Measurement Protocol

Measurement Object	23T04Z80629 VoLTE EVS	23T04Z80629 VoLTE AMR
Description	FCC Volume control	FCC Volume control
Model Name	B160V	b160v
Sample Number	UT78a	UT78a
IMEI	356197680005216	356197680005216
Test Band	VoLTE Band2	VoLTE Band2
Test Date	20231213-20231217	20231213-20231217
Tester	Zhu Hongye	Zhu Hongye
Test System (ACQUA System)	ACQUA V5.1.200,CMW500 (SN:170430),Labcore (SN:77000136)	ACQUA V5.1.200,CMW500 (SN:170430),Labcore (SN:77000136)
HATS Type	HEAD HATS (HMS II.3, SN: 12306194(torso13740182))(0,0,5)	HEAD HATS (HMS II.3, SN: 12306194(torso13740182))(0,0,5)
Environment	Temp.15~35 'C, 20~75%RH, Acoustic Chamber	Temp.15~35 'C, 20~75%RH, Acoustic Chamber
Location	The NO.52 of Huayuan North Road	The NO.52 of Huayuan North Road

Project	TIA 5050 v1
Report Generation Date	2023/12/17 10:29
Responsible Person	STA

Status Overview

SMD	Status	Single Value Description	Single Value	Object
5.1 Receive Volume Control Performance 8N Table-1	Done	Speech Level [dB[SPL]]	84.44	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 8N Table-1	Ok	Calculated Value [dB]	14.44	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	27.47	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	26.45	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	24.09	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	22.61	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.09	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	30.09	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.53	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.42	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.02	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	24.50	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-1	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-1	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	3.67	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 8N Table-1	Done	Speech Level [dB[SPL]]	83.95	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 8N Table-1	Ok	Calculated Value [dB]	13.95	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 250 WBonly	Done	Distortion (Noise) [dB], 0.0 dB	28.35	23T04Z80629 VoLTE EVS

Table-1				
Receive path - distortion and noise 315Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	29.94	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.95	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.67	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.39	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.19	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.41	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.26	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	37.92	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	38.36	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	33.82	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	32.30	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 4000Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	33.86	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 5000Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	33.46	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-1	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-1	Ok	Min. dist. to tolerance scheme [dB], 205.7 Hz	3.60	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 2N Table-1	Done	Speech Level [dB[SPL]]	80.83	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 2N Table-1	Ok	Calculated Value [dB]	10.83	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	25.11	23T04Z80629 VoLTE EVS

Receive path - distortion and noise 500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	25.98	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 630Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	26.00	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	23.28	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.08	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	30.09	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	35.14	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	32.95	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.93	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	26.41	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-1	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-1	Ok	Min. dist. to tolerance scheme [dB], 305.9 Hz	3.52	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 2N Table-1	Done	Speech Level [dB[SPL]]	80.48	23T04Z80629 VoLTE EVS
5.1.1 -1 Conversation Gain 2N Table-1	Ok	Calculated Value [dB]	10.48	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 250 WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	27.80	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 315Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	29.77	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 4000Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	32.87	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 400Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	33.33	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	30.91	23T04Z80629 VoLTE EVS
Receive path - distortion and noise	Done	Distortion (Noise) [dB], 0.0	36.55	23T04Z80629

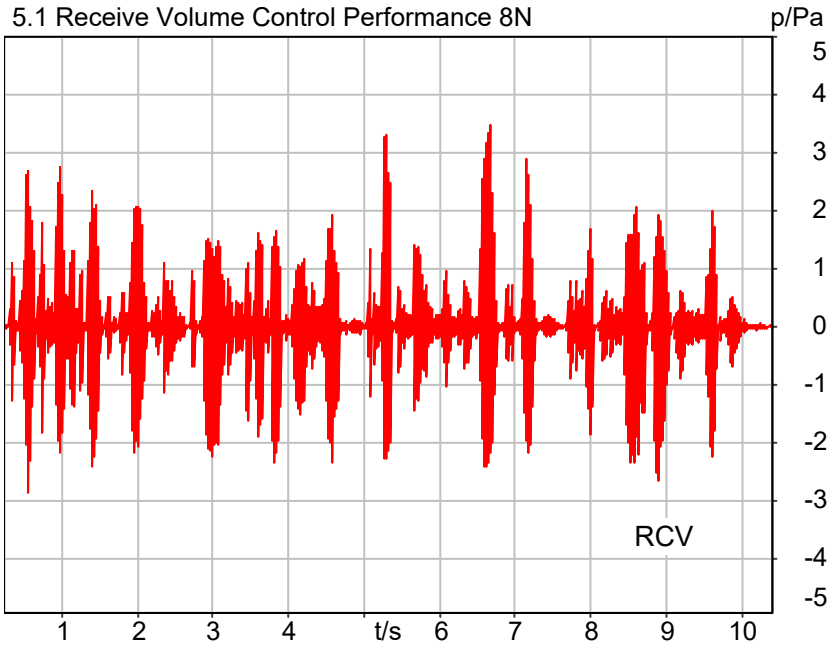
630Hz WB&NB Table-1		dB		VoLTE EVS
Receive path - distortion and noise 800Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.49	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.36	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1250Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.18	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 1600Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.39	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2000Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	36.06	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 2500Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	34.42	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 3150Hz WB&NB Table-1	Done	Distortion (Noise) [dB], 0.0 dB	31.56	23T04Z80629 VoLTE EVS
Receive path - distortion and noise 5000Hz WBonly Table-1	Done	Distortion (Noise) [dB], 0.0 dB	33.20	23T04Z80629 VoLTE EVS
5.2 Receive path – distortion and noise Table-1	Ok			23T04Z80629 VoLTE EVS
5.3 Receive Acoustic Frequency response Performance Table-1	Ok	Min. dist. to tolerance scheme [dB], 205.7 Hz	2.61	23T04Z80629 VoLTE EVS
5.1 Receive Volume Control Performance 8N 12.2kbps; Table-1	Done	Speech Level [dB[SPL]]	84.80	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 8N 4.75kbps; Table-1	Done	Speech Level [dB[SPL]]	84.05	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 8N 12.2kbps; Table-1	Ok	Calculated Value [dB]	14.80	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 8N 4.75kbps; Table-1	Ok	Calculated Value [dB]	14.05	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 8N 6.6kbps; Table-1	Done	Speech Level [dB[SPL]]	83.93	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 8N 12.65kbps; Table-1	Done	Speech Level [dB[SPL]]	84.09	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 8N 6.6kbps; Table-1	Ok	Calculated Value [dB]	13.93	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 8N 12.65kbps;Table-1	Ok	Calculated Value [dB]	14.09	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 2N	Done	Speech Level [dB[SPL]]	80.32	23T04Z80629 VoLTE AMR

4.75kbps; Table-1				
5.1 Receive Volume Control Performance 2N 12.2kbps; Table-1	Done	Speech Level [dB[SPL]]	81.16	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 2N 4.75kbps; Table-1	Ok	Calculated Value [dB]	10.32	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 2N 12.2kbps; Table-1	Ok	Calculated Value [dB]	11.16	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 2N 6.6kbps; Table-1	Done	Speech Level [dB[SPL]]	80.39	23T04Z80629 VoLTE AMR
5.1 Receive Volume Control Performance 2N 12.65kbps; Table-1	Done	Speech Level [dB[SPL]]	80.53	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 2N 6.6kbps; Table-1	Ok	Calculated Value [dB]	10.39	23T04Z80629 VoLTE AMR
5.1.1 -1 Conversation Gain 2N 12.65kbps; Table-1	Ok	Calculated Value [dB]	10.53	23T04Z80629 VoLTE AMR

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE EVS)

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

Table-1



Speech Level RCV: 84.44 dB[SPL], Act.: 93.46%

2023/12/13 9:40 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 133.5000 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

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

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE EVS)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB
Table-1

Correction

rcv_vol_nb	84.440 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_nb-70

Calculated Value: 14.44 dB Ok

Ok

2023/12/13 9:40 ACQUA 5.1.200

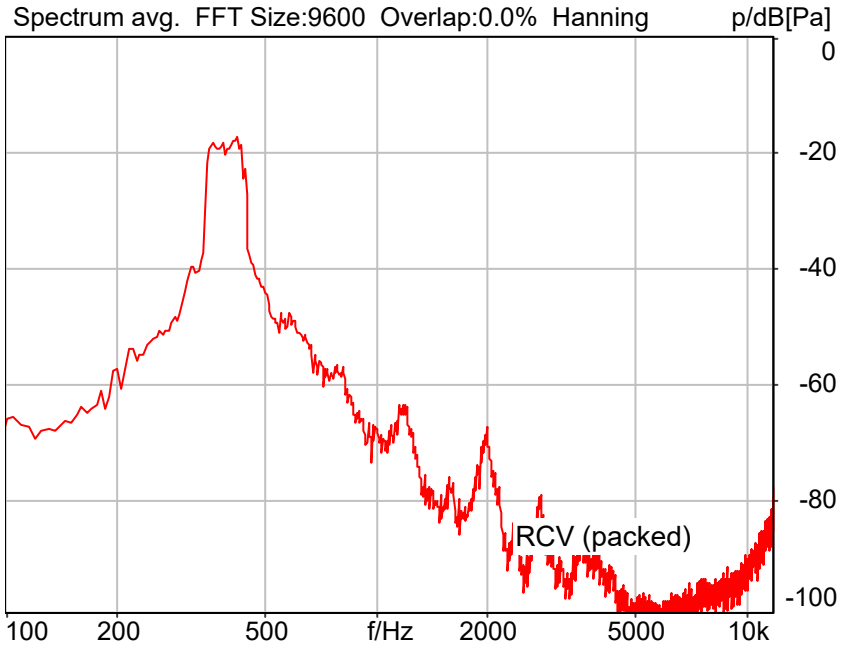
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 400Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 27.47 dB (4.23%)

2023/12/13 9:41 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	133.5000 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

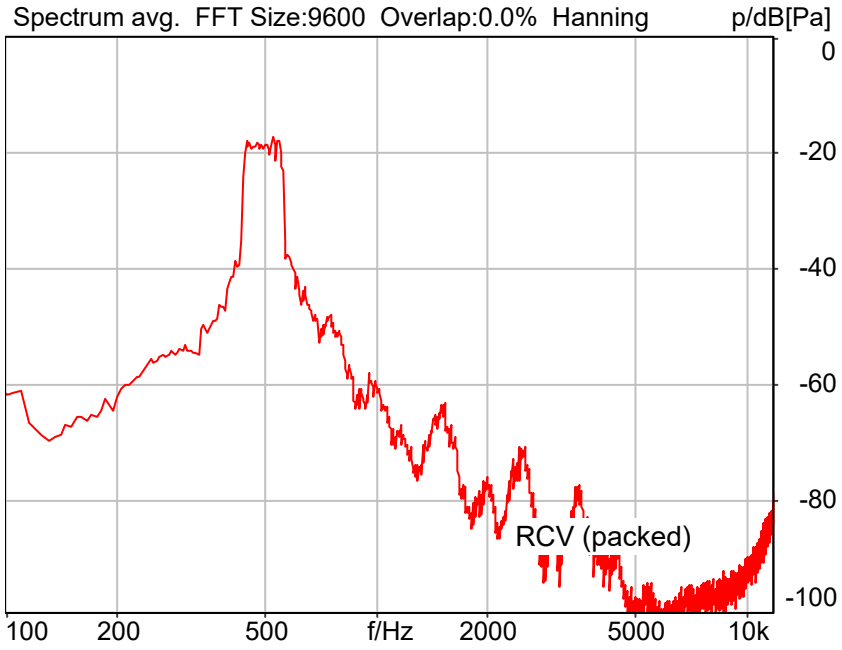
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 26.45 dB (4.76%)

2023/12/13 9:41 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	133.5000 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

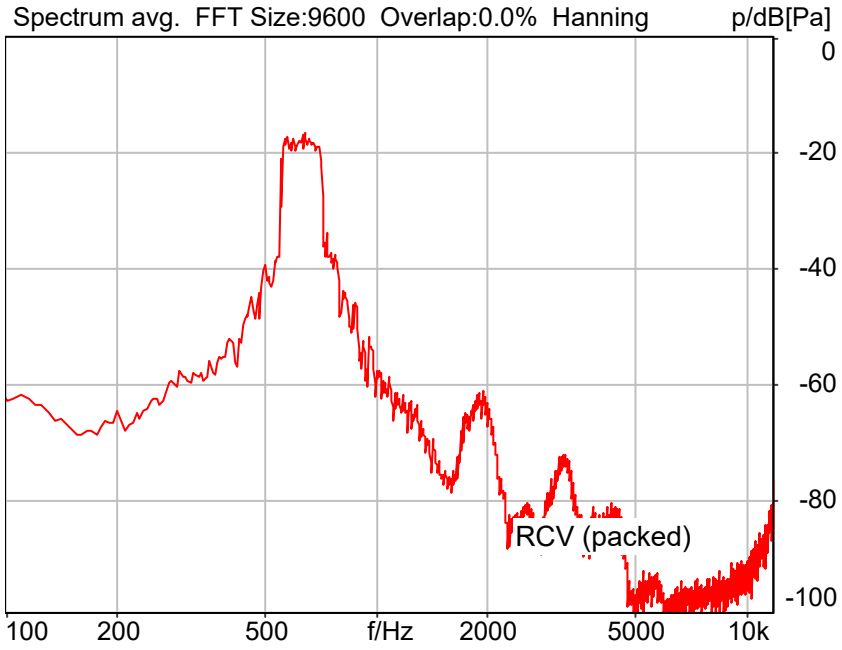
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 630Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 24.09 dB (6.25%)

2023/12/13 9:41 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	133.5000 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

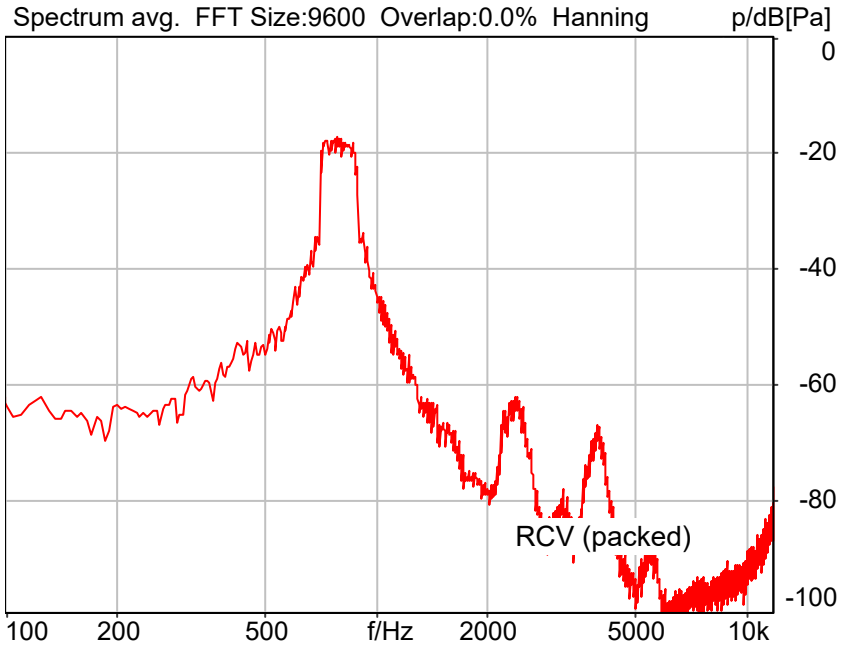
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 800Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 22.61 dB (7.40%)

2023/12/13 9:42 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	133.5000 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

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

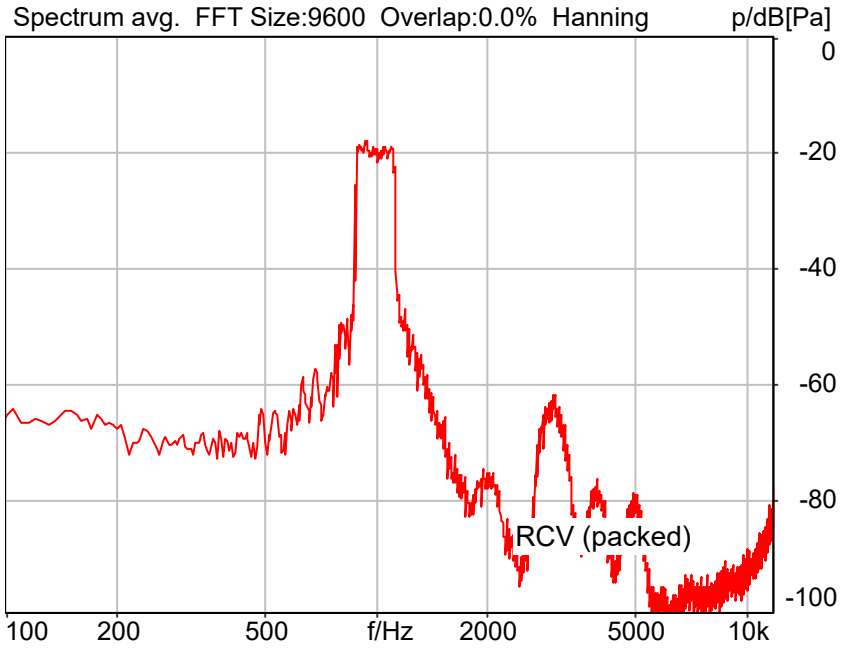
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.09 dB (2.79%)

2023/12/13 9:42 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	133.5000 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

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

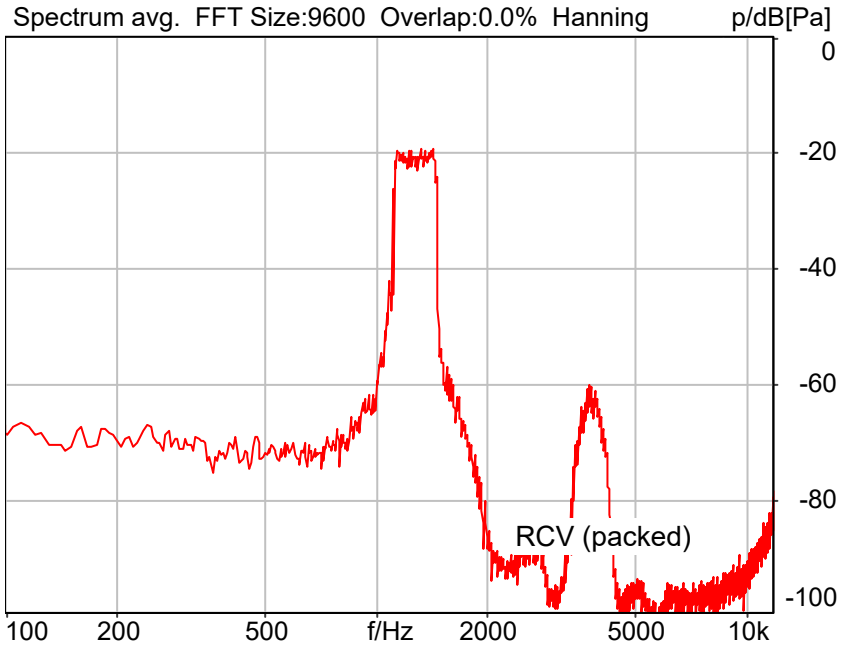
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1250Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



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

2023/12/13 9:43 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	133.5000 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

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

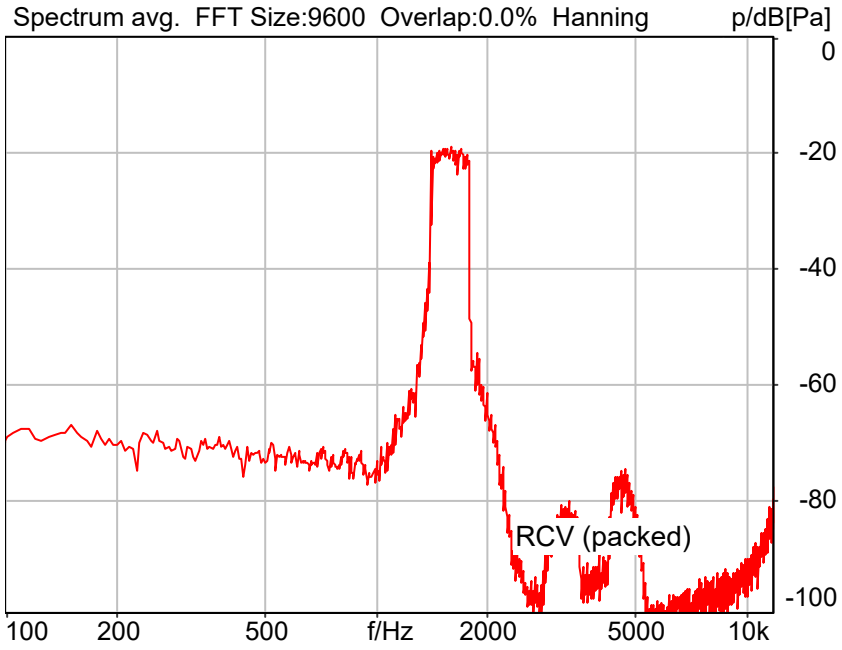
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1600Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.53 dB (1.88%)

2023/12/13 9:43 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	133.5000 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

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

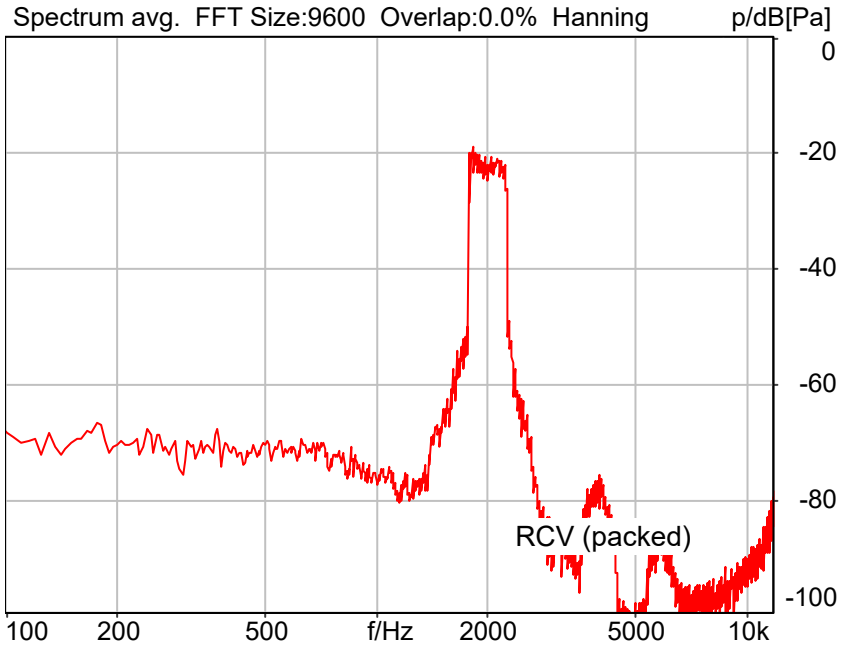
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.42 dB (1.90%)

2023/12/13 9:43 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 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	133.5000 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

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

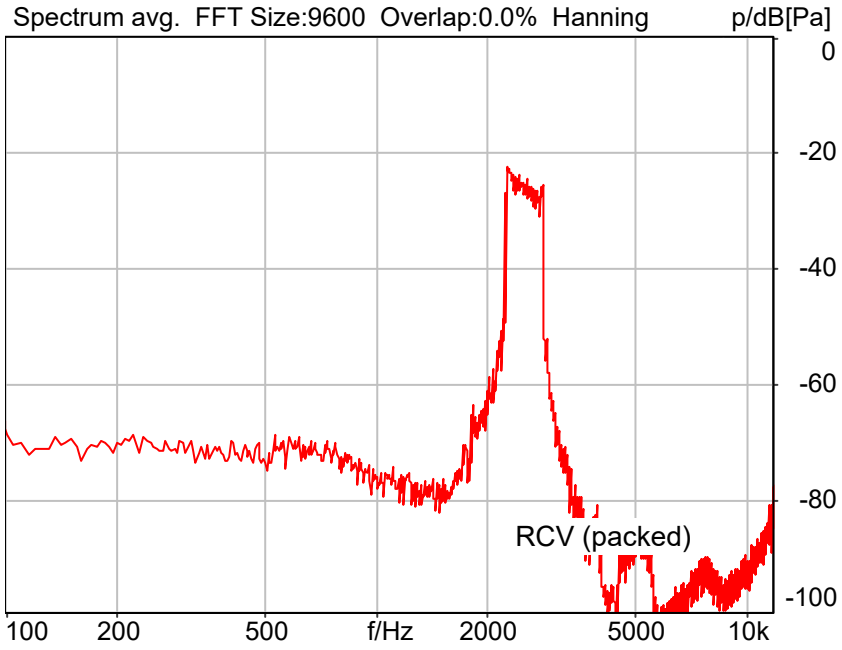
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.02 dB (2.81%)

2023/12/13 9:44 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	133.5000 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

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

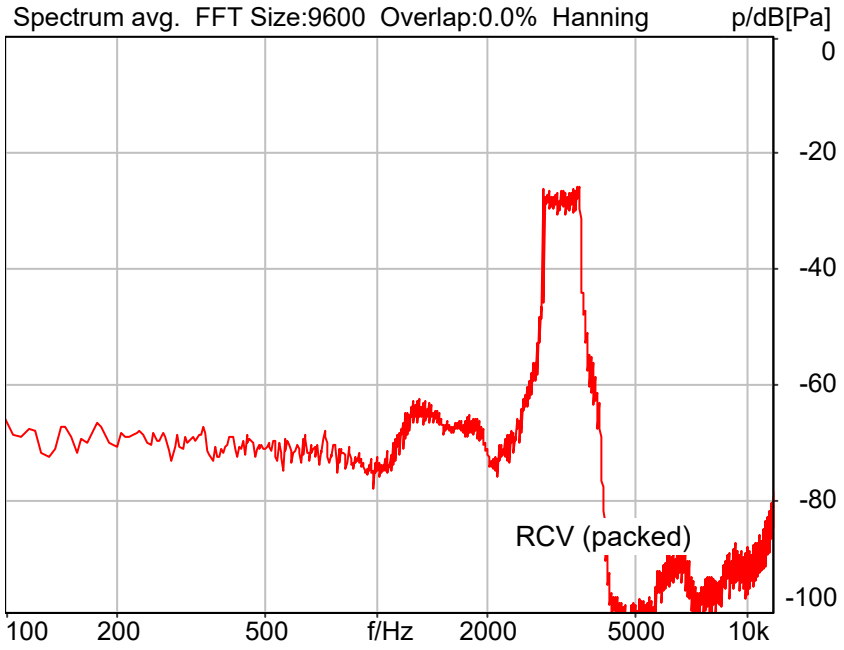
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 3150Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 24.50 dB (5.96%)

2023/12/13 9:44 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	133.5000 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

5.2 Receive path – distortion and noise (23T04Z80629 VoLTE EVS)

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

Table-1

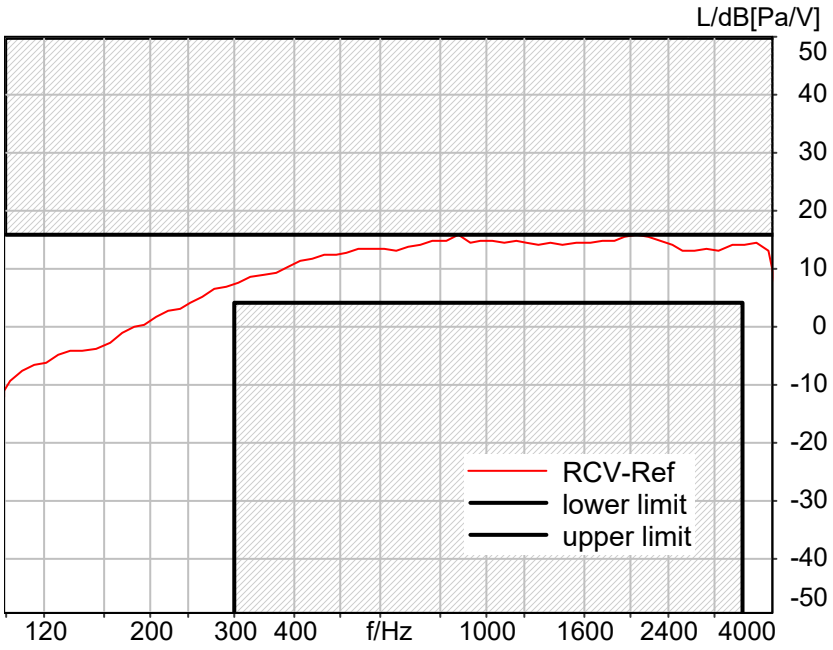
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
3	iso26_16_SDNR	27.47	20	320...480 Hz	Pass
4	iso27_16_SDNR	26.45	20	410...595 Hz	Pass
5	iso28_16_SDNR	24.09	20	525...745 Hz	Pass
6	iso29_16_SDNR	22.61	20	675...925 Hz	Pass
7	iso30_16_SDNR	31.09	20	855...1155 Hz	Pass
8	iso31_16_SDNR	30.09	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	34.53	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	34.42	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	31.02	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	24.5	20	2785...3585 Hz	Pass

2023/12/13 9:44 ACQUA

5.3 Receive Acoustic Frequency response Performance (23T04Z80629 VoLTE EVS)

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

Table-1



Absolute minimal distance

3.67 dB at 305.9 Hz Ok

Ok

2023/12/13 9:44 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 Range length 10200.00 ms

Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	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	133.5000 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

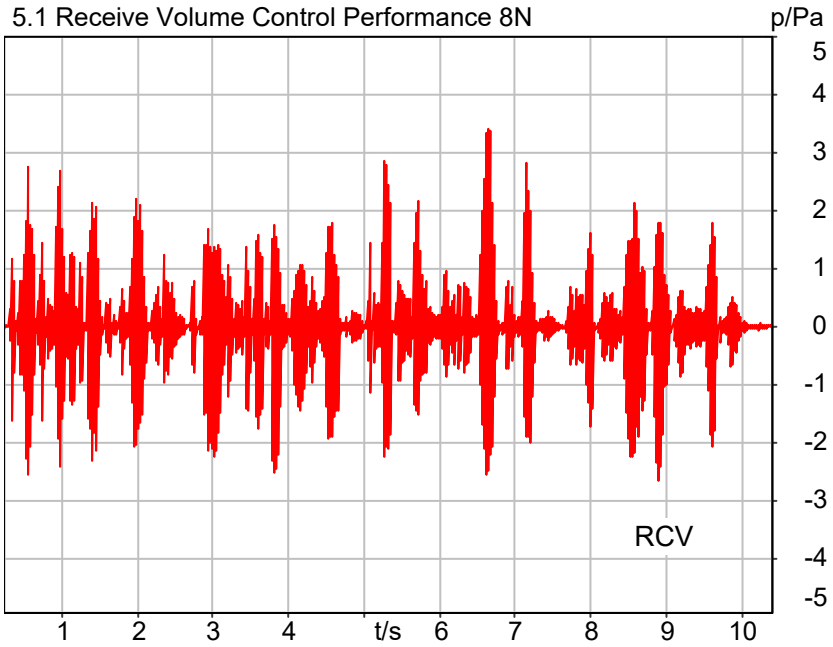
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE EVS)

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

Table-1



Speech Level RCV: 83.95 dB[SPL], Act.: 94.98%

2023/12/13 9:45 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	138.0000 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

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE EVS)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB
Table-1

Correction

rcv_vol_wb	83.950 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_wb-70

Calculated Value: 13.95 dB Ok

Ok

2023/12/13 9:45 ACQUA 5.1.200

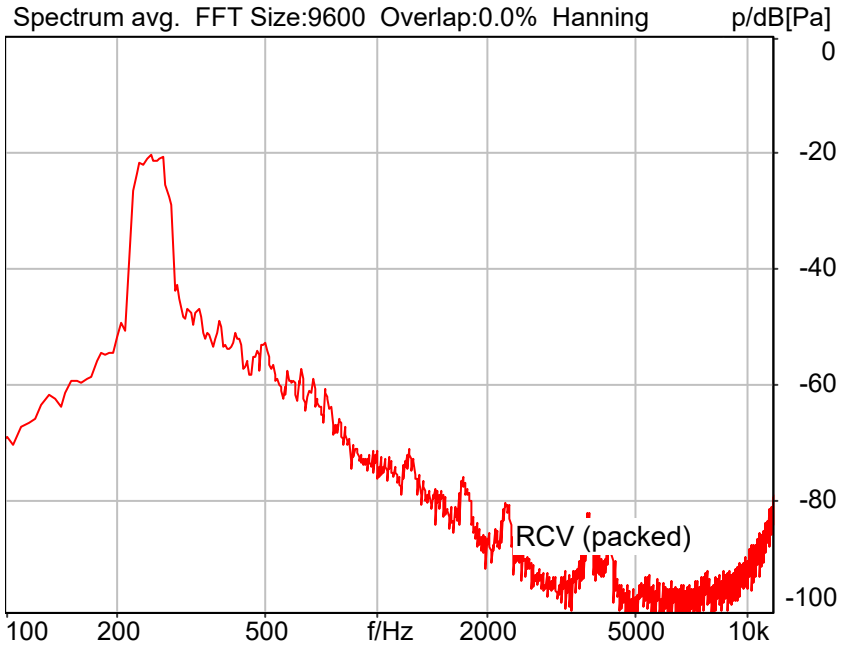
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 250 WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 28.35 dB (3.83%)

2023/12/13 9:46 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	138.0000 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

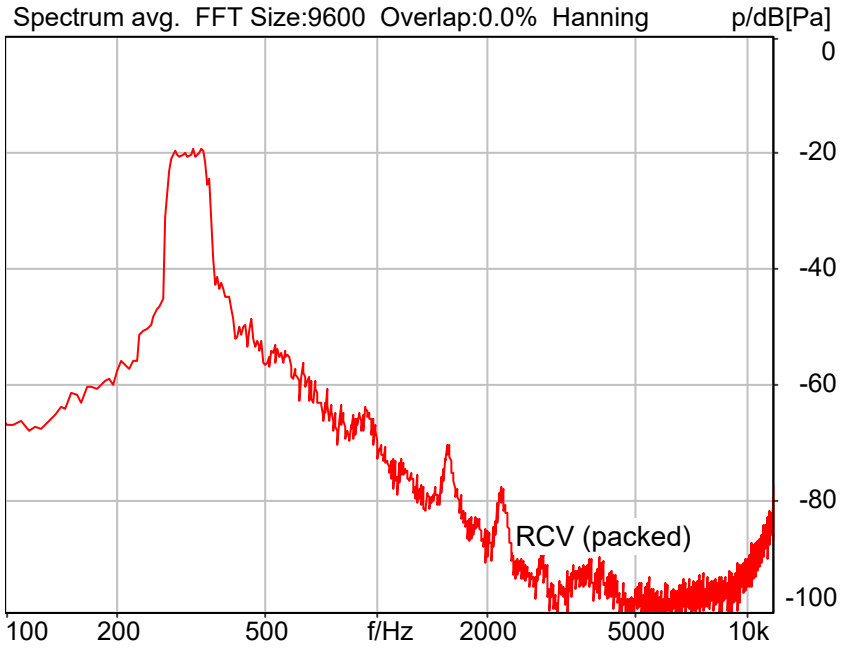
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 315Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 29.94 dB (3.18%)

2023/12/13 9:46 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	138.0000 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

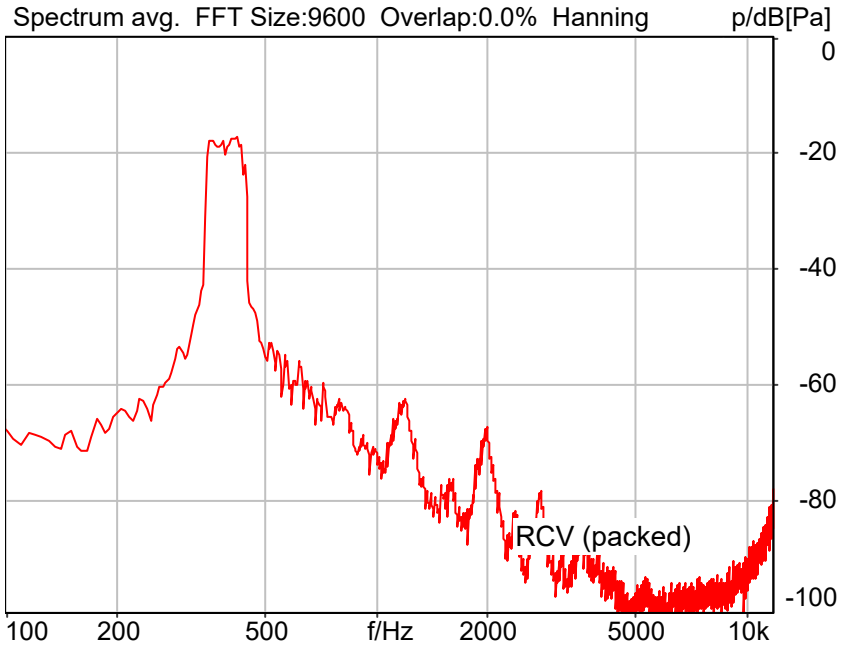
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 400Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.95 dB (1.79%)

2023/12/13 9:46 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	133.5000 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

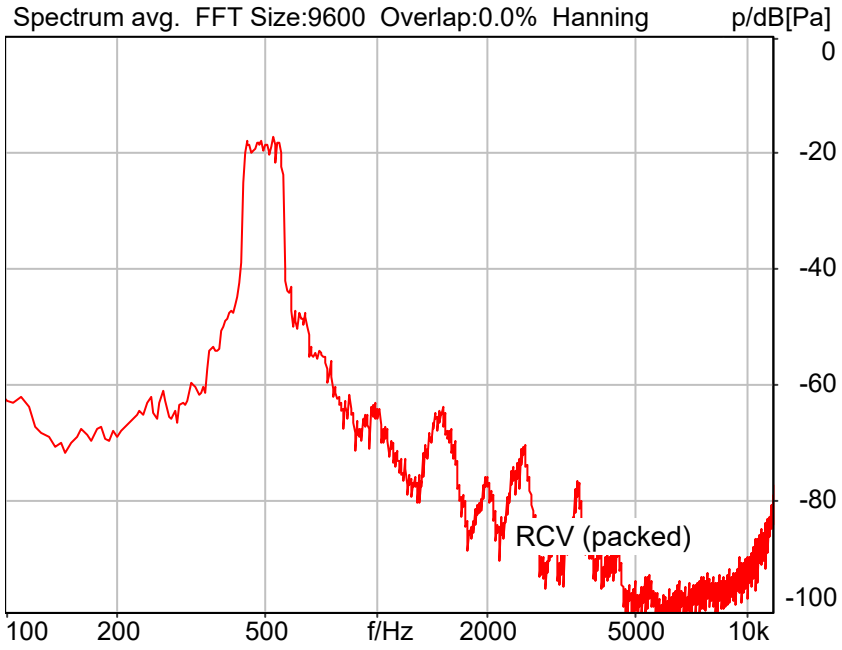
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.67 dB (2.61%)

2023/12/13 9:47 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	133.5000 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

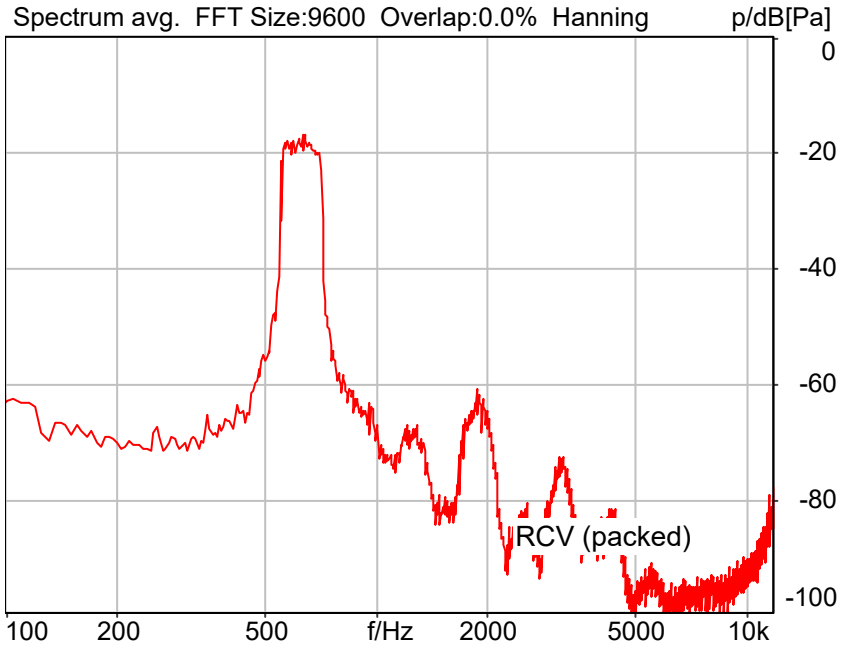
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 630Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.39 dB (1.52%)

2023/12/13 9:47 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	133.5000 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

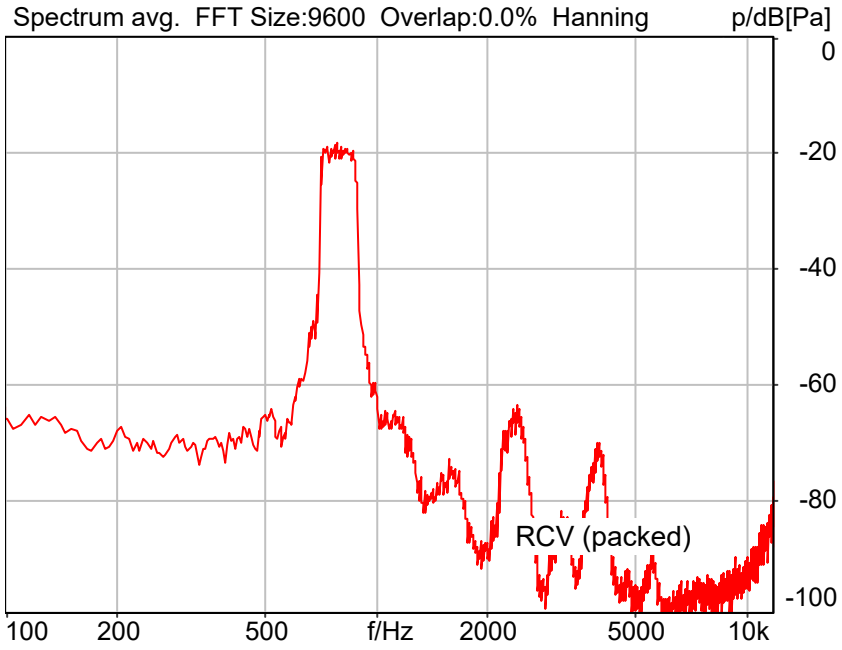
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 800Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.19 dB (1.55%)

2023/12/13 9:48 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	133.5000 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

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

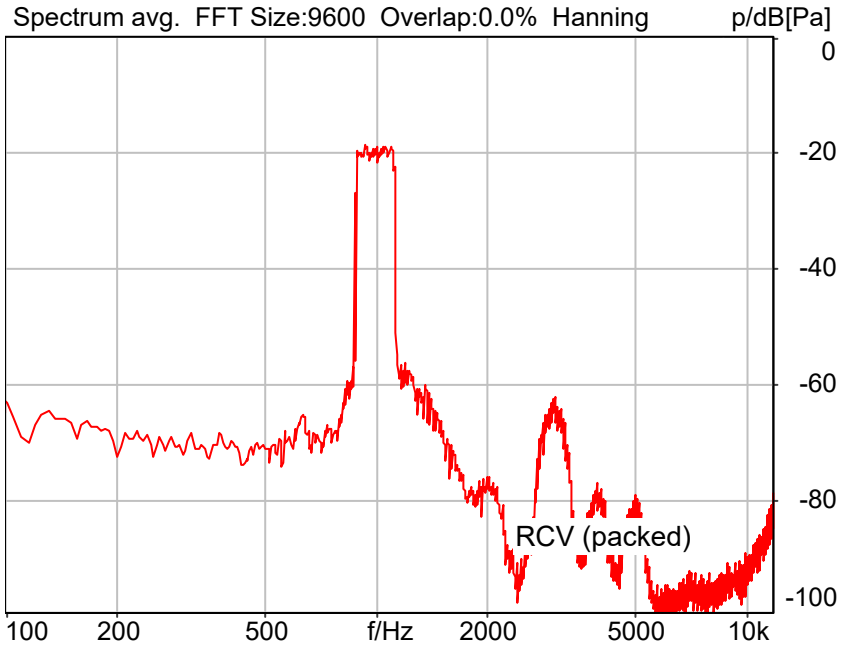
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.41 dB (1.51%)

2023/12/13 9:48 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	133.5000 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

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

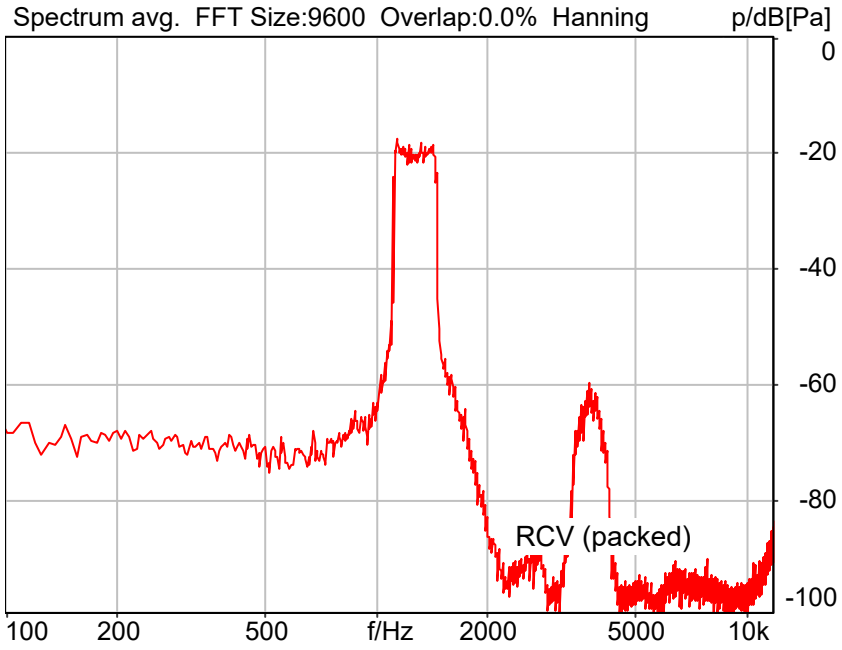
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1250Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.26 dB (2.73%)

2023/12/13 9:48 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	133.5000 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

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

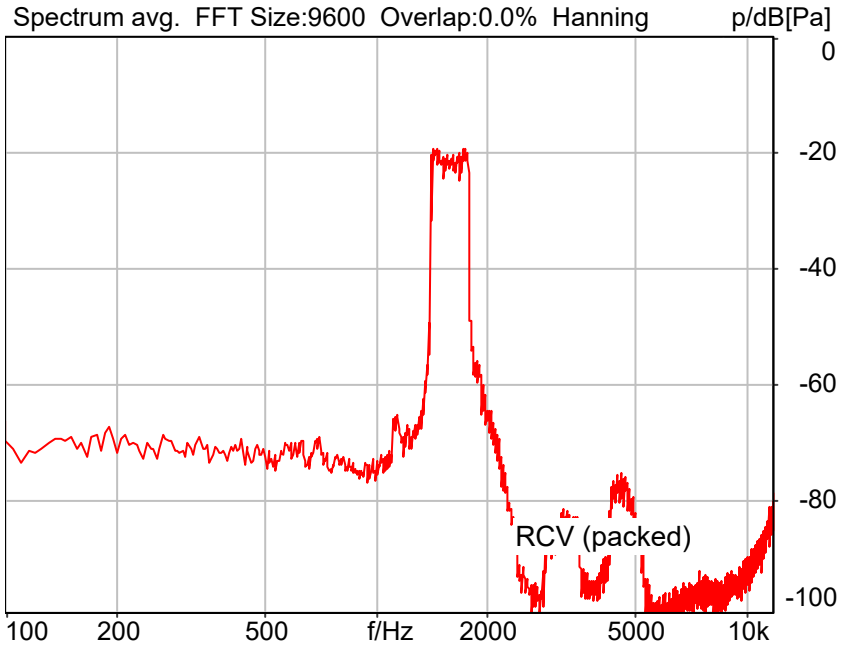
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1600Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 37.92 dB (1.27%)

2023/12/13 9:49 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	133.5000 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

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

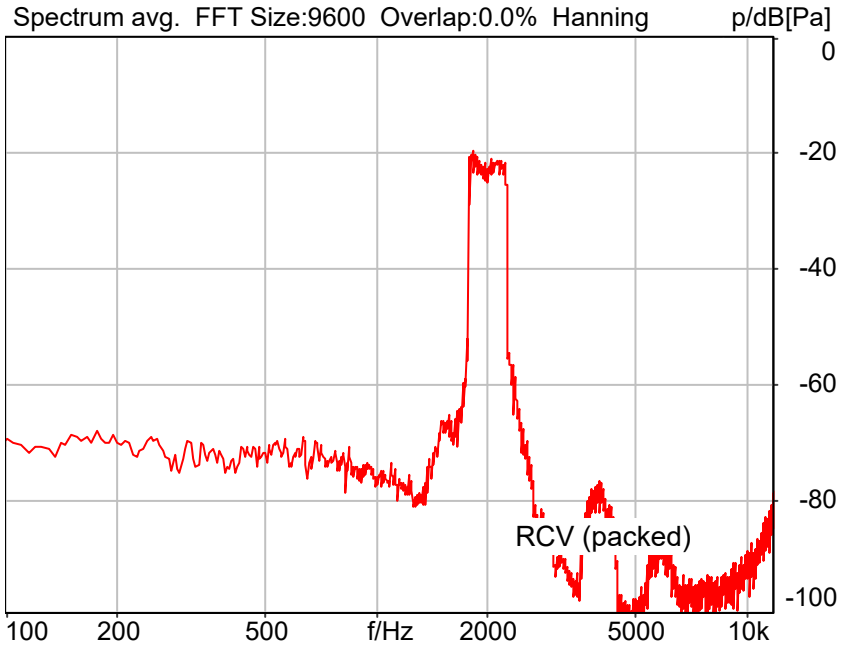
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 38.36 dB (1.21%)

2023/12/13 9:49 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 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	133.5000 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

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

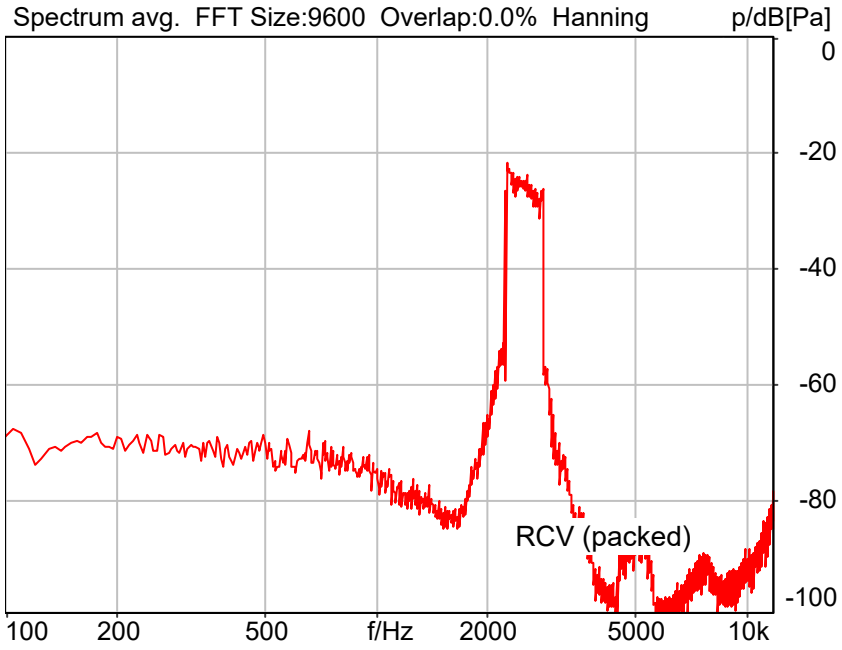
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 33.82 dB (2.04%)

2023/12/13 9:49 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	133.5000 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

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

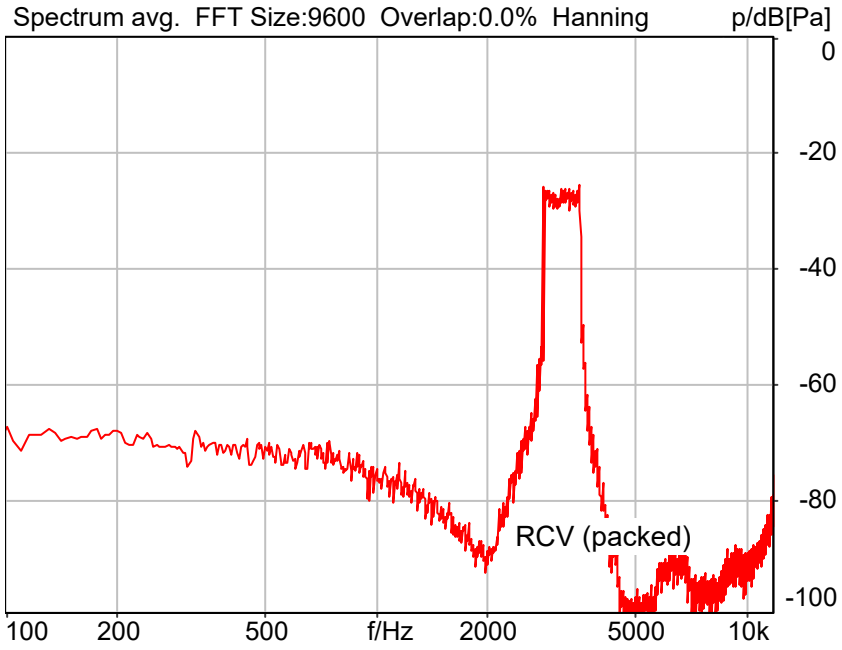
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 3150Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 32.30 dB (2.43%)

2023/12/13 9:50 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	133.5000 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

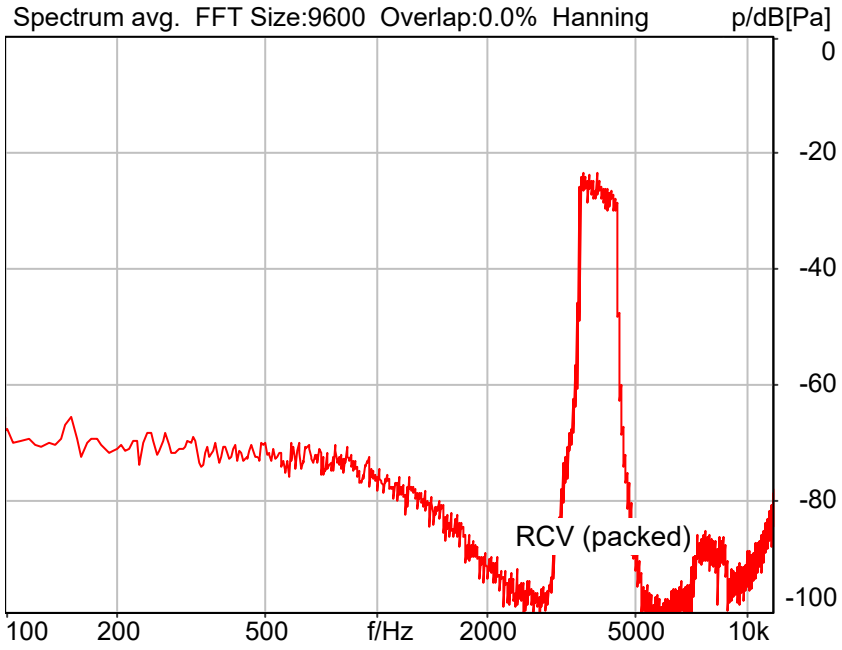
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 4000Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 33.86 dB (2.03%)

2023/12/13 9:50 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 start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz

Analysis min.	100.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay	138.0000 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

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

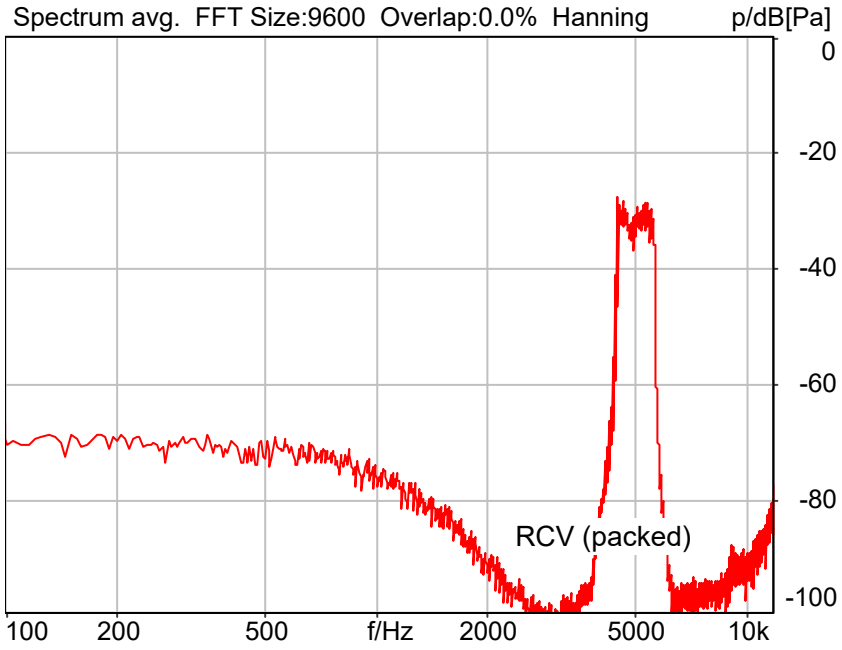
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 5000Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



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

2023/12/13 9:50 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 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	138.0000 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

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

5.2 Receive path – distortion and noise (23T04Z80629 VoLTE EVS)

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

Table-1

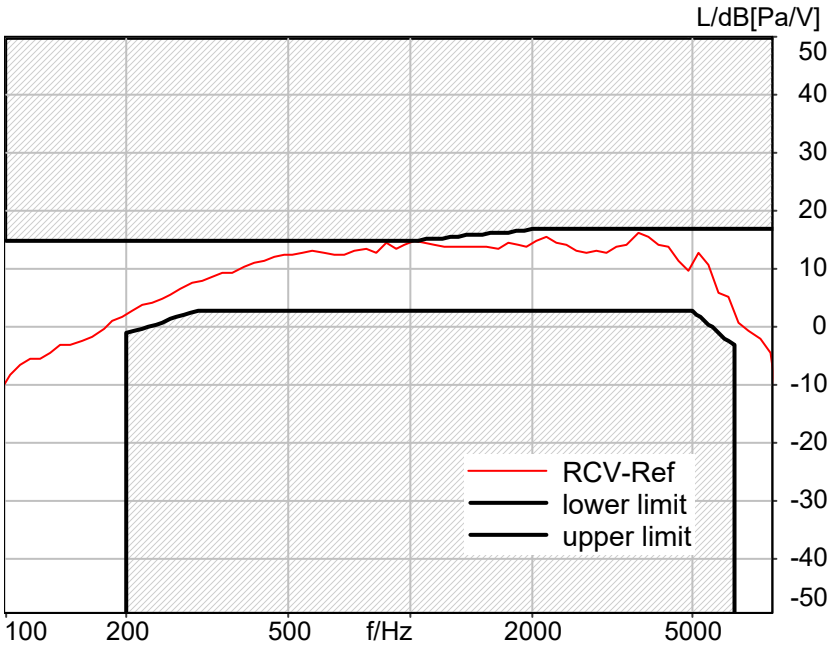
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
1	iso24_16_SDNR	28.35	20	190...315 Hz	Pass
2	iso25_16_SDNR	29.94	20	245...390 Hz	Pass
3	iso26_16_SDNR	34.95	20	320...480 Hz	Pass
4	iso27_16_SDNR	31.67	20	410...595 Hz	Pass
5	iso28_16_SDNR	36.39	20	525...745 Hz	Pass
6	iso29_16_SDNR	36.19	20	675...925 Hz	Pass
7	iso30_16_SDNR	36.41	20	855...1155 Hz	Pass
8	iso31_16_SDNR	31.26	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	37.92	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	38.36	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	33.82	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	32.3	20	2785...3585 Hz	Pass
13	iso36_16_SDNR	33.86	20	3515...4500 Hz	Pass
14	iso37_16_SDNR	33.46	20	4430...5660 Hz	Pass

2023/12/13 9:50 ACQUA

5.3 Receive Acoustic Frequency response Performance (23T04Z80629 VoLTE EVS)

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

Table-1



Absolute minimal distance

3.60 dB at 205.7 Hz Ok

Ok

2023/12/13 9:51 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 Range length 10200.00 ms

Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	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	138.0000 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

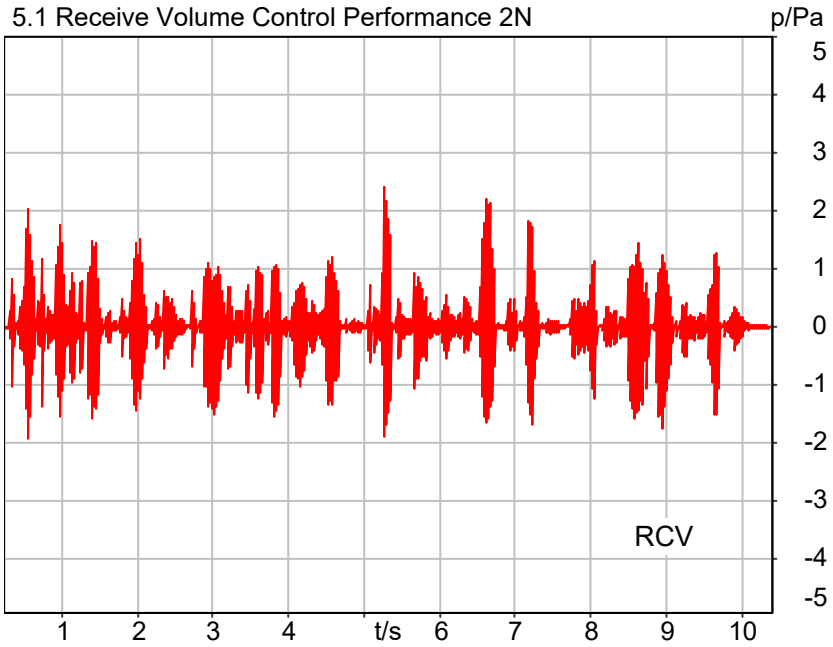
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE EVS)

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

Table-1



Speech Level RCV: 80.83 dB[SPL], Act.: 93.52%

2023/12/13 10:01 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	136.6000 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

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

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE EVS)

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB
Table-1

Correction

rcv_vol_nb	80.830 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_nb-70

Calculated Value: 10.83 dB Ok

Ok

2023/12/13 10:01 ACQUA 5.1.200

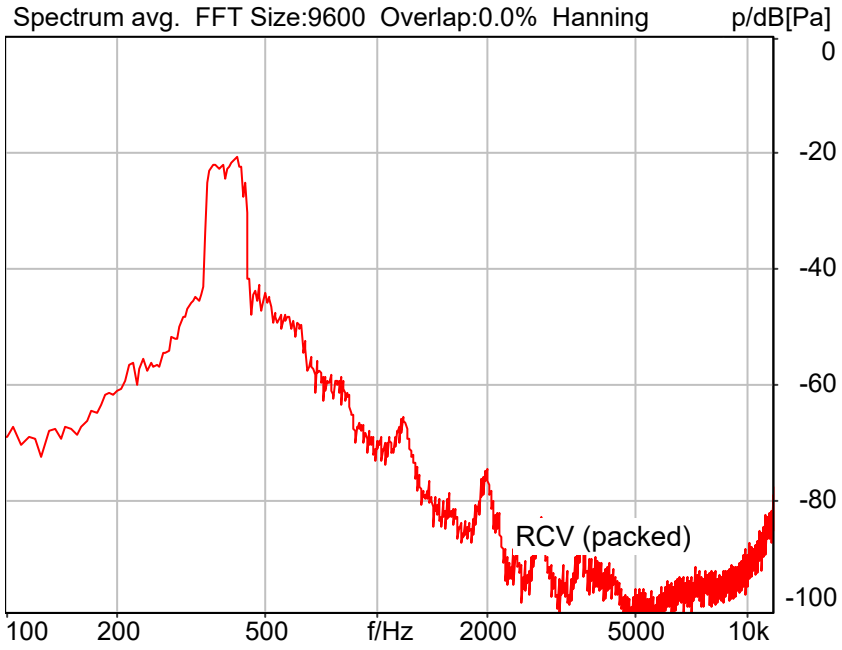
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 400Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 25.11 dB (5.55%)

2023/12/13 10:01 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	136.6000 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

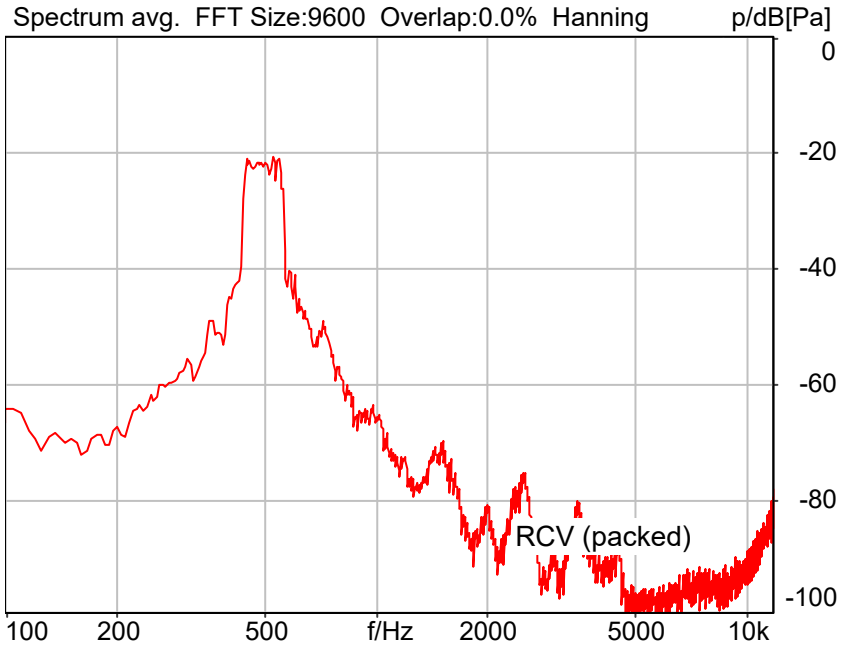
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 25.98 dB (5.03%)

2023/12/13 10:01 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	136.6000 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

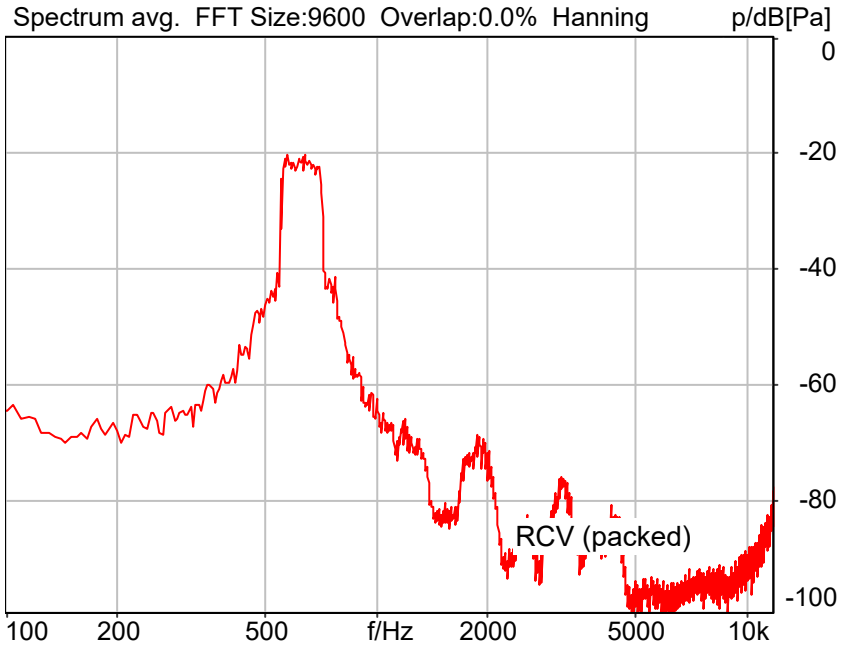
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 630Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 26.00 dB (5.01%)

2023/12/13 10:02 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	136.6000 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

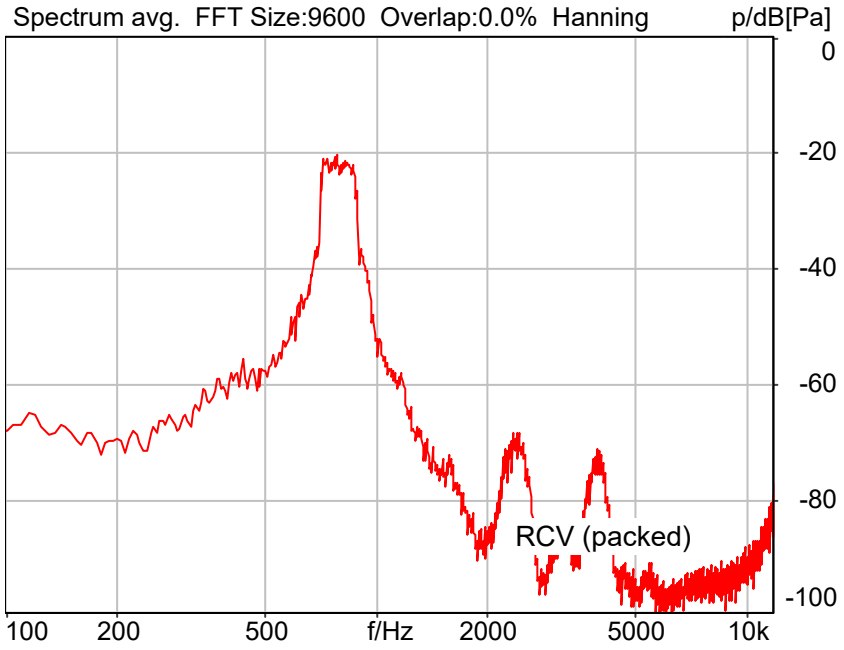
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 800Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 23.28 dB (6.85%)

2023/12/13 10:02 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	136.6000 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

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

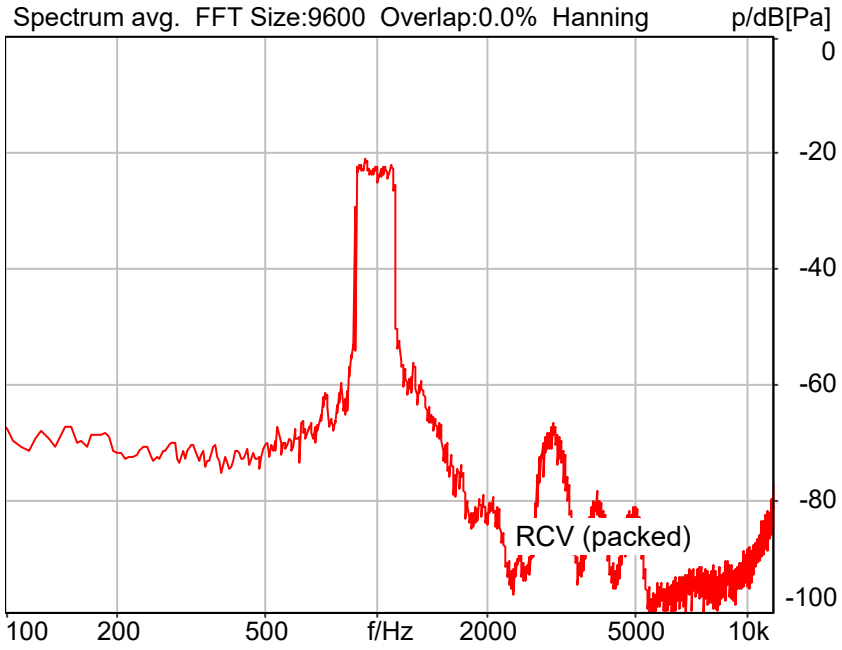
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.08 dB (1.98%)

2023/12/13 10:02 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	136.6000 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

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

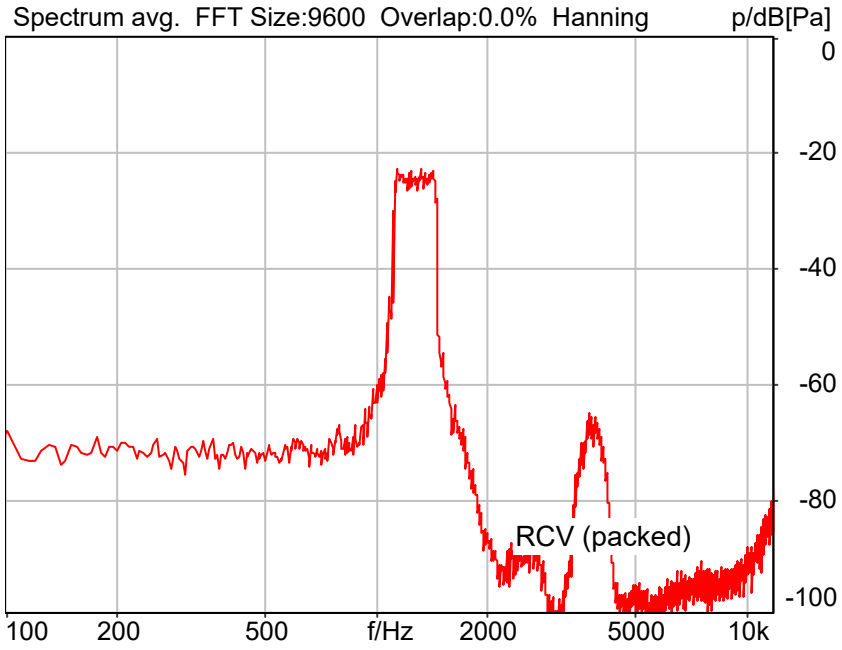
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1250Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



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

2023/12/13 10:03 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	136.6000 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

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

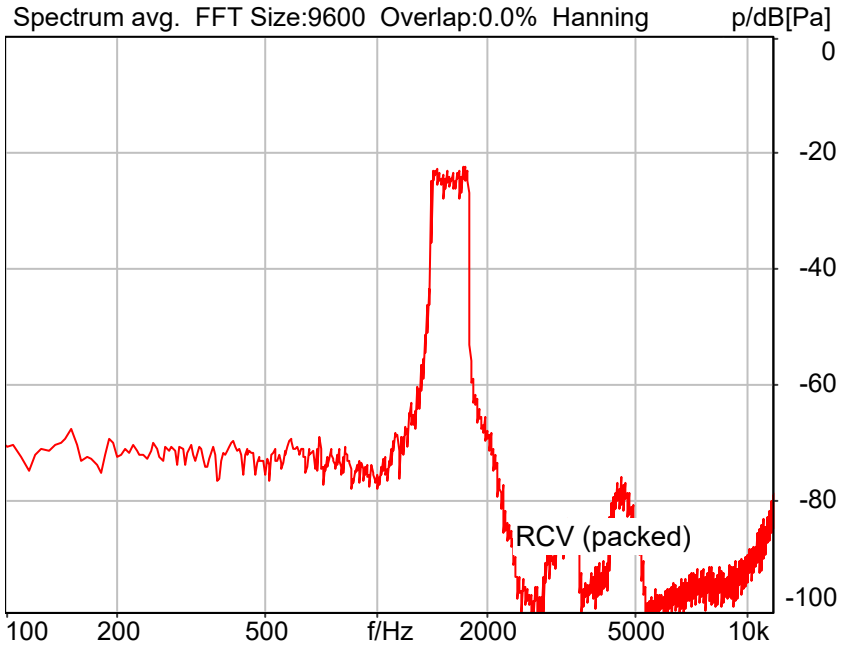
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1600Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 35.14 dB (1.75%)

2023/12/13 10:03 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	136.6000 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

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

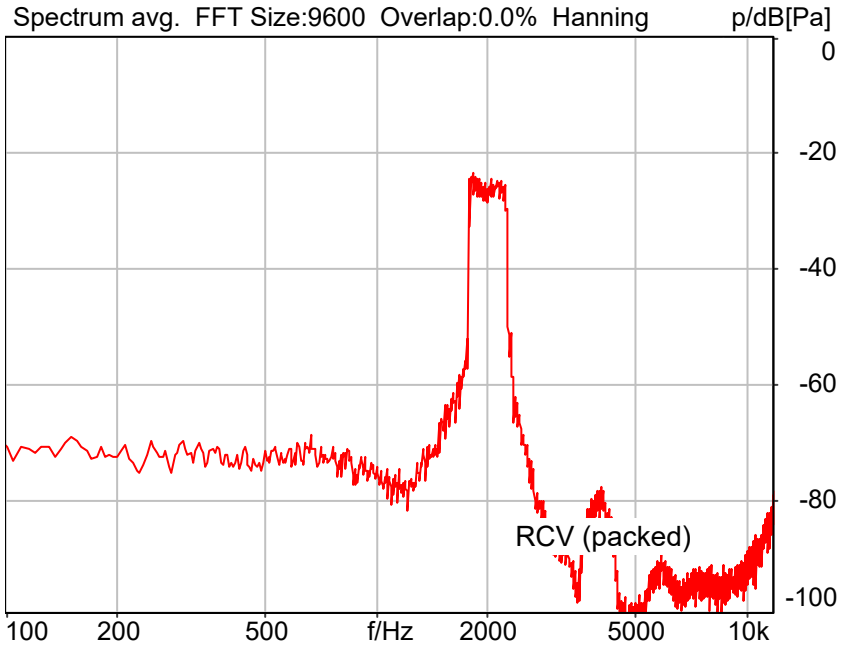
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 32.95 dB (2.25%)

2023/12/13 10:03 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 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	136.6000 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

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

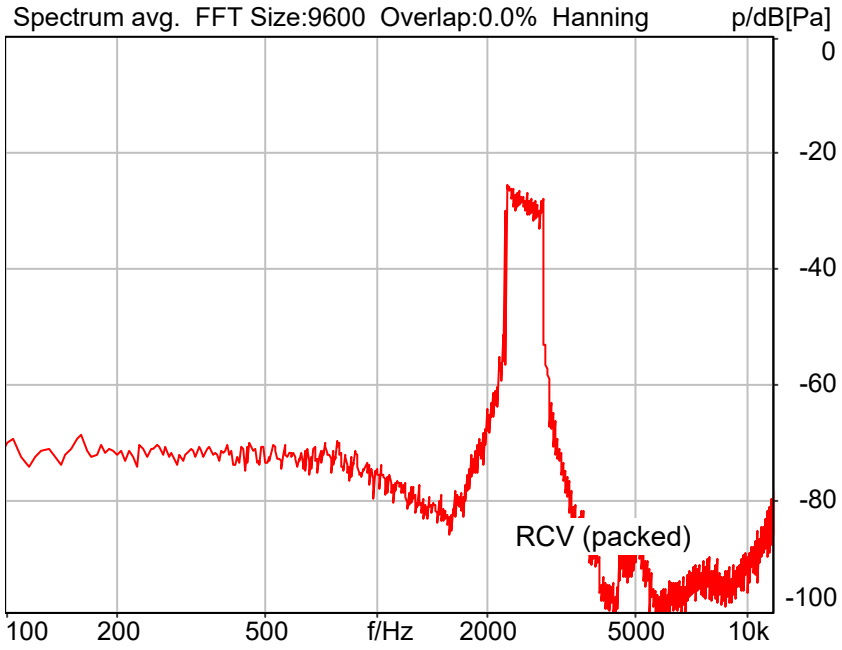
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.93 dB (2.53%)

2023/12/13 10:04 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	136.6000 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

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

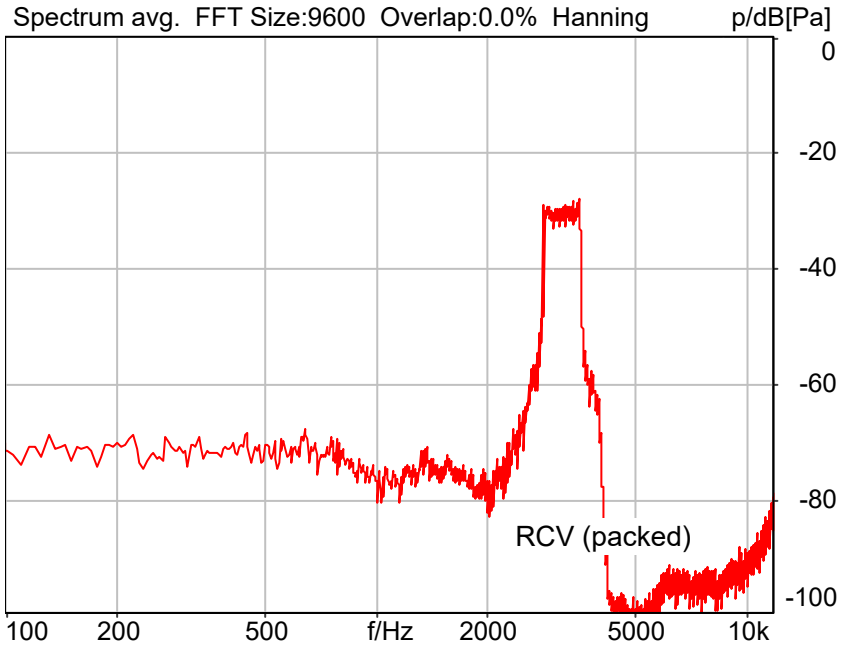
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 3150Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



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

2023/12/13 10:04 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	136.6000 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

5.2 Receive path – distortion and noise (23T04Z80629 VoLTE EVS)

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

Table-1

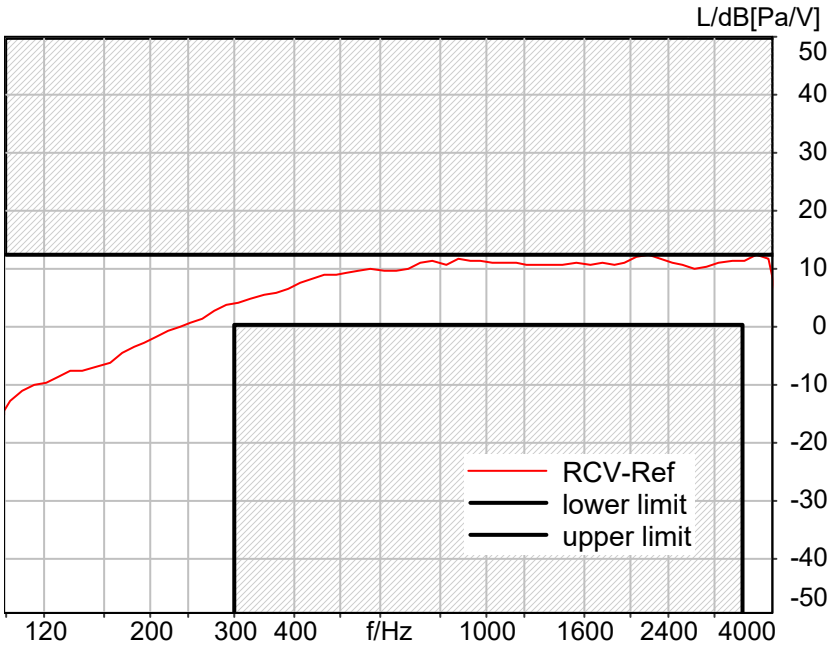
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
3	iso26_16_SDNR	25.11	20	320...480 Hz	Pass
4	iso27_16_SDNR	25.98	20	410...595 Hz	Pass
5	iso28_16_SDNR	26.0	20	525...745 Hz	Pass
6	iso29_16_SDNR	23.28	20	675...925 Hz	Pass
7	iso30_16_SDNR	34.08	20	855...1155 Hz	Pass
8	iso31_16_SDNR	30.09	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	35.14	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	32.95	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	31.93	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	26.41	20	2785...3585 Hz	Pass

2023/12/13 10:04 ACQUA

5.3 Receive Acoustic Frequency response Performance (23T04Z80629 VoLTE EVS)

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

Table-1



Absolute minimal distance

3.52 dB at 305.9 Hz Ok

Ok

2023/12/13 10:04 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 Range length 10200.00 ms

Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	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	136.6000 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

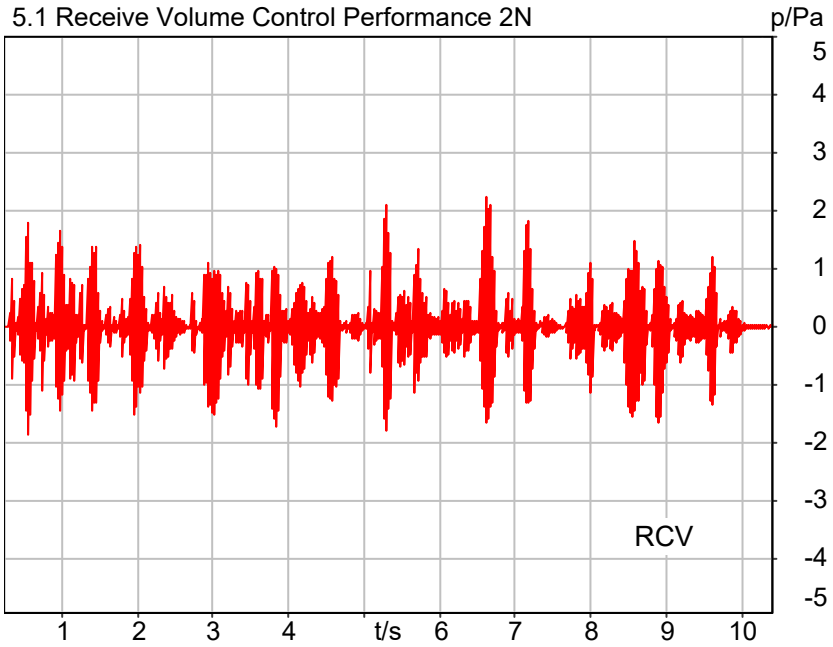
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE EVS)

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

Table-1



Speech Level RCV: 80.48 dB[SPL], Act.: 94.93%

2023/12/13 9:54 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	138.0000 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

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE EVS)

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB
Table-1

Correction

rcv_vol_wb	80.480 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_wb-70

Calculated Value: 10.48 dB Ok

Ok

2023/12/13 9:54 ACQUA 5.1.200

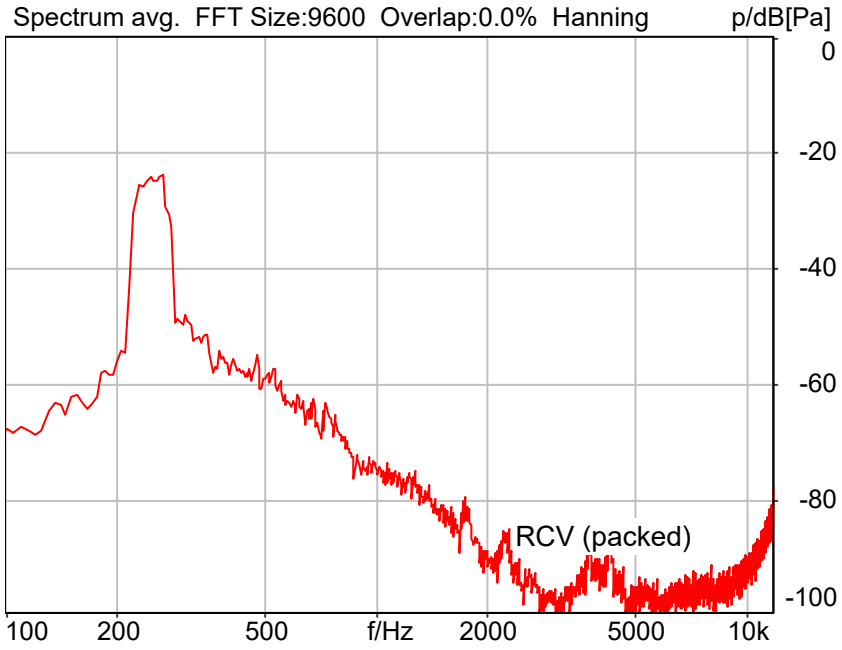
Limits

	lower
Run 1	6.00 dB

Receive path - distortion and noise 250 WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 27.80 dB (4.07%)

2023/12/13 9:54 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	138.0000 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

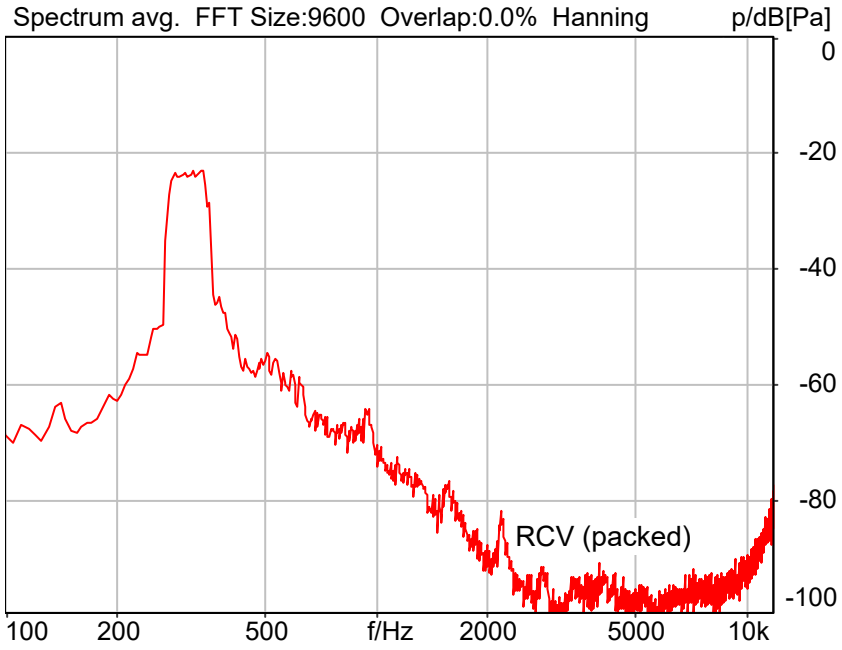
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 315Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 29.77 dB (3.25%)

2023/12/13 9:55 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	138.0000 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

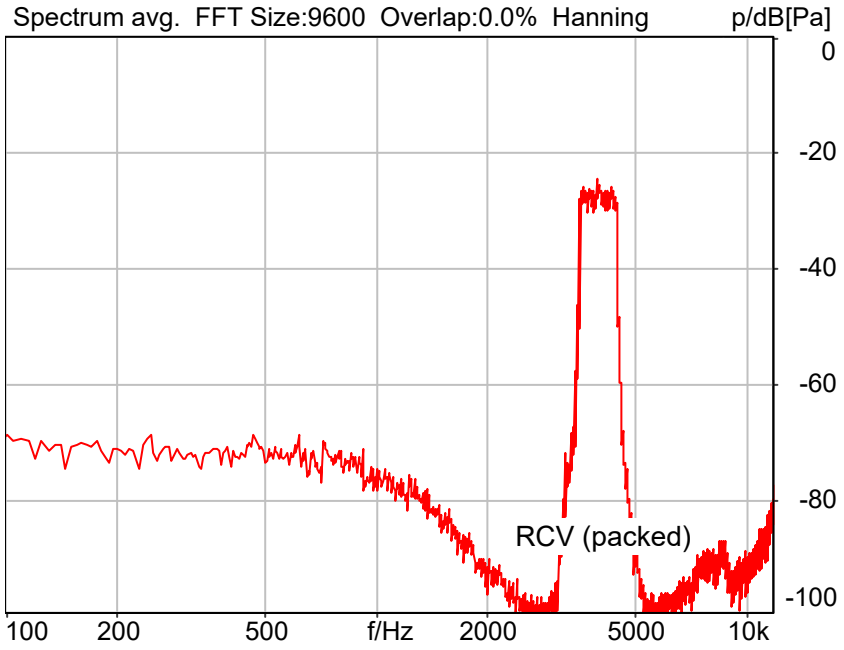
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 4000Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 32.87 dB (2.27%)

2023/12/13 9:55 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 start	13550.00 ms	Range length	200.00 ms
Number of seq.	10	Sequence length	400.00 ms
Use FIR Filter	Ch2	FIR filter	drp2ff_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	Transformation		
FFT size	9600	Overlap	0 %
Window function.	Hanning	Smooth	Off
dB weighting	A Weighting		
Stimulus min.	3515.0 Hz	Stimulus max.	4500.0 Hz

Analysis min.	100.0 Hz	Analysis max.	3510.0 Hz
Analysis (2) min.	4505.0 Hz	Analysis (2) max.	8000.0 Hz

Special Features

Compensate delay	138.0000 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

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

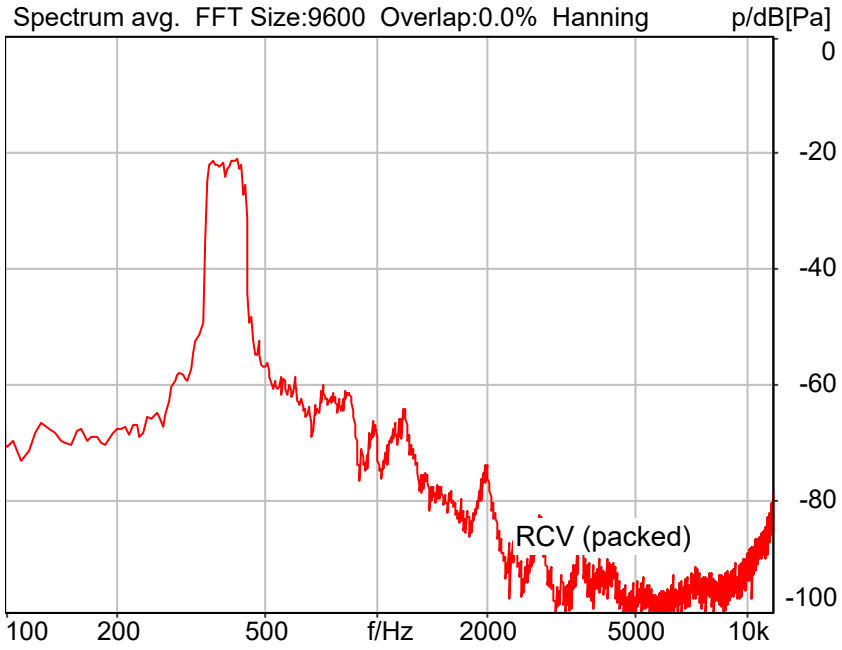
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 400Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 33.33 dB (2.15%)

2023/12/13 9:55 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	133.5000 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

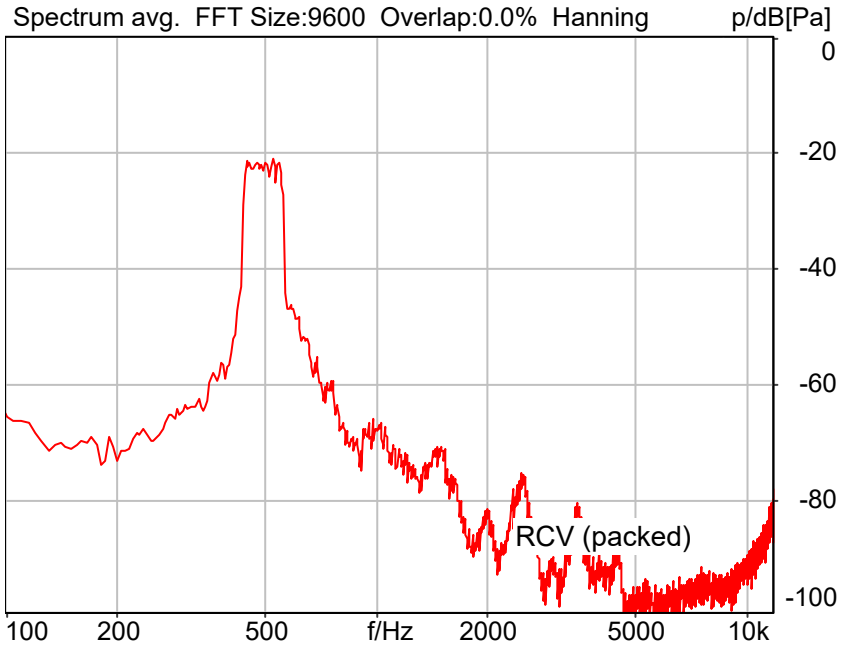
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 30.91 dB (2.85%)

2023/12/13 9:56 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	133.5000 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

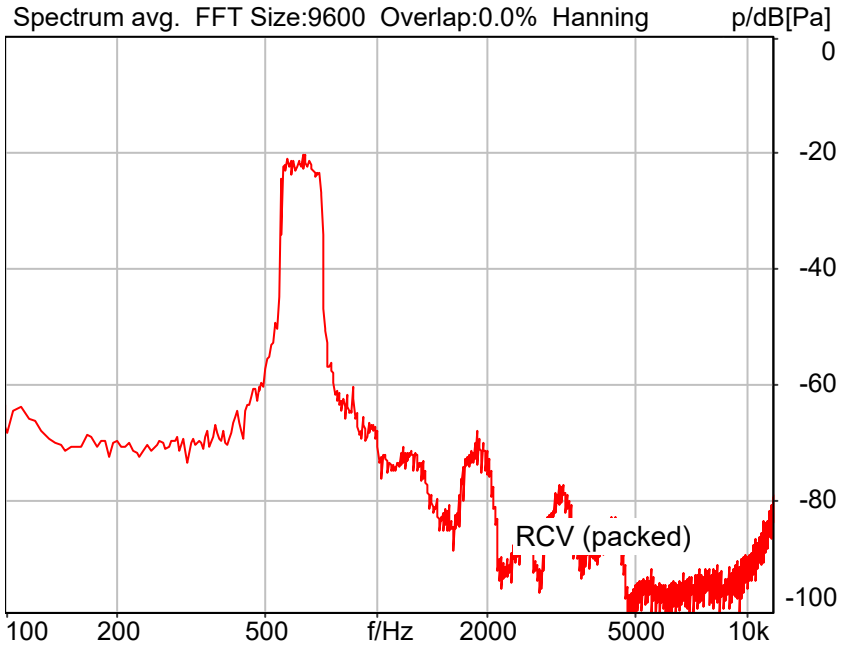
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 630Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.55 dB (1.49%)

2023/12/13 9:56 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	133.5000 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

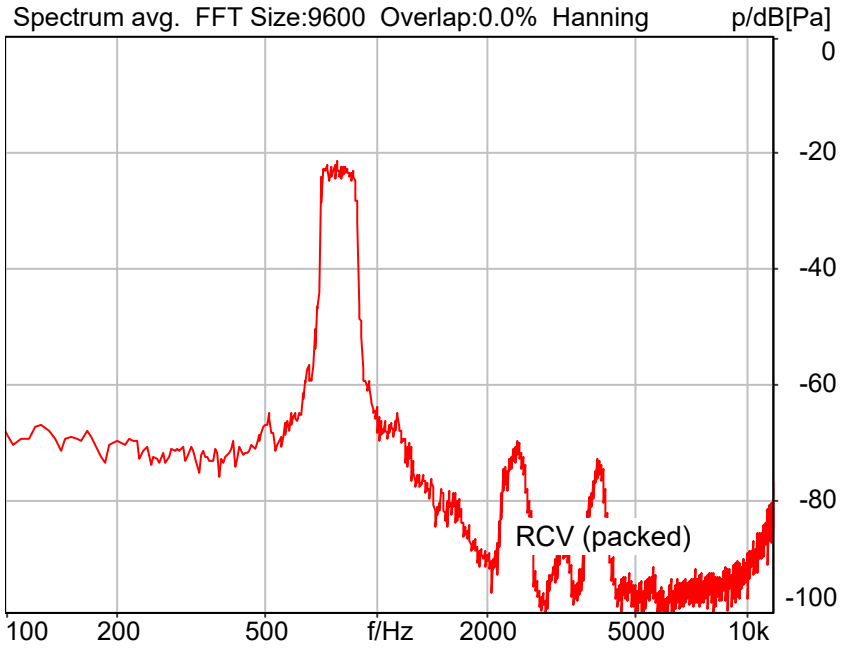
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 800Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.49 dB (1.50%)

2023/12/13 9:57 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	133.5000 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

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

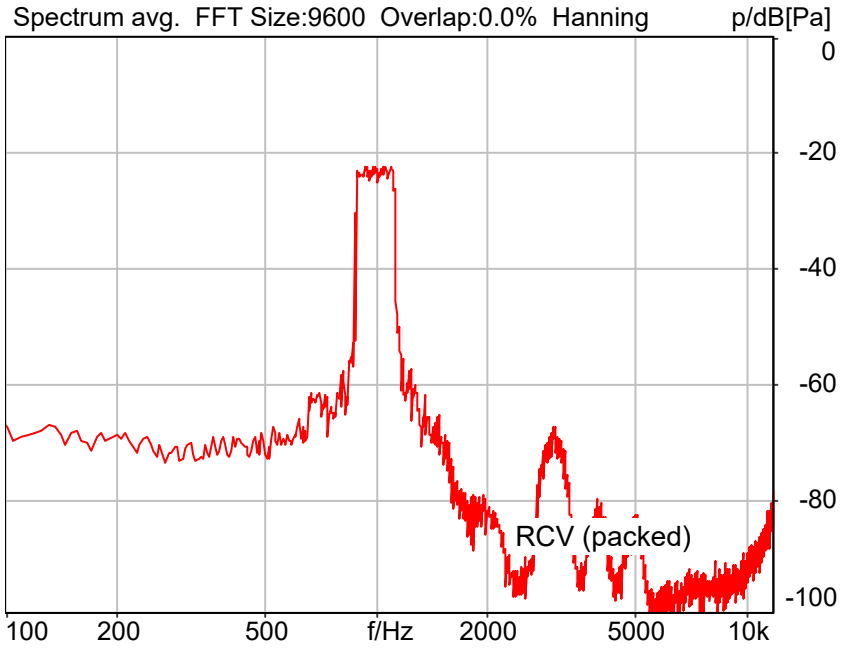
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.36 dB (1.92%)

2023/12/13 9:57 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	133.5000 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

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

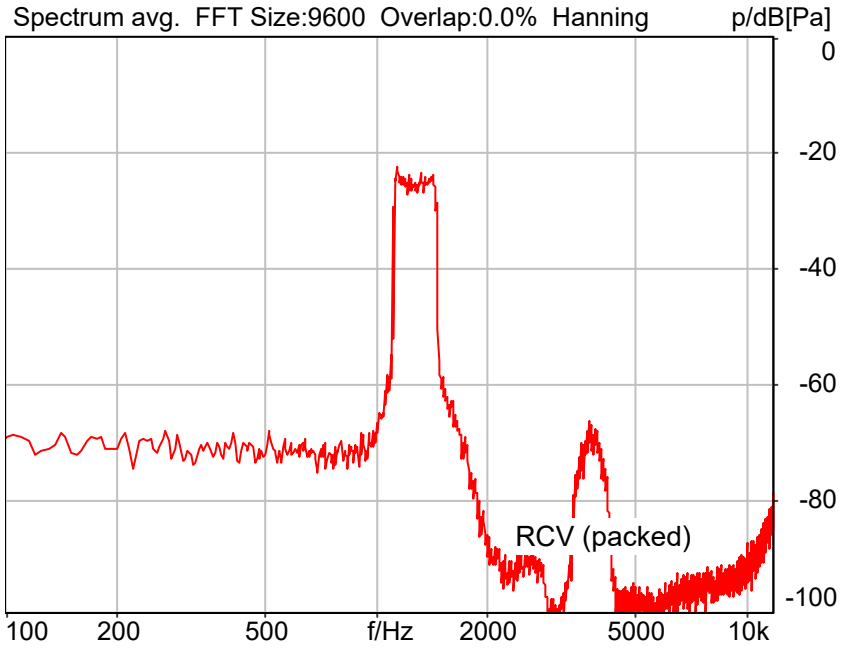
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1250Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.18 dB (2.76%)

2023/12/13 9:57 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	133.5000 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

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

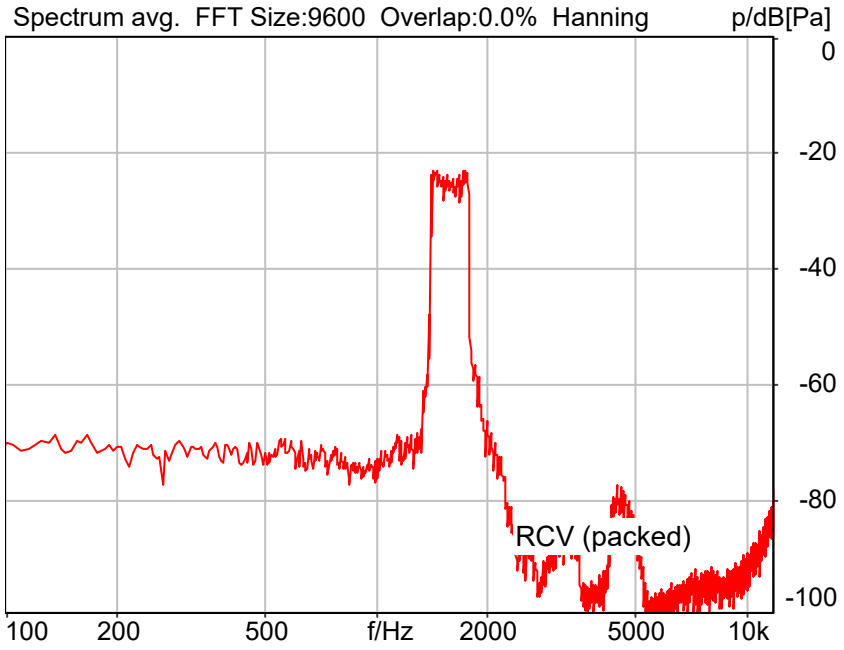
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 1600Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.39 dB (1.52%)

2023/12/13 9:58 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	133.5000 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

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

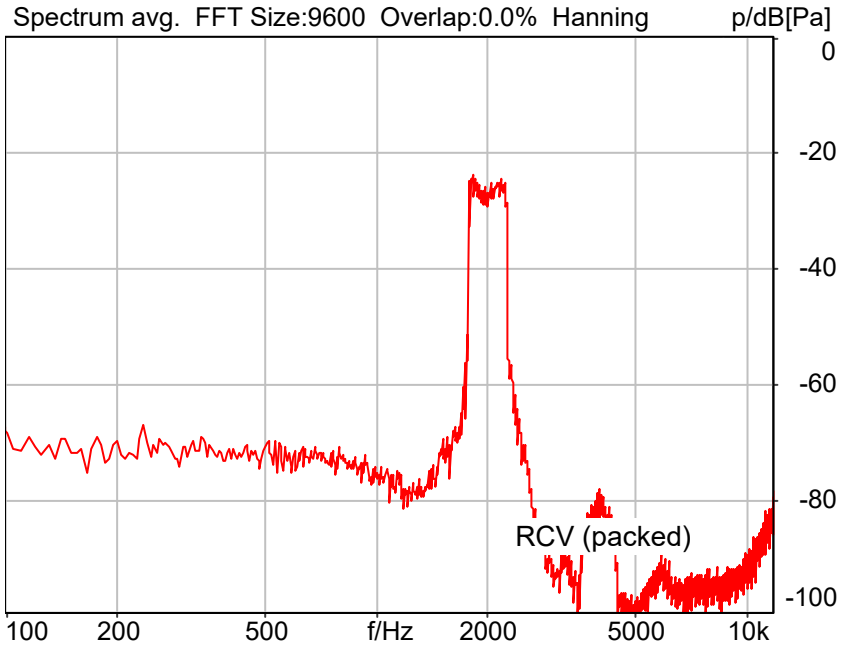
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2000Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 36.06 dB (1.57%)

2023/12/13 9:58 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 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	133.5000 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

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

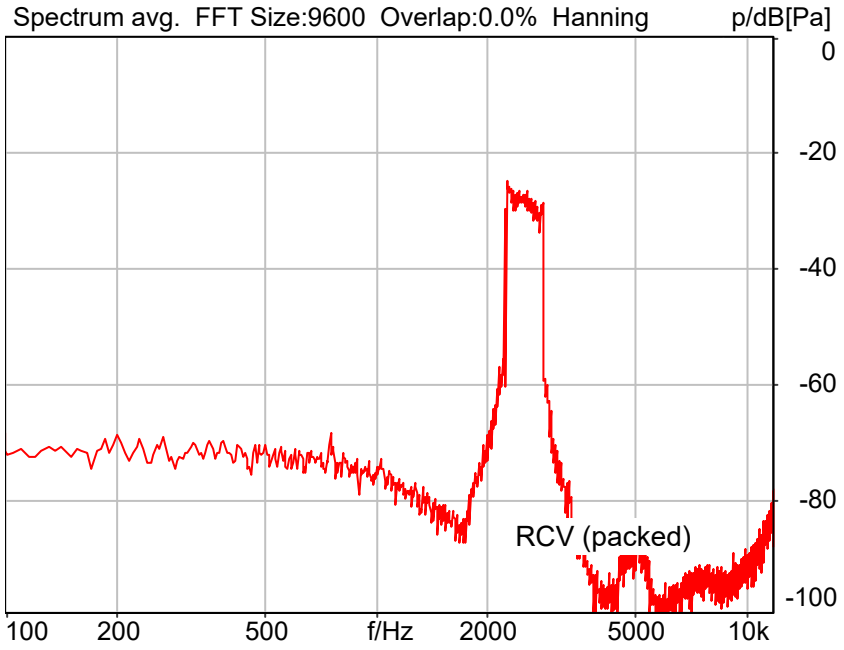
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 2500Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 34.42 dB (1.90%)

2023/12/13 9:58 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	133.5000 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

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

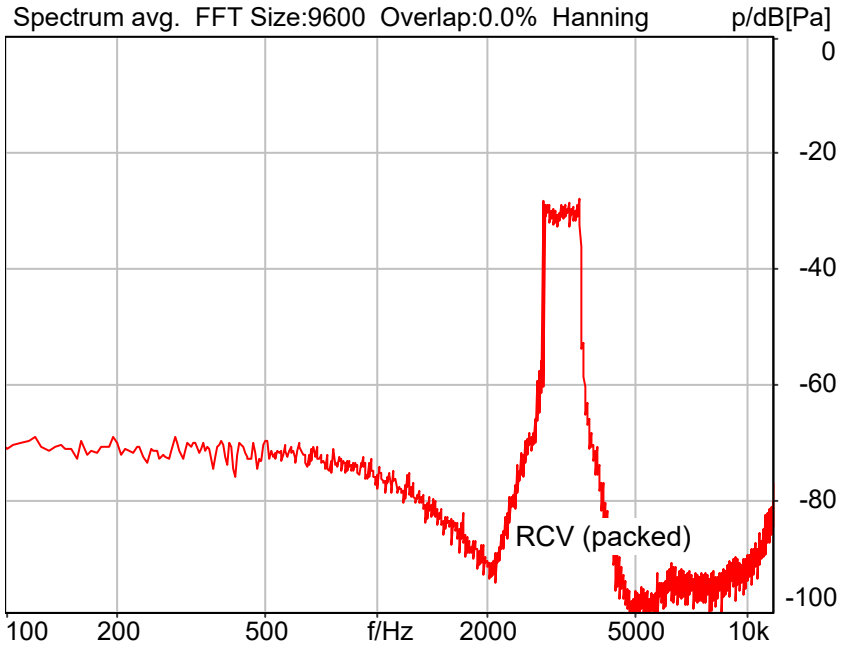
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 3150Hz WB&NB (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 31.56 dB (2.64%)

2023/12/13 9:59 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	133.5000 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

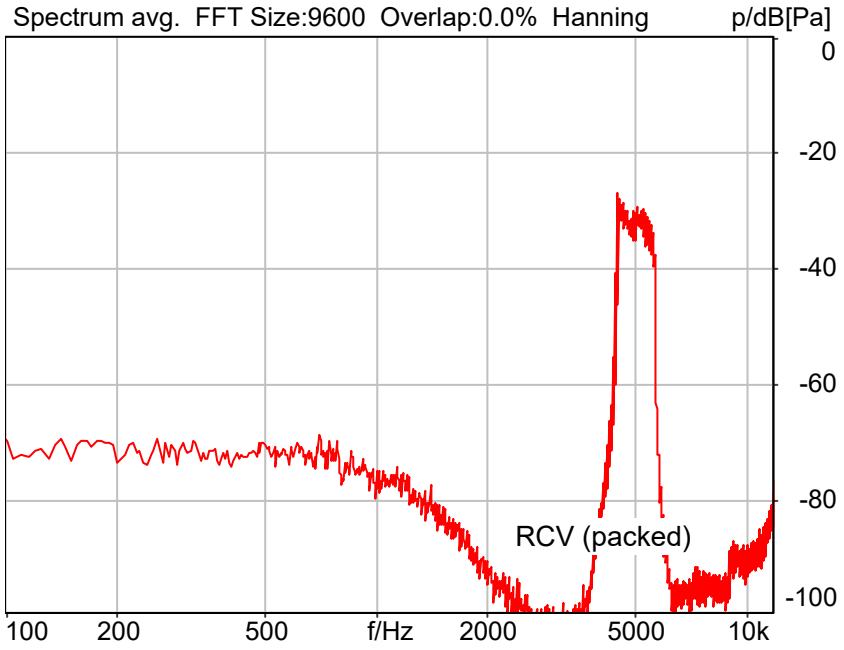
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

Receive path - distortion and noise 5000Hz WBonly (23T04Z80629 VoLTE EVS)

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

Table-1



Distortion (Noise) RCV (packed): 33.20 dB (2.19%)

2023/12/13 9:59 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 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	138.0000 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

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

5.2 Receive path – distortion and noise (23T04Z80629 VoLTE EVS)

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

Table-1

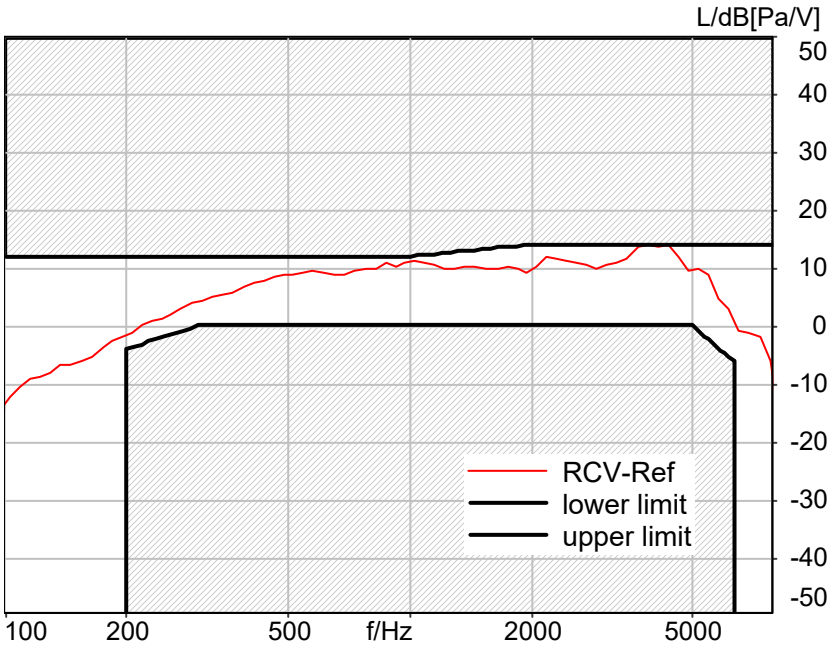
ID	Variable Name	Distortion Value	LowerLimit	Frequency Range	Pass/Fail
1	iso24_16_SDNR	27.8	20	190...315 Hz	Pass
2	iso25_16_SDNR	29.77	20	245...390 Hz	Pass
3	iso26_16_SDNR	33.33	20	320...480 Hz	Pass
4	iso27_16_SDNR	30.91	20	410...595 Hz	Pass
5	iso28_16_SDNR	36.55	20	525...745 Hz	Pass
6	iso29_16_SDNR	36.49	20	675...925 Hz	Pass
7	iso30_16_SDNR	34.36	20	855...1155 Hz	Pass
8	iso31_16_SDNR	31.18	20	1085...1450 Hz	Pass
9	iso32_16_SDNR	36.39	20	1375...1815 Hz	Pass
10	iso33_16_SDNR	36.06	20	1745...2275 Hz	Pass
11	iso34_16_SDNR	34.42	20	2205...2855 Hz	Pass
12	iso35_16_SDNR	31.56	20	2785...3585 Hz	Pass
13	iso36_16_SDNR	32.87	20	3515...4500 Hz	Pass
14	iso37_16_SDNR	33.2	20	4430...5660 Hz	Pass

2023/12/13 9:59 ACQUA

5.3 Receive Acoustic Frequency response Performance (23T04Z80629 VoLTE EVS)

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

Table-1



Absolute minimal distance

2.61 dB at 205.7 Hz Ok

Ok

2023/12/13 9:59 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 Range length 10200.00 ms

Use FIR Filter	Ch2	FIR filter	drp2df_ieee1652
DRP/ERP Ch.1:	Off	DRP/ERP Ch.2:	Off
Frequency base	12th octave	DIN Row	Row A
Method	FFT		
FFT size	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	138.0000 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

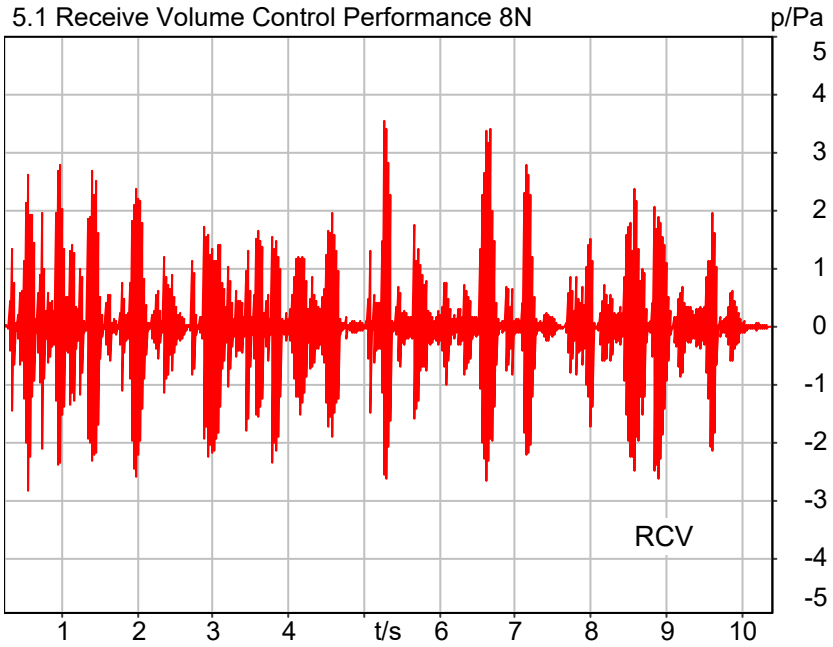
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE AMR)

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

12.2kbps; Table-1



Speech Level RCV: 84.80 dB[SPL], Act.: 93.49%

2023/12/13 9:35 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 139.5000 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

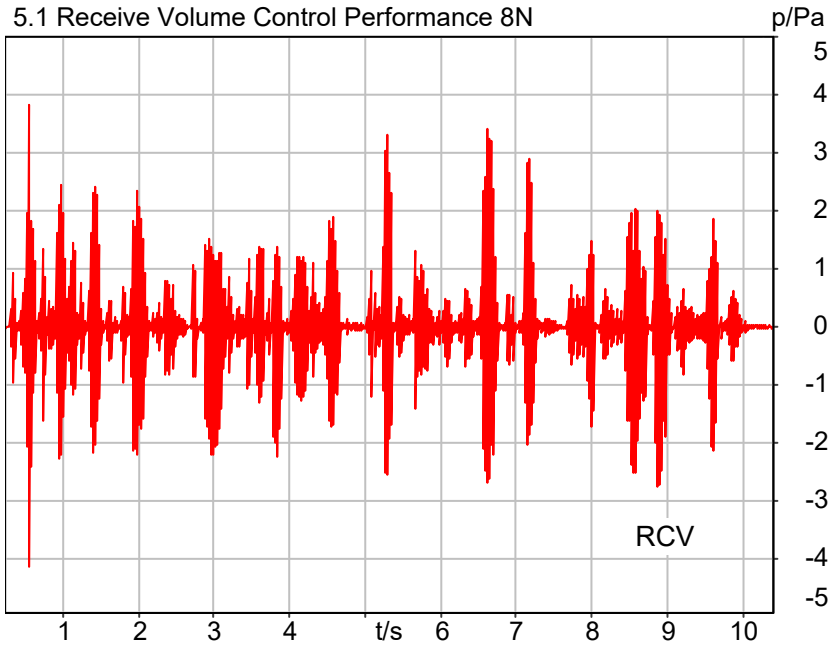
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE AMR)

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

4.75kbps; Table-1



Speech Level RCV: 84.05 dB[SPL], Act.: 93.47%

2023/12/13 9:36 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	135.8000 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

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

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB
12.2kbps; Table-1

Correction

rcv_vol_nb	84.800 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_nb-70

Calculated Value: 14.80 dB Ok

Ok

2023/12/13 9:35 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ NB
4.75kbps; Table-1

Correction

rcv_vol_nb	84.050 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_nb-70

Calculated Value: 14.05 dB Ok

Ok

2023/12/13 9:36 ACQUA 5.1.200

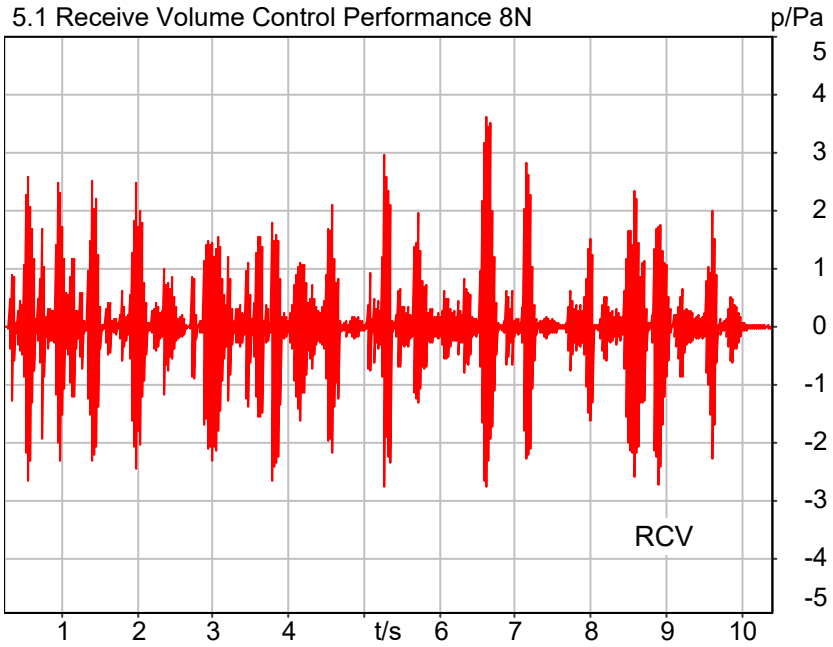
Limits

	lower
Run 1	6.00 dB

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE AMR)

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

6.6kbps; Table-1



Speech Level RCV: 83.93 dB[SPL], Act.: 93.46%

2023/12/13 9:37 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	137.9000 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

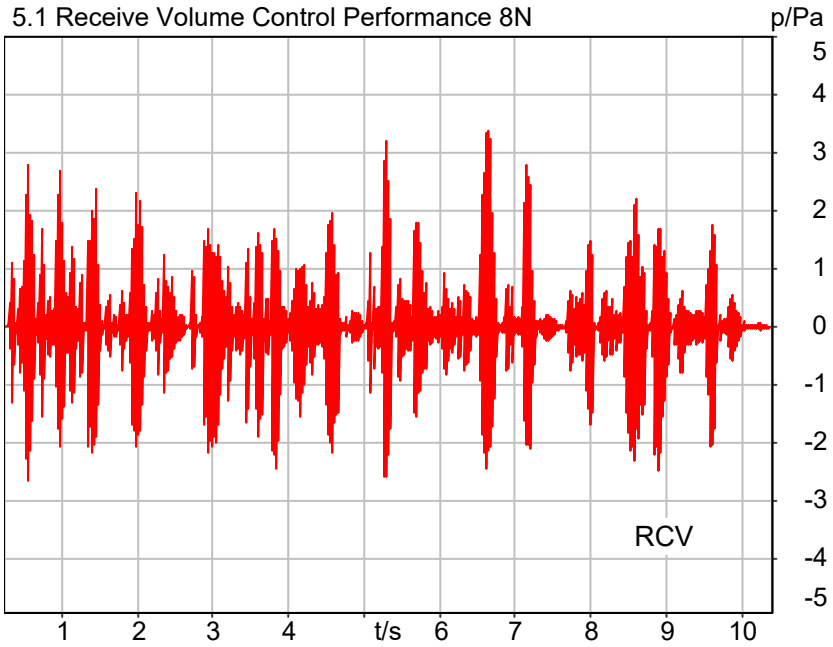
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 8N (23T04Z80629 VoLTE AMR)

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

12.65kbps; Table-1



Speech Level RCV: 84.09 dB[SPL], Act.: 93.57%

2023/12/13 9:38 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	138.4000 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

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB
6.6kbps; Table-1

Correction

rcv_vol_wb	83.930 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_wb-70

Calculated Value: 13.93 dB Ok

Ok

2023/12/13 9:37 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB

5.1.1 -1 Conversation Gain 8N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 8N HAC OFF \ WB
12.65kbps;Table-1

Correction

rcv_vol_wb	84.090 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 8N

rcv_vol_wb-70

Calculated Value: 14.09 dB Ok

Ok

2023/12/13 9:38 ACQUA 5.1.200

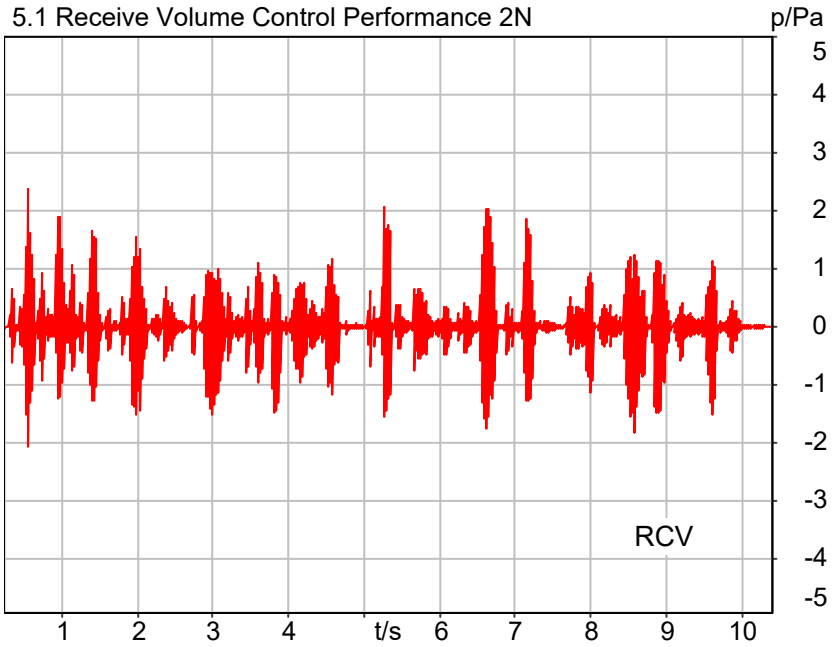
Limits

	lower
Run 1	6.00 dB

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE AMR)

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

4.75kbps; Table-1



Speech Level RCV: 80.32 dB[SPL], Act.: 93.30%

2023/12/13 10:06 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 135.1000 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

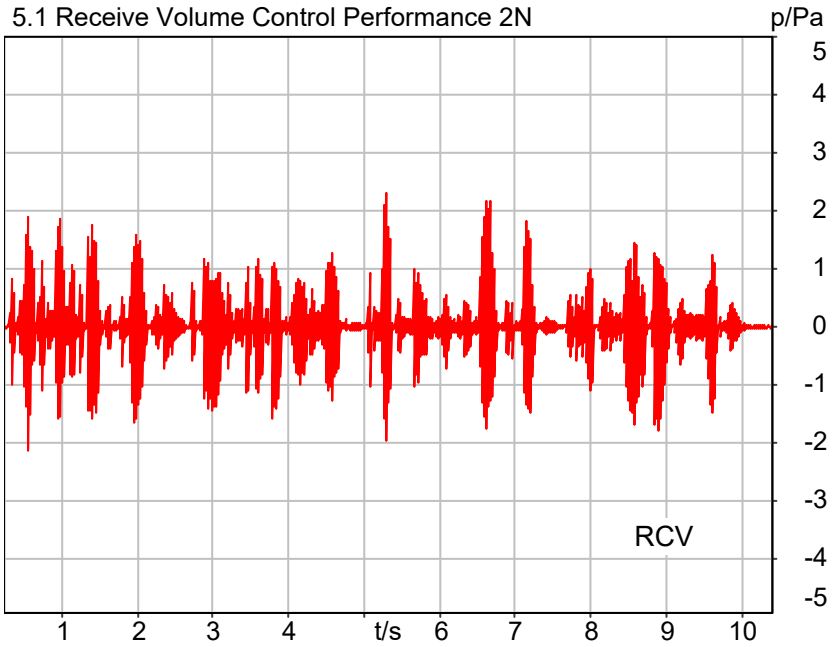
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE AMR)

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

12.2kbps; Table-1



Speech Level RCV: 81.16 dB[SPL], Act.: 93.42%

2023/12/13 10:07 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 135.2000 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

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

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB
4.75kbps; Table-1

Correction

rcv_vol_nb	80.320 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_nb-70

Calculated Value: 10.32 dB Ok

Ok

2023/12/13 10:06 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 2N HAC ON \ NB
12.2kbps; Table-1

Correction

rcv_vol_nb	81.160 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_nb-70

Calculated Value: 11.16 dB Ok

Ok

2023/12/13 10:07 ACQUA 5.1.200

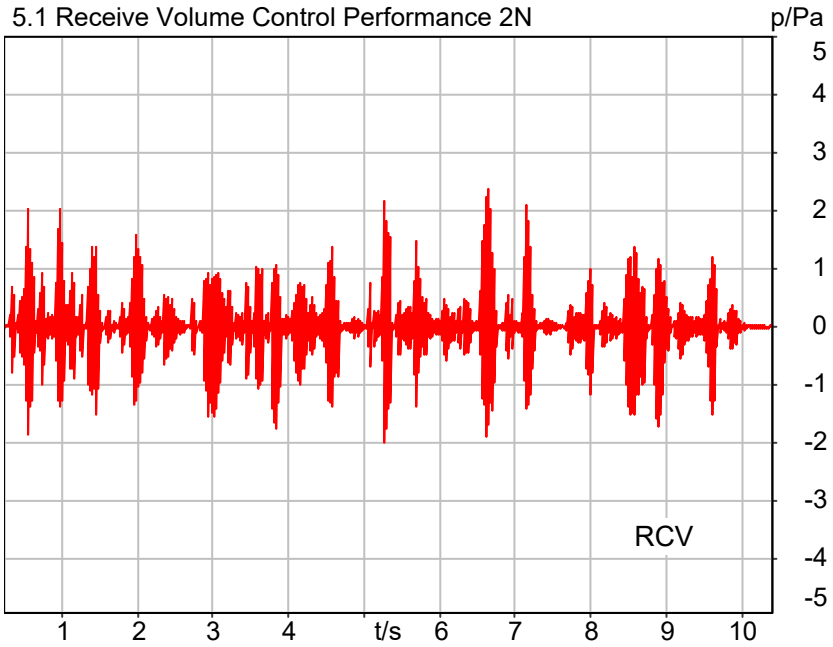
Limits

	lower
Run 1	6.00 dB

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE AMR)

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

6.6kbps; Table-1



Speech Level RCV: 80.39 dB[SPL], Act.: 93.43%

2023/12/13 10:09 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	137.9000 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

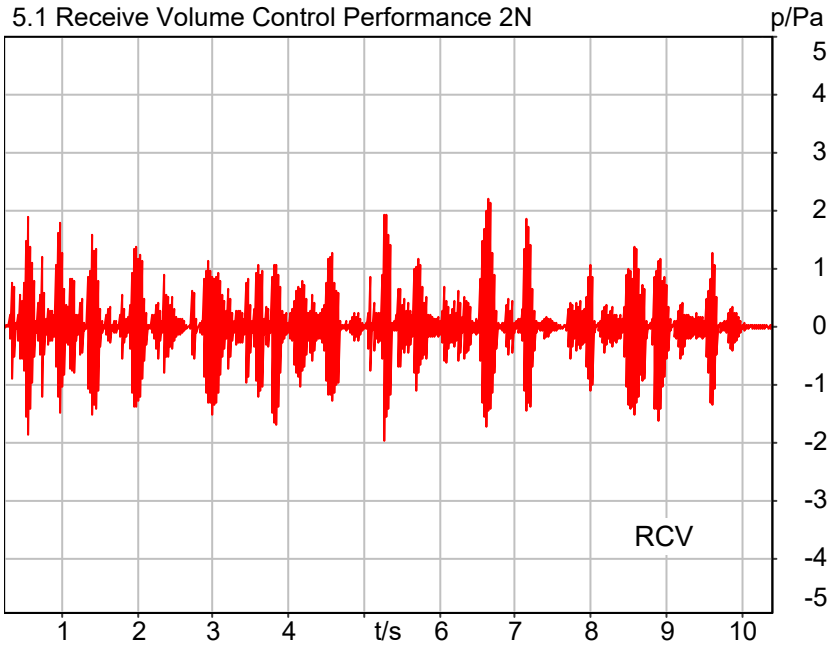
Artificial Head Settings (HATS 3 (HMS II.3))

Ser. Nr.	12306194	Pinna Type	Type 3.3

5.1 Receive Volume Control Performance 2N (23T04Z80629 VoLTE AMR)

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

12.65kbps; Table-1



Speech Level RCV: 80.53 dB[SPL], Act.: 93.40%

2023/12/13 10:10 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	136.1000 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

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB
6.6kbps; Table-1

Correction

rcv_vol_wb	80.390 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_wb-70

Calculated Value: 10.39 dB Ok

Ok

2023/12/13 10:09 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB

5.1.1 -1 Conversation Gain 2N (23T04Z80629 VoLTE AMR)

ANSI/TIA 5050-2018 \ 2N HAC ON \ WB
12.65kbps; Table-1

Correction

rcv_vol_wb	80.530 dB[SPL]	2023/12/13	Measured	5.1 Receive Volume Control Performance 2N

rcv_vol_wb-70

Calculated Value: 10.53 dB Ok

Ok

2023/12/13 10:10 ACQUA 5.1.200

Limits

	lower
Run 1	6.00 dB