

## **Measurement Protocol**

Measurement Object	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 15:31
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	107.6	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	19.02	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	13.74	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.49	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.95	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.46	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.87	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.73	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.73	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.16	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.31	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.60	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.98	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	23.98	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.59	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.75	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and	Ok	Distortion (Noise)	34.67	339D LTE Band

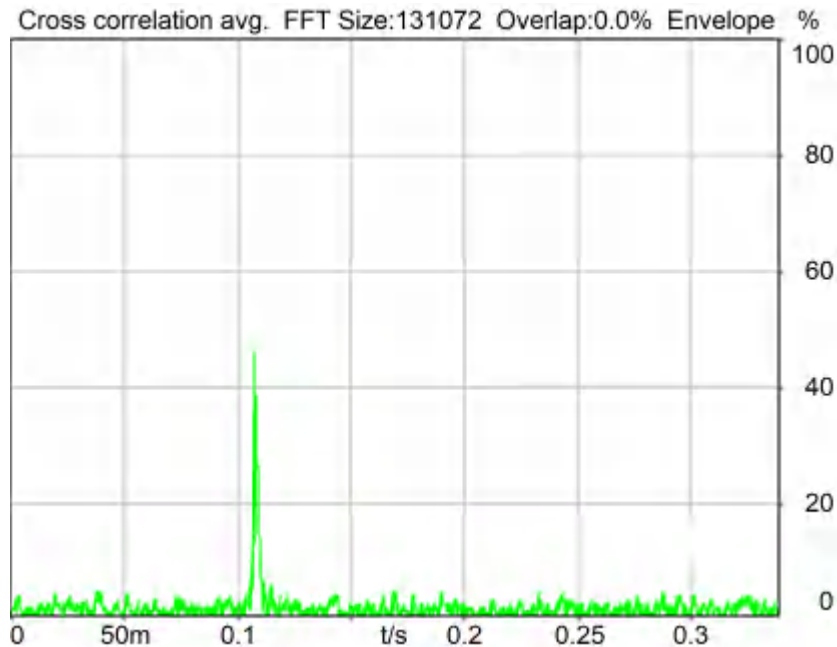
Noise - 630 Hz NB		[dB], 0.0 dB		2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.52	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.50	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.04	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.95	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.09	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.10	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.70	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	23.04	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 462.0 Hz	3.40	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 462.0 Hz	4.09	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.63	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.84	339D LTE Band 2_20QPSK_100RB_0_EVS NB 9.6kbps_CH18900

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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	11
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	20
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5.2 RCV Distortion and Noise - 1600 Hz NB	24
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5.2 RCV Distortion and Noise - 2500 Hz NB	29
5.2 RCV Distortion and Noise - 3150 Hz NB	31
Report - Receive Distortion and Noise (Conversational Gain)	33
5.2 RCV Distortion and Noise - 400 Hz NB	34
5.2 RCV Distortion and Noise - 500 Hz NB	36
5.2 RCV Distortion and Noise - 630 Hz NB	38
5.2 RCV Distortion and Noise - 800 Hz NB	40
5.2 RCV Distortion and Noise - 1000 Hz NB	42
5.2 RCV Distortion and Noise - 1250 Hz NB	44
5.2 RCV Distortion and Noise - 1600 Hz NB	47
5.2 RCV Distortion and Noise - 2000 Hz NB	49
5.2 RCV Distortion and Noise - 2500 Hz NB	51
5.2 RCV Distortion and Noise - 3150 Hz NB	53
Report - Receive Distortion and Noise (Conversational Gain)	55
5.3 Frequency Response 8N FF HANB	56
5.3 Frequency Response 8N DF HANB	58
5.3 Frequency Response 2N FF HANB	60
5.3 Frequency Response 2N DF HANB	63

## Overall Receive Delay NB

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



Delay (Cross): 107.6 ms

2024/1/20 14:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

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

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

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

Output ch.1: 0.00 dB

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

**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: 8.1 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))**

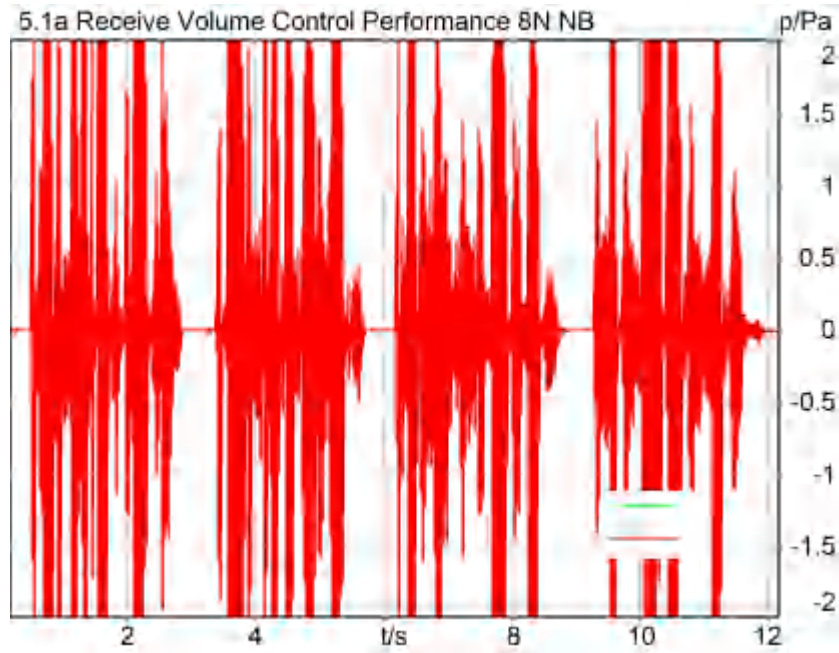
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 89.02 dB[SPL], Act.: 81.58%

Corrected Speech Level: 19.02 dB[SPL] Ok

### Ok

2024/1/21 9:01 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

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

**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	-3.7 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	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 107.6000 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
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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))

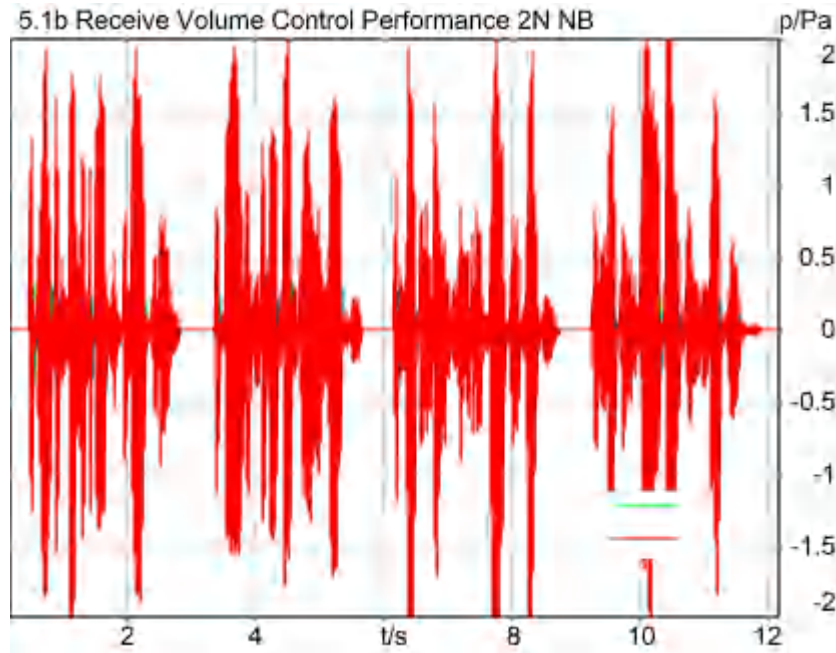
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

## 5.1b Receive Volume Control Performance 2N NB

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



### Correction

X - 70

Speech Level RCV: 83.74 dB[SPL], Act.: 80.53%

Corrected Speech Level: 13.74 dB[SPL] Ok

### Ok

2024/1/20 13:55 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))

**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	-0.7 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	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 133.5000 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
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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

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 BEQ Settings (BEQ Filter 1)  
 Block mode        Bypass  
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Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613

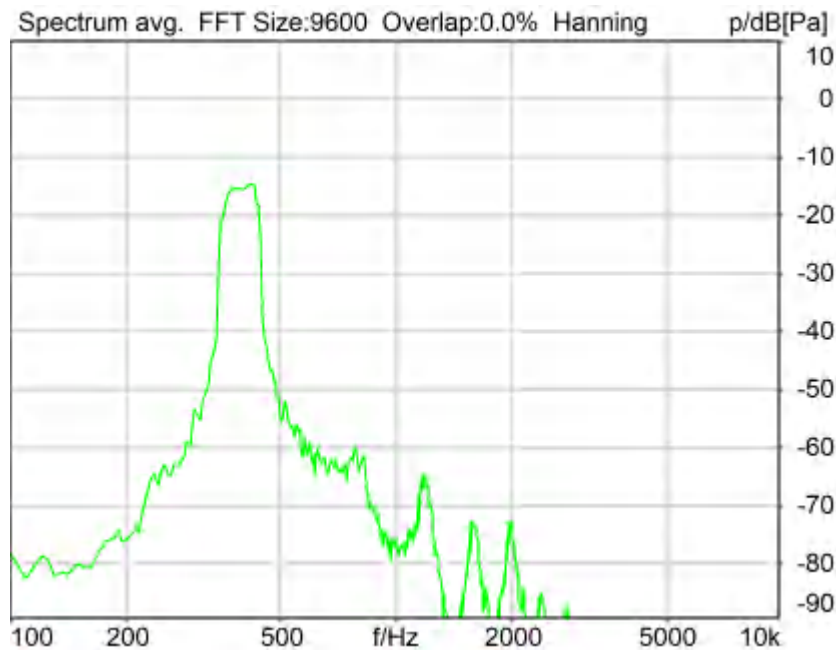
Pinna Type        Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 38.49 dB (1.19%) Ok

**Ok**

2024/1/8 14:16 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\_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	-3.9 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.	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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

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

### labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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### Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

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 BEQ Settings (BEQ Filter 1)  
 Block mode Bypass

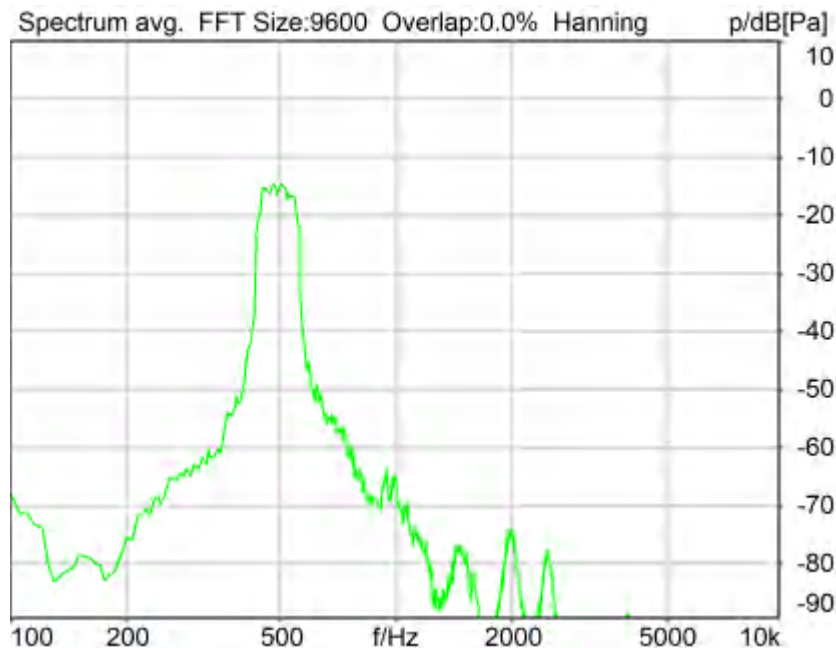
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 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 36.95 dB (1.42%) Ok

**Ok**

2024/1/8 14:16 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\_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	-3.9 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.	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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

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

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

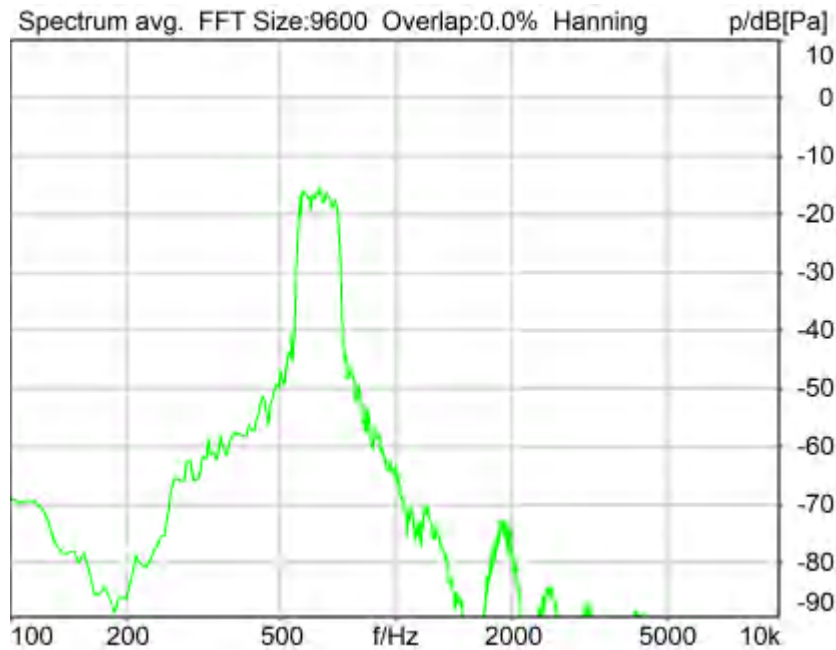
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 33.46 dB (2.12%) Ok

**Ok**

2024/1/8 14:16 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\_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	-3.9 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 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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

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

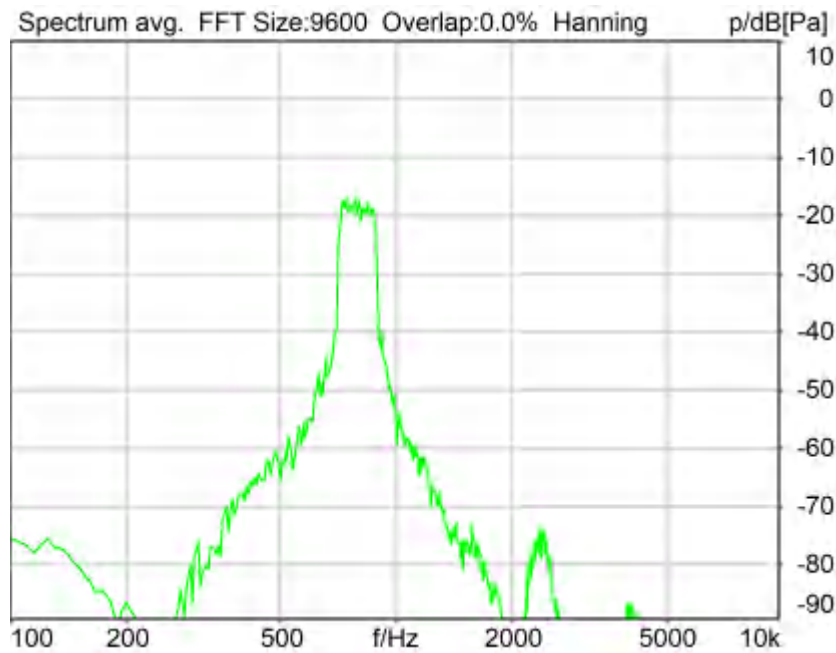
**HIB Settings**

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 - 800 Hz NB

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



Distortion (Noise) RCV (packed): 30.87 dB (2.86%) Ok

**Ok**

2024/1/8 14:17 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	-3.9 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.	675.0 Hz
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis min.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

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

Polarisation Voltage200V                      Supply Voltage    ±60V

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

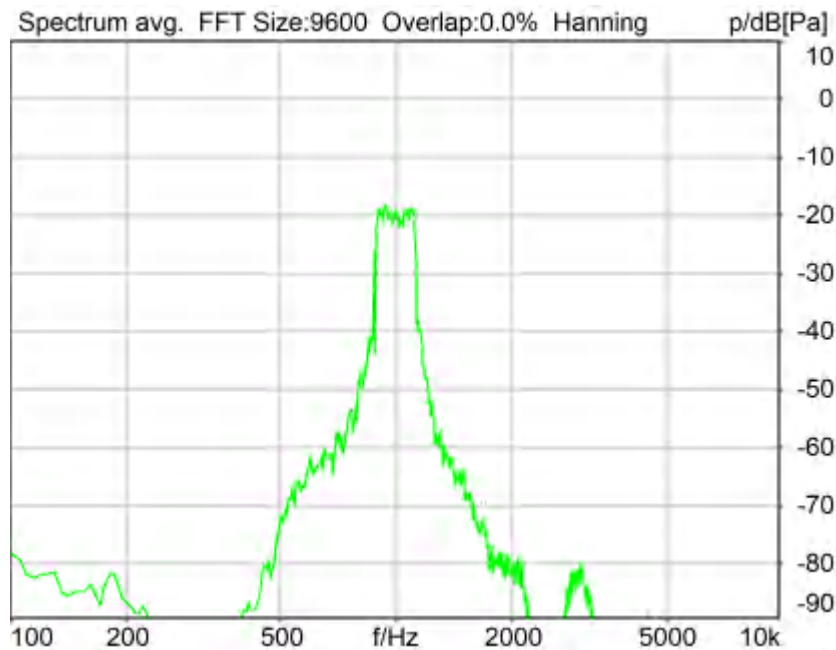
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 28.73 dB (3.66%) Ok

**Ok**

2024/1/8 14:17 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting            off

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

Source: act\_rpn\_b250ms\_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	-3.9 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.	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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

#### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

#### labCORE Settings

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

#### labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

#### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

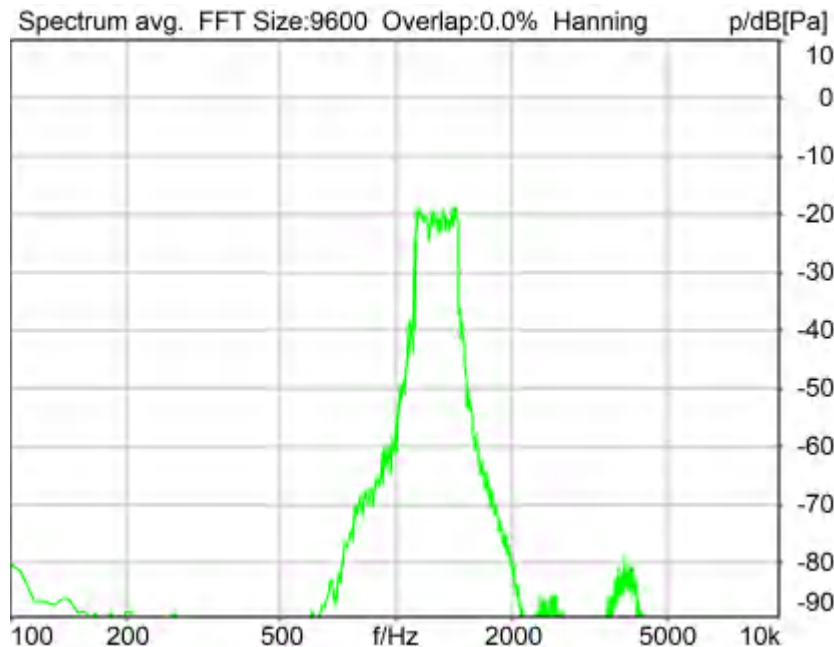
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 24.73 dB (5.80%) Ok

**Ok**

2024/1/8 14:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	20.00 dB

Meas. Setting off

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

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

**Calibration**

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

**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	-3.9 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	Overlap	0 %
Frequency base	Transformation	Smooth	Off
FFT size	9600	Stimulus max.	1450.0 Hz
Window function.	Hanning	Analysis max.	1080.0 Hz
dB weighting	A Weighting	Analysis (2) max.	20000.0 Hz
Stimulus min.	1085.0 Hz		
Analysis min.	20.0 Hz		
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

-----  
 labCORE Routing  
 Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

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

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

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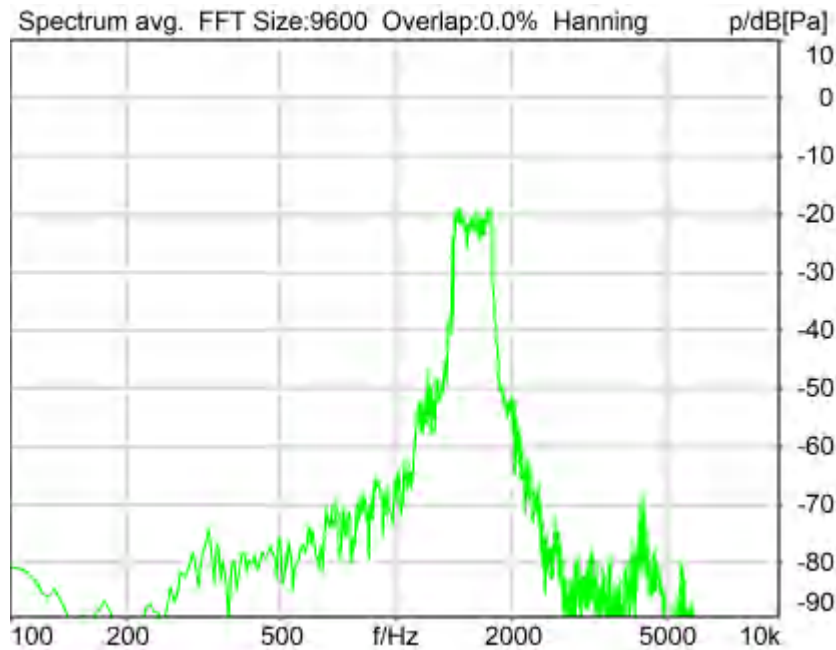
**HIB Settings**

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

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

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





Distortion (Noise) RCV (packed): 26.16 dB (4.92%) Ok

**Ok**

2024/1/8 14:18 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\_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	-3.9 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 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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

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

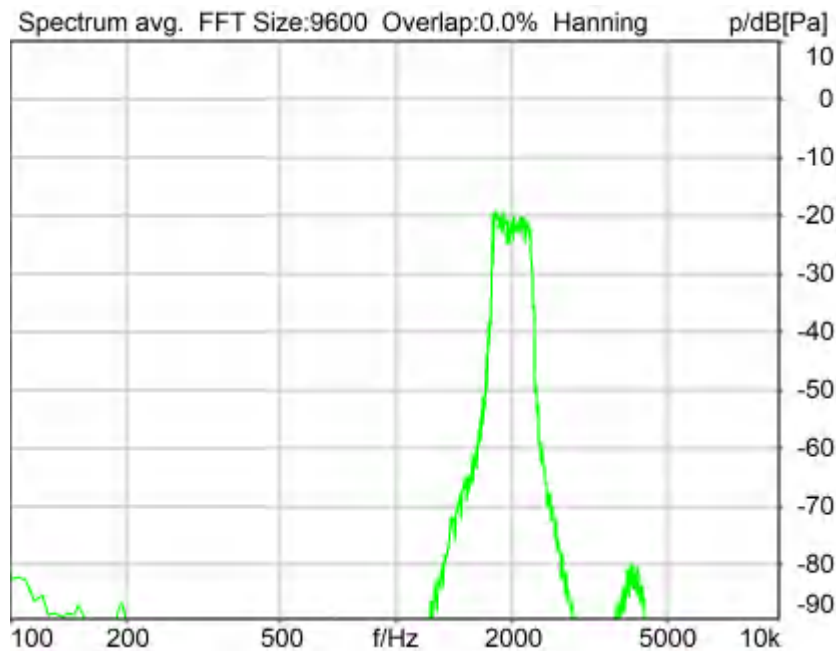
**HIB Settings**

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 - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 29.31 dB (3.43%) Ok

**Ok**

2024/1/8 14:19 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\_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	-3.9 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.	1745.0 Hz
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis min.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

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

Polarisation Voltage 200V                      Supply Voltage    ±60V

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

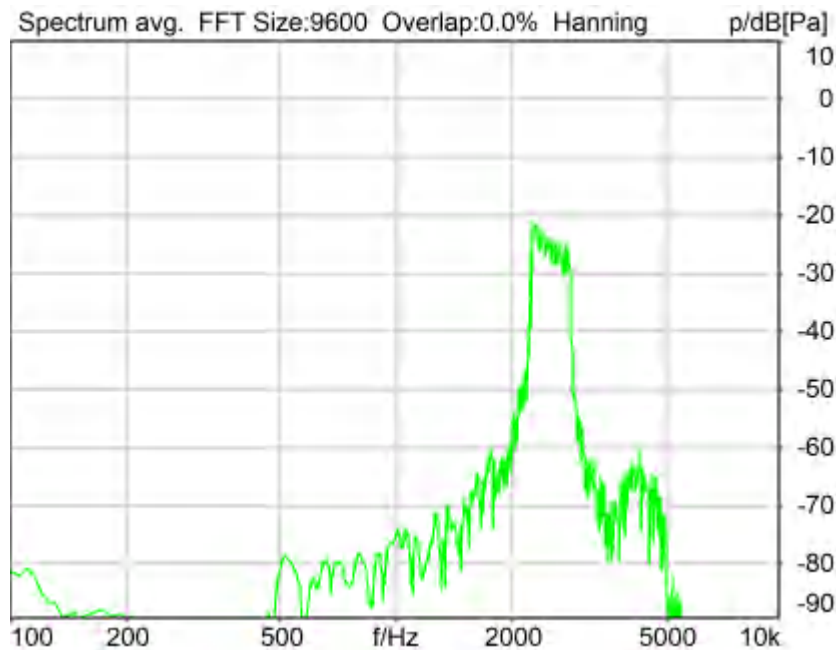
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 25.60 dB (5.25%) Ok

**Ok**

2024/1/8 14:19 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\_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	-3.9 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.	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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

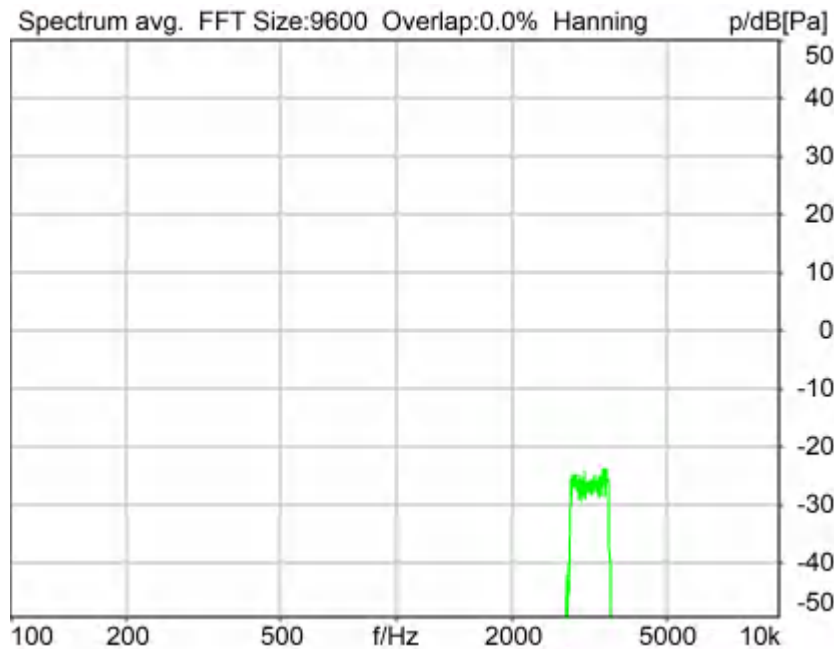
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 23.98 dB (6.33%) Ok

**Ok**

2024/1/8 14:19 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	-3.9 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	Overlap	0 %
Frequency base	Transformation	Smooth	Off
FFT size	9600	Stimulus max.	3585.0 Hz
Window function.	Hanning	Analysis min.	20.0 Hz
dB weighting	A Weighting	Analysis (2) min.	3590.0 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 133.5000 ms (D\_RCV\_NB, Delay (Cross))  
 Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

-----  
 labCORE Routing  
 Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker



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

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

Range Ch. 1      0.00 dB                      Ch. 0 Float      On  
 Range Ch. 2      0.00 dB                      Ch. 1 Float      On

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

Range Ch. 1      0.00 dB                      Range Ch. 2      0.00 dB

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode      Bypass

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

Ser. Nr.              12306613                      Pinna Type          Type 3.3

**HIB Settings**

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

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

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

Region	Frequency	SDNR
1	400Hz	38.49 dB
2	500Hz	36.95 dB
3	630Hz	33.46 dB
4	800Hz	30.87 dB
5	1000Hz	28.73 dB
6	1250Hz	24.73 dB
7	1600Hz	26.16 dB
8	2000Hz	29.31 dB
9	2500Hz	25.60 dB
10	3150Hz	23.98 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 23.98dB at 3150Hz.

2024/1/8 14:19 ACQUA

## 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): 35.59 dB (1.66%) Ok

**Ok**

2024/1/20 13:56 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 Ze	0.0 mm	Delta C	0.0 °
Ym	-0.7 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.	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 133.5000 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 Voltage200V                      Supply Voltage    ±60V

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

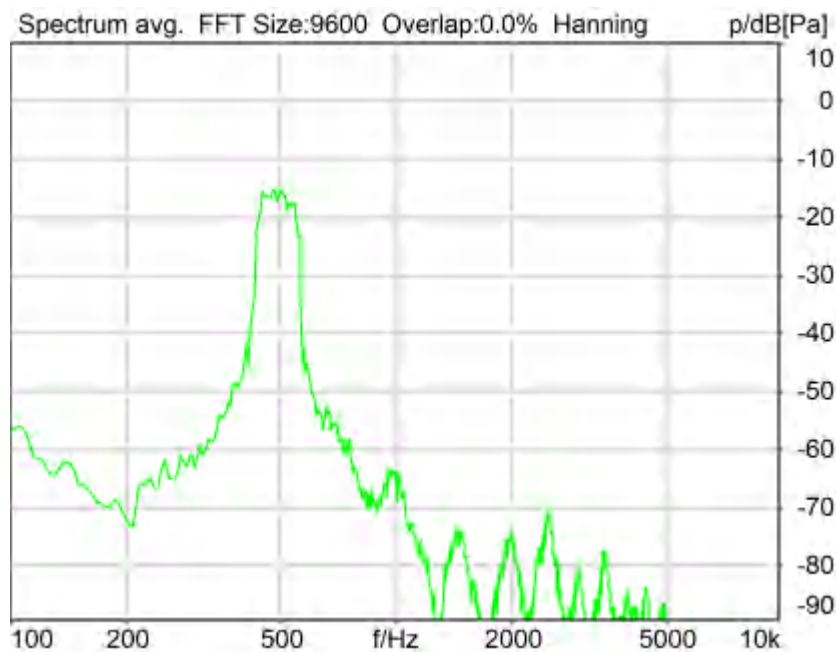
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.                12306613                      Pinna Type            Type 3.3

**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 - 500 Hz NB**

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



Distortion (Noise) RCV (packed): 35.75 dB (1.63%) Ok

**Ok**

2024/1/20 13:57 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\_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	-0.7 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 133.5000 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 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 - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.67 dB (1.85%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.7 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.	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 133.5000 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 Voltage200V              Supply Voltage       ±60V

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode        Bypass

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

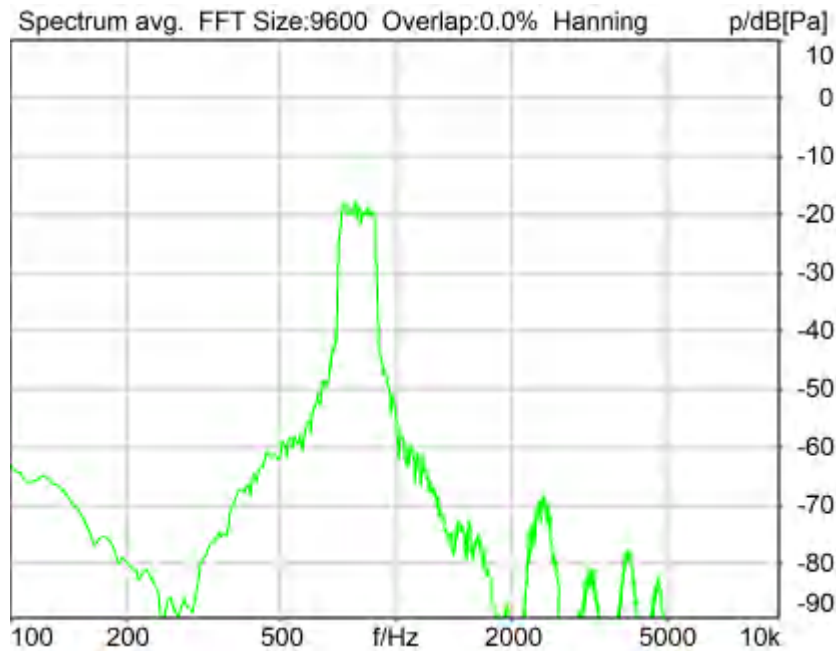
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 31.52 dB (2.66%) 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\_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	-0.7 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 133.5000 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
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-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

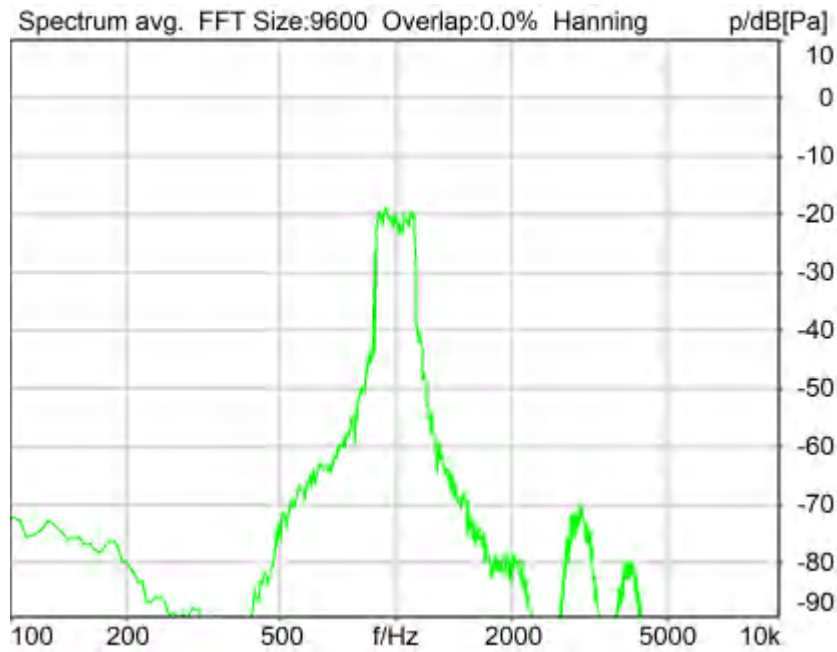
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 NB

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



Distortion (Noise) RCV (packed): 29.50 dB (3.35%) 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	-0.7 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 133.5000 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
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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))**

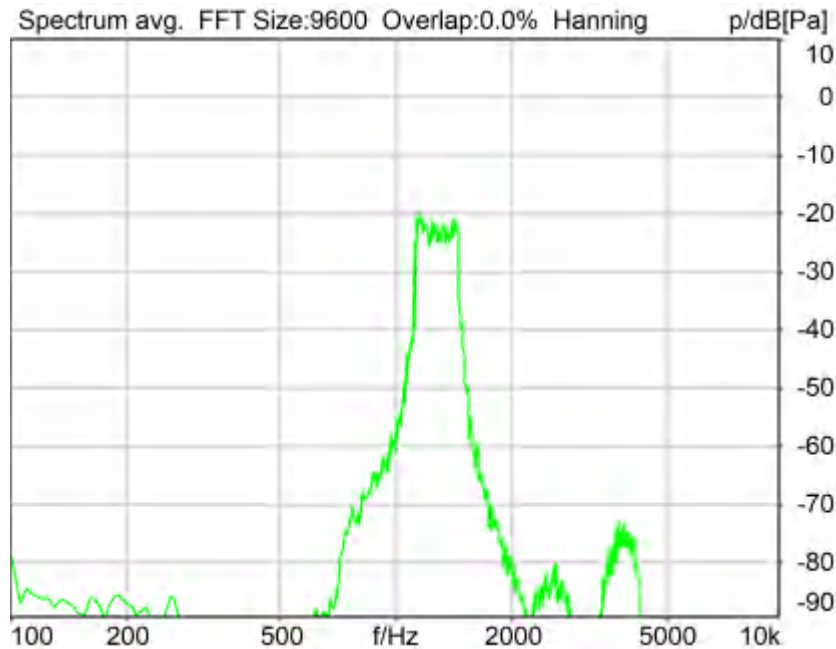
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.04 dB (7.05%) 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\_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	-0.7 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 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 133.5000 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))**

<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))**

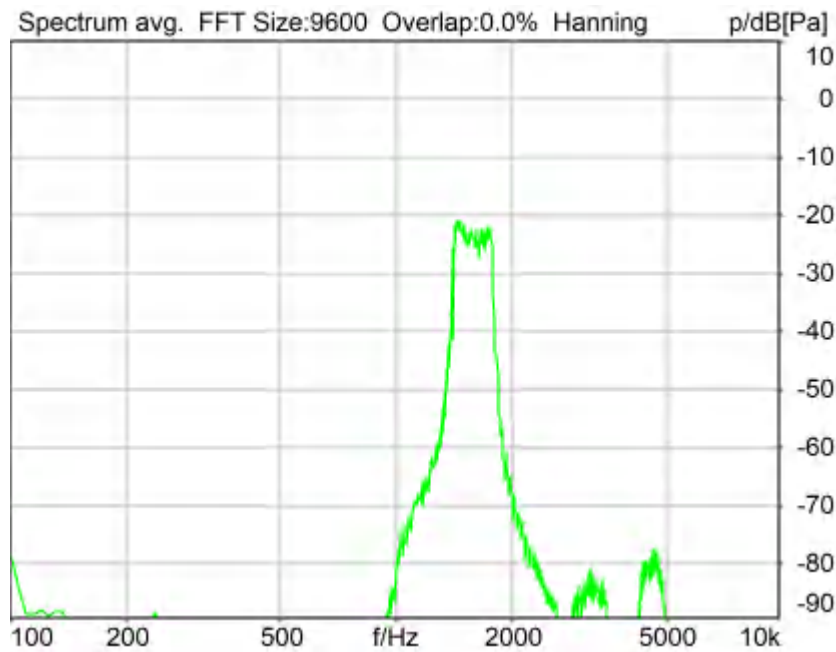
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 NB**

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Distortion (Noise) RCV (packed): 29.95 dB (3.18%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	-0.7 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 133.5000 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



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))

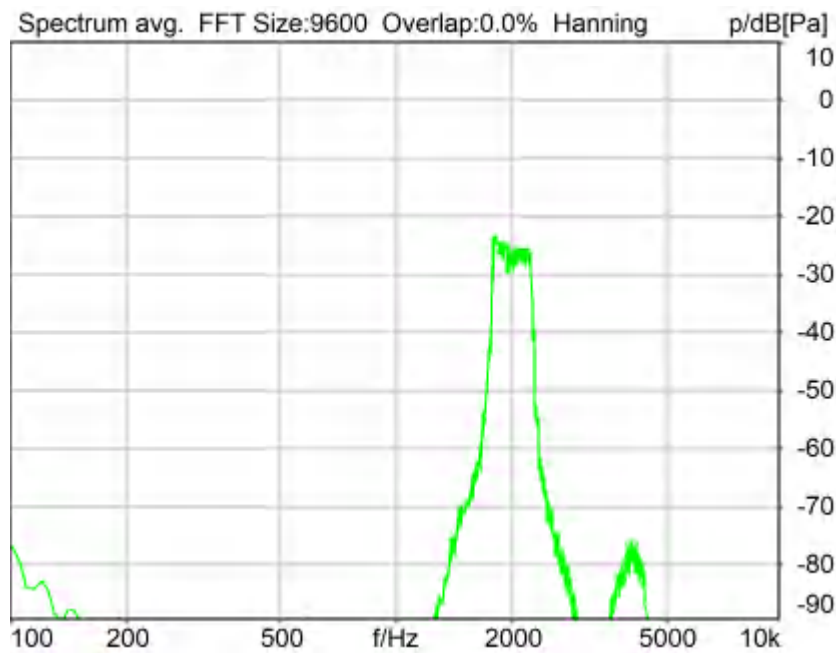
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 28.09 dB (3.94%) 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	-0.7 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 133.5000 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

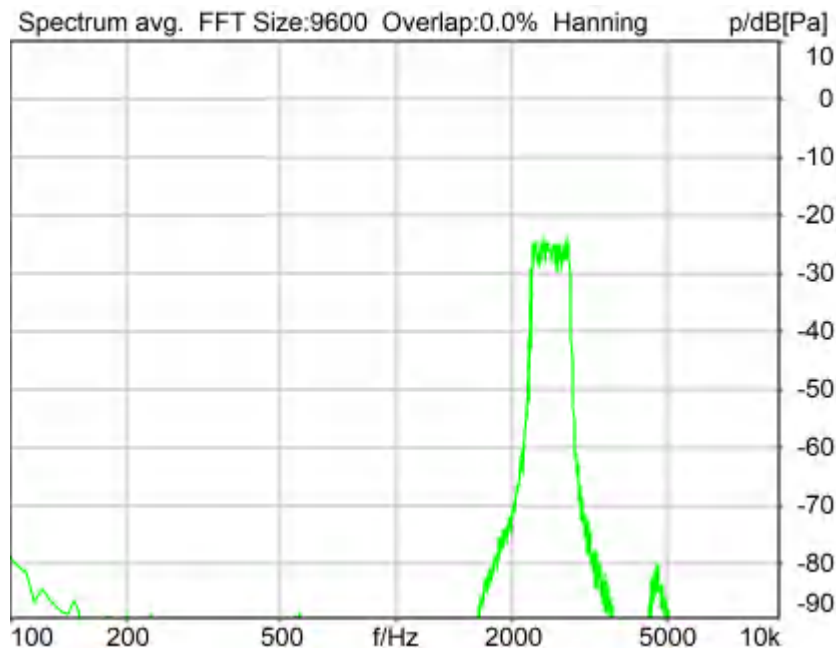
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 32.10 dB (2.48%) Ok

**Ok**

2024/1/20 14:00 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\_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	-0.7 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.	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 133.5000 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**

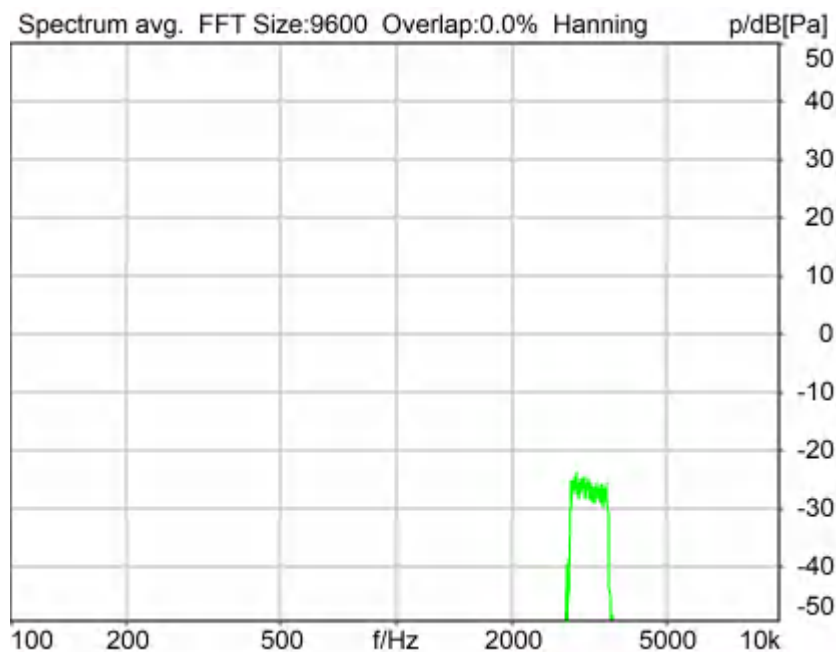
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 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
<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 NB

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



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

**Ok**

2024/1/20 14:00 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\_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	-0.7 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 133.5000 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

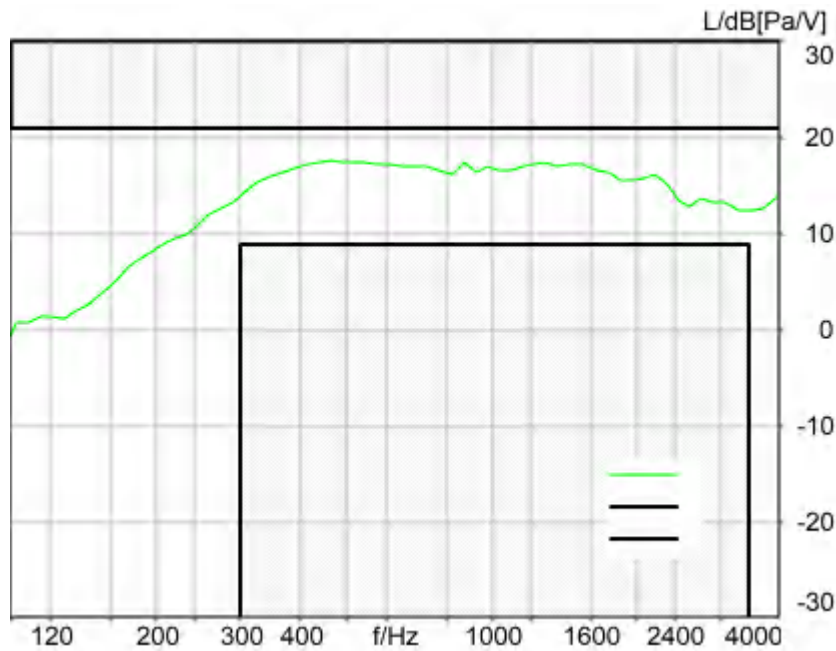
Region	Frequency	SDNR
1	400Hz	35.59 dB
2	500Hz	35.75 dB
3	630Hz	34.67 dB
4	800Hz	31.52 dB
5	1000Hz	29.50 dB
6	1250Hz	23.04 dB
7	1600Hz	29.95 dB
8	2000Hz	28.09 dB
9	2500Hz	32.10 dB
10	3150Hz	28.70 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 23.04dB at 1250Hz.

2024/1/20 14:00 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance  
 3.40 dB at 462.0 Hz Ok

**Ok**

2024/1/20 14:05 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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



**Source: respmaleieeee269\_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	-4.4 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_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 107.6000 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))

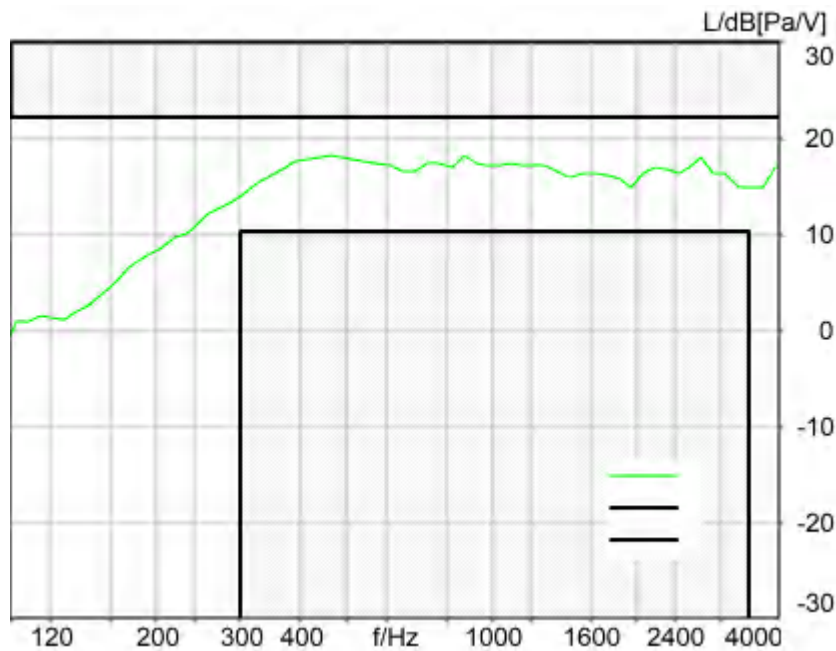
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
 4.09 dB at 462.0 Hz Ok

**Ok**

2024/1/20 14:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: respmaleieeee269\_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	-4.4 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	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_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 107.6000 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))

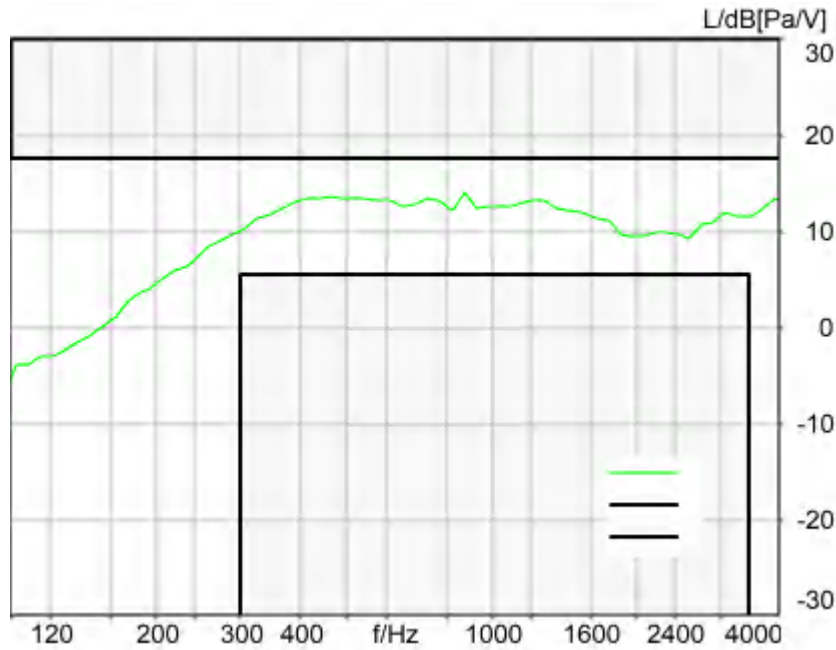
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
 3.63 dB at 873.9 Hz Ok

Ok

2024/1/20 14:01 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	-0.7 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 133.5000 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))

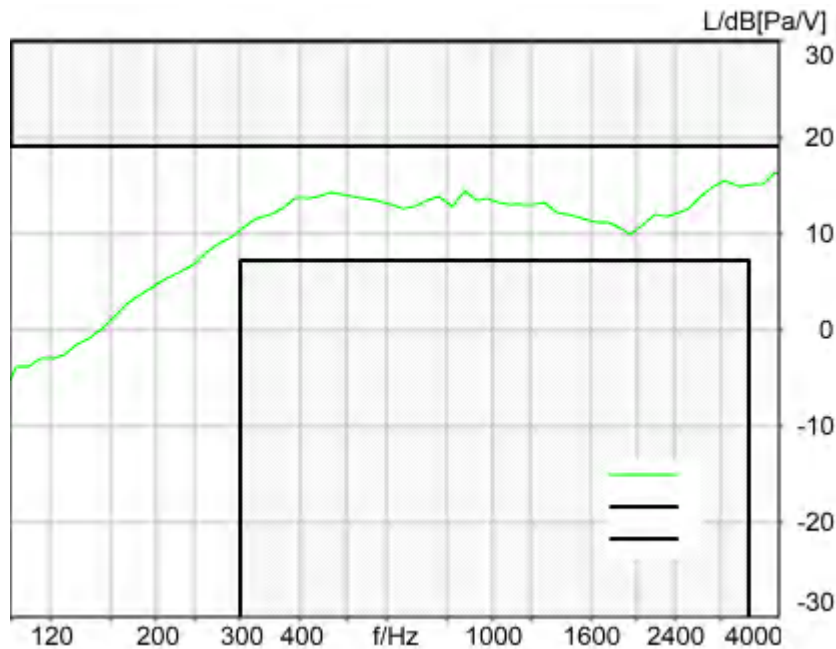
Ser. Nr. 12306613 Pinna Type Type 3.3

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 DF HANB

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



Absolute minimal distance  
 2.84 dB at 3882.4 Hz Ok

Ok

2024/1/20 14:01 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

Limits

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

Meas. Setting off

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

**Source: 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	-0.7 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	Min. freq. for tol.	100.0 Hz
Tol. scheme file	521_rcv_frq_man_hanb.tol	Max. freq. for tol.	4000.0 Hz
Auto adjust	Centrate		

**Special Features**

Compensate delay 133.5000 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	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
Project	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 15:45
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	126.9	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	18.28	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	13.45	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.88	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.39	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.23	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.03	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.19	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.15	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.53	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.33	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.88	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.39	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.09	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.75	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.83	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and	Ok	Distortion (Noise)	31.52	339D LTE Band

Noise - 5000 Hz WB		[dB], 0.0 dB		2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	22.09	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.79	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.70	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.12	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.31	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.73	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.14	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.43	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.48	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.89	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.11	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.81	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.81	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.65	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.98	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	25.48	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 544.4 Hz	2.39	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	2.86	339D LTE Band

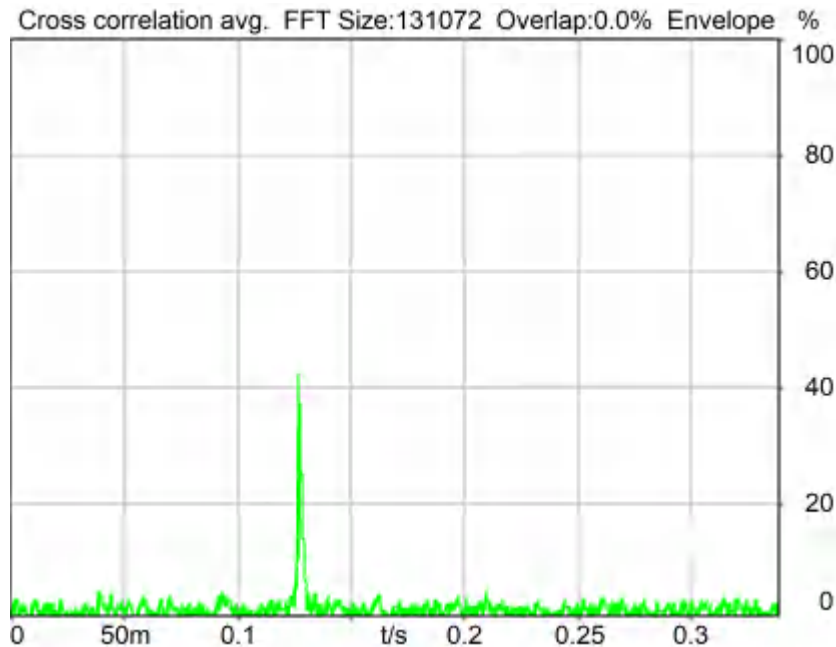
DF		scheme [dB], 873.9 Hz		2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.14	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.10	339D LTE Band 2_20QPSK_100RB_0_EVS WB 13.2kbps_CH18900

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Overall Receive Delay WB	6
5.1a Receive Volume Control Performance 8N WB	8
5.1b Receive Volume Control Performance 2N WB	10
5.2 RCV Distortion and Noise - 250 Hz WB	12
5.2 RCV Distortion and Noise - 315 Hz WB	14
5.2 RCV Distortion and Noise - 400 Hz WB	16
5.2 RCV Distortion and Noise - 500 Hz WB	18
5.2 RCV Distortion and Noise - 630 Hz WB	21
5.2 RCV Distortion and Noise - 800 Hz WB	23
5.2 RCV Distortion and Noise - 1000 Hz WB	25
5.2 RCV Distortion and Noise - 1250 Hz WB	27
5.2 RCV Distortion and Noise - 1600 Hz WB	30
5.2 RCV Distortion and Noise - 2000 Hz WB	32
5.2 RCV Distortion and Noise - 2500 Hz WB	34
5.2 RCV Distortion and Noise - 3150 Hz WB	36
5.2 RCV Distortion and Noise - 4000 Hz WB	39
5.2 RCV Distortion and Noise - 5000 Hz WB	41
Report - Receive Distortion and Noise (Conversational Gain)	43
5.2 RCV Distortion and Noise - 250 Hz WB	44
5.2 RCV Distortion and Noise - 315 Hz WB	46
5.2 RCV Distortion and Noise - 400 Hz WB	48
5.2 RCV Distortion and Noise - 500 Hz WB	50
5.2 RCV Distortion and Noise - 630 Hz WB	52
5.2 RCV Distortion and Noise - 800 Hz WB	54
5.2 RCV Distortion and Noise - 1000 Hz WB	57
5.2 RCV Distortion and Noise - 1250 Hz WB	59
5.2 RCV Distortion and Noise - 1600 Hz WB	61
5.2 RCV Distortion and Noise - 2000 Hz WB	63
5.2 RCV Distortion and Noise - 2500 Hz WB	65
5.2 RCV Distortion and Noise - 3150 Hz WB	67
5.2 RCV Distortion and Noise - 4000 Hz WB	70
5.2 RCV Distortion and Noise - 5000 Hz WB	72
Report - Receive Distortion and Noise (Conversational Gain)	74
5.3 Frequency Response 8N FF	74
5.3 Frequency Response 8N DF	77
5.3 Frequency Response 2N FF	79
5.3 Frequency Response 2N DF	81

## Overall Receive Delay WB

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



Delay (Cross): 126.9 ms

2024/1/20 13:51 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	-3.8 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
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**HIB Settings**

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

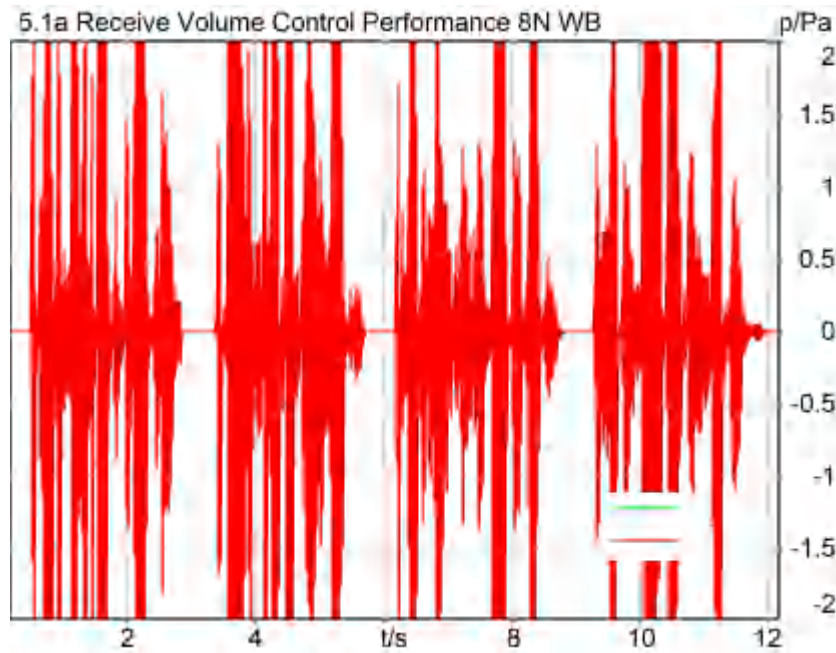


Gain out 1 -40.00 dB  
Gain in 1 0.00 dB  
Mic 1 Power Supply Off

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: 88.28 dB[SPL], Act.: 80.85%

Corrected Speech Level: 18.28 dB[SPL] Ok

### Ok

2024/1/20 13:51 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))

**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	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 100.2000 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))

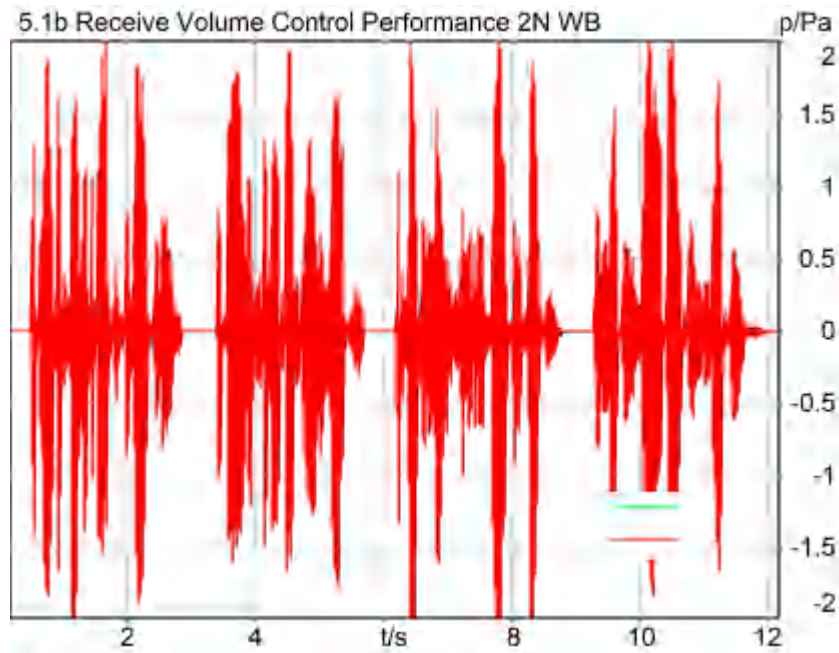
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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

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



**Correction**

X - 70

Speech Level RCV: 83.45 dB[SPL], Act.: 80.49%

Corrected Speech Level: 13.45 dB[SPL] Ok

**Ok**

2024/1/20 13:41 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))

**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	-0.3 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	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 100.2000 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

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

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



Distortion (Noise) RCV (packed): 33.88 dB (2.02%) Ok

**Ok**

2024/1/16 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\_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	-5.2 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.	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 100.2000 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))**

<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  
-----

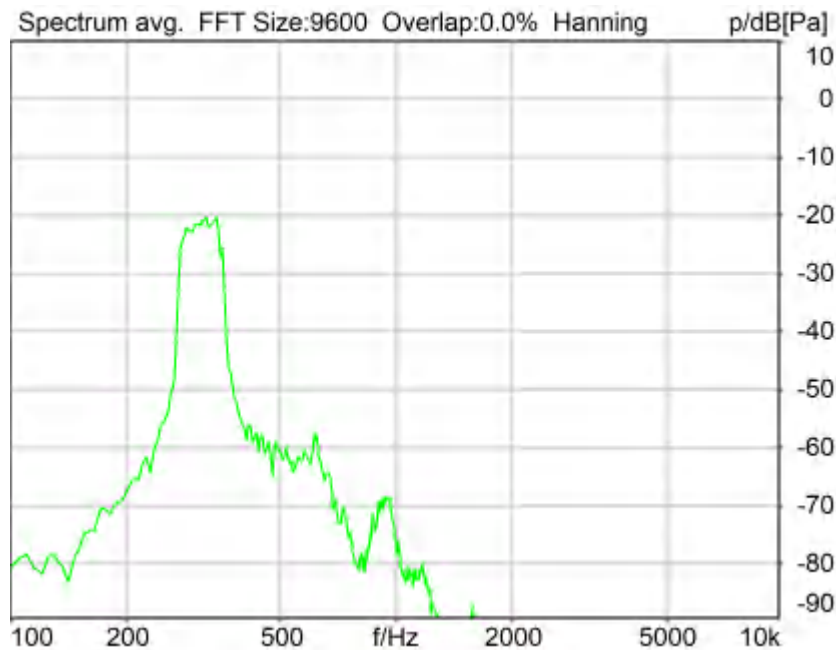
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 - 315 Hz WB

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



Distortion (Noise) RCV (packed): 35.39 dB (1.70%) Ok

**Ok**

2024/1/16 17:00 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\_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 °
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	-5.2 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.	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 100.2000 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))

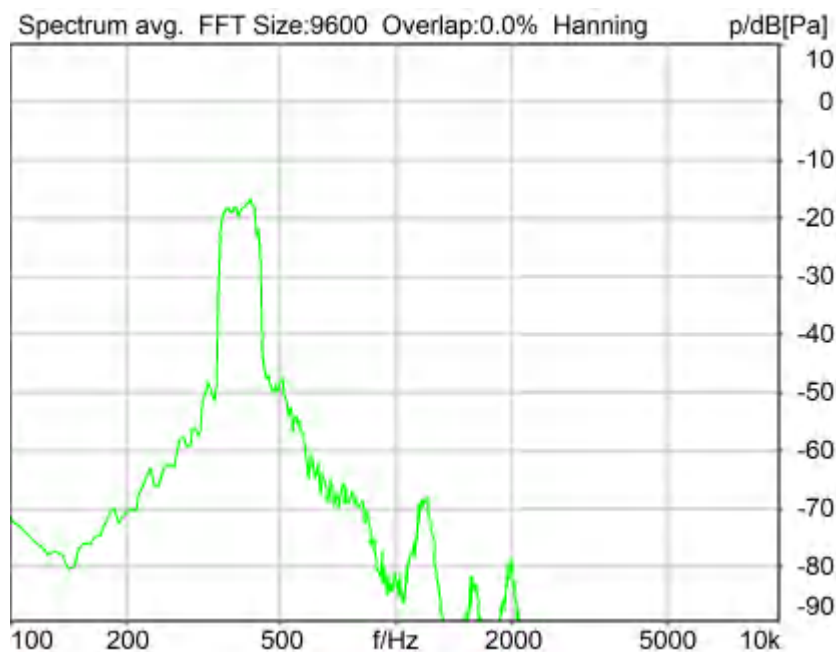
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 35.23 dB (1.73%) Ok

**Ok**

2024/1/8 14:58 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\_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	-5.3 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_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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable      RCVWB10\_400Hz

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

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

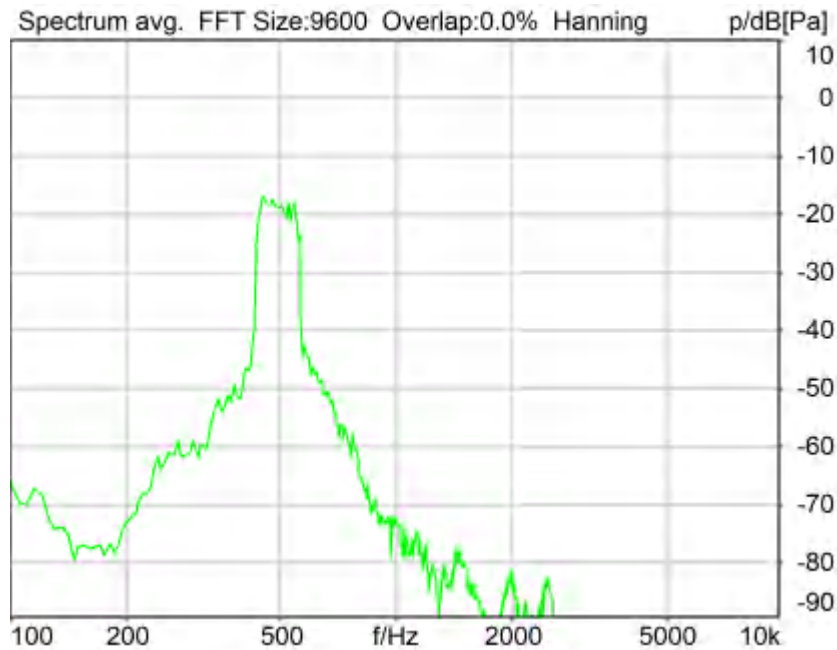
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 500 Hz WB**

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



Distortion (Noise) RCV (packed): 32.03 dB (2.50%) Ok

**Ok**

2024/1/8 14:58 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\_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	-5.3 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 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.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

<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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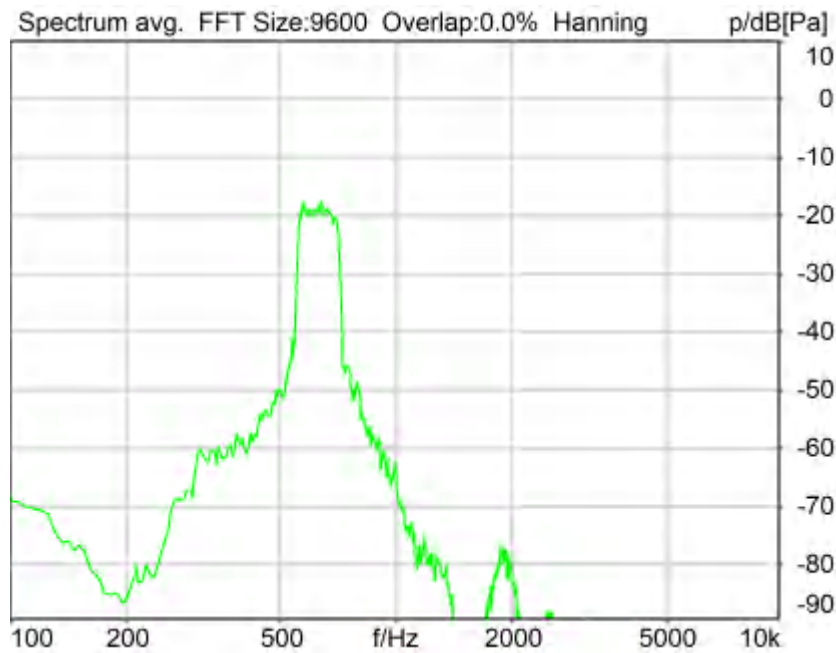
**HIB Settings**

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 - 630 Hz WB

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



Distortion (Noise) RCV (packed): 32.19 dB (2.46%) Ok

**Ok**

2024/1/8 14:59 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	-5.3 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 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 min.	20.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

<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 Voltage200V                      Supply Voltage     ±60V

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

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

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 30.15 dB (3.11%) Ok

**Ok**

2024/1/8 14:59 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\_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	-5.3 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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

#### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

#### labCORE Settings

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

#### labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

#### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

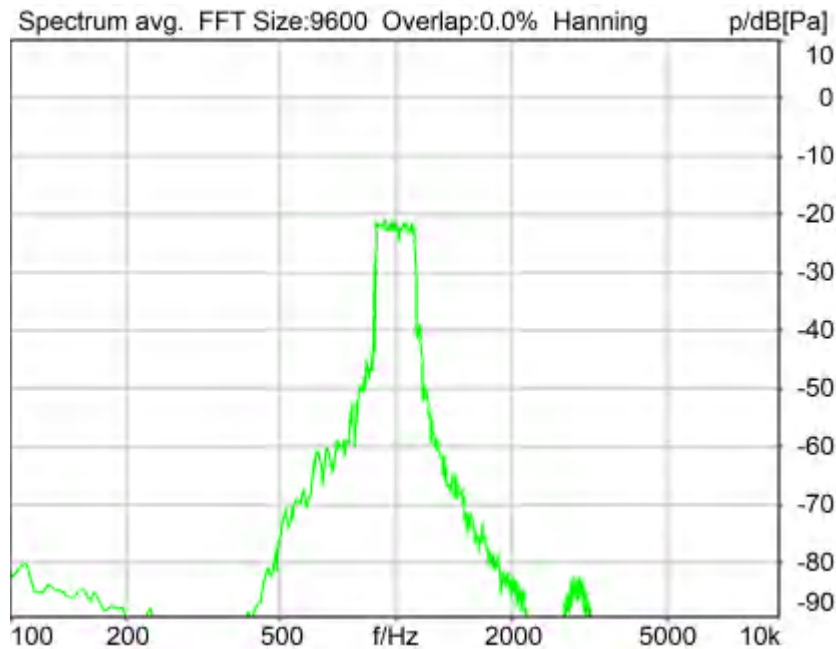
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 28.53 dB (3.75%) Ok

**Ok**

2024/1/8 15:00 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\_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	-5.3 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.	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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable      RCVWB10\_1000Hz

**Hardware Config Settings**

Used Setting      HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

-----  
labCORE Routing  
Out Channel 1 ->      Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

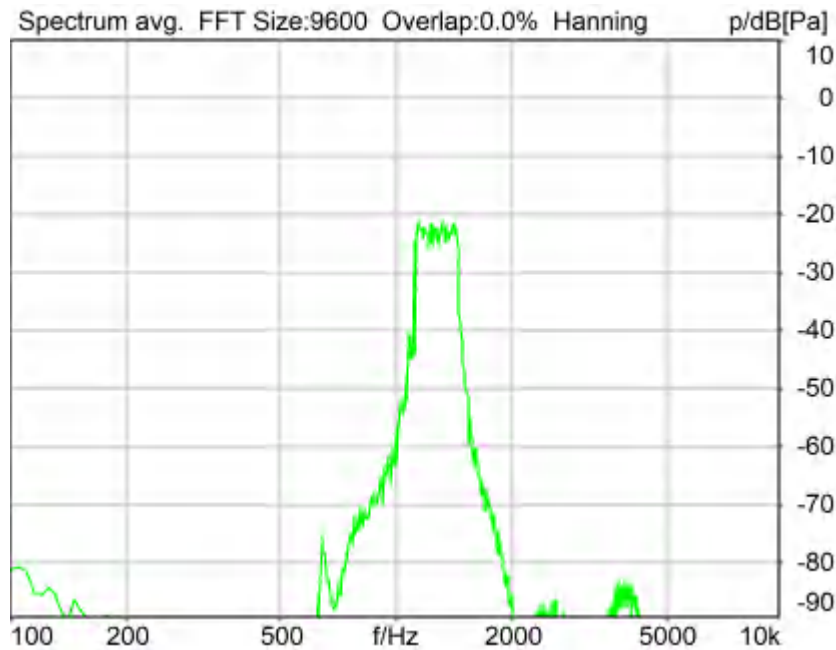
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## **5.2 RCV Distortion and Noise - 1250 Hz WB**

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



Distortion (Noise) RCV (packed): 24.33 dB (6.07%) Ok

**Ok**

2024/1/8 15:00 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\_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	-5.3 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
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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

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

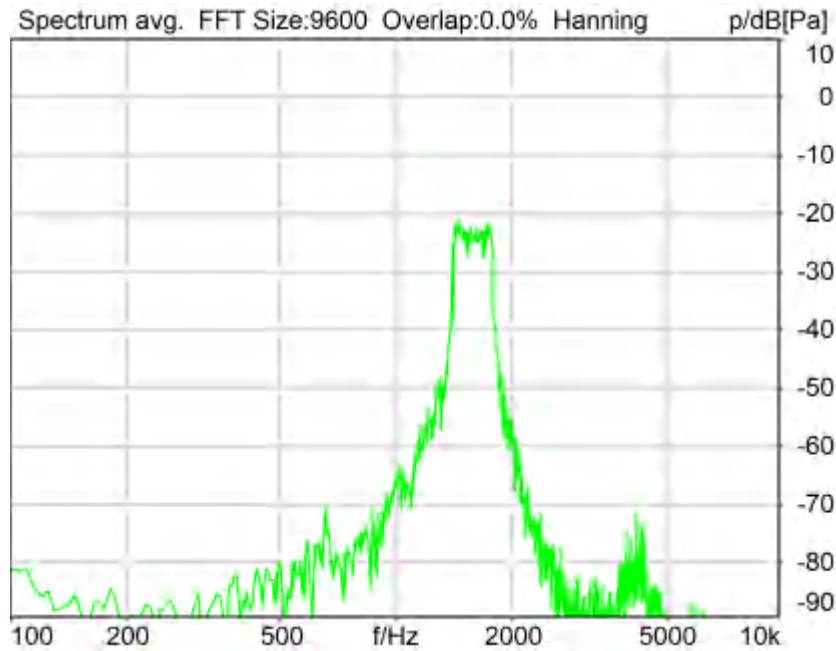
**HIB Settings**

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): 25.88 dB (5.08%) Ok

**Ok**

2024/1/8 15:00 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\_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	-5.3 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
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 min.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

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



Polarisation Voltage 200V                      Supply Voltage    ±60V

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

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

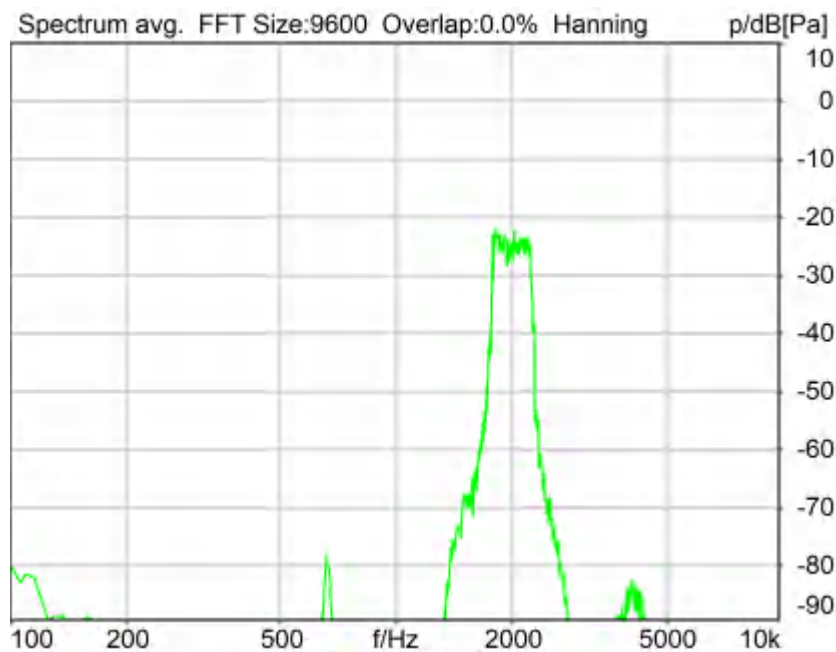
Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 29.39 dB (3.39%) Ok

**Ok**

2024/1/8 15:03 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\_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	-5.3 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.	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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

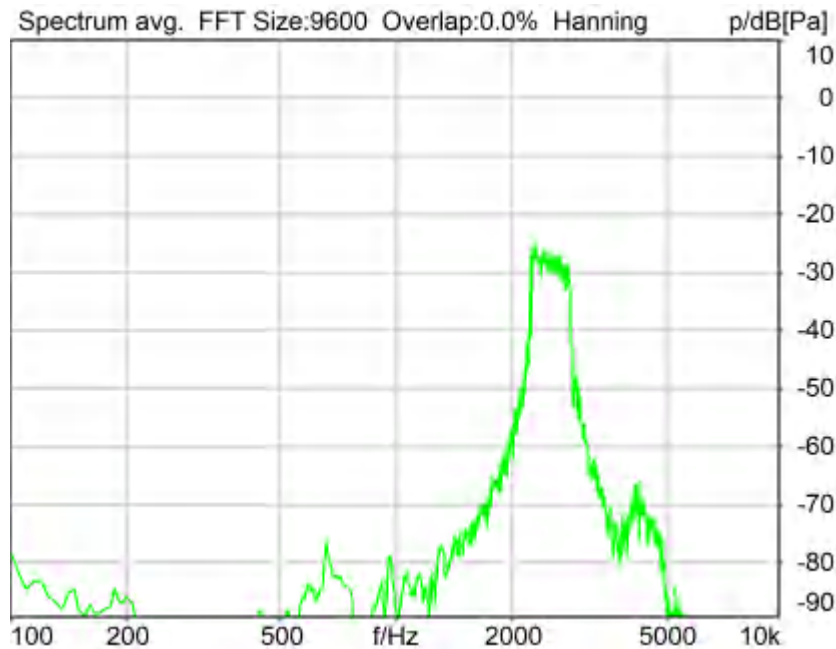
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 22.09 dB (7.86%) Ok

**Ok**

2024/1/8 15:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-5.3 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	Overlap	0 %
Frequency base	Transformation	Smooth	Off
FFT size	9600	Stimulus min.	2205.0 Hz
Window function.	Hanning	Stimulus max.	2855.0 Hz
dB weighting	A Weighting	Analysis min.	20.0 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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

-----  
labCORE Routing  
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

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

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

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

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



Distortion (Noise) RCV (packed): 25.75 dB (5.16%) Ok

**Ok**

2024/1/8 15:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-5.3 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		
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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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**Microphone Settings (Mic Amp. (Slot 6))**

<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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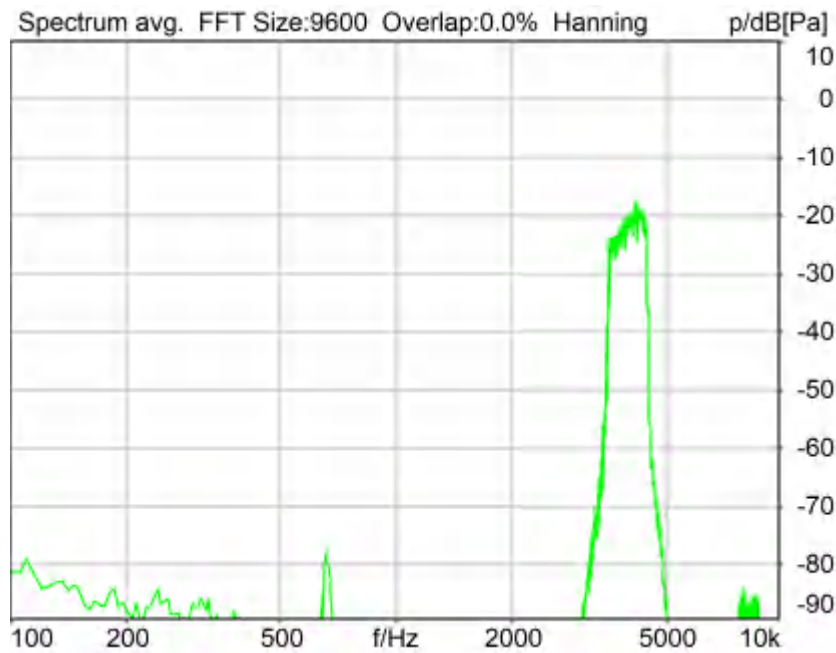
**HIB Settings**

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 - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 34.83 dB (1.81%) Ok

**Ok**

2024/1/8 15:02 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\_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	-5.3 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
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	3515.0 Hz
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis min.	20.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis max.	3510.0 Hz
		Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

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

Polarisation Voltage 200V                      Supply Voltage    ±60V

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

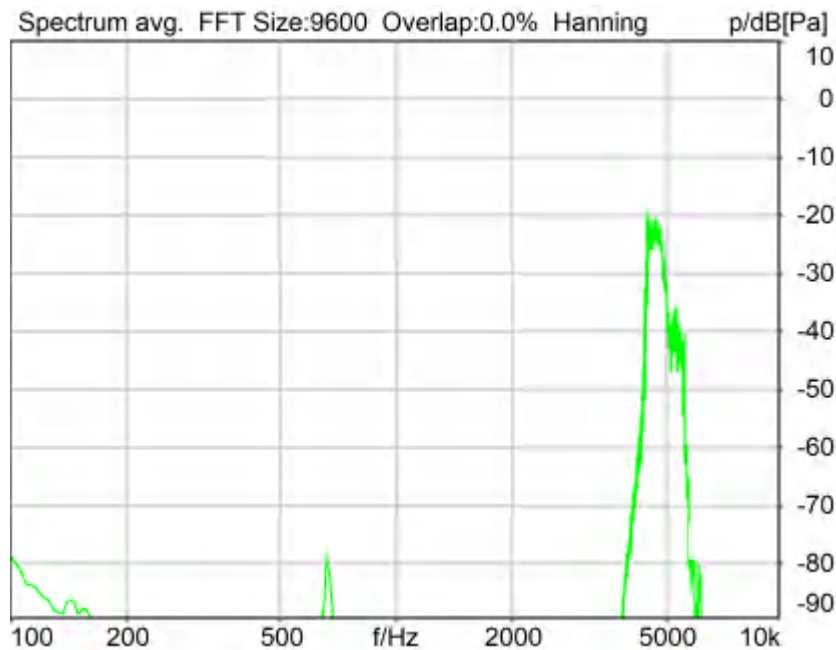
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

**5.2 RCV Distortion and Noise - 5000 Hz WB**

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



Distortion (Noise) RCV (packed): 31.52 dB (2.65%) Ok

**Ok**

2024/1/8 15:03 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\_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 °
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	-5.3 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.	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 114.6000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

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

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

Region	Frequency	SDNR
1	250Hz	32.95 dB
2	315Hz	33.12 dB
3	400Hz	35.23 dB
4	500Hz	32.03 dB
5	630Hz	32.19 dB
6	800Hz	30.15 dB
7	1000Hz	28.53 dB
8	1250Hz	24.33 dB
9	1600Hz	25.88 dB
10	2500Hz	22.09 dB
11	4000Hz	34.83 dB
12	5000Hz	31.52 dB
13	2000Hz	29.39 dB
14	3150Hz	25.75 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 22.09dB at 2500Hz.

2024/1/8 15:04 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): 26.79 dB (4.58%) Ok

Ok

2024/1/20 13:42 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\_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)

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	-0.3 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.	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 100.2000 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 2N



Distortion (Noise) RCV (packed): 31.70 dB (2.60%) Ok

**Ok**

2024/1/20 13:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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 °
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	-0.3 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.	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 100.2000 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



Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

## 5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 36.12 dB (1.56%) Ok

Ok

2024/1/20 13:43 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 Ze	0.0 mm	Delta C	0.0 °
Ym	-0.3 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.	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 100.2000 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): 35.31 dB (1.72%) Ok

**Ok**

2024/1/20 13:43 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	-0.3 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.	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 100.2000 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
<b>HIB Settings</b>			
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 35.73 dB (1.64%) Ok

**Ok**

2024/1/20 13:44 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	-0.3 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.	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 100.2000 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
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-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

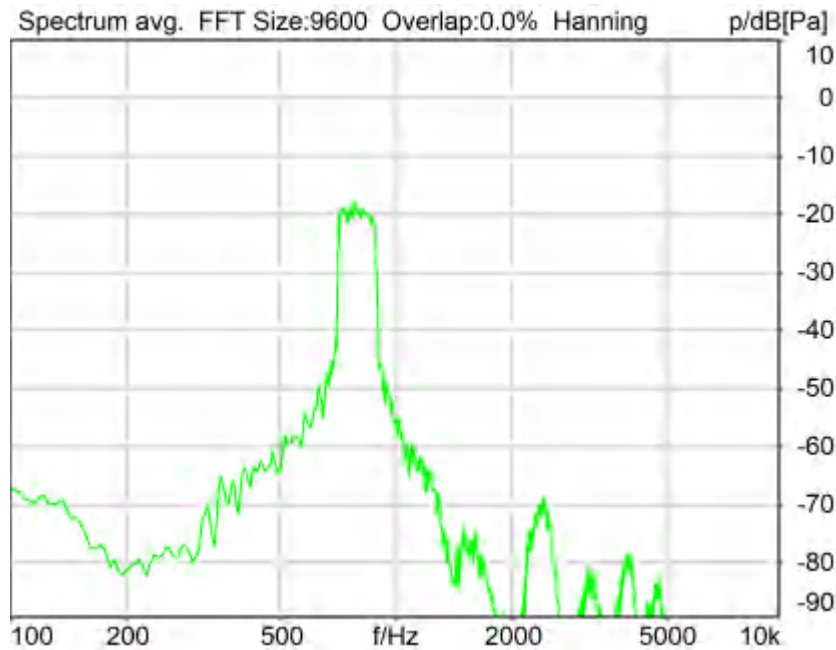
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 800 Hz WB

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



Distortion (Noise) RCV (packed): 32.14 dB (2.47%) Ok

**Ok**

2024/1/20 13:44 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	-0.3 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 100.2000 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))**

<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))**

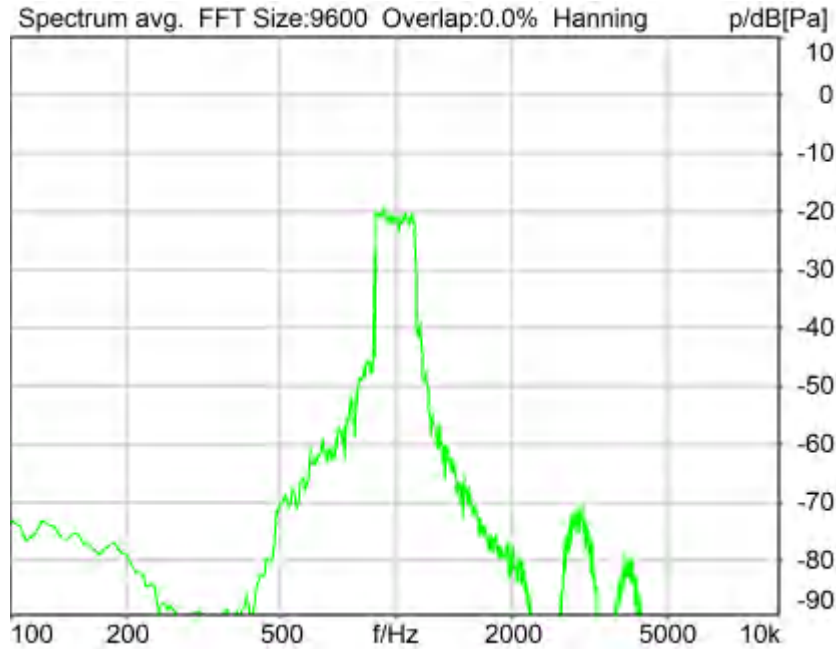
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 28.43 dB (3.79%) Ok

**Ok**

2024/1/20 13:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_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 °
		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	-0.3 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.	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 100.2000 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))**

<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))**

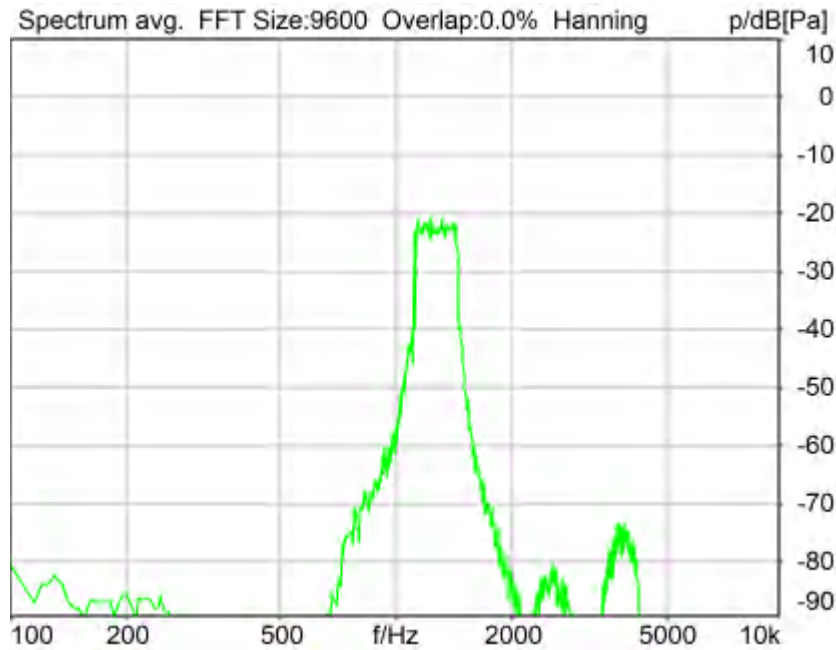
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1250 Hz WB**

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



Distortion (Noise) RCV (packed): 25.48 dB (5.32%) Ok

**Ok**

2024/1/20 13:45 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.3 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.	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 100.2000 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

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))

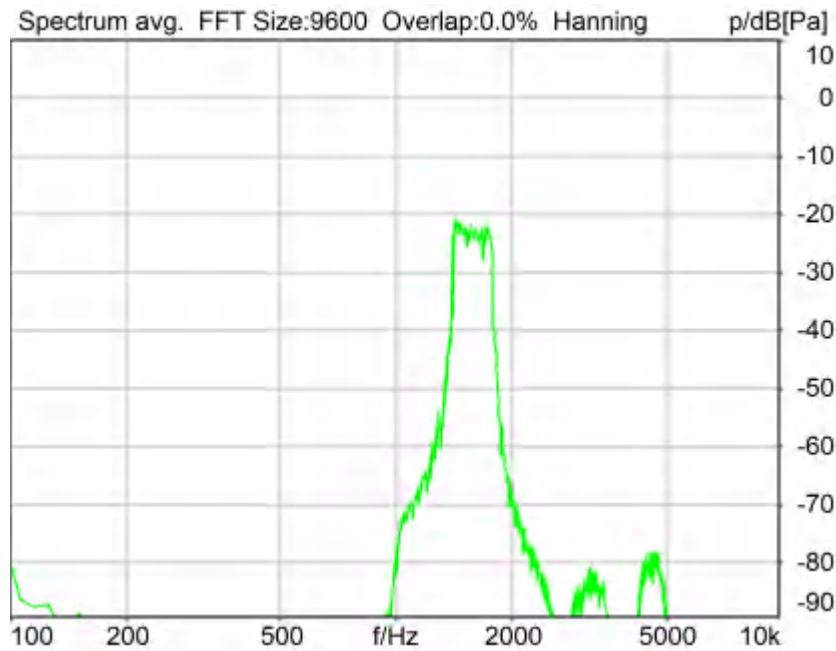
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 29.89 dB (3.20%) Ok

**Ok**

2024/1/20 13:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.3 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 100.2000 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  
-----

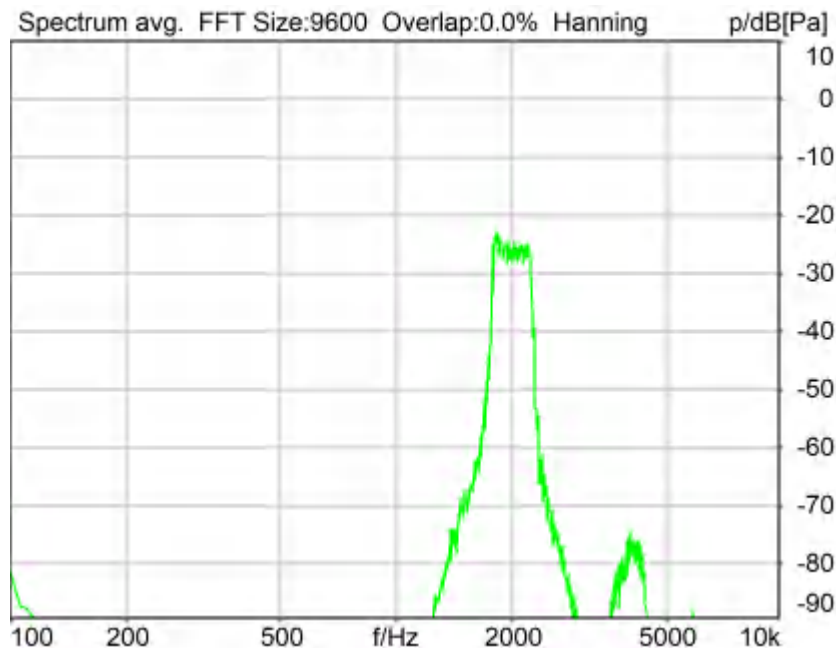
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 29.11 dB (3.50%) Ok

**Ok**

2024/1/20 13:46 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	-0.3 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.	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 100.2000 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**

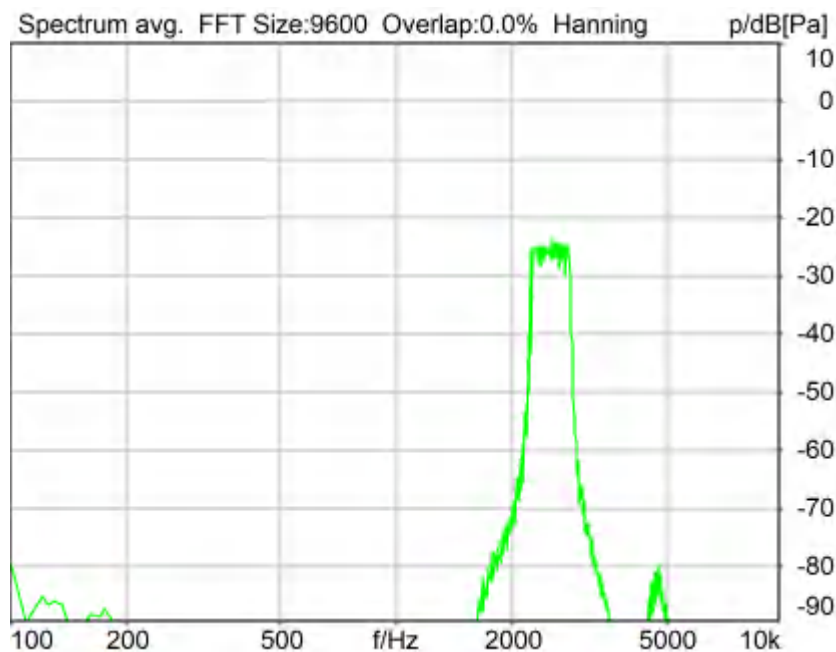
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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
<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 - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 30.81 dB (2.88%) Ok

**Ok**

2024/1/20 13:46 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	-0.3 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	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 100.2000 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))

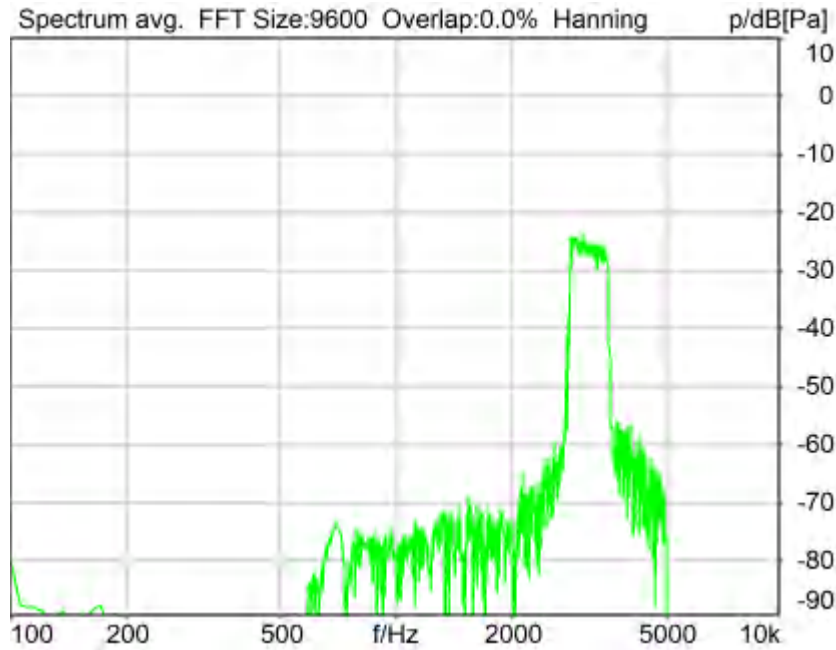
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 29.81 dB (3.23%) Ok

**Ok**

2024/1/20 13:47 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	-0.3 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 100.2000 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))**

<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))**

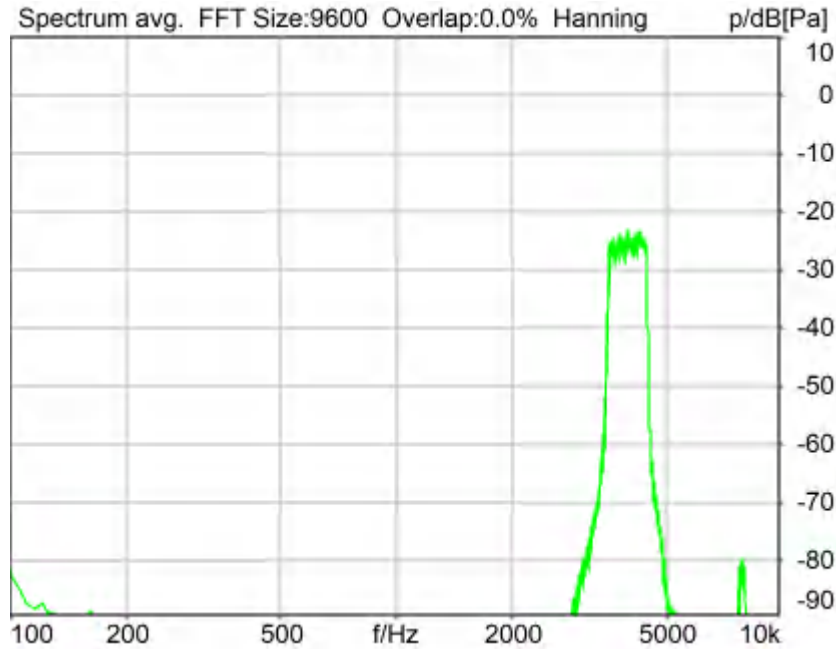
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 32.65 dB (2.33%) Ok

**Ok**

2024/1/20 13:47 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 °
		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	-0.3 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.	3515.0 Hz
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 100.2000 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))**

<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))**



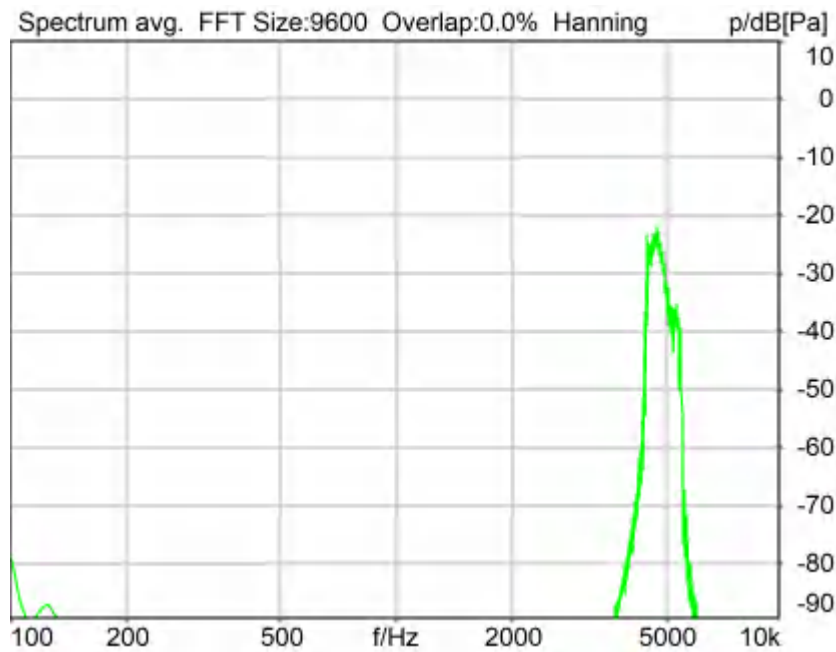
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 5000 Hz WB**

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



Distortion (Noise) RCV (packed): 32.98 dB (2.24%) Ok

**Ok**

2024/1/20 13:49 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\_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 °
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	-0.3 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.	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 100.2000 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

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

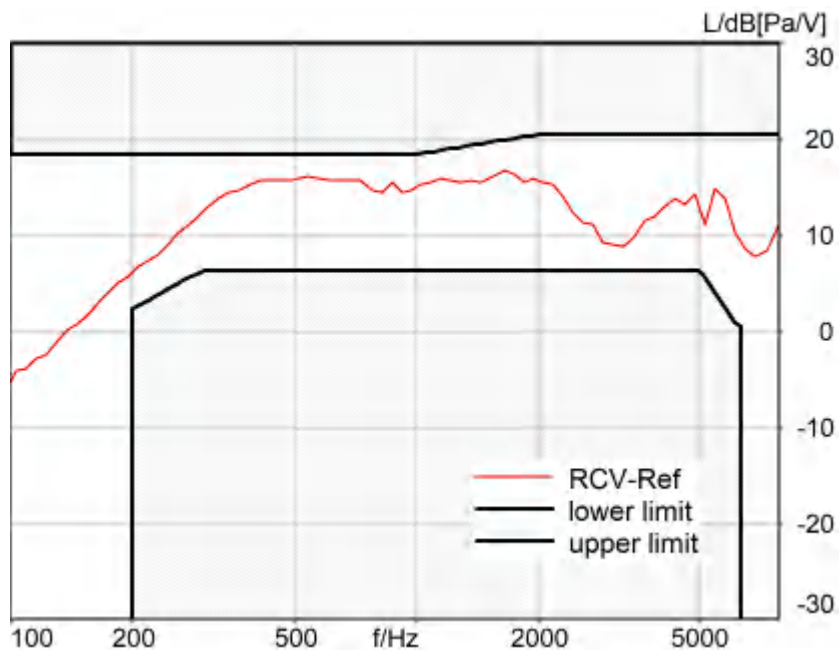
Region	Frequency	SDNR
1	250Hz	26.79 dB
2	315Hz	31.70 dB
3	400Hz	36.12 dB
4	500Hz	35.31 dB
5	630Hz	35.73 dB
6	800Hz	32.14 dB
7	1000Hz	28.43 dB
8	1250Hz	25.48 dB
9	1600Hz	29.89 dB
10	2000Hz	29.11 dB
11	2500Hz	30.81 dB
12	3150Hz	29.81 dB
13	4000Hz	32.65 dB
14	5000Hz	32.98 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 25.48dB at 1250Hz.

2024/1/20 13:49 ACQUA

### 5.3 Frequency Response 8N FF

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



Absolute minimal distance  
2.39 dB at 544.4 Hz Ok

**Ok**

2024/1/16 17:44 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

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

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.  
0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 100.2000 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))**

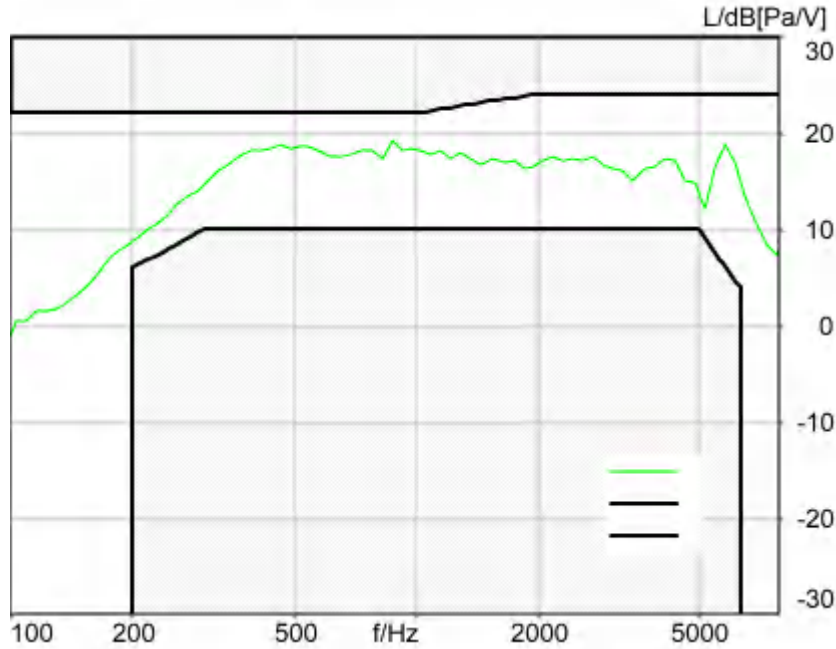
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 8N DF

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



Absolute minimal distance  
2.86 dB at 873.9 Hz Ok

**Ok**

2024/1/20 13:50 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

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

**Source: respmaleieeee269\_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 °
		Rotation Delta C	0.0 °
		Rotation Delta B	5.0 °
MECRP Delta Ye	0.0 mm	Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Delta C	0.0 °
Delta Xe	0.0 mm	Delta B	0.0 °
Delta Ye	0.0 mm		
Delta Ze	0.0 mm		
Ym	-3.8 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_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 100.2000 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))**

<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

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))

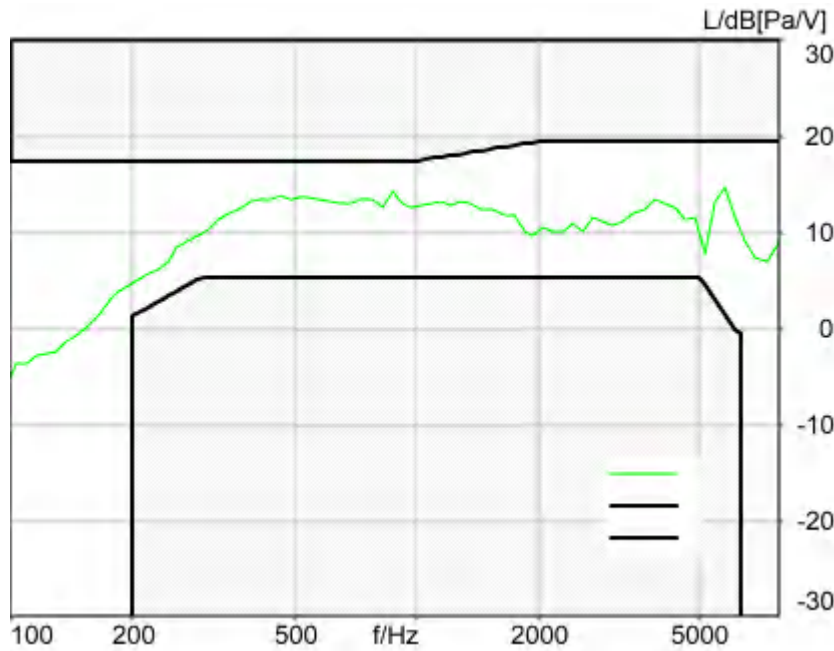
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
3.14 dB at 873.9 Hz Ok

**Ok**

2024/1/20 13:54 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)**

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	-0.8 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.2 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 126.9000 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))

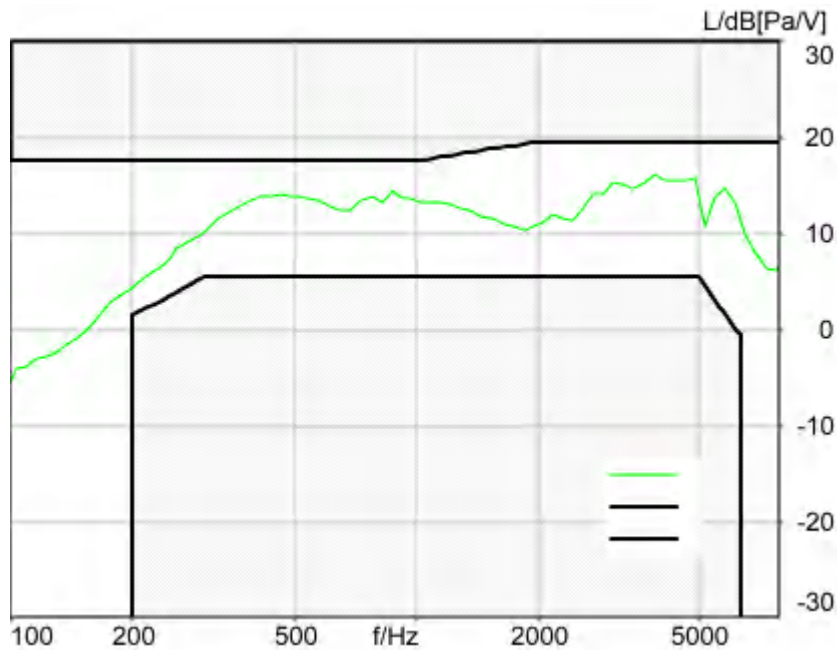
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
3.10 dB at 873.9 Hz Ok

**Ok**

2024/1/20 13:54 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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_ieeee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	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 126.9000 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

## **Measurement Protocol**

Measurement Object	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 15:58
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	110.3	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.66	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	13.25	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.01	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.40	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.11	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.75	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.94	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.17	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.50	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.25	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.80	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.39	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	23.39	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.00	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.38	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.39	339D LTE Band

Noise - 630 Hz NB		[dB], 0.0 dB		12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.21	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.54	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.56	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.28	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.75	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.39	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.39	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	21.39	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 487.0 Hz	3.15	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 462.0 Hz	3.89	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 514.4 Hz	3.57	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	3.30	339D LTE Band 12_10QPSK_50RB_0_EVS NB 9.6kbps_CH23095

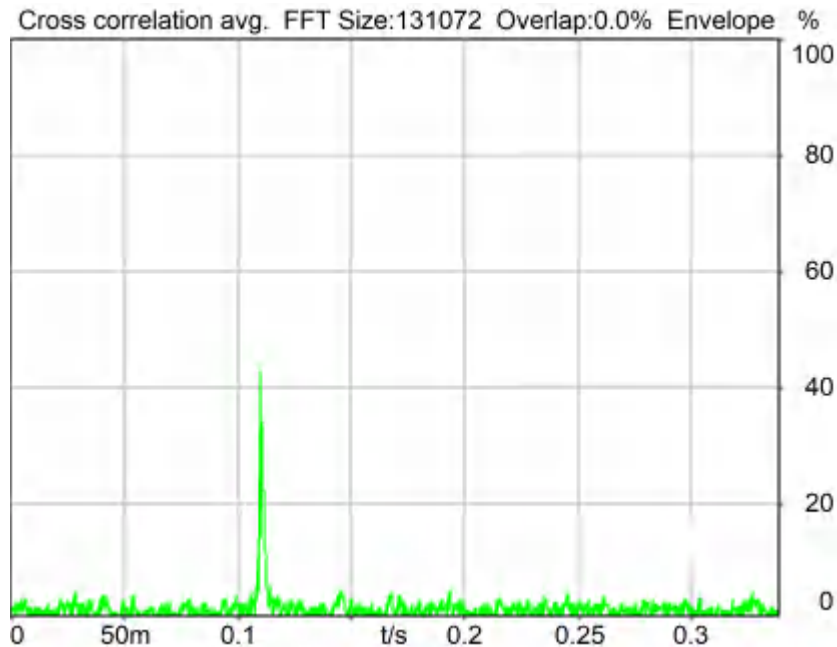


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5.2 RCV Distortion and Noise - 400 Hz NB	11
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5.2 RCV Distortion and Noise - 500 Hz NB	36
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5.2 RCV Distortion and Noise - 800 Hz NB	40
5.2 RCV Distortion and Noise - 1000 Hz NB	42
5.2 RCV Distortion and Noise - 1250 Hz NB	44
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5.2 RCV Distortion and Noise - 2500 Hz NB	51
5.2 RCV Distortion and Noise - 3150 Hz NB	53
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5.3 Frequency Response 8N FF HANB	55
5.3 Frequency Response 8N DF HANB	58
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## Overall Receive Delay NB

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



Delay (Cross): 110.3 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	-1.9 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**

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
-------------	---------	-------------	---------

**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))**

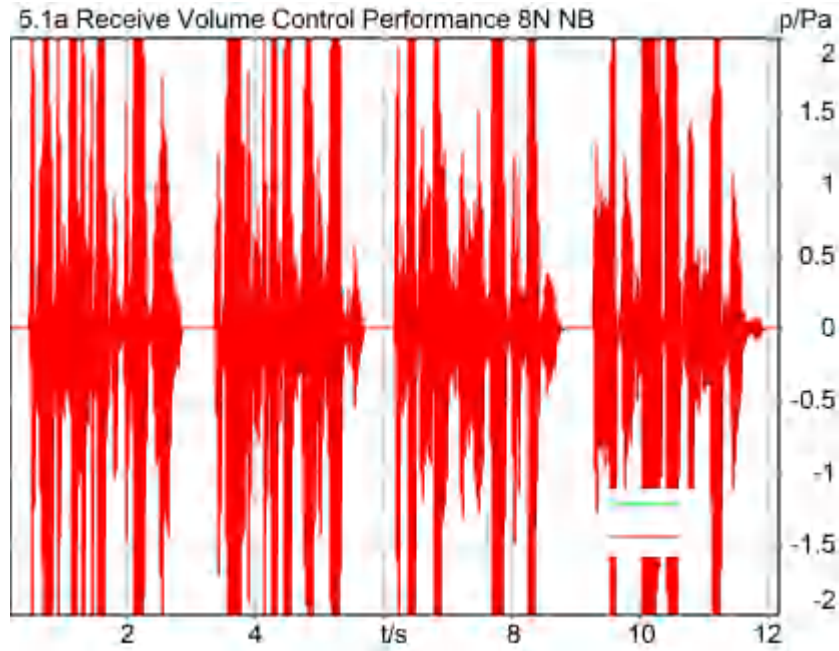
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 88.66 dB[SPL], Act.: 81.29%

Corrected Speech Level: 18.66 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

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

**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	-3.9 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	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 110.3000 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))

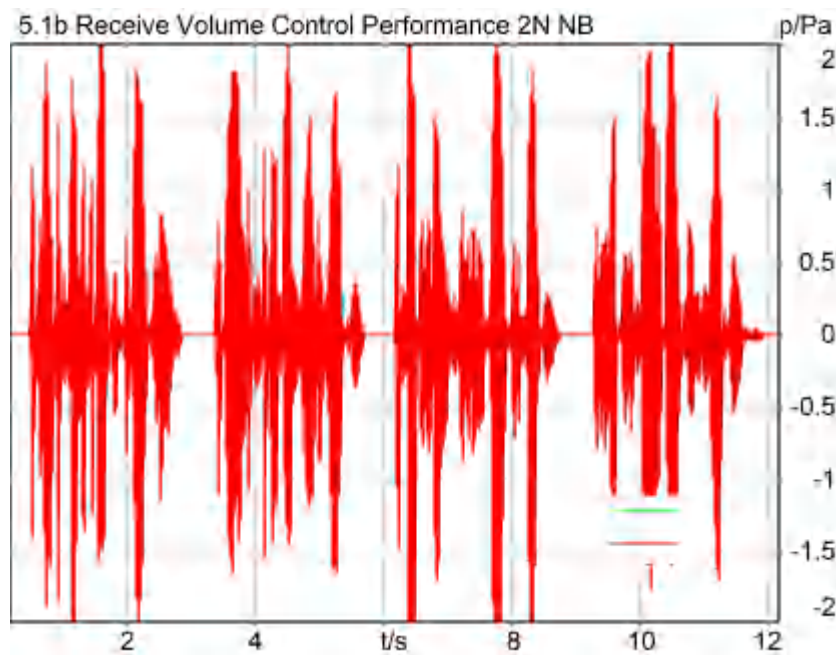
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

## 5.1b Receive Volume Control Performance 2N NB

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



### Correction

X - 70

Speech Level RCV: 83.25 dB[SPL], Act.: 82.97%

Corrected Speech Level: 13.25 dB[SPL] Ok

### Ok

2024/1/21 9:34 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))

**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	-0.1 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	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 110.3000 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))**

<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 NB**

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



Distortion (Noise) RCV (packed): 36.01 dB (1.58%) Ok

**Ok**

2024/1/20 0:30 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\_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	-1.9 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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
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 110.3000 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 Voltage200V Supply Voltage ±60V  
 Channel In 2 Settings

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

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

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

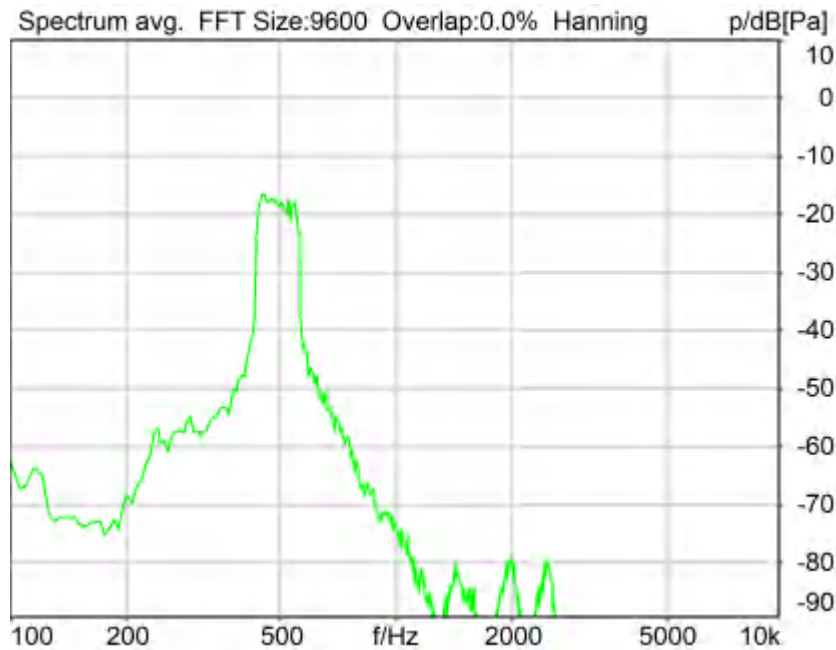
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 33.40 dB (2.14%) Ok

**Ok**

2024/1/20 0:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 110.3000 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))

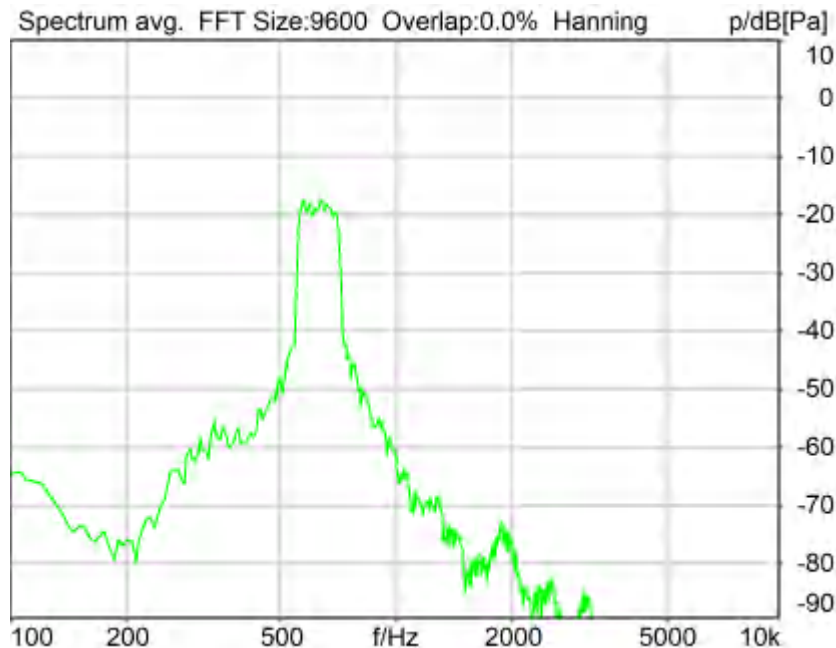
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 30.11 dB (3.12%) Ok

**Ok**

2024/1/20 0:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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 110.3000 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
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 30.75 dB (2.90%) Ok

**Ok**

2024/1/20 0:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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: 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 110.3000 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))**

<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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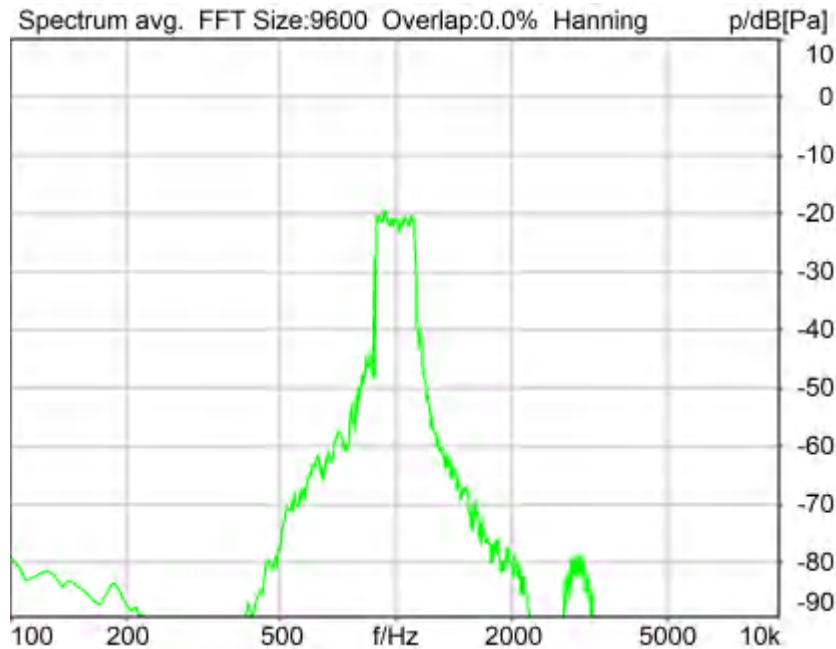
**HIB Settings**

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 - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 27.94 dB (4.01%) Ok

Ok

2024/1/20 0:32 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\_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 °
		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: 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 110.3000 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))**

<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))**

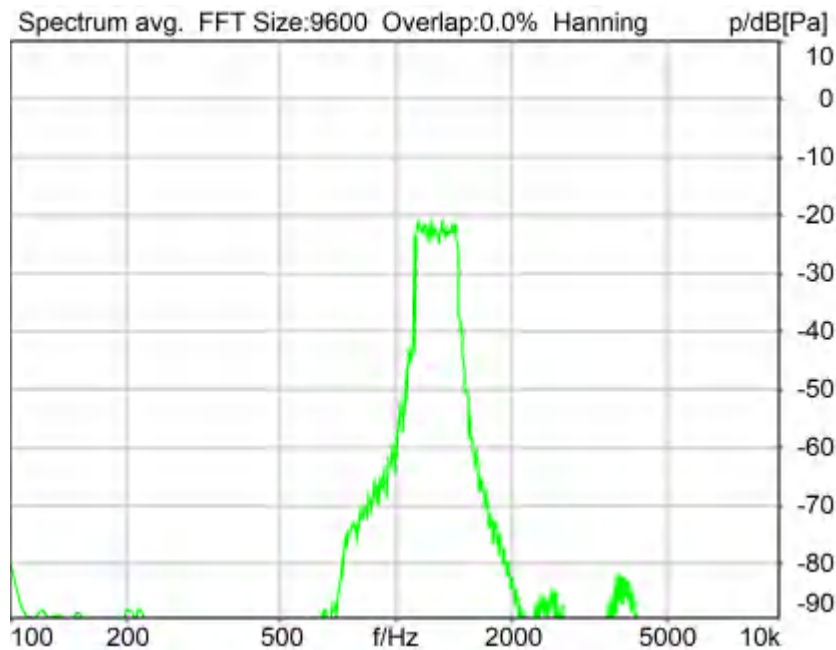
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1250 Hz NB**

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



Distortion (Noise) RCV (packed): 24.17 dB (6.19%) Ok

**Ok**

2024/1/20 0:32 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	-1.9 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.	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 110.3000 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))**

<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))

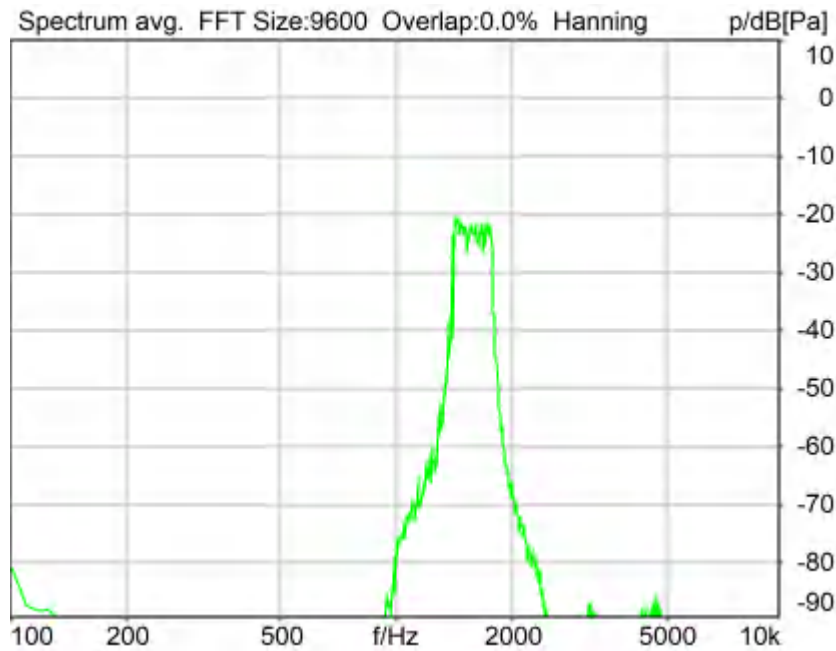
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 29.50 dB (3.35%) Ok

**Ok**

2024/1/20 0:33 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: 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 110.3000 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

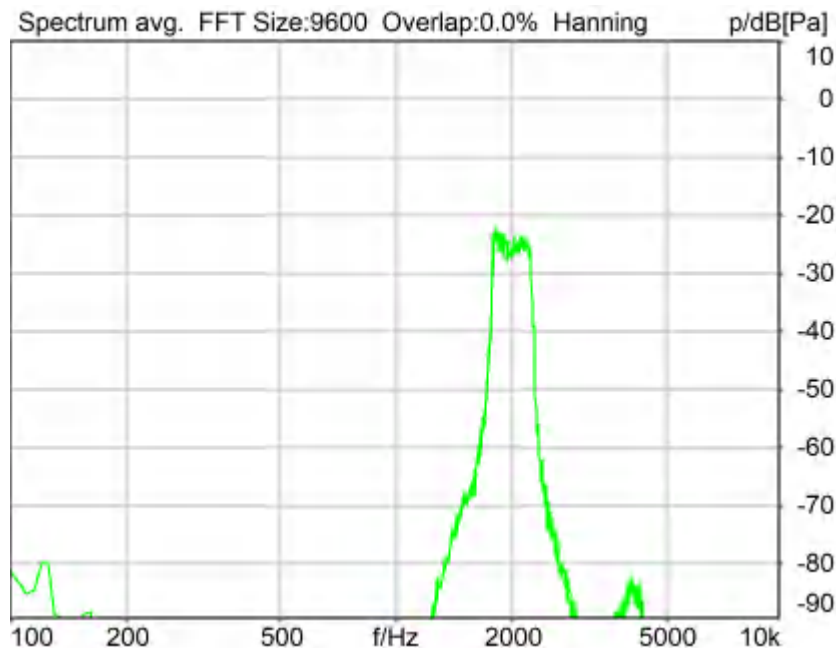
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 29.25 dB (3.45%) Ok

**Ok**

2024/1/20 0:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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 110.3000 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

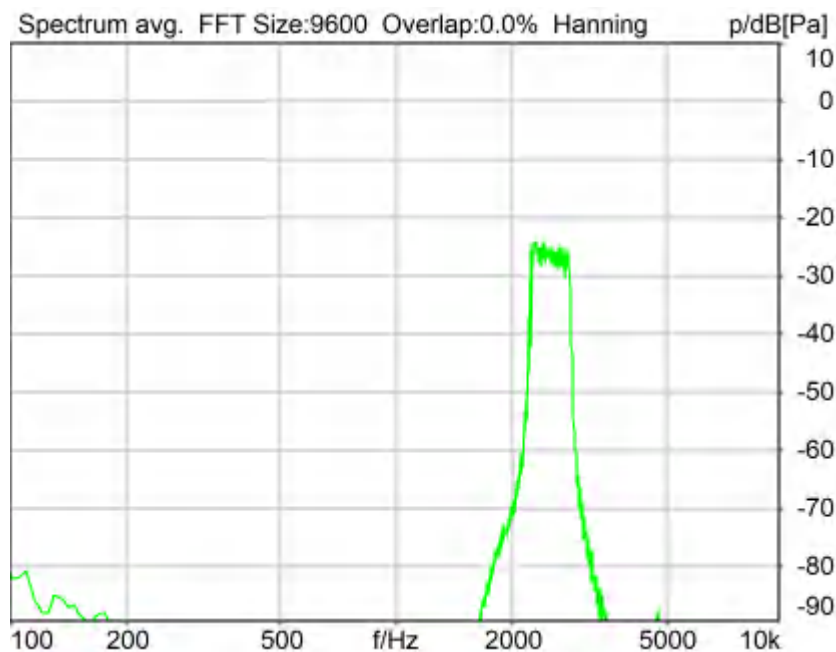
-----  
 Analog In Mainboard Settings (Analog In 1/2)



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
<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 - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 30.80 dB (2.88%) Ok

**Ok**

2024/1/20 0:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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	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 110.3000 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))

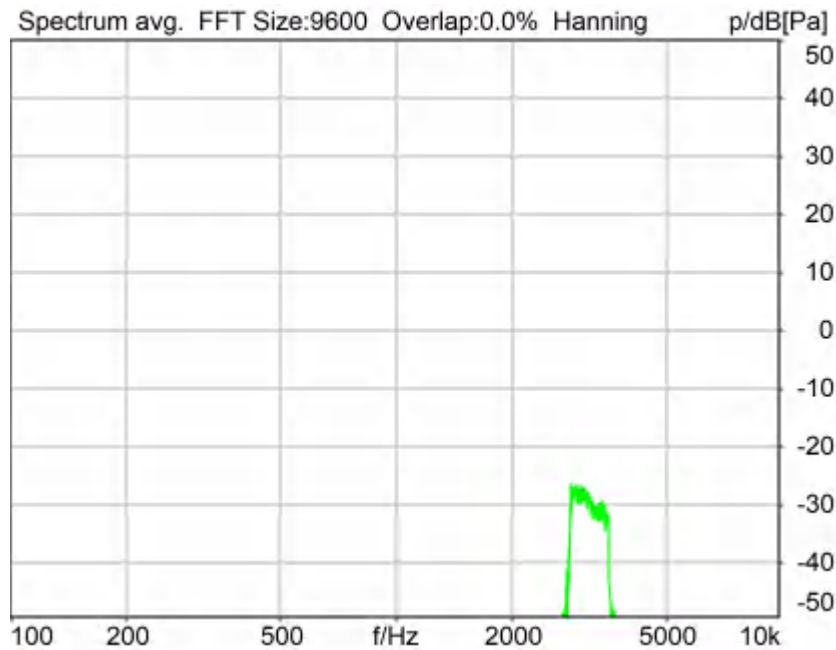
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 23.39 dB (6.77%) Ok

**Ok**

2024/1/20 0:36 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	-1.9 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 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 110.3000 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
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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

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

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

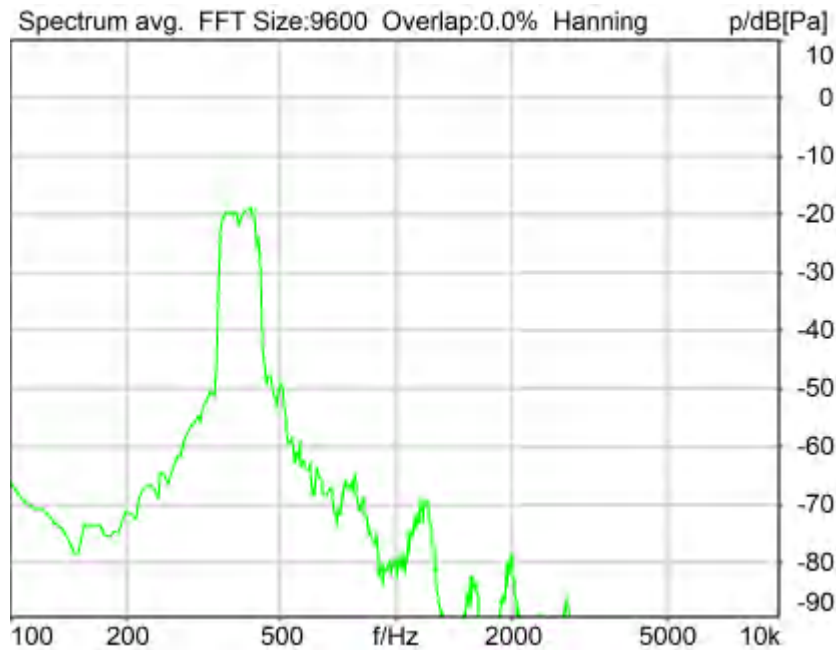
<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	36.01 dB
2	500Hz	33.40 dB
3	630Hz	30.11 dB
4	800Hz	30.75 dB
5	1000Hz	27.94 dB
6	1250Hz	24.17 dB
7	1600Hz	29.50 dB
8	2000Hz	29.25 dB
9	2500Hz	30.80 dB
10	3150Hz	23.39 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 23.39dB at 3150Hz.

2024/1/20 0:36 ACQUA

## **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): 36.00 dB (1.59%) Ok

**Ok**

2024/1/20 0:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	0.4 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.	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 110.3000 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
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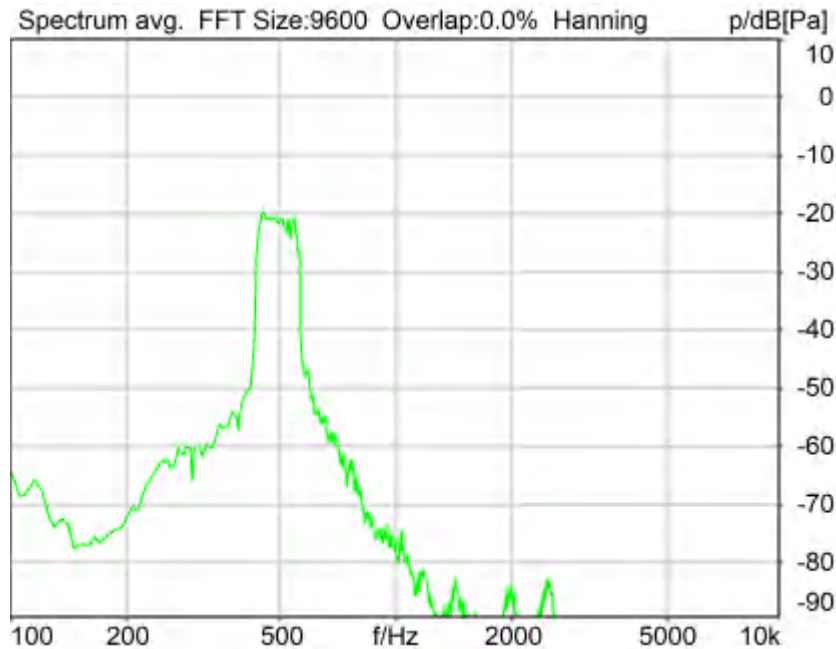
#### HIB Settings

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): 34.38 dB (1.91%) Ok

**Ok**

2024/1/20 0:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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	0.4 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.	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 110.3000 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))**

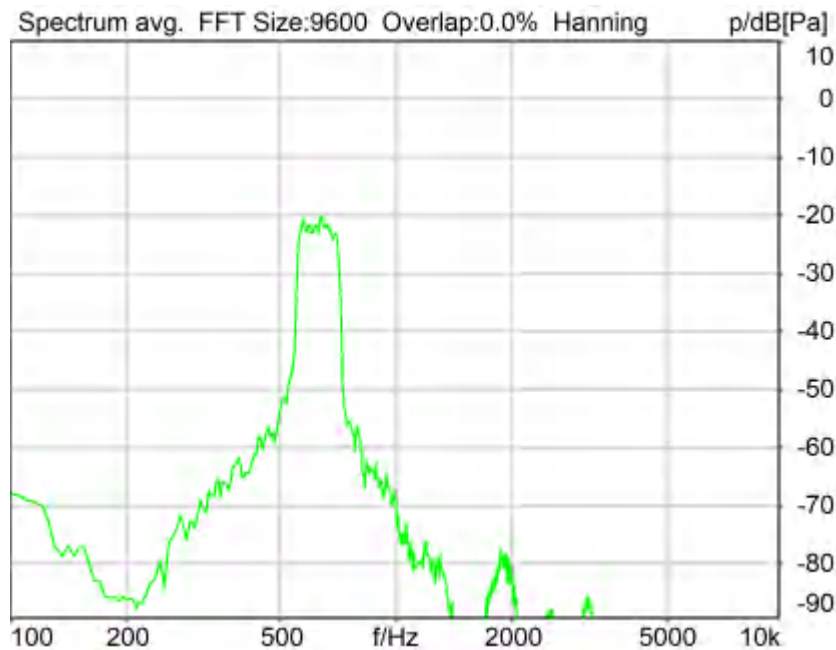
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 35.39 dB (1.70%) Ok

**Ok**

2024/1/20 0:40 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	0.4 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 110.3000 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 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))

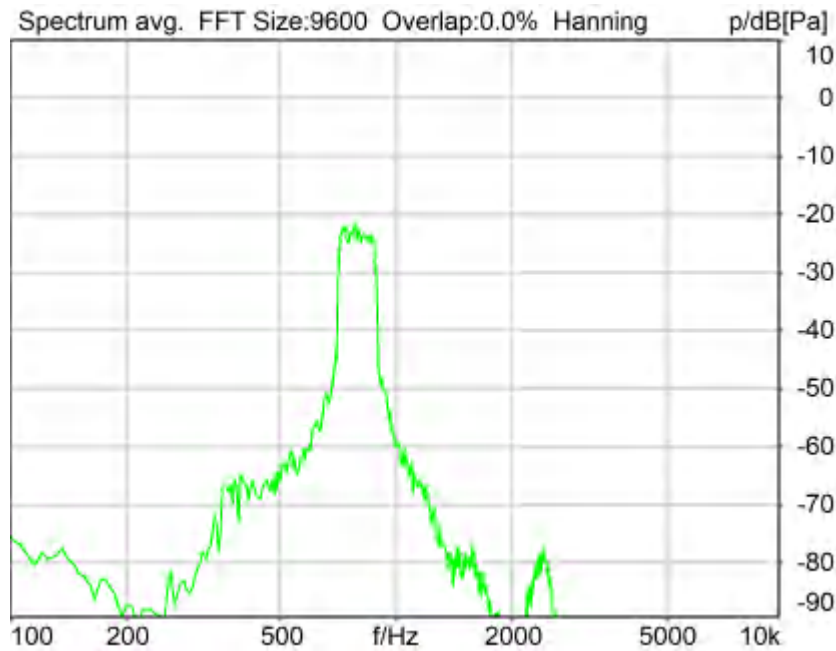
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 800 Hz NB

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



Distortion (Noise) RCV (packed): 31.21 dB (2.75%) Ok

Ok

2024/1/20 0:41 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	0.4 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.	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 110.3000 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  
 -----

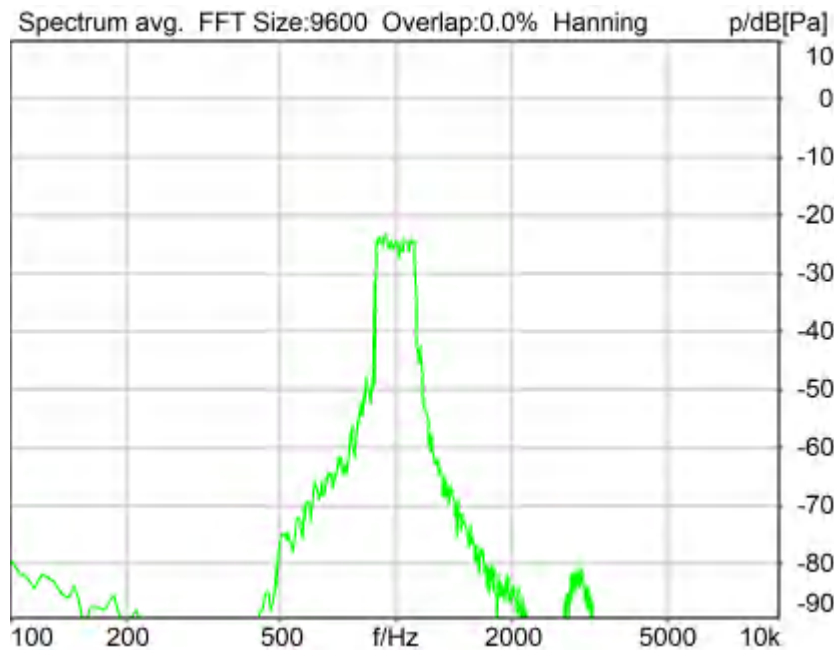
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.          12306613                      Pinna Type          Type 3.3

**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 2N



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

**Ok**

2024/1/20 0:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	0.4 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.	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 110.3000 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 2N



Distortion (Noise) RCV (packed): 22.56 dB (7.45%) Ok

**Ok**

2024/1/20 0:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	0.4 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.	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 110.3000 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))

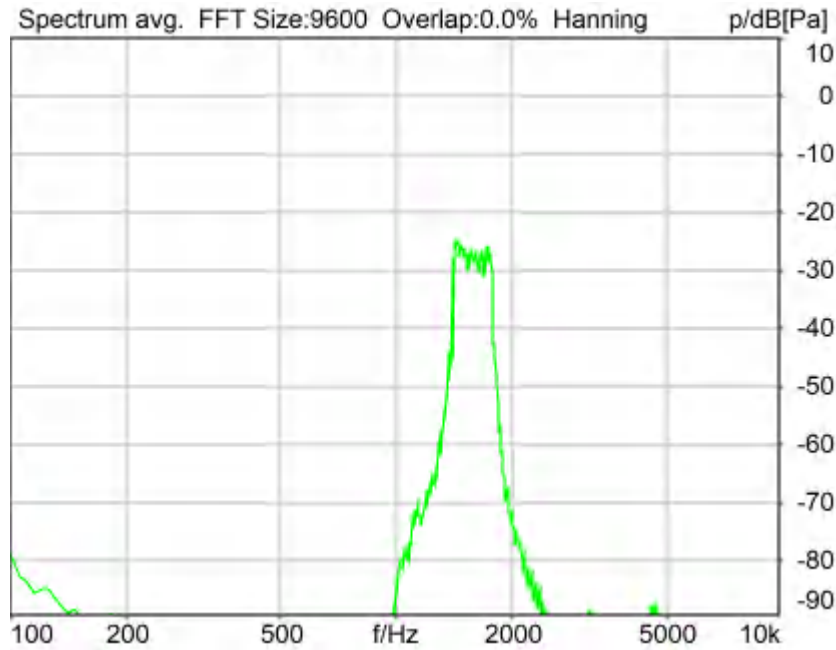
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 29.28 dB (3.44%) Ok

**Ok**

2024/1/20 0:42 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\_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	0.4 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.	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 110.3000 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))

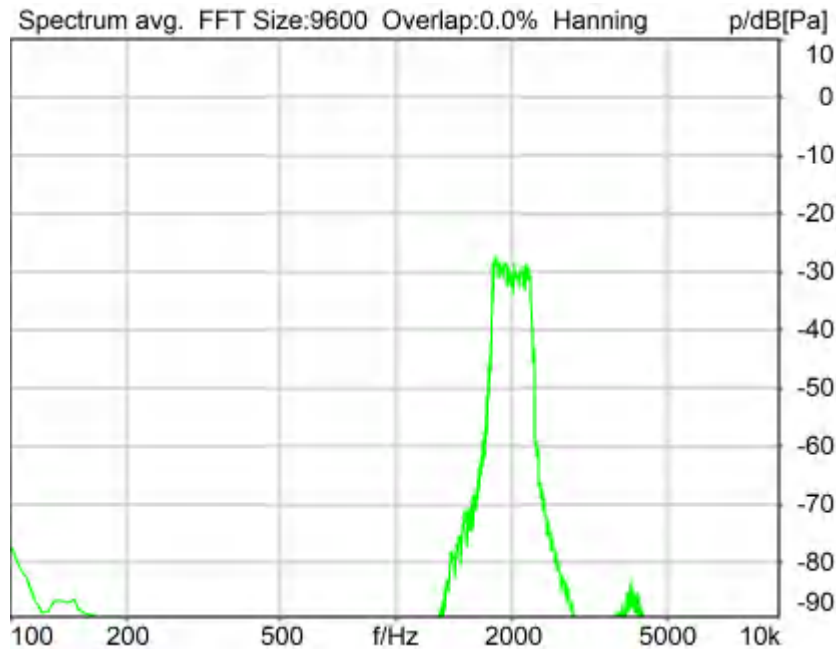
Ser. Nr.	12306613	Pinna Type	Type 3.3
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#### HIB Settings

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 2N



Distortion (Noise) RCV (packed): 28.75 dB (3.65%) Ok

**Ok**

2024/1/20 0:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_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	0.4 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.	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 110.3000 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))**

<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))**

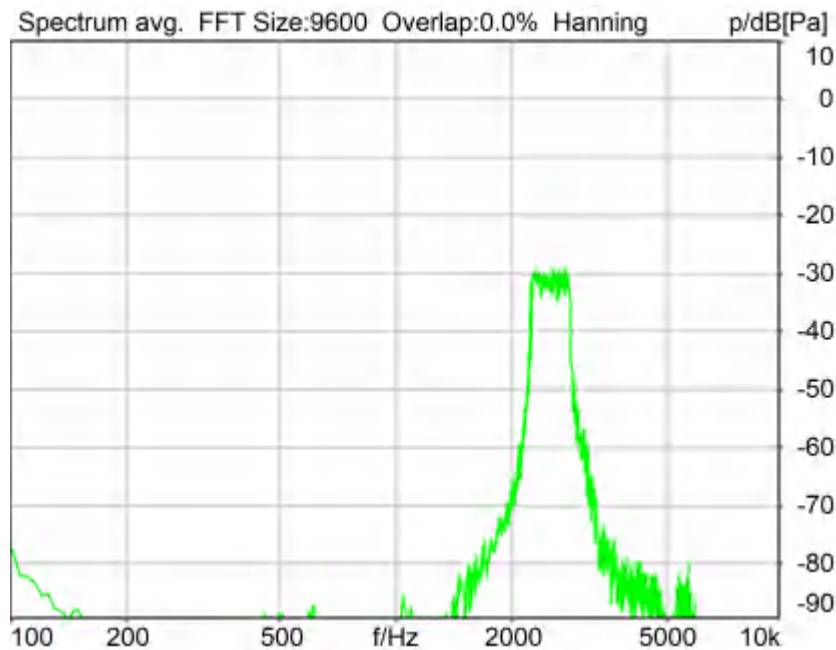
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 2500 Hz NB**

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



Distortion (Noise) RCV (packed): 24.39 dB (6.03%) Ok

**Ok**

2024/1/20 0:43 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	0.4 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 110.3000 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))**

<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))

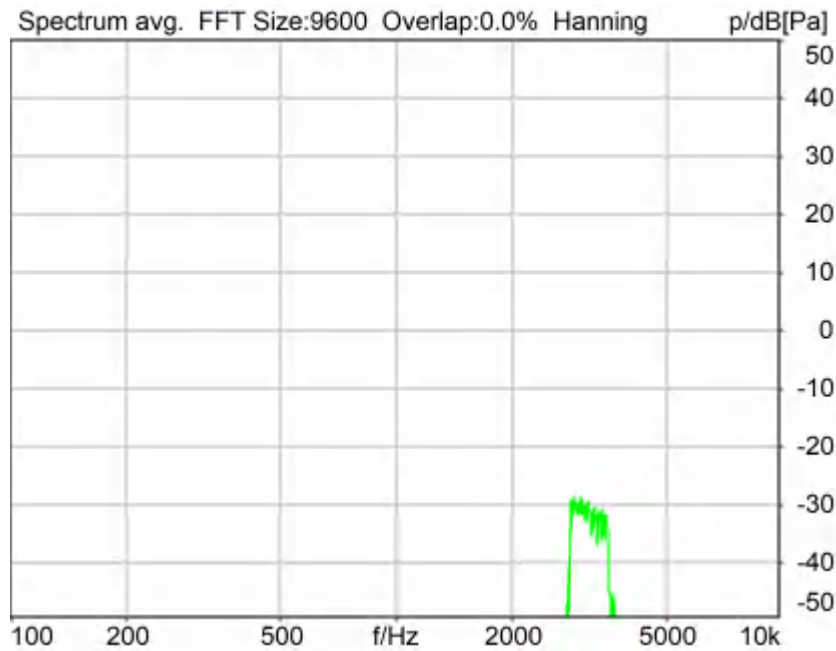
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 21.39 dB (8.52%) Ok

**Ok**

2024/1/20 0:43 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	0.4 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.	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 110.3000 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

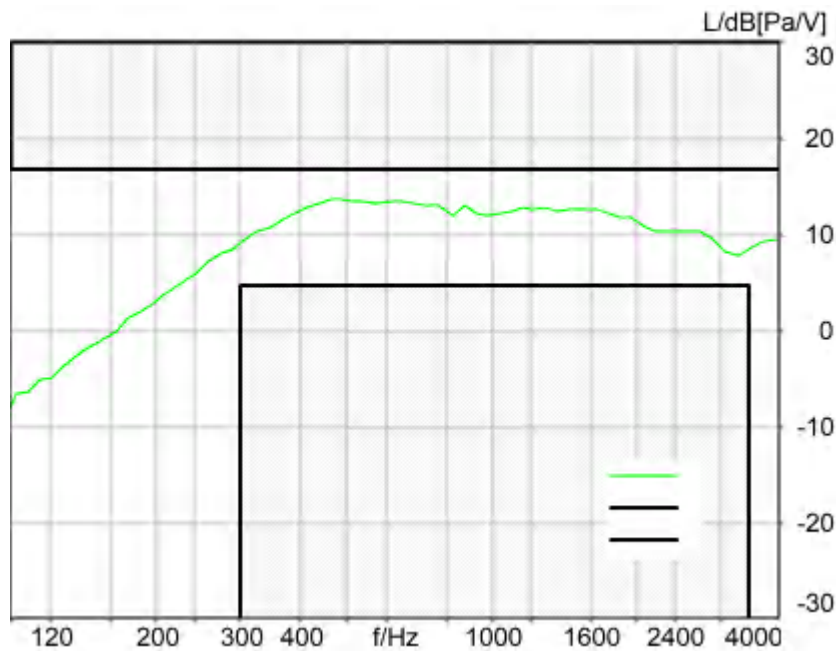
Region	Frequency	SDNR
1	400Hz	36.00 dB
2	500Hz	34.38 dB
3	630Hz	35.39 dB
4	800Hz	31.21 dB
5	1000Hz	28.54 dB
6	1250Hz	22.56 dB
7	1600Hz	29.28 dB
8	2000Hz	28.75 dB
9	2500Hz	24.39 dB
10	3150Hz	21.39 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.39dB at 3150Hz.

2024/1/20 0:43 ACQUA

**5.3 Frequency Response 8N FF HANB**

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



Absolute minimal distance  
 3.15 dB at 487.0 Hz Ok

**Ok**

2024/1/20 0:36 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	-1.9 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	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 110.3000 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))**

<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))

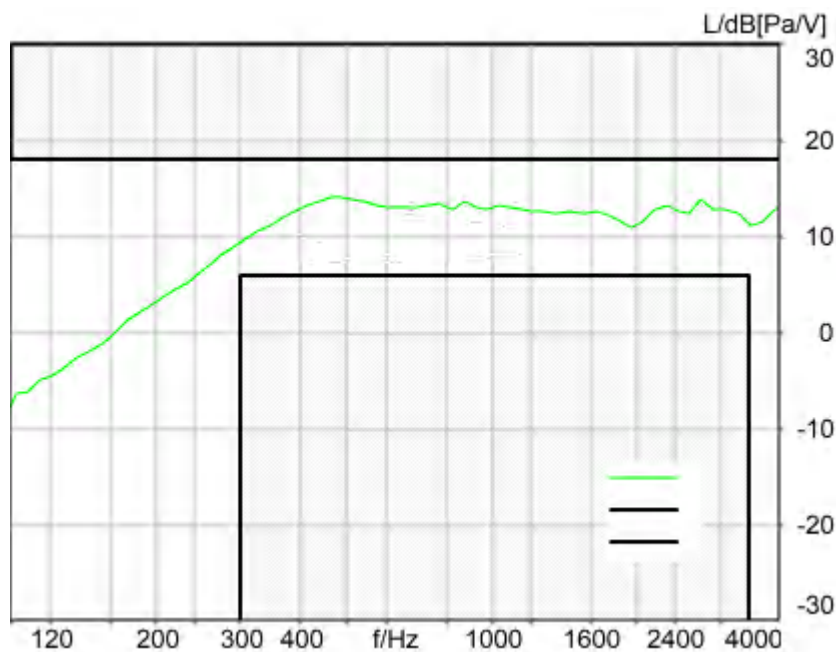
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

3.89 dB at 462.0 Hz Ok

**Ok**

2024/1/20 0:36 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	-1.9 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	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 110.3000 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))

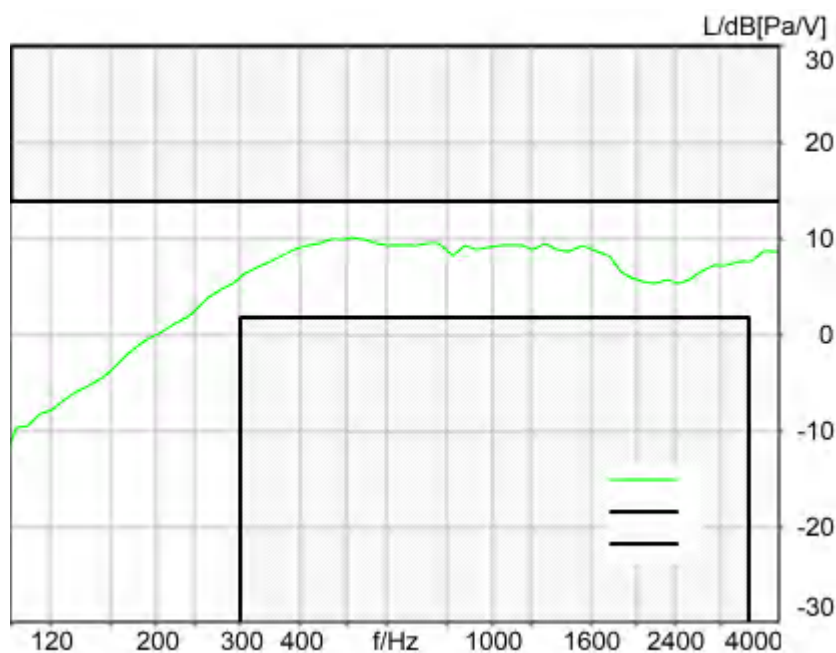
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N FF HANB

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



Absolute minimal distance  
 3.57 dB at 514.4 Hz Ok

**Ok**

2024/1/20 0:44 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	0.4 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

Use FIR Filter Ch2

DRP/ERP Ch.1: Off

Range length 11500.00 ms

FIR filter drp2ff\_ieee1652

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 110.3000 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))**

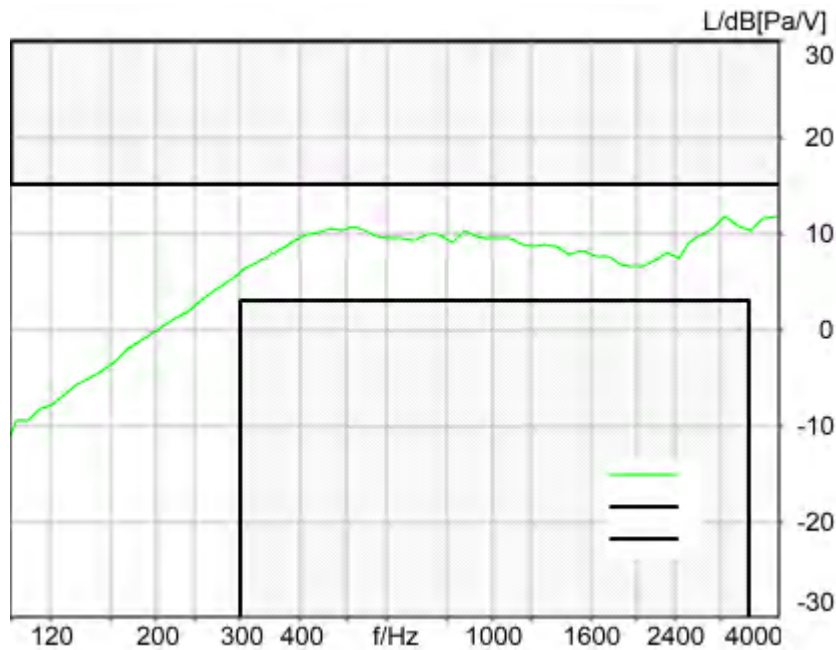
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N DF HANB**

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



Absolute minimal distance  
 3.30 dB at 3882.4 Hz Ok

**Ok**

2024/1/20 0:44 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	0.4 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_ieeee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	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 110.3000 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 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

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

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

**HIB Settings**

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

## **Measurement Protocol**

Measurement Object	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 15:59
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	128.8	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	18.80	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	13.85	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.54	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.70	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	38.40	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.51	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.68	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.23	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.49	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.23	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.54	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.13	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.87	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.16	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.82	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and	Ok	Distortion (Noise)	32.62	339D LTE Band



Noise - 5000 Hz WB		[dB], 0.0 dB		12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	20.87	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.61	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	37.11	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	38.99	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.83	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.30	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.22	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.67	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.86	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.80	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.77	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.21	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.14	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.81	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.98	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	23.86	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	1.50	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	2.41	339D LTE Band

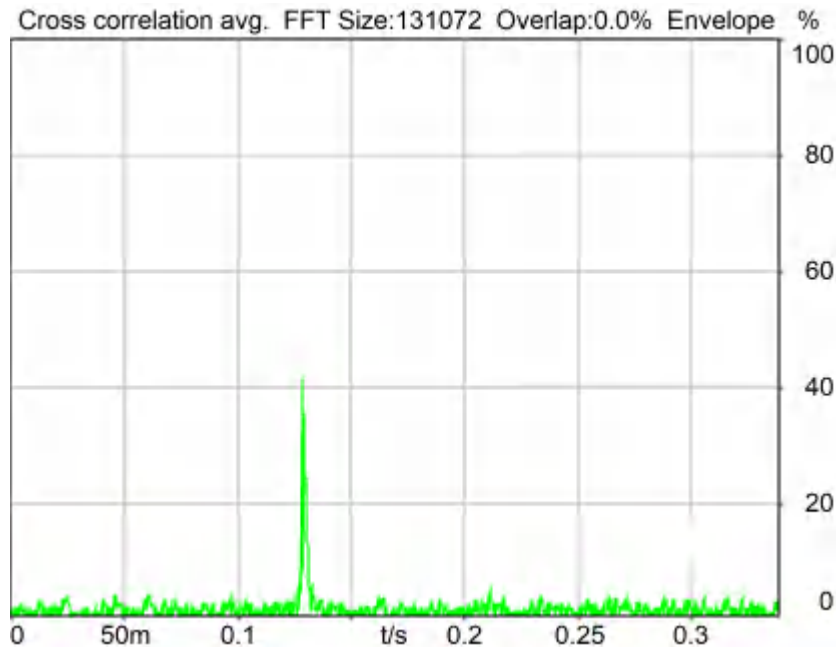
DF		scheme [dB], 205.7 Hz		12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.05	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	2.25	339D LTE Band 12_10QPSK_50RB_0_EVS WB 13.2kbps_CH23095

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Overall Receive Delay WB	6
5.1a Receive Volume Control Performance 8N WB	8
5.1b Receive Volume Control Performance 2N WB	10
5.2 RCV Distortion and Noise - 250 Hz WB	12
5.2 RCV Distortion and Noise - 315 Hz WB	14
5.2 RCV Distortion and Noise - 400 Hz WB	16
5.2 RCV Distortion and Noise - 500 Hz WB	18
5.2 RCV Distortion and Noise - 630 Hz WB	20
5.2 RCV Distortion and Noise - 800 Hz WB	23
5.2 RCV Distortion and Noise - 1000 Hz WB	25
5.2 RCV Distortion and Noise - 1250 Hz WB	27
5.2 RCV Distortion and Noise - 1600 Hz WB	29
5.2 RCV Distortion and Noise - 2000 Hz WB	31
5.2 RCV Distortion and Noise - 2500 Hz WB	33
5.2 RCV Distortion and Noise - 3150 Hz WB	36
5.2 RCV Distortion and Noise - 4000 Hz WB	38
5.2 RCV Distortion and Noise - 5000 Hz WB	40
Report - Receive Distortion and Noise (Conversational Gain)	42
5.2 RCV Distortion and Noise - 250 Hz WB	43
5.2 RCV Distortion and Noise - 315 Hz WB	45
5.2 RCV Distortion and Noise - 400 Hz WB	47
5.2 RCV Distortion and Noise - 500 Hz WB	49
5.2 RCV Distortion and Noise - 630 Hz WB	51
5.2 RCV Distortion and Noise - 800 Hz WB	53
5.2 RCV Distortion and Noise - 1000 Hz WB	56
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
5.2 RCV Distortion and Noise - 2500 Hz WB	64
5.2 RCV Distortion and Noise - 3150 Hz WB	66
5.2 RCV Distortion and Noise - 4000 Hz WB	69
5.2 RCV Distortion and Noise - 5000 Hz WB	71
Report - Receive Distortion and Noise (Conversational Gain)	73
5.3 Frequency Response 8N FF	73
5.3 Frequency Response 8N DF	76
5.3 Frequency Response 2N FF	78
5.3 Frequency Response 2N DF	80

## Overall Receive Delay WB

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



Delay (Cross): 128.8 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: csswb1b\_r1s.dat

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 8000 Hz

### Calibration

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

Output ch.1: 0.00 dB

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

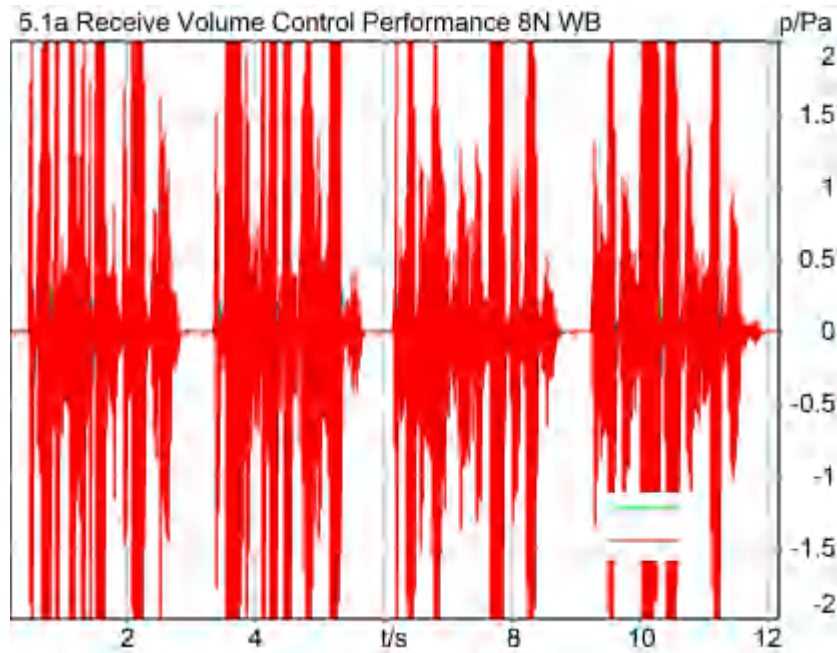
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

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

Gain out 2 0.00 dB  
Gain in 2 0.00 dB  
Mic 2 Power Supply Off

## 5.1a Receive Volume Control Performance 8N WB

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



### Correction

X - 70

Speech Level RCV: 88.80 dB[SPL], Act.: 80.43%

Corrected Speech Level: 18.80 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

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

### Calibration

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

**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	-4.0 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	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 128.8000 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 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))**

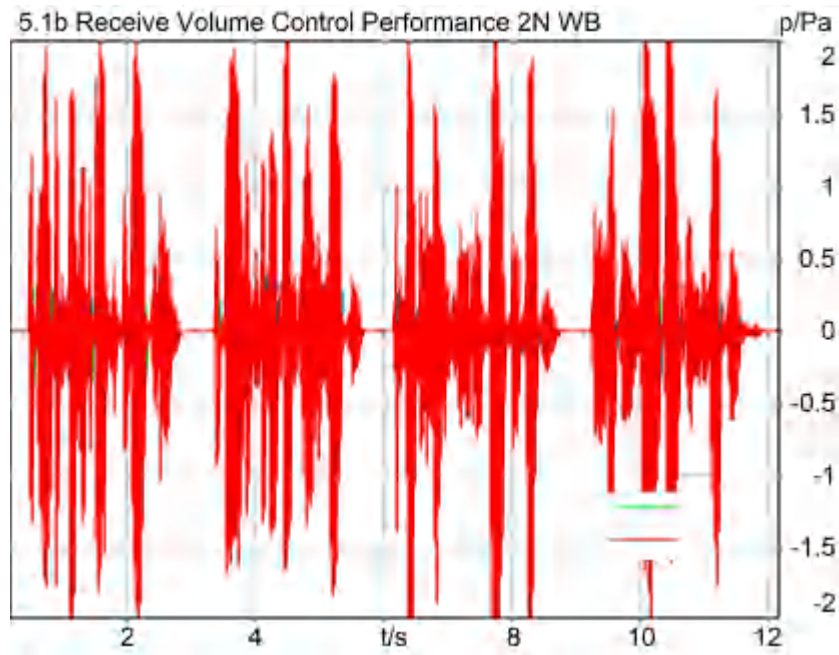
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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

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



**Correction**

X - 70

Speech Level RCV: 83.85 dB[SPL], Act.: 81.63%

Corrected Speech Level: 13.85 dB[SPL] Ok

**Ok**

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**Limits**

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

Meas. Setting off



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

**Calibration**

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

**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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 N

**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 128.8000 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

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

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



Distortion (Noise) RCV (packed): 34.54 dB (1.88%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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: 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.	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 128.8000 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))**

<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	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  
-----

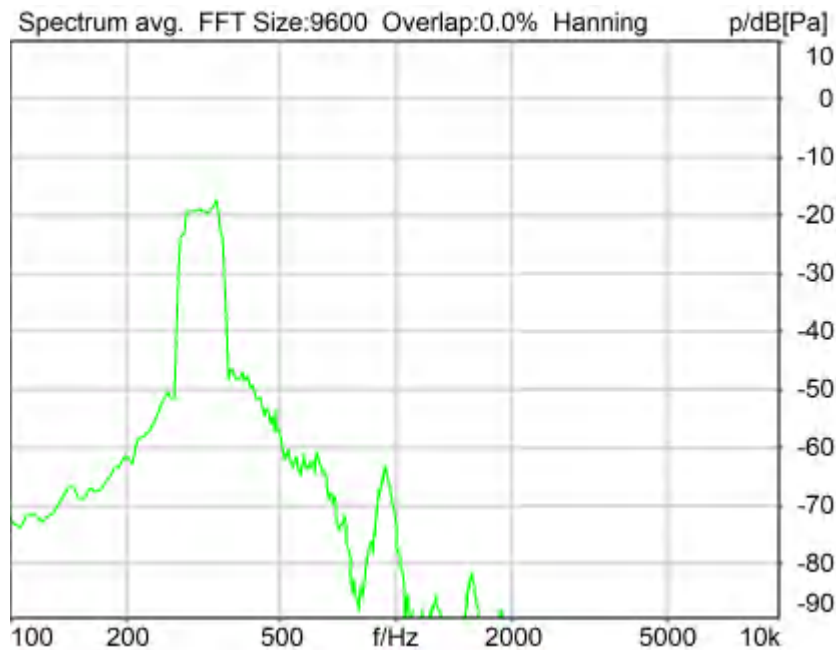
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 - 315 Hz WB

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



Distortion (Noise) RCV (packed): 33.70 dB (2.07%) Ok

**Ok**

2024/1/20 0:22 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\_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 °
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: 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.	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 128.8000 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): 38.40 dB (1.20%) Ok

**Ok**

2024/1/20 0:23 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	-1.9 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	Overlap	0 %
Frequency base	Transformation	Smooth	Off
FFT size	9600	Stimulus min.	320.0 Hz
Window function.	Hanning	Stimulus max.	480.0 Hz
dB weighting	A Weighting	Analysis min.	20.0 Hz
Stimulus min.	320.0 Hz	Analysis max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis (2) min.	485.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 128.8000 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
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-----  
Artificial Head Settings (HATS 1 (HMS II.3))

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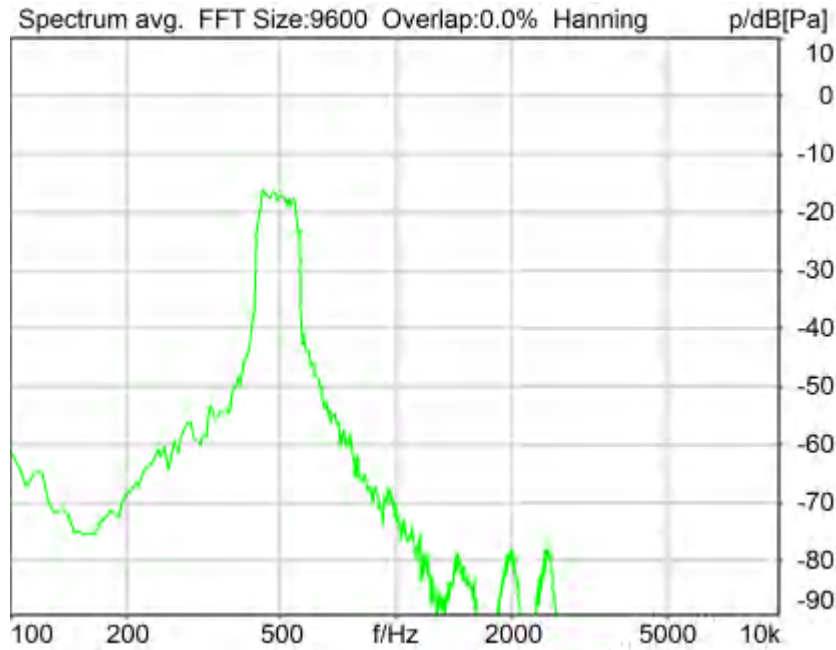
**HIB Settings**

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 - 500 Hz WB**

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





Distortion (Noise) RCV (packed): 33.51 dB (2.11%) Ok

**Ok**

2024/1/20 0:23 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	-1.9 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 max.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 128.8000 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))**

<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))**

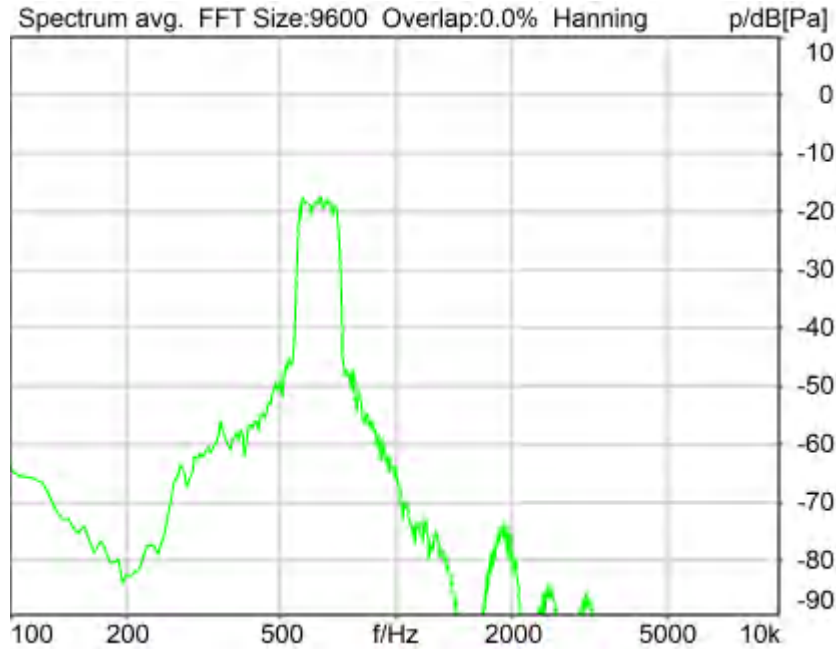
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 630 Hz WB

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



Distortion (Noise) RCV (packed): 32.68 dB (2.32%) Ok

**Ok**

2024/1/20 0:23 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\_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 °
		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: 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 128.8000 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))**

<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))**

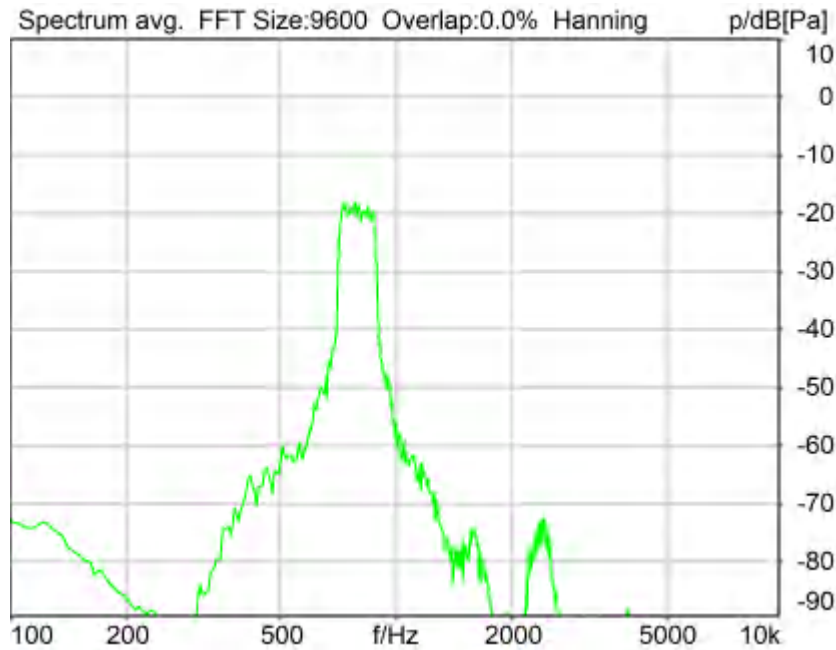
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 800 Hz WB**

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



Distortion (Noise) RCV (packed): 32.23 dB (2.45%) Ok

**Ok**

2024/1/20 0:24 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat  
Level adj. Ch1 -90.0 dB

**Calibration**

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

**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: 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.	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 128.8000 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
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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

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))

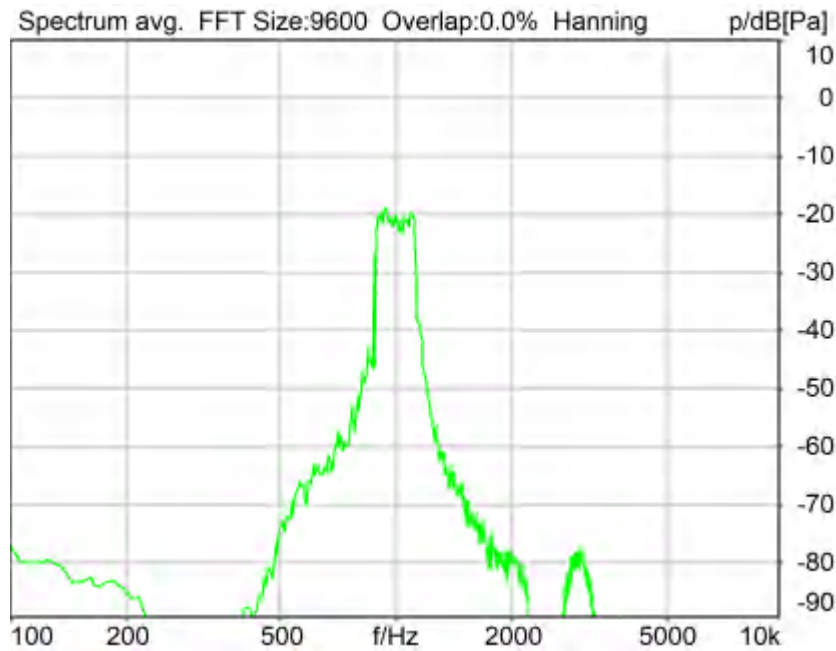
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 28.49 dB (3.76%) Ok

Ok

2024/1/20 0:24 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\_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: 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.	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 128.8000 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 Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

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

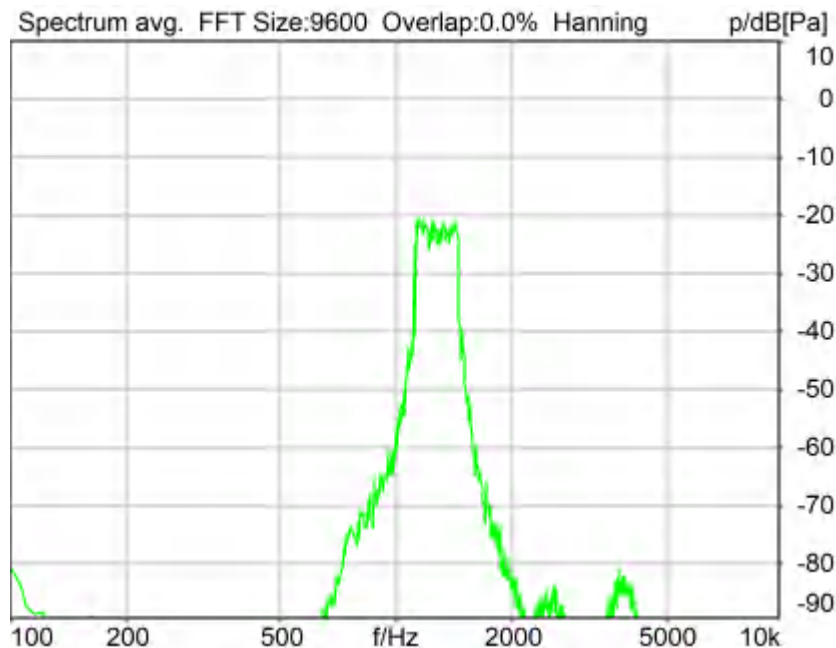
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 25.23 dB (5.48%) Ok

**Ok**

2024/1/20 0:25 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 °
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: 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.	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 128.8000 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

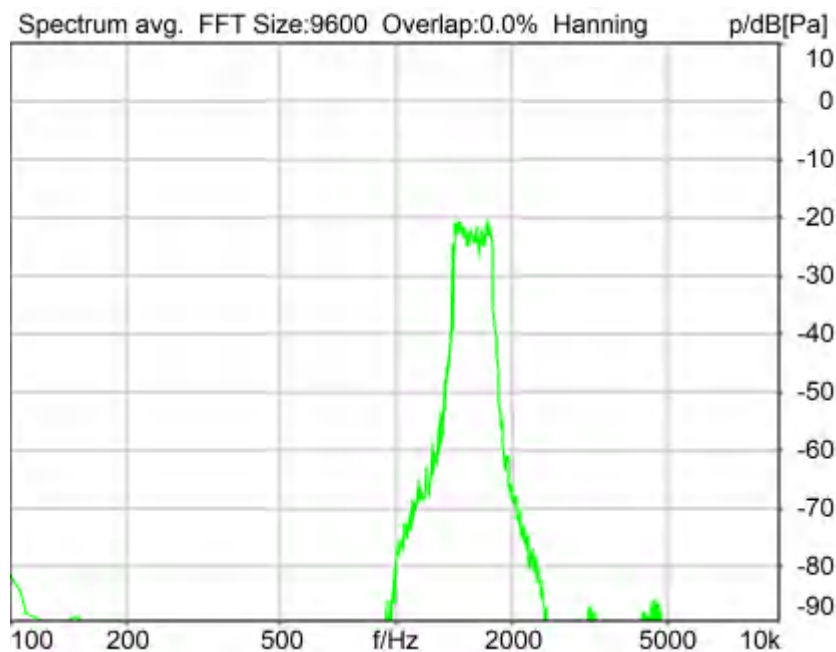
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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
<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 - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 29.54 dB (3.33%) Ok

**Ok**

2024/1/20 0:25 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	-1.9 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 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 128.8000 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
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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))

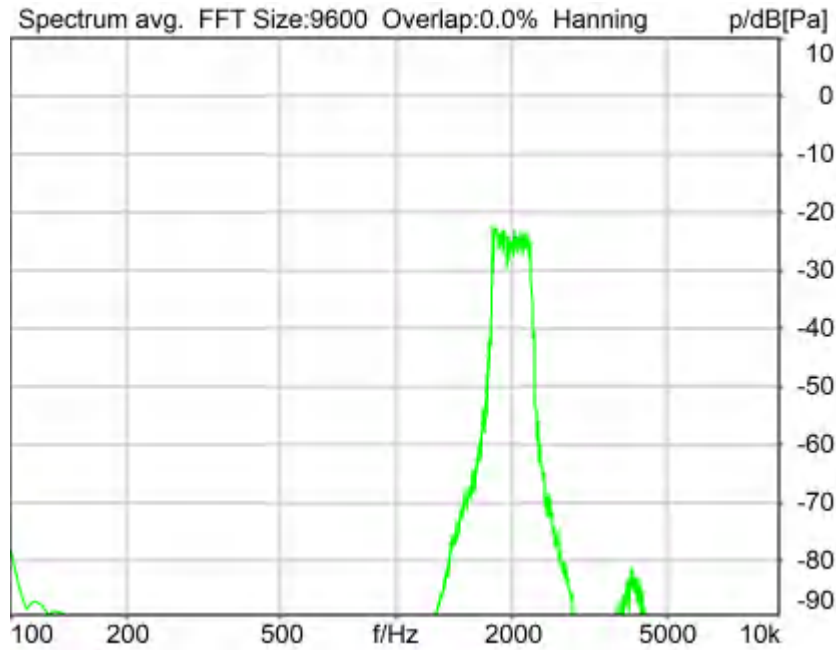
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 30.13 dB (3.12%) Ok

**Ok**

2024/1/20 0:26 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\_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: 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.	2275.0 Hz
Stimulus min.	1745.0 Hz	Analysis max.	1740.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	2280.0 Hz		

**Special Features**

Compensate delay 128.8000 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
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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))**

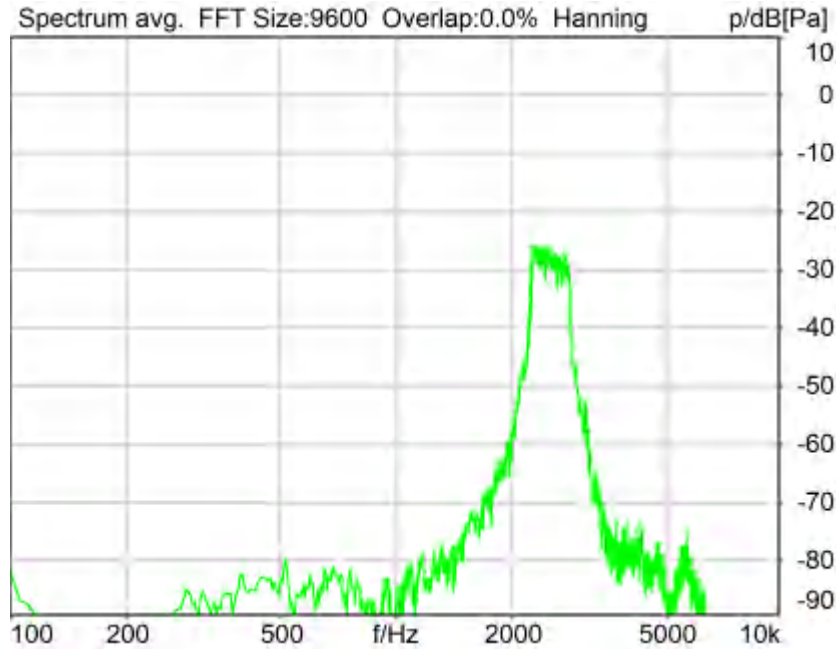
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 20.87 dB (9.05%) Ok

**Ok**

2024/1/20 0:26 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\_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 °
		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: 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 128.8000 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))**

<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))**

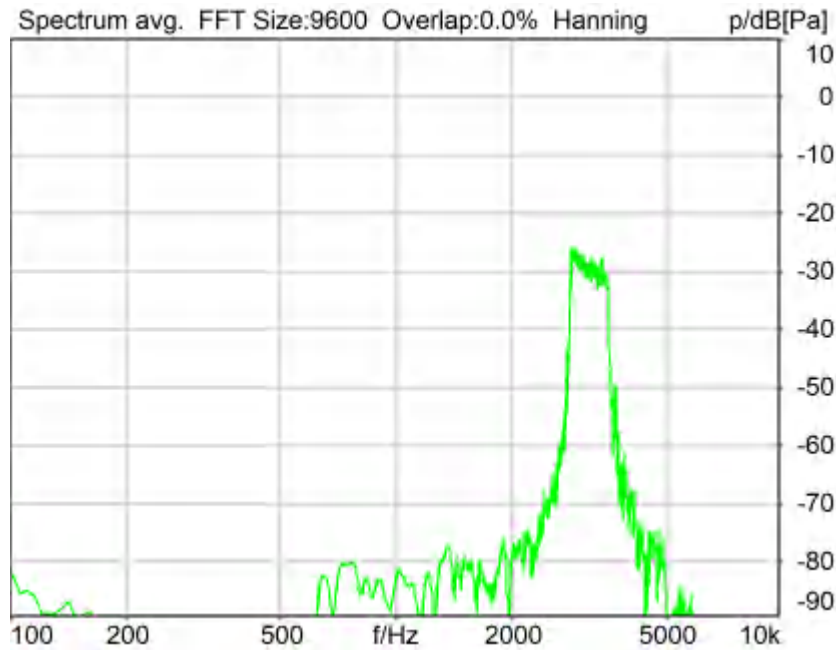
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 3150 Hz WB**

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



Distortion (Noise) RCV (packed): 27.16 dB (4.38%) Ok

**Ok**

2024/1/20 0:26 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\_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: 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.	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 128.8000 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))**

<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))

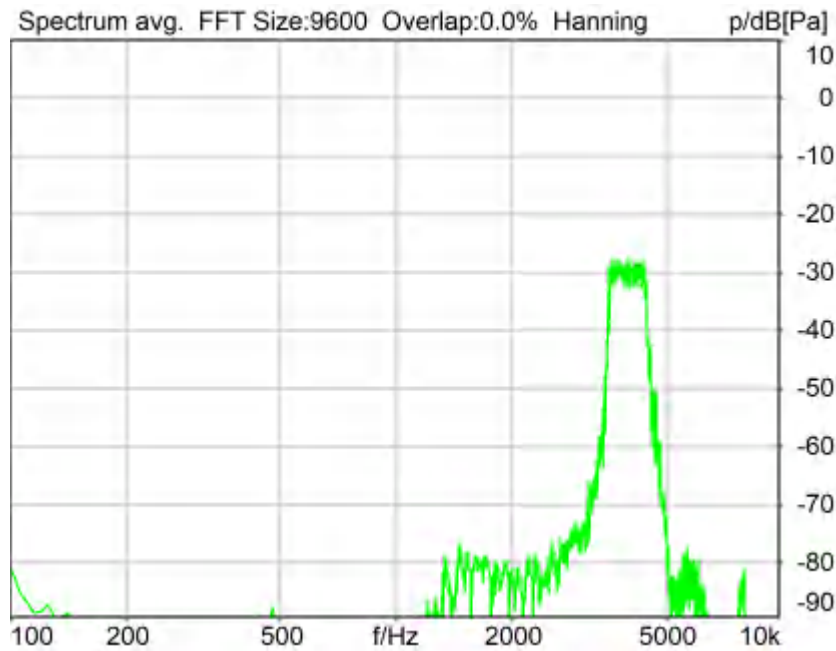
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 22.82 dB (7.22%) Ok

**Ok**

2024/1/20 0:27 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	-1.9 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 128.8000 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

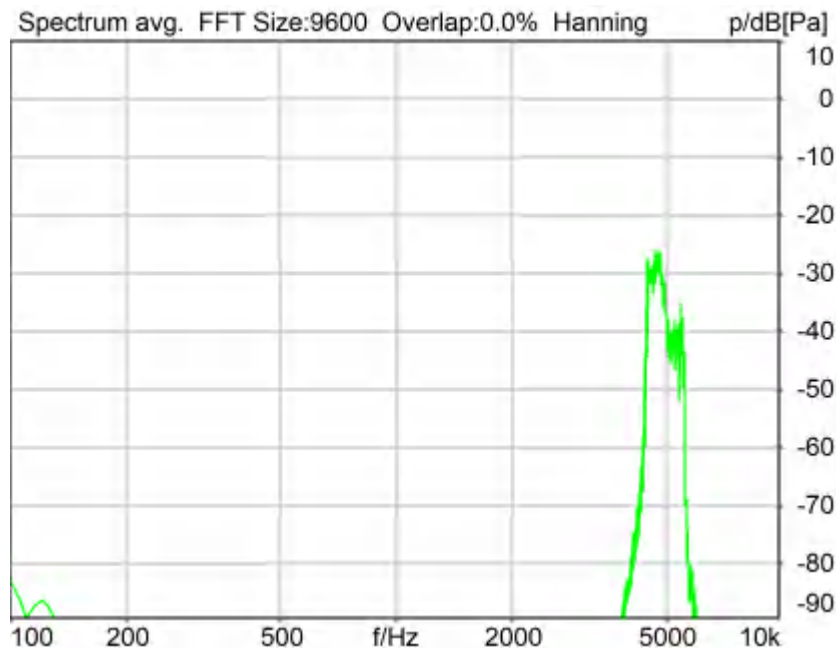
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.          12306613                      Pinna Type          Type 3.3

**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 8N



Distortion (Noise) RCV (packed): 32.62 dB (2.34%) Ok

**Ok**

2024/1/20 0:27 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 °
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: 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 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 128.8000 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 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 \ Wideband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
1	250Hz	34.54 dB
2	315Hz	33.70 dB
3	400Hz	38.40 dB
4	500Hz	33.51 dB
5	630Hz	32.68 dB
6	800Hz	32.23 dB
7	1000Hz	28.49 dB
8	1250Hz	25.23 dB
9	1600Hz	29.54 dB
10	2000Hz	30.13 dB
11	2500Hz	20.87 dB
12	3150Hz	27.16 dB
13	4000Hz	22.82 dB
14	5000Hz	32.62 dB

All SDNRs were greater than 20.0 dB, requirement was met.



Smallest SDNR was 20.87dB at 2500Hz.

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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): 35.61 dB (1.66%) Ok

Ok

2024/1/20 17:04 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\_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	-0.7 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.	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 128.8000 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))**

<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 - 315 Hz WB**

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



Distortion (Noise) RCV (packed): 37.11 dB (1.40%) Ok

**Ok**

2024/1/20 17:04 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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 °
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	-0.7 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.	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 128.8000 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 Voltage200V	Supply Voltage	±60V
Channel In 2 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V
Channel In 3 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V
Channel In 4 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V

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

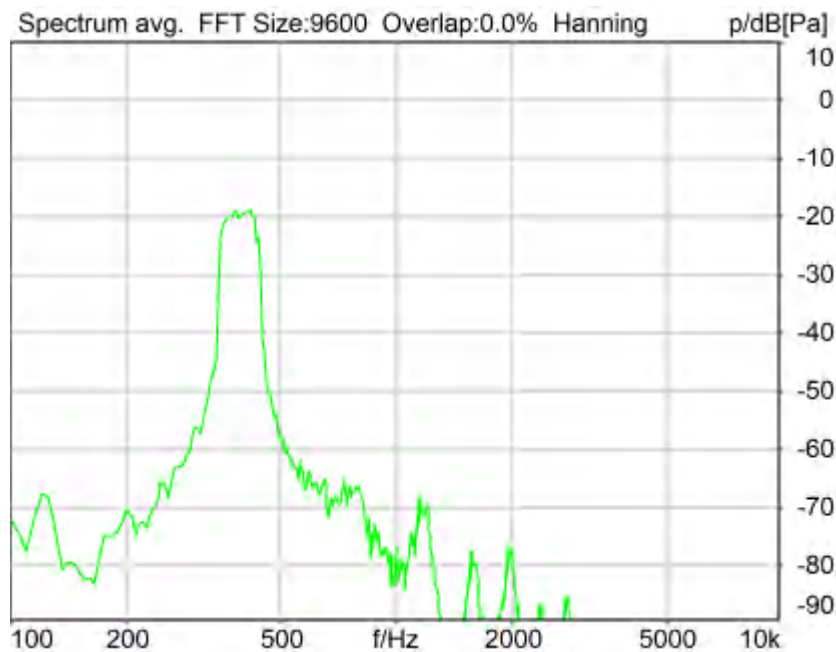
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 - 400 Hz WB**

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



Distortion (Noise) RCV (packed): 38.99 dB (1.12%) Ok

**Ok**

2024/1/20 17:05 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\_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	-0.7 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.	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 128.8000 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
-------------	---------	-------------	----

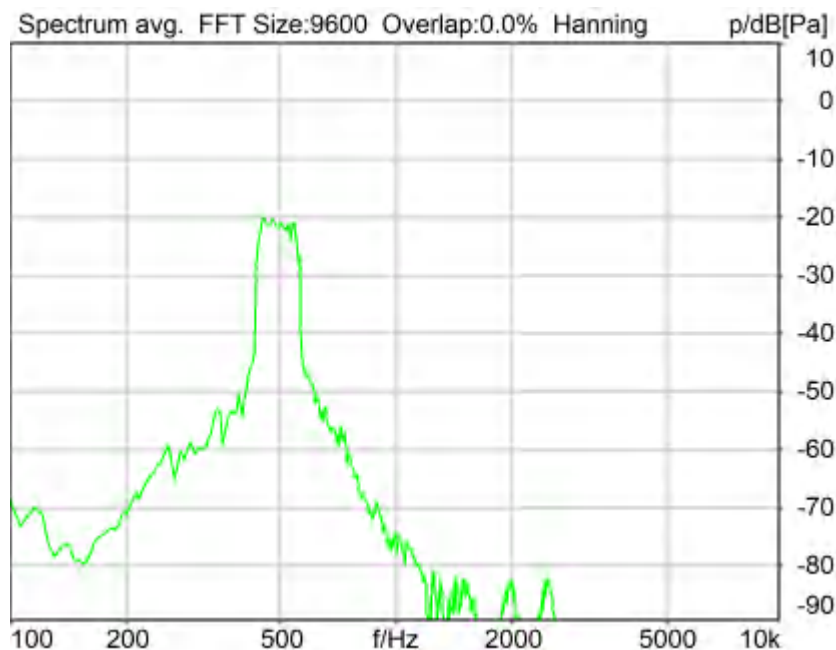
```

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 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 - 500 Hz WB

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



Distortion (Noise) RCV (packed): 31.83 dB (2.56%) Ok

**Ok**

2024/1/20 17:05 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\_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	-0.7 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.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 128.8000 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))

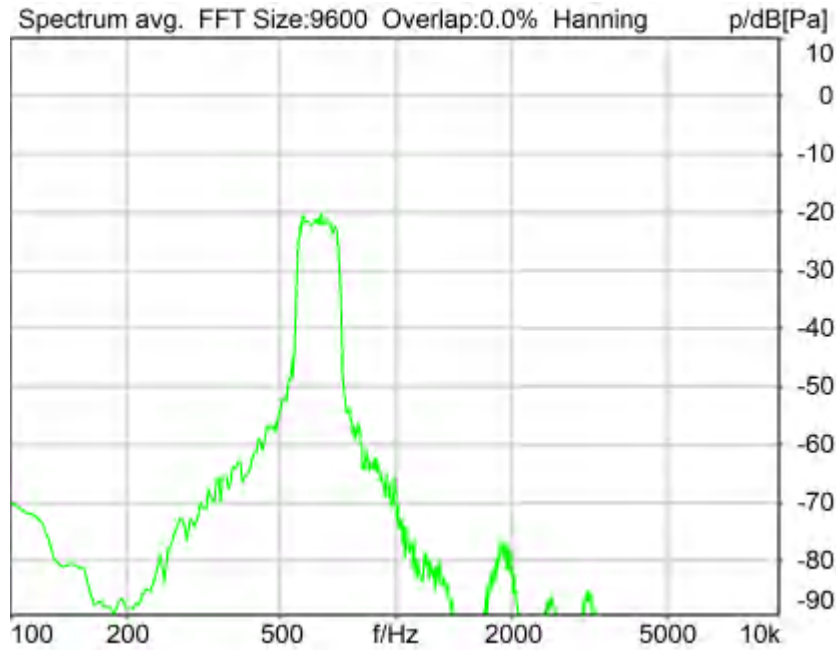
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 35.30 dB (1.72%) Ok

**Ok**

2024/1/20 17:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

**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	-0.7 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.	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 128.8000 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))**

<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))**

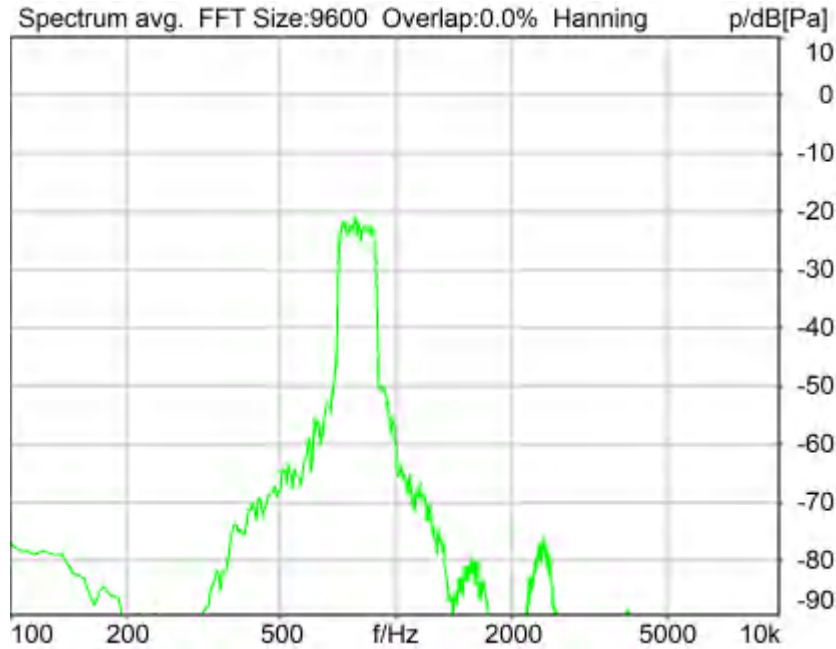
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 800 Hz WB

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



Distortion (Noise) RCV (packed): 33.22 dB (2.18%) Ok

**Ok**

2024/1/20 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\_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 °
		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	-0.7 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.	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 128.8000 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))**

<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))**

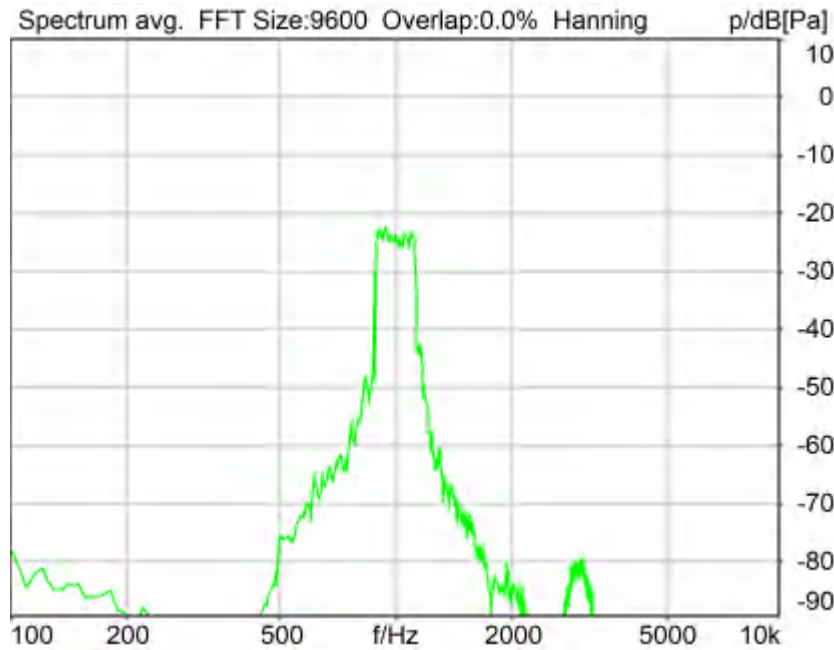
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1000 Hz WB**

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



Distortion (Noise) RCV (packed): 28.67 dB (3.68%) Ok

**Ok**

2024/1/20 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\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.7 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.	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 128.8000 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))**

<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))

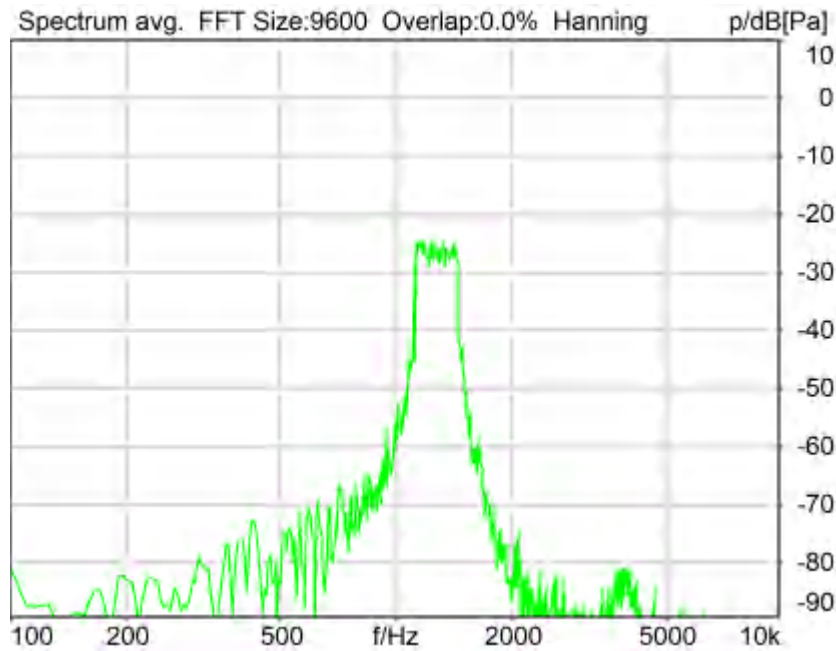
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.86 dB (6.41%) Ok

**Ok**

2024/1/20 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 128.8000 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))

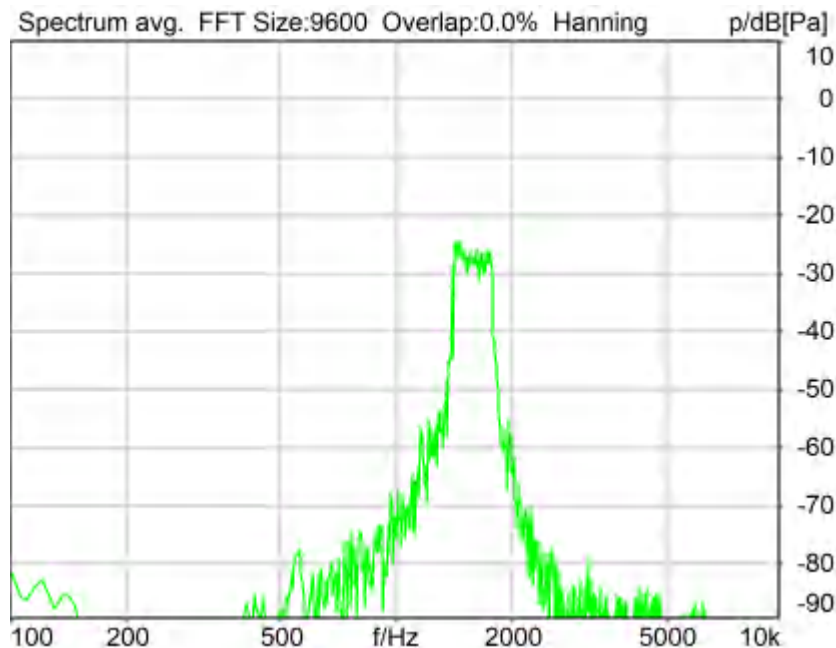
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 26.80 dB (4.57%) Ok

**Ok**

2024/1/20 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\_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	-0.7 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.	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 128.8000 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**

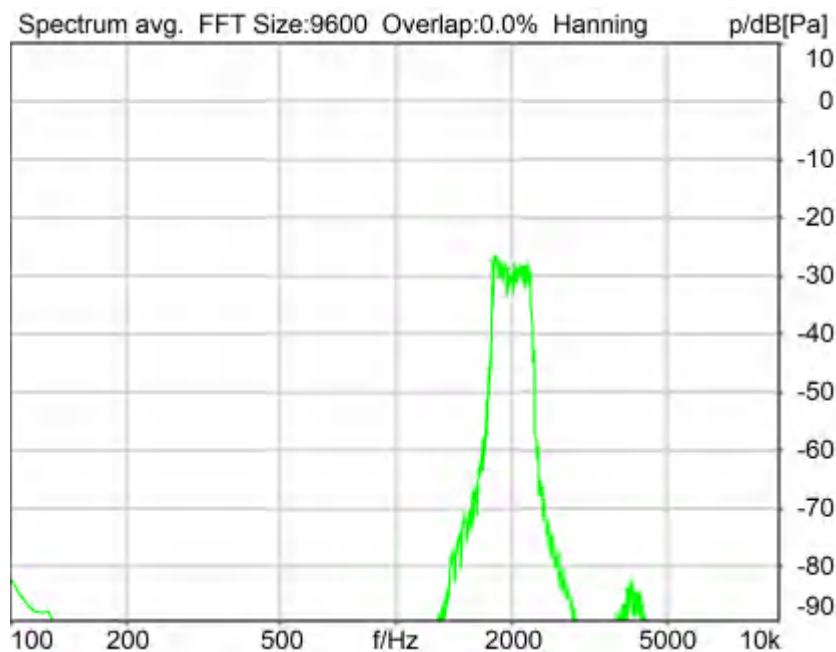
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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
<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 - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 28.77 dB (3.64%) Ok

**Ok**

2024/1/20 17:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

**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	-0.7 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.	1745.0 Hz
Stimulus min.	1745.0 Hz	Analysis max.	1740.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	2280.0 Hz		

**Special Features**

Compensate delay 128.8000 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
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-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

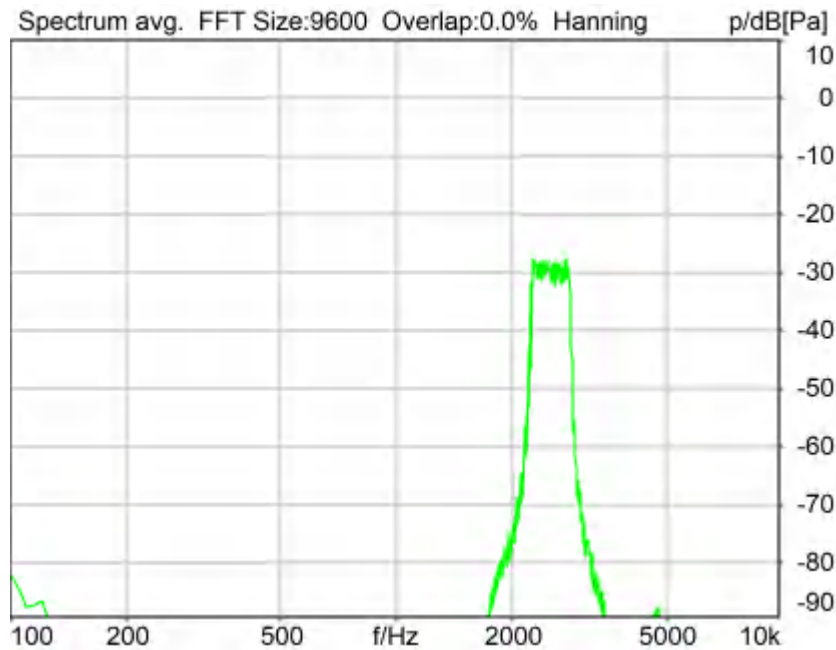
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 31.21 dB (2.75%) Ok

**Ok**

2024/1/20 17:10 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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
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 128.8000 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
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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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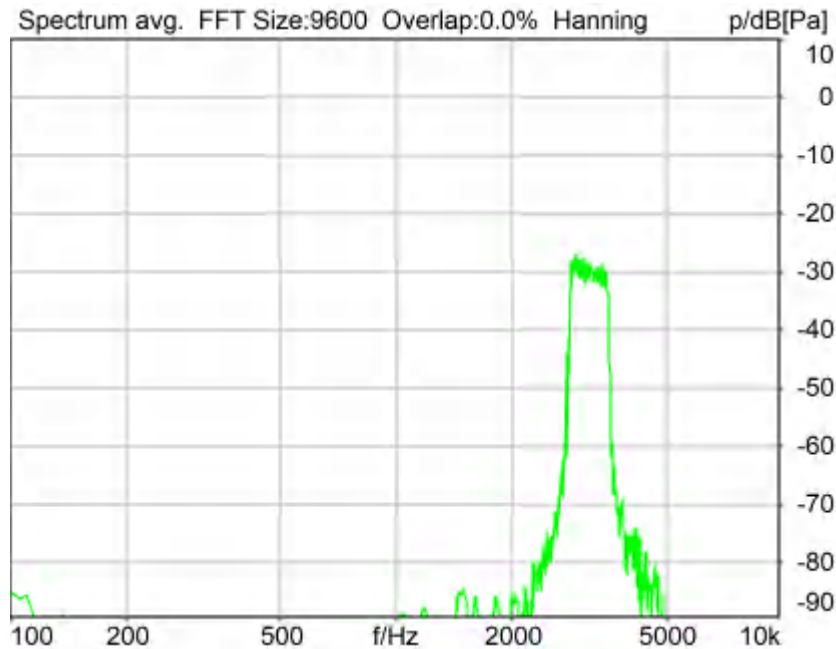
**HIB Settings**

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 - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 31.14 dB (2.77%) Ok

**Ok**

2024/1/20 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\_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 °
		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	-0.7 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.	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 128.8000 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))**

<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))**

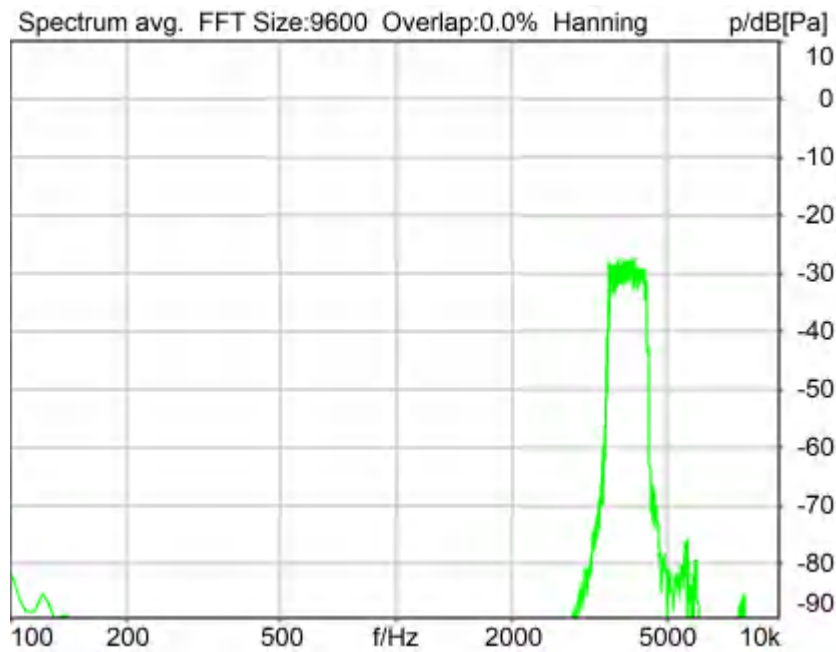
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 4000 Hz WB**

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



Distortion (Noise) RCV (packed): 31.81 dB (2.57%) Ok

**Ok**

2024/1/20 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\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	3515.0 Hz
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 128.8000 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))**

<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))

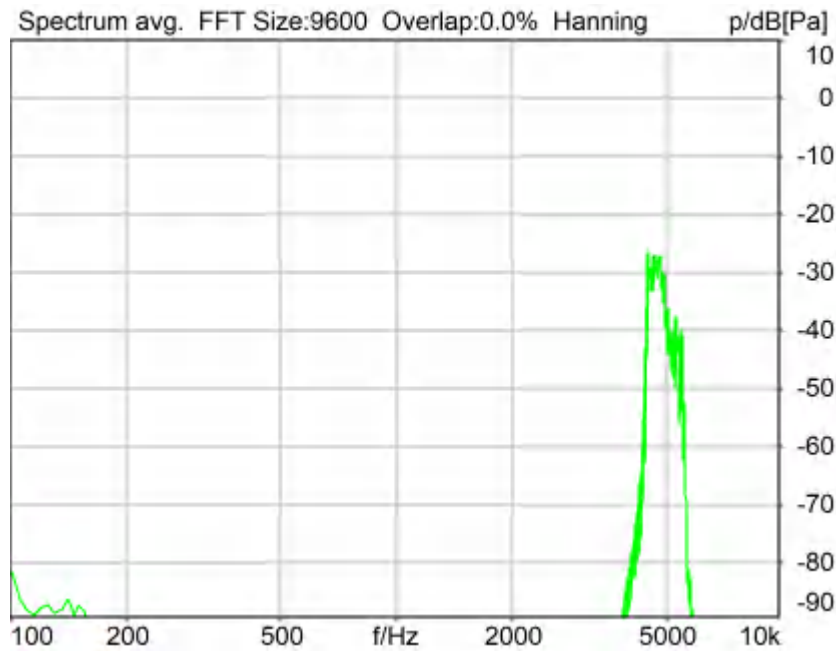
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 33.98 dB (2.00%) Ok

Ok

2024/1/20 17:11 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\_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 °
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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 128.8000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

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

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

**HIB Settings**

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

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

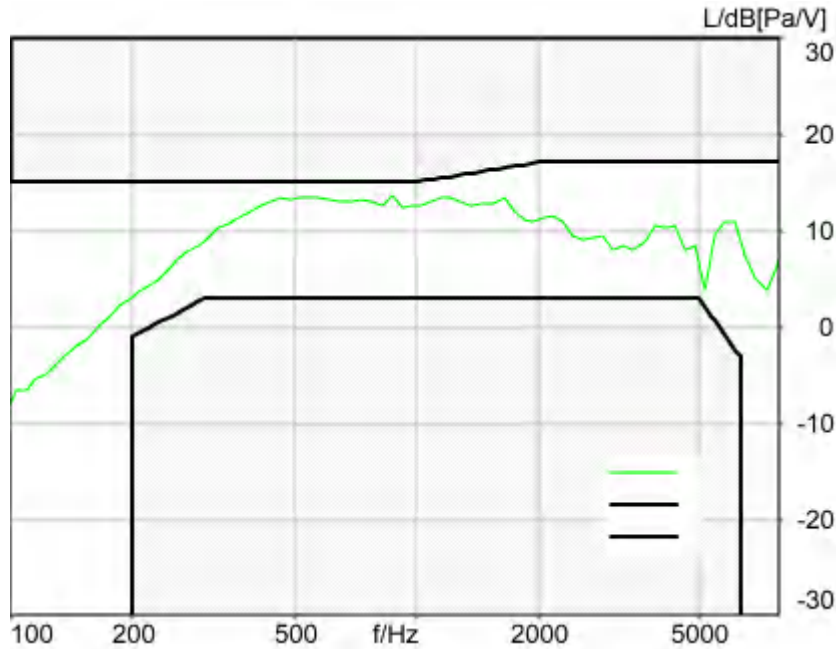
TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	35.61 dB
2	315Hz	37.11 dB
3	400Hz	38.99 dB
4	500Hz	31.83 dB
5	630Hz	35.30 dB
6	800Hz	33.22 dB
7	1000Hz	28.67 dB
8	1250Hz	23.86 dB
9	1600Hz	26.80 dB
10	2000Hz	28.77 dB
11	2500Hz	31.21 dB
12	3150Hz	31.14 dB
13	4000Hz	31.81 dB
14	5000Hz	33.98 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 23.86dB at 1250Hz.

### 5.3 Frequency Response 8N FF

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



Absolute minimal distance  
1.50 dB at 873.9 Hz Ok

**Ok**

2024/1/20 0:28 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 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	-1.9 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	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 128.8000 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
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Polarisation Voltage200V	Supply Voltage	±60V
Channel In 3 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V
Channel In 4 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V

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

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

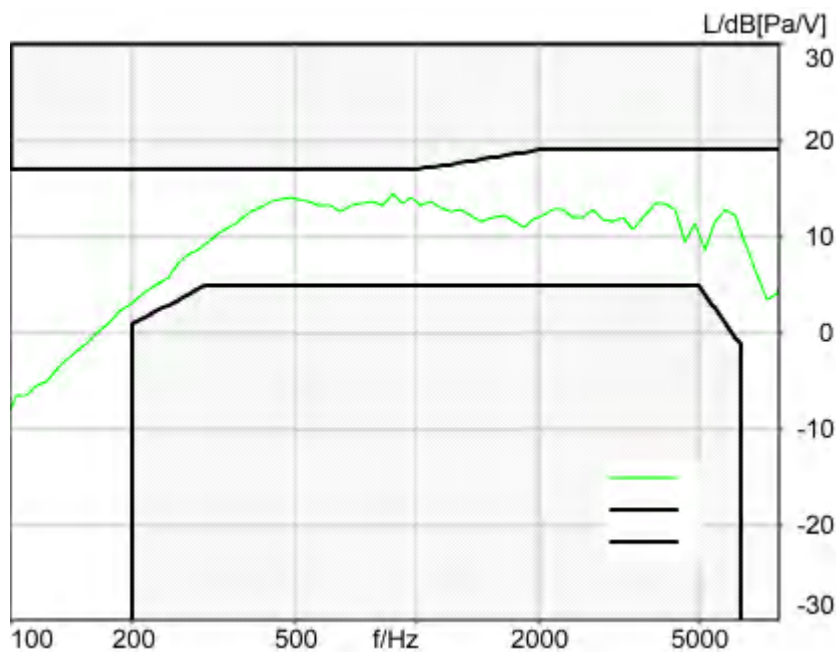
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

### 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
2.41 dB at 205.7 Hz Ok

**Ok**

2024/1/20 0:28 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	-1.9 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	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 128.8000 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))

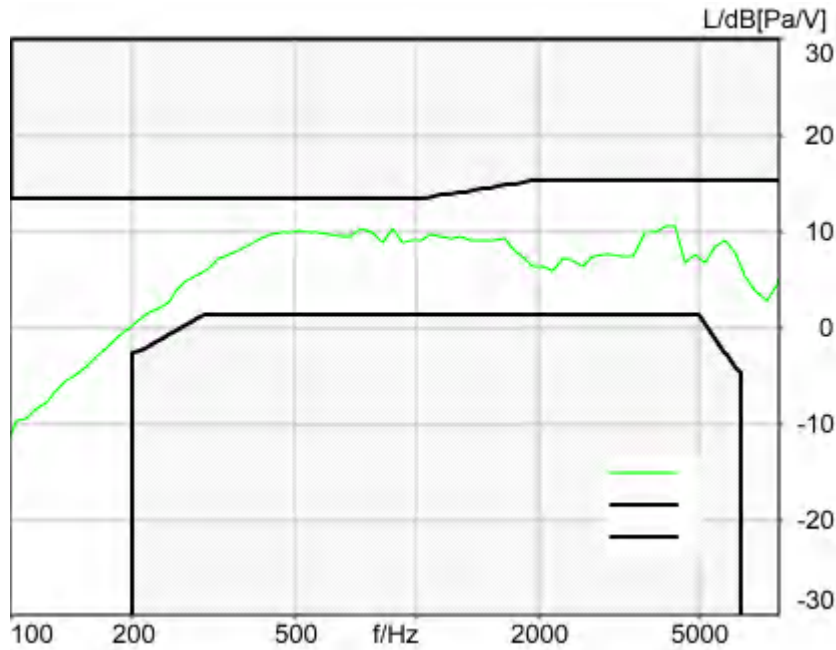
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 FF

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



Absolute minimal distance  
3.05 dB at 873.9 Hz Ok

**Ok**

2024/1/20 17:12 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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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 128.8000 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))

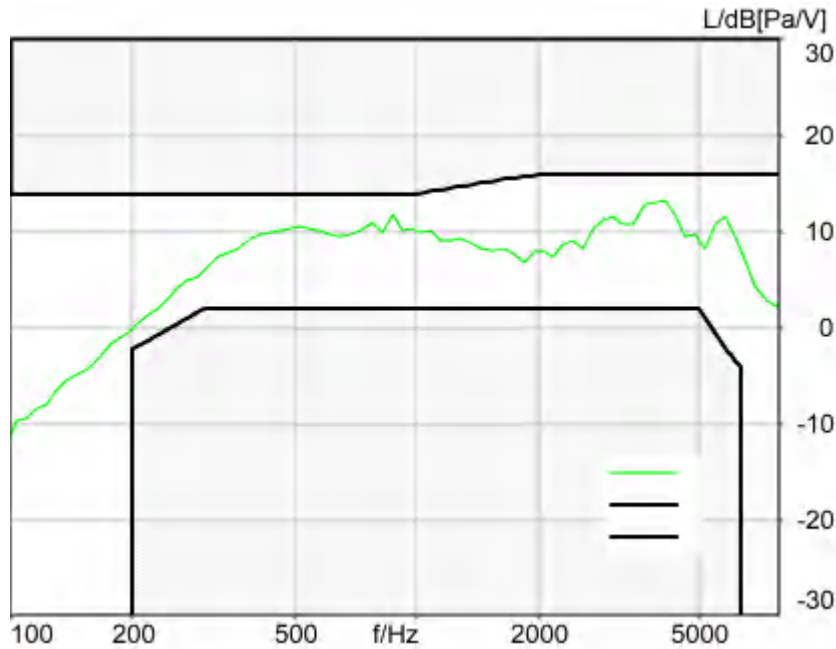
Ser. Nr. 12306613 Pinna Type Type 3.3

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 2N DF

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



Absolute minimal distance  
 2.25 dB at 873.9 Hz Ok

Ok

2024/1/20 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 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	-0.7 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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 128.8000 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

## **Measurement Protocol**

Measurement Object	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:01
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	107.9	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.25	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	13.74	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.31	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.81	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.51	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.69	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.90	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.98	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.89	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.50	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.55	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.49	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	20.98	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.61	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.96	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.59	339D LTE Band

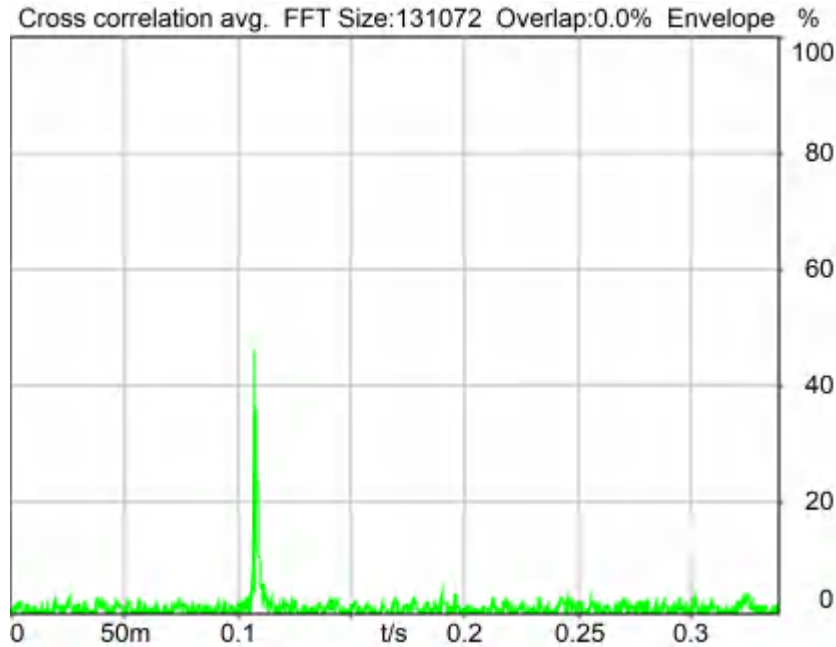
Noise - 630 Hz NB		[dB], 0.0 dB		14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.52	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.81	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.91	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.04	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.00	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.00	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.12	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.00	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	3.30	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.18	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.97	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.77	339D LTE Band 14_10QPSK_50RB_0_EVS NB 9.6kbps_CH23330

---

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5.2 RCV Distortion and Noise - 400 Hz NB	33
5.2 RCV Distortion and Noise - 500 Hz NB	36
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## Overall Receive Delay NB

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



Delay (Cross): 107.9 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	-1.8 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**

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
-------------	---------	-------------	---------

**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))**

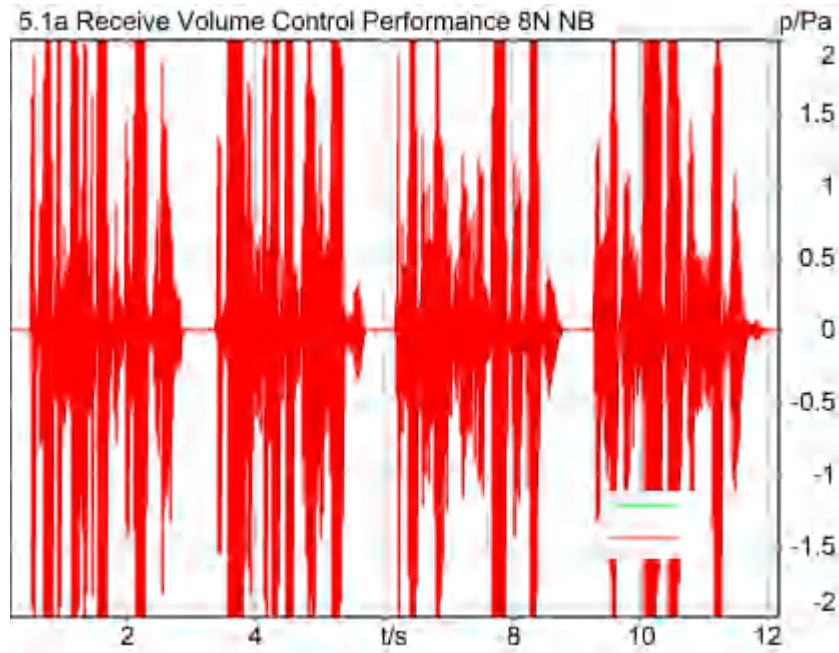
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 88.25 dB[SPL], Act.: 80.87%

Corrected Speech Level: 18.25 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03



**Calibration**

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

**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	-4.4 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	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 107.9000 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))

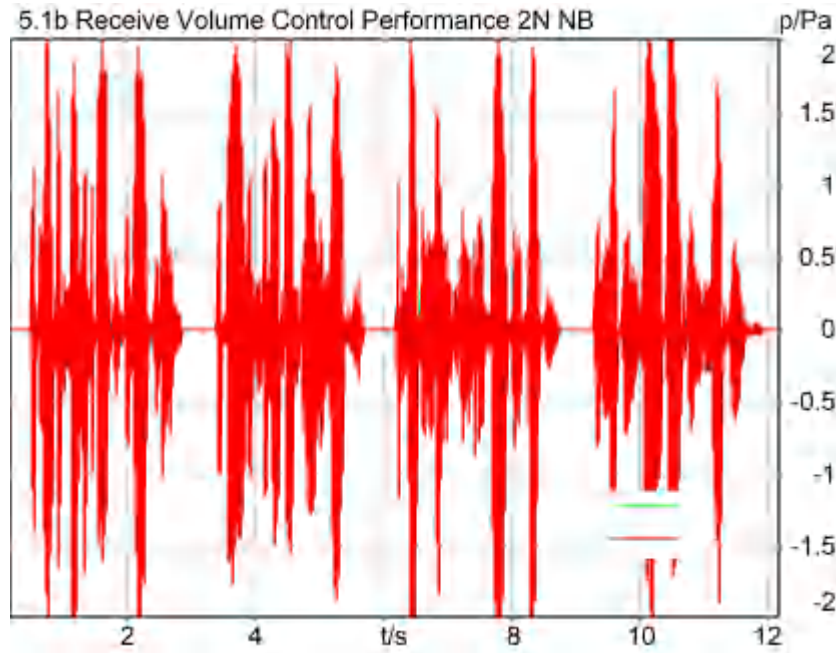
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

## 5.1b Receive Volume Control Performance 2N NB

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



### Correction

X - 70

Speech Level RCV: 83.74 dB[SPL], Act.: 82.20%

Corrected Speech Level: 13.74 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))

**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	-1.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 N

**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 107.9000 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

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

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



Distortion (Noise) RCV (packed): 35.31 dB (1.72%) Ok

**Ok**

2024/1/20 0:03 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\_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	-1.9 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.	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 107.9000 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))

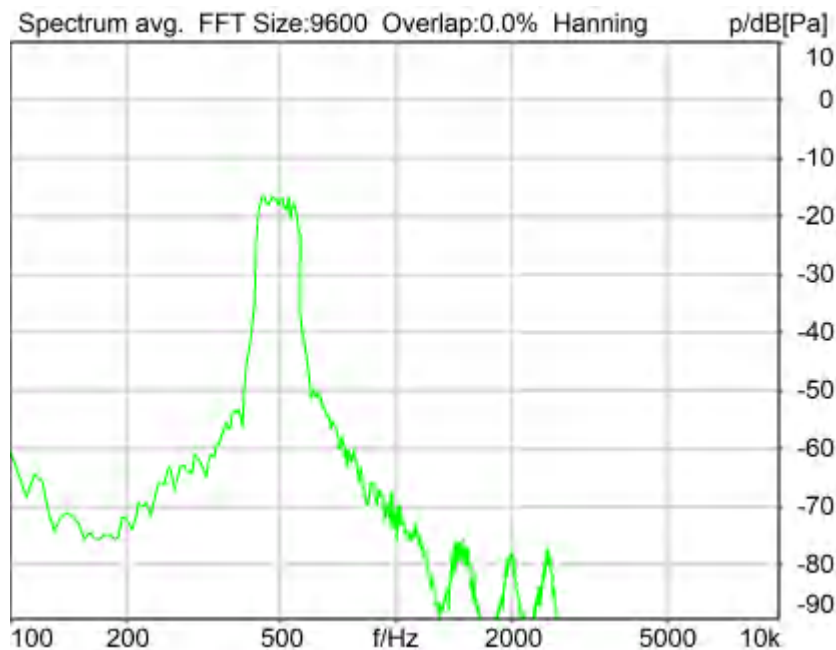
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 35.81 dB (1.62%) Ok

**Ok**

2024/1/20 0:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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.	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 107.9000 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 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))

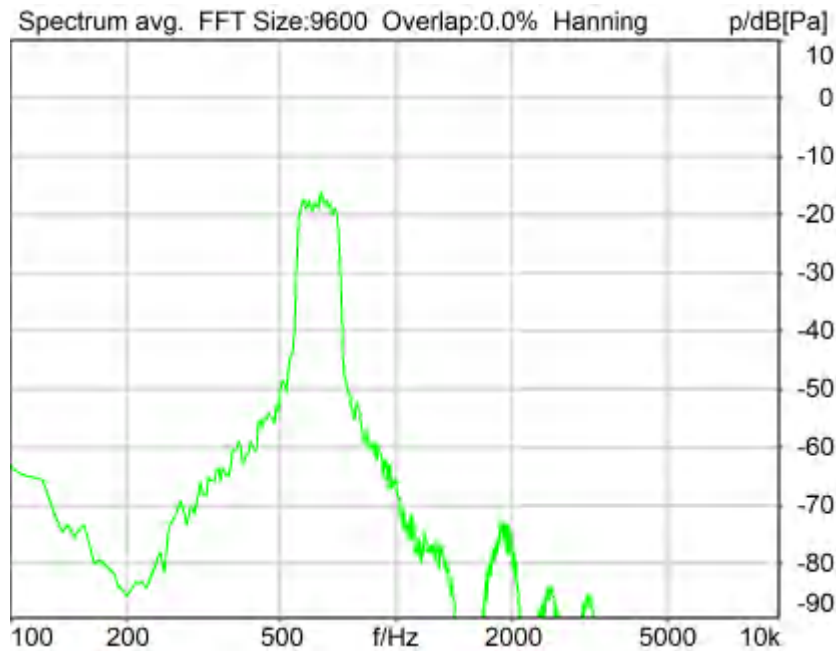
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 - 630 Hz NB

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



Distortion (Noise) RCV (packed): 35.51 dB (1.68%) Ok



**Ok**

2024/1/20 0:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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 107.9000 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
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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))

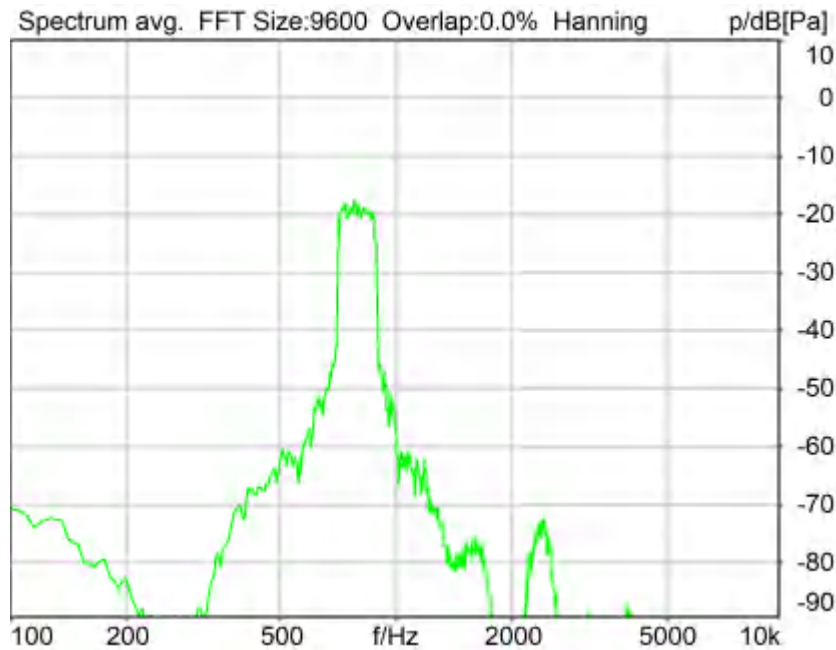
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 33.69 dB (2.07%) Ok

**Ok**

2024/1/20 0:05 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	-1.9 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 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 107.9000 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))**

<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))**

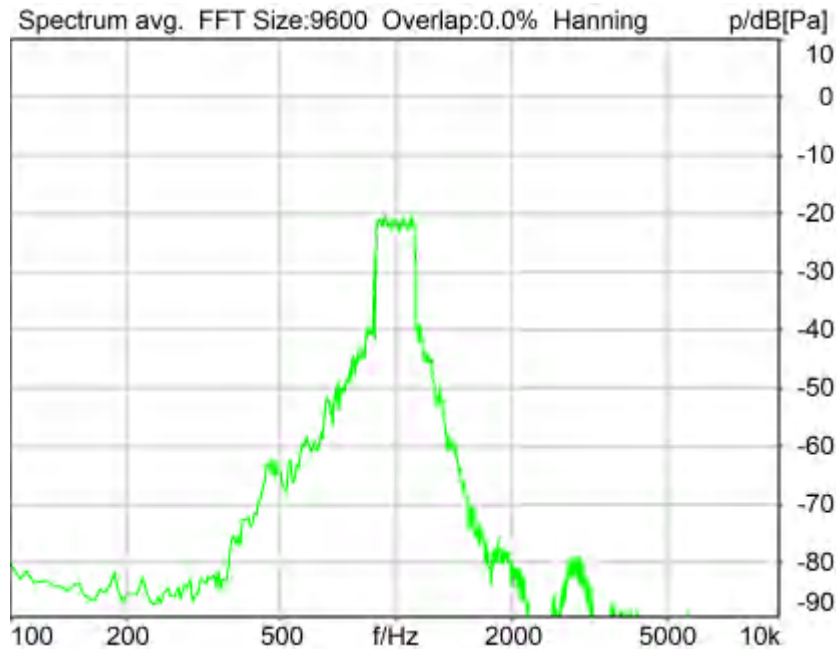
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 22.90 dB (7.17%) Ok

**Ok**

2024/1/20 0:05 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 °
		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: 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.	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 107.9000 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
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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	

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

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



Distortion (Noise) RCV (packed): 20.98 dB (8.94%) Ok

**Ok**

2024/1/20 0:06 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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 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_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 107.9000 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))**

<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 Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

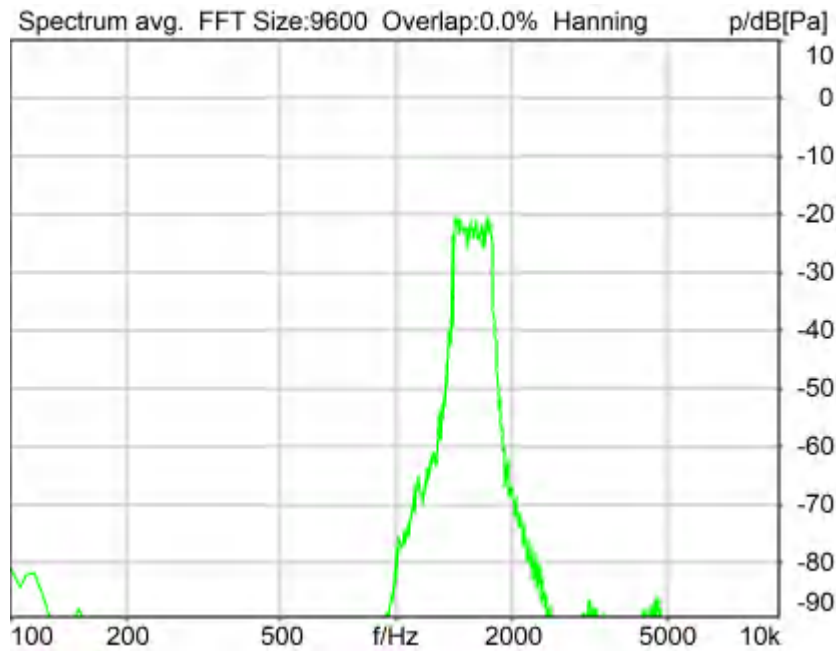
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 29.89 dB (3.20%) Ok

**Ok**

2024/1/20 0:06 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 °
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: 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 107.9000 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

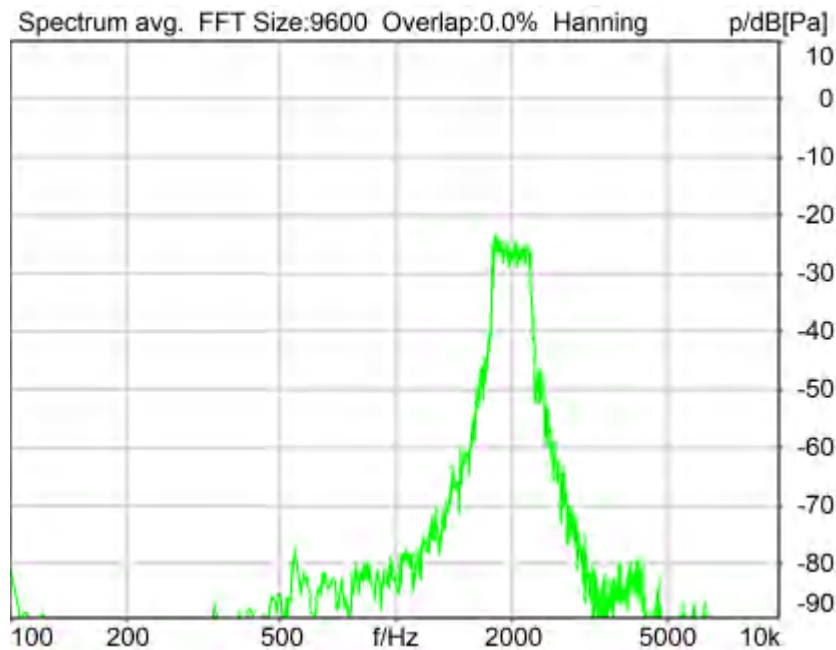
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 22.50 dB (7.50%) Ok

**Ok**

2024/1/20 0:06 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

**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: 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 107.9000 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))

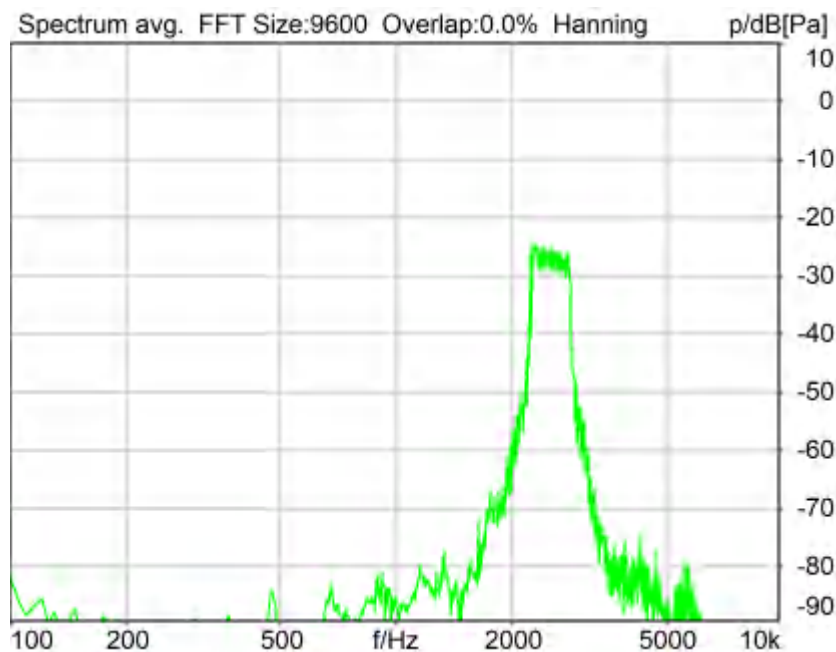
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 24.55 dB (5.92%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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: 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.	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 107.9000 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))

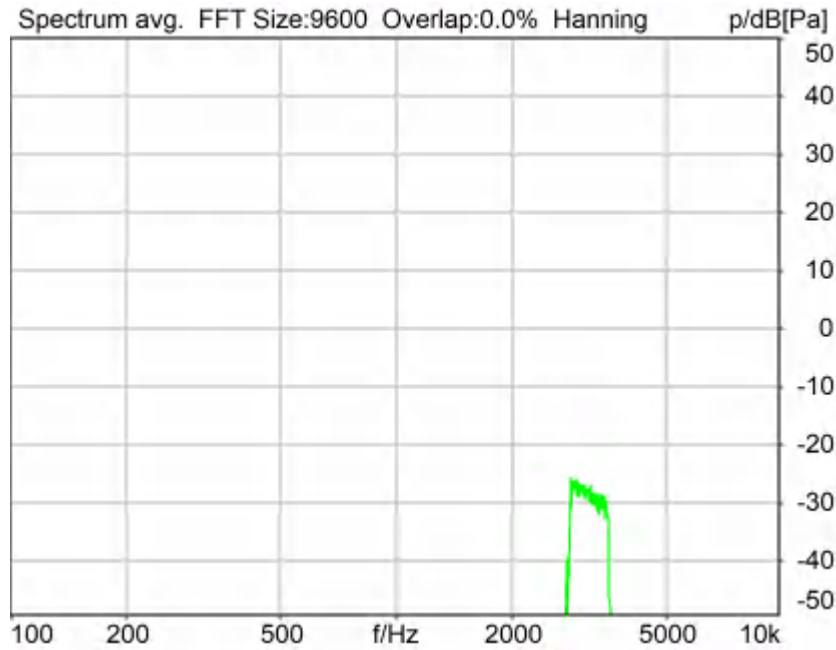
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 30.49 dB (2.99%) 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	-1.9 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 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 107.9000 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
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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

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

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

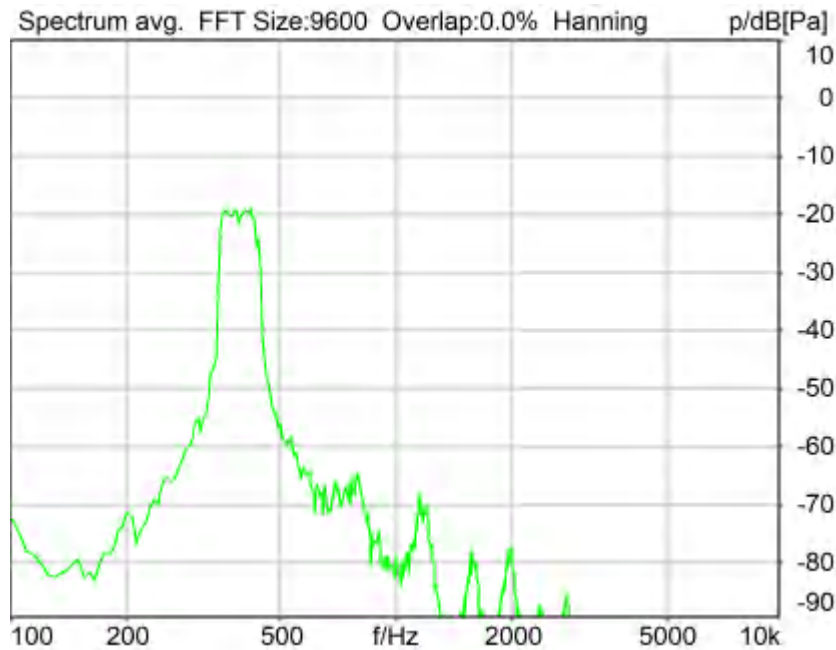
<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	35.31 dB
2	500Hz	35.81 dB
3	630Hz	35.51 dB
4	800Hz	33.69 dB
5	1000Hz	22.90 dB
6	1250Hz	20.98 dB
7	1600Hz	29.89 dB
8	2000Hz	22.50 dB
9	2500Hz	24.55 dB
10	3150Hz	30.49 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 20.98dB 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): 38.61 dB (1.17%) 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 Ze	0.0 mm	Delta C	0.0 °
Ym	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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
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 107.9000 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))**

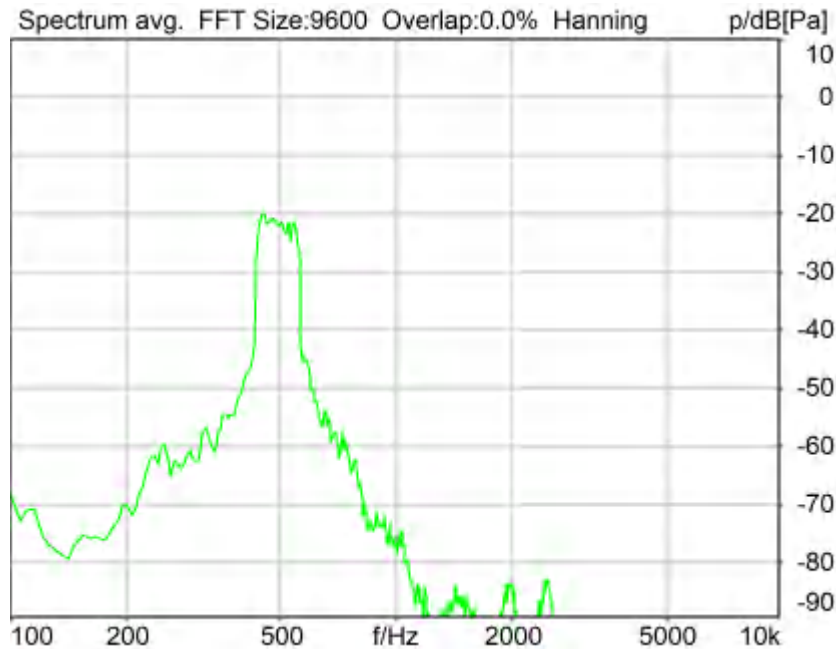
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 32.96 dB (2.25%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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
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 107.9000 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))**

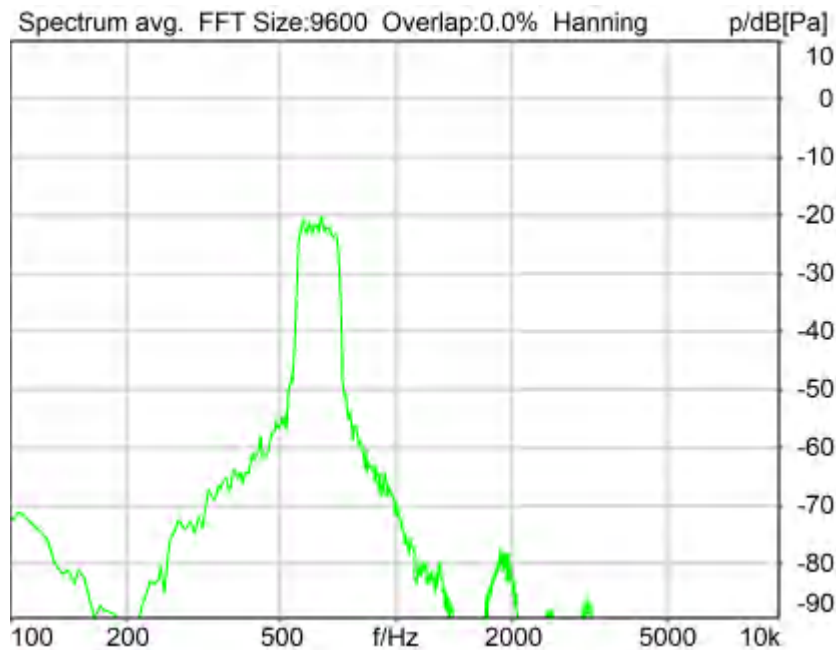
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 35.59 dB (1.66%) 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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.	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 107.9000 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 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))

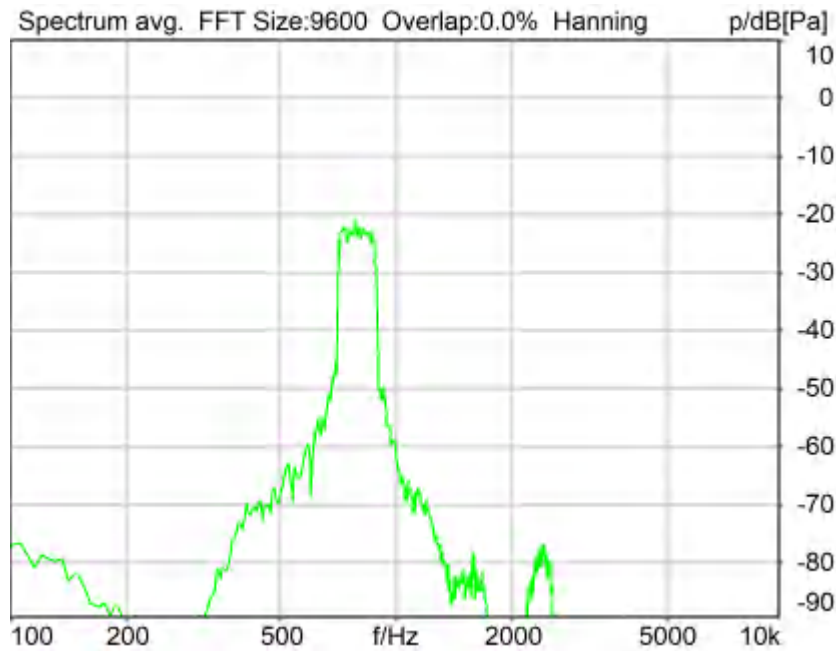
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 800 Hz NB

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



Distortion (Noise) RCV (packed): 33.52 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 107.9000 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

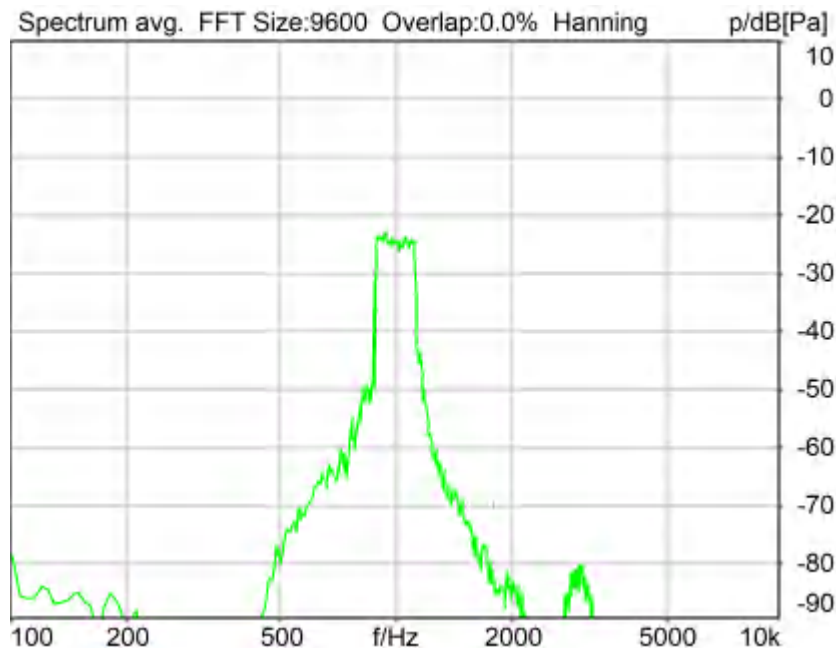
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 28.81 dB (3.63%) Ok

**Ok**

2024/1/20 17:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
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 107.9000 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**

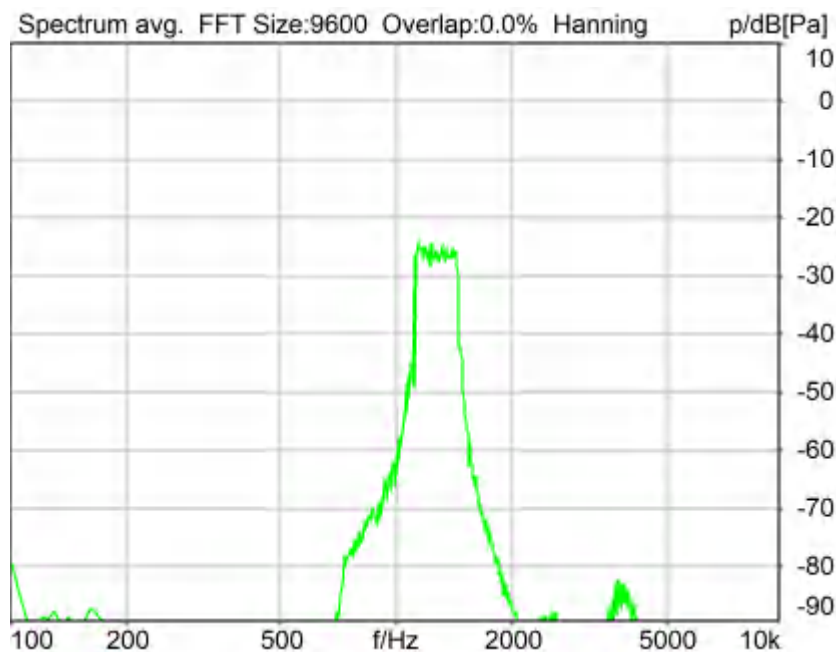
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
 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
<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 - 1250 Hz NB

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



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

**Ok**

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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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
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 107.9000 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): 23.04 dB (7.05%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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
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 107.9000 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))**

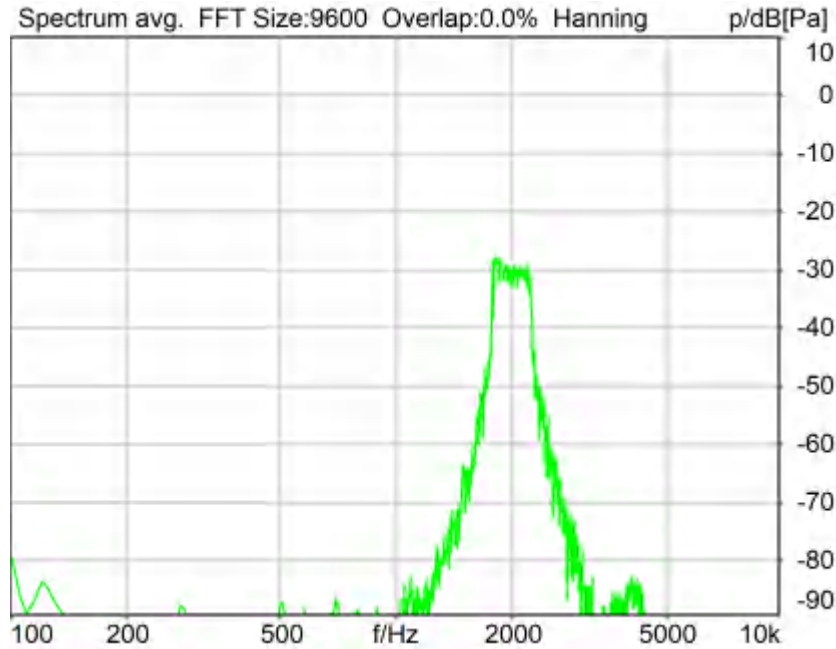
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 22.00 dB (7.94%) 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 °  
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	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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
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 107.9000 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))**

<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))**

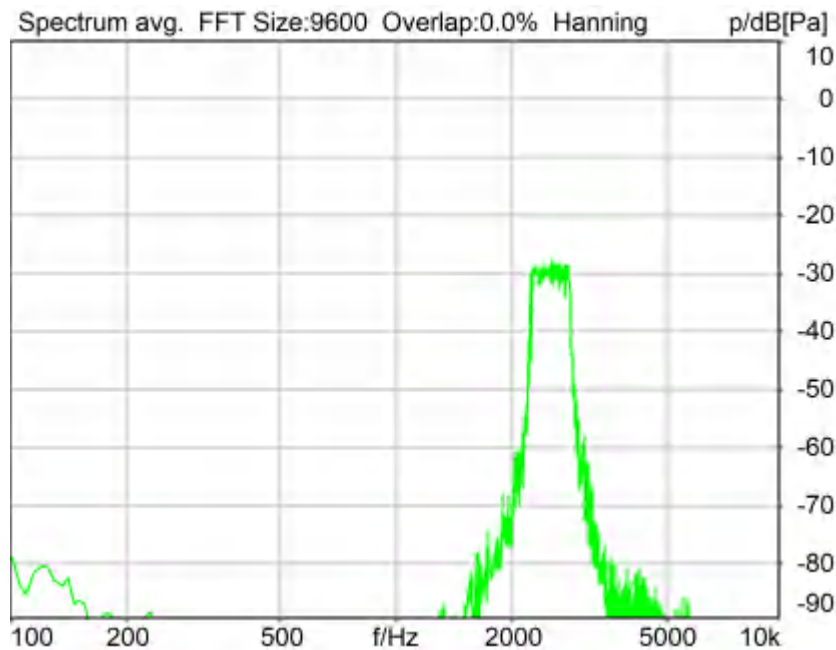
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 2500 Hz NB**

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



Distortion (Noise) RCV (packed): 26.00 dB (5.01%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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.	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 107.9000 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))

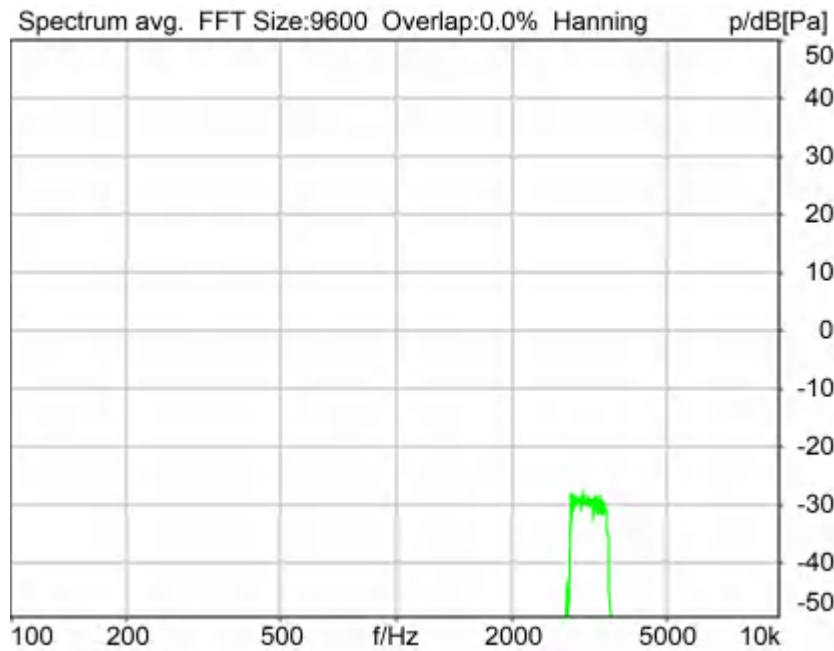
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 30.12 dB (3.12%) Ok

**Ok**

2024/1/20 17:19 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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.	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 107.9000 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	38.61 dB
2	500Hz	32.96 dB
3	630Hz	35.59 dB
4	800Hz	33.52 dB
5	1000Hz	28.81 dB
6	1250Hz	24.91 dB
7	1600Hz	23.04 dB
8	2000Hz	22.00 dB
9	2500Hz	26.00 dB
10	3150Hz	30.12 dB

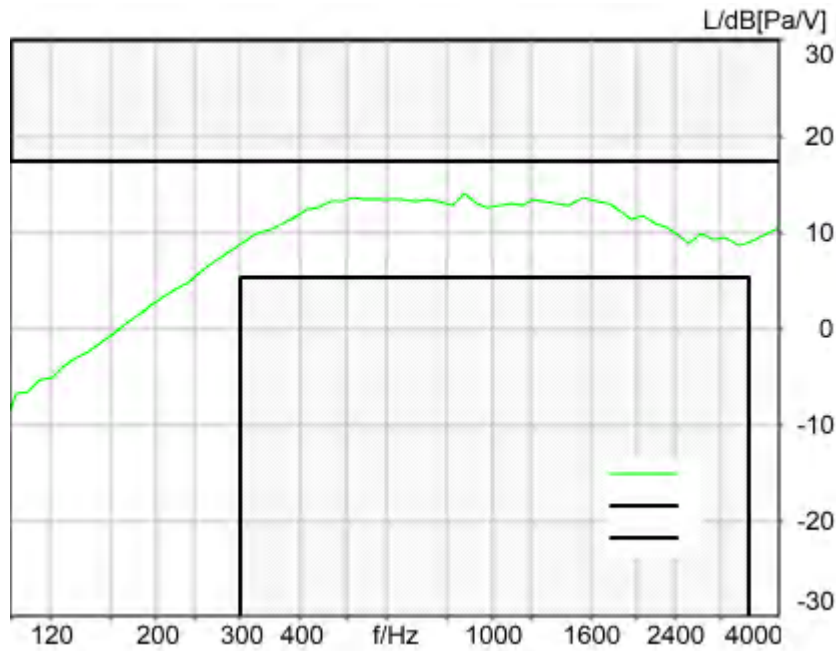
All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 22.00dB at 2000Hz.

2024/1/20 17:19 ACQUA

**5.3 Frequency Response 8N FF HANB**



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



Absolute minimal distance  
 3.30 dB at 3245.6 Hz Ok

**Ok**

2024/1/20 0:08 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	-1.9 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	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 107.9000 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))

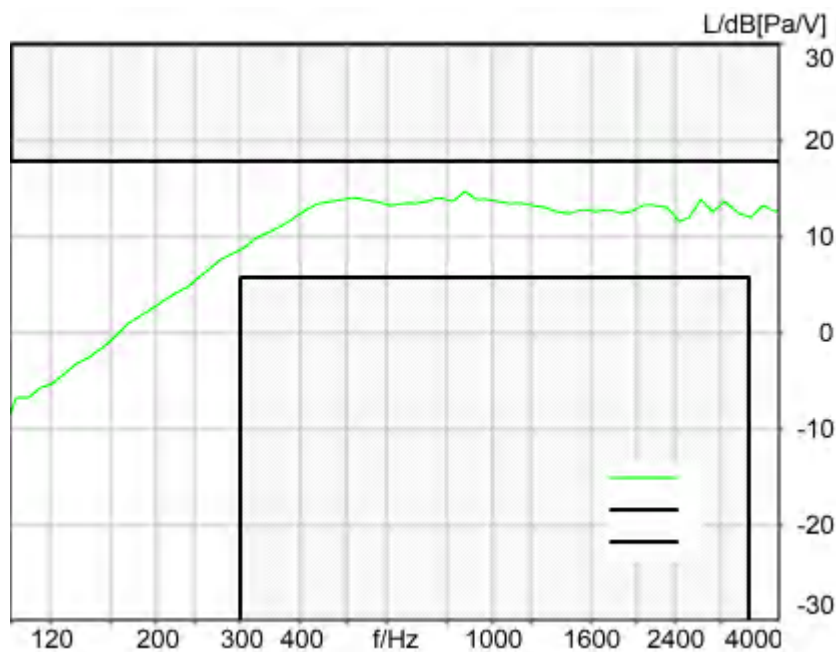
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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

3.18 dB at 873.9 Hz Ok

**Ok**

2024/1/20 0:08 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	-1.9 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	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 107.9000 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))

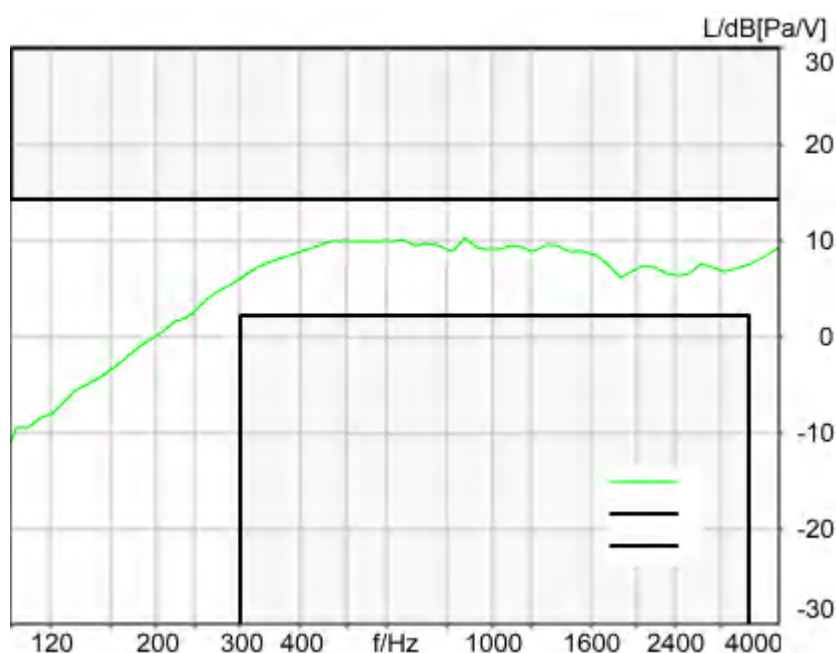
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
 3.97 dB at 873.9 Hz Ok

**Ok**

2024/1/20 17:20 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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 107.9000 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))**

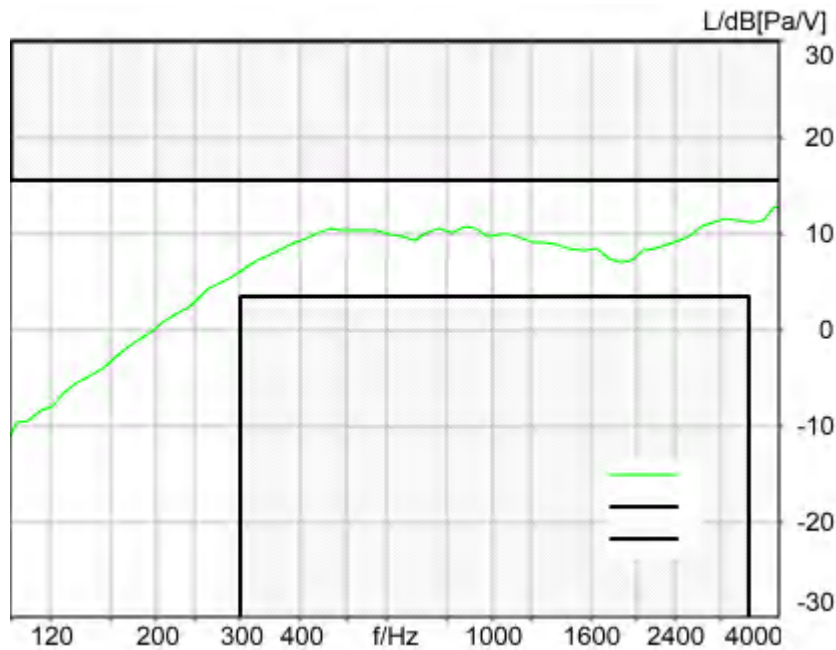
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
 2.77 dB at 3882.4 Hz Ok

**Ok**

2024/1/20 17:20 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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
 Force to apply: 2.0 N, Force reached: 2.1 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 107.9000 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	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:01
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	108.6	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	18.51	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	13.81	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.87	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.43	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	38.13	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.09	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.73	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.41	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.12	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.78	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.30	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.34	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.16	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.42	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.56	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and	Ok	Distortion (Noise)	20.49	339D LTE Band

Noise - 5000 Hz WB		[dB], 0.0 dB		14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 5000Hz)	20.49	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.08	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.01	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	37.21	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.73	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.65	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.30	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.88	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.01	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.25	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.91	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.04	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.70	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.44	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.51	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.91	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	2.67	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	2.49	339D LTE Band

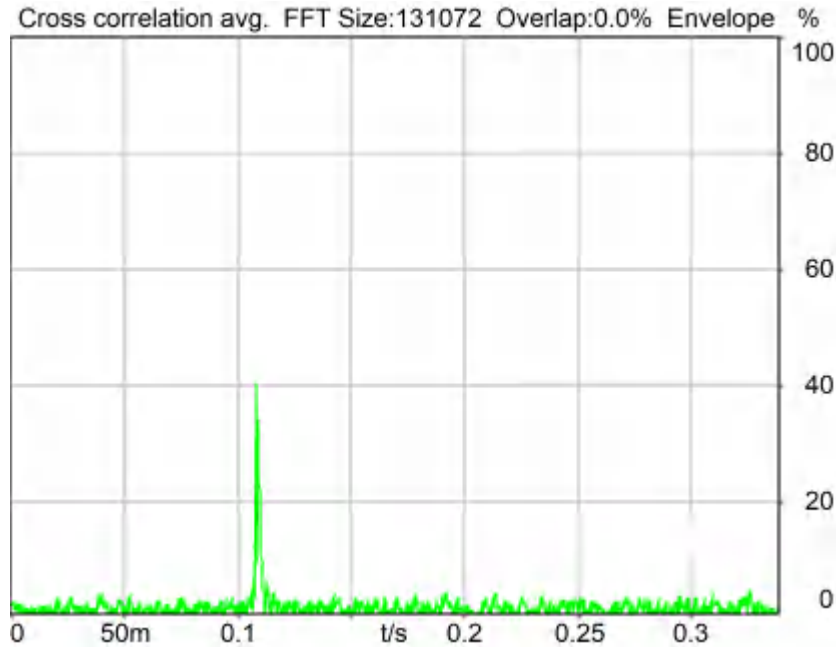
DF		scheme [dB], 205.7 Hz		14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.10	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.56	339D LTE Band 14_10QPSK_50RB_0_EVS WB 13.2kbps_CH23330

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Overall Receive Delay WB	6
5.1a Receive Volume Control Performance 8N WB	8
5.1b Receive Volume Control Performance 2N WB	10
5.2 RCV Distortion and Noise - 250 Hz WB	12
5.2 RCV Distortion and Noise - 315 Hz WB	14
5.2 RCV Distortion and Noise - 400 Hz WB	16
5.2 RCV Distortion and Noise - 500 Hz WB	18
5.2 RCV Distortion and Noise - 630 Hz WB	20
5.2 RCV Distortion and Noise - 800 Hz WB	23
5.2 RCV Distortion and Noise - 1000 Hz WB	25
5.2 RCV Distortion and Noise - 1250 Hz WB	27
5.2 RCV Distortion and Noise - 1600 Hz WB	29
5.2 RCV Distortion and Noise - 2000 Hz WB	31
5.2 RCV Distortion and Noise - 2500 Hz WB	33
5.2 RCV Distortion and Noise - 3150 Hz WB	36
5.2 RCV Distortion and Noise - 4000 Hz WB	38
5.2 RCV Distortion and Noise - 5000 Hz WB	40
Report - Receive Distortion and Noise (Conversational Gain)	42
5.2 RCV Distortion and Noise - 250 Hz WB	43
5.2 RCV Distortion and Noise - 315 Hz WB	45
5.2 RCV Distortion and Noise - 400 Hz WB	47
5.2 RCV Distortion and Noise - 500 Hz WB	49
5.2 RCV Distortion and Noise - 630 Hz WB	51
5.2 RCV Distortion and Noise - 800 Hz WB	53
5.2 RCV Distortion and Noise - 1000 Hz WB	56
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
5.2 RCV Distortion and Noise - 2500 Hz WB	64
5.2 RCV Distortion and Noise - 3150 Hz WB	66
5.2 RCV Distortion and Noise - 4000 Hz WB	69
5.2 RCV Distortion and Noise - 5000 Hz WB	71
Report - Receive Distortion and Noise (Conversational Gain)	73
5.3 Frequency Response 8N FF	73
5.3 Frequency Response 8N DF	76
5.3 Frequency Response 2N FF	78
5.3 Frequency Response 2N DF	80

## Overall Receive Delay WB

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



Delay (Cross): 108.6 ms

2024/1/20 0:09 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	-1.9 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**

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
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**HIB Settings**

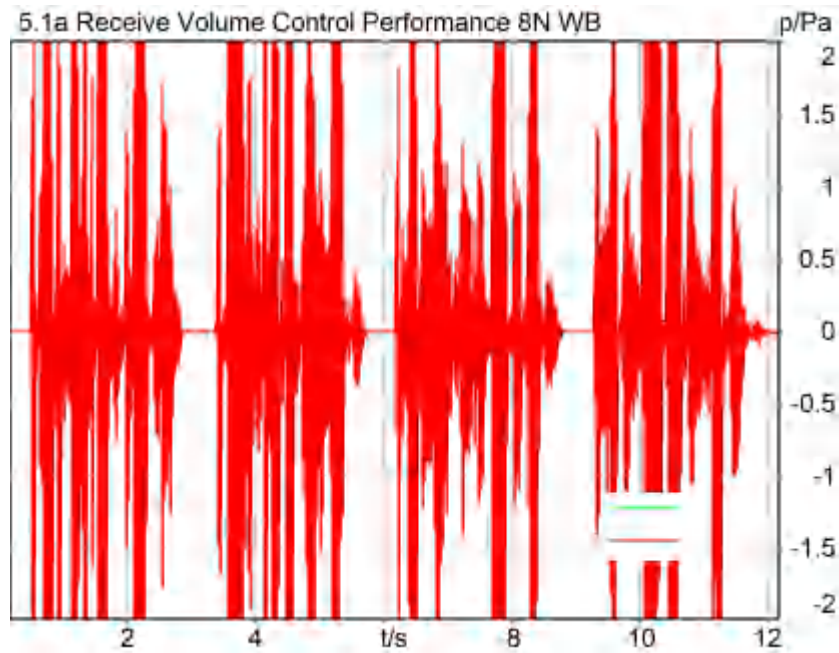
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

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: 88.51 dB[SPL], Act.: 81.27%

Corrected Speech Level: 18.51 dB[SPL] Ok

### Ok

2024/1/21 9:45 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))

**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	-4.4 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	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 108.6000 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 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))**

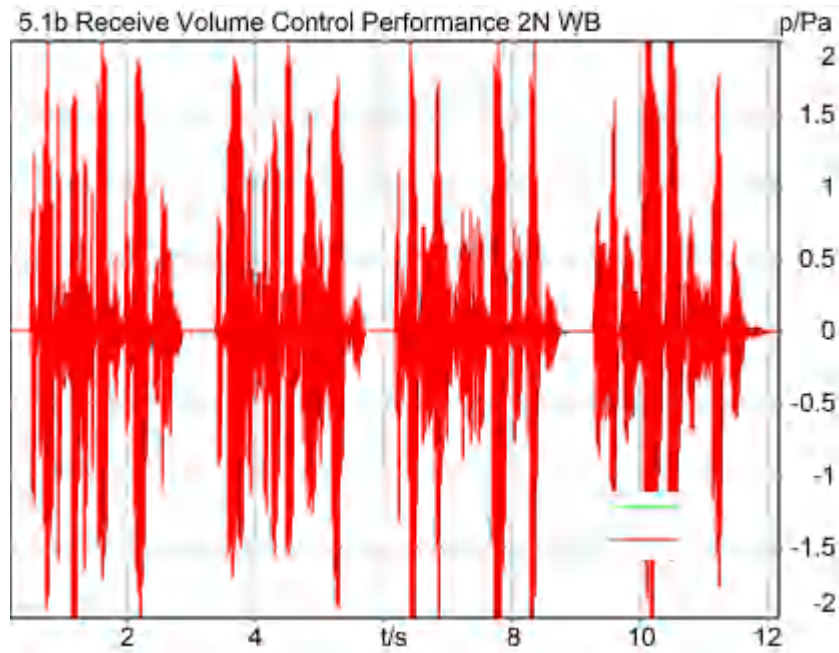
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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

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



**Correction**

X - 70

Speech Level RCV: 83.81 dB[SPL], Act.: 83.21%

Corrected Speech Level: 13.81 dB[SPL] Ok

**Ok**

2024/1/21 9:44 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))

**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	-0.7 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	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 108.6000 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))

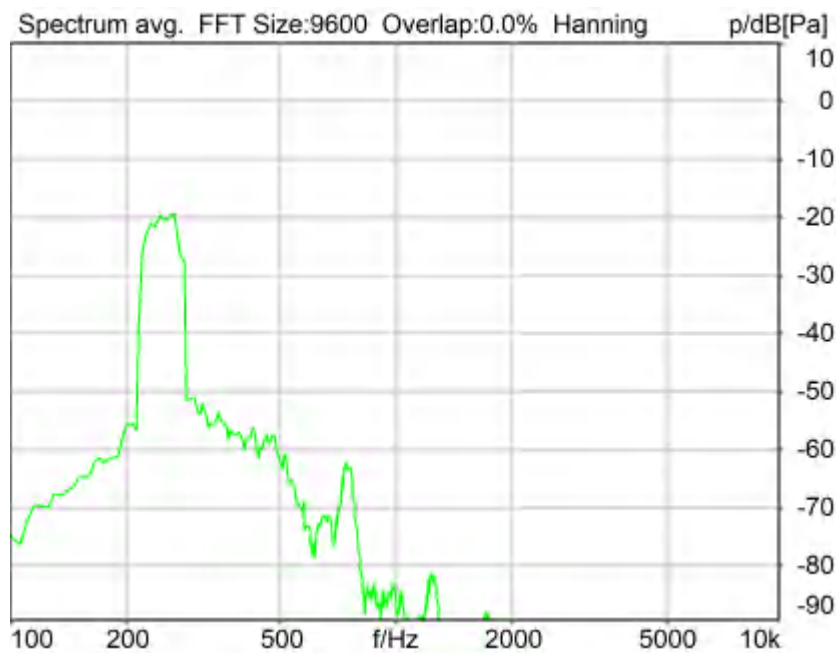
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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

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

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



Distortion (Noise) RCV (packed): 34.87 dB (1.81%) Ok

**Ok**

2024/1/20 0:10 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\_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: 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.	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 108.6000 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))**

<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  
-----

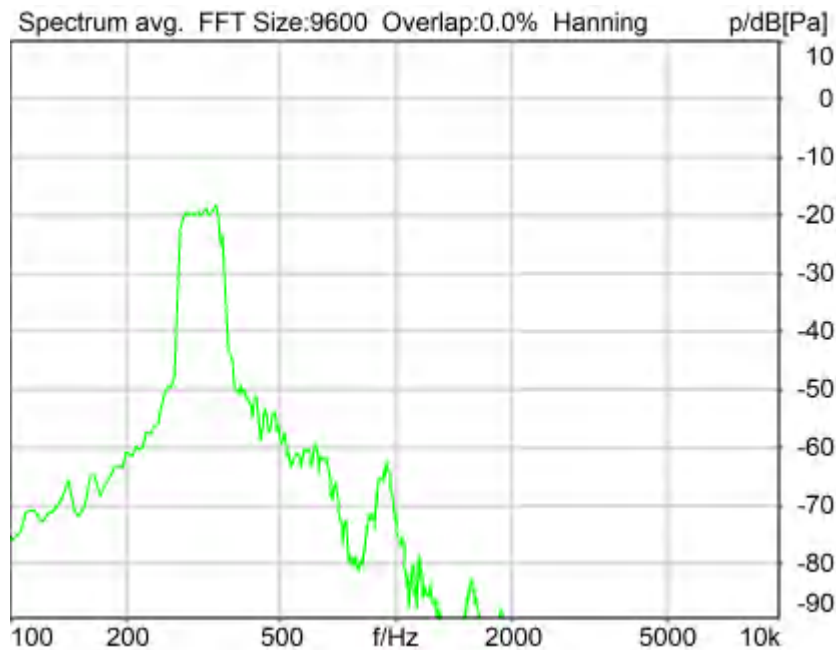
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 315 Hz WB**

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



Distortion (Noise) RCV (packed): 34.43 dB (1.90%) Ok

**Ok**

2024/1/20 0:11 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
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Run 1	20.00 dB
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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 °
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: 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.	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 108.6000 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))

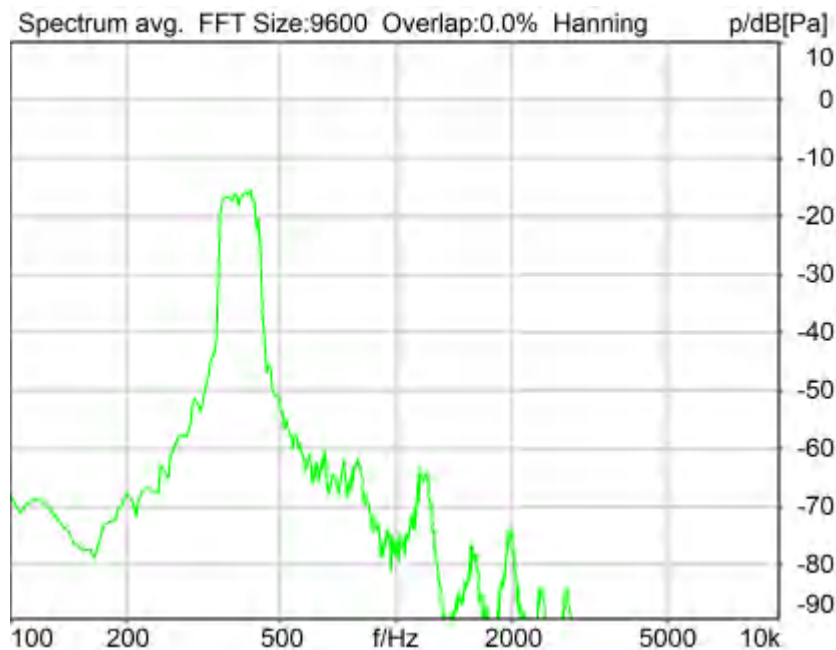
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 38.13 dB (1.24%) Ok

**Ok**

2024/1/20 0:11 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\_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	-1.9 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_jeee1652
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 108.6000 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
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-----  
Artificial Head Settings (HATS 1 (HMS II.3))

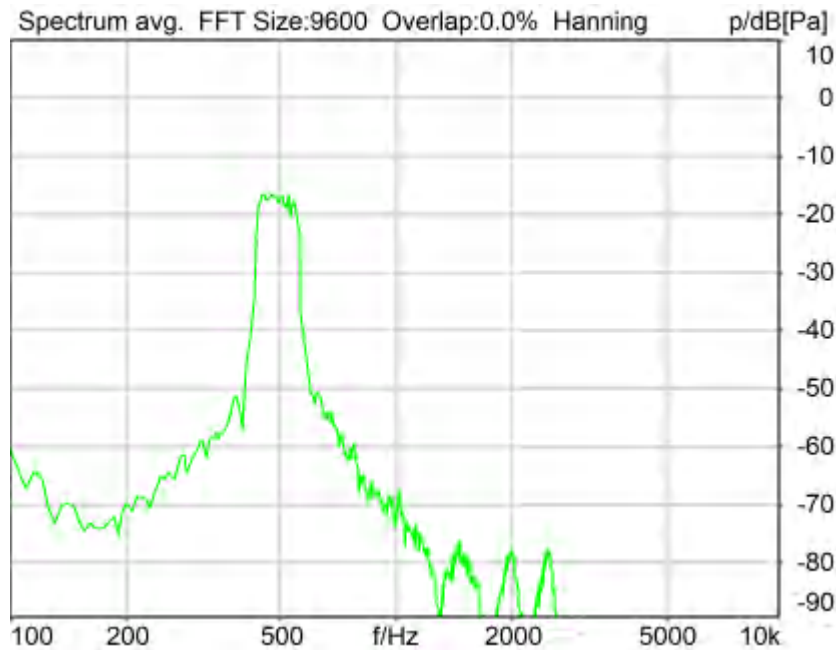
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 500 Hz WB**

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



Distortion (Noise) RCV (packed): 36.09 dB (1.57%) Ok

**Ok**

2024/1/20 0:11 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\_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: 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.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 108.6000 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))**

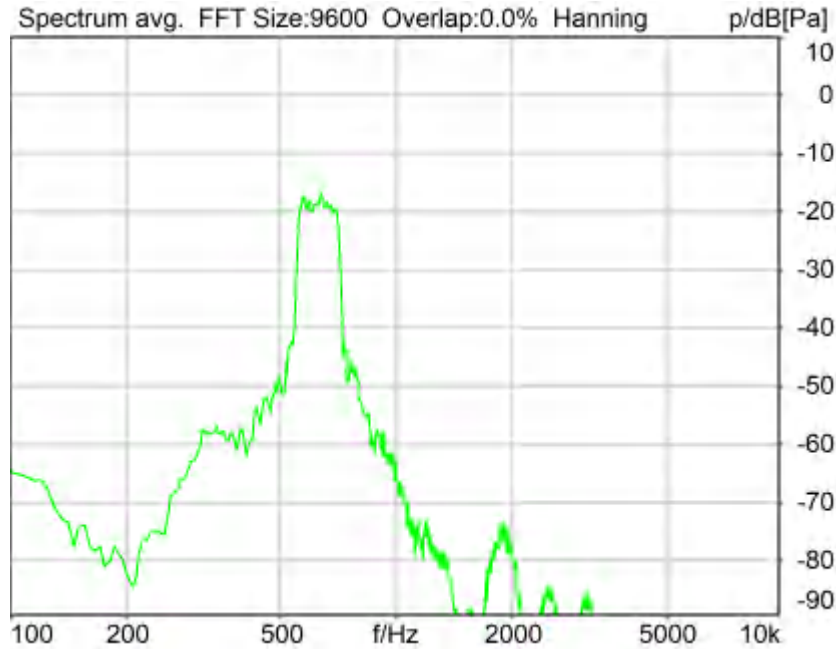
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 31.73 dB (2.59%) Ok

**Ok**

2024/1/20 0:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_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 °
		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: 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 108.6000 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))**

<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 - 800 Hz WB**

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



Distortion (Noise) RCV (packed): 30.41 dB (3.02%) Ok

**Ok**

2024/1/20 0:12 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat  
Level adj. Ch1 -90.0 dB

**Calibration**

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

**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: 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.	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 108.6000 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))**

<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 - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 22.12 dB (7.83%) Ok

Ok

2024/1/20 0:13 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\_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: 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.	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 108.6000 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 Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

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

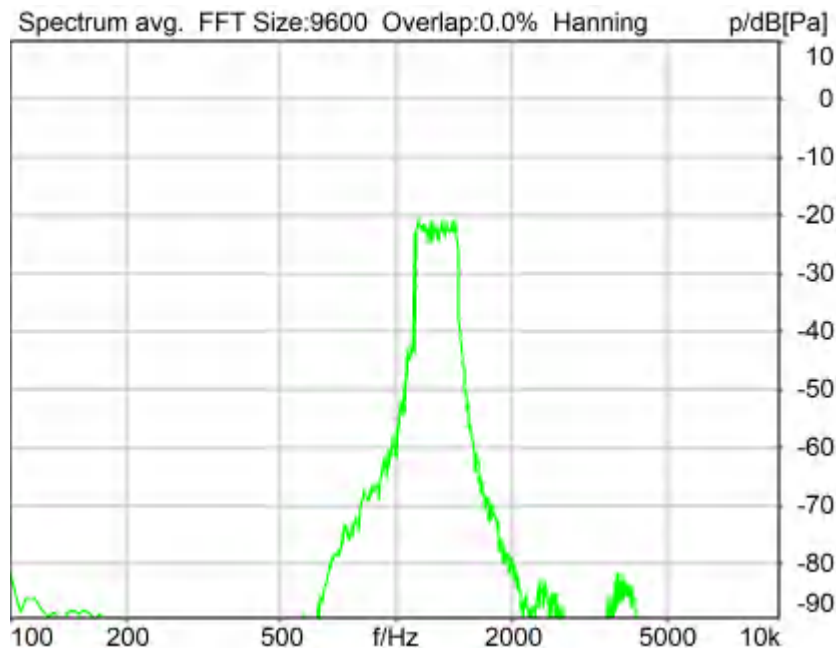
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 25.78 dB (5.14%) Ok

**Ok**

2024/1/20 0:13 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\_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	-1.9 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.	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 108.6000 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

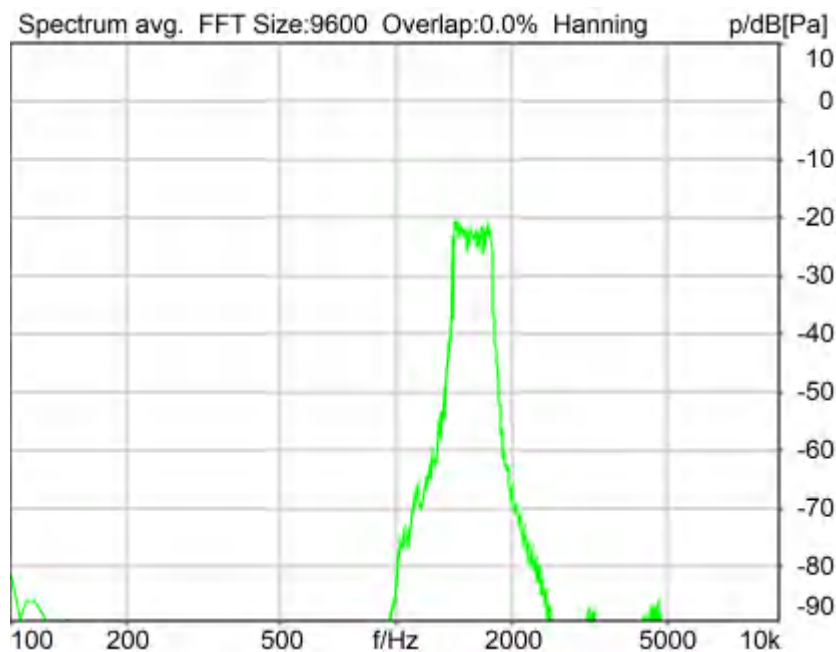
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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))			
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 - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 29.30 dB (3.43%) Ok

**Ok**

2024/1/20 0:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

**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: 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 108.6000 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
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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))

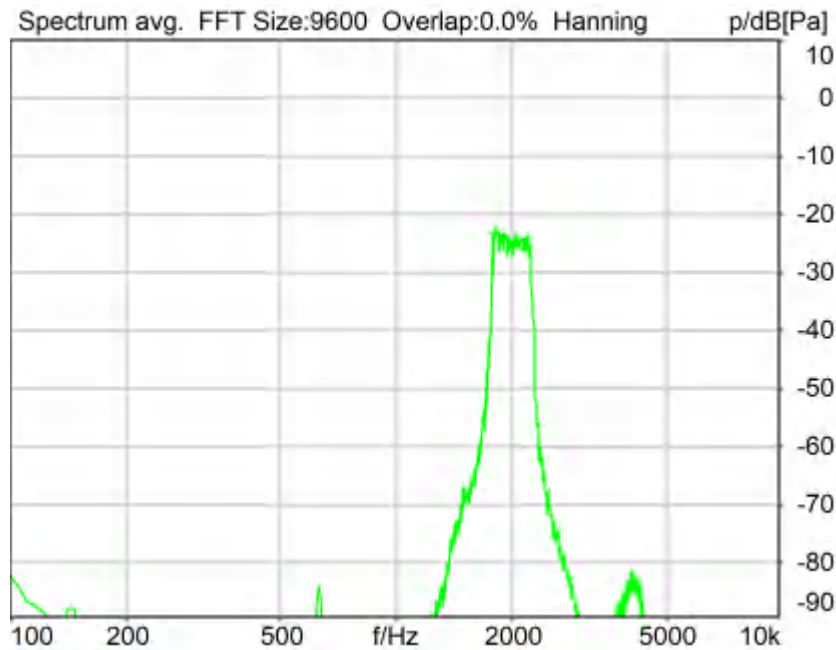
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 29.34 dB (3.41%) Ok

**Ok**

2024/1/20 0:15 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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: 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.	2275.0 Hz
Stimulus min.	1745.0 Hz	Analysis max.	1740.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	2280.0 Hz		

**Special Features**

Compensate delay 108.6000 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
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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))**

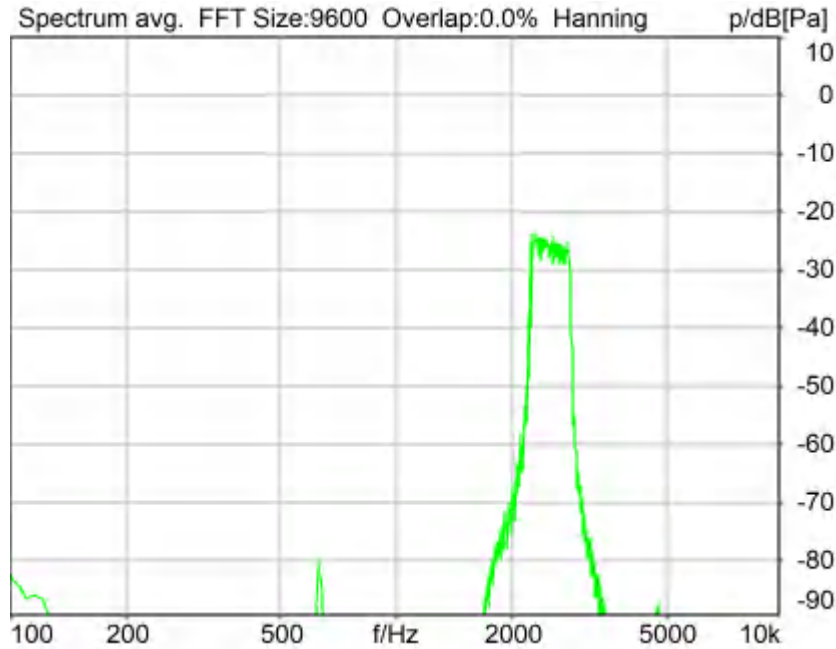
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 31.16 dB (2.77%) Ok

**Ok**

2024/1/20 0:16 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\_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 °
		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: 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.	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 108.6000 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))**

<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))**

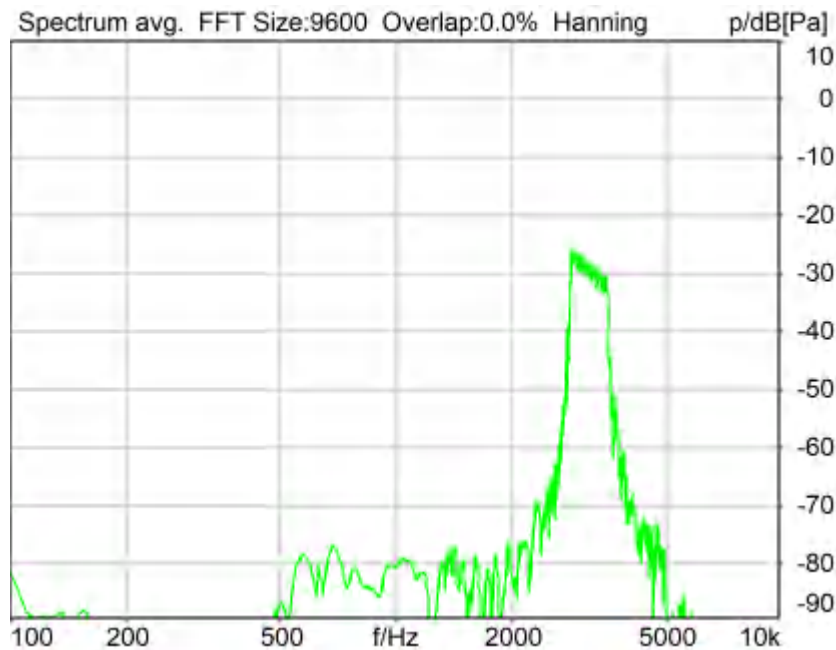
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 3150 Hz WB**

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



Distortion (Noise) RCV (packed): 25.42 dB (5.36%) Ok

**Ok**

2024/1/20 0:16 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\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.9 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
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	2785.0 Hz
Stimulus 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 108.6000 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))**

<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))

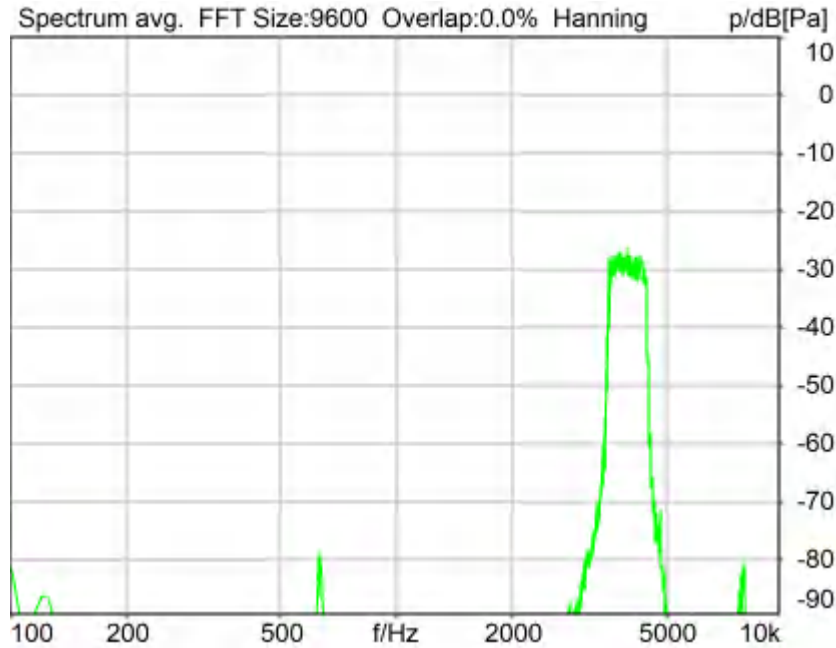
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 32.56 dB (2.35%) 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\_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: 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.	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 108.6000 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))

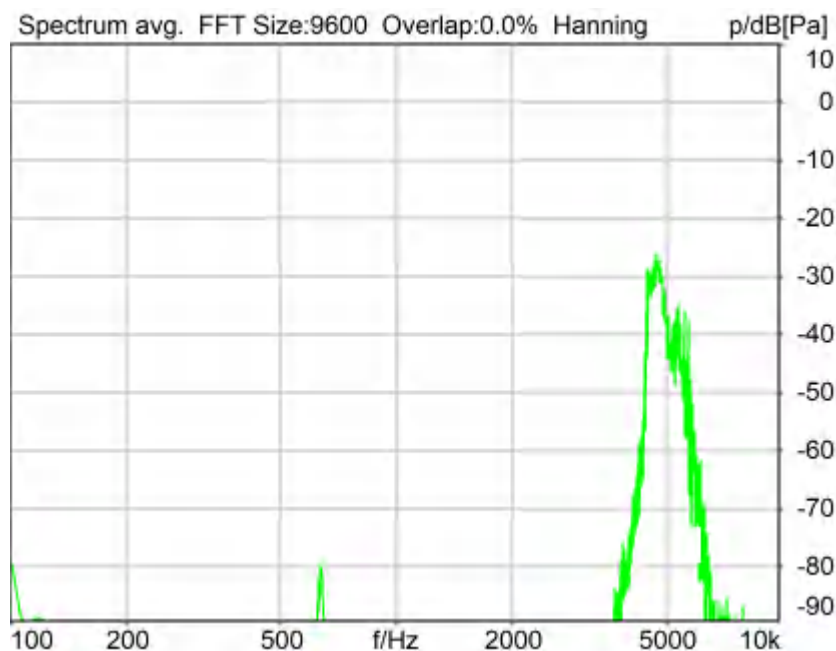
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 8N



Distortion (Noise) RCV (packed): 20.49 dB (9.45%) 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\_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 °
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: 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.	4430.0 Hz
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 108.6000 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))
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 \ Wideband \ 5.2 Receive Distortion and Noise 8N

Region	Frequency	SDNR
1	250Hz	34.87 dB
2	315Hz	34.43 dB
3	400Hz	38.13 dB
4	500Hz	36.09 dB
5	630Hz	31.73 dB
6	800Hz	30.41 dB
7	1000Hz	22.12 dB
8	1250Hz	25.78 dB
9	1600Hz	29.30 dB
10	2000Hz	29.34 dB
11	2500Hz	31.16 dB
12	3150Hz	25.42 dB
13	4000Hz	32.56 dB
14	5000Hz	20.49 dB

All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 20.49dB at 5000Hz.

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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): 35.08 dB (1.76%) 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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 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 108.6000 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))**

<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 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 - 315 Hz WB**

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



Distortion (Noise) RCV (packed): 35.01 dB (1.78%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat**  
Level adj. Ch1 -90.0 dB

**Calibration**

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

**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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
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 108.6000 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 Voltage200V	Supply Voltage	±60V
Channel In 2 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V
Channel In 3 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V
Channel In 4 Settings		
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass
Polarisation Voltage200V	Supply Voltage	±60V

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

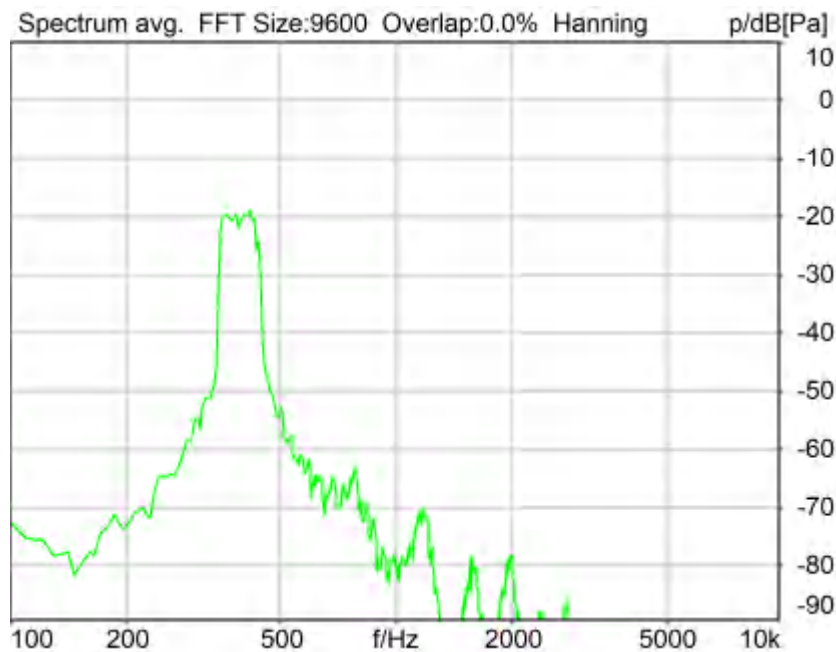
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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 - 400 Hz WB**

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



Distortion (Noise) RCV (packed): 37.21 dB (1.38%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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
-------------	---------	-------------	----

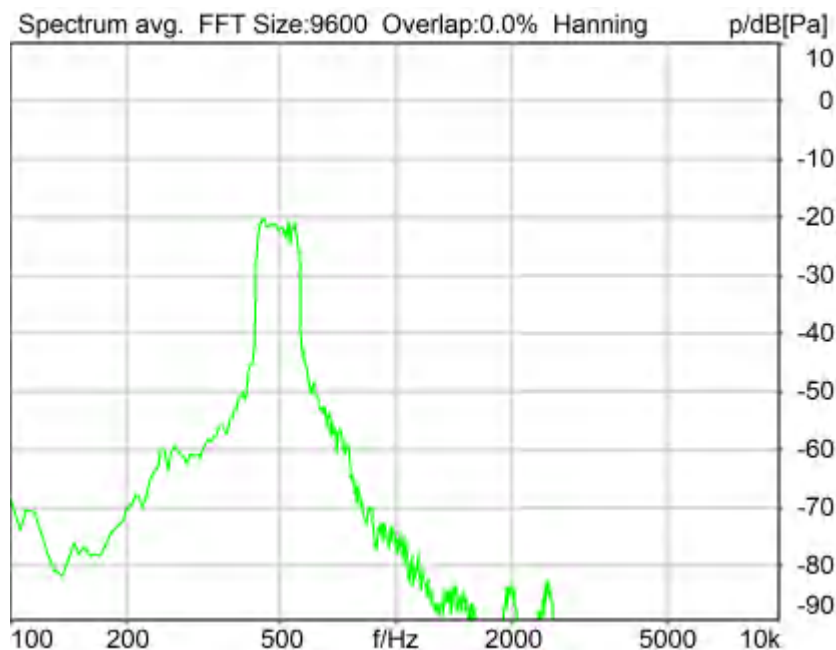
```

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 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 - 500 Hz WB

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



Distortion (Noise) RCV (packed): 31.73 dB (2.59%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	595.0 Hz
Stimulus min.	410.0 Hz	Analysis max.	405.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	600.0 Hz		

**Special Features**

Compensate delay 108.6000 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
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-----  
Artificial Head Settings (HATS 1 (HMS II.3))

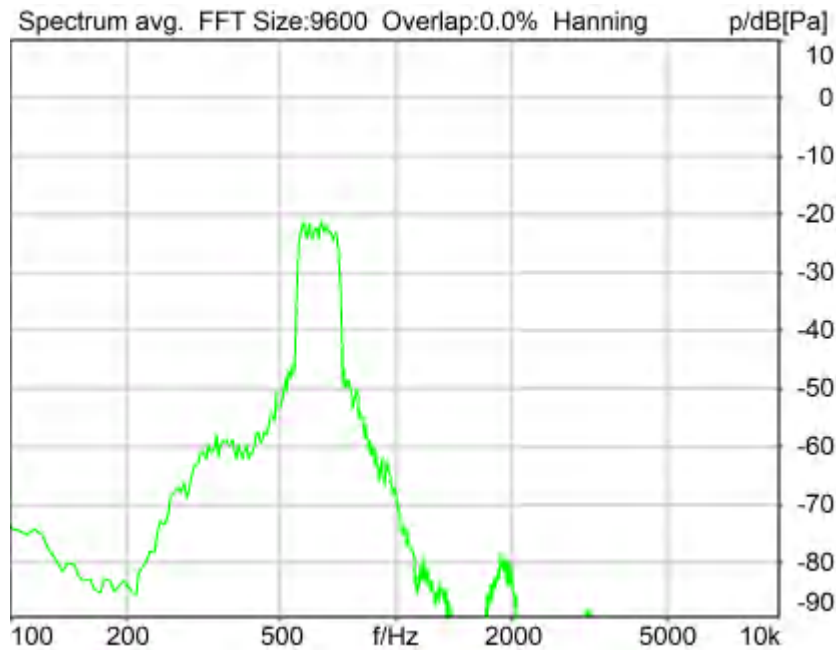
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 630 Hz WB**

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



Distortion (Noise) RCV (packed): 30.65 dB (2.94%) Ok

**Ok**

2024/1/20 17:24 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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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))**

<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))**

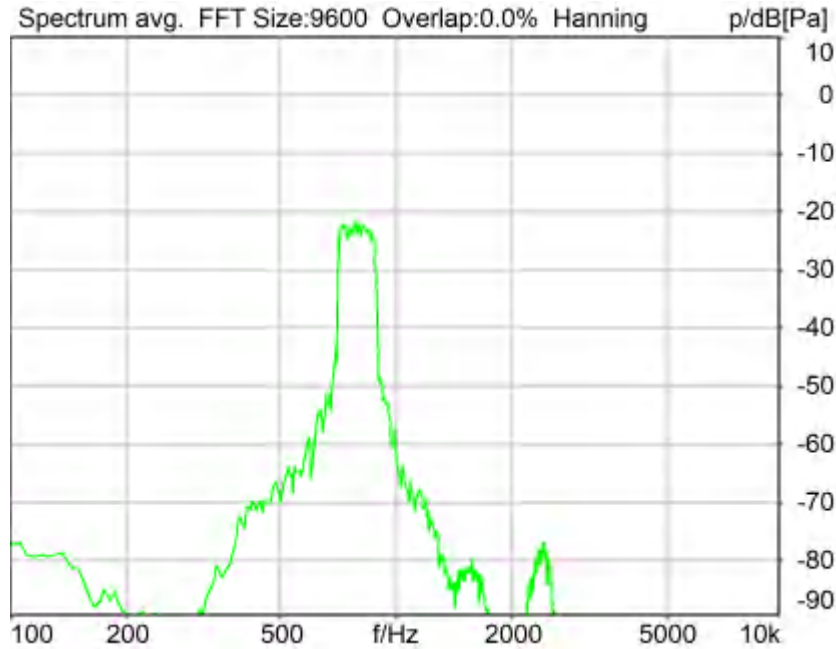
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 800 Hz WB

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



Distortion (Noise) RCV (packed): 33.30 dB (2.16%) 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 °
		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	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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
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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	

**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): 27.88 dB (4.04%) Ok

**Ok**

2024/1/20 17:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

**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	-0.7 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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 108.6000 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))**

<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))

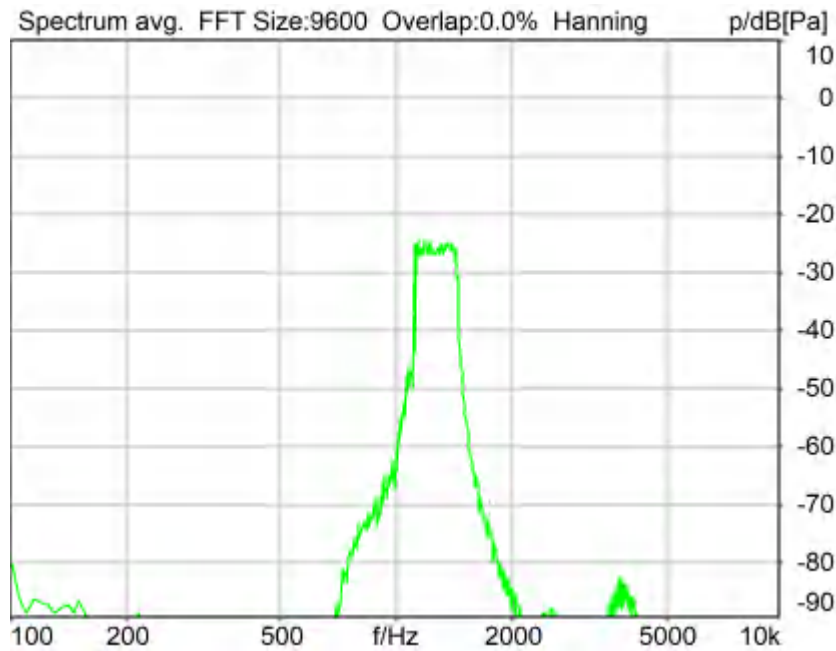
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 26.01 dB (5.00%) 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 108.6000 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))**

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

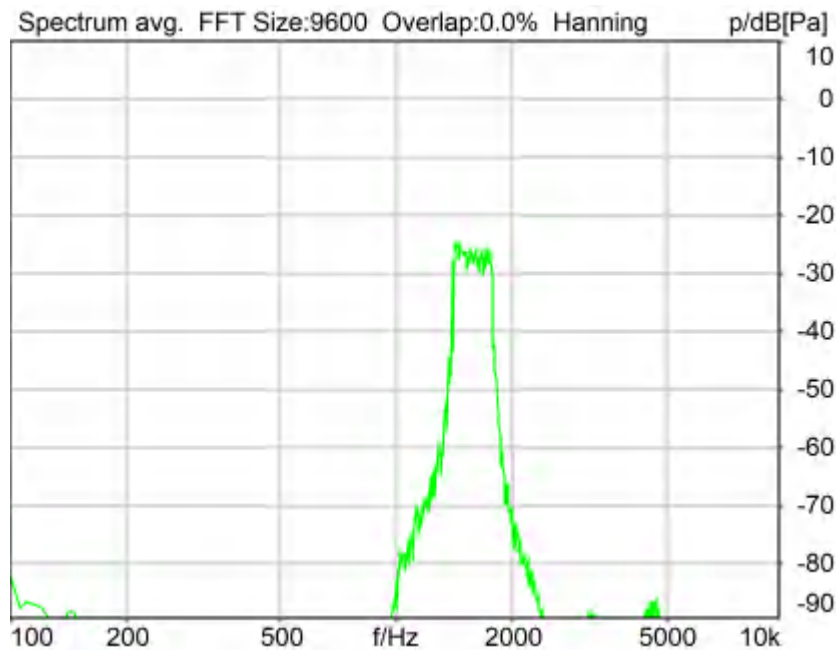
-----  
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 30.25 dB (3.07%) 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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**

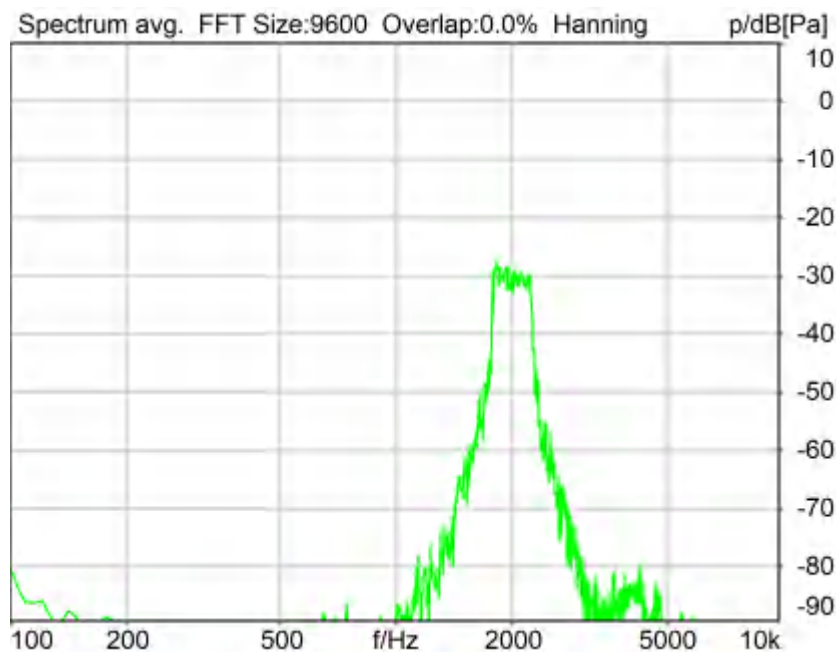
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
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
<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 - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.91 dB (8.03%) Ok



**Ok**

2024/1/20 17:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

**Calibration**

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

**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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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))

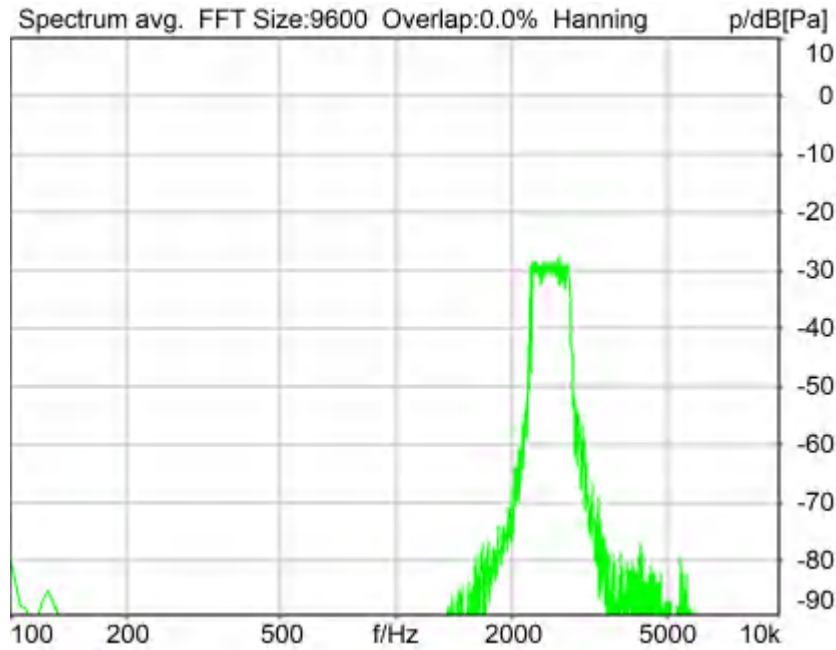
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 27.04 dB (4.45%) Ok

**Ok**

2024/1/20 17:26 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
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 108.6000 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))**

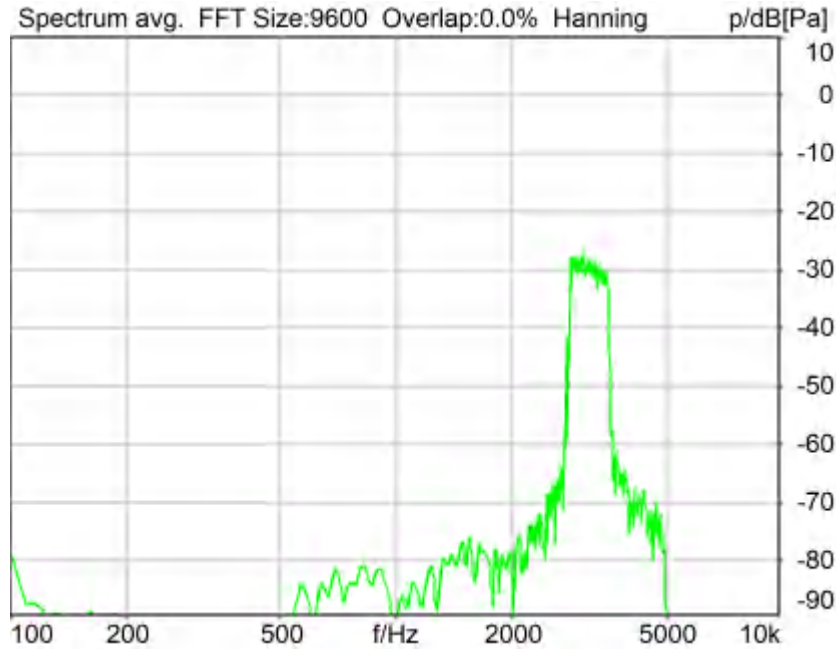
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 29.70 dB (3.27%) Ok

Ok

2024/1/20 17:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

### 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	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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
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 108.6000 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))**

<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))**

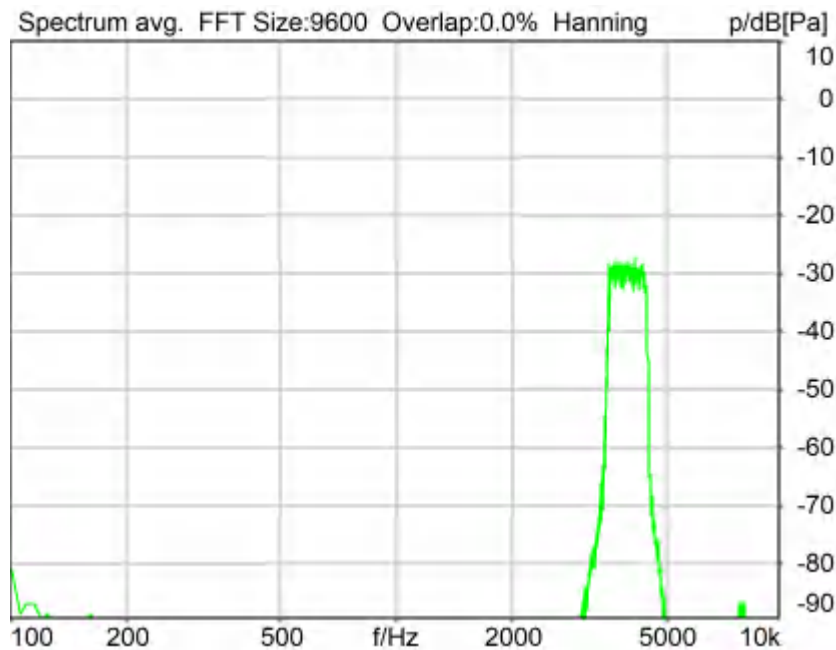
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 4000 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**

2024/1/20 17:27 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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 108.6000 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))**

<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))

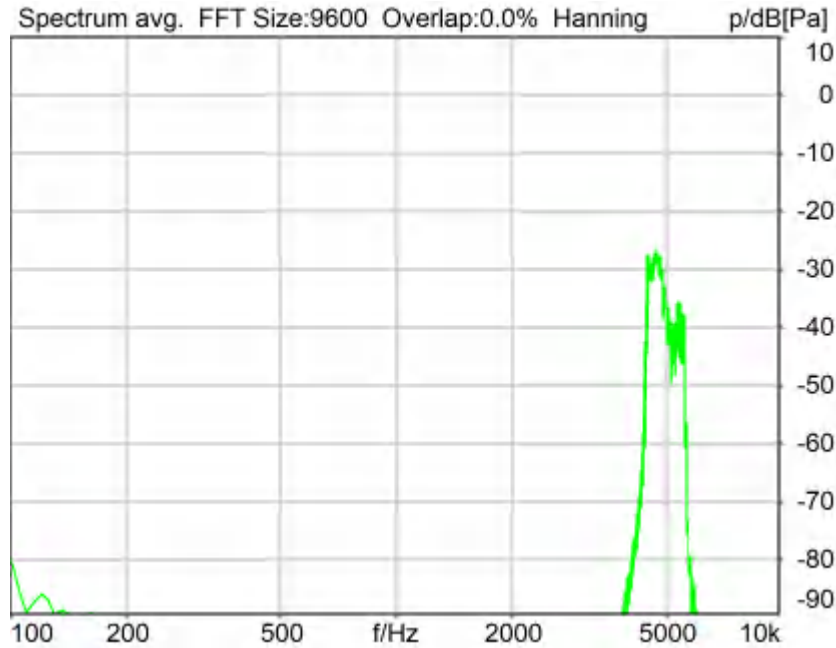
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 33.51 dB (2.11%) Ok

Ok

2024/1/20 17:28 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\_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 °
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	-0.7 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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.	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 108.6000 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))**

Channel In 1 Settings

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

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

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

**HIB Settings**

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

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

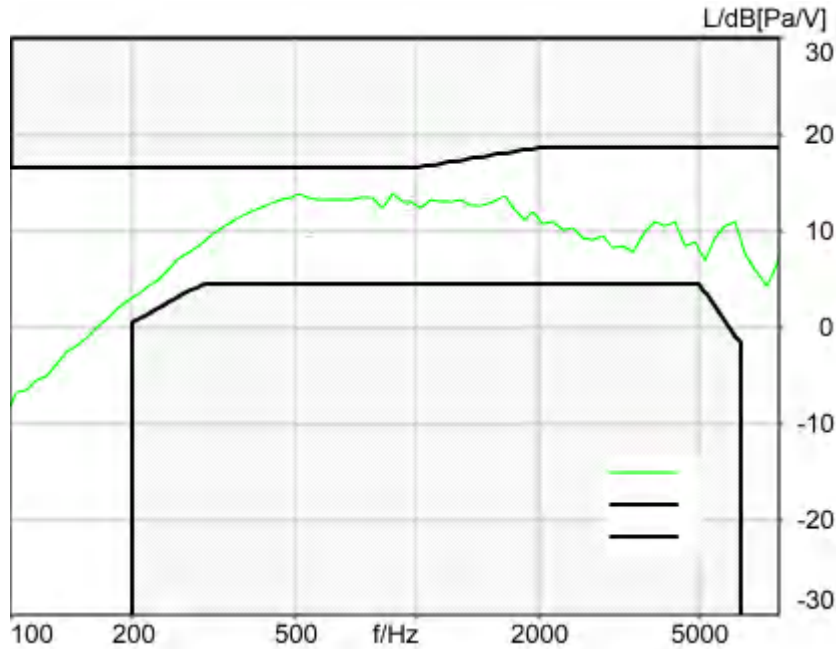
TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	35.08 dB
2	315Hz	35.01 dB
3	400Hz	37.21 dB
4	500Hz	31.73 dB
5	630Hz	30.65 dB
6	800Hz	33.30 dB
7	1000Hz	27.88 dB
8	1250Hz	26.01 dB
9	1600Hz	30.25 dB
10	2000Hz	21.91 dB
11	2500Hz	27.04 dB
12	3150Hz	29.70 dB
13	4000Hz	31.44 dB
14	5000Hz	33.51 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 21.91dB at 2000Hz.

### 5.3 Frequency Response 8N FF

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



Absolute minimal distance  
2.67 dB at 873.9 Hz Ok

**Ok**

2024/1/20 0:18 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	-1.9 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 108.6000 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
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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))

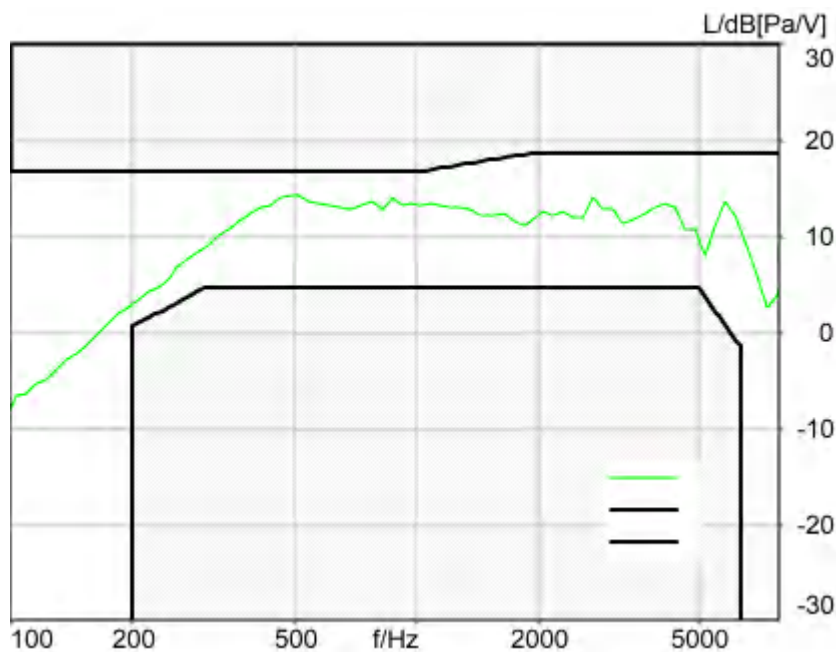
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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	

**5.3 Frequency Response 8N DF**

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



Absolute minimal distance  
2.49 dB at 205.7 Hz Ok

**Ok**

2024/1/20 0:18 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: 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	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_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	Window function.	Hanning
FFT size	4096	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 108.6000 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
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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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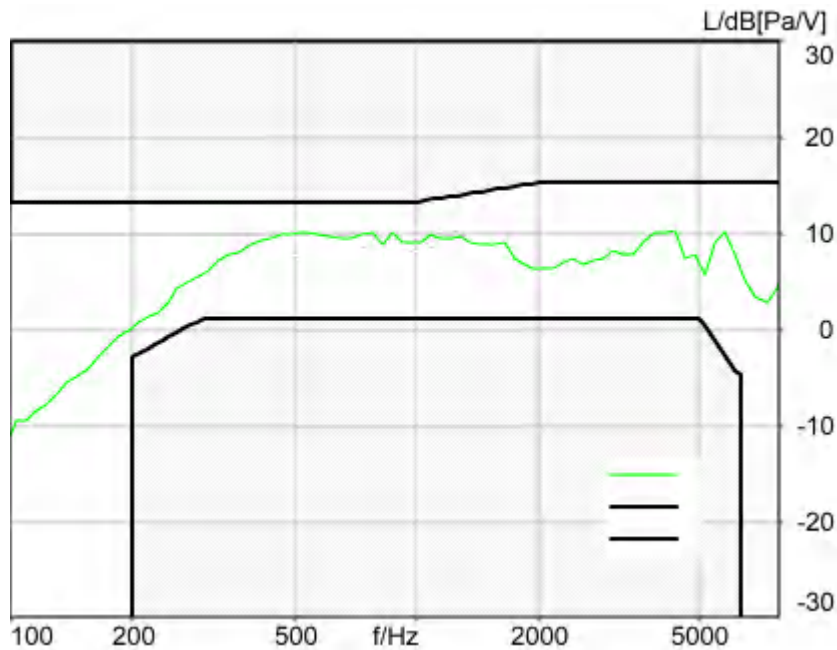
**HIB Settings**

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  
3.10 dB at 873.9 Hz Ok

**Ok**

2024/1/20 17:29 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\_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	-0.7 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.1 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 108.6000 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))

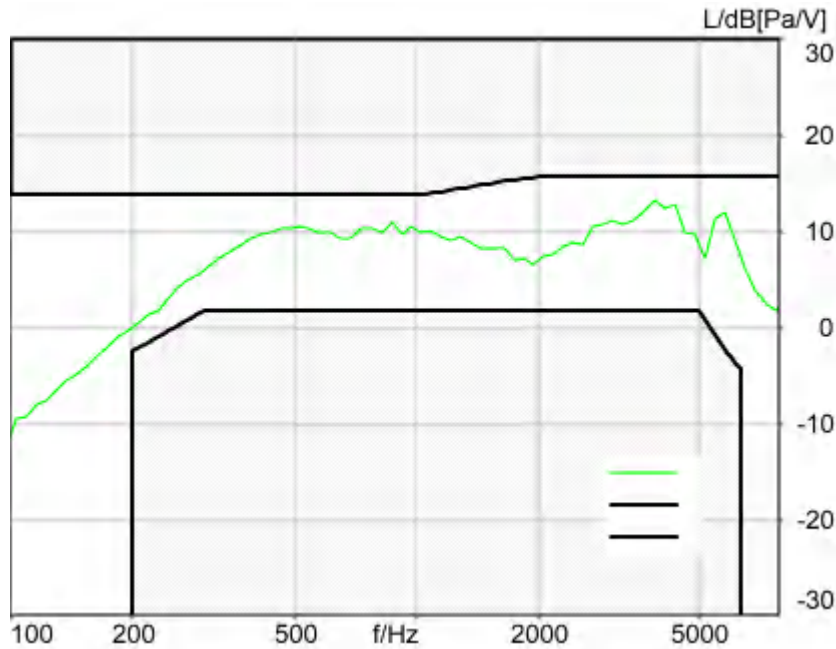
Ser. Nr. 12306613 Pinna Type Type 3.3

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 2N DF

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



Absolute minimal distance  
 2.56 dB at 3882.4 Hz Ok

Ok

2024/1/20 17:30 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

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

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the 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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.7 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.1 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_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	Window function.	Hanning
FFT size	4096	Reference file	r521_rcv_frq_spee269_hawb.fft
Window function.	Hanning	Tol. scheme file	521_rcv_frq_man_hawb.tol
Reference file	r521_rcv_frq_spee269_hawb.fft	Min. freq. for tol.	100.0 Hz
Tol. scheme file	521_rcv_frq_man_hawb.tol	Max. freq. for tol.	8000.0 Hz
Auto adjust	Centrate		

**Special Features**

Compensate delay 108.6000 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

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## **Measurement Protocol**

Measurement Object	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
Description	SN339D

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/5 16:02
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	112.5	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.73	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	13.43	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.81	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.13	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.13	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.66	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.47	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.54	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.48	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.17	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.15	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.53	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	24.54	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.85	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.20	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and	Ok	Distortion (Noise)	33.87	339D LTE Band

Noise - 630 Hz NB		[dB], 0.0 dB		30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.32	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.77	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.70	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.58	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.21	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.99	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.26	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	24.70	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.86	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	3.93	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	3.89	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.47	339D LTE Band 30_10_QPSK_50RB_0_EVS NB 9.6kbps_CH27710

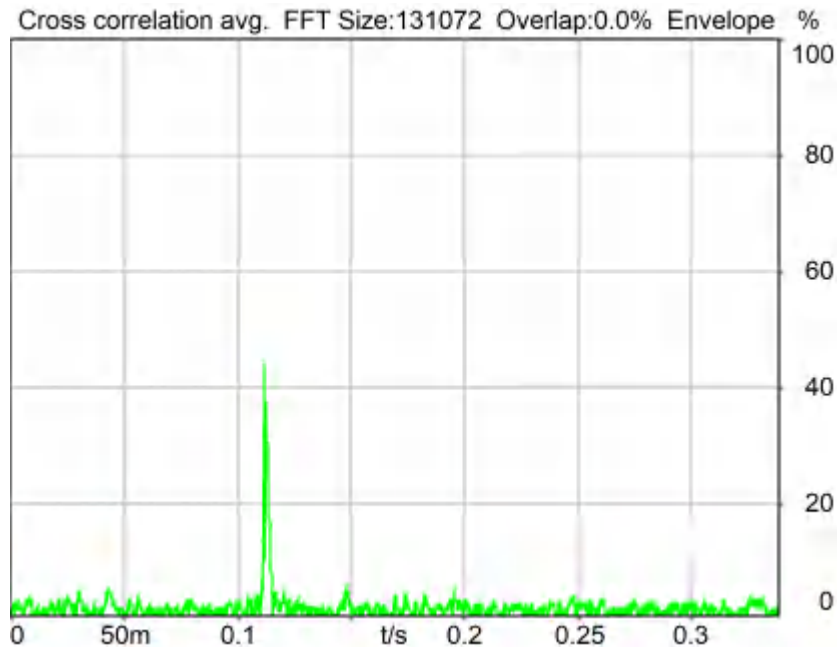


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Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	7
5.1b Receive Volume Control Performance 2N NB	9
5.2 RCV Distortion and Noise - 400 Hz NB	11
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	17
5.2 RCV Distortion and Noise - 1000 Hz NB	20
5.2 RCV Distortion and Noise - 1250 Hz NB	22
5.2 RCV Distortion and Noise - 1600 Hz NB	24
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)	33
5.2 RCV Distortion and Noise - 400 Hz NB	33
5.2 RCV Distortion and Noise - 500 Hz NB	36
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## Overall Receive Delay NB

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



Delay (Cross): 112.5 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	-3.4 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**

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
-------------	---------	-------------	---------

**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))**

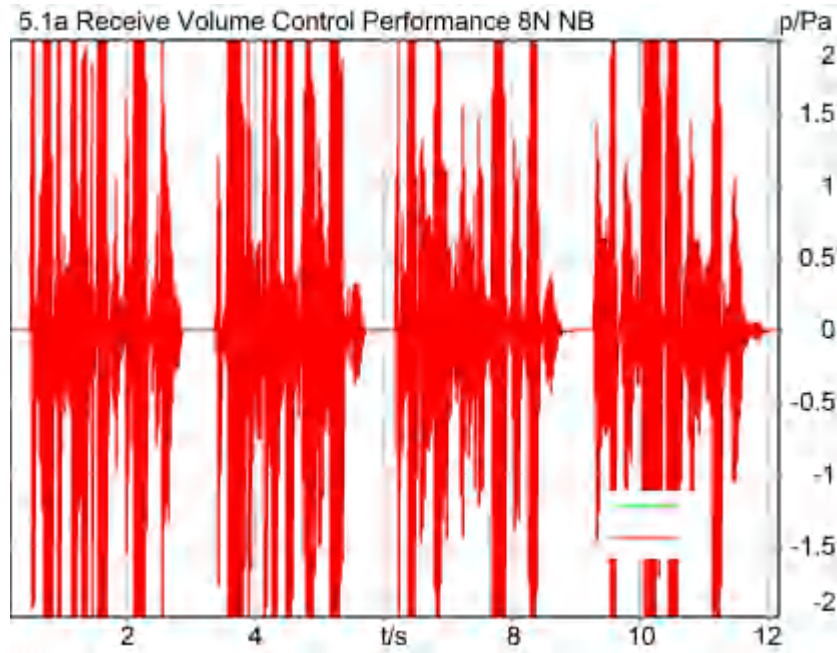
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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

## 5.1a Receive Volume Control Performance 8N NB

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



### Correction

X - 70

Speech Level RCV: 88.73 dB[SPL], Act.: 81.56%

Corrected Speech Level: 18.73 dB[SPL] Ok

### Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

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

**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	-3.5 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	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
	15.90 dB		

**Special Features**

Show source signal Source ch.2  
 Compensate delay 112.5000 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))

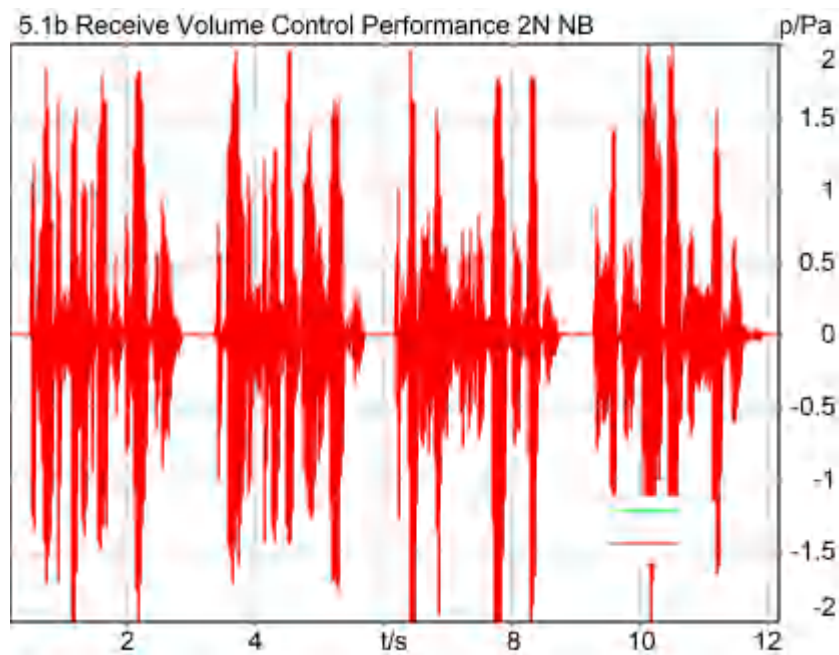
Ser. Nr. 12306613 Pinna Type Type 3.3

**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

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

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



**Correction**

X - 70

Speech Level RCV: 83.43 dB[SPL], Act.: 80.41%

Corrected Speech Level: 13.43 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))

**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	-0.1 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	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
 Compensate delay 112.5000 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))

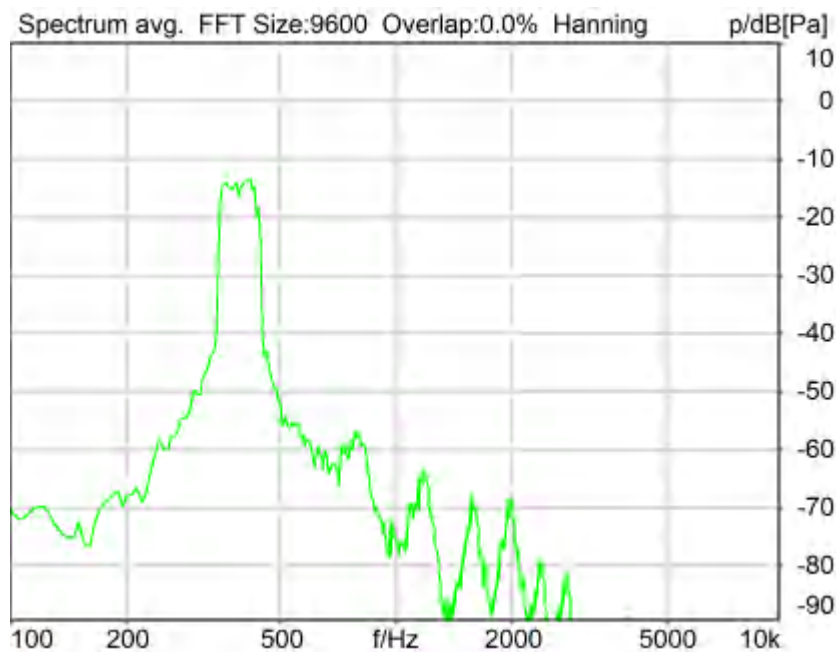
Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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

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

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



Distortion (Noise) RCV (packed): 37.81 dB (1.29%) 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	-3.4 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.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

### Special Features

Compensate delay 112.5000 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	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation	200V	Supply Voltage	±60V

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

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

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

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 35.13 dB (1.75%) 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	-3.4 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		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.5000 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))

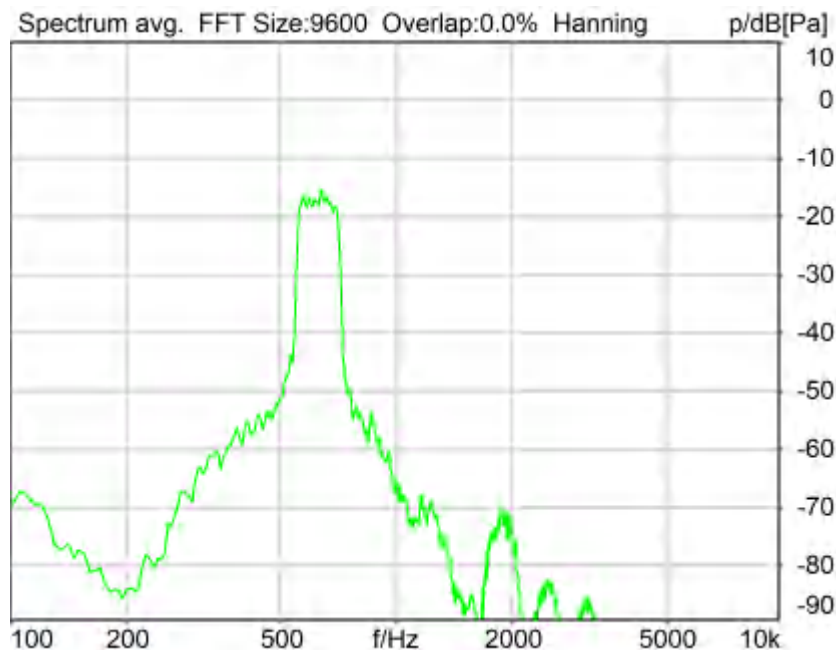
Ser. Nr.            12306613                      Pinna Type        Type 3.3

**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): 35.13 dB (1.75%) 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	-3.4 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
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 112.5000 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
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-----  
 Artificial Head Settings (HATS 1 (HMS II.3))

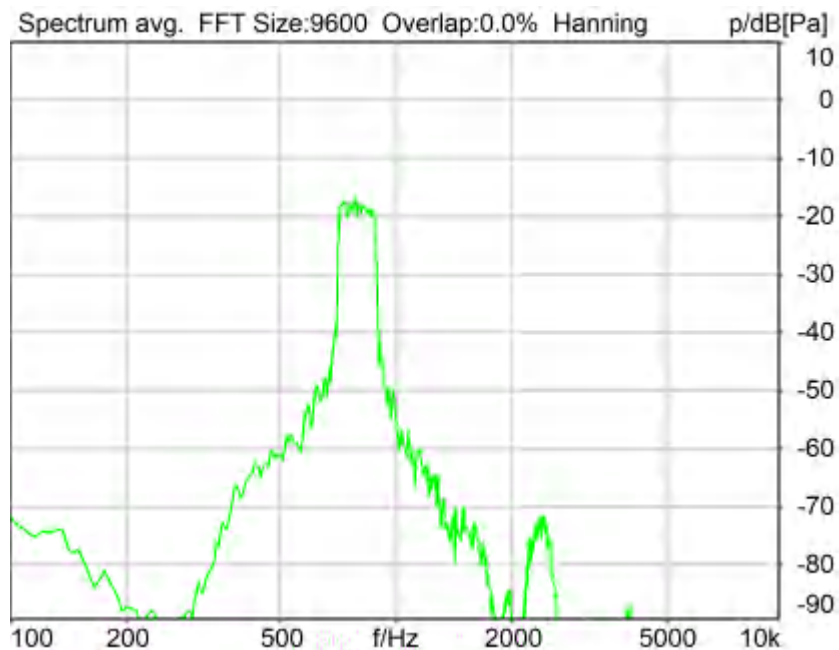
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 800 Hz NB

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



Distortion (Noise) RCV (packed): 32.66 dB (2.33%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

**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	-3.4 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
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 112.5000 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
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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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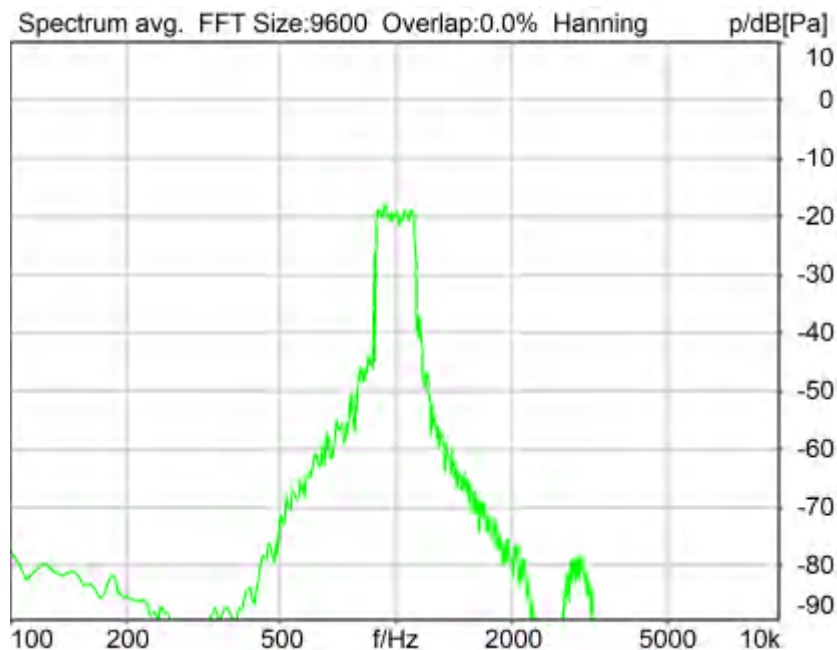
**HIB Settings**

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 - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 28.47 dB (3.77%) 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\_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 °  
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	-3.4 mm	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
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 112.5000 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))**

<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))**

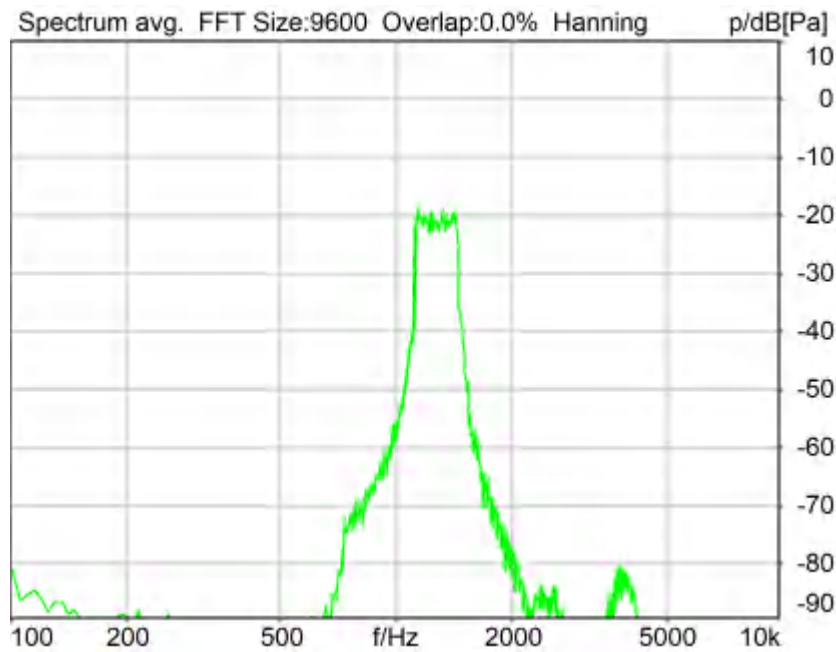
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 1250 Hz NB**

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



Distortion (Noise) RCV (packed): 24.54 dB (5.93%) 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\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.4 mm	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_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.5000 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
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**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

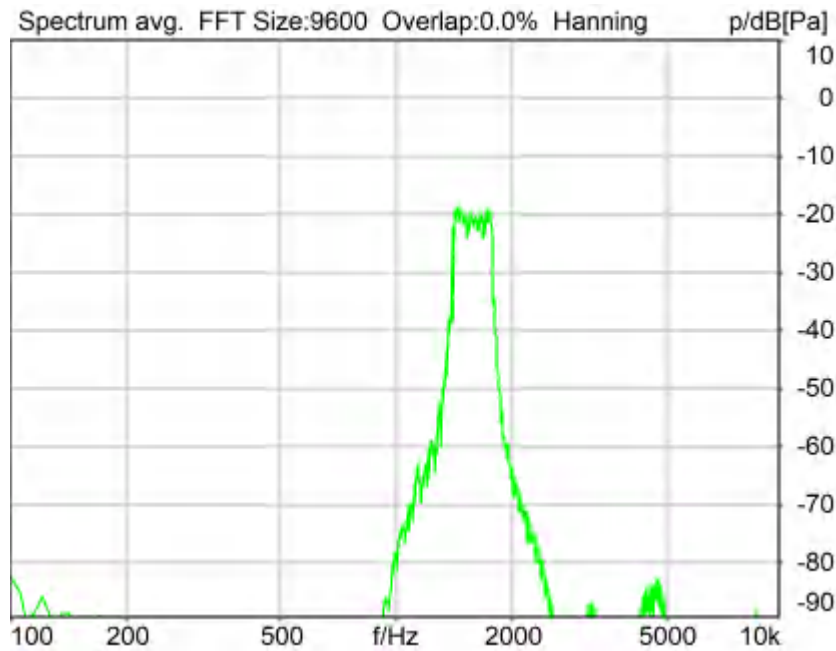
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

## 5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 29.48 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\_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	-3.4 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.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

#### Special Features

Compensate delay 112.5000 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  
 -----

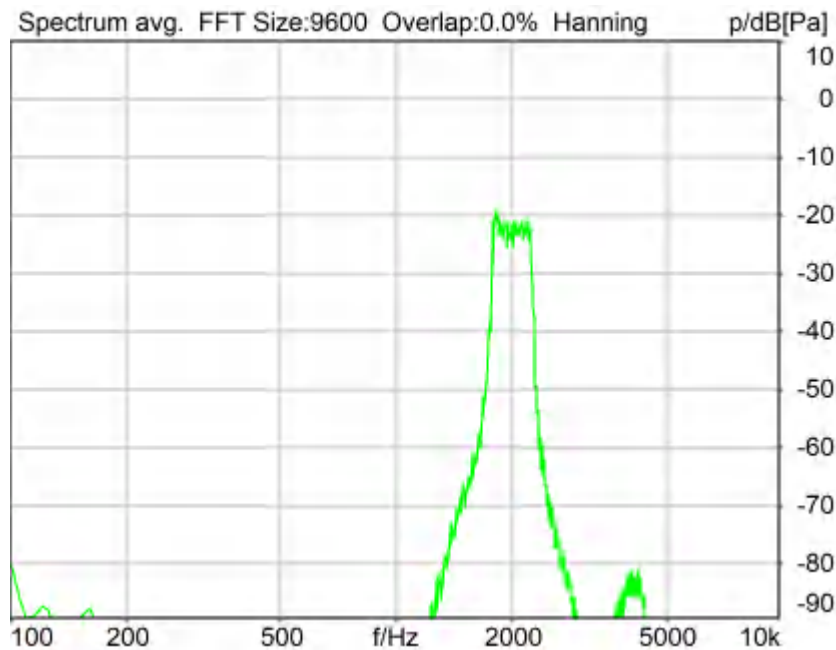
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 29.17 dB (3.48%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

**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	-3.4 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.	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 112.5000 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 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))

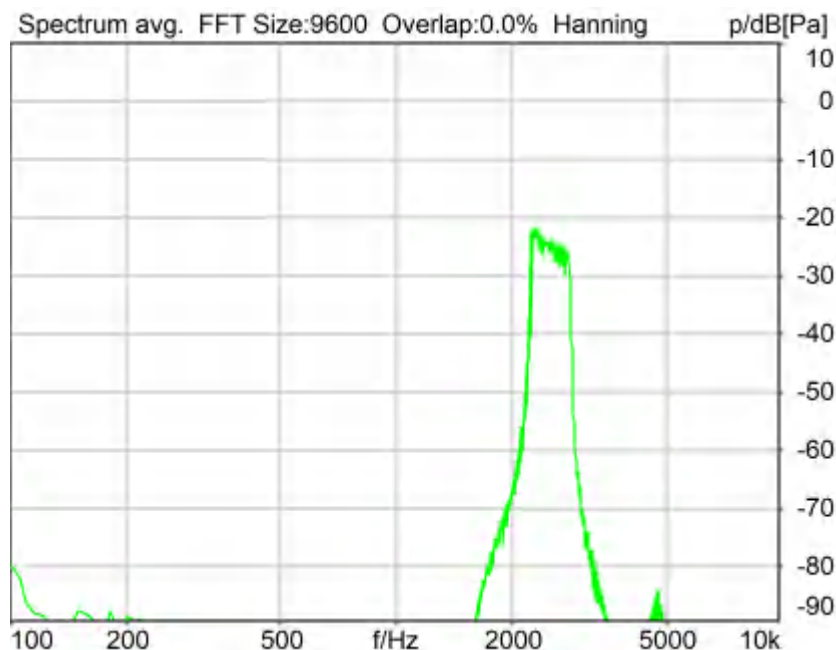
Ser. Nr.            12306613                      Pinna Type        Type 3.3

**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 - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 30.15 dB (3.11%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-3.4 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.	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 112.5000 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))

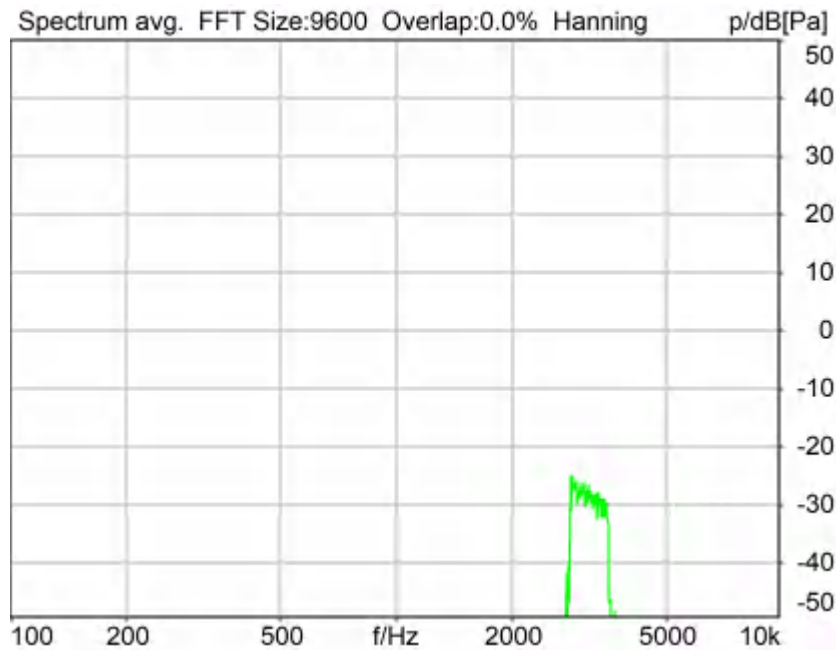
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 26.53 dB (4.71%) 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\_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	-3.4 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 112.5000 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))**

<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 \ Narrowband \ 5.2 Receive Distortion and Noise 8N

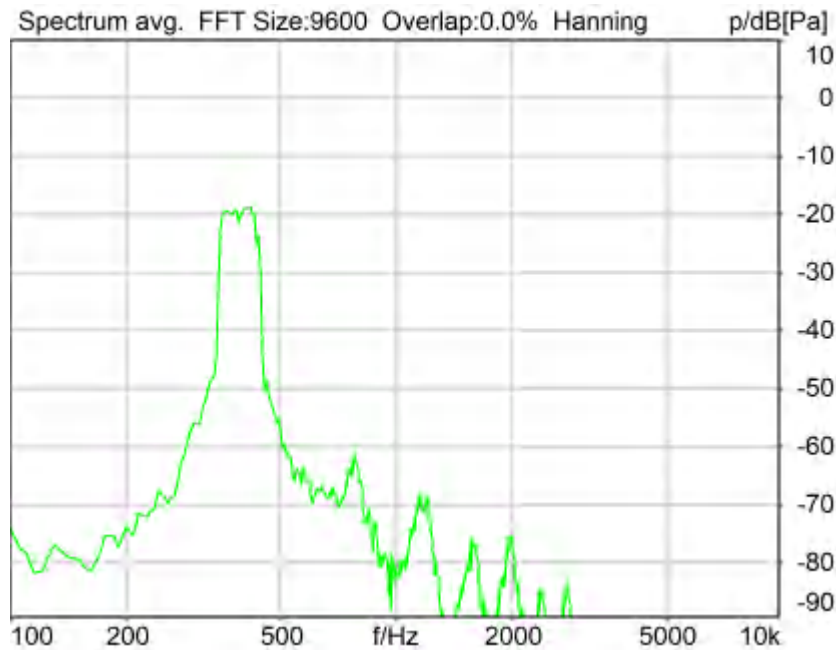
<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	37.81 dB
2	500Hz	35.13 dB
3	630Hz	35.13 dB
4	800Hz	32.66 dB
5	1000Hz	28.47 dB
6	1250Hz	24.54 dB
7	1600Hz	29.48 dB
8	2000Hz	29.17 dB
9	2500Hz	30.15 dB
10	3150Hz	26.53 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 24.54dB 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): 38.85 dB (1.14%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	0.1 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.	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 112.5000 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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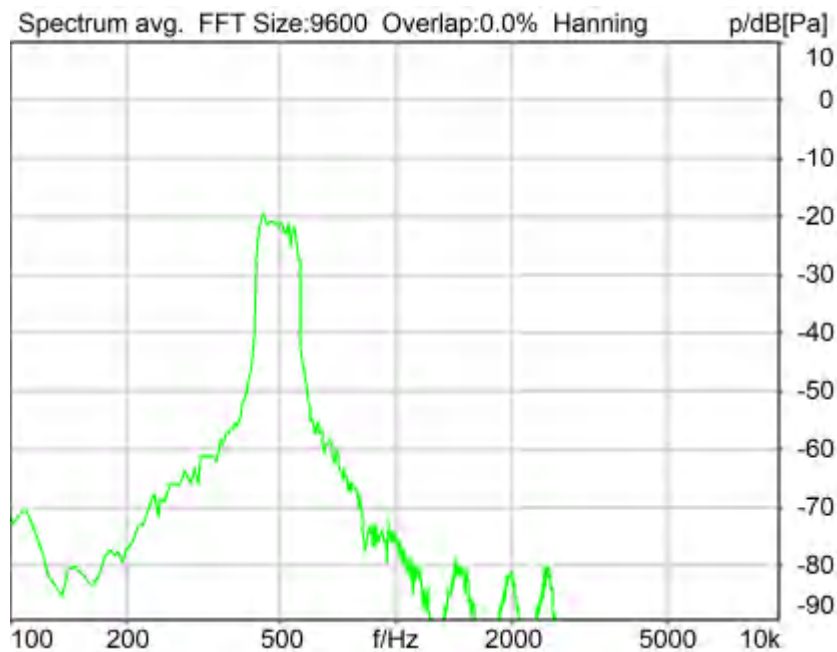
**HIB Settings**

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): 36.20 dB (1.55%) 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 °
		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	0.1 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.	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 112.5000 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))**

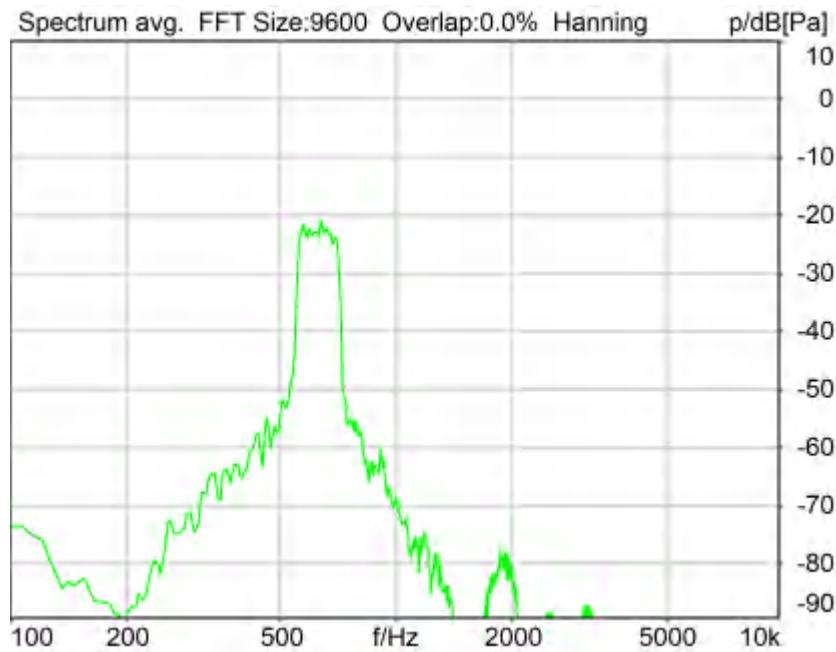
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 33.87 dB (2.03%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.1 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.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.5000 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 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))

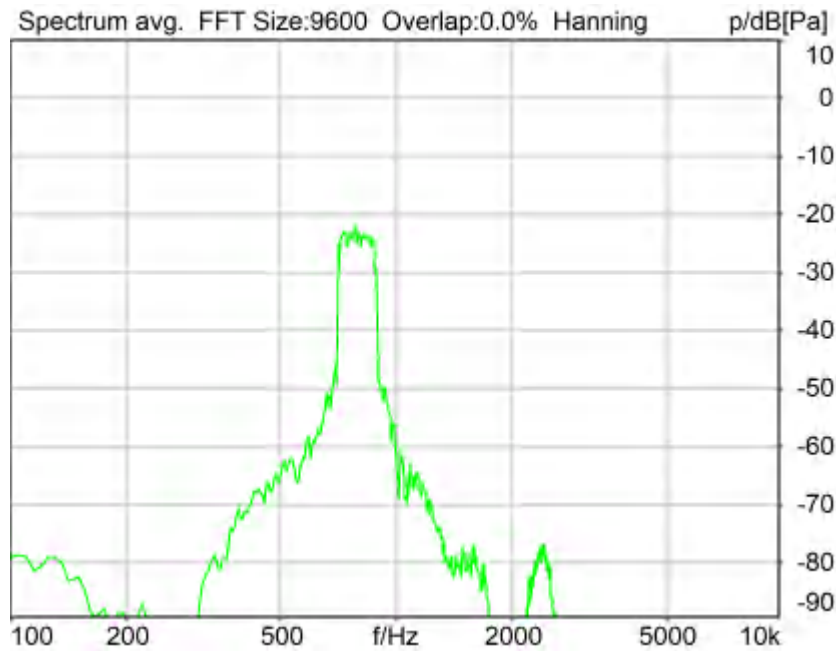
Ser. Nr. 12306613 Pinna Type Type 3.3

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 - 800 Hz NB

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



Distortion (Noise) RCV (packed): 31.32 dB (2.72%) 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	0.1 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 112.5000 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

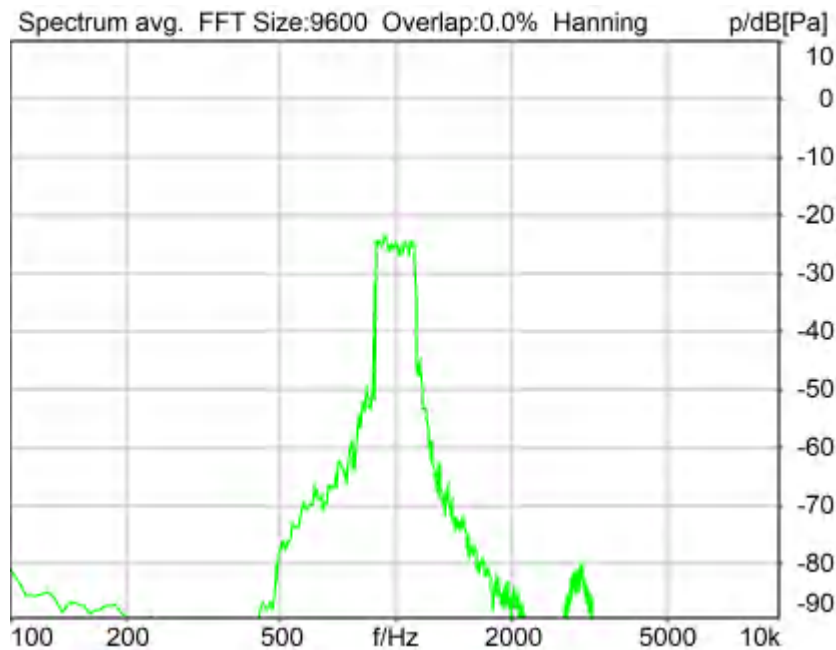
-----  
 Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**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): 29.77 dB (3.25%) Ok

**Ok**

2024/1/20 18:38 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	0.1 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 112.5000 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))

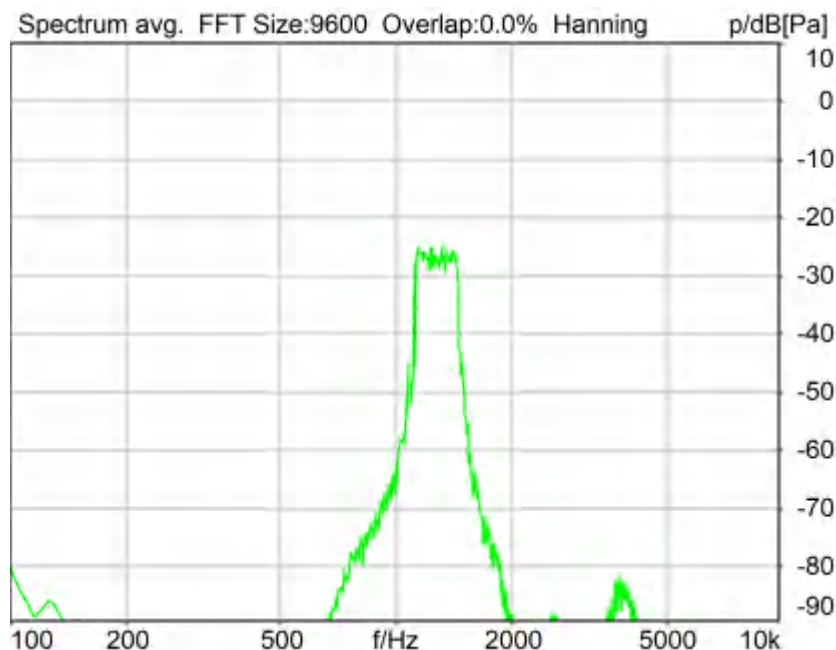
Ser. Nr.              12306613                      Pinna Type          Type 3.3

**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 2N



Distortion (Noise) RCV (packed): 24.70 dB (5.82%) Ok

**Ok**

2024/1/20 18:38 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	0.1 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 112.5000 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))

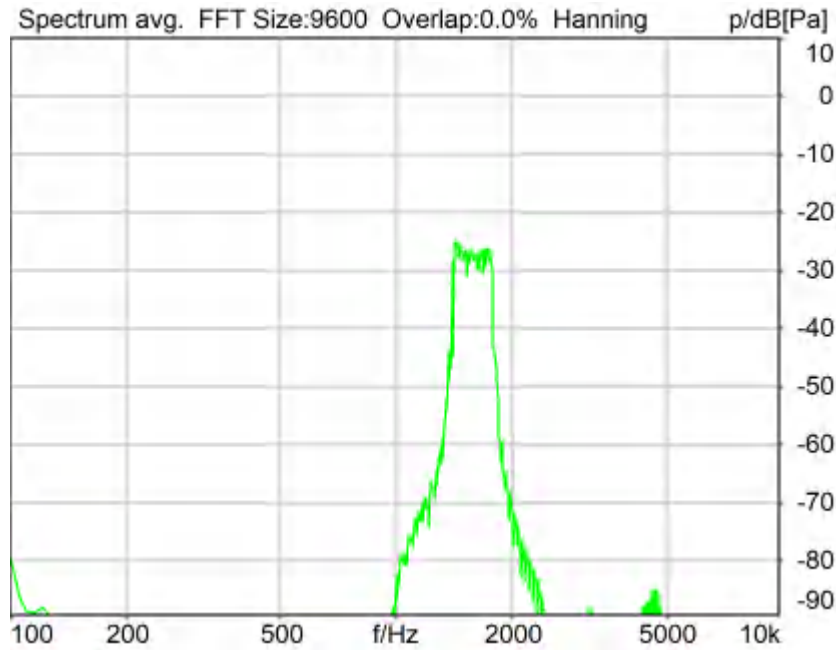
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 29.58 dB (3.32%) Ok

**Ok**

2024/1/20 18:38 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	0.1 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.	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 112.5000 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))**

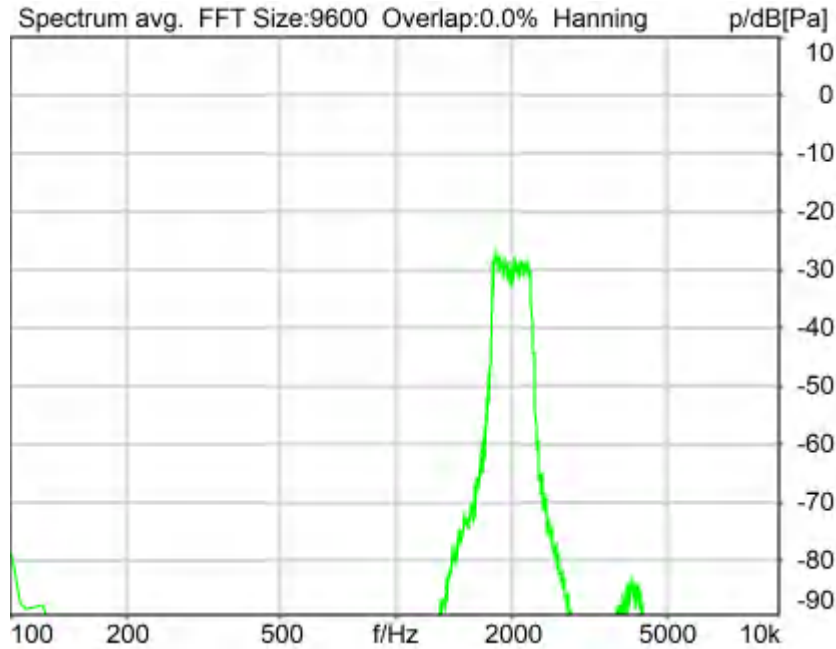
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 29.21 dB (3.46%) Ok

Ok

2024/1/20 18:39 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\_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	0.1 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.	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 112.5000 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))**

<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))**

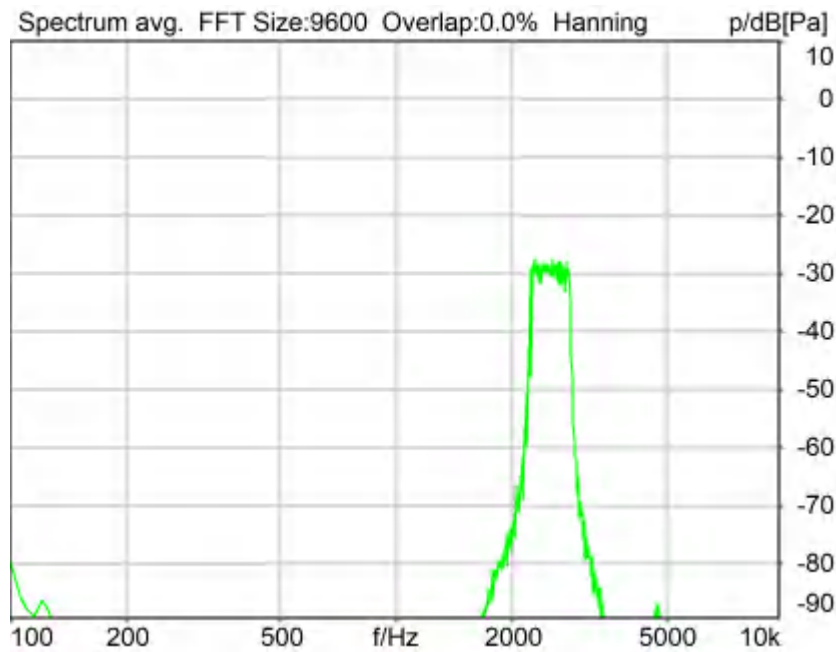
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 2500 Hz NB**

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



Distortion (Noise) RCV (packed): 29.99 dB (3.16%) Ok

**Ok**

2024/1/20 18:39 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	0.1 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.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 112.5000 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))

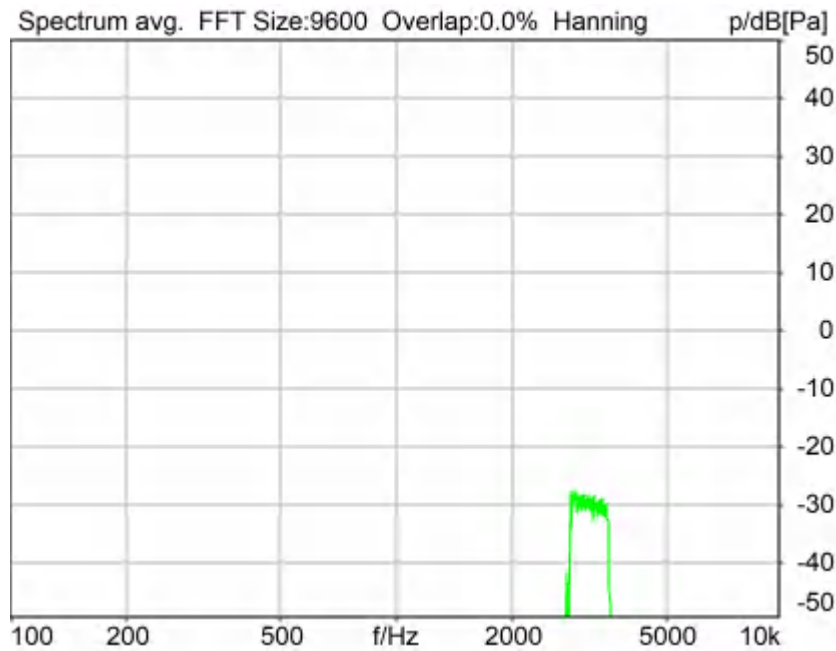
Ser. Nr. 12306613 Pinna Type Type 3.3

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 2N



Distortion (Noise) RCV (packed): 31.26 dB (2.74%) Ok

Ok

2024/1/20 18:40 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	0.1 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.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

### Special Features

Compensate delay 112.5000 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

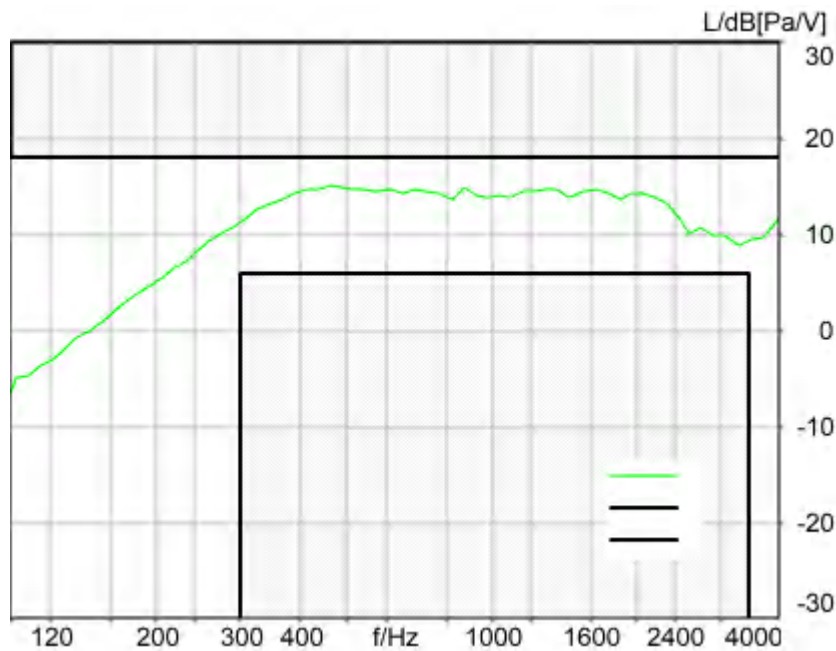
Region	Frequency	SDNR
1	400Hz	38.85 dB
2	500Hz	36.20 dB
3	630Hz	33.87 dB
4	800Hz	31.32 dB
5	1000Hz	29.77 dB
6	1250Hz	24.70 dB
7	1600Hz	29.58 dB
8	2000Hz	29.21 dB
9	2500Hz	29.99 dB
10	3150Hz	31.26 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 24.70dB at 1250Hz.

2024/1/20 18:40 ACQUA

**5.3 Frequency Response 8N FF HANB**

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



Absolute minimal distance  
 2.86 dB at 3245.6 Hz Ok

**Ok**

2024/1/20 18:16 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	-3.4 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 112.5000 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

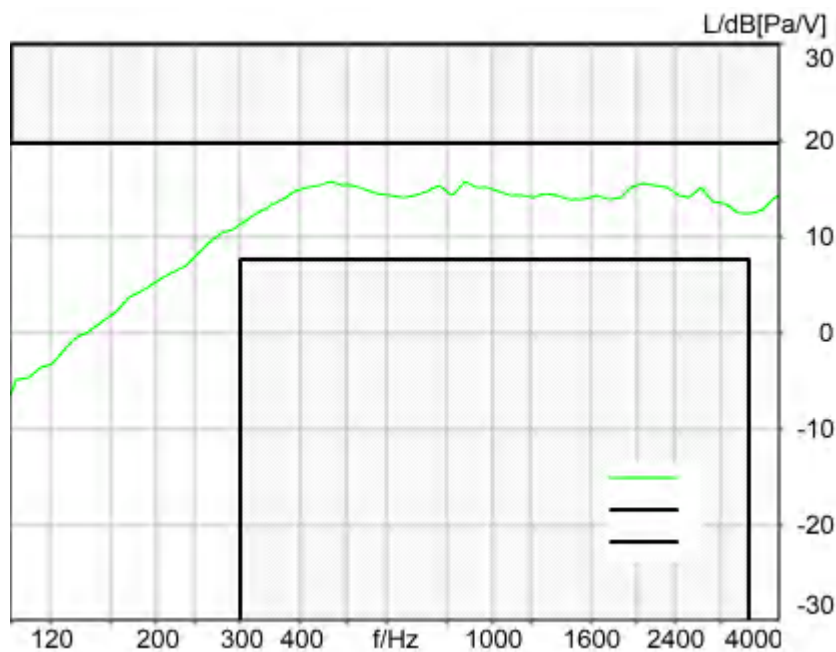
Pinna Type        Type 3.3

**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

3.93 dB at 873.9 Hz Ok

**Ok**

2024/1/20 18:16 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	-3.4 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_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 112.5000 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))

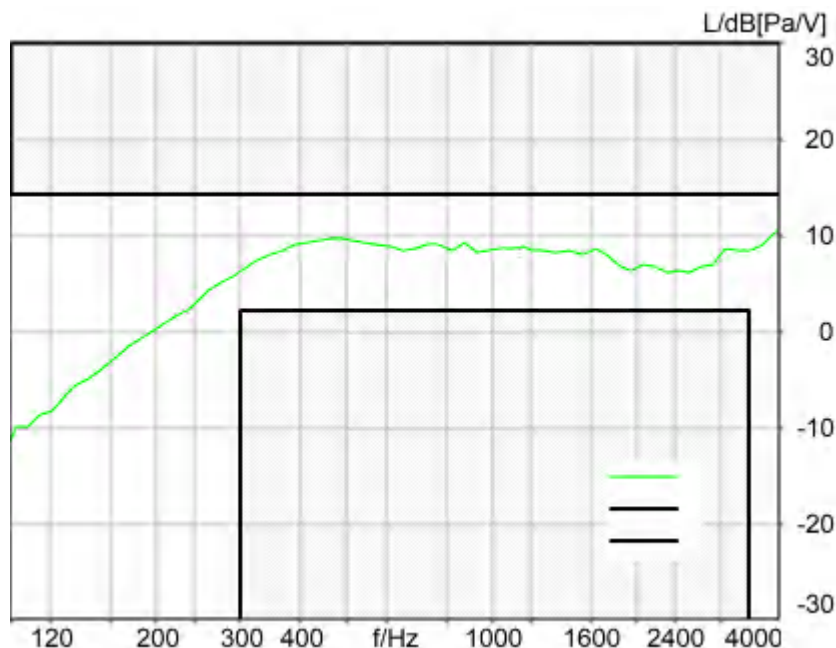
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
3.89 dB at 3882.4 Hz Ok

**Ok**

2024/1/20 18:40 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

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

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

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

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

Pause 0.5 s +

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

Pause till end of file

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the 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	0.1 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

Use FIR Filter Ch2

DRP/ERP Ch.1: Off

Range length 11500.00 ms

FIR filter drp2ff\_ieee1652

DRP/ERP Ch.2: Off

Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 112.5000 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))**

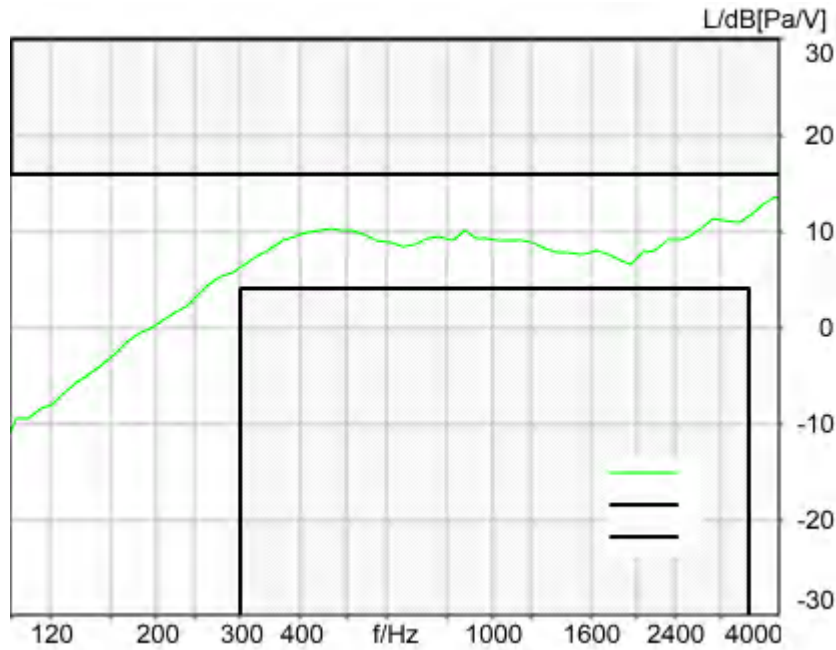
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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  
 2.47 dB at 3882.4 Hz Ok

**Ok**

2024/1/20 18:41 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	0.1 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 112.5000 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