

## **Measurement Protocol**

Measurement Object	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/6 10:34
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	203.4	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.35	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	13.07	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.11	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.02	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.24	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.07	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.79	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.08	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.94	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.34	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.84	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.79	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	26.08	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.14	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.34	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	34.73	WIFI 5G_802.11an-HT 40

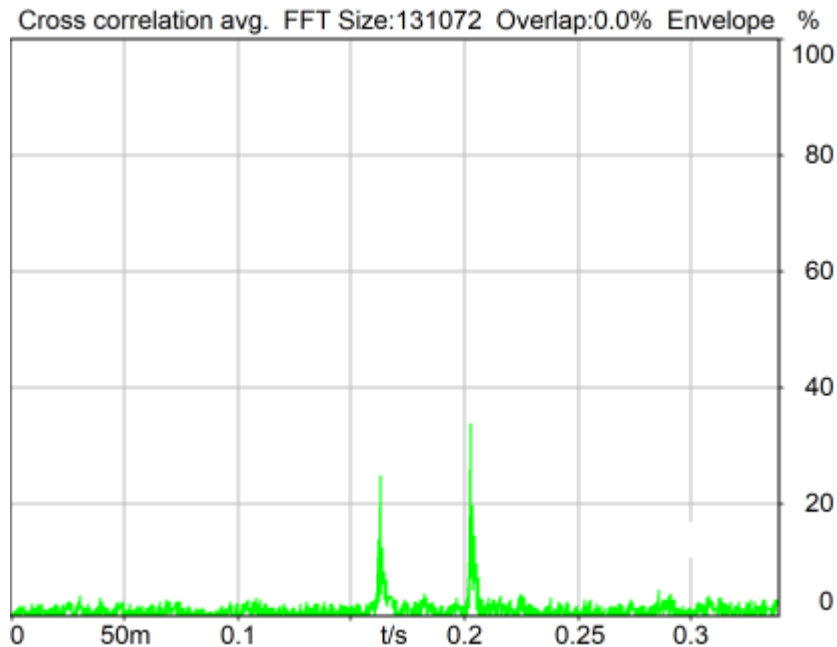
- 630 Hz NB		0.0 dB		MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.69	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.65	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.38	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	41.20	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	42.14	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	44.16	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	42.21	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 400Hz)	30.14	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	0.19	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.3 Frequency Response 8N DF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 649.1 Hz	-0.78	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.22	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38
5.3 Frequency Response 2N DF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 689.1 Hz	-0.29	WIFI 5G_802.11an-HT 40 MCS0_EVS NB 24.4kbps_CH38

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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	19
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)	32
5.2 RCV Distortion and Noise - 400 Hz NB	33
5.2 RCV Distortion and Noise - 500 Hz NB	35
5.2 RCV Distortion and Noise - 630 Hz NB	37
5.2 RCV Distortion and Noise - 800 Hz NB	39
5.2 RCV Distortion and Noise - 1000 Hz NB	41
5.2 RCV Distortion and Noise - 1250 Hz NB	44
5.2 RCV Distortion and Noise - 1600 Hz NB	46
5.2 RCV Distortion and Noise - 2000 Hz NB	48
5.2 RCV Distortion and Noise - 2500 Hz NB	50
5.2 RCV Distortion and Noise - 3150 Hz NB	52
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5.3 Frequency Response 8N FF HANB	55
5.3 Frequency Response 8N DF HANB	57
5.3 Frequency Response 2N FF HANB	59
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## Overall Receive Delay NB

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



Delay (Cross): 203.4 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

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

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

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

Output ch.1: 0.00 dB

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

Show source signal Source ch.2 Store to variable D\_RCV\_NB

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

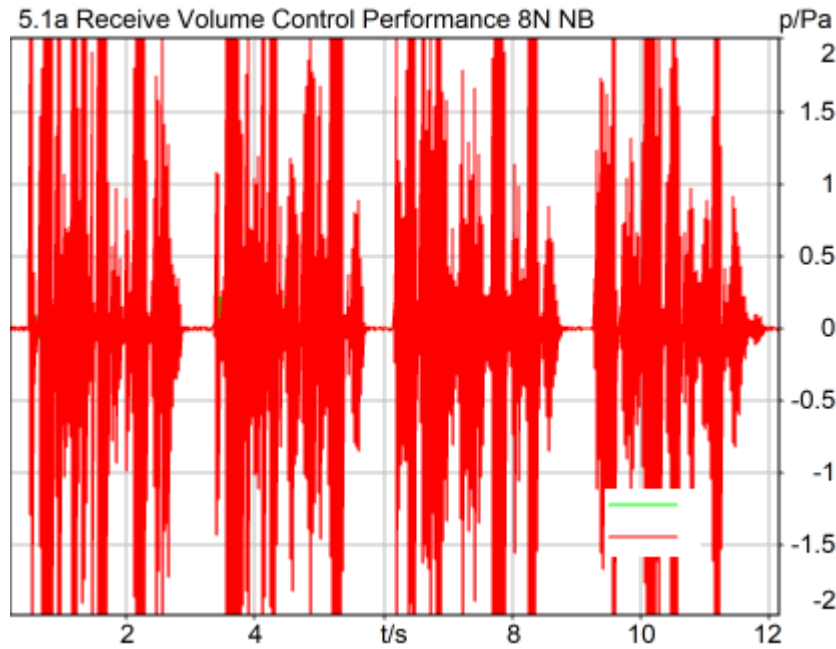
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.1a Receive Volume Control Performance 8N NB

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



### Correction

X - 70

Speech Level RCV: 87.35 dB[SPL], Act.: 85.09%

Corrected Speech Level: 17.35 dB[SPL] Not Ok

### Not Ok

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### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Calibration**

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 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 203.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

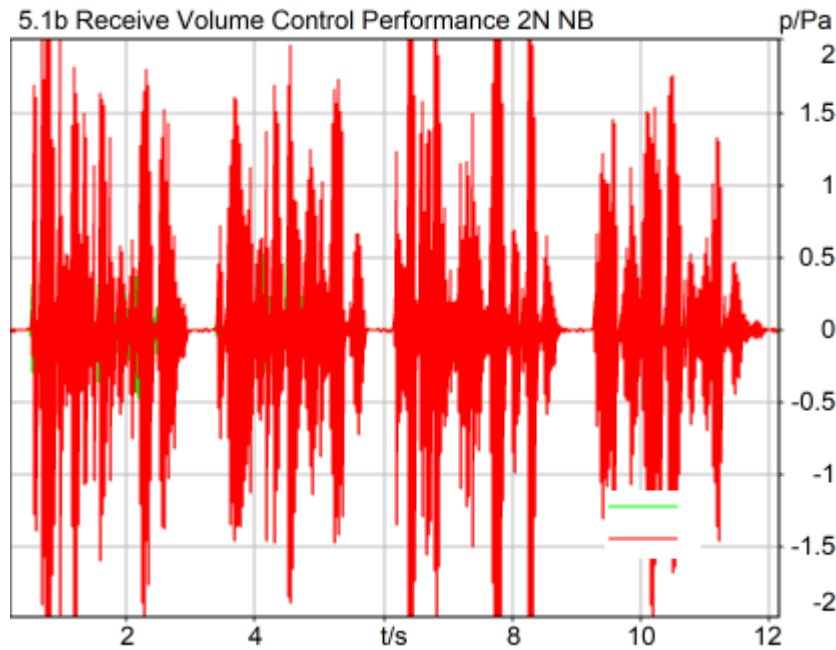
Ser. Nr. 12306613 Pinna Type Type 3.3

**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: 83.07 dB[SPL], Act.: 85.05%

Corrected Speech Level: 13.07 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	0.3 mm	Delta B	0.0 °

Ear Type 3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	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 159.0000 ms (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 Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

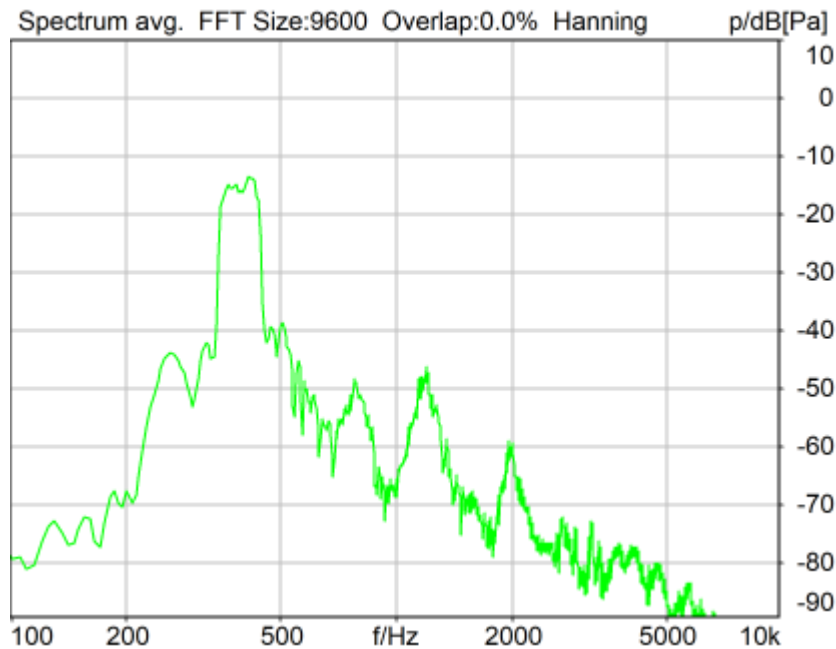
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

## 5.2 RCV Distortion and Noise - 400 Hz NB

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Distortion (Noise) RCV (packed): 27.11 dB (4.41%) 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	-3.6 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.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_400Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	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))

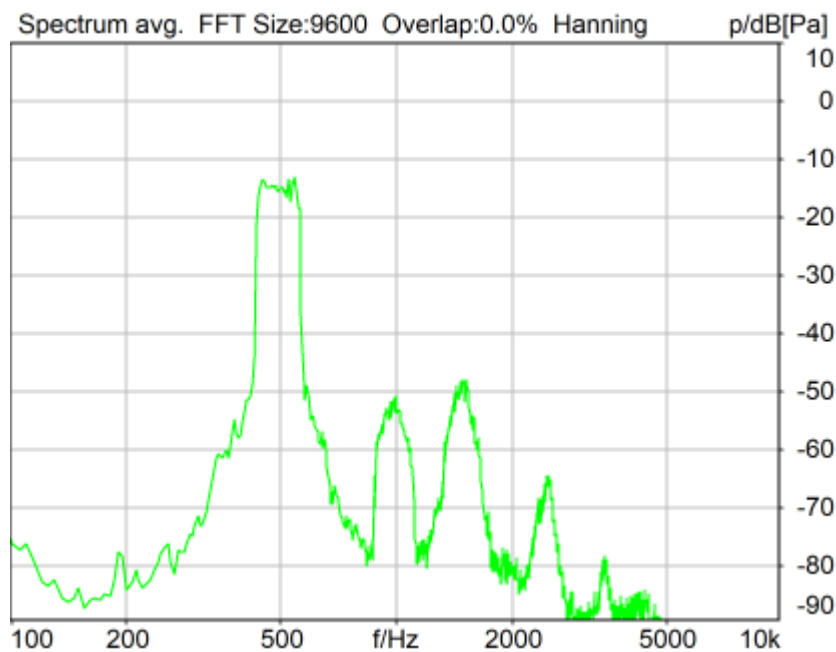
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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

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Distortion (Noise) RCV (packed): 31.02 dB (2.81%) 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	-3.6 mm	Delta B	0.0 °

Ear Type 3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode                      Bypass

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

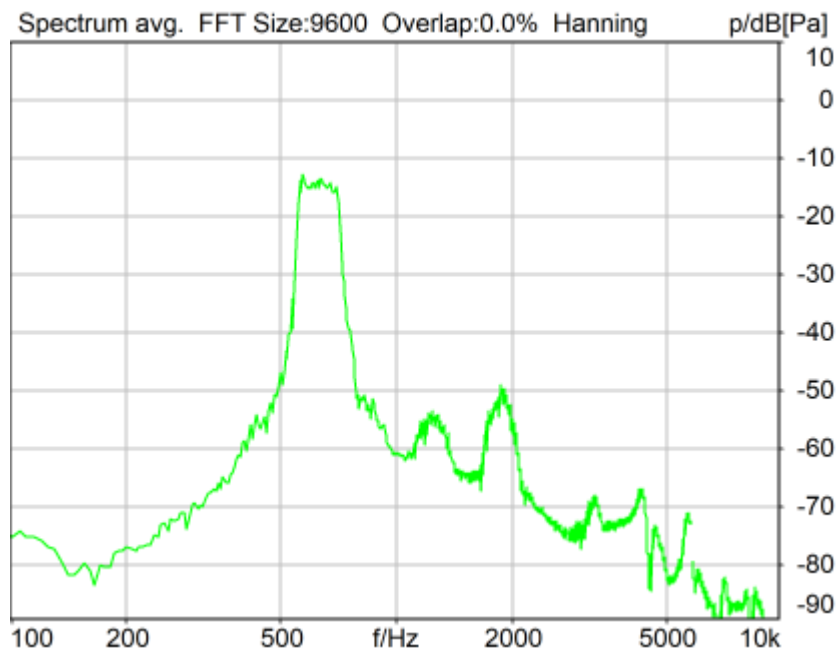
Ser. Nr.                      12306613                      Pinna Type                      Type 3.3

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 29.24 dB (3.45%) Ok

**Ok**

2024/1/20 8:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting      off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

Mouth Eq. Ch.1:    HATS 1 (HMS II.3)

**Analysis**

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

**Special Features**

Compensate delay 203.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable    RCVNB10\_630Hz

**labCORE Settings**

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

labCORE Routing



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

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

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

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

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

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

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

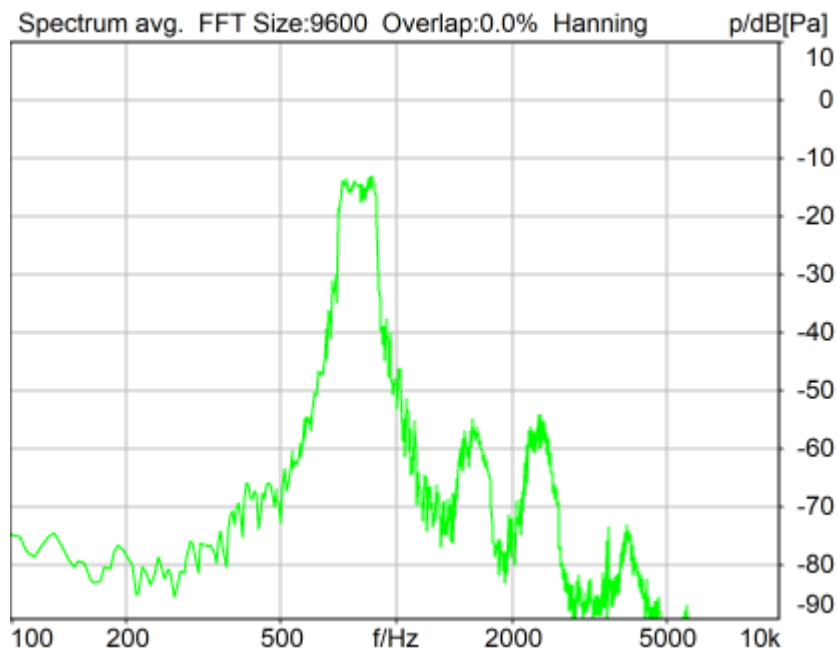
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 29.07 dB (3.52%) Ok

**Ok**

2024/1/20 8:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

Compensate delay 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

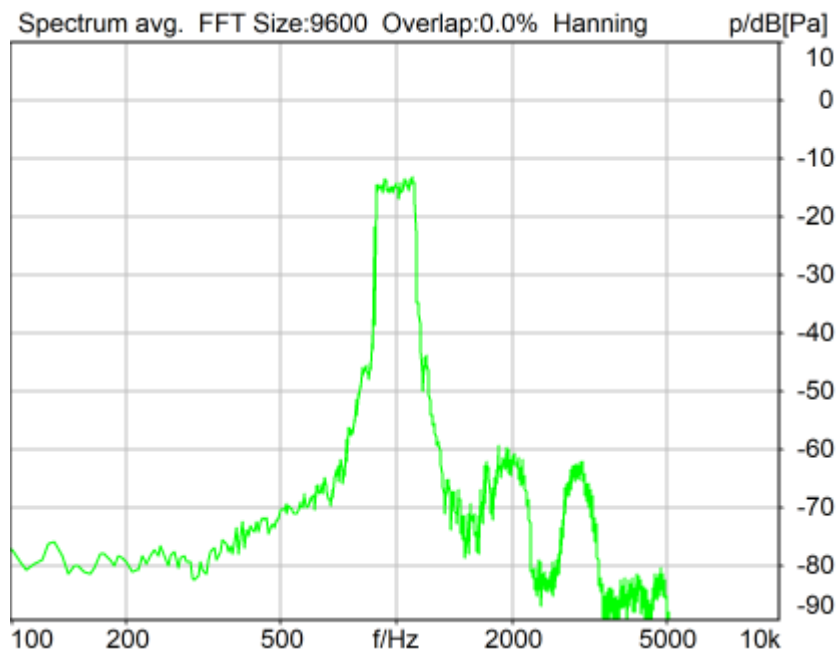
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 33.79 dB (2.04%) Ok

**Ok**

2024/1/20 8:51 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	-3.6 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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

<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))**

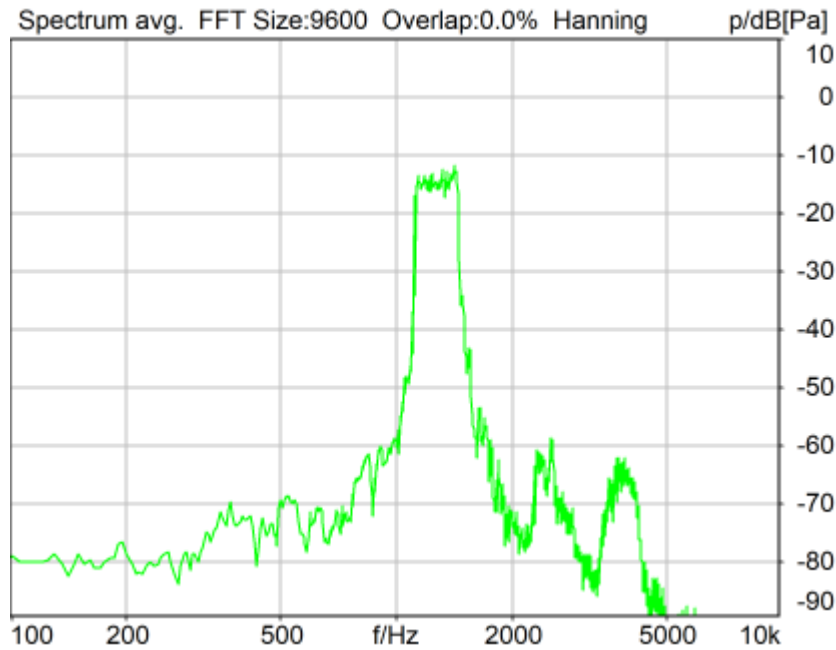
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 26.08 dB (4.97%) Ok

**Ok**

2024/1/20 8:51 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

**Calibration**

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

<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))

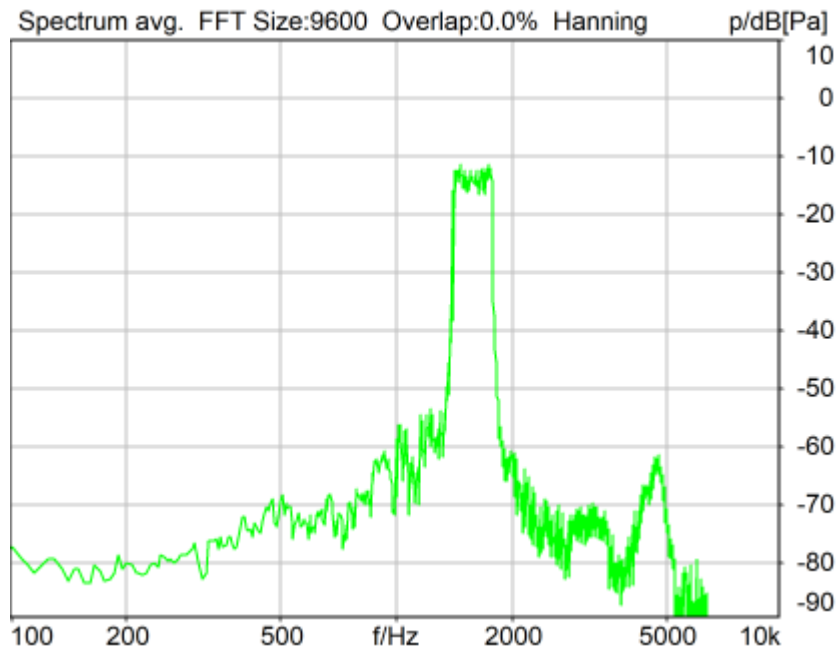
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 39.94 dB (1.01%) Ok

**Ok**

2024/1/20 8:51 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	-3.6 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.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings

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

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

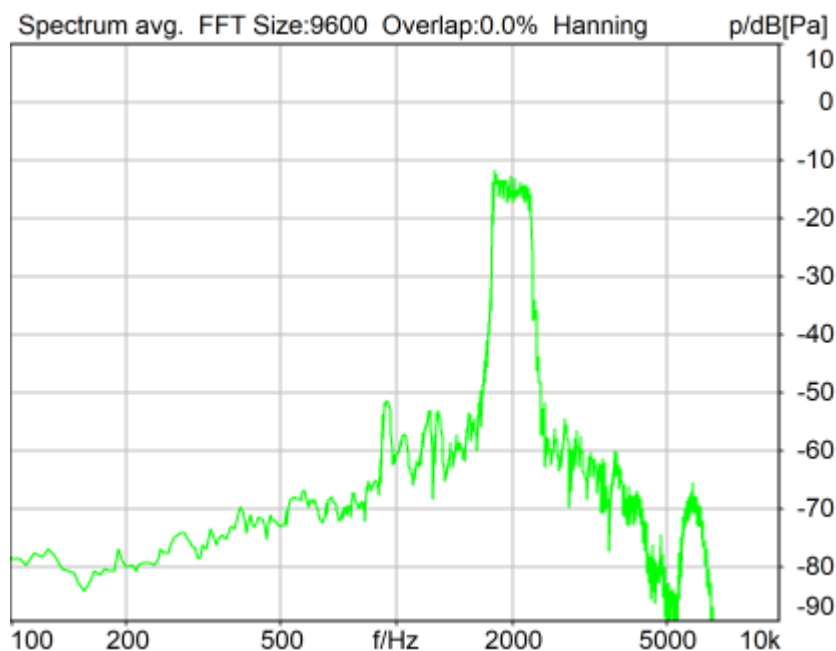
**Artificial Head Settings (HATS 1 (HMS II.3))**  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 28.34 dB (3.83%) Ok

**Ok**

2024/1/20 8:52 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 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	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**labCORE Settings**

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

labCORE Routing

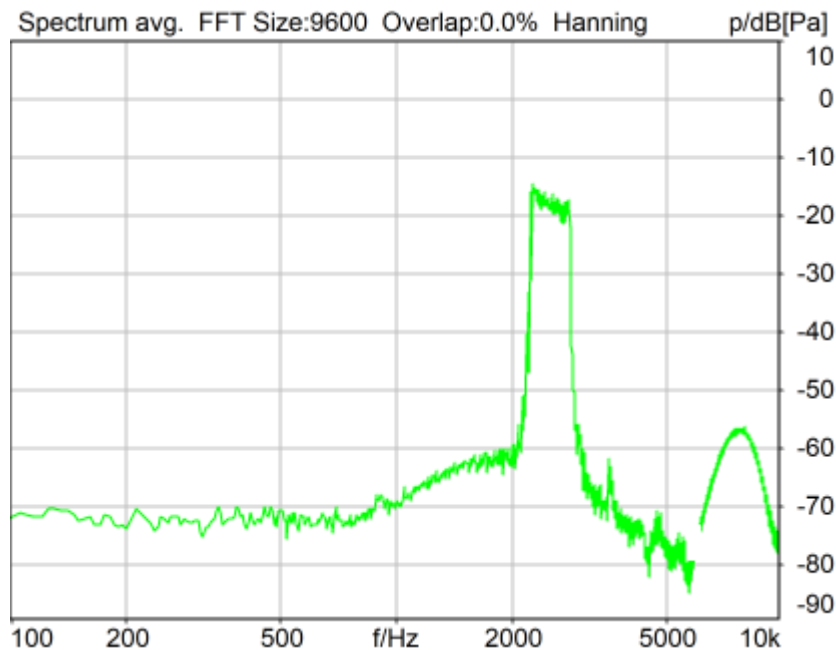
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
BEQ Settings (BEQ Filter 1)			
Block mode	Bypass		
-----			
Artificial Head Settings (HATS 1 (HMS II.3))			
Ser. Nr.	12306613	Pinna Type	Type 3.3
<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): 30.84 dB (2.87%) Ok

**Ok**

2024/1/20 8:52 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	-3.6 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.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))

Store to variable RCVNB10\_2500Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

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

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

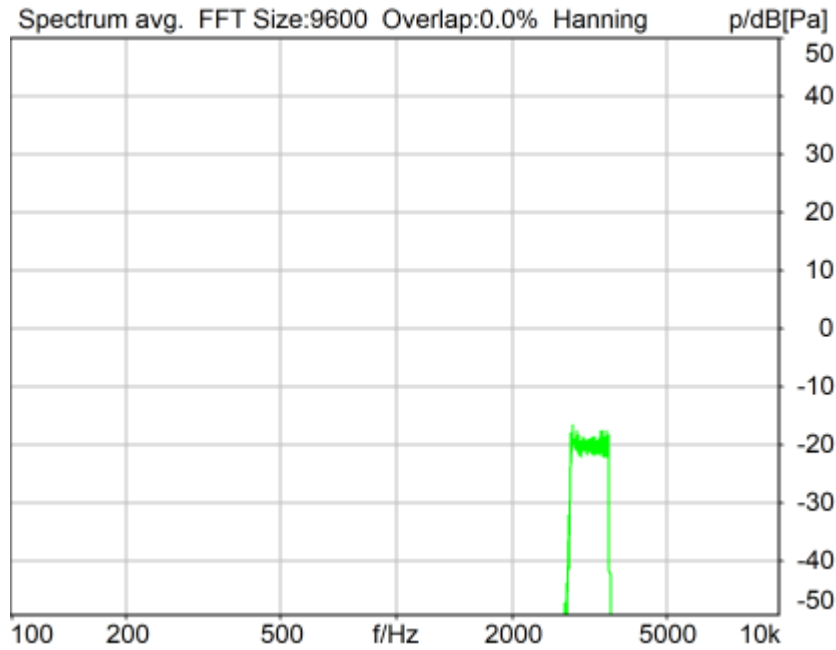
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 30.79 dB (2.89%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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	-3.6 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.	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 203.4000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

<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

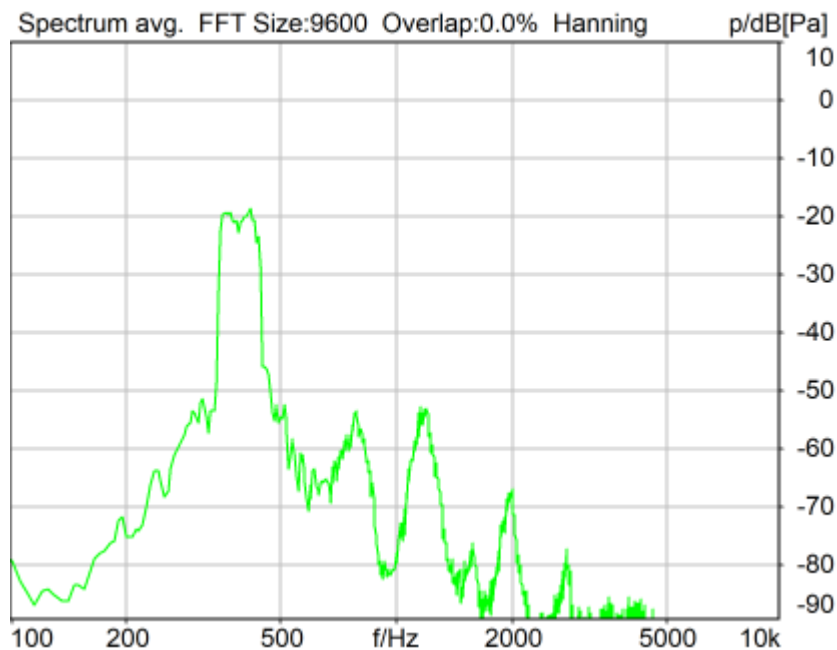
<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	27.11 dB
2	500Hz	31.02 dB
3	630Hz	29.24 dB
4	800Hz	29.07 dB
5	1000Hz	33.79 dB
6	1250Hz	26.08 dB
7	1600Hz	39.94 dB
8	2000Hz	28.34 dB
9	2500Hz	30.84 dB
10	3150Hz	30.79 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 26.08dB 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): 30.14 dB (3.11%) Ok

**Ok**

2024/1/20 8:41 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\_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: 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 159.0000 ms (D\_RCV\_NB) 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))

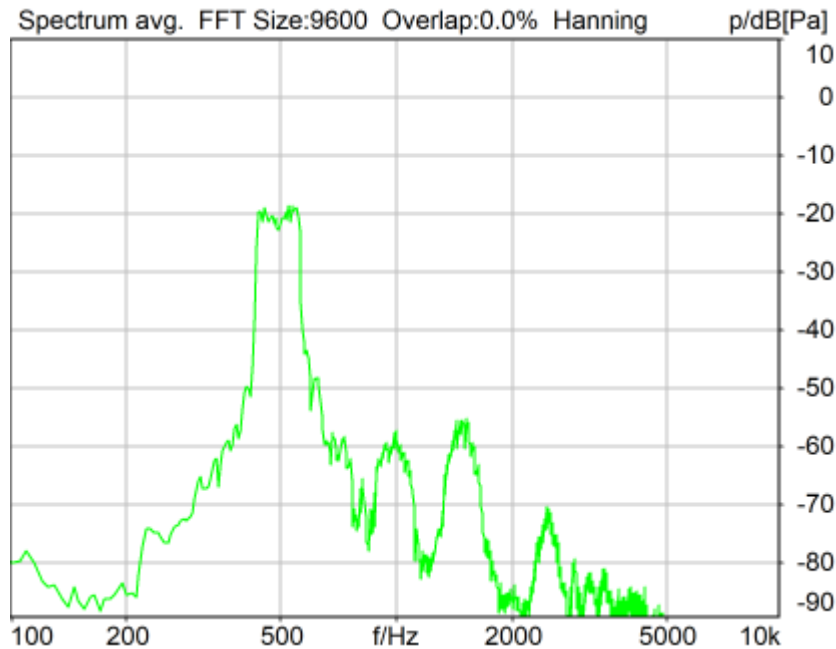
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 30.34 dB (3.04%) Ok

**Ok**

2024/1/20 8:41 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\_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	0.3 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 159.0000 ms (D\_RCV\_NB) 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))

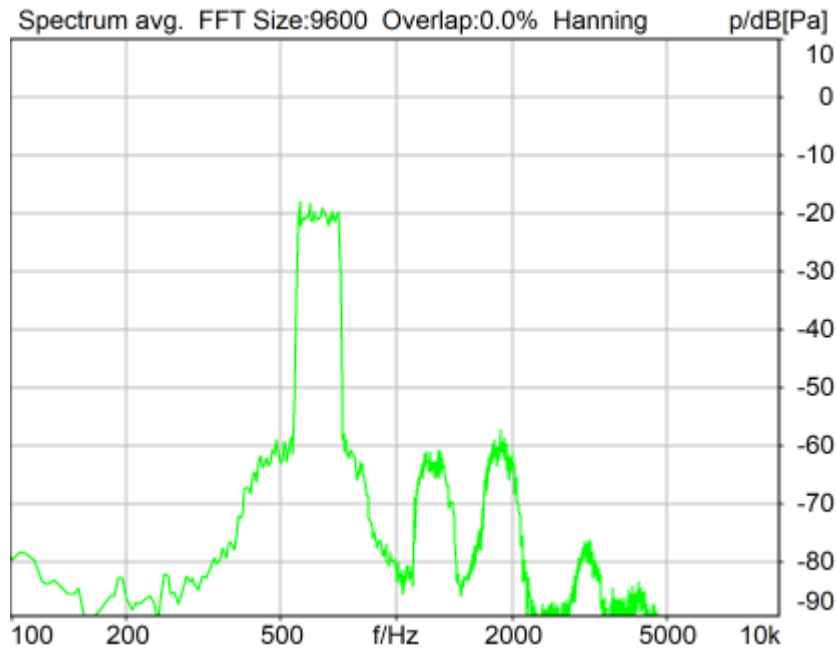
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 34.73 dB (1.83%) Ok

**Ok**

2024/1/20 8:42 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\_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: 2.0 N

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off		
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus 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 159.0000 ms (D\_RCV\_NB) Store to variable RCVNB10\_630Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

Polarisation Voltage 200V                      Supply Voltage    ±60V

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

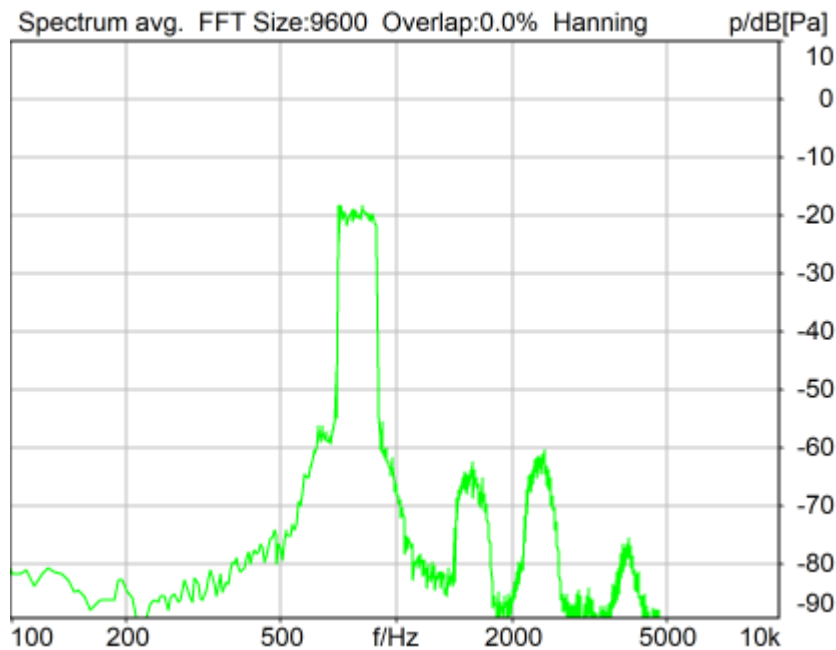
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 36.69 dB (1.46%) Ok

**Ok**

2024/1/20 8:42 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\_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 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 159.0000 ms (D\_RCV\_NB) 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))

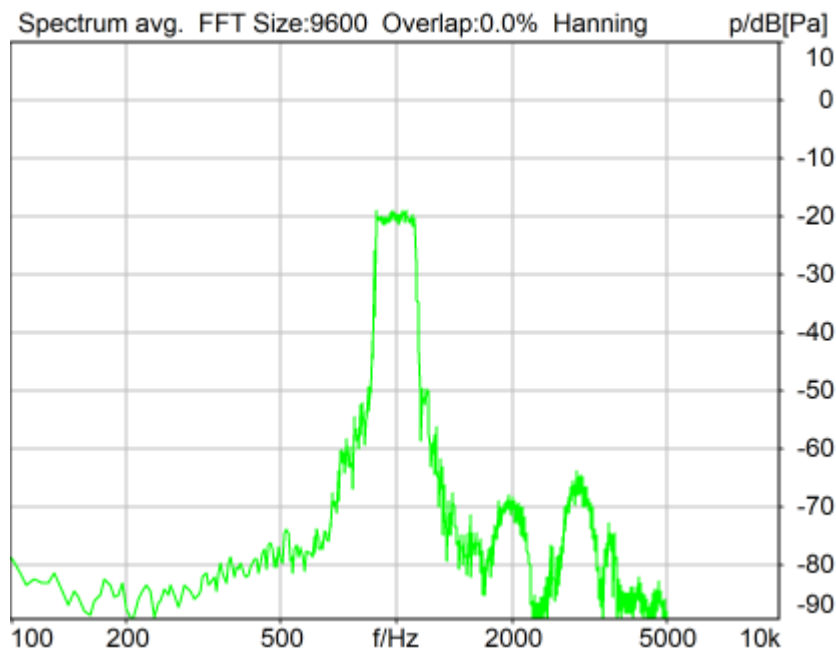
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 33.65 dB (2.08%) Ok

**Ok**

2024/1/20 8:43 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\_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	0.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

Compensate delay 159.0000 ms (D\_RCV\_NB) Store to variable RCVNB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode                      Bypass

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

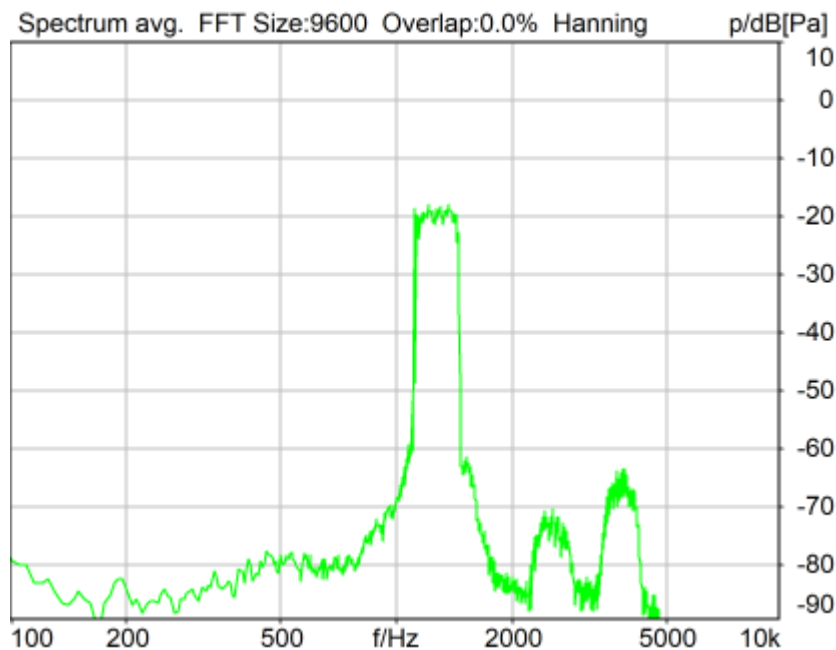
Ser. Nr.                      12306613                      Pinna Type                      Type 3.3

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 33.38 dB (2.14%) Ok

**Ok**

2024/1/20 8:43 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\_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	0.3 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.	1085.0 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 159.0000 ms (D\_RCV\_NB) 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))

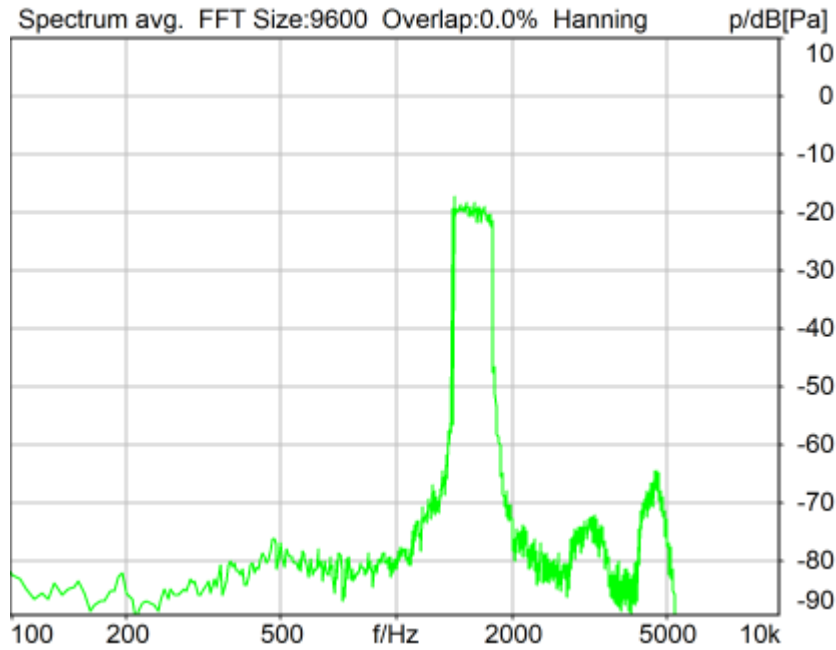
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 41.20 dB (0.87%) Ok

**Ok**

2024/1/20 8:43 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\_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 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 159.0000 ms (D\_RCV\_NB) 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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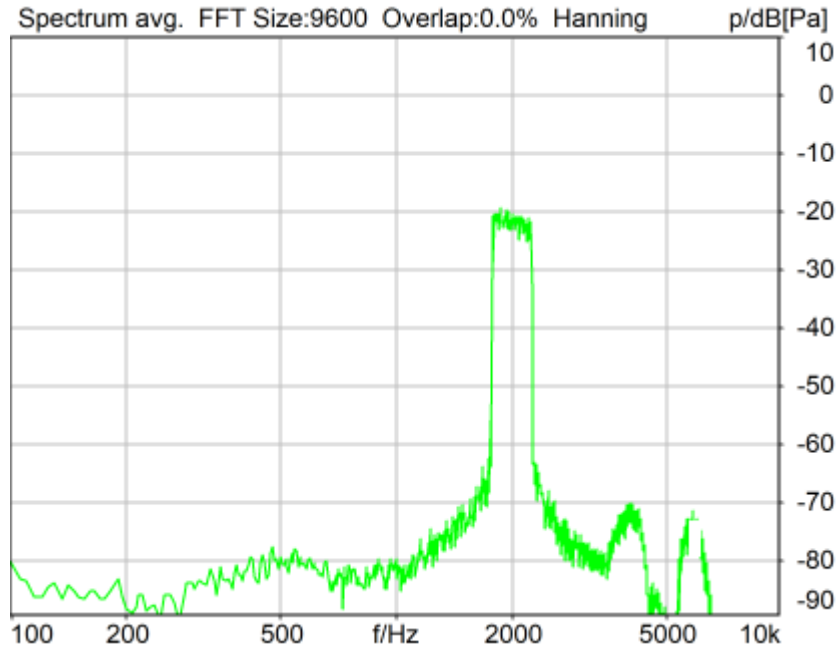
**HIB Settings**

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): 42.14 dB (0.78%) Ok

Ok

2024/1/20 8:44 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	0.3 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	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 159.0000 ms (D\_RCV\_NB) 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))**

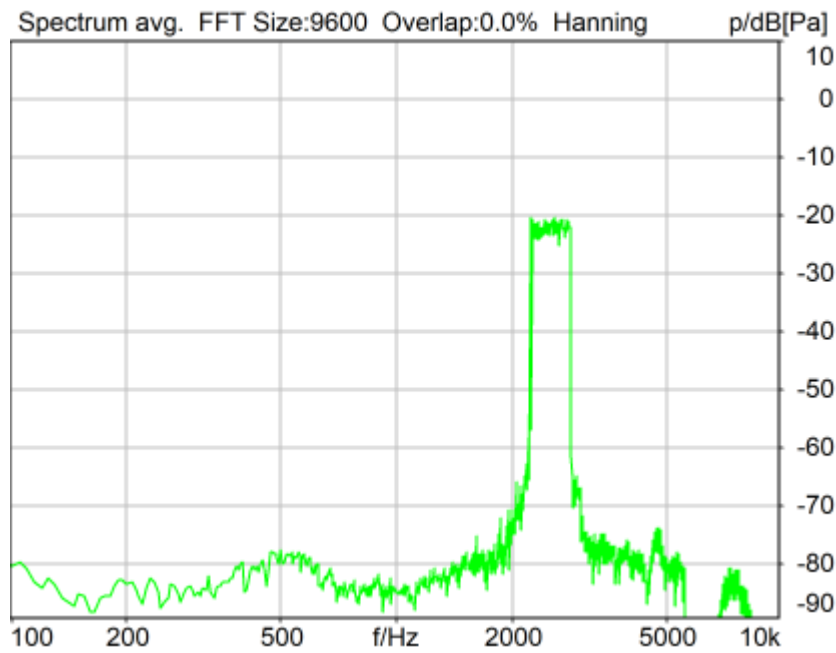
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 44.16 dB (0.62%) Ok

**Ok**

2024/1/20 8:44 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\_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: 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 159.0000 ms (D\_RCV\_NB) Store to variable RCVNB10\_2500Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

Polarisation Voltage 200V                      Supply Voltage    ±60V

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

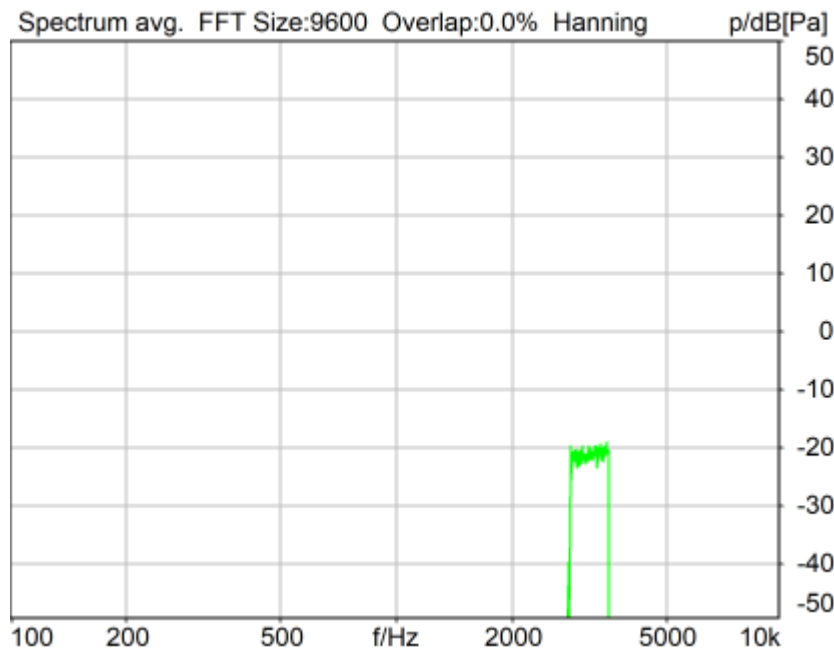
Artificial Head Settings (HATS 1 (HMS II.3))  
Ser. Nr.                12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 42.21 dB (0.78%) Ok

**Ok**

2024/1/20 8:45 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\_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: 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 159.0000 ms (D\_RCV\_NB) 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

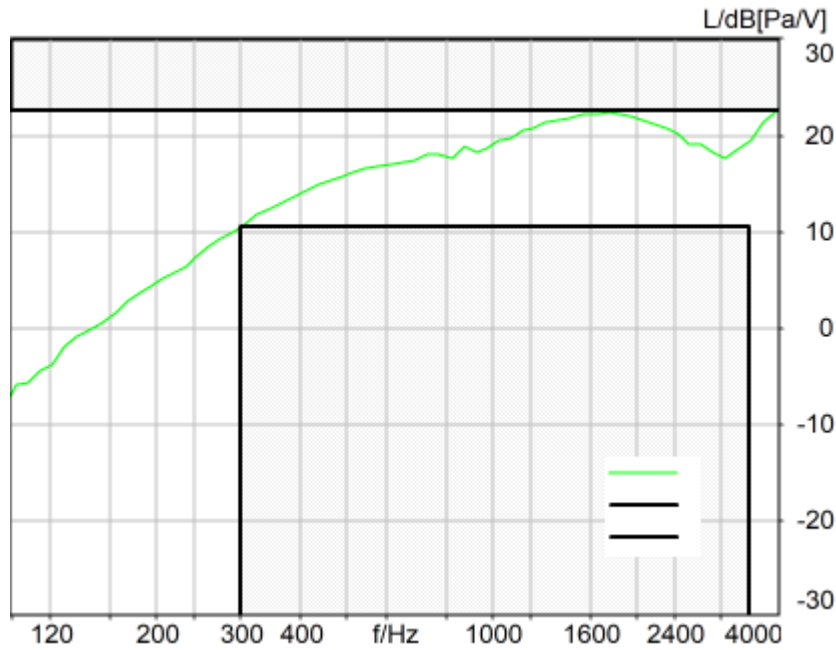
Region	Frequency	SDNR
1	400Hz	30.14 dB
2	500Hz	30.34 dB
3	630Hz	34.73 dB
4	800Hz	36.69 dB
5	1000Hz	33.65 dB
6	1250Hz	33.38 dB
7	1600Hz	41.20 dB
8	2000Hz	42.14 dB
9	2500Hz	44.16 dB
10	3150Hz	42.21 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
 Smallest SDNR was 30.14dB at 400Hz.

2024/1/20 8:45 ACQUA

**5.3 Frequency Response 8N FF HANB**

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



Absolute minimal distance  
0.19 dB at 305.9 Hz Ok

**Ok**

2024/1/20 8:53 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	Fit into tolerance

Meas. Setting off

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

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

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

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

Pause 0.5 s +

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

Pause till end of file

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

**Calibration**



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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 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	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	Window function.	Hanning
FFT size	4096	Reference file	r521_rcv_frq_spee269_hanb.fft
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 203.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

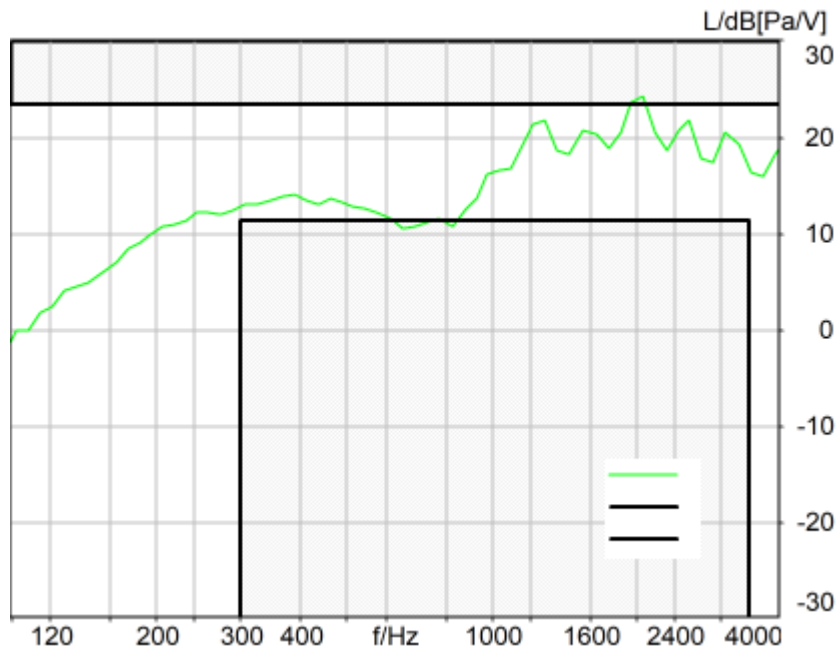
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

### 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
-0.78 dB at 649.1 Hz Not Ok

**Not Ok**

2024/1/20 8:54 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: 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	-3.6 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_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 203.4000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

Analog In Mainboard Settings (Analog In 1/2)

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

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

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

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode      Bypass

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

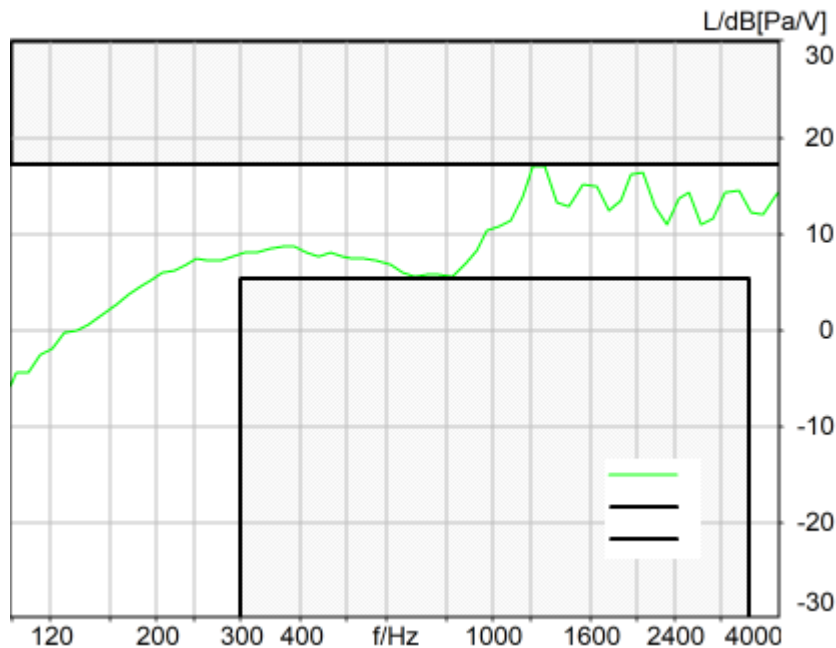
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

## 5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance

0.22 dB at 1285.9 Hz Ok

**Ok**

2024/1/20 8:46 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	0.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave		
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 159.0000 ms (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 Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

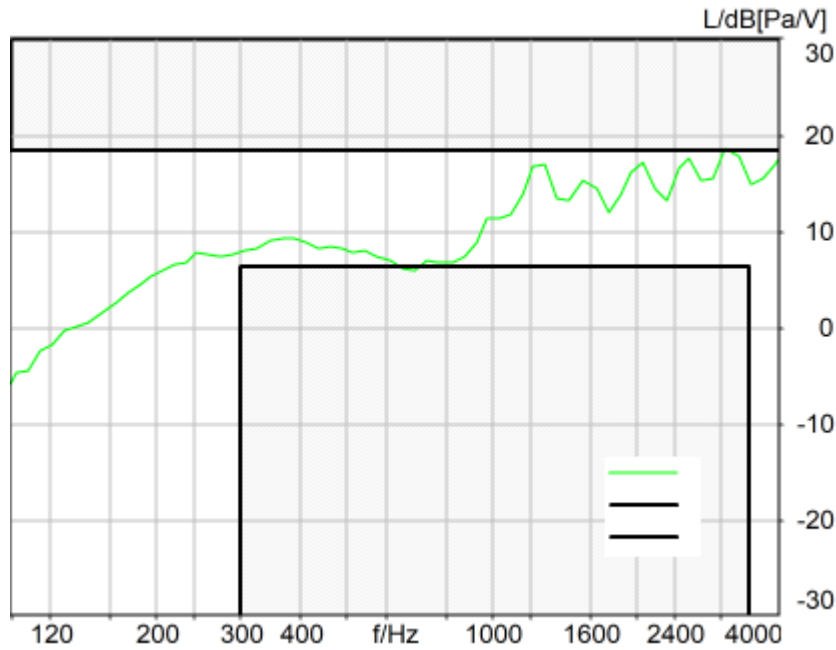
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
-0.29 dB at 689.1 Hz Not Ok

**Not Ok**

2024/1/20 8:47 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	0.3 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2df_ieeee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	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 159.0000 ms (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 Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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



BEQ Settings (BEQ Filter 1)

Block mode        Bypass

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

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

**HIB Settings**

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

## **Measurement Protocol**

Measurement Object	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/6 10:35
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	202.1	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	18.07	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	12.86	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.55	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.60	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.09	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.32	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.01	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.88	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.93	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.67	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.00	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.49	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.04	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.66	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.99	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	33.67	WIFI 5G_802.11an-HT 40

- 5000 Hz WB		0.0 dB		MCS0_EVS WB 128kbps_CH38
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.67	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.31	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.52	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.43	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.72	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.12	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.33	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.93	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.29	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.62	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.65	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.91	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.39	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.94	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.43	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	21.29	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 2883.7 Hz	0.26	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38
5.3 Frequency Response 8N	Not Ok	Min. dist. to tolerance	-1.97	WIFI 5G_802.11an-HT 40

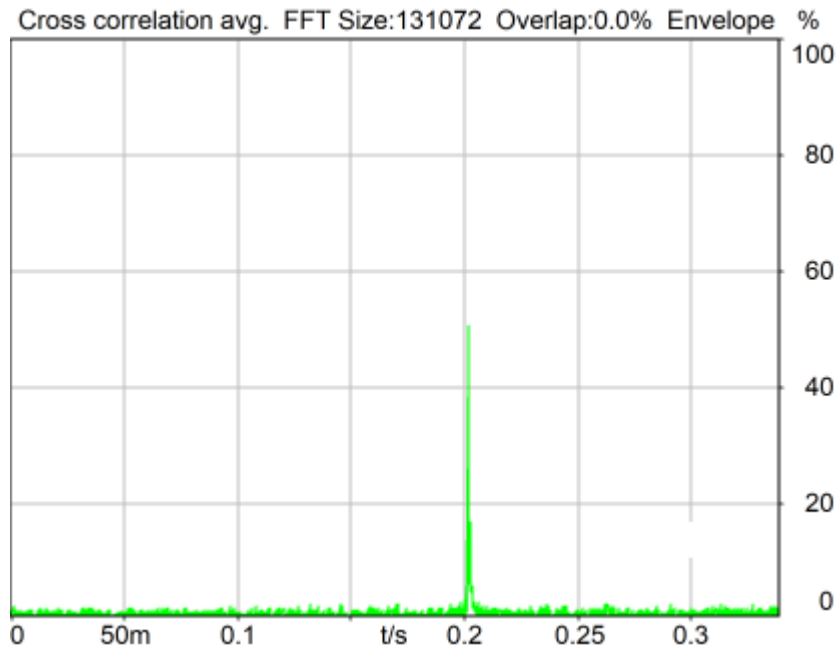
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DF		scheme [dB], 4369.4 Hz		MCS0_EVS WB 128kbps_CH38
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.08	WIFI 5G_802.11an-HT 40 MCS0_EVS WB 128kbps_CH38



## Overall Receive Delay WB

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



Delay (Cross): 202.1 ms

2024/1/20 9:03 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	-3.6 mm	Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

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

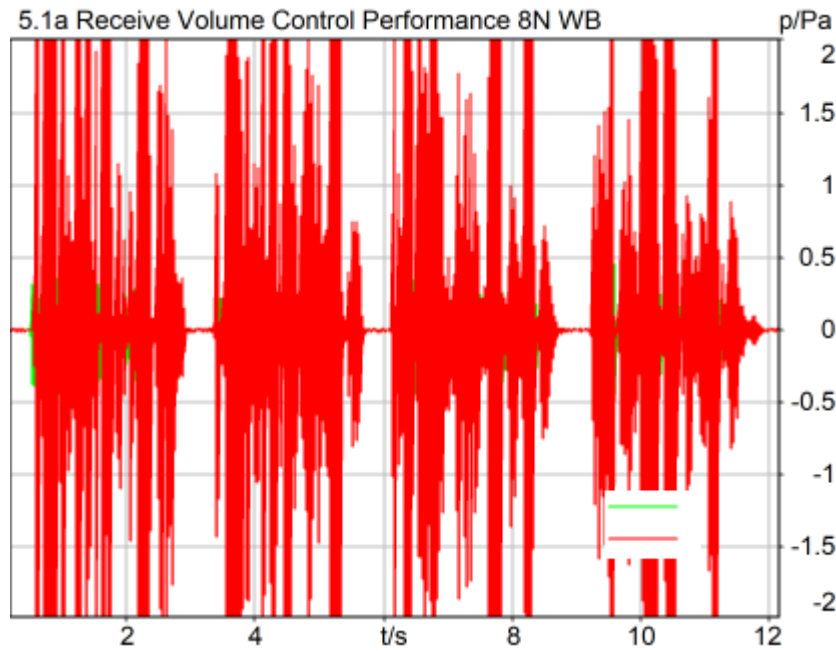


Gain out 1 -40.00 dB  
 Gain in 1 0.00 dB  
 Mic 1 Power Supply Off

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: 88.07 dB[SPL], Act.: 84.49%  
 Corrected Speech Level: 18.07 dB[SPL] Ok

#### Ok

2024/1/20 9:03 ACQUA 5.1.200

#### Limits

	<b>lower</b>
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	-3.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

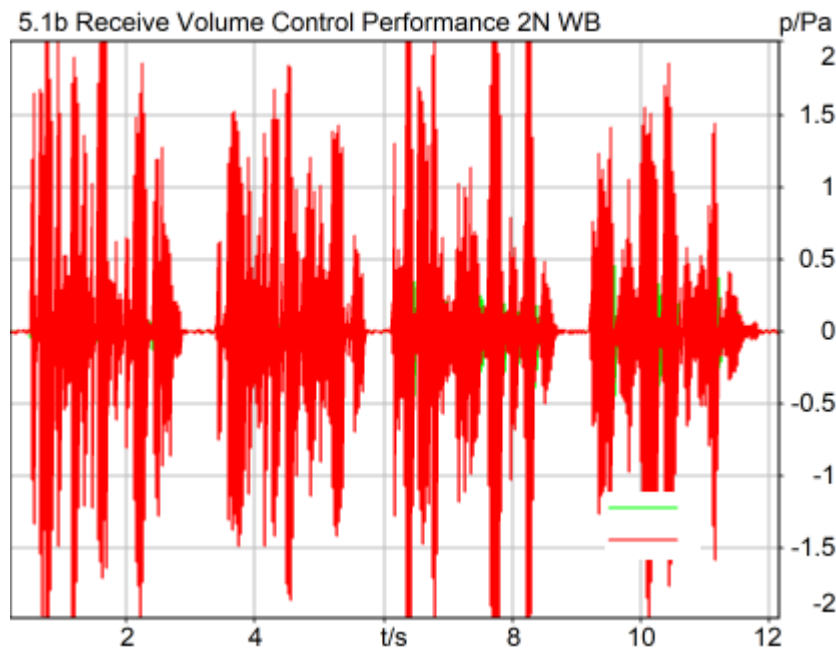
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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: 82.86 dB[SPL], Act.: 84.43%

Corrected Speech Level: 12.86 dB[SPL] Ok

**Ok**

2024/1/20 9:21 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: 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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

**Analog Out 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))

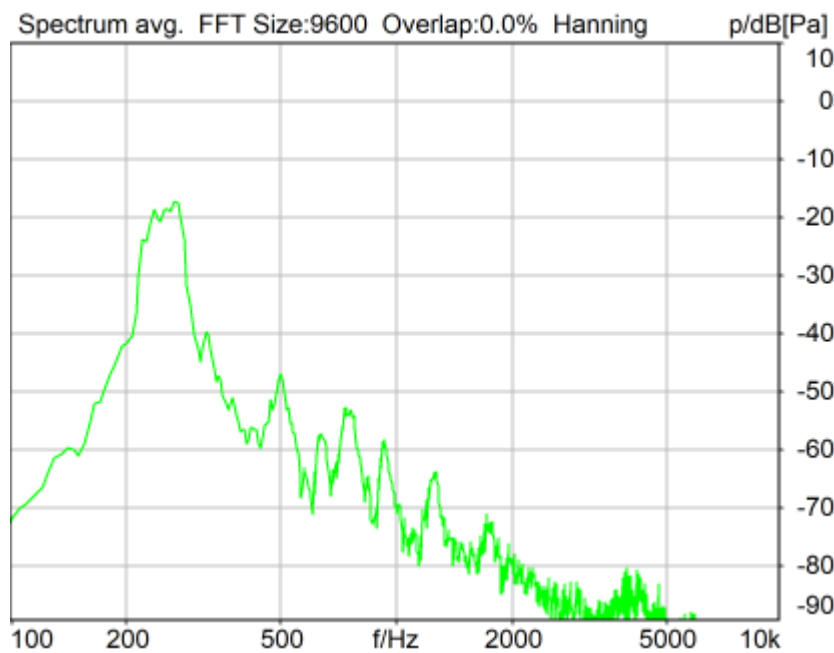
Ser. Nr. 12306613 Pinna Type Type 3.3

**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 - 250 Hz WB

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



Distortion (Noise) RCV (packed): 27.55 dB (4.19%) Ok

**Ok**

2024/1/20 9:04 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\_250hz\_sr20dbm0\_v02.dat.dat

Level adj. Ch1 -90.0 dB

#### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

#### Output Equalization/Filter

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

#### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_250Hz

#### labCORE Settings

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

#### labCORE Routing

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

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

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

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

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

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

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

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

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

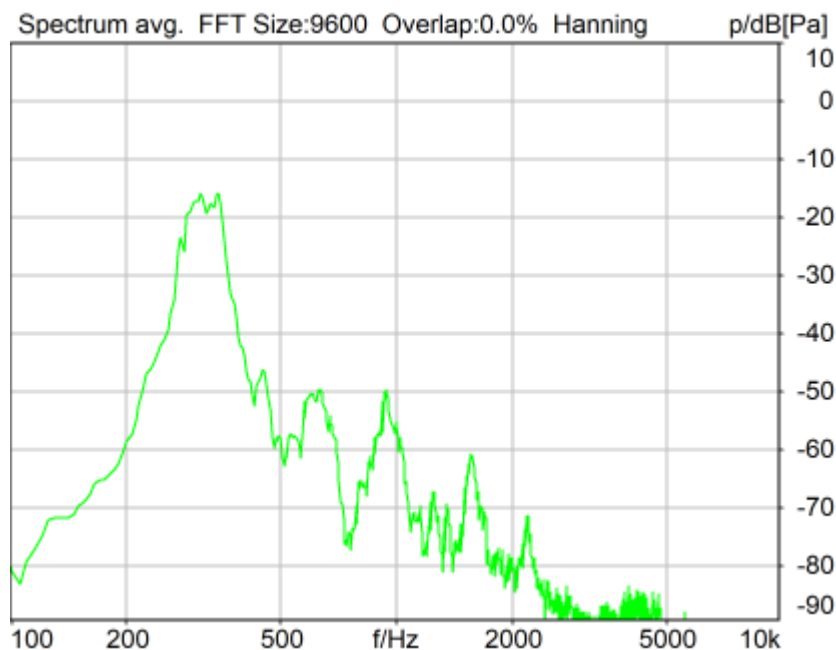
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 28.60 dB (3.71%) Ok

**Ok**

2024/1/20 9:05 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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

#### Output Equalization/Filter

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

#### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

#### labCORE Settings

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

#### labCORE Routing

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

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

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

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

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



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

## Channel In 1 Settings

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

## Channel In 2 Settings

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

## Channel In 3 Settings

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

## Channel In 4 Settings

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

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

Block mode Bypass

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

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

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

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

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



Distortion (Noise) RCV (packed): 27.09 dB (4.42%) Ok

Ok

2024/1/20 9:05 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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_400Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

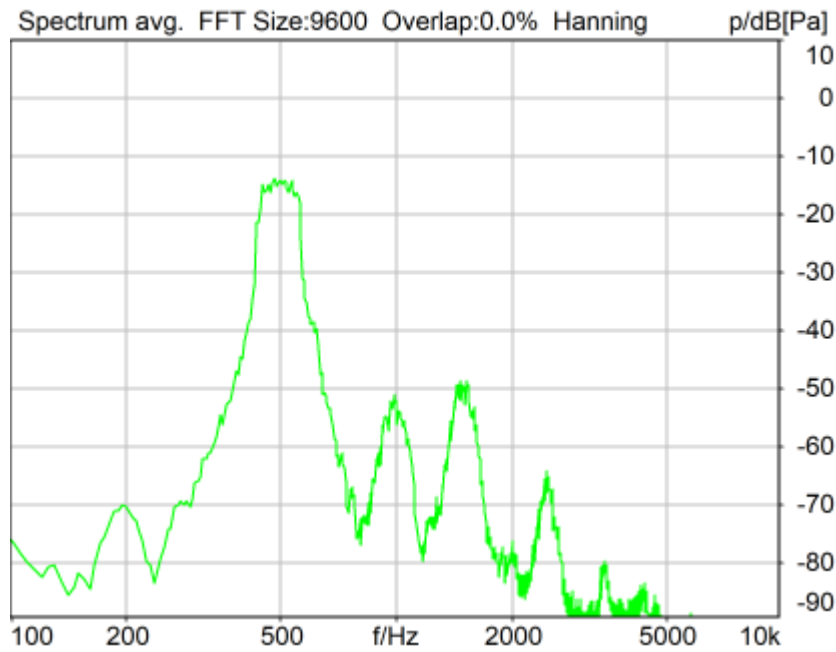
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 500 Hz WB**

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



Distortion (Noise) RCV (packed): 28.32 dB (3.84%) Ok

**Ok**

2024/1/20 9:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
 Store to variable RCVWB10\_500Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

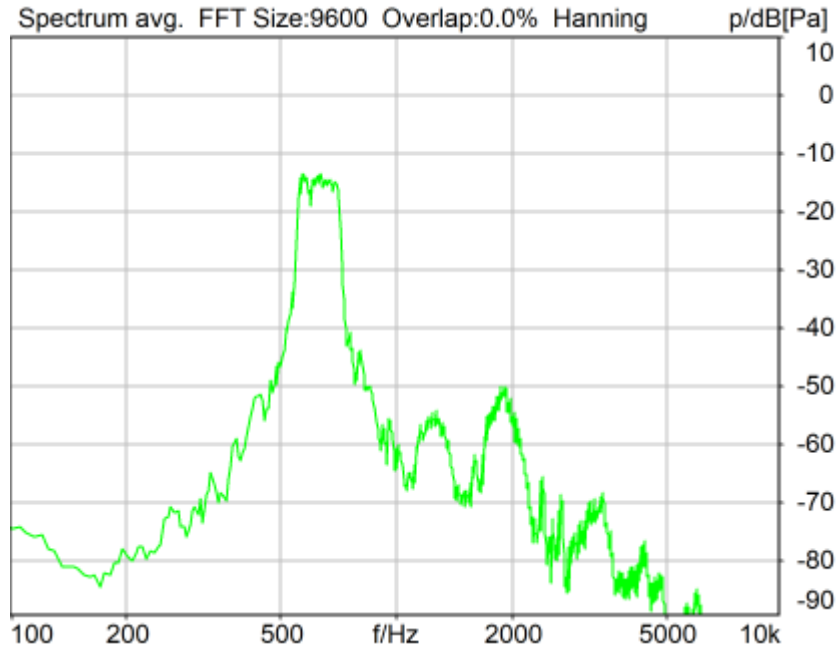
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 - 630 Hz WB

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



Distortion (Noise) RCV (packed): 29.01 dB (3.54%) Ok

**Ok**

2024/1/20 9:06 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 °
		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	-3.6 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

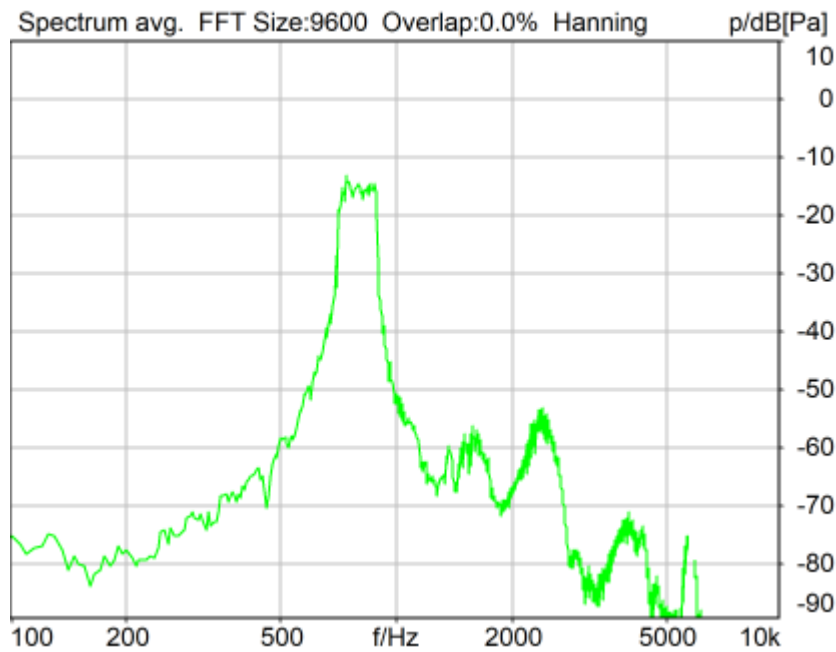
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 28.88 dB (3.60%) Ok

**Ok**

2024/1/20 9:06 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 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_800Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

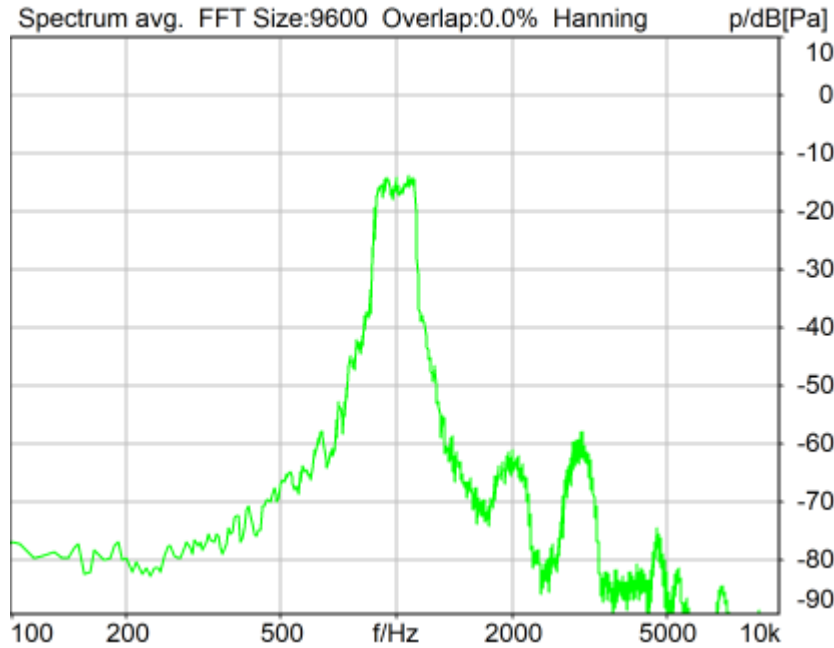
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name 60020095 Serial 60020095  
 HIB Mode Mobile Measurement Impedance 32 Ohm  
 Gain out 1 -40.00 dB Gain out 2 0.00 dB  
 Gain in 1 0.00 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): 26.93 dB (4.50%) 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 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings

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

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

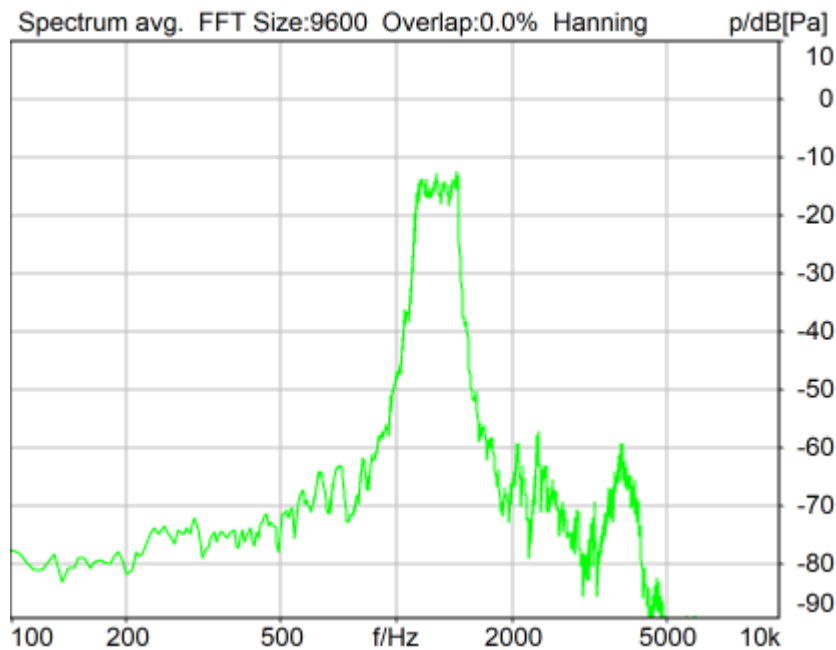
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 21.67 dB (8.25%) Ok

**Ok**

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Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

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

**labCORE Routing**

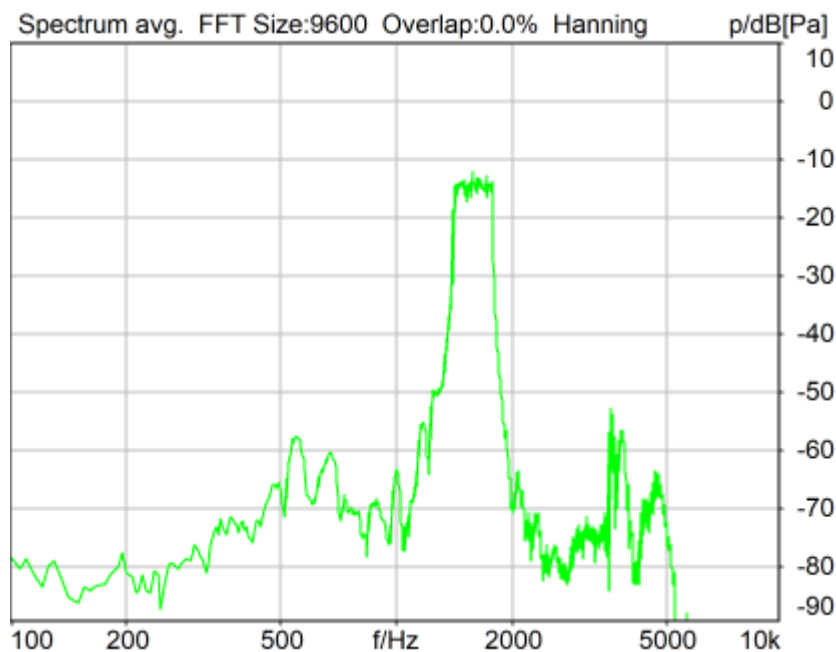
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
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): 32.00 dB (2.51%) Ok

**Ok**

2024/1/20 9:08 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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1600Hz

**labCORE Settings**

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

-----

## labCORE Routing

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

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

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

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

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

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

## Channel In 1 Settings

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

## Channel In 2 Settings

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

## Channel In 3 Settings

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

## Channel In 4 Settings

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

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

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

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

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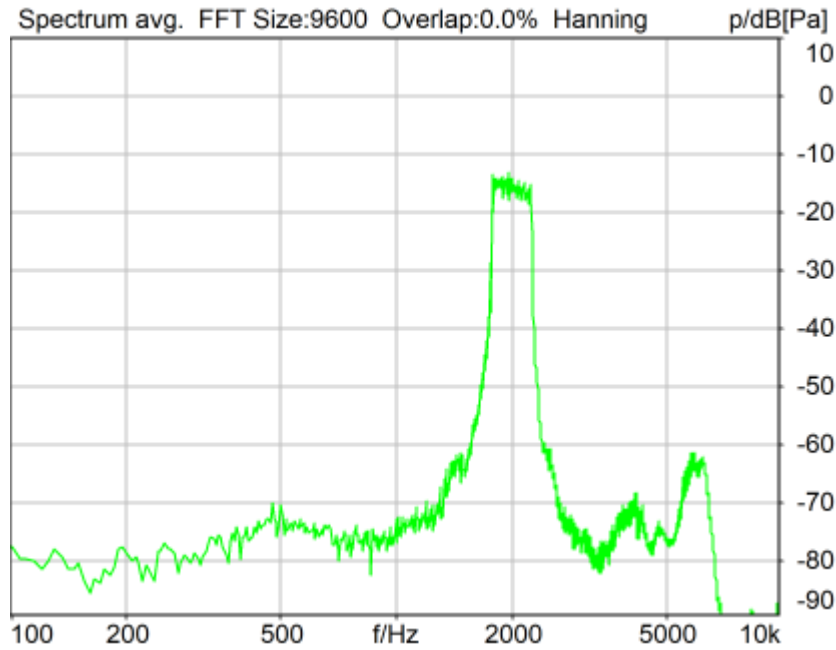
**HIB Settings**

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

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

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





Distortion (Noise) RCV (packed): 32.49 dB (2.38%) 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\_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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
 Store to variable RCVWB10\_2000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

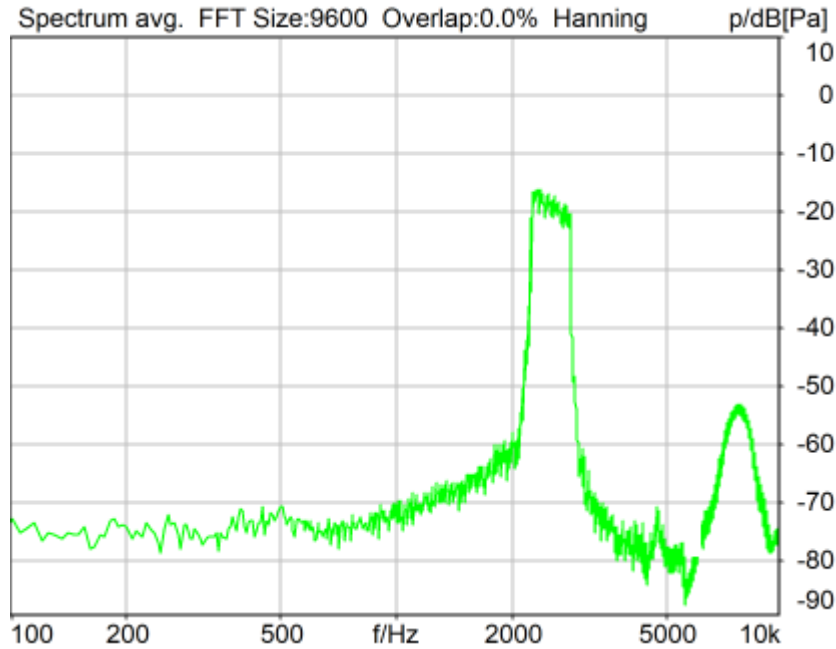
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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

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Distortion (Noise) RCV (packed): 29.04 dB (3.53%) Ok

**Ok**

2024/1/20 9:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

**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	-3.6 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

**Analog Out 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))**

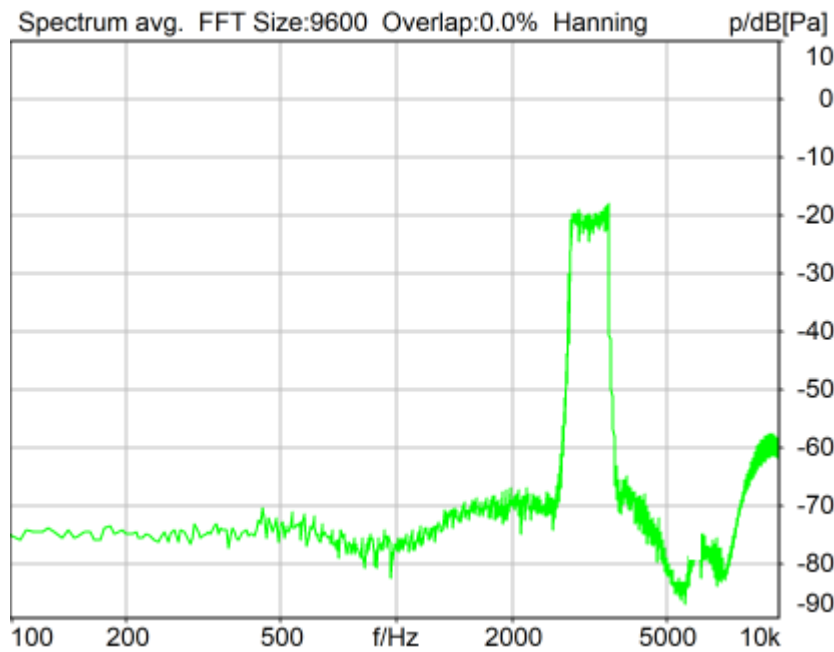
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 31.66 dB (2.61%) Ok

**Ok**

2024/1/20 9:09 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_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	-3.6 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_3150Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

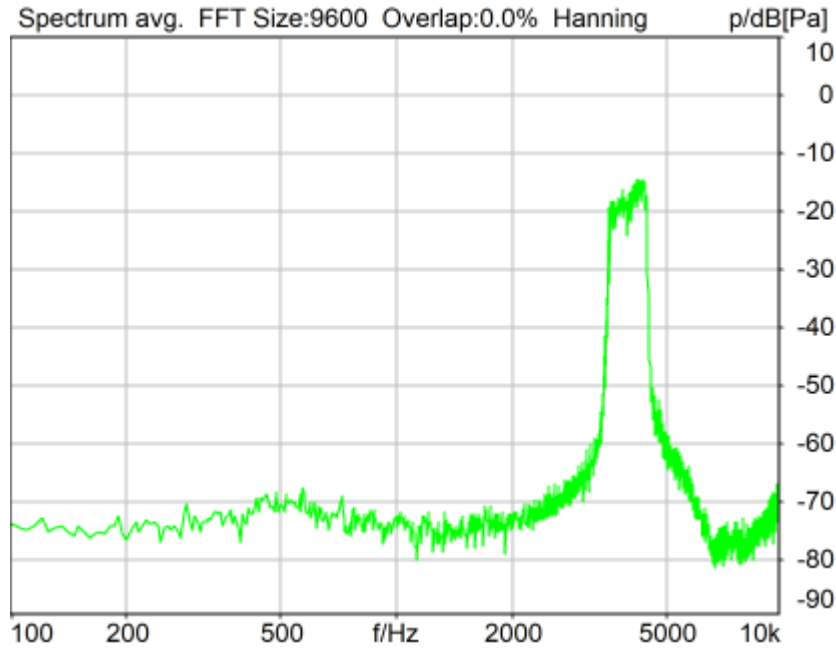
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 27.99 dB (3.99%) 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\_4000hz\_sr20dbm0\_v02.dat**

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings



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

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

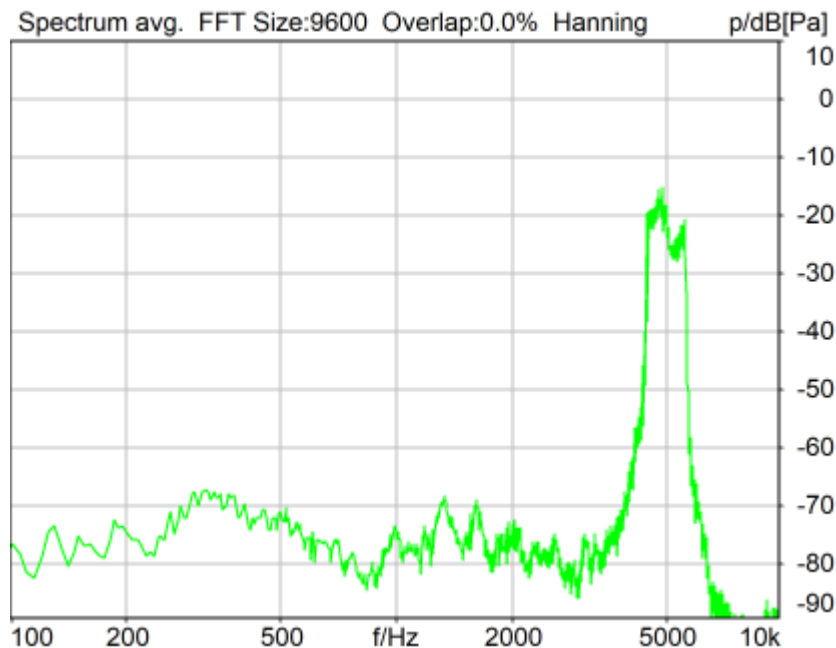
**Artificial Head Settings (HATS 1 (HMS II.3))**  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 33.67 dB (2.07%) 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\_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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off		
Frequency base	Transformation	Overlap	0 %
FFT size	9600	Smooth	Off
Window function.	Hanning		
dB weighting	A Weighting	Stimulus max.	5660.0 Hz
Stimulus min.	4430.0 Hz	Analysis max.	4425.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	5665.0 Hz		

**Special Features**

Compensate delay 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

Range Ch. 1      0.00 dB                      Ch. 0 Float      On  
 Range Ch. 2      0.00 dB                      Ch. 1 Float      On  
 -----  
 Analog Out Mainboard Settings (Analog Out 1/2)  
 Range Ch. 1      0.00 dB                      Range Ch. 2      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	27.55 dB
2	315Hz	28.60 dB
3	400Hz	27.09 dB
4	500Hz	28.32 dB
5	630Hz	29.01 dB
6	800Hz	28.88 dB
7	1000Hz	26.93 dB
8	1250Hz	21.67 dB
9	1600Hz	32.00 dB
10	2000Hz	32.49 dB
11	2500Hz	29.04 dB
12	3150Hz	31.66 dB
13	4000Hz	27.99 dB
14	5000Hz	33.67 dB

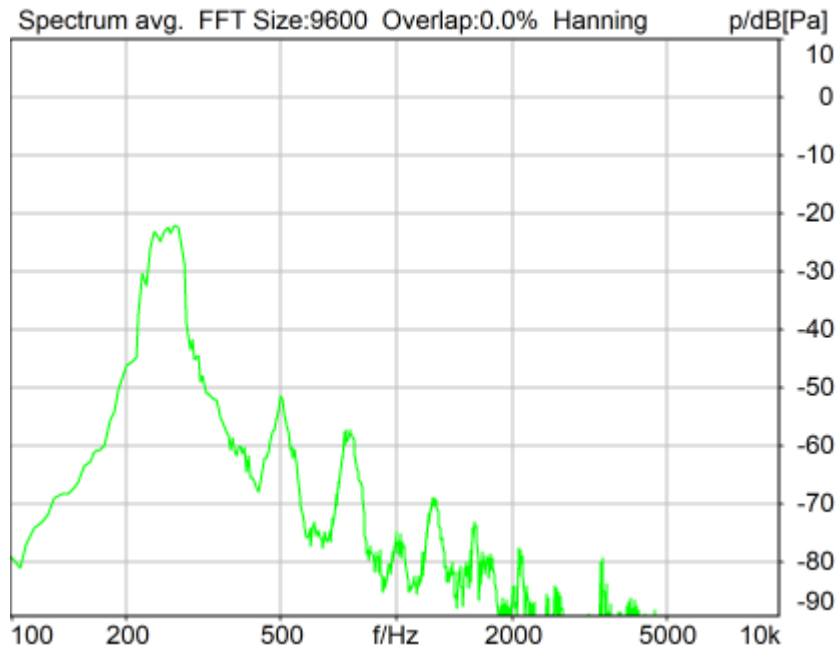
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.67dB at 1250Hz.

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## 5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 29.31 dB (3.42%) 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	-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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_250Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

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

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

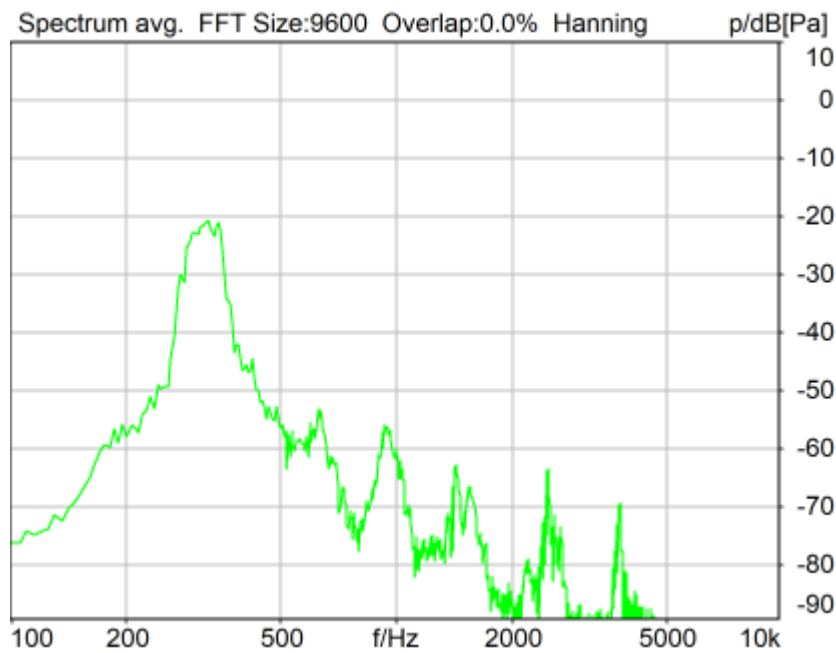
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name 60020095 Serial 60020095  
 HIB Mode Mobile Measurement Impedance 32 Ohm  
 Gain out 1 -40.00 dB Gain out 2 0.00 dB  
 Gain in 1 0.00 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): 26.52 dB (4.72%) Ok

**Ok**

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 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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	-0.3 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	Stimulus max.	390.0 Hz
dB weighting	A Weighting	Analysis max.	240.0 Hz
Stimulus min.	245.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis min.	20.0 Hz		
Analysis (2) min.	395.0 Hz		

#### Special Features

Compensate delay 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

#### labCORE Settings

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

#### labCORE Routing

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

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

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

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

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

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

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off

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

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

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

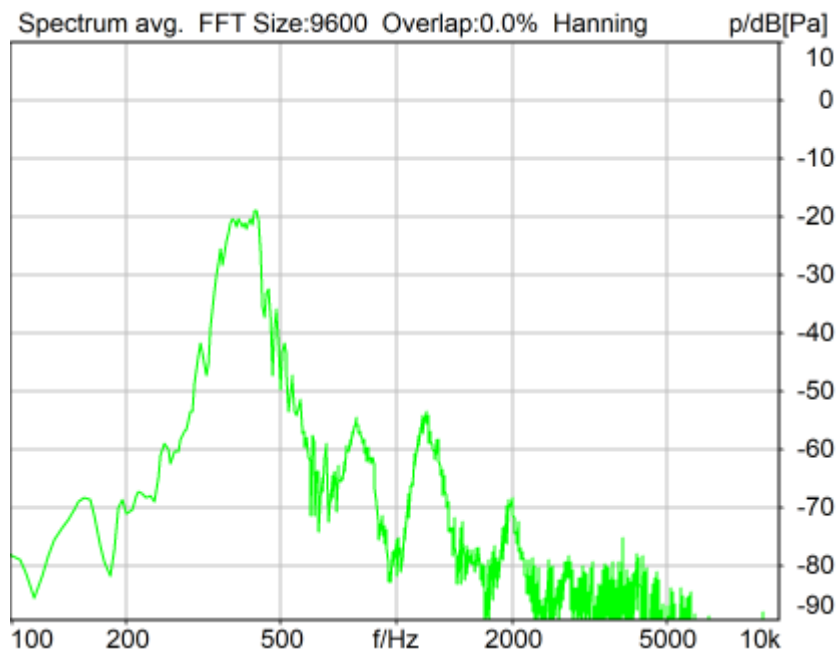
Ser. Nr.	12306613	Pinna Type	Type 3.3
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#### HIB Settings

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

## 5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 24.43 dB (6.00%) 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\_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 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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

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

**labCORE Routing**

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

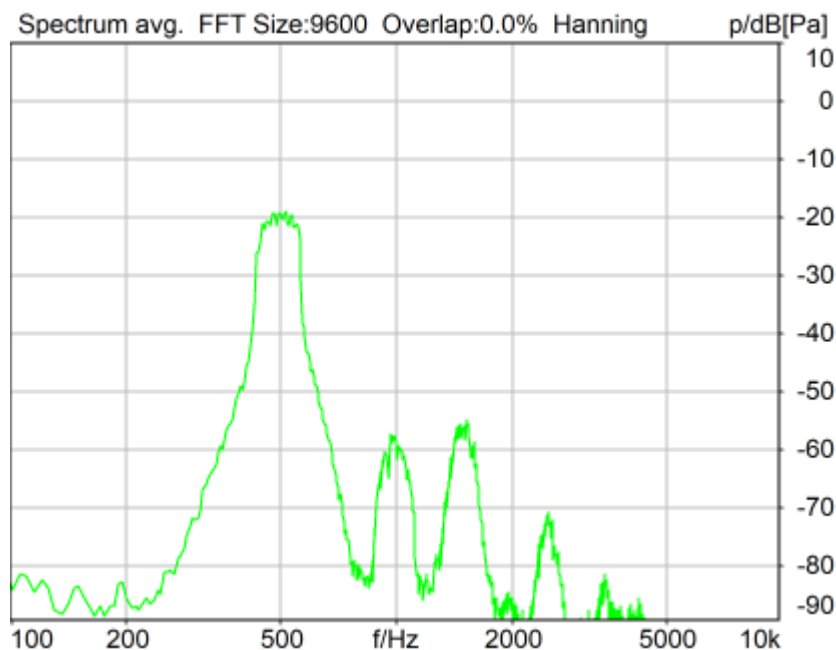
**Analog In Mainboard Settings (Analog In 1/2)**

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

Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
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 - 500 Hz WB

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



Distortion (Noise) RCV (packed): 29.72 dB (3.27%) Ok

**Ok**

2024/1/20 9:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source: act\_rpn\_b250ms\_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 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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_500Hz

**labCORE Settings**

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

-----

## labCORE Routing

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

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

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

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

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

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

## Channel In 1 Settings

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

## Channel In 2 Settings

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

## Channel In 3 Settings

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

## Channel In 4 Settings

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

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

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

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

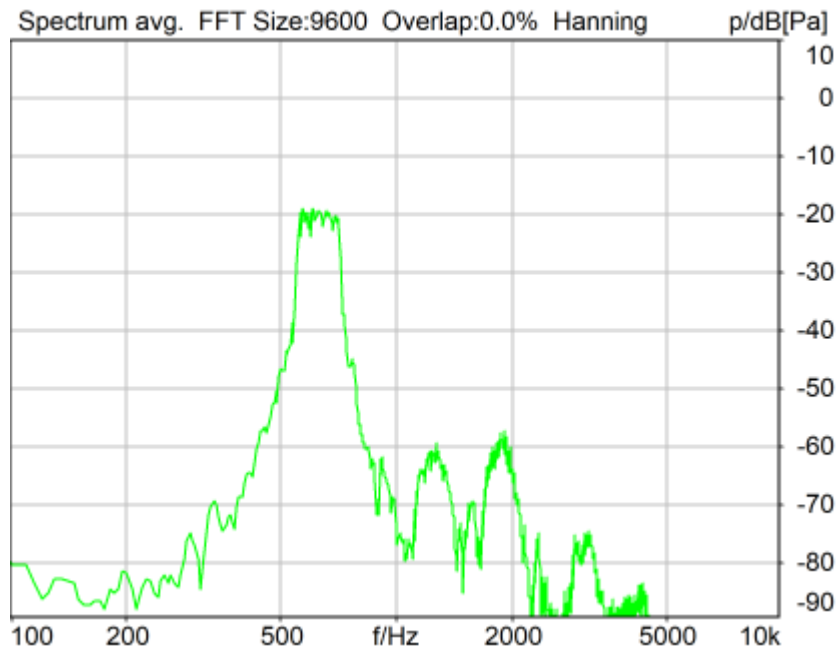
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 29.12 dB (3.50%) Ok

**Ok**

2024/1/20 9:23 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 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
 Store to variable RCVWB10\_630Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

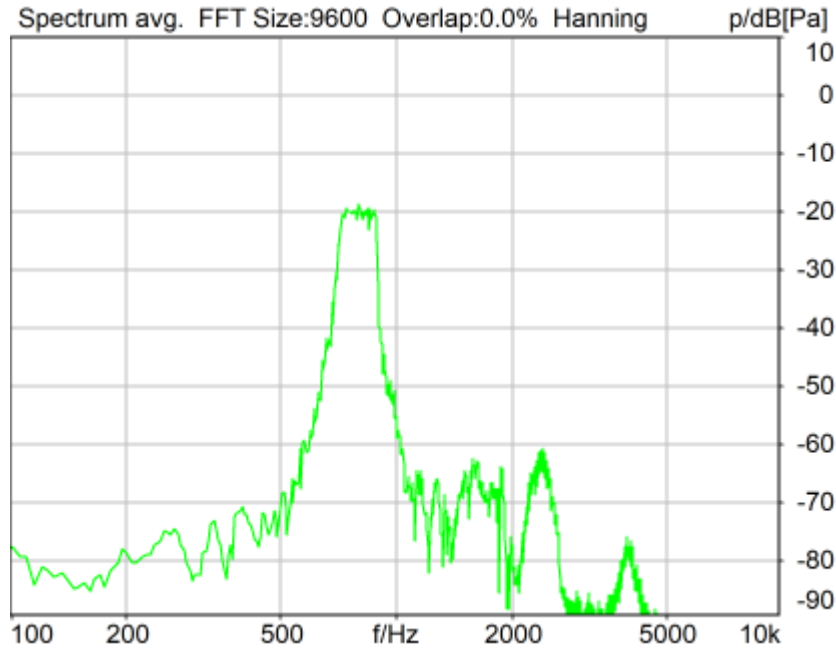
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 29.33 dB (3.42%) Ok

**Ok**

2024/1/20 9:24 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 °
		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 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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

**Analog Out 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))**



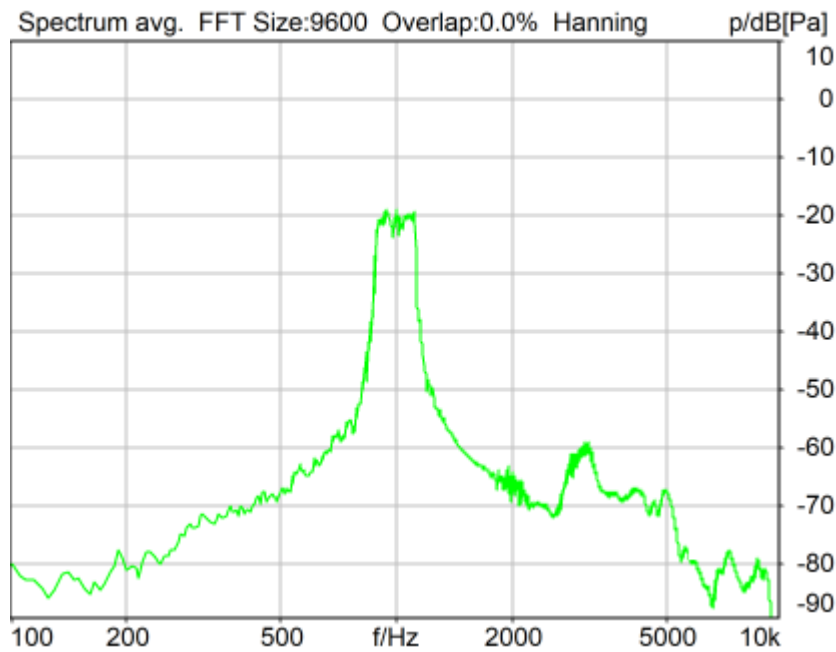
Ser. Nr. 12306613 Pinna Type Type 3.3

**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): 25.93 dB (5.05%) Ok

**Ok**

2024/1/20 9:24 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat  
 Level adj. Ch1 -90.0 dB

**Calibration**

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

Channel In 4 Settings

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

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

Block mode Bypass

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

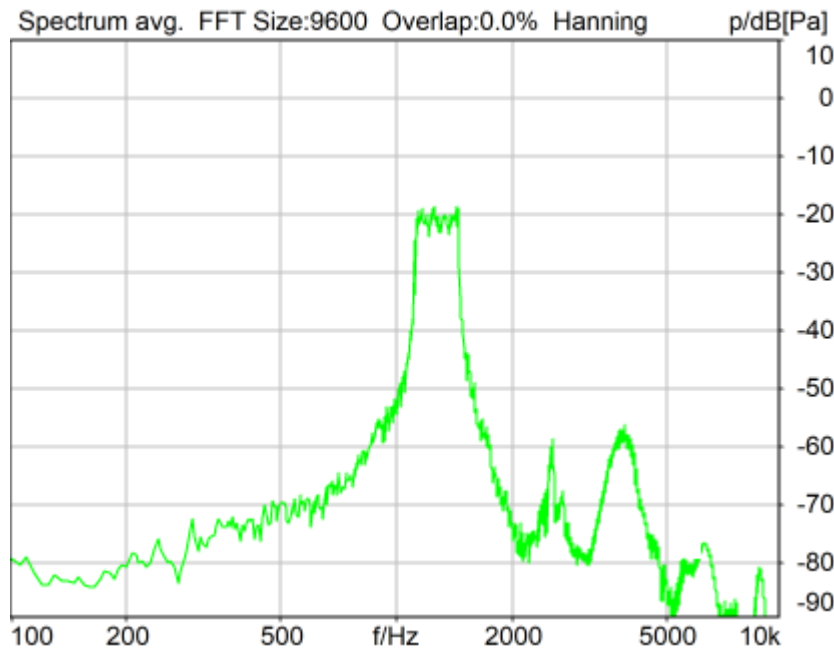
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

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

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



Distortion (Noise) RCV (packed): 21.29 dB (8.62%) Ok

**Ok**

2024/1/20 9:24 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\_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	-0.3 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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

Channel In 1 Settings

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

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

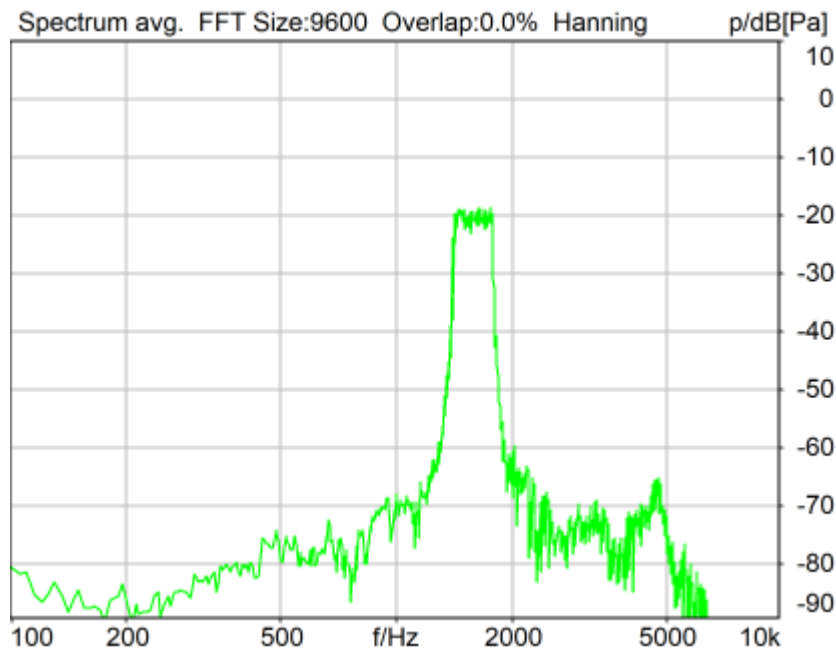
Artificial Head Settings (HATS 1 (HMS II.3))  
 Ser. Nr.            12306613                      Pinna Type            Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 32.62 dB (2.34%) Ok

**Ok**

2024/1/20 9:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	lower
Run 1	20.00 dB

Meas. Setting off

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

**Source: act\_rpn\_b250ms\_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 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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

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

**labCORE Routing**

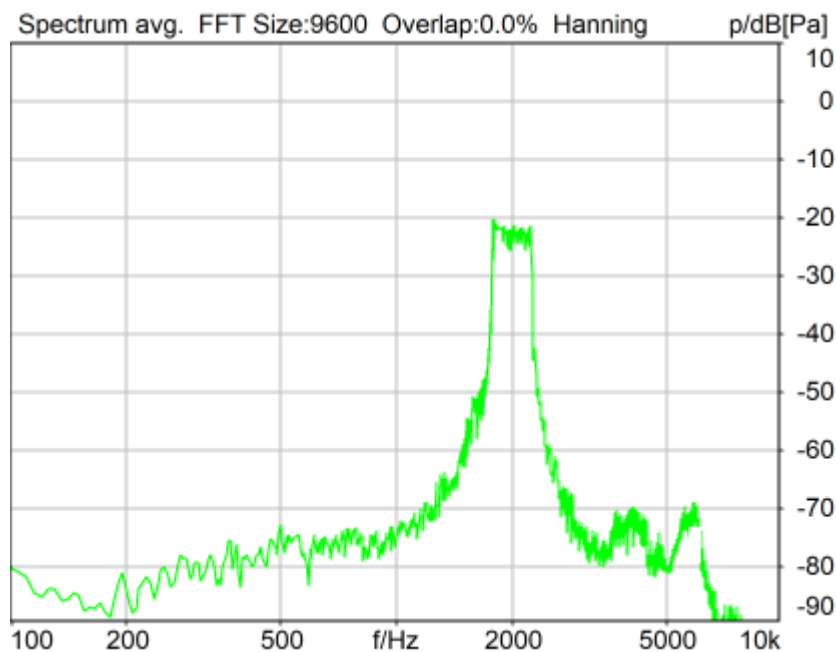
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
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): 26.65 dB (4.65%) Ok

**Ok**

2024/1/20 9:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

**Calibration**

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_2000Hz

**labCORE Settings**

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

-----



## labCORE Routing

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

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

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

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

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

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

## Channel In 1 Settings

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

## Channel In 2 Settings

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

## Channel In 3 Settings

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

## Channel In 4 Settings

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

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

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

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

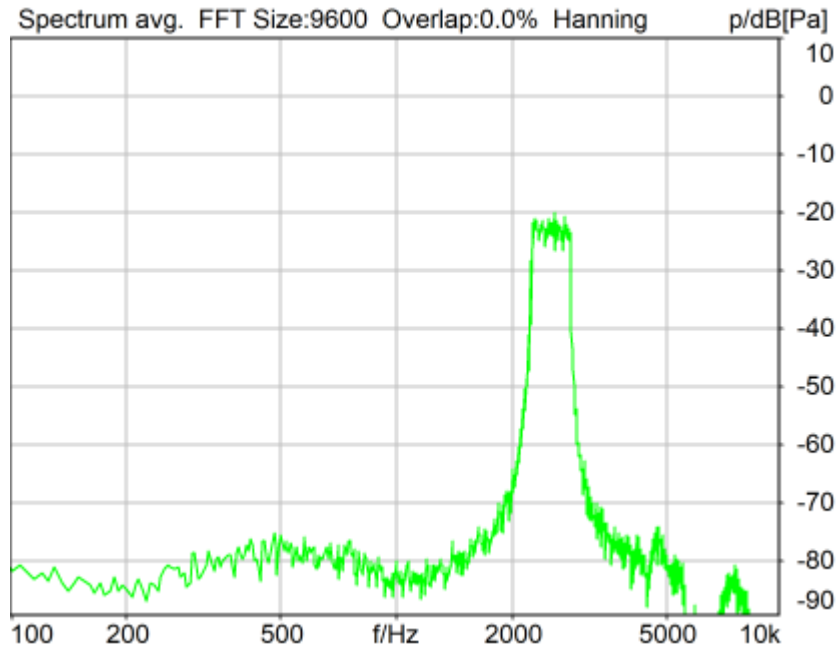
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 30.91 dB (2.85%) Ok

**Ok**

2024/1/20 9:26 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	-0.3 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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
 Store to variable RCVWB10\_2500Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

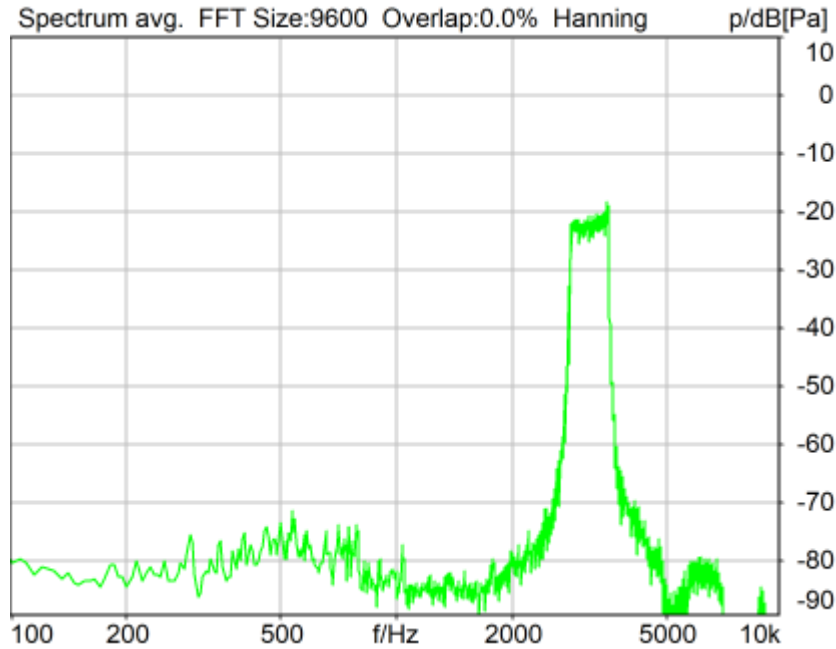
Ser. Nr.	12306613	Pinna Type	Type 3.3
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**HIB Settings**

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): 33.39 dB (2.14%) Ok

**Ok**

2024/1/20 9:26 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 °
		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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

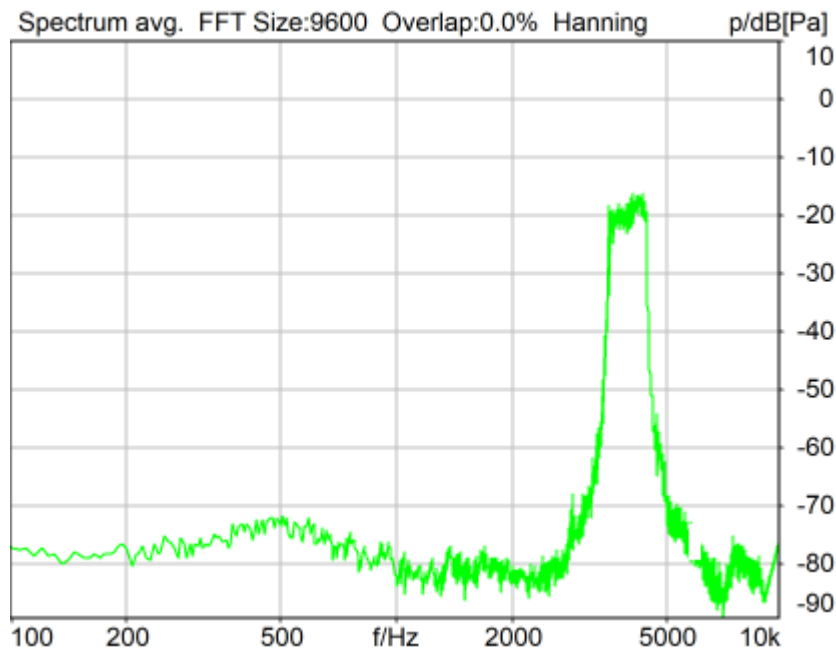
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 29.94 dB (3.19%) Ok

**Ok**

2024/1/20 9:27 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	-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_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_4000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

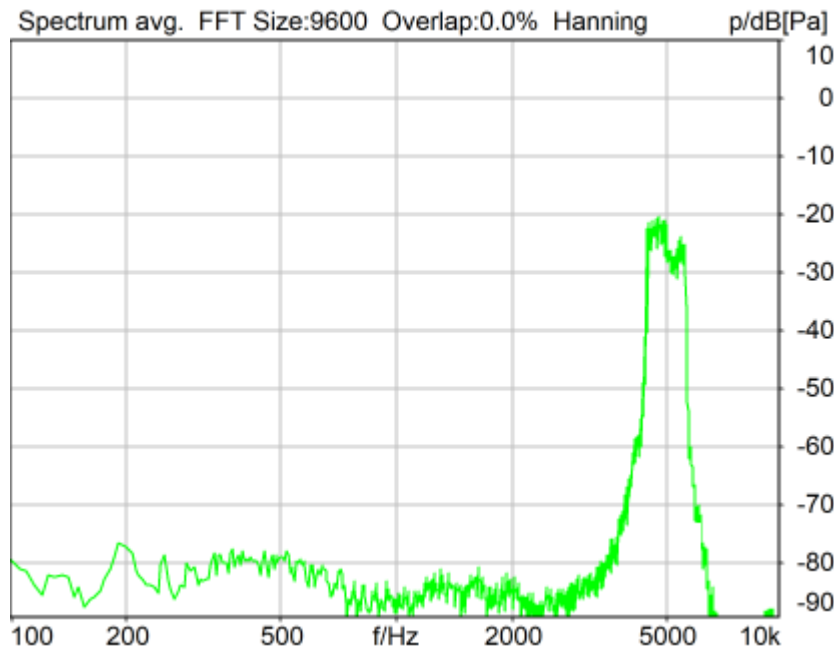
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name 60020095 Serial 60020095  
 HIB Mode Mobile Measurement Impedance 32 Ohm  
 Gain out 1 -40.00 dB Gain out 2 0.00 dB  
 Gain in 1 0.00 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): 32.43 dB (2.39%) Ok

**Ok**

2024/1/20 9:27 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	-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.	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

Store to variable RCVWB10\_5000Hz

#### labCORE Settings

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

#### labCORE Routing

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

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

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

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

Range Ch. 1	0.00 dB	Range Ch. 2	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	29.31 dB
2	315Hz	26.52 dB
3	400Hz	24.43 dB
4	500Hz	29.72 dB
5	630Hz	29.12 dB
6	800Hz	29.33 dB
7	1000Hz	25.93 dB
8	1250Hz	21.29 dB
9	1600Hz	32.62 dB
10	2000Hz	26.65 dB
11	2500Hz	30.91 dB
12	3150Hz	33.39 dB
13	4000Hz	29.94 dB
14	5000Hz	32.43 dB

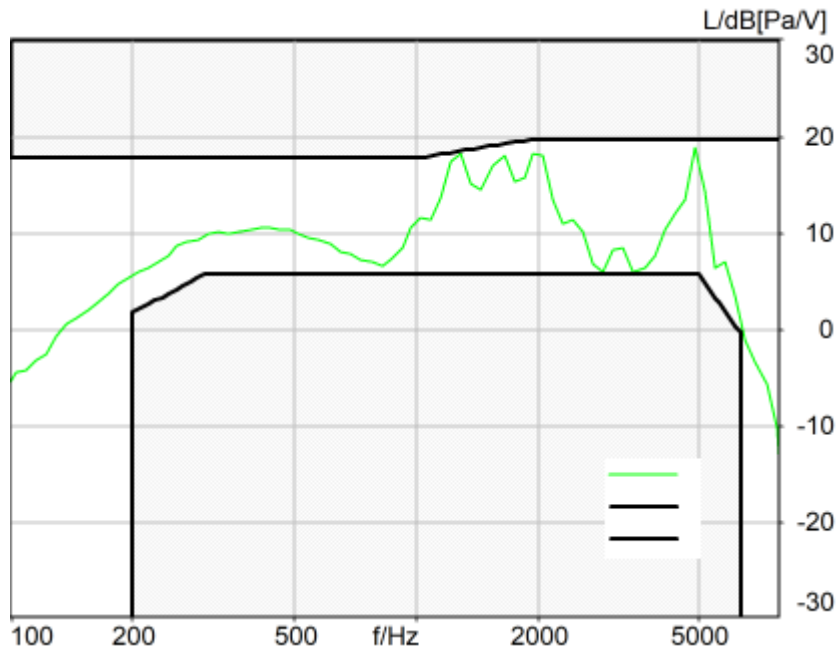
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.29dB at 1250Hz.

2024/1/20 9:27 ACQUA

### 5.3 Frequency Response 8N FF

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



Absolute minimal distance  
0.26 dB at 2883.7 Hz Ok

**Ok**

2024/1/22 17:27 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

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

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

### Output Equalization/Filter

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

### Analysis

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

### Special Features

Compensate delay 202.1000 ms (D\_RCV\_WB, Delay (Cross))

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

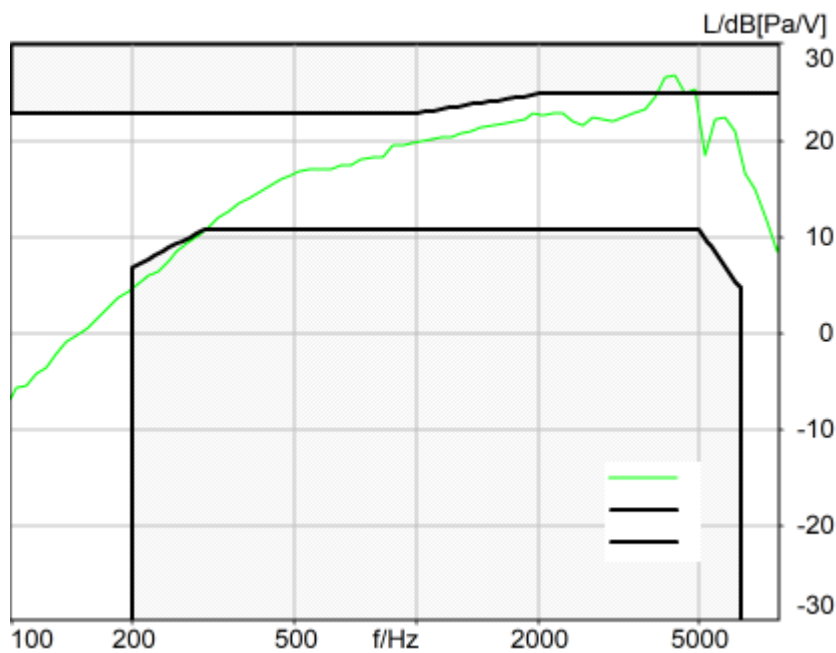
Ser. Nr. 12306613 Pinna Type Type 3.3

**HIB Settings**

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

**5.3 Frequency Response 8N DF**

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



Absolute minimal distance  
 -1.97 dB at 4369.4 Hz Not Ok

**Not Ok**

2024/1/20 9:14 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	-3.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	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 202.1000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

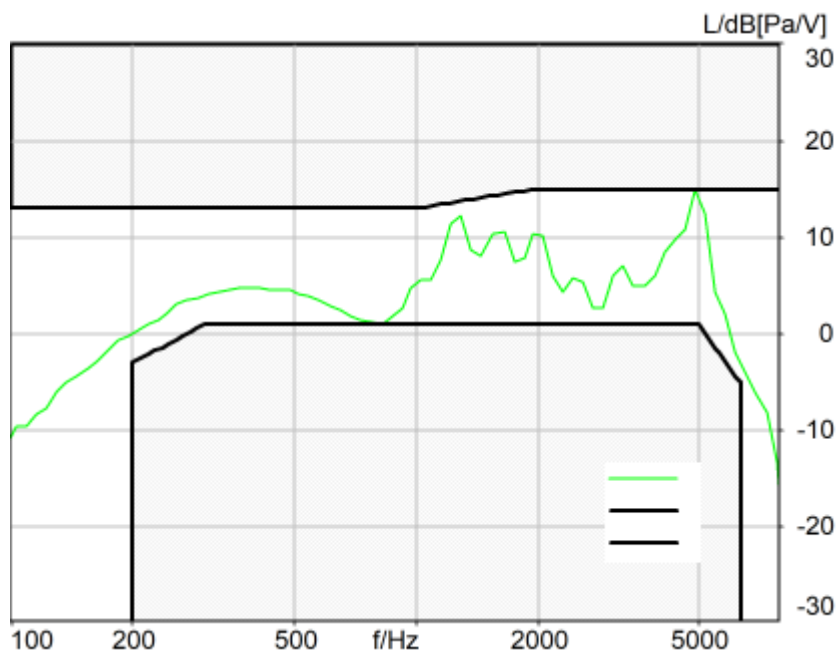
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

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

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On
-----			
Analog Out Mainboard Settings (Analog Out 1/2)			
Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-----			
Microphone Settings (Mic Amp. (Slot 6))			
Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
-----			
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

### 5.3 Frequency Response 2N FF

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



Absolute minimal distance

0.08 dB at 4870.0 Hz Ok

## Ok

2024/1/22 17:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

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

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +

Pause till end of file

Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

### Calibration

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

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

### Special Features

Compensate delay 202.1000 ms (D\_RCV\_WB, Delay (Cross))

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings



```

labCORE Serial  77000207          Nickname
Firmware        3.4.17           Sync Source   Internal
Clock Pitch    0.00 ppm
-----
labCORE Routing
Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1  <- Analog In 1/2 In 1  <- Radio Tester 1 (CMW500) Out
In Channel 2  <- BEQ Filter 1 R  <- Mic Amp. (Slot 6) In 2  <- HATS 1 (HMS II.3) Mic. Right
-----
Analog In Mainboard Settings (Analog In 1/2)
Range Ch. 1    0.00 dB           Ch. 0 Float   On
Range Ch. 2    0.00 dB           Ch. 1 Float   On
-----
Analog Out Mainboard Settings (Analog Out 1/2)
Range Ch. 1    0.00 dB           Range Ch. 2   0.00 dB
-----
Microphone Settings (Mic Amp. (Slot 6))
Channel In 1 Settings
Range          114 dB[SPL] @ 12.5 mV/Pa Highpass      Off
Polarisation 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

```