

## **Measurement Protocol**

Measurement Object	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
Description	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/7 8:48
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	192.3	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.36	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.22	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.56	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.35	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.22	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.42	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.90	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.67	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.86	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.23	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.39	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.89	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1000Hz)	25.90	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.69	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.29	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	29.37	WIFI 2.4G_802.11b

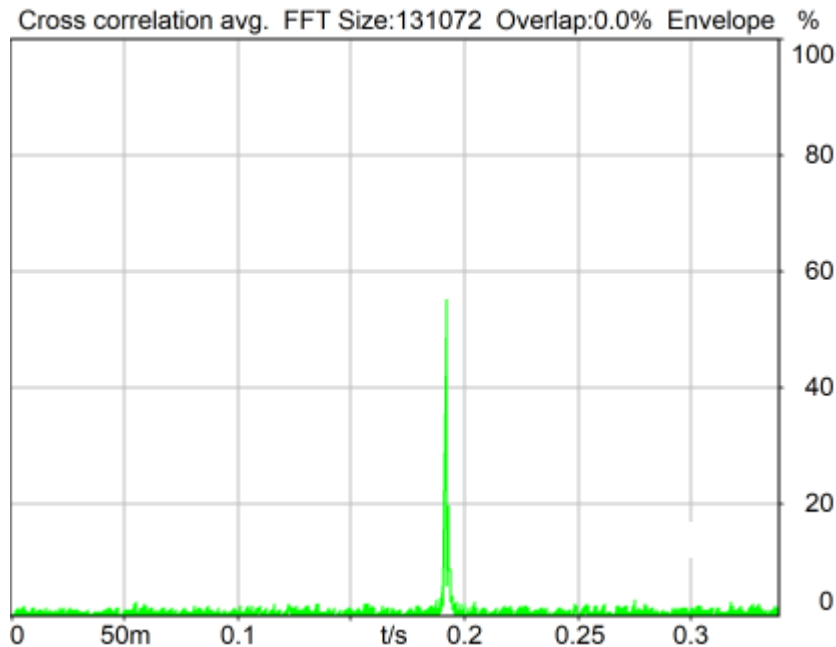
630 Hz NB		0.0 dB		1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.86	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.05	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.82	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.44	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.99	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.83	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.04	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	27.82	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	1.31	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	0.31	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	0.31	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_CH6
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.71	WIFI 2.4G_802.11b 1Mps_AMR NB 12.2kbps_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	9
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	17
5.2 RCV Distortion and Noise - 1000 Hz NB	19
5.2 RCV Distortion and Noise - 1250 Hz NB	21
5.2 RCV Distortion and Noise - 1600 Hz NB	23
5.2 RCV Distortion and Noise - 2000 Hz NB	26
5.2 RCV Distortion and Noise - 2500 Hz NB	28
5.2 RCV Distortion and Noise - 3150 Hz NB	30
Report - Receive Distortion and Noise (Conversational Gain)	32
5.2 RCV Distortion and Noise - 400 Hz NB	32
5.2 RCV Distortion and Noise - 500 Hz NB	35
5.2 RCV Distortion and Noise - 630 Hz NB	37
5.2 RCV Distortion and Noise - 800 Hz NB	39
5.2 RCV Distortion and Noise - 1000 Hz NB	41
5.2 RCV Distortion and Noise - 1250 Hz NB	43
5.2 RCV Distortion and Noise - 1600 Hz NB	45
5.2 RCV Distortion and Noise - 2000 Hz NB	48
5.2 RCV Distortion and Noise - 2500 Hz NB	50
5.2 RCV Distortion and Noise - 3150 Hz NB	52
Report - Receive Distortion and Noise (Conversational Gain)	54
5.3 Frequency Response 8N FF HANB	54
5.3 Frequency Response 8N DF HANB	57
5.3 Frequency Response 2N FF HANB	59
5.3 Frequency Response 2N DF HANB	61

## Overall Receive Delay NB

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



Delay (Cross): 192.3 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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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\_NB

**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 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))**

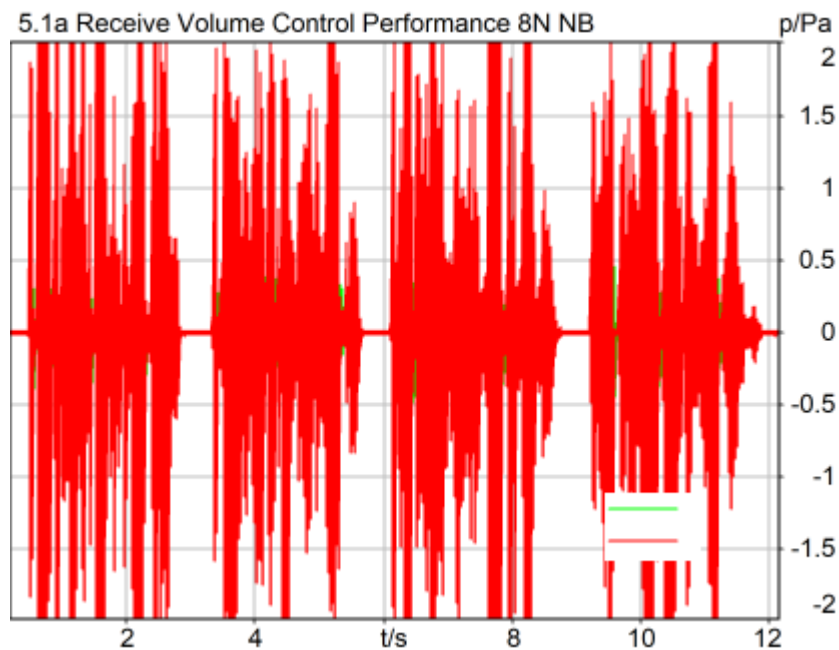
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 87.36 dB[SPL], Act.: 85.94%

Corrected Speech Level: 17.36 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 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 192.3000 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

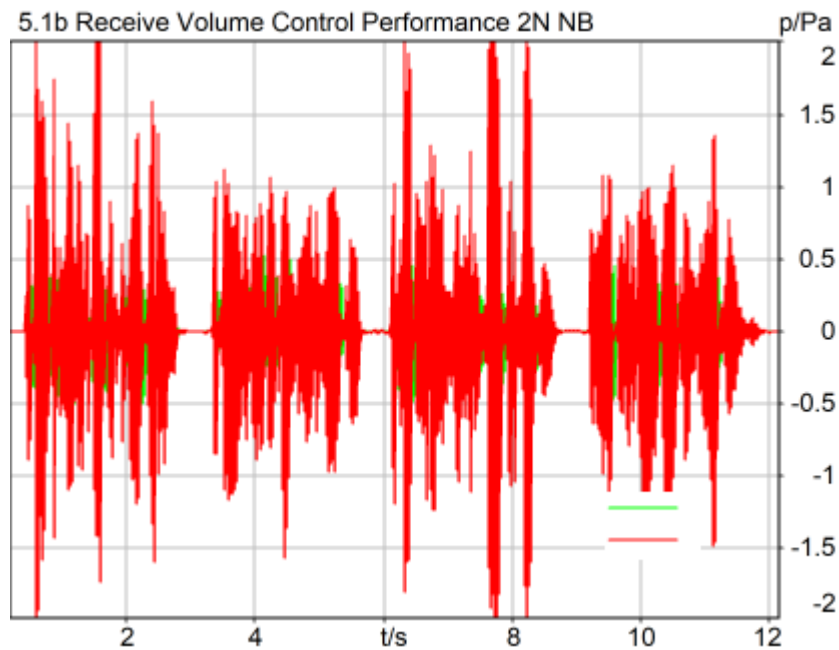


Mic 1 Power Supply Off

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: 81.22 dB[SPL], Act.: 86.10%

Corrected Speech Level: 11.22 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 192.3000 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))**

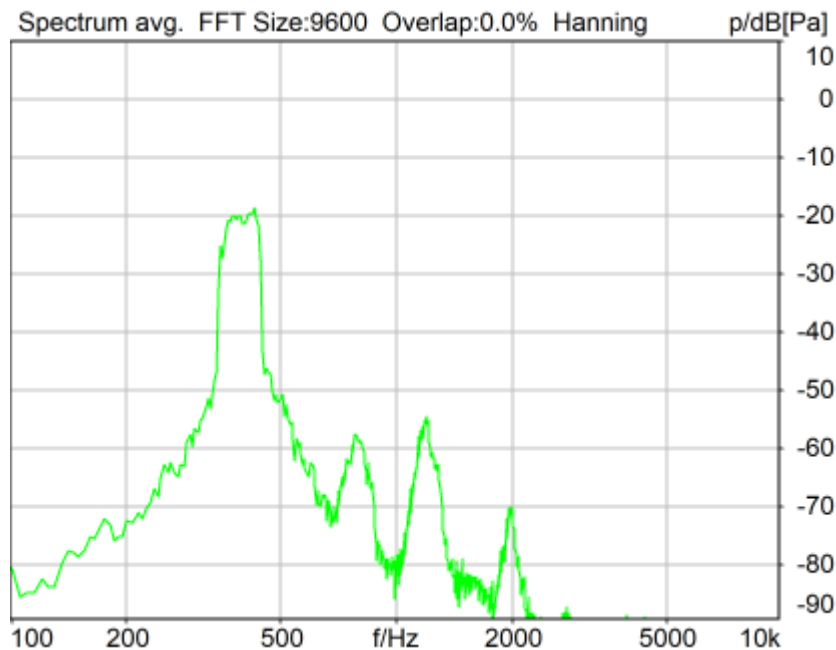
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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Distortion (Noise) RCV (packed): 31.56 dB (2.64%) 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\_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))

### 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.0 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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.	480.0 Hz
Stimulus min.	320.0 Hz	Analysis max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	485.0 Hz		

**Special Features**

Compensate delay 192.3000 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 -> 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))**

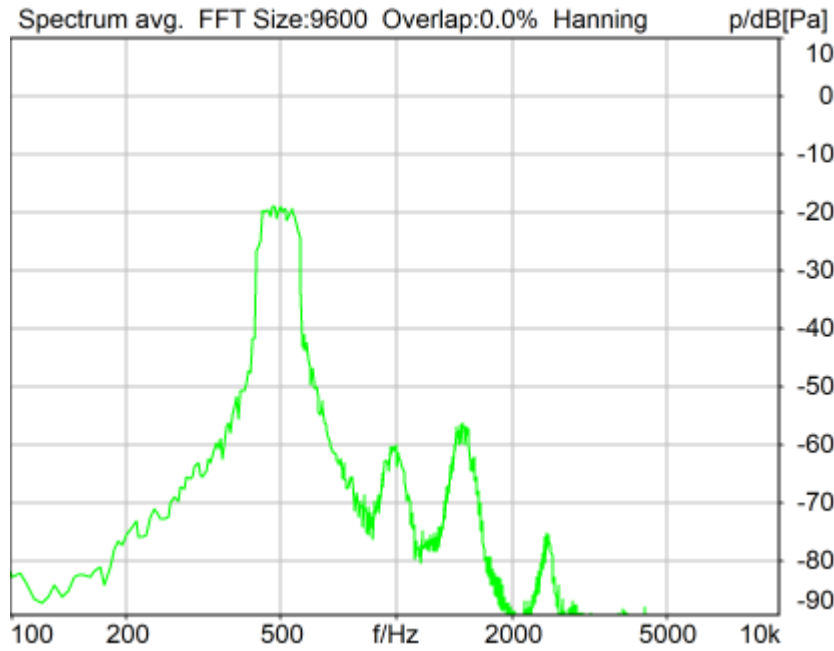
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 500 Hz NB

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Distortion (Noise) RCV (packed): 31.35 dB (2.71%) 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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 192.3000 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 -> 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))**

<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))

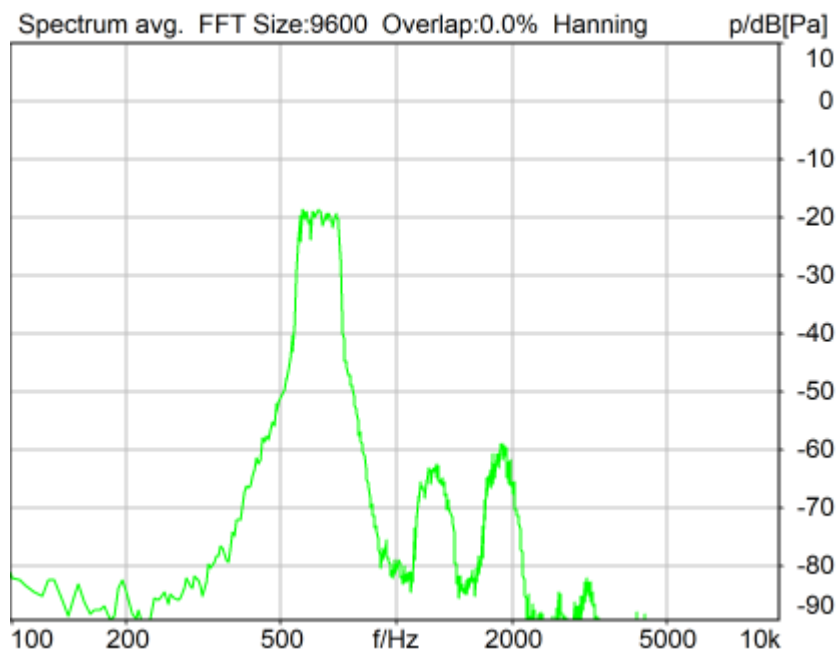
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 32.22 dB (2.45%) Ok

Ok

2024/1/19 20:55 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\_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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 7.9 N

**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 192.3000 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 -> 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))**

<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 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  
-----

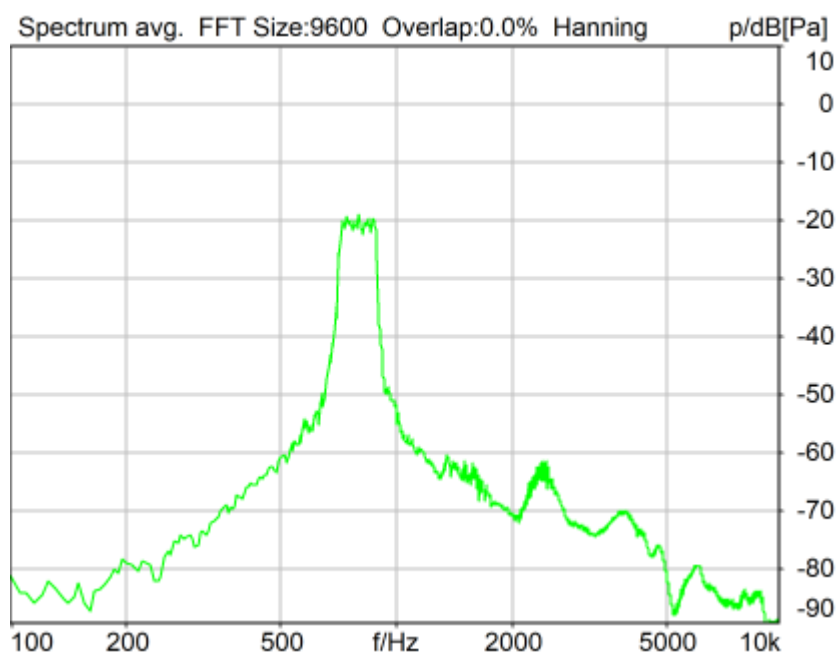
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB**

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



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

**Ok**

2024/1/19 20:56 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))

**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	-6.0 mm	Delta B	0.0 °

Ear Type 3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 192.3000 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 -> 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))

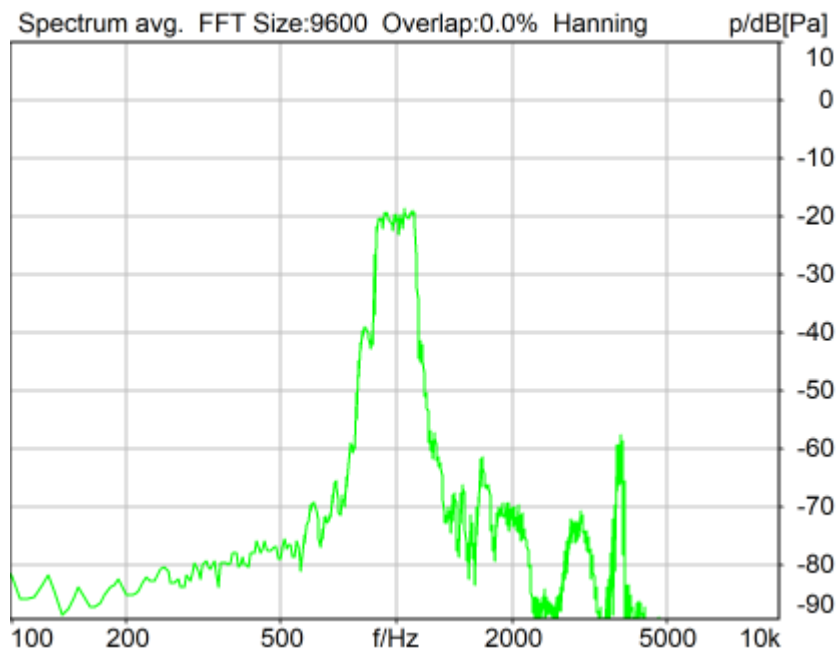
Ser. Nr.            12306613                      Pinna Type      Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 25.90 dB (5.07%) Ok

**Ok**

2024/1/19 20:56 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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 192.3000 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 -> 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))

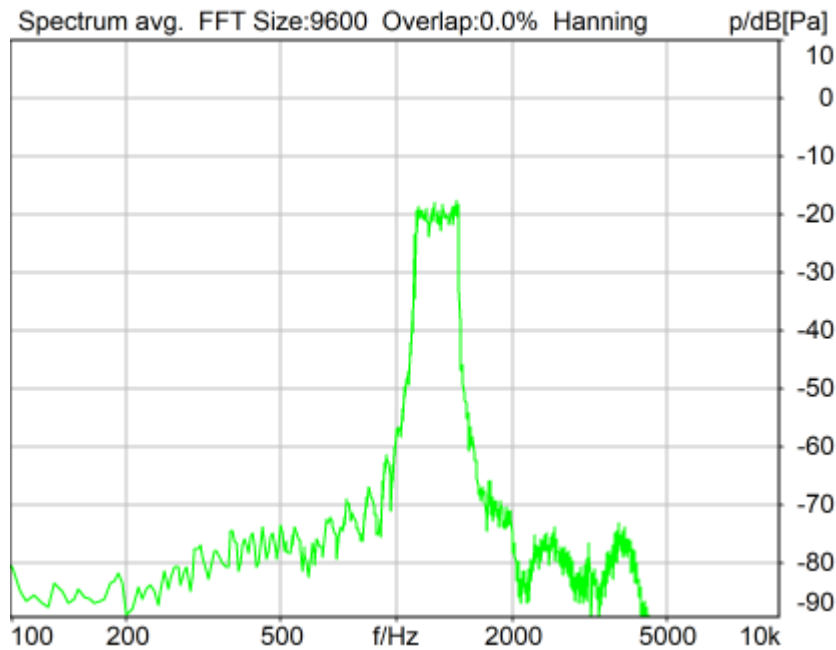
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 NB

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



Distortion (Noise) RCV (packed): 27.67 dB (4.14%) Ok

**Ok**

2024/1/19 20:57 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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 192.3000 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 -> 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))**

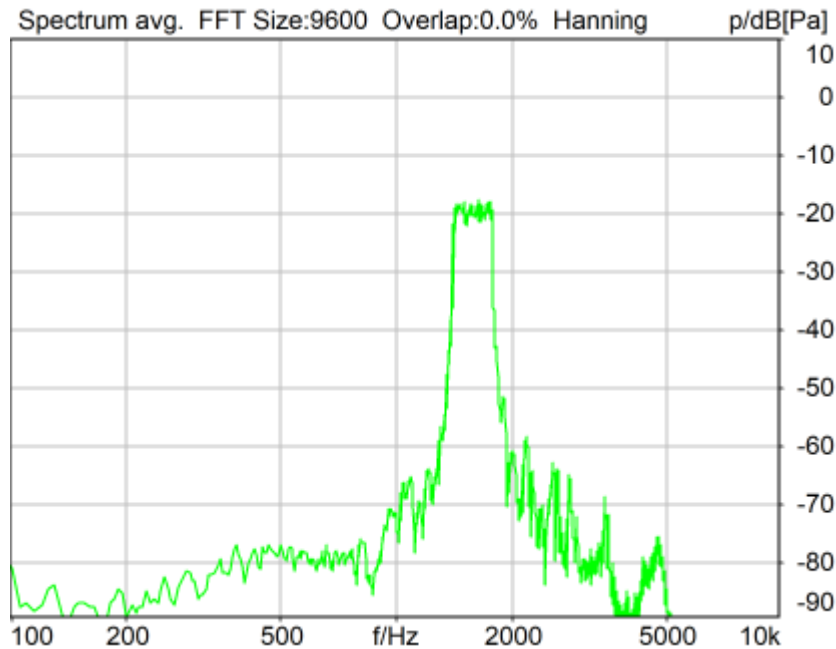
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 32.86 dB (2.28%) Ok

**Ok**

2024/1/19 20:57 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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °



MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.0 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1375.0 Hz
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 192.3000 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 -> 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))

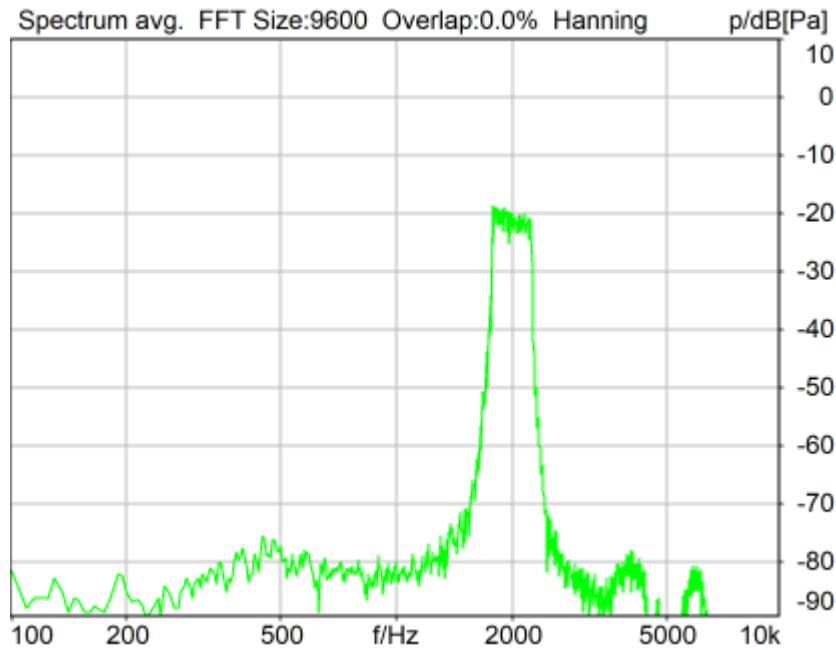
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 30.23 dB (3.08%) 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\_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))

**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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 192.3000 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 -> 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))

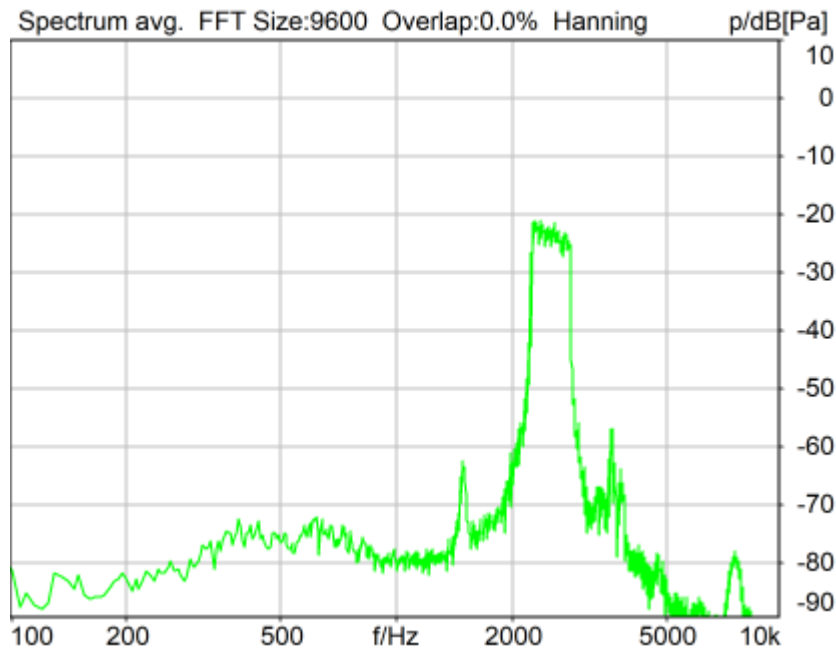
Ser. Nr. 12306613 Pinna Type Type 3.3

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 8N



Distortion (Noise) RCV (packed): 31.39 dB (2.69%) 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\_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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 192.3000 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 -> 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  
 -----

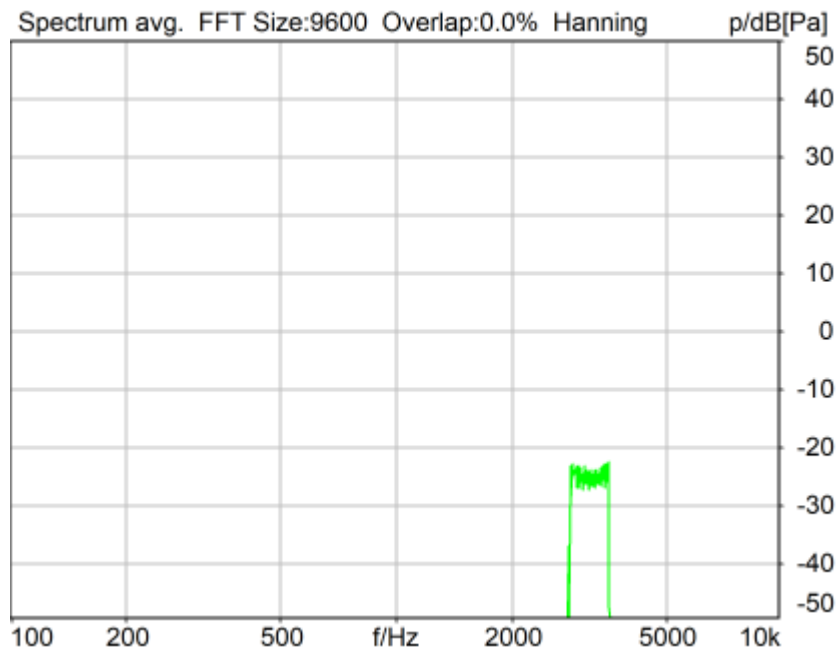
**Artificial Head Settings (HATS 1 (HMS II.3))**  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 NB**

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



Distortion (Noise) RCV (packed): 37.89 dB (1.27%) 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))

**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	-6.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	2785.0 Hz
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 192.3000 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 -> 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 8N

Region	Frequency	SDNR
1	400Hz	31.56 dB
2	500Hz	31.35 dB
3	630Hz	32.22 dB
4	800Hz	28.42 dB
5	1000Hz	25.90 dB
6	1250Hz	27.67 dB
7	1600Hz	32.86 dB
8	2000Hz	30.23 dB
9	2500Hz	31.39 dB
10	3150Hz	37.89 dB

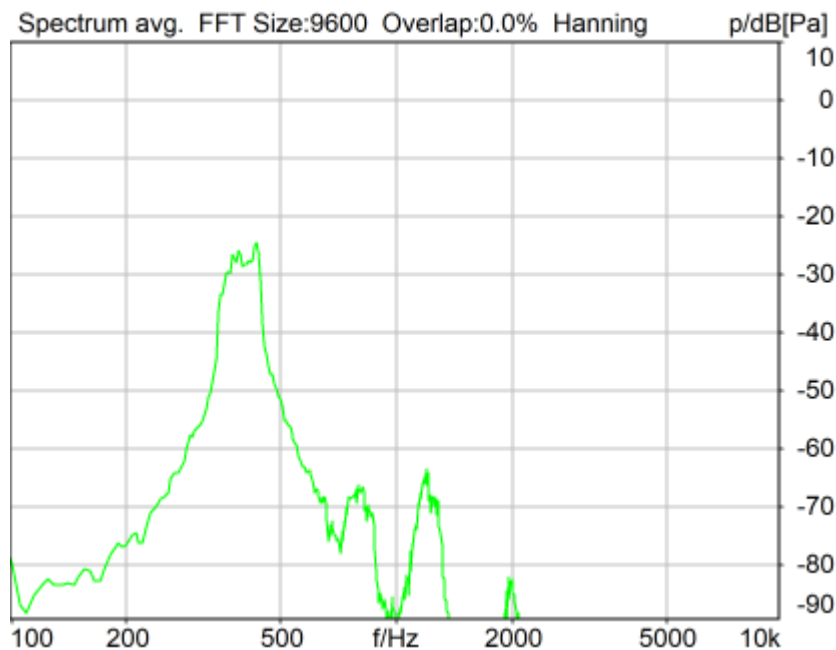
All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 25.90dB at 1000Hz.



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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): 28.69 dB (3.68%) Ok

**Ok**

2024/1/19 21:02 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\_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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.3 mm	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 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 192.3000 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 -> 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))

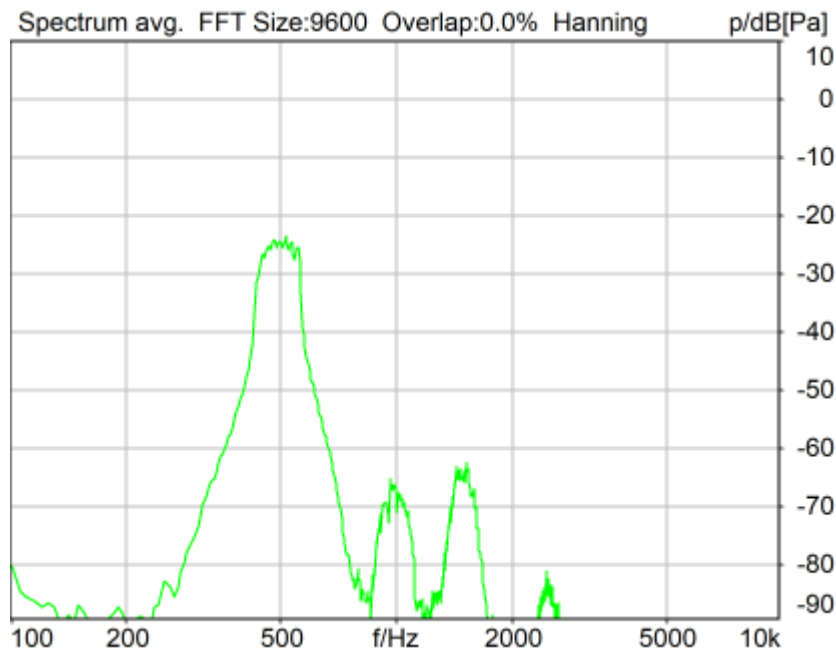
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

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



Distortion (Noise) RCV (packed): 29.29 dB (3.43%) Ok

**Ok**

2024/1/19 21:03 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))

**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 °
Delta B		Delta B	0.0 °
Ym	-3.3 mm	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 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 192.3000 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 -> 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))

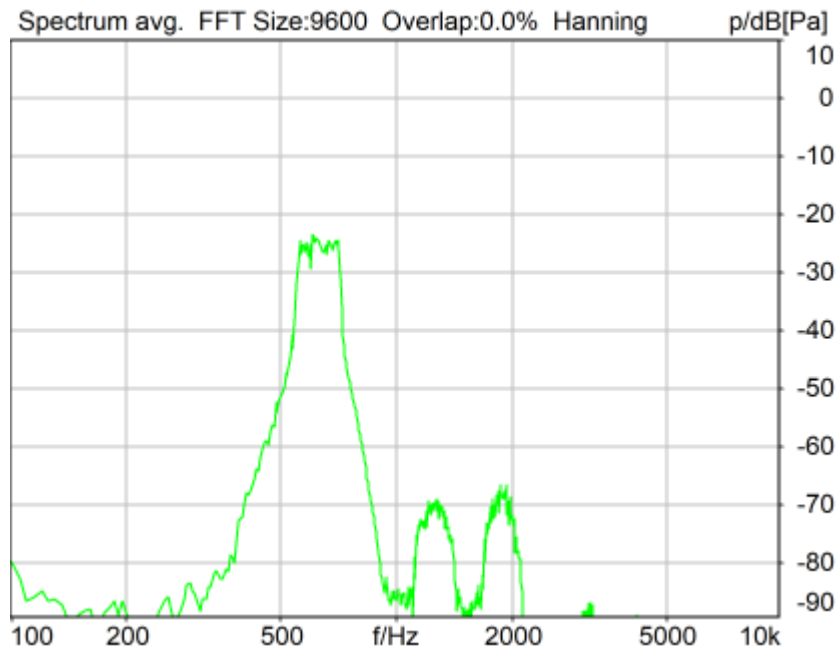
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 29.37 dB (3.40%) Ok

**Ok**

2024/1/19 21:03 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))

**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	-3.3 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 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 192.3000 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 -> 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

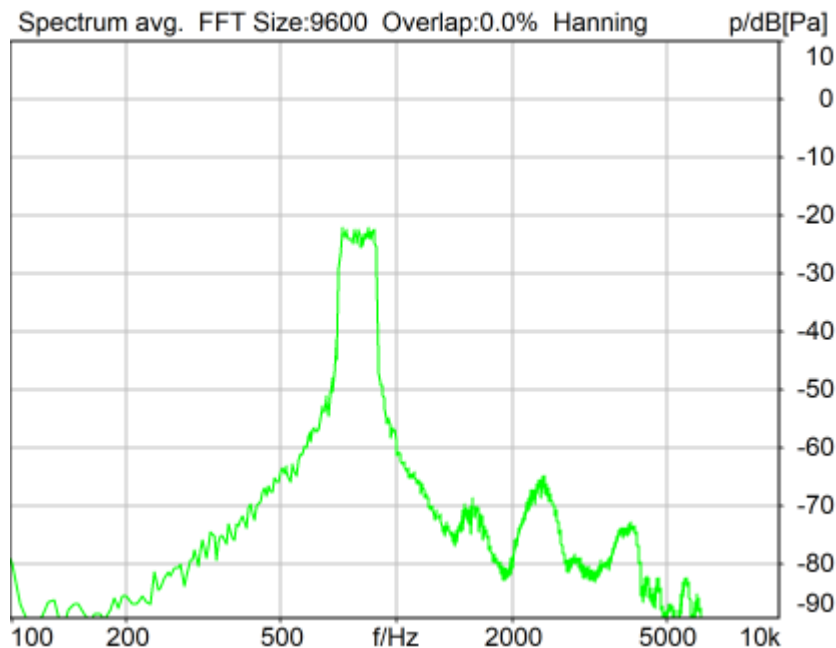
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 30.86 dB (2.86%) Ok

**Ok**

2024/1/19 21:05 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))

**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	-3.3 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	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 192.3000 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 -> 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

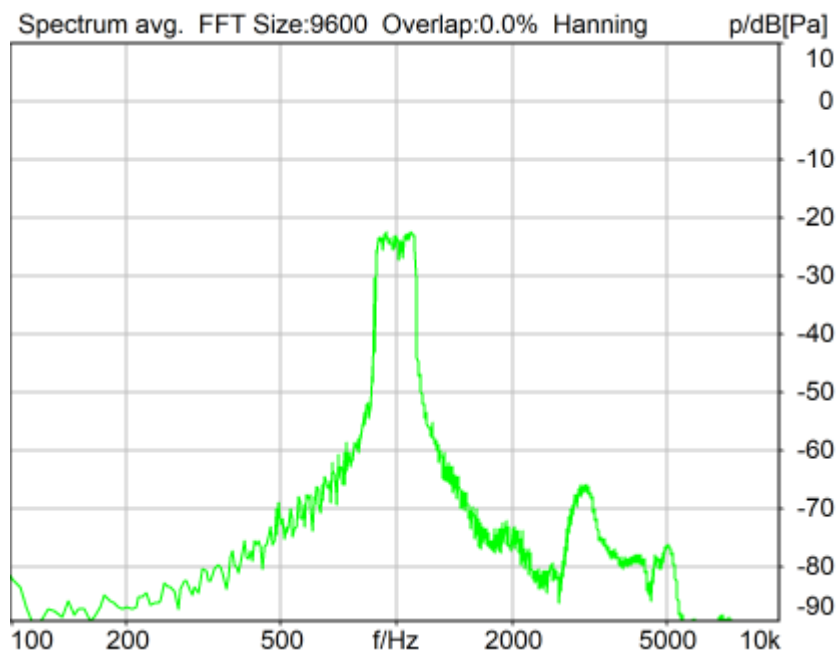
-----  
Analog In Mainboard Settings (Analog In 1/2)



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 - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 30.05 dB (3.14%) Ok

**Ok**

2024/1/19 21:05 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))

**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	-3.3 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	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.	1155.0 Hz
Stimulus min.	855.0 Hz	Analysis max.	850.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1160.0 Hz		

**Special Features**

Compensate delay 192.3000 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 -> 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))

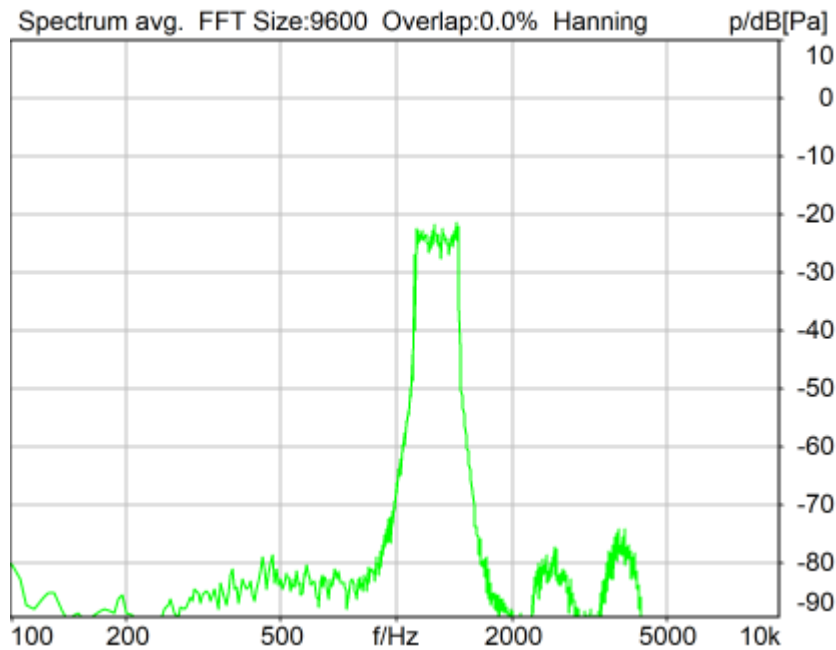
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 27.82 dB (4.06%) Ok

**Ok**

2024/1/19 21:06 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))

**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	-3.3 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 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 192.3000 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 -> 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))**

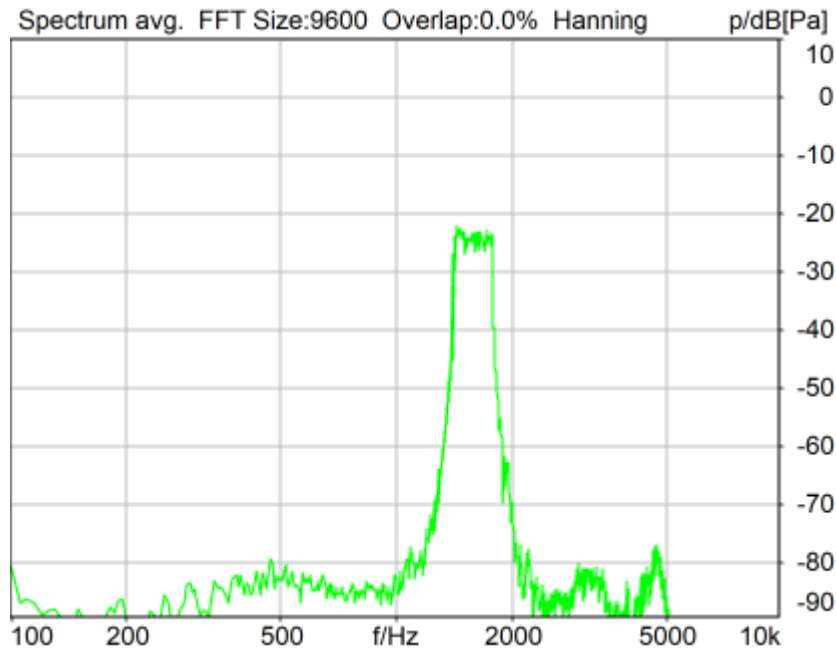
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 33.44 dB (2.13%) Ok

**Ok**

2024/1/19 21:06 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye 0.0 mm      Rotation Delta A 0.0 °  
Rotation Delta C 0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.3 mm	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	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.	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 192.3000 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 -> 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))**

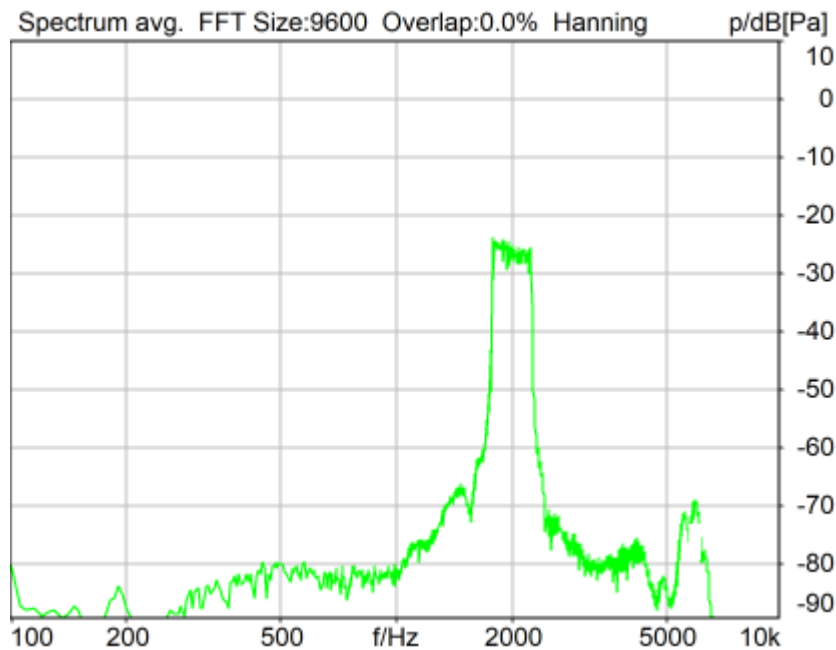
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 32.99 dB (2.24%) Ok

**Ok**

2024/1/19 21:07 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\_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))

**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 °
Delta B		Delta B	0.0 °
Ym	-3.3 mm	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 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 192.3000 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 -> 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))

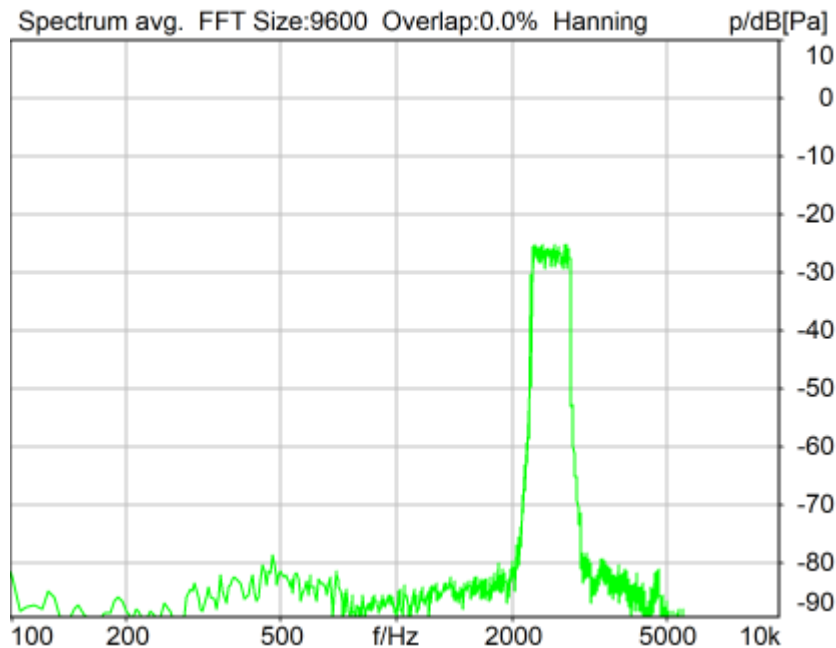
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 38.83 dB (1.14%) Ok

Ok

2024/1/19 21:07 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\_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))

**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	-3.3 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 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 192.3000 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 -> 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  
 -----

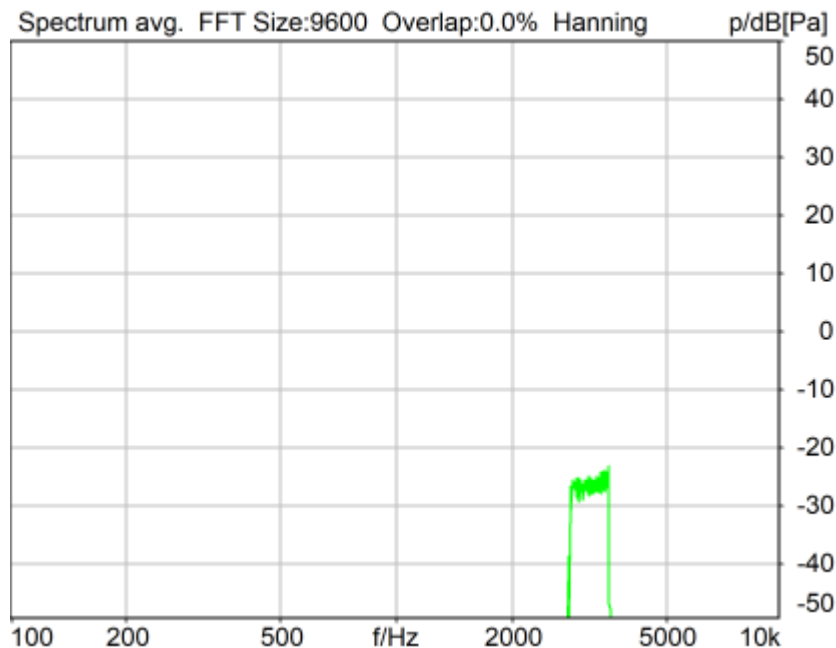
**Artificial Head Settings (HATS 1 (HMS II.3))**  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 35.04 dB (1.77%) Ok

**Ok**

2024/1/19 21:08 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\_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))

**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	-3.3 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	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.	2785.0 Hz
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 192.3000 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 -> 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

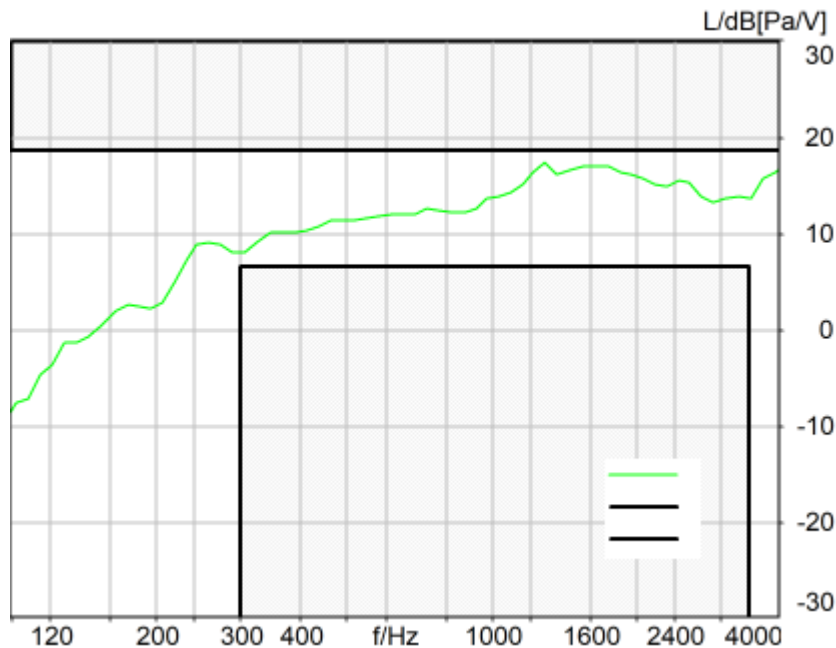
Region	Frequency	SDNR
1	400Hz	28.69 dB
2	500Hz	29.29 dB
3	630Hz	29.37 dB
4	800Hz	30.86 dB
5	1000Hz	30.05 dB
6	1250Hz	27.82 dB
7	1600Hz	33.44 dB
8	2000Hz	32.99 dB
9	2500Hz	38.83 dB
10	3150Hz	35.04 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 27.82dB at 1250Hz.

2024/1/19 21:08 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance  
1.31 dB at 1285.9 Hz Ok

**Ok**

2024/1/19 20:59 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))

### 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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

### 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 192.3000 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 -> 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))

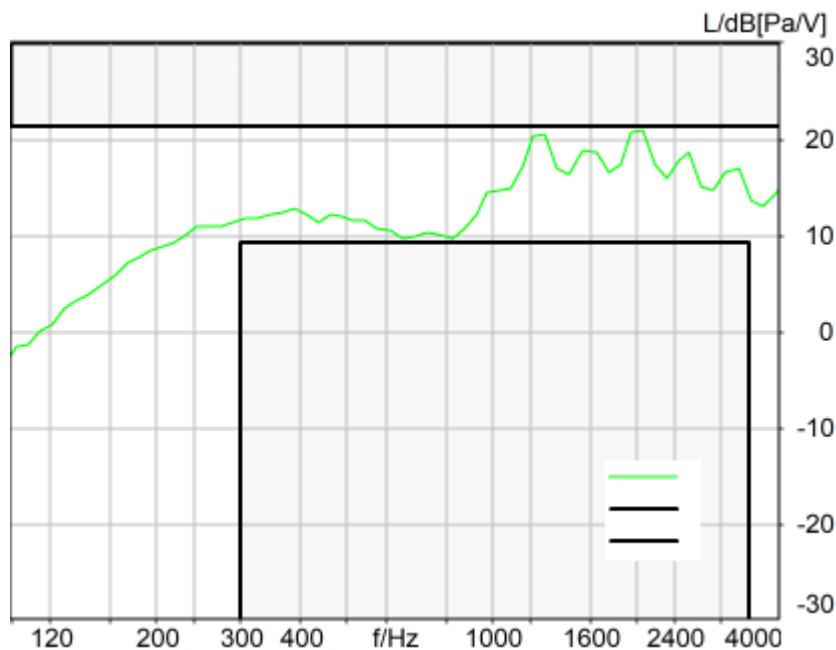
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 8N DF HANB**

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



Absolute minimal distance  
0.31 dB at 2057.5 Hz Ok

**Ok**

2024/1/19 20:59 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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 192.3000 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 ->	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))

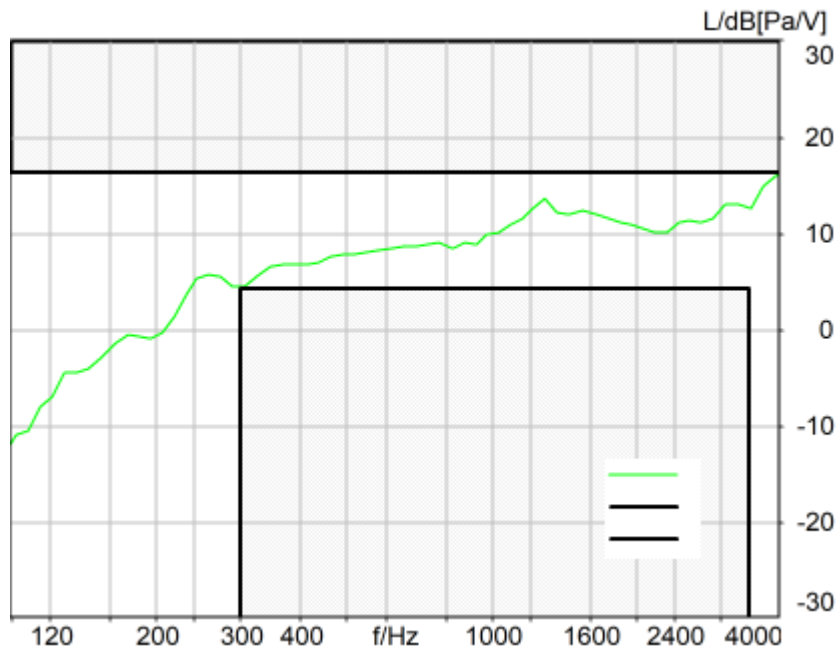
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
0.31 dB at 3882.4 Hz Ok

**Ok**

2024/1/19 21:08 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\_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))

**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	-3.3 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 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 192.3000 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 -> 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))

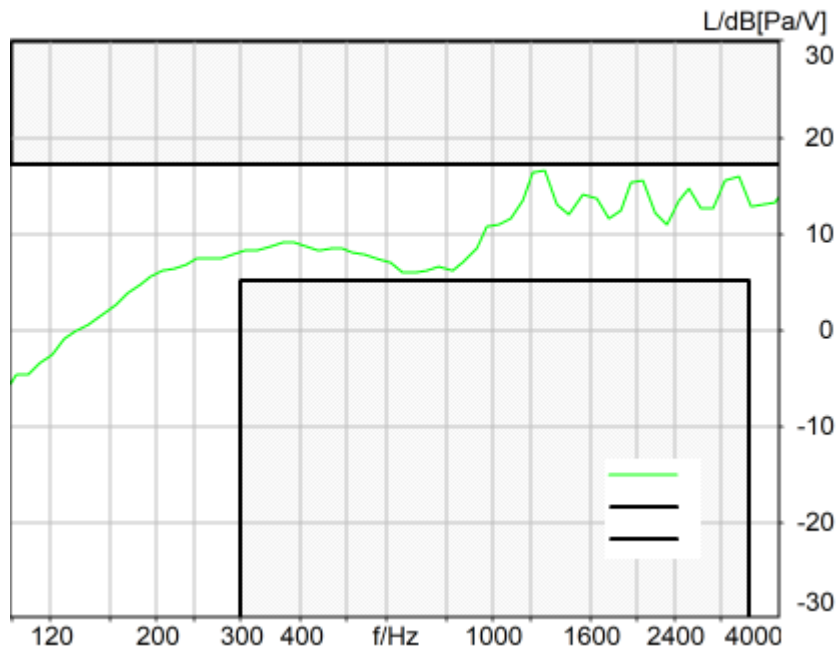
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 DF HANB

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



Absolute minimal distance  
0.71 dB at 1285.9 Hz Ok

**Ok**

2024/1/19 21:09 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: 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))

**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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.3 mm	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:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT	Window function.	Hanning
FFT size	4096	Reference file	r521_rcv_frq_spee269_hanb.fft
Window function.	Hanning	Tol. scheme file	521_rcv_frq_man_hanb.tol
Reference file	r521_rcv_frq_spee269_hanb.fft	Auto adjust	Centrate
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 192.3000 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 -> 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



## **Measurement Protocol**

Measurement Object	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
Description	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/7 8:49
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	123.6	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	17.46	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	11.15	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.10	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.53	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.09	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.18	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.79	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	39.58	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.82	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.02	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.33	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.50	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	40.04	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	42.34	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.85	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	35.76	WIFI 2.4G_802.11b

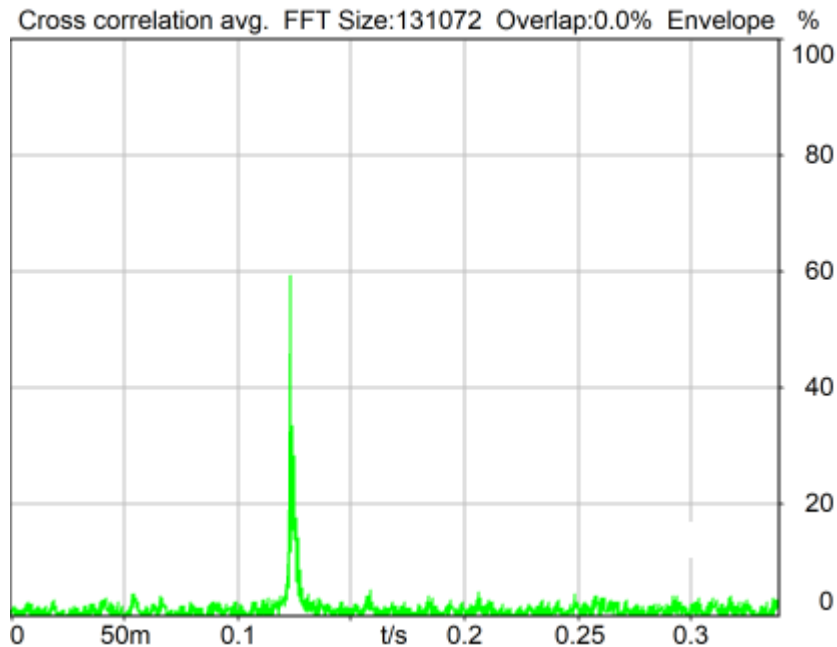
5000 Hz WB		0.0 dB		1Mps_AMR WB 23.85kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	28.02	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.40	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.62	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.00	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.31	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.94	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.78	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.04	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.34	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	37.05	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.85	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	39.61	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	38.16	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.06	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.22	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1000Hz)	27.04	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 272.2 Hz	1.37	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.3 Frequency Response 8N	Not Ok	Min. dist. to tolerance	-1.23	WIFI 2.4G_802.11b

DF		scheme [dB], 4369.4 Hz		1Mps_AMR WB 23.85kbps_CH6
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.35	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6
5.3 Frequency Response 2N DF	Not Ok	Min. dist. to tolerance scheme [dB], 4119.5 Hz	-2.49	WIFI 2.4G_802.11b 1Mps_AMR WB 23.85kbps_CH6



## Overall Receive Delay WB

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



Delay (Cross): 123.6 ms

2024/1/19 21:10 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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.6 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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

**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))**

<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
----------	----------	------------	----------

**HIB Settings**

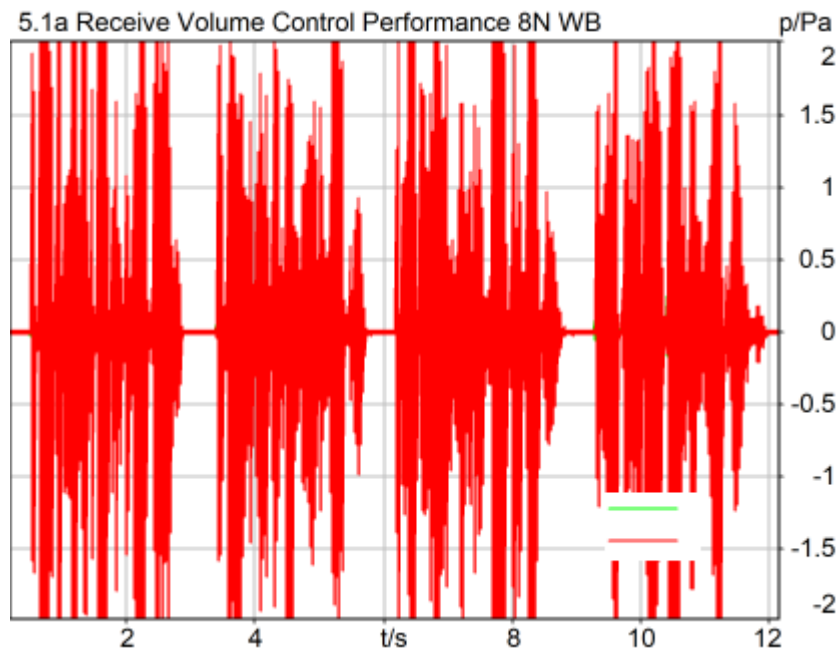
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

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

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

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



#### Correction

X - 70

Speech Level RCV: 87.46 dB[SPL], Act.: 85.97%  
 Corrected Speech Level: 17.46 dB[SPL] Not Ok

#### Not Ok

2024/1/22 22:46 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 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 123.6000 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))**

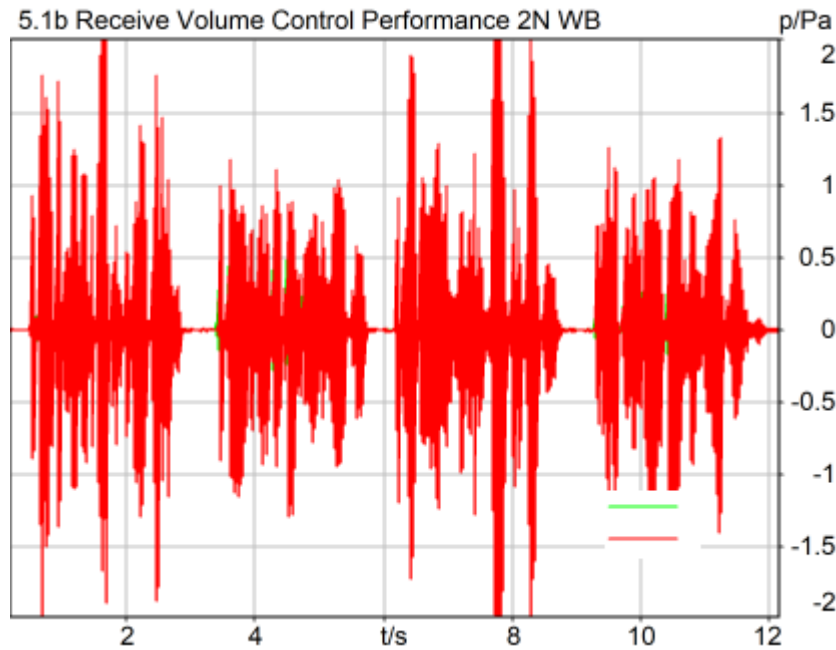
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 81.15 dB[SPL], Act.: 86.23%

Corrected Speech Level: 11.15 dB[SPL] Ok

### Ok

2024/1/22 22:50 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		

**Special Features**

Show source signal Source ch.2  
 Compensate delay 123.6000 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))**

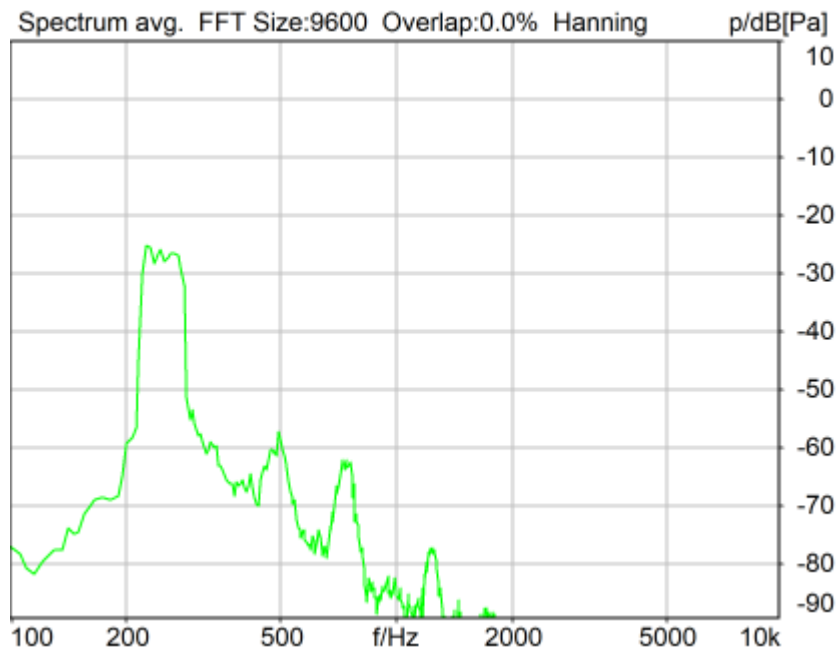
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 32.10 dB (2.48%) Ok

**Ok**

2024/1/19 21:13 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.1 N

### 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 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 123.6000 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 -> 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

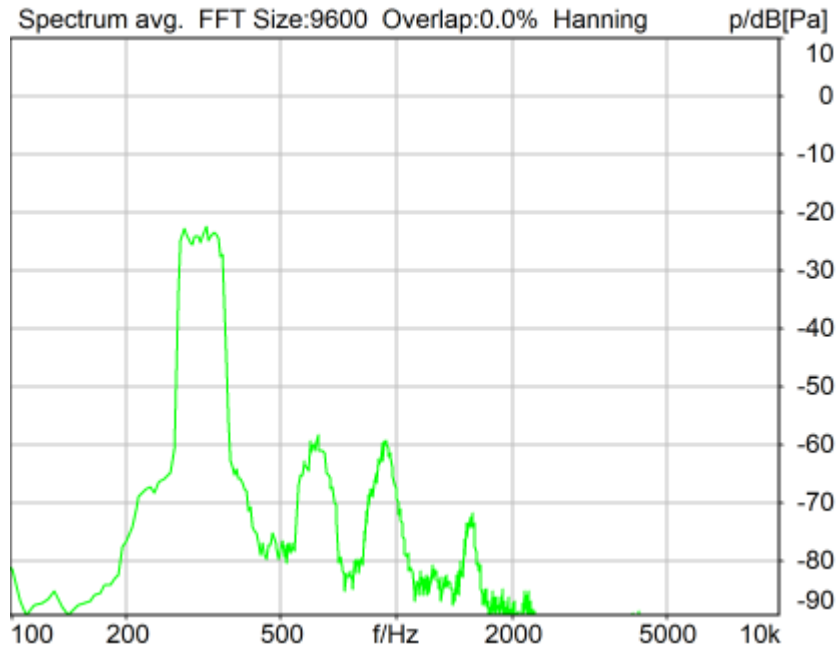
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB

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): 33.53 dB (2.11%) 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\_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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.7 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 123.6000 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 -> 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))

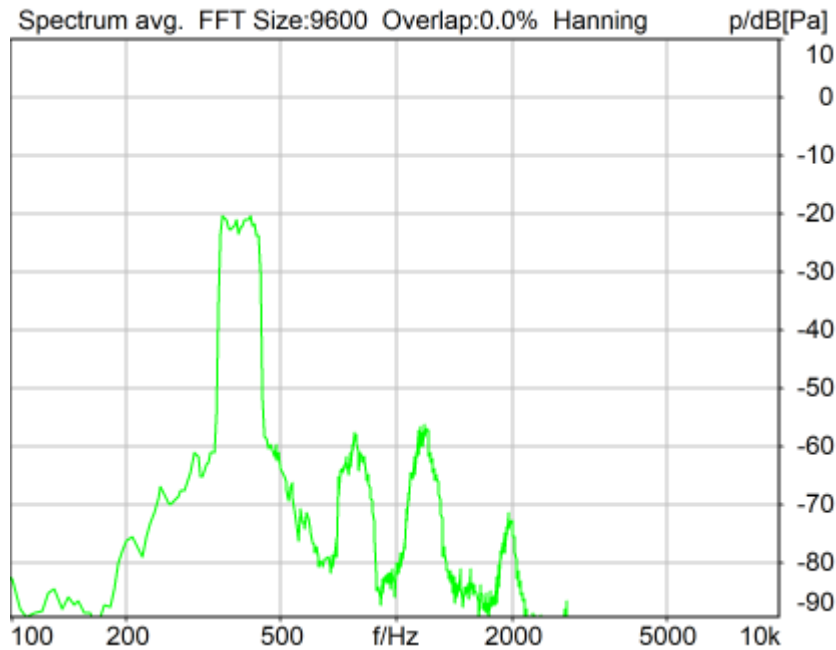
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 33.09 dB (2.22%) 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 123.6000 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 ->	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))

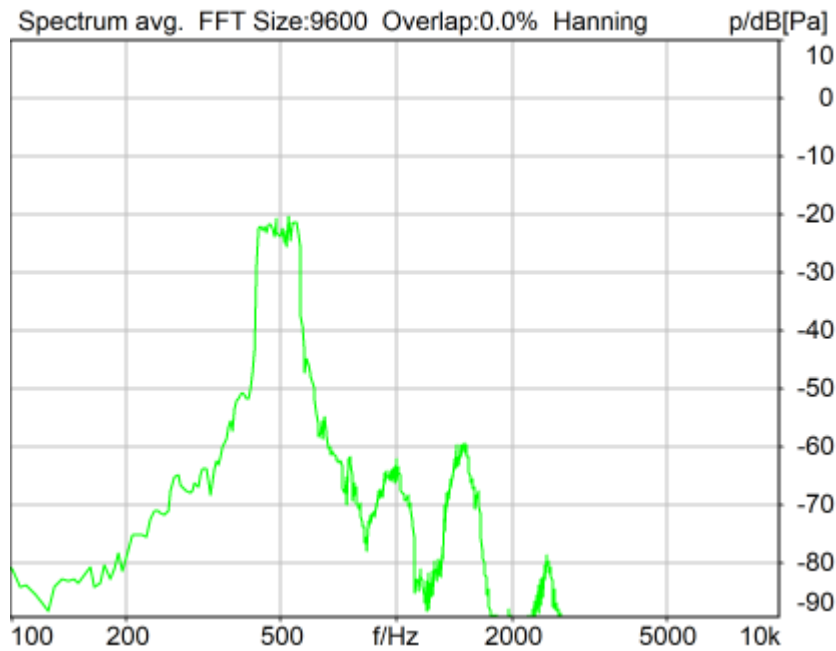
Ser. Nr. 12306613 Pinna Type Type 3.3

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 8N



Distortion (Noise) RCV (packed): 31.18 dB (2.76%) 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\_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))

#### 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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

#### 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 123.6000 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 -> 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  
 -----

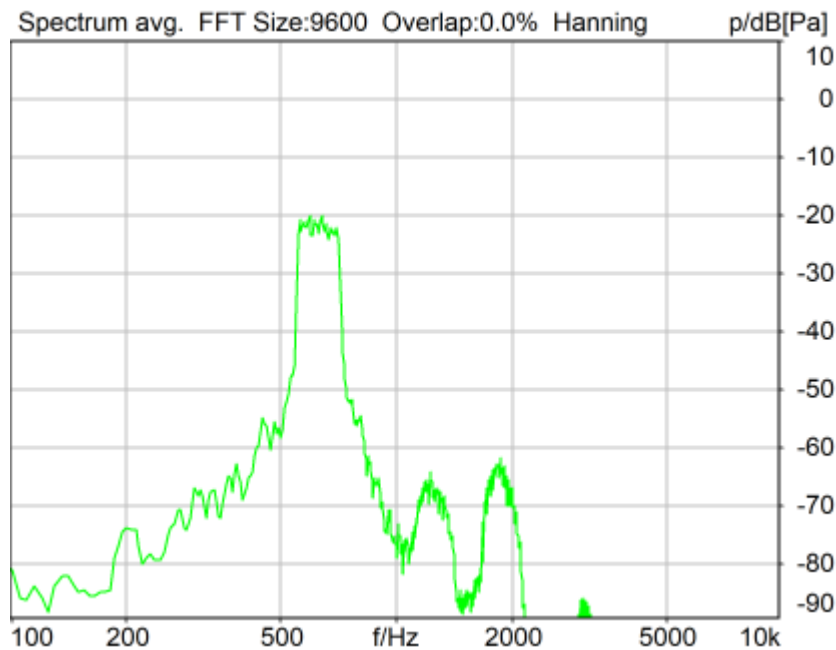
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 32.79 dB (2.29%) 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	525.0 Hz
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 123.6000 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**

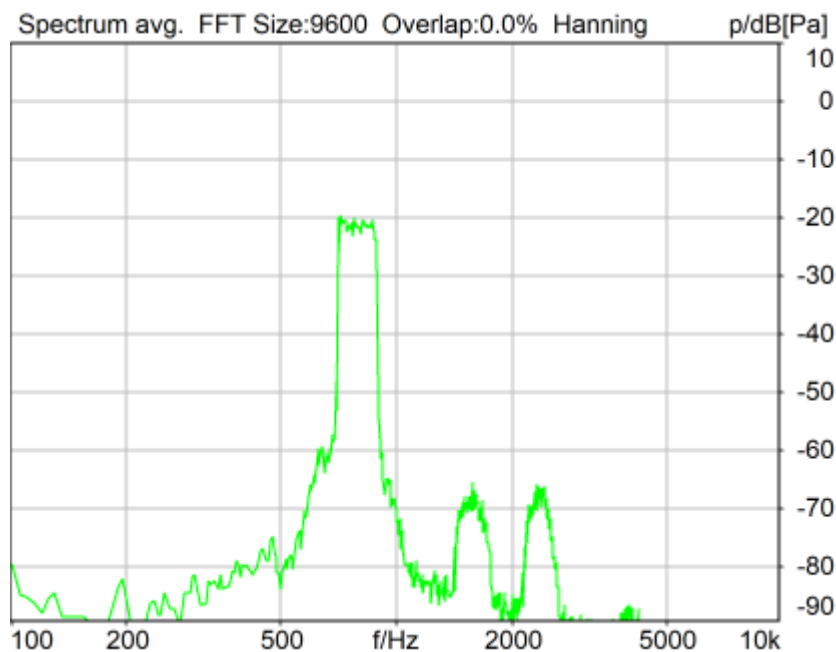
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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 - 800 Hz WB

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



Distortion (Noise) RCV (packed): 39.58 dB (1.05%) 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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
----------	----------	------------	----------

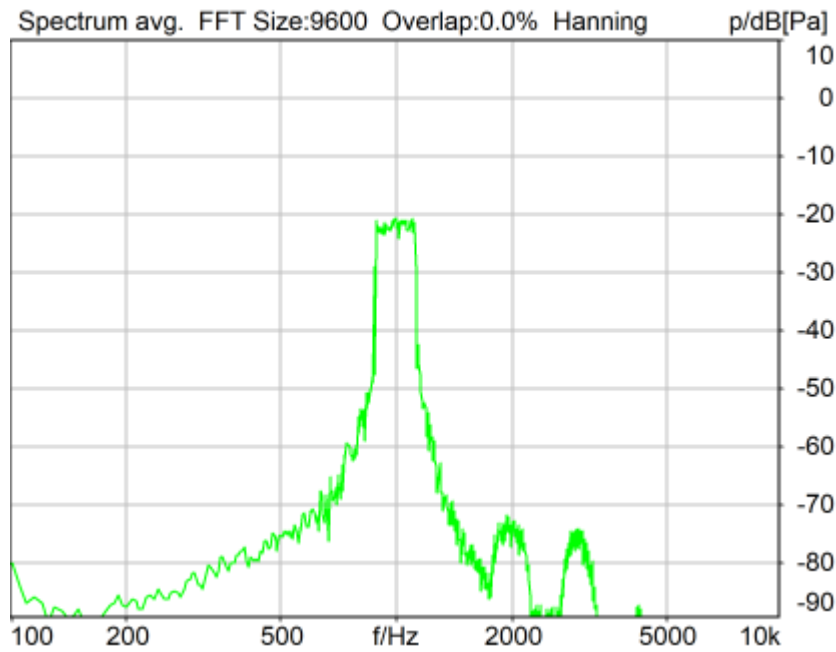
**HIB Settings**

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 8N





Distortion (Noise) RCV (packed): 33.82 dB (2.04%) Ok

**Ok**

2024/1/19 21:16 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1155.0 Hz
Stimulus min.	855.0 Hz	Analysis max.	850.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1160.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

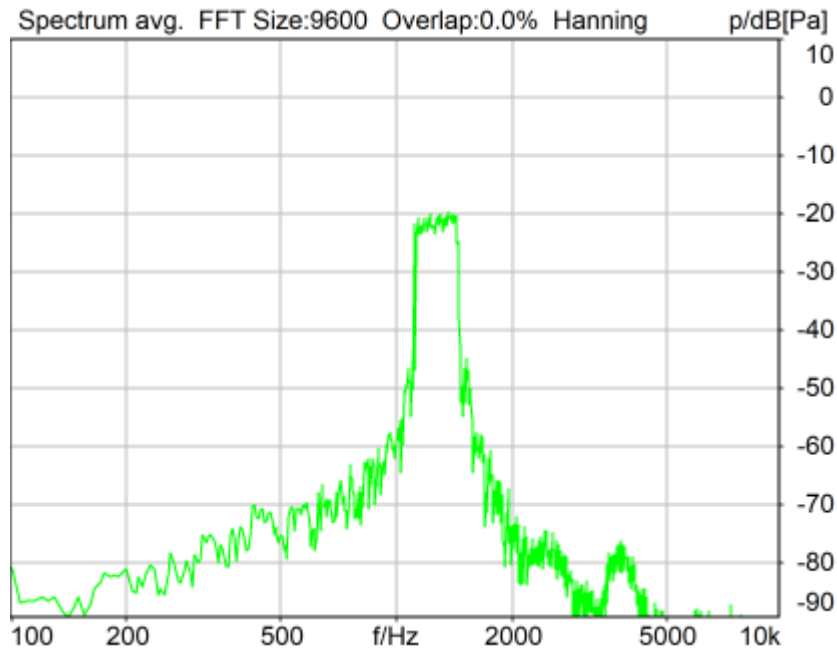
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 28.02 dB (3.97%) 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye 0.0 mm      Rotation Delta A 0.0 °  
Rotation Delta C 0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

<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))**

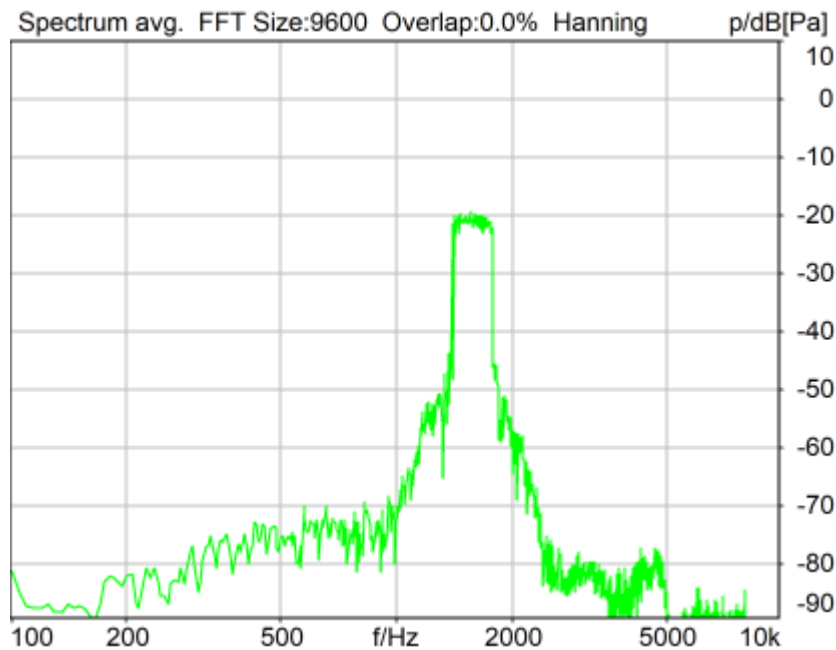
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 30.33 dB (3.04%) 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 123.6000 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 ->	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))

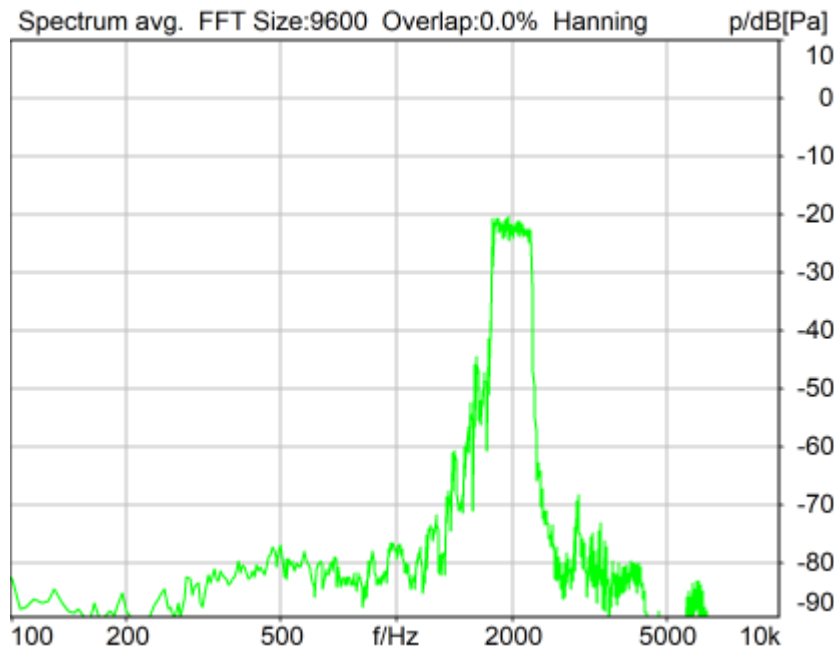
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 29.50 dB (3.35%) 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 123.6000 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 -> 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  
 -----

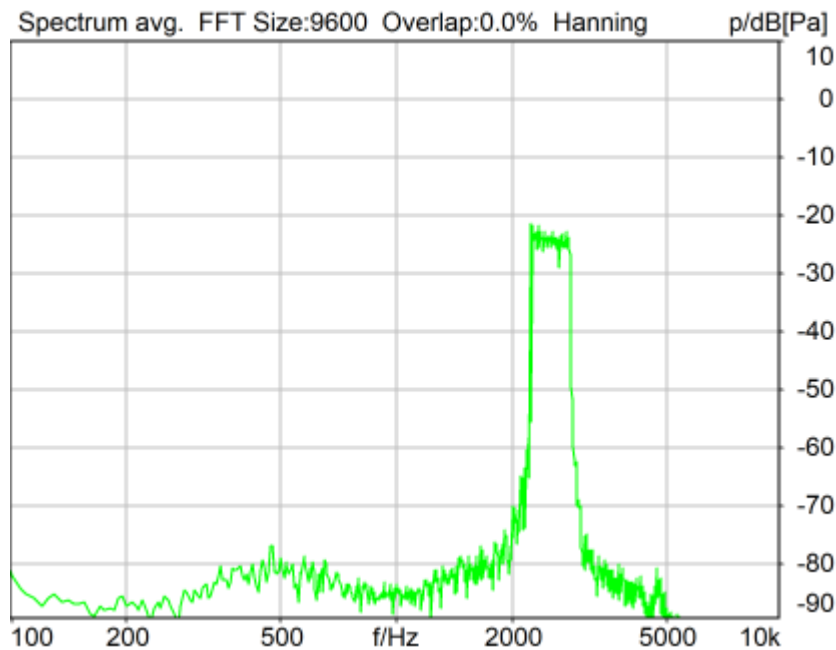
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 40.04 dB (1.00%) 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
dB weighting	A Weighting	Stimulus max.	2855.0 Hz
Stimulus min.	2205.0 Hz	Analysis max.	2200.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	2860.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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

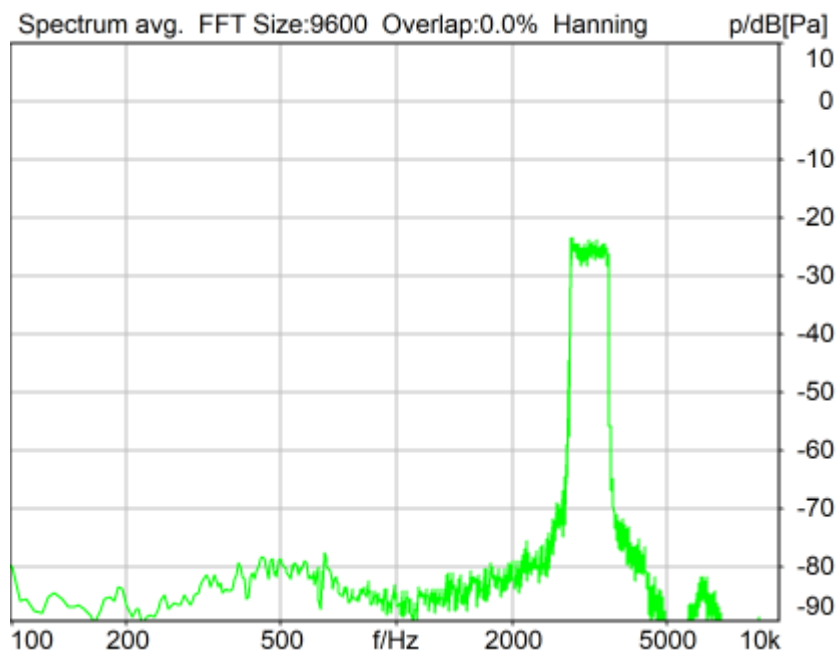
-----

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 - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 42.34 dB (0.76%) 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\_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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	3585.0 Hz
Stimulus min.	2785.0 Hz	Analysis max.	2780.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	3590.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))

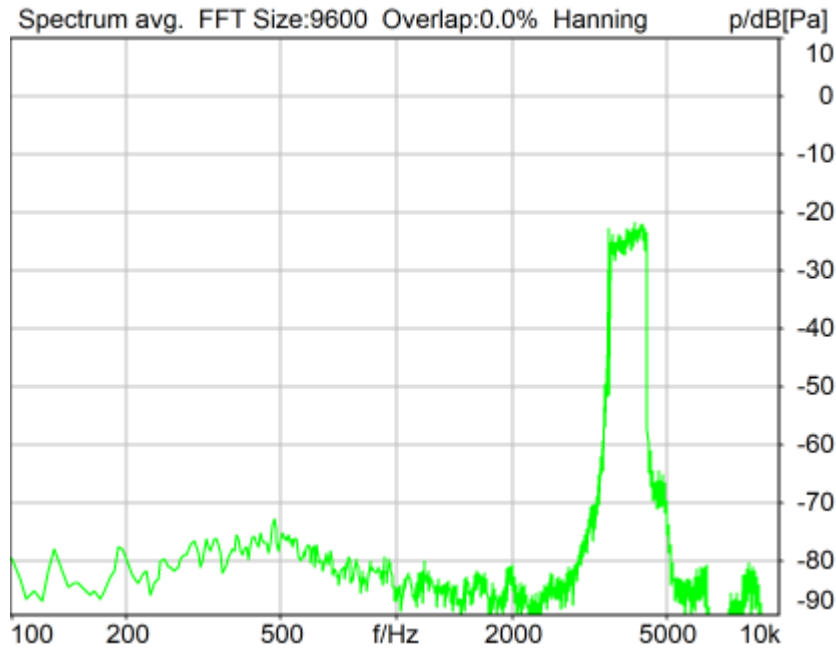
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 35.85 dB (1.61%) Ok

**Ok**

2024/1/19 21:18 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

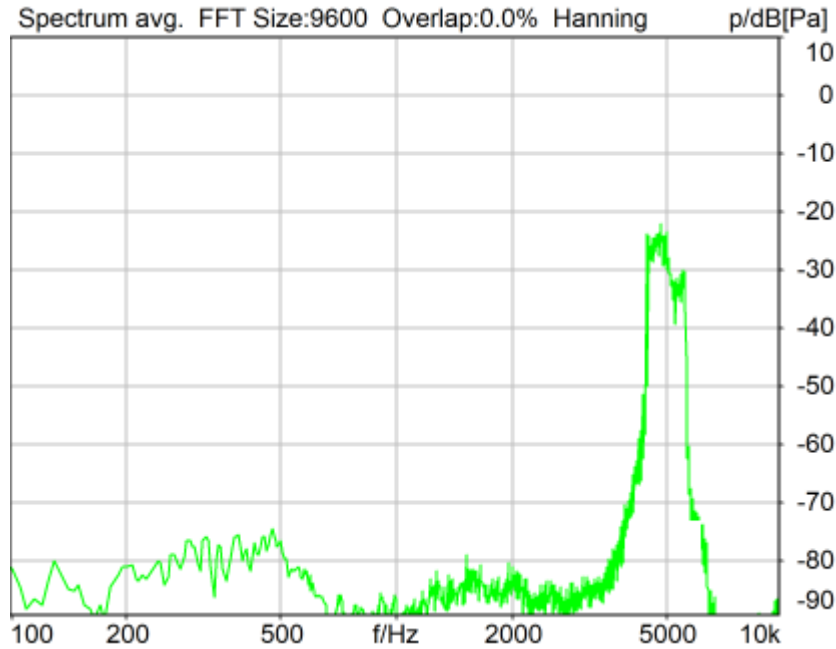
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 35.76 dB (1.63%) Ok

**Ok**

2024/1/19 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\_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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °



MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	5660.0 Hz
Stimulus min.	4430.0 Hz	Analysis max.	4425.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	5665.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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

**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

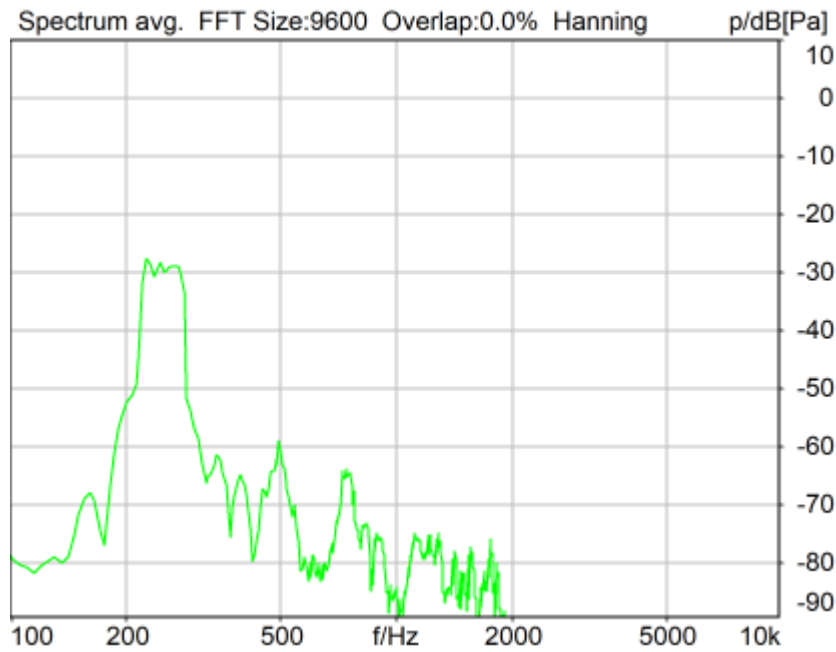
Region	Frequency	SDNR
1	250Hz	32.10 dB
2	315Hz	33.53 dB
3	400Hz	33.09 dB
4	500Hz	31.18 dB
5	630Hz	32.79 dB
6	800Hz	39.58 dB
7	1000Hz	33.82 dB
8	1250Hz	28.02 dB
9	1600Hz	30.33 dB
10	2000Hz	29.50 dB
11	2500Hz	40.04 dB
12	3150Hz	42.34 dB
13	4000Hz	35.85 dB
14	5000Hz	35.76 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 28.02dB 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): 31.40 dB (2.69%) Ok

**Ok**

2024/1/19 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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.	315.0 Hz
Stimulus min.	190.0 Hz	Analysis max.	185.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	320.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

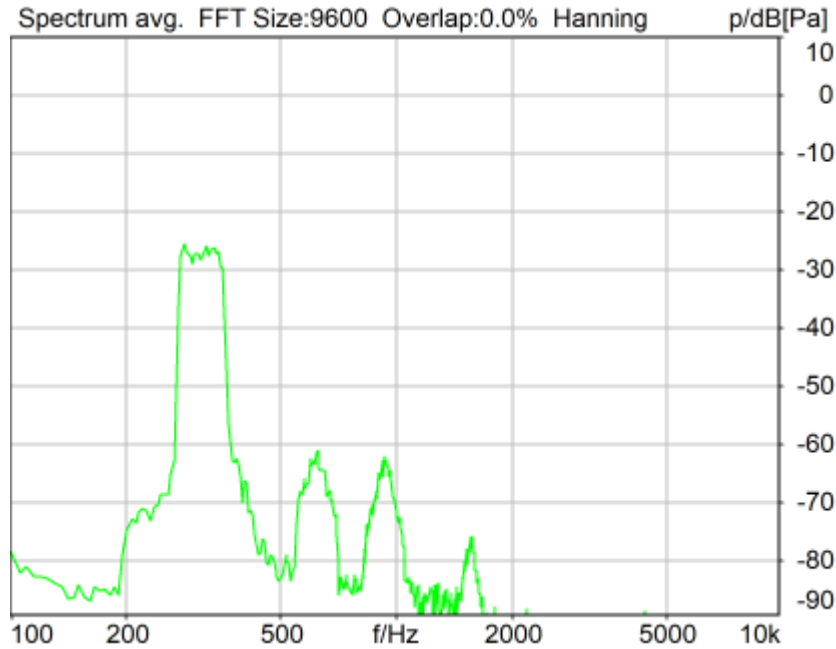
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 33.62 dB (2.09%) Ok

Ok

2024/1/19 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\_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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.8 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	390.0 Hz
Stimulus min.	245.0 Hz	Analysis max.	240.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	395.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

<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))**

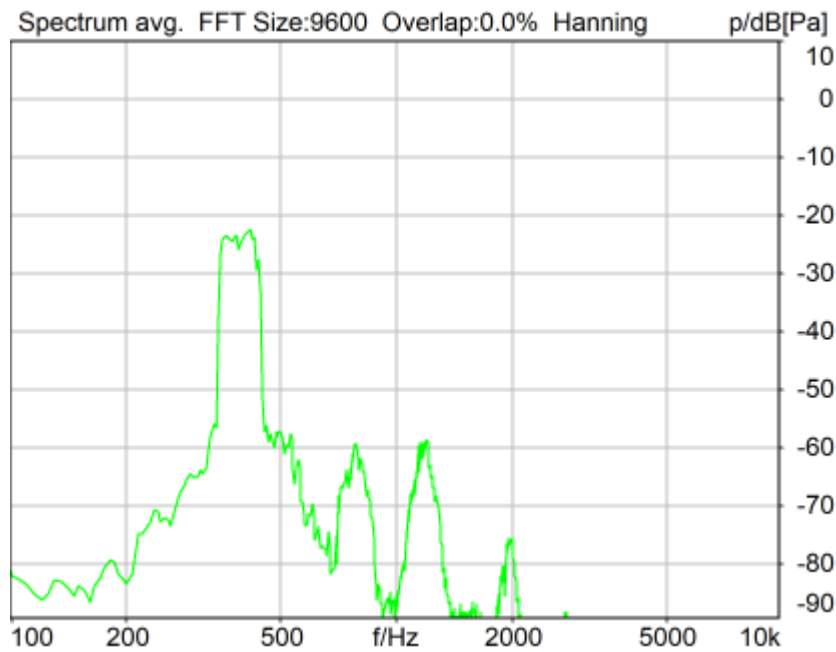
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 32.00 dB (2.51%) Ok

**Ok**

2024/1/19 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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 123.6000 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 ->	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))

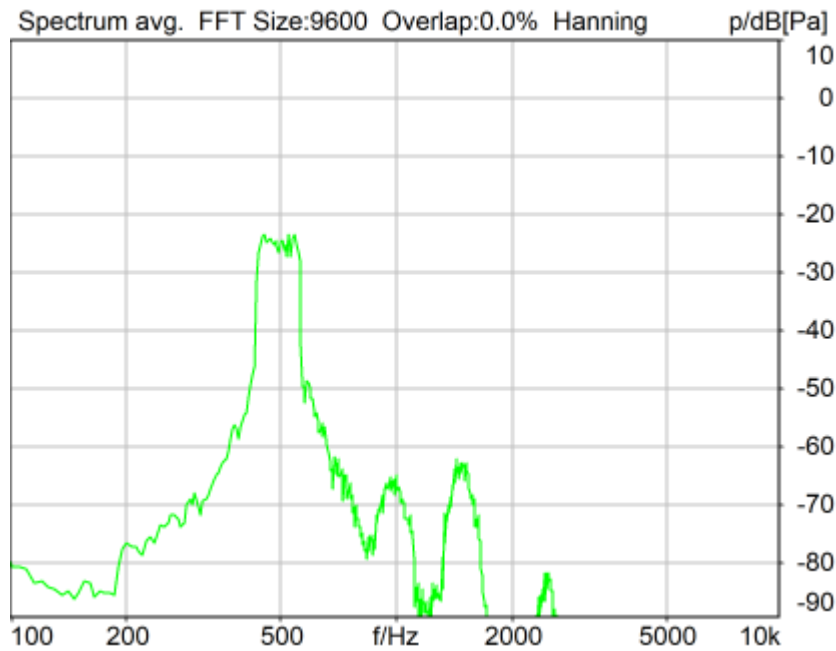
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 31.31 dB (2.72%) Ok

**Ok**

2024/1/19 21:23 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))

#### 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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

#### 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 123.6000 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 -> 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))**

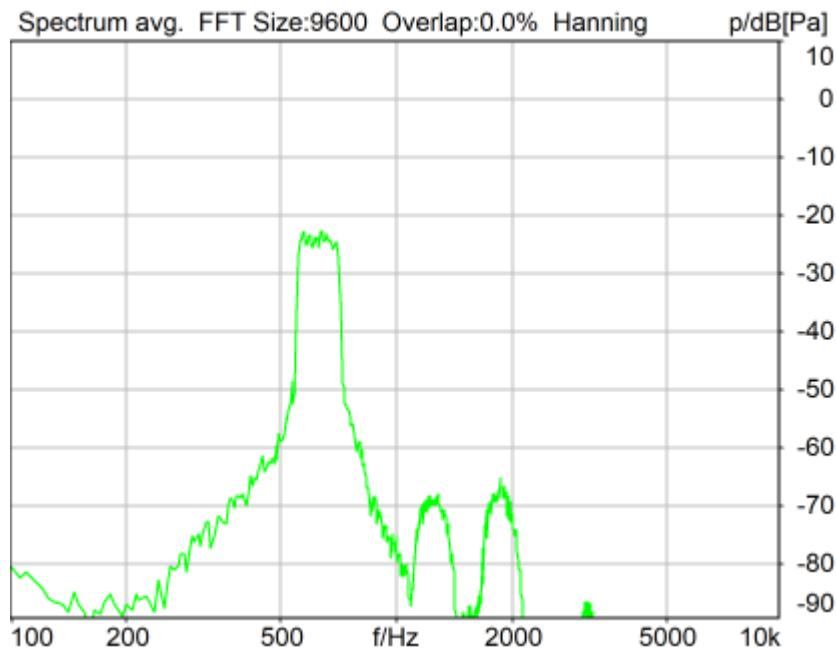
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 33.94 dB (2.01%) Ok

**Ok**

2024/1/19 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	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 123.6000 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**

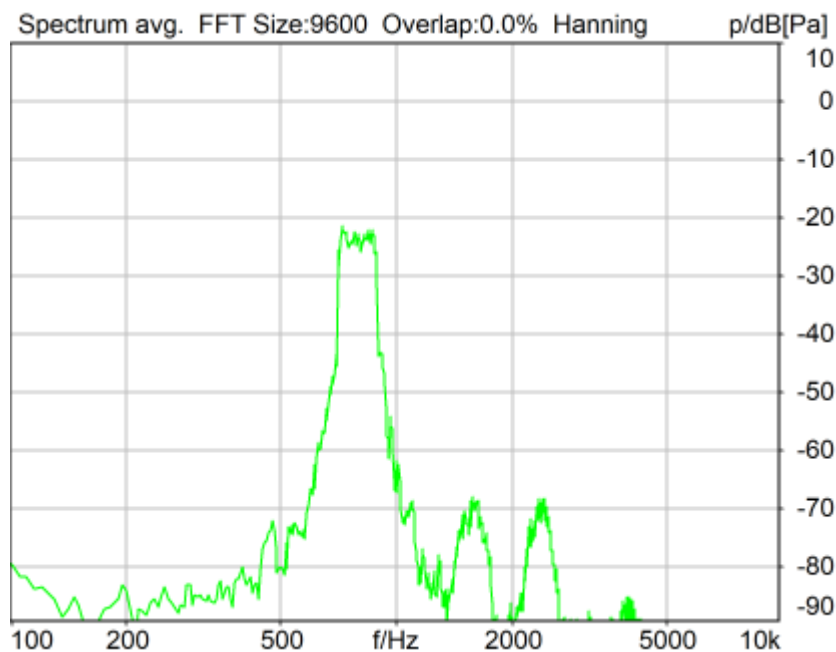
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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 - 800 Hz WB

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



Distortion (Noise) RCV (packed): 32.78 dB (2.30%) Ok

**Ok**

2024/1/19 21:24 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))

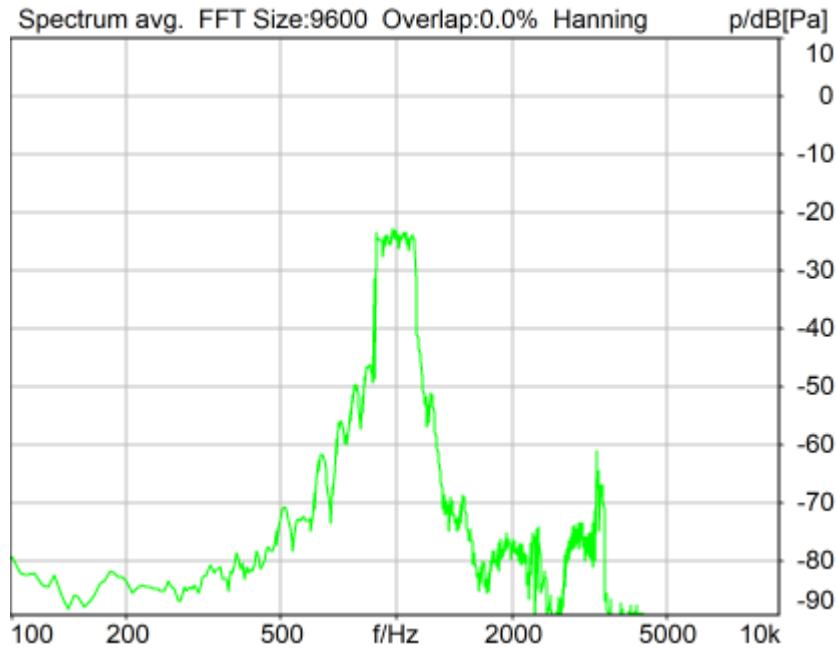
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 27.04 dB (4.45%) Ok

**Ok**

2024/1/19 21:24 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N



**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.	1155.0 Hz
Stimulus min.	855.0 Hz	Analysis max.	850.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1160.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

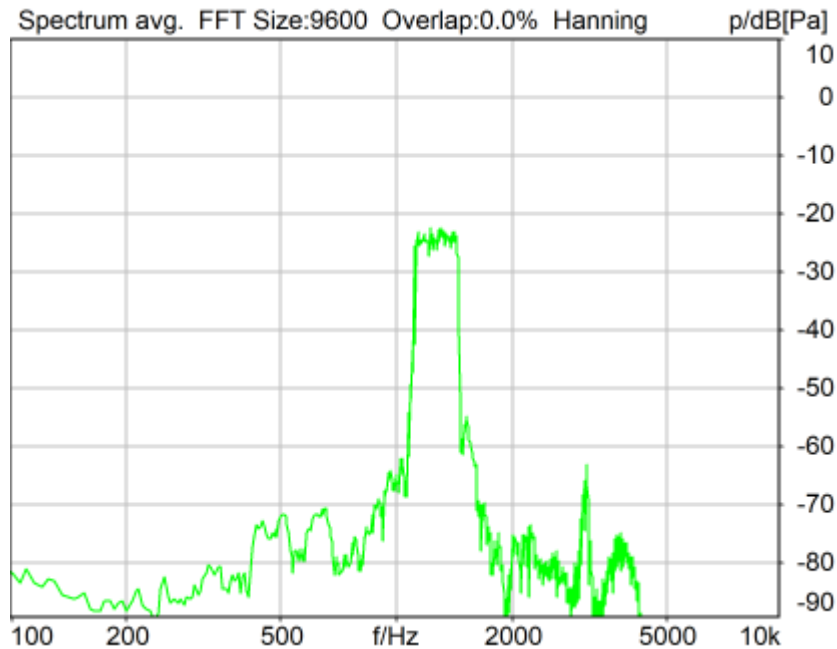
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 31.34 dB (2.71%) Ok

**Ok**

2024/1/19 21:25 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye 0.0 mm      Rotation Delta A 0.0 °  
Rotation Delta C 0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.8 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	1085.0 Hz
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 123.6000 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 -> 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))**

<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))**

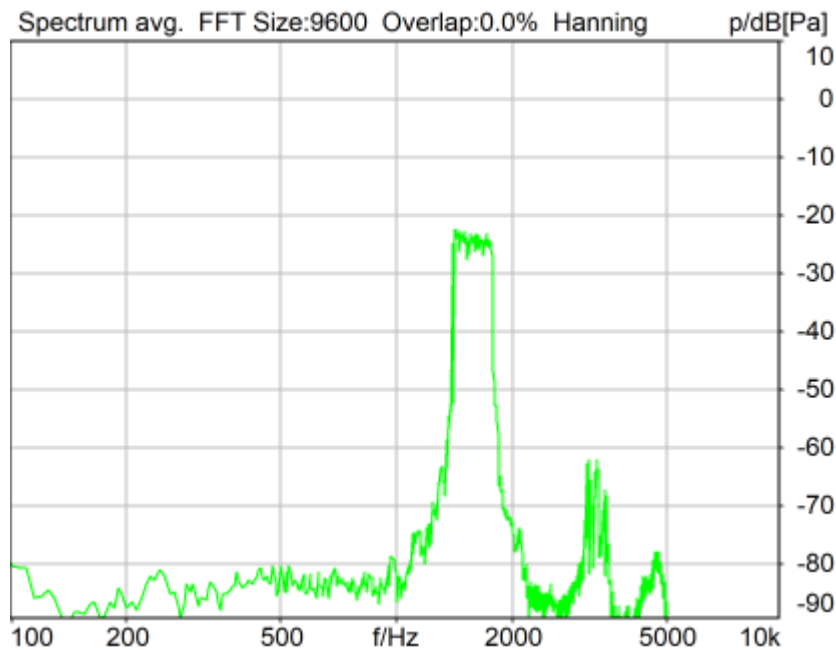
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 37.05 dB (1.40%) Ok

**Ok**

2024/1/19 21:25 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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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 123.6000 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 ->	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))

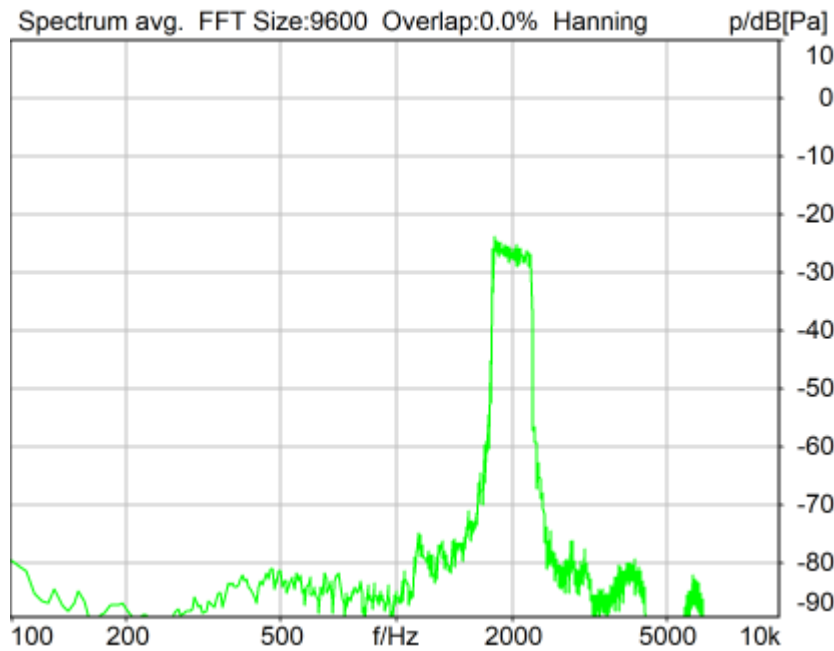
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 36.85 dB (1.44%) Ok

**Ok**

2024/1/19 21:25 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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 123.6000 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 -> 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  
 -----

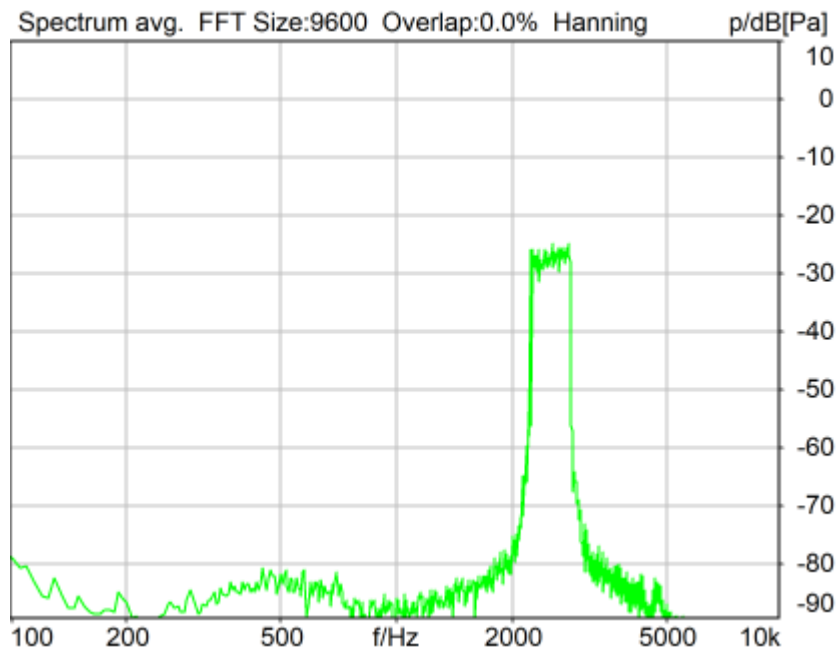
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 39.61 dB (1.05%) Ok

**Ok**

2024/1/19 21:26 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	2205.0 Hz
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 123.6000 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**

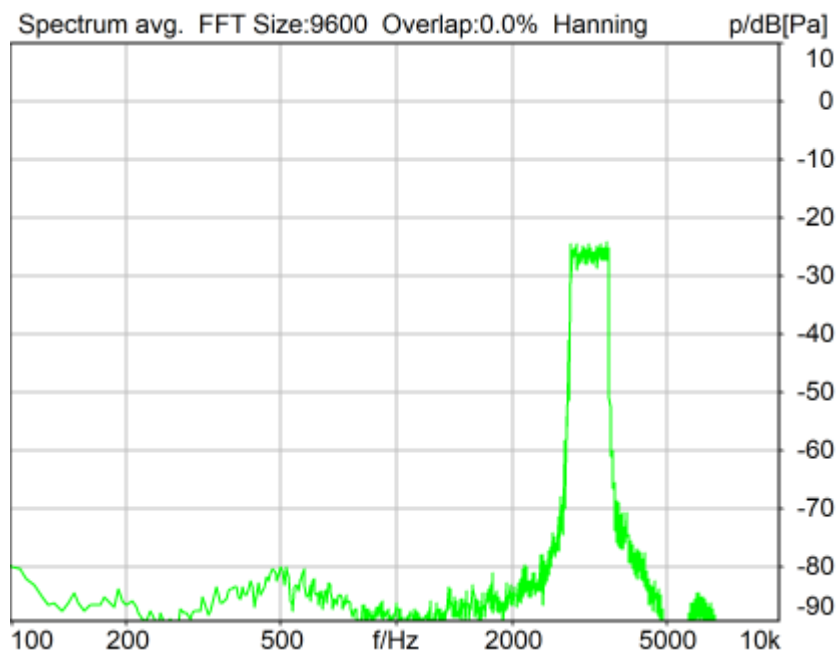
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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 - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 38.16 dB (1.24%) Ok

**Ok**

2024/1/19 21:26 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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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.	3585.0 Hz
Stimulus min.	2785.0 Hz	Analysis max.	2780.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	3590.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))

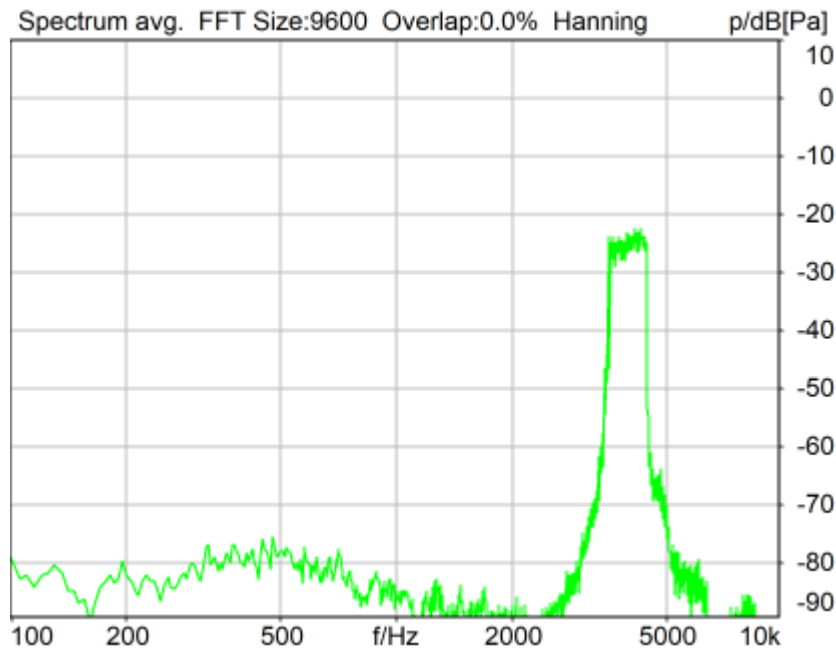
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 33.06 dB (2.22%) Ok

**Ok**

2024/1/19 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\_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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

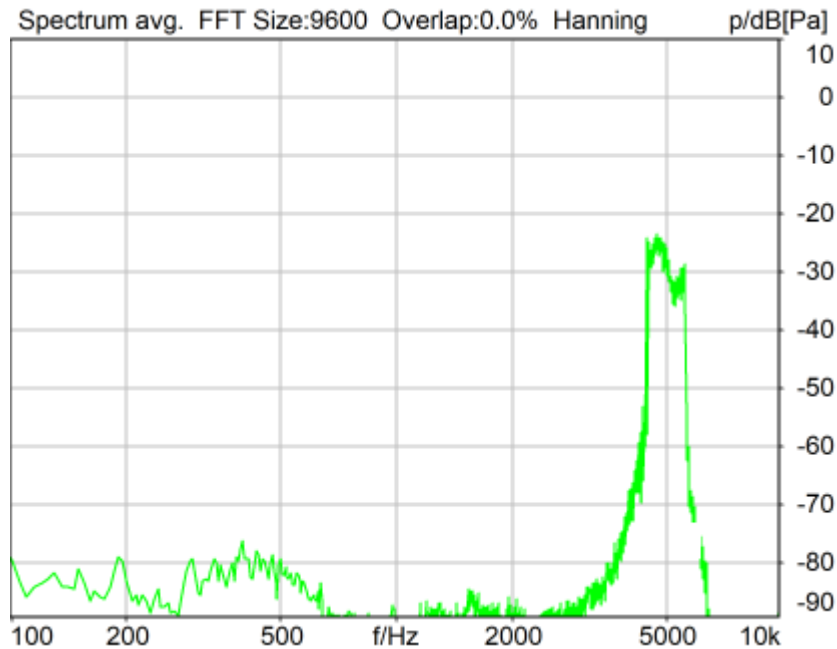
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 36.22 dB (1.55%) Ok

**Ok**

2024/1/19 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye 0.0 mm      Rotation Delta A 0.0 °  
Rotation Delta C 0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.8 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	5660.0 Hz
Stimulus min.	4430.0 Hz	Analysis max.	4425.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	5665.0 Hz		

**Special Features**

Compensate delay 123.6000 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 -> 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))**

<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

**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

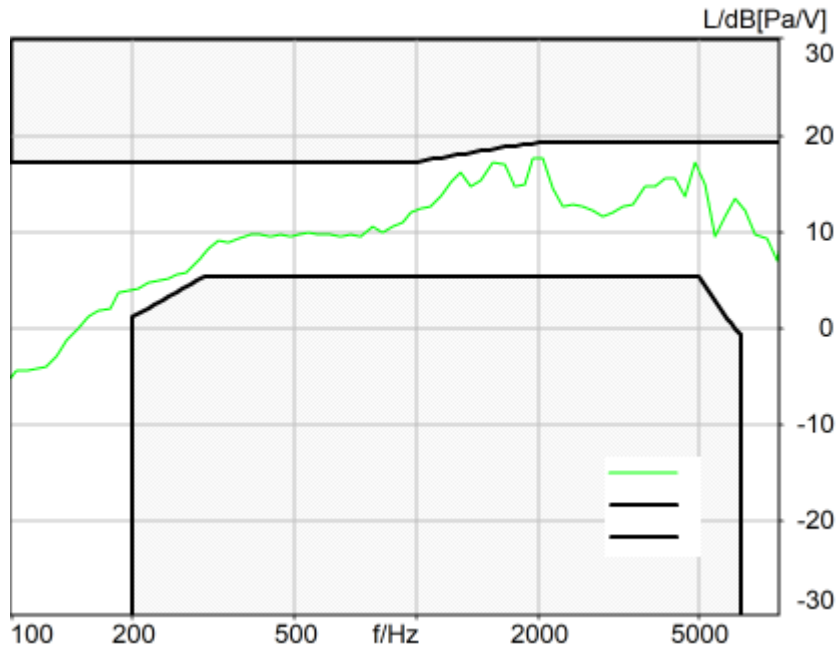
Region	Frequency	SDNR
1	250Hz	31.40 dB
2	315Hz	33.62 dB
3	400Hz	32.00 dB
4	500Hz	31.31 dB
5	630Hz	33.94 dB
6	800Hz	32.78 dB
7	1000Hz	27.04 dB
8	1250Hz	31.34 dB
9	1600Hz	37.05 dB
10	2000Hz	36.85 dB
11	2500Hz	39.61 dB
12	3150Hz	38.16 dB
13	4000Hz	33.06 dB
14	5000Hz	36.22 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 27.04dB at 1000Hz.

2024/1/19 21:27 ACQUA

**5.3 Frequency Response 8N FF**

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



Absolute minimal distance  
 1.37 dB at 272.2 Hz Ok

**Ok**

2024/1/19 21:19 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 8.0 N, Force reached: 8.0 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	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_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 123.6000 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 -> 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))

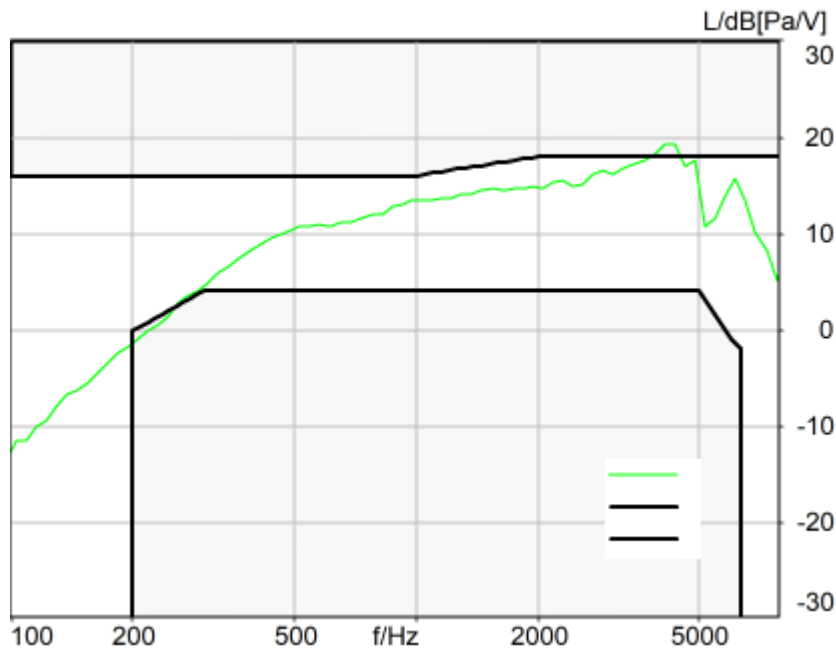
Ser. Nr. 12306613 Pinna Type Type 3.3

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  
 -1.23 dB at 4369.4 Hz Not Ok

**Not Ok**

2024/1/19 21:20 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))

**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	-6.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 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:	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_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 123.6000 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 -> 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))

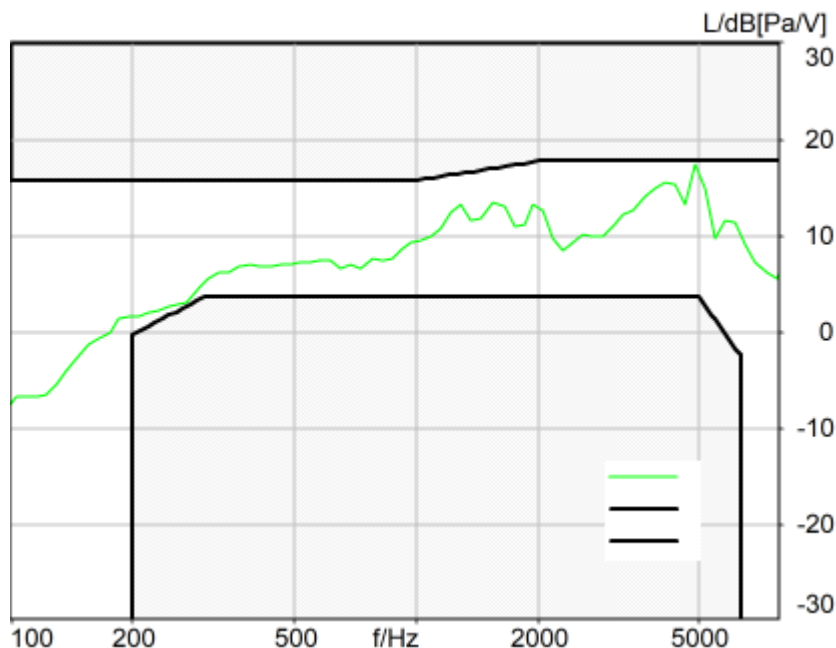
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

0.35 dB at 4870.0 Hz Ok

**Ok**

2024/1/19 21:28 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))

#### 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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 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	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave		
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 123.6000 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 -> 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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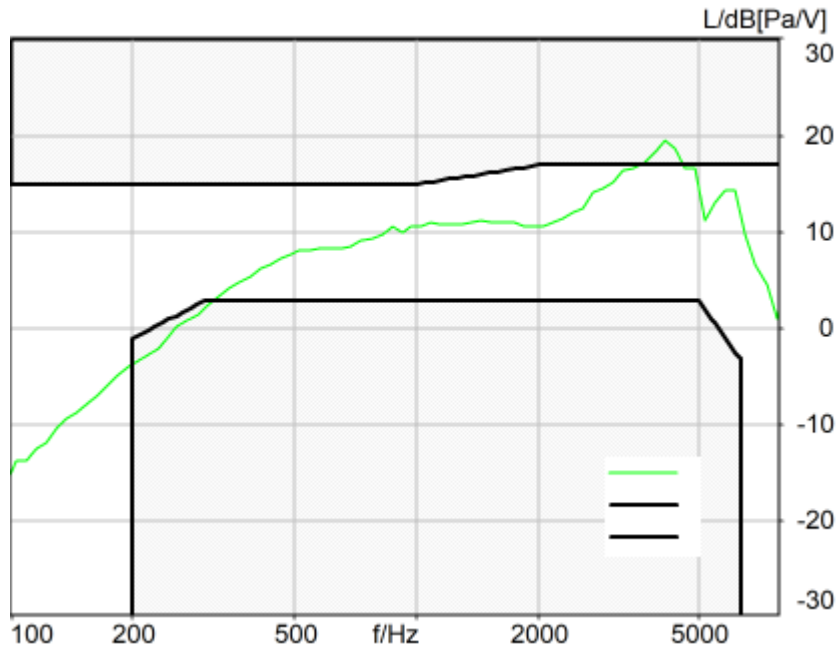
**HIB Settings**

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  
 -2.49 dB at 4119.5 Hz Not Ok

**Not Ok**

2024/1/19 21:28 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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 1.9 N

**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 123.6000 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 -> 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

## **Measurement Protocol**

Measurement Object	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/7 8:52
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	207.1	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.37	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.34	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.31	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.31	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.83	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.85	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.33	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.42	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.31	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.65	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.77	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.18	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.42	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.32	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.47	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	31.88	WIFI 2.4G_802.11b

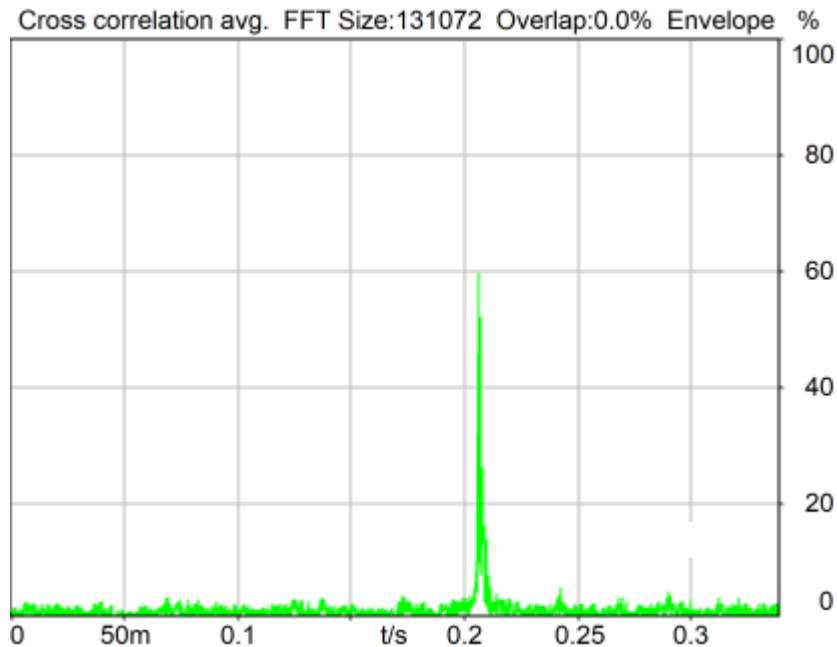
630 Hz NB		0.0 dB		1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.92	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.30	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.53	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.42	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.58	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.95	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.33	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1600Hz)	20.42	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1647.8 Hz	1.33	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	0.04	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	0.33	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_CH6
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.43	WIFI 2.4G_802.11b 1Mps_EVS NB24.4kbps_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
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## Overall Receive Delay NB

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



Delay (Cross): 207.1 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
-------------	---------	-------------	---------

**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))**

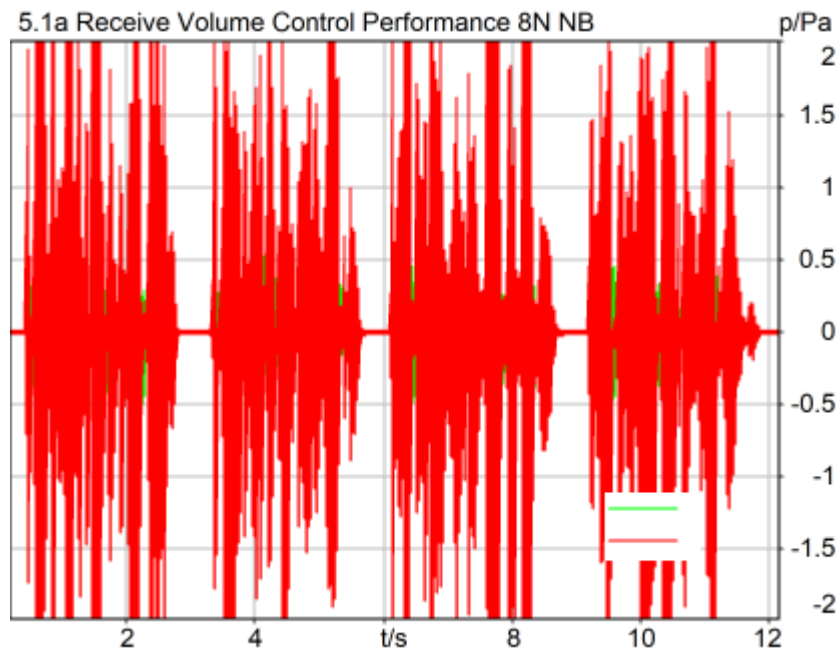
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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: 87.37 dB[SPL], Act.: 86.02%

Corrected Speech Level: 17.37 dB[SPL] Not Ok

### Not Ok

2024/1/22 22:44 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_ieeee1652
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 207.1000 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))

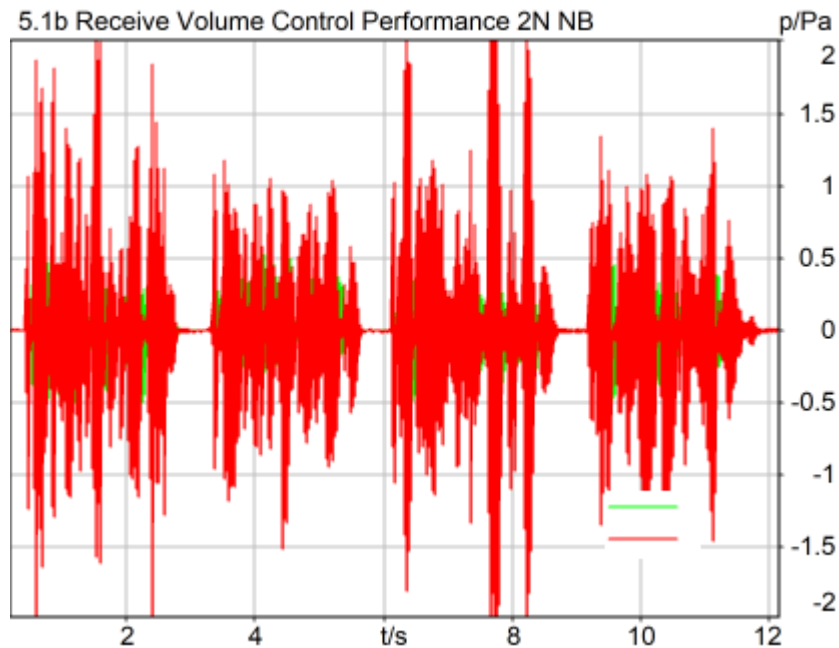
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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	

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

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



**Correction**

X - 70

Speech Level RCV: 81.34 dB[SPL], Act.: 85.85%

Corrected Speech Level: 11.34 dB[SPL] Ok

**Ok**

2024/1/22 22:52 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 207.1000 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))

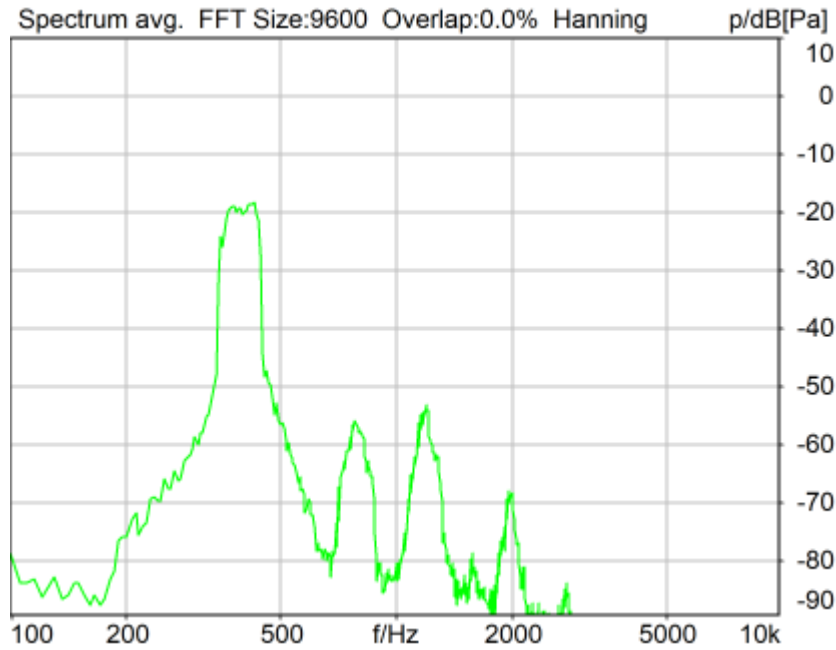
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 32.31 dB (2.42%) Ok

**Ok**

2024/1/19 16:23 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
 Force to apply: 8.0 N, Force reached: 8.0 N

**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.	480.0 Hz
Stimulus min.	320.0 Hz	Analysis max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	485.0 Hz		

**Special Features**

Compensate delay 179.2000 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 -> 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))**

<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))**

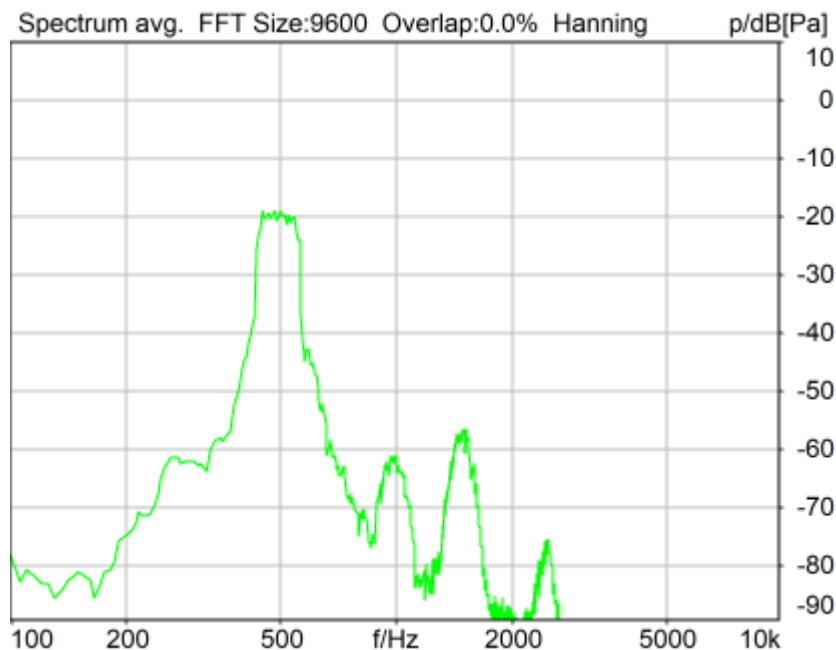
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain 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): 30.31 dB (3.05%) Ok

**Ok**

2024/1/19 16:24 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °



MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.3 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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.	410.0 Hz
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 179.2000 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 -> 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))**

<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))**

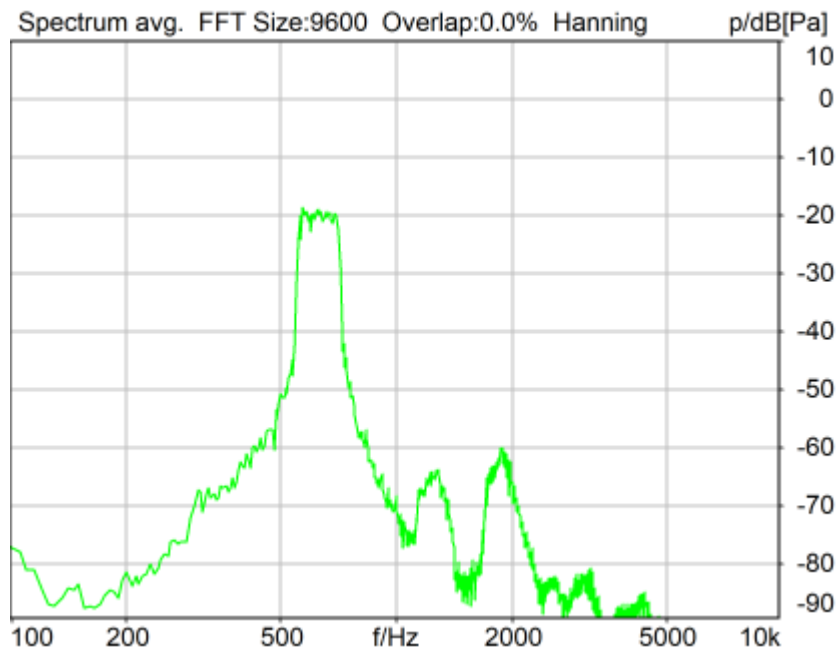
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 32.83 dB (2.28%) Ok

**Ok**

2024/1/19 16:24 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\_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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 179.2000 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 -> 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 Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

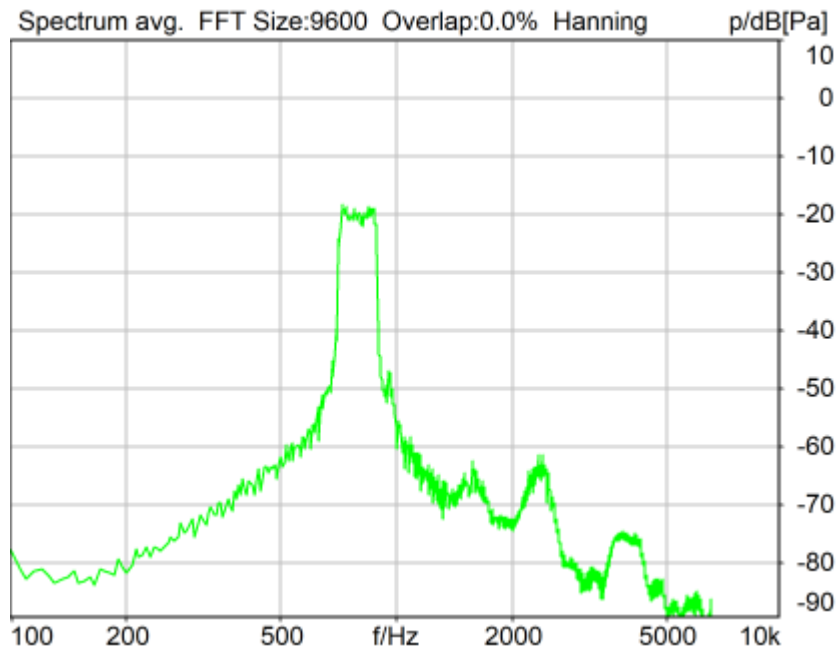
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 30.85 dB (2.87%) 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 179.2000 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 -> 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

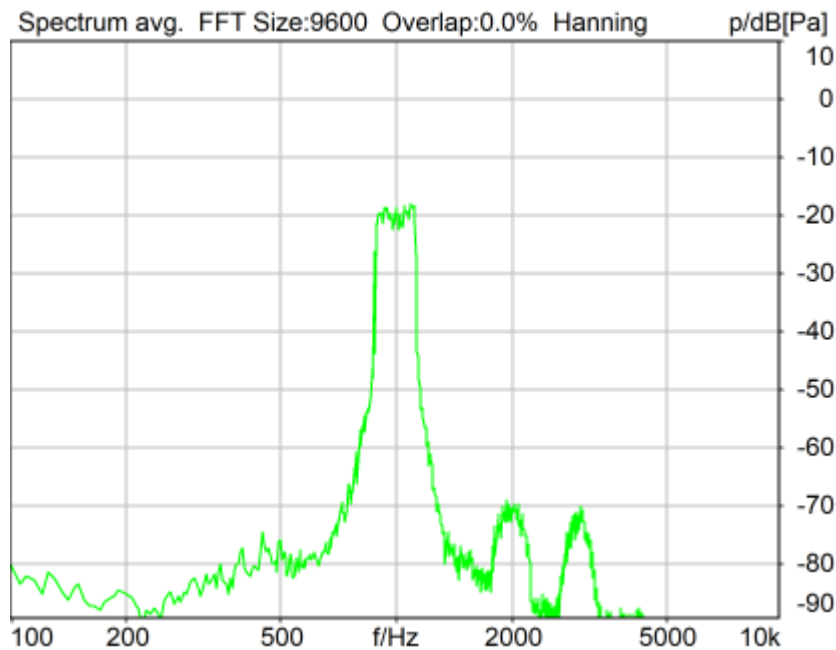
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.          12306613                      Pinna Type          Type 3.3

**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 NB**

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



Distortion (Noise) RCV (packed): 38.33 dB (1.21%) 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	855.0 Hz
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 179.2000 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 -> 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))

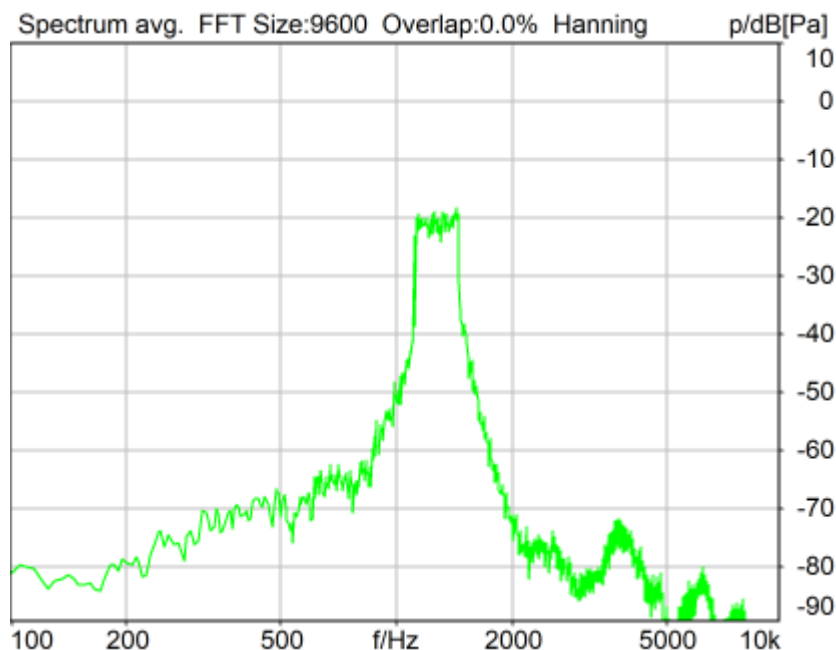
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 21.42 dB (8.49%) 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 179.2000 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 -> 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))

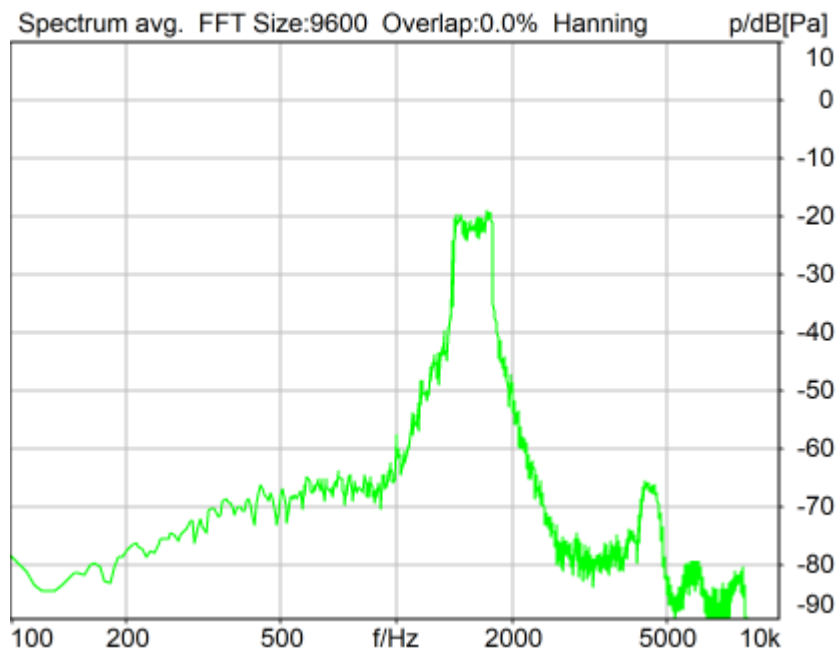
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 22.31 dB (7.66%) 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\_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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1815.0 Hz
Stimulus min.	1375.0 Hz	Analysis max.	1370.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1820.0 Hz		

**Special Features**

Compensate delay 179.2000 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 -> 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))**

<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))**

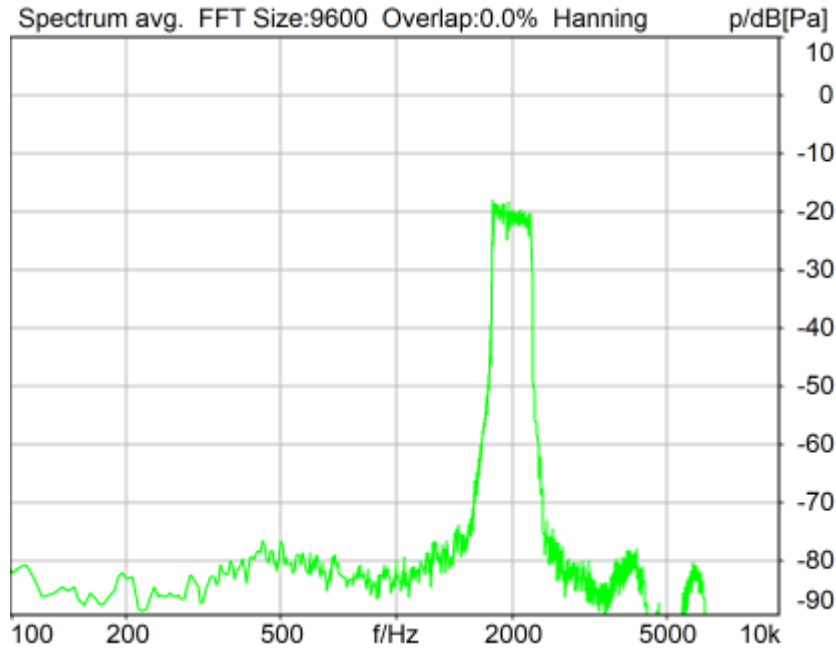
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain 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): 37.65 dB (1.31%) 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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.3 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1745.0 Hz
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 179.2000 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 -> 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))

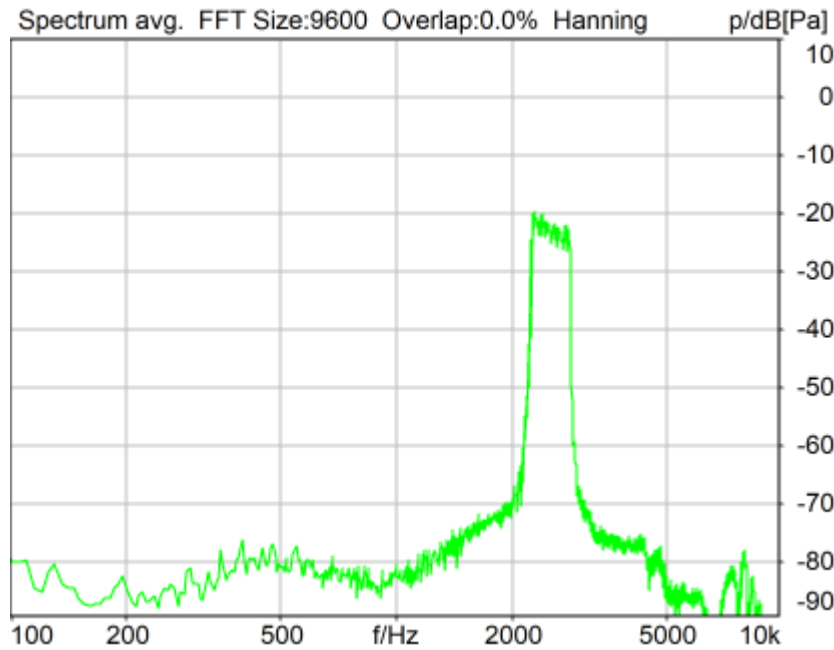
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 36.77 dB (1.45%) 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	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 179.2000 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 -> 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))**

<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



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))

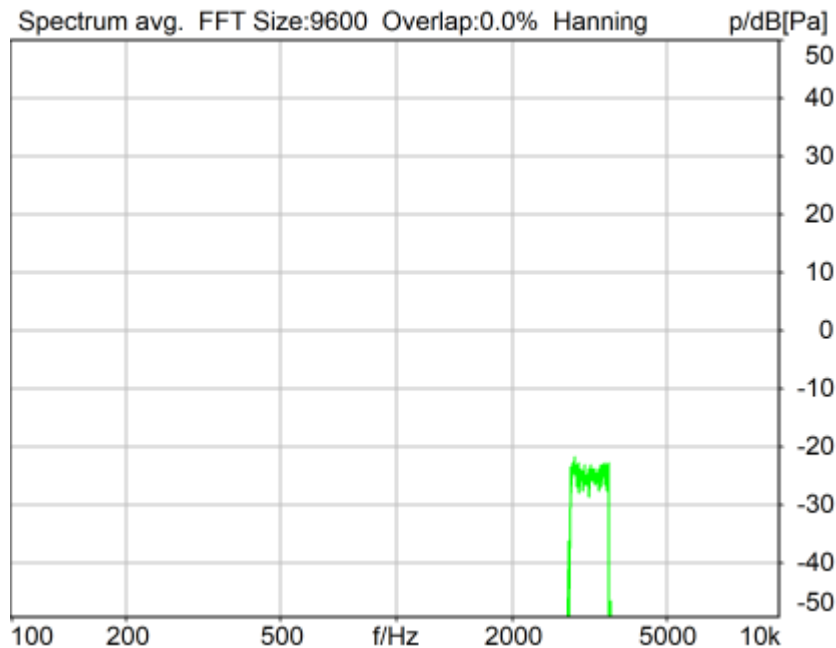
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 35.18 dB (1.74%) 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))

**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	-4.3 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 179.2000 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 -> 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 8N

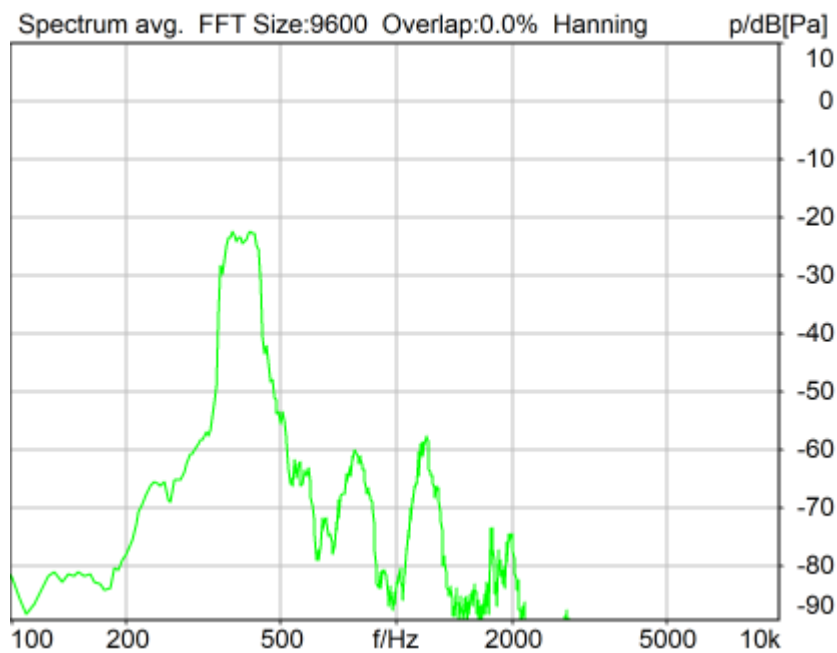
Region	Frequency	SDNR
1	400Hz	32.31 dB
2	500Hz	30.31 dB
3	630Hz	32.83 dB
4	800Hz	30.85 dB
5	1000Hz	38.33 dB
6	1600Hz	22.31 dB
7	2000Hz	37.65 dB
8	2500Hz	36.77 dB
9	3150Hz	35.18 dB
10	1250Hz	21.42 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.42dB 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): 31.32 dB (2.71%) 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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 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 179.2000 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 -> 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))**

<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**

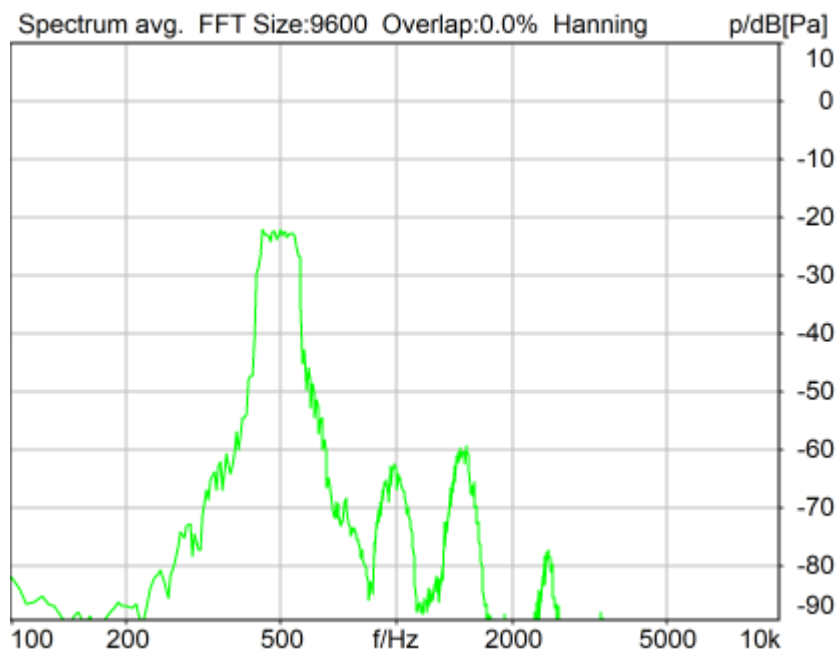
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB

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): 31.47 dB (2.67%) 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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 179.2000 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 -> 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))

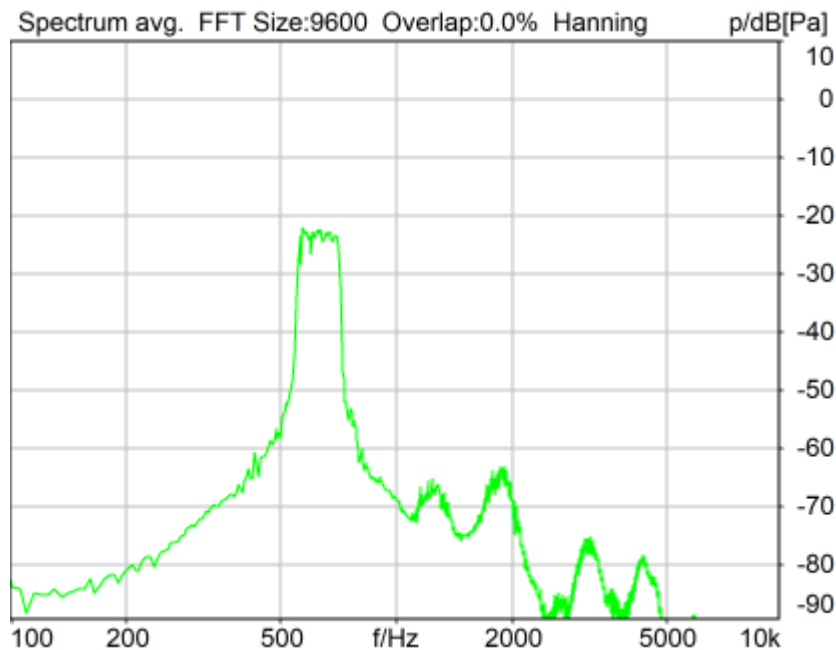
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 31.88 dB (2.55%) 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\_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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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 179.2000 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 -> 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 Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

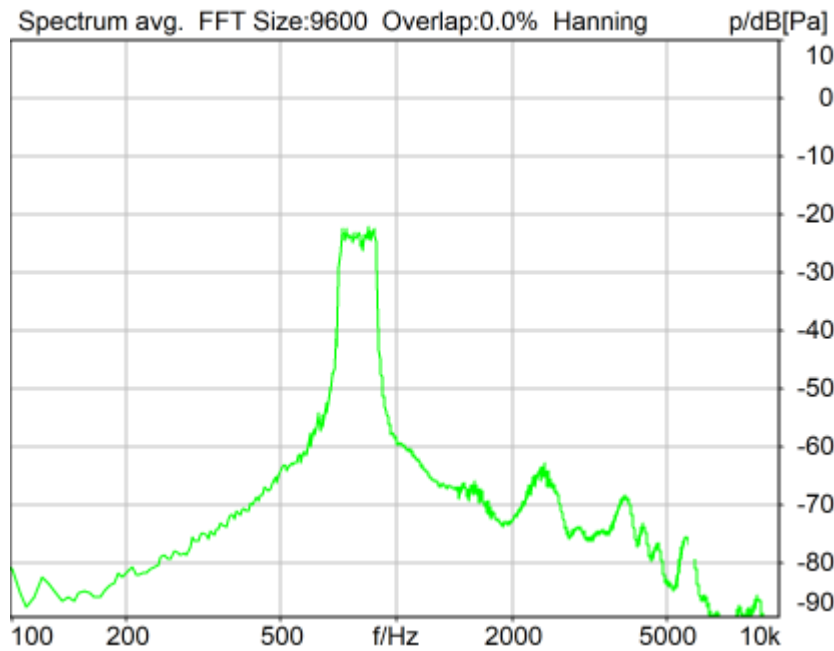
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 28.92 dB (3.58%) 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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 179.2000 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 -> 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

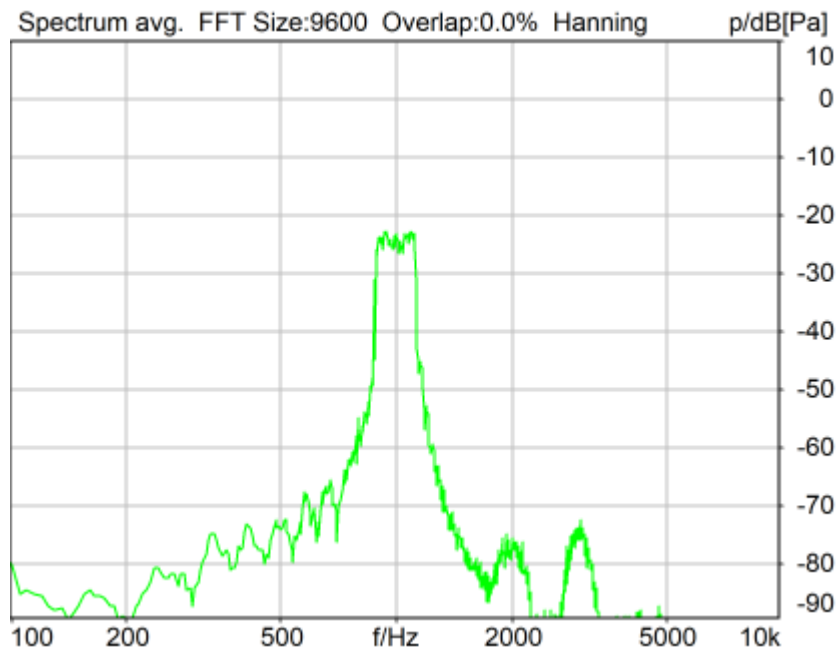
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.          12306613                      Pinna Type          Type 3.3

**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 NB**

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



Distortion (Noise) RCV (packed): 30.30 dB (3.05%) Ok

**Ok**

2024/1/19 16:48 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	855.0 Hz
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 179.2000 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 -> 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))

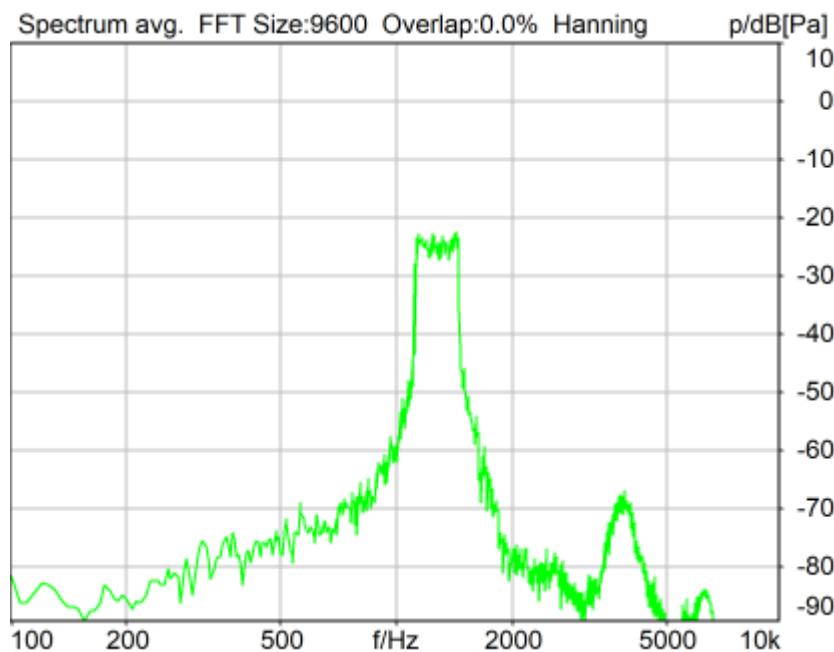
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 NB

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



Distortion (Noise) RCV (packed): 24.53 dB (5.94%) Ok

**Ok**

2024/1/19 16:48 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

**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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 179.2000 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 -> 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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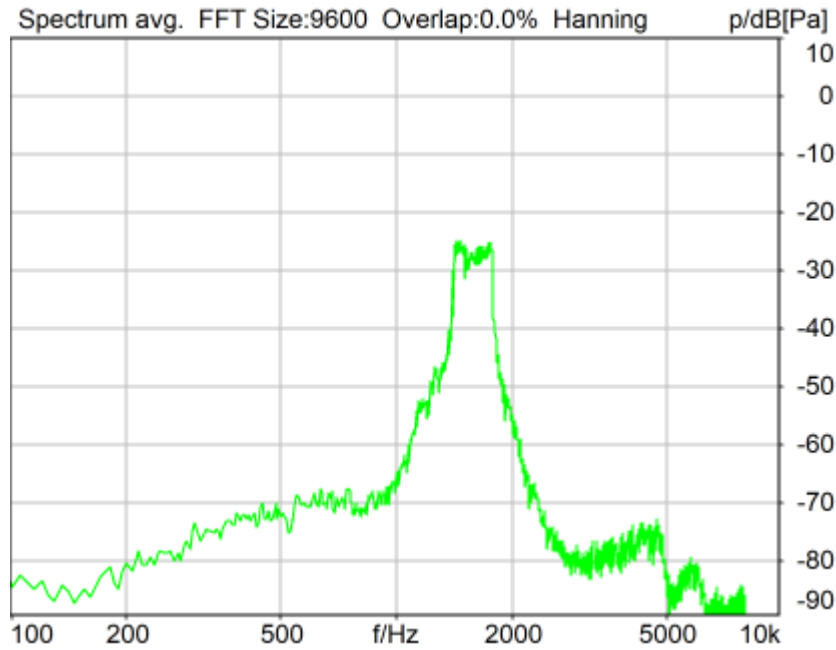
**HIB Settings**

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): 20.42 dB (9.53%) Ok

**Ok**

2024/1/19 16:49 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 1.9 N

**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 179.2000 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 -> 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))**

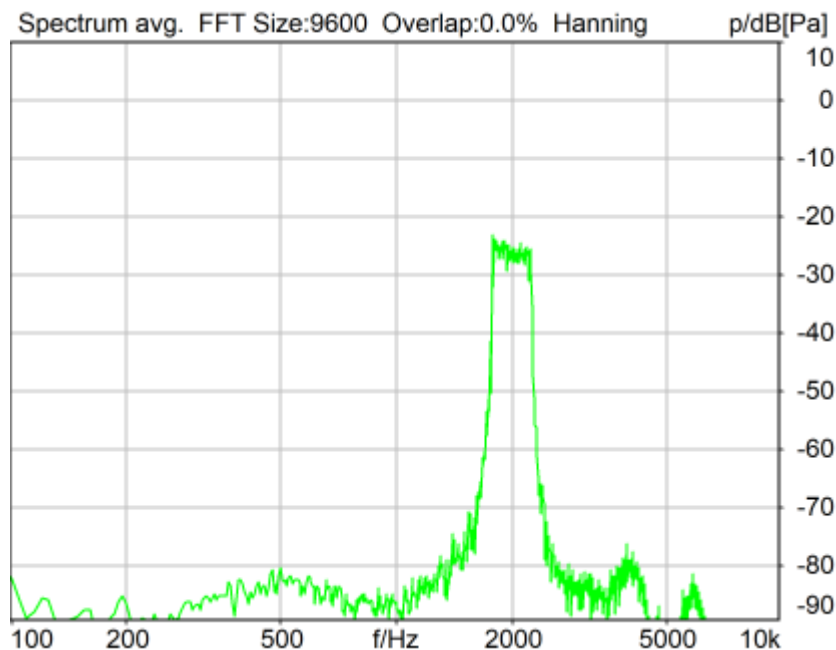
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 34.58 dB (1.87%) Ok

**Ok**

2024/1/19 16:49 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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	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 179.2000 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 -> 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))**

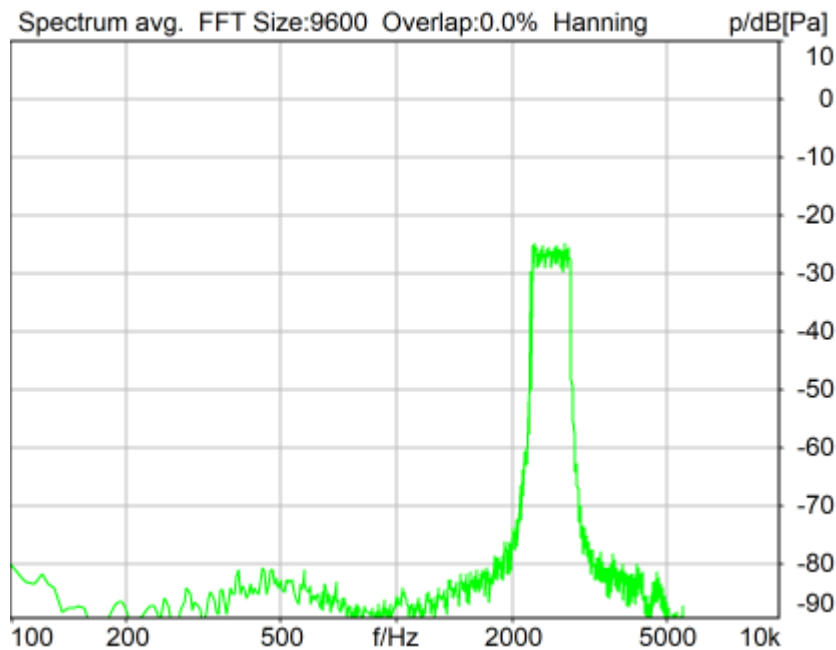
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 34.95 dB (1.79%) Ok

**Ok**

2024/1/19 16:50 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))

**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 °
Delta B		Delta B	0.0 °
Ym	-0.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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.	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 179.2000 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 -> 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))

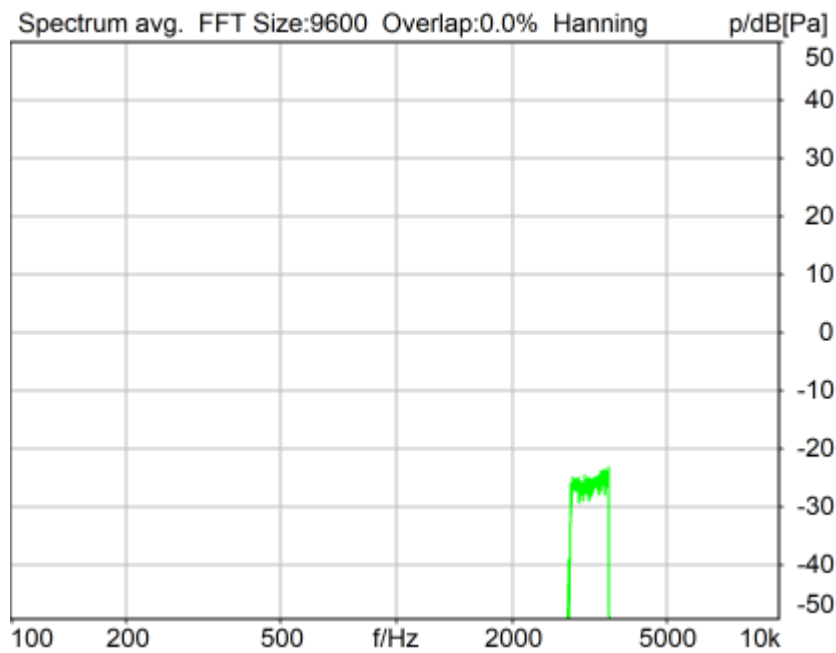
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 38.33 dB (1.21%) Ok

**Ok**

2024/1/19 16:50 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 N

**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 179.2000 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 -> 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

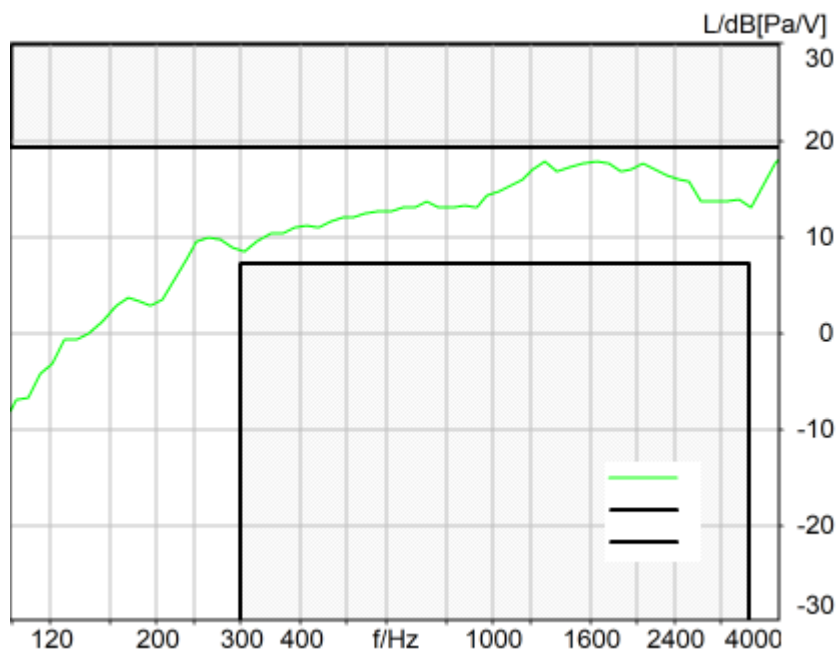
Region	Frequency	SDNR
1	400Hz	31.32 dB
2	500Hz	31.47 dB
3	630Hz	31.88 dB
4	800Hz	28.92 dB
5	1000Hz	30.30 dB
6	1250Hz	24.53 dB
7	1600Hz	20.42 dB
8	2000Hz	34.58 dB
9	2500Hz	34.95 dB
10	3150Hz	38.33 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 20.42dB at 1600Hz.

2024/1/19 16:50 ACQUA

**5.3 Frequency Response 8N FF HANB**

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



Absolute minimal distance  
 1.33 dB at 1647.8 Hz Ok

**Ok**

2024/1/19 15:41 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))

**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	-3.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 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	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 179.2000 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 -> 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))**

<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

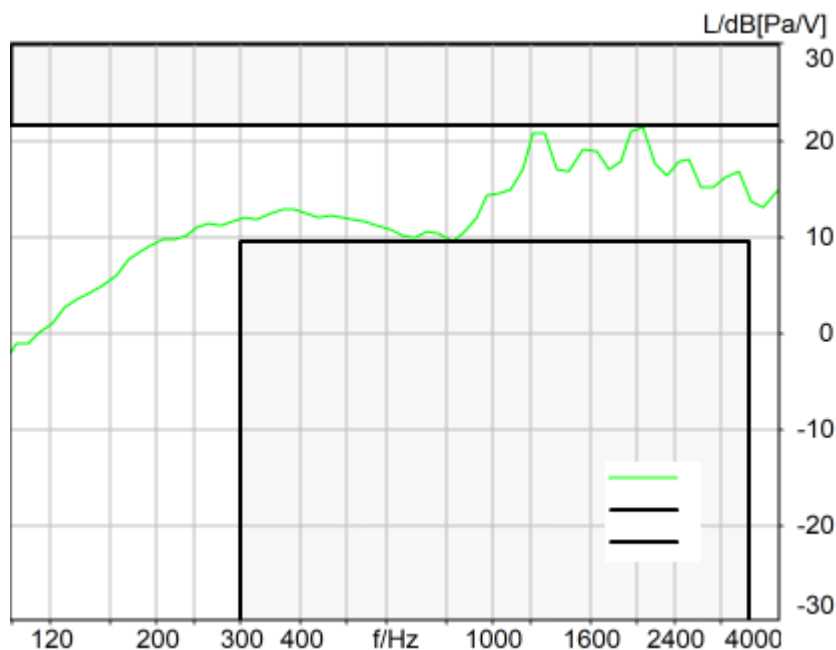
Pinna Type        Type 3.3

**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  
0.04 dB at 2057.5 Hz Ok

**Ok**

2024/1/19 16:29 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: 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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.3 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 179.2000 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 -> 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))

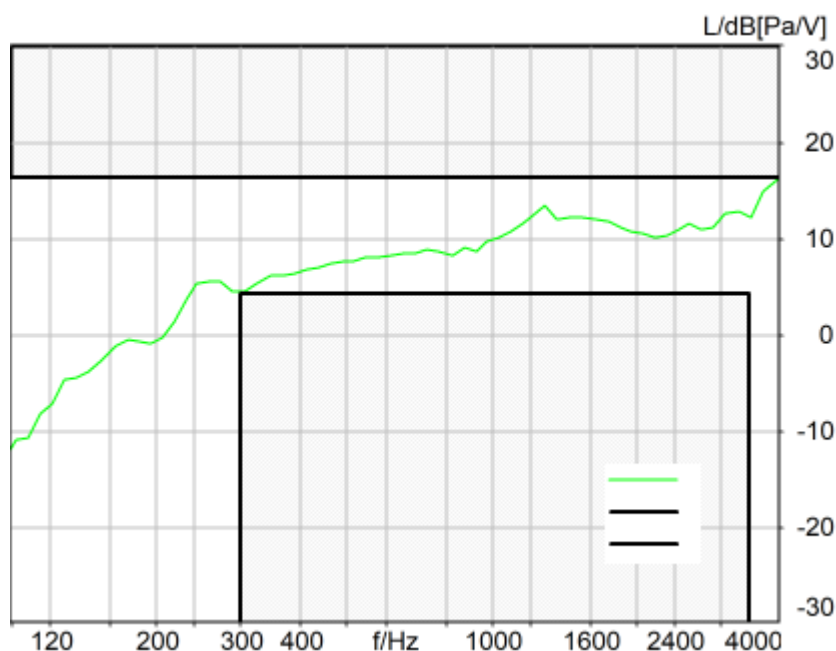
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 FF HANB

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



Absolute minimal distance  
 0.33 dB at 3882.4 Hz Ok

**Ok**

2024/1/19 16:51 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 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	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	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 179.2000 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 -> 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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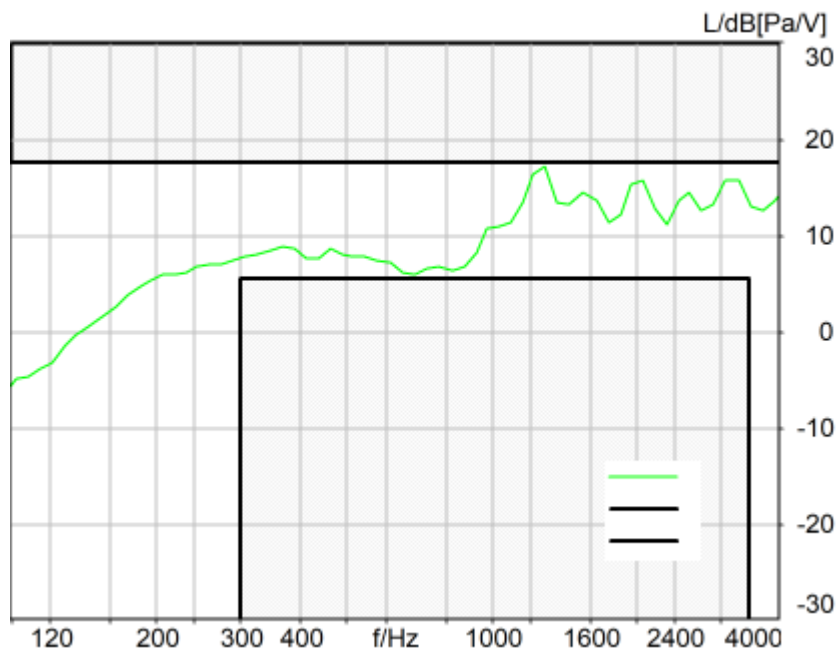
**HIB Settings**

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  
 0.43 dB at 1285.9 Hz Ok

**Ok**

2024/1/19 16:51 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))

**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	-0.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 1.9 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:	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 179.2000 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 -> 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
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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	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
Description	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/7 8:53
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	163.0	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	17.24	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	11.16	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.20	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.71	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.15	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.67	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.01	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.91	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.54	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.96	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.77	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.95	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.30	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.25	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.29	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise -	Ok	Distortion (Noise) [dB],	31.22	WIFI 2.4G_802.11b

5000 Hz WB		0.0 dB		1Mps_EVS WB 128kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.96	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.34	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.02	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.33	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.39	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.25	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.58	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.80	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.57	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.11	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.65	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.44	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.63	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	22.80	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 4369.4 Hz	1.32	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.3 Frequency Response 8N	Not Ok	Min. dist. to tolerance	-1.39	WIFI 2.4G_802.11b

DF		scheme [dB], 4119.5 Hz		1Mps_EVS WB 128kbps_CH6
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.93	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6
5.3 Frequency Response 2N DF	Not Ok	Min. dist. to tolerance scheme [dB], 4119.5 Hz	-2.98	WIFI 2.4G_802.11b 1Mps_EVS WB 128kbps_CH6

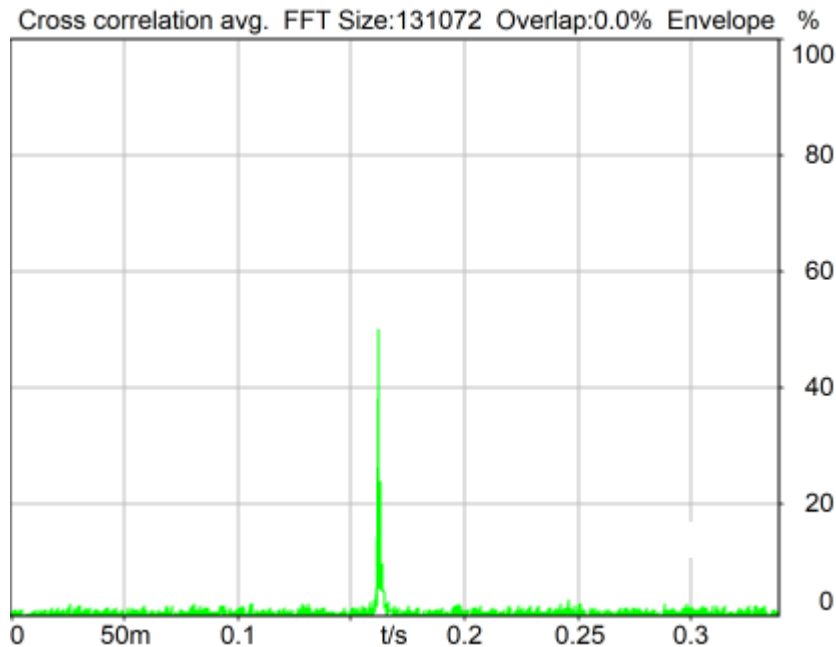
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5.2 RCV Distortion and Noise - 630 Hz WB	20
5.2 RCV Distortion and Noise - 800 Hz WB	22
5.2 RCV Distortion and Noise - 1000 Hz WB	24
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5.2 RCV Distortion and Noise - 1600 Hz WB	29
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5.2 RCV Distortion and Noise - 800 Hz WB	53
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5.2 RCV Distortion and Noise - 1250 Hz WB	58
5.2 RCV Distortion and Noise - 1600 Hz WB	60
5.2 RCV Distortion and Noise - 2000 Hz WB	62
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5.2 RCV Distortion and Noise - 3150 Hz WB	66
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## Overall Receive Delay WB

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



Delay (Cross): 163.0 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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-6.7 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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

**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**

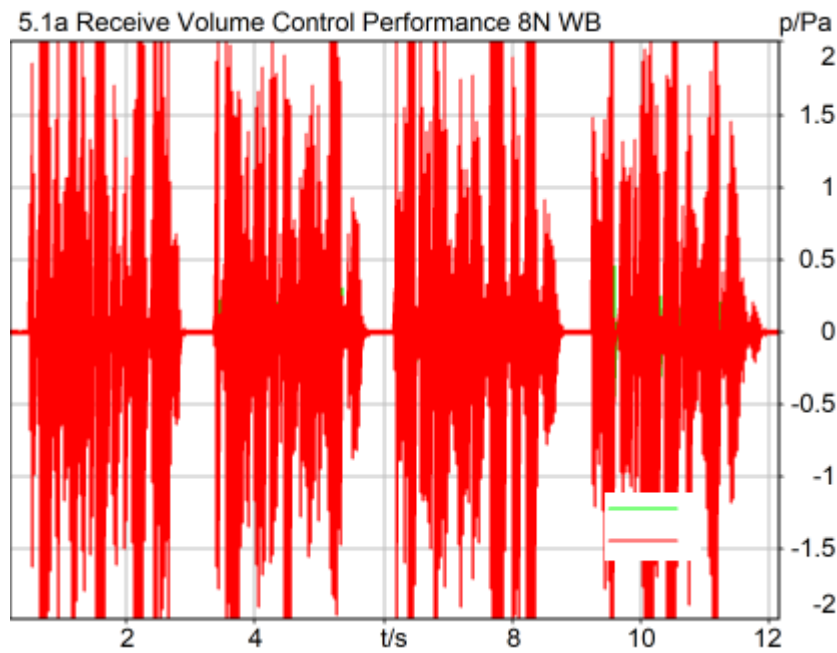
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB  
Gain 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

## 5.1a Receive Volume Control Performance 8N WB

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



### Correction

X - 70

Speech Level RCV: 87.24 dB[SPL], Act.: 86.27%

Corrected Speech Level: 17.24 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 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 163.0000 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))**

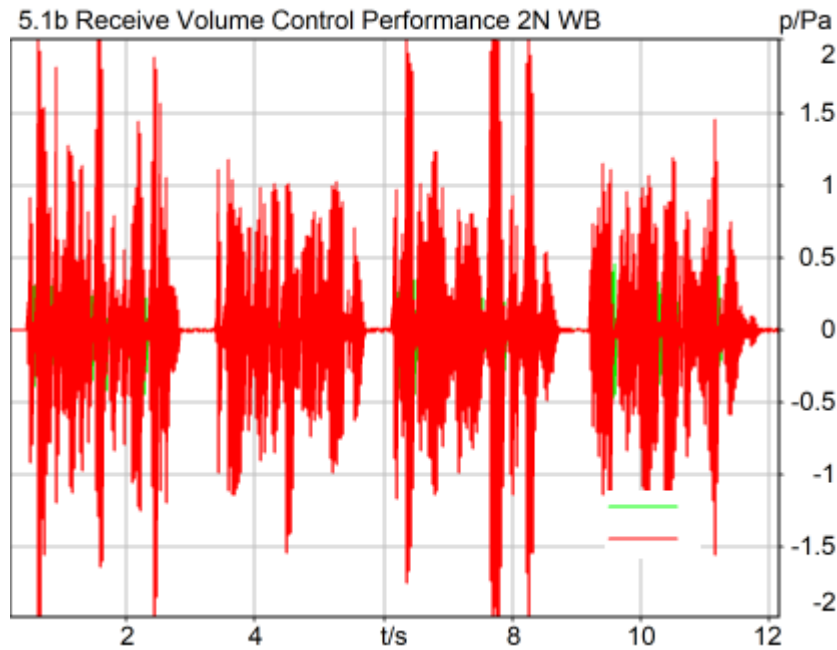
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 81.16 dB[SPL], Act.: 86.09%

Corrected Speech Level: 11.16 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 163.0000 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))**

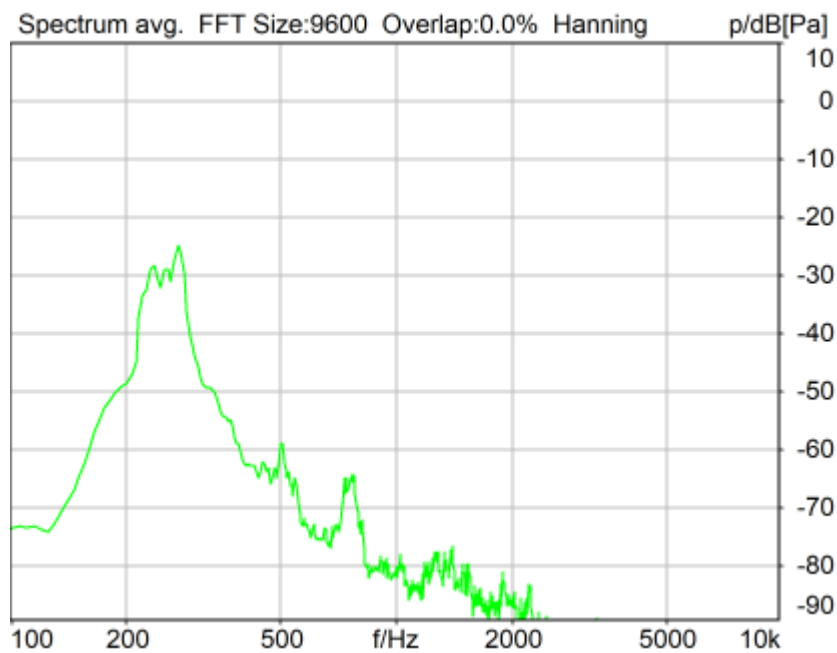
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 27.20 dB (4.36%) 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 7.9 N

**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 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	223.5000 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 ->	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

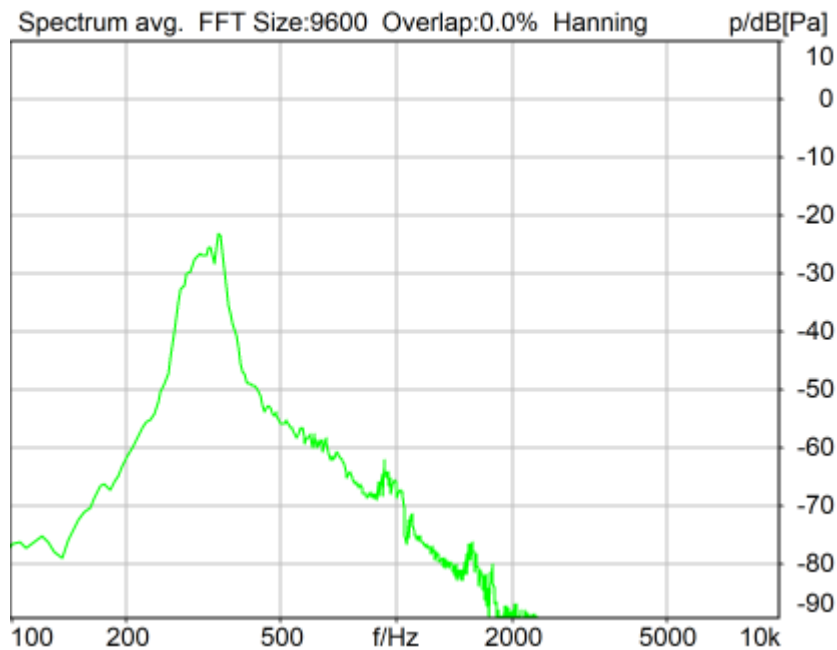


Mic 1 Power Supply Off

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): 24.71 dB (5.82%) 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\_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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 223.5000 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 -> 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))

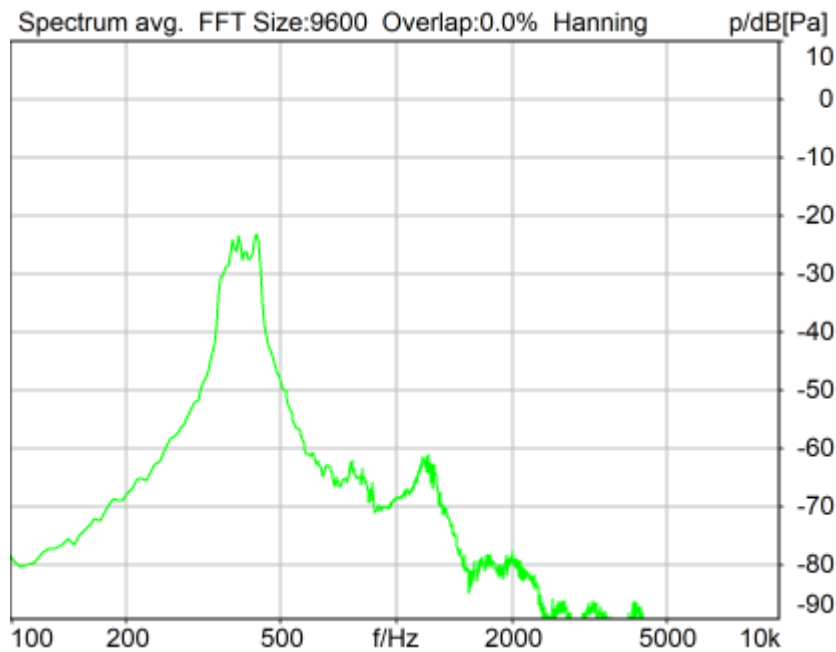
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 26.15 dB (4.93%) 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\_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))

**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 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-4.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 223.5000 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 -> 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))

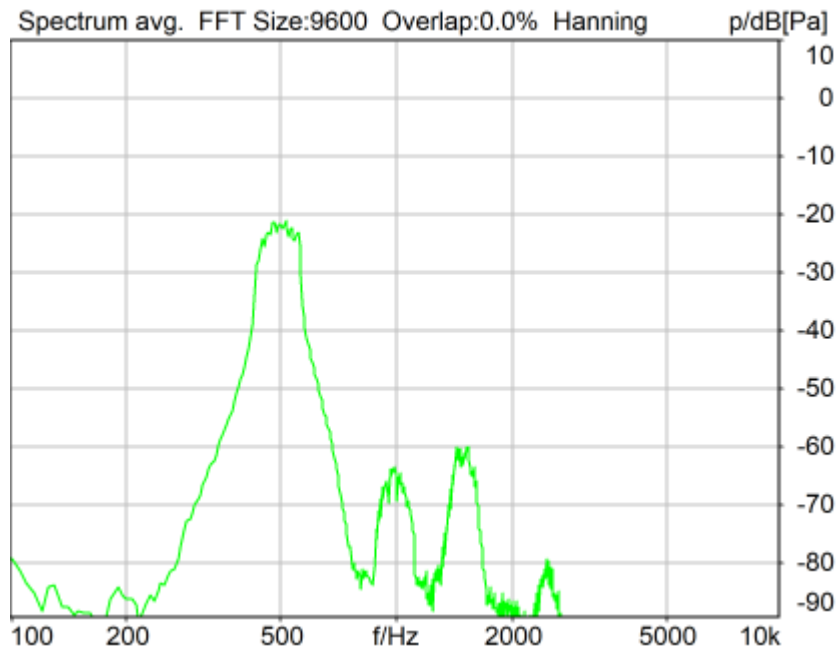
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

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Distortion (Noise) RCV (packed): 28.67 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 223.5000 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 -> 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))

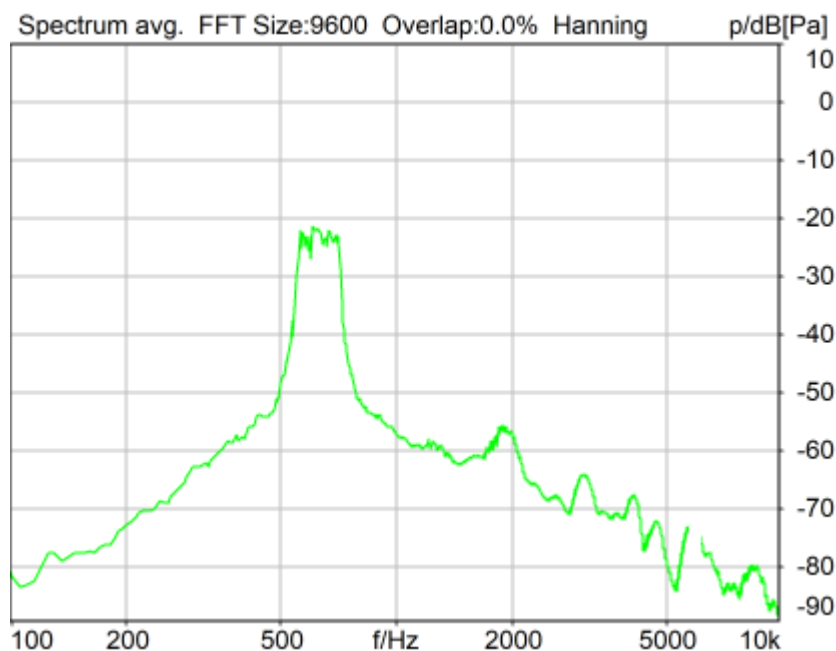
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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**

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Distortion (Noise) RCV (packed): 23.01 dB (7.07%) 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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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.	525.0 Hz
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 223.5000 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 -> 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))

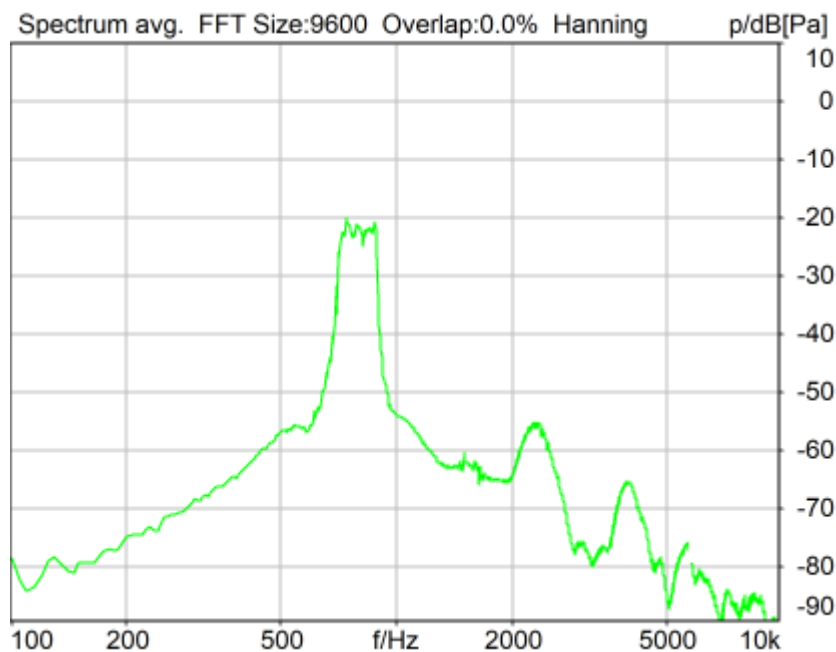
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 WB

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Distortion (Noise) RCV (packed): 24.91 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 7.9 N

**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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 223.5000 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 -> 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))

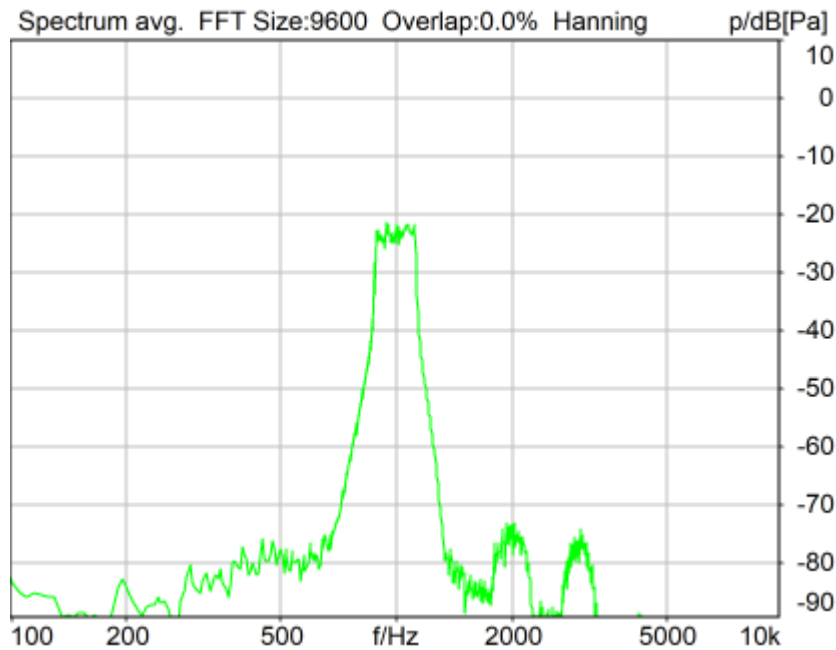
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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**

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Distortion (Noise) RCV (packed): 28.54 dB (3.74%) 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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.1 N

**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 223.5000 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 -> 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))**

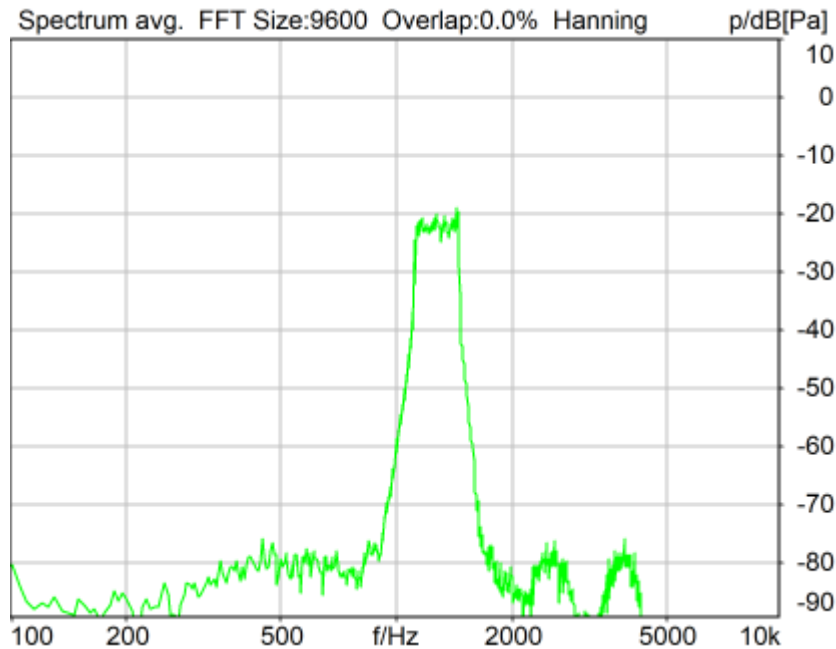
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 21.96 dB (7.98%) Ok

**Ok**

2024/1/19 17:02 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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.	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 223.5000 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 -> 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))**

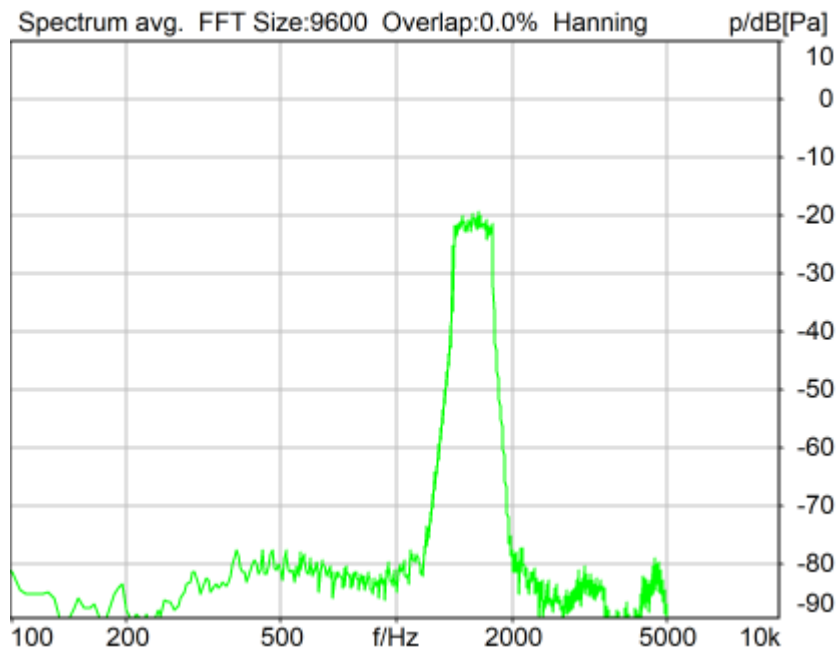
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 31.77 dB (2.58%) Ok

**Ok**

2024/1/19 16:58 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))

**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 °
Delta B		Delta B	0.0 °
Ym	-4.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 223.5000 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 -> 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))

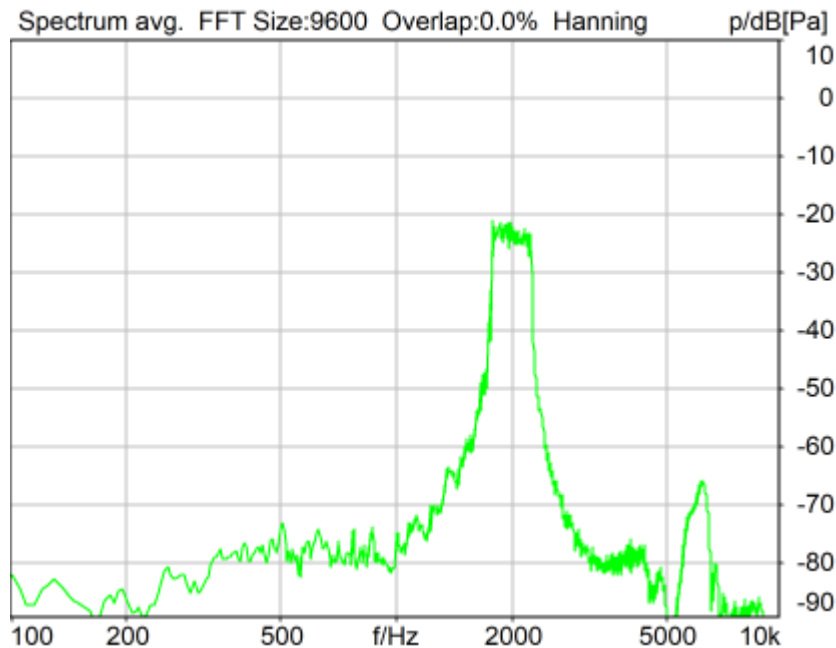
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 25.95 dB (5.04%) Ok

**Ok**

2024/1/19 16:59 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 223.5000 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 -> 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  
-----

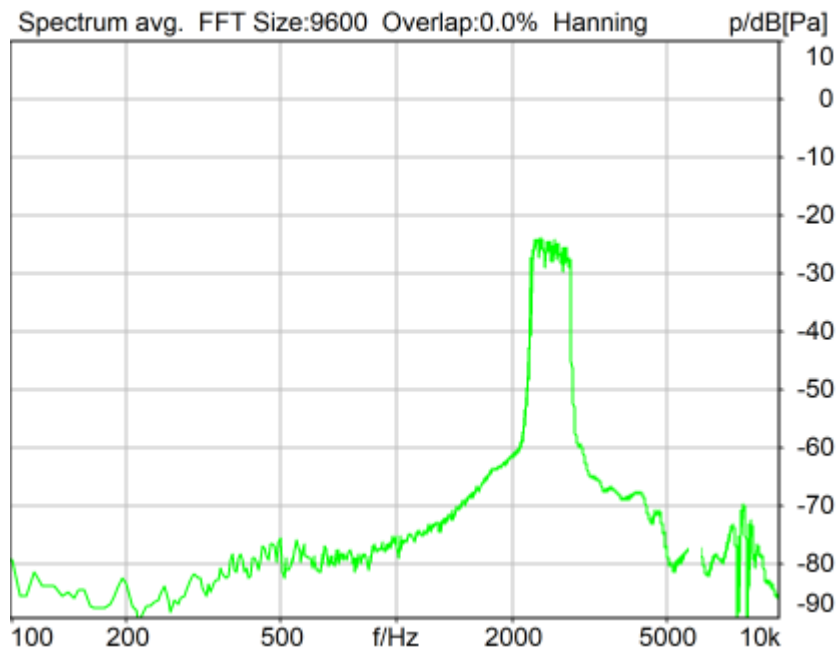
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 28.30 dB (3.85%) Ok

**Ok**

2024/1/19 16:59 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	2205.0 Hz
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 223.5000 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 -> 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))

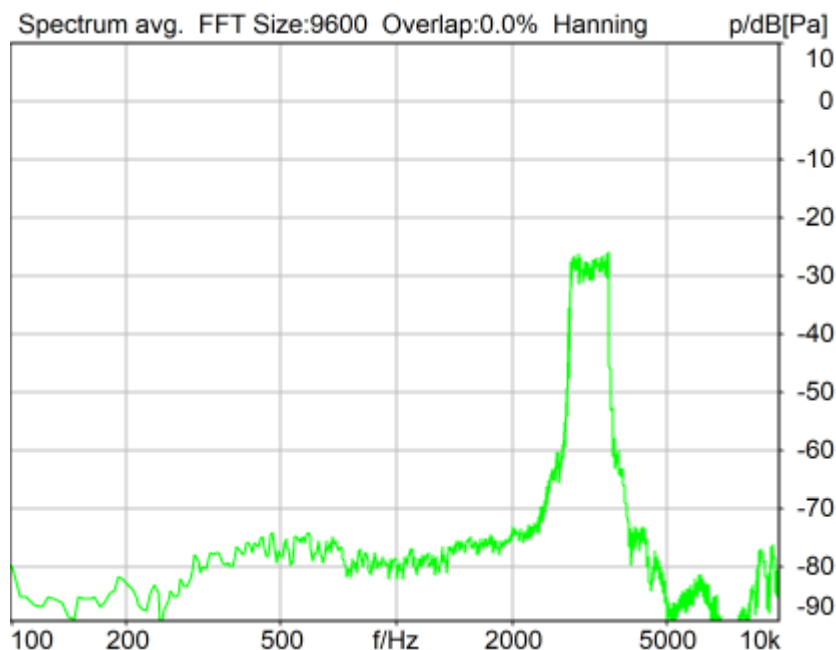
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 29.25 dB (3.45%) Ok

**Ok**

2024/1/19 16:59 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	2785.0 Hz
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 223.5000 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 -> 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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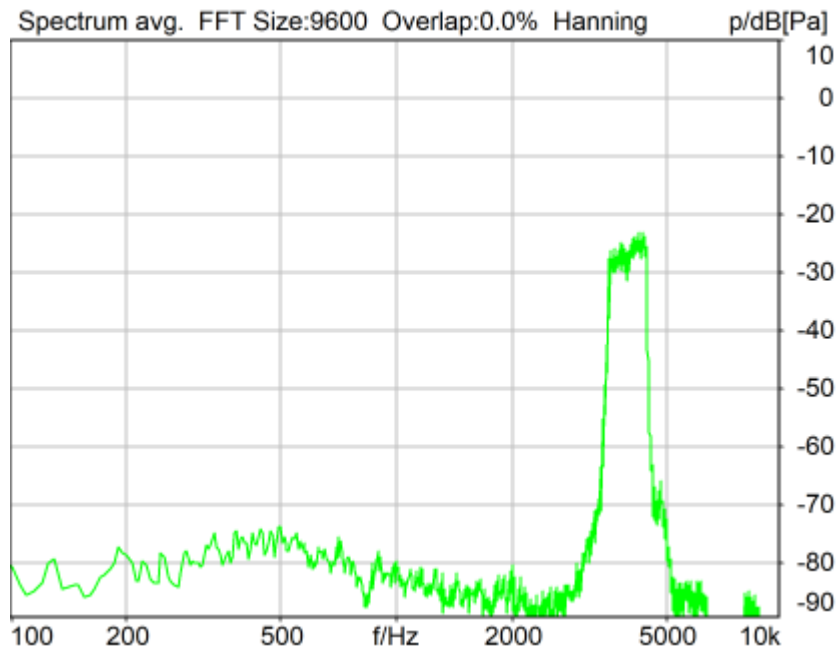
**HIB Settings**

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): 32.29 dB (2.43%) Ok

**Ok**

2024/1/19 17:00 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\_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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 223.5000 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 -> 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))**

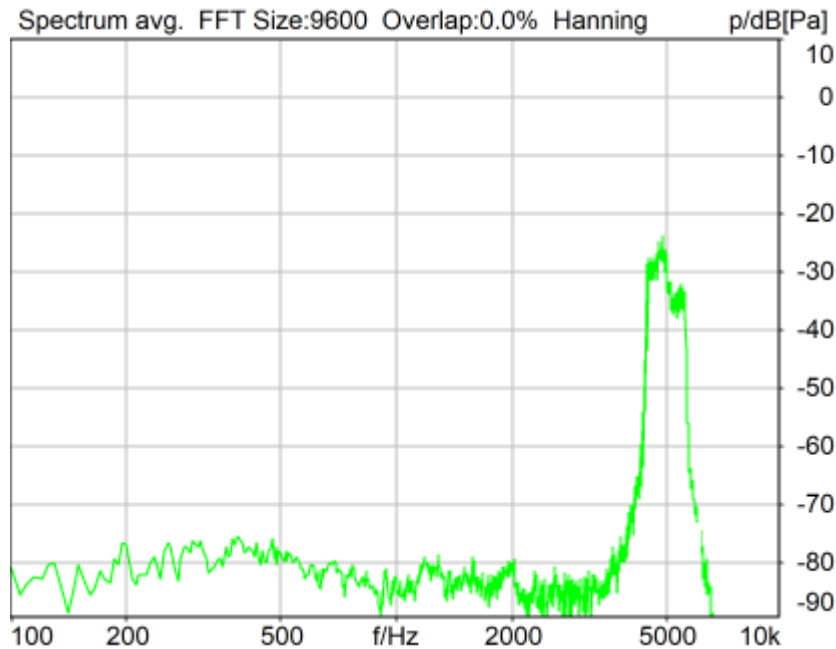
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 31.22 dB (2.75%) Ok

**Ok**

2024/1/19 17:00 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	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 223.5000 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 -> 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

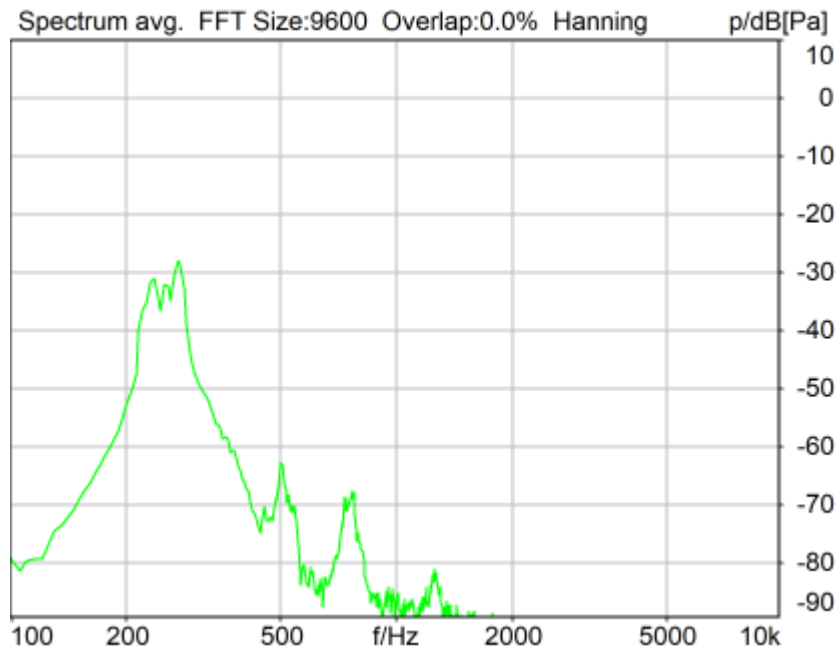
Region	Frequency	SDNR
1	250Hz	27.20 dB
2	315Hz	24.71 dB
3	400Hz	26.15 dB
4	500Hz	28.67 dB
5	630Hz	23.01 dB
6	800Hz	24.91 dB
7	1000Hz	28.54 dB
8	1600Hz	31.77 dB
9	2000Hz	25.95 dB
10	2500Hz	28.30 dB
11	3150Hz	29.25 dB
12	4000Hz	32.29 dB
13	5000Hz	31.22 dB
14	1250Hz	21.96 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.96dB at 1250Hz.

2024/1/19 17:02 ACQUA

**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): 28.34 dB (3.83%) Ok

**Ok**

2024/1/19 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\_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))

**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	-1.9 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 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 223.5000 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 -> 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))**

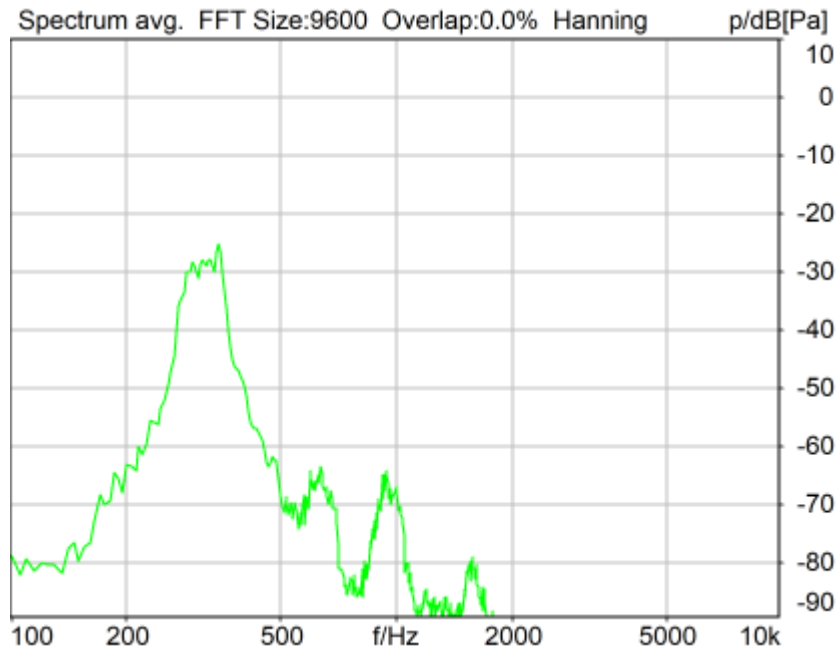
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 28.40 dB (3.80%) Ok

**Ok**

2024/1/19 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °



MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 mm	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	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.	245.0 Hz
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 223.5000 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 -> 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))**

<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))**

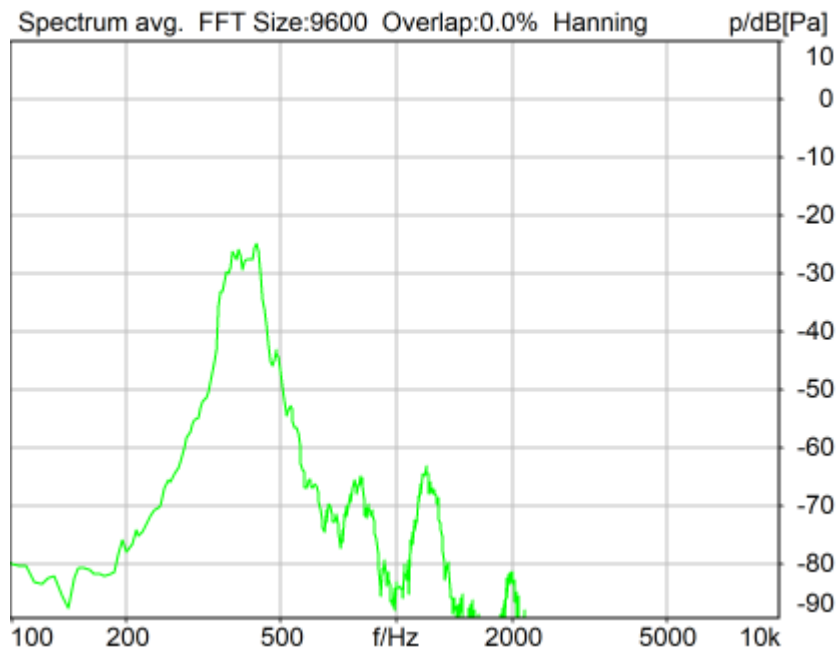
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 25.02 dB (5.61%) Ok

**Ok**

2024/1/19 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\_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))

**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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 mm	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 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 223.5000 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 -> 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))

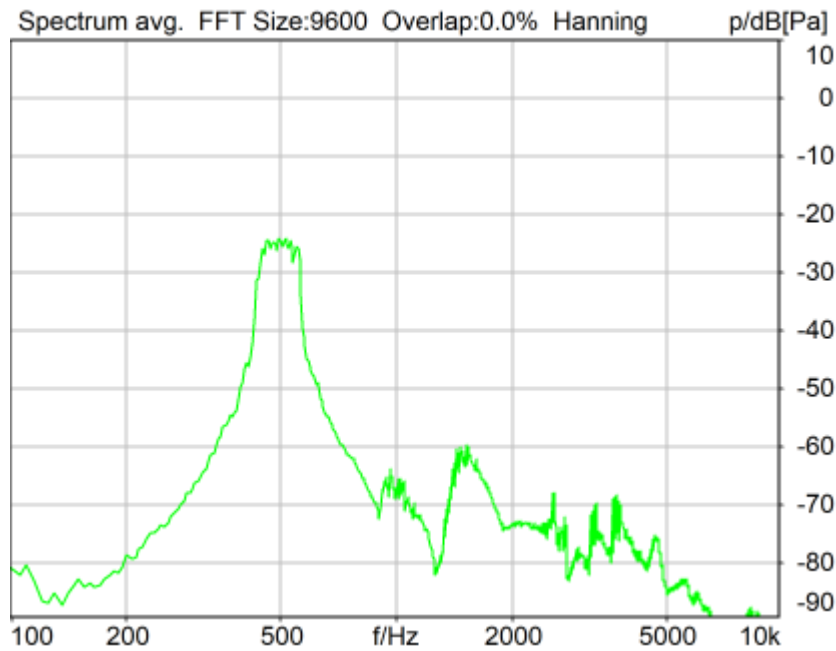
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 25.33 dB (5.41%) Ok

**Ok**

2024/1/19 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\_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))

**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	-1.9 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 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 223.5000 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 -> 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): 24.39 dB (6.03%) Ok

**Ok**

2024/1/19 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\_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))

**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	-1.9 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	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.	525.0 Hz
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 223.5000 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 -> 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))

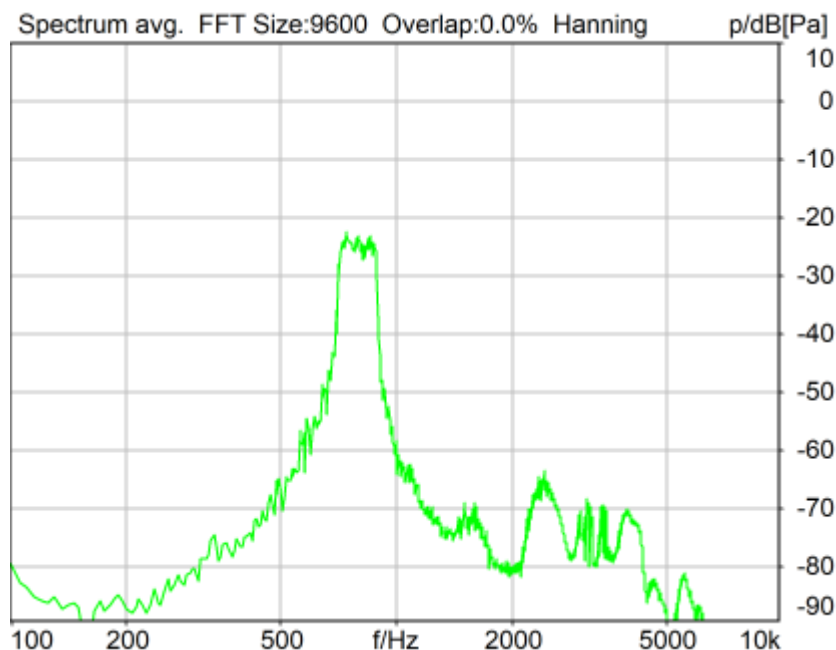
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 28.25 dB (3.87%) Ok



**Ok**

2024/1/19 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\_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))

**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	-1.9 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	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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 223.5000 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 -> 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))

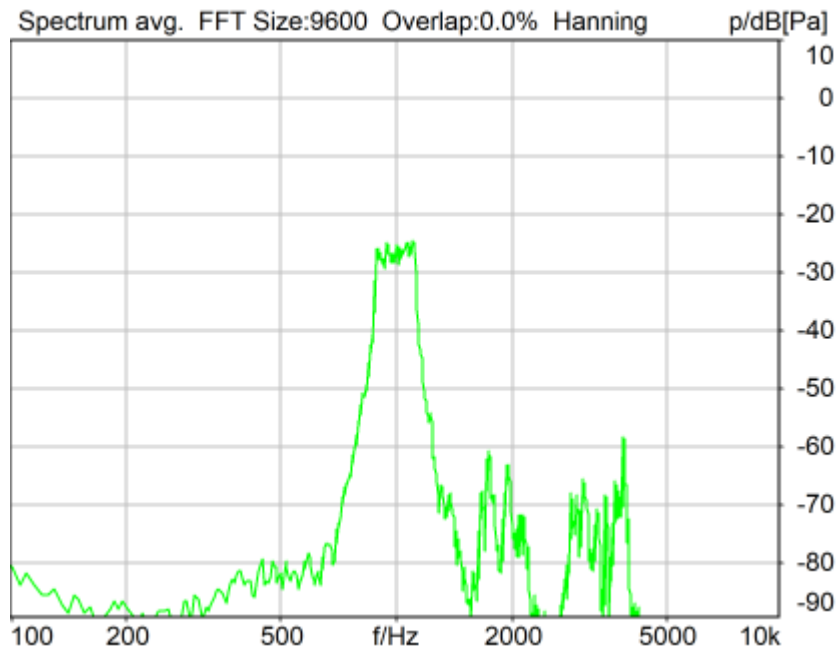
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 25.58 dB (5.26%) Ok

**Ok**

2024/1/19 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\_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))

**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	-1.9 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 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 223.5000 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 -> 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))**

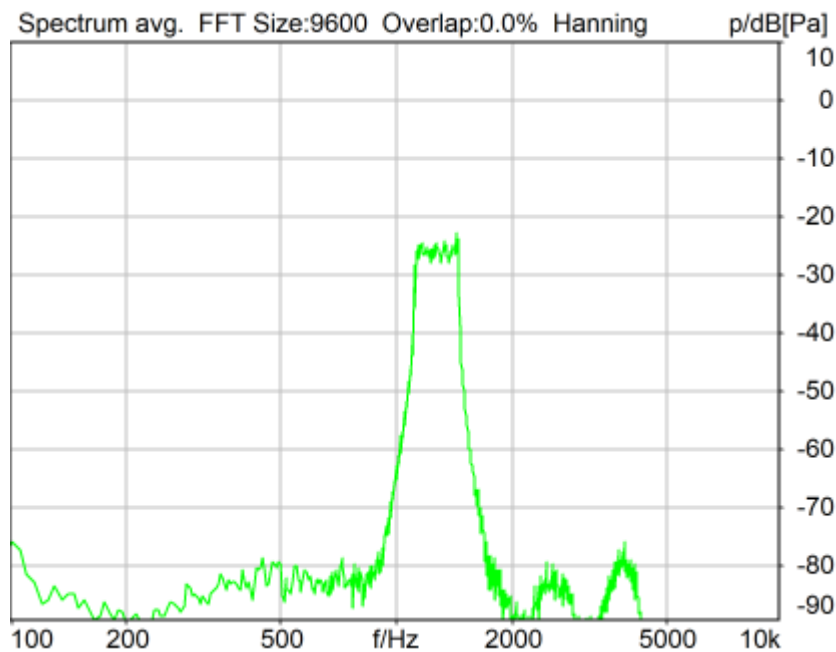
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 22.80 dB (7.24%) Ok

**Ok**

2024/1/19 17:09 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 mm	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	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.	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 223.5000 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 -> 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))**

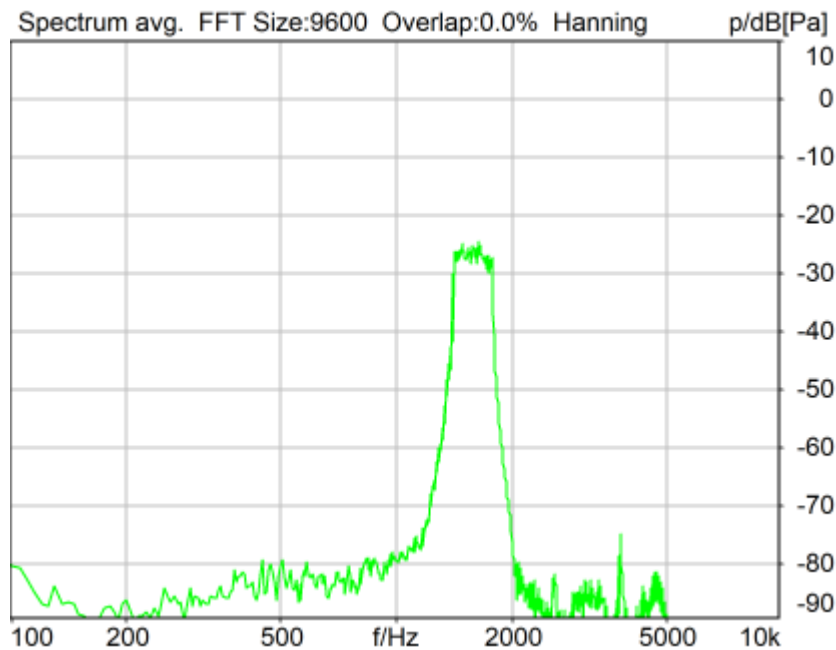
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 29.57 dB (3.32%) Ok

**Ok**

2024/1/19 17:09 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))

**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	-1.9 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 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 223.5000 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 -> 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))**

<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



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))

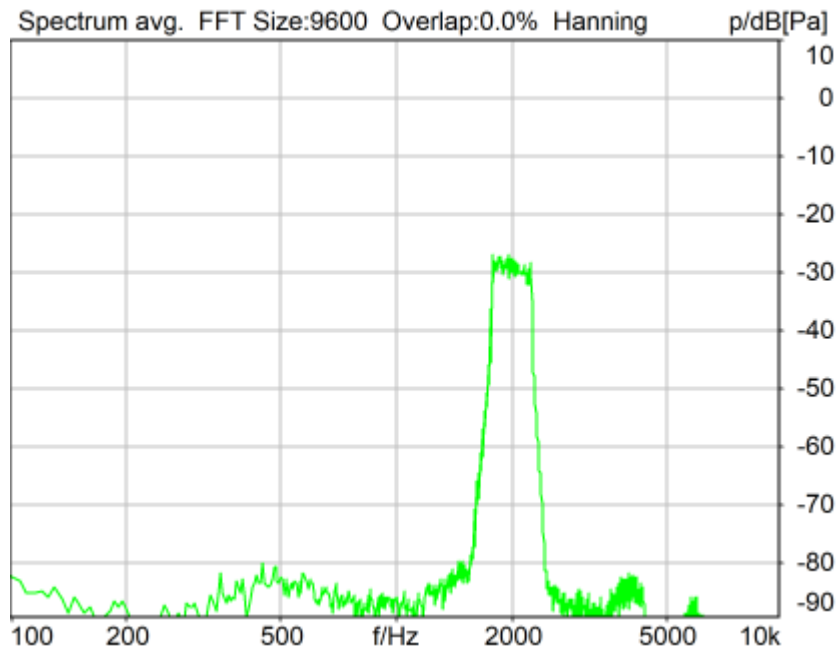
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 28.11 dB (3.93%) Ok

**Ok**

2024/1/19 17:10 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\_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))

**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	-1.9 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 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 223.5000 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 -> 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

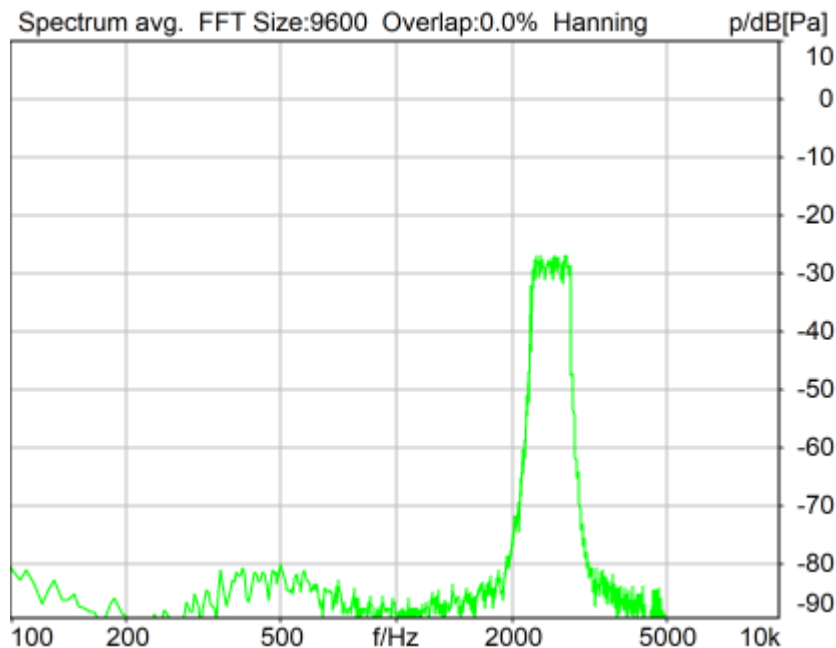
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 30.65 dB (2.93%) Ok

**Ok**

2024/1/19 17:10 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\_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))

**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	-1.9 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	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.	2205.0 Hz
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 223.5000 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**

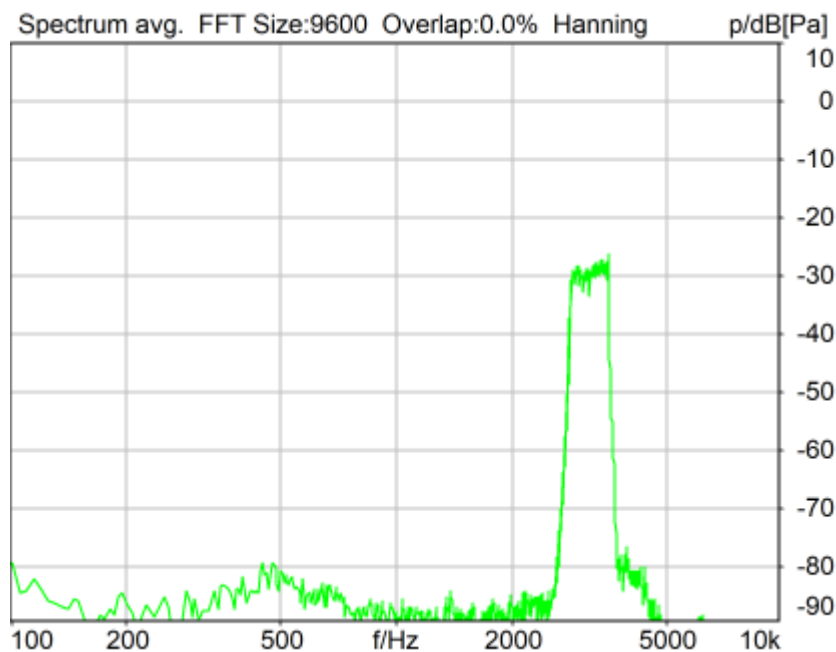
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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 - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 31.44 dB (2.68%) Ok

**Ok**

2024/1/19 17:11 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\_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))

**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	-1.9 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	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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
dB weighting	A Weighting	Stimulus max.	3585.0 Hz
Stimulus min.	2785.0 Hz	Analysis max.	2780.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	3590.0 Hz		

**Special Features**

Compensate delay 223.5000 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 -> 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))

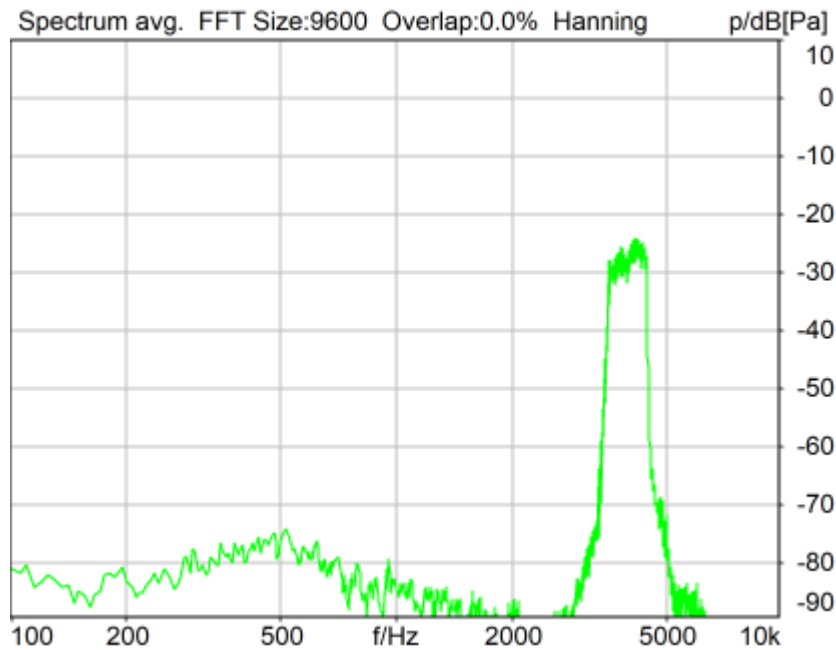
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



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

**Ok**

2024/1/19 17:11 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\_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))

**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	-1.9 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 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 223.5000 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 -> 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))**

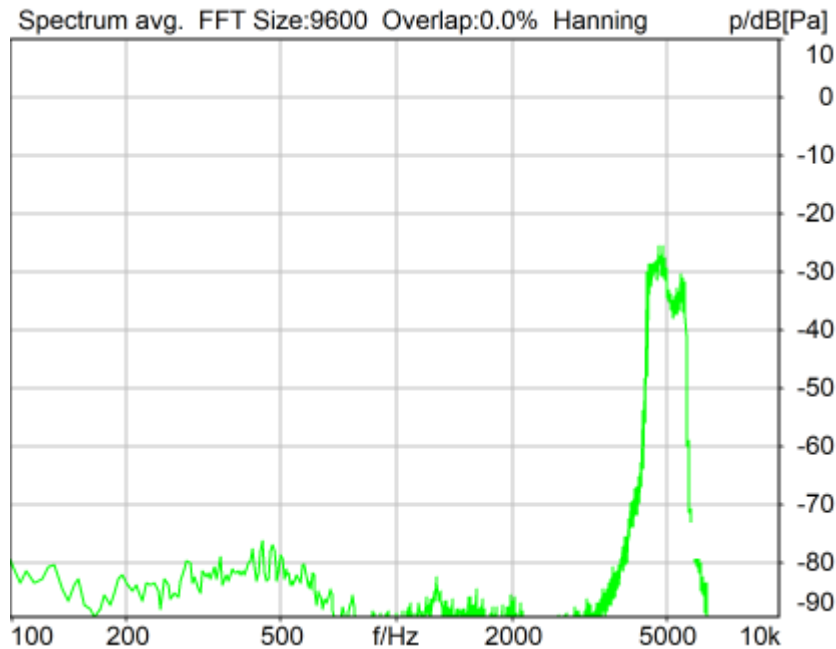
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 SupplyOff		Mic 2 Power SupplyOff	

## 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): 31.63 dB (2.62%) Ok

**Ok**

2024/1/19 17:11 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 mm	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	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.	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 223.5000 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 -> 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 2N

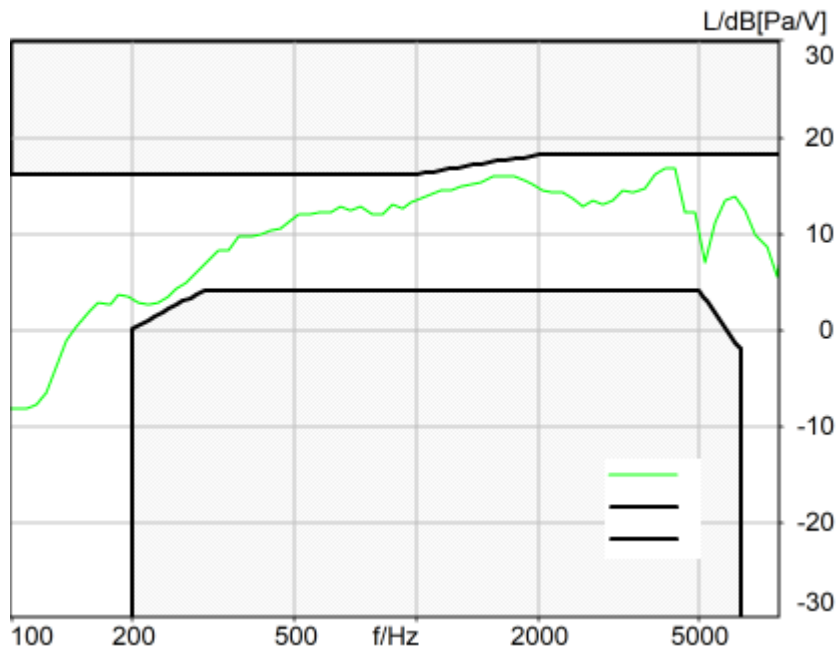
Region	Frequency	SDNR
1	250Hz	28.34 dB
2	315Hz	28.40 dB
3	400Hz	25.02 dB
4	500Hz	25.33 dB
5	630Hz	24.39 dB
6	800Hz	28.25 dB
7	1000Hz	25.58 dB
8	1250Hz	22.80 dB
9	1600Hz	29.57 dB
10	2000Hz	28.11 dB
11	2500Hz	30.65 dB
12	3150Hz	31.44 dB
13	4000Hz	28.40 dB
14	5000Hz	31.63 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 22.80dB at 1250Hz.

2024/1/19 17:11 ACQUA

**5.3 Frequency Response 8N FF**

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



Absolute minimal distance  
1.32 dB at 4369.4 Hz Ok

**Ok**

2024/1/19 17:03 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))

**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	-4.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 7.9 N

**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 223.5000 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 -> 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))

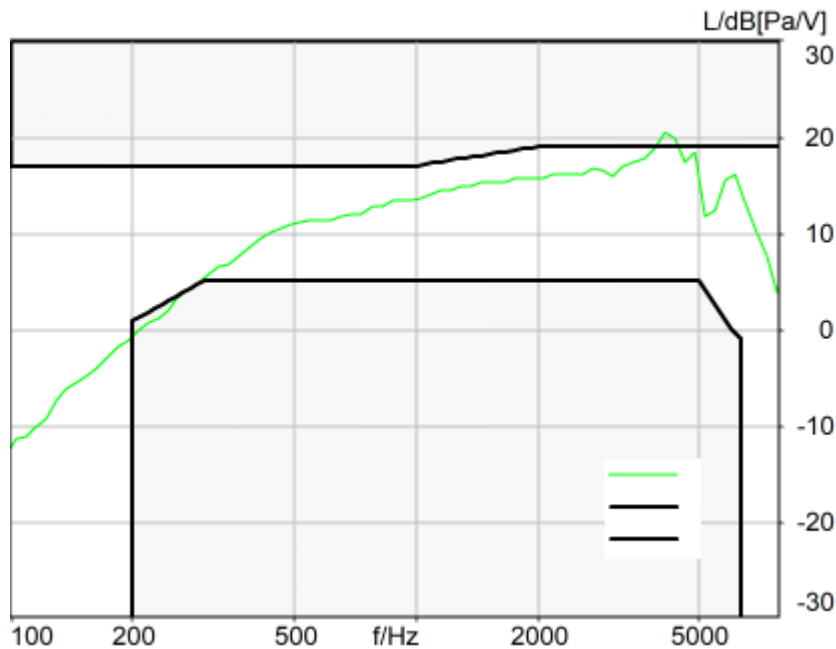
Ser. Nr. 12306613 Pinna Type Type 3.3

**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  
-1.39 dB at 4119.5 Hz Not Ok

**Not Ok**

2024/1/19 17:03 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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 7.9 N

**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 223.5000 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 -> 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))

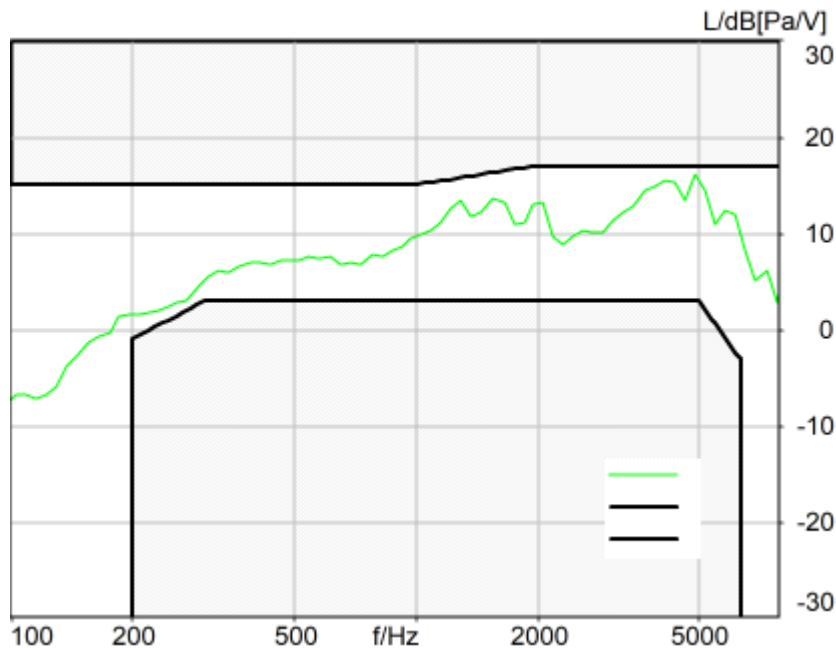
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.3 Frequency Response 2N FF

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



Absolute minimal distance

0.93 dB at 4870.0 Hz Ok

**Ok**

2024/1/19 17:12 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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 mm	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	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave		
Method	FFT		

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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 223.5000 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 -> 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))**

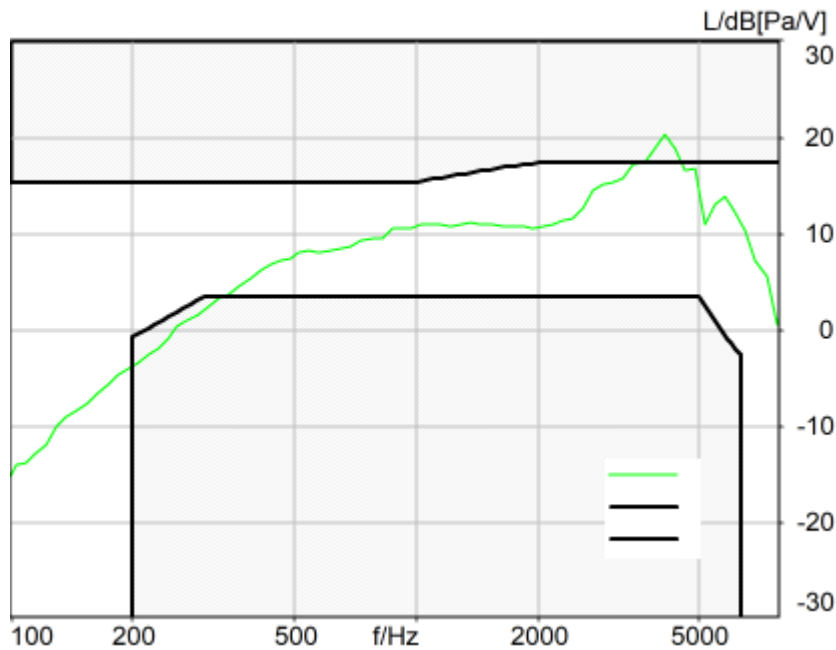
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
-2.98 dB at 4119.5 Hz Not Ok

**Not Ok**

2024/1/19 17:12 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))

**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	-1.9 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 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 223.5000 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 -> 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

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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
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HIB Mode	Mobile Measurement	Impedance	32 Ohm
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Gain out 1	-40.00 dB	Gain out 2	0.00 dB
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Gain in 1	0.00 dB	Gain in 2	0.00 dB
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Mic 1 Power Supply	Off	Mic 2 Power Supply	Off
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## **Measurement Protocol**

Measurement Object	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
Description	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/7 8:55
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	184.4	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.55	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.41	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.75	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.07	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.46	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.08	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.85	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.71	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.94	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.60	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.97	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.05	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.71	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.27	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.27	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.87	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.99	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.02	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.82	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.34	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.93	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.76	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40



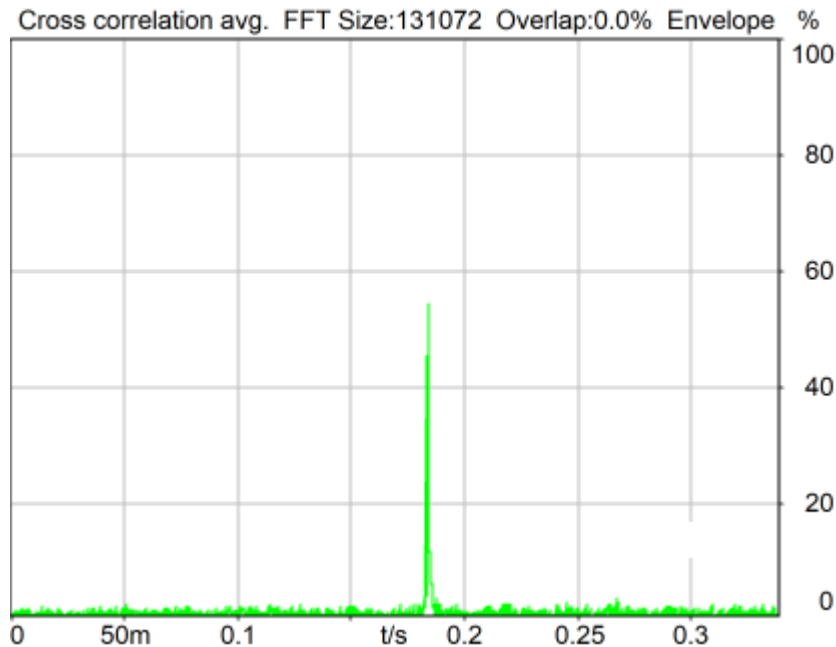
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.33	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.82	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	1.19	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	0.22	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	0.35	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 689.1 Hz	0.83	WIFI 5.2G_802.11a 6M AMR NB 12.2kbps_CH40

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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	9
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	17
5.2 RCV Distortion and Noise - 1000 Hz NB	19
5.2 RCV Distortion and Noise - 1250 Hz NB	21
5.2 RCV Distortion and Noise - 1600 Hz NB	23
5.2 RCV Distortion and Noise - 2000 Hz NB	26
5.2 RCV Distortion and Noise - 2500 Hz NB	28
5.2 RCV Distortion and Noise - 3150 Hz NB	30
Report - Receive Distortion and Noise (Conversational Gain)	32
5.2 RCV Distortion and Noise - 400 Hz NB	32
5.2 RCV Distortion and Noise - 500 Hz NB	35
5.2 RCV Distortion and Noise - 630 Hz NB	37
5.2 RCV Distortion and Noise - 800 Hz NB	39
5.2 RCV Distortion and Noise - 1000 Hz NB	41
5.2 RCV Distortion and Noise - 1250 Hz NB	43
5.2 RCV Distortion and Noise - 1600 Hz NB	45
5.2 RCV Distortion and Noise - 2000 Hz NB	48
5.2 RCV Distortion and Noise - 2500 Hz NB	50
5.2 RCV Distortion and Noise - 3150 Hz NB	52
Report - Receive Distortion and Noise (Conversational Gain)	54
5.3 Frequency Response 8N FF HANB	54
5.3 Frequency Response 8N DF HANB	57
5.3 Frequency Response 2N FF HANB	59
5.3 Frequency Response 2N DF HANB	61

## Overall Receive Delay NB

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



Delay (Cross): 184.4 ms

2024/1/19 22:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

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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))

**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	-4.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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

**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))**

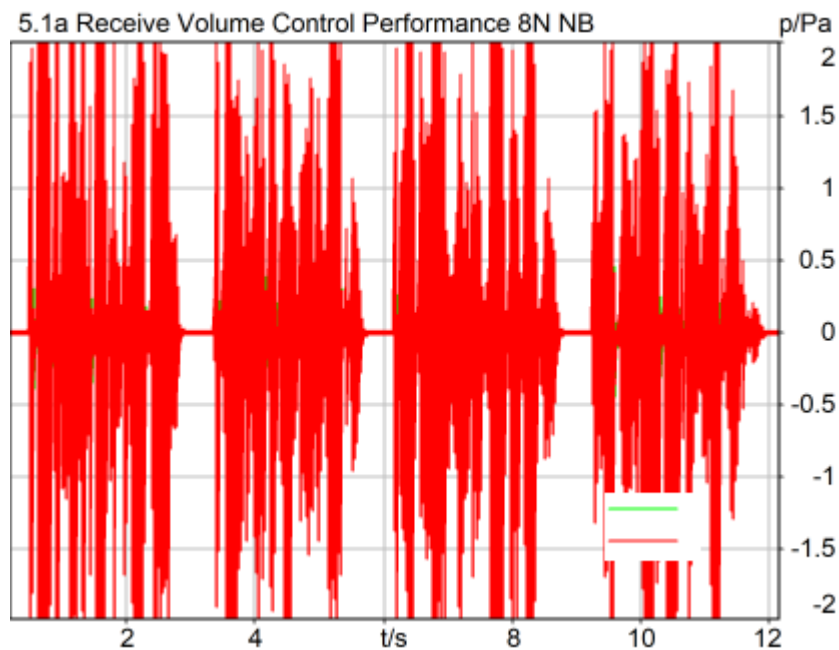
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 87.55 dB[SPL], Act.: 86.14%

Corrected Speech Level: 17.55 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 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 184.4000 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
----------	----------	------------	----------

**HIB Settings**

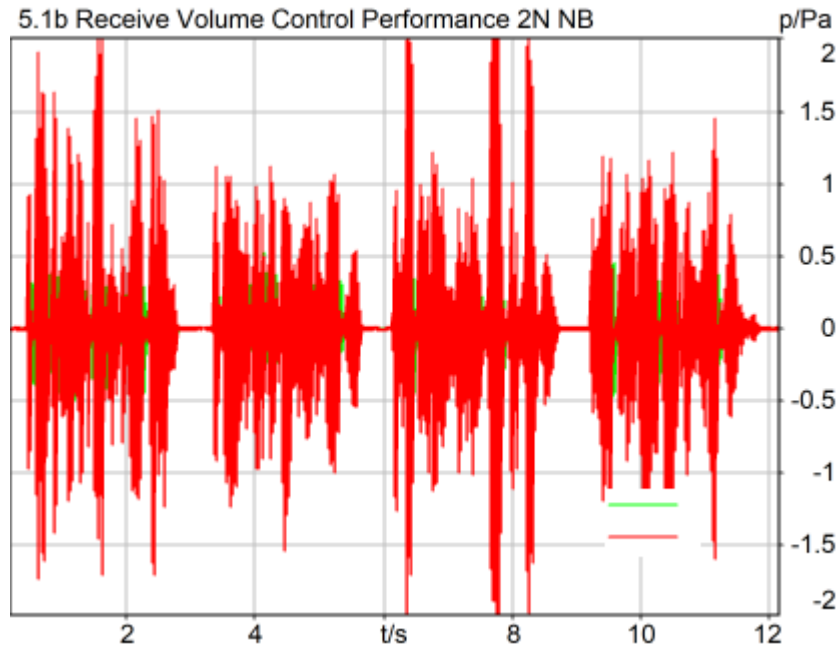
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB

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: 81.41 dB[SPL], Act.: 85.95%

Corrected Speech Level: 11.41 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 184.4000 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
----------	----------	------------	----------

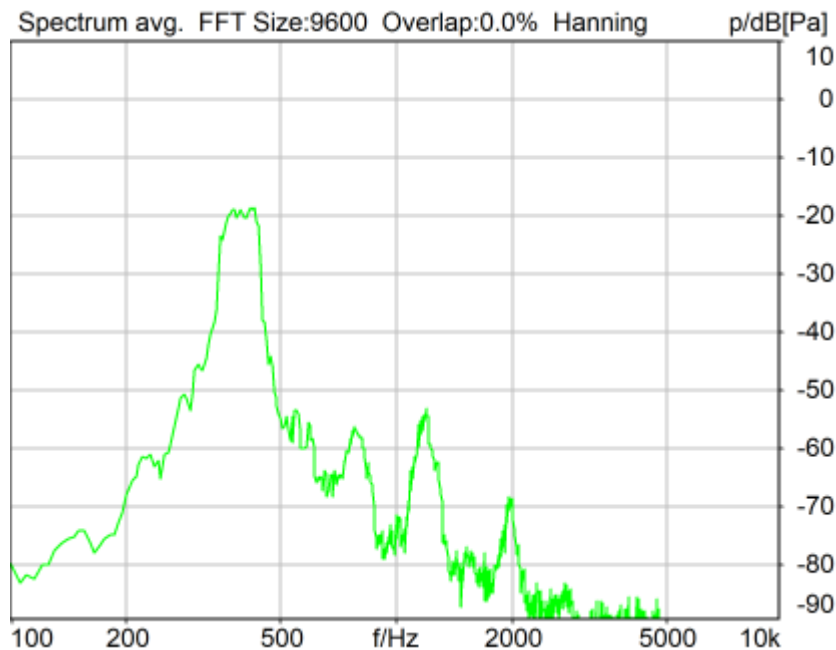
### HIB Settings

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): 30.75 dB (2.90%) Ok

Ok

2024/1/19 22:26 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\_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))

### 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.6 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

### 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.	480.0 Hz
Stimulus min.	320.0 Hz	Analysis max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	485.0 Hz		

### Special Features

Compensate delay 184.4000 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 -> 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))

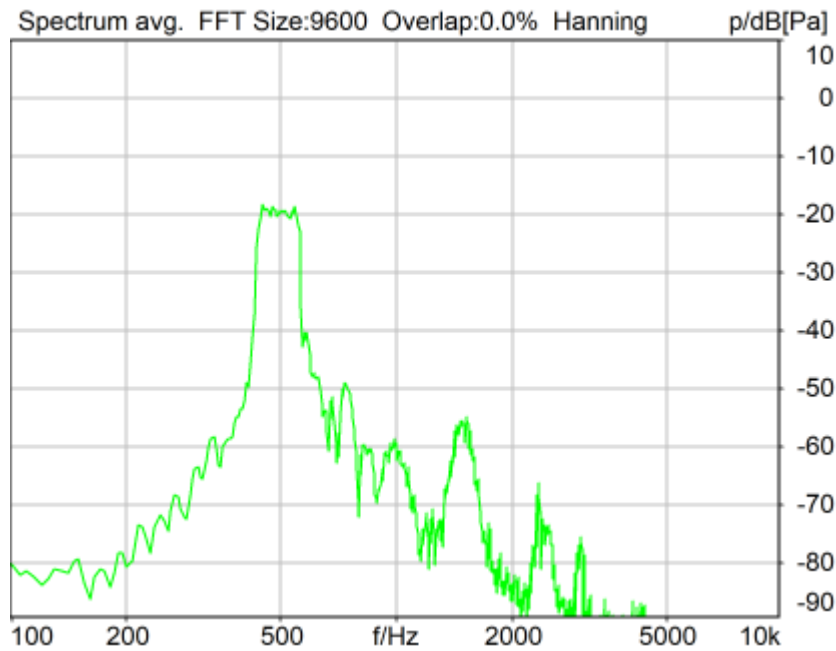
Ser. Nr.	12306613	Pinna Type	Type 3.3
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### HIB Settings

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 NB

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



Distortion (Noise) RCV (packed): 29.07 dB (3.52%) 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 184.4000 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 -> 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))

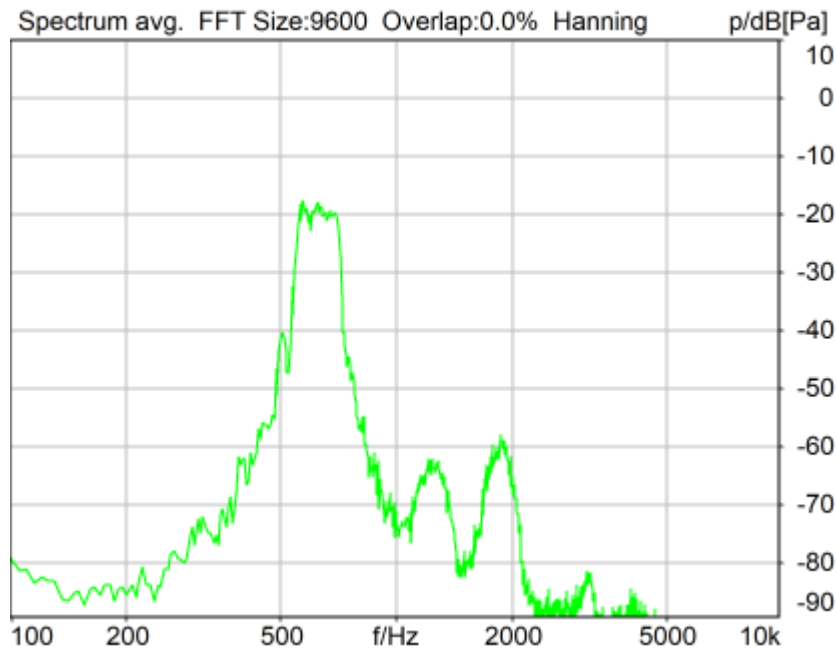
Ser. Nr. 12306613 Pinna Type Type 3.3

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 8N



Distortion (Noise) RCV (packed): 29.46 dB (3.36%) 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 184.4000 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 -> 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))**

<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 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))

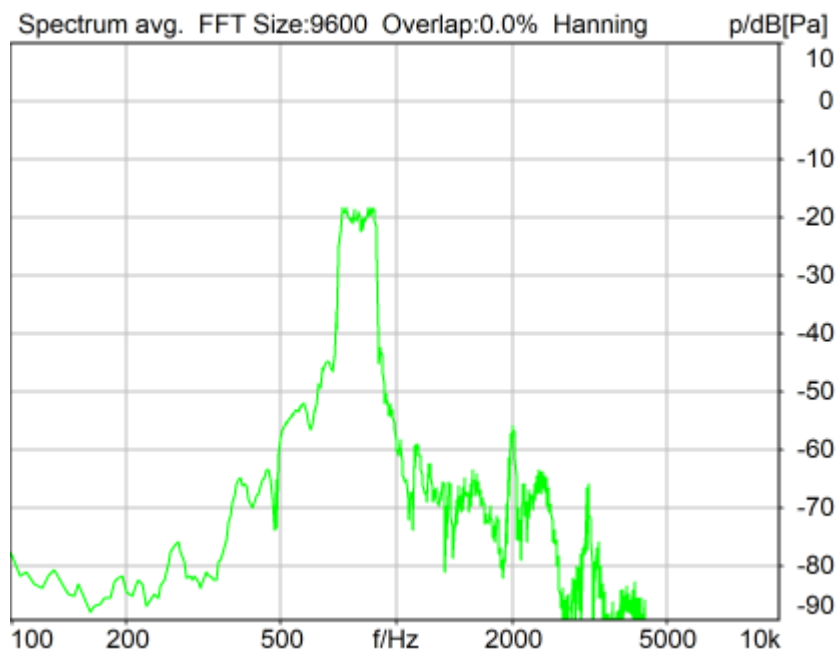
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 NB**

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



Distortion (Noise) RCV (packed): 30.08 dB (3.13%) Ok

**Ok**

2024/1/19 22:28 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\_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))

**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	-4.6 mm	Delta B	0.0 °

Ear Type 3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	925.0 Hz
Stimulus min.	675.0 Hz	Analysis max.	670.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	930.0 Hz		

**Special Features**

Compensate delay 184.4000 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 -> 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))

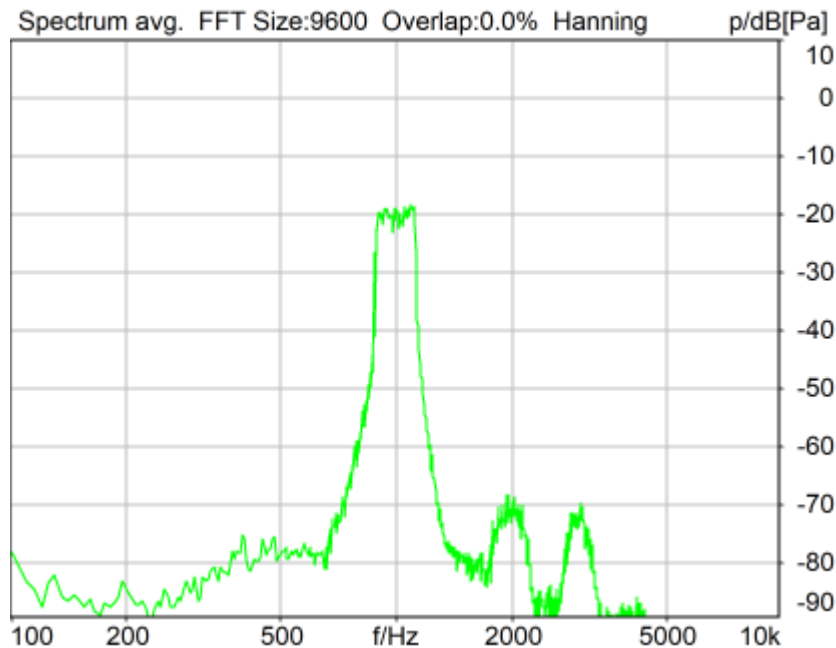
Ser. Nr.                      12306613                      Pinna Type                      Type 3.3

**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 NB

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



Distortion (Noise) RCV (packed): 35.85 dB (1.61%) Ok

Ok

2024/1/19 22:28 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	855.0 Hz
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 184.4000 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 -> 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))

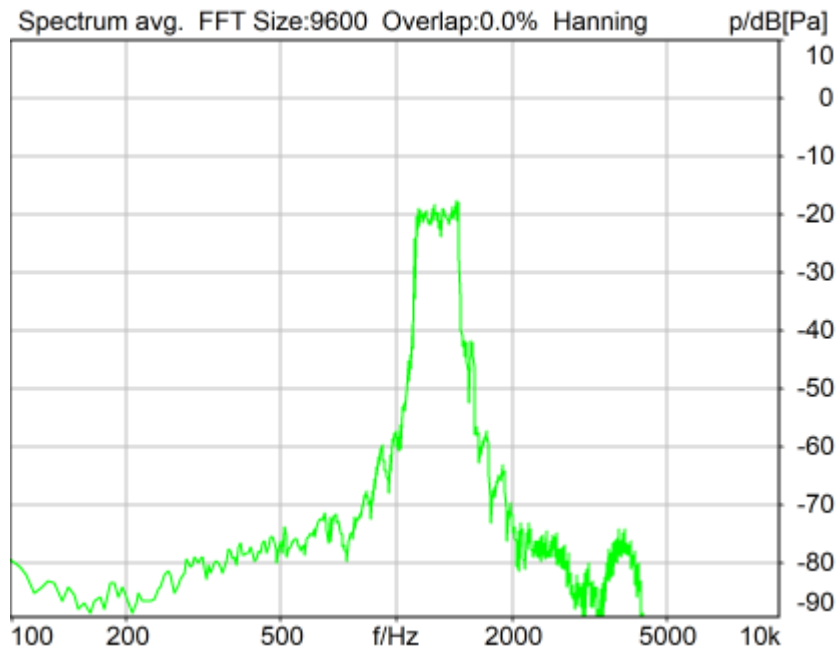
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 21.71 dB (8.22%) Ok

**Ok**

2024/1/19 22:29 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 184.4000 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 -> 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))**

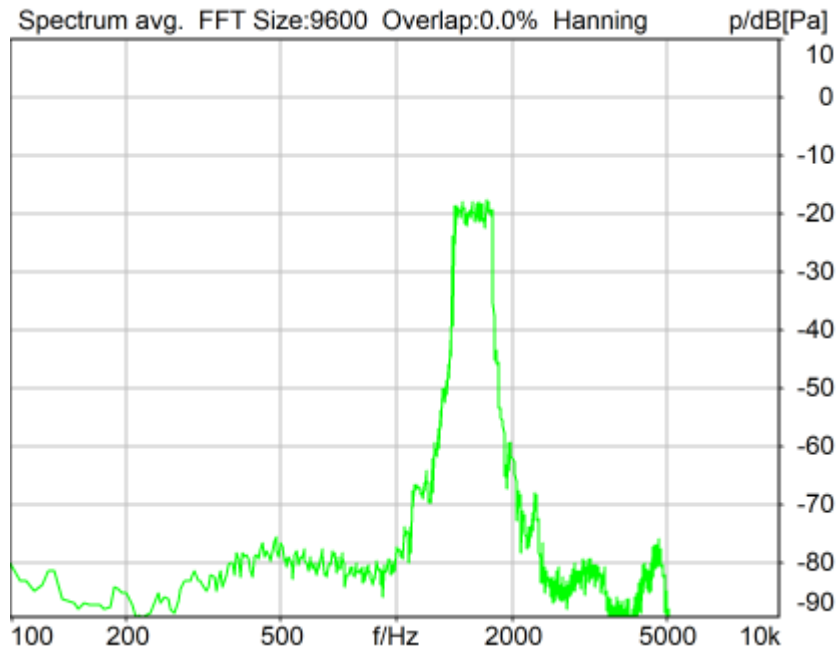
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 32.94 dB (2.26%) Ok

**Ok**

2024/1/19 22:29 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.6 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	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 184.4000 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 -> 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))**

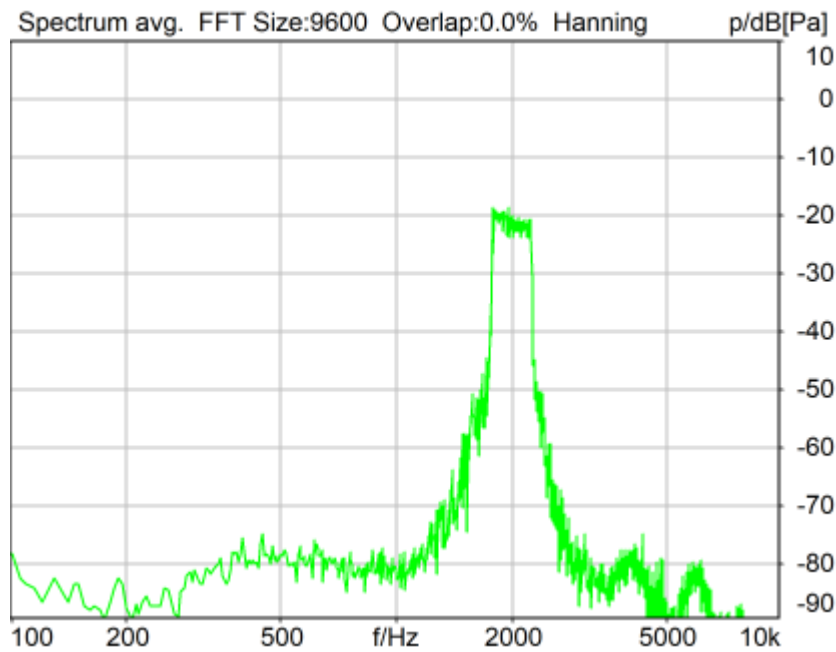
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 30.60 dB (2.95%) Ok

**Ok**

2024/1/19 22:30 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 184.4000 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 -> 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))

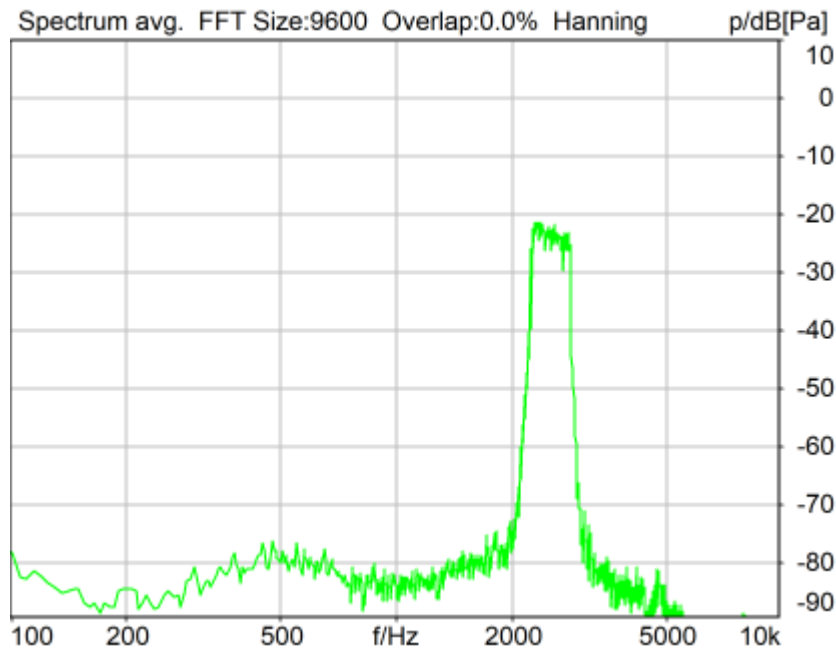
Ser. Nr. 12306613 Pinna Type Type 3.3

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 8N



Distortion (Noise) RCV (packed): 30.97 dB (2.83%) Ok

Ok

2024/1/19 22:30 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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 184.4000 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 -> 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

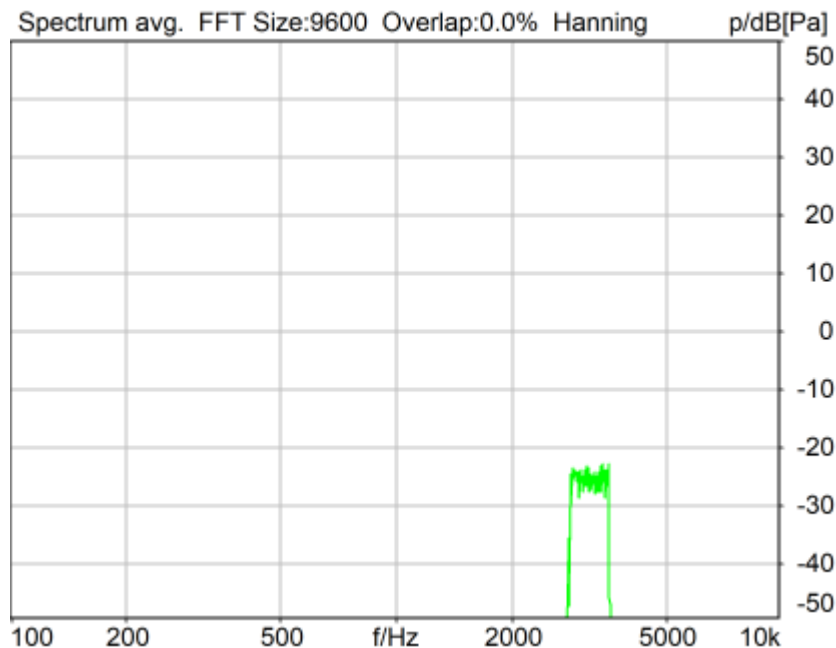
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 NB**

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



Distortion (Noise) RCV (packed): 34.05 dB (1.98%) Ok

**Ok**

2024/1/19 22:30 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\_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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**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.	2785.0 Hz
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 184.4000 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 -> 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 SupplyOff                Mic 2 Power SupplyOff

```

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

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

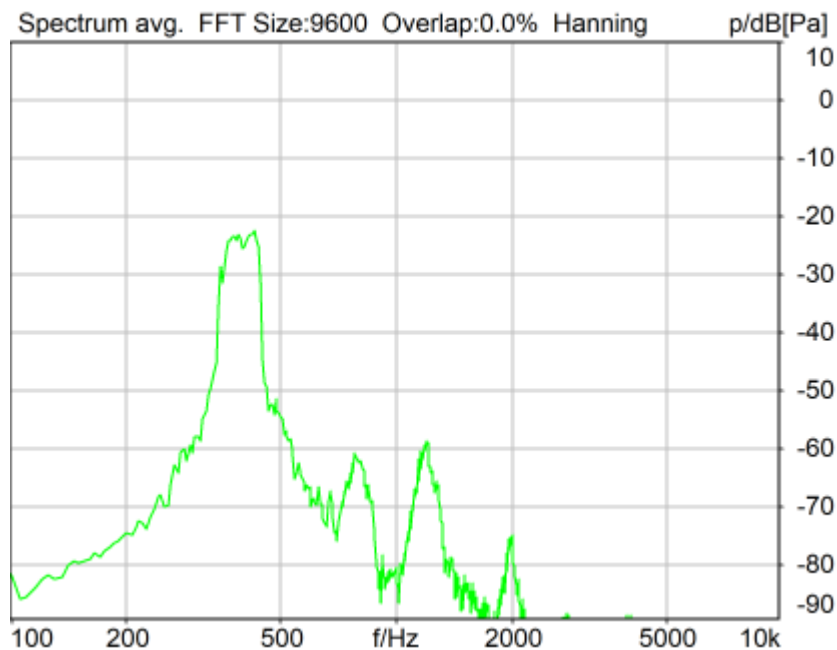
Region	Frequency	SDNR
1	400Hz	30.75 dB
2	500Hz	29.07 dB
3	630Hz	29.46 dB
4	800Hz	30.08 dB
5	1000Hz	35.85 dB
6	1250Hz	21.71 dB
7	1600Hz	32.94 dB
8	2000Hz	30.60 dB
9	2500Hz	30.97 dB
10	3150Hz	34.05 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.71dB 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): 31.27 dB (2.73%) Ok

**Ok**

2024/1/19 23:24 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\_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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.3 mm	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 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 184.4000 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 -> 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))

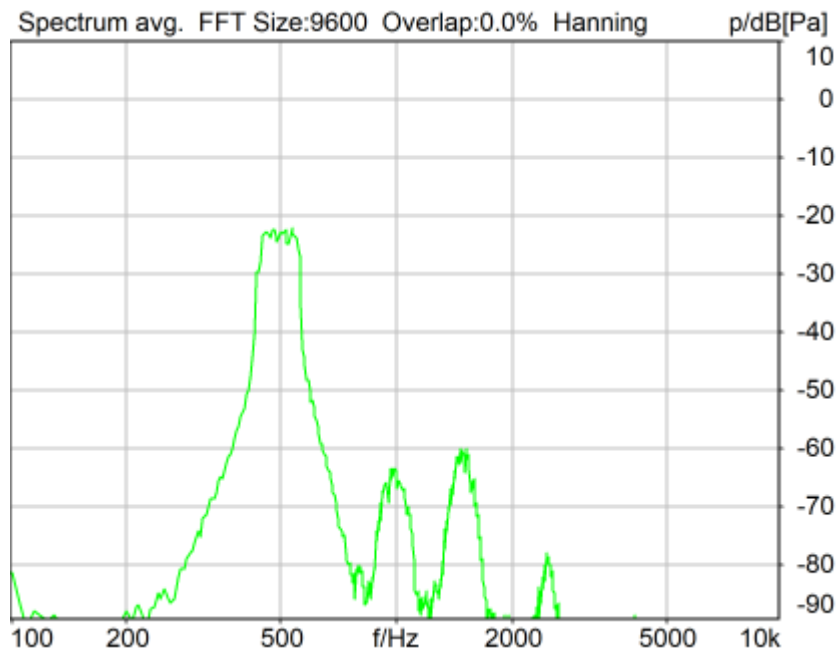
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

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



Distortion (Noise) RCV (packed): 32.27 dB (2.44%) 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))

**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	-1.3 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 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 184.4000 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 -> 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))

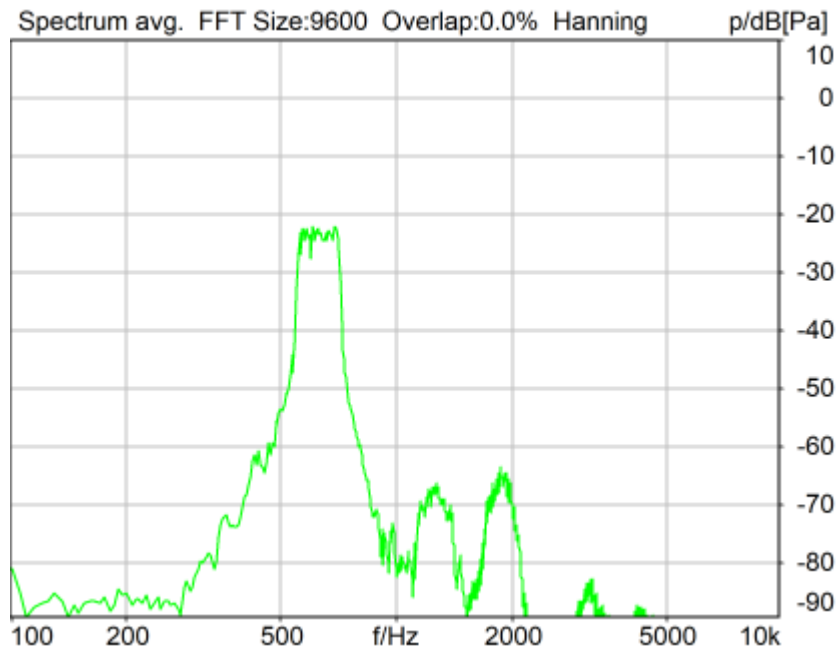
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 32.87 dB (2.27%) 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))

**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	-1.3 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 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 184.4000 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 -> 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))

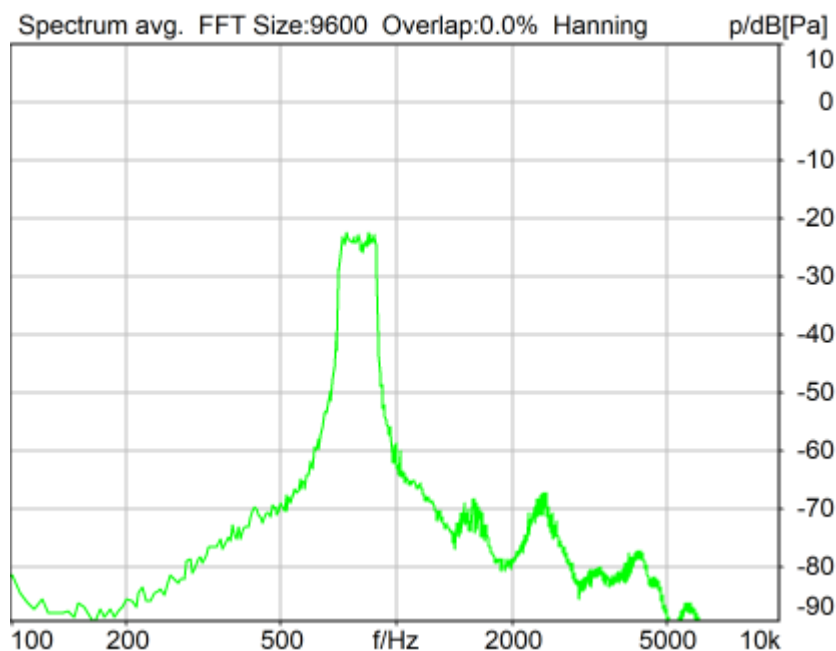
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 31.99 dB (2.52%) Ok

**Ok**

2024/1/19 23:26 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\_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))

**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	-1.3 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	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 184.4000 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**

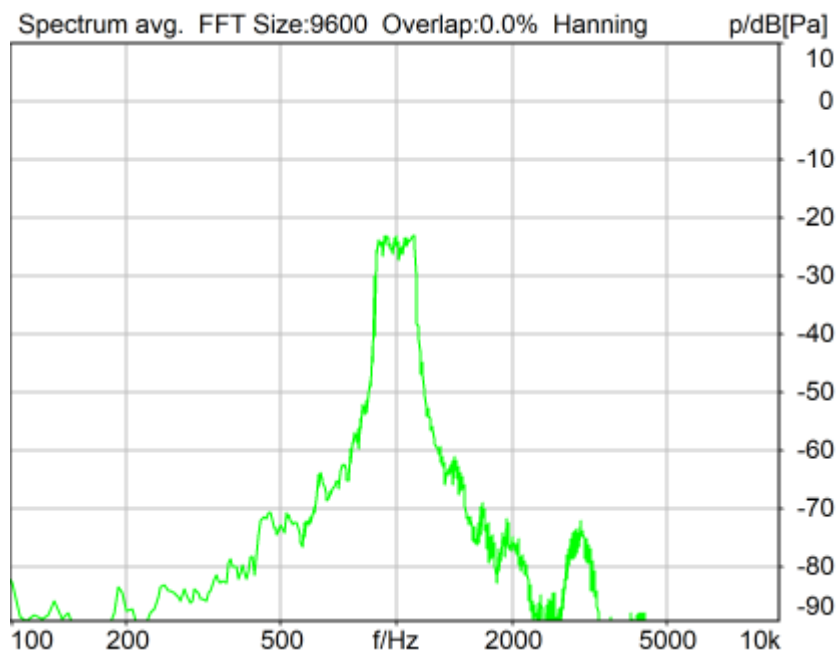
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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 - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 28.02 dB (3.97%) Ok

**Ok**

2024/1/19 23:26 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\_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))

**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	-1.3 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	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.	1155.0 Hz
Stimulus min.	855.0 Hz	Analysis max.	850.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1160.0 Hz		

**Special Features**

Compensate delay 184.4000 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 -> 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))

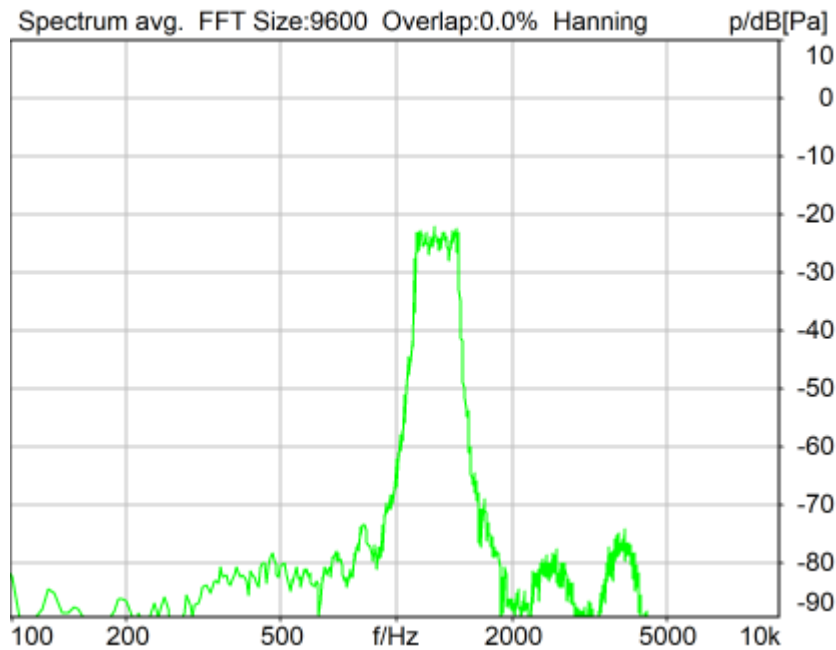
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 21.82 dB (8.11%) Ok

**Ok**

2024/1/19 23:26 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\_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))

**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	-1.3 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 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 184.4000 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 -> 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))**

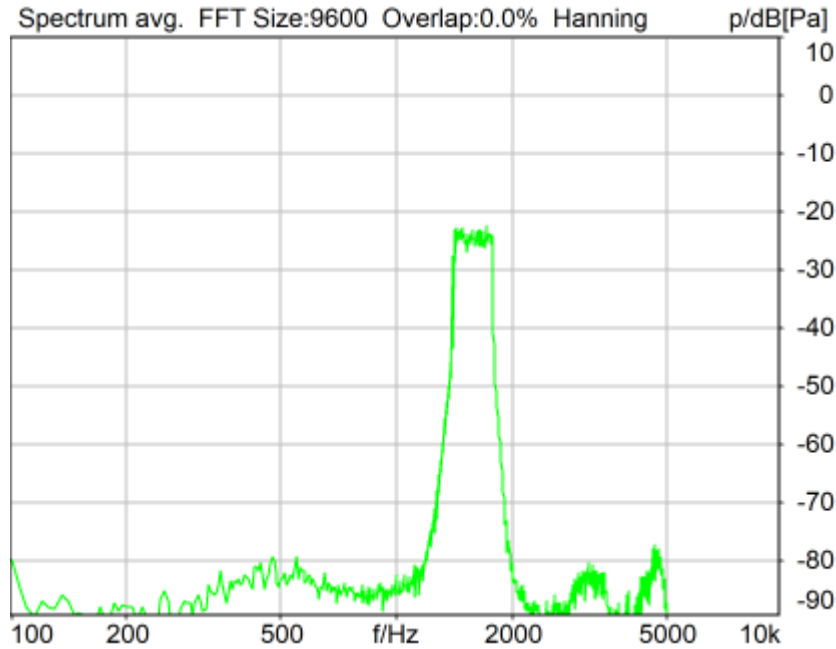
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 35.34 dB (1.71%) Ok

**Ok**

2024/1/19 23:27 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\_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))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
		Rotation Delta C	0.0 °

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.3 mm	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	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.	1375.0 Hz
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 184.4000 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 -> 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))

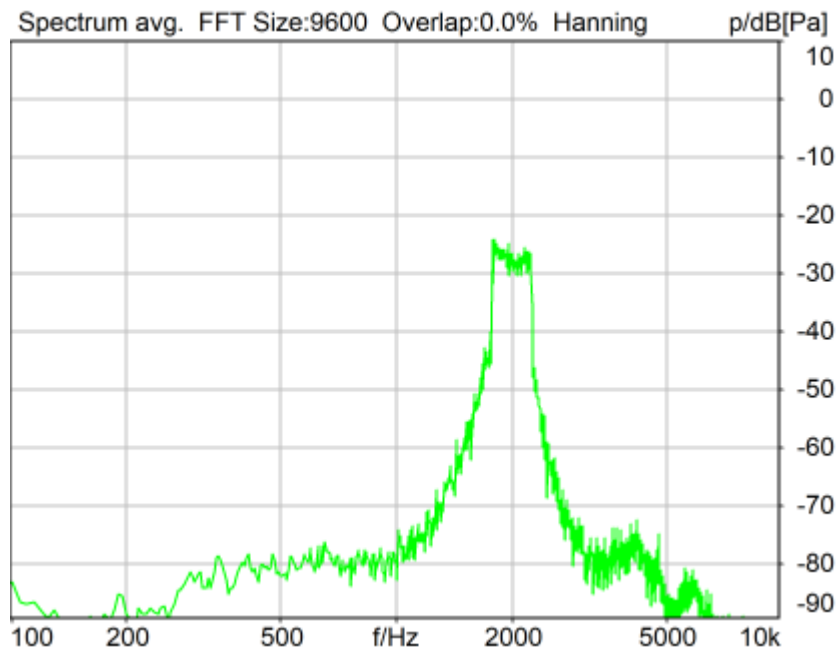
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 21.93 dB (8.01%) Ok

**Ok**

2024/1/19 23:27 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\_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))

**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 °
Delta B		Delta B	0.0 °
Ym	-1.3 mm	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 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 184.4000 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 -> 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))

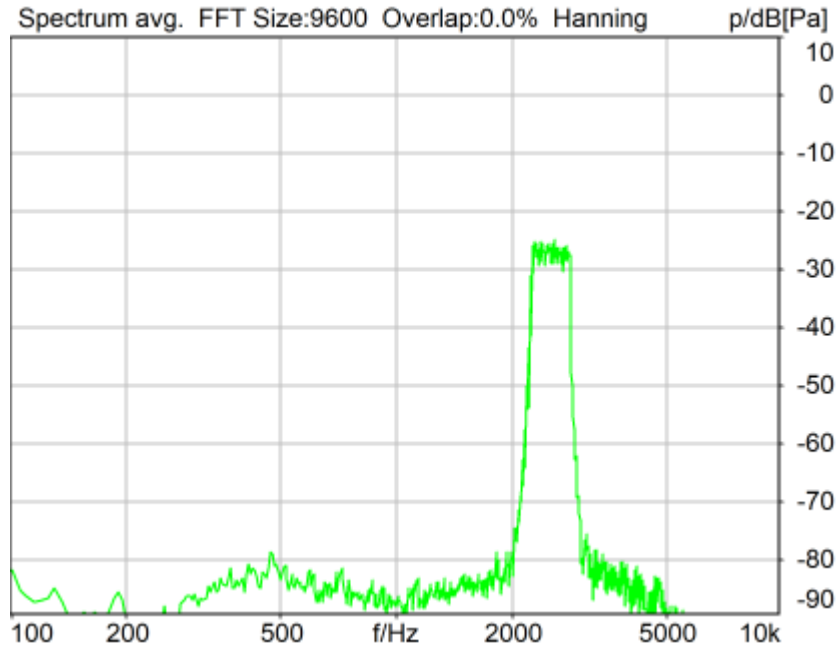
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 32.76 dB (2.30%) Ok

Ok

2024/1/19 23:28 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\_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))

**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	-1.3 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 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 184.4000 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 -> 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))

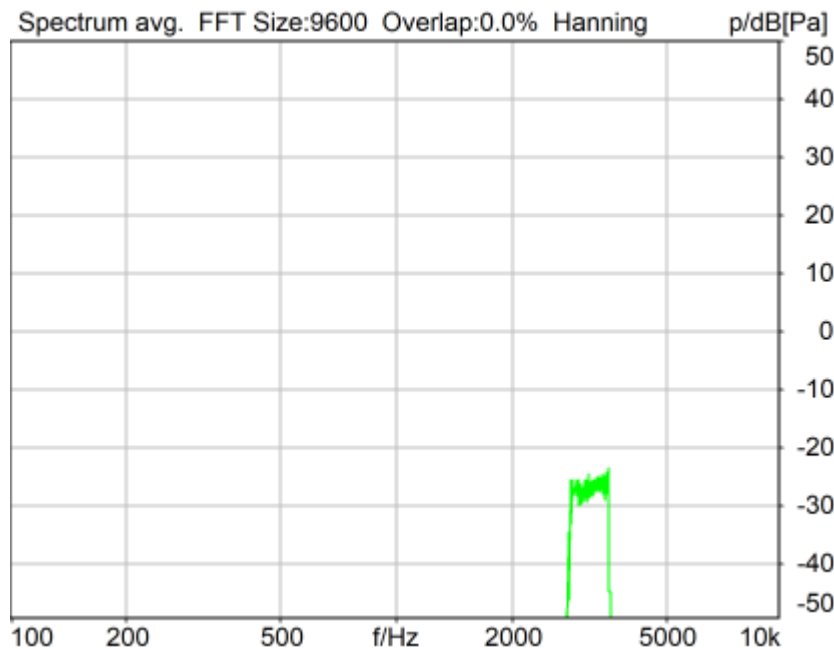
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 NB**

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



Distortion (Noise) RCV (packed): 29.33 dB (3.41%) Ok

**Ok**

2024/1/19 23:28 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\_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))

**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	-1.3 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	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.	2785.0 Hz
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 184.4000 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 -> 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

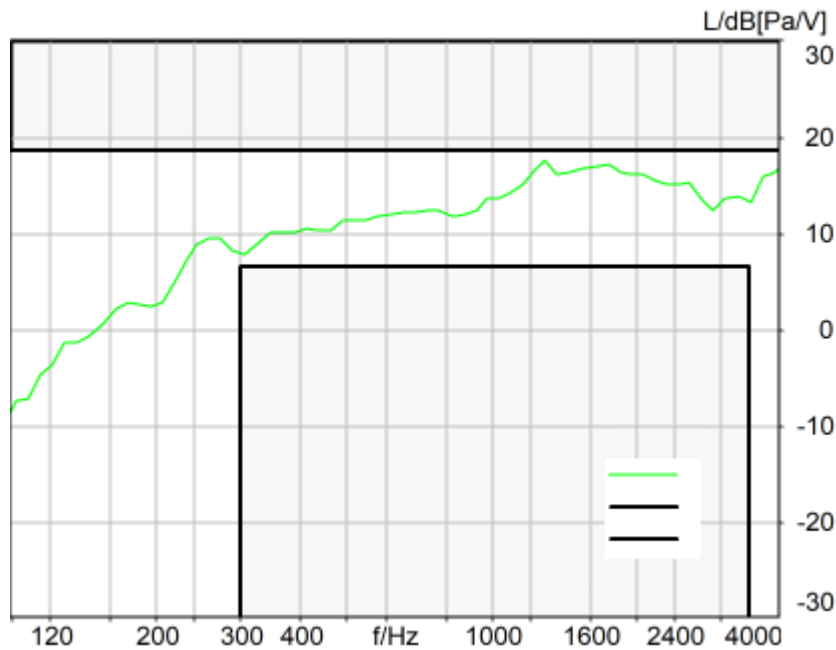
Region	Frequency	SDNR
1	400Hz	31.27 dB
2	500Hz	32.27 dB
3	630Hz	32.87 dB
4	800Hz	31.99 dB
5	1000Hz	28.02 dB
6	1250Hz	21.82 dB
7	1600Hz	35.34 dB
8	2000Hz	21.93 dB
9	2500Hz	32.76 dB
10	3150Hz	29.33 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.82dB at 1250Hz.

2024/1/19 23:29 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance  
1.19 dB at 1285.9 Hz Ok

**Ok**

2024/1/19 22:31 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))

**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	-4.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 8.0 N, Force reached: 8.0 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	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 184.4000 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 -> 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))

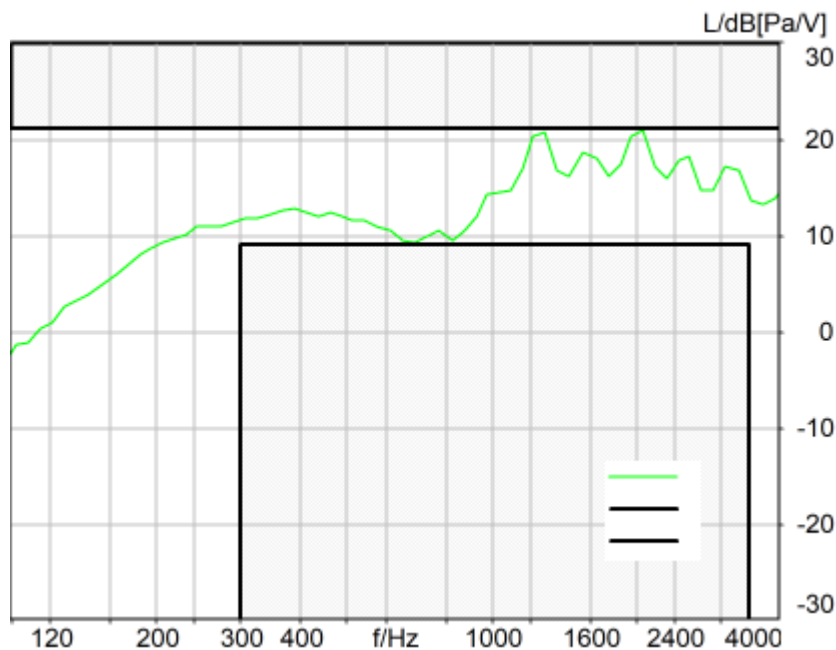
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 HANB**

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



Absolute minimal distance  
0.22 dB at 2057.5 Hz Ok

**Ok**

2024/1/19 22:31 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))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.6 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

**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 184.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial 77000207 Nickname



```

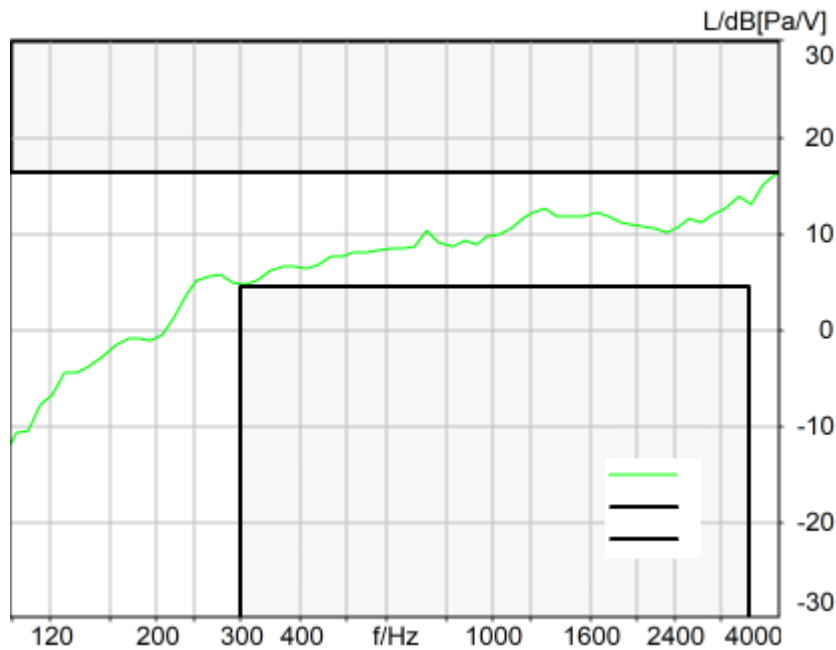
Firmware          3.4.17          Sync Source      Internal
Clock Pitch      0.00 ppm
-----
labCORE Routing
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-  Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) 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 2N FF HANB

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



Absolute minimal distance  
0.35 dB at 3882.4 Hz Ok

**Ok**

2024/1/19 23:29 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))

**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	-1.3 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	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 184.4000 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 -> 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))

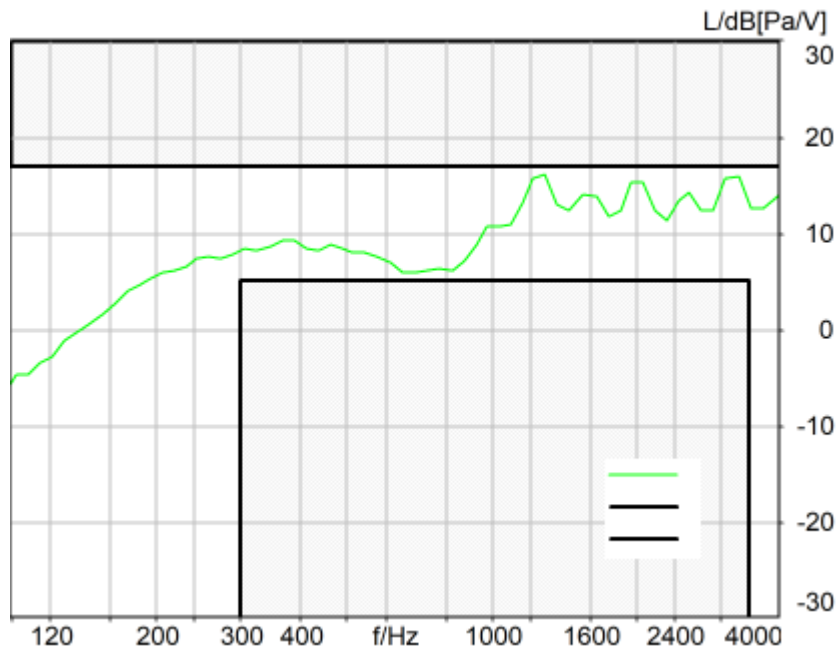
Ser. Nr. 12306613 Pinna Type Type 3.3

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 DF HANB

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



Absolute minimal distance  
0.83 dB at 689.1 Hz Ok

Ok

2024/1/19 23:29 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))

**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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.3 mm	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:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT	Window function.	Hanning
FFT size	4096	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 184.4000 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 -> 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