

## **Measurement Protocol**

Measurement Object	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 17:28
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	119.2	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.88	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	12.31	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.31	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.64	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.11	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.72	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.91	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.68	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.19	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.59	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.36	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.72	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.68	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.72	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	27.68	339D NR

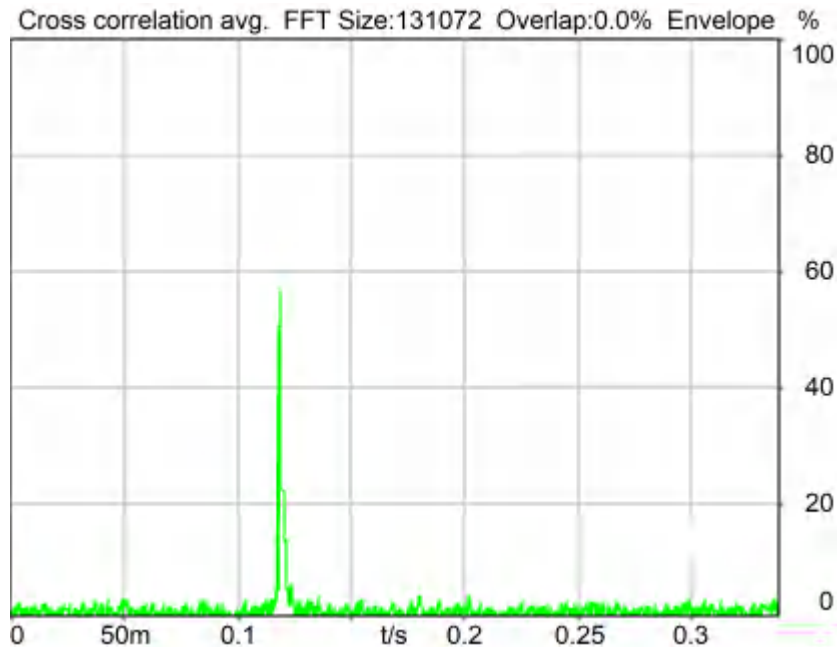
- 630 Hz NB		0.0 dB		n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.02	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.91	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.99	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.91	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.62	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.47	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.71	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.99	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1948.0 Hz	1.50	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	1.14	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	1.55	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3445.5 Hz	0.01	339D NR n71_15_DFT-S-OFDM_EVS NB9.6kbps_CH136100

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Overall Receive Delay NB	5
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5.2 RCV Distortion and Noise - 400 Hz NB	31
5.2 RCV Distortion and Noise - 500 Hz NB	33
5.2 RCV Distortion and Noise - 630 Hz NB	35
5.2 RCV Distortion and Noise - 800 Hz NB	37
5.2 RCV Distortion and Noise - 1000 Hz NB	39
5.2 RCV Distortion and Noise - 1250 Hz NB	41
5.2 RCV Distortion and Noise - 1600 Hz NB	43
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5.2 RCV Distortion and Noise - 2500 Hz NB	47
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5.3 Frequency Response 8N FF HANB	51
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## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 119.2 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_NB
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**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

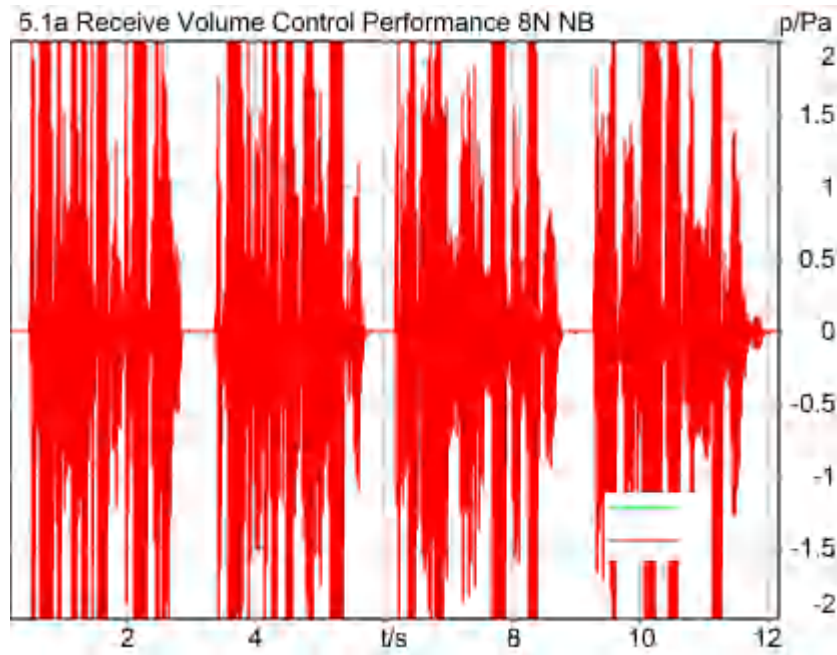
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1a Receive Volume Control Performance 8N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 88.88 dB[SPL], Act.: 85.17%

Corrected Speech Level: 18.88 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		

**Special Features**

Show source signal Source ch.2  
 Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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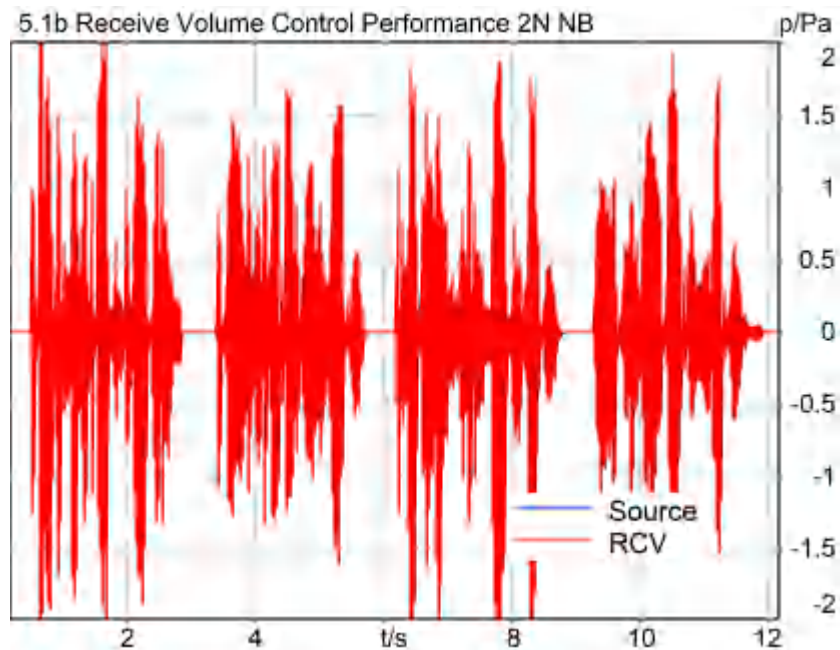
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1b Receive Volume Control Performance 2N NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband





**Correction**

X - 70

Speech Level RCV: 82.31 dB[SPL], Act.: 85.20%

Corrected Speech Level: 12.31 dB[SPL] Ok

**Ok**

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**Limits**

	<b>lower</b>
Run 1	6.00 dB20uPa

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction Out 2 -> In 2

Range start 200.00 ms

Use FIR Filter Ch2

Bandpass filter Narrow Band

15.90 dB

Range length 12000.00 ms

FIR filter drp2ff\_ieee1652

Margin (15.9dB nom)

**Special Features**

Show source signal Source ch.2  
 Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.31 dB (3.84%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.64 dB (3.70%) Ok

Ok

2024/1/25 21:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 630 Hz NB**

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Distortion (Noise) RCV (packed): 28.11 dB (3.93%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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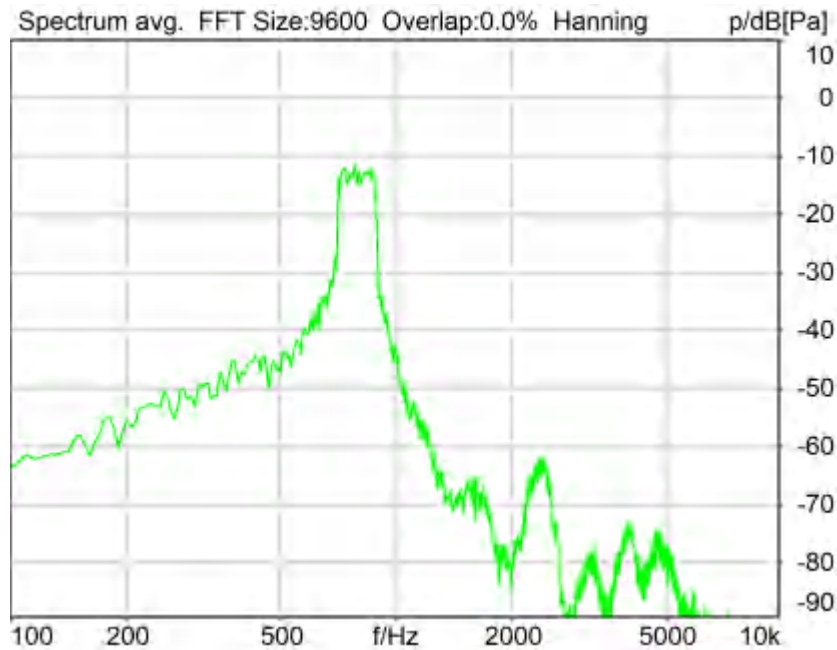
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **5.2 RCV Distortion and Noise - 800 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 25.72 dB (5.18%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

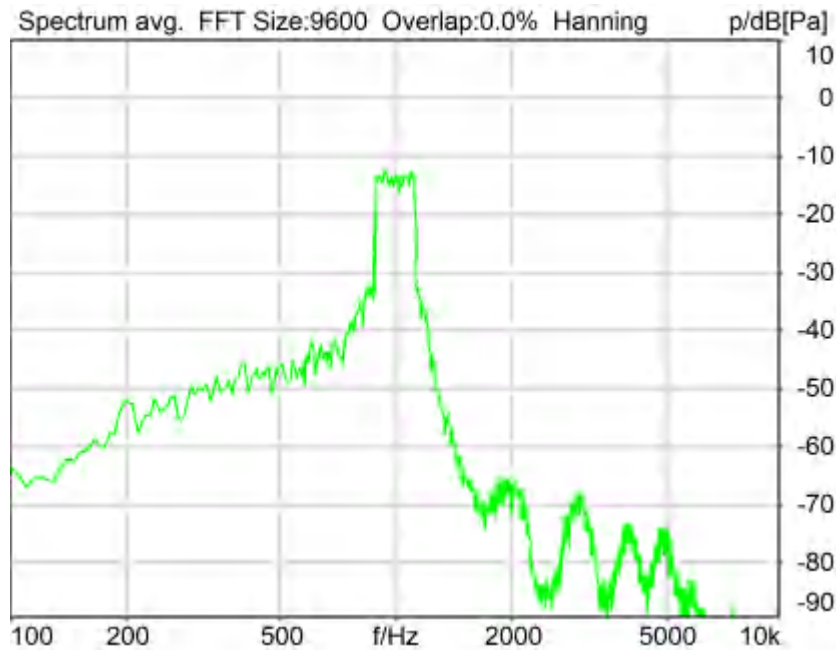
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **5.2 RCV Distortion and Noise - 1000 Hz NB**

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Distortion (Noise) RCV (packed): 23.91 dB (6.37%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

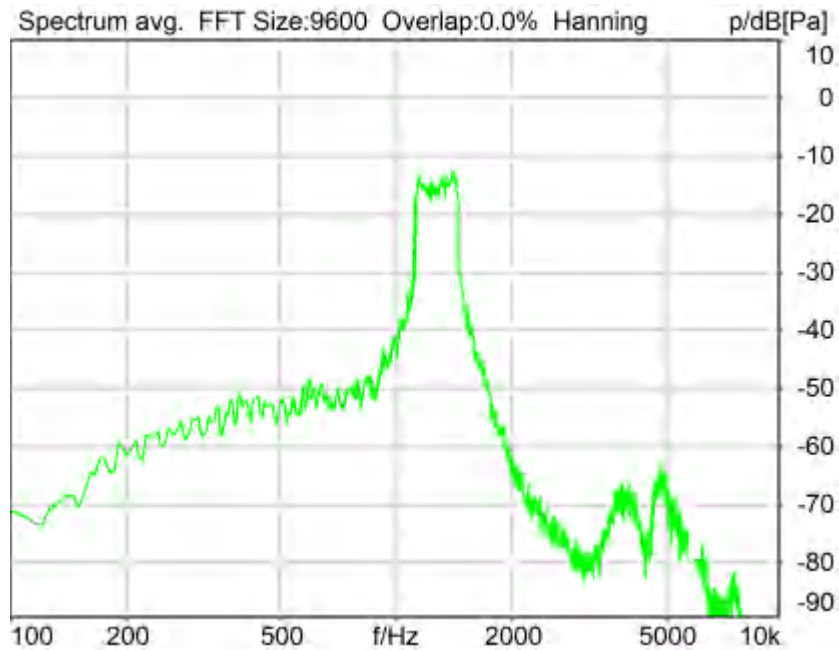
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 21.68 dB (8.24%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

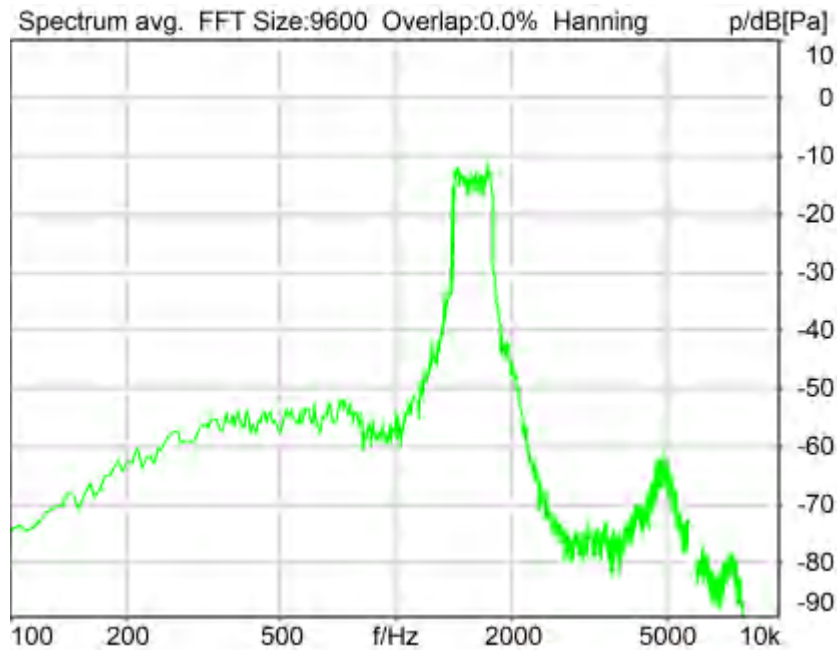
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1600 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.19 dB (5.50%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 23.59 dB (6.61%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

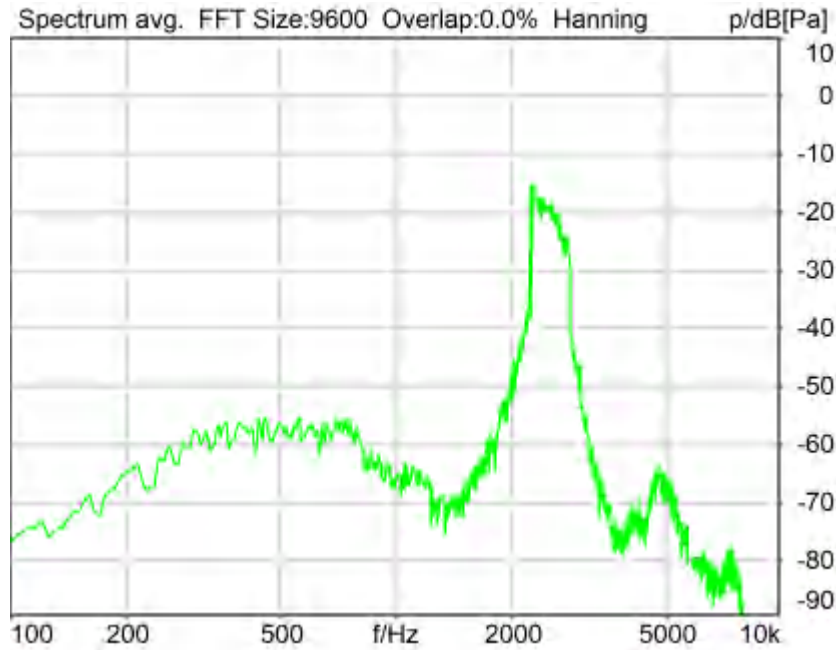
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.36 dB (6.05%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

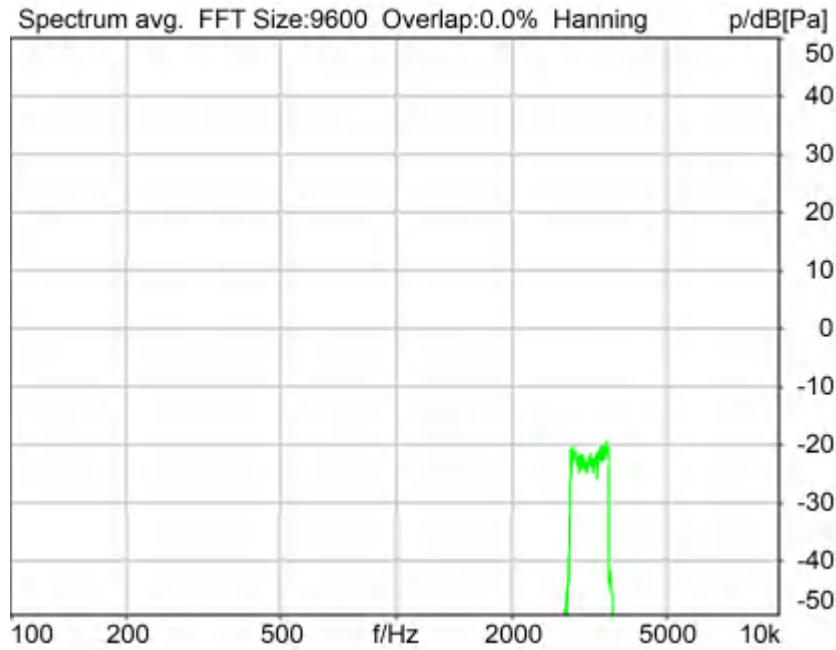
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 3150 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.72 dB (3.66%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
--------	-----------	------

1	400Hz	28.31 dB
2	500Hz	28.64 dB
3	630Hz	28.11 dB
4	800Hz	25.72 dB
5	1000Hz	23.91 dB
6	1250Hz	21.68 dB
7	1600Hz	25.19 dB
8	2000Hz	23.59 dB
9	2500Hz	24.36 dB
10	3150Hz	28.72 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 21.68dB at 1250Hz.

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## **5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.40 dB (3.80%) Ok

**Ok**

2024/1/25 21:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			



Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage 200V Supply Voltage ±60V

-----  
 VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
 BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

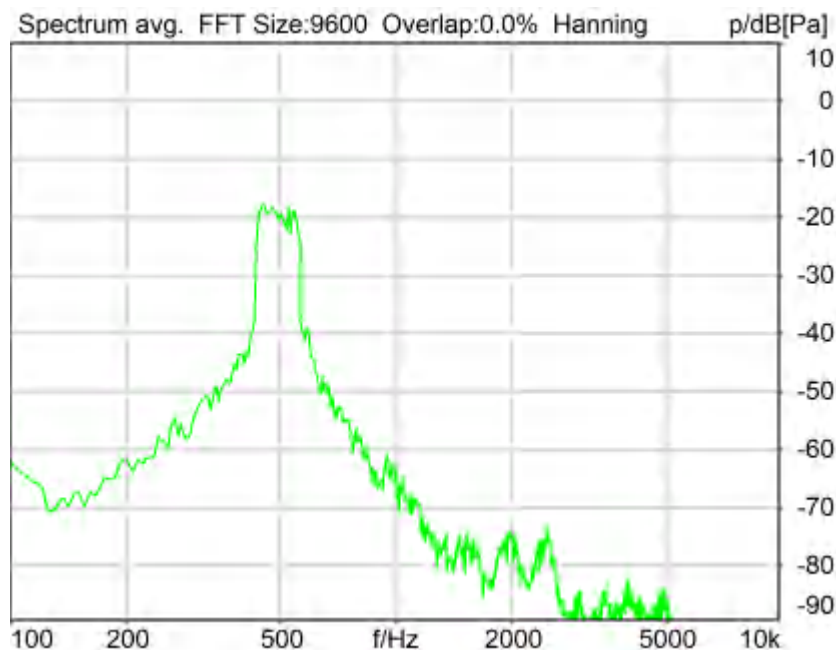
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.72 dB (3.66%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
-------	--------------------------	----------	-----

Polarisation Voltage	200V	Supply Voltage	±60V
-----			
VoIP Settings (VoIP)			
RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off
-----			
BEQ Settings (BEQ Filter 1)			
Block mode	Bypass		
-----			
Artificial Head Settings (HATS 1 (HMS II.3))			
Ser. Nr.	12306613	Pinna Type	Type 3.3
<b>HIB Settings</b>			
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.68 dB (4.13%) Ok

**Ok**

2024/1/25 21:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	745.0 Hz
Stimulus min.	525.0 Hz	Analysis max.	520.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	750.0 Hz		

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
 VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
 BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

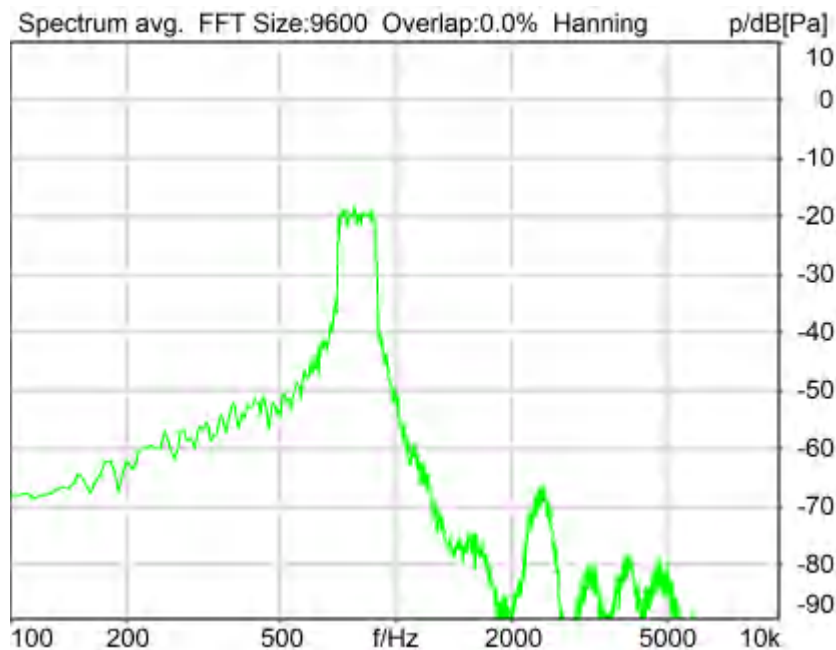
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.02 dB (5.00%) Ok

**Ok**

2024/1/25 21:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	675.0 Hz
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode            Bypass  
 -----

Artificial Head Settings (HATS 1 (HMS II.3))

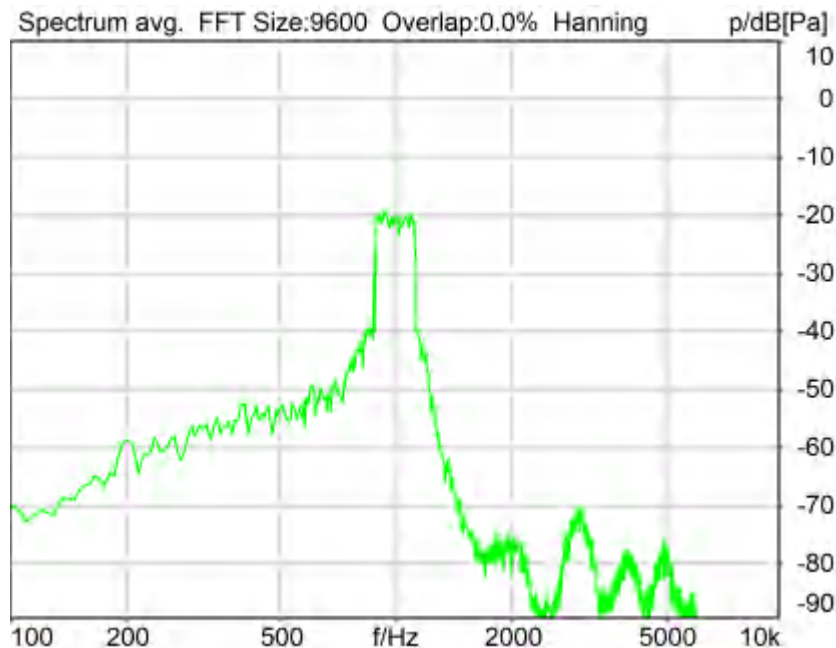
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.91 dB (6.38%) Ok

**Ok**

2024/1/25 21:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140



Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
 Packet Length 20 Encoder Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass  
 -----

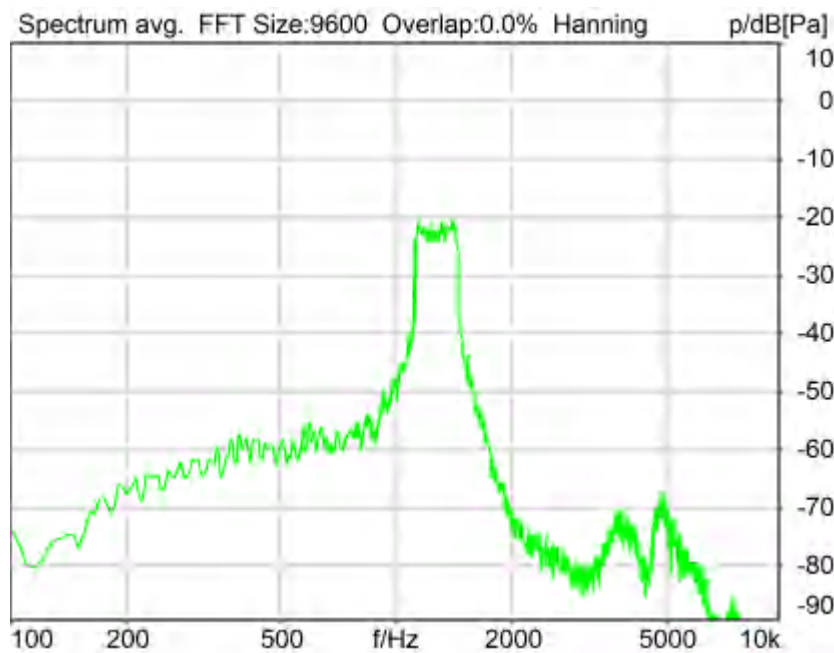
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.99 dB (7.95%) Ok

**Ok**

2024/1/25 21:21 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
--	-------

Run 1	20.00 dB
-------	----------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

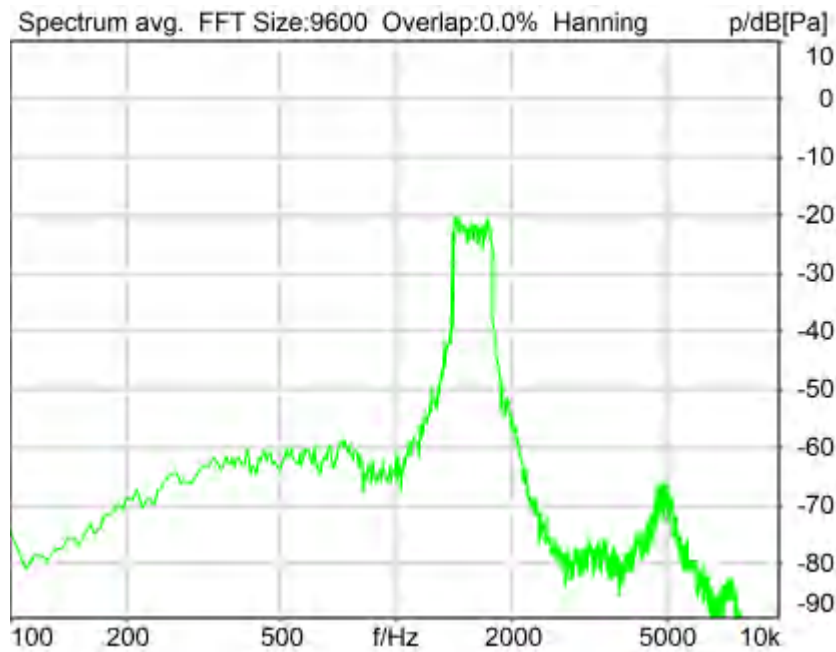
-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**  
 HIB Name 60020095 Serial 60020095  
 HIB Mode Mobile Measurement Impedance 32 Ohm  
 Gain out 1 -40.00 dB Gain out 2 0.00 dB  
 Gain in 1 0.00 dB Gain in 2 0.00 dB  
 Mic 1 Power Supply Off Mic 2 Power Supply Off

## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.91 dB (5.68%) Ok

**Ok**

2024/1/25 21:22 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

**FMTF Parameter**

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

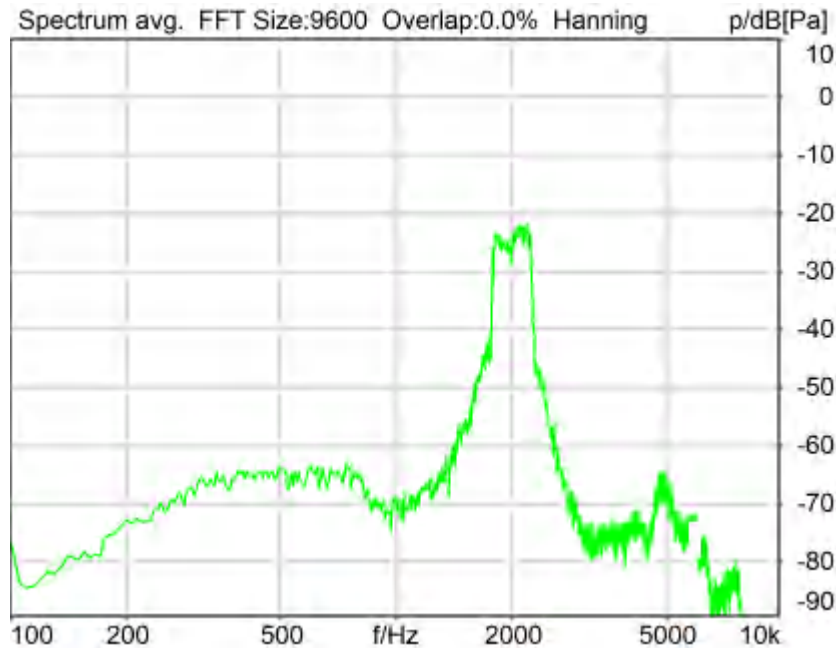
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.62 dB (7.40%) Ok

**Ok**

2024/1/25 21:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2



Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTMP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off



BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

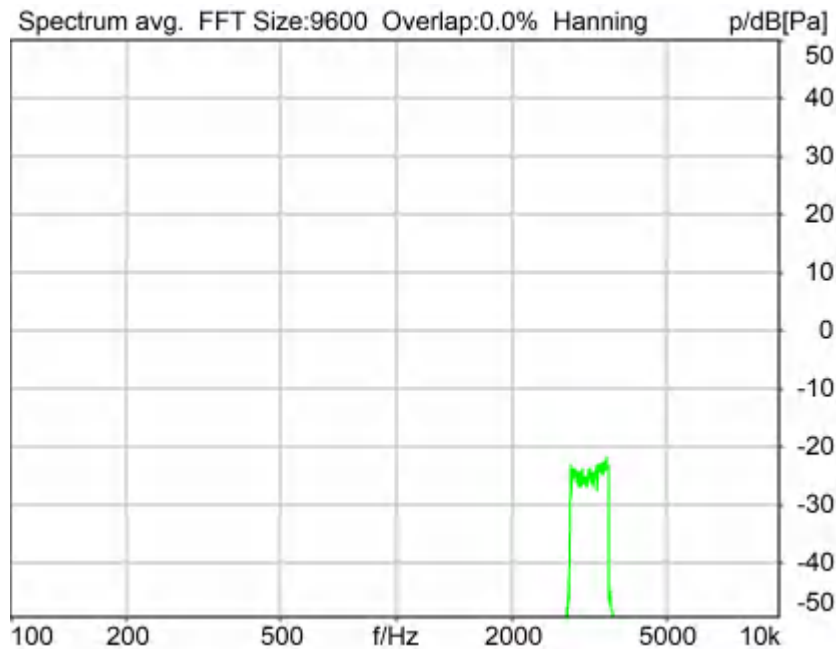
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.71 dB (3.27%) Ok

Ok

2024/1/25 21:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr. 12306613

Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

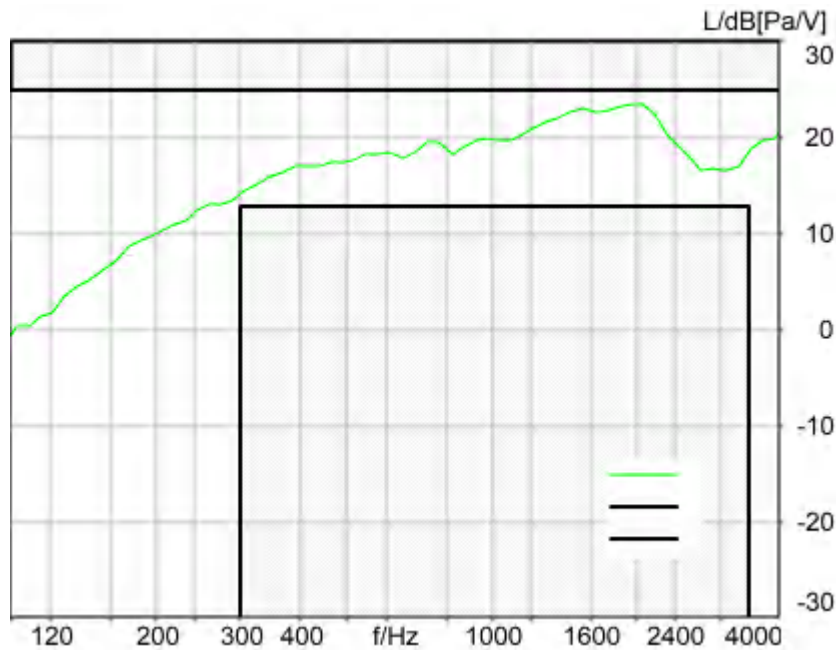
Region	Frequency	SDNR
1	400Hz	28.40 dB
2	500Hz	28.72 dB
3	630Hz	27.68 dB
4	800Hz	26.02 dB
5	1000Hz	23.91 dB
6	1250Hz	21.99 dB
7	1600Hz	24.91 dB
8	2000Hz	22.62 dB
9	2500Hz	25.47 dB
10	3150Hz	29.71 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.99dB at 1250Hz.

2024/1/25 21:23 ACQUA

**5.3 Frequency Response 8N FF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 1.50 dB at 1948.0 Hz Ok

**Ok**

2024/1/25 21:50 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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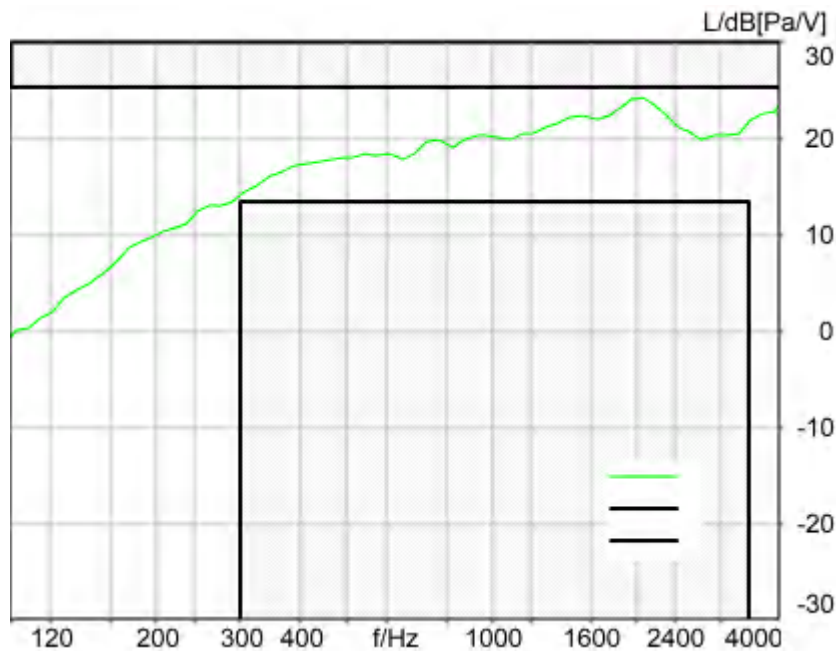
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1      -40.00 dB                      Gain out 2      0.00 dB  
 Gain in 1       0.00 dB                              Gain in 2       0.00 dB  
 Mic 1 Power Supply Off                      Mic 2 Power Supply Off

### 5.3 Frequency Response 8N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 1.14 dB at 305.9 Hz Ok

**Ok**

2024/1/25 21:50 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1      -90.0 dB                      Level adj. Ch2      -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file  
 Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
 Alteration:  
 0.2 s Pause added at the beginning of the file.  
 0.8 s Pause added at the end of the file.  
 filtered with 4.0 kHz low-pass filter  
 signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 119.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off                                  Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)  
Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr. 12306613

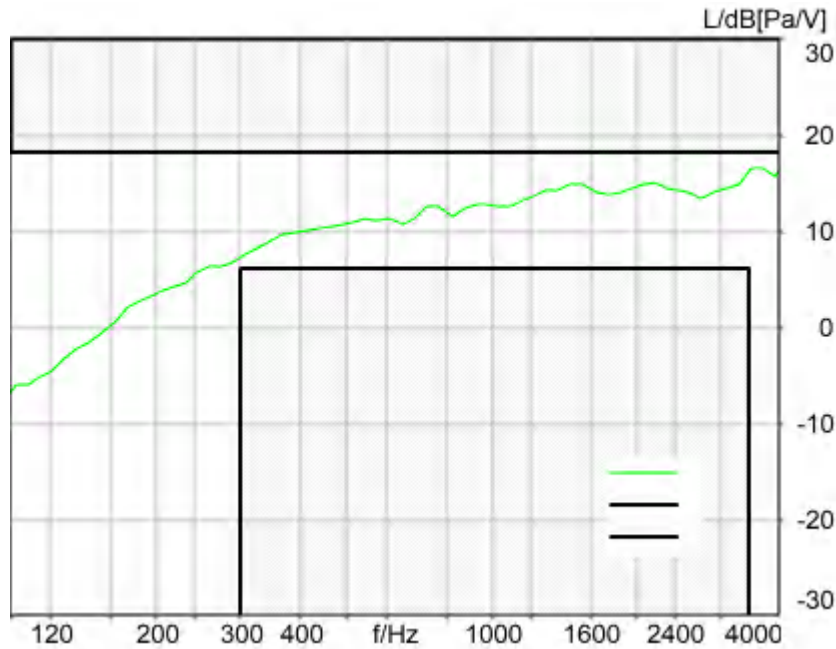
Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance

1.55 dB at 305.9 Hz Ok

**Ok**

2024/1/25 21:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance



Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB  
 NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2  
 Pause 0.5 s +  
 Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +  
 Pause till end of file  
 Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

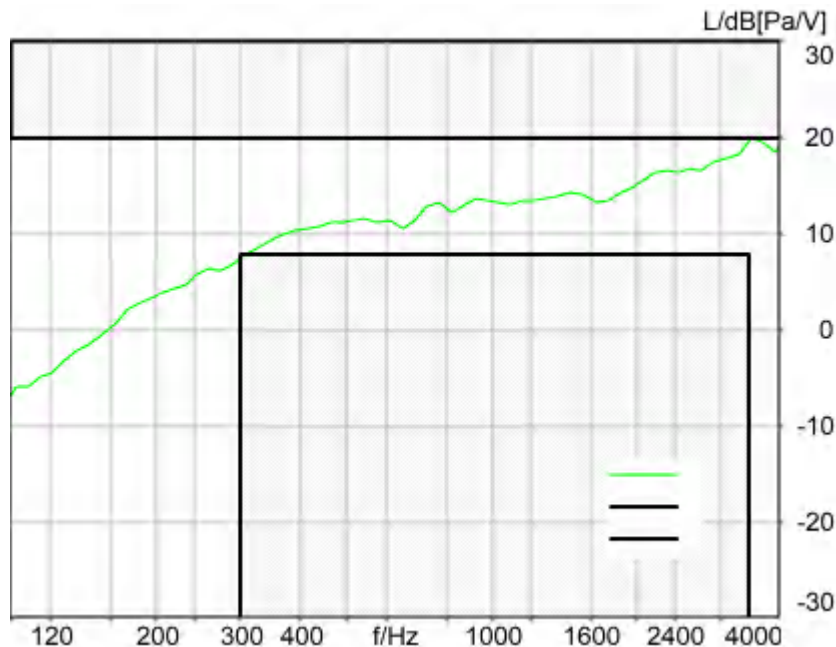
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 0.01 dB at 3445.5 Hz Ok

**Ok**

2024/1/25 21:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 115.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out

In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable  
SIP Reg. State Unregistered Jitterbuffer Length 140  
Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
Packet Length 20 Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

## **Measurement Protocol**

Measurement Object	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 17:28
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	119.6	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	19.09	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	12.35	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.29	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.78	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.42	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.70	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.17	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.69	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.87	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.68	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.19	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.59	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.38	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.71	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.14	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise	Ok	Distortion (Noise)	24.29	339D NR

- 5000 Hz WB		[dB], 0.0 dB		n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.68	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.43	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.80	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.32	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.94	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.88	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.94	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.88	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.00	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.83	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.63	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.46	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.71	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.56	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.19	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	22.00	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	0.98	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.17	339D NR

DF		scheme [dB], 4870.0 Hz		n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.00	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100
5.3 Frequency Response 2N DF	Not Ok	Min. dist. to tolerance scheme [dB], 649.1 Hz	-0.78	339D NR n71_15_DFT-S-OFDM_EVS WB13.2kbps_CH136100

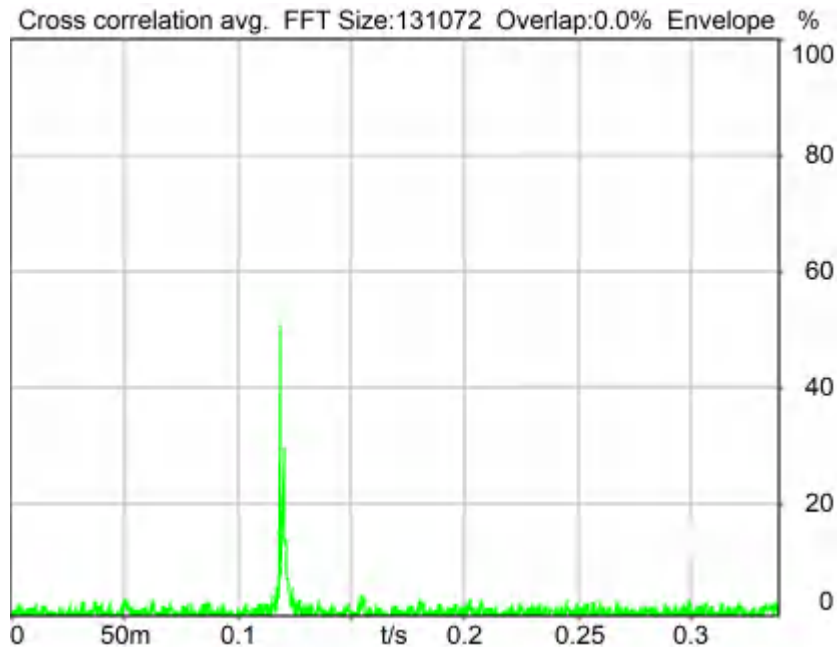


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## Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 119.6 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: csswb1b\_r1s.dat

WIDEBAND Composite Source Signal RCV P.501 (1 bursts) at Channel 2

Pause 0.5 s +

voiced signal + 8000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 8000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation	Overlap	0 %
FFT size	131072	Smooth	Off
Window function.	Hanning		
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_WB
--------------------	-------------	-------------------	----------

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode	Bypass
------------	--------

**Artificial Head Settings (HATS 1 (HMS II.3))**

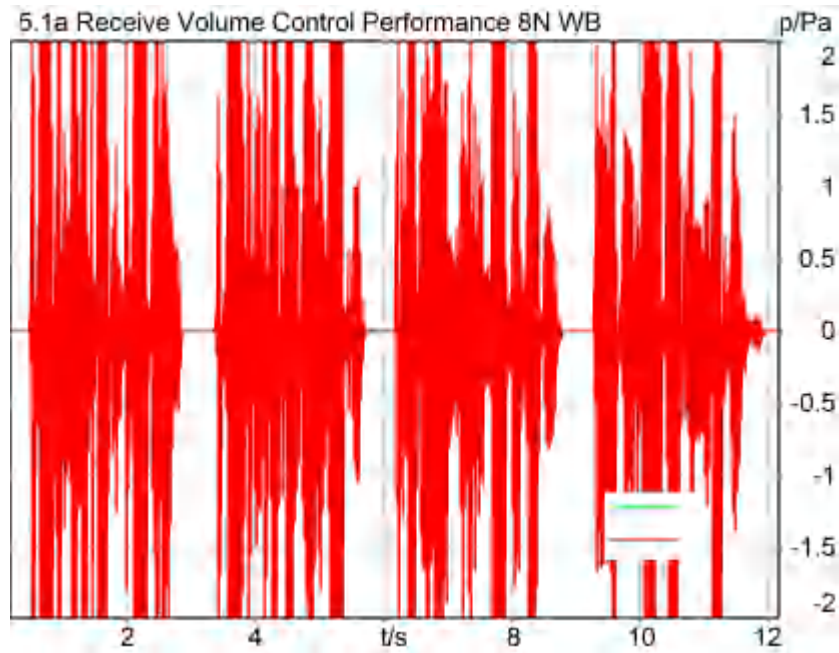
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1a Receive Volume Control Performance 8N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 89.09 dB[SPL], Act.: 85.24%

Corrected Speech Level: 19.09 dB[SPL] Ok

Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2  
Range start 200.00 ms Range length 12000.00 ms  
Use FIR Filter Ch2 FIR filter drp2ff\_ieee1652

Bandpass filter      Super Wideband              Margin (15.9dB nom)  
15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial    77000207                      Nickname  
Firmware            3.4.17                         Sync Source            Internal  
Clock Pitch        0.00 ppm

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            20Hz  
Polarisation Voltage200V                      Supply Voltage       ±60V  
Channel In 2 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            20Hz  
Polarisation Voltage200V                      Supply Voltage       ±60V  
Channel In 3 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            Off  
Polarisation Voltage200V                      Supply Voltage       ±60V  
Channel In 4 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            Off  
Polarisation Voltage200V                      Supply Voltage       ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection    Streaming                         SIP Connection        Unavailable  
SIP Reg. State    Unregistered                      Jitterbuffer Length    140  
Jitter Buffer Reset On Playback                Enabled Codec          EVS/16000/1  
Packet Length     20                                    Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode   Off                                    Impairment Type       Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode        Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

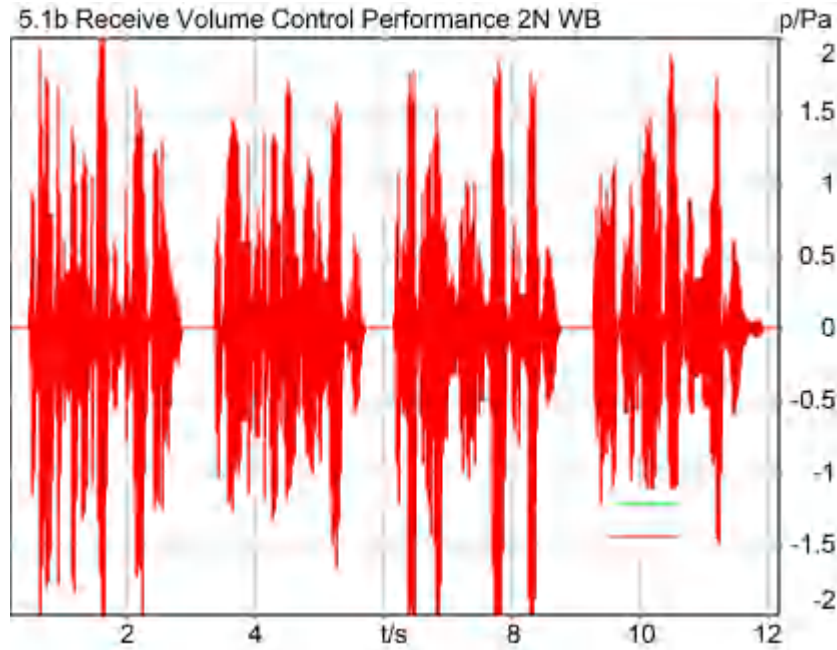
Ser. Nr.            12306613                         Pinna Type            Type 3.3

**HIB Settings**

HIB Name           60020095                         Serial                 60020095  
HIB Mode           Mobile Measurement                Impedance            32 Ohm  
Gain out 1         -40.00 dB                         Gain out 2            0.00 dB  
Gain in 1           0.00 dB                             Gain in 2            0.00 dB  
Mic 1 Power Supply Off                         Mic 2 Power Supply Off

**5.1b Receive Volume Control Performance 2N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



**Correction**

X - 70

Speech Level RCV: 82.35 dB[SPL], Act.: 84.79%  
Corrected Speech Level: 12.35 dB[SPL] Ok

**Ok**

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**Limits**

	<b>lower</b>
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

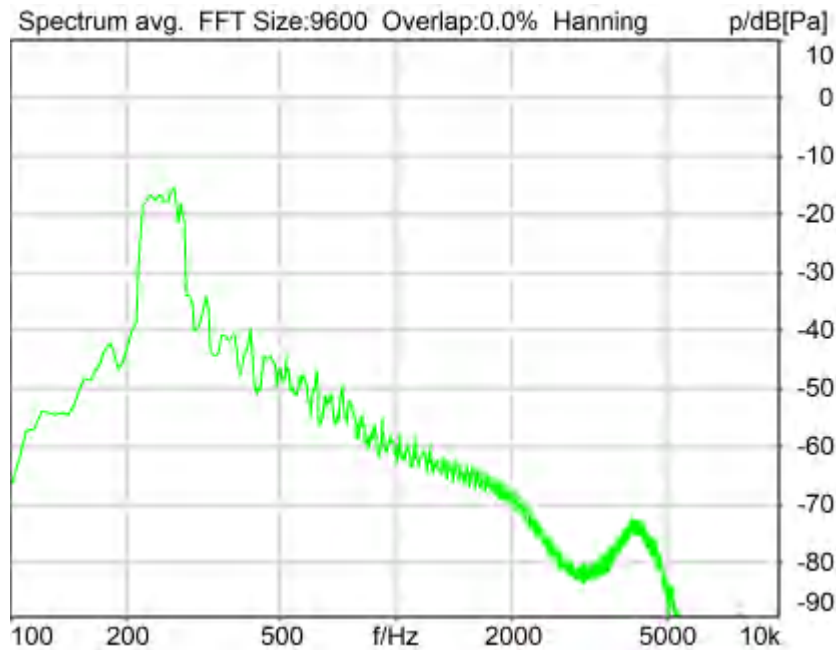
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.29 dB (6.85%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

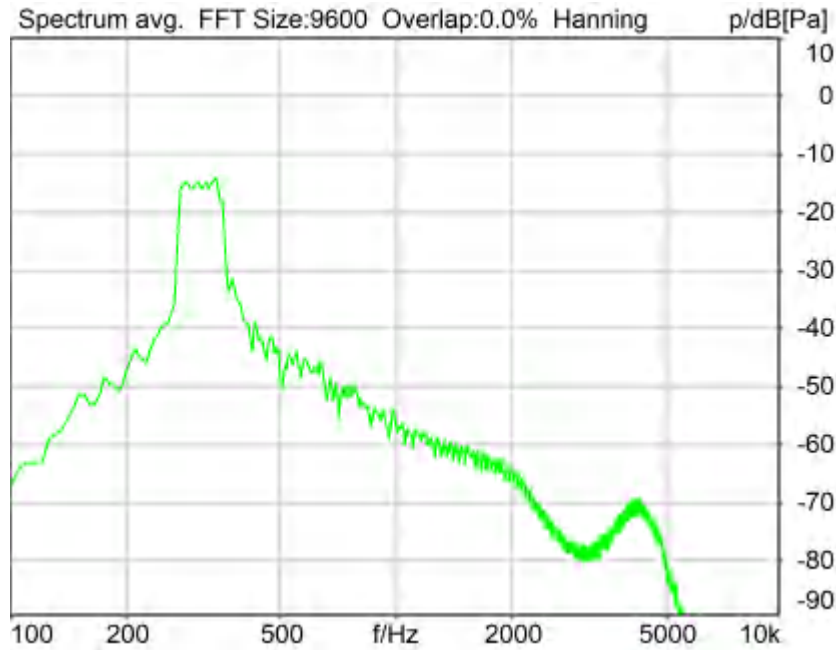
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 315 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.78 dB (5.77%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

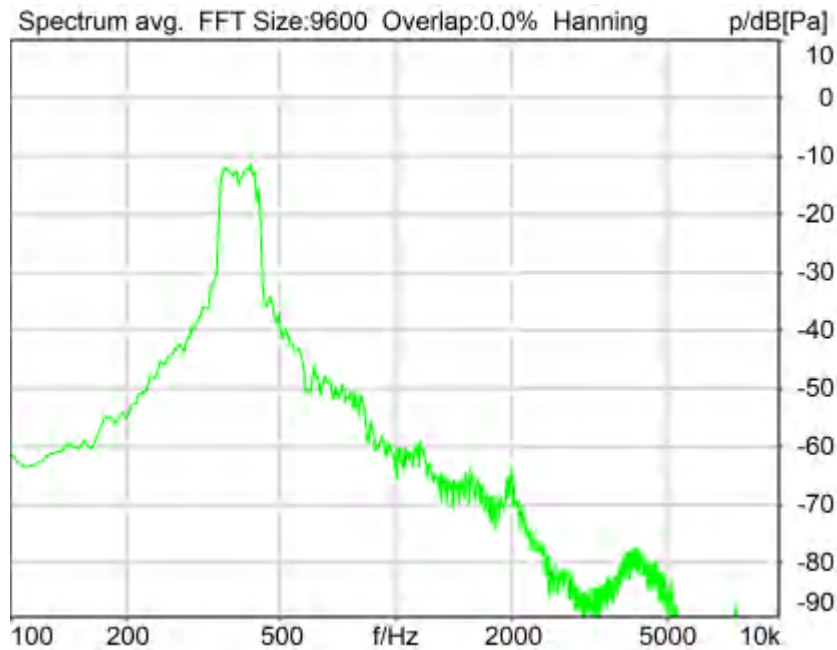
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.42 dB (3.79%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **5.2 RCV Distortion and Noise - 500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.70 dB (3.67%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.17 dB (3.90%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

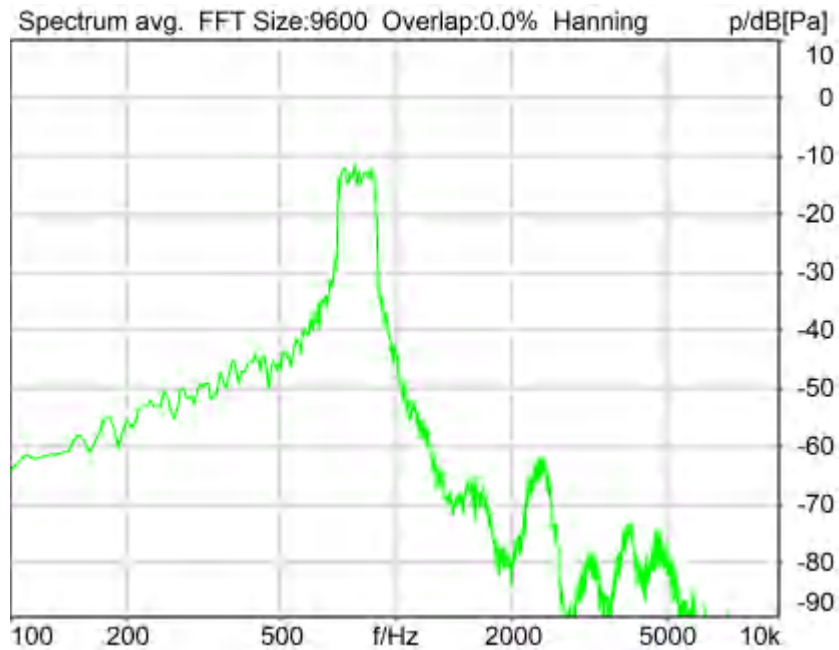
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 800 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.69 dB (5.19%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial 77000207      Nickname  
Firmware 3.4.17      Sync Source Internal  
Clock Pitch 0.00 ppm

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection Streaming      SIP Connection Unavailable  
SIP Reg. State Unregistered      Jitterbuffer Length 140  
Jitter Buffer Reset On Playback      Enabled Codec EVS/16000/1  
Packet Length 20      Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off      Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

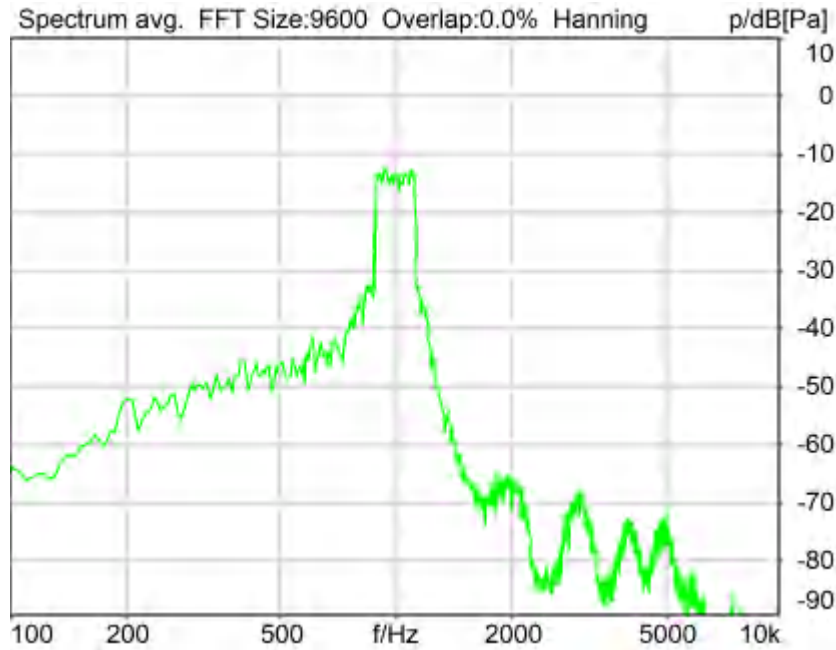
Ser. Nr. 12306613      Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095      Serial 60020095  
HIB Mode Mobile Measurement      Impedance 32 Ohm  
Gain out 1 -40.00 dB      Gain out 2 0.00 dB  
Gain in 1 0.00 dB      Gain in 2 0.00 dB  
Mic 1 Power Supply Off      Mic 2 Power Supply Off

**5.2 RCV Distortion and Noise - 1000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.87 dB (6.41%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

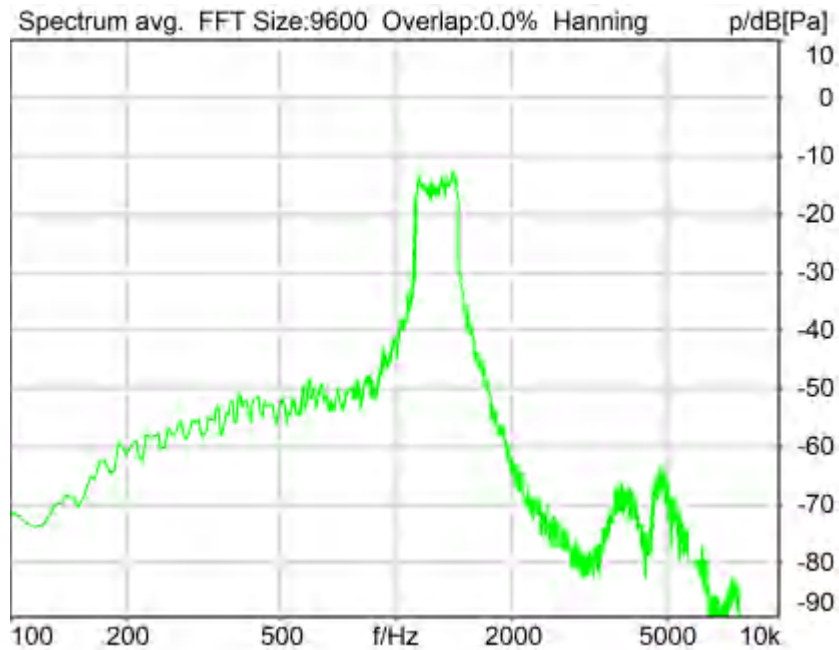
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 21.68 dB (8.24%) Ok

**Ok**

2024/1/25 21:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

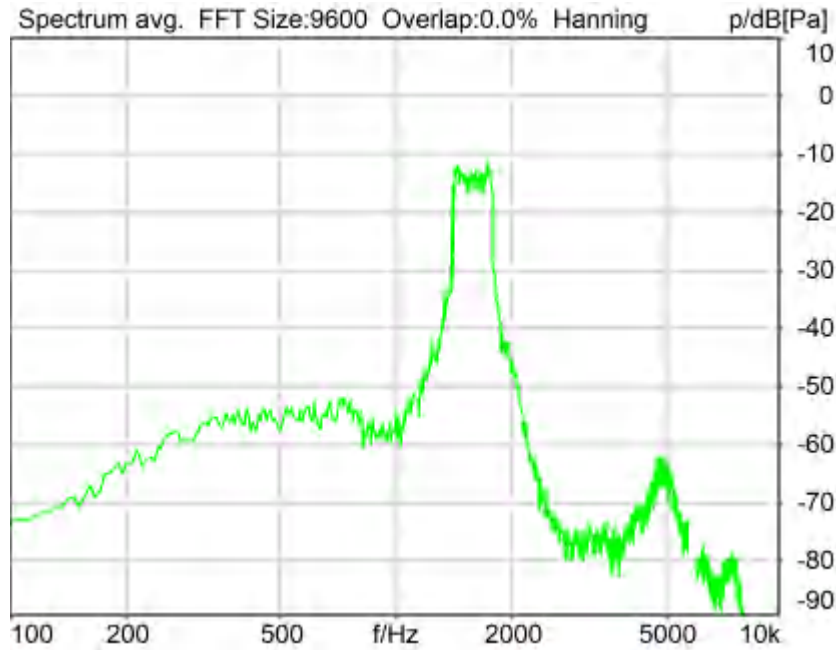
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1600 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.19 dB (5.50%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.59 dB (6.62%) Ok

**Ok**

2024/1/25 21:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

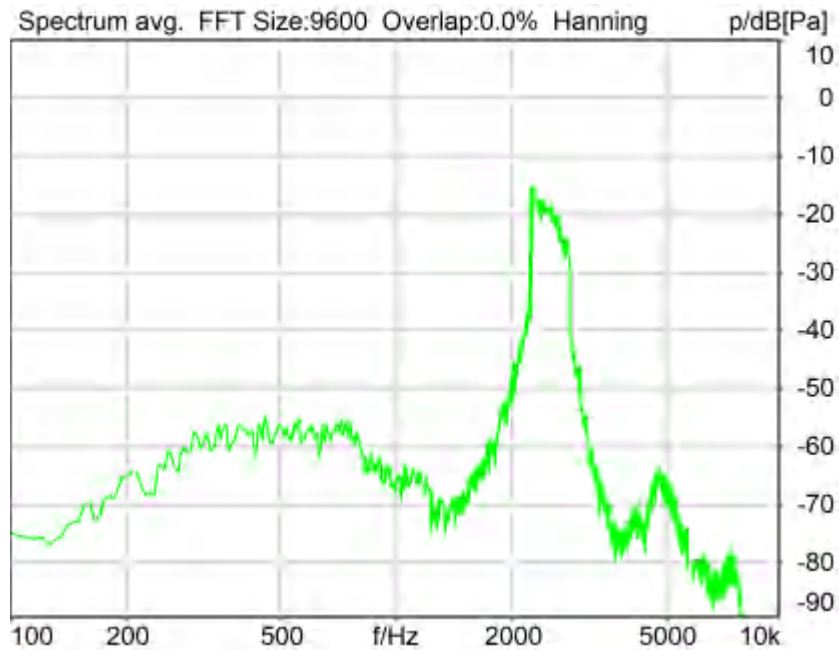
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.38 dB (6.04%) Ok

**Ok**

2024/1/25 21:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

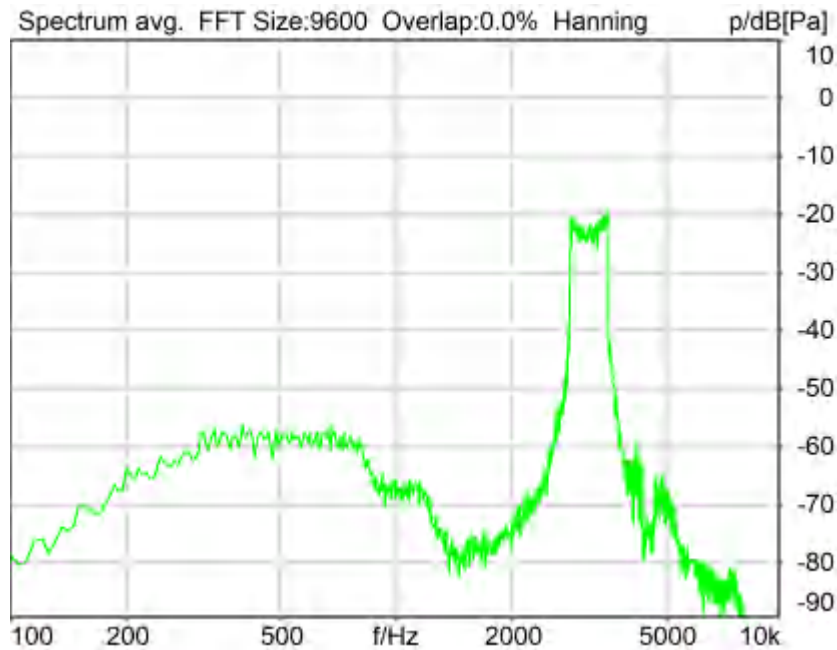
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **5.2 RCV Distortion and Noise - 3150 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.71 dB (3.67%) Ok

**Ok**

2024/1/25 21:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.14 dB (4.39%) Ok

**Ok**

2024/1/25 21:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

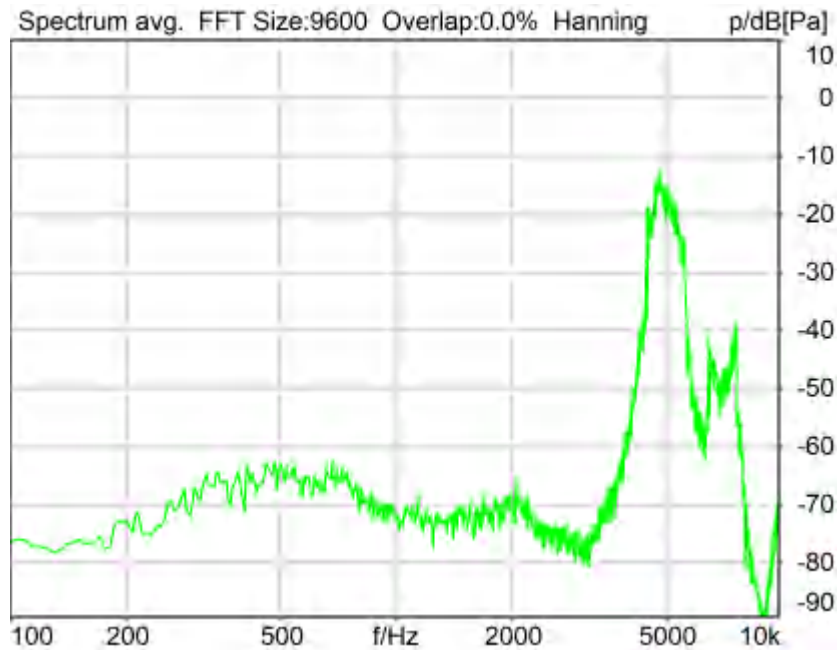
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 5000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.29 dB (6.10%) Ok

**Ok**

2024/1/25 21:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
--------	-----------	------

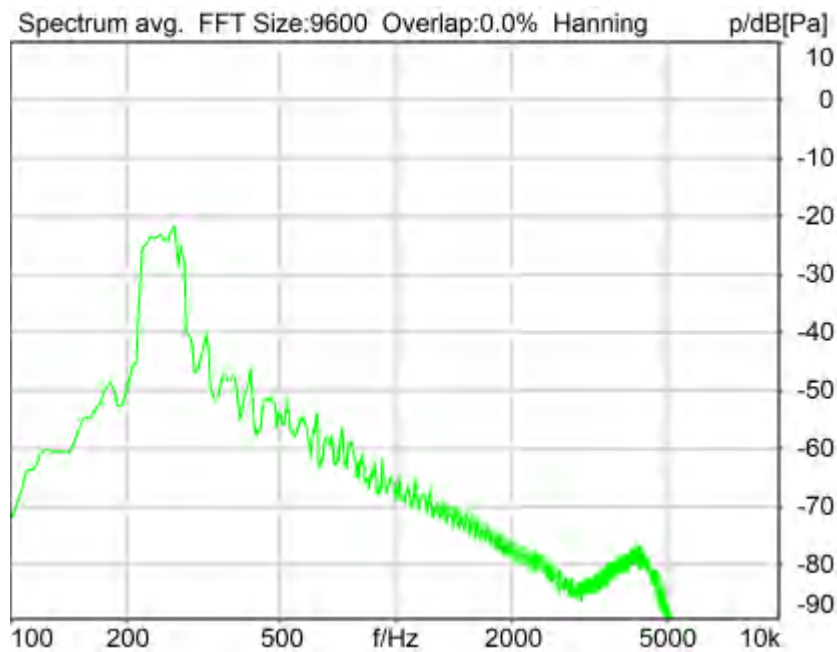
1	250Hz	23.29 dB
2	315Hz	24.78 dB
3	400Hz	28.42 dB
4	500Hz	28.70 dB
5	630Hz	28.17 dB
6	800Hz	25.69 dB
7	1000Hz	23.87 dB
8	1250Hz	21.68 dB
9	1600Hz	25.19 dB
10	2000Hz	23.59 dB
11	2500Hz	24.38 dB
12	3150Hz	28.71 dB
13	4000Hz	27.14 dB
14	5000Hz	24.29 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.68dB at 1250Hz.

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## **5.2 RCV Distortion and Noise - 250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.43 dB (6.73%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat  
Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.80 dB (5.75%) Ok

**Ok**

2024/1/25 21:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**  
Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz

Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.32 dB (3.84%) Ok



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.94 dB (3.57%) Ok

**Ok**

2024/1/25 21:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.88 dB (4.04%) Ok

**Ok**

2024/1/25 21:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

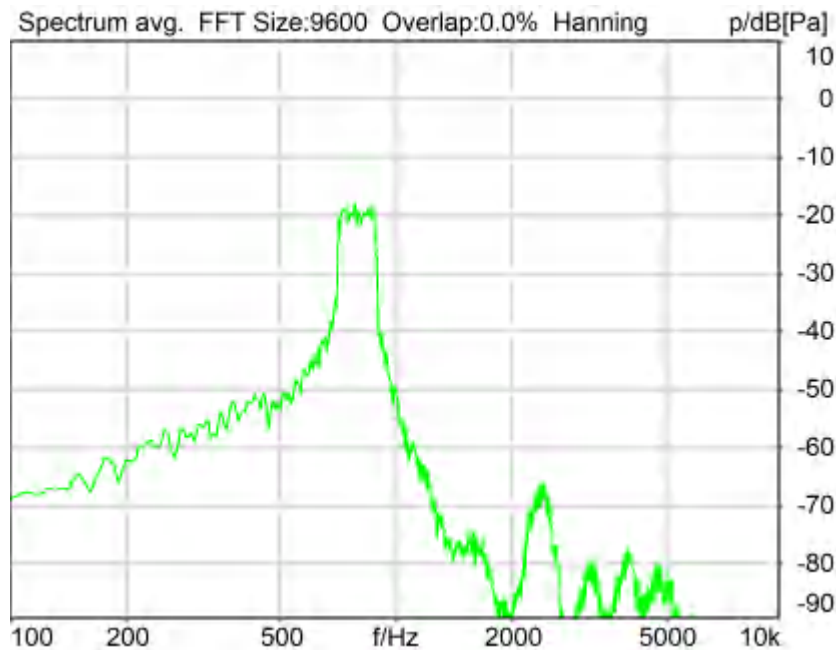
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.94 dB (5.05%) Ok

**Ok**

2024/1/25 21:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.88 dB (6.39%) Ok



**Ok**

2024/1/25 21:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

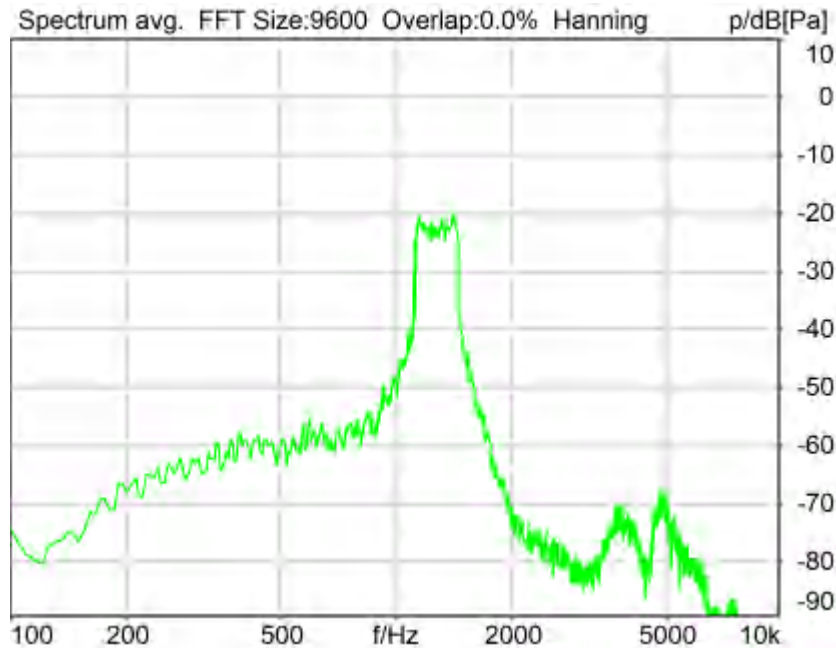
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.00 dB (7.94%) Ok

**Ok**

2024/1/25 21:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

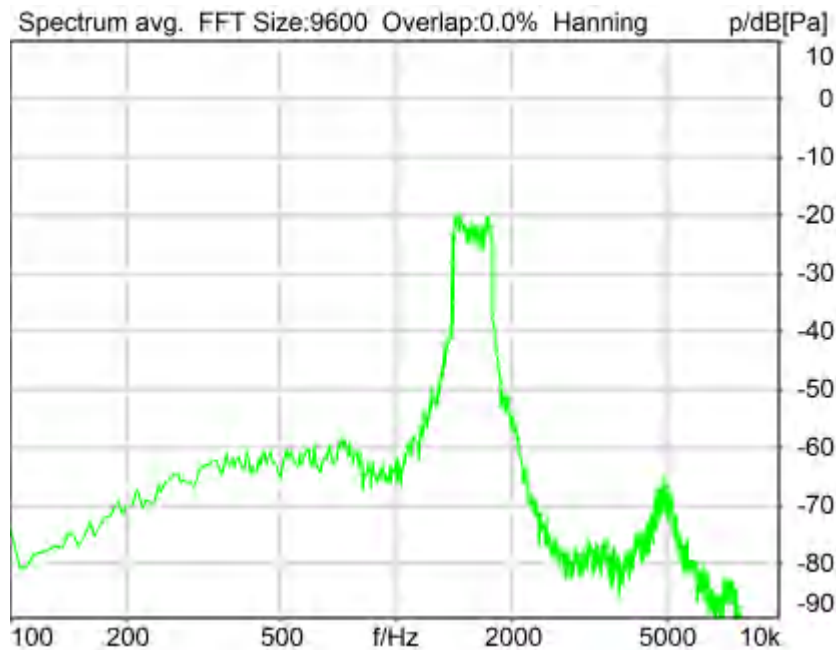
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.83 dB (5.73%) Ok

**Ok**

2024/1/25 21:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

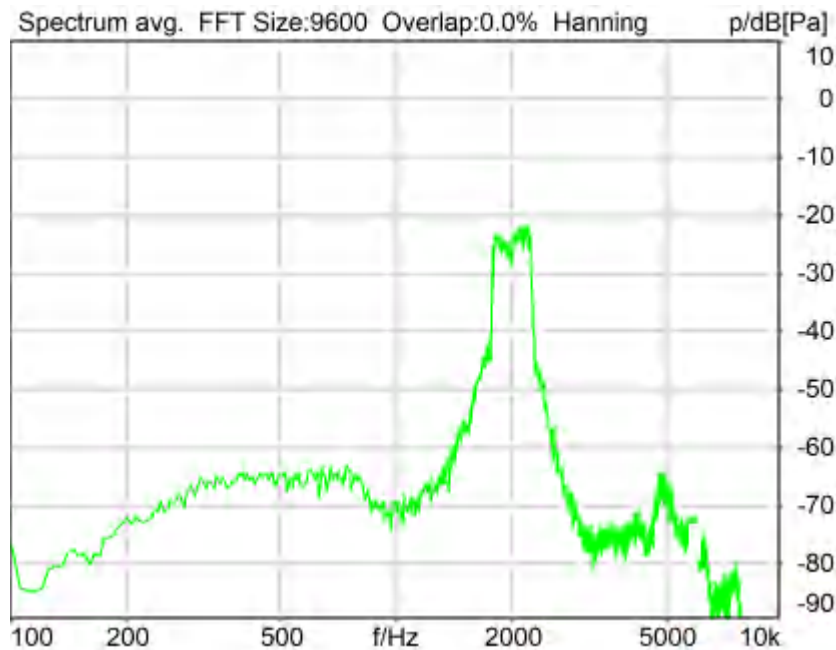
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.63 dB (7.39%) Ok

**Ok**

2024/1/25 21:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

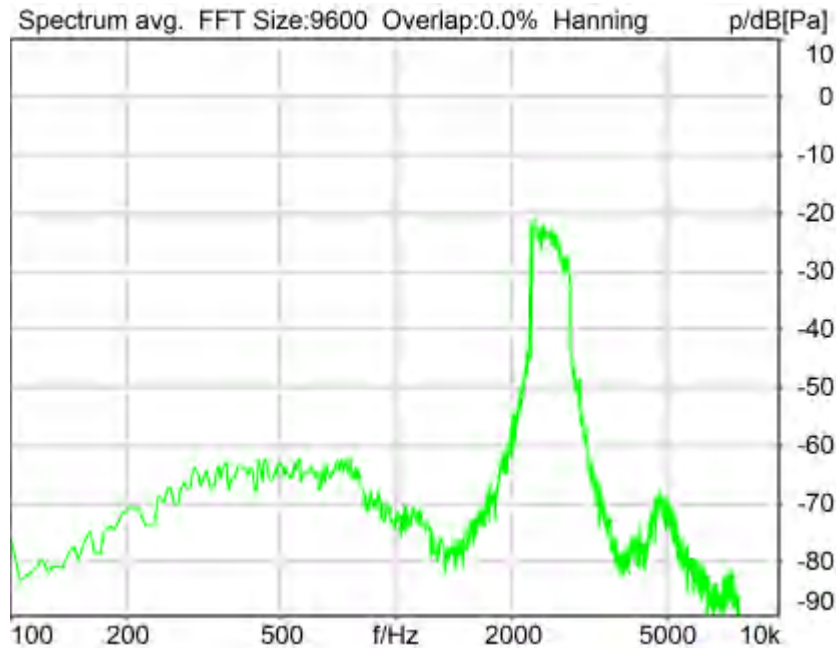
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.46 dB (5.33%) Ok



**Ok**

2024/1/25 21:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

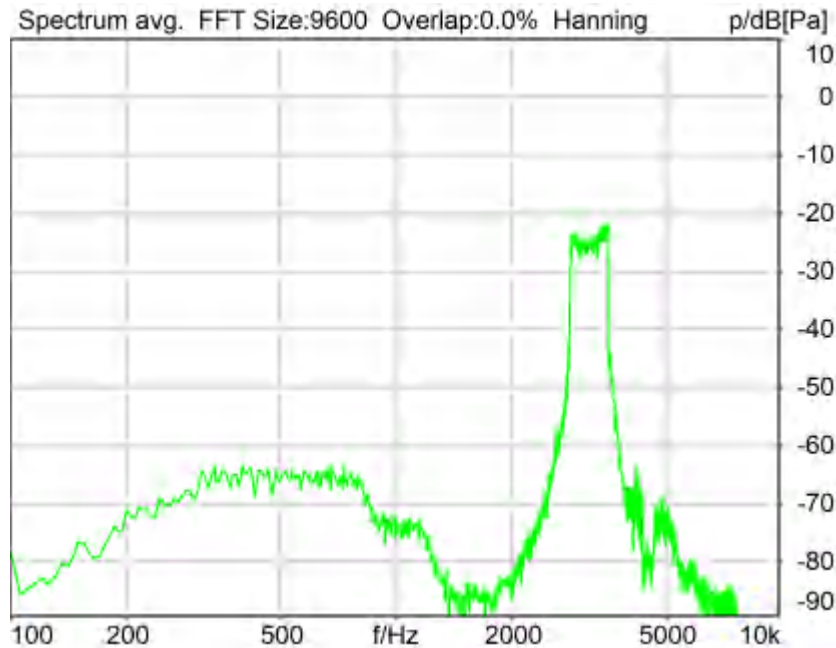
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.71 dB (3.27%) Ok

**Ok**

2024/1/25 21:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

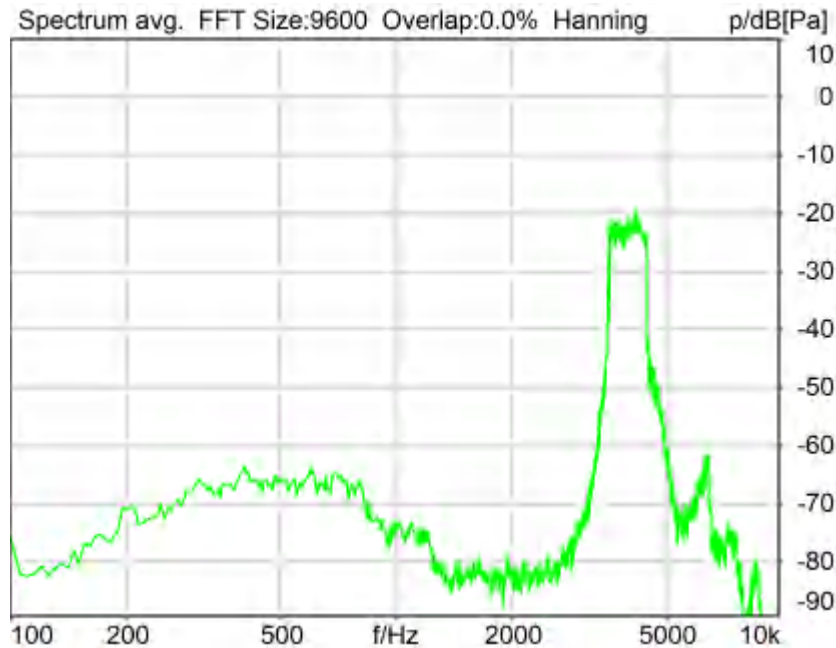
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.56 dB (4.19%) Ok

**Ok**

2024/1/25 21:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

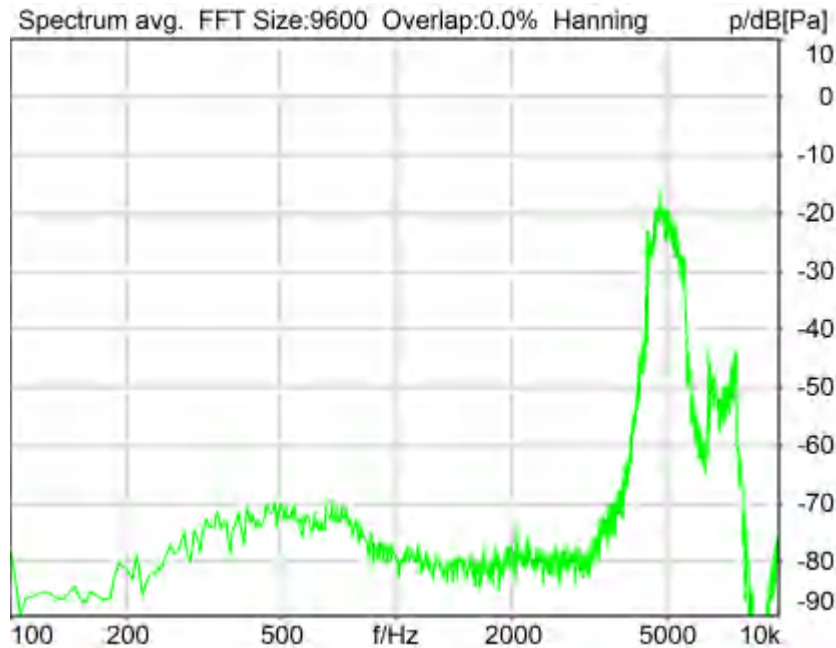
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.19 dB (6.17%) Ok

**Ok**

2024/1/25 21:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable  
SIP Reg. State Unregistered Jitterbuffer Length 140  
Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
Packet Length 20 Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTF Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

**Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	23.43 dB
2	315Hz	24.80 dB
3	400Hz	28.32 dB
4	500Hz	28.94 dB
5	630Hz	27.88 dB
6	800Hz	25.94 dB
7	1000Hz	23.88 dB
8	1250Hz	22.00 dB
9	1600Hz	24.83 dB
10	2000Hz	22.63 dB
11	2500Hz	25.46 dB
12	3150Hz	29.71 dB
13	4000Hz	27.56 dB
14	5000Hz	24.19 dB

All SDNRs were greater than 20.0 dB, requirement was met.

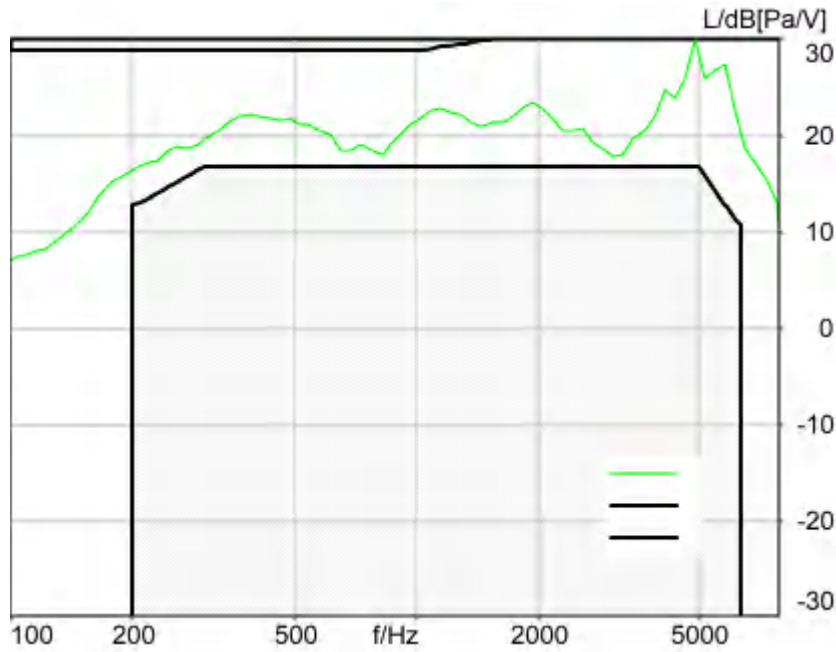
Smallest SDNR was 22.00dB at 1250Hz.



2024/1/25 21:32 ACQUA

### 5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.98 dB at 3058.6 Hz Ok

**Ok**

2024/1/27 0:19 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

#### Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

Source: respmaleieeee269\_wb\_r20\_v01.dat  
Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

### Special Features

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

**FMTF Parameter**

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode	Active	Equalization	FF (no torso)
HATS serial	12306613	Pinna	Type 3.3

**Artificial Head Settings (HATS 1 (HMS II.3))**

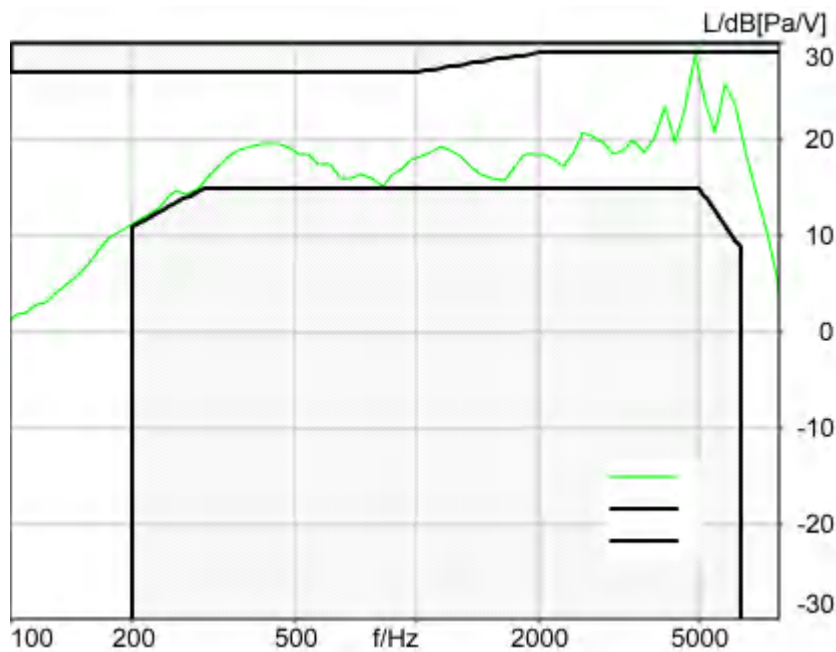
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 8N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.17 dB at 4870.0 Hz Ok

**Ok**

2024/1/26 13:02 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

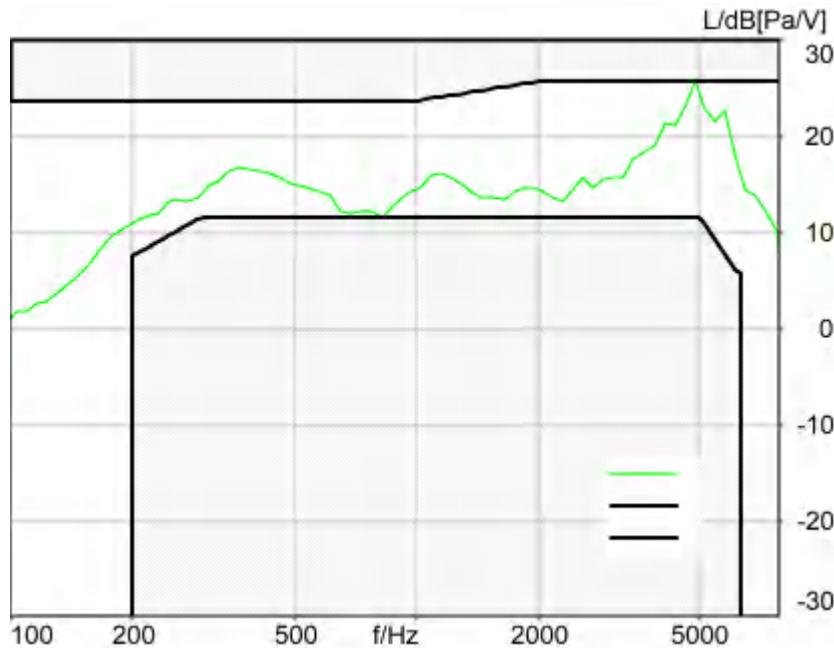
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.00 dB at 4870.0 Hz Ok

**Ok**

2024/1/26 15:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing  
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> VolP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VolP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

-----  
 VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable

SIP Reg. State Unregistered Jitterbuffer Length 140

Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1

Packet Length 20 Encoder Parameter

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

FMTTP Parameter

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off Impairment Type Off

-----  
 BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095

HIB Mode Mobile Measurement Impedance 32 Ohm

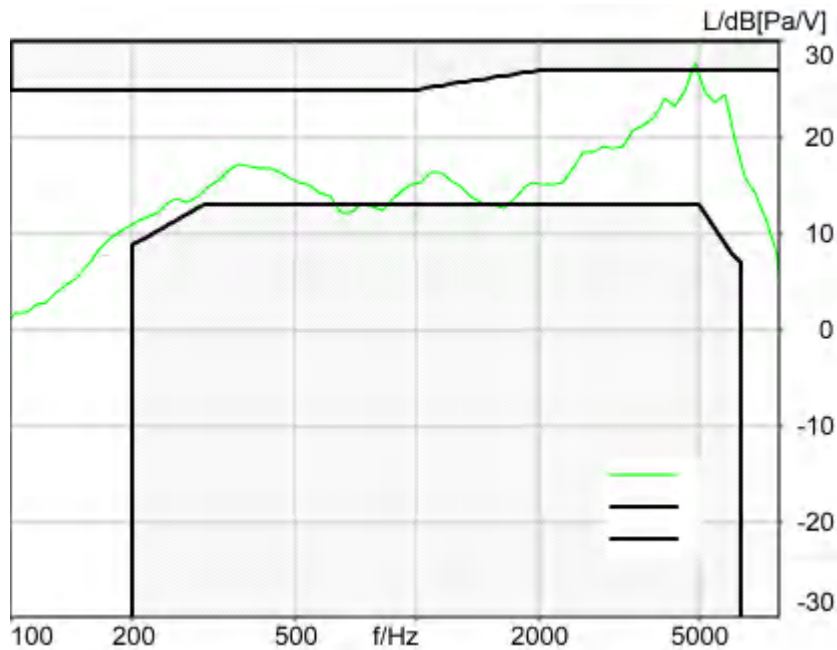
Gain out 1 -40.00 dB Gain out 2 0.00 dB

Gain in 1 0.00 dB Gain in 2 0.00 dB

Mic 1 Power Supply Off Mic 2 Power Supply Off

## 5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
-0.78 dB at 649.1 Hz Not Ok

### Not Ok

2024/1/26 15:05 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: respmaleieeee269\_wb\_r20\_v01.dat

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration



Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 119.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1        -40.00 dB  
Gain in 1         0.00 dB  
Mic 1 Power Supply Off

Gain out 2        0.00 dB  
Gain in 2         0.00 dB  
Mic 2 Power Supply Off

## **Measurement Protocol**

Measurement Object	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 17:29
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	125.7	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.84	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	12.52	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.43	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.71	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.12	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.73	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.87	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.68	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.18	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.62	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.42	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.70	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.68	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.36	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.76	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	27.82	339D NR

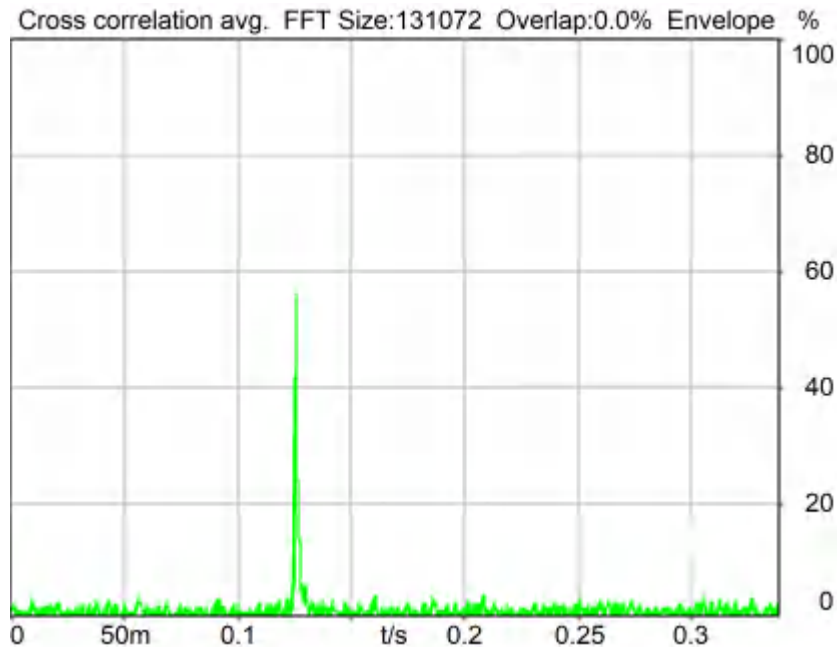
- 630 Hz NB		0.0 dB		n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.87	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.88	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.99	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.84	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.72	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.45	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.67	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.99	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1948.0 Hz	1.59	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	1.38	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3657.5 Hz	1.60	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3445.5 Hz	0.05	339D NR n77_100_DFT-S-OFDM_EVS NB9.6kbps_CH650000

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Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	6
5.1b Receive Volume Control Performance 2N NB	8
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	12
5.2 RCV Distortion and Noise - 630 Hz NB	14
5.2 RCV Distortion and Noise - 800 Hz NB	16
5.2 RCV Distortion and Noise - 1000 Hz NB	18
5.2 RCV Distortion and Noise - 1250 Hz NB	20
5.2 RCV Distortion and Noise - 1600 Hz NB	22
5.2 RCV Distortion and Noise - 2000 Hz NB	24
5.2 RCV Distortion and Noise - 2500 Hz NB	26
5.2 RCV Distortion and Noise - 3150 Hz NB	28
Report - Receive Distortion and Noise (Conversational Gain)	30
5.2 RCV Distortion and Noise - 400 Hz NB	31
5.2 RCV Distortion and Noise - 500 Hz NB	33
5.2 RCV Distortion and Noise - 630 Hz NB	35
5.2 RCV Distortion and Noise - 800 Hz NB	37
5.2 RCV Distortion and Noise - 1000 Hz NB	39
5.2 RCV Distortion and Noise - 1250 Hz NB	41
5.2 RCV Distortion and Noise - 1600 Hz NB	43
5.2 RCV Distortion and Noise - 2000 Hz NB	45
5.2 RCV Distortion and Noise - 2500 Hz NB	47
5.2 RCV Distortion and Noise - 3150 Hz NB	49
Report - Receive Distortion and Noise (Conversational Gain)	51
5.3 Frequency Response 8N FF HANB	51
5.3 Frequency Response 8N DF HANB	54
5.3 Frequency Response 2N FF HANB	56
5.3 Frequency Response 2N DF HANB	58

## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 125.7 ms

2024/1/25 22:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_NB
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**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTMP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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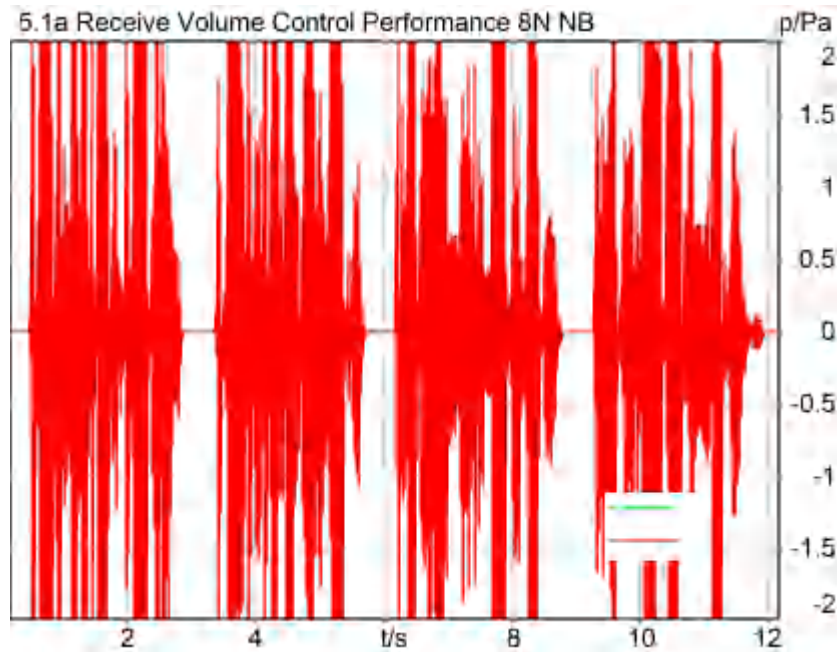
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.1a Receive Volume Control Performance 8N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 88.84 dB[SPL], Act.: 85.21%

Corrected Speech Level: 18.84 dB[SPL] Ok

### Ok

2024/1/25 22:01 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		

15.90 dB

**Special Features**

Show source signal Source ch.2  
 Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

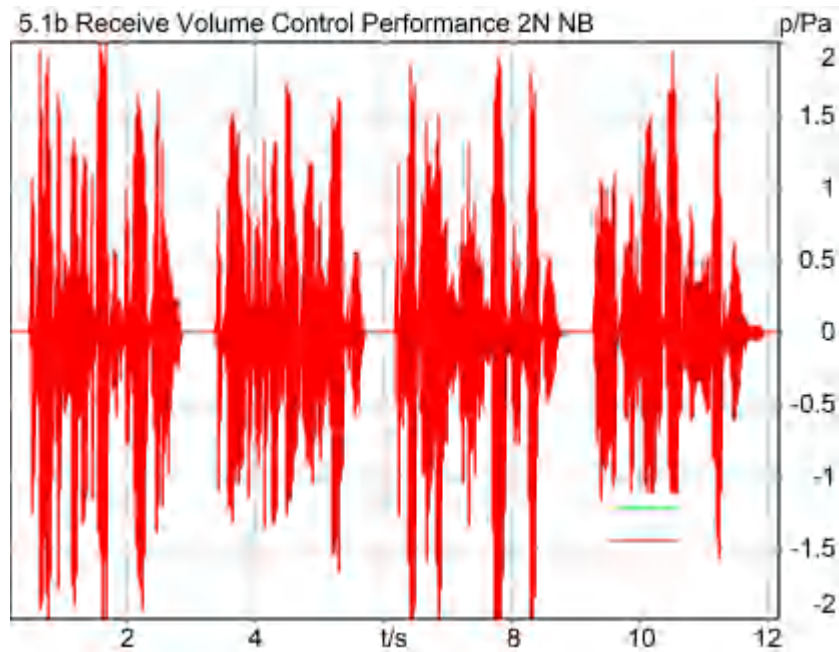
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1b Receive Volume Control Performance 2N NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



**Correction**

X - 70

Speech Level RCV: 82.52 dB[SPL], Act.: 84.86%

Corrected Speech Level: 12.52 dB[SPL] Ok

**Ok**

2024/1/25 22:22 ACQUA 5.1.200

**Limits**

	<b>lower</b>
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		

15.90 dB

**Special Features**

Show source signal Source ch.2  
 Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

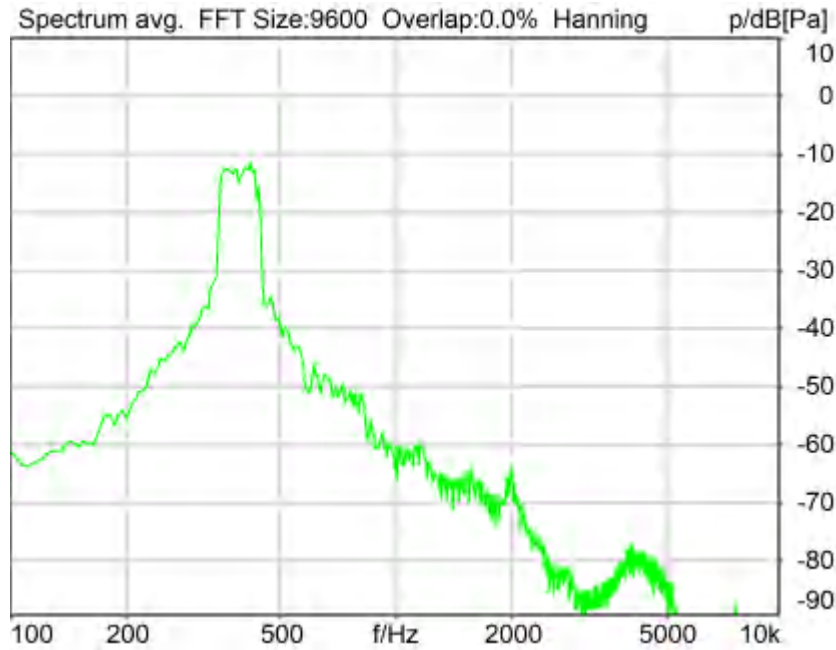
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.43 dB (3.79%) Ok

**Ok**

2024/1/25 22:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 500 Hz NB**

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Distortion (Noise) RCV (packed): 28.71 dB (3.67%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 630 Hz NB**

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Distortion (Noise) RCV (packed): 28.12 dB (3.93%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

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Distortion (Noise) RCV (packed): 25.73 dB (5.17%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

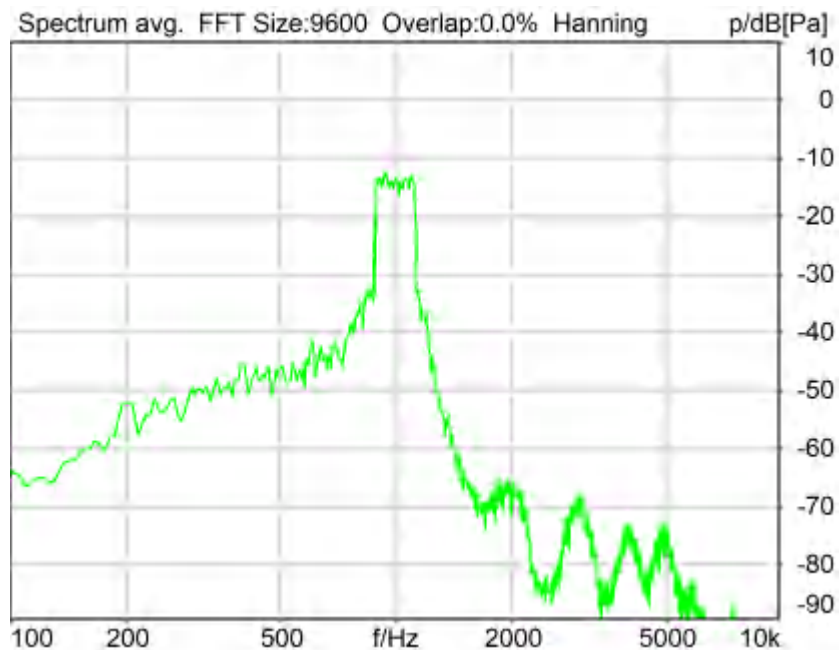
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz NB**

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Distortion (Noise) RCV (packed): 23.87 dB (6.41%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

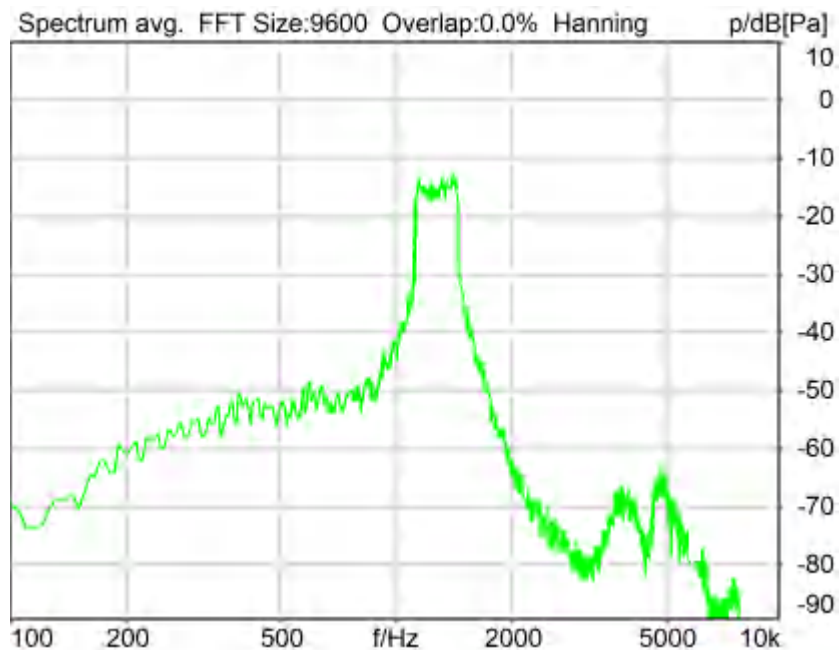
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz NB**

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Distortion (Noise) RCV (packed): 21.68 dB (8.24%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**labCORE Settings**

labCORE Serial 77000207      Nickname  
Firmware 3.4.17      Sync Source Internal  
Clock Pitch 0.00 ppm

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection Streaming      SIP Connection Unavailable  
SIP Reg. State Unregistered      Jitterbuffer Length 140  
Jitter Buffer Reset On Playback      Enabled Codec EVS/16000/1  
Packet Length 20      Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off      Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr. 12306613      Pinna Type Type 3.3

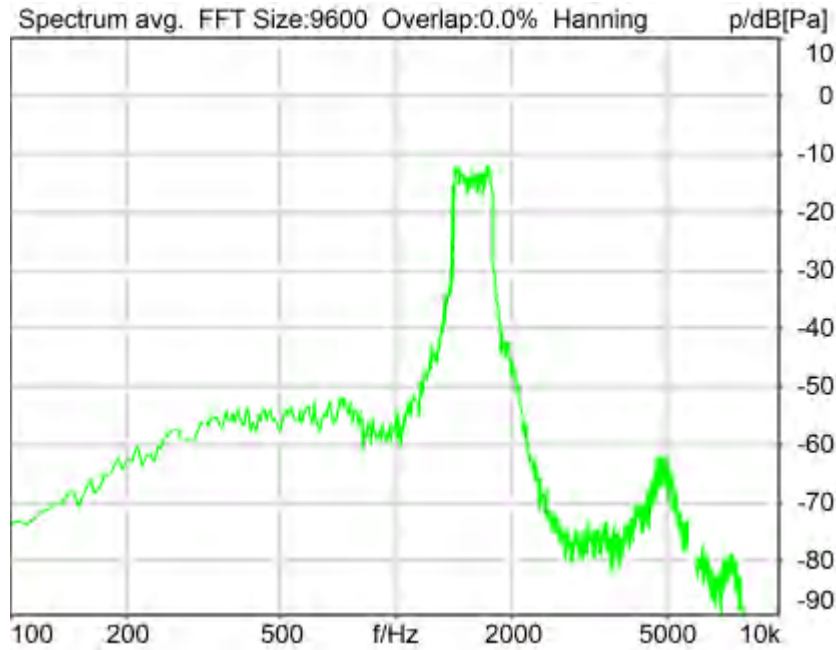
**HIB Settings**

HIB Name 60020095      Serial 60020095  
HIB Mode Mobile Measurement      Impedance 32 Ohm  
Gain out 1 -40.00 dB      Gain out 2 0.00 dB  
Gain in 1 0.00 dB      Gain in 2 0.00 dB  
Mic 1 Power Supply Off      Mic 2 Power Supply Off

**5.2 RCV Distortion and Noise - 1600 Hz NB**

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Distortion (Noise) RCV (packed): 25.18 dB (5.51%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

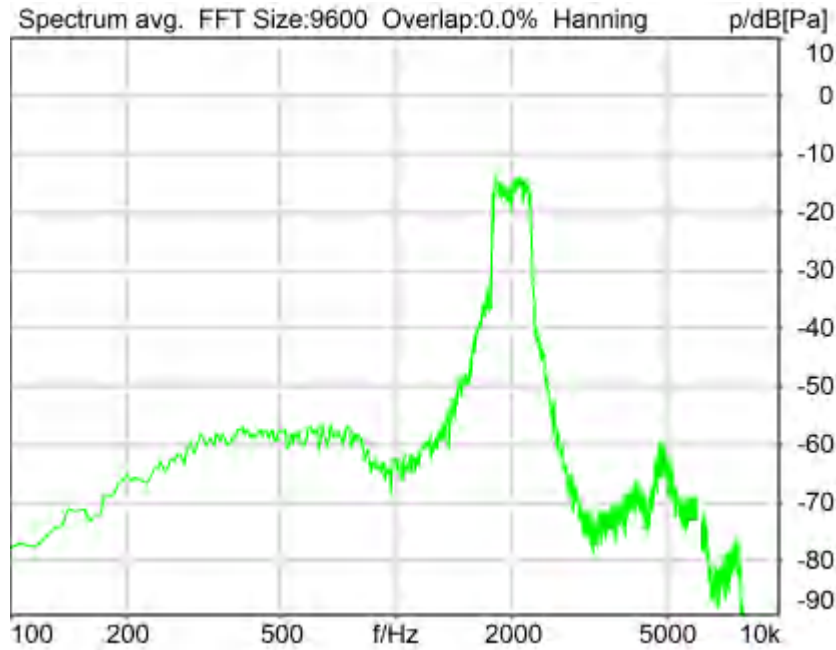
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.62 dB (6.59%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

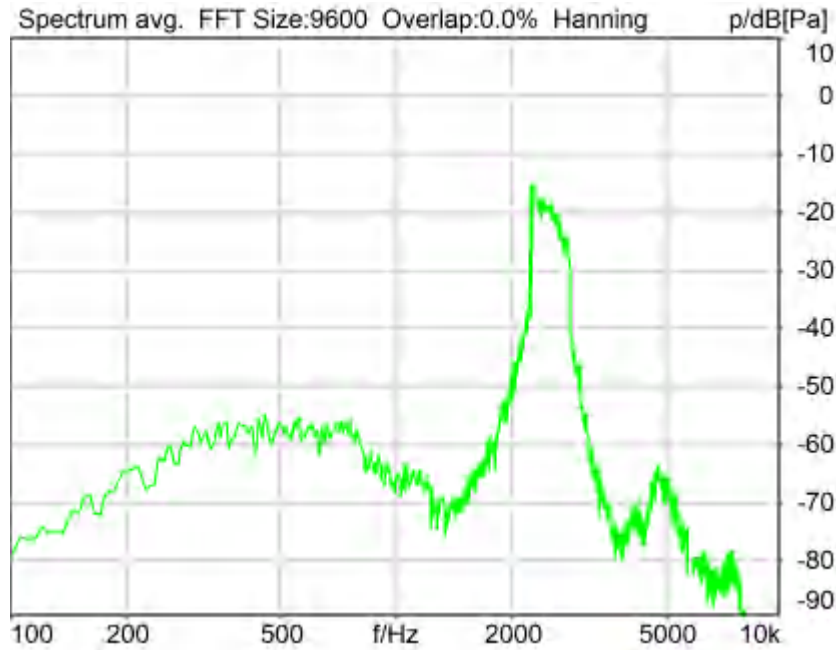
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.42 dB (6.02%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

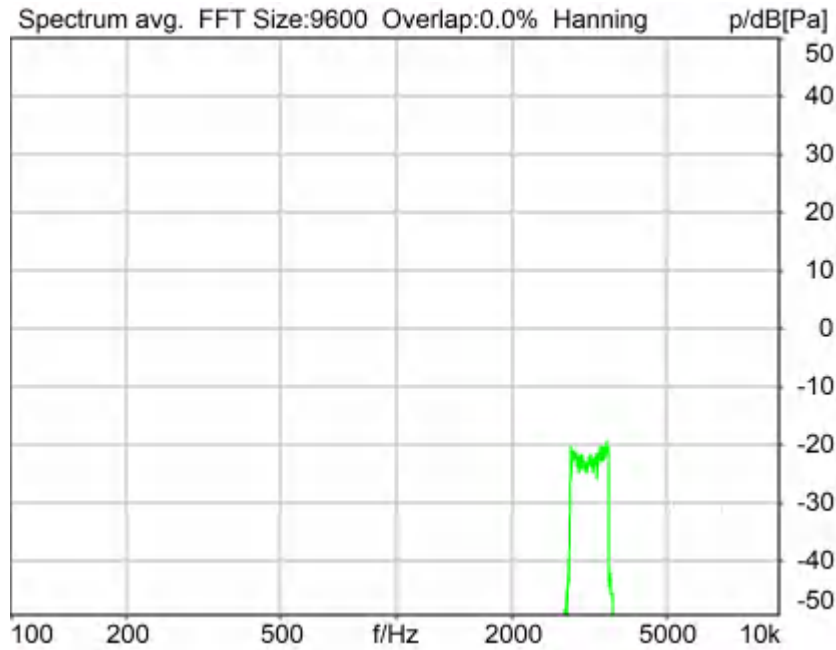
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.70 dB (3.67%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
--------	-----------	------



1	400Hz	28.43 dB
2	500Hz	28.71 dB
3	630Hz	28.12 dB
4	800Hz	25.73 dB
5	1000Hz	23.87 dB
6	1250Hz	21.68 dB
7	1600Hz	25.18 dB
8	2000Hz	23.62 dB
9	2500Hz	24.42 dB
10	3150Hz	28.70 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 21.68dB at 1250Hz.

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## **5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.36 dB (3.82%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage 200V Supply Voltage ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.76 dB (3.65%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right  
 -----

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
-------	--------------------------	----------	-----

Polarisation Voltage	200V	Supply Voltage	±60V
-----			
VoIP Settings (VoIP)			
RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off
-----			
BEQ Settings (BEQ Filter 1)			
Block mode	Bypass		
-----			
Artificial Head Settings (HATS 1 (HMS II.3))			
Ser. Nr.	12306613	Pinna Type	Type 3.3
<b>HIB Settings</b>			
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.82 dB (4.06%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	745.0 Hz
Stimulus min.	525.0 Hz	Analysis max.	520.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	750.0 Hz		

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
 VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
 BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

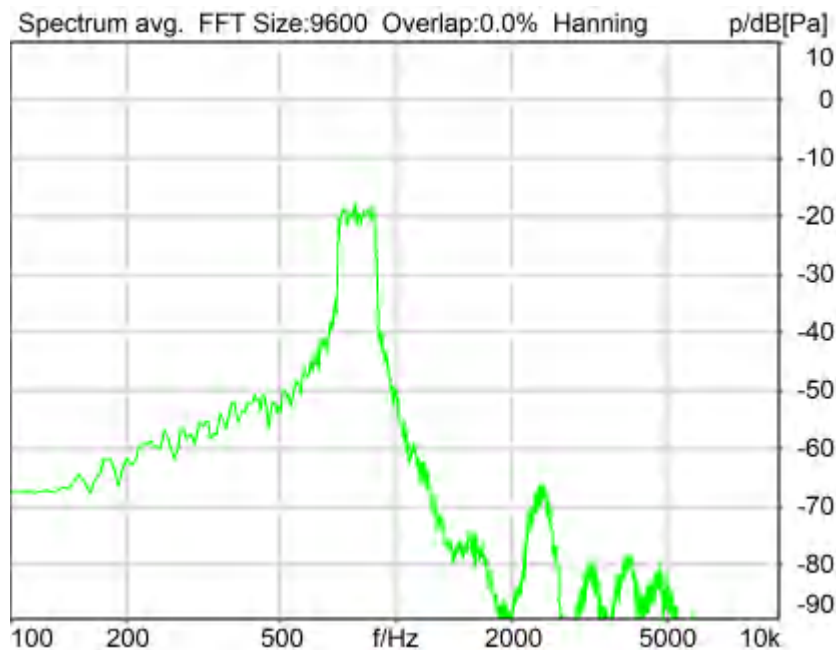
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.87 dB (5.08%) Ok

**Ok**

2024/1/25 22:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	675.0 Hz
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

**VoIP Settings (VoIP)**



RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass  
 -----

Artificial Head Settings (HATS 1 (HMS II.3))

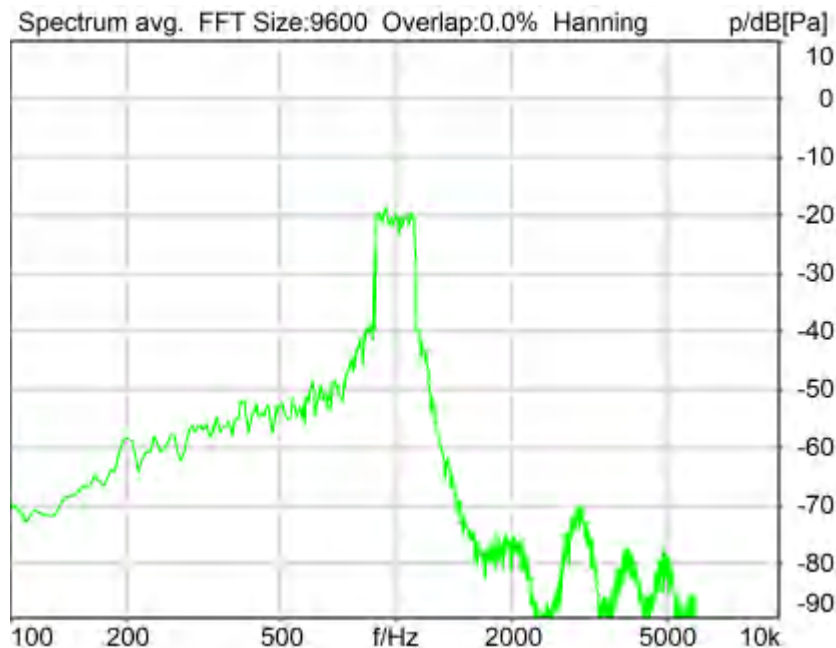
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.88 dB (6.40%) Ok

**Ok**

2024/1/25 22:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140

Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
 Packet Length 20 Encoder Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass  
 -----

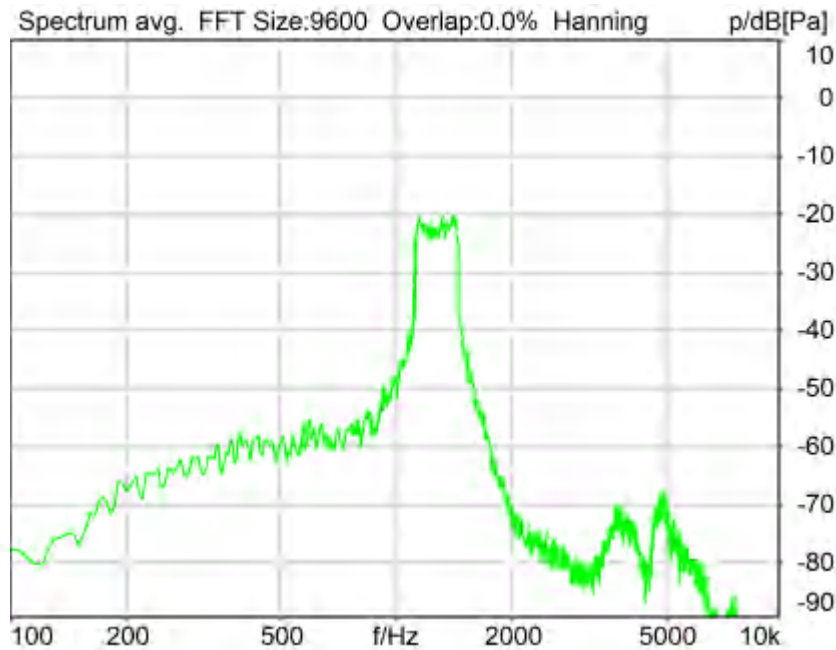
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.99 dB (7.95%) Ok

**Ok**

2024/1/25 22:25 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
--	-------

Run 1	20.00 dB
-------	----------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

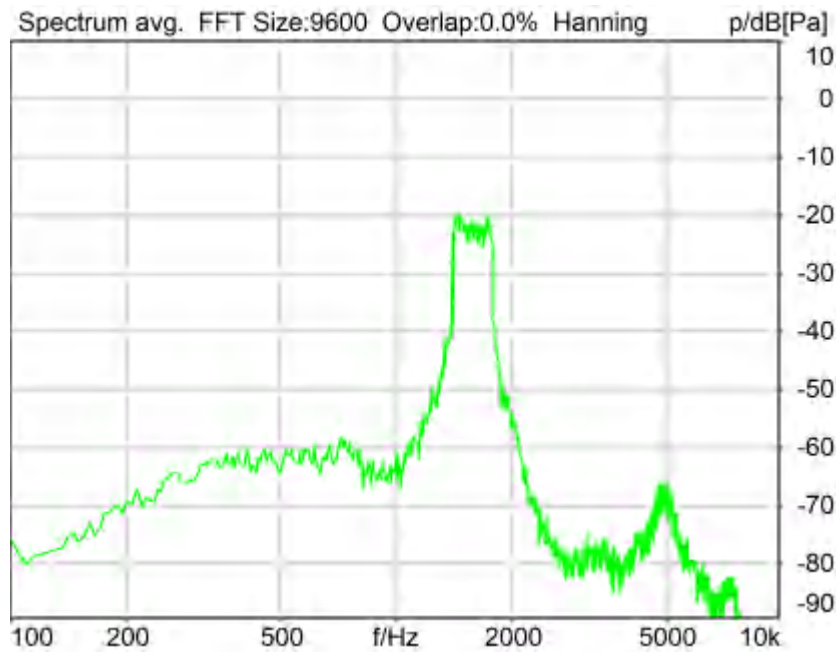
-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**  
 HIB Name 60020095 Serial 60020095  
 HIB Mode Mobile Measurement Impedance 32 Ohm  
 Gain out 1 -40.00 dB Gain out 2 0.00 dB  
 Gain in 1 0.00 dB Gain in 2 0.00 dB  
 Mic 1 Power Supply Off Mic 2 Power Supply Off

## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.84 dB (5.73%) Ok

**Ok**

2024/1/25 22:25 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

**FMTF Parameter**

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.72 dB (7.31%) Ok

**Ok**

2024/1/25 22:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			





Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat  
 Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTMP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

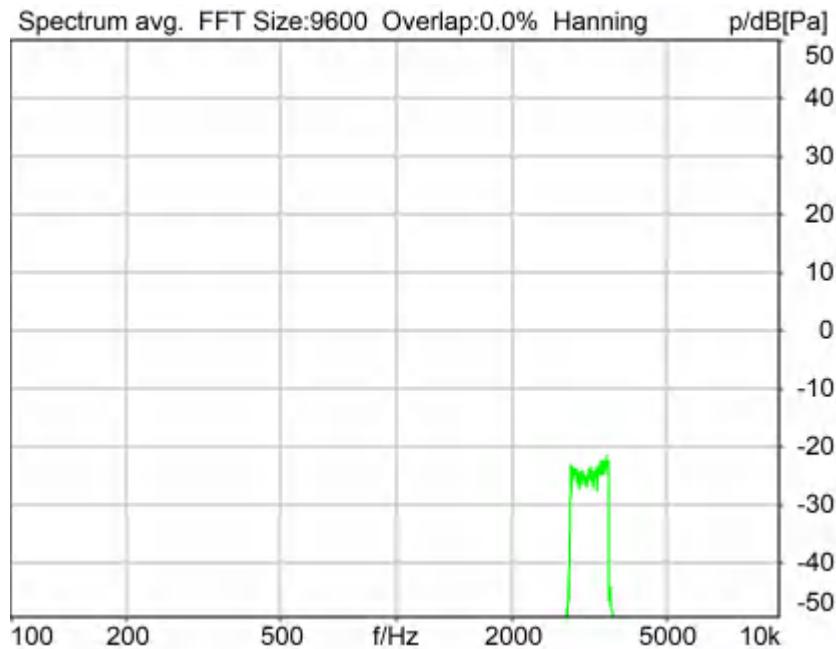
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.67 dB (3.29%) Ok

Ok

2024/1/25 22:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

**Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

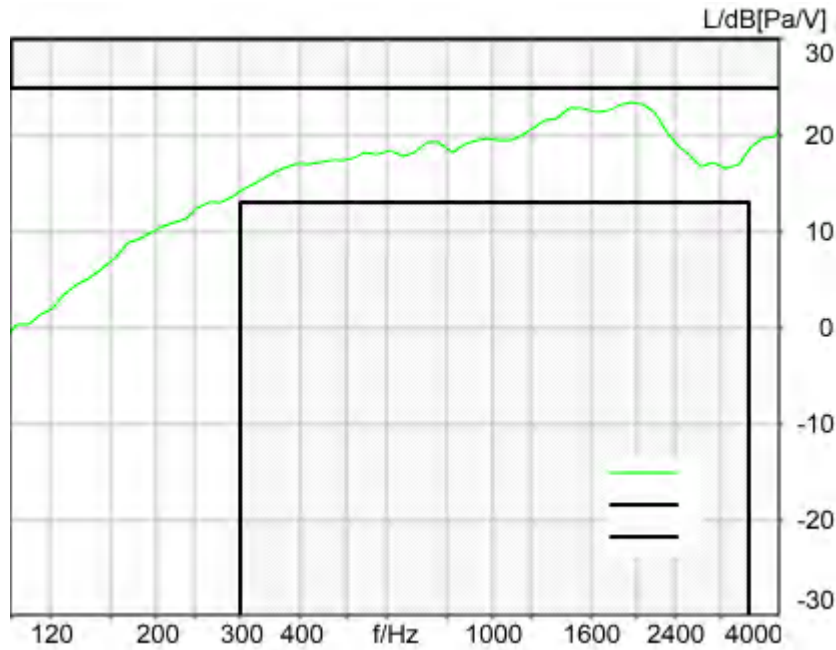
Region	Frequency	SDNR
1	400Hz	28.36 dB
2	500Hz	28.76 dB
3	630Hz	27.82 dB
4	800Hz	25.87 dB
5	1000Hz	23.88 dB
6	1250Hz	21.99 dB
7	1600Hz	24.84 dB
8	2000Hz	22.72 dB
9	2500Hz	25.45 dB
10	3150Hz	29.67 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.99dB at 1250Hz.

2024/1/25 22:27 ACQUA

**5.3 Frequency Response 8N FF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 1.59 dB at 1948.0 Hz Ok

**Ok**

2024/1/25 22:05 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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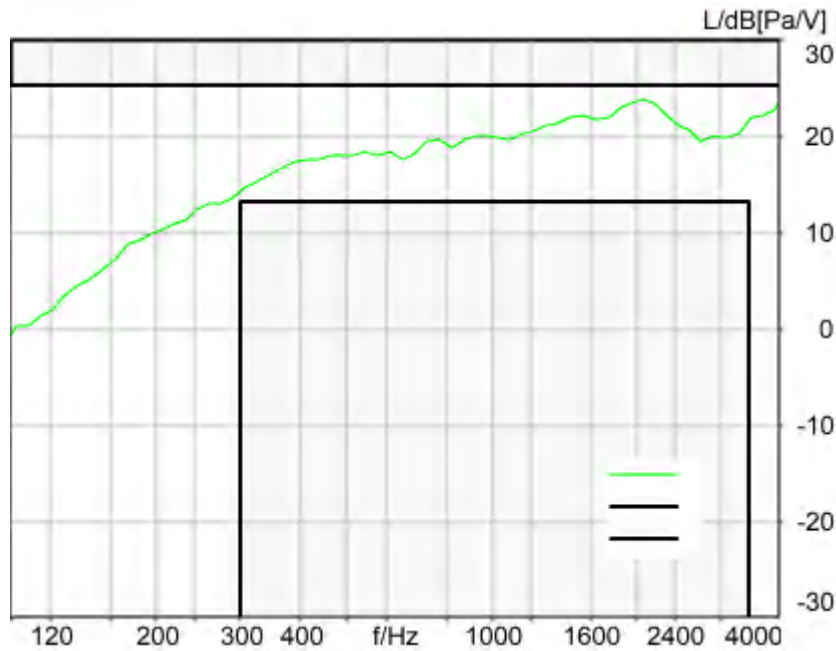
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1      -40.00 dB                      Gain out 2      0.00 dB  
 Gain in 1       0.00 dB                              Gain in 2       0.00 dB  
 Mic 1 Power Supply Off                      Mic 2 Power Supply Off

### 5.3 Frequency Response 8N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 1.38 dB at 2057.5 Hz Ok

**Ok**

2024/1/25 22:06 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1      -90.0 dB                      Level adj. Ch2      -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +



Pause till end of file  
 Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
 Alteration:  
 0.2 s Pause added at the beginning of the file.  
 0.8 s Pause added at the end of the file.  
 filtered with 4.0 kHz low-pass filter  
 signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 FMTP Parameter  
 ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

Impairment Mode Off                      Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)  
Block mode            Bypass  
-----

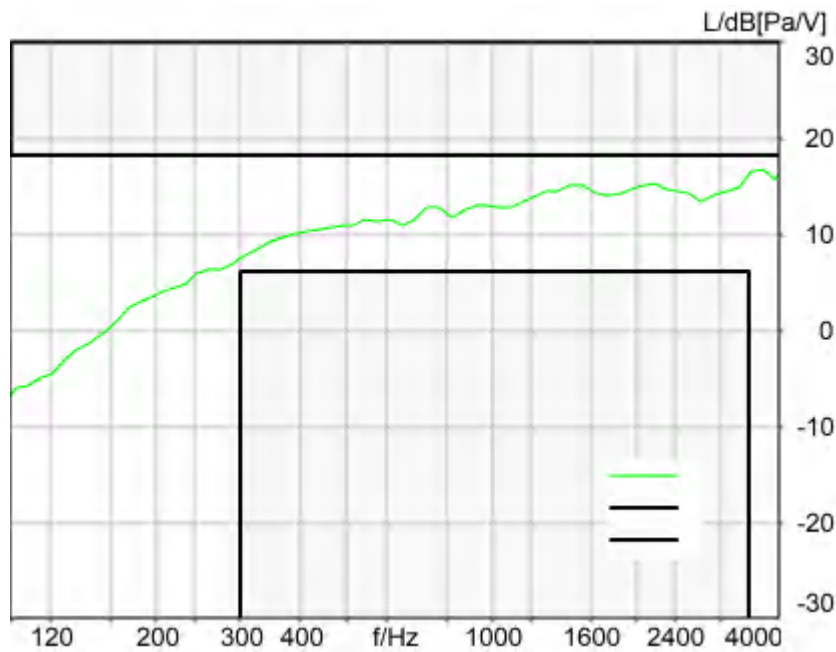
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name                60020095                      Serial                60020095  
HIB Mode                Mobile Measurement            Impedance            32 Ohm  
Gain out 1               -40.00 dB                      Gain out 2            0.00 dB  
Gain in 1                0.00 dB                        Gain in 2            0.00 dB  
Mic 1 Power Supply Off            Mic 2 Power Supply Off

**5.3 Frequency Response 2N FF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
1.60 dB at 3657.5 Hz Ok

**Ok**

2024/1/25 22:27 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB  
 NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2  
 Pause 0.5 s +  
 Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +  
 Pause till end of file  
 Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

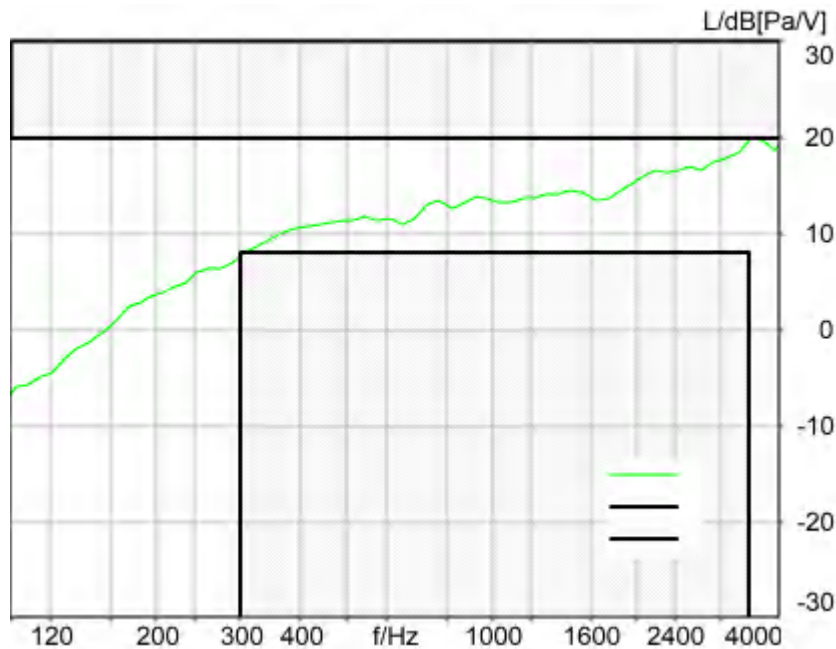
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
 0.05 dB at 3445.5 Hz Ok

**Ok**

2024/1/25 22:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB  
 NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2  
 Pause 0.5 s +  
 Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +  
 Pause till end of file  
 Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.  
 0.8 s Pause added at the and of the file.  
 filtered with 4.0 kHz low-pass filter  
 signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
 Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 125.7000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out

In Channel 1 <- VolP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable  
SIP Reg. State Unregistered Jitterbuffer Length 140  
Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
Packet Length 20 Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

## **Measurement Protocol**

Measurement Object	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 17:30
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	125.6	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	18.95	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	12.50	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.31	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.89	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.43	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.73	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.14	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.64	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.82	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.67	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.18	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.62	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.39	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.69	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.15	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise	Ok	Distortion (Noise)	24.44	339D NR



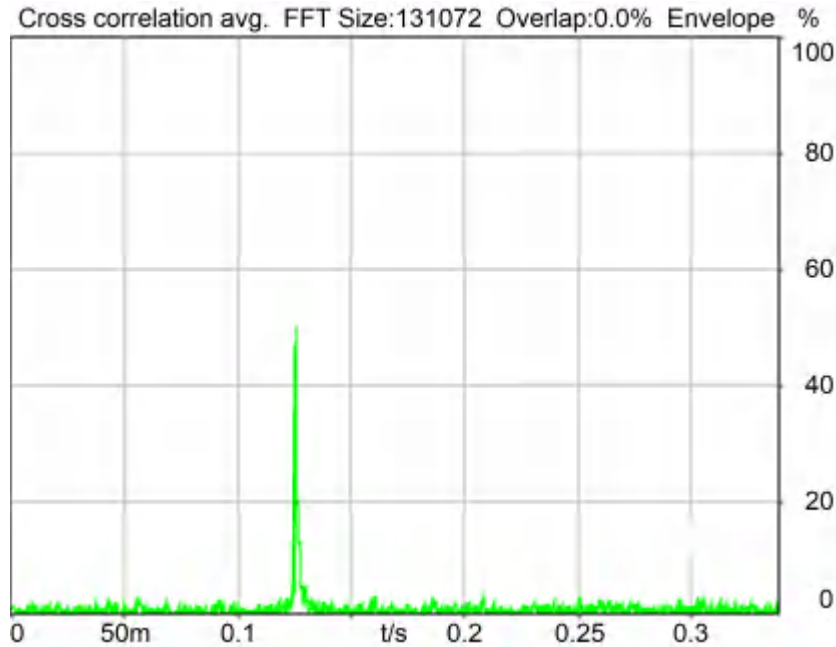
- 5000 Hz WB		[dB], 0.0 dB		n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.67	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.45	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.90	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.48	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.83	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.82	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.84	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.87	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.99	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.84	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.71	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.43	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.68	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.49	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.12	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.99	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.44	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.61	339D NR

DF		scheme [dB], 4870.0 Hz		n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.28	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	0.24	339D NR n77_100_DFT-S-OFDM_EVS WB13.2kbps_CH650000

Overall Receive Delay WB	6
5.1a Receive Volume Control Performance 8N WB	7
5.1b Receive Volume Control Performance 2N WB	9
5.2 RCV Distortion and Noise - 250 Hz WB	11
5.2 RCV Distortion and Noise - 315 Hz WB	13
5.2 RCV Distortion and Noise - 400 Hz WB	15
5.2 RCV Distortion and Noise - 500 Hz WB	17
5.2 RCV Distortion and Noise - 630 Hz WB	19
5.2 RCV Distortion and Noise - 800 Hz WB	21
5.2 RCV Distortion and Noise - 1000 Hz WB	23
5.2 RCV Distortion and Noise - 1250 Hz WB	25
5.2 RCV Distortion and Noise - 1600 Hz WB	27
5.2 RCV Distortion and Noise - 2000 Hz WB	29
5.2 RCV Distortion and Noise - 2500 Hz WB	31
5.2 RCV Distortion and Noise - 3150 Hz WB	33
5.2 RCV Distortion and Noise - 4000 Hz WB	35
5.2 RCV Distortion and Noise - 5000 Hz WB	37
Report - Receive Distortion and Noise (Conversational Gain)	39
5.2 RCV Distortion and Noise - 250 Hz WB	40
5.2 RCV Distortion and Noise - 315 Hz WB	42
5.2 RCV Distortion and Noise - 400 Hz WB	44
5.2 RCV Distortion and Noise - 500 Hz WB	46
5.2 RCV Distortion and Noise - 630 Hz WB	48
5.2 RCV Distortion and Noise - 800 Hz WB	50
5.2 RCV Distortion and Noise - 1000 Hz WB	52
5.2 RCV Distortion and Noise - 1250 Hz WB	54
5.2 RCV Distortion and Noise - 1600 Hz WB	56
5.2 RCV Distortion and Noise - 2000 Hz WB	58
5.2 RCV Distortion and Noise - 2500 Hz WB	60
5.2 RCV Distortion and Noise - 3150 Hz WB	62
5.2 RCV Distortion and Noise - 4000 Hz WB	64
5.2 RCV Distortion and Noise - 5000 Hz WB	66
Report - Receive Distortion and Noise (Conversational Gain)	68
5.3 Frequency Response 8N FF	69
5.3 Frequency Response 8N DF	71
5.3 Frequency Response 2N FF	73
5.3 Frequency Response 2N DF	75

## Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 125.6 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: csswb1b\_r1s.dat

WIDEBAND Composite Source Signal RCV P.501 (1 bursts) at Channel 2

Pause 0.5 s +

voiced signal + 8000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 8000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation	Overlap	0 %
FFT size	131072	Smooth	Off
Window function.	Hanning		
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_WB
--------------------	-------------	-------------------	----------

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode	Bypass
------------	--------

**Artificial Head Settings (HATS 1 (HMS II.3))**

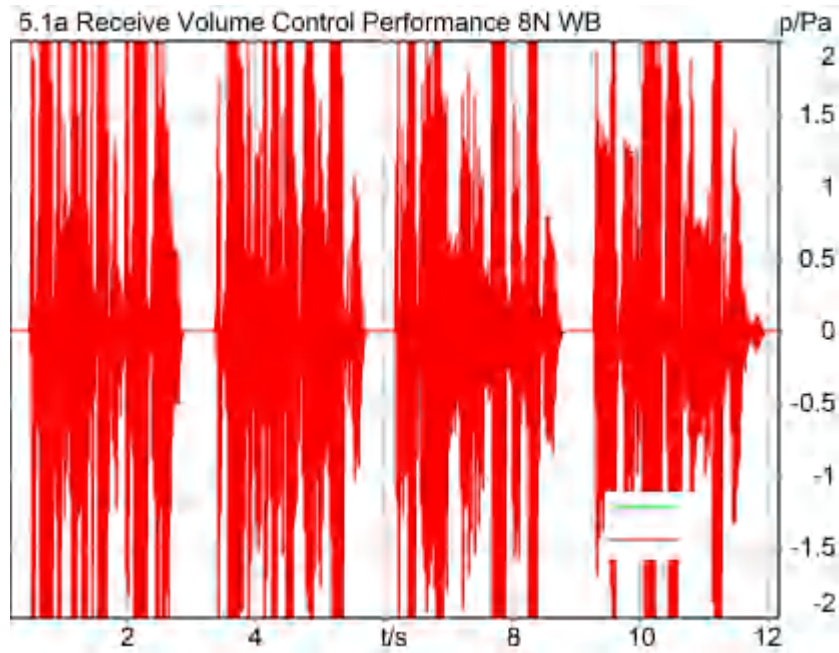
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1a Receive Volume Control Performance 8N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



**Correction**

X - 70

Speech Level RCV: 88.95 dB[SPL], Act.: 85.24%

Corrected Speech Level: 18.95 dB[SPL] Ok

**Ok**

2024/1/25 22:07 ACQUA 5.1.200

**Limits**

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2		

Bandpass filter      Super Wideband                  Margin (15.9dB nom)  
15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial    77000207                          Nickname  
Firmware            3.4.17                              Sync Source          Internal  
Clock Pitch        0.00 ppm

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            20Hz  
Polarisation Voltage200V                          Supply Voltage      ±60V  
Channel In 2 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            20Hz  
Polarisation Voltage200V                          Supply Voltage      ±60V  
Channel In 3 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            Off  
Polarisation Voltage200V                          Supply Voltage      ±60V  
Channel In 4 Settings  
Range                114 dB[SPL] @ 12.5 mV/Pa    Highpass            Off  
Polarisation Voltage200V                          Supply Voltage      ±60V

-----  
**VoIP Settings (VoIP)**

RTP Connection    Streaming                          SIP Connection      Unavailable  
SIP Reg. State    Unregistered                      Jitterbuffer Length 140  
Jitter Buffer Reset On Playback                      Enabled Codec      EVS/16000/1  
Packet Length     20                                      Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode   Off                                      Impairment Type    Off

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode        Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

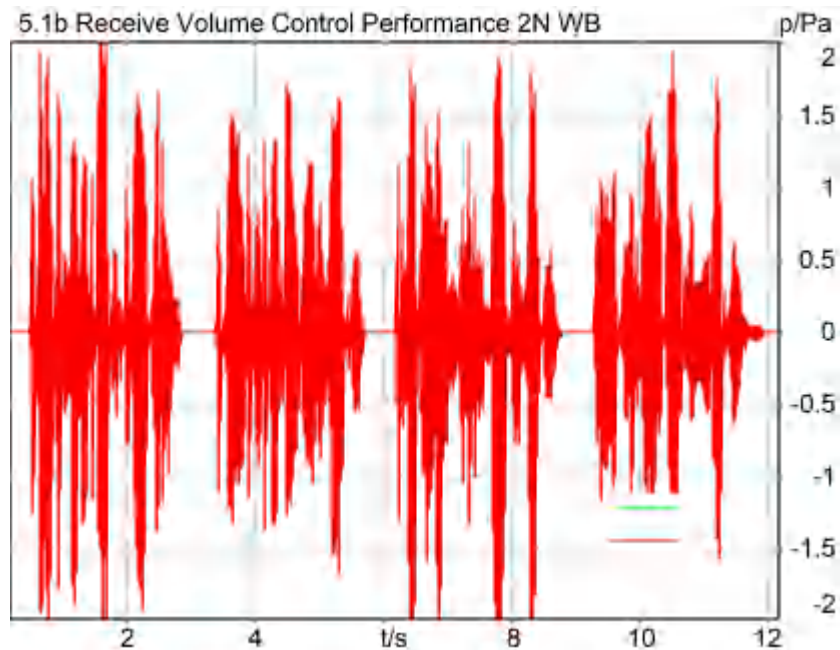
Ser. Nr.            12306613                          Pinna Type            Type 3.3

**HIB Settings**

HIB Name          60020095                          Serial                 60020095  
HIB Mode          Mobile Measurement              Impedance            32 Ohm  
Gain out 1        -40.00 dB                          Gain out 2            0.00 dB  
Gain in 1          0.00 dB                              Gain in 2            0.00 dB  
Mic 1 Power Supply Off                              Mic 2 Power Supply Off

**5.1b Receive Volume Control Performance 2N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 82.50 dB[SPL], Act.: 84.87%

Corrected Speech Level: 12.50 dB[SPL] Ok

### Ok

2024/1/25 22:15 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		



15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V  
 Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.31 dB (6.83%) Ok

Ok

2024/1/25 22:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

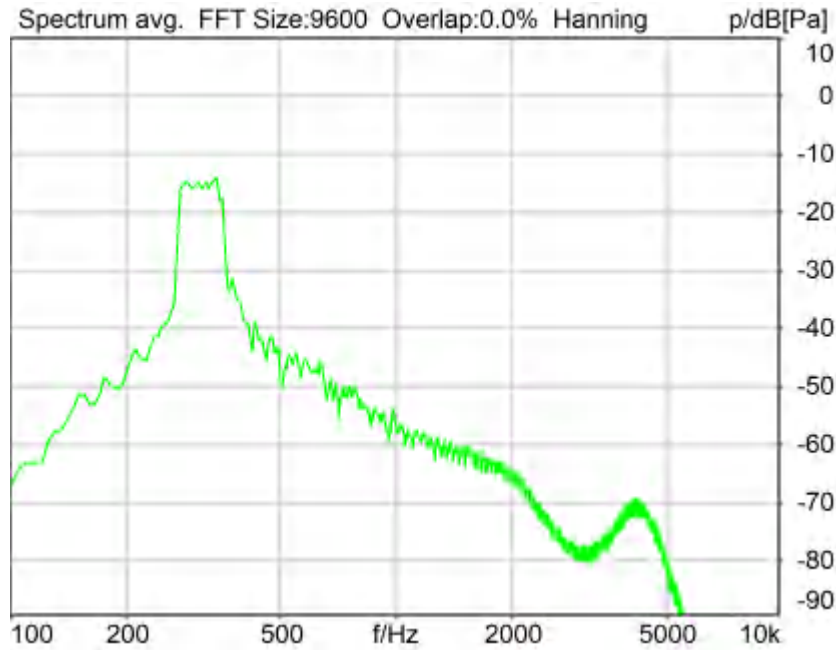
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.89 dB (5.69%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

labCORE Serial 77000207      Nickname  
Firmware 3.4.17      Sync Source Internal  
Clock Pitch 0.00 ppm

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection Streaming      SIP Connection Unavailable  
SIP Reg. State Unregistered      Jitterbuffer Length 140  
Jitter Buffer Reset On Playback      Enabled Codec EVS/16000/1  
Packet Length 20      Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off      Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr. 12306613      Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095      Serial 60020095  
HIB Mode Mobile Measurement      Impedance 32 Ohm  
Gain out 1 -40.00 dB      Gain out 2 0.00 dB  
Gain in 1 0.00 dB      Gain in 2 0.00 dB  
Mic 1 Power Supply Off      Mic 2 Power Supply Off

**5.2 RCV Distortion and Noise - 400 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.43 dB (3.79%) Ok

Ok

2024/1/25 22:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial 77000207      Nickname  
Firmware 3.4.17      Sync Source Internal  
Clock Pitch 0.00 ppm

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass 20Hz  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa      Highpass Off  
Polarisation Voltage200V      Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection Streaming      SIP Connection Unavailable  
SIP Reg. State Unregistered      Jitterbuffer Length 140  
Jitter Buffer Reset On Playback      Enabled Codec EVS/16000/1  
Packet Length 20      Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTP Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off      Impairment Type Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr. 12306613      Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095      Serial 60020095  
HIB Mode Mobile Measurement      Impedance 32 Ohm  
Gain out 1 -40.00 dB      Gain out 2 0.00 dB  
Gain in 1 0.00 dB      Gain in 2 0.00 dB  
Mic 1 Power Supply Off      Mic 2 Power Supply Off

**5.2 RCV Distortion and Noise - 500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.73 dB (3.66%) Ok

Ok

2024/1/25 22:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.14 dB (3.92%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **5.2 RCV Distortion and Noise - 800 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.64 dB (5.22%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

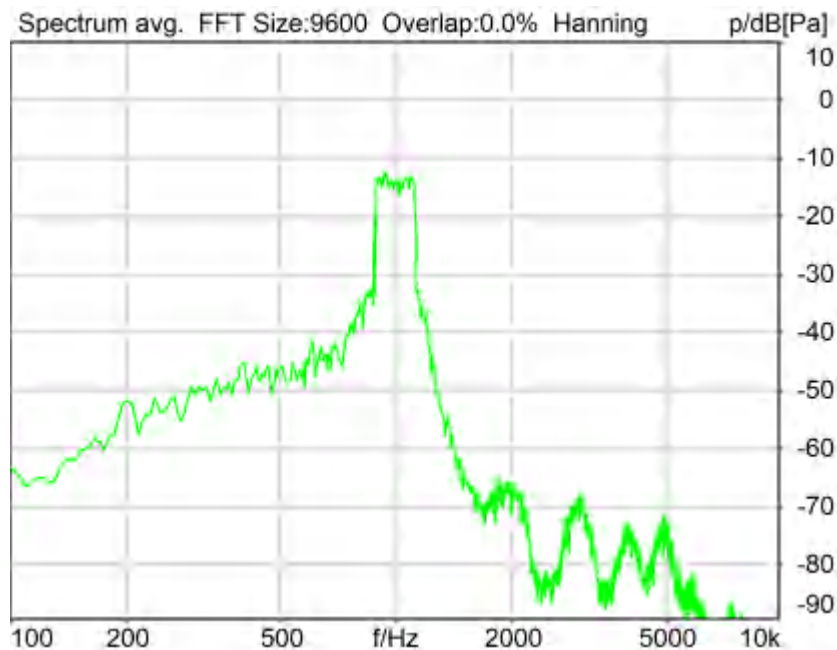
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.82 dB (6.44%) Ok

**Ok**

2024/1/25 22:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 21.67 dB (8.25%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

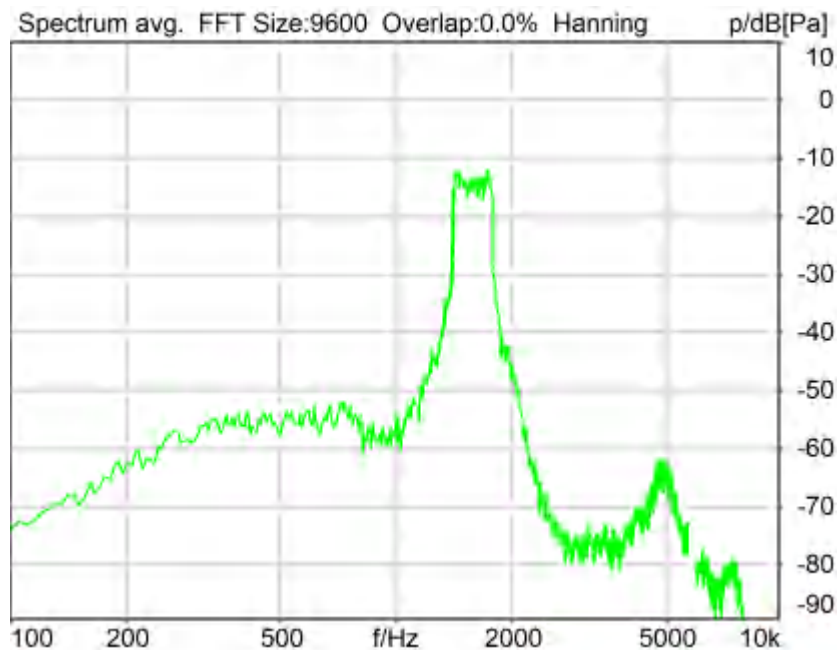
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.18 dB (5.51%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.62 dB (6.59%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

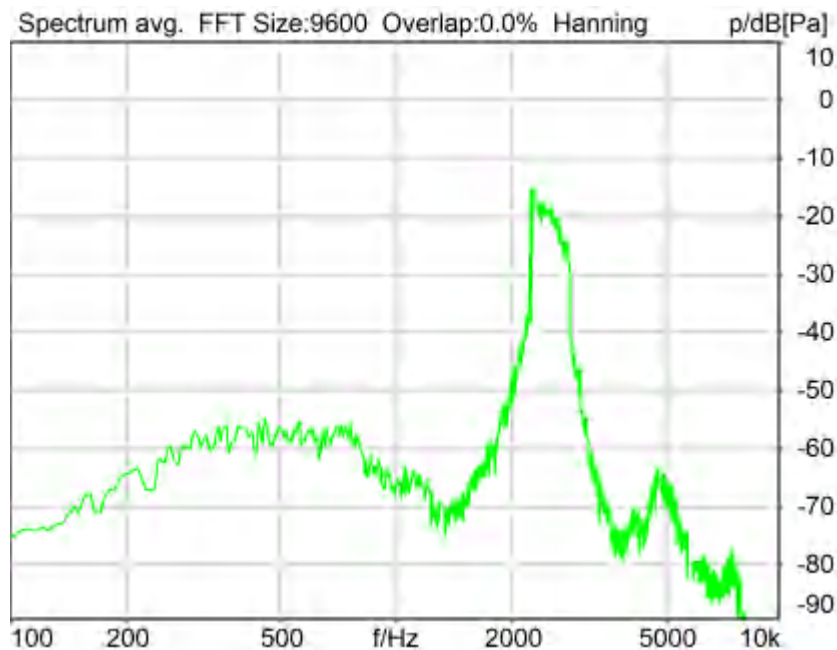
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.39 dB (6.03%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

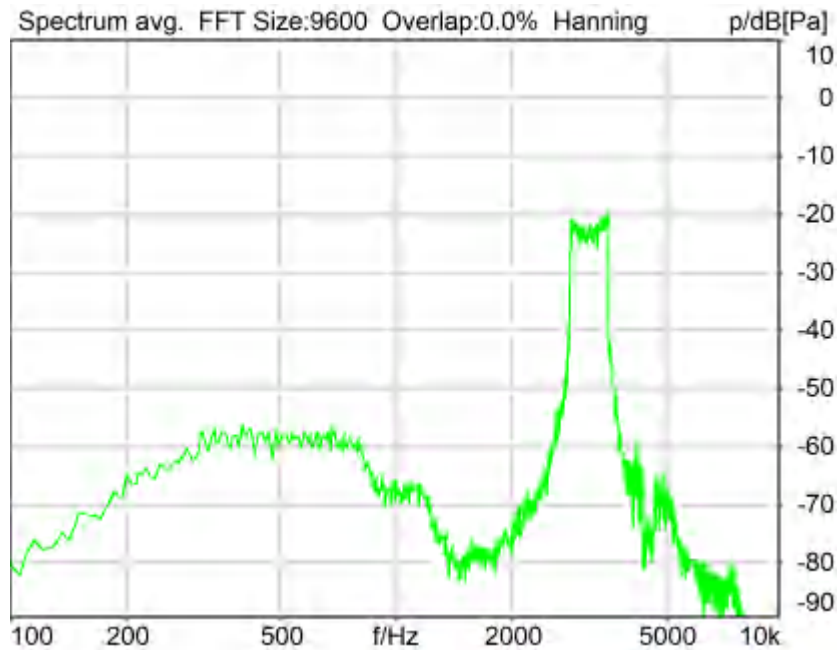
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.69 dB (3.68%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

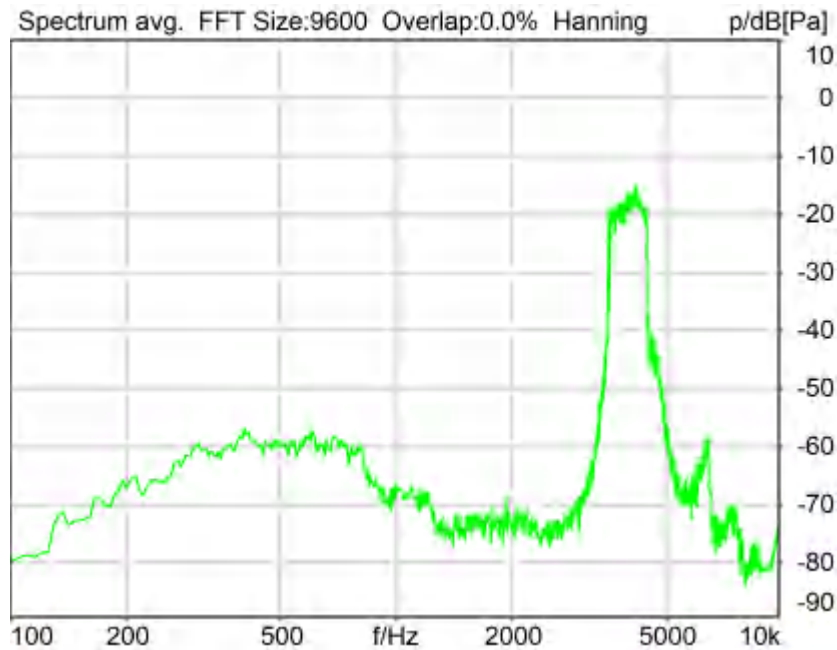
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.15 dB (4.39%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

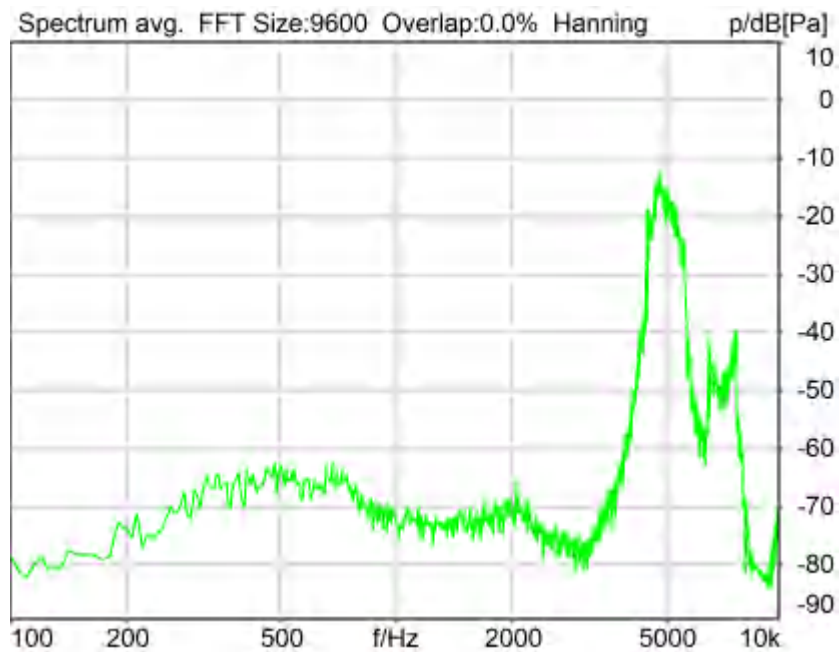
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.44 dB (6.00%) Ok

**Ok**

2024/1/25 22:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
FMTMP Parameter ;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

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Region	Frequency	SDNR
--------	-----------	------

1	250Hz	23.31 dB
2	315Hz	24.89 dB
3	400Hz	28.43 dB
4	500Hz	28.73 dB
5	630Hz	28.14 dB
6	800Hz	25.64 dB
7	1000Hz	23.82 dB
8	1250Hz	21.67 dB
9	1600Hz	25.18 dB
10	2000Hz	23.62 dB
11	2500Hz	24.39 dB
12	3150Hz	28.69 dB
13	4000Hz	27.15 dB
14	5000Hz	24.44 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.67dB at 1250Hz.

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## **5.2 RCV Distortion and Noise - 250 Hz WB**

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Distortion (Noise) RCV (packed): 23.45 dB (6.72%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat**  
Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTMP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.90 dB (5.69%) Ok



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_315Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
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Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.48 dB (3.77%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.83 dB (3.62%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.82 dB (4.06%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

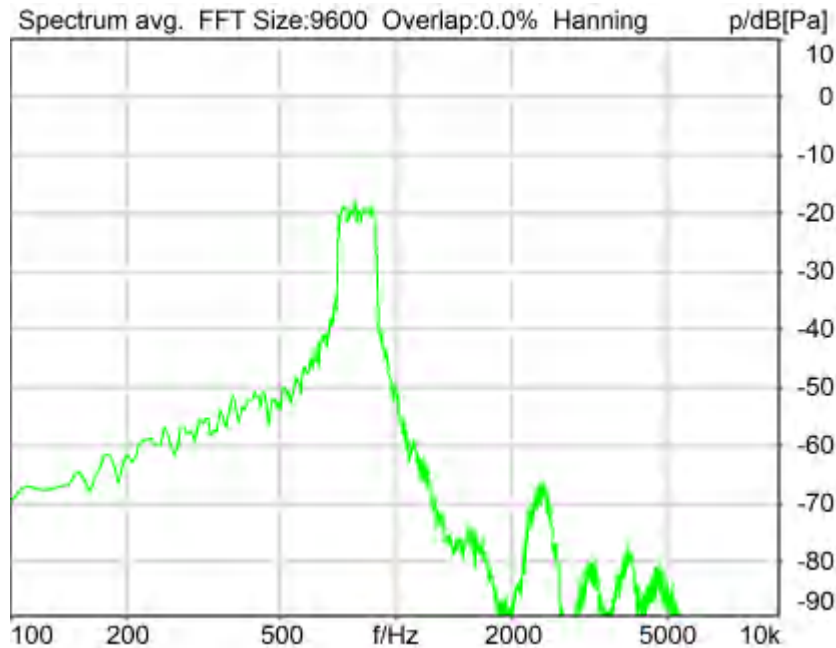
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.84 dB (5.11%) Ok



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

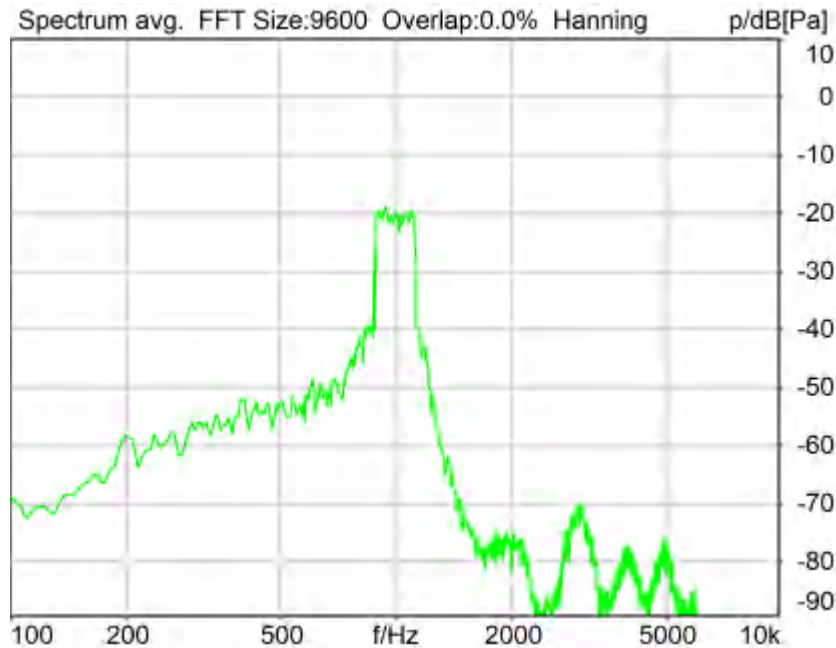
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.87 dB (6.41%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

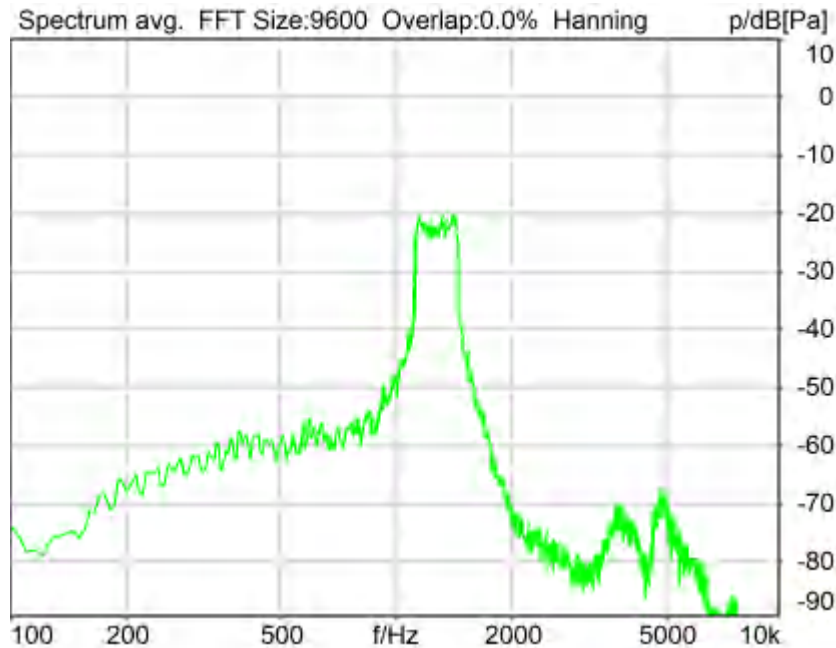
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.99 dB (7.95%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:      HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

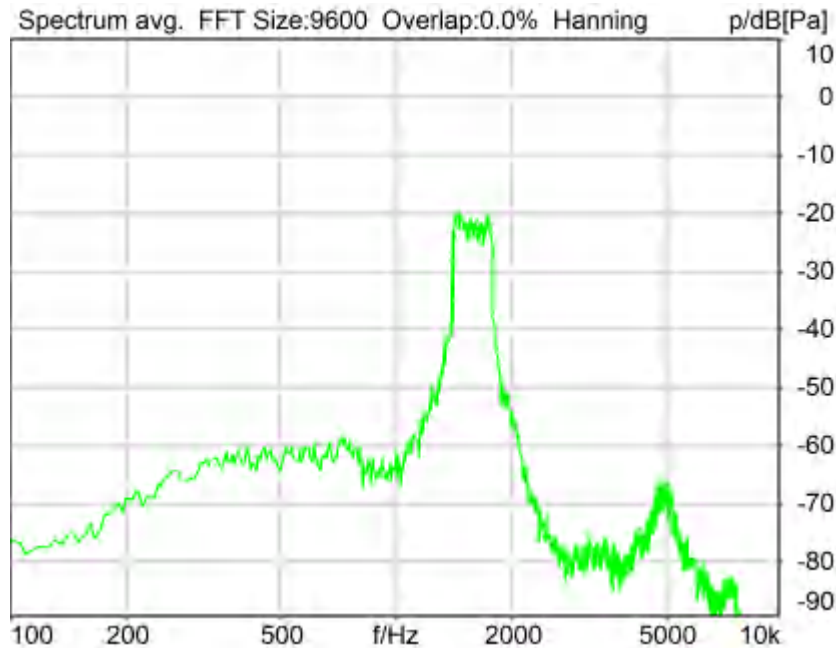
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.84 dB (5.73%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

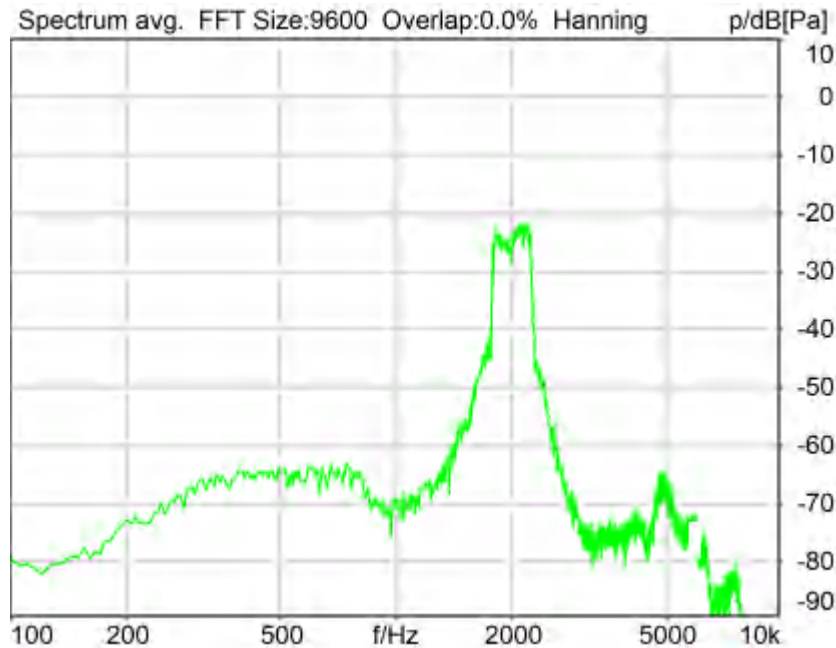
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.71 dB (7.32%) Ok



**Ok**

2024/1/25 22:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

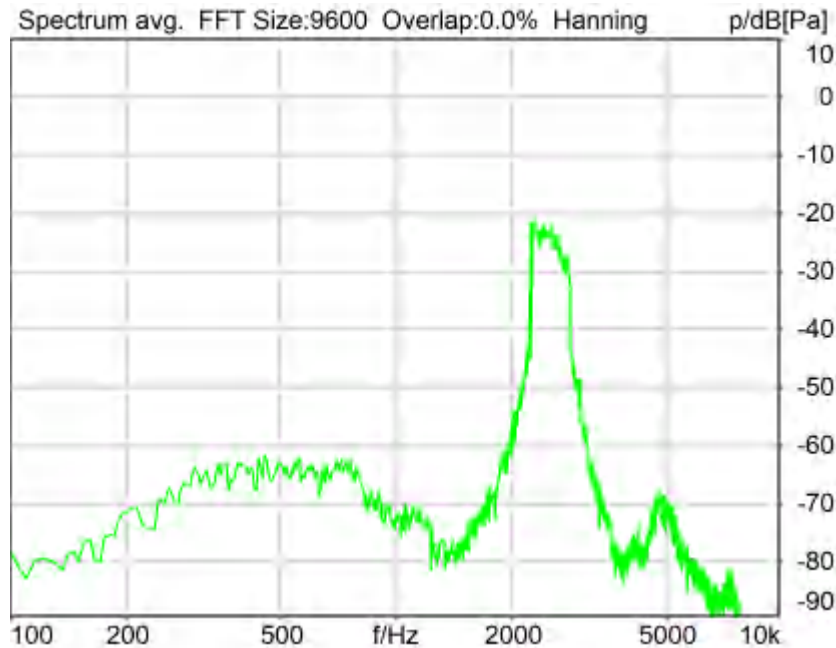
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.43 dB (5.35%) Ok

**Ok**

2024/1/25 22:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

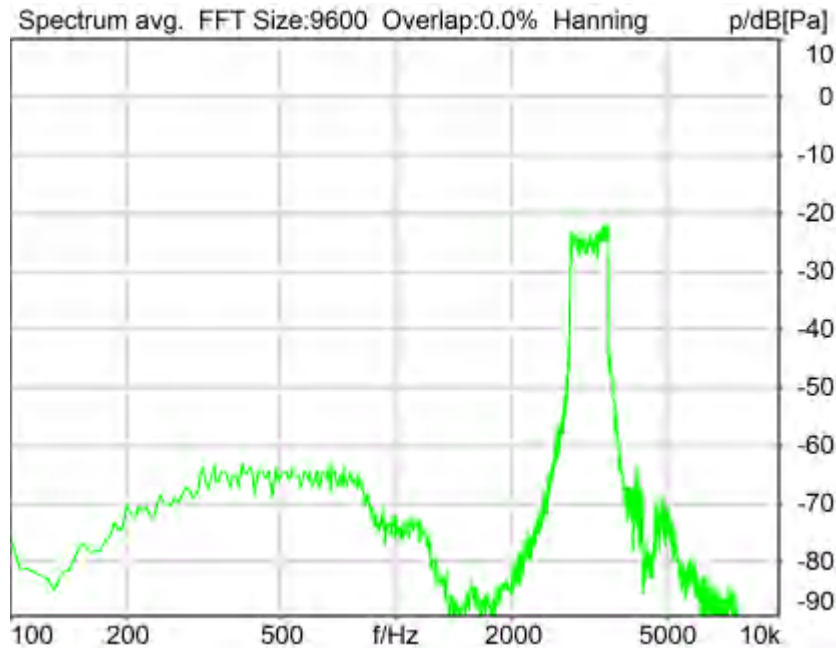
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.68 dB (3.28%) Ok

**Ok**

2024/1/25 22:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

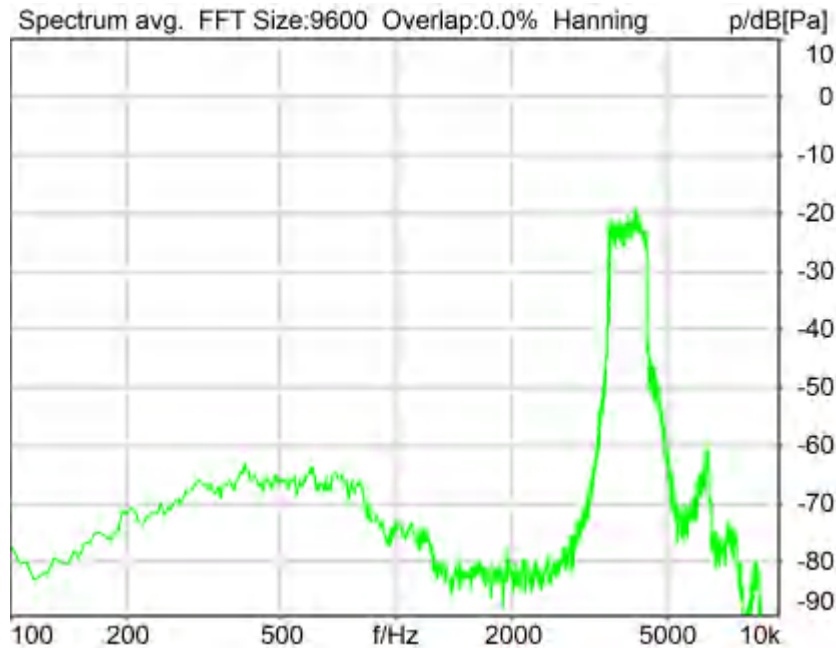
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.49 dB (4.22%) Ok

**Ok**

2024/1/25 22:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:      HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTF Parameter			
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

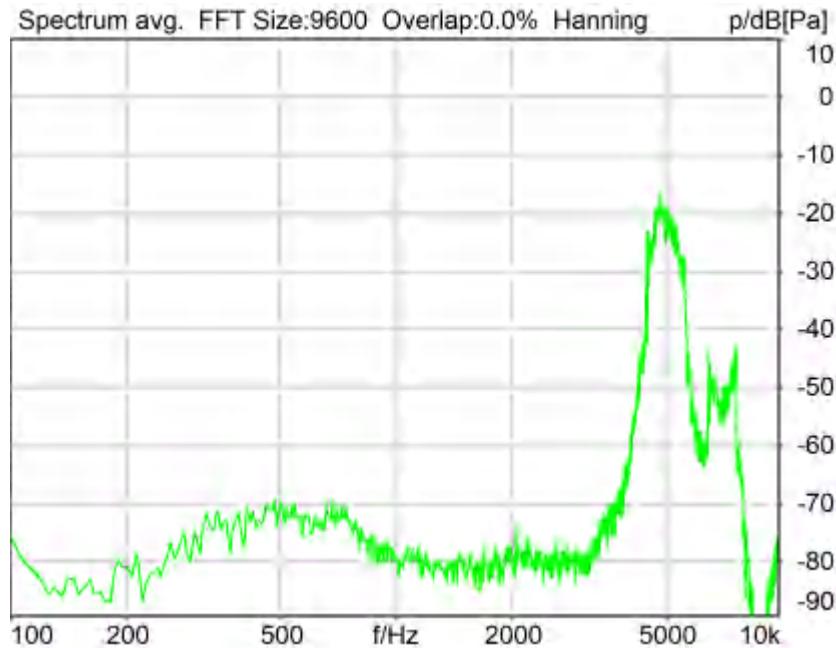
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 5000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.12 dB (6.22%) Ok



**Ok**

2024/1/25 22:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable  
SIP Reg. State Unregistered Jitterbuffer Length 140  
Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
Packet Length 20 Encoder Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTF Parameter  
;max-red=0;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	23.45 dB
2	315Hz	24.90 dB
3	400Hz	28.48 dB
4	500Hz	28.83 dB
5	630Hz	27.82 dB
6	800Hz	25.84 dB
7	1000Hz	23.87 dB
8	1250Hz	21.99 dB
9	1600Hz	24.84 dB
10	2000Hz	22.71 dB
11	2500Hz	25.43 dB
12	3150Hz	29.68 dB
13	4000Hz	27.49 dB
14	5000Hz	24.12 dB

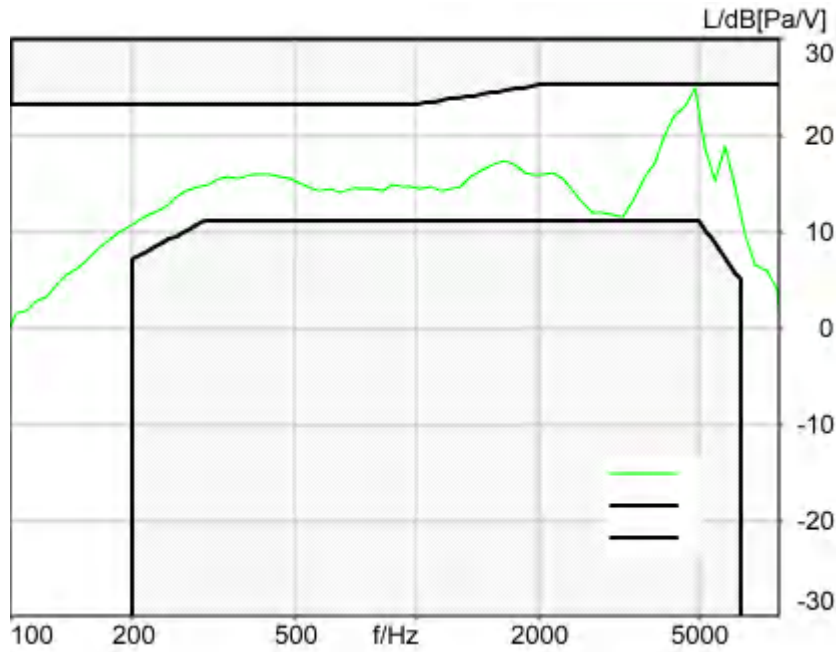
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.99dB at 1250Hz.

2024/1/25 22:21 ACQUA

### 5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
 0.44 dB at 4870.0 Hz Ok

**Ok**

2024/1/29 11:06 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

Source: respmaleieeee269\_wb\_r20\_v01.dat  
 Level adj. Ch1 -90.0 dB  
 WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

### Special Features

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
 In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	

;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2

FMTF Parameter ;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
 Impairment Mode Off Impairment Type Off

-----  
 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613

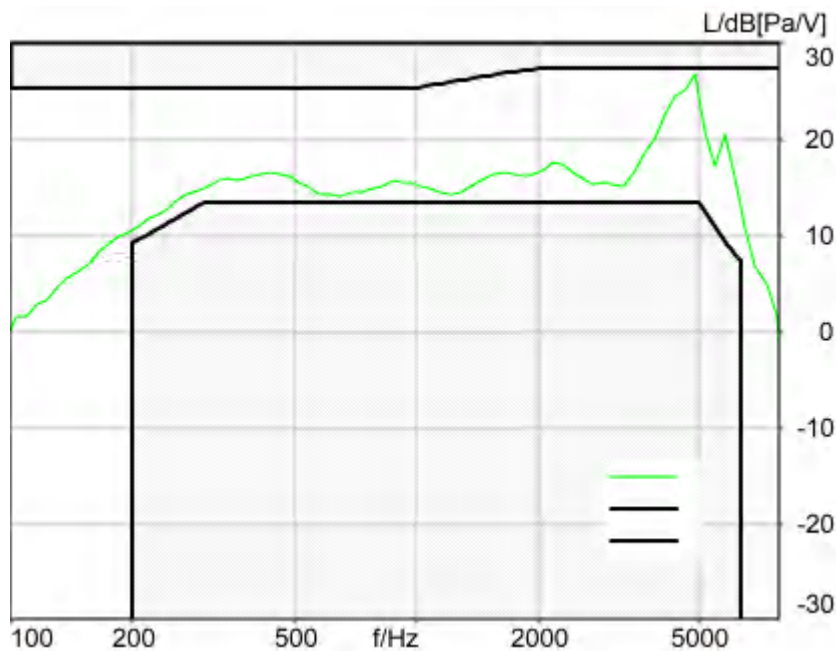
Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.3 Frequency Response 8N DF**

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
 0.61 dB at 4870.0 Hz Ok

**Ok**

2024/1/29 11:07 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
--	--------------

Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the end of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off

Polarisation Voltage200V	Supply Voltage	±60V
Channel In 4 Settings		
Range 114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V	Supply Voltage	±60V

-----  
VoIP Settings (VoIP)

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	
;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2			
FMTP Parameter	;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2		
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

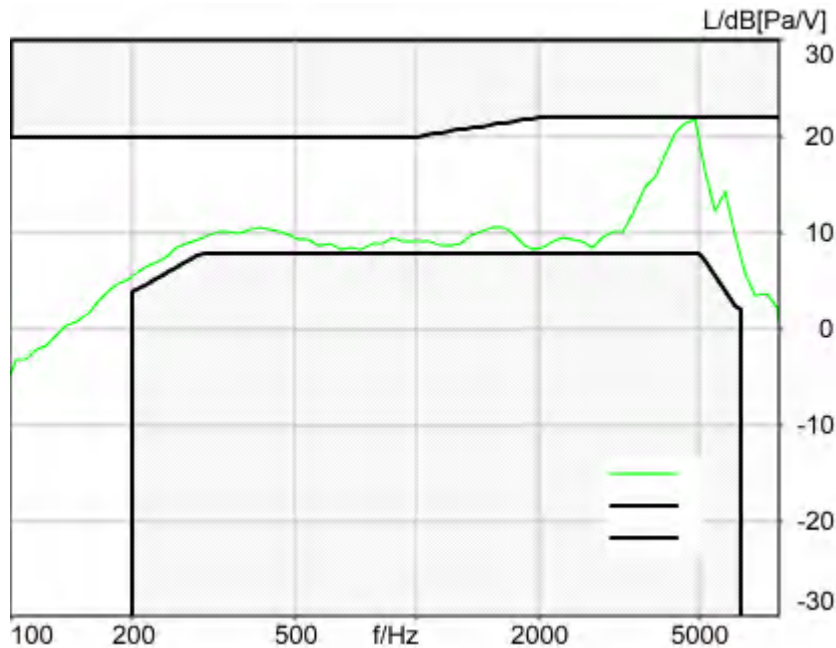
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.28 dB at 4870.0 Hz Ok

**Ok**

2024/1/29 11:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 125.6000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out



In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

-----  
VoIP Settings (VoIP)

RTP Connection Streaming SIP Connection Unavailable  
SIP Reg. State Unregistered Jitterbuffer Length 140  
Jitter Buffer Reset On Playback Enabled Codec EVS/16000/1  
Packet Length 20 Encoder Parameter  
;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
FMTMP Parameter ;evs-mode-switch=1;br=5.9-13.2;bw=nb-swb;ch-aw-recv=2  
Impairment Mode Off Impairment Type Off

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

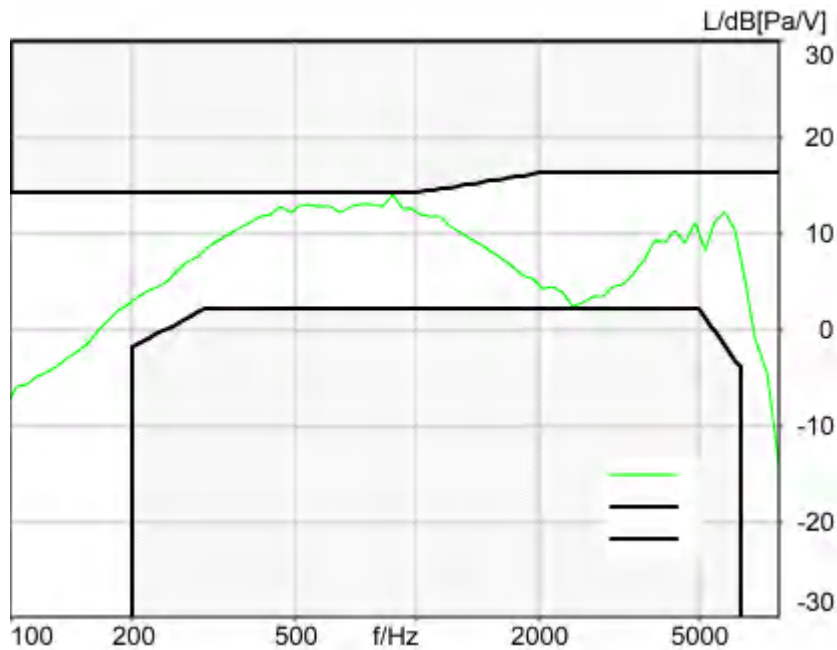
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

## 5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.24 dB at 873.9 Hz Ok

**Ok**

2024/1/23 22:02 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting on

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_ieeee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	P.57
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT		
FFT size	4096		
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 121.0000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> VoIP 1 -> Radio Tester 1 (CMW500) RF In/Out  
In Channel 1 <- VoIP In/Out 1 <- Radio Tester 1 (CMW500) RF In/Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**VoIP Settings (VoIP)**

RTP Connection	Streaming	SIP Connection	Unavailable
SIP Reg. State	Unregistered	Jitterbuffer Length	140
Jitter Buffer Reset	On Playback	Enabled Codec	EVS/16000/1
Packet Length	20	Encoder Parameter	;max-red=0;br=5.9-13.2;bw=nb-sw;ch-aw-recv=2
FMTTP Parameter	;max-red=0;br=5.9-13.2;bw=nb-sw;ch-aw-recv=2		
Impairment Mode	Off	Impairment Type	Off

-----  
BEQ Settings (BEQ Filter 1)  
Block mode        Bypass  
-----

Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613

Pinna Type        Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## **Measurement Protocol**

Measurement Object	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:07
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	135.7	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	16.09	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	10.35	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.37	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.50	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.34	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.46	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.86	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.41	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.16	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.37	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.42	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.11	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.41	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.10	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.77	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	26.34	339D WIFI 2.4G 802.11b

630 Hz NB		0.0 dB		1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.60	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.66	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.29	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.57	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.45	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.51	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.39	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.29	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1647.8 Hz	3.38	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 649.1 Hz	3.11	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.48	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	1.22	339D WIFI 2.4G 802.11b 1Mbps EVS NB 9.6kbps_CH6

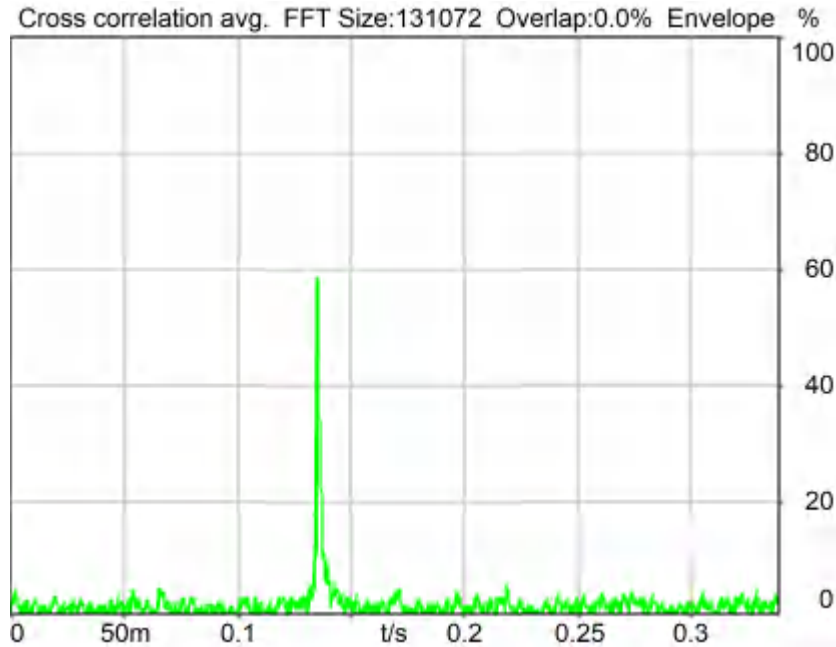
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Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	7
5.1b Receive Volume Control Performance 2N NB	8
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	12
5.2 RCV Distortion and Noise - 630 Hz NB	14
5.2 RCV Distortion and Noise - 800 Hz NB	16
5.2 RCV Distortion and Noise - 1000 Hz NB	18
5.2 RCV Distortion and Noise - 1250 Hz NB	20
5.2 RCV Distortion and Noise - 1600 Hz NB	22
5.2 RCV Distortion and Noise - 2000 Hz NB	24
5.2 RCV Distortion and Noise - 2500 Hz NB	26
5.2 RCV Distortion and Noise - 3150 Hz NB	28
Report - Receive Distortion and Noise (Conversational Gain)	30
5.2 RCV Distortion and Noise - 400 Hz NB	31
5.2 RCV Distortion and Noise - 500 Hz NB	33
5.2 RCV Distortion and Noise - 630 Hz NB	35
5.2 RCV Distortion and Noise - 800 Hz NB	37
5.2 RCV Distortion and Noise - 1000 Hz NB	39
5.2 RCV Distortion and Noise - 1250 Hz NB	41
5.2 RCV Distortion and Noise - 1600 Hz NB	43
5.2 RCV Distortion and Noise - 2000 Hz NB	45
5.2 RCV Distortion and Noise - 2500 Hz NB	47
5.2 RCV Distortion and Noise - 3150 Hz NB	49
Report - Receive Distortion and Noise (Conversational Gain)	51
5.3 Frequency Response 8N FF HANB	52
5.3 Frequency Response 8N DF HANB	54
5.3 Frequency Response 2N FF HANB	56
5.3 Frequency Response 2N DF HANB	58



## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 135.7 ms

2024/1/27 18:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal Source ch.2 Store to variable D\_RCV\_NB

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

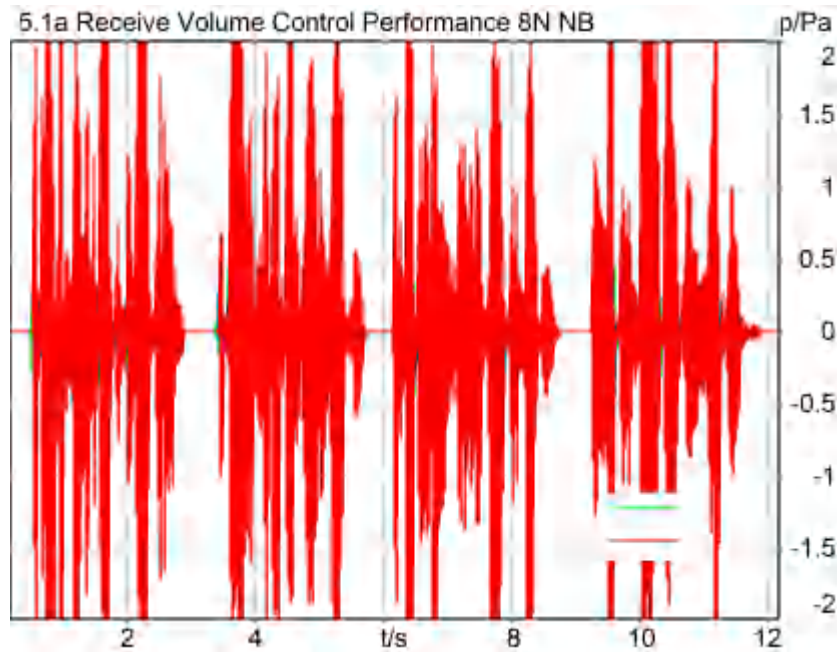
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1a Receive Volume Control Performance 8N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 86.09 dB[SPL], Act.: 83.86%

Corrected Speech Level: 16.09 dB[SPL] Not Ok

### Not Ok

2024/1/27 18:55 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

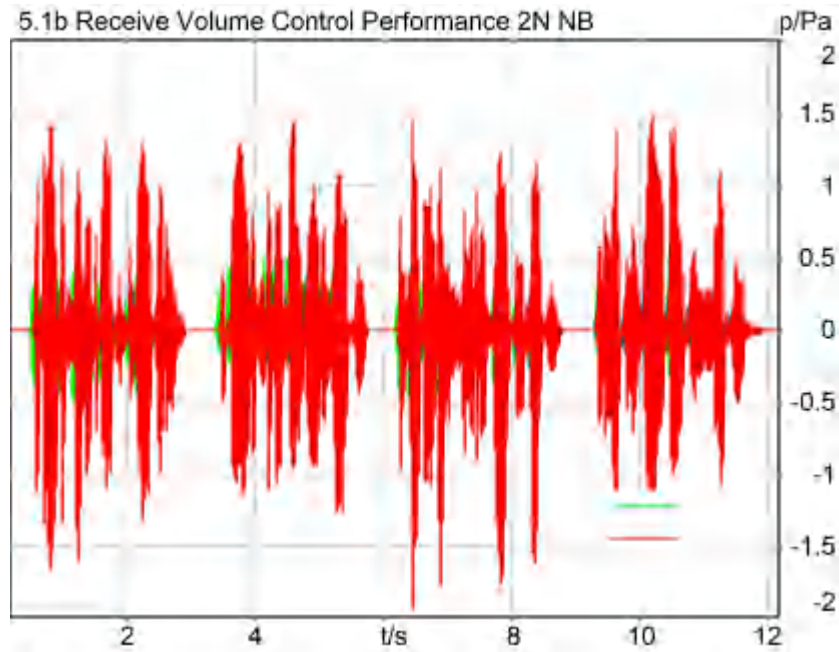
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

**5.1b Receive Volume Control Performance 2N NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 80.35 dB[SPL], Act.: 83.83%

Corrected Speech Level: 10.35 dB[SPL] Ok

Ok

2024/1/27 19:05 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Narrow Band	Margin (15.9dB nom)	

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.37 dB (3.82%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 28.50 dB (3.76%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

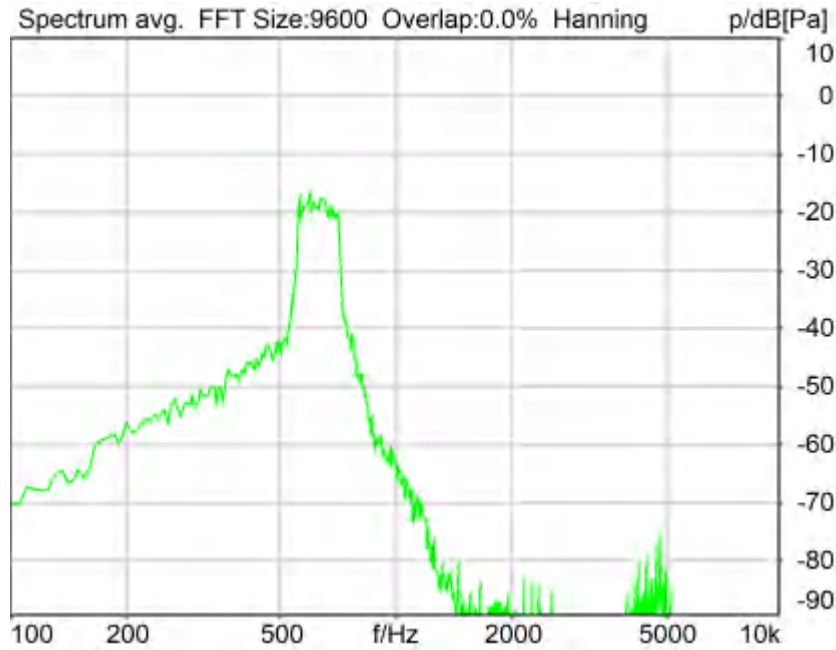
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.34 dB (4.82%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

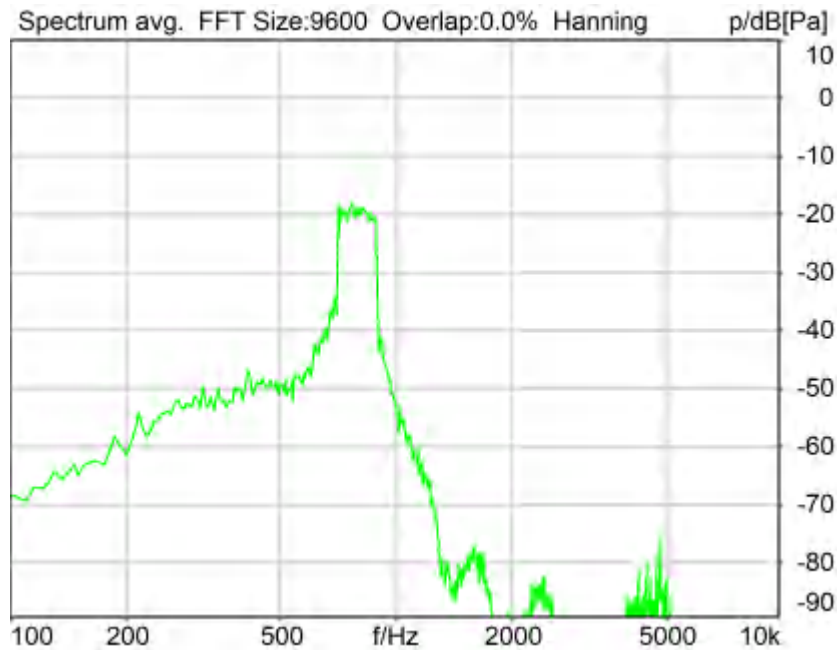
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.46 dB (5.33%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

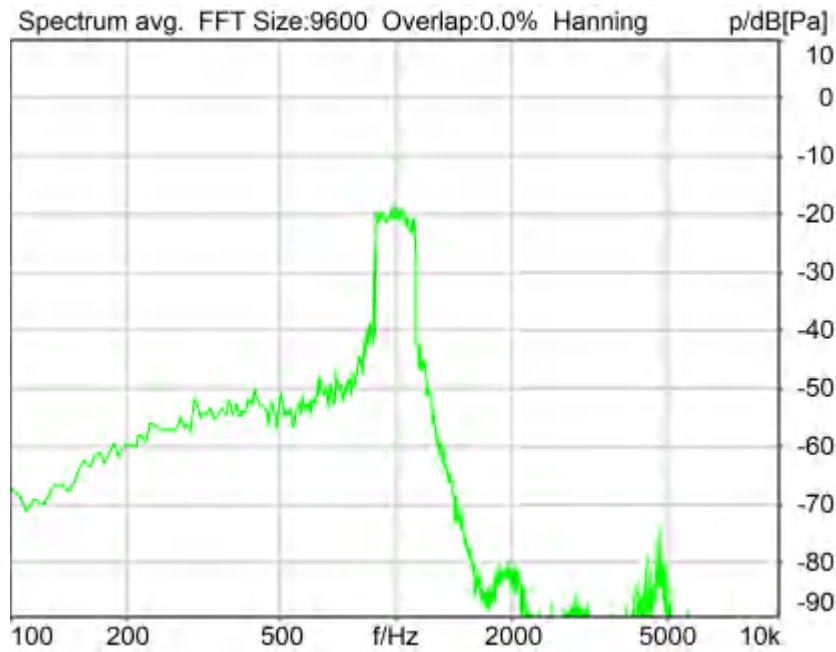
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.86 dB (5.09%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 20.41 dB (9.54%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

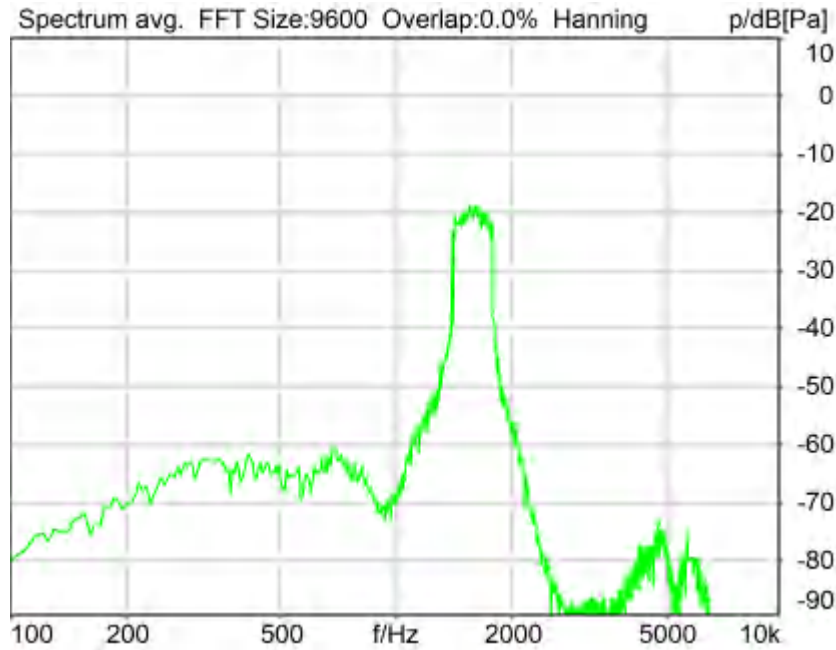
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1600 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.16 dB (4.39%) Ok

**Ok**

2024/1/27 18:59 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

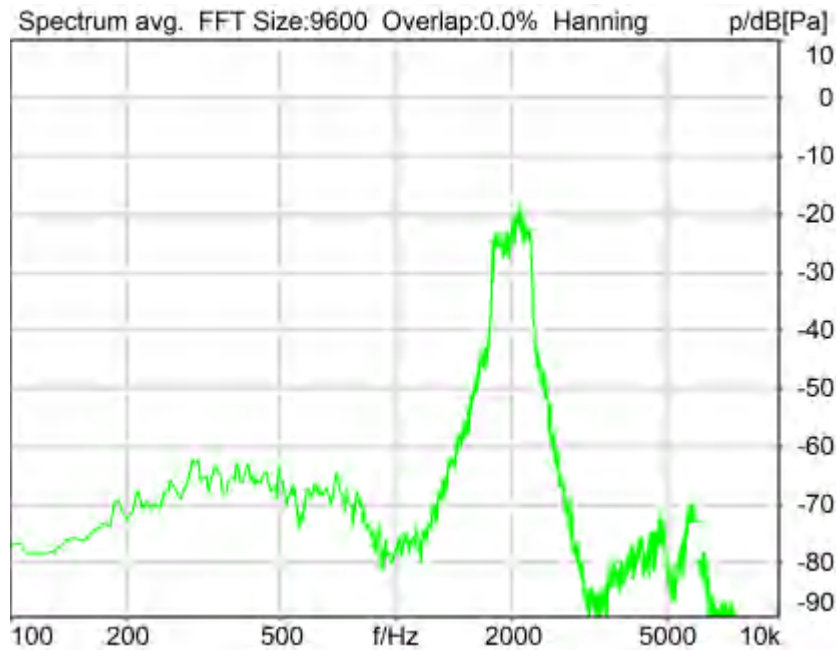
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz NB

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Distortion (Noise) RCV (packed): 22.37 dB (7.61%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

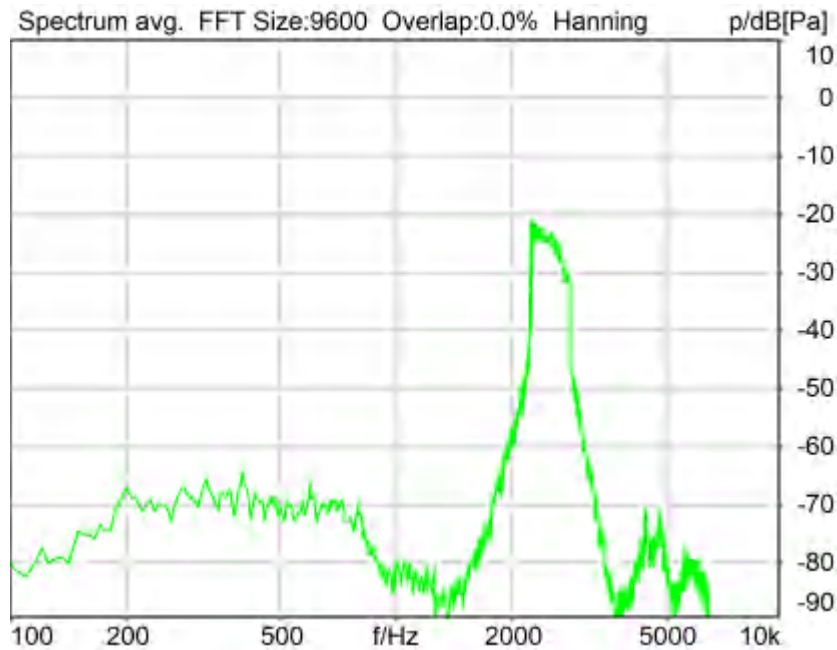
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz NB**

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Distortion (Noise) RCV (packed): 26.42 dB (4.78%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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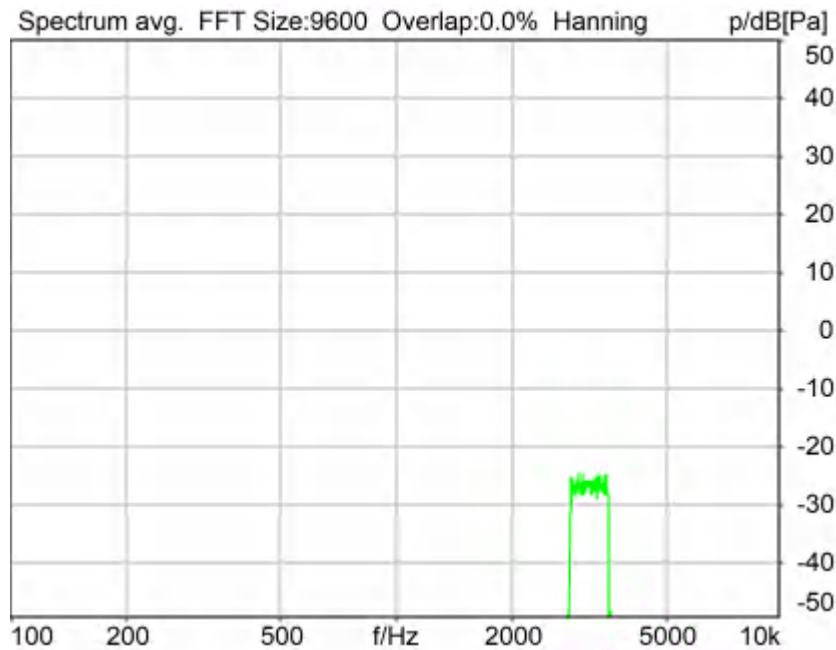
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz NB

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Distortion (Noise) RCV (packed): 30.11 dB (3.12%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**Report - Receive Distortion and Noise (Conversational Gain)**

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Region	Frequency	SDNR
1	400Hz	28.37 dB
2	500Hz	28.50 dB
3	630Hz	26.34 dB
4	800Hz	25.46 dB
5	1000Hz	25.86 dB
6	1250Hz	20.41 dB
7	1600Hz	27.16 dB
8	2000Hz	22.37 dB
9	2500Hz	26.42 dB
10	3150Hz	30.11 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.41dB at 1250Hz.

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## 5.2 RCV Distortion and Noise - 400 Hz NB

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Distortion (Noise) RCV (packed): 30.10 dB (3.12%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

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Distortion (Noise) RCV (packed): 27.77 dB (4.09%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.34 dB (4.82%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                                  Range Ch. 2      0.00 dB

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                                  Supply Voltage    ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          20Hz  
Polarisation Voltage 200V                                  Supply Voltage    ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                                  Supply Voltage    ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                                  Supply Voltage    ±60V

BEQ Settings (BEQ Filter 1)

Block mode      Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

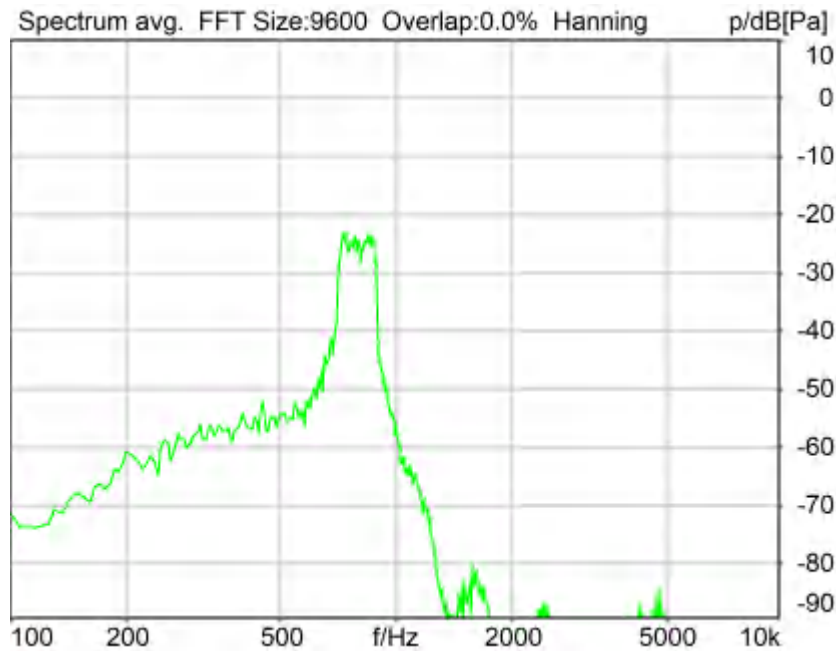
Ser. Nr.            12306613                                  Pinna Type        Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.60 dB (5.25%) Ok

**Ok**

2024/1/27 19:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

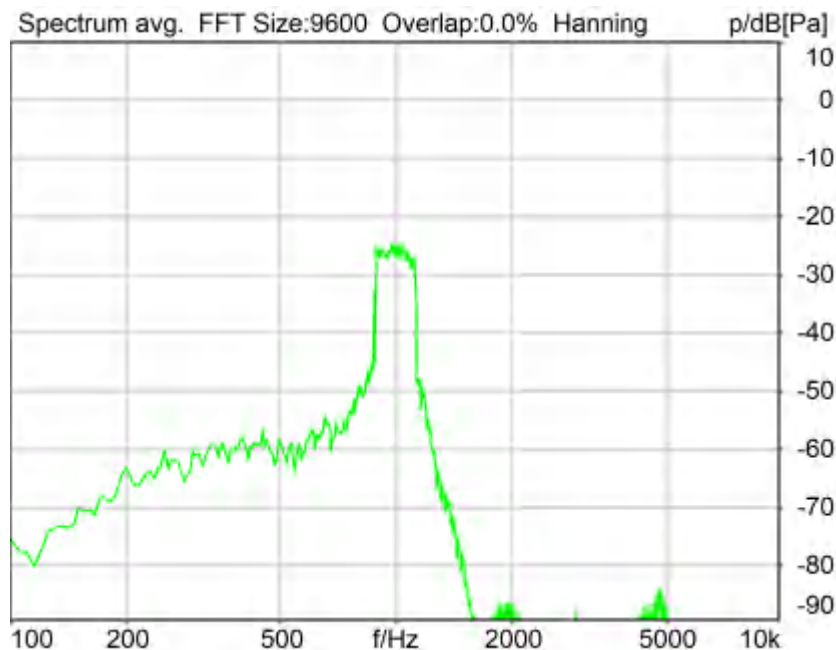
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.66 dB (5.21%) Ok

**Ok**

2024/1/27 19:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

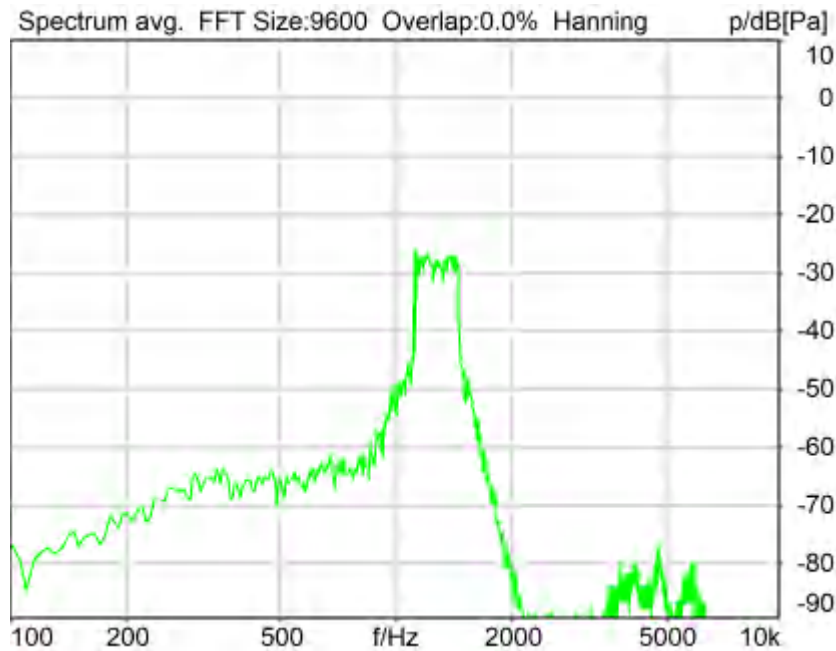
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.29 dB (9.67%) Ok

**Ok**

2024/1/27 19:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

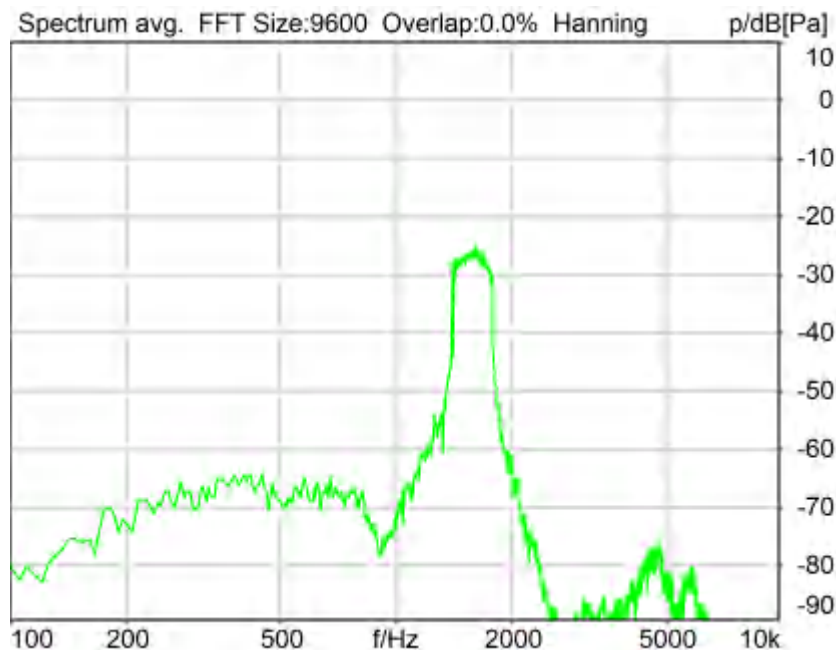
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.57 dB (4.70%) Ok

**Ok**

2024/1/27 19:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          20Hz  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

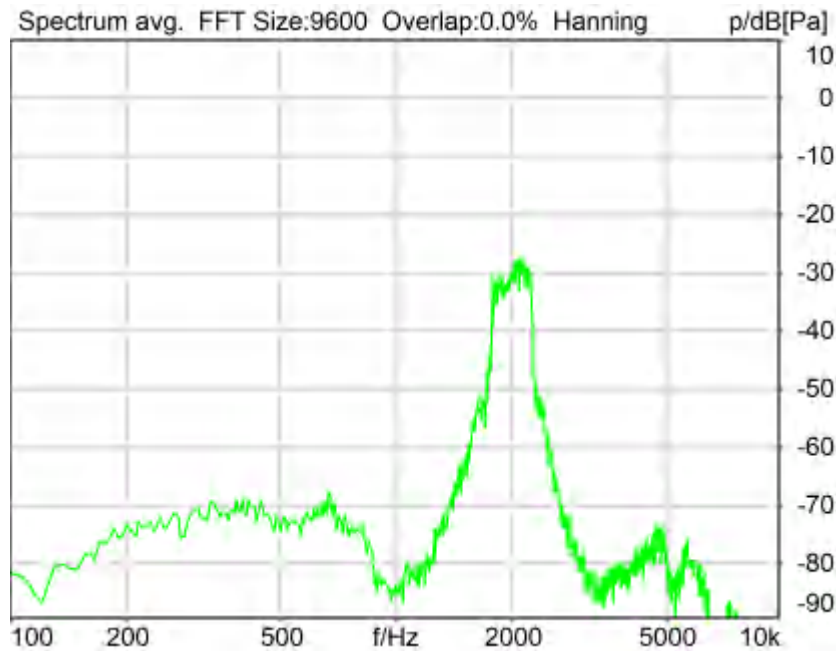
Ser. Nr.            12306613                      Pinna Type        Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.45 dB (8.46%) Ok

**Ok**

2024/1/27 19:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

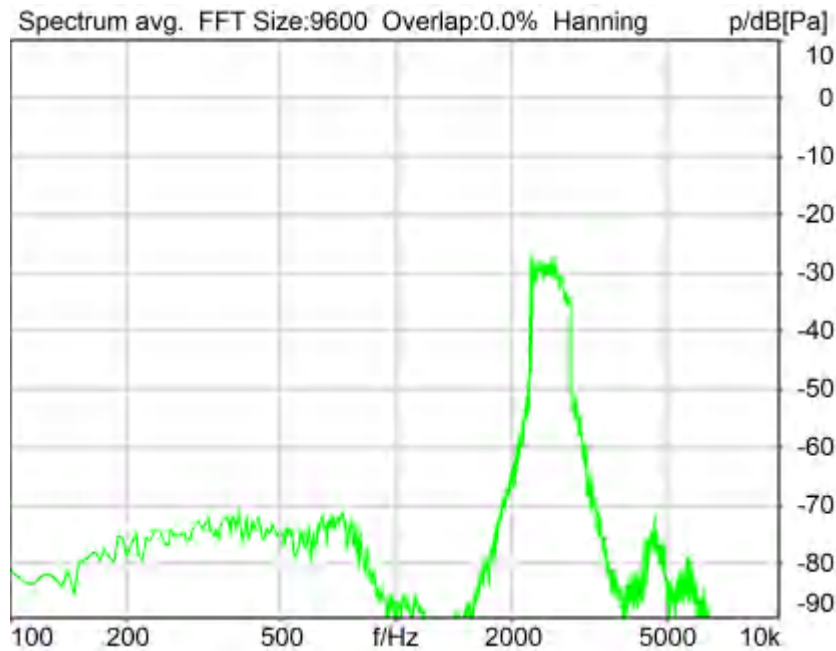
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.51 dB (5.30%) Ok

**Ok**

2024/1/27 19:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage200V                      Supply Voltage    ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          20Hz  
Polarisation Voltage200V                      Supply Voltage    ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage200V                      Supply Voltage    ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage200V                      Supply Voltage    ±60V

BEQ Settings (BEQ Filter 1)

Block mode      Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

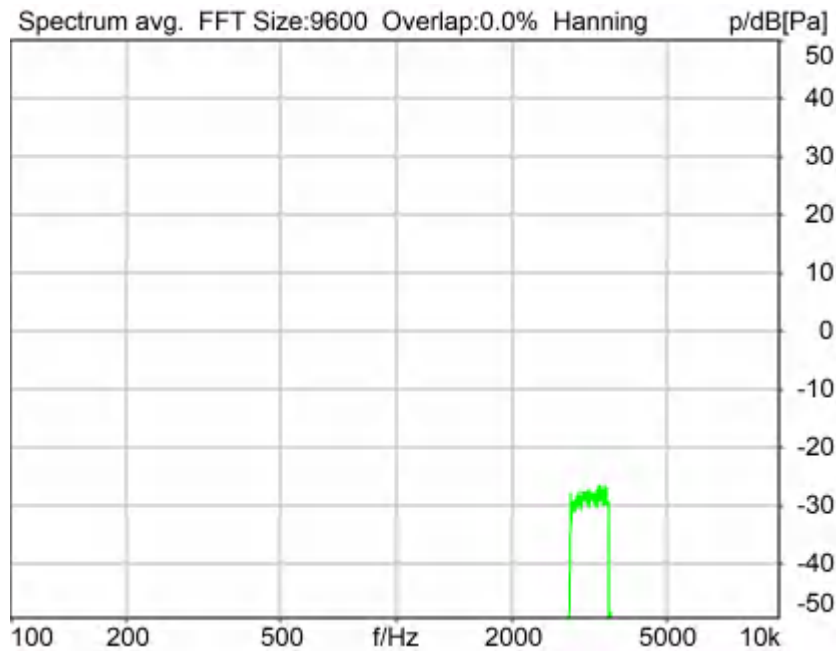
Ser. Nr.          12306613                      Pinna Type        Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.39 dB (3.39%) Ok

**Ok**

2024/1/27 19:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable    RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

-----

BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.              12306613                      Pinna Type              Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	400Hz	30.10 dB
2	500Hz	27.77 dB
3	630Hz	26.34 dB
4	800Hz	25.60 dB
5	1000Hz	25.66 dB
6	1250Hz	20.29 dB
7	1600Hz	26.57 dB
8	2000Hz	21.45 dB
9	2500Hz	25.51 dB
10	3150Hz	29.39 dB

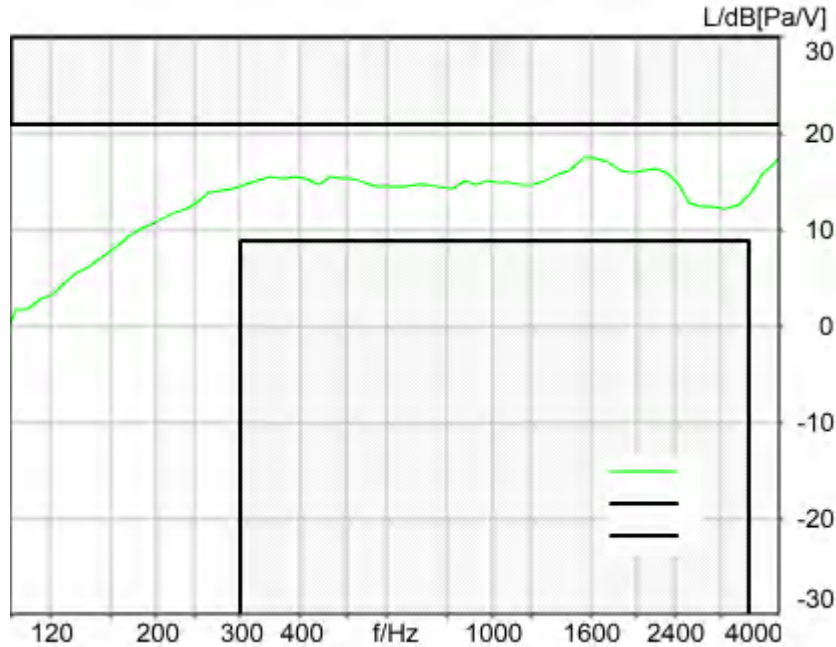
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 20.29dB at 1250Hz.

2024/1/27 19:10 ACQUA

### 5.3 Frequency Response 8N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
3.38 dB at 1647.8 Hz Ok

**Ok**

2024/1/27 19:00 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"



**Alteration:**

0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the end of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT		
FFT size	4096		
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr. 12306613

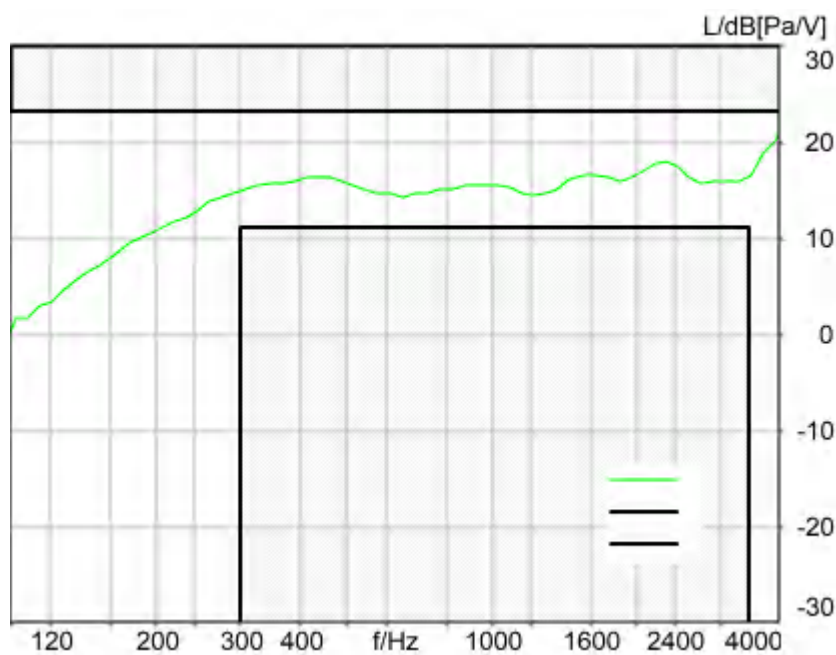
Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.3 Frequency Response 8N DF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
3.11 dB at 649.1 Hz Ok

**Ok**

2024/1/27 19:01 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

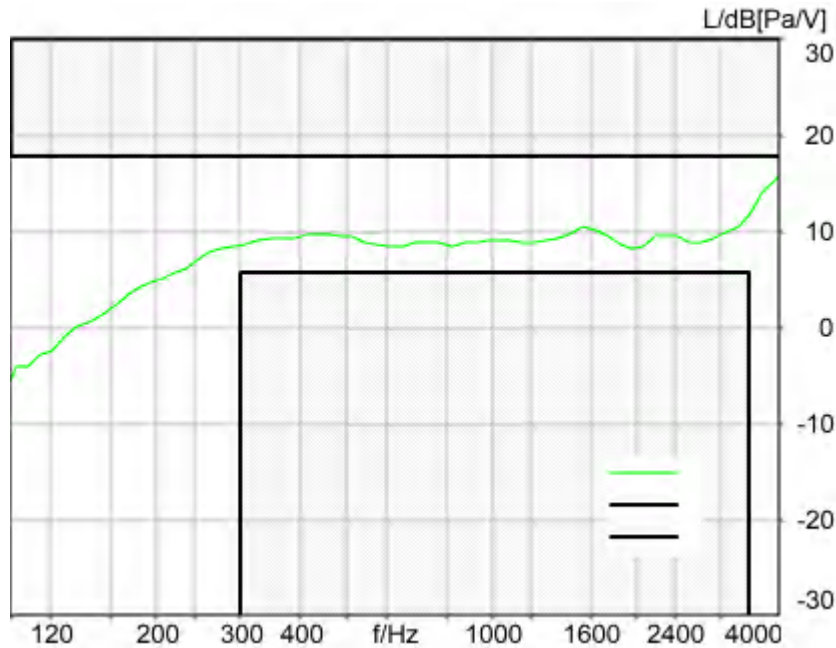
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
2.48 dB at 3882.4 Hz Ok

**Ok**

2024/1/27 19:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1      -90.0 dB                      Level adj. Ch2      -4.0 dB  
NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2  
  Pause 0.5 s      +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +  
Pause till end of file  
Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the end of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:      HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

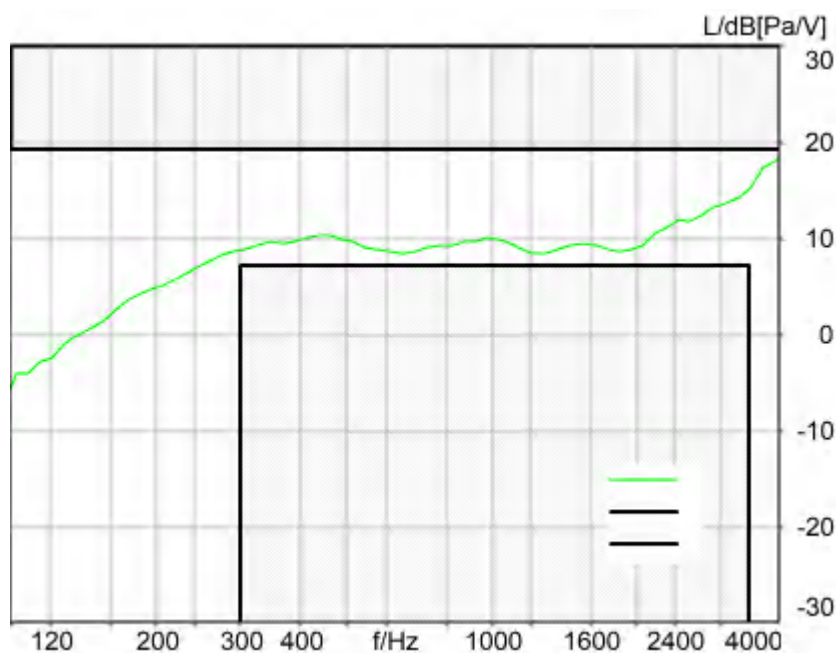
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.3 Frequency Response 2N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
1.22 dB at 3882.4 Hz Ok

**Ok**

2024/1/27 19:11 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction Out 2 -> In 2

Range start 500.00 ms

Range length 11500.00 ms

Use FIR Filter Ch2

FIR filter drp2df\_ieeee1652

DRP/ERP Ch.1: Off

DRP/ERP Ch.2: Off

Frequency base 12th octave

DIN Row Row A

Method FFT

FFT size 4096

Overlap 75 %

Window function. Hanning

Reference file r521\_rcv\_frq\_spee269\_hanb.fft

Tol. scheme file 521\_rcv\_frq\_man\_hanb.tol Min. freq. for tol. 100.0 Hz

Auto adjust Centrate Max. freq. for tol. 4000.0 Hz

**Special Features**

Compensate delay 135.7000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 2 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings  
 Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
 Polarisation Voltage200V Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	



## **Measurement Protocol**

Measurement Object	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:08
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	172.8	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	15.86	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	10.56	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.85	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.27	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.60	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.59	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.96	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.68	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.25	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.66	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.67	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.01	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.87	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.77	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.29	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	21.86	339D WIFI 2.4G 802.11b

5000 Hz WB		0.0 dB		1Mbps EVS WB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.66	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.77	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.11	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.19	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.89	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.02	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.67	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.74	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.79	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.82	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.47	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.57	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.42	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.39	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.75	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	20.47	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	1.14	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.93	339D WIFI 2.4G 802.11b

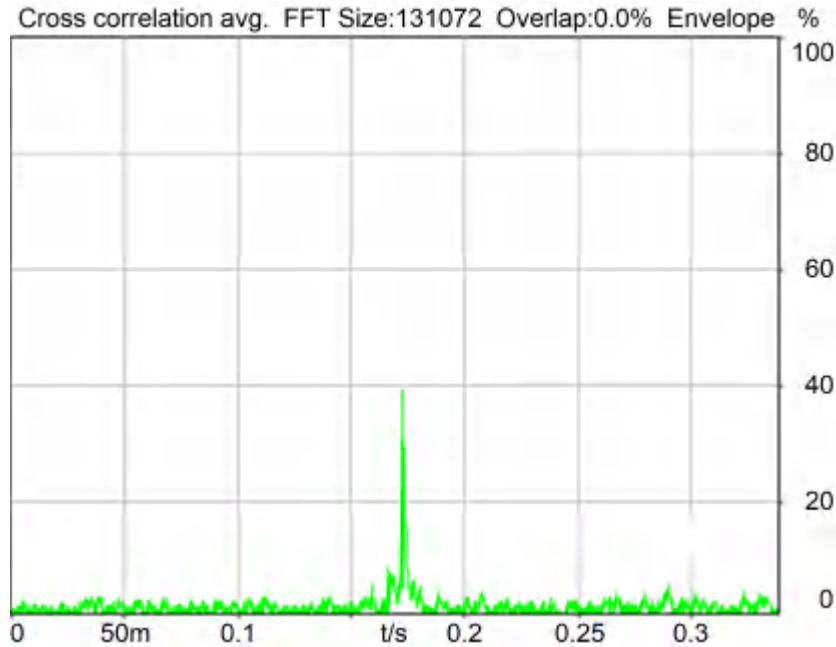
DF		scheme [dB], 4870.0 Hz		1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4620.1 Hz	0.50	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 2N DF	Not Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	-0.40	339D WIFI 2.4G 802.11b 1Mbps EVS WB 9.6kbps_CH6

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5.2 RCV Distortion and Noise - 800 Hz WB	21
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5.2 RCV Distortion and Noise - 1250 Hz WB	25
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5.2 RCV Distortion and Noise - 630 Hz WB	48
5.2 RCV Distortion and Noise - 800 Hz WB	50
5.2 RCV Distortion and Noise - 1000 Hz WB	52
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## Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 172.8 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: csswb1b\_r1s.dat

WIDEBAND Composite Source Signal RCV P.501 (1 bursts) at Channel 2

Pause 0.5 s +

voiced signal + 8000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 8000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_WB
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**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

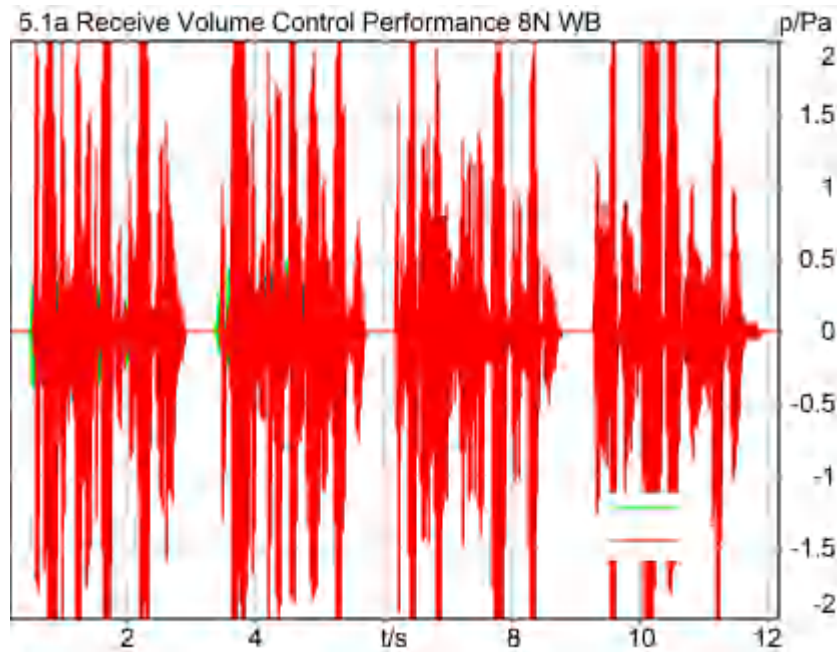
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1a Receive Volume Control Performance 8N WB

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 85.86 dB[SPL], Act.: 83.98%

Corrected Speech Level: 15.86 dB[SPL] Not Ok

### Not Ok

2024/1/27 20:00 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)



**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

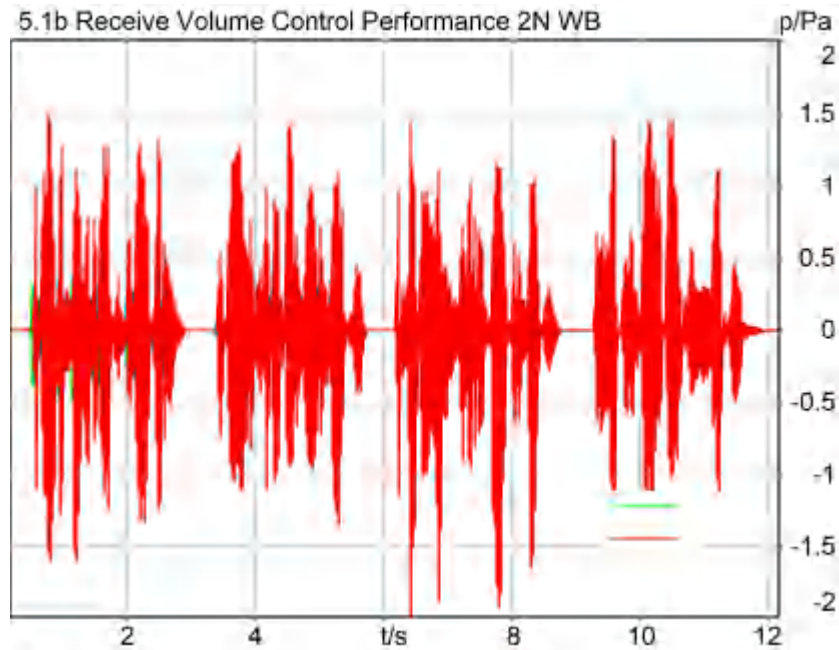
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

**5.1b Receive Volume Control Performance 2N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 80.56 dB[SPL], Act.: 83.94%

Corrected Speech Level: 10.56 dB[SPL] Ok

### Ok

2024/1/27 20:22 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

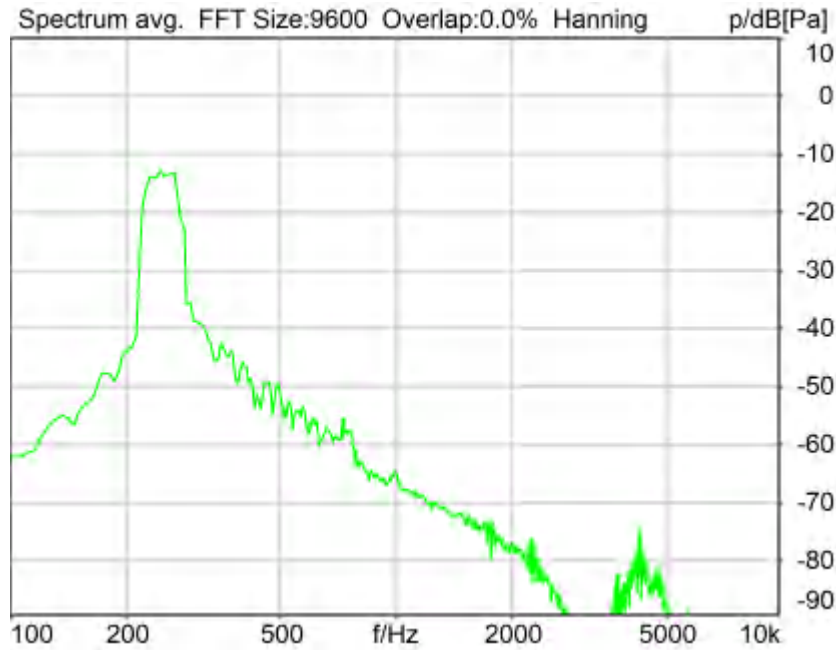
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 30.85 dB (2.87%) Ok

Ok

2024/1/27 20:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

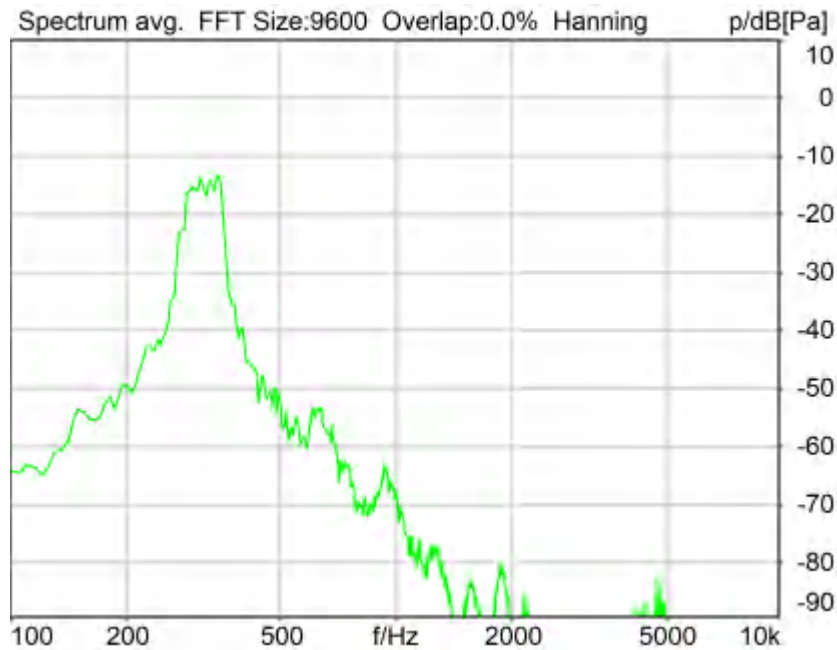
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 315 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 32.27 dB (2.43%) Ok

**Ok**

2024/1/27 20:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

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Distortion (Noise) RCV (packed): 32.60 dB (2.34%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

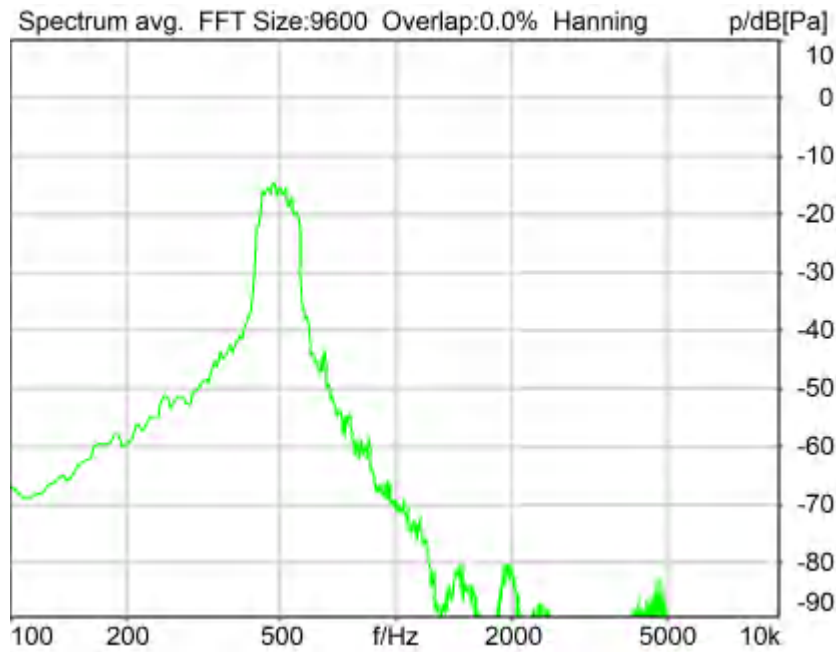
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 500 Hz WB**

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Distortion (Noise) RCV (packed): 29.59 dB (3.32%) Ok

**Ok**

2024/1/27 20:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

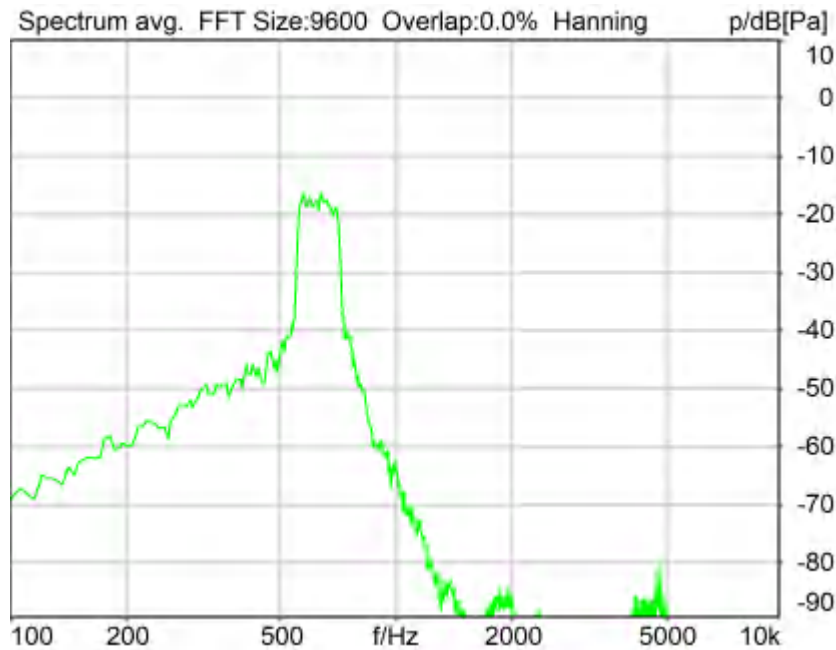
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.96 dB (4.00%) Ok

Ok

2024/1/27 20:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

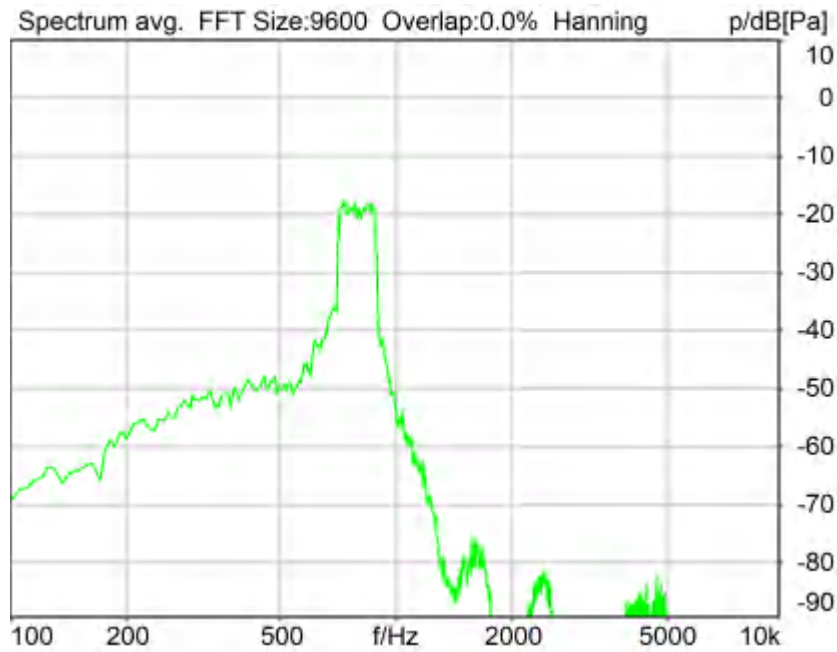
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.68 dB (5.20%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

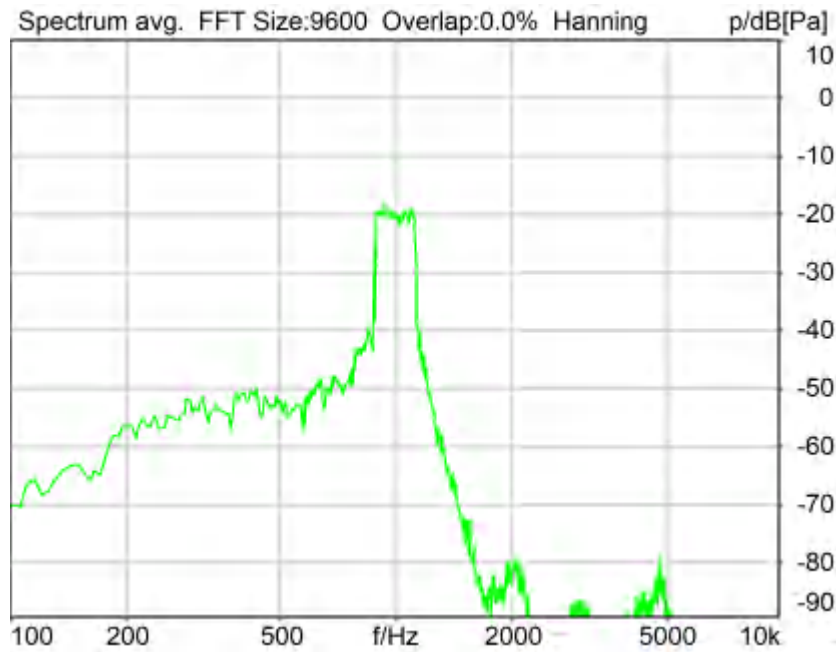
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.25 dB (5.47%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %



Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

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Distortion (Noise) RCV (packed): 20.66 dB (9.27%) Ok

**Ok**

2024/1/27 20:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

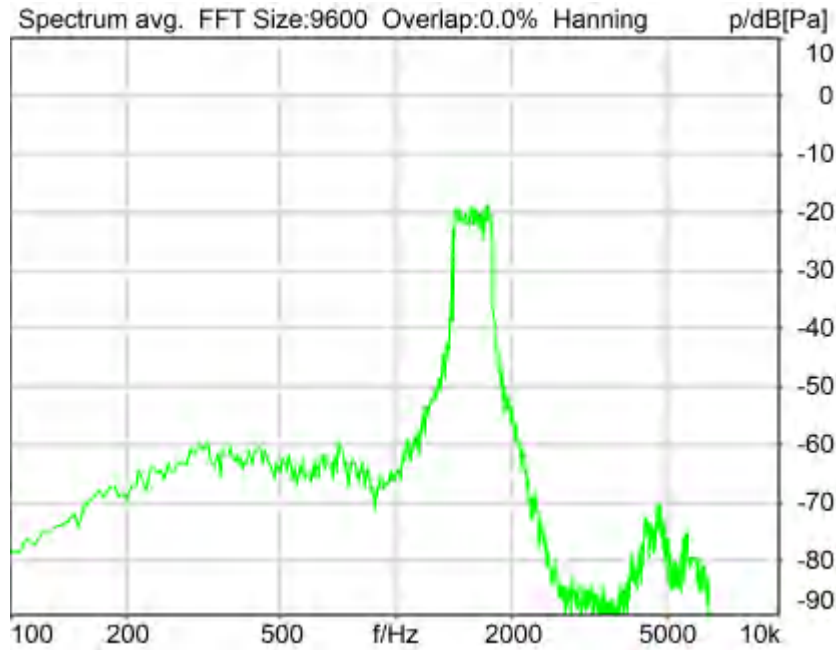
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.67 dB (4.64%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 22.01 dB (7.94%) Ok

**Ok**

2024/1/27 20:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.87 dB (5.09%) Ok

Ok

2024/1/27 20:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %



---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

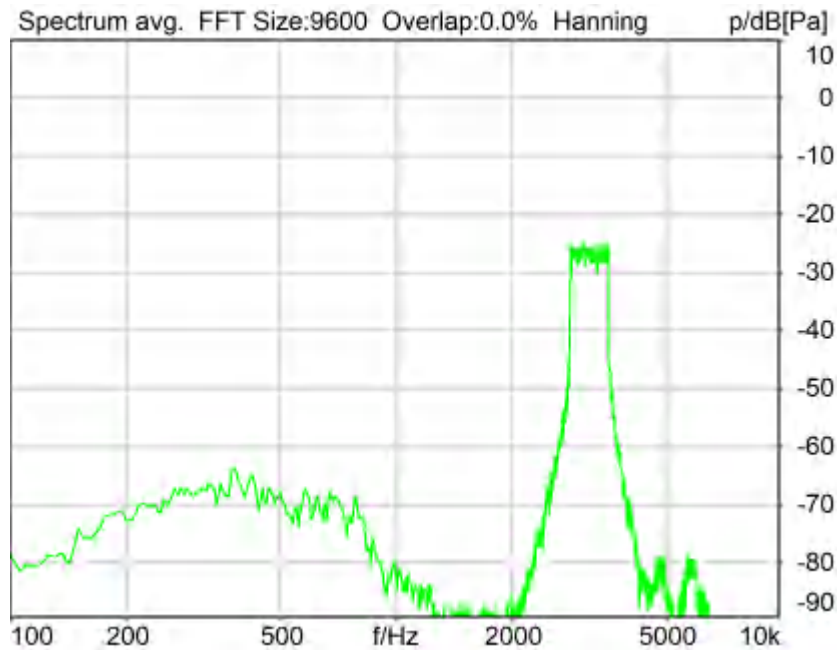
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.77 dB (3.25%) Ok

**Ok**

2024/1/27 20:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

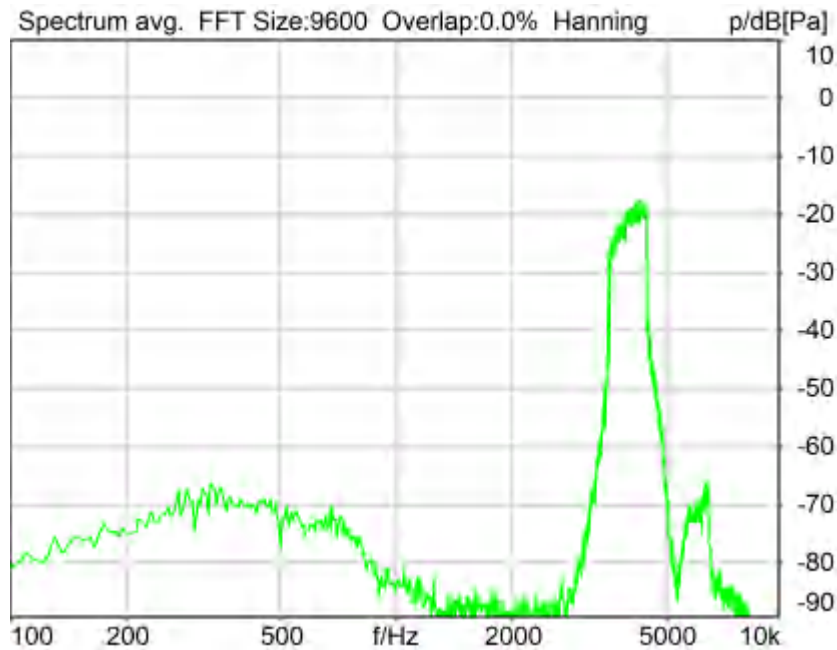
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.29 dB (3.85%) Ok

**Ok**

2024/1/27 20:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

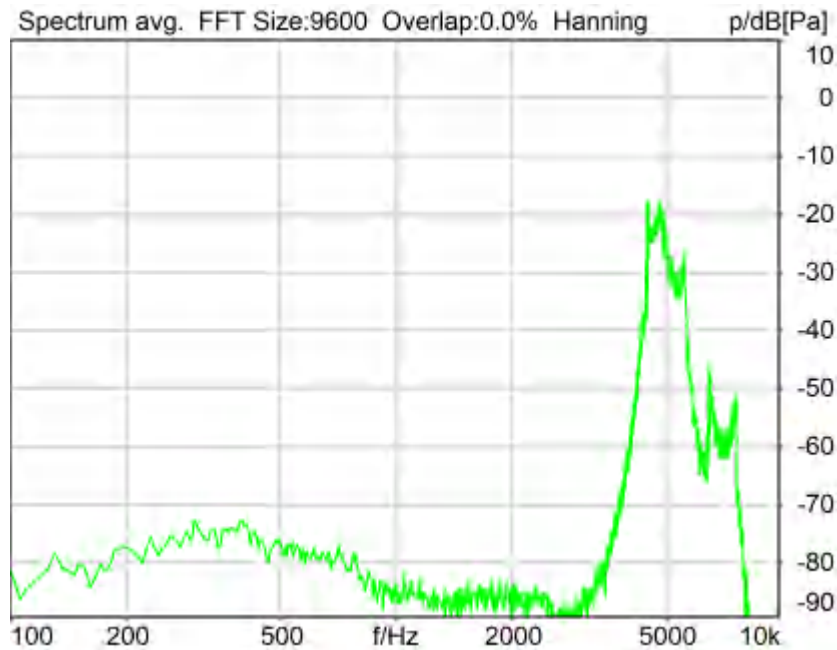
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 21.86 dB (8.07%) Ok

**Ok**

2024/1/27 20:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
1	250Hz	30.85 dB
2	315Hz	32.27 dB
3	400Hz	32.60 dB
4	500Hz	29.59 dB
5	630Hz	27.96 dB
6	800Hz	25.68 dB
7	1000Hz	25.25 dB
8	1600Hz	26.67 dB
9	2000Hz	22.01 dB
10	2500Hz	25.87 dB
11	3150Hz	29.77 dB
12	4000Hz	28.29 dB
13	5000Hz	21.86 dB
14	1250Hz	20.66 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.66dB at 1250Hz.

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## 5.2 RCV Distortion and Noise - 250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N





Distortion (Noise) RCV (packed): 30.77 dB (2.89%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

```

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right
    
```

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 31.11 dB (2.78%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
BEQ Settings (BEQ Filter 1)			
Block mode	Bypass		
-----			
Artificial Head Settings (HATS 1 (HMS II.3))			
Ser. Nr.	12306613	Pinna Type	Type 3.3
<b>HIB Settings</b>			
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 31.19 dB (2.76%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          20Hz  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass          Off  
Polarisation Voltage 200V                      Supply Voltage    ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

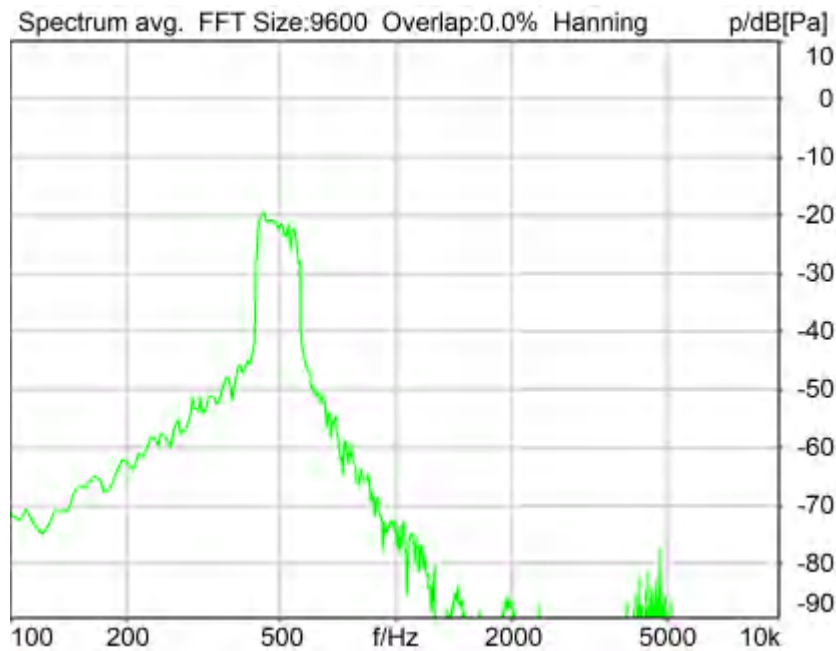
Ser. Nr.            12306613                      Pinna Type          Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.89 dB (3.20%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

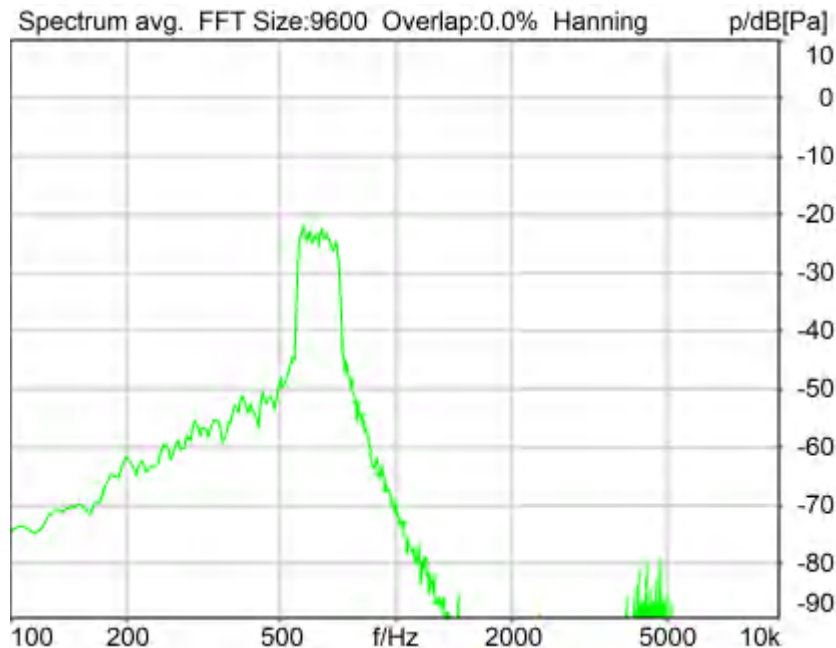
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.02 dB (3.97%) Ok



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

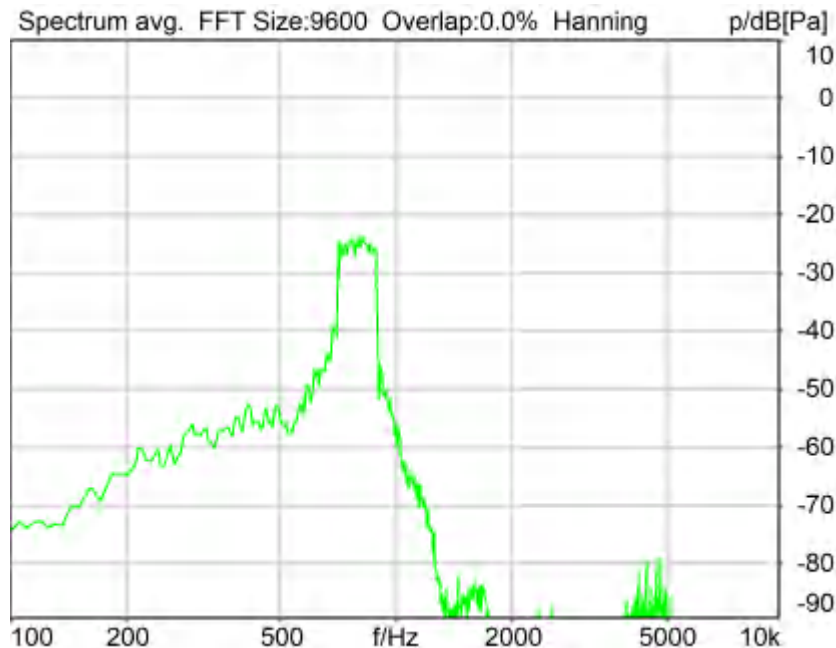
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.67 dB (5.84%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

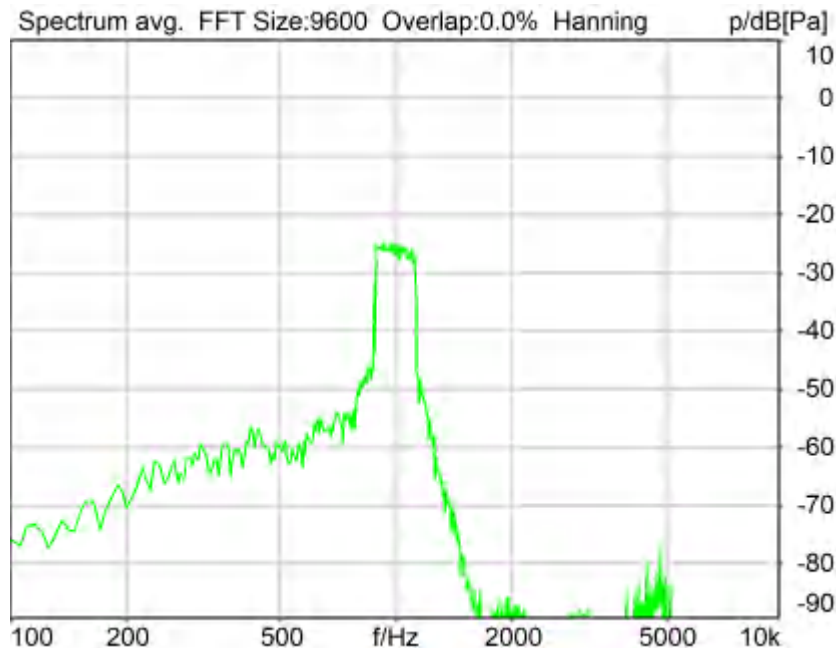
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.74 dB (5.16%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

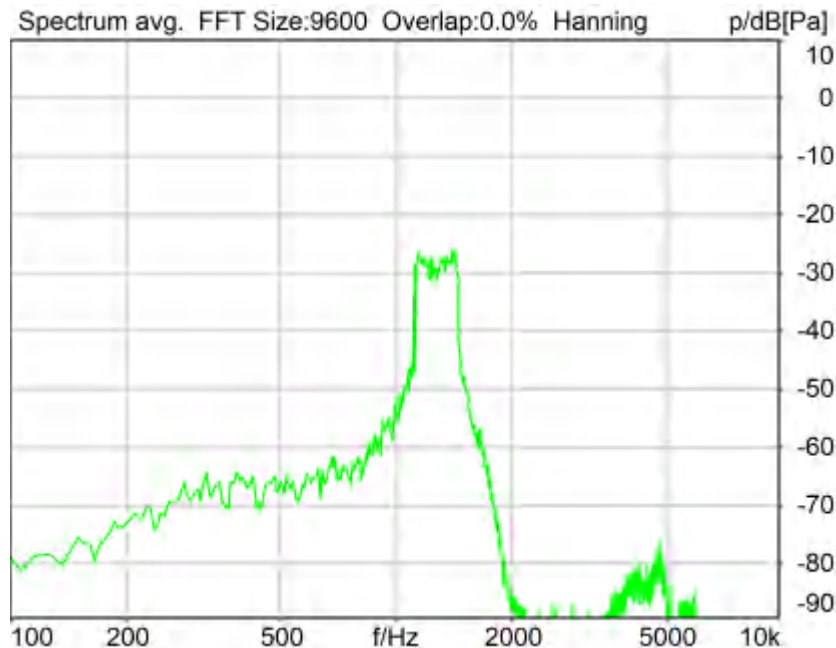
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.79 dB (8.14%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

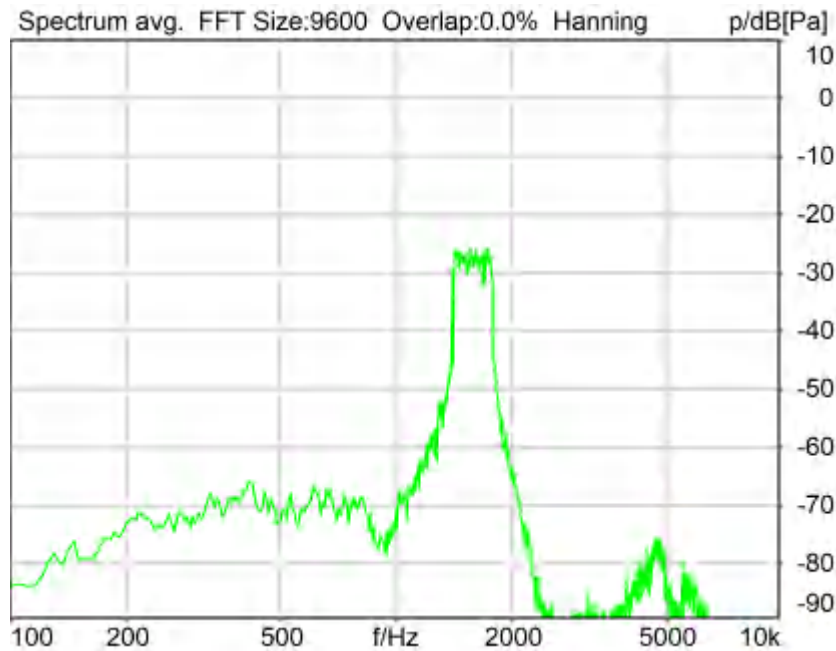
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.82 dB (4.56%) Ok



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

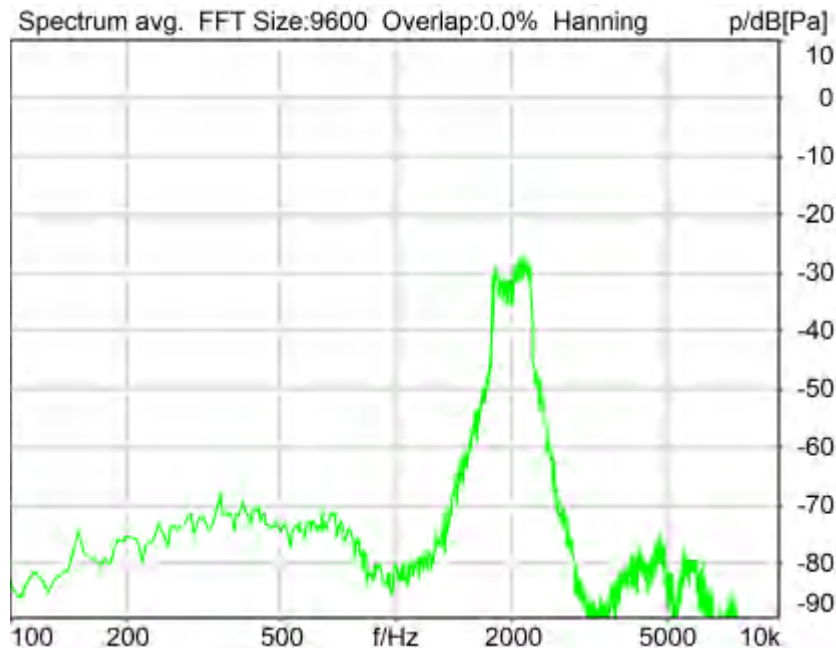
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.47 dB (9.48%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1      -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

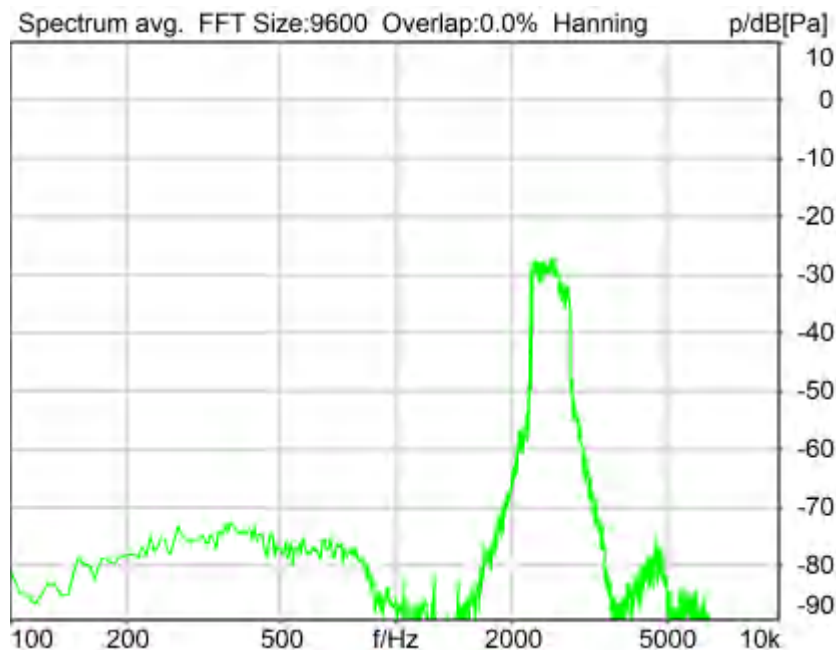
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.57 dB (4.69%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage        ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

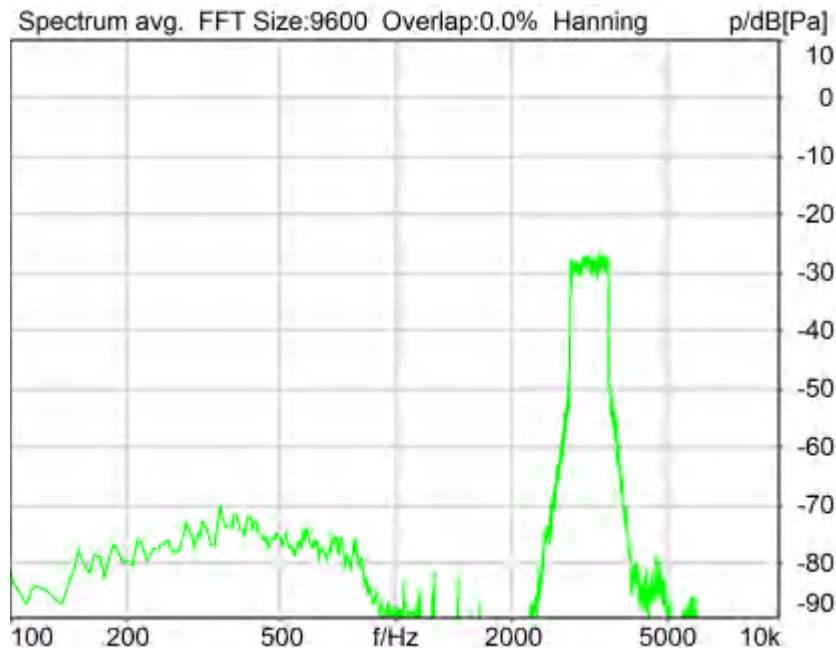
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.42 dB (3.38%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

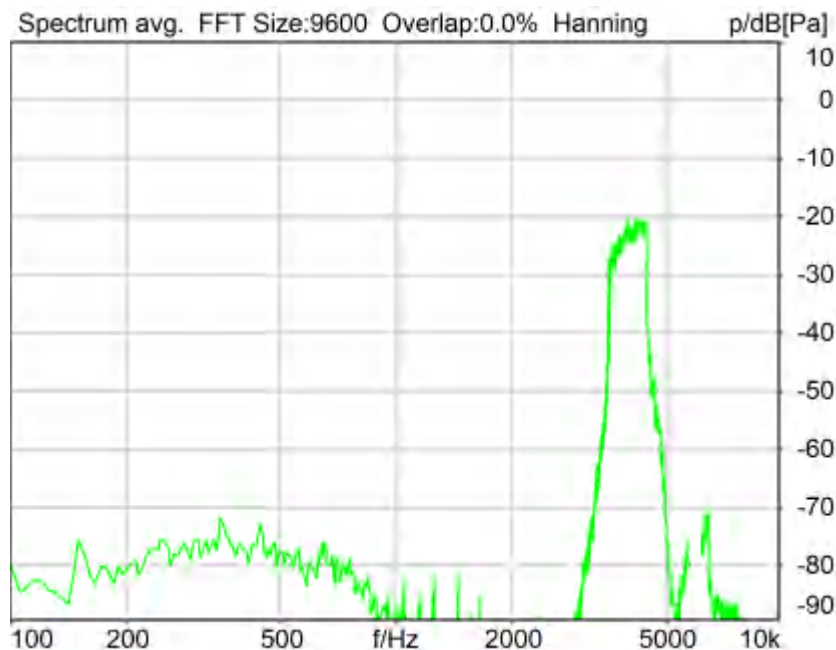
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.39 dB (3.81%) Ok



**Ok**

2024/1/27 20:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

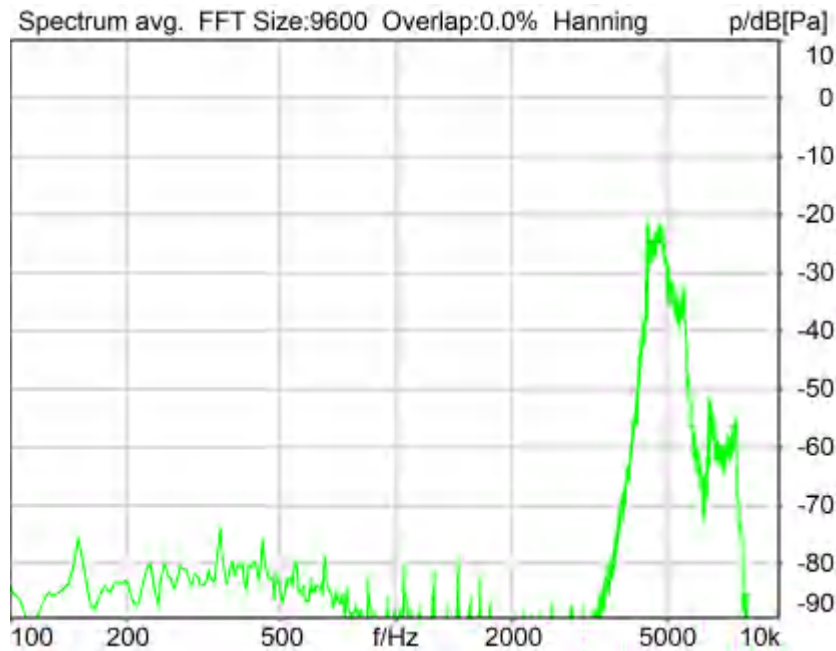
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 5000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.75 dB (9.17%) Ok

**Ok**

2024/1/27 20:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB    Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V    Supply Voltage      ±60V

Channel In 2 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V    Supply Voltage      ±60V

Channel In 3 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V    Supply Voltage      ±60V

Channel In 4 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V    Supply Voltage      ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode              Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.                      12306613    Pinna Type              Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	30.77 dB
2	315Hz	31.11 dB
3	400Hz	31.19 dB
4	500Hz	29.89 dB
5	630Hz	28.02 dB
6	800Hz	24.67 dB
7	1000Hz	25.74 dB
8	1250Hz	21.79 dB
9	1600Hz	26.82 dB
10	2000Hz	20.47 dB
11	2500Hz	26.57 dB
12	3150Hz	29.42 dB
13	4000Hz	28.39 dB
14	5000Hz	20.75 dB

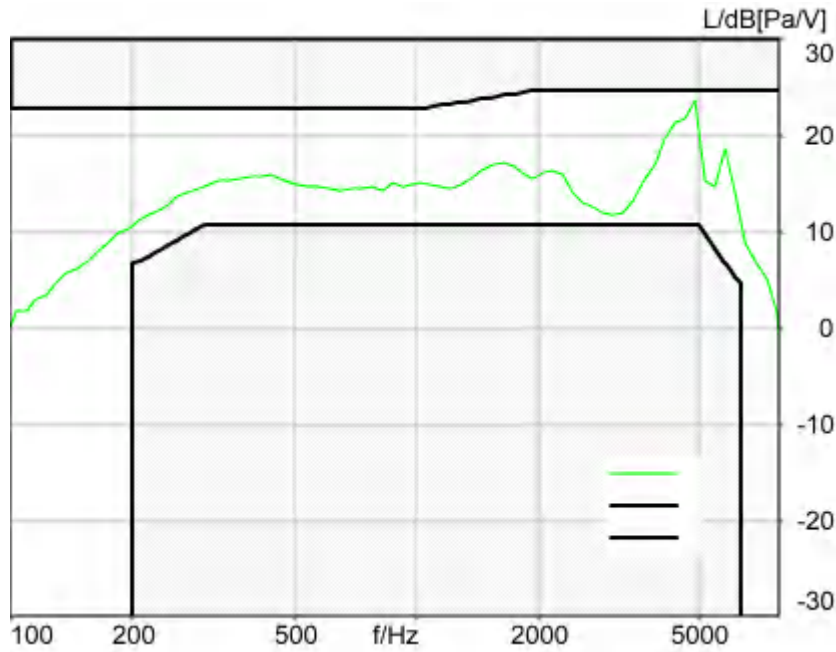
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 20.47dB at 2000Hz.

2024/1/27 20:28 ACQUA

### 5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
1.14 dB at 3058.6 Hz Ok

**Ok**

2024/1/27 20:08 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

Source: respmaleieeee269\_wb\_r20\_v01.dat  
Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

### Special Features

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

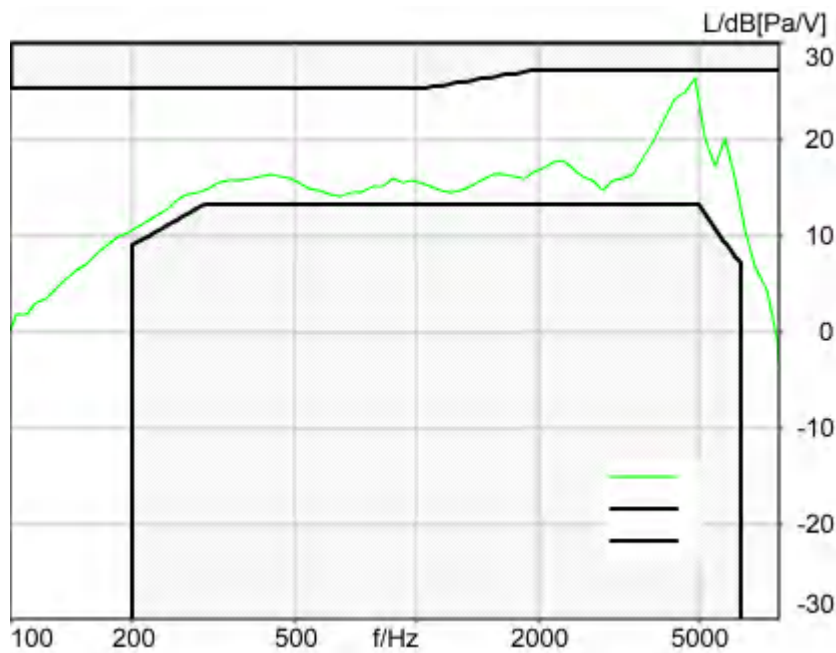
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 8N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.93 dB at 4870.0 Hz Ok

**Ok**

2024/1/27 20:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
--	-------

Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**



Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 2 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      20Hz  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 3 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 4 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode                      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

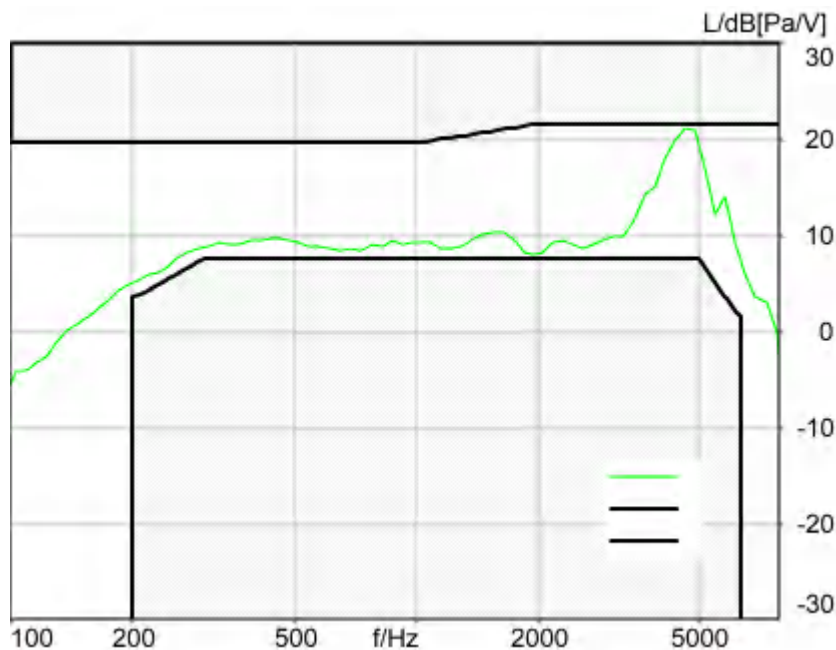
Ser. Nr.                      12306613                      Pinna Type                      Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.3 Frequency Response 2N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.50 dB at 4620.1 Hz Ok

**Ok**

2024/1/27 20:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieee269\_wb\_r20\_v01.dat**

Level adj. Ch1      -90.0 dB

WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

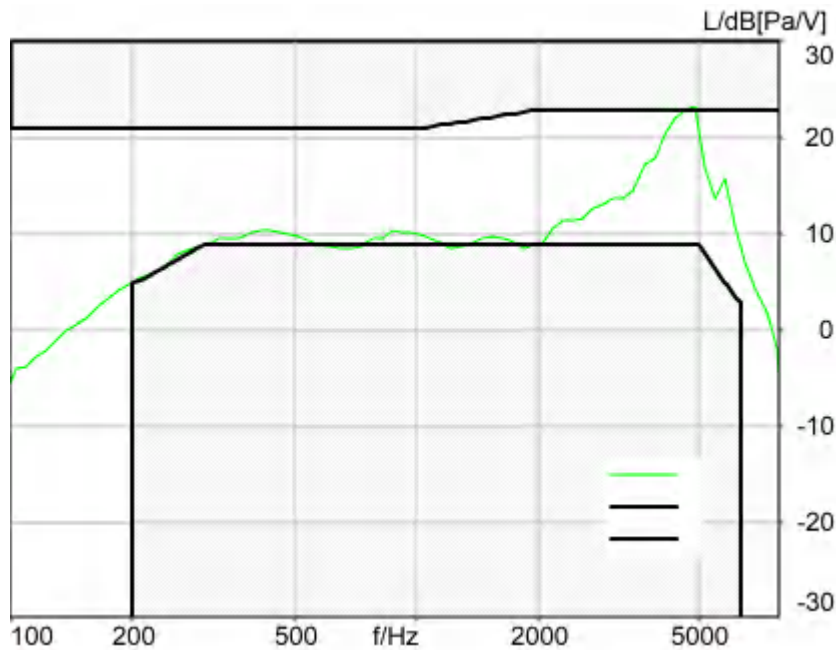
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
-0.40 dB at 4870.0 Hz Not Ok

### Not Ok

2024/1/27 20:30 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: respmaleieeee269\_wb\_r20\_v01.dat

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 172.8000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1        -40.00 dB  
Gain in 1         0.00 dB  
Mic 1 Power Supply Off

Gain out 2        0.00 dB  
Gain in 2         0.00 dB  
Mic 2 Power Supply Off

## **Measurement Protocol**

Measurement Object	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:08
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	112.4	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	16.19	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	10.01	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.77	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.33	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.20	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.07	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.89	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.19	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.51	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.94	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.64	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.16	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.19	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.01	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.67	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	27.67	339D WIFI 2.4G 802.11g



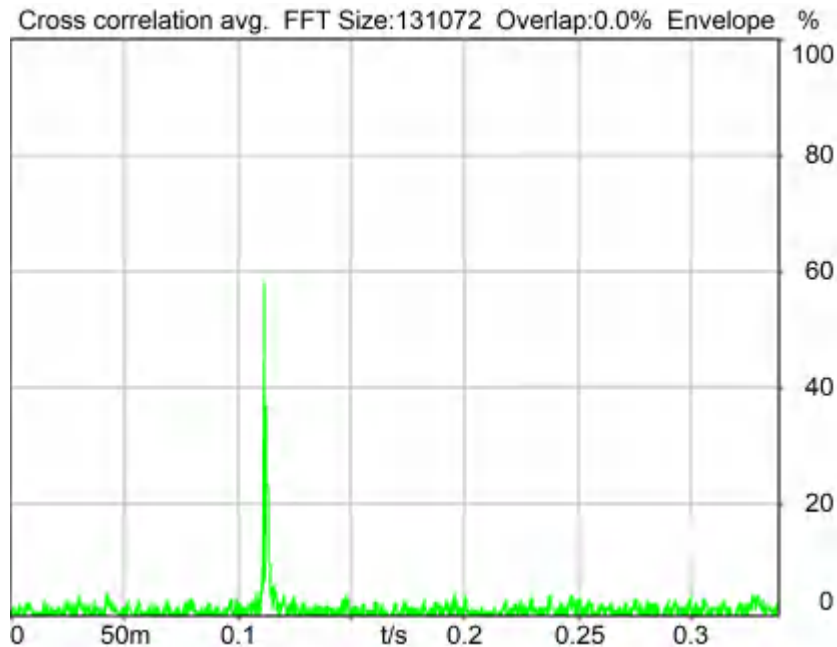
630 Hz NB		0.0 dB		1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.06	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.78	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.61	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.11	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.36	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.47	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.22	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.61	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1547.5 Hz	2.64	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2302.3 Hz	2.60	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3657.5 Hz	2.90	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3657.5 Hz	1.17	339D WIFI 2.4G 802.11g 1Mbps EVS NB 9.6kbps_CH6

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Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	6
5.1b Receive Volume Control Performance 2N NB	8
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	12
5.2 RCV Distortion and Noise - 630 Hz NB	14
5.2 RCV Distortion and Noise - 800 Hz NB	16
5.2 RCV Distortion and Noise - 1000 Hz NB	18
5.2 RCV Distortion and Noise - 1250 Hz NB	20
5.2 RCV Distortion and Noise - 1600 Hz NB	22
5.2 RCV Distortion and Noise - 2000 Hz NB	24
5.2 RCV Distortion and Noise - 2500 Hz NB	26
5.2 RCV Distortion and Noise - 3150 Hz NB	28
Report - Receive Distortion and Noise (Conversational Gain)	30
5.2 RCV Distortion and Noise - 400 Hz NB	31
5.2 RCV Distortion and Noise - 500 Hz NB	33
5.2 RCV Distortion and Noise - 630 Hz NB	35
5.2 RCV Distortion and Noise - 800 Hz NB	37
5.2 RCV Distortion and Noise - 1000 Hz NB	38
5.2 RCV Distortion and Noise - 1250 Hz NB	40
5.2 RCV Distortion and Noise - 1600 Hz NB	42
5.2 RCV Distortion and Noise - 2000 Hz NB	44
5.2 RCV Distortion and Noise - 2500 Hz NB	46
5.2 RCV Distortion and Noise - 3150 Hz NB	48
Report - Receive Distortion and Noise (Conversational Gain)	50
5.3 Frequency Response 8N FF HANB	51
5.3 Frequency Response 8N DF HANB	53
5.3 Frequency Response 2N FF HANB	55
5.3 Frequency Response 2N DF HANB	57

## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 112.4 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal Source ch.2 Store to variable D\_RCV\_NB

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

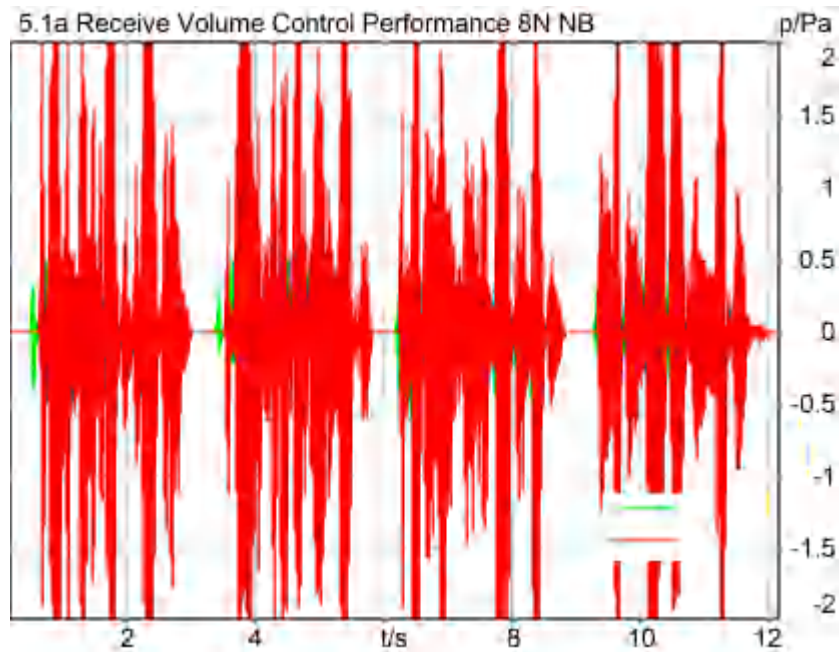
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.1a Receive Volume Control Performance 8N NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 86.19 dB[SPL], Act.: 84.19%

Corrected Speech Level: 16.19 dB[SPL] Not Ok

### Not Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

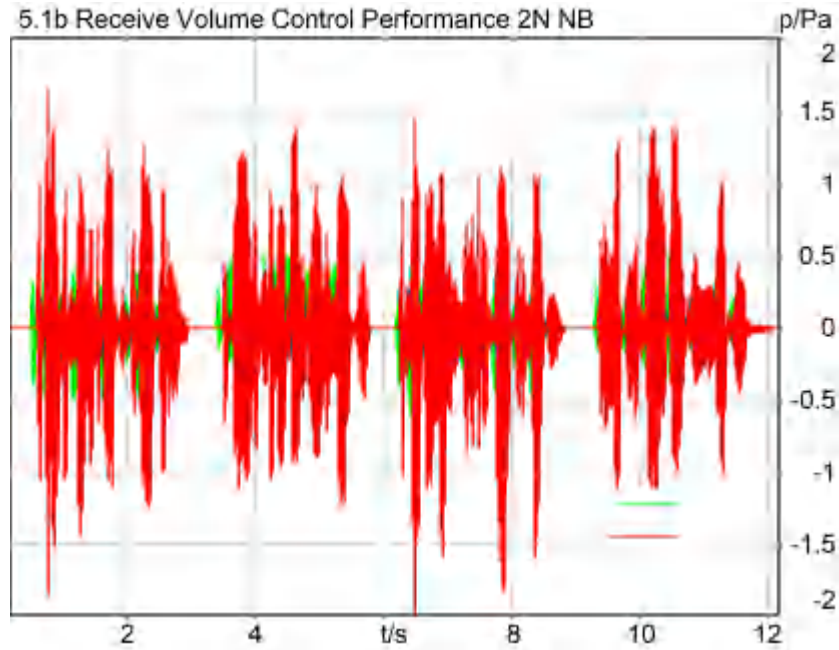
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1b Receive Volume Control Performance 2N NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 80.01 dB[SPL], Act.: 84.13%

Corrected Speech Level: 10.01 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 27.77 dB (4.09%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.33 dB (4.30%) Ok

Ok

2024/1/26 17:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

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Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 630 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.20 dB (3.47%) Ok

Ok

2024/1/26 17:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.2 RCV Distortion and Noise - 800 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.07 dB (7.02%) Ok

**Ok**

2024/1/26 17:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

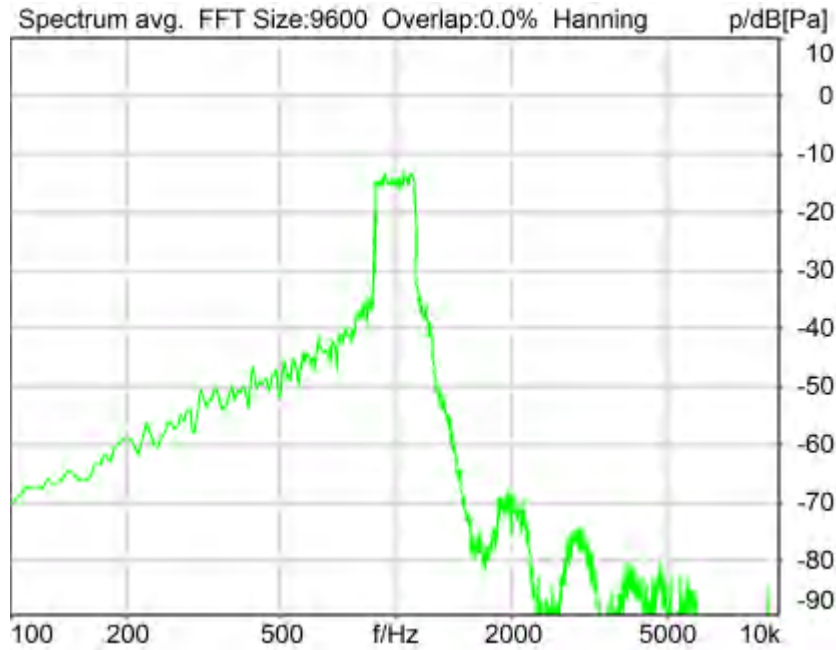
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## 5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 23.89 dB (6.39%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 20.19 dB (9.79%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 1600 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.51 dB (5.30%) Ok

Ok

2024/1/26 17:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

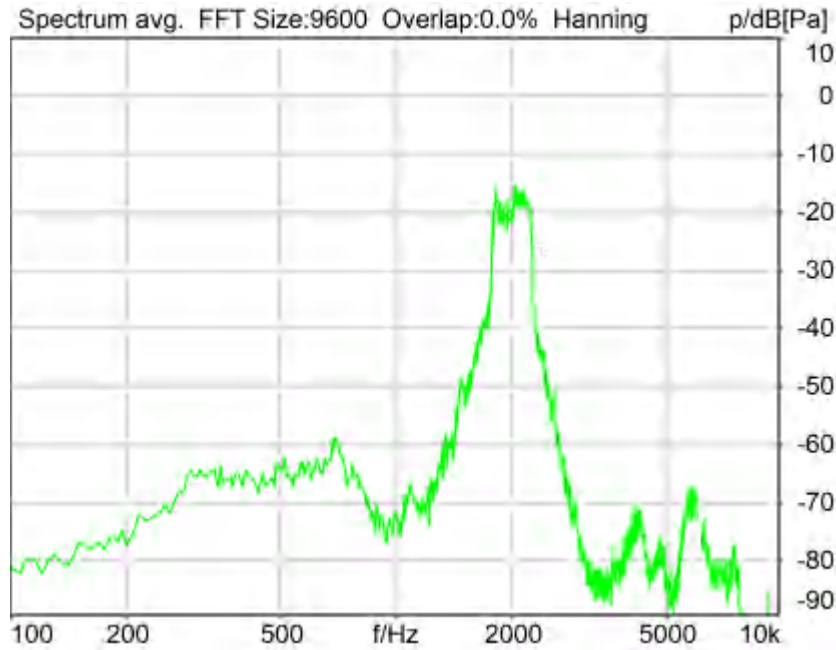
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 22.94 dB (7.13%) Ok

**Ok**

2024/1/26 17:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

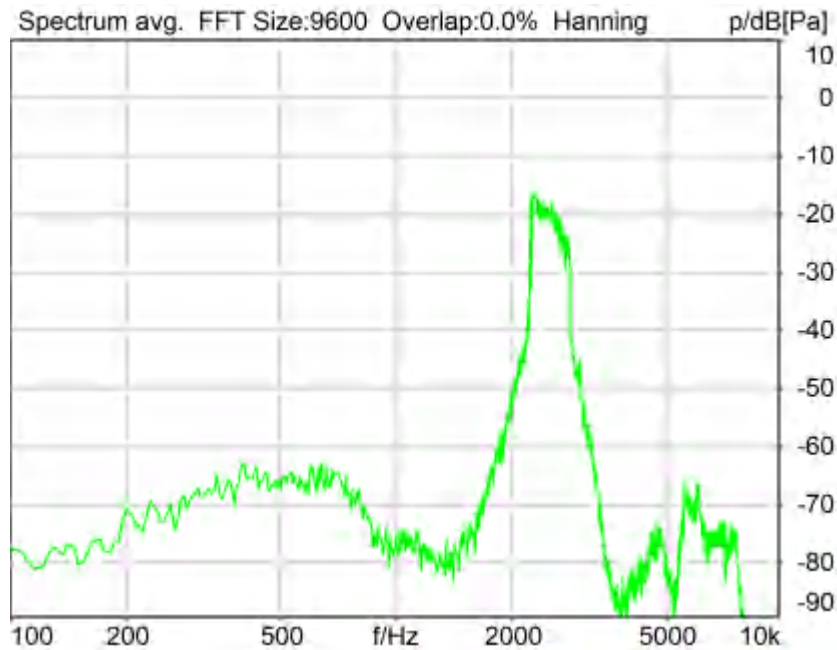
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.2 RCV Distortion and Noise - 2500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 25.64 dB (5.23%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

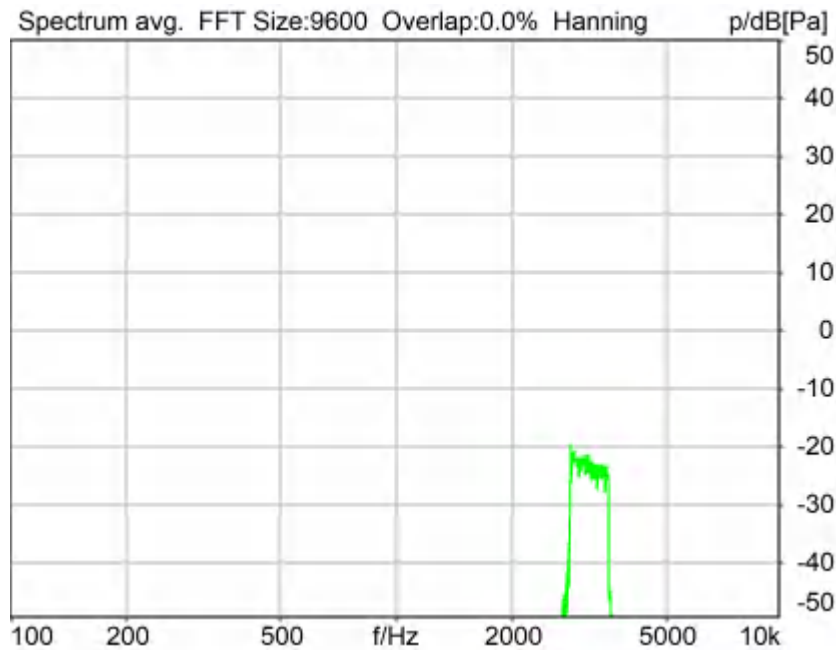
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 3150 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.16 dB (3.91%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
1	400Hz	27.77 dB
2	500Hz	27.33 dB
3	630Hz	29.20 dB
4	800Hz	23.07 dB

5	1000Hz	23.89 dB
6	1250Hz	20.19 dB
7	1600Hz	25.51 dB
8	2000Hz	22.94 dB
9	2500Hz	25.64 dB
10	3150Hz	28.16 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.19dB at 1250Hz.

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## **5.2 RCV Distortion and Noise - 400 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.01 dB (3.98%) Ok

**Ok**

2024/1/26 17:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.67 dB (3.69%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**



Block mode      Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

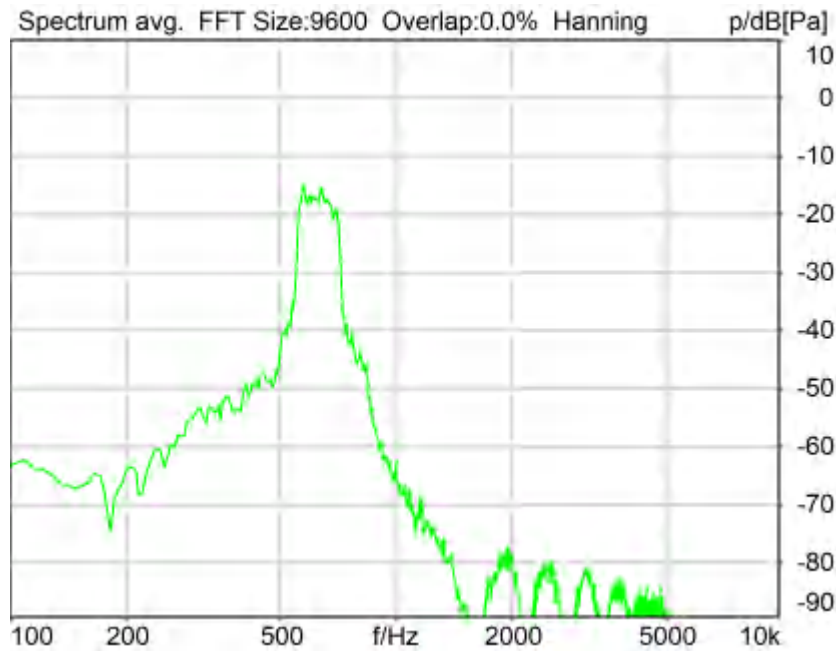
Ser. Nr.            12306613

Pinna Type

Type 3.3

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.67 dB (4.13%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

### Limits

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1      -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	745.0 Hz
Stimulus min.	525.0 Hz	Analysis max.	520.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	750.0 Hz		

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

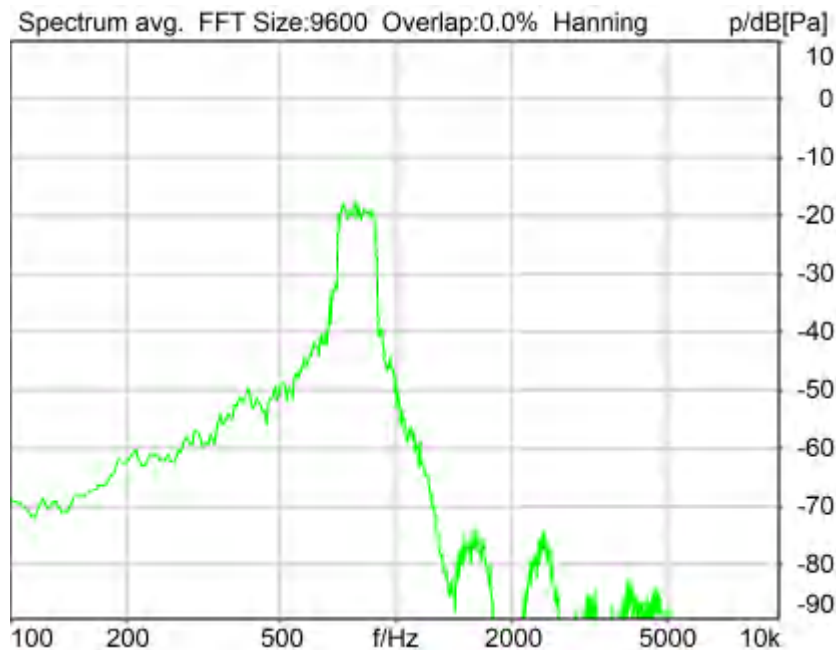
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.06 dB (5.59%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms

Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

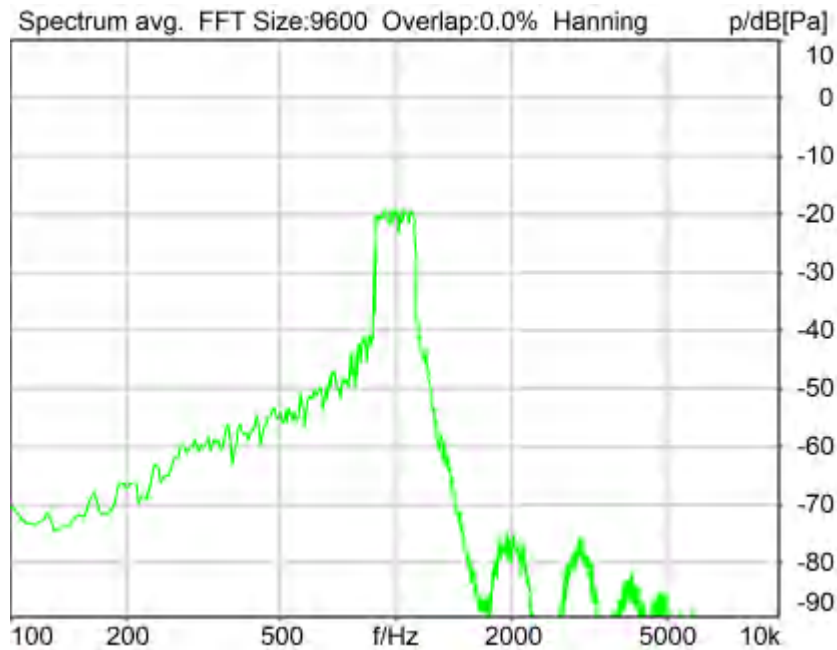
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## 5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.78 dB (5.77%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

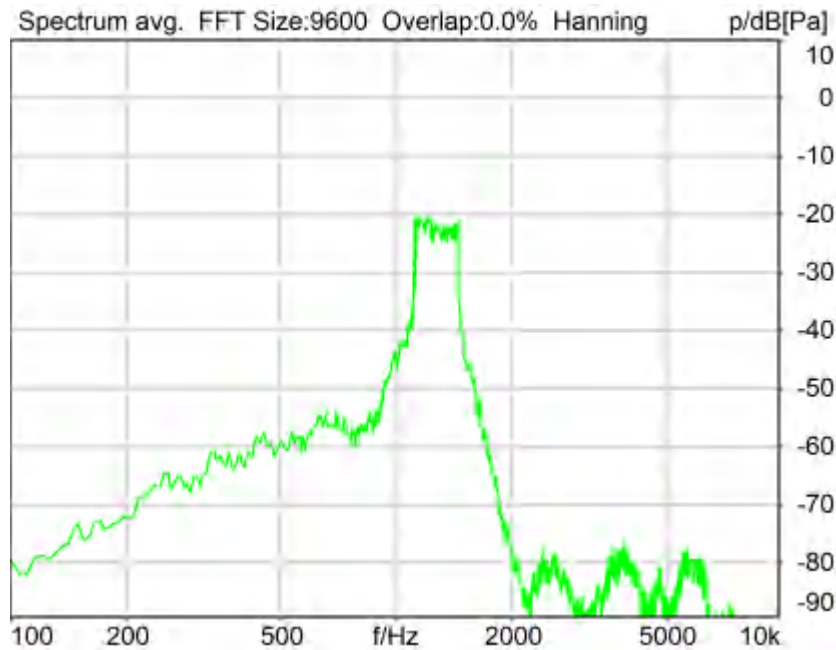
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 1250 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.61 dB (9.32%) Ok

**Ok**

2024/1/26 17:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

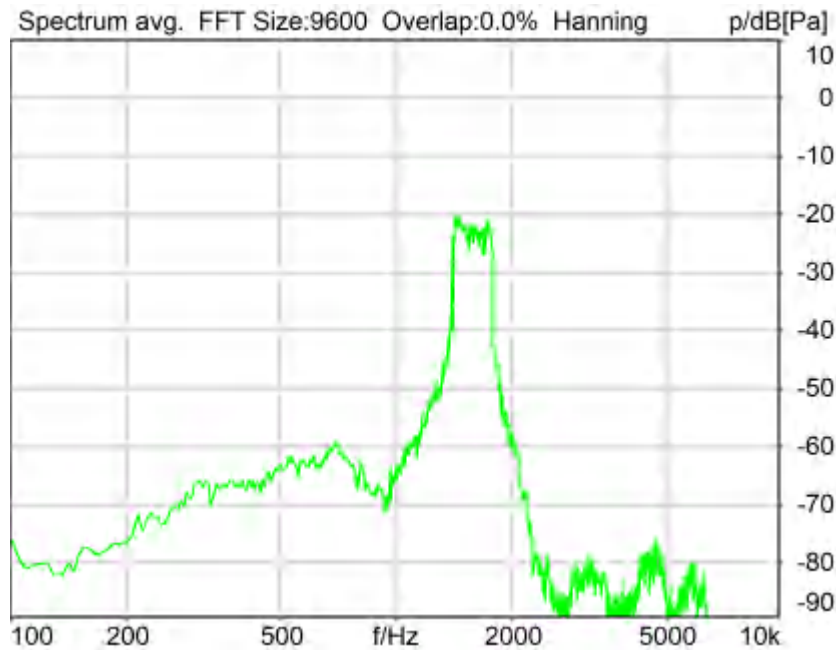
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.2 RCV Distortion and Noise - 1600 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N





Distortion (Noise) RCV (packed): 26.11 dB (4.95%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

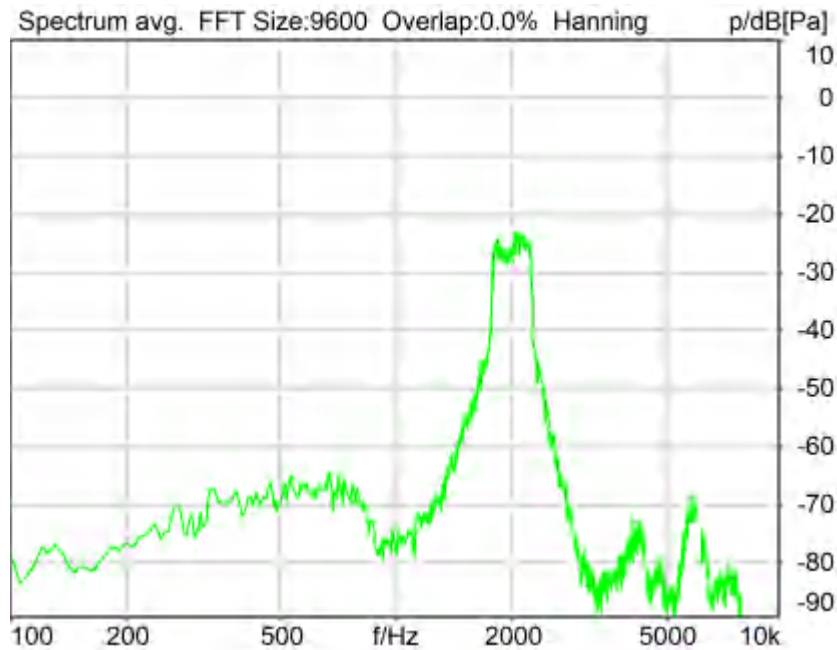
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.2 RCV Distortion and Noise - 2000 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.36 dB (8.55%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

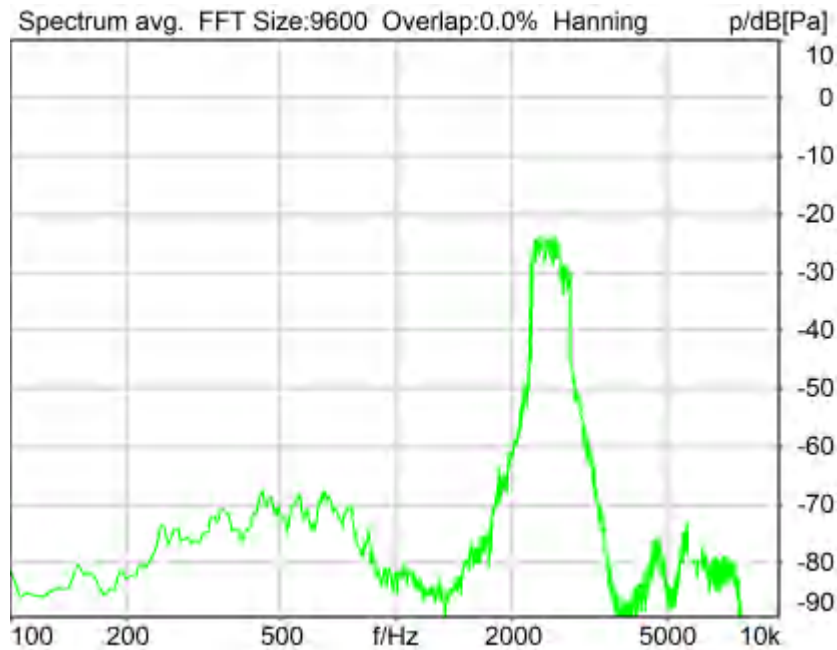
Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**5.2 RCV Distortion and Noise - 2500 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.47 dB (5.33%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

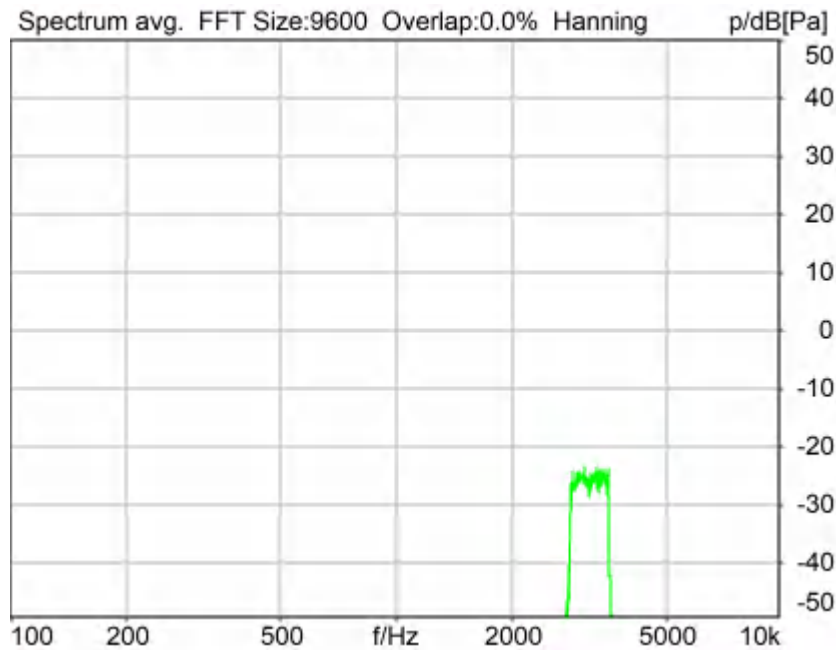
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**5.2 RCV Distortion and Noise - 3150 Hz NB**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.22 dB (3.88%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	400Hz	28.01 dB
2	500Hz	28.67 dB
3	630Hz	27.67 dB
4	800Hz	25.06 dB



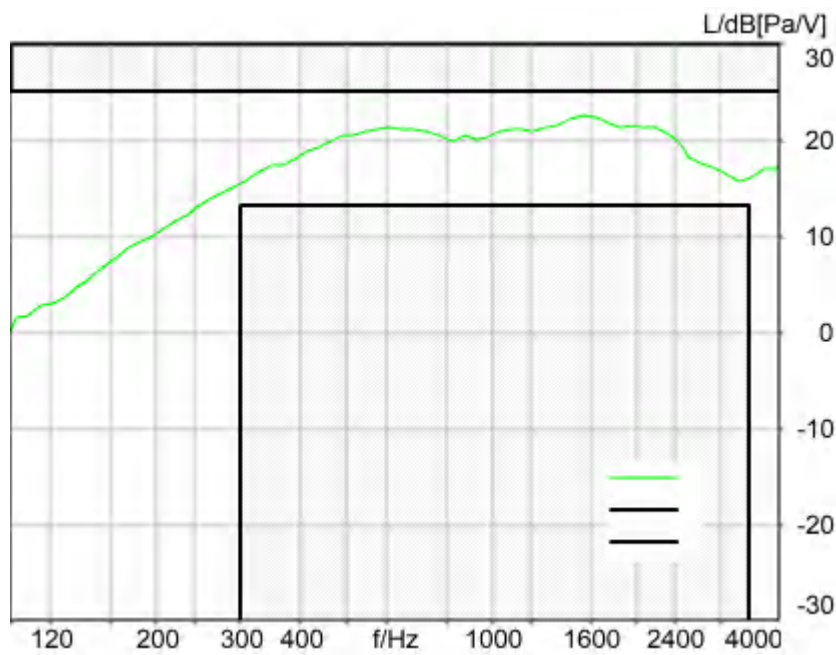
5	1000Hz	24.78 dB
6	1600Hz	26.11 dB
7	2000Hz	21.36 dB
8	2500Hz	25.47 dB
9	3150Hz	28.22 dB
10	1250Hz	20.61 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.61dB at 1250Hz.

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### **5.3 Frequency Response 8N FF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
2.64 dB at 1547.5 Hz Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

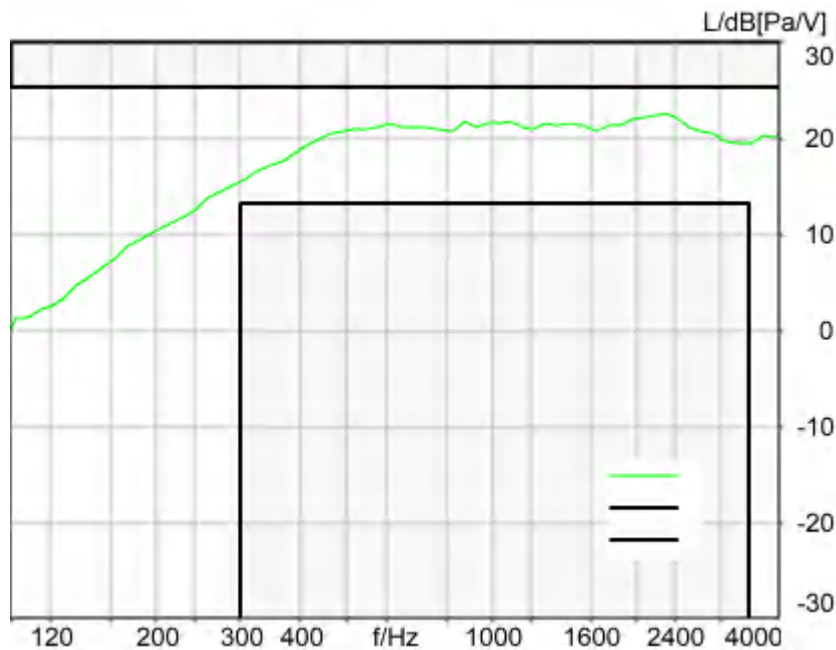
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
BEQ Settings (BEQ Filter 1)			
Block mode	Bypass		
-----			
Artificial Head Settings (HATS 1 (HMS II.3))			
Ser. Nr.	12306613	Pinna Type	Type 3.3

### 5.3 Frequency Response 8N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
2.60 dB at 2302.3 Hz Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
 Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
 Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
 BEQ Settings (BEQ Filter 1)

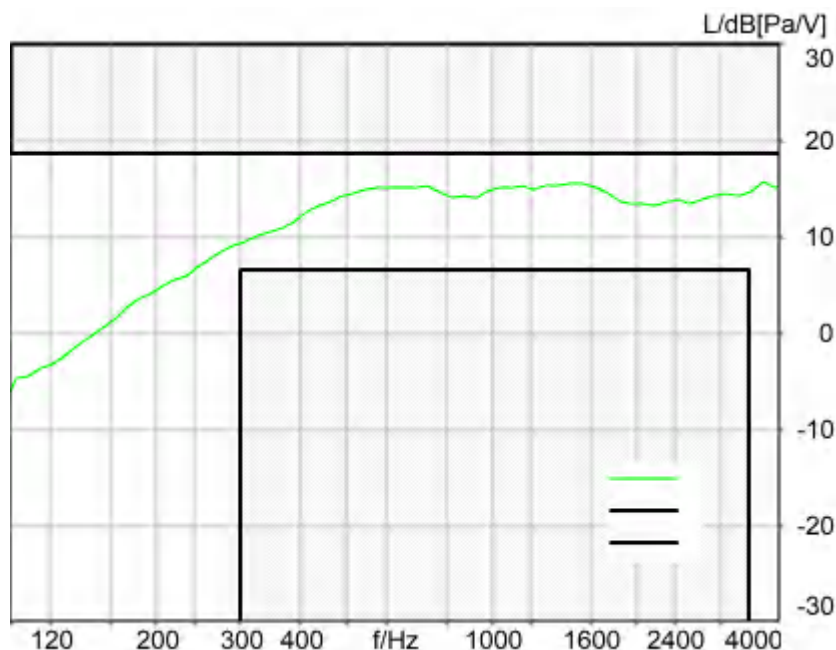
Block mode	Bypass
------------	--------

-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### 5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance

2.90 dB at 3657.5 Hz Ok

## Ok

2024/1/26 17:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: respmaleieee269\_nb\_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 500.00 ms

Range length 11500.00 ms

Use FIR Filter Ch2

FIR filter drp2ff\_ieee1652

DRP/ERP Ch.1: Off

DRP/ERP Ch.2: Off

Frequency base 12th octave

DIN Row Row A

Method FFT

FFT size 4096

Overlap 75 %

Window function. Hanning

Reference file r521\_rcv\_frq\_spee269\_hanb.fft

Tol. scheme file 521\_rcv\_frq\_man\_hanb.tol Min. freq. for tol. 100.0 Hz

Auto adjust Centrate Max. freq. for tol. 4000.0 Hz

### Special Features

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

---

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In

In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out

In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----

BEQ Settings (BEQ Filter 1)

Block mode      Bypass

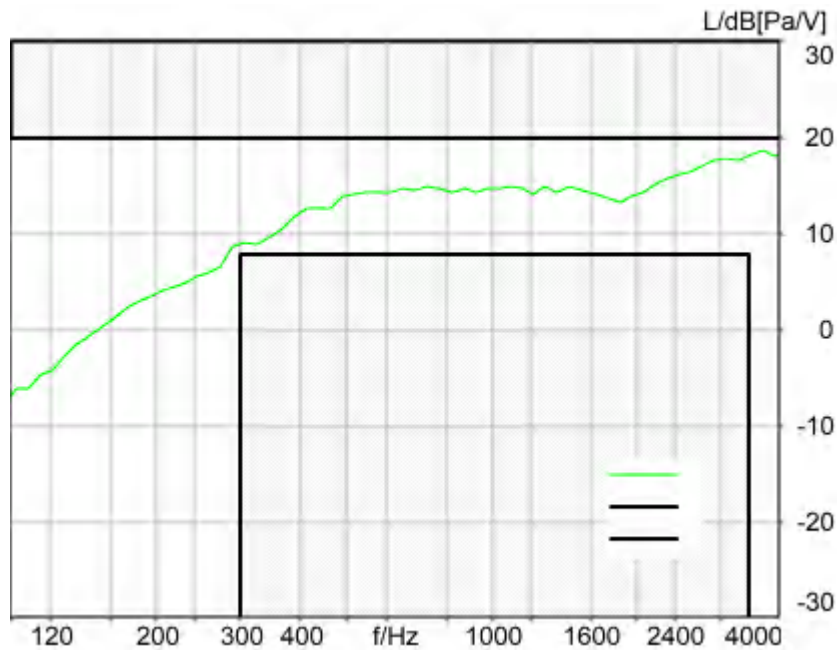
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Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

## **5.3 Frequency Response 2N DF HANB**

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
1.17 dB at 3657.5 Hz Ok

**Ok**

2024/1/26 17:40 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +  
Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**



Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 112.4000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **Measurement Protocol**

Measurement Object	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:09
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	130.1	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	16.04	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	10.09	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.53	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.03	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.03	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.37	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.32	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.88	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.84	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.52	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.18	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.07	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.45	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.71	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.64	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	20.75	339D WIFI 2.4G 802.11g

5000 Hz WB		0.0 dB		1Mbps EVS WB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.52	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.83	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.47	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.54	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.63	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.47	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.53	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.59	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.00	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.79	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.31	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.44	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.95	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.94	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.31	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.52	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 5143.7 Hz	2.75	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	1.97	339D WIFI 2.4G 802.11g

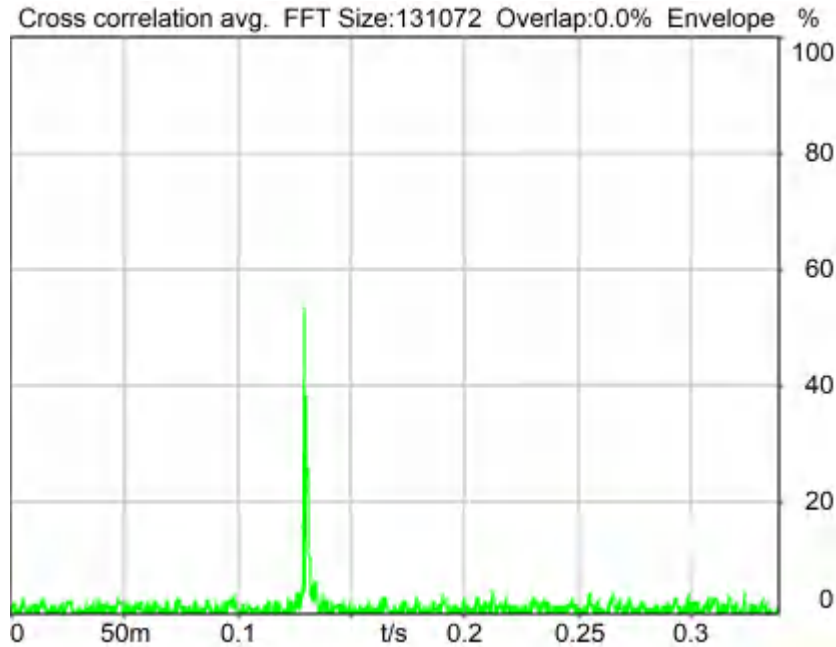
DF		scheme [dB], 4870.0 Hz		1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4620.1 Hz	1.54	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 5767.3 Hz	0.06	339D WIFI 2.4G 802.11g 1Mbps EVS WB 9.6kbps_CH6

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Overall Receive Delay WB	6
5.1a Receive Volume Control Performance 8N WB	7
5.1b Receive Volume Control Performance 2N WB	9
5.2 RCV Distortion and Noise - 250 Hz WB	11
5.2 RCV Distortion and Noise - 315 Hz WB	13
5.2 RCV Distortion and Noise - 400 Hz WB	15
5.2 RCV Distortion and Noise - 500 Hz WB	17
5.2 RCV Distortion and Noise - 630 Hz WB	19
5.2 RCV Distortion and Noise - 800 Hz WB	21
5.2 RCV Distortion and Noise - 1000 Hz WB	23
5.2 RCV Distortion and Noise - 1250 Hz WB	25
5.2 RCV Distortion and Noise - 1600 Hz WB	27
5.2 RCV Distortion and Noise - 2000 Hz WB	29
5.2 RCV Distortion and Noise - 2500 Hz WB	31
5.2 RCV Distortion and Noise - 3150 Hz WB	33
5.2 RCV Distortion and Noise - 4000 Hz WB	35
5.2 RCV Distortion and Noise - 5000 Hz WB	37
Report - Receive Distortion and Noise (Conversational Gain)	39
5.2 RCV Distortion and Noise - 250 Hz WB	40
5.2 RCV Distortion and Noise - 315 Hz WB	42
5.2 RCV Distortion and Noise - 400 Hz WB	44
5.2 RCV Distortion and Noise - 500 Hz WB	46
5.2 RCV Distortion and Noise - 630 Hz WB	48
5.2 RCV Distortion and Noise - 800 Hz WB	50
5.2 RCV Distortion and Noise - 1000 Hz WB	52
5.2 RCV Distortion and Noise - 1250 Hz WB	54
5.2 RCV Distortion and Noise - 1600 Hz WB	56
5.2 RCV Distortion and Noise - 2000 Hz WB	58
5.2 RCV Distortion and Noise - 2500 Hz WB	60
5.2 RCV Distortion and Noise - 3150 Hz WB	62
5.2 RCV Distortion and Noise - 4000 Hz WB	64
5.2 RCV Distortion and Noise - 5000 Hz WB	66
Report - Receive Distortion and Noise (Conversational Gain)	68
5.3 Frequency Response 8N FF	69
5.3 Frequency Response 8N DF	71
5.3 Frequency Response 2N FF	73
5.3 Frequency Response 2N DF	75

## Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 130.1 ms

2024/1/26 17:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: csswb1b\_r1s.dat

WIDEBAND Composite Source Signal RCV P.501 (1 bursts) at Channel 2

Pause 0.5 s +

voiced signal + 8000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 8000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_WB
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**Hardware Config Settings**

Used Setting	HEAD 2G3G labCORE NetSim
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**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode	Bypass
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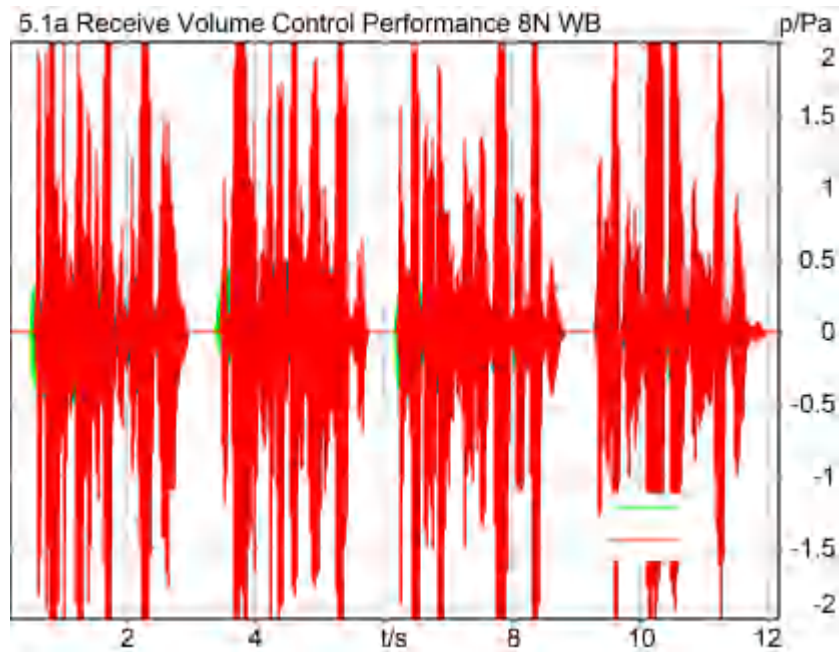
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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## **5.1a Receive Volume Control Performance 8N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband





### Correction

X - 70

Speech Level RCV: 86.04 dB[SPL], Act.: 83.99%

Corrected Speech Level: 16.04 dB[SPL] Not Ok

### Not Ok

2024/1/27 20:41 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

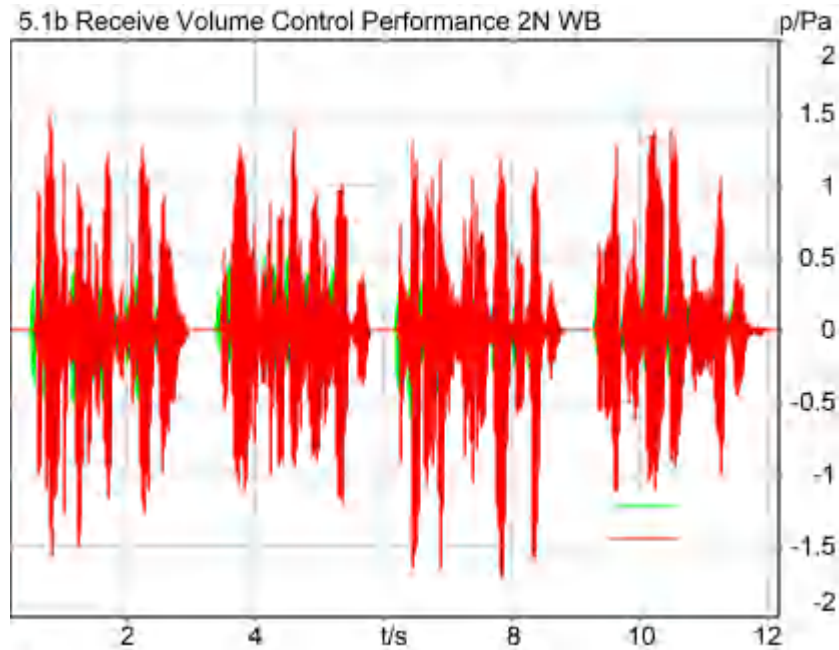
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.1b Receive Volume Control Performance 2N WB**

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 80.09 dB[SPL], Act.: 84.04%

Corrected Speech Level: 10.09 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.53 dB (3.34%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

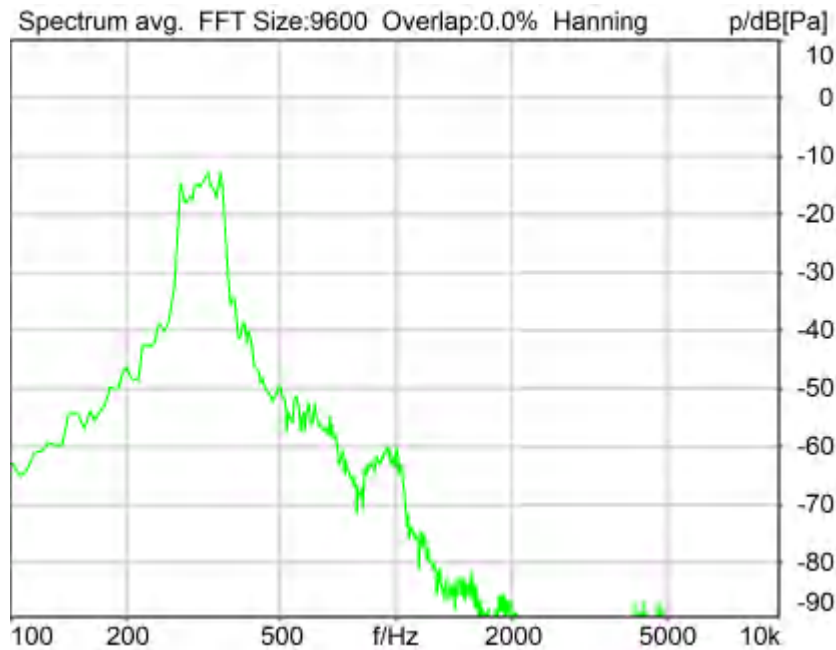
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 315 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 31.03 dB (2.81%) Ok

**Ok**

2024/1/26 19:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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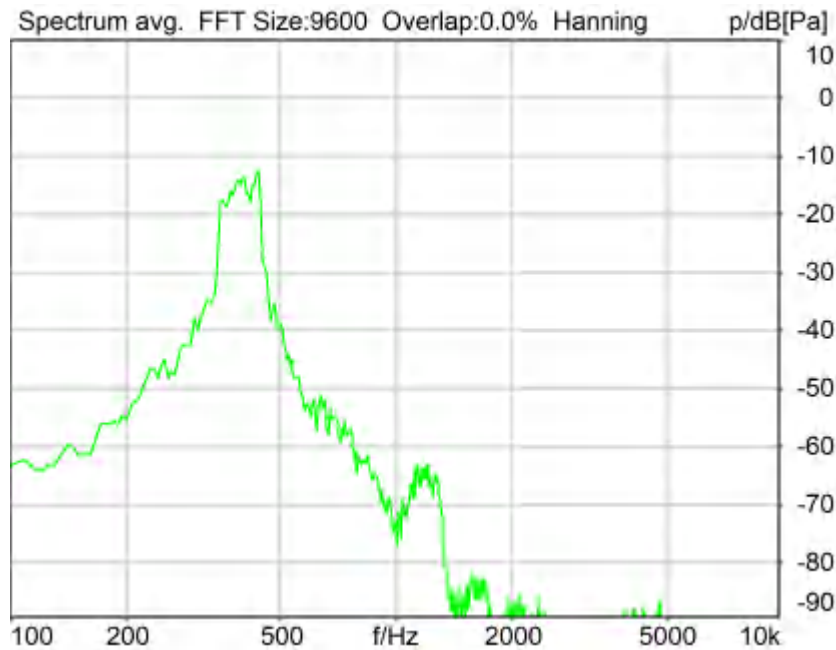
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 400 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 29.03 dB (3.54%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.37 dB (3.82%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 630 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.32 dB (6.08%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 800 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.88 dB (6.40%) Ok

Ok

2024/1/26 19:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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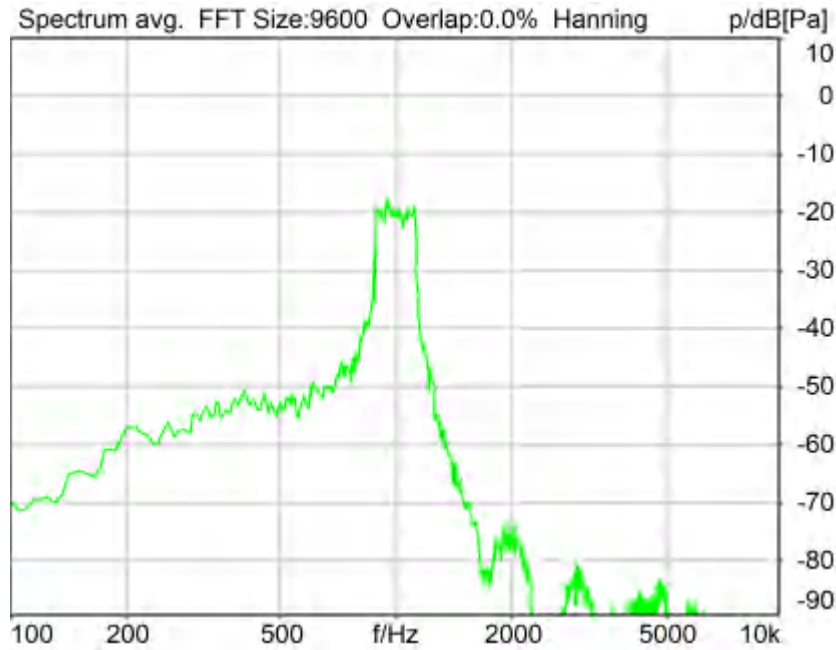
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 23.84 dB (6.43%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

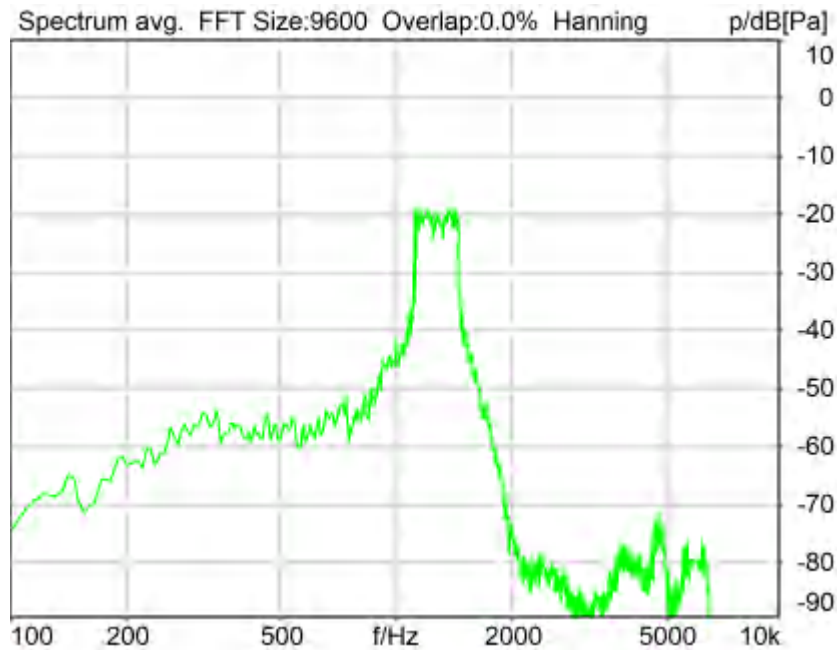
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 20.52 dB (9.42%) Ok

**Ok**

2024/1/26 19:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

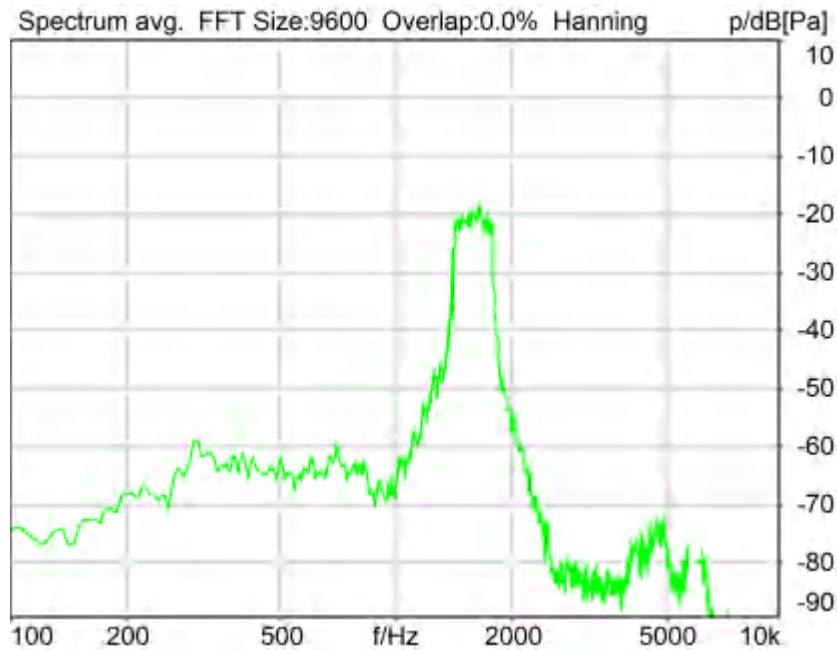
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.18 dB (5.51%) Ok

**Ok**

2024/1/26 19:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

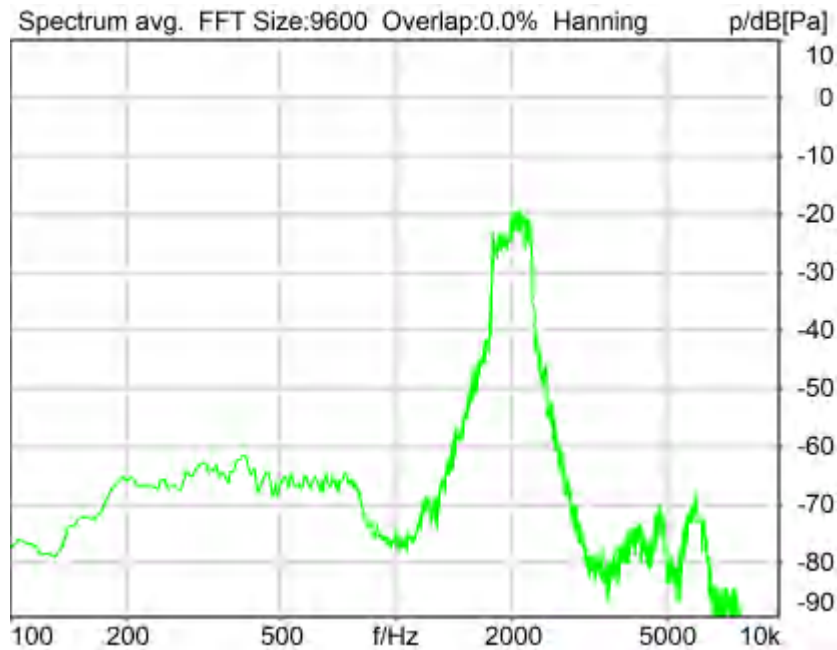
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 22.07 dB (7.88%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

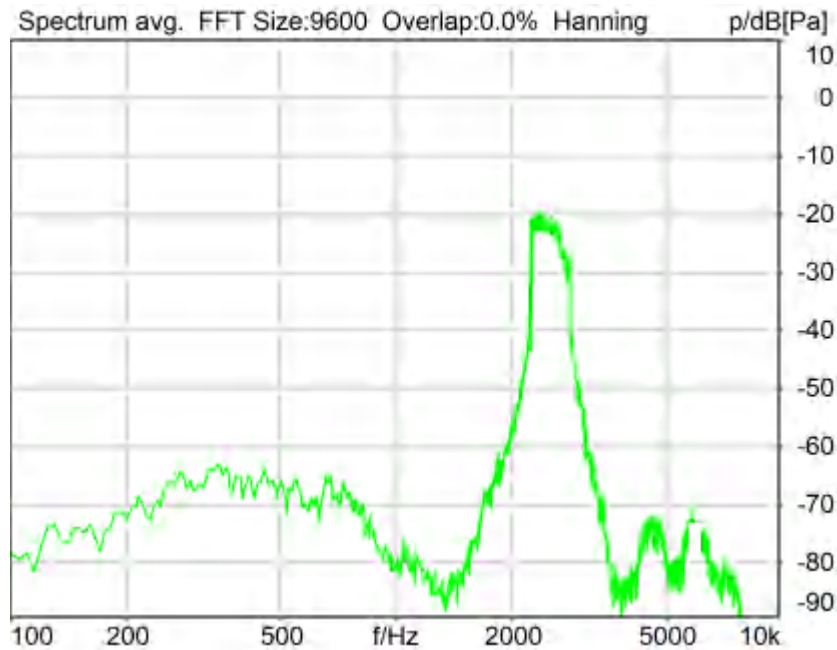
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N





Distortion (Noise) RCV (packed): 25.45 dB (5.34%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

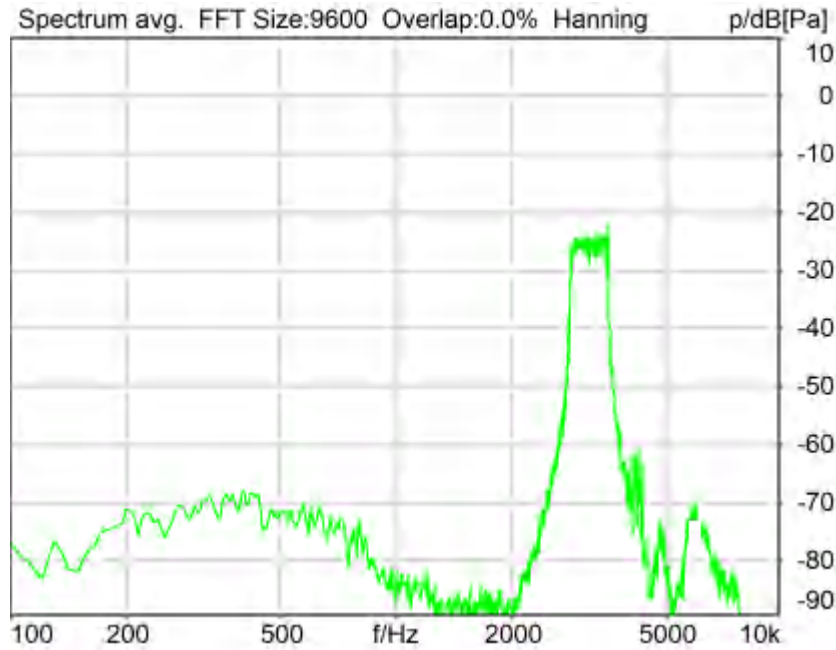
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 3150 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.71 dB (4.62%) Ok

**Ok**

2024/1/26 19:15 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

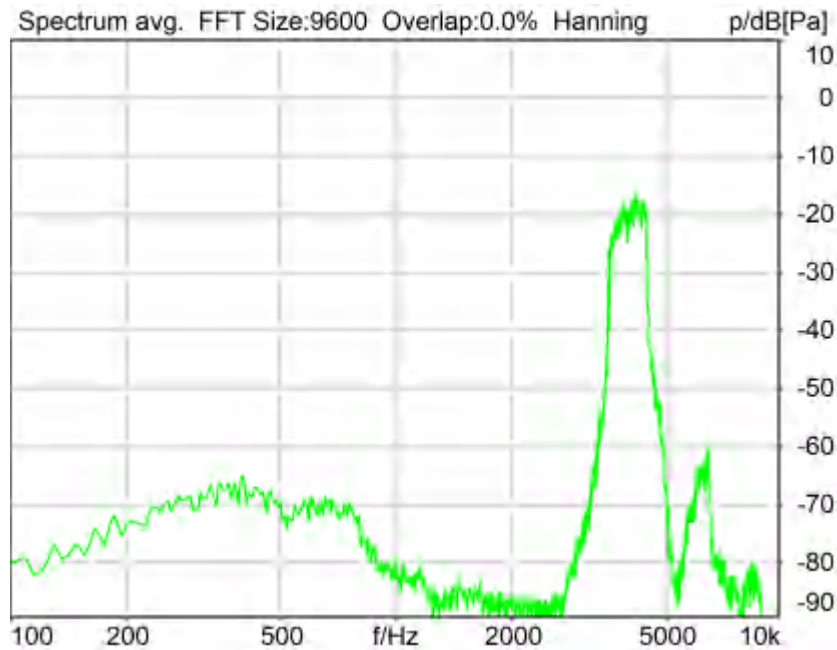
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.64 dB (3.30%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %

---

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_4000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

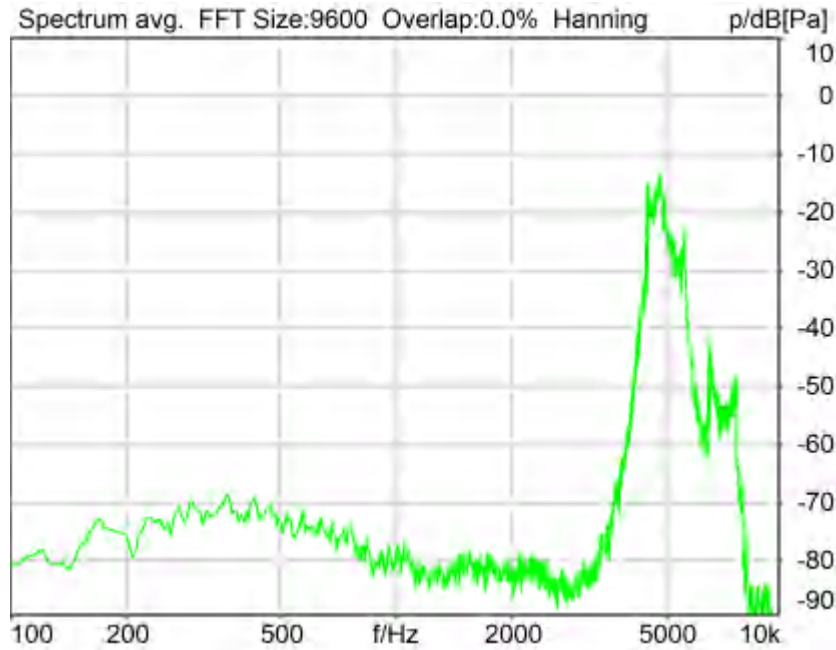
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 20.75 dB (9.18%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %

Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



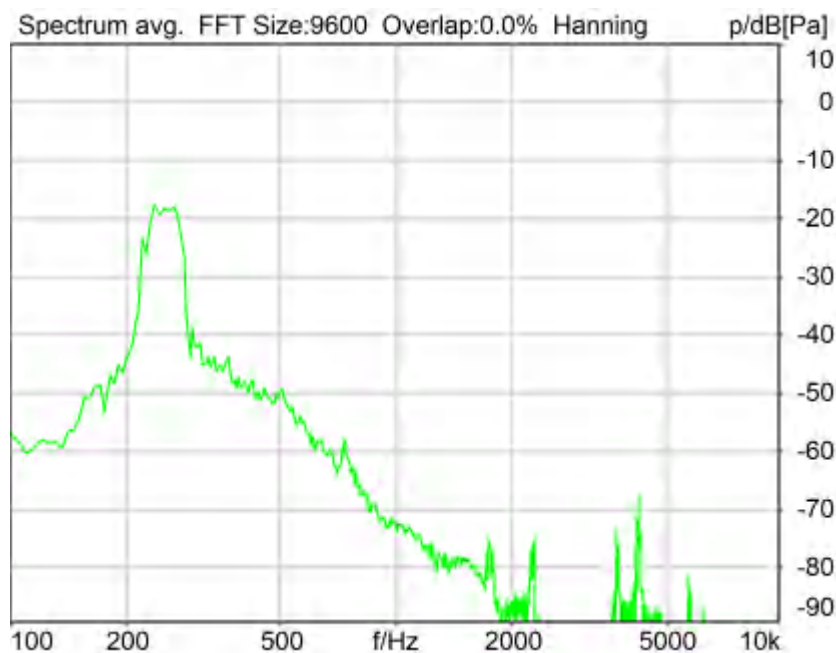
Region	Frequency	SDNR
1	250Hz	29.53 dB
2	315Hz	31.03 dB
3	400Hz	29.03 dB
4	500Hz	28.37 dB
5	630Hz	24.32 dB
6	800Hz	23.88 dB
7	1000Hz	23.84 dB
8	1600Hz	25.18 dB
9	2000Hz	22.07 dB
10	2500Hz	25.45 dB
11	3150Hz	26.71 dB
12	4000Hz	29.64 dB
13	1250Hz	20.52 dB
14	5000Hz	20.75 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.52dB at 1250Hz.

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## 5.2 RCV Distortion and Noise - 250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.83 dB (4.55%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

```

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right
    
```

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 31.47 dB (2.67%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

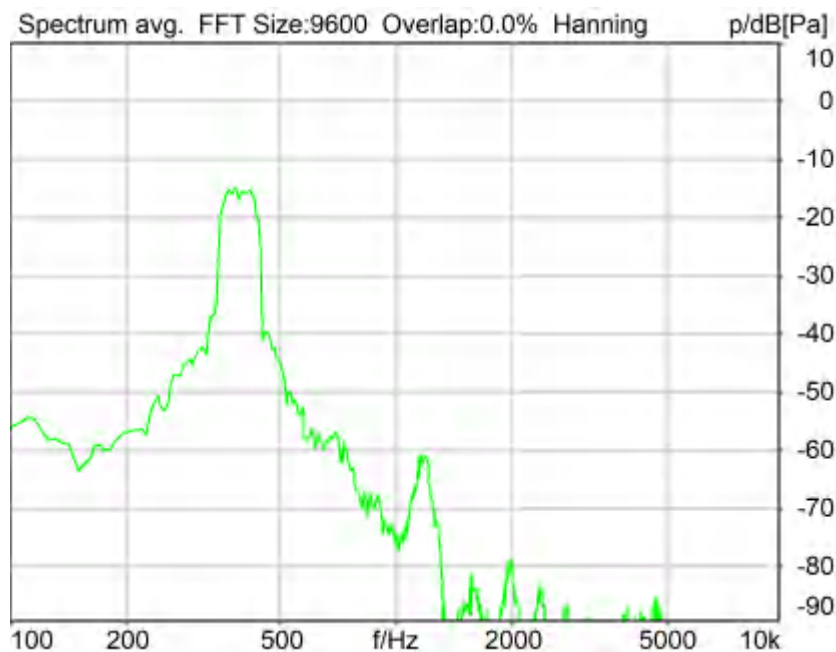
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 32.54 dB (2.36%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.47 dB (4.23%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage200V              Supply Voltage      ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

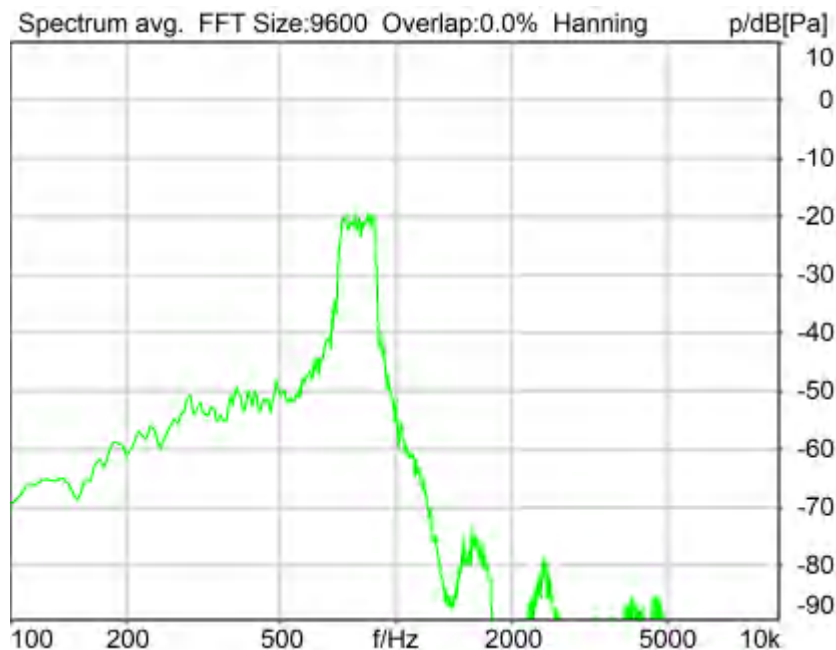
Ser. Nr.              12306613                      Pinna Type              Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.53 dB (5.29%) Ok

**Ok**

2024/1/26 19:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

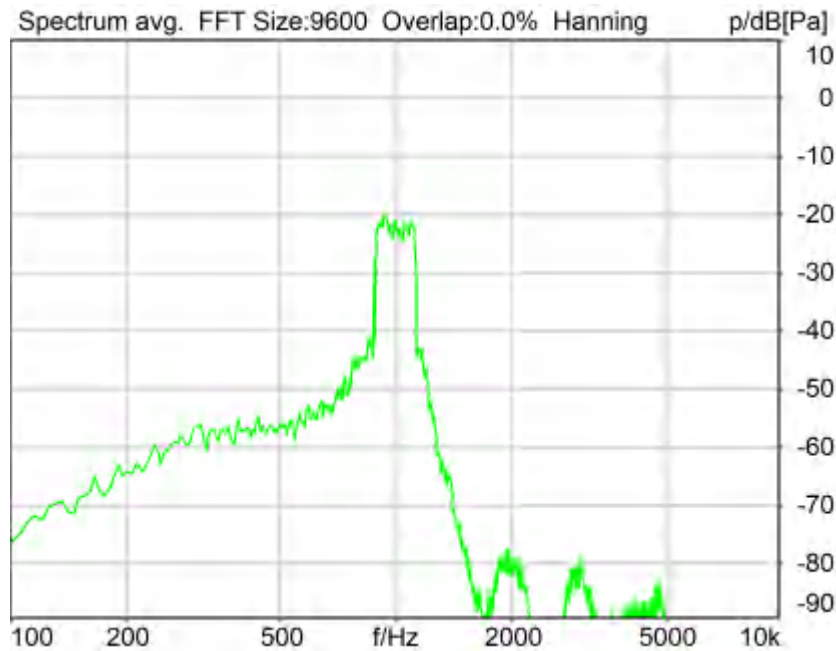
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.59 dB (5.89%) Ok

**Ok**

2024/1/26 19:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

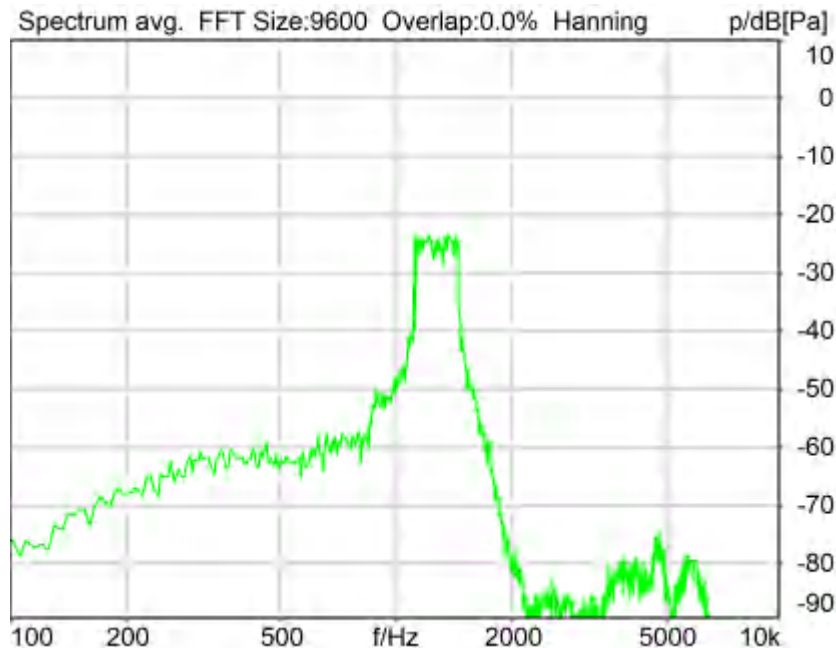
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 1250 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.00 dB (10.01%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.79 dB (5.13%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_1600hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

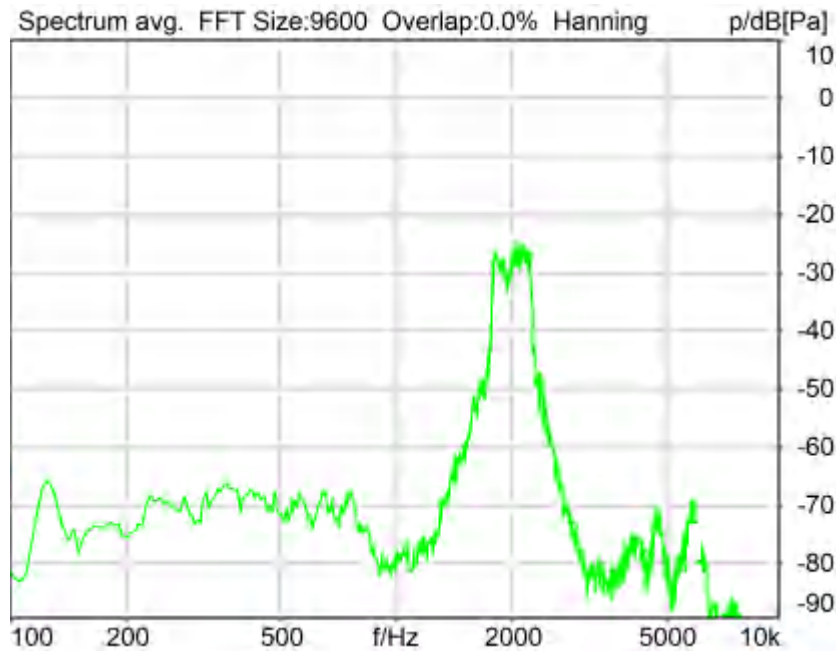
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 21.31 dB (8.60%) Ok

**Ok**

2024/1/26 19:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V              Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

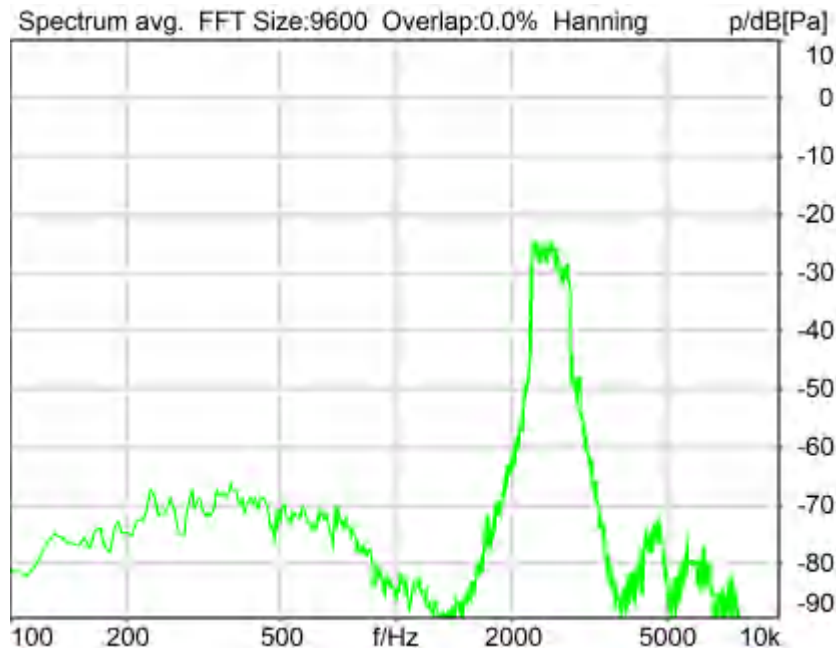
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 2500 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.44 dB (6.00%) Ok

**Ok**

2024/1/26 19:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage      ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage      ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage      ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage      ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

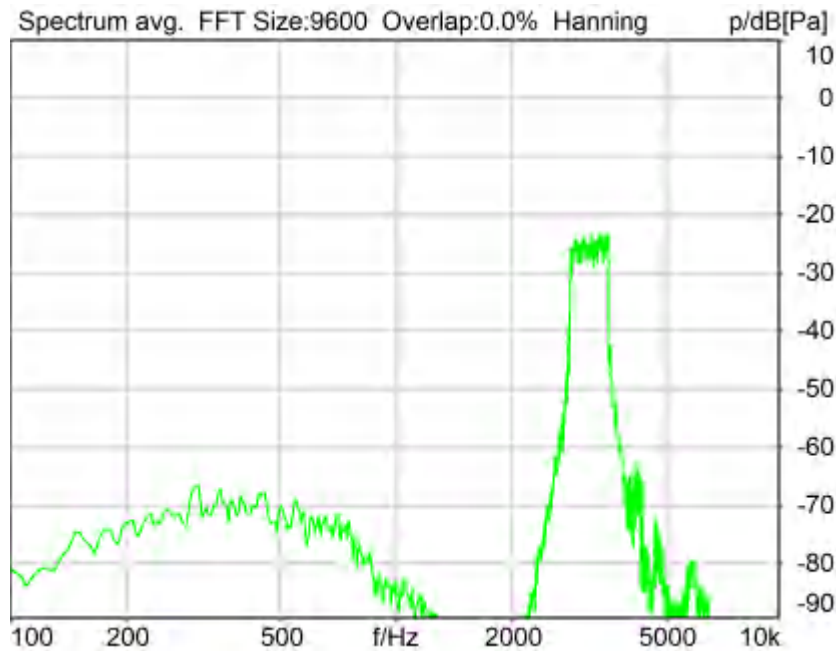
Ser. Nr.              12306613                      Pinna Type              Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 3150 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.95 dB (4.00%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

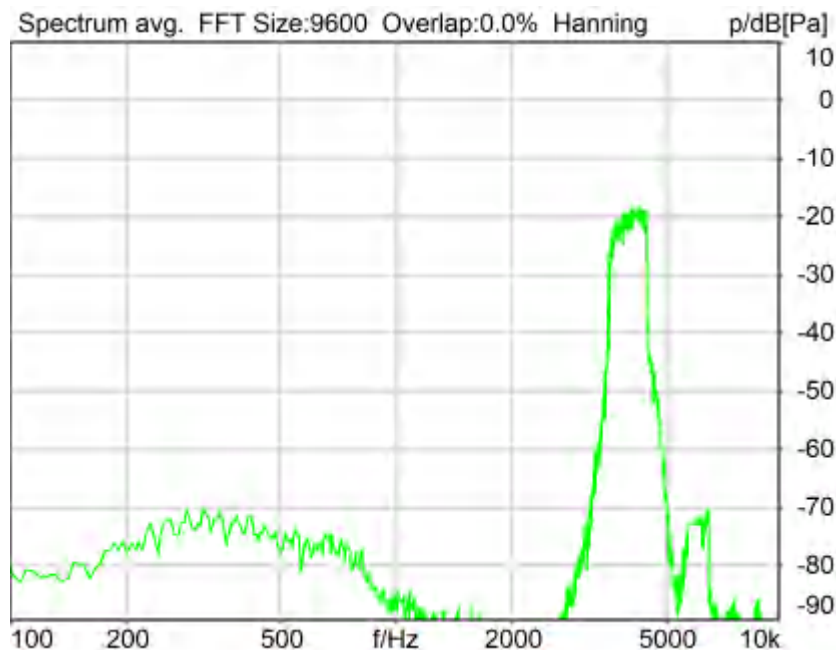
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 4000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.94 dB (3.57%) Ok

**Ok**

2024/1/26 19:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 2 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              20Hz  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 3 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

Channel In 4 Settings

Range              114 dB[SPL] @ 12.5 mV/Pa    Highpass              Off  
Polarisation Voltage 200V                      Supply Voltage       ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode        Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

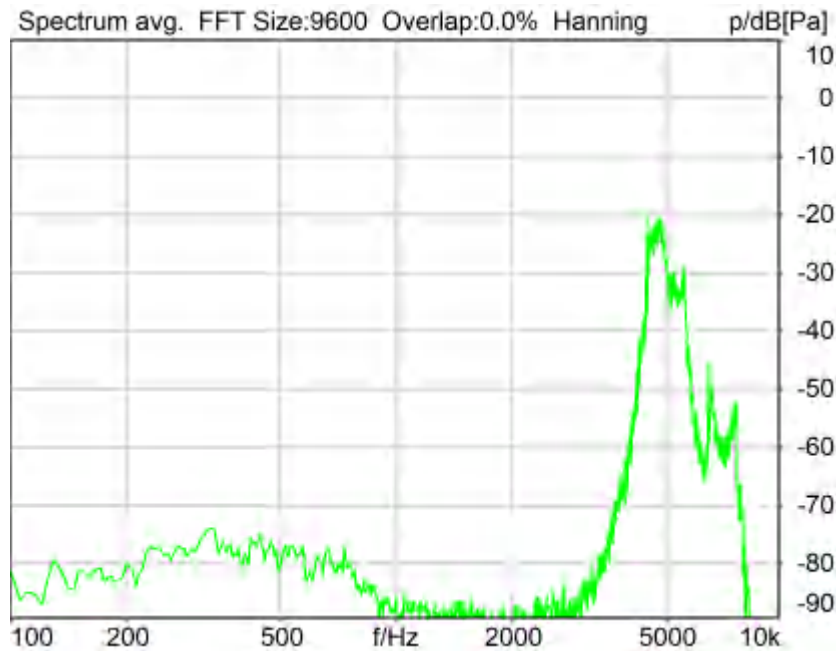
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

**5.2 RCV Distortion and Noise - 5000 Hz WB**

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 20.31 dB (9.65%) Ok

**Ok**

2024/1/26 19:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

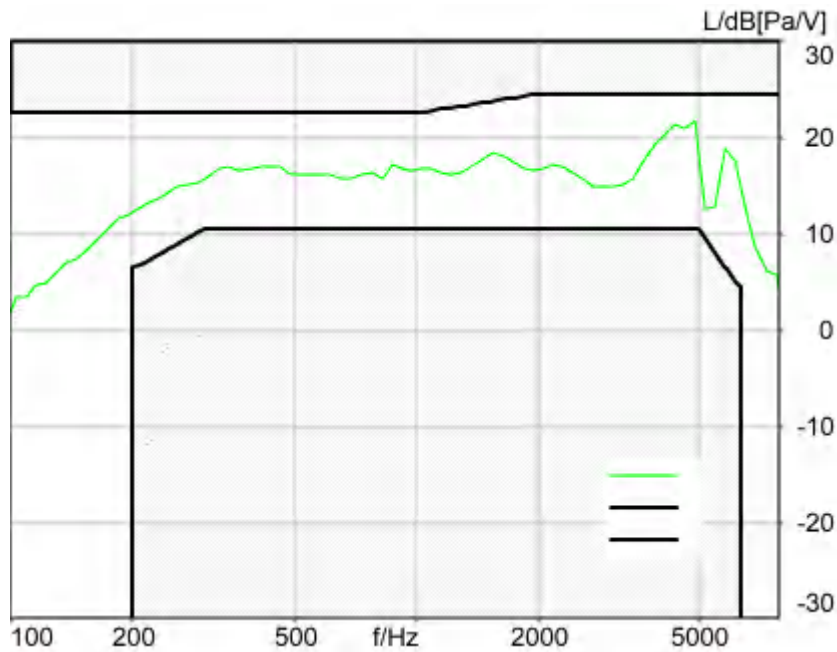
Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On



2024/1/26 19:27 ACQUA

### 5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
2.75 dB at 5143.7 Hz Ok

**Ok**

2024/1/26 19:17 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**  
Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

### Special Features

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage 200V Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

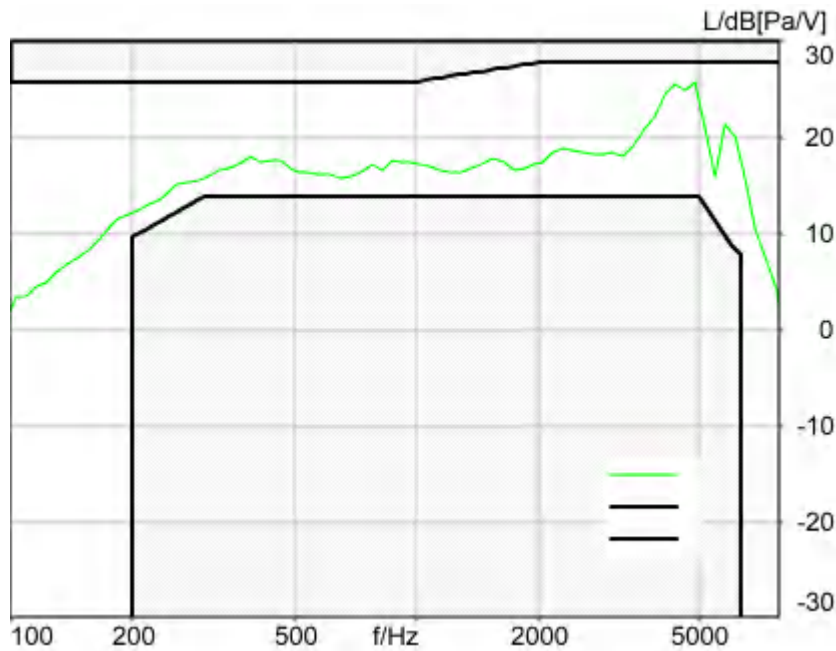
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name 60020095 Serial 60020095  
HIB Mode Mobile Measurement Impedance 32 Ohm  
Gain out 1 -40.00 dB Gain out 2 0.00 dB  
Gain in 1 0.00 dB Gain in 2 0.00 dB  
Mic 1 Power Supply Off Mic 2 Power Supply Off

### 5.3 Frequency Response 8N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
1.97 dB at 4870.0 Hz Ok

Ok

2024/1/26 19:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
--	-------



Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the end of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 2 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      20Hz  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 3 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

Channel In 4 Settings

Range                      114 dB[SPL] @ 12.5 mV/Pa    Highpass                      Off  
Polarisation Voltage 200V                      Supply Voltage                      ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode                      Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

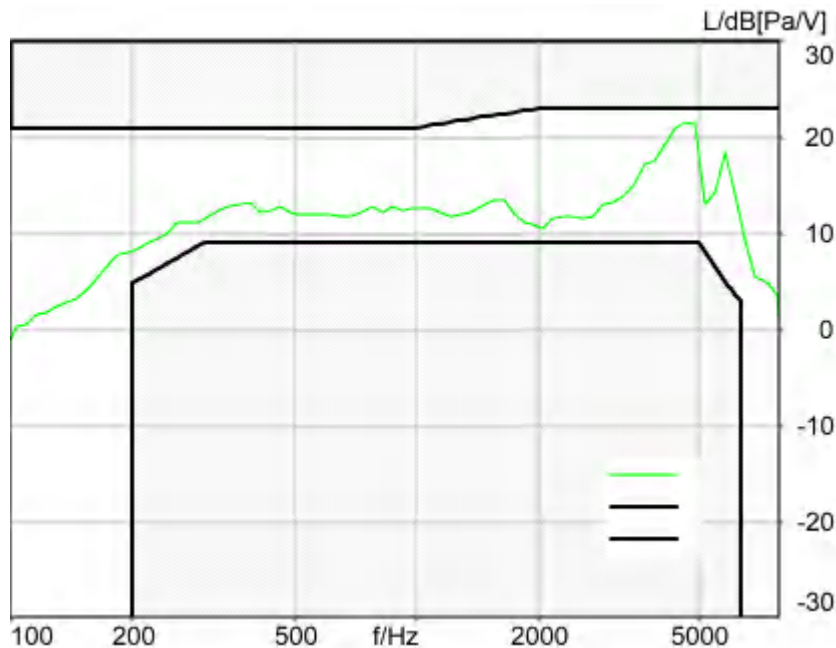
Ser. Nr.                      12306613                      Pinna Type                      Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.3 Frequency Response 2N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
1.54 dB at 4620.1 Hz Ok

**Ok**

2024/1/26 19:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieee269\_wb\_r20\_v01.dat**

Level adj. Ch1      -90.0 dB

WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

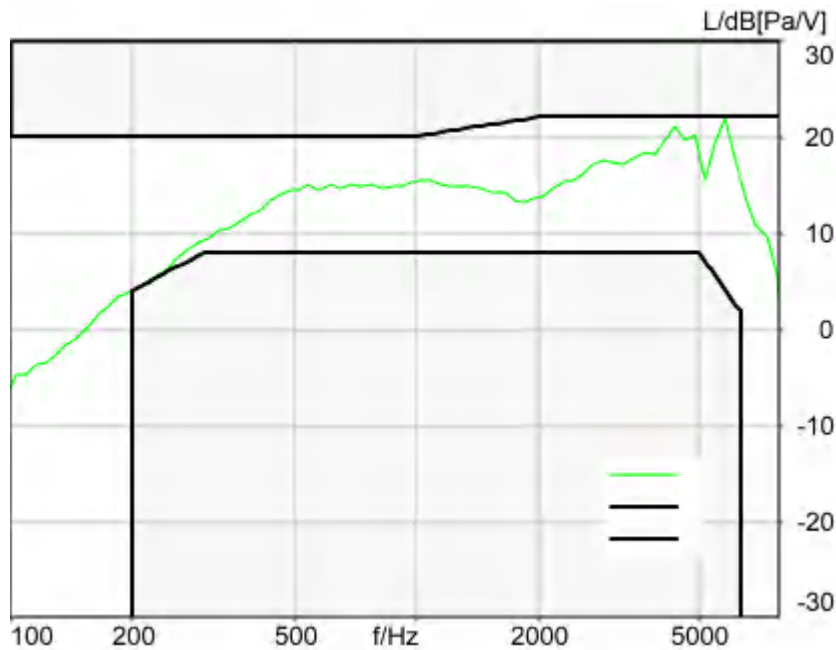
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.06 dB at 5767.3 Hz Ok

**Ok**

2024/1/26 17:33 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 130.1000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
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