
Measurement Protocol

Measurement Object	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/8 10:41
Responsible Person	audio

Status Overview

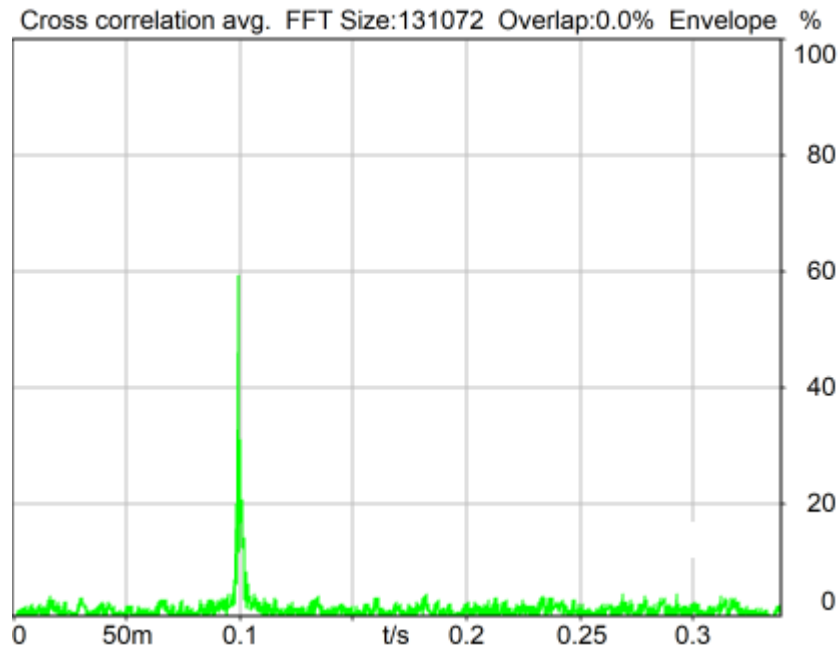
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	99.3	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.1a Receive Volume Control Performance 8N NB	Not Ok	Corrected Speech Level [dB[SPL]]	17.44	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	11.51	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.43	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.85	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.28	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.76	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	42.27	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.86	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	49.36	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	46.20	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	44.07	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	45.04	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 400Hz)	32.43	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.80	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.35	LTE Band13_10QPSK_50RB_0_E VSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	32.67	LTE

- 630 Hz NB		0.0 dB		Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	37.75	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.54	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.87	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	40.42	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	38.88	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	39.51	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	40.42	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1250Hz)	28.87	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	1.48	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.3 Frequency Response 8N DF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	-0.39	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.29	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	0.56	LTE Band13_10QPSK_50RB_0_EVSNB24.4kbps_CH23230

Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	7
5.1b Receive Volume Control Performance 2N NB	9
5.2 RCV Distortion and Noise - 400 Hz NB	10
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	17
5.2 RCV Distortion and Noise - 1000 Hz NB	19
5.2 RCV Distortion and Noise - 1250 Hz NB	21
5.2 RCV Distortion and Noise - 1600 Hz NB	23
5.2 RCV Distortion and Noise - 2000 Hz NB	26
5.2 RCV Distortion and Noise - 2500 Hz NB	28
5.2 RCV Distortion and Noise - 3150 Hz NB	30
Report - Receive Distortion and Noise (Conversational Gain)	32
5.2 RCV Distortion and Noise - 400 Hz NB	32
5.2 RCV Distortion and Noise - 500 Hz NB	35
5.2 RCV Distortion and Noise - 630 Hz NB	37
5.2 RCV Distortion and Noise - 800 Hz NB	39
5.2 RCV Distortion and Noise - 1000 Hz NB	41
5.2 RCV Distortion and Noise - 1250 Hz NB	43
5.2 RCV Distortion and Noise - 1600 Hz NB	45
5.2 RCV Distortion and Noise - 2000 Hz NB	48
5.2 RCV Distortion and Noise - 2500 Hz NB	50
5.2 RCV Distortion and Noise - 3150 Hz NB	52
Report - Receive Distortion and Noise (Conversational Gain)	54
5.3 Frequency Response 8N FF HANB	54
5.3 Frequency Response 8N DF HANB	57
5.3 Frequency Response 2N FF HANB	59
5.3 Frequency Response 2N DF HANB	61

Overall Receive Delay NB

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



Delay (Cross): 99.3 ms

2024/1/19 10:36 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: cssnb1b_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b_R1s.dat - CS-signal with special 1s random noise

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 4000 Hz

Calibration

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

Output ch.1: 0.00 dB

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.1 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

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

Output Equalization/Filter

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

Analysis

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

Special Features

Show source signal Source ch.2 Store to variable D_RCV_NB

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

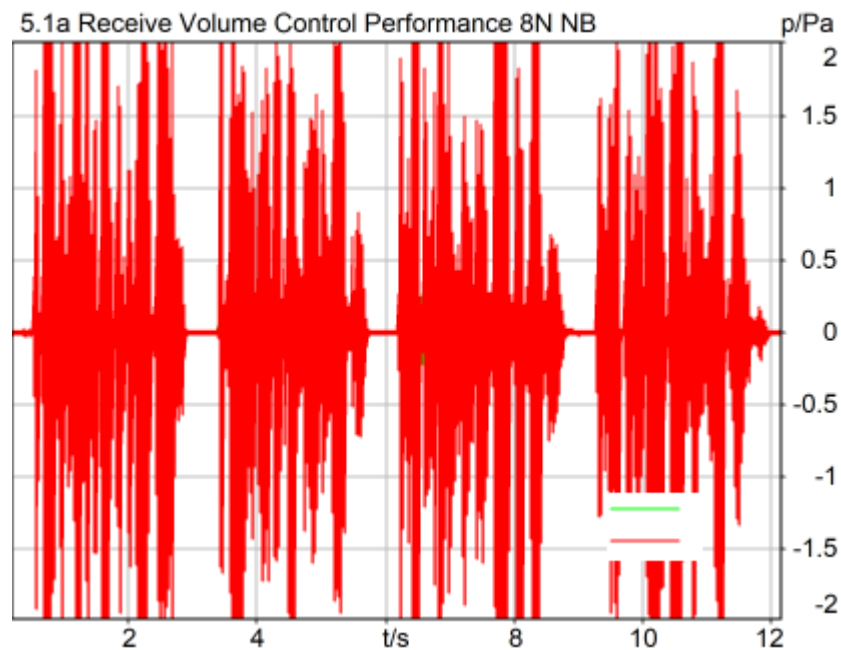
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.1a Receive Volume Control Performance 8N NB

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



Correction

X - 70

Speech Level RCV: 87.44 dB[SPL], Act.: 85.70%

Corrected Speech Level: 17.44 dB[SPL] Not Ok

Not Ok

2024/1/22 20:57 ACQUA 5.1.200

Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Calibration

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

Output Equalization/Filter

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

Analysis

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

Special Features

Show source signal Source ch.2
Compensate delay 99.3000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

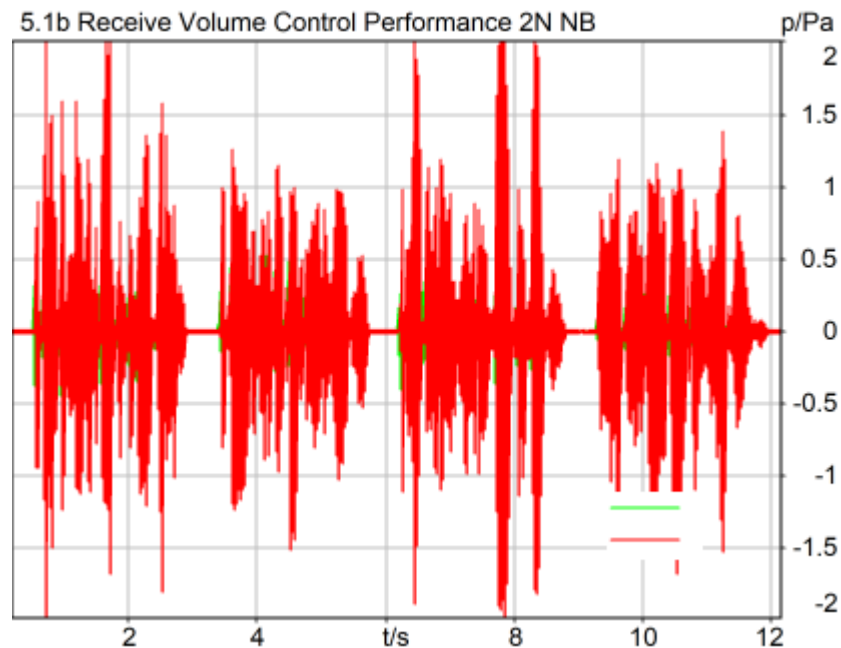
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Speech Level RCV: 81.51 dB[SPL], Act.: 85.84%

Corrected Speech Level: 11.51 dB[SPL] Ok

Ok

2024/1/22 21:08 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Calibration

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

Output Equalization/Filter

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

Analysis

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

Special Features

Show source signal Source ch.2
Compensate delay 99.3000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

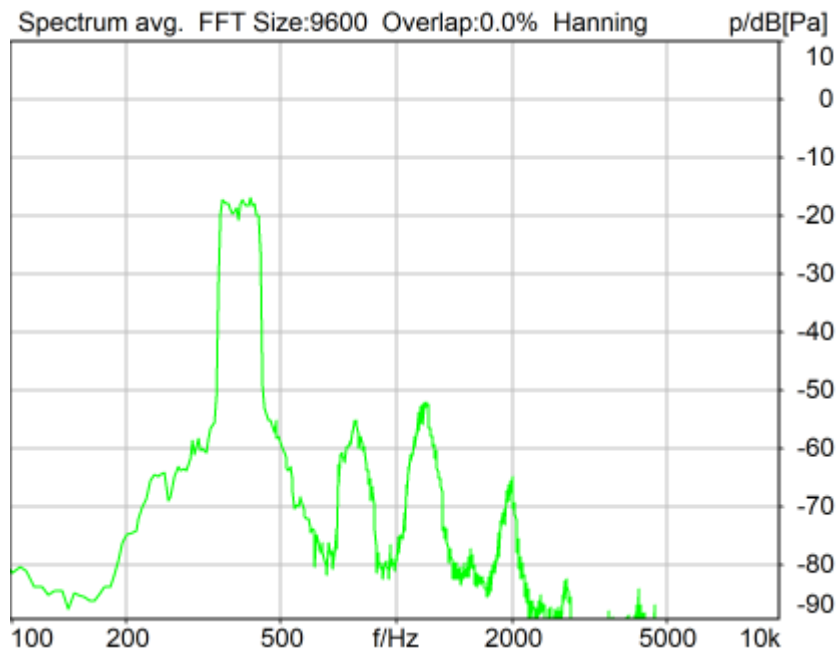
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 32.43 dB (2.39%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

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

Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.2 mm	Ear Type	3.3 Coordinates

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_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 99.3000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_400Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

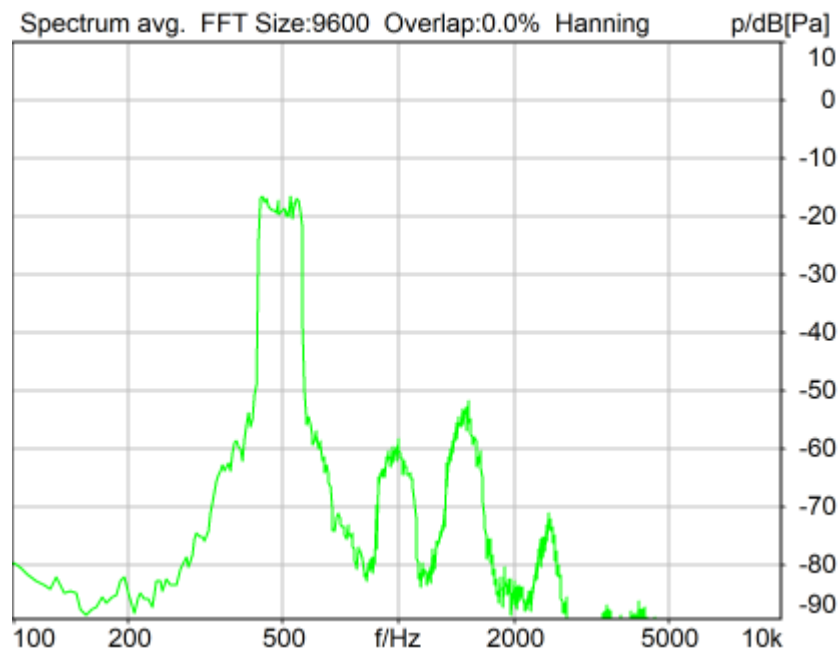
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 500 Hz NB

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Distortion (Noise) RCV (packed): 32.85 dB (2.28%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 99.3000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_500Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

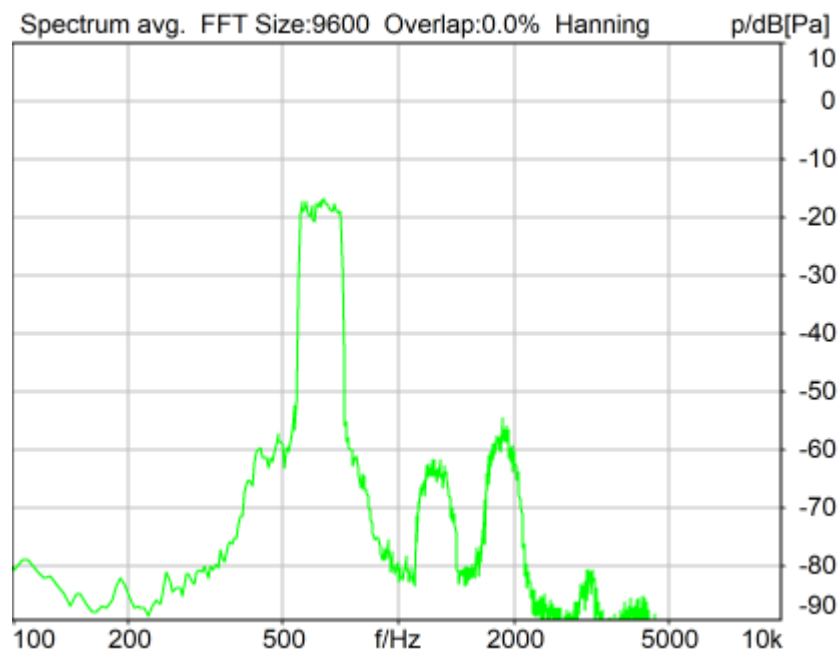
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 630 Hz NB

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Distortion (Noise) RCV (packed): 35.28 dB (1.72%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 99.3000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_630Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

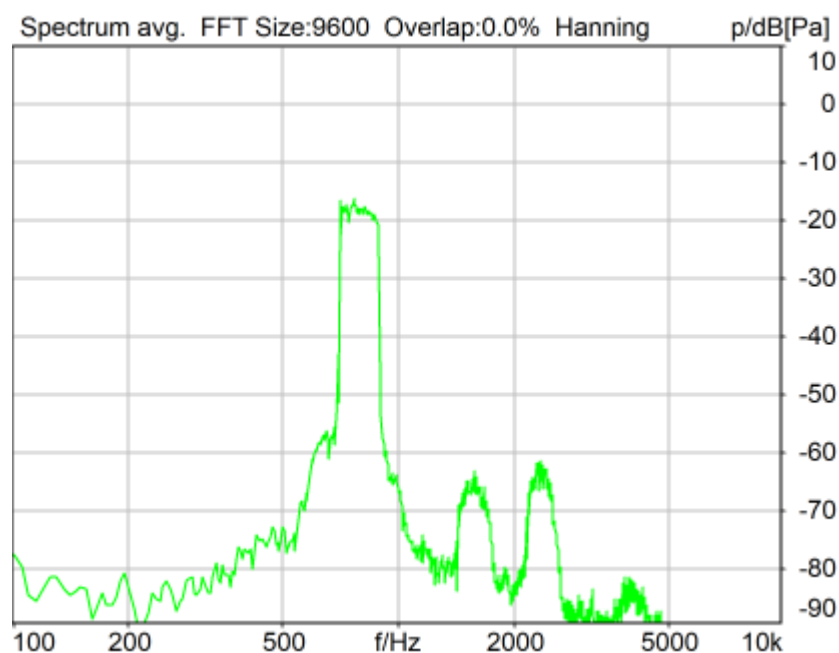
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 800 Hz NB

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Distortion (Noise) RCV (packed): 38.76 dB (1.15%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 99.3000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_800Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

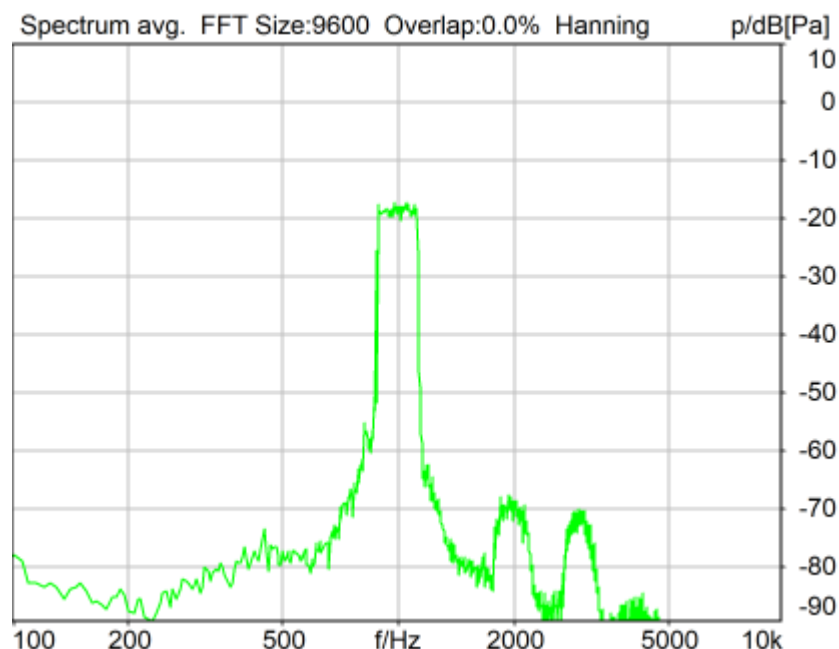
Ser. Nr. 12306613 Pinna Type Type 3.3

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

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Distortion (Noise) RCV (packed): 42.27 dB (0.77%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 99.3000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1000Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

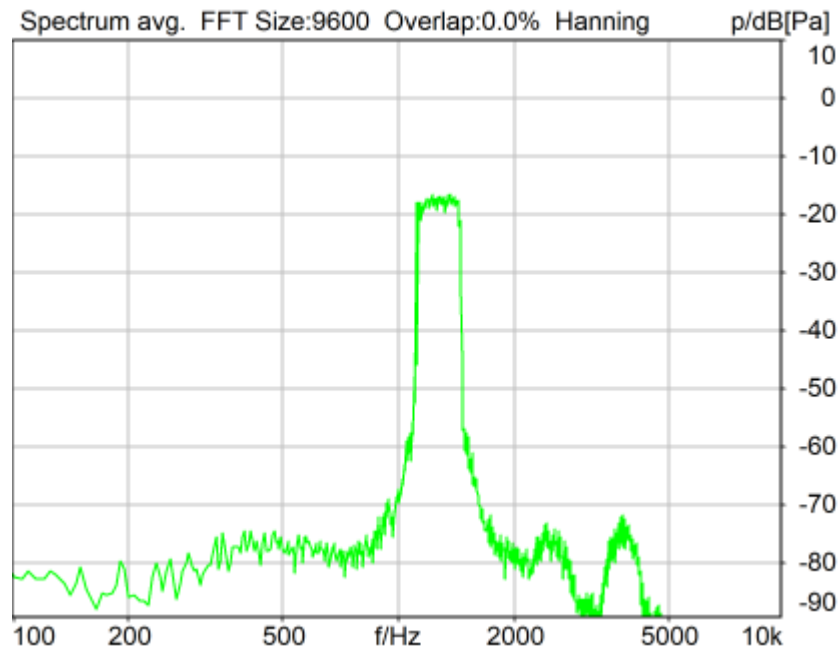
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1250 Hz NB

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Distortion (Noise) RCV (packed): 32.86 dB (2.28%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 99.3000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_1250Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

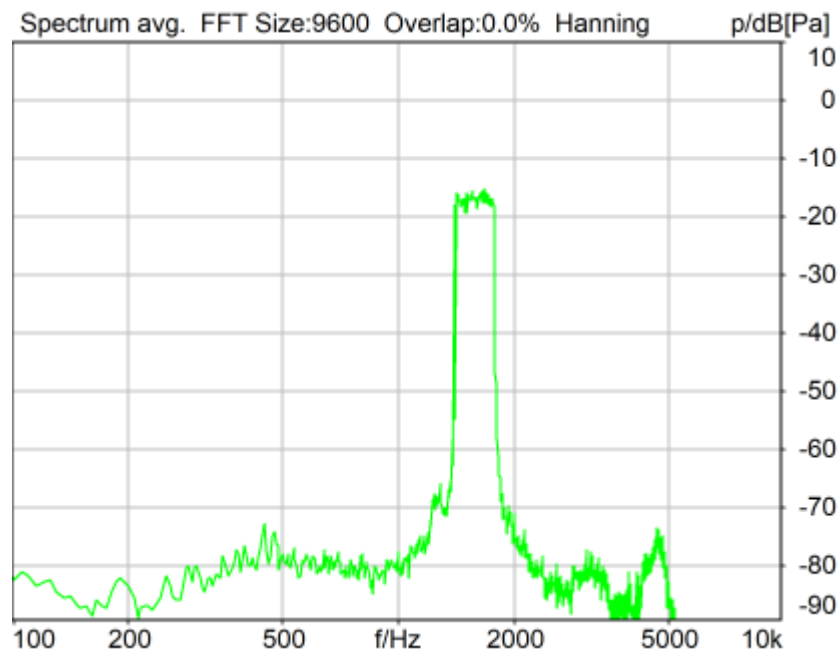
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1600 Hz NB

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Distortion (Noise) RCV (packed): 49.36 dB (0.34%) Ok

Ok

2024/1/19 10:40 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_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

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

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-2.2 mm	Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 99.3000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_1600Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

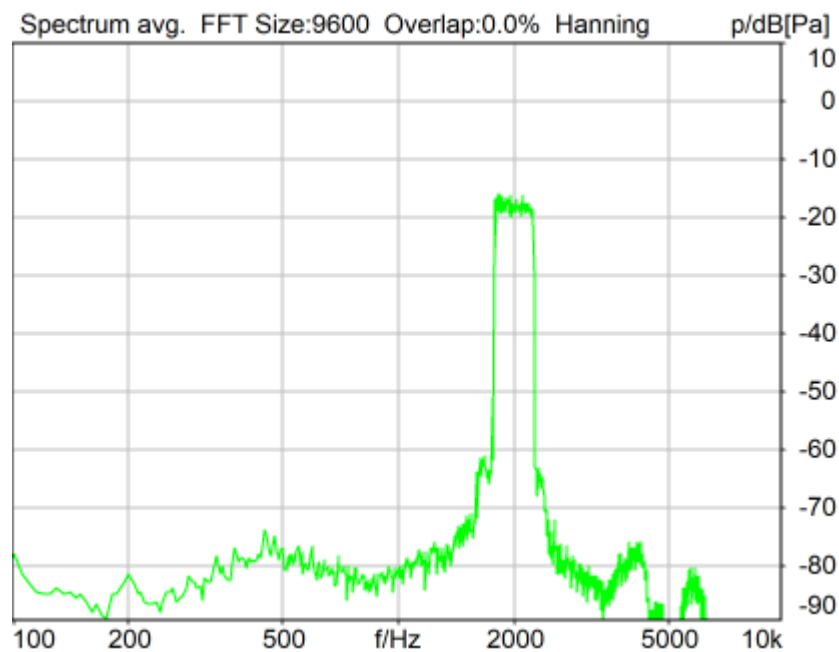
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 46.20 dB (0.49%) Ok

Ok

2024/1/19 10:40 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-2.2 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 99.3000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_2000Hz

labCORE Settings

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

labCORE Routing

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

Analogue In Mainboard Settings (Analog In 1/2)

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

Analogue Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

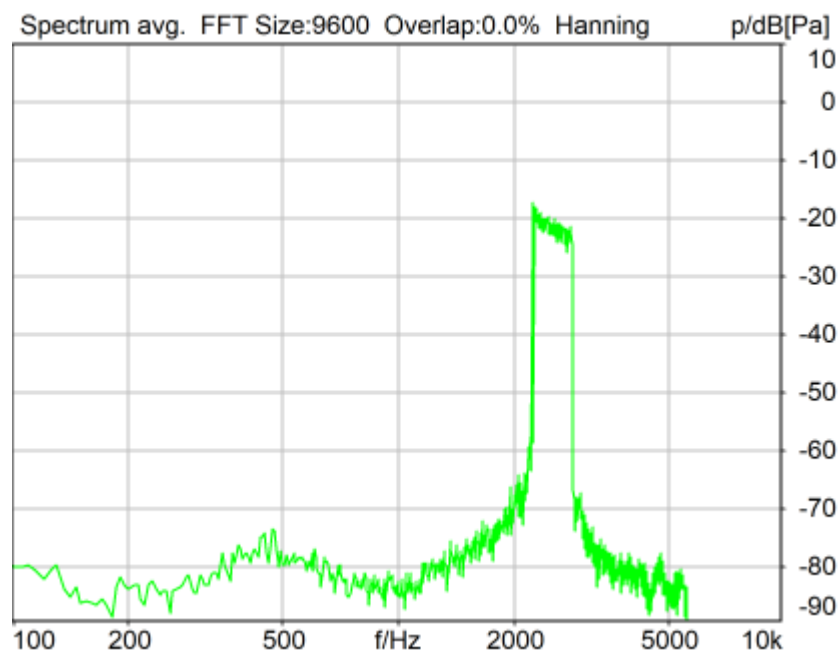
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 2500 Hz NB

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Distortion (Noise) RCV (packed): 44.07 dB (0.63%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 99.3000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_2500Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

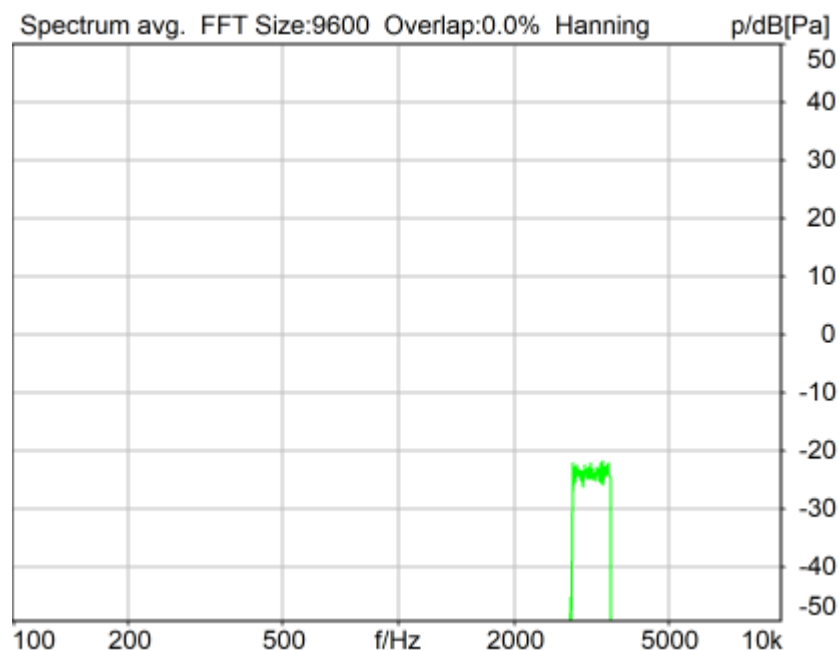
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 3150 Hz NB

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Distortion (Noise) RCV (packed): 45.04 dB (0.56%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

		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	-2.2 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.	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 99.3000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_3150Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

Report - Receive Distortion and Noise (Conversational Gain)

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Region	Frequency	SDNR
1	400Hz	32.43 dB
2	500Hz	32.85 dB
3	630Hz	35.28 dB
4	800Hz	38.76 dB
5	1000Hz	42.27 dB
6	1250Hz	32.86 dB
7	1600Hz	49.36 dB
8	2000Hz	46.20 dB
9	2500Hz	44.07 dB
10	3150Hz	45.04 dB

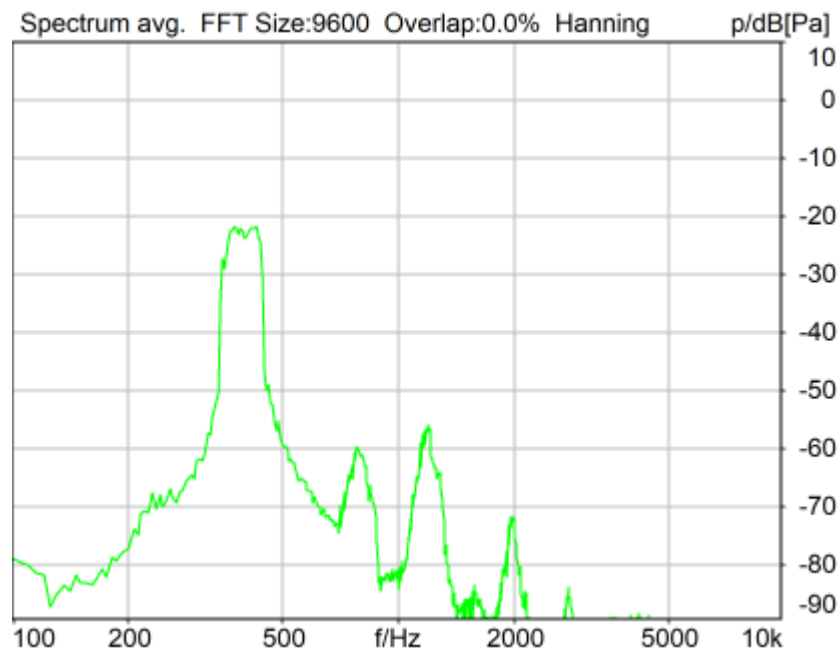
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 32.43dB at 400Hz.

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5.2 RCV Distortion and Noise - 400 Hz NB

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Distortion (Noise) RCV (packed): 31.80 dB (2.57%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

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	1.8 mm	Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 158.0000 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
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

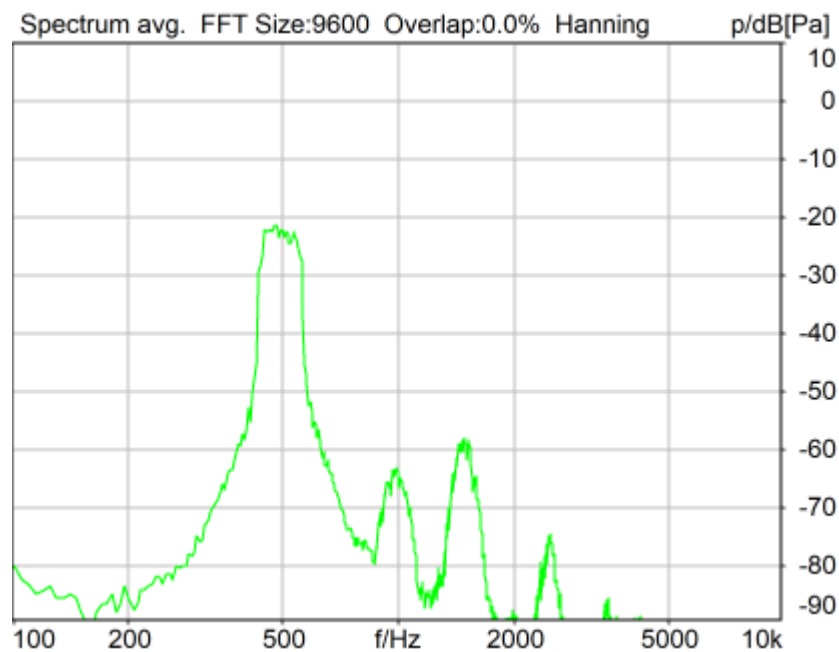
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 500 Hz NB

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Distortion (Noise) RCV (packed): 32.35 dB (2.41%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.8 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 158.0000 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
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Microphone Settings (Mic Amp. (Slot 6))

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

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

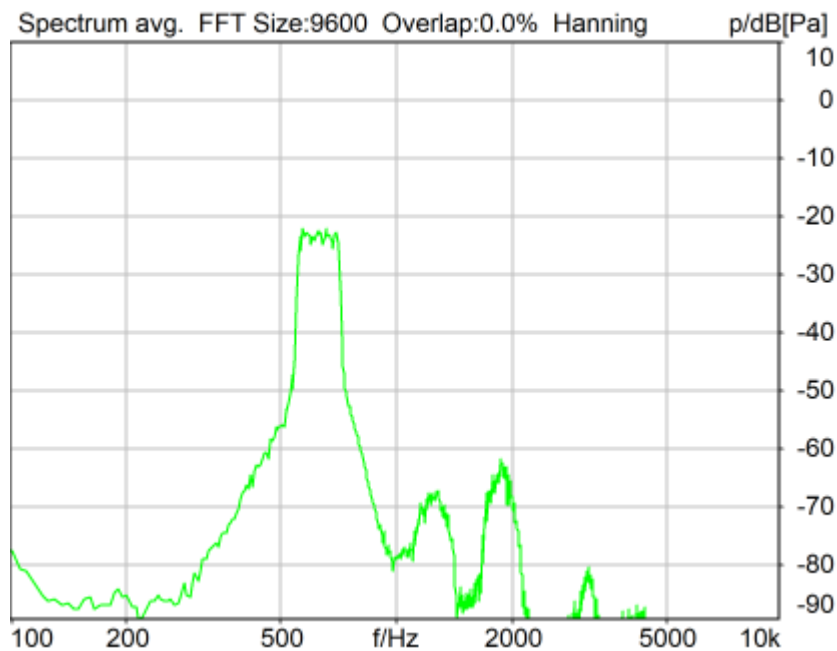
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 32.67 dB (2.33%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 158.0000 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
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

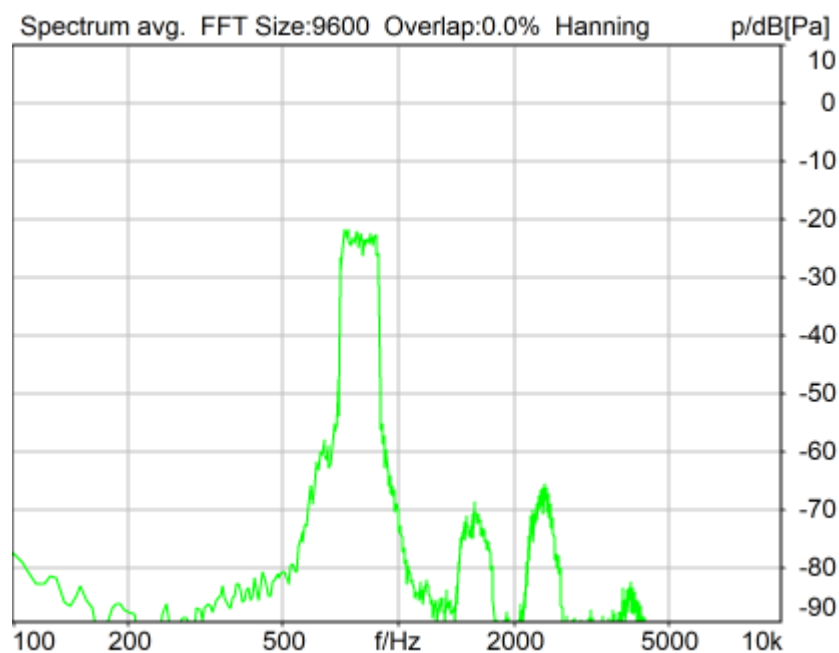
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 37.75 dB (1.30%) Ok

Ok

2024/1/19 10:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
 Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat
 Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 158.0000 ms (D_RCV_NB) Store to variable RCVNB10_800Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

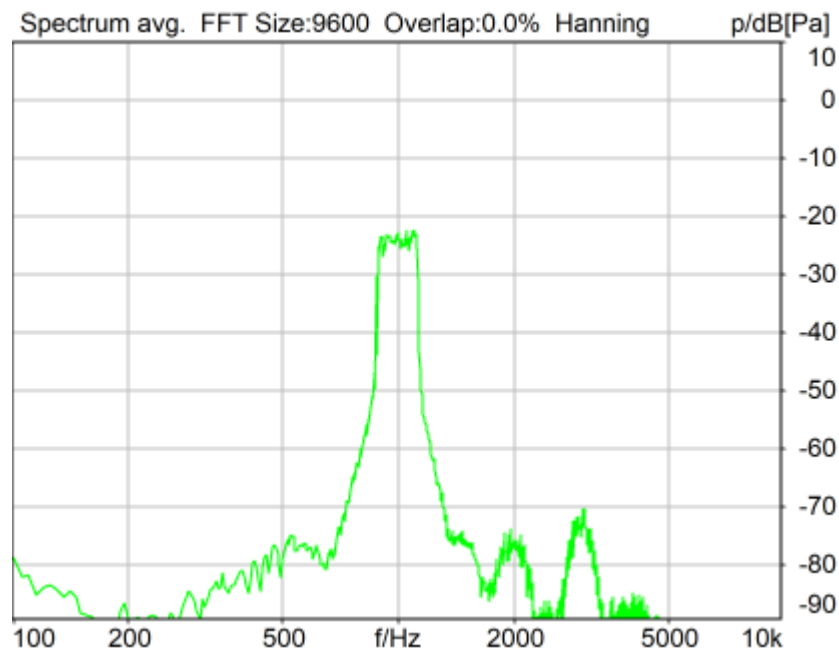
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 34.54 dB (1.87%) Ok

Ok

2024/1/19 10:31 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_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 158.0000 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
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 Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

 BEQ Settings (BEQ Filter 1)

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

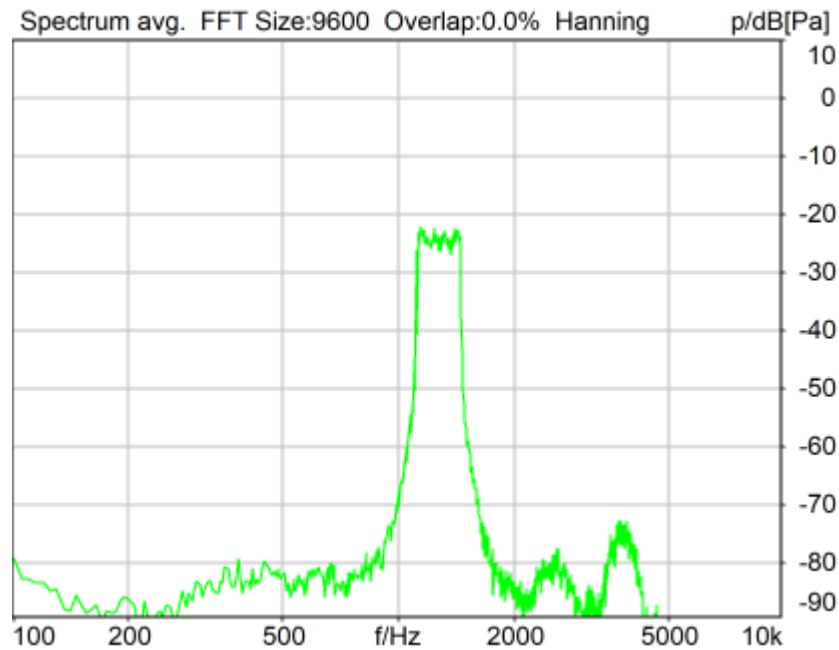
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 28.87 dB (3.60%) Ok

Ok

2024/1/19 10:31 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_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 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 158.0000 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
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----- Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

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

Block mode Bypass

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

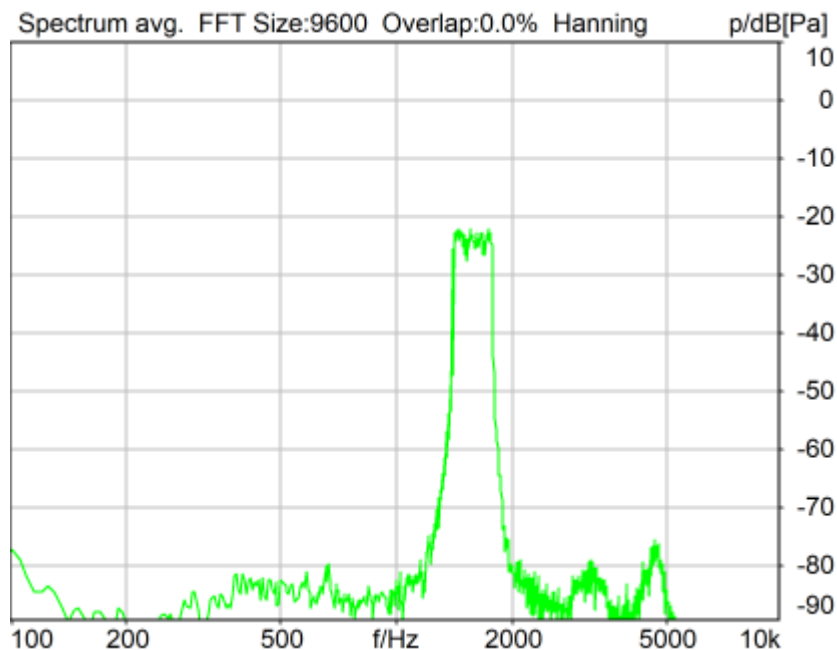
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 40.42 dB (0.95%) Ok

Ok

2024/1/19 10:32 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_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

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

MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	1.9 mm	Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 158.0000 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
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

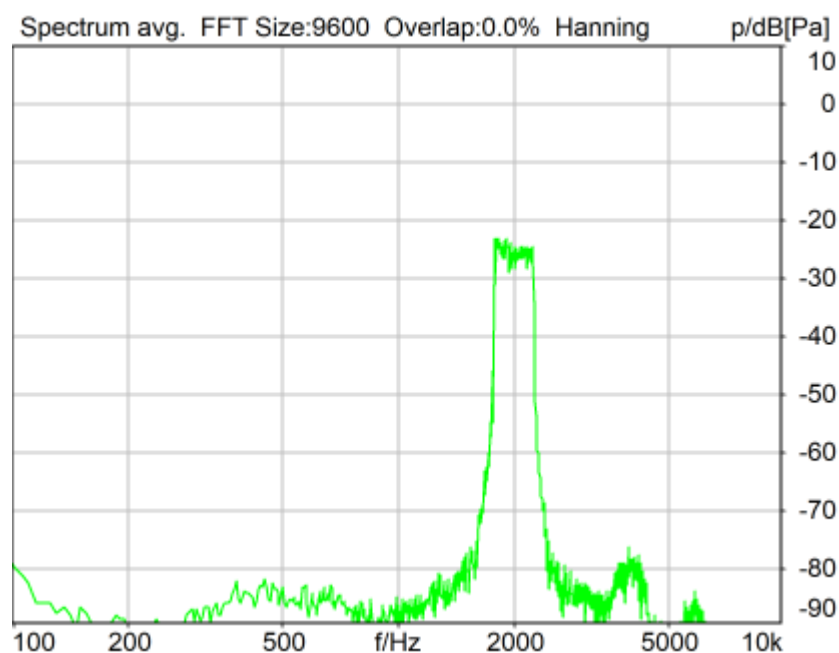
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 38.88 dB (1.14%) Ok

Ok

2024/1/19 10:32 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_2000hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 158.0000 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
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

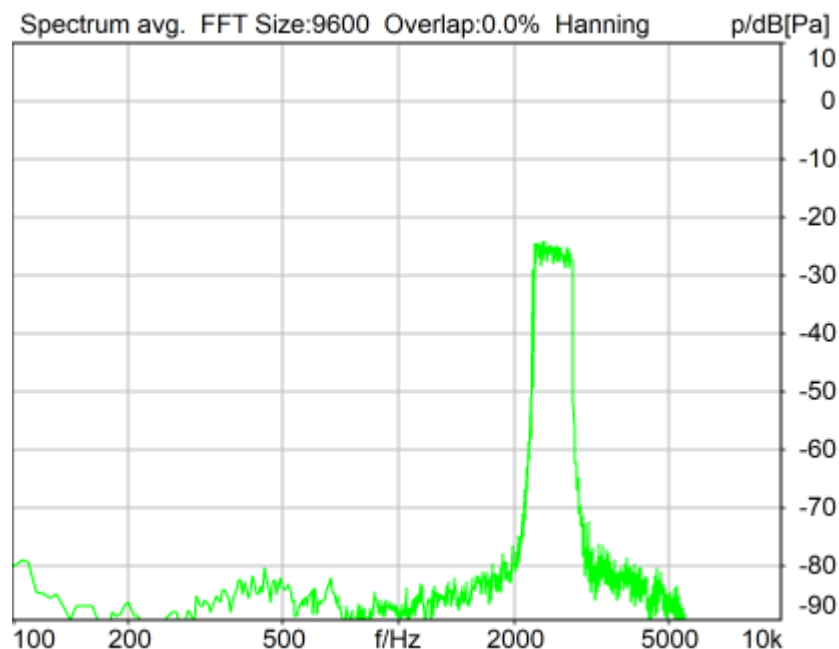
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 39.51 dB (1.06%) Ok

Ok

2024/1/19 10:32 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_2500hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 158.0000 ms (D_RCV_NB) Store to variable RCVNB10_2500Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

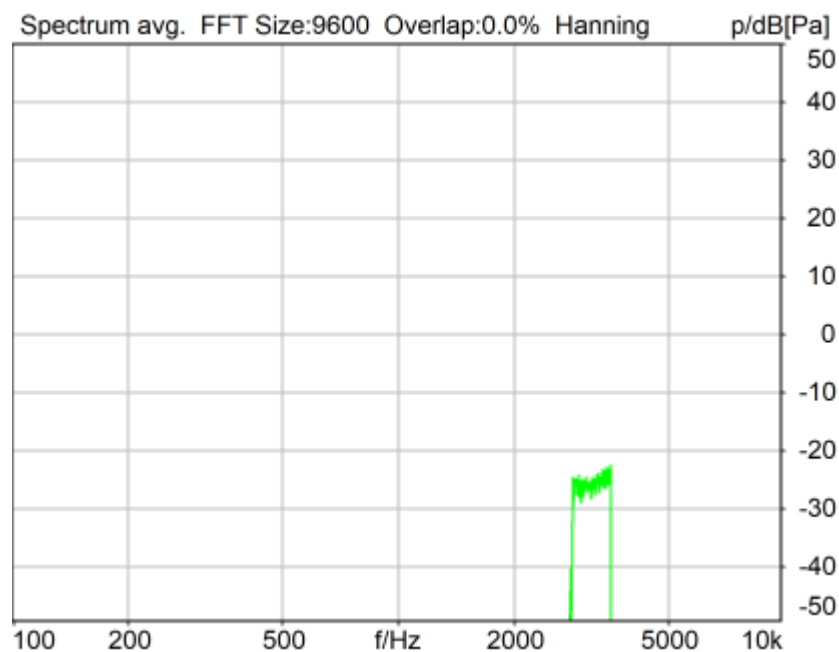
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 40.42 dB (0.95%) Ok

Ok

2024/1/19 10:33 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_3150hz_sr20dbm0_v02.dat
 Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
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 158.0000 ms (D_RCV_NB) Store to variable RCVNB10_3150Hz

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

 Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

 BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	400Hz	31.80 dB
2	500Hz	32.35 dB
3	630Hz	32.67 dB
4	800Hz	37.75 dB
5	1000Hz	34.54 dB
6	1250Hz	28.87 dB
7	1600Hz	40.42 dB
8	2000Hz	38.88 dB
9	2500Hz	39.51 dB
10	3150Hz	40.42 dB

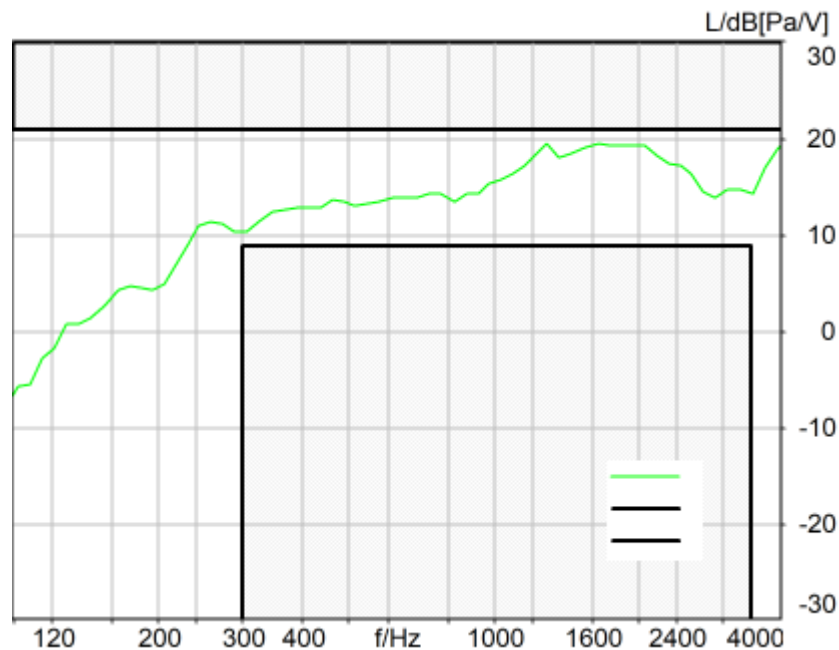
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 28.87dB at 1250Hz.

2024/1/19 10:33 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance

1.48 dB at 1285.9 Hz Ok

Ok

2024/1/19 10:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

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

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

Pause 0.5 s +

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

Pause till end of file

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

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

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

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range 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 99.3000 ms (D_RCV_NB, Delay (Cross))

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

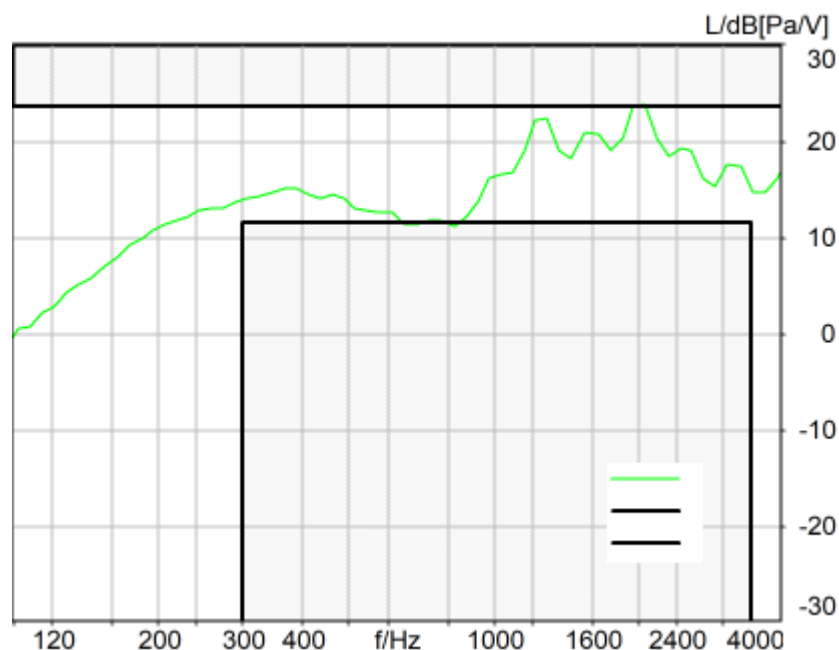
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
-0.39 dB at 2057.5 Hz Not Ok

Not Ok

2024/1/19 10:42 ACQUA 5.1.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

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

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

Pause 0.5 s +

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

Pause till end of file

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

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.2 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 99.3000 ms (D_RCV_NB, Delay (Cross))

labCORE Settings

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

labCORE Routing

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

 Analog In Mainboard Settings (Analog In 1/2)

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

 Analog Out Mainboard Settings (Analog Out 1/2)

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

 Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

 BEQ Settings (BEQ Filter 1)

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

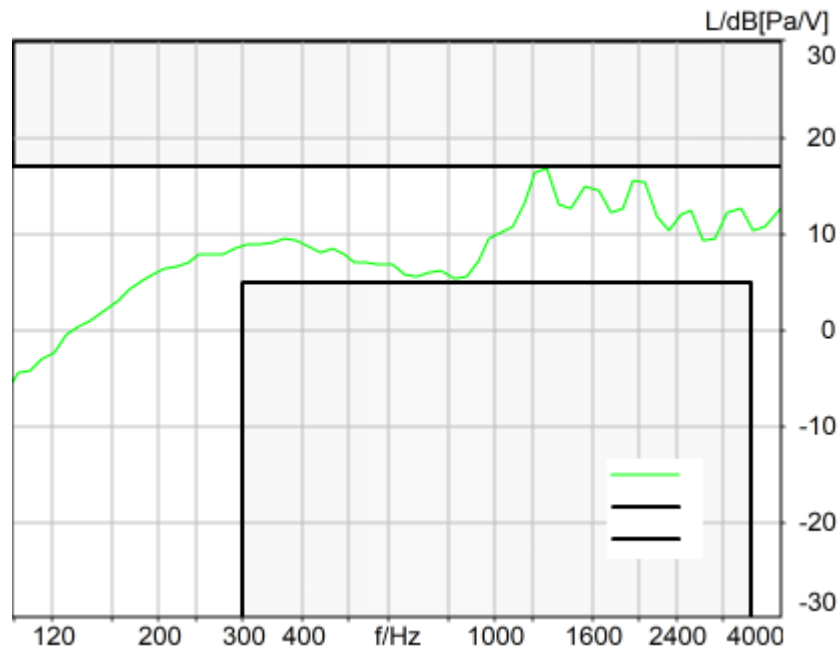
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
 0.29 dB at 1285.9 Hz Ok

Ok

2024/1/19 10:34 ACQUA 5.1.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
 Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

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

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

Pause 0.5 s +

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

Pause till end of file

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

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave		
Method	FFT	Overlap	75 %
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 158.0000 ms (D_RCV_NB)

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

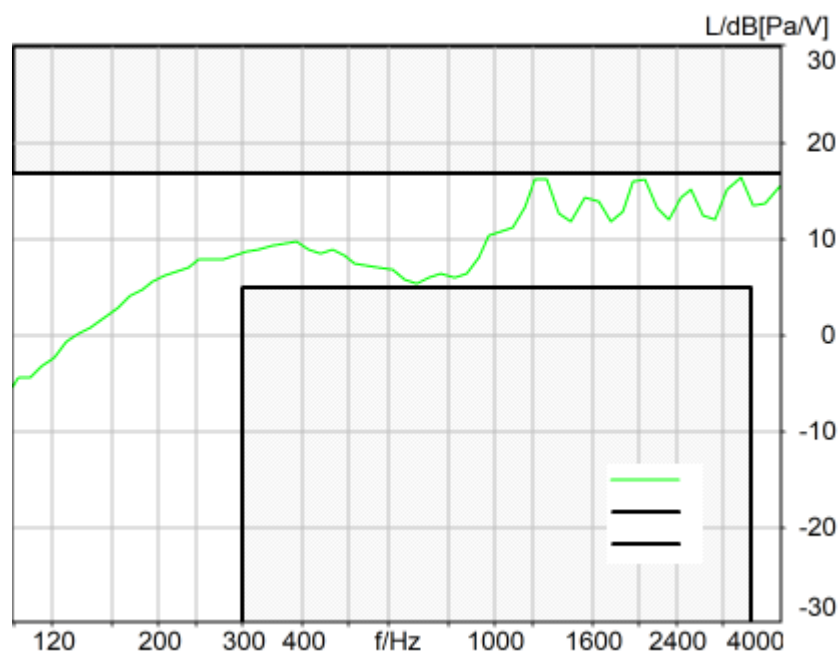
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance

0.56 dB at 3245.6 Hz Ok

Ok

2024/1/19 10:35 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

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

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

Pause 0.5 s +

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

Pause till end of file

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

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	1.9 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_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 158.0000 ms (D_RCV_NB)

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

Measurement Protocol

Measurement Object	WCDMA Band5_AMR WB 23.85kbps_CH4132
Project	HMD_2322#N159v

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/8 10:48
Responsible Person	audio

Status Overview

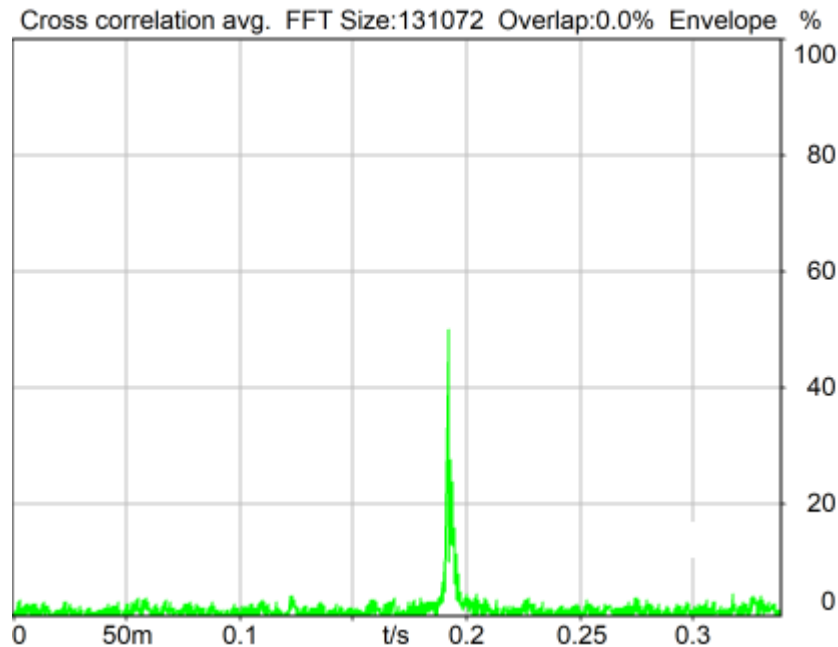
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	192.3	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	15.24	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	10.55	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.46	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.02	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.93	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.08	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.96	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.87	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.97	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.45	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.91	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.30	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.80	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.69	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.96	WCDMA Band5_AMR WB 23.85kbps_CH4132
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 5000Hz)	21.96	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.80	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.78	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.99	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.37	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.76	WCDMA Band5_AMR WB 23.85kbps_CH4132

5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.44	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.75	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.08	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.81	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.00	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.59	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.66	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.65	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.82	WCDMA Band5_AMR WB 23.85kbps_CH4132
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 5000Hz)	22.82	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.3 Frequency Response 8N FF	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.17	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 2057.5 Hz	0.46	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	0.13	WCDMA Band5_AMR WB 23.85kbps_CH4132
5.3 Frequency Response 2N DF	Not Ok	Min. dist. to tolerance scheme [dB], 4870.0 Hz	-0.76	WCDMA Band5_AMR WB 23.85kbps_CH4132

Overall Receive Delay WB	5
5.1a Receive Volume Control Performance 8N WB	7
5.1b Receive Volume Control Performance 2N WB	9
5.2 RCV Distortion and Noise - 250 Hz WB	11
5.2 RCV Distortion and Noise - 315 Hz WB	13
5.2 RCV Distortion and Noise - 400 Hz WB	15
5.2 RCV Distortion and Noise - 500 Hz WB	18
5.2 RCV Distortion and Noise - 630 Hz WB	20
5.2 RCV Distortion and Noise - 800 Hz WB	22
5.2 RCV Distortion and Noise - 1000 Hz WB	24
5.2 RCV Distortion and Noise - 1250 Hz WB	27
5.2 RCV Distortion and Noise - 1600 Hz WB	29
5.2 RCV Distortion and Noise - 2000 Hz WB	31
5.2 RCV Distortion and Noise - 2500 Hz WB	33
5.2 RCV Distortion and Noise - 3150 Hz WB	36
5.2 RCV Distortion and Noise - 4000 Hz WB	38
5.2 RCV Distortion and Noise - 5000 Hz WB	40
Report - Receive Distortion and Noise (Conversational Gain)	42
5.2 RCV Distortion and Noise - 250 Hz WB	43
5.2 RCV Distortion and Noise - 315 Hz WB	45
5.2 RCV Distortion and Noise - 400 Hz WB	47
5.2 RCV Distortion and Noise - 500 Hz WB	50
5.2 RCV Distortion and Noise - 630 Hz WB	52
5.2 RCV Distortion and Noise - 800 Hz WB	54
5.2 RCV Distortion and Noise - 1000 Hz WB	56
5.2 RCV Distortion and Noise - 1250 Hz WB	59
5.2 RCV Distortion and Noise - 1600 Hz WB	61
5.2 RCV Distortion and Noise - 2000 Hz WB	63
5.2 RCV Distortion and Noise - 2500 Hz WB	65
5.2 RCV Distortion and Noise - 3150 Hz WB	68
5.2 RCV Distortion and Noise - 4000 Hz WB	70
5.2 RCV Distortion and Noise - 5000 Hz WB	72
Report - Receive Distortion and Noise (Conversational Gain)	74
5.3 Frequency Response 8N FF	75
5.3 Frequency Response 8N DF	77
5.3 Frequency Response 2N FF	80
5.3 Frequency Response 2N DF	82

Overall Receive Delay WB

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



Delay (Cross): 192.3 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: csswb1b_r1s.dat

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

Pause 0.5 s +

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

Pause till end of file

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

75 % overlap in frequency range of 100 to 8000 Hz

Calibration

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

Output ch.1: 0.00 dB

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

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

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-4.0 mm	Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

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

Special Features

Show source signal Source ch.2 Store to variable D_RCV_WB

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

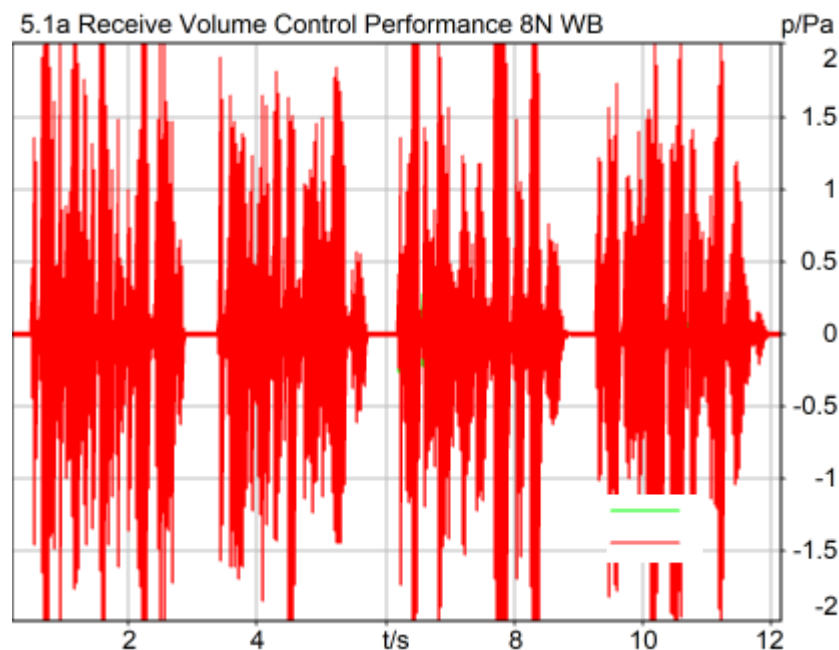
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Speech Level RCV: 85.24 dB[SPL], Act.: 86.47%

Corrected Speech Level: 15.24 dB[SPL] Not Ok

Not Ok

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Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Show source signal Source ch.2

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

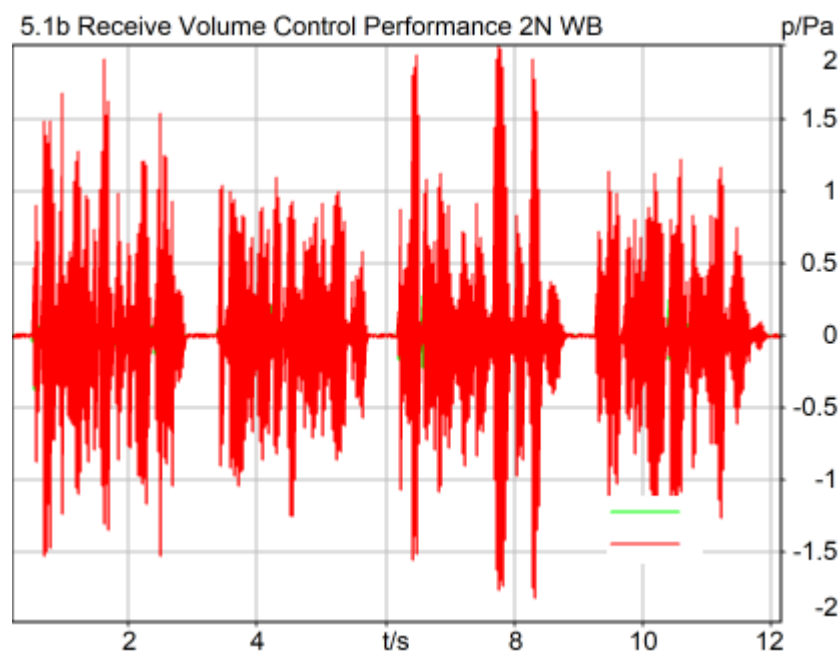
Pinna Type Type 3.3

HIB Settings

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

5.1b Receive Volume Control Performance 2N WB

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



Correction

X - 70

Speech Level RCV: 80.55 dB[SPL], Act.: 86.19%

Corrected Speech Level: 10.55 dB[SPL] Ok

Ok

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Limits

	lower
Run 1	6.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03**Calibration**Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))**HHP IV Settings (Setting: STD:(0,0,0) rel AHP)**

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 1.9 N**Output Equalization/Filter**

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

Analysis

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

Special FeaturesShow source signal Source ch.2
Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))**Hardware Config Settings**

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

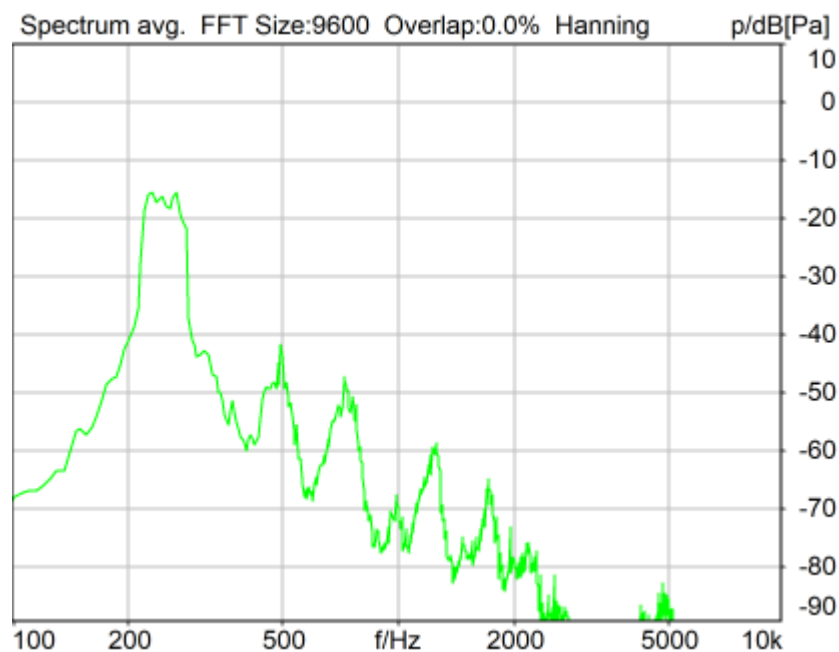
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 28.46 dB (3.77%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_250hz_sr20dbm0_v02.dat.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off		
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

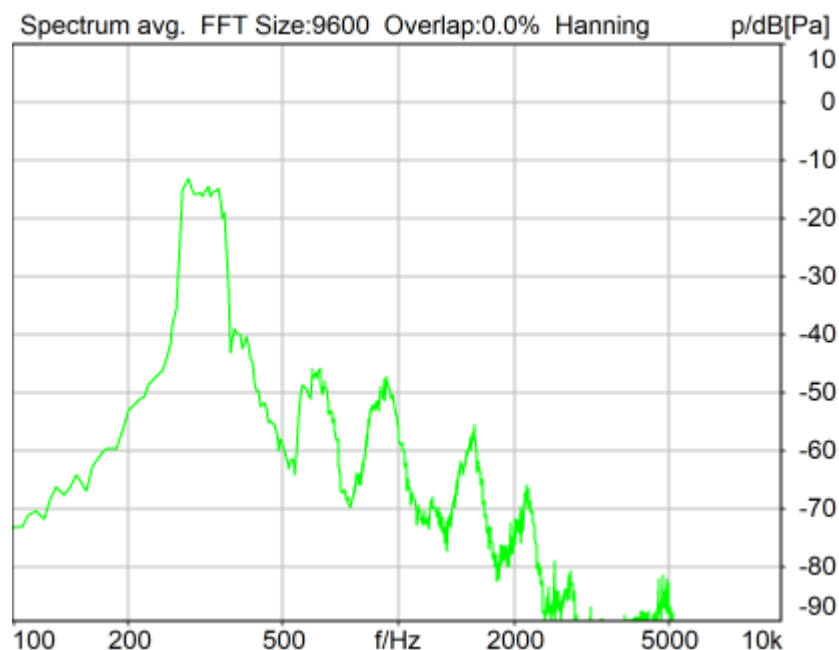
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 315 Hz WB

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



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

Ok

2024/1/15 14:33 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_315hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-4.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off		
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_315Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

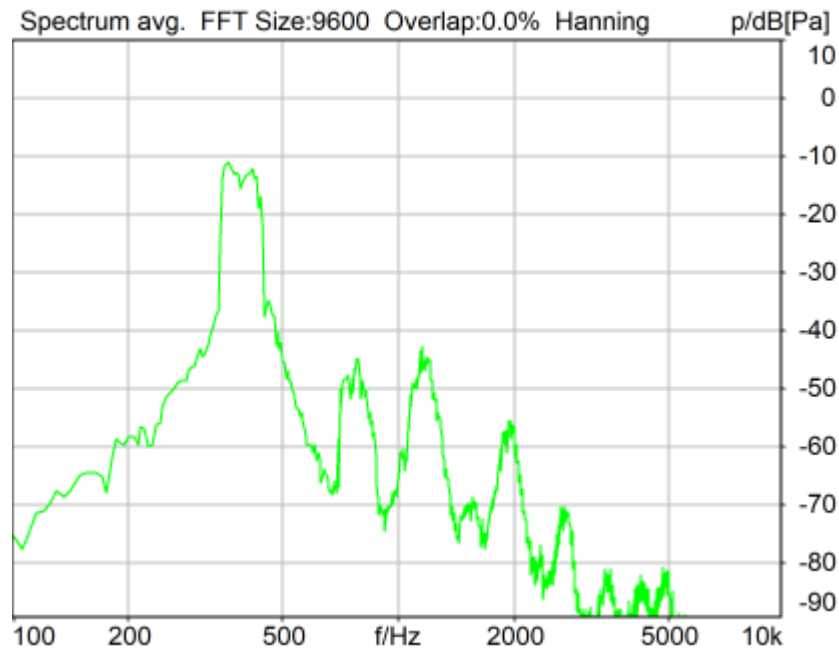
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 400 Hz WB

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



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

Ok

2024/1/15 14:33 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_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_400Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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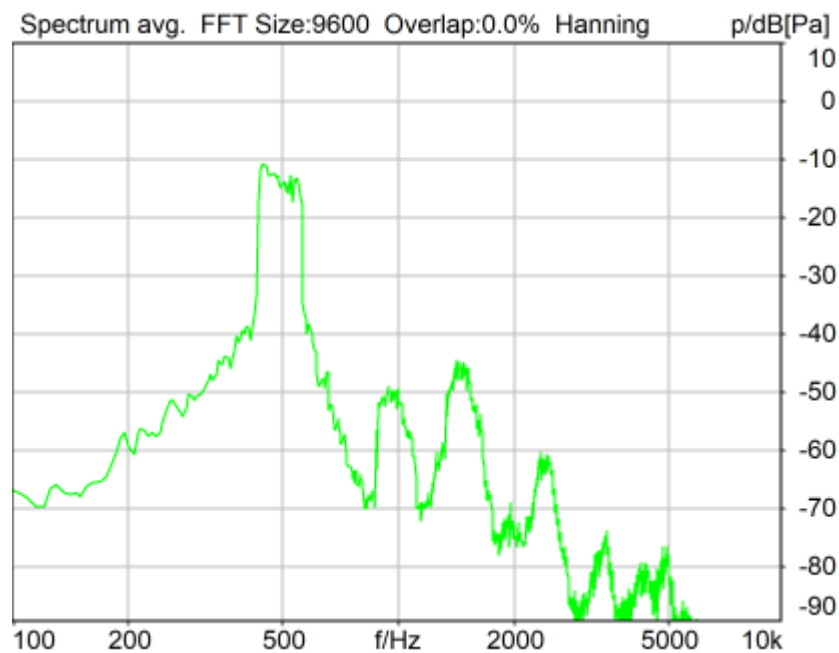
HIB Settings

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

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

5.2 RCV Distortion and Noise - 500 Hz WB

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Distortion (Noise) RCV (packed): 27.93 dB (4.01%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

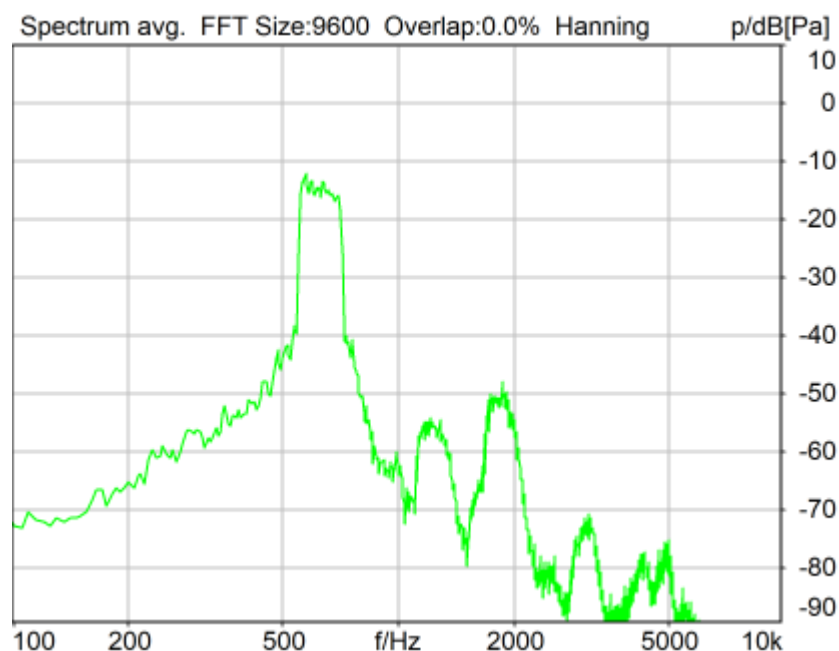
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 29.08 dB (3.51%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-4.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_630Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.96 dB (4.00%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

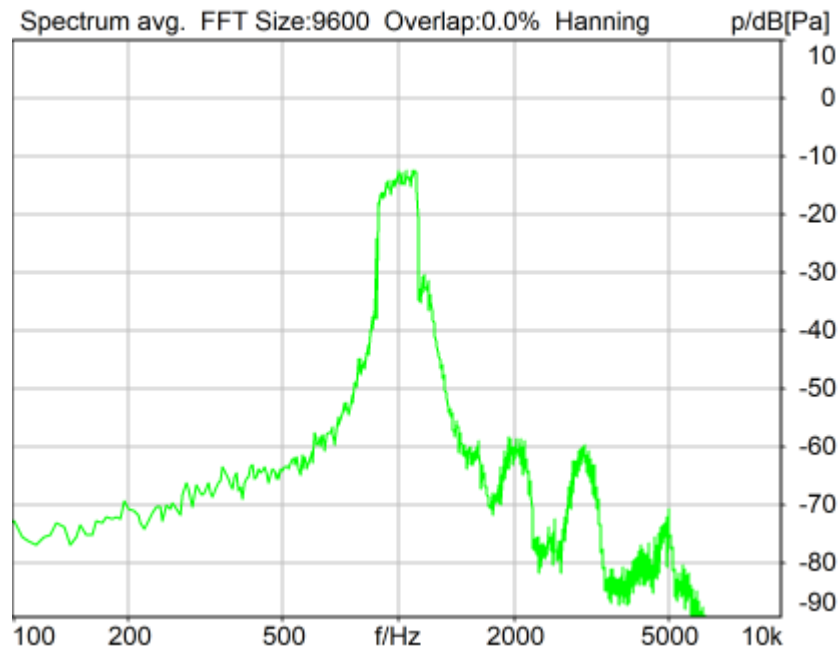
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 22.87 dB (7.19%) Ok

Ok

2024/1/15 14:35 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_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_1000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

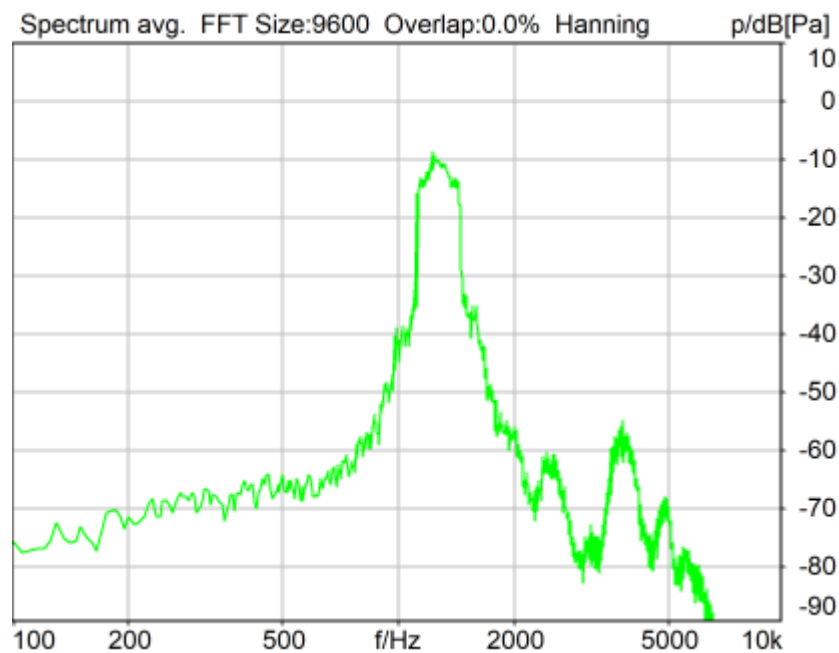
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

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

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

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.97 dB (6.33%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

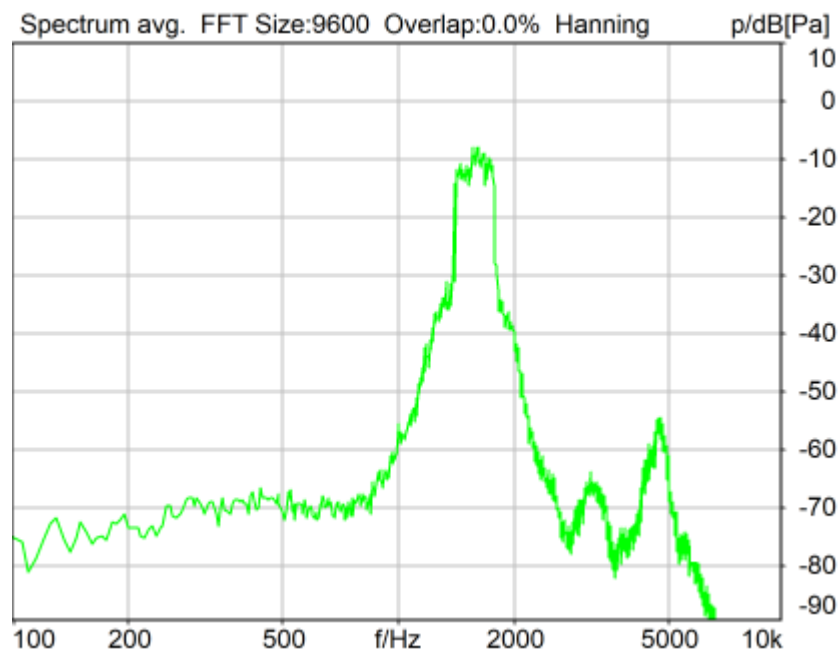
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 24.45 dB (5.99%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-4.0 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_1600Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

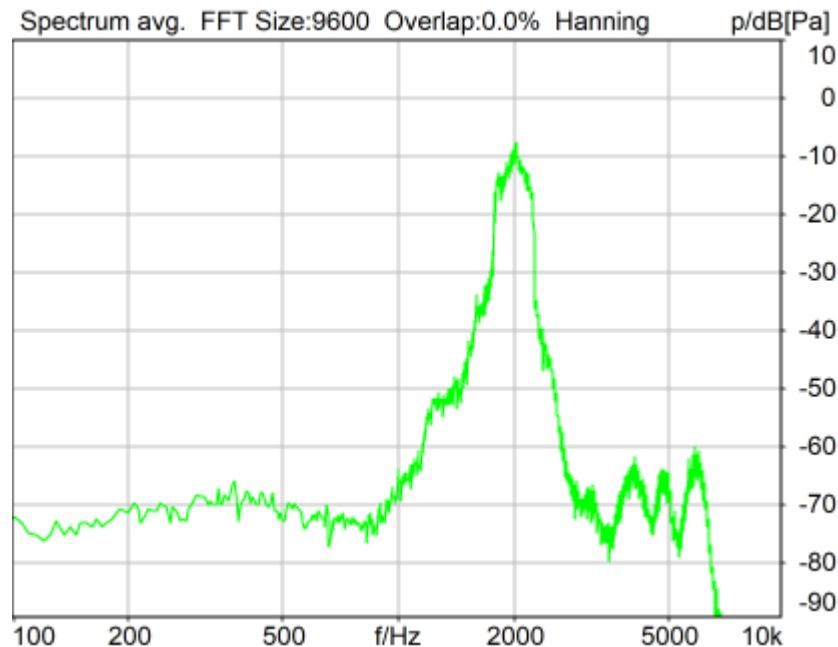
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 23.91 dB (6.38%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_2000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

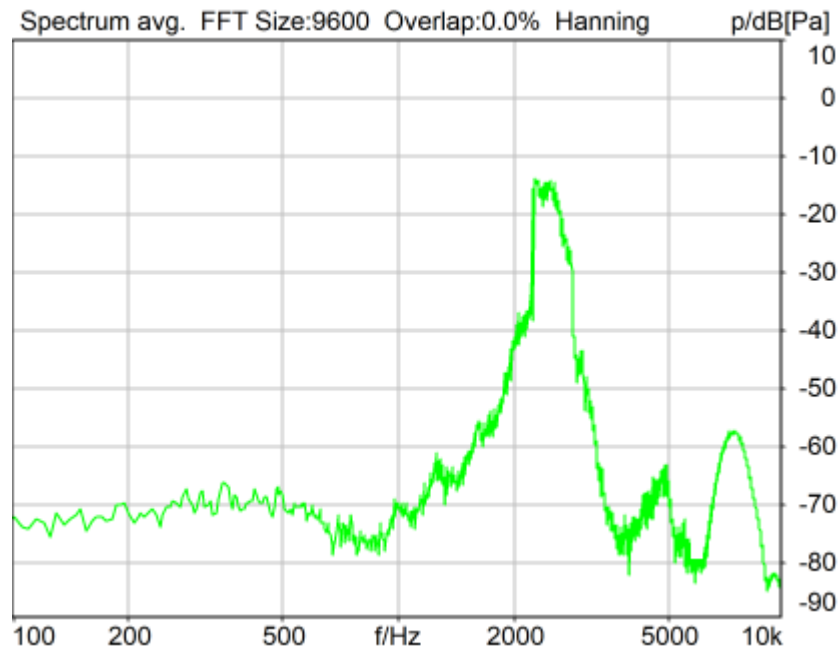
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 23.30 dB (6.84%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_2500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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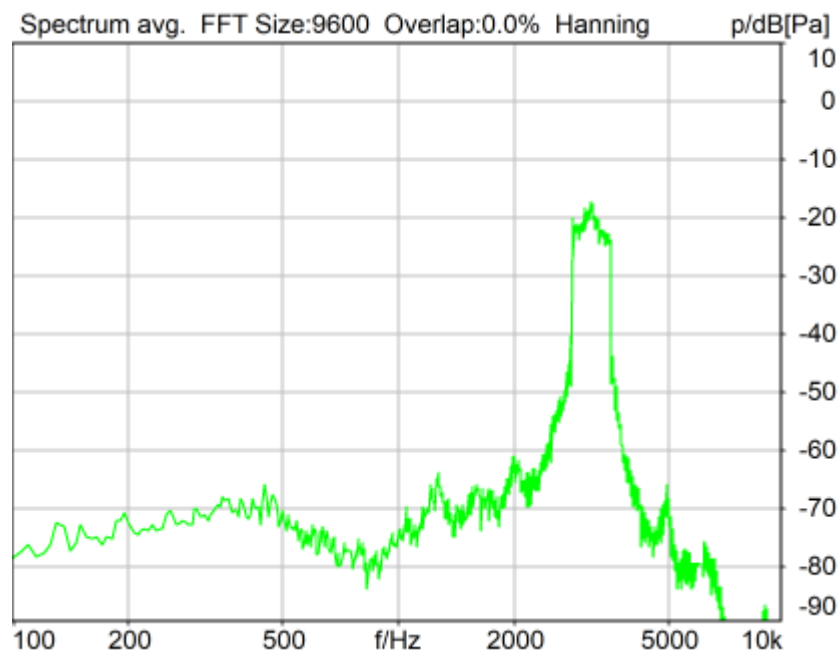
HIB Settings

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

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

5.2 RCV Distortion and Noise - 3150 Hz WB

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Distortion (Noise) RCV (packed): 29.80 dB (3.23%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_3150Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

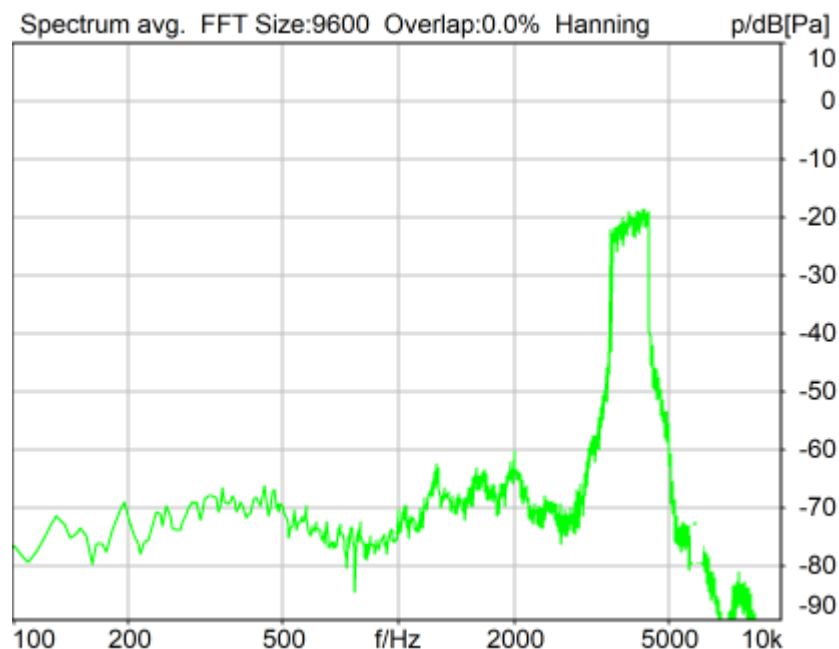
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.69 dB (4.13%) Ok

Ok

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Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_4000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_4000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

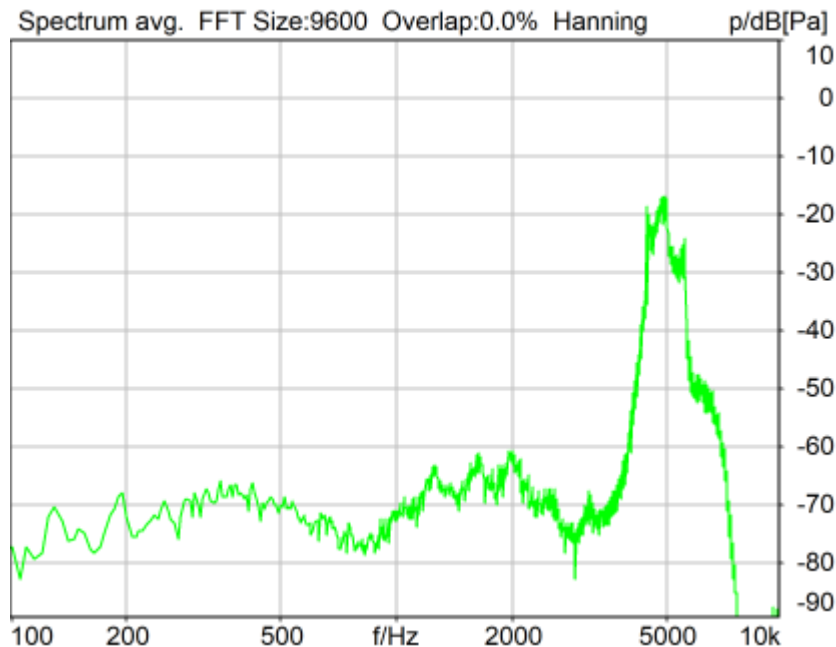
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 21.96 dB (7.98%) Ok

Ok

2024/1/15 14:38 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_5000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Overlap	0 %
Frequency base	Transformation	Smooth	Off
FFT size	9600	Stimulus min.	4430.0 Hz
Window function.	Hanning	Stimulus max.	5660.0 Hz
dB weighting	A Weighting	Analysis min.	20.0 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 192.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_5000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	28.46 dB
2	315Hz	28.40 dB
3	400Hz	28.02 dB
4	500Hz	27.93 dB
5	630Hz	29.08 dB
6	800Hz	27.96 dB
7	1000Hz	22.87 dB
8	1250Hz	23.97 dB
9	1600Hz	24.45 dB
10	2000Hz	23.91 dB
11	2500Hz	23.30 dB
12	3150Hz	29.80 dB

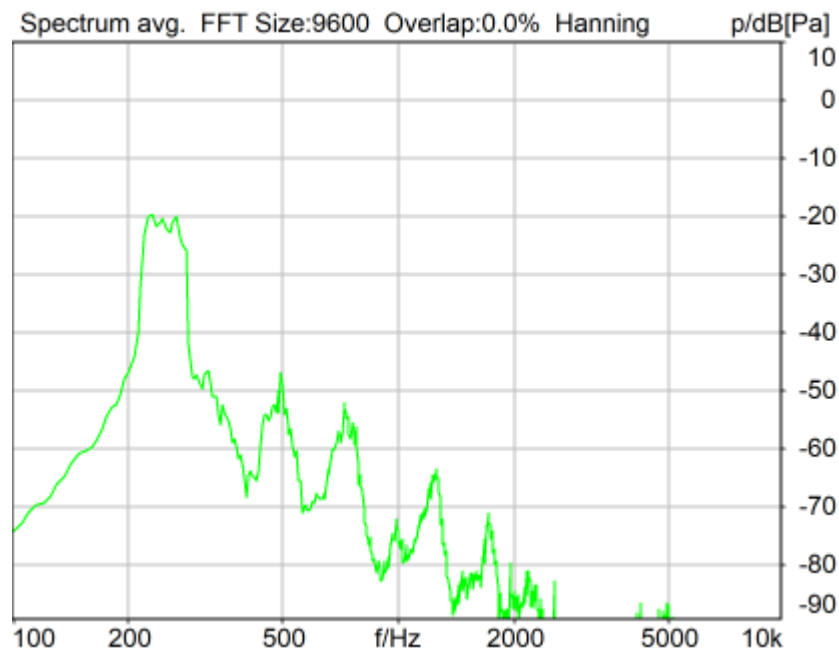
13	4000Hz	27.69 dB
14	5000Hz	21.96 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.96dB at 5000Hz.

2024/1/15 14:40 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): 28.80 dB (3.63%) Ok

Ok

2024/1/15 14:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_250hz_sr20dbm0_v02.dat.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-0.1 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	190.0 Hz	Stimulus max.	315.0 Hz
Analysis min.	20.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

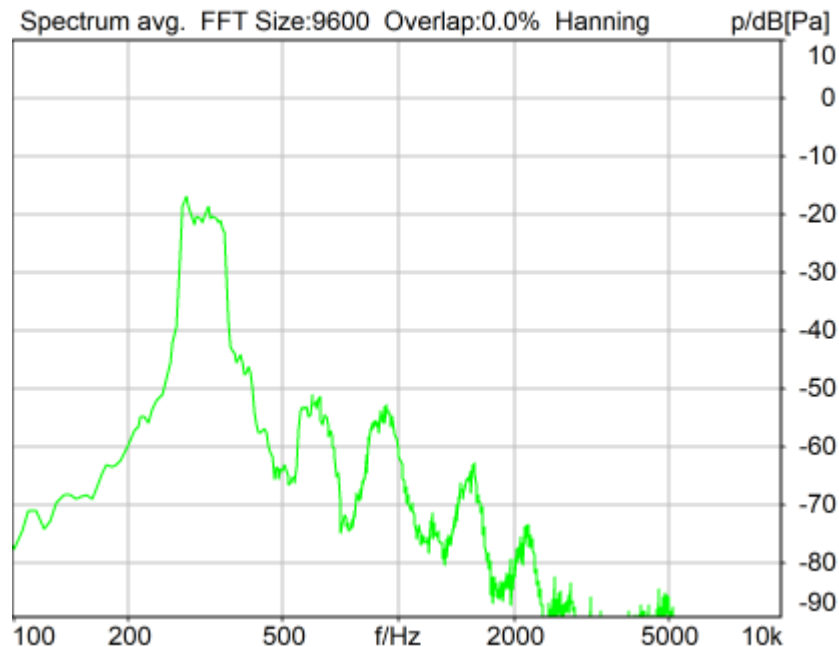
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 28.78 dB (3.64%) Ok

Ok

2024/1/15 14:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_315hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	245.0 Hz	Stimulus max.	390.0 Hz
Analysis min.	20.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_315Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

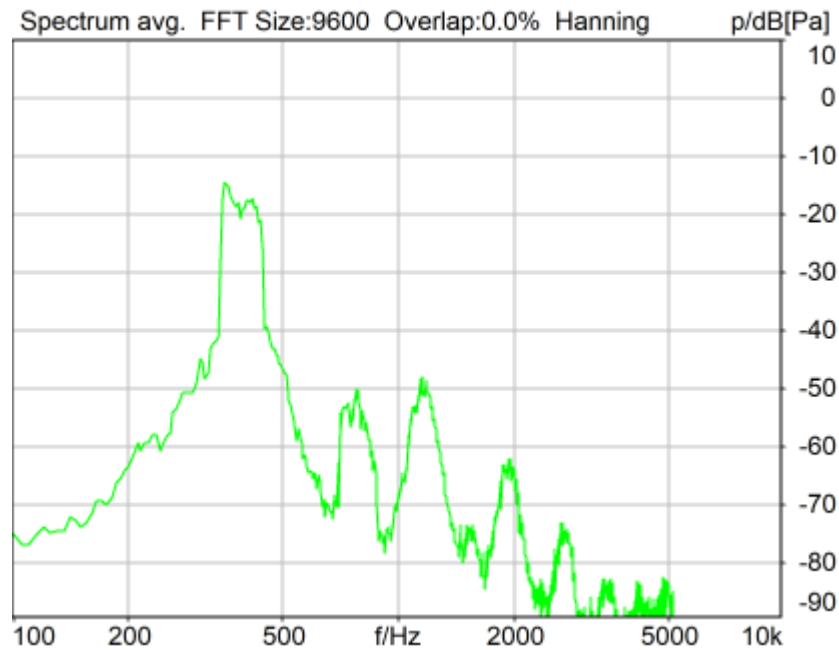
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 27.99 dB (3.99%) Ok

Ok

2024/1/15 14:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 182.5000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_400Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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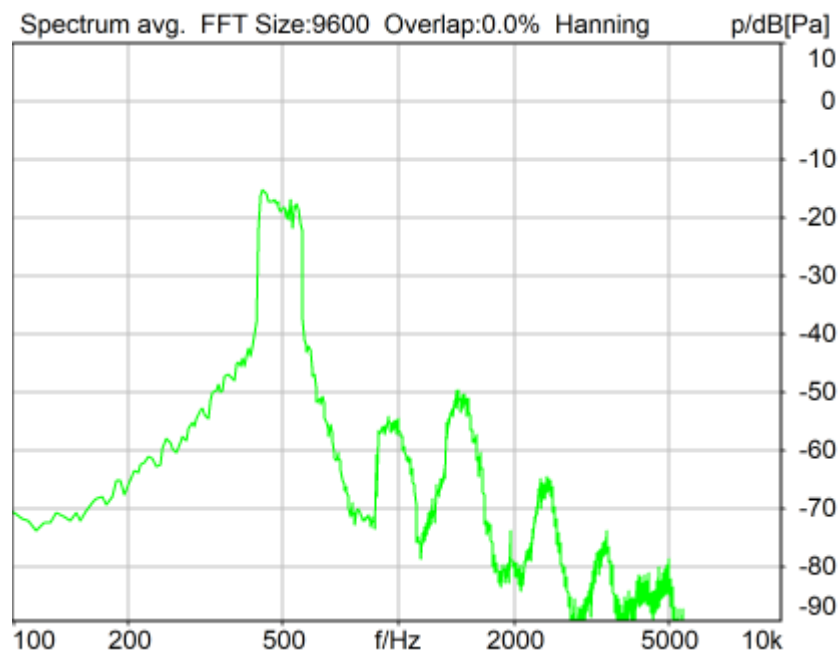
HIB Settings

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

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

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 28.37 dB (3.81%) Ok

Ok

2024/1/15 14:21 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_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

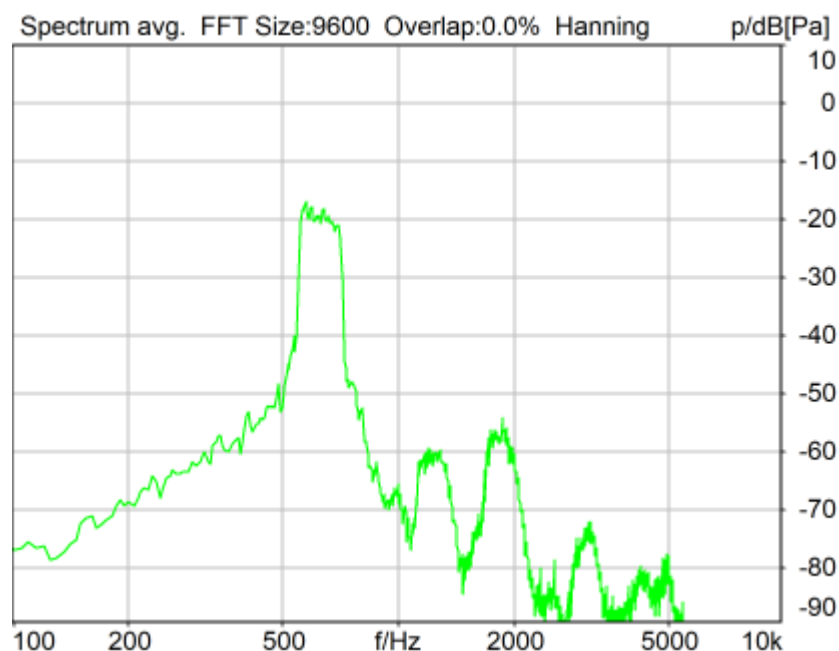
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

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

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 29.76 dB (3.25%) Ok

Ok

2024/1/15 14:21 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_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_630Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

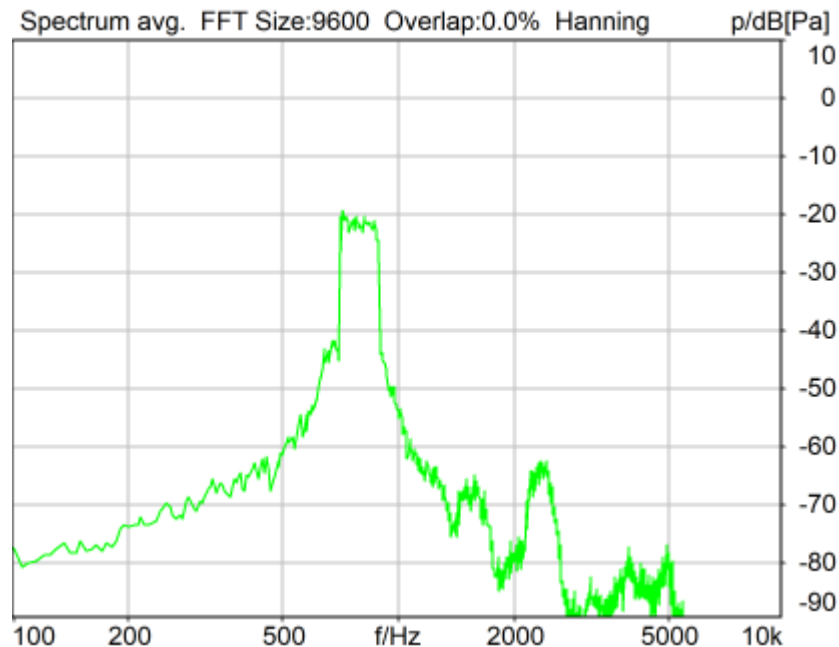
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.44 dB (4.25%) Ok

Ok

2024/1/15 14:21 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_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

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

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

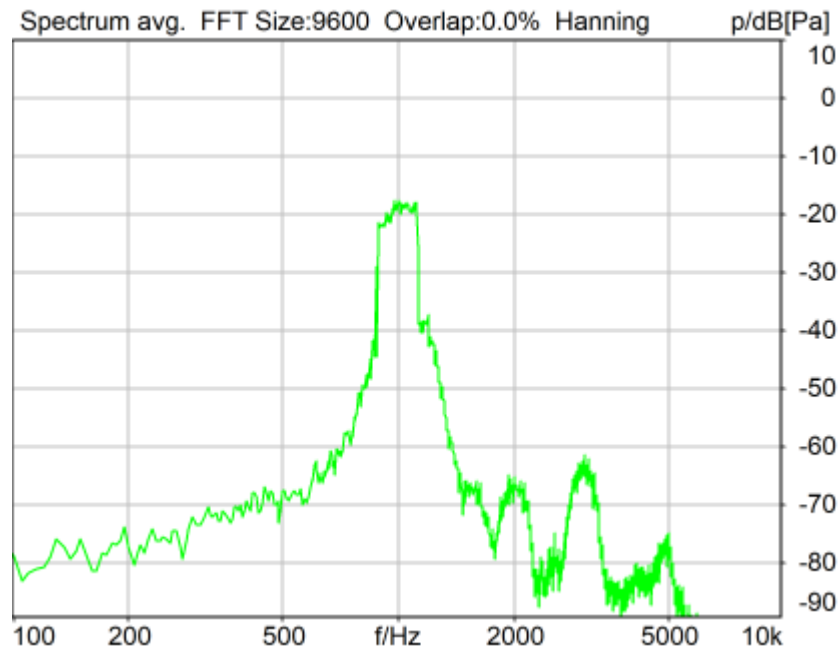
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

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

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 23.75 dB (6.49%) Ok

Ok

2024/1/15 14:22 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_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	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 182.5000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_1000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306613	Pinna Type	Type 3.3
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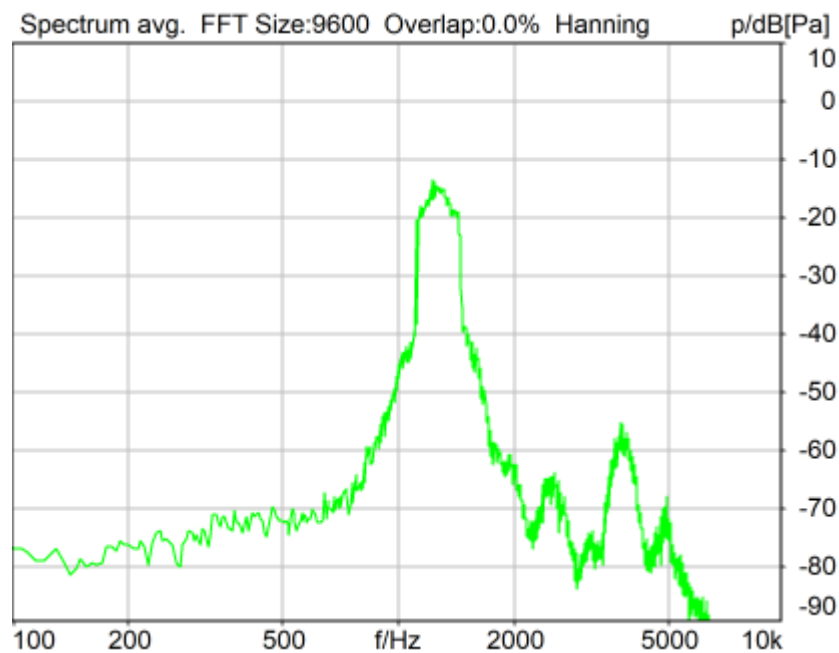
HIB Settings

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

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

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 24.08 dB (6.25%) Ok

Ok

2024/1/15 14:22 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_1250hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 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 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)
Block mode Bypass

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

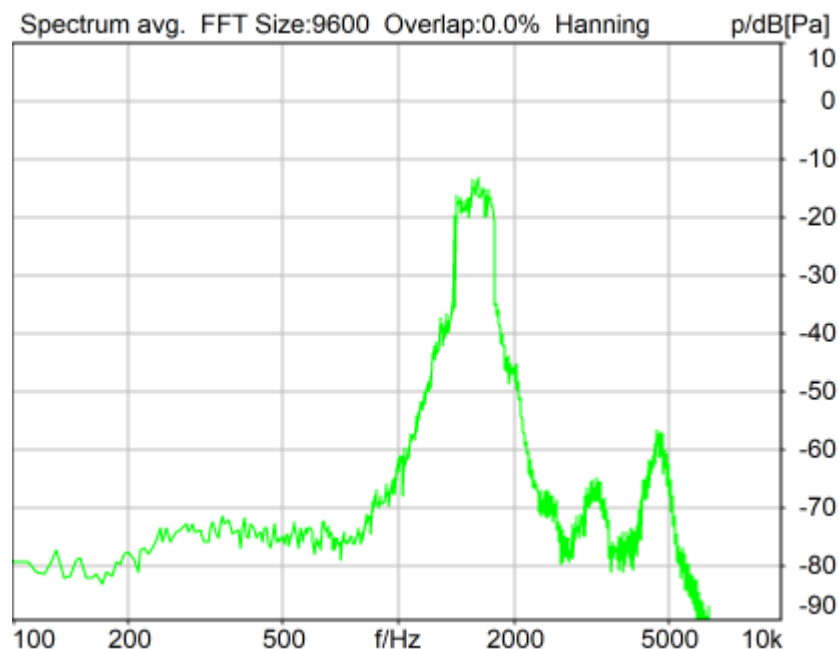
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 23.81 dB (6.45%) Ok

Ok

2024/1/15 14:23 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_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-0.1 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_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 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_1600Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

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

labCORE Routing

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

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Channel In 1 Settings

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

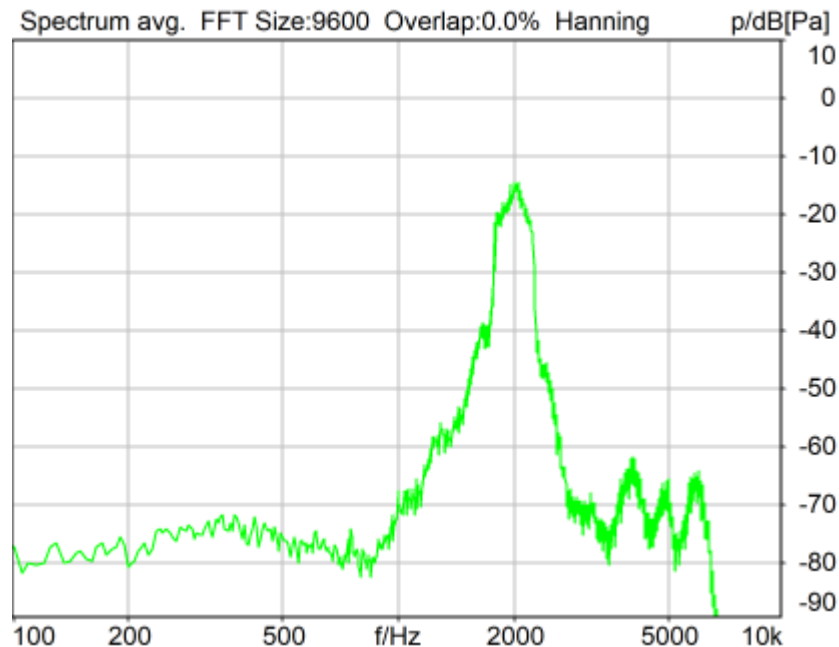
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 24.00 dB (6.31%) Ok

Ok

2024/1/15 14:23 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

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

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

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

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

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

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_2000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

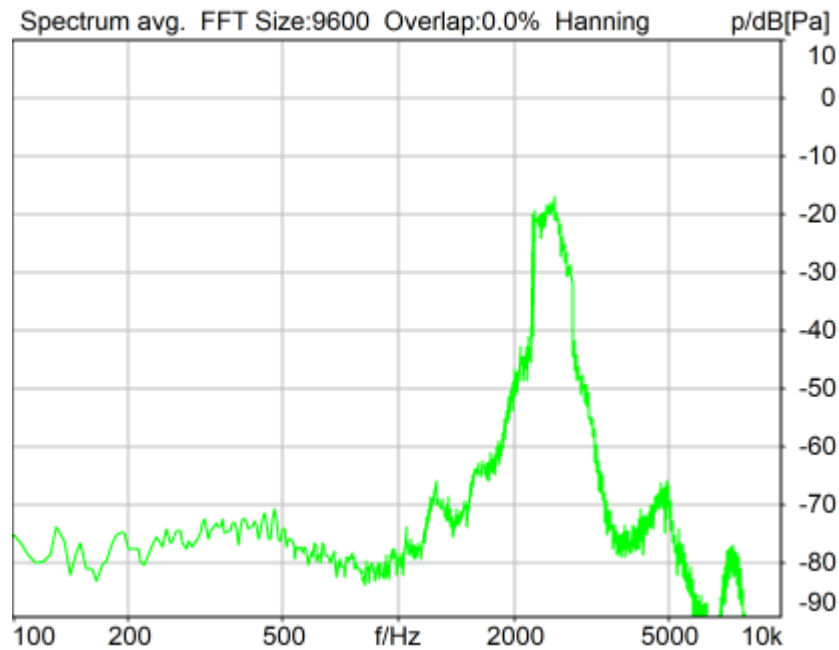
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 2500 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 24.59 dB (5.90%) Ok

Ok

2024/1/15 14:23 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_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 182.5000 ms (D_RCV_WB, Delay (Cross))
Store to variable RCVWB10_2500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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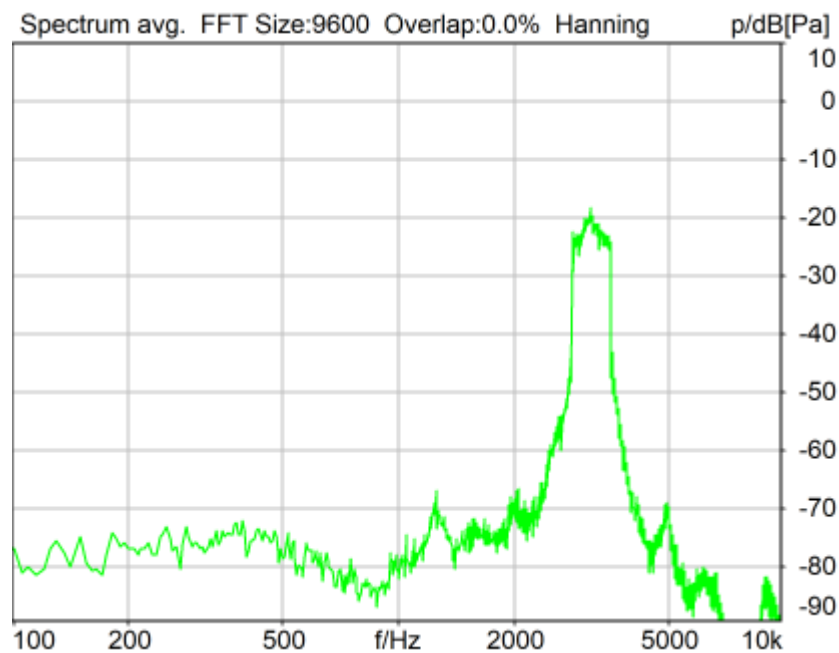
HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

5.2 RCV Distortion and Noise - 3150 Hz WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 30.66 dB (2.93%) Ok

Ok

2024/1/15 14:24 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_3150hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_3150Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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Polarisation Voltage 200V Supply Voltage $\pm 60V$

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

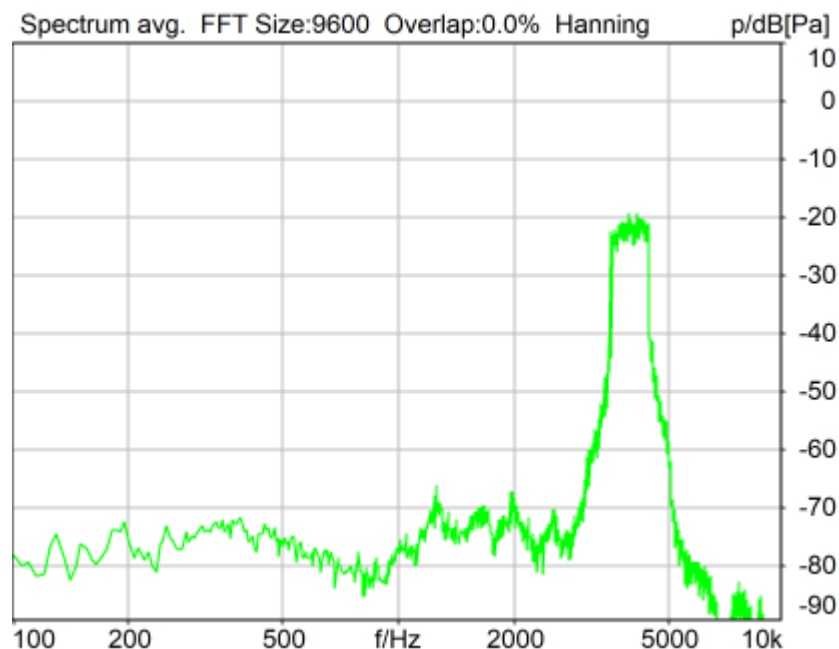
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.65 dB (4.15%) Ok

Ok

2024/1/15 14:24 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_4000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-0.1 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	20.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_4000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off
Polarisation 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))

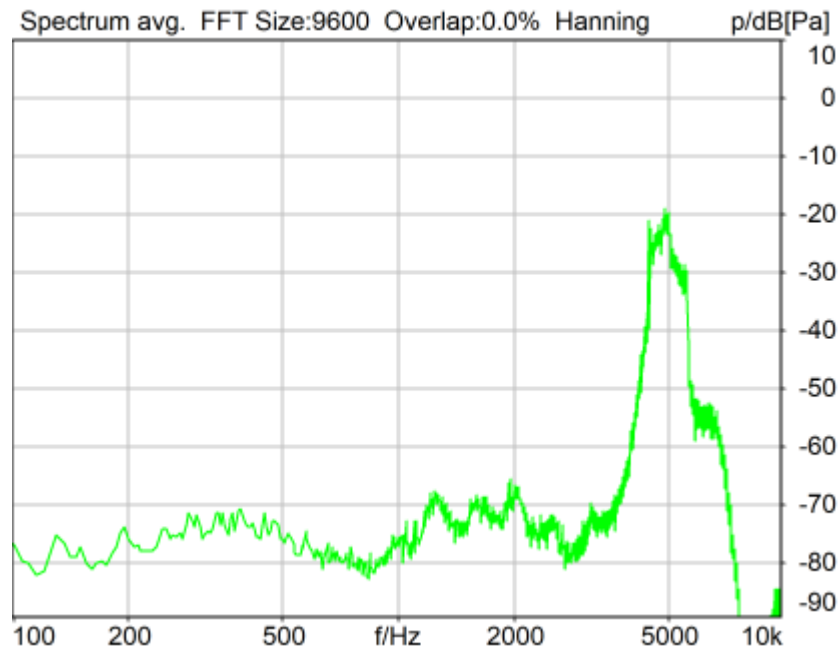
Ser. Nr. 12306613 Pinna Type Type 3.3

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): 22.82 dB (7.23%) Ok

Ok

2024/1/15 14:25 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_5000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	20.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 182.5000 ms (D_RCV_WB, Delay (Cross))

Store to variable RCVWB10_5000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Wideband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	250Hz	28.80 dB
2	315Hz	28.78 dB
3	400Hz	27.99 dB
4	500Hz	28.37 dB
5	630Hz	29.76 dB
6	800Hz	27.44 dB
7	1000Hz	23.75 dB
8	1250Hz	24.08 dB
9	1600Hz	23.81 dB
10	2000Hz	24.00 dB
11	2500Hz	24.59 dB
12	3150Hz	30.66 dB

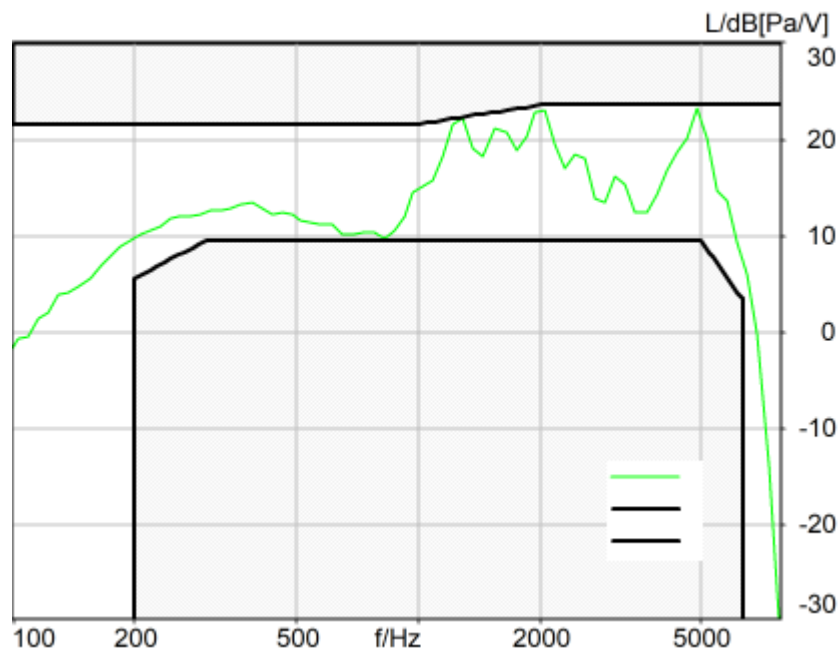
13	4000Hz	27.65 dB
14	5000Hz	22.82 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.82dB at 5000Hz.

2024/1/15 14:25 ACQUA

5.3 Frequency Response 8N FF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance
0.17 dB at 1285.9 Hz Ok

Ok

2024/1/15 14:41 ACQUA 5.1.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieee269_wb_r20_v01.dat

Level adj. Ch1 -90.0 dB
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2
Pause 0.5 s +
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +
Pause till end of file
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 7.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave		
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hawb.fft		
Tol. scheme file	521_rcv_frq_man_hawb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	8000.0 Hz

Special Features

Compensate delay 192.3000 ms (D_RCV_WB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.3 Frequency Response 8N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance
0.46 dB at 2057.5 Hz Ok

Ok

2024/1/15 14:43 ACQUA 5.1.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_wb_r20_v01.dat

Level adj. Ch1 -90.0 dB
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2
Pause 0.5 s +
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +
Pause till end of file
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.1 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 192.3000 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 $\pm 60V$

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

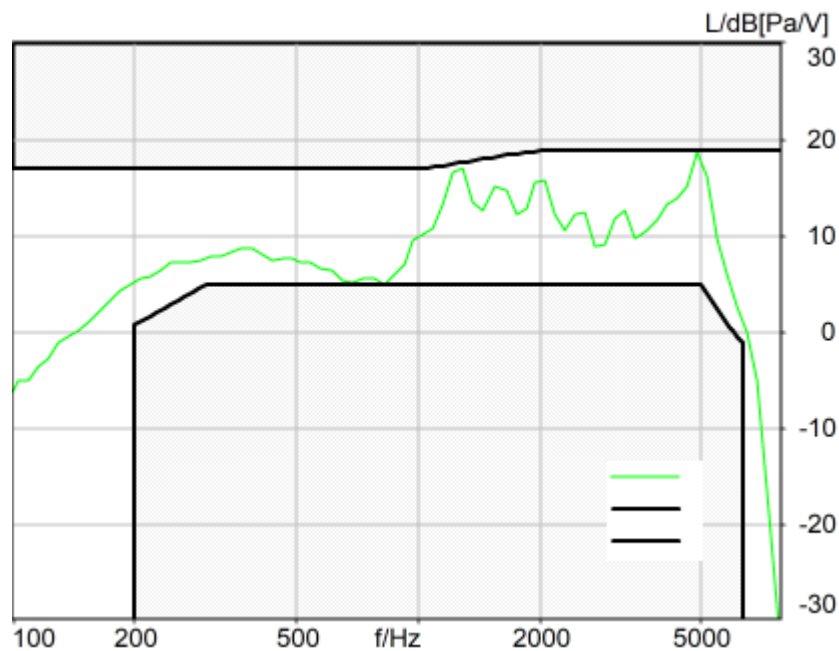
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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

0.13 dB at 4870.0 Hz Ok

Ok

2024/1/15 14:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
--	-------

Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieee269_wb_r20_v01.dat

Level adj. Ch1 -90.0 dB
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2
Pause 0.5 s +
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +
Pause till end of file
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"
Alteration:
0.2 s Pause added at the beginning of the file.
0.8 s Pause added at the end of the file.
filtered with 8.0 kHz low-pass filter
signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2	Range length	11500.00 ms
Range start	500.00 ms	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	DIN Row	Row A
Frequency base	12th octave	Overlap	75 %
Method	FFT	Window function.	Hanning
FFT size	4096	Reference file	r521_rcv_frq_spee269_hawb.fft
Window function.	Hanning	Tol. scheme file	521_rcv_frq_man_hawb.tol
Reference file	r521_rcv_frq_spee269_hawb.fft	Auto adjust	Centrate
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 182.5000 ms (D_RCV_WB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

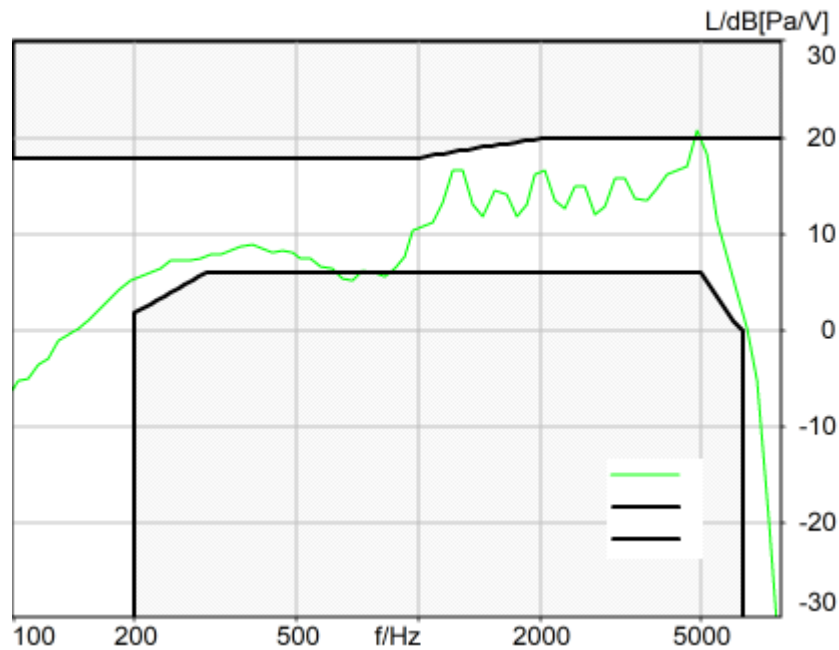
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.3 Frequency Response 2N DF

TIA-5050 (2018-01) \ Measurements \ Wideband



Absolute minimal distance
-0.76 dB at 4870.0 Hz Not Ok

Not Ok

2024/1/15 14:29 ACQUA 5.1.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_wb_r20_v01.dat

Level adj. Ch1 -90.0 dB
WIDEBAND IEEE-269-2010 Real Speech Signal at Channel 2
Pause 0.5 s +
Real Speech (english, male speaker) 11.5 s, Active Speech Level: -22,2 dBV, margin 15.9 dB +
Pause till end of file
Signal level (ch2): -22,2 dBV Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 8.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.1 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 182.5000 ms (D_RCV_WB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

Measurement Protocol

Measurement Object	WCDMA Band 2_AMR WB 23.85kbps_CH9262
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/8 11:00
Responsible Person	audio

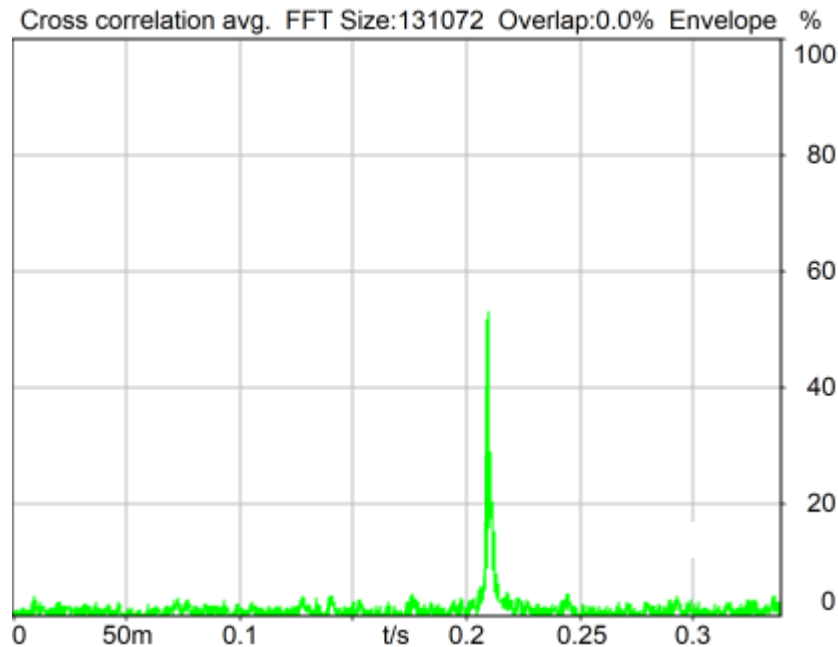
Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	210.0	WCDMA Band 2_AMR WB 23.85kbps_CH9262
5.1a Receive Volume Control Performance 8N WB	Not Ok	Corrected Speech Level [dB[SPL]]	14.84	WCDMA Band 2_AMR WB 23.85kbps_CH9262
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	10.04	WCDMA Band 2_AMR WB 23.85kbps_CH9262

Overall Receive Delay WB	4
5.1a Receive Volume Control Performance 8N WB	6
5.1b Receive Volume Control Performance 2N WB	8

Overall Receive Delay WB

TIA-5050 (2018-01) \ Measurements \ Wideband \ Preparation - Delay measurement



Delay (Cross): 210.0 ms

2024/1/20 12:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: csswb1b_r1s.dat

WIDEBAND Composite Source Signal RCV P.501 (1 bursts) at Channel 2

Pause 0.5 s +

voiced signal + 8000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 8000 Hz

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

Rotation Delta A 0.0 °

MECRP Delta Ye	0.0 mm	Rotation Delta C	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta B	5.0 °
Delta Xe	0.0 mm	Delta A	0.0 °
Delta Ye	0.0 mm	Delta C	0.0 °
Delta Ze	0.0 mm	Delta B	0.0 °
Ym	-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

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

Special Features

Show source signal Source ch.2 Store to variable D_RCV_WB

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

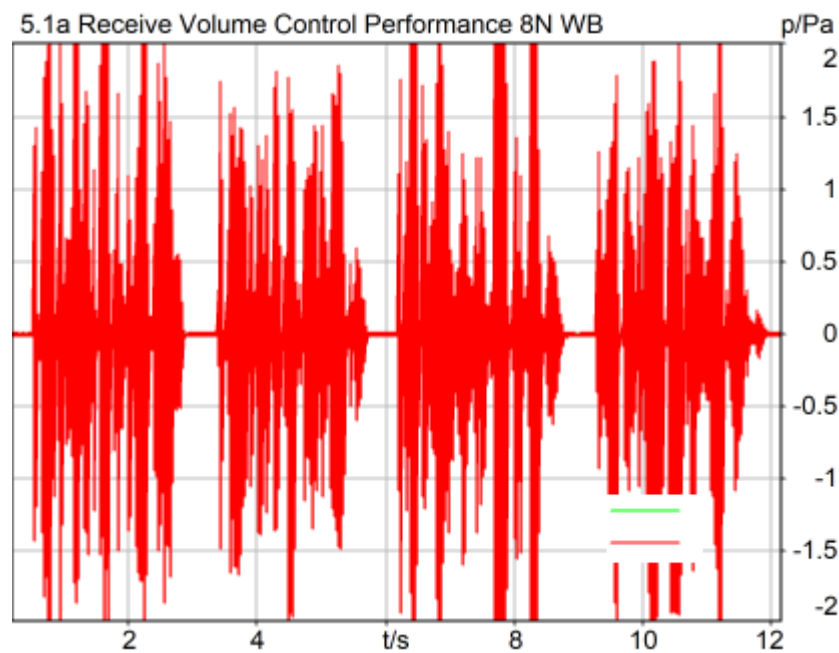
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.1a Receive Volume Control Performance 8N WB

TIA-5050 (2018-01) \ Measurements \ Wideband



Correction

X - 70

Speech Level RCV: 84.84 dB[SPL], Act.: 86.02%

Corrected Speech Level: 14.84 dB[SPL] Not Ok

Not Ok

2024/1/20 12:30 ACQUA 5.1.200

Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-2.9 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Super Wideband	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2
Compensate delay 210.0000 ms (D_RCV_WB, Delay (Cross))

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

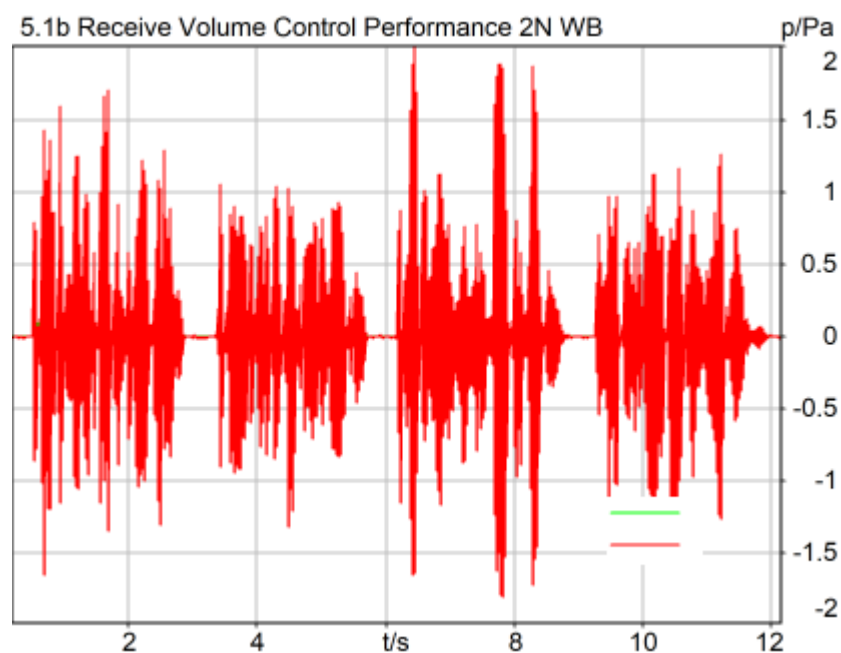
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply Off		Mic 2 Power Supply Off	

5.1b Receive Volume Control Performance 2N WB

TIA-5050 (2018-01) \ Measurements \ Wideband



Correction

X - 70

Speech Level RCV: 80.04 dB[SPL], Act.: 85.81%

Corrected Speech Level: 10.04 dB[SPL] Ok

Ok

2024/1/20 12:31 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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	0.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Super Wideband	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2
Compensate delay 210.0000 ms (D_RCV_WB, Delay (Cross))

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 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	WCDMA Band2_AMR NB12.2kbps_CH9262
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/8 10:53
Responsible Person	audio

Status Overview

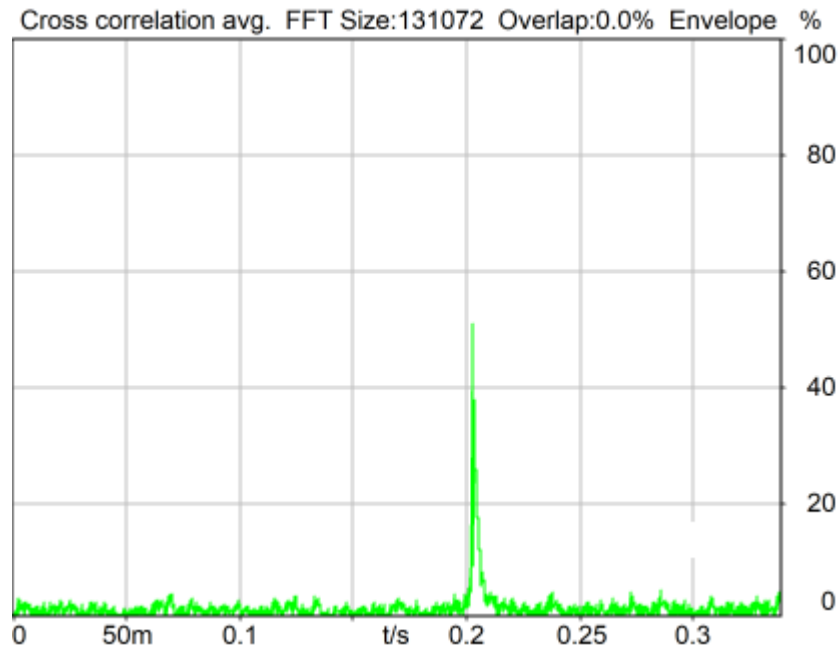
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	203.4	WCDMA Band2_AMR NB12.2kbps_CH9262
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.94	WCDMA Band2_AMR NB12.2kbps_CH9262
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	14.41	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.39	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.55	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.55	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.85	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.61	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.54	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.85	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.30	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.89	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.39	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.58	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.38	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.14	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.98	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.62	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.36	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.61	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.58	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.12	WCDMA Band2_AMR NB12.2kbps_CH9262
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.50	WCDMA Band2_AMR NB12.2kbps_CH9262

Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	25.50	WCDMA Band2_AMR NB12.2kbps_CH9262
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1948.0 Hz	3.47	WCDMA Band2_AMR NB12.2kbps_CH9262
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.42	WCDMA Band2_AMR NB12.2kbps_CH9262
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.76	WCDMA Band2_AMR NB12.2kbps_CH9262
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	0.99	WCDMA Band2_AMR NB12.2kbps_CH9262

Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	7
5.1b Receive Volume Control Performance 2N NB	9
5.2 RCV Distortion and Noise - 400 Hz NB	11
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	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	27
5.2 RCV Distortion and Noise - 2500 Hz NB	29
5.2 RCV Distortion and Noise - 3150 Hz NB	31
5.2 RCV Distortion and Noise - 400 Hz NB	33
5.2 RCV Distortion and Noise - 500 Hz NB	36
5.2 RCV Distortion and Noise - 630 Hz NB	38
5.2 RCV Distortion and Noise - 800 Hz NB	40
5.2 RCV Distortion and Noise - 1000 Hz NB	42
5.2 RCV Distortion and Noise - 1250 Hz NB	45
5.2 RCV Distortion and Noise - 1600 Hz NB	47
5.2 RCV Distortion and Noise - 2000 Hz NB	49
5.2 RCV Distortion and Noise - 2500 Hz NB	51
5.2 RCV Distortion and Noise - 3150 Hz NB	54
Report - Receive Distortion and Noise (Conversational Gain)	56
5.3 Frequency Response 8N FF HANB	56
5.3 Frequency Response 8N DF HANB	59
5.3 Frequency Response 2N FF HANB	61
5.3 Frequency Response 2N DF HANB	64

Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 203.4 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: cssnb1b_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-5.4 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

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 Voltage200V		Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

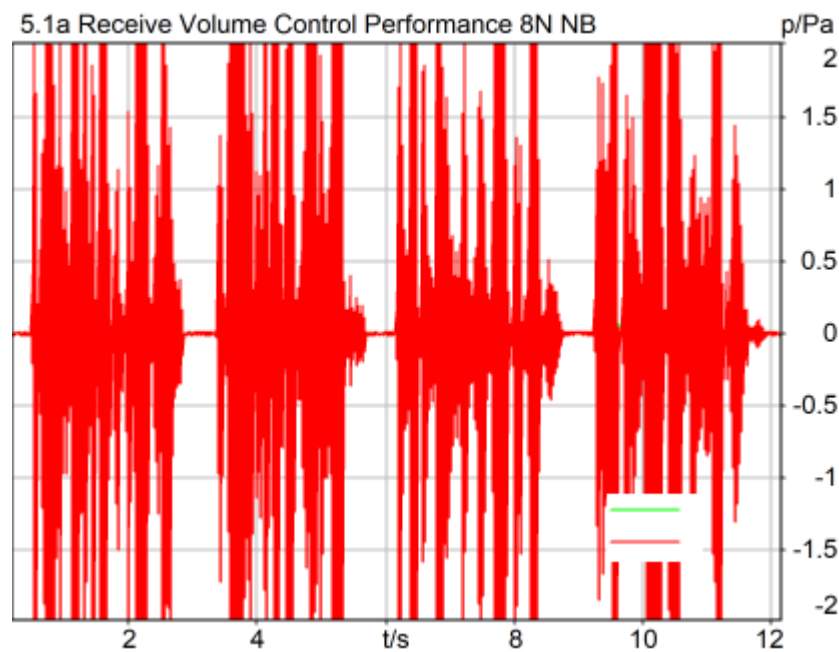
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.1a Receive Volume Control Performance 8N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband

**Correction**

X - 70

Speech Level RCV: 88.94 dB[SPL], Act.: 82.02%

Corrected Speech Level: 18.94 dB[SPL] Ok

Ok

2024/1/15 13:50 ACQUA 5.1.200

Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Narrow Band	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2
Compensate delay 203.4000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

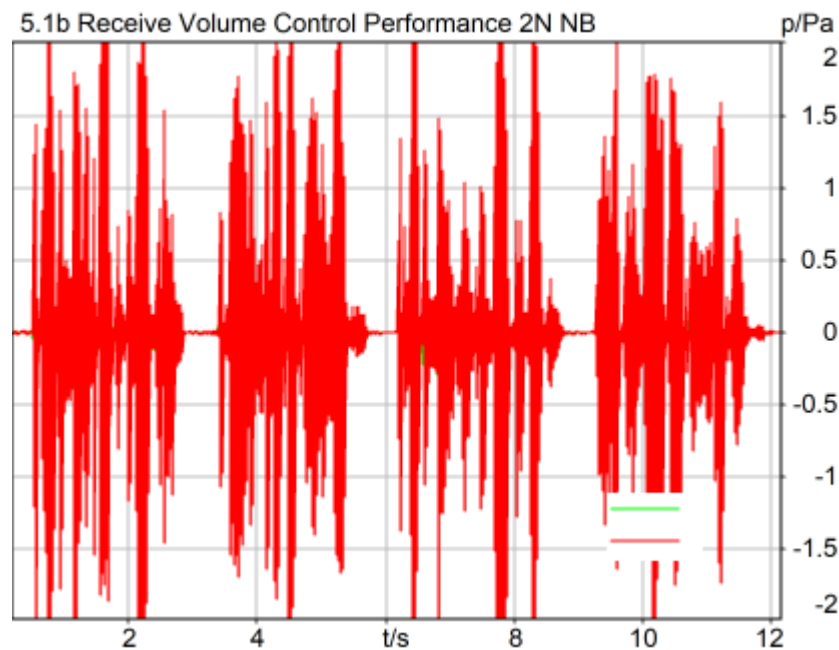
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.1b Receive Volume Control Performance 2N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband

**Correction**

X - 70

Speech Level RCV: 84.41 dB[SPL], Act.: 81.62%

Corrected Speech Level: 14.41 dB[SPL] Ok

Ok

2024/1/15 13:28 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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Narrow Band	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

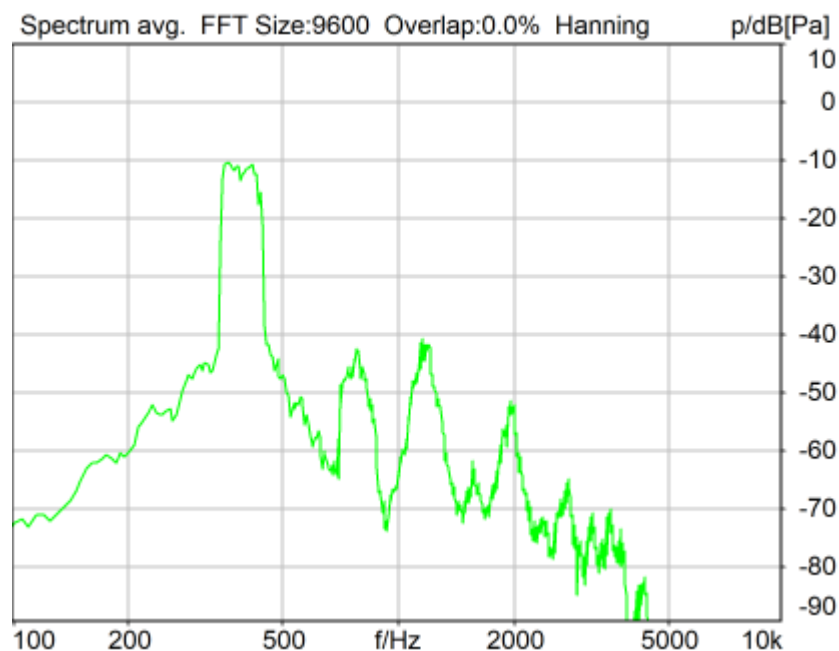
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.39 dB (4.27%) Ok

Ok

2024/1/15 13:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.1 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 7.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 203.4000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_400Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out

In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

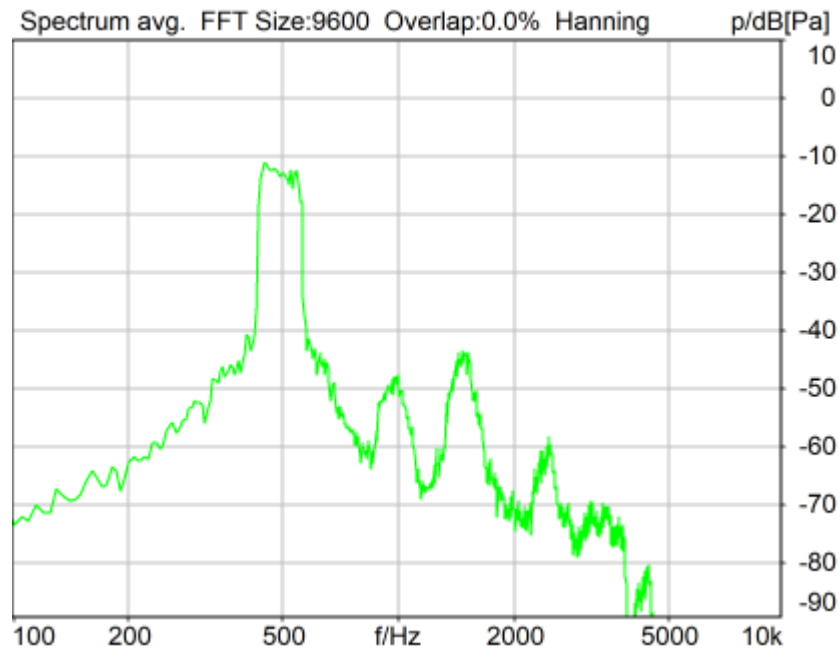
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.55 dB (4.19%) Ok

Ok

2024/1/15 13:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.1 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 203.4000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

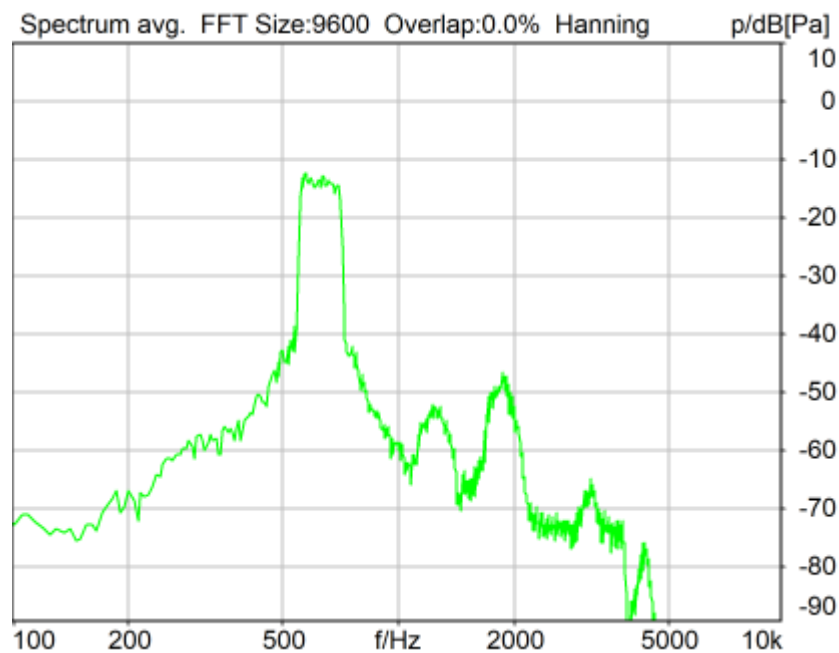
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.55 dB (3.74%) Ok

Ok

2024/1/15 13:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_630Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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Polarisation Voltage200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

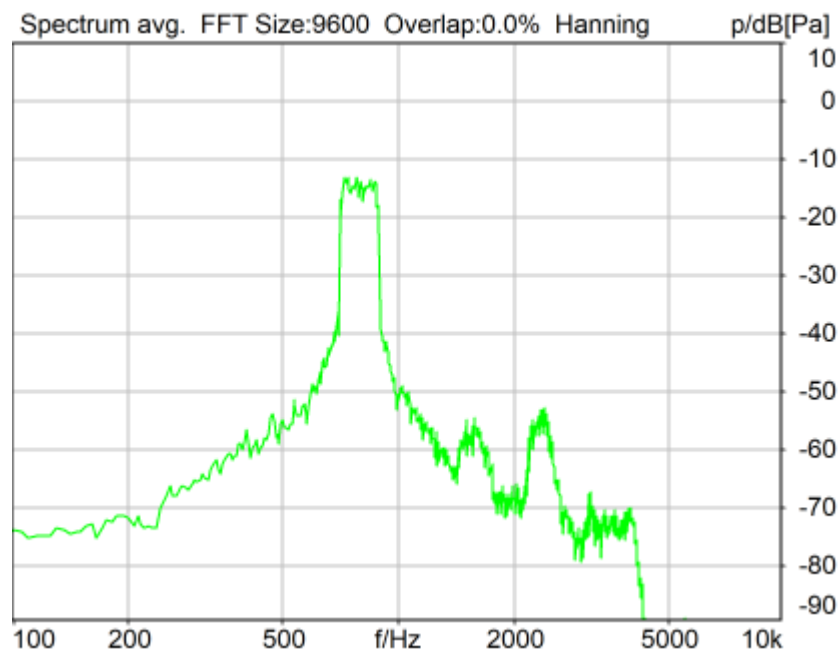
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.85 dB (3.22%) Ok

Ok

2024/1/15 13:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

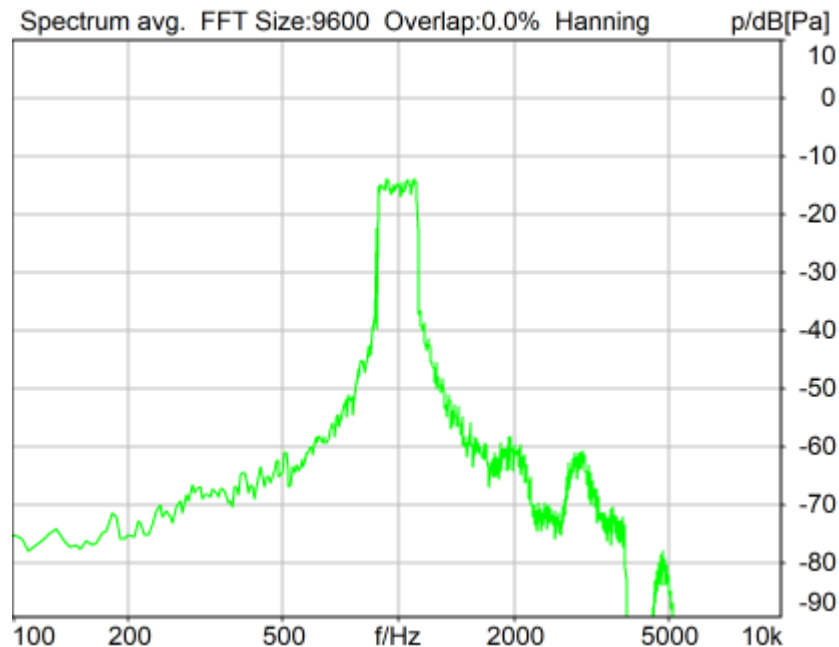
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.61 dB (3.71%) Ok

Ok

2024/1/15 13:44 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_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

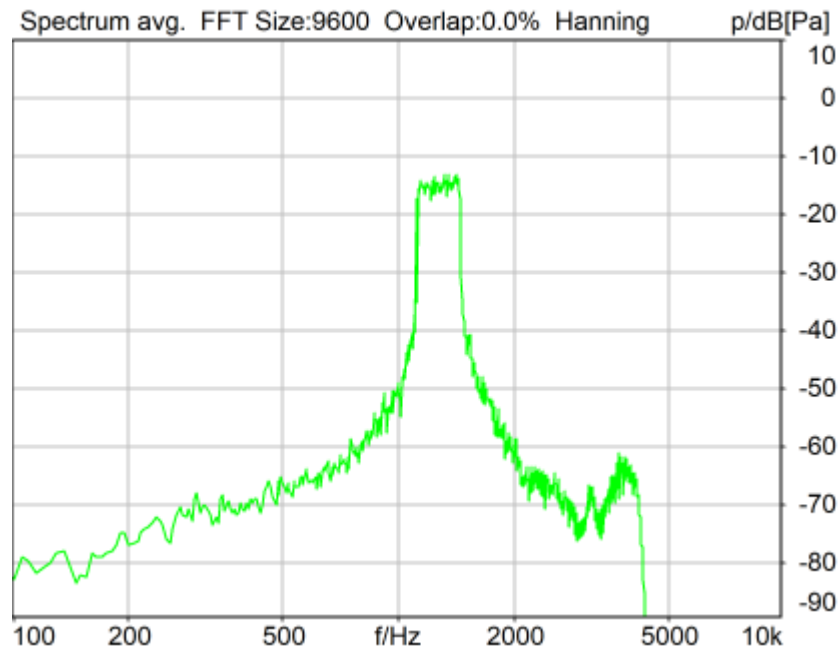
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 26.54 dB (4.71%) Ok

Ok

2024/1/15 13:44 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_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable RCVNB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

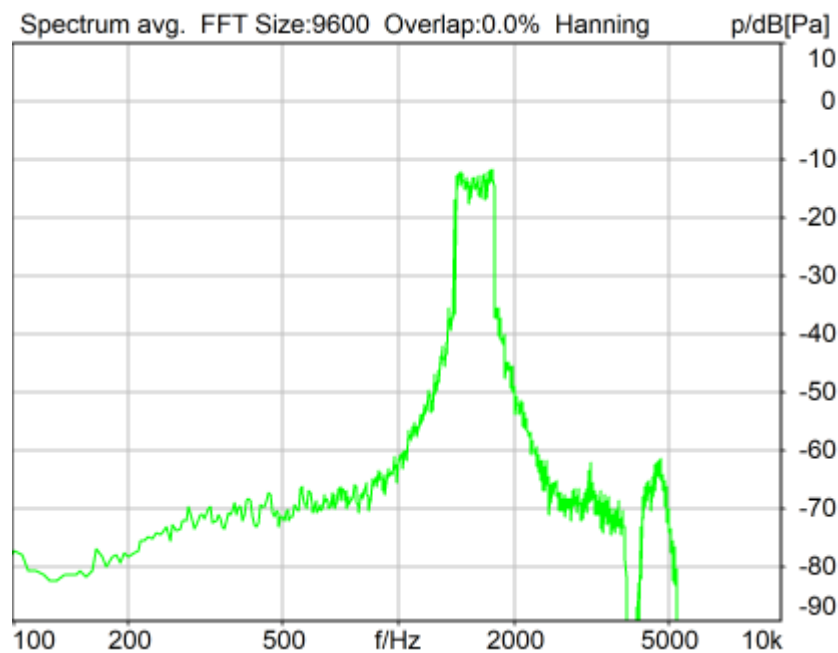
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.85 dB (4.05%) Ok

Ok

2024/1/15 13:45 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_1600hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1600Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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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

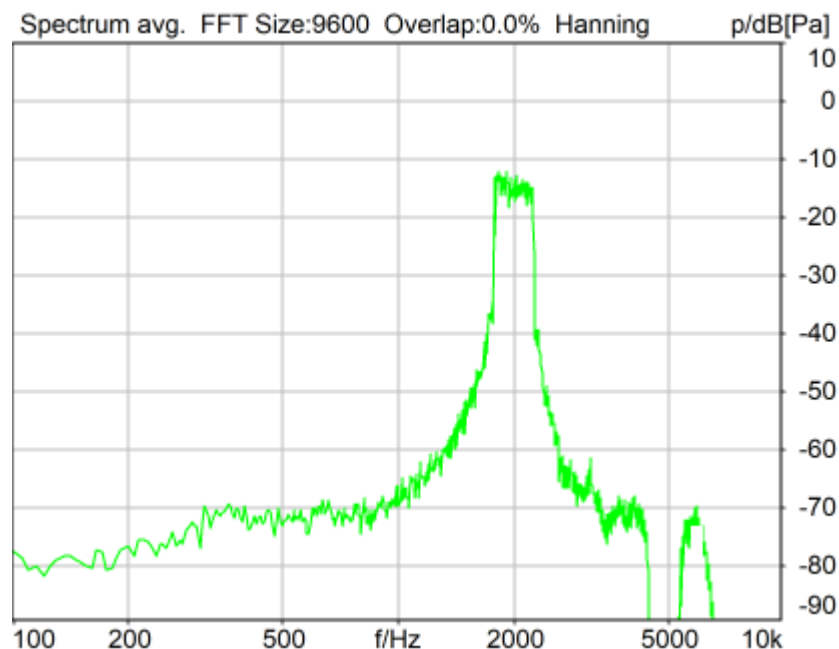
0.00 dB

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 8N



Distortion (Noise) RCV (packed): 28.30 dB (3.85%) Ok

Ok

2024/1/15 13:45 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_2000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

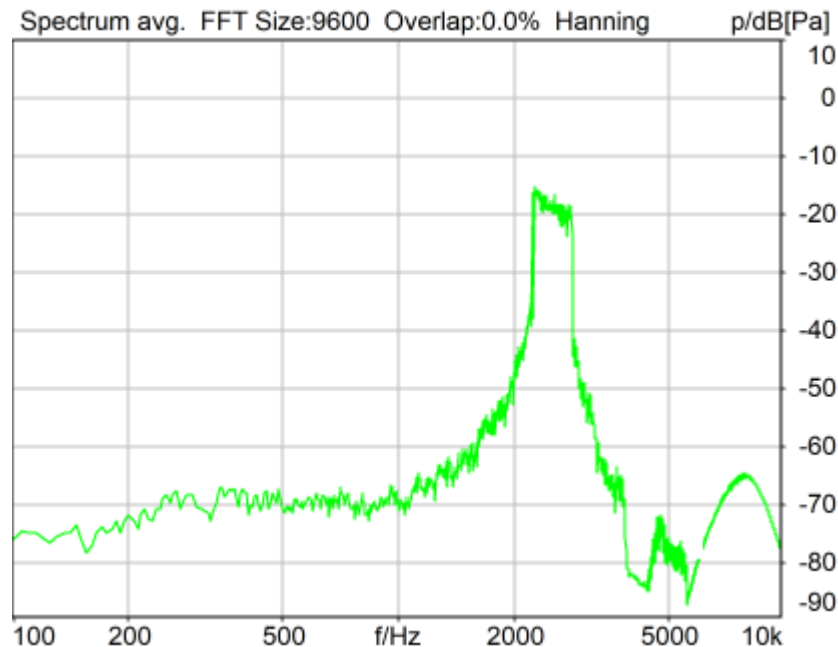
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 24.89 dB (5.69%) Ok

Ok

2024/1/15 13:46 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_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_2500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

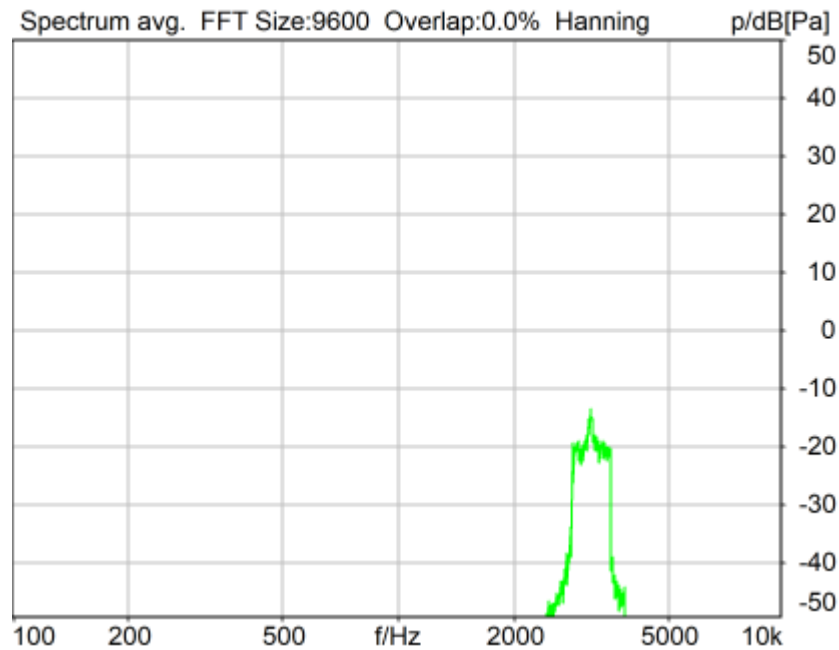
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.39 dB (6.77%) Ok

Ok

2024/1/15 13:48 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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	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 203.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable RCVNB10_3150Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

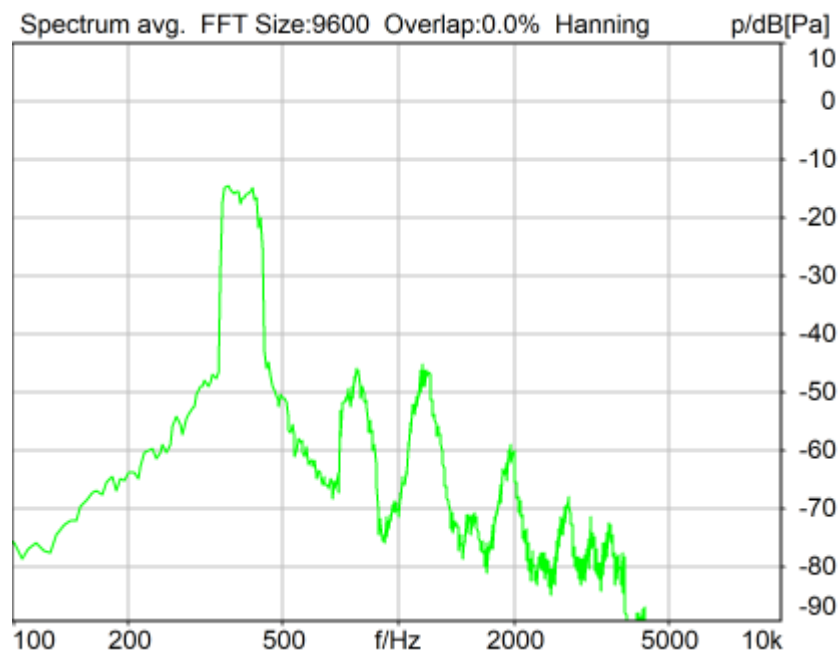
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.58 dB (4.18%) Ok

Ok

2024/1/15 13:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	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 193.0000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_400Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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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

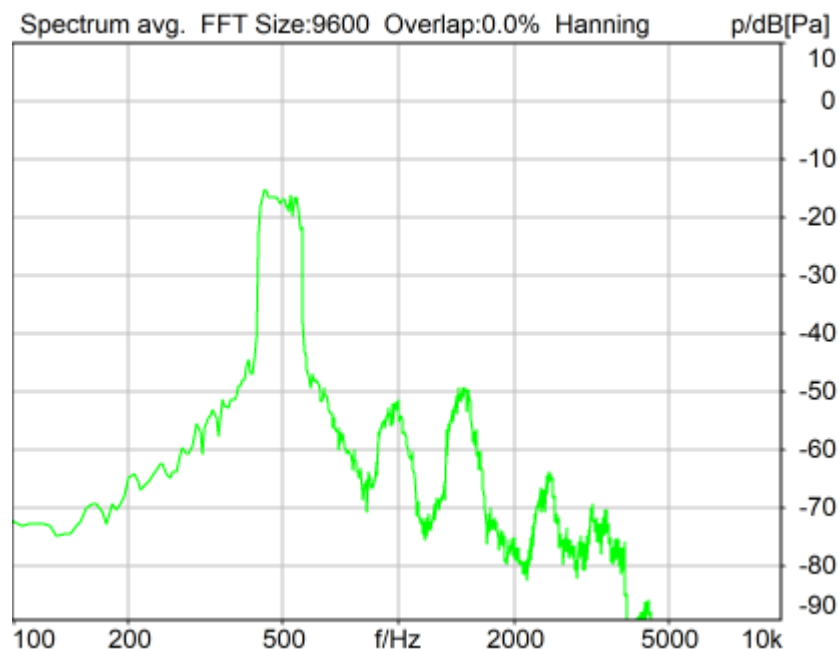
0.00 dB

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): 28.38 dB (3.81%) Ok

Ok

2024/1/15 13:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-1.5 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	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 193.0000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

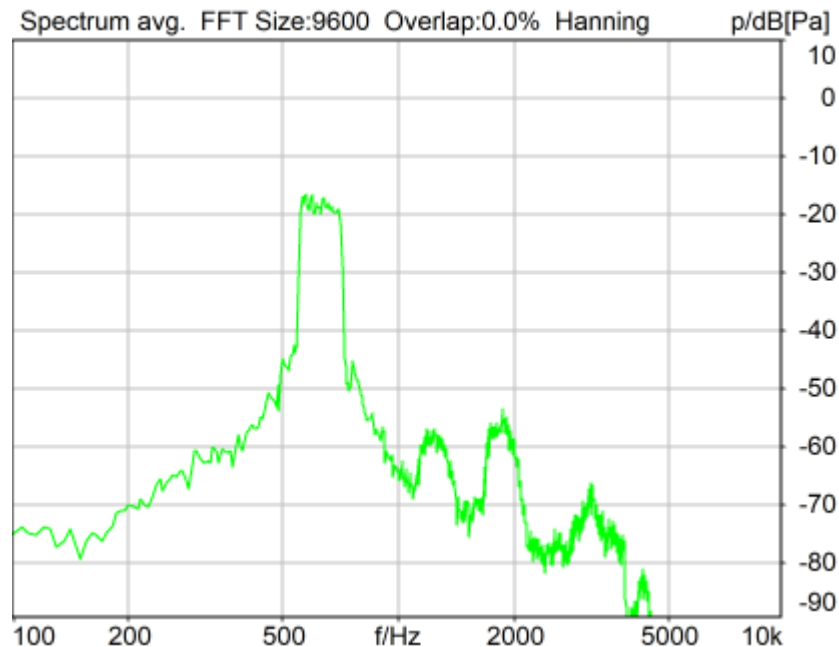
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.14 dB (3.49%) Ok

Ok

2024/1/15 13:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type	3.3 Coordinates

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_630Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

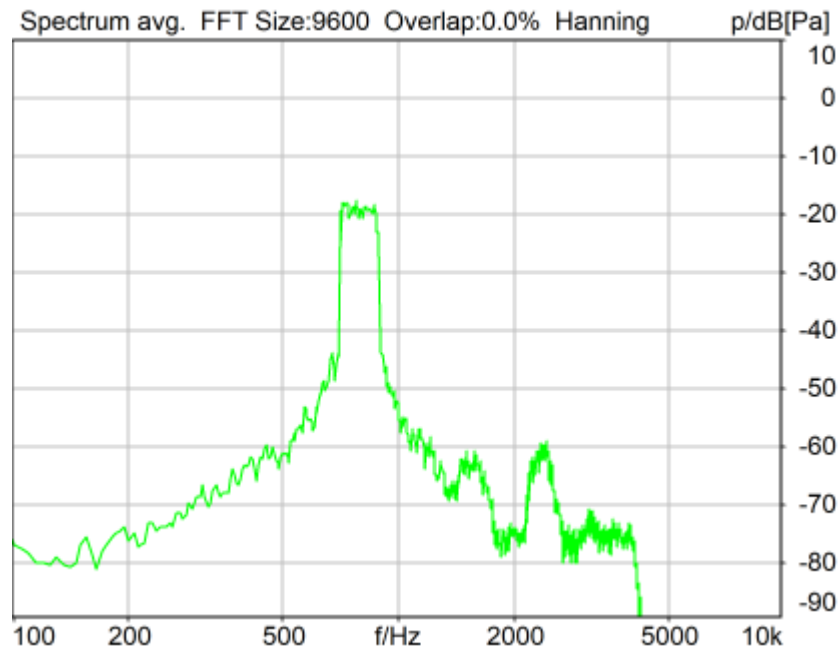
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.98 dB (3.17%) Ok

Ok

2024/1/15 13:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

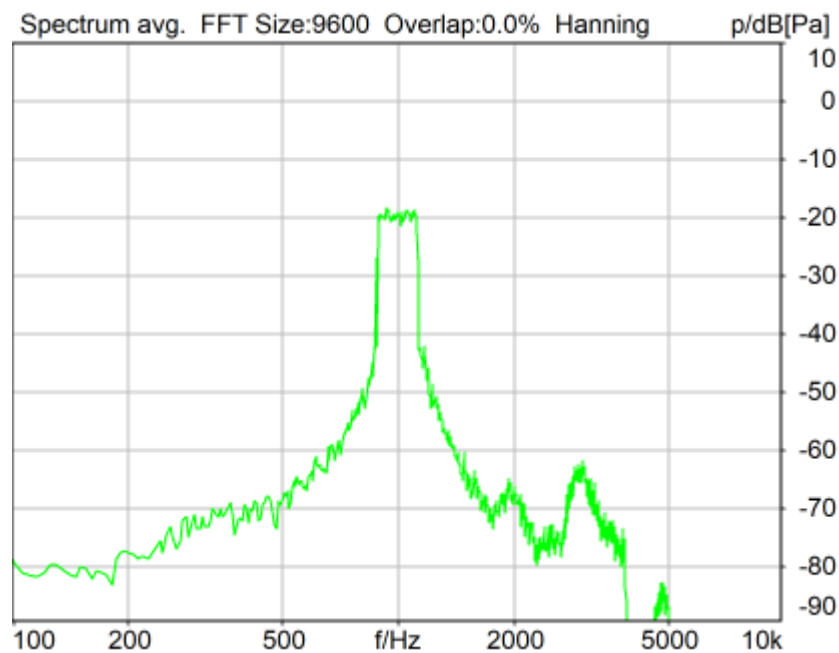
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.62 dB (3.71%) Ok

Ok

2024/1/15 13:31 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_1000hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 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
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Polarisation Voltage200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

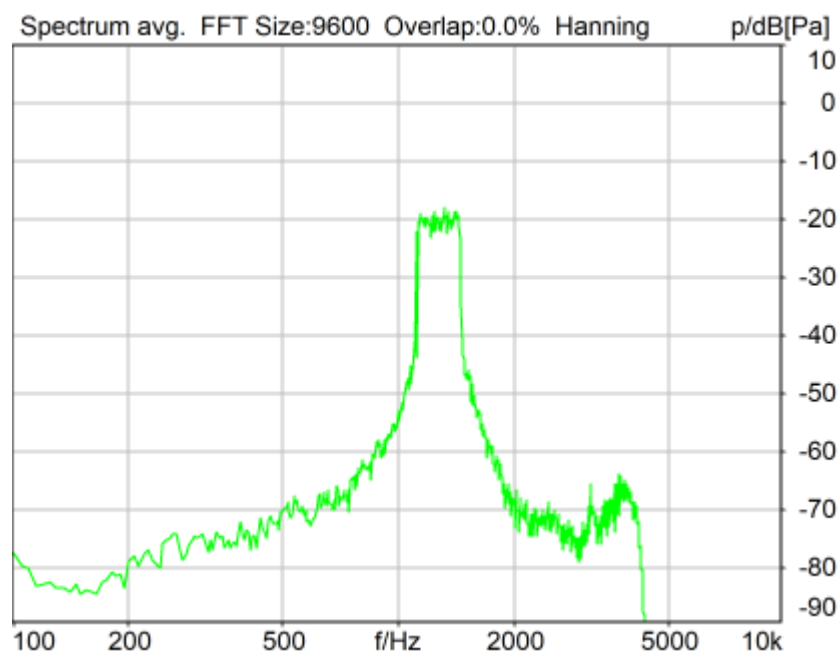
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.36 dB (4.81%) Ok

Ok

2024/1/15 13:31 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_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

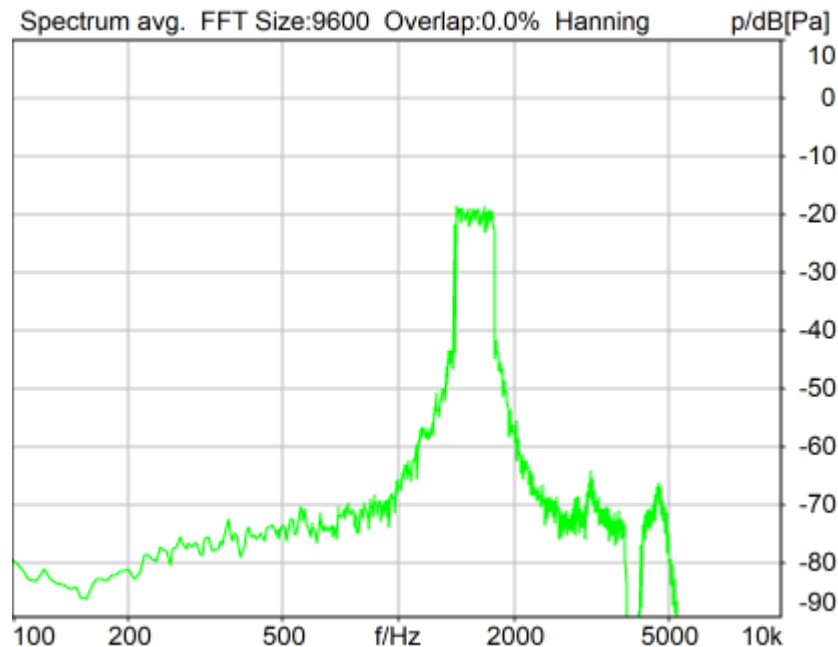
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.61 dB (3.71%) Ok

Ok

2024/1/15 13:31 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_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1600Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

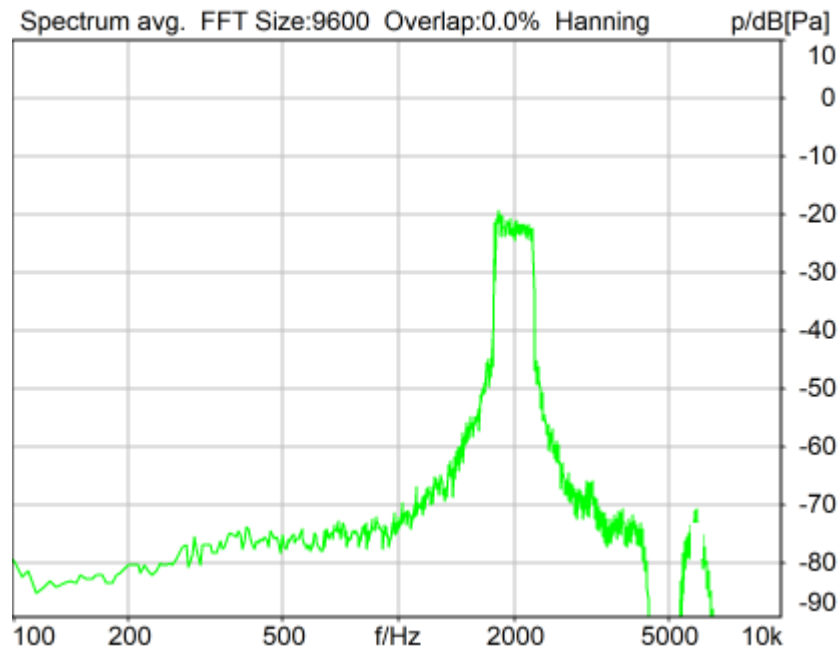
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 2000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.58 dB (4.18%) Ok

Ok

2024/1/15 13:32 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))
 Store to variable RCVNB10_2000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

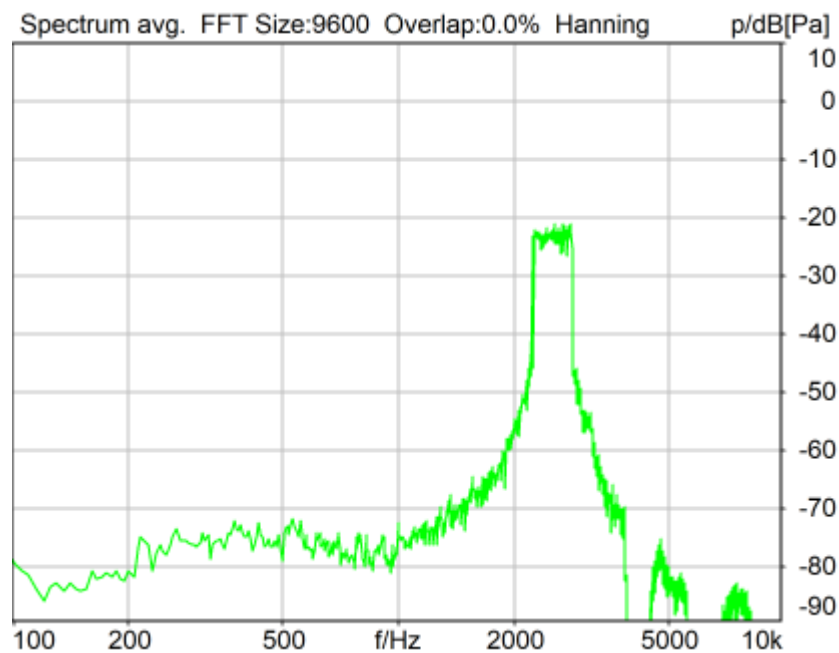
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 27.12 dB (4.40%) Ok

Ok

2024/1/15 13:32 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_2500hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 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 Voltage200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

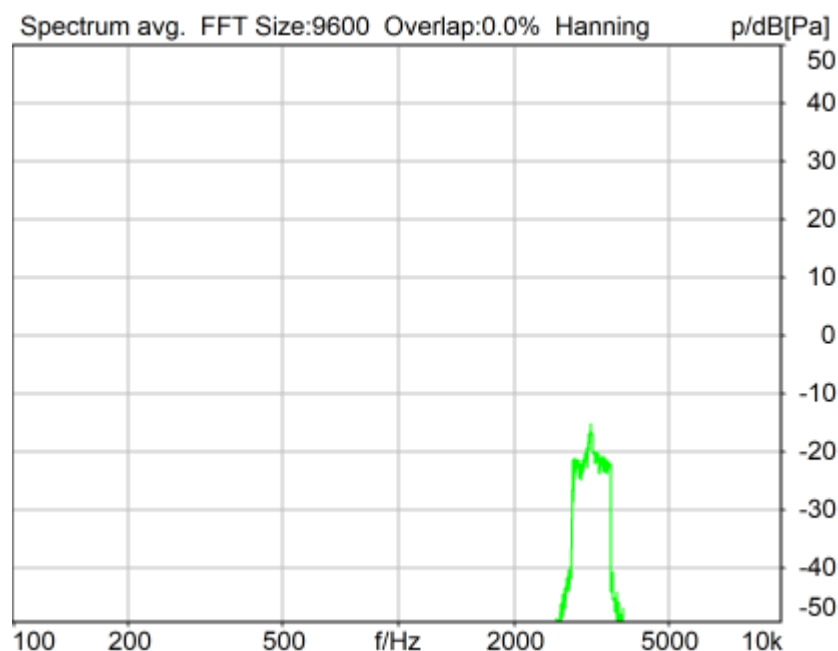
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.50 dB (5.31%) Ok

Ok

2024/1/15 13:33 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_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 193.0000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_3150Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off
Polarisation Voltage200V Supply Voltage ±60V

Channel In 2 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass 20Hz
Polarisation Voltage200V Supply Voltage ±60V

Channel In 3 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off
Polarisation Voltage200V Supply Voltage ±60V

Channel In 4 Settings

Range 114 dB[SPL] @ 12.5 mV/Pa Highpass Off
Polarisation Voltage200V Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name 60020095 Serial 60020095
HIB Mode Mobile Measurement Impedance 32 Ohm
Gain out 1 -40.00 dB Gain out 2 0.00 dB
Gain in 1 0.00 dB Gain in 2 0.00 dB
Mic 1 Power Supply Off Mic 2 Power Supply Off

Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	400Hz	27.58 dB
2	500Hz	28.38 dB
3	630Hz	29.14 dB
4	800Hz	29.98 dB
5	1000Hz	28.62 dB
6	1250Hz	26.36 dB
7	1600Hz	28.61 dB
8	2000Hz	27.58 dB
9	2500Hz	27.12 dB
10	3150Hz	25.50 dB

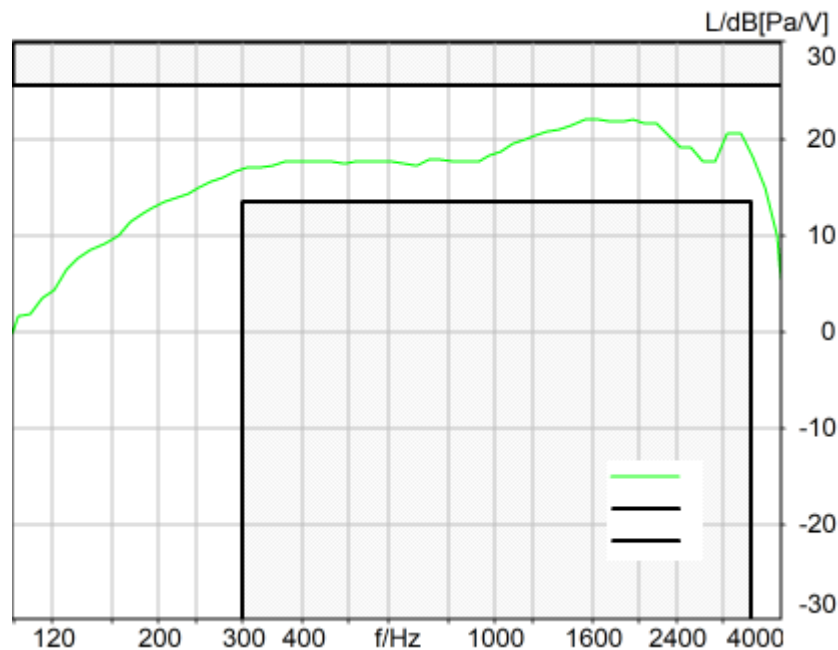
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 25.50dB at 3150Hz.

2024/1/15 13:33 ACQUA

5.3 Frequency Response 8N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance

3.47 dB at 1948.0 Hz Ok

Ok

2024/1/15 13:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.
filtered with 4.0 kHz low-pass filter
signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-3.2 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range 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 203.4000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage200V		Supply Voltage	±60V
Channel In 2 Settings			

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

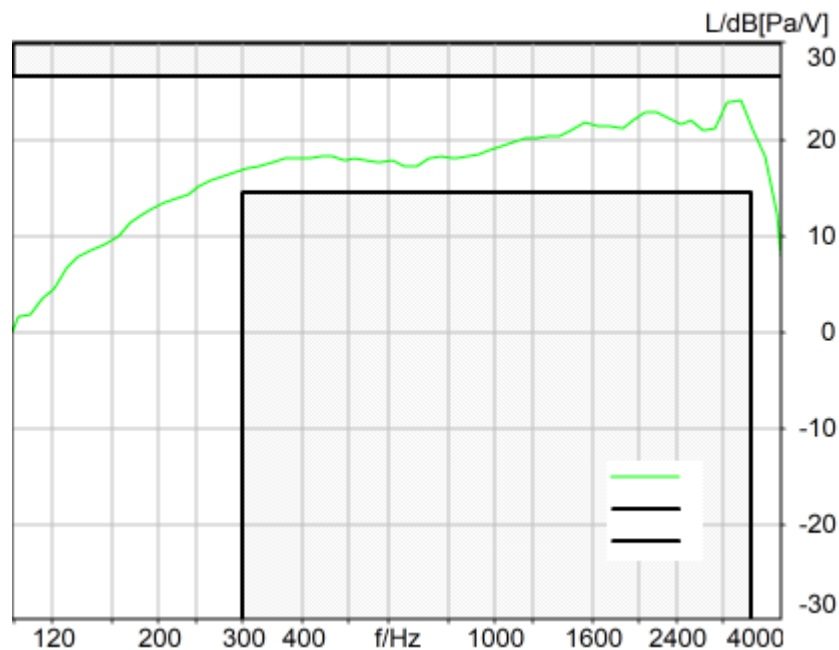
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.3 Frequency Response 8N DF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance

2.42 dB at 3245.6 Hz Ok

Ok

2024/1/15 13:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

		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	-3.2 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 203.4000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

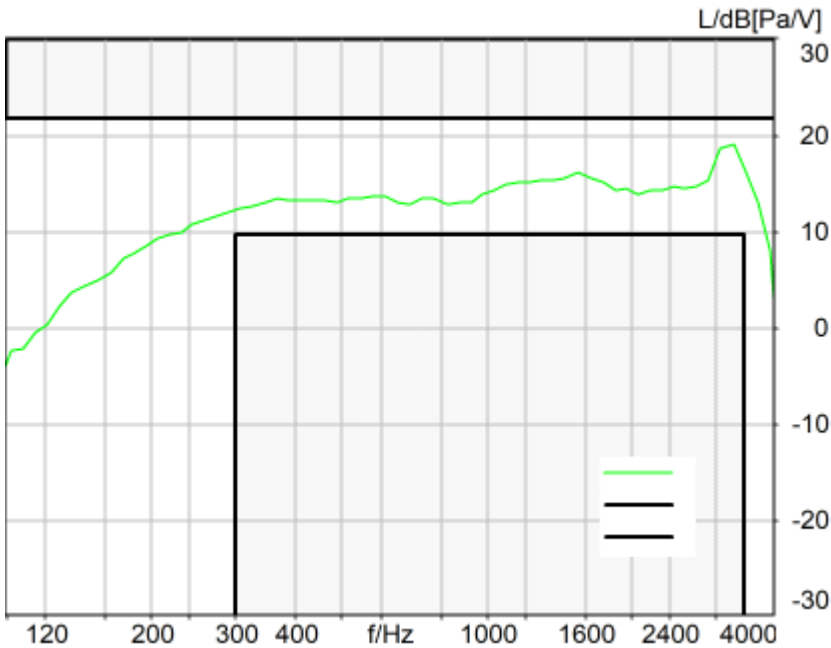
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance
2.76 dB at 3245.6 Hz Ok

Ok

2024/1/15 13:33 ACQUA 5.1.200
Unmodified HEAD acoustics Measurement Descriptor

Limits	
	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the and of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-1.5 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 193.0000 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 $\pm 60V$

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

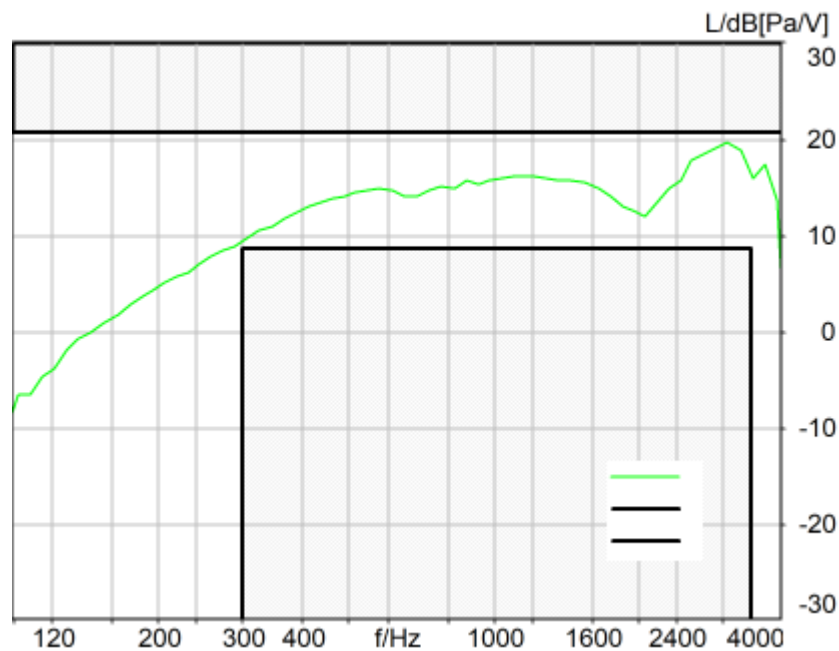
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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

0.99 dB at 3058.6 Hz Ok

Ok

2024/1/10 14:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
--	-------

Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +
Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	0.4 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 2.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	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 213.5000 ms (D_RCV_NB)

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

Measurement Protocol

Measurement Object	WCDMA Band5_AMR NB 12.2lbps_CH4132
Project	HMD_2322#N159V

Project	TIA-5050 (2018-01)
Report Generation Date	2024/3/8 11:01
Responsible Person	audio

Status Overview

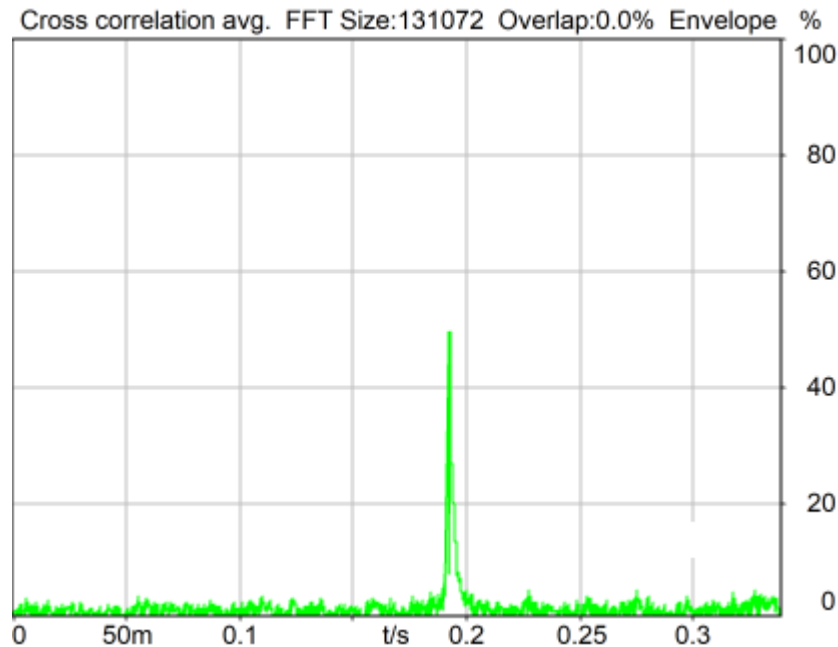
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	192.6	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	18.91	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	14.27	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.51	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.83	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.59	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.15	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.28	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.92	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.33	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.53	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.68	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.72	WCDMA Band5_AMR NB 12.2lbps_CH4132
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	23.72	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.55	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.46	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.40	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.53	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.03	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.54	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.16	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.51	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.12	WCDMA Band5_AMR NB 12.2lbps_CH4132

5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.12	WCDMA Band5_AMR NB 12.2lbps_CH4132
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 3150Hz)	25.12	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.3 Frequency Response 8N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1647.8 Hz	3.56	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.87	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.15	WCDMA Band5_AMR NB 12.2lbps_CH4132
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 689.1 Hz	0.42	WCDMA Band5_AMR NB 12.2lbps_CH4132

Overall Receive Delay NB	5
5.1a Receive Volume Control Performance 8N NB	7
5.1b Receive Volume Control Performance 2N NB	9
5.2 RCV Distortion and Noise - 400 Hz NB	11
5.2 RCV Distortion and Noise - 500 Hz NB	13
5.2 RCV Distortion and Noise - 630 Hz NB	15
5.2 RCV Distortion and Noise - 800 Hz NB	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	27
5.2 RCV Distortion and Noise - 2500 Hz NB	29
5.2 RCV Distortion and Noise - 3150 Hz NB	31
Report - Receive Distortion and Noise (Conversational Gain)	33
5.2 RCV Distortion and Noise - 400 Hz NB	34
5.2 RCV Distortion and Noise - 500 Hz NB	36
5.2 RCV Distortion and Noise - 630 Hz NB	38
5.2 RCV Distortion and Noise - 800 Hz NB	40
5.2 RCV Distortion and Noise - 1000 Hz NB	43
5.2 RCV Distortion and Noise - 1250 Hz NB	45
5.2 RCV Distortion and Noise - 1600 Hz NB	47
5.2 RCV Distortion and Noise - 2000 Hz NB	49
5.2 RCV Distortion and Noise - 2500 Hz NB	52
5.2 RCV Distortion and Noise - 3150 Hz NB	54
Report - Receive Distortion and Noise (Conversational Gain)	56
5.3 Frequency Response 8N FF HANB	57
5.3 Frequency Response 8N DF HANB	59
5.3 Frequency Response 2N FF HANB	61
5.3 Frequency Response 2N DF HANB	64

Overall Receive Delay NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ Preparation - Delay measurement



Delay (Cross): 192.6 ms

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Unmodified HEAD acoustics Measurement Descriptor

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: cssnb1b_r1s.dat

Level adj. Ch1 -90.0 dB

CSSnb1b_R1s.dat - CS-signal with special 1s random noise

NARROWBAND Composite Source Signal RCV P.501 (1 burst) at Channel 2

Pause 0.5 s +

voiced signal + 4000 Hz band limited random noise 1.0 s +

Pause till end of file

Signal level (ch2): -14.7 dBm0 (corresponds to approx. -16.0 dBm0 for a 350 ms CSS considering 101 ms Pause) from 0.5s to 1.544s for 4-k FFT, Hanning window,

75 % overlap in frequency range of 100 to 4000 Hz

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.1: 0.00 dB

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Range start	550.00 ms	Range length	1950.00 ms
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	131072	Overlap	0 %
Window function.	Hanning	Smooth	Off
Delayed channel	None		
Valid range start	-1228.79 ms	Valid range end	1228.81 ms

Special Features

Show source signal Source ch.2 Store to variable D_RCV_NB

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

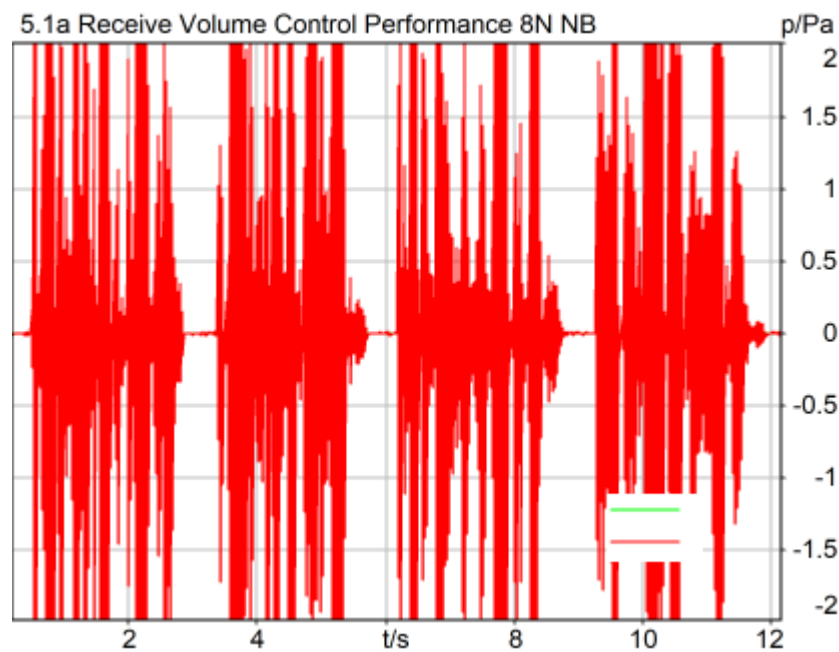
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.1a Receive Volume Control Performance 8N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband

**Correction**

X - 70

Speech Level RCV: 88.91 dB[SPL], Act.: 81.92%

Corrected Speech Level: 18.91 dB[SPL] Ok

Ok

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Limits

	lower
Run 1	18.00 dB20uPa

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Narrow Band	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2
Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

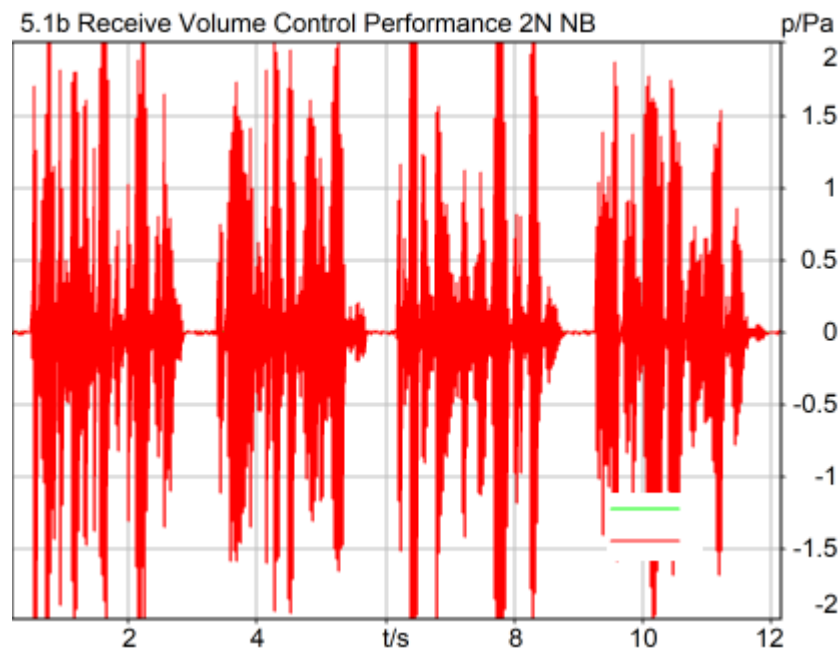
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.1b Receive Volume Control Performance 2N NB

TIA-5050 (2018-01) \ Measurements \ Narrowband

**Correction**

X - 70

Speech Level RCV: 84.27 dB[SPL], Act.: 82.49%

Corrected Speech Level: 14.27 dB[SPL] Ok

Ok

2024/1/15 14:58 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))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	200.00 ms	Range length	12000.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
Bandpass filter	Narrow Band	Margin (15.9dB nom)	
15.90 dB			

Special Features

Show source signal Source ch.2
Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 2 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 3 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V
Channel In 4 Settings			
Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

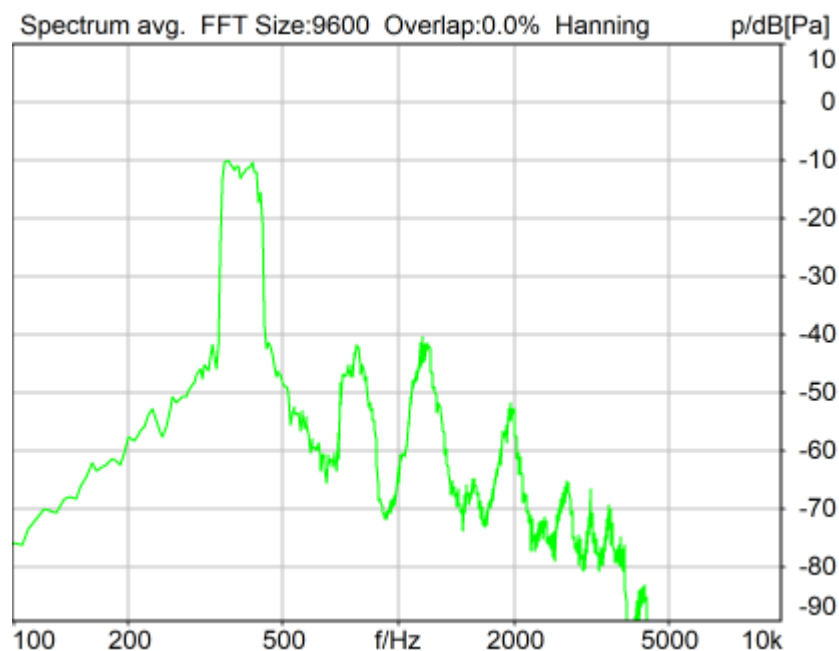
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 400 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.51 dB (4.21%) Ok

Ok

2024/1/15 14:49 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_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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
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Artificial Head Settings (HATS 1 (HMS II.3))

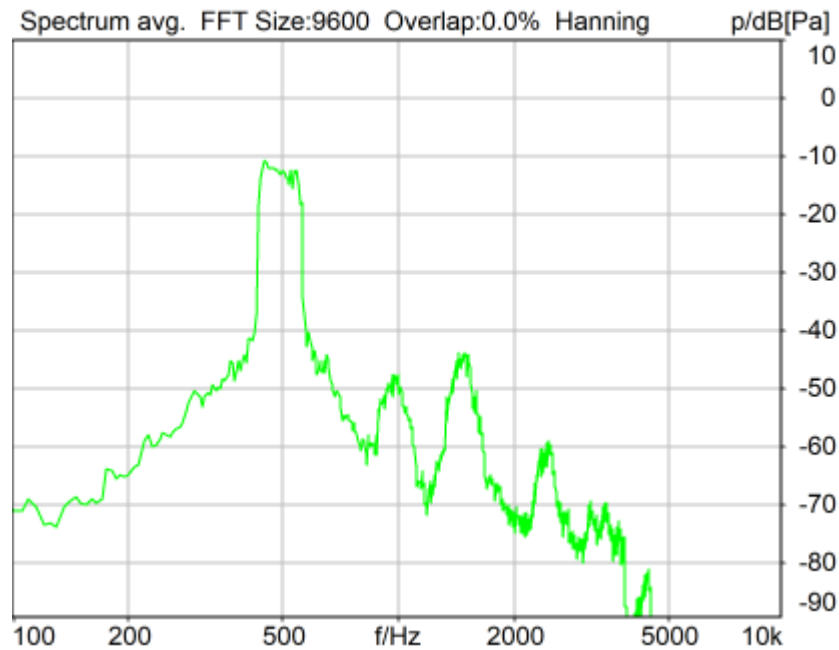
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 27.83 dB (4.06%) Ok

Ok

2024/1/15 14:50 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_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
 Store to variable RCVNB10_500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

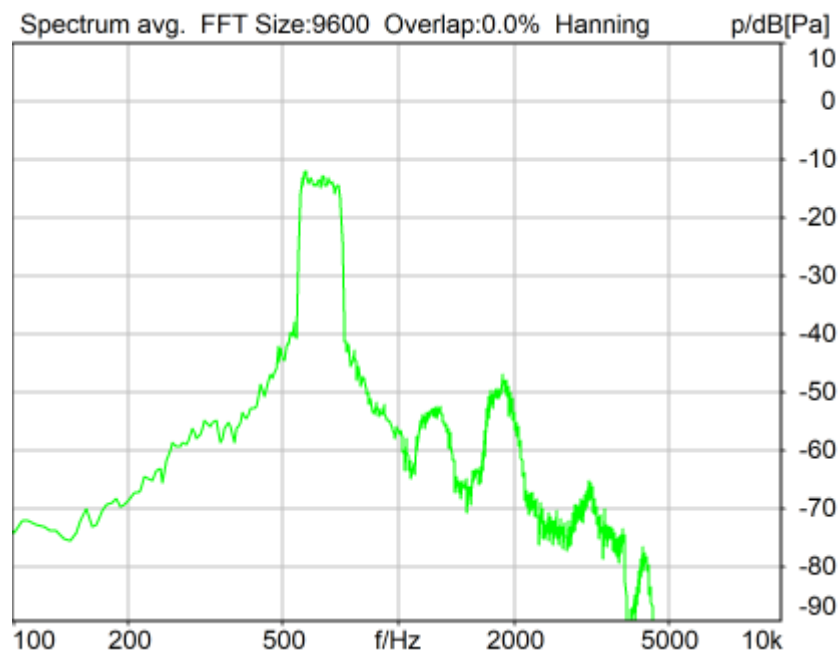
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.59 dB (3.72%) Ok

Ok

2024/1/15 14:50 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_630hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_630Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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Polarisation Voltage200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

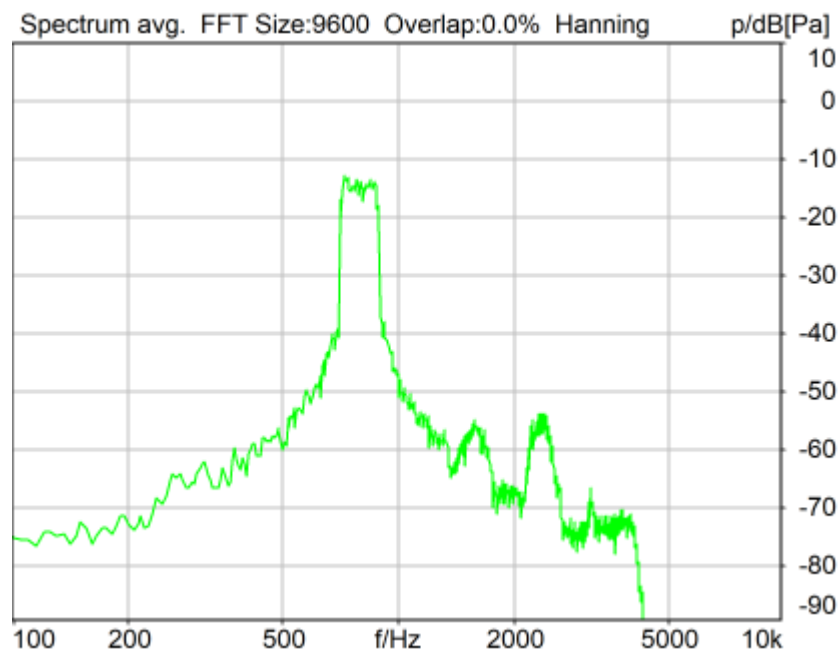
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 29.15 dB (3.49%) Ok

Ok

2024/1/15 14:51 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_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

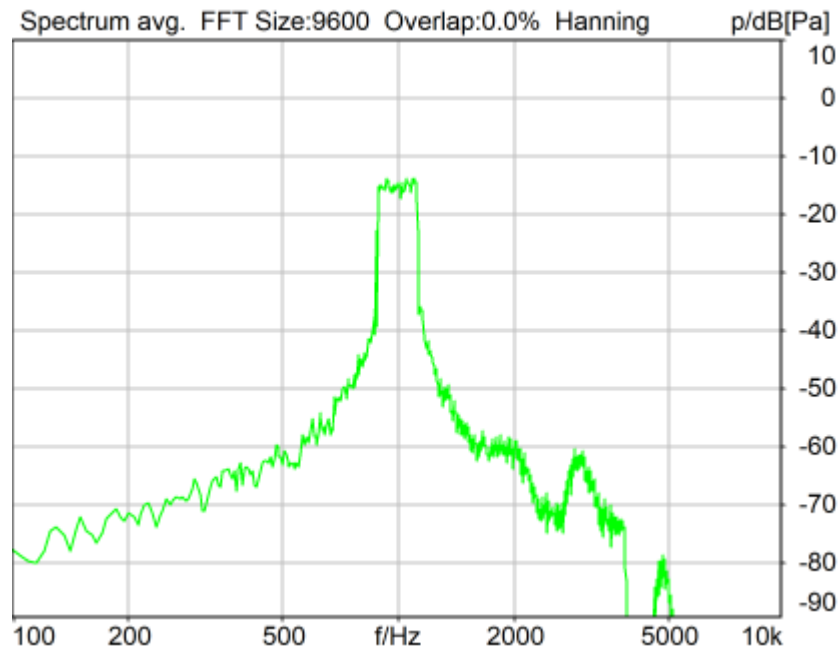
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.28 dB (3.86%) Ok

Ok

2024/1/15 14:51 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_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_1000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

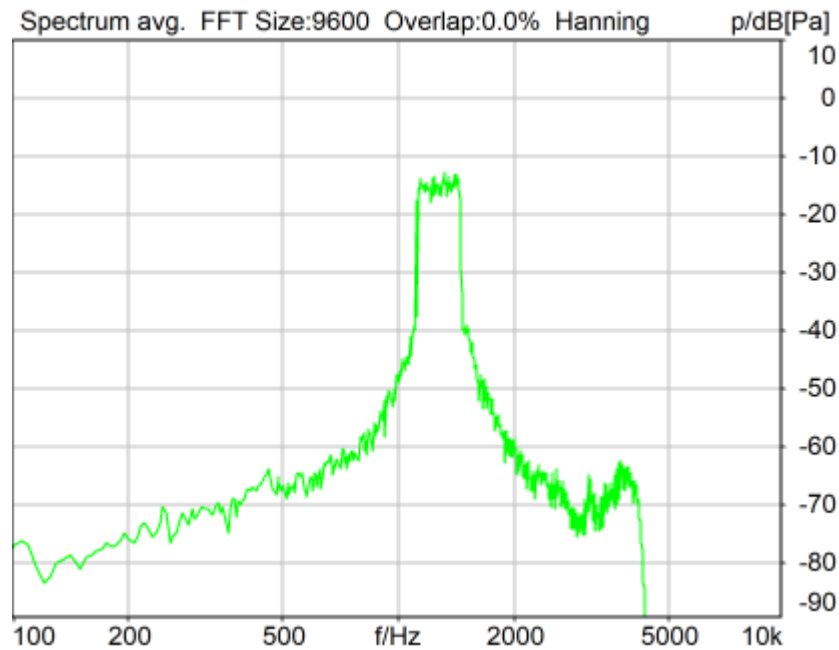
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 25.92 dB (5.06%) Ok

Ok

2024/1/15 14:51 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_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

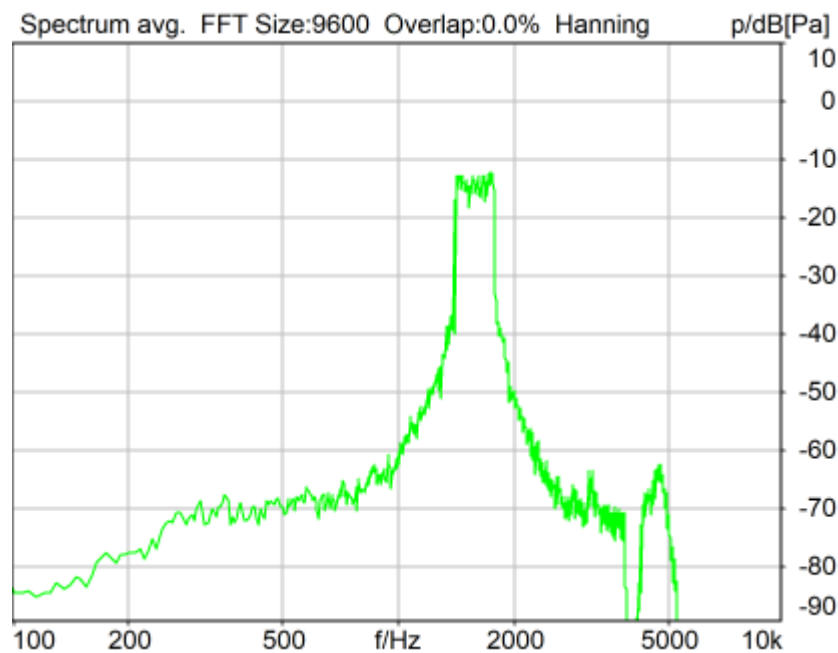
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 28.33 dB (3.83%) Ok

Ok

2024/1/15 14:52 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_1600hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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 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

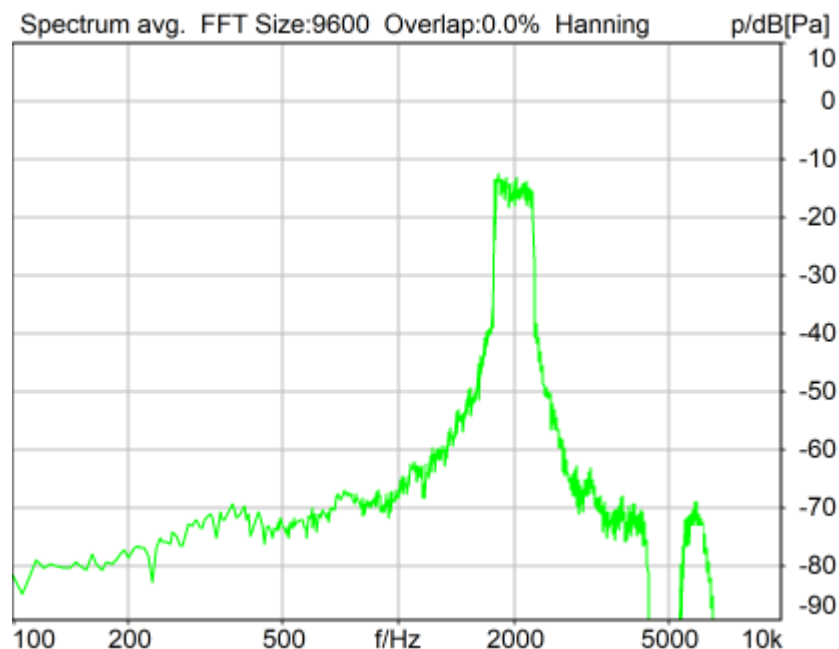
0.00 dB

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 8N



Distortion (Noise) RCV (packed): 28.53 dB (3.75%) Ok

Ok

2024/1/15 14:52 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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
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Artificial Head Settings (HATS 1 (HMS II.3))

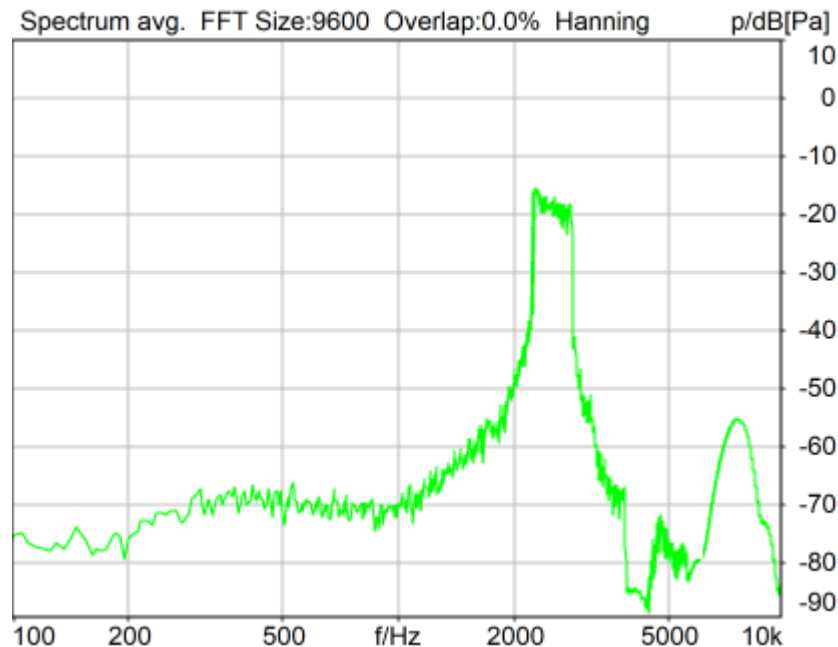
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 2500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 25.68 dB (5.20%) Ok

Ok

2024/1/15 14:53 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_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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
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Artificial Head Settings (HATS 1 (HMS II.3))

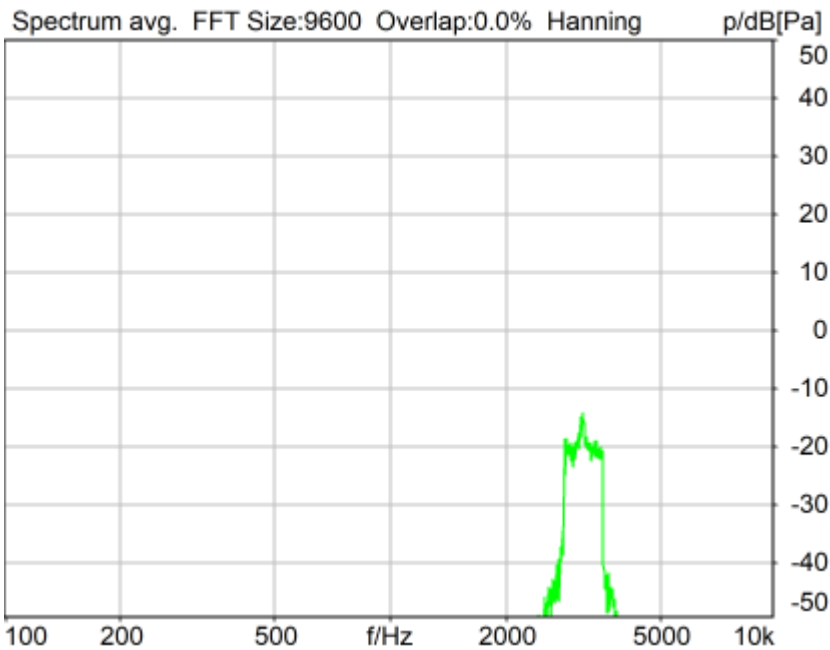
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N



Distortion (Noise) RCV (packed): 23.72 dB (6.51%) Ok

Ok

2024/1/15 14:55 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_3150hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration
Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_3150Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 8N

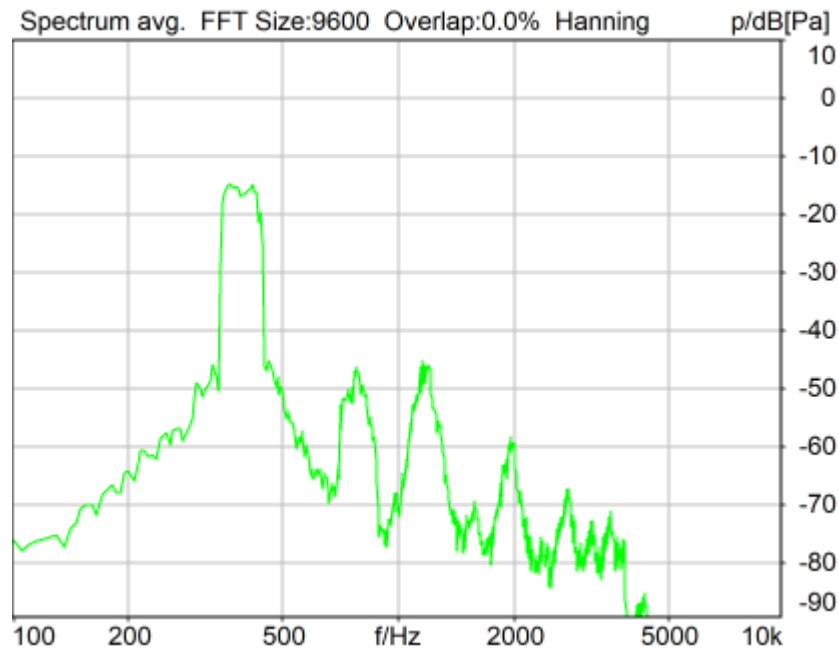
Region	Frequency	SDNR
1	400Hz	27.51 dB
2	500Hz	27.83 dB
3	630Hz	28.59 dB
4	800Hz	29.15 dB
5	1000Hz	28.28 dB
6	1250Hz	25.92 dB
7	1600Hz	28.33 dB
8	2000Hz	28.53 dB
9	2500Hz	25.68 dB
10	3150Hz	23.72 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.72dB at 3150Hz.

2024/1/15 14:56 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): 27.55 dB (4.19%) Ok

Ok

2024/1/15 15:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	20.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_400Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

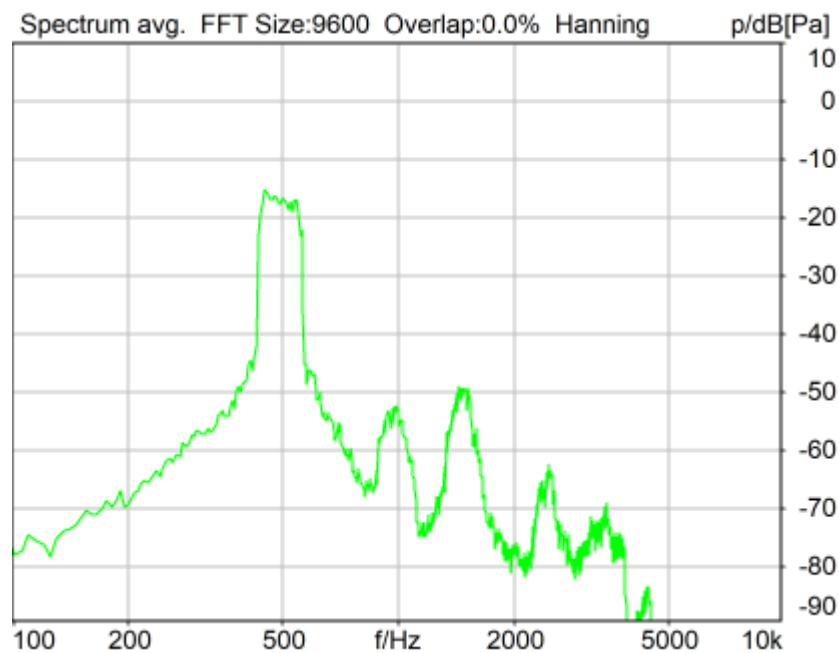
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 500 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.46 dB (3.78%) Ok

Ok

2024/1/15 15:01 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_500hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	410.0 Hz	Stimulus max.	595.0 Hz
Analysis min.	20.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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
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Polarisation Voltage 200V

Supply Voltage $\pm 60V$ -----
BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 630 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.40 dB (3.39%) Ok

Ok

2024/1/15 15:01 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_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	20.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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))

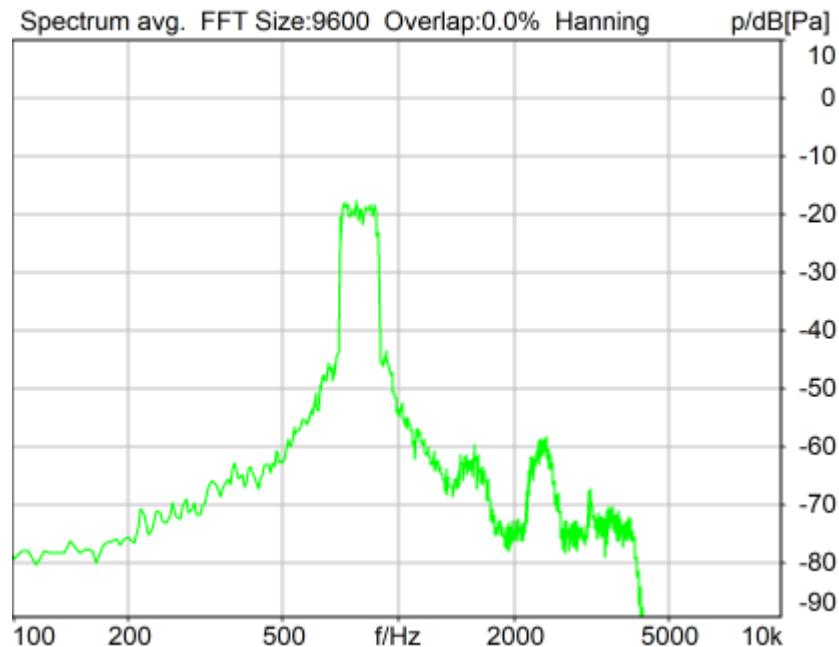
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 800 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.53 dB (3.75%) Ok

Ok

2024/1/15 15:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	675.0 Hz	Stimulus max.	925.0 Hz
Analysis min.	20.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_800Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker

Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

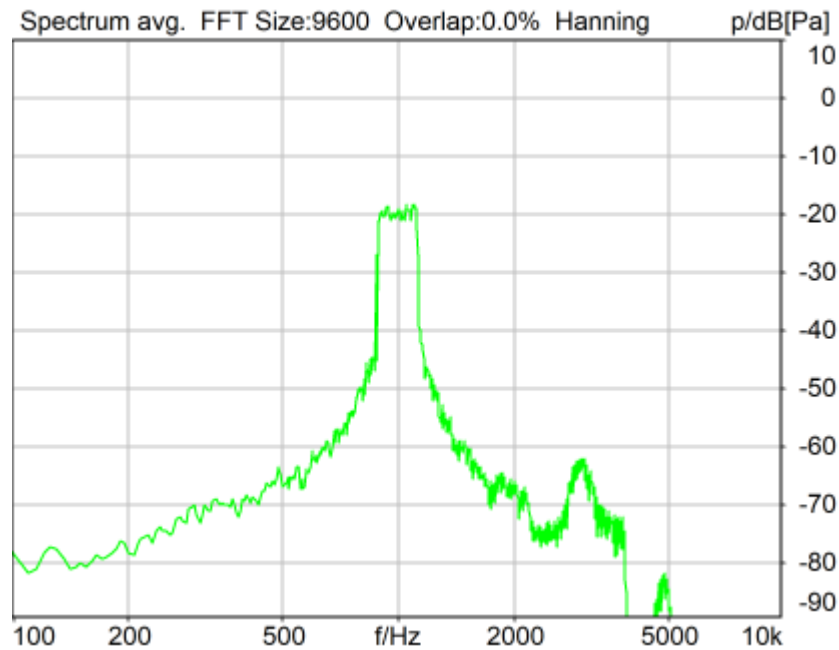
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.2 RCV Distortion and Noise - 1000 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 28.03 dB (3.97%) Ok

Ok

2024/1/15 15:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	20.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_1000Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

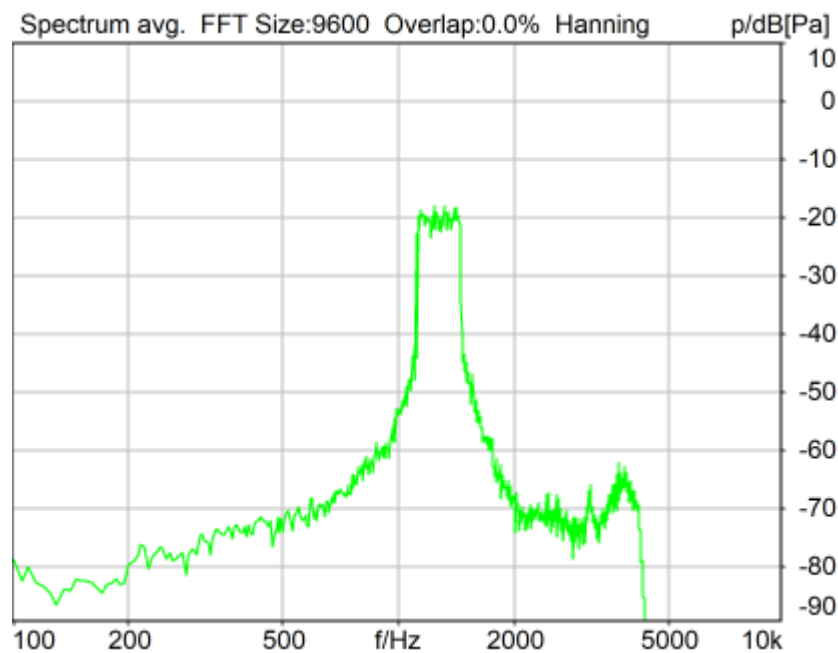
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1250 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 26.54 dB (4.71%) Ok

Ok

2024/1/15 15:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat
Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1250Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
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Polarisation Voltage200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

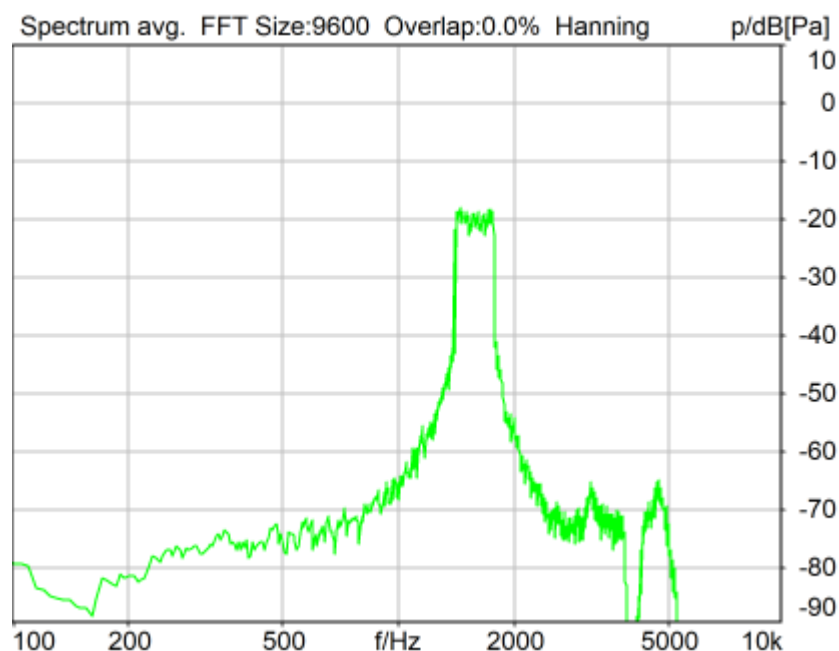
0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 1600 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 29.16 dB (3.48%) Ok

Ok

2024/1/15 15:03 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_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Store to variable RCVNB10_1600Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

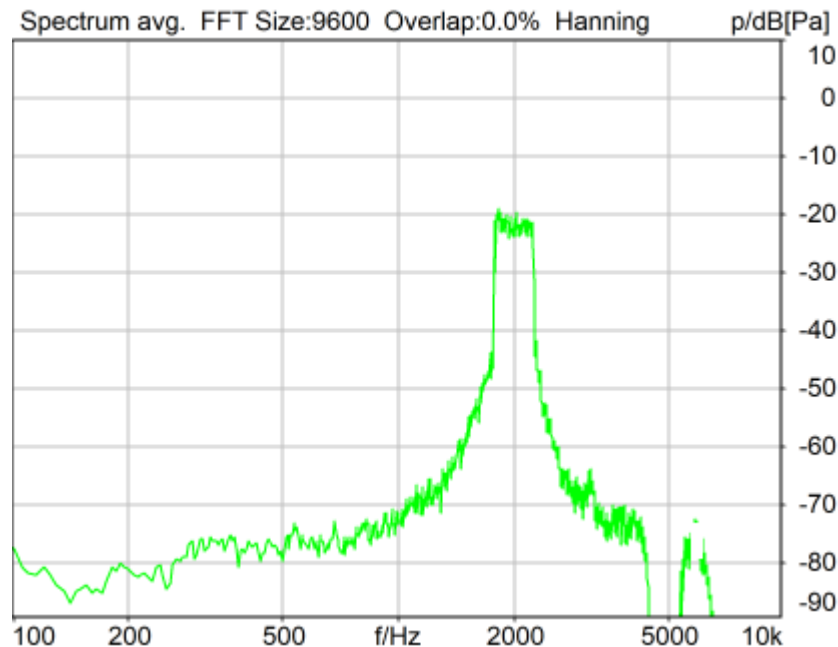
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 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): 27.51 dB (4.21%) Ok

Ok

2024/1/15 15:03 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_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
Ear Type 3.3 Coordinates			

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	20.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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))

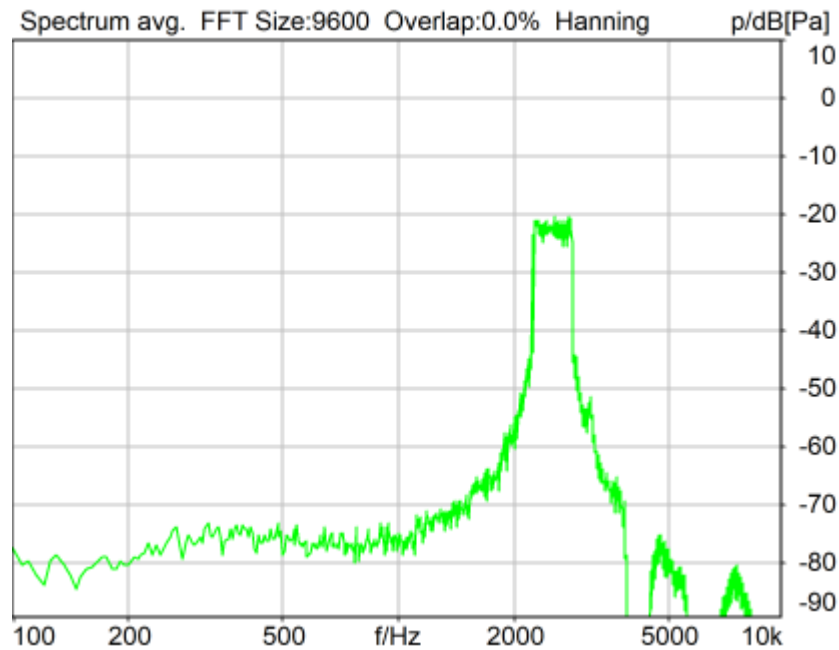
Ser. Nr.	12306613	Pinna Type	Type 3.3
----------	----------	------------	----------

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): 27.12 dB (4.41%) Ok

Ok

2024/1/15 15:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))
Store to variable RCVNB10_2500Hz

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))**Channel In 1 Settings**

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

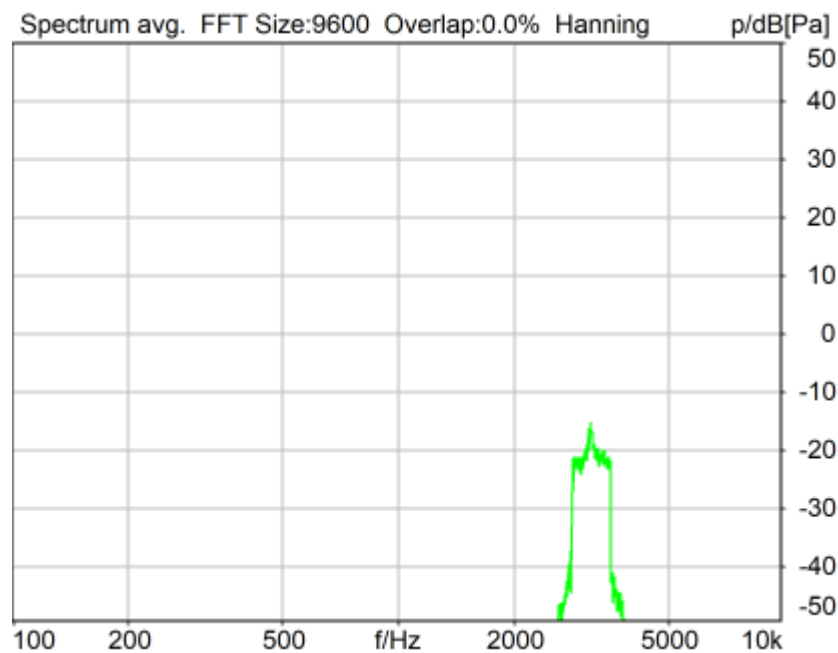
HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm

Gain out 1 -40.00 dB
Gain in 1 0.00 dB
Mic 1 Power Supply Off

Gain out 2 0.00 dB
Gain in 2 0.00 dB
Mic 2 Power Supply Off

5.2 RCV Distortion and Noise - 3150 Hz NB

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N



Distortion (Noise) RCV (packed): 25.12 dB (5.54%) Ok

Ok

2024/1/15 15:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	2785.0 Hz	Stimulus max.	3585.0 Hz
Analysis min.	20.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	20000.0 Hz

Special Features

Compensate delay 192.6000 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
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Polarisation Voltage 200V

Supply Voltage ±60V

BEQ Settings (BEQ Filter 1)Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr. 12306613

Pinna Type

Type 3.3

HIB Settings

HIB Name 60020095

Serial

60020095

HIB Mode Mobile Measurement

Impedance

32 Ohm

Gain out 1 -40.00 dB

Gain out 2

0.00 dB

Gain in 1 0.00 dB

Gain in 2

0.00 dB

Mic 1 Power Supply Off

Mic 2 Power Supply Off

Report - Receive Distortion and Noise (Conversational Gain)

TIA-5050 (2018-01) \ Measurements \ Narrowband \ 5.2 Receive Distortion and Noise 2N

Region	Frequency	SDNR
1	400Hz	27.55 dB
2	500Hz	28.46 dB
3	630Hz	29.40 dB
4	800Hz	28.53 dB
5	1000Hz	28.03 dB
6	1250Hz	26.54 dB
7	1600Hz	29.16 dB
8	2000Hz	27.51 dB
9	2500Hz	27.12 dB
10	3150Hz	25.12 dB

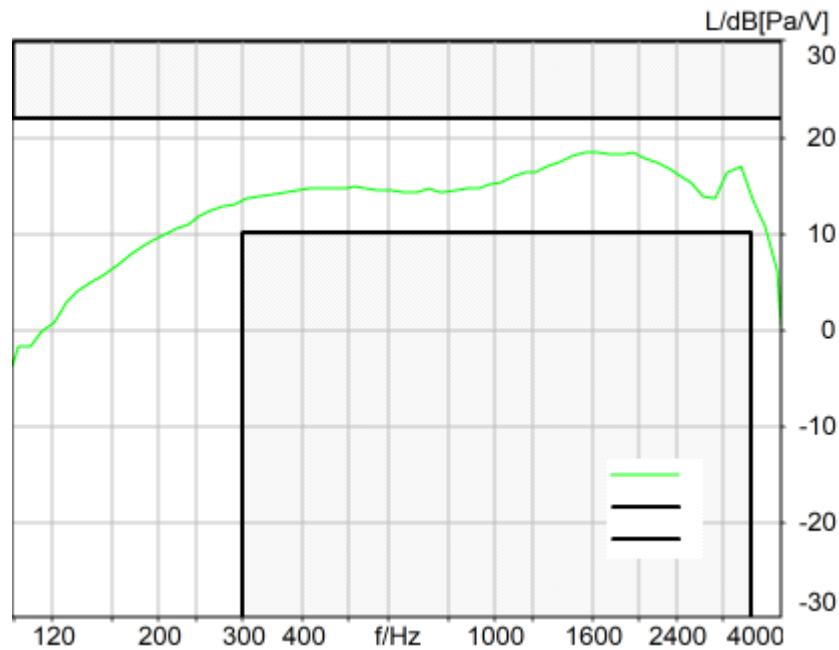
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 25.12dB at 3150Hz.

2024/1/15 15:05 ACQUA

5.3 Frequency Response 8N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance
3.56 dB at 1647.8 Hz Ok

Ok

2024/1/15 14:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: respmaleieee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 8.0 N, Force reached: 8.0 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range 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 213.5000 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 $\pm 60V$

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

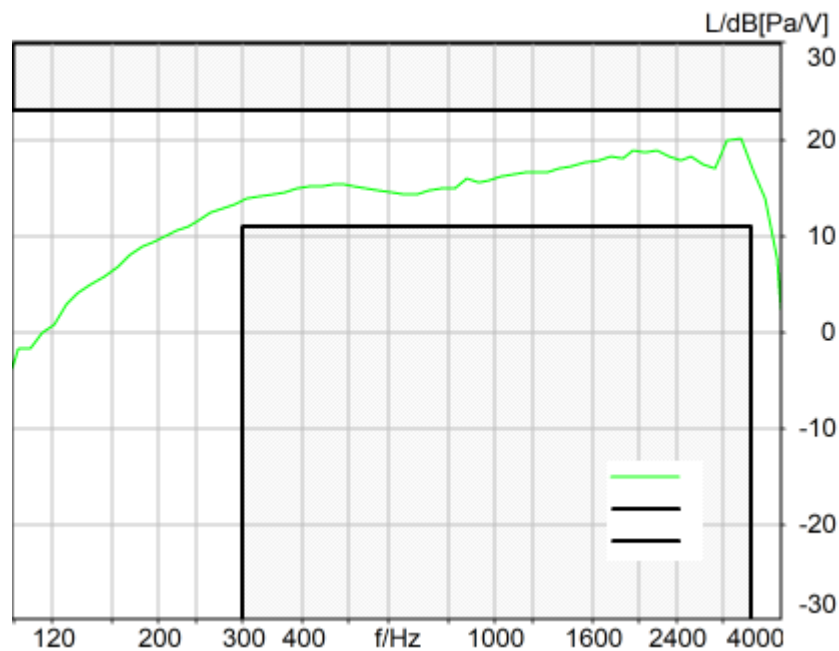
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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

2.87 dB at 3245.6 Hz Ok

Ok

2024/1/15 14:45 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
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Run 1	Fit into tolerance
-------	--------------------

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-4.0 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 8.0 N, Force reached: 8.1 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 213.5000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
-------------	---------	-------------	---------

Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
------------	--------

Artificial Head Settings (HATS 1 (HMS II.3))

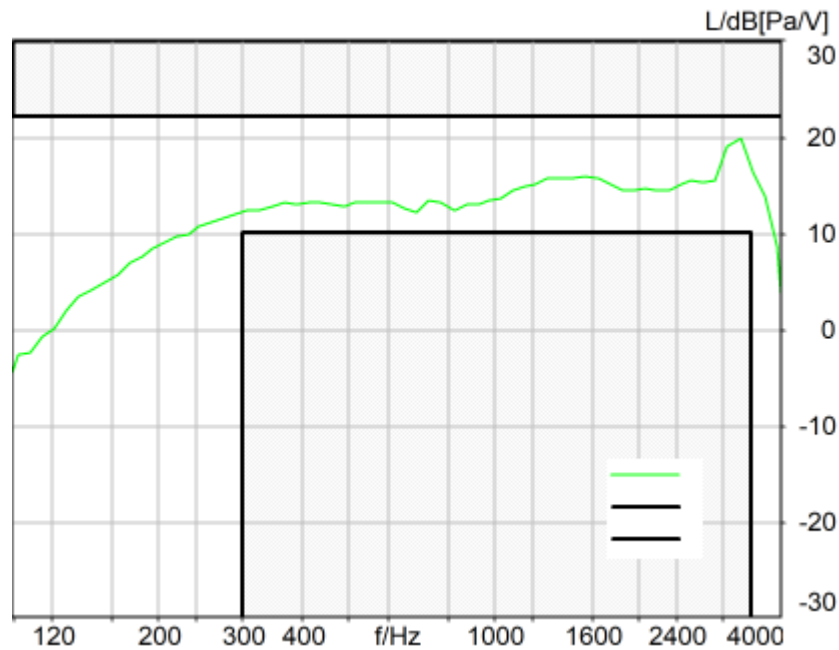
Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 dB
Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off

5.3 Frequency Response 2N FF HANB

TIA-5050 (2018-01) \ Measurements \ Narrowband



Absolute minimal distance
2.15 dB at 3245.6 Hz Ok

Ok

2024/1/15 15:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)

Database Version: 40_HAC_Suite_Rev03

Source: respmaleieee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))
Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Ym	-0.6 mm	Delta B	0.0 °
		Ear Type 3.3 Coordinates	

Mounting: Right Ear
Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 192.6000 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 $\pm 60V$

BEQ Settings (BEQ Filter 1)
Block mode Bypass

Artificial Head Settings (HATS 1 (HMS II.3))

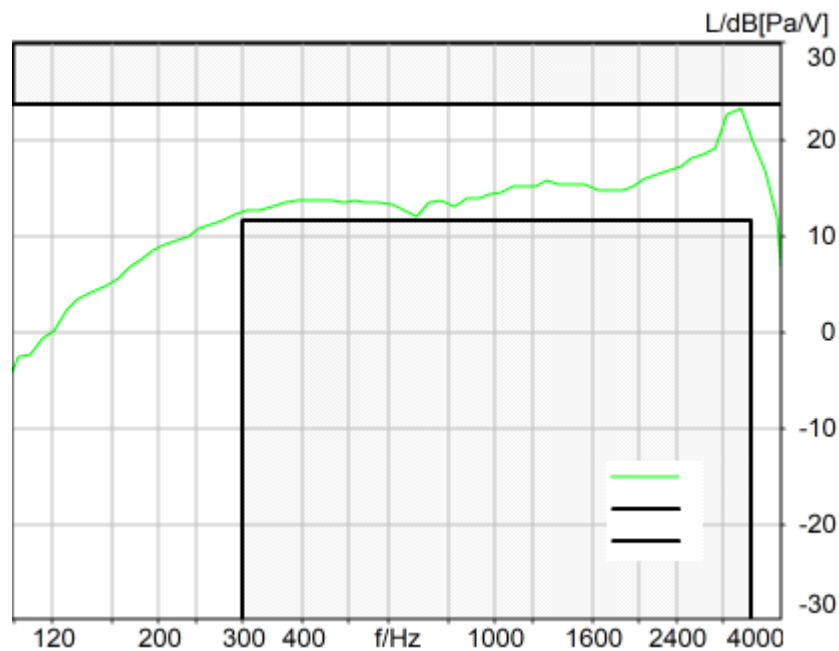
Ser. Nr. 12306613 Pinna Type Type 3.3

HIB Settings

HIB Name	60020095	Serial	60020095
HIB Mode	Mobile Measurement	Impedance	32 Ohm
Gain out 1	-40.00 dB	Gain out 2	0.00 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

0.42 dB at 689.1 Hz Ok

Ok

2024/1/15 15:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
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Run 1	Fit into tolerance
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Meas. Setting off

Underlying Standard: TIA-5050 (2018-01)
Database Version: 40_HAC_Suite_Rev03

Source: respmaleieeee269_nb_r16.dat

Level adj. Ch1 -90.0 dB Level adj. Ch2 -4.0 dB

NARROWBAND IEEE-269-2010 Real Speech Signal at Channel 2

Pause 0.5 s +

Real Speech (english, male speaker) 11.5 s, Active Speech Level: -16 dBm0, margin 15.9 dB +

Pause till end of file

Signal level (ch1): -16 dBm0 Active Speech Level, margin 15.9 dB

Signal taken from "IEEE_269-2010_Male_mono_48_kHz.wav"

Alteration:

0.2 s Pause added at the beginning of the file.

0.8 s Pause added at the end of the file.

filtered with 4.0 kHz low-pass filter

signal level changed

Calibration

Input ch.2: 0.49 dB 2023/11/1 (HATS 1 (HMS II.3))

Output ch.2: 0.00 dB 2023/6/27 (Radio Tester 1 (CMW500))

HHP IV Settings (Setting: STD:(0,0,0) rel AHP)

MECRP Delta Ye	0.0 mm	Rotation Delta A	0.0 °
MECRP Delta Ze	0.0 mm	Rotation Delta C	0.0 °
Delta Xe	0.0 mm	Rotation Delta B	5.0 °
Delta Ye	0.0 mm	Delta A	0.0 °
Delta Ze	0.0 mm	Delta C	0.0 °
Delta B	0.0 mm	Delta B	0.0 °
Ym	-0.6 mm	Ear Type 3.3 Coordinates	

Mounting: Right Ear

Force to apply: 2.0 N, Force reached: 1.9 N

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 1 (HMS II.3)

Analysis

Direction	Out 2 -> In 2		
Range start	500.00 ms	Range length	11500.00 ms
Use FIR Filter	Ch2	FIR filter	drp2df_ieeee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	4096	Overlap	75 %
Window function.	Hanning		
Reference file	r521_rcv_frq_spee269_hanb.fft		
Tol. scheme file	521_rcv_frq_man_hanb.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	Centrate	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 192.6000 ms (D_RCV_NB, Delay (Cross))

Hardware Config Settings

Used Setting HEAD 2G3G labCORE NetSim

labCORE Settings

labCORE Serial	77000207	Nickname	
Firmware	3.4.17	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. (Slot 10) 1 -> HATS 1 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 2 -> Radio Tester 1 (CMW500) In
In Channel 1 <- Analog In 1/2 In 1 <- Radio Tester 1 (CMW500) Out
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. (Slot 6) In 2 <- HATS 1 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Ch. 0 Float	On
Range Ch. 2	0.00 dB	Ch. 1 Float	On

Analog Out Mainboard Settings (Analog Out 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Microphone Settings (Mic Amp. (Slot 6))

Channel In 1 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 2 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	20Hz
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 3 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

Channel In 4 Settings

Range	114 dB[SPL] @ 12.5 mV/Pa	Highpass	Off
Polarisation Voltage	200V	Supply Voltage	±60V

BEQ Settings (BEQ Filter 1)

Block mode	Bypass
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Artificial Head Settings (HATS 1 (HMS II.3))

Ser. Nr.	12306613	Pinna Type	Type 3.3
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HIB Settings

HIB Name	60020095	Serial	60020095
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Gain in 1	0.00 dB	Gain in 2	0.00 dB
Mic 1 Power Supply	Off	Mic 2 Power Supply	Off