Measurement Protocol

Measurement Object	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:48
Responsible Person	audio

Status Overview

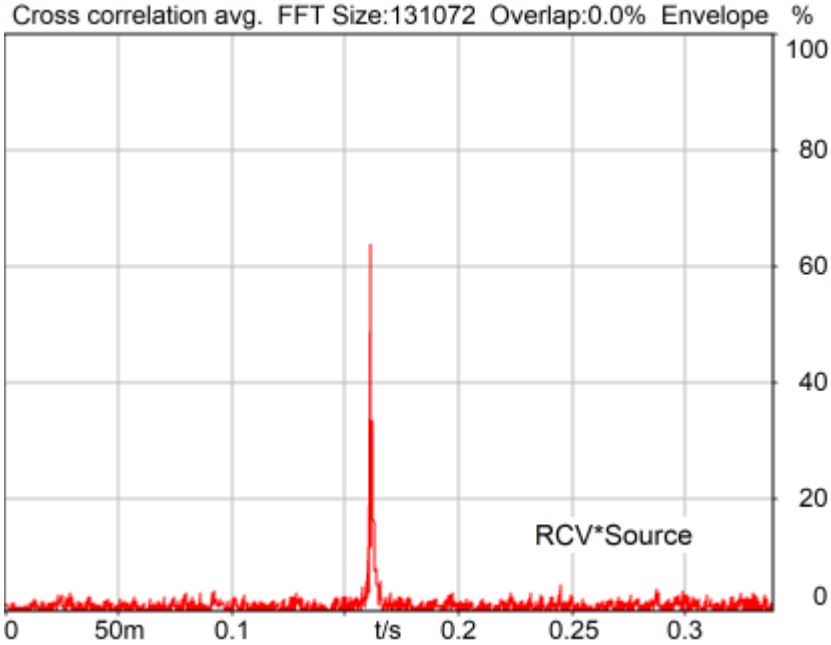
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	162.0	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	23.15	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	17.78	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.49	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.47	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.39	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.93	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.75	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.24	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.55	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.97	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.63	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	26.58	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.97	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.37	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.26	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	31.21	LTE

- 630 Hz NB		0.0 dB		Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.81	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.57	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.79	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.50	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.04	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.03	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.98	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.3 Frequency Response 8N FF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	-2.30	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	0.84	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	0.43	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	1.82	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900

Overall Receive Delay NB 5
5.1a Receive Volume Control Performance 8N NB 5
5.1b Receive Volume Control Performance 2N NB 6
5.2 RCV Distortion and Noise - 400 Hz NB 7
5.2 RCV Distortion and Noise - 500 Hz NB 8
5.2 RCV Distortion and Noise - 630 Hz NB 9
5.2 RCV Distortion and Noise - 800 Hz NB 10
5.2 RCV Distortion and Noise - 1000 Hz NB 11
5.2 RCV Distortion and Noise - 1250 Hz NB 12
5.2 RCV Distortion and Noise - 1600 Hz NB 13
5.2 RCV Distortion and Noise - 2000 Hz NB 14
5.2 RCV Distortion and Noise - 2500 Hz NB 15
5.2 RCV Distortion and Noise - 3150 Hz NB 16
Report - Receive Distortion and Noise (Conversational Gain) 17
5.2 RCV Distortion and Noise - 400 Hz NB 18
5.2 RCV Distortion and Noise - 500 Hz NB 18
5.2 RCV Distortion and Noise - 630 Hz NB 19
5.2 RCV Distortion and Noise - 800 Hz NB 20
5.2 RCV Distortion and Noise - 1000 Hz NB 21
5.2 RCV Distortion and Noise - 1250 Hz NB 22
5.2 RCV Distortion and Noise - 1600 Hz NB 23
5.2 RCV Distortion and Noise - 2000 Hz NB 24
5.2 RCV Distortion and Noise - 2500 Hz NB 25
5.2 RCV Distortion and Noise - 3150 Hz NB 26
5.3 Frequency Response 8N FF HANB 27
5.3 Frequency Response 8N DF HANB 28
5.3 Frequency Response 2N FF HANB 29
5.3 Frequency Response 2N DF HANB 30

Overall Receive Delay NB

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



Channel	Delay
RCV*Source	162.0 ms

2025/1/16 9:38 ACQUA 6.0.200
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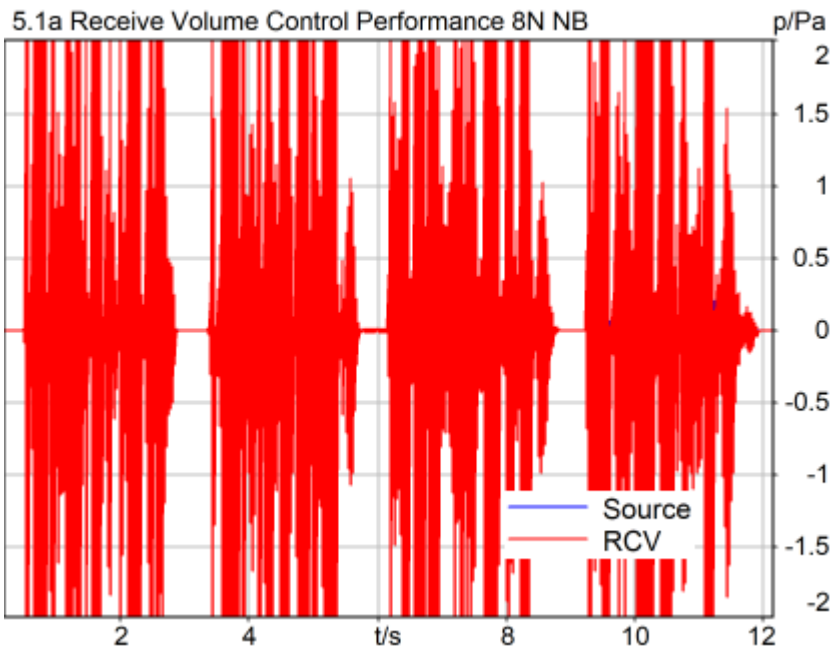
5.1a Receive Volume Control Performance 8N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.15 dB[SPL]	84.04%	23.15 dB[SPL]	Ok

Ok

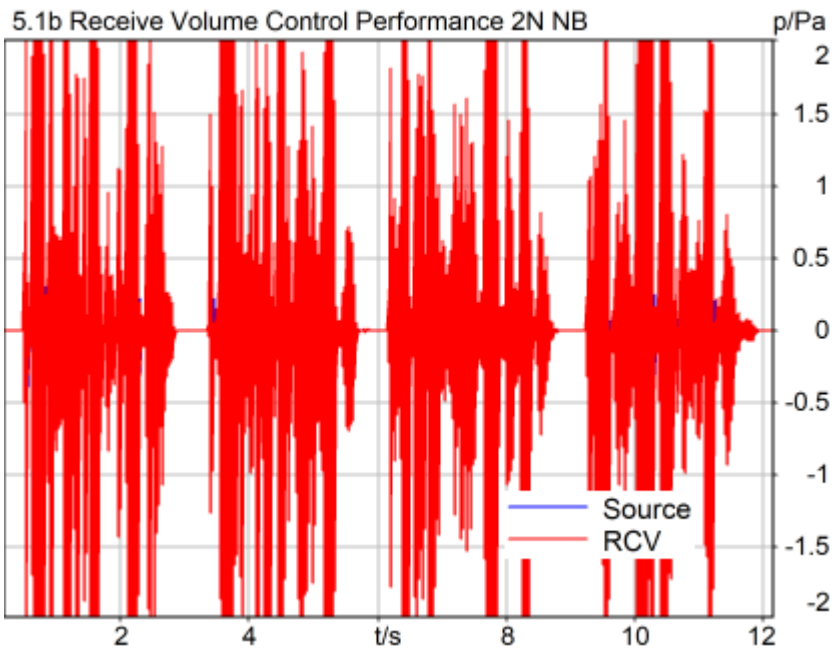
2025/1/16 9:39 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.78 dB[SPL]	84.09%	17.78 dB[SPL]	Ok

Ok

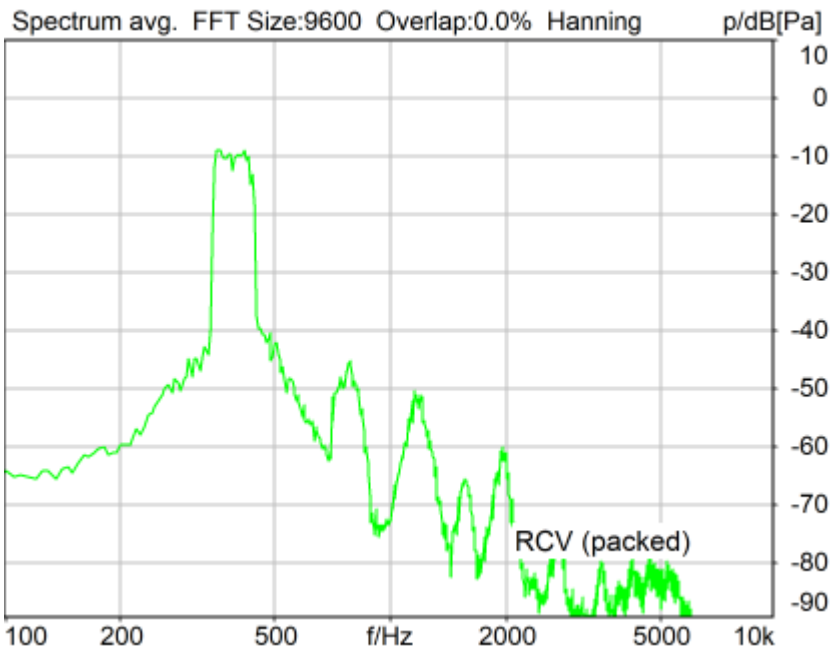
2025/1/16 9:47 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 400 Hz NB

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



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

Ok

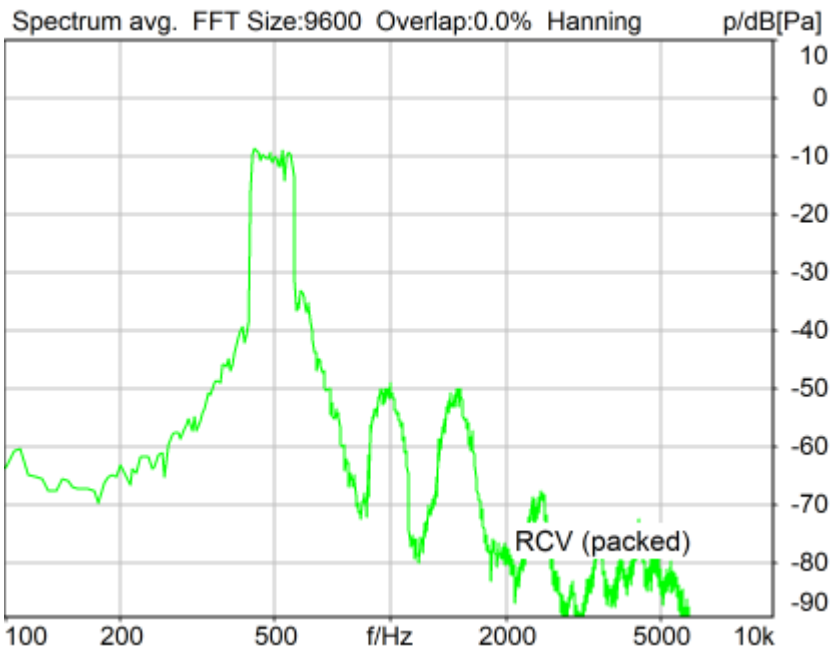
2025/1/15 16:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 31.47 dB (2.67%) Ok

Ok

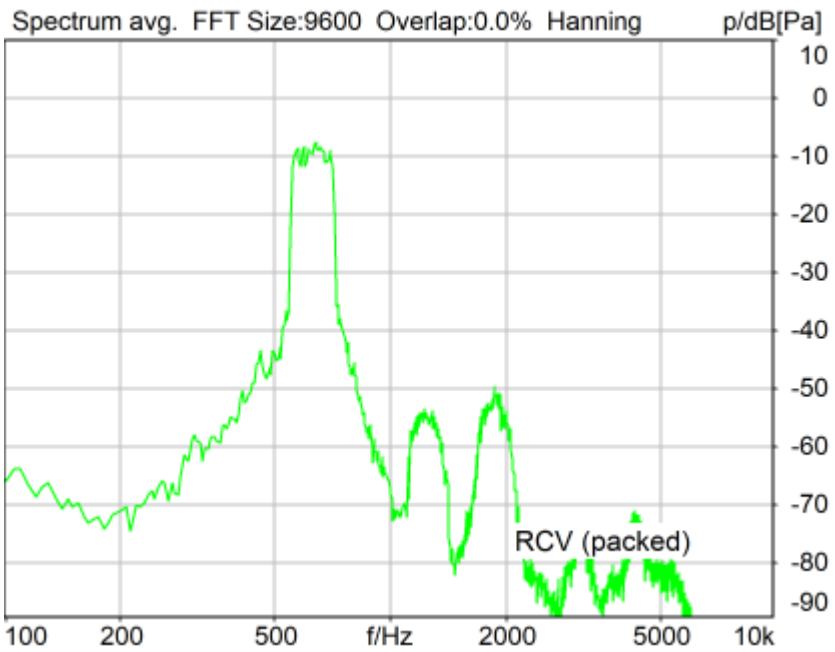
2025/1/15 16:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



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

Ok

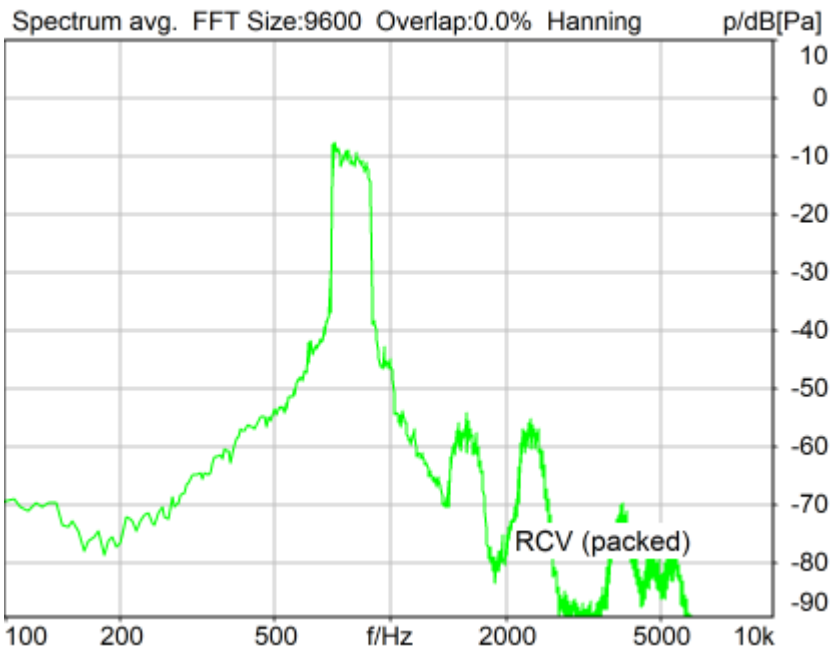
2025/1/15 16:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 33.93 dB (2.01%) Ok

Ok

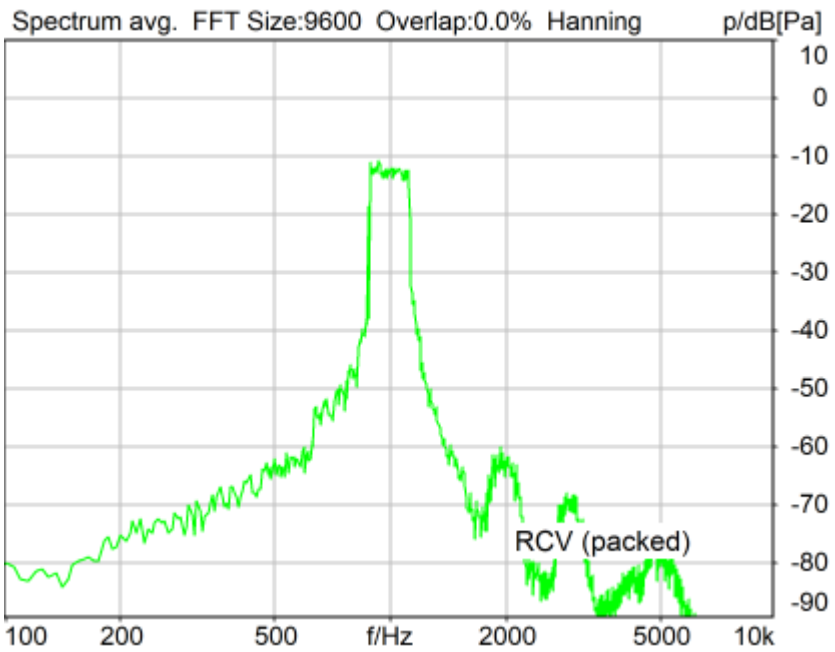
2025/1/15 16:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 31.75 dB (2.59%) Ok

Ok

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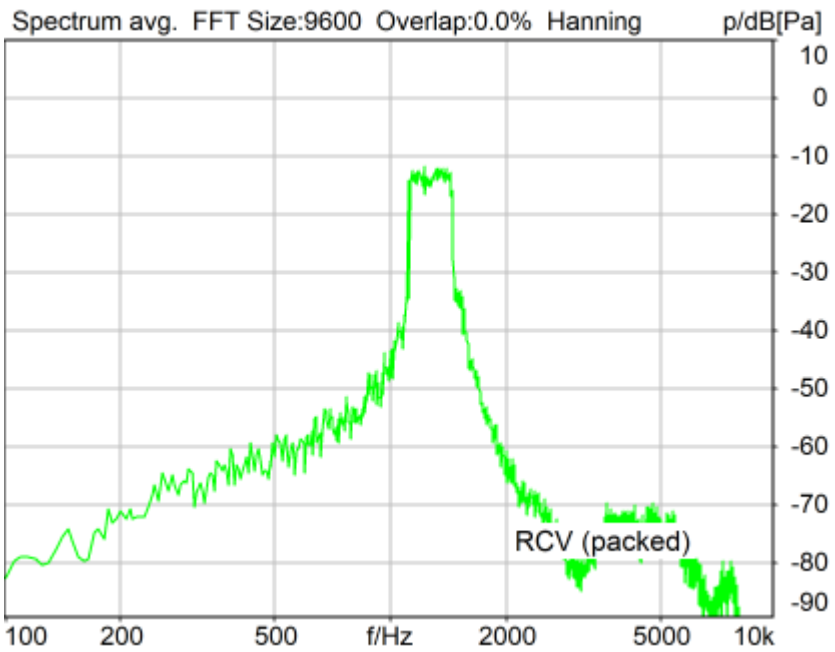
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.24 dB (6.89%) Ok

Ok

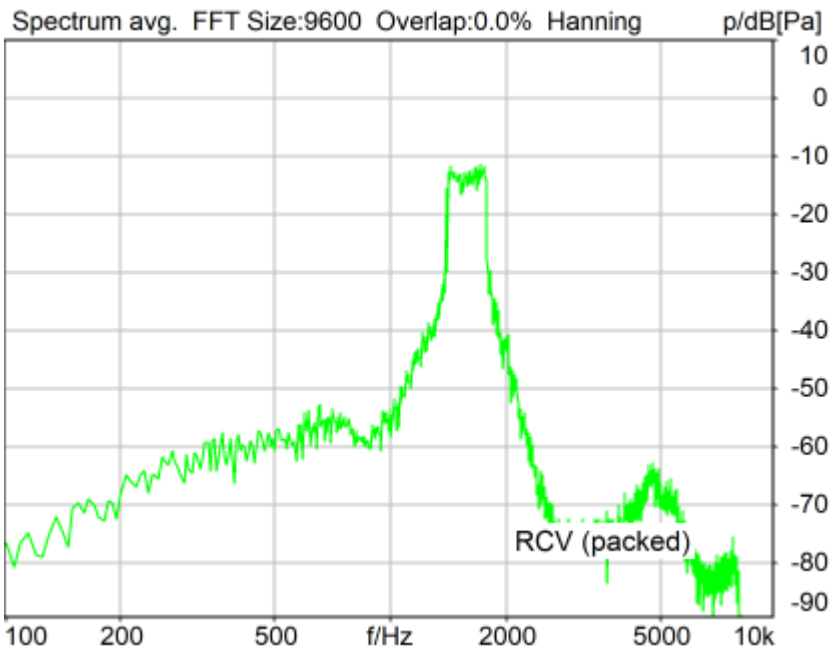
2025/1/15 16:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 23.55 dB (6.65%) Ok

Ok

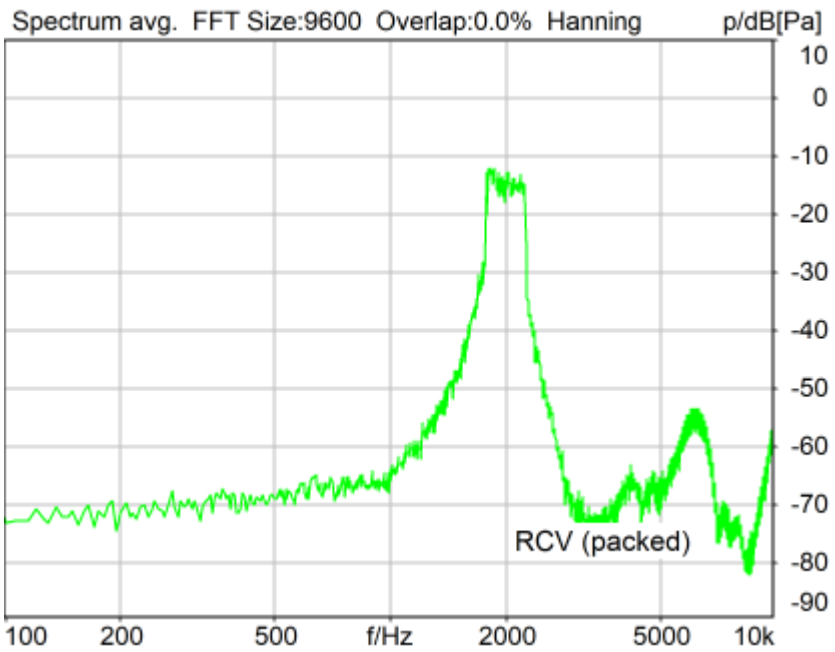
2025/1/15 16:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.97 dB (7.97%) Ok

Ok

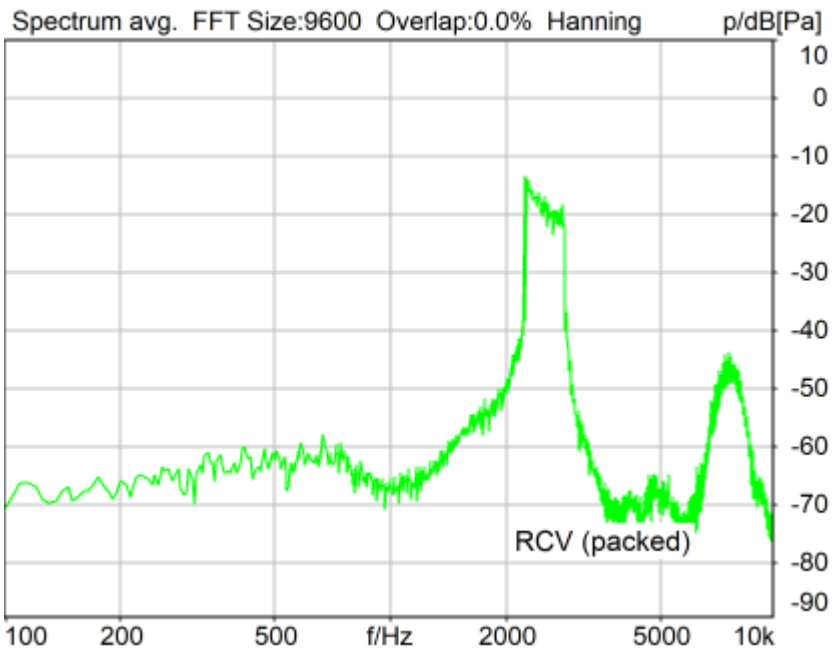
2025/1/15 16:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 23.63 dB (6.58%) Ok

Ok

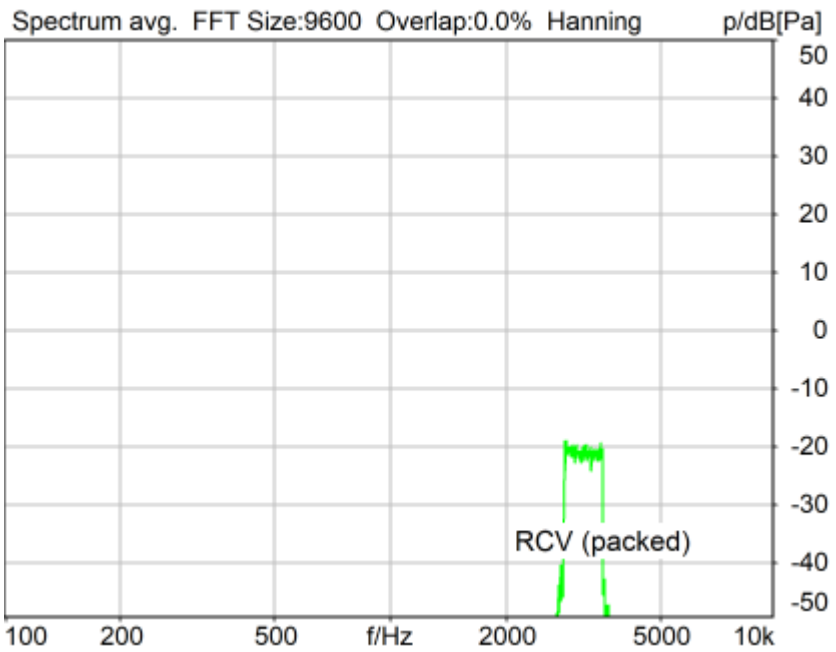
2025/1/15 16:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 26.58 dB (4.69%) Ok

Ok

2025/1/15 16:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	400Hz	33.49 dB
2	500Hz	31.47 dB
3	630Hz	34.39 dB
4	800Hz	33.93 dB
5	1000Hz	31.75 dB
6	1250Hz	23.24 dB
7	1600Hz	23.55 dB
8	2000Hz	21.97 dB
9	2500Hz	23.63 dB
10	3150Hz	26.58 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.97dB at 2000Hz.

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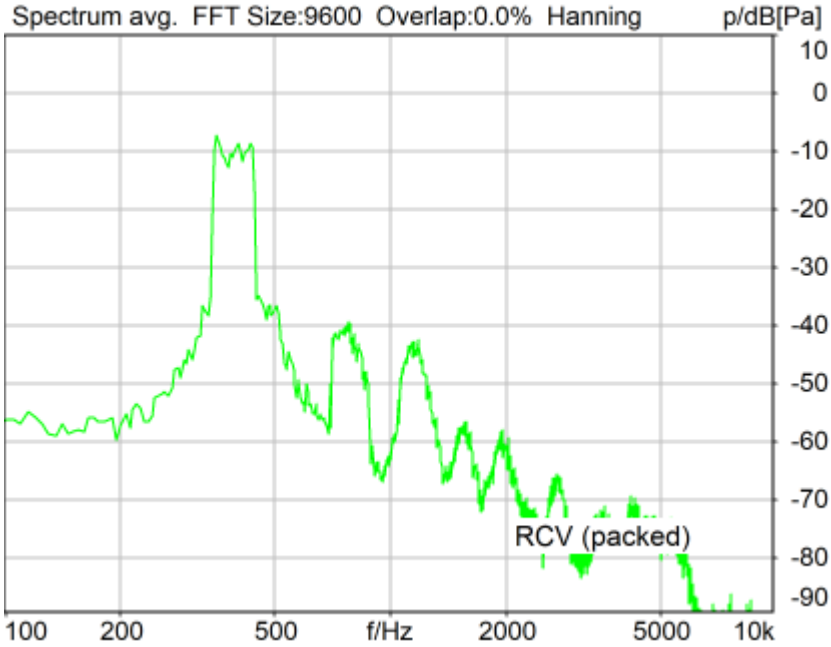
5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 27.37 dB (4.28%) Ok

Ok

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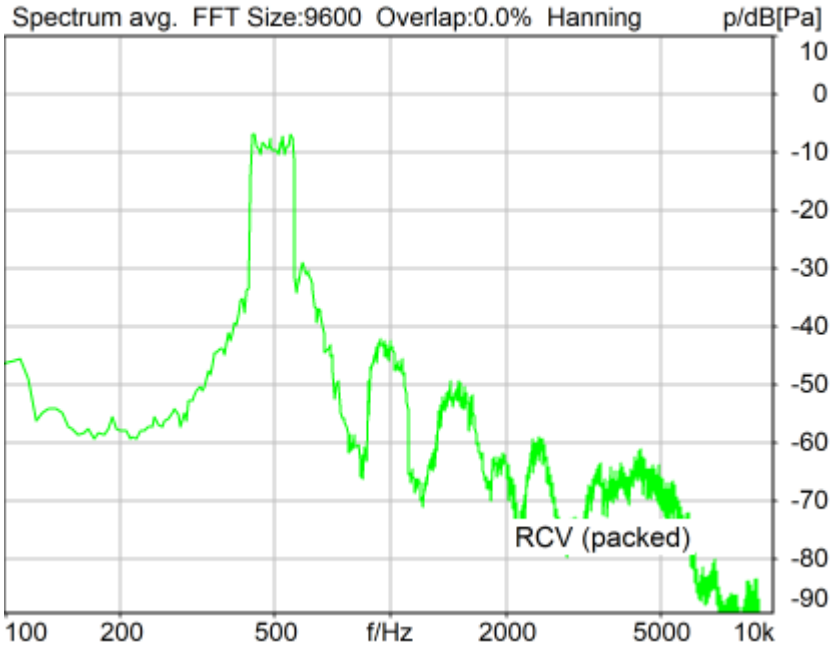
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 27.26 dB (4.33%) Ok

Ok

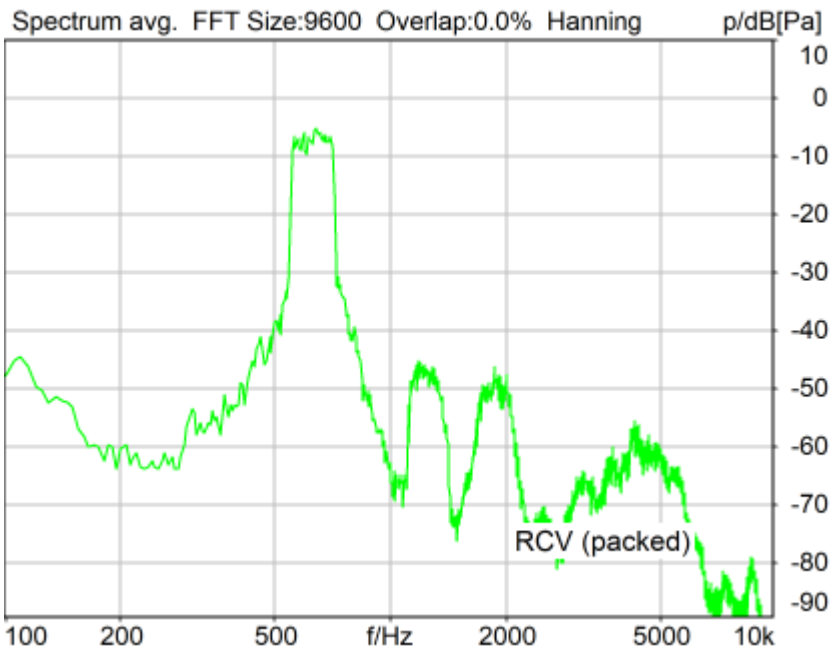
2025/1/15 15:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 31.21 dB (2.75%) Ok

Ok

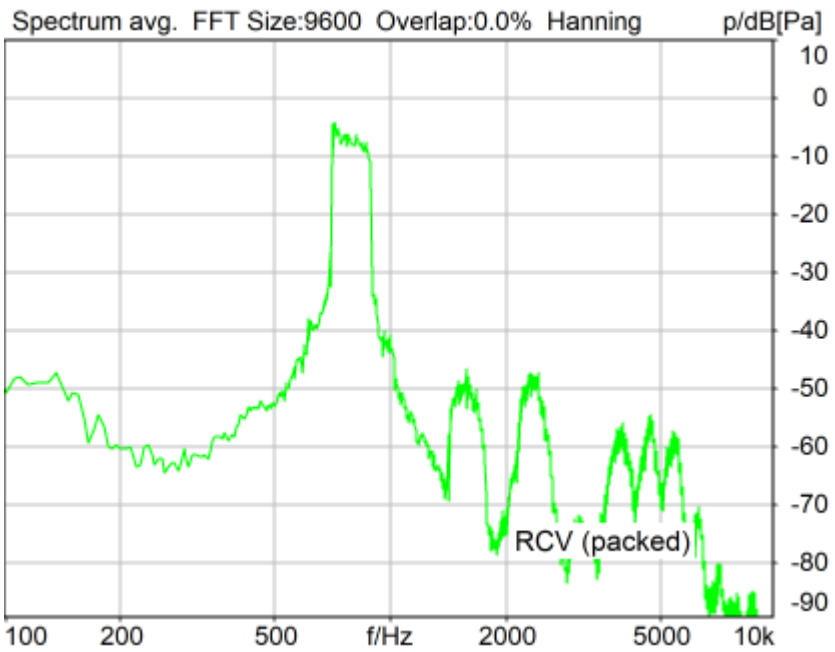
2025/1/15 15:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 31.81 dB (2.57%) Ok

Ok

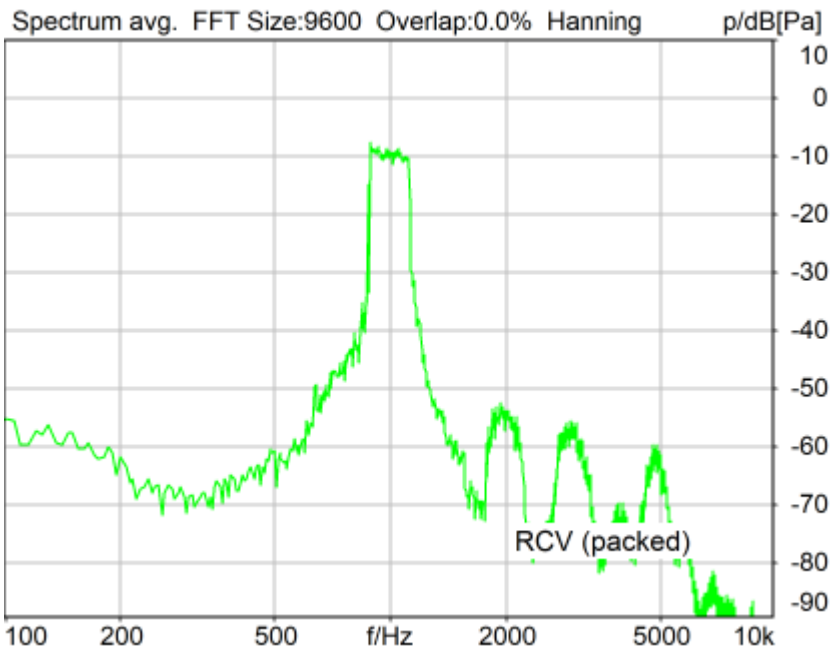
2025/1/15 15:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



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

Ok

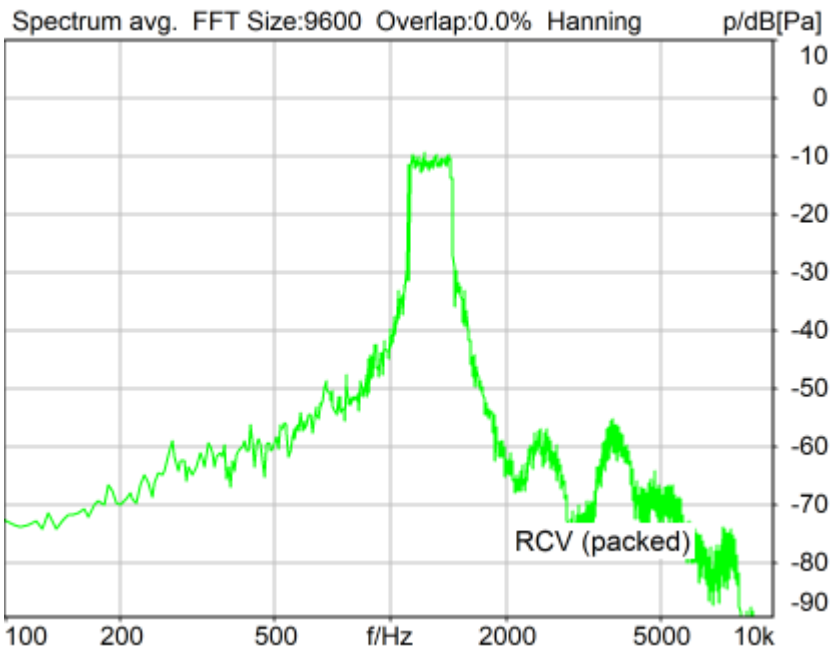
2025/1/15 15:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.79 dB (6.46%) Ok

Ok

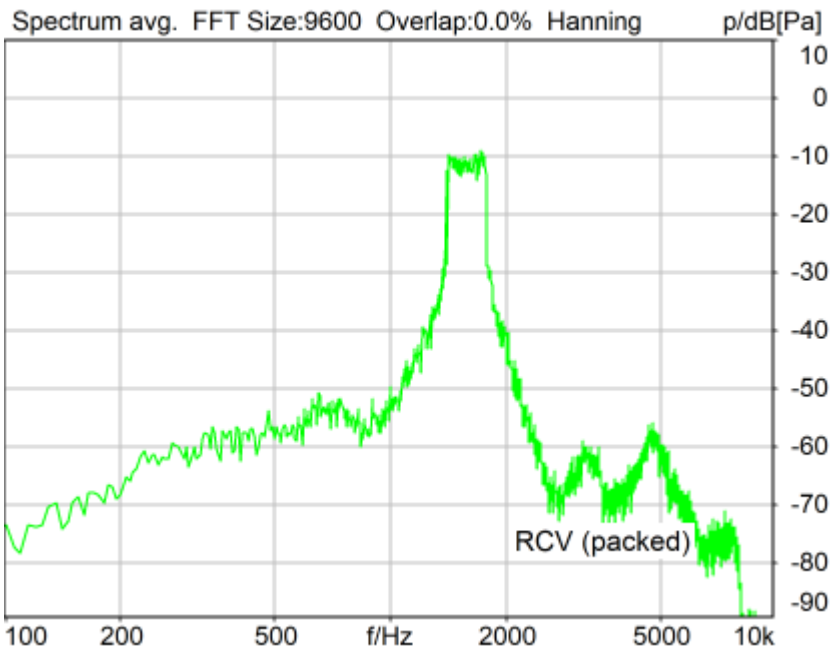
2025/1/15 15:59 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



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

Ok

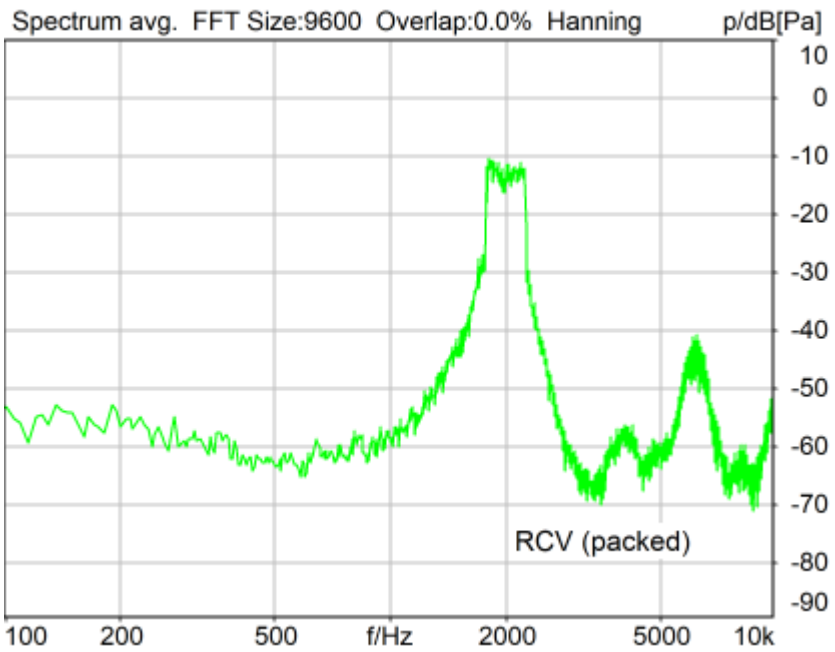
2025/1/15 15:59 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 20.04 dB (9.96%) Ok

Ok

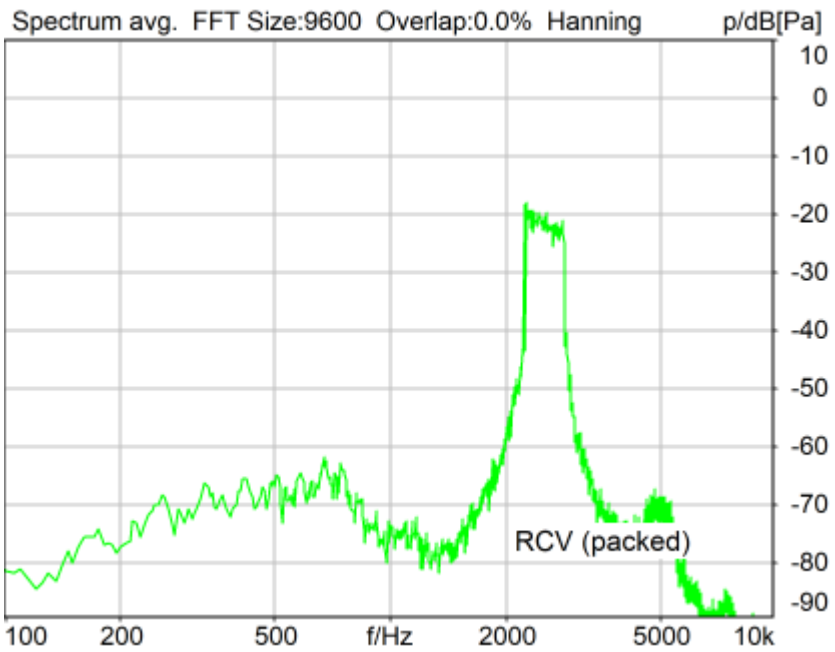
2025/1/15 16:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 28.03 dB (3.97%) Ok

Ok

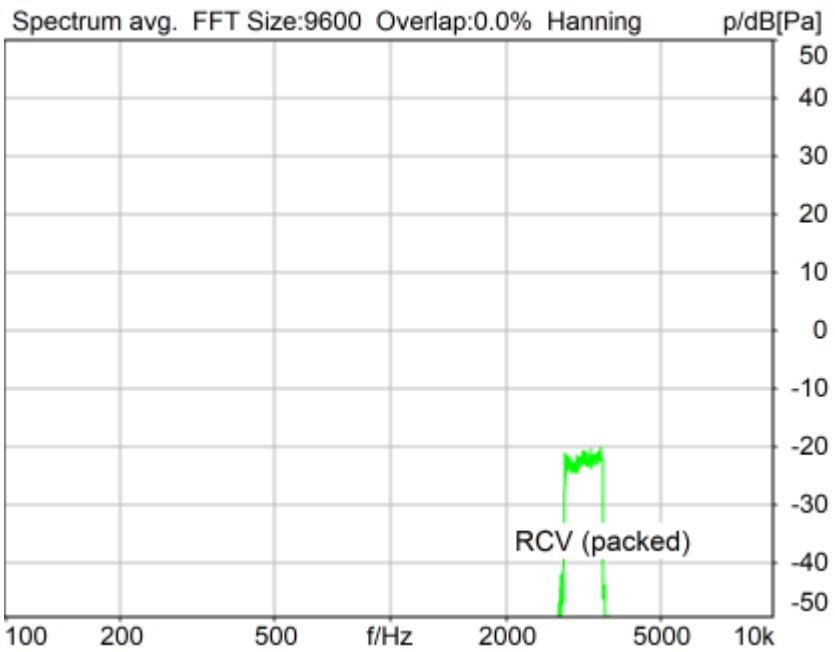
2025/1/15 16:07 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 29.98 dB (3.17%) Ok

Ok

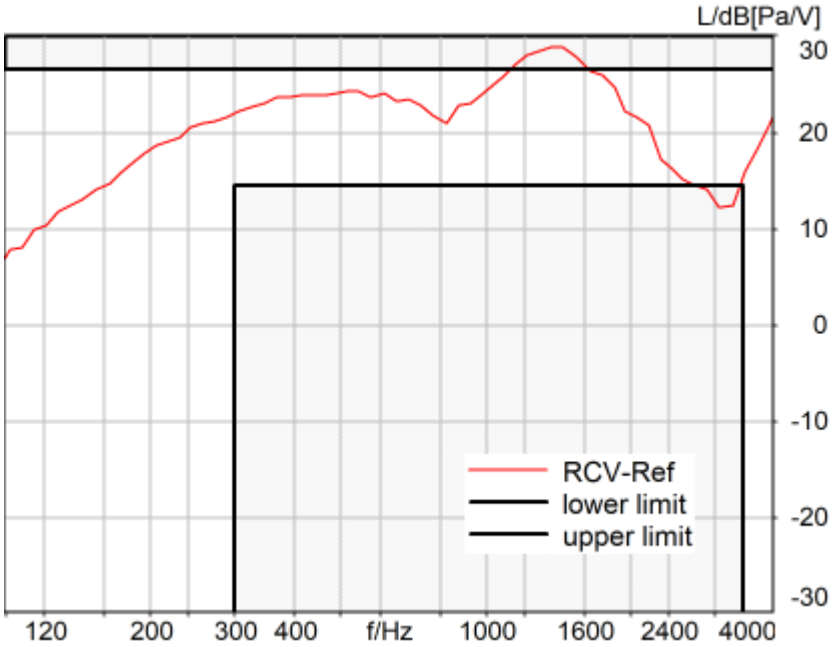
2025/1/15 16:08 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
-2.30 dB at 3058.6 Hz Not Ok

Not Ok

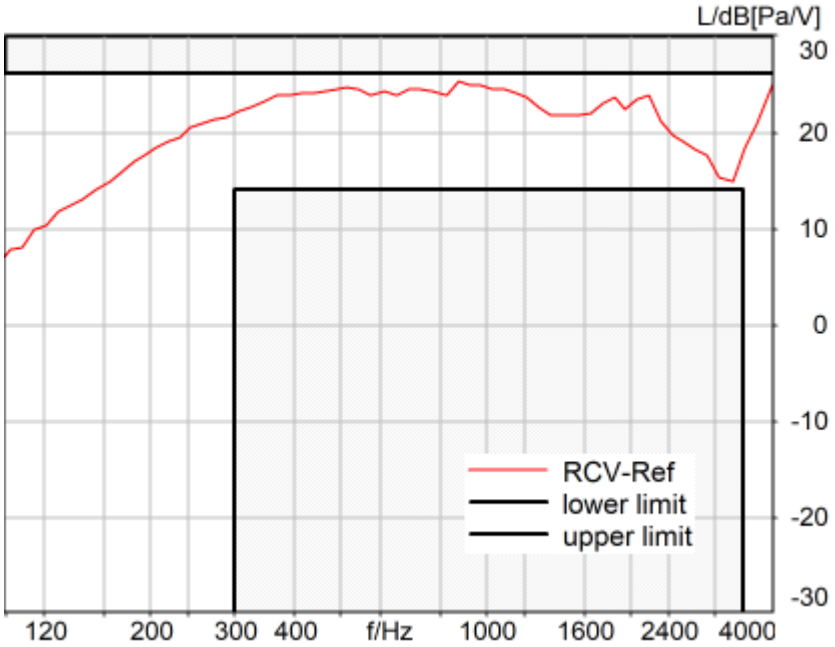
2025/1/16 9:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
0.84 dB at 873.9 Hz Ok

Ok

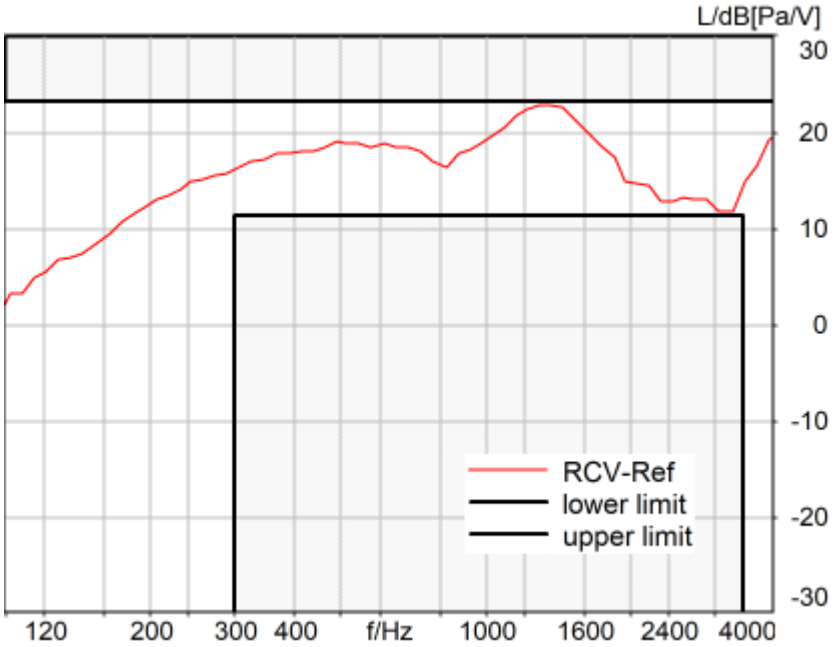
2025/1/16 9:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.43 dB at 3058.6 Hz Ok

Ok

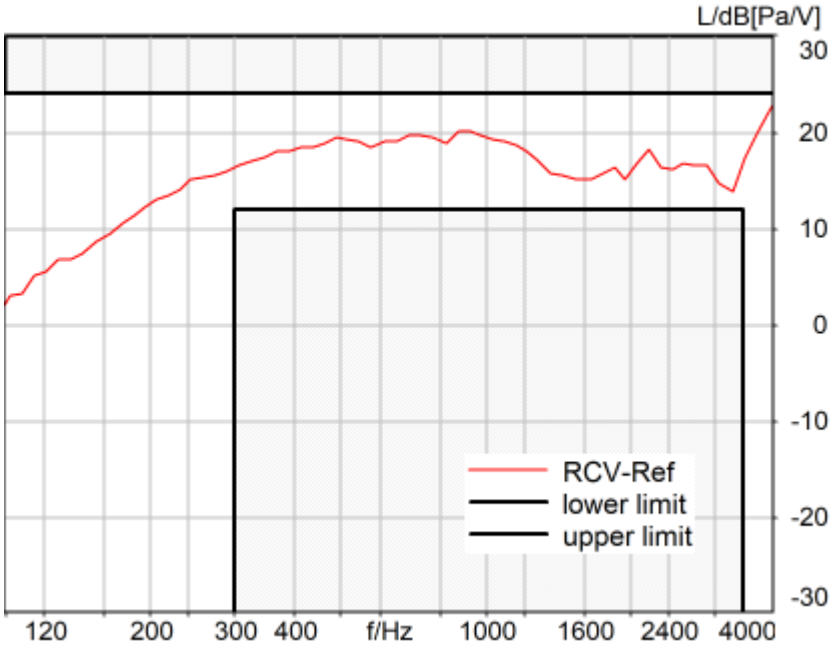
2025/1/16 9:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
1.82 dB at 3882.4 Hz Ok

Ok

2025/1/16 9:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/14 15:41
Responsible Person	audio

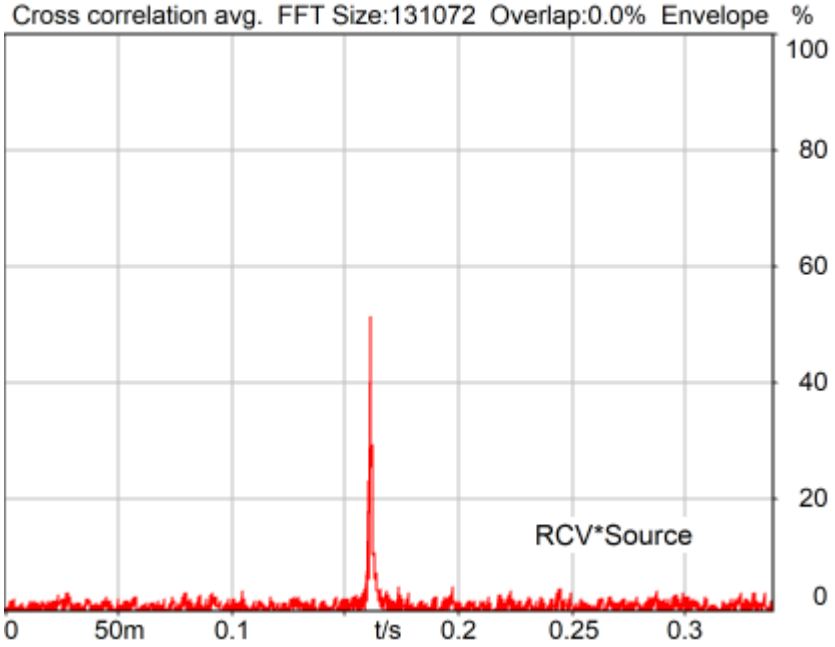
Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	161.7	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	17.45	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.06	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.89	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.64	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.06	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.09	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.61	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.31	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.92	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.18	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.01	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.92	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1360.9 Hz	0.39	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	2.27	LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2

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

Overall Receive Delay NB

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

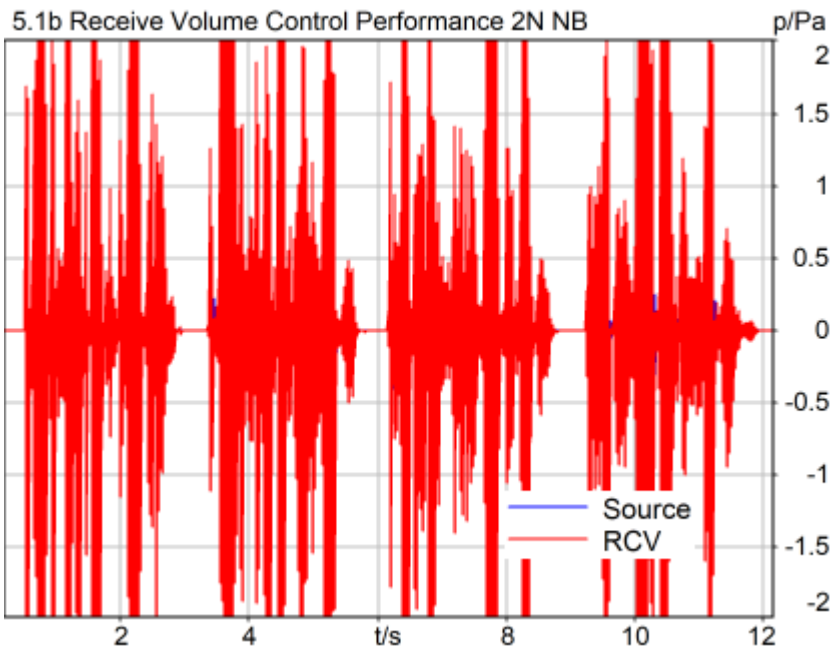


Channel	Delay
RCV*Source	161.7 ms

2025/3/12 13:06 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.45 dB[SPL]	83.11%	17.45 dB[SPL]	Ok

Ok

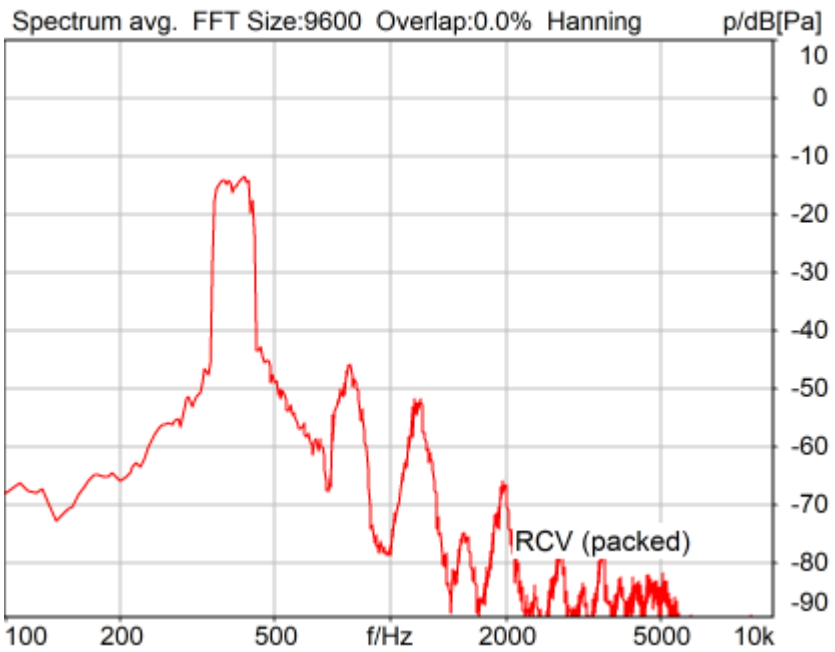
2025/3/12 13:08 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 400 Hz NB

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



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

Ok

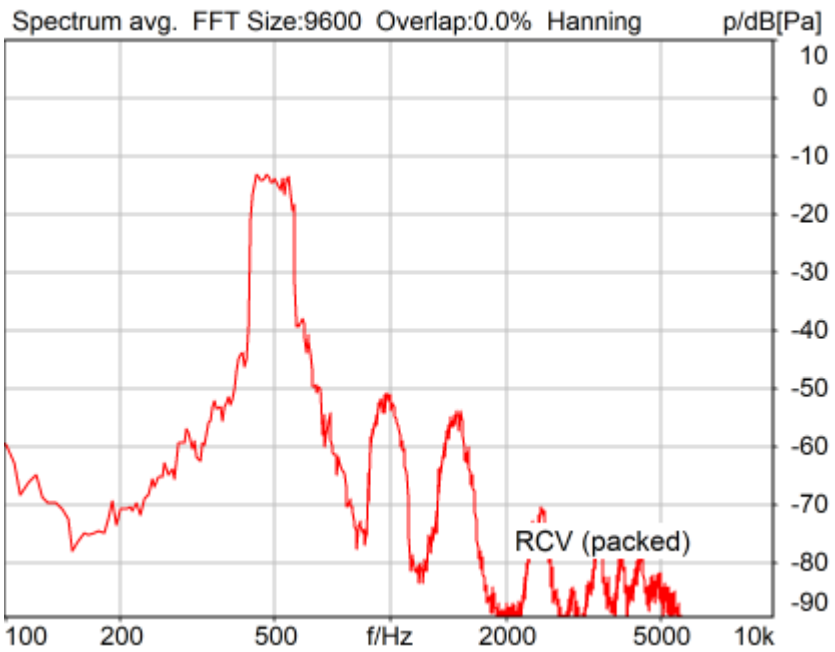
2025/3/12 13:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



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

Ok

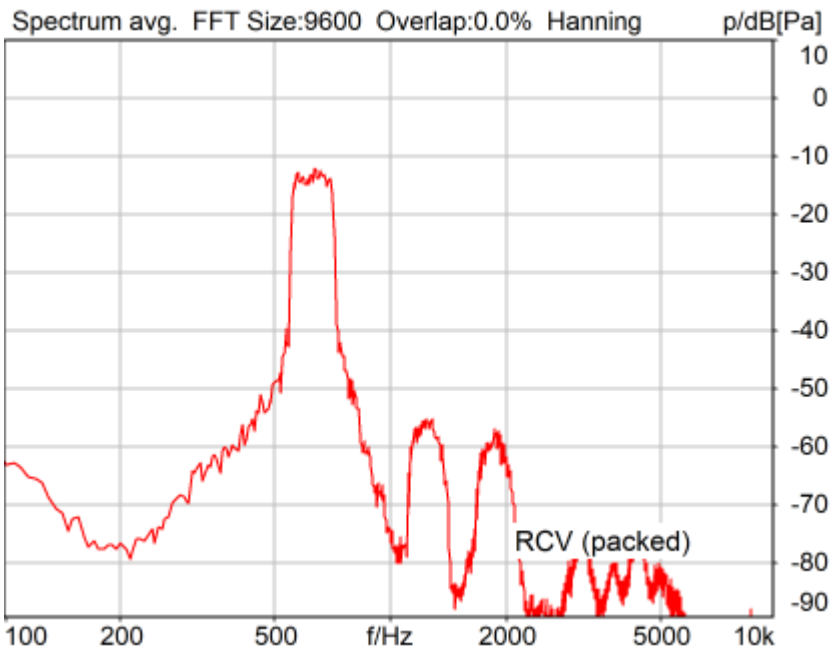
2025/3/12 13:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.64 dB (1.85%) Ok

Ok

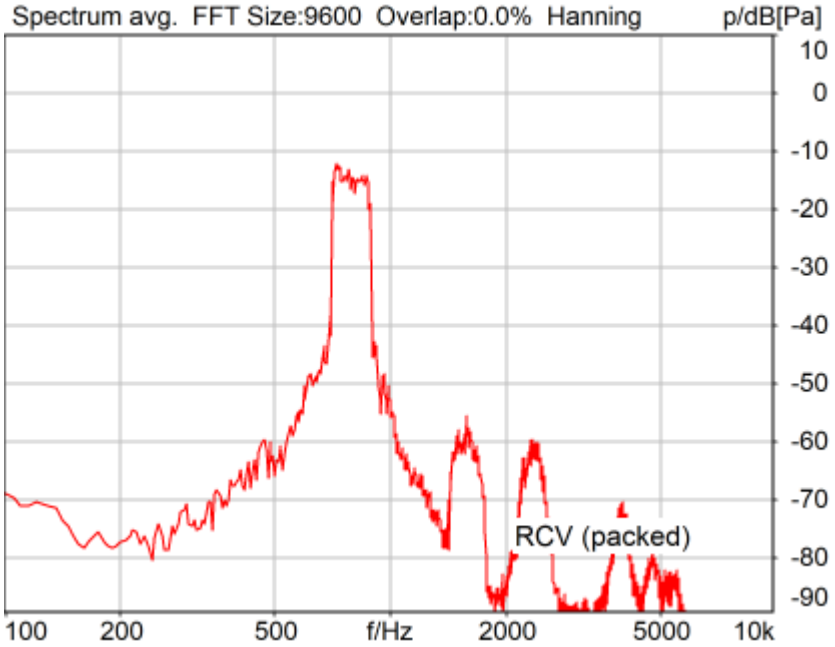
2025/3/12 13:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 35.06 dB (1.77%) Ok

Ok

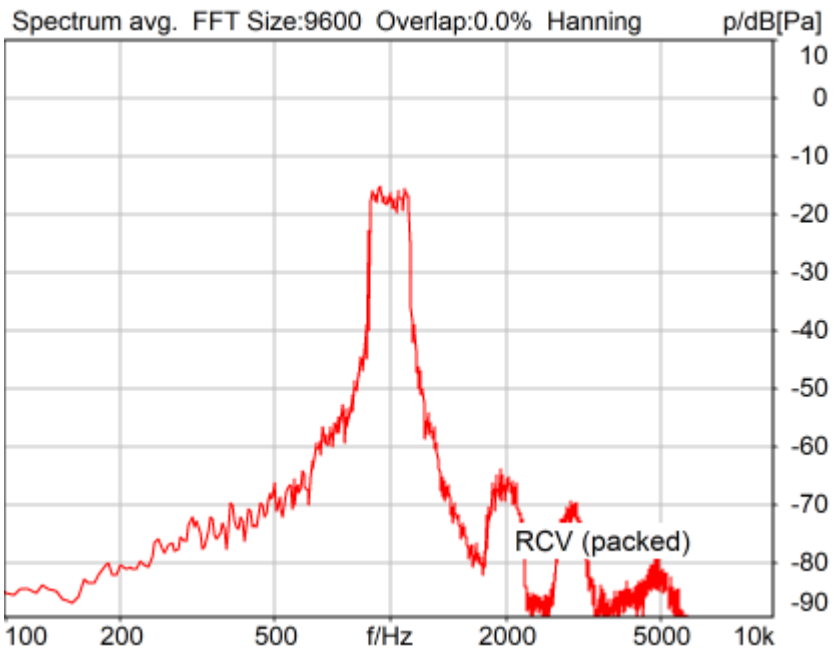
2025/3/12 13:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 32.09 dB (2.49%) Ok

Ok

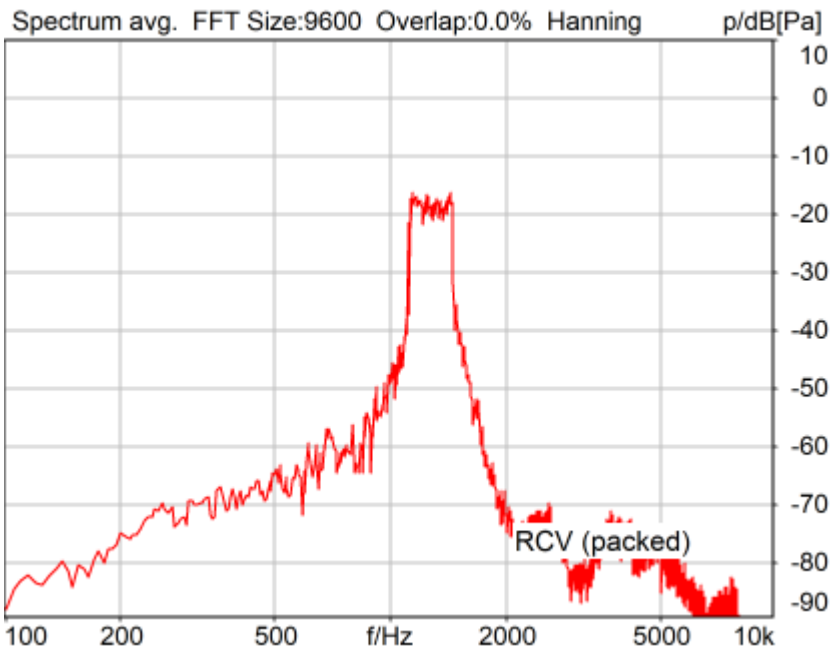
2025/3/12 13:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.61 dB (6.60%) Ok

Ok

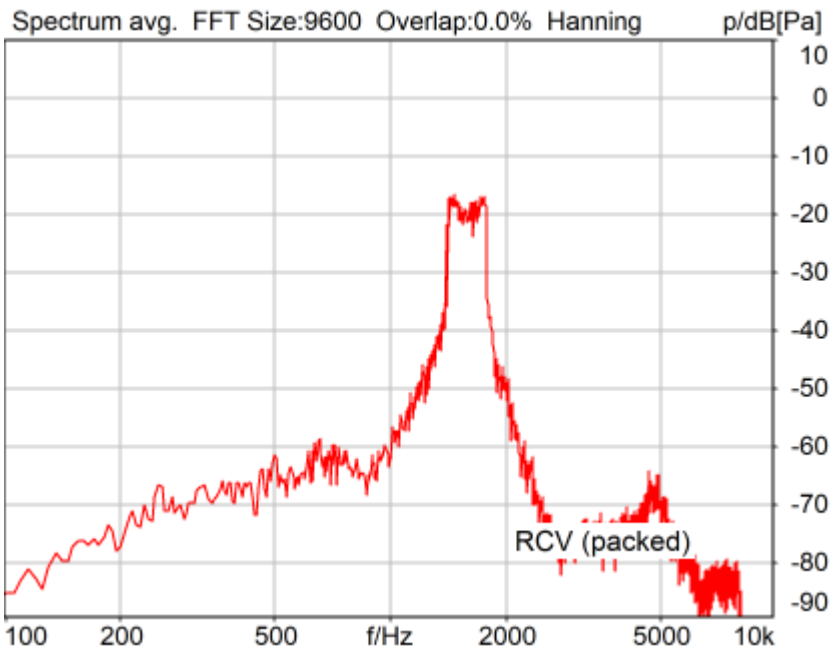
2025/3/12 13:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 24.31 dB (6.09%) Ok

Ok

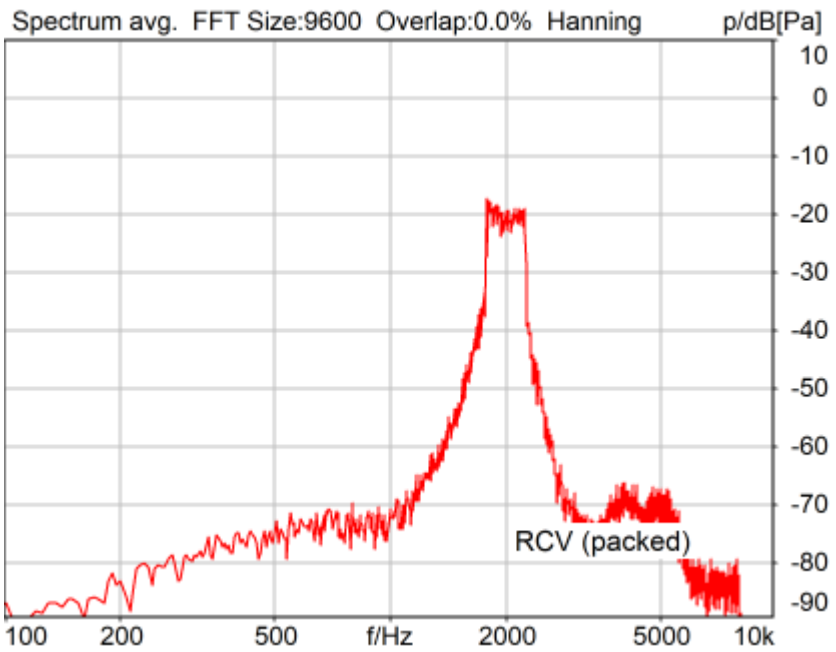
2025/3/12 13:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.92 dB (8.02%) Ok

Ok

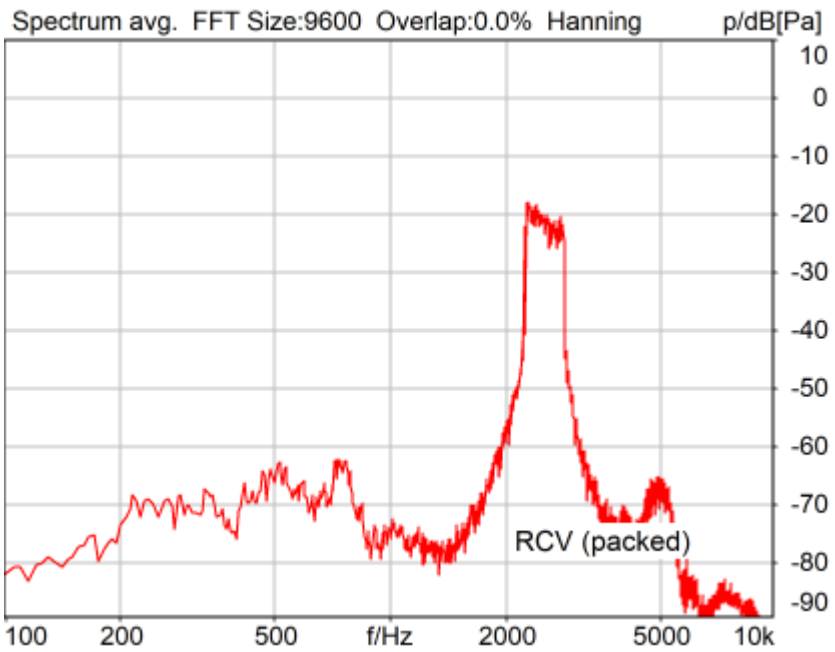
2025/3/12 13:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 29.18 dB (3.48%) Ok

Ok

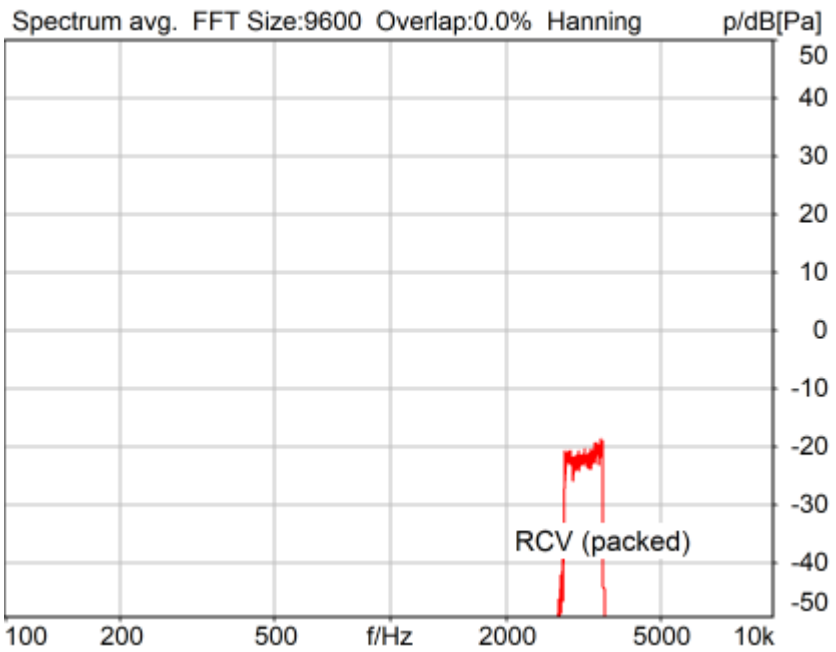
2025/3/12 13:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 30.01 dB (3.16%) Ok

Ok

2025/3/12 13:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

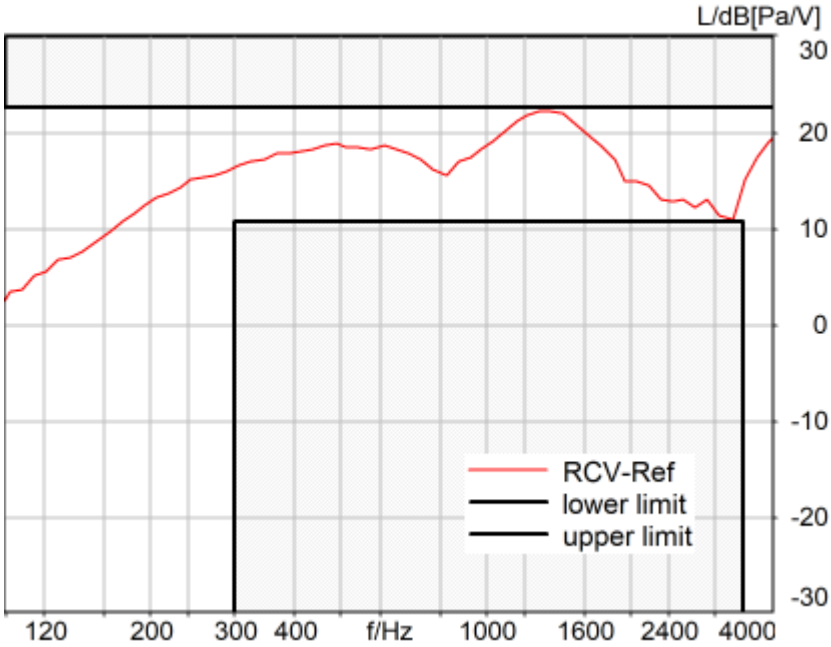
Region	Frequency	SDNR
1	400Hz	31.06 dB
2	500Hz	31.89 dB
3	630Hz	34.64 dB
4	800Hz	35.06 dB
5	1000Hz	32.09 dB
6	1250Hz	23.61 dB
7	1600Hz	24.31 dB
8	2000Hz	21.92 dB
9	2500Hz	29.18 dB
10	3150Hz	30.01 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.92dB at 2000Hz.

2025/3/12 13:19 ACQUA

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.39 dB at 1360.9 Hz Ok

Ok

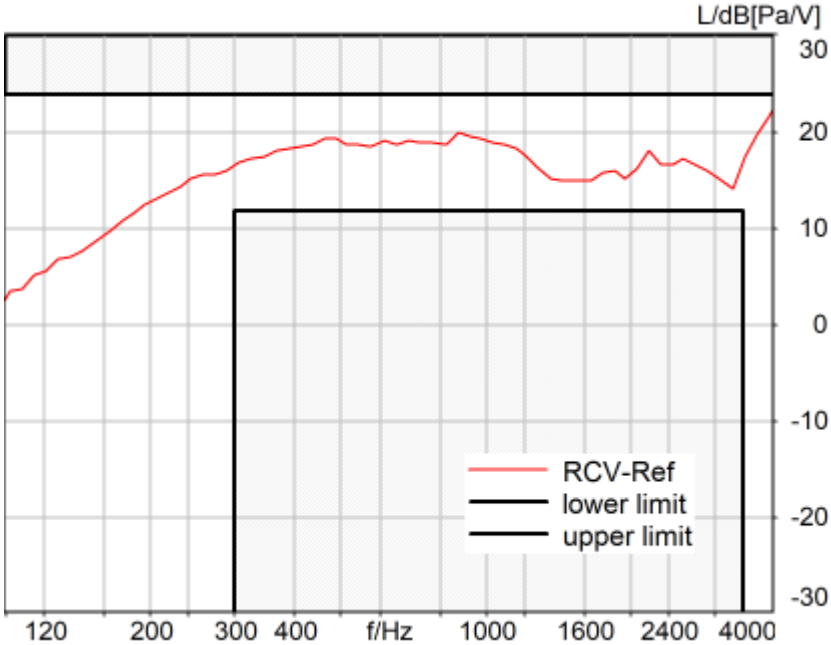
2025/3/12 13:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
2.27 dB at 3245.6 Hz Ok

Ok

2025/3/12 13:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:50
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	152.4	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	23.37	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	17.44	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.13	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.04	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.31	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.97	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.34	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.71	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.12	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.82	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.25	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.83	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.51	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.97	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.49	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	22.35	LTE

- 5000 Hz WB		0.0 dB		Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 1600Hz)	20.25	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.54	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.13	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.86	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.54	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.53	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.65	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.38	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.83	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.47	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.34	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.65	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.83	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.93	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.22	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.34	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response 8N FF	Not Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	-1.92	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.39	LTE

DF		scheme [dB], 4369.4 Hz		Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.55	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 1948.0 Hz	0.93	LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900

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5.1b Receive Volume Control Performance 2N WB 7
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5.2 RCV Distortion and Noise - 315 Hz WB 9
5.2 RCV Distortion and Noise - 400 Hz WB 10
5.2 RCV Distortion and Noise - 500 Hz WB 11
5.2 RCV Distortion and Noise - 630 Hz WB 12
5.2 RCV Distortion and Noise - 800 Hz WB 13
5.2 RCV Distortion and Noise - 1000 Hz WB 14
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5.2 RCV Distortion and Noise - 315 Hz WB 24
5.2 RCV Distortion and Noise - 400 Hz WB 24
5.2 RCV Distortion and Noise - 500 Hz WB 25
5.2 RCV Distortion and Noise - 630 Hz WB 26
5.2 RCV Distortion and Noise - 800 Hz WB 27
5.2 RCV Distortion and Noise - 1000 Hz WB 28
5.2 RCV Distortion and Noise - 1250 Hz WB 29
5.2 RCV Distortion and Noise - 1600 Hz WB 30
5.2 RCV Distortion and Noise - 2000 Hz WB 31
5.2 RCV Distortion and Noise - 2500 Hz WB 32
5.2 RCV Distortion and Noise - 3150 Hz WB 33
5.2 RCV Distortion and Noise - 4000 Hz WB 34
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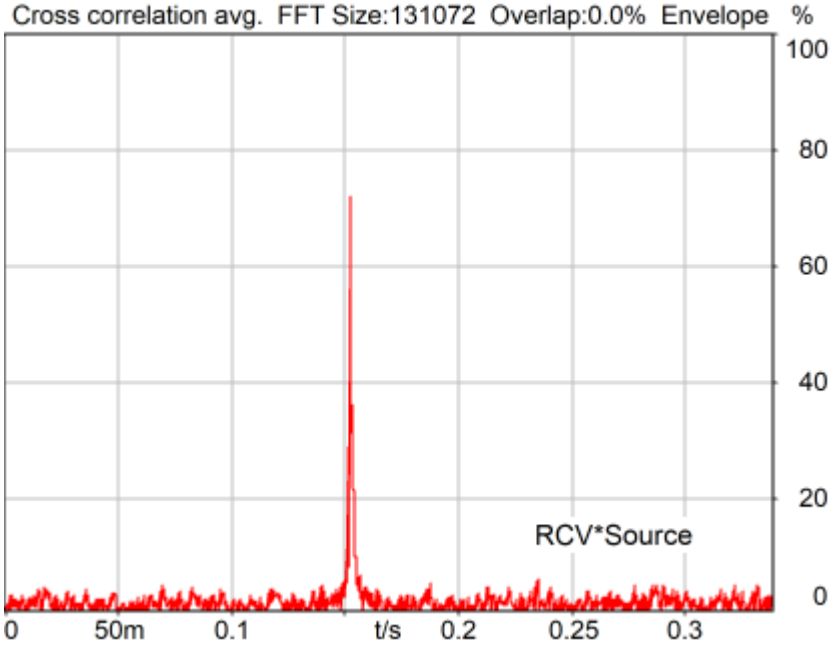
5.3 Frequency Response 8N FF 37
5.3 Frequency Response 8N DF 38
5.3 Frequency Response 2N FF 38
5.3 Frequency Response 2N DF 39

Overall Receive Delay WB

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



Channel	Delay
RCV*Source	152.4 ms

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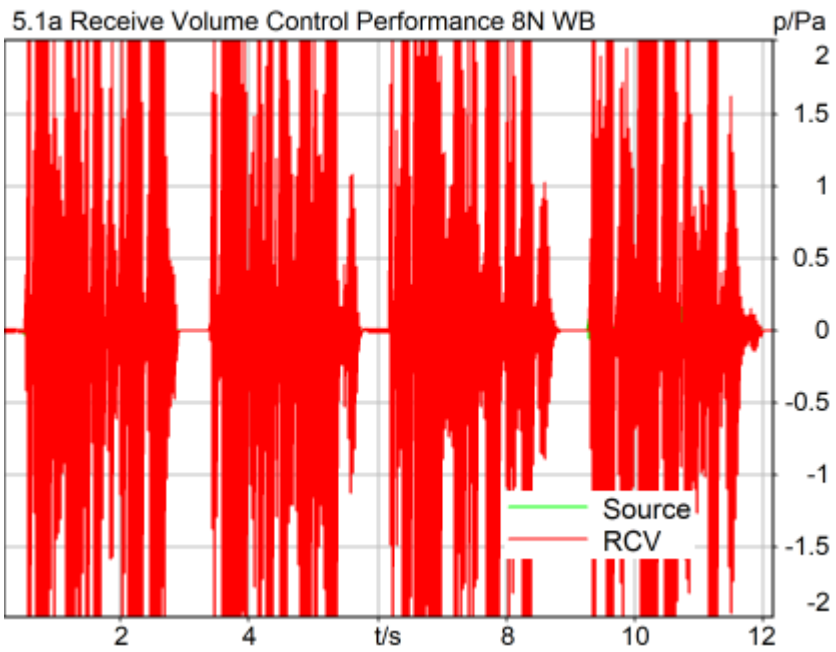
5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.37 dB[SPL]	83.96%	23.37 dB[SPL]	Ok

Ok

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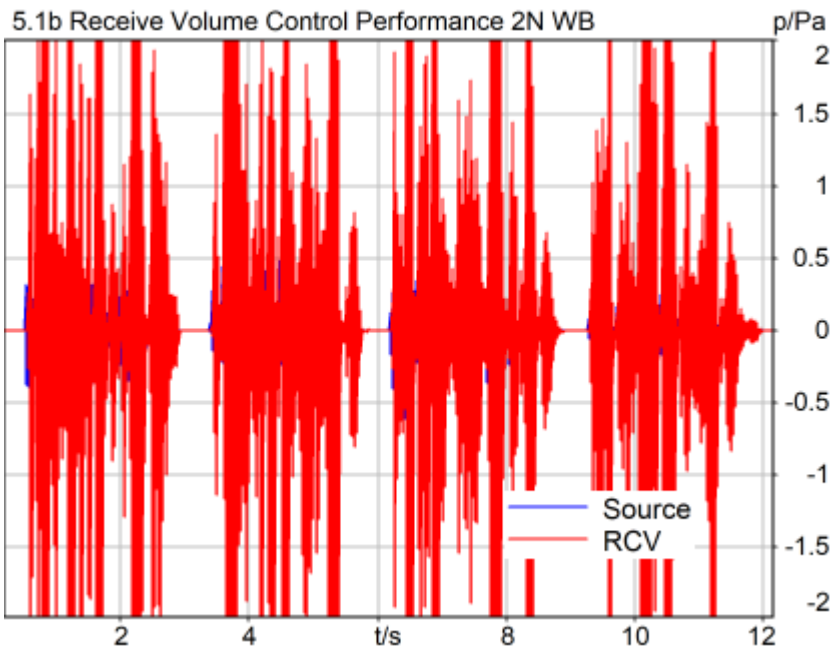
Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.44 dB[SPL]	84.29%	17.44 dB[SPL]	Ok

Ok

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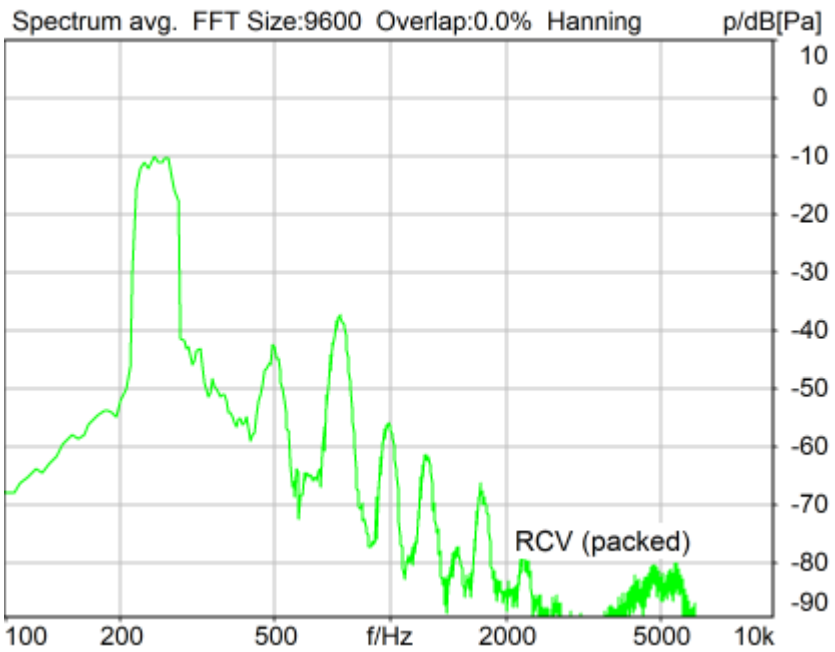
Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 27.13 dB (4.40%) Ok

Ok

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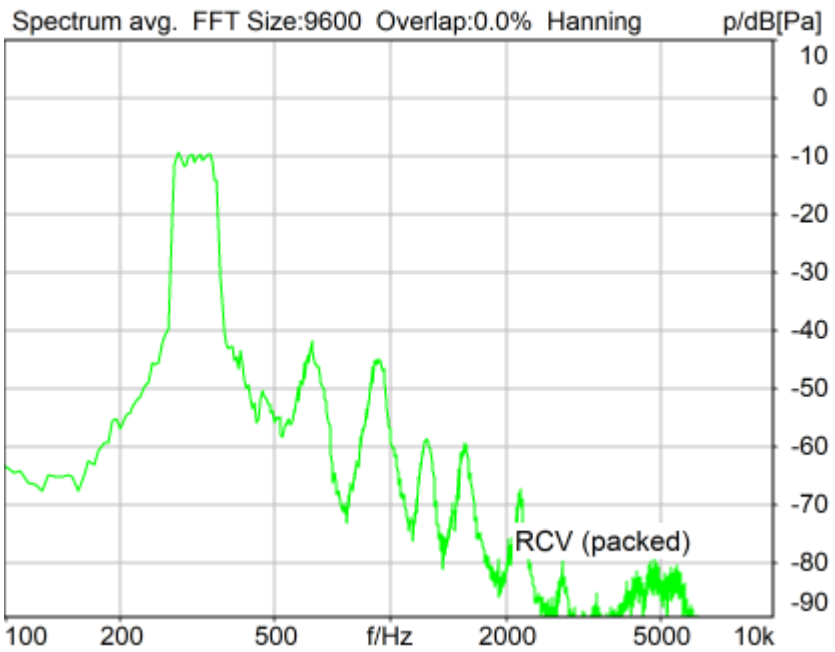
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 32.04 dB (2.50%) Ok

Ok

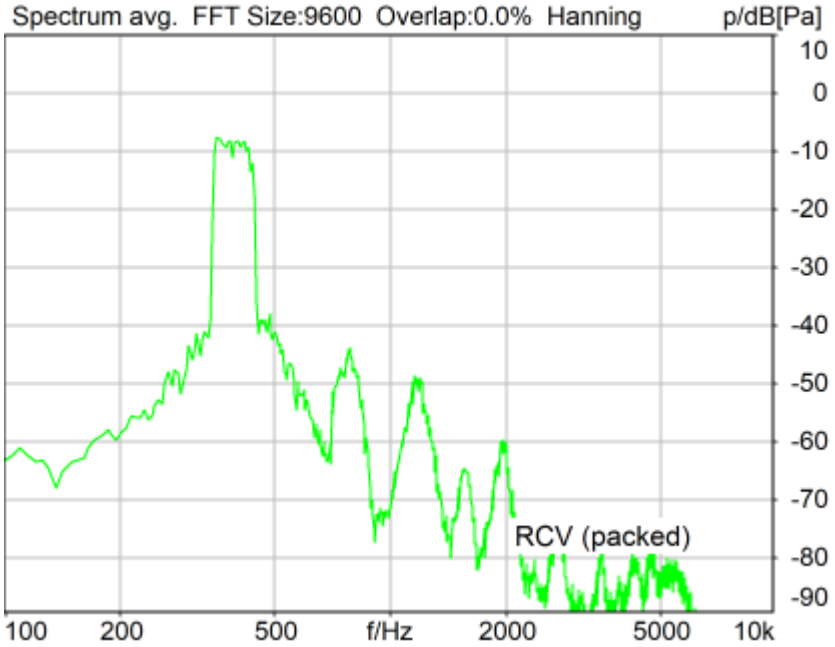
2025/1/15 17:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 33.31 dB (2.16%) Ok

Ok

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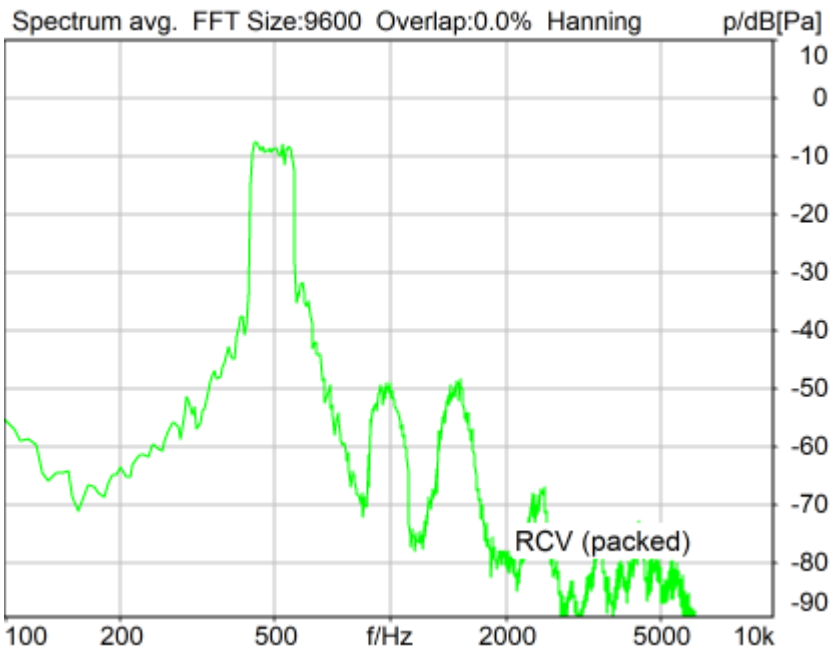
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



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

Ok

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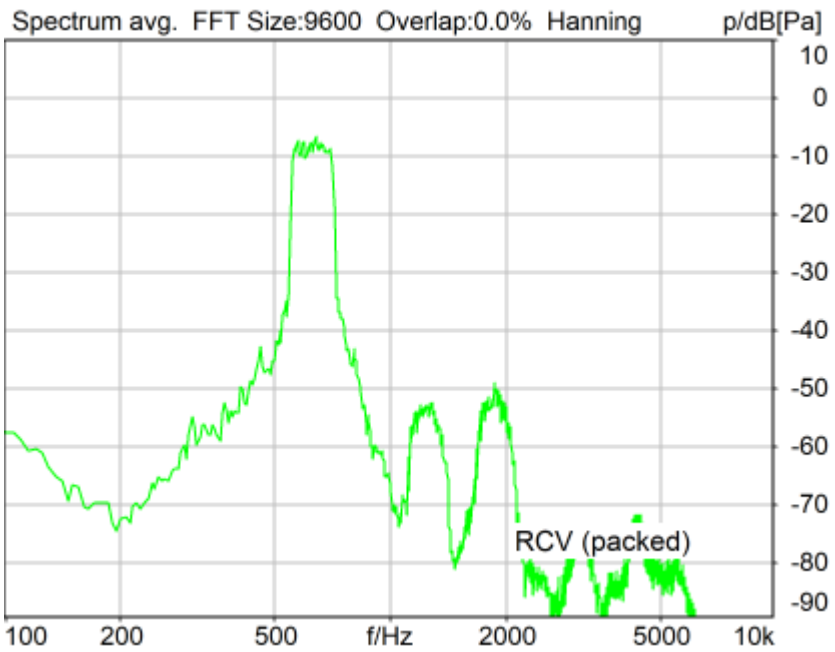
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.34 dB (1.92%) Ok

Ok

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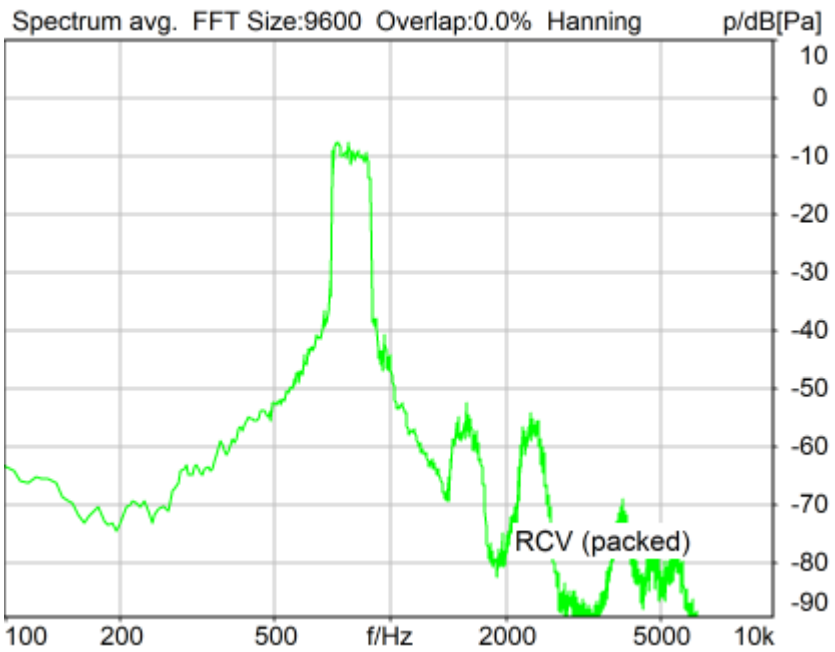
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 33.71 dB (2.06%) Ok

Ok

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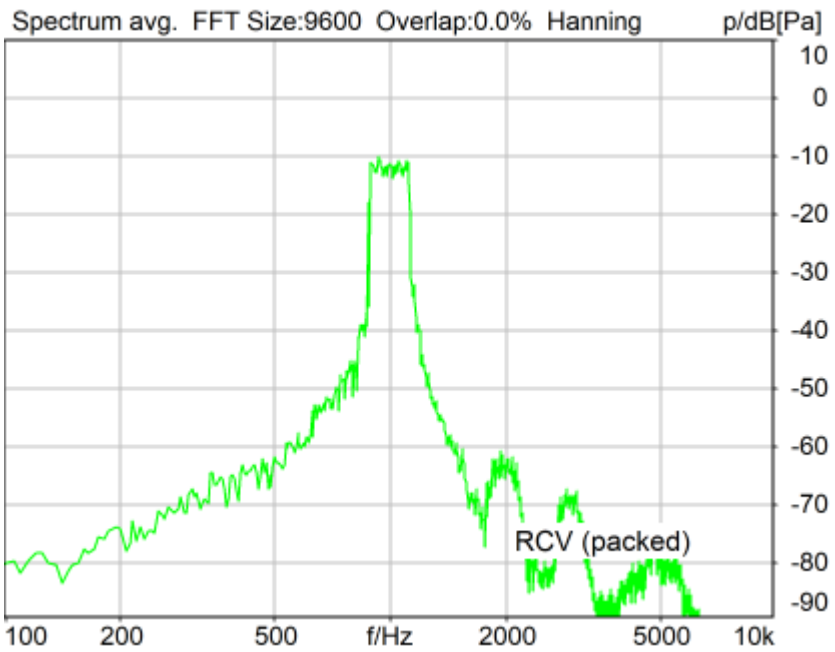
Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



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

Ok

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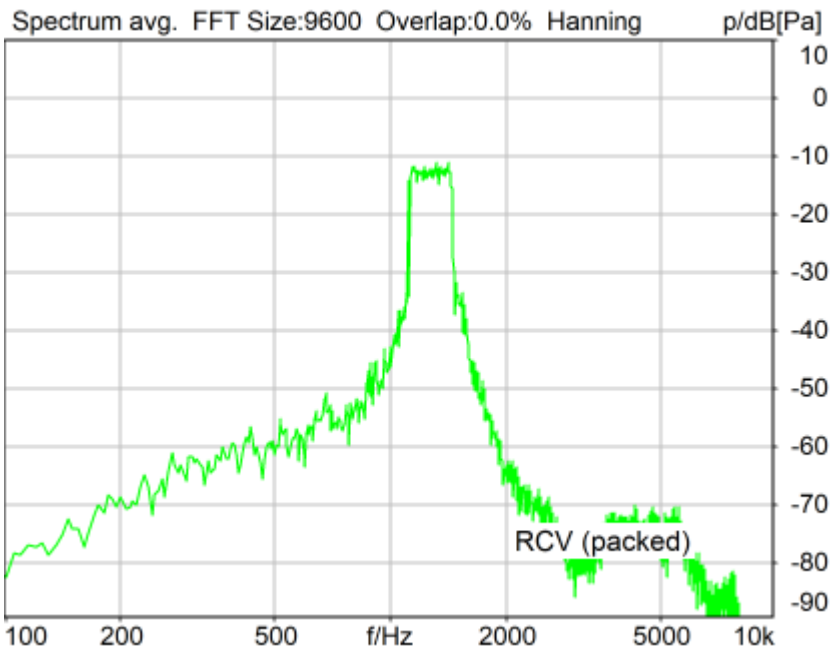
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.82 dB (6.44%) Ok

Ok

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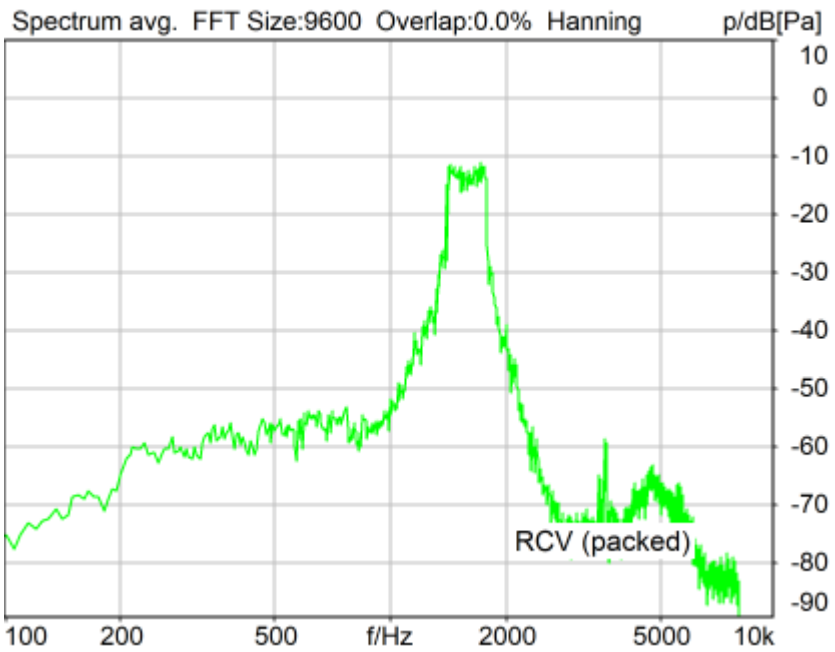
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 20.25 dB (9.72%) Ok

Ok

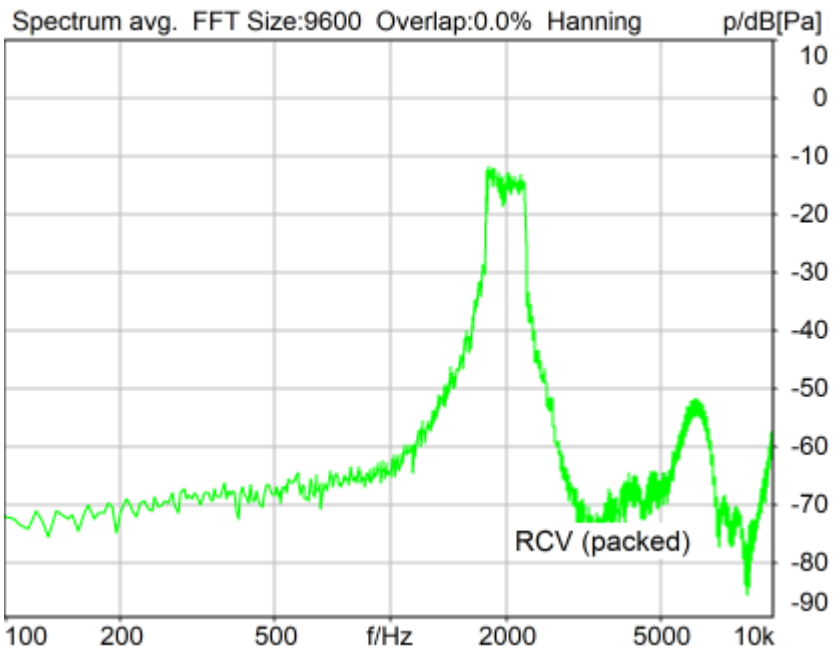
2025/1/15 17:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.83 dB (8.10%) Ok

Ok

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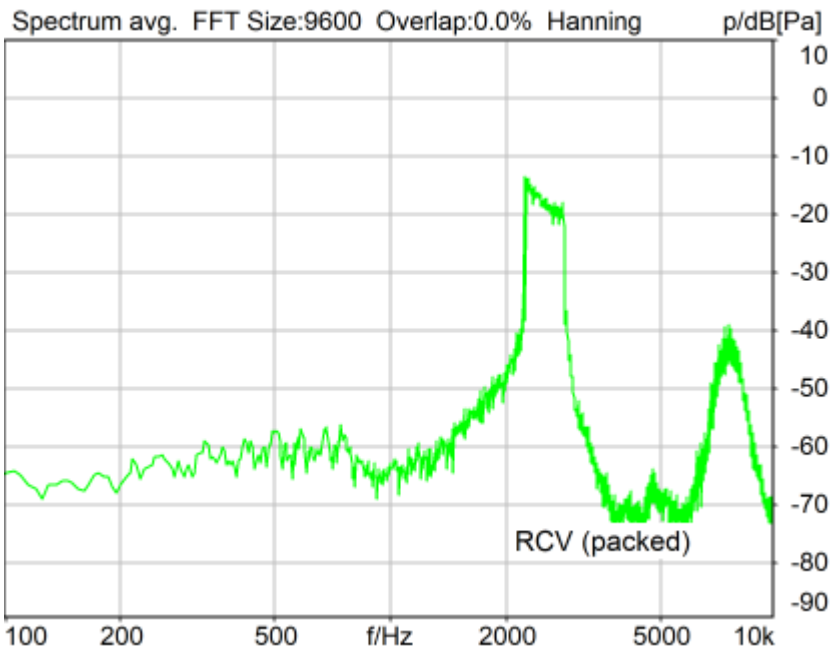
Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 21.51 dB (8.40%) Ok

Ok

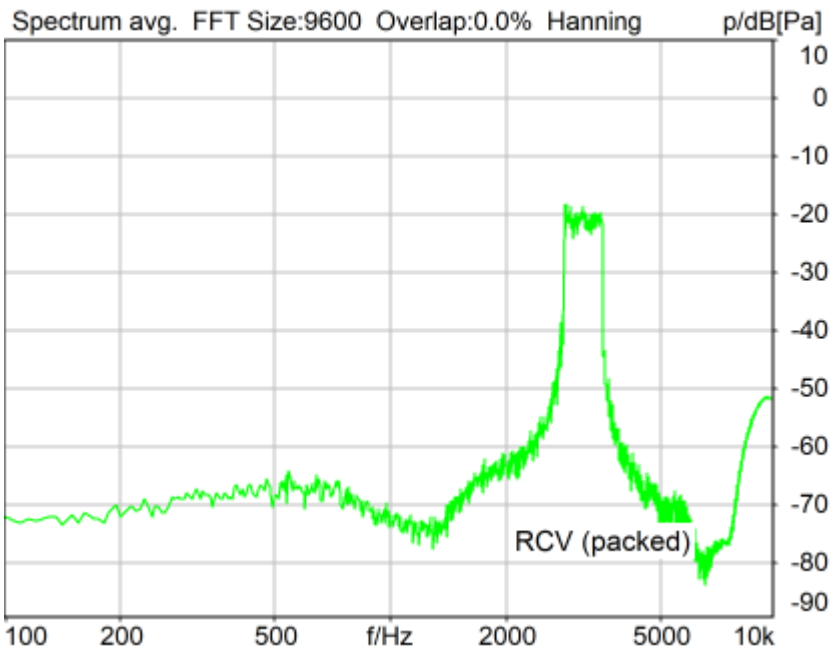
2025/1/15 17:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 25.97 dB (5.03%) Ok

Ok

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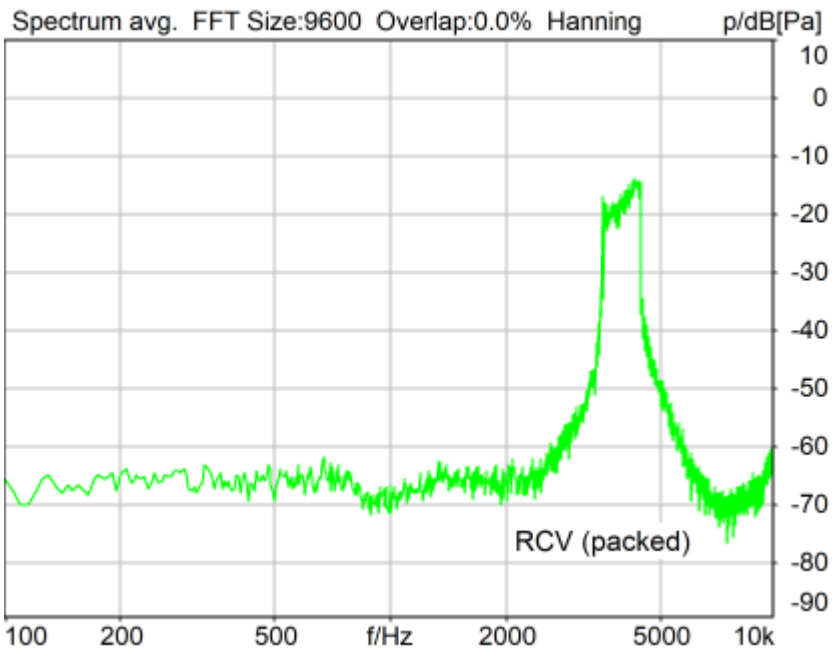
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 22.49 dB (7.50%) Ok

Ok

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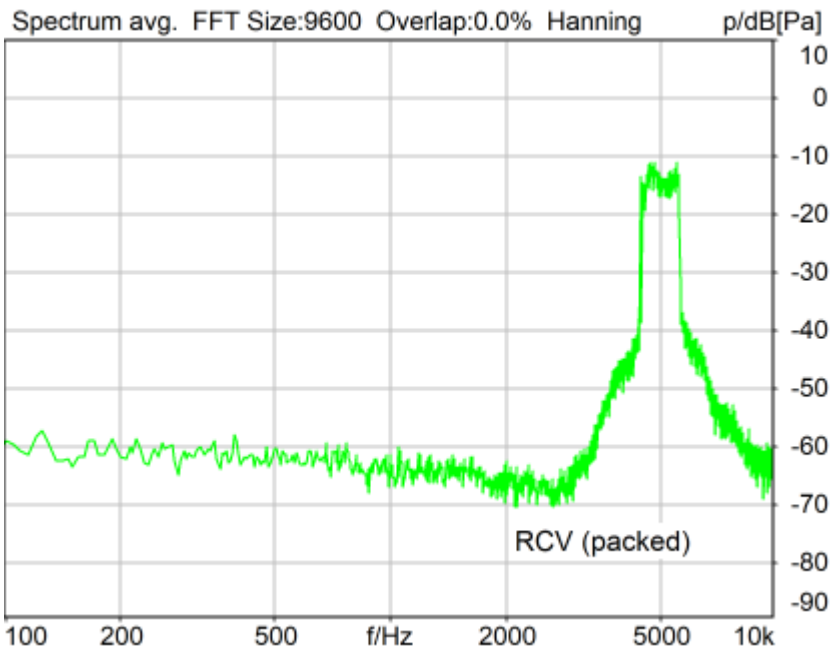
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 22.35 dB (7.63%) Ok

Ok

2025/1/15 17:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	27.13 dB
2	315Hz	32.04 dB
3	400Hz	33.31 dB
4	500Hz	31.97 dB
5	630Hz	34.34 dB
6	800Hz	33.71 dB
7	1000Hz	31.12 dB
8	1250Hz	23.82 dB
9	1600Hz	20.25 dB
10	2000Hz	21.83 dB

11	2500Hz	21.51 dB
12	3150Hz	25.97 dB
13	4000Hz	22.49 dB
14	5000Hz	22.35 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 20.25dB at 1600Hz.

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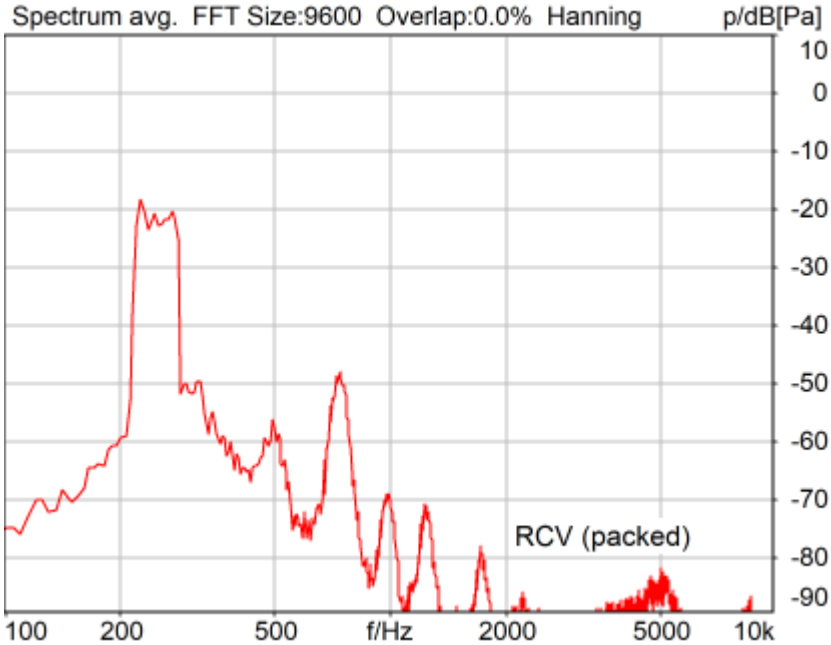
5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 28.54 dB (3.74%) Ok

Ok

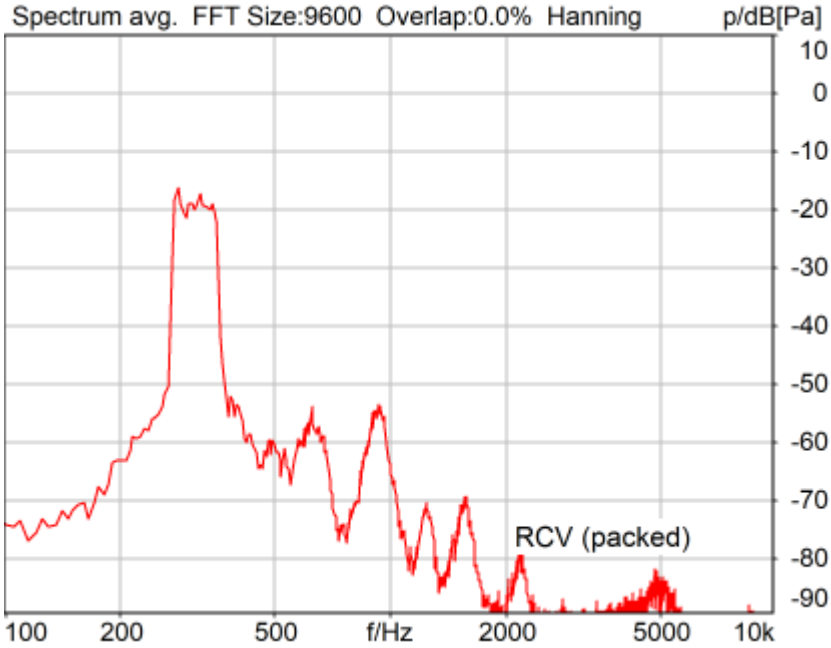
2025/1/16 9:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 33.13 dB (2.21%) Ok

Ok

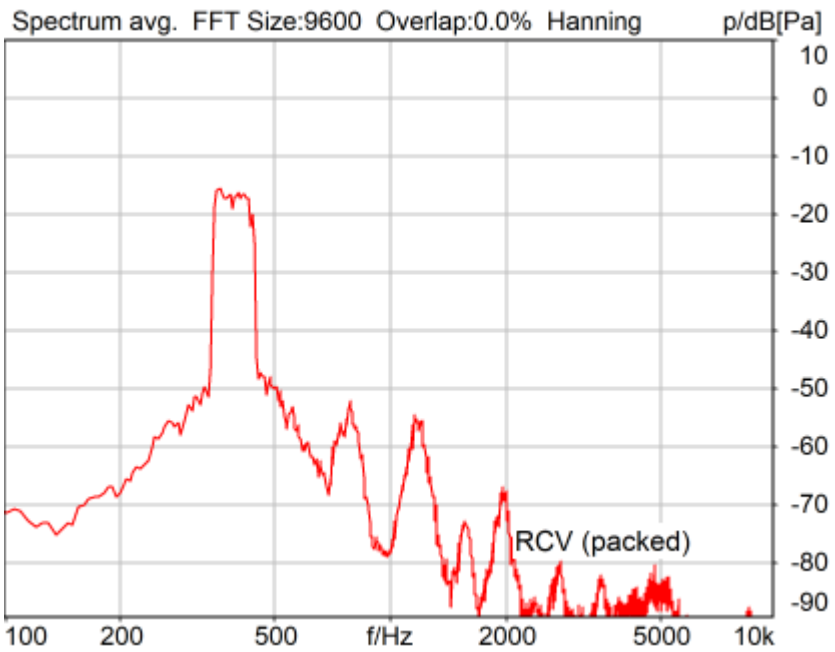
2025/1/16 9:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 32.86 dB (2.27%) Ok

Ok

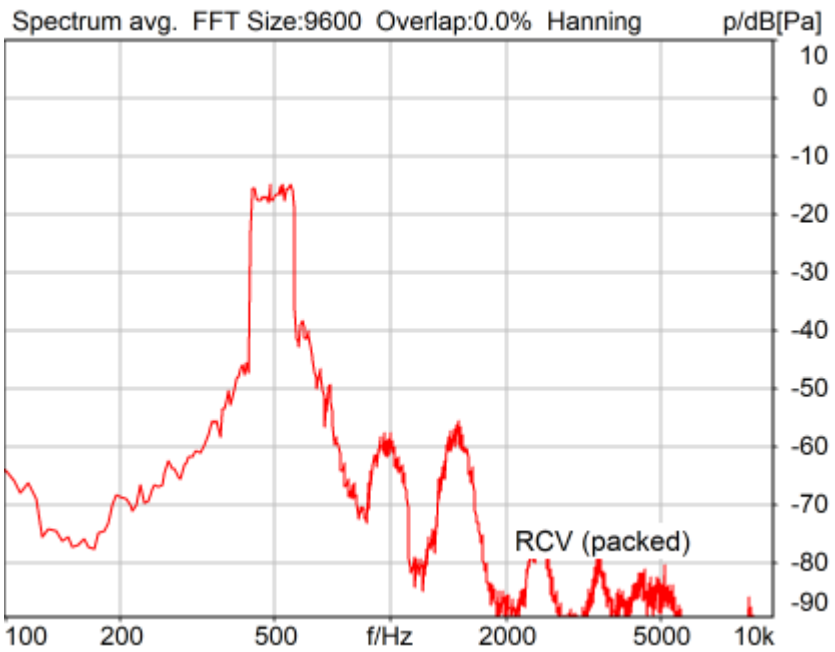
2025/1/16 9:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



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

Ok

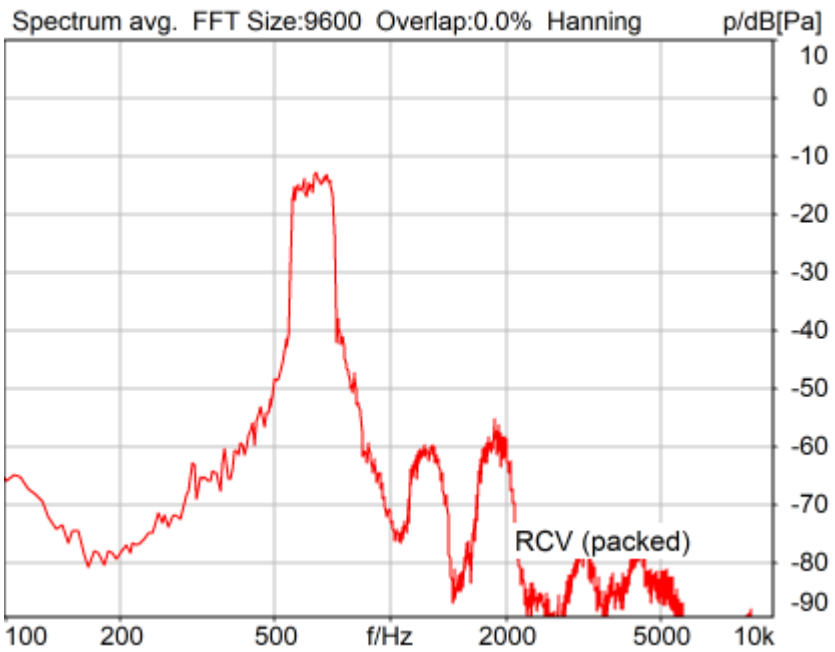
2025/1/16 9:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 33.53 dB (2.11%) Ok

Ok

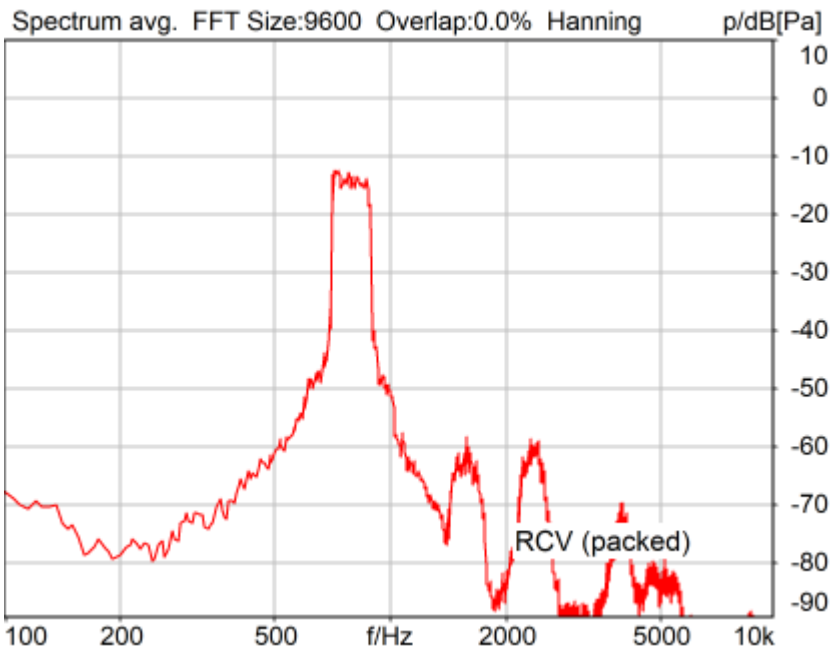
2025/1/16 9:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 34.65 dB (1.85%) Ok

Ok

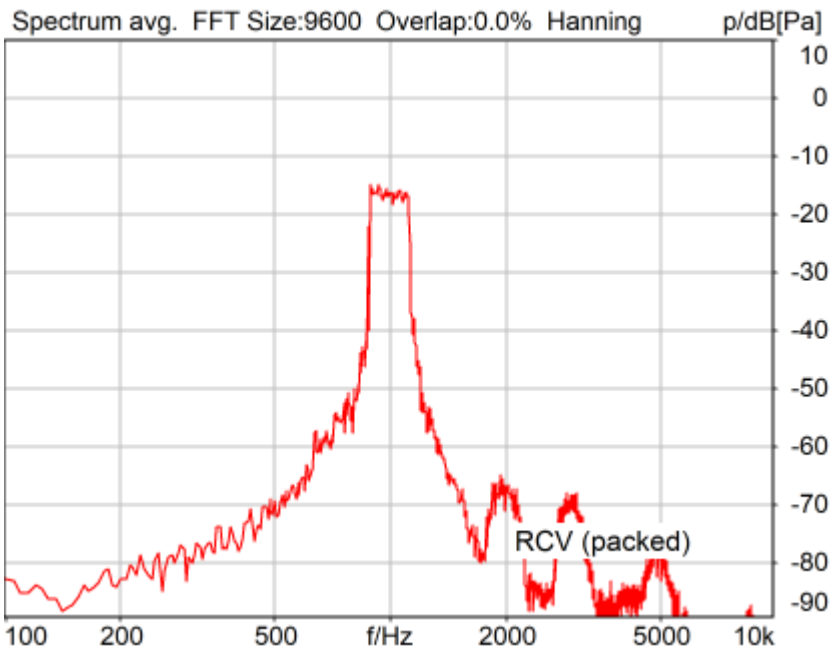
2025/1/16 9:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 32.38 dB (2.40%) Ok

Ok

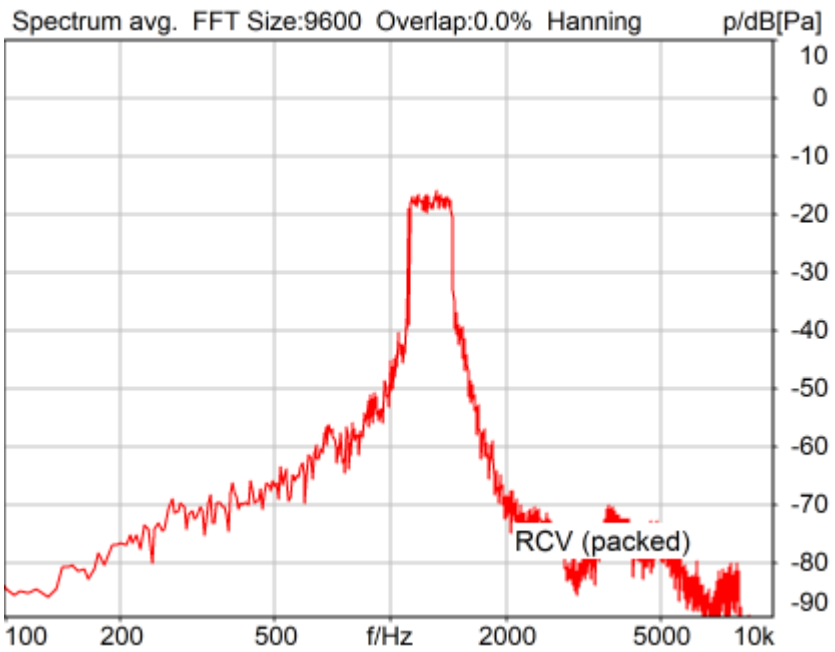
2025/1/16 9:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.83 dB (6.44%) Ok

Ok

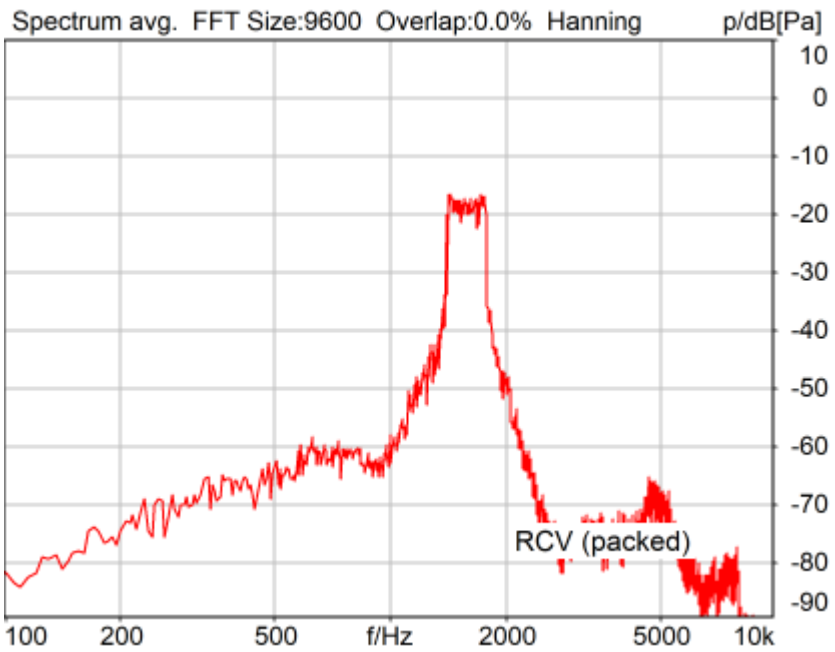
2025/1/16 9:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 24.47 dB (5.97%) Ok

Ok

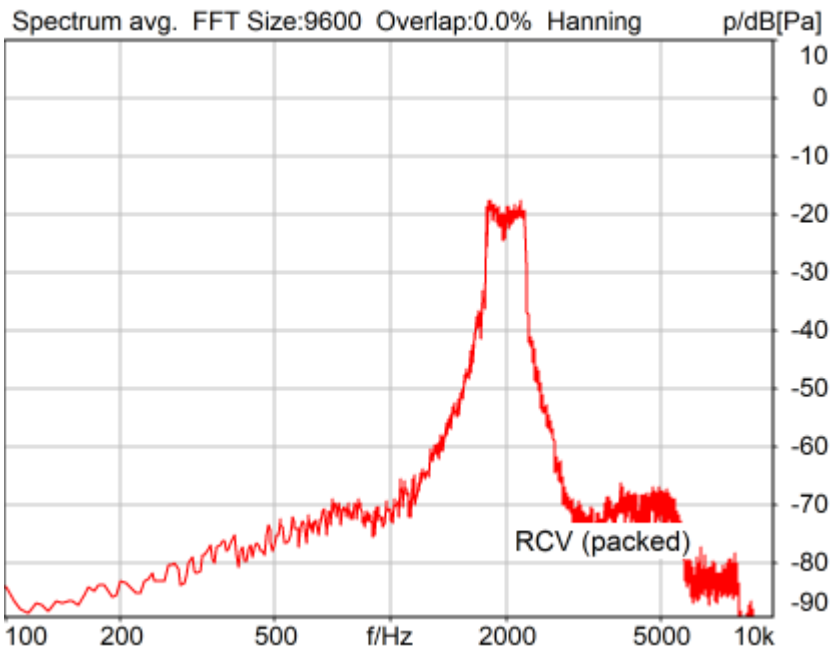
2025/1/16 9:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.34 dB (8.57%) Ok

Ok

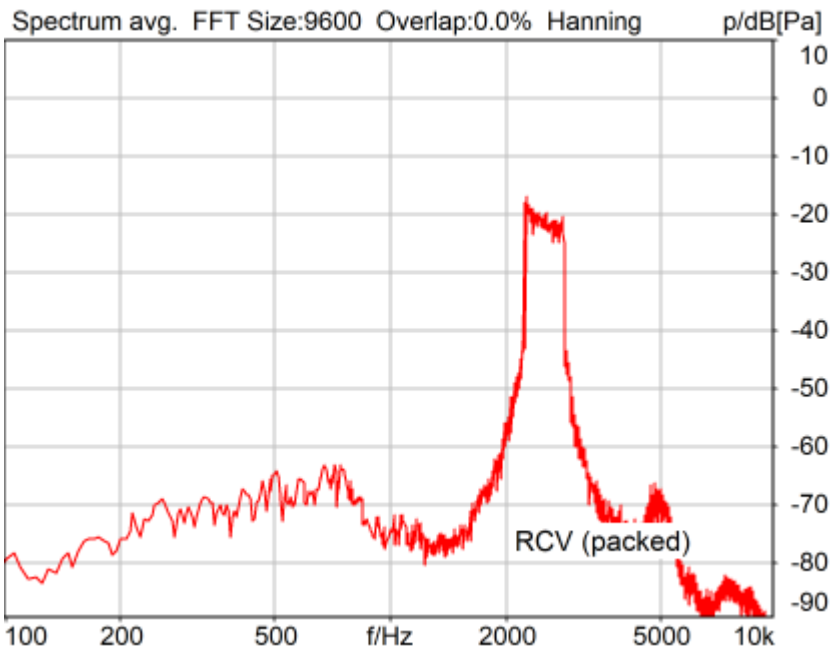
2025/1/16 9:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 28.65 dB (3.70%) Ok

Ok

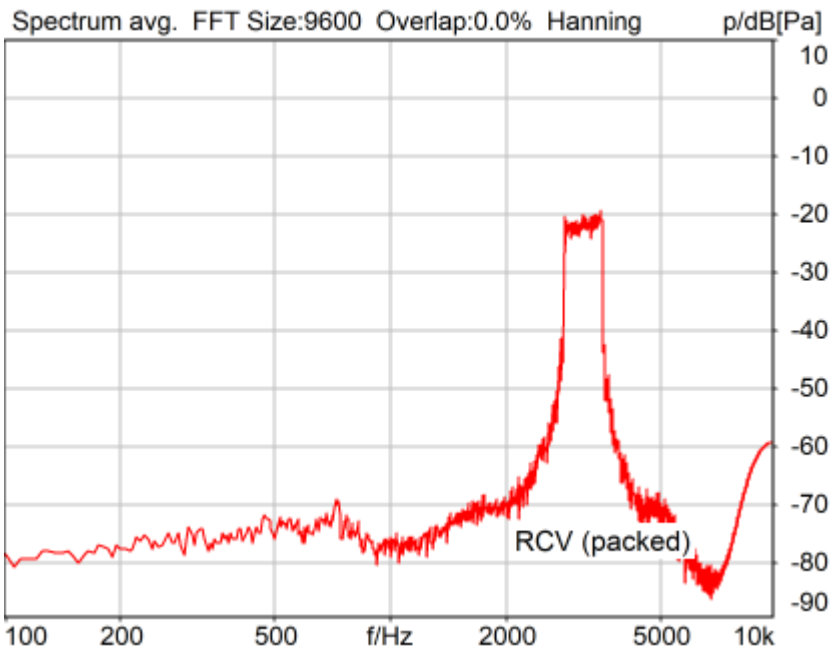
2025/1/16 9:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



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

Ok

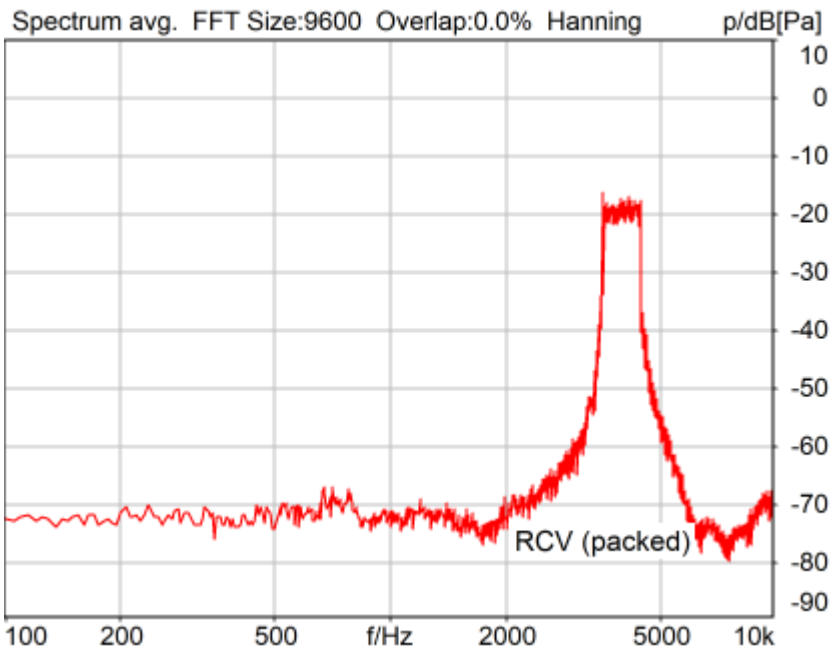
2025/1/16 9:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 24.93 dB (5.67%) Ok

Ok

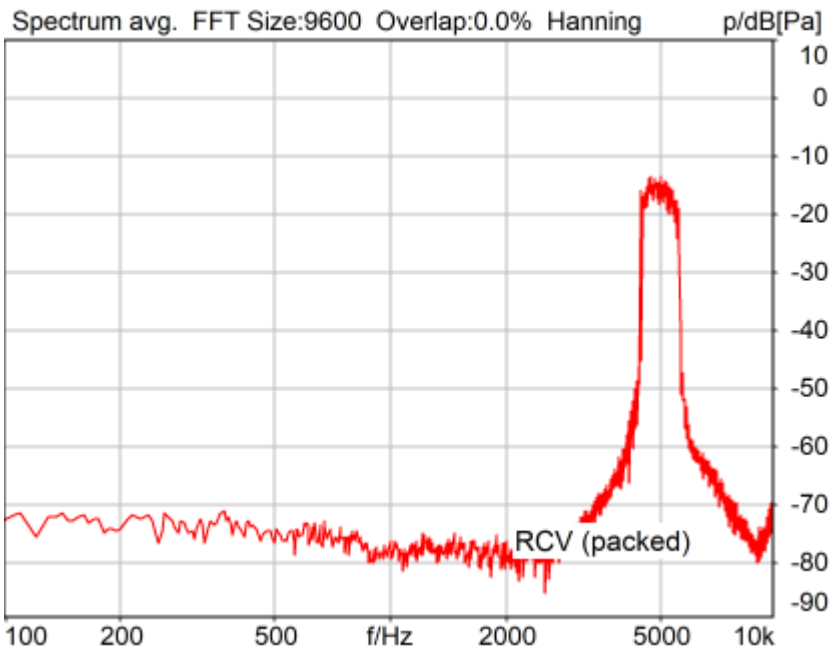
2025/1/16 9:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 35.22 dB (1.73%) Ok

Ok

2025/1/16 9:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	28.54 dB
2	315Hz	33.13 dB
3	400Hz	32.86 dB
4	500Hz	30.54 dB
5	630Hz	33.53 dB
6	800Hz	34.65 dB
7	1000Hz	32.38 dB
8	1250Hz	23.83 dB
9	1600Hz	24.47 dB
10	2000Hz	21.34 dB

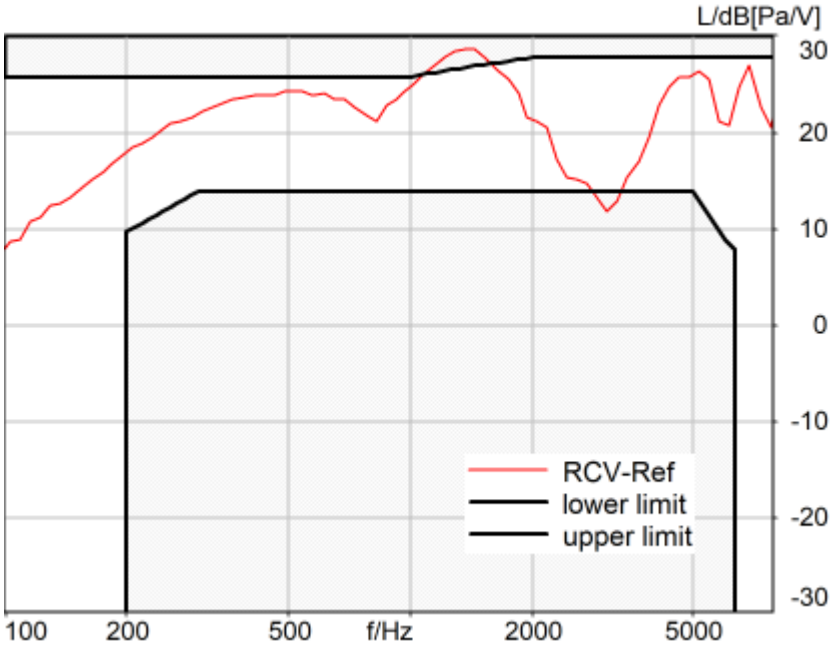
11	2500Hz	28.65 dB
12	3150Hz	28.83 dB
13	4000Hz	24.93 dB
14	5000Hz	35.22 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.34dB at 2000Hz.

2025/1/16 9:23 ACQUA

5.3 Frequency Response 8N FF

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



Absolute minimal distance
-1.92 dB at 1285.9 Hz Not Ok

Not Ok

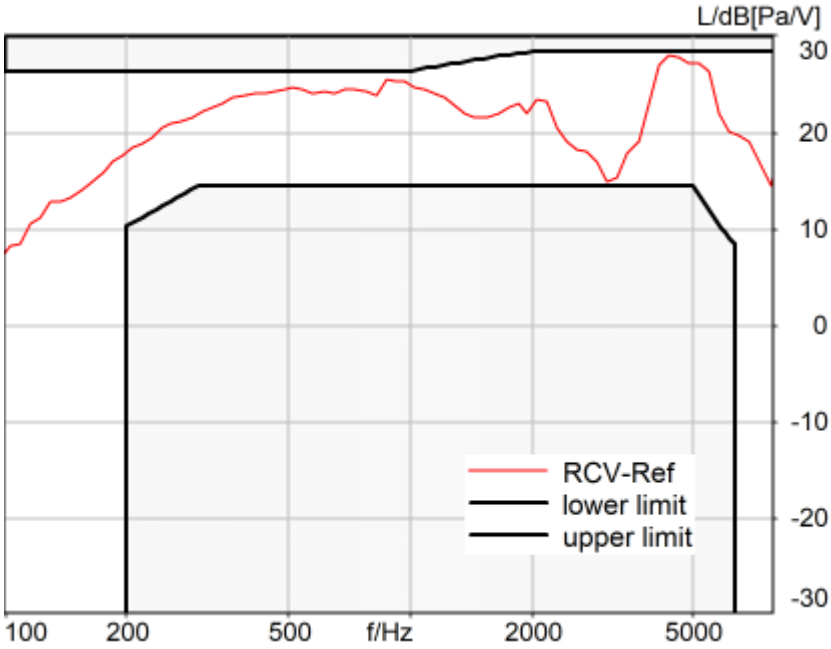
2025/1/16 9:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.39 dB at 4369.4 Hz Ok

Ok

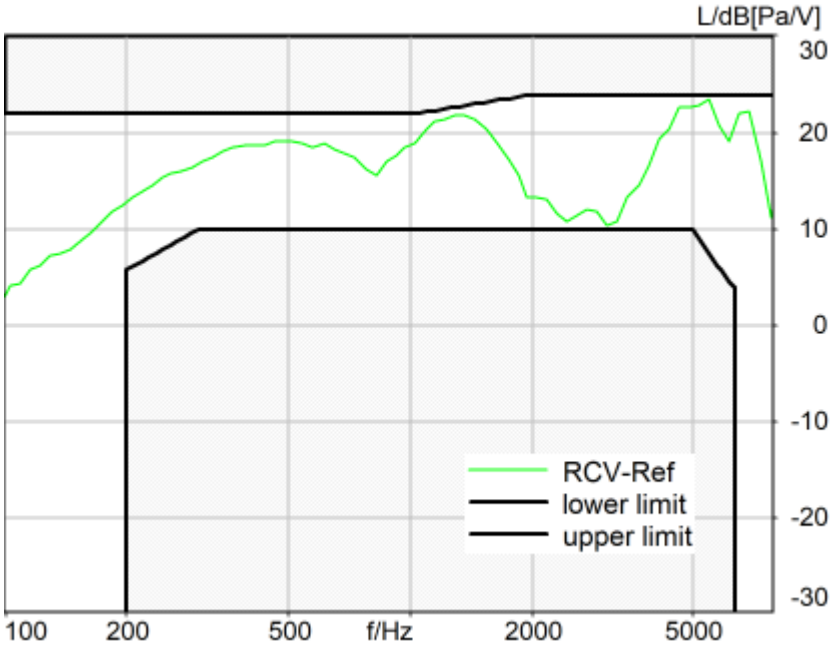
2025/1/16 9:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF

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



Absolute minimal distance
0.55 dB at 5443.6 Hz Ok

Ok

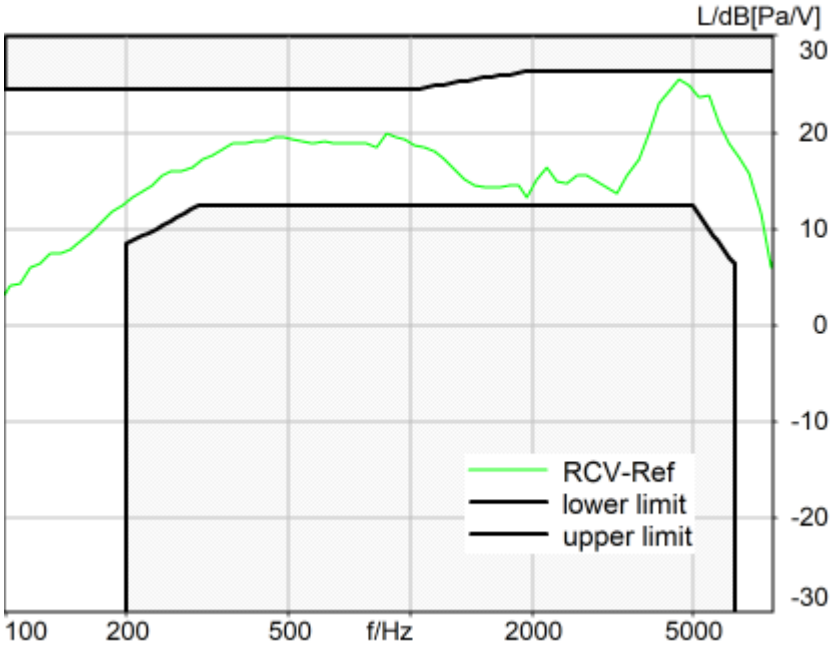
2025/1/15 17:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
0.93 dB at 1948.0 Hz Ok

Ok

2025/1/15 17:33 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:51
Responsible Person	audio

Status Overview

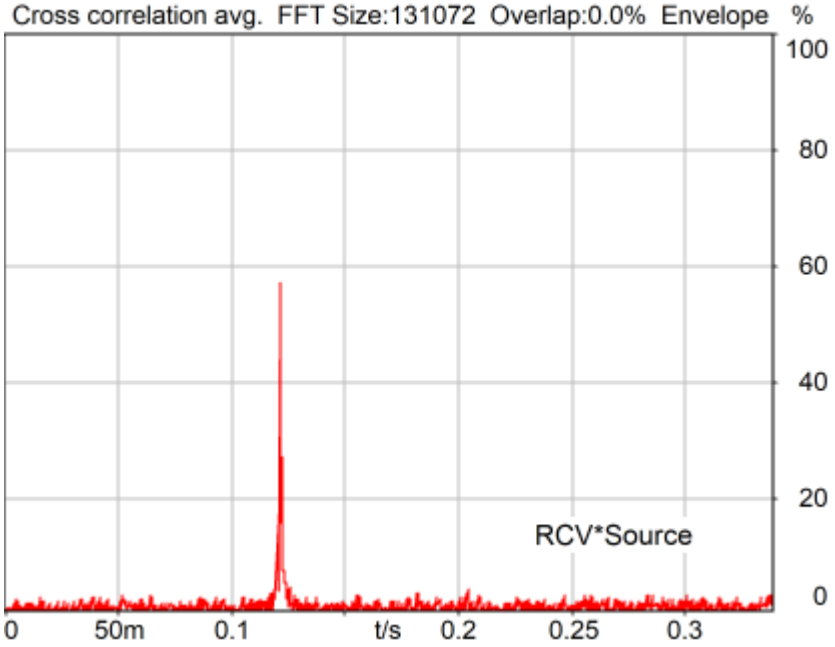
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	121.3	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	23.03	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	17.69	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.47	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.06	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.09	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.25	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.19	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.96	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.97	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.34	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.84	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.65	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	20.84	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.02	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.81	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	33.83	LTE

- 630 Hz NB		0.0 dB		Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.29	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.78	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.84	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.48	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.41	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.74	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.43	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.41	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.3 Frequency Response 8N FF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 1447.5 Hz	-2.03	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 873.9 Hz	1.13	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	0.55	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	1.96	LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525

Overall Receive Delay NB 5
5.1a Receive Volume Control Performance 8N NB 5
5.1b Receive Volume Control Performance 2N NB 6
5.2 RCV Distortion and Noise - 400 Hz NB 7
5.2 RCV Distortion and Noise - 500 Hz NB 8
5.2 RCV Distortion and Noise - 630 Hz NB 9
5.2 RCV Distortion and Noise - 800 Hz NB 10
5.2 RCV Distortion and Noise - 1000 Hz NB 11
5.2 RCV Distortion and Noise - 1250 Hz NB 12
5.2 RCV Distortion and Noise - 1600 Hz NB 13
5.2 RCV Distortion and Noise - 2000 Hz NB 14
5.2 RCV Distortion and Noise - 2500 Hz NB 15
5.2 RCV Distortion and Noise - 3150 Hz NB 16
Report - Receive Distortion and Noise (Conversational Gain) 17
5.2 RCV Distortion and Noise - 400 Hz NB 18
5.2 RCV Distortion and Noise - 500 Hz NB 18
5.2 RCV Distortion and Noise - 630 Hz NB 19
5.2 RCV Distortion and Noise - 800 Hz NB 20
5.2 RCV Distortion and Noise - 1000 Hz NB 21
5.2 RCV Distortion and Noise - 1250 Hz NB 22
5.2 RCV Distortion and Noise - 1600 Hz NB 23
5.2 RCV Distortion and Noise - 2000 Hz NB 24
5.2 RCV Distortion and Noise - 2500 Hz NB 25
5.2 RCV Distortion and Noise - 3150 Hz NB 26
Report - Receive Distortion and Noise (Conversational Gain) 27
5.3 Frequency Response 8N FF HANB 28
5.3 Frequency Response 8N DF HANB 29
5.3 Frequency Response 2N FF HANB 29
5.3 Frequency Response 2N DF HANB 30

Overall Receive Delay NB

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

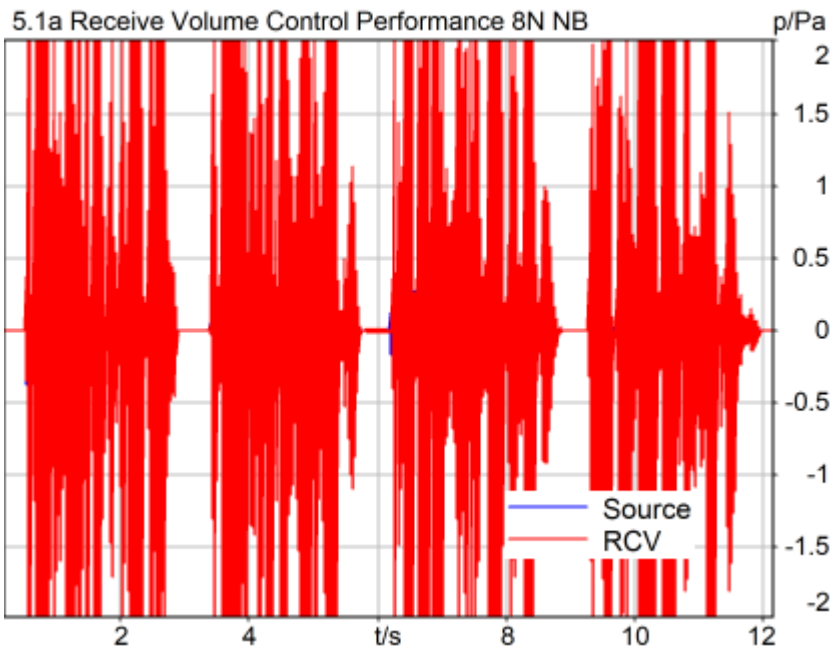


Channel	Delay
RCV*Source	121.3 ms

2025/1/16 10:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.03 dB[SPL]	84.08%	23.03 dB[SPL]	Ok

Ok

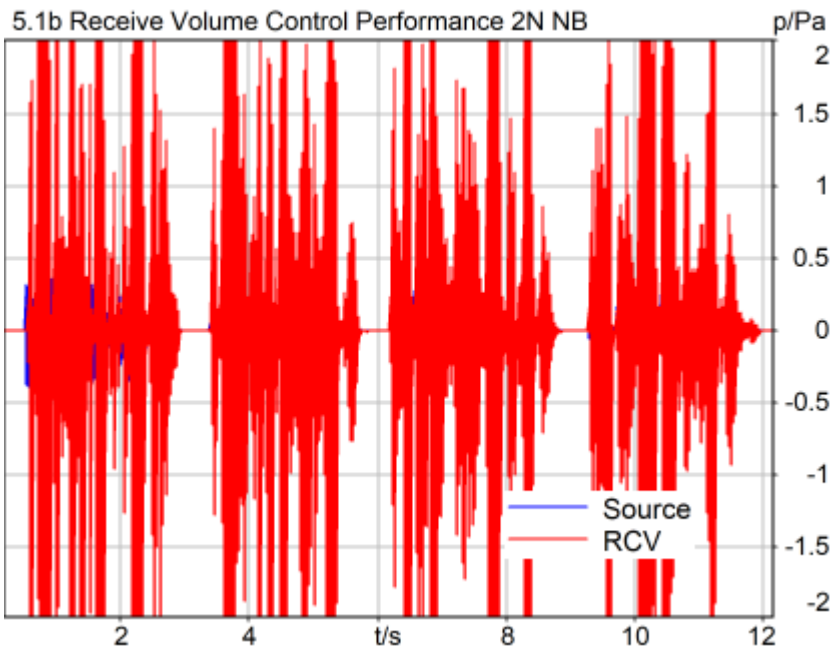
2025/1/16 10:41 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.69 dB[SPL]	84.40%	17.69 dB[SPL]	Ok

Ok

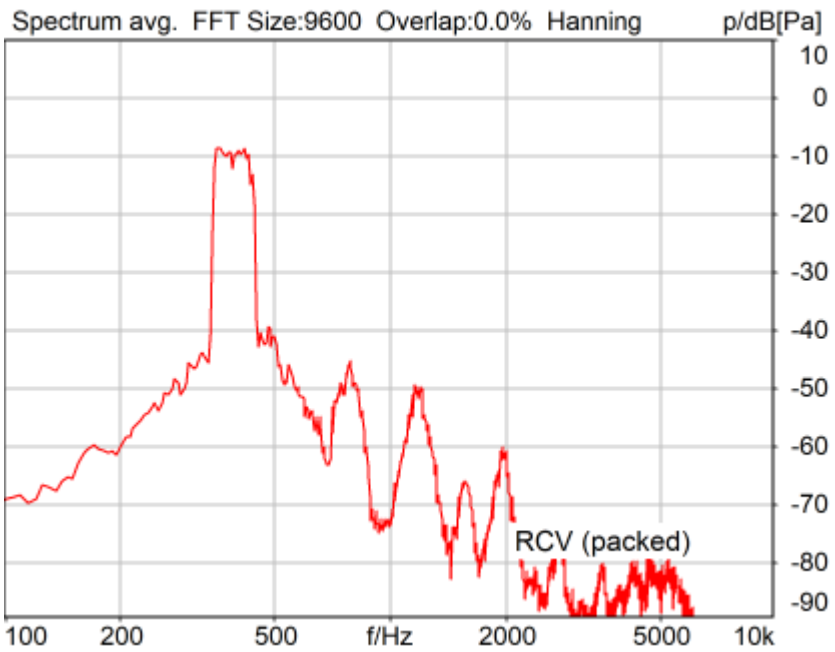
2025/1/16 10:17 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 400 Hz NB

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



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

Ok

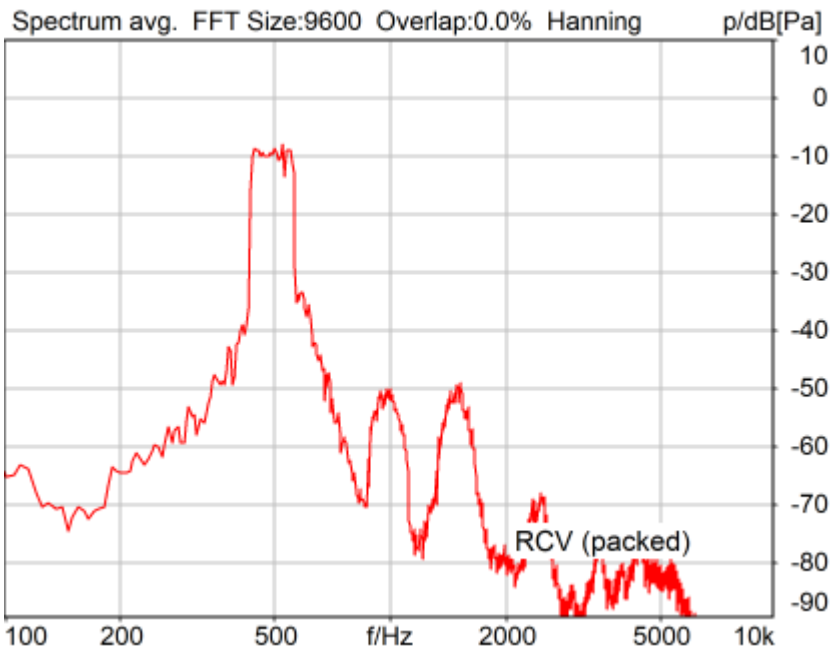
2025/1/16 10:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 32.06 dB (2.49%) Ok

Ok

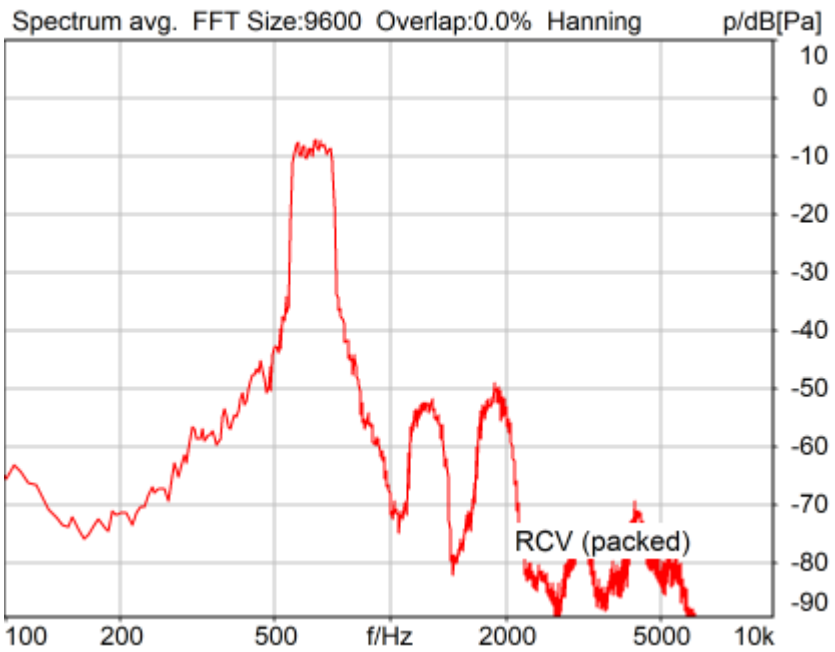
2025/1/16 10:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.09 dB (1.97%) Ok

Ok

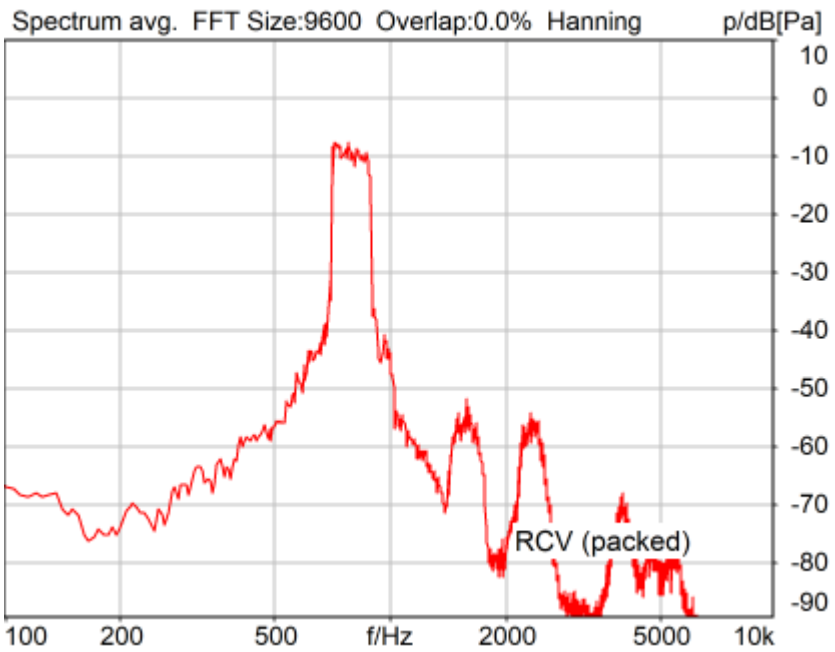
2025/1/16 10:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 34.25 dB (1.94%) Ok

Ok

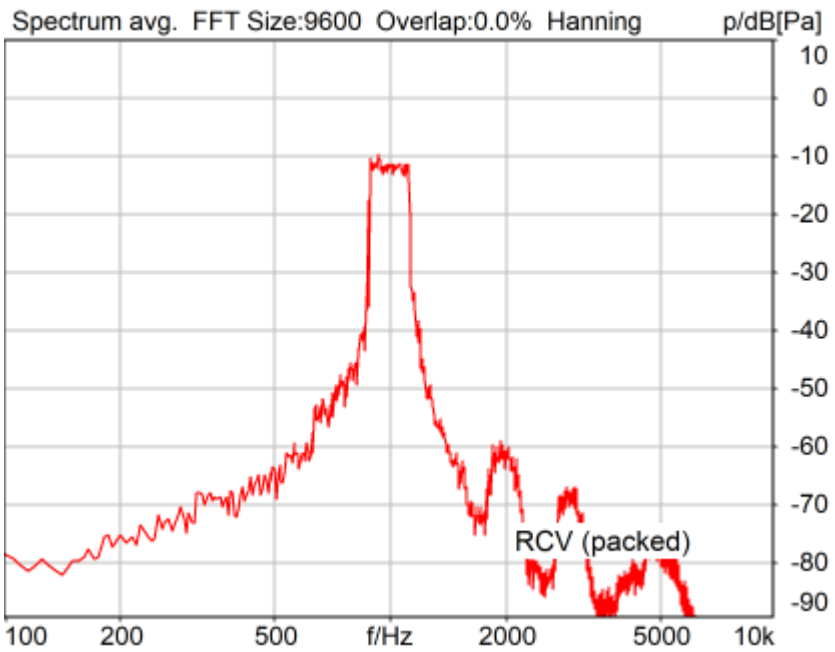
2025/1/16 10:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 32.19 dB (2.46%) Ok

Ok

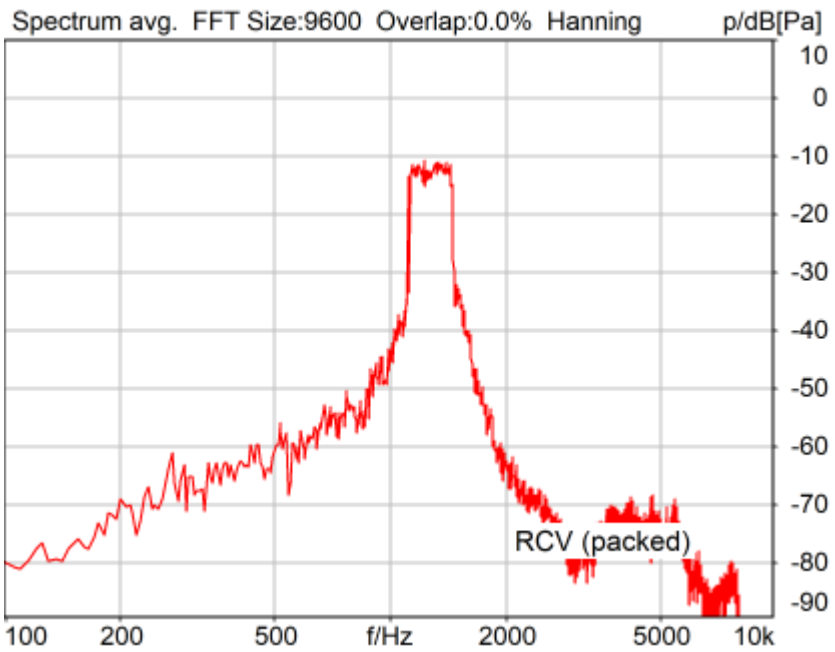
2025/1/16 10:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.96 dB (6.34%) Ok

Ok

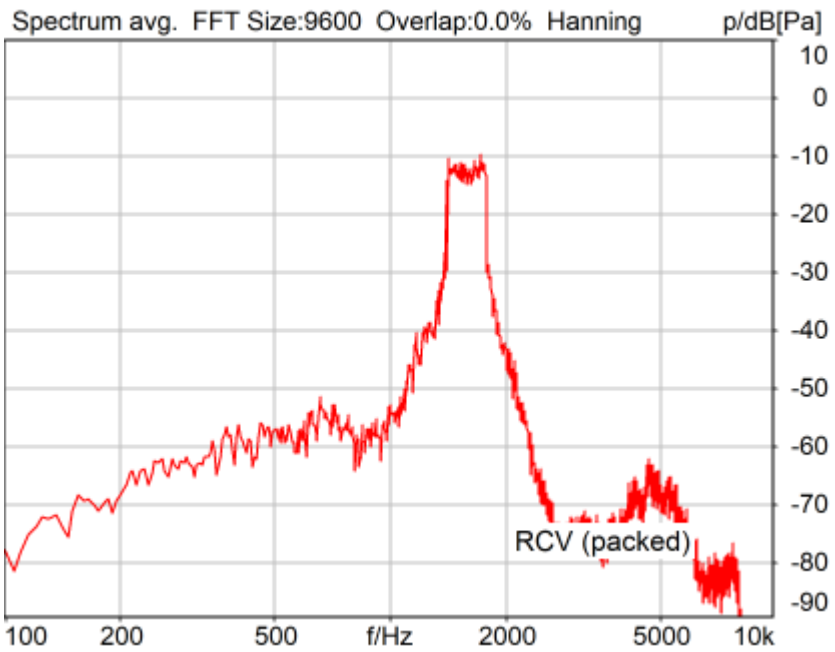
2025/1/16 10:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



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

Ok

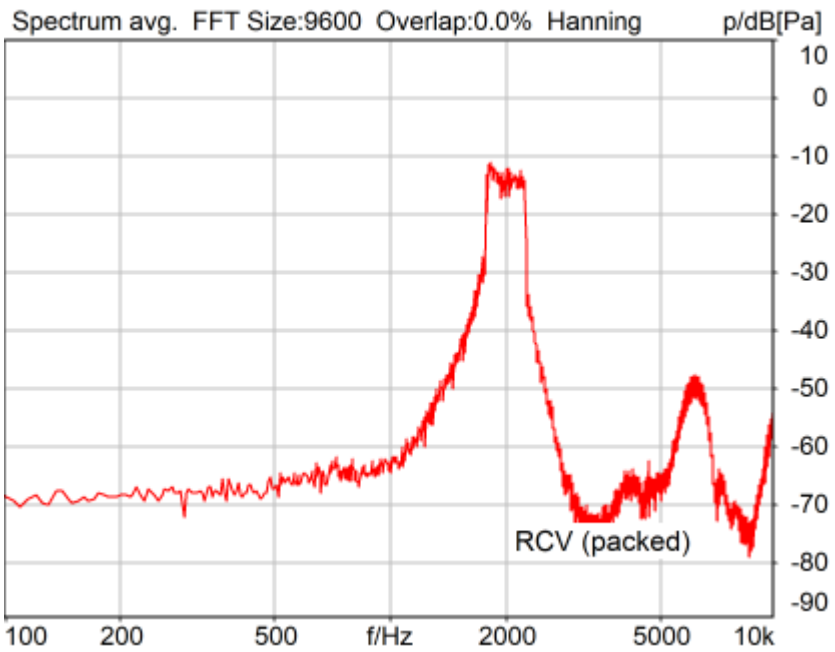
2025/1/16 10:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.34 dB (8.58%) Ok

Ok

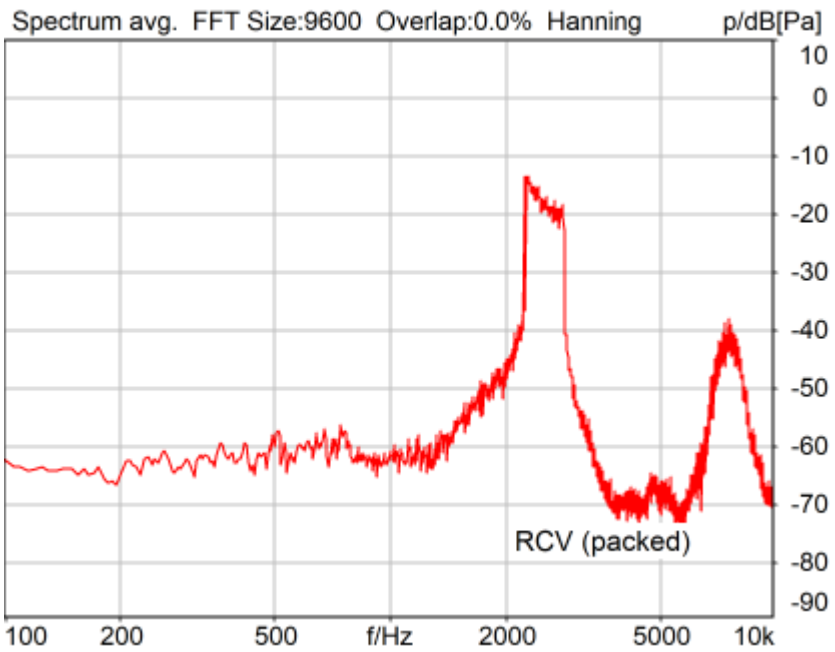
2025/1/16 10:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 20.84 dB (9.08%) Ok

Ok

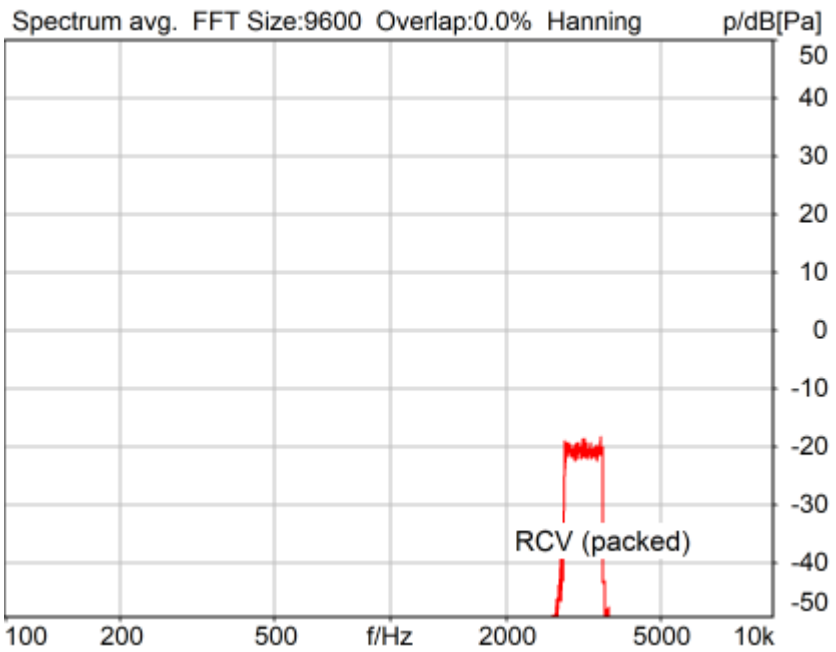
2025/1/16 10:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 25.65 dB (5.22%) Ok

Ok

2025/1/16 10:45 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

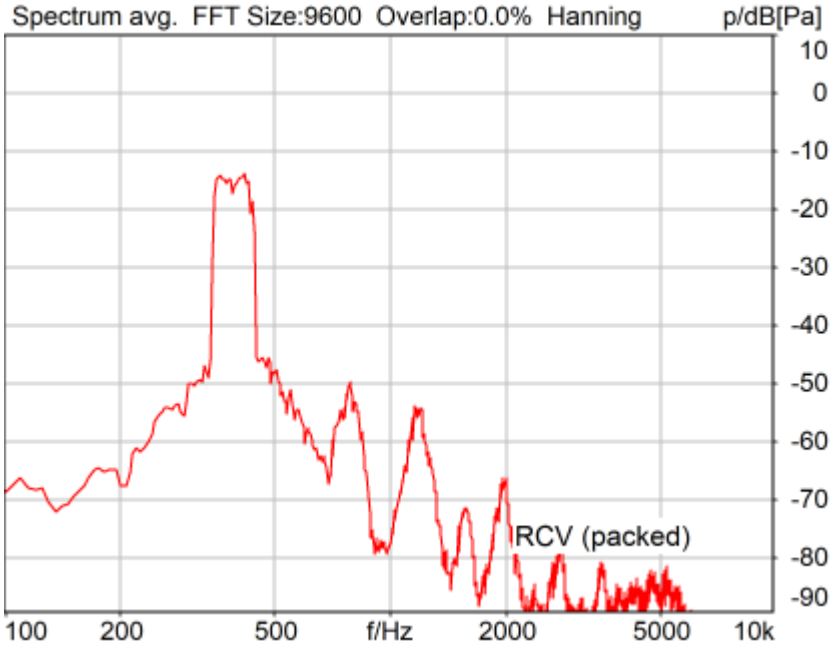
Region	Frequency	SDNR
1	400Hz	33.47 dB
2	500Hz	32.06 dB
3	630Hz	34.09 dB
4	800Hz	34.25 dB
5	1000Hz	32.19 dB
6	1250Hz	23.96 dB
7	1600Hz	23.97 dB
8	2000Hz	21.34 dB
9	2500Hz	20.84 dB
10	3150Hz	25.65 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 20.84dB at 2500Hz.

2025/1/16 10:45 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB

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



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

Ok

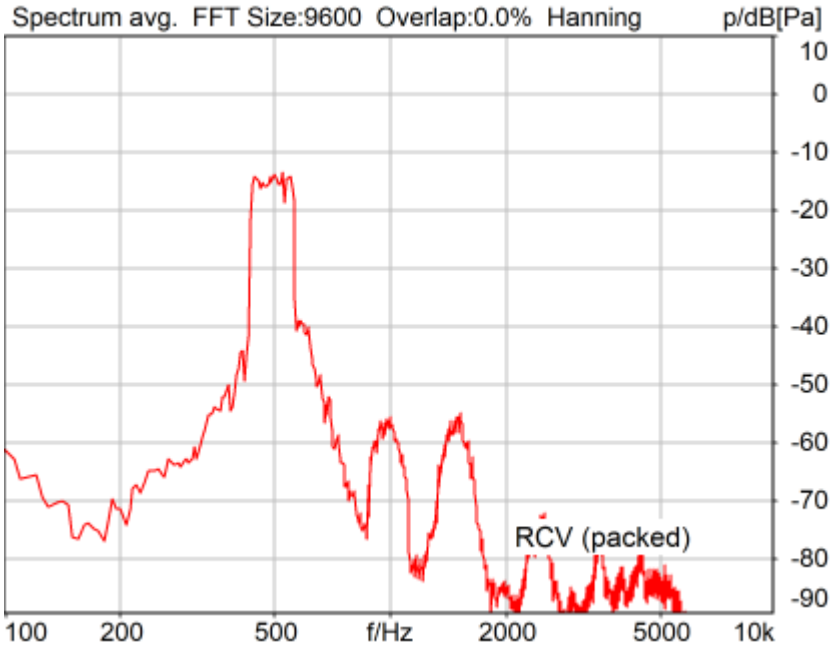
2025/1/16 10:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 31.81 dB (2.57%) Ok

Ok

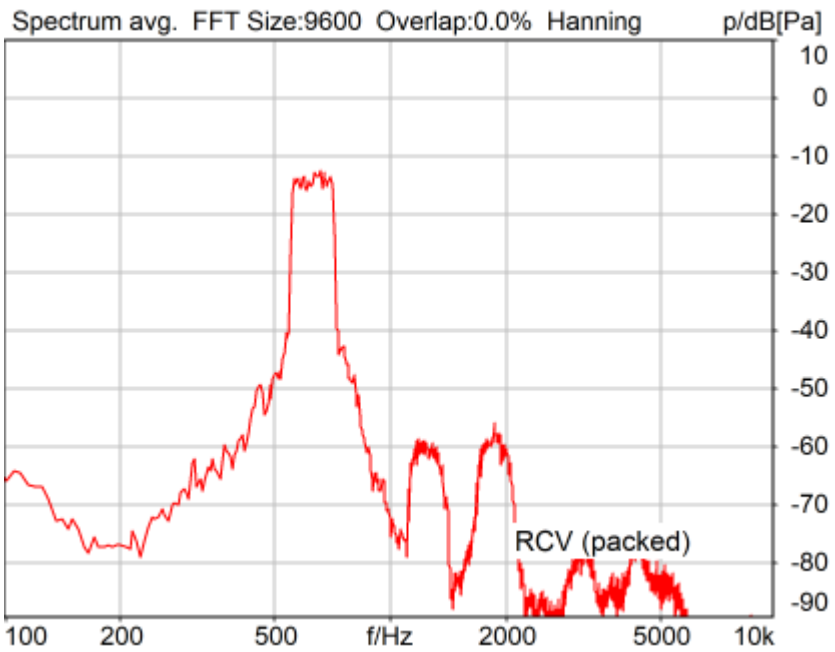
2025/1/16 10:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 33.83 dB (2.03%) Ok

Ok

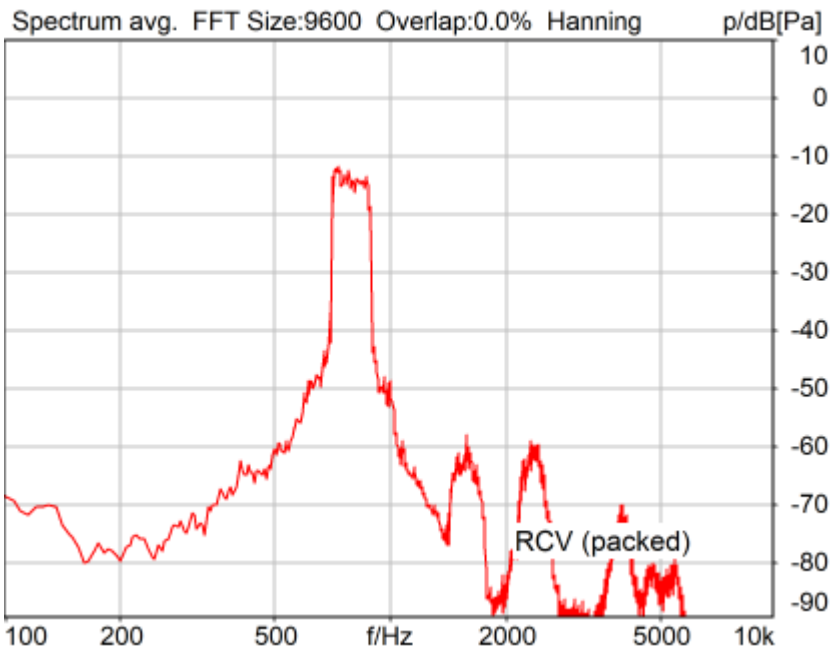
2025/1/16 10:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 35.29 dB (1.72%) Ok

Ok

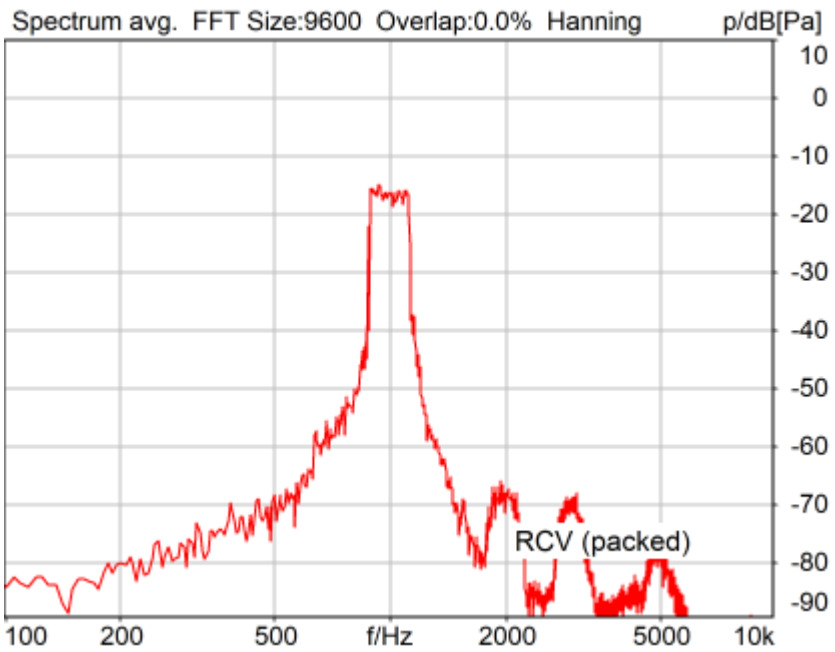
2025/1/16 10:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 32.78 dB (2.30%) Ok

Ok

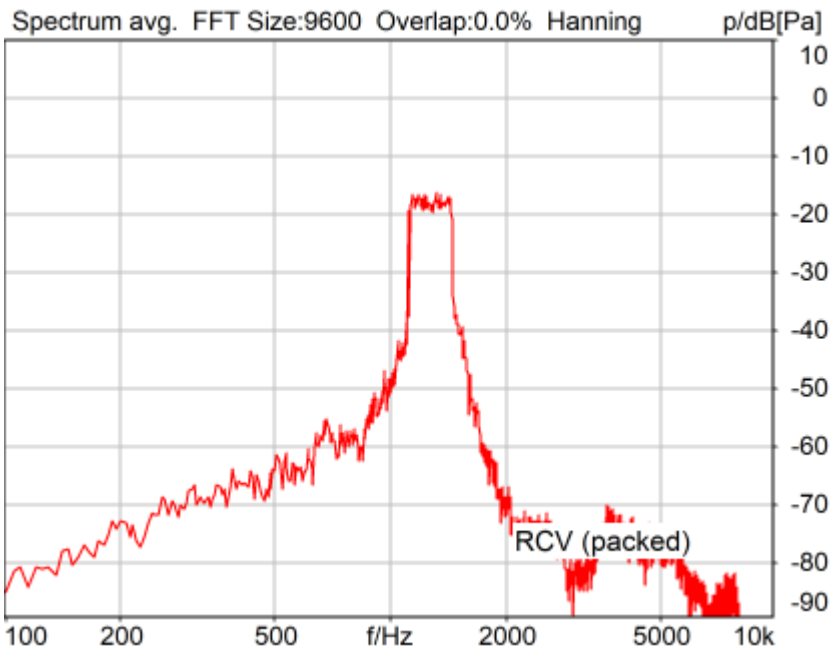
2025/1/16 10:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.84 dB (6.43%) Ok

Ok

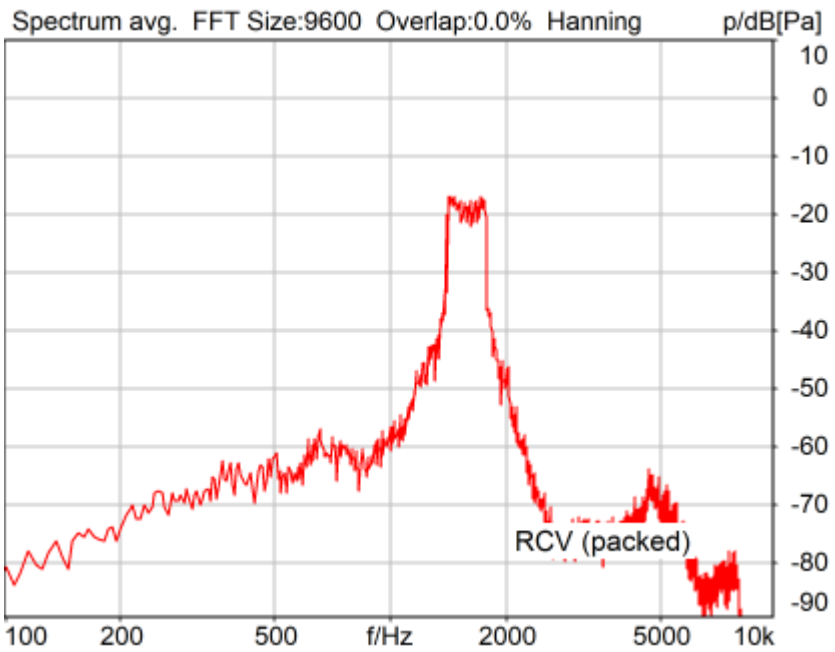
2025/1/16 10:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 23.48 dB (6.70%) Ok

Ok

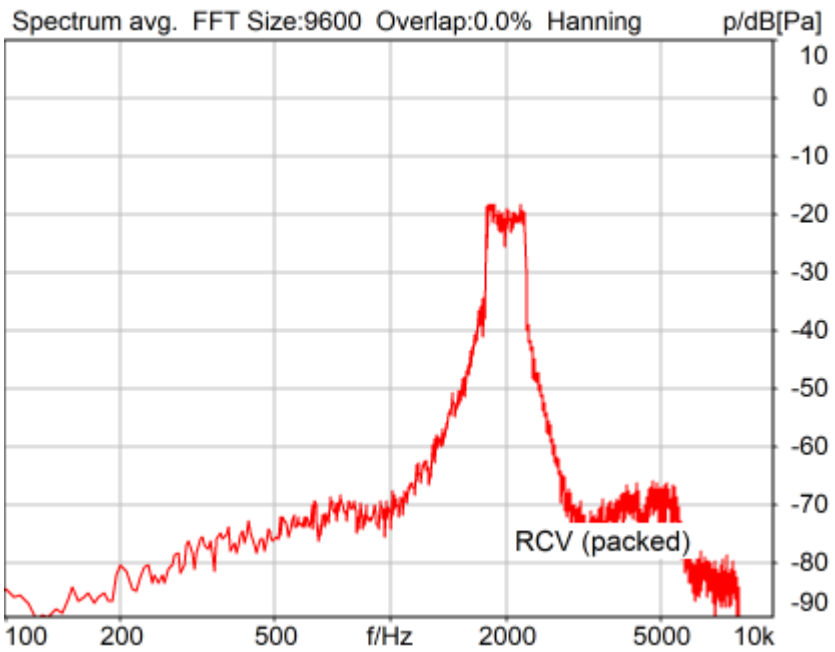
2025/1/16 10:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.41 dB (8.50%) Ok

Ok

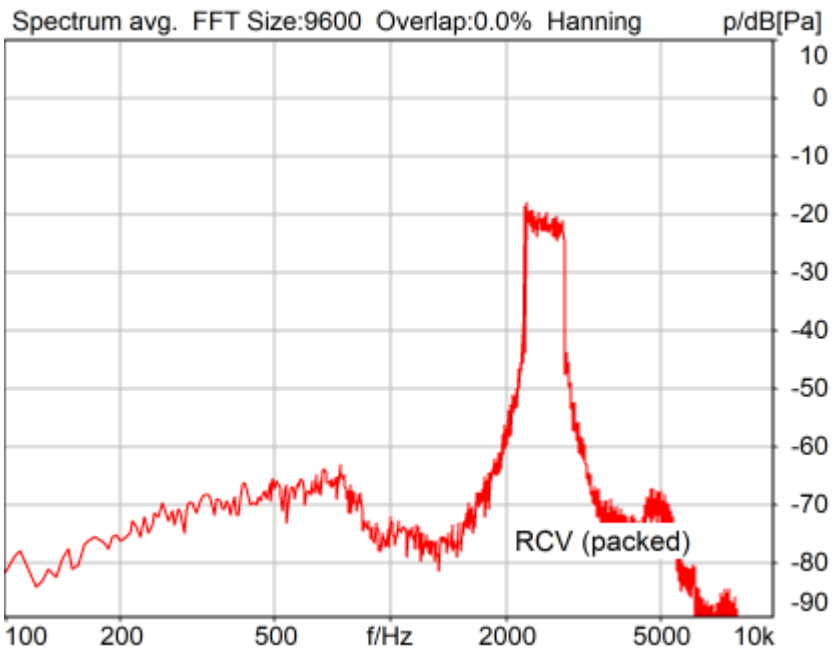
2025/1/16 10:20 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 28.74 dB (3.66%) Ok

Ok

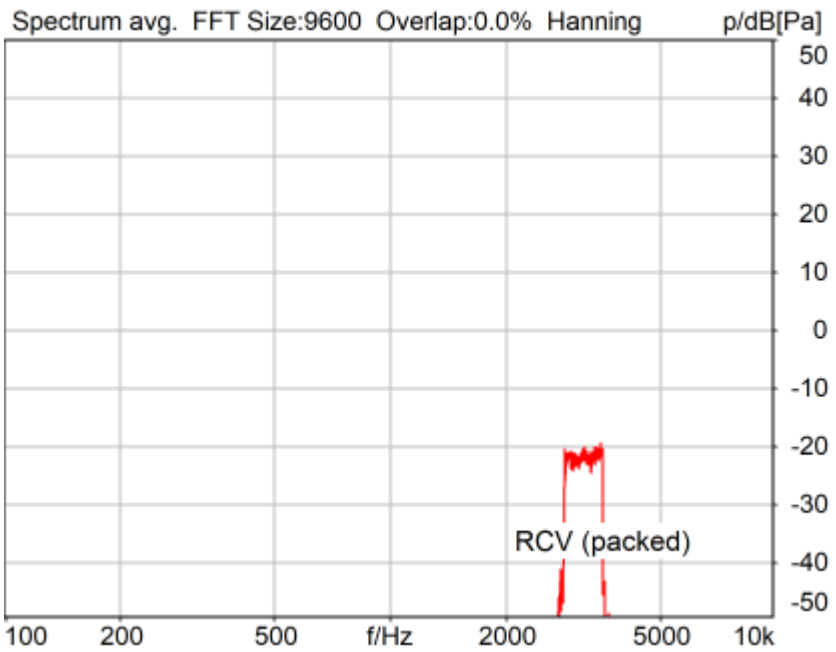
2025/1/16 10:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 29.43 dB (3.38%) Ok

Ok

2025/1/16 10:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

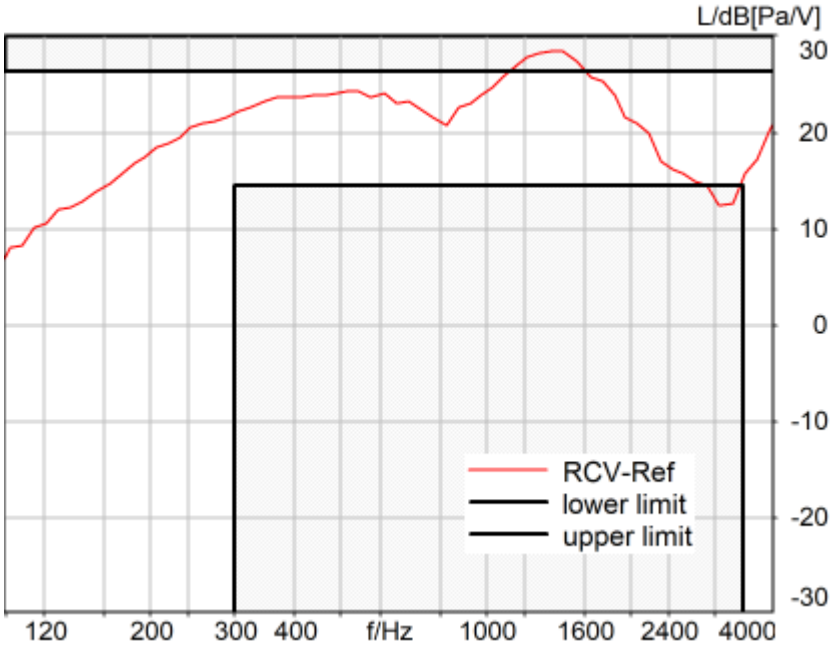
Region	Frequency	SDNR
1	400Hz	33.02 dB
2	500Hz	31.81 dB
3	630Hz	33.83 dB
4	800Hz	35.29 dB
5	1000Hz	32.78 dB
6	1250Hz	23.84 dB
7	1600Hz	23.48 dB
8	2000Hz	21.41 dB
9	2500Hz	28.74 dB
10	3150Hz	29.43 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.41dB at 2000Hz.

2025/1/16 10:22 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
-2.03 dB at 1447.5 Hz Not Ok

Not Ok

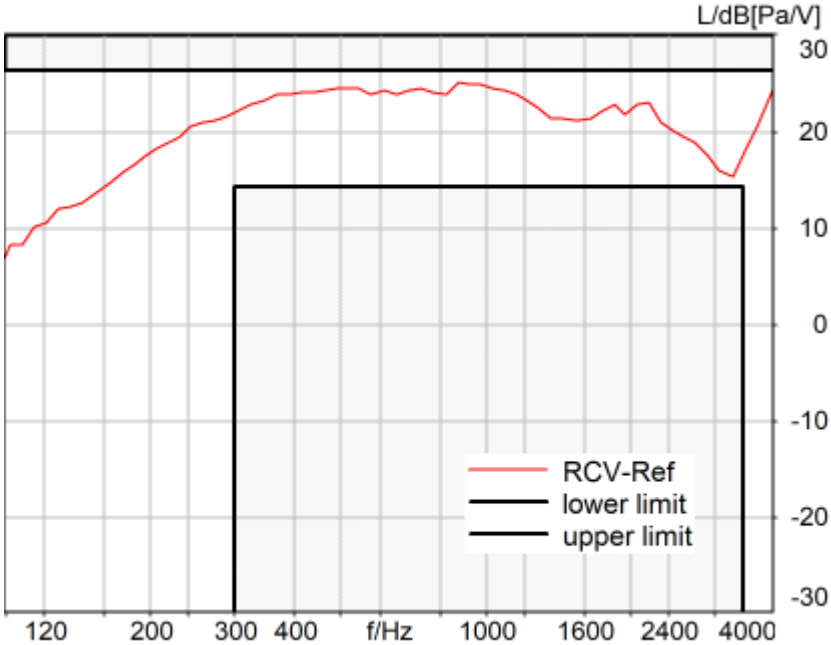
2025/1/16 10:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
1.13 dB at 873.9 Hz Ok

Ok

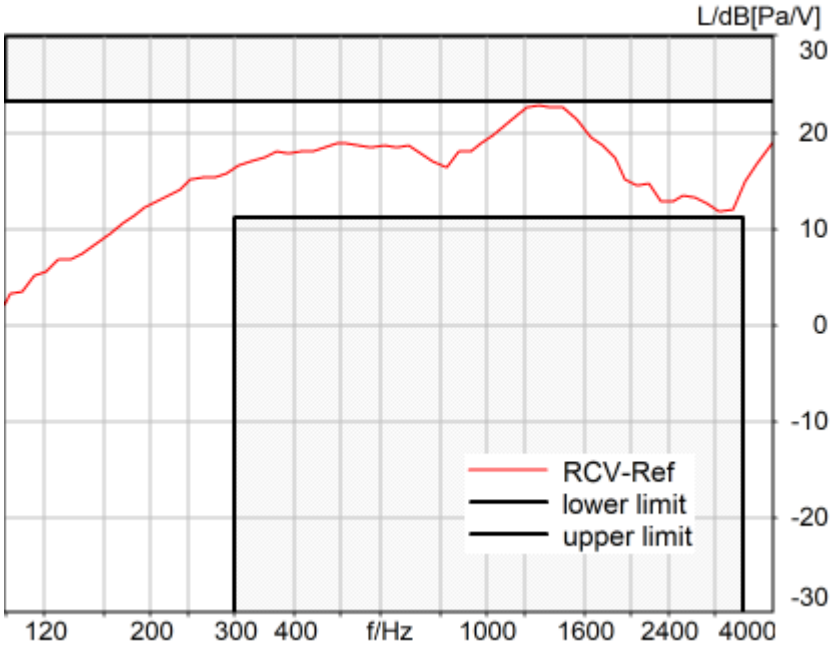
2025/1/16 10:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.55 dB at 3058.6 Hz Ok

Ok

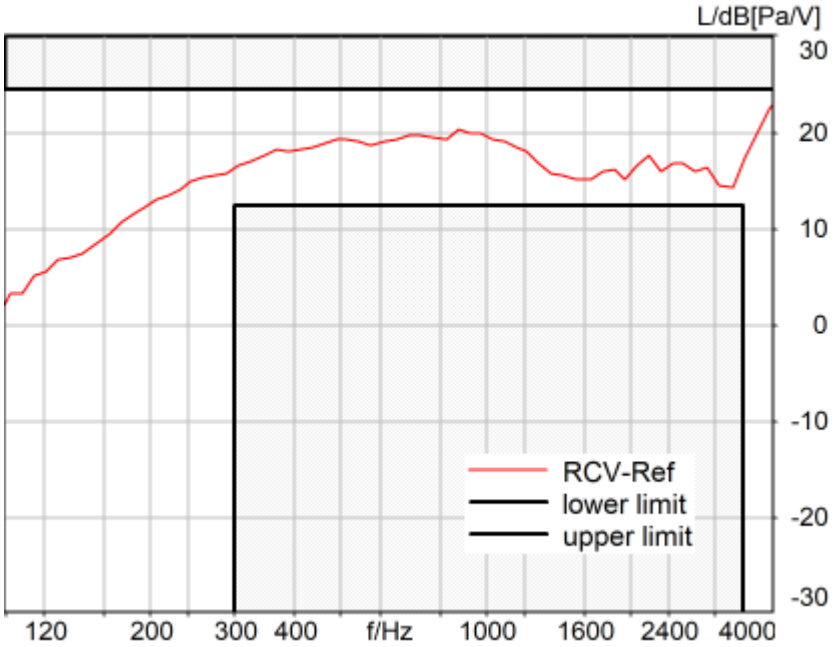
2025/1/16 10:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
1.96 dB at 3882.4 Hz Ok

Ok

2025/1/16 10:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:52
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	140.7	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	23.00	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	17.76	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.21	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.68	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.52	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.95	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.17	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.66	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.33	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.51	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.94	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.34	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.37	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.60	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	20.16	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	20.44	LTE

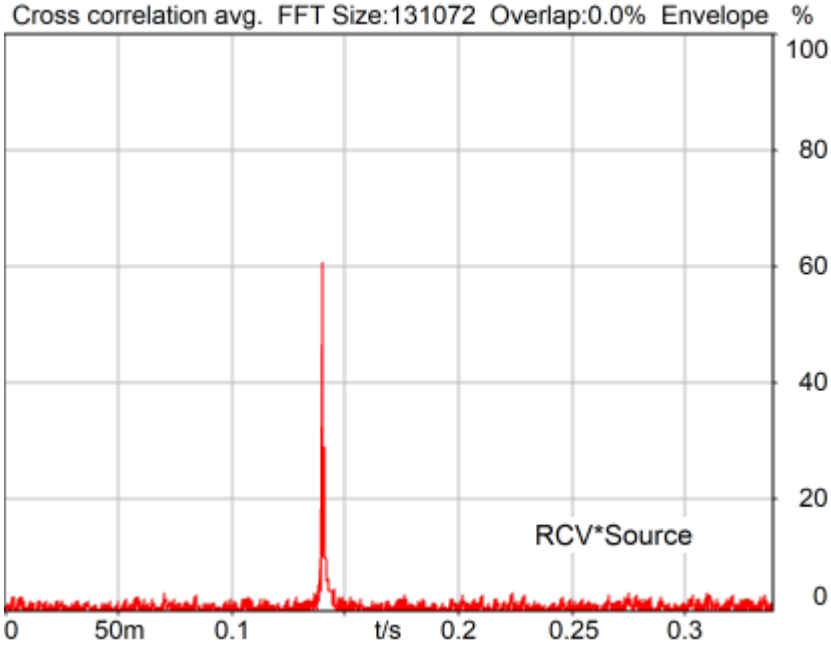
- 5000 Hz WB		0.0 dB		Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 4000Hz)	20.16	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.33	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.11	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.95	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.95	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.48	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.24	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.81	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.45	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.94	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.96	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.81	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.38	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.31	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.89	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.96	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response 8N FF	Not Ok	Min. dist. to tolerance scheme [dB], 1360.9 Hz	-1.90	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.40	LTE

DF		scheme [dB], 4620.1 Hz		Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.65	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 4620.1 Hz	0.82	LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525

Overall Receive Delay WB 6
5.1a Receive Volume Control Performance 8N WB 6
5.1b Receive Volume Control Performance 2N WB 7
5.2 RCV Distortion and Noise - 250 Hz WB 8
5.2 RCV Distortion and Noise - 315 Hz WB 9
5.2 RCV Distortion and Noise - 400 Hz WB 10
5.2 RCV Distortion and Noise - 500 Hz WB 11
5.2 RCV Distortion and Noise - 630 Hz WB 12
5.2 RCV Distortion and Noise - 800 Hz WB 13
5.2 RCV Distortion and Noise - 1000 Hz WB 14
5.2 RCV Distortion and Noise - 1250 Hz WB 15
5.2 RCV Distortion and Noise - 1600 Hz WB 16
5.2 RCV Distortion and Noise - 2000 Hz WB 17
5.2 RCV Distortion and Noise - 2500 Hz WB 18
5.2 RCV Distortion and Noise - 3150 Hz WB 19
5.2 RCV Distortion and Noise - 4000 Hz WB 20
5.2 RCV Distortion and Noise - 5000 Hz WB 21
Report - Receive Distortion and Noise (Conversational Gain) 22
5.2 RCV Distortion and Noise - 250 Hz WB 23
5.2 RCV Distortion and Noise - 315 Hz WB 24
5.2 RCV Distortion and Noise - 400 Hz WB 24
5.2 RCV Distortion and Noise - 500 Hz WB 25
5.2 RCV Distortion and Noise - 630 Hz WB 26
5.2 RCV Distortion and Noise - 800 Hz WB 27
5.2 RCV Distortion and Noise - 1000 Hz WB 28
5.2 RCV Distortion and Noise - 1250 Hz WB 29
5.2 RCV Distortion and Noise - 1600 Hz WB 30
5.2 RCV Distortion and Noise - 2000 Hz WB 31
5.2 RCV Distortion and Noise - 2500 Hz WB 32
5.2 RCV Distortion and Noise - 3150 Hz WB 33
5.2 RCV Distortion and Noise - 4000 Hz WB 34
5.2 RCV Distortion and Noise - 5000 Hz WB 35
Report - Receive Distortion and Noise (Conversational Gain) 36
5.3 Frequency Response 8N FF 37
5.3 Frequency Response 8N DF 38
5.3 Frequency Response 2N FF 38
5.3 Frequency Response 2N DF 39

Overall Receive Delay WB

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

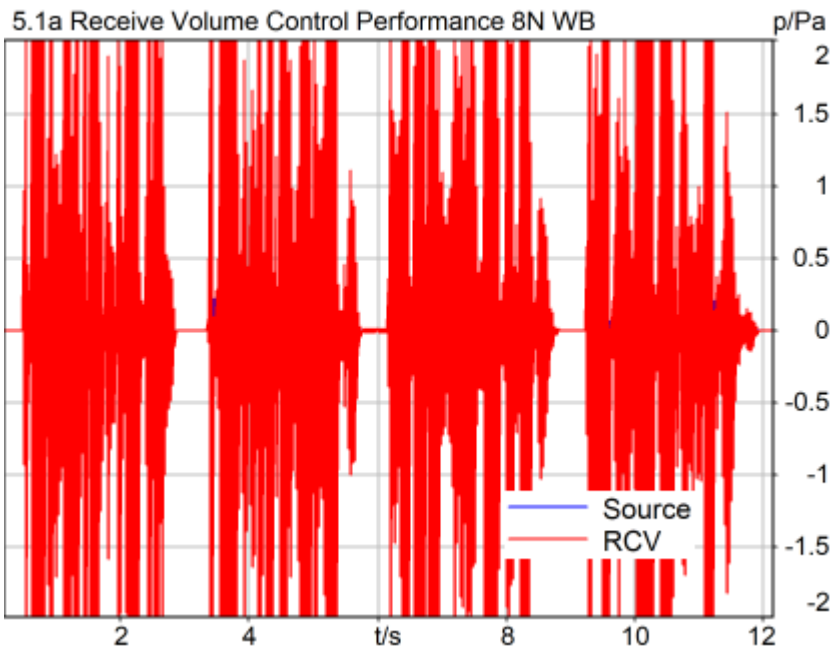


Channel	Delay
RCV*Source	140.7 ms

2025/1/16 10:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.00 dB[SPL]	84.28%	23.00 dB[SPL]	Ok

Ok

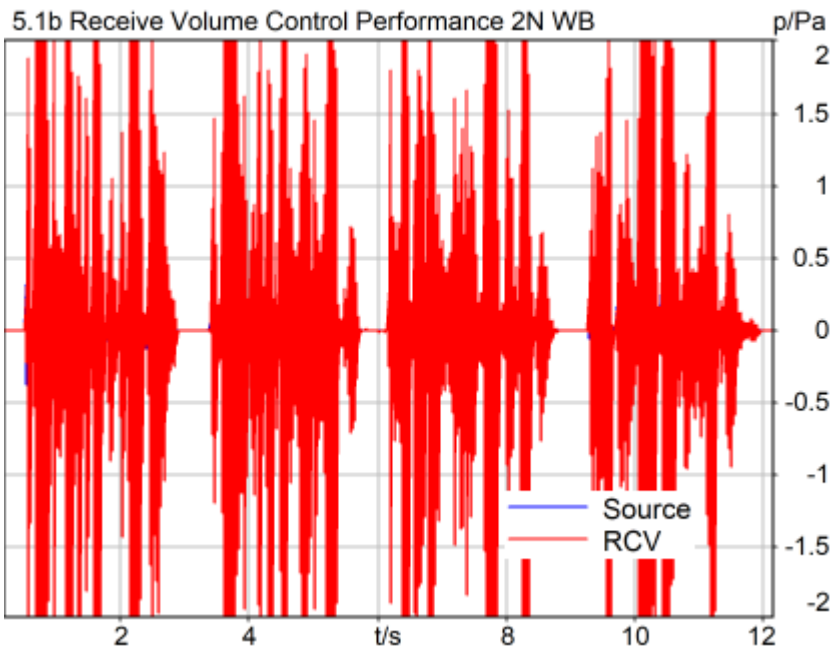
2025/1/16 10:46 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.76 dB[SPL]	84.09%	17.76 dB[SPL]	Ok

Ok

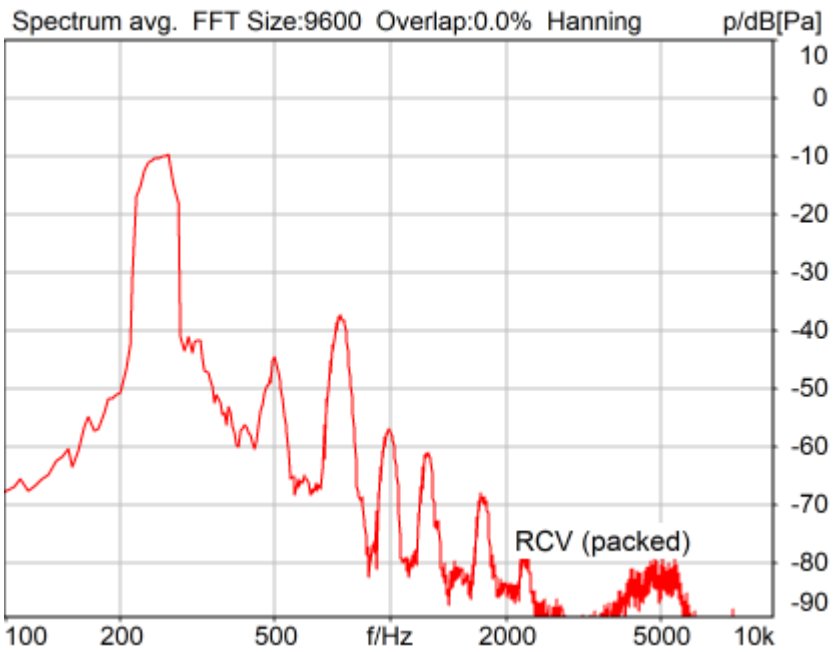
2025/1/16 10:59 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 27.21 dB (4.36%) Ok

Ok

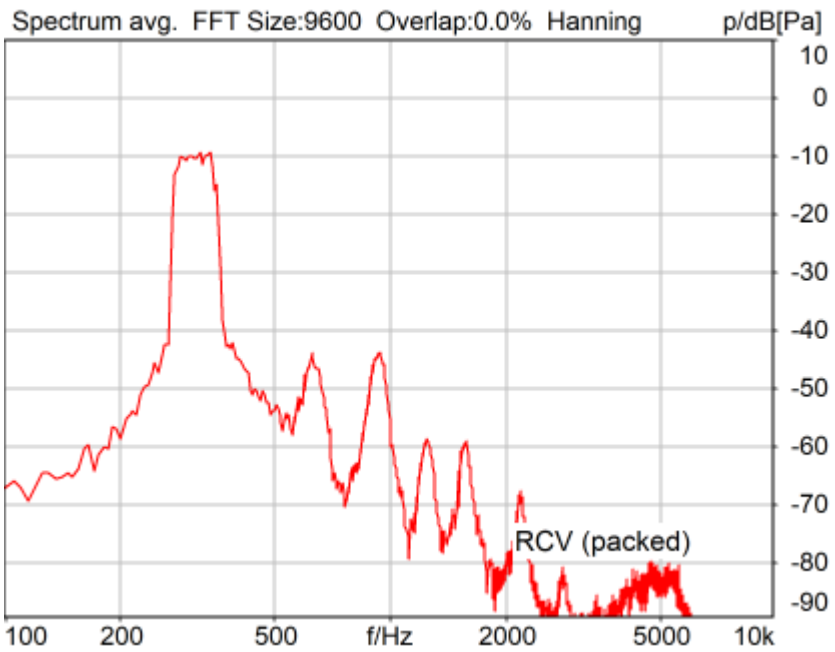
2025/1/16 10:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 31.68 dB (2.60%) Ok

Ok

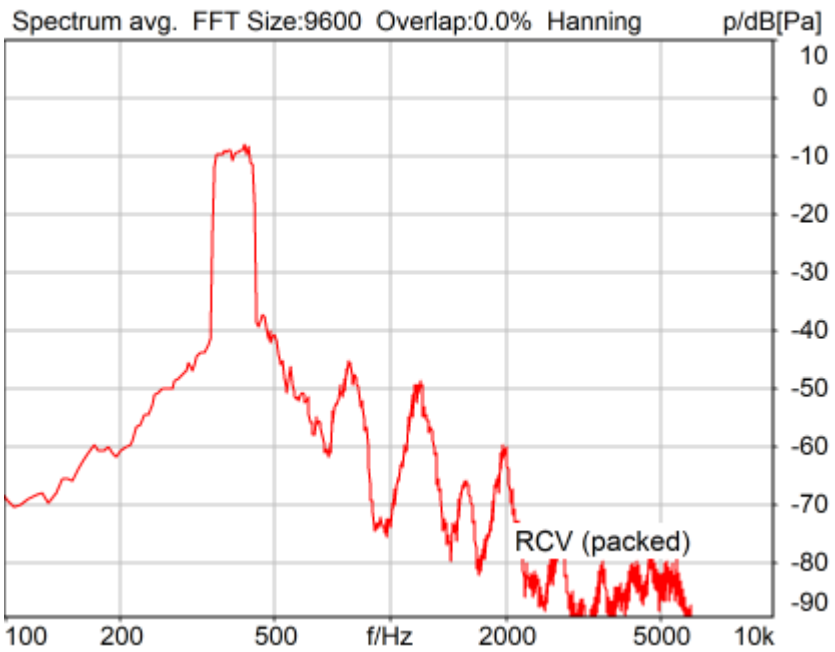
2025/1/16 10:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 33.52 dB (2.11%) Ok

Ok

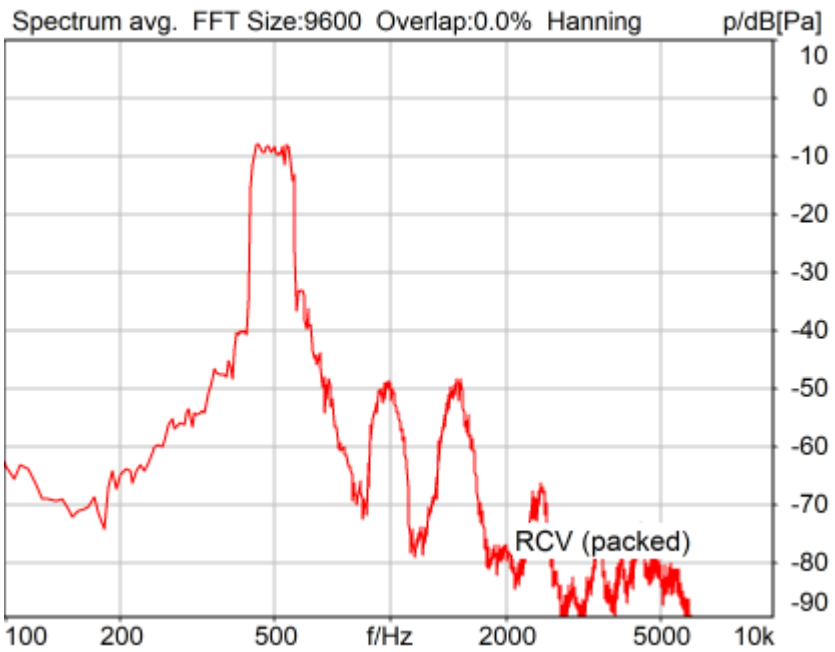
2025/1/16 10:47 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



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

Ok

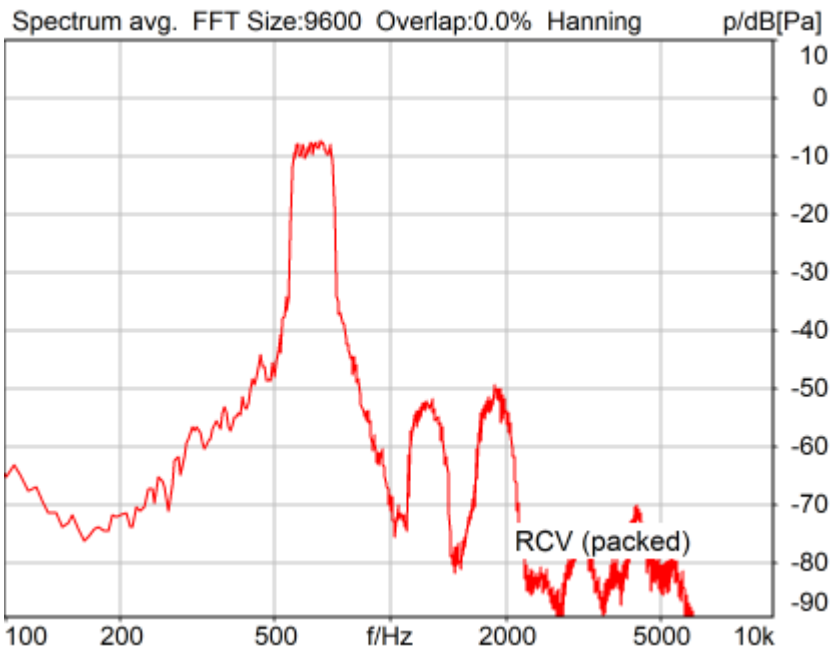
2025/1/16 10:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.17 dB (1.96%) Ok

Ok

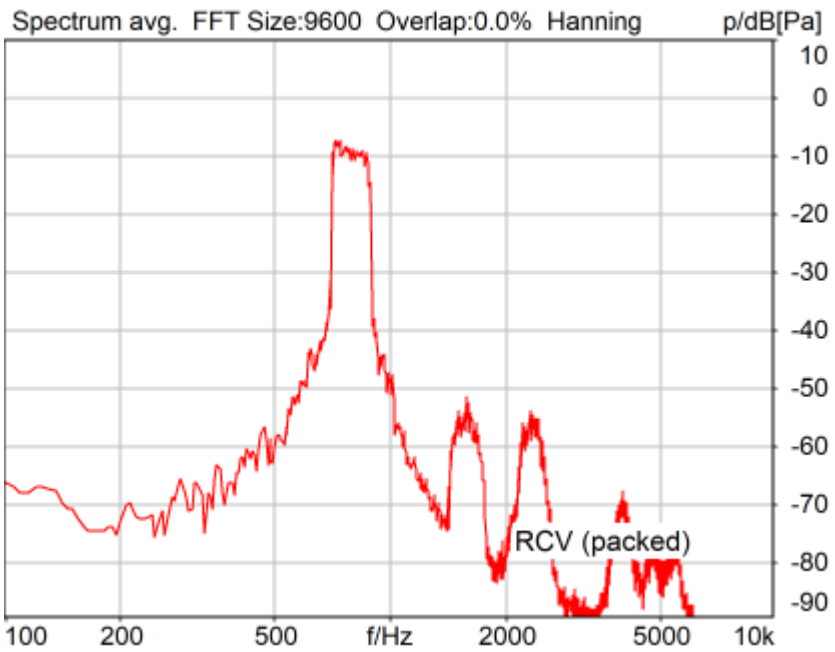
2025/1/16 10:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 35.66 dB (1.65%) Ok

Ok

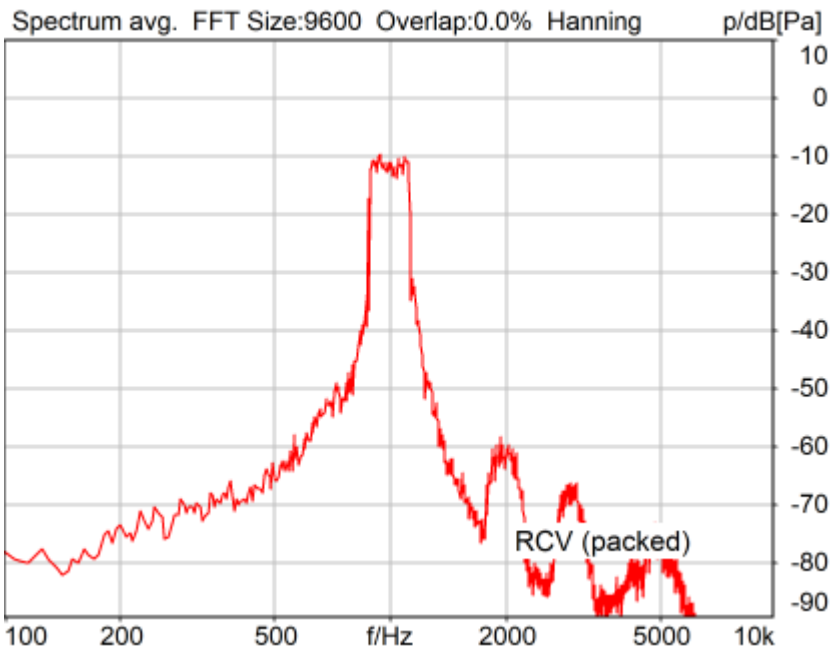
2025/1/16 10:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 31.33 dB (2.71%) Ok

Ok

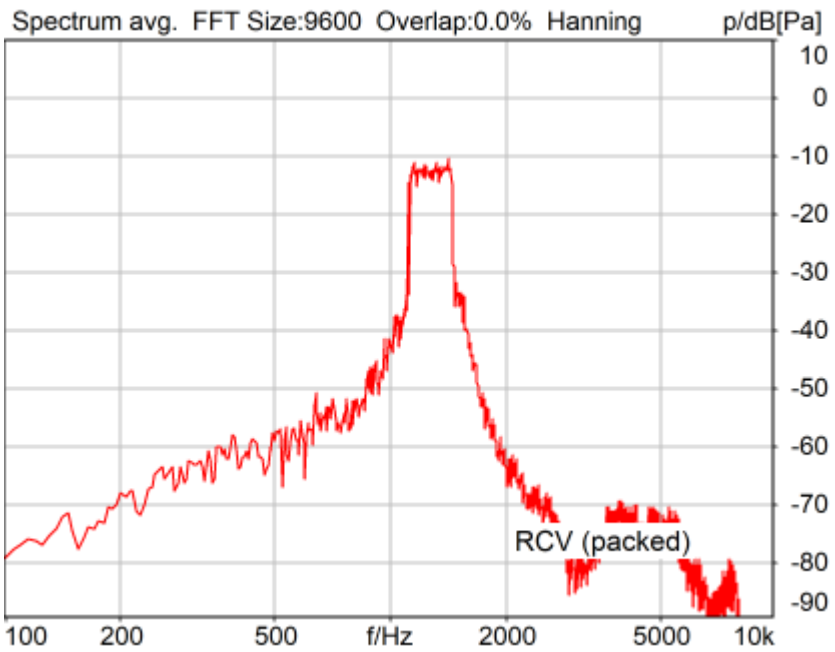
2025/1/16 10:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.51 dB (6.68%) Ok

Ok

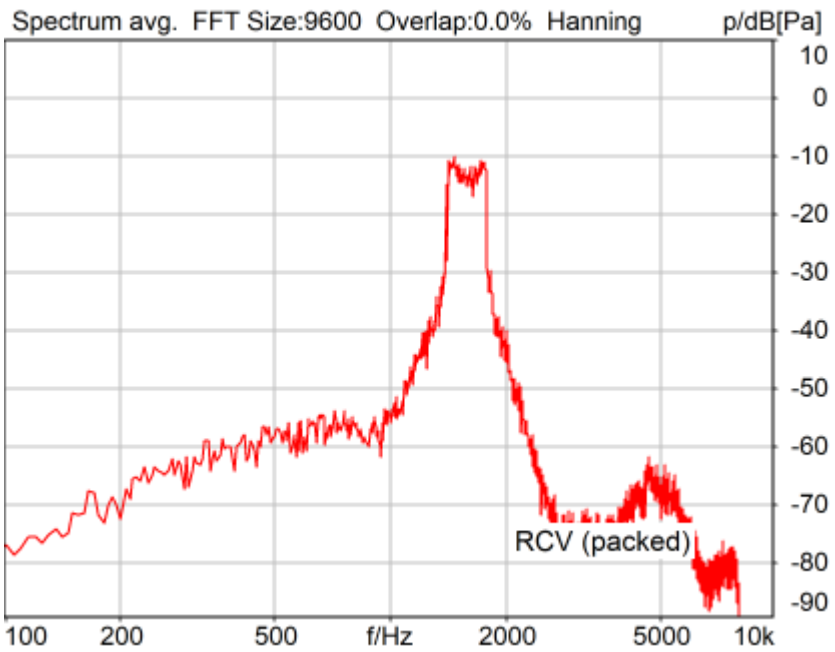
2025/1/16 10:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 23.94 dB (6.35%) Ok

Ok

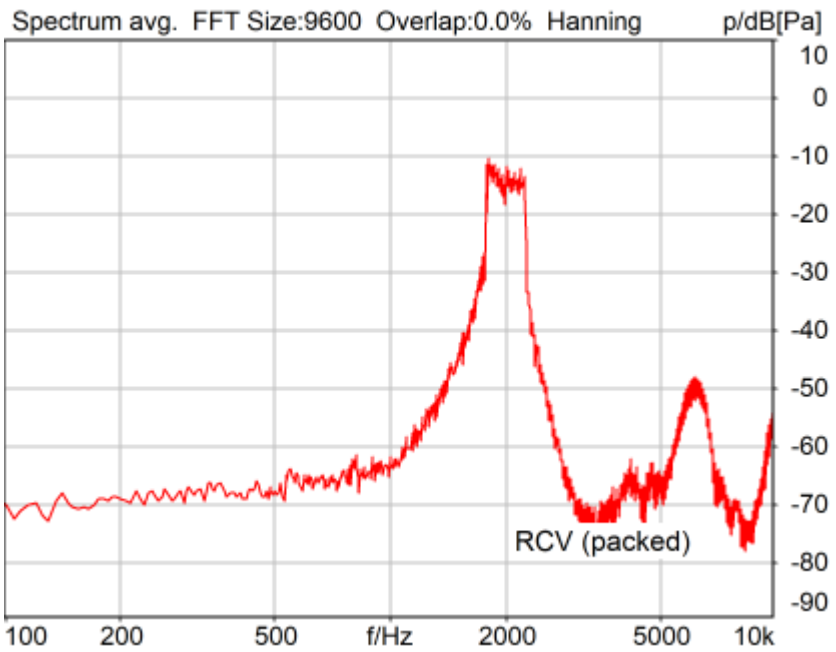
2025/1/16 10:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.34 dB (8.57%) Ok

Ok

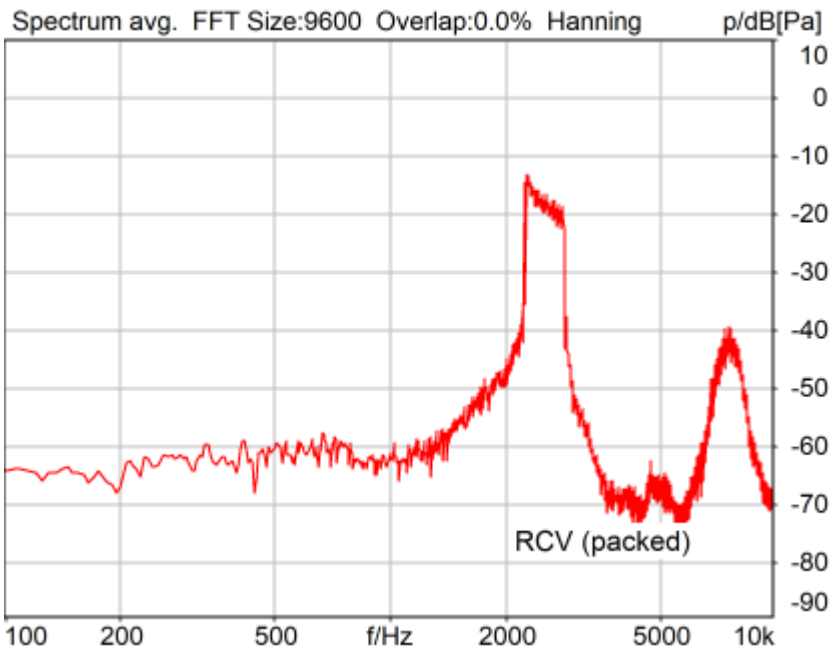
2025/1/16 10:50 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 21.37 dB (8.54%) Ok

Ok

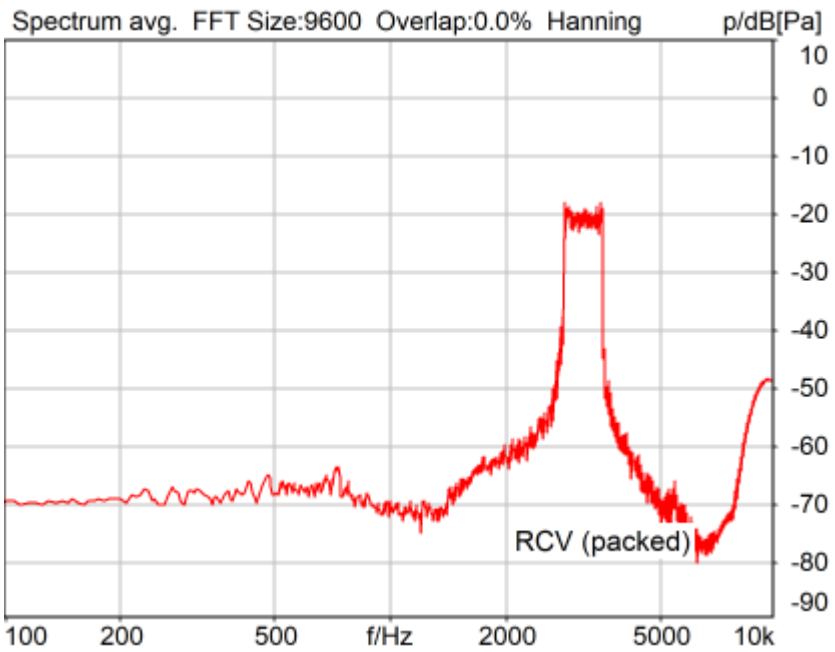
2025/1/16 10:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 24.60 dB (5.89%) Ok

Ok

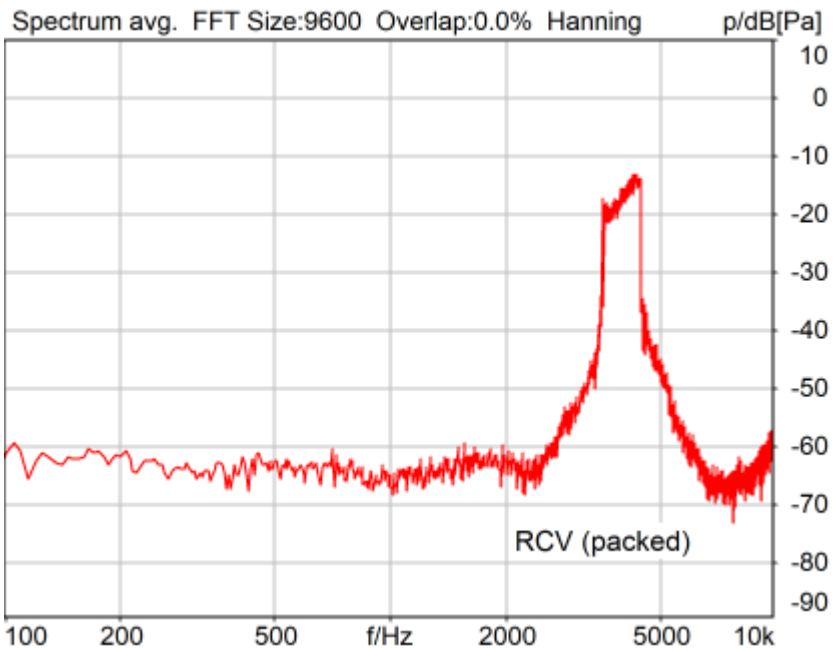
2025/1/16 10:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 20.16 dB (9.82%) Ok

Ok

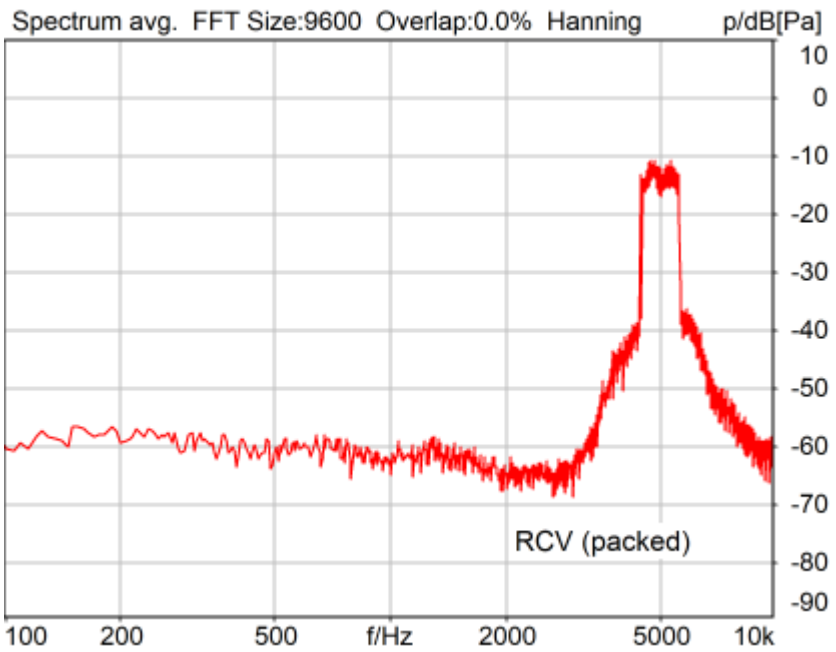
2025/1/16 10:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 20.44 dB (9.50%) Ok

Ok

2025/1/16 10:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	27.21 dB
2	315Hz	31.68 dB
3	400Hz	33.52 dB
4	500Hz	32.95 dB
5	630Hz	34.17 dB
6	800Hz	35.66 dB
7	1000Hz	31.33 dB
8	1250Hz	23.51 dB
9	1600Hz	23.94 dB
10	2000Hz	21.34 dB

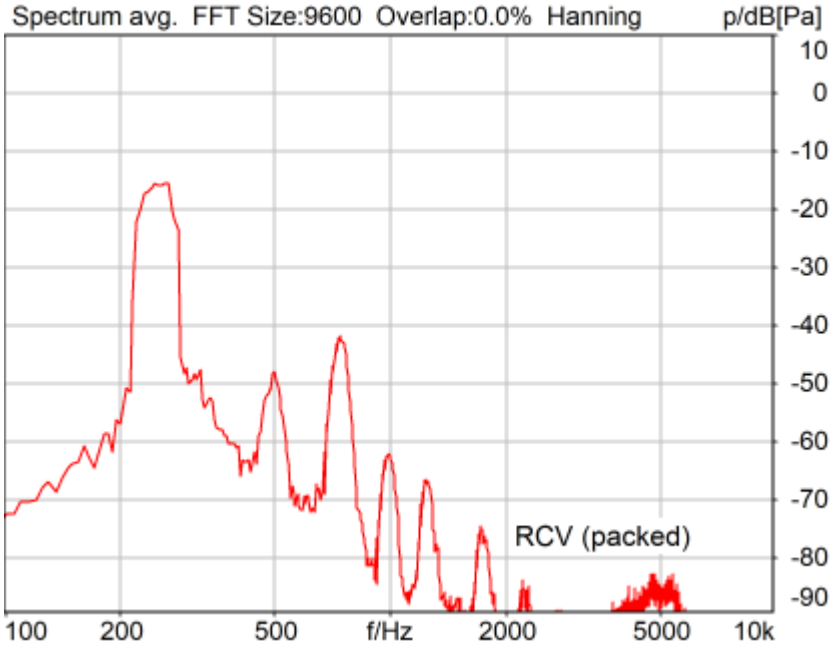
11	2500Hz	21.37 dB
12	3150Hz	24.60 dB
13	5000Hz	20.44 dB
14	4000Hz	20.16 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 20.16dB at 4000Hz.

2025/1/16 10:52 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 26.33 dB (4.83%) Ok

Ok

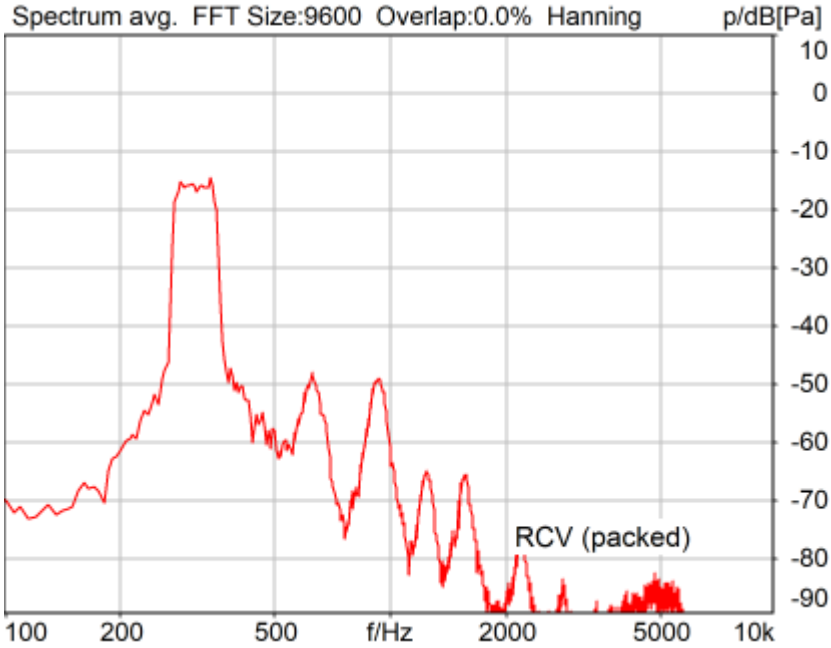
2025/1/16 11:00 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 31.11 dB (2.78%) Ok

Ok

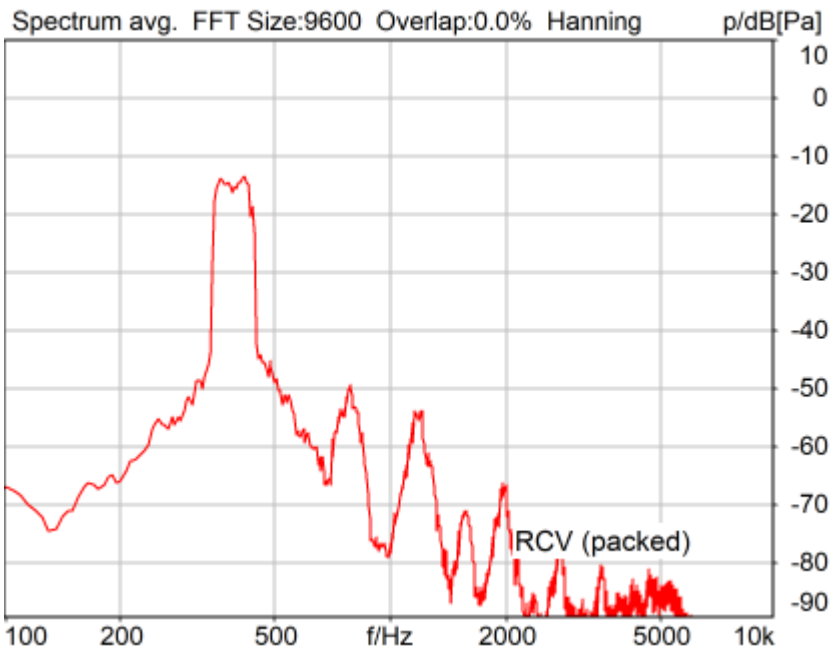
2025/1/16 11:00 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



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

Ok

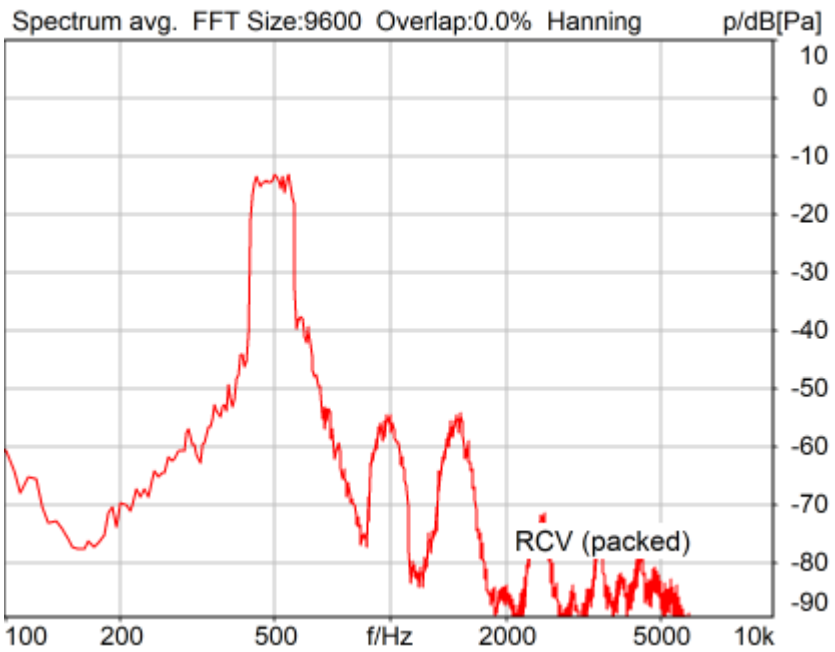
2025/1/16 11:00 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 31.95 dB (2.53%) Ok

Ok

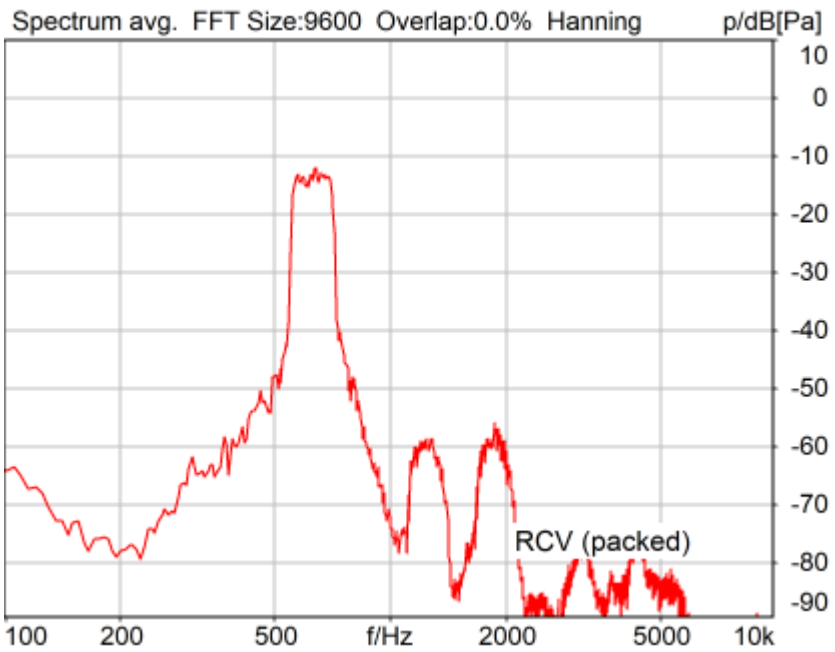
2025/1/16 11:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.48 dB (1.89%) Ok

Ok

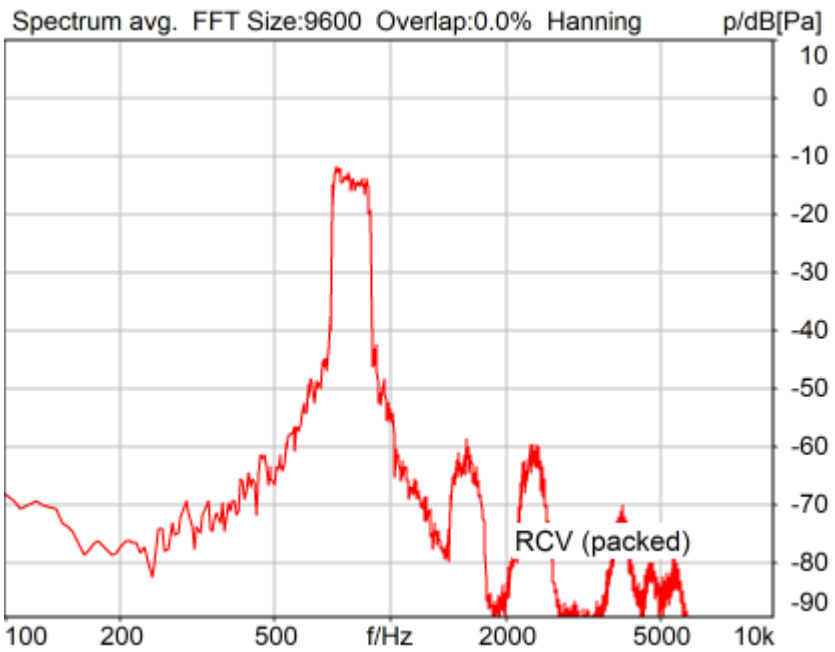
2025/1/16 11:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 36.24 dB (1.54%) Ok

Ok

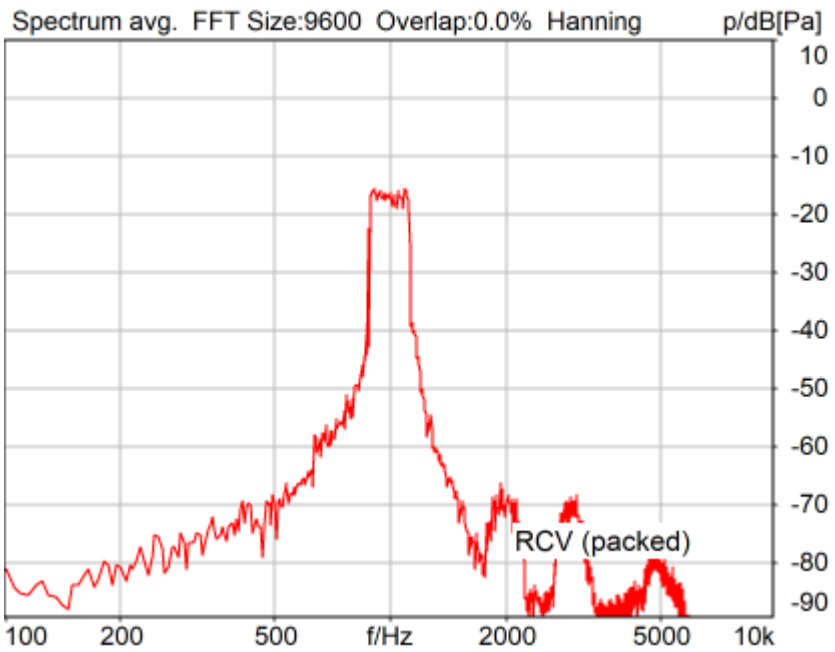
2025/1/16 11:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 31.81 dB (2.57%) Ok

Ok

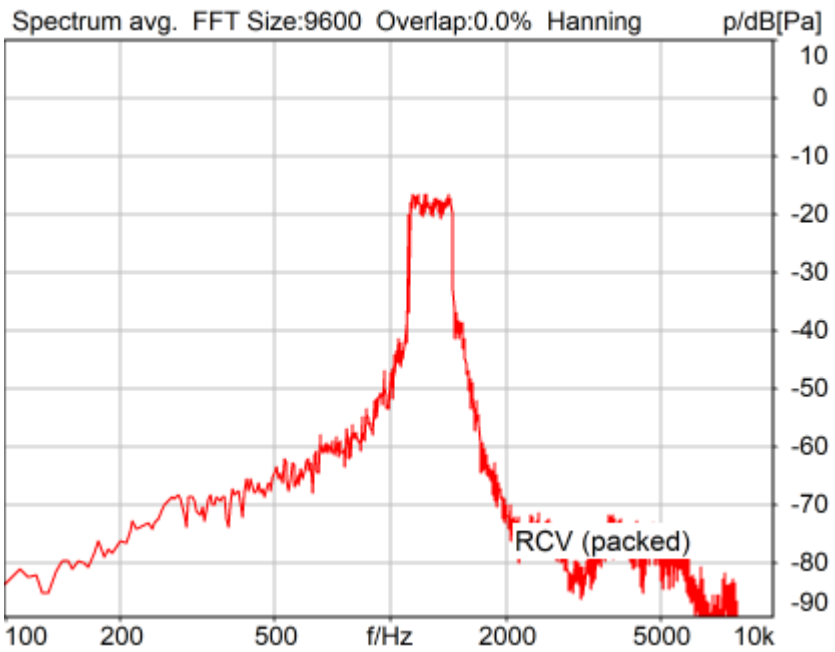
2025/1/16 11:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.45 dB (6.72%) Ok

Ok

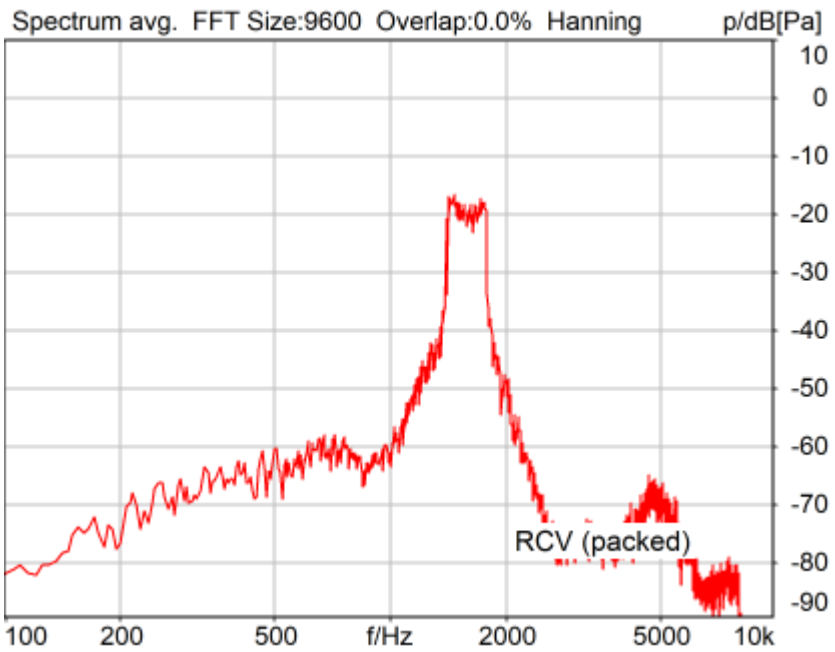
2025/1/16 11:02 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 23.94 dB (6.35%) Ok

Ok

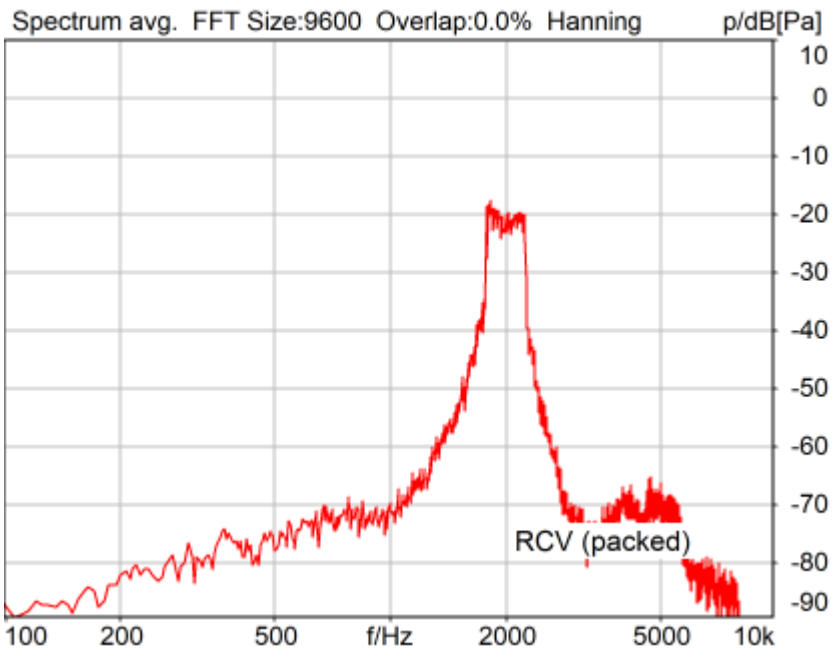
2025/1/16 11:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.96 dB (7.98%) Ok

Ok

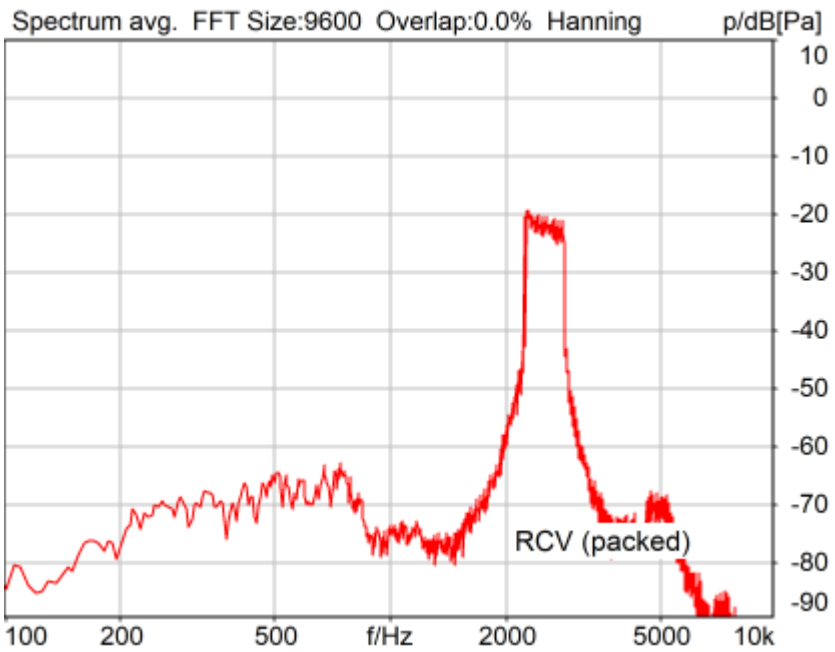
2025/1/16 11:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 28.81 dB (3.63%) Ok

Ok

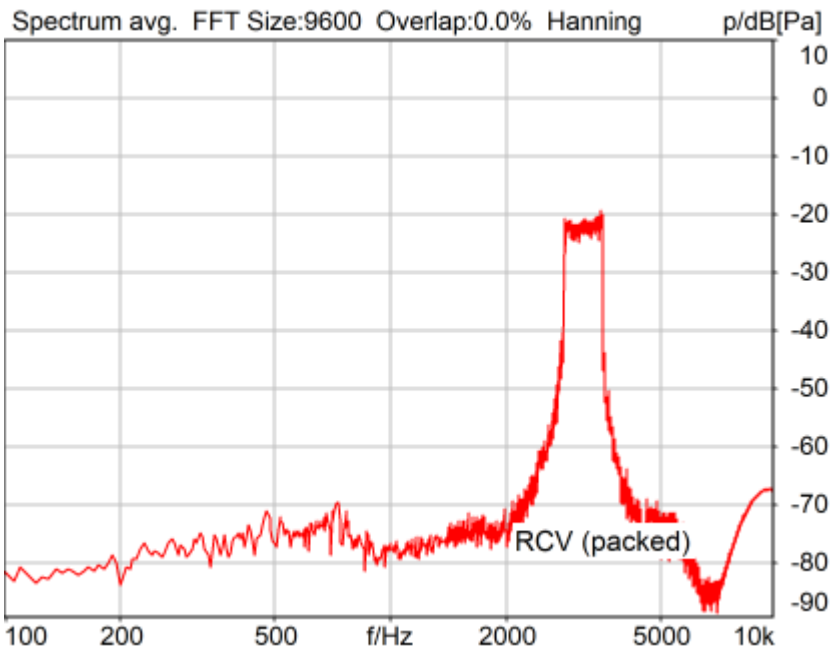
2025/1/16 11:04 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



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

Ok

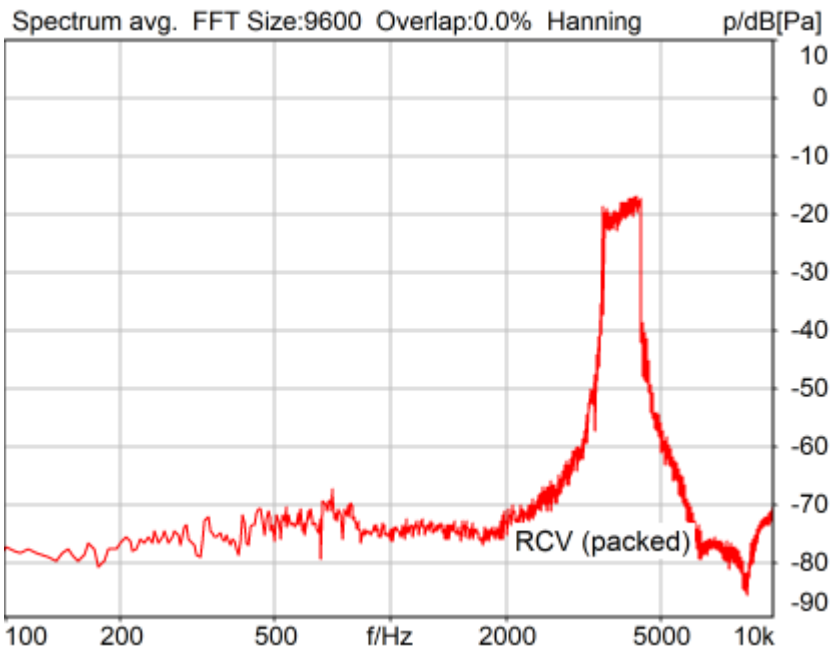
2025/1/16 11:04 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 26.31 dB (4.84%) Ok

Ok

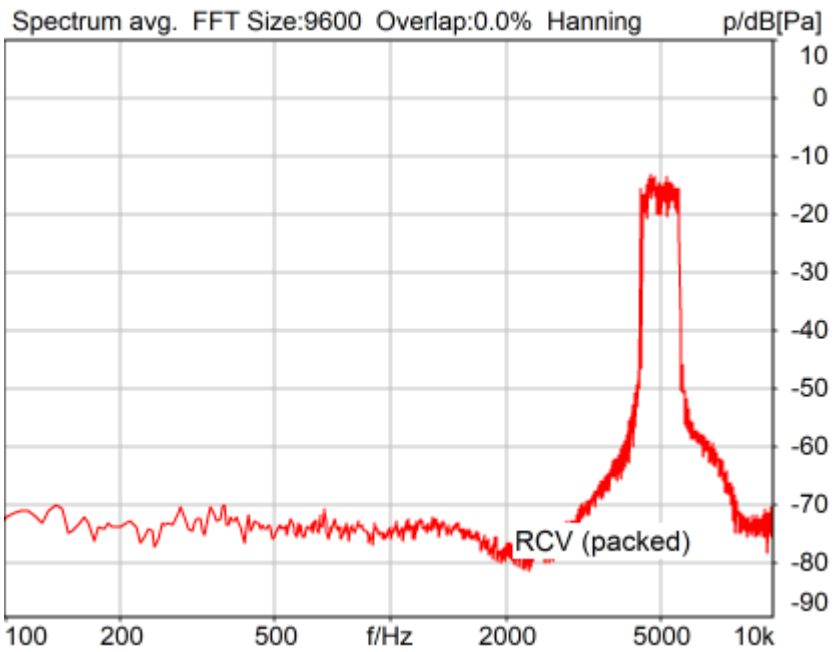
2025/1/16 11:04 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 33.89 dB (2.02%) Ok

Ok

2025/1/16 11:05 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	26.33 dB
2	315Hz	31.11 dB
3	400Hz	32.95 dB
4	500Hz	31.95 dB
5	630Hz	34.48 dB
6	800Hz	36.24 dB
7	1000Hz	31.81 dB
8	1250Hz	23.45 dB
9	1600Hz	23.94 dB
10	2000Hz	21.96 dB

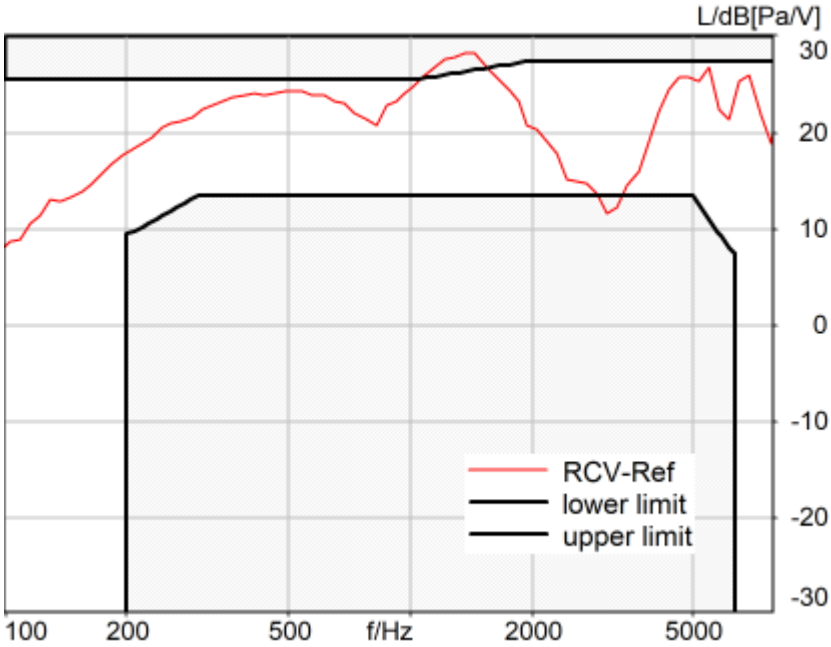
11	2500Hz	28.81 dB
12	3150Hz	30.38 dB
13	4000Hz	26.31 dB
14	5000Hz	33.89 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.96dB at 2000Hz.

2025/1/16 11:05 ACQUA

5.3 Frequency Response 8N FF

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



Absolute minimal distance
-1.90 dB at 1360.9 Hz Not Ok

Not Ok

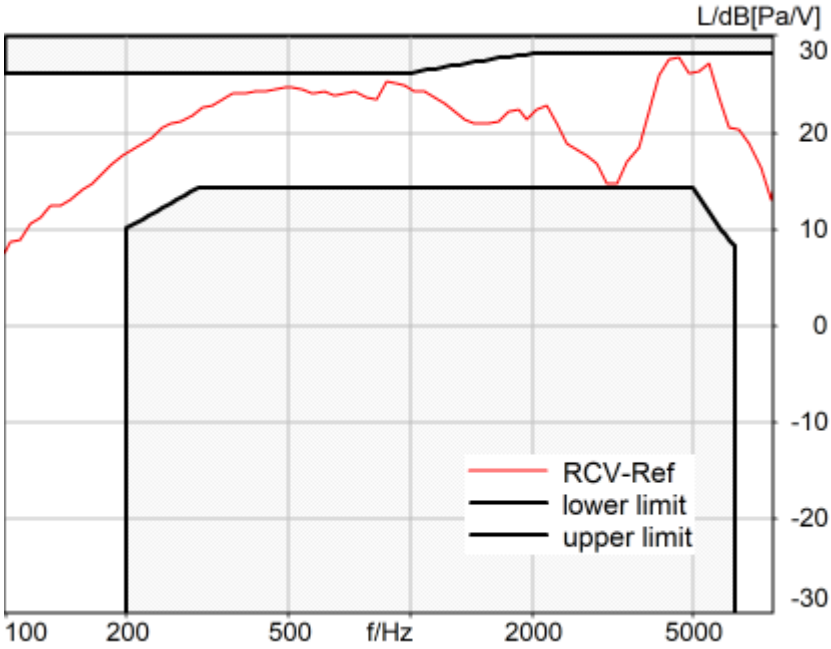
2025/1/16 10:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.40 dB at 4620.1 Hz Ok

Ok

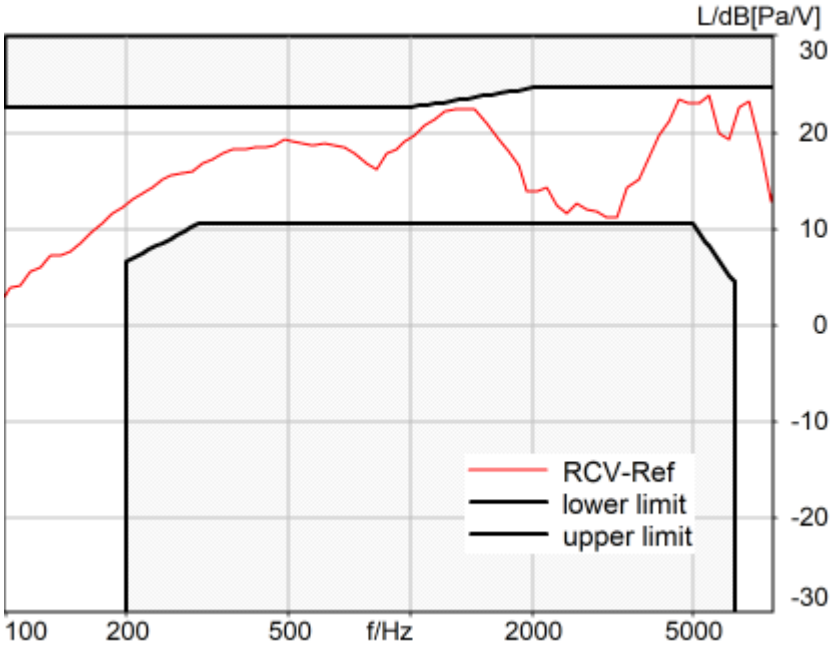
2025/1/16 10:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF

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



Absolute minimal distance
0.65 dB at 5443.6 Hz Ok

Ok

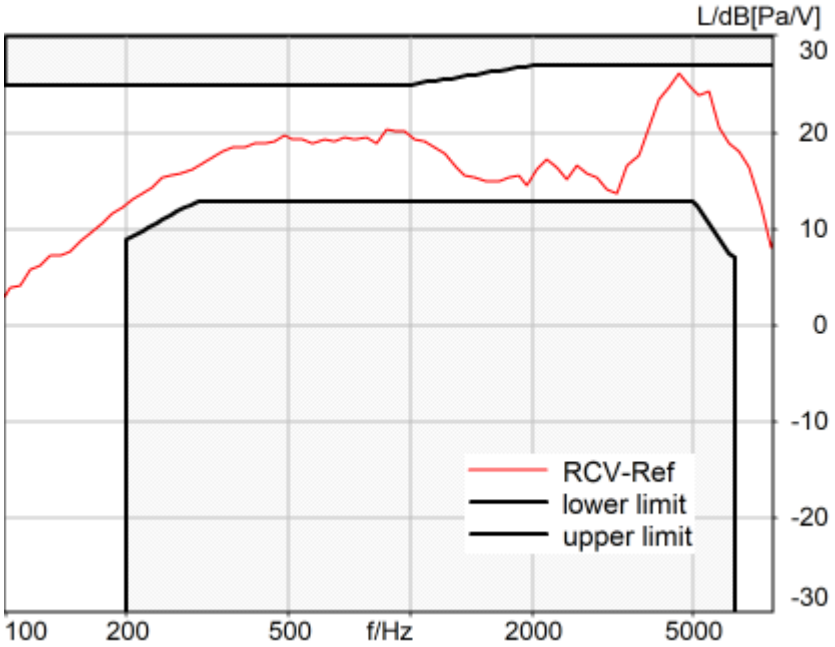
2025/1/16 10:58 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
0.82 dB at 4620.1 Hz Ok

Ok

2025/1/16 10:57 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/14 15:42
Responsible Person	audio

Status Overview

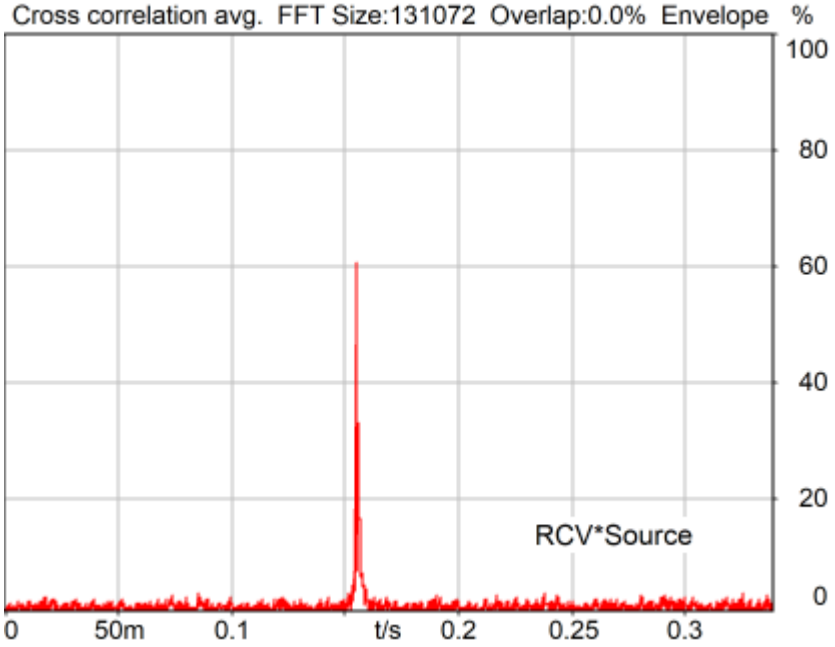
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	155.7	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	22.81	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.73	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.74	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.62	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.93	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.68	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.05	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.09	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.39	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.41	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.56	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.12	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.66	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.47	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.54	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
Report - Receive Distortion	Ok	Minimum SDNR [dB],	21.12	LTE

and Noise (Conversational Gain)		(occured at 2500Hz)		Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 4369.4 Hz	0.41	LTE Band5_20_QPSK_1_0_EVS WB 24.4kbps_CH18900_Sample2

Overall Receive Delay WB 5
5.1a Receive Volume Control Performance 8N WB 5
5.2 RCV Distortion and Noise - 250 Hz WB 6
5.2 RCV Distortion and Noise - 315 Hz WB 7
5.2 RCV Distortion and Noise - 400 Hz WB 8
5.2 RCV Distortion and Noise - 500 Hz WB 9
5.2 RCV Distortion and Noise - 630 Hz WB 10
5.2 RCV Distortion and Noise - 800 Hz WB 11
5.2 RCV Distortion and Noise - 1000 Hz WB 12
5.2 RCV Distortion and Noise - 1250 Hz WB 13
5.2 RCV Distortion and Noise - 1600 Hz WB 14
5.2 RCV Distortion and Noise - 2000 Hz WB 15
5.2 RCV Distortion and Noise - 2500 Hz WB 16
5.2 RCV Distortion and Noise - 3150 Hz WB 17
5.2 RCV Distortion and Noise - 4000 Hz WB 18
5.2 RCV Distortion and Noise - 5000 Hz WB 19
Report - Receive Distortion and Noise (Conversational Gain) 20
5.3 Frequency Response 8N DF 21

Overall Receive Delay WB

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

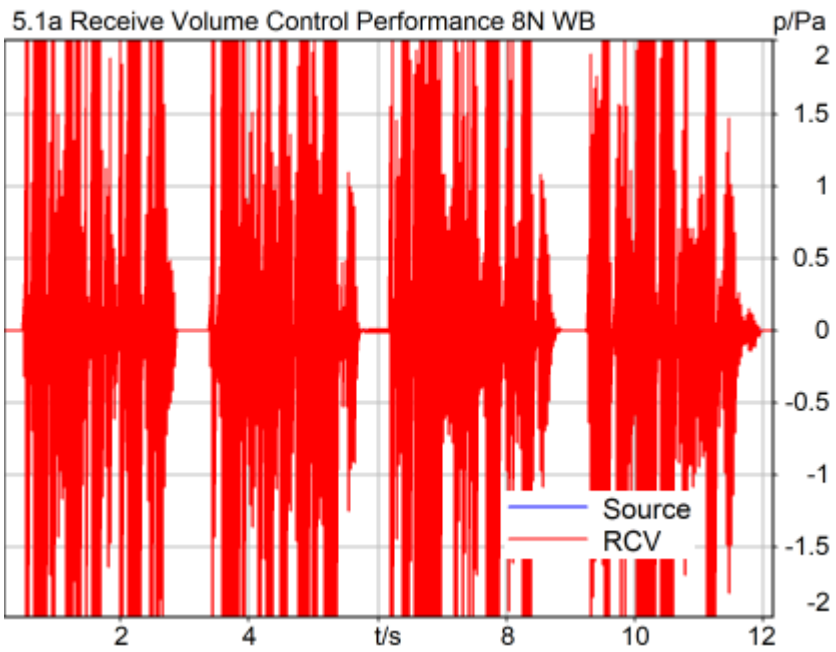


Channel	Delay
RCV*Source	155.7 ms

2025/3/12 13:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	92.81 dB[SPL]	83.76%	22.81 dB[SPL]	Ok

Ok

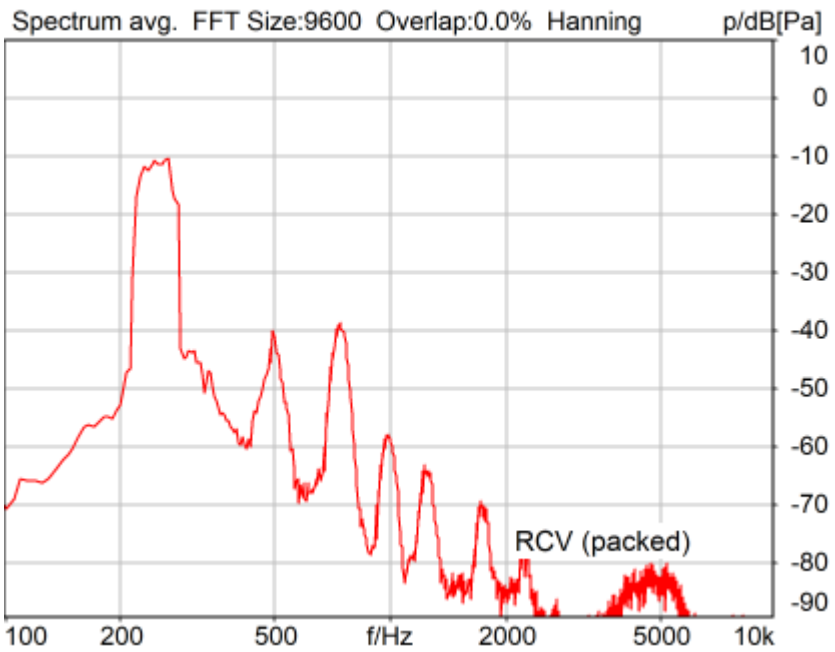
2025/3/12 13:35 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 27.73 dB (4.11%) Ok

Ok

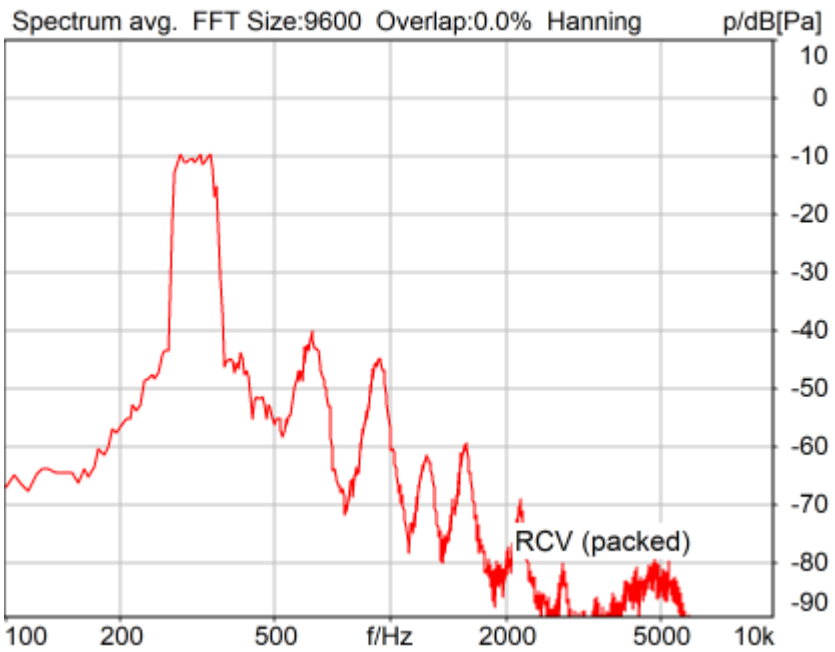
2025/3/12 13:38 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



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

Ok

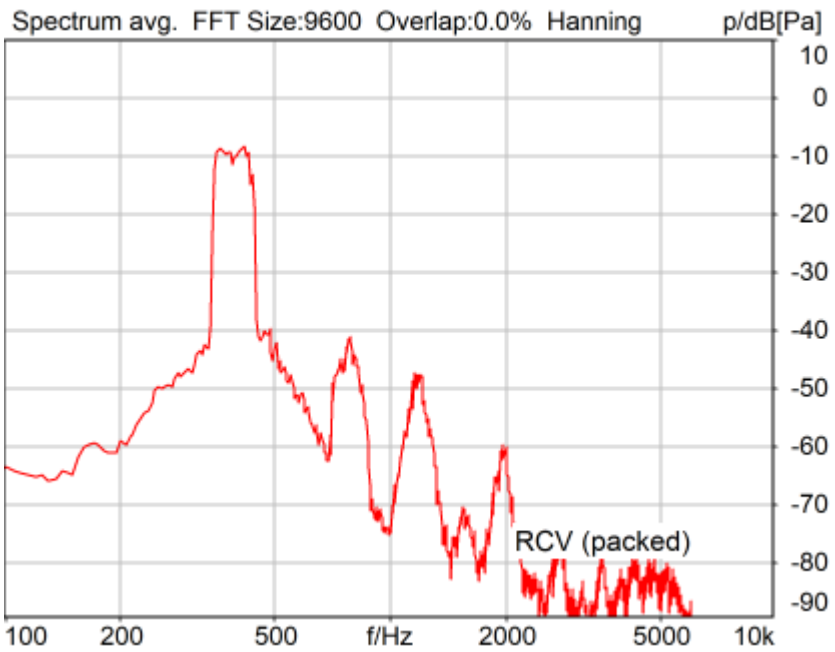
2025/3/12 13:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 31.62 dB (2.63%) Ok

Ok

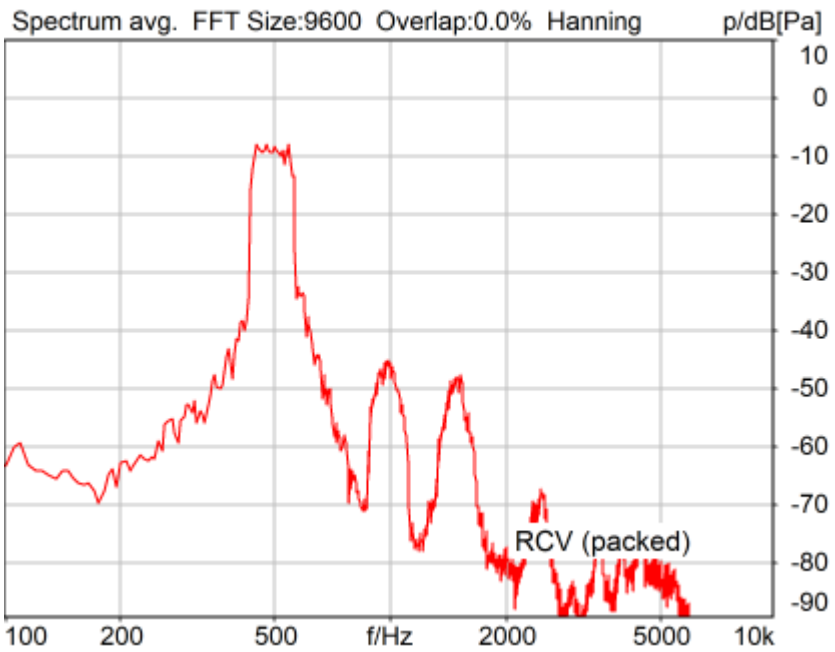
2025/3/12 13:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



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

Ok

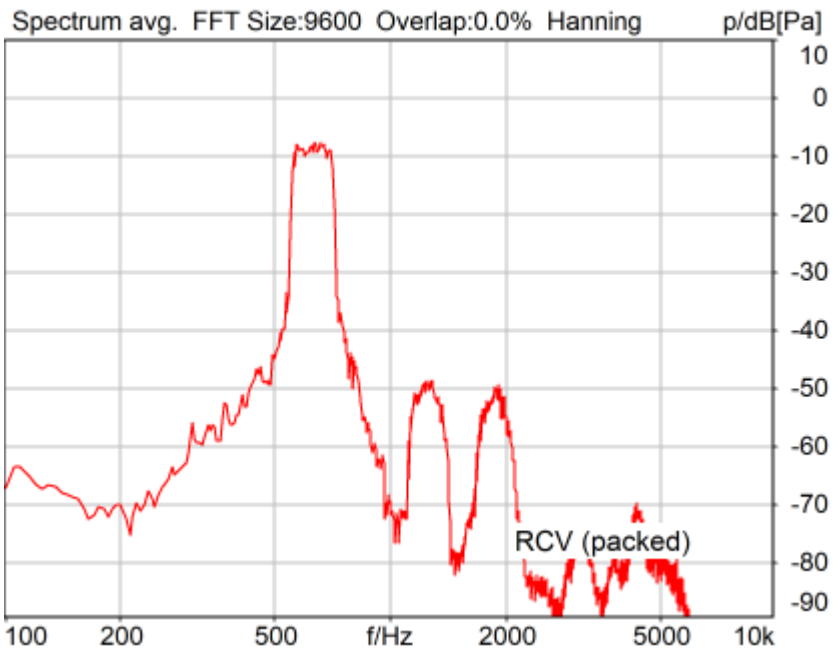
2025/3/12 13:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 33.68 dB (2.07%) Ok

Ok

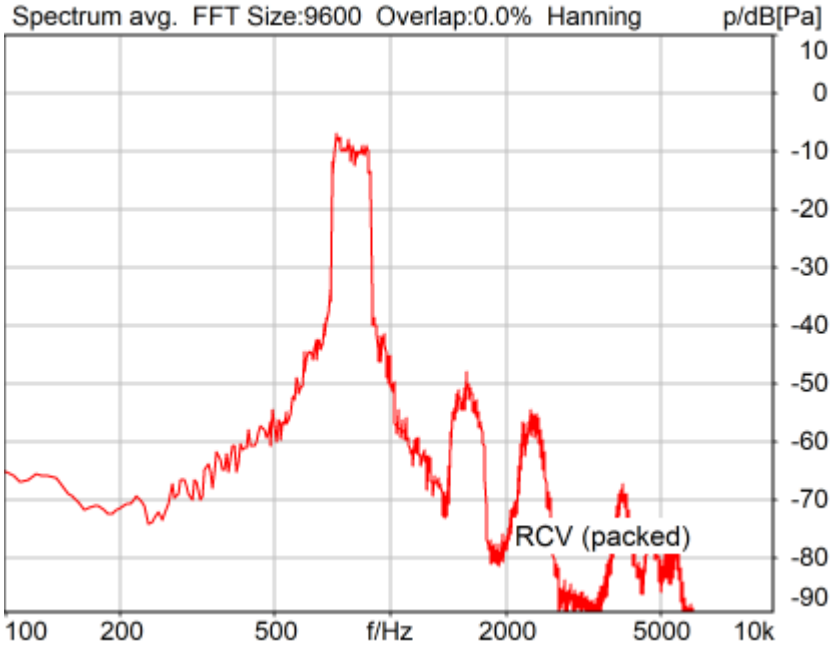
2025/3/12 13:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 34.05 dB (1.98%) Ok

Ok

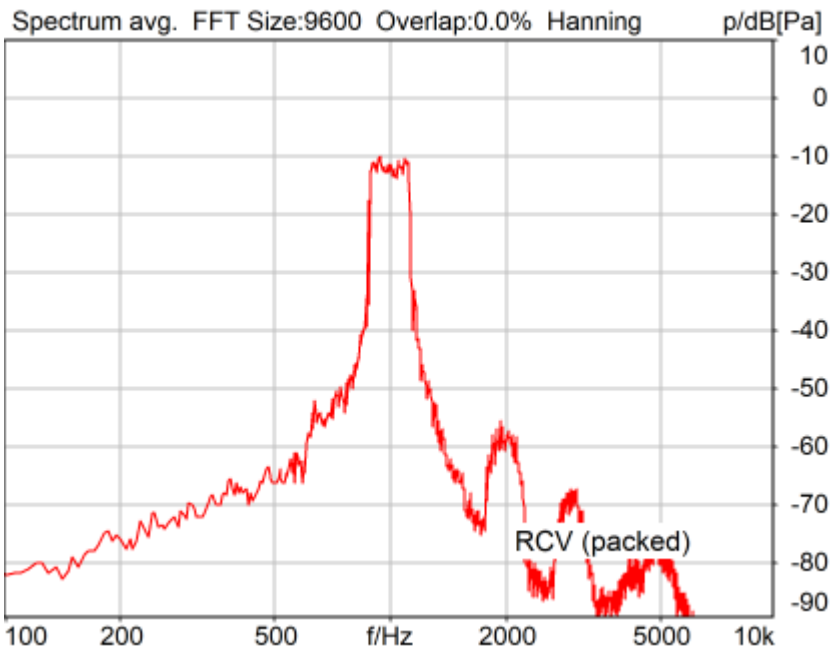
2025/3/12 13:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 32.09 dB (2.48%) Ok

Ok

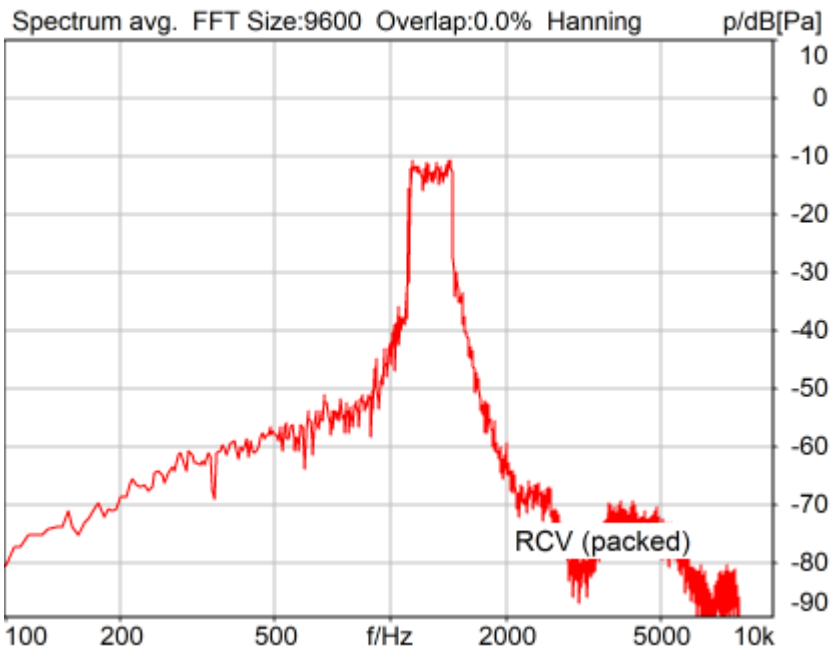
2025/3/12 13:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.39 dB (6.77%) Ok

Ok

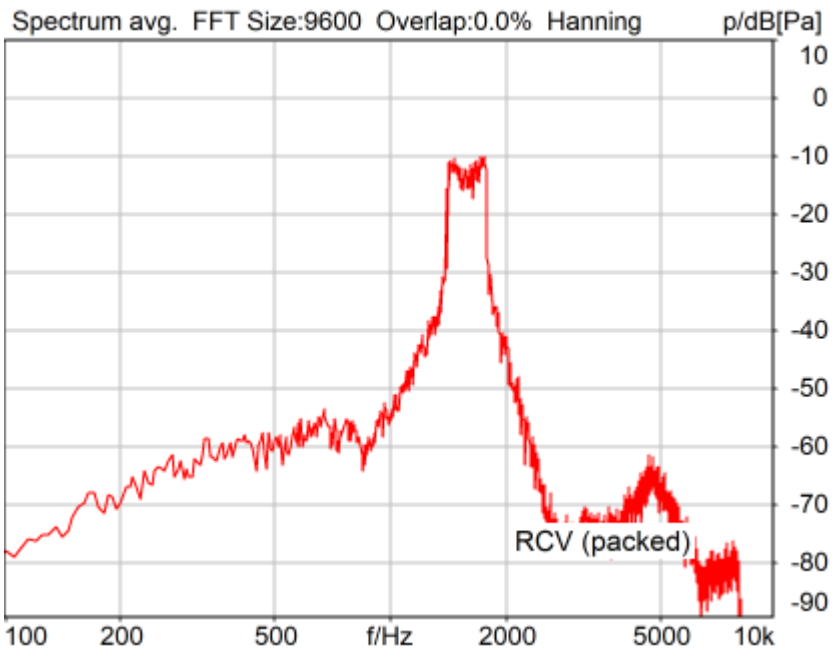
2025/3/12 13:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 24.41 dB (6.02%) Ok

Ok

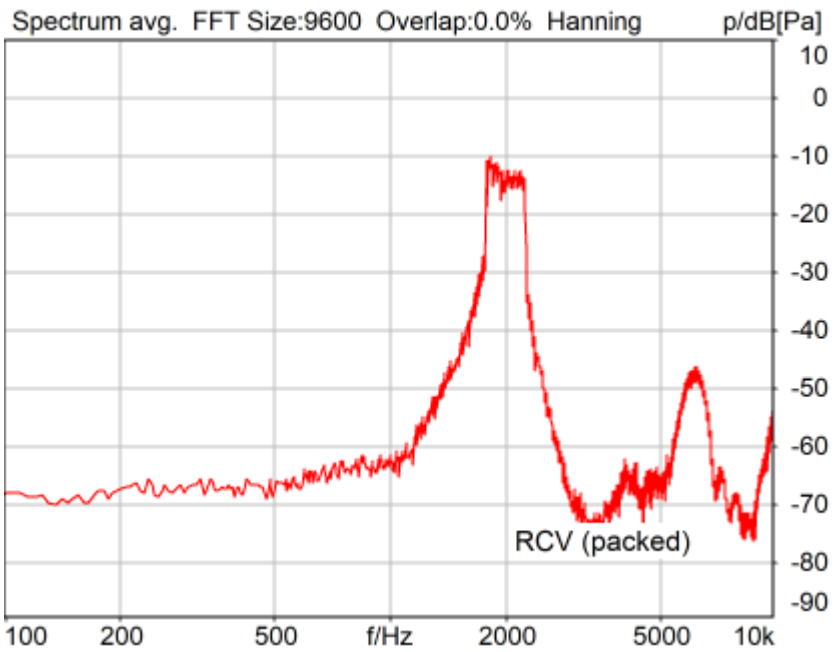
2025/3/12 13:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.56 dB (8.36%) Ok

Ok

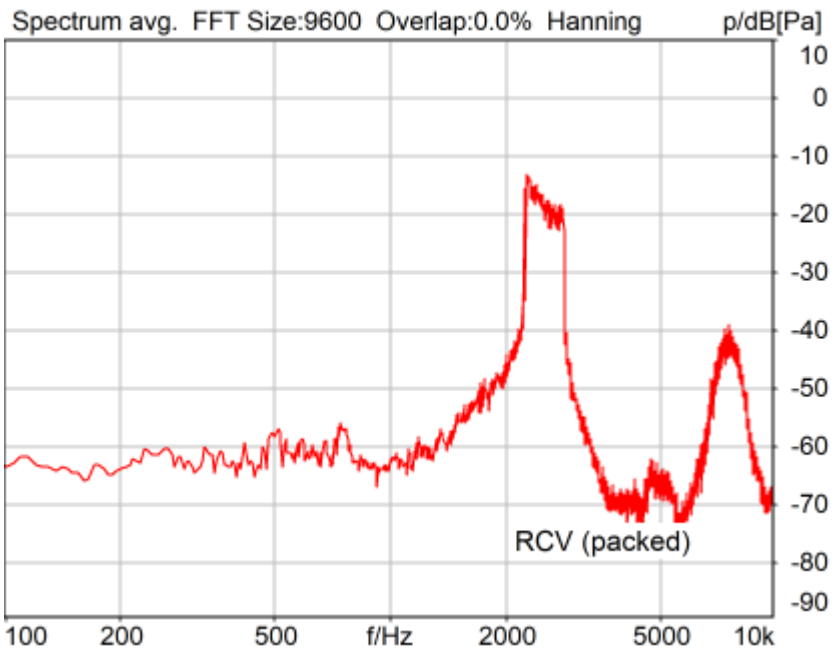
2025/3/12 13:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 21.12 dB (8.79%) Ok

Ok

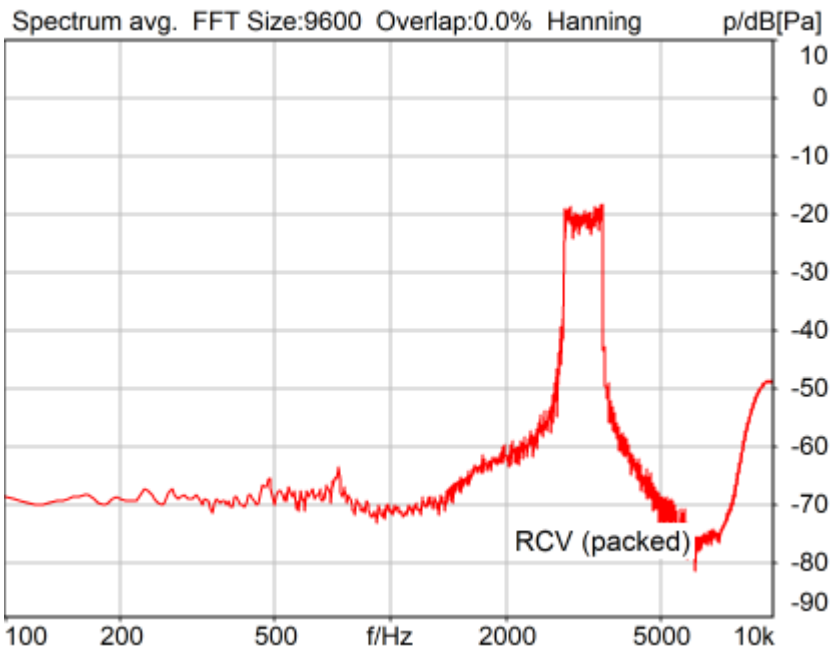
2025/3/12 13:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 24.66 dB (5.85%) Ok

Ok

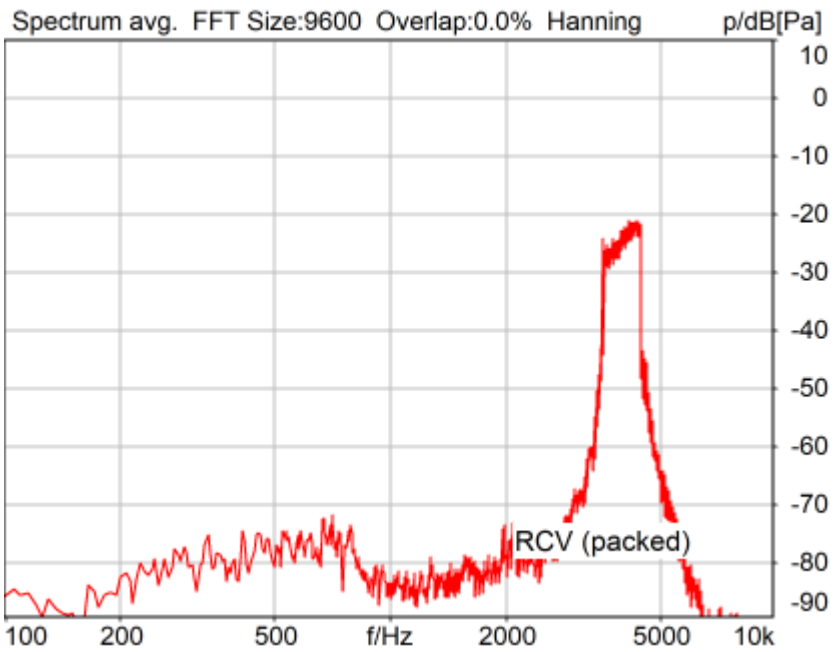
2025/3/12 13:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 28.47 dB (3.77%) Ok

Ok

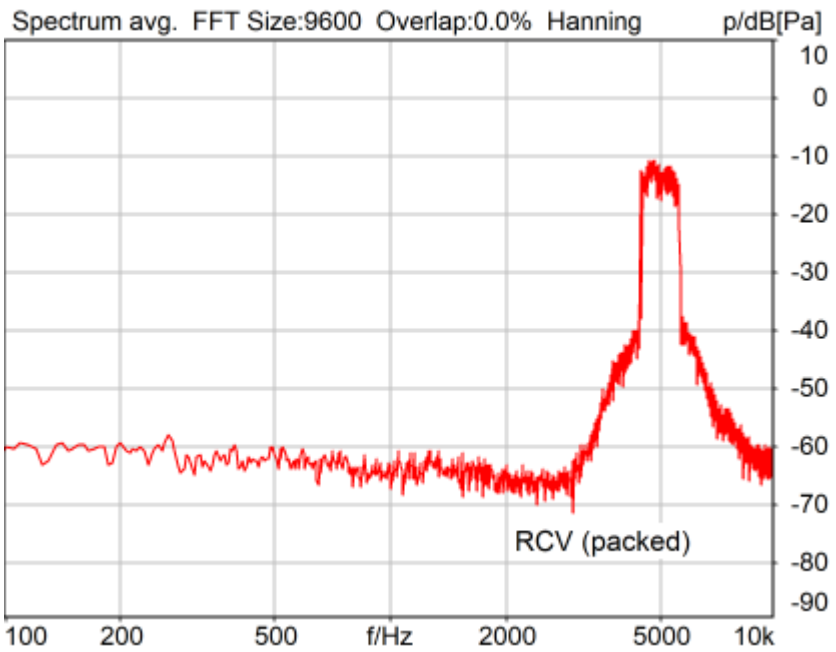
2025/3/12 13:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 21.54 dB (8.37%) Ok

Ok

2025/3/12 13:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	27.73 dB
2	315Hz	30.74 dB
3	400Hz	31.62 dB
4	500Hz	31.93 dB
5	630Hz	33.68 dB
6	800Hz	34.05 dB
7	1000Hz	32.09 dB
8	1250Hz	23.39 dB
9	1600Hz	24.41 dB
10	2000Hz	21.56 dB

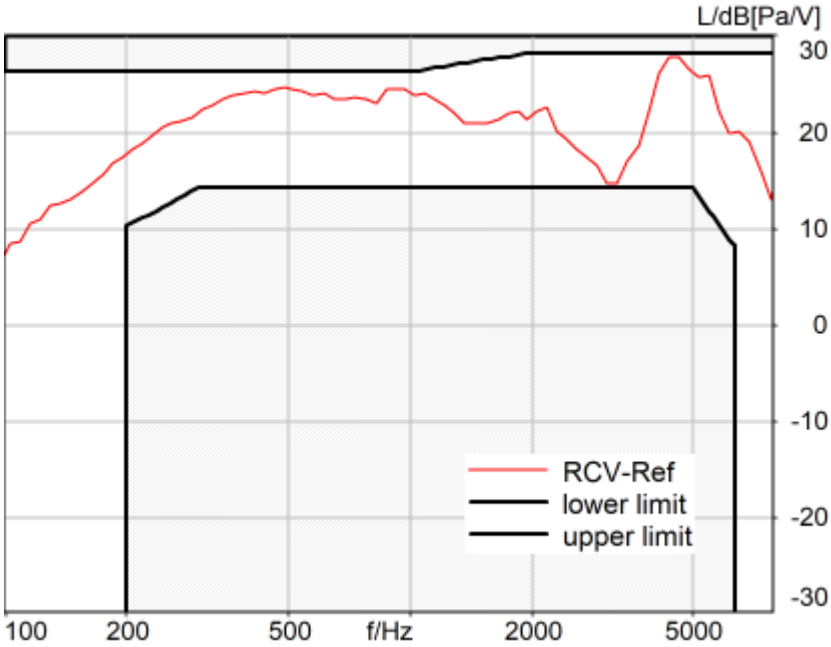
11	2500Hz	21.12 dB
12	3150Hz	24.66 dB
13	5000Hz	21.54 dB
14	4000Hz	28.47 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.12dB at 2500Hz.

2025/3/12 13:53 ACQUA

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.41 dB at 4369.4 Hz Ok

Ok

2025/3/12 13:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:52
Responsible Person	audio

Status Overview

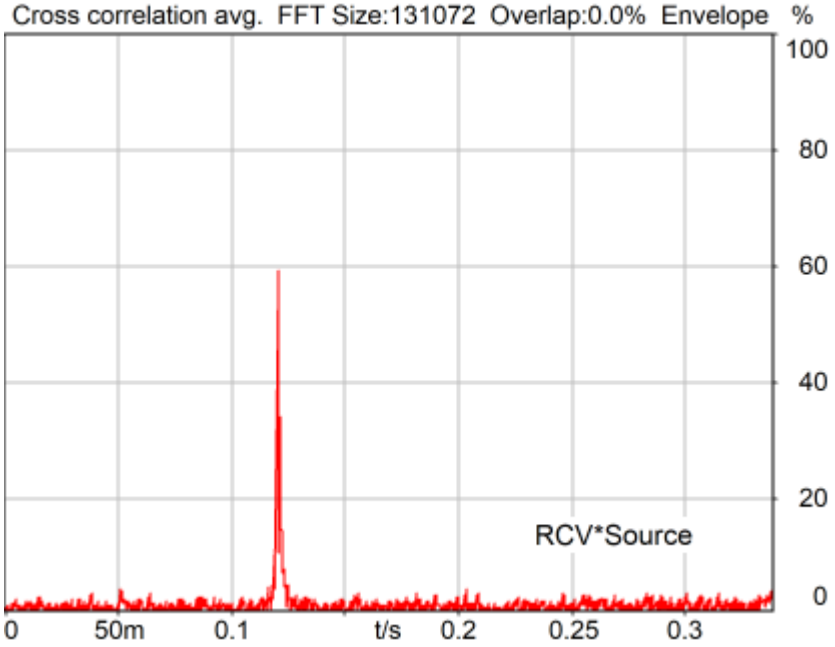
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	120.7	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	23.25	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	17.67	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.67	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.69	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.50	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.76	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.96	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.39	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.55	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.10	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.58	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	25.36	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	21.58	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.99	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.26	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	34.41	LTE

- 630 Hz NB		0.0 dB		Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.46	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.21	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.46	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.22	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.29	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.01	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.99	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.29	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.3 Frequency Response 8N FF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 1360.9 Hz	-2.03	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 487.0 Hz	0.73	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.46	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.08	LTE Band7_20_QPSK_1_0_EVS NB 24.4kbps_CH21100

Overall Receive Delay NB 5
5.1a Receive Volume Control Performance 8N NB 5
5.1b Receive Volume Control Performance 2N NB 6
5.2 RCV Distortion and Noise - 400 Hz NB 7
5.2 RCV Distortion and Noise - 500 Hz NB 8
5.2 RCV Distortion and Noise - 630 Hz NB 9
5.2 RCV Distortion and Noise - 800 Hz NB 10
5.2 RCV Distortion and Noise - 1000 Hz NB 11
5.2 RCV Distortion and Noise - 1250 Hz NB 12
5.2 RCV Distortion and Noise - 1600 Hz NB 13
5.2 RCV Distortion and Noise - 2000 Hz NB 14
5.2 RCV Distortion and Noise - 2500 Hz NB 15
5.2 RCV Distortion and Noise - 3150 Hz NB 16
Report - Receive Distortion and Noise (Conversational Gain) 17
5.2 RCV Distortion and Noise - 400 Hz NB 18
5.2 RCV Distortion and Noise - 500 Hz NB 18
5.2 RCV Distortion and Noise - 630 Hz NB 19
5.2 RCV Distortion and Noise - 800 Hz NB 20
5.2 RCV Distortion and Noise - 1000 Hz NB 21
5.2 RCV Distortion and Noise - 1250 Hz NB 22
5.2 RCV Distortion and Noise - 1600 Hz NB 23
5.2 RCV Distortion and Noise - 2000 Hz NB 24
5.2 RCV Distortion and Noise - 2500 Hz NB 25
5.2 RCV Distortion and Noise - 3150 Hz NB 26
Report - Receive Distortion and Noise (Conversational Gain) 27
5.3 Frequency Response 8N FF HANB 28
5.3 Frequency Response 8N DF HANB 29
5.3 Frequency Response 2N FF HANB 29
5.3 Frequency Response 2N DF HANB 30

Overall Receive Delay NB

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

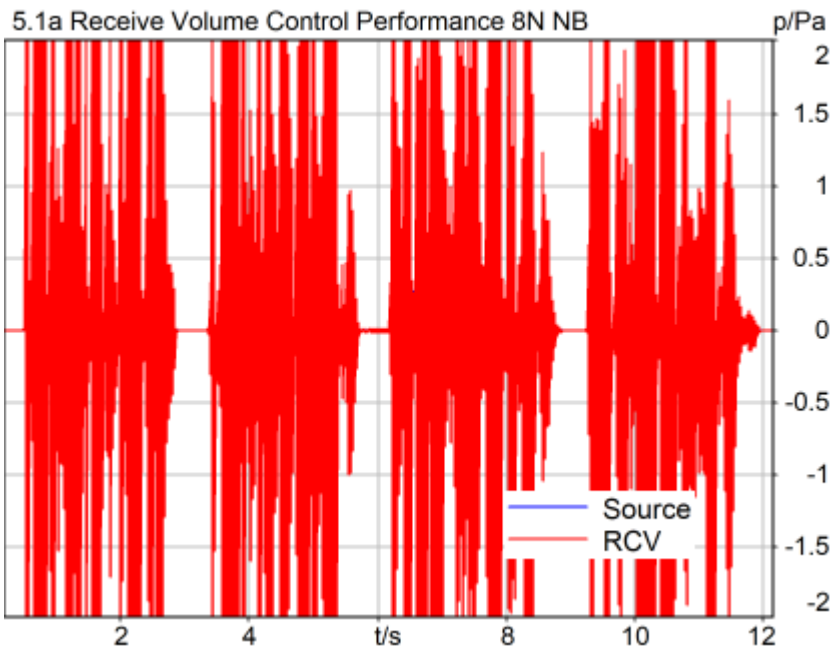


Channel	Delay
RCV*Source	120.7 ms

2025/1/16 11:09 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.25 dB[SPL]	84.09%	23.25 dB[SPL]	Ok

Ok

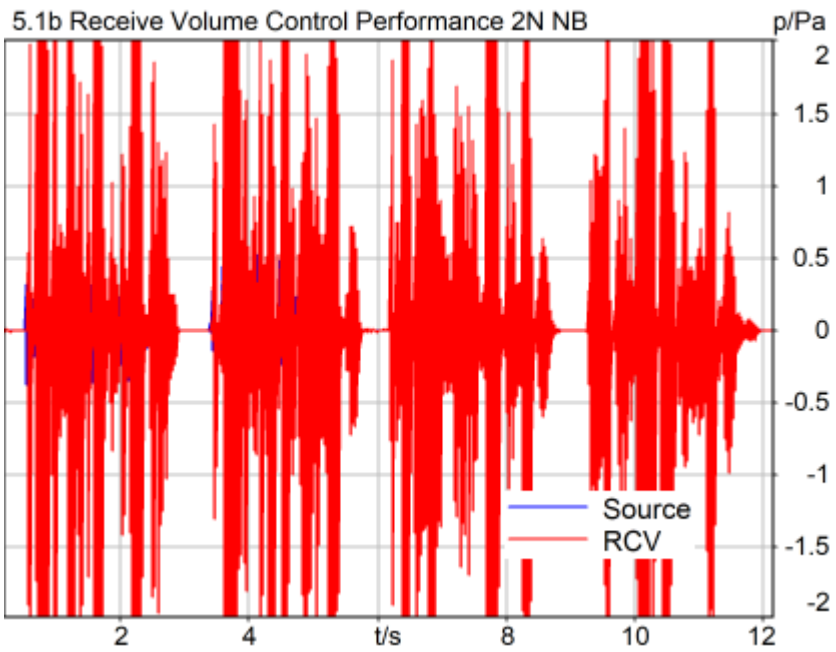
2025/1/16 11:20 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.67 dB[SPL]	84.46%	17.67 dB[SPL]	Ok

Ok

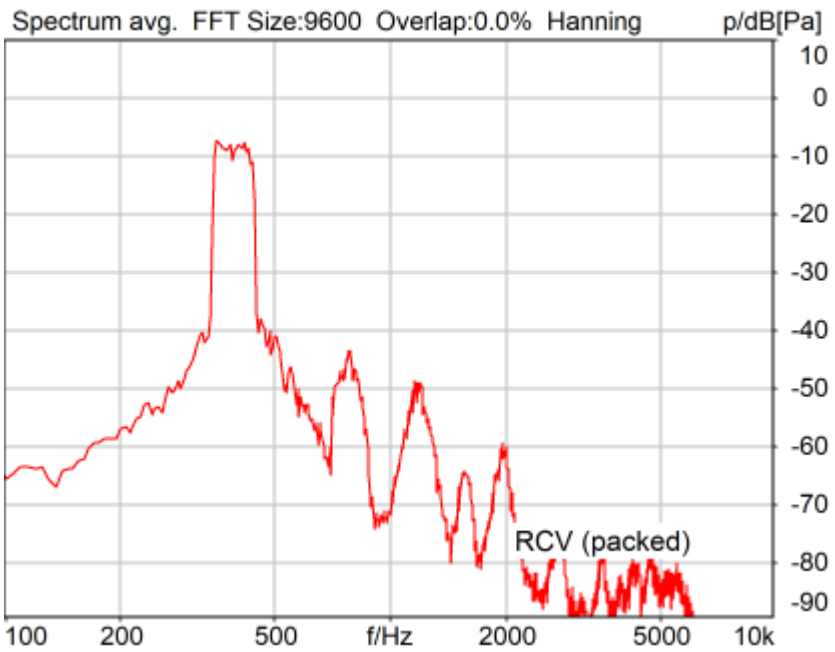
2025/1/16 11:10 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 33.67 dB (2.07%) Ok

Ok

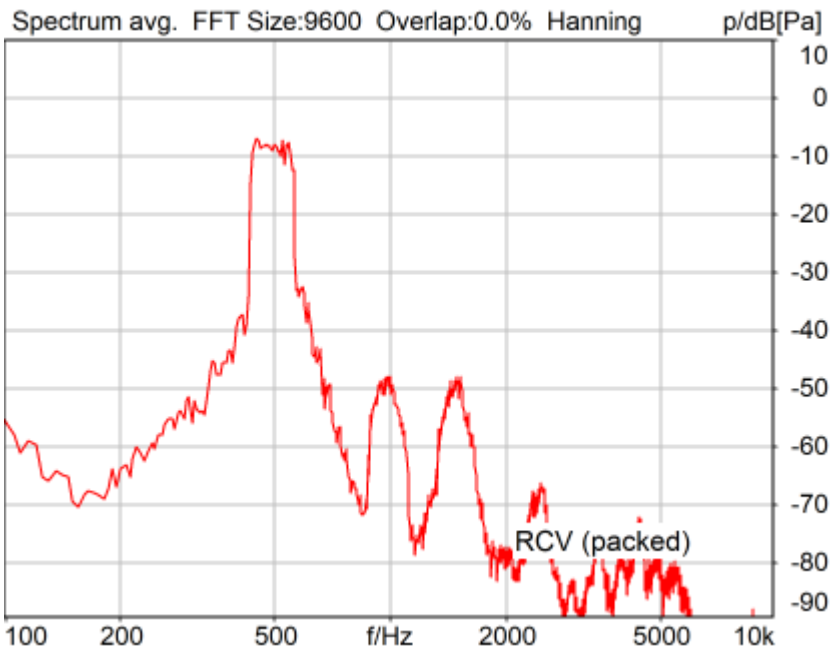
2025/1/16 11:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 32.69 dB (2.32%) Ok

Ok

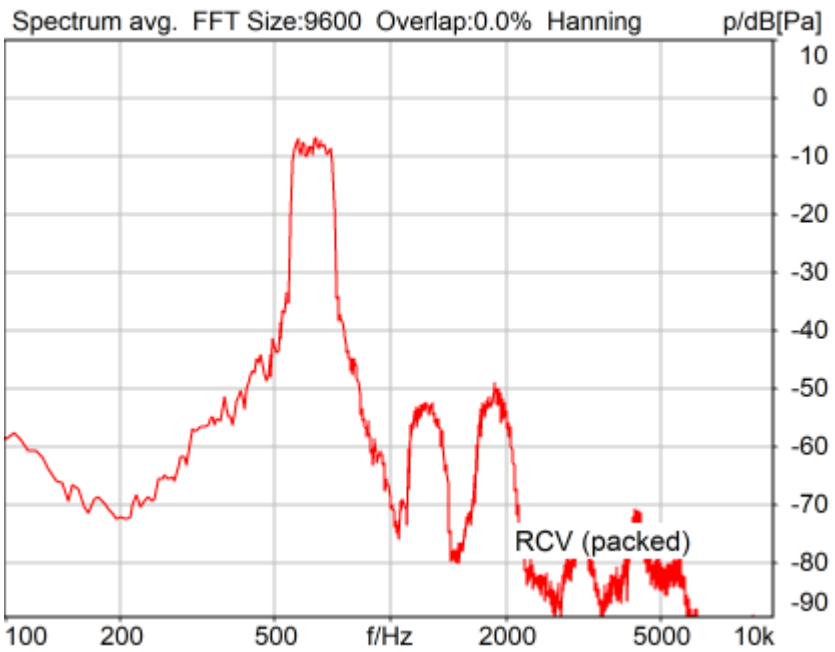
2025/1/16 11:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.50 dB (1.88%) Ok

Ok

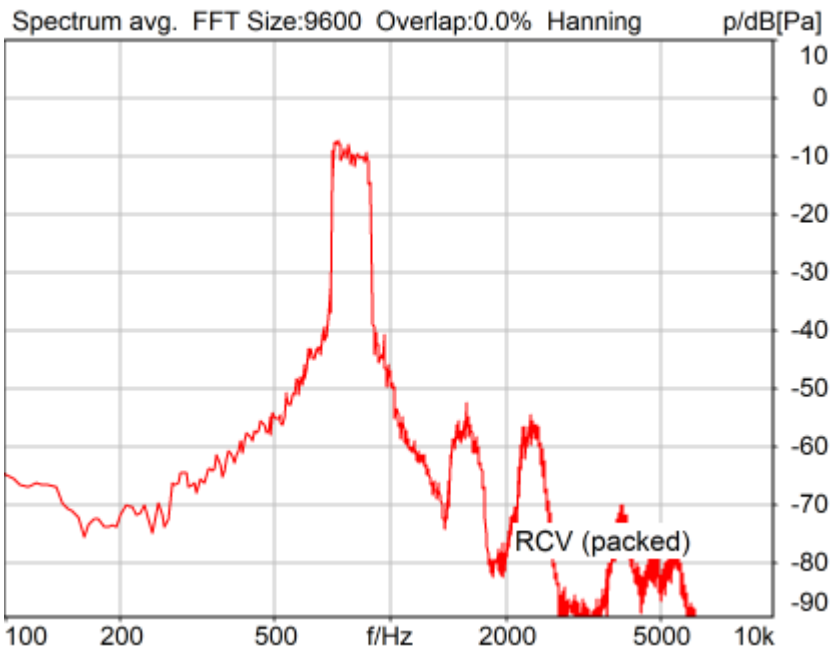
2025/1/16 11:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 34.76 dB (1.83%) Ok

Ok

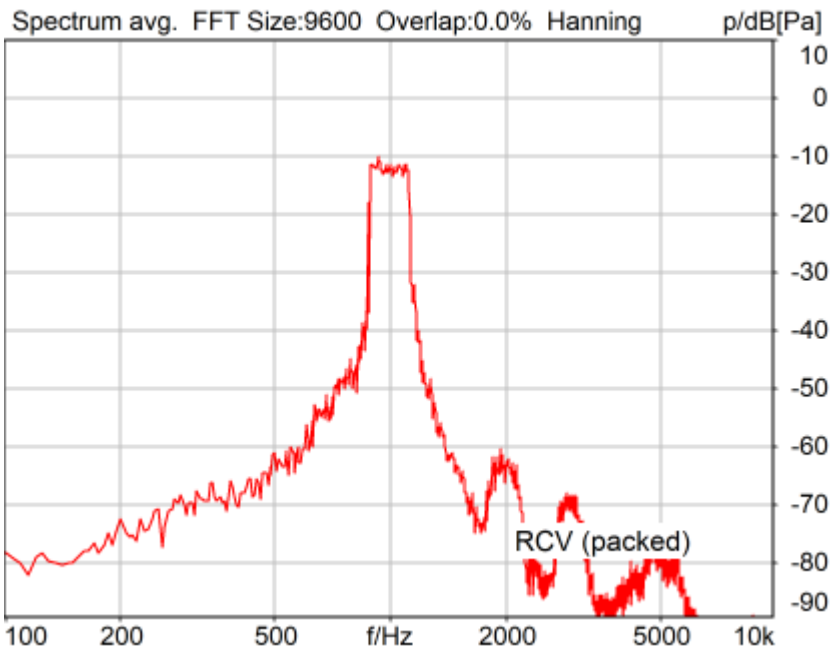
2025/1/16 11:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 31.96 dB (2.52%) Ok

Ok

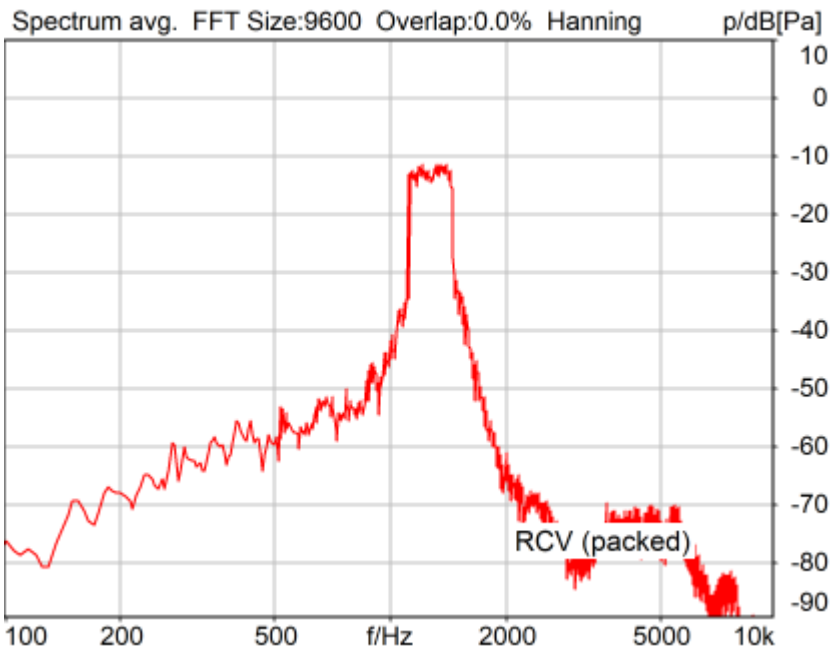
2025/1/16 11:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.39 dB (6.77%) Ok

Ok

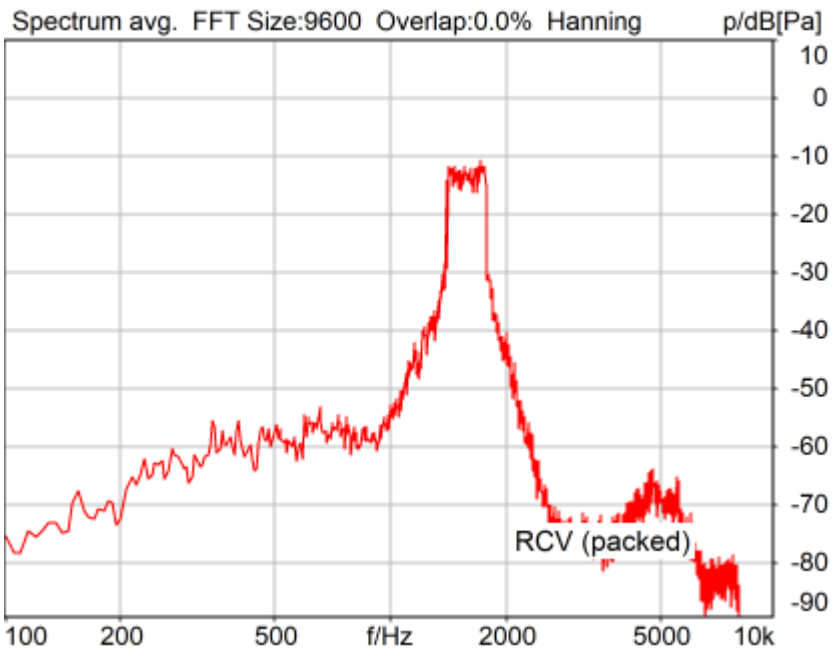
2025/1/16 11:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 23.55 dB (6.65%) Ok

Ok

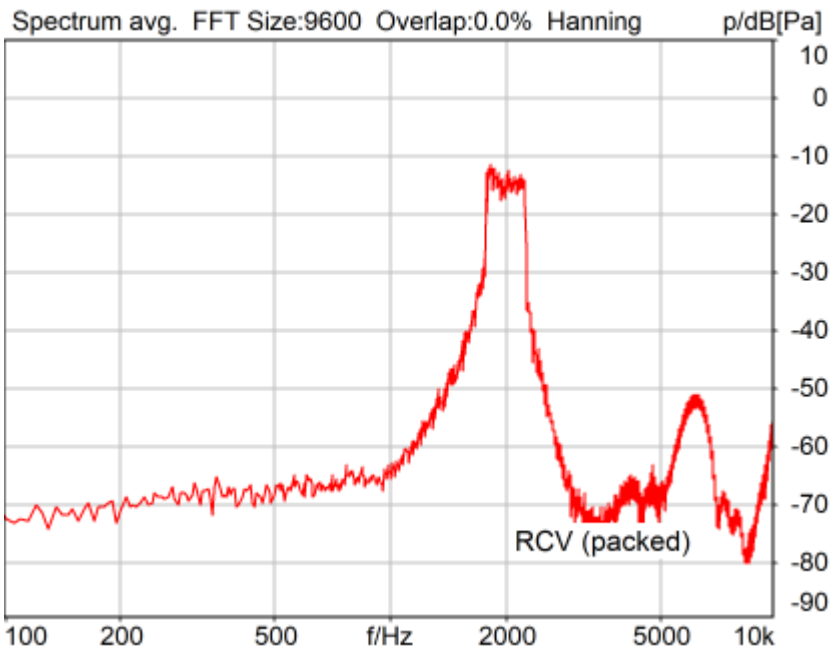
2025/1/16 11:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 22.10 dB (7.85%) Ok

Ok

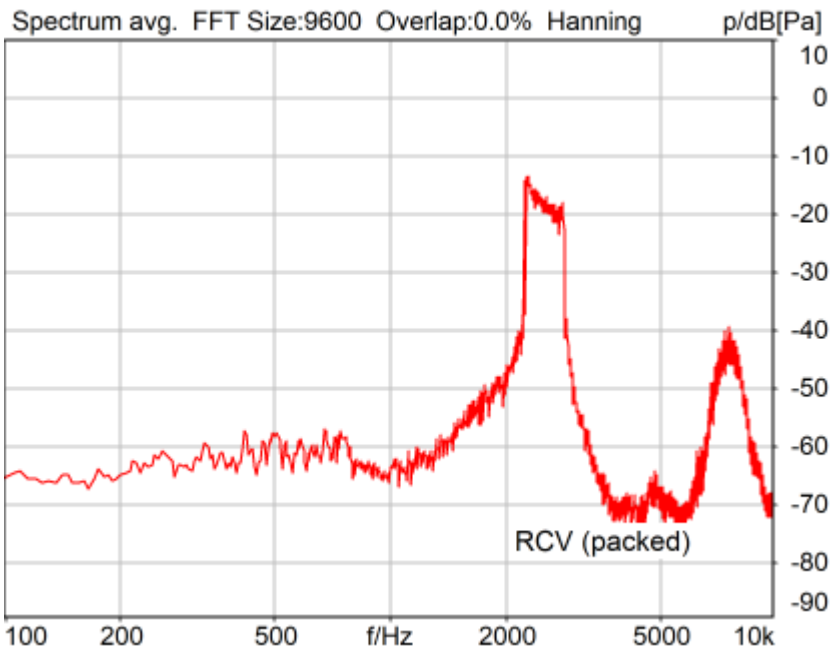
2025/1/16 11:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 21.58 dB (8.34%) Ok

Ok

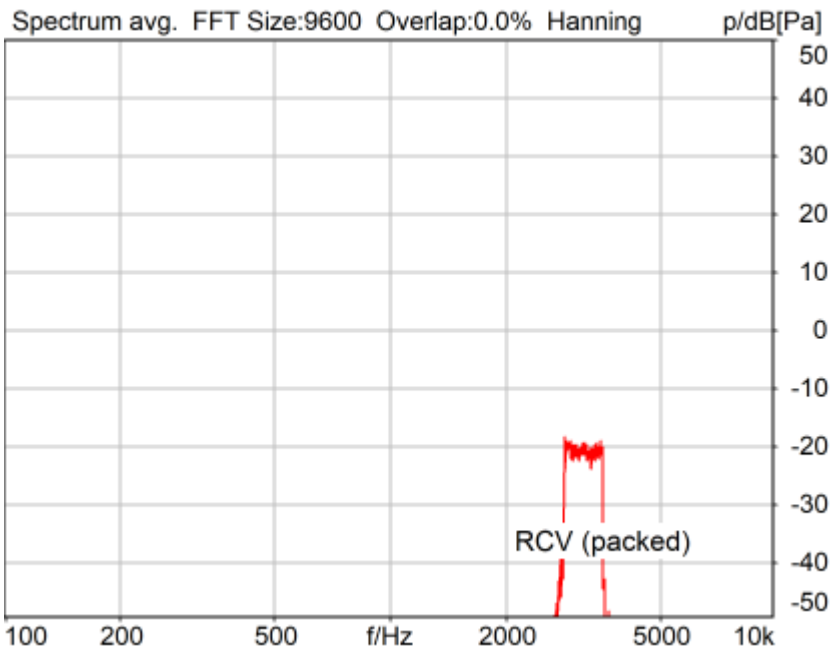
2025/1/16 11:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 25.36 dB (5.40%) Ok

Ok

2025/1/16 11:24 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

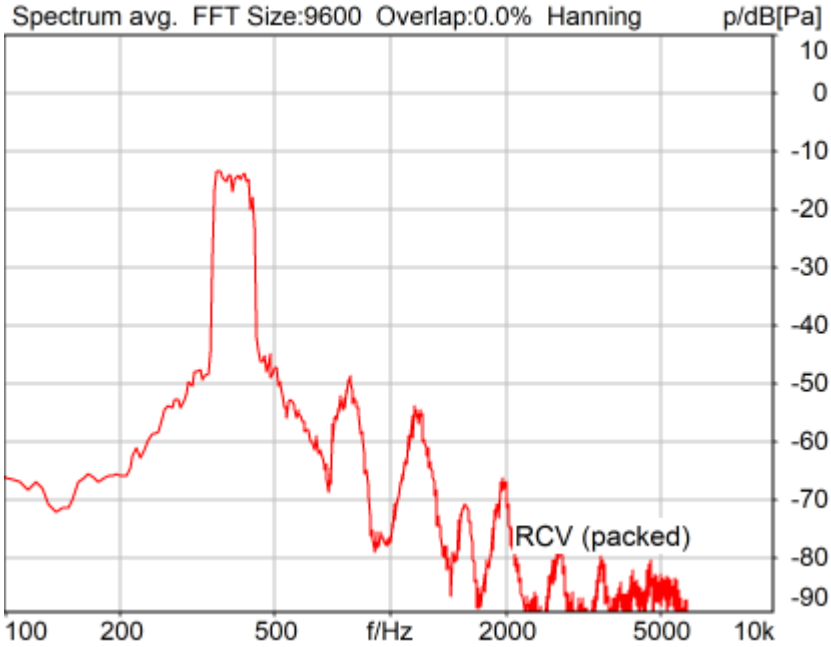
Region	Frequency	SDNR
1	400Hz	33.67 dB
2	500Hz	32.69 dB
3	630Hz	34.50 dB
4	800Hz	34.76 dB
5	1000Hz	31.96 dB
6	1250Hz	23.39 dB
7	1600Hz	23.55 dB
8	2000Hz	22.10 dB
9	2500Hz	21.58 dB
10	3150Hz	25.36 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.58dB at 2500Hz.

2025/1/16 11:24 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 32.99 dB (2.24%) Ok

Ok

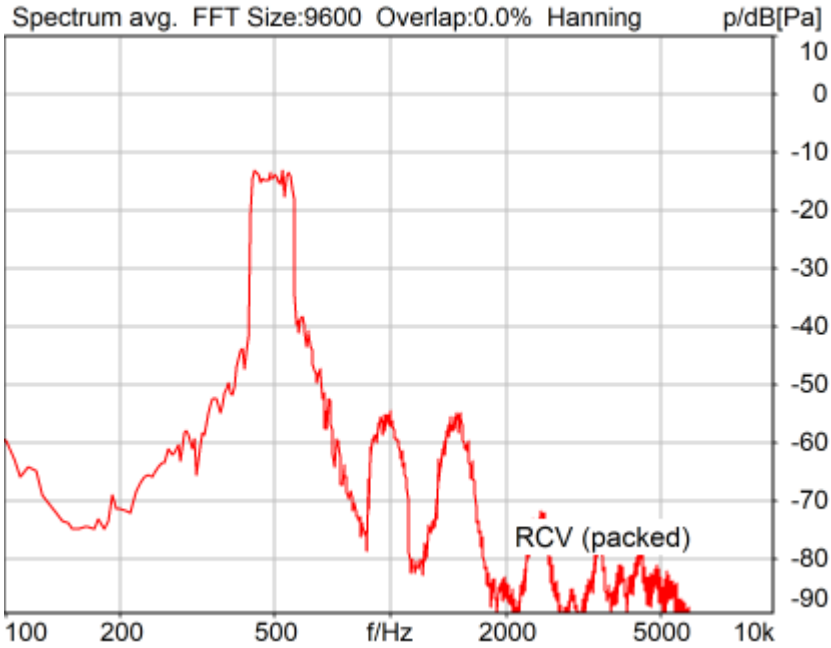
2025/1/16 11:10 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 32.26 dB (2.44%) Ok

Ok

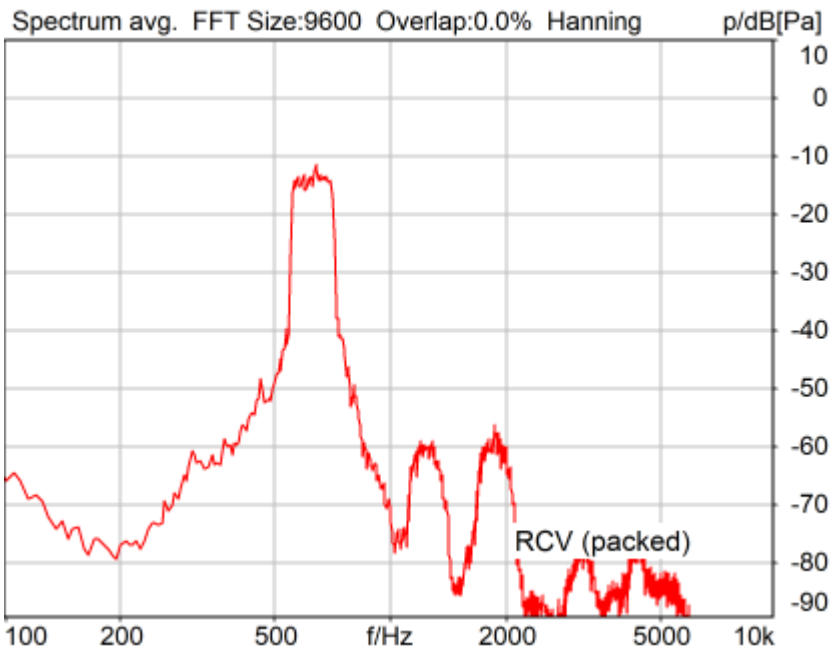
2025/1/16 11:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.41 dB (1.90%) Ok

Ok

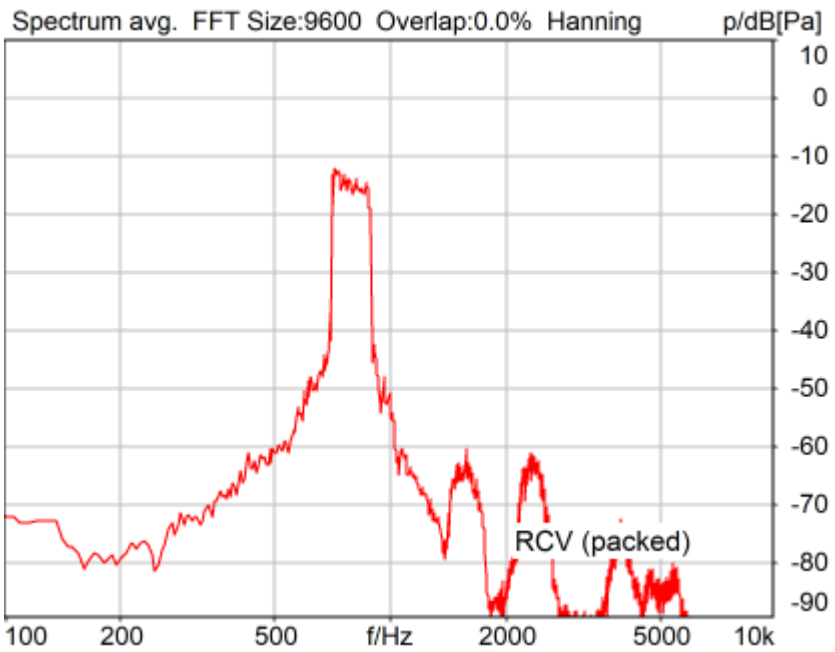
2025/1/16 11:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 35.46 dB (1.69%) Ok

Ok

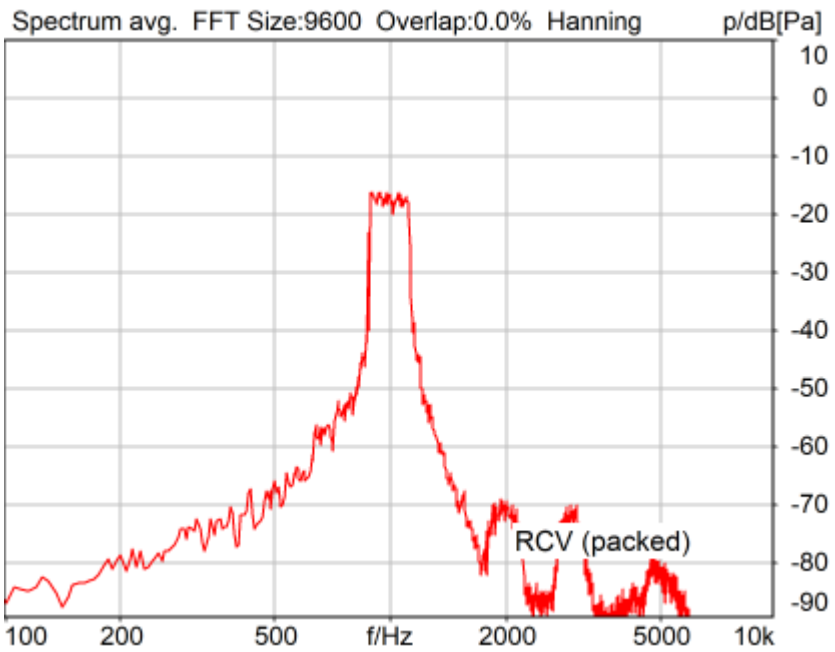
2025/1/16 11:11 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 31.21 dB (2.75%) Ok

Ok

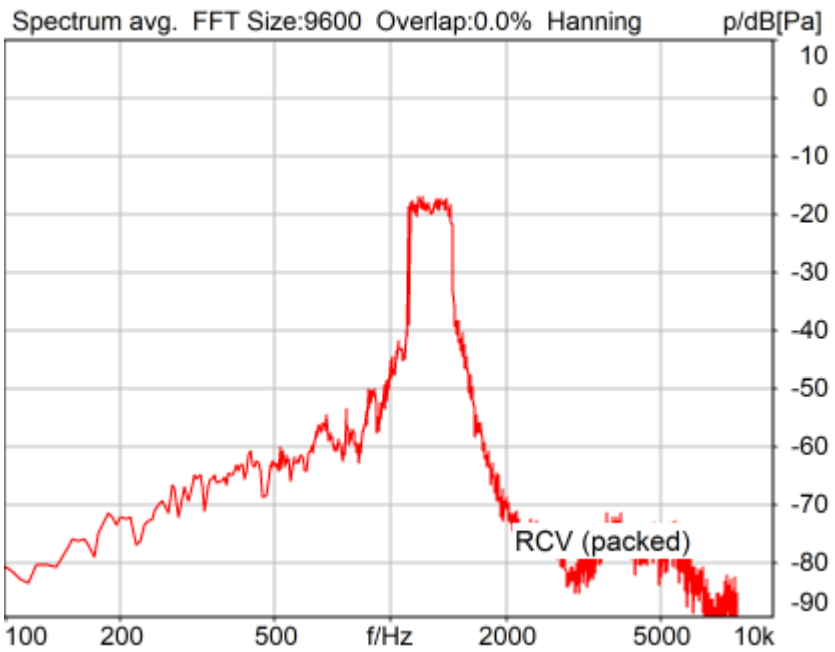
2025/1/16 11:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.46 dB (6.72%) Ok

Ok

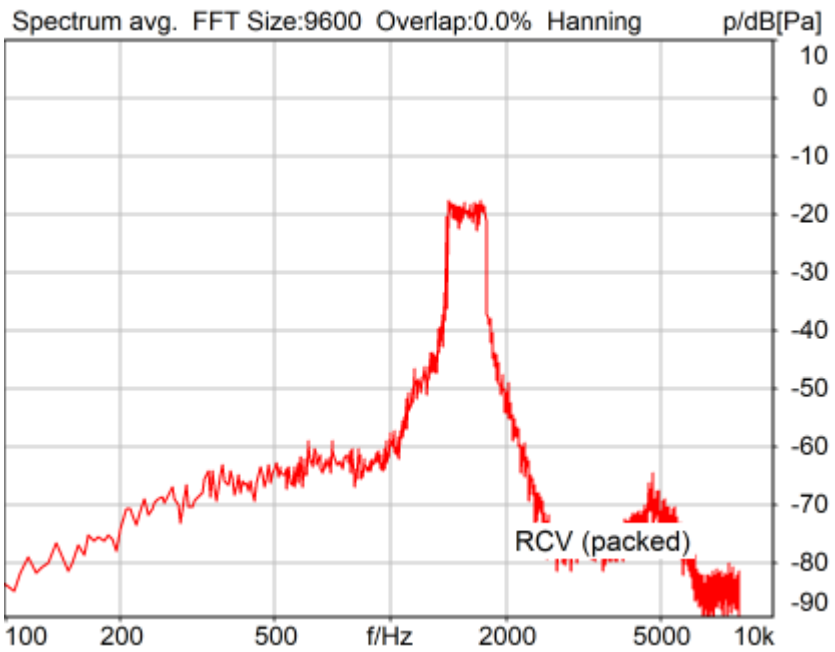
2025/1/16 11:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 24.22 dB (6.15%) Ok

Ok

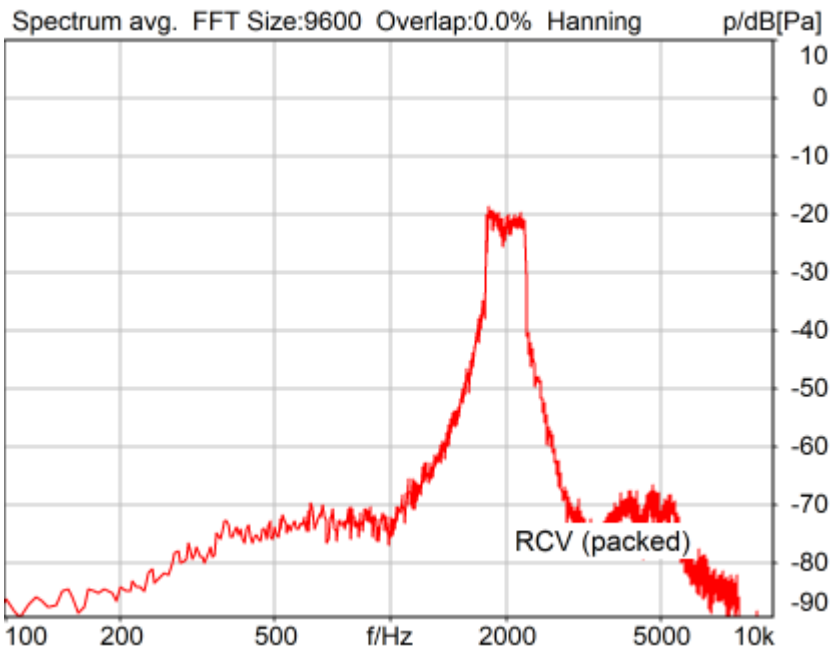
2025/1/16 11:12 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.29 dB (8.62%) Ok

Ok

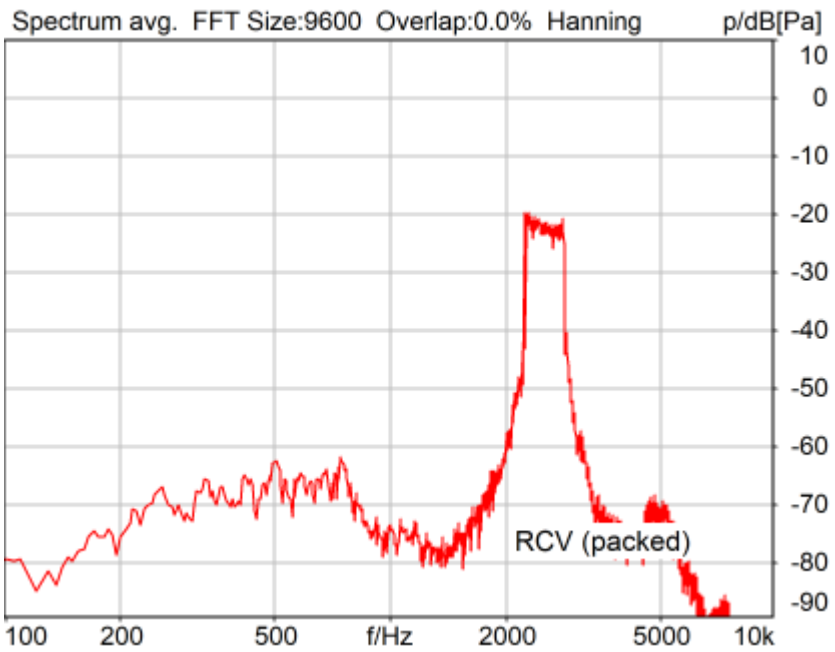
2025/1/16 11:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 28.01 dB (3.98%) Ok

Ok

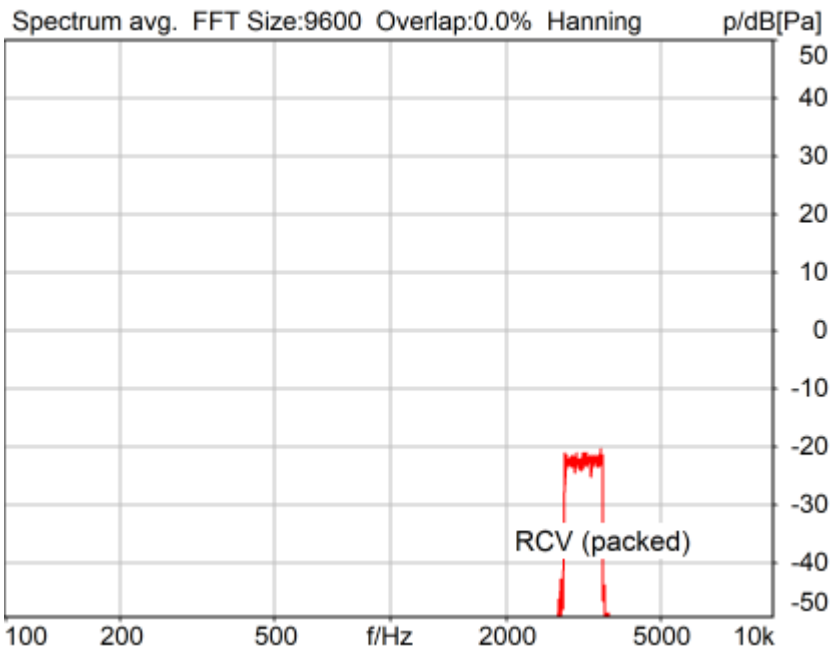
2025/1/16 11:13 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 29.99 dB (3.16%) Ok

Ok

2025/1/16 11:14 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

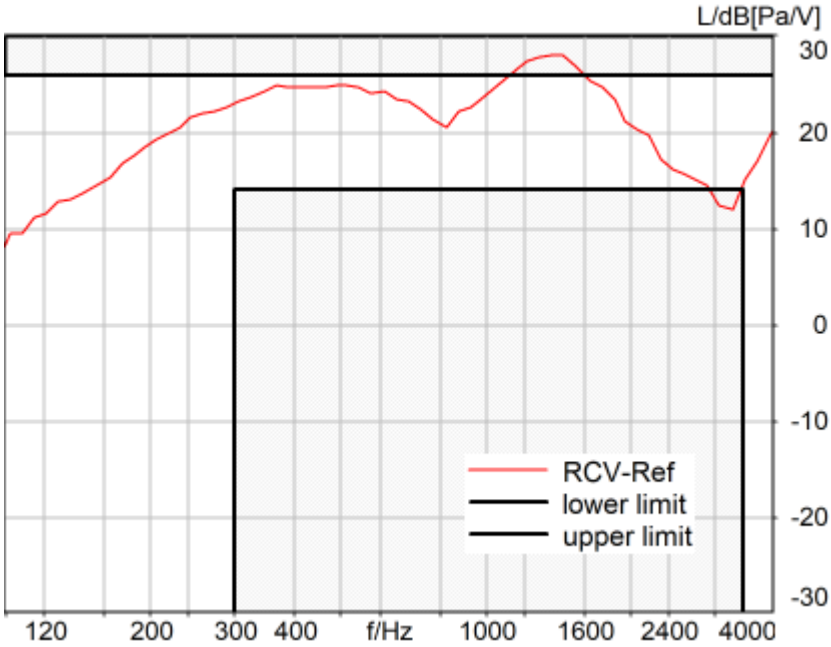
Region	Frequency	SDNR
1	400Hz	32.99 dB
2	500Hz	32.26 dB
3	630Hz	34.41 dB
4	800Hz	35.46 dB
5	1000Hz	31.21 dB
6	1250Hz	23.46 dB
7	1600Hz	24.22 dB
8	2000Hz	21.29 dB
9	2500Hz	28.01 dB
10	3150Hz	29.99 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.29dB at 2000Hz.

2025/1/16 11:14 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
-2.03 dB at 1360.9 Hz Not Ok

Not Ok

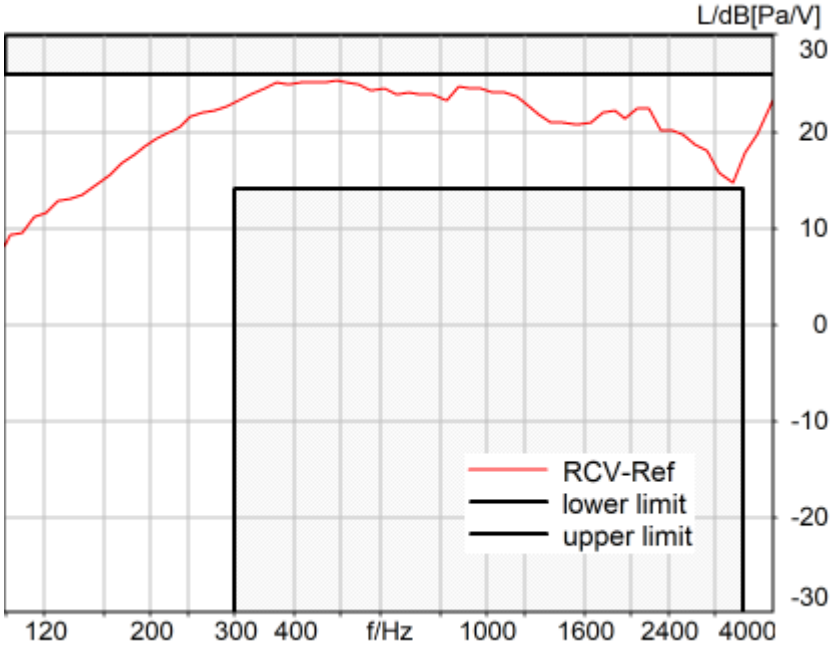
2025/1/16 11:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
0.73 dB at 487.0 Hz Ok

Ok

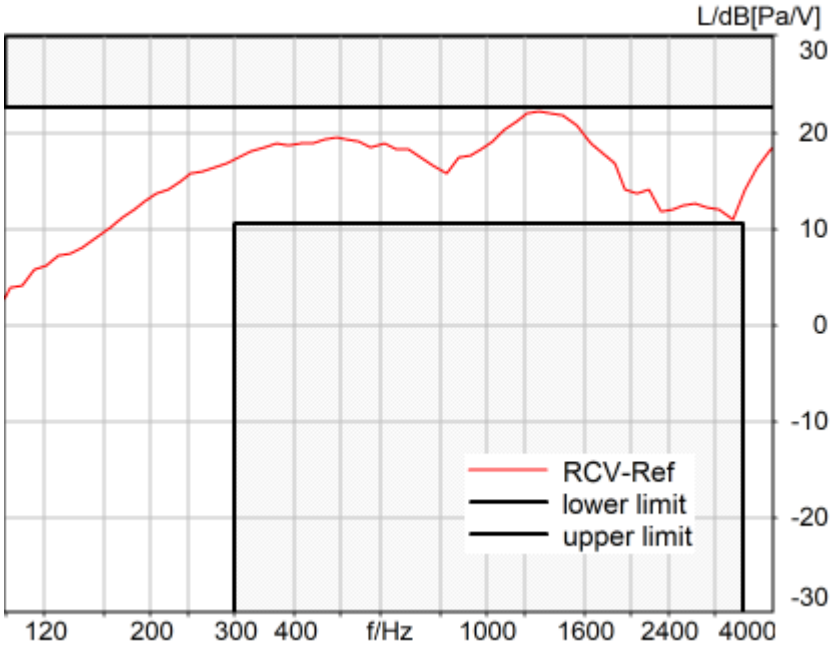
2025/1/16 11:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.46 dB at 1285.9 Hz Ok

Ok

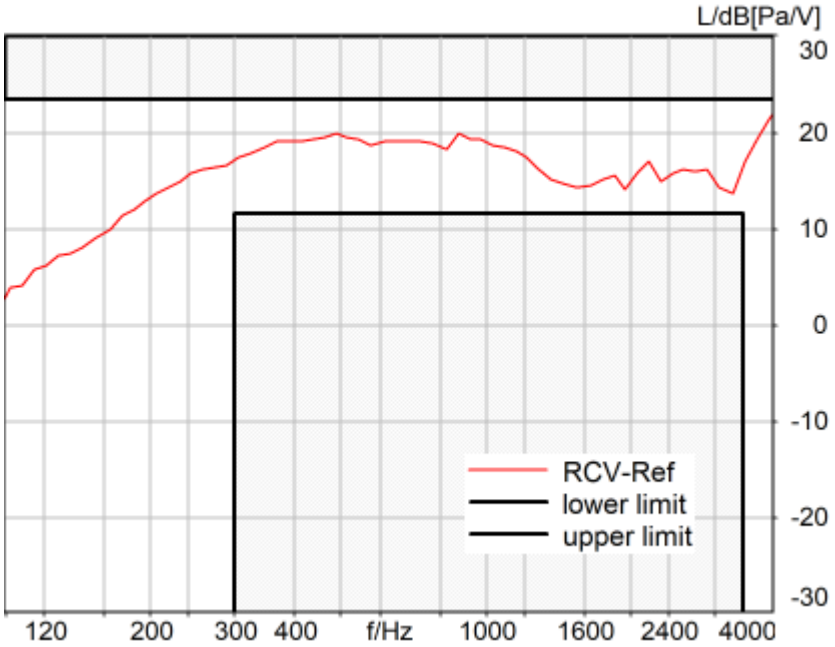
2025/1/16 11:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
2.08 dB at 3882.4 Hz Ok

Ok

2025/1/16 11:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:53
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	141.5	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	23.28	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	17.84	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.69	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.33	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.28	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.38	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.72	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.82	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.52	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.87	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.36	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.79	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.46	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.07	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.33	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	22.64	LTE

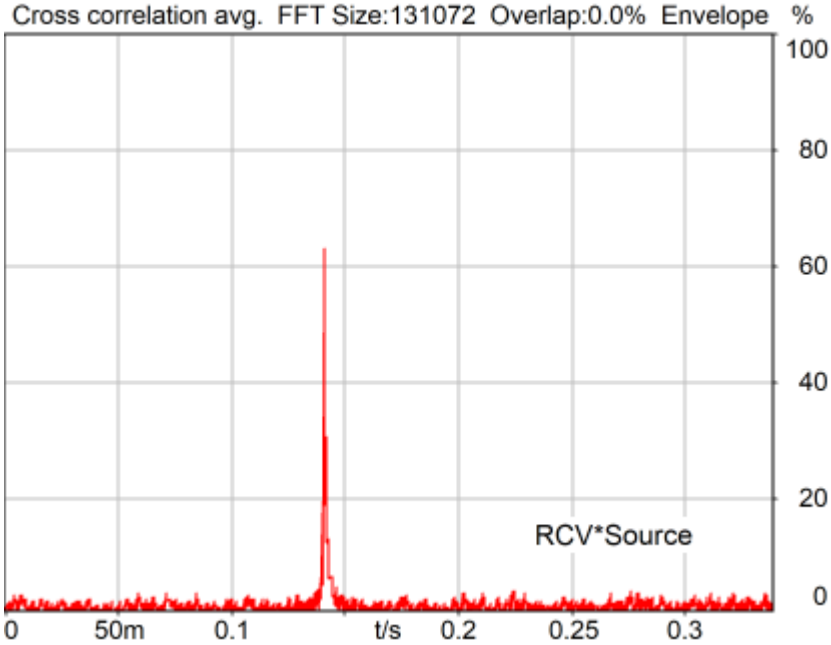
- 5000 Hz WB		0.0 dB		Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	21.46	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	25.89	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.19	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.94	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.78	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.06	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.90	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.74	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.77	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.94	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.12	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.95	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.58	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.32	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.36	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.12	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.3 Frequency Response 8N FF	Not Ok	Min. dist. to tolerance scheme [dB], 3058.6 Hz	-1.49	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.48	LTE

DF		scheme [dB], 3245.6 Hz		Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.71	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 4620.1 Hz	1.18	LTE Band7_20_QPSK_1_0_EVS WB 24.4kbps_CH21100

Overall Receive Delay WB 6
5.1a Receive Volume Control Performance 8N WB 6
5.1b Receive Volume Control Performance 2N WB 7
5.2 RCV Distortion and Noise - 250 Hz WB 8
5.2 RCV Distortion and Noise - 315 Hz WB 9
5.2 RCV Distortion and Noise - 400 Hz WB 10
5.2 RCV Distortion and Noise - 500 Hz WB 11
5.2 RCV Distortion and Noise - 630 Hz WB 12
5.2 RCV Distortion and Noise - 800 Hz WB 13
5.2 RCV Distortion and Noise - 1000 Hz WB 14
5.2 RCV Distortion and Noise - 1250 Hz WB 15
5.2 RCV Distortion and Noise - 1600 Hz WB 16
5.2 RCV Distortion and Noise - 2000 Hz WB 17
5.2 RCV Distortion and Noise - 2500 Hz WB 18
5.2 RCV Distortion and Noise - 3150 Hz WB 19
5.2 RCV Distortion and Noise - 4000 Hz WB 20
5.2 RCV Distortion and Noise - 5000 Hz WB 21
Report - Receive Distortion and Noise (Conversational Gain) 22
5.2 RCV Distortion and Noise - 250 Hz WB 23
5.2 RCV Distortion and Noise - 315 Hz WB 24
5.2 RCV Distortion and Noise - 400 Hz WB 24
5.2 RCV Distortion and Noise - 500 Hz WB 25
5.2 RCV Distortion and Noise - 630 Hz WB 26
5.2 RCV Distortion and Noise - 800 Hz WB 27
5.2 RCV Distortion and Noise - 1000 Hz WB 28
5.2 RCV Distortion and Noise - 1250 Hz WB 29
5.2 RCV Distortion and Noise - 1600 Hz WB 30
5.2 RCV Distortion and Noise - 2000 Hz WB 31
5.2 RCV Distortion and Noise - 2500 Hz WB 32
5.2 RCV Distortion and Noise - 3150 Hz WB 33
5.2 RCV Distortion and Noise - 4000 Hz WB 34
5.2 RCV Distortion and Noise - 5000 Hz WB 35
Report - Receive Distortion and Noise (Conversational Gain) 36
5.3 Frequency Response 8N FF 37
5.3 Frequency Response 8N DF 38
5.3 Frequency Response 2N FF 38
5.3 Frequency Response 2N DF 39

Overall Receive Delay WB

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

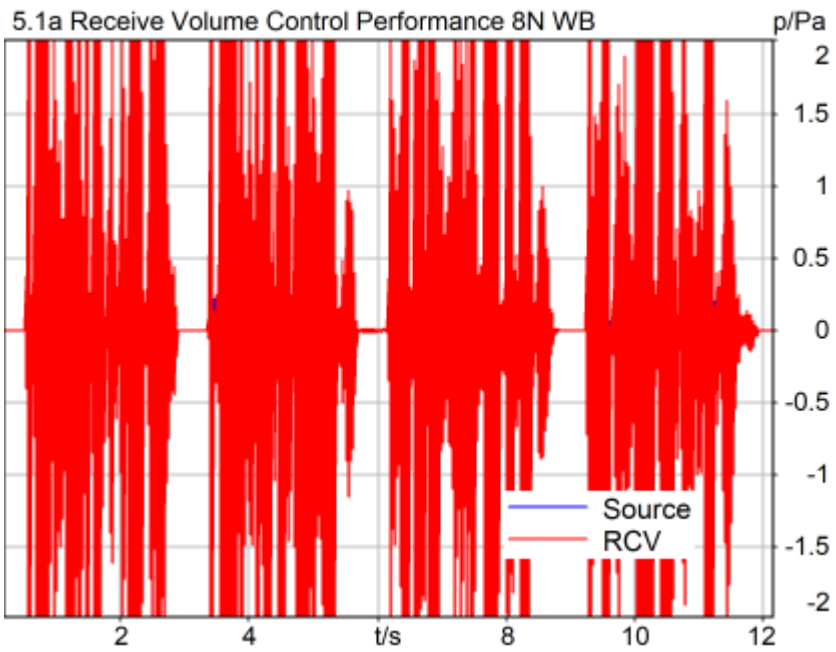


Channel	Delay
RCV*Source	141.5 ms

2025/1/16 11:25 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.28 dB[SPL]	84.13%	23.28 dB[SPL]	Ok

Ok

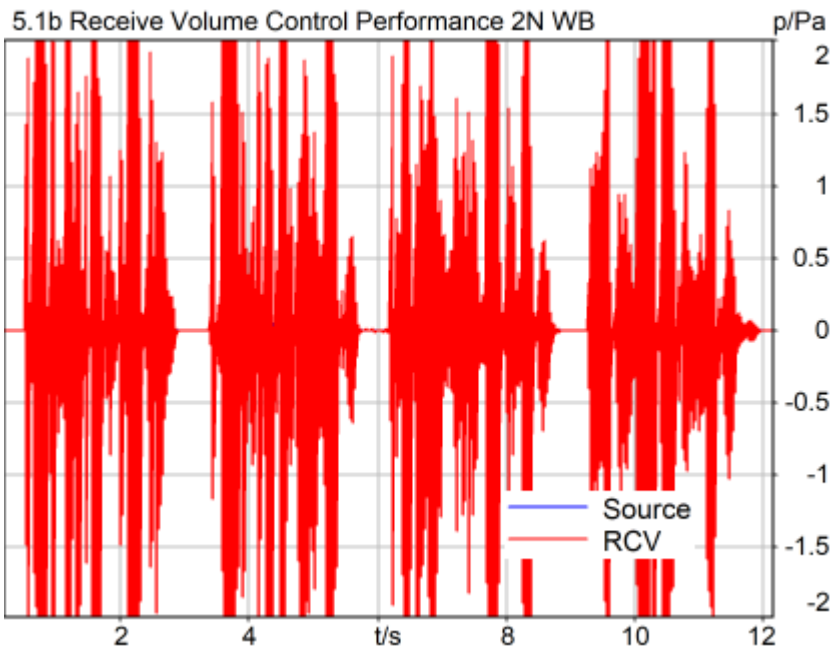
2025/1/16 11:26 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.84 dB[SPL]	83.77%	17.84 dB[SPL]	Ok

Ok

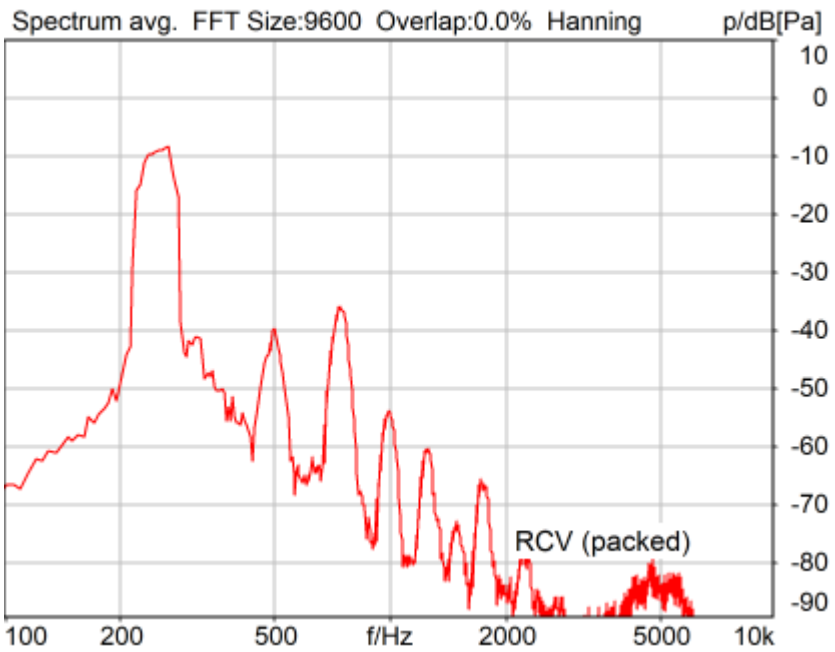
2025/1/16 12:05 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 26.69 dB (4.63%) Ok

Ok

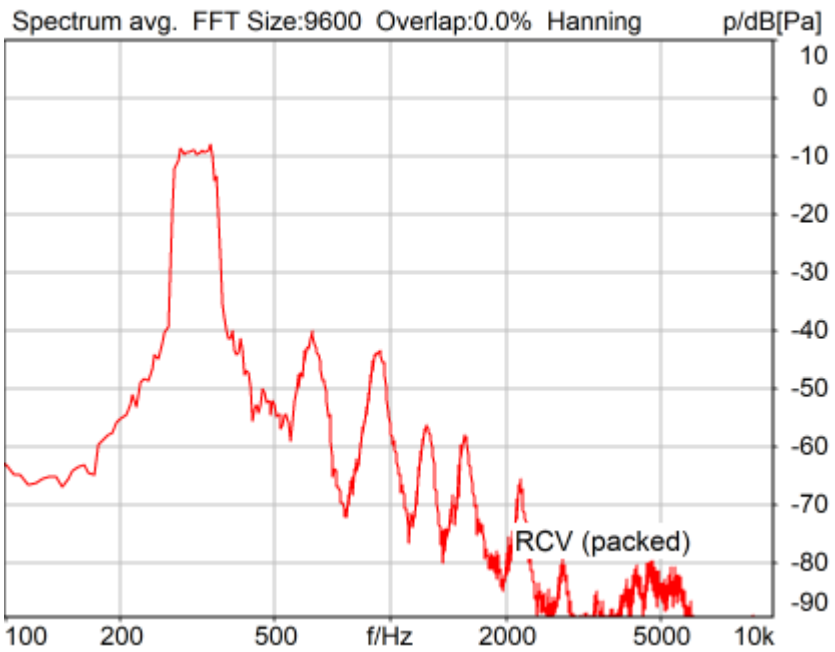
2025/1/16 11:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 31.33 dB (2.71%) Ok

Ok

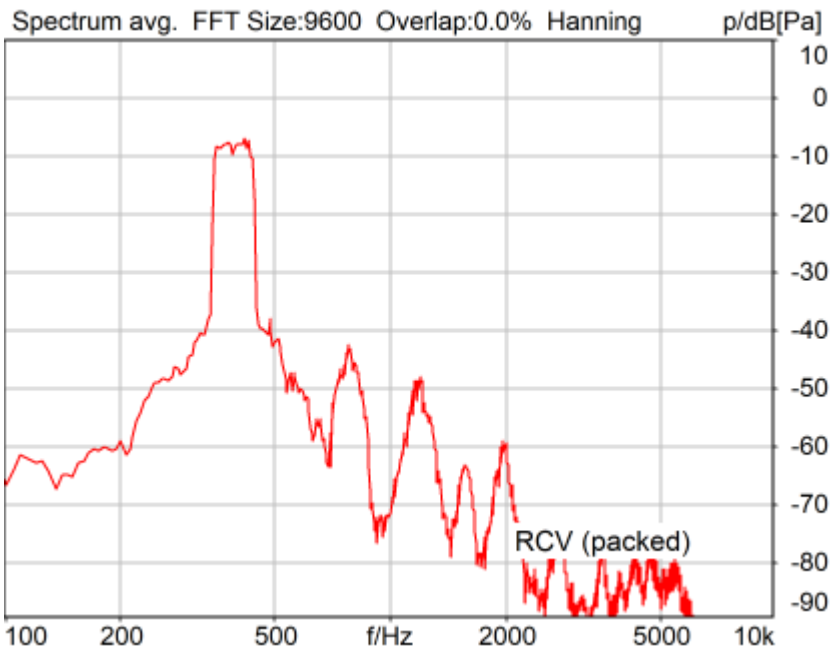
2025/1/16 11:26 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 33.28 dB (2.17%) Ok

Ok

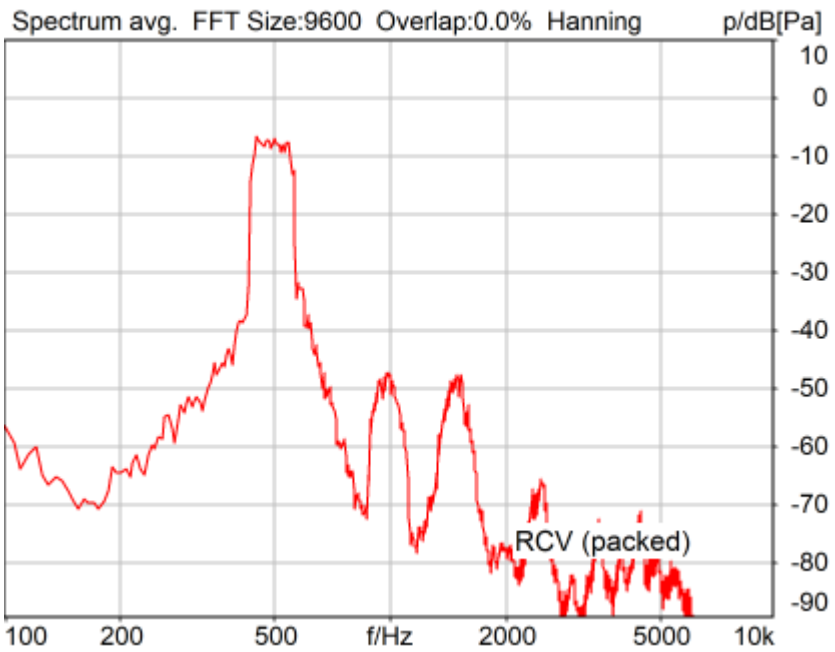
2025/1/16 11:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 33.38 dB (2.14%) Ok

Ok

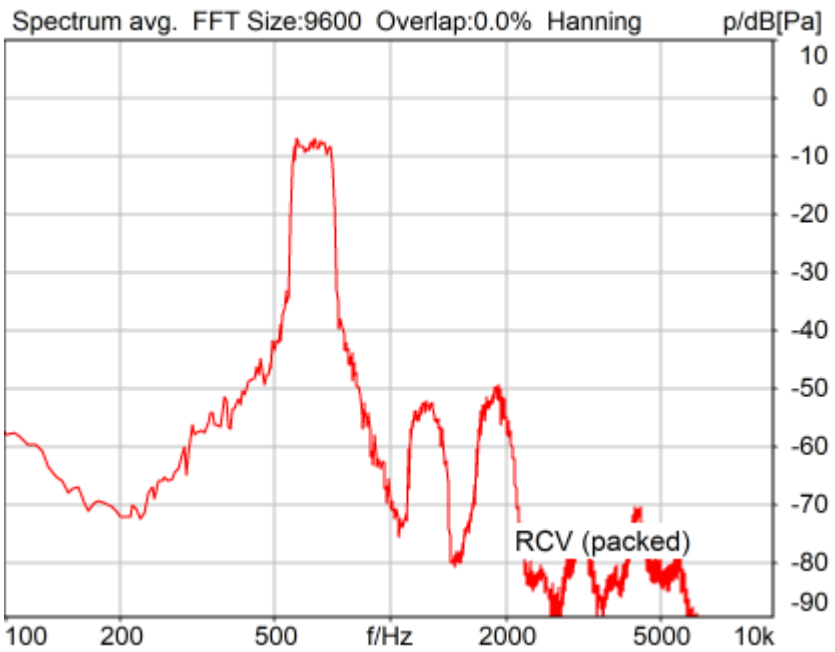
2025/1/16 11:27 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.72 dB (1.84%) Ok

Ok

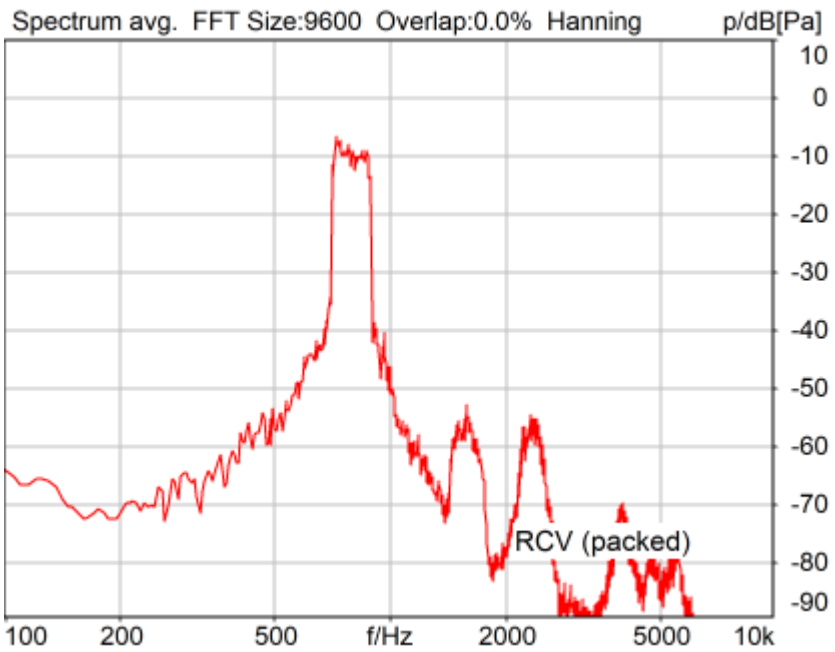
2025/1/16 11:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 34.82 dB (1.82%) Ok

Ok

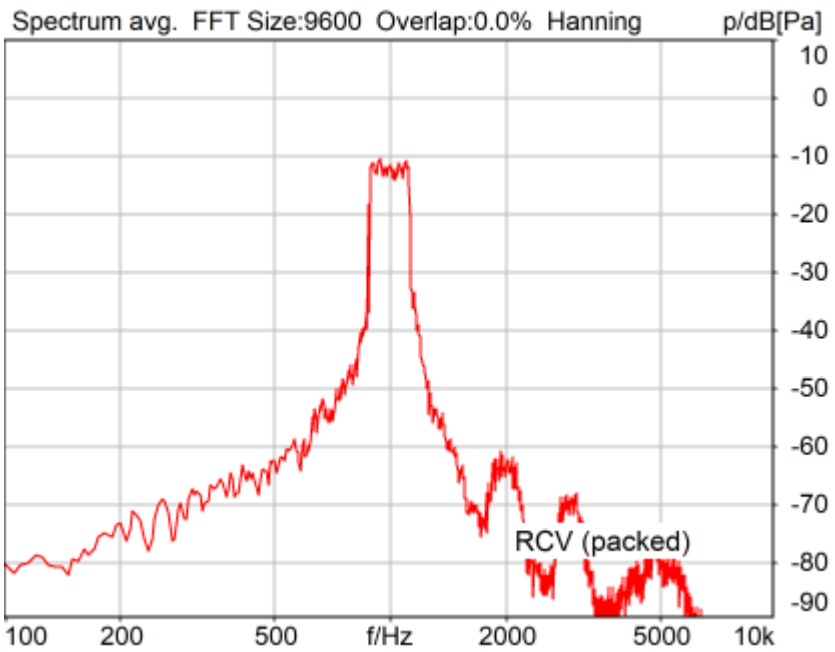
2025/1/16 11:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 31.52 dB (2.66%) Ok

Ok

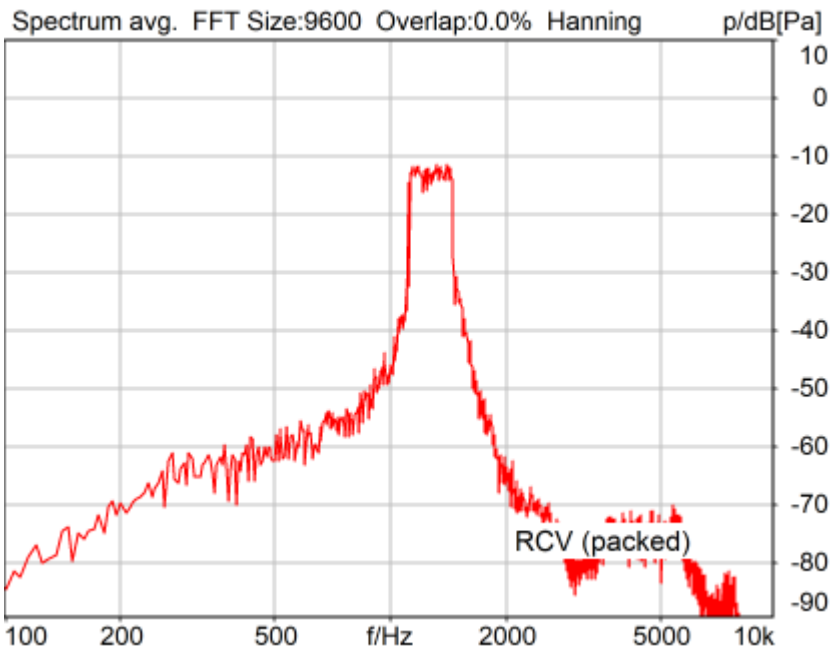
2025/1/16 11:28 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.87 dB (6.40%) Ok

Ok

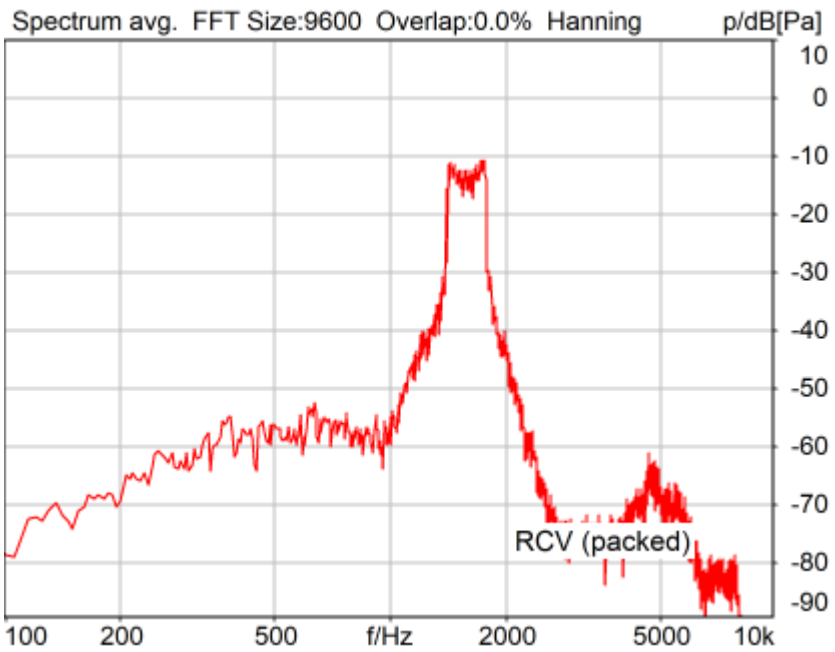
2025/1/16 11:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 24.36 dB (6.06%) Ok

Ok

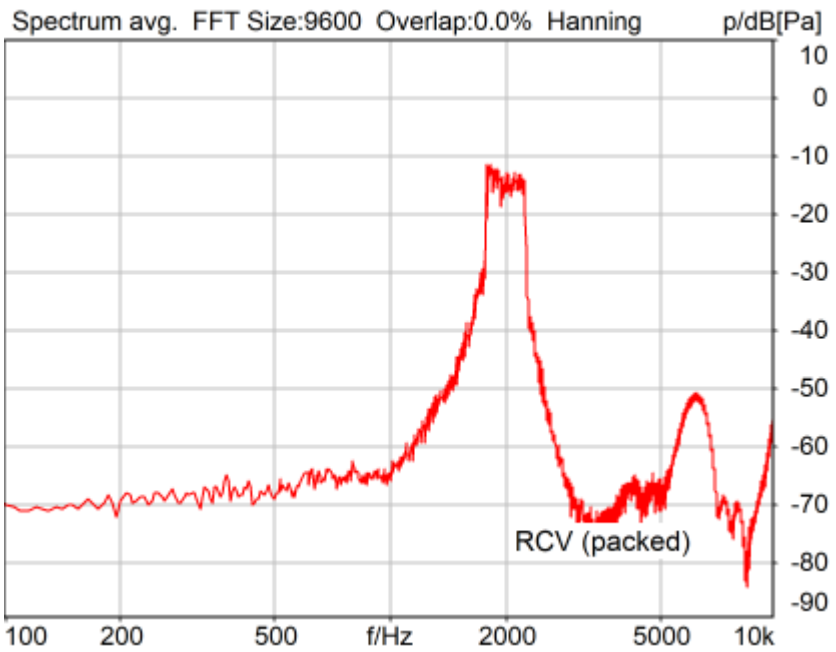
2025/1/16 11:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.79 dB (8.14%) Ok

Ok

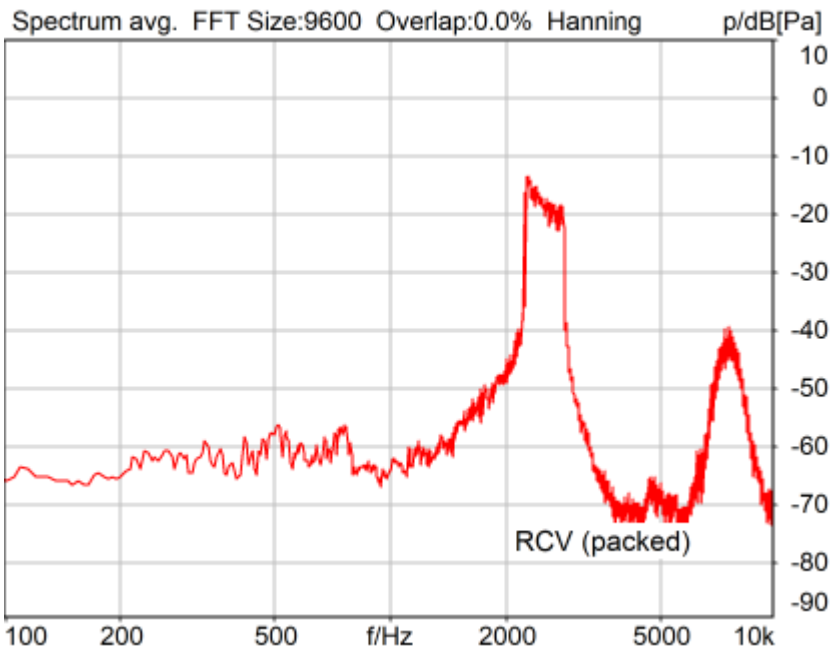
2025/1/16 11:29 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 21.46 dB (8.45%) Ok

Ok

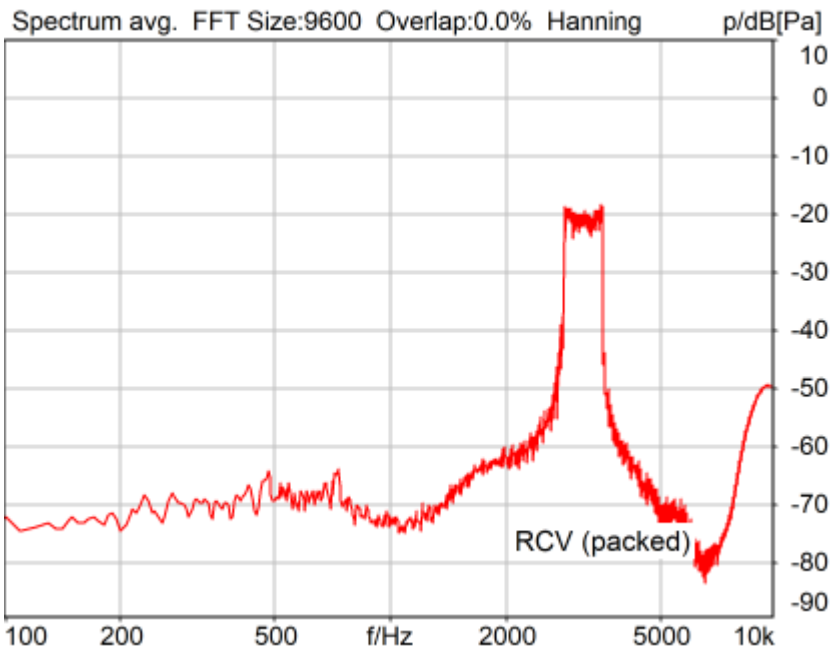
2025/1/16 11:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 25.07 dB (5.58%) Ok

Ok

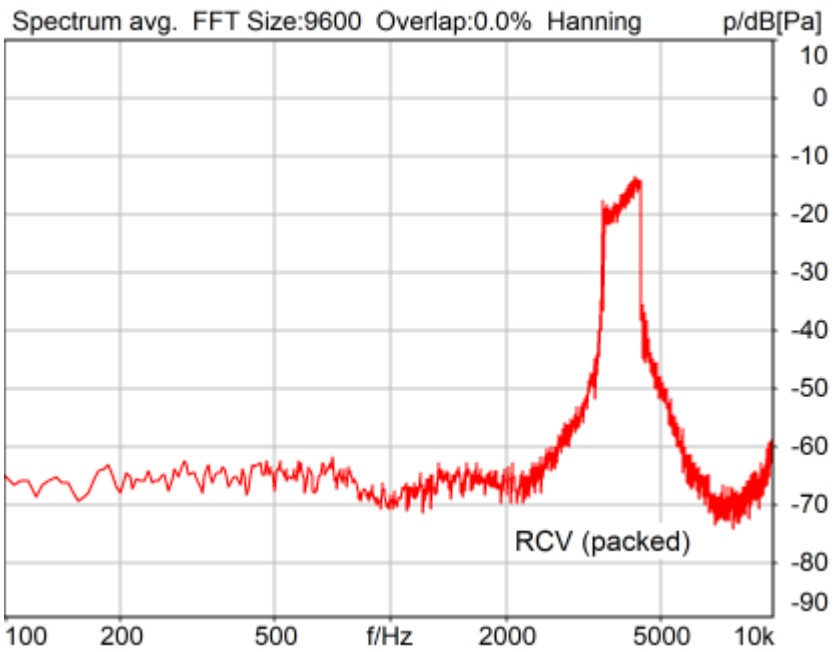
2025/1/16 11:30 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 22.33 dB (7.64%) Ok

Ok

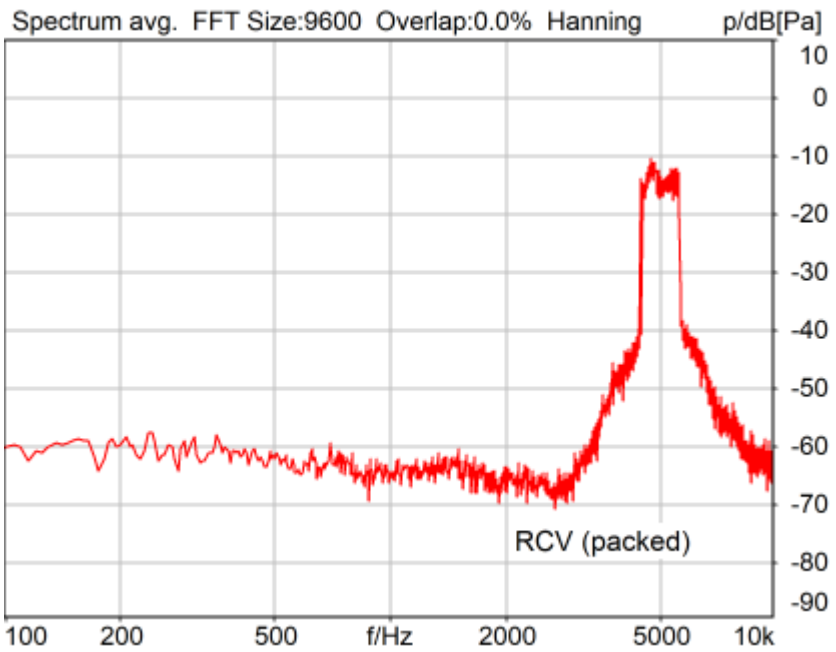
2025/1/16 11:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 22.64 dB (7.38%) Ok

Ok

2025/1/16 11:31 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	26.69 dB
2	315Hz	31.33 dB
3	400Hz	33.28 dB
4	500Hz	33.38 dB
5	630Hz	34.72 dB
6	800Hz	34.82 dB
7	1000Hz	31.52 dB
8	1250Hz	23.87 dB
9	1600Hz	24.36 dB
10	2000Hz	21.79 dB

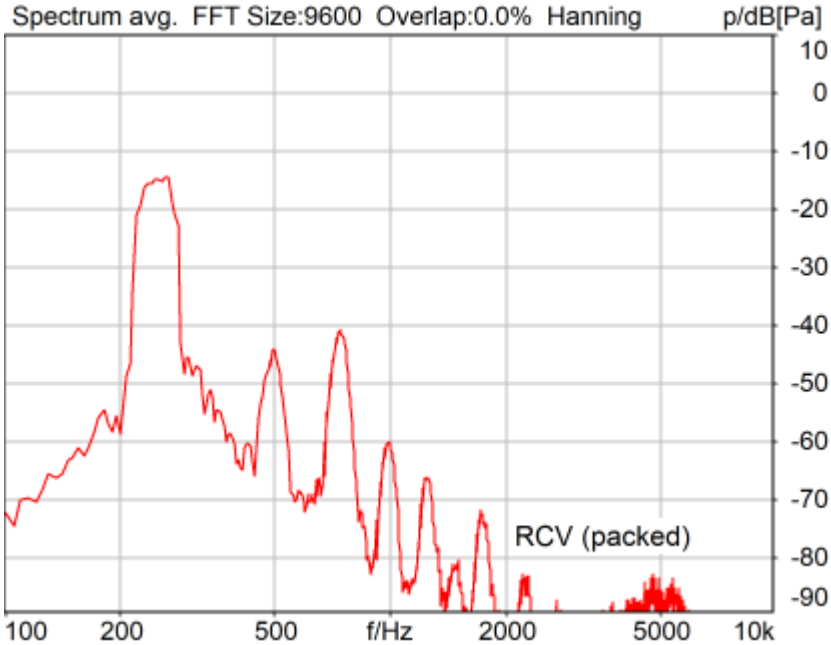
11	2500Hz	21.46 dB
12	3150Hz	25.07 dB
13	4000Hz	22.33 dB
14	5000Hz	22.64 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.46dB at 2500Hz.

2025/1/16 11:59 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 25.89 dB (5.08%) Ok

Ok

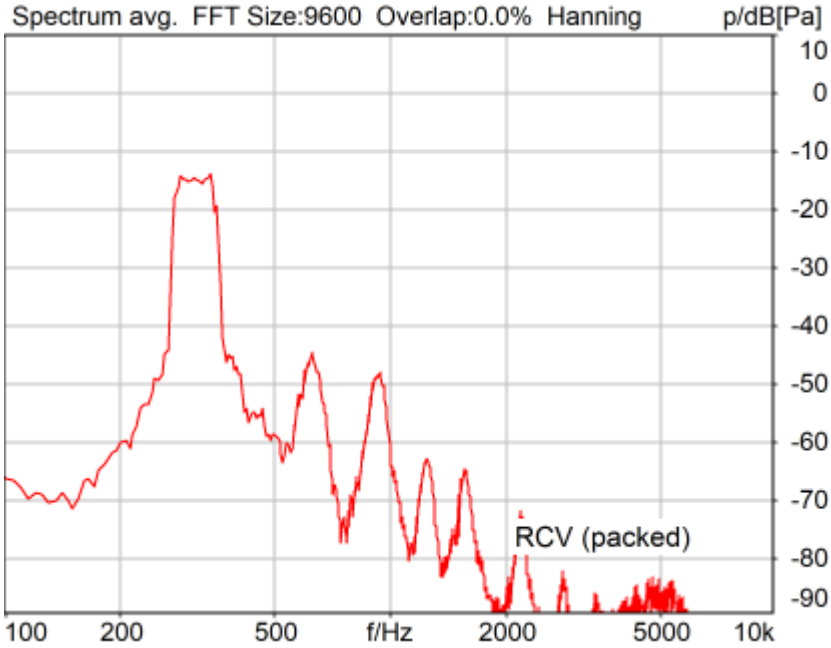
2025/1/16 12:05 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 30.19 dB (3.09%) Ok

Ok

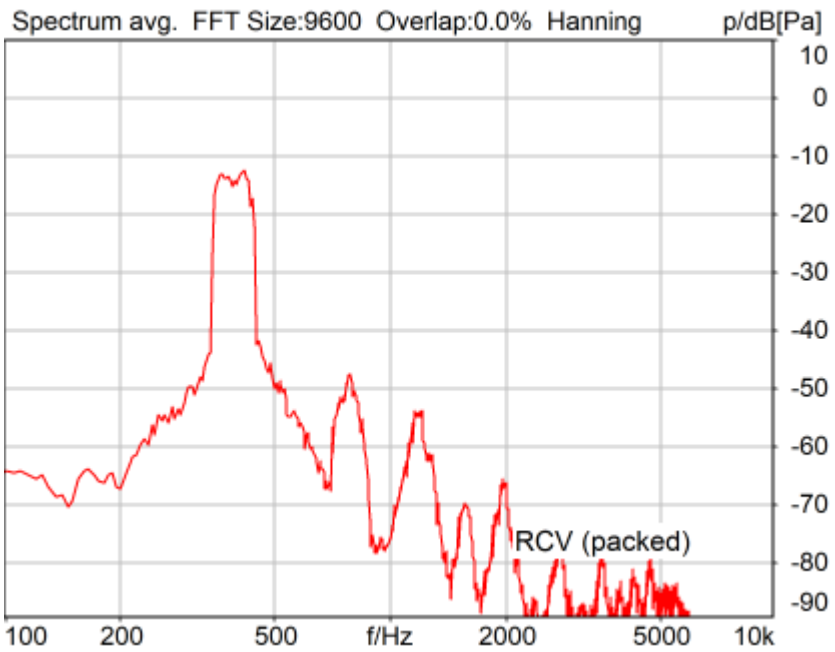
2025/1/16 12:06 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 32.94 dB (2.25%) Ok

Ok

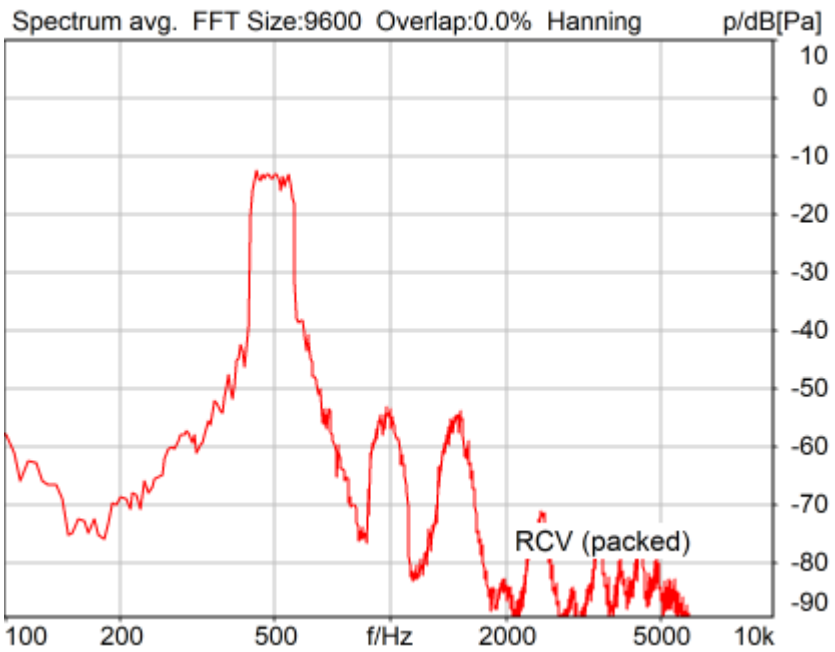
2025/1/16 12:06 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 32.78 dB (2.30%) Ok

Ok

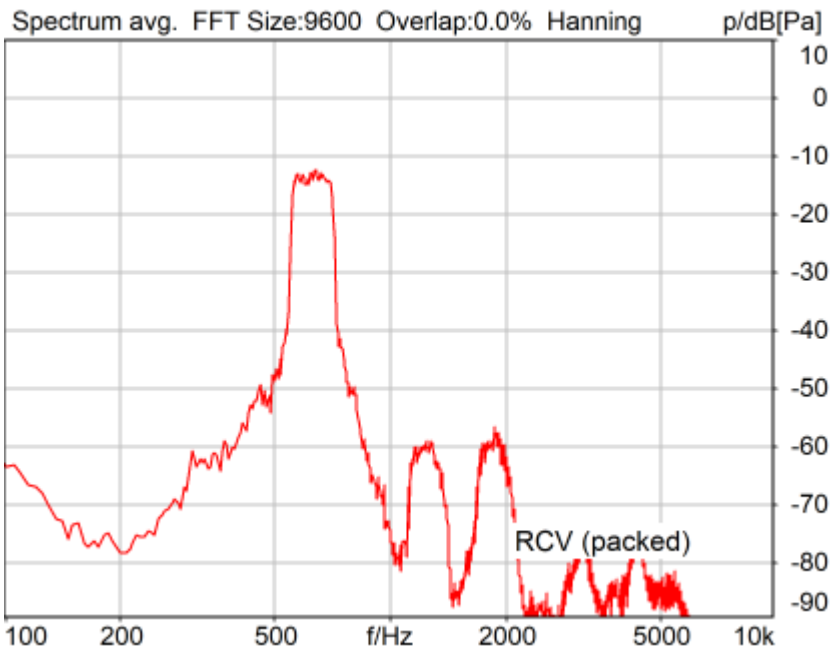
2025/1/16 12:07 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 35.06 dB (1.77%) Ok

Ok

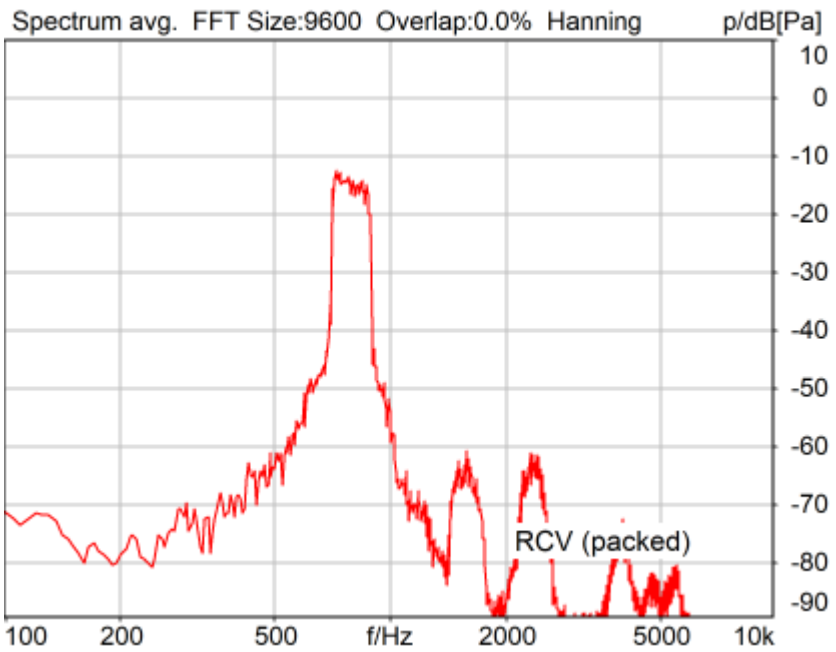
2025/1/16 12:07 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 35.90 dB (1.60%) Ok

Ok

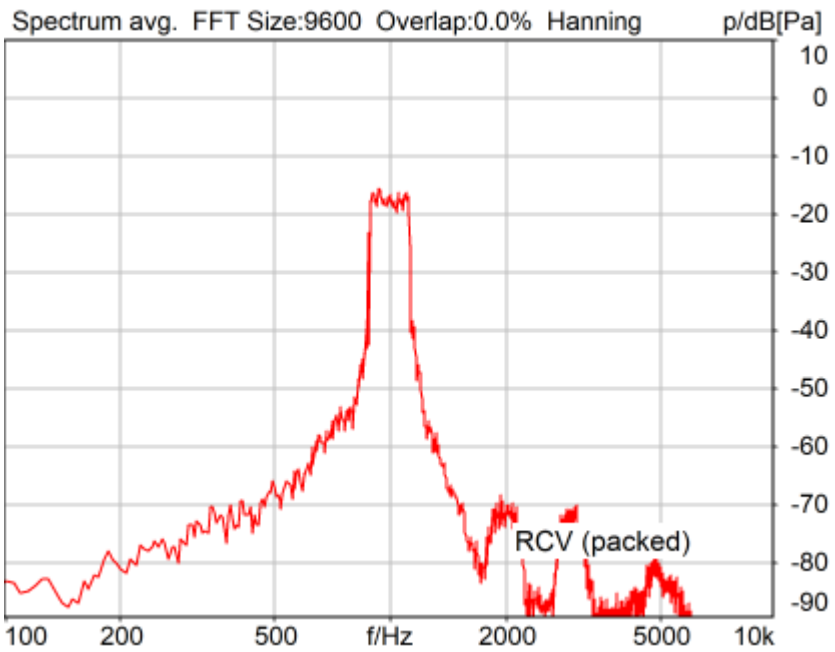
2025/1/16 12:07 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 32.74 dB (2.31%) Ok

Ok

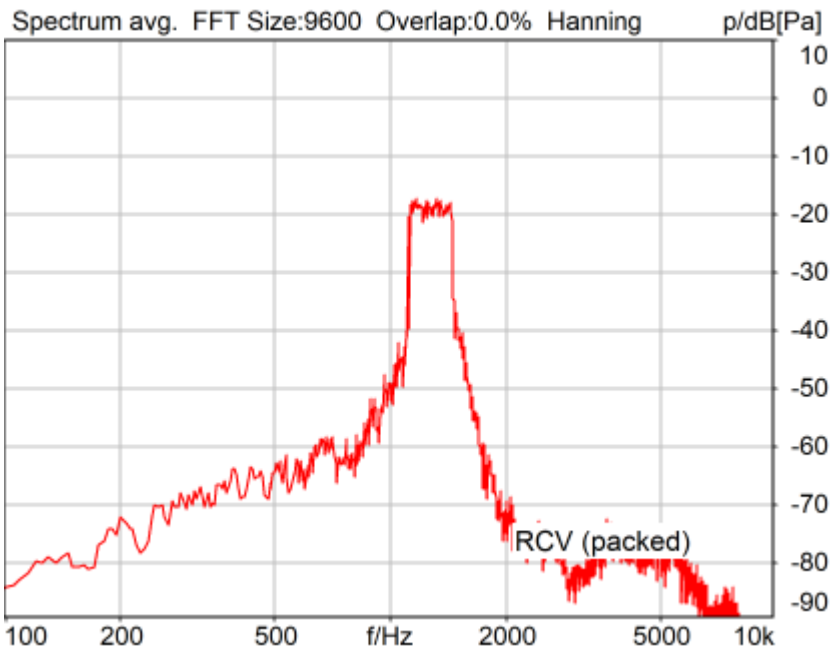
2025/1/16 12:08 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.77 dB (6.48%) Ok

Ok

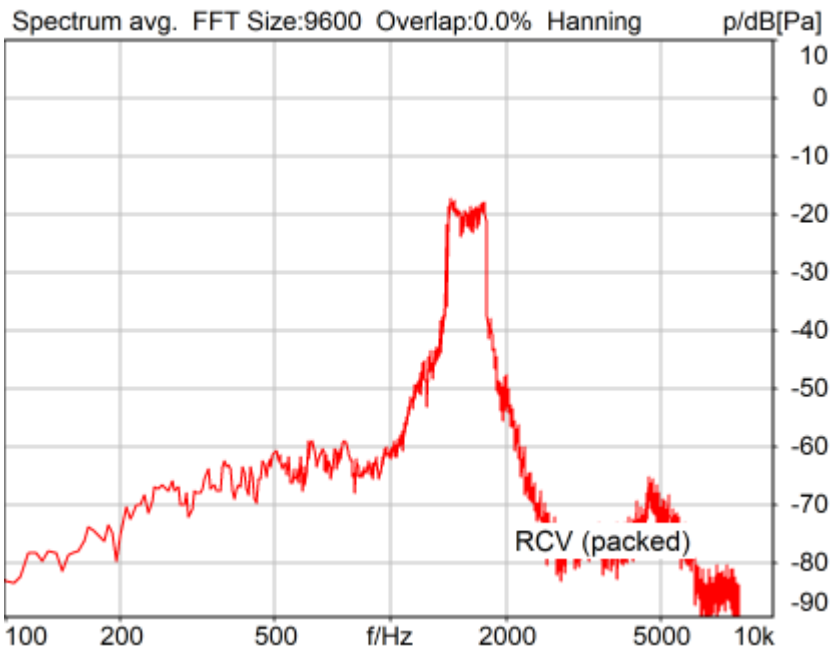
2025/1/16 12:08 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 23.94 dB (6.35%) Ok

Ok

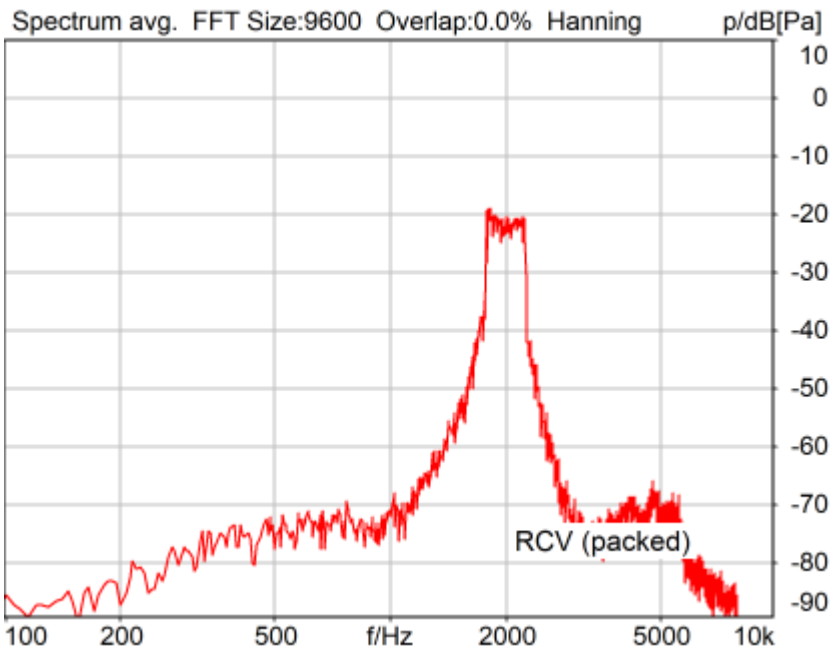
2025/1/16 12:08 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 22.12 dB (7.83%) Ok

Ok

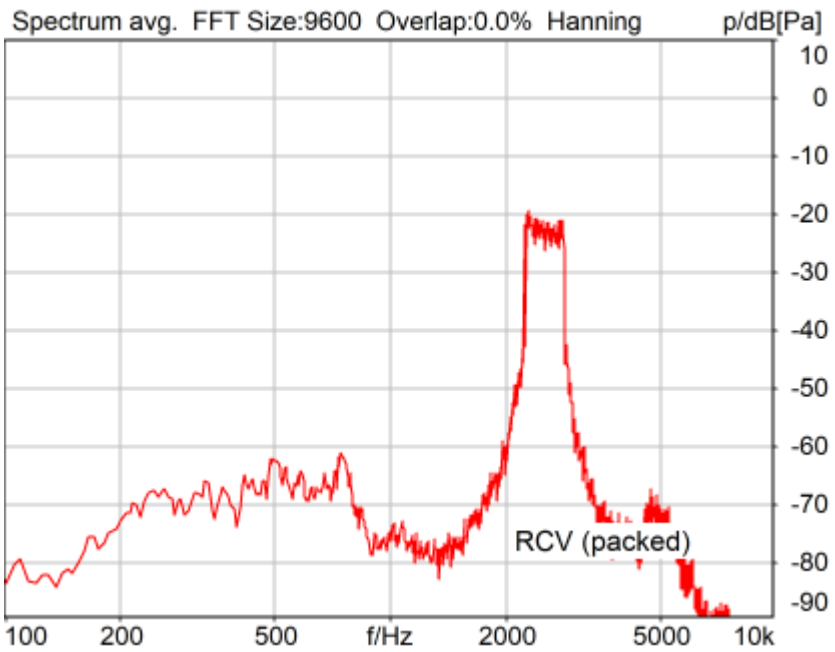
2025/1/16 12:09 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 27.95 dB (4.00%) Ok

Ok

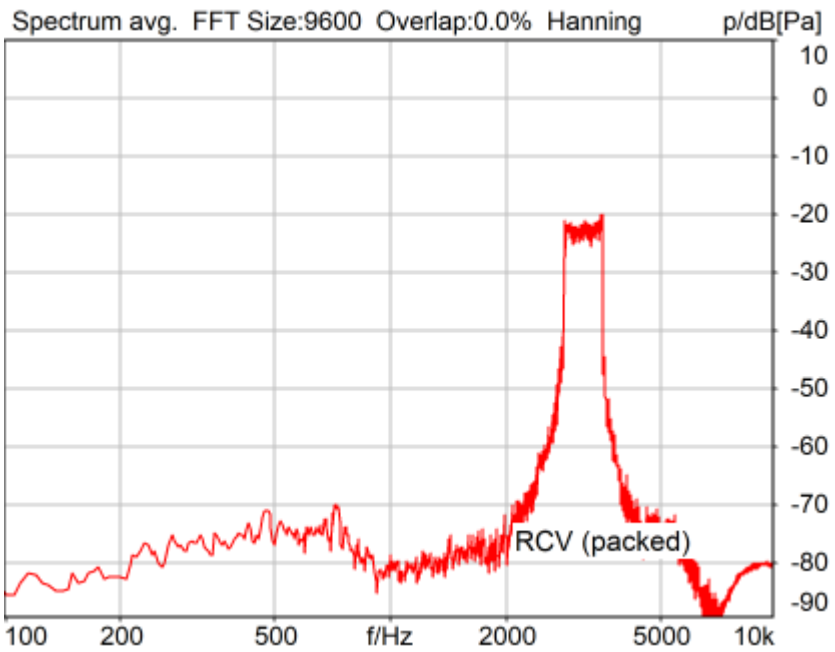
2025/1/16 12:09 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 30.58 dB (2.96%) Ok

Ok

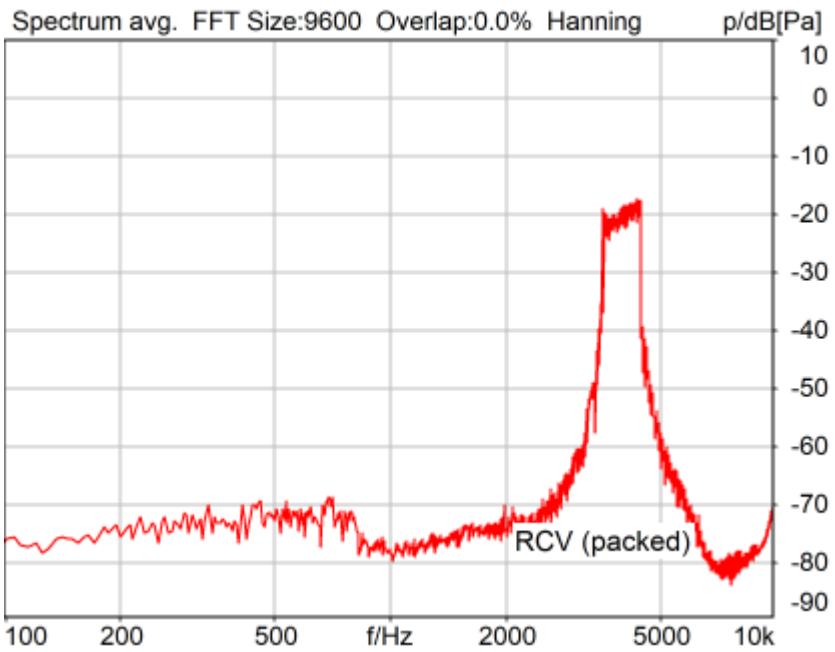
2025/1/16 12:10 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 26.32 dB (4.83%) Ok

Ok

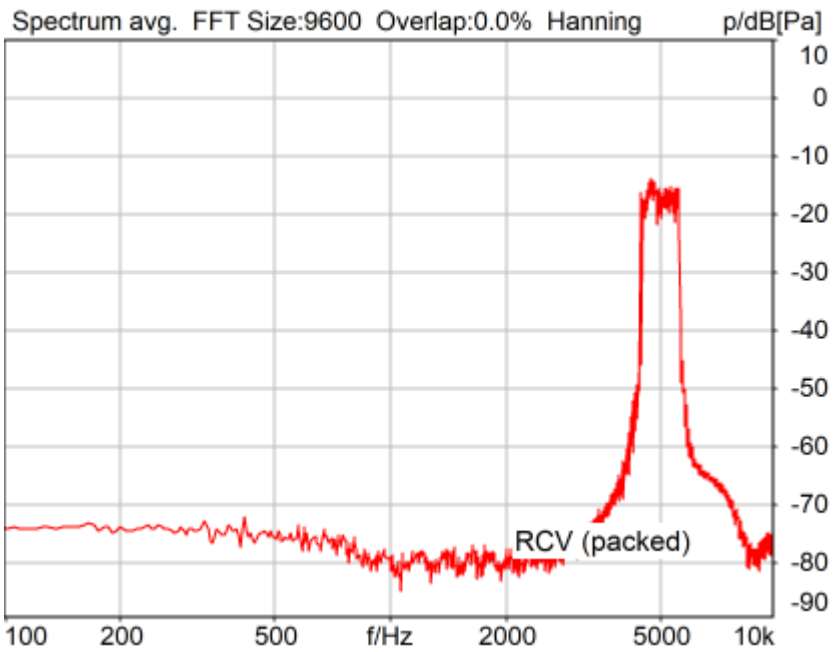
2025/1/16 12:10 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 35.36 dB (1.71%) Ok

Ok

2025/1/16 12:10 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	25.89 dB
2	315Hz	30.19 dB
3	400Hz	32.94 dB
4	500Hz	32.78 dB
5	630Hz	35.06 dB
6	800Hz	35.90 dB
7	1000Hz	32.74 dB
8	1250Hz	23.77 dB
9	1600Hz	23.94 dB
10	2000Hz	22.12 dB

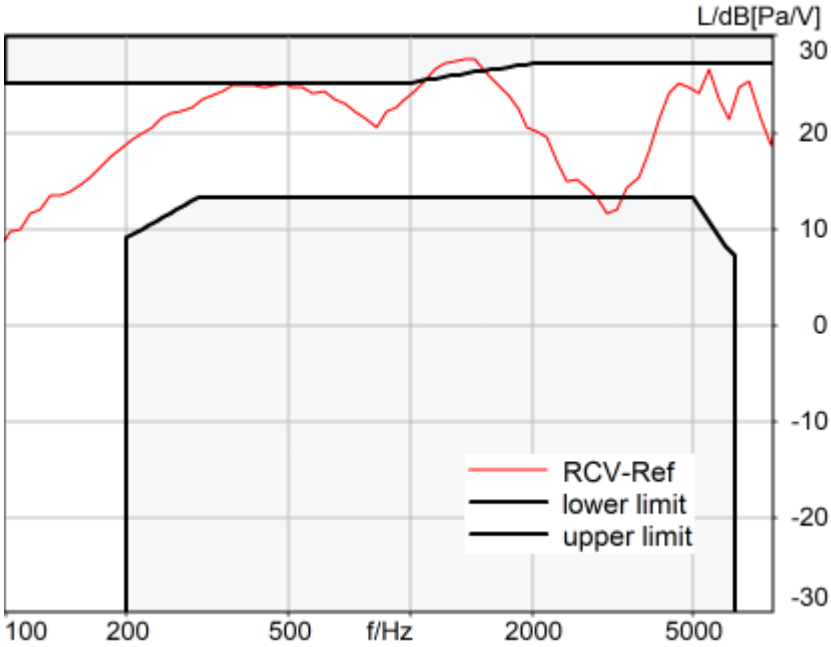
11	2500Hz	27.95 dB
12	3150Hz	30.58 dB
13	4000Hz	26.32 dB
14	5000Hz	35.36 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.12dB at 2000Hz.

2025/1/16 12:11 ACQUA

5.3 Frequency Response 8N FF

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



Absolute minimal distance
-1.49 dB at 3058.6 Hz Not Ok

Not Ok

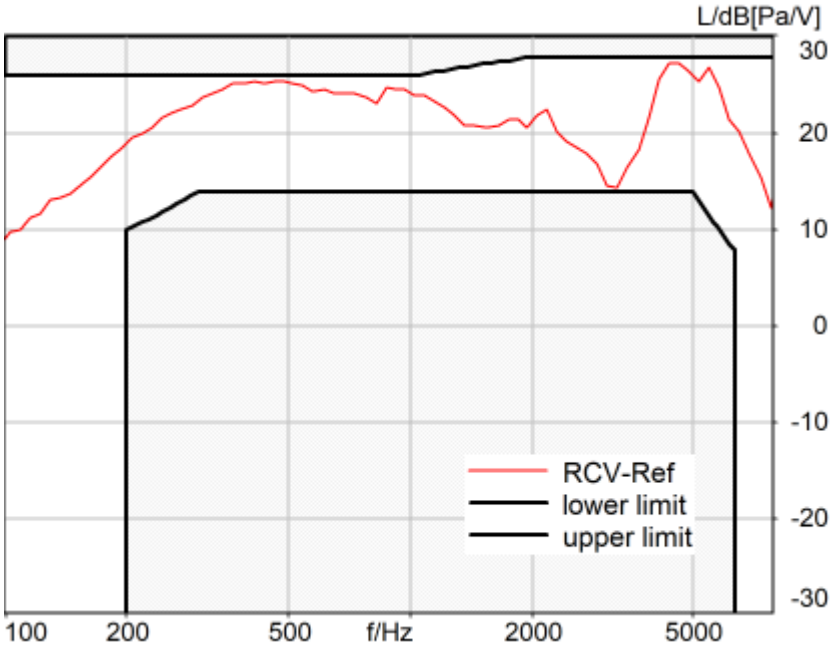
2025/1/16 12:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.48 dB at 3245.6 Hz Ok

Ok

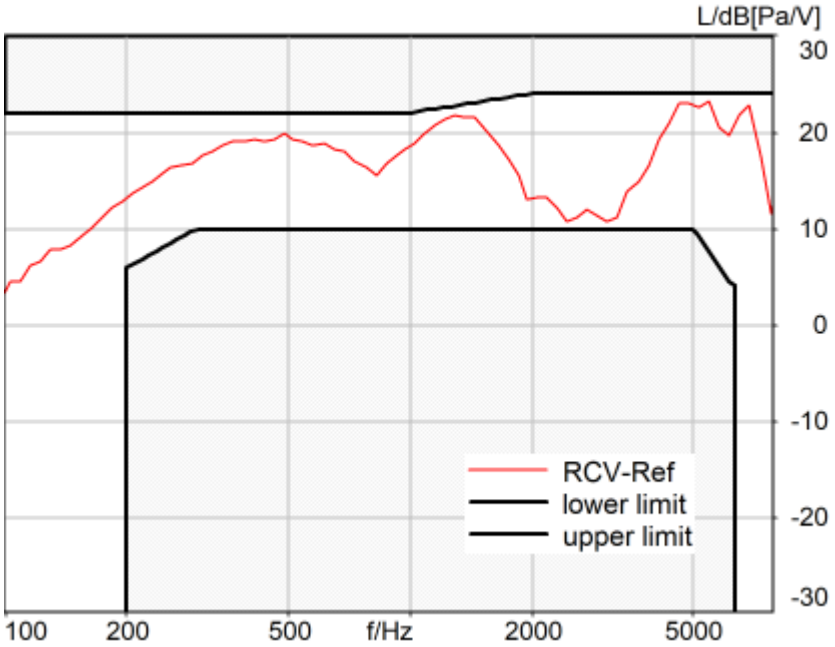
2025/1/16 12:01 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF

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



Absolute minimal distance
0.71 dB at 5443.6 Hz Ok

Ok

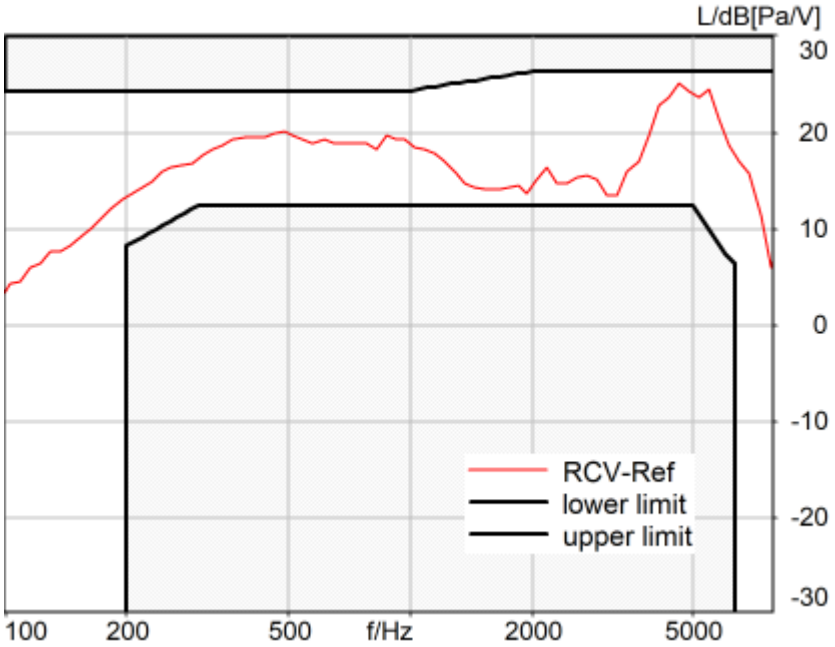
2025/1/16 12:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
1.18 dB at 4620.1 Hz Ok

Ok

2025/1/16 12:03 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:54
Responsible Person	audio

Status Overview

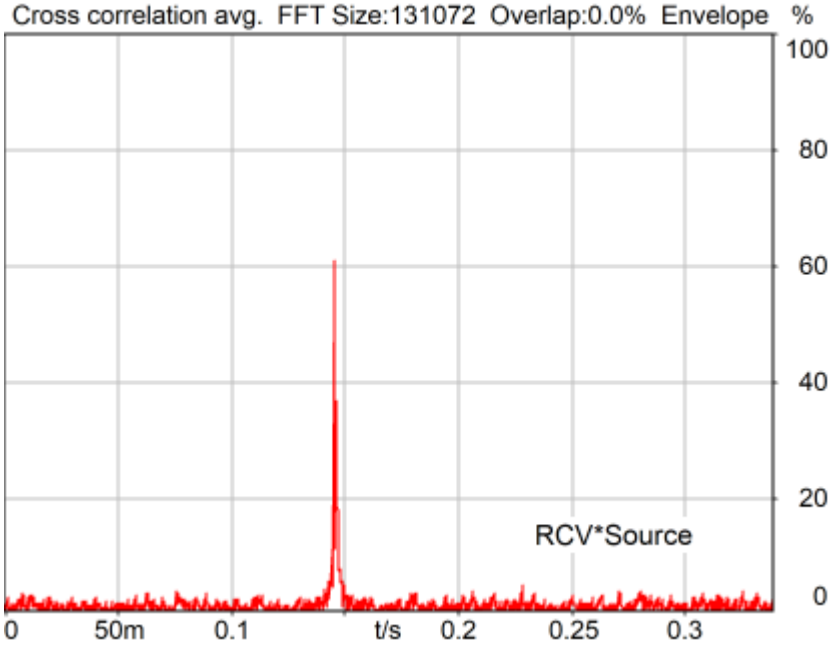
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	145.5	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	23.38	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	17.76	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.35	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.09	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.78	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.73	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.15	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.45	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.16	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.23	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	20.47	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.35	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	20.47	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.74	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.53	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	35.10	LTE

- 630 Hz NB		0.0 dB		Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.36	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.76	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.62	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.95	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	21.99	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	27.52	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	30.38	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.99	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.3 Frequency Response 8N FF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	-1.85	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 487.0 Hz	0.75	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1360.9 Hz	0.56	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	1.97	LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095

Overall Receive Delay NB 5
5.1a Receive Volume Control Performance 8N NB 5
5.1b Receive Volume Control Performance 2N NB 6
5.2 RCV Distortion and Noise - 400 Hz NB 7
5.2 RCV Distortion and Noise - 500 Hz NB 8
5.2 RCV Distortion and Noise - 630 Hz NB 9
5.2 RCV Distortion and Noise - 800 Hz NB 10
5.2 RCV Distortion and Noise - 1000 Hz NB 11
5.2 RCV Distortion and Noise - 1250 Hz NB 12
5.2 RCV Distortion and Noise - 1600 Hz NB 13
5.2 RCV Distortion and Noise - 2000 Hz NB 14
5.2 RCV Distortion and Noise - 2500 Hz NB 15
5.2 RCV Distortion and Noise - 3150 Hz NB 16
Report - Receive Distortion and Noise (Conversational Gain) 17
5.2 RCV Distortion and Noise - 400 Hz NB 18
5.2 RCV Distortion and Noise - 500 Hz NB 18
5.2 RCV Distortion and Noise - 630 Hz NB 19
5.2 RCV Distortion and Noise - 800 Hz NB 20
5.2 RCV Distortion and Noise - 1000 Hz NB 21
5.2 RCV Distortion and Noise - 1250 Hz NB 22
5.2 RCV Distortion and Noise - 1600 Hz NB 23
5.2 RCV Distortion and Noise - 2000 Hz NB 24
5.2 RCV Distortion and Noise - 2500 Hz NB 25
5.2 RCV Distortion and Noise - 3150 Hz NB 26
Report - Receive Distortion and Noise (Conversational Gain) 27
5.3 Frequency Response 8N FF HANB 28
5.3 Frequency Response 8N DF HANB 29
5.3 Frequency Response 2N FF HANB 29
5.3 Frequency Response 2N DF HANB 30

Overall Receive Delay NB

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

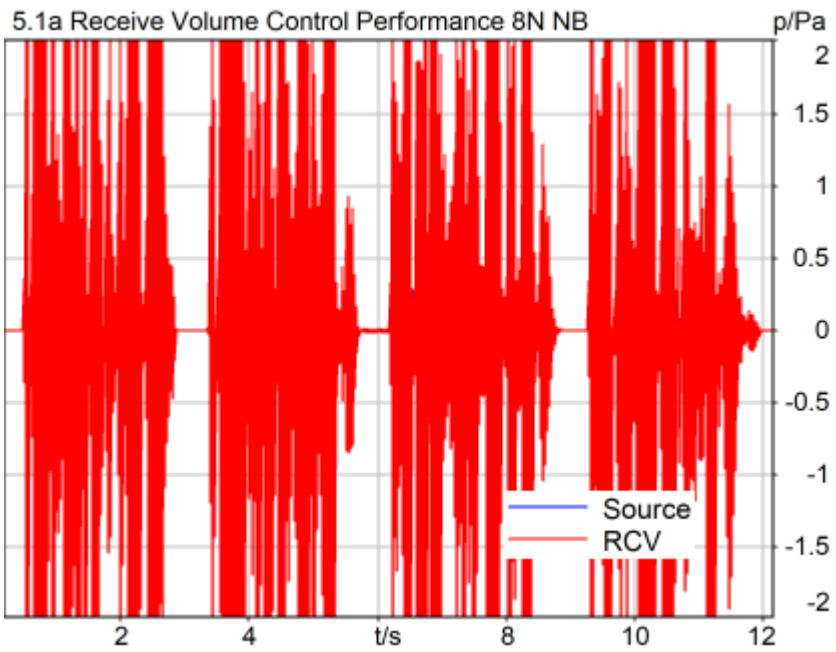


Channel	Delay
RCV*Source	145.5 ms

2025/1/16 12:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.38 dB[SPL]	83.95%	23.38 dB[SPL]	Ok

Ok

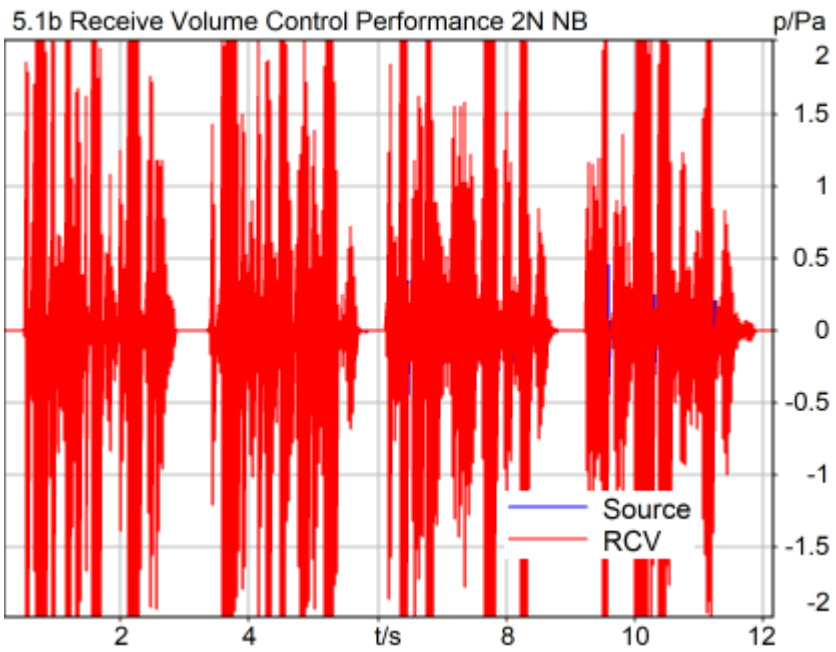
2025/1/16 12:33 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N NB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.76 dB[SPL]	83.85%	17.76 dB[SPL]	Ok

Ok

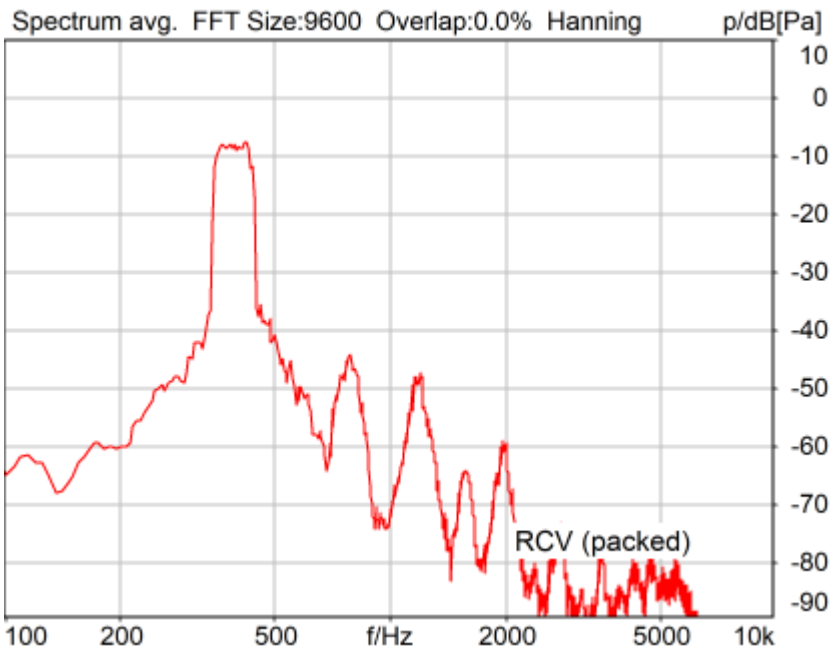
2025/1/16 12:15 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 33.35 dB (2.15%) Ok

Ok

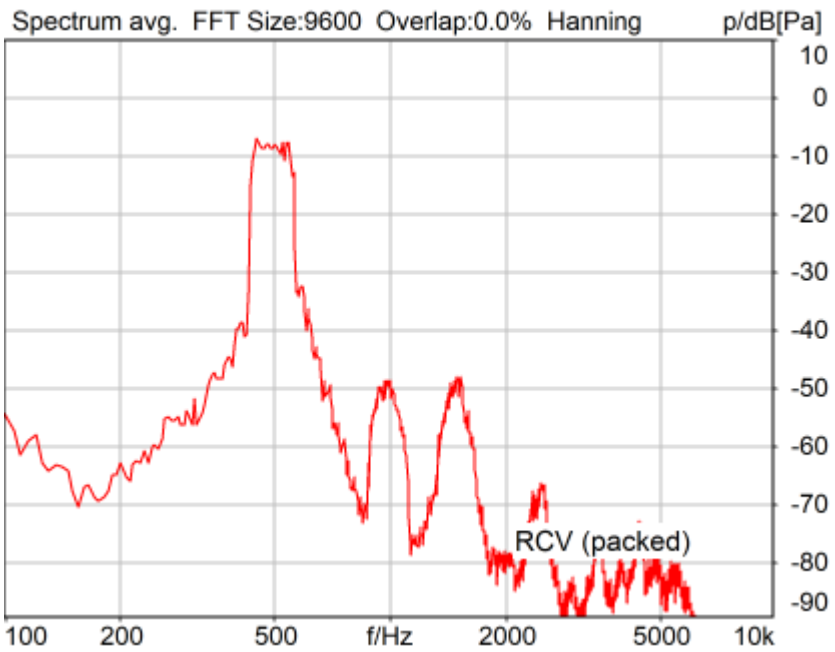
2025/1/16 12:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 33.09 dB (2.21%) Ok

Ok

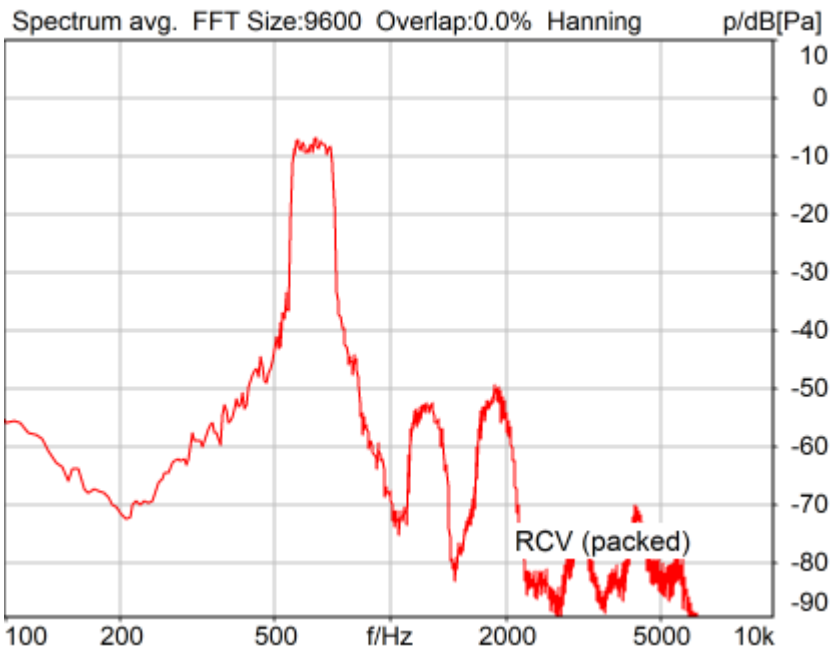
2025/1/16 12:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 34.78 dB (1.82%) Ok

Ok

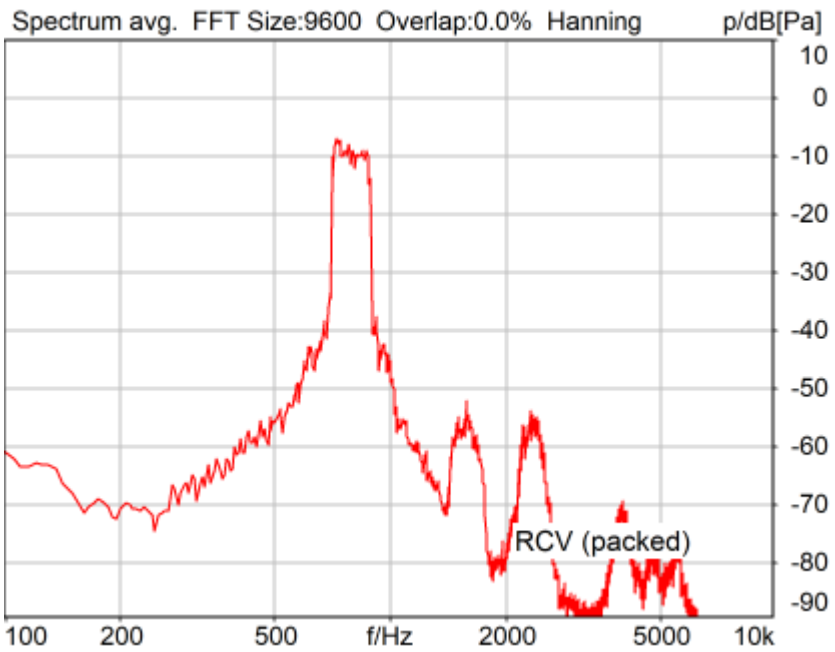
2025/1/16 12:34 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 34.73 dB (1.83%) Ok

Ok

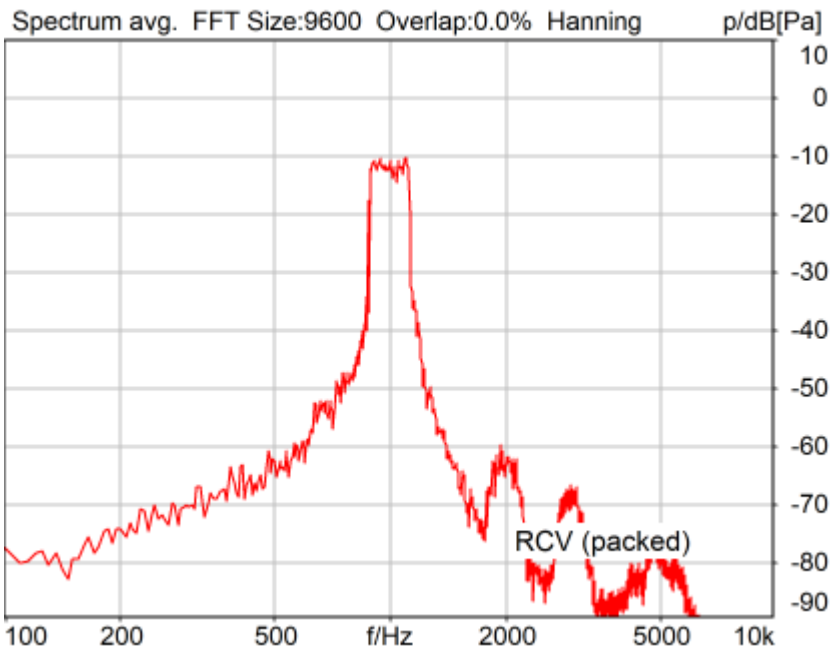
2025/1/16 12:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 32.15 dB (2.47%) Ok

Ok

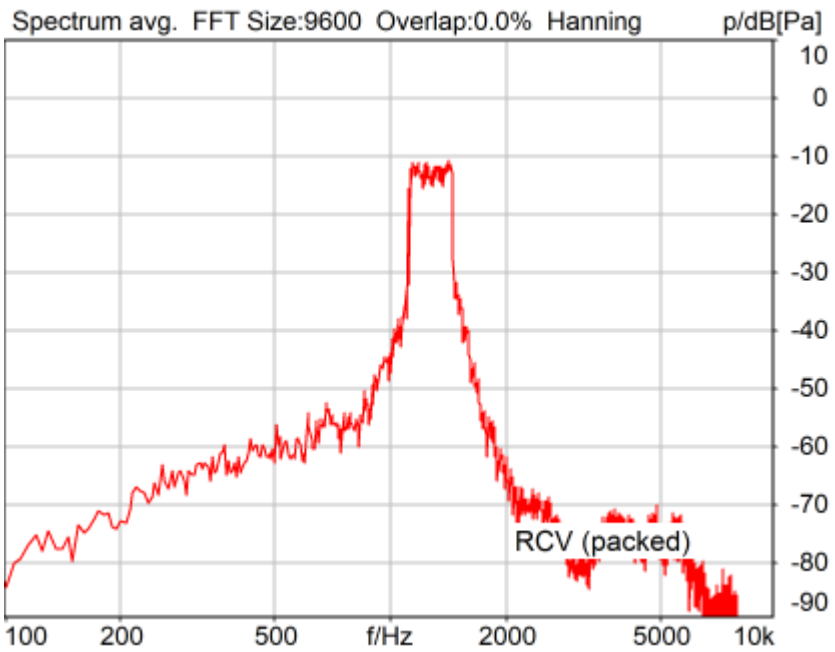
2025/1/16 12:35 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



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

Ok

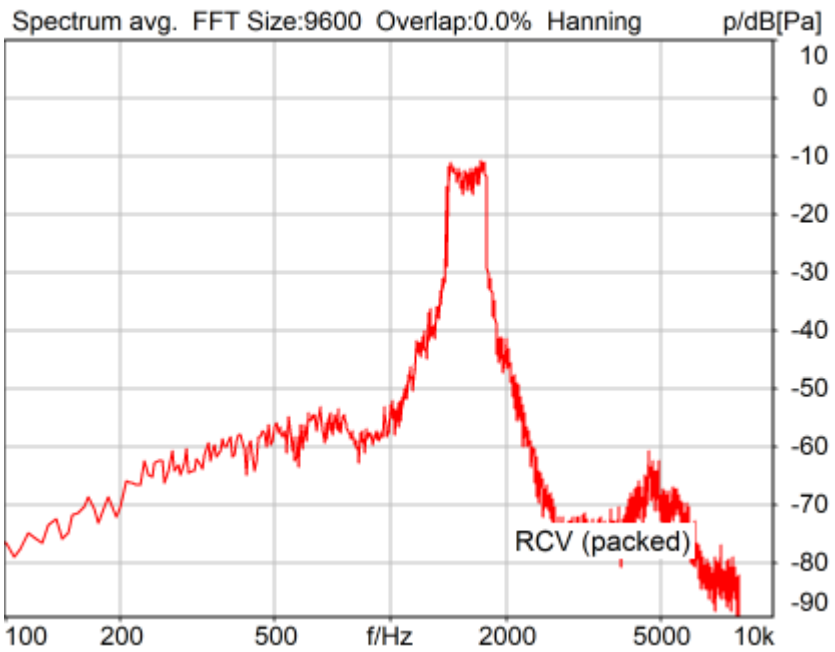
2025/1/16 12:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 24.16 dB (6.20%) Ok

Ok

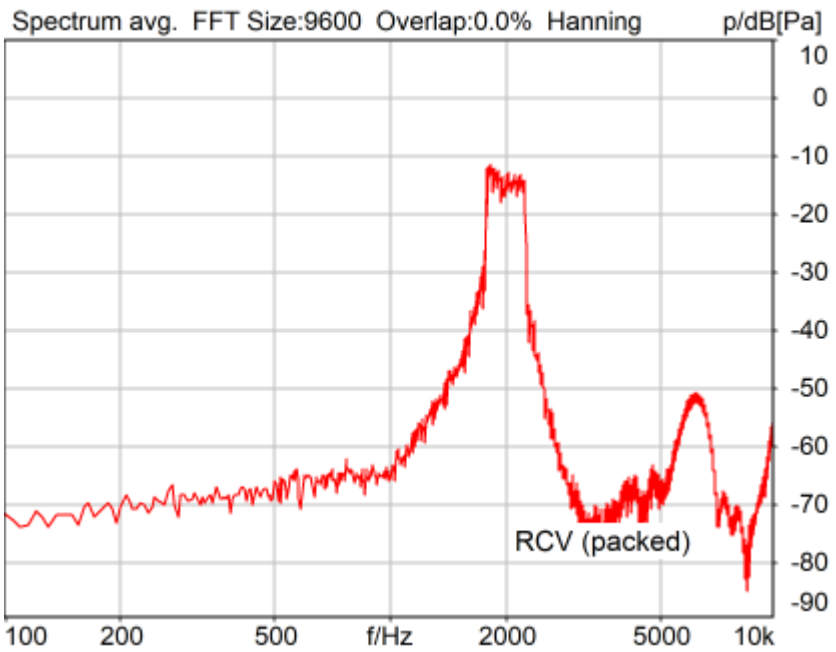
2025/1/16 12:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 22.23 dB (7.74%) Ok

Ok

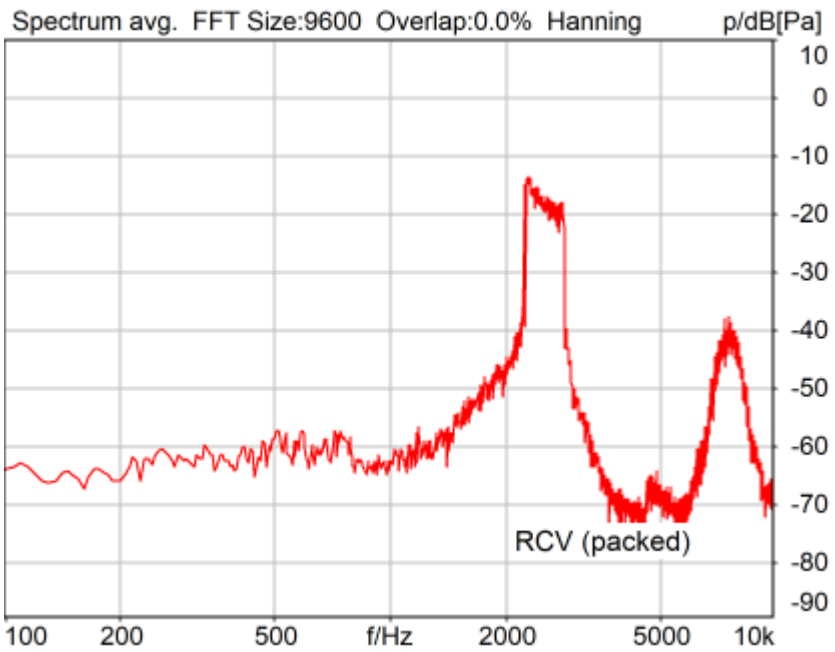
2025/1/16 12:36 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 20.47 dB (9.47%) Ok

Ok

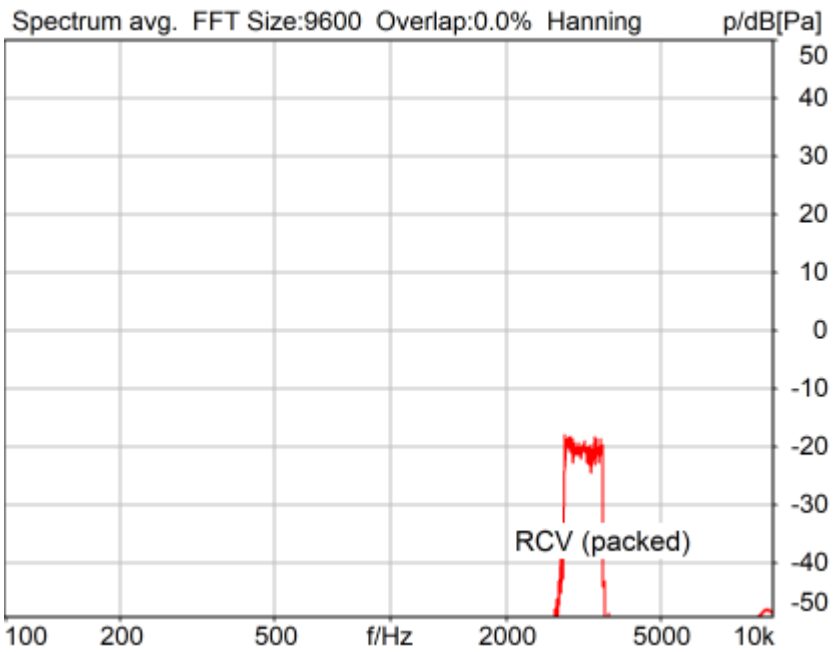
2025/1/16 12:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



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

Ok

2025/1/16 12:37 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

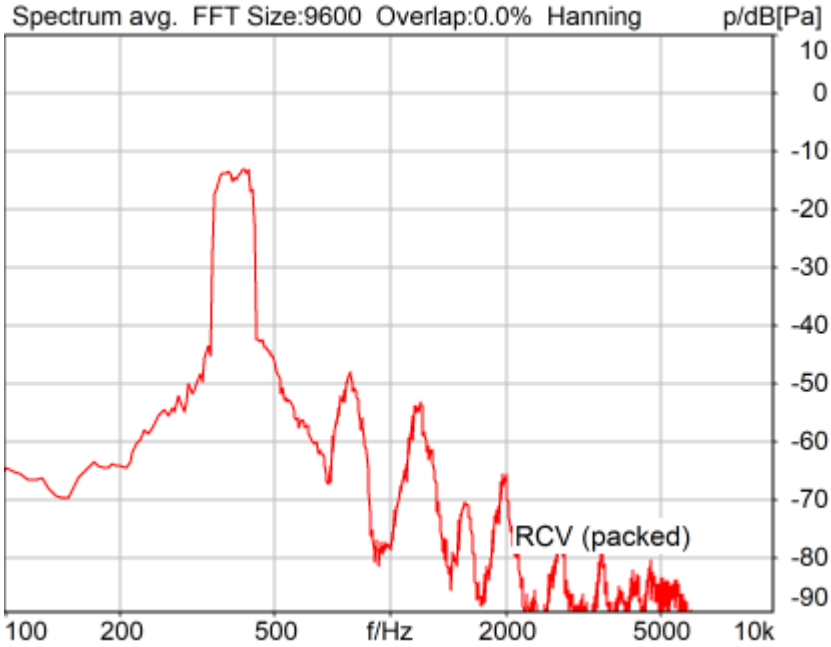
Region	Frequency	SDNR
1	400Hz	33.35 dB
2	500Hz	33.09 dB
3	630Hz	34.78 dB
4	800Hz	34.73 dB
5	1000Hz	32.15 dB
6	1250Hz	24.45 dB
7	1600Hz	24.16 dB
8	2000Hz	22.23 dB
9	2500Hz	20.47 dB
10	3150Hz	24.35 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 20.47dB at 2500Hz.

2025/1/16 12:38 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB

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



Distortion (Noise) RCV (packed): 32.74 dB (2.31%) Ok

Ok

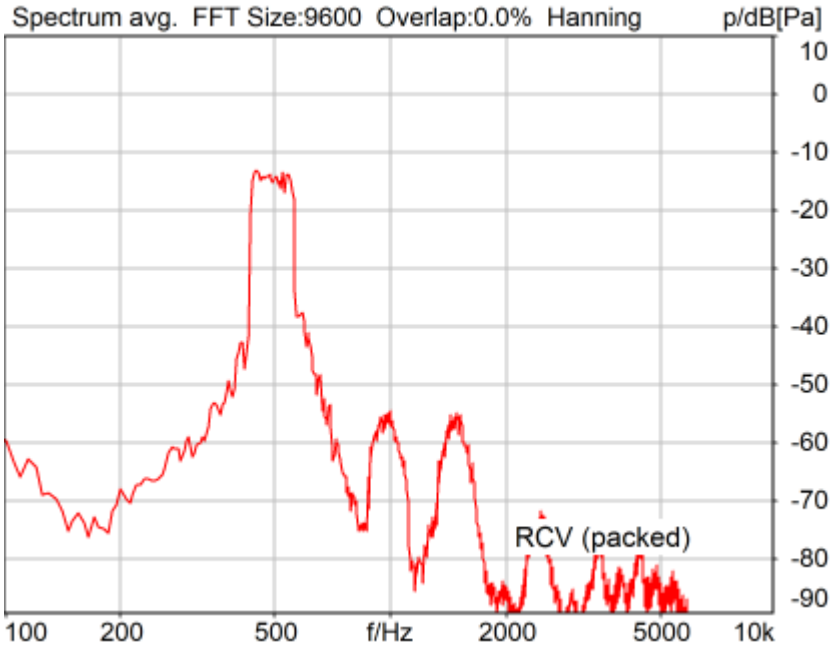
2025/1/16 12:15 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



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

Ok

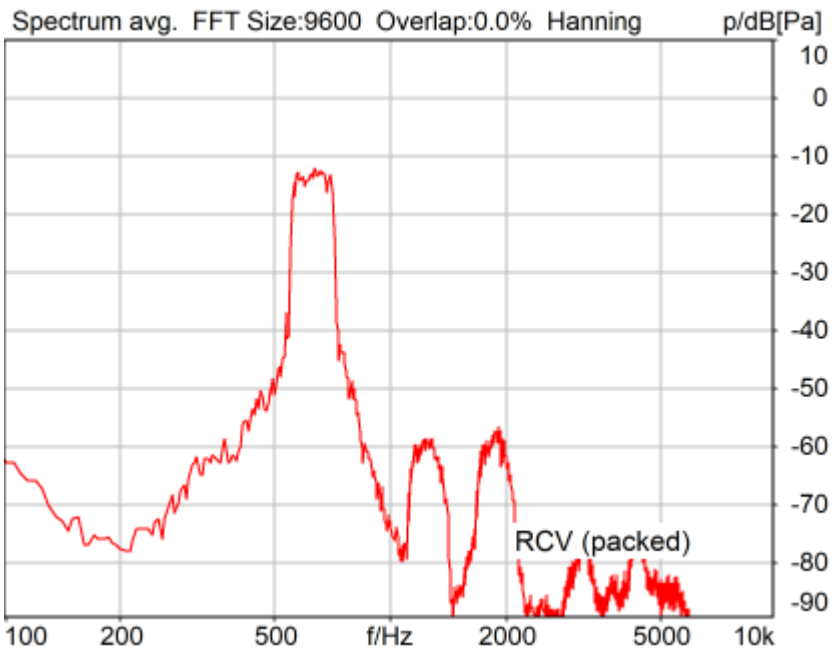
2025/1/16 12:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 35.10 dB (1.76%) Ok

Ok

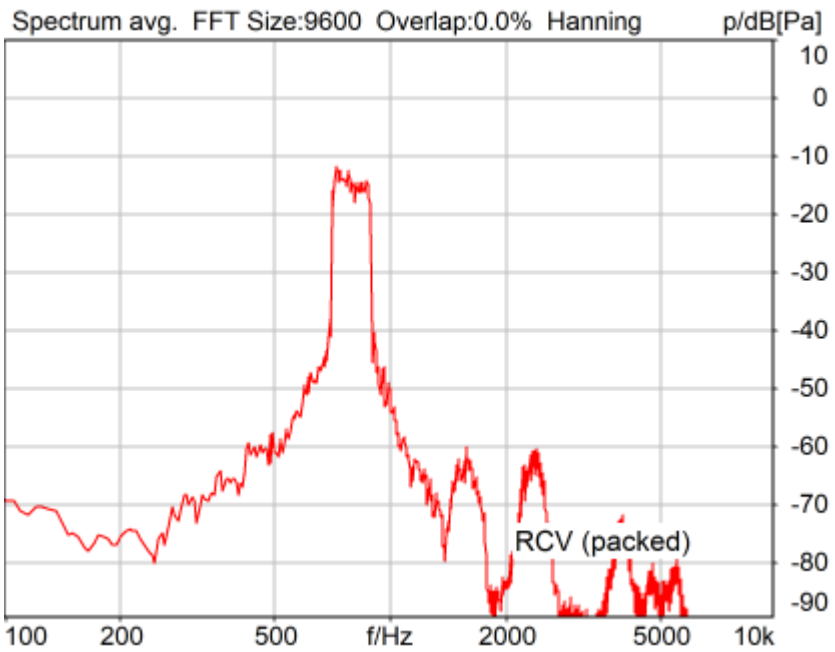
2025/1/16 12:16 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 34.36 dB (1.91%) Ok

Ok

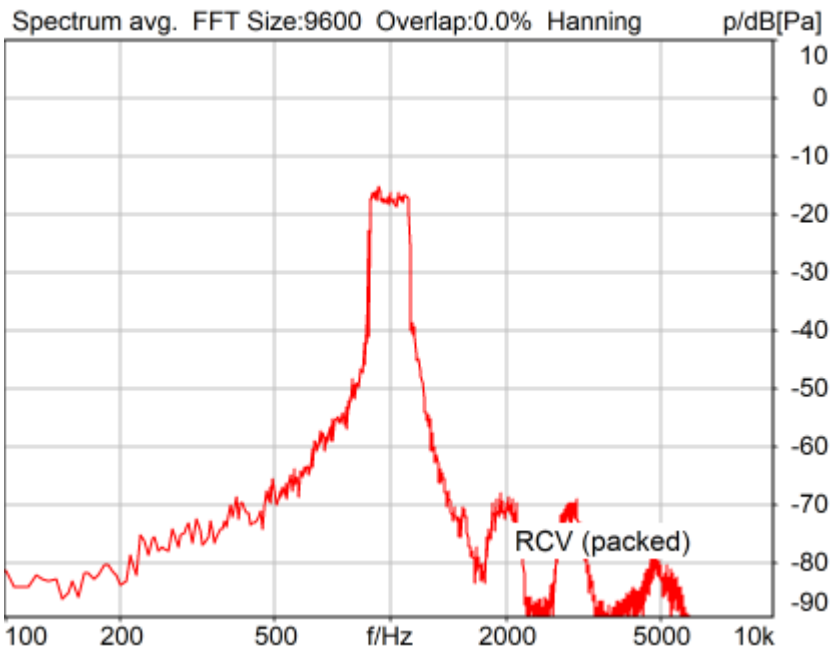
2025/1/16 12:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 31.76 dB (2.58%) Ok

Ok

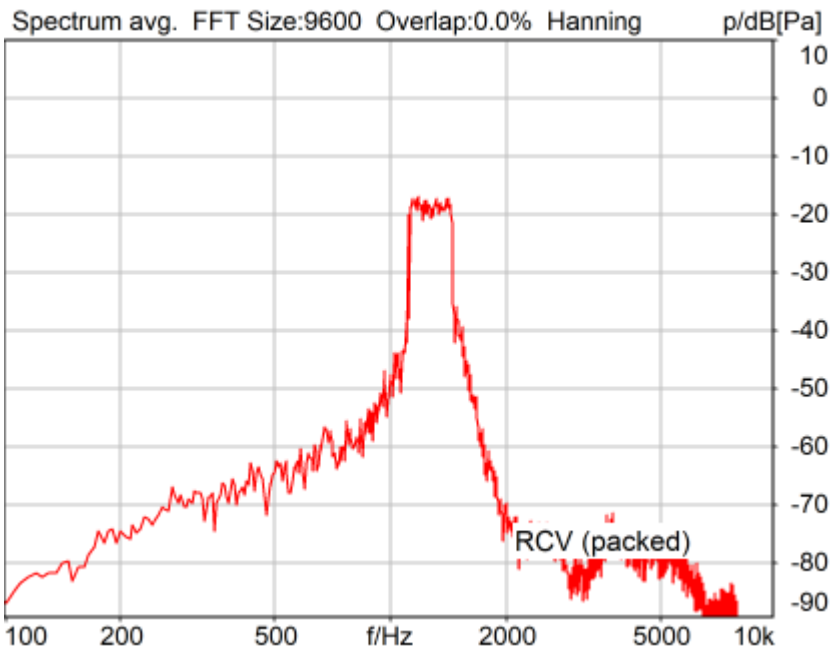
2025/1/16 12:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.62 dB (6.59%) Ok

Ok

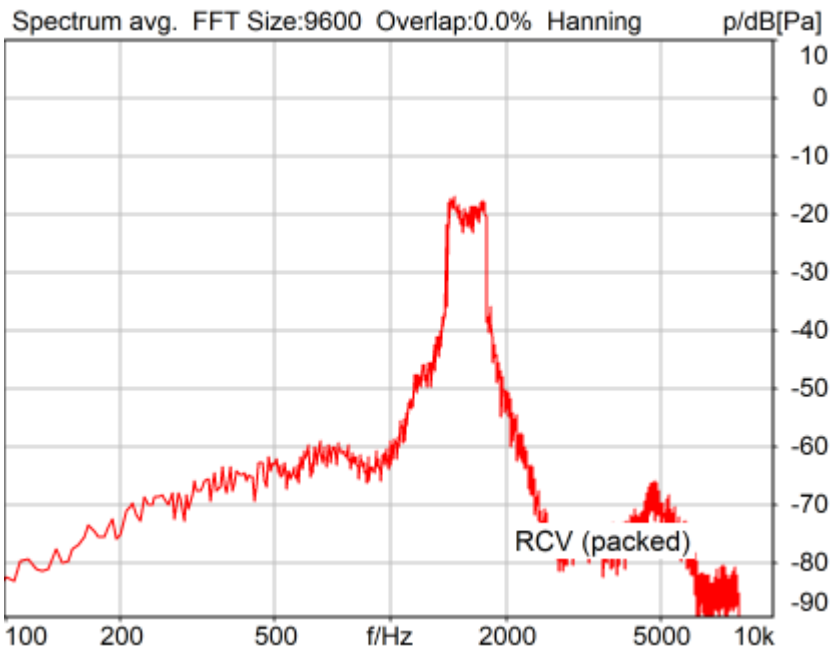
2025/1/16 12:17 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 23.95 dB (6.35%) Ok

Ok

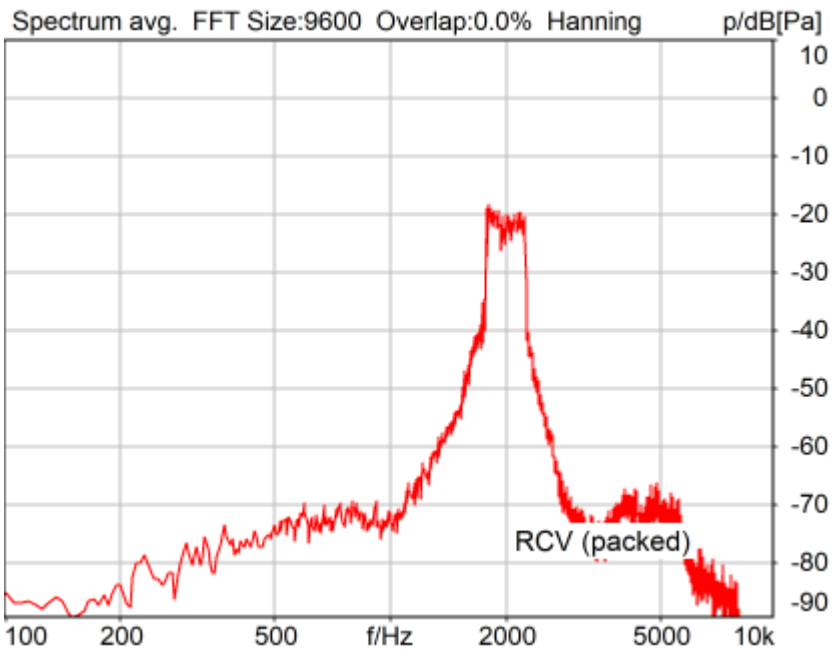
2025/1/16 12:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.99 dB (7.95%) Ok

Ok

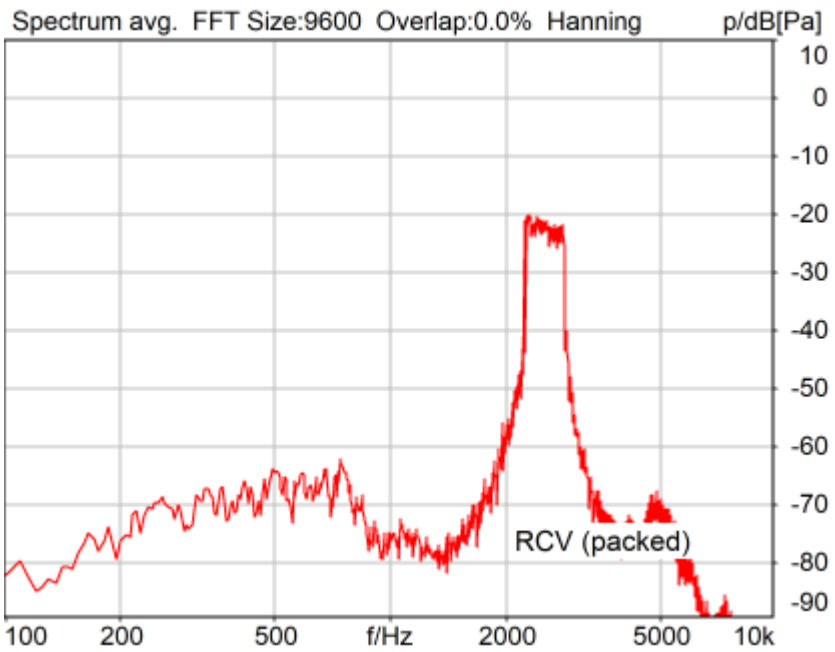
2025/1/16 12:18 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



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

Ok

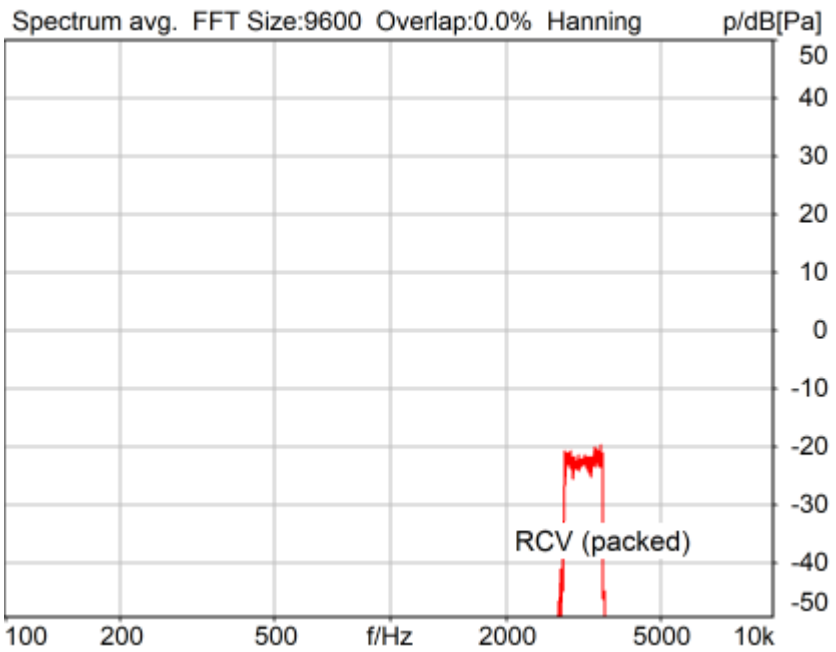
2025/1/16 12:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



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

Ok

2025/1/16 12:19 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

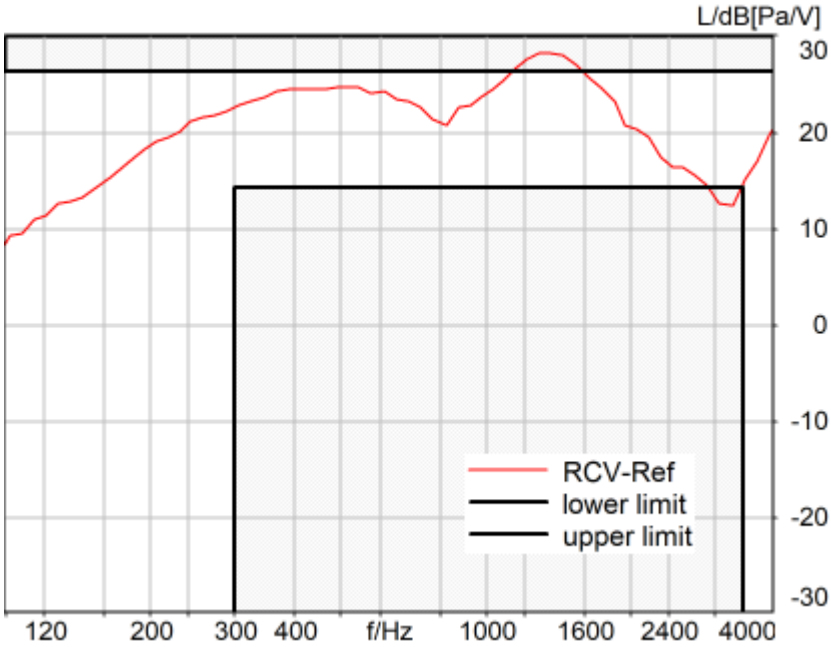
Region	Frequency	SDNR
1	400Hz	32.74 dB
2	500Hz	32.53 dB
3	630Hz	35.10 dB
4	800Hz	34.36 dB
5	1000Hz	31.76 dB
6	1250Hz	23.62 dB
7	1600Hz	23.95 dB
8	2000Hz	21.99 dB
9	2500Hz	27.52 dB
10	3150Hz	30.38 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.99dB at 2000Hz.

2025/1/16 12:20 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
-1.85 dB at 1285.9 Hz Not Ok

Not Ok

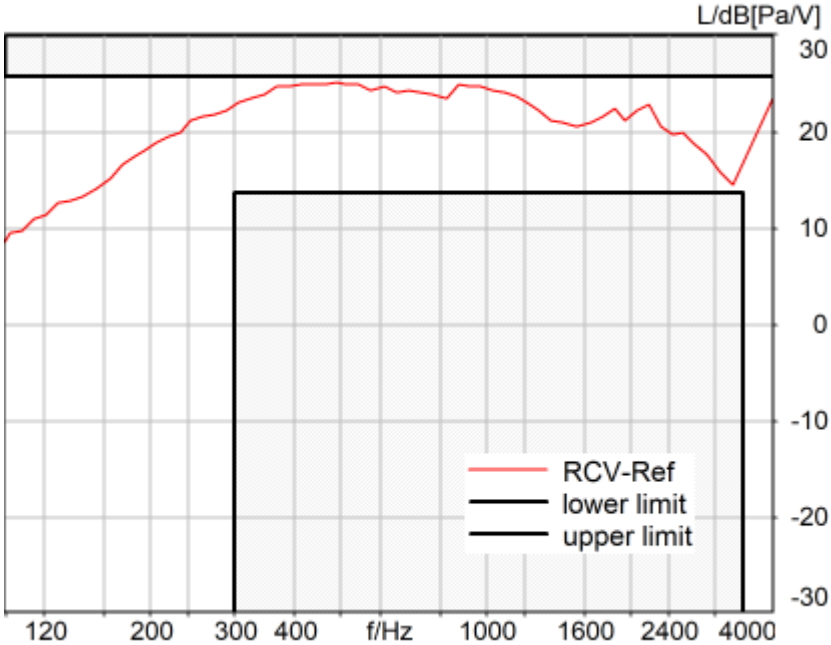
2025/1/16 12:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
0.75 dB at 487.0 Hz Ok

Ok

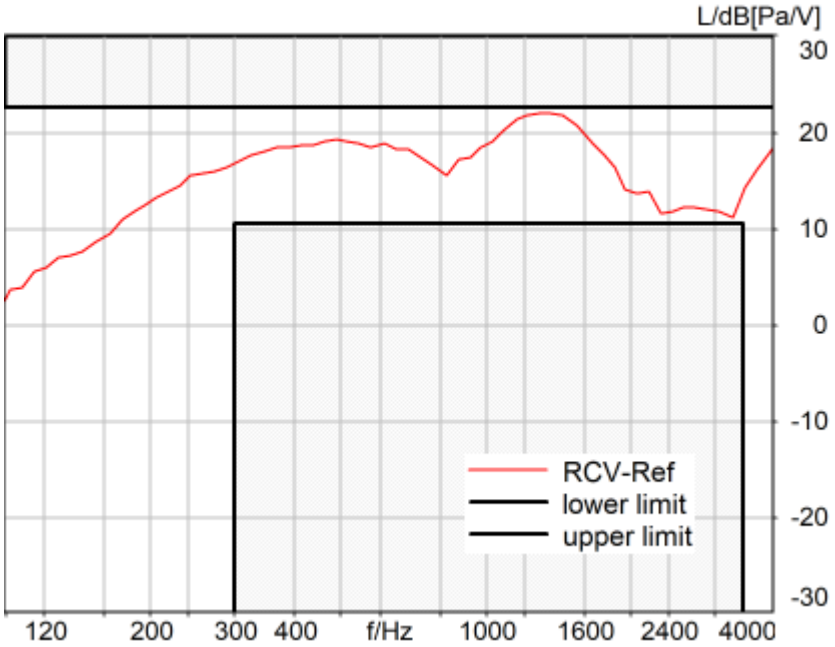
2025/1/16 12:23 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.56 dB at 1360.9 Hz Ok

Ok

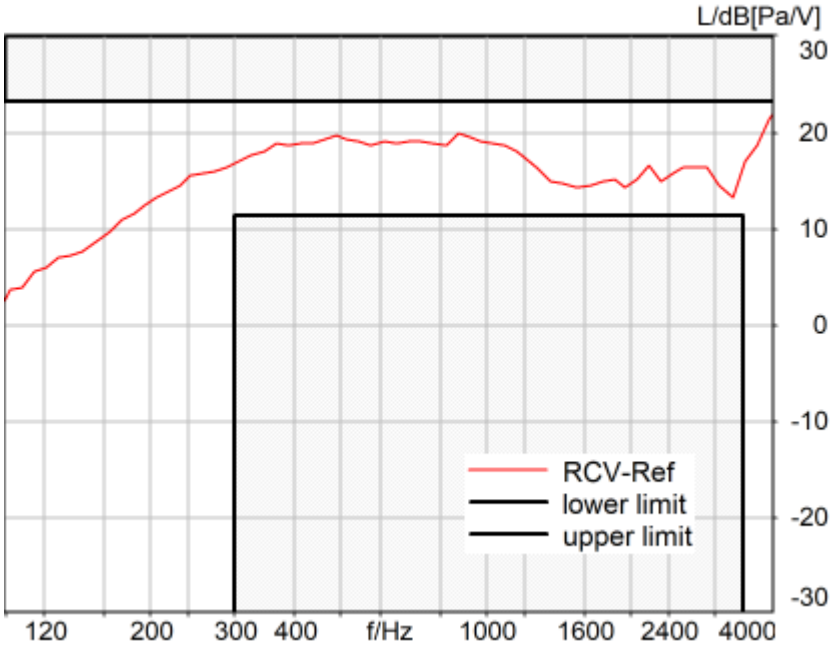
2025/1/16 12:21 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
1.97 dB at 3245.6 Hz Ok

Ok

2025/1/16 12:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/11 16:54
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	137.0	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	23.25	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	17.67	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.10	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.50	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.69	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.88	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.63	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.31	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.84	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.38	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.84	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.24	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.15	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.69	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.32	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise	Ok	Distortion (Noise) [dB],	22.38	LTE

- 5000 Hz WB		0.0 dB		Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2500Hz)	21.15	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.29	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.83	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.24	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.53	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.47	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.33	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.85	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.17	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.34	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.69	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.10	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.61	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.60	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.28	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.69	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response 8N FF	Not Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	-1.75	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response 8N	Ok	Min. dist. to tolerance	0.60	LTE

DF		scheme [dB], 4369.4 Hz		Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response 2N FF	Ok	Min. dist. to tolerance scheme [dB], 1285.9 Hz	0.69	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 4620.1 Hz	0.86	LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095

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5.1b Receive Volume Control Performance 2N WB 7
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5.2 RCV Distortion and Noise - 315 Hz WB 9
5.2 RCV Distortion and Noise - 400 Hz WB 10
5.2 RCV Distortion and Noise - 500 Hz WB 11
5.2 RCV Distortion and Noise - 630 Hz WB 12
5.2 RCV Distortion and Noise - 800 Hz WB 13
5.2 RCV Distortion and Noise - 1000 Hz WB 14
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5.2 RCV Distortion and Noise - 500 Hz WB 25
5.2 RCV Distortion and Noise - 630 Hz WB 26
5.2 RCV Distortion and Noise - 800 Hz WB 27
5.2 RCV Distortion and Noise - 1000 Hz WB 28
5.2 RCV Distortion and Noise - 1250 Hz WB 29
5.2 RCV Distortion and Noise - 1600 Hz WB 30
5.2 RCV Distortion and Noise - 2000 Hz WB 31
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5.2 RCV Distortion and Noise - 3150 Hz WB 33
5.2 RCV Distortion and Noise - 4000 Hz WB 34
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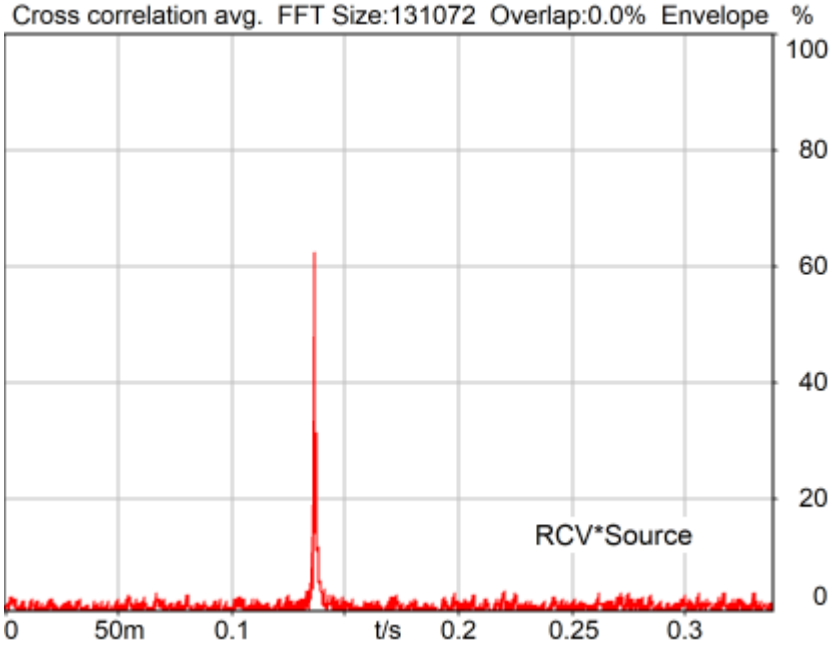
5.3 Frequency Response 8N DF 38
5.3 Frequency Response 2N FF 38
5.3 Frequency Response 2N DF 39

Overall Receive Delay WB

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



Channel	Delay
RCV*Source	137.0 ms

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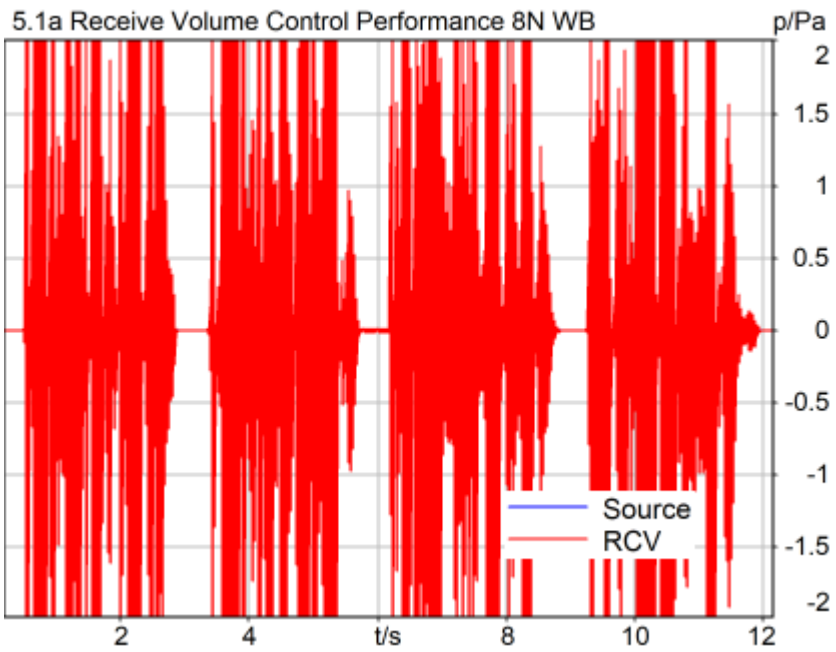
Unmodified HEAD acoustics Measurement Descriptor

5.1a Receive Volume Control Performance 8N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	93.25 dB[SPL]	83.87%	23.25 dB[SPL]	Ok

Ok

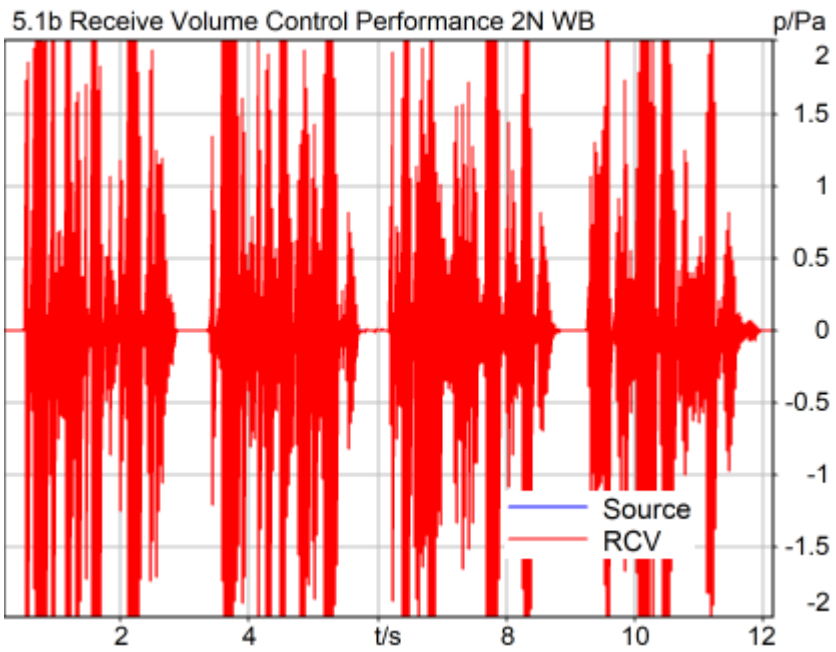
2025/1/16 12:39 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.1b Receive Volume Control Performance 2N WB

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



Correction

X - 70

Channel	Speech level	Activity	Corrected speech level	
RCV	87.67 dB[SPL]	84.42%	17.67 dB[SPL]	Ok

Ok

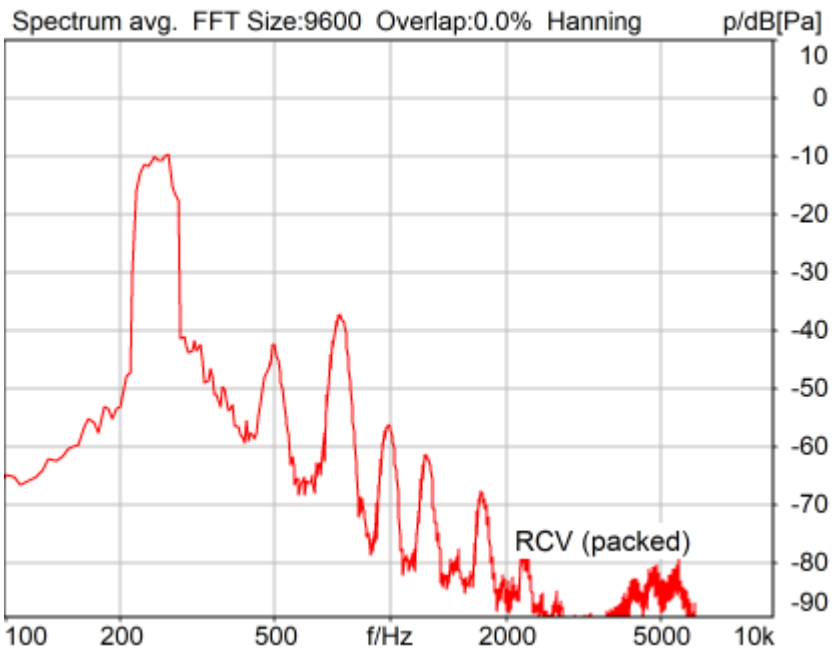
2025/1/16 12:51 ACQUA 6.0.200

Limits

	lower
Run 1	6.00 dB20uPa

5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 27.10 dB (4.41%) Ok

Ok

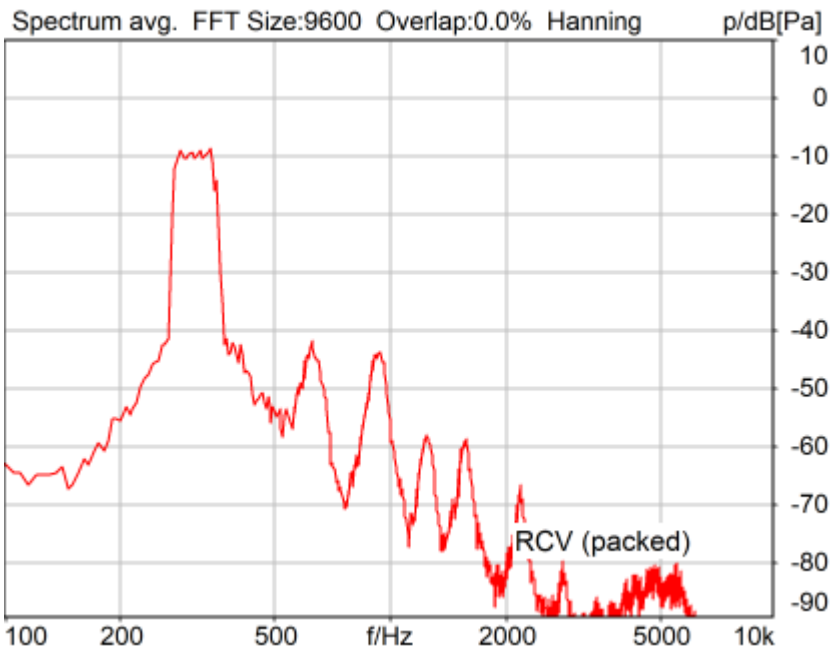
2025/1/16 12:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 31.50 dB (2.66%) Ok

Ok

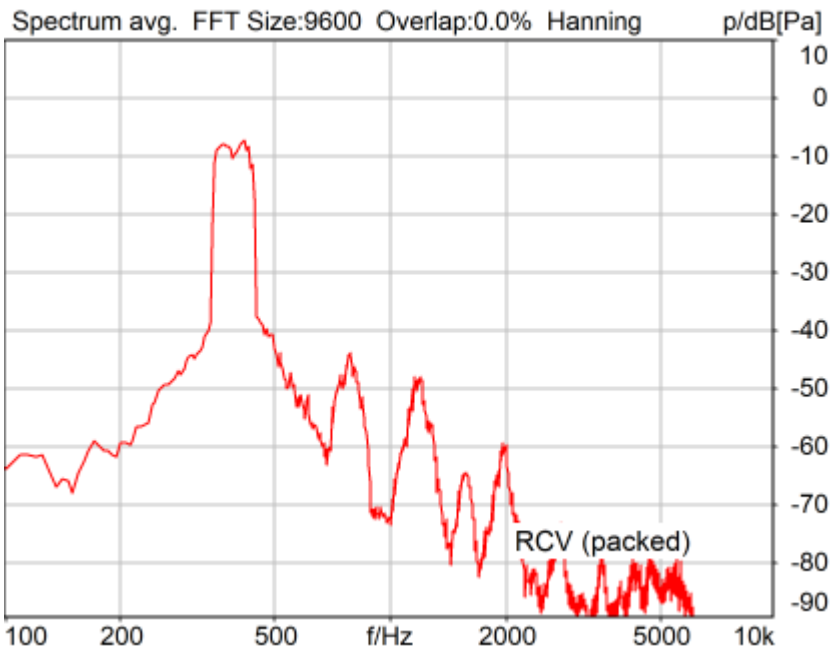
2025/1/16 12:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



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

Ok

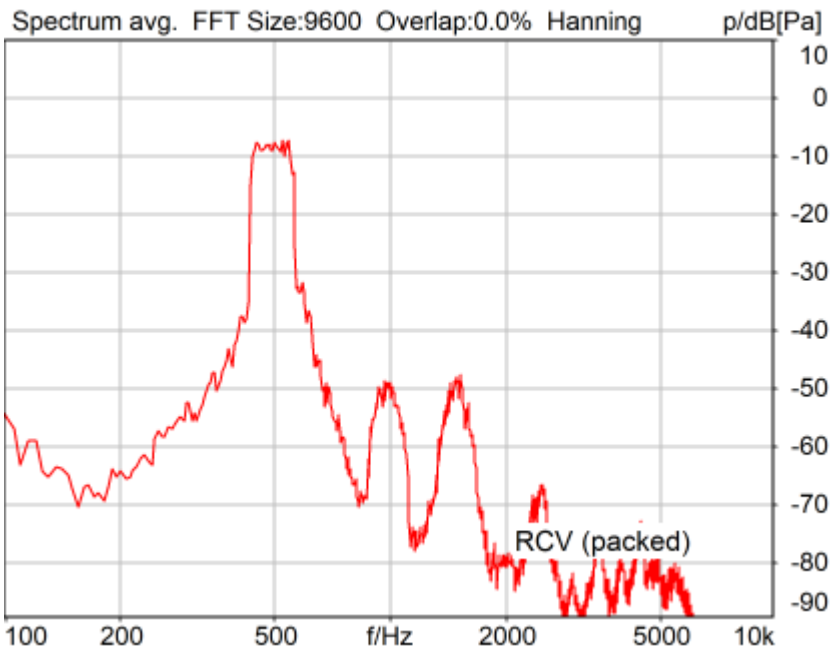
2025/1/16 12:40 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 32.88 dB (2.27%) Ok

Ok

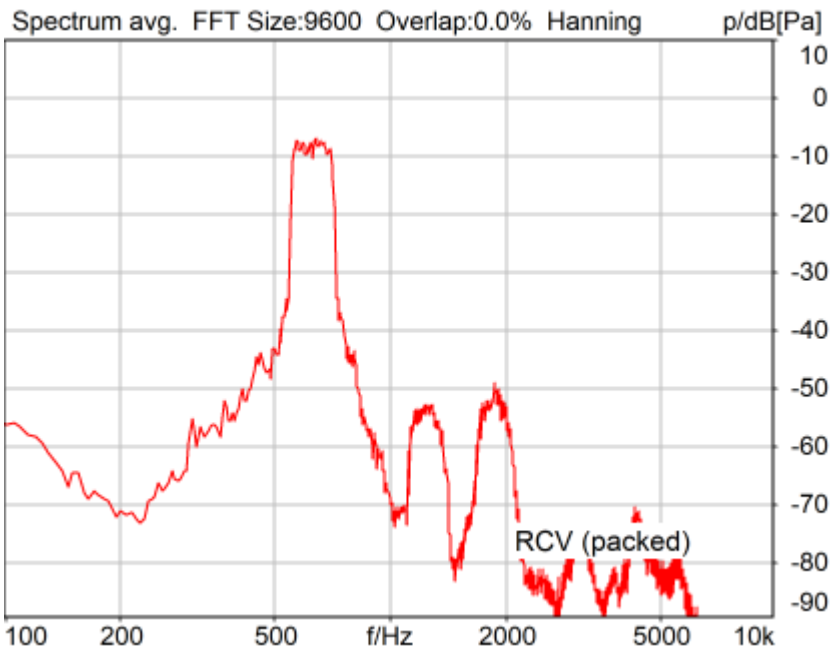
2025/1/16 12:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.63 dB (1.85%) Ok

Ok

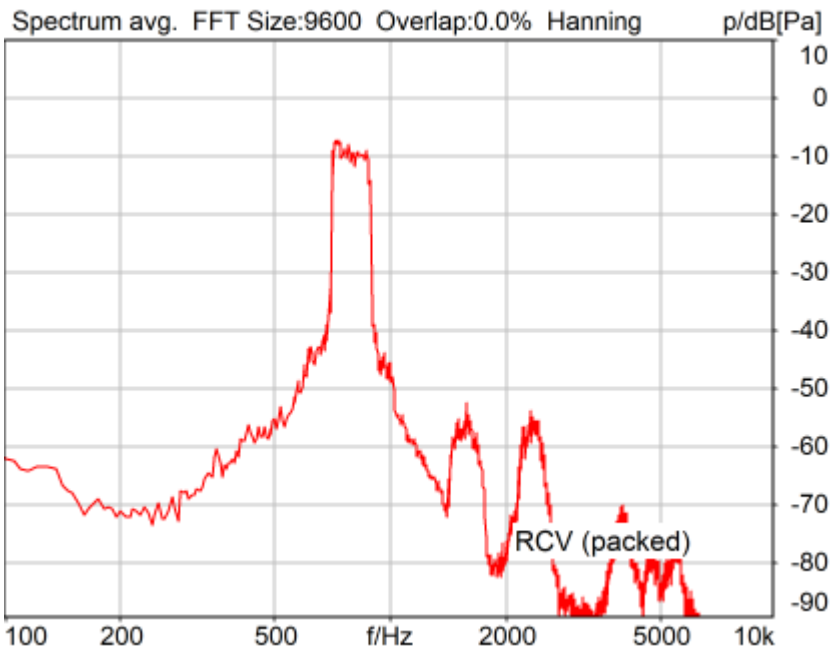
2025/1/16 12:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 35.31 dB (1.72%) Ok

Ok

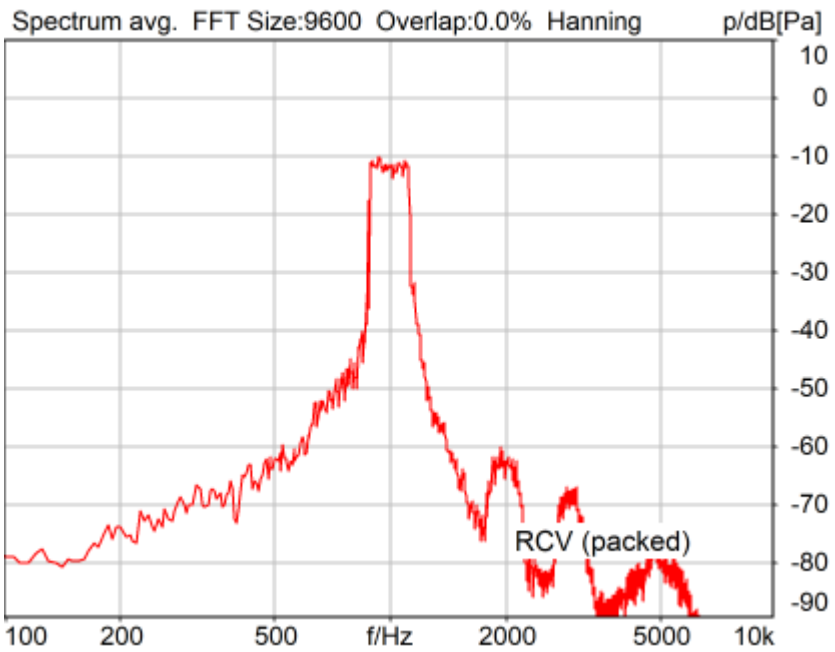
2025/1/16 12:41 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



Distortion (Noise) RCV (packed): 31.84 dB (2.56%) Ok

Ok

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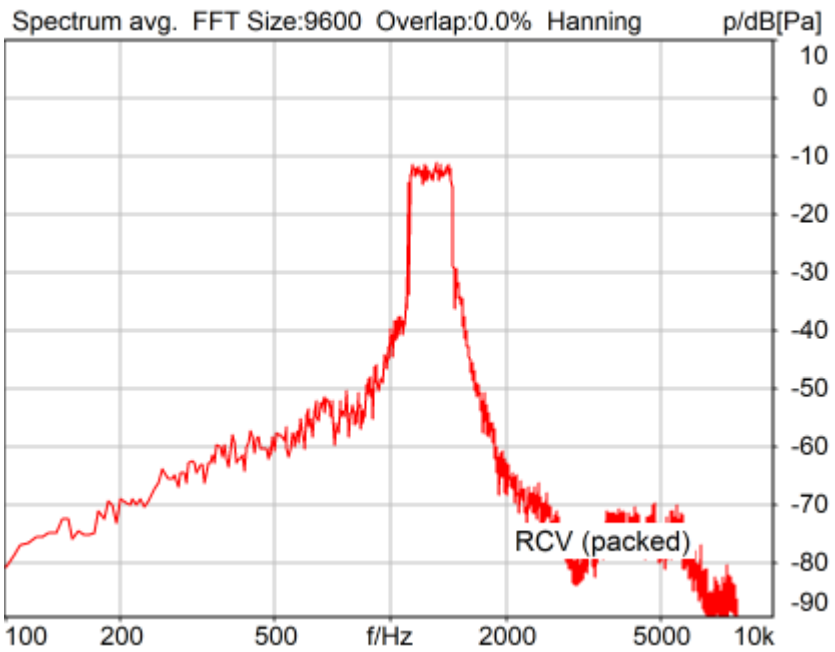
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.38 dB (6.78%) Ok

Ok

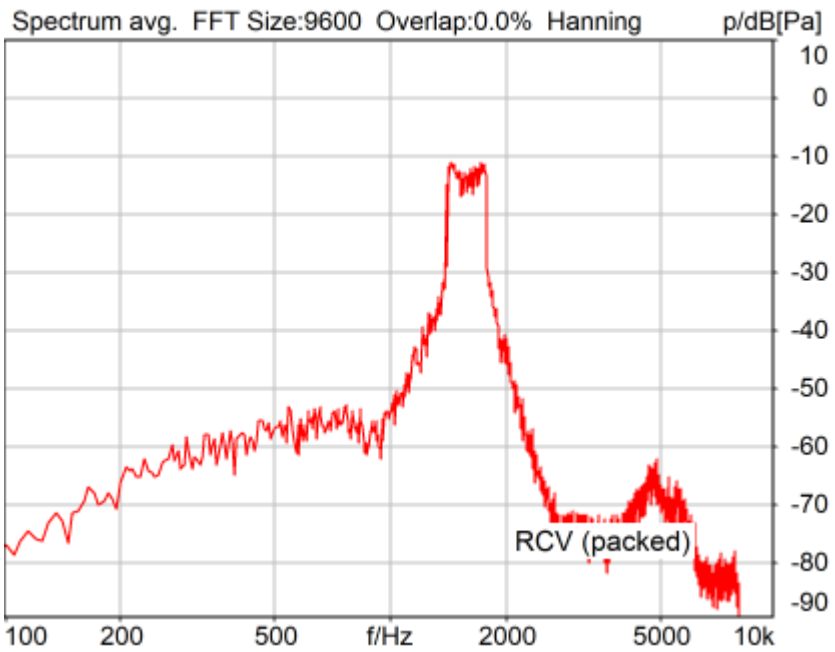
2025/1/16 12:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 23.84 dB (6.42%) Ok

Ok

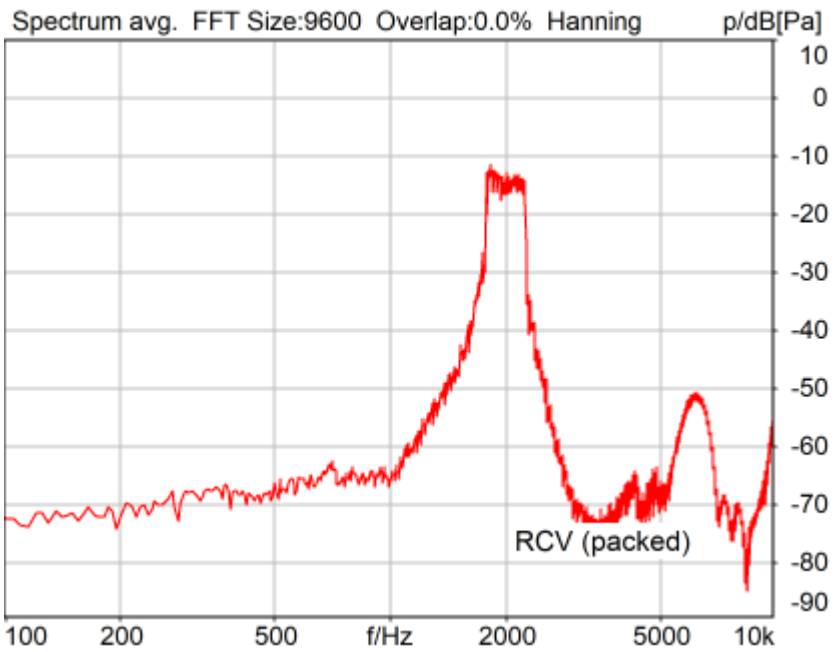
2025/1/16 12:42 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.24 dB (8.67%) Ok

Ok

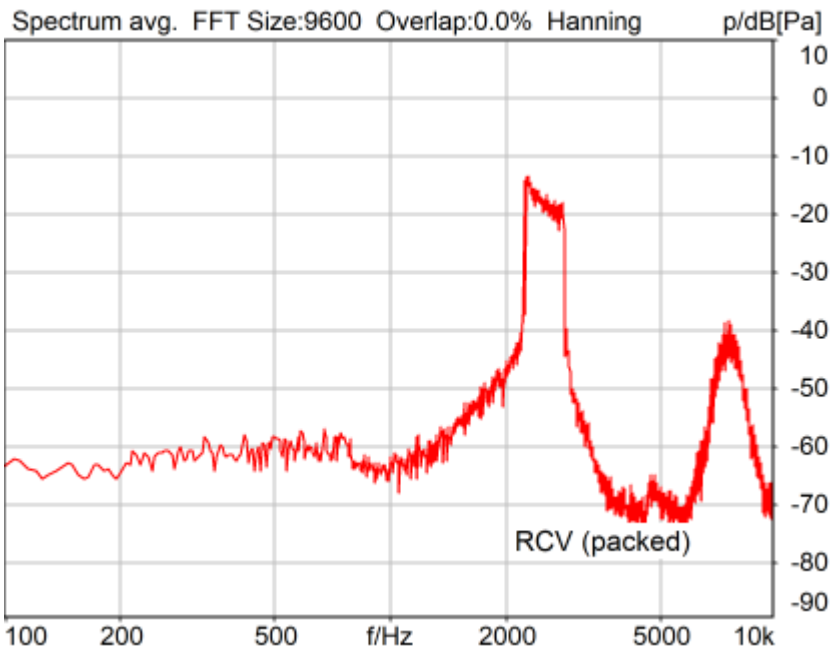
2025/1/16 12:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 21.15 dB (8.76%) Ok

Ok

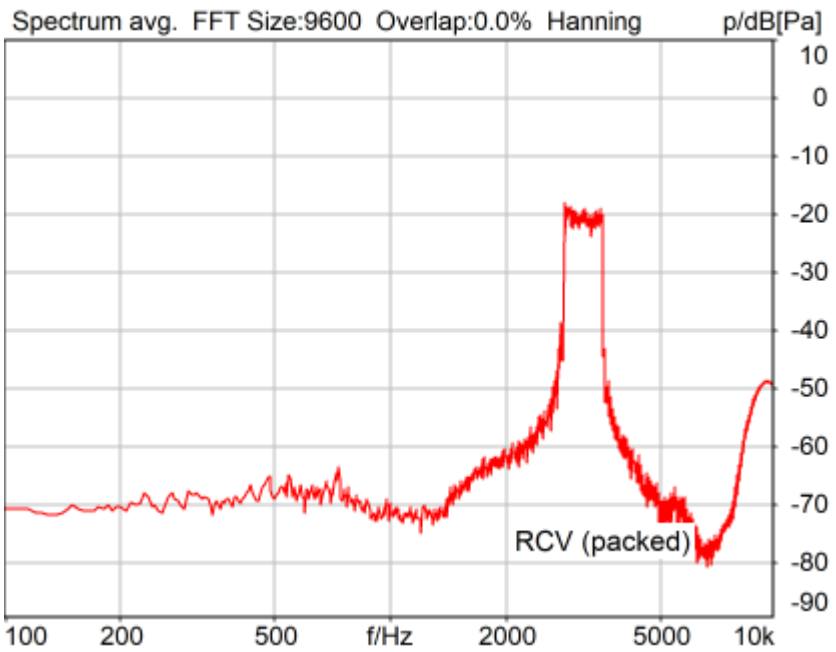
2025/1/16 12:43 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



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

Ok

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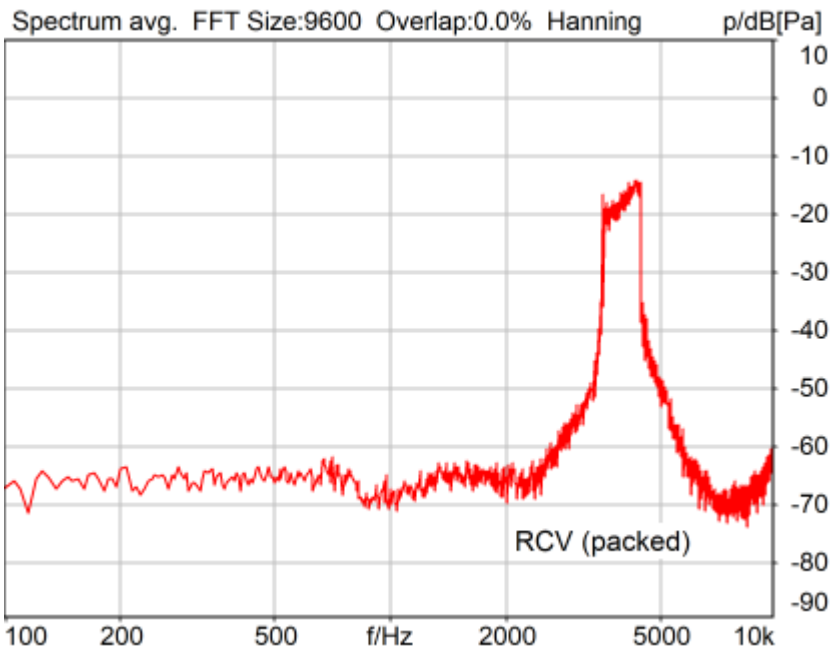
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 22.32 dB (7.65%) Ok

Ok

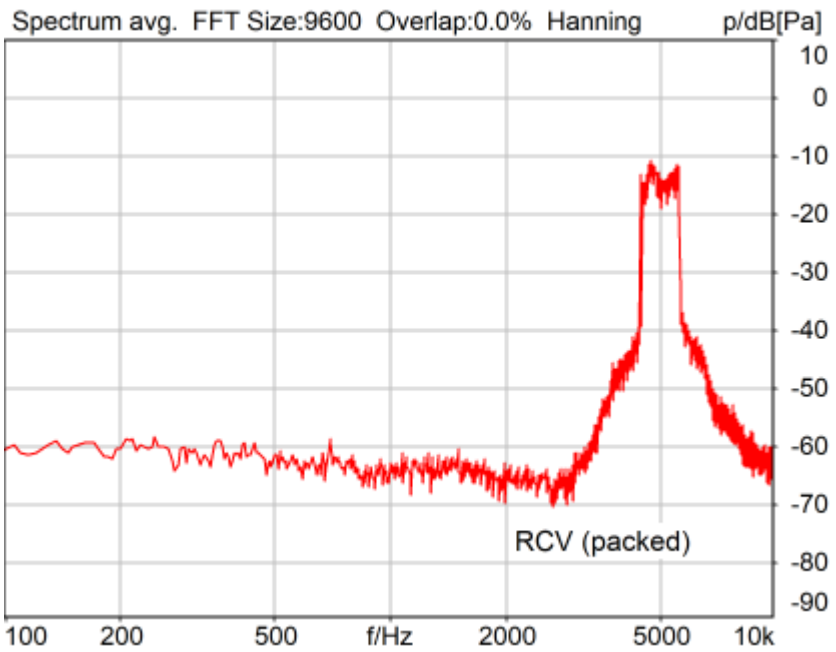
2025/1/16 12:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 22.38 dB (7.60%) Ok

Ok

2025/1/16 12:44 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	27.10 dB
2	315Hz	31.50 dB
3	400Hz	33.69 dB
4	500Hz	32.88 dB
5	630Hz	34.63 dB
6	800Hz	35.31 dB
7	1000Hz	31.84 dB
8	1250Hz	23.38 dB
9	1600Hz	23.84 dB
10	2000Hz	21.24 dB

11	2500Hz	21.15 dB
12	3150Hz	24.69 dB
13	4000Hz	22.32 dB
14	5000Hz	22.38 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.15dB at 2500Hz.

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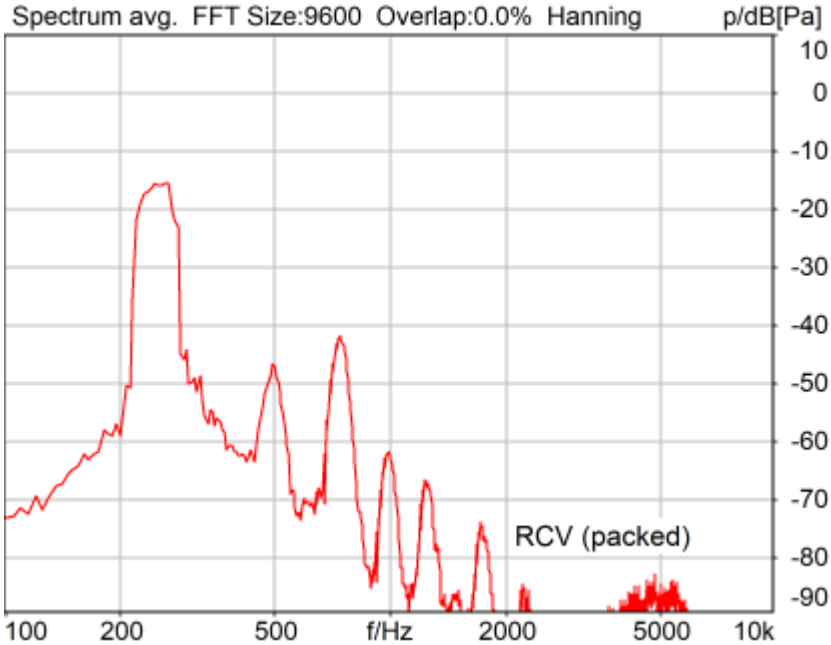
5.2 RCV Distortion and Noise - 250 Hz WB

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



Distortion (Noise) RCV (packed): 26.29 dB (4.85%) Ok

Ok

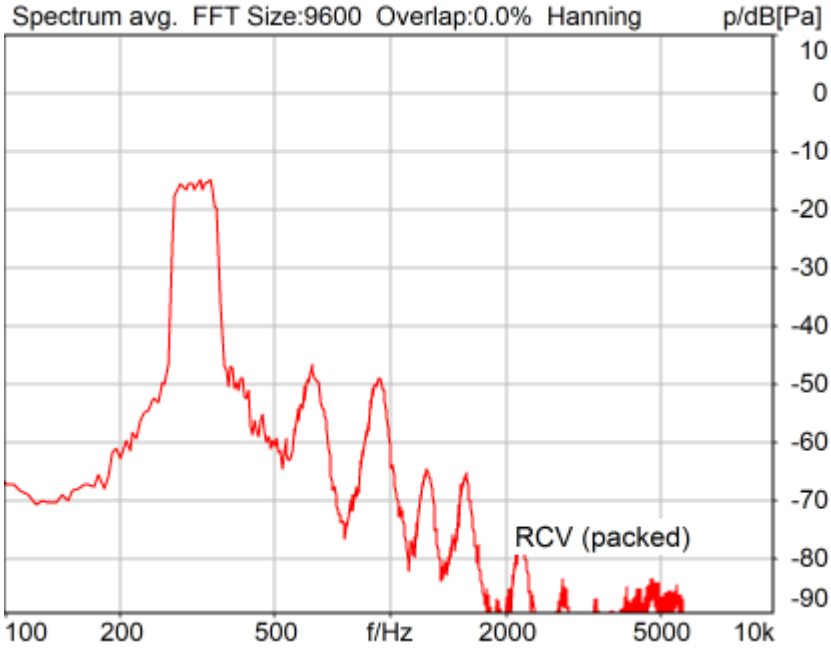
2025/1/16 12:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 315 Hz WB

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



Distortion (Noise) RCV (packed): 30.83 dB (2.87%) Ok

Ok

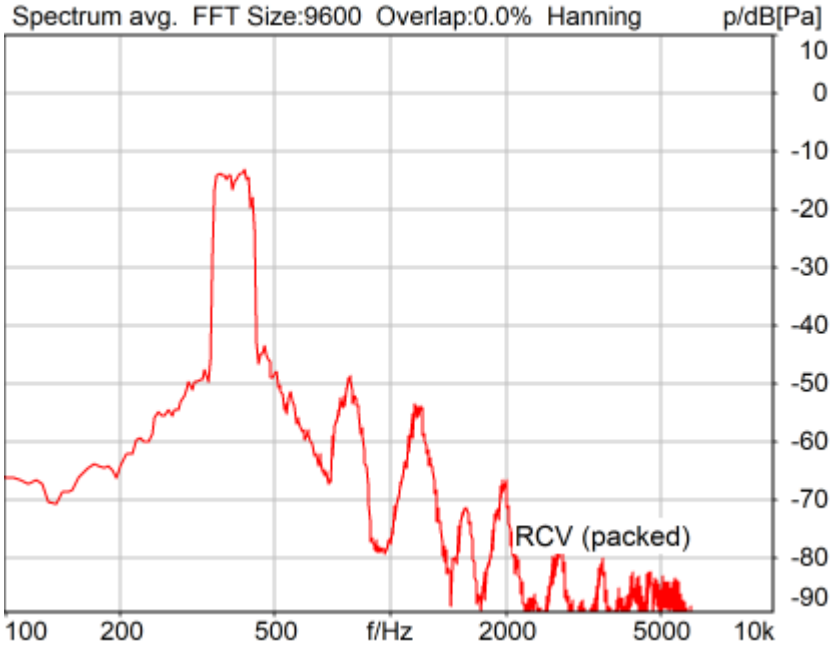
2025/1/16 12:51 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 400 Hz WB

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



Distortion (Noise) RCV (packed): 33.24 dB (2.18%) Ok

Ok

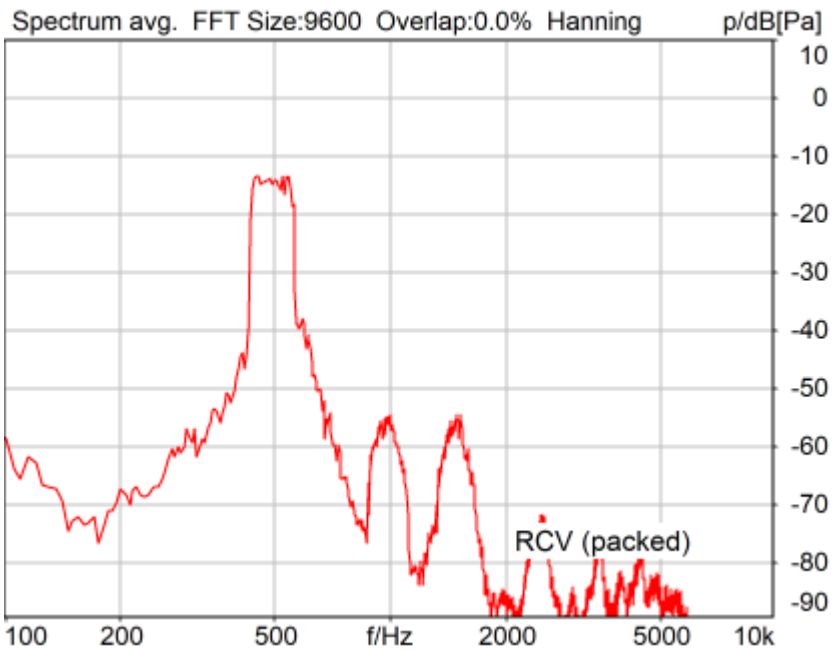
2025/1/16 12:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



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

Ok

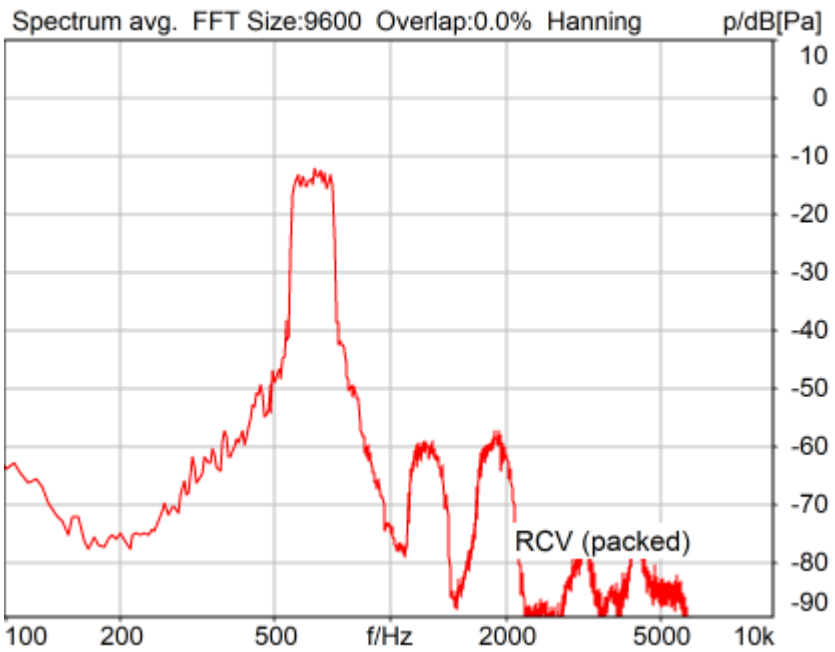
2025/1/16 12:52 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz WB

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



Distortion (Noise) RCV (packed): 34.47 dB (1.89%) Ok

Ok

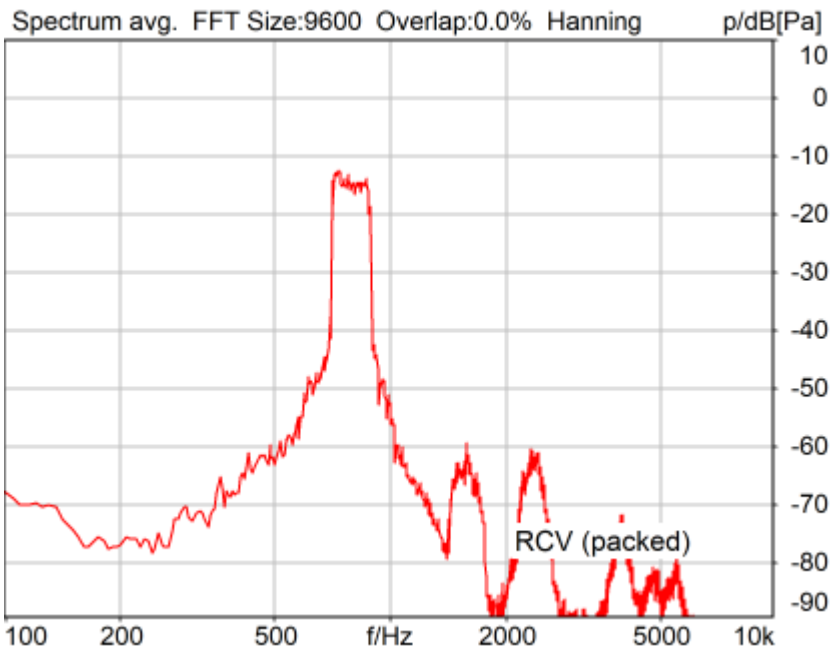
2025/1/16 12:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 35.33 dB (1.71%) Ok

Ok

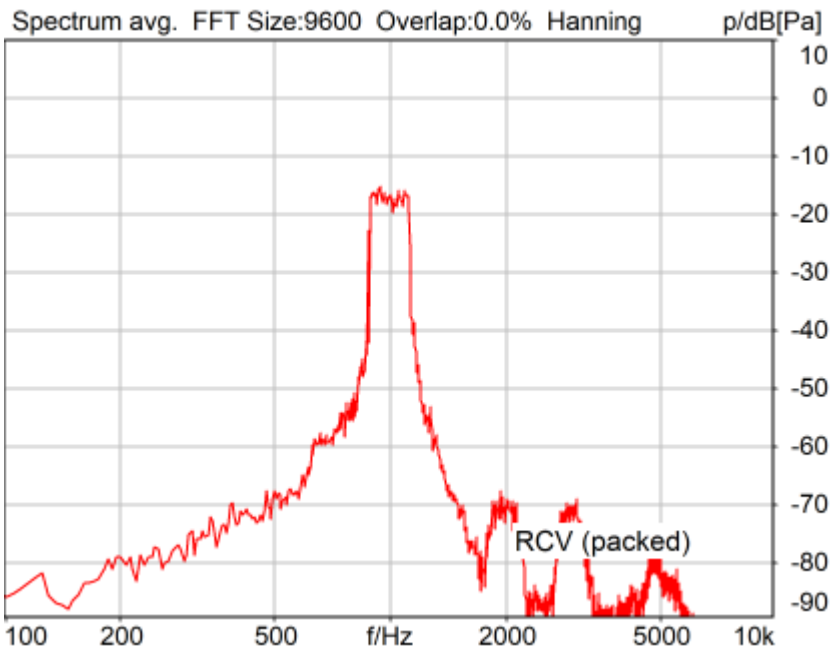
2025/1/16 12:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



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

Ok

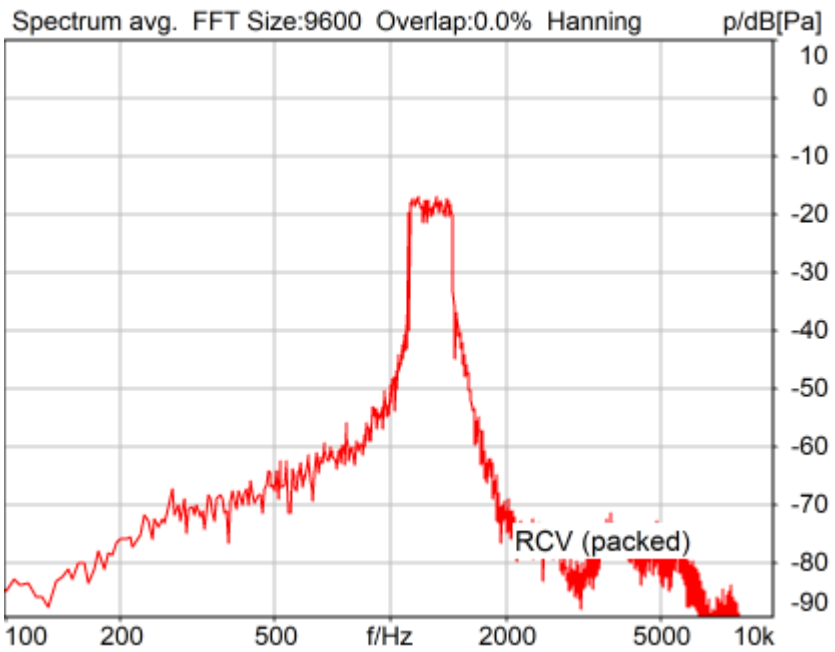
2025/1/16 12:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 24.17 dB (6.19%) Ok

Ok

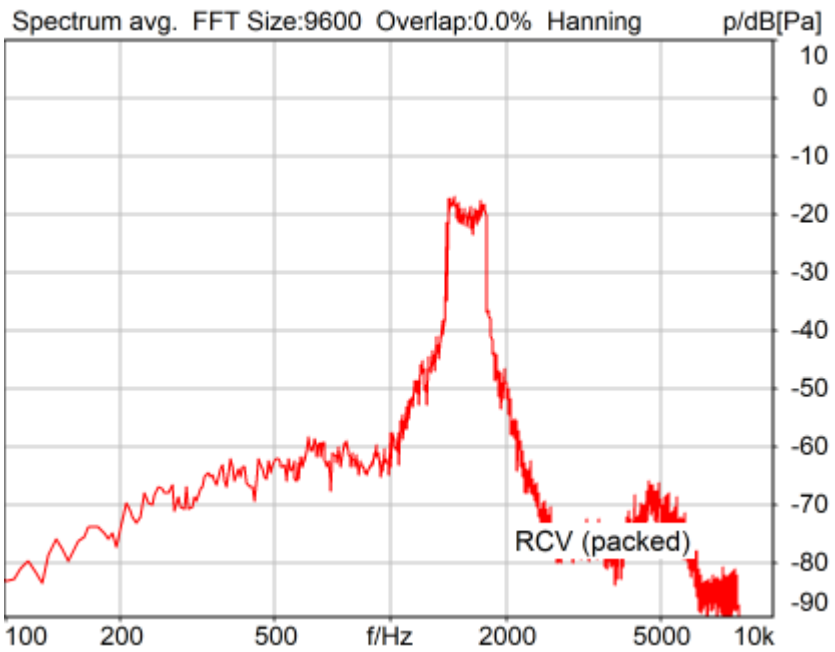
2025/1/16 12:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



Distortion (Noise) RCV (packed): 24.34 dB (6.07%) Ok

Ok

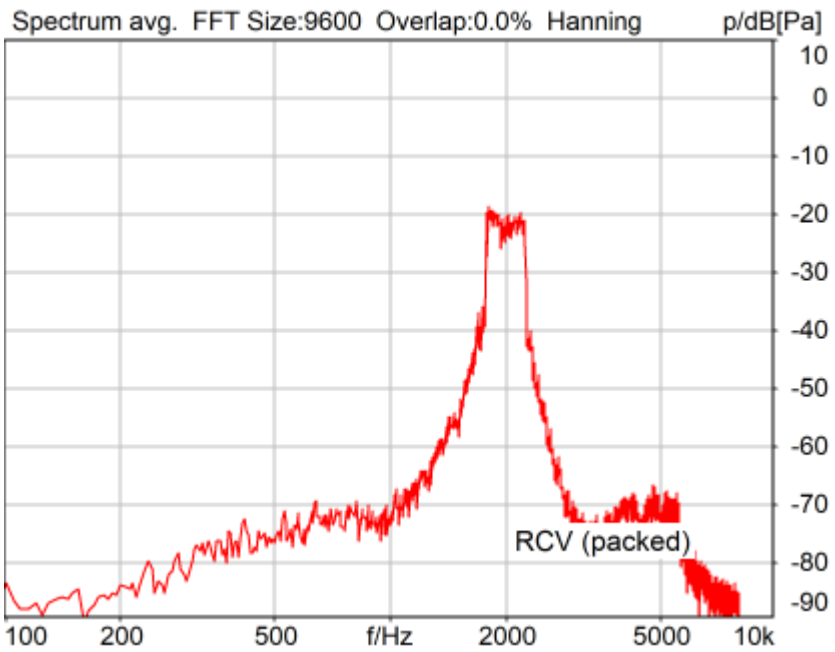
2025/1/16 12:54 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz WB

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



Distortion (Noise) RCV (packed): 21.69 dB (8.24%) Ok

Ok

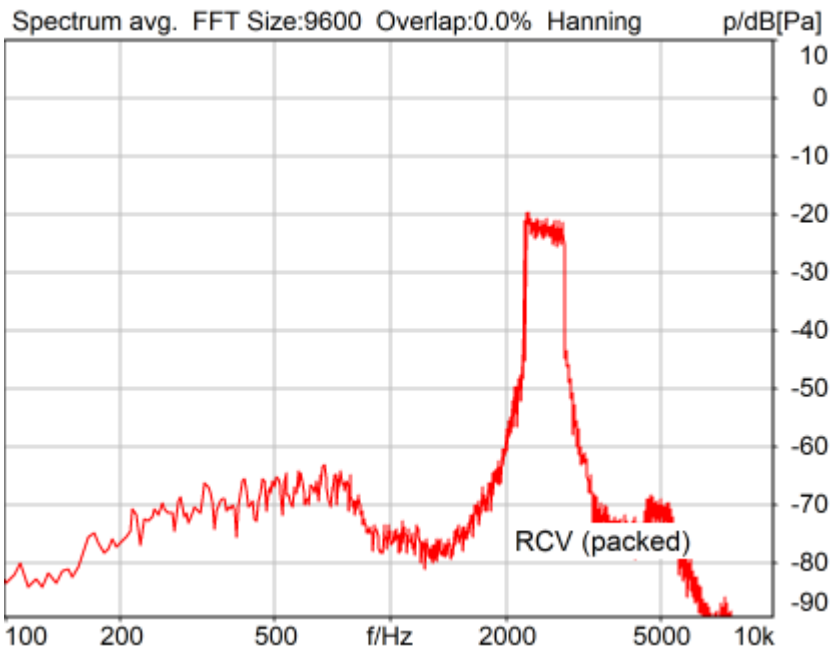
2025/1/16 12:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 28.10 dB (3.94%) Ok

Ok

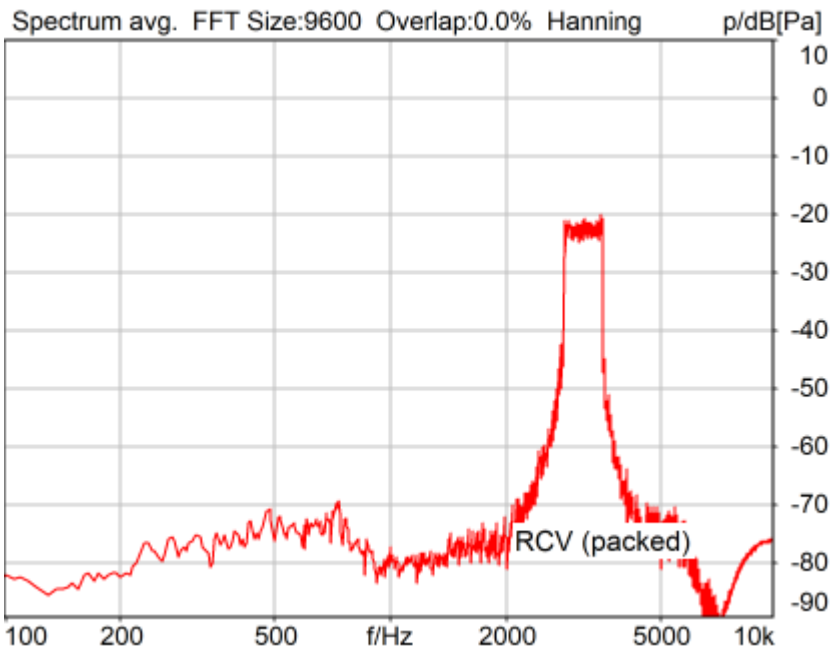
2025/1/16 12:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 30.61 dB (2.95%) Ok

Ok

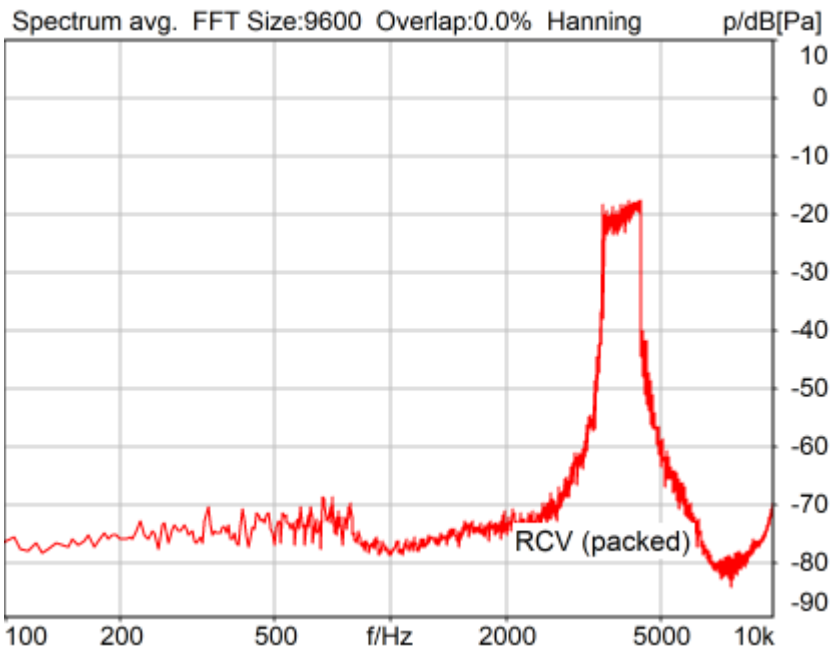
2025/1/16 12:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 4000 Hz WB

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



Distortion (Noise) RCV (packed): 27.60 dB (4.17%) Ok

Ok

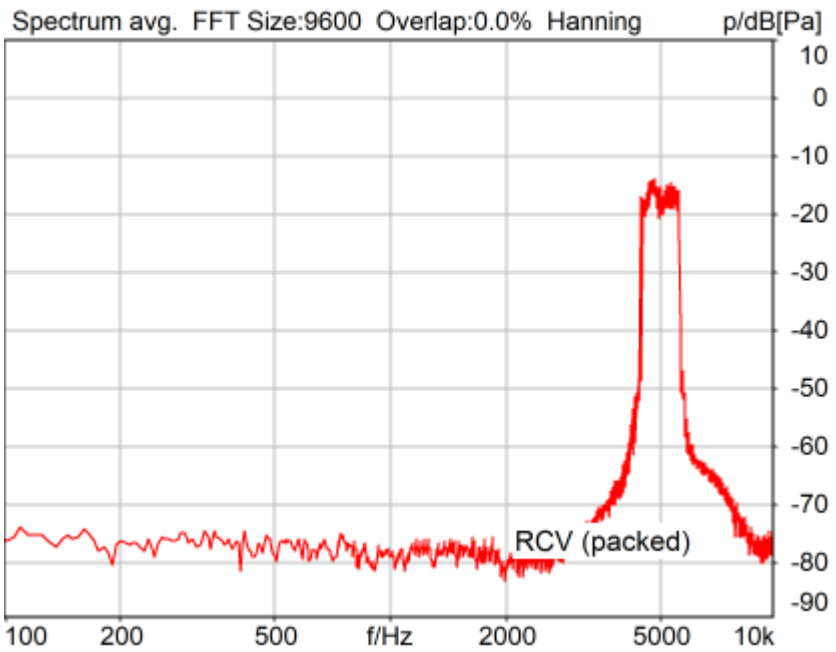
2025/1/16 12:56 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 5000 Hz WB

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



Distortion (Noise) RCV (packed): 36.28 dB (1.53%) Ok

Ok

2025/1/16 12:56 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

Report - Receive Distortion and Noise (Conversational Gain)

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

Region	Frequency	SDNR
1	250Hz	26.29 dB
2	315Hz	30.83 dB
3	400Hz	33.24 dB
4	500Hz	32.53 dB
5	630Hz	34.47 dB
6	800Hz	35.33 dB
7	1000Hz	32.85 dB
8	1250Hz	24.17 dB
9	1600Hz	24.34 dB
10	2000Hz	21.69 dB

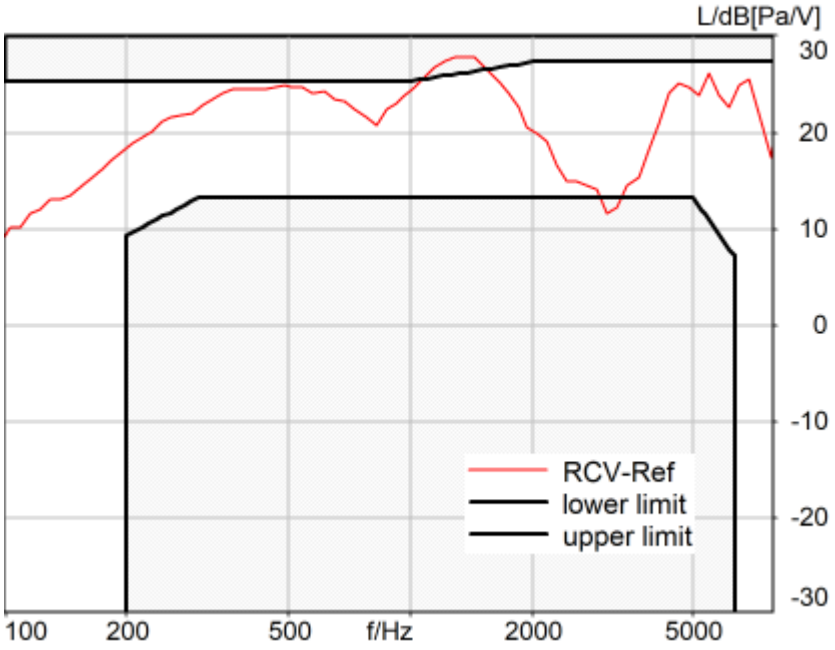
11	2500Hz	28.10 dB
12	3150Hz	30.61 dB
13	4000Hz	27.60 dB
14	5000Hz	36.28 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.69dB at 2000Hz.

2025/1/16 12:57 ACQUA

5.3 Frequency Response 8N FF

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



Absolute minimal distance
-1.75 dB at 1285.9 Hz Not Ok

Not Ok

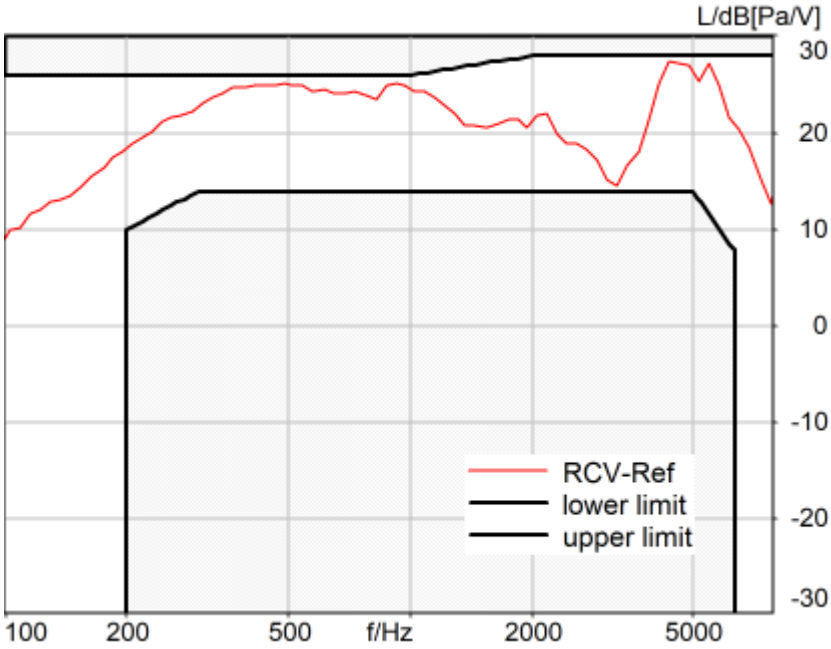
2025/1/16 12:46 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.60 dB at 4369.4 Hz Ok

Ok

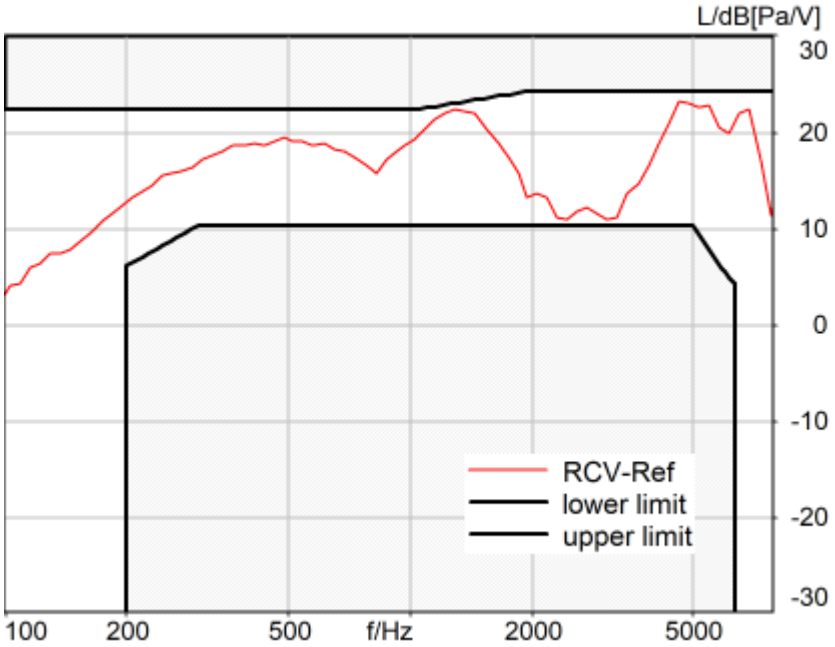
2025/1/16 12:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF

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



Absolute minimal distance
0.69 dB at 1285.9 Hz Ok

Ok

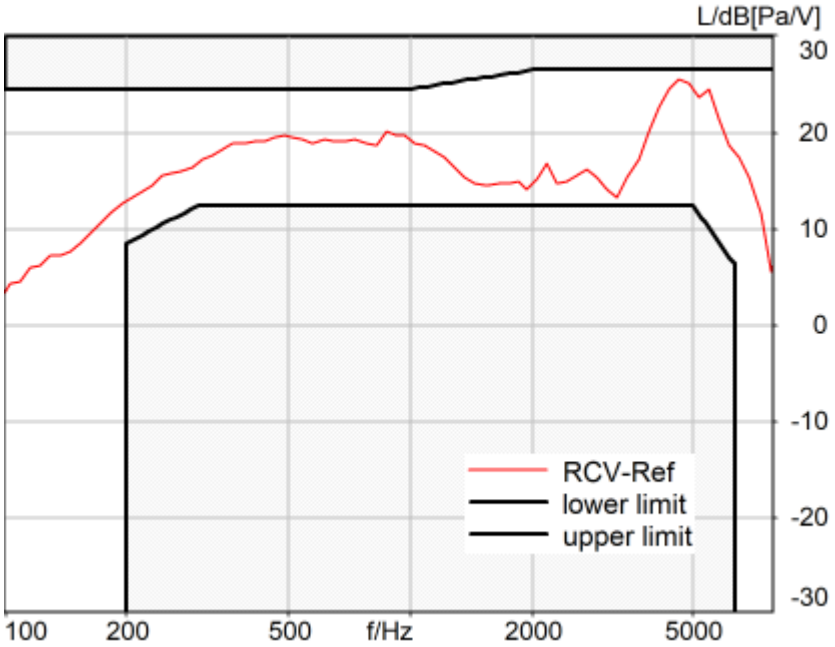
2025/1/16 12:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
0.86 dB at 4620.1 Hz Ok

Ok

2025/1/16 12:49 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance