

Measurement Protocol

Measurement Object	23T04Z80629 VoLTE EVS
Description	FCC Volume control
Model Name	B160V
Sample Number	UT78a
IMEI	356197680005216
Test Band	VoLTE Band2
Test Date	20231213-202318
Tester	Zhu Hongye
Test System (ACQUA System)	ACQUA V5.1.200,CMW500 (SN:170430),Labcore (SN:77000136)
HATS Type	HEAD HATS (HMS II.3, SN: 12306194(torso13740182))(0,0,5)
Environment	Temp.15~35 'C, 20~75%RH, Acoustic Chamber
Location	The NO.52 of Huayuan North Road

Project	TIA 5050 v1
Report Generation Date	2023/12/18 16:57
Responsible Person	STA

Status Overview

SMD	Status	Single Value Description	Single Value	Object
5.1 Receive Volume Control Performance 8N QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Speech Level [dB[SPL]]	84.82	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 8N QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Ok	Calculated Value [dB]	14.82	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	25.91	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	21.71	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	25.35	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	24.20	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	32.48	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	29.92	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.45	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.47	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	32.36	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Done	Distortion (Noise) [dB], 0.0 dB	27.93	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise	Ok			23T04Z80629 VoLTE EVS

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7				
5.3 Receive Acoustic Frequency response Performance QPSK, RB Size=1, RB Offset=0; Table-2; Table-7	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	2.44	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 8N Table-7	Done	Speech Level [dB[SPL]]	83.91	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 8N Table-7	Ok	Calculated Value [dB]	13.91	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 250 WOnly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	27.38	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 315Hz WOnly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	26.34	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	36.12	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.46	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	36.23	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	36.47	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.58	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	31.99	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	38.29	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	38.41	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	34.40	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.02	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 4000Hz WOnly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	32.98	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 5000Hz WOnly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	34.49	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and	Ok			23T04Z80629

noise Table-7				VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-7	Ok	Min. dist. to tolerance scheme [dB], 205.7 Hz	2.75	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 2N Table-7	Done	Speech Level [dB[SPL]]	80.90	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 2N Table-7	Ok	Calculated Value [dB]	10.90	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	26.88	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	26.41	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	25.40	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	23.46	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.27	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	30.09	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.26	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	34.86	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	29.99	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	29.59	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-7	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-7	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	3.46	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 2N Table-7	Done	Speech Level [dB[SPL]]	80.52	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 2N Table-7	Ok	Calculated Value [dB]	10.52	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 250 WBoNly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	28.26	23T04Z80629 VoLTE EVS

Receive path - distortion and noise 315Hz WBonly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	28.33	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 4000Hz WBonly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.84	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	36.34	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.92	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	36.77	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	37.35	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.28	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	32.08	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	37.55	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	37.48	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	35.17	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.13	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 5000Hz WBonly Table-7	Done	Distortion (Noise) [dB], 0.0 dB	33.09	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-7	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-7	Ok	Min. dist. to tolerance scheme [dB], 205.7 Hz	1.64	23T04Z80629 VoLTE EVS

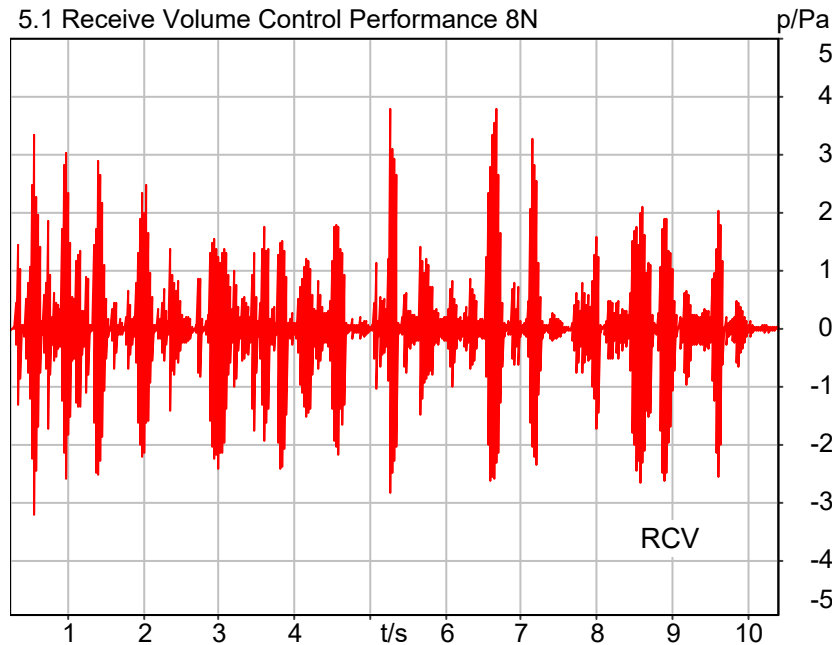
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Receive path - distortion and noise 1250Hz WB&NB.....	114
Receive path - distortion and noise 1600Hz WB&NB.....	116
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5.1 Receive Volume Control Performance 8N

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Speech Level RCV: 84.82 dB[SPL], Act.: 92.96%

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Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_nb.dat

Level adj. Ch1 -90.0 dB

Level adj. Ch2 -4.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms Range length 10200.00 ms

Bandpass filter Narrow Band Margin (15.9dB nom) 15.90 dB

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))

Store to variable rcv_vol_nb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1.1 -1 Conversation Gain 8N

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB
QPSK, RB Size=1, RB Offset=0; Table-2; Table-7

Correction

rcv_vol_nb	84.820 dB[SPL]	2023/12/17	Measured	5.1 Receive Volume Control Performance 8N
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rcv_vol_nb-70

Calculated Value: 14.82 dB Ok

Ok

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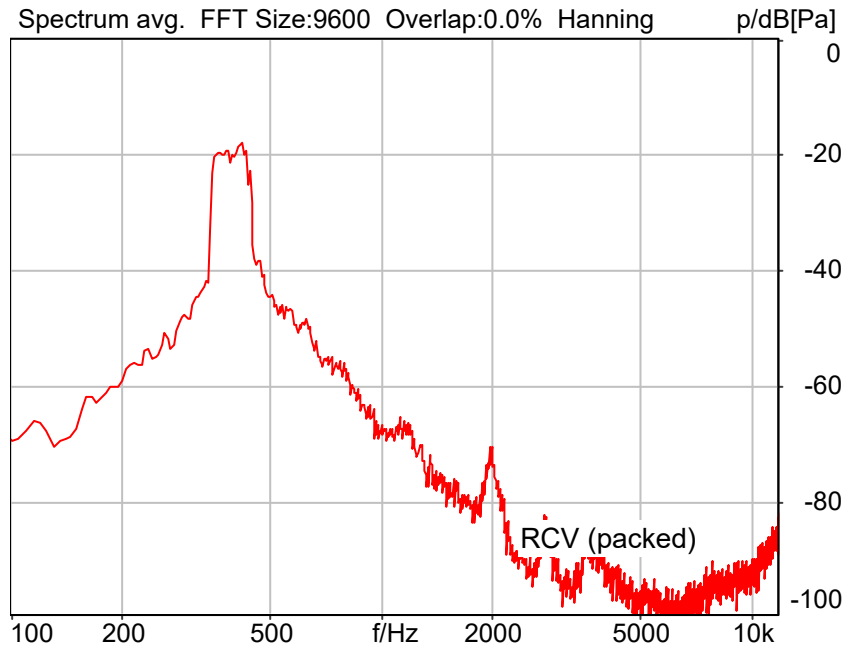
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 400Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 25.91 dB (5.06%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	320.0 Hz
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	100.0 Hz	Analysis min.	100.0 Hz
Analysis (2) min.	485.0 Hz	Analysis max.	315.0 Hz
		Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO26_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

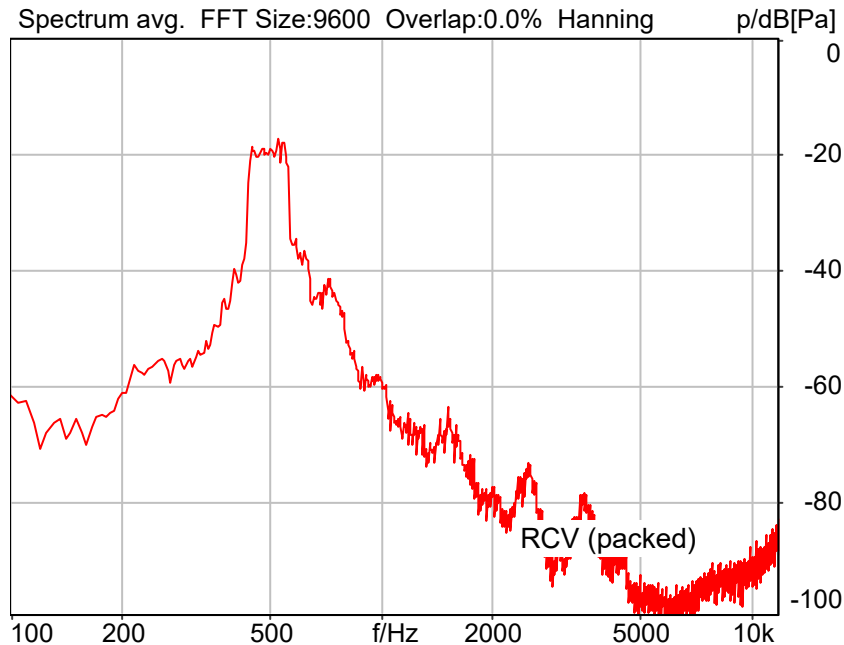
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 500Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 21.71 dB (8.21%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO27_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

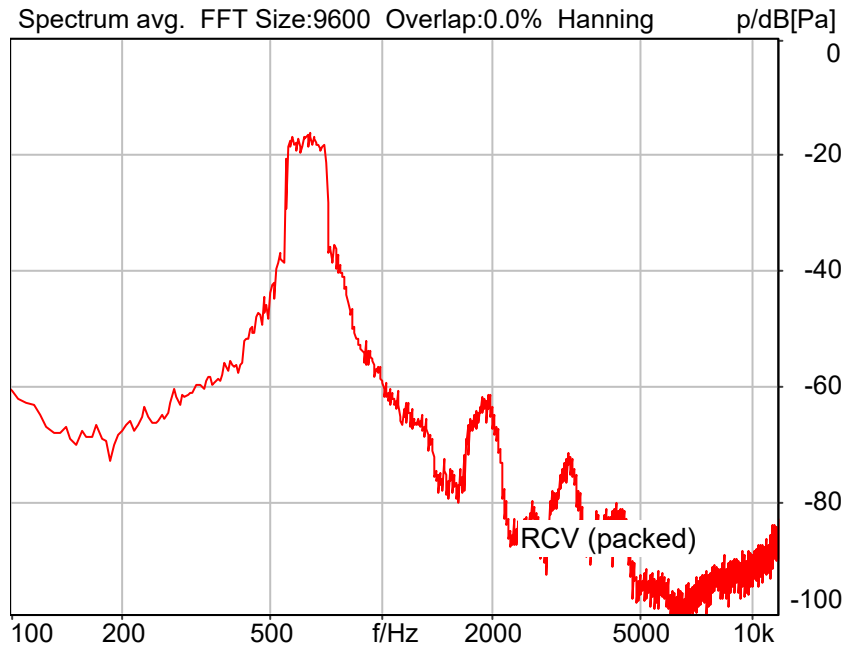
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 630Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 25.35 dB (5.40%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	525.0 Hz
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	100.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO28_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

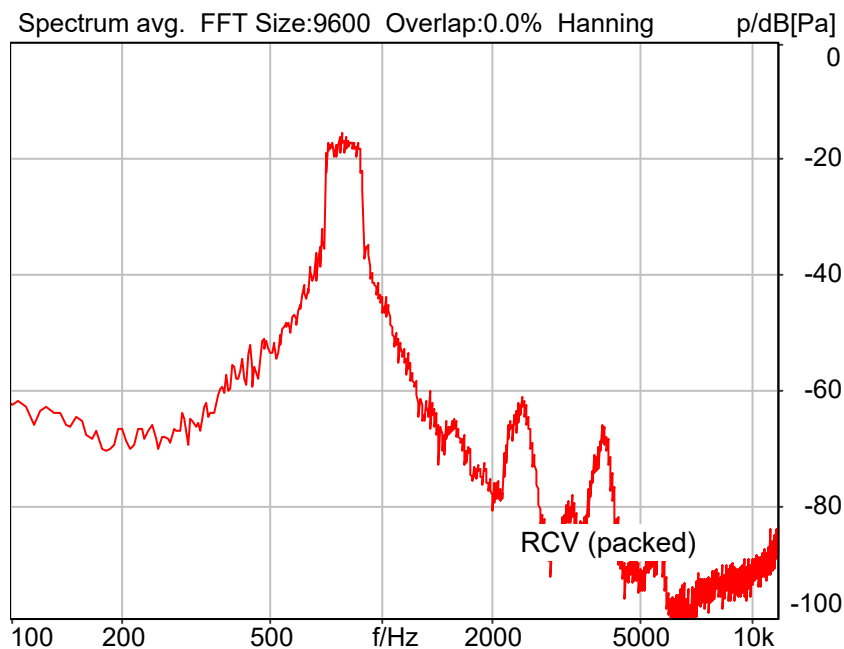
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 800Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 24.20 dB (6.17%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO29_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

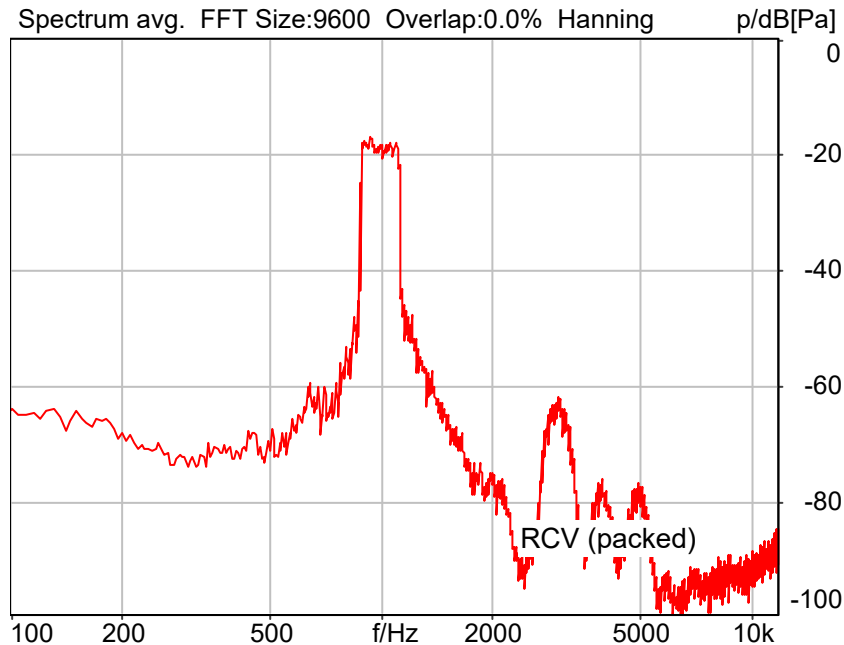
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1000Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 32.48 dB (2.38%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	855.0 Hz
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	100.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO30_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

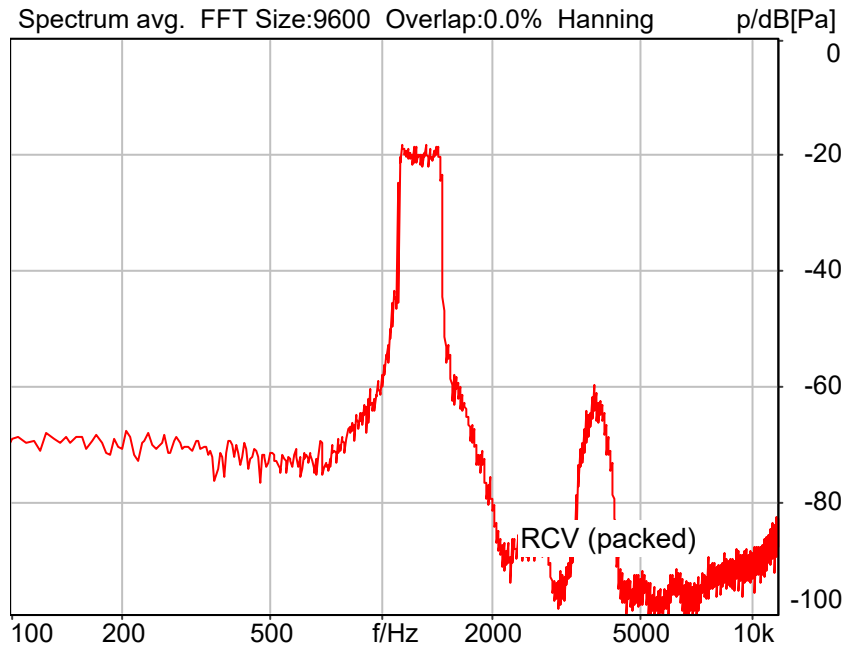
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1250Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 29.92 dB (3.19%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO31_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

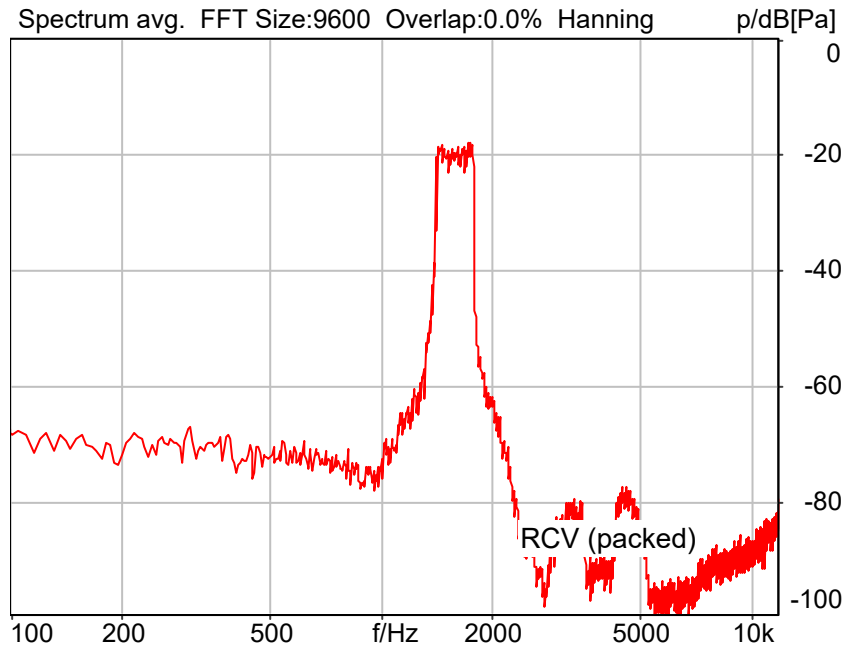
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1600Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 35.45 dB (1.69%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO32_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

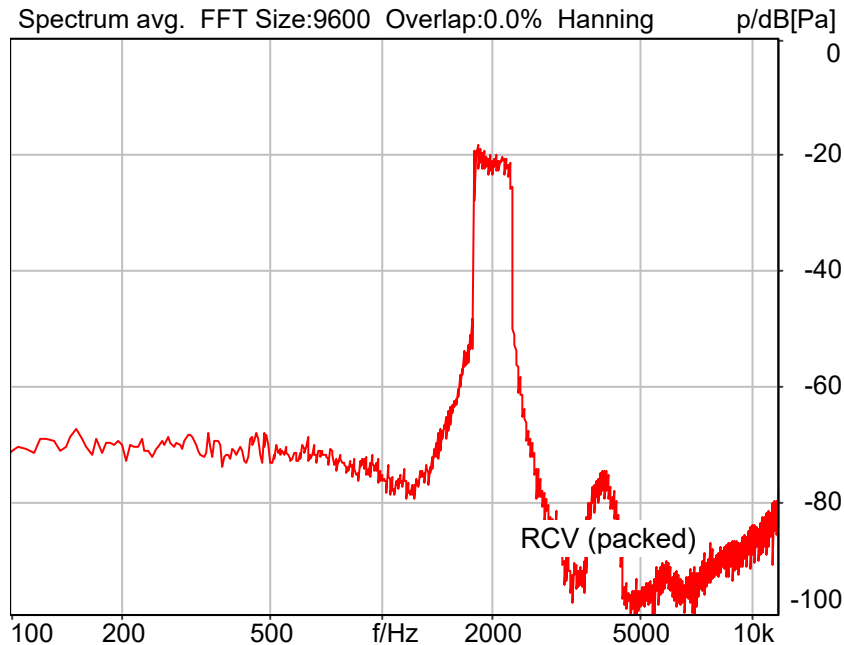
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2000Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 35.47 dB (1.69%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO33_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

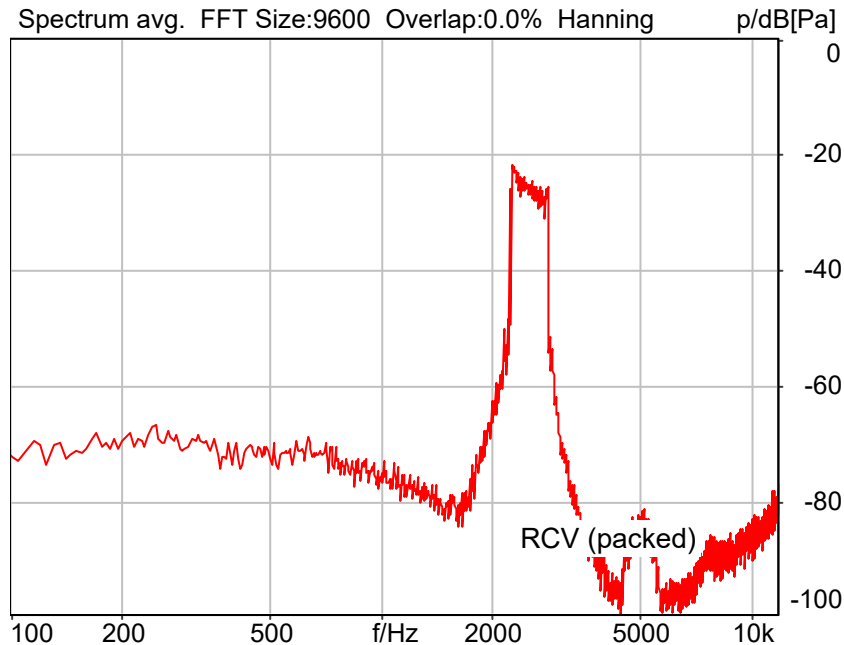
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2500Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Distortion (Noise) RCV (packed): 32.36 dB (2.41%)

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO34_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

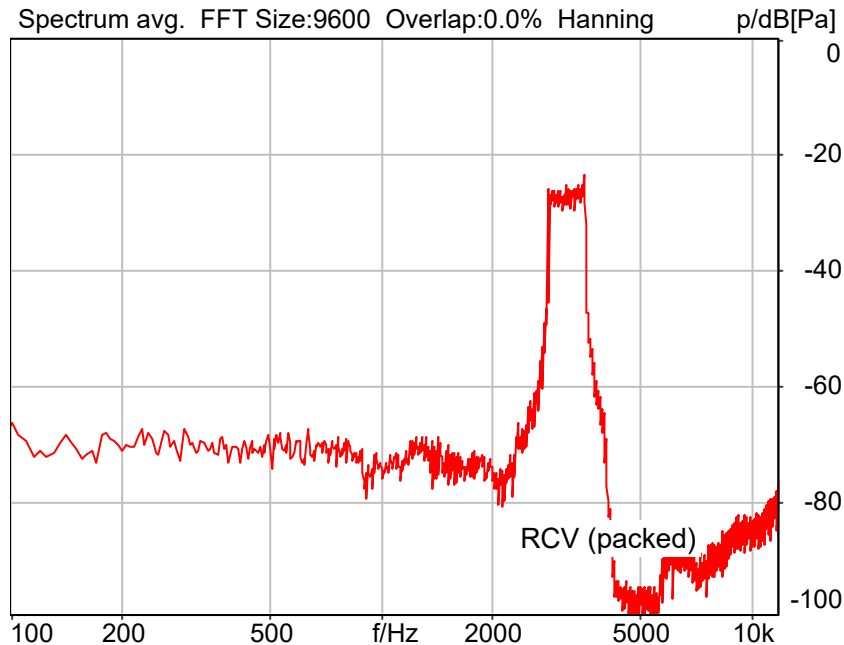
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 3150Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



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

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO35_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.2 Receive path – distortion and noise

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB \ 5.2 Receive path – distortion and noise

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7

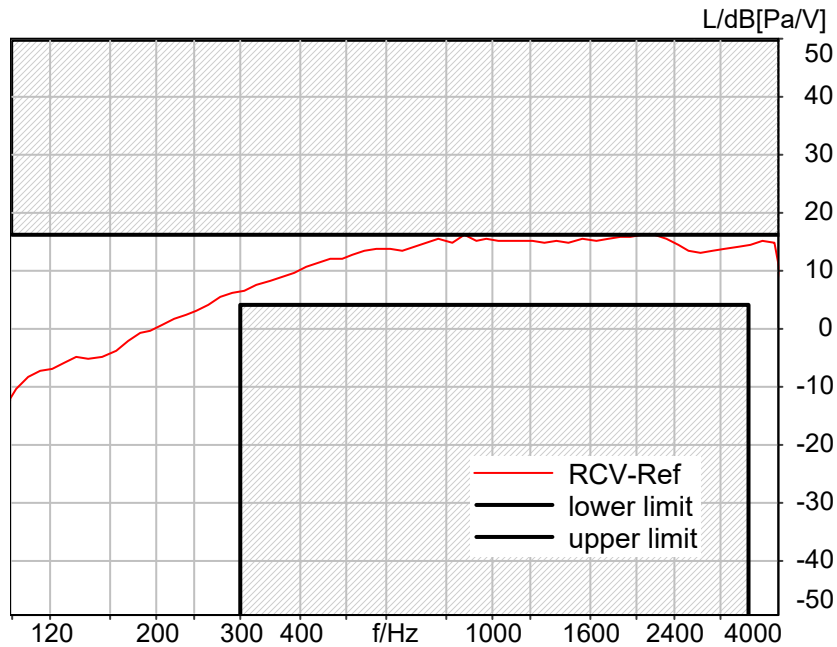
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
3	iso26_16_SDNR	25.91	20	320...480 Hz	Pass
4	iso27_16_SDNR	21.71	20	410...595 Hz	Pass
5	iso28_16_SDNR	25.35	20	525...745 Hz	Pass
6	iso29_16_SDNR	24.2	20	675...925 Hz	Pass
7	iso30_16_SDNR	32.48	20	855...1155 Hz	Pass
8	iso31_16_SDNR	29.92	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	35.45	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	35.47	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	32.36	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	27.93	20	2785...3585 Hz	Pass

2023/12/17 10:40 ACQUA

5.3 Receive Acoustic Frequency response Performance

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB

QPSK, RB Size=1, RB Offset=0; Table-2; Table-7



Absolute minimal distance

2.44 dB at 305.9 Hz Ok

Ok

2023/12/17 10:40 ACQUA 5.1.200

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_nb.dat

Level adj. Ch1 -90.0 dB

Level adj. Ch2 -4.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Use FIR Filter Ch2

Range length 10200.00 ms

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	16384	Overlap	75 %
Window function.	Hanning		
Reference file	rcv_nb_ref1.fft		
Tol. scheme file	nb_fr_tol.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	To upper scheme	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 123.9000 ms (D_RCV_NB, Delay (Cross))
 Store to file rcv_fr

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

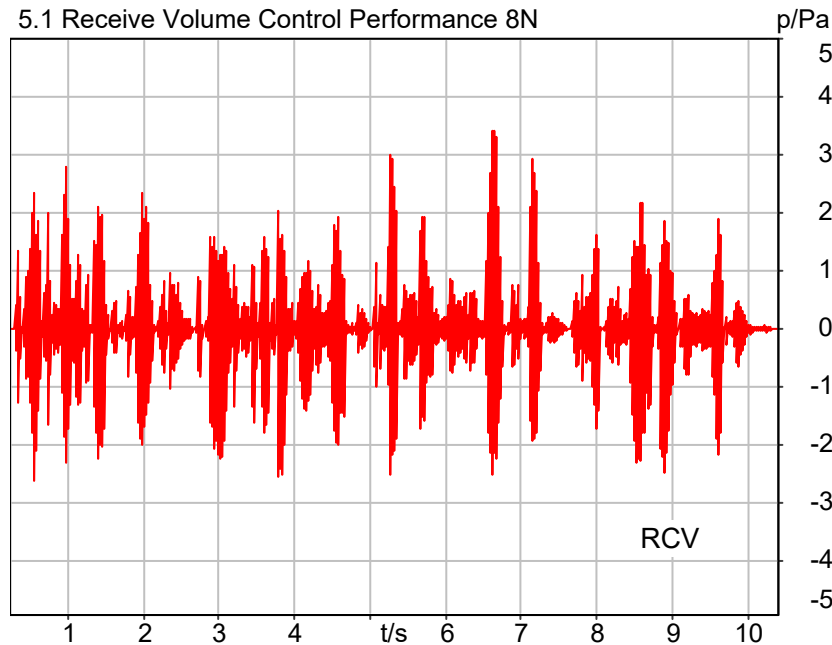
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1 Receive Volume Control Performance 8N

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB

Table-7



Speech Level RCV: 83.91 dB[SPL], Act.: 94.89%

2023/12/18 16:26 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_wb.dat

Level adj. Ch1 -90.0 dB

Level adj. Ch2 -4.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Range length 10200.00 ms

Bandpass filter Super Wideband

Margin (15.9dB nom) 15.90 dB

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))

Store to variable rcv_vol_wb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1.1 -1 Conversation Gain 8N

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB

Table-7

Correction

rcv_vol_wb	83.910 dB[SPL]	2023/12/18	Measured	5.1 Receive Volume Control Performance 8N
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rcv_vol_wb-70

Calculated Value: 13.91 dB Ok

Ok2023/12/18 16:26 ACQUA 5.1.200

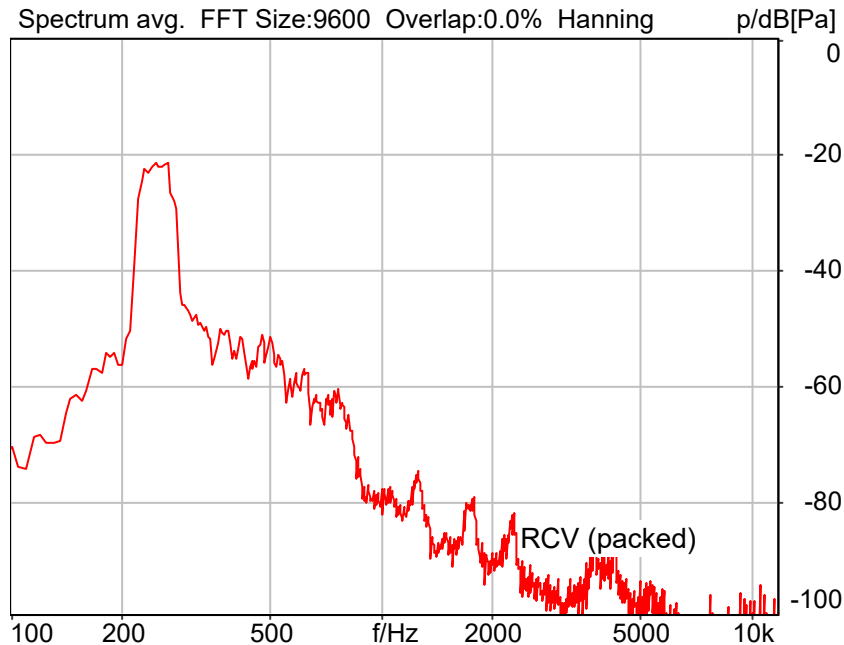
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 250 WOnly

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 27.38 dB (4.27%)

2023/12/18 16:27 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_250hz_sr20dbm0_v02.dat.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO24_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

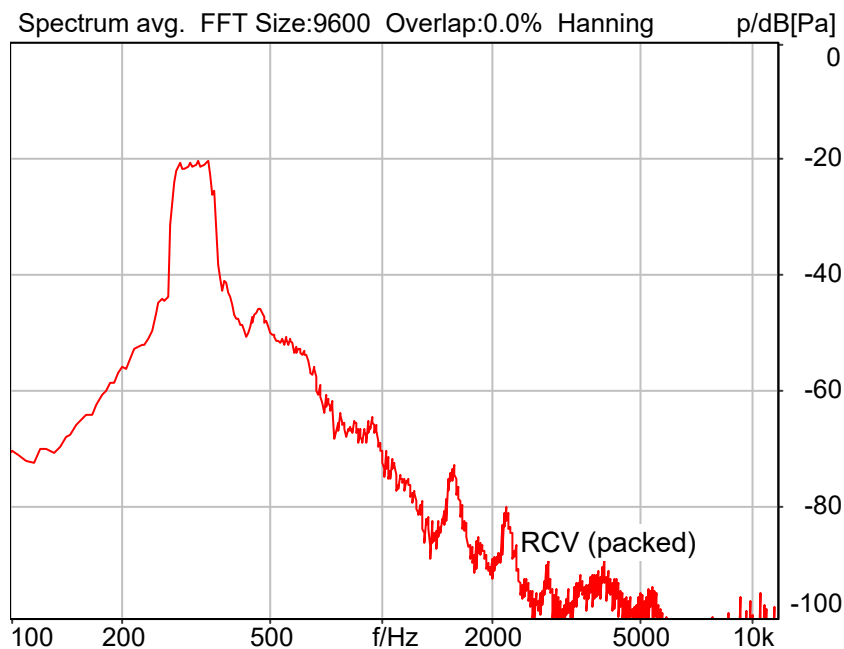
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 315Hz WOnly

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 26.34 dB (4.82%)

2023/12/18 16:27 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_315hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO25_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

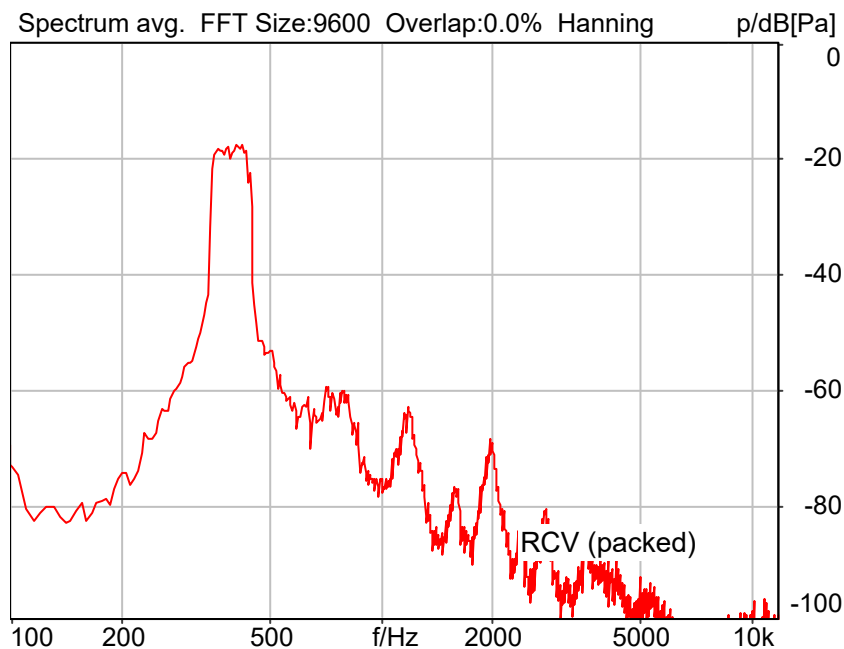
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 400Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

2023/12/18 16:27 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	320.0 Hz
Stimulus min.	320.0 Hz	Stimulus max.	480.0 Hz
Analysis min.	100.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO26_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

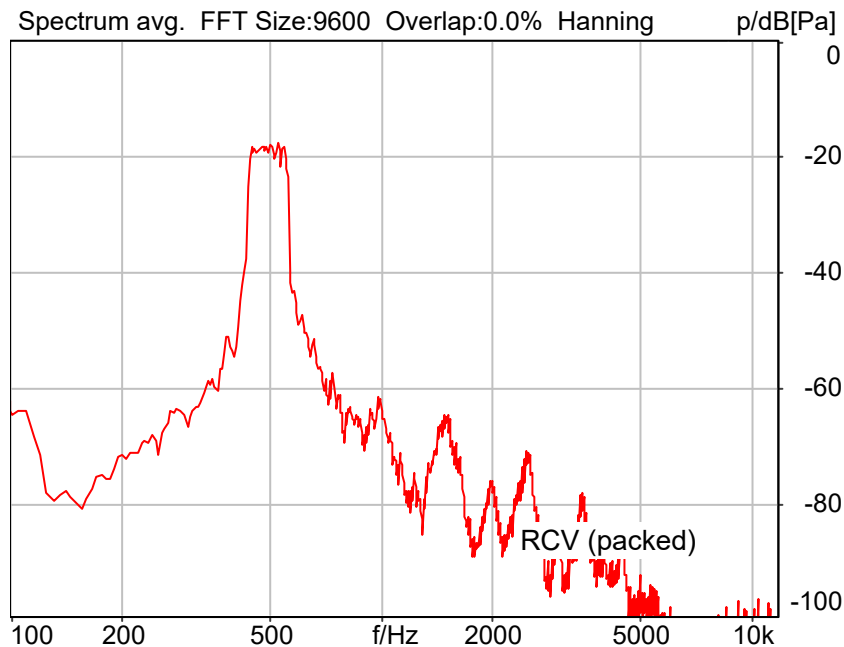
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 500Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

2023/12/18 16:28 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO27_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

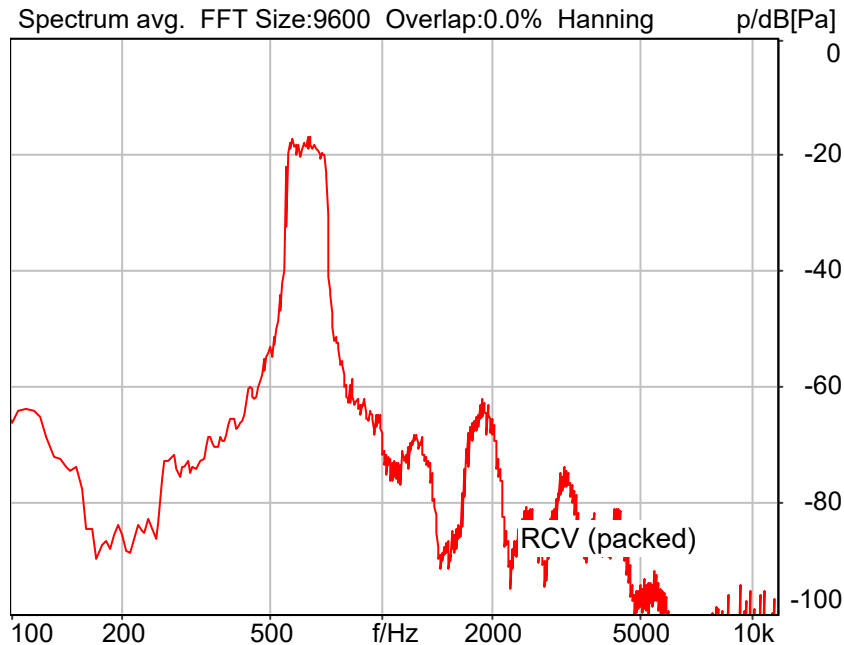
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 630Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 36.23 dB (1.54%)

2023/12/18 16:28 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	525.0 Hz
Stimulus min.	525.0 Hz	Stimulus max.	745.0 Hz
Analysis min.	100.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO28_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

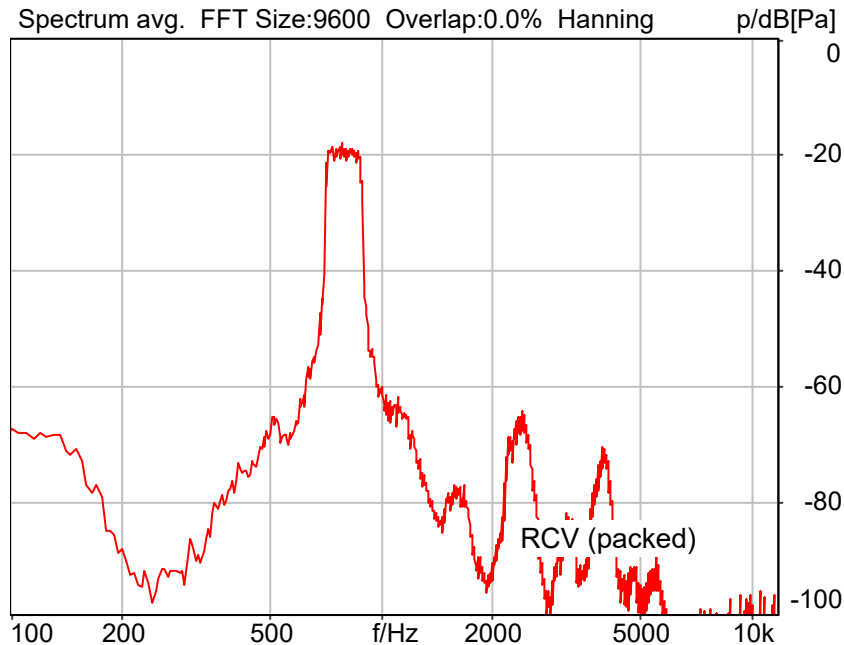
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 800Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 36.47 dB (1.50%)

2023/12/18 16:28 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO29_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

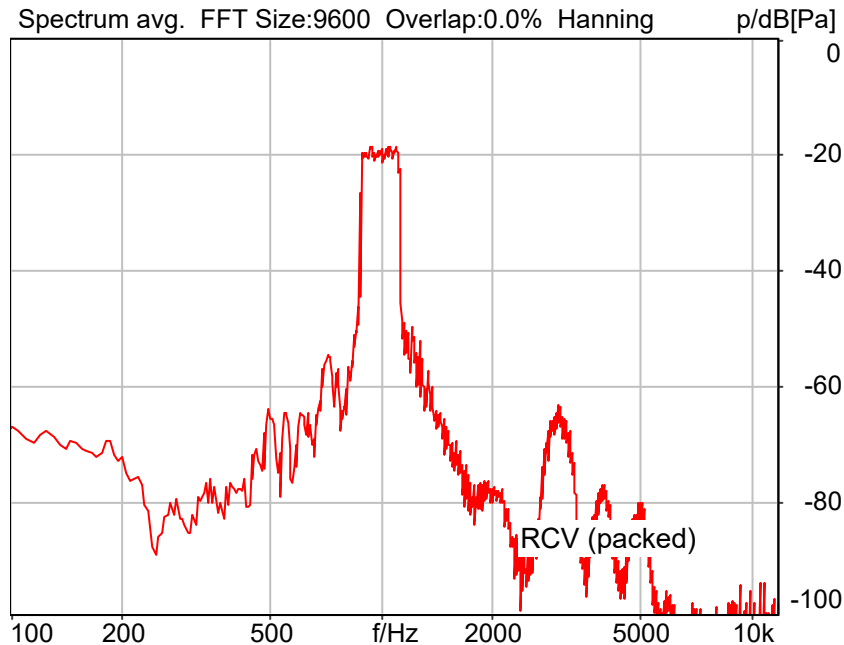
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1000Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 33.58 dB (2.09%)

2023/12/18 16:29 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO30_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

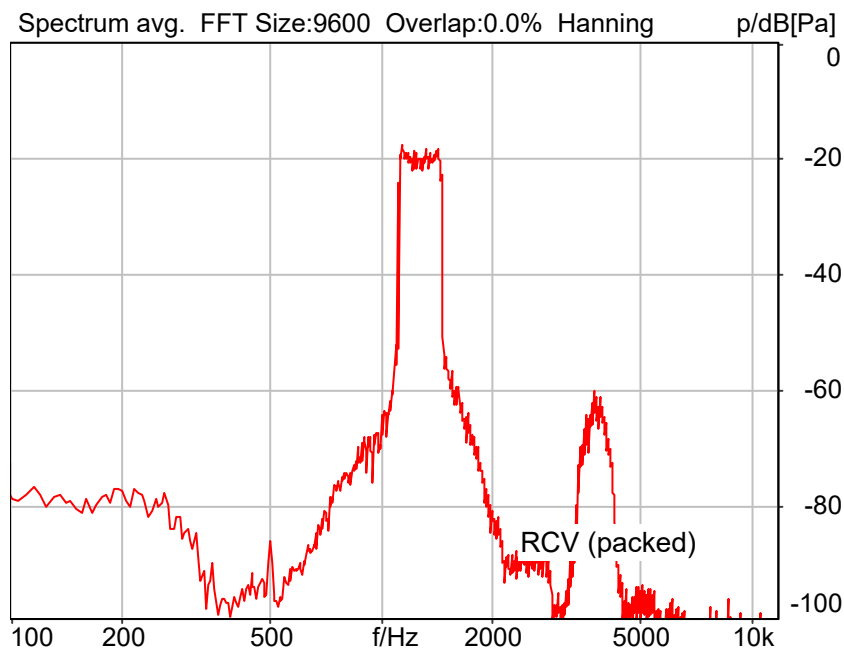
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1250Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 31.99 dB (2.52%)

2023/12/18 16:29 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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
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.	100.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO31_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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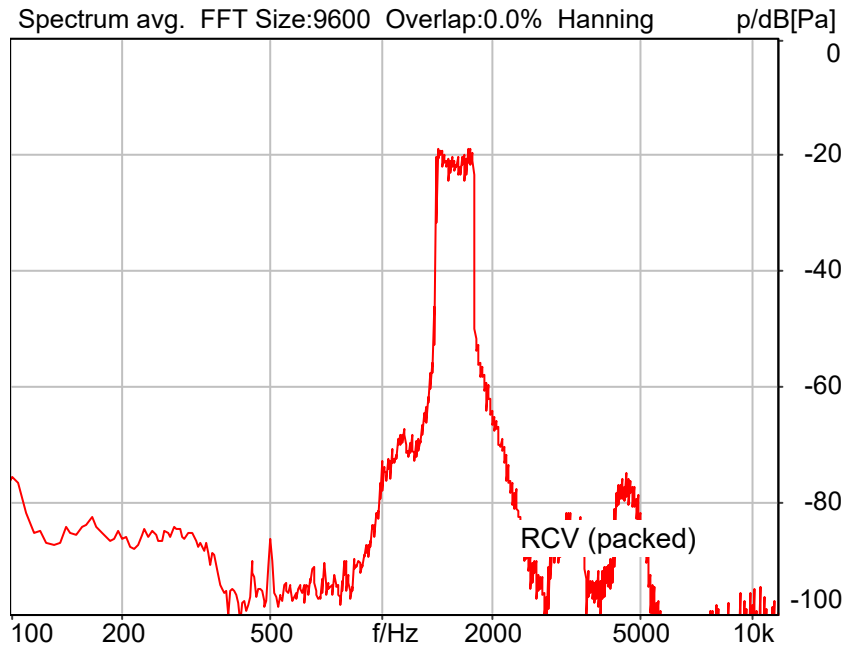
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1600Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 38.29 dB (1.22%)

2023/12/18 16:30 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO32_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

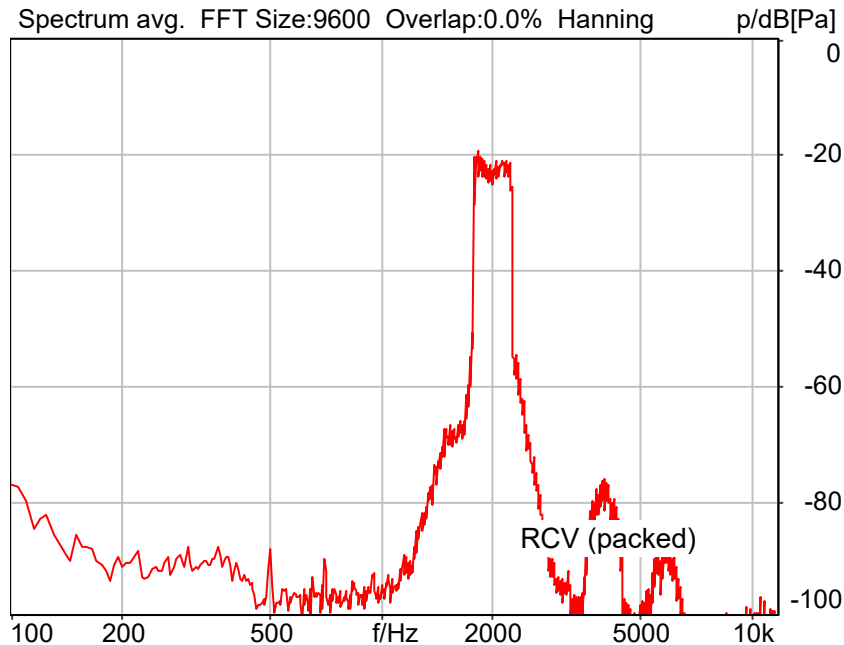
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2000Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 38.41 dB (1.20%)

2023/12/18 16:30 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1745.0 Hz
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	100.0 Hz	Analysis min.	100.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis max.	1740.0 Hz
		Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO33_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

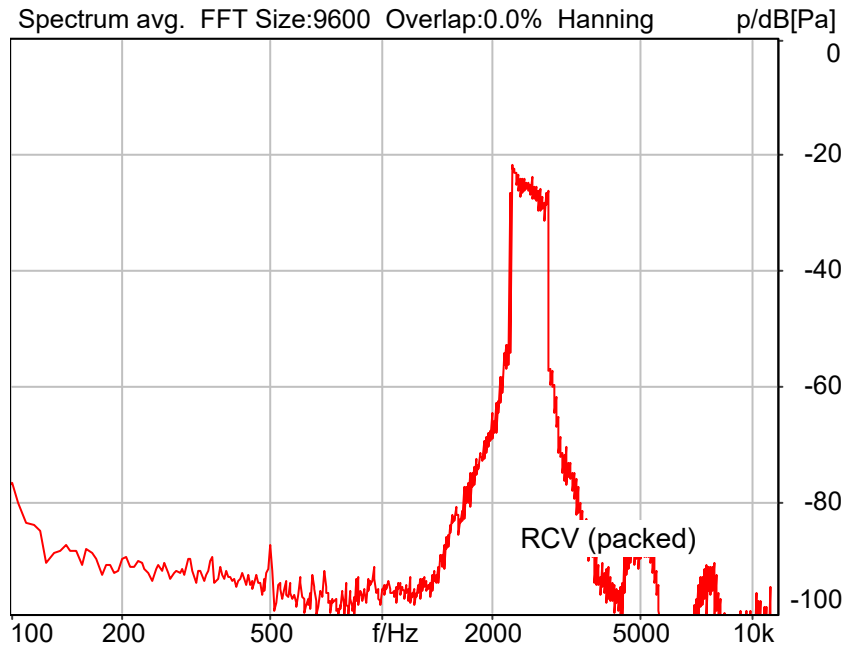
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2500Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 34.40 dB (1.91%)

2023/12/18 16:30 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	2205.0 Hz
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	100.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO34_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

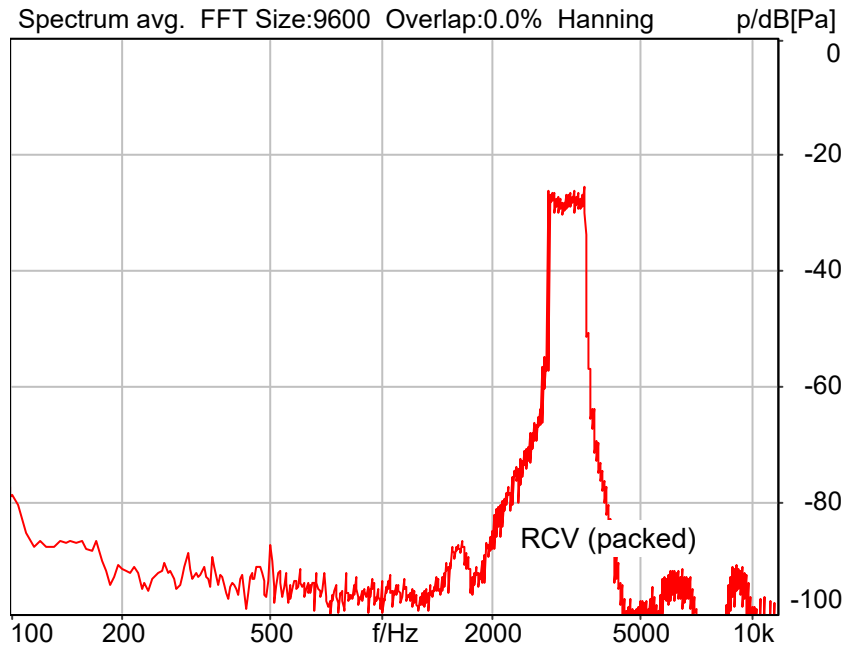
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 3150Hz WB&NB

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 33.02 dB (2.23%)

2023/12/18 16:31 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO35_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

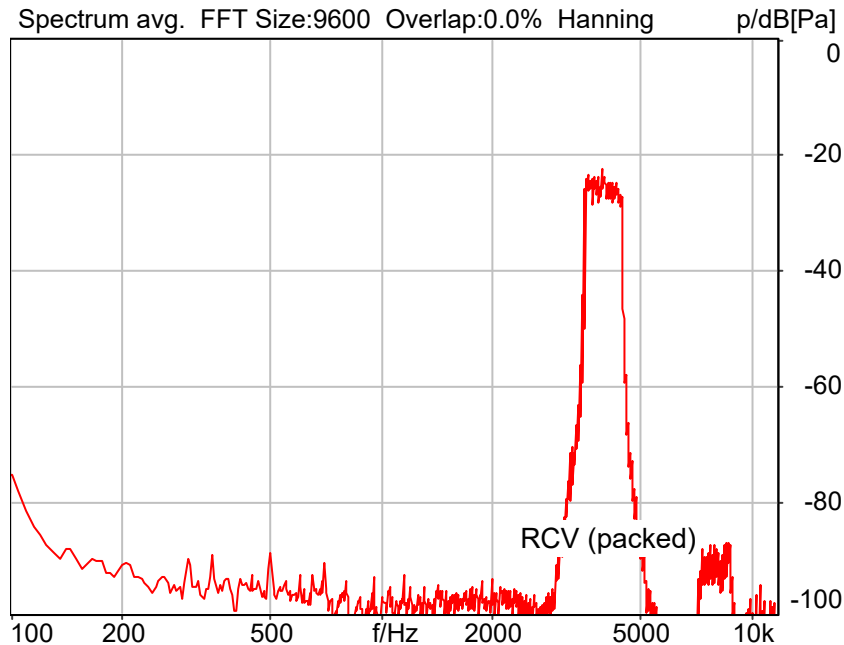
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 4000Hz WOnly

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

2023/12/18 16:31 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_4000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	3515.0 Hz
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	100.0 Hz	Analysis min.	100.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis max.	3510.0 Hz
		Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO36_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

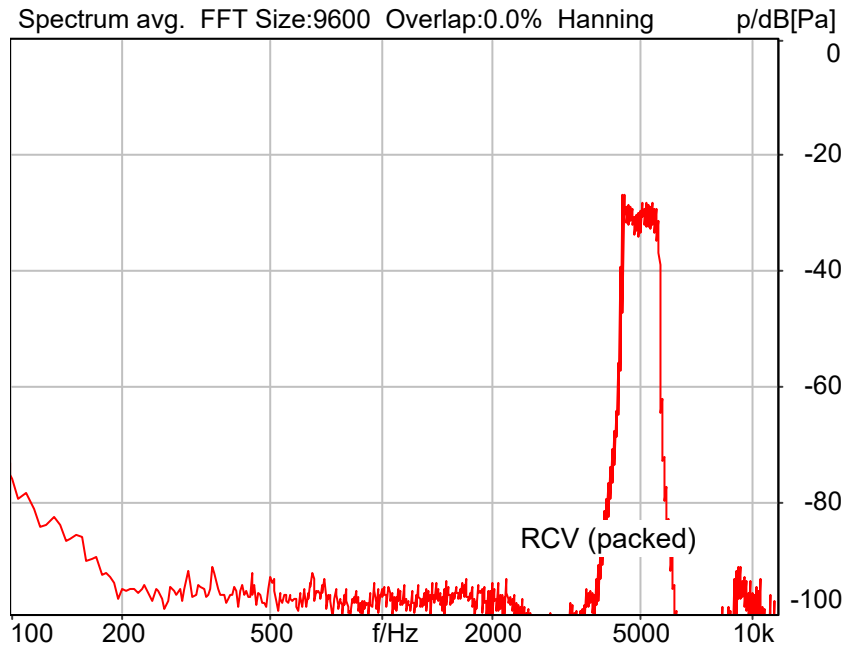
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 5000Hz WOnly

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 34.49 dB (1.89%)

2023/12/18 16:31 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_5000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	4430.0 Hz
Stimulus min.	4430.0 Hz	Stimulus max.	5660.0 Hz
Analysis min.	100.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO37_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.2 Receive path – distortion and noise

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB \ 5.2 Receive path – distortion and noise

Table-7

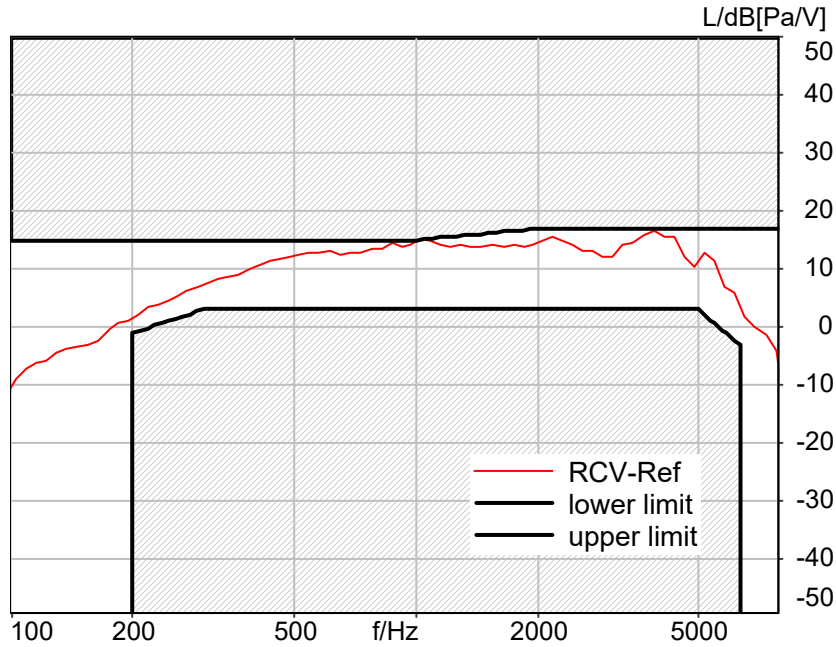
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
1	iso24_16_SDNR	27.38	20	190...315 Hz	Pass
2	iso25_16_SDNR	26.34	20	245...390 Hz	Pass
3	iso26_16_SDNR	36.12	20	320...480 Hz	Pass
4	iso27_16_SDNR	33.46	20	410...595 Hz	Pass
5	iso28_16_SDNR	36.23	20	525...745 Hz	Pass
6	iso29_16_SDNR	36.47	20	675...925 Hz	Pass
7	iso30_16_SDNR	33.58	20	855...1155 Hz	Pass
8	iso31_16_SDNR	31.99	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	38.29	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	38.41	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	34.4	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	33.02	20	2785...3585 Hz	Pass
13	iso36_16_SDNR	32.98	20	3515...4500 Hz	Pass
14	iso37_16_SDNR	34.49	20	4430...5660 Hz	Pass

2023/12/18 16:31 ACQUA

5.3 Receive Acoustic Frequency response Performance

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB

Table-7



Absolute minimal distance
2.75 dB at 205.7 Hz Ok

Ok

2023/12/18 16:32 ACQUA 5.1.200

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_wb.dat

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

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Use FIR Filter Ch2

Range length 10200.00 ms

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	16384	Overlap	75 %
Window function.	Hanning		
Reference file	rcv_wb_ref1.fft		
Tol. scheme file	wb_fr_tol.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	To upper scheme	Max. freq. for tol.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_WB, Delay (Cross))
Store to file rcv_fr_wb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

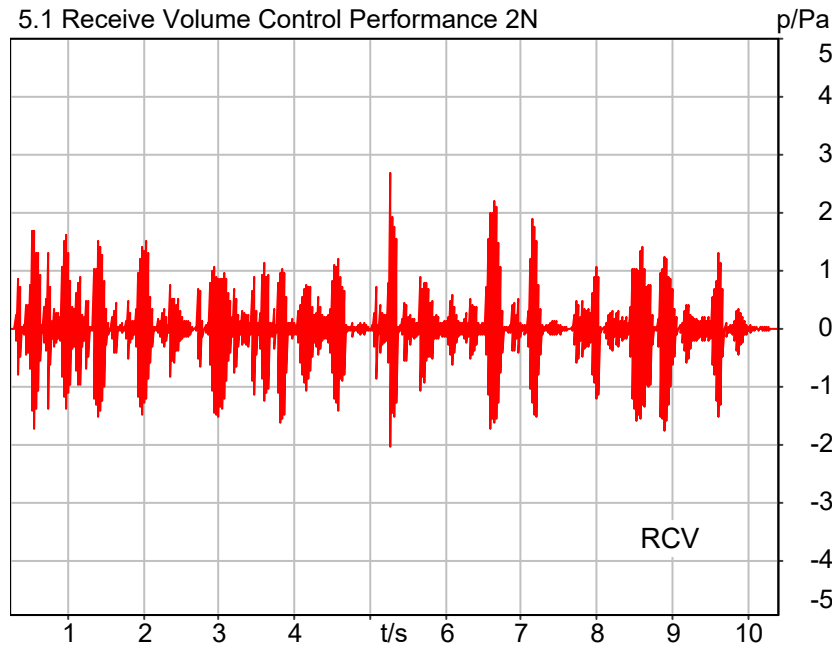
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1 Receive Volume Control Performance 2N

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB

Table-7



Speech Level RCV: 80.90 dB[SPL], Act.: 93.07%

2023/12/18 16:44 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_nb.dat

Level adj. Ch1 -90.0 dB

Level adj. Ch2 -4.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms Range length 10200.00 ms

Bandpass filter Narrow Band Margin (15.9dB nom) 15.90 dB

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))

Store to variable rcv_vol_nb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)

Channel In 1 Settings

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1.1 -1 Conversation Gain 2N

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB

Table-7

Correction

rcv_vol_nb	80.900 dB[SPL]	2023/12/18	Measured	5.1 Receive Volume Control Performance 2N
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rcv_vol_nb-70

Calculated Value: 10.90 dB Ok

Ok

2023/12/18 16:44 ACQUA 5.1.200

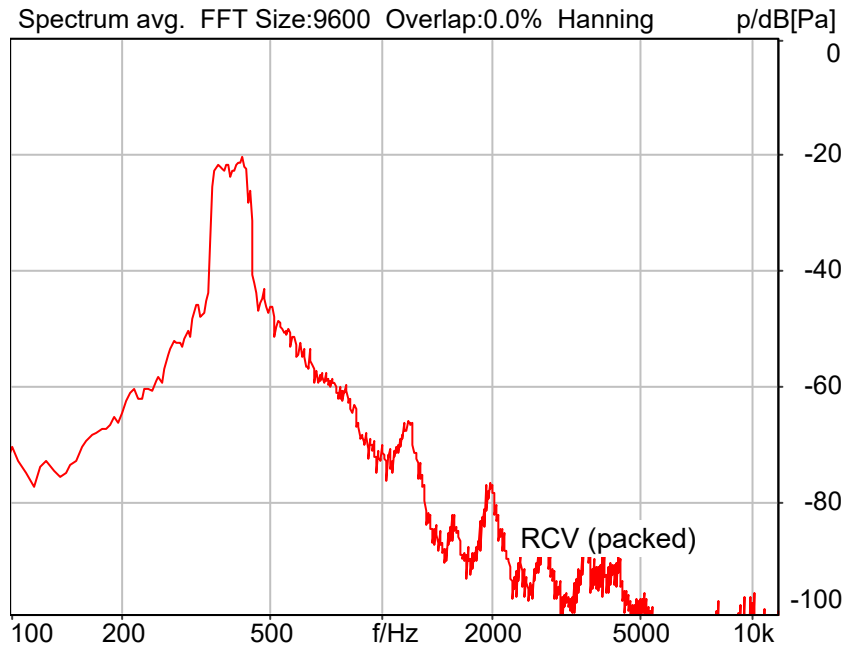
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 400Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 26.88 dB (4.53%)

2023/12/18 16:45 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO26_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

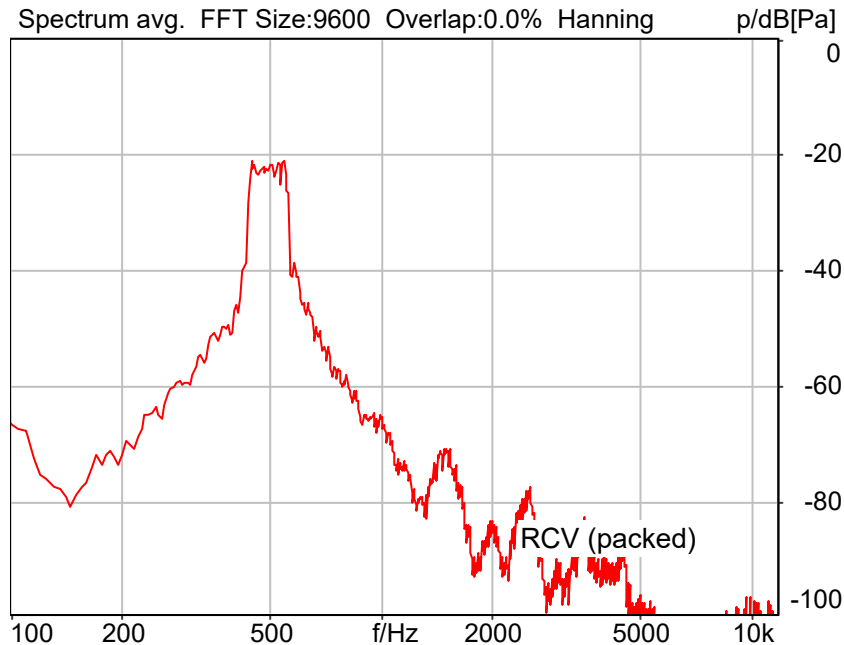
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
----------	----------	------------	----------

Receive path - distortion and noise 500Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 26.41 dB (4.78%)

2023/12/18 16:45 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO27_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

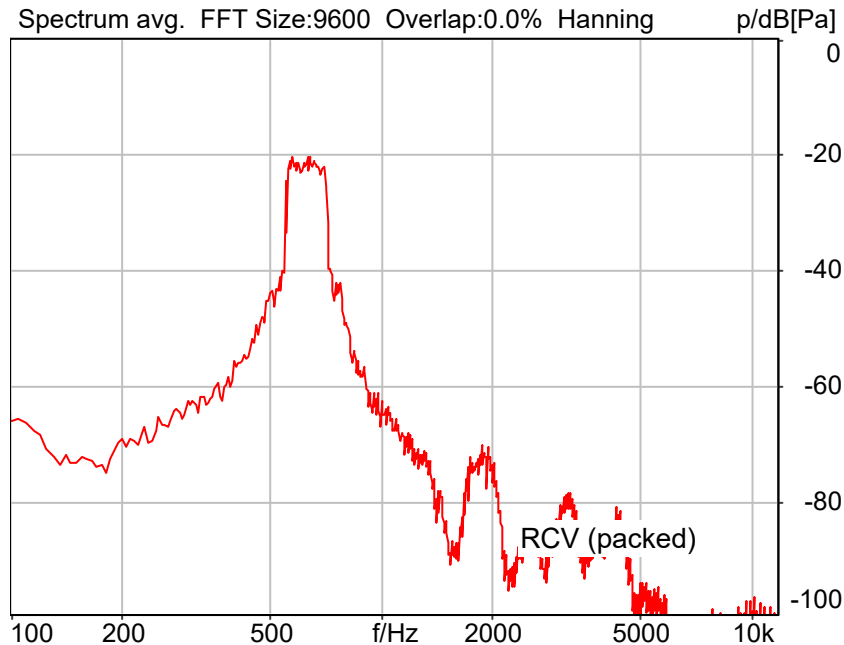
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
----------	----------	------------	----------

Receive path - distortion and noise 630Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 25.40 dB (5.37%)

2023/12/18 16:45 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 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.	745.0 Hz
Window function.	Hanning	Analysis min.	100.0 Hz
dB weighting	A Weighting	Analysis max.	520.0 Hz
Stimulus min.	525.0 Hz	Analysis (2) min.	750.0 Hz
Analysis min.	100.0 Hz	Analysis (2) max.	8000.0 Hz
Analysis (2) min.	750.0 Hz		

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO28_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

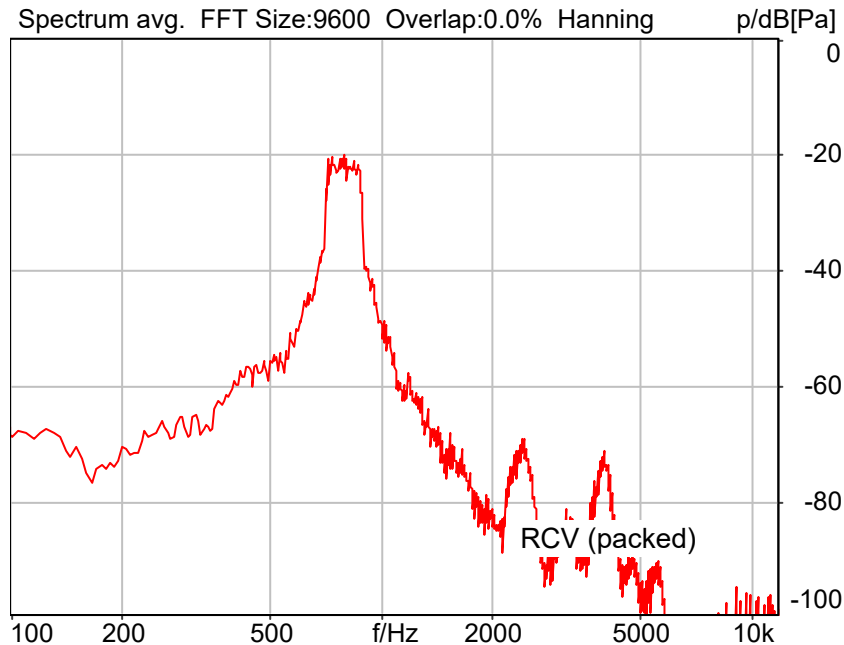
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 800Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 23.46 dB (6.71%)

2023/12/18 16:46 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO29_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

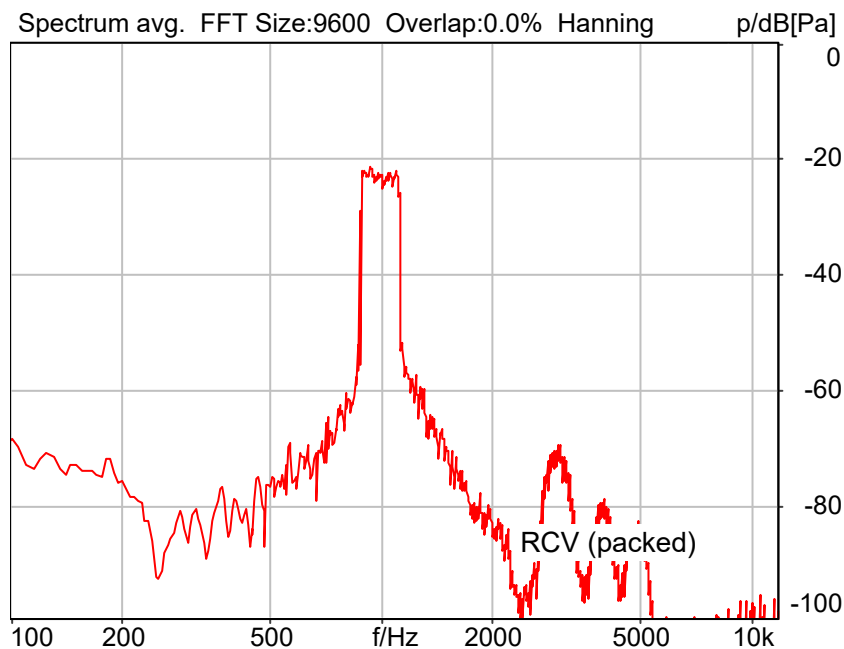
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1000Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 35.27 dB (1.72%)

2023/12/18 16:46 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO30_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

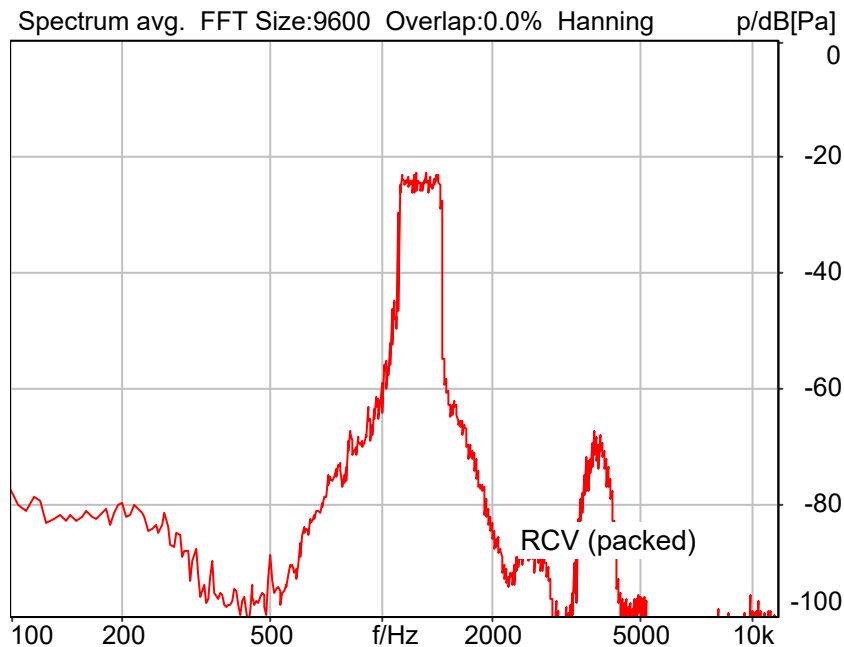
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1250Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 30.09 dB (3.13%)

2023/12/18 16:47 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
Frequency base	Transformation	FFT size	9600
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1085.0 Hz
Stimulus min.	1085.0 Hz	Stimulus max.	1450.0 Hz
Analysis min.	100.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO31_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

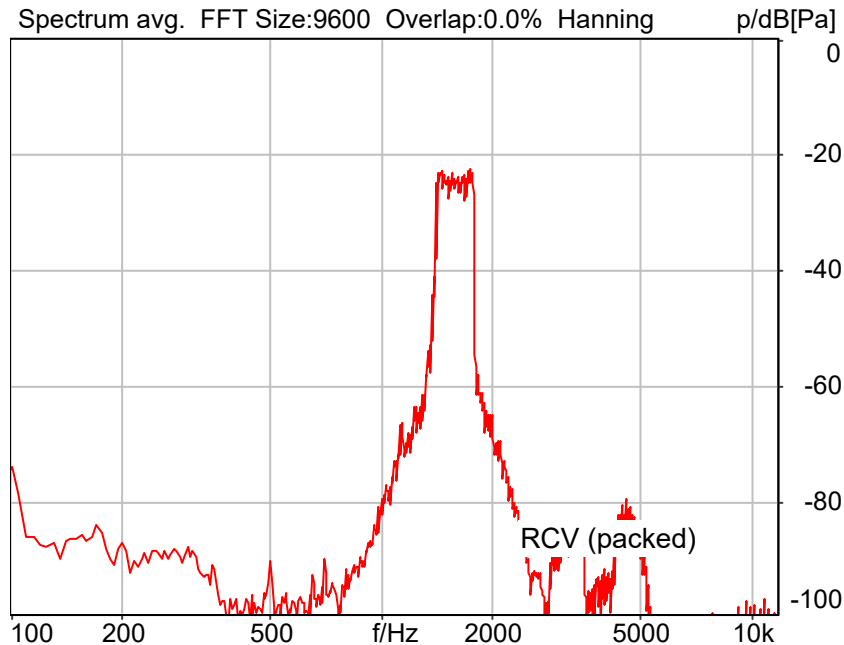
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1600Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 35.26 dB (1.73%)

2023/12/18 16:47 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1375.0 Hz
Stimulus min.	1375.0 Hz	Stimulus max.	1815.0 Hz
Analysis min.	100.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO32_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

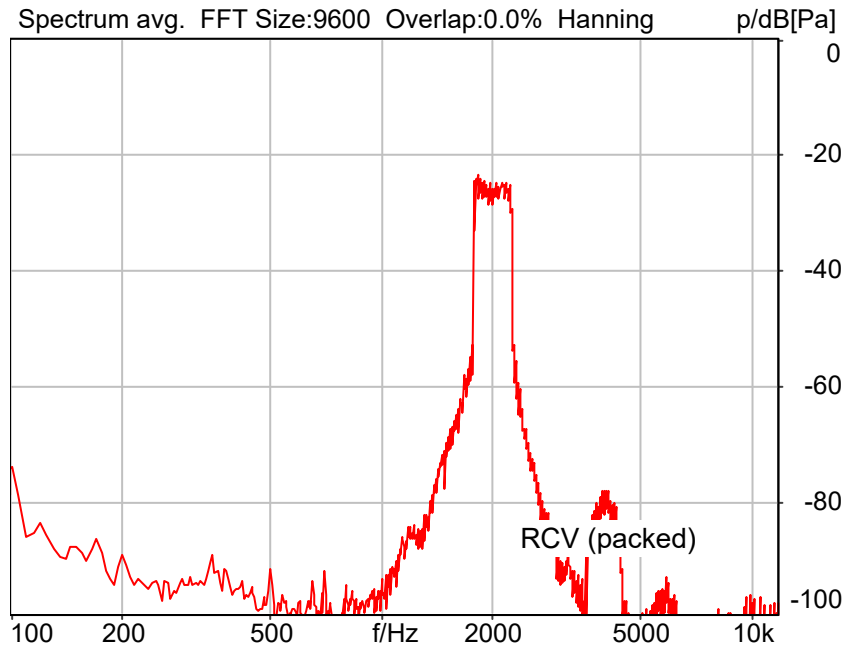
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2000Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 34.86 dB (1.81%)

2023/12/18 16:47 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1745.0 Hz
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	100.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO33_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

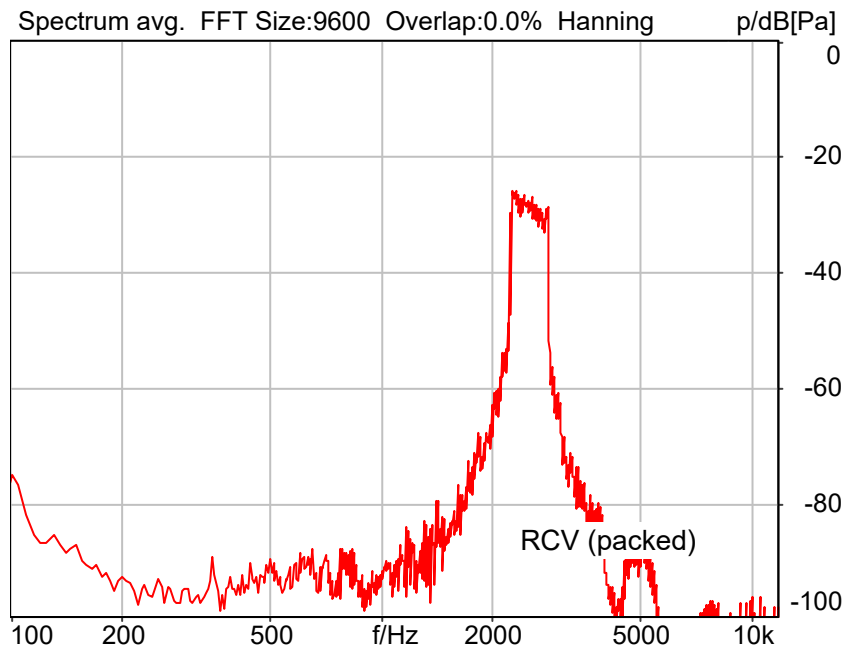
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2500Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 29.99 dB (3.17%)

2023/12/18 16:48 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	2205.0 Hz
Stimulus min.	2205.0 Hz	Stimulus max.	2855.0 Hz
Analysis min.	100.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO34_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

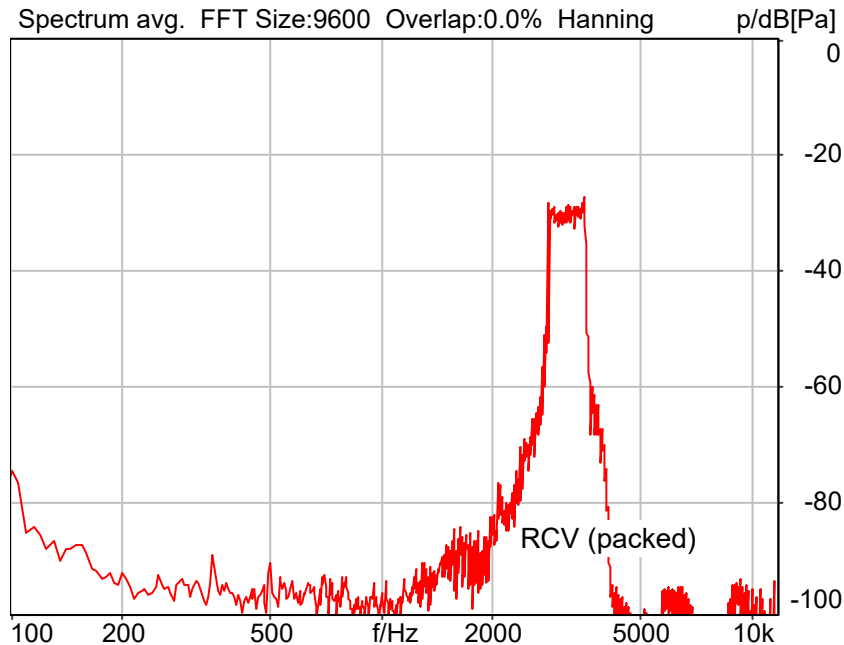
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 3150Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 29.59 dB (3.31%)

2023/12/18 16:48 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO35_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.2 Receive path – distortion and noise

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB \ 5.2 Receive path – distortion and noise

Table-7

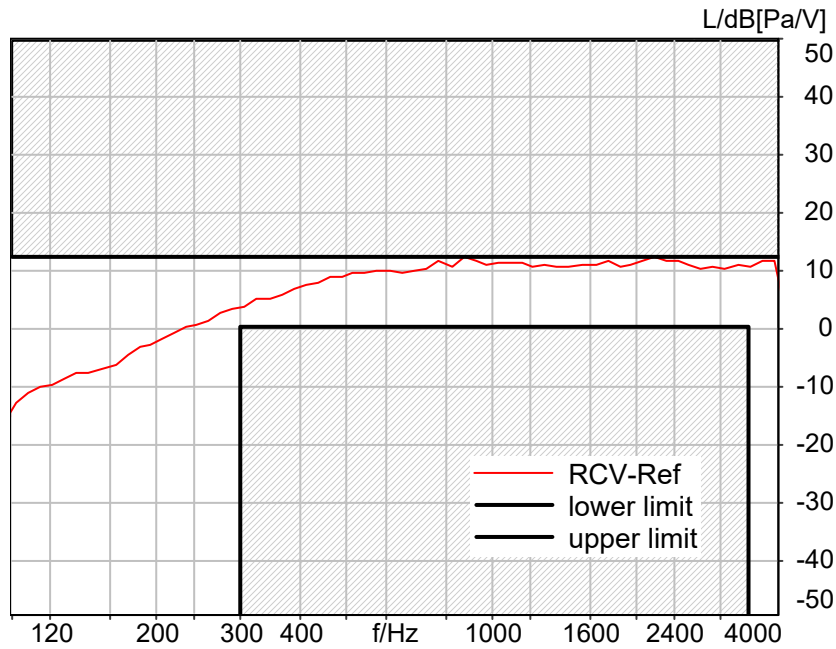
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
3	iso26_16_SDNR	26.88	20	320...480 Hz	Pass
4	iso27_16_SDNR	26.41	20	410...595 Hz	Pass
5	iso28_16_SDNR	25.4	20	525...745 Hz	Pass
6	iso29_16_SDNR	23.46	20	675...925 Hz	Pass
7	iso30_16_SDNR	35.27	20	855...1155 Hz	Pass
8	iso31_16_SDNR	30.09	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	35.26	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	34.86	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	29.99	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	29.59	20	2785...3585 Hz	Pass

2023/12/18 16:48 ACQUA

5.3 Receive Acoustic Frequency response Performance

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB

Table-7



Absolute minimal distance
3.46 dB at 305.9 Hz Ok

Ok

2023/12/18 16:48 ACQUA 5.1.200

Limits

	lower
Run 1	Fit into tolerance

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_nb.dat

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

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Use FIR Filter Ch2

Range length 10200.00 ms

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	16384	Overlap	75 %
Window function.	Hanning		
Reference file	rcv_nb_ref1.fft		
Tol. scheme file	nb_fr_tol.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	To upper scheme	Max. freq. for tol.	4000.0 Hz

Special Features

Compensate delay 142.9000 ms (D_RCV_NB, Delay (Cross))
 Store to file rcv_fr

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

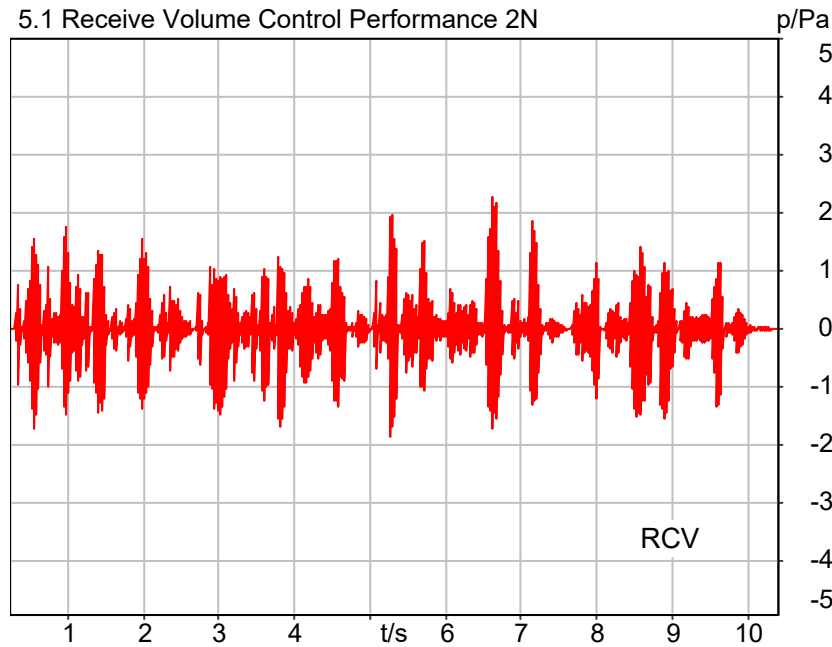
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1 Receive Volume Control Performance 2N

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB

Table-7



Speech Level RCV: 80.52 dB[SPL], Act.: 94.82%

2023/12/18 16:37 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_wb.dat

Level adj. Ch1 -90.0 dB

Level adj. Ch2 -4.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Range length 10200.00 ms

Bandpass filter Super Wideband

Margin (15.9dB nom) 15.90 dB

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))

Store to variable rcv_vol_wb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 ->	Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
Out Channel 2 ->	Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
In Channel 1 <-	BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
In Channel 2 <-	BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.1.1 -1 Conversation Gain 2N

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB

Table-7

Correction

rcv_vol_wb	80.520 dB[SPL]	2023/12/18	Measured	5.1 Receive Volume Control Performance 2N
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rcv_vol_wb-70

Calculated Value: 10.52 dB Ok

Ok

2023/12/18 16:37 ACQUA 5.1.200

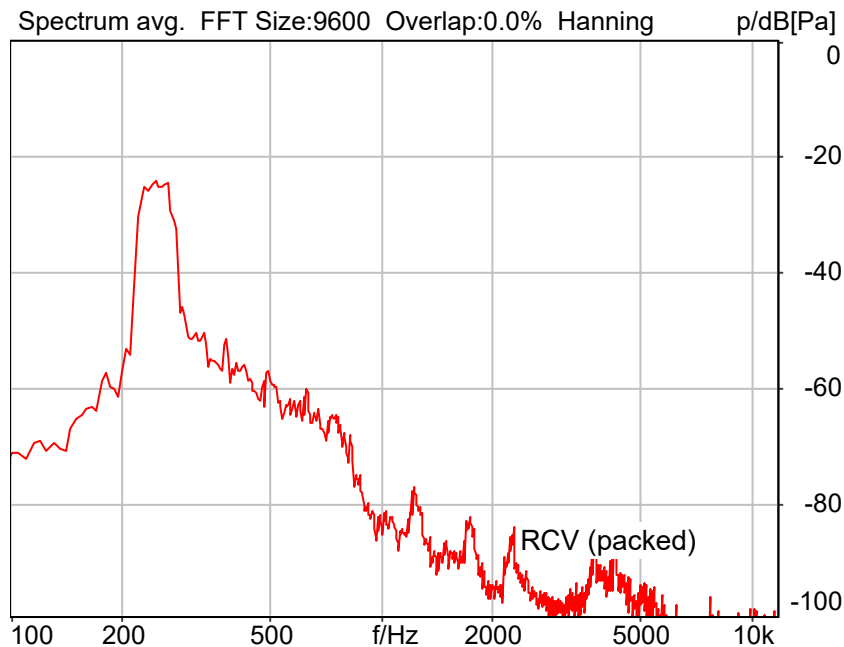
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 250 WBoNy

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 28.26 dB (3.86%)

2023/12/18 16:38 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_250hz_sr20dbm0_v02.dat.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	185.0 Hz
Analysis (2) min.	320.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO24_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

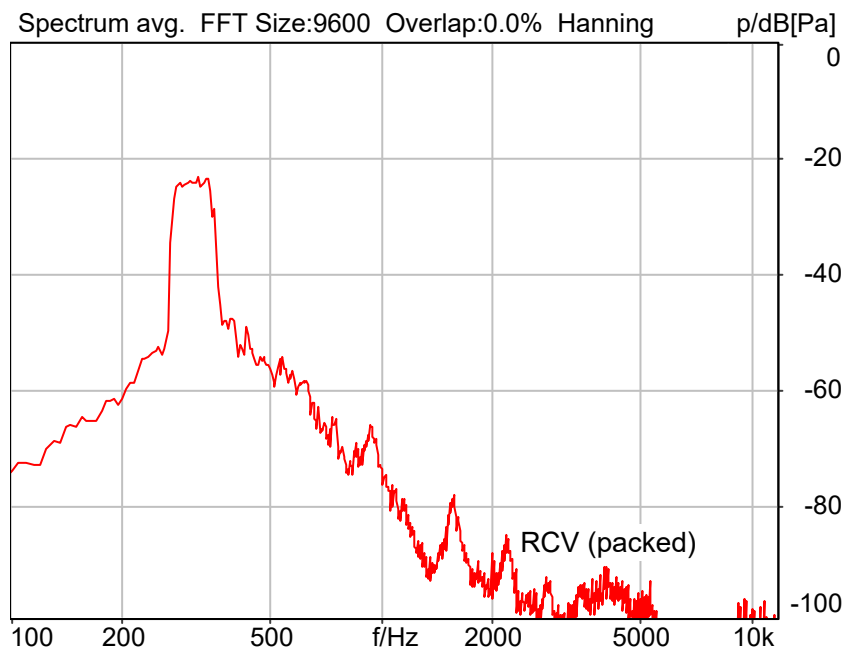
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 315Hz WOnly

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 28.33 dB (3.83%)

2023/12/18 16:38 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_315hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	240.0 Hz
Analysis (2) min.	395.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO25_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

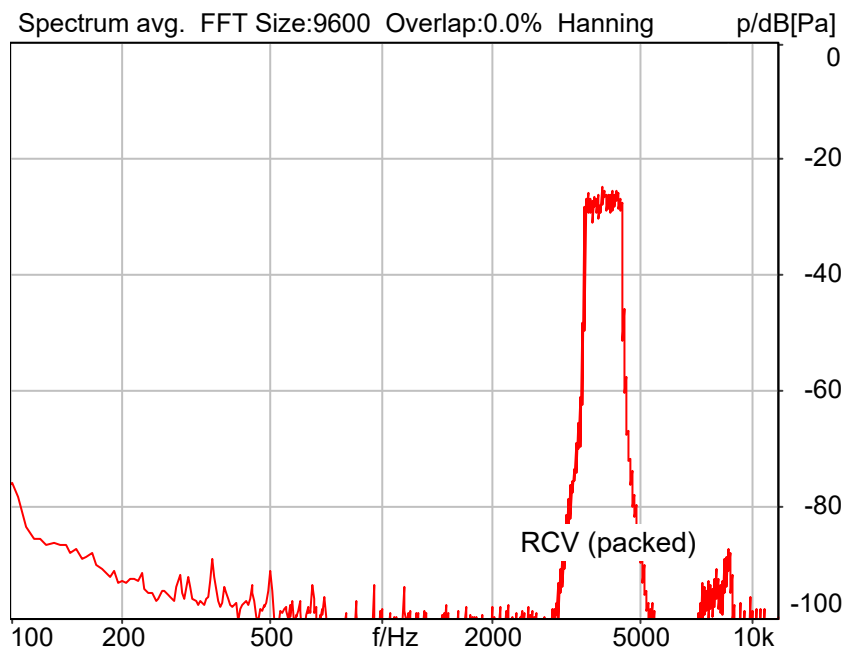
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 4000Hz WOnly

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 33.84 dB (2.03%)

2023/12/18 16:38 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_4000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	3515.0 Hz
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz
Analysis min.	100.0 Hz	Analysis min.	100.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis max.	3510.0 Hz
		Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO36_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

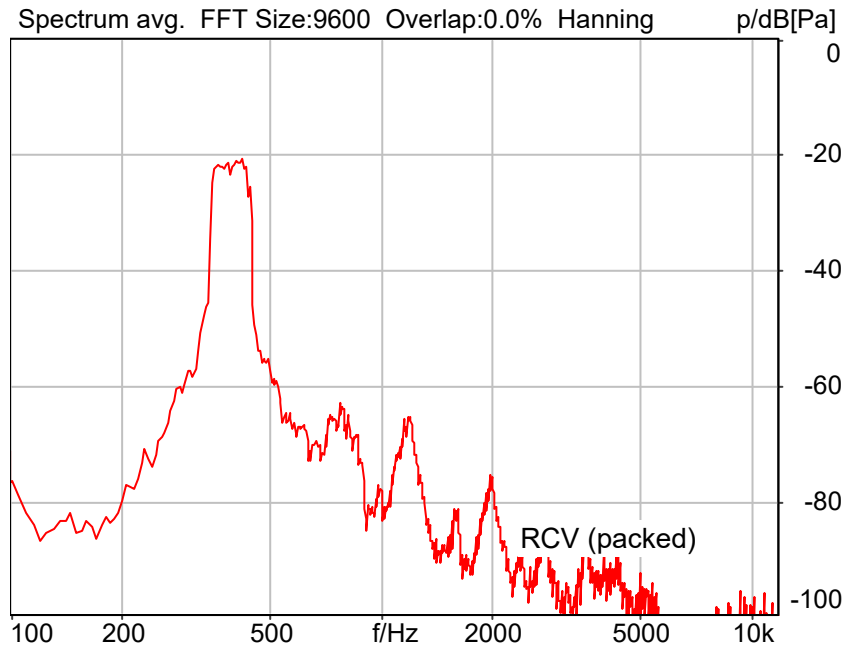
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 400Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 36.34 dB (1.52%)

2023/12/18 16:39 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_400hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	315.0 Hz
Analysis (2) min.	485.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO26_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

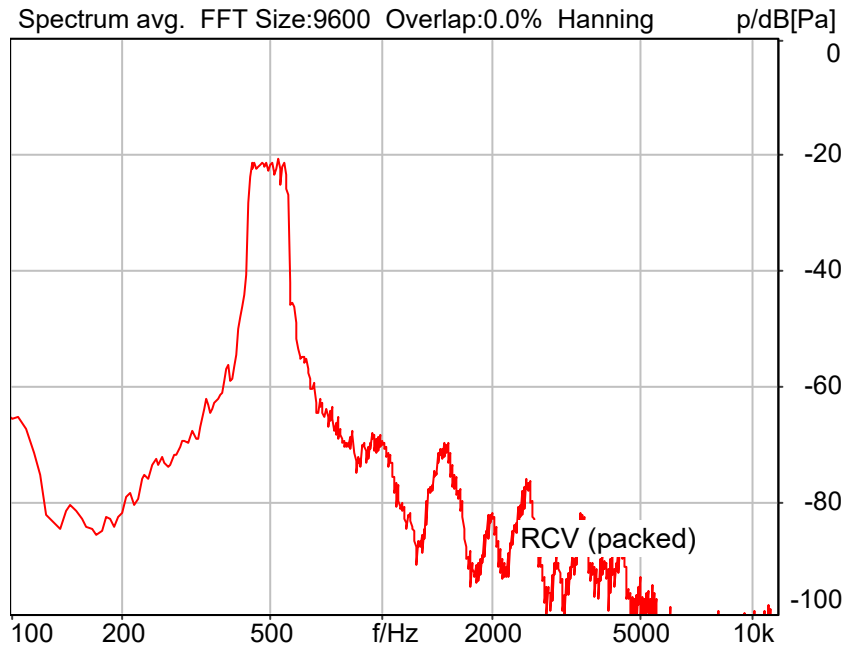
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 500Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 35.92 dB (1.60%)

2023/12/18 16:39 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	405.0 Hz
Analysis (2) min.	600.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO27_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

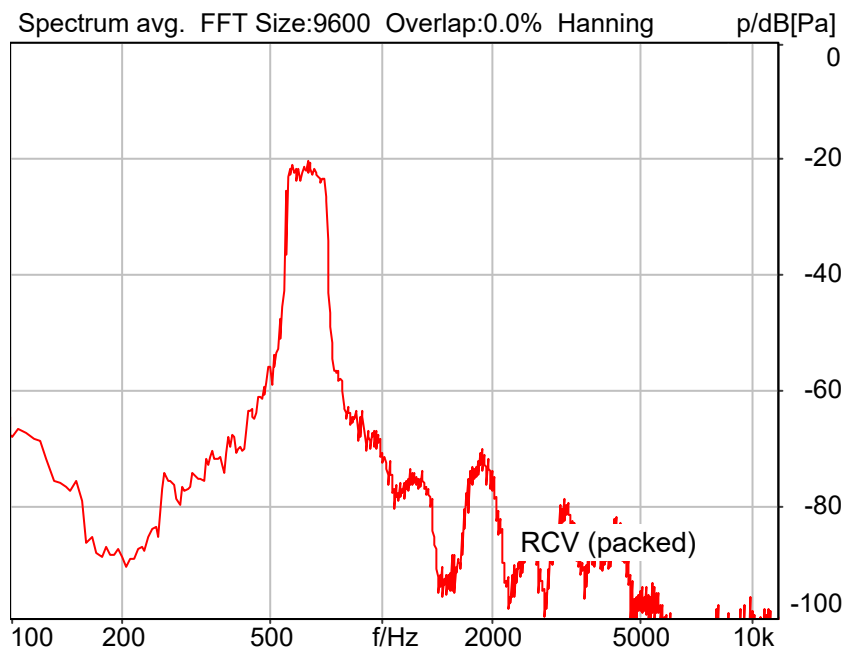
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 630Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

2023/12/18 16:40 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_630hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	520.0 Hz
Analysis (2) min.	750.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO28_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

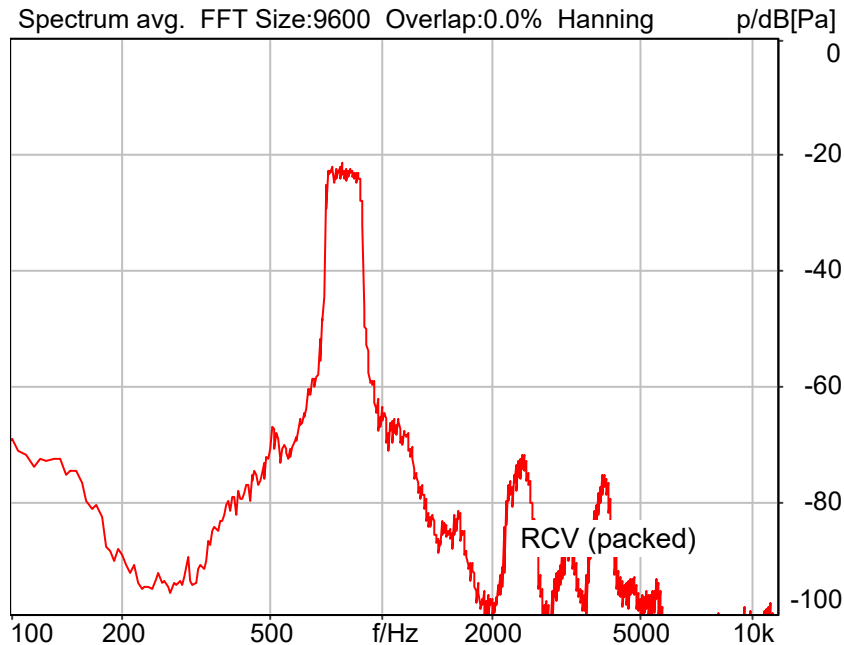
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 800Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 37.35 dB (1.36%)

2023/12/18 16:40 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_800hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	670.0 Hz
Analysis (2) min.	930.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO29_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

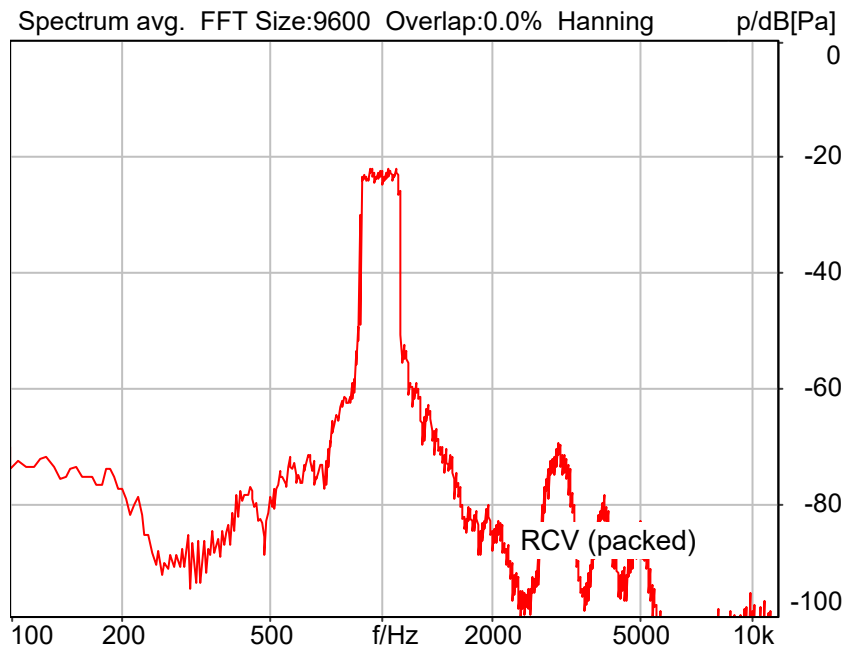
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1000Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

2023/12/18 16:40 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	855.0 Hz
Stimulus min.	855.0 Hz	Stimulus max.	1155.0 Hz
Analysis min.	100.0 Hz	Analysis max.	850.0 Hz
Analysis (2) min.	1160.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO30_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

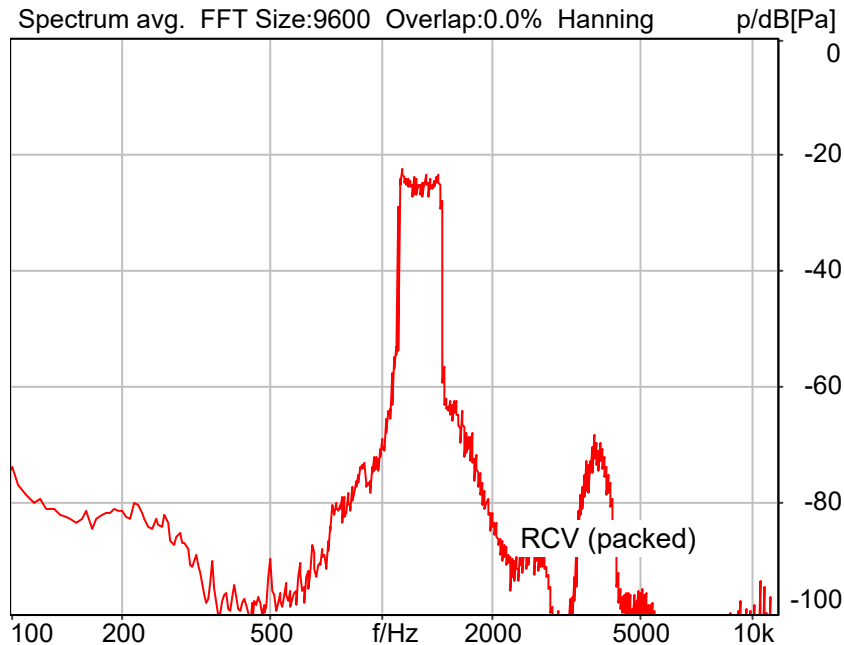
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1250Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 32.08 dB (2.49%)

2023/12/18 16:41 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1250hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1080.0 Hz
Analysis (2) min.	1455.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO31_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

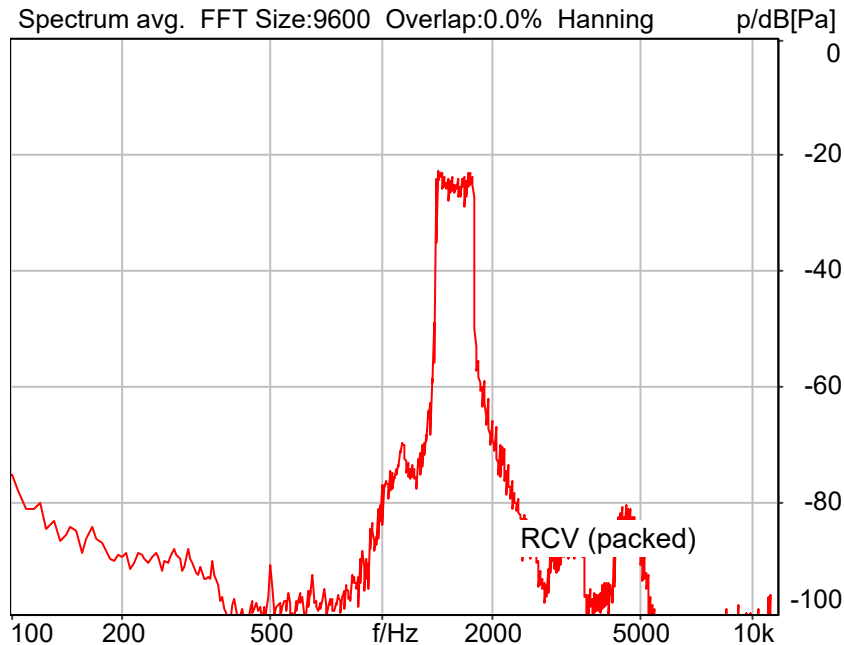
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 1600Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 37.55 dB (1.33%)

2023/12/18 16:41 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_1600hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	1370.0 Hz
Analysis (2) min.	1820.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO32_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

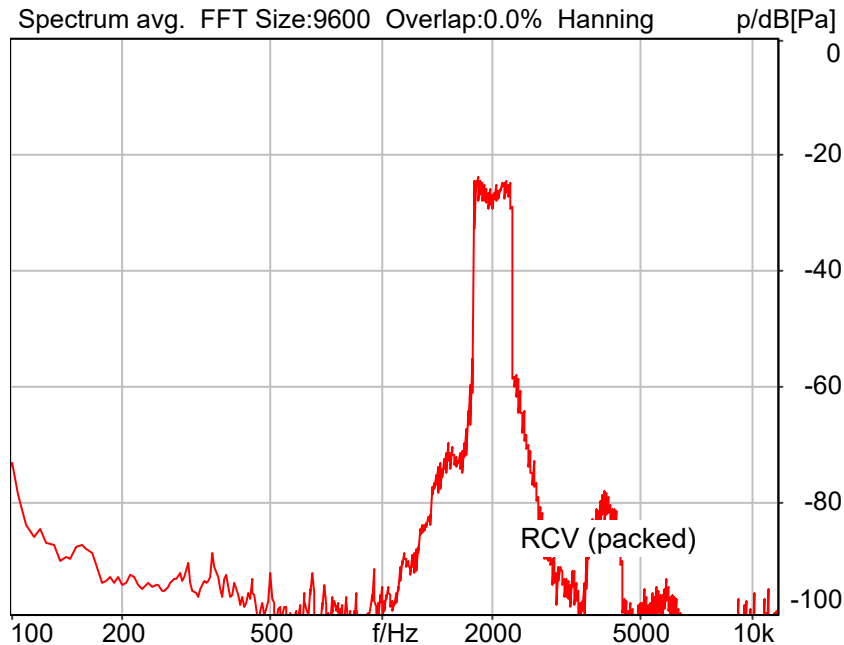
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2000Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 37.48 dB (1.34%)

2023/12/18 16:41 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction	Out 2 -> In 2	Range length	200.00 ms
Range start	13550.00 ms	Sequence length	400.00 ms
Number of seq.	10	FIR filter	drp2ff_ieee1652
Use FIR Filter	Ch2	DRP/ERP Ch.2:	Off
DRP/ERP Ch.1:	Off	Frequency base	Transformation
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting	Stimulus min.	1745.0 Hz
Stimulus min.	1745.0 Hz	Stimulus max.	2275.0 Hz
Analysis min.	100.0 Hz	Analysis max.	1740.0 Hz
Analysis (2) min.	2280.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO33_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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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. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

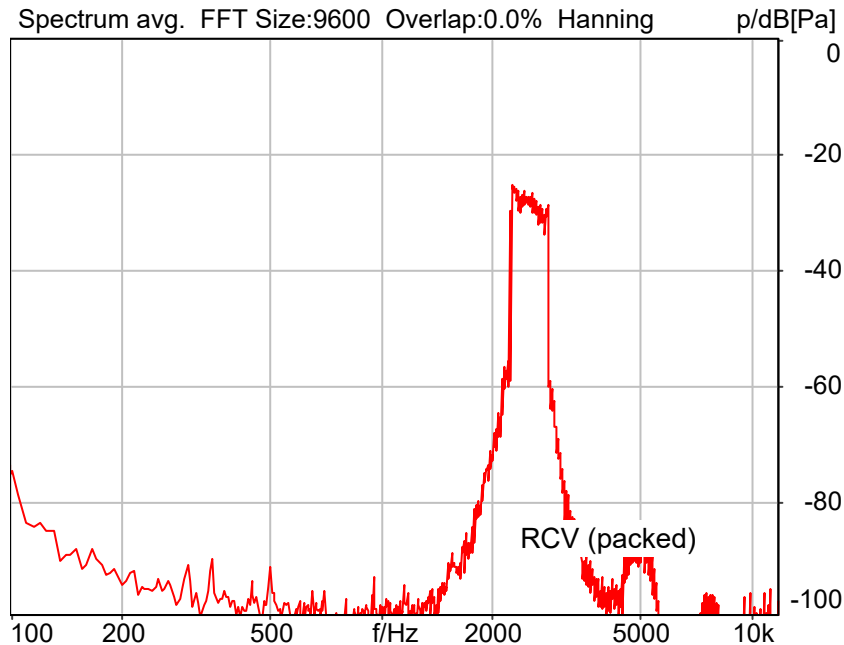
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 2500Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 35.17 dB (1.74%)

2023/12/18 16:42 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_2500hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2200.0 Hz
Analysis (2) min.	2860.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO34_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

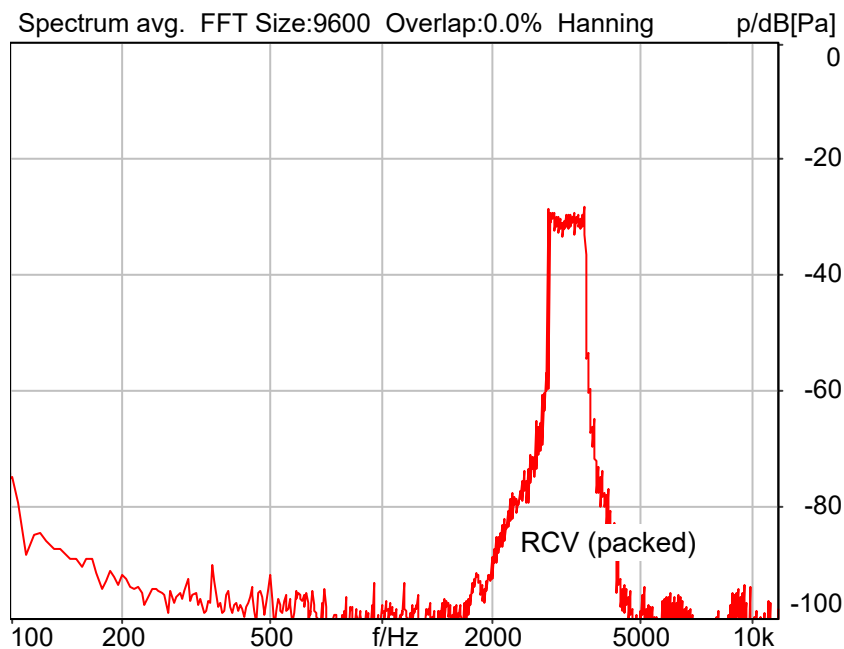
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 3150Hz WB&NB

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



Distortion (Noise) RCV (packed): 33.13 dB (2.20%)

2023/12/18 16:42 ACQUA 5.1.200

Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_3150hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	2780.0 Hz
Analysis (2) min.	3590.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.4000 ms (D_RCV_NB, Delay (Cross))
 Store to variable ISO35_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

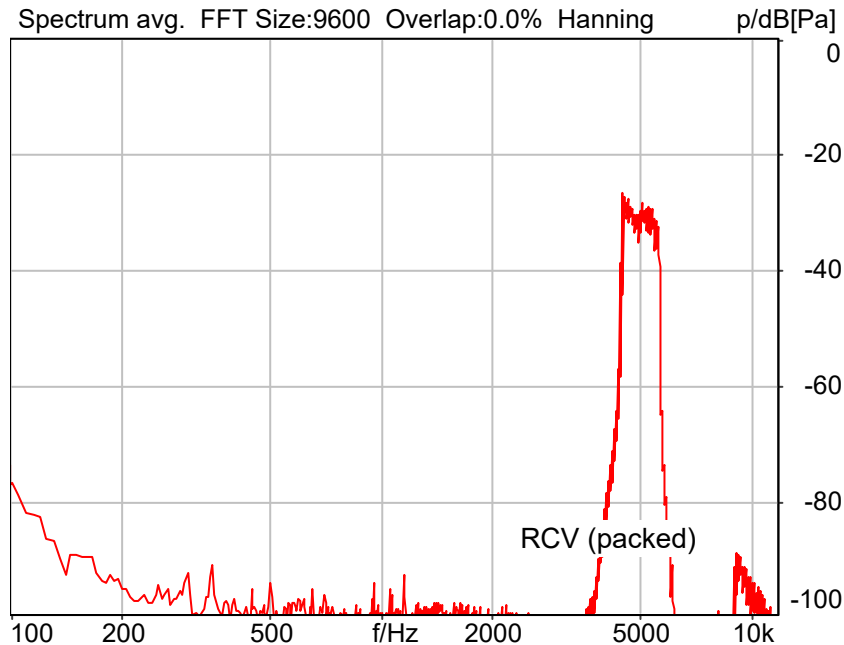
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3
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Receive path - distortion and noise 5000Hz WBoNy

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7



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

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Meas. Setting STD:DRP/ERP OFF

Source: act_rpn_b250ms_5000hz_sr20dbm0_v02.dat

Level adj. Ch1 -90.0 dB

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

Mouth Eq. Ch.1: HATS 3 (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.	100.0 Hz	Analysis max.	4425.0 Hz
Analysis (2) min.	5665.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))
 Store to variable ISO37_16_SDNR

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

Range Ch. 1	0.00 dB	Range Ch. 2	0.00 dB
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Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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5.2 Receive path – distortion and noise

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB \ 5.2 Receive path – distortion and noise

Table-7

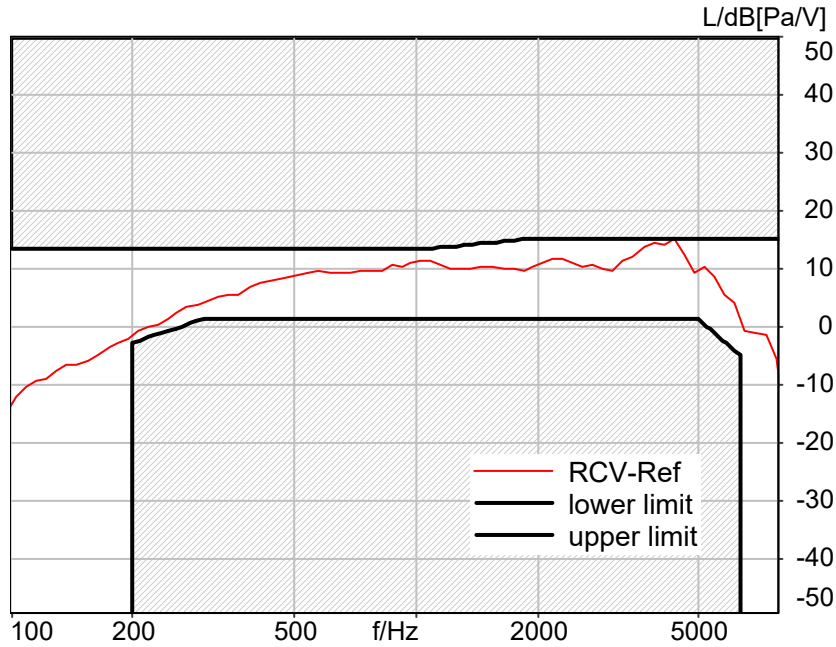
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
1	iso24_16_SDNR	28.26	20	190...315 Hz	Pass
2	iso25_16_SDNR	28.33	20	245...390 Hz	Pass
3	iso26_16_SDNR	36.34	20	320...480 Hz	Pass
4	iso27_16_SDNR	35.92	20	410...595 Hz	Pass
5	iso28_16_SDNR	36.77	20	525...745 Hz	Pass
6	iso29_16_SDNR	37.35	20	675...925 Hz	Pass
7	iso30_16_SDNR	35.28	20	855...1155 Hz	Pass
8	iso31_16_SDNR	32.08	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	37.55	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	37.48	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	35.17	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	33.13	20	2785...3585 Hz	Pass
13	iso36_16_SDNR	33.84	20	3515...4500 Hz	Pass
14	iso37_16_SDNR	33.09	20	4430...5660 Hz	Pass

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5.3 Receive Acoustic Frequency response Performance

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB

Table-7



Absolute minimal distance
1.64 dB at 205.7 Hz Ok

Ok

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Limits

	lower
Run 1	Fit into tolerance

Meas. Setting STD:DRP/ERP OFF

Source: ieee_male_dual_wb.dat

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

Calibration

Input ch.2: 1.37 dB 2023/11/29 (HATS 3 (HMS II.3))

Output ch.2: 0.00 dB (Radio Tester 1 (CMW500))

Output Equalization/Filter

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

Analysis

Direction Out 2 -> In 2

Range start 250.00 ms

Use FIR Filter Ch2

Range length 10200.00 ms

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	16384	Overlap	75 %
Window function.	Hanning		
Reference file	rcv_wb_ref1.fft		
Tol. scheme file	wb_fr_tol.tol	Min. freq. for tol.	100.0 Hz
Auto adjust	To upper scheme	Max. freq. for tol.	8000.0 Hz

Special Features

Compensate delay 143.3000 ms (D_RCV_WB, Delay (Cross))
 Store to file rcv_fr_wb

Hardware Config Settings

Used Setting STD:Mobile test both channels

labCORE Settings

labCORE Serial	77000136	Nickname	
Firmware	3.2.46	Sync Source	Internal
Clock Pitch	0.00 ppm		

labCORE Routing

Out Channel 1 -> Power Amp. 1/2 1 -> HATS 3 (HMS II.3) Speaker
 Out Channel 2 -> Analog Out 1/2 1 -> Radio Tester 1 (CMW500) In
 In Channel 1 <- BEQ Filter 1 L <- Mic Amp. 1..4 In 1 <- HATS 3 (HMS II.3) Mic. Left
 In Channel 2 <- BEQ Filter 1 R <- Mic Amp. 1..4 In 2 <- HATS 3 (HMS II.3) Mic. Right

Analog In Mainboard Settings (Analog In 1/2)

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

Analog Out Mainboard Settings (Analog Out 1/2)

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

Microphone Settings (Mic Amp. 1..4)**Channel In 1 Settings**

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

Channel In 2 Settings

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

Channel In 3 Settings

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

Channel In 4 Settings

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

BEQ Settings (BEQ Filter 1)

Block mode Bypass

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

Ser. Nr.	12306194	Pinna Type	Type 3.3
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