

## **Measurement Protocol**

Measurement Object	LTE Band5_10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/2 10:50
Responsible Person	audio

## Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	105.2	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.29	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.71	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.32	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.54	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.96	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.13	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.93	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.50	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	45.58	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.82	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.31	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.94	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 400Hz)	30.32	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.80	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.64	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	34.39	LTE Band5

- 630 Hz NB		0.0 dB		_10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.60	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.22	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.70	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	43.16	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	42.26	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	43.33	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.49	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 500Hz)	30.64	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1747.8 Hz	0.63	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.27	LTE Band5 _10QPSK_50RB_0_AMR NB 12.2kbps_CH20525

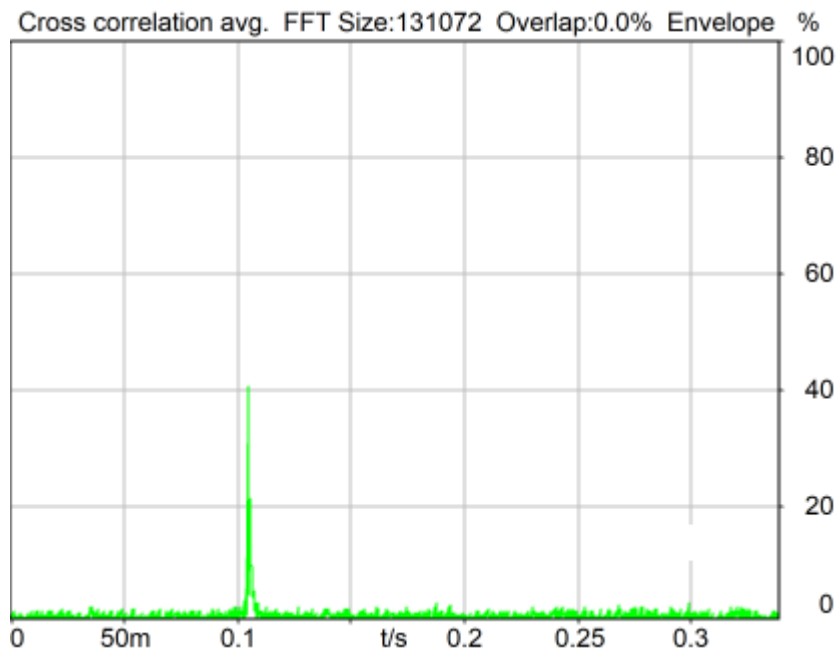
---

Overall Receive Delay NB	6
5.1a Receive Volume Control Performance 8N NB	9
5.1b Receive Volume Control Performance 2N NB	11
5.2 RCV Distortion and Noise - 400 Hz NB	13
5.2 RCV Distortion and Noise - 500 Hz NB	16
5.2 RCV Distortion and Noise - 630 Hz NB	19
5.2 RCV Distortion and Noise - 800 Hz NB	22
5.2 RCV Distortion and Noise - 1000 Hz NB	25
5.2 RCV Distortion and Noise - 1250 Hz NB	28
5.2 RCV Distortion and Noise - 1600 Hz NB	31
5.2 RCV Distortion and Noise - 2000 Hz NB	34
5.2 RCV Distortion and Noise - 2500 Hz NB	37
5.2 RCV Distortion and Noise - 3150 Hz NB	40
Report - Receive Distortion and Noise (Conversational Gain)	43
5.2 RCV Distortion and Noise - 400 Hz NB	44
5.2 RCV Distortion and Noise - 500 Hz NB	47
5.2 RCV Distortion and Noise - 630 Hz NB	50
5.2 RCV Distortion and Noise - 800 Hz NB	53
5.2 RCV Distortion and Noise - 1000 Hz NB	56
5.2 RCV Distortion and Noise - 1250 Hz NB	59
5.2 RCV Distortion and Noise - 1600 Hz NB	62
5.2 RCV Distortion and Noise - 2000 Hz NB	65
5.2 RCV Distortion and Noise - 2500 Hz NB	68
5.2 RCV Distortion and Noise - 3150 Hz NB	71
Report - Receive Distortion and Noise (Conversational Gain)	74
5.3 Frequency Response 8N FF HANB	75
5.3 Frequency Response 2N FF HANB	78



## Overall Receive Delay NB

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



Delay (Cross): 105.2 ms

2024/1/16 15:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

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

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

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

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

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

Output ch.1: 0.00 dB

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

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

MECRP Delta Ye 0.0 mm                      Rotation Delta A 0.0 °  
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	-5.1 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**

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

**Special Features**

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

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

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

Block mode Bypass

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

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

**HIB Settings**

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

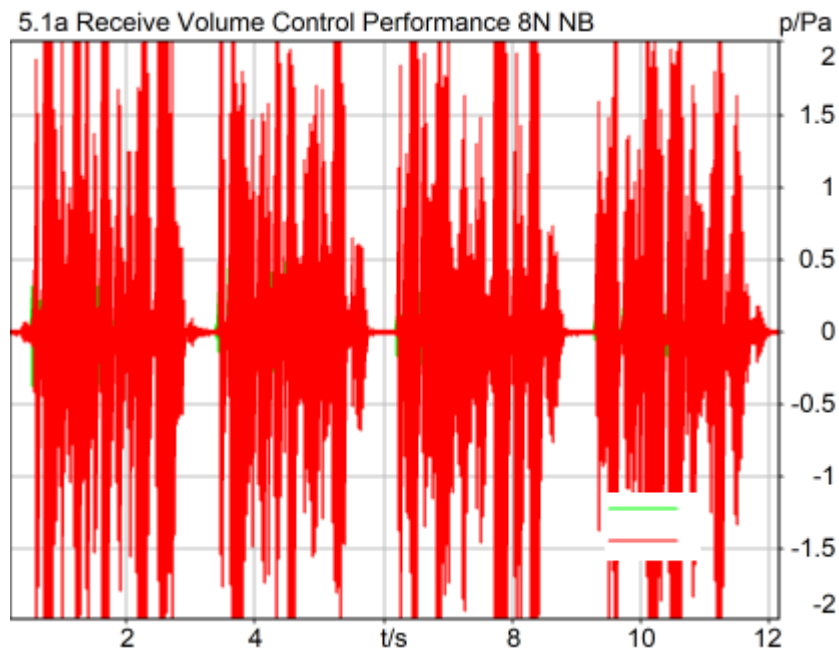
Gain in 1            0.00 dB  
Mic 1 Power Supply Off

Gain in 2            0.00 dB  
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: 87.29 dB[SPL], Act.: 86.15%  
Corrected Speech Level: 17.29 dB[SPL] Not Ok

### Not Ok

2024/1/22 20:16 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

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

### Calibration

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

### Output Equalization/Filter

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

**Analysis**

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

**Special Features**

Show source signal Source ch.2  
Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

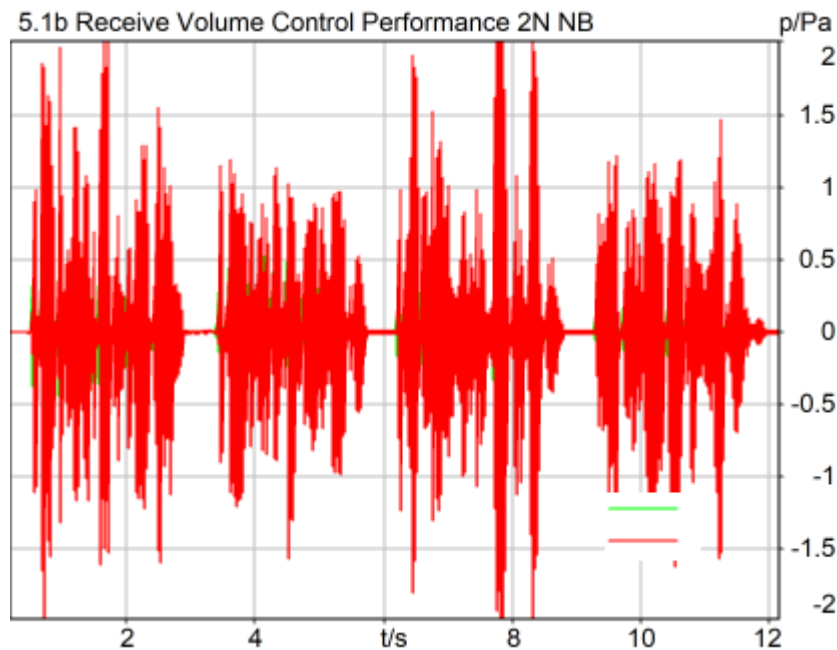
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.1b Receive Volume Control Performance 2N NB

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



### Correction

X - 70

Speech Level RCV: 81.71 dB[SPL], Act.: 86.00%

Corrected Speech Level: 11.71 dB[SPL] Ok

### Ok

2024/1/22 20:26 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

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

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

### Output Equalization/Filter

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

**Analysis**

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

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

-----  
**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

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

Block mode Bypass

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

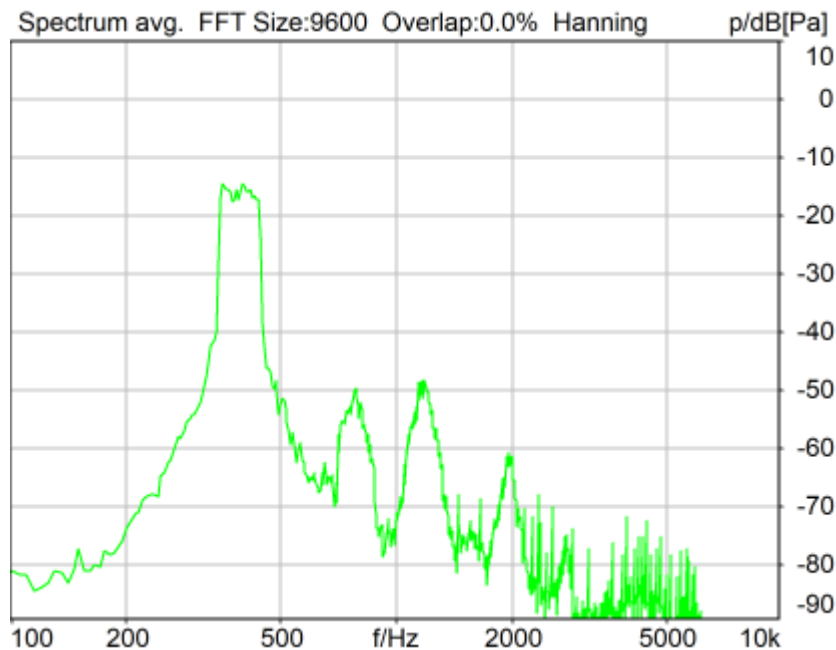
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 30.32 dB (3.05%) Ok

Ok

2024/1/16 15:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

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

### Output Equalization/Filter

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

### Analysis

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

### Special Features

Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

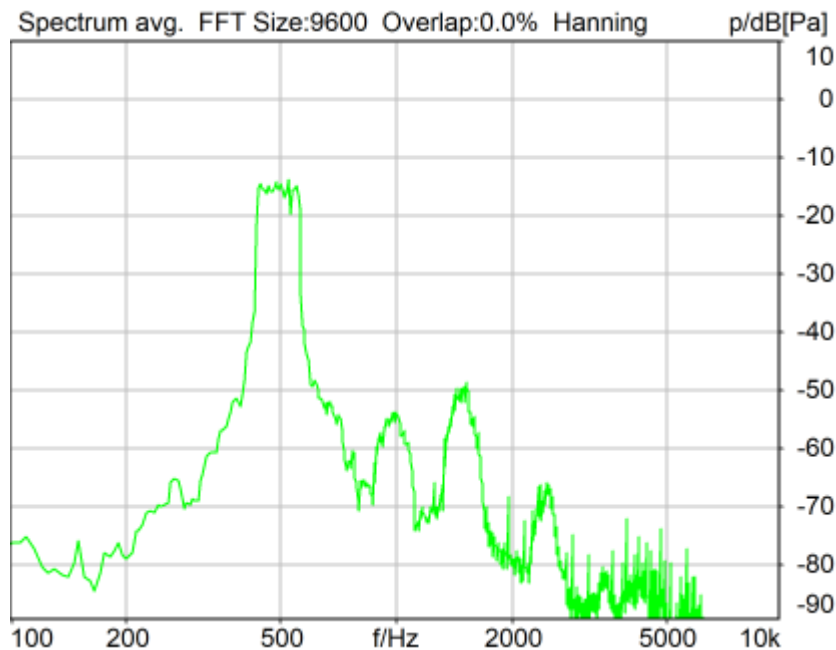
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 30.54 dB (2.97%) Ok

Ok

2024/1/16 15:48 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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

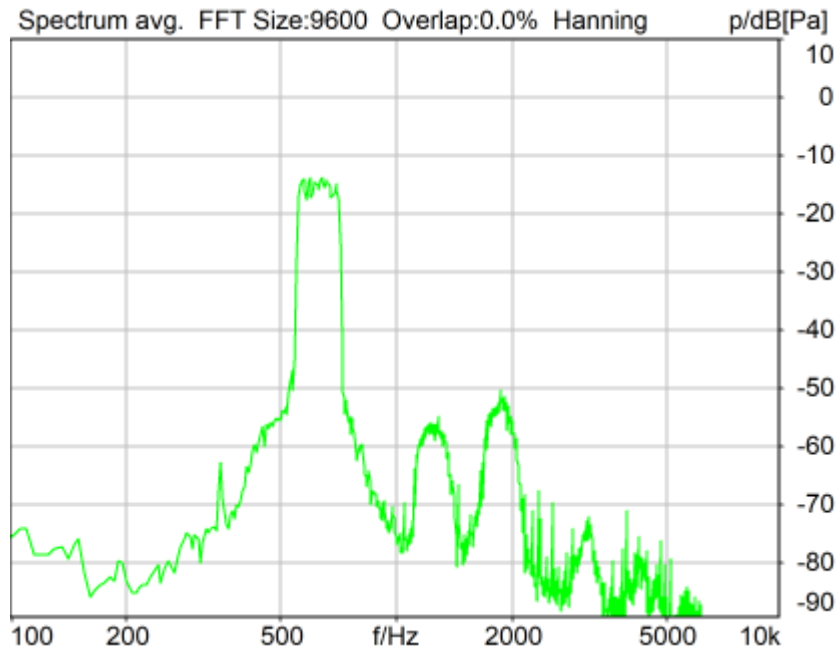
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 32.96 dB (2.25%) Ok

**Ok**

2024/1/16 15:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

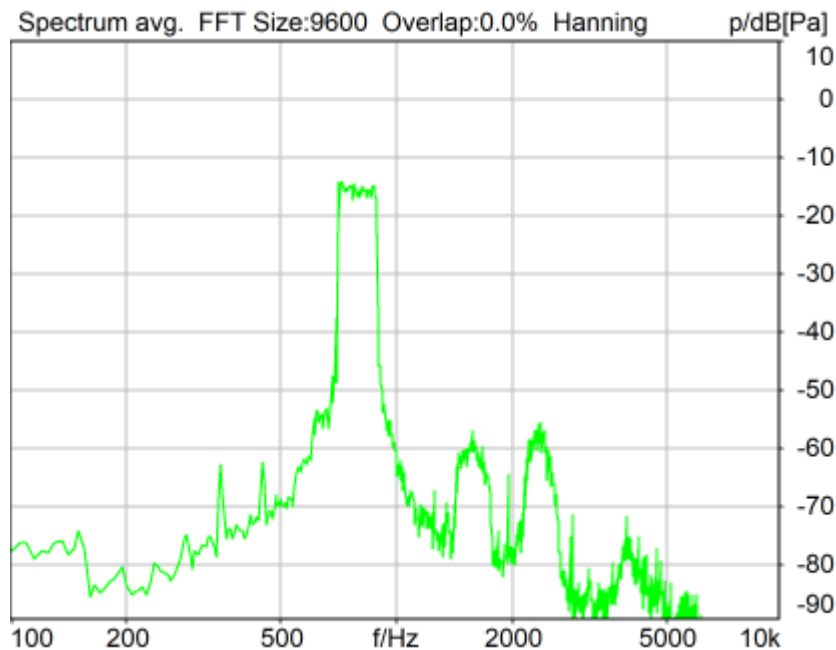
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 36.13 dB (1.56%) Ok

Ok

2024/1/16 15:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

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

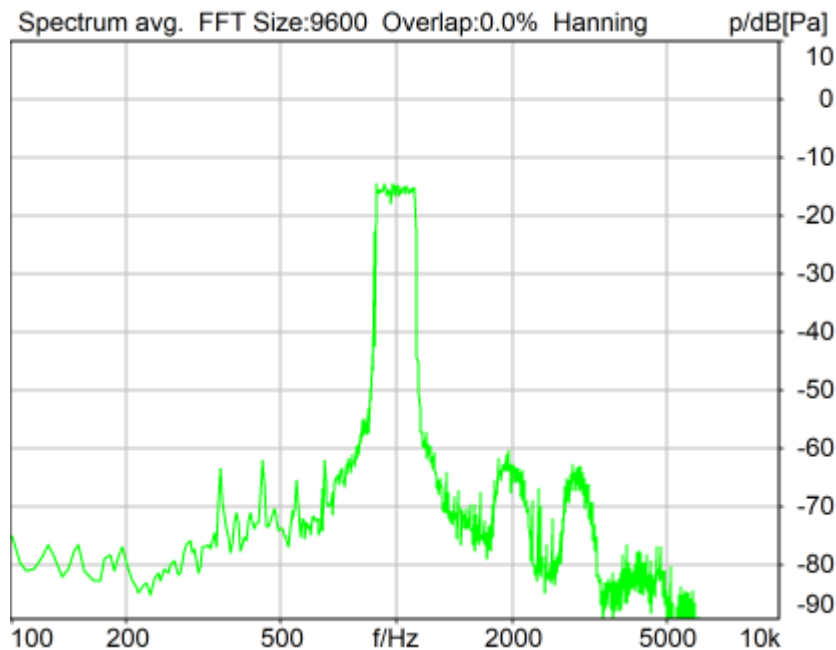
### HIB Settings

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



## 5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 39.93 dB (1.01%) Ok

Ok

2024/1/16 15:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

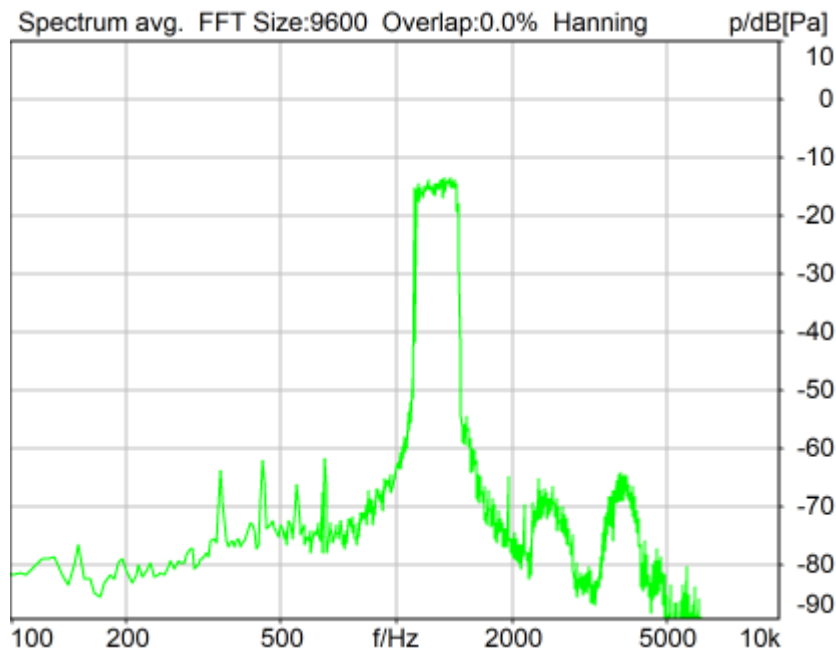
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 31.50 dB (2.66%) Ok

Ok

2024/1/16 15:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

### Special Features

Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

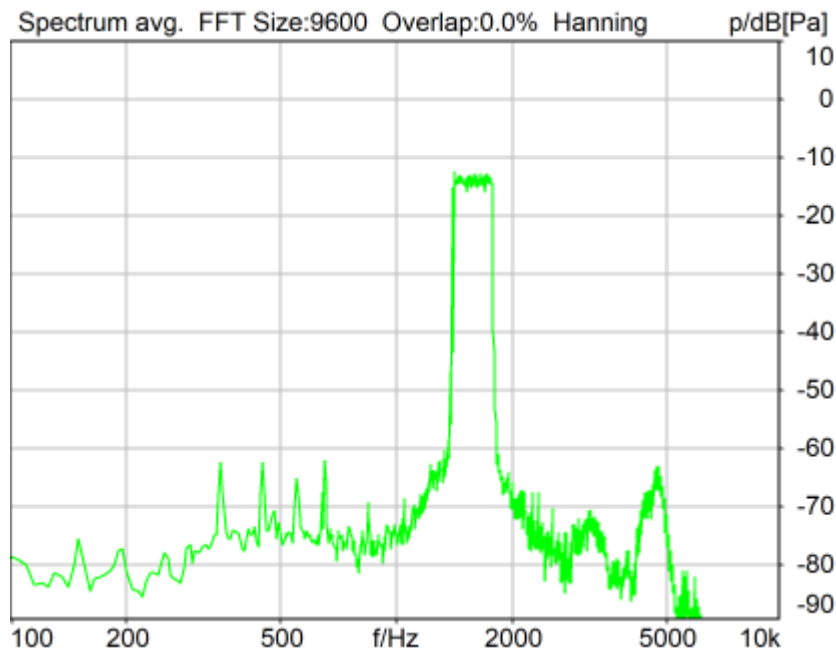
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 45.58 dB (0.53%) Ok

Ok

2024/1/16 15:50 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 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 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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

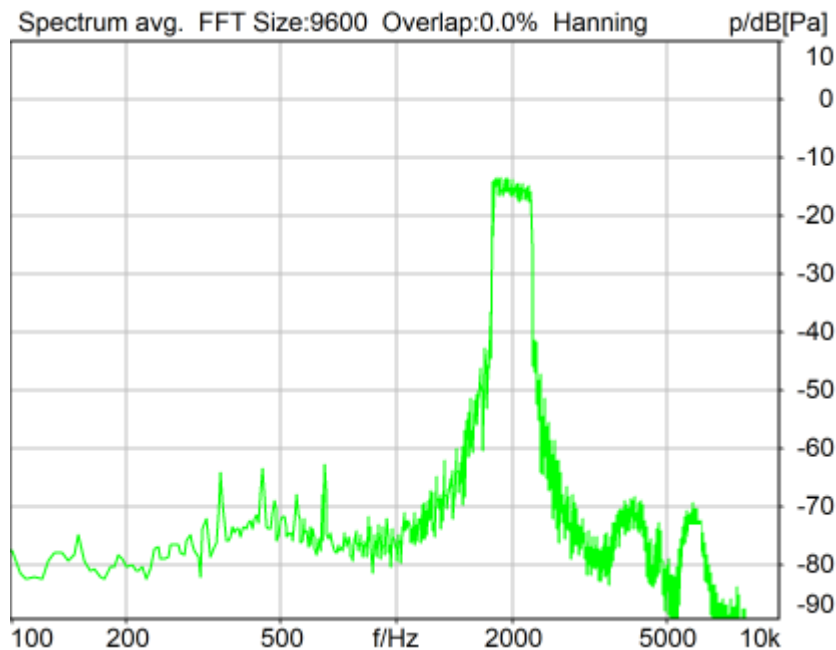
**HIB Settings**



HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 32.82 dB (2.29%) Ok

Ok

2024/1/16 15:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

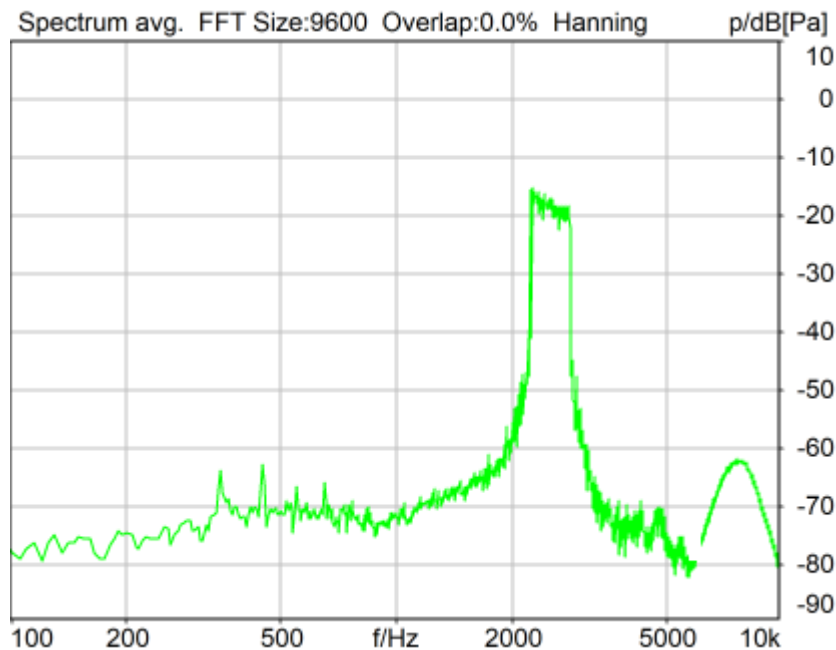
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 32.31 dB (2.42%) Ok

Ok

2024/1/16 15:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

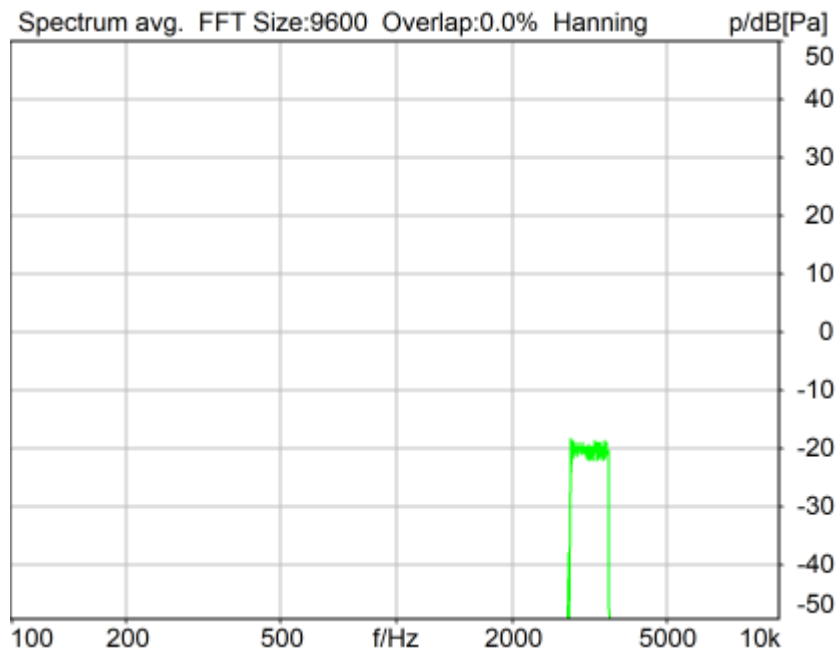
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 35.94 dB (1.60%) Ok

Ok

2024/1/16 15:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta 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
Frequency base	Transformation	FFT size	9600
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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

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

Block mode Bypass

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

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

**HIB Settings**

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

---

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

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

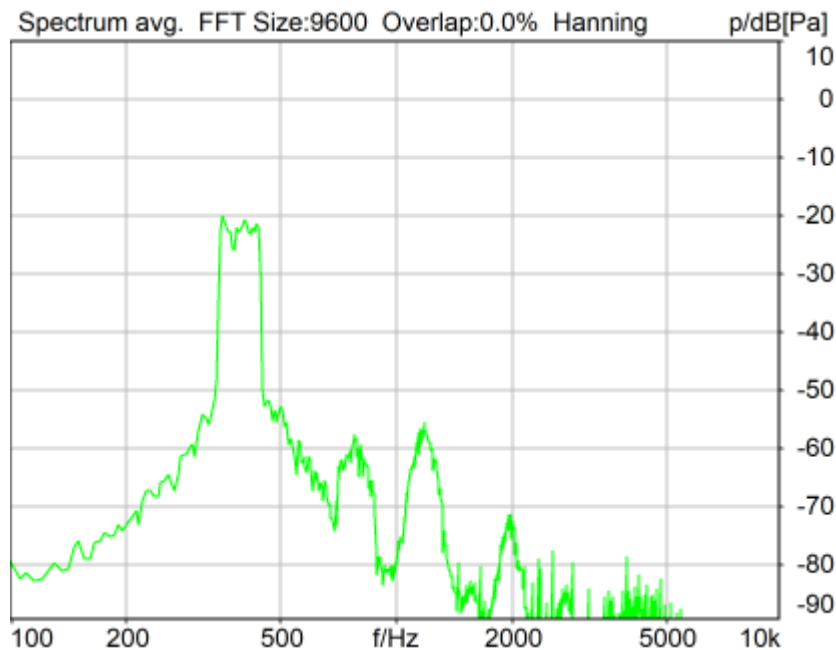
<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	30.32 dB
2	500Hz	30.54 dB
3	630Hz	32.96 dB
4	800Hz	36.13 dB
5	1000Hz	39.93 dB
6	1250Hz	31.50 dB
7	1600Hz	45.58 dB
8	2000Hz	32.82 dB
9	2500Hz	32.31 dB
10	3150Hz	35.94 dB

All SDNRs were greater than 20.0 dB, requirement was met.  
Smallest SDNR was 30.32dB at 400Hz.

2024/1/16 15:51 ACQUA

## 5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 30.80 dB (2.89%) Ok

Ok

2024/1/16 15:38 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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
Frequency base	Transformation	FFT size	9600
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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

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

Block mode Bypass

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

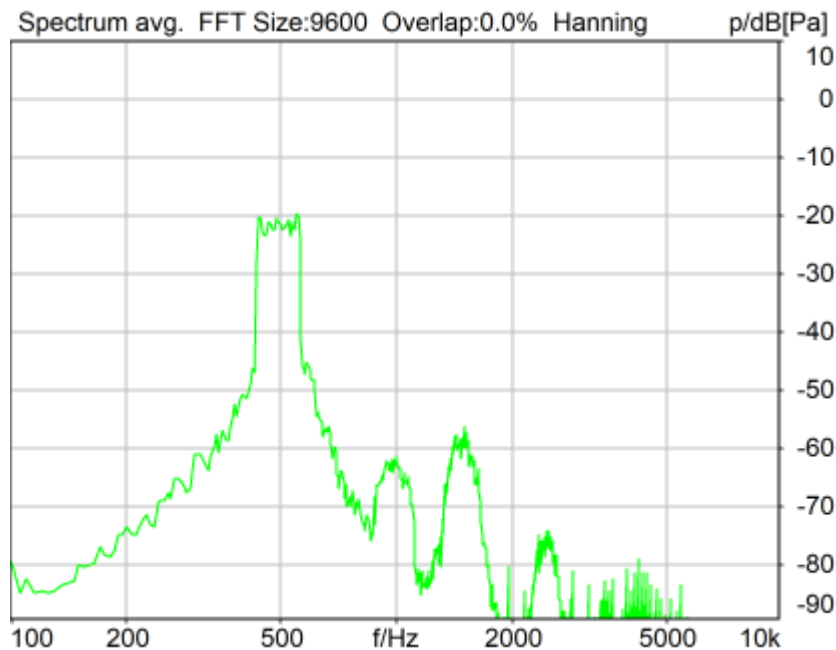
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 30.64 dB (2.94%) Ok

Ok

2024/1/16 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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
Frequency base	Transformation	FFT size	9600
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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

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

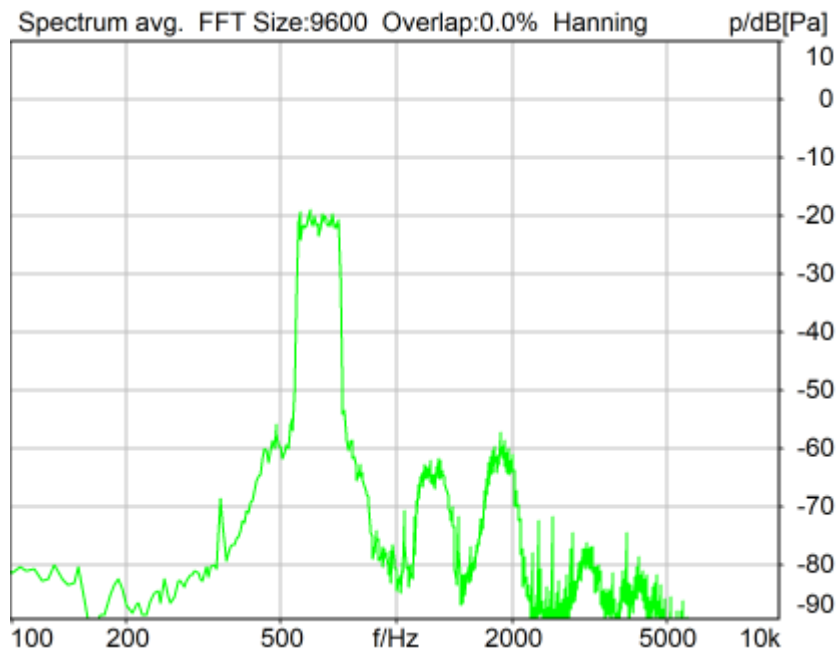
### HIB Settings



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

## 5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.39 dB (1.91%) Ok

Ok

2024/1/16 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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
Frequency base	Transformation	FFT size	9600
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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

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

Block mode Bypass

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

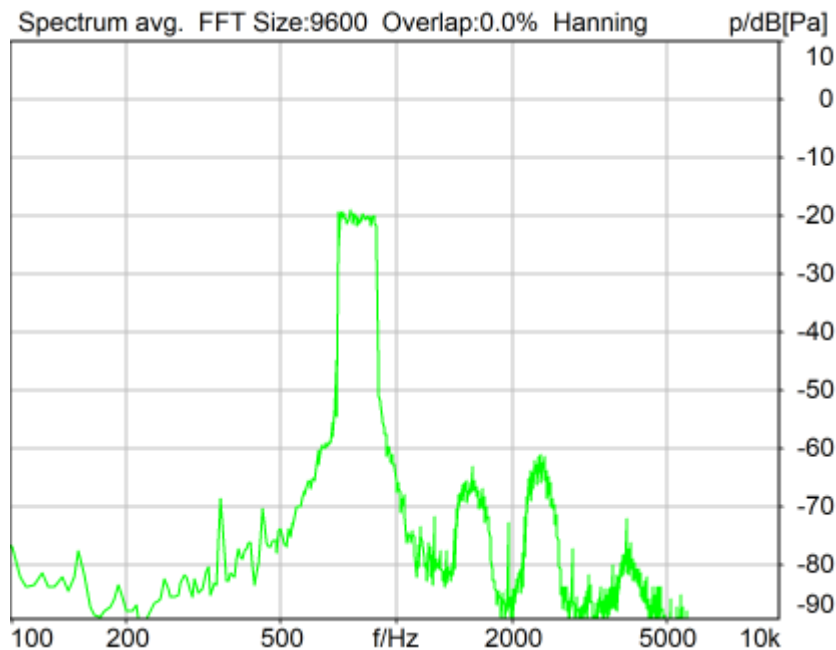
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 36.60 dB (1.48%) Ok

Ok

2024/1/16 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

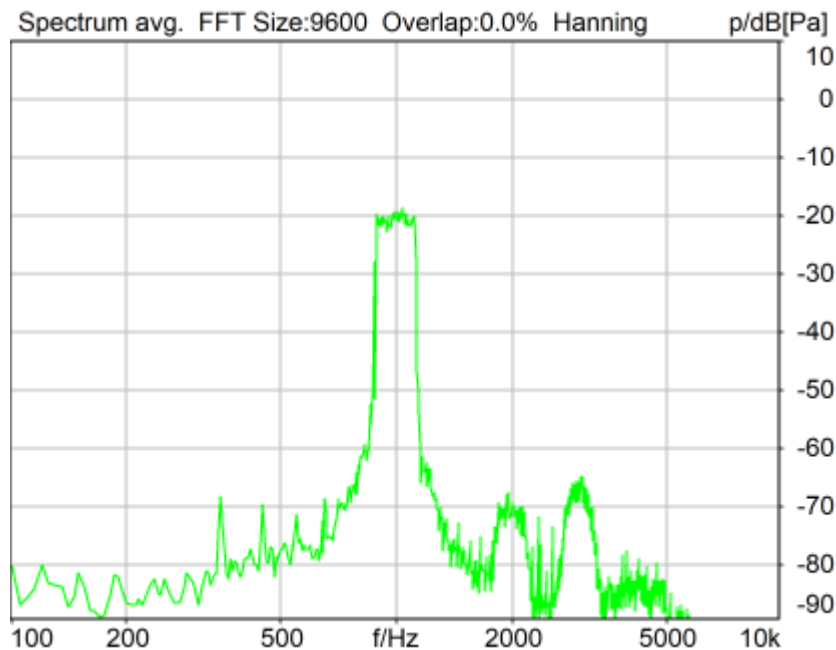
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 39.22 dB (1.09%) Ok

Ok

2024/1/16 15:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

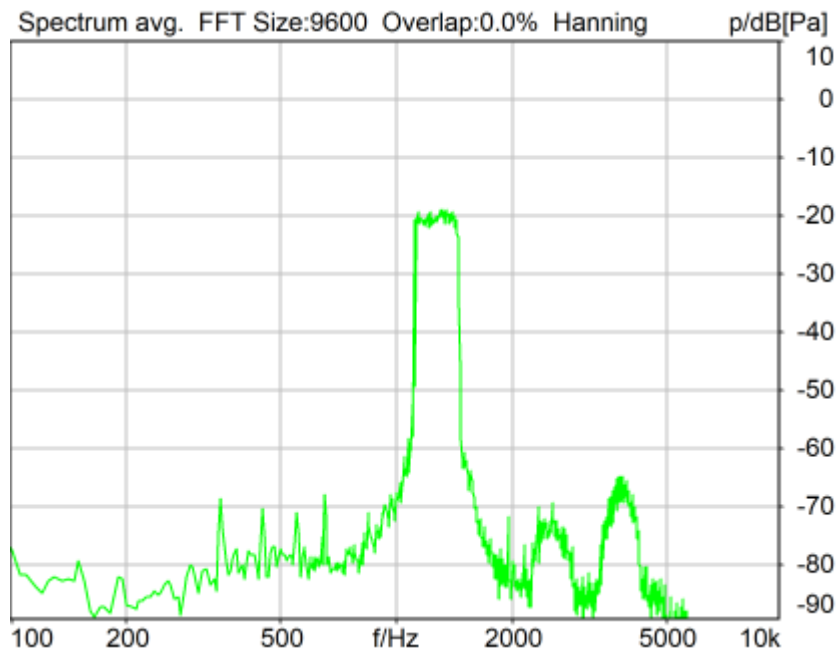
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 31.70 dB (2.60%) Ok

Ok

2024/1/16 15:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

### Special Features

Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

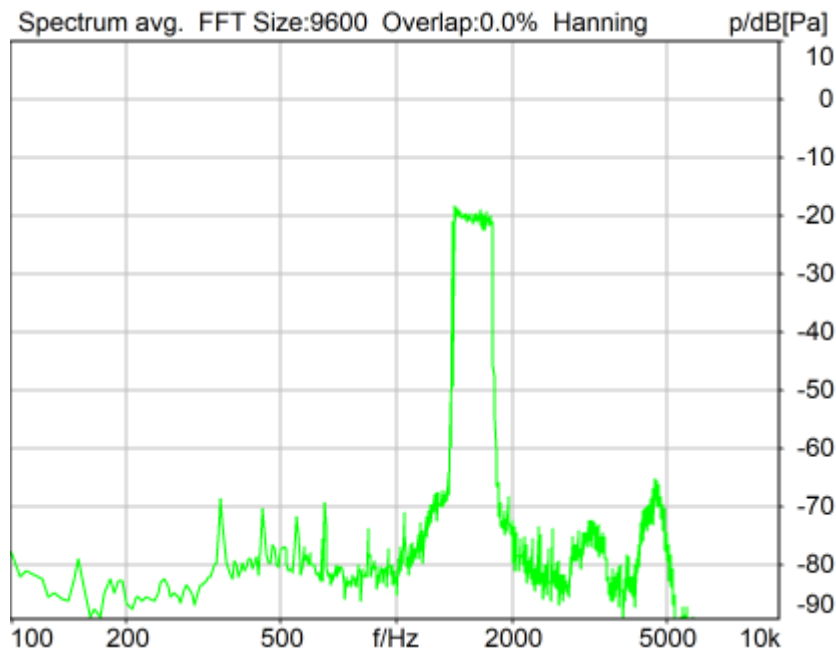
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 43.16 dB (0.70%) Ok

Ok

2024/1/16 15:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

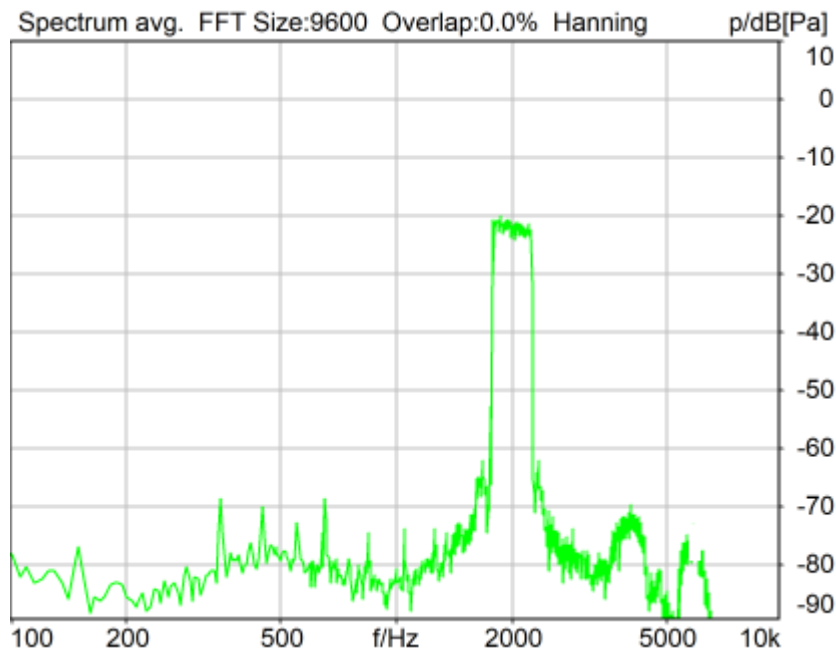
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 42.26 dB (0.77%) Ok

Ok

2024/1/16 15:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

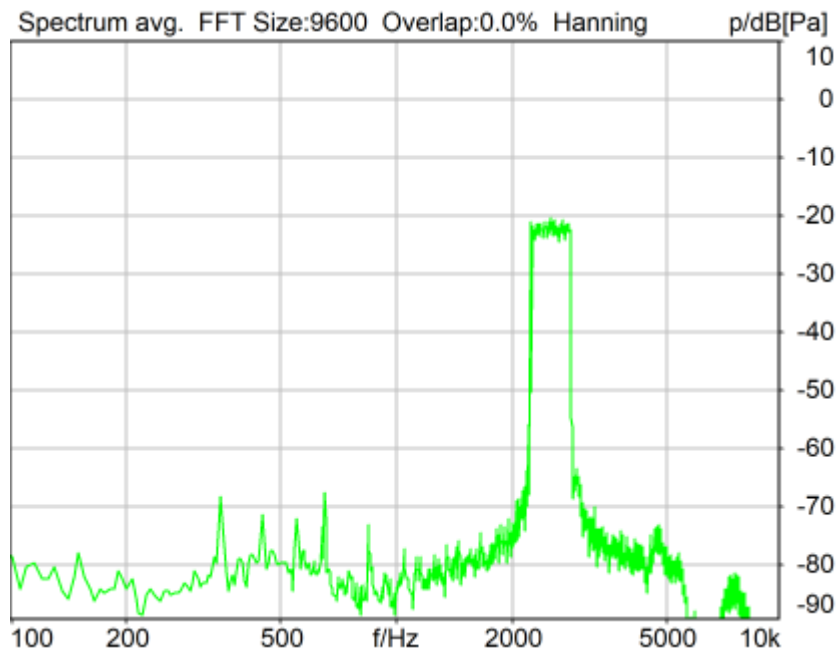
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 43.33 dB (0.68%) Ok

Ok

2024/1/16 15:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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.	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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

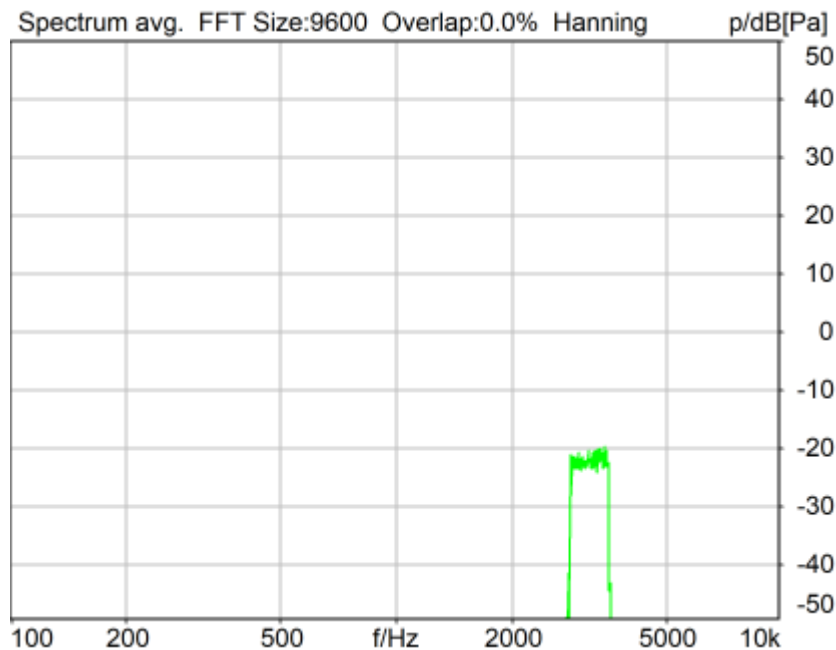
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 33.49 dB (2.12%) Ok

Ok

2024/1/16 15:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 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
Frequency base	Transformation	FFT size	9600
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 105.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**labCORE Settings**

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

labCORE Routing

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

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

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

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

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

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

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

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

Block mode Bypass

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

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

**HIB Settings**



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

---

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

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

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	30.80 dB
2	500Hz	30.64 dB
3	630Hz	34.39 dB
4	800Hz	36.60 dB
5	1000Hz	39.22 dB
6	1250Hz	31.70 dB
7	1600Hz	43.16 dB
8	2000Hz	42.26 dB
9	2500Hz	43.33 dB
10	3150Hz	33.49 dB

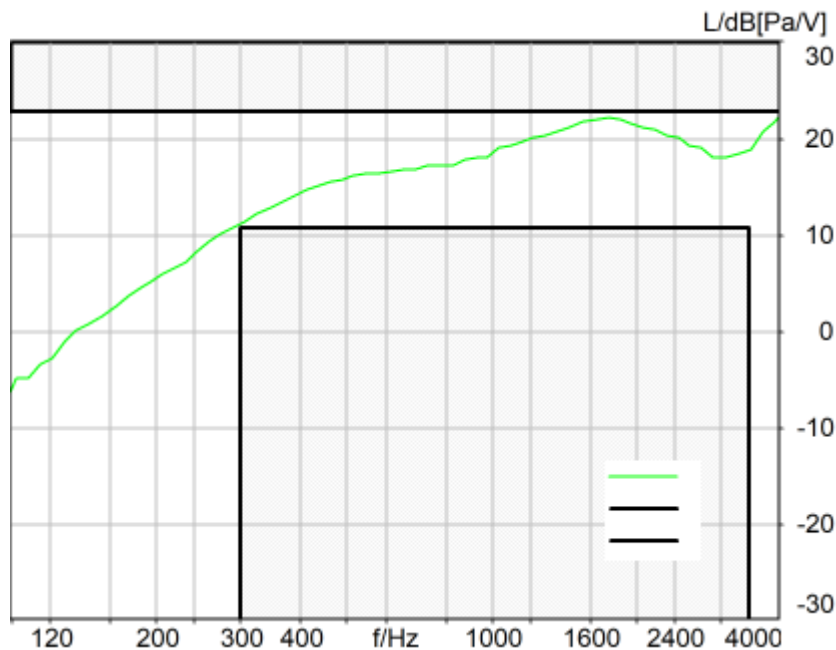
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 30.64dB at 500Hz.

2024/1/16 15:42 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance  
0.63 dB at 1747.8 Hz Ok

Ok

2024/1/16 15:52 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

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

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

Pause 0.5 s +

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

Pause till end of file

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

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

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

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-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 start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

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

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

Block mode      Bypass

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

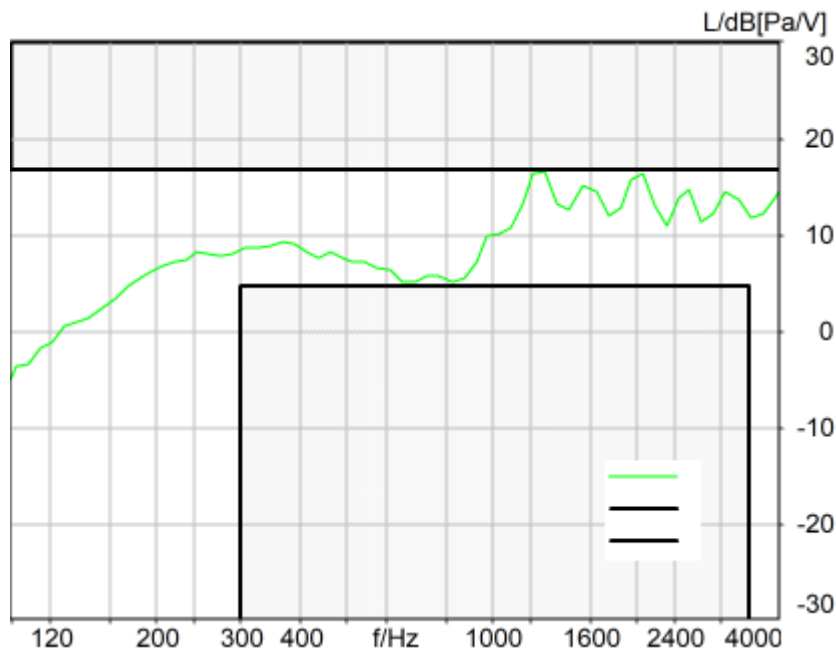
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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  
0.27 dB at 1285.9 Hz Ok

Ok

2024/1/16 15:44 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

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

Meas. Setting off

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

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

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

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

Pause 0.5 s +

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

Pause till end of file

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

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

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

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	0.5 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

Compensate delay 105.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

---

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

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

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

Pinna Type      Type 3.3

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/2 10:51
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	109.7	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	17.30	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	11.88	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.93	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.46	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.43	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.63	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.53	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.56	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.58	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.95	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	46.73	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	44.45	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	40.65	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	43.50	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.77	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	31.38	LTE

- 5000 Hz WB		0.0 dB		Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 4000Hz)	26.77	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.44	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.01	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.37	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.88	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.27	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	37.01	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.05	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.85	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	44.36	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	41.98	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.71	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	39.37	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.10	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.01	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 4000Hz)	26.10	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.71	LTE Band5_10QPSK_50RB_0_AMR WB 23.85kbps_CH20525
5.3 Frequency Response 2N	Ok	Min. dist. to tolerance	0.05	LTE

---

FF	scheme [dB], 4119.5 Hz	Band5_10QPSK_50RB_0_AM R WB 23.85kbps_CH20525
----	---------------------------	--

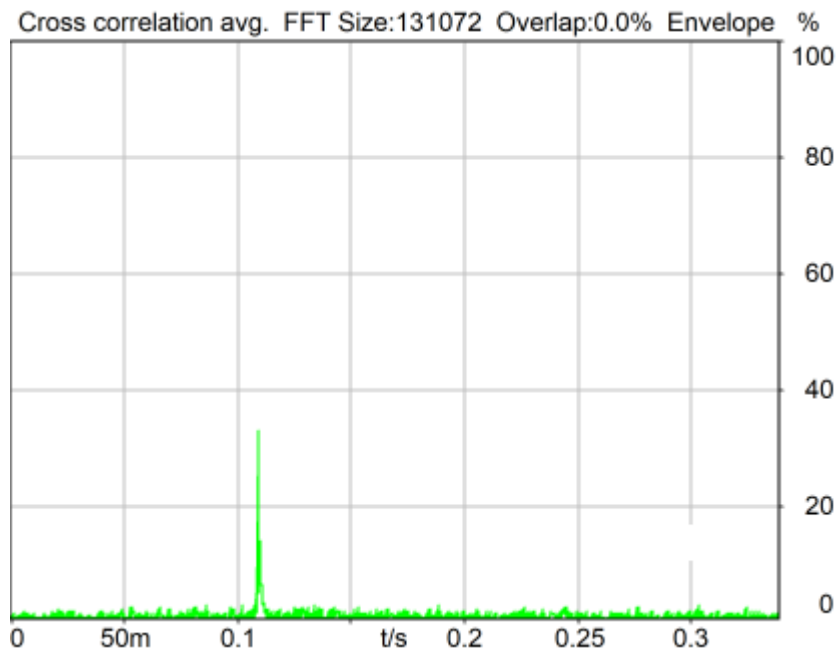
---

Overall Receive Delay WB	7
5.1a Receive Volume Control Performance 8N WB	10
5.1b Receive Volume Control Performance 2N WB	12
5.2 RCV Distortion and Noise - 250 Hz WB	14
5.2 RCV Distortion and Noise - 315 Hz WB	17
5.2 RCV Distortion and Noise - 400 Hz WB	20
5.2 RCV Distortion and Noise - 500 Hz WB	23
5.2 RCV Distortion and Noise - 630 Hz WB	26
5.2 RCV Distortion and Noise - 800 Hz WB	29
5.2 RCV Distortion and Noise - 1000 Hz WB	32
5.2 RCV Distortion and Noise - 1250 Hz WB	35
5.2 RCV Distortion and Noise - 1600 Hz WB	38
5.2 RCV Distortion and Noise - 2000 Hz WB	41
5.2 RCV Distortion and Noise - 2500 Hz WB	44
5.2 RCV Distortion and Noise - 3150 Hz WB	47
5.2 RCV Distortion and Noise - 4000 Hz WB	50
5.2 RCV Distortion and Noise - 5000 Hz WB	53
Report - Receive Distortion and Noise (Conversational Gain)	56
5.2 RCV Distortion and Noise - 250 Hz WB	57
5.2 RCV Distortion and Noise - 315 Hz WB	60
5.2 RCV Distortion and Noise - 400 Hz WB	63
5.2 RCV Distortion and Noise - 500 Hz WB	66
5.2 RCV Distortion and Noise - 630 Hz WB	69
5.2 RCV Distortion and Noise - 800 Hz WB	72
5.2 RCV Distortion and Noise - 1000 Hz WB	75
5.2 RCV Distortion and Noise - 1250 Hz WB	78
5.2 RCV Distortion and Noise - 1600 Hz WB	81
5.2 RCV Distortion and Noise - 2000 Hz WB	84
5.2 RCV Distortion and Noise - 2500 Hz WB	87
5.2 RCV Distortion and Noise - 3150 Hz WB	90
5.2 RCV Distortion and Noise - 4000 Hz WB	93
5.2 RCV Distortion and Noise - 5000 Hz WB	96
Report - Receive Distortion and Noise (Conversational Gain)	99
5.3 Frequency Response 8N FF	100
5.3 Frequency Response 2N FF	103



## Overall Receive Delay WB

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



Delay (Cross): 109.7 ms

2024/1/16 15:06 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)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
		Delta A	0.0 °

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

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.1 N

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

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

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

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

**HIB Settings**

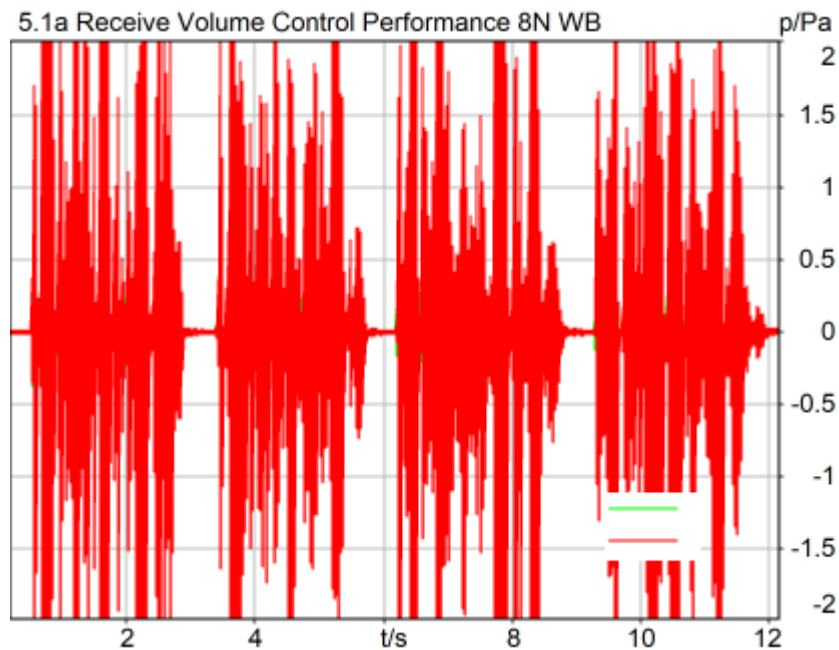
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off





## 5.1a Receive Volume Control Performance 8N WB

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



### Correction

X - 70

Speech Level RCV: 87.30 dB[SPL], Act.: 86.26%  
Corrected Speech Level: 17.30 dB[SPL] Not Ok

### Not Ok

2024/1/22 20:18 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

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

### Calibration

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

### Output Equalization/Filter

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

**Analysis**

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

15.90 dB

**Special Features**

Show source signal Source ch.2  
Compensate delay 109.7000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

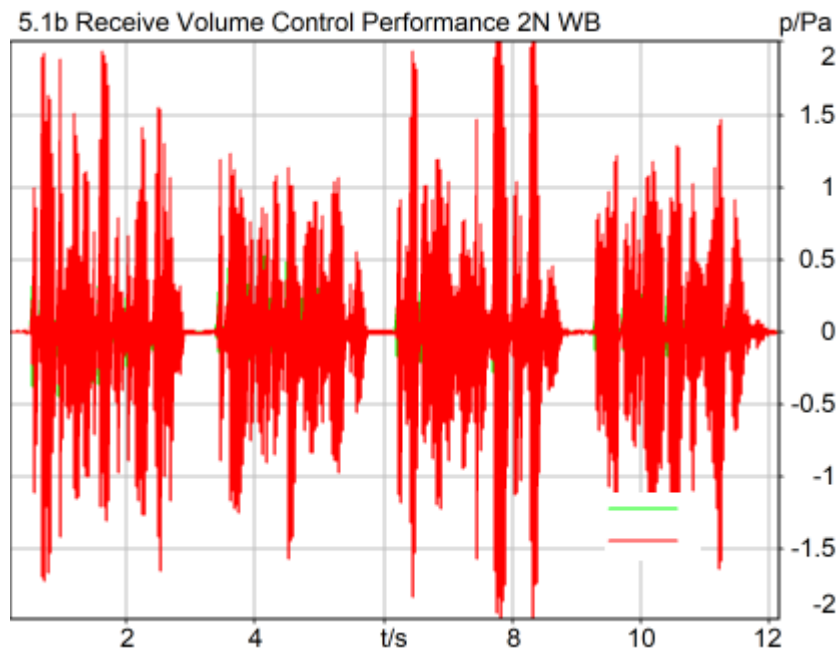
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.1b Receive Volume Control Performance 2N WB

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



### Correction

X - 70

Speech Level RCV: 81.88 dB[SPL], Act.: 85.88%

Corrected Speech Level: 11.88 dB[SPL] Ok

### Ok

2024/1/22 20:24 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

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

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

### Output Equalization/Filter

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

**Analysis**

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

**Special Features**

Show source signal Source ch.2  
Compensate delay 109.7000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

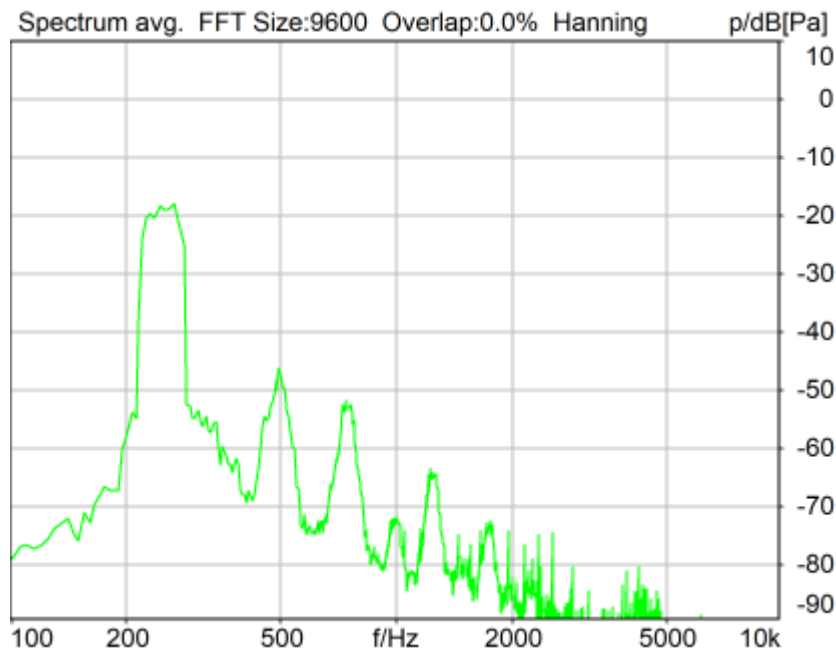
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 29.93 dB (3.19%) Ok

Ok

2024/1/16 15:08 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\_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 C	0.0 °

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

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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
----------	----------	------------	----------

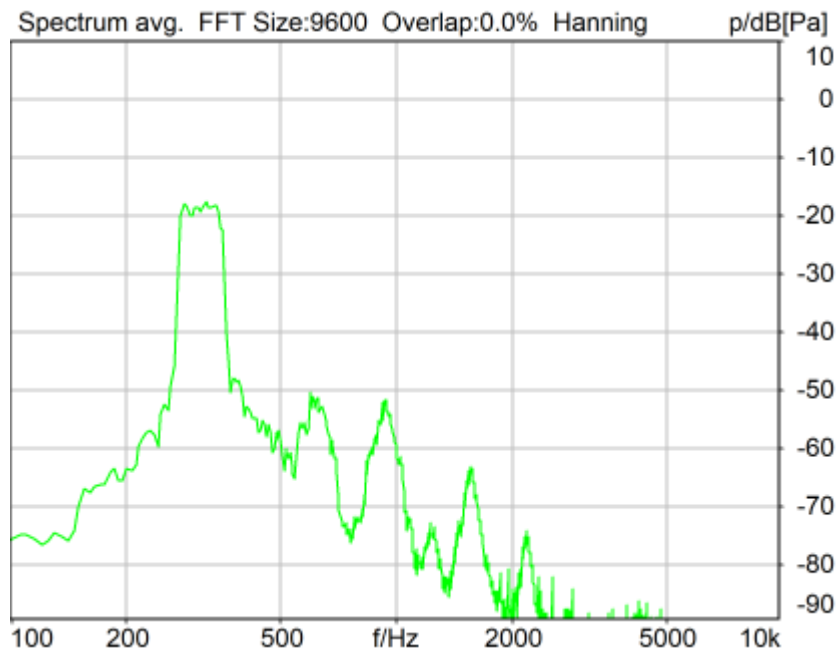
### HIB Settings

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): 30.46 dB (3.00%) Ok

Ok

2024/1/16 15:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

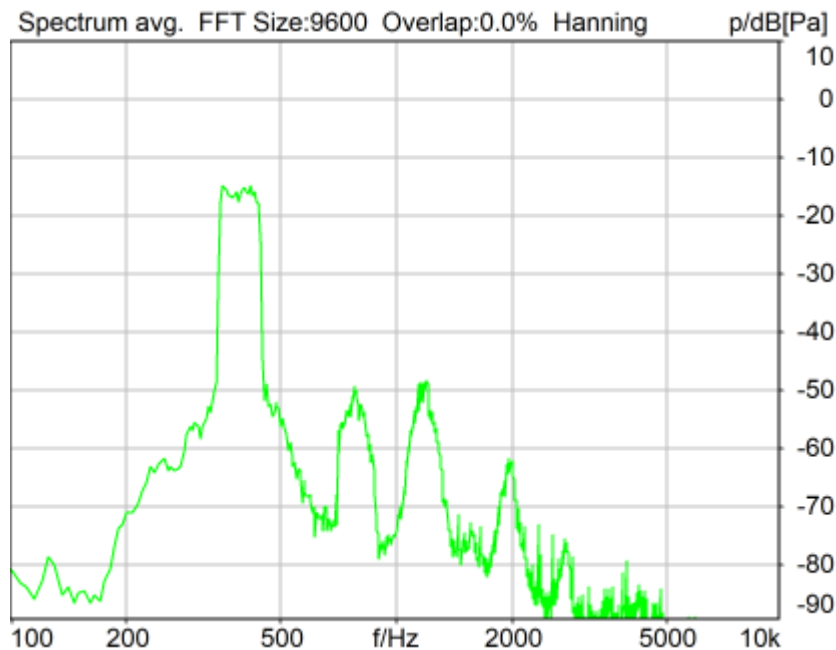
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 30.43 dB (3.01%) Ok

Ok

2024/1/16 15:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

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

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

### Output Equalization/Filter

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

### Analysis

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

### Special Features

Compensate delay 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

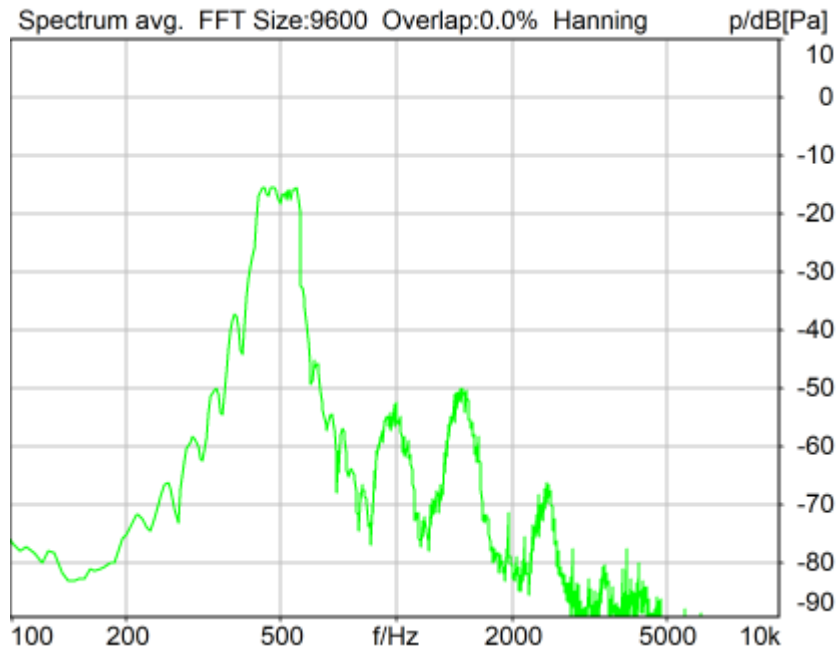
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 28.63 dB (3.70%) Ok

Ok

2024/1/16 15:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

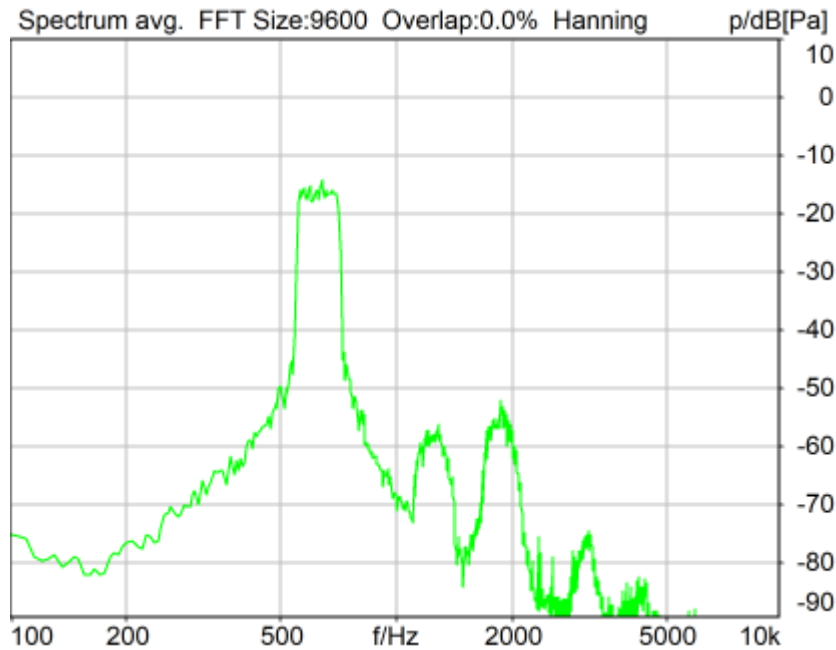
**HIB Settings**



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

## 5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 32.53 dB (2.36%) Ok

Ok

2024/1/16 15:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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))**

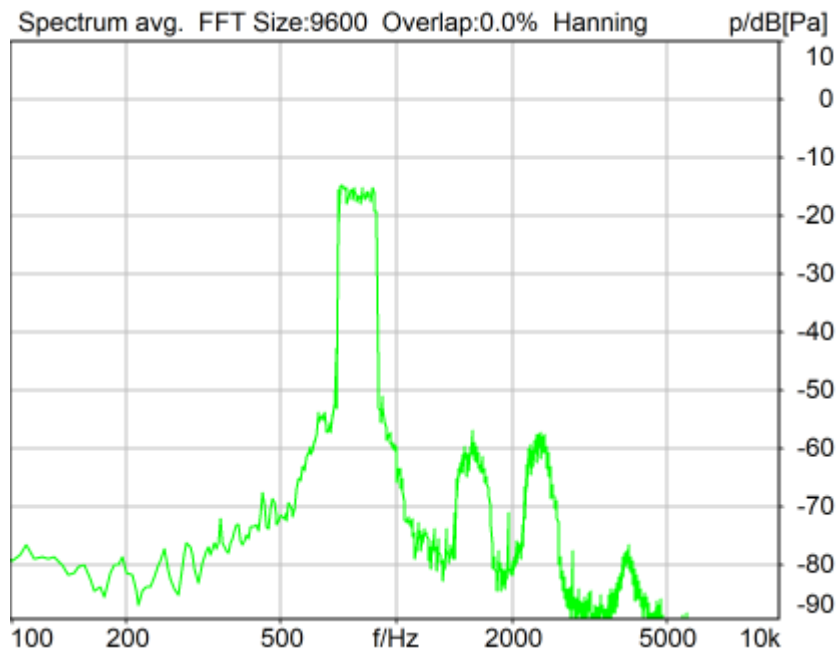
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 36.56 dB (1.49%) Ok

Ok

2024/1/16 15:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

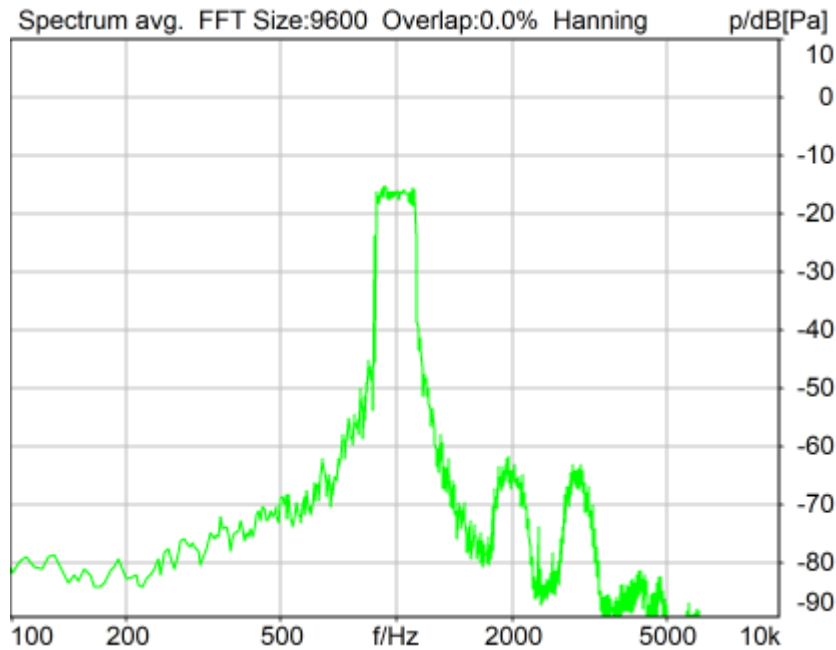
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 34.58 dB (1.87%) Ok

Ok

2024/1/16 15:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °



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

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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))

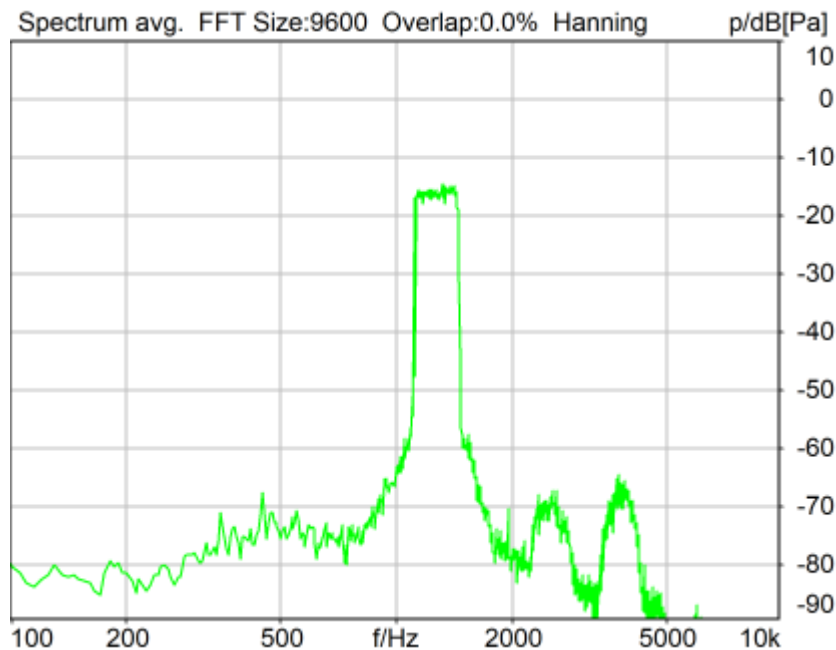
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### 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): 31.95 dB (2.53%) Ok

Ok

2024/1/16 15:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

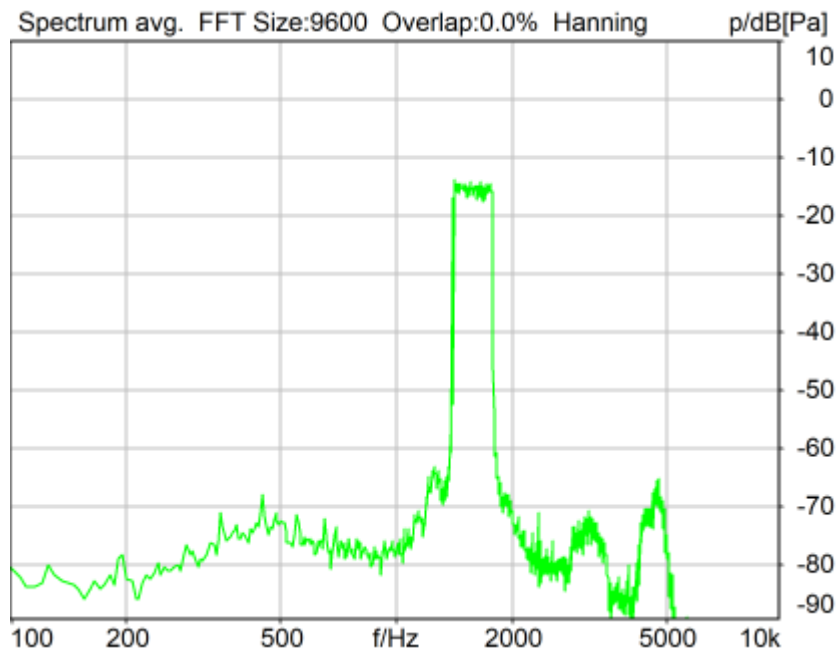
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 46.73 dB (0.46%) Ok

Ok

2024/1/16 15:12 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 C	0.0 °

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

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

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

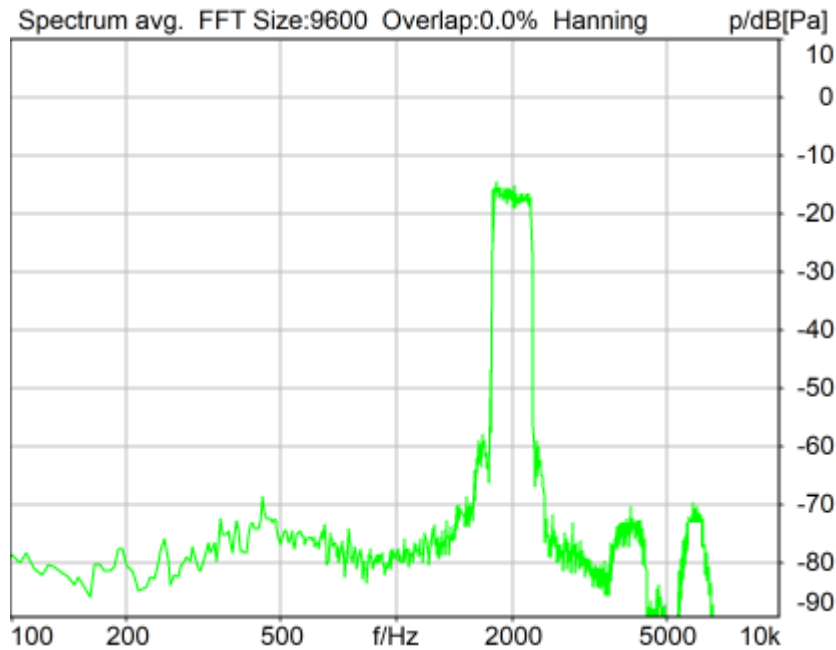
### HIB Settings

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



## 5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 44.45 dB (0.60%) Ok

Ok

2024/1/16 15:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

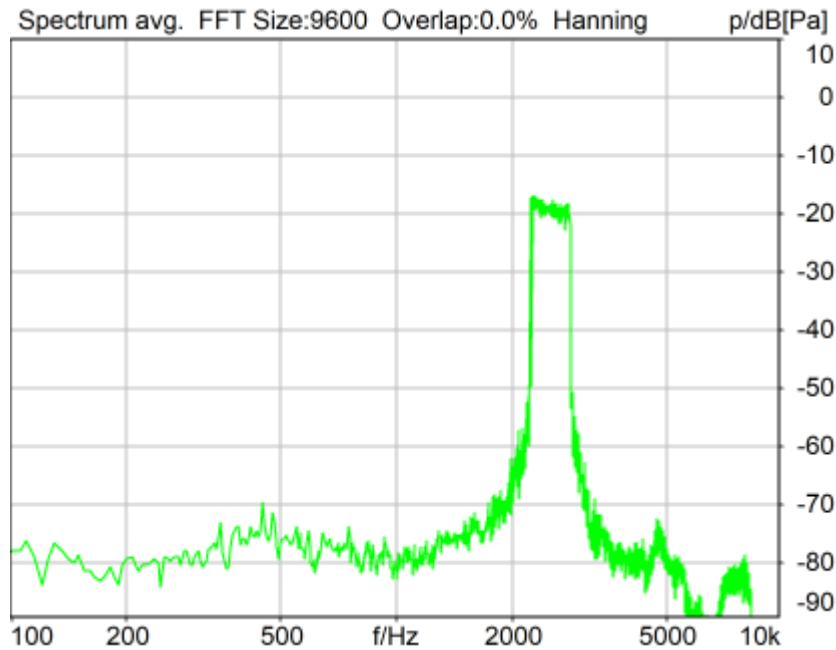
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 40.65 dB (0.93%) Ok

Ok

2024/1/16 15:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

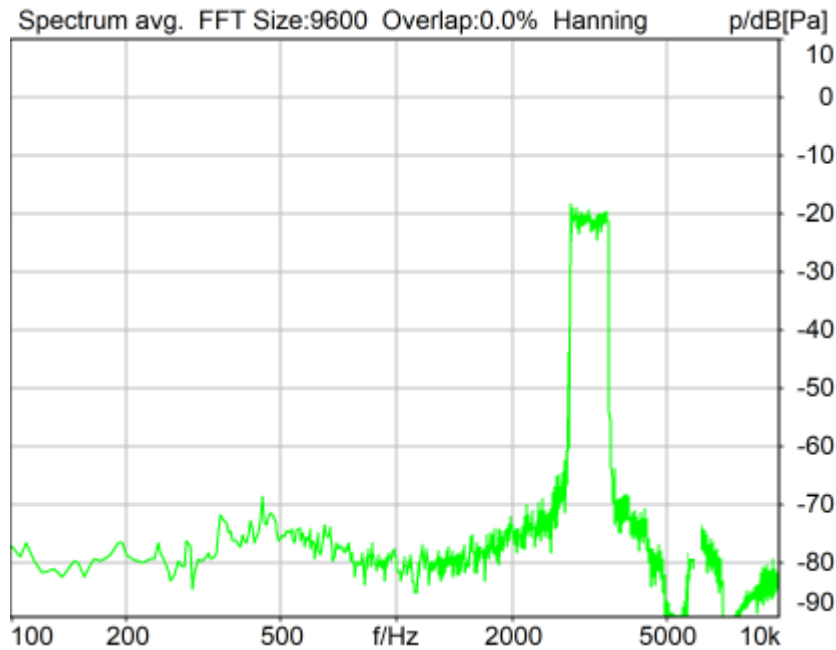
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 43.50 dB (0.67%) Ok

Ok

2024/1/16 15:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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 Voltage200V Supply Voltage ±60V

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

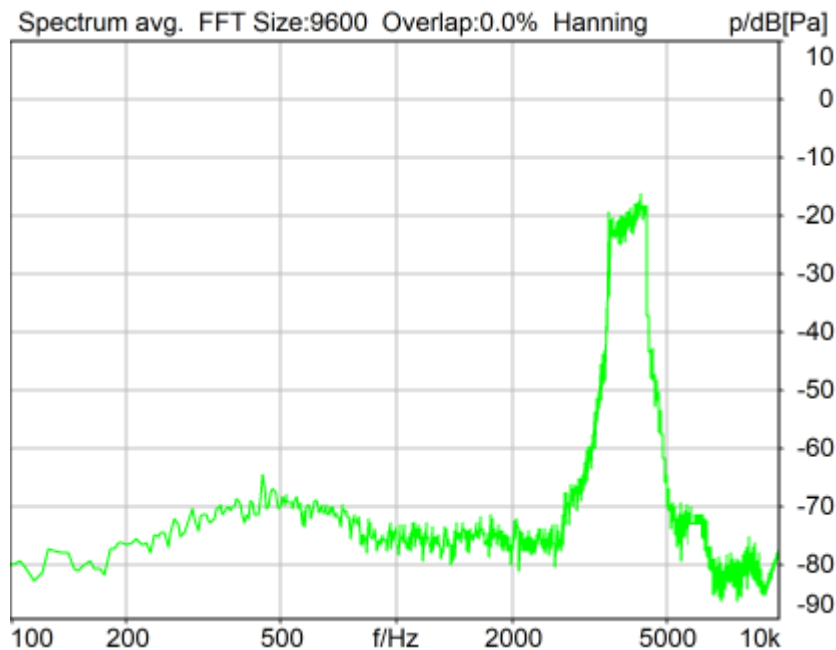
**HIB Settings**



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

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 26.77 dB (4.59%) Ok

Ok

2024/1/16 15:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

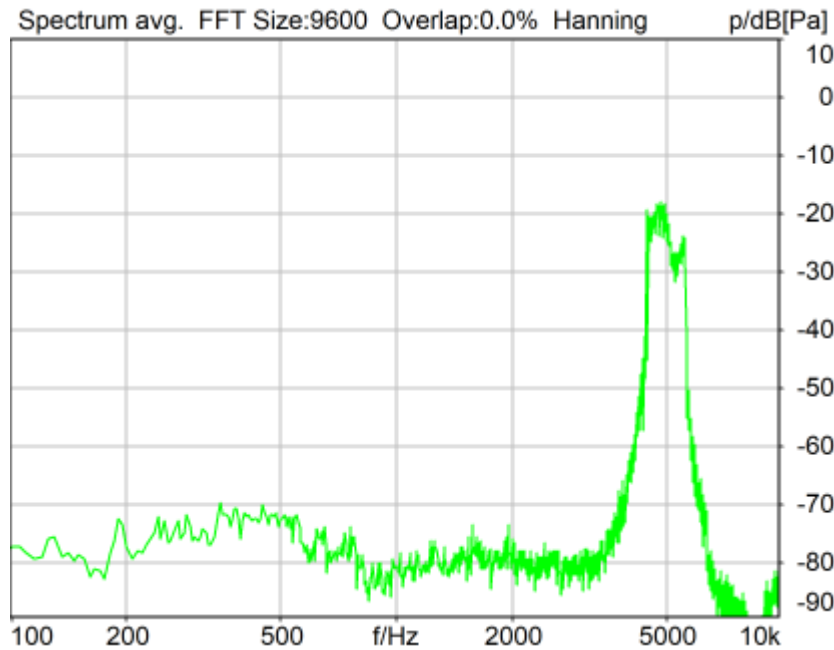
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 31.38 dB (2.70%) Ok

Ok

2024/1/16 15:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 109.7000 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

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	250Hz	29.93 dB
2	315Hz	30.46 dB
3	400Hz	30.43 dB
4	500Hz	28.63 dB
5	630Hz	32.53 dB
6	800Hz	36.56 dB
7	1000Hz	34.58 dB
8	1250Hz	31.95 dB
9	1600Hz	46.73 dB
10	2000Hz	44.45 dB
11	2500Hz	40.65 dB
12	3150Hz	43.50 dB
13	4000Hz	26.77 dB
14	5000Hz	31.38 dB

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

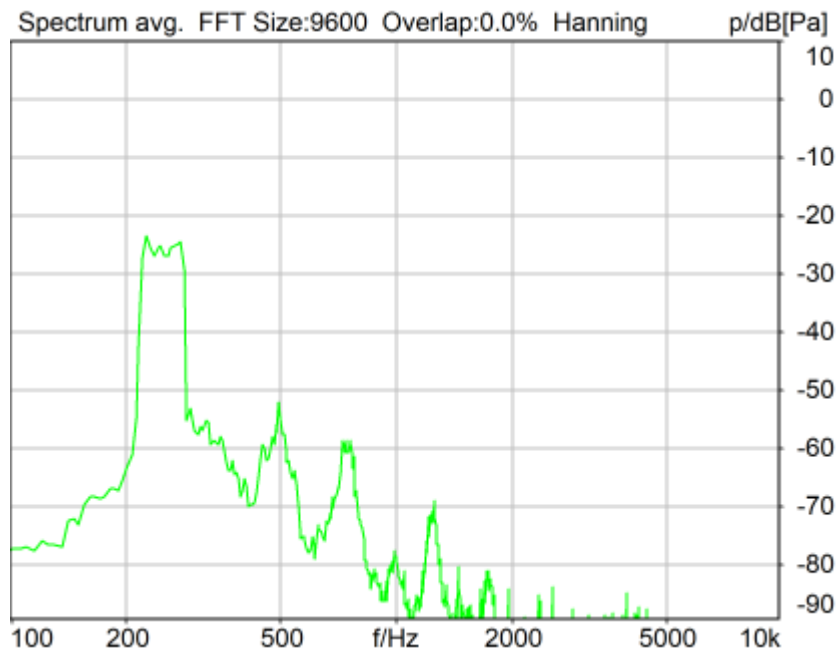
Smallest SDNR was 26.77dB at 4000Hz.

2024/1/16 15:14 ACQUA



## 5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 30.44 dB (3.01%) Ok

Ok

2024/1/16 15:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

### Output Equalization/Filter

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

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

### labCORE Settings

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

### labCORE Routing

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

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

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

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

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

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

#### Channel In 1 Settings

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

#### Channel In 2 Settings

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

#### Channel In 3 Settings

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

#### Channel In 4 Settings

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

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

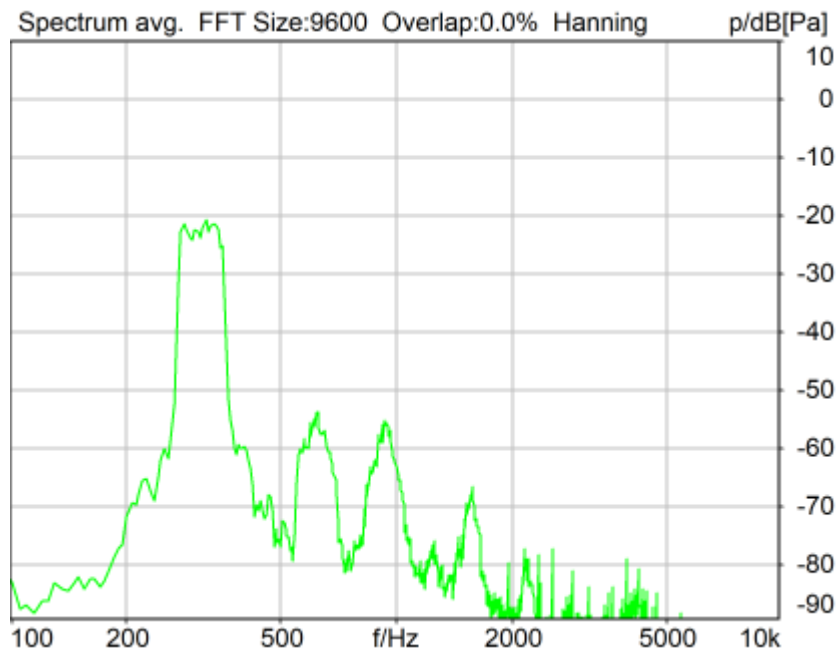
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

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

## 5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 31.01 dB (2.81%) Ok

Ok

2024/1/16 15:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

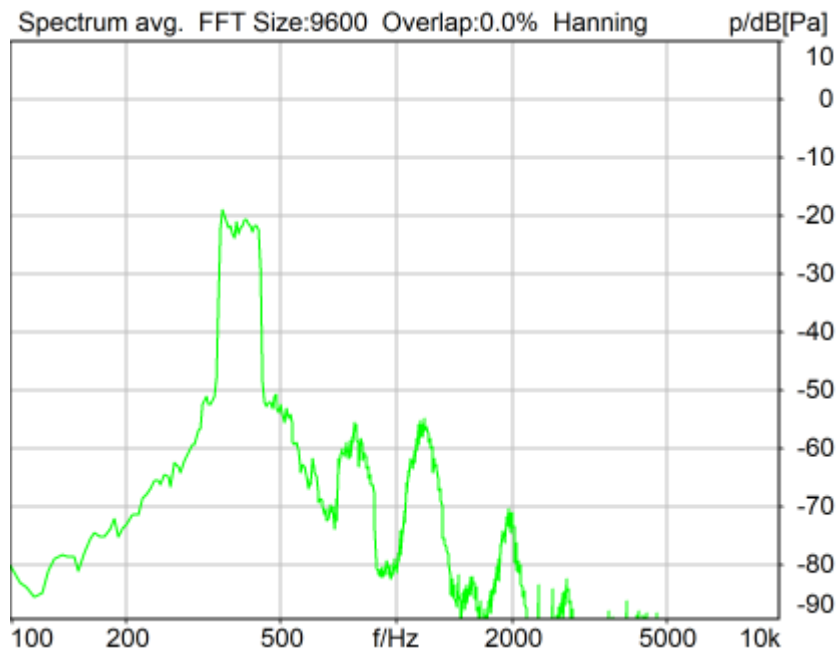
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 30.37 dB (3.03%) Ok

Ok

2024/1/16 15:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

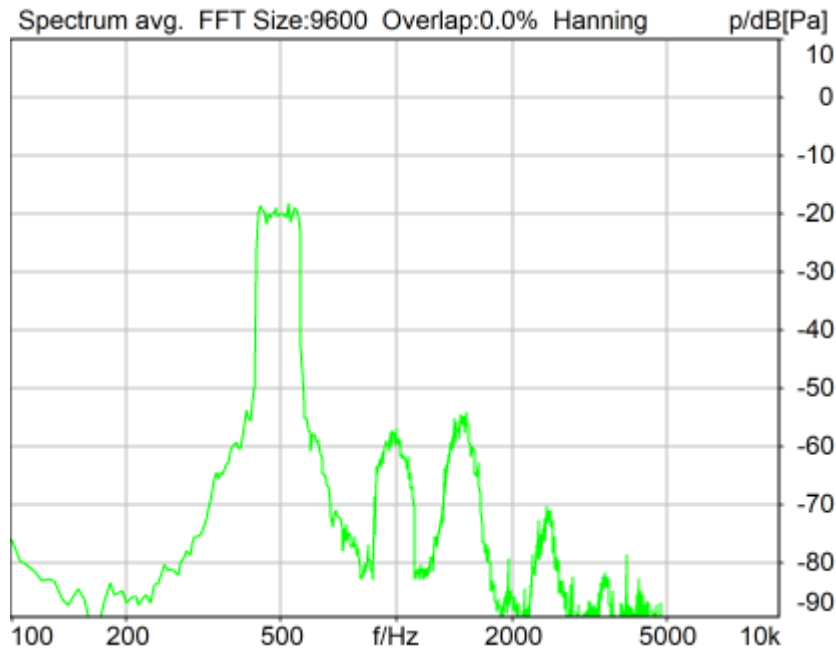
**HIB Settings**



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

## 5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 31.88 dB (2.55%) Ok

Ok

2024/1/16 15:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

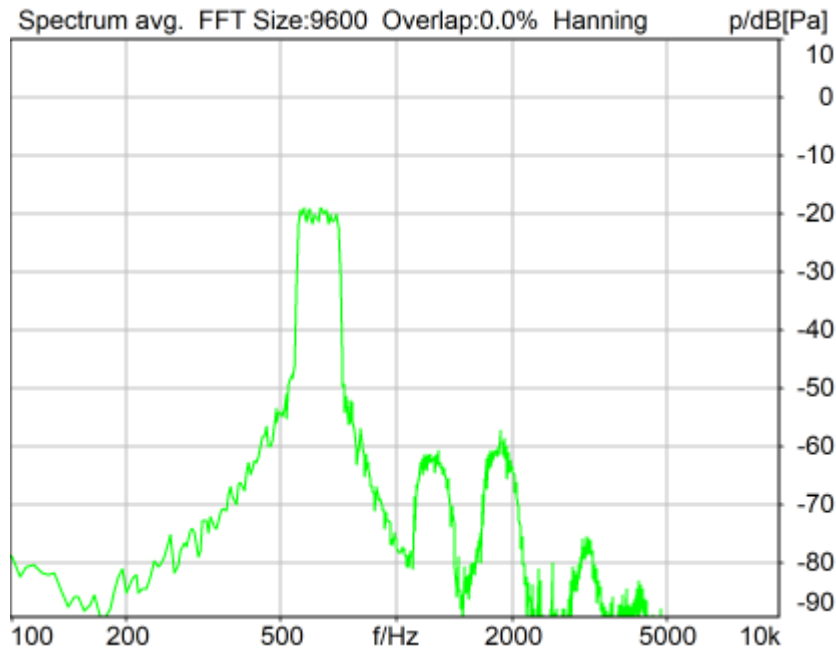
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 33.27 dB (2.17%) Ok

Ok

2024/1/16 15:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

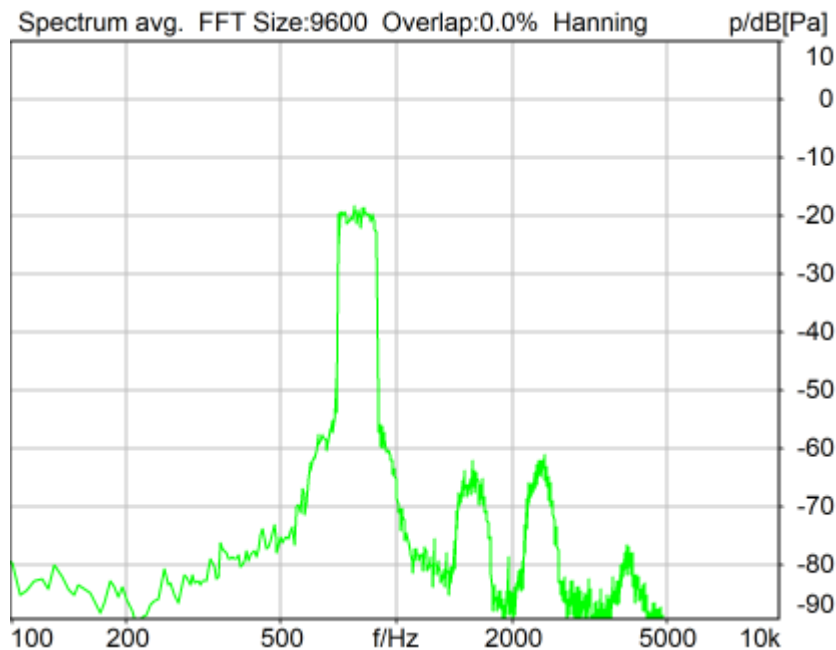
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 37.01 dB (1.41%) Ok

Ok

2024/1/16 15:23 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\_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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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))**

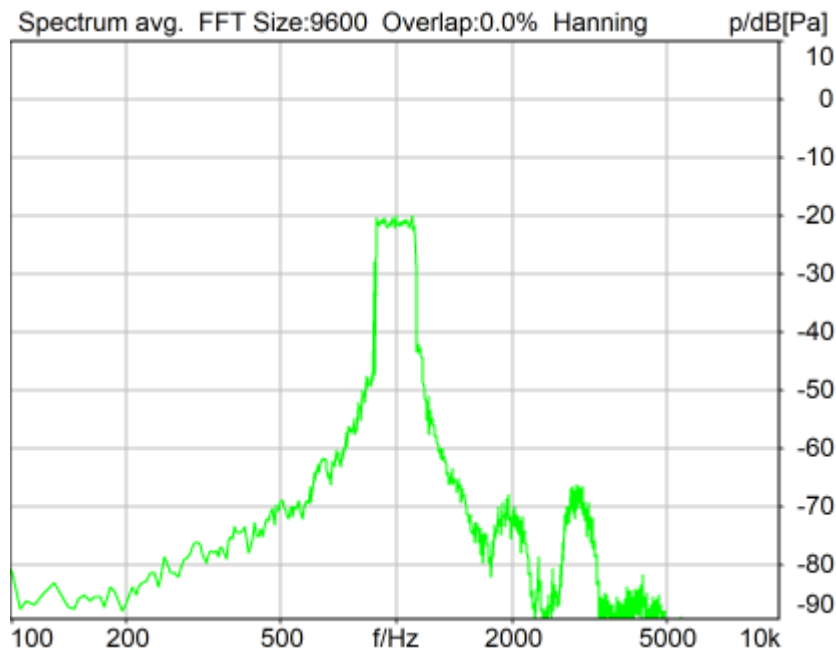
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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 2N



Distortion (Noise) RCV (packed): 30.05 dB (3.15%) Ok

Ok

2024/1/16 15:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

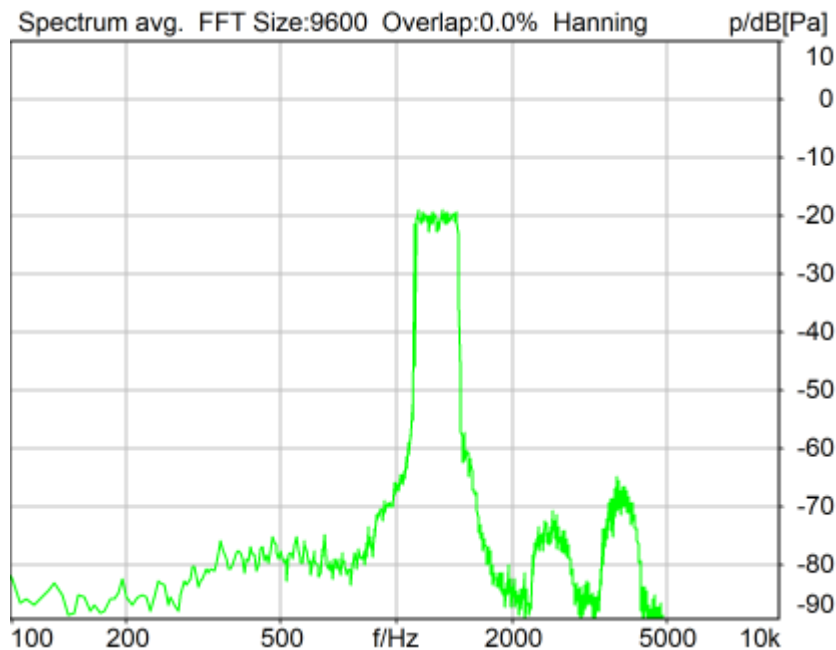
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power 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): 31.85 dB (2.55%) Ok

Ok

2024/1/16 15:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

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

**Special Features**

Compensate delay 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

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

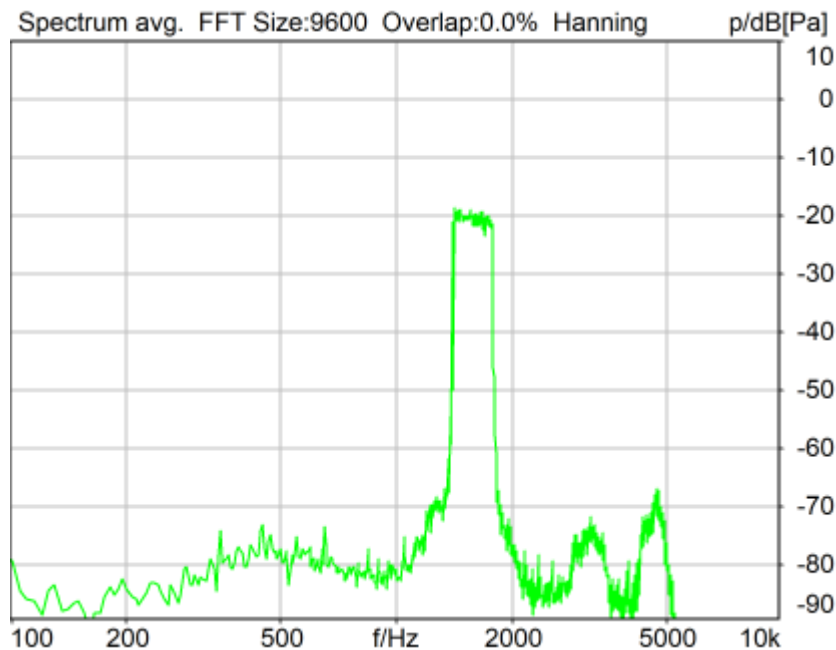
**HIB Settings**

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



## 5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 44.36 dB (0.61%) Ok

Ok

2024/1/16 15:25 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	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 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

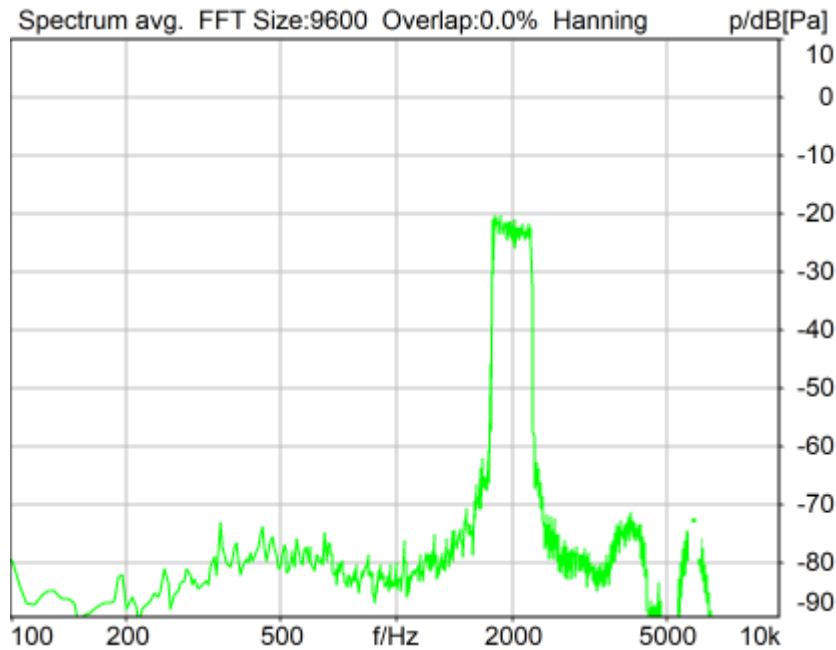
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 41.98 dB (0.80%) Ok

Ok

2024/1/16 15:25 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\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

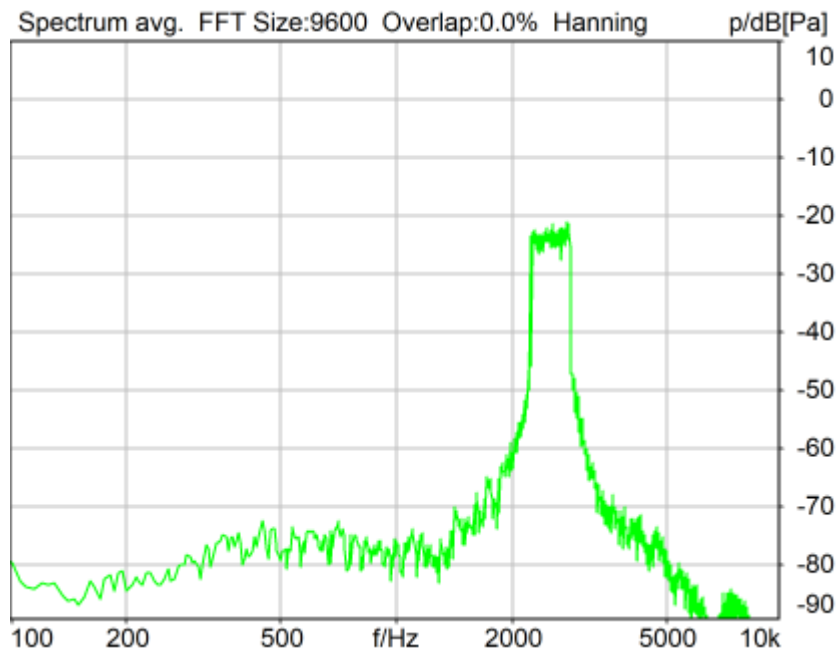
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



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

Ok

2024/1/16 15:25 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\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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
----------	----------	------------	----------

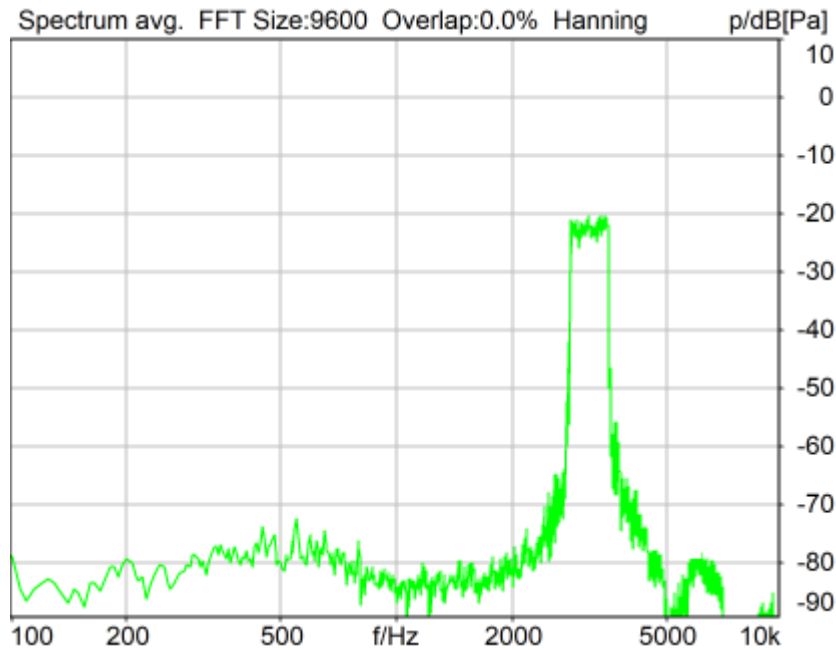
**HIB Settings**



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 2N



Distortion (Noise) RCV (packed): 39.37 dB (1.07%) Ok

Ok

2024/1/16 15:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

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

Level adj. Ch1 -90.0 dB

### Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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 Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

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

Block mode Bypass

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

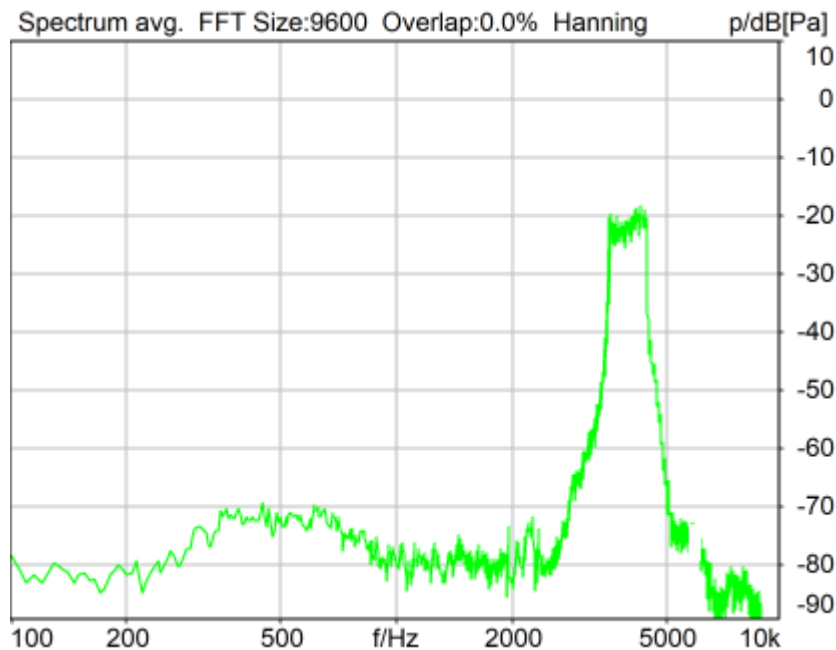
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 26.10 dB (4.95%) Ok

Ok

2024/1/16 15:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 109.7000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

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

**labCORE Routing**

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

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

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

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

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

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

**Channel In 1 Settings**

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

**Channel In 2 Settings**

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

**Channel In 3 Settings**

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

**Channel In 4 Settings**

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

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

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

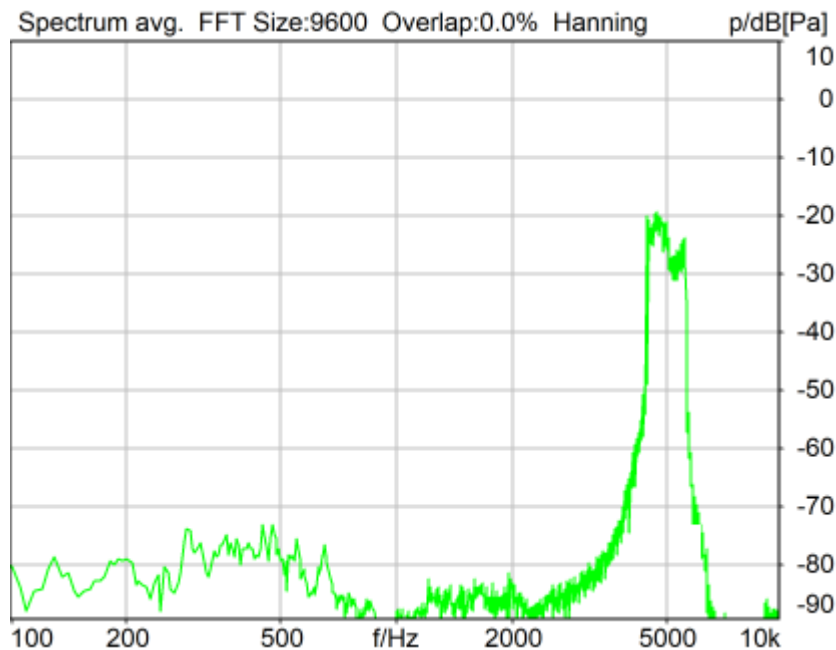
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

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

## 5.2 RCV Distortion and Noise - 5000 Hz WB

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



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

Ok

2024/1/16 15:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type	3.3 Coordinates

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus 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 109.7000 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

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	250Hz	30.44 dB
2	315Hz	31.01 dB
3	400Hz	30.37 dB
4	500Hz	31.88 dB
5	630Hz	33.27 dB
6	800Hz	37.01 dB
7	1000Hz	30.05 dB
8	1250Hz	31.85 dB
9	1600Hz	44.36 dB
10	2000Hz	41.98 dB
11	2500Hz	29.71 dB
12	3150Hz	39.37 dB
13	4000Hz	26.10 dB
14	5000Hz	36.01 dB

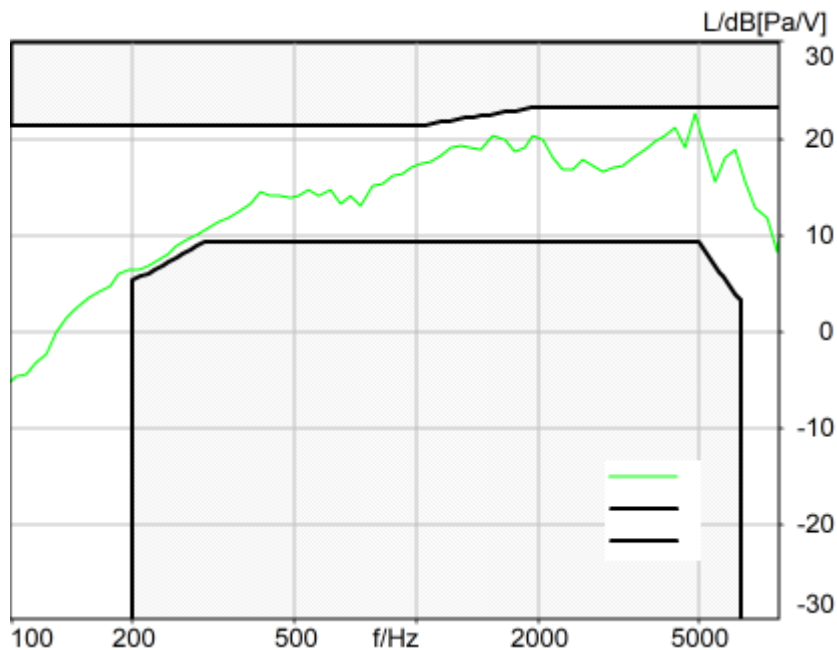
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 26.10dB at 4000Hz.

2024/1/16 15:28 ACQUA

## 5.3 Frequency Response 8N FF

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



Absolute minimal distance  
0.71 dB at 4870.0 Hz Ok

Ok

2024/1/16 15:15 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

### Limits

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

Meas. Setting off

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

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

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

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

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

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

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

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

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

**Output Equalization/Filter**

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

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	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 109.7000 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
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

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

Block mode      Bypass

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

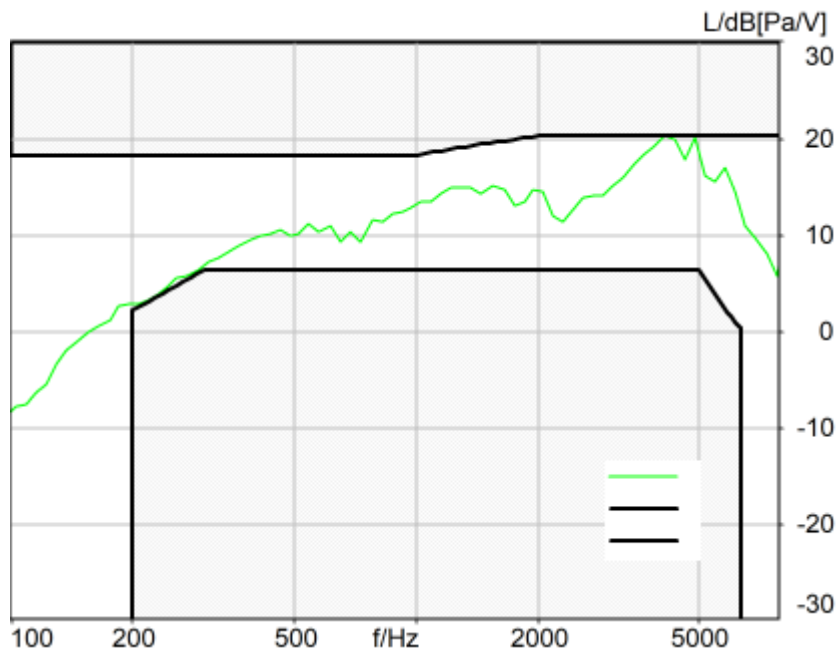
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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  
0.05 dB at 4119.5 Hz Ok

Ok

2024/1/16 15:28 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-1.1 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range 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 109.7000 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
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode      Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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	LTE Band12_10QPSK_50RB_0_AMR NB 12.2kbps_CH23095
Description	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/2 10:56
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	157.8	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.15	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.56	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.24	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.35	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.10	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.00	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.05	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.97	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.88	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.81	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	41.42	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.47	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.81	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.35	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.34	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	34.69	LTE

- 630 Hz NB		0.0 dB		Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.47	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.13	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.74	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.64	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.09	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.82	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.61	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	22.74	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	1.43	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	0.28	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	0.36	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.81	LTE Band12_10QPSK_50RB_0_A MR NB 12.2kbps_CH23095

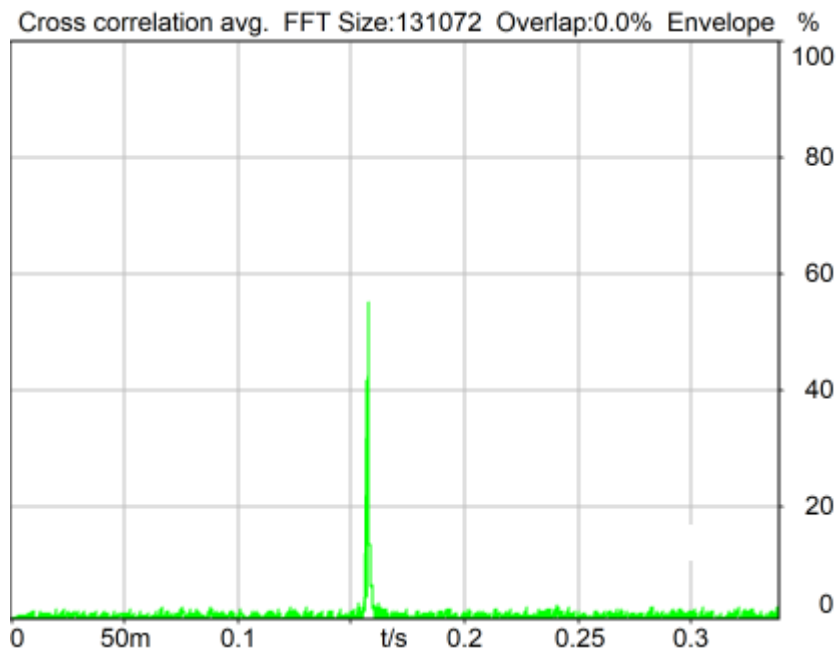
---

Overall Receive Delay NB	6
5.1a Receive Volume Control Performance 8N NB	8
5.1b Receive Volume Control Performance 2N NB	10
5.2 RCV Distortion and Noise - 400 Hz NB	12
5.2 RCV Distortion and Noise - 500 Hz NB	14
5.2 RCV Distortion and Noise - 630 Hz NB	16
5.2 RCV Distortion and Noise - 800 Hz NB	18
5.2 RCV Distortion and Noise - 1000 Hz NB	20
5.2 RCV Distortion and Noise - 1250 Hz NB	22
5.2 RCV Distortion and Noise - 1600 Hz NB	24
5.2 RCV Distortion and Noise - 2000 Hz NB	26
5.2 RCV Distortion and Noise - 2500 Hz NB	28
5.2 RCV Distortion and Noise - 3150 Hz NB	30
Report - Receive Distortion and Noise (Conversational Gain)	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	43
5.2 RCV Distortion and Noise - 1600 Hz NB	45
5.2 RCV Distortion and Noise - 2000 Hz NB	47
5.2 RCV Distortion and Noise - 2500 Hz NB	49
5.2 RCV Distortion and Noise - 3150 Hz NB	51
Report - Receive Distortion and Noise (Conversational Gain)	53
5.3 Frequency Response 8N FF HANB	54
5.3 Frequency Response 8N DF HANB	57
5.3 Frequency Response 2N FF HANB	60
5.3 Frequency Response 2N DF HANB	63



## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 157.8 ms

2024/1/18 17:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal	Source ch.2	Store to variable	D_RCV_NB
--------------------	-------------	-------------------	----------

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

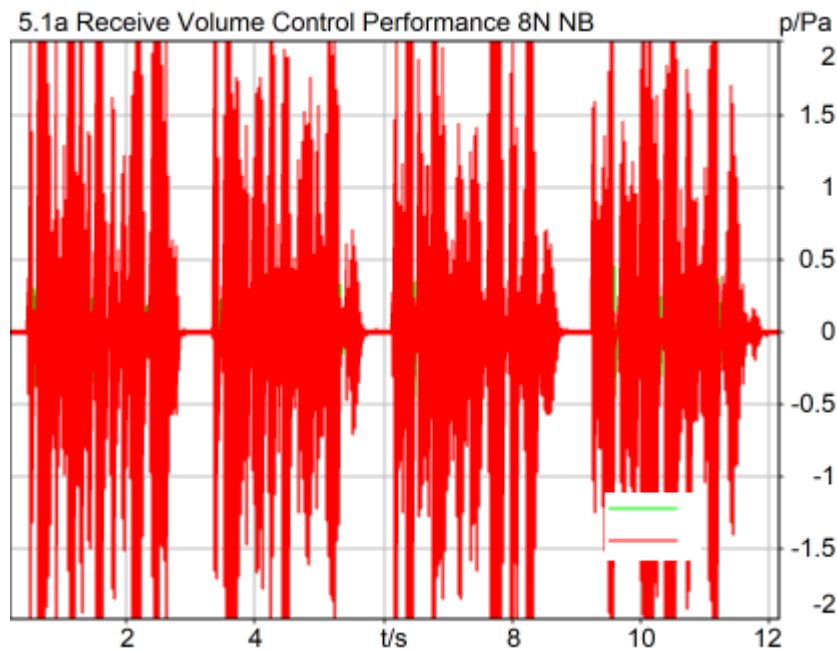
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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: 87.15 dB[SPL], Act.: 86.03%  
Corrected Speech Level: 17.15 dB[SPL] Not Ok

### Not Ok

2024/1/22 20:39 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieeee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

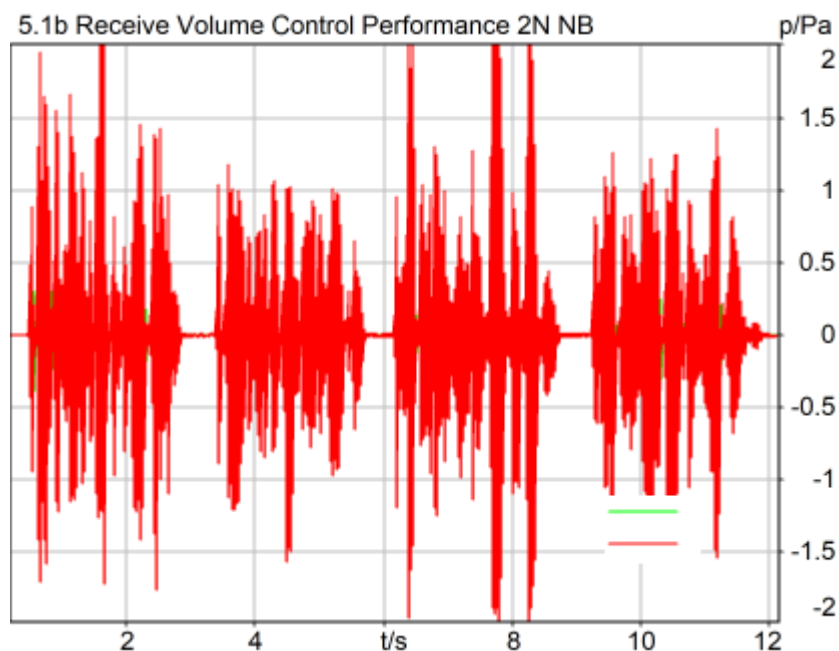
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1b Receive Volume Control Performance 2N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 81.56 dB[SPL], Act.: 86.00%  
Corrected Speech Level: 11.56 dB[SPL] Ok

### Ok

2024/1/22 20:27 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

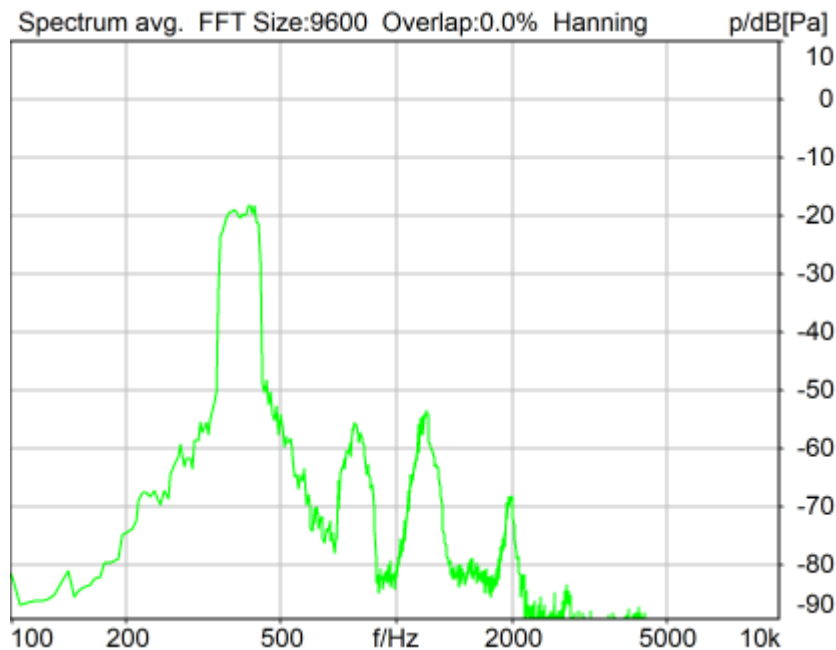
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 32.24 dB (2.44%) Ok

Ok

2024/1/18 17:44 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\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

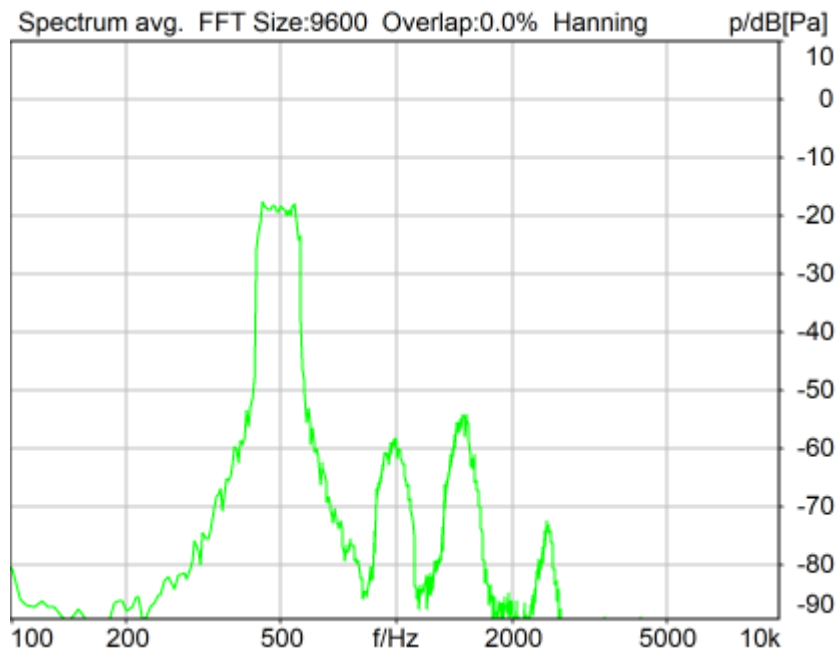
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 33.35 dB (2.15%) Ok

Ok

2024/1/18 17:44 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\_500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms

Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

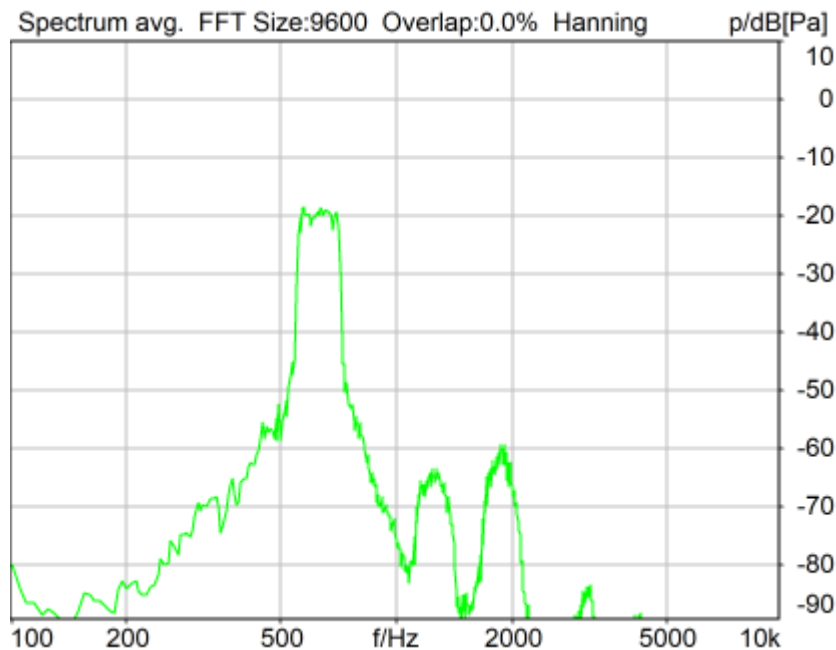
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 34.10 dB (1.97%) Ok

Ok

2024/1/18 17:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

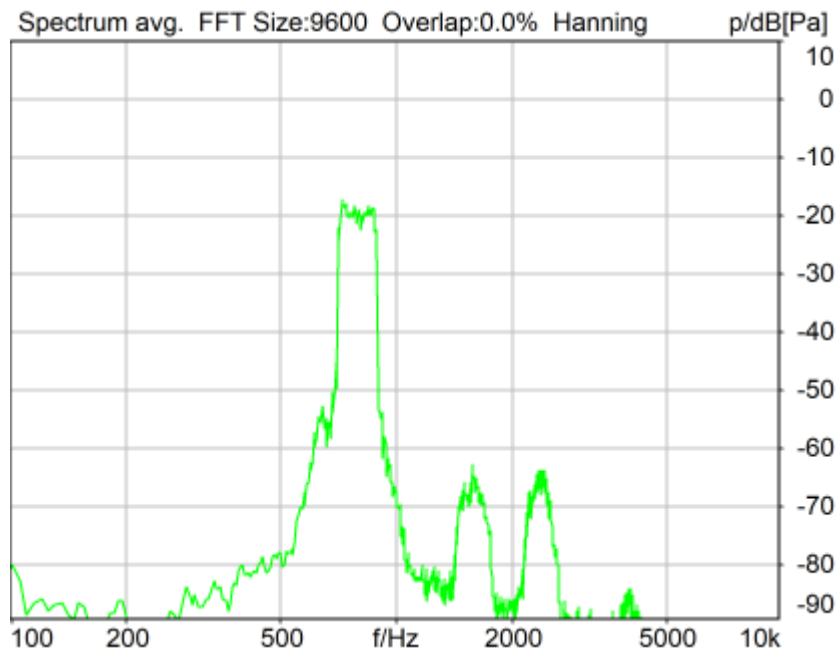
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 38.00 dB (1.26%) Ok

Ok

2024/1/18 17:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

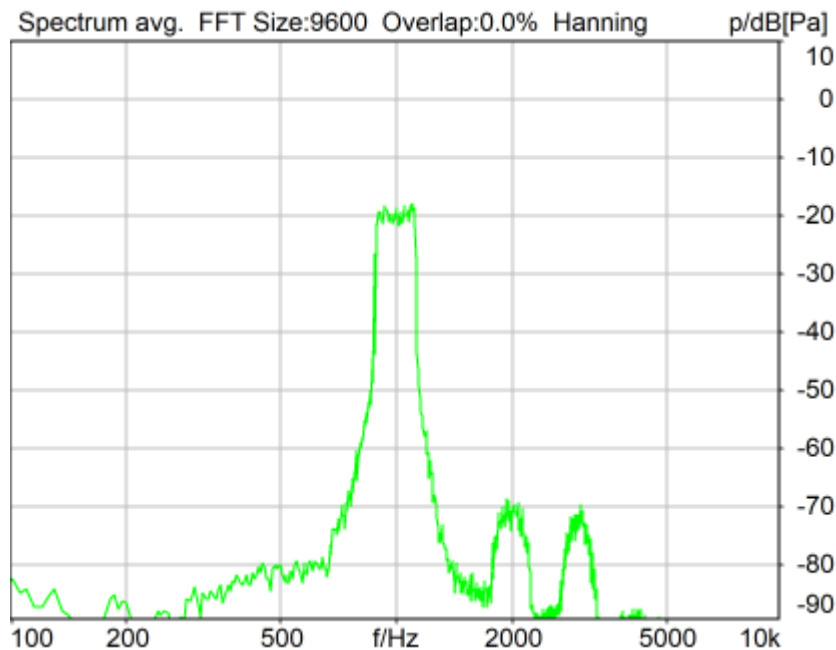
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 39.05 dB (1.12%) Ok

Ok

2024/1/18 17:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

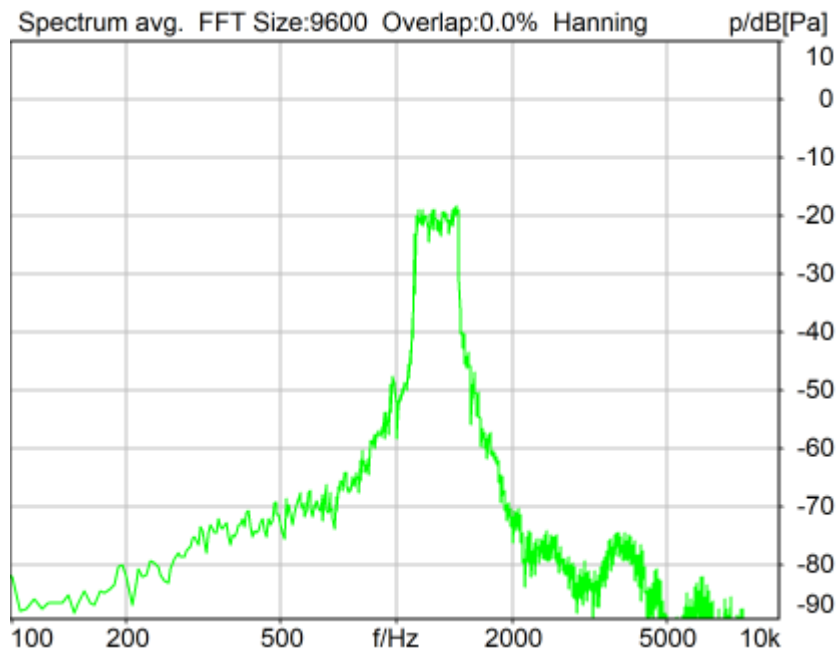
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 22.97 dB (7.11%) Ok

**Ok**

2024/1/18 17:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

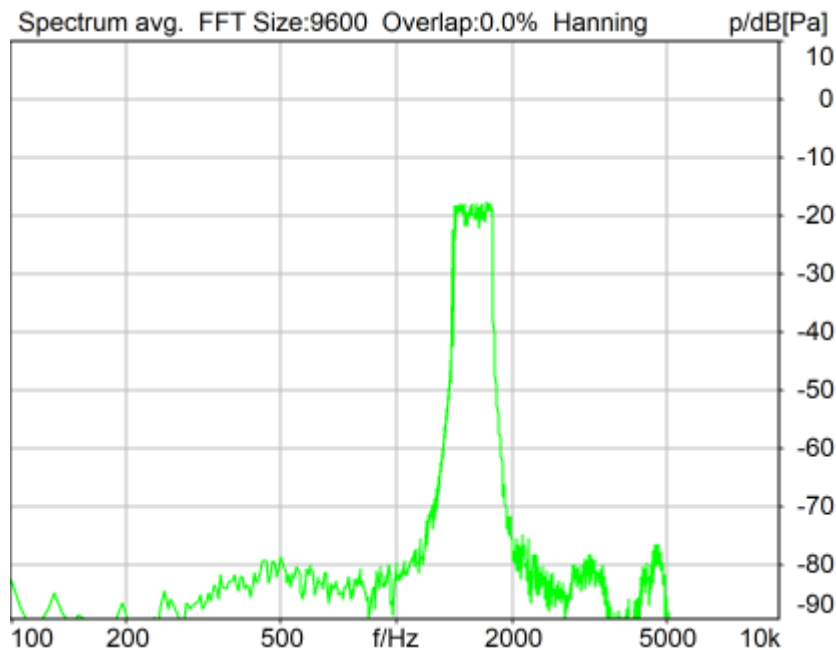
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 39.88 dB (1.01%) Ok

Ok

2024/1/18 17:47 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))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

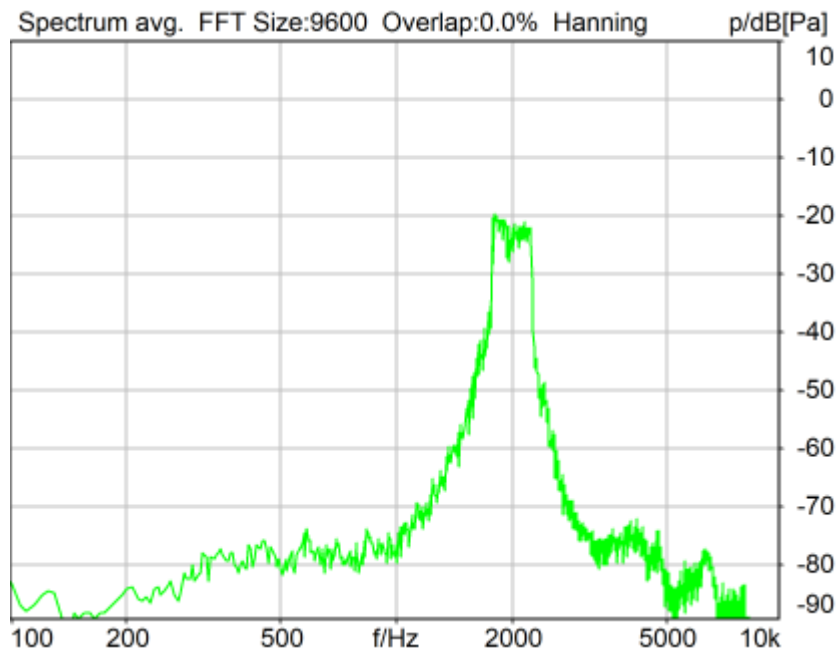
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 22.81 dB (7.24%) Ok

Ok

2024/1/18 17:47 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))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

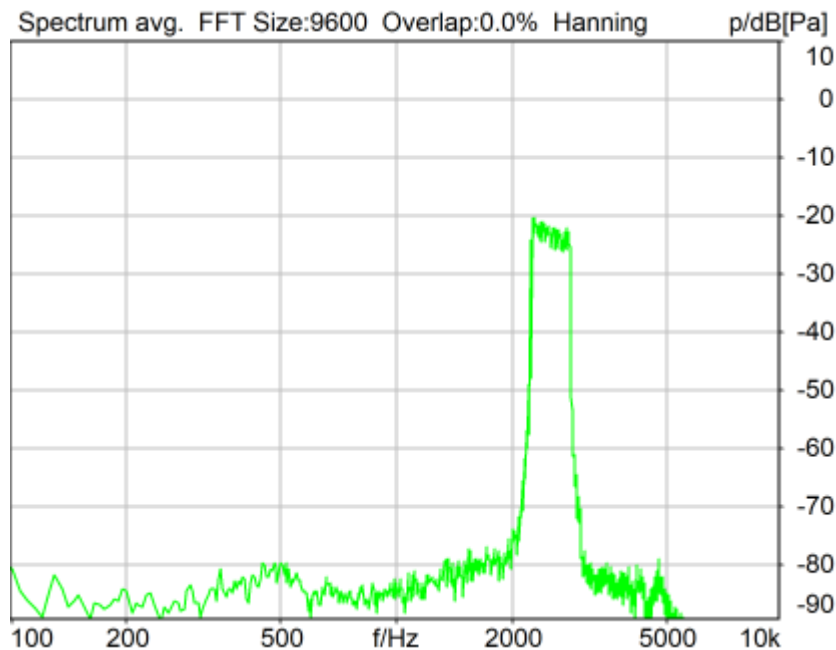
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 41.42 dB (0.85%) Ok

Ok

2024/1/18 17:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

### Special Features

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

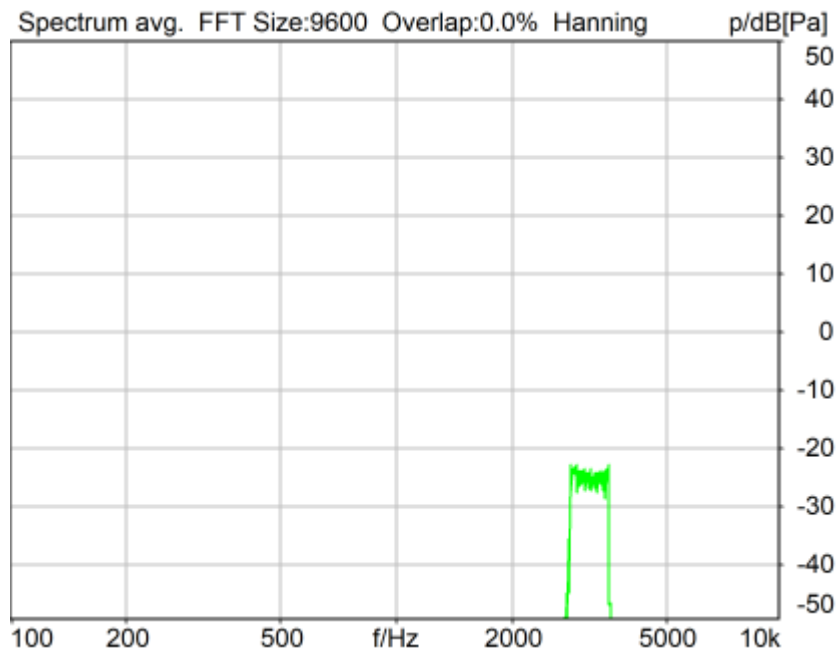
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 29.47 dB (3.36%) Ok

**Ok**

2024/1/18 17:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



---

## **Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	32.24 dB
2	500Hz	33.35 dB
3	630Hz	34.10 dB
4	800Hz	38.00 dB
5	1000Hz	39.05 dB
6	1250Hz	22.97 dB
7	1600Hz	39.88 dB
8	2000Hz	22.81 dB
9	2500Hz	41.42 dB
10	3150Hz	29.47 dB

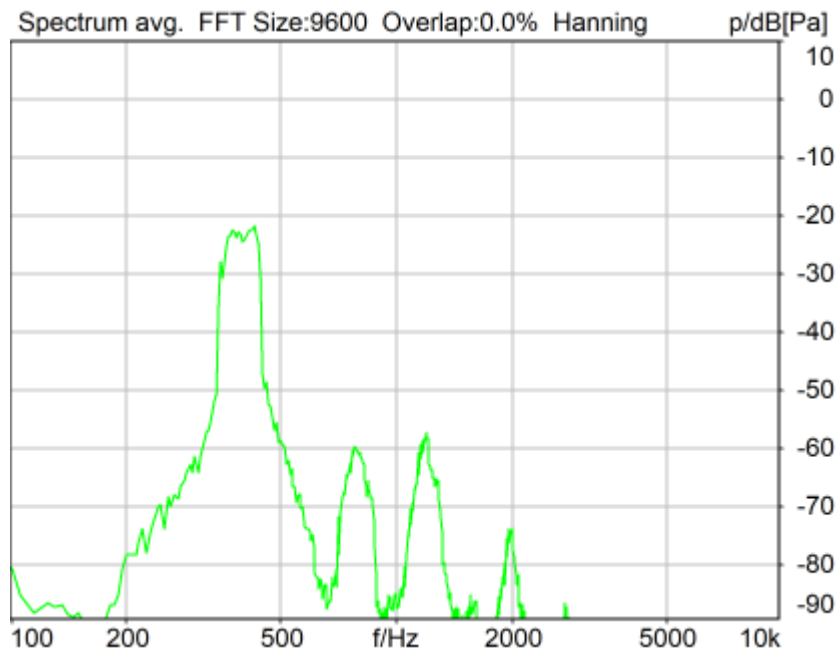
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.81dB at 2000Hz.

2024/1/18 17:48 ACQUA

## 5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 32.35 dB (2.41%) Ok

Ok

2024/1/18 17:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

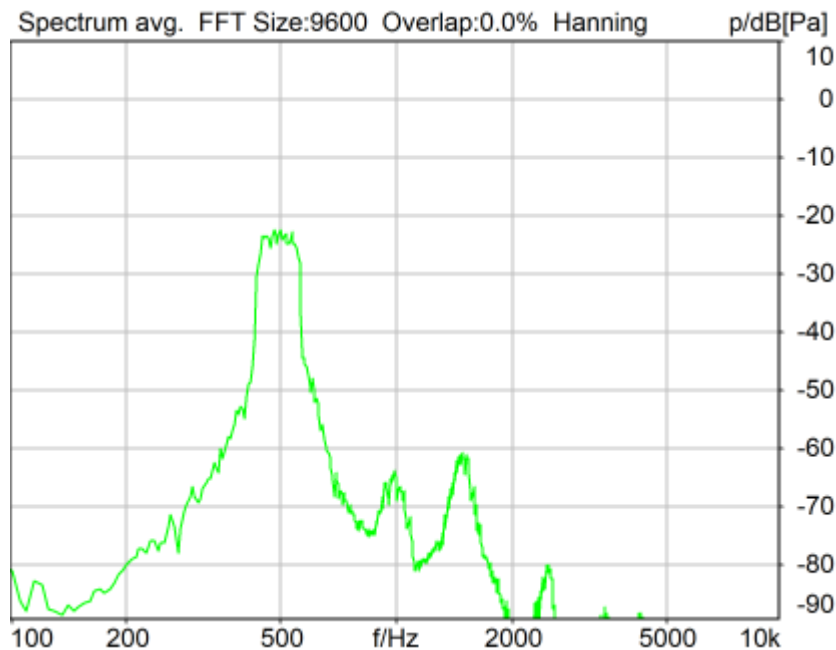
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 30.34 dB (3.04%) Ok

**Ok**

2024/1/18 17:51 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))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

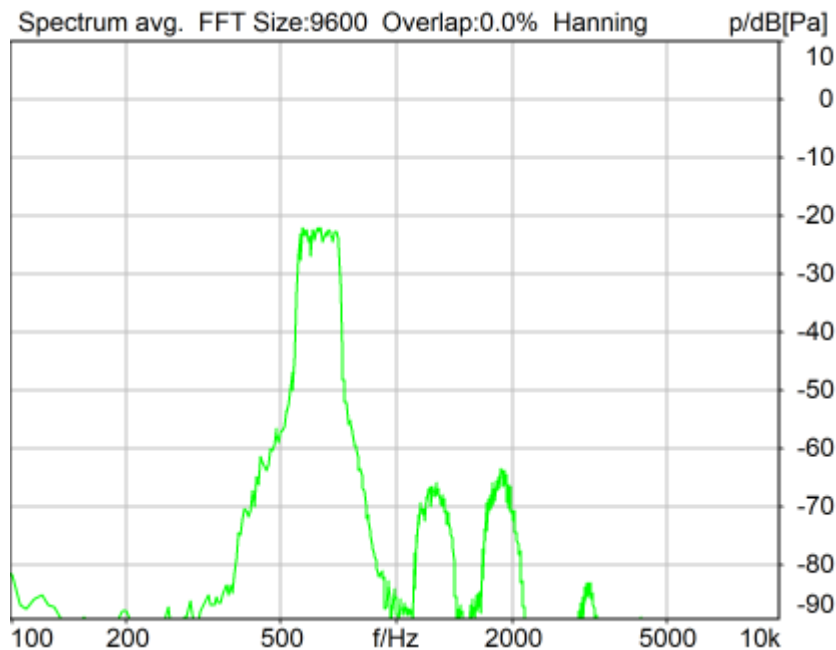
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 34.69 dB (1.84%) Ok

Ok

2024/1/18 17:52 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

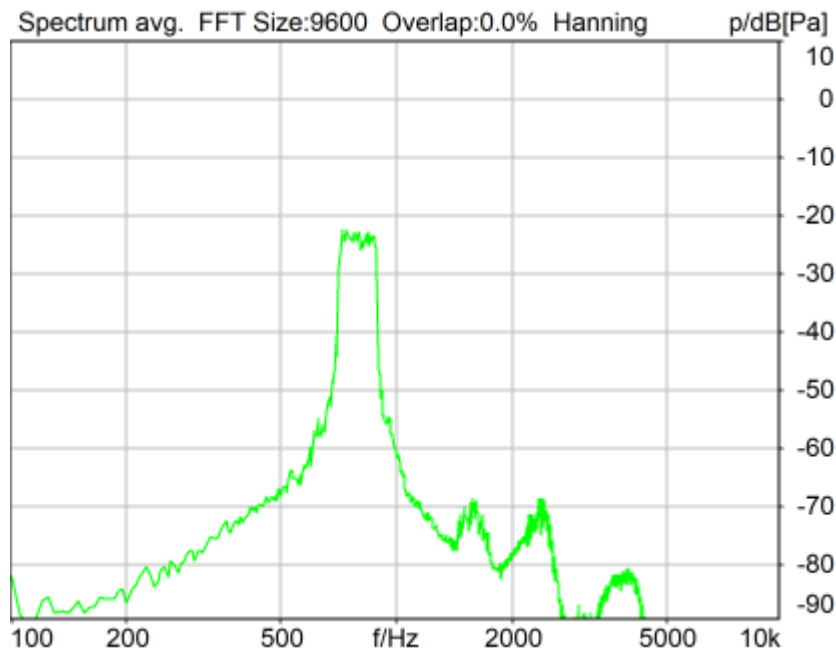
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 32.47 dB (2.38%) Ok

Ok

2024/1/18 17:52 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

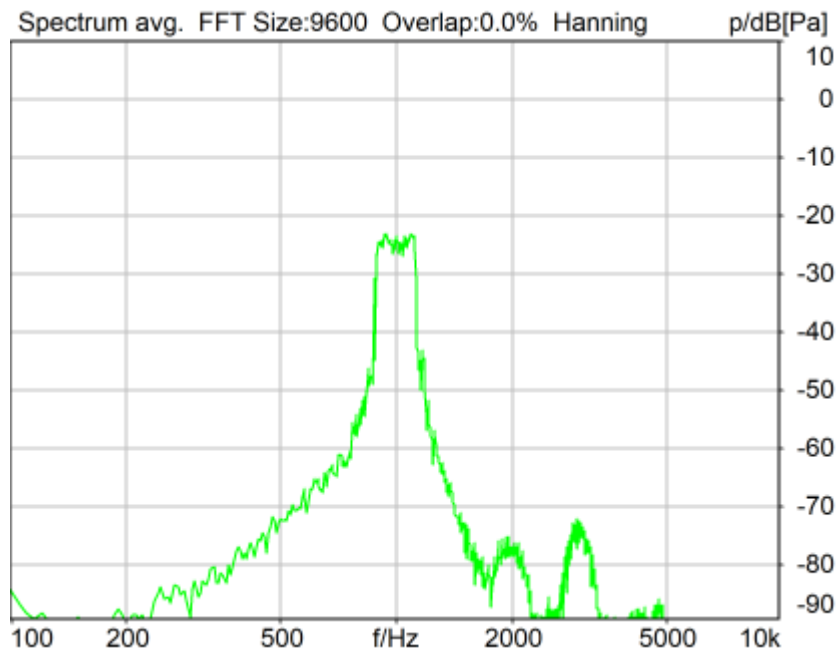
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.13 dB (4.40%) Ok

**Ok**

2024/1/18 17:52 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

**Source:** act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

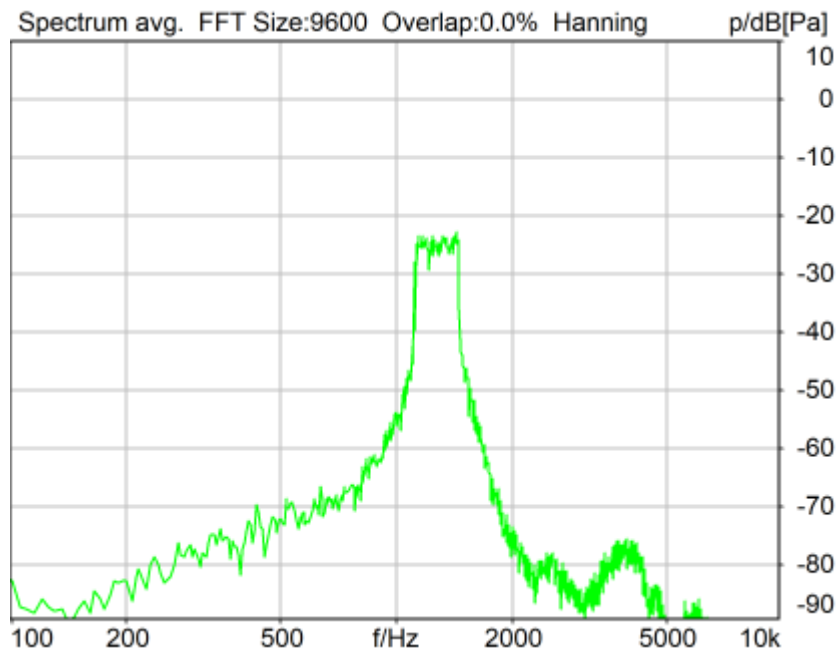
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.74 dB (7.30%) Ok

**Ok**

2024/1/18 17:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

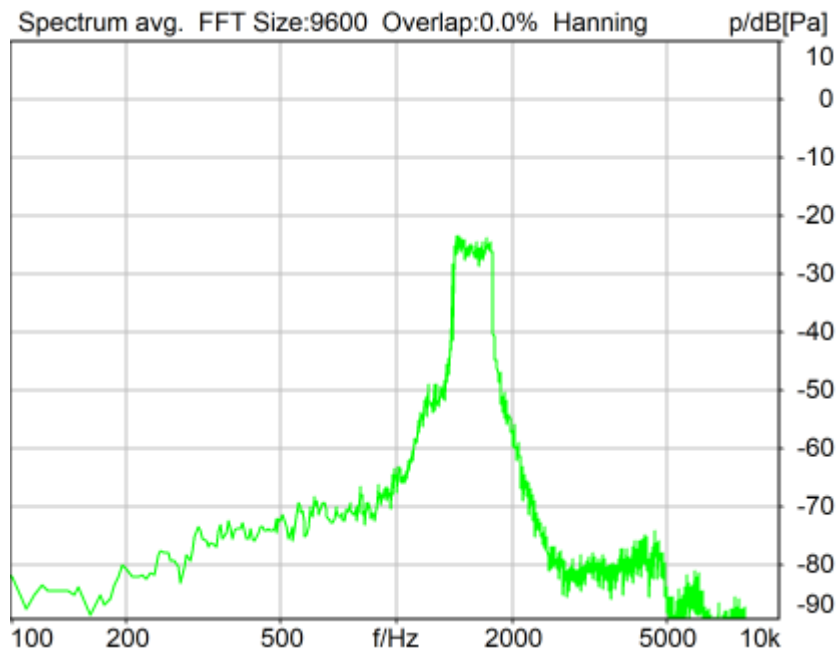
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.64 dB (6.57%) Ok

Ok

2024/1/18 17:53 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))

### 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 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

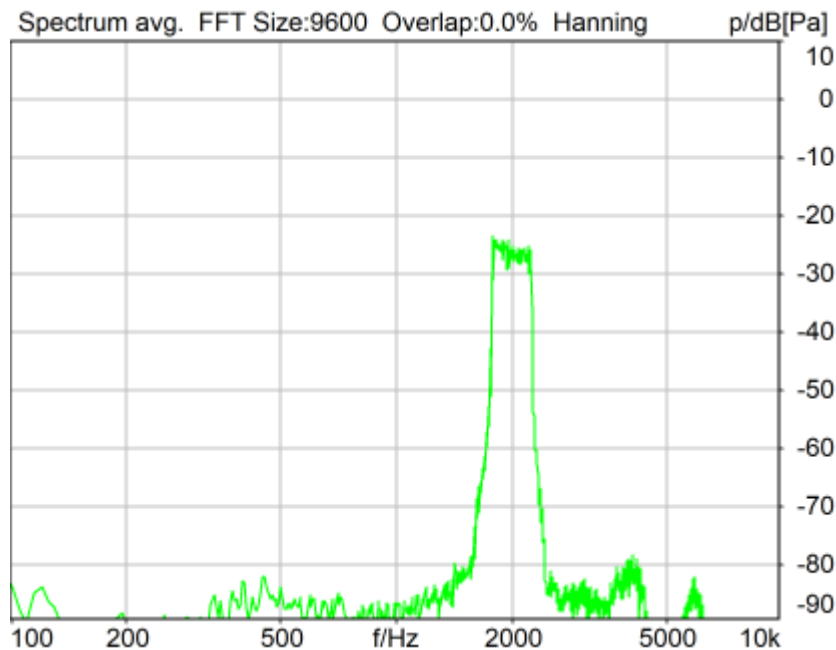
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 37.09 dB (1.40%) Ok

Ok

2024/1/18 17:54 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))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms



Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

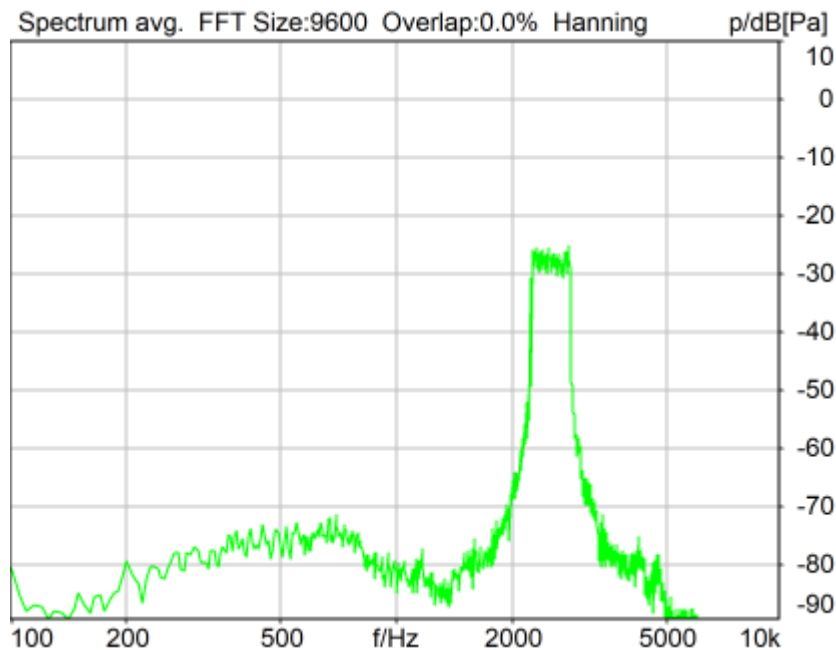
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 30.82 dB (2.88%) Ok

Ok

2024/1/18 17:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

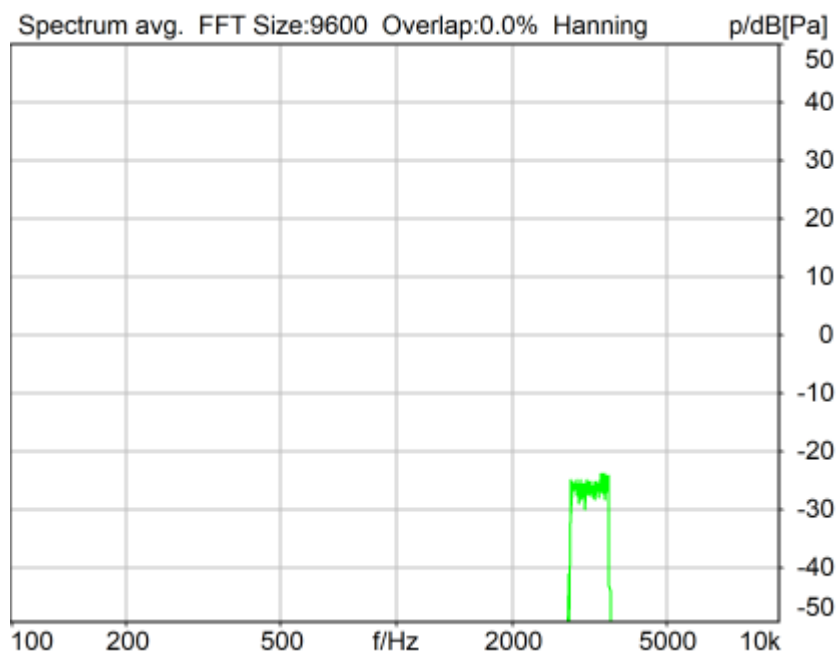
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 31.61 dB (2.63%) Ok

**Ok**

2024/1/18 17:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction Out 2 -> In 2

Range start 13550.00 ms Range length 200.00 ms

Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

---

## **Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	32.35 dB
2	500Hz	30.34 dB
3	630Hz	34.69 dB
4	800Hz	32.47 dB
5	1000Hz	27.13 dB
6	1250Hz	22.74 dB
7	1600Hz	23.64 dB
8	2000Hz	37.09 dB
9	2500Hz	30.82 dB
10	3150Hz	31.61 dB

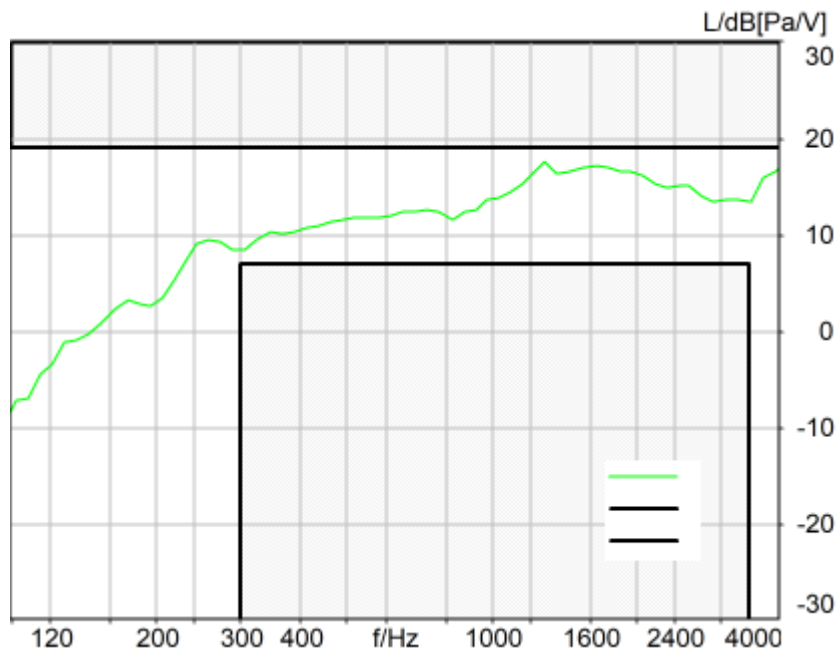
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.74dB at 1250Hz.

2024/1/18 17:55 ACQUA

### 5.3 Frequency Response 8N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
1.43 dB at 1285.9 Hz Ok

Ok

2024/1/18 17:48 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

<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))**



---

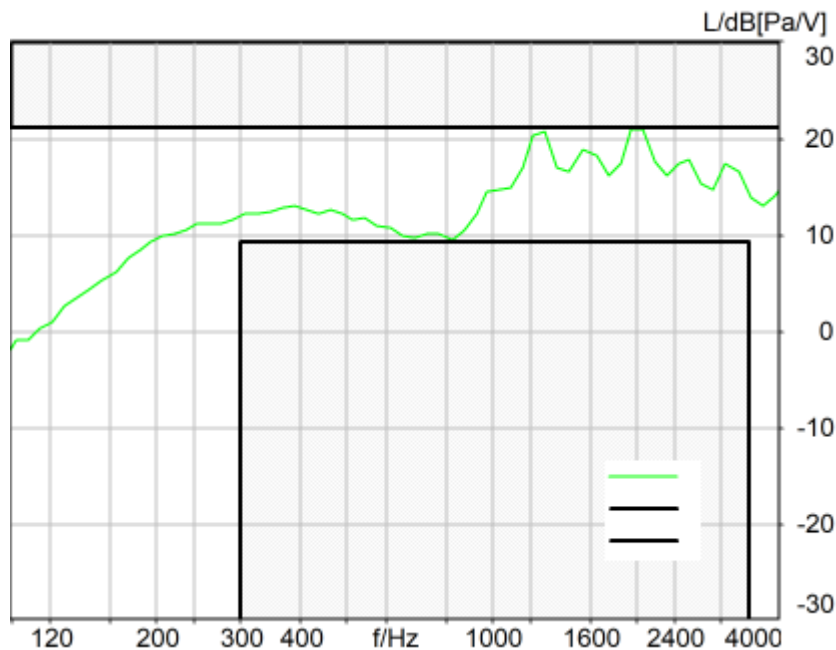
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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  
0.28 dB at 2057.5 Hz Ok

Ok

2024/1/18 17:49 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

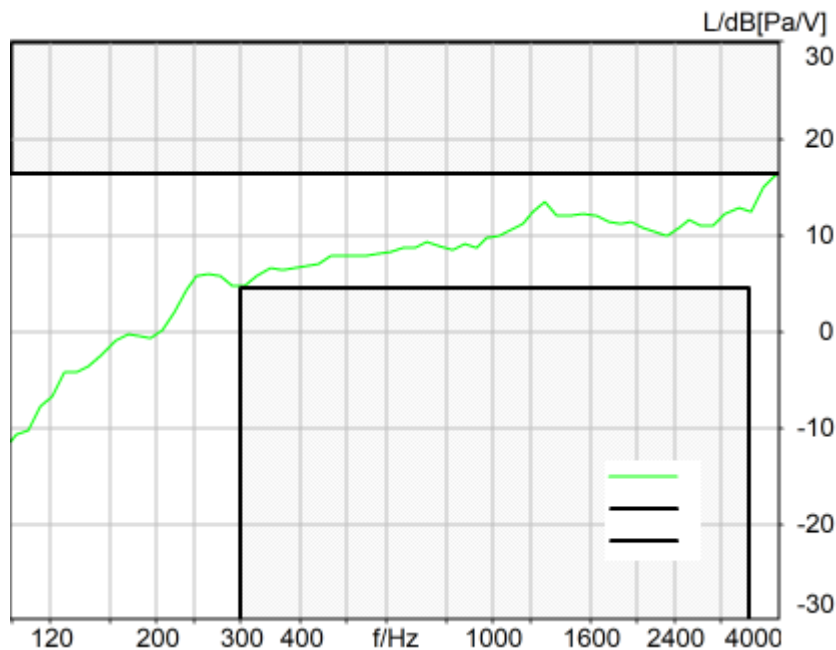
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
0.36 dB at 3882.4 Hz Ok

Ok

2024/1/18 17:55 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

#### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

#### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

#### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

#### Special Features

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

#### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

#### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

#### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

#### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

#### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

#### Microphone Settings (Mic Amp. (Slot 6))

##### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### BEQ Settings (BEQ Filter 1)

Block mode Bypass

#### Artificial Head Settings (HATS 1 (HMS II.3))

---

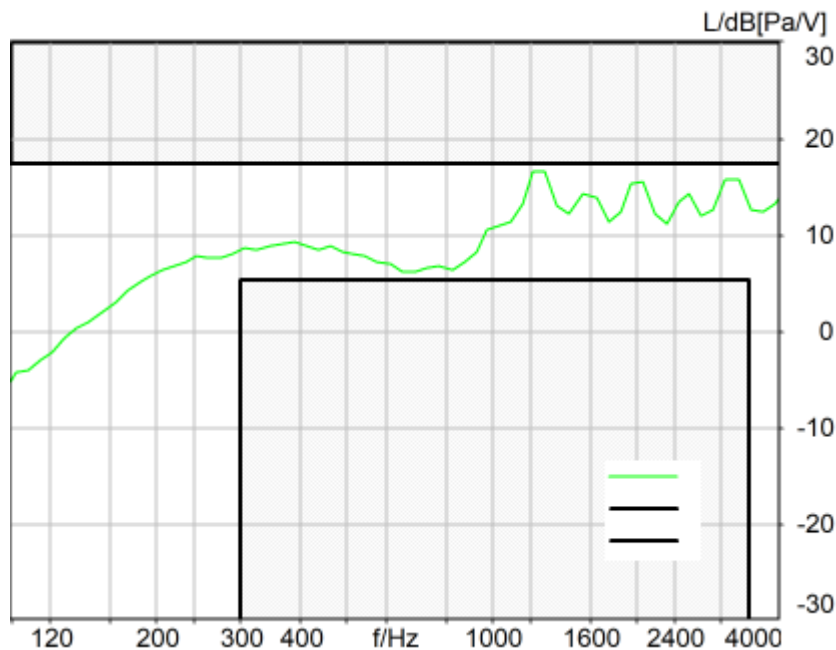
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
0.81 dB at 1285.9 Hz Ok

Ok

2024/1/18 17:55 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.



0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

#### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

#### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

#### Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

#### Special Features

Compensate delay 157.8000 ms (D\_RCV\_NB, Delay (Cross))

#### Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

#### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

#### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

#### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

#### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

#### Microphone Settings (Mic Amp. (Slot 6))

##### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

##### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### BEQ Settings (BEQ Filter 1)

Block mode Bypass

#### Artificial Head Settings (HATS 1 (HMS II.3))

---

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

---

## Measurement Protocol

Measurement Object	LTE Band12_10QPSK_50RB_0_AMR WB23.85kbps_CH23095
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/2 10:57
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	157.2	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	17.64	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	11.75	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.41	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.52	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.73	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.94	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.12	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.85	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.13	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.20	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.94	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.16	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.08	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.91	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.31	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise	Ok	Distortion (Noise)	21.83	LTE

- 5000 Hz WB		[dB], 0.0 dB		Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 5000Hz)	21.83	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.85	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.88	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.90	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.84	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.31	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.57	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.15	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.27	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.29	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.94	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.92	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.69	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.49	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.41	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 5000Hz)	22.41	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.25	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.52	LTE

DF		scheme [dB], 2057.5 Hz		Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 1216.1 Hz	0.33	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.42	LTE Band12_10QPSK_50RB_0_A MR WB23.85kbps_CH23095

---

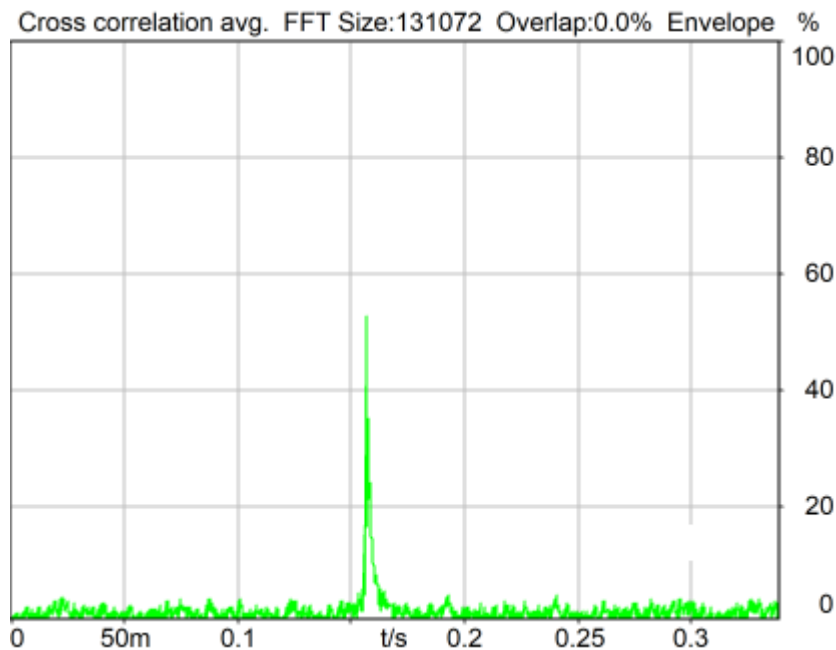
Overall Receive Delay WB	7
5.1a Receive Volume Control Performance 8N WB	10
5.1b Receive Volume Control Performance 2N WB	12
5.2 RCV Distortion and Noise - 250 Hz WB	14
5.2 RCV Distortion and Noise - 315 Hz WB	17
5.2 RCV Distortion and Noise - 400 Hz WB	20
5.2 RCV Distortion and Noise - 500 Hz WB	23
5.2 RCV Distortion and Noise - 630 Hz WB	26
5.2 RCV Distortion and Noise - 800 Hz WB	29
5.2 RCV Distortion and Noise - 1000 Hz WB	32
5.2 RCV Distortion and Noise - 1250 Hz WB	35
5.2 RCV Distortion and Noise - 1600 Hz WB	38
5.2 RCV Distortion and Noise - 2000 Hz WB	41
5.2 RCV Distortion and Noise - 2500 Hz WB	44
5.2 RCV Distortion and Noise - 3150 Hz WB	47
5.2 RCV Distortion and Noise - 4000 Hz WB	50
5.2 RCV Distortion and Noise - 5000 Hz WB	53
Report - Receive Distortion and Noise (Conversational Gain)	56
5.2 RCV Distortion and Noise - 250 Hz WB	57
5.2 RCV Distortion and Noise - 315 Hz WB	60
5.2 RCV Distortion and Noise - 400 Hz WB	63
5.2 RCV Distortion and Noise - 500 Hz WB	66
5.2 RCV Distortion and Noise - 630 Hz WB	69
5.2 RCV Distortion and Noise - 800 Hz WB	72
5.2 RCV Distortion and Noise - 1000 Hz WB	75
5.2 RCV Distortion and Noise - 1250 Hz WB	78
5.2 RCV Distortion and Noise - 1600 Hz WB	81
5.2 RCV Distortion and Noise - 2000 Hz WB	84
5.2 RCV Distortion and Noise - 2500 Hz WB	87
5.2 RCV Distortion and Noise - 3150 Hz WB	90
5.2 RCV Distortion and Noise - 4000 Hz WB	93
5.2 RCV Distortion and Noise - 5000 Hz WB	96
Report - Receive Distortion and Noise (Conversational Gain)	99
5.3 Frequency Response 8N FF	100
5.3 Frequency Response 8N DF	103
5.3 Frequency Response 2N FF	106
5.3 Frequency Response 2N DF	109





## Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 157.2 ms

2024/1/19 8:30 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)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
		Delta A	0.0 °

Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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		
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal Source ch.2 Store to variable D\_RCV\_WB

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

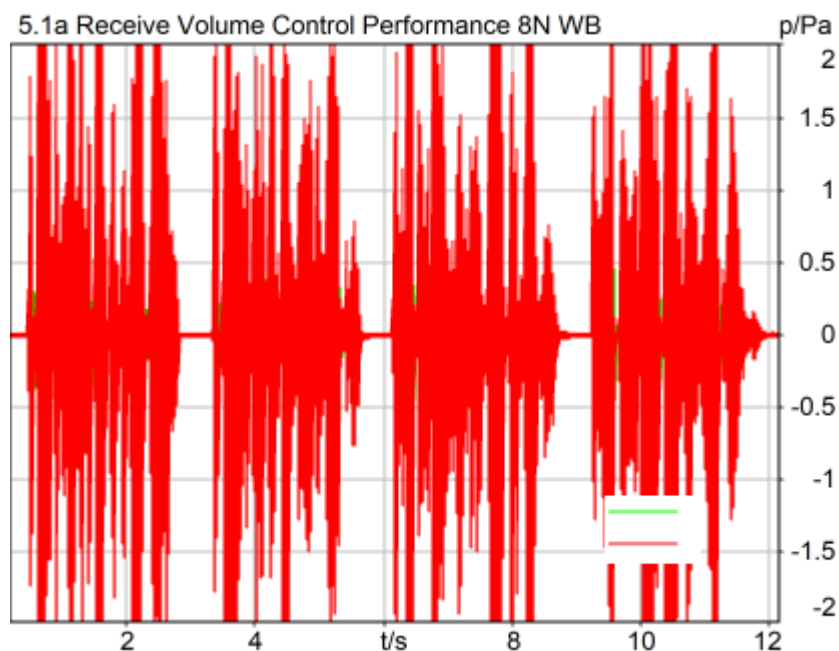
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.1a Receive Volume Control Performance 8N WB

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 87.64 dB[SPL], Act.: 85.75%  
Corrected Speech Level: 17.64 dB[SPL] Not Ok

### Not Ok

2024/1/22 20:38 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

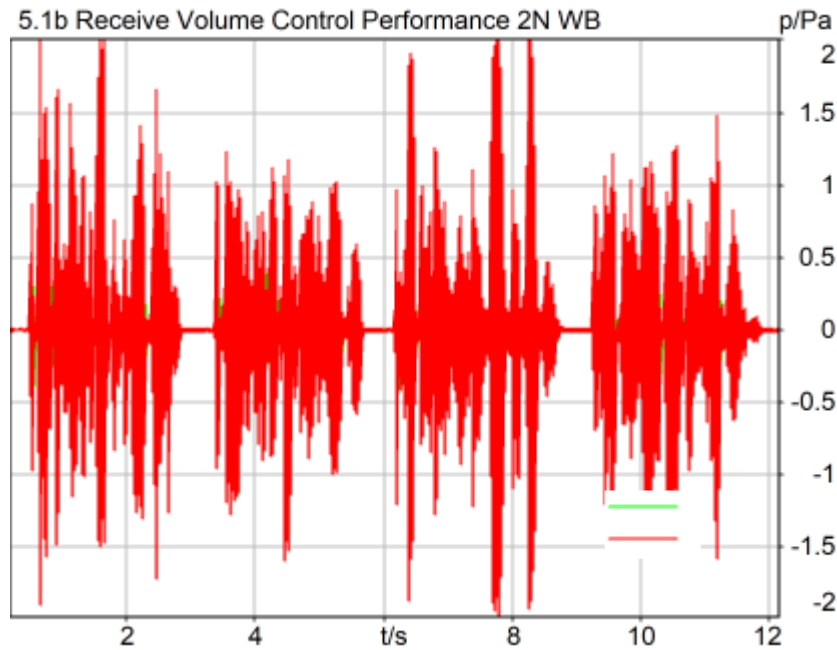
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1b Receive Volume Control Performance 2N WB

TIA-5050 (2018-01) \ Measurements \ Wideband



### Correction

X - 70

Speech Level RCV: 81.75 dB[SPL], Act.: 85.91%

Corrected Speech Level: 11.75 dB[SPL] Ok

### Ok

2024/1/22 20:32 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Super Wideband		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

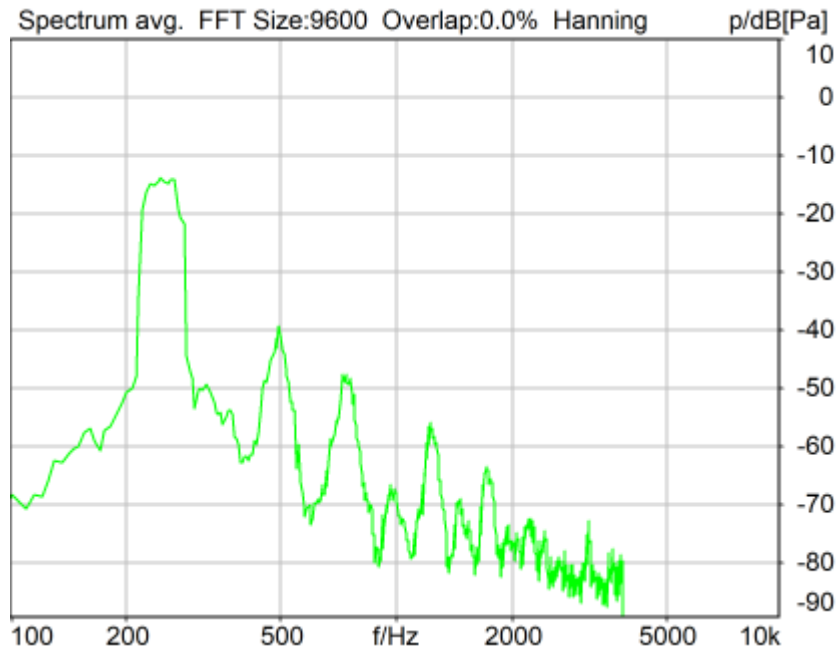
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.41 dB (3.80%) Ok

Ok

2024/1/19 8:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_250hz\_sr20dbm0\_v02.dat.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

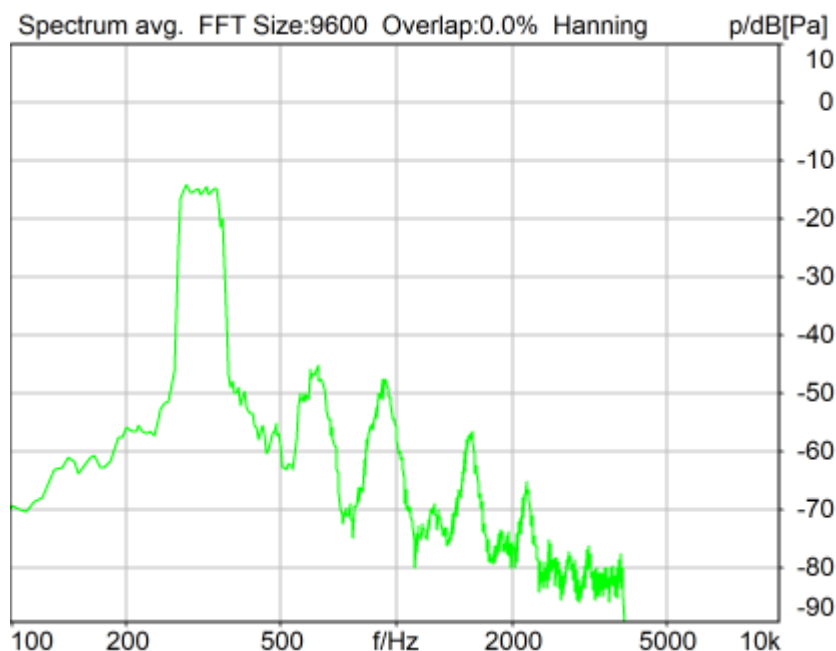
**HIB Settings**

---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.52 dB (3.34%) Ok

Ok

2024/1/19 8:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

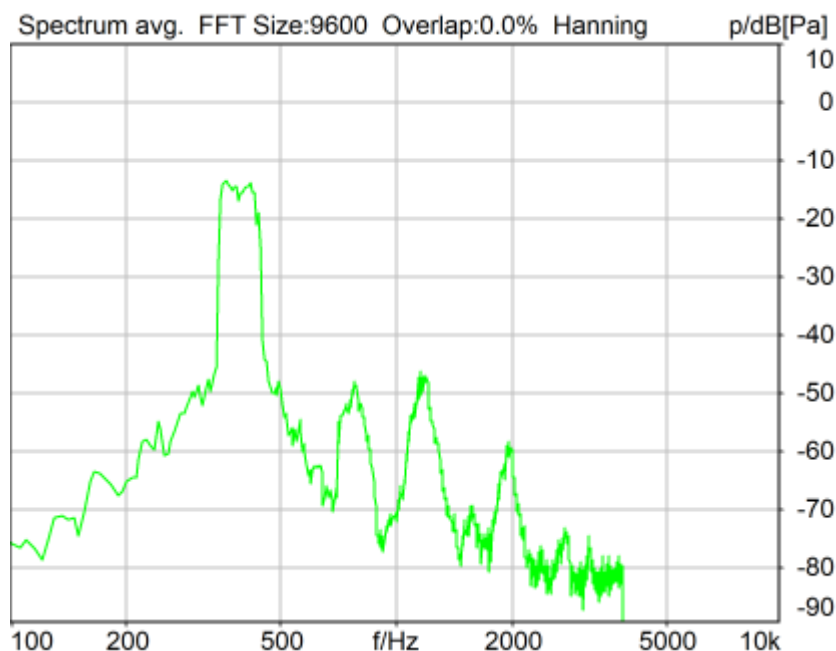
### HIB Settings

---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.73 dB (3.26%) Ok

Ok

2024/1/19 8:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

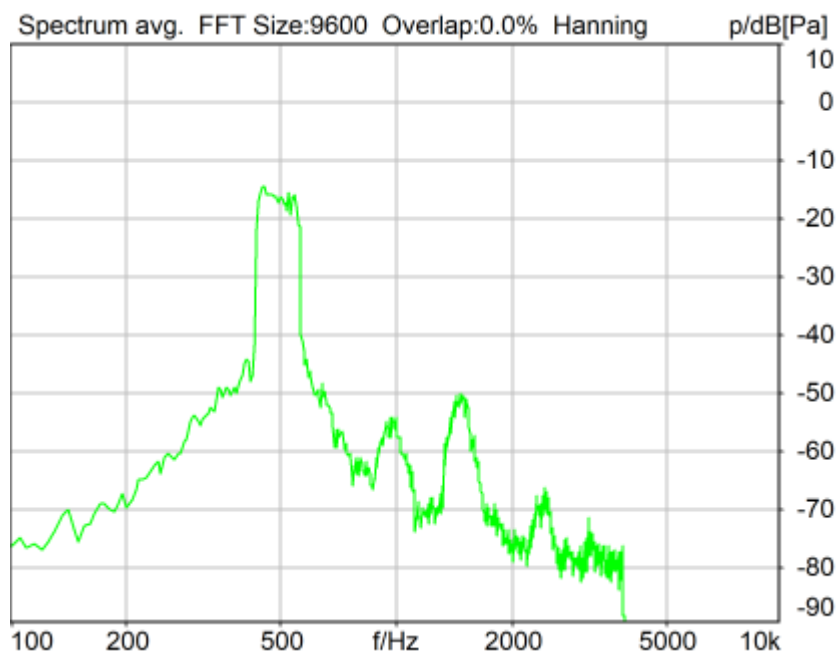
---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.94 dB (3.18%) Ok

Ok

2024/1/19 8:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

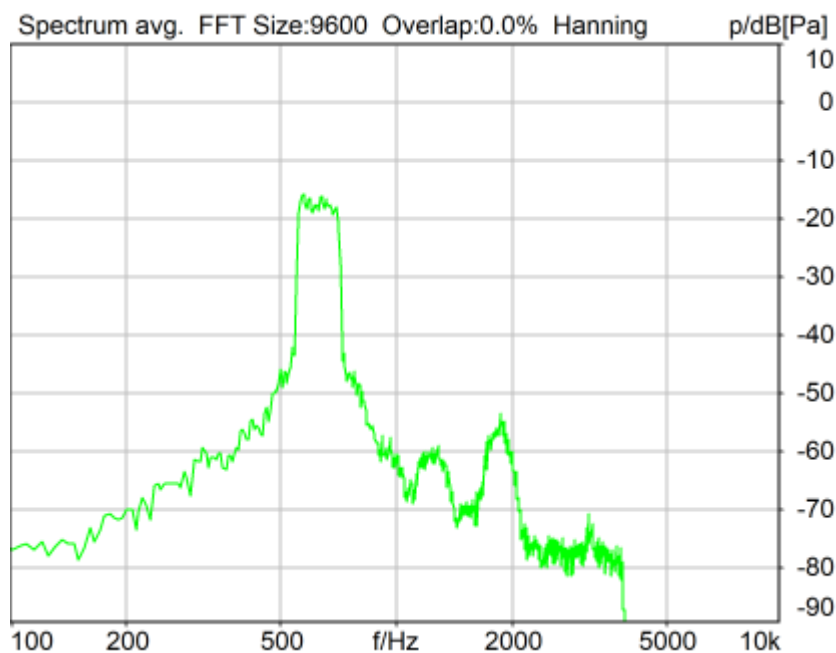
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 30.12 dB (3.12%) Ok

Ok

2024/1/19 8:33 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

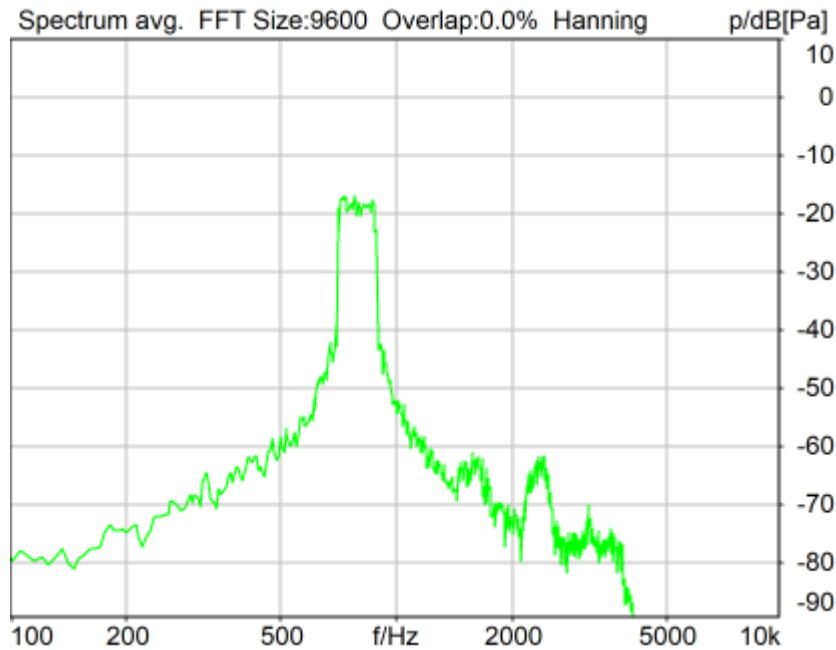
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 29.85 dB (3.22%) Ok

Ok

2024/1/19 8:33 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

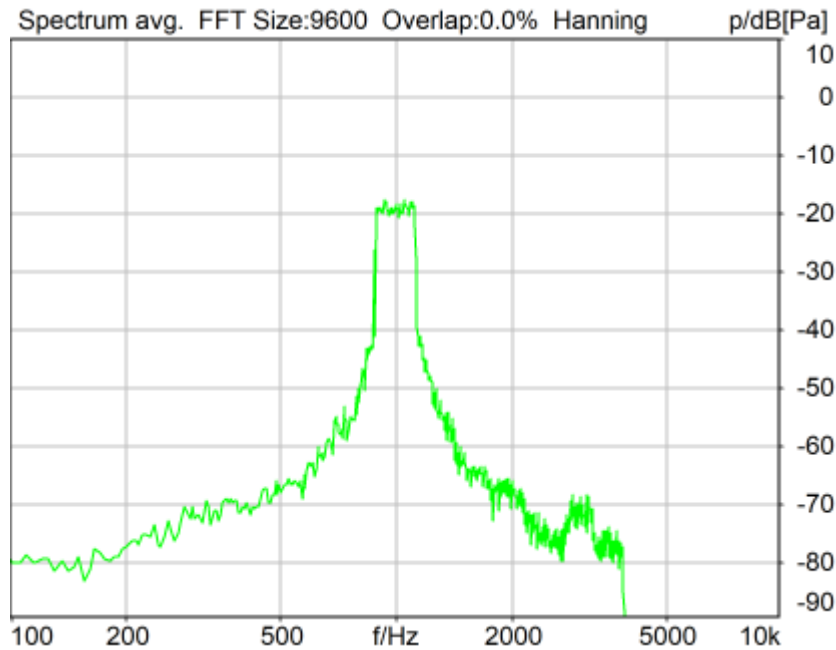


---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.13 dB (3.92%) Ok

Ok

2024/1/19 8:34 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

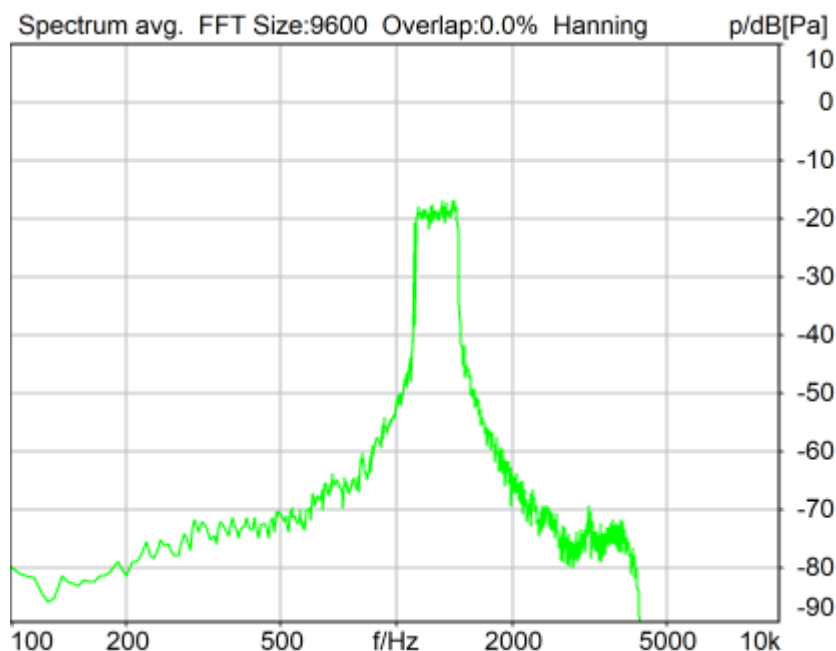
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.20 dB (4.90%) Ok

Ok

2024/1/19 8:34 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

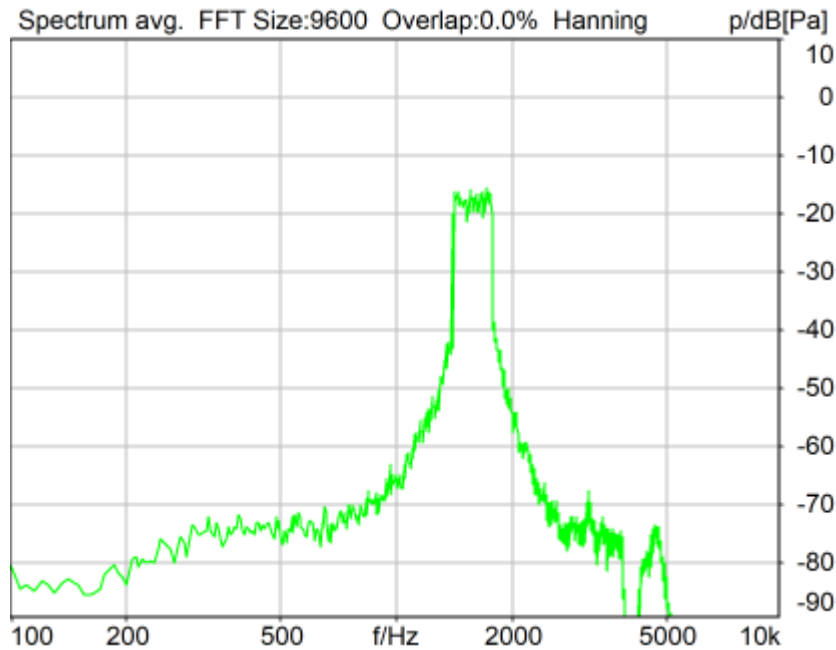
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.94 dB (3.57%) Ok

Ok

2024/1/19 8:34 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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

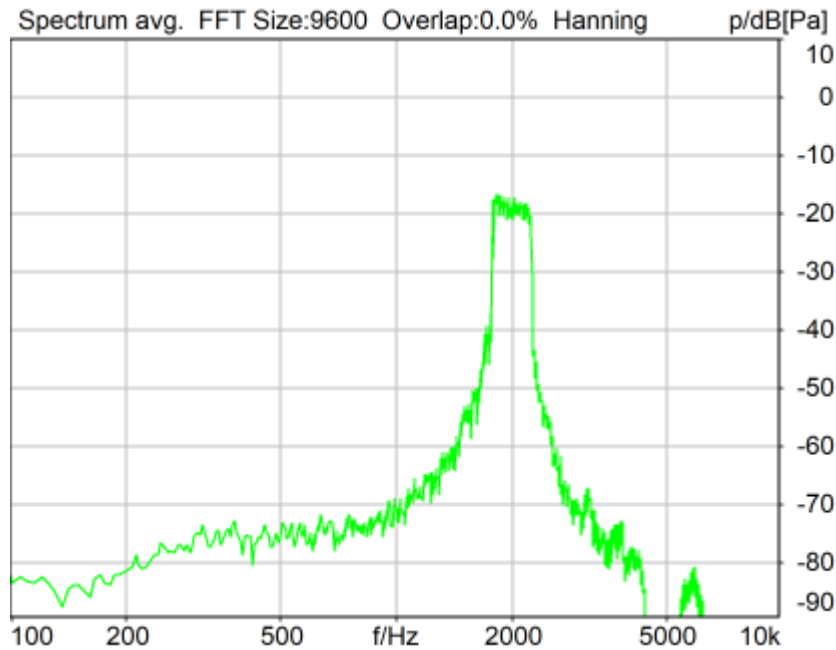
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.16 dB (3.91%) Ok

Ok

2024/1/19 8:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

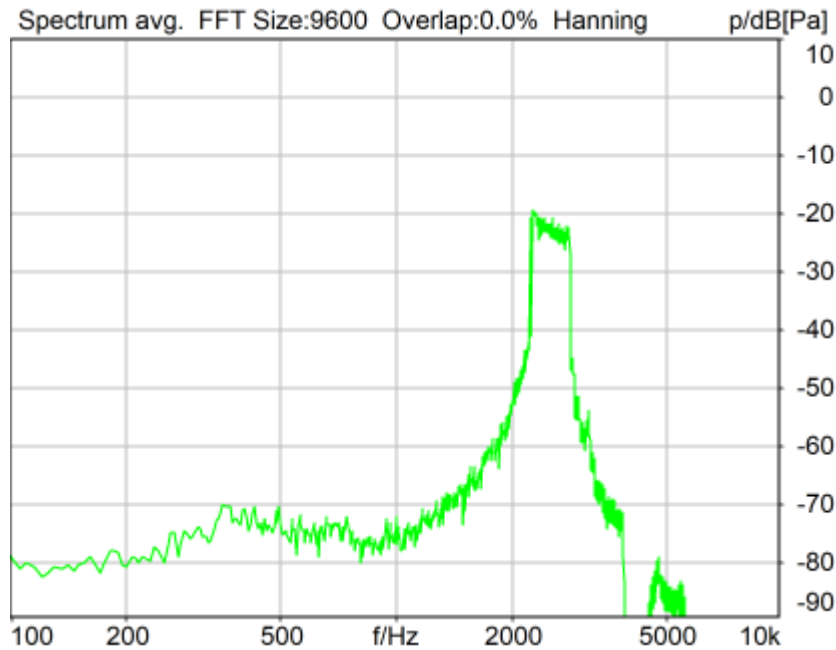
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.08 dB (4.97%) Ok

Ok

2024/1/19 8:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

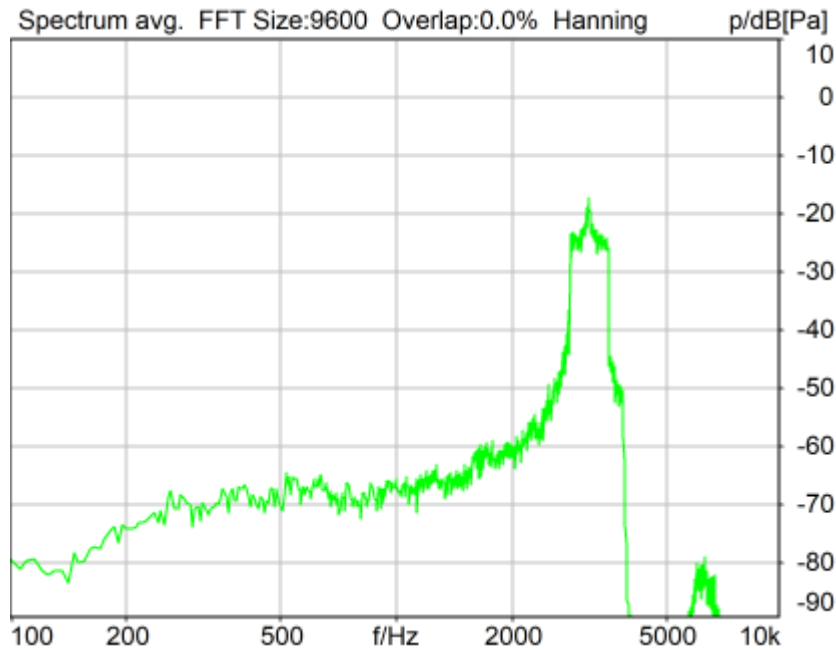
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.91 dB (6.37%) Ok

Ok

2024/1/19 8:36 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

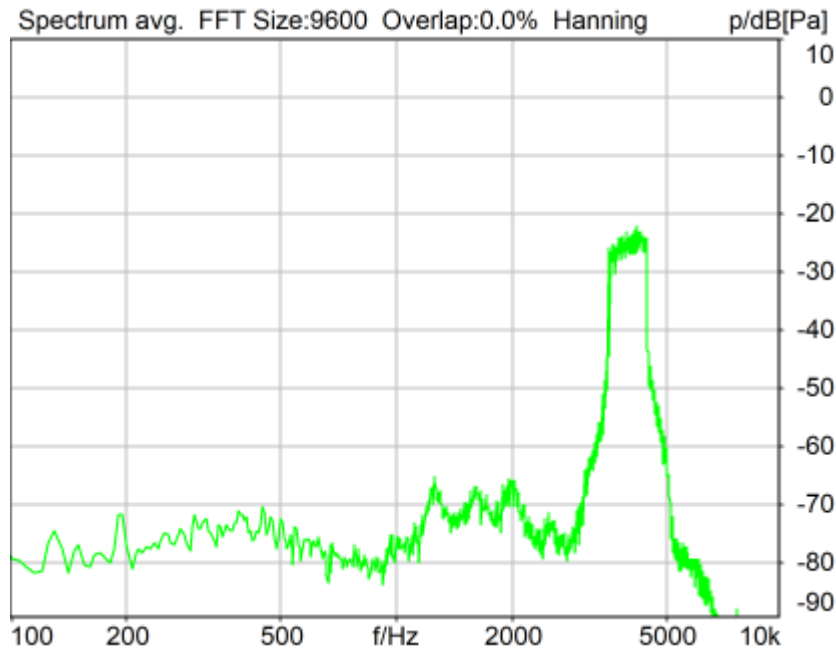
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.31 dB (4.31%) Ok

Ok

2024/1/19 8:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 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.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

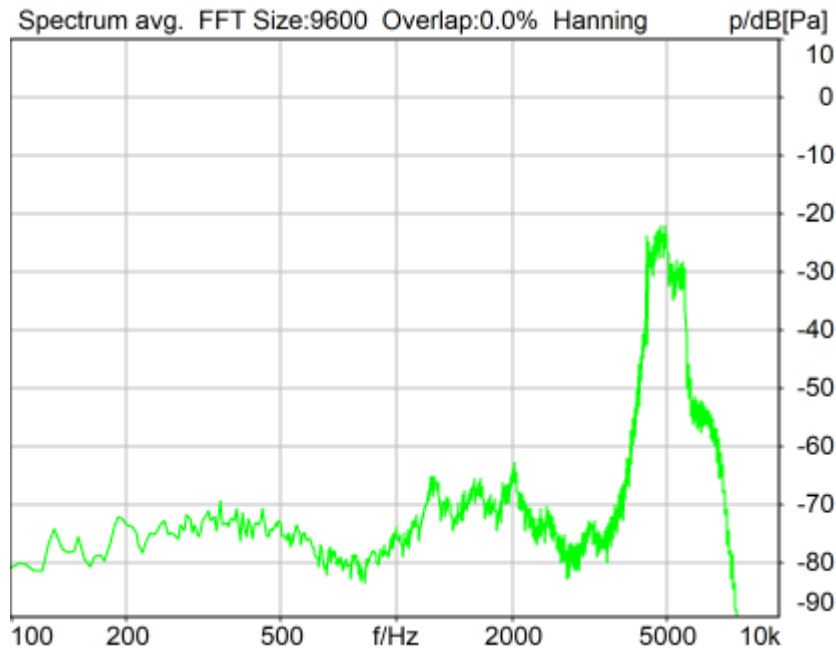
**HIB Settings**

---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 21.83 dB (8.10%) Ok

Ok

2024/1/19 8:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	5660.0 Hz
Stimulus min.	4430.0 Hz	Analysis max.	4425.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	5665.0 Hz		

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

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

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	250Hz	28.41 dB
2	315Hz	29.52 dB
3	400Hz	29.73 dB
4	500Hz	29.94 dB
5	630Hz	30.12 dB
6	800Hz	29.85 dB
7	1000Hz	28.13 dB
8	1250Hz	26.20 dB
9	1600Hz	28.94 dB
10	2000Hz	28.16 dB
11	2500Hz	26.08 dB
12	3150Hz	23.91 dB
13	5000Hz	21.83 dB
14	4000Hz	27.31 dB

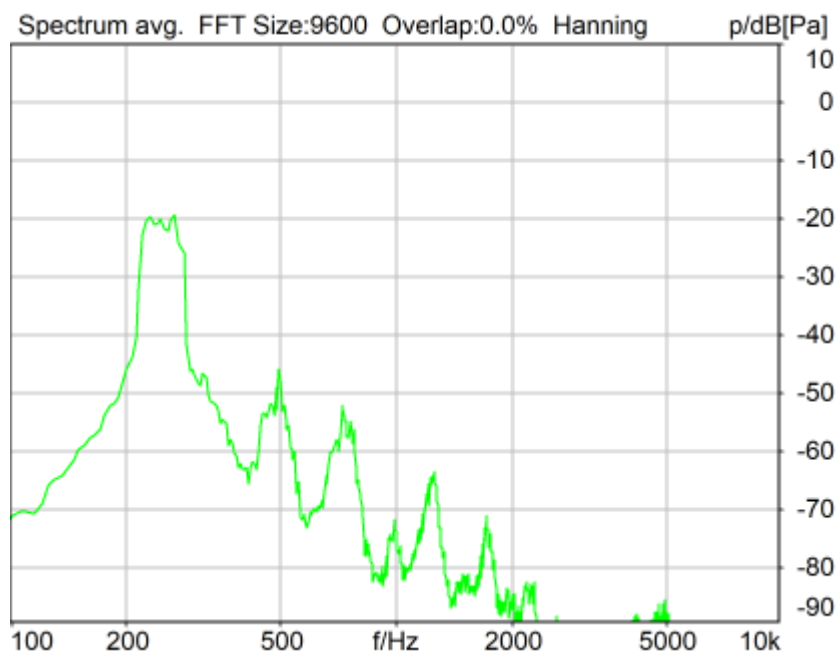
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.83dB at 5000Hz.

2024/1/19 8:40 ACQUA

## 5.2 RCV Distortion and Noise - 250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.85 dB (3.61%) Ok

Ok

2024/1/19 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\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

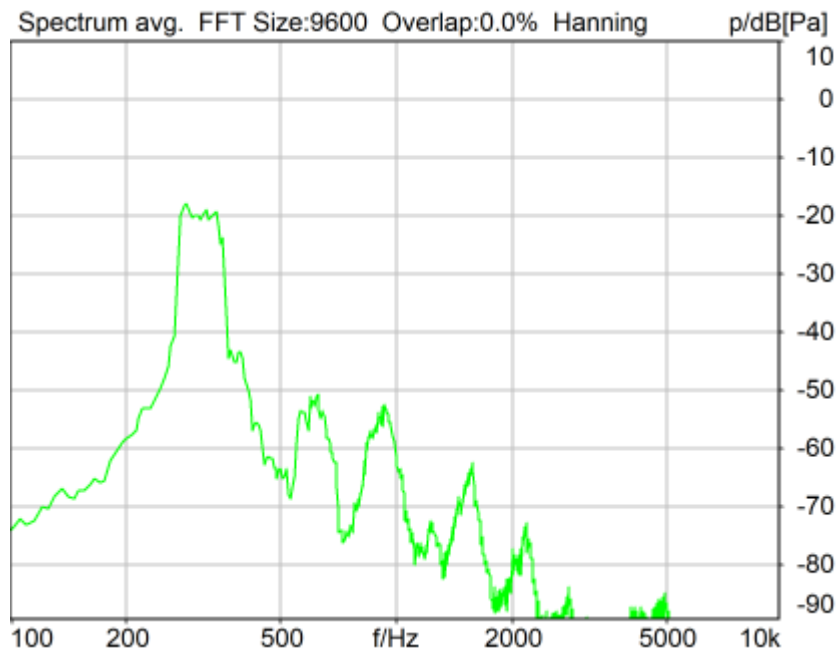
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 315 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.88 dB (3.60%) Ok

Ok

2024/1/19 8:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_315hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_315Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

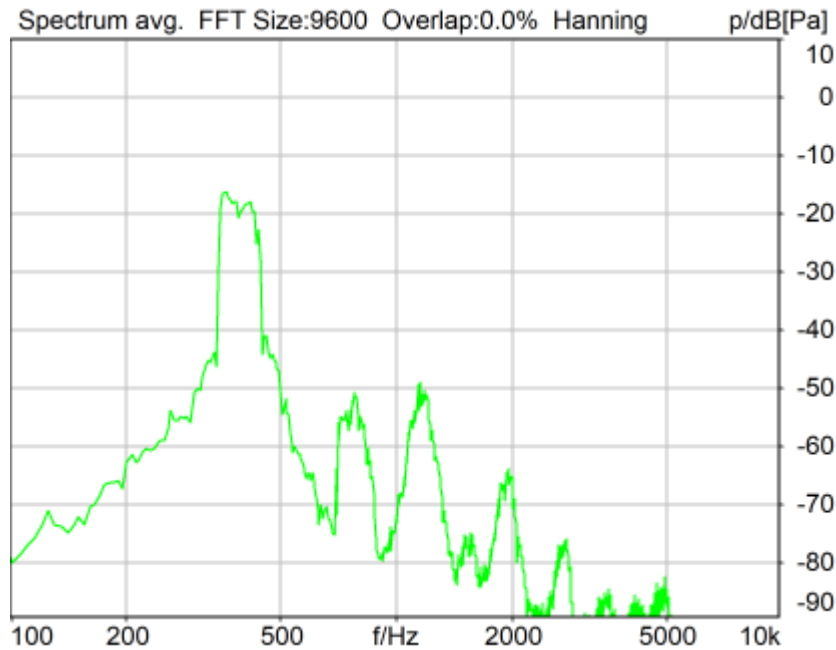
---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 400 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.90 dB (3.59%) Ok

Ok

2024/1/19 8:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

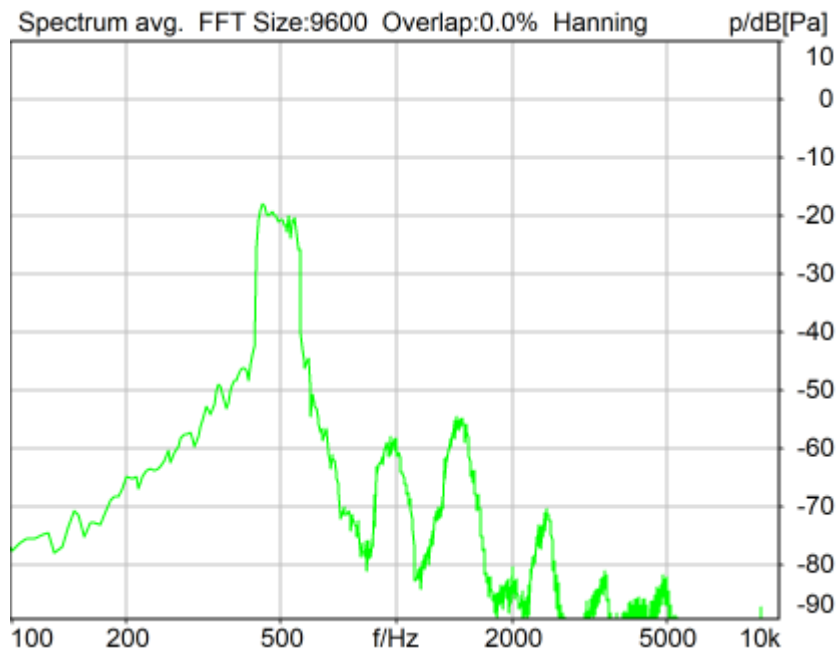
**HIB Settings**

---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.84 dB (3.22%) Ok

Ok

2024/1/19 8:46 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))****Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

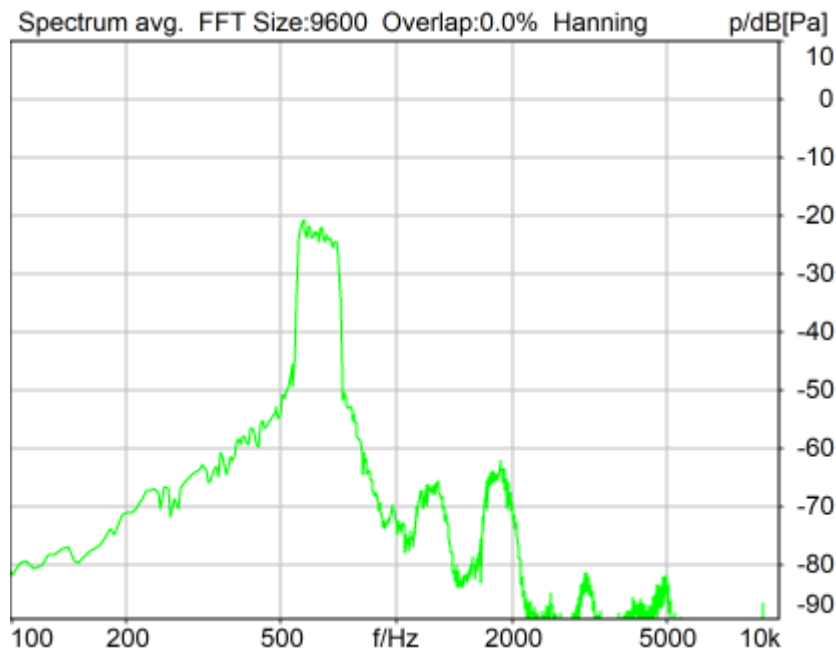
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 31.31 dB (2.72%) Ok

Ok

2024/1/19 8:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_630Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

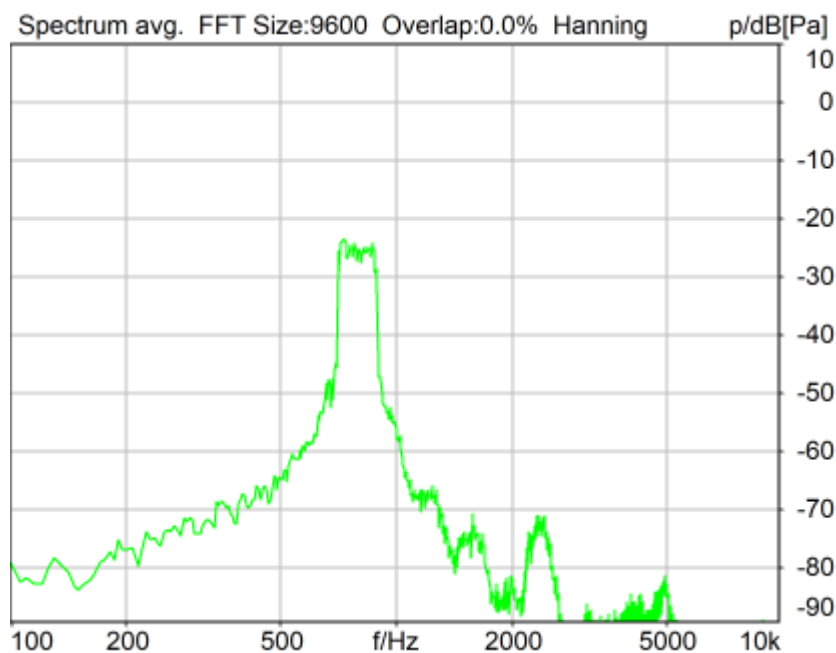


---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 800 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.57 dB (3.73%) Ok

Ok

2024/1/19 8:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

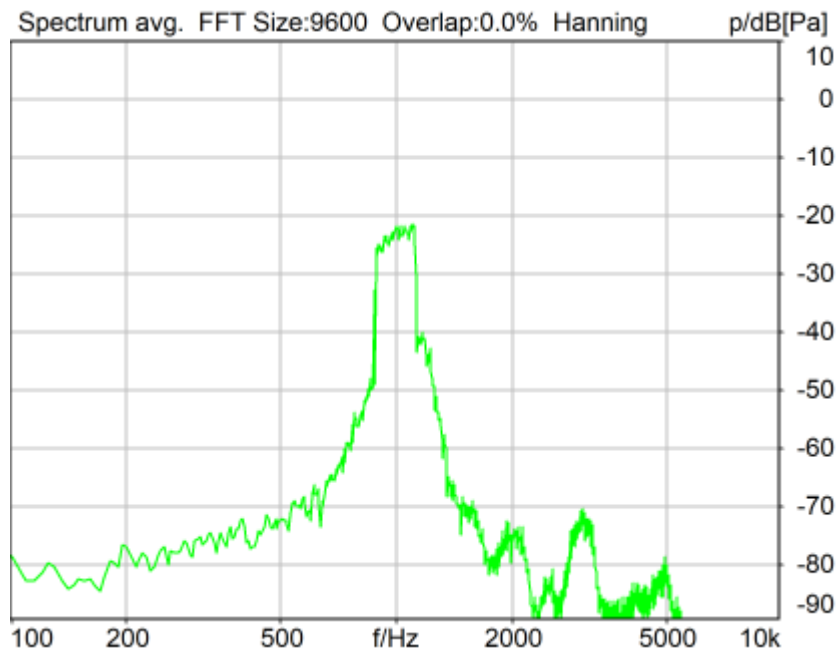
**HIB Settings**

---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.15 dB (6.96%) Ok

Ok

2024/1/19 8:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

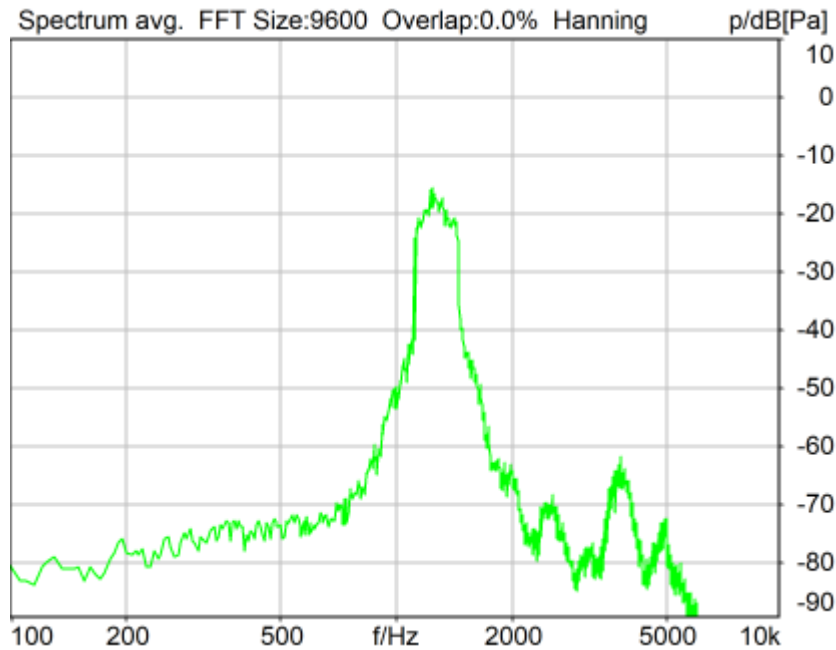
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1250 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.27 dB (6.12%) Ok

Ok

2024/1/19 8:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

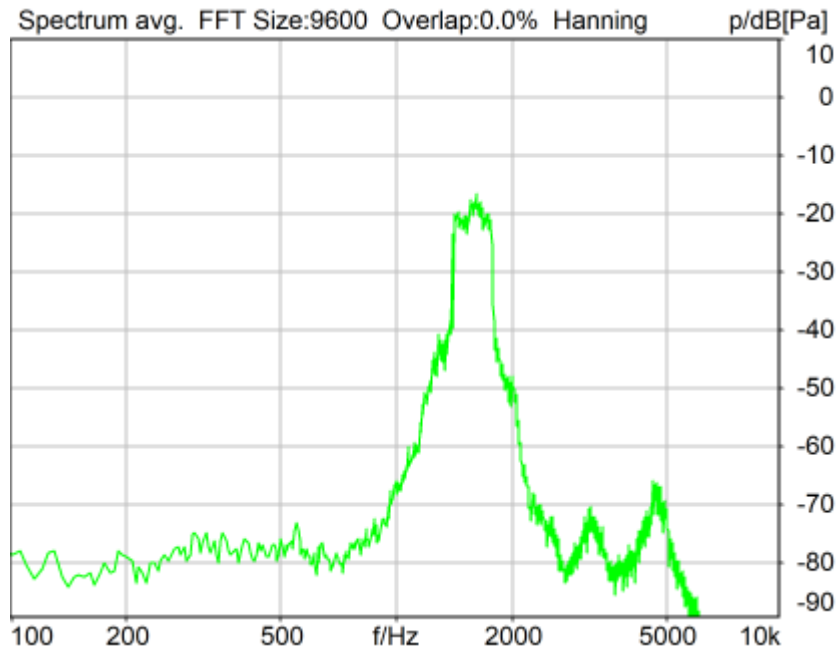
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1600 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.29 dB (6.11%) Ok

Ok

2024/1/19 8:48 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

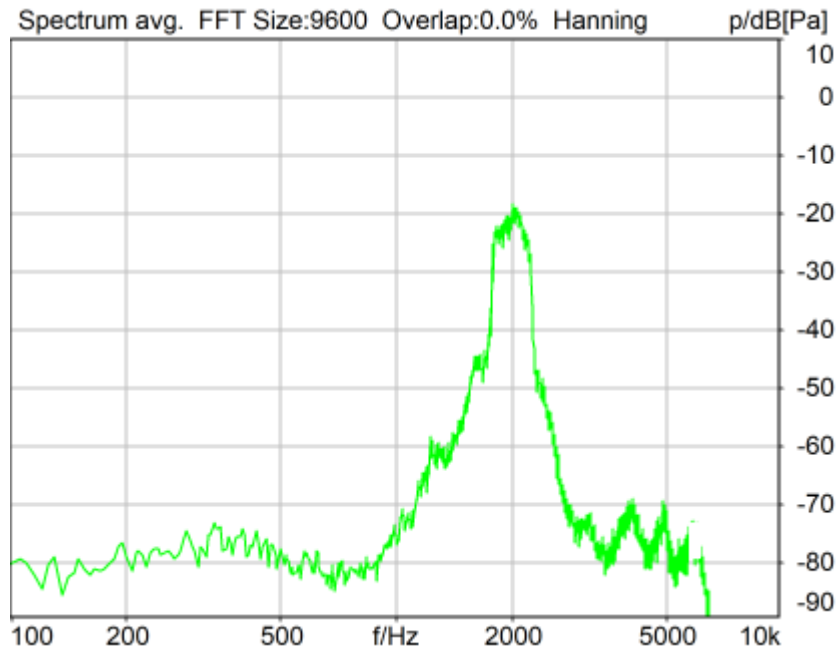
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.94 dB (6.35%) Ok

Ok

2024/1/19 8:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

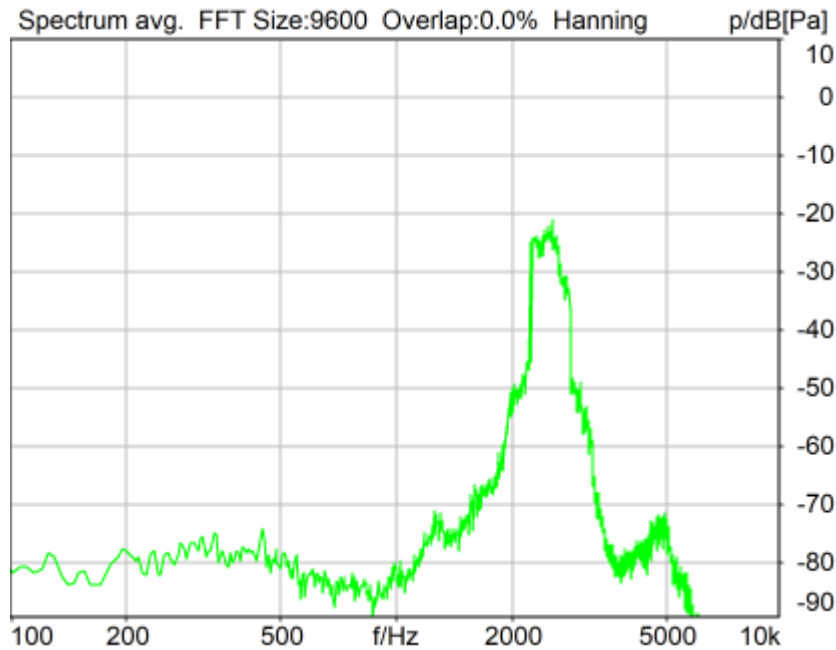
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 2500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 23.92 dB (6.37%) Ok

Ok

2024/1/19 8:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_2500Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

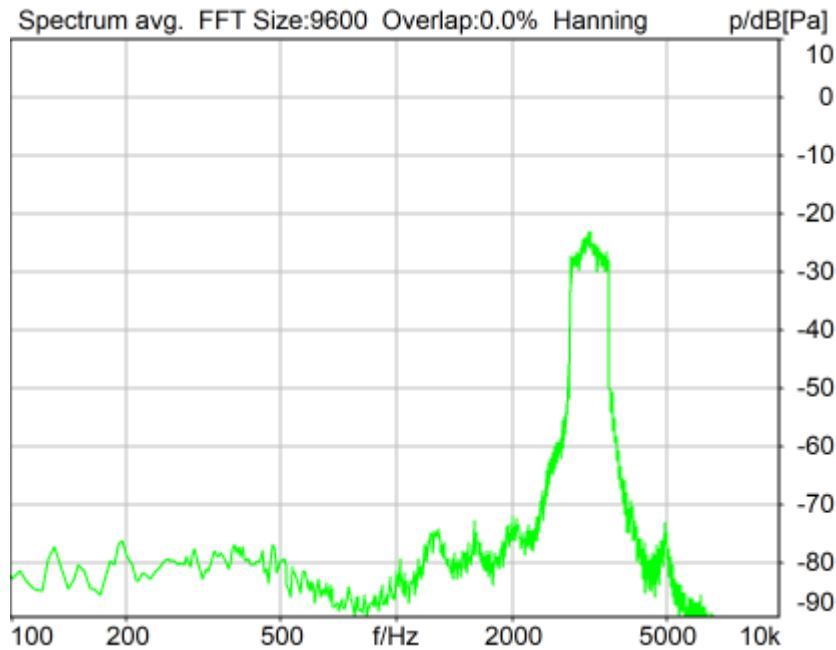
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 30.69 dB (2.92%) Ok

Ok

2024/1/19 8:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_3150Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

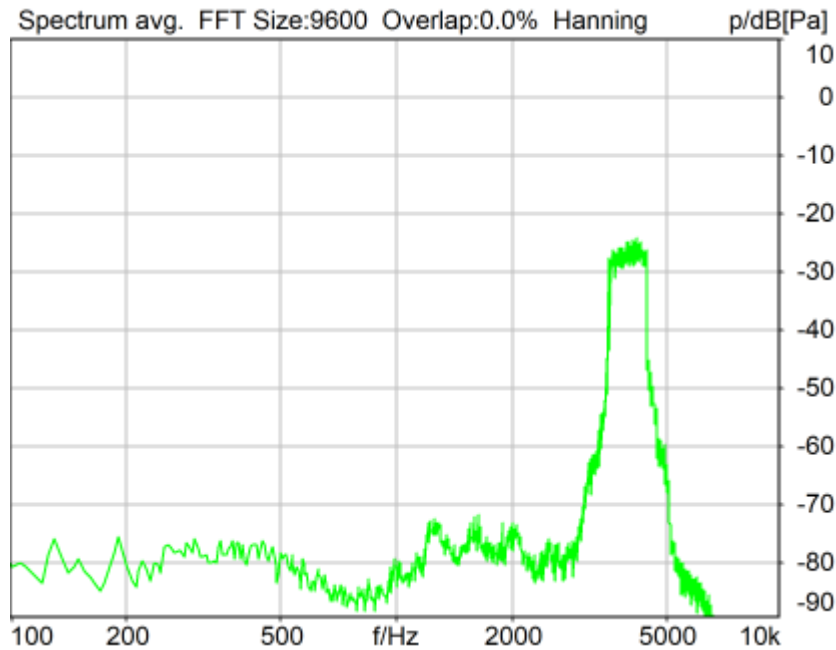
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 4000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.49 dB (4.22%) Ok

Ok

2024/1/19 8:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_4000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	4500.0 Hz
Stimulus min.	3515.0 Hz	Analysis max.	3510.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	4505.0 Hz		

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_4000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

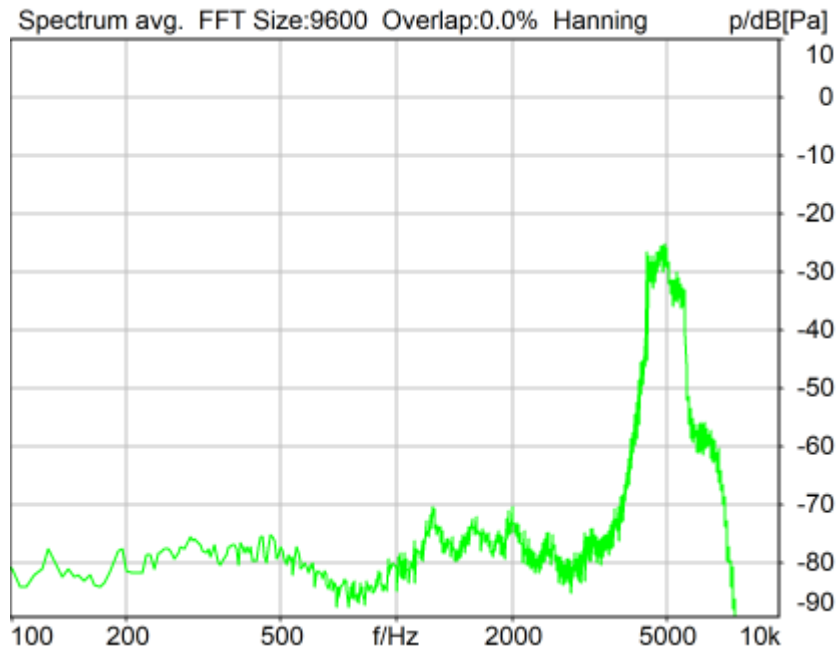


---

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 5000 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 22.41 dB (7.58%) Ok

Ok

2024/1/19 8:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_5000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 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.	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))  
Store to variable RCVWB10\_5000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

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

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	250Hz	28.85 dB
2	315Hz	28.88 dB
3	400Hz	28.90 dB
4	500Hz	29.84 dB
5	630Hz	31.31 dB
6	800Hz	28.57 dB
7	1000Hz	23.15 dB
8	1250Hz	24.27 dB
9	1600Hz	24.29 dB
10	2000Hz	23.94 dB
11	2500Hz	23.92 dB
12	3150Hz	30.69 dB
13	4000Hz	27.49 dB
14	5000Hz	22.41 dB

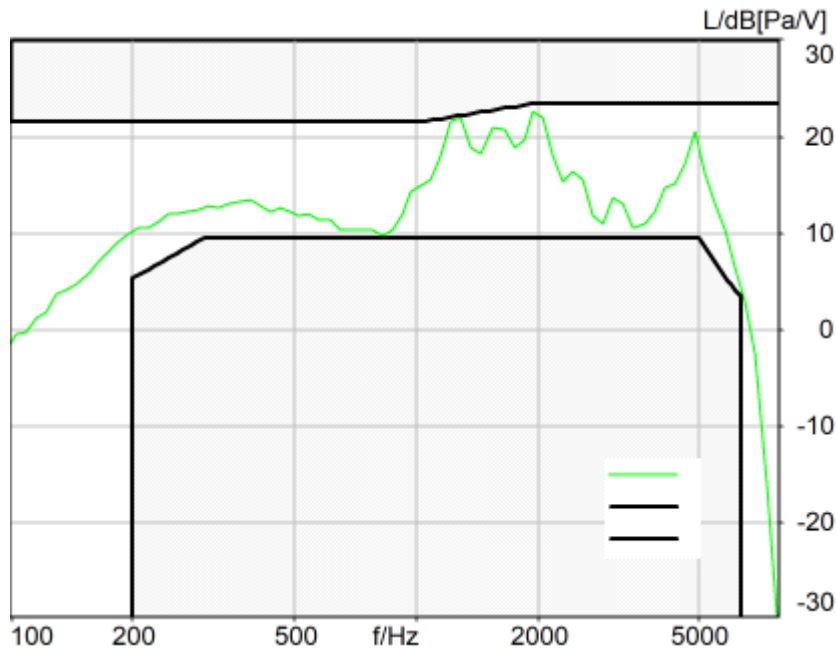
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.41dB at 5000Hz.

2024/1/19 8:50 ACQUA

## 5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.25 dB at 1285.9 Hz Ok

Ok

2024/1/19 8:41 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

### Limits

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: respmaleieeee269\_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	-3.5 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

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 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off

---

Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode      Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

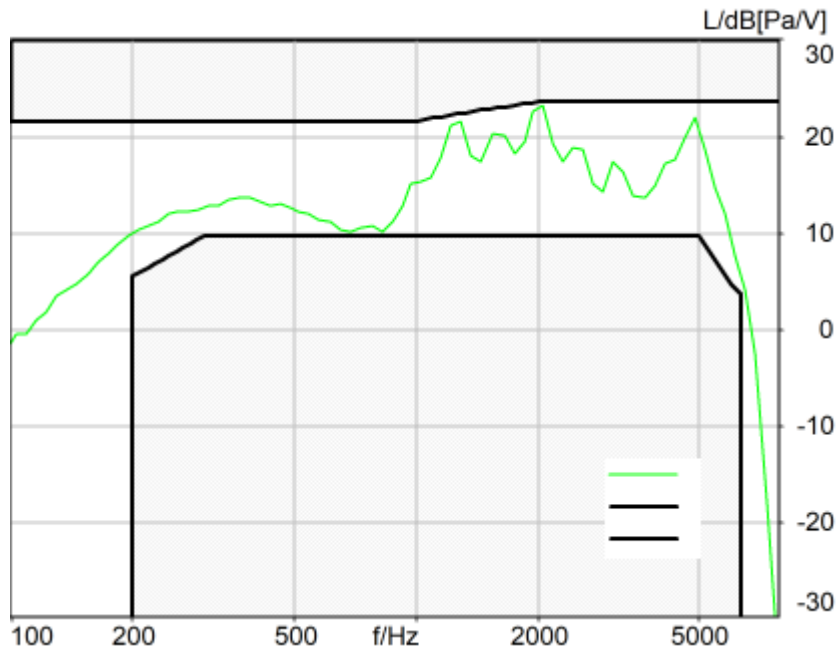
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



### 5.3 Frequency Response 8N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.52 dB at 2057.5 Hz Ok

Ok

2024/1/19 8:41 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-3.5 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<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))**

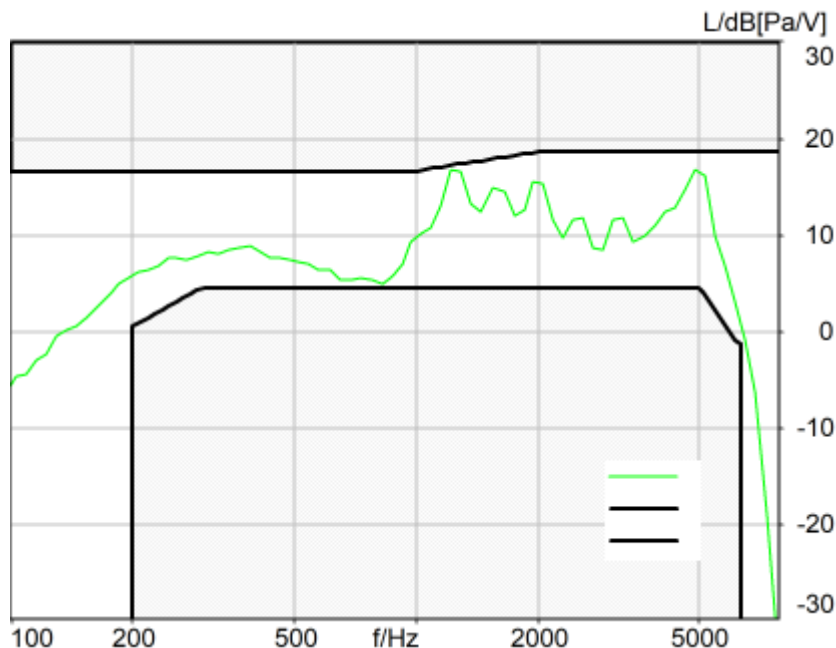
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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

### 5.3 Frequency Response 2N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
 0.33 dB at 1216.1 Hz Ok

Ok

2024/1/19 8:50 ACQUA 5.1.200  
 Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
 Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
 WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
 Pause 0.5 s +  
 Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
 Pause till end of file  
 Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
 Alteration:  
 0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	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 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off

---

Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode      Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

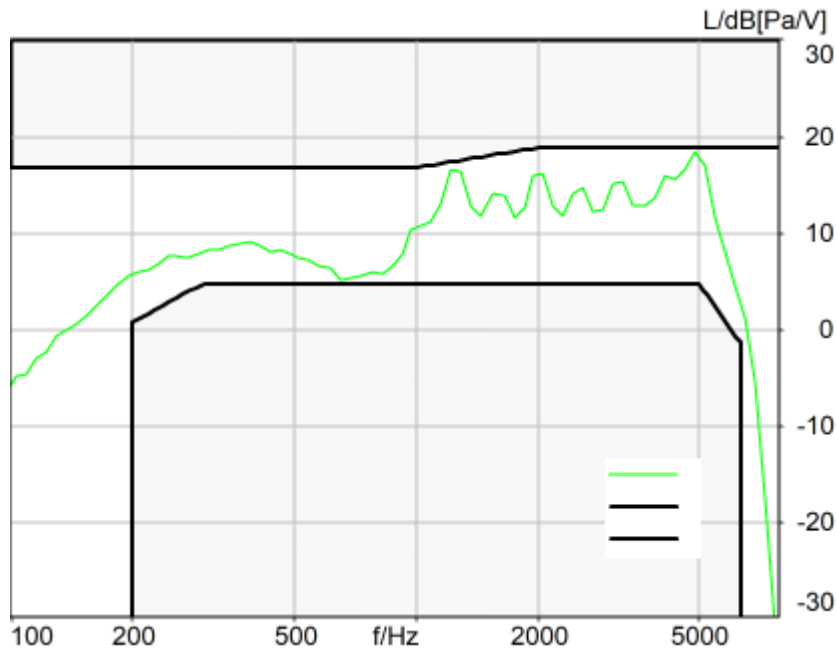
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

### 5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance  
0.42 dB at 4870.0 Hz Ok

Ok

2024/1/19 8:51 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_wb\_r20\_v01.dat**

Level adj. Ch1 -90.0 dB  
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2  
Pause 0.5 s +  
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +  
Pause till end of file  
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"  
Alteration:  
0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.  
filtered with 8.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-0.2 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

**Special Features**

Compensate delay 157.2000 ms (D\_RCV\_WB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<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

## **Measurement Protocol**

Measurement Object	LTE Band13_10QPSK_50RB_0_AMR NB 12.2kbps_CH23230
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/2/2 11:01
Responsible Person	audio

**Status Overview**

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	161.2	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.44	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.41	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.25	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.44	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.74	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.71	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.77	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.38	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.80	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.64	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.79	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.93	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	27.38	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.60	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.84	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	34.01	LTE

- 630 Hz NB		0.0 dB		Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.32	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.42	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.78	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	36.76	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	40.85	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	40.82	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	28.40	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	1.73	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 1948.0 Hz	0.01	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	0.02	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	0.57	LTE Band13_10QPSK_50RB_0_A MR NB 12.2kbps_CH23230

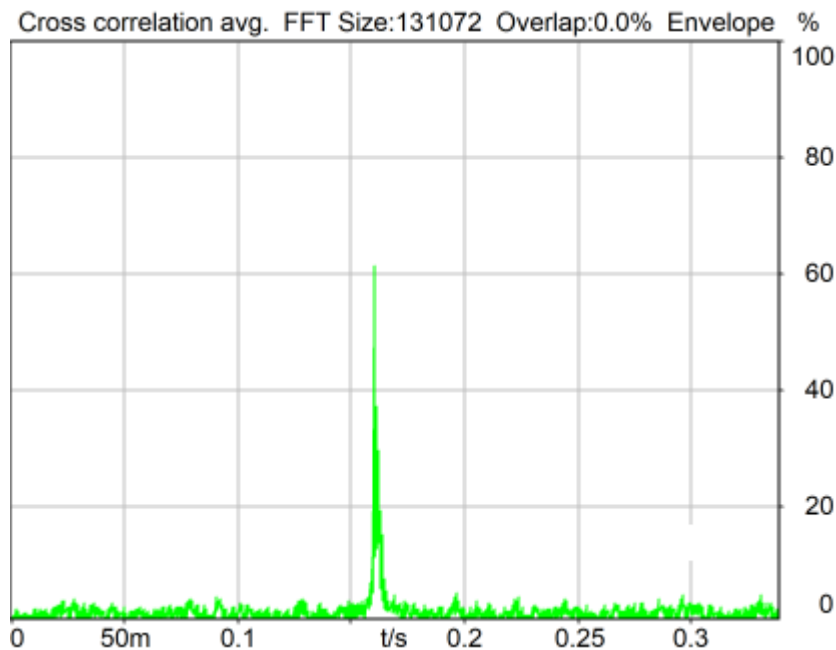
---

Overall Receive Delay NB	6
5.1a Receive Volume Control Performance 8N NB	9
5.1b Receive Volume Control Performance 2N NB	11
5.2 RCV Distortion and Noise - 400 Hz NB	13
5.2 RCV Distortion and Noise - 500 Hz NB	16
5.2 RCV Distortion and Noise - 630 Hz NB	19
5.2 RCV Distortion and Noise - 800 Hz NB	22
5.2 RCV Distortion and Noise - 1000 Hz NB	25
5.2 RCV Distortion and Noise - 1250 Hz NB	28
5.2 RCV Distortion and Noise - 1600 Hz NB	31
5.2 RCV Distortion and Noise - 2000 Hz NB	34
5.2 RCV Distortion and Noise - 2500 Hz NB	37
5.2 RCV Distortion and Noise - 3150 Hz NB	40
Report - Receive Distortion and Noise (Conversational Gain)	43
5.2 RCV Distortion and Noise - 400 Hz NB	44
5.2 RCV Distortion and Noise - 500 Hz NB	47
5.2 RCV Distortion and Noise - 630 Hz NB	50
5.2 RCV Distortion and Noise - 800 Hz NB	53
5.2 RCV Distortion and Noise - 1000 Hz NB	56
5.2 RCV Distortion and Noise - 1250 Hz NB	59
5.2 RCV Distortion and Noise - 1600 Hz NB	62
5.2 RCV Distortion and Noise - 2000 Hz NB	65
5.2 RCV Distortion and Noise - 2500 Hz NB	68
5.2 RCV Distortion and Noise - 3150 Hz NB	71
Report - Receive Distortion and Noise (Conversational Gain)	74
5.3 Frequency Response 8N FF HANB	75
5.3 Frequency Response 8N DF HANB	78
5.3 Frequency Response 2N FF HANB	81
5.3 Frequency Response 2N DF HANB	84



## Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 161.2 ms

2024/1/19 10:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Source: cssnb1b\_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b\_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye 0.0 mm                      Rotation Delta A 0.0 °  
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	-2.8 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

**Special Features**

Show source signal Source ch.2	Store to variable	D_RCV_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

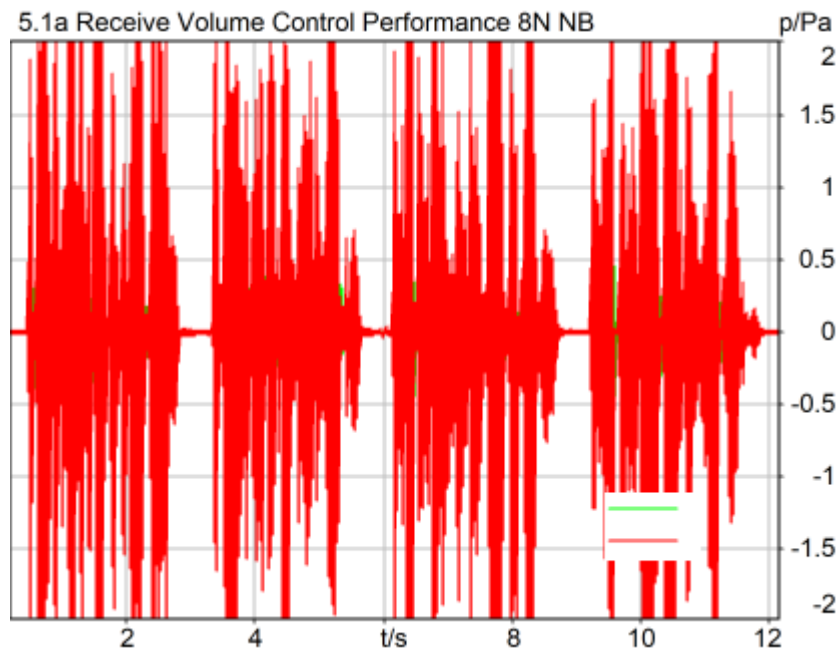


Gain in 1            0.00 dB  
Mic 1 Power Supply Off

Gain in 2            0.00 dB  
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: 87.44 dB[SPL], Act.: 85.83%  
Corrected Speech Level: 17.44 dB[SPL] Not Ok

### Not Ok

2024/1/22 21:01 ACQUA 5.1.200

### Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 161.2000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

-----  
**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

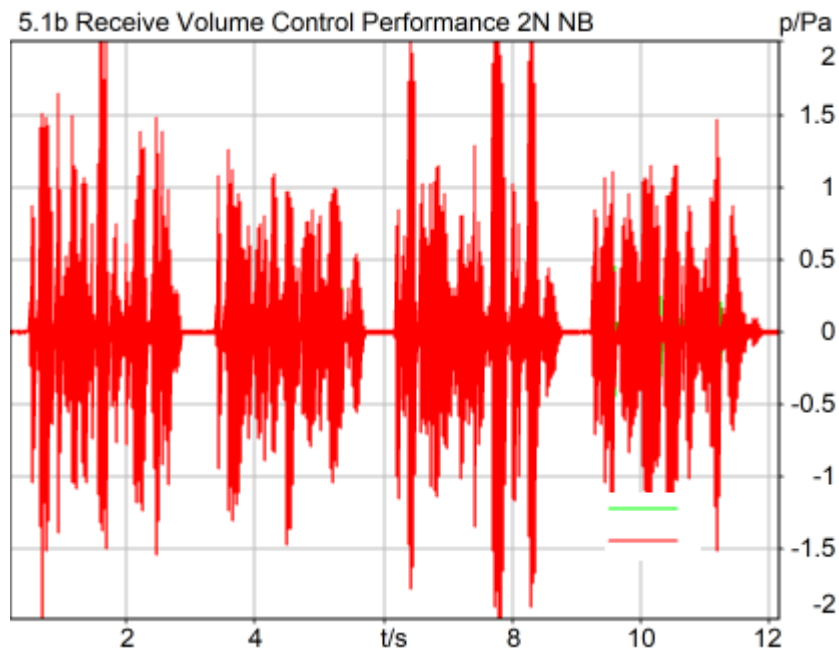
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.1b Receive Volume Control Performance 2N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband



### Correction

X - 70

Speech Level RCV: 81.41 dB[SPL], Act.: 85.87%

Corrected Speech Level: 11.41 dB[SPL] Ok

### Ok

2024/1/22 21:04 ACQUA 5.1.200

### Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	12000.00 ms
Range start	200.00 ms	FIR filter	drp2ff_ieeee1652
Use FIR Filter	Ch2	Margin (15.9dB nom)	
Bandpass filter	Narrow Band		
15.90 dB			

**Special Features**

Show source signal Source ch.2  
Compensate delay 161.2000 ms (D\_RCV\_NB, Delay (Cross))

**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

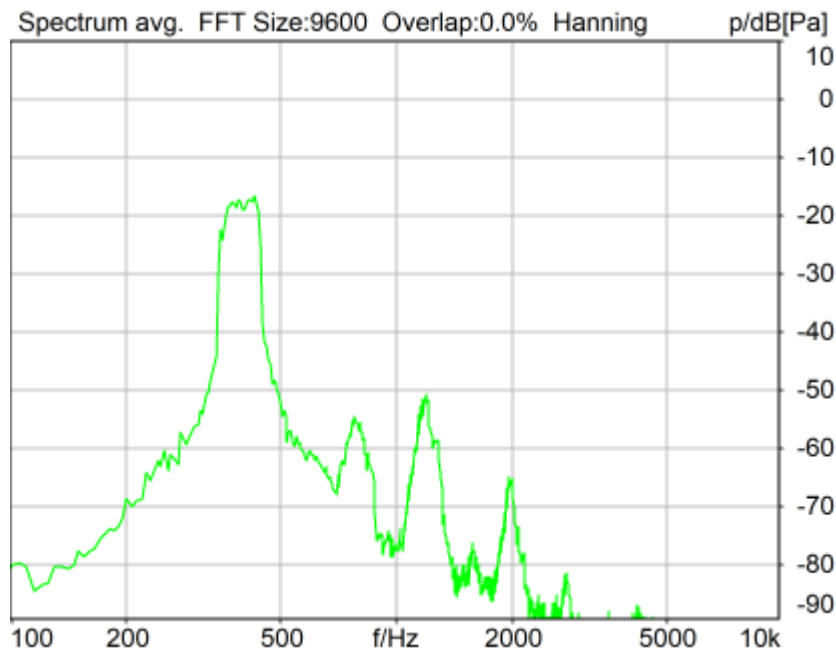
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 31.25 dB (2.74%) Ok

Ok

2024/1/19 10:59 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_400Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

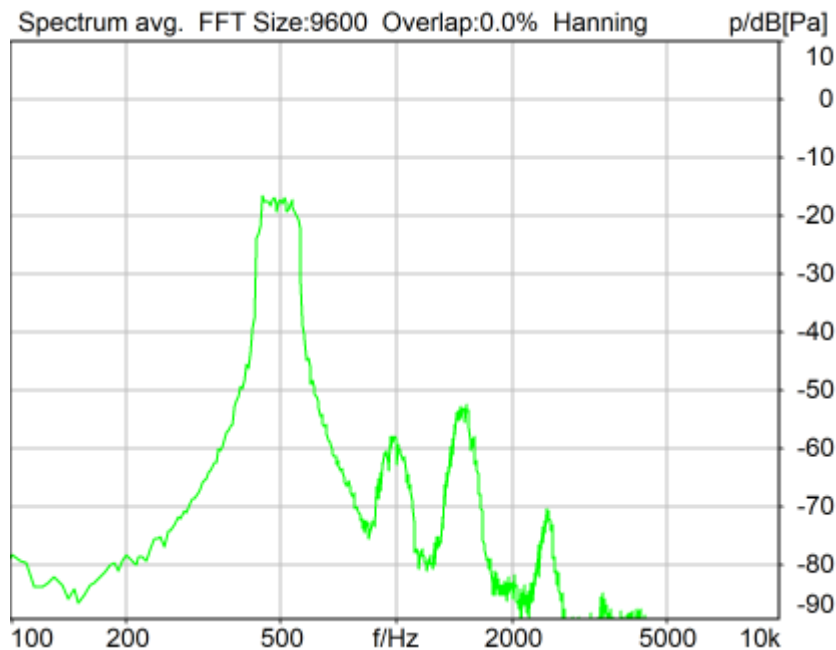
**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 31.44 dB (2.68%) Ok

Ok

2024/1/19 11:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_500Hz

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

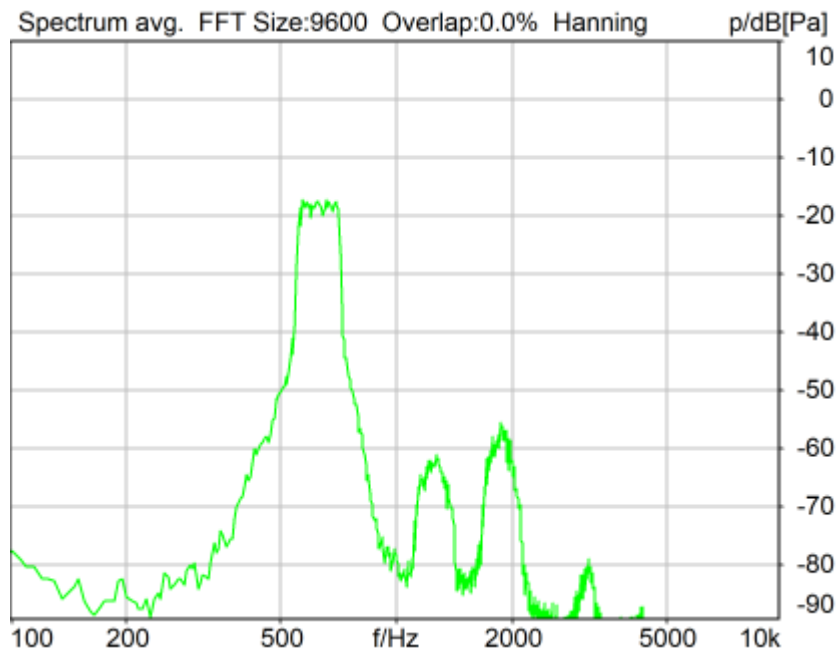
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 32.74 dB (2.31%) Ok

Ok

2024/1/19 11:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	745.0 Hz
Stimulus min.	525.0 Hz	Analysis max.	520.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	750.0 Hz		

### Special Features

Compensate delay 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_630Hz

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

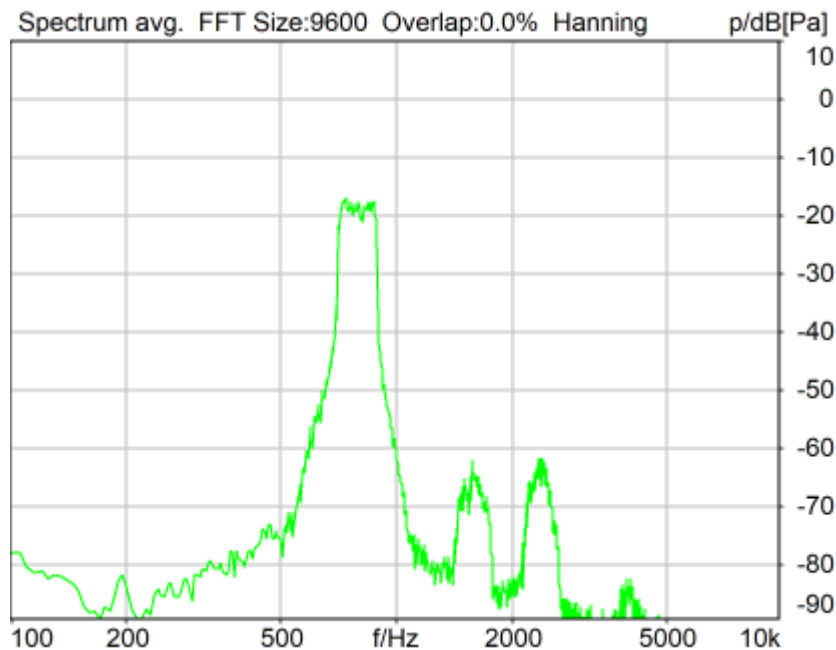
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 34.71 dB (1.84%) Ok

Ok

2024/1/19 11:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_800Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

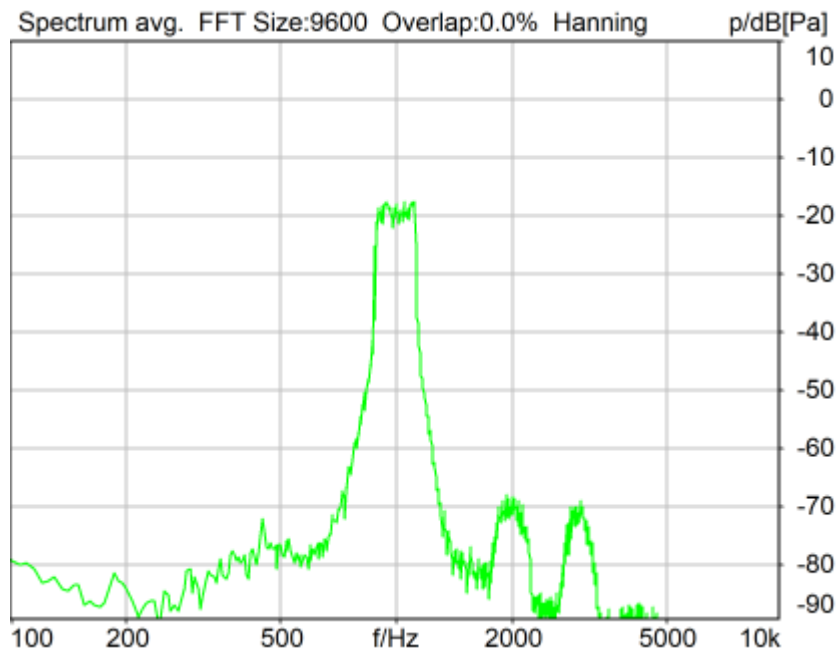
**HIB Settings**



HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 34.77 dB (1.83%) Ok

Ok

2024/1/19 11:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<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))**

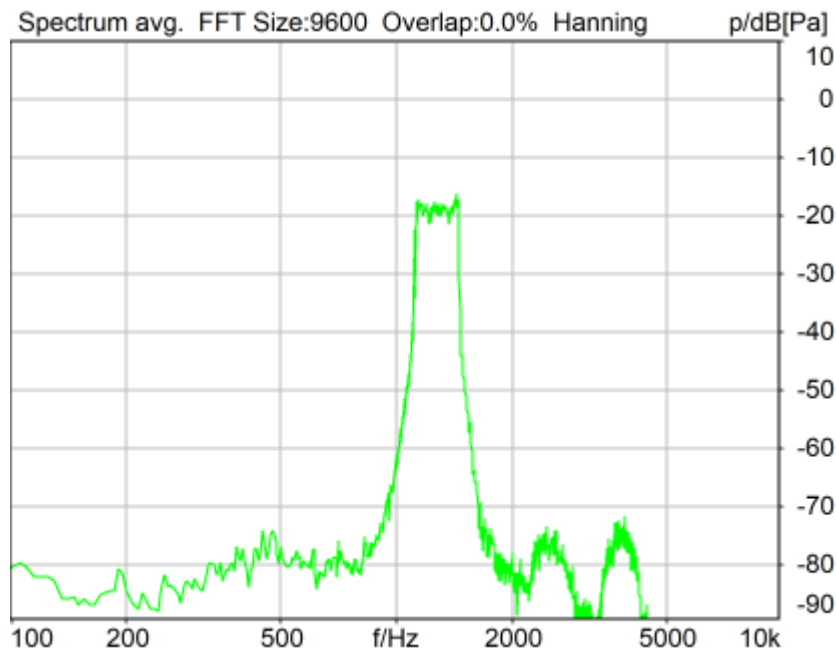
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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): 27.38 dB (4.28%) Ok

Ok

2024/1/19 11:01 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1250Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 2 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 3 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**Channel In 4 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

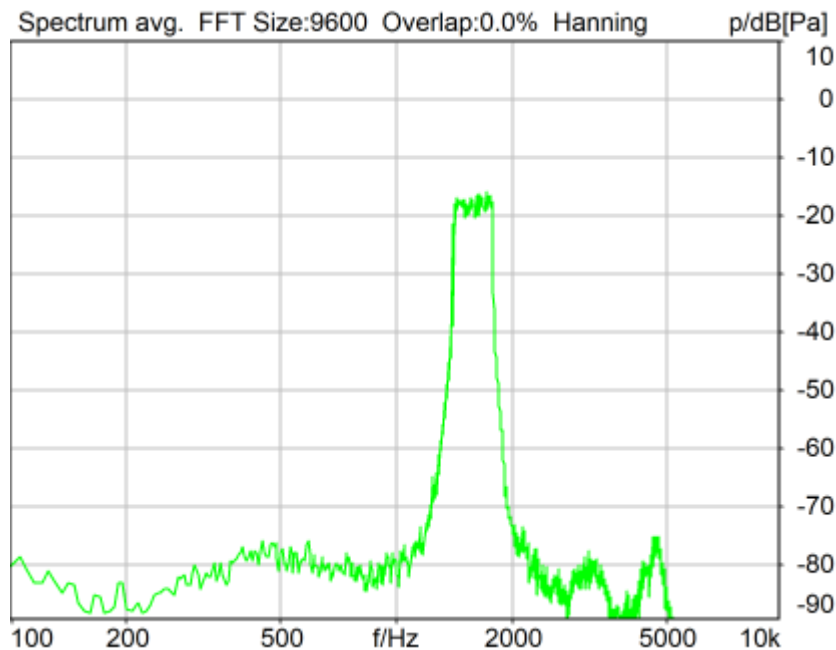
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 36.80 dB (1.45%) Ok

Ok

2024/1/19 11:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_1600Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

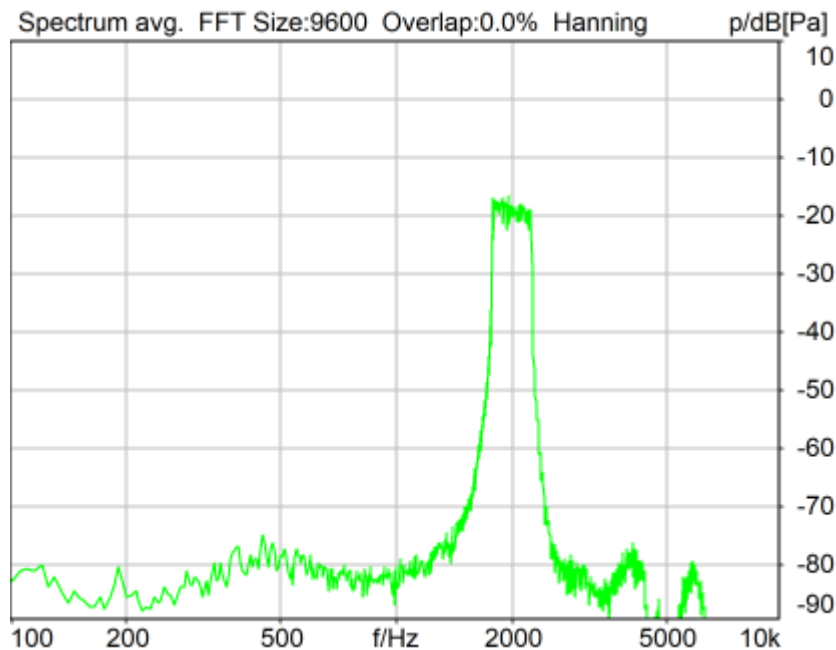
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 35.64 dB (1.65%) Ok

Ok

2024/1/19 11:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2000Hz

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

-----  
Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

-----  
Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

-----  
Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 2 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 3 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V  
Channel In 4 Settings  
Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off  
Polarisation Voltage200V Supply Voltage ±60V

-----  
BEQ Settings (BEQ Filter 1)

Block mode Bypass

-----  
Artificial Head Settings (HATS 1 (HMS II.3))

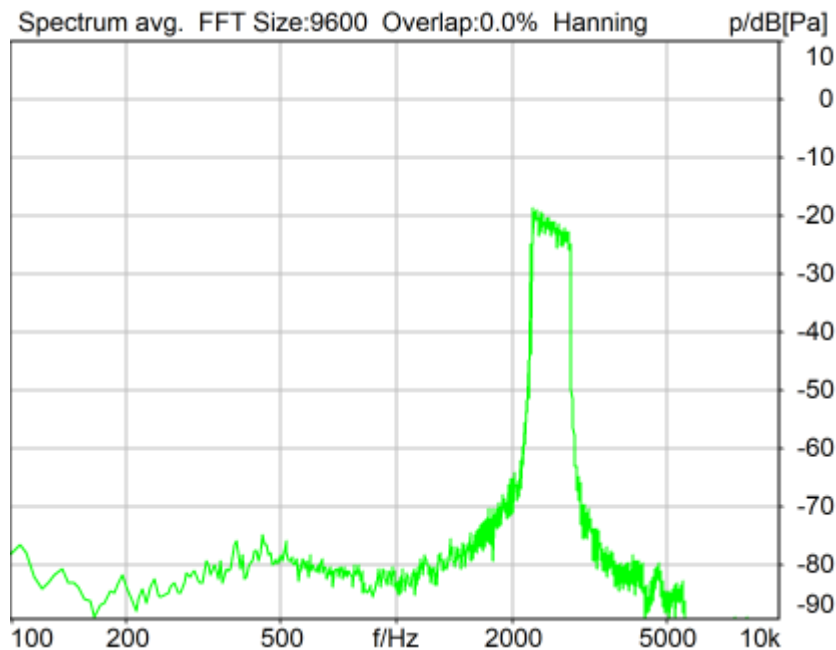
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

## 5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 37.79 dB (1.29%) Ok

Ok

2024/1/19 11:03 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_2500hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_2500Hz

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

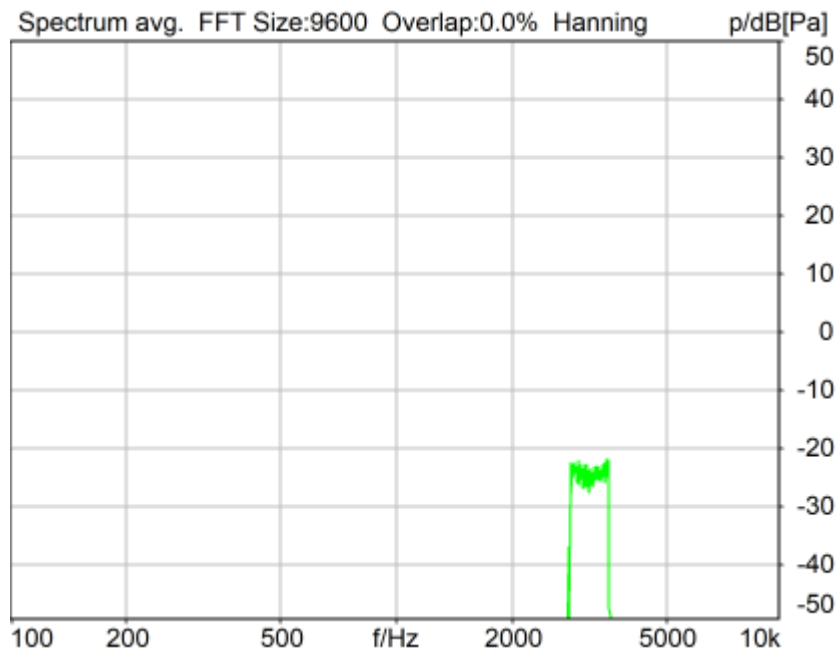
### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off



## 5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 38.93 dB (1.13%) Ok

Ok

2024/1/19 11:03 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_3150hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

### Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

### Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus max.	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 161.2000 ms (D\_RCV\_NB, Delay (Cross))  
Store to variable RCVNB10\_3150Hz

### labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

### labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

### Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

### Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

### Microphone Settings (Mic Amp. (Slot 6))

#### Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

#### Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

### BEQ Settings (BEQ Filter 1)

Block mode Bypass

### Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

### HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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	31.25 dB
2	500Hz	31.44 dB
3	630Hz	32.74 dB
4	800Hz	34.71 dB
5	1000Hz	34.77 dB
6	1250Hz	27.38 dB
7	1600Hz	36.80 dB
8	2000Hz	35.64 dB
9	2500Hz	37.79 dB
10	3150Hz	38.93 dB

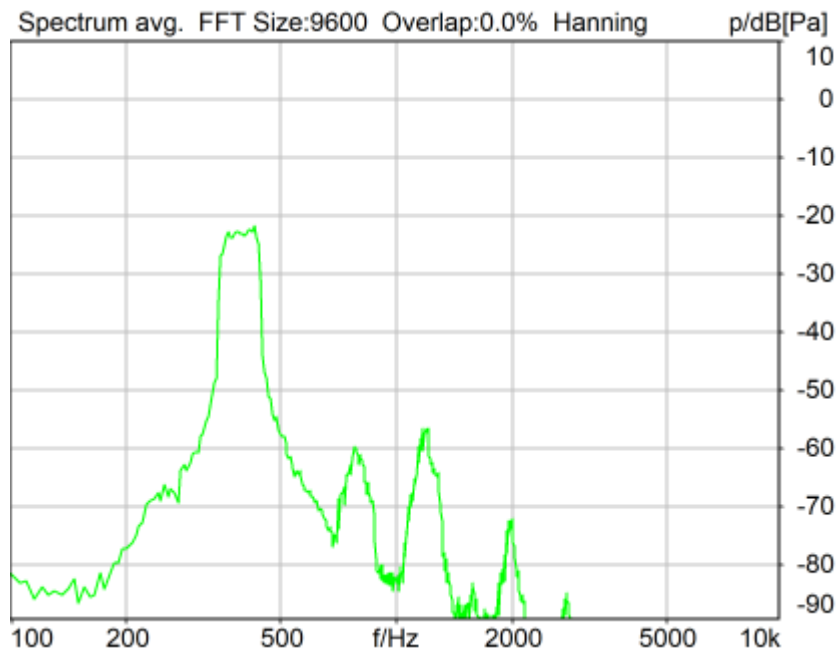
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 27.38dB at 1250Hz.

2024/1/19 11:03 ACQUA

## 5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 31.60 dB (2.63%) Ok

Ok

2024/1/19 10:52 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_400hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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))**

<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
----------	----------	------------	----------

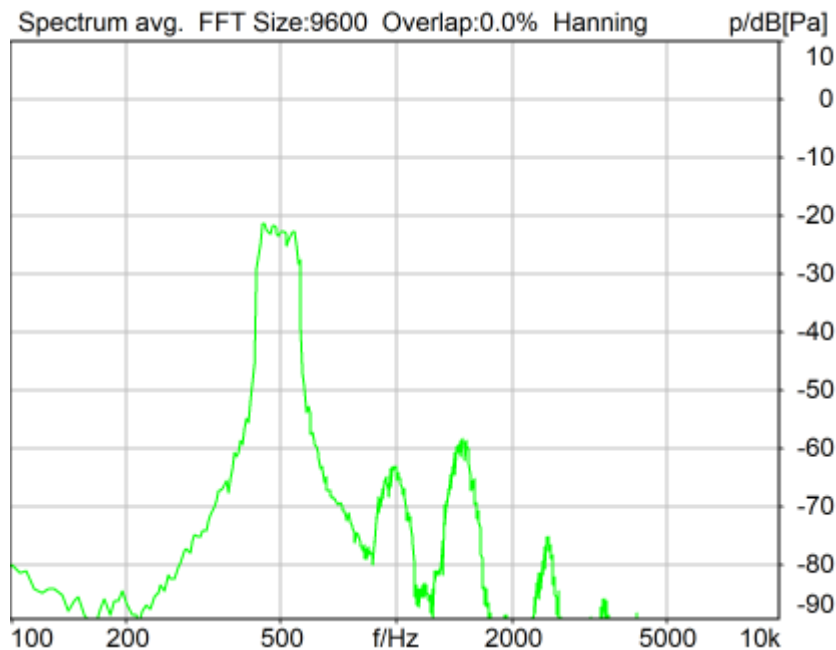
**HIB Settings**

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 - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 32.84 dB (2.28%) Ok

Ok

2024/1/19 10:52 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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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 157.0000 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))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

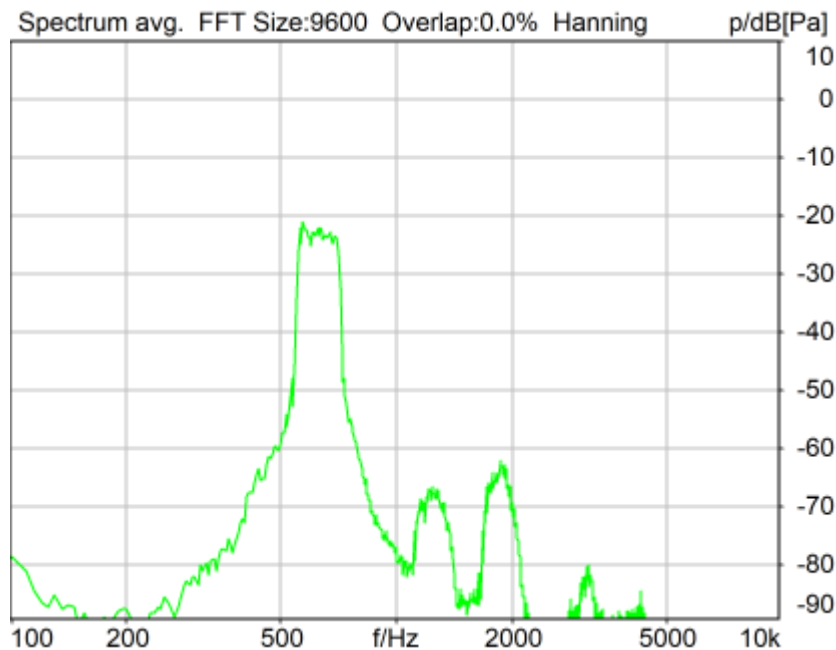
**HIB Settings**

HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 34.01 dB (1.99%) Ok

Ok

2024/1/19 10:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_630hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

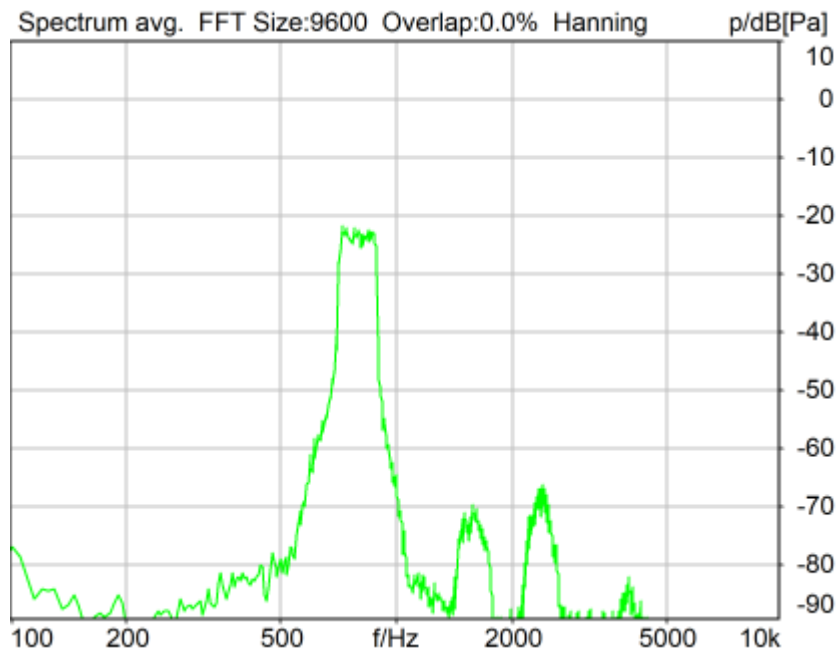
**HIB Settings**

HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 35.32 dB (1.71%) Ok

Ok

2024/1/19 10:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_800hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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))**

<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**

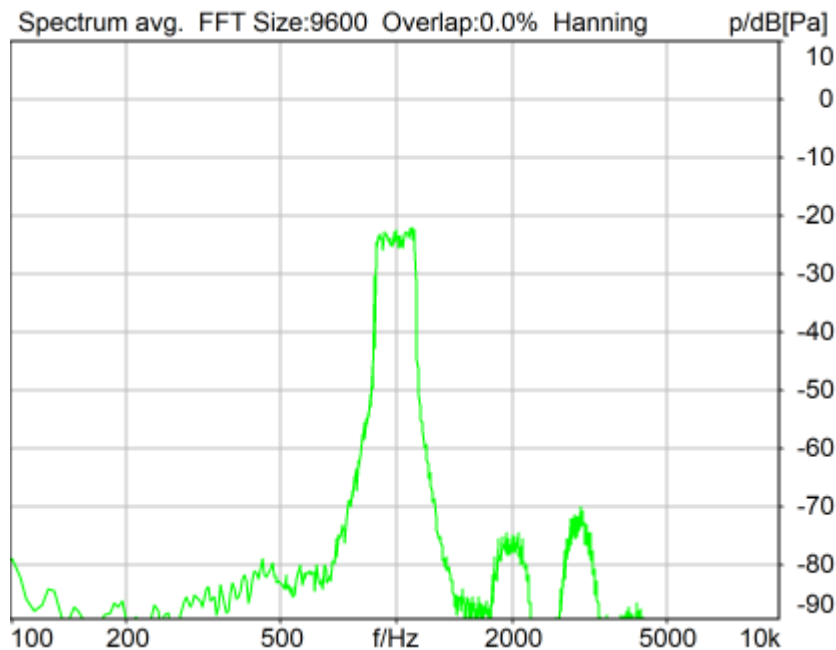
HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

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 NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 36.42 dB (1.51%) Ok

Ok

2024/1/19 10:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1000hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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
Frequency base	Transformation	FFT size	9600
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 157.0000 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))**

<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
----------	----------	------------	----------

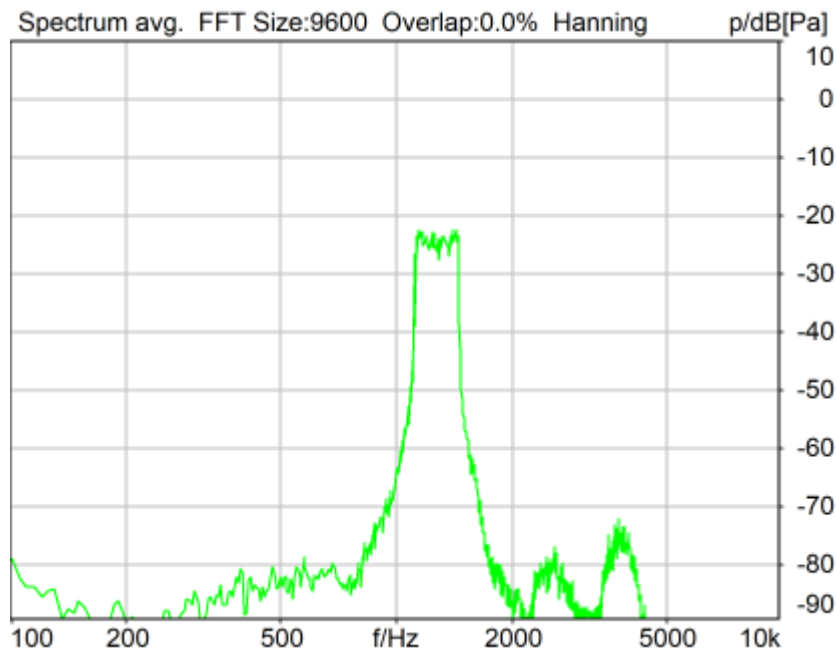
**HIB Settings**

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 2N



Distortion (Noise) RCV (packed): 28.40 dB (3.80%) Ok

Ok

2024/1/19 10:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_1250hz\_sr20dbm0\_v02.dat

Level adj. Ch1 -90.0 dB

### Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

### HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
		Delta C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	1450.0 Hz
Stimulus min.	1085.0 Hz	Analysis max.	1080.0 Hz
Analysis min.	20.0 Hz	Analysis (2) max.	20000.0 Hz
Analysis (2) min.	1455.0 Hz		

**Special Features**

Compensate delay 157.0000 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))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

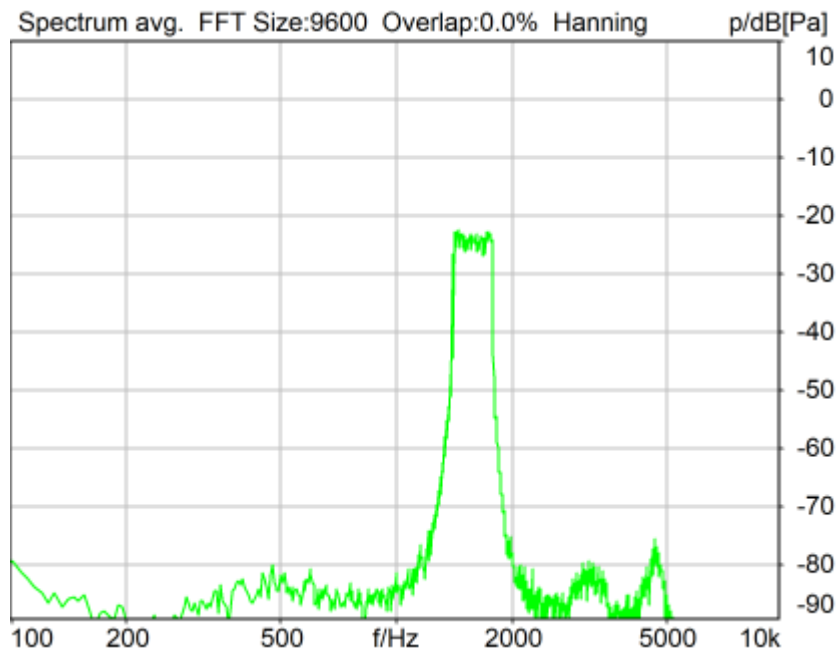
**HIB Settings**

HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 38.78 dB (1.15%) Ok

Ok

2024/1/19 10:54 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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1375.0 Hz
Stimulus 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 157.0000 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))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

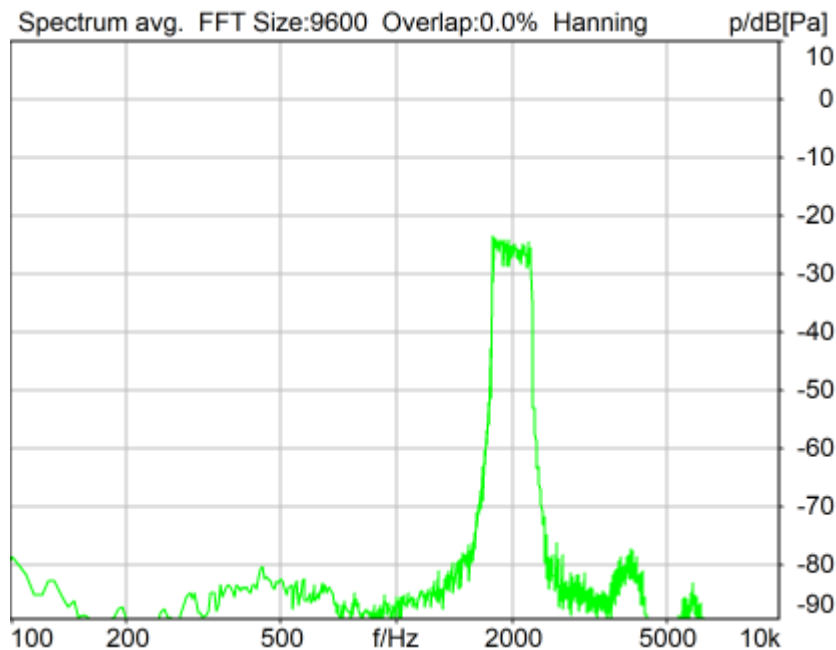
HIB Name	60020095	Serial	60020095
----------	----------	--------	----------



HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

## 5.2 RCV Distortion and Noise - 2000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 36.76 dB (1.45%) Ok

Ok

2024/1/19 10:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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
----------	----------	------------	----------

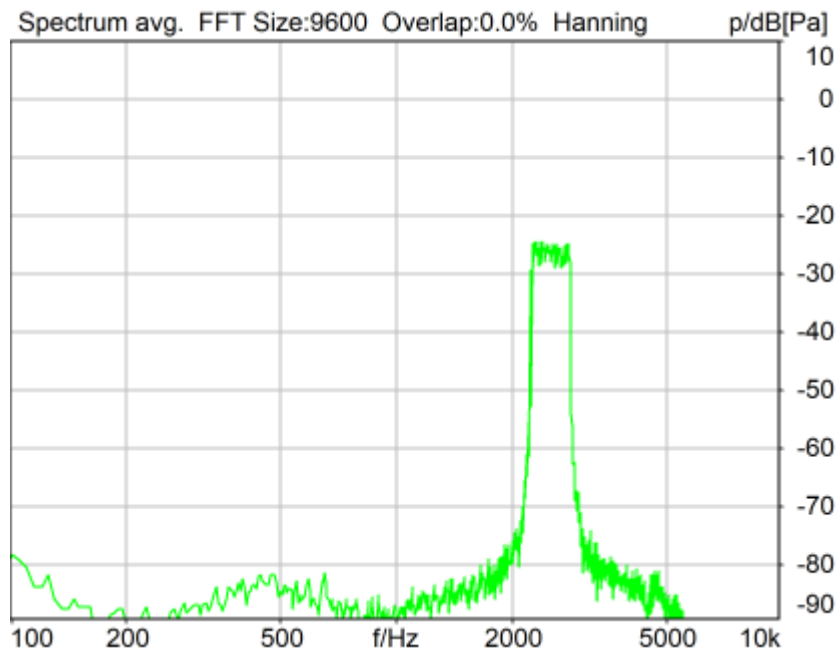
**HIB Settings**

HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 40.85 dB (0.91%) Ok

Ok

2024/1/19 10:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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))**

<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
----------	----------	------------	----------

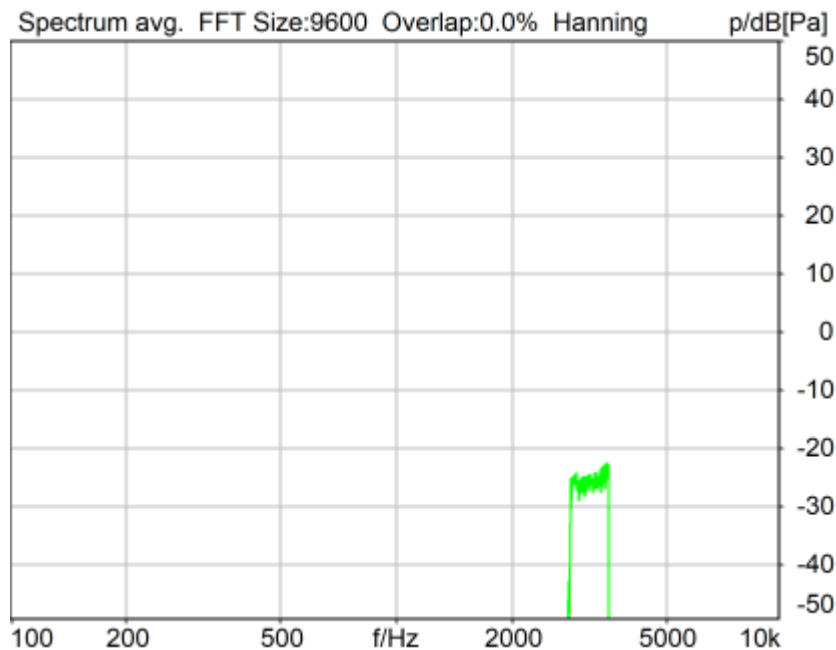
**HIB Settings**

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 NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 40.82 dB (0.91%) Ok

Ok

2024/1/19 10:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40\_HAC\_Suite\_Rev03

Source: act\_rpn\_b250ms\_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 C	0.0 °



Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 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.	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 157.0000 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))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 4 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

**BEQ Settings (BEQ Filter 1)**

Block mode Bypass

**Artificial Head Settings (HATS 1 (HMS II.3))**

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
----------	----------	--------	----------

HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

---

## **Report - Receive Distortion and Noise (Conversational Gain)**

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

<b>Region</b>	<b>Frequency</b>	<b>SDNR</b>
1	400Hz	31.60 dB
2	500Hz	32.84 dB
3	630Hz	34.01 dB
4	800Hz	35.32 dB
5	1000Hz	36.42 dB
6	1250Hz	28.40 dB
7	1600Hz	38.78 dB
8	2000Hz	36.76 dB
9	2500Hz	40.85 dB
10	3150Hz	40.82 dB

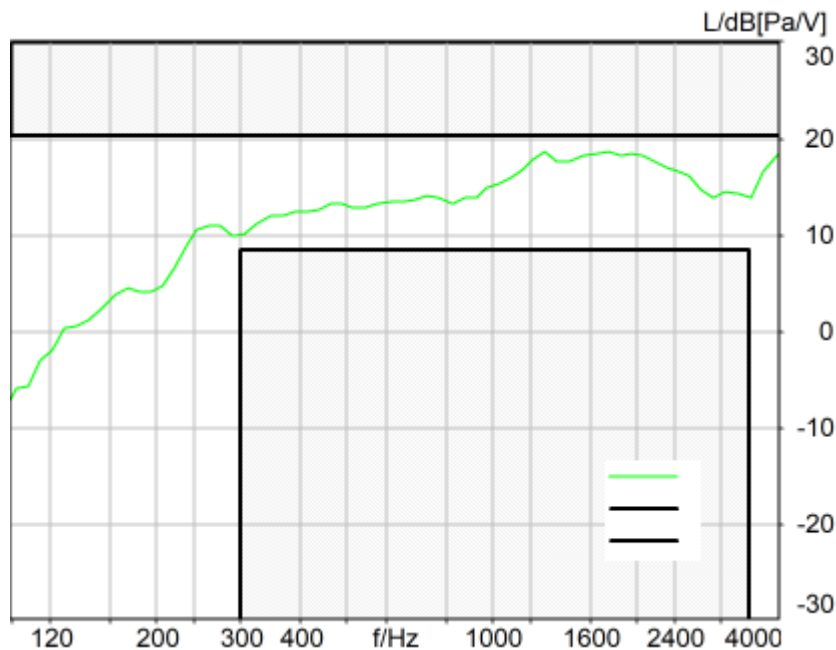
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 28.40dB at 1250Hz.

2024/1/19 10:56 ACQUA

### 5.3 Frequency Response 8N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
1.73 dB at 1285.9 Hz Ok

Ok

2024/1/19 11:04 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 161.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

**labCORE Routing**

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

**Analog In Mainboard Settings (Analog In 1/2)**

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

**Analog Out Mainboard Settings (Analog Out 1/2)**

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

**Microphone Settings (Mic Amp. (Slot 6))**

<b>Channel In 1 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 2 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
<b>Channel In 3 Settings</b>			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off

---

Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode      Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

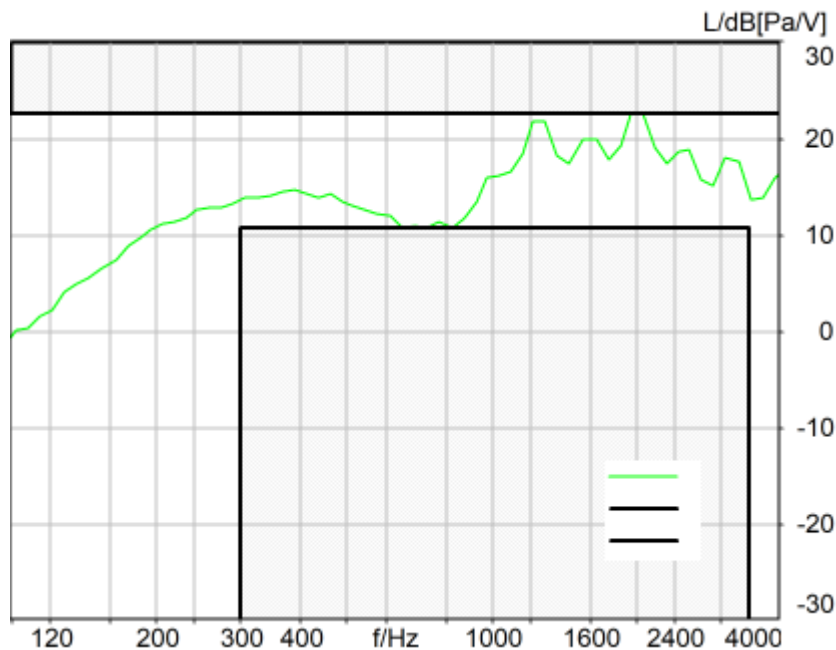
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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  
0.01 dB at 1948.0 Hz Ok

Ok

2024/1/19 11:04 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.9 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear  
Force to apply: 8.0 N, Force reached: 8.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 161.2000 ms (D\_RCV\_NB, Delay (Cross))

**labCORE Settings**

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker  
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In  
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out  
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off



---

Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

-----  
**BEQ Settings (BEQ Filter 1)**

Block mode      Bypass

-----  
**Artificial Head Settings (HATS 1 (HMS II.3))**

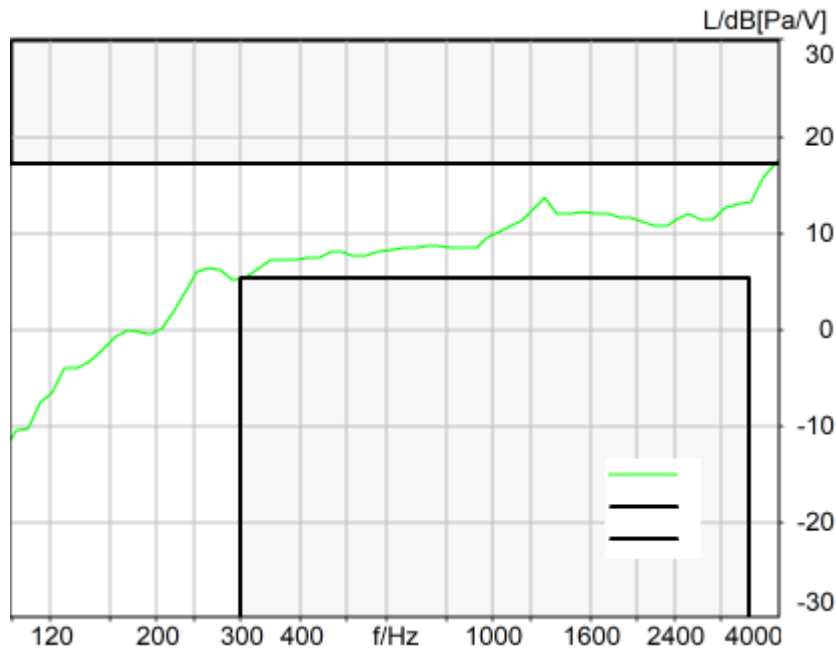
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**HIB Settings**

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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  
0.02 dB at 305.9 Hz Ok

Ok

2024/1/19 10:56 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.0 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT		
FFT size	4096		
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 157.0000 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))**

<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))**

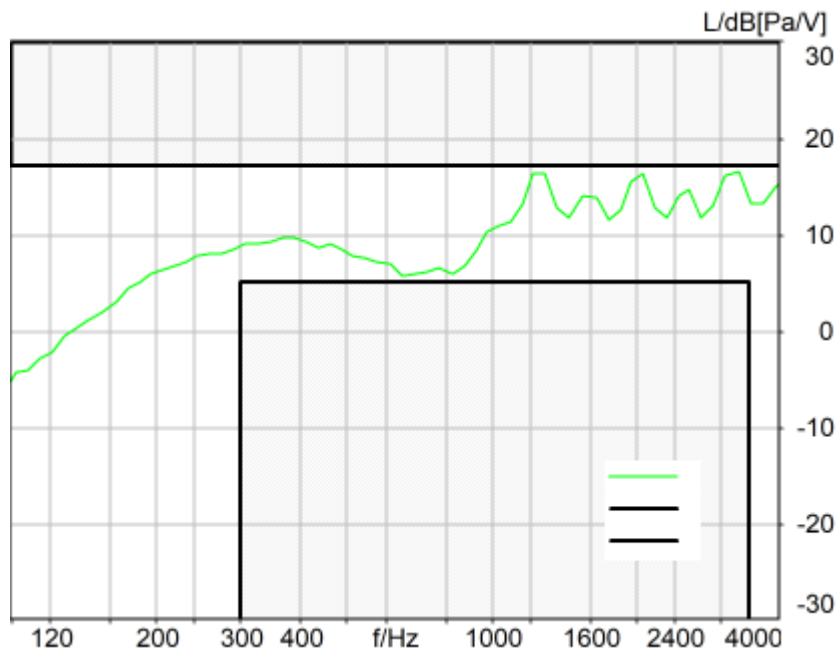
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

**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

### 5.3 Frequency Response 2N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance  
0.57 dB at 3245.6 Hz Ok

Ok

2024/1/19 10:56 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

**Limits**

	<b>lower</b>
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)  
Database Version: 40\_HAC\_Suite\_Rev03

**Source: respmaleieeee269\_nb\_r16.dat**

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE\_269-2010\_Male\_mono\_48\_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.  
filtered with 4.0 kHz low-pass filter  
signal level changed

**Calibration**

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))  
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

		Rotation Delta A	0.0 °
MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.0 mm	Ear Type	3.3 Coordinates

Mounting: Right Ear  
Force to apply: 2.0 N, Force reached: 2.0 N

**Output Equalization/Filter**

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

**Analysis**

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

**Special Features**

Compensate delay 157.0000 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))**

<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