Measurement Protocol

Measurement Object	LTE Band 25_20QPSK_100RB_0_EVS WB 24.4kbps_CH26340
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 11:27
Responsible Person	audio

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5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 8
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 9
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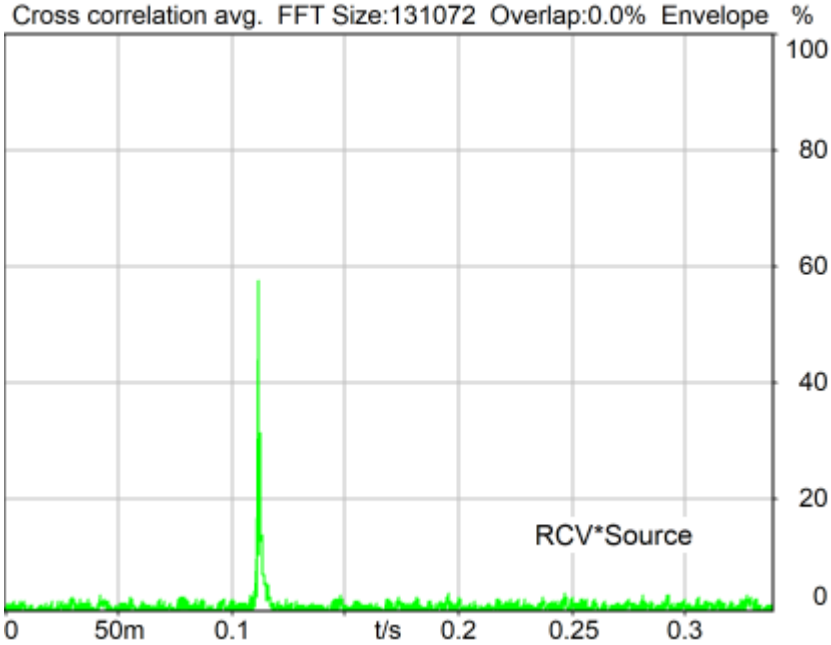
Overall Receive Delay WB, Index: 1

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



Channel	Delay
RCV*Source	112.2 ms

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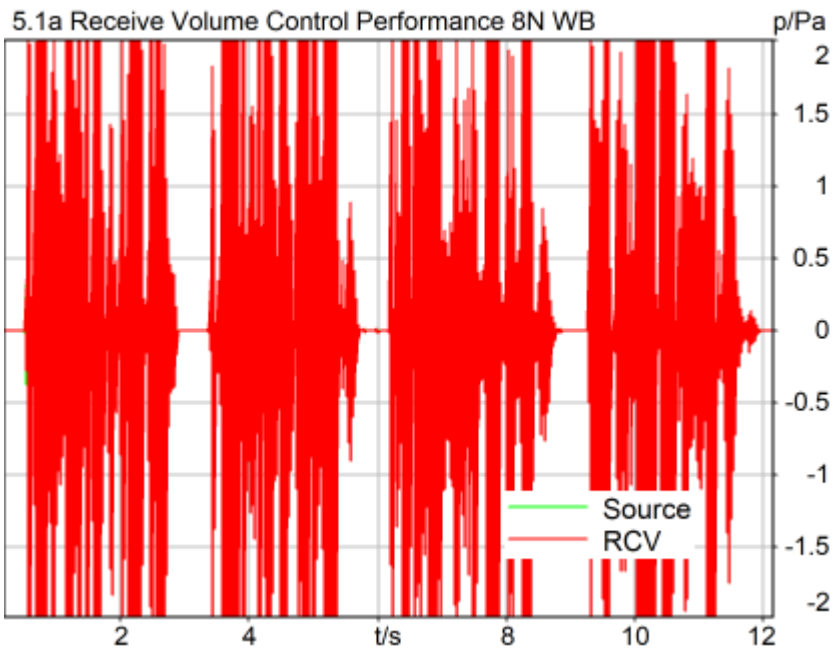
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB, Index: 1

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



Correction

X - 70

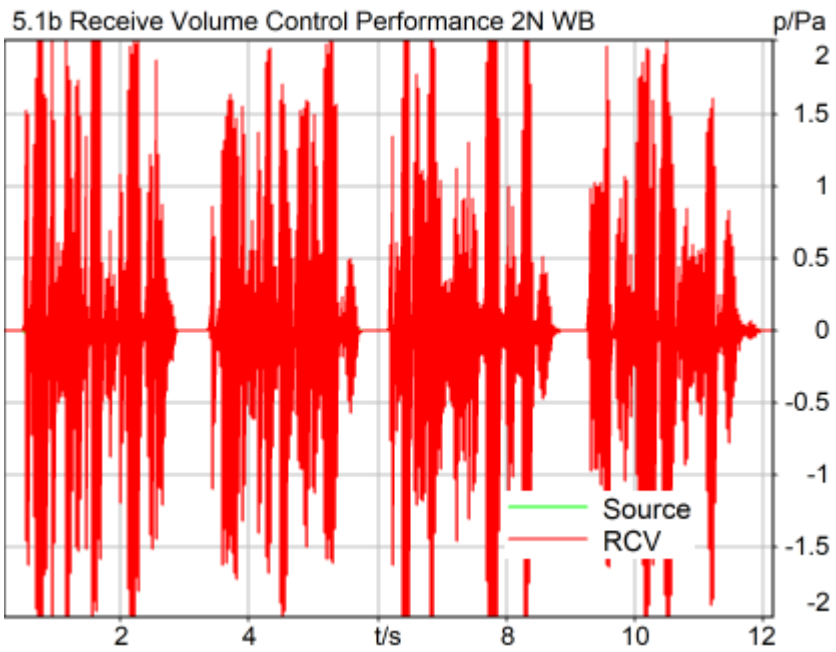
Channel	Speech level	Activity	Corrected speech level	
RCV	91.59 dB[SPL]	84.24%	21.59 dB[SPL]	Ok

Ok

2024/5/5 16:44 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N WB, Index: 1

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



Correction

X - 70

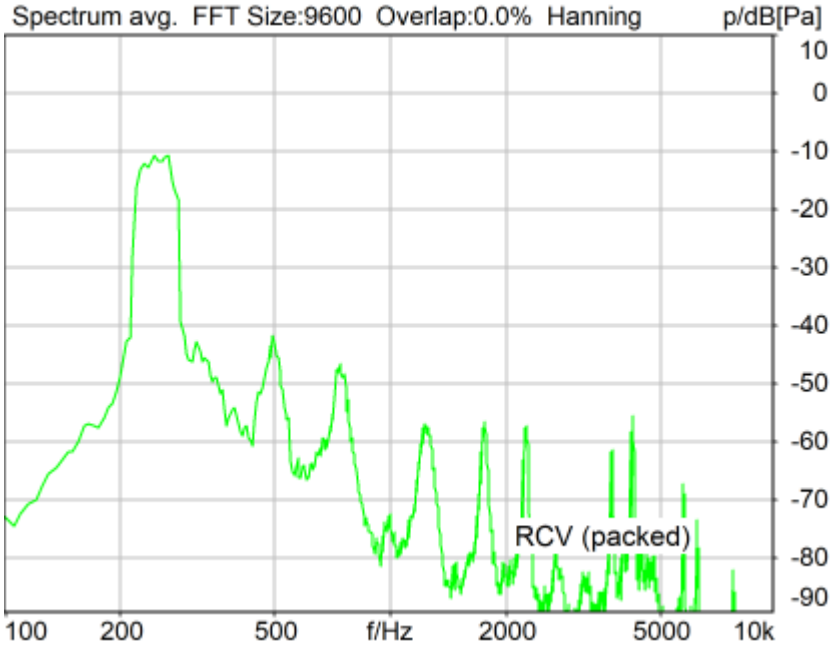
Channel	Speech level	Activity	Corrected speech level	
RCV	85.17 dB[SPL]	84.43%	15.17 dB[SPL]	Ok

Ok

2024/5/5 16:52 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



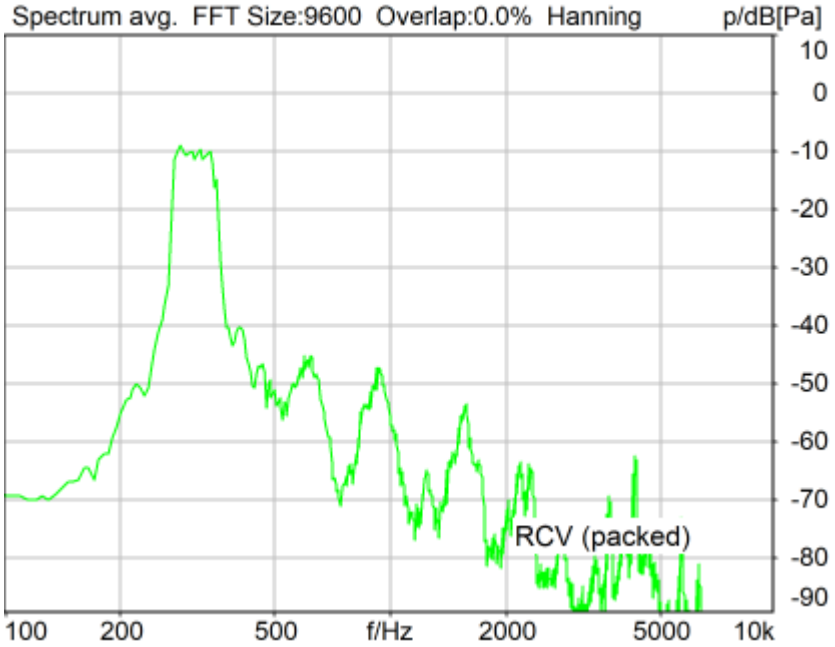
Distortion (Noise) RCV (packed): 31.52 dB (2.65%) Ok

Ok

2024/5/5 16:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



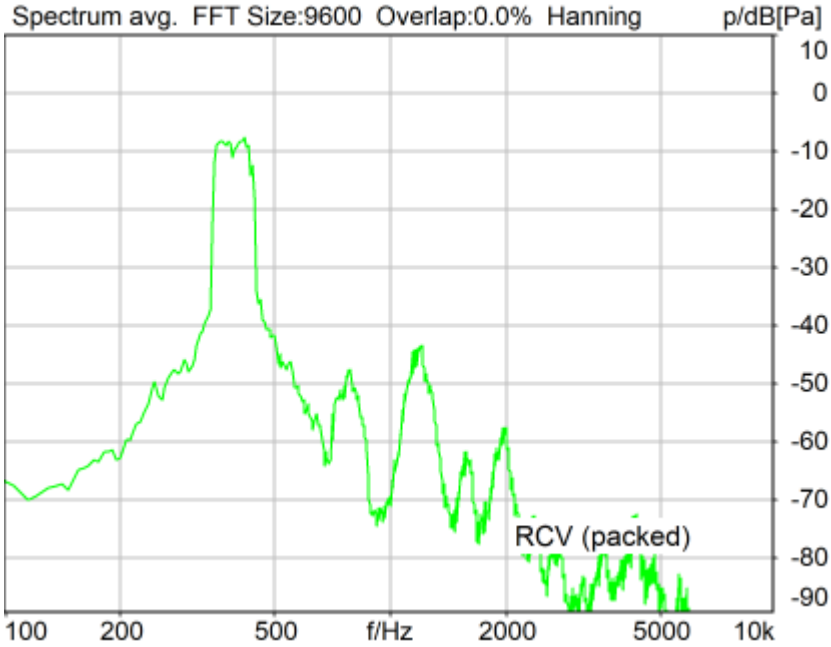
Distortion (Noise) RCV (packed): 32.05 dB (2.50%) Ok

Ok

2024/5/5 16:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



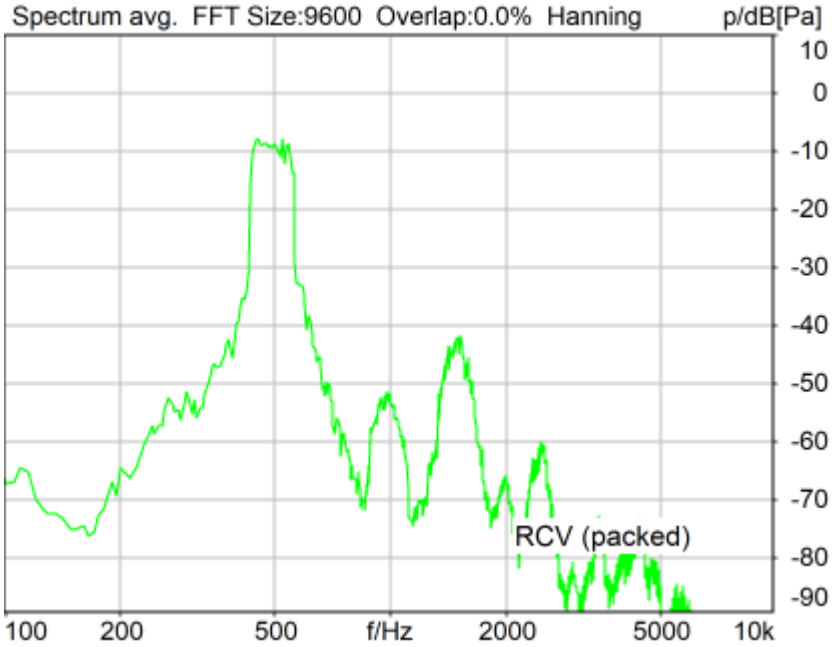
Distortion (Noise) RCV (packed): 31.92 dB (2.54%) Ok

Ok

2024/5/5 16:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



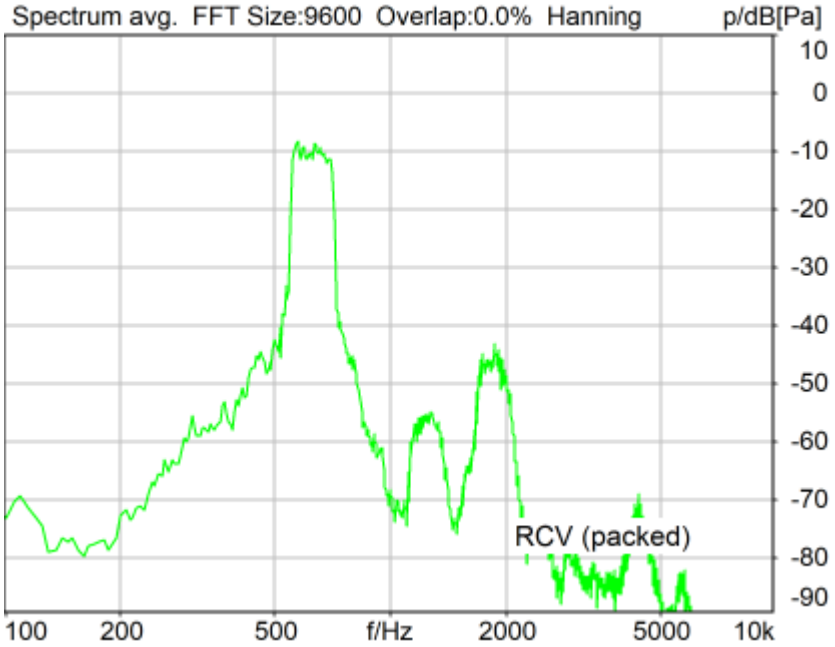
Distortion (Noise) RCV (packed): 29.60 dB (3.31%) Ok

Ok

2024/5/5 16:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



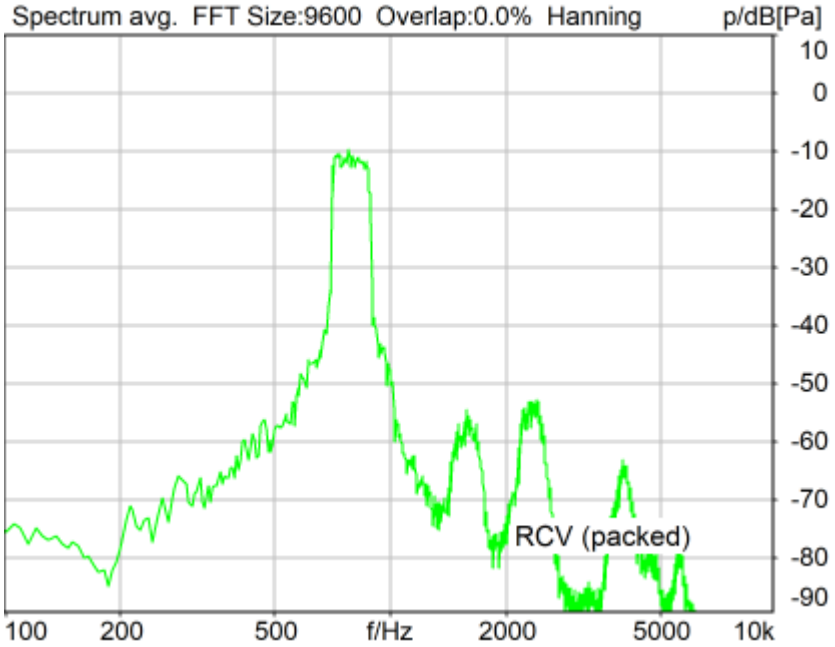
Distortion (Noise) RCV (packed): 30.44 dB (3.01%) Ok

Ok

2024/5/5 16:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



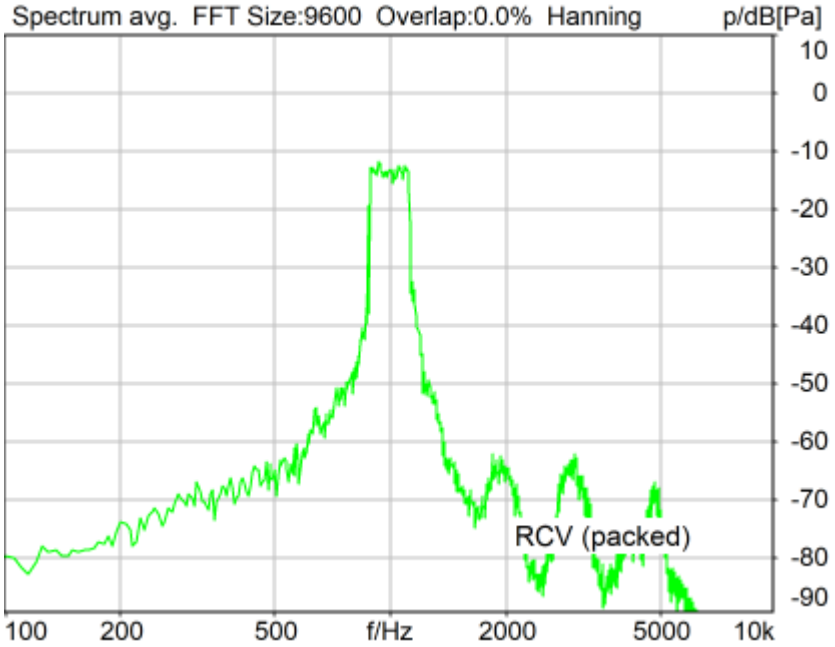
Distortion (Noise) RCV (packed): 33.26 dB (2.17%) Ok

Ok

2024/5/5 16:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



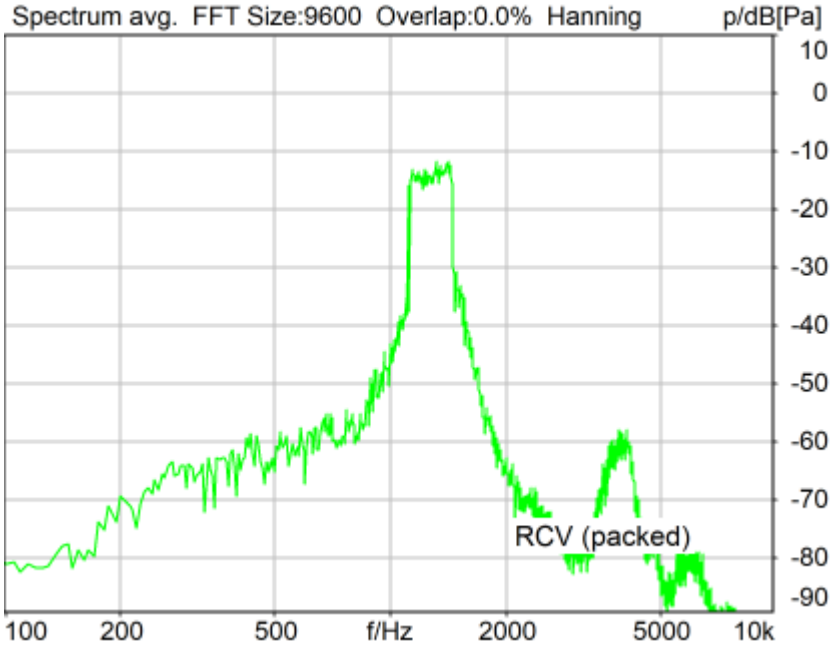
Distortion (Noise) RCV (packed): 31.12 dB (2.78%) Ok

Ok

2024/5/5 16:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



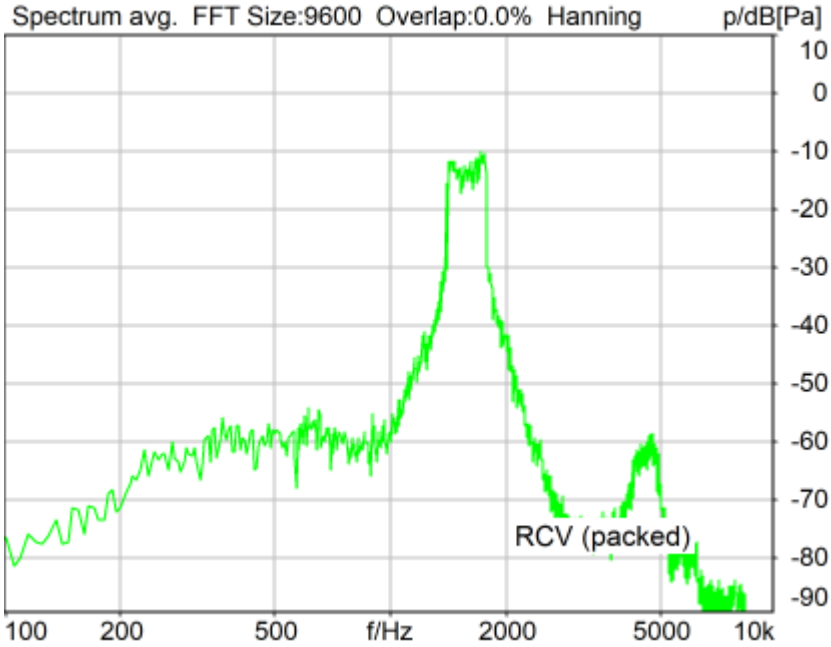
Distortion (Noise) RCV (packed): 23.14 dB (6.97%) Ok

Ok

2024/5/5 16:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



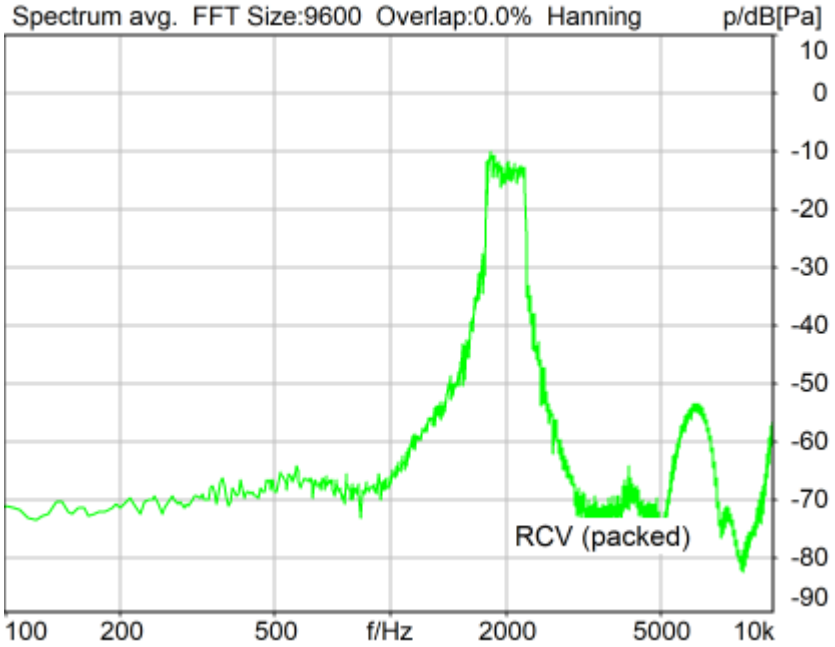
Distortion (Noise) RCV (packed): 24.35 dB (6.06%) Ok

Ok

2024/5/5 16:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



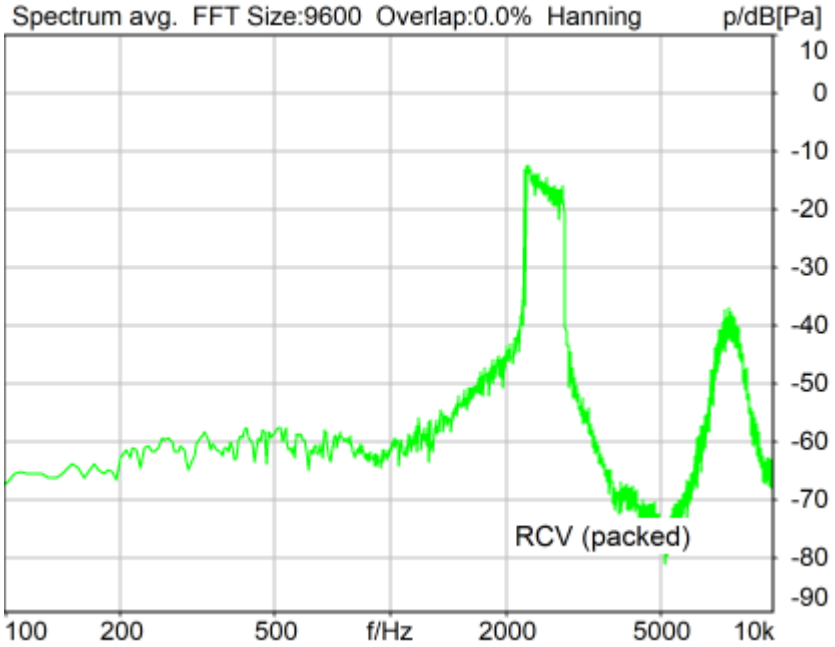
Distortion (Noise) RCV (packed): 23.14 dB (6.97%) Ok

Ok

2024/5/5 16:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



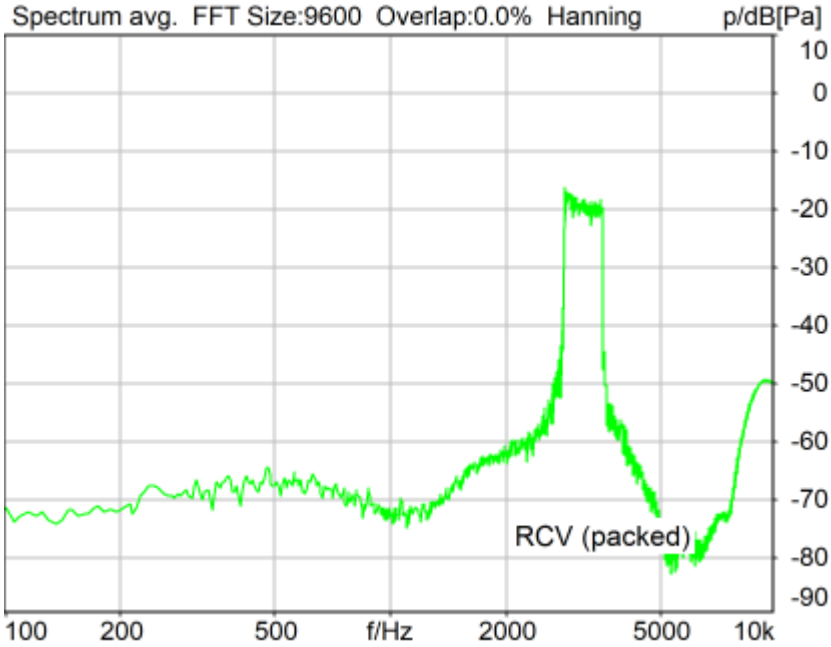
Distortion (Noise) RCV (packed): 21.10 dB (8.81%) Ok

Ok

2024/5/5 16:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



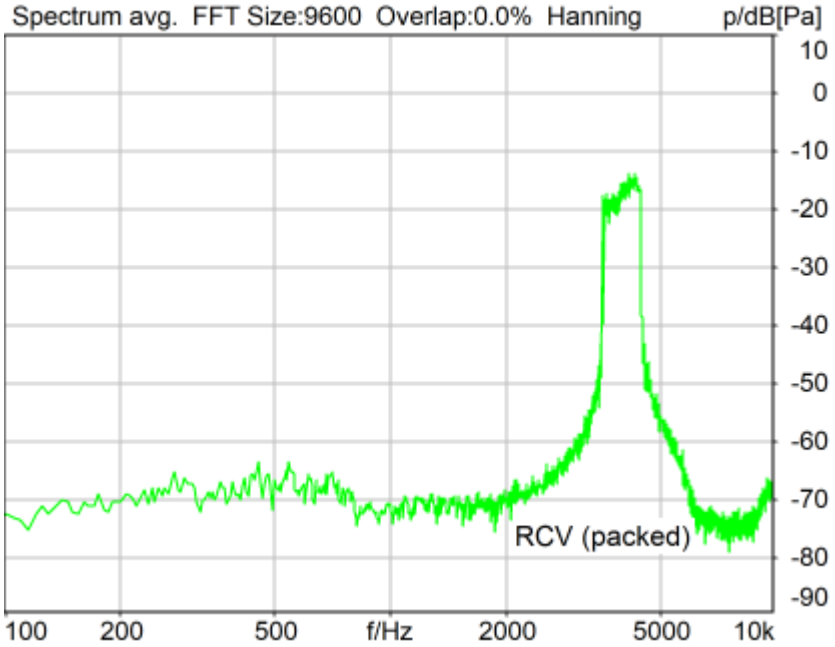
Distortion (Noise) RCV (packed): 26.66 dB (4.65%) Ok

Ok

2024/5/5 16:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



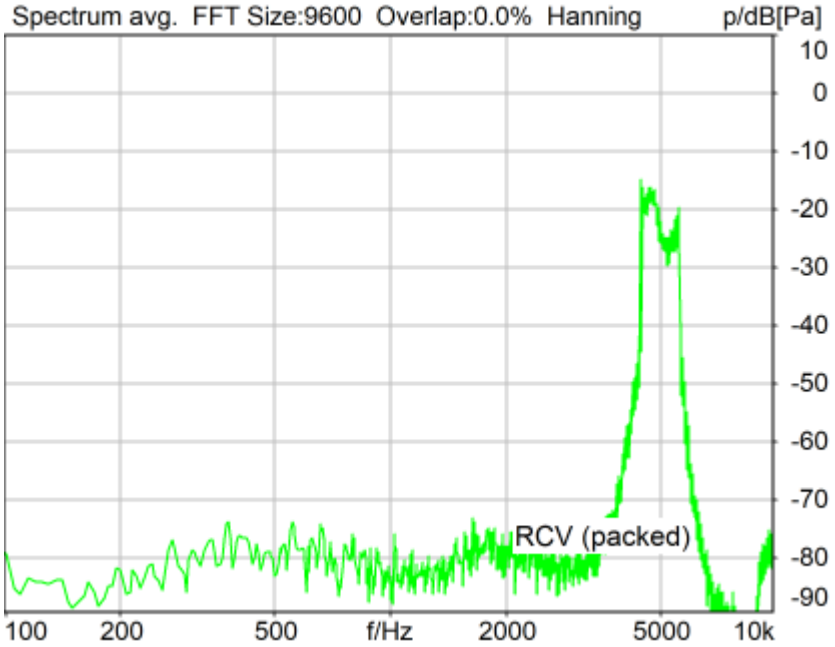
Distortion (Noise) RCV (packed): 28.21 dB (3.89%) Ok

Ok

2024/5/5 16:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



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

Ok

2024/5/5 16:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

Region	Frequency	SDNR
1	250Hz	31.52 dB
2	315Hz	32.05 dB
3	400Hz	31.92 dB
4	500Hz	29.60 dB
5	630Hz	30.44 dB
6	800Hz	33.26 dB
7	1000Hz	31.12 dB
8	1250Hz	23.14 dB
9	1600Hz	24.35 dB
10	2000Hz	23.14 dB
11	2500Hz	21.10 dB
12	3150Hz	26.66 dB
13	4000Hz	28.21 dB
14	5000Hz	32.43 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.10dB at 2500Hz.

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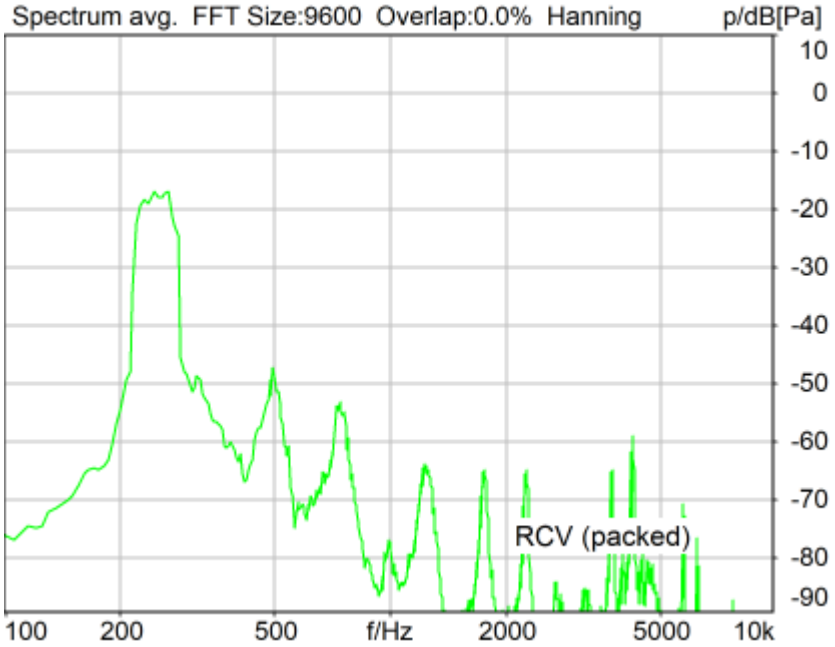
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



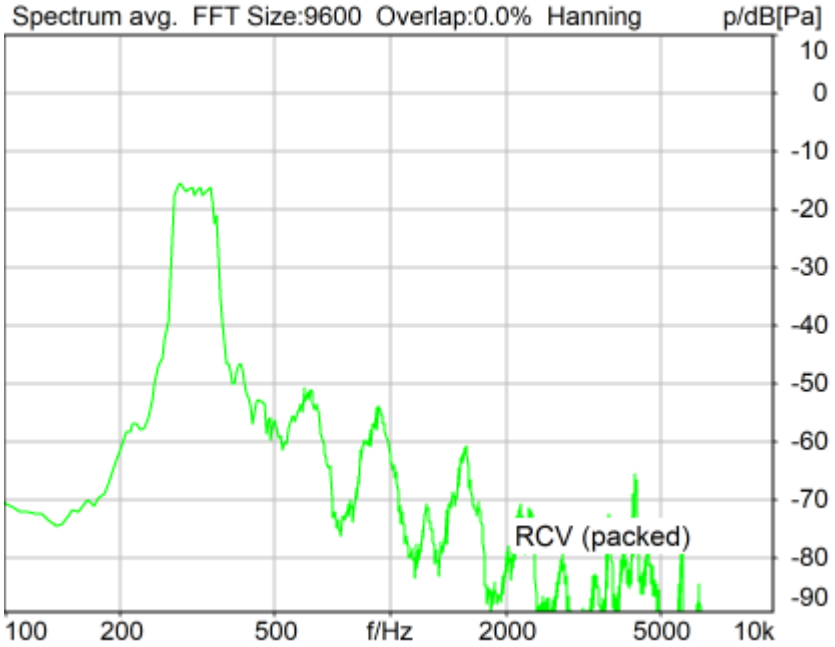
Distortion (Noise) RCV (packed): 31.25 dB (2.74%) Ok

Ok

2024/5/5 16:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



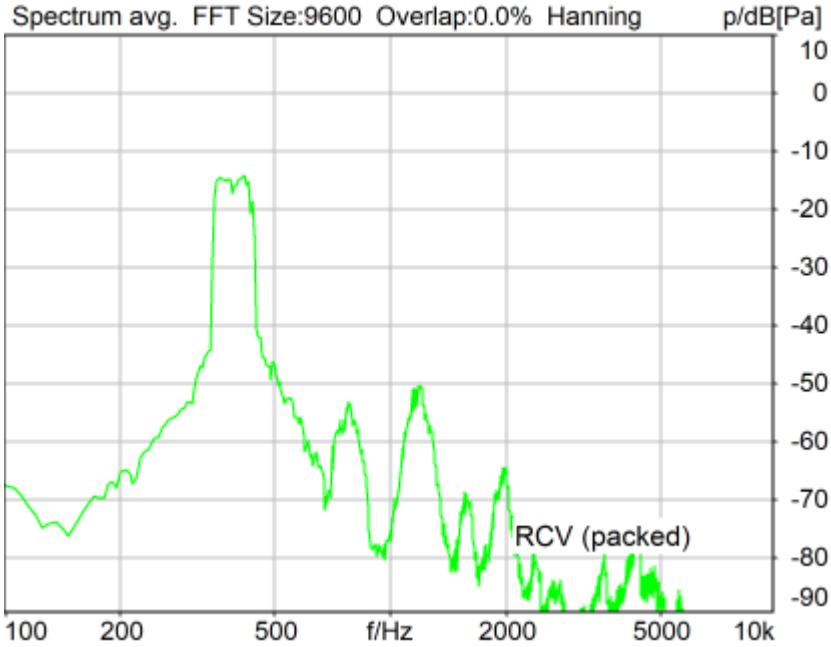
Distortion (Noise) RCV (packed): 32.00 dB (2.51%) Ok

Ok

2024/5/5 16:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



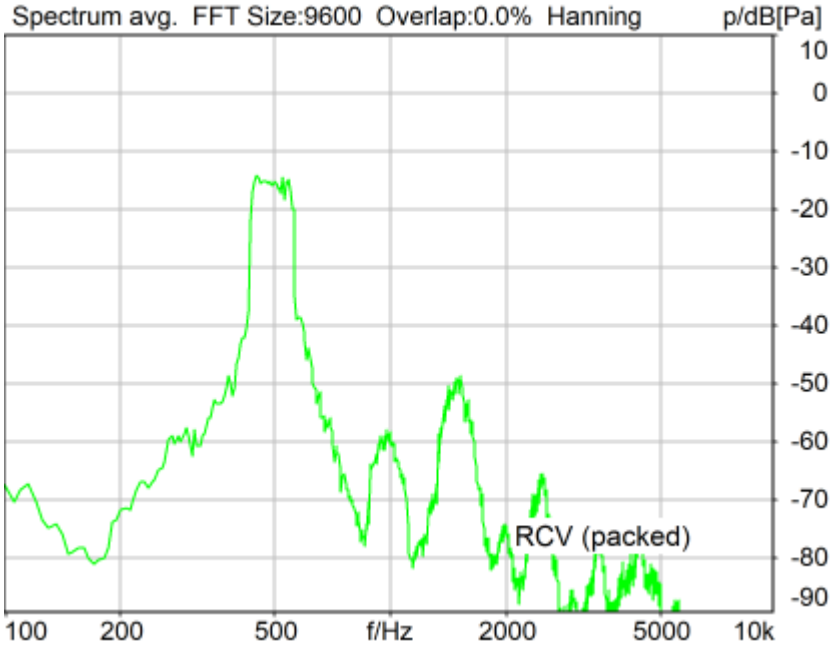
Distortion (Noise) RCV (packed): 31.89 dB (2.54%) Ok

Ok

2024/5/5 16:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



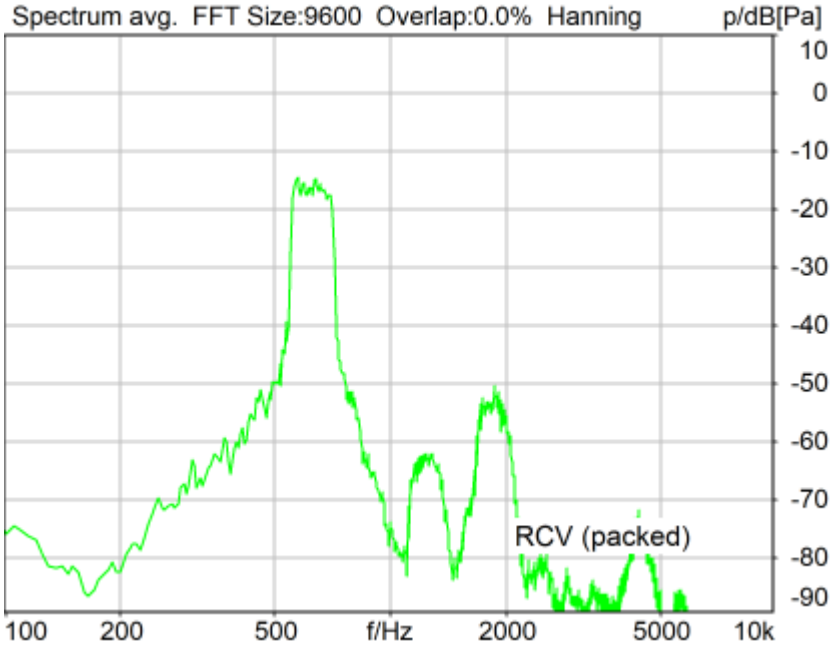
Distortion (Noise) RCV (packed): 30.09 dB (3.13%) Ok

Ok

2024/5/5 16:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



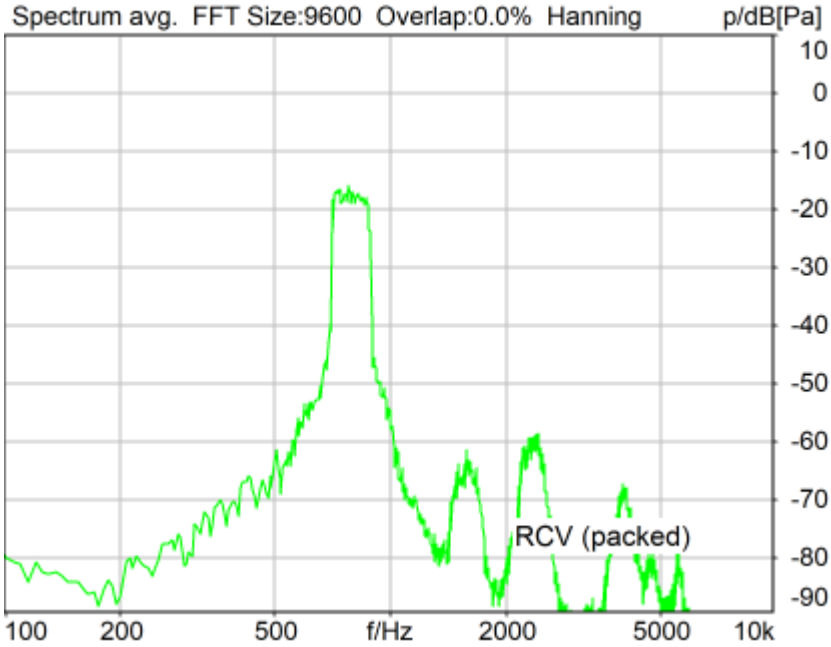
Distortion (Noise) RCV (packed): 31.26 dB (2.74%) Ok

Ok

2024/5/5 16:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



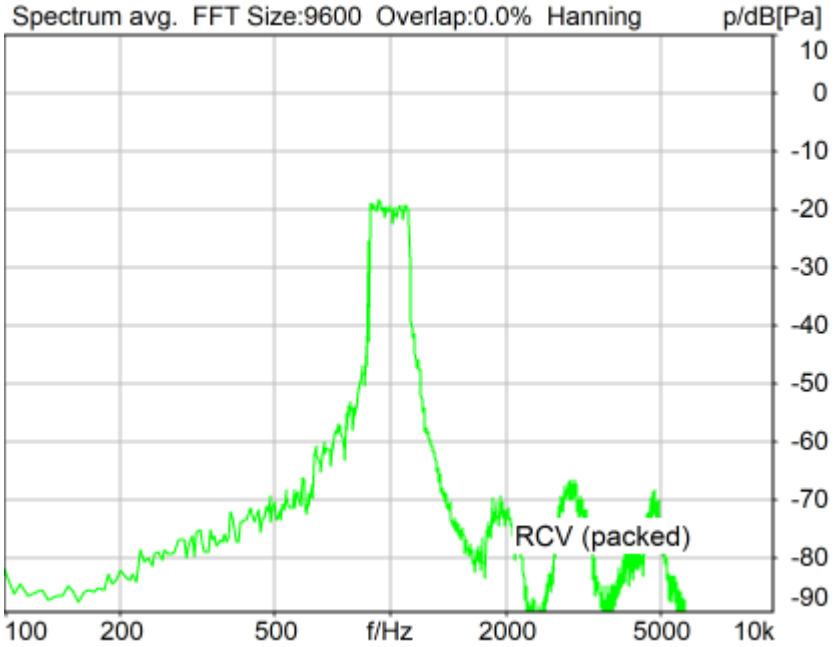
Distortion (Noise) RCV (packed): 33.59 dB (2.09%) Ok

Ok

2024/5/5 16:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



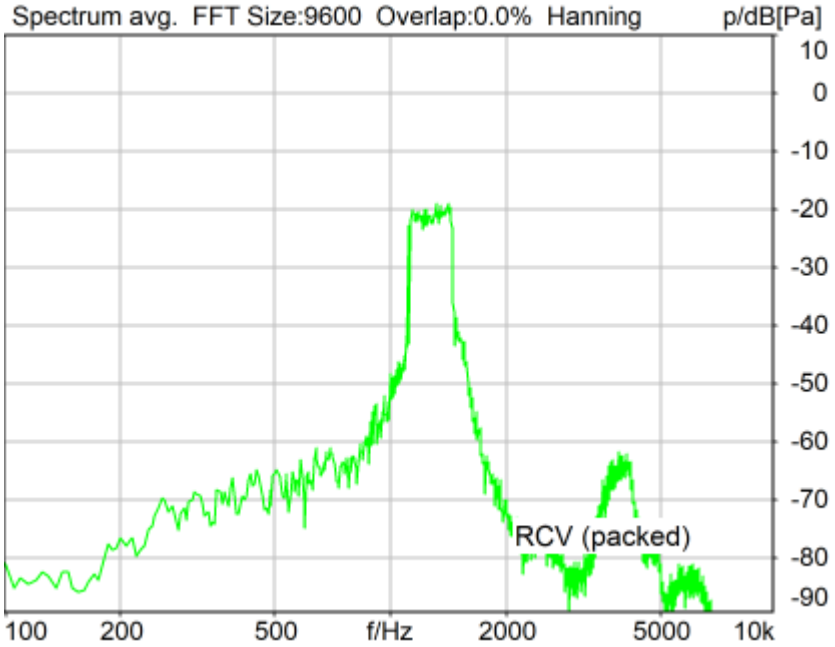
Distortion (Noise) RCV (packed): 31.32 dB (2.72%) Ok

Ok

2024/5/5 16:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



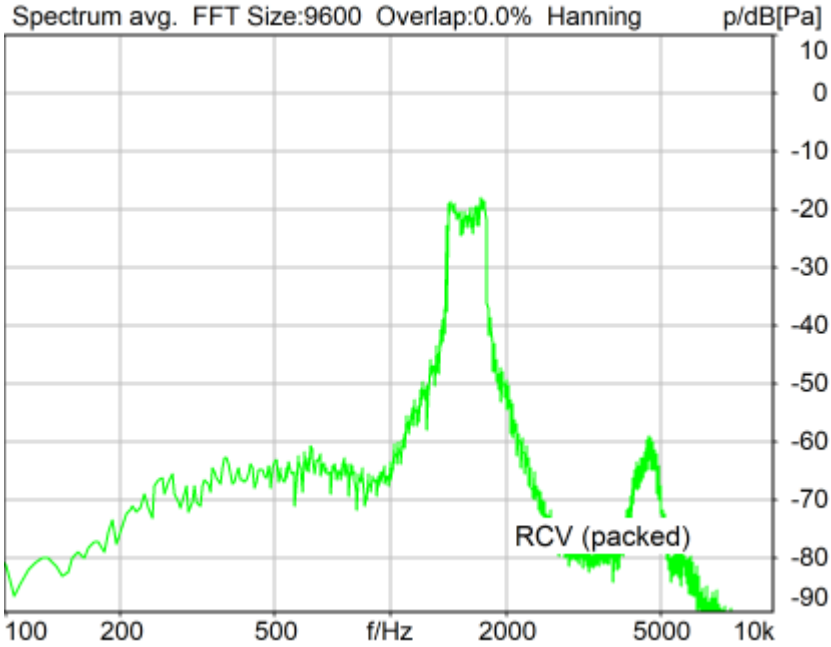
Distortion (Noise) RCV (packed): 23.15 dB (6.96%) Ok

Ok

2024/5/5 16:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



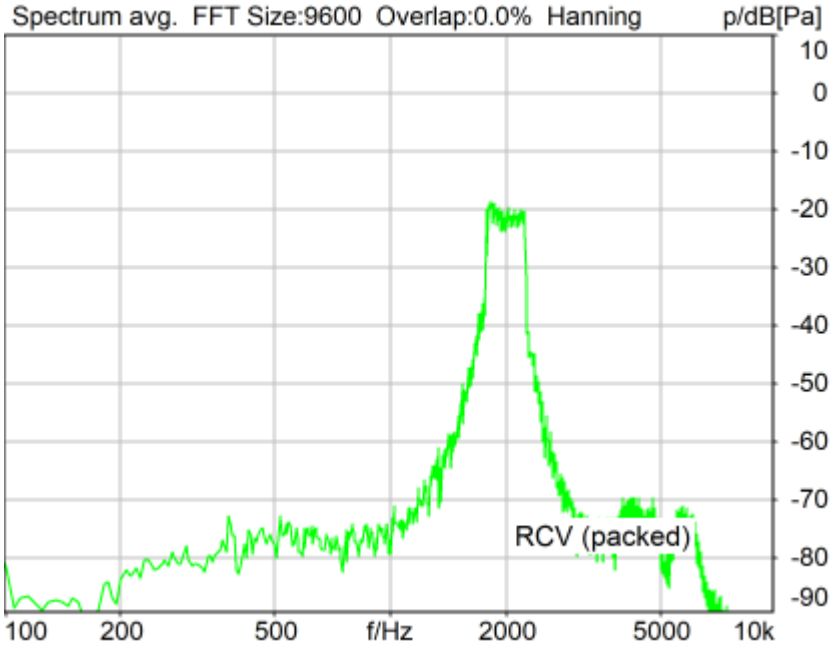
Distortion (Noise) RCV (packed): 24.61 dB (5.88%) Ok

Ok

2024/5/5 16:56 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



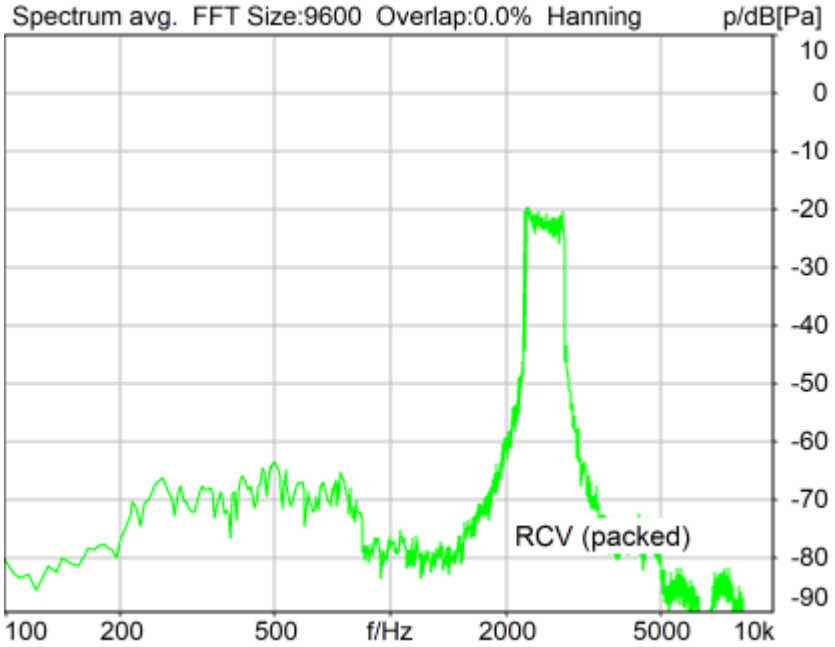
Distortion (Noise) RCV (packed): 22.93 dB (7.13%) Ok

Ok

2024/5/5 16:56 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



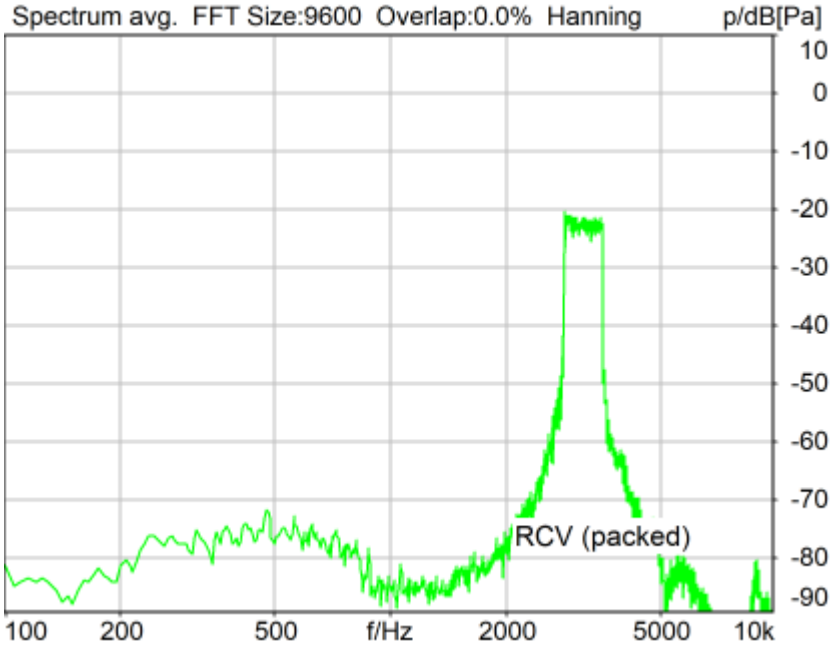
Distortion (Noise) RCV (packed): 30.50 dB (2.99%) Ok

Ok

2024/5/5 16:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



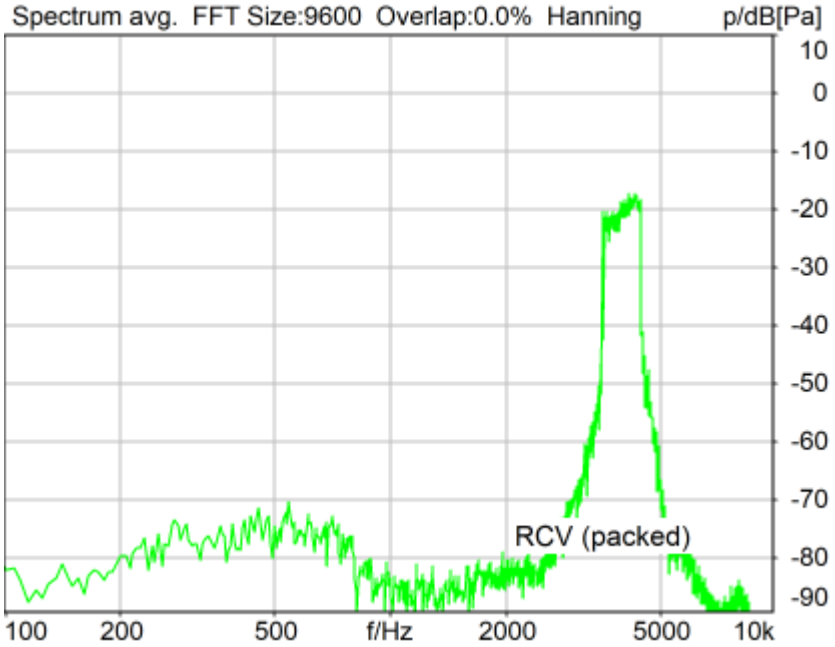
Distortion (Noise) RCV (packed): 33.29 dB (2.16%) Ok

Ok

2024/5/5 16:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



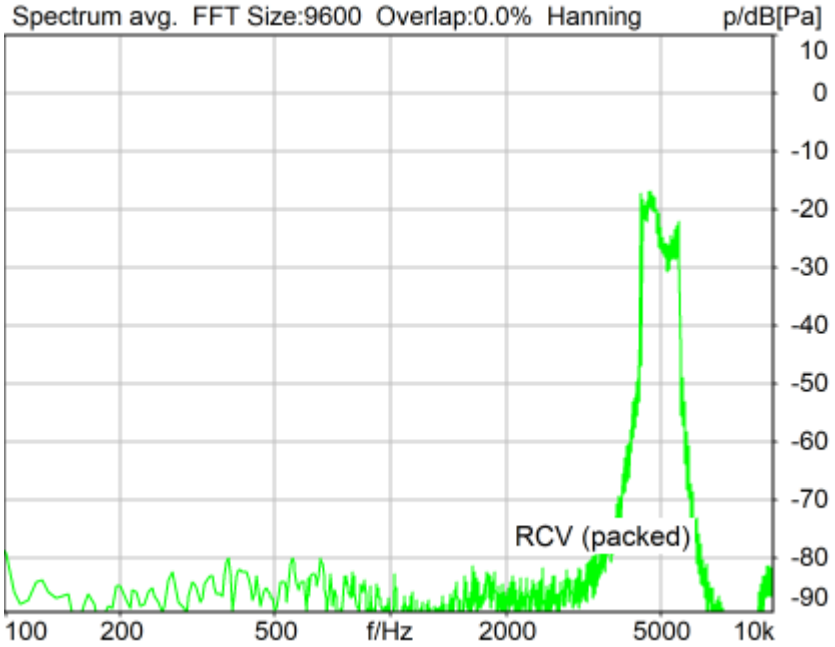
Distortion (Noise) RCV (packed): 31.97 dB (2.52%) Ok

Ok

2024/5/5 16:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 34.29 dB (1.93%) Ok

Ok

2024/5/5 16:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

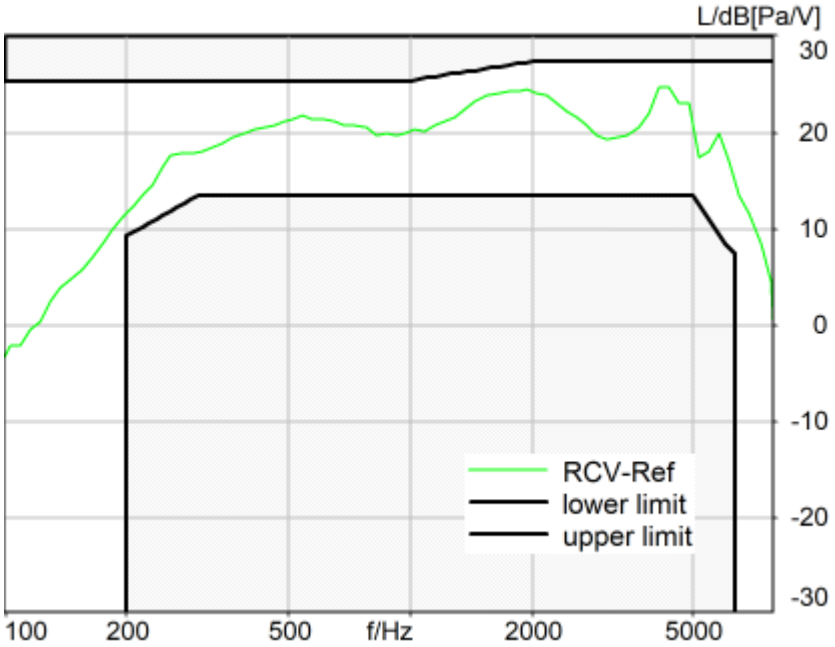
Region	Frequency	SDNR
1	250Hz	31.25 dB
2	315Hz	32.00 dB
3	400Hz	31.89 dB
4	500Hz	30.09 dB
5	630Hz	31.26 dB
6	800Hz	33.59 dB
7	1000Hz	31.32 dB
8	1250Hz	23.15 dB
9	1600Hz	24.61 dB
10	2000Hz	22.93 dB
11	2500Hz	30.50 dB
12	3150Hz	33.29 dB
13	4000Hz	31.97 dB
14	5000Hz	34.29 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.93dB at 2000Hz.

2024/5/5 16:58 ACQUA

5.3 Frequency Response 8N FF, Index: 1

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



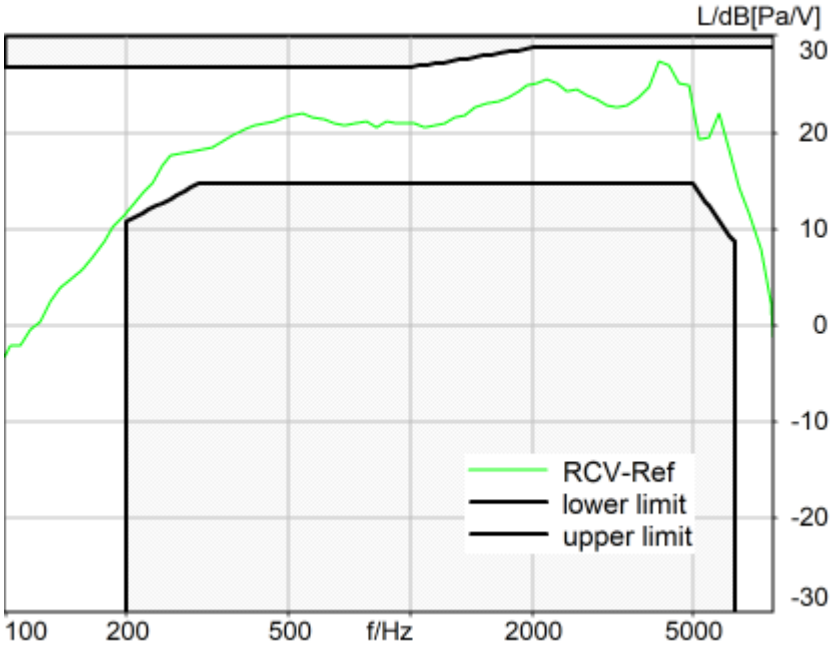
Absolute minimal distance
2.65 dB at 1747.8 Hz Ok

Ok

2024/5/5 16:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF, Index: 1

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



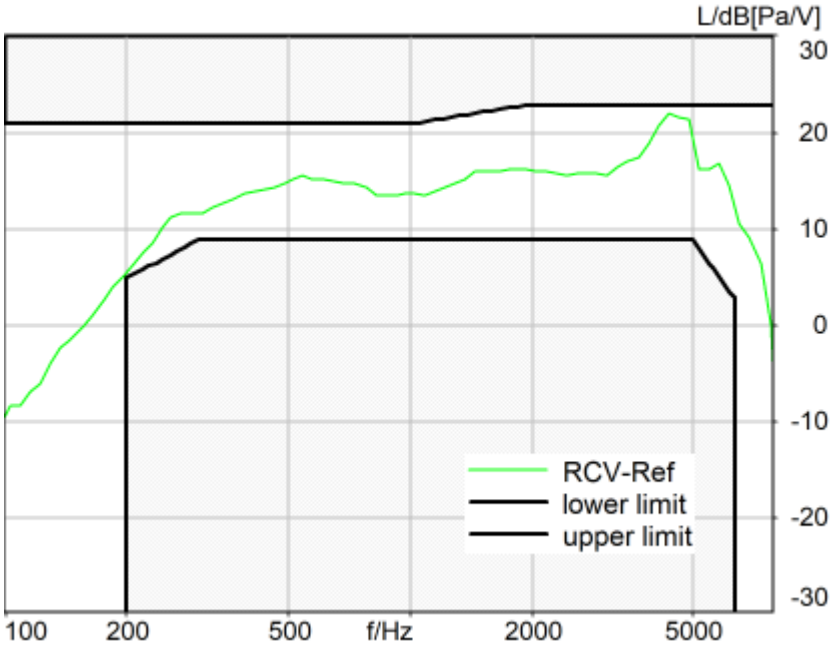
Absolute minimal distance
1.34 dB at 4119.5 Hz Ok

Ok

2024/5/5 16:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF, Index: 1

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



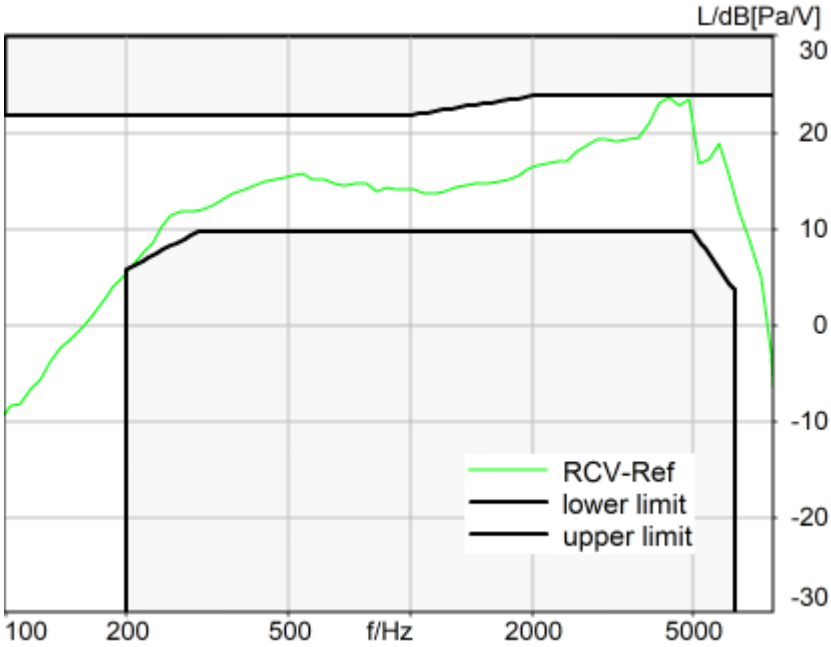
Absolute minimal distance
0.98 dB at 4369.4 Hz Ok

Ok

2024/5/5 16:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF, Index: 1

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



Absolute minimal distance
0.12 dB at 4369.4 Hz Ok

Ok

2024/5/5 20:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

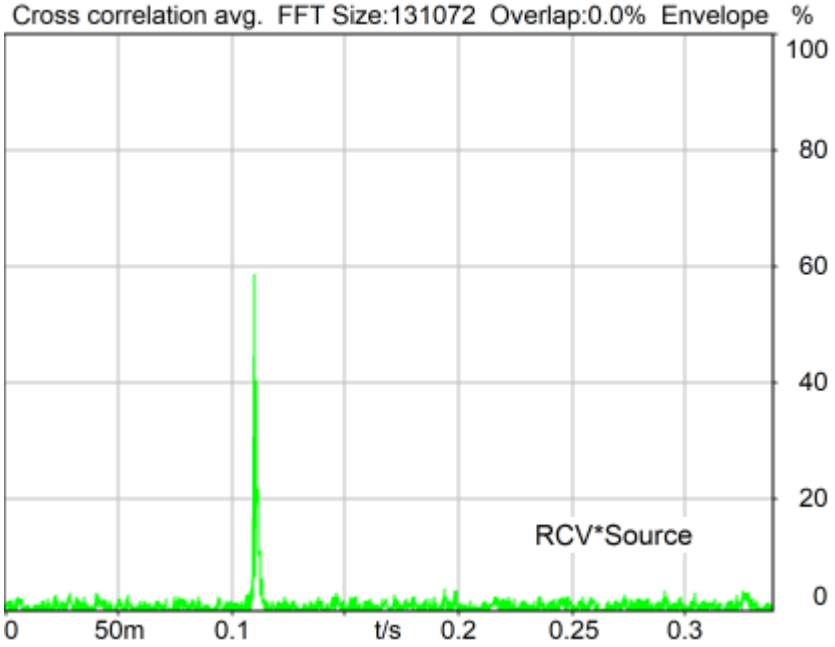
Measurement Object	LTE Band 26_15QPSK_75RB_0_EVS NB 24.4kbps_CH26865
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 11:28
Responsible Person	audio

Overall Receive Delay NB, Index: 1 3
5.1a Receive Volume Control Performance 8N NB, Index: 1 3
5.1b Receive Volume Control Performance 2N NB, Index: 1 4
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 5
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 6
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 8
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 10
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 11
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 11
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 12
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 14
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 16
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 18
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 19
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 19
5.3 Frequency Response 8N FF HANB, Index: 1 20
5.3 Frequency Response 8N DF HANB, Index: 1 21
5.3 Frequency Response 2N FF HANB, Index: 1 21
5.3 Frequency Response 2N DF HANB, Index: 1 22

Overall Receive Delay NB, Index: 1

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

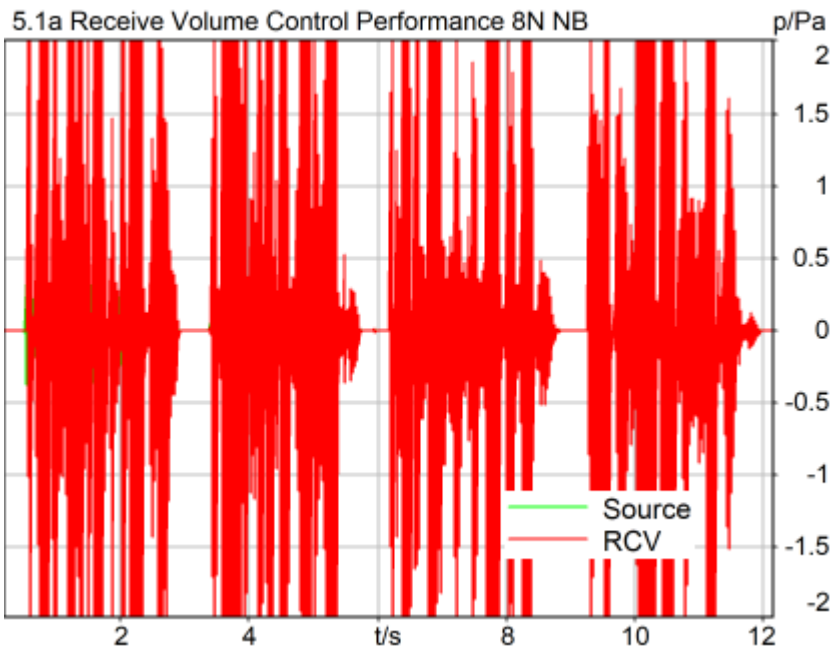


Channel	Delay
RCV*Source	110.8 ms

2024/5/5 17:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB, Index: 1

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



Correction

X - 70

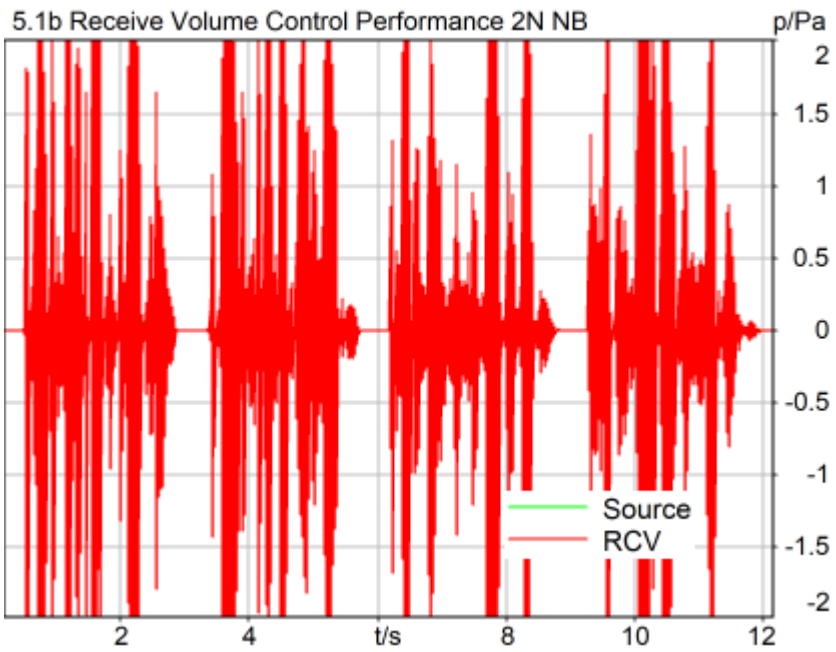
Channel	Speech level	Activity	Corrected speech level	
RCV	92.88 dB[SPL]	80.61%	22.88 dB[SPL]	Ok

Ok

2024/5/5 17:19 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N NB, Index: 1

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



Correction

X - 70

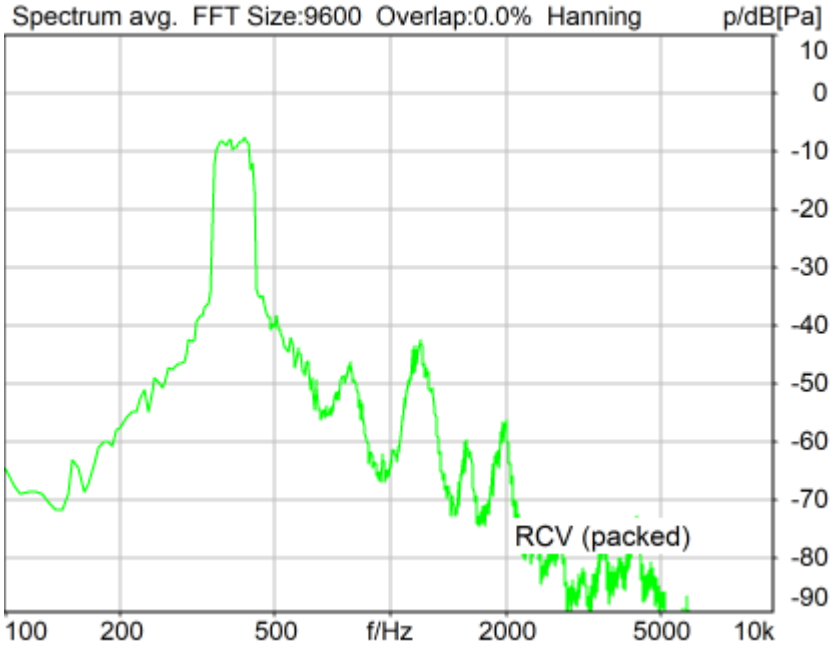
Channel	Speech level	Activity	Corrected speech level	
RCV	87.50 dB[SPL]	80.17%	17.50 dB[SPL]	Ok

Ok

2024/5/5 17:25 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



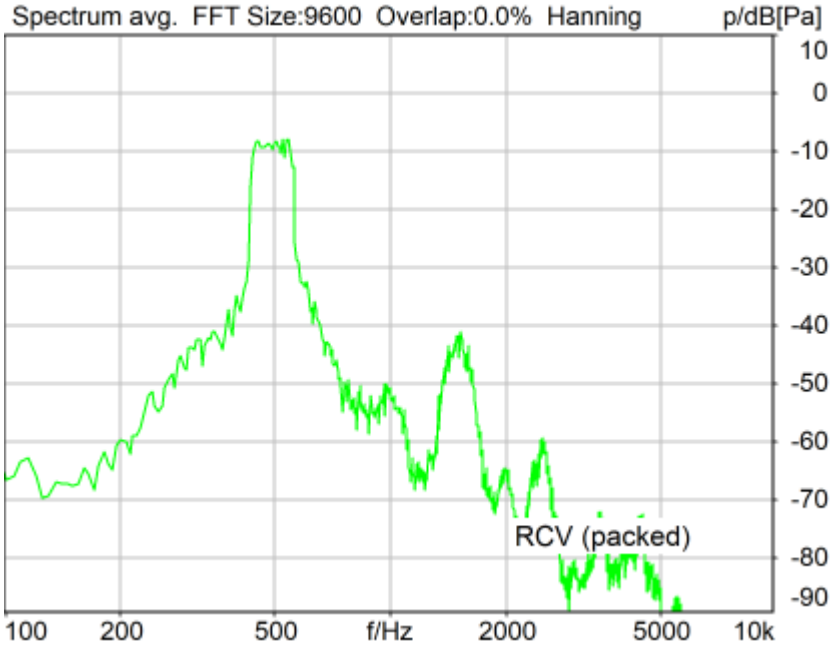
Distortion (Noise) RCV (packed): 30.51 dB (2.98%) Ok

Ok

2024/5/5 17:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



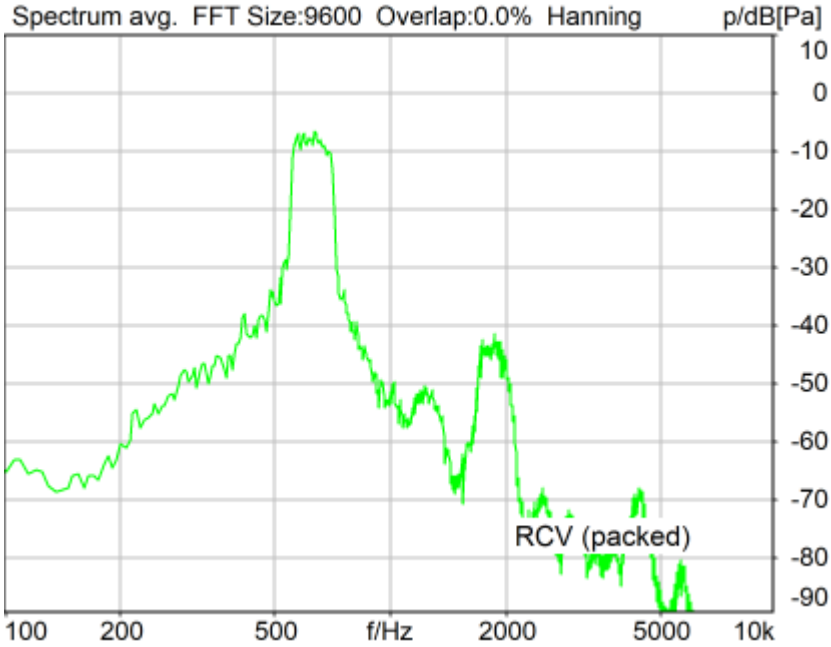
Distortion (Noise) RCV (packed): 27.41 dB (4.26%) Ok

Ok

2024/5/5 17:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



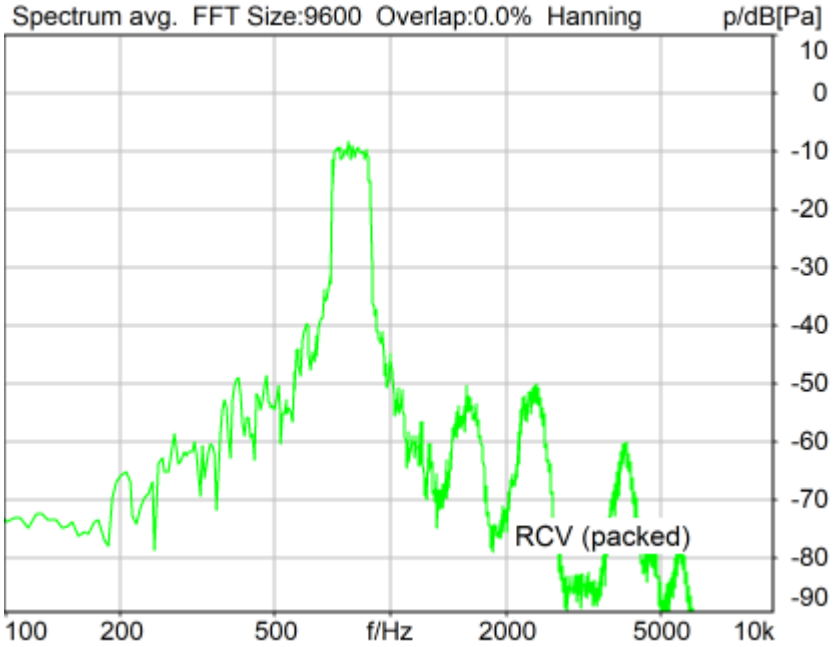
Distortion (Noise) RCV (packed): 27.59 dB (4.17%) Ok

Ok

2024/5/5 17:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



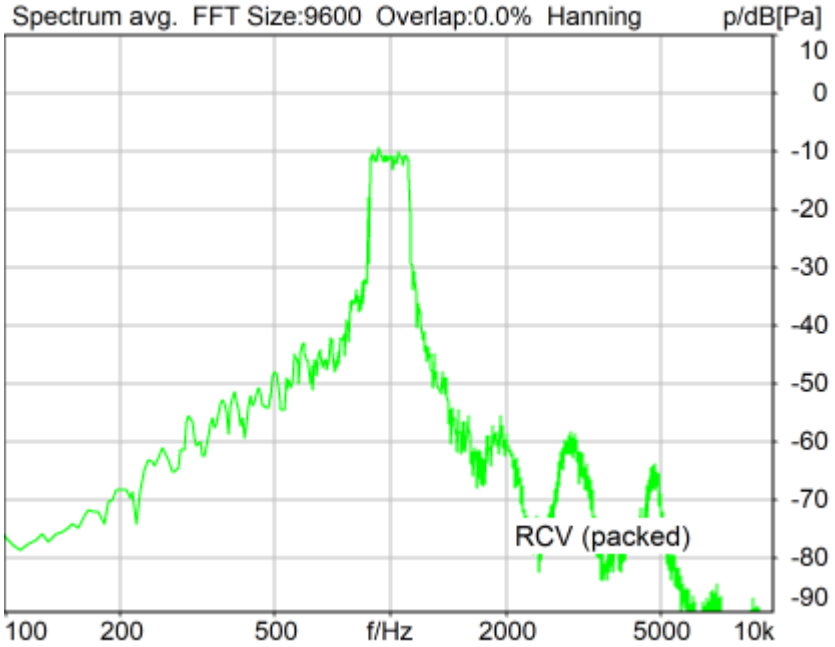
Distortion (Noise) RCV (packed): 31.86 dB (2.55%) Ok

Ok

2024/5/5 17:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



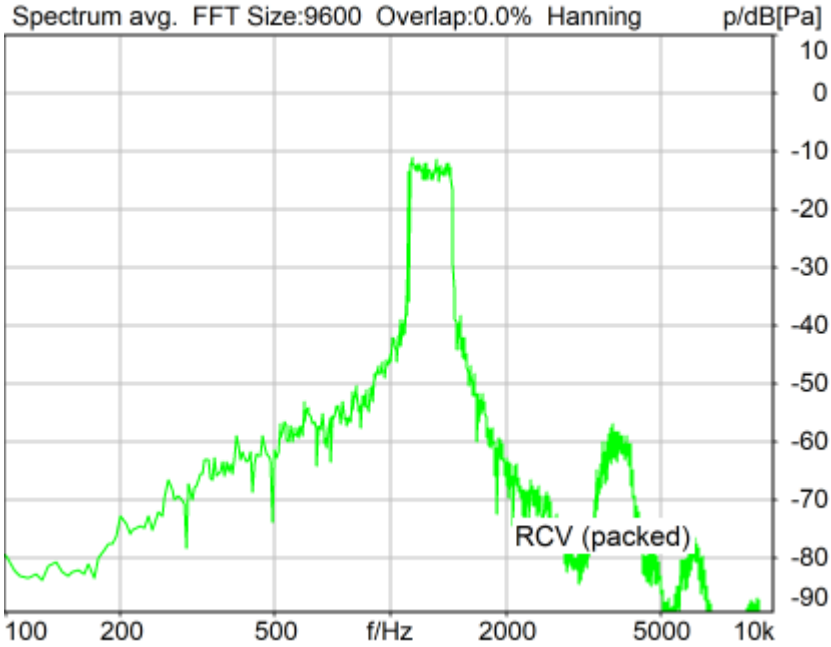
Distortion (Noise) RCV (packed): 26.88 dB (4.53%) Ok

Ok

2024/5/5 17:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



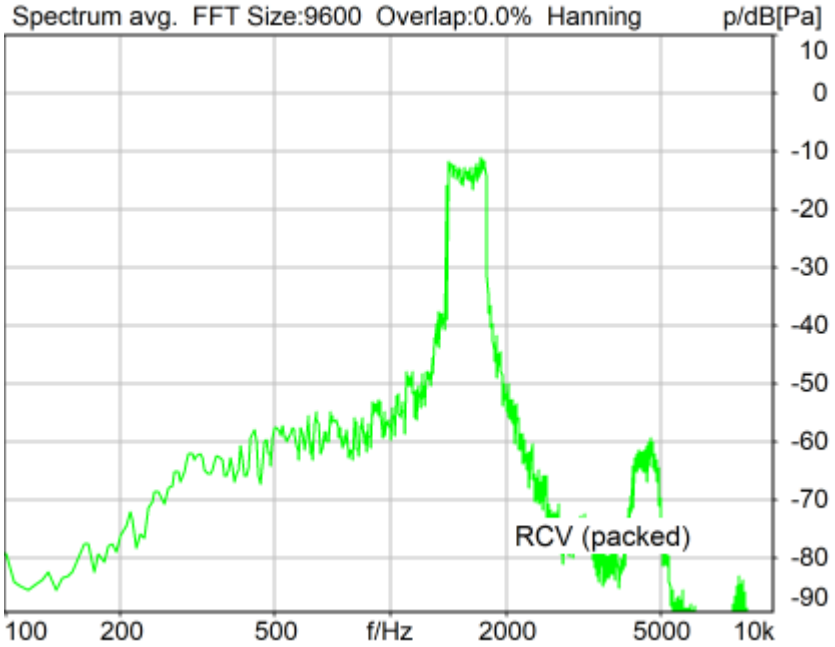
Distortion (Noise) RCV (packed): 27.17 dB (4.38%) Ok

Ok

2024/5/5 17:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



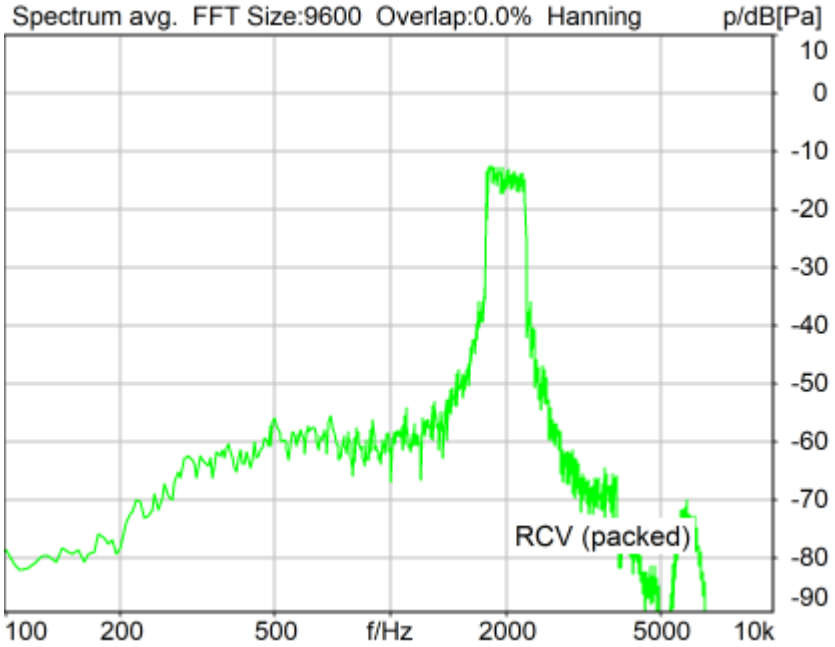
Distortion (Noise) RCV (packed): 29.17 dB (3.48%) Ok

Ok

2024/5/5 17:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



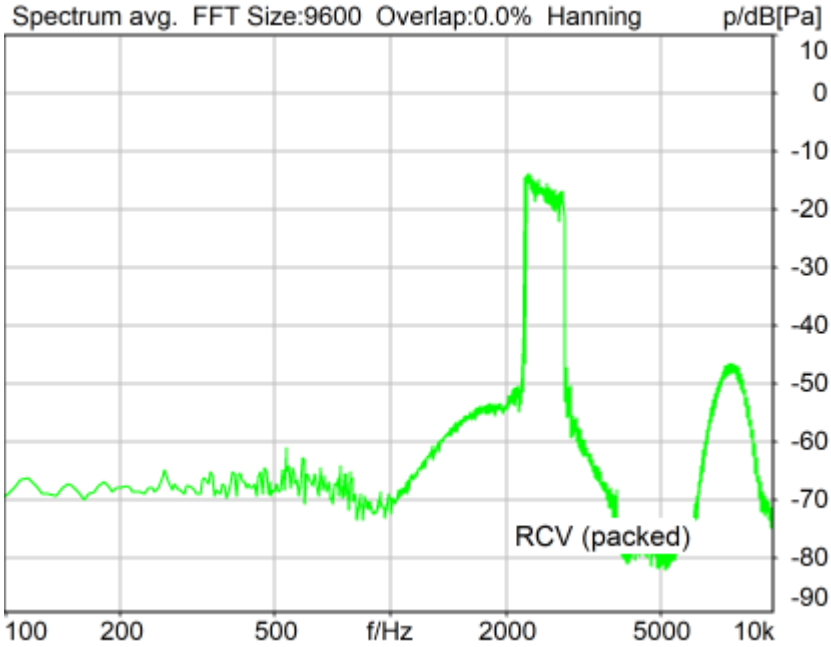
Distortion (Noise) RCV (packed): 26.76 dB (4.59%) Ok

Ok

2024/5/5 17:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



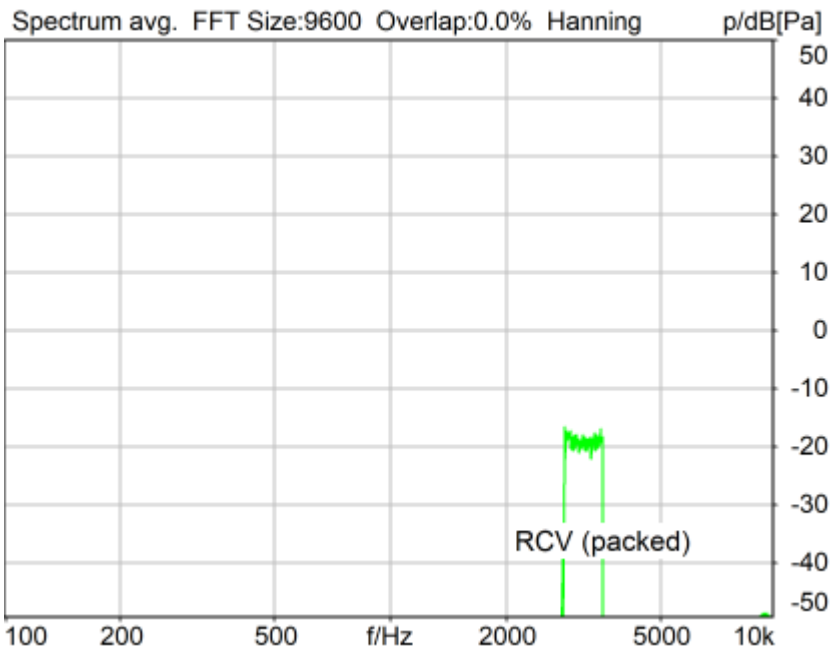
Distortion (Noise) RCV (packed): 26.75 dB (4.60%) Ok

Ok

2024/5/5 17:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 27.98 dB (3.99%) Ok

Ok

2024/5/5 17:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

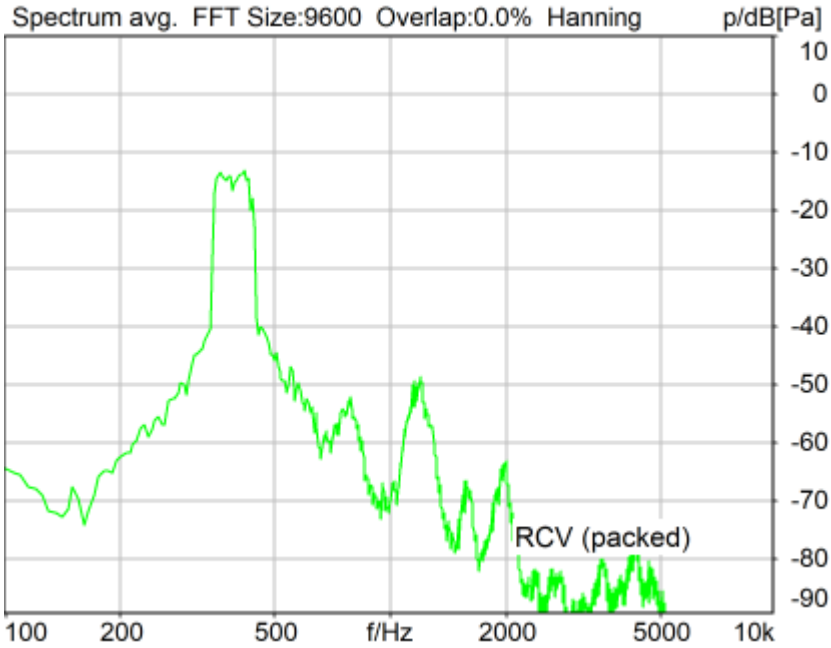
Region	Frequency	SDNR
1	400Hz	30.51 dB
2	500Hz	27.41 dB
3	630Hz	27.59 dB
4	800Hz	31.86 dB
5	1000Hz	26.88 dB
6	1250Hz	27.17 dB
7	1600Hz	29.17 dB
8	2000Hz	26.76 dB
9	2500Hz	26.75 dB
10	3150Hz	27.98 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.75dB at 2500Hz.

2024/5/5 17:23 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



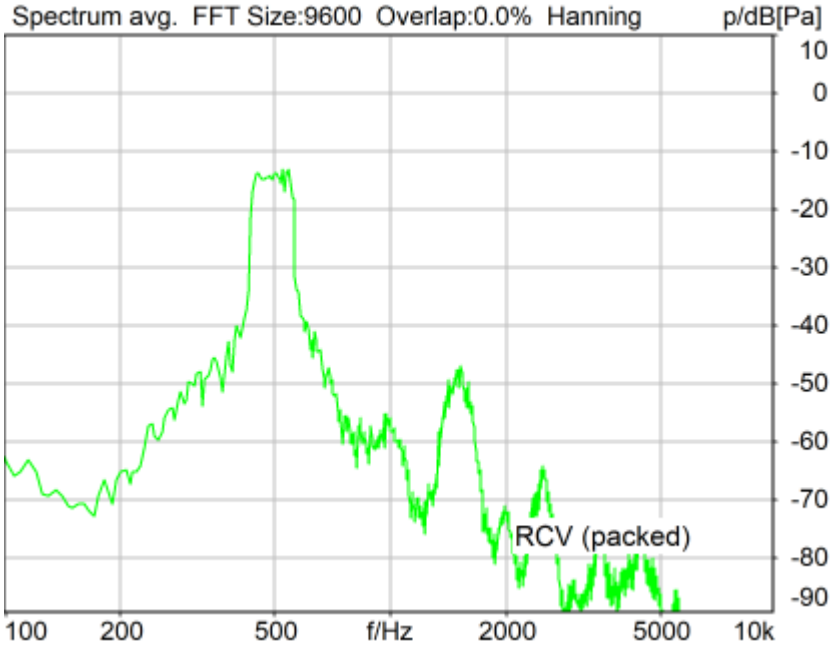
Distortion (Noise) RCV (packed): 30.66 dB (2.93%) Ok

Ok

2024/5/5 17:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



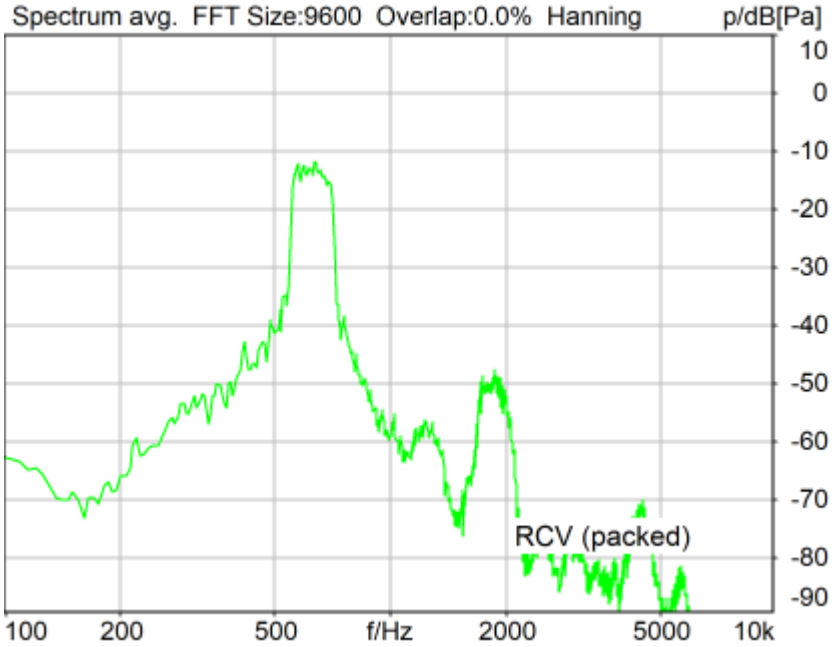
Distortion (Noise) RCV (packed): 27.92 dB (4.02%) Ok

Ok

2024/5/5 17:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



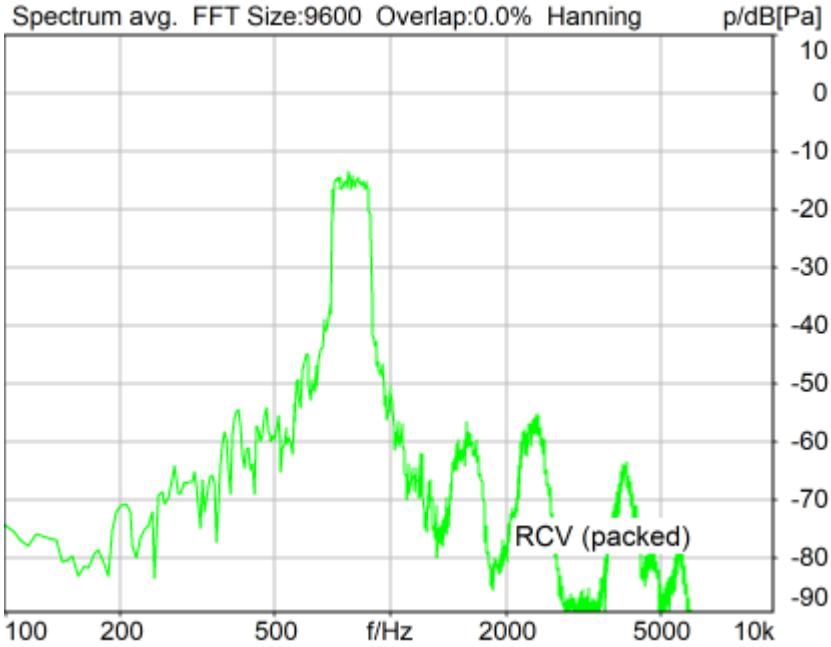
Distortion (Noise) RCV (packed): 27.76 dB (4.09%) Ok

Ok

2024/5/5 17:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



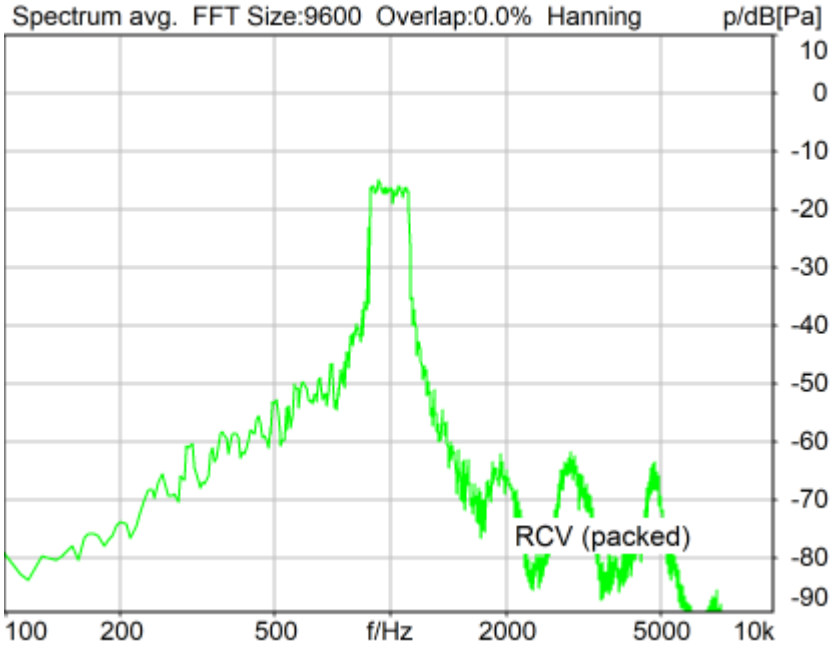
Distortion (Noise) RCV (packed): 31.90 dB (2.54%) Ok

Ok

2024/5/5 17:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



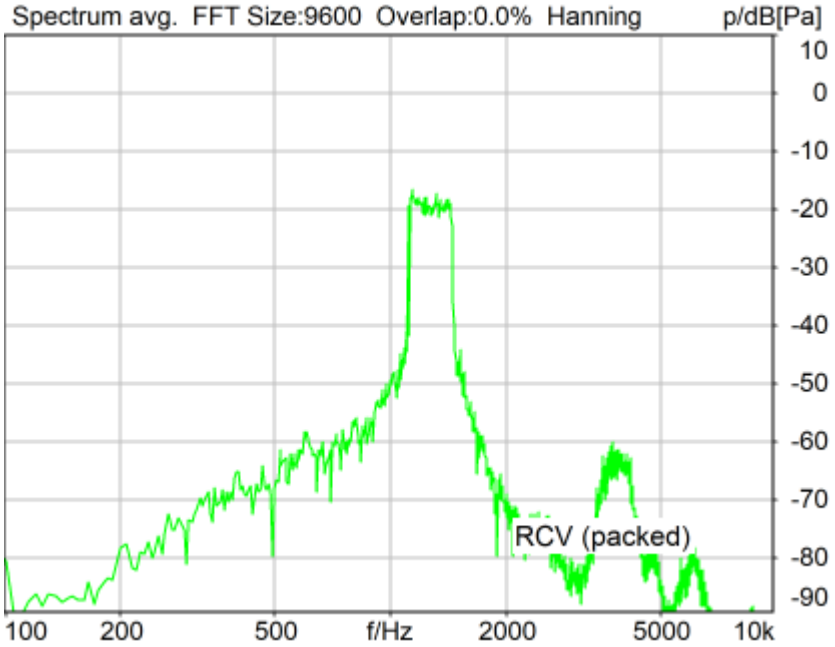
Distortion (Noise) RCV (packed): 27.05 dB (4.44%) Ok

Ok

2024/5/5 17:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



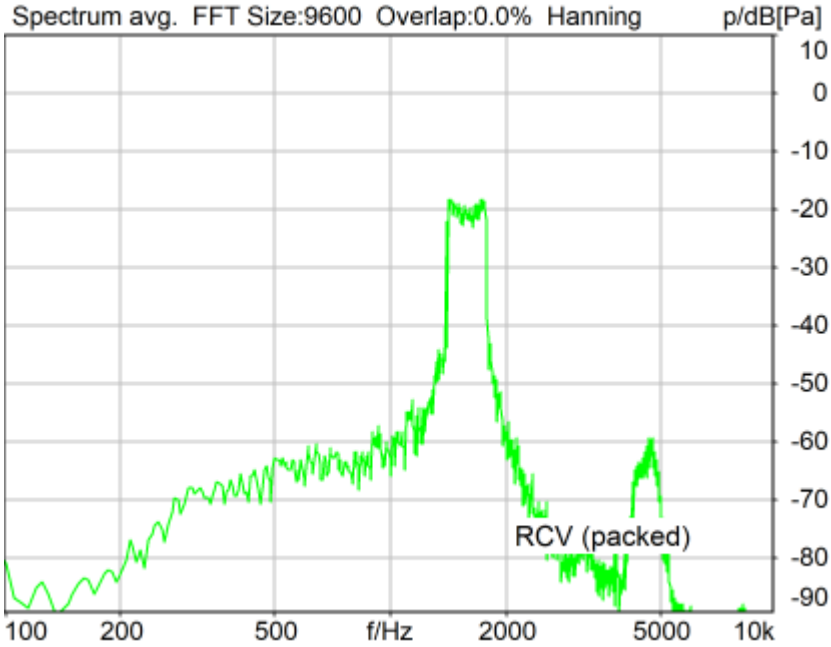
Distortion (Noise) RCV (packed): 27.15 dB (4.39%) Ok

Ok

2024/5/5 17:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



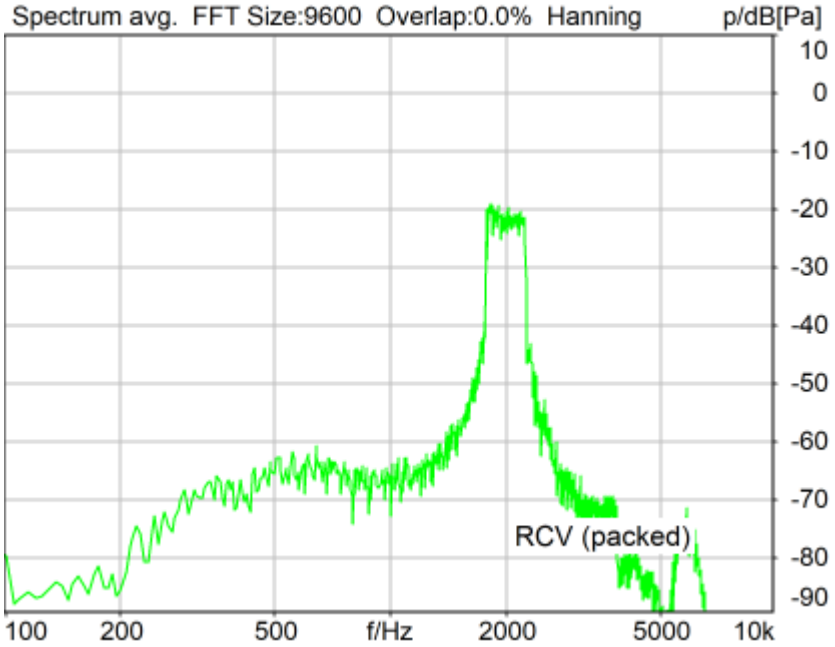
Distortion (Noise) RCV (packed): 28.83 dB (3.62%) Ok

Ok

2024/5/5 17:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



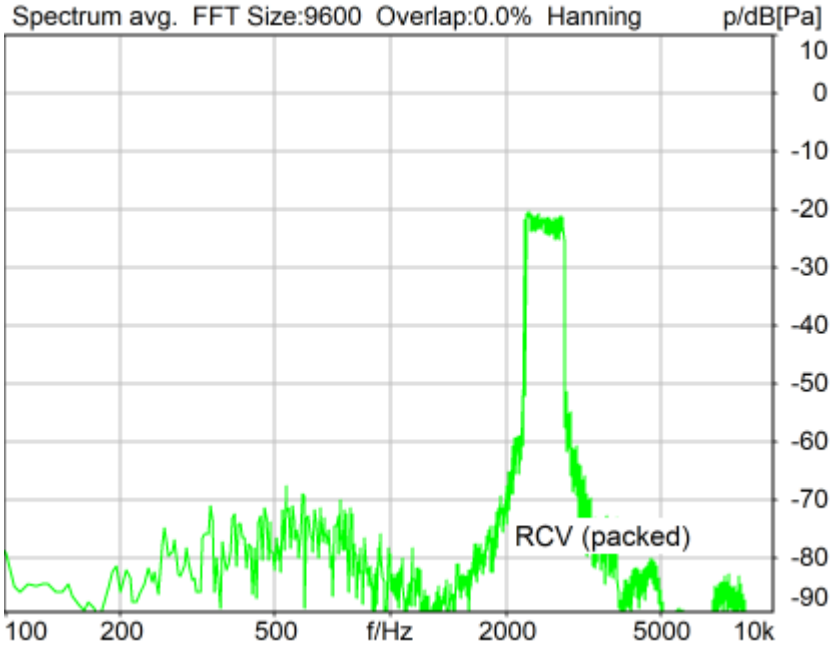
Distortion (Noise) RCV (packed): 26.14 dB (4.93%) Ok

Ok

2024/5/5 17:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



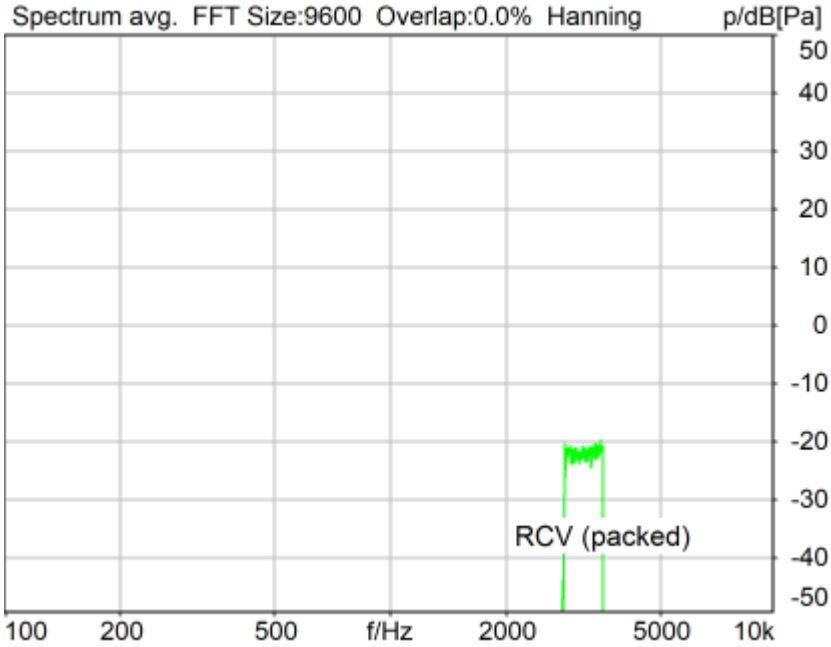
Distortion (Noise) RCV (packed): 38.52 dB (1.19%) Ok

Ok

2024/5/5 17:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 45.49 dB (0.53%) Ok

Ok

2024/5/5 17:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

Region	Frequency	SDNR
1	400Hz	30.66 dB

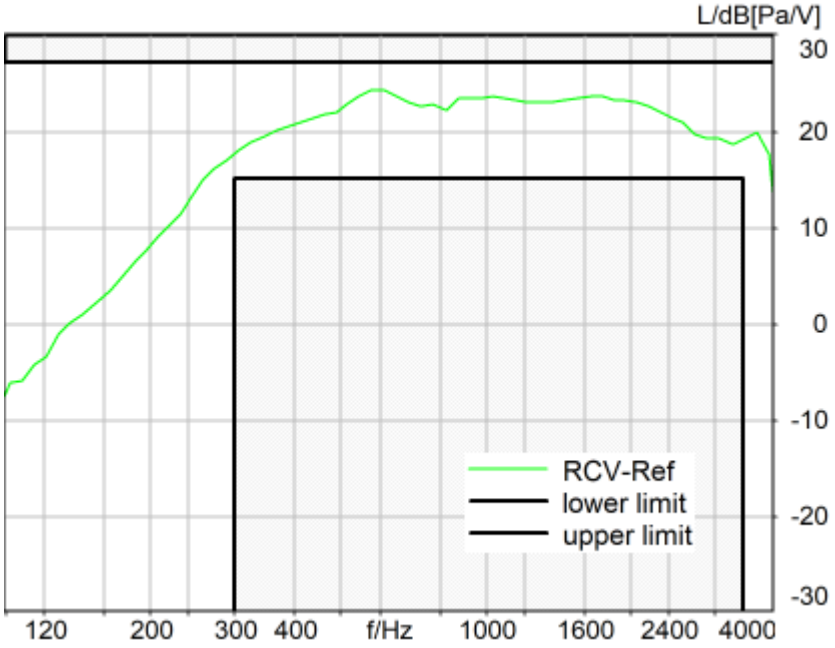
2	500Hz	27.92 dB
3	630Hz	27.76 dB
4	800Hz	31.90 dB
5	1000Hz	27.05 dB
6	1250Hz	27.15 dB
7	1600Hz	28.83 dB
8	2000Hz	26.14 dB
9	2500Hz	38.52 dB
10	3150Hz	45.49 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.14dB at 2000Hz.

2024/5/5 17:30 ACQUA

5.3 Frequency Response 8N FF HANB, Index: 1

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



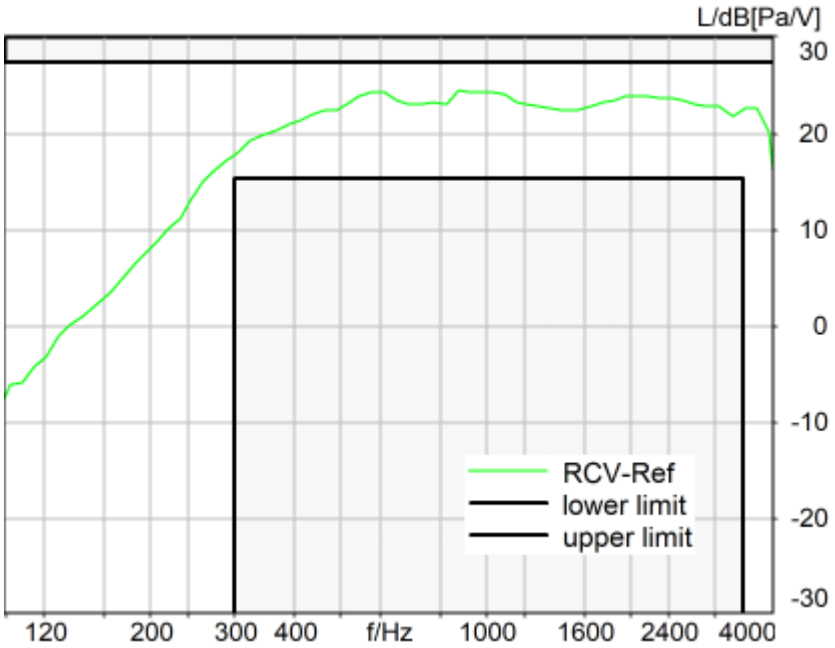
Absolute minimal distance
2.91 dB at 305.9 Hz Ok

Ok

2024/5/5 17:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF HANB, Index: 1

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



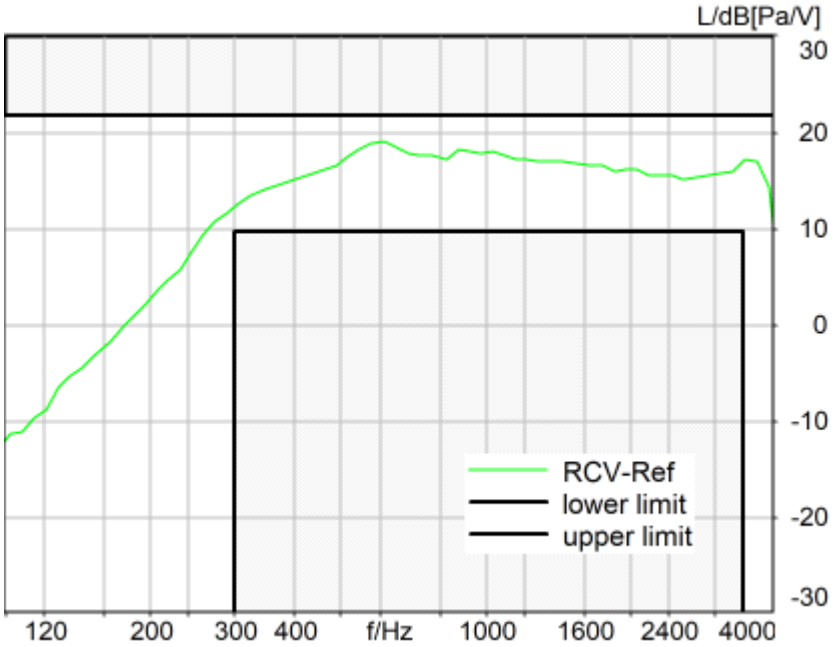
Absolute minimal distance
2.85 dB at 873.9 Hz Ok

Ok

2024/5/5 17:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF HANB, Index: 1

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



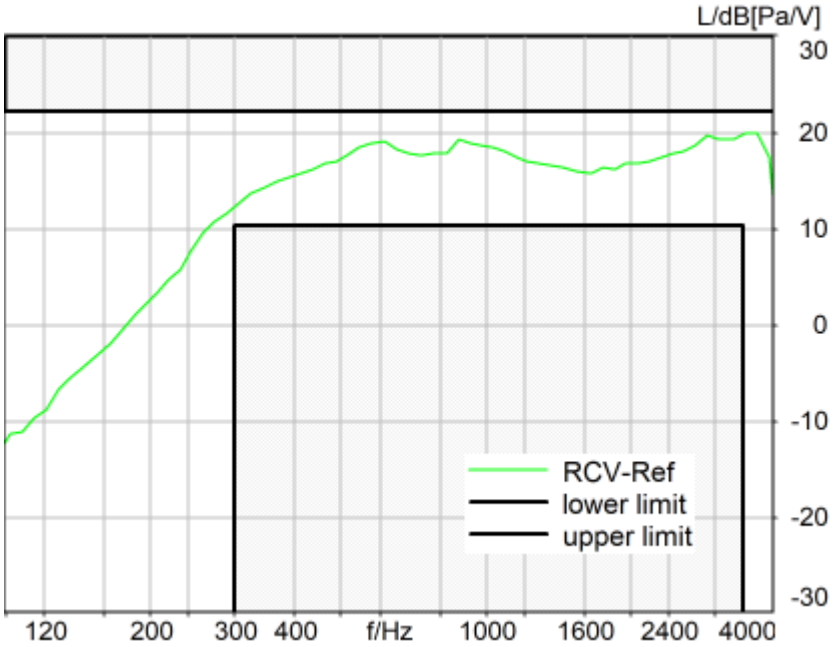
Absolute minimal distance
2.73 dB at 611.7 Hz Ok

Ok

2024/5/5 17:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF HANB, Index: 1

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



Absolute minimal distance
2.31 dB at 3657.5 Hz Ok

Ok

2024/5/5 17:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

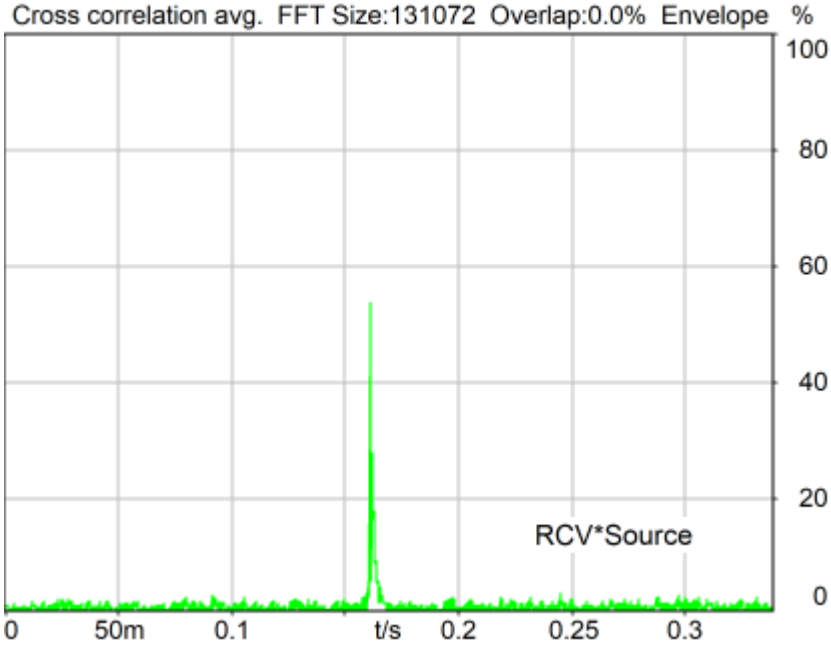
Measurement Object	LTE Band 26_15QPSK_75RB_0_EVS WB 24.4kbps_CH26865
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 11:29
Responsible Person	audio

Overall Receive Delay WB, Index: 1 3
5.1a Receive Volume Control Performance 8N WB, Index: 1 3
5.1b Receive Volume Control Performance 2N WB, Index: 1 4
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 5
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 6
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 8
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 10
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 12
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 14
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 15
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 15
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 16
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 18
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 20
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 22
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 24
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 25
5.3 Frequency Response 8N FF, Index: 1 25
5.3 Frequency Response 8N DF, Index: 1 26
5.3 Frequency Response 2N FF, Index: 1 27
5.3 Frequency Response 2N DF, Index: 1 28

Overall Receive Delay WB, Index: 1

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

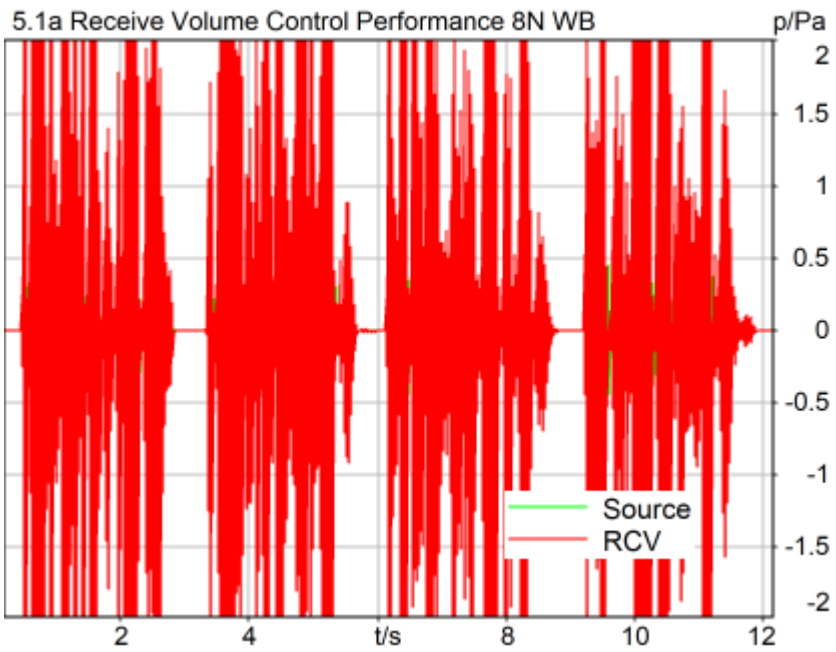


Channel	Delay
RCV*Source	162.1 ms

2024/5/5 17:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB, Index: 1

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



Correction

X - 70

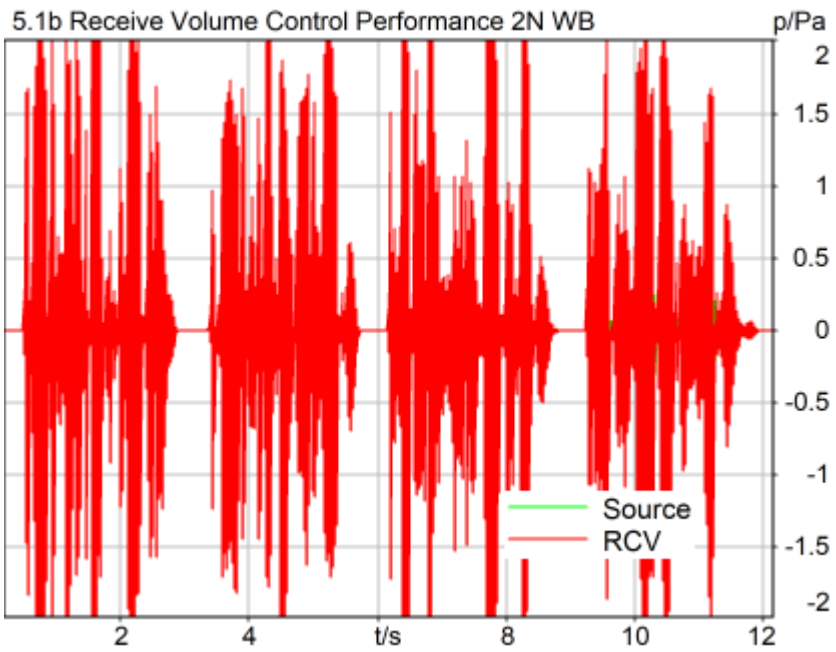
Channel	Speech level	Activity	Corrected speech level	
RCV	90.94 dB[SPL]	84.31%	20.94 dB[SPL]	Ok

Ok

2024/5/5 18:00 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N WB, Index: 1

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



Correction

X - 70

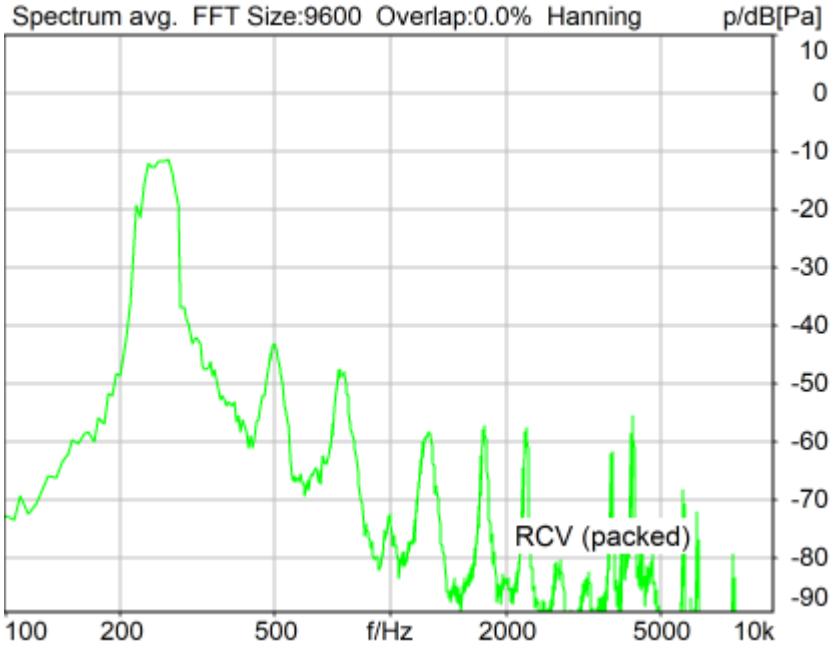
Channel	Speech level	Activity	Corrected speech level	
RCV	85.67 dB[SPL]	84.33%	15.67 dB[SPL]	Ok

Ok

2024/5/5 17:34 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



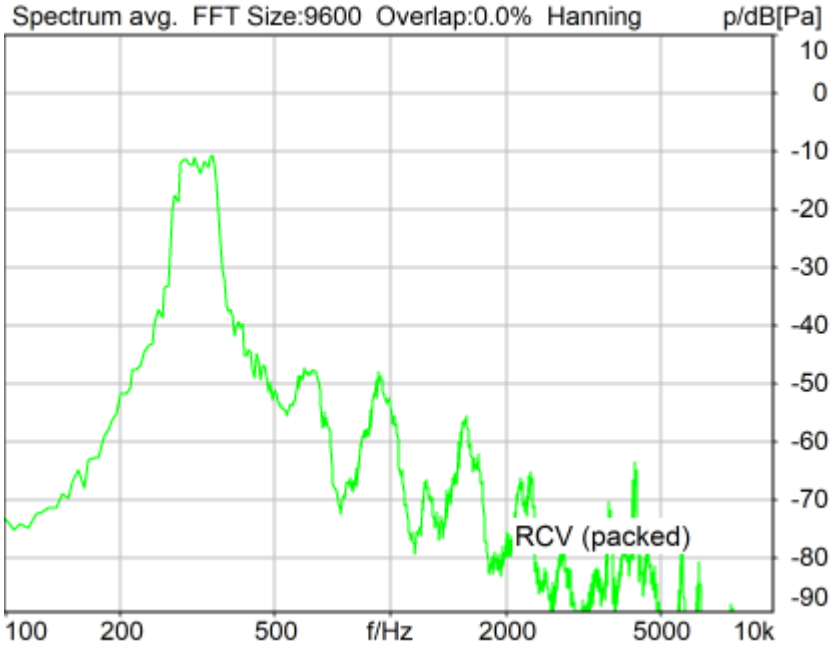
Distortion (Noise) RCV (packed): 31.05 dB (2.80%) Ok

Ok

2024/5/5 18:00 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



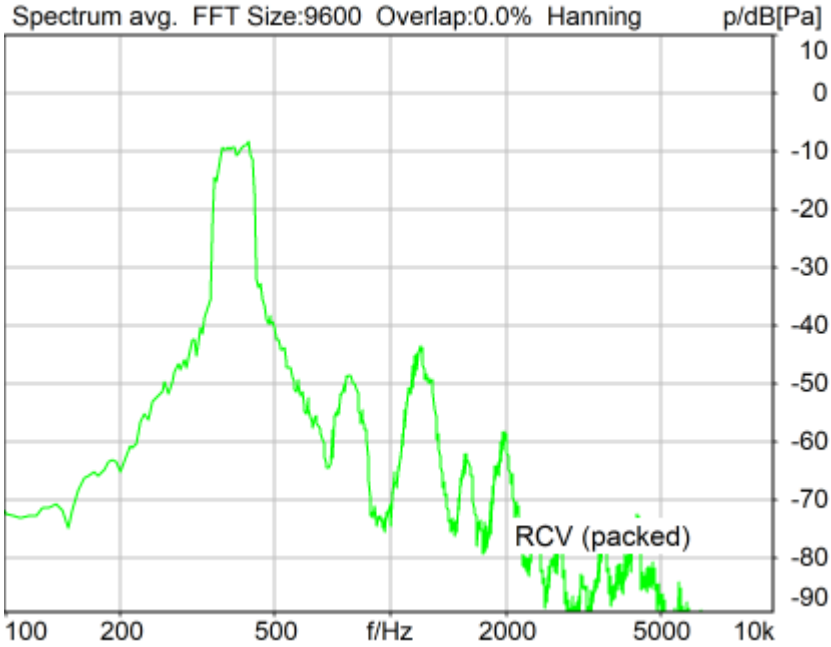
Distortion (Noise) RCV (packed): 30.97 dB (2.83%) Ok

Ok

2024/5/5 18:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



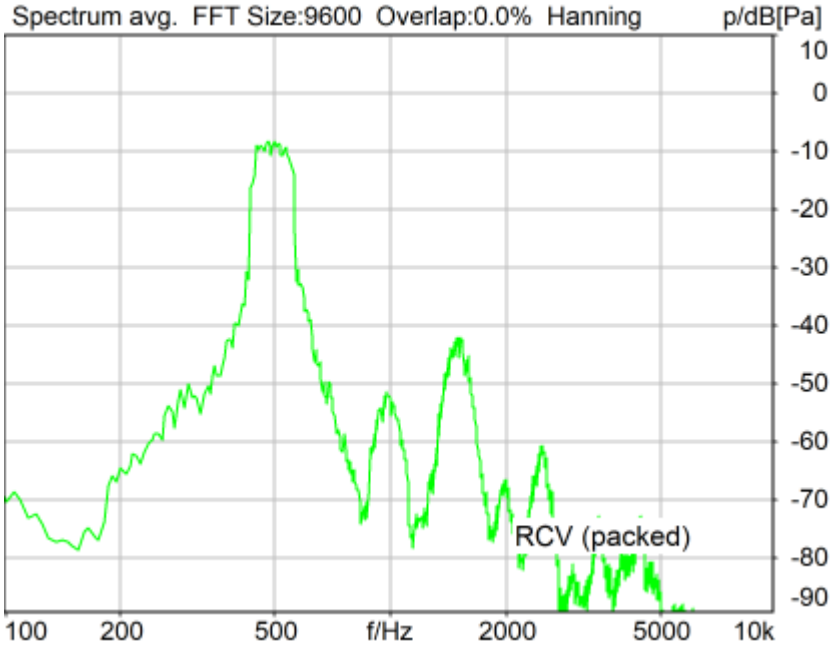
Distortion (Noise) RCV (packed): 31.04 dB (2.80%) Ok

Ok

2024/5/5 18:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



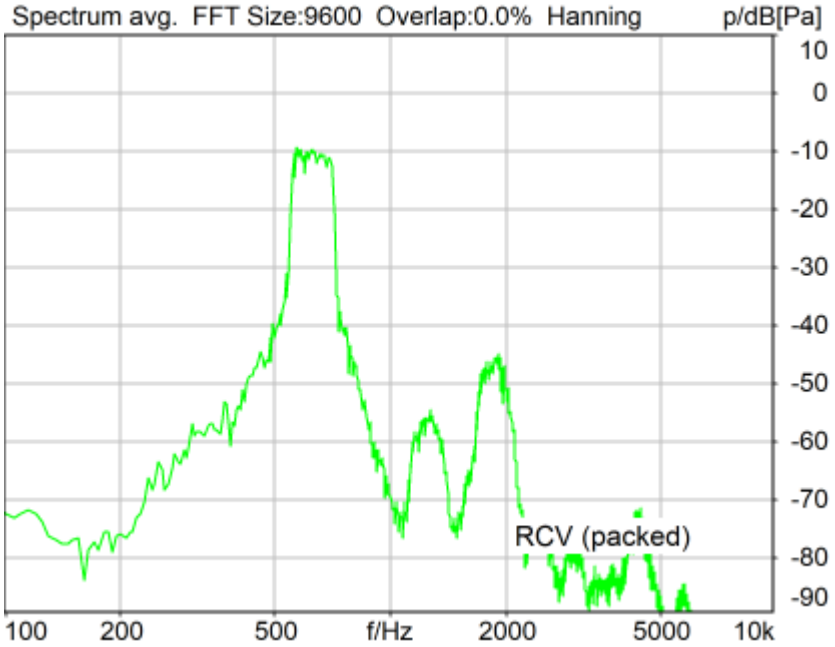
Distortion (Noise) RCV (packed): 29.42 dB (3.38%) Ok

Ok

2024/5/5 18:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



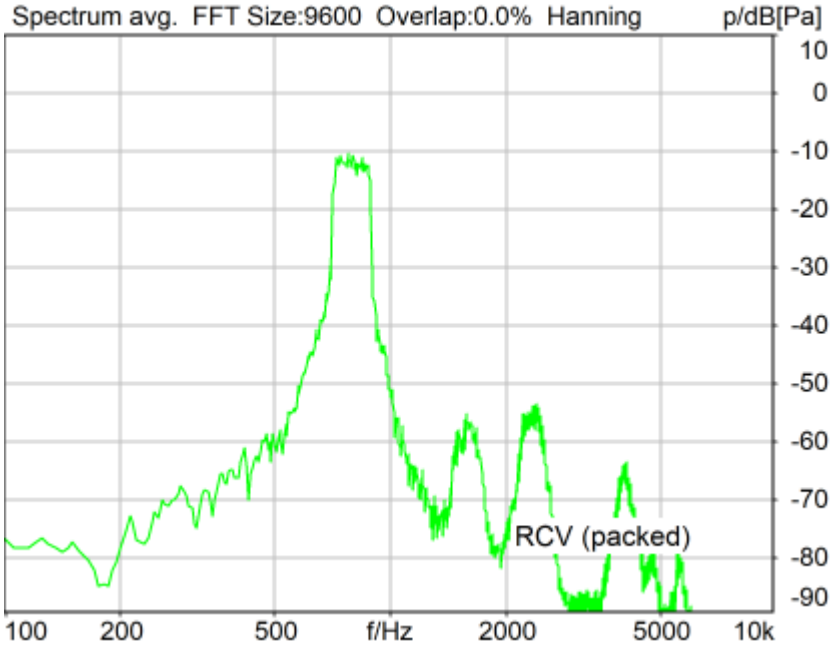
Distortion (Noise) RCV (packed): 29.97 dB (3.17%) Ok

Ok

2024/5/5 18:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



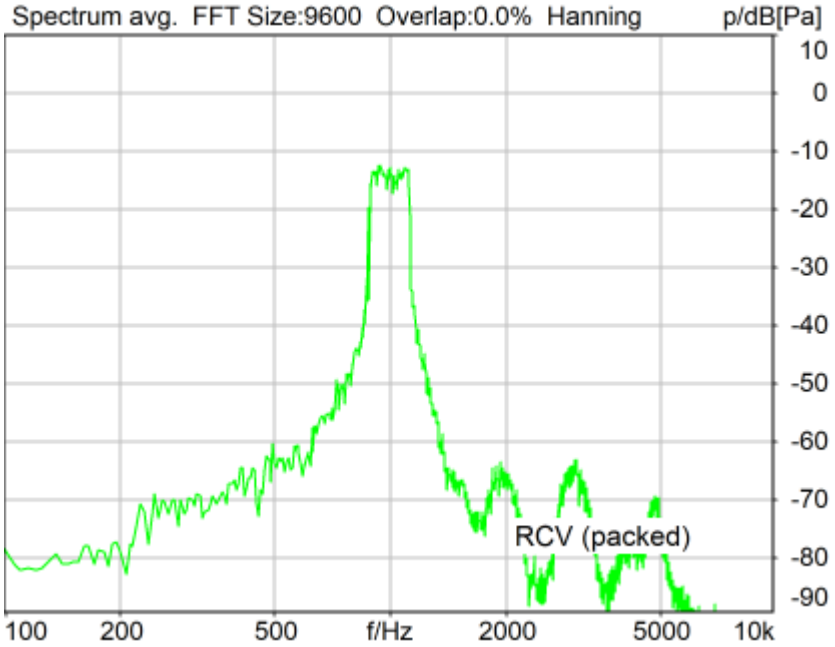
Distortion (Noise) RCV (packed): 31.86 dB (2.55%) Ok

Ok

2024/5/5 18:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



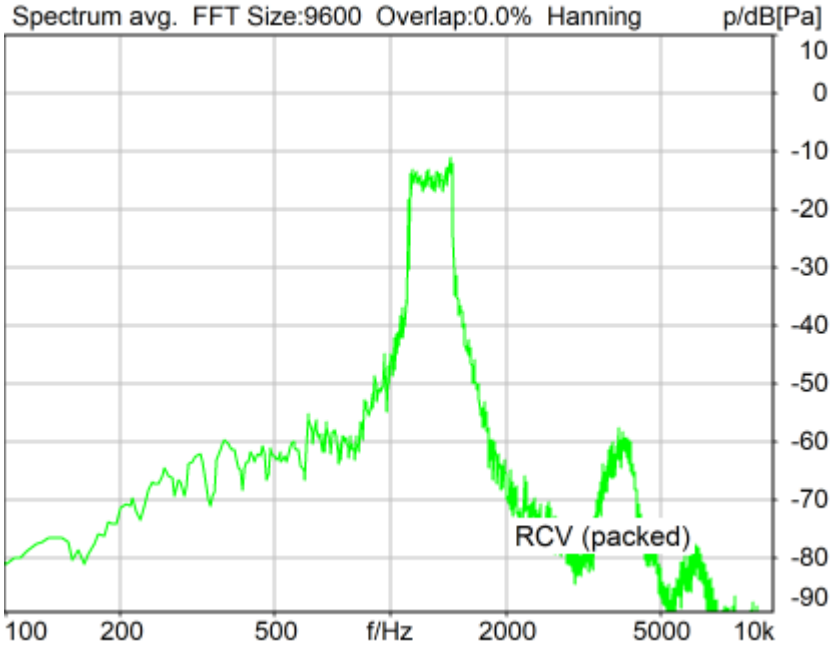
Distortion (Noise) RCV (packed): 31.12 dB (2.78%) Ok

Ok

2024/5/5 18:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



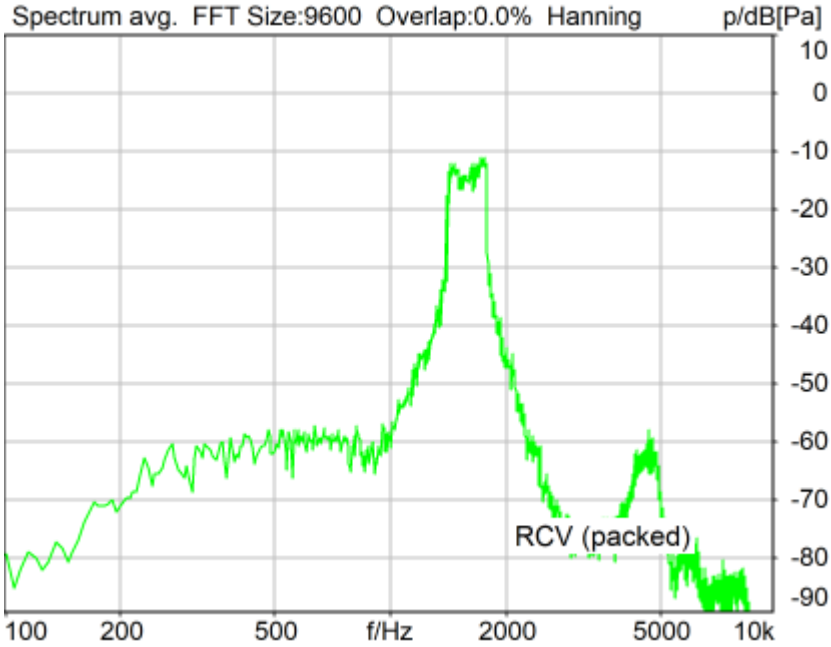
Distortion (Noise) RCV (packed): 22.66 dB (7.37%) Ok

Ok

2024/5/5 18:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



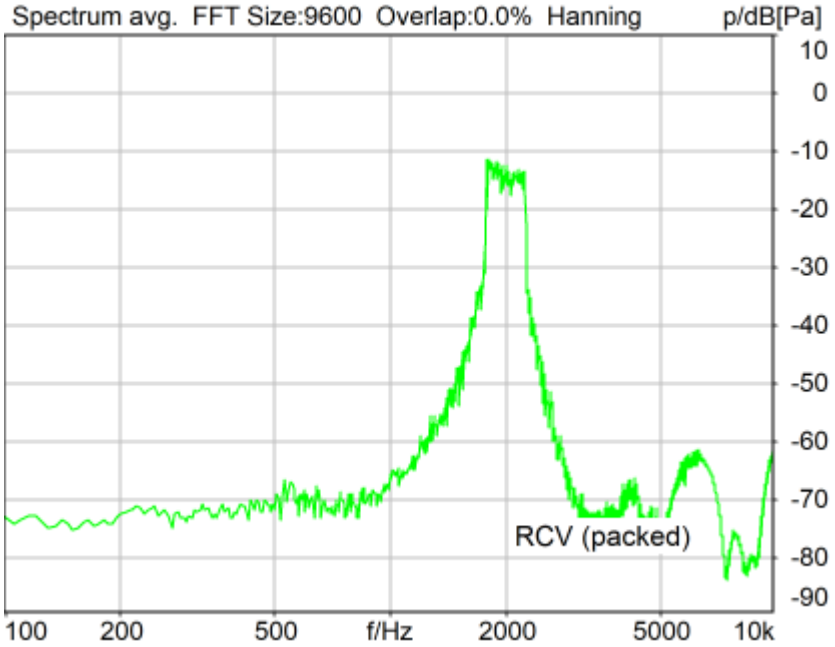
Distortion (Noise) RCV (packed): 24.45 dB (5.99%) Ok

Ok

2024/5/5 18:04 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



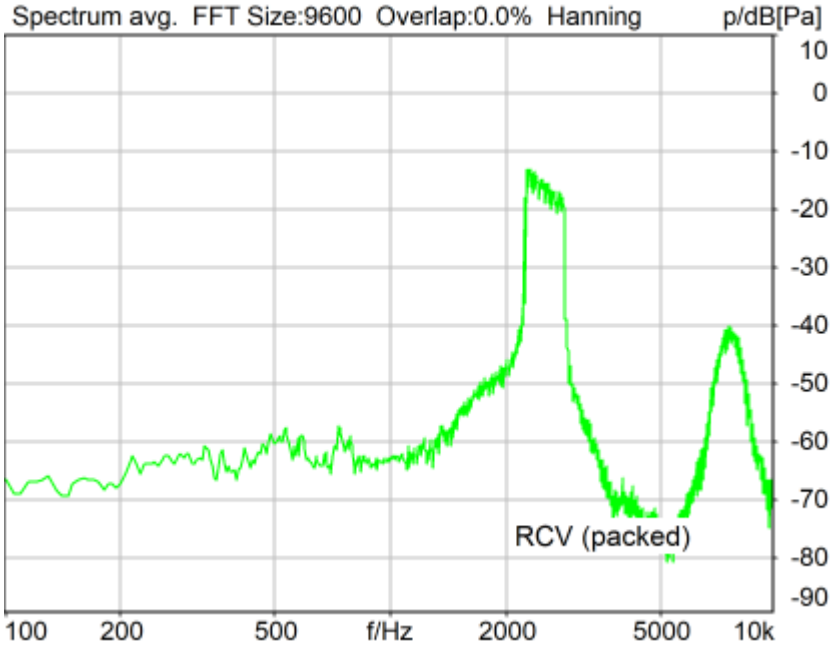
Distortion (Noise) RCV (packed): 24.11 dB (6.23%) Ok

Ok

2024/5/5 18:04 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



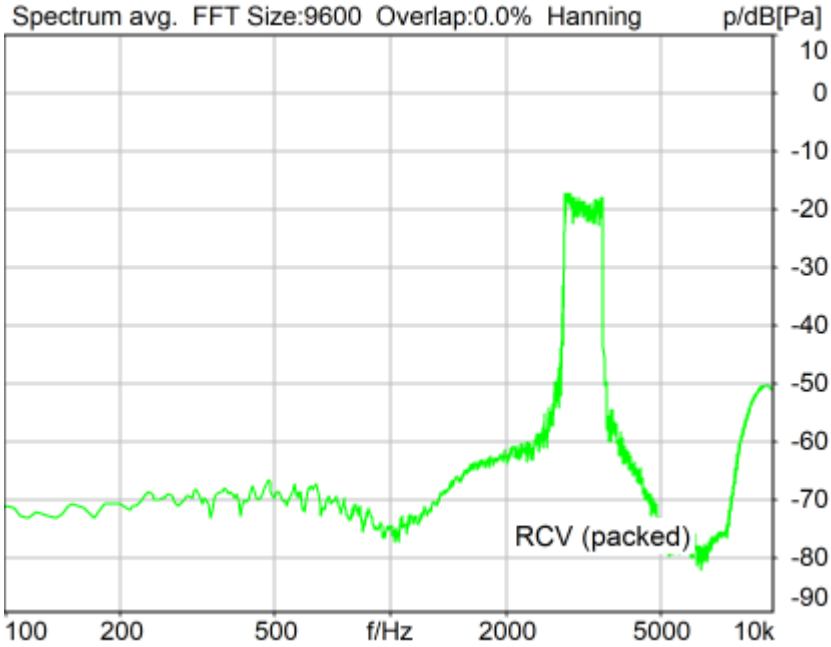
Distortion (Noise) RCV (packed): 22.28 dB (7.69%) Ok

Ok

2024/5/5 18:05 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



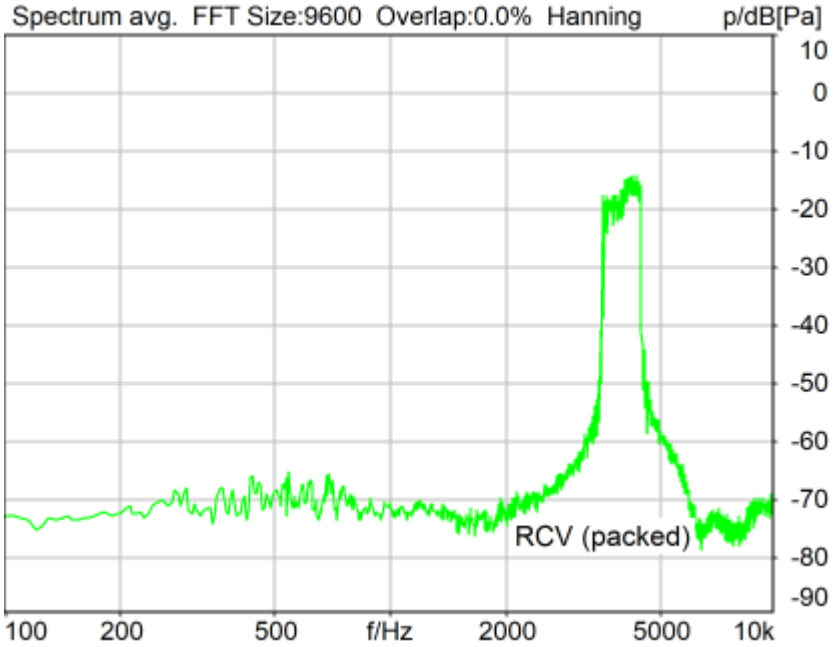
Distortion (Noise) RCV (packed): 27.22 dB (4.35%) Ok

Ok

2024/5/5 18:05 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



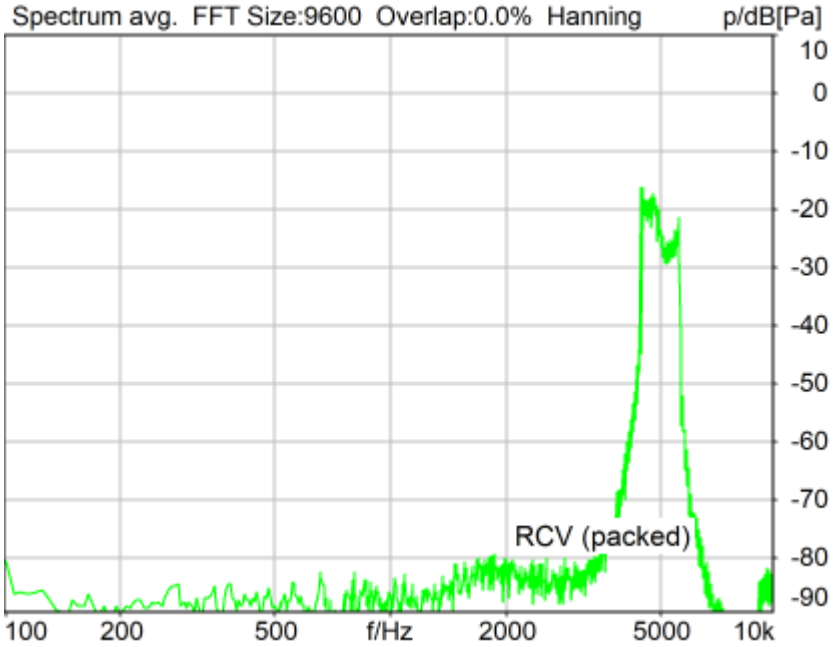
Distortion (Noise) RCV (packed): 30.29 dB (3.06%) Ok

Ok

2024/5/5 18:05 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 34.27 dB (1.93%) Ok

Ok

2024/5/5 18:06 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

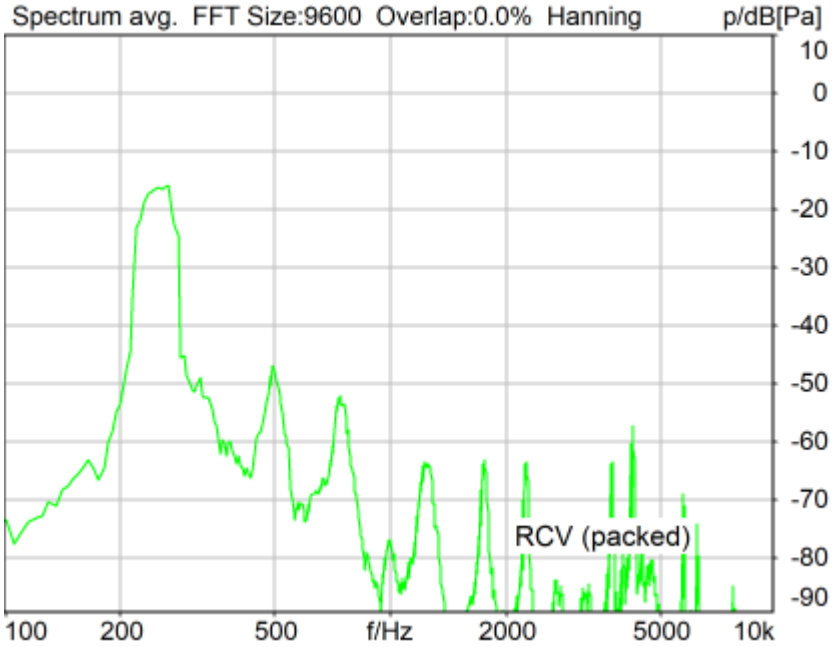
Region	Frequency	SDNR
1	250Hz	31.05 dB
2	315Hz	30.97 dB
3	400Hz	31.04 dB
4	500Hz	29.42 dB
5	630Hz	29.97 dB
6	800Hz	31.86 dB
7	1000Hz	31.12 dB
8	1250Hz	22.66 dB
9	1600Hz	24.45 dB
10	2000Hz	24.11 dB
11	2500Hz	22.28 dB
12	3150Hz	27.22 dB
13	4000Hz	30.29 dB
14	5000Hz	34.27 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.28dB at 2500Hz.

2024/5/5 18:06 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



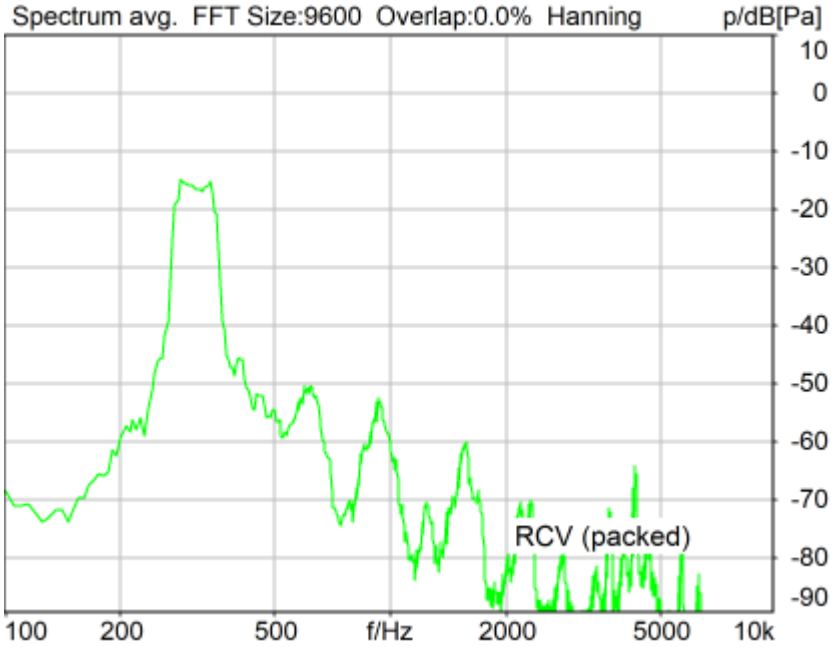
Distortion (Noise) RCV (packed): 31.06 dB (2.80%) Ok

Ok

2024/5/5 17:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



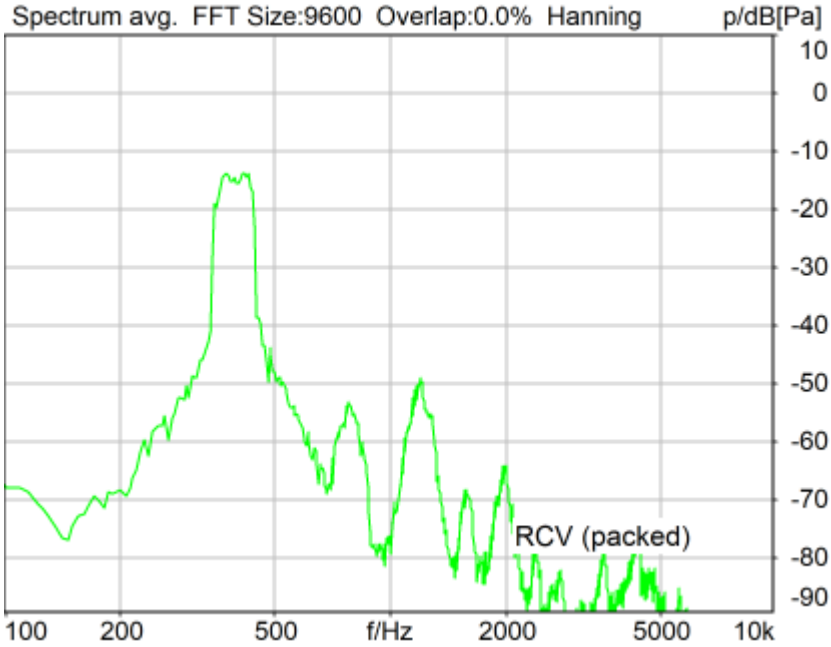
Distortion (Noise) RCV (packed): 31.57 dB (2.64%) Ok

Ok

2024/5/5 17:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



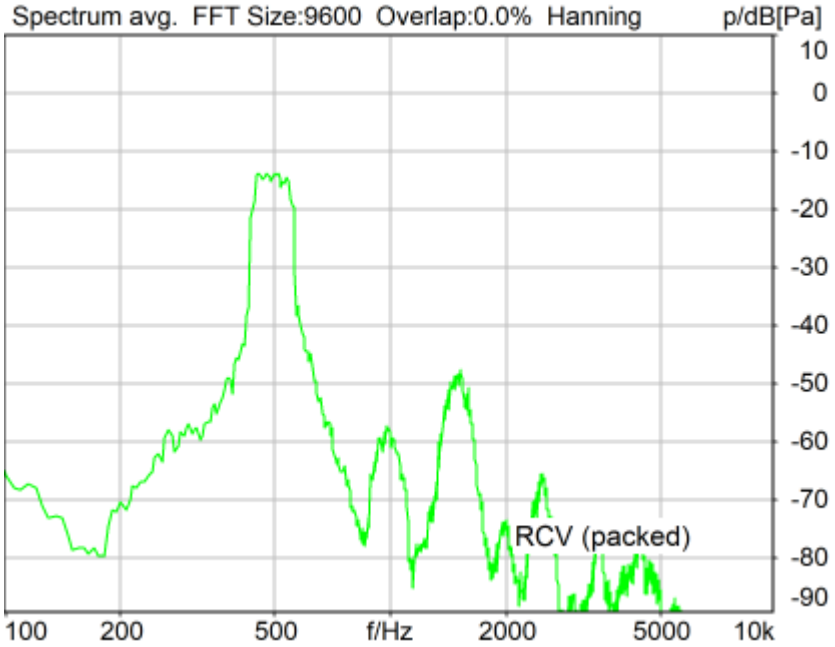
Distortion (Noise) RCV (packed): 31.64 dB (2.62%) Ok

Ok

2024/5/5 17:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



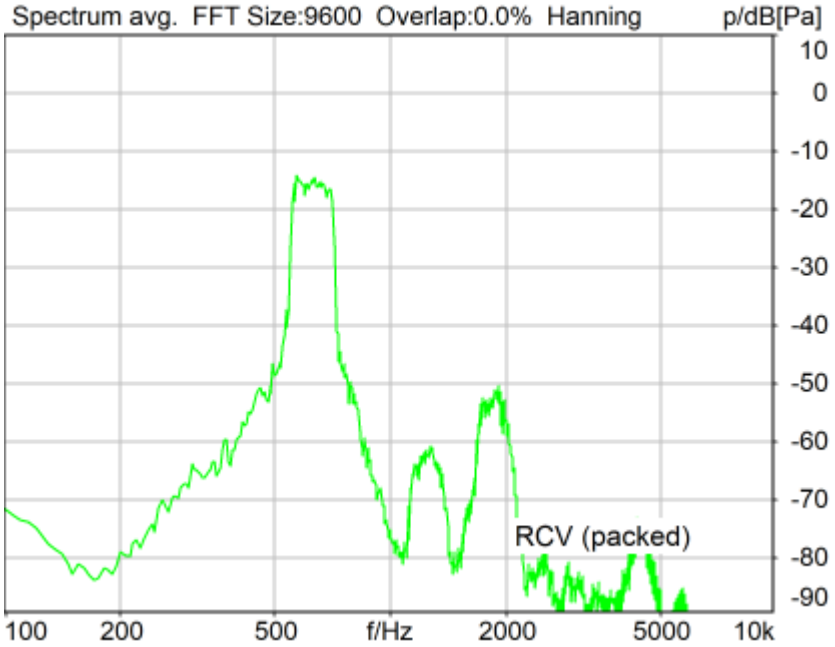
Distortion (Noise) RCV (packed): 30.16 dB (3.10%) Ok

Ok

2024/5/5 17:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



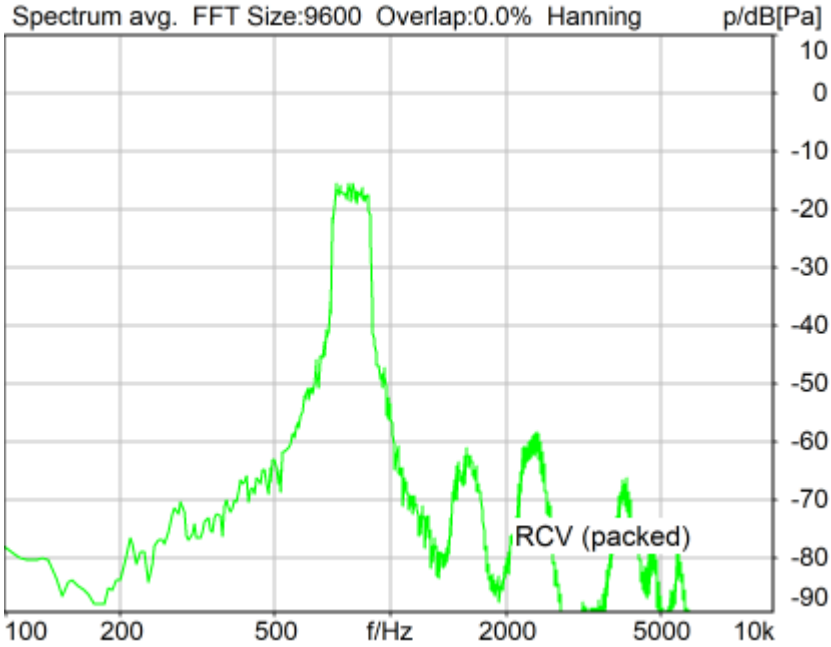
Distortion (Noise) RCV (packed): 31.06 dB (2.80%) Ok

Ok

2024/5/5 17:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



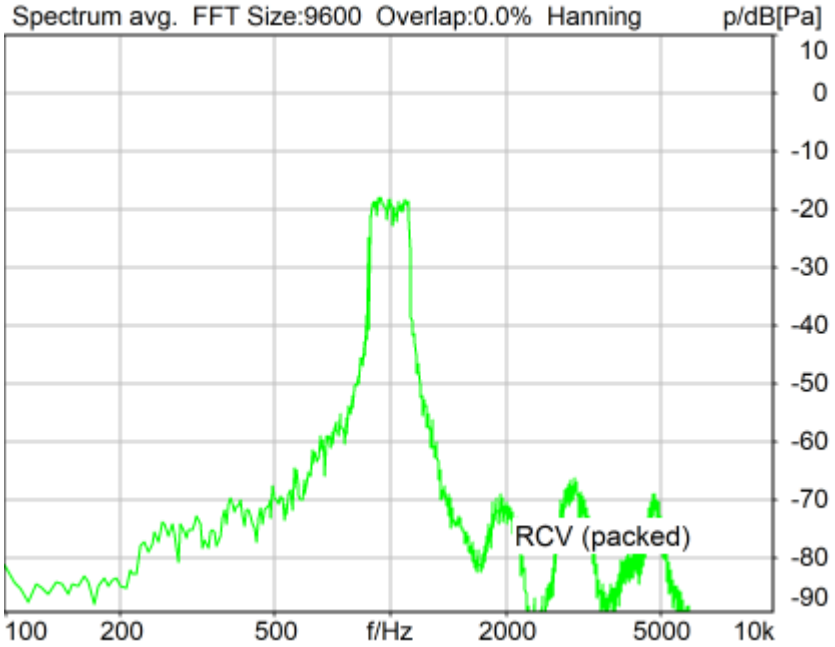
Distortion (Noise) RCV (packed): 32.13 dB (2.47%) Ok

Ok

2024/5/5 17:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



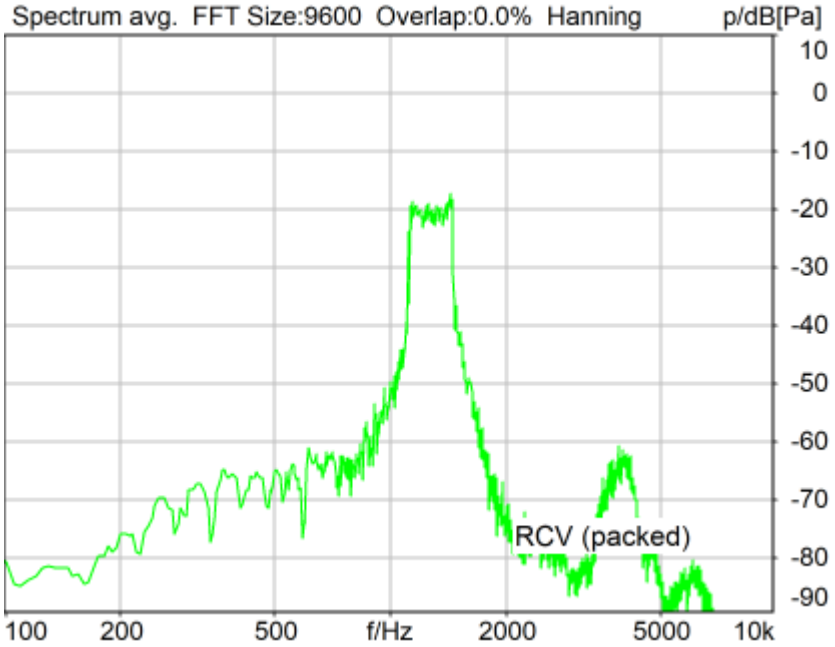
Distortion (Noise) RCV (packed): 30.99 dB (2.82%) Ok

Ok

2024/5/5 17:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



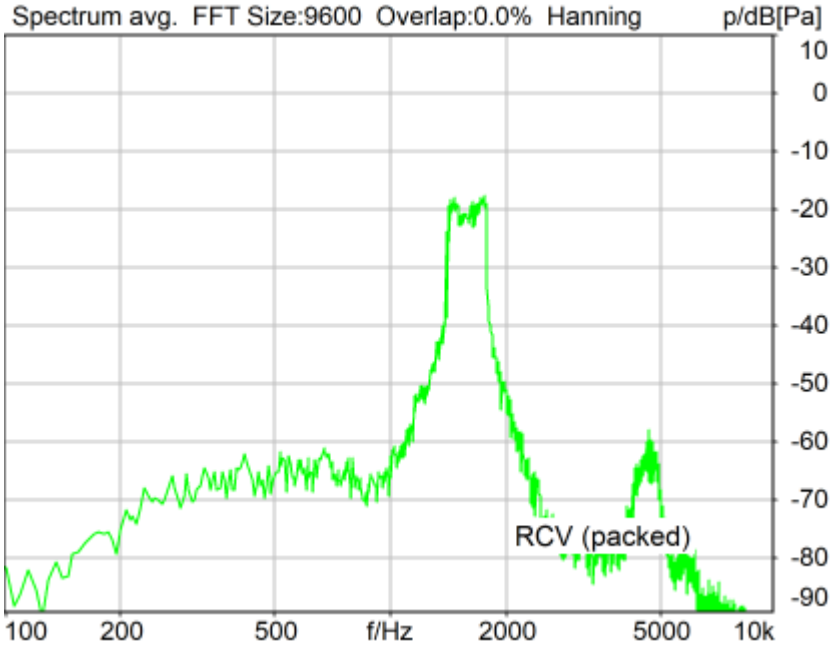
Distortion (Noise) RCV (packed): 22.50 dB (7.50%) Ok

Ok

2024/5/5 17:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



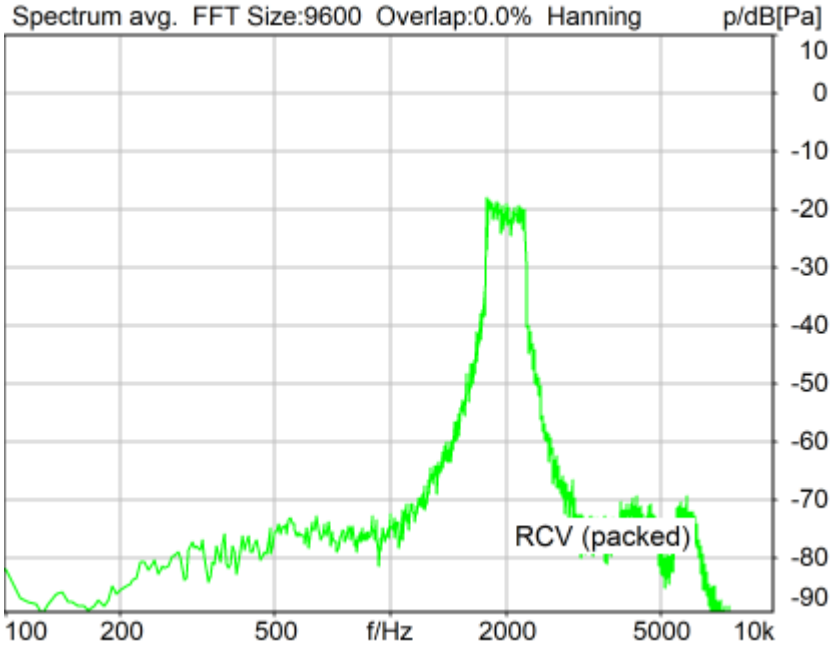
Distortion (Noise) RCV (packed): 24.87 dB (5.71%) Ok

Ok

2024/5/5 17:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



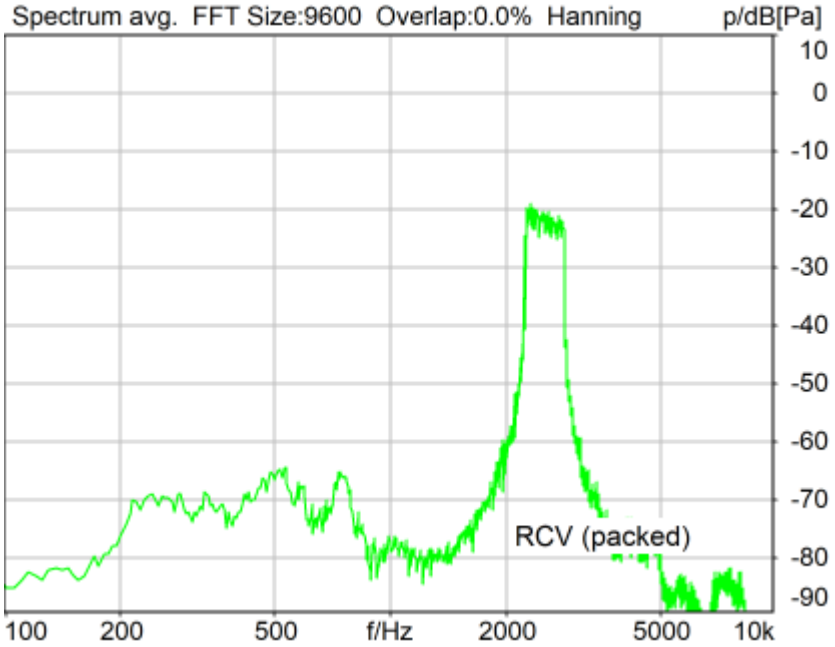
Distortion (Noise) RCV (packed): 23.67 dB (6.56%) Ok

Ok

2024/5/5 17:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



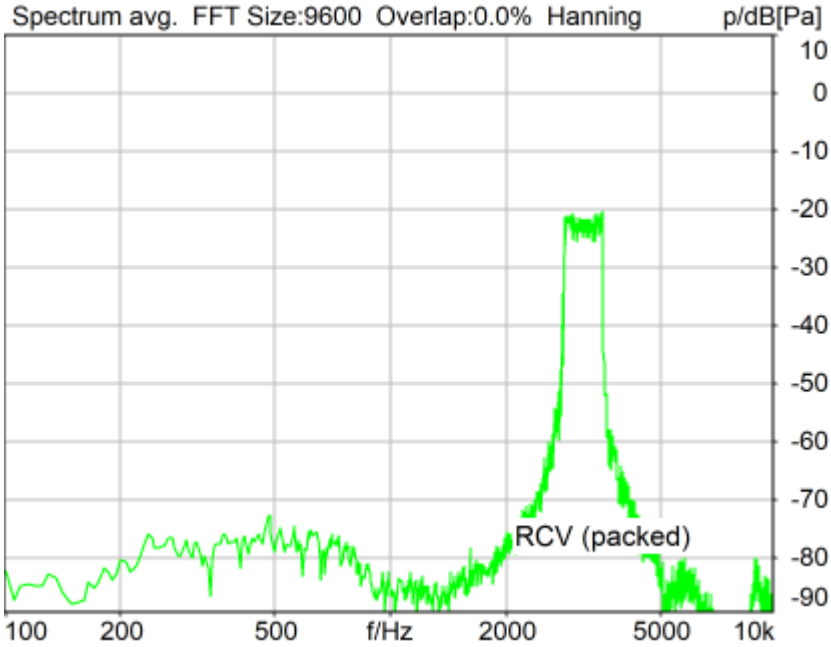
Distortion (Noise) RCV (packed): 30.73 dB (2.91%) Ok

Ok

2024/5/5 17:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



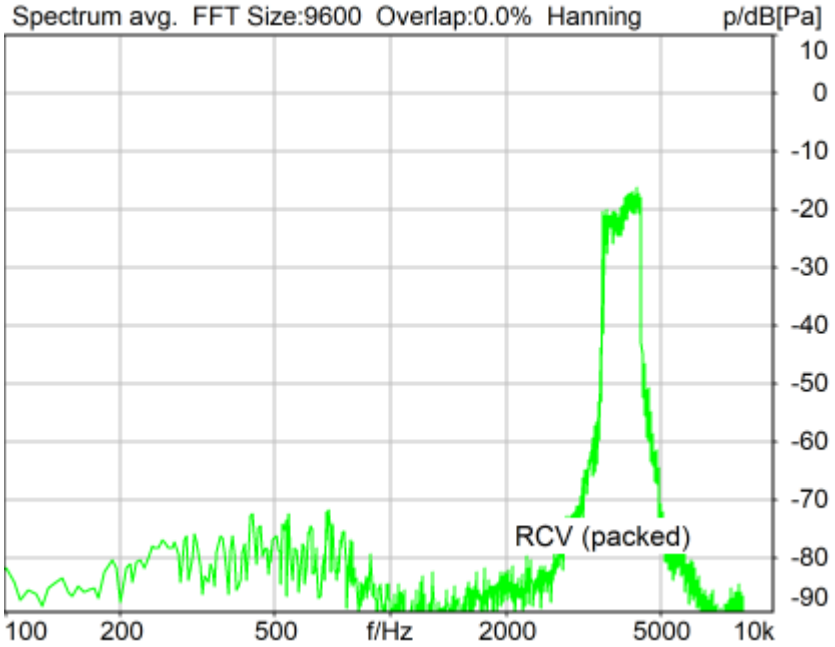
Distortion (Noise) RCV (packed): 33.49 dB (2.12%) Ok

Ok

2024/5/5 17:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



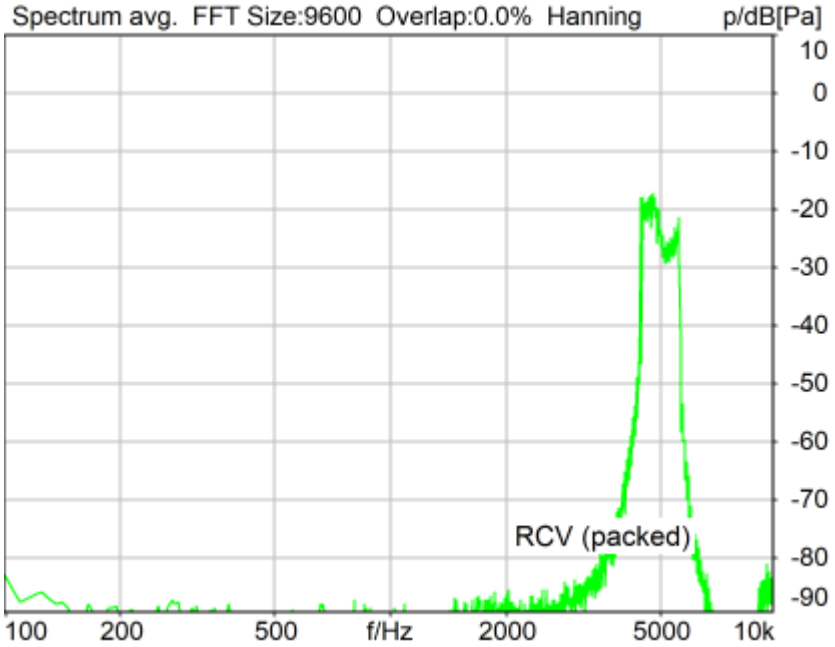
Distortion (Noise) RCV (packed): 35.81 dB (1.62%) Ok

Ok

2024/5/5 17:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 36.15 dB (1.56%) Ok

Ok

2024/5/5 17:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

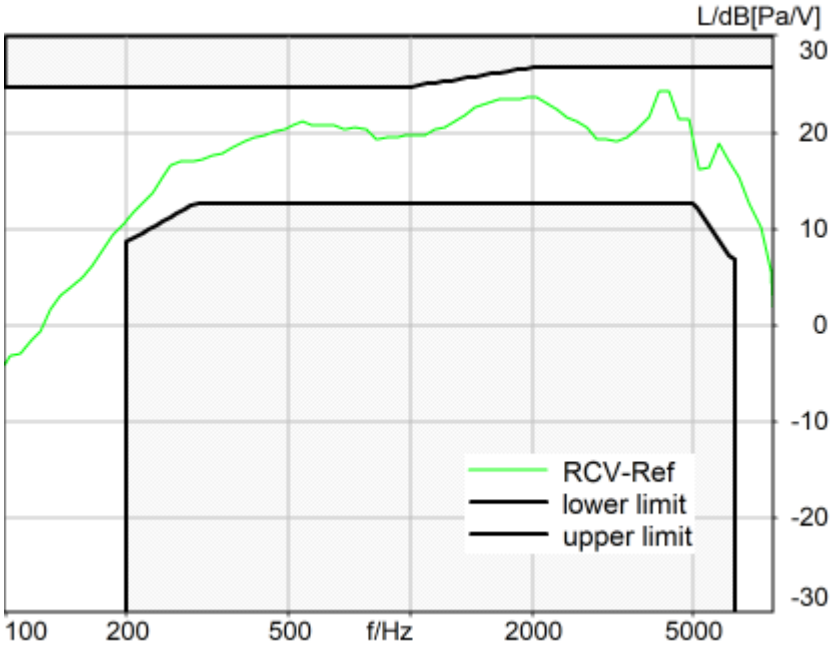
Region	Frequency	SDNR
1	250Hz	31.06 dB
2	315Hz	31.57 dB
3	400Hz	31.64 dB
4	500Hz	30.16 dB
5	630Hz	31.06 dB
6	800Hz	32.13 dB
7	1000Hz	30.99 dB
8	1250Hz	22.50 dB
9	1600Hz	24.87 dB
10	2000Hz	23.67 dB
11	2500Hz	30.73 dB
12	3150Hz	33.49 dB
13	4000Hz	35.81 dB
14	5000Hz	36.15 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.50dB at 1250Hz.

2024/5/5 17:58 ACQUA

5.3 Frequency Response 8N FF, Index: 1

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



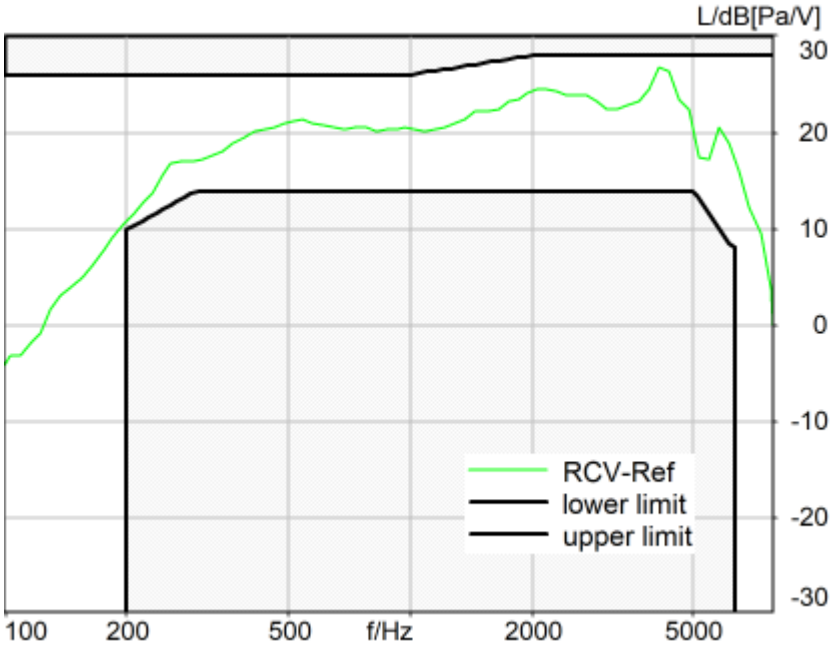
Absolute minimal distance
2.49 dB at 4369.4 Hz Ok

Ok

2024/5/5 18:06 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF, Index: 1

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



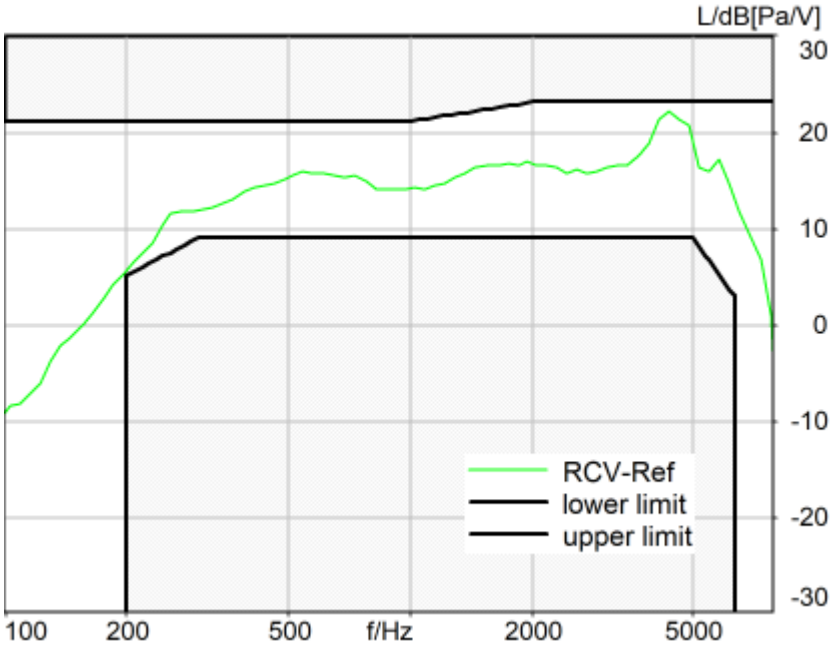
Absolute minimal distance
1.20 dB at 4119.5 Hz Ok

Ok

2024/5/5 18:07 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF, Index: 1

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



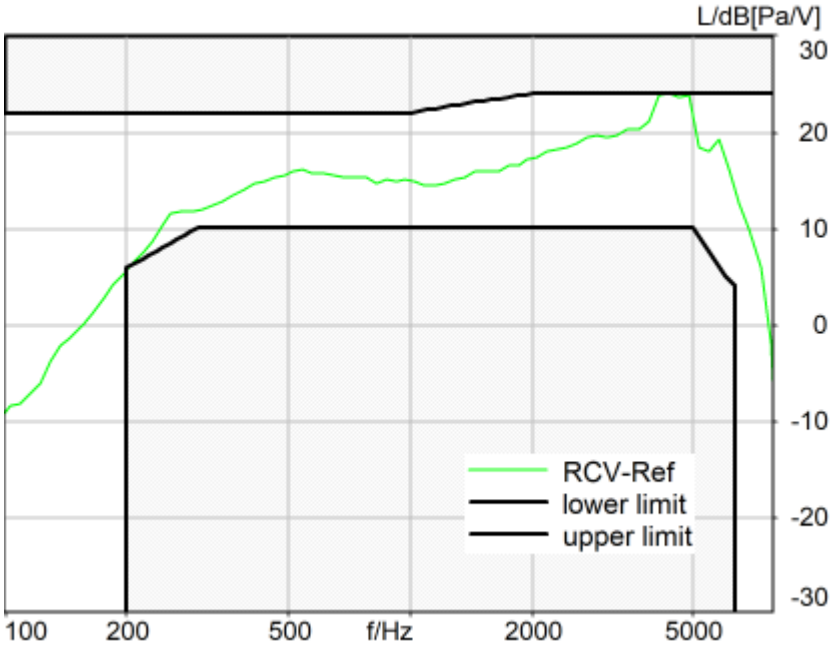
Absolute minimal distance
0.99 dB at 4369.4 Hz Ok

Ok

2024/5/5 17:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF, Index: 1

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



Absolute minimal distance
0.02 dB at 4369.4 Hz Ok

Ok

2024/5/5 17:59 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

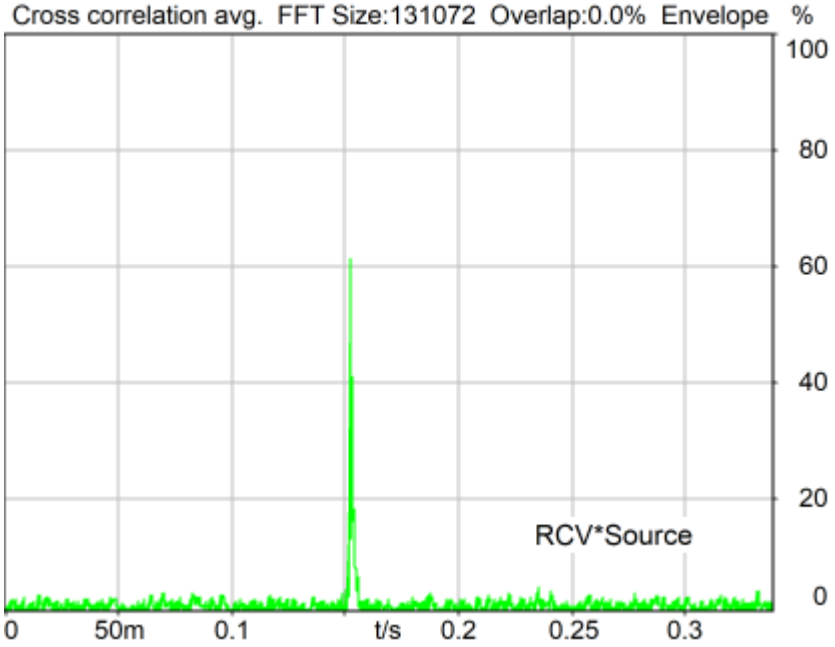
Measurement Object	LTE Band 38_20QPSK_100RB_0_EVS NB 24.4kbps_CH38000
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:12
Responsible Person	audio

Overall Receive Delay NB, Index: 1 3
5.1a Receive Volume Control Performance 8N NB, Index: 1 3
5.1b Receive Volume Control Performance 2N NB, Index: 1 4
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 5
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 6
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 8
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 10
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 11
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 11
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 12
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 14
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 16
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 18
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 19
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 19
5.3 Frequency Response 8N FF HANB, Index: 1 20
5.3 Frequency Response 8N DF HANB, Index: 1 21
5.3 Frequency Response 2N FF HANB, Index: 1 21
5.3 Frequency Response 2N DF HANB, Index: 1 22

Overall Receive Delay NB, Index: 1

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

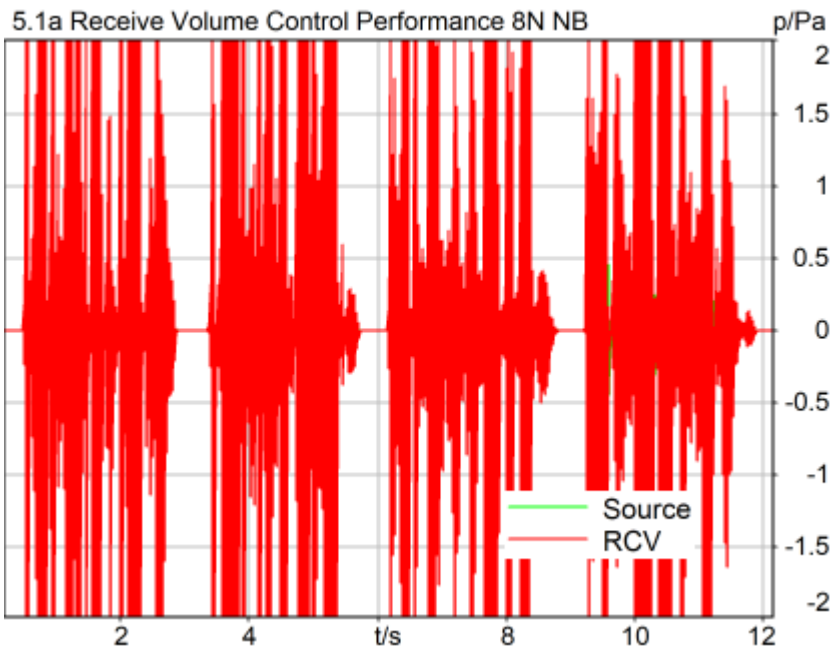


Channel	Delay
RCV*Source	152.6 ms

2024/5/5 19:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB, Index: 1

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



Correction

X - 70

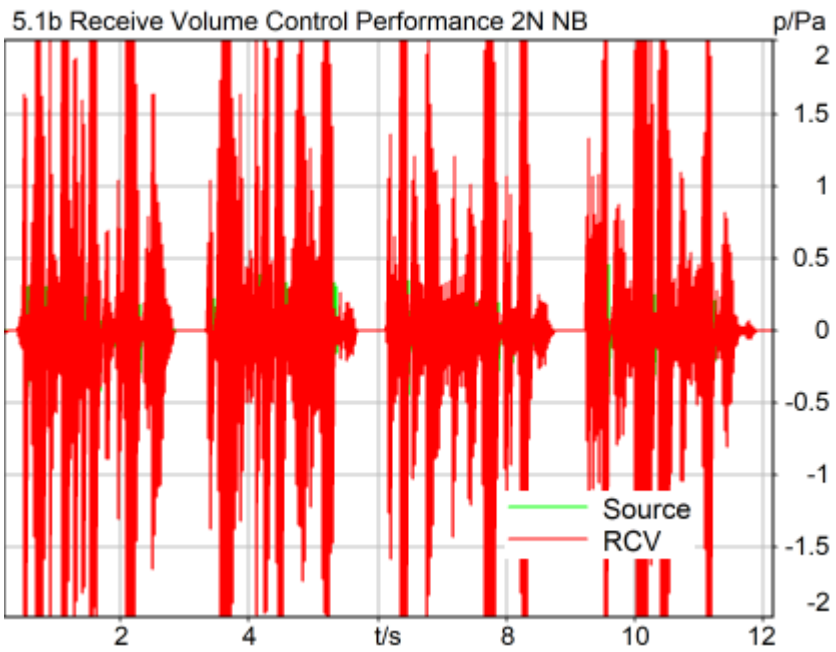
Channel	Speech level	Activity	Corrected speech level	
RCV	93.28 dB[SPL]	80.66%	23.28 dB[SPL]	Ok

Ok

2024/5/5 19:40 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N NB, Index: 1

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



Correction

X - 70

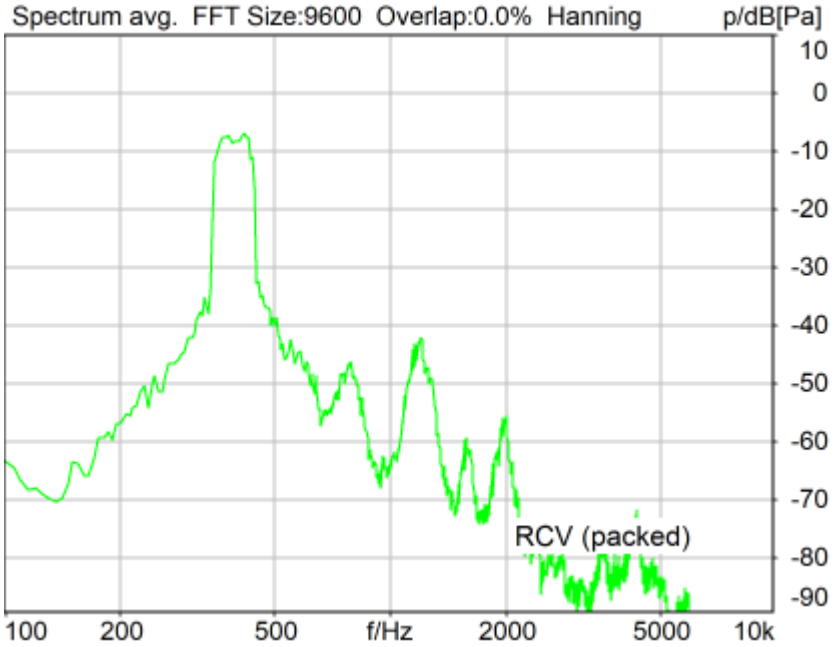
Channel	Speech level	Activity	Corrected speech level	
RCV	87.32 dB[SPL]	80.53%	17.32 dB[SPL]	Ok

Ok

2024/5/5 19:48 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



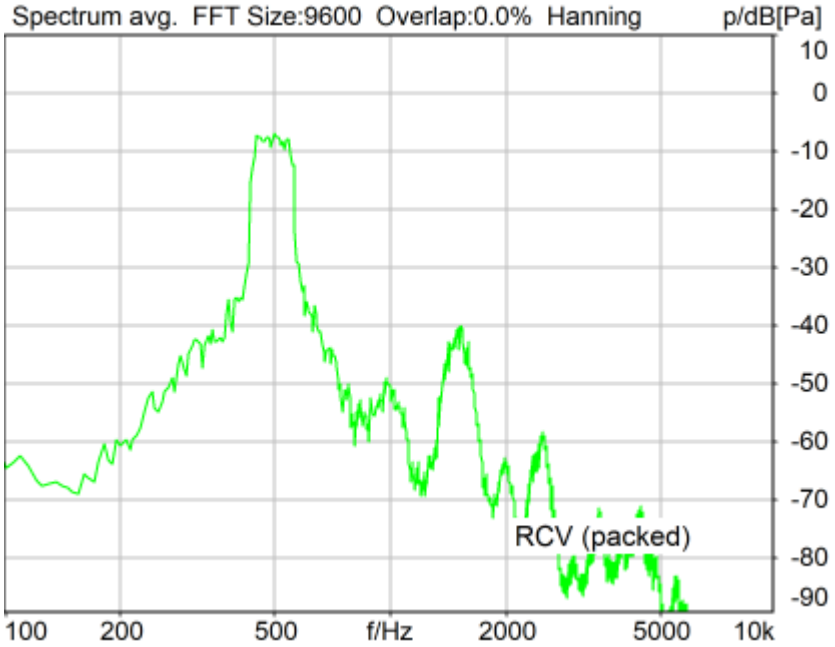
Distortion (Noise) RCV (packed): 30.88 dB (2.86%) Ok

Ok

2024/5/5 19:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



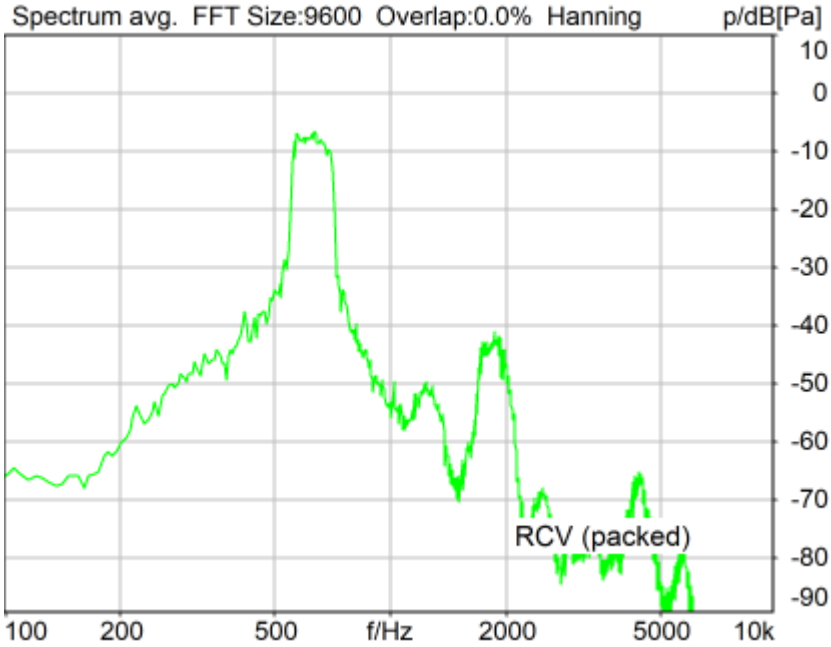
Distortion (Noise) RCV (packed): 28.30 dB (3.85%) Ok

Ok

2024/5/5 19:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



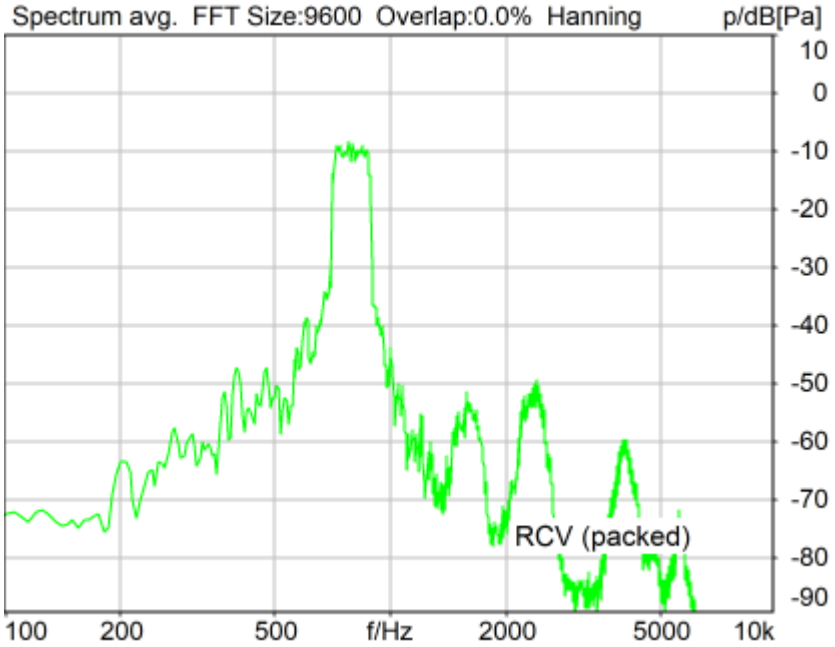
Distortion (Noise) RCV (packed): 27.52 dB (4.21%) Ok

Ok

2024/5/5 19:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



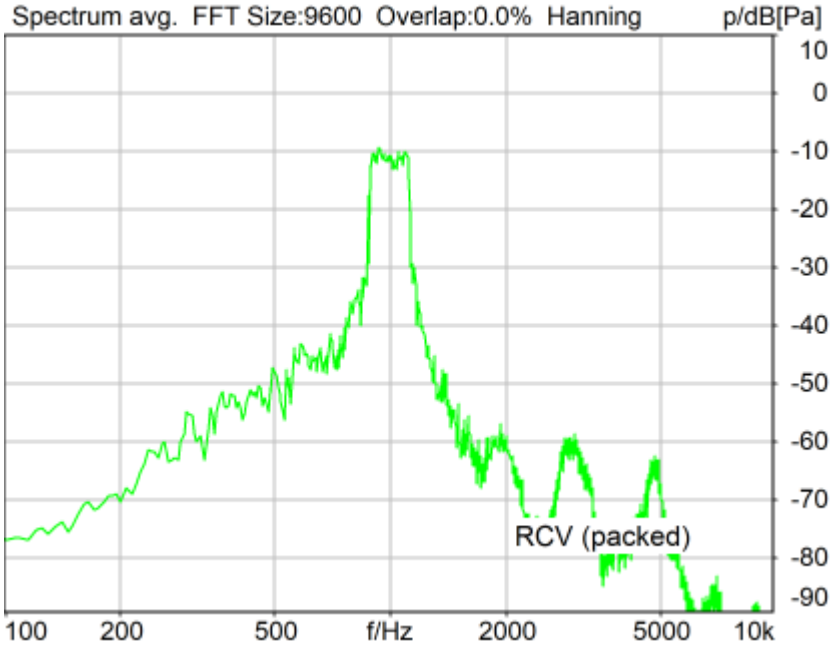
Distortion (Noise) RCV (packed): 31.17 dB (2.76%) Ok

Ok

2024/5/5 19:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



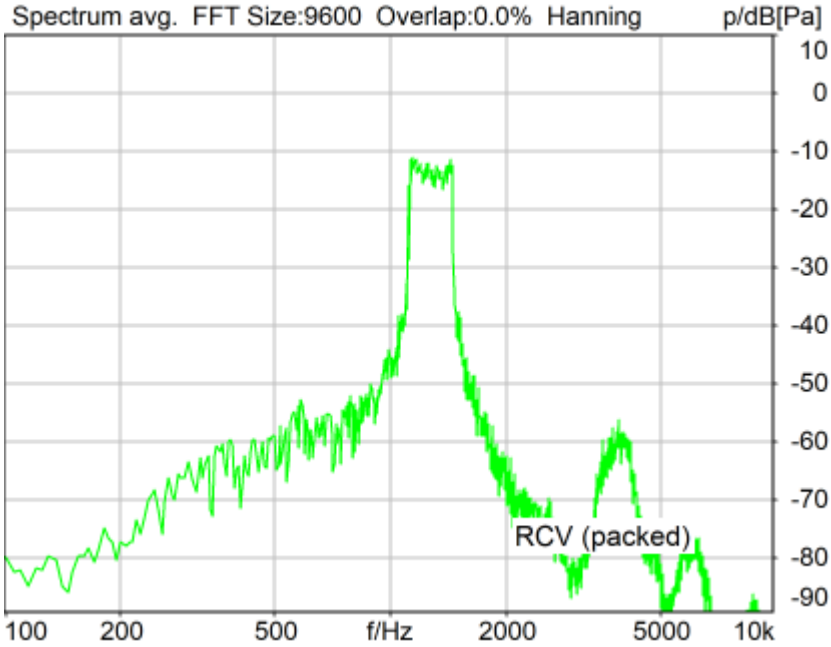
Distortion (Noise) RCV (packed): 26.61 dB (4.67%) Ok

Ok

2024/5/5 19:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



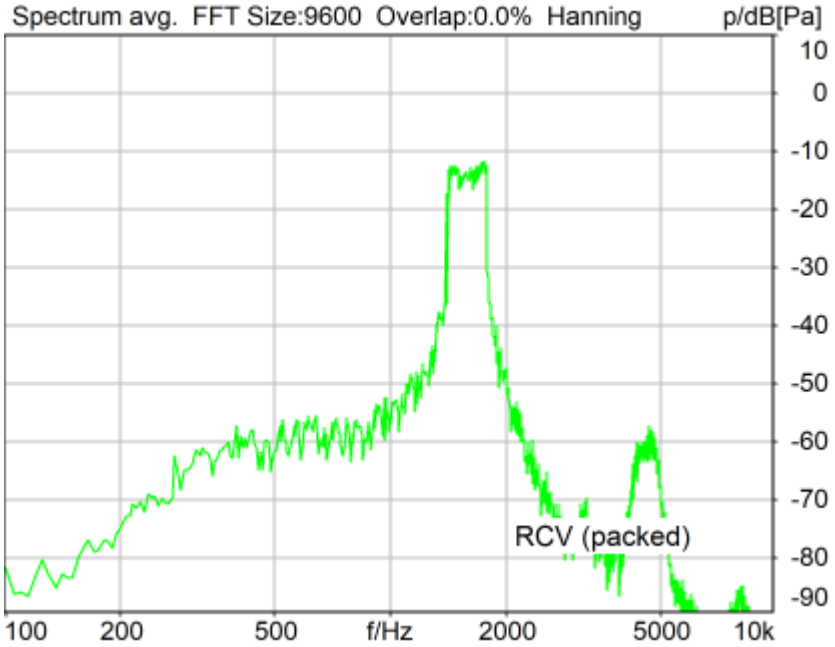
Distortion (Noise) RCV (packed): 26.67 dB (4.64%) Ok

Ok

2024/5/5 19:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



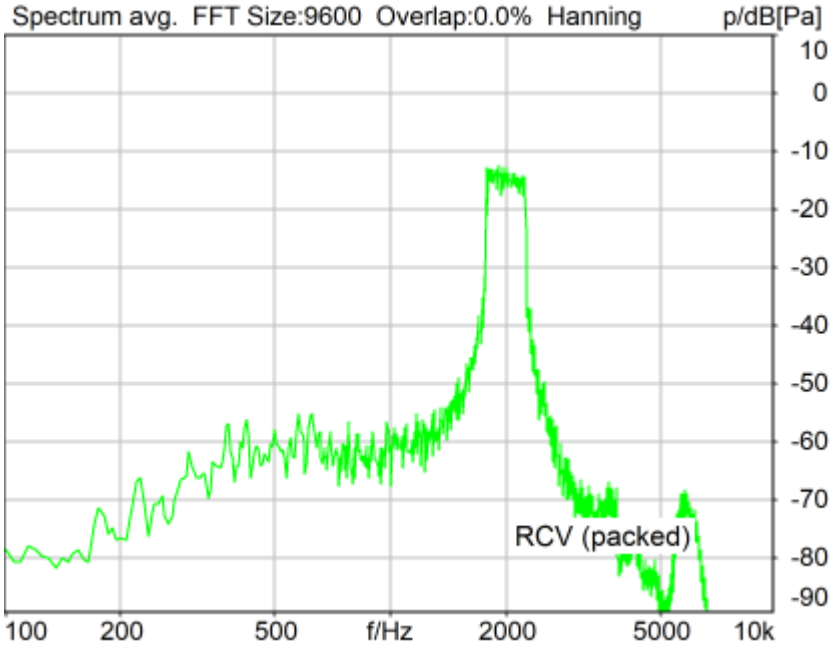
Distortion (Noise) RCV (packed): 28.04 dB (3.96%) Ok

Ok

2024/5/5 19:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



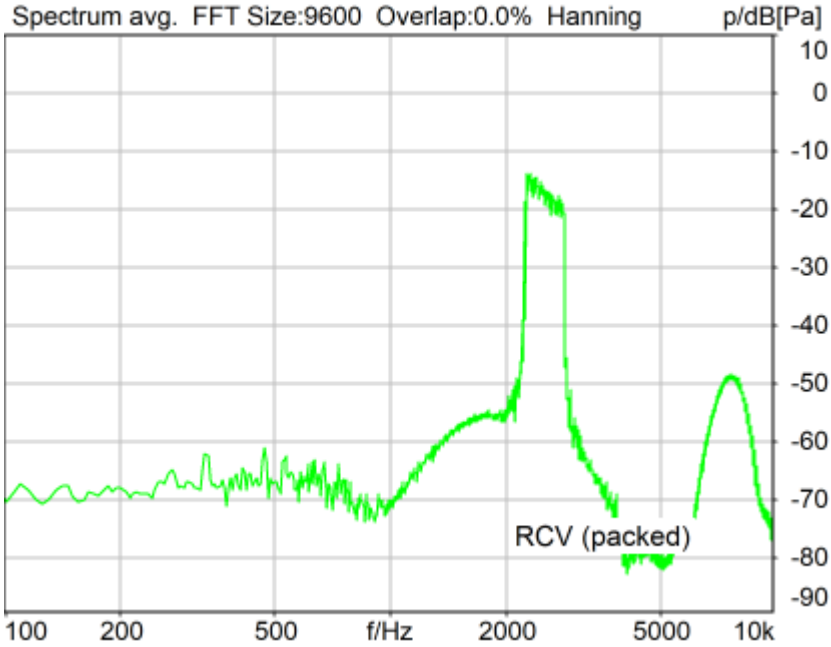
Distortion (Noise) RCV (packed): 28.20 dB (3.89%) Ok

Ok

2024/5/5 19:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



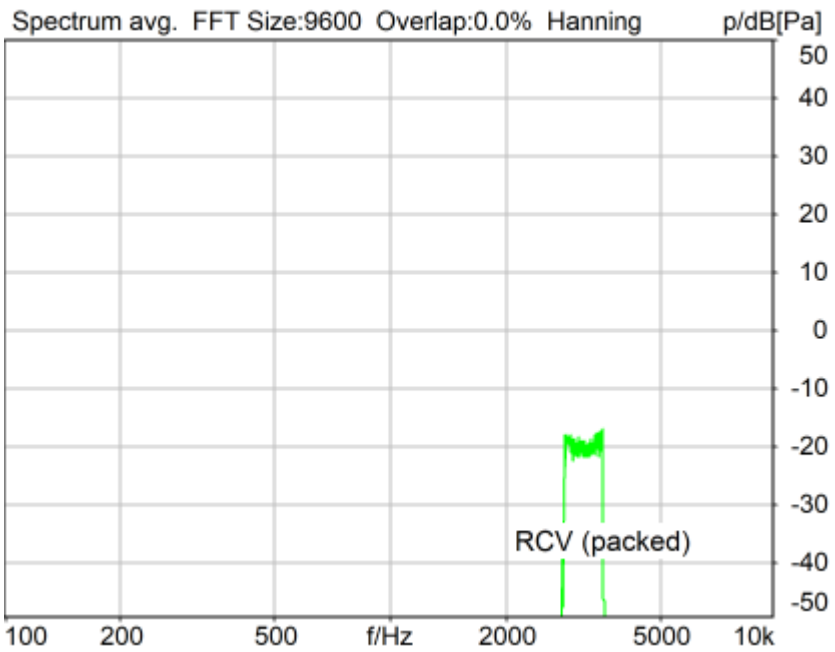
Distortion (Noise) RCV (packed): 27.47 dB (4.23%) Ok

Ok

2024/5/5 19:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 30.38 dB (3.03%) Ok

Ok

2024/5/5 19:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

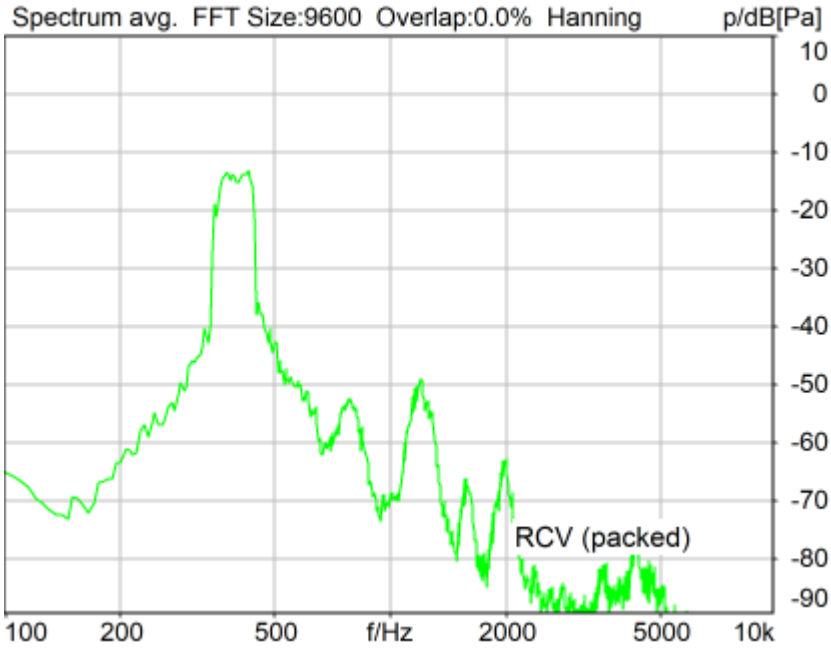
Region	Frequency	SDNR
1	400Hz	30.88 dB
2	500Hz	28.30 dB
3	630Hz	27.52 dB
4	800Hz	31.17 dB
5	1000Hz	26.61 dB
6	1250Hz	26.67 dB
7	1600Hz	28.04 dB
8	2000Hz	28.20 dB
9	2500Hz	27.47 dB
10	3150Hz	30.38 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.61dB at 1000Hz.

2024/5/5 19:45 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



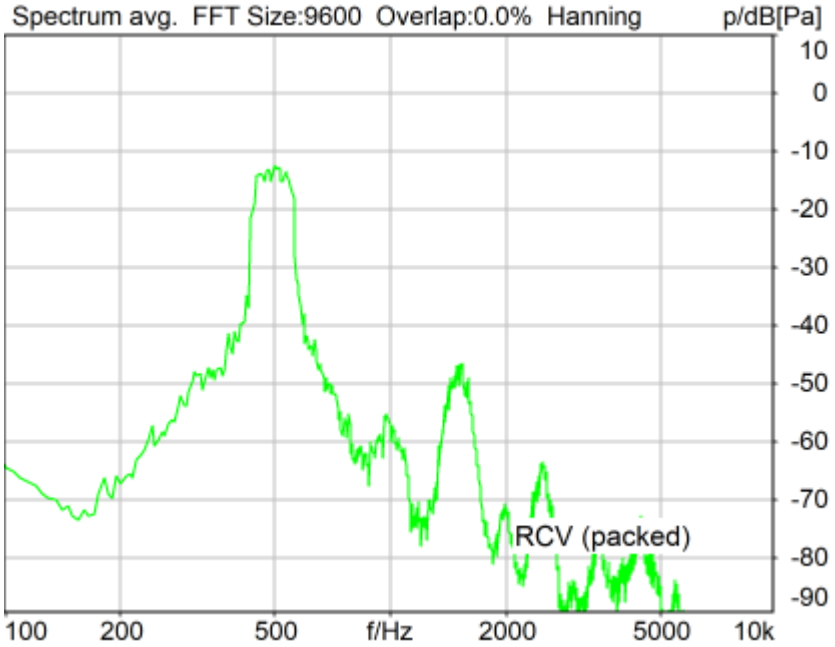
Distortion (Noise) RCV (packed): 30.12 dB (3.12%) Ok

Ok

2024/5/5 19:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



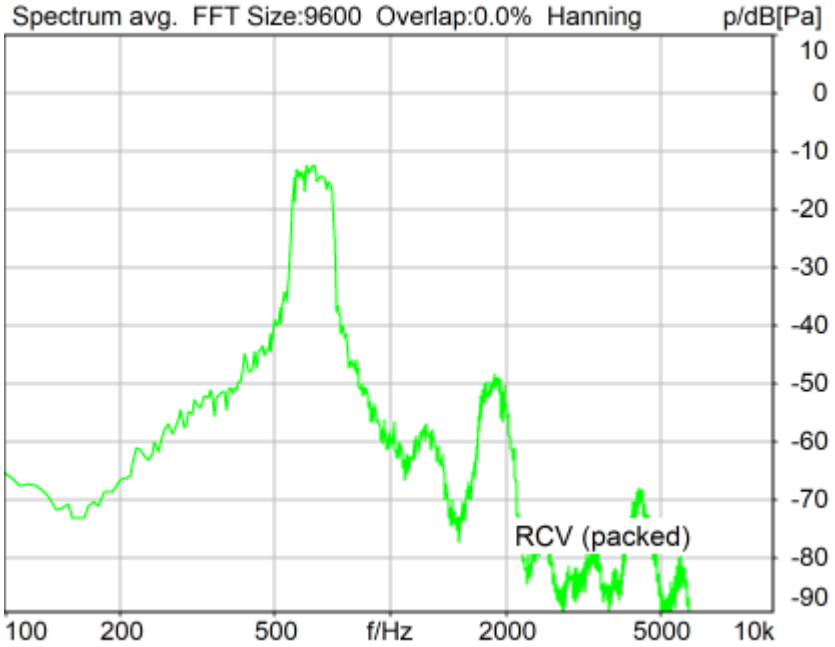
Distortion (Noise) RCV (packed): 28.60 dB (3.72%) Ok

Ok

2024/5/5 19:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



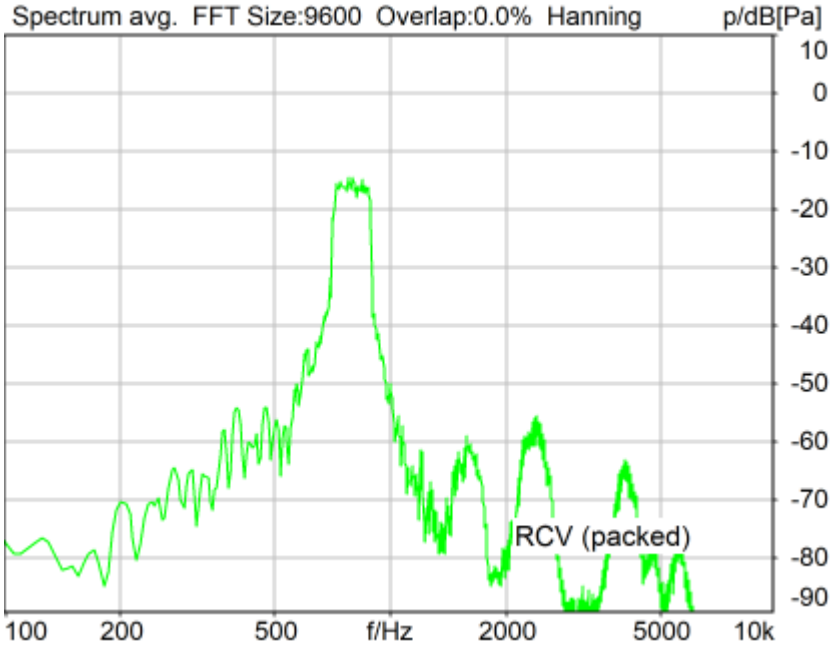
Distortion (Noise) RCV (packed): 27.98 dB (3.99%) Ok

Ok

2024/5/5 19:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



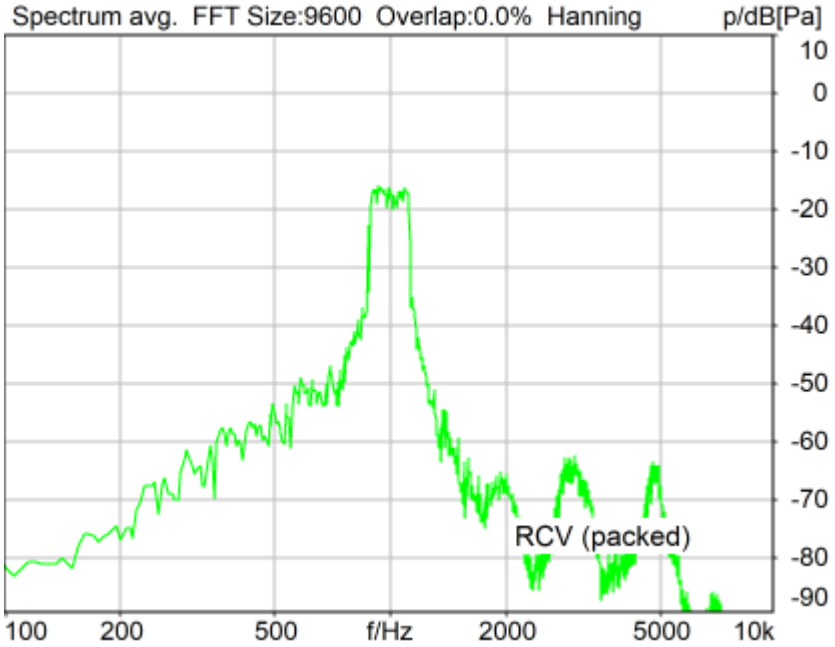
Distortion (Noise) RCV (packed): 29.50 dB (3.35%) Ok

Ok

2024/5/5 19:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



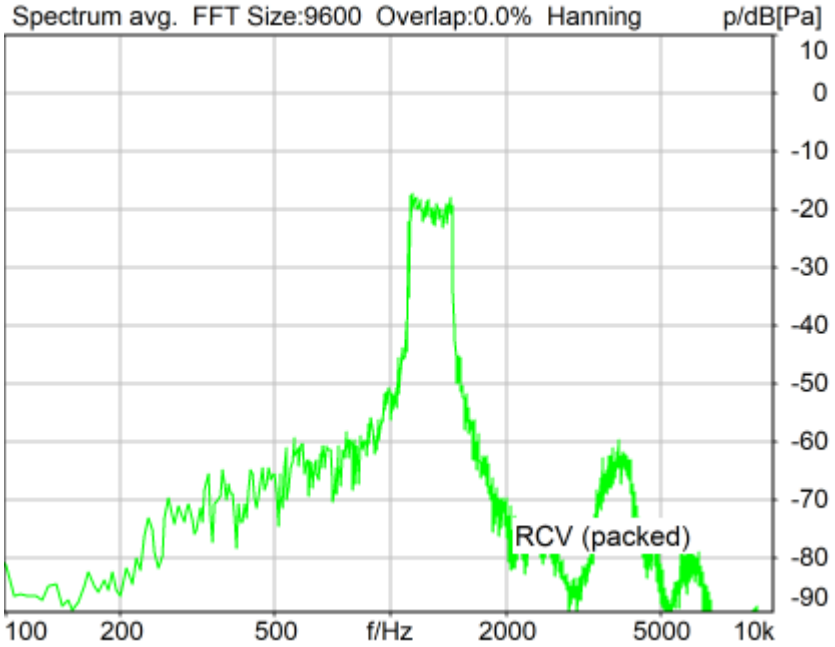
Distortion (Noise) RCV (packed): 26.22 dB (4.89%) Ok

Ok

2024/5/5 19:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



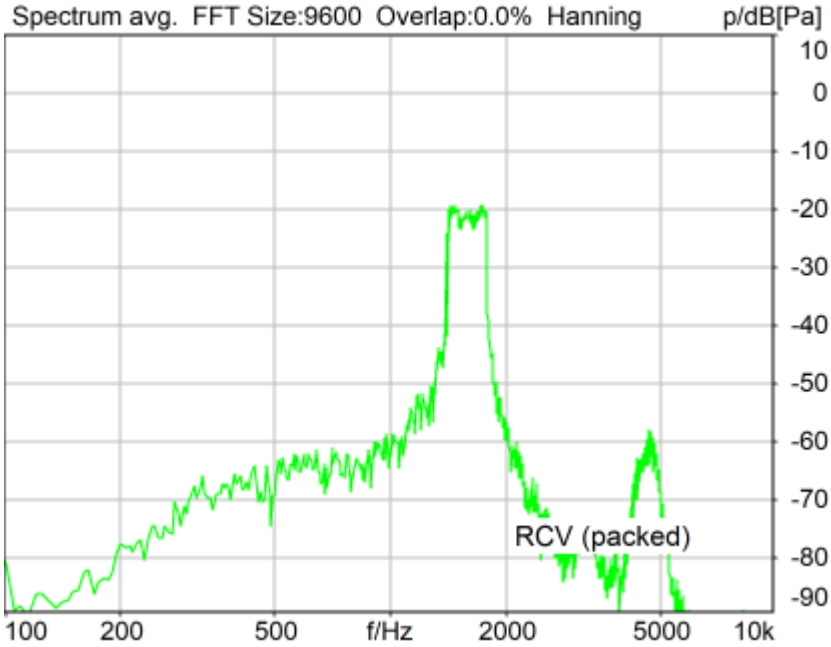
Distortion (Noise) RCV (packed): 26.72 dB (4.61%) Ok

Ok

2024/5/5 19:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



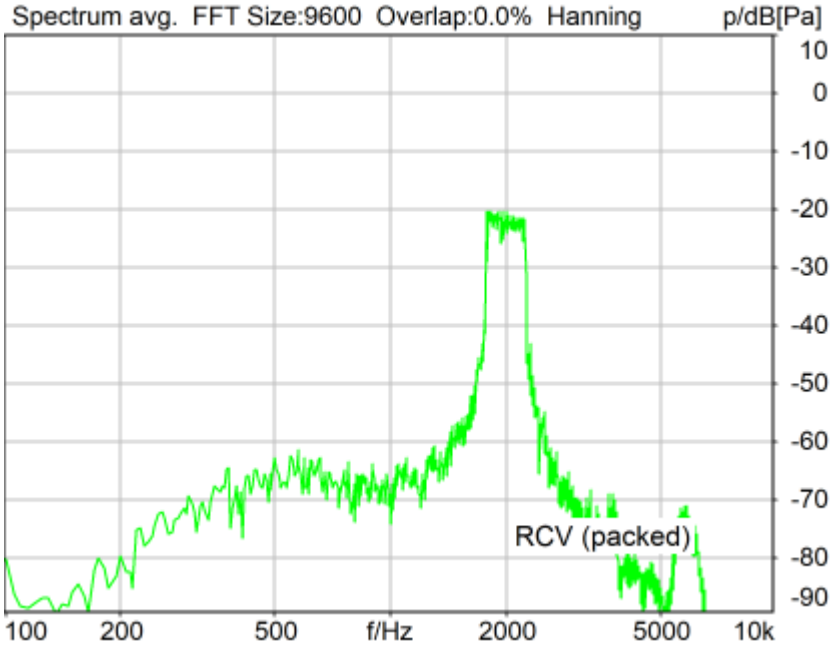
Distortion (Noise) RCV (packed): 27.28 dB (4.33%) Ok

Ok

2024/5/5 19:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



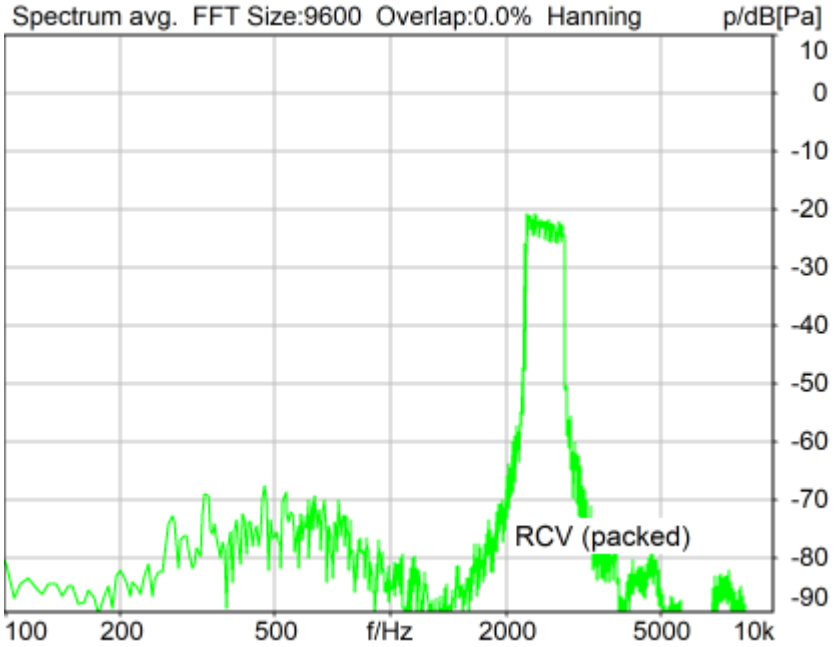
Distortion (Noise) RCV (packed): 27.34 dB (4.30%) Ok

Ok

2024/5/5 19:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



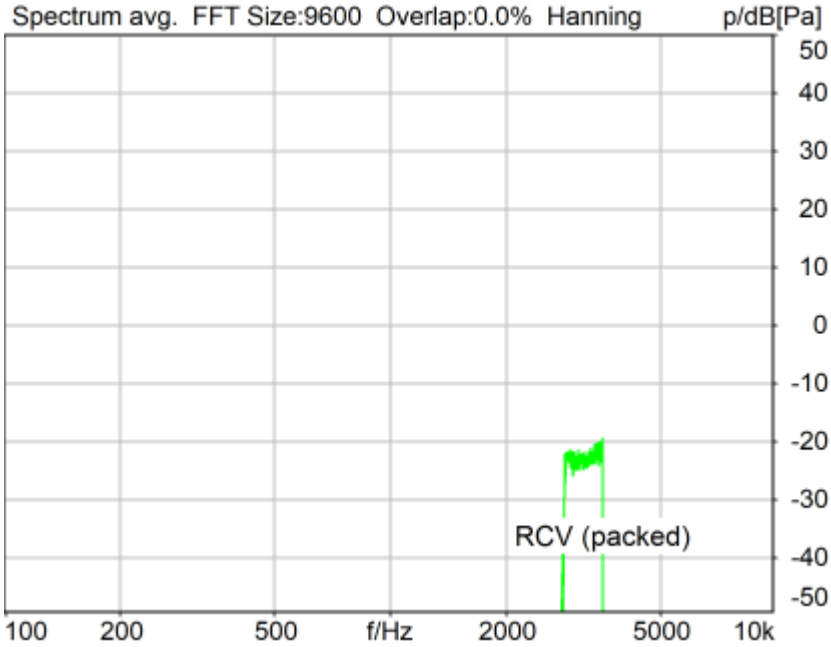
Distortion (Noise) RCV (packed): 36.52 dB (1.49%) Ok

Ok

2024/5/5 19:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 40.53 dB (0.94%) Ok

Ok

2024/5/5 19:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

Region	Frequency	SDNR
1	400Hz	30.12 dB

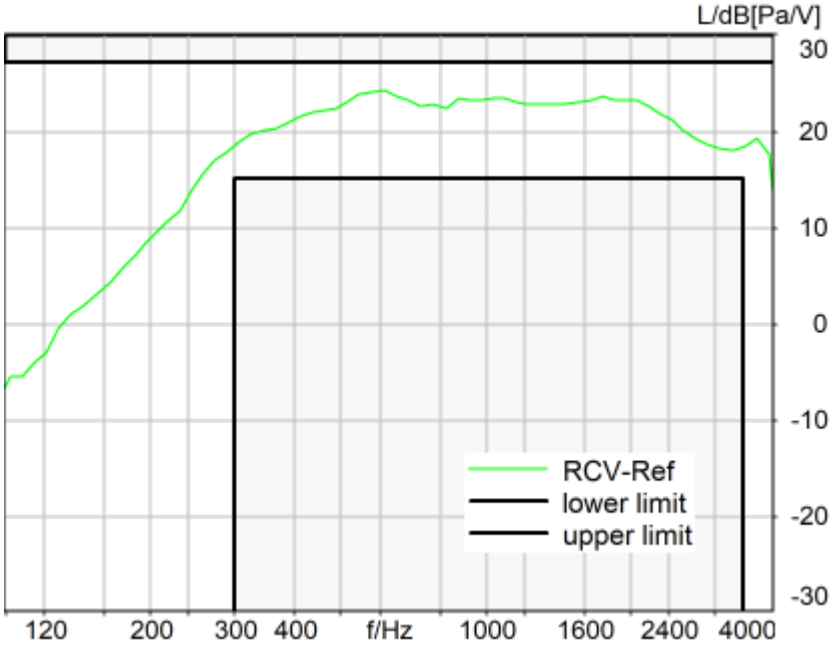
2	500Hz	28.60 dB
3	630Hz	27.98 dB
4	800Hz	29.50 dB
5	1000Hz	26.22 dB
6	1250Hz	26.72 dB
7	1600Hz	27.28 dB
8	2000Hz	27.34 dB
9	2500Hz	36.52 dB
10	3150Hz	40.53 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.22dB at 1000Hz.

2024/5/5 19:53 ACQUA

5.3 Frequency Response 8N FF HANB, Index: 1

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



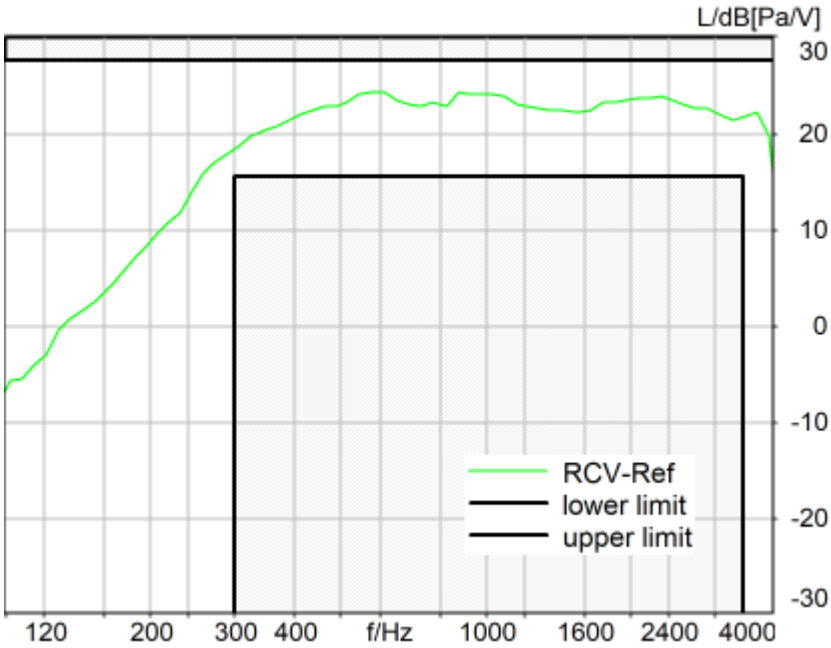
Absolute minimal distance
2.84 dB at 3245.6 Hz Ok

Ok

2024/5/5 19:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF HANB, Index: 1

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



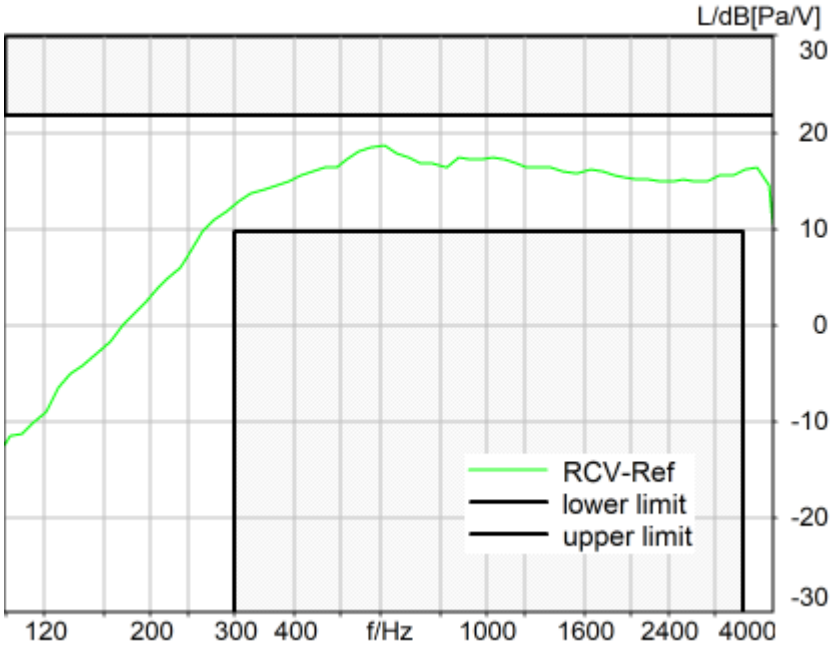
Absolute minimal distance
3.19 dB at 873.9 Hz Ok

Ok

2024/5/5 19:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF HANB, Index: 1

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



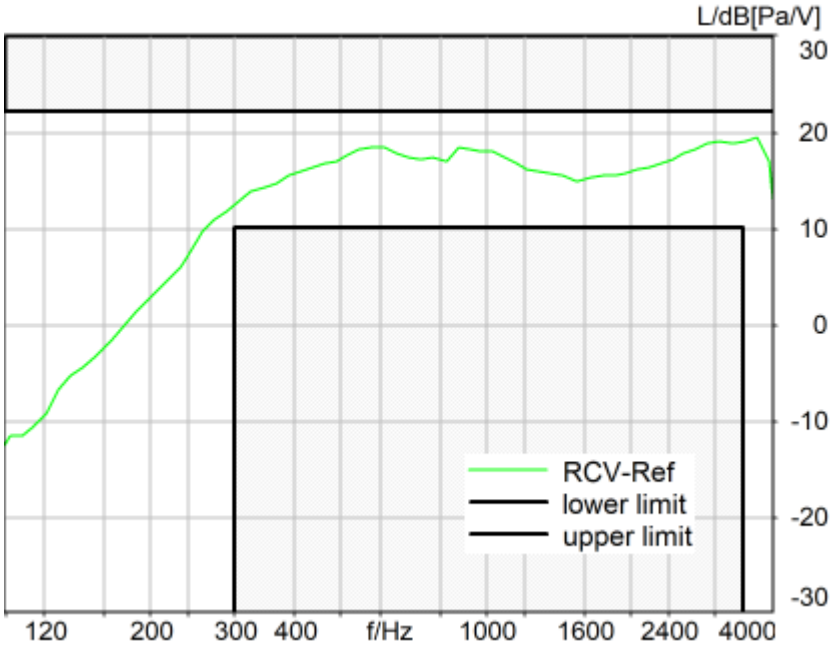
Absolute minimal distance
3.10 dB at 611.7 Hz Ok

Ok

2024/5/5 19:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF HANB, Index: 1

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



Absolute minimal distance
2.61 dB at 305.9 Hz Ok

Ok

2024/5/5 19:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

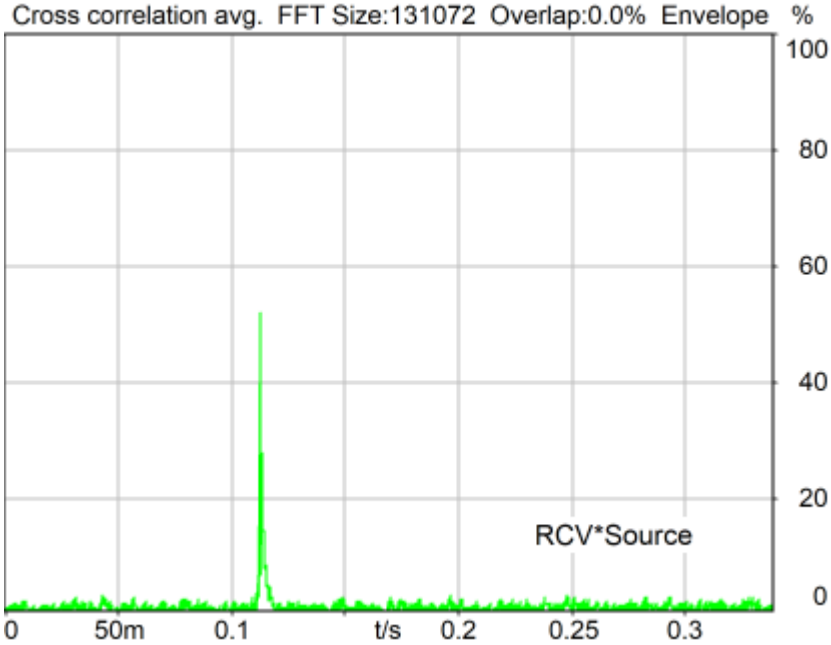
Measurement Object	LTE Band 38_20QPSK_100RB_0_EVS WB 24.4kbps_CH38000
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:13
Responsible Person	audio

Overall Receive Delay WB, Index: 1 3
5.1a Receive Volume Control Performance 8N WB, Index: 1 3
5.1b Receive Volume Control Performance 2N WB, Index: 1 4
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 5
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 6
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 8
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 10
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 12
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 14
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 15
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 15
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 16
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 18
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 20
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 22
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 24
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 25
5.3 Frequency Response 8N FF, Index: 1 25
5.3 Frequency Response 8N DF, Index: 1 26
5.3 Frequency Response 2N FF, Index: 1 27
5.3 Frequency Response 2N DF, Index: 1 28

Overall Receive Delay WB, Index: 1

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

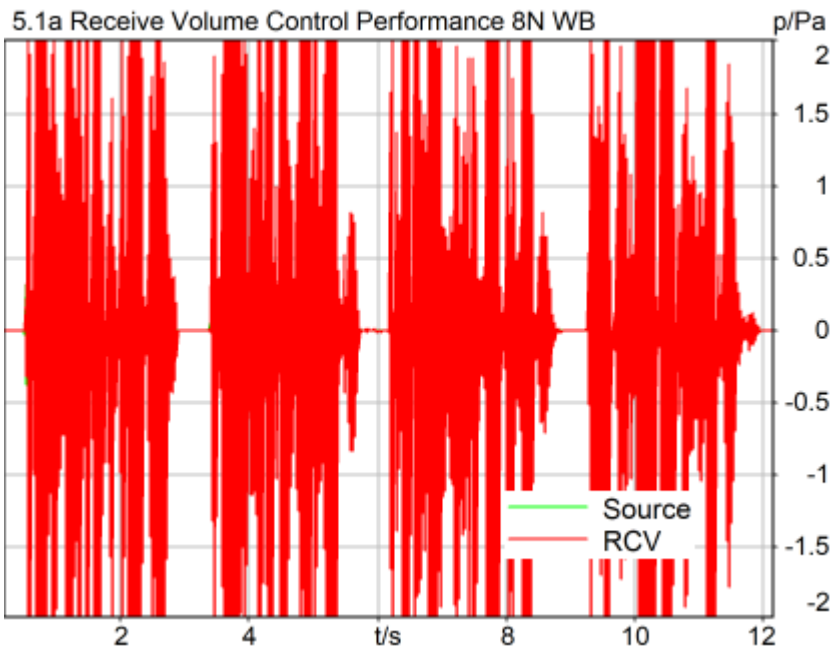


Channel	Delay
RCV*Source	113.2 ms

2024/5/5 19:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB, Index: 1

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



Correction

X - 70

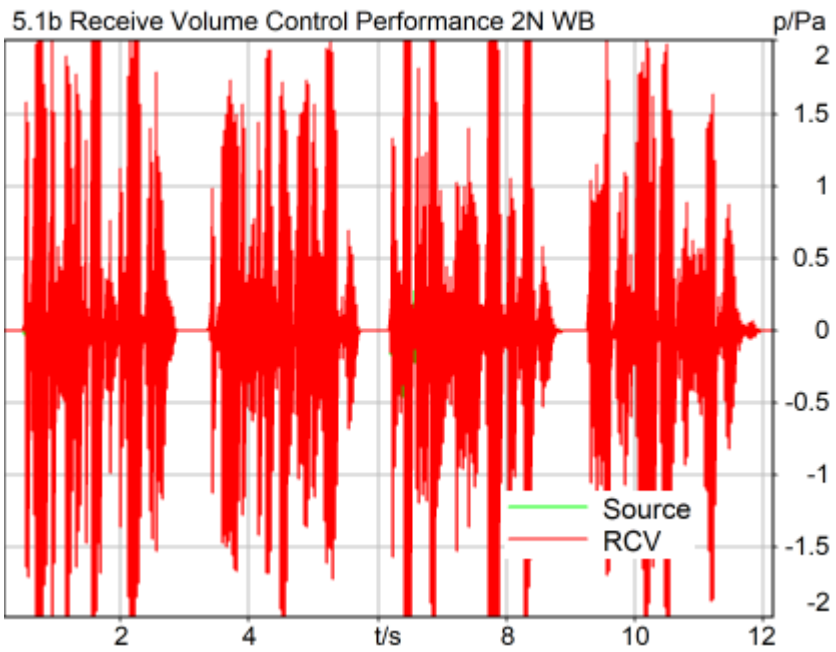
Channel	Speech level	Activity	Corrected speech level	
RCV	91.43 dB[SPL]	84.16%	21.43 dB[SPL]	Ok

Ok

2024/5/5 19:31 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N WB, Index: 1

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



Correction

X - 70

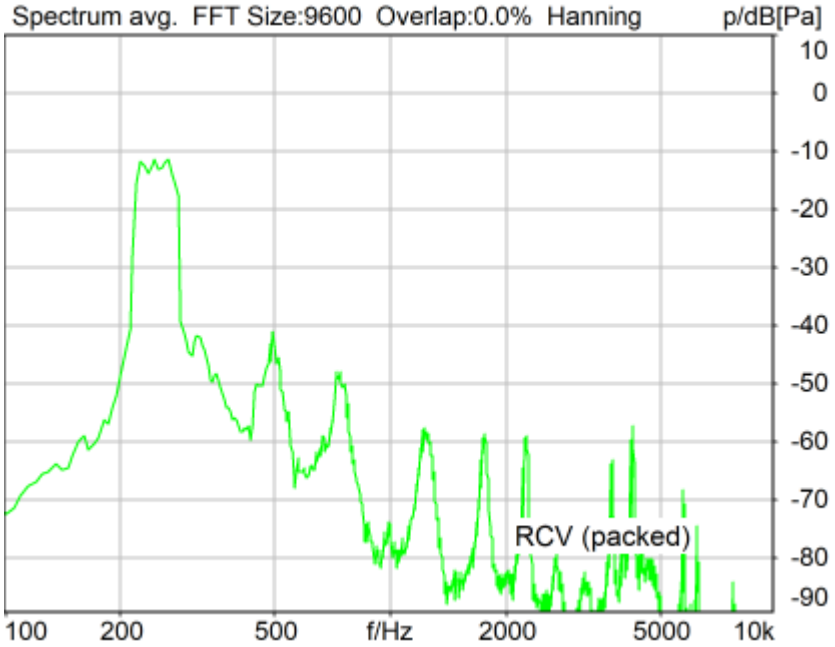
Channel	Speech level	Activity	Corrected speech level	
RCV	85.22 dB[SPL]	84.56%	15.22 dB[SPL]	Ok

Ok

2024/5/5 19:21 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



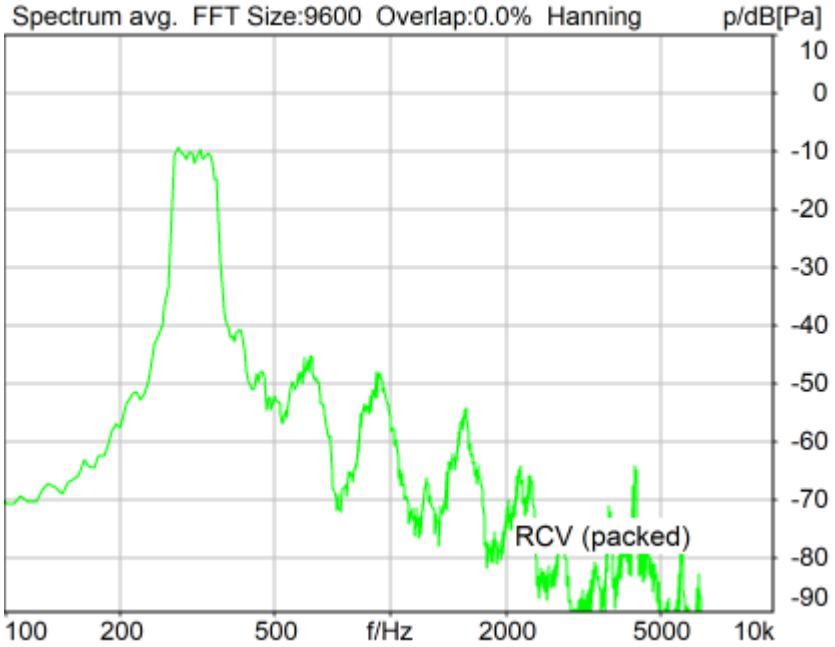
Distortion (Noise) RCV (packed): 31.54 dB (2.65%) Ok

Ok

2024/5/5 19:32 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



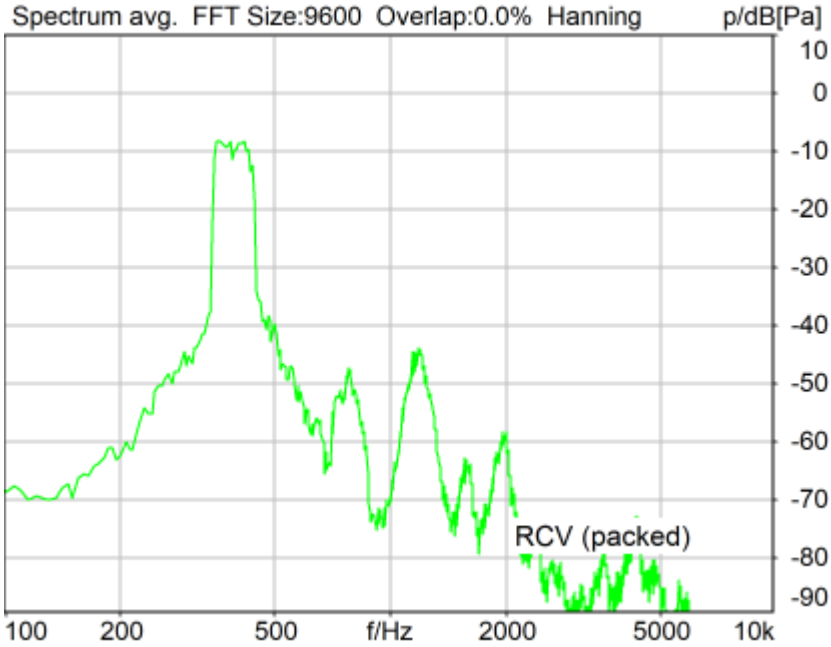
Distortion (Noise) RCV (packed): 32.61 dB (2.34%) Ok

Ok

2024/5/5 19:32 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



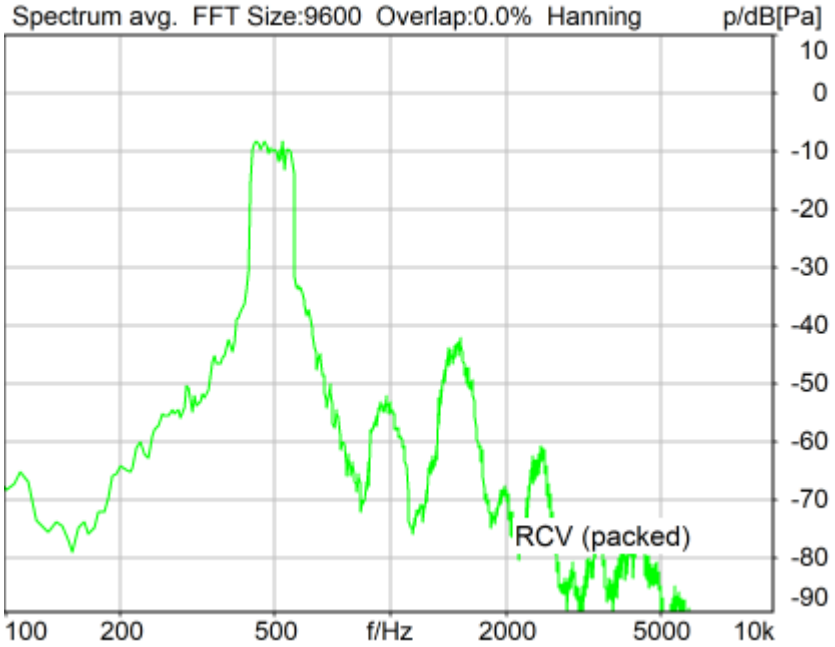
Distortion (Noise) RCV (packed): 32.02 dB (2.51%) Ok

Ok

2024/5/5 19:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



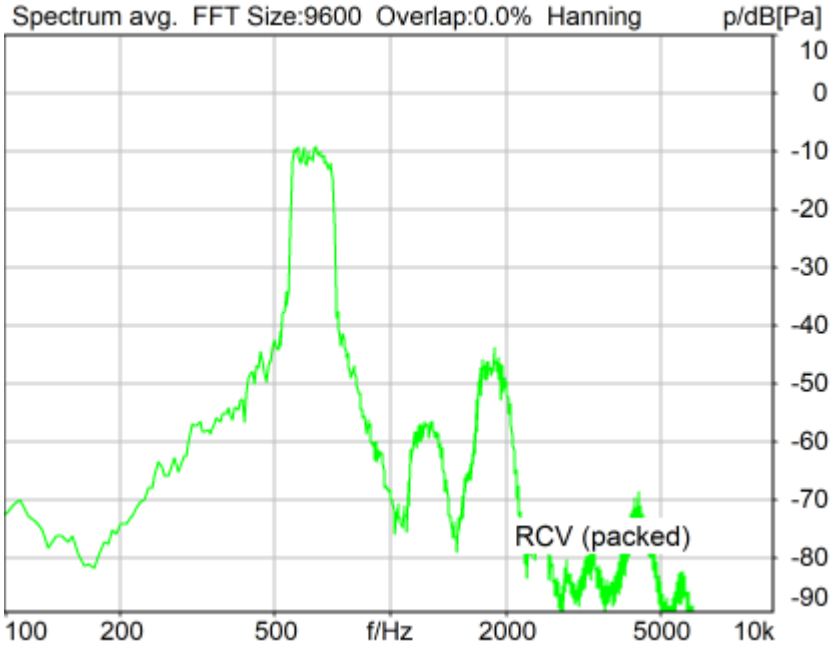
Distortion (Noise) RCV (packed): 29.55 dB (3.33%) Ok

Ok

2024/5/5 19:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



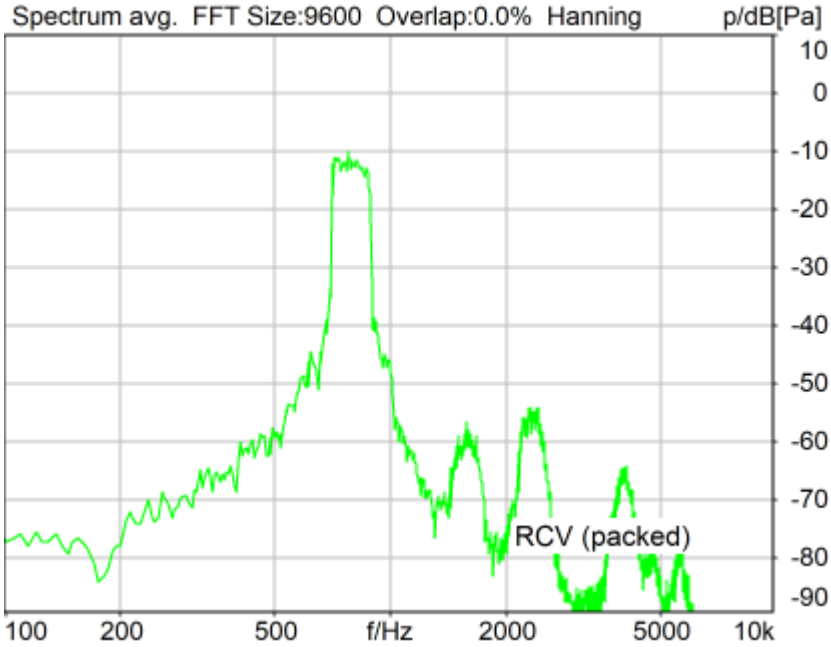
Distortion (Noise) RCV (packed): 30.76 dB (2.90%) Ok

Ok

2024/5/5 19:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



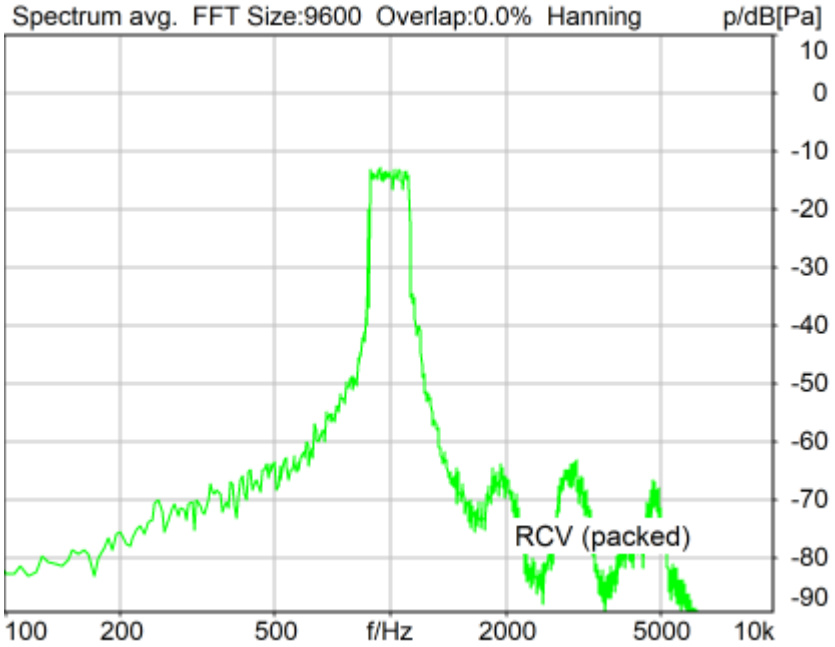
Distortion (Noise) RCV (packed): 33.13 dB (2.20%) Ok

Ok

2024/5/5 19:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



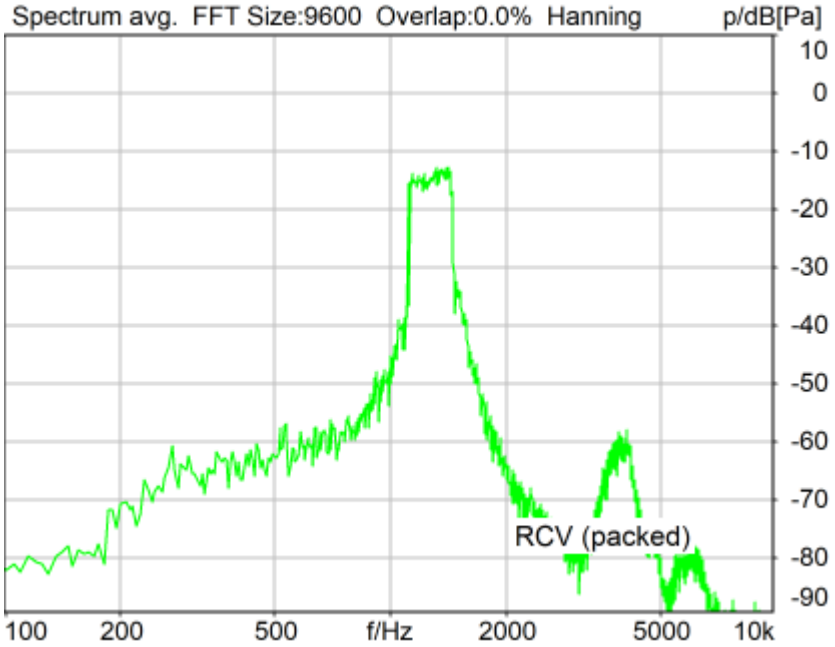
Distortion (Noise) RCV (packed): 31.43 dB (2.68%) Ok

Ok

2024/5/5 19:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



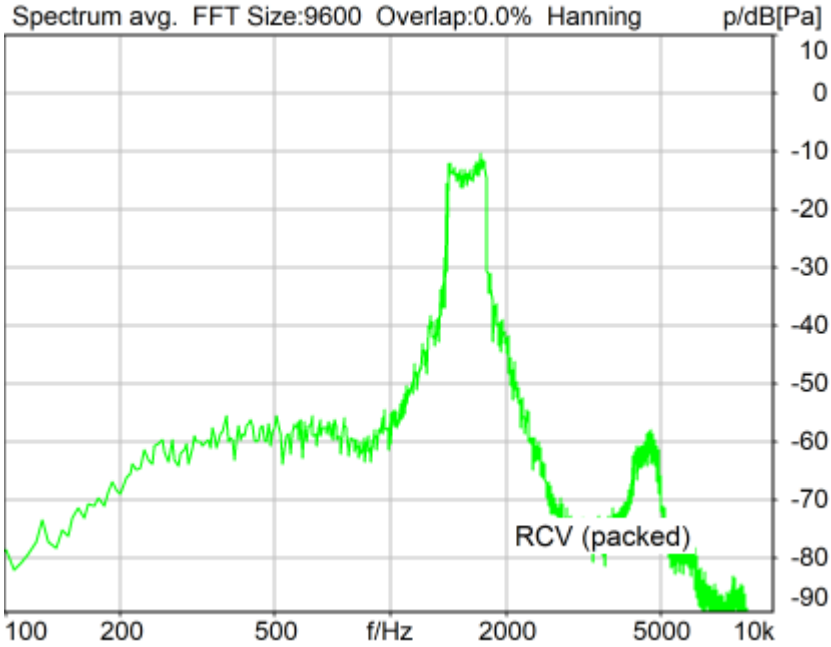
Distortion (Noise) RCV (packed): 23.06 dB (7.03%) Ok

Ok

2024/5/5 19:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



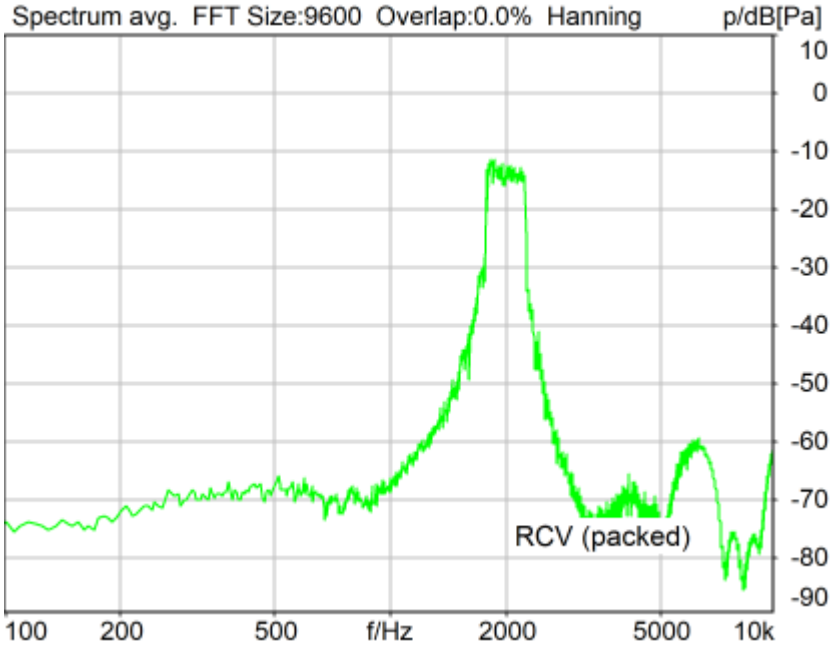
Distortion (Noise) RCV (packed): 24.58 dB (5.91%) Ok

Ok

2024/5/5 19:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



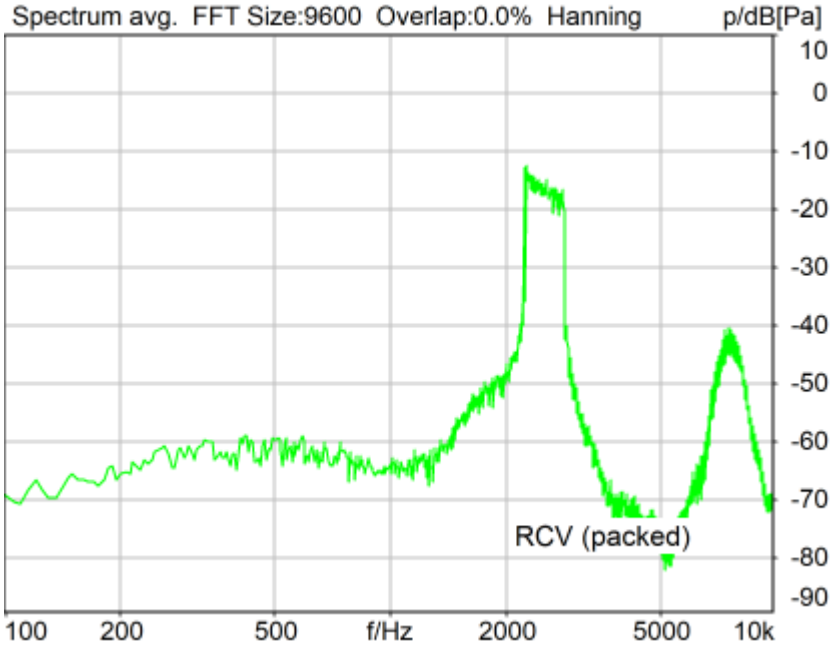
Distortion (Noise) RCV (packed): 23.25 dB (6.87%) Ok

Ok

2024/5/5 19:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



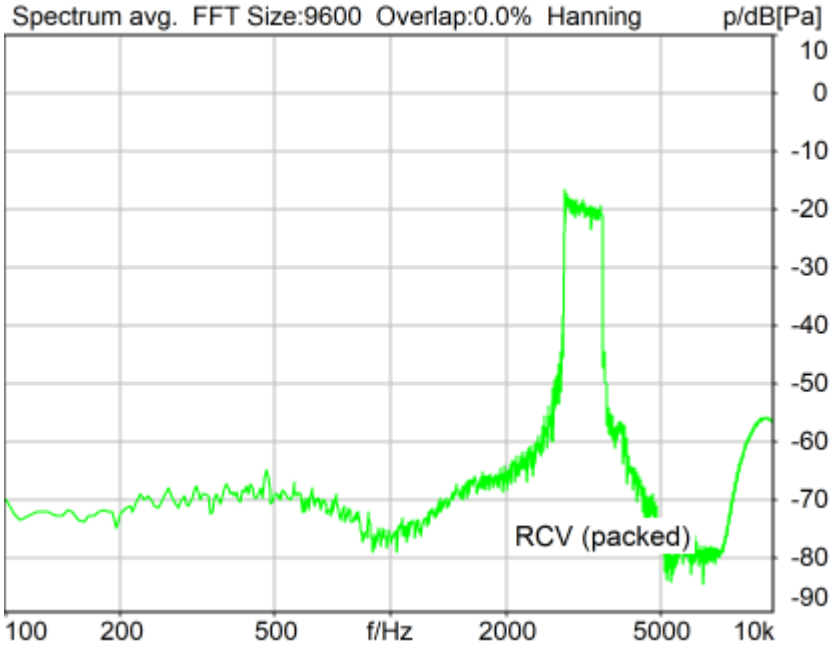
Distortion (Noise) RCV (packed): 23.16 dB (6.95%) Ok

Ok

2024/5/5 19:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



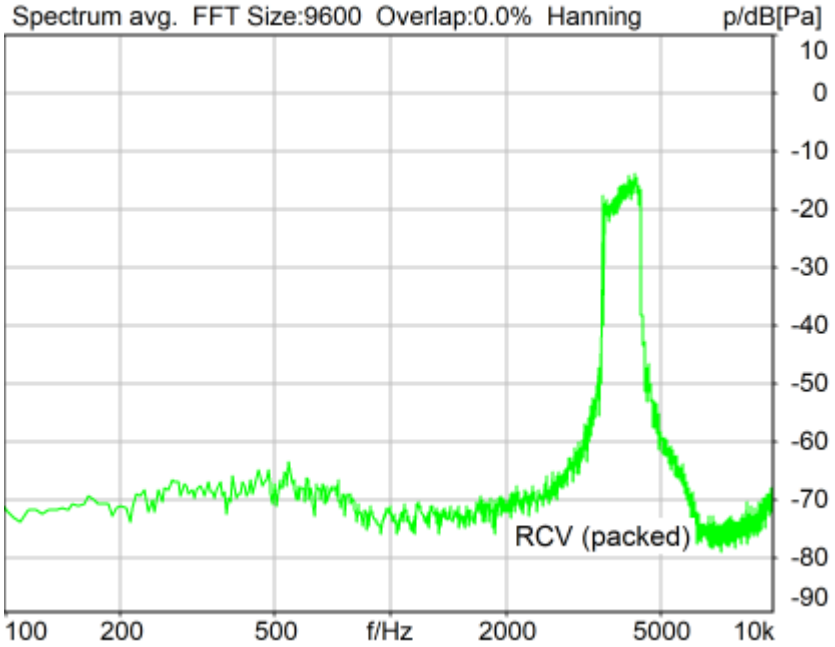
Distortion (Noise) RCV (packed): 29.62 dB (3.30%) Ok

Ok

2024/5/5 19:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



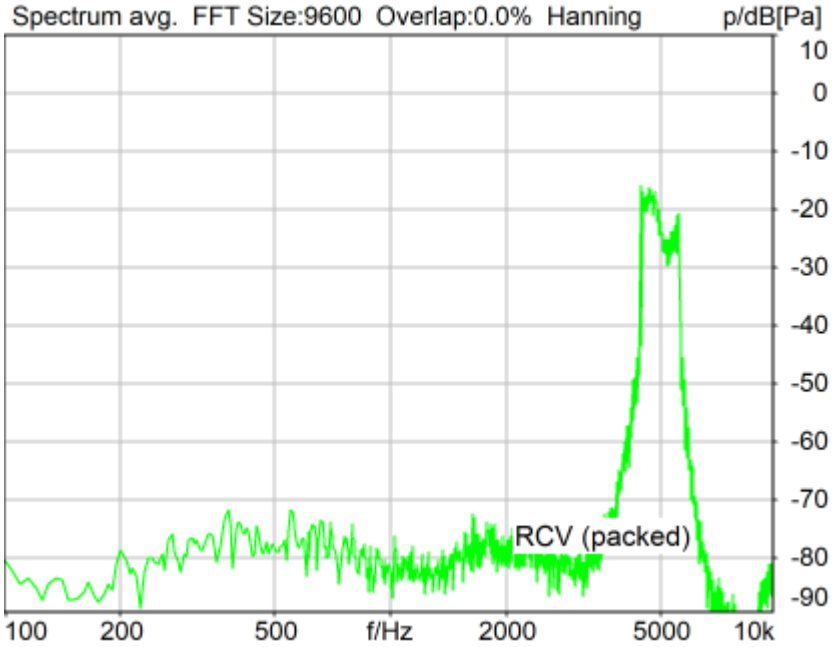
Distortion (Noise) RCV (packed): 29.55 dB (3.33%) Ok

Ok

2024/5/5 19:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 32.00 dB (2.51%) Ok

Ok

2024/5/5 19:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

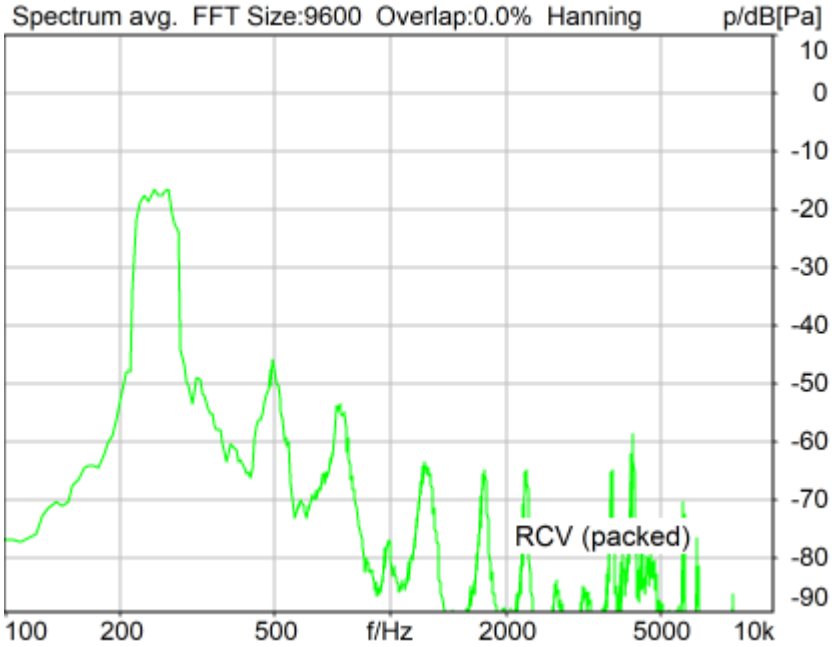
Region	Frequency	SDNR
1	250Hz	31.54 dB
2	315Hz	32.61 dB
3	400Hz	32.02 dB
4	500Hz	29.55 dB
5	630Hz	30.76 dB
6	800Hz	33.13 dB
7	1000Hz	31.43 dB
8	1250Hz	23.06 dB
9	1600Hz	24.58 dB
10	2000Hz	23.25 dB
11	2500Hz	23.16 dB
12	3150Hz	29.62 dB
13	4000Hz	29.55 dB
14	5000Hz	32.00 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.06dB at 1250Hz.

2024/5/5 19:37 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



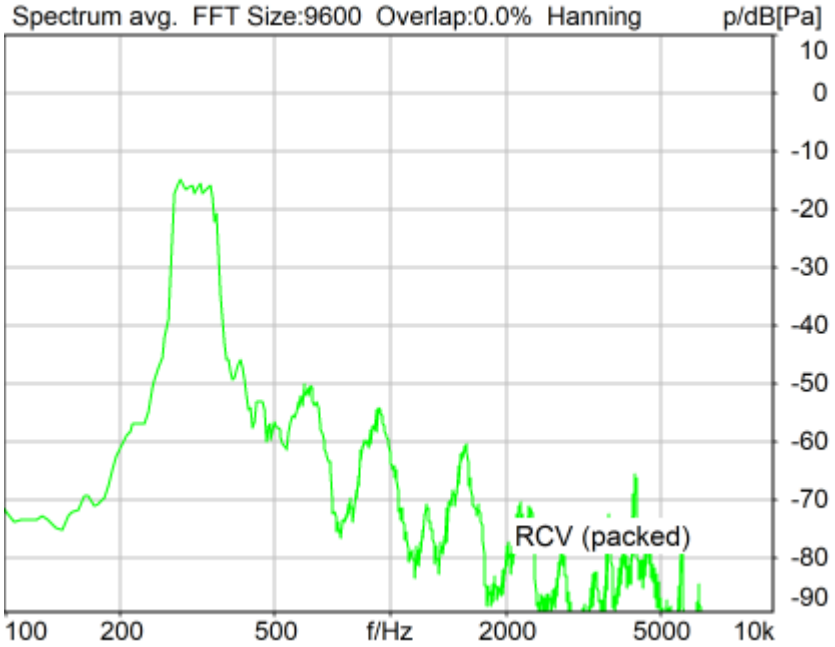
Distortion (Noise) RCV (packed): 31.17 dB (2.76%) Ok

Ok

2024/5/5 19:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



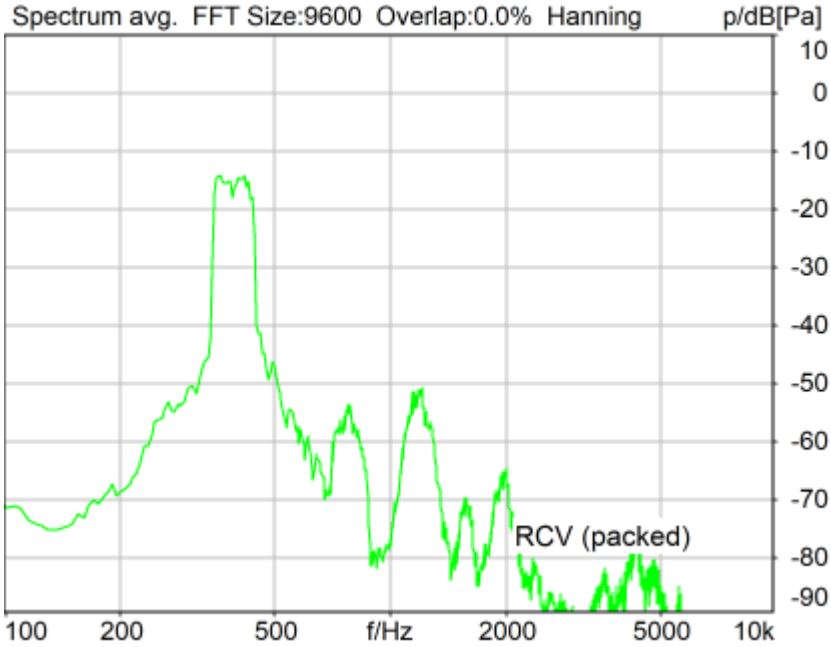
Distortion (Noise) RCV (packed): 32.18 dB (2.46%) Ok

Ok

2024/5/5 19:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



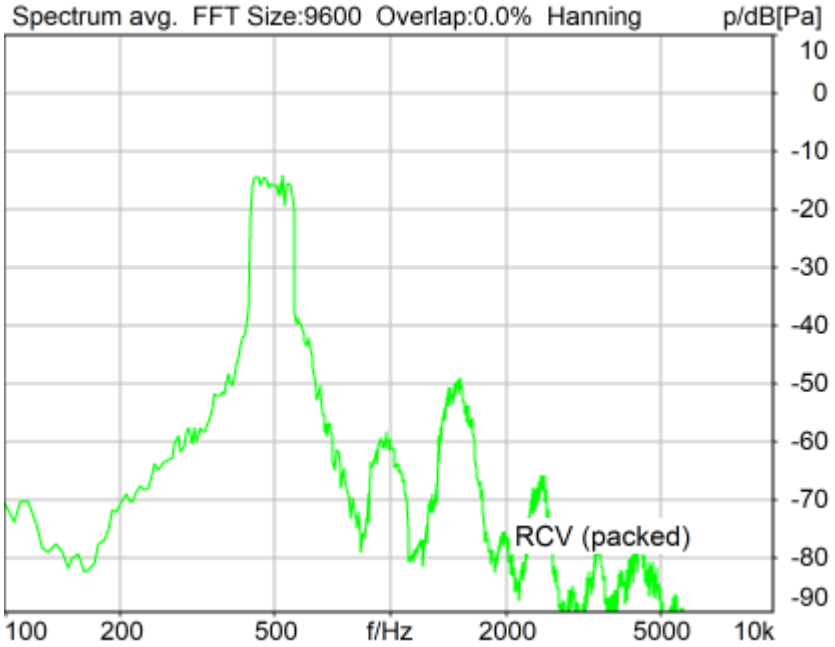
Distortion (Noise) RCV (packed): 32.31 dB (2.42%) Ok

Ok

2024/5/5 19:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



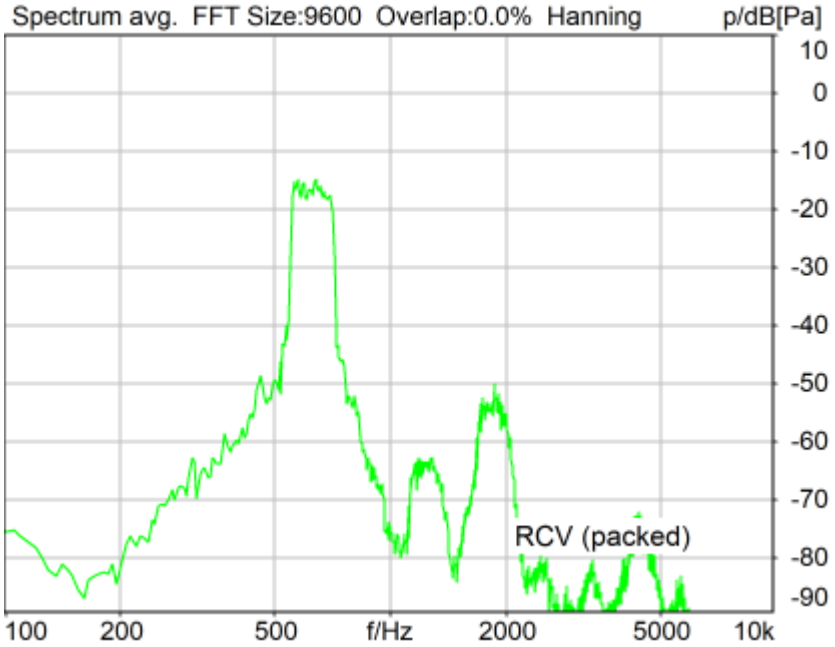
Distortion (Noise) RCV (packed): 29.77 dB (3.25%) Ok

Ok

2024/5/5 19:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



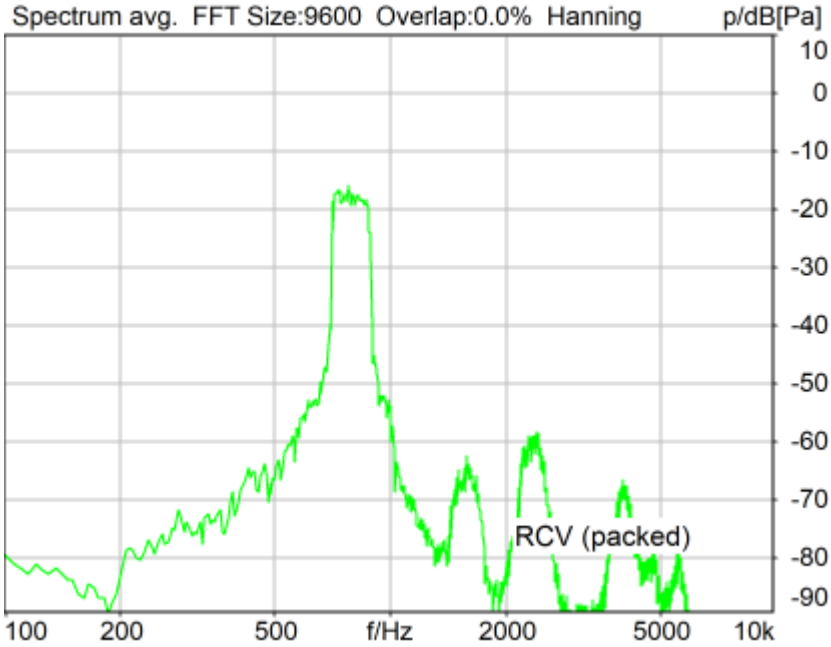
Distortion (Noise) RCV (packed): 31.08 dB (2.79%) Ok

Ok

2024/5/5 19:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



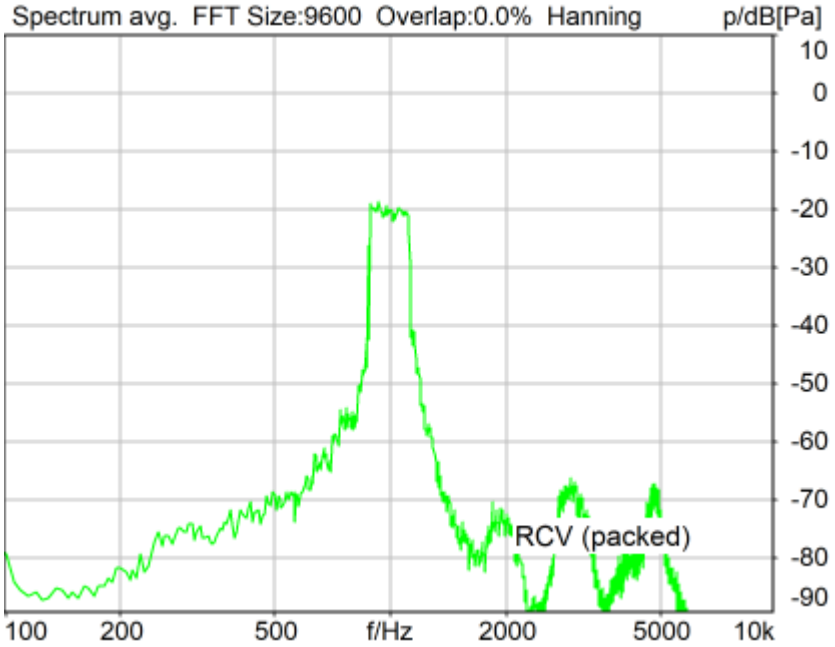
Distortion (Noise) RCV (packed): 33.69 dB (2.07%) Ok

Ok

2024/5/5 19:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



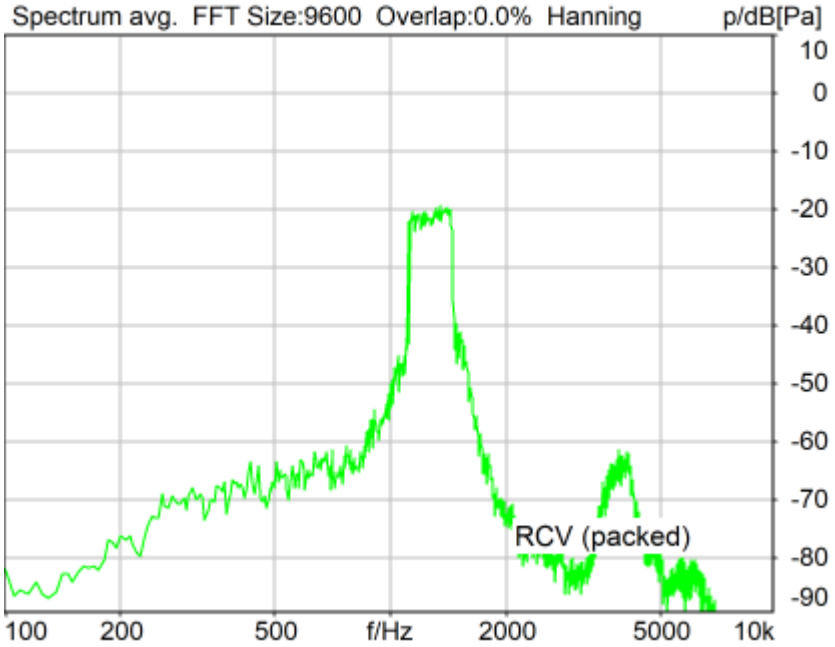
Distortion (Noise) RCV (packed): 31.29 dB (2.73%) Ok

Ok

2024/5/5 19:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



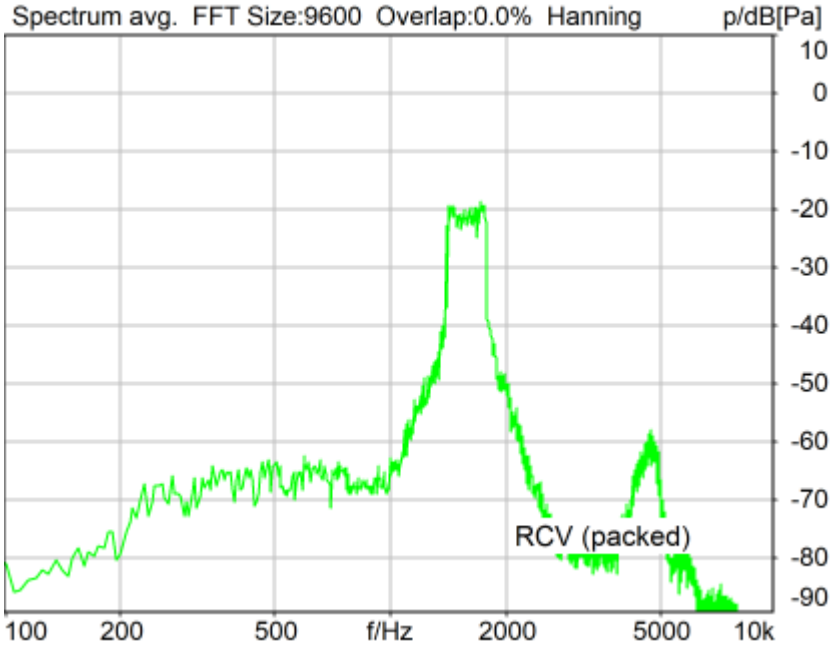
Distortion (Noise) RCV (packed): 23.16 dB (6.95%) Ok

Ok

2024/5/5 19:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



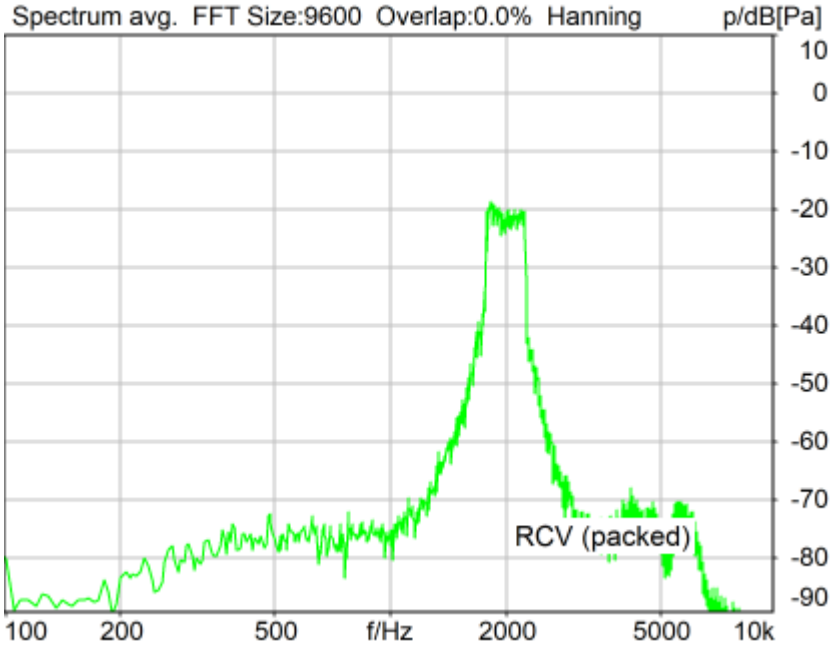
Distortion (Noise) RCV (packed): 24.51 dB (5.95%) Ok

Ok

2024/5/5 19:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



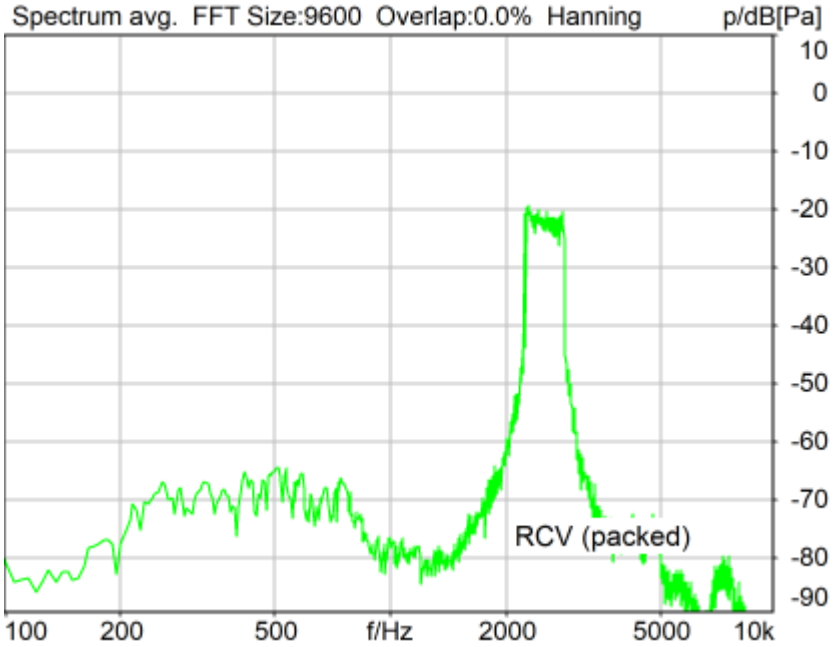
Distortion (Noise) RCV (packed): 23.75 dB (6.49%) Ok

Ok

2024/5/5 19:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



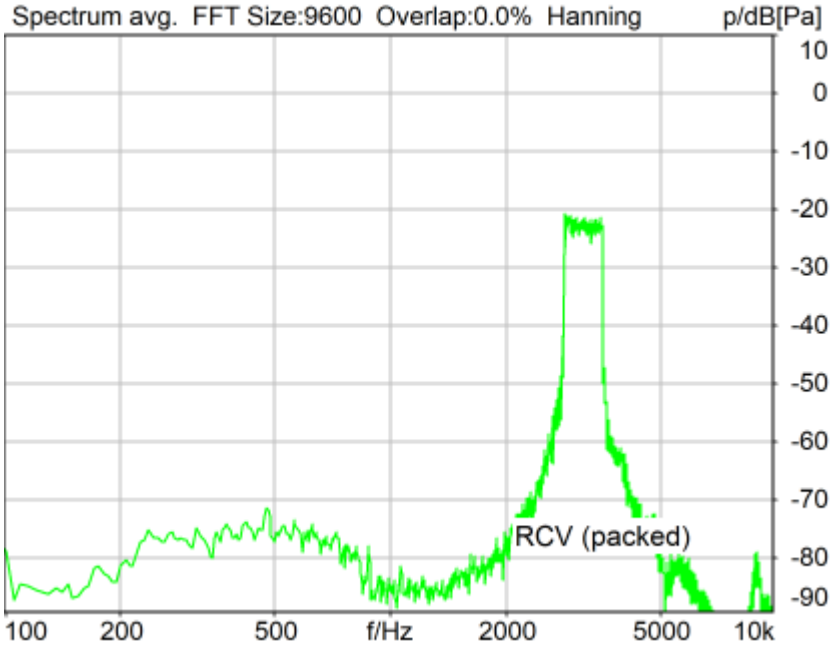
Distortion (Noise) RCV (packed): 30.53 dB (2.98%) Ok

Ok

2024/5/5 19:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



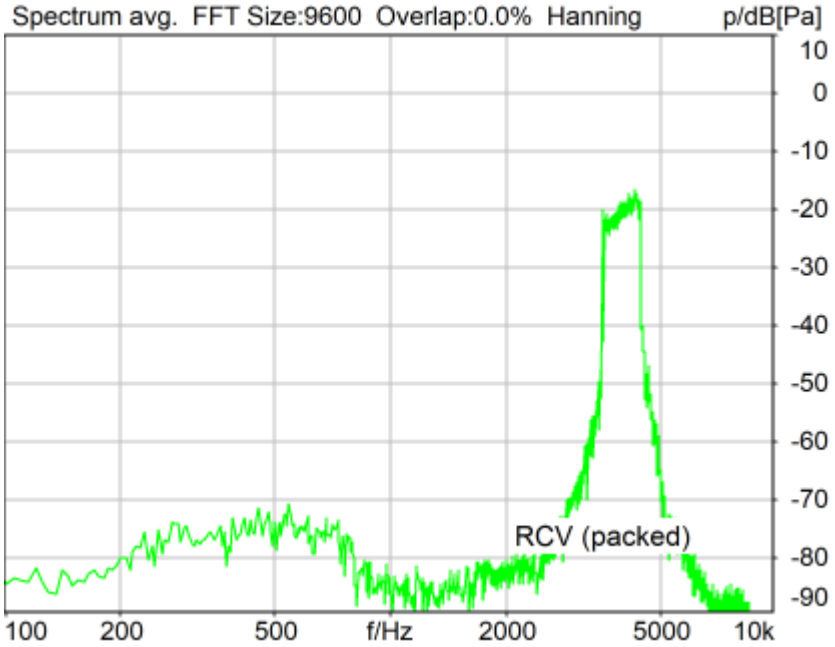
Distortion (Noise) RCV (packed): 33.17 dB (2.19%) Ok

Ok

2024/5/5 19:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



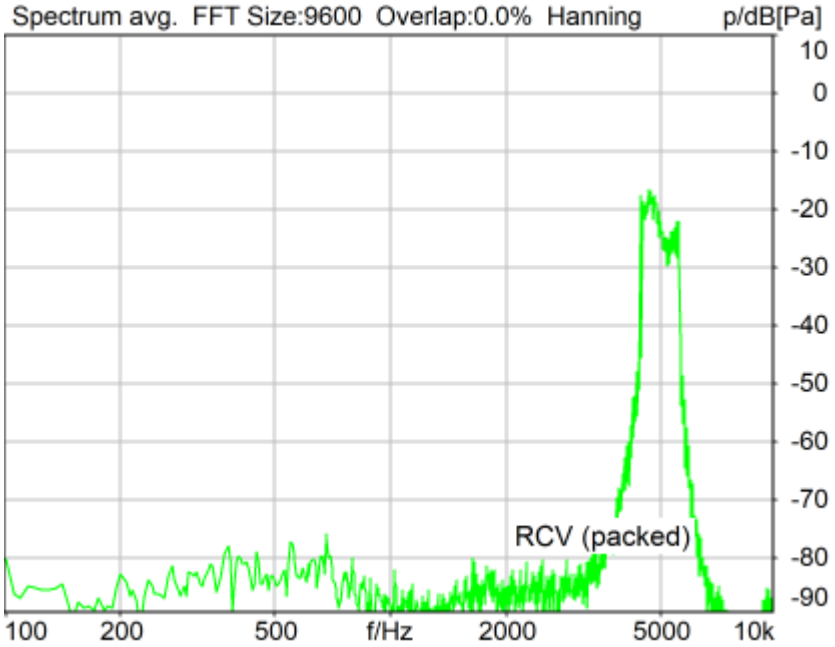
Distortion (Noise) RCV (packed): 31.12 dB (2.78%) Ok

Ok

2024/5/5 19:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 34.13 dB (1.97%) Ok

Ok

2024/5/5 19:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

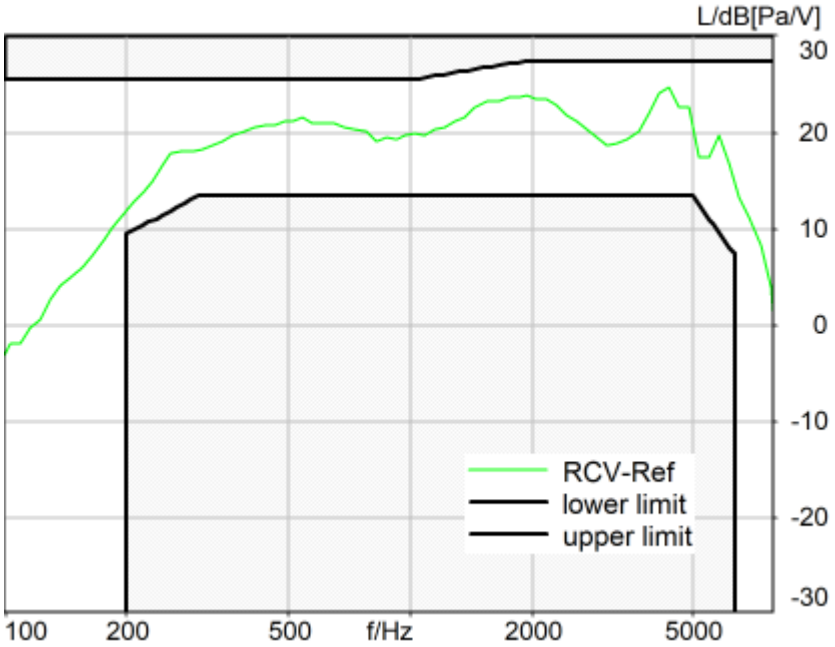
Region	Frequency	SDNR
1	250Hz	31.17 dB
2	315Hz	32.18 dB
3	400Hz	32.31 dB
4	500Hz	29.77 dB
5	630Hz	31.08 dB
6	800Hz	33.69 dB
7	1000Hz	31.29 dB
8	1250Hz	23.16 dB
9	1600Hz	24.51 dB
10	2000Hz	23.75 dB
11	2500Hz	30.53 dB
12	3150Hz	33.17 dB
13	4000Hz	31.12 dB
14	5000Hz	34.13 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.16dB at 1250Hz.

2024/5/5 19:29 ACQUA

5.3 Frequency Response 8N FF, Index: 1

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



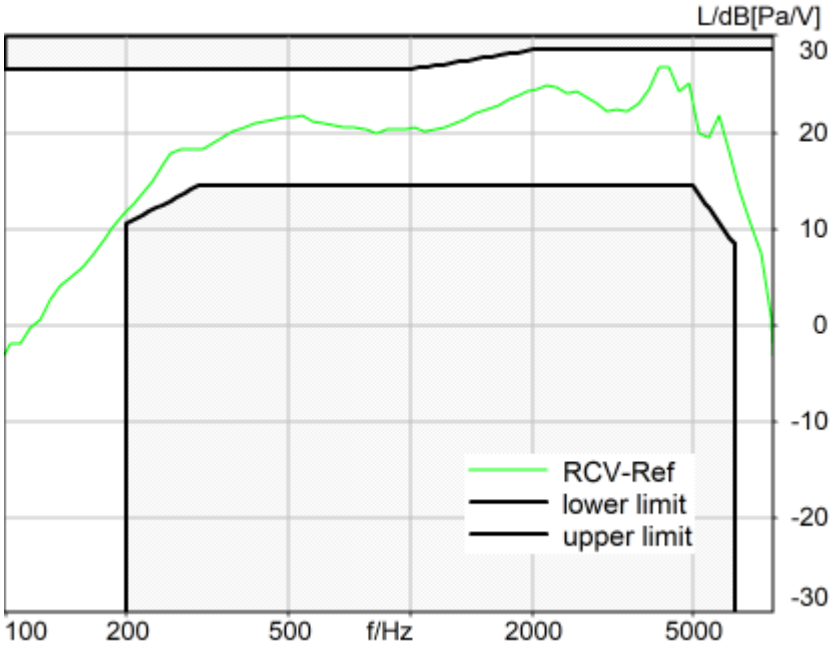
Absolute minimal distance
2.79 dB at 4369.4 Hz Ok

Ok

2024/5/5 19:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF, Index: 1

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



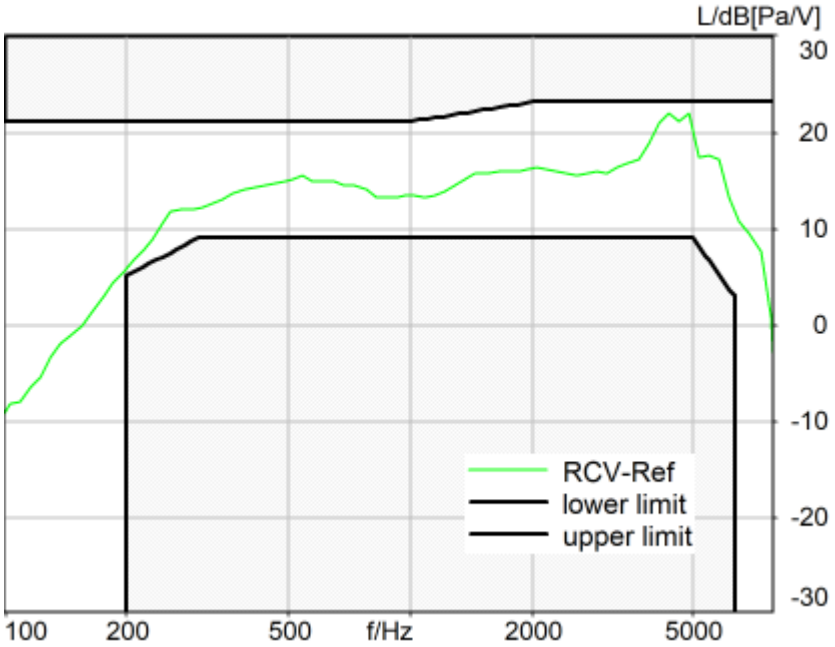
Absolute minimal distance
1.71 dB at 4119.5 Hz Ok

Ok

2024/5/5 19:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF, Index: 1

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



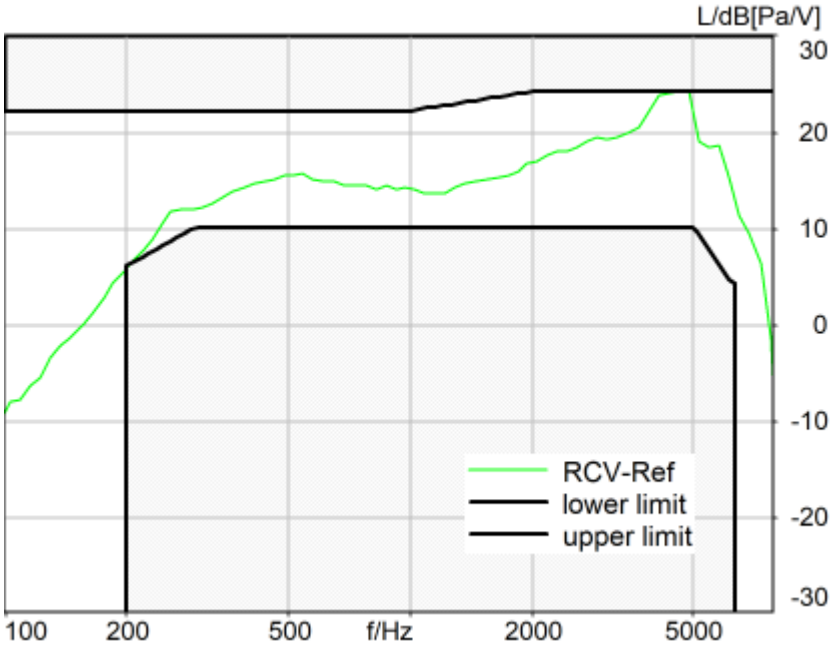
Absolute minimal distance
1.13 dB at 4369.4 Hz Ok

Ok

2024/5/5 19:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF, Index: 1

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



Absolute minimal distance
0.02 dB at 4870.0 Hz Ok

Ok

2024/5/5 19:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

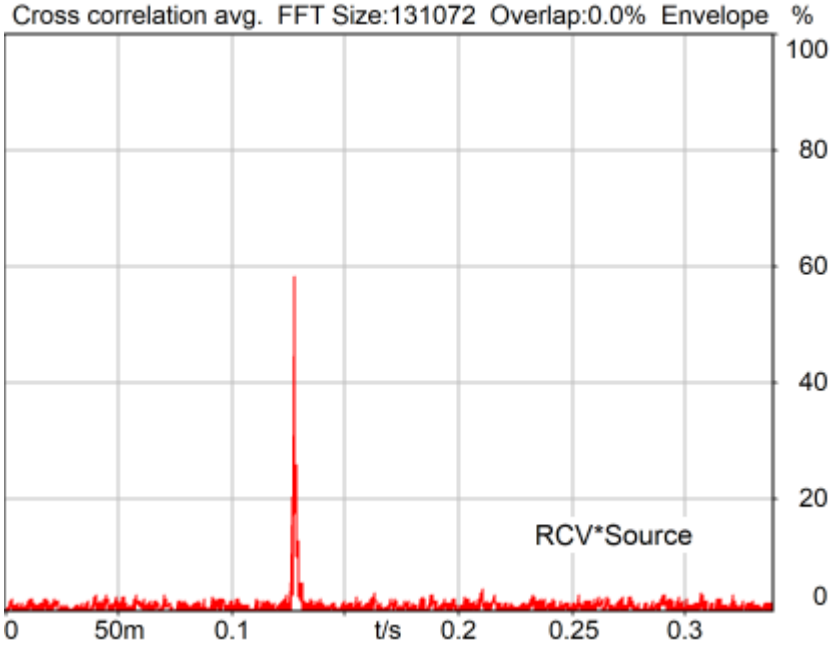
Measurement Object	LTE Band 41_20QPSK_100RB_0_EVS NB 24.4kbps_CH40620
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:13
Responsible Person	audio

Overall Receive Delay NB, Index: 1 3
5.1a Receive Volume Control Performance 8N NB, Index: 1 3
5.1b Receive Volume Control Performance 2N NB, Index: 1 4
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 5
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 6
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 8
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 10
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 11
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 11
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 12
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 14
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 16
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 18
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 19
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 19
5.3 Frequency Response 8N FF HANB, Index: 1 20
5.3 Frequency Response 8N DF HANB, Index: 1 21
5.3 Frequency Response 2N FF HANB, Index: 1 21
5.3 Frequency Response 2N DF HANB, Index: 1 22

Overall Receive Delay NB, Index: 1

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

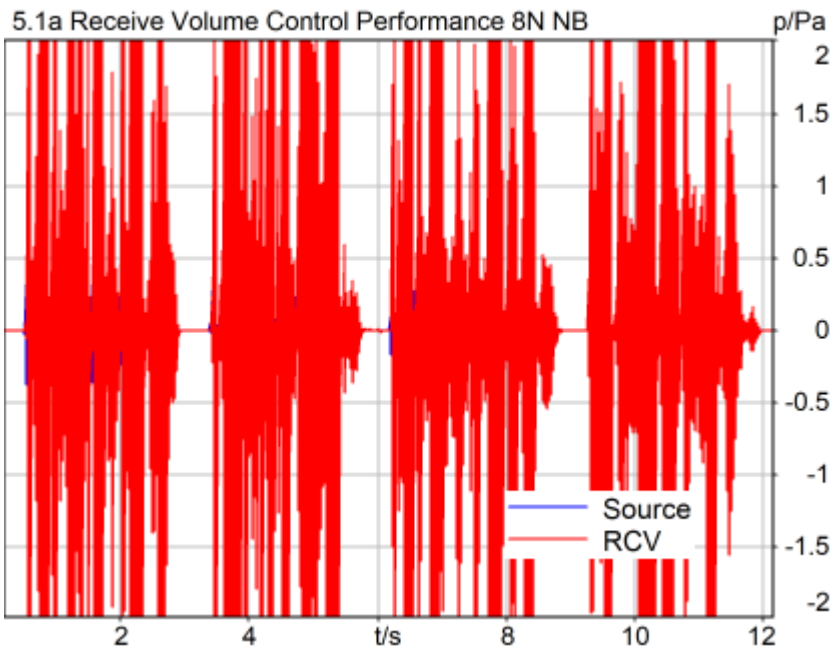


Channel	Delay
RCV*Source	127.7 ms

2024/5/6 9:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB, Index: 1

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



Correction

X - 70

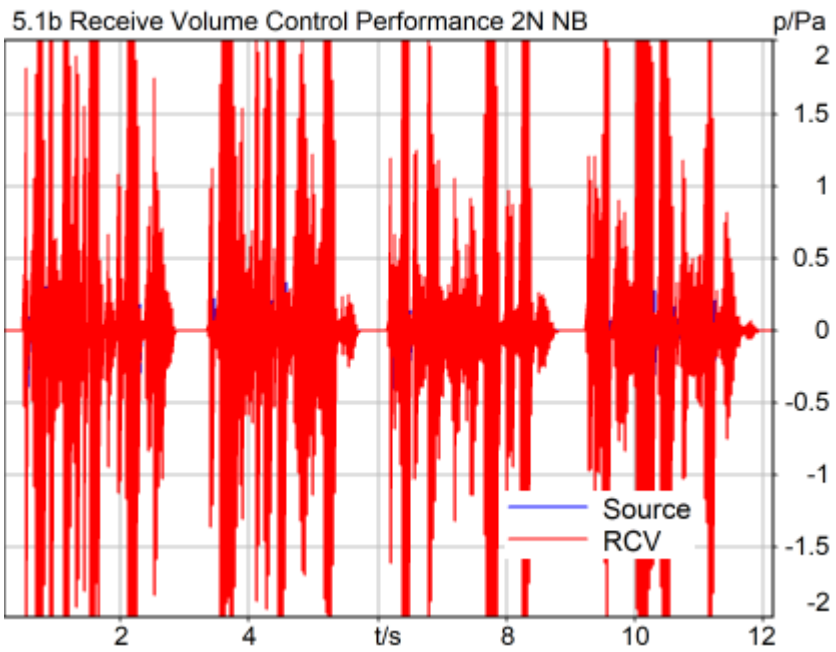
Channel	Speech level	Activity	Corrected speech level	
RCV	93.62 dB[SPL]	80.48%	23.62 dB[SPL]	Ok

Ok

2024/5/6 9:34 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N NB, Index: 1

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



Correction

X - 70

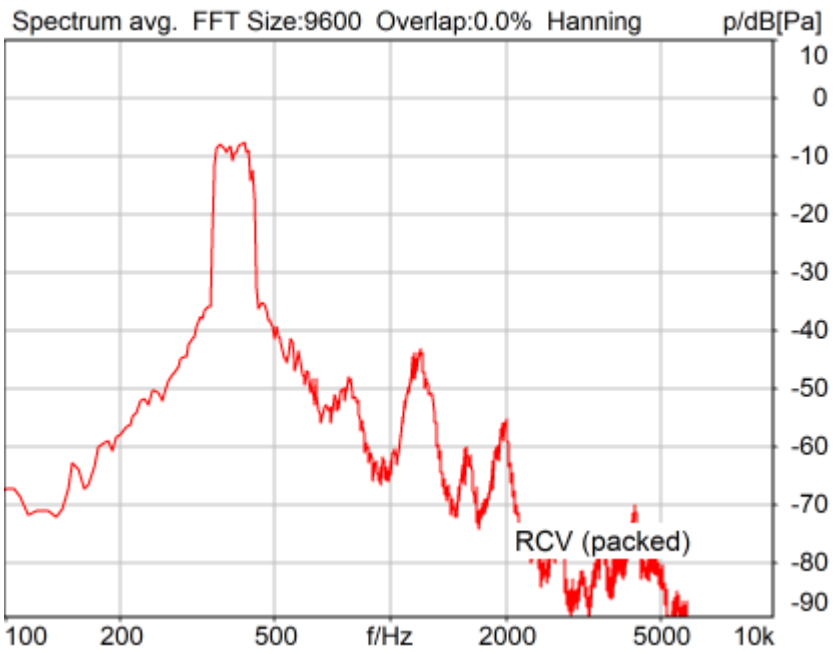
Channel	Speech level	Activity	Corrected speech level	
RCV	87.05 dB[SPL]	80.42%	17.05 dB[SPL]	Ok

Ok

2024/5/6 9:44 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



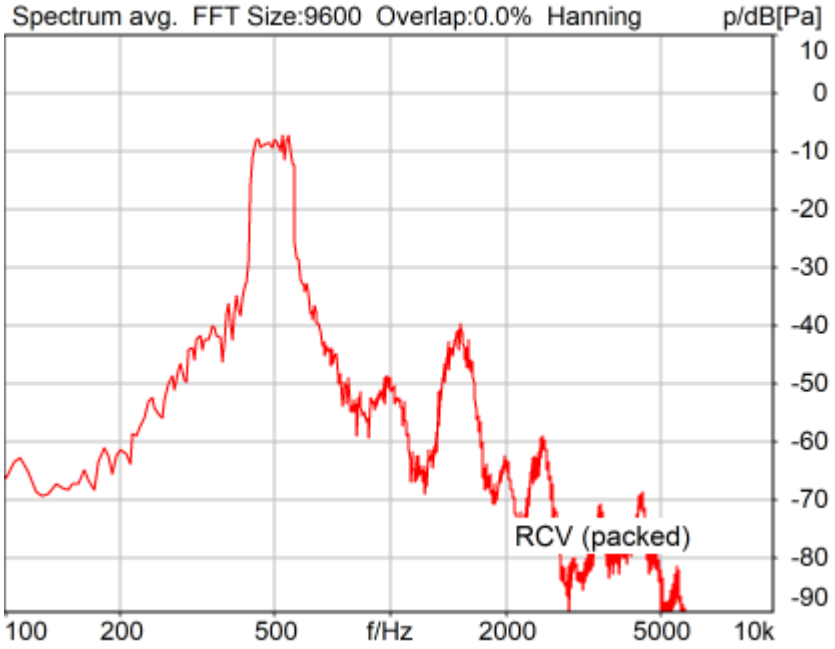
Distortion (Noise) RCV (packed): 30.74 dB (2.90%) Ok

Ok

2024/5/6 9:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



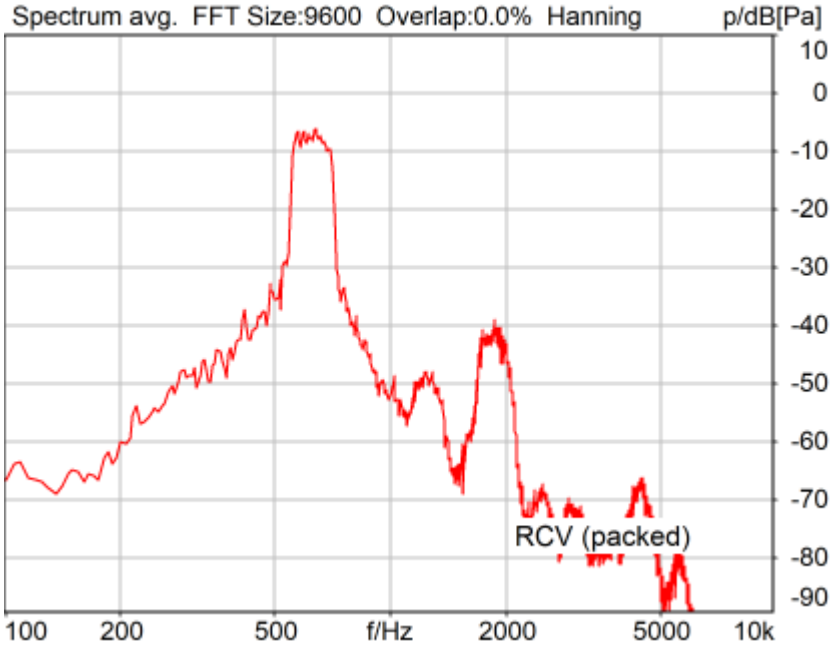
Distortion (Noise) RCV (packed): 27.34 dB (4.29%) Ok

Ok

2024/5/6 9:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



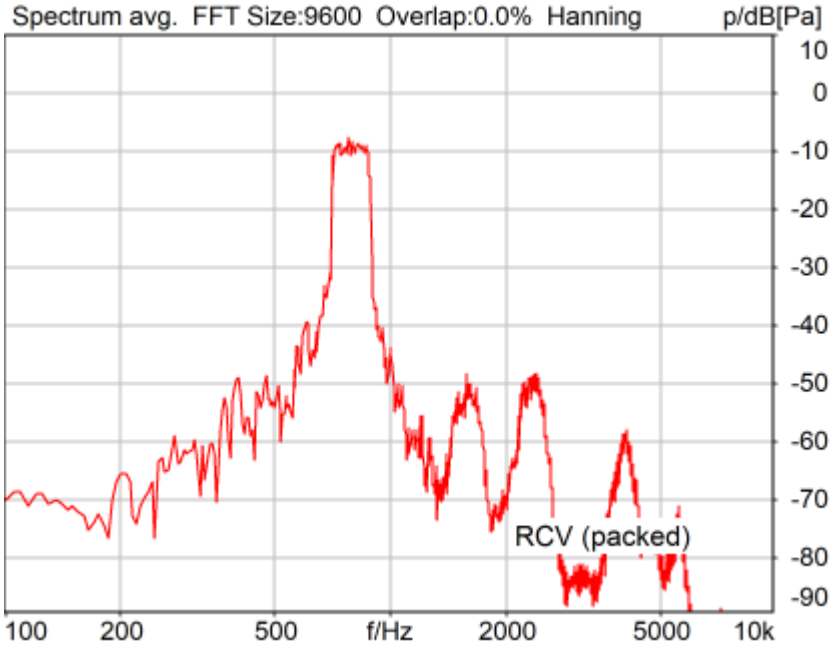
Distortion (Noise) RCV (packed): 26.66 dB (4.65%) Ok

Ok

2024/5/6 9:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



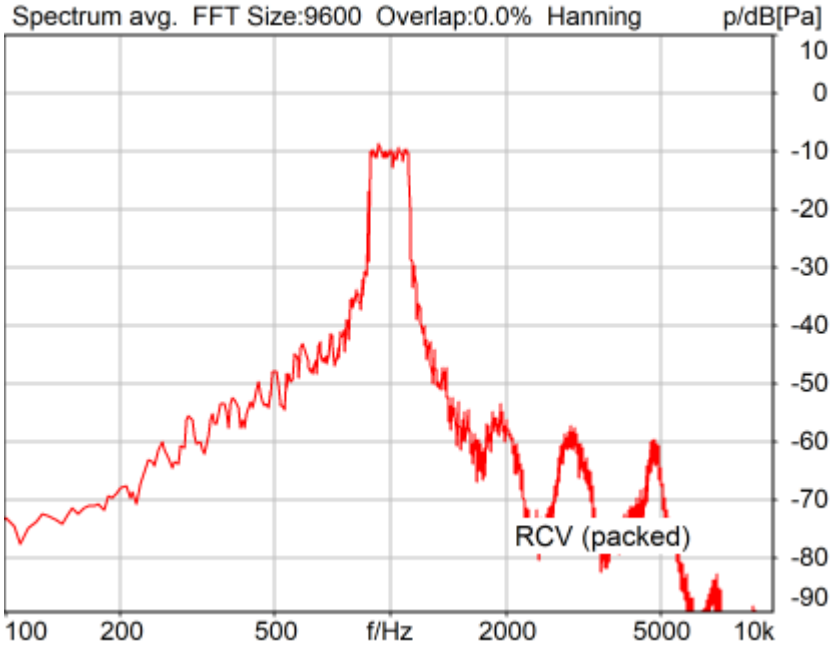
Distortion (Noise) RCV (packed): 31.32 dB (2.72%) Ok

Ok

2024/5/6 9:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



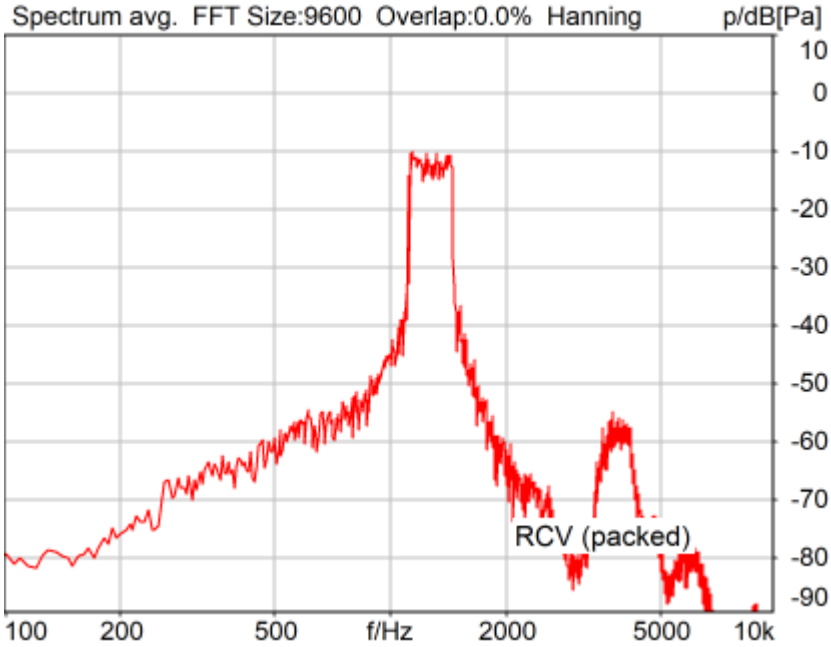
Distortion (Noise) RCV (packed): 26.91 dB (4.51%) Ok

Ok

2024/5/6 9:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



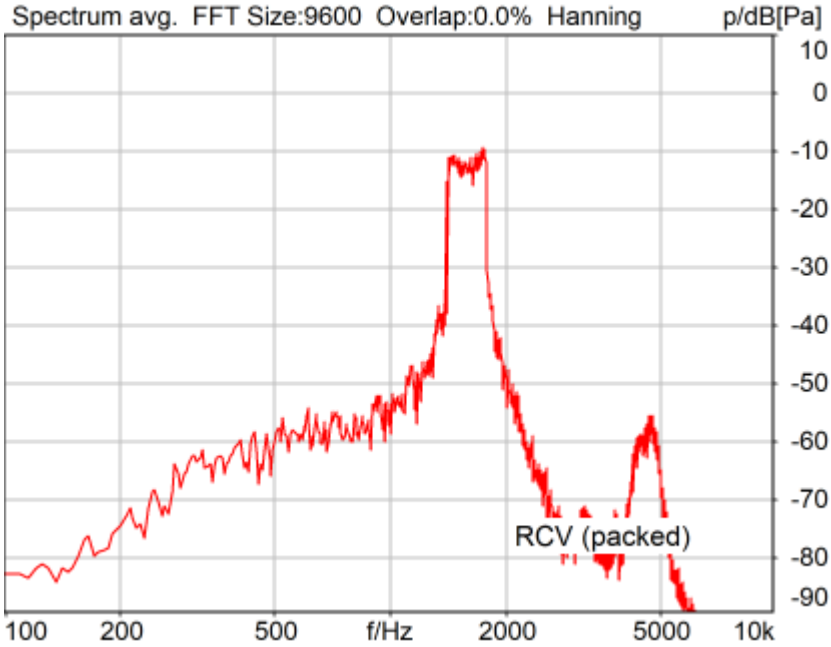
Distortion (Noise) RCV (packed): 27.54 dB (4.20%) Ok

Ok

2024/5/6 9:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



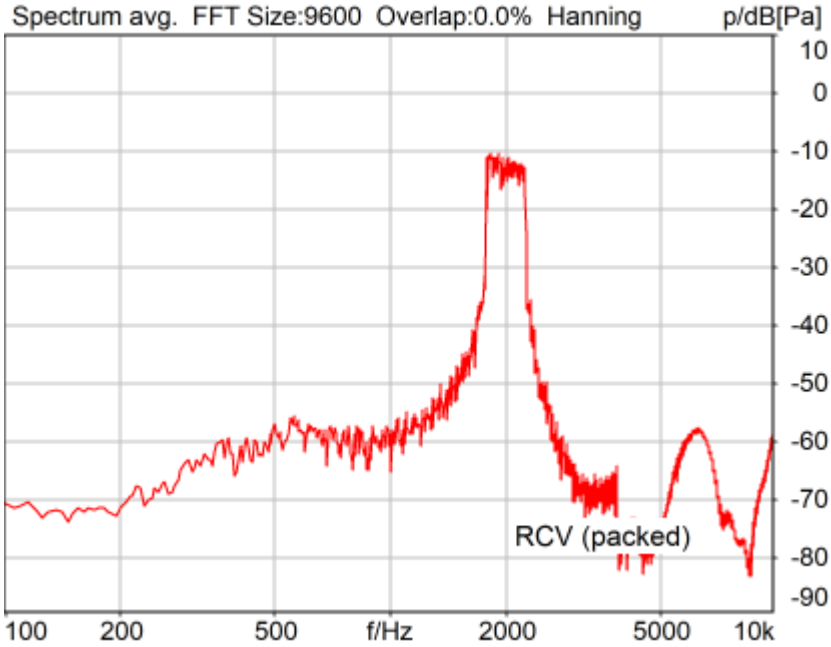
Distortion (Noise) RCV (packed): 28.69 dB (3.68%) Ok

Ok

2024/5/6 9:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



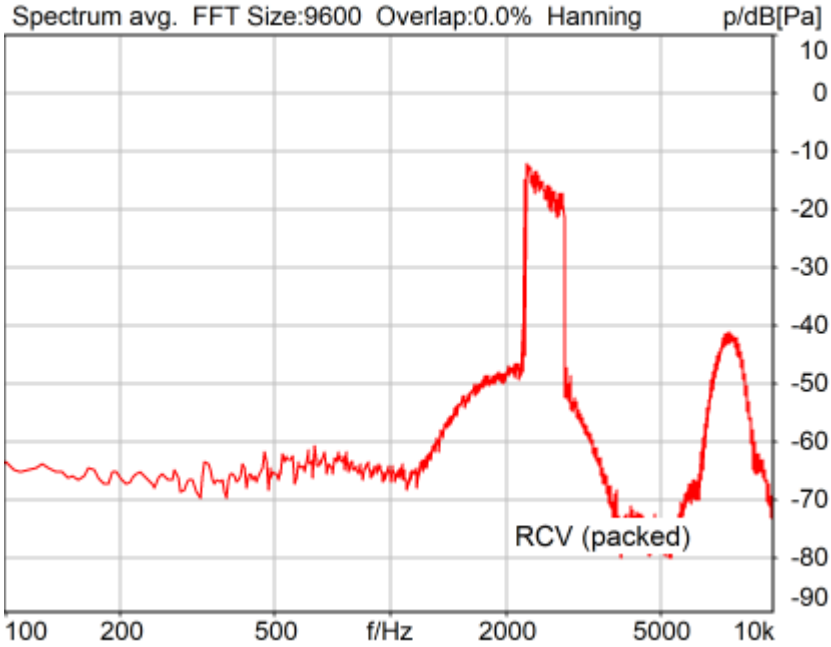
Distortion (Noise) RCV (packed): 27.50 dB (4.22%) Ok

Ok

2024/5/6 9:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



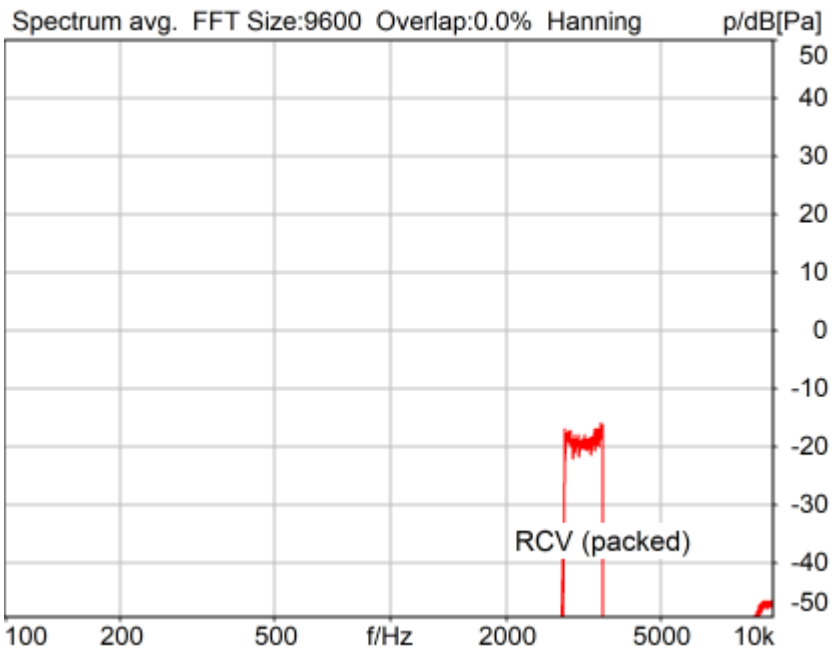
Distortion (Noise) RCV (packed): 23.05 dB (7.04%) Ok

Ok

2024/5/6 9:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 26.07 dB (4.97%) Ok

Ok

2024/5/6 9:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

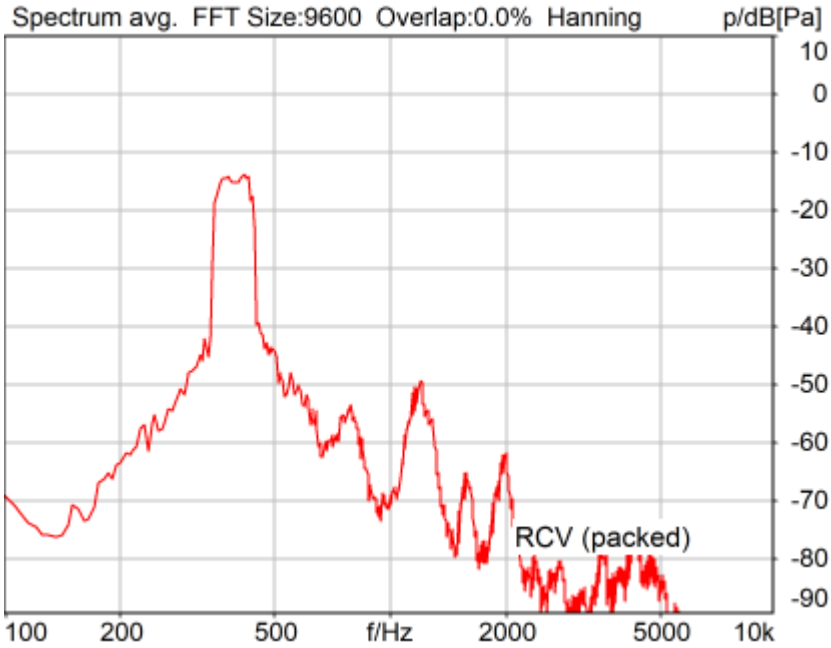
Region	Frequency	SDNR
1	400Hz	30.74 dB
2	500Hz	27.34 dB
3	630Hz	26.66 dB
4	800Hz	31.32 dB
5	1000Hz	26.91 dB
6	1250Hz	27.54 dB
7	1600Hz	28.69 dB
8	2000Hz	27.50 dB
9	2500Hz	23.05 dB
10	3150Hz	26.07 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.05dB at 2500Hz.

2024/5/6 9:39 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



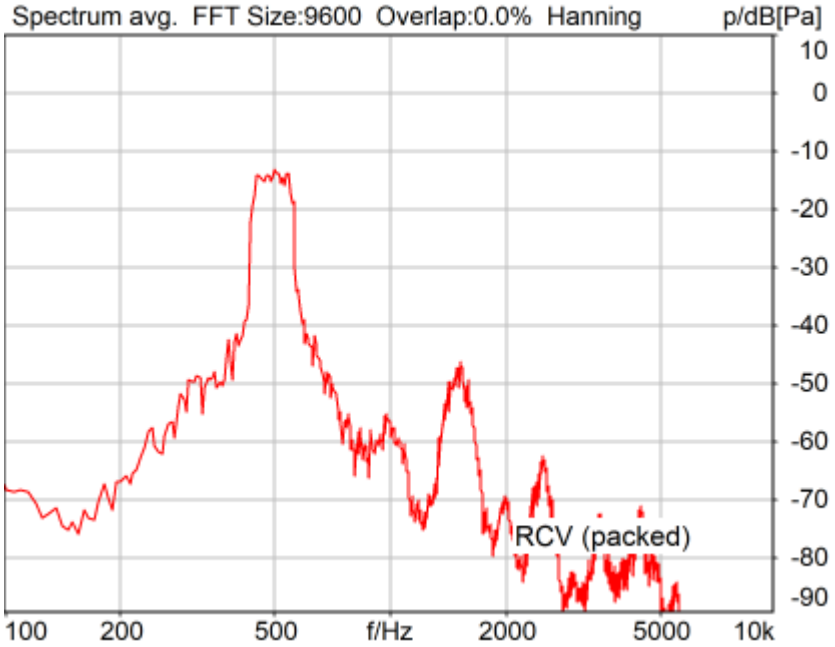
Distortion (Noise) RCV (packed): 30.56 dB (2.96%) Ok

Ok

2024/5/6 9:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



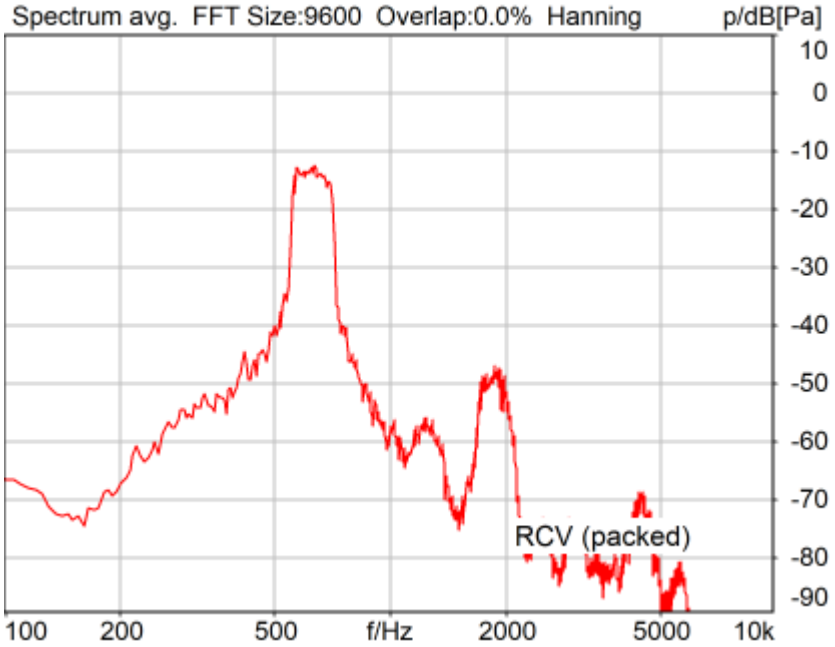
Distortion (Noise) RCV (packed): 28.07 dB (3.95%) Ok

Ok

2024/5/6 9:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



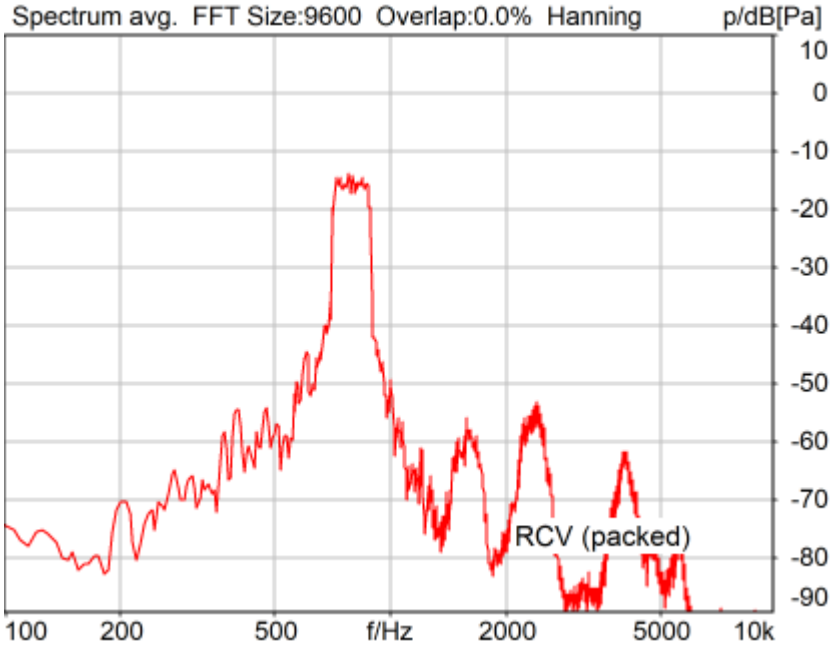
Distortion (Noise) RCV (packed): 27.47 dB (4.23%) Ok

Ok

2024/5/6 9:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



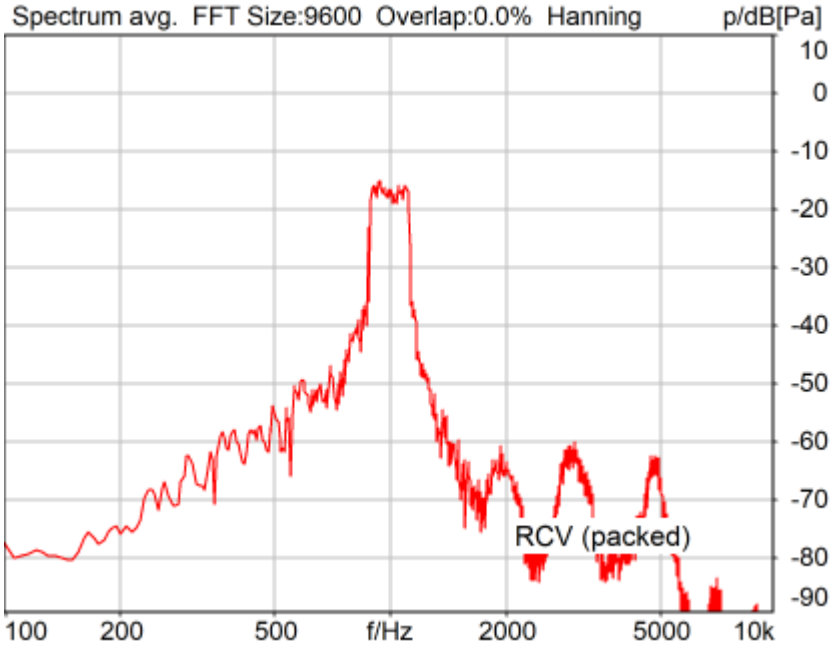
Distortion (Noise) RCV (packed): 30.73 dB (2.91%) Ok

Ok

2024/5/6 9:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



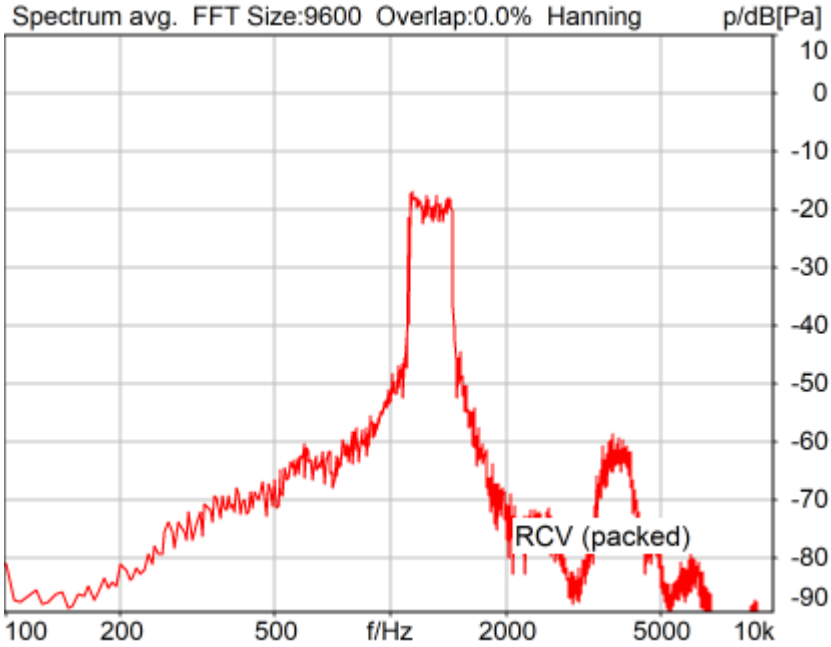
Distortion (Noise) RCV (packed): 26.84 dB (4.55%) Ok

Ok

2024/5/6 9:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



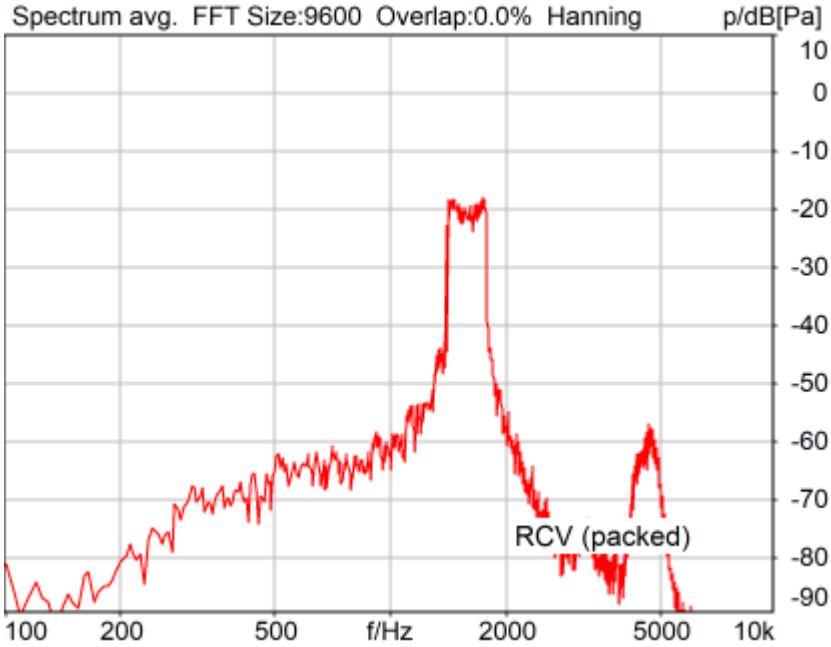
Distortion (Noise) RCV (packed): 27.56 dB (4.19%) Ok

Ok

2024/5/6 9:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



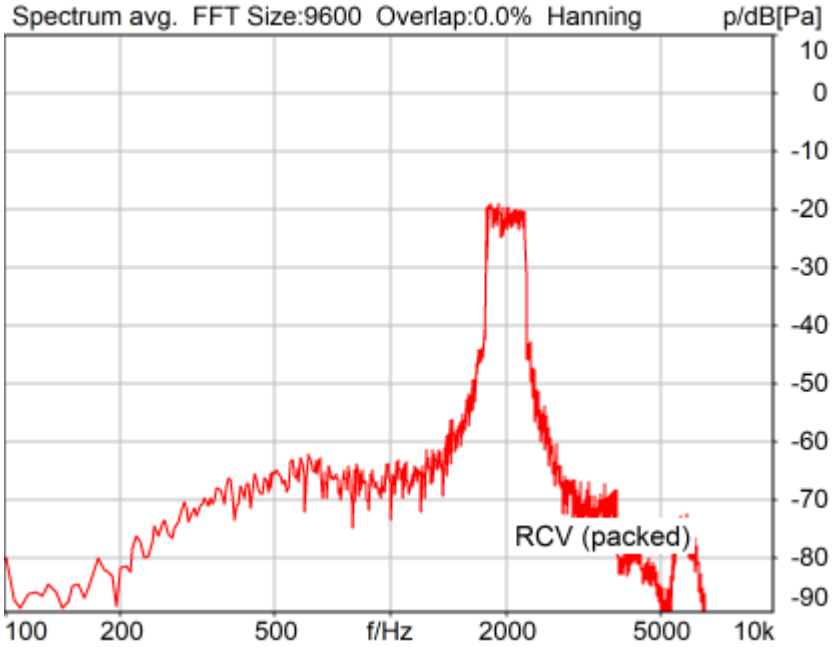
Distortion (Noise) RCV (packed): 27.96 dB (4.00%) Ok

Ok

2024/5/6 9:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



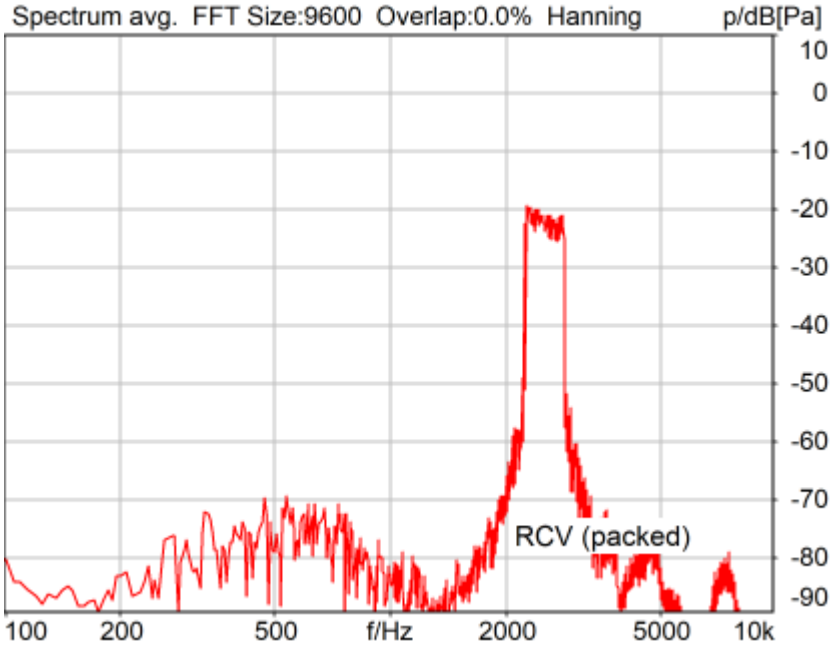
Distortion (Noise) RCV (packed): 26.92 dB (4.51%) Ok

Ok

2024/5/6 9:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



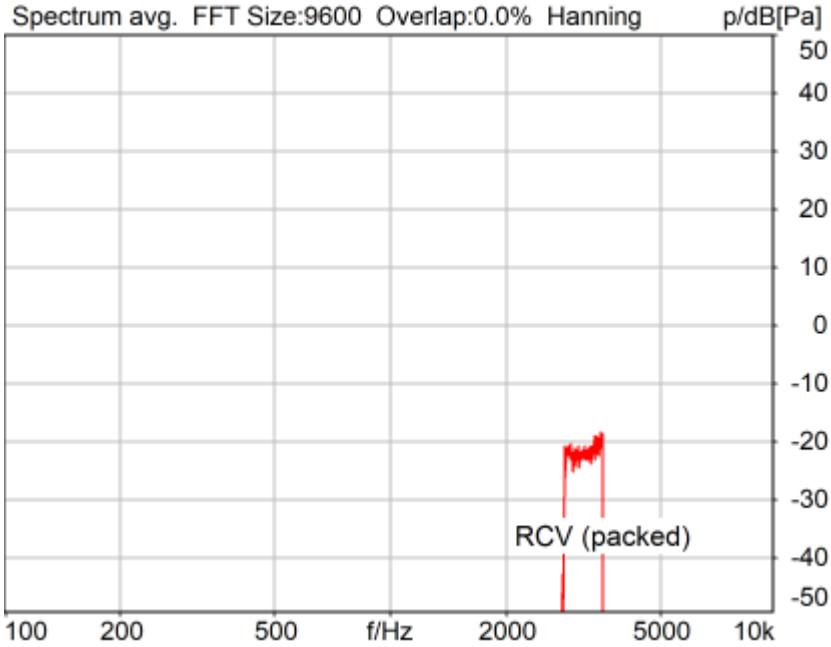
Distortion (Noise) RCV (packed): 38.13 dB (1.24%) Ok

Ok

2024/5/6 9:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 44.42 dB (0.60%) Ok

Ok

2024/5/6 9:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

Region	Frequency	SDNR
1	400Hz	30.56 dB

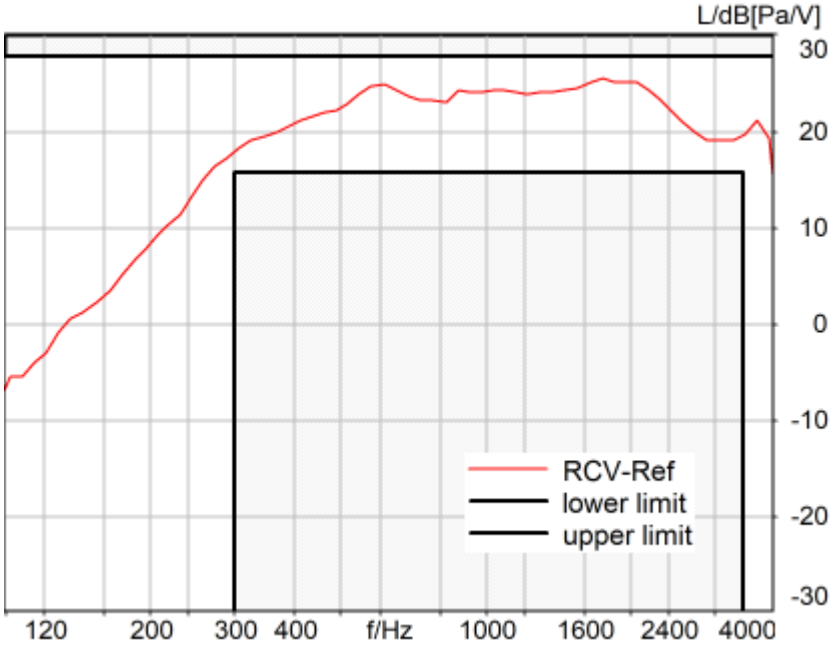
2	500Hz	28.07 dB
3	630Hz	27.47 dB
4	800Hz	30.73 dB
5	1000Hz	26.84 dB
6	1250Hz	27.56 dB
7	1600Hz	27.96 dB
8	2000Hz	26.92 dB
9	2500Hz	38.13 dB
10	3150Hz	44.42 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.84dB at 1000Hz.

2024/5/6 9:49 ACQUA

5.3 Frequency Response 8N FF HANB, Index: 1

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



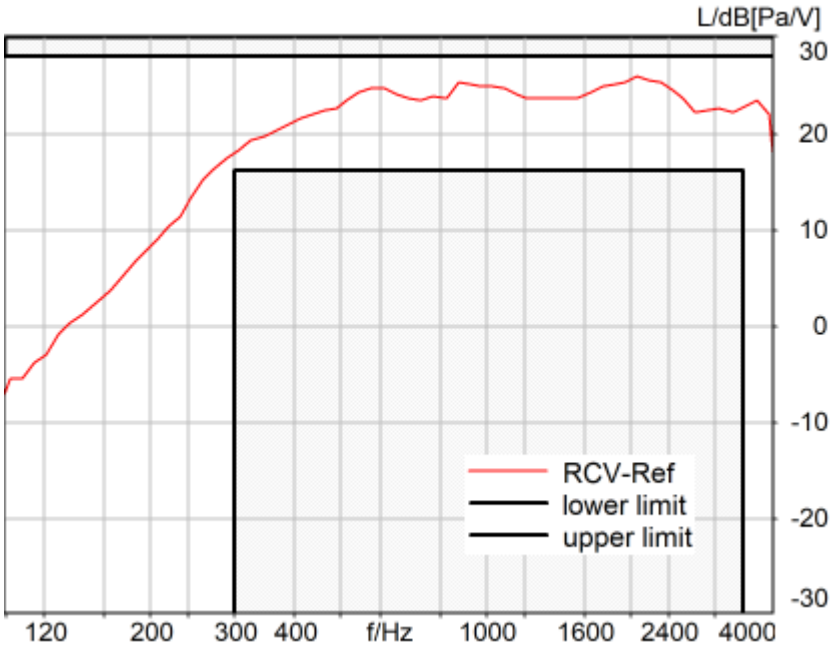
Absolute minimal distance
2.41 dB at 1747.8 Hz Ok

Ok

2024/5/6 9:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF HANB, Index: 1

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



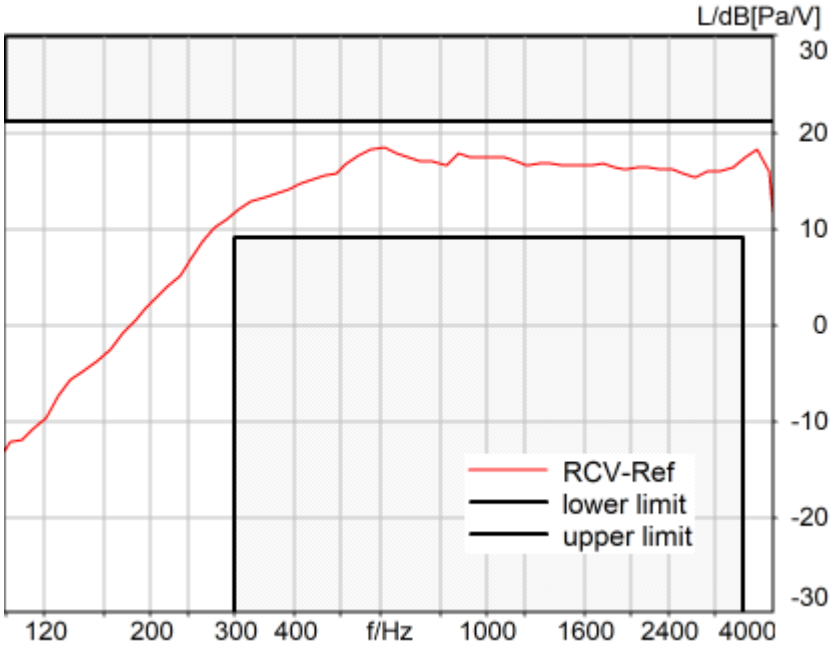
Absolute minimal distance
2.12 dB at 2057.5 Hz Ok

Ok

2024/5/6 9:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF HANB, Index: 1

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



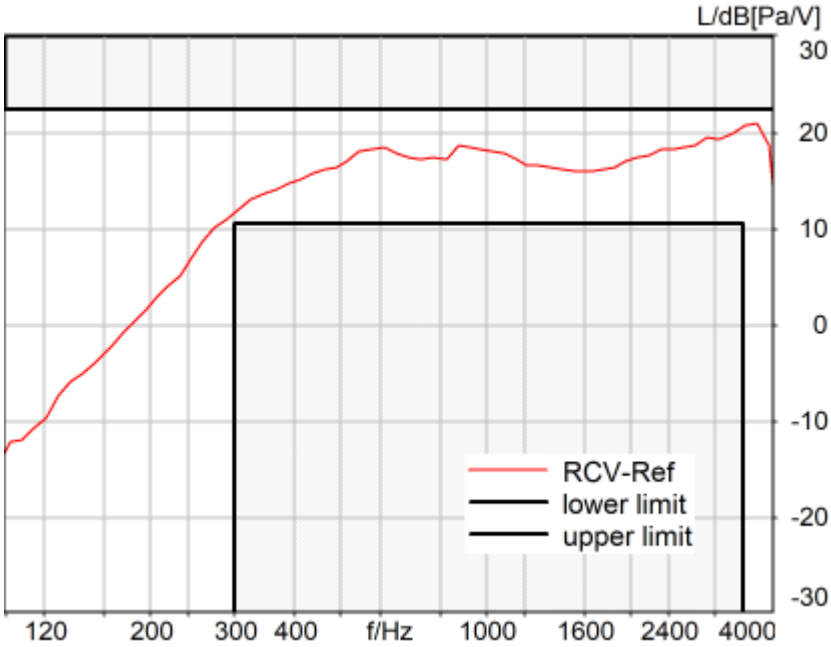
Absolute minimal distance
2.72 dB at 611.7 Hz Ok

Ok

2024/5/6 9:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF HANB, Index: 1

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



Absolute minimal distance
1.47 dB at 3657.5 Hz Ok

Ok

2024/5/6 9:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

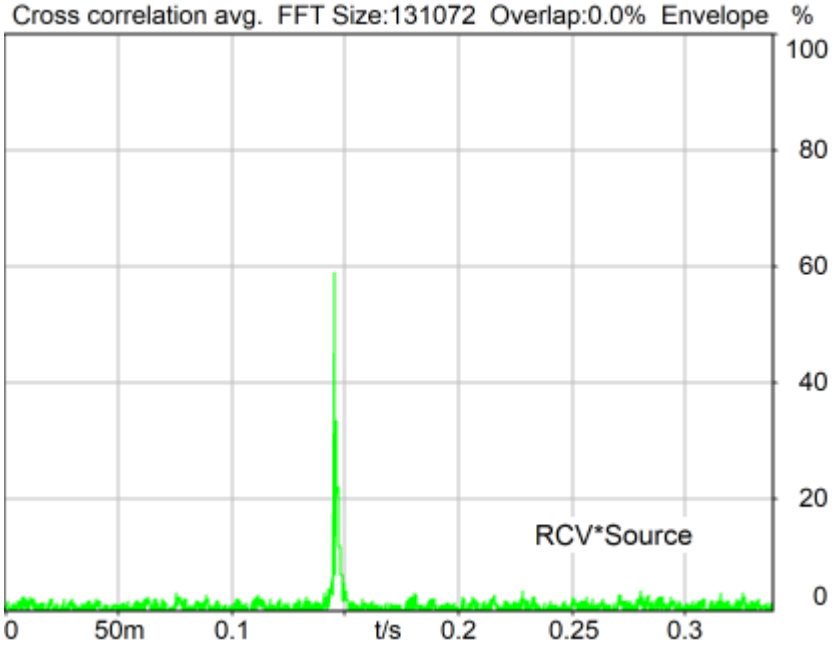
Measurement Object	LTE Band 41_20QPSK_100RB_0_EVS WB 24.4kbps_CH40620
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:14
Responsible Person	audio

Overall Receive Delay WB, Index: 1 3
5.1a Receive Volume Control Performance 8N WB, Index: 1 3
5.1b Receive Volume Control Performance 2N WB, Index: 1 4
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 5
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 6
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 8
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 10
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 12
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 14
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 15
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 15
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 16
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 18
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 20
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 22
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 24
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 25
5.3 Frequency Response 8N FF, Index: 1 25
5.3 Frequency Response 8N DF, Index: 1 26
5.3 Frequency Response 2N FF, Index: 1 27
5.3 Frequency Response 2N DF, Index: 1 28

Overall Receive Delay WB, Index: 1

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

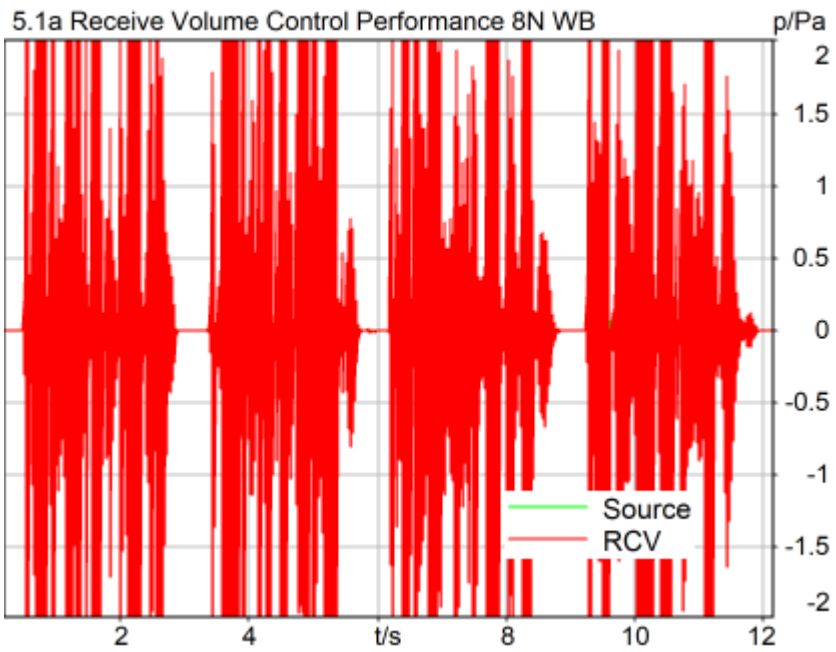


Channel	Delay
RCV*Source	145.6 ms

2024/5/5 20:10 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB, Index: 1

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



Correction

X - 70

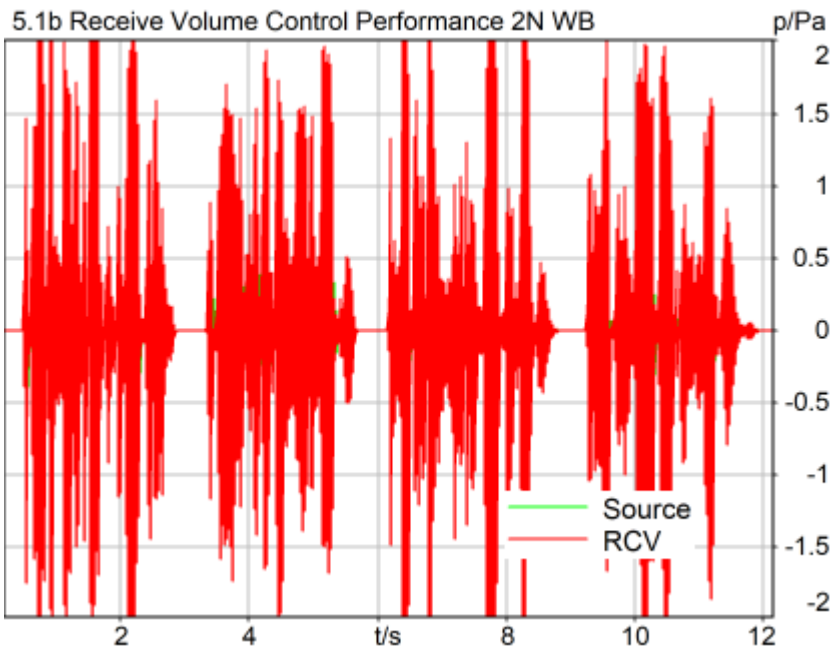
Channel	Speech level	Activity	Corrected speech level	
RCV	91.17 dB[SPL]	84.45%	21.17 dB[SPL]	Ok

Ok

2024/5/5 20:10 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N WB, Index: 1

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



Correction

X - 70

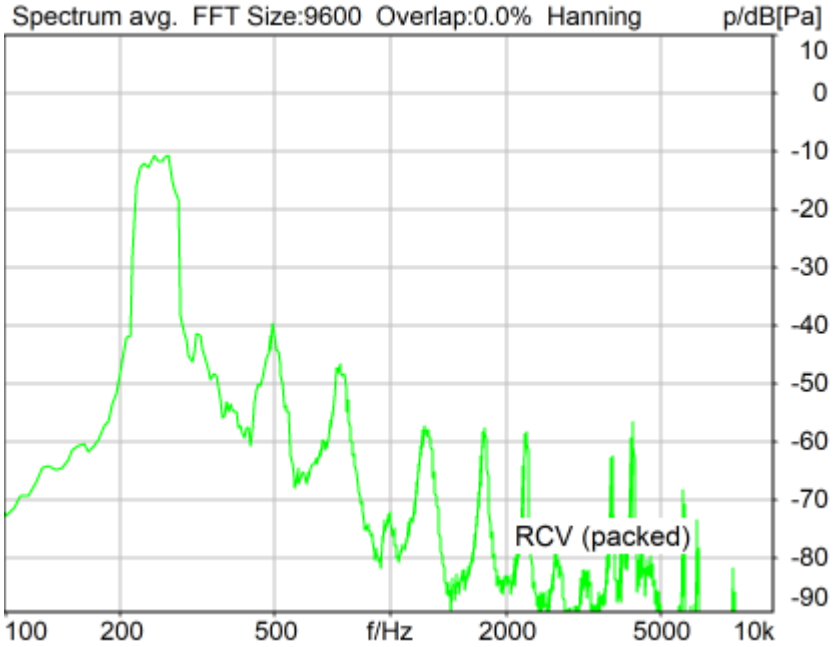
Channel	Speech level	Activity	Corrected speech level	
RCV	85.02 dB[SPL]	84.53%	15.02 dB[SPL]	Ok

Ok

2024/5/5 20:18 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



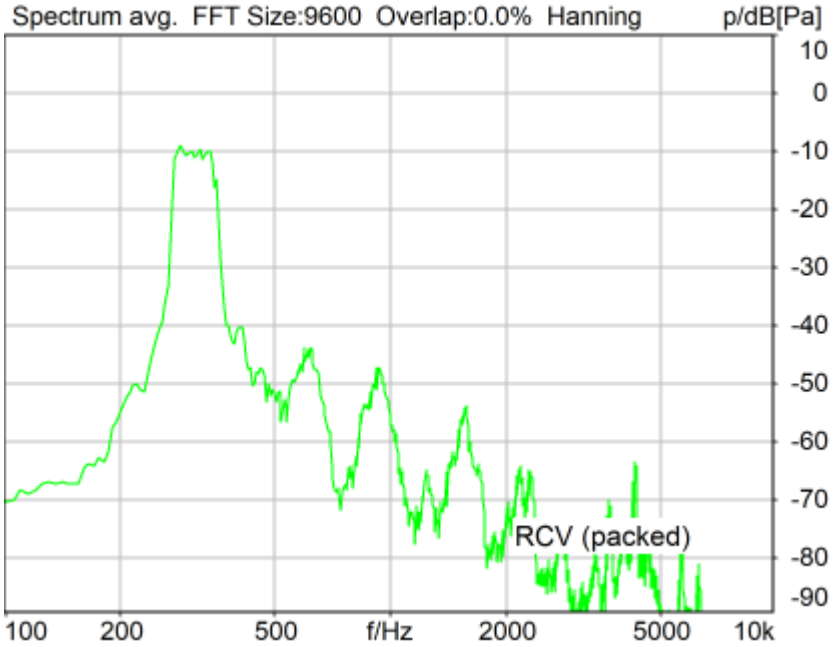
Distortion (Noise) RCV (packed): 31.02 dB (2.81%) Ok

Ok

2024/5/5 20:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



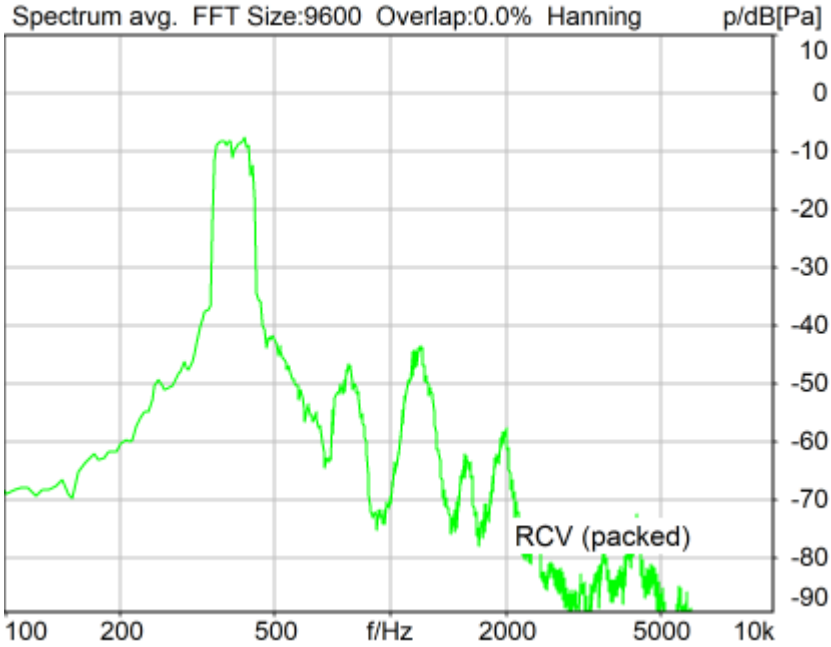
Distortion (Noise) RCV (packed): 31.87 dB (2.55%) Ok

Ok

2024/5/5 20:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



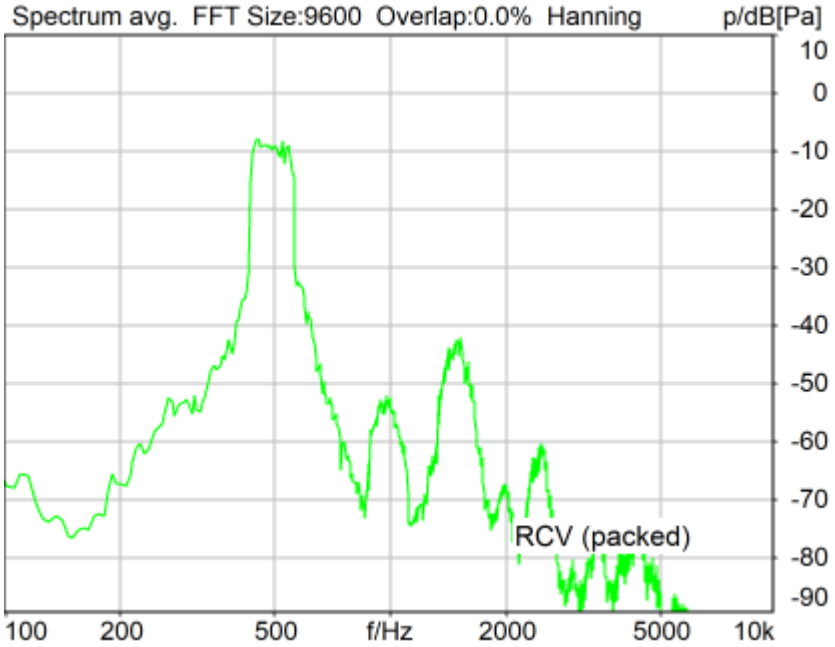
Distortion (Noise) RCV (packed): 31.92 dB (2.53%) Ok

Ok

2024/5/5 20:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



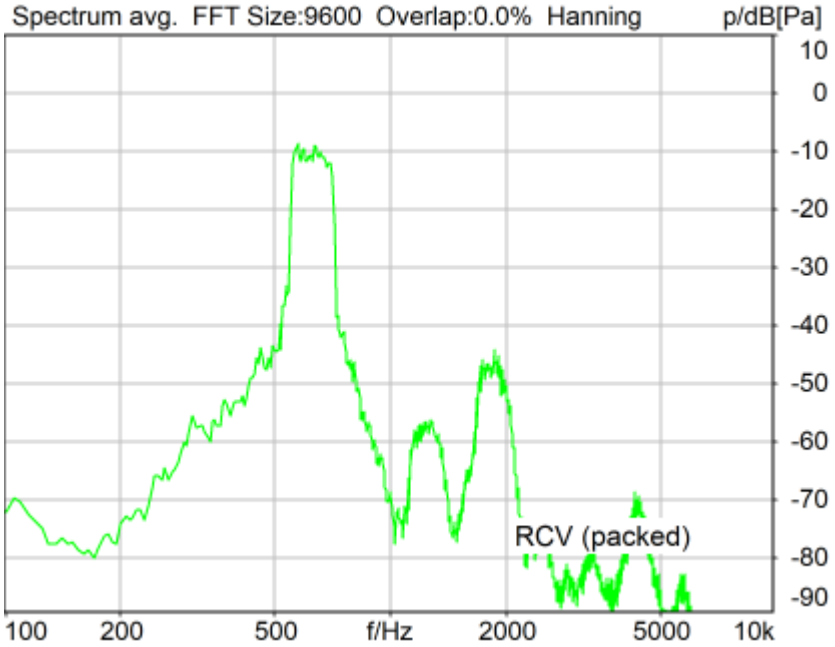
Distortion (Noise) RCV (packed): 29.76 dB (3.25%) Ok

Ok

2024/5/5 20:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



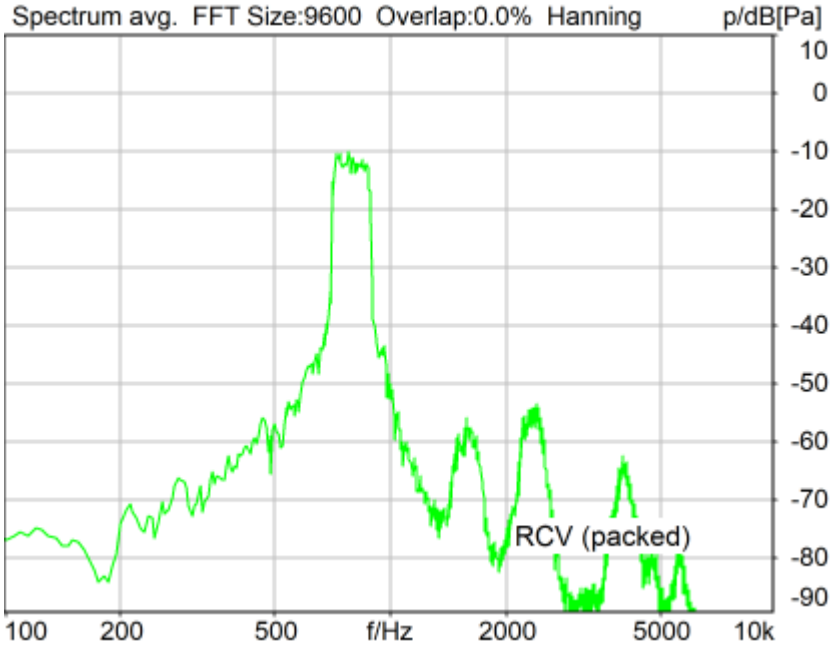
Distortion (Noise) RCV (packed): 30.91 dB (2.85%) Ok

Ok

2024/5/5 20:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



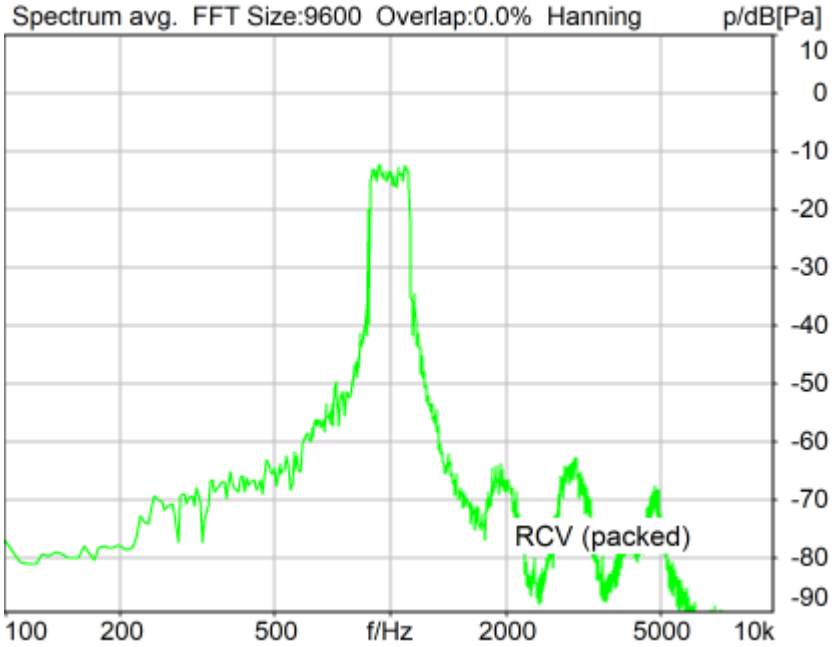
Distortion (Noise) RCV (packed): 33.47 dB (2.12%) Ok

Ok

2024/5/5 20:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



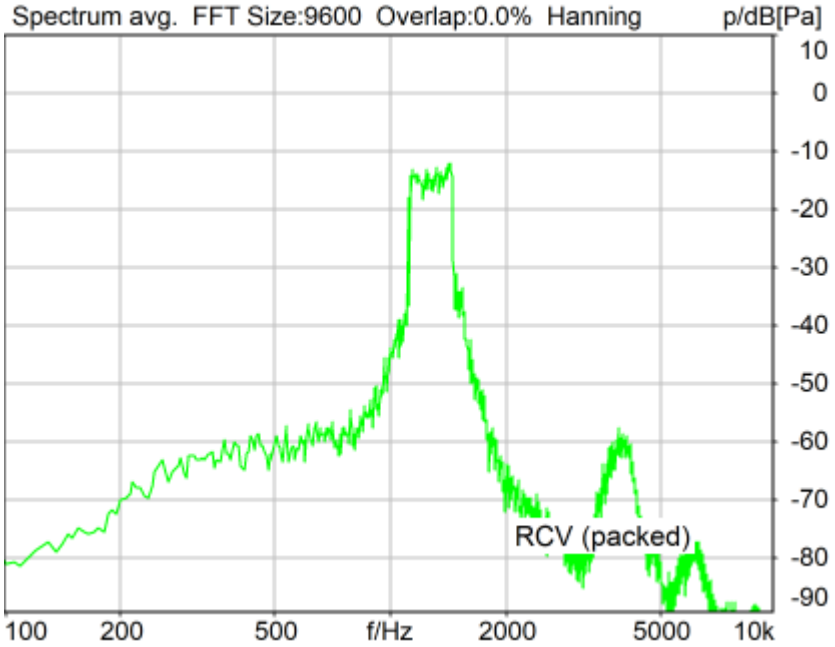
Distortion (Noise) RCV (packed): 31.73 dB (2.59%) Ok

Ok

2024/5/5 20:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



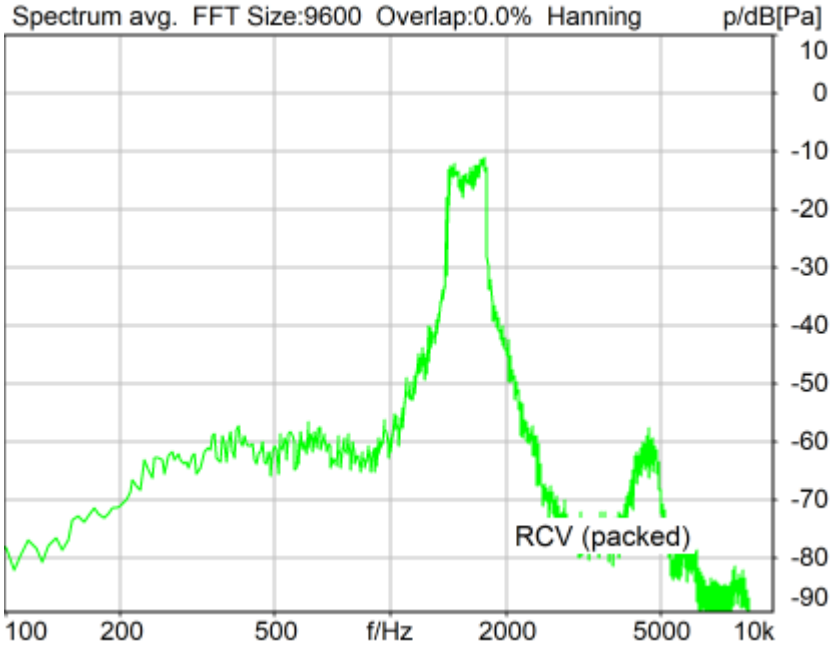
Distortion (Noise) RCV (packed): 22.92 dB (7.15%) Ok

Ok

2024/5/5 20:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



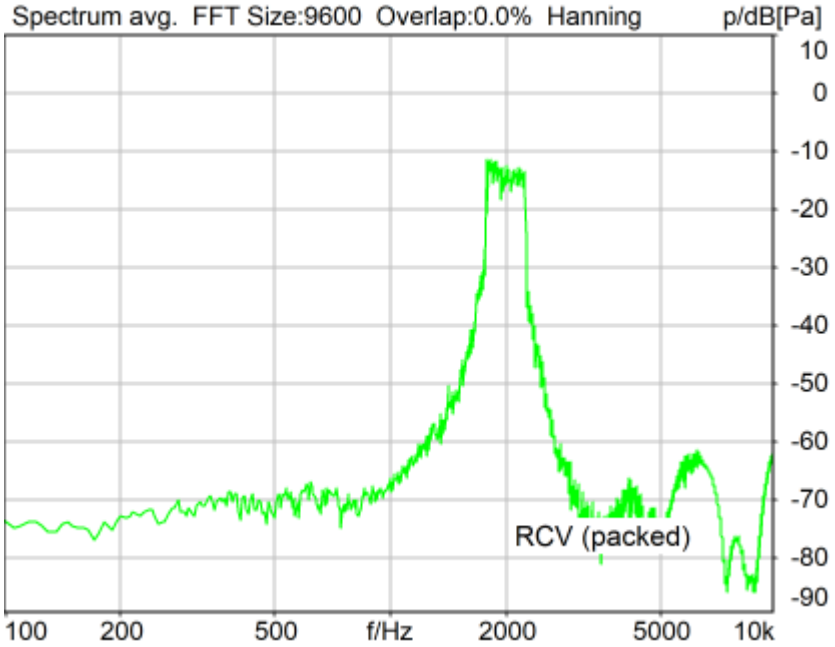
Distortion (Noise) RCV (packed): 24.69 dB (5.83%) Ok

Ok

2024/5/5 20:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



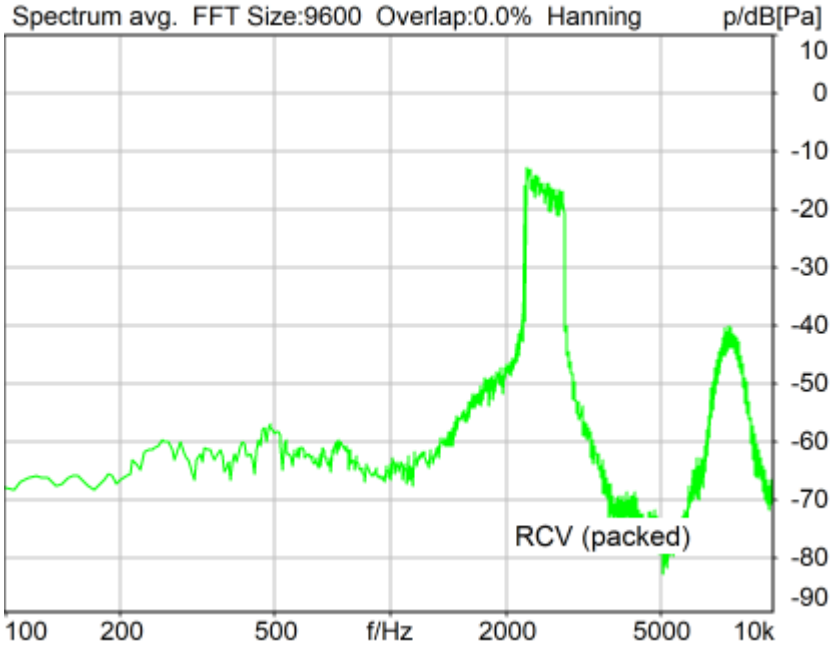
Distortion (Noise) RCV (packed): 24.19 dB (6.18%) Ok

Ok

2024/5/5 20:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



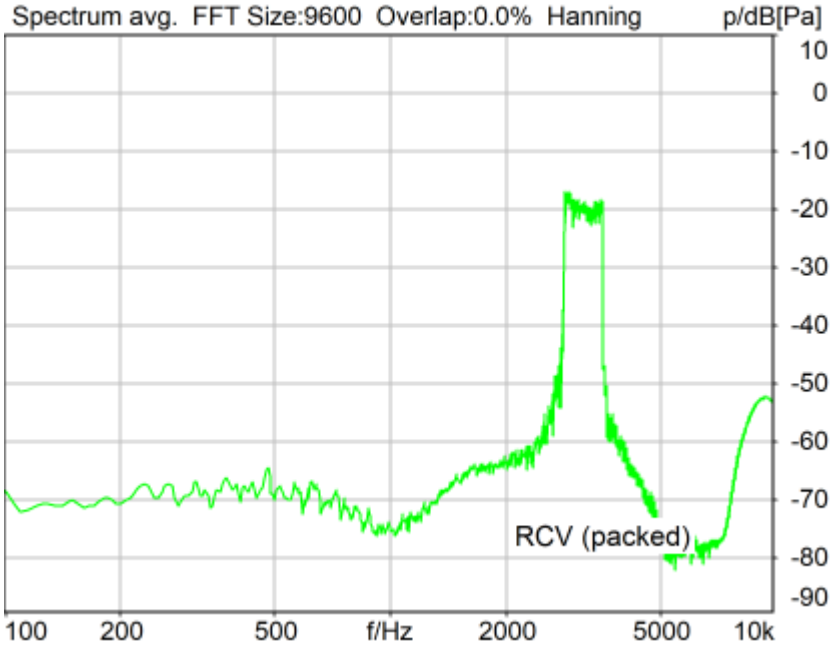
Distortion (Noise) RCV (packed): 22.73 dB (7.31%) Ok

Ok

2024/5/5 20:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



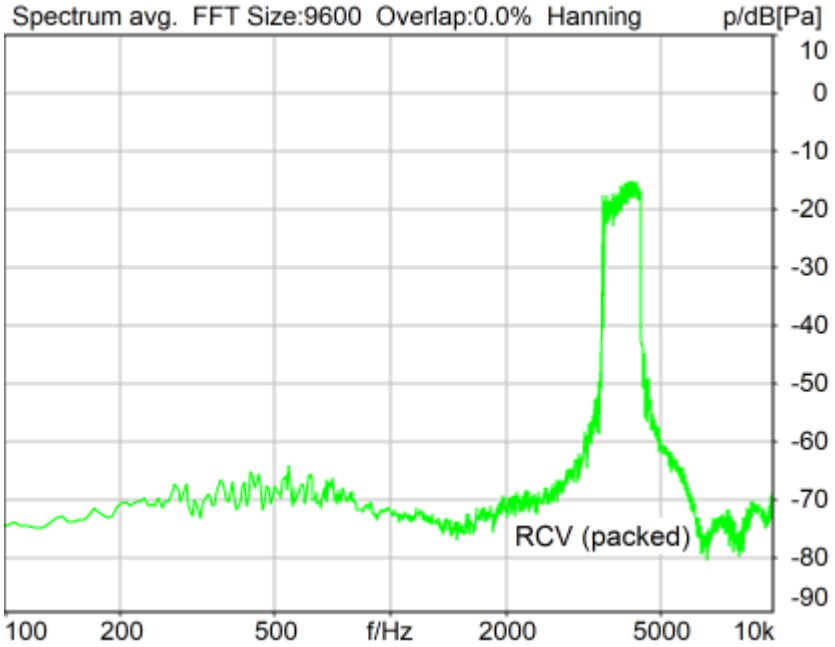
Distortion (Noise) RCV (packed): 28.25 dB (3.87%) Ok

Ok

2024/5/5 20:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



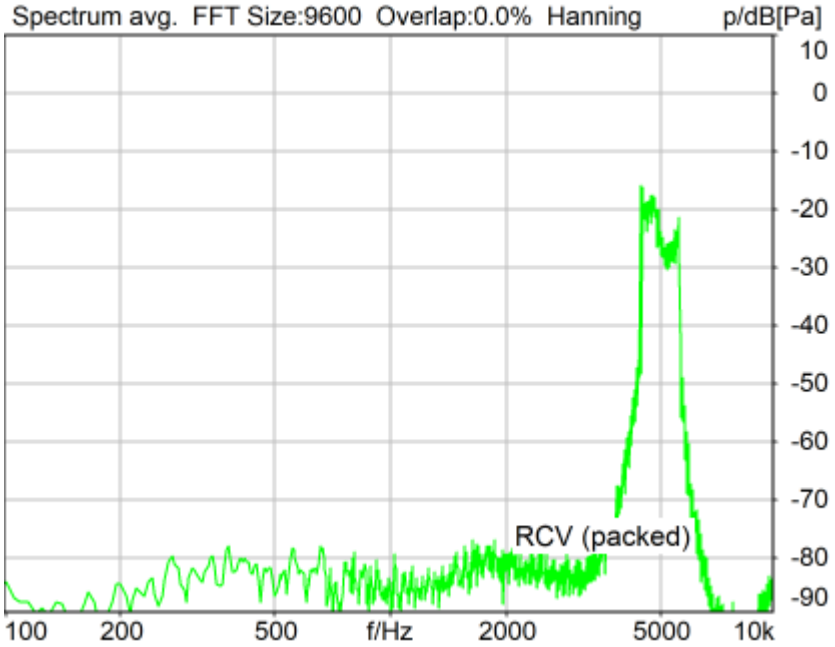
Distortion (Noise) RCV (packed): 30.97 dB (2.83%) Ok

Ok

2024/5/5 20:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 33.47 dB (2.12%) Ok

Ok

2024/5/5 20:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

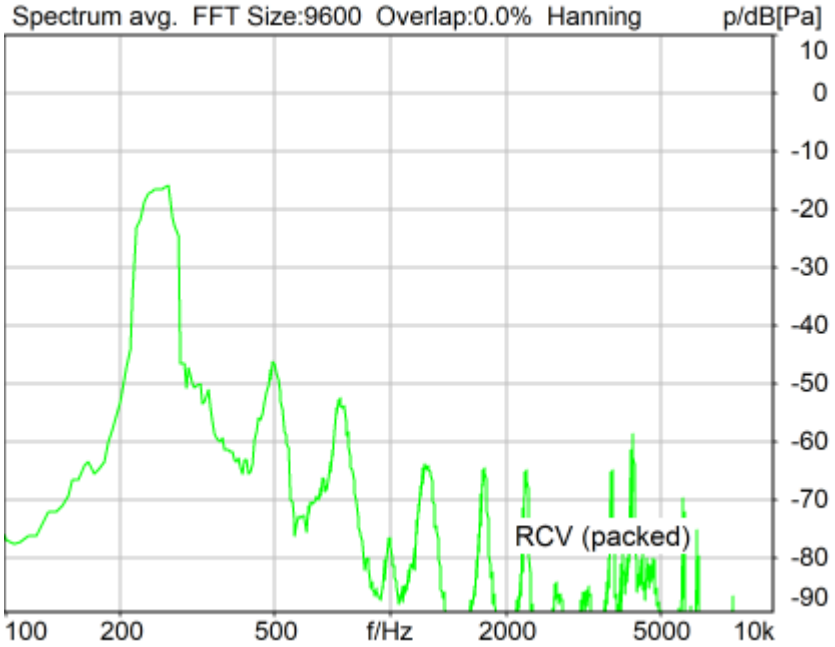
Region	Frequency	SDNR
1	250Hz	31.02 dB
2	315Hz	31.87 dB
3	400Hz	31.92 dB
4	500Hz	29.76 dB
5	630Hz	30.91 dB
6	800Hz	33.47 dB
7	1000Hz	31.73 dB
8	1250Hz	22.92 dB
9	1600Hz	24.69 dB
10	2000Hz	24.19 dB
11	2500Hz	22.73 dB
12	3150Hz	28.25 dB
13	4000Hz	30.97 dB
14	5000Hz	33.47 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.73dB at 2500Hz.

2024/5/5 20:16 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



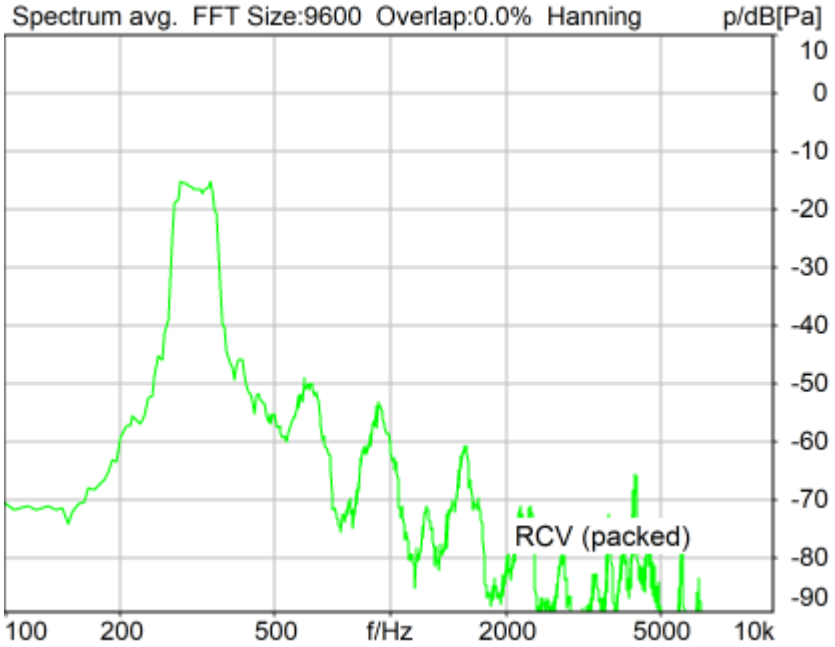
Distortion (Noise) RCV (packed): 30.96 dB (2.83%) Ok

Ok

2024/5/5 20:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



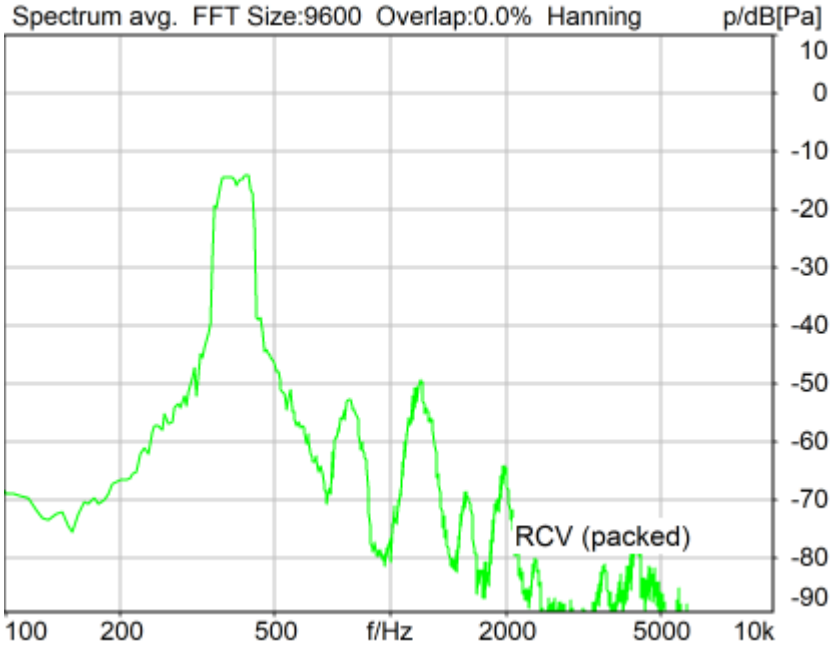
Distortion (Noise) RCV (packed): 31.48 dB (2.67%) Ok

Ok

2024/5/5 20:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



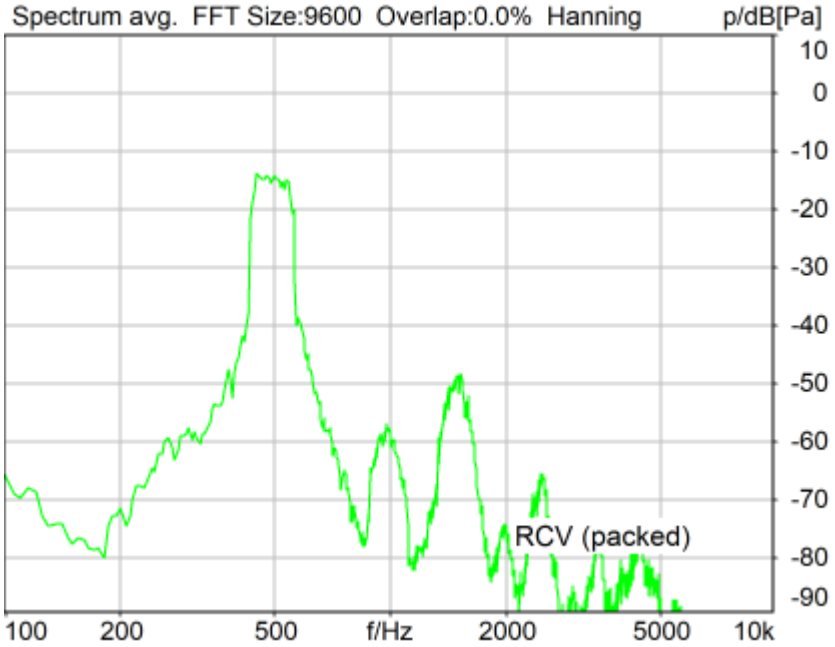
Distortion (Noise) RCV (packed): 31.49 dB (2.66%) Ok

Ok

2024/5/5 20:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



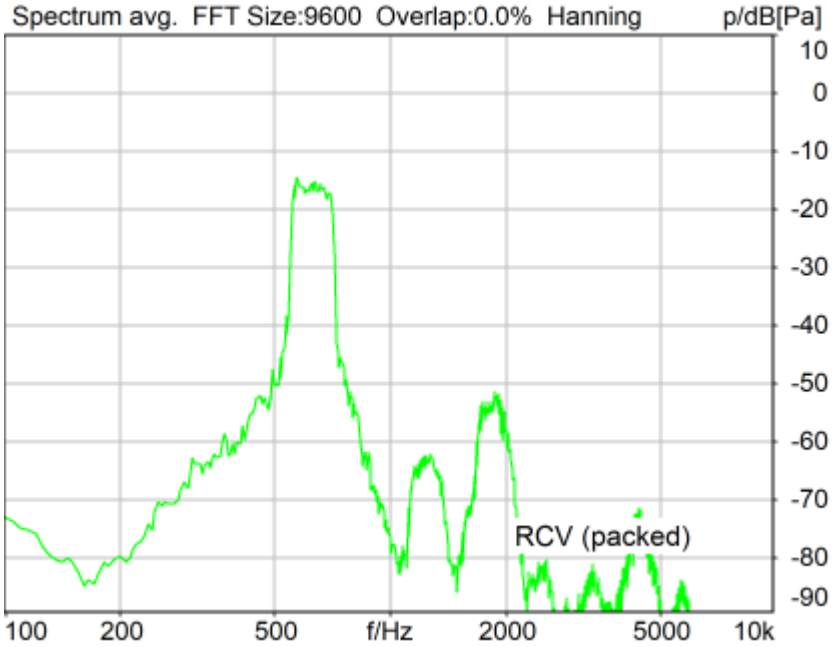
Distortion (Noise) RCV (packed): 30.41 dB (3.02%) Ok

Ok

2024/5/5 20:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



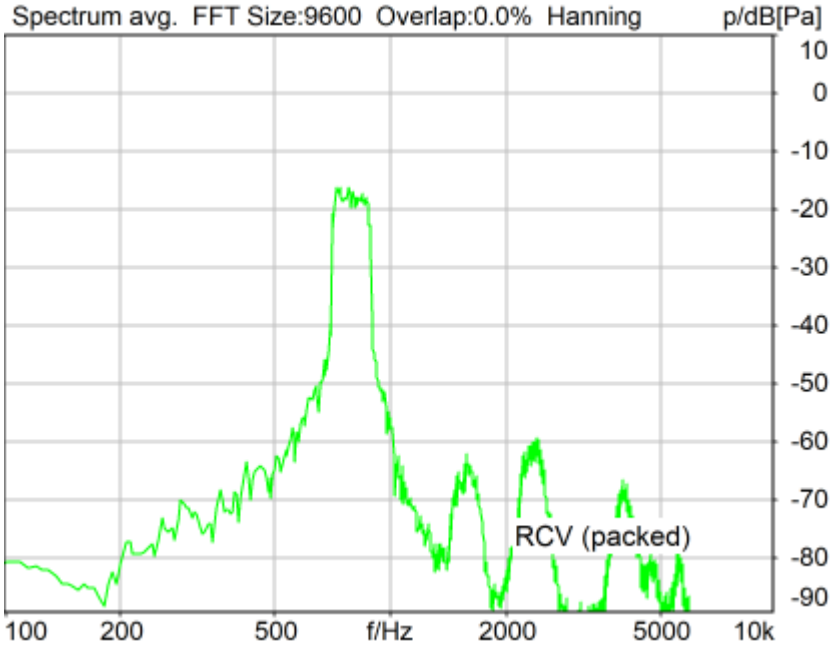
Distortion (Noise) RCV (packed): 31.51 dB (2.66%) Ok

Ok

2024/5/5 20:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



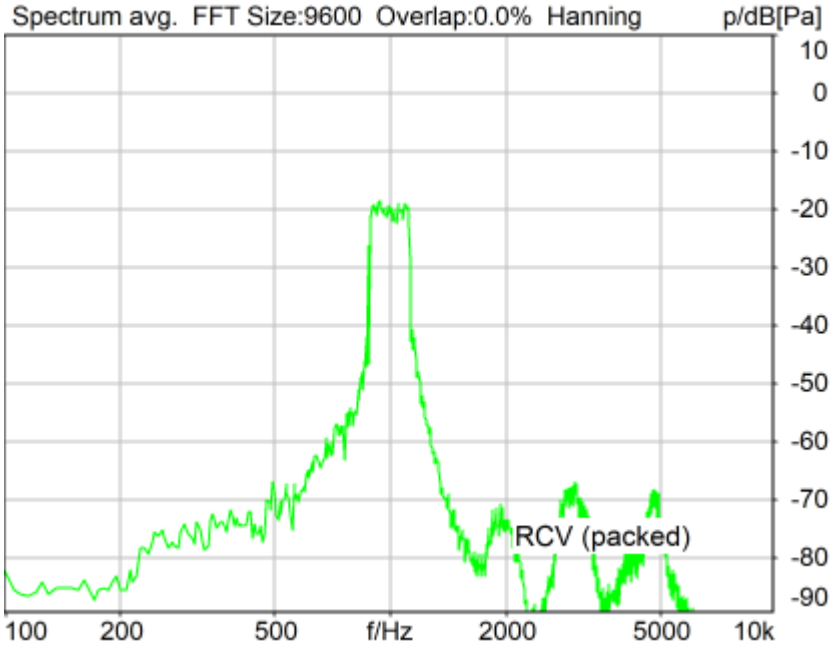
Distortion (Noise) RCV (packed): 33.70 dB (2.07%) Ok

Ok

2024/5/5 20:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



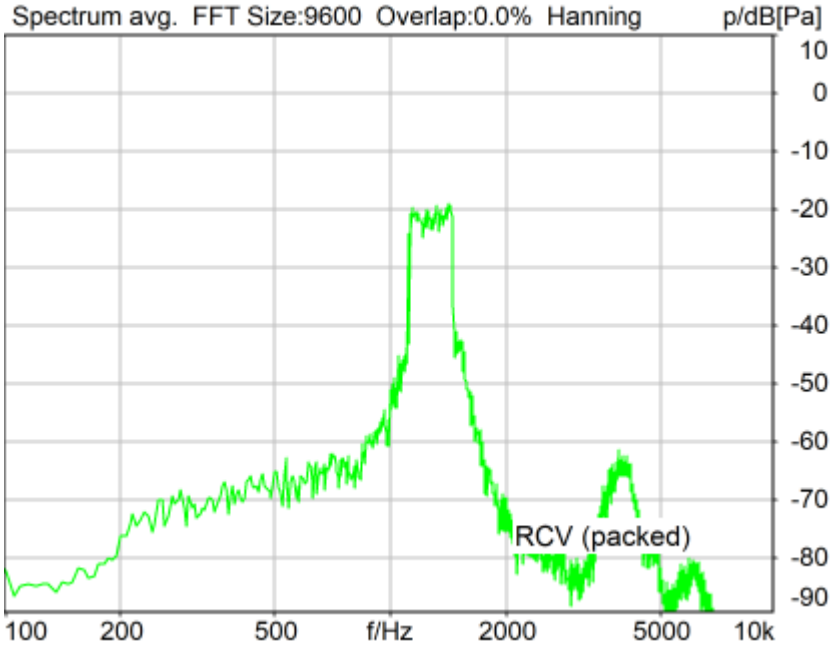
Distortion (Noise) RCV (packed): 31.60 dB (2.63%) Ok

Ok

2024/5/5 20:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



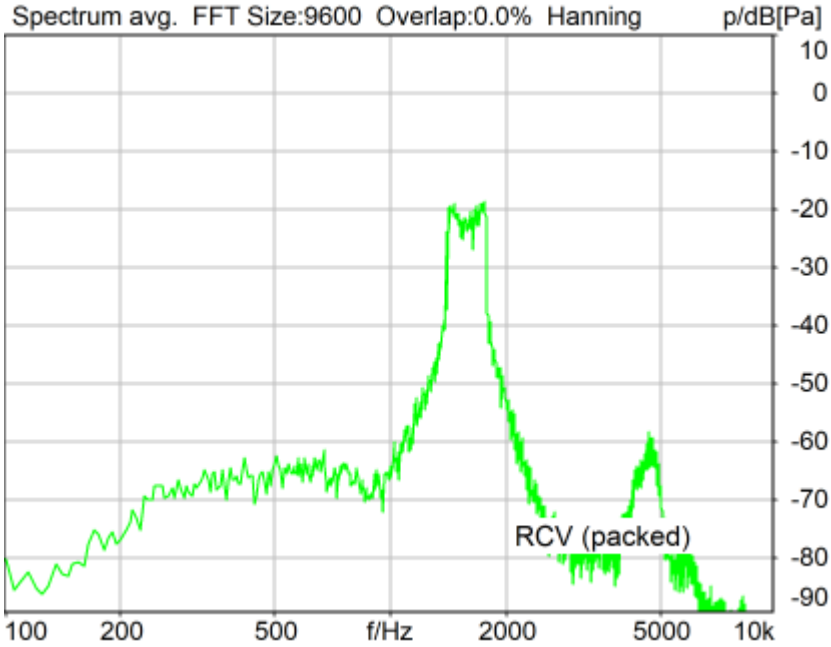
Distortion (Noise) RCV (packed): 24.54 dB (5.93%) Ok

Ok

2024/5/5 20:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



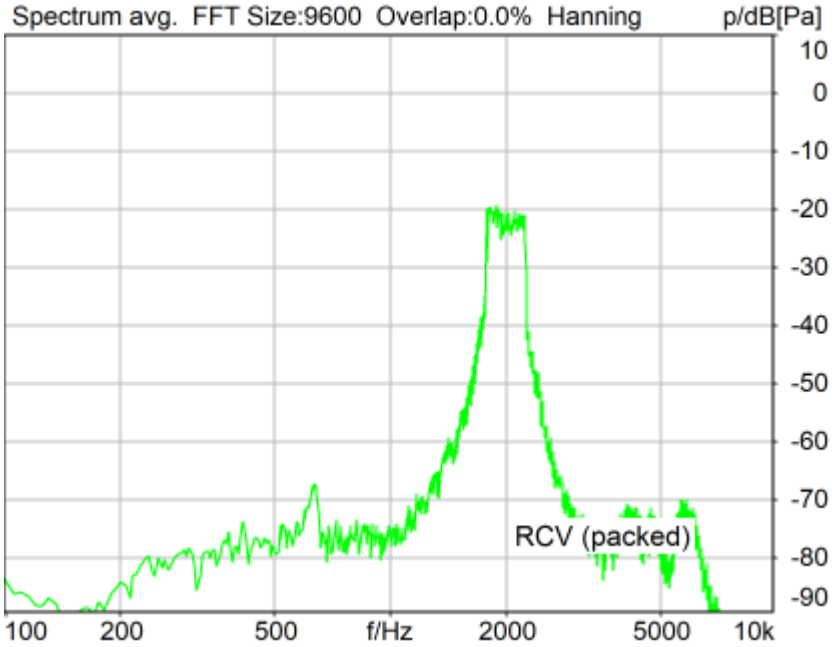
Distortion (Noise) RCV (packed): 24.50 dB (5.95%) Ok

Ok

2024/5/5 20:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



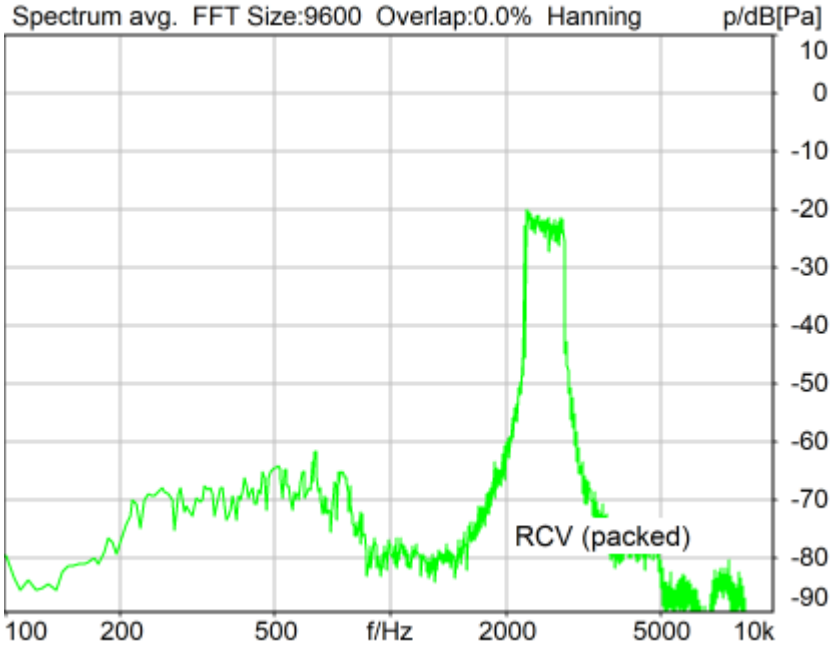
Distortion (Noise) RCV (packed): 23.92 dB (6.37%) Ok

Ok

2024/5/5 20:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



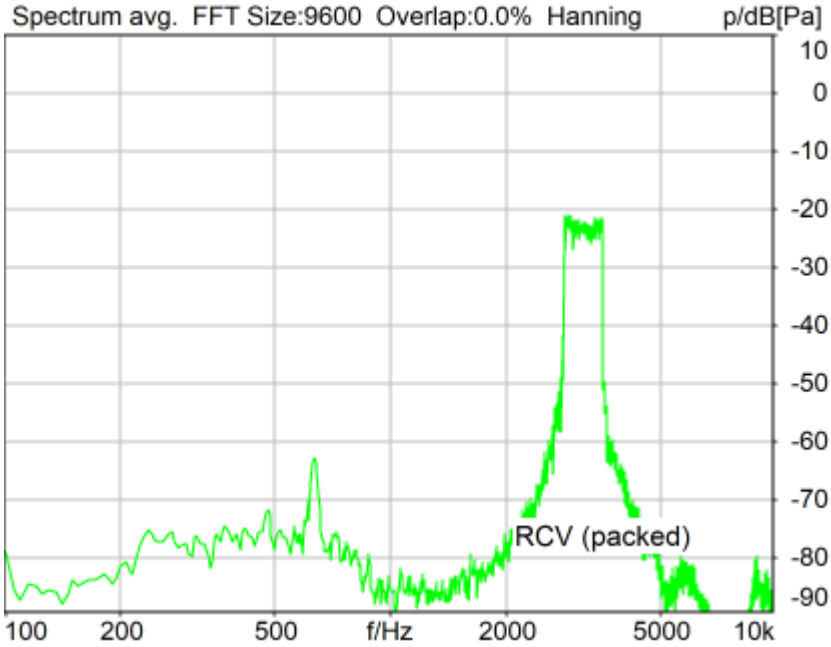
Distortion (Noise) RCV (packed): 30.09 dB (3.13%) Ok

Ok

2024/5/5 20:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



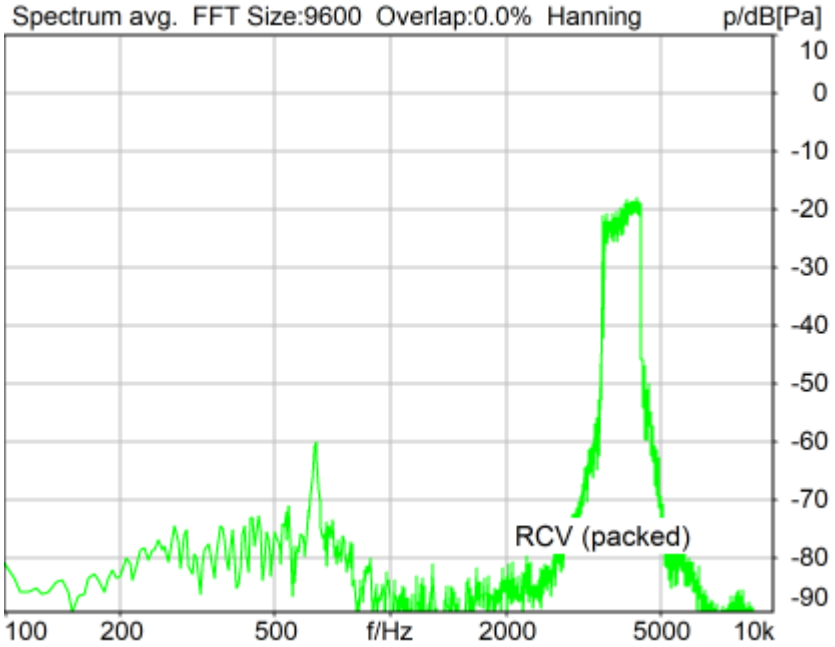
Distortion (Noise) RCV (packed): 33.83 dB (2.03%) Ok

Ok

2024/5/5 20:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



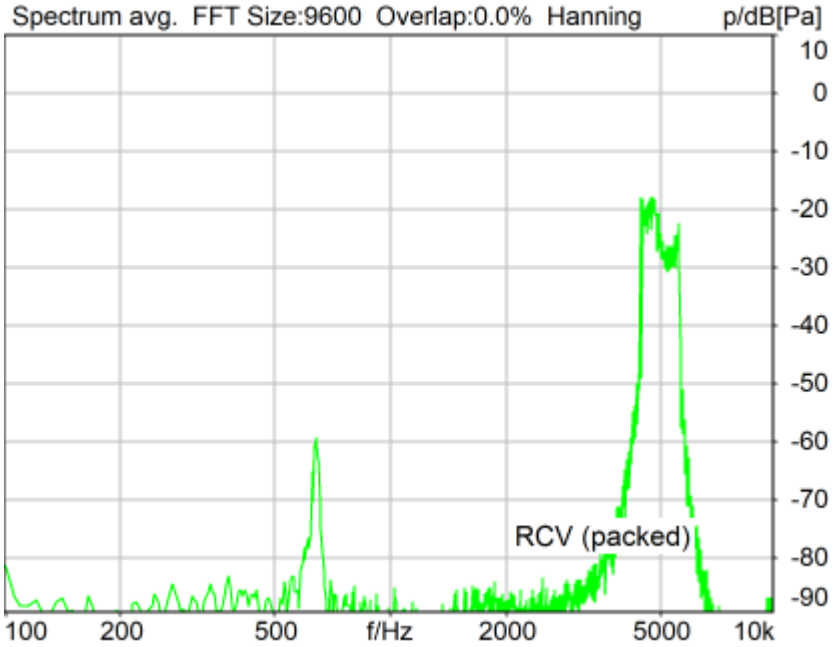
Distortion (Noise) RCV (packed): 34.87 dB (1.80%) Ok

Ok

2024/5/5 20:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 35.15 dB (1.75%) Ok

Ok

2024/5/5 20:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

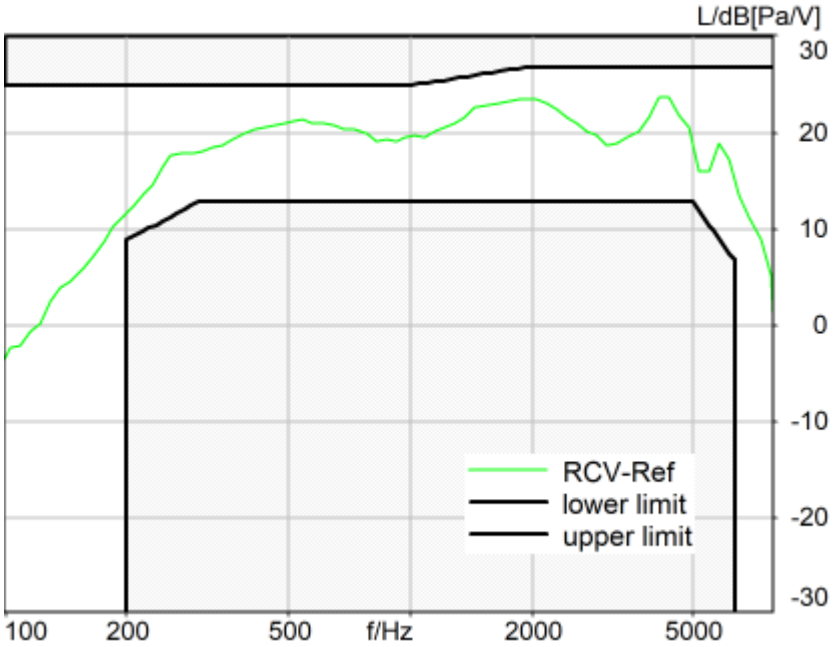
Region	Frequency	SDNR
1	250Hz	30.96 dB
2	315Hz	31.48 dB
3	400Hz	31.49 dB
4	500Hz	30.41 dB
5	630Hz	31.51 dB
6	800Hz	33.70 dB
7	1000Hz	31.60 dB
8	1250Hz	24.54 dB
9	1600Hz	24.50 dB
10	2000Hz	23.92 dB
11	2500Hz	30.09 dB
12	3150Hz	33.83 dB
13	4000Hz	34.87 dB
14	5000Hz	35.15 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.92dB at 2000Hz.

2024/5/5 20:24 ACQUA

5.3 Frequency Response 8N FF, Index: 1

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



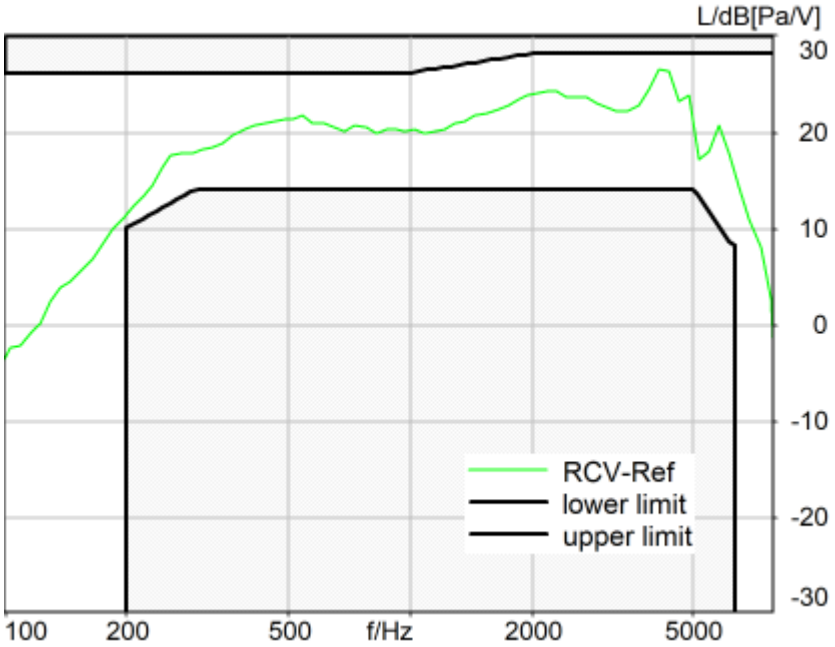
Absolute minimal distance
3.18 dB at 1848.0 Hz Ok

Ok

2024/5/5 20:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF, Index: 1

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



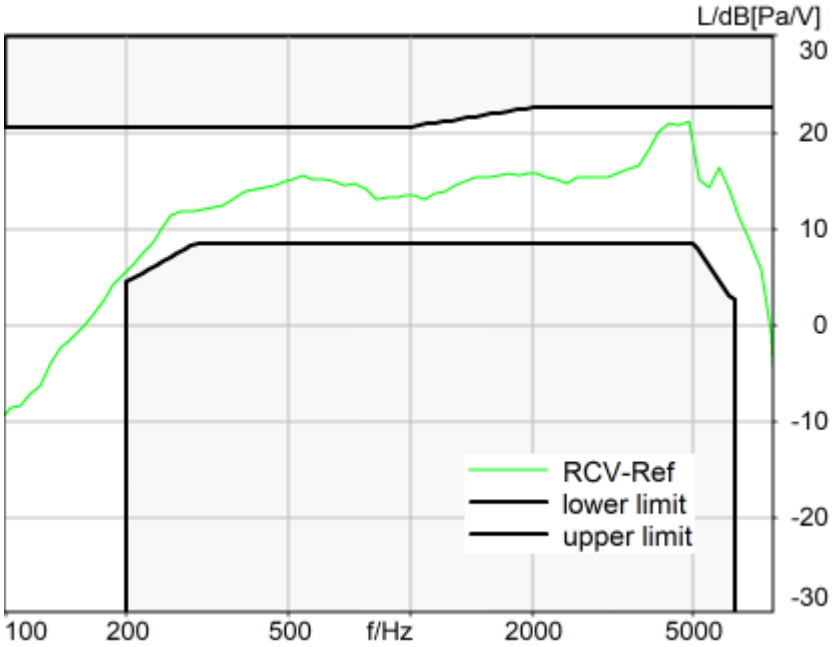
Absolute minimal distance
1.70 dB at 4119.5 Hz Ok

Ok

2024/5/5 20:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF, Index: 1

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



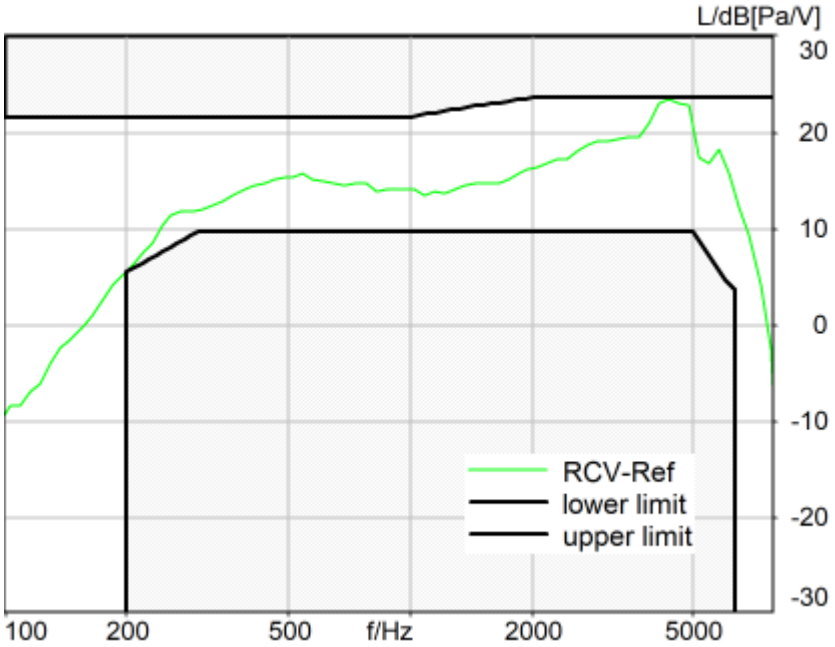
Absolute minimal distance
1.44 dB at 4870.0 Hz Ok

Ok

2024/5/5 20:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF, Index: 1

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



Absolute minimal distance
0.27 dB at 4369.4 Hz Ok

Ok

2024/5/5 20:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

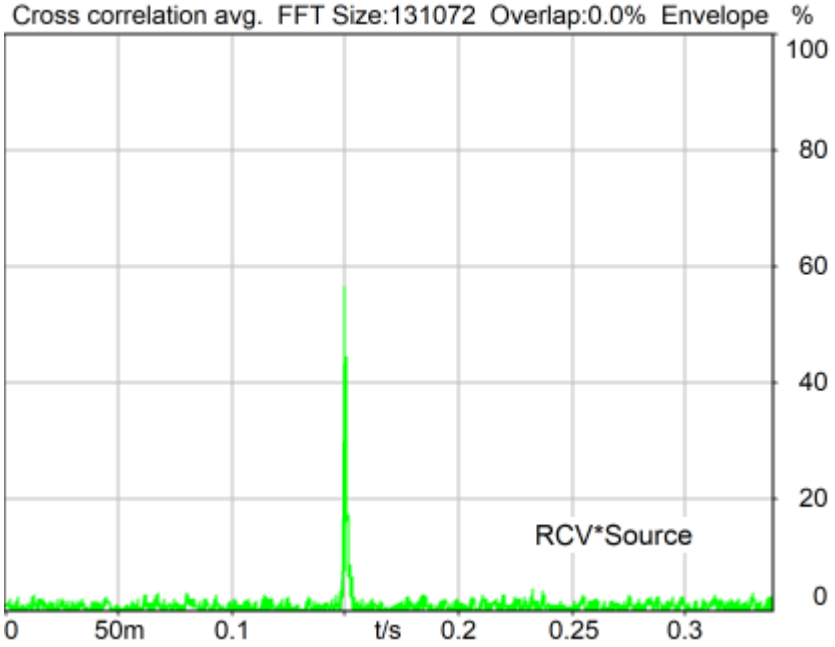
Measurement Object	LTE Band 66_20QPSK_100RB_0_EVS NB 24.4kbps_CH132322
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:17
Responsible Person	audio

Overall Receive Delay NB, Index: 1 3
5.1a Receive Volume Control Performance 8N NB, Index: 1 3
5.1b Receive Volume Control Performance 2N NB, Index: 1 4
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 5
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 6
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 7
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 8
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 9
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 10
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 11
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 11
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 12
5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1 13
5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1 14
5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1 15
5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1 16
5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1 17
5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1 18
5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1 19
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 19
5.3 Frequency Response 8N FF HANB, Index: 1 20
5.3 Frequency Response 8N DF HANB, Index: 1 21
5.3 Frequency Response 2N FF HANB, Index: 1 21
5.3 Frequency Response 2N DF HANB, Index: 1 22

Overall Receive Delay NB, Index: 1

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

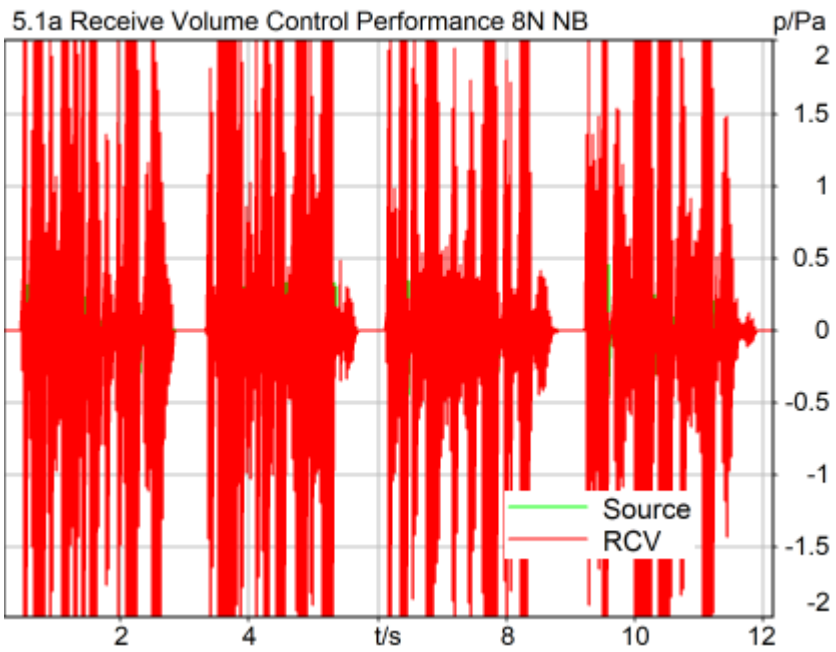


Channel	Delay
RCV*Source	150.1 ms

2024/5/5 18:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB, Index: 1

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



Correction

X - 70

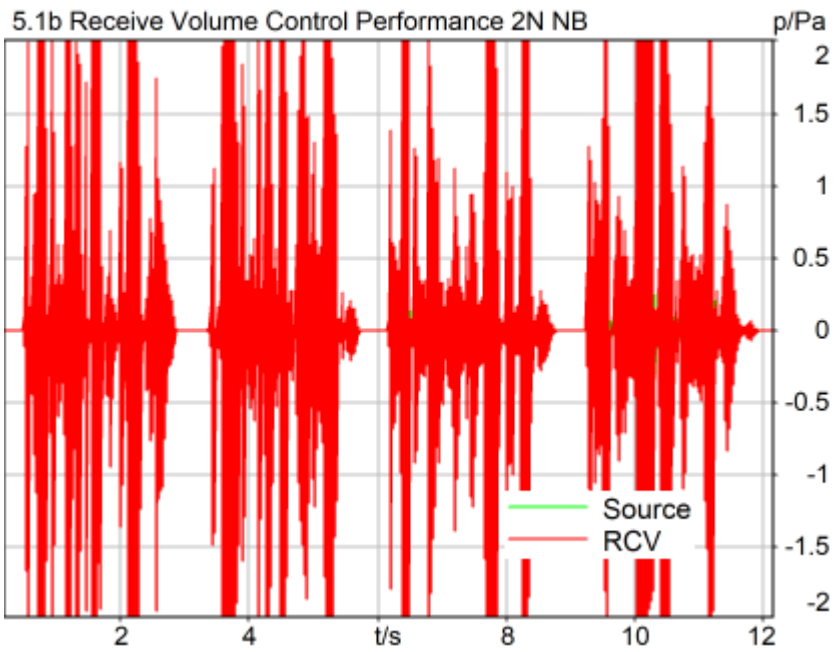
Channel	Speech level	Activity	Corrected speech level	
RCV	92.46 dB[SPL]	80.34%	22.46 dB[SPL]	Ok

Ok

2024/5/5 18:37 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N NB, Index: 1

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



Correction

X - 70

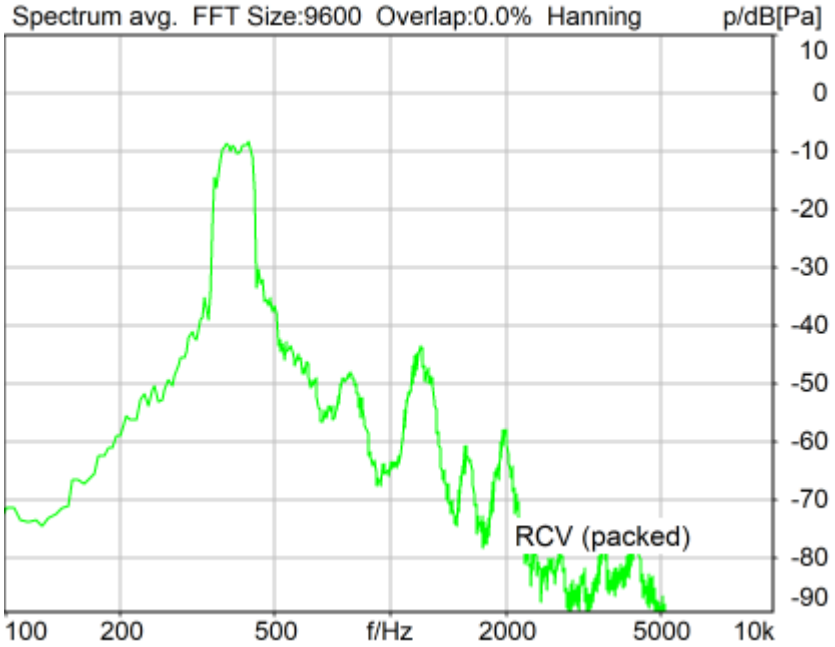
Channel	Speech level	Activity	Corrected speech level	
RCV	87.77 dB[SPL]	80.27%	17.77 dB[SPL]	Ok

Ok

2024/5/5 18:30 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



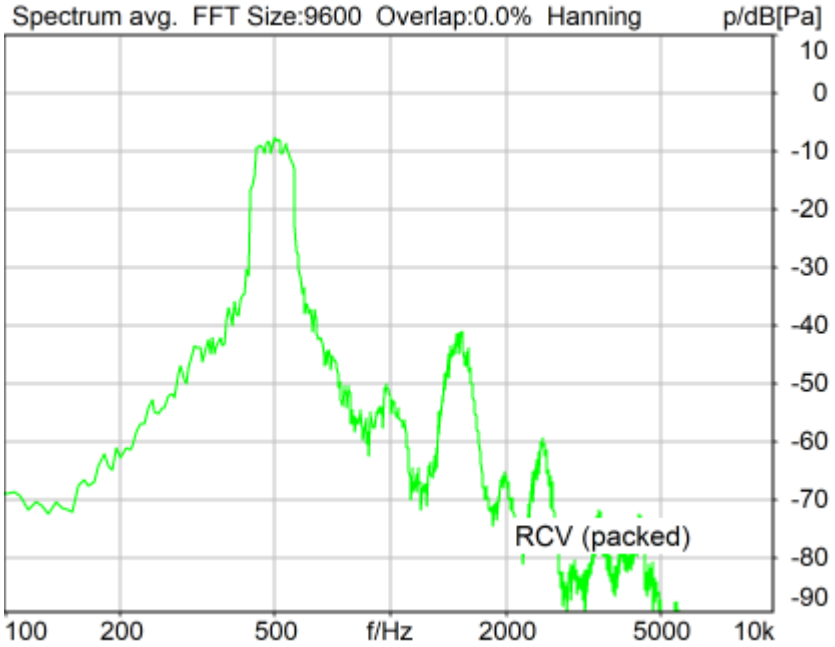
Distortion (Noise) RCV (packed): 29.67 dB (3.29%) Ok

Ok

2024/5/5 18:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



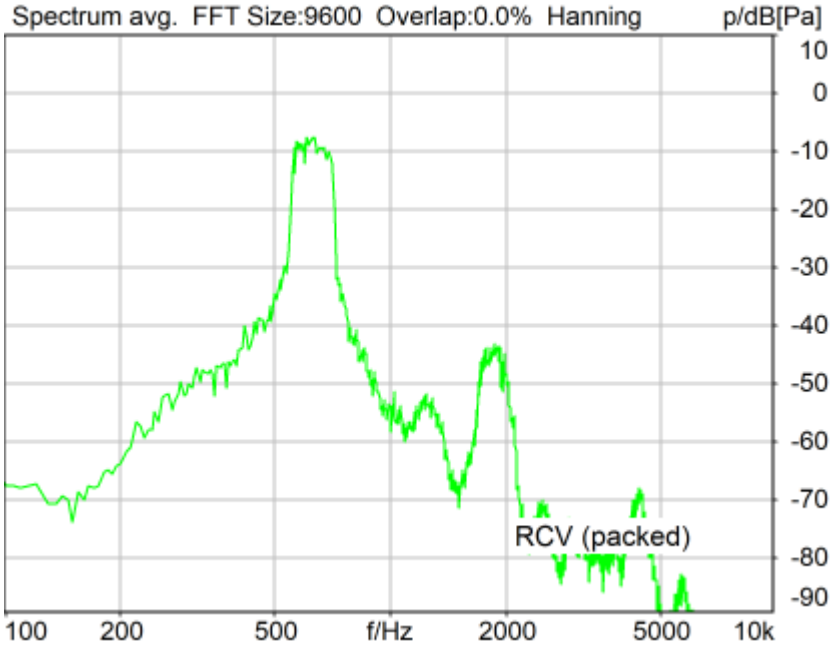
Distortion (Noise) RCV (packed): 28.13 dB (3.92%) Ok

Ok

2024/5/5 18:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



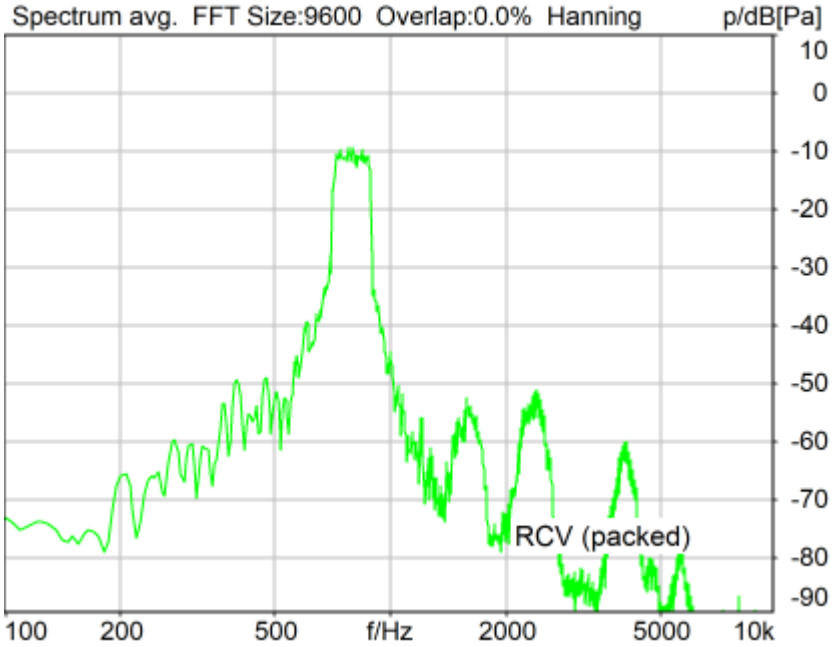
Distortion (Noise) RCV (packed): 27.72 dB (4.11%) Ok

Ok

2024/5/5 18:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



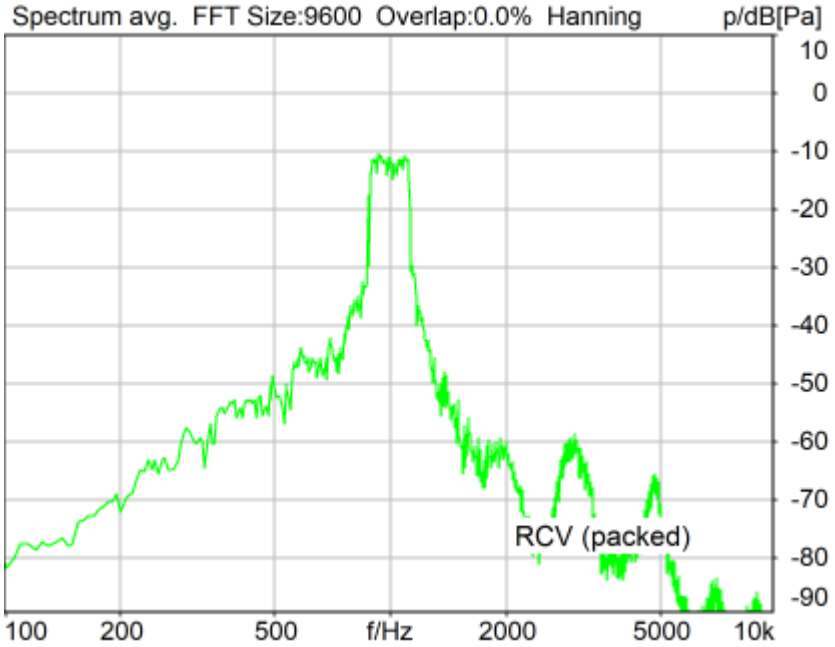
Distortion (Noise) RCV (packed): 30.04 dB (3.15%) Ok

Ok

2024/5/5 18:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



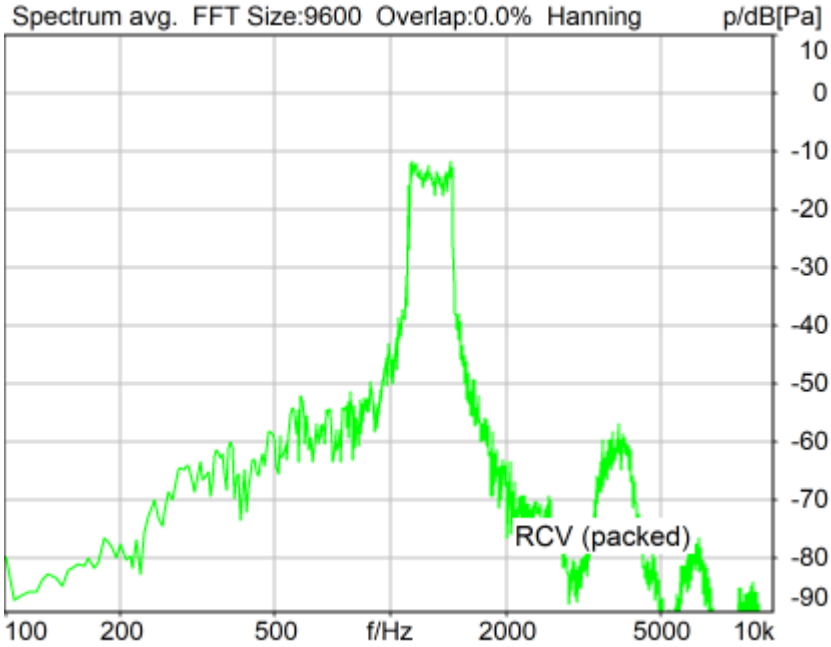
Distortion (Noise) RCV (packed): 26.10 dB (4.95%) Ok

Ok

2024/5/5 18:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



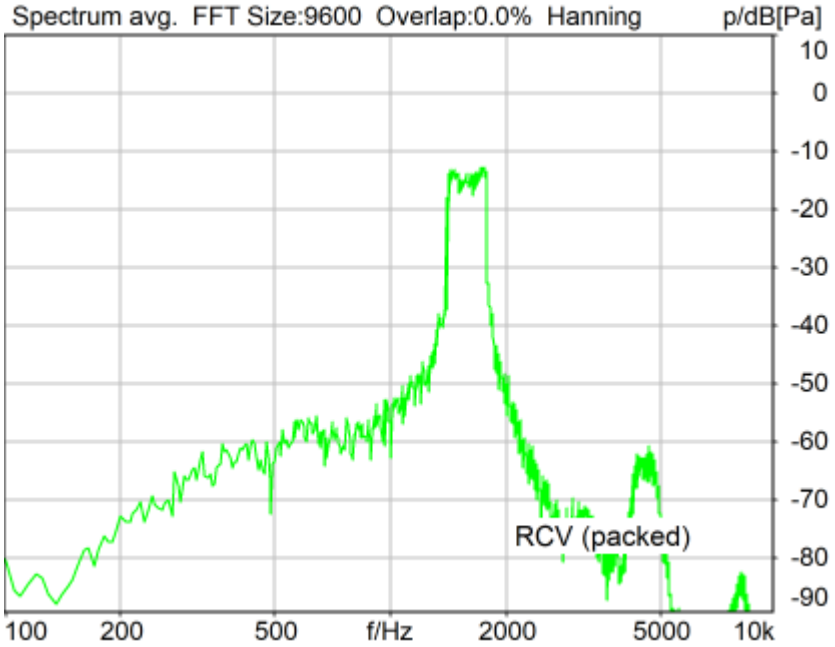
Distortion (Noise) RCV (packed): 25.42 dB (5.36%) Ok

Ok

2024/5/5 18:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



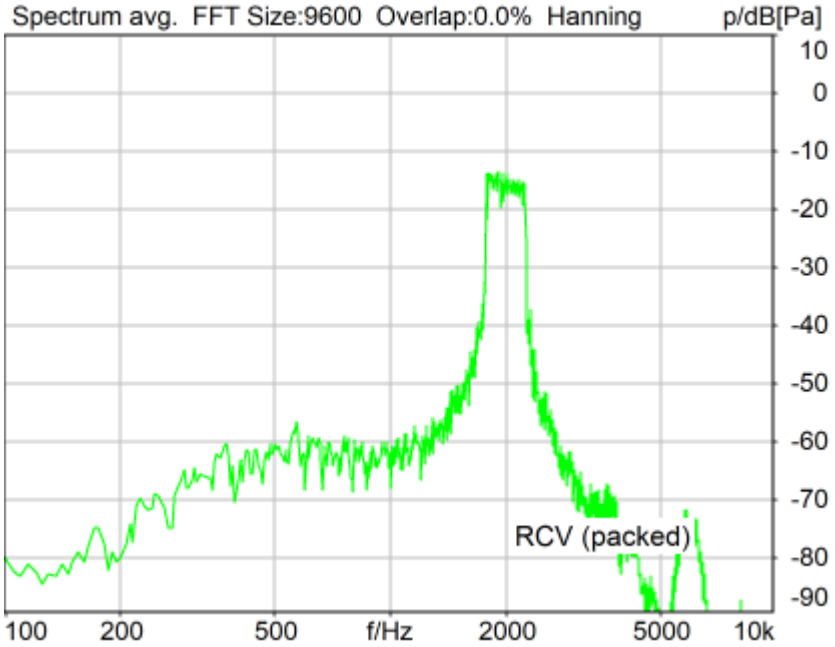
Distortion (Noise) RCV (packed): 28.04 dB (3.96%) Ok

Ok

2024/5/5 18:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



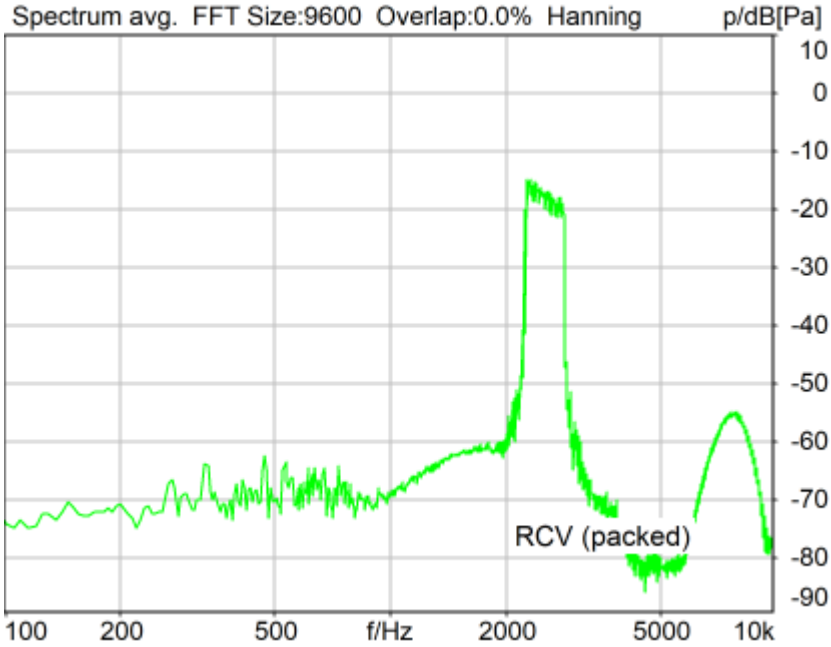
Distortion (Noise) RCV (packed): 27.89 dB (4.03%) Ok

Ok

2024/5/5 18:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



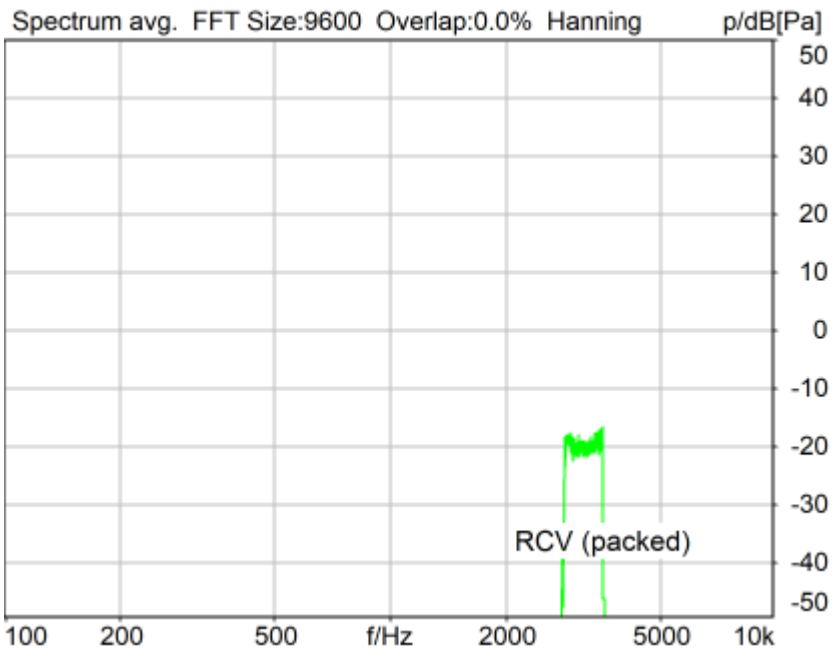
Distortion (Noise) RCV (packed): 31.42 dB (2.68%) Ok

Ok

2024/5/5 18:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 29.40 dB (3.39%) Ok

Ok

2024/5/5 18:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

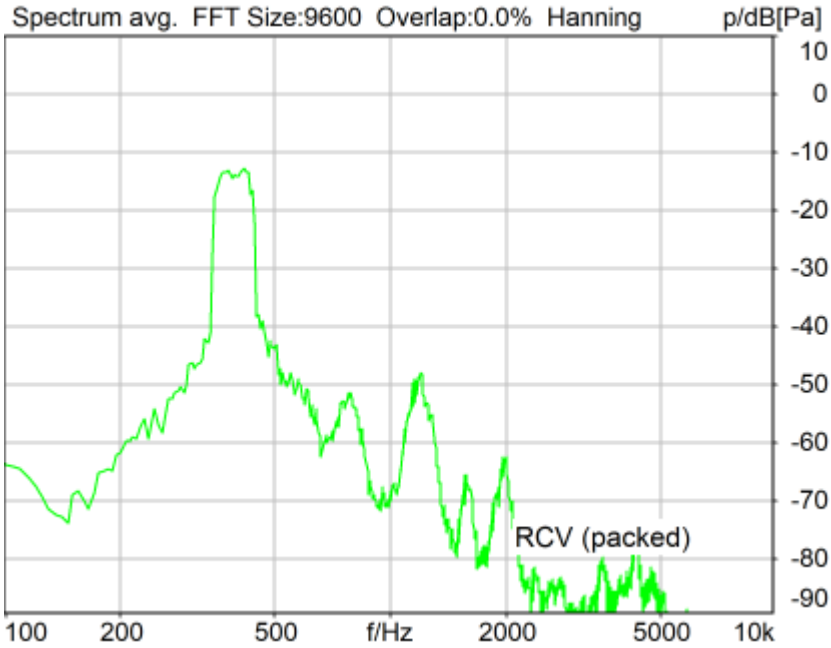
Region	Frequency	SDNR
1	400Hz	29.67 dB
2	500Hz	28.13 dB
3	630Hz	27.72 dB
4	800Hz	30.04 dB
5	1000Hz	26.10 dB
6	1250Hz	25.42 dB
7	1600Hz	28.04 dB
8	2000Hz	27.89 dB
9	2500Hz	31.42 dB
10	3150Hz	29.40 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 25.42dB at 1250Hz.

2024/5/5 18:41 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB, Index: 1

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



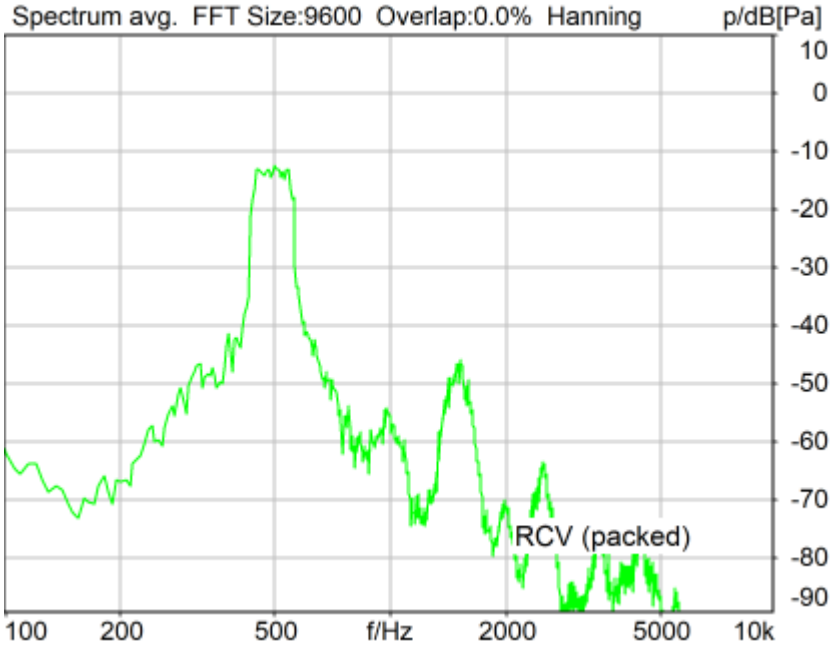
Distortion (Noise) RCV (packed): 30.43 dB (3.01%) Ok

Ok

2024/5/5 18:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz NB, Index: 1

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



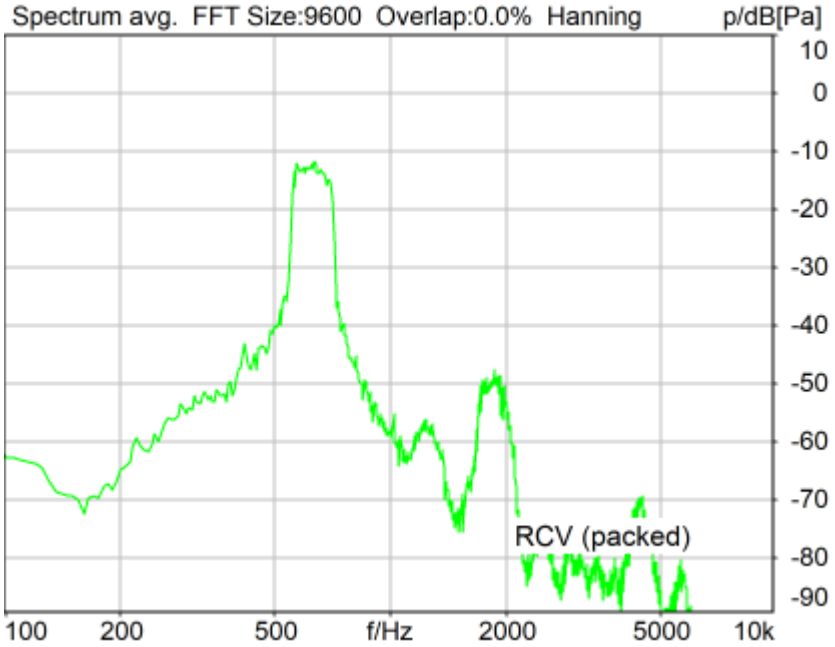
Distortion (Noise) RCV (packed): 28.52 dB (3.75%) Ok

Ok

2024/5/5 18:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz NB, Index: 1

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



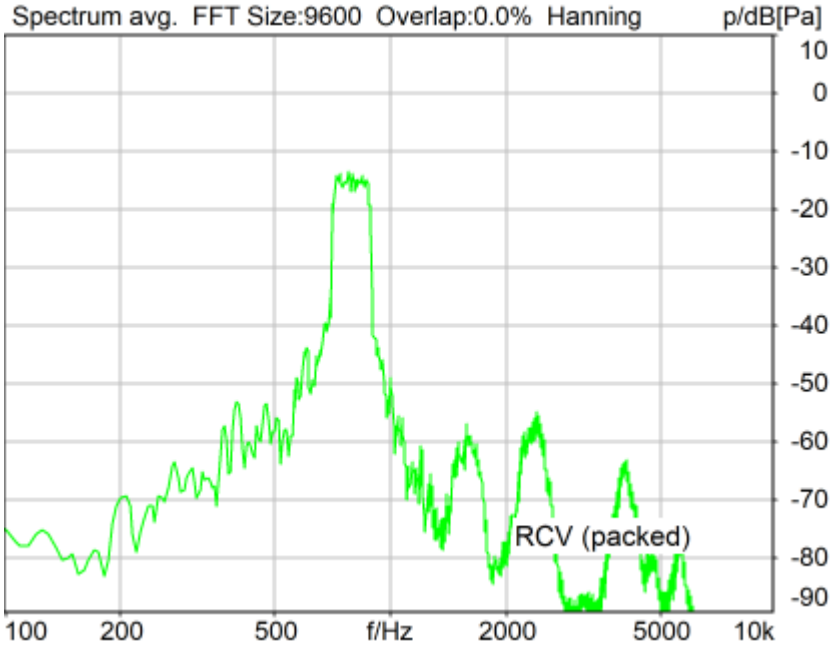
Distortion (Noise) RCV (packed): 28.25 dB (3.87%) Ok

Ok

2024/5/5 18:32 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz NB, Index: 1

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



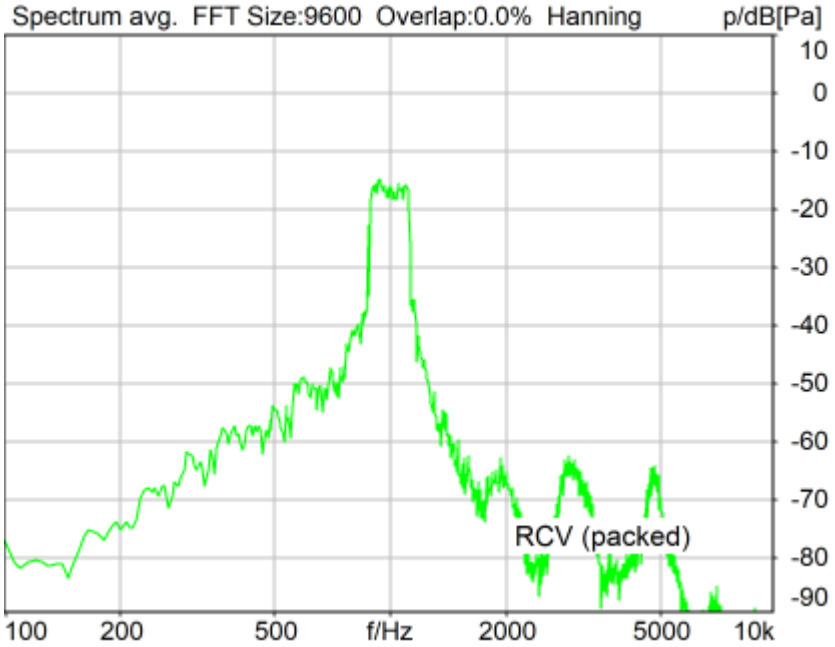
Distortion (Noise) RCV (packed): 31.41 dB (2.69%) Ok

Ok

2024/5/5 18:32 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz NB, Index: 1

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



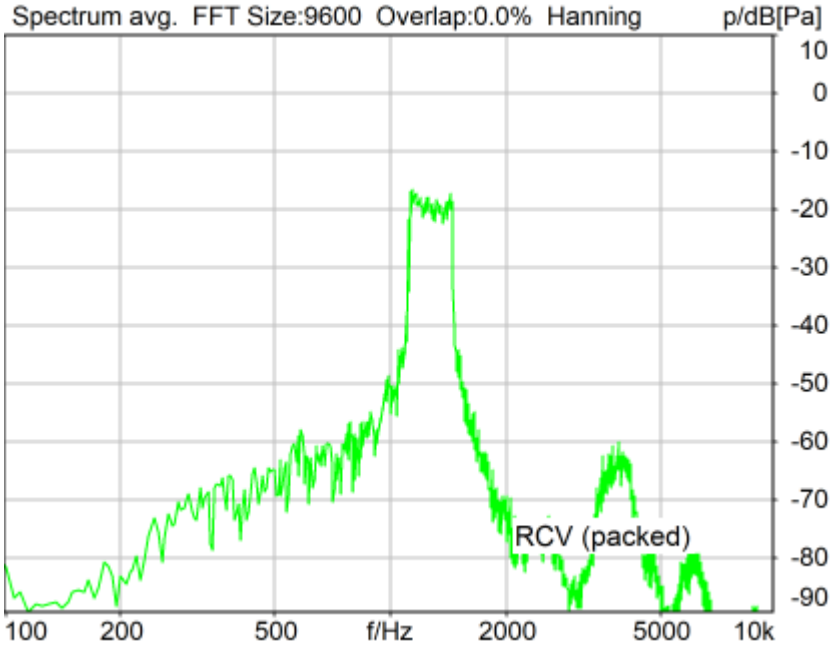
Distortion (Noise) RCV (packed): 26.61 dB (4.67%) Ok

Ok

2024/5/5 18:32 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz NB, Index: 1

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



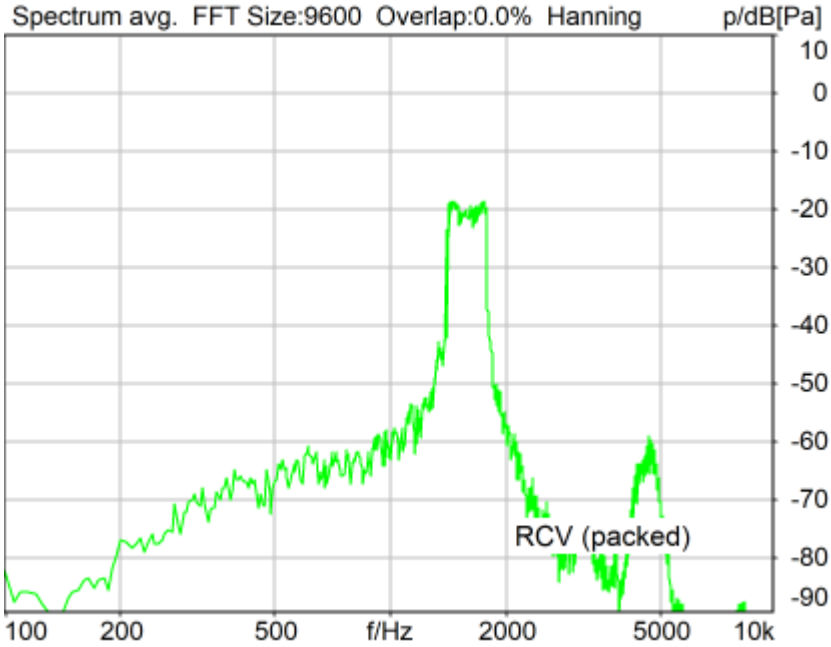
Distortion (Noise) RCV (packed): 26.74 dB (4.60%) Ok

Ok

2024/5/5 18:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz NB, Index: 1

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



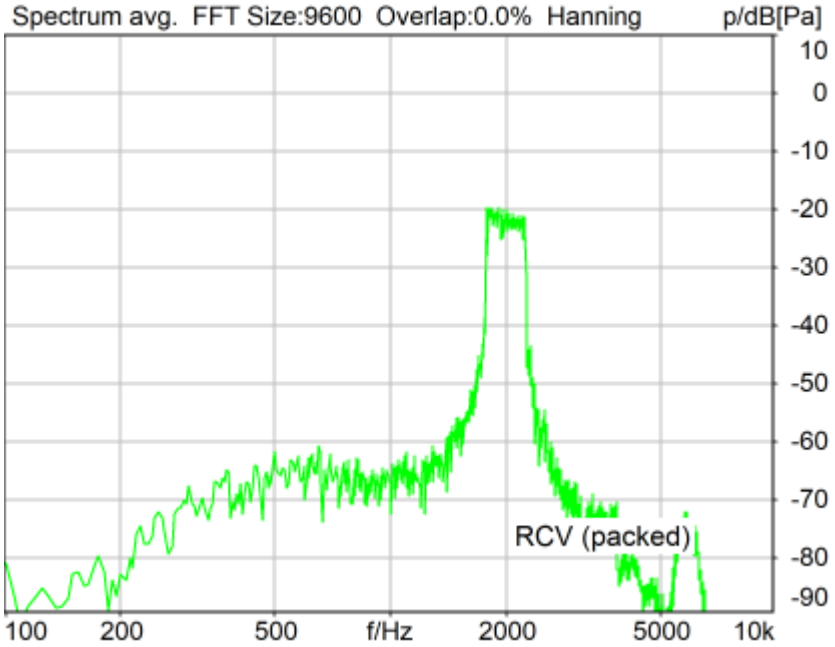
Distortion (Noise) RCV (packed): 27.70 dB (4.12%) Ok

Ok

2024/5/5 18:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz NB, Index: 1

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



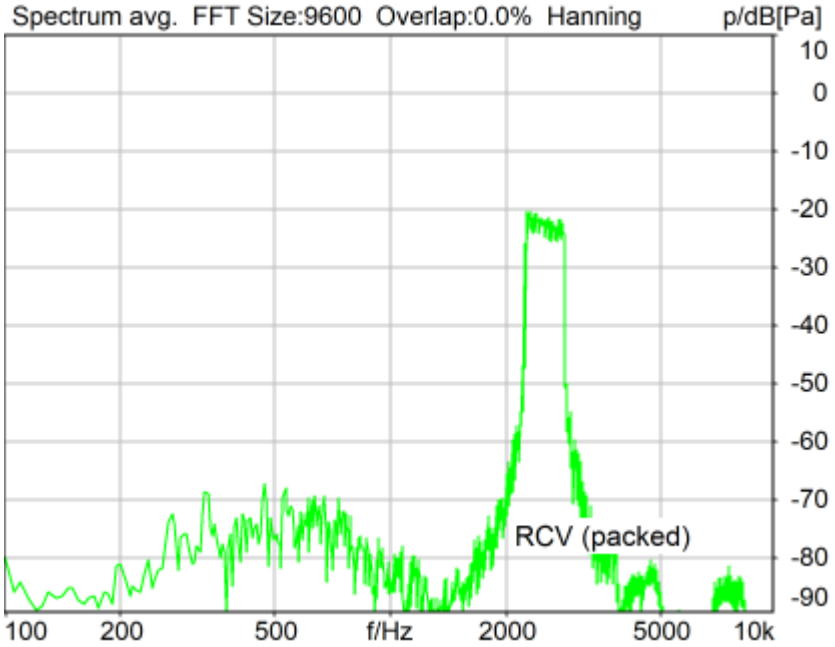
Distortion (Noise) RCV (packed): 27.41 dB (4.26%) Ok

Ok

2024/5/5 18:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz NB, Index: 1

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



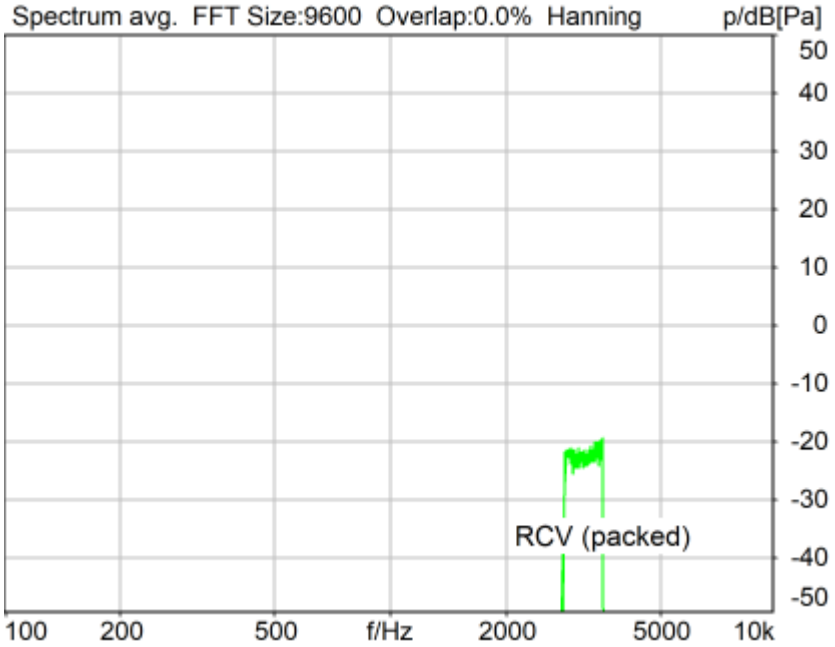
Distortion (Noise) RCV (packed): 36.41 dB (1.51%) Ok

Ok

2024/5/5 18:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz NB, Index: 1

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



Distortion (Noise) RCV (packed): 40.56 dB (0.94%) Ok

Ok

2024/5/5 18:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

Region	Frequency	SDNR
1	400Hz	30.43 dB

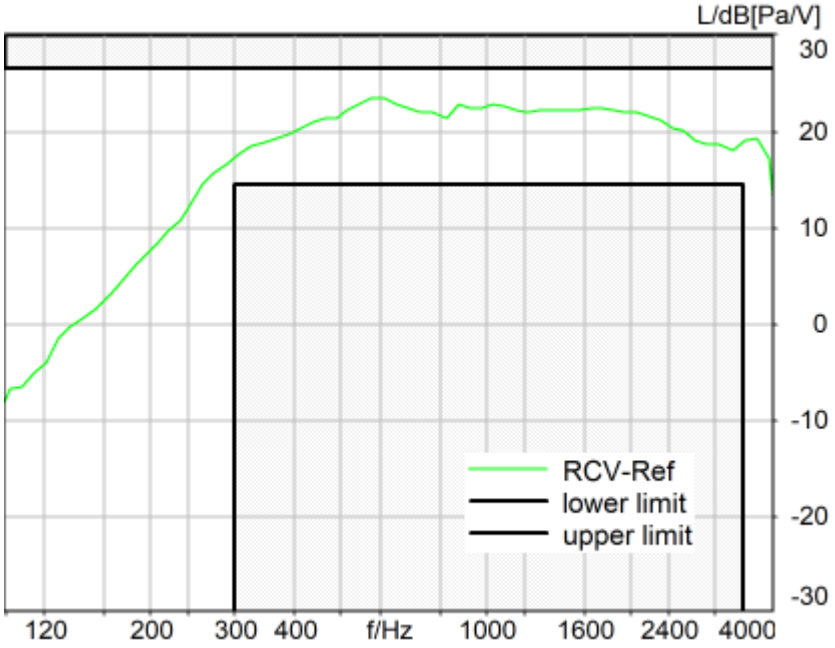
2	500Hz	28.52 dB
3	630Hz	28.25 dB
4	800Hz	31.41 dB
5	1000Hz	26.61 dB
6	1250Hz	26.74 dB
7	1600Hz	27.70 dB
8	2000Hz	27.41 dB
9	2500Hz	36.41 dB
10	3150Hz	40.56 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 26.61dB at 1000Hz.

2024/5/5 18:35 ACQUA

5.3 Frequency Response 8N FF HANB, Index: 1

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



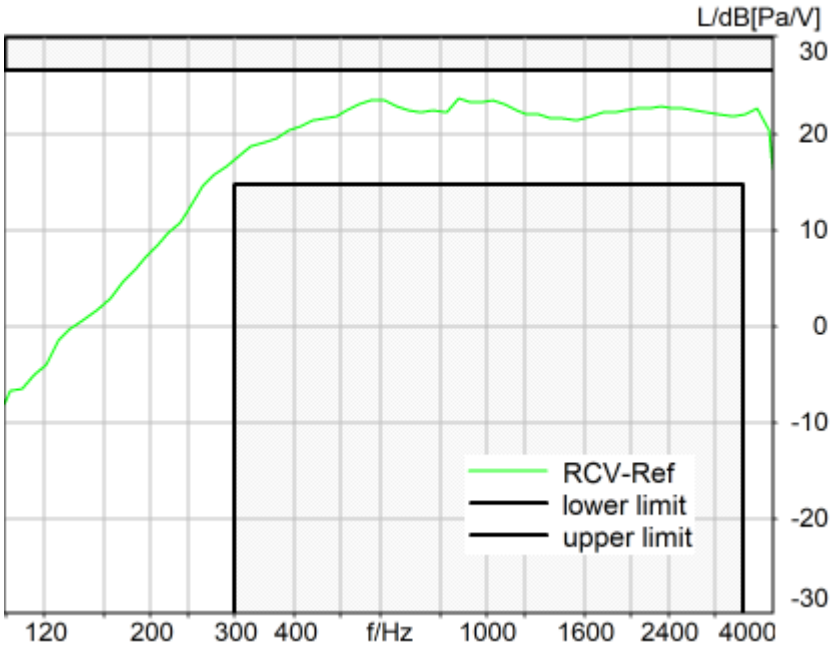
Absolute minimal distance
3.09 dB at 611.7 Hz Ok

Ok

2024/5/5 18:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF HANB, Index: 1

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



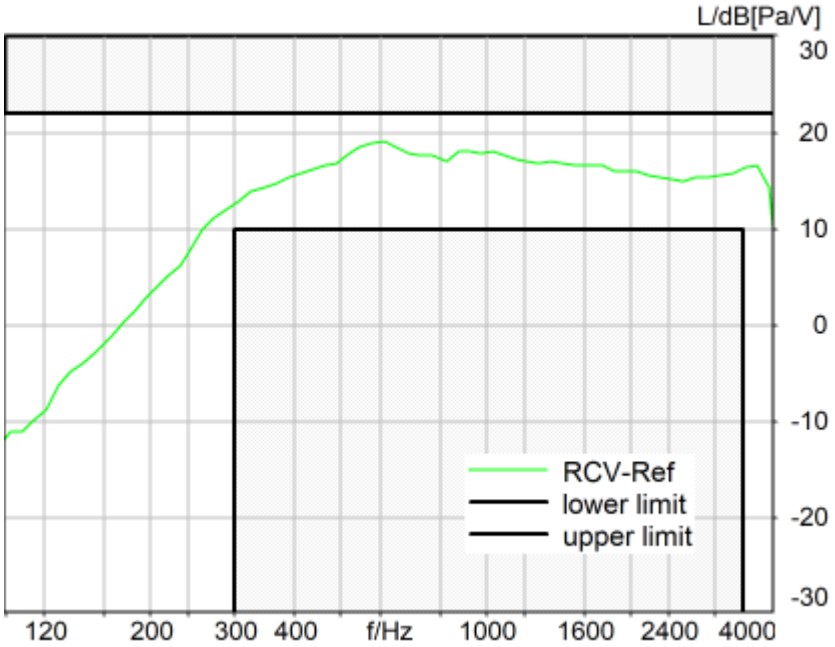
Absolute minimal distance
3.01 dB at 873.9 Hz Ok

Ok

2024/5/5 18:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF HANB, Index: 1

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



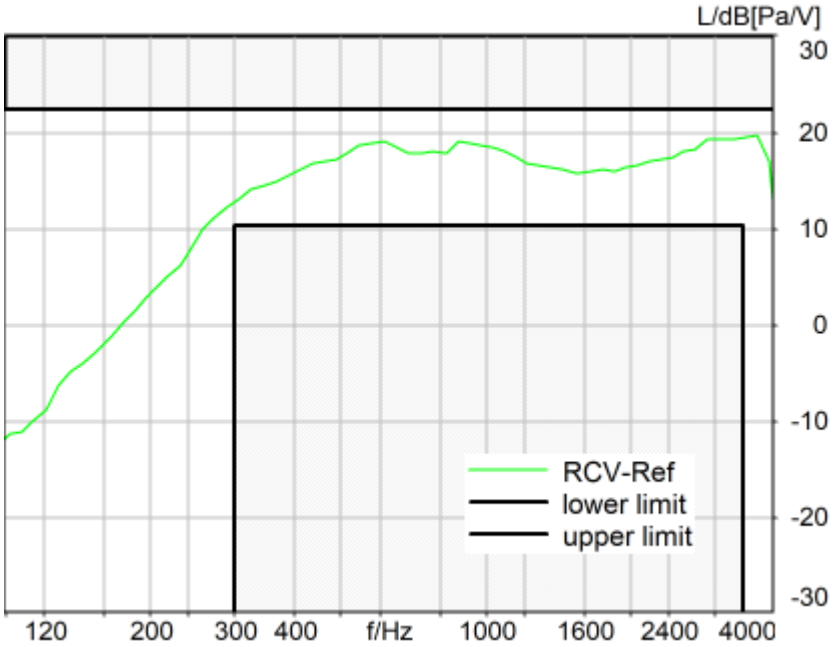
Absolute minimal distance
2.89 dB at 611.7 Hz Ok

Ok

2024/5/5 18:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF HANB, Index: 1

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



Absolute minimal distance
2.71 dB at 3657.5 Hz Ok

Ok

2024/5/5 18:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Measurement Protocol

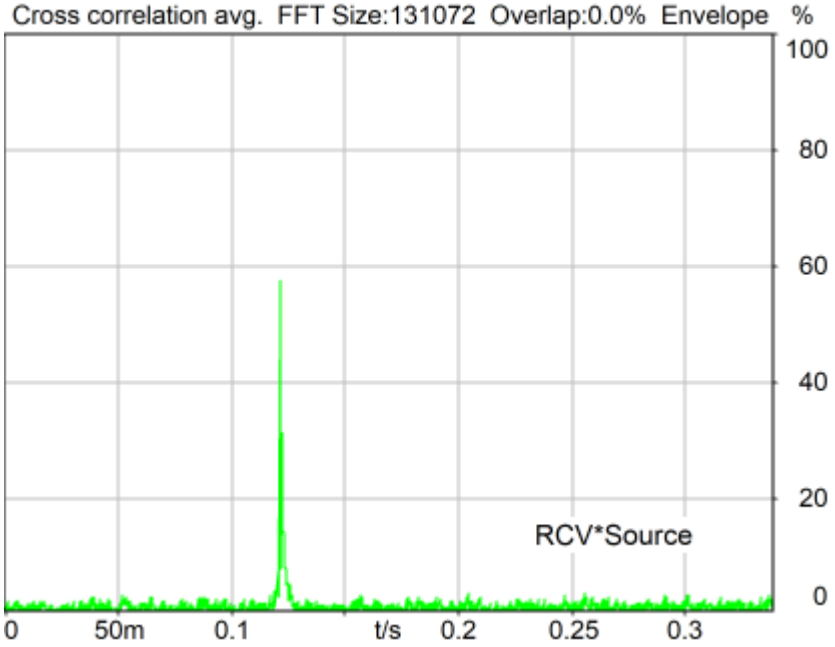
Measurement Object	LTE Band 66_20QPSK_100RB_0_EVS WB 24.4kbps_CH132322
Description	HMD_TA_1600#Tomcat

Project	TIA-5050 (2018-01)
Report Generation Date	2024/5/22 12:15
Responsible Person	audio

Overall Receive Delay WB, Index: 1 3
5.1a Receive Volume Control Performance 8N WB, Index: 1 3
5.1b Receive Volume Control Performance 2N WB, Index: 1 4
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 5
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 6
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 7
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 8
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 9
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 10
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 11
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 12
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 13
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 14
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 15
5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1 15
5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1 16
5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1 17
5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1 18
5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1 19
5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1 20
5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1 21
5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1 22
5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1 23
5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1 24
Report - Receive Distortion and Noise (Conversational Gain), Index: 1 25
5.3 Frequency Response 8N FF, Index: 1 25
5.3 Frequency Response 8N DF, Index: 1 26
5.3 Frequency Response 2N FF, Index: 1 27
5.3 Frequency Response 2N DF, Index: 1 28

Overall Receive Delay WB, Index: 1

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

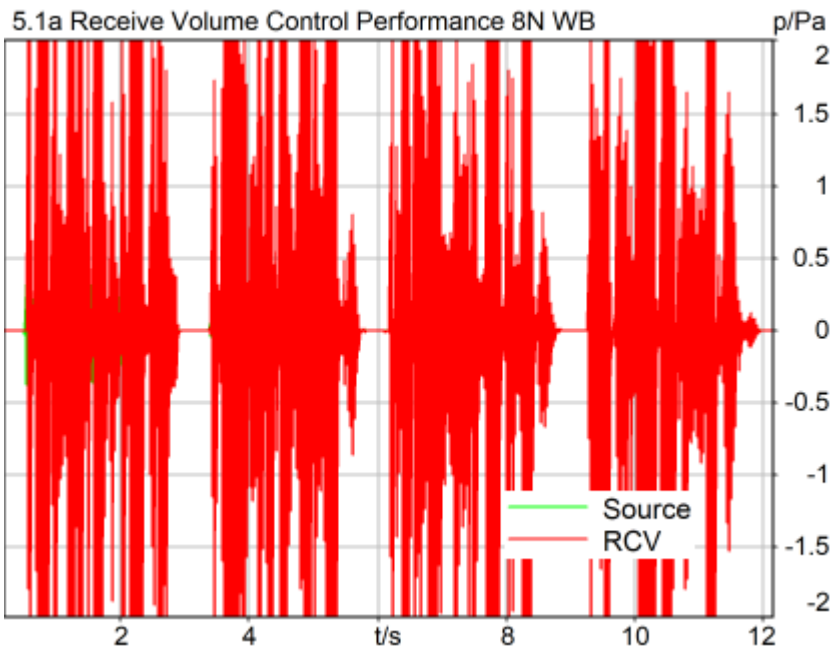


Channel	Delay
RCV*Source	121.5 ms

2024/5/5 18:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB, Index: 1

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



Correction

X - 70

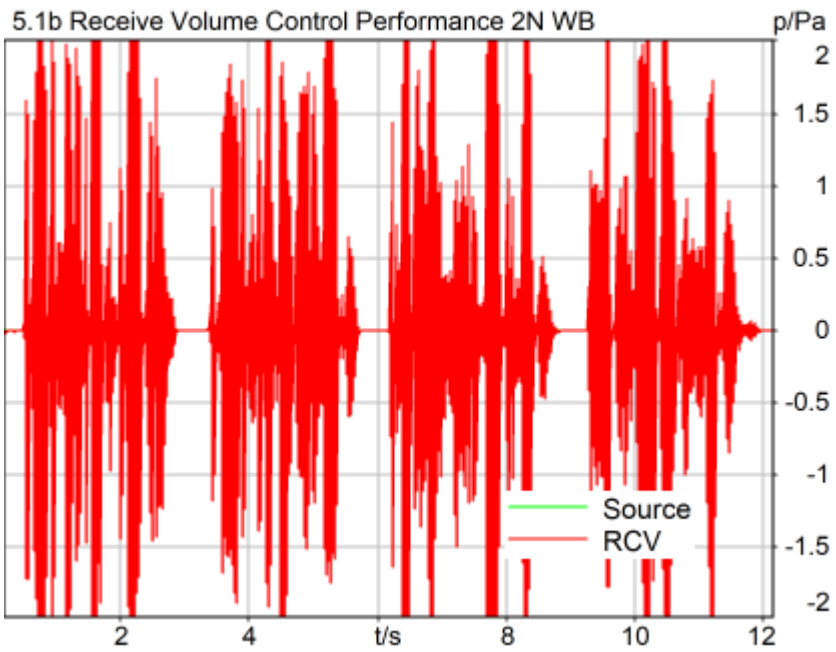
Channel	Speech level	Activity	Corrected speech level	
RCV	90.82 dB[SPL]	84.42%	20.82 dB[SPL]	Ok

Ok

2024/5/5 18:12 ACQUA 6.0.200

5.1b Receive Volume Control Performance 2N WB, Index: 1

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



Correction

X - 70

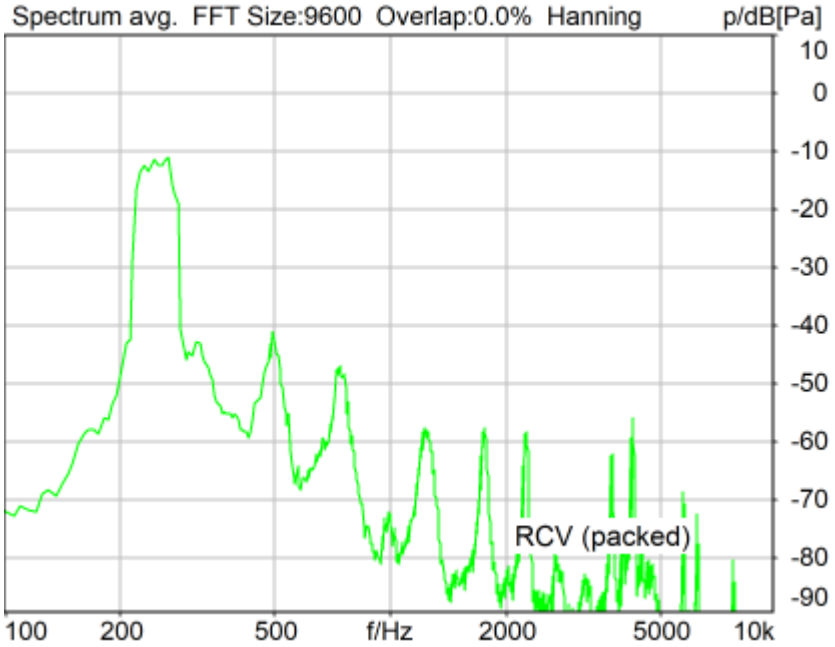
Channel	Speech level	Activity	Corrected speech level	
RCV	85.82 dB[SPL]	84.36%	15.82 dB[SPL]	Ok

Ok

2024/5/5 18:20 ACQUA 6.0.200

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



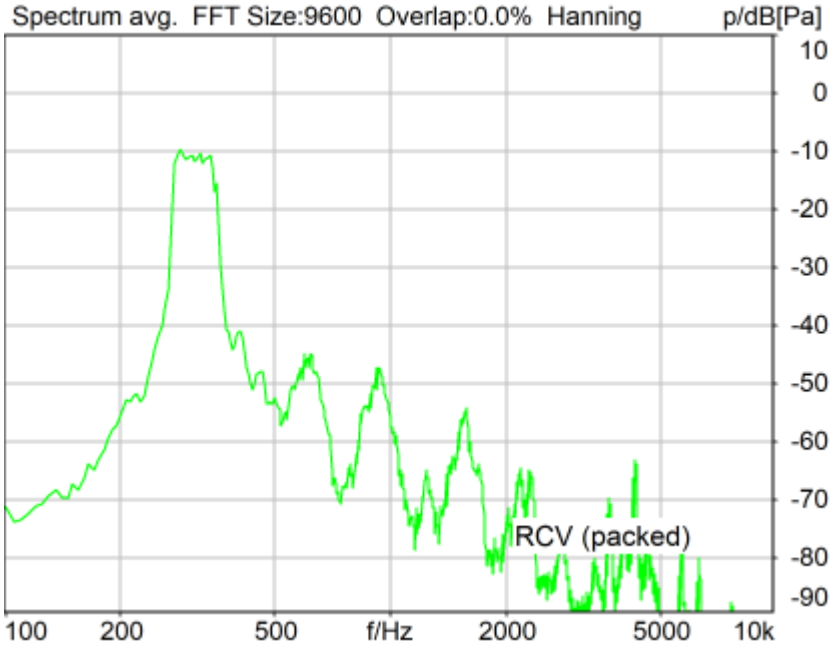
Distortion (Noise) RCV (packed): 31.03 dB (2.81%) Ok

Ok

2024/5/5 18:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



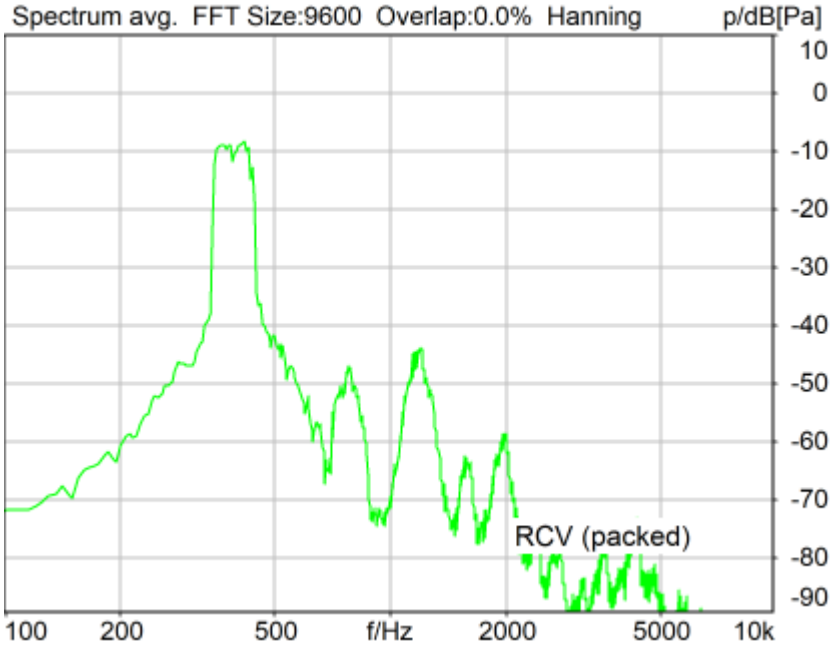
Distortion (Noise) RCV (packed): 31.83 dB (2.56%) Ok

Ok

2024/5/5 18:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



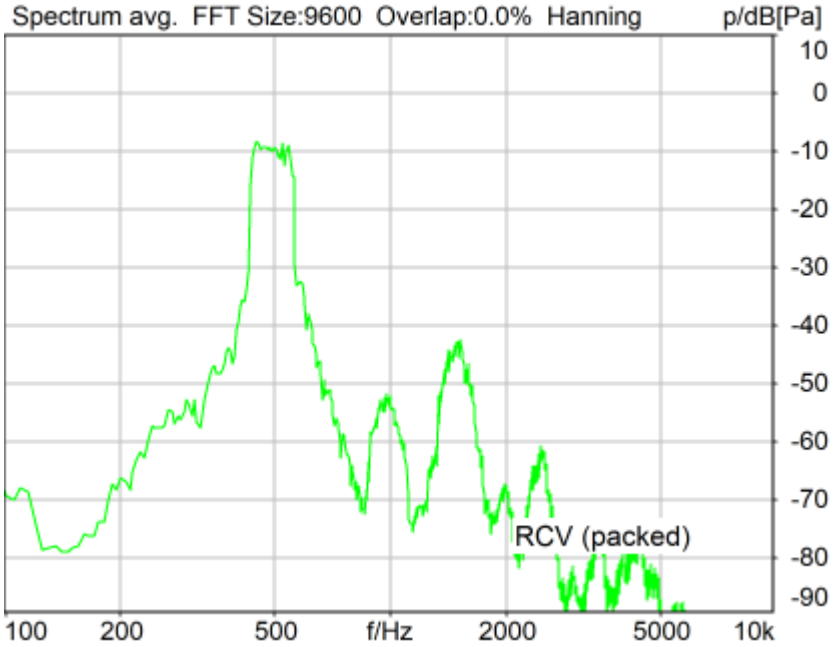
Distortion (Noise) RCV (packed): 31.57 dB (2.64%) Ok

Ok

2024/5/5 18:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



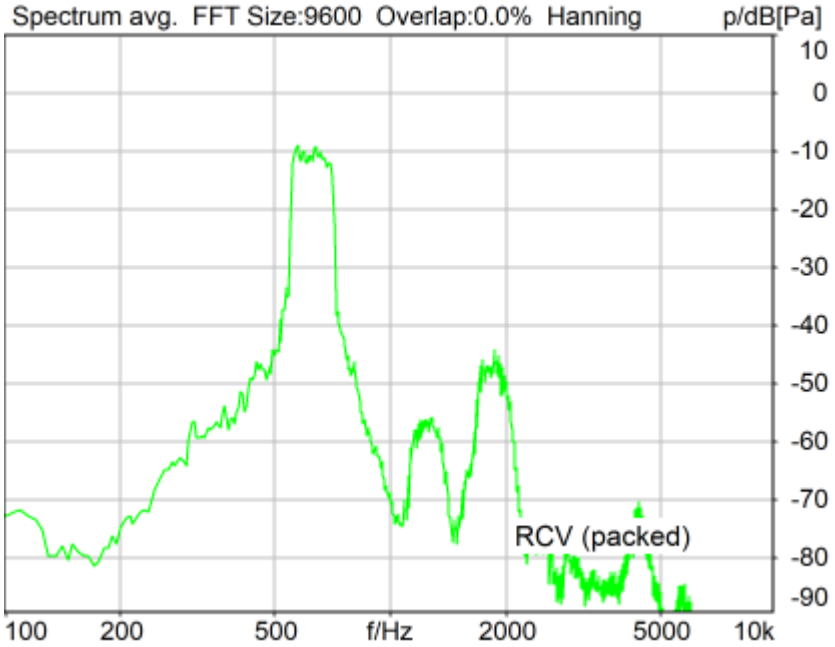
Distortion (Noise) RCV (packed): 29.62 dB (3.30%) Ok

Ok

2024/5/5 18:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



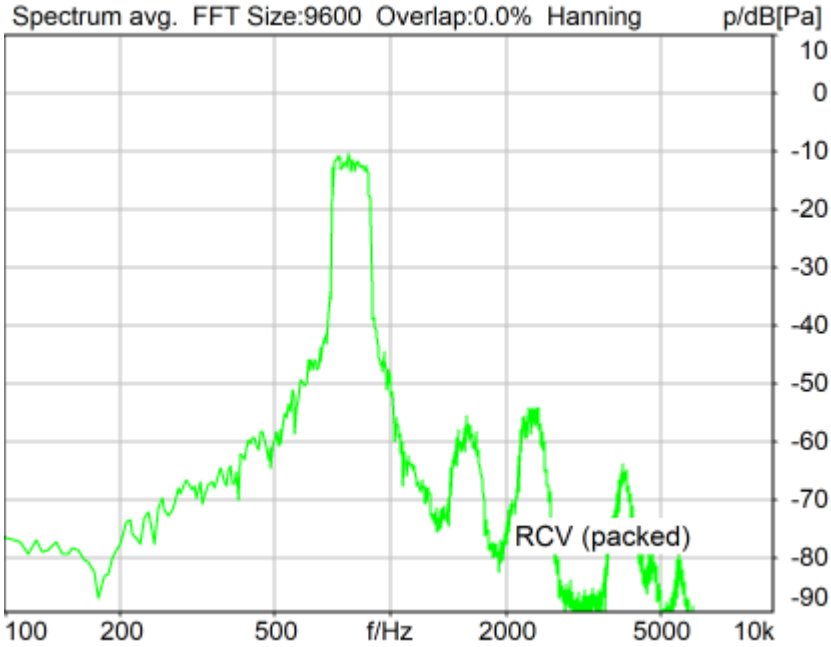
Distortion (Noise) RCV (packed): 30.88 dB (2.86%) Ok

Ok

2024/5/5 18:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



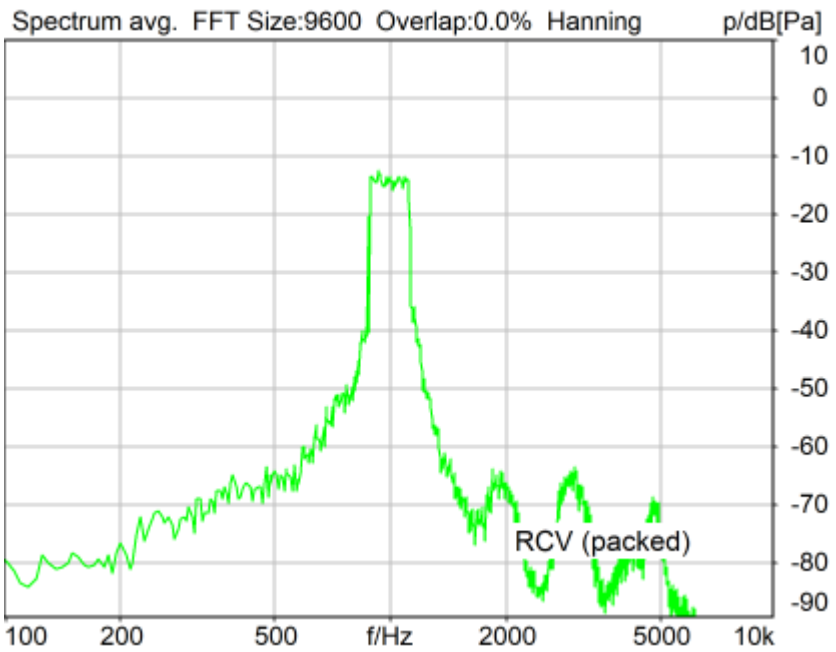
Distortion (Noise) RCV (packed): 33.77 dB (2.05%) Ok

Ok

2024/5/5 18:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



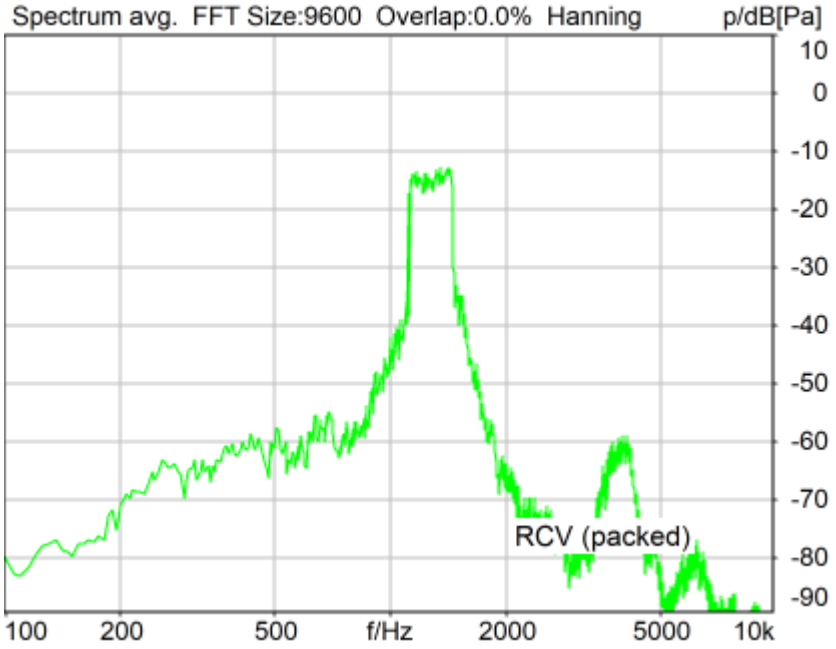
Distortion (Noise) RCV (packed): 31.38 dB (2.70%) Ok

Ok

2024/5/5 18:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



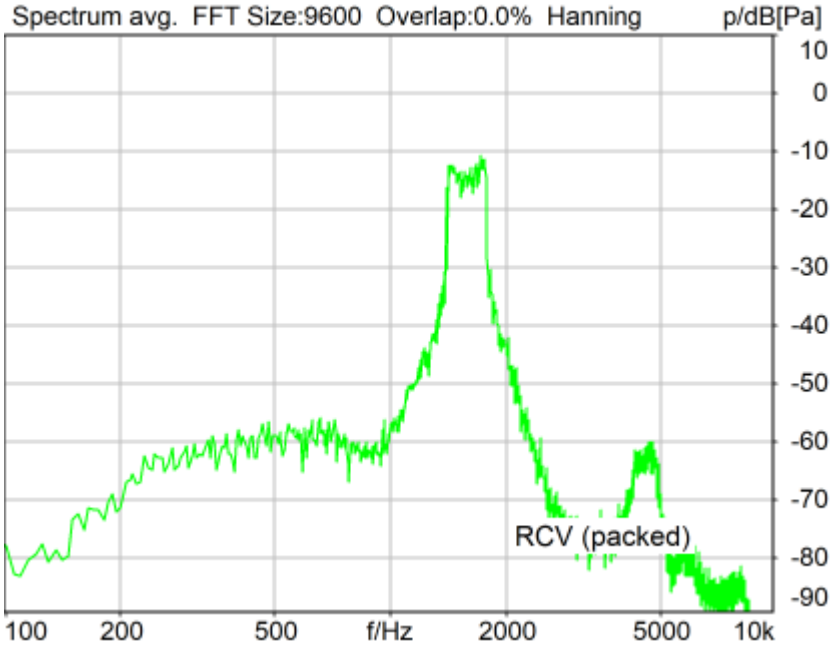
Distortion (Noise) RCV (packed): 23.36 dB (6.79%) Ok

Ok

2024/5/5 18:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



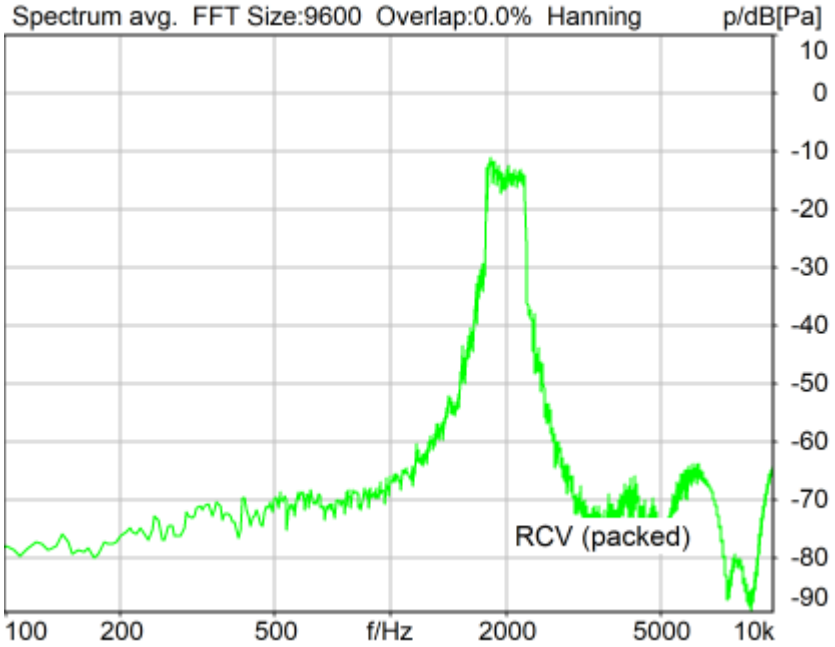
Distortion (Noise) RCV (packed): 24.38 dB (6.04%) Ok

Ok

2024/5/5 18:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



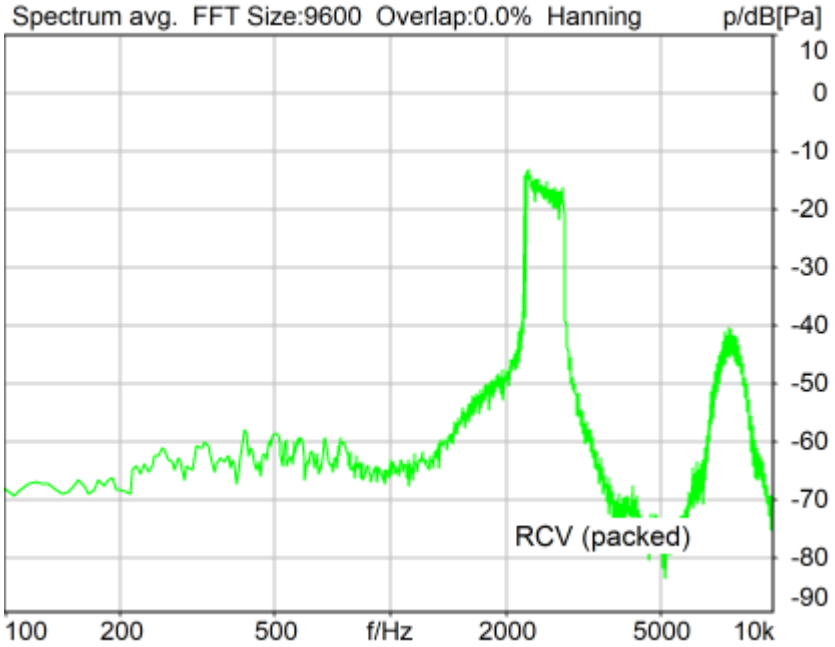
Distortion (Noise) RCV (packed): 23.26 dB (6.87%) Ok

Ok

2024/5/5 18:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



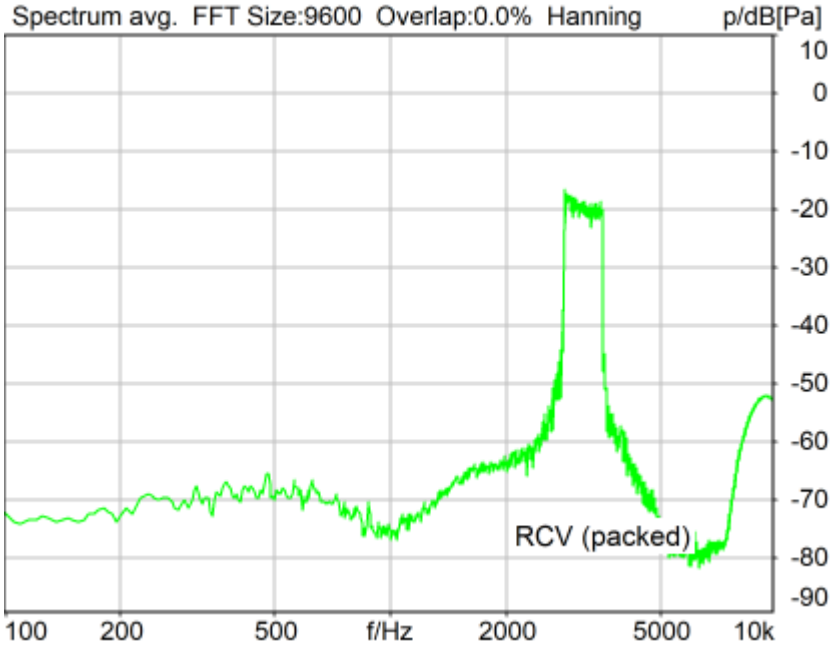
Distortion (Noise) RCV (packed): 23.11 dB (6.99%) Ok

Ok

2024/5/5 18:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



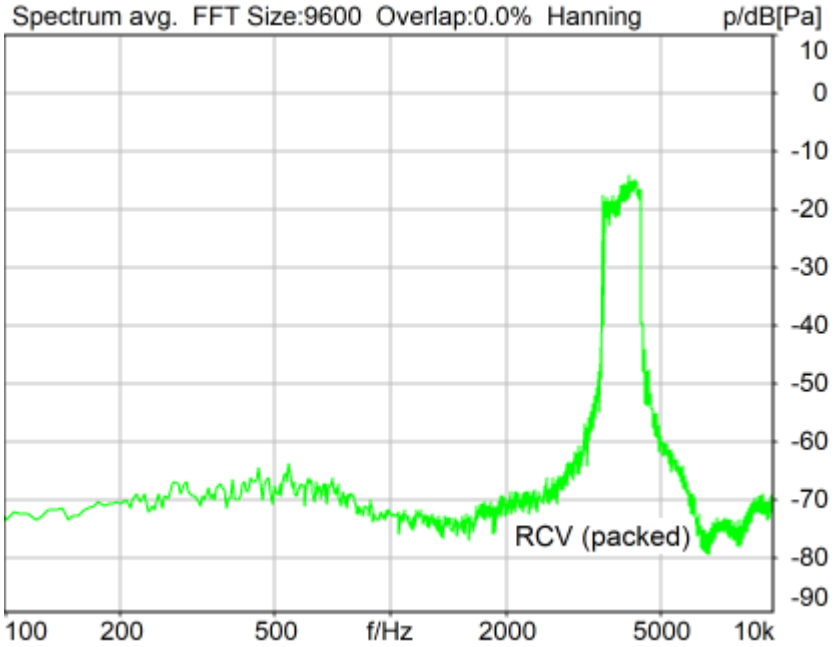
Distortion (Noise) RCV (packed): 28.09 dB (3.94%) Ok

Ok

2024/5/5 18:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



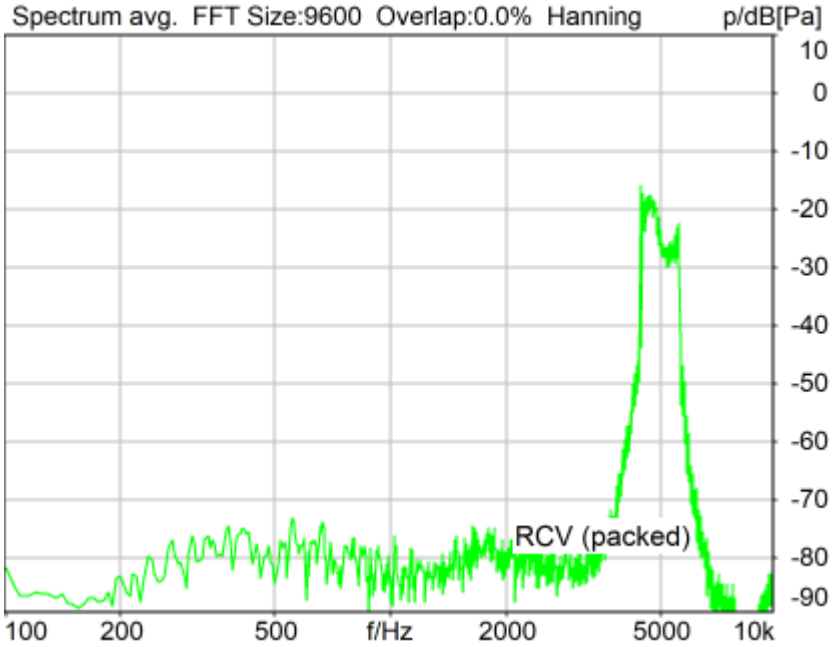
Distortion (Noise) RCV (packed): 30.05 dB (3.14%) Ok

Ok

2024/5/5 18:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



Distortion (Noise) RCV (packed): 31.63 dB (2.62%) Ok

Ok

2024/5/5 18:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

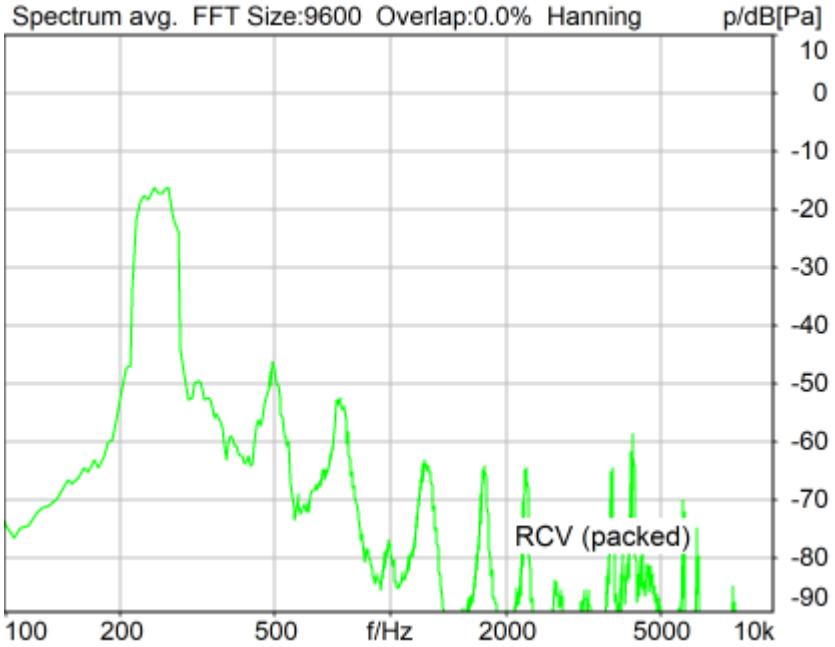
Region	Frequency	SDNR
1	250Hz	31.03 dB
2	315Hz	31.83 dB
3	400Hz	31.57 dB
4	500Hz	29.62 dB
5	630Hz	30.88 dB
6	800Hz	33.77 dB
7	1000Hz	31.38 dB
8	1250Hz	23.36 dB
9	1600Hz	24.38 dB
10	2000Hz	23.26 dB
11	2500Hz	23.11 dB
12	3150Hz	28.09 dB
13	4000Hz	30.05 dB
14	5000Hz	31.63 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.11dB at 2500Hz.

2024/5/5 18:18 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB, Index: 1

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



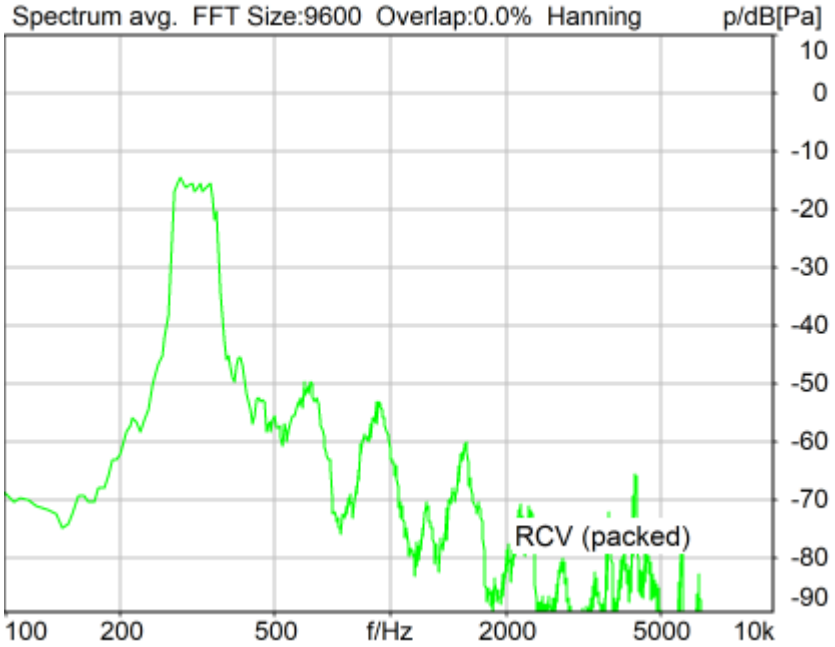
Distortion (Noise) RCV (packed): 31.11 dB (2.78%) Ok

Ok

2024/5/5 18:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 315 Hz WB, Index: 1

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



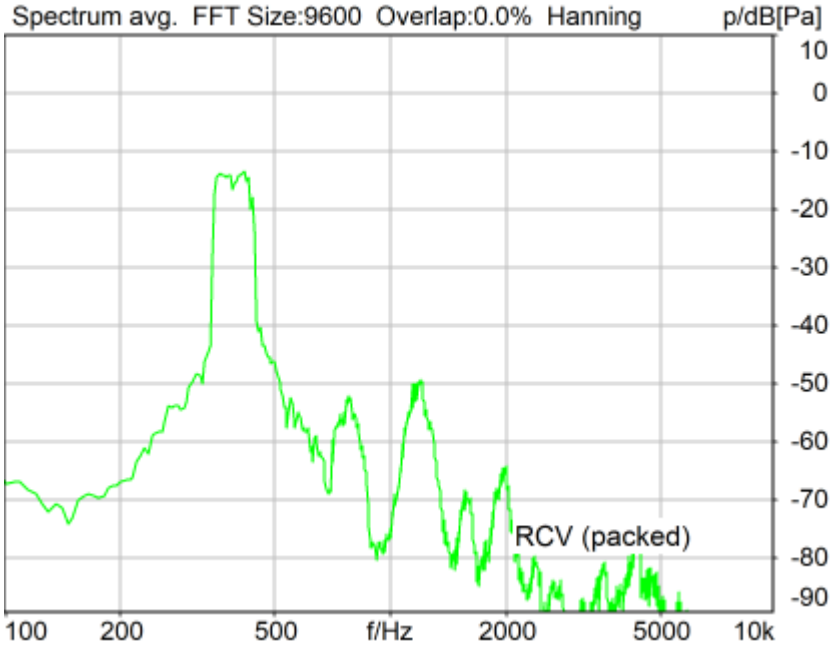
Distortion (Noise) RCV (packed): 31.86 dB (2.55%) Ok

Ok

2024/5/5 18:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 400 Hz WB, Index: 1

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



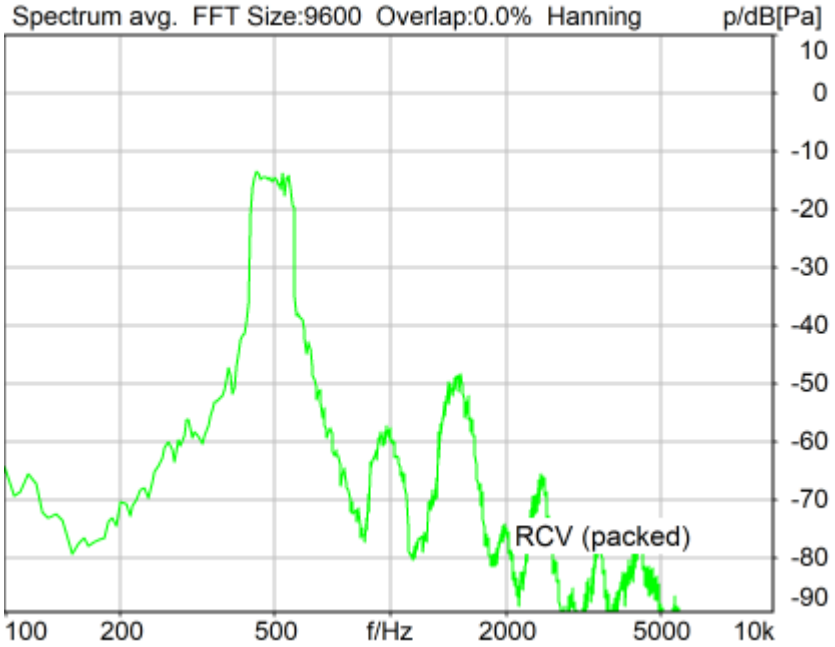
Distortion (Noise) RCV (packed): 31.78 dB (2.58%) Ok

Ok

2024/5/5 18:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 500 Hz WB, Index: 1

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



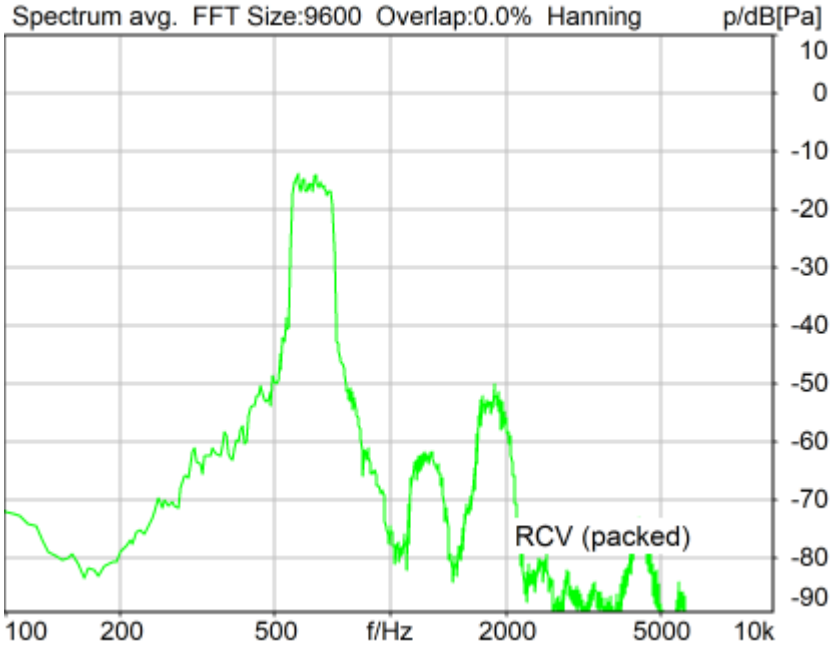
Distortion (Noise) RCV (packed): 30.09 dB (3.13%) Ok

Ok

2024/5/5 18:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 630 Hz WB, Index: 1

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



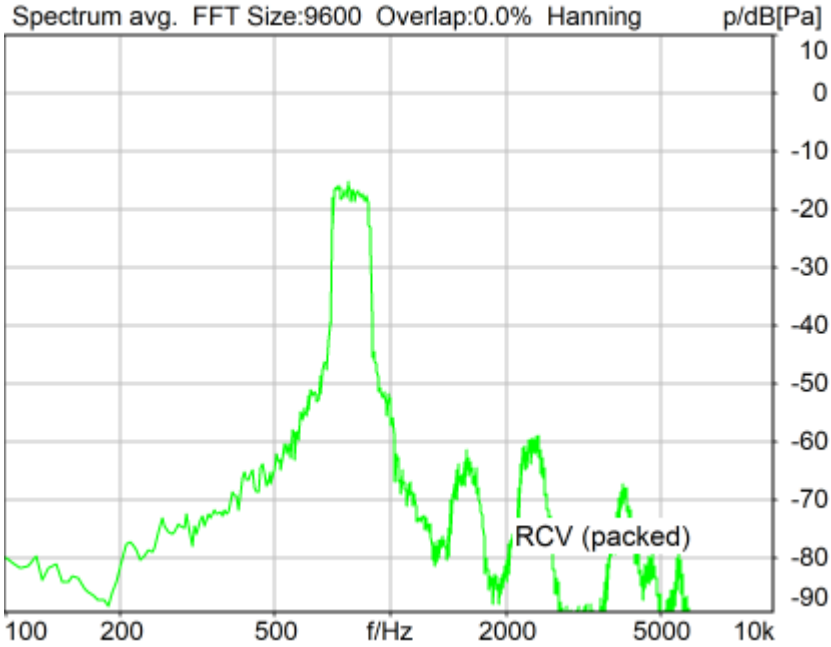
Distortion (Noise) RCV (packed): 31.57 dB (2.64%) Ok

Ok

2024/5/5 18:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 800 Hz WB, Index: 1

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



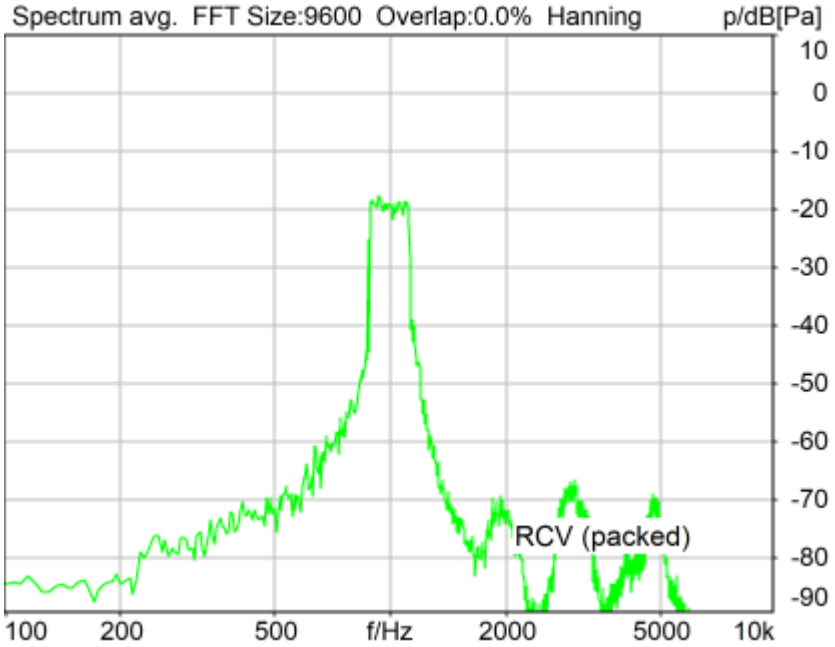
Distortion (Noise) RCV (packed): 33.95 dB (2.01%) Ok

Ok

2024/5/5 18:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1000 Hz WB, Index: 1

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



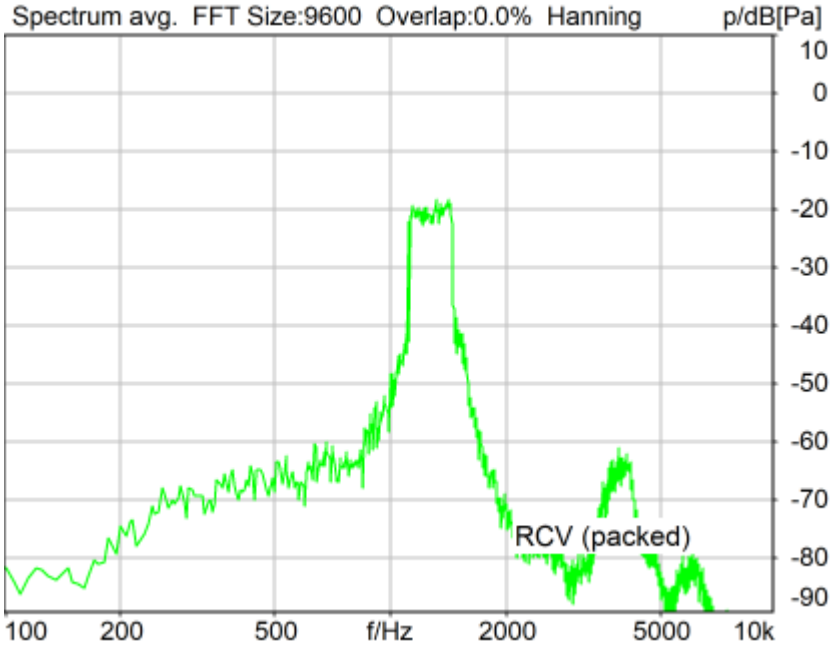
Distortion (Noise) RCV (packed): 31.56 dB (2.64%) Ok

Ok

2024/5/5 18:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1250 Hz WB, Index: 1

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



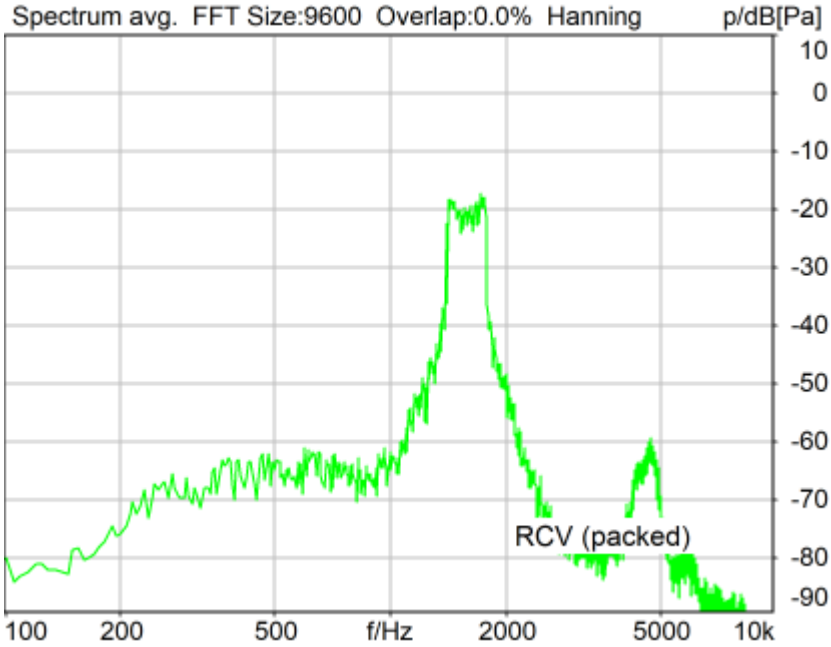
Distortion (Noise) RCV (packed): 23.65 dB (6.57%) Ok

Ok

2024/5/5 18:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 1600 Hz WB, Index: 1

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



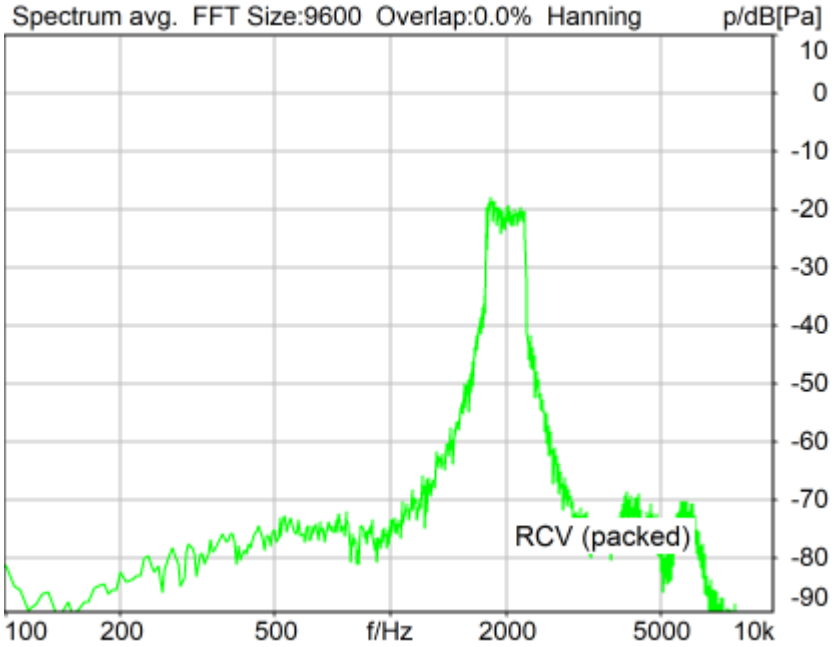
Distortion (Noise) RCV (packed): 24.33 dB (6.08%) Ok

Ok

2024/5/5 18:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2000 Hz WB, Index: 1

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



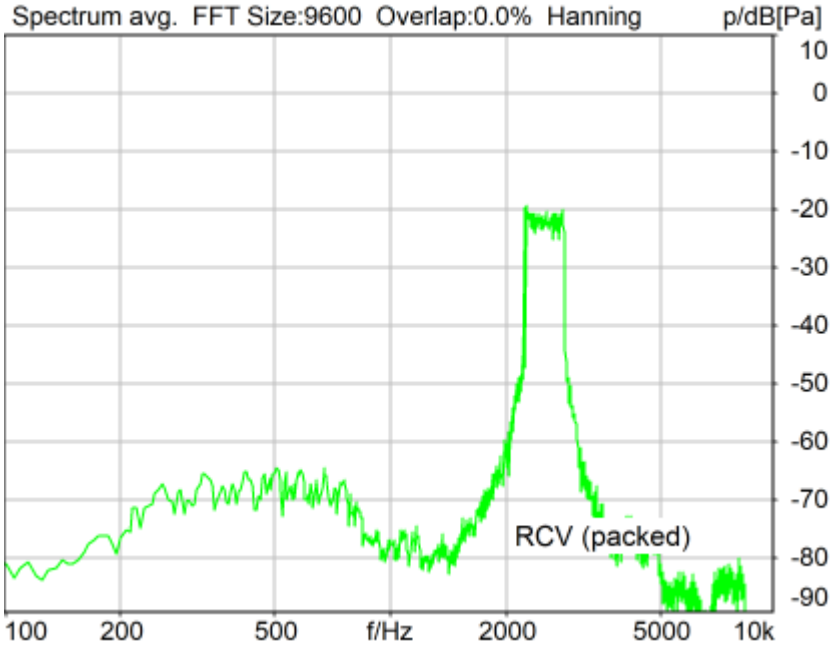
Distortion (Noise) RCV (packed): 23.54 dB (6.65%) Ok

Ok

2024/5/5 18:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 2500 Hz WB, Index: 1

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



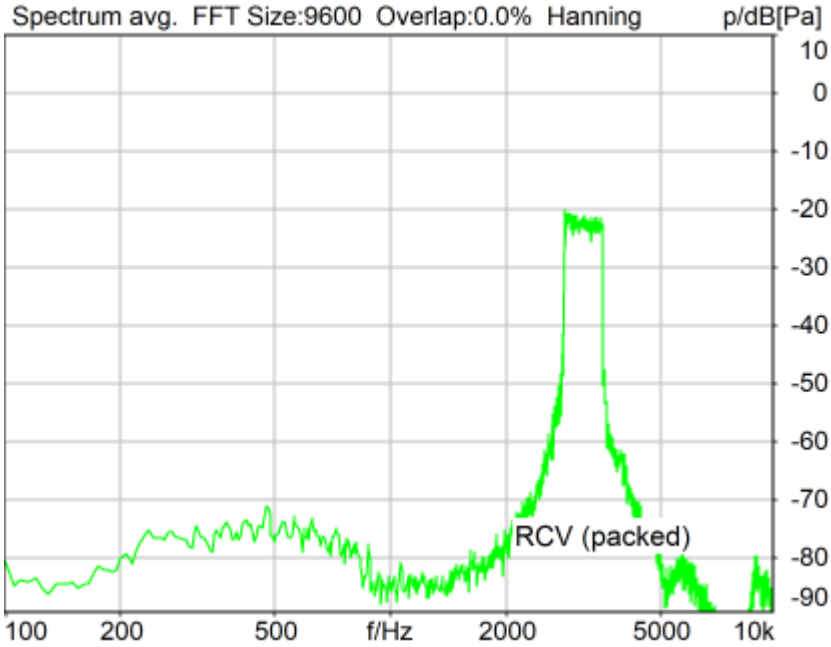
Distortion (Noise) RCV (packed): 30.92 dB (2.84%) Ok

Ok

2024/5/5 18:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 3150 Hz WB, Index: 1

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



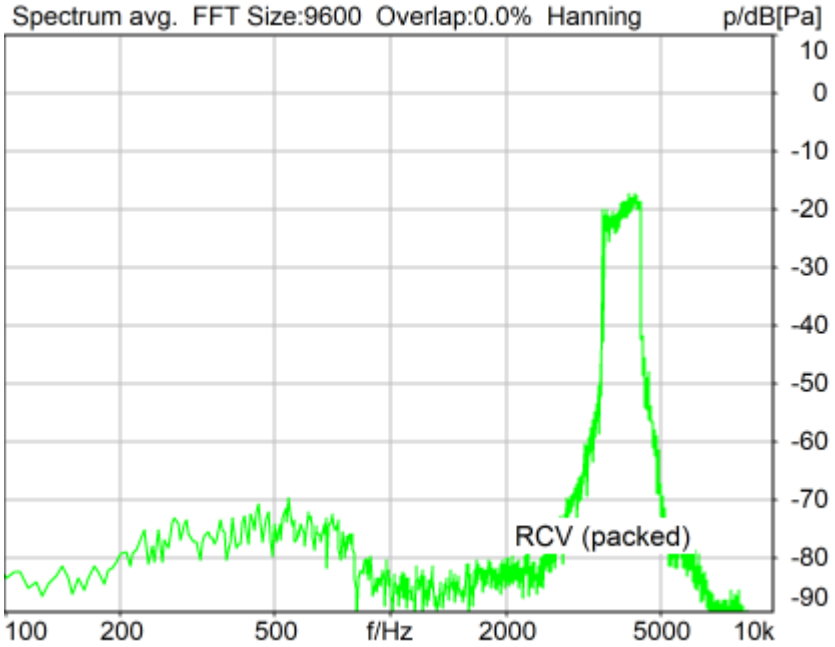
Distortion (Noise) RCV (packed): 33.43 dB (2.13%) Ok

Ok

2024/5/5 18:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 4000 Hz WB, Index: 1

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



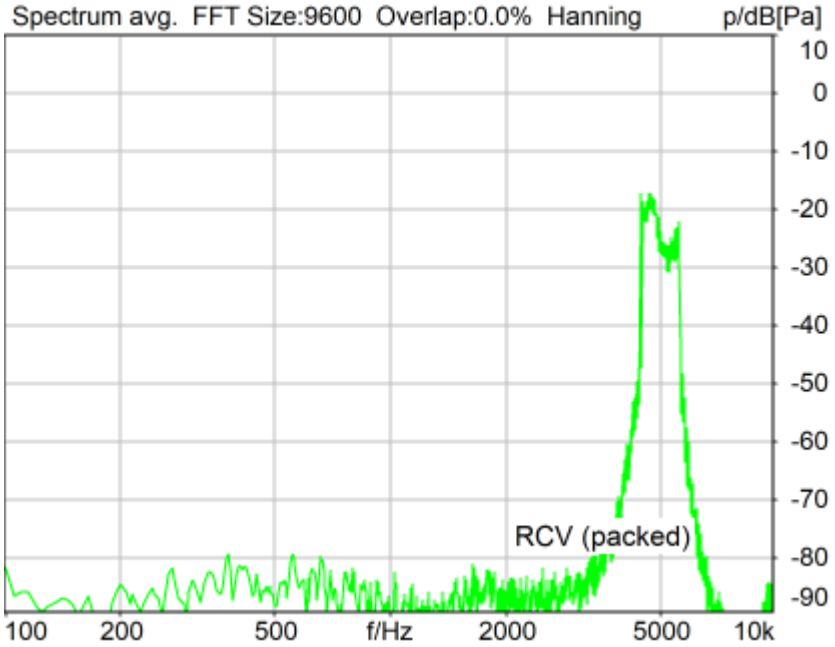
Distortion (Noise) RCV (packed): 32.23 dB (2.45%) Ok

Ok

2024/5/5 18:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.2 RCV Distortion and Noise - 5000 Hz WB, Index: 1

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



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

Ok

2024/5/5 18:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Report - Receive Distortion and Noise (Conversational Gain), Index: 1

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

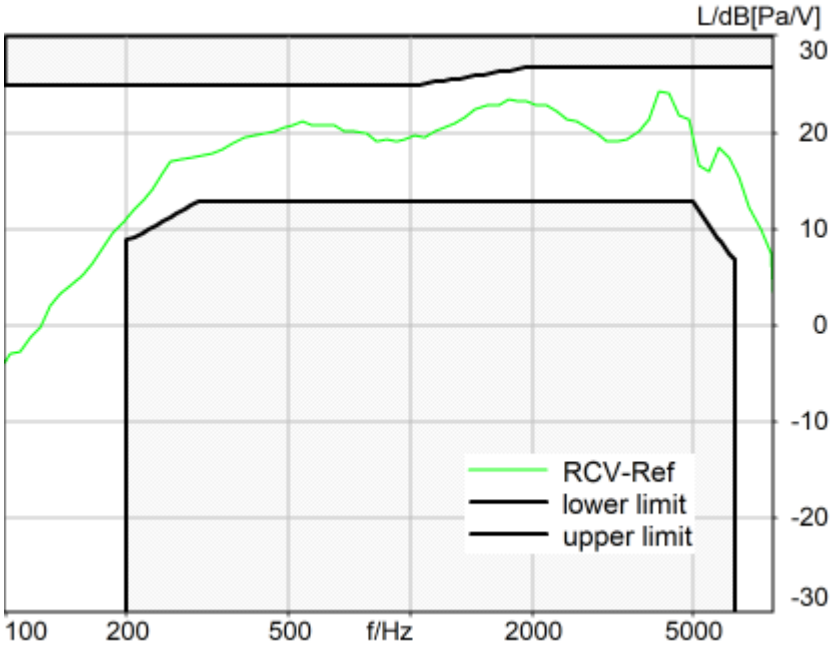
Region	Frequency	SDNR
1	250Hz	31.11 dB
2	315Hz	31.86 dB
3	400Hz	31.78 dB
4	500Hz	30.09 dB
5	630Hz	31.57 dB
6	800Hz	33.95 dB
7	1000Hz	31.56 dB
8	1250Hz	23.65 dB
9	1600Hz	24.33 dB
10	2000Hz	23.54 dB
11	2500Hz	30.92 dB
12	3150Hz	33.43 dB
13	4000Hz	32.23 dB
14	5000Hz	33.82 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 23.54dB at 2000Hz.

2024/5/5 18:27 ACQUA

5.3 Frequency Response 8N FF, Index: 1

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



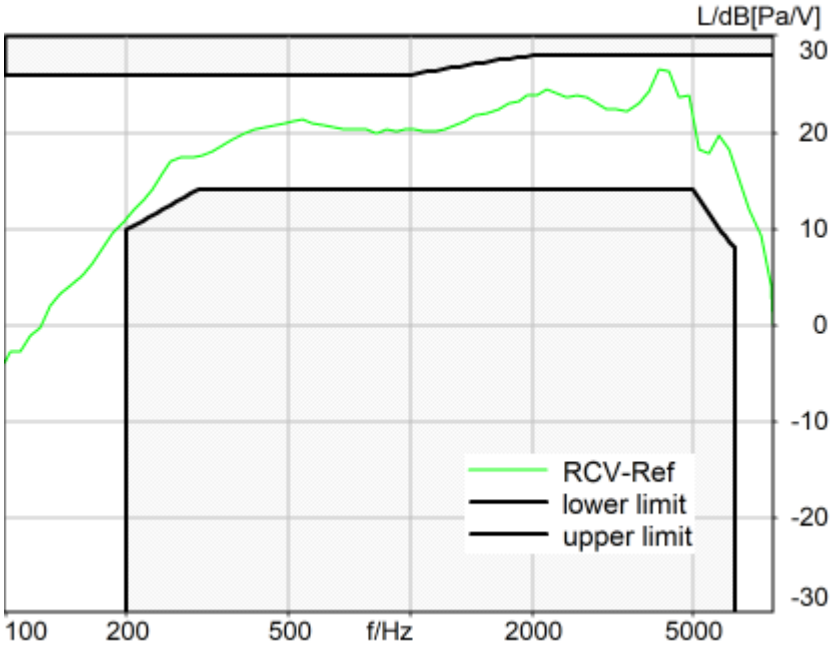
Absolute minimal distance
2.64 dB at 4119.5 Hz Ok

Ok

2024/5/5 18:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 8N DF, Index: 1

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



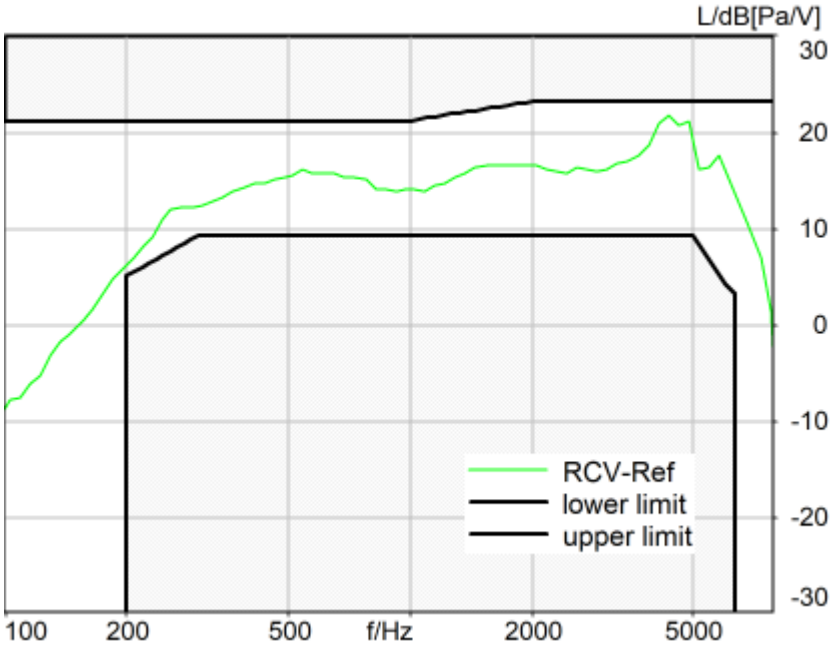
Absolute minimal distance
1.41 dB at 205.7 Hz Ok

Ok

2024/5/5 18:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N FF, Index: 1

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



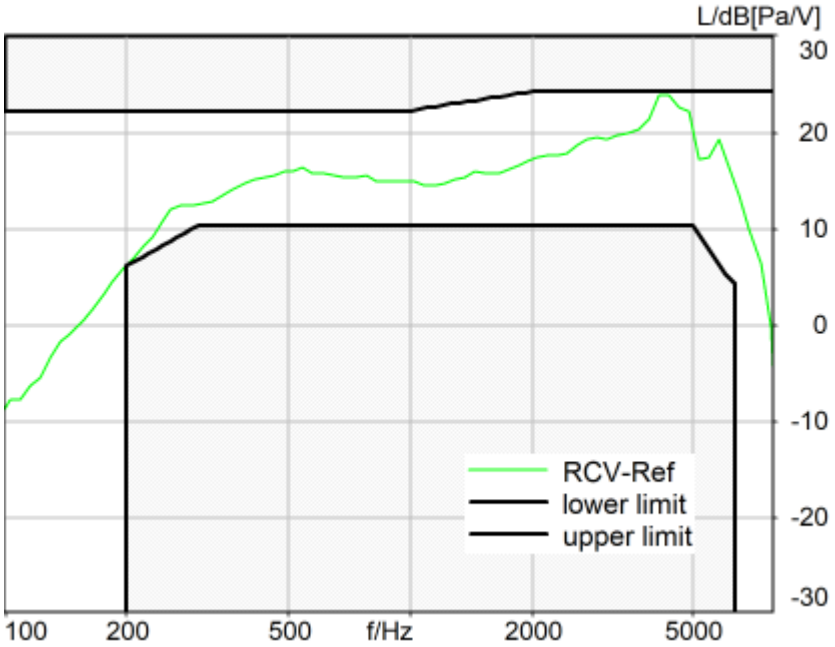
Absolute minimal distance
1.41 dB at 4369.4 Hz Ok

Ok

2024/5/5 18:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.3 Frequency Response 2N DF, Index: 1

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



Absolute minimal distance
0.36 dB at 4119.5 Hz Ok

Ok

2024/5/5 18:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor