
Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
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Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:45
Responsible Person	audio

Status Overview

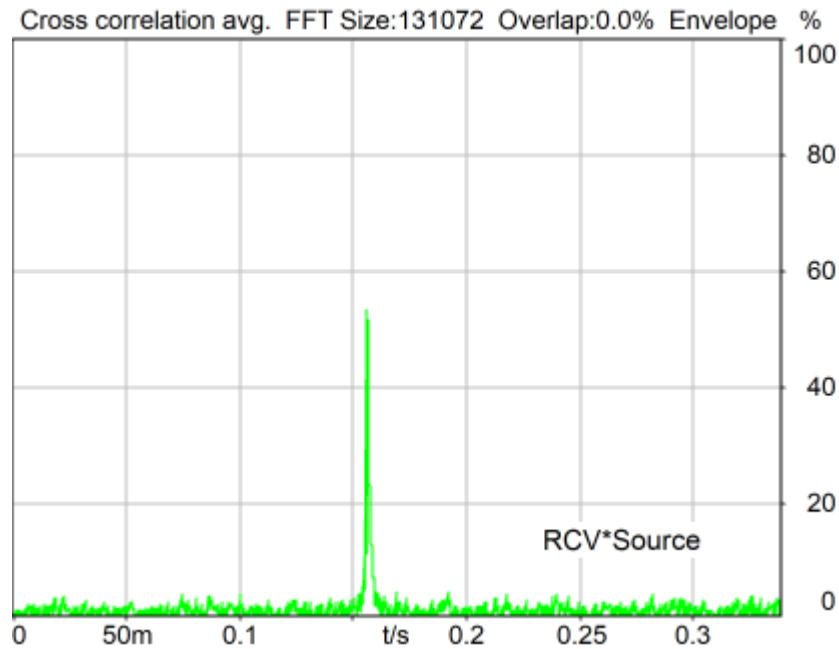
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	156.7	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	21.62	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	16.21	HUHAO_2403_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	34.01	HUHAO_2403_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	33.69	HUHAO_2403_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	35.81	HUHAO_2403_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	35.27	HUHAO_2403_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	32.40	HUHAO_2403_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	23.71	HUHAO_2403_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	24.36	HUHAO_2403_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	21.20	HUHAO_2403_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	24.66	HUHAO_2403_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	29.35	HUHAO_2403_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)	21.20	HUHAO_2403_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	33.20	HUHAO_2403_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	33.14	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.62	HUHAO_2403_LTE

Noise - 630 Hz NB		[dB], 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	33.70	HUHAO_2403_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	32.78	HUHAO_2403_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	23.03	HUHAO_2403_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	24.27	HUHAO_2403_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	21.93	HUHAO_2403_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	28.68	HUHAO_2403_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	27.36	HUHAO_2403_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)	21.93	HUHAO_2403_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], 1285.9 Hz	-2.19	HUHAO_2403_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], 924.0 Hz	0.66	HUHAO_2403_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], 1360.9 Hz	0.34	HUHAO_2403_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	2.57	HUHAO_2403_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
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

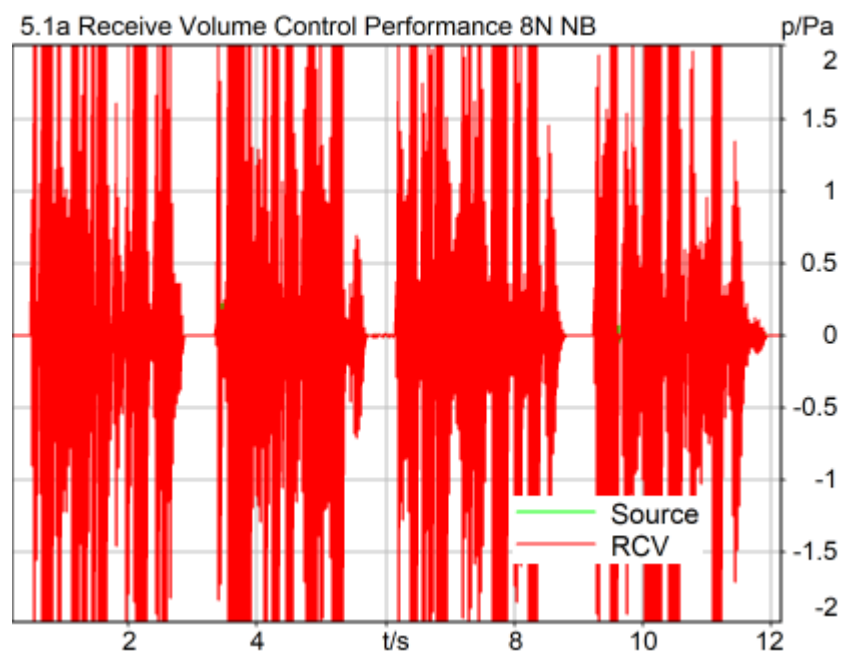


Channel	Delay
RCV*Source	156.7 ms

2025/1/23 16:41 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	91.62 dB[SPL]	84.43%	21.62 dB[SPL]	Ok

Ok

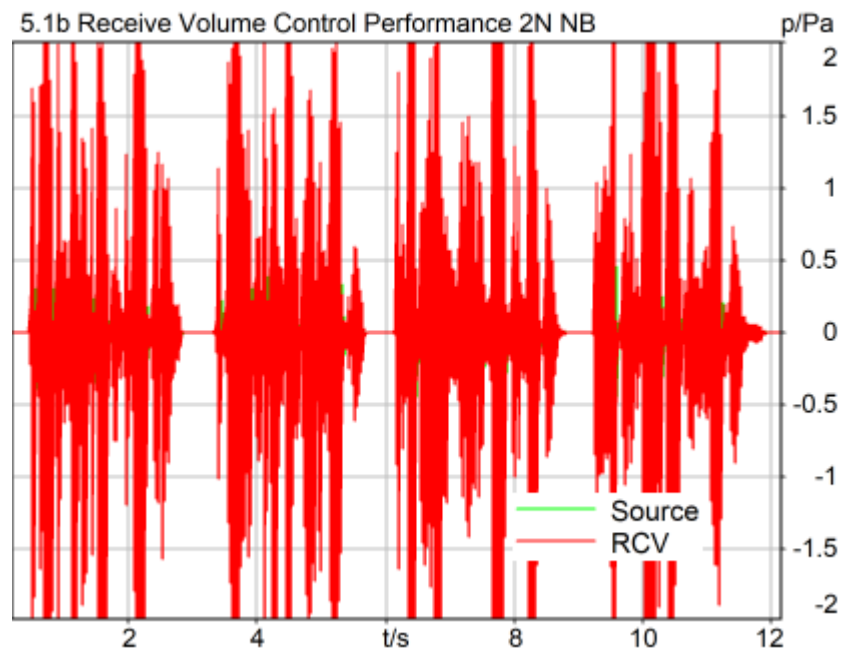
2025/1/23 16:55 ACQUA 6.0.200

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	86.21 dB[SPL]	84.38%	16.21 dB[SPL]	Ok

Ok

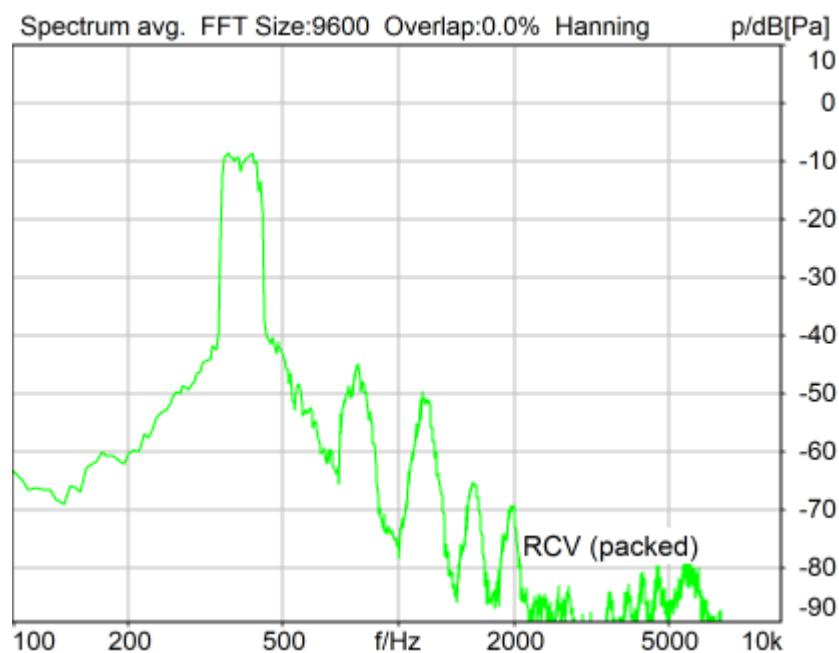
2025/1/23 17:05 ACQUA 6.0.200

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): 34.01 dB (1.99%) Ok

Ok

2025/1/23 16:50 ACQUA 6.0.200

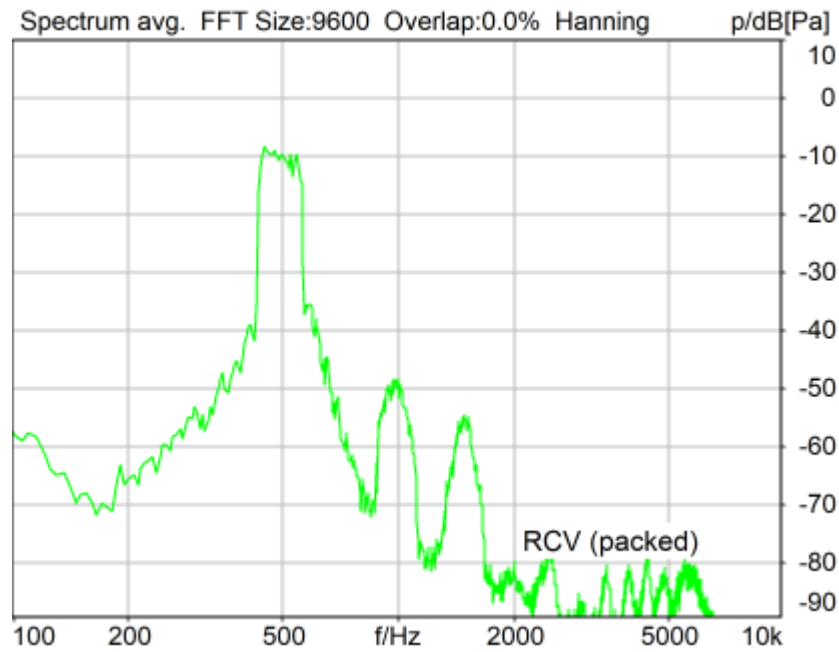
Unmodified HEAD acoustics Measurement Descriptor

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): 33.69 dB (2.07%) Ok

Ok

2025/1/23 16:51 ACQUA 6.0.200

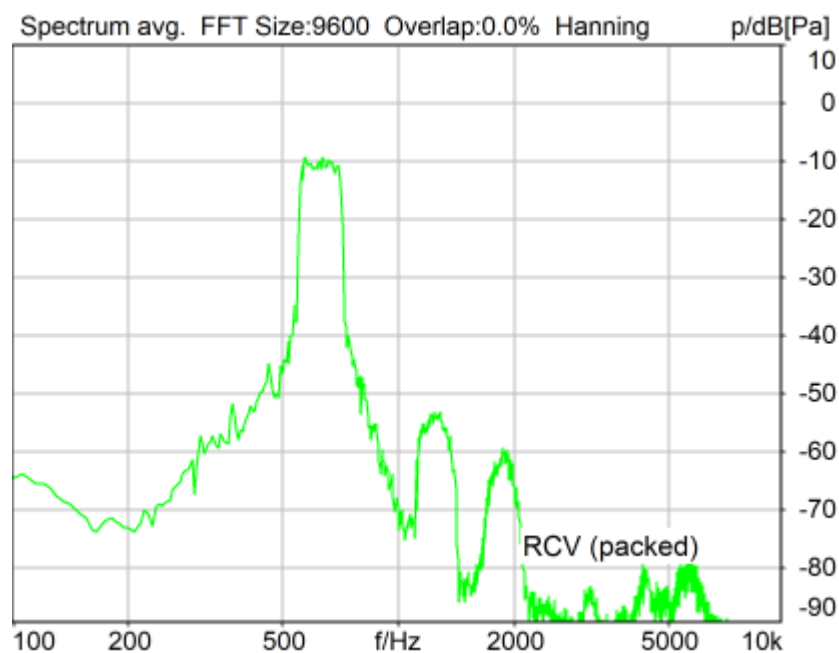
Unmodified HEAD acoustics Measurement Descriptor

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): 35.81 dB (1.62%) Ok

Ok

2025/1/23 16:51 ACQUA 6.0.200

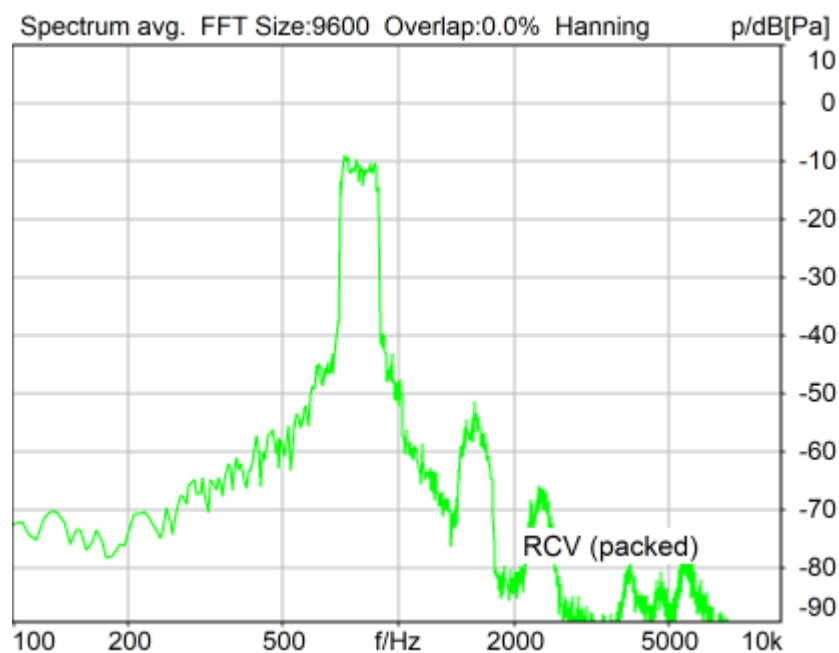
Unmodified HEAD acoustics Measurement Descriptor

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): 35.27 dB (1.72%) Ok

Ok

2025/1/23 16:52 ACQUA 6.0.200

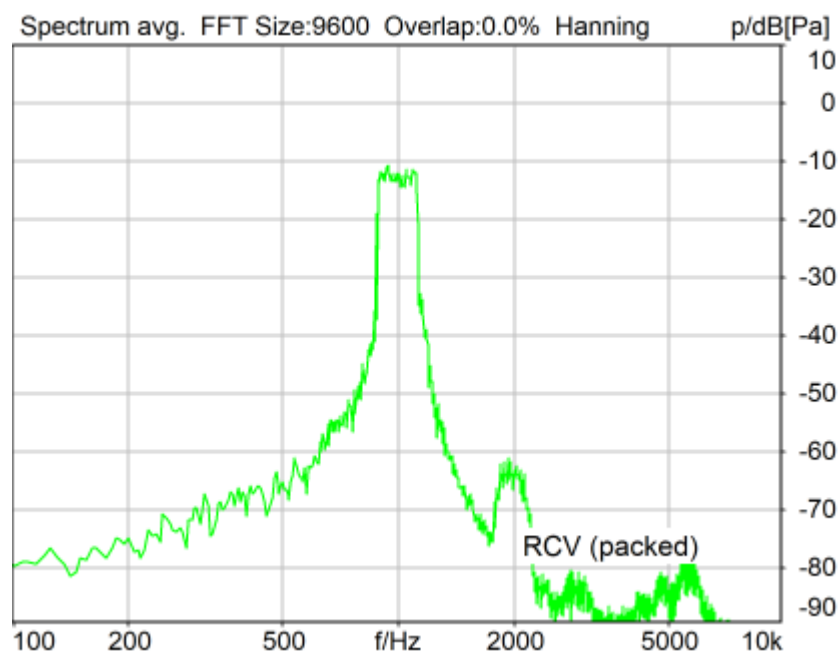
Unmodified HEAD acoustics Measurement Descriptor

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): 32.40 dB (2.40%) Ok

Ok

2025/1/23 16:52 ACQUA 6.0.200

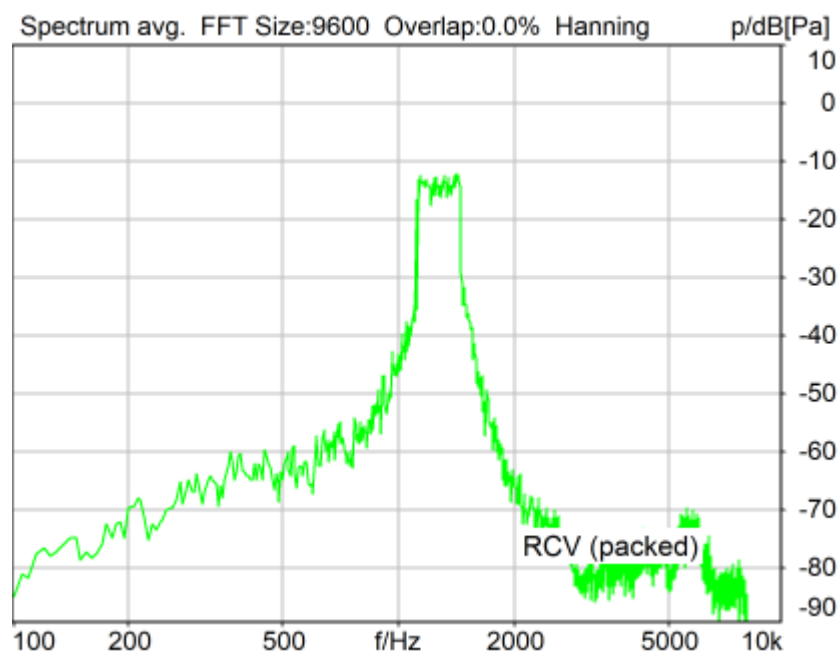
Unmodified HEAD acoustics Measurement Descriptor

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): 23.71 dB (6.53%) Ok

Ok

2025/1/23 16:53 ACQUA 6.0.200

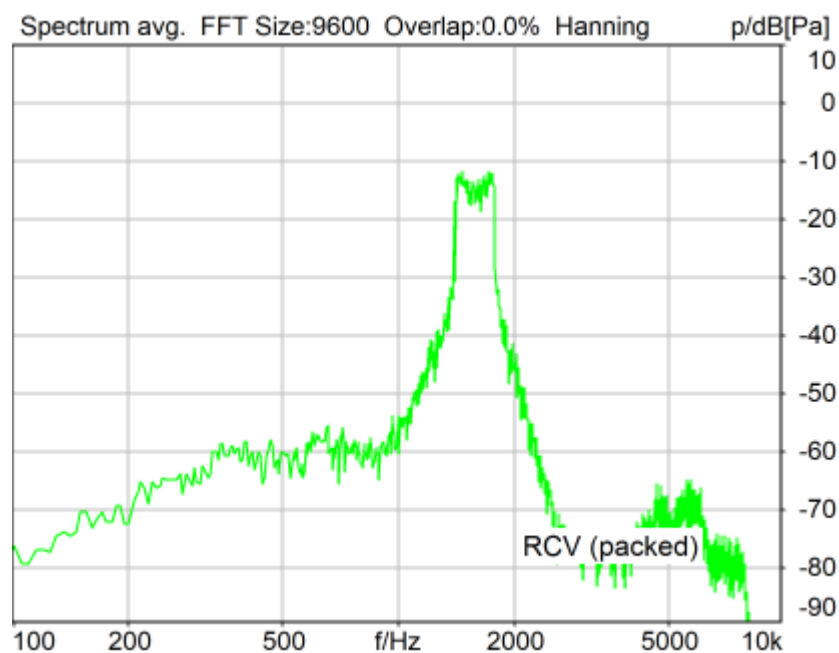
Unmodified HEAD acoustics Measurement Descriptor

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): 24.36 dB (6.05%) Ok

Ok

2025/1/23 16:53 ACQUA 6.0.200

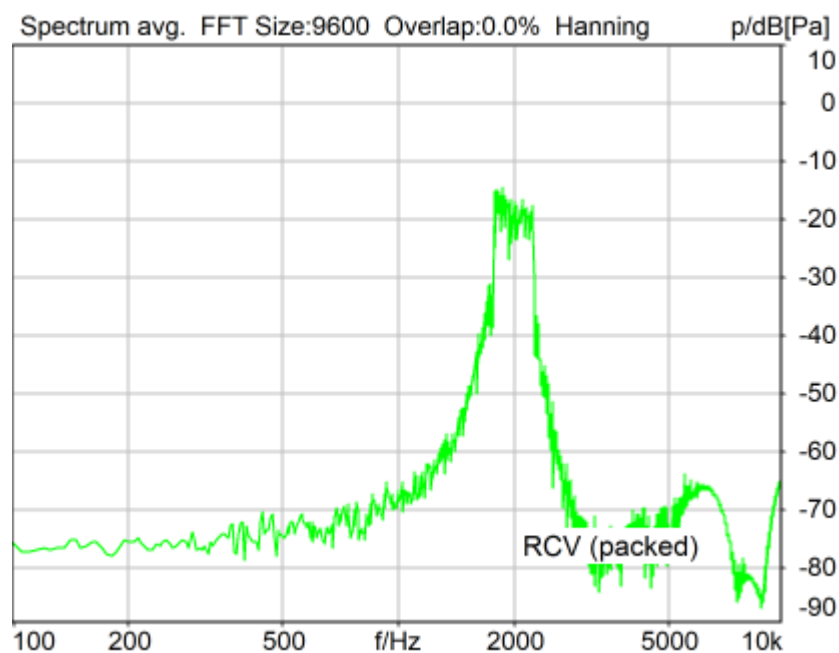
Unmodified HEAD acoustics Measurement Descriptor

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): 21.20 dB (8.71%) Ok

Ok

2025/1/23 16:53 ACQUA 6.0.200

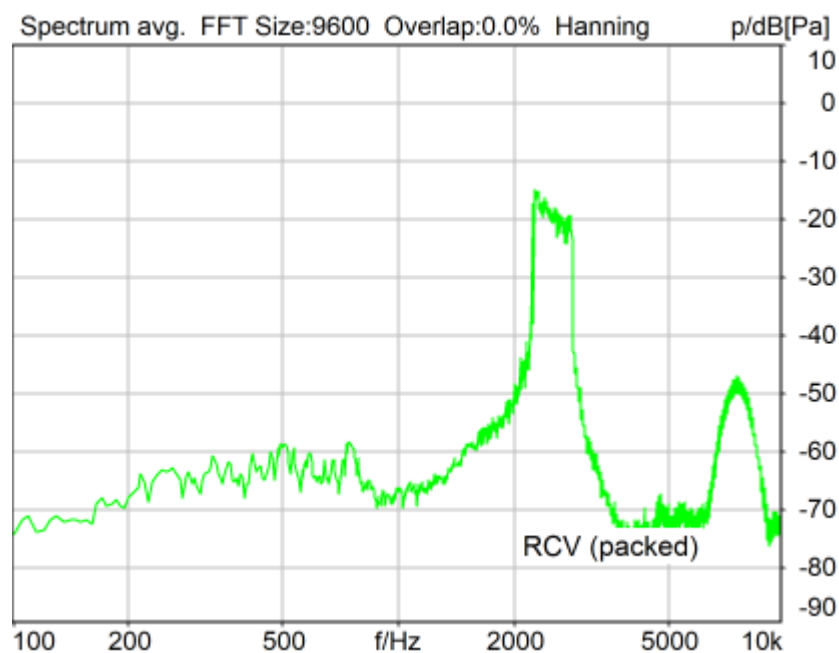
Unmodified HEAD acoustics Measurement Descriptor

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): 24.66 dB (5.85%) Ok

Ok

2025/1/23 16:54 ACQUA 6.0.200

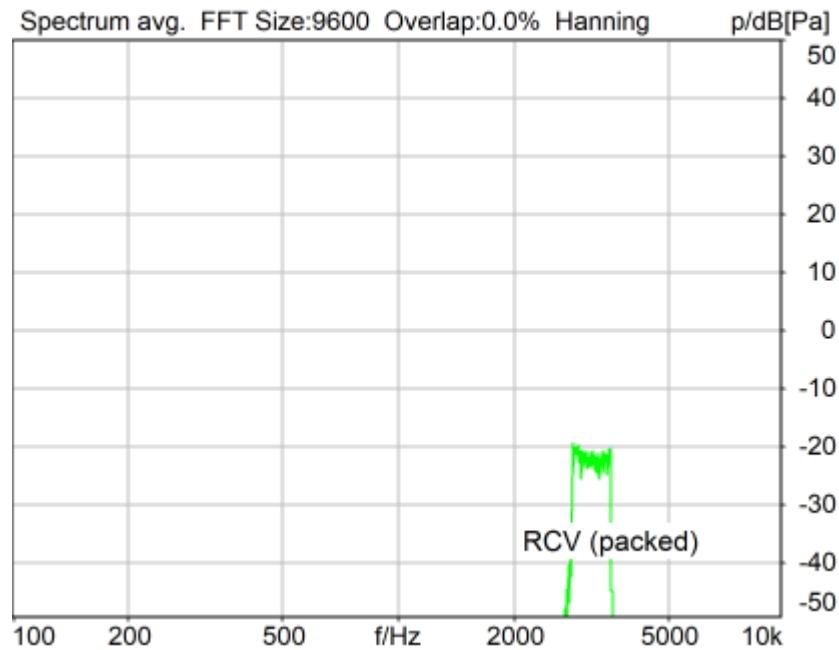
Unmodified HEAD acoustics Measurement Descriptor

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): 29.35 dB (3.41%) Ok

Ok

2025/1/23 16:56 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 \ Narrowband \ 5.2 Receive Distortion and Noise 8N

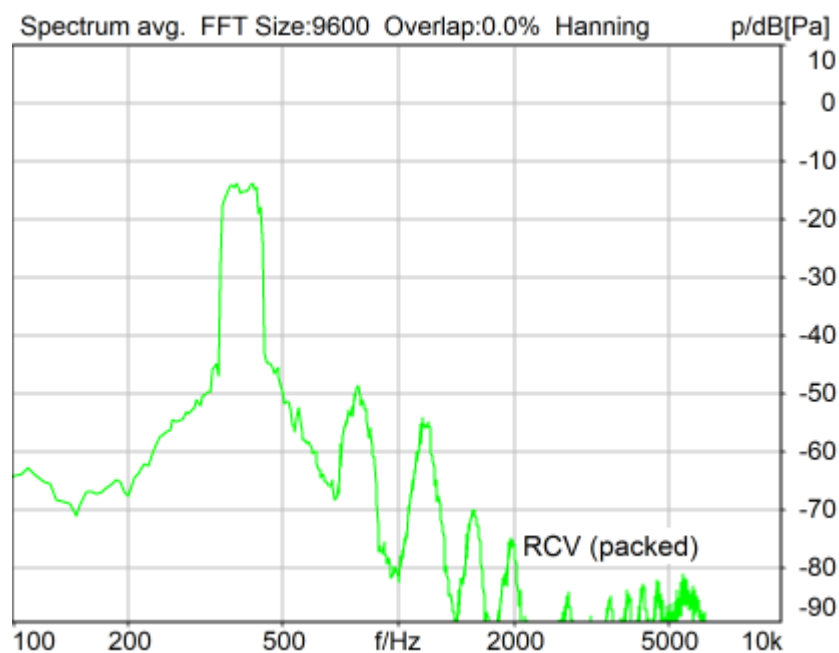
Region	Frequency	SDNR
1	400Hz	34.01 dB
2	500Hz	33.69 dB
3	630Hz	35.81 dB
4	800Hz	35.27 dB
5	1000Hz	32.40 dB
6	1250Hz	23.71 dB
7	1600Hz	24.36 dB
8	2000Hz	21.20 dB
9	2500Hz	24.66 dB
10	3150Hz	29.35 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.20dB at 2000Hz.

2025/1/23 16:56 ACQUA

5.2 RCV Distortion and Noise - 400 Hz NB

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



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

Ok

2025/1/23 17:00 ACQUA 6.0.200

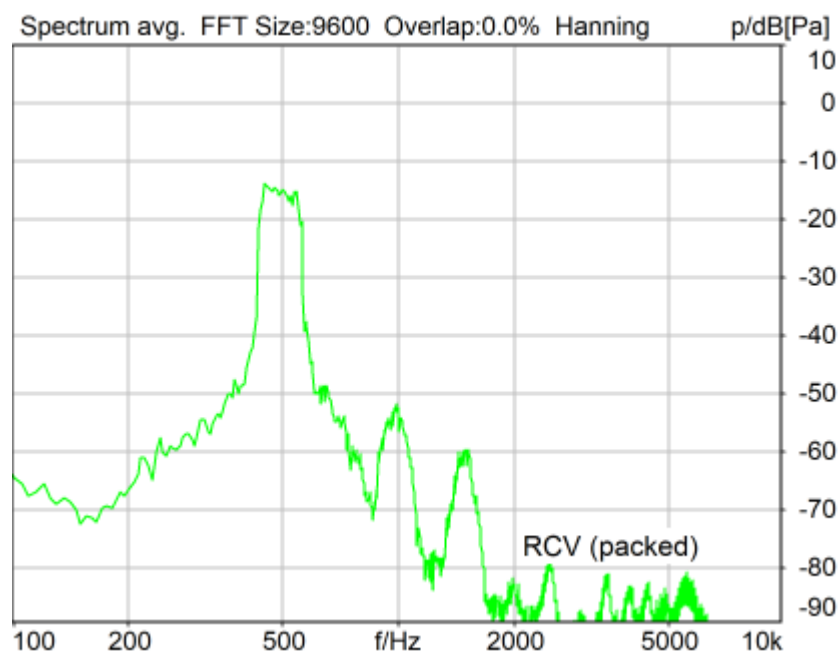
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 33.14 dB (2.20%) Ok

Ok

2025/1/23 17:01 ACQUA 6.0.200

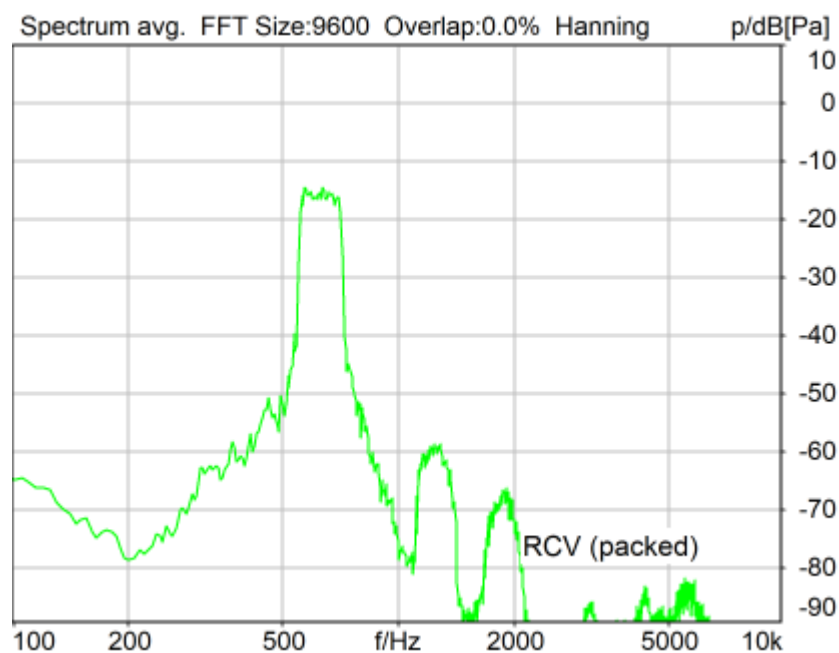
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 630 Hz NB

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



Distortion (Noise) RCV (packed): 35.62 dB (1.66%) Ok

Ok

2025/1/23 17:01 ACQUA 6.0.200

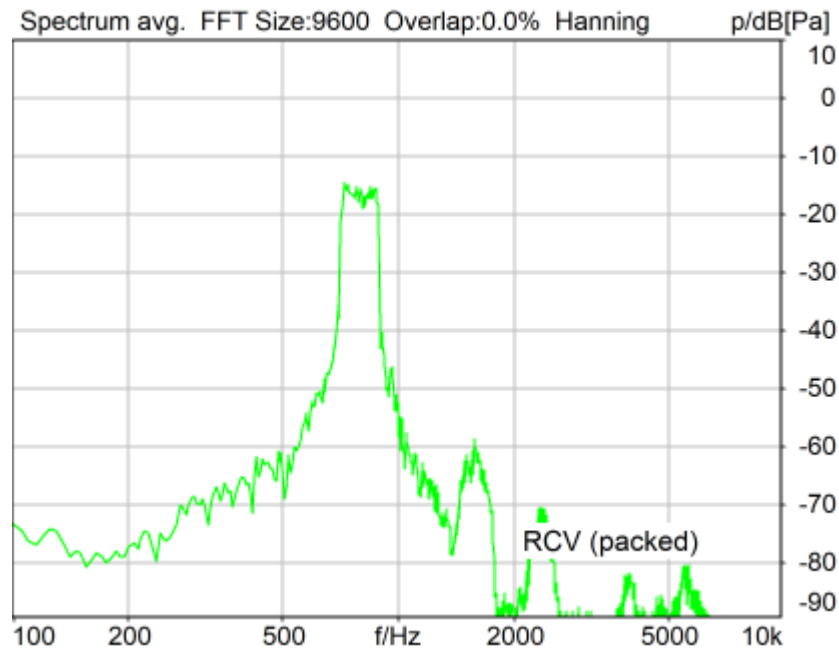
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 33.70 dB (2.06%) Ok

Ok

2025/1/23 17:02 ACQUA 6.0.200

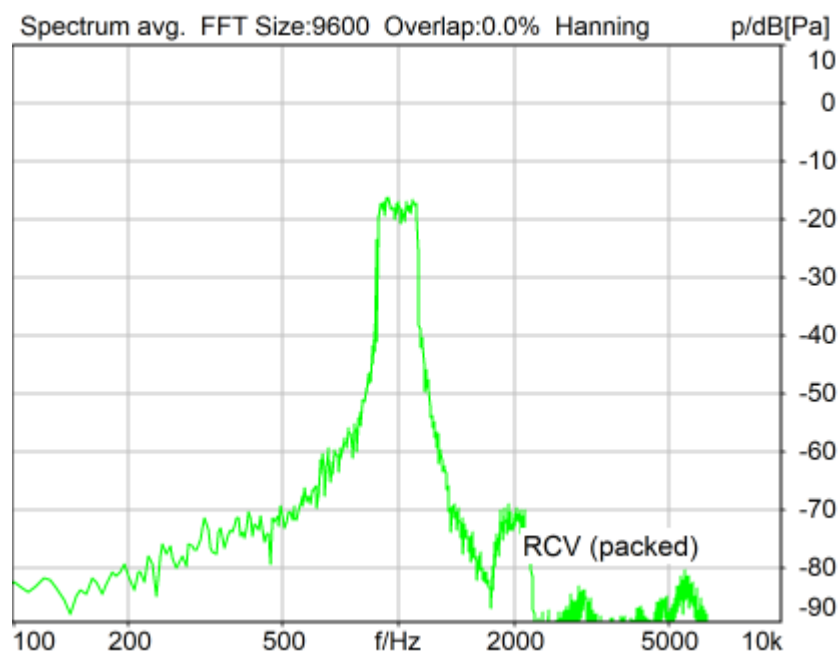
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz 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

2025/1/23 17:02 ACQUA 6.0.200

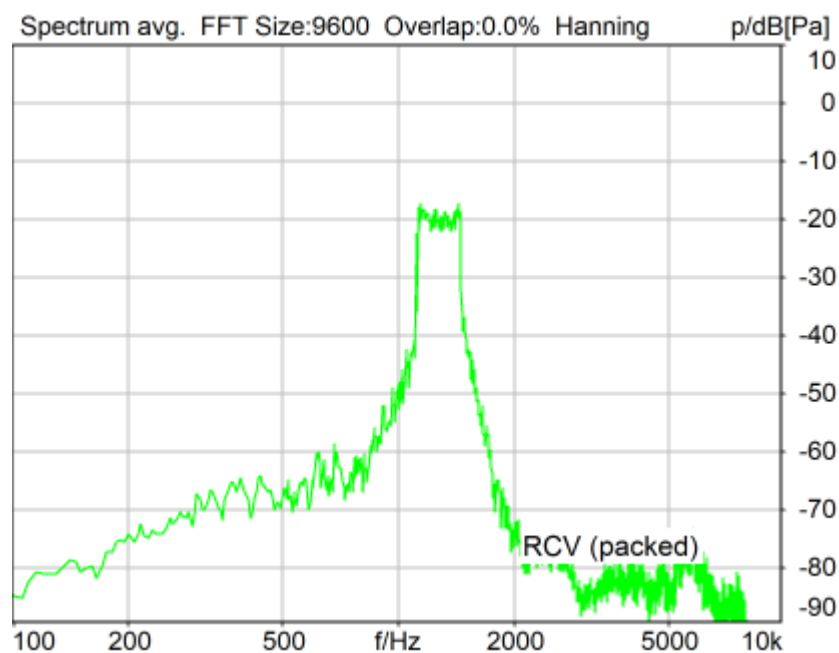
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz NB

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



Distortion (Noise) RCV (packed): 23.03 dB (7.05%) Ok

Ok

2025/1/23 17:02 ACQUA 6.0.200

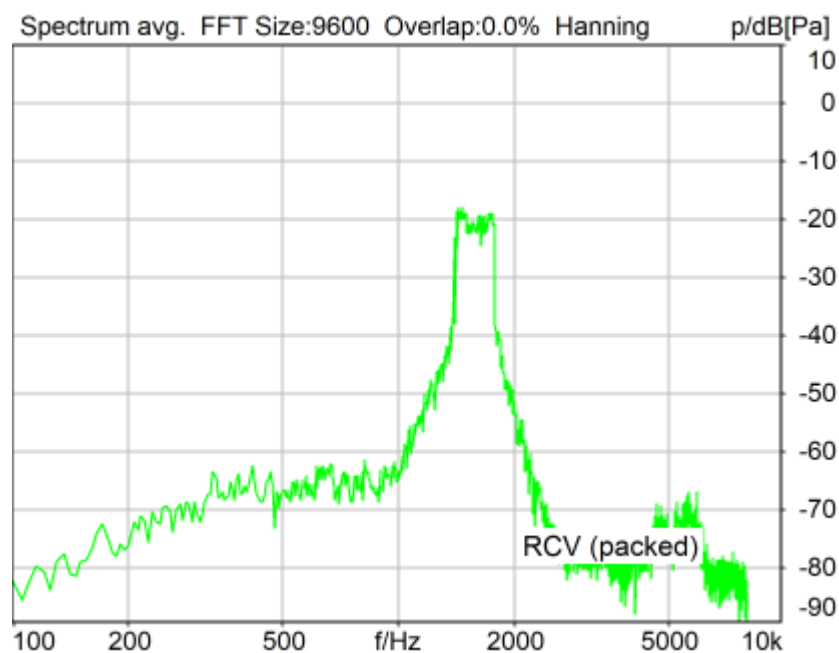
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



Distortion (Noise) RCV (packed): 24.27 dB (6.12%) Ok

Ok

2025/1/23 17:03 ACQUA 6.0.200

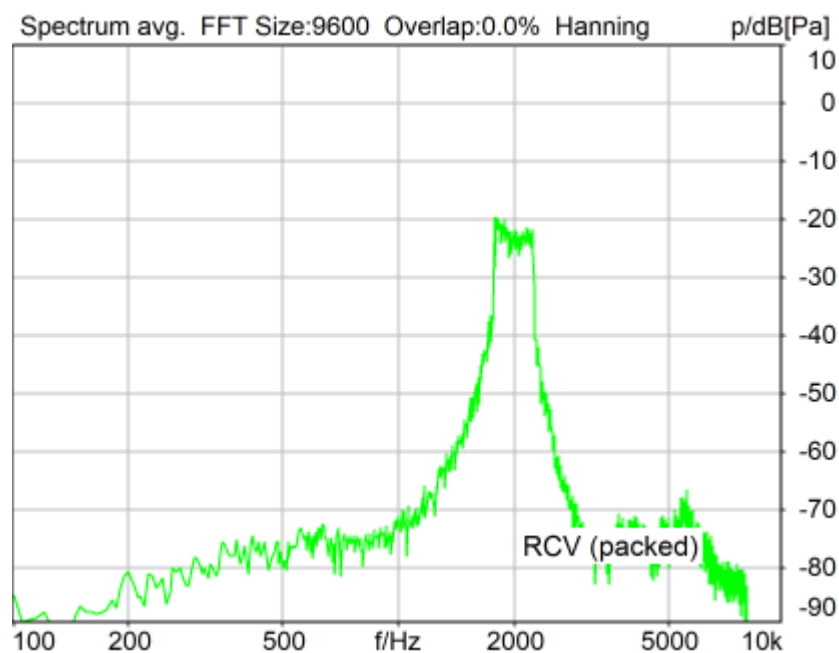
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 21.93 dB (8.01%) Ok

Ok

2025/1/23 17:03 ACQUA 6.0.200

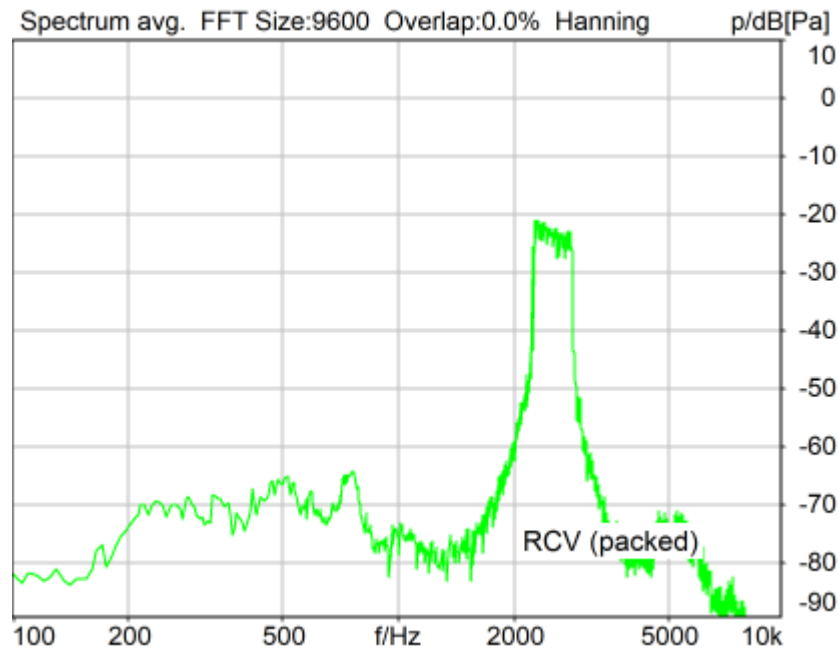
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 28.68 dB (3.68%) Ok

Ok

2025/1/23 17:04 ACQUA 6.0.200

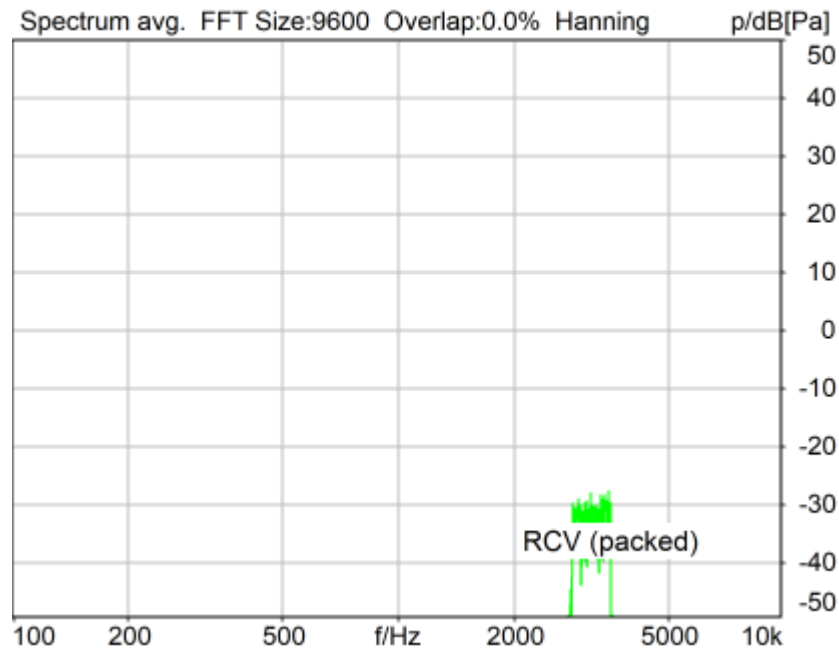
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 27.36 dB (4.28%) Ok

Ok

2025/1/23 17:04 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

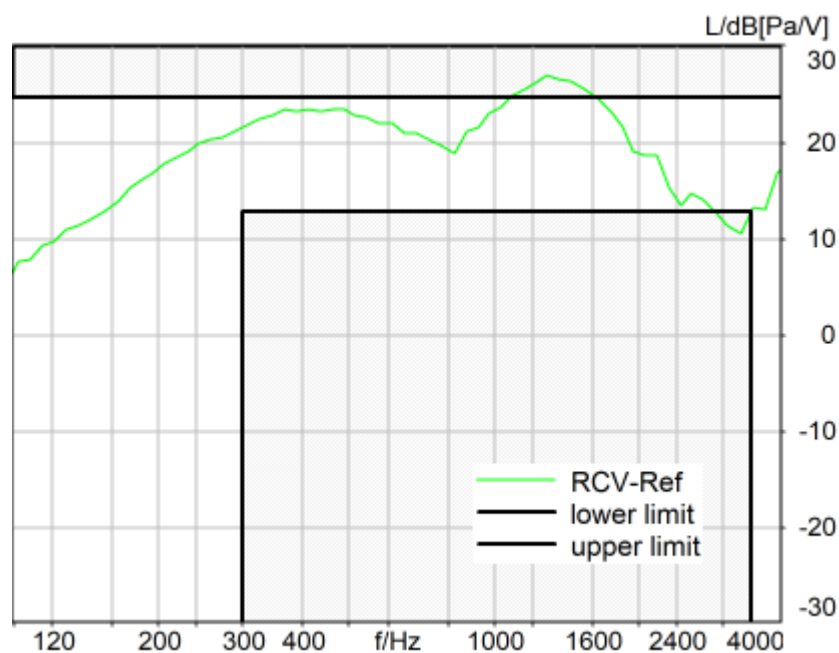
Region	Frequency	SDNR
1	400Hz	33.20 dB
2	500Hz	33.14 dB
3	630Hz	35.62 dB
4	800Hz	33.70 dB
5	1000Hz	32.78 dB
6	1250Hz	23.03 dB
7	1600Hz	24.27 dB
8	2000Hz	21.93 dB
9	2500Hz	28.68 dB
10	3150Hz	27.36 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 21.93dB at 2000Hz.

2025/1/23 17:04 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
 -2.19 dB at 1285.9 Hz Not Ok

Not Ok

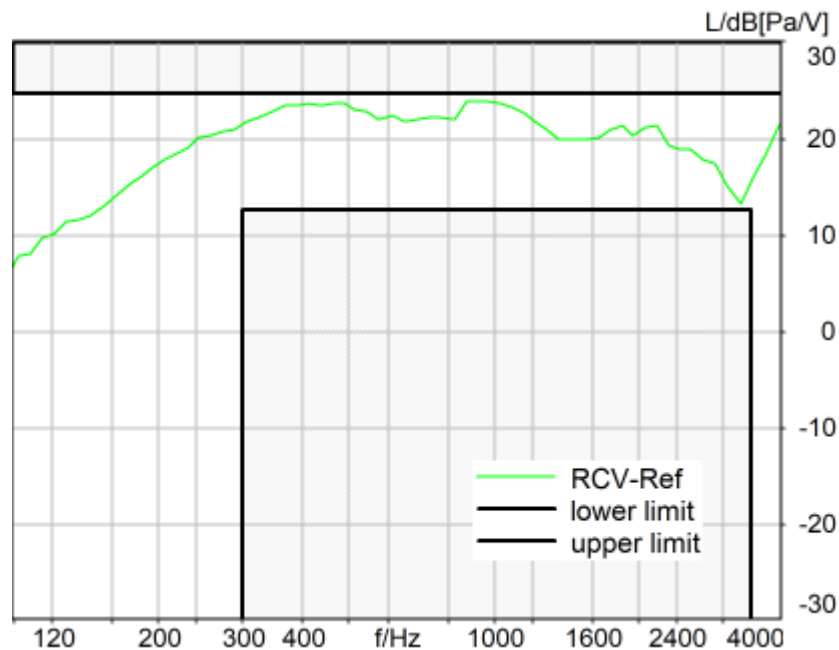
2025/1/23 16:43 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance

0.66 dB at 924.0 Hz Ok

Ok

2025/1/23 16:44 ACQUA 6.0.200

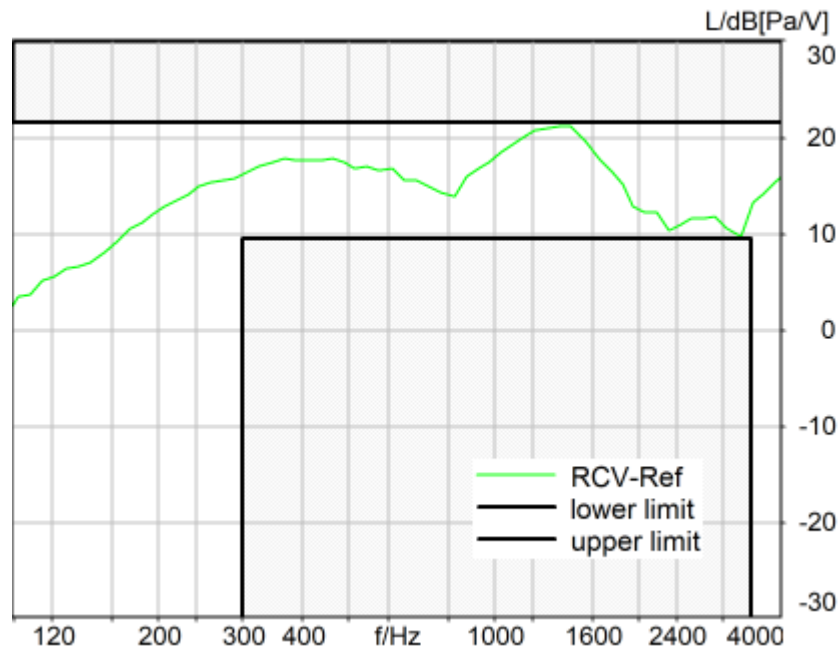
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
 0.34 dB at 1360.9 Hz Ok

Ok

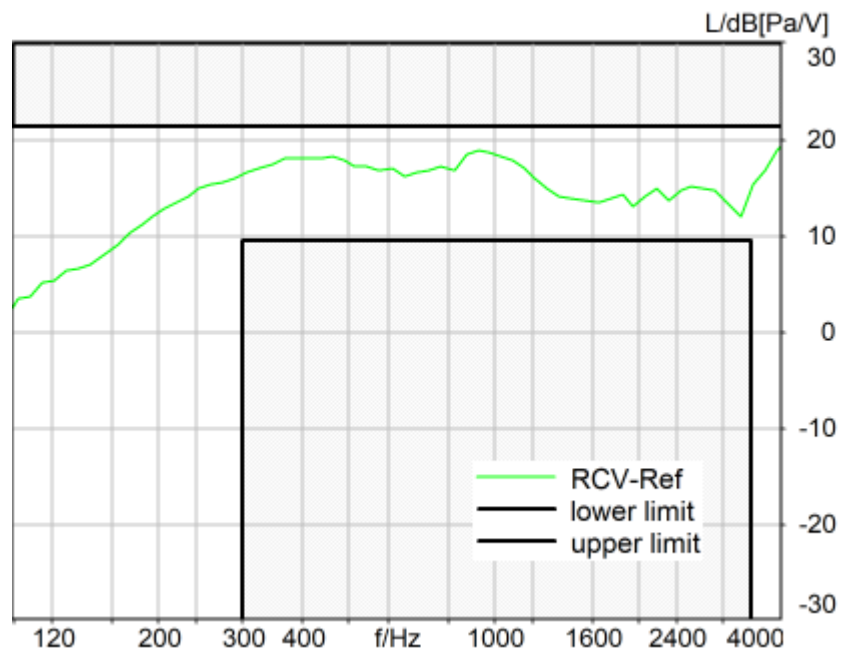
2025/1/23 17:09 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
 2.57 dB at 3882.4 Hz Ok

Ok

2025/1/23 17:09 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
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Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:47
Responsible Person	audio

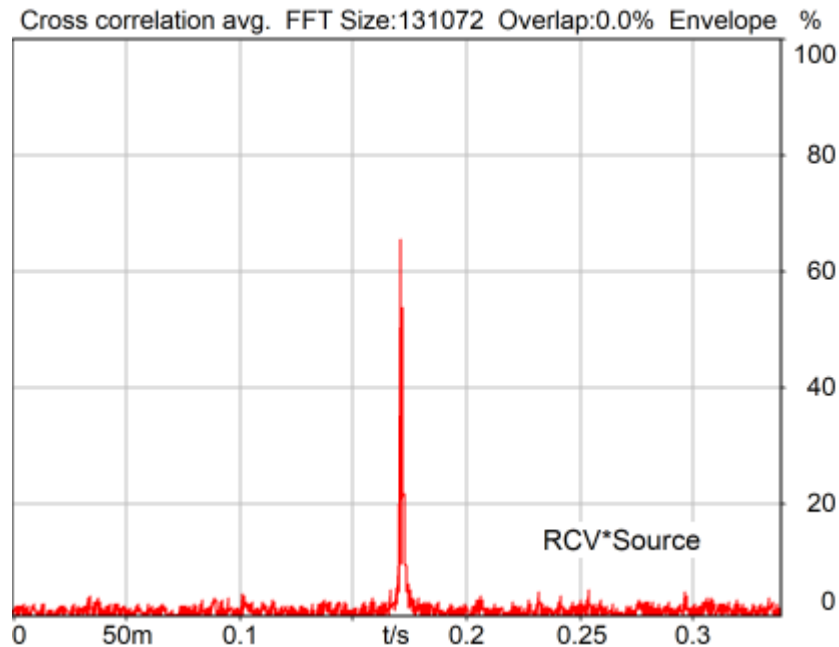
Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	171.4	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	22.14	HUHAO_2403_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	32.73	HUHAO_2403_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	32.67	HUHAO_2403_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	33.60	HUHAO_2403_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	33.14	HUHAO_2403_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	32.41	HUHAO_2403_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	22.28	HUHAO_2403_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	24.27	HUHAO_2403_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	21.90	HUHAO_2403_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	23.95	HUHAO_2403_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	28.78	HUHAO_2403_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)	21.90	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 462.0 Hz	0.67	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS NB 24.4kbps_CH18900_Sample2

Overall Receive Delay NB	4
5.1a Receive Volume Control Performance 8N 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 8N DF HANB	16

Overall Receive Delay NB

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

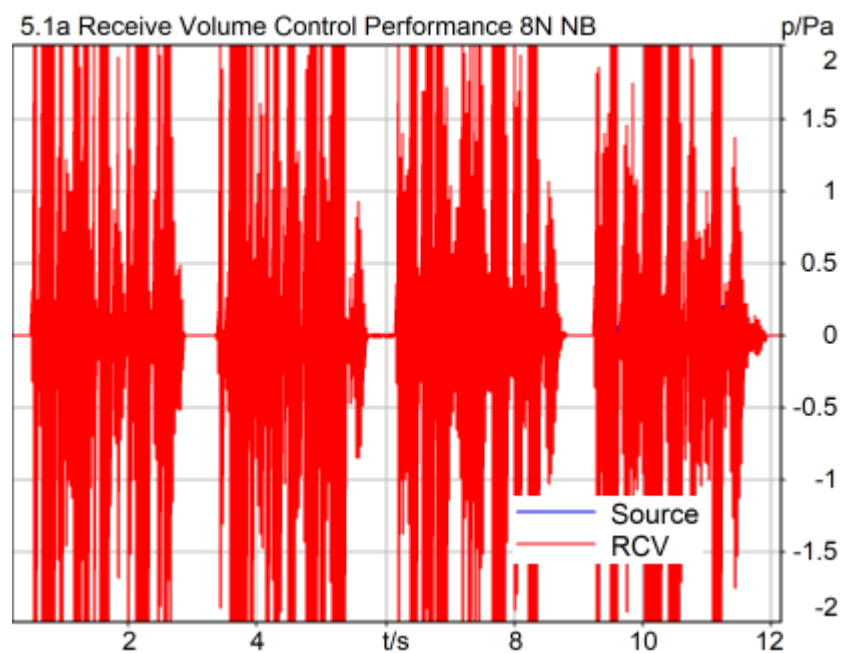


Channel	Delay
RCV*Source	171.4 ms

2025/3/18 16:18 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	92.14 dB[SPL]	84.26%	22.14 dB[SPL]	Ok

Ok

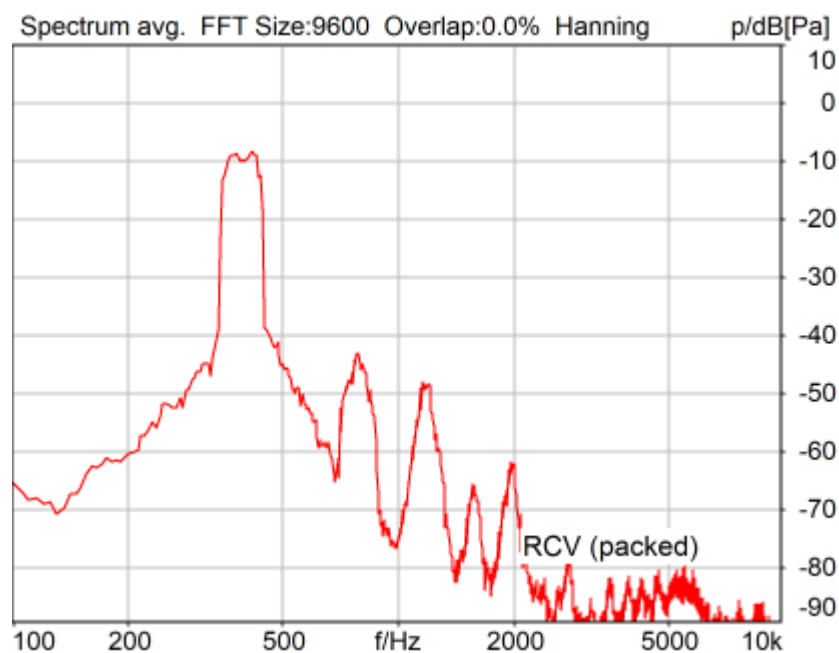
2025/3/18 16:19 ACQUA 6.0.200

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): 32.73 dB (2.31%) Ok

Ok

2025/3/18 16:20 ACQUA 6.0.200

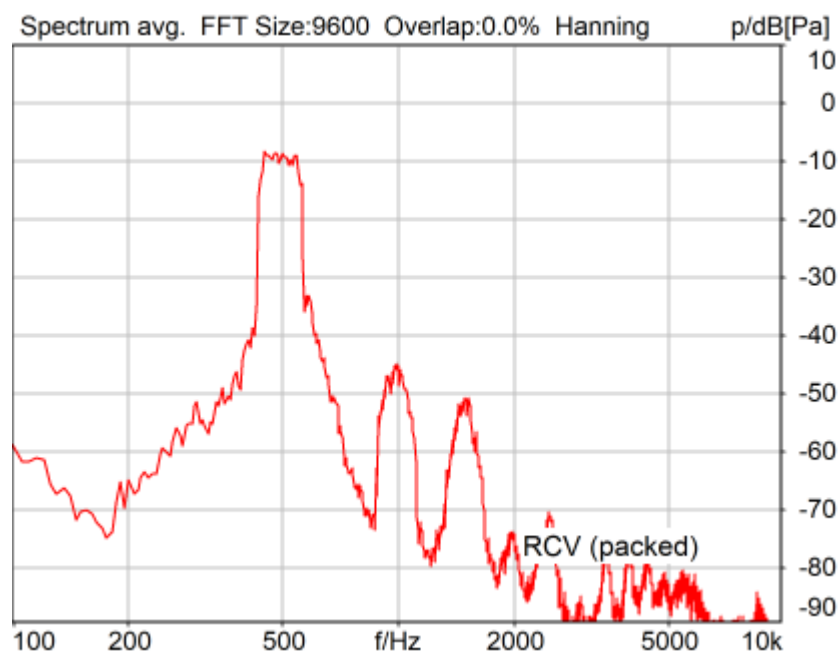
Unmodified HEAD acoustics Measurement Descriptor

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): 32.67 dB (2.32%) Ok

Ok

2025/3/18 16:20 ACQUA 6.0.200

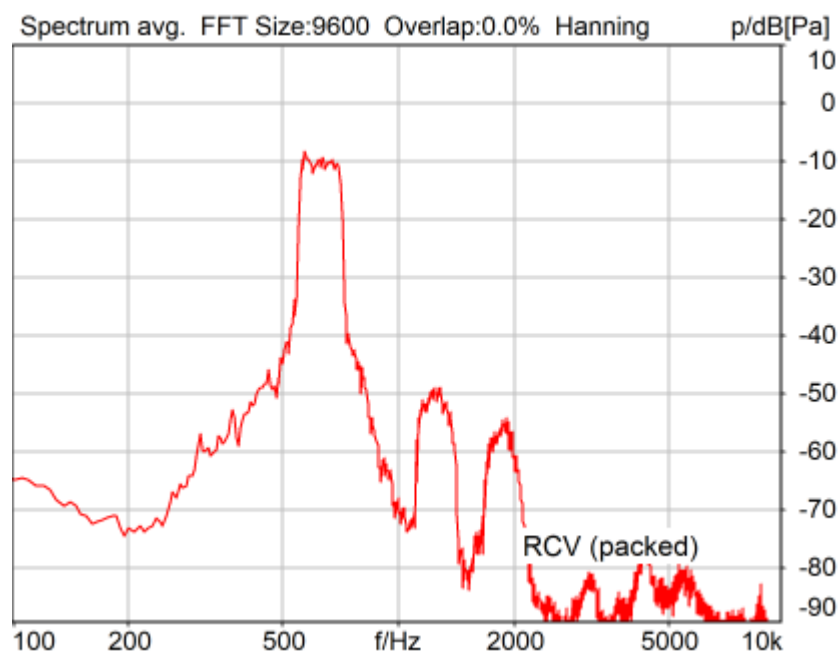
Unmodified HEAD acoustics Measurement Descriptor

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): 33.60 dB (2.09%) Ok

Ok

2025/3/18 16:20 ACQUA 6.0.200

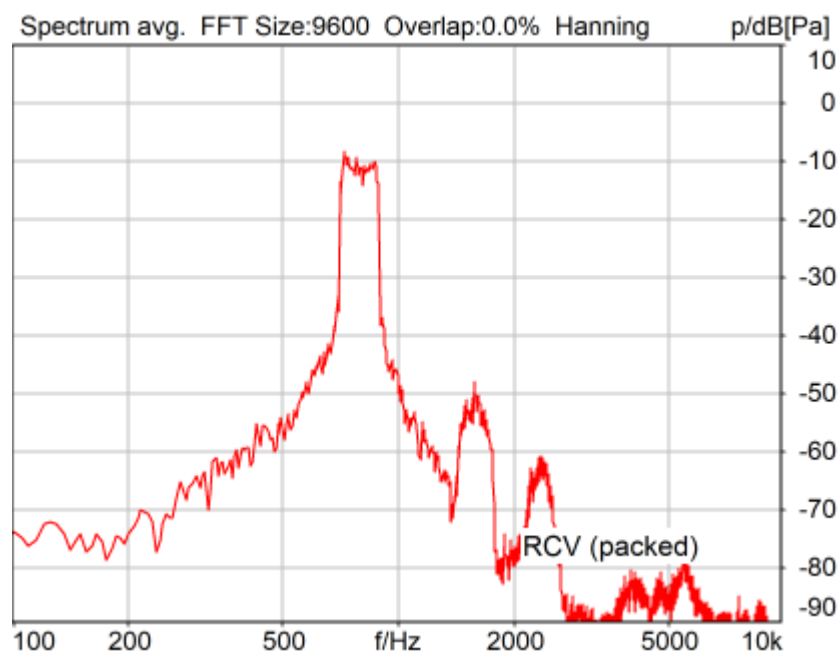
Unmodified HEAD acoustics Measurement Descriptor

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): 33.14 dB (2.20%) Ok

Ok

2025/3/18 16:21 ACQUA 6.0.200

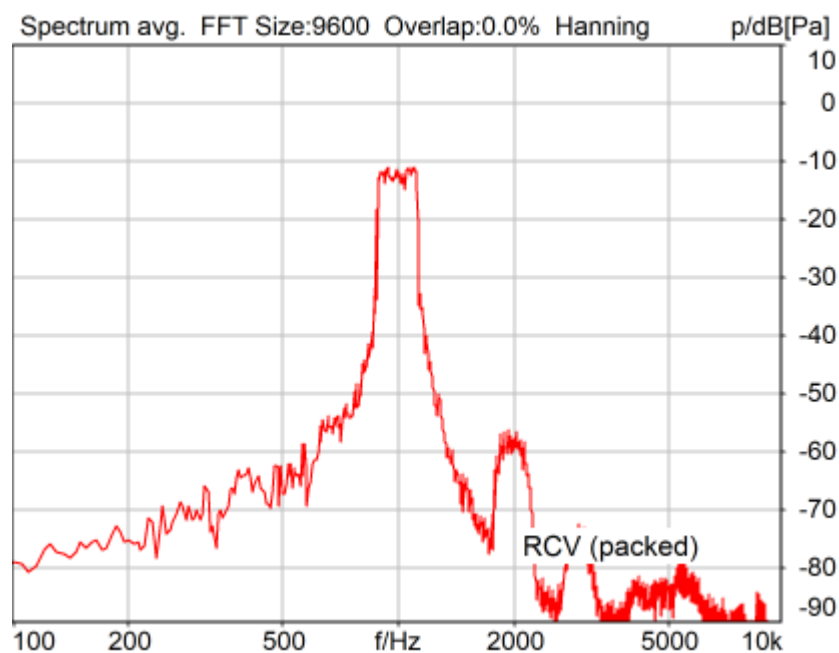
Unmodified HEAD acoustics Measurement Descriptor

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): 32.41 dB (2.40%) Ok

Ok

2025/3/18 16:21 ACQUA 6.0.200

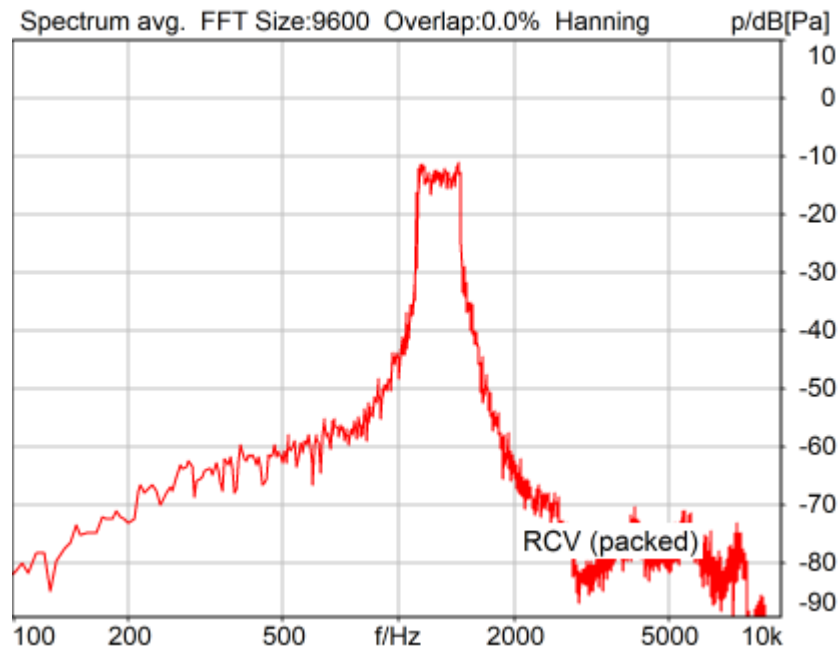
Unmodified HEAD acoustics Measurement Descriptor

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): 22.28 dB (7.69%) Ok

Ok

2025/3/18 16:22 ACQUA 6.0.200

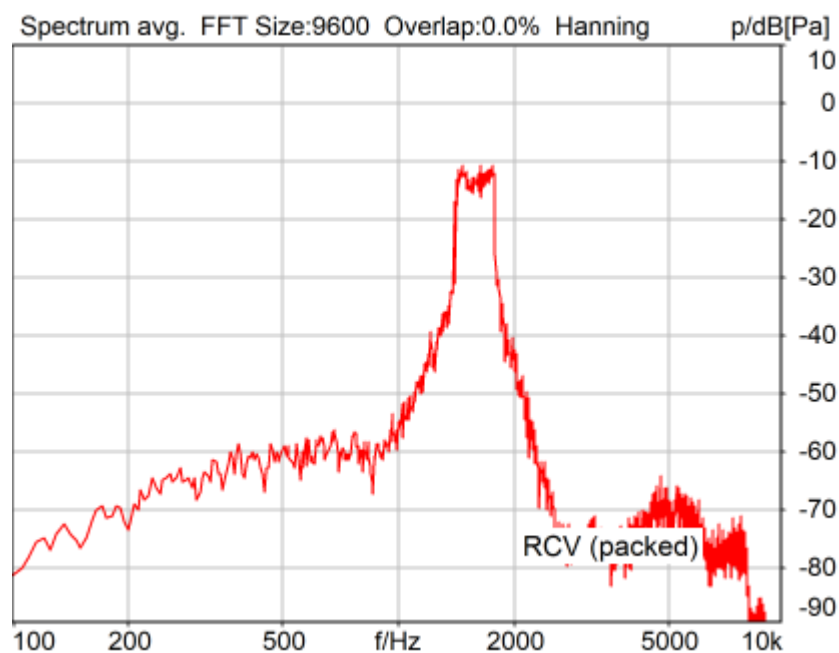
Unmodified HEAD acoustics Measurement Descriptor

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): 24.27 dB (6.12%) Ok

Ok

2025/3/18 16:22 ACQUA 6.0.200

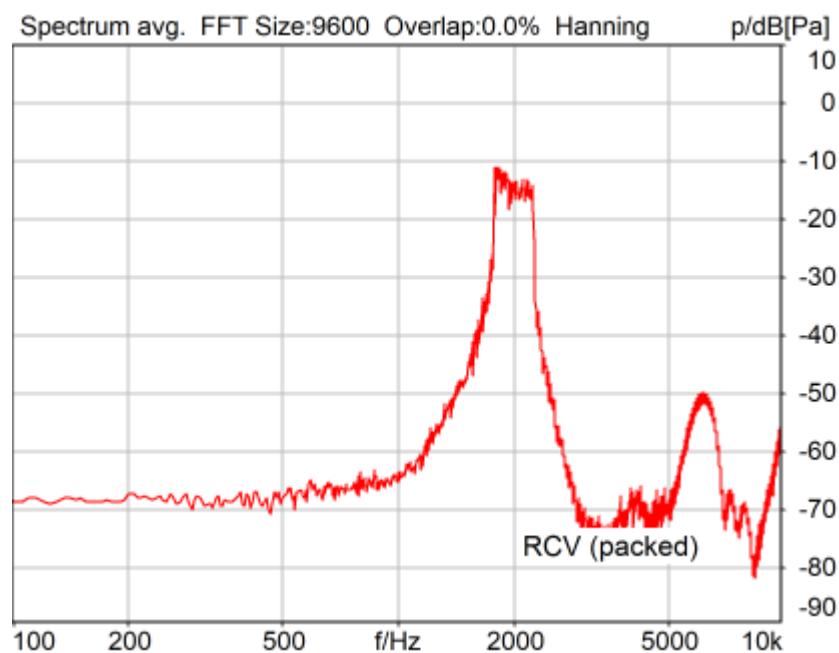
Unmodified HEAD acoustics Measurement Descriptor

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): 21.90 dB (8.03%) Ok

Ok

2025/3/18 16:22 ACQUA 6.0.200

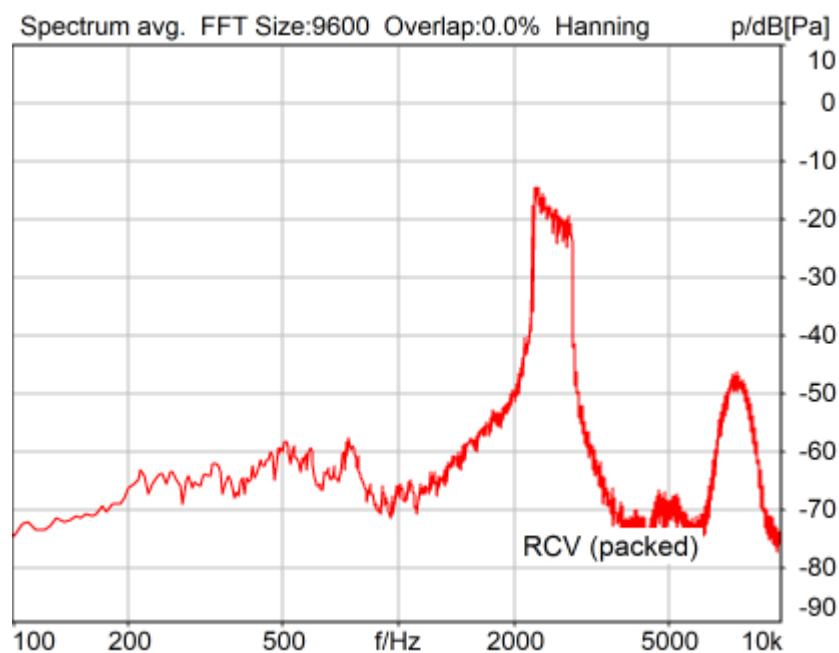
Unmodified HEAD acoustics Measurement Descriptor

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): 23.95 dB (6.35%) Ok

Ok

2025/3/18 16:23 ACQUA 6.0.200

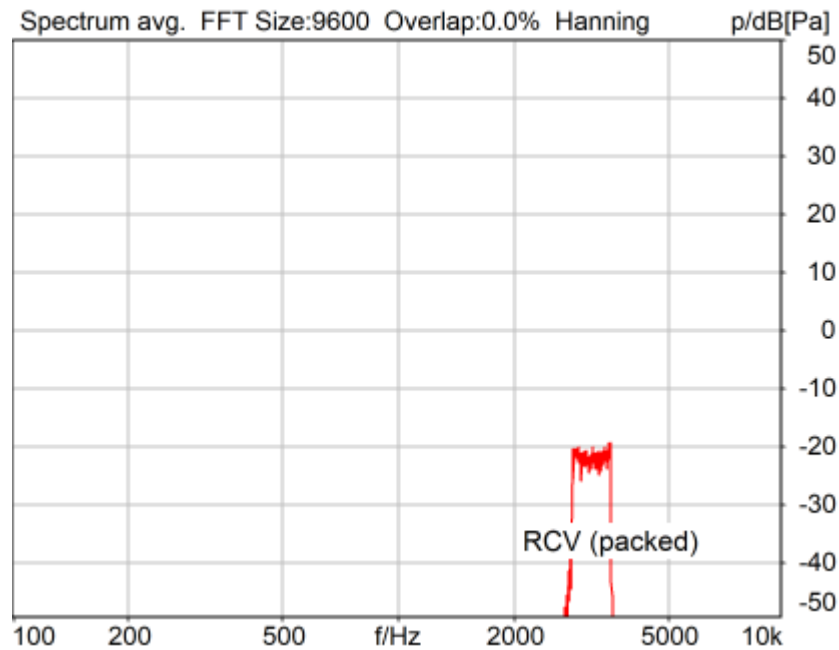
Unmodified HEAD acoustics Measurement Descriptor

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): 28.78 dB (3.64%) Ok

Ok

2025/3/18 16:23 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 \ Narrowband \ 5.2 Receive Distortion and Noise 8N

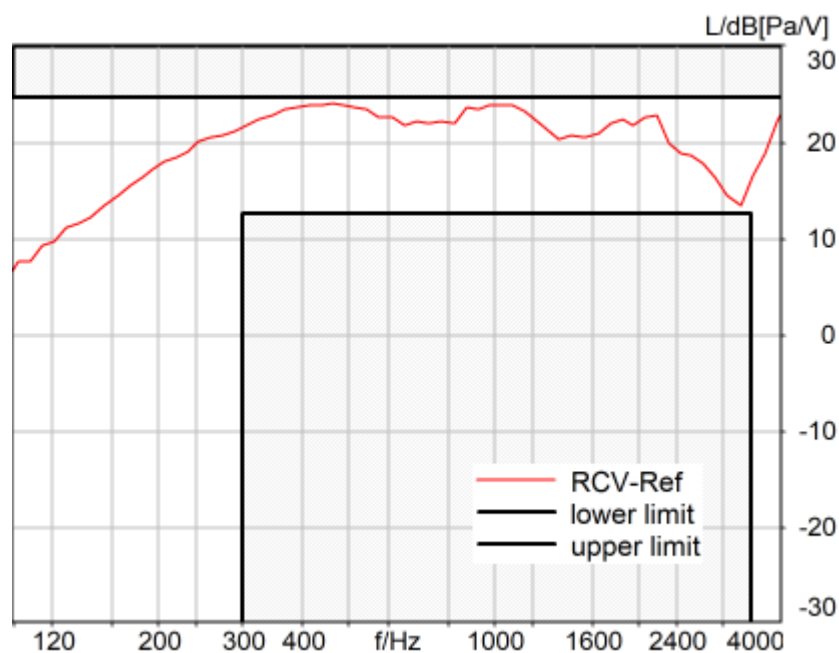
Region	Frequency	SDNR
1	400Hz	32.73 dB
2	500Hz	32.67 dB
3	630Hz	33.60 dB
4	800Hz	33.14 dB
5	1000Hz	32.41 dB
6	1250Hz	22.28 dB
7	1600Hz	24.27 dB
8	2000Hz	21.90 dB
9	2500Hz	23.95 dB
10	3150Hz	28.78 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 21.90dB at 2000Hz.

2025/3/18 16:23 ACQUA

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance
 0.67 dB at 462.0 Hz Ok

Ok

2025/3/18 16:26 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
--------------------	--

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:47
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	154.6	HUHAO_2403_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]]	21.78	HUHAO_2403_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]]	16.29	HUHAO_2403_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	26.02	HUHAO_2403_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	30.56	HUHAO_2403_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	33.60	HUHAO_2403_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	34.03	HUHAO_2403_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	35.66	HUHAO_2403_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	35.40	HUHAO_2403_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	32.27	HUHAO_2403_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	23.19	HUHAO_2403_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	24.41	HUHAO_2403_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	22.67	HUHAO_2403_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	24.72	HUHAO_2403_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	29.31	HUHAO_2403_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	28.46	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and	Ok	Distortion (Noise)	30.59	HUHAO_2403_LTE

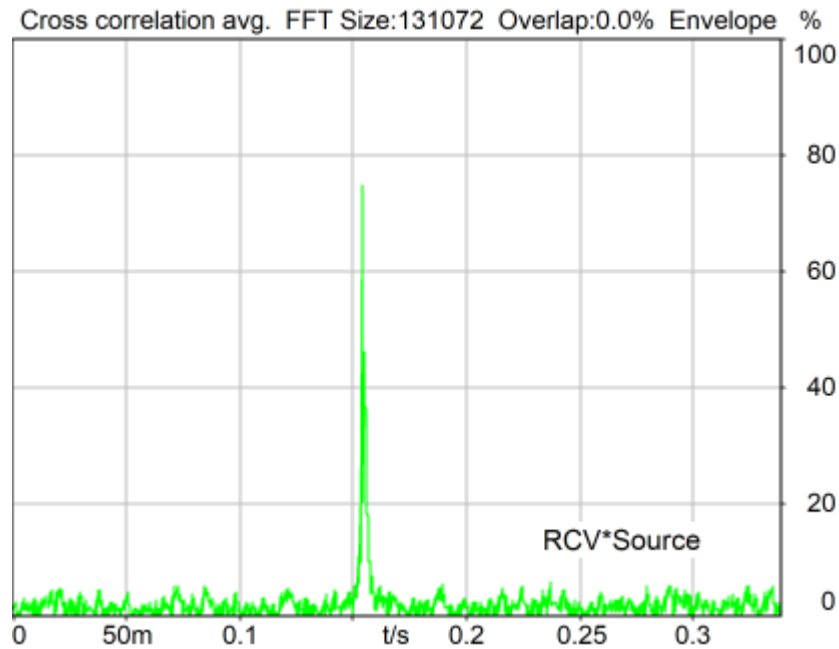
Noise - 5000 Hz WB		[dB], 0.0 dB		Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.67	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.81	HUHAO_2403_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	29.94	HUHAO_2403_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	33.04	HUHAO_2403_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	33.89	HUHAO_2403_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	35.90	HUHAO_2403_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	34.75	HUHAO_2403_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	33.11	HUHAO_2403_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	23.88	HUHAO_2403_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	23.68	HUHAO_2403_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	21.61	HUHAO_2403_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	28.75	HUHAO_2403_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	30.90	HUHAO_2403_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	28.18	HUHAO_2403_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	34.38	HUHAO_2403_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)	21.61	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.49	HUHAO_2403_LTE Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
5.3 Frequency Response	Ok	Min. dist. to tolerance	0.36	HUHAO_2403_LTE

2N DF		scheme [dB], 1948.0 Hz	Band2_20_QPSK_1_0_EVS WB 24.4kbps_CH18900
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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 DF	37
5.3 Frequency Response 2N DF	38

Overall Receive Delay WB

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

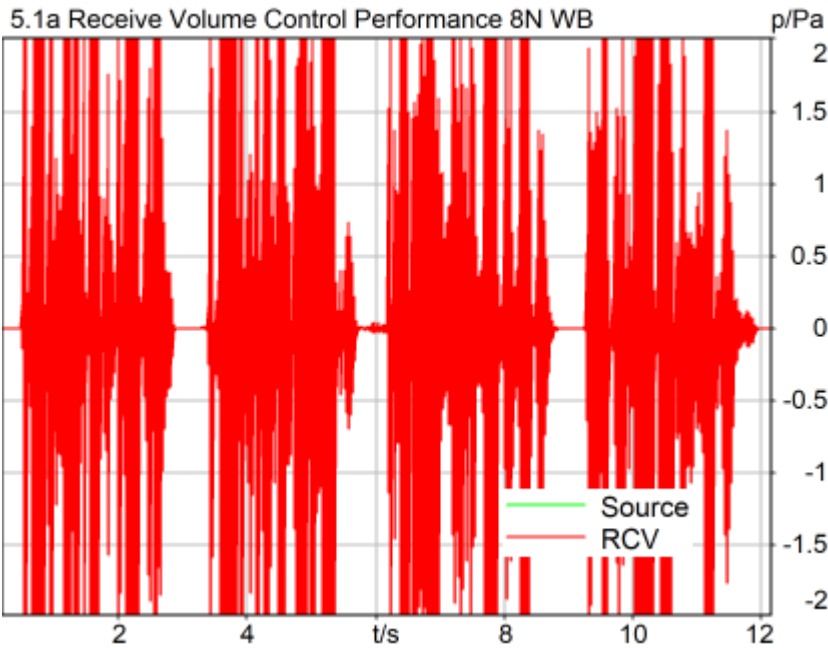


Channel	Delay
RCV*Source	154.6 ms

2025/1/23 17:14 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	91.78 dB[SPL]	84.04%	21.78 dB[SPL]	Ok

Ok

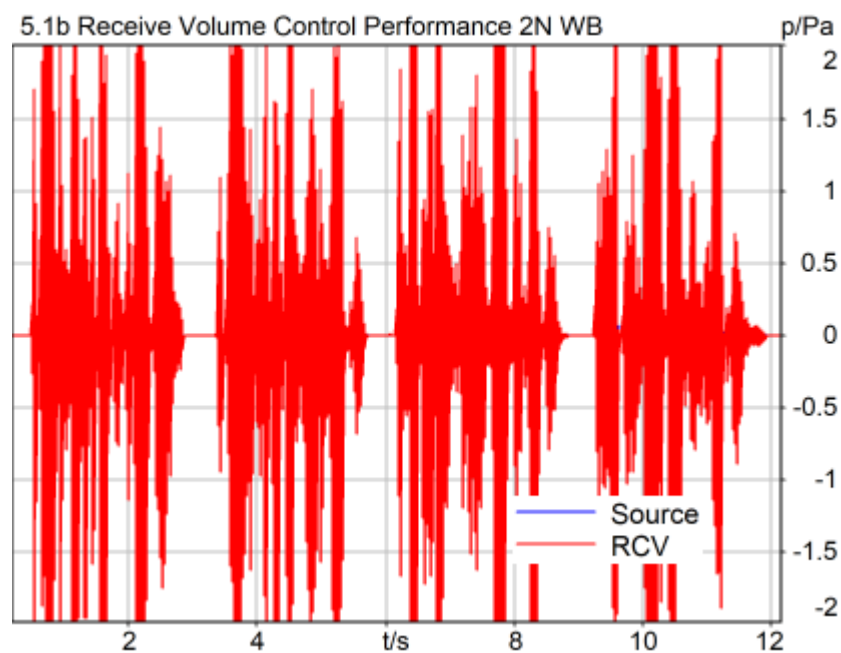
2025/1/23 17:17 ACQUA 6.0.200

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	86.29 dB[SPL]	84.20%	16.29 dB[SPL]	Ok

Ok

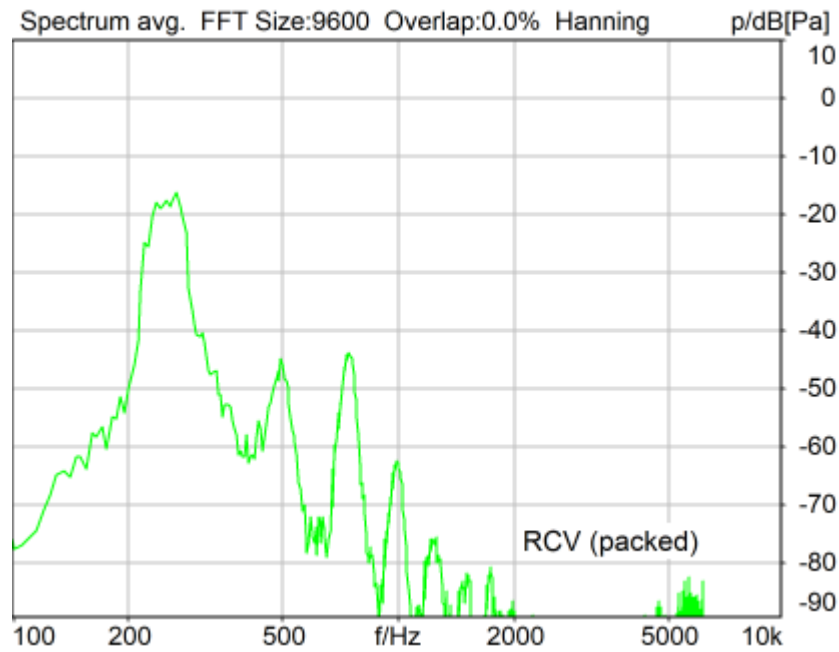
2025/2/5 15:11 ACQUA 6.0.200

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): 26.02 dB (5.00%) Ok

Ok

2025/1/23 17:18 ACQUA 6.0.200

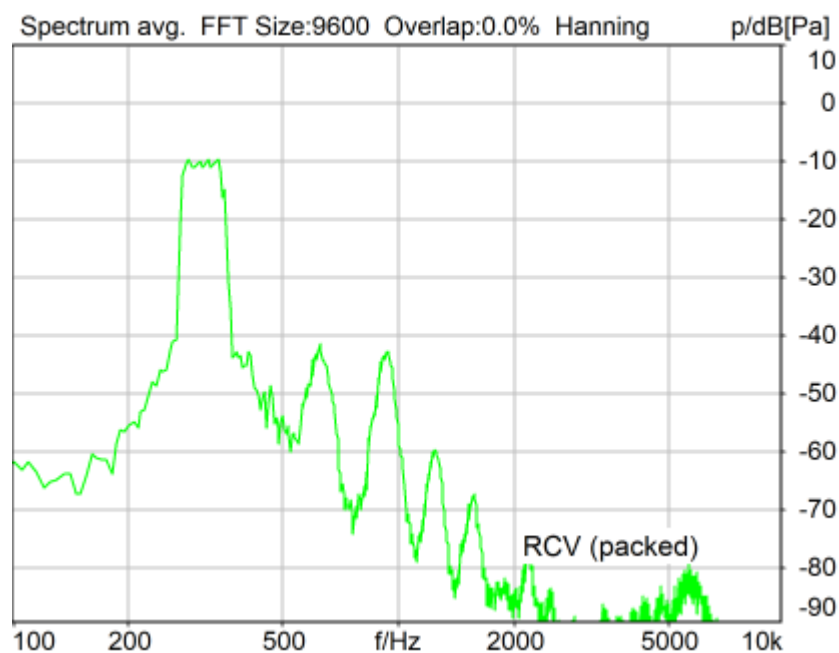
Unmodified HEAD acoustics Measurement Descriptor

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 8N



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

Ok

2025/1/23 17:18 ACQUA 6.0.200

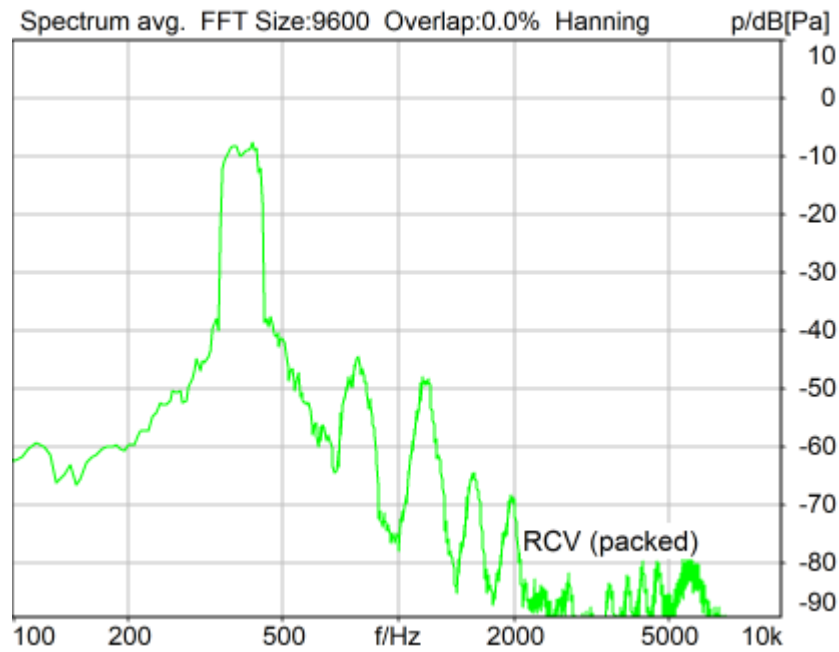
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 33.60 dB (2.09%) Ok

Ok

2025/1/23 17:19 ACQUA 6.0.200

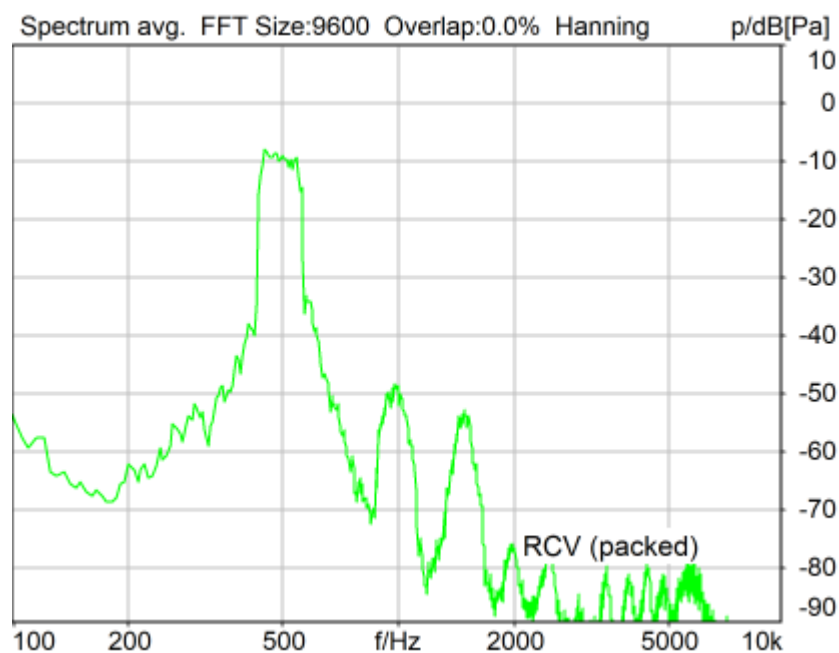
Unmodified HEAD acoustics Measurement Descriptor

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): 34.03 dB (1.99%) Ok

Ok

2025/1/23 17:19 ACQUA 6.0.200

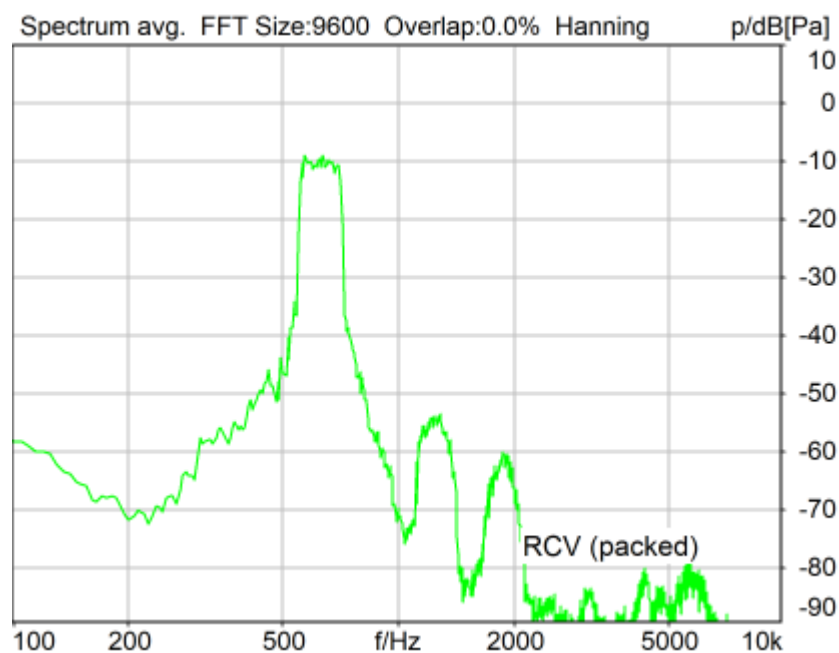
Unmodified HEAD acoustics Measurement Descriptor

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 8N



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

Ok

2025/1/23 17:19 ACQUA 6.0.200

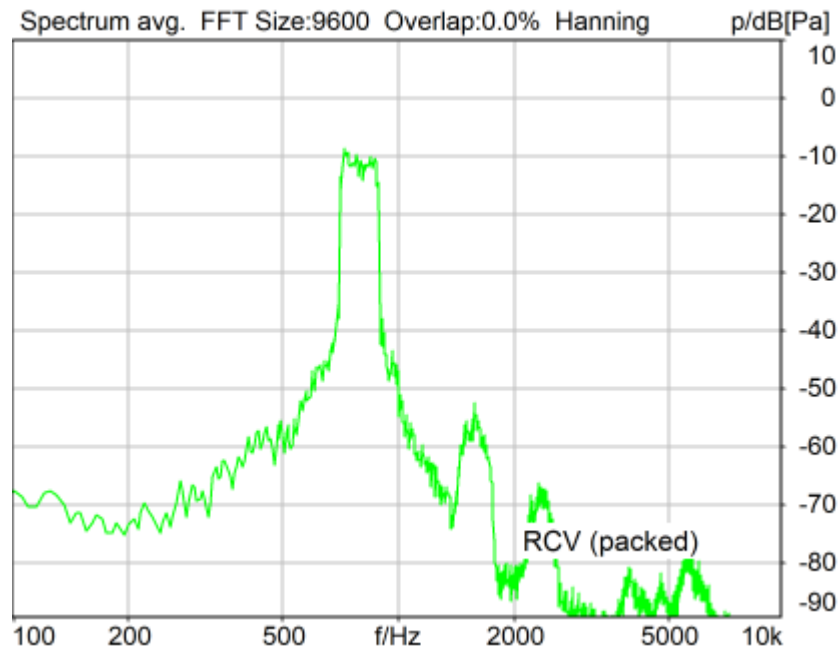
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 35.40 dB (1.70%) Ok

Ok

2025/1/23 17:20 ACQUA 6.0.200

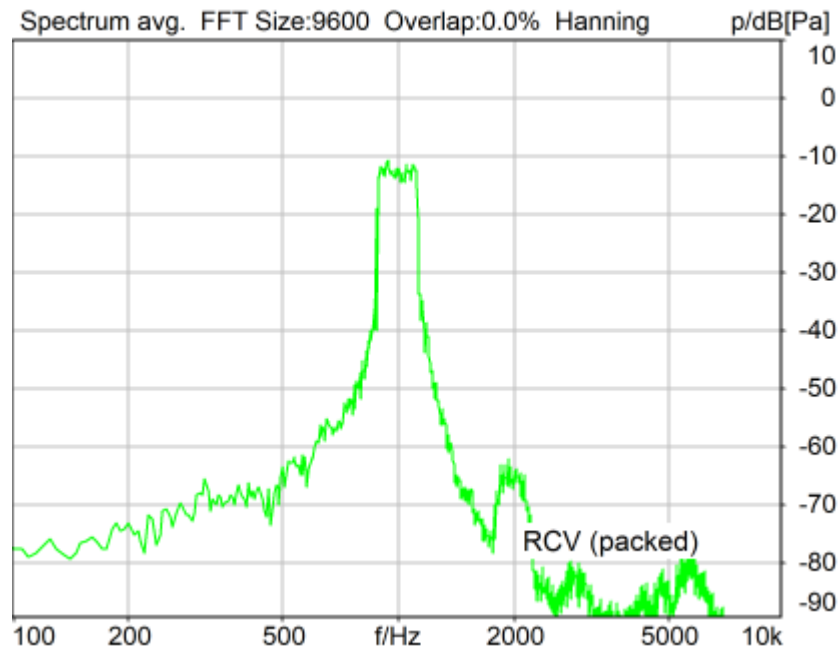
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 32.27 dB (2.43%) Ok

Ok

2025/1/23 17:20 ACQUA 6.0.200

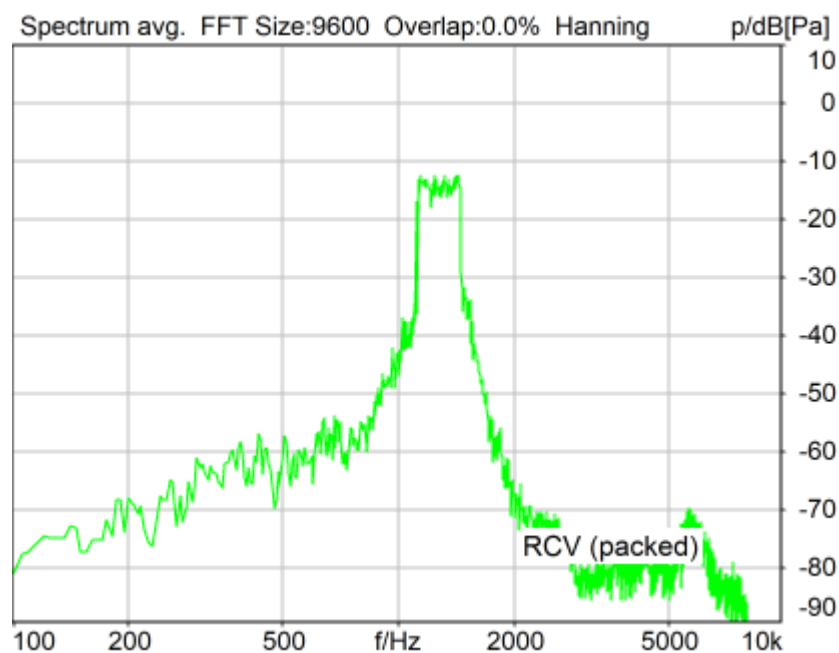
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 23.19 dB (6.93%) Ok

Ok

2025/1/23 17:21 ACQUA 6.0.200

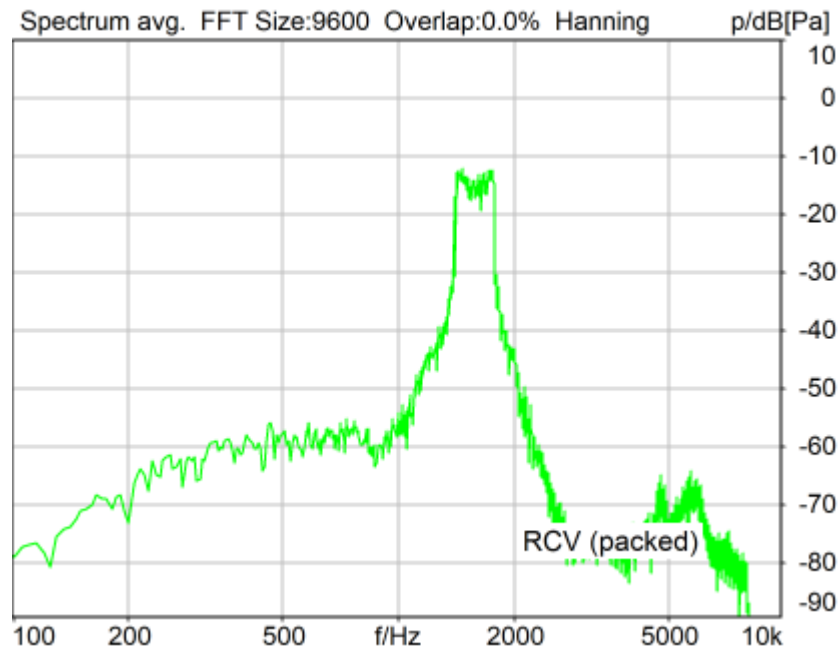
Unmodified HEAD acoustics Measurement Descriptor

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

2025/1/23 17:21 ACQUA 6.0.200

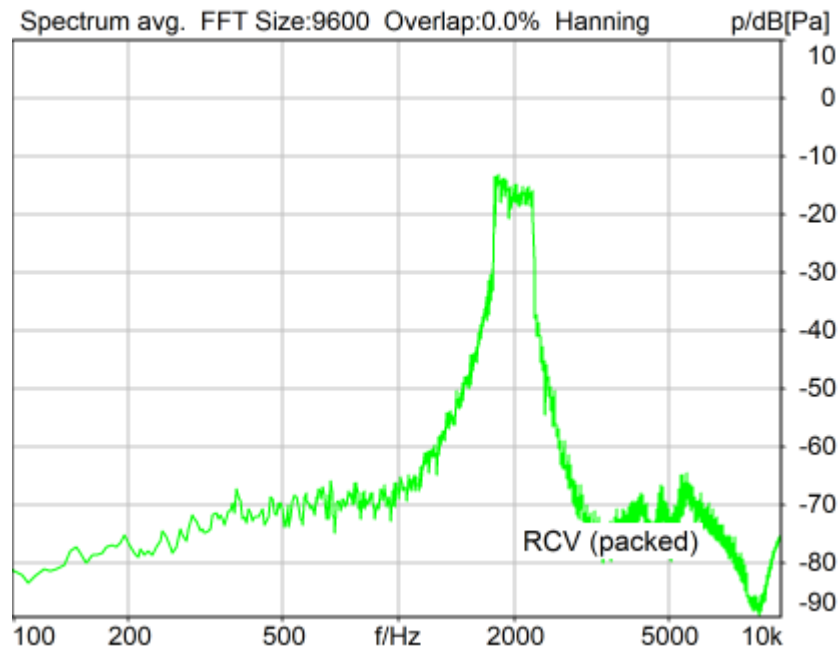
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 22.67 dB (7.35%) Ok

Ok

2025/1/23 17:22 ACQUA 6.0.200

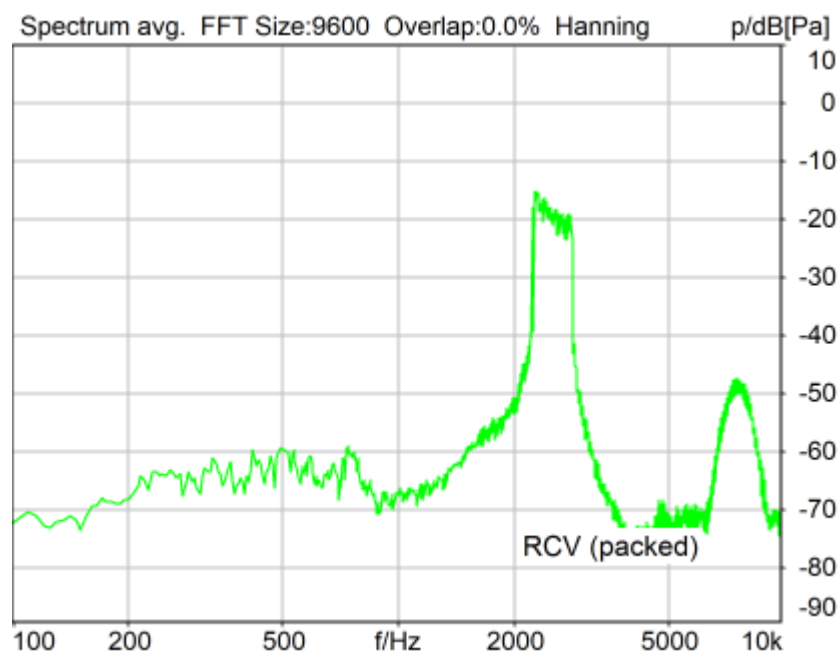
Unmodified HEAD acoustics Measurement Descriptor

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): 24.72 dB (5.81%) Ok

Ok

2025/1/23 17:22 ACQUA 6.0.200

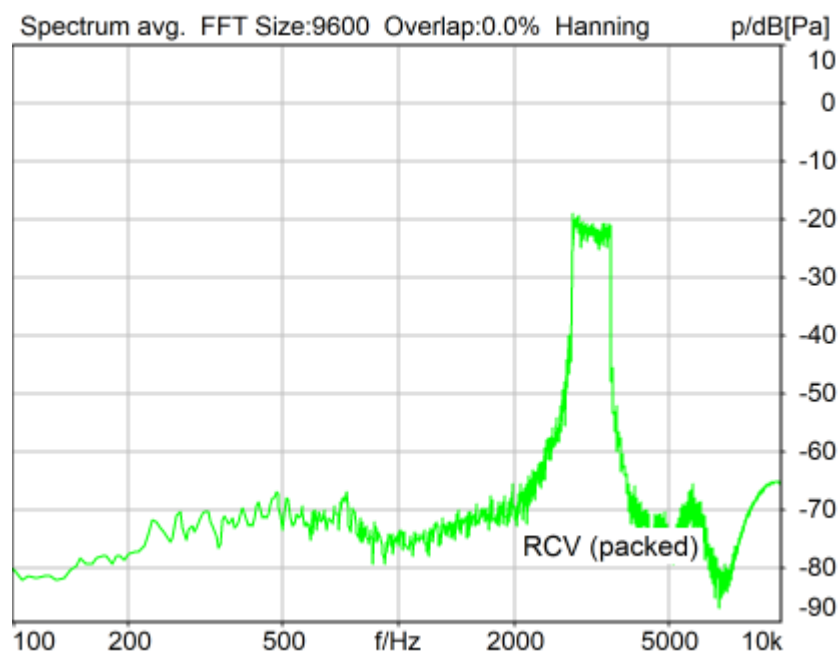
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 29.31 dB (3.42%) Ok

Ok

2025/1/23 17:22 ACQUA 6.0.200

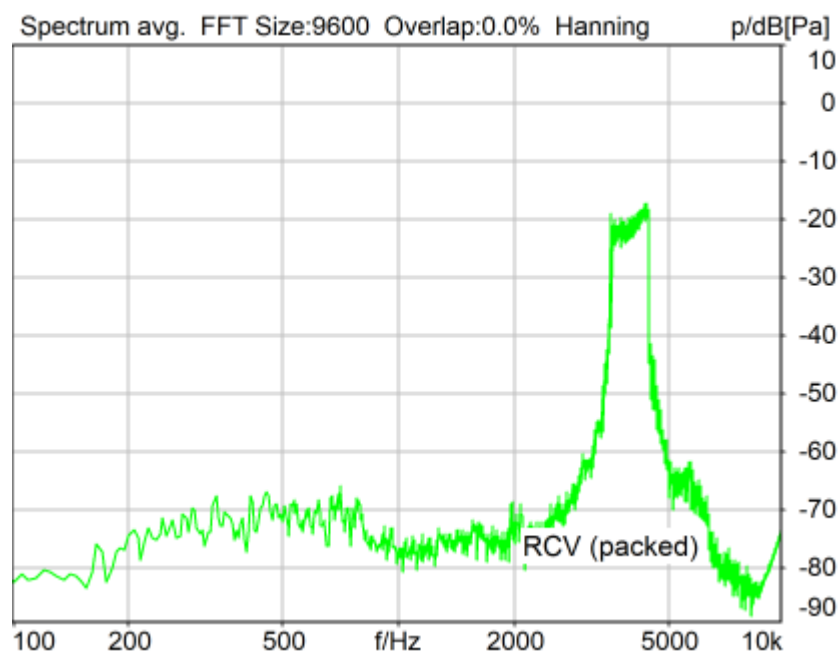
Unmodified HEAD acoustics Measurement Descriptor

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 8N



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

Ok

2025/1/23 17:23 ACQUA 6.0.200

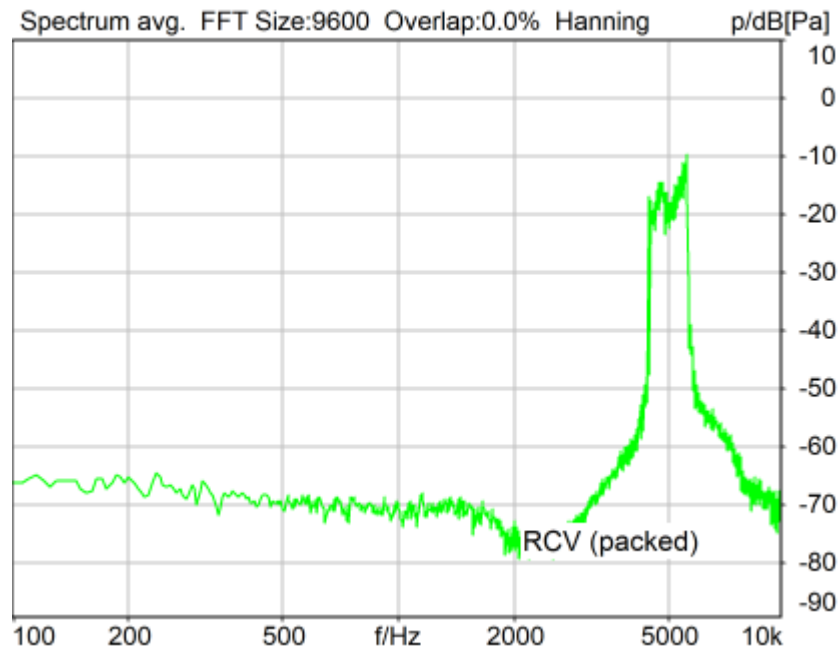
Unmodified HEAD acoustics Measurement Descriptor

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 8N



Distortion (Noise) RCV (packed): 30.59 dB (2.95%) Ok

Ok

2025/1/23 17:23 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 8N

Region	Frequency	SDNR
1	250Hz	26.02 dB
2	315Hz	30.56 dB
3	400Hz	33.60 dB
4	500Hz	34.03 dB
5	630Hz	35.66 dB
6	800Hz	35.40 dB
7	1000Hz	32.27 dB
8	1250Hz	23.19 dB
9	1600Hz	24.41 dB
10	2000Hz	22.67 dB

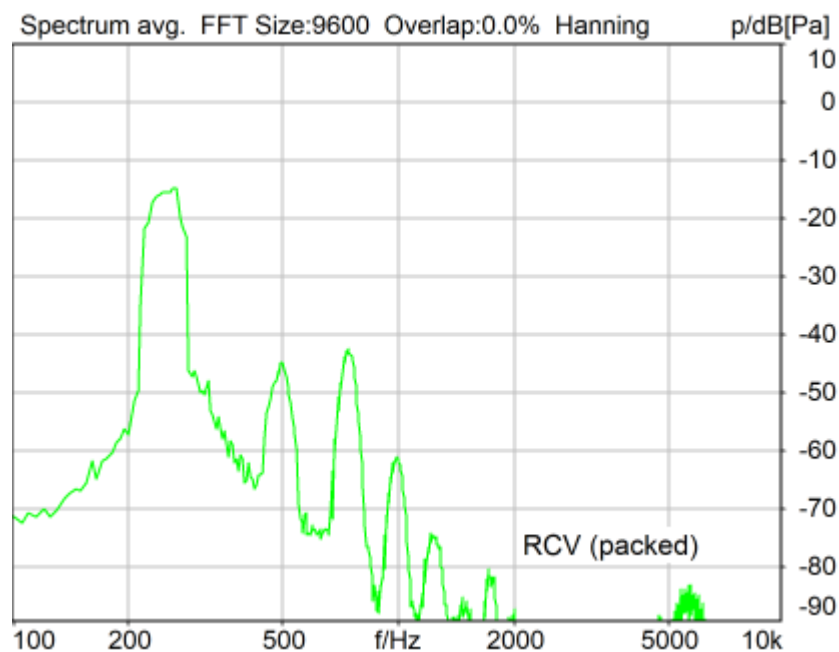
11	2500Hz	24.72 dB
12	3150Hz	29.31 dB
13	4000Hz	28.46 dB
14	5000Hz	30.59 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.67dB at 2000Hz.

2025/1/23 17:23 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): 26.81 dB (4.57%) Ok

Ok

2025/1/23 17:32 ACQUA 6.0.200

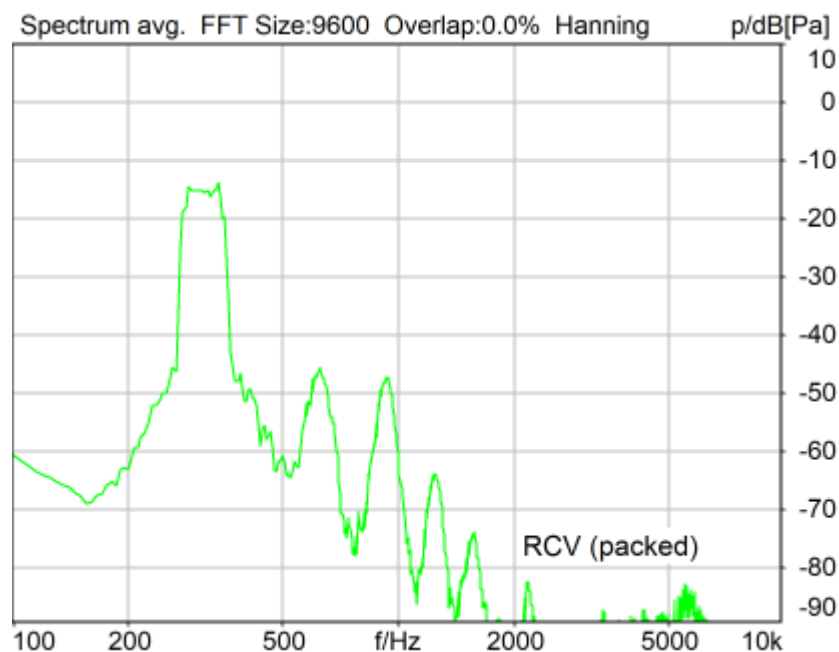
Unmodified HEAD acoustics Measurement Descriptor

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): 29.94 dB (3.18%) Ok

Ok

2025/1/23 17:33 ACQUA 6.0.200

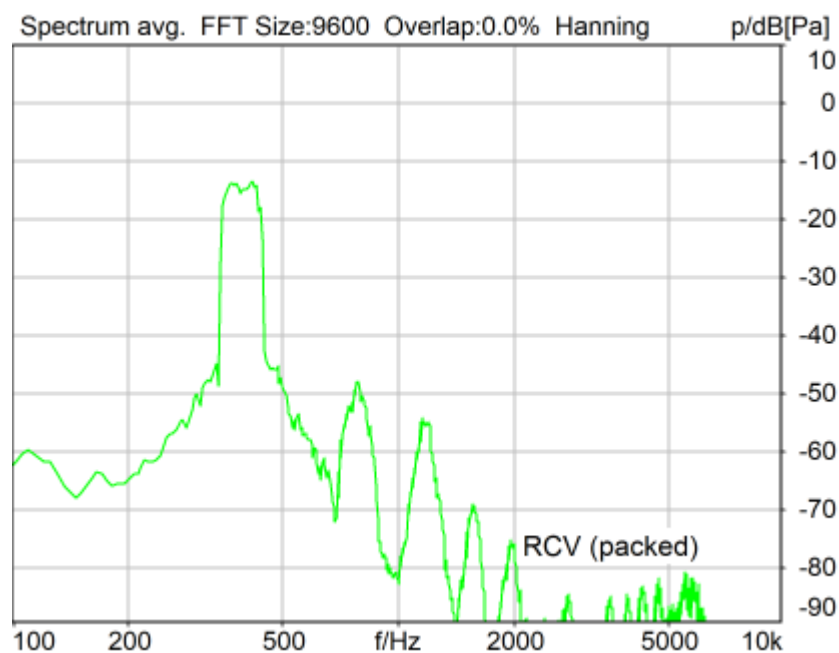
Unmodified HEAD acoustics Measurement Descriptor

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): 33.04 dB (2.23%) Ok

Ok

2025/1/23 17:33 ACQUA 6.0.200

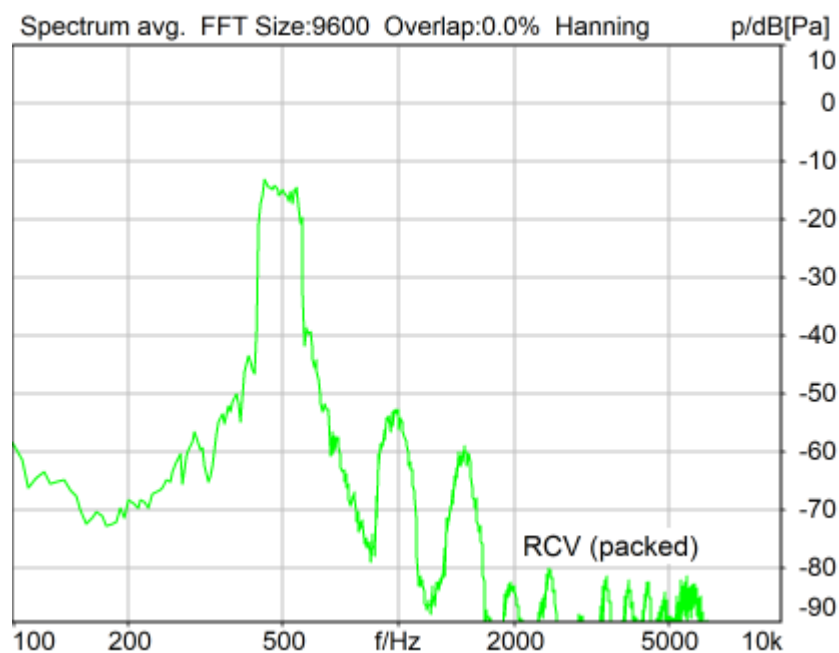
Unmodified HEAD acoustics Measurement Descriptor

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): 33.89 dB (2.02%) Ok

Ok

2025/1/23 17:33 ACQUA 6.0.200

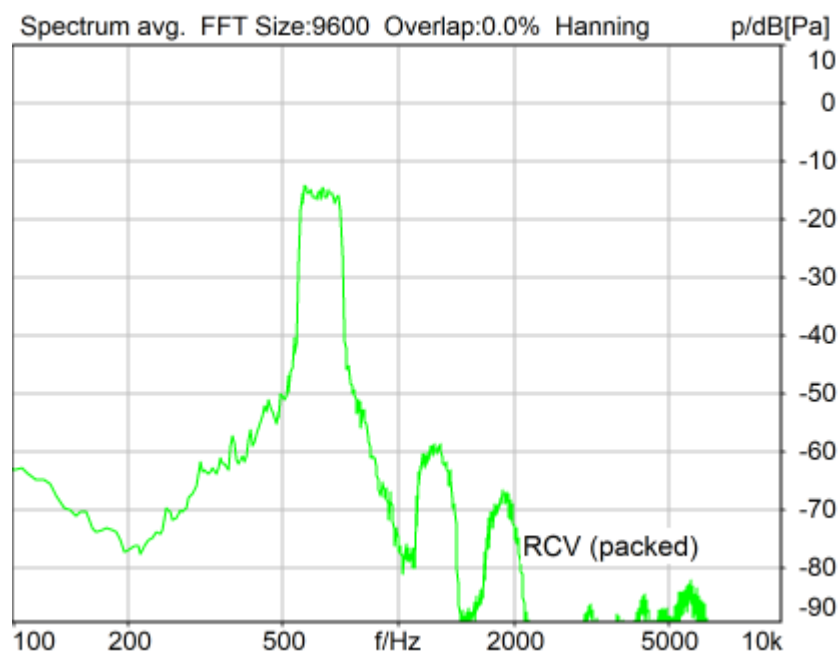
Unmodified HEAD acoustics Measurement Descriptor

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): 35.90 dB (1.60%) Ok

Ok

2025/1/23 17:34 ACQUA 6.0.200

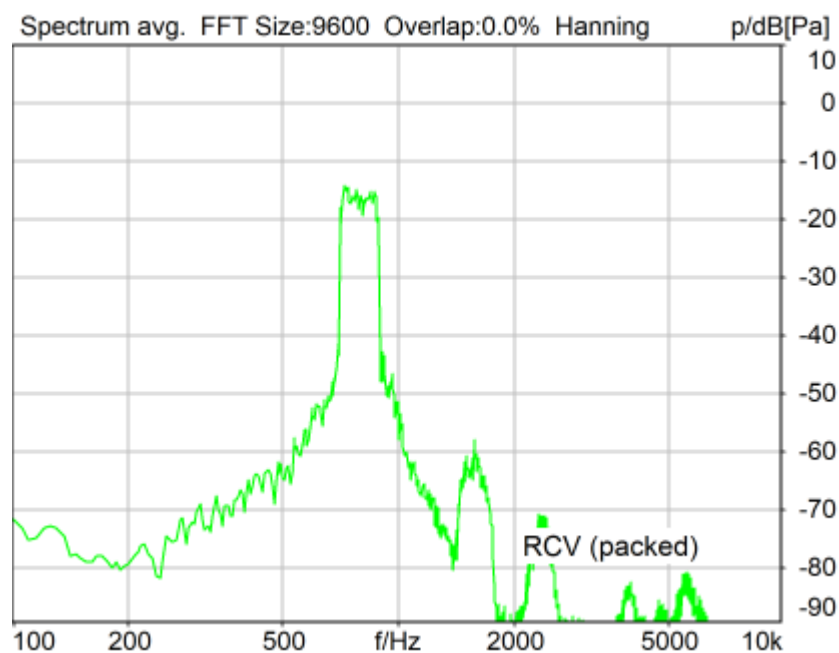
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 34.75 dB (1.83%) Ok

Ok

2025/1/23 17:34 ACQUA 6.0.200

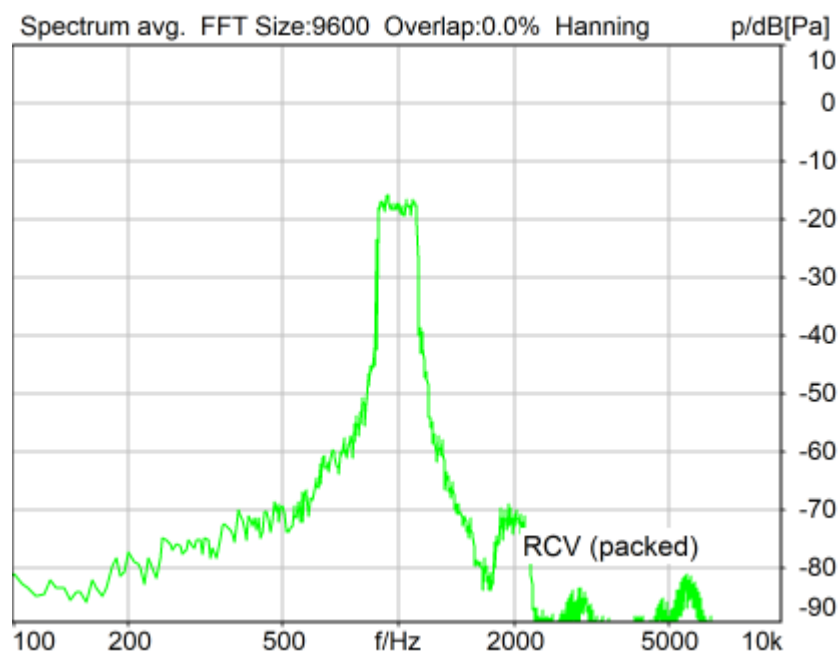
Unmodified HEAD acoustics Measurement Descriptor

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): 33.11 dB (2.21%) Ok

Ok

2025/1/23 17:35 ACQUA 6.0.200

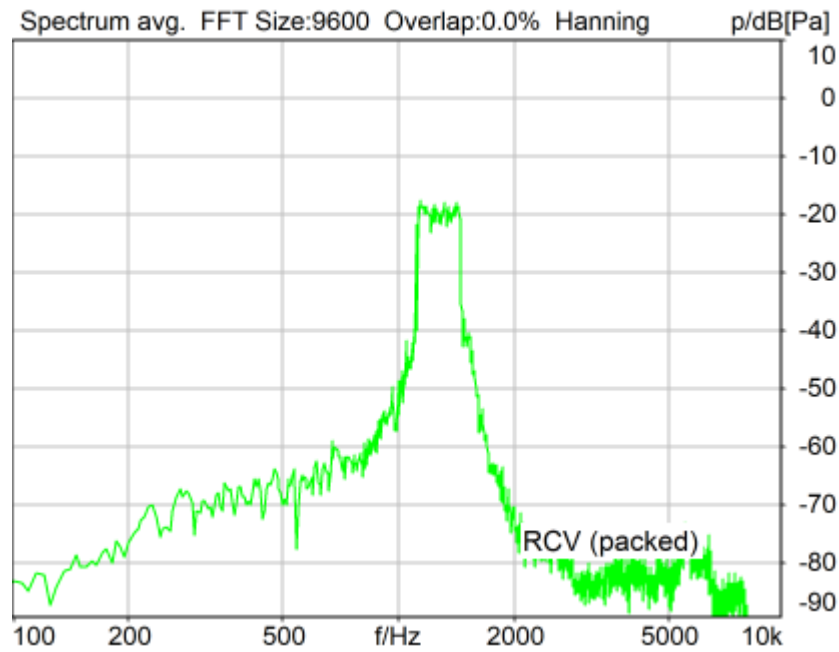
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.88 dB (6.40%) Ok

Ok

2025/1/23 17:35 ACQUA 6.0.200

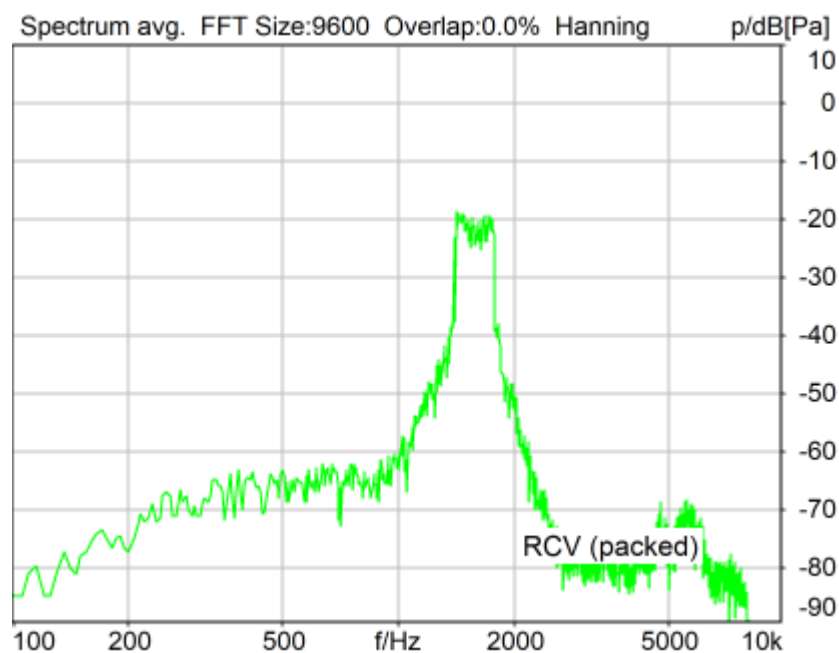
Unmodified HEAD acoustics Measurement Descriptor

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): 23.68 dB (6.55%) Ok

Ok

2025/1/23 17:35 ACQUA 6.0.200

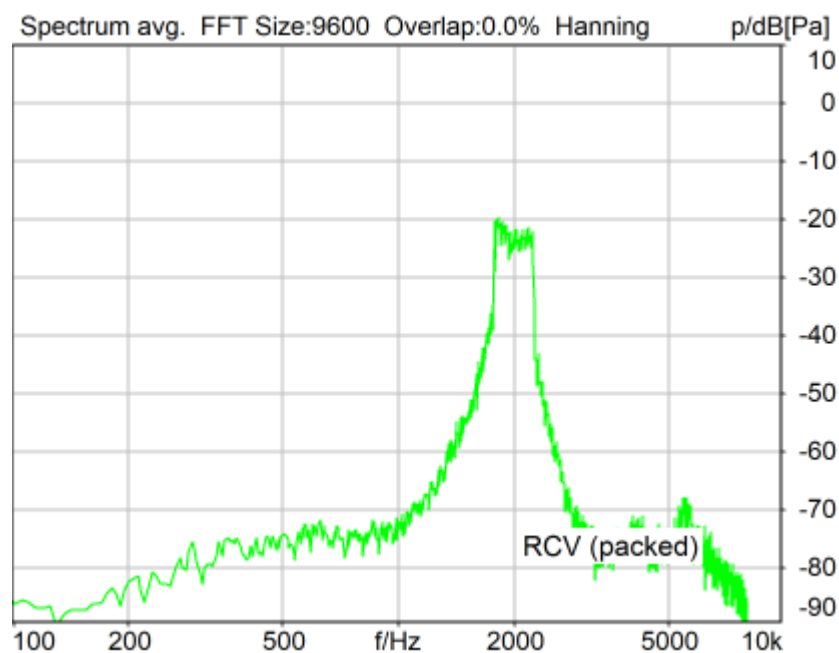
Unmodified HEAD acoustics Measurement Descriptor

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): 21.61 dB (8.30%) Ok

Ok

2025/1/23 17:36 ACQUA 6.0.200

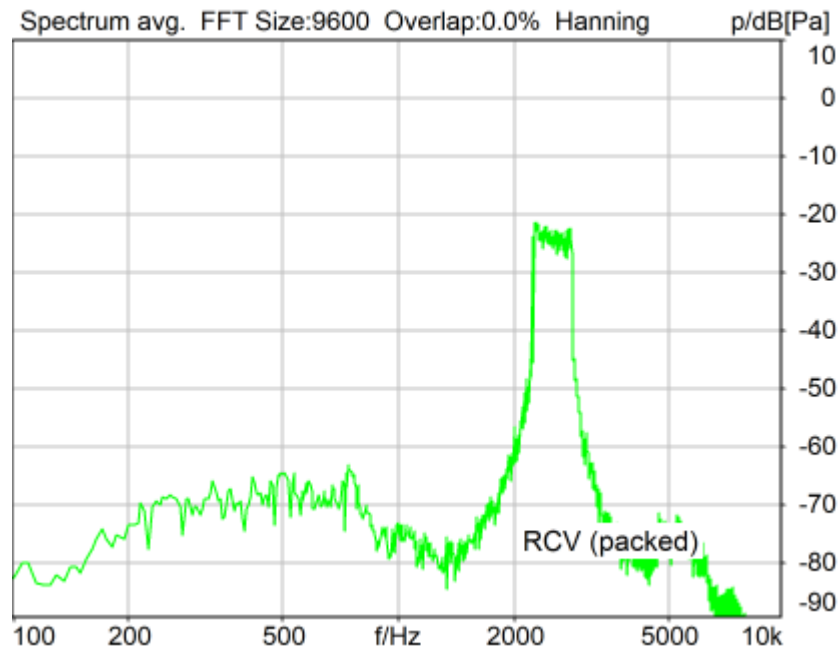
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



Distortion (Noise) RCV (packed): 28.75 dB (3.65%) Ok

Ok

2025/1/23 17:36 ACQUA 6.0.200

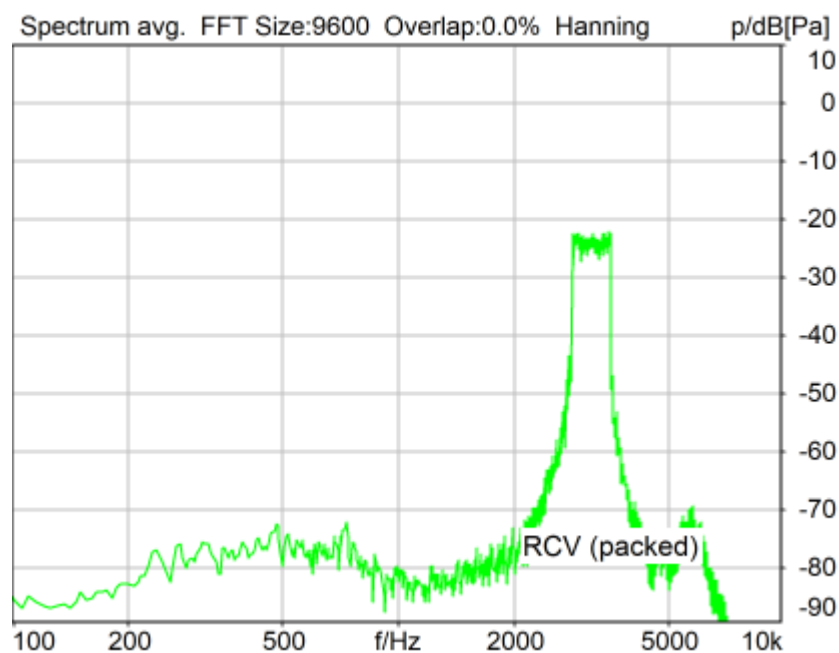
Unmodified HEAD acoustics Measurement Descriptor

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): 30.90 dB (2.85%) Ok

Ok

2025/1/23 17:37 ACQUA 6.0.200

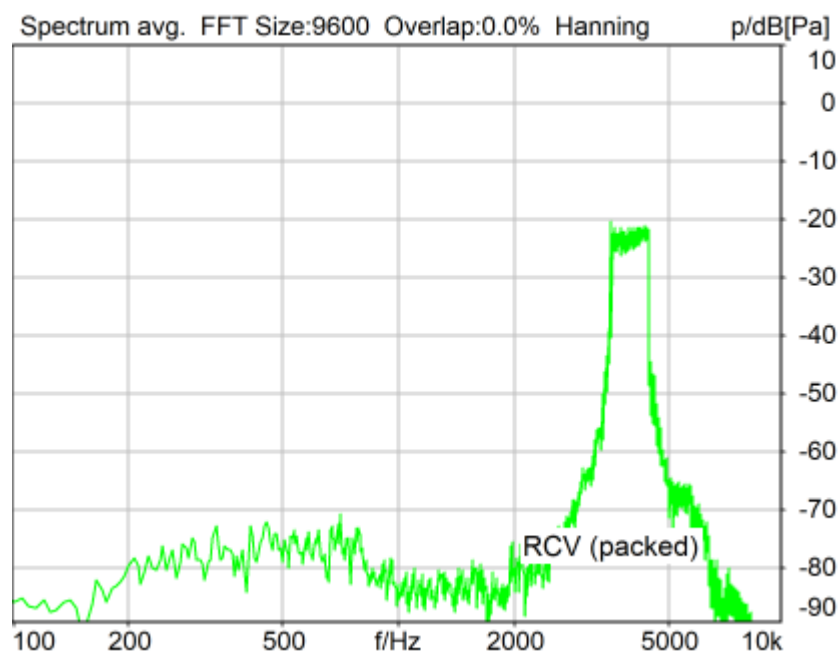
Unmodified HEAD acoustics Measurement Descriptor

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): 28.18 dB (3.90%) Ok

Ok

2025/1/23 17:37 ACQUA 6.0.200

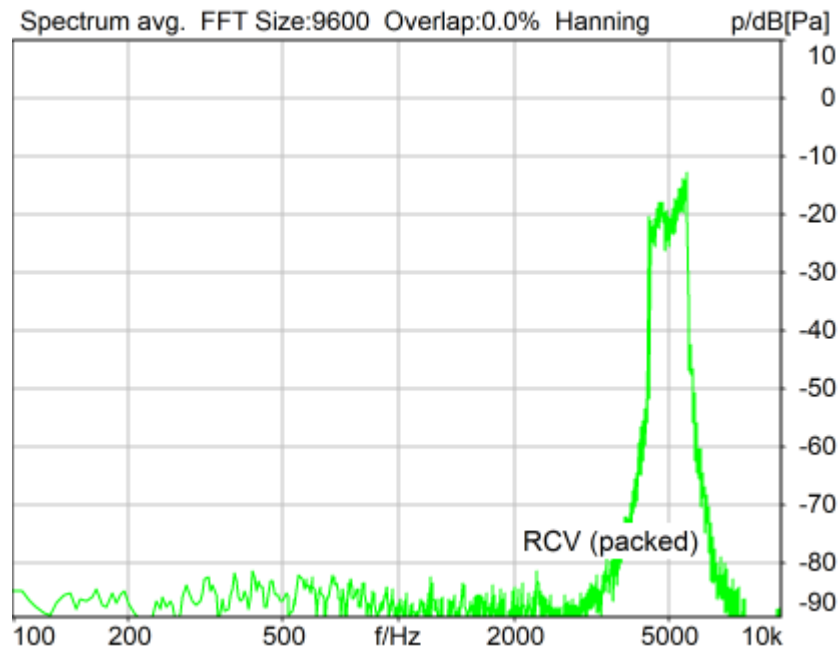
Unmodified HEAD acoustics Measurement Descriptor

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): 34.38 dB (1.91%) Ok

Ok

2025/1/23 17:38 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	26.81 dB
2	315Hz	29.94 dB
3	400Hz	33.04 dB
4	500Hz	33.89 dB
5	630Hz	35.90 dB
6	800Hz	34.75 dB
7	1000Hz	33.11 dB
8	1250Hz	23.88 dB
9	1600Hz	23.68 dB
10	2000Hz	21.61 dB

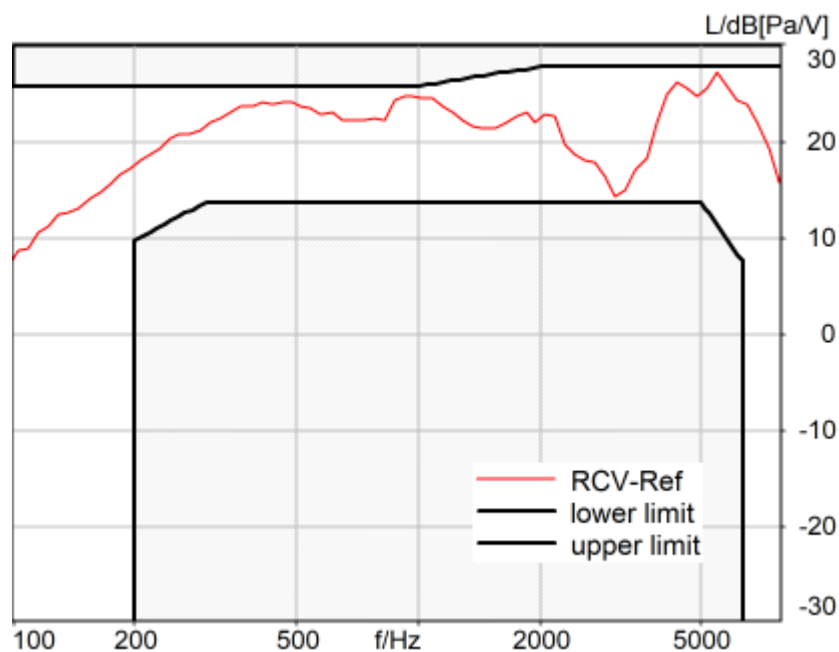
11	2500Hz	28.75 dB
12	3150Hz	30.90 dB
13	4000Hz	28.18 dB
14	5000Hz	34.38 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.61dB at 2000Hz.

2025/1/23 17:40 ACQUA

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.49 dB at 5443.6 Hz Ok

Ok

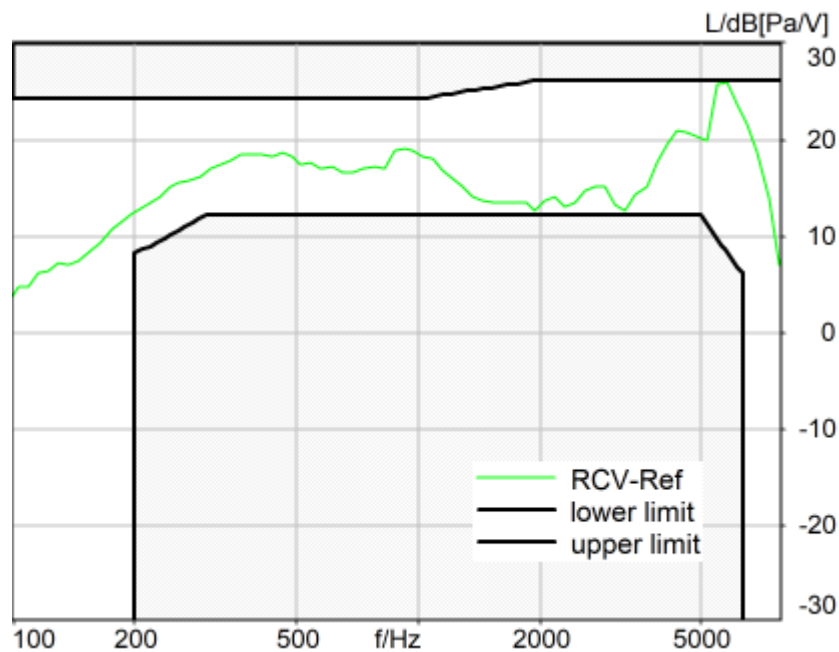
2025/1/26 13:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
 0.36 dB at 1948.0 Hz Ok

Ok

2025/1/23 17:29 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
--------------------	--

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:48
Responsible Person	audio

Status Overview

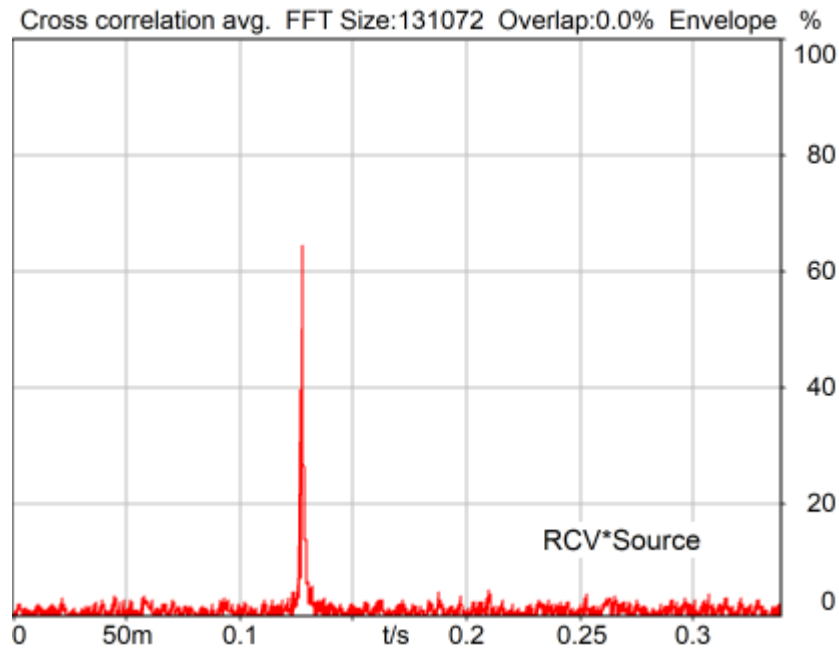
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	127.6	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	22.01	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	16.02	HUHAO_2403_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	34.79	HUHAO_2403_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	32.52	HUHAO_2403_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	34.30	HUHAO_2403_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	33.74	HUHAO_2403_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	HUHAO_2403_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	23.69	HUHAO_2403_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	24.34	HUHAO_2403_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	21.79	HUHAO_2403_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	23.81	HUHAO_2403_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	28.32	HUHAO_2403_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)	21.79	HUHAO_2403_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	HUHAO_2403_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	32.98	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS NB 24.4kbps_CH20525
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.04	HUHAO_2403_LTE

Noise - 630 Hz NB		[dB], 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	35.14	HUHAO_2403_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	32.94	HUHAO_2403_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	23.55	HUHAO_2403_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	24.18	HUHAO_2403_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	21.56	HUHAO_2403_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	28.77	HUHAO_2403_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	30.33	HUHAO_2403_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)	21.56	HUHAO_2403_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	-2.26	HUHAO_2403_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], 462.0 Hz	0.94	HUHAO_2403_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], 1360.9 Hz	0.18	HUHAO_2403_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], 3245.6 Hz	2.63	HUHAO_2403_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

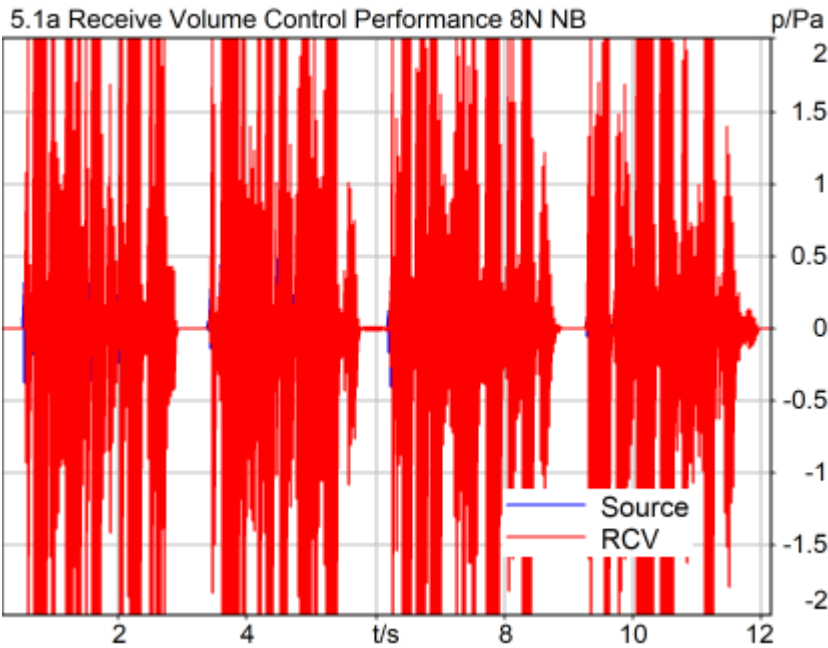


Channel	Delay
RCV*Source	127.6 ms

2025/1/26 14:40 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	92.01 dB[SPL]	84.30%	22.01 dB[SPL]	Ok

Ok

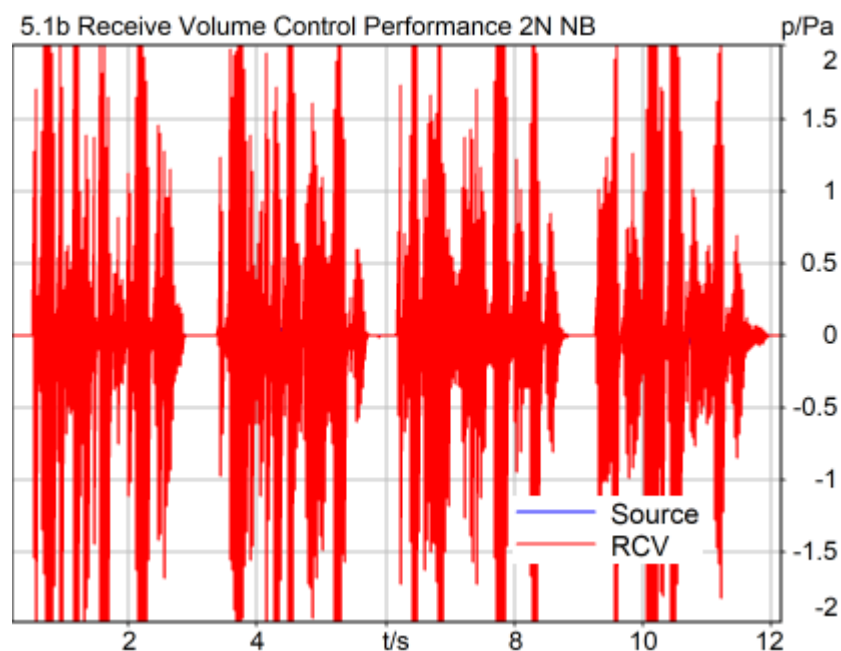
2025/1/26 14:42 ACQUA 6.0.200

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	86.02 dB[SPL]	84.17%	16.02 dB[SPL]	Ok

Ok

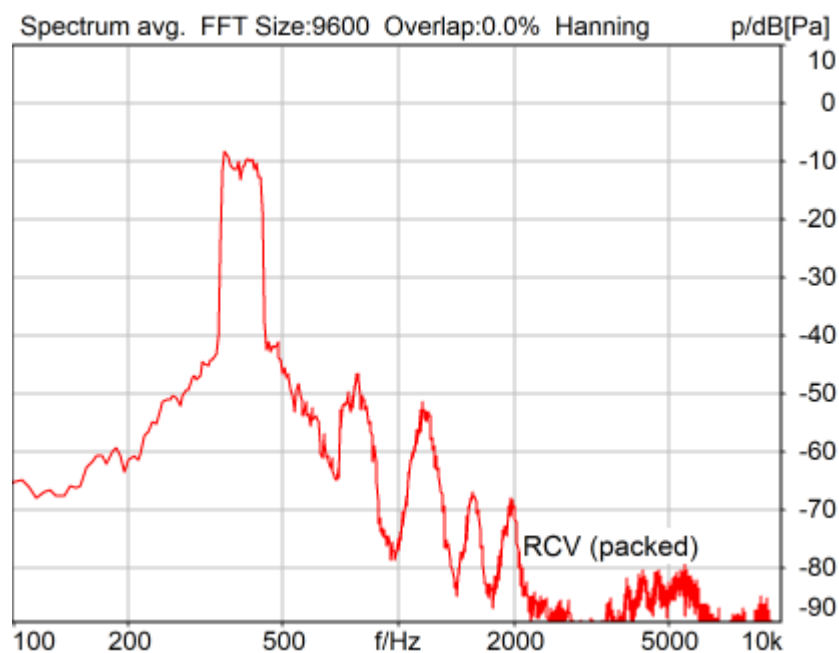
2025/1/26 14:54 ACQUA 6.0.200

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): 34.79 dB (1.82%) Ok

Ok

2025/1/26 14:43 ACQUA 6.0.200

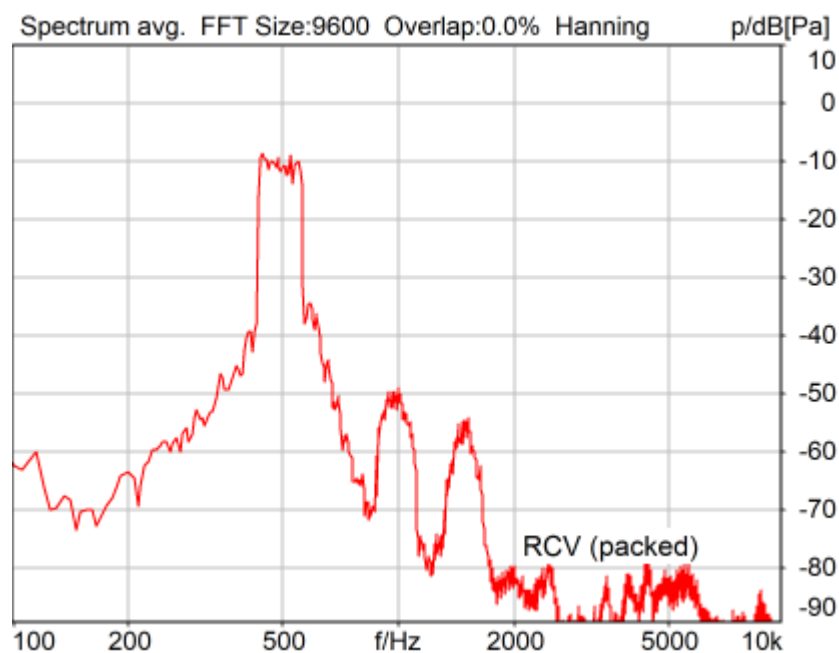
Unmodified HEAD acoustics Measurement Descriptor

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): 32.52 dB (2.37%) Ok

Ok

2025/1/26 14:43 ACQUA 6.0.200

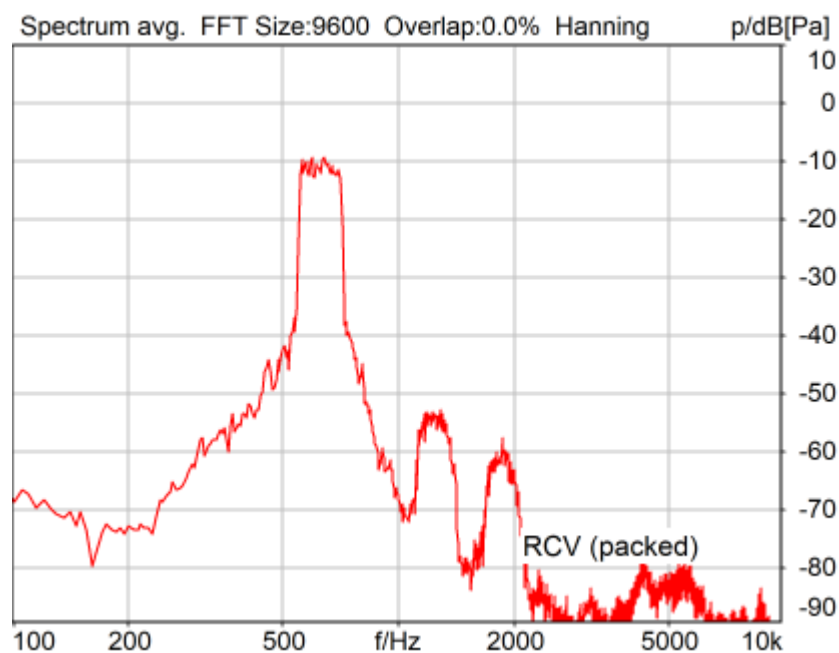
Unmodified HEAD acoustics Measurement Descriptor

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): 34.30 dB (1.93%) Ok

Ok

2025/1/26 14:44 ACQUA 6.0.200

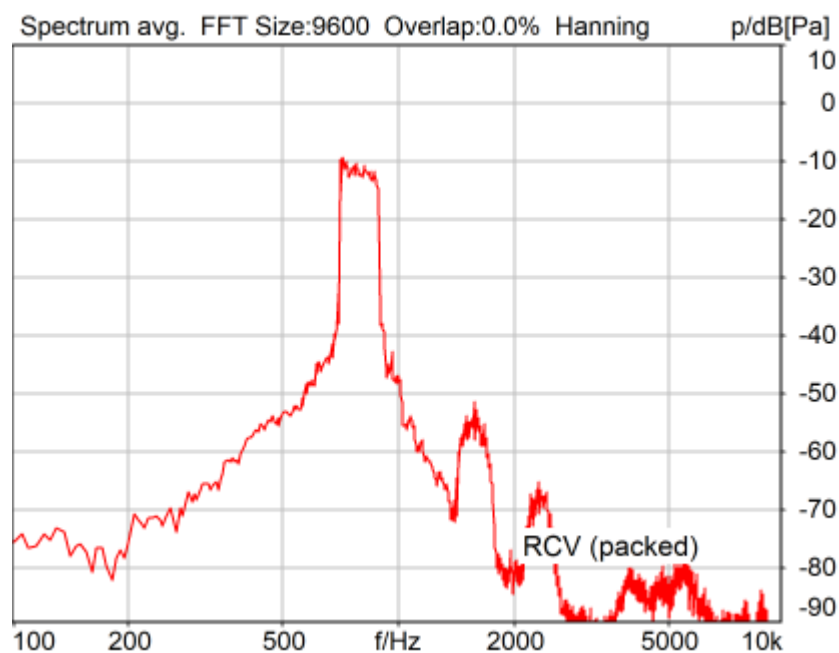
Unmodified HEAD acoustics Measurement Descriptor

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): 33.74 dB (2.06%) Ok

Ok

2025/1/26 14:44 ACQUA 6.0.200

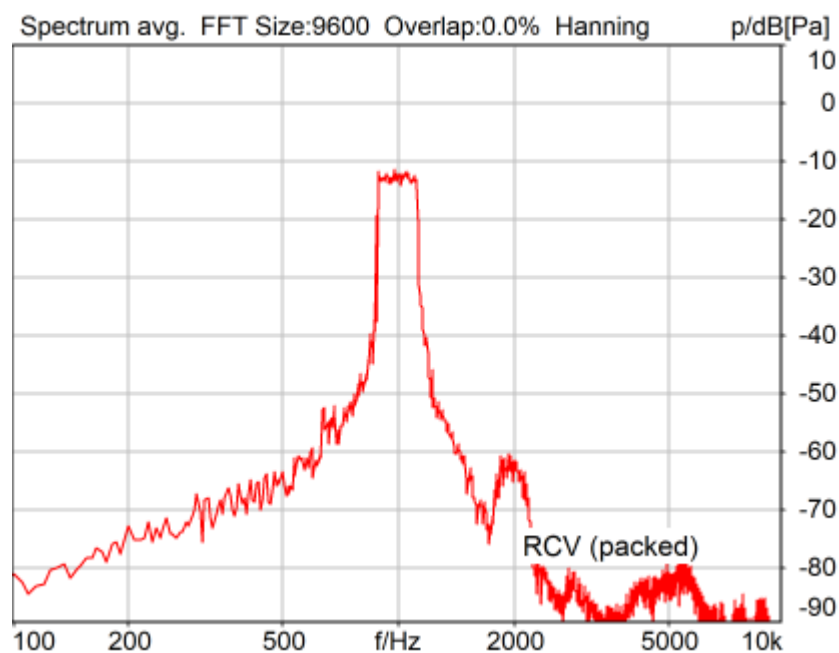
Unmodified HEAD acoustics Measurement Descriptor

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): 32.78 dB (2.30%) Ok

Ok

2025/1/26 14:44 ACQUA 6.0.200

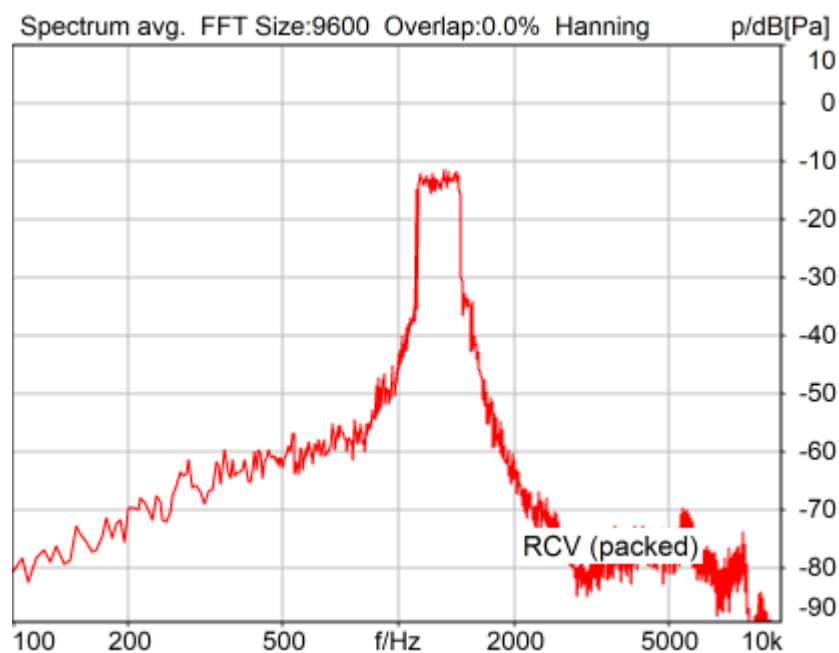
Unmodified HEAD acoustics Measurement Descriptor

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): 23.69 dB (6.54%) Ok

Ok

2025/1/26 14:45 ACQUA 6.0.200

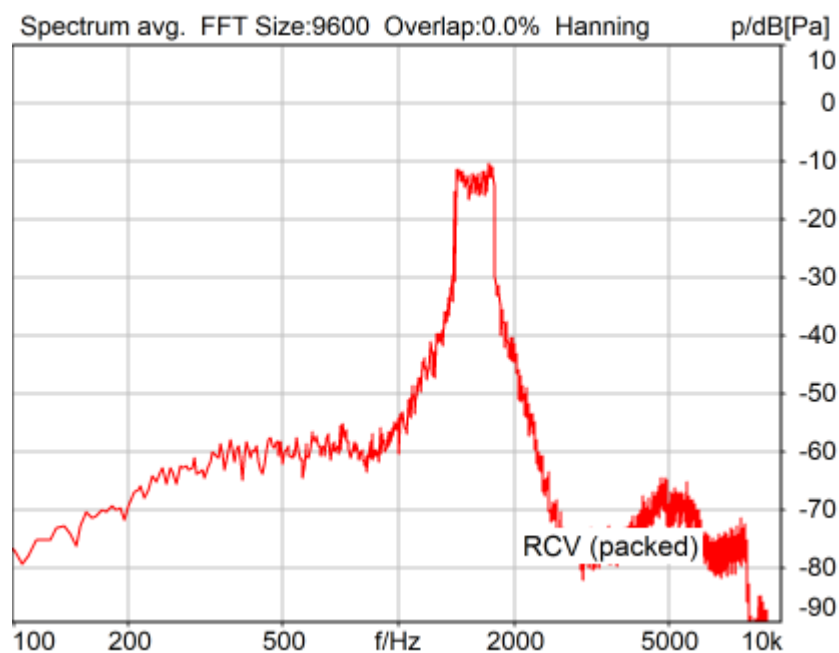
Unmodified HEAD acoustics Measurement Descriptor

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): 24.34 dB (6.07%) Ok

Ok

2025/1/26 14:45 ACQUA 6.0.200

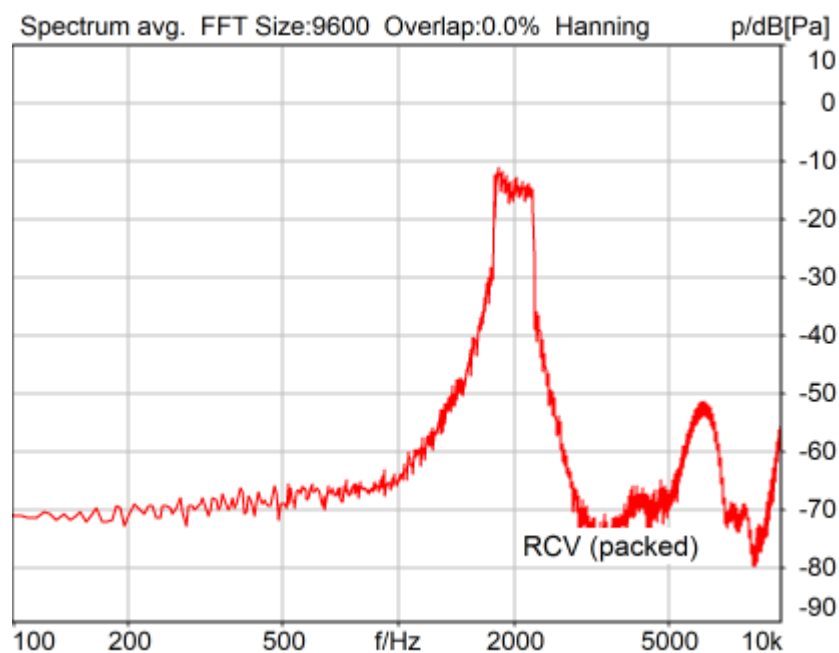
Unmodified HEAD acoustics Measurement Descriptor

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): 21.79 dB (8.14%) Ok

Ok

2025/1/26 14:45 ACQUA 6.0.200

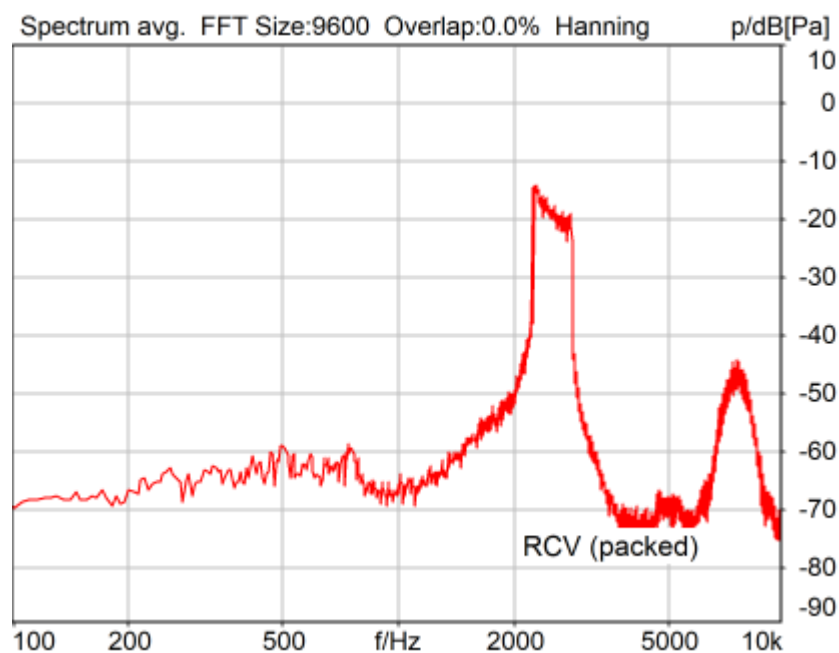
Unmodified HEAD acoustics Measurement Descriptor

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): 23.81 dB (6.45%) Ok

Ok

2025/1/26 14:46 ACQUA 6.0.200

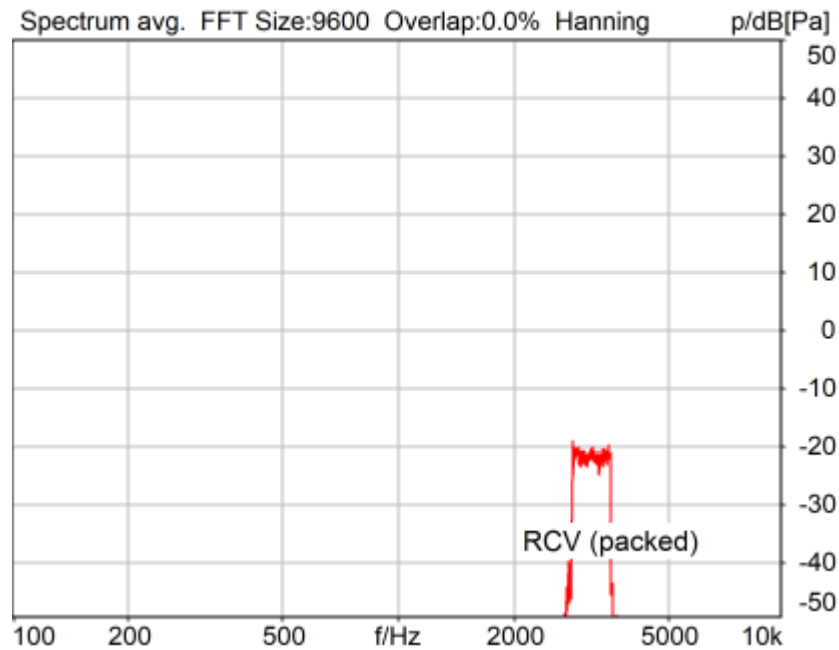
Unmodified HEAD acoustics Measurement Descriptor

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): 28.32 dB (3.84%) Ok

Ok

2025/1/26 14:46 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

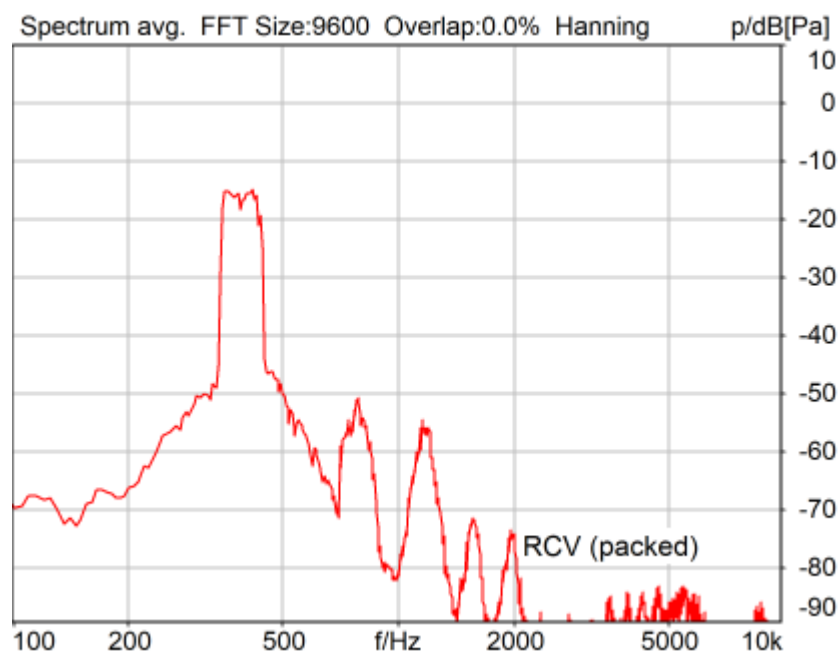
Region	Frequency	SDNR
1	400Hz	34.79 dB
2	500Hz	32.52 dB
3	630Hz	34.30 dB
4	800Hz	33.74 dB
5	1000Hz	32.78 dB
6	1250Hz	23.69 dB
7	1600Hz	24.34 dB
8	2000Hz	21.79 dB
9	2500Hz	23.81 dB
10	3150Hz	28.32 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.79dB at 2000Hz.

2025/1/26 14:47 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): 33.47 dB (2.12%) Ok

Ok

2025/1/26 14:55 ACQUA 6.0.200

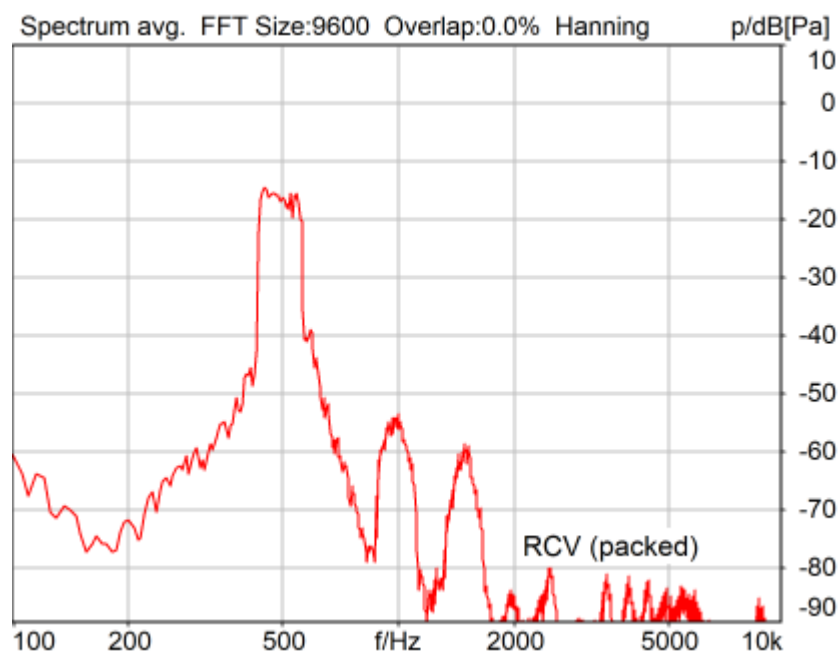
Unmodified HEAD acoustics Measurement Descriptor

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): 32.98 dB (2.24%) Ok

Ok

2025/1/26 14:55 ACQUA 6.0.200

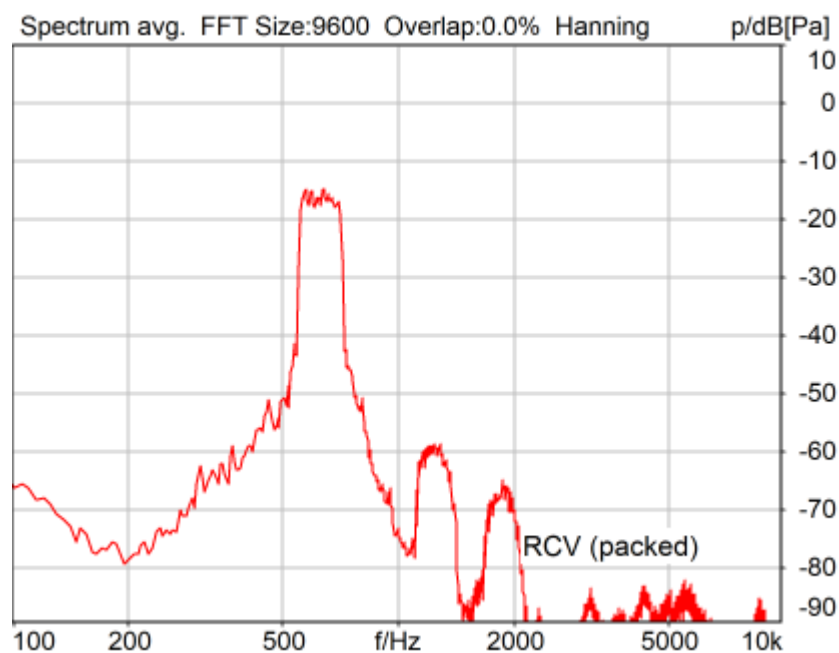
Unmodified HEAD acoustics Measurement Descriptor

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): 35.04 dB (1.77%) Ok

Ok

2025/1/26 14:55 ACQUA 6.0.200

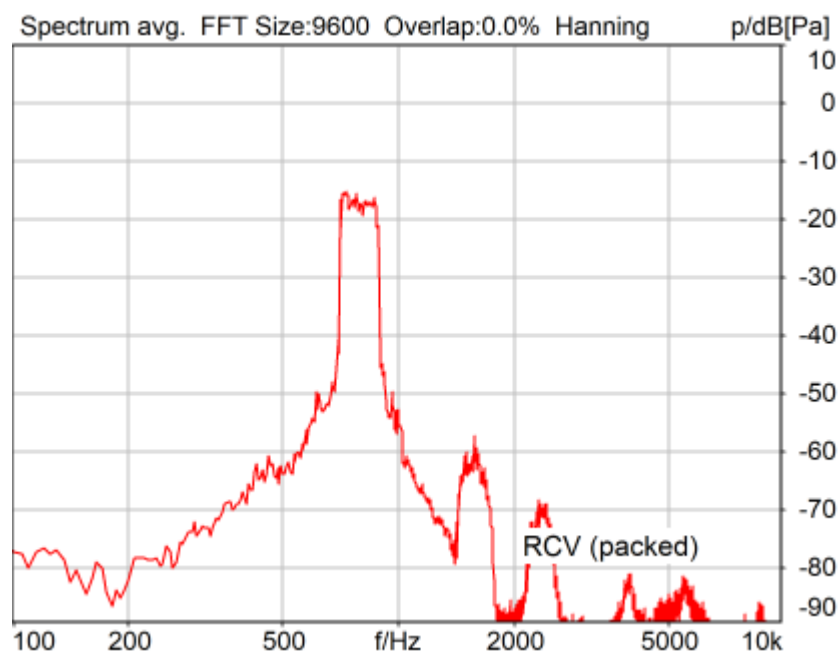
Unmodified HEAD acoustics Measurement Descriptor

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): 35.14 dB (1.75%) Ok

Ok

2025/1/26 14:56 ACQUA 6.0.200

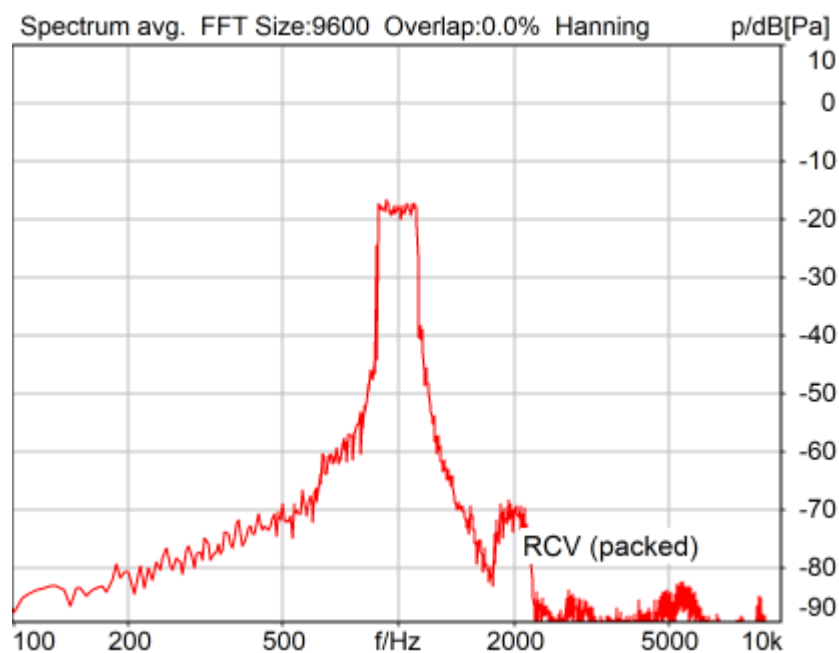
Unmodified HEAD acoustics Measurement Descriptor

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): 32.94 dB (2.25%) Ok

Ok

2025/1/26 14:56 ACQUA 6.0.200

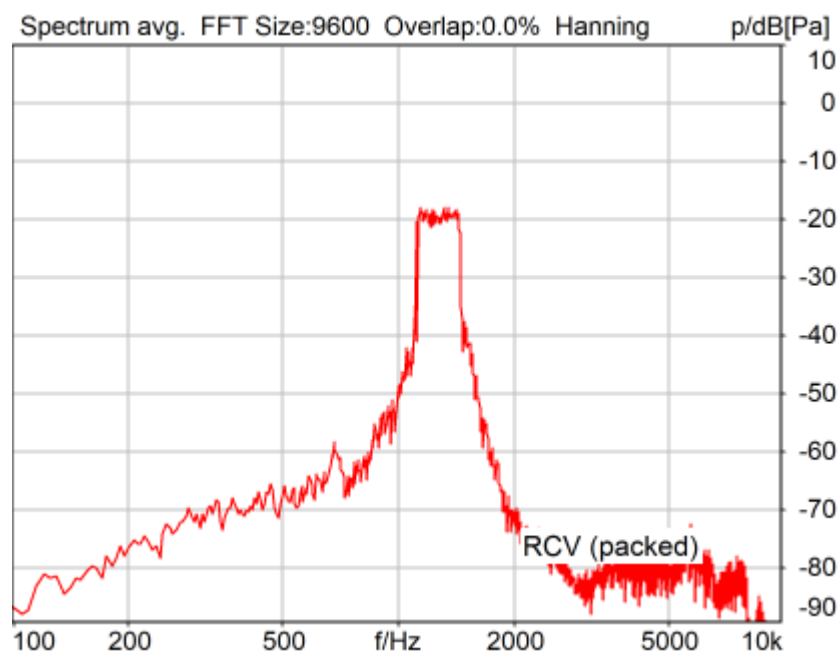
Unmodified HEAD acoustics Measurement Descriptor

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): 23.55 dB (6.65%) Ok

Ok

2025/1/26 14:57 ACQUA 6.0.200

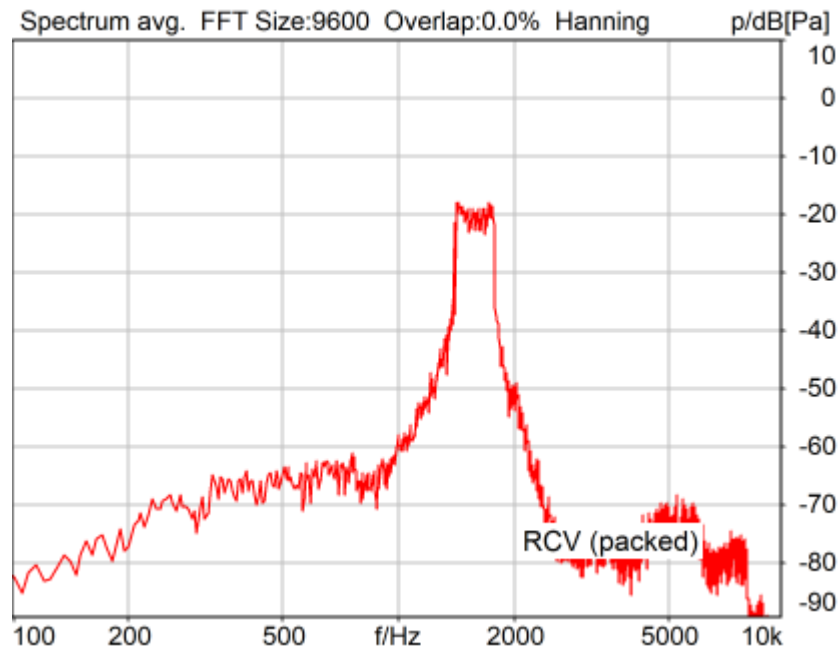
Unmodified HEAD acoustics Measurement Descriptor

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): 24.18 dB (6.18%) Ok

Ok

2025/1/26 14:57 ACQUA 6.0.200

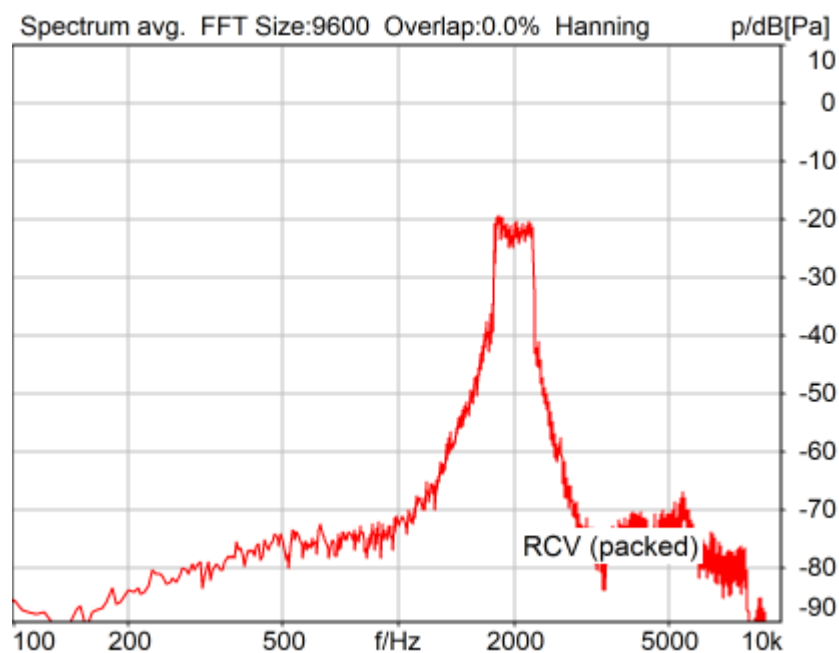
Unmodified HEAD acoustics Measurement Descriptor

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): 21.56 dB (8.36%) Ok

Ok

2025/1/26 14:57 ACQUA 6.0.200

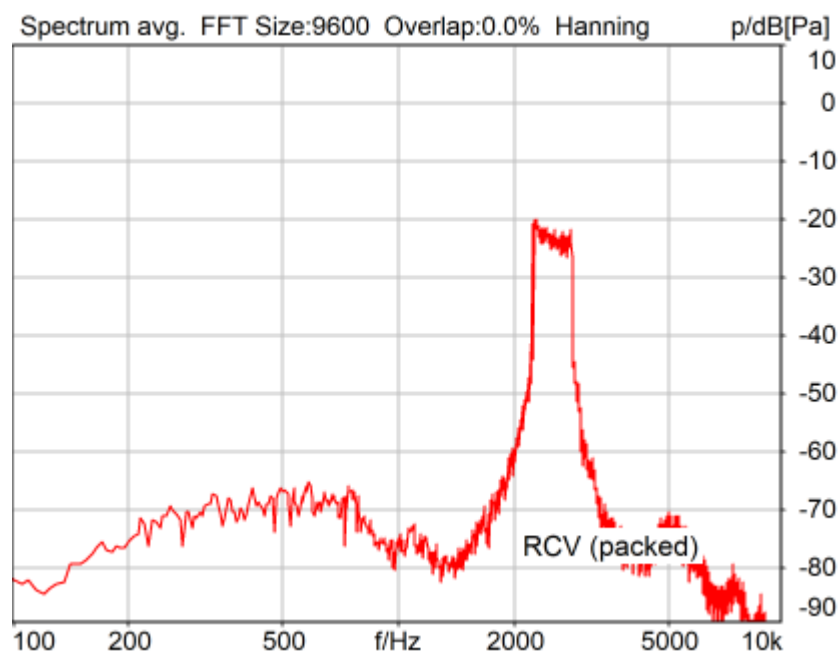
Unmodified HEAD acoustics Measurement Descriptor

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): 28.77 dB (3.64%) Ok

Ok

2025/1/26 14:58 ACQUA 6.0.200

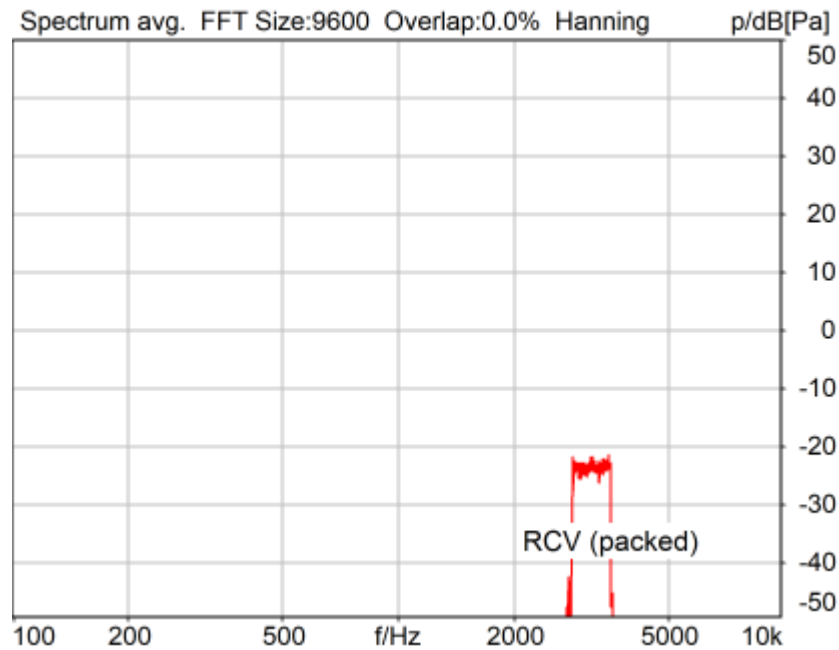
Unmodified HEAD acoustics Measurement Descriptor

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): 30.33 dB (3.04%) Ok

Ok

2025/1/26 14:58 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

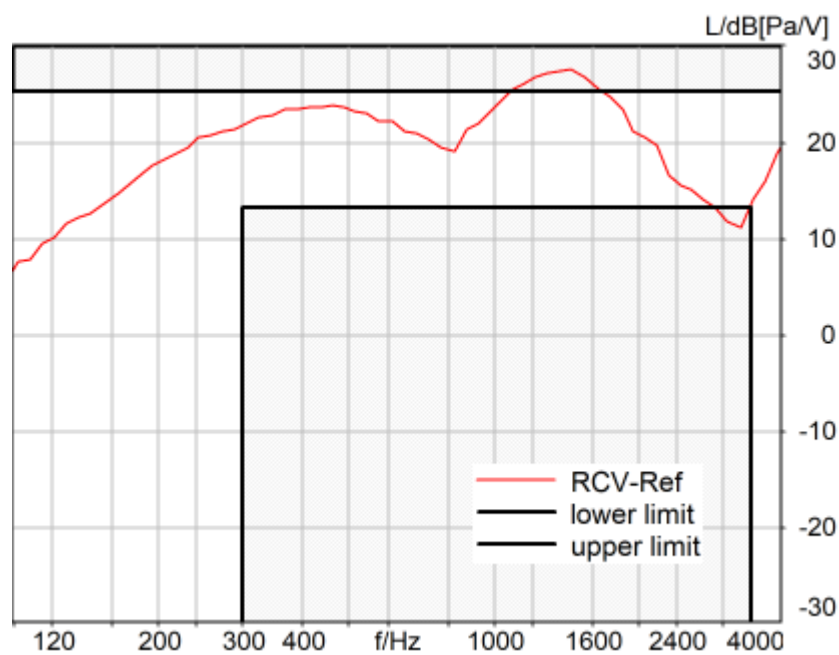
Region	Frequency	SDNR
1	400Hz	33.47 dB
2	500Hz	32.98 dB
3	630Hz	35.04 dB
4	800Hz	35.14 dB
5	1000Hz	32.94 dB
6	1250Hz	23.55 dB
7	1600Hz	24.18 dB
8	2000Hz	21.56 dB
9	2500Hz	28.77 dB
10	3150Hz	30.33 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.56dB at 2000Hz.

2025/1/26 14:59 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
-2.26 dB at 1447.5 Hz Not Ok

Not Ok

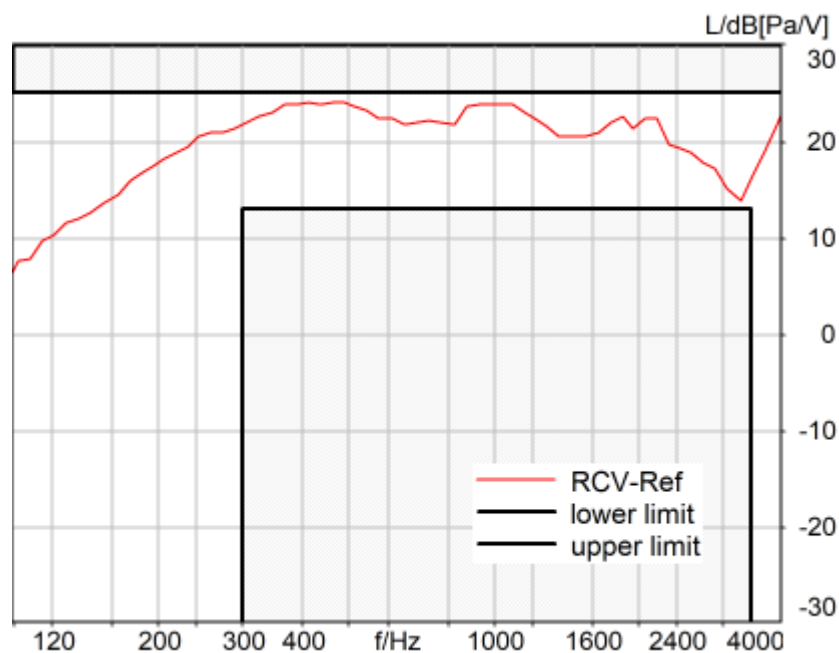
2025/1/26 14:48 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance

0.94 dB at 462.0 Hz Ok

Ok

2025/1/26 14:49 ACQUA 6.0.200

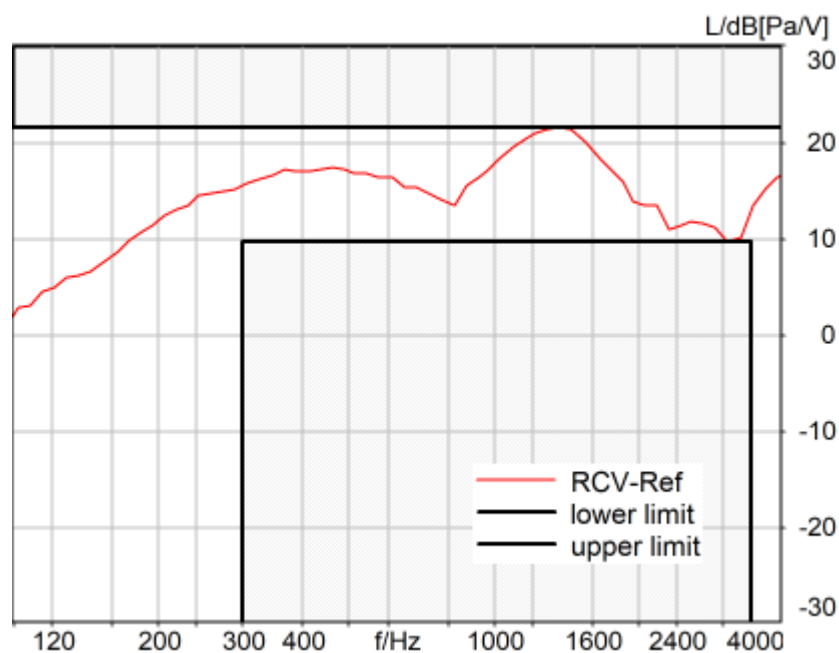
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
0.18 dB at 1360.9 Hz Ok

Ok

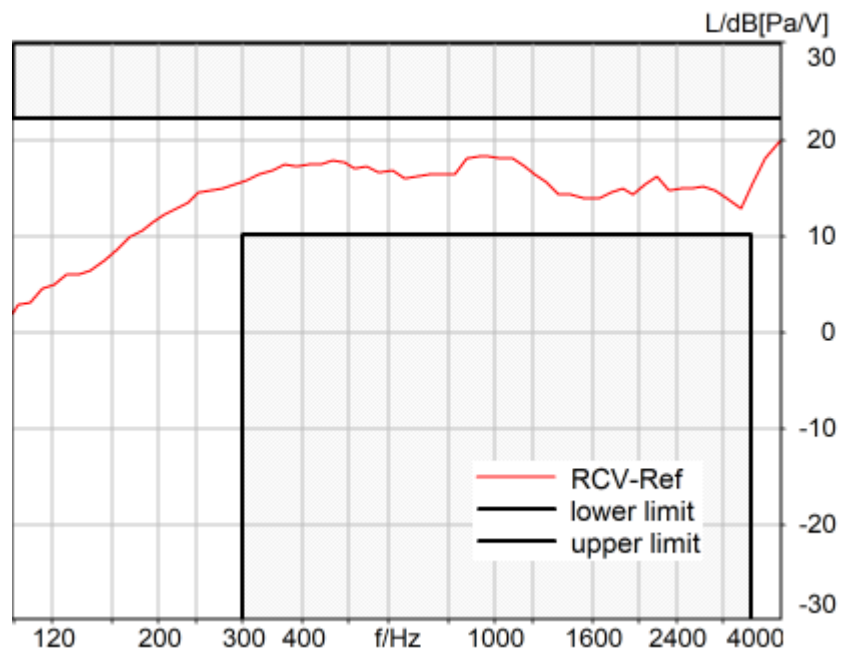
2025/1/26 14:53 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
 2.63 dB at 3245.6 Hz Ok

Ok

2025/1/26 14:51 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
--------------------	--

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:49
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	123.9	HUHAO_2403_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]]	22.01	HUHAO_2403_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]]	16.22	HUHAO_2403_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	27.96	HUHAO_2403_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	31.84	HUHAO_2403_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	34.37	HUHAO_2403_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	32.51	HUHAO_2403_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	34.87	HUHAO_2403_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	34.55	HUHAO_2403_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	32.68	HUHAO_2403_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	23.01	HUHAO_2403_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	24.17	HUHAO_2403_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	21.57	HUHAO_2403_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	25.33	HUHAO_2403_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	28.16	HUHAO_2403_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	24.43	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and	Ok	Distortion (Noise)	25.37	HUHAO_2403_LTE

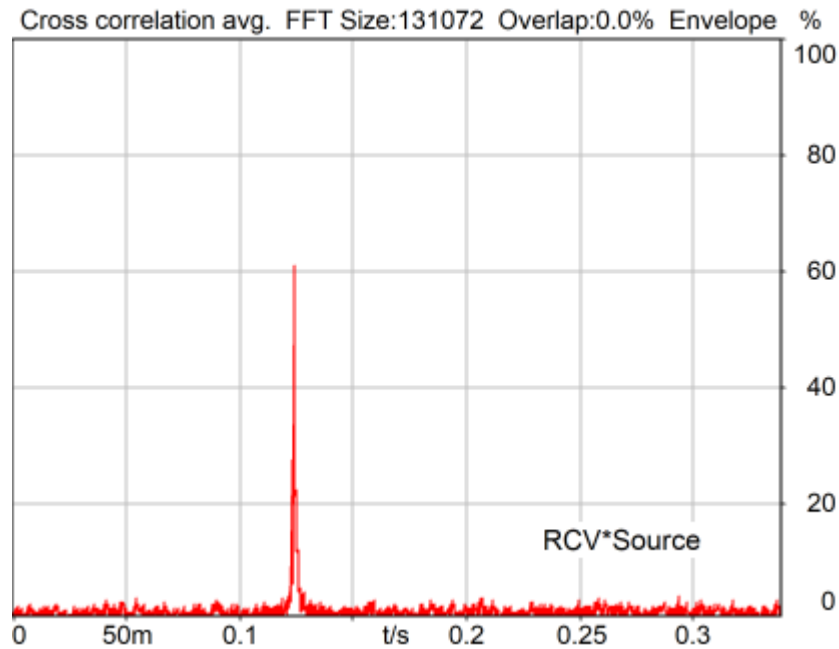
Noise - 5000 Hz WB		[dB], 0.0 dB		Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.57	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.54	HUHAO_2403_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	30.81	HUHAO_2403_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	32.97	HUHAO_2403_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	32.93	HUHAO_2403_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	35.52	HUHAO_2403_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	35.36	HUHAO_2403_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	32.83	HUHAO_2403_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	23.85	HUHAO_2403_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	24.03	HUHAO_2403_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	21.33	HUHAO_2403_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	27.71	HUHAO_2403_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	30.36	HUHAO_2403_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	26.58	HUHAO_2403_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	36.78	HUHAO_2403_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)	21.33	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.03	HUHAO_2403_LTE Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
5.3 Frequency Response	Ok	Min. dist. to tolerance	1.29	HUHAO_2403_LTE

2N DF		scheme [dB], 3245.6 Hz	Band5_10_QPSK_1_0_EVS WB 24.4kbps_CH20525
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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 DF	37
5.3 Frequency Response 2N DF	38

Overall Receive Delay WB

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

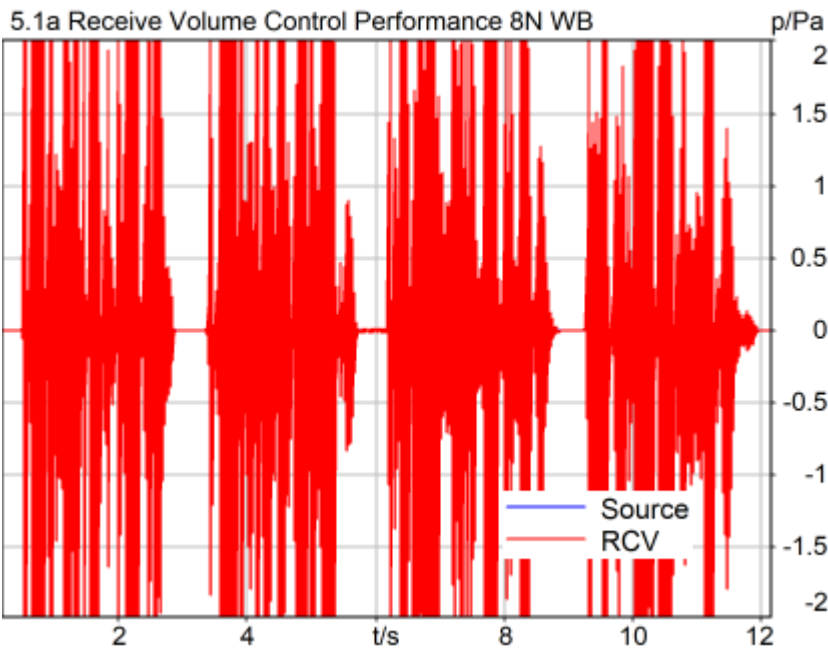


Channel	Delay
RCV*Source	123.9 ms

2025/1/26 14:24 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	92.01 dB[SPL]	84.29%	22.01 dB[SPL]	Ok

Ok

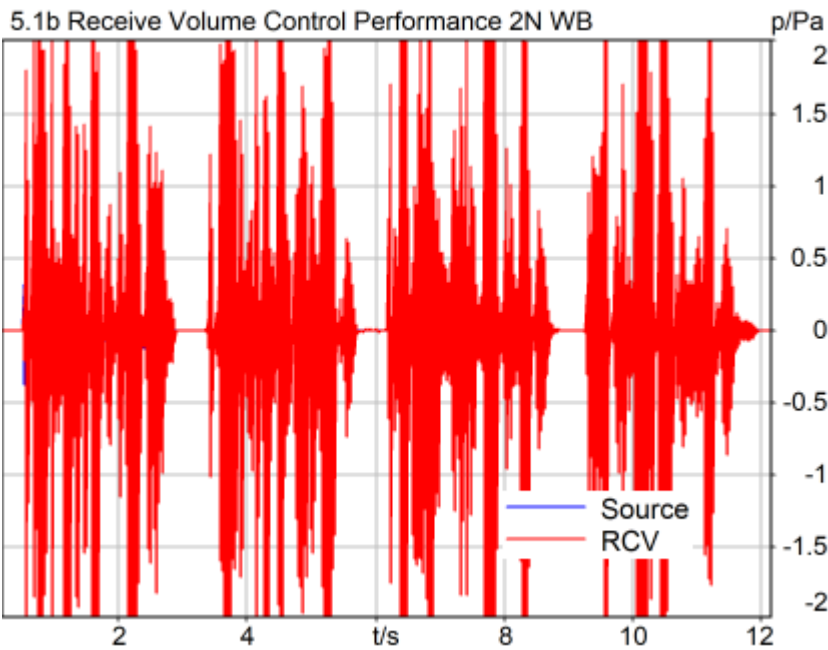
2025/1/26 14:24 ACQUA 6.0.200

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	86.22 dB[SPL]	84.34%	16.22 dB[SPL]	Ok

Ok

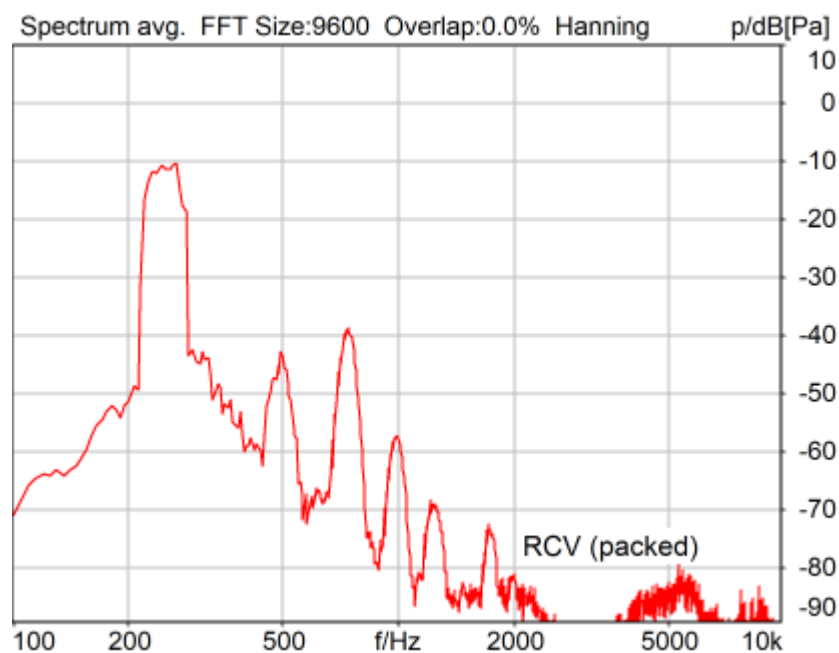
2025/1/26 14:07 ACQUA 6.0.200

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): 27.96 dB (4.00%) Ok

Ok

2025/1/26 14:25 ACQUA 6.0.200

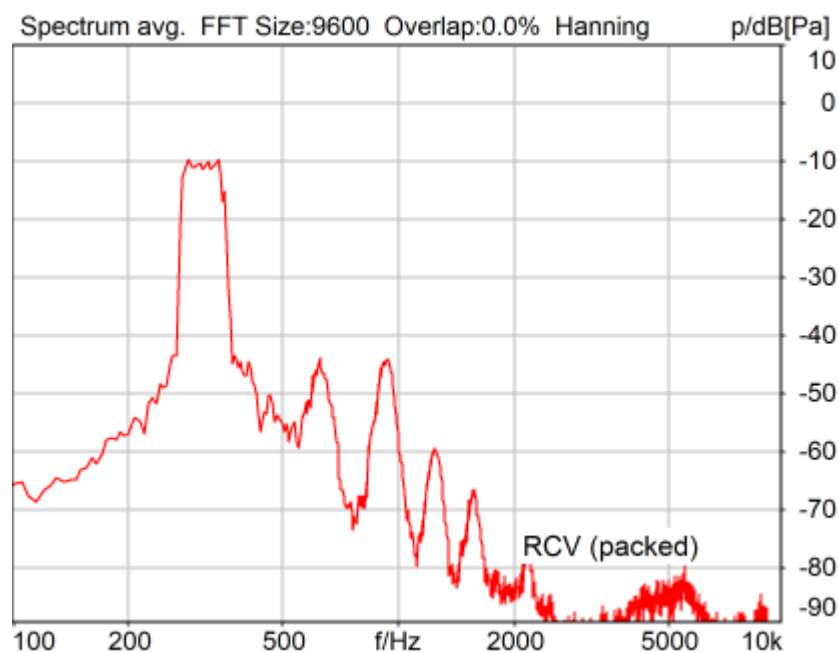
Unmodified HEAD acoustics Measurement Descriptor

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): 31.84 dB (2.56%) Ok

Ok

2025/1/26 14:25 ACQUA 6.0.200

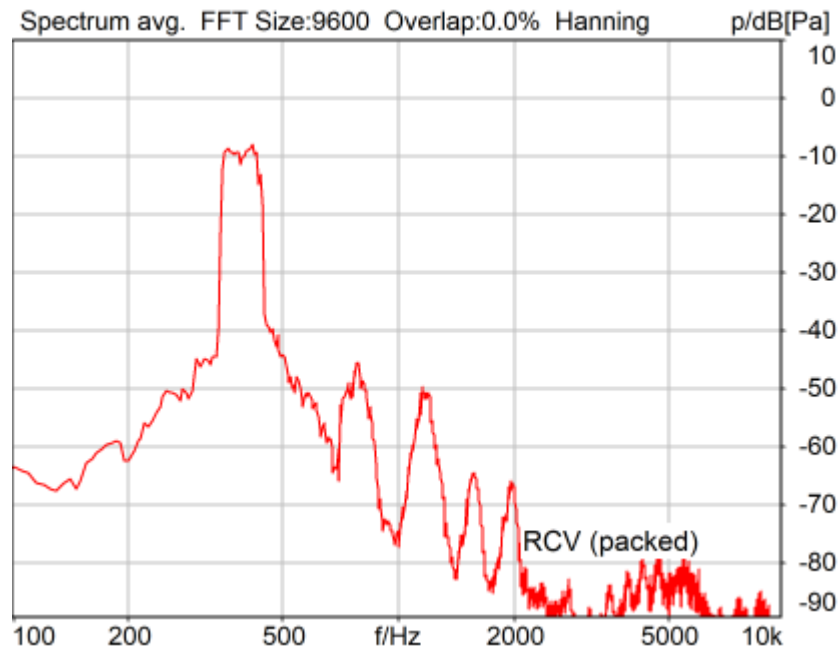
Unmodified HEAD acoustics Measurement Descriptor

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): 34.37 dB (1.91%) Ok

Ok

2025/1/26 14:25 ACQUA 6.0.200

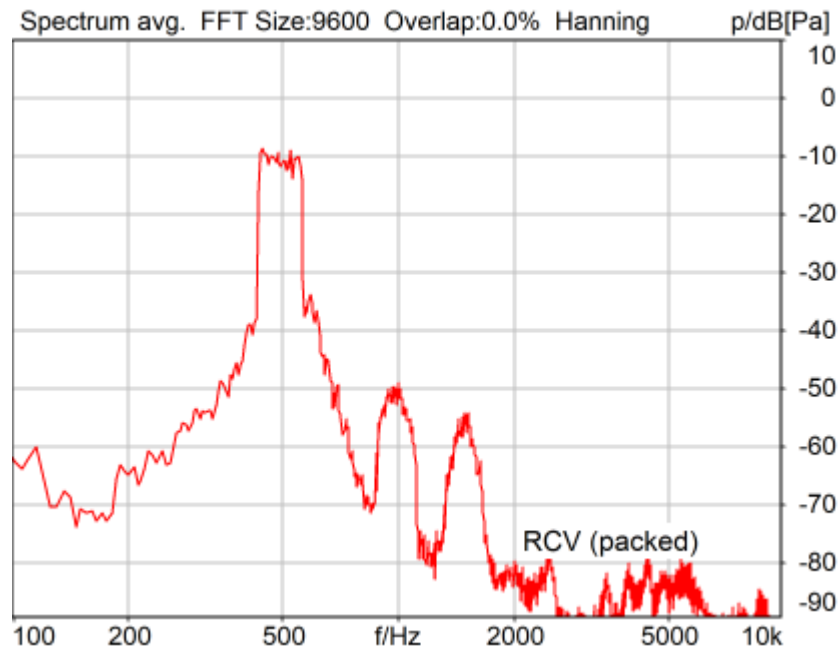
Unmodified HEAD acoustics Measurement Descriptor

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): 32.51 dB (2.37%) Ok

Ok

2025/1/26 14:26 ACQUA 6.0.200

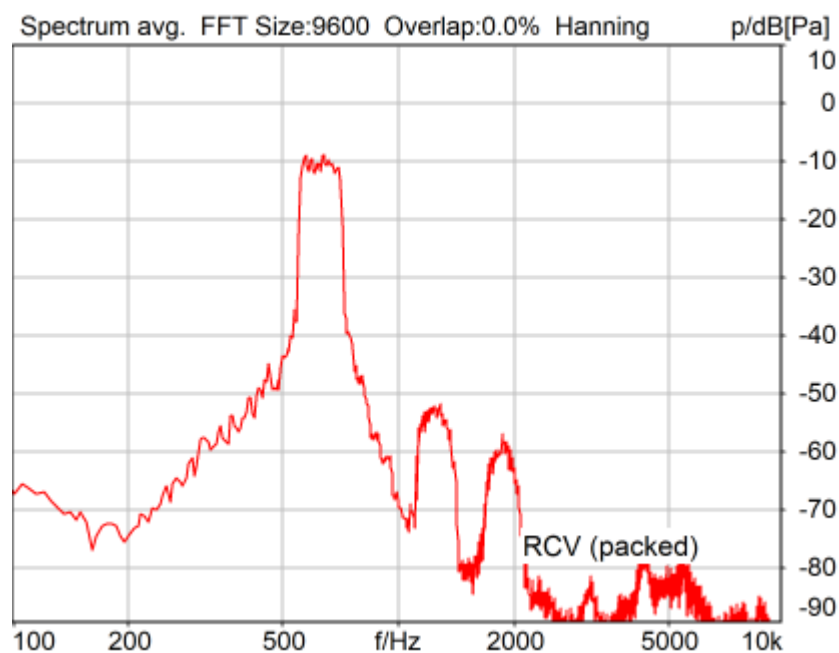
Unmodified HEAD acoustics Measurement Descriptor

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): 34.87 dB (1.81%) Ok

Ok

2025/1/26 14:26 ACQUA 6.0.200

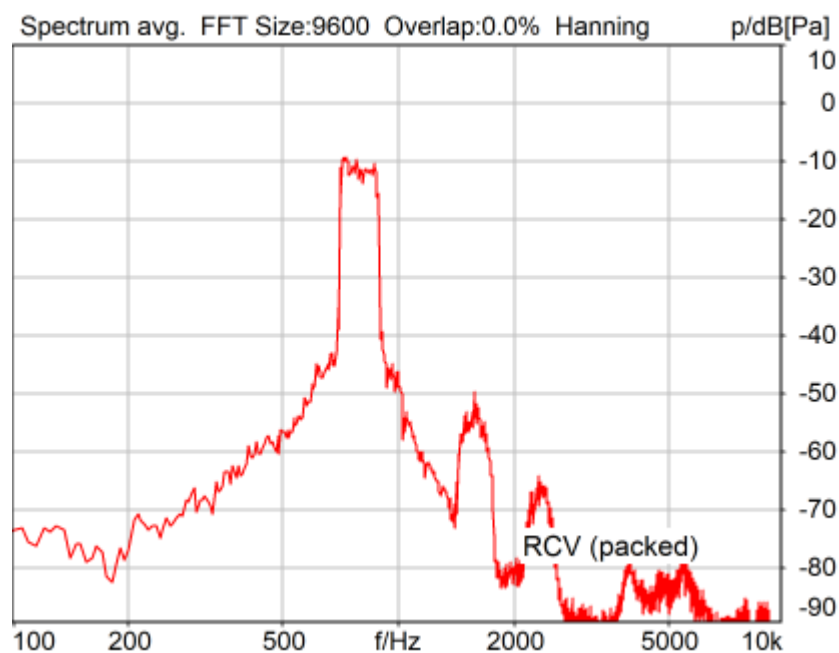
Unmodified HEAD acoustics Measurement Descriptor

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): 34.55 dB (1.87%) Ok

Ok

2025/1/26 14:26 ACQUA 6.0.200

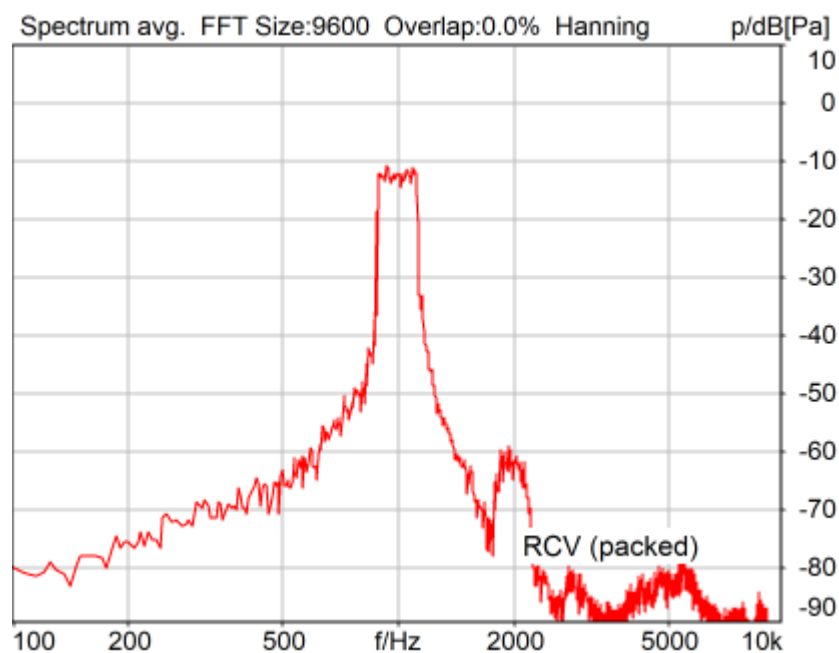
Unmodified HEAD acoustics Measurement Descriptor

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): 32.68 dB (2.32%) Ok

Ok

2025/1/26 14:27 ACQUA 6.0.200

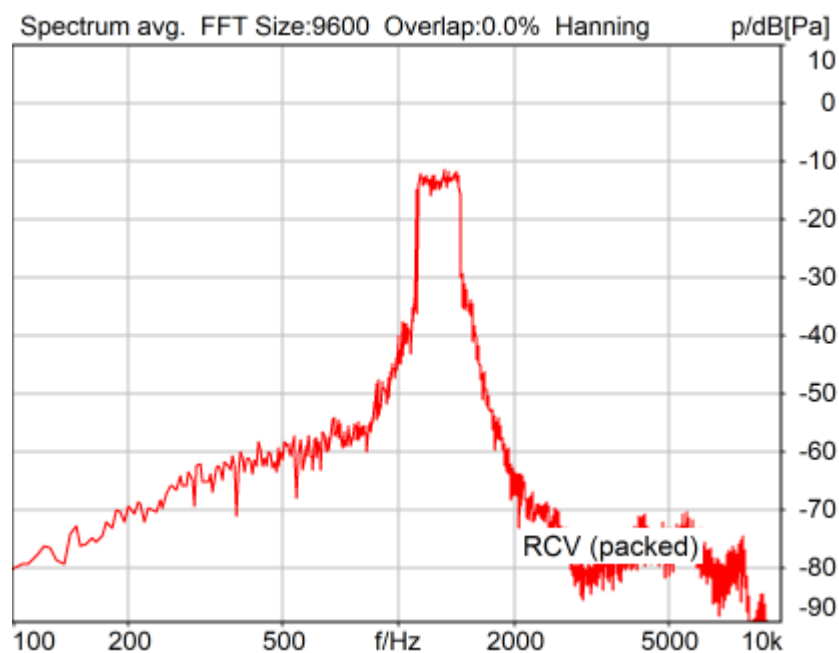
Unmodified HEAD acoustics Measurement Descriptor

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): 23.01 dB (7.07%) Ok

Ok

2025/1/26 14:27 ACQUA 6.0.200

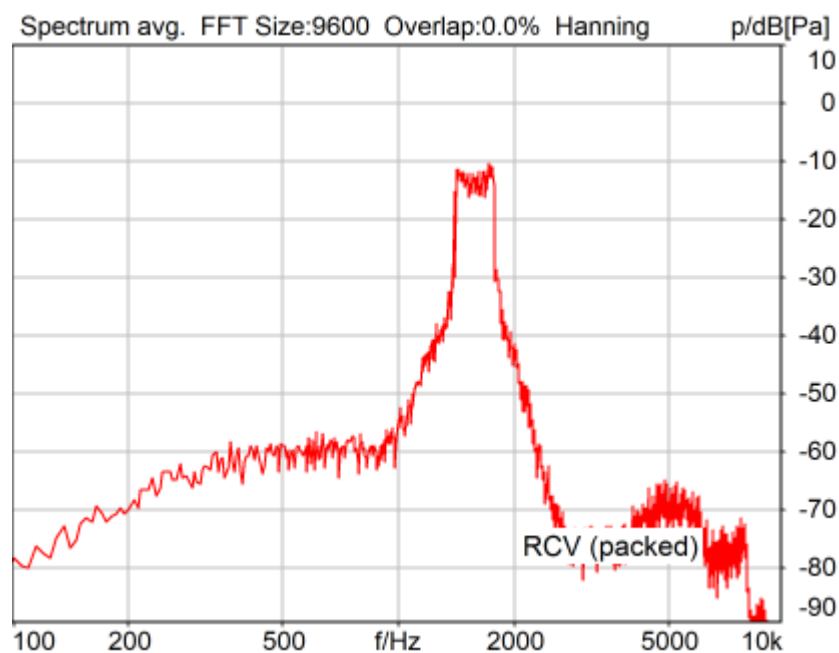
Unmodified HEAD acoustics Measurement Descriptor

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): 24.17 dB (6.18%) Ok

Ok

2025/1/26 14:28 ACQUA 6.0.200

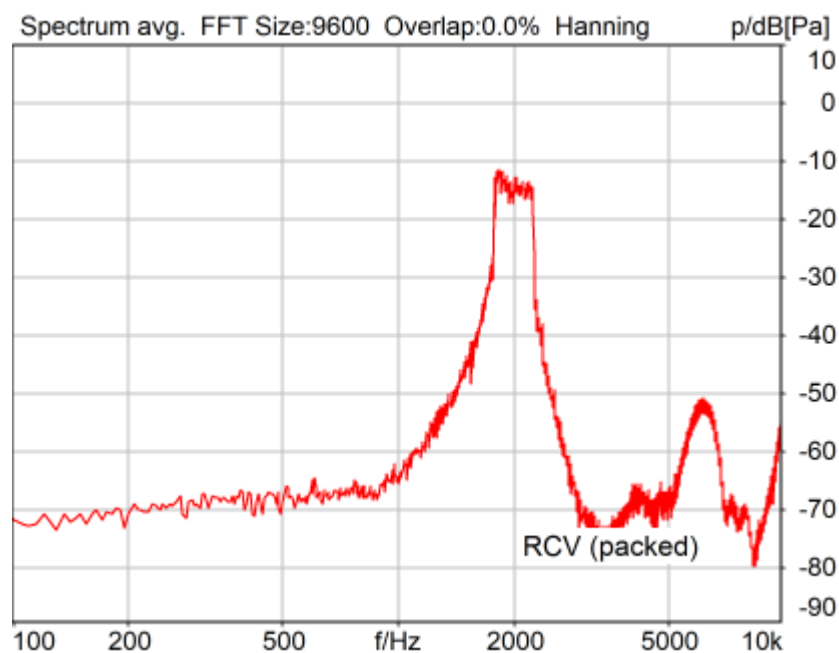
Unmodified HEAD acoustics Measurement Descriptor

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): 21.57 dB (8.35%) Ok

Ok

2025/1/26 14:28 ACQUA 6.0.200

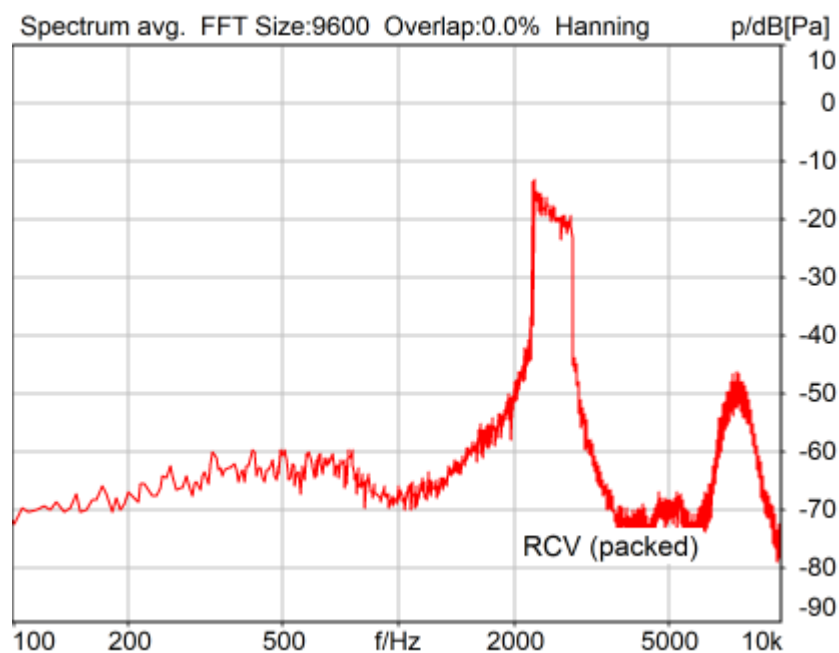
Unmodified HEAD acoustics Measurement Descriptor

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): 25.33 dB (5.42%) Ok

Ok

2025/1/26 14:28 ACQUA 6.0.200

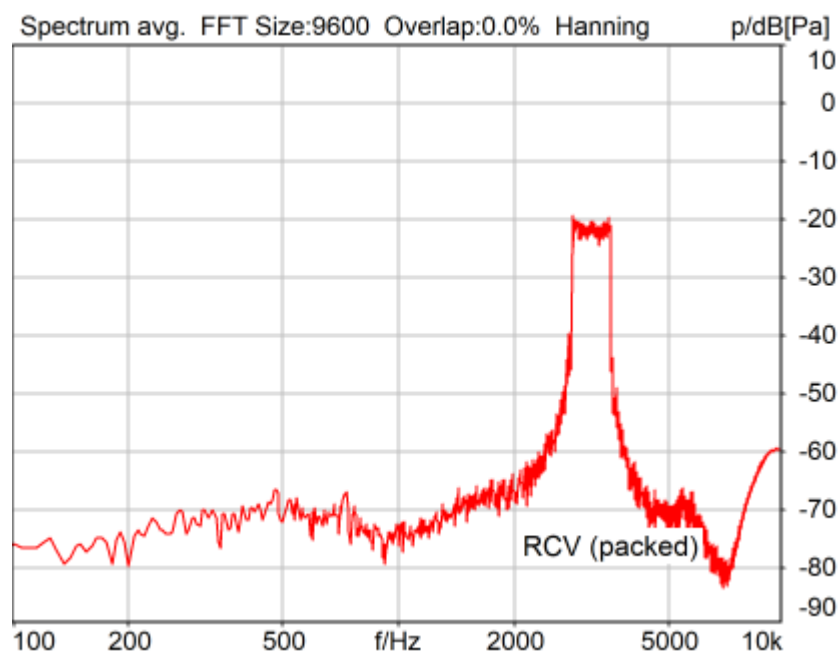
Unmodified HEAD acoustics Measurement Descriptor

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): 28.16 dB (3.91%) Ok

Ok

2025/1/26 14:29 ACQUA 6.0.200

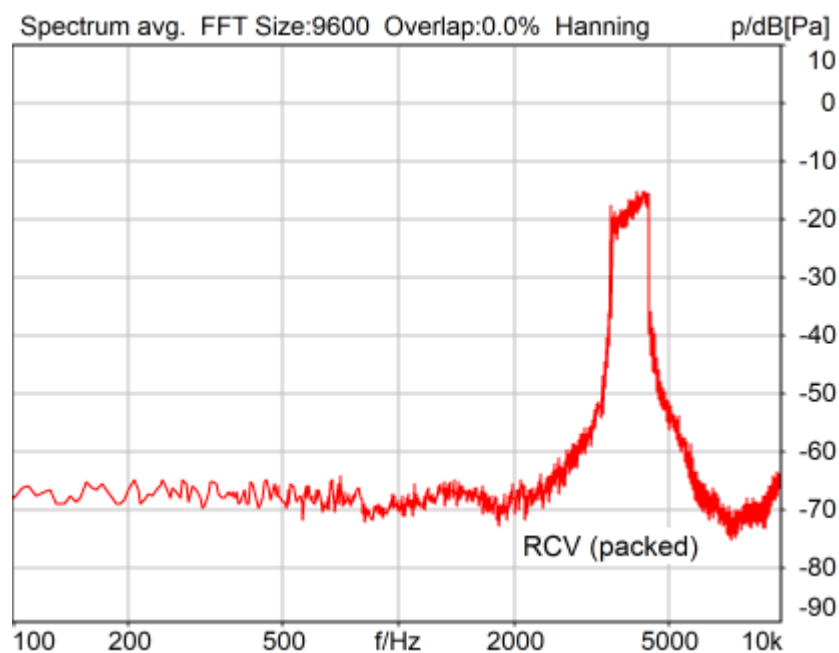
Unmodified HEAD acoustics Measurement Descriptor

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): 24.43 dB (6.01%) Ok

Ok

2025/1/26 14:29 ACQUA 6.0.200

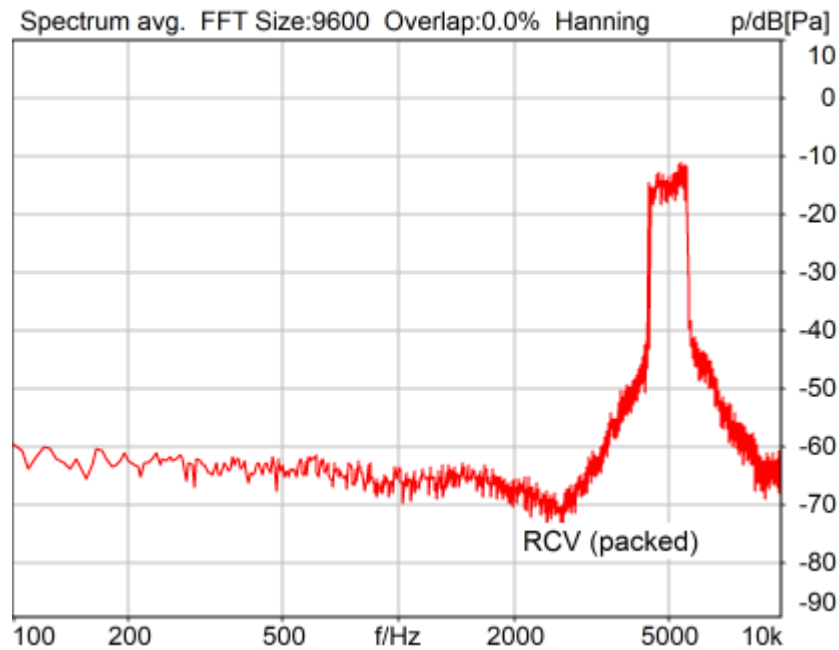
Unmodified HEAD acoustics Measurement Descriptor

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): 25.37 dB (5.39%) Ok

Ok

2025/1/26 14:30 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	27.96 dB
2	315Hz	31.84 dB
3	400Hz	34.37 dB
4	500Hz	32.51 dB
5	630Hz	34.87 dB
6	800Hz	34.55 dB
7	1000Hz	32.68 dB
8	1250Hz	23.01 dB
9	1600Hz	24.17 dB
10	2000Hz	21.57 dB

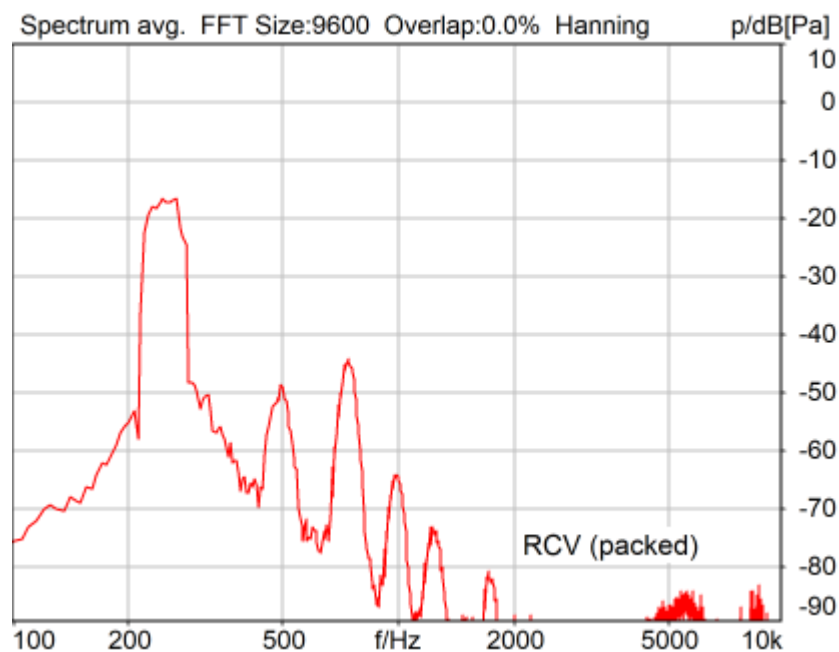
11	2500Hz	25.33 dB
12	3150Hz	28.16 dB
13	4000Hz	24.43 dB
14	5000Hz	25.37 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.57dB at 2000Hz.

2025/1/26 14:37 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): 27.54 dB (4.20%) Ok

Ok

2025/1/26 14:08 ACQUA 6.0.200

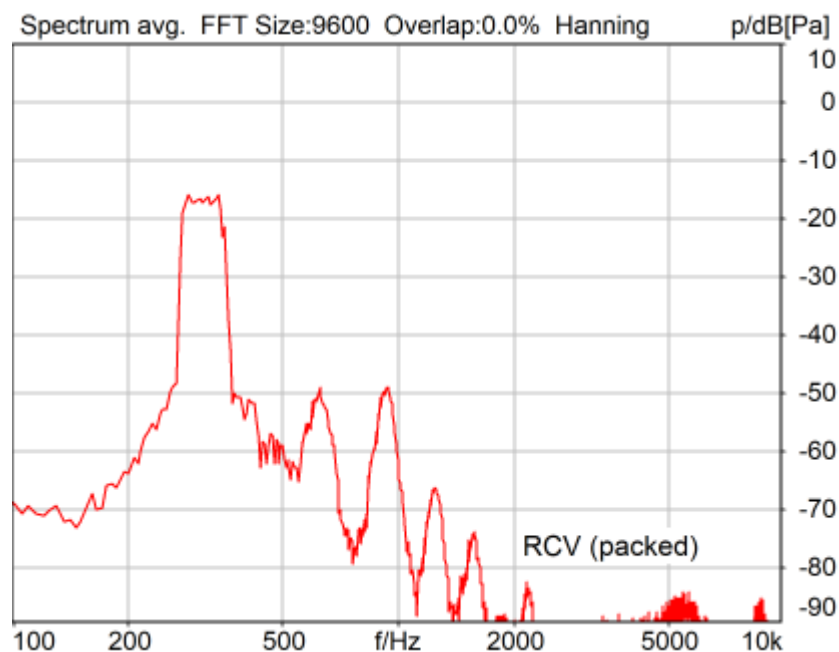
Unmodified HEAD acoustics Measurement Descriptor

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): 30.81 dB (2.88%) Ok

Ok

2025/1/26 14:08 ACQUA 6.0.200

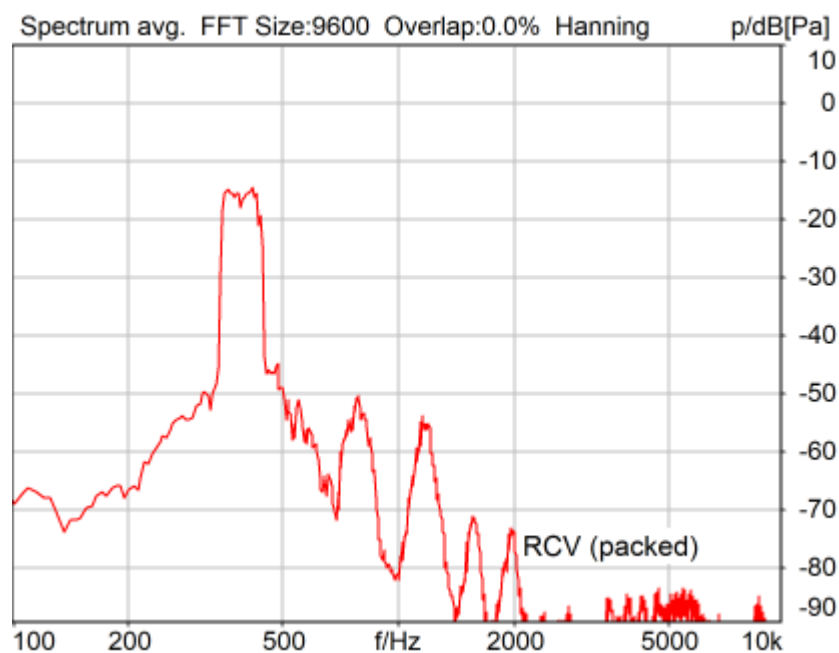
Unmodified HEAD acoustics Measurement Descriptor

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): 32.97 dB (2.25%) Ok

Ok

2025/1/26 14:09 ACQUA 6.0.200

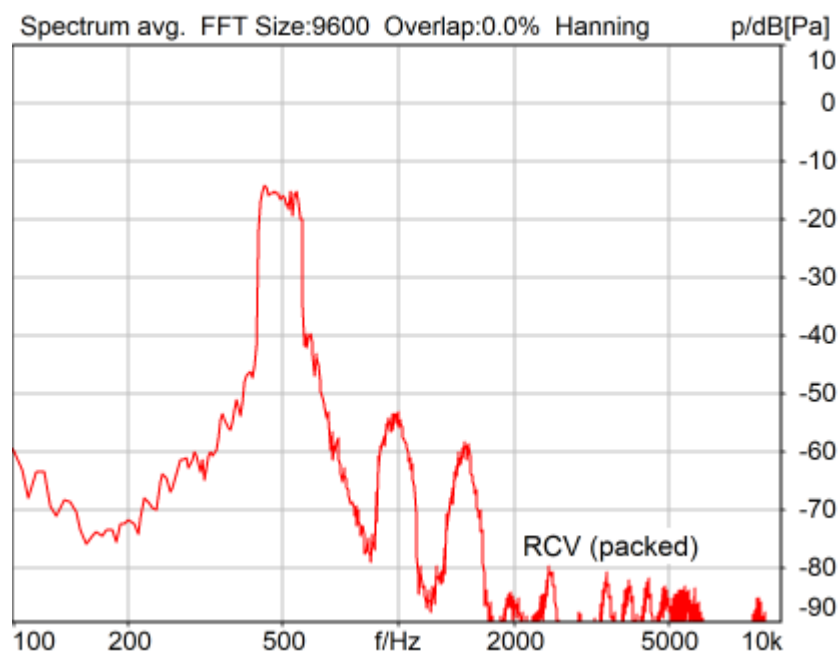
Unmodified HEAD acoustics Measurement Descriptor

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): 32.93 dB (2.26%) Ok

Ok

2025/1/26 14:09 ACQUA 6.0.200

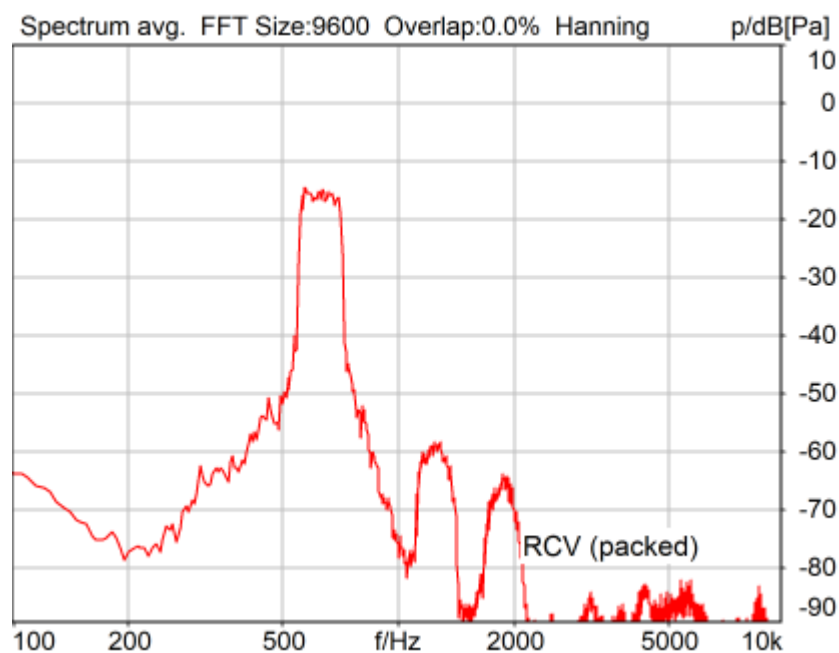
Unmodified HEAD acoustics Measurement Descriptor

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): 35.52 dB (1.68%) Ok

Ok

2025/1/26 14:09 ACQUA 6.0.200

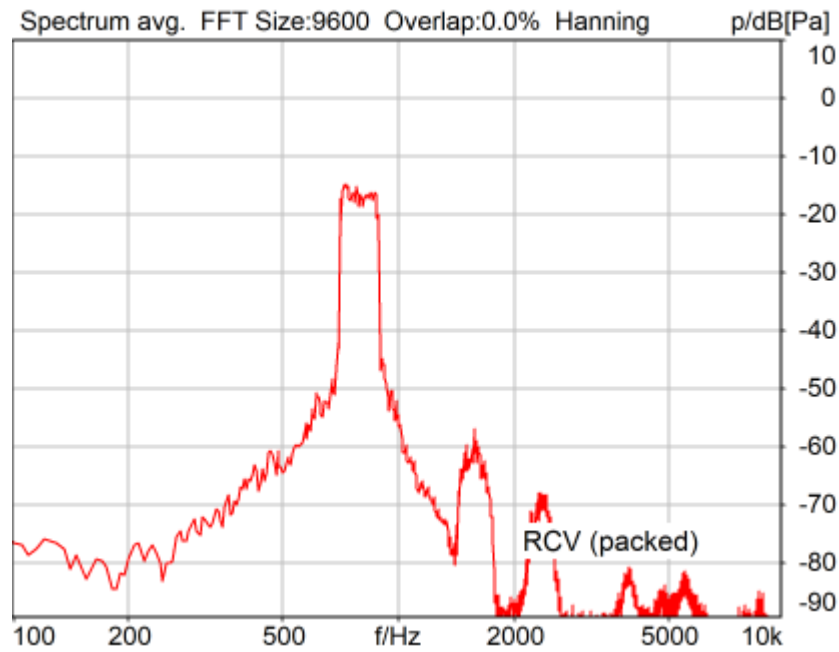
Unmodified HEAD acoustics Measurement Descriptor

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): 35.36 dB (1.71%) Ok

Ok

2025/1/26 14:10 ACQUA 6.0.200

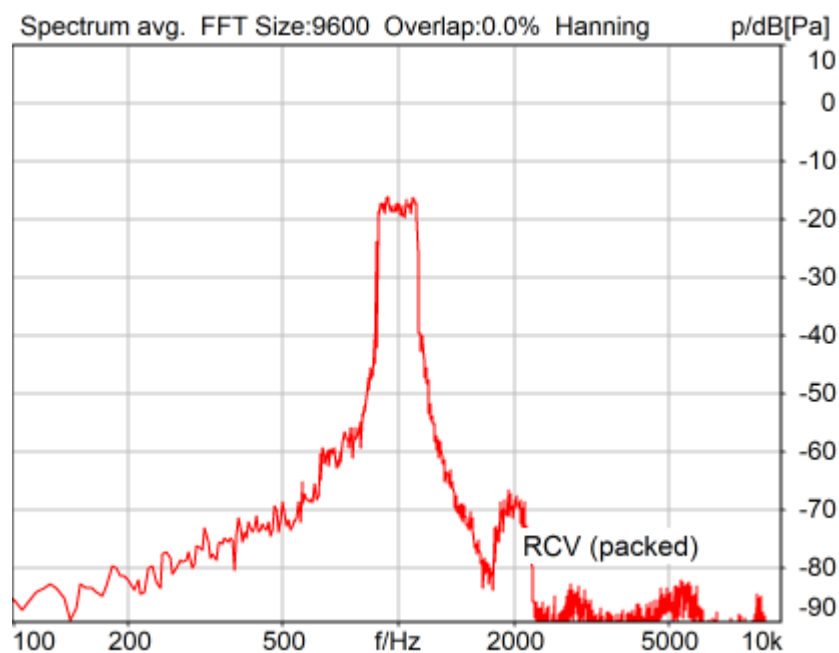
Unmodified HEAD acoustics Measurement Descriptor

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): 32.83 dB (2.28%) Ok

Ok

2025/1/26 14:10 ACQUA 6.0.200

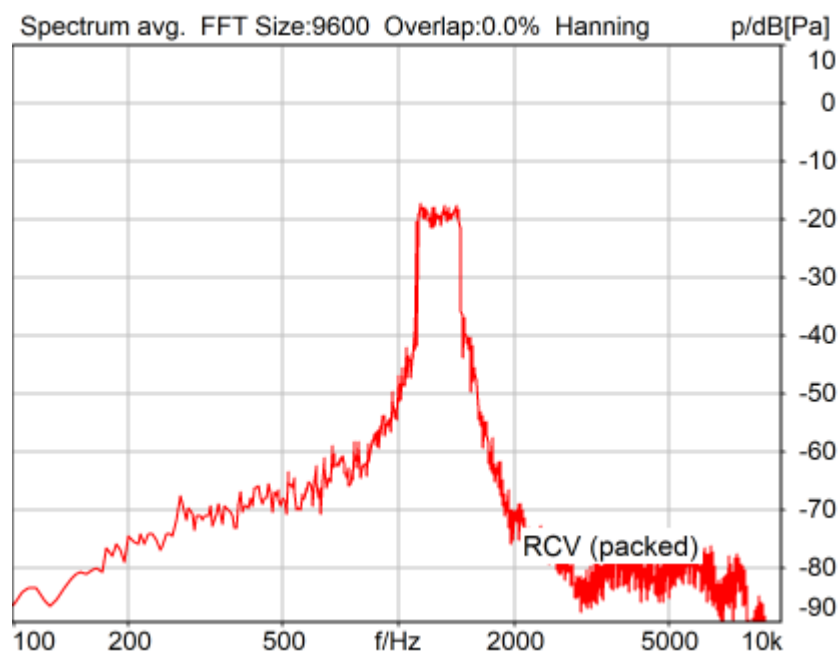
Unmodified HEAD acoustics Measurement Descriptor

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): 23.85 dB (6.42%) Ok

Ok

2025/1/26 14:11 ACQUA 6.0.200

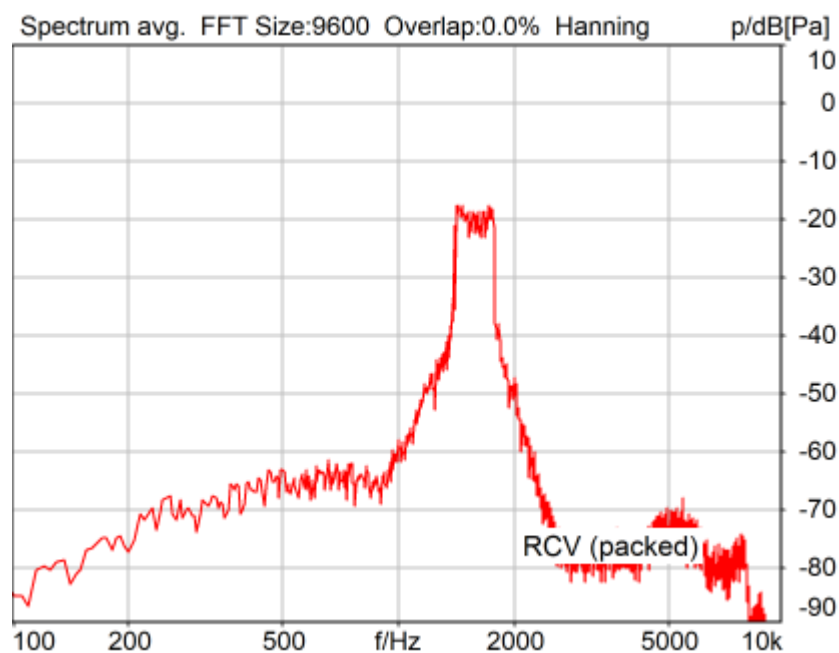
Unmodified HEAD acoustics Measurement Descriptor

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): 24.03 dB (6.29%) Ok

Ok

2025/1/26 14:11 ACQUA 6.0.200

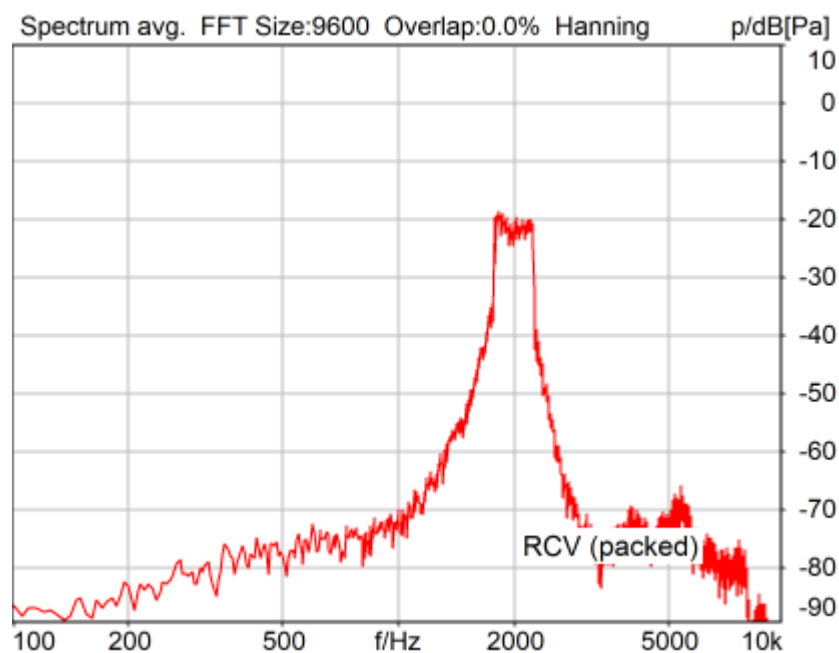
Unmodified HEAD acoustics Measurement Descriptor

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): 21.33 dB (8.58%) Ok

Ok

2025/1/26 14:11 ACQUA 6.0.200

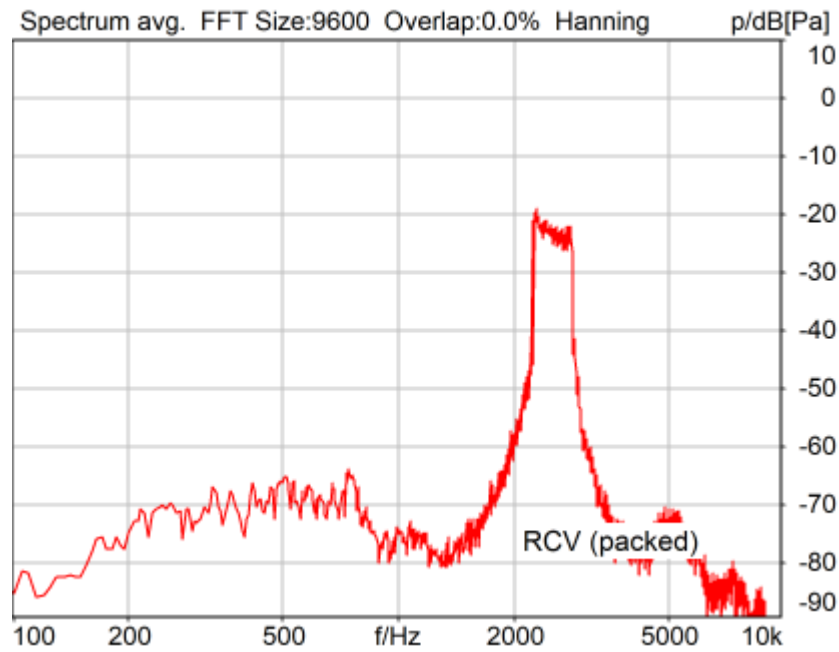
Unmodified HEAD acoustics Measurement Descriptor

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): 27.71 dB (4.12%) Ok

Ok

2025/1/26 14:12 ACQUA 6.0.200

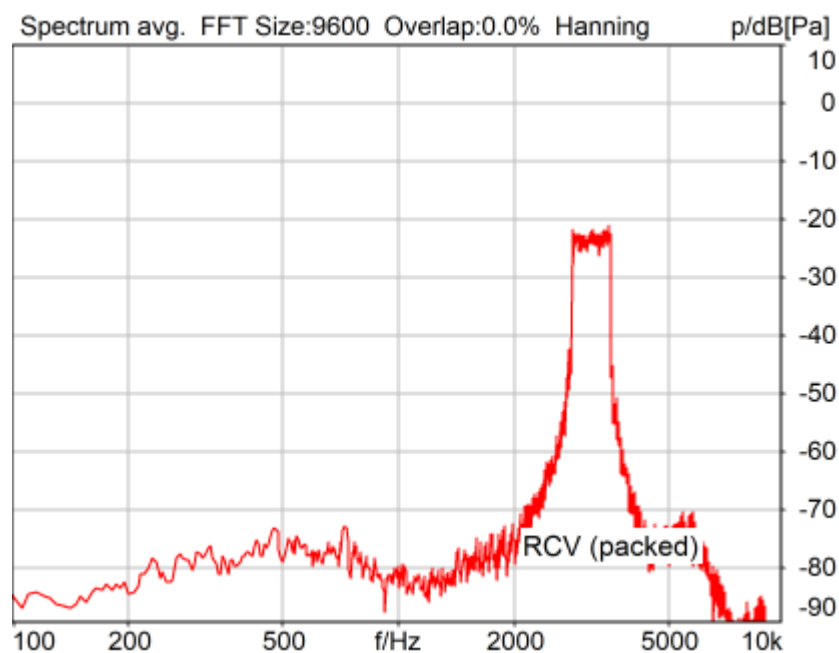
Unmodified HEAD acoustics Measurement Descriptor

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): 30.36 dB (3.03%) Ok

Ok

2025/1/26 14:12 ACQUA 6.0.200

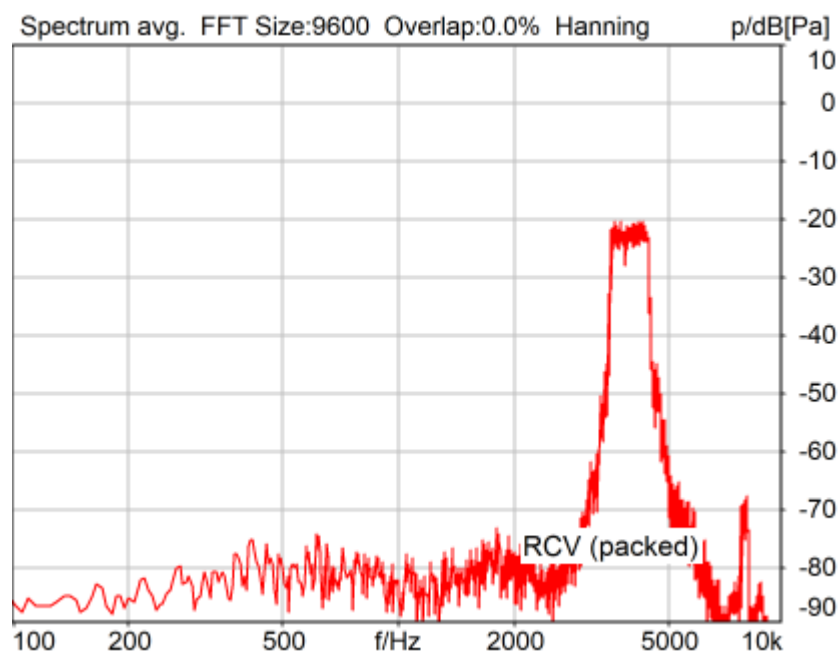
Unmodified HEAD acoustics Measurement Descriptor

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): 26.58 dB (4.69%) Ok

Ok

2025/1/26 14:13 ACQUA 6.0.200

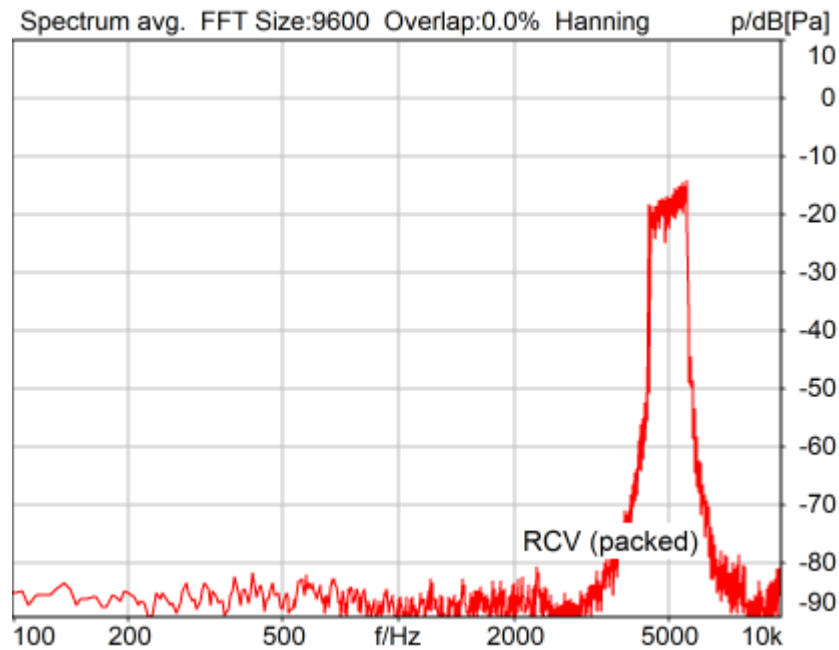
Unmodified HEAD acoustics Measurement Descriptor

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): 36.78 dB (1.45%) Ok

Ok

2025/1/26 14:13 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	27.54 dB
2	315Hz	30.81 dB
3	400Hz	32.97 dB
4	500Hz	32.93 dB
5	630Hz	35.52 dB
6	800Hz	35.36 dB
7	1000Hz	32.83 dB
8	1250Hz	23.85 dB
9	1600Hz	24.03 dB
10	2000Hz	21.33 dB

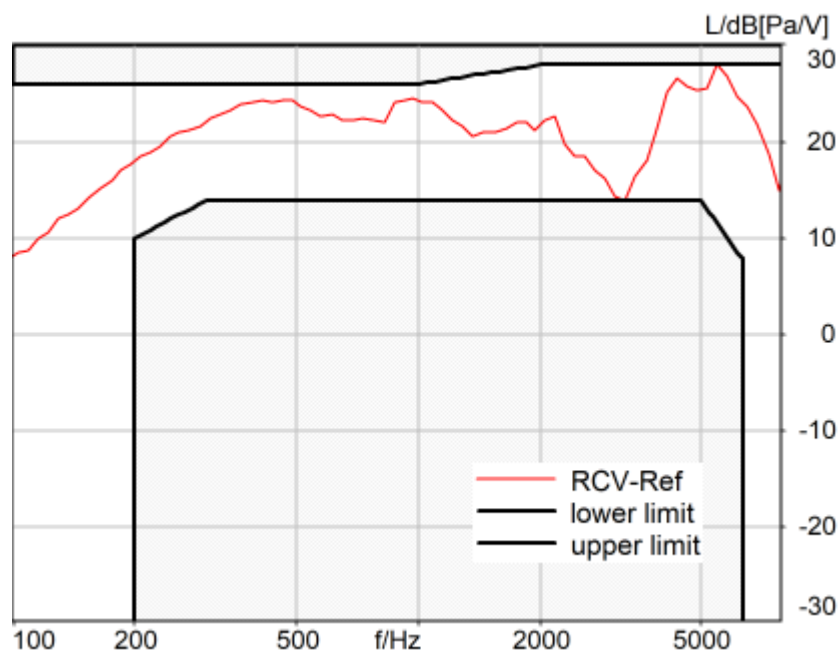
11	2500Hz	27.71 dB
12	3150Hz	30.36 dB
13	4000Hz	26.58 dB
14	5000Hz	36.78 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.33dB at 2000Hz.

2025/1/26 14:14 ACQUA

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.03 dB at 5443.6 Hz Ok

Ok

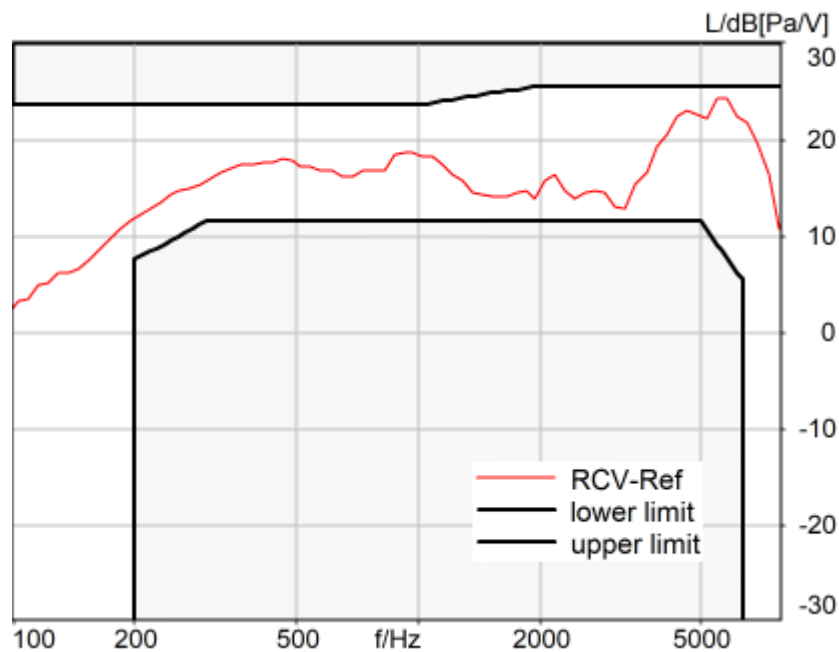
2025/1/26 14:22 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
 1.29 dB at 3245.6 Hz Ok

Ok

2025/1/26 14:16 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
--------------------	---

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:50
Responsible Person	audio

Status Overview

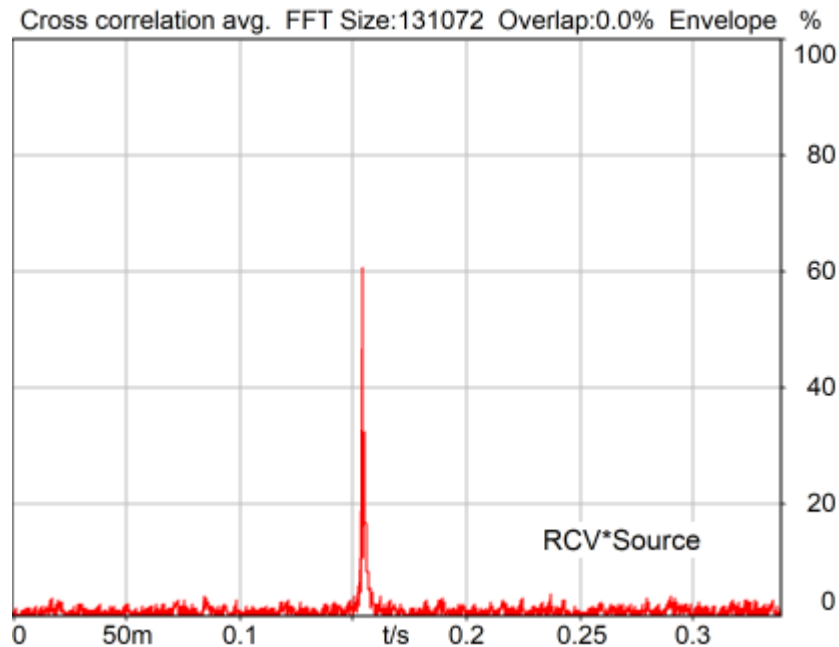
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	154.7	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	22.15	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	16.09	HUHAO_2403_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	34.31	HUHAO_2403_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	33.32	HUHAO_2403_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	35.52	HUHAO_2403_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	32.81	HUHAO_2403_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	32.30	HUHAO_2403_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	23.24	HUHAO_2403_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	24.56	HUHAO_2403_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	22.22	HUHAO_2403_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	23.47	HUHAO_2403_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	28.55	HUHAO_2403_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)	22.22	HUHAO_2403_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	HUHAO_2403_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	33.27	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS NB 24.4kbps_CH23095
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.21	HUHAO_2403_LTE

Noise - 630 Hz NB		[dB], 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	34.67	HUHAO_2403_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	33.05	HUHAO_2403_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	23.38	HUHAO_2403_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	24.49	HUHAO_2403_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	22.21	HUHAO_2403_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	29.05	HUHAO_2403_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	31.23	HUHAO_2403_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)	22.21	HUHAO_2403_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], 3058.6 Hz	-2.26	HUHAO_2403_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], 3245.6 Hz	1.09	HUHAO_2403_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	0.46	HUHAO_2403_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], 3882.4 Hz	2.57	HUHAO_2403_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

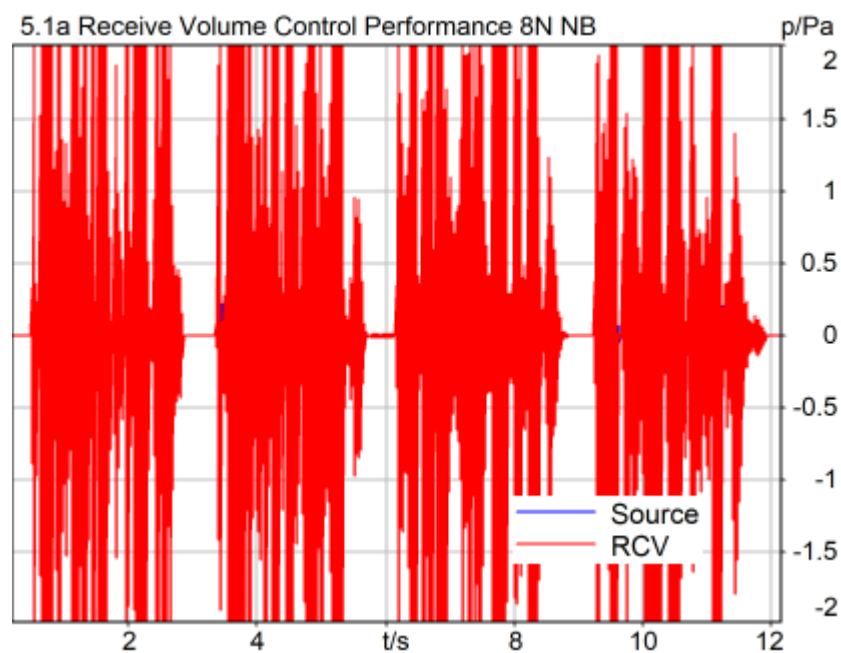


Channel	Delay
RCV*Source	154.7 ms

2025/1/26 15:10 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	92.15 dB[SPL]	84.28%	22.15 dB[SPL]	Ok

Ok

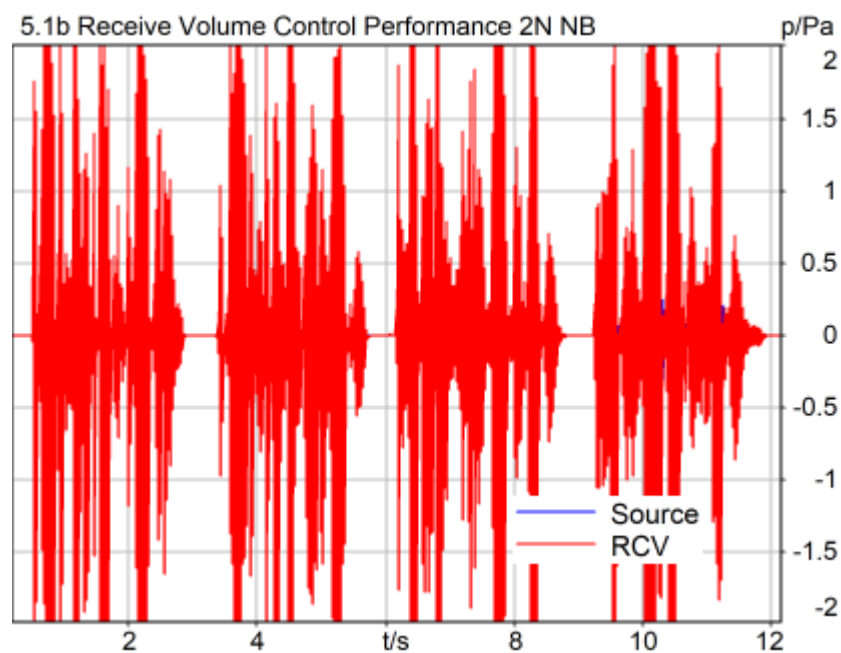
2025/1/26 15:20 ACQUA 6.0.200

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	86.09 dB[SPL]	84.13%	16.09 dB[SPL]	Ok

Ok

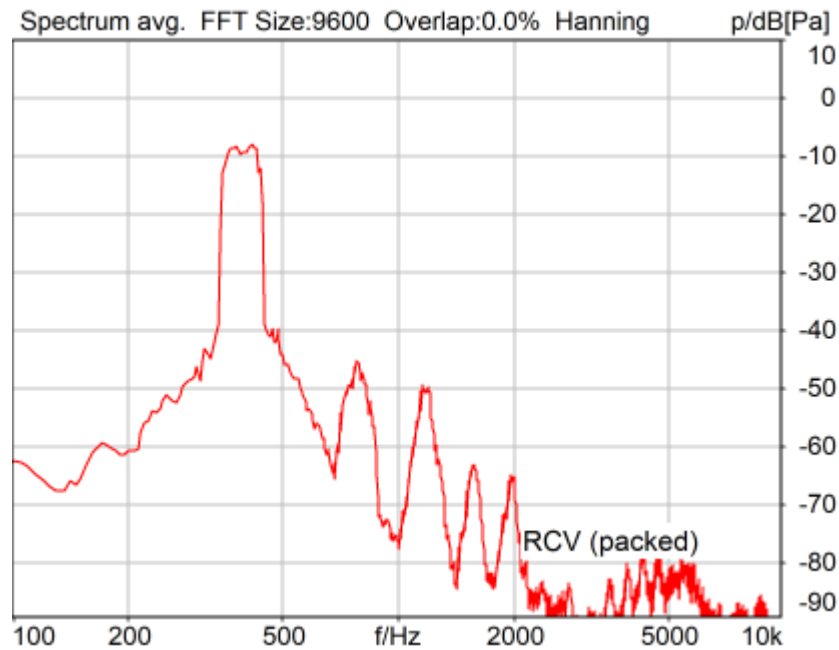
2025/1/26 15:10 ACQUA 6.0.200

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): 34.31 dB (1.92%) Ok

Ok

2025/1/26 15:21 ACQUA 6.0.200

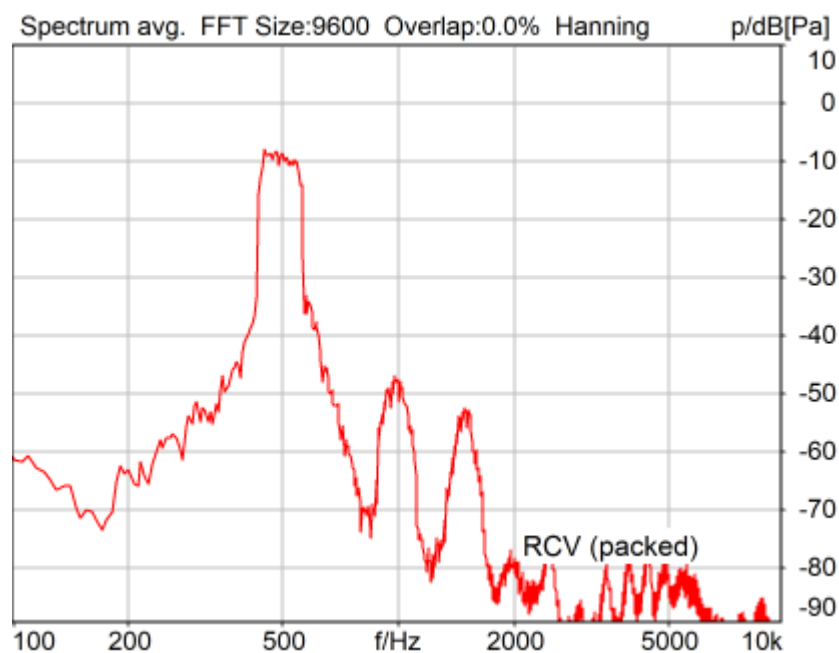
Unmodified HEAD acoustics Measurement Descriptor

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): 33.32 dB (2.16%) Ok

Ok

2025/1/26 15:21 ACQUA 6.0.200

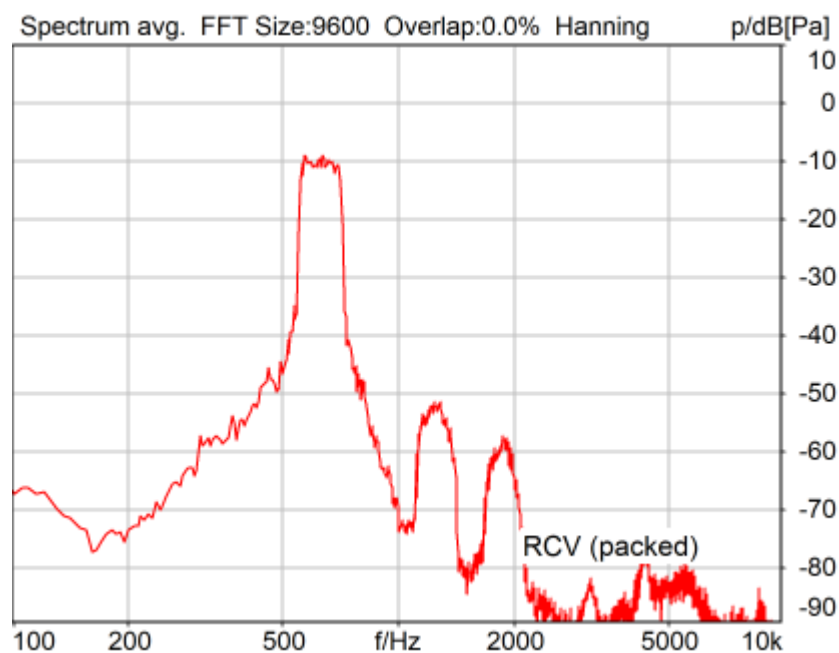
Unmodified HEAD acoustics Measurement Descriptor

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): 35.52 dB (1.68%) Ok

Ok

2025/1/26 15:21 ACQUA 6.0.200

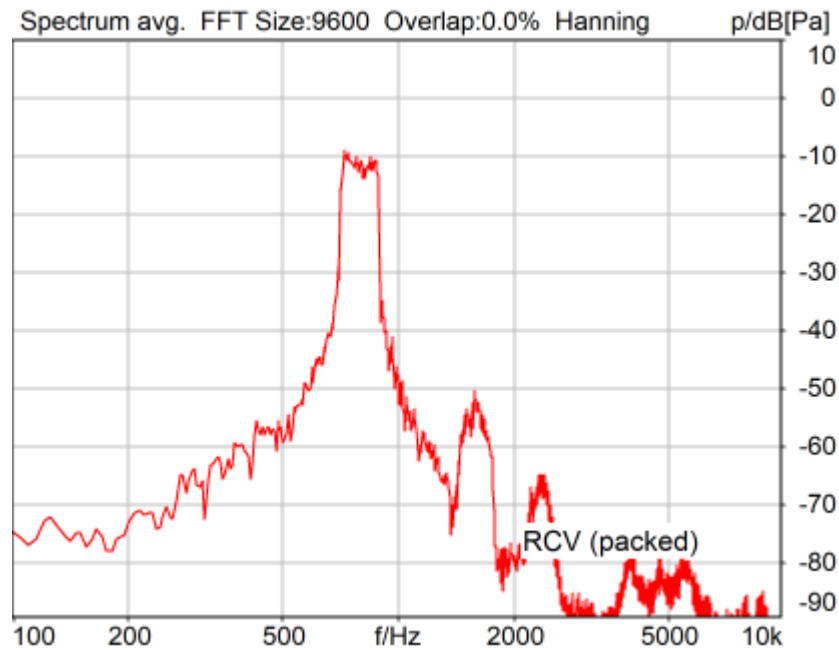
Unmodified HEAD acoustics Measurement Descriptor

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): 32.81 dB (2.29%) Ok

Ok

2025/1/26 15:22 ACQUA 6.0.200

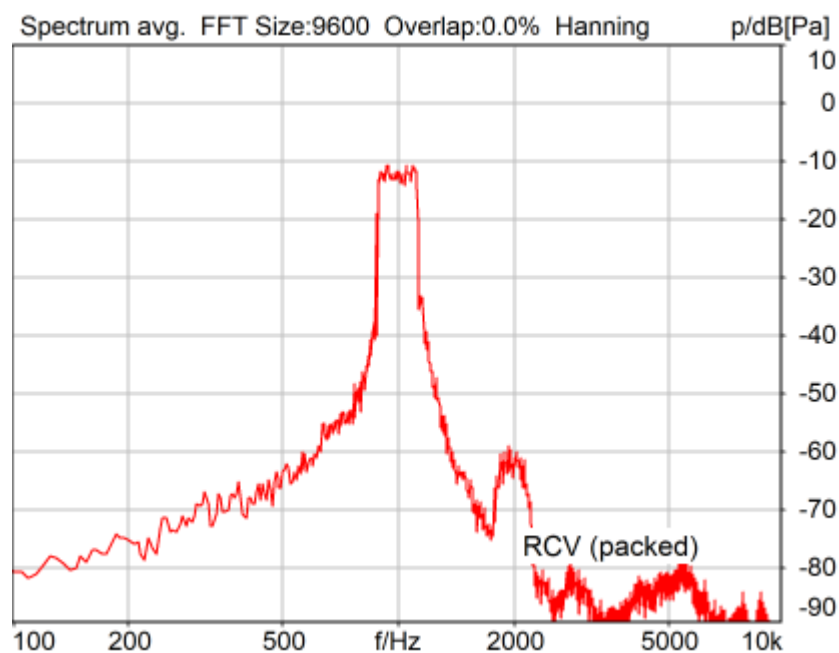
Unmodified HEAD acoustics Measurement Descriptor

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): 32.30 dB (2.43%) Ok

Ok

2025/1/26 15:22 ACQUA 6.0.200

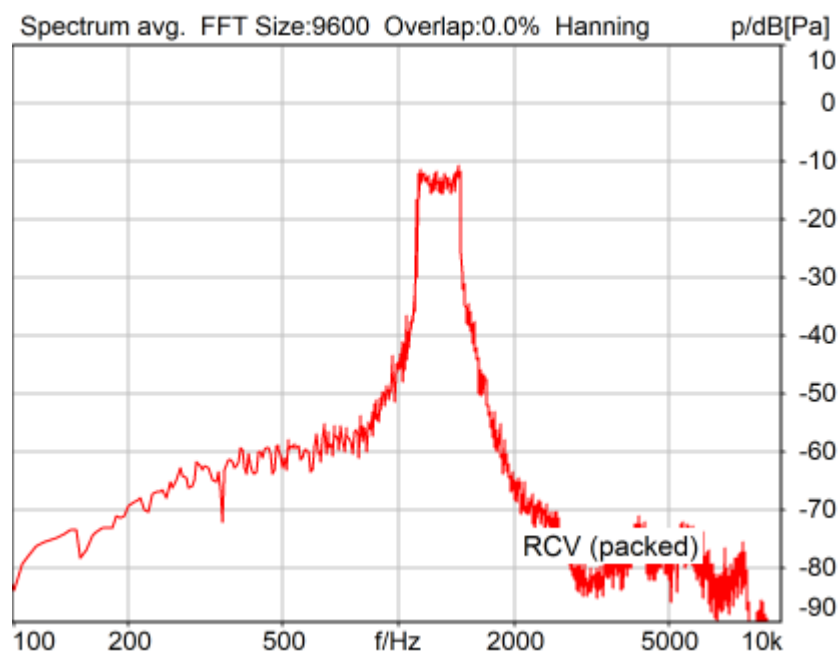
Unmodified HEAD acoustics Measurement Descriptor

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): 23.24 dB (6.89%) Ok

Ok

2025/1/26 15:23 ACQUA 6.0.200

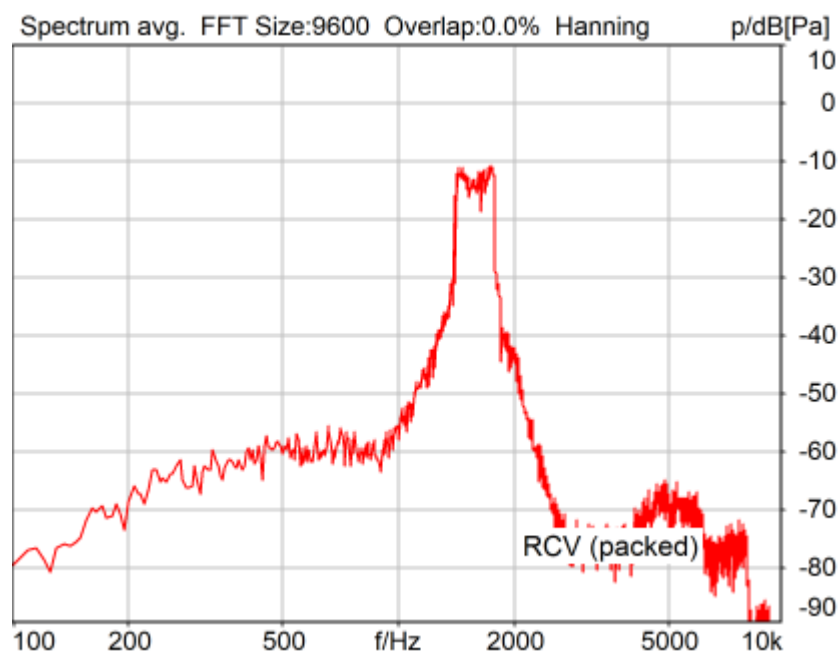
Unmodified HEAD acoustics Measurement Descriptor

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): 24.56 dB (5.91%) Ok

Ok

2025/1/26 15:23 ACQUA 6.0.200

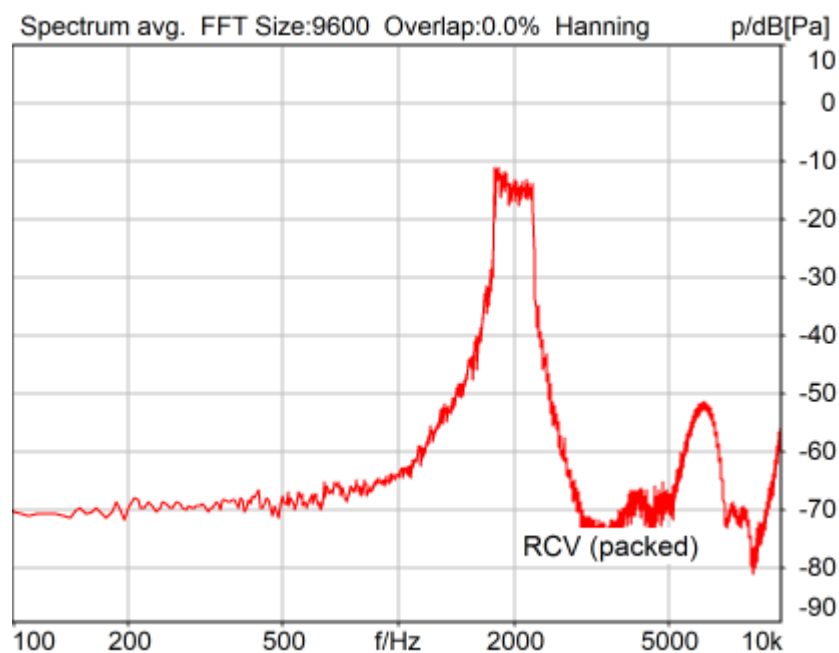
Unmodified HEAD acoustics Measurement Descriptor

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): 22.22 dB (7.74%) Ok

Ok

2025/1/26 15:23 ACQUA 6.0.200

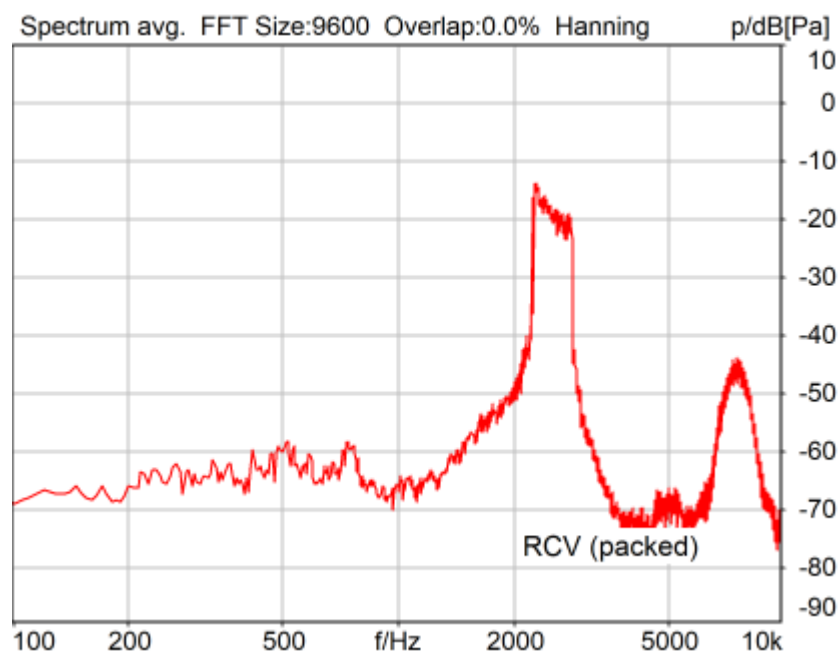
Unmodified HEAD acoustics Measurement Descriptor

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): 23.47 dB (6.70%) Ok

Ok

2025/1/26 15:24 ACQUA 6.0.200

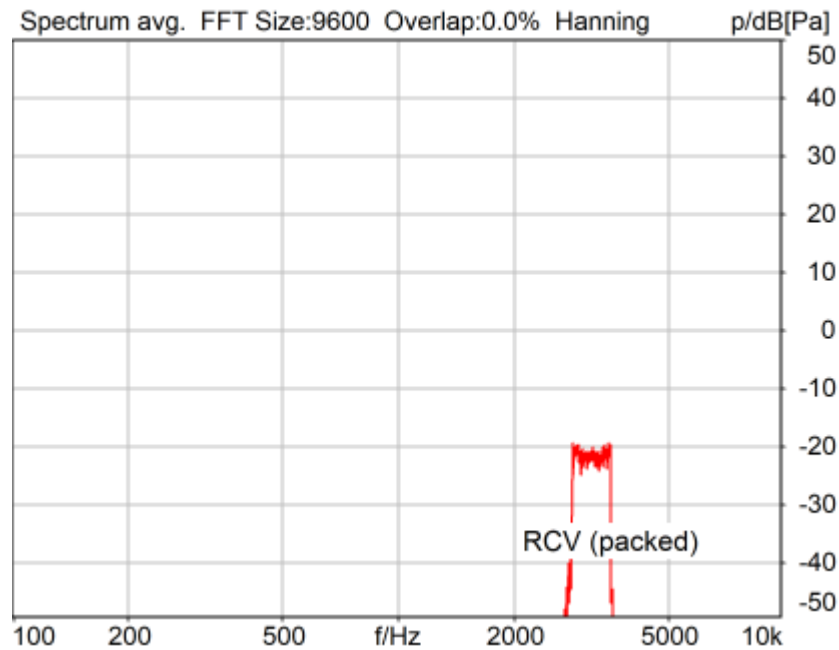
Unmodified HEAD acoustics Measurement Descriptor

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): 28.55 dB (3.74%) Ok

Ok

2025/1/26 15:24 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

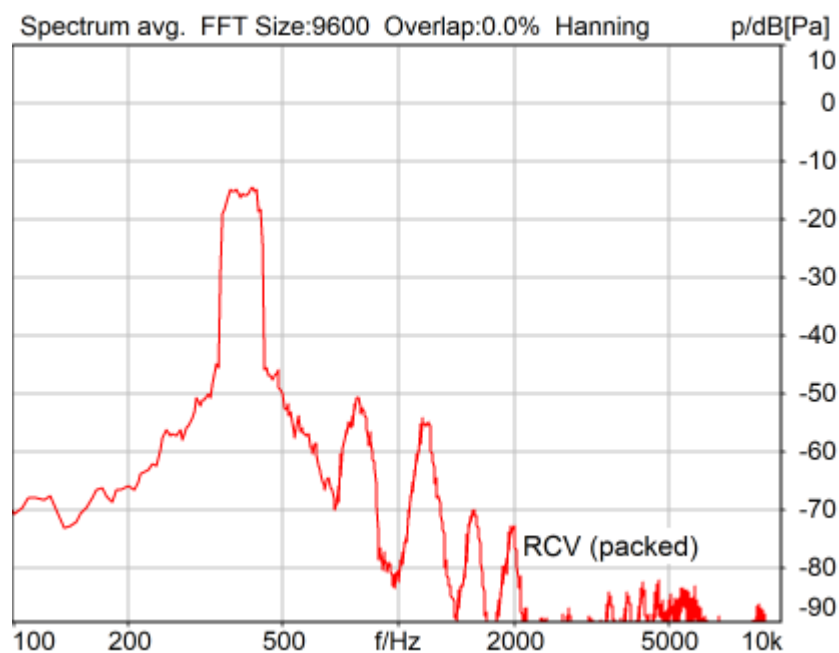
Region	Frequency	SDNR
1	400Hz	34.31 dB
2	500Hz	33.32 dB
3	630Hz	35.52 dB
4	800Hz	32.81 dB
5	1000Hz	32.30 dB
6	1250Hz	23.24 dB
7	1600Hz	24.56 dB
8	2000Hz	22.22 dB
9	2500Hz	23.47 dB
10	3150Hz	28.55 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.22dB at 2000Hz.

2025/1/26 15:24 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): 33.35 dB (2.15%) Ok

Ok

2025/1/26 15:11 ACQUA 6.0.200

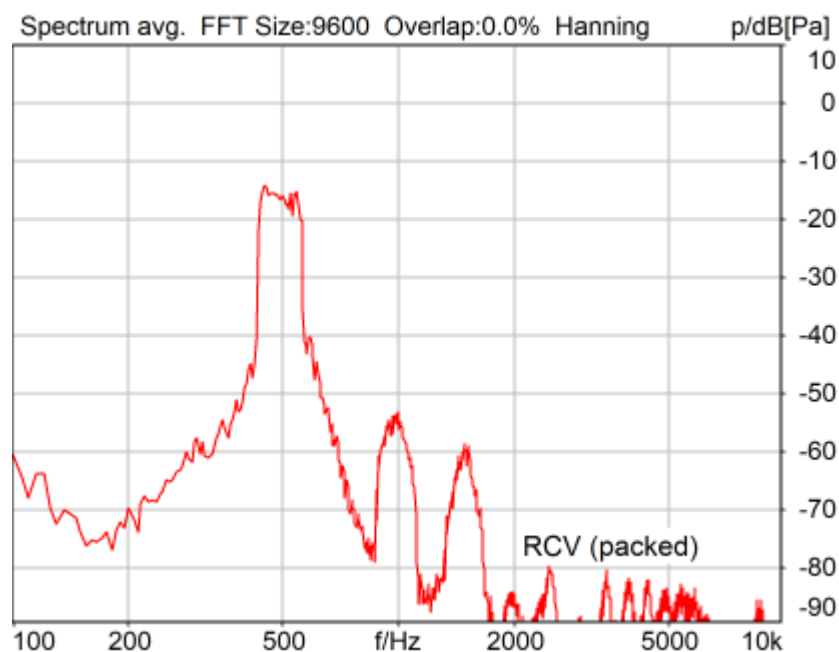
Unmodified HEAD acoustics Measurement Descriptor

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): 33.27 dB (2.17%) Ok

Ok

2025/1/26 15:11 ACQUA 6.0.200

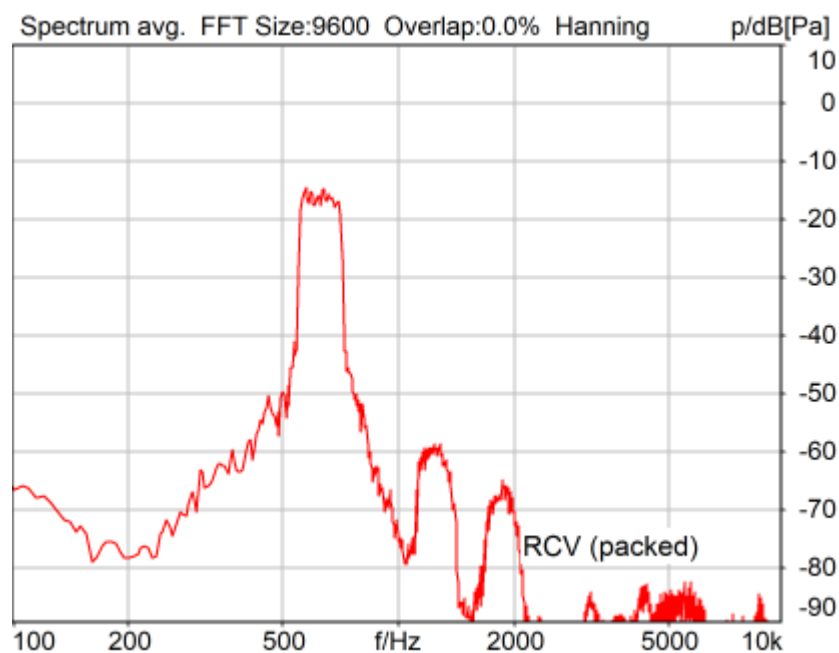
Unmodified HEAD acoustics Measurement Descriptor

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): 35.21 dB (1.74%) Ok

Ok

2025/1/26 15:11 ACQUA 6.0.200

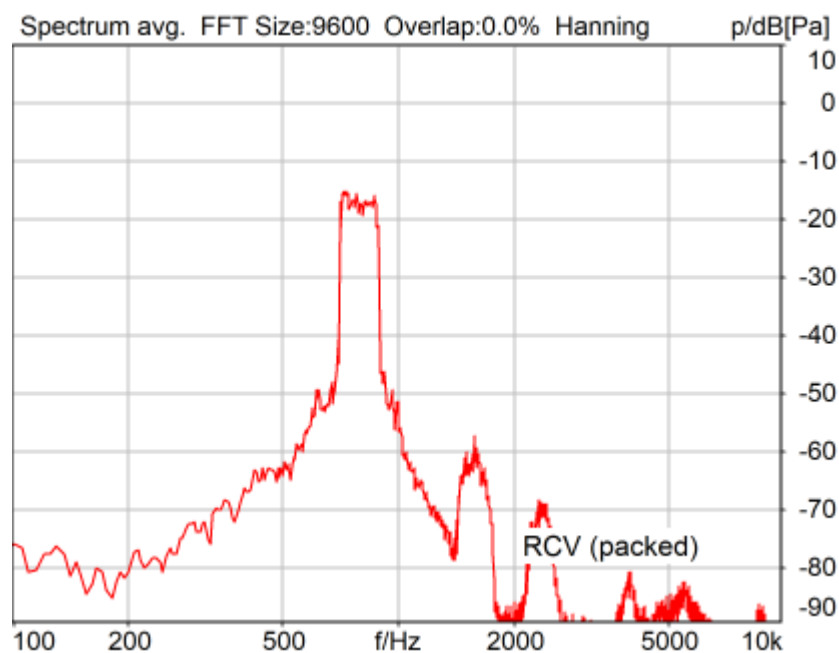
Unmodified HEAD acoustics Measurement Descriptor

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): 34.67 dB (1.85%) Ok

Ok

2025/1/26 15:12 ACQUA 6.0.200

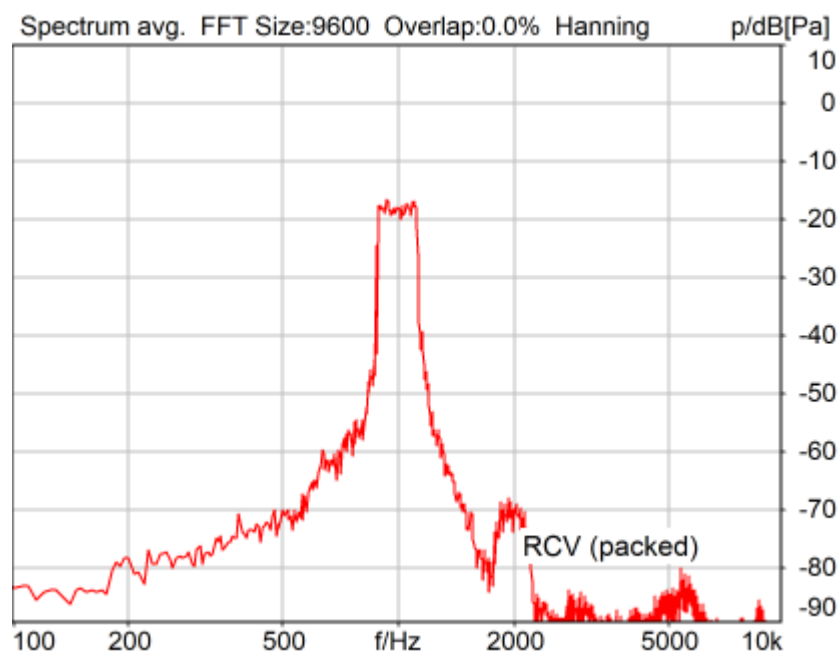
Unmodified HEAD acoustics Measurement Descriptor

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): 33.05 dB (2.22%) Ok

Ok

2025/1/26 15:12 ACQUA 6.0.200

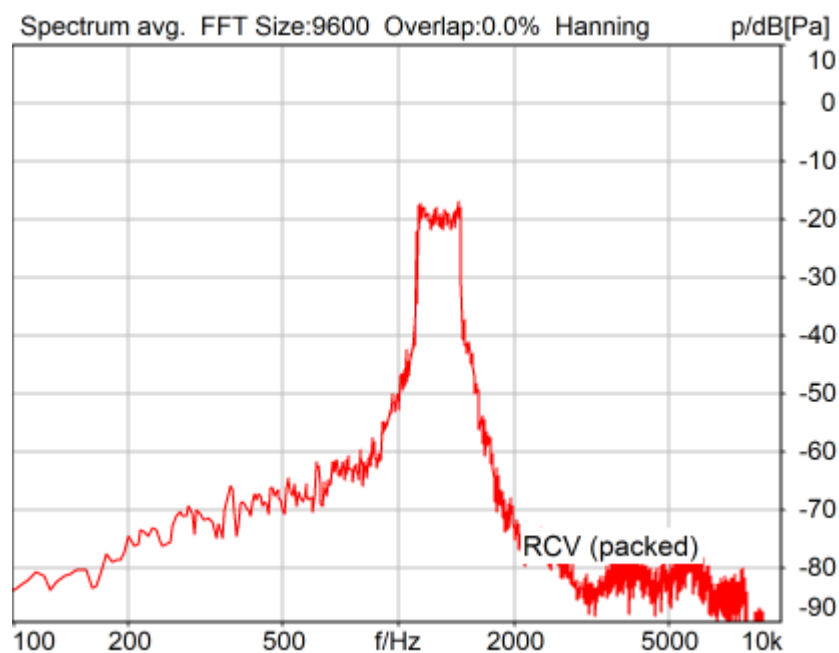
Unmodified HEAD acoustics Measurement Descriptor

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): 23.38 dB (6.78%) Ok

Ok

2025/1/26 15:12 ACQUA 6.0.200

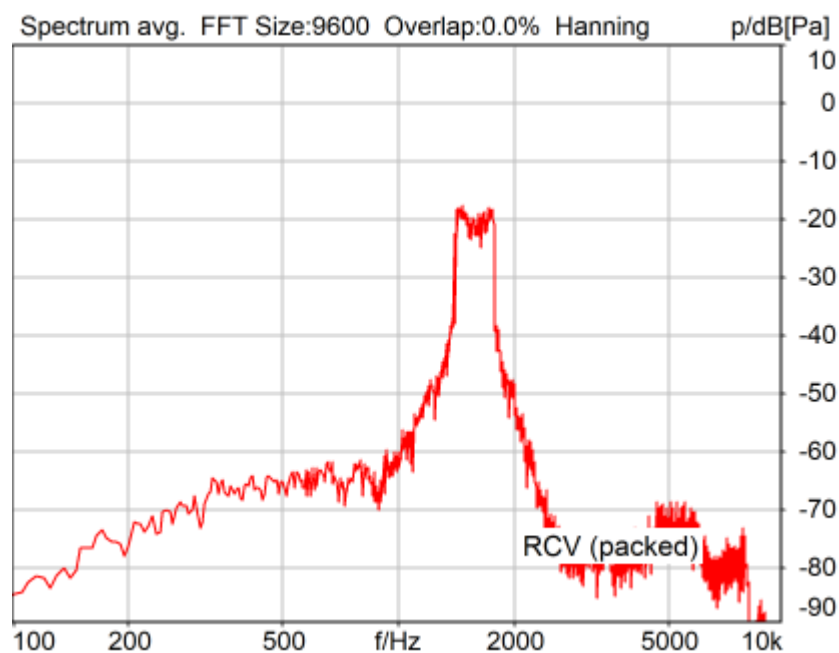
Unmodified HEAD acoustics Measurement Descriptor

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): 24.49 dB (5.96%) Ok

Ok

2025/1/26 15:13 ACQUA 6.0.200

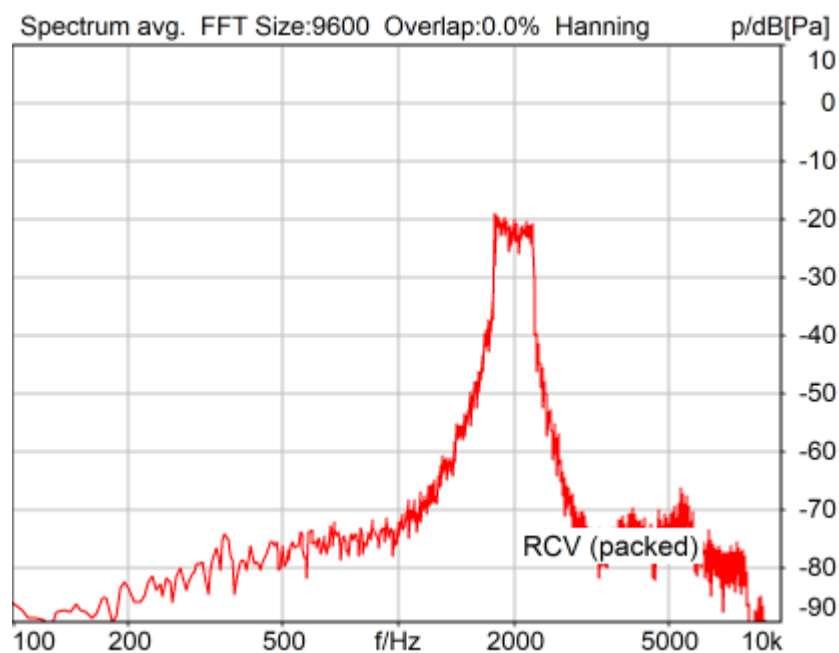
Unmodified HEAD acoustics Measurement Descriptor

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): 22.21 dB (7.75%) Ok

Ok

2025/1/26 15:13 ACQUA 6.0.200

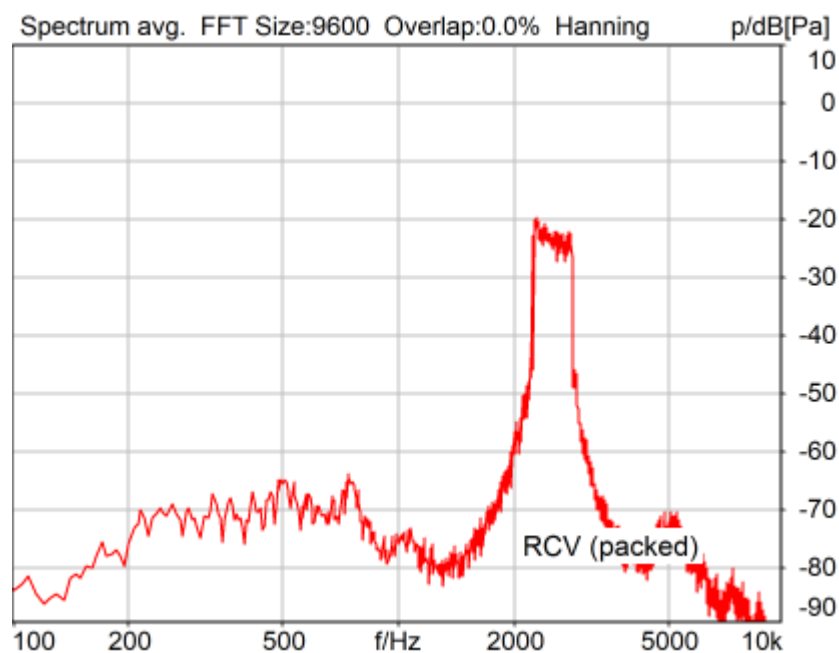
Unmodified HEAD acoustics Measurement Descriptor

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): 29.05 dB (3.53%) Ok

Ok

2025/1/26 15:14 ACQUA 6.0.200

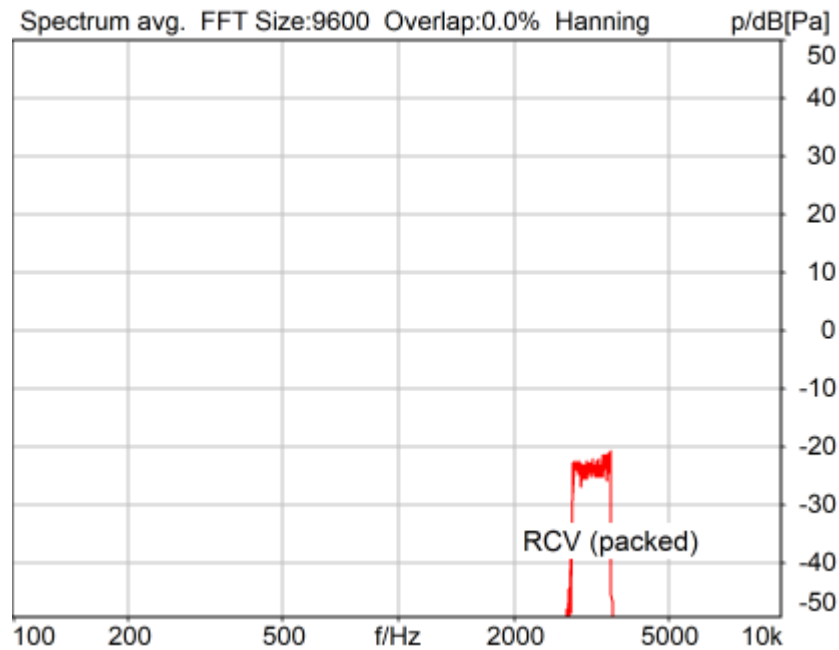
Unmodified HEAD acoustics Measurement Descriptor

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): 31.23 dB (2.75%) Ok

Ok

2025/1/26 15:14 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

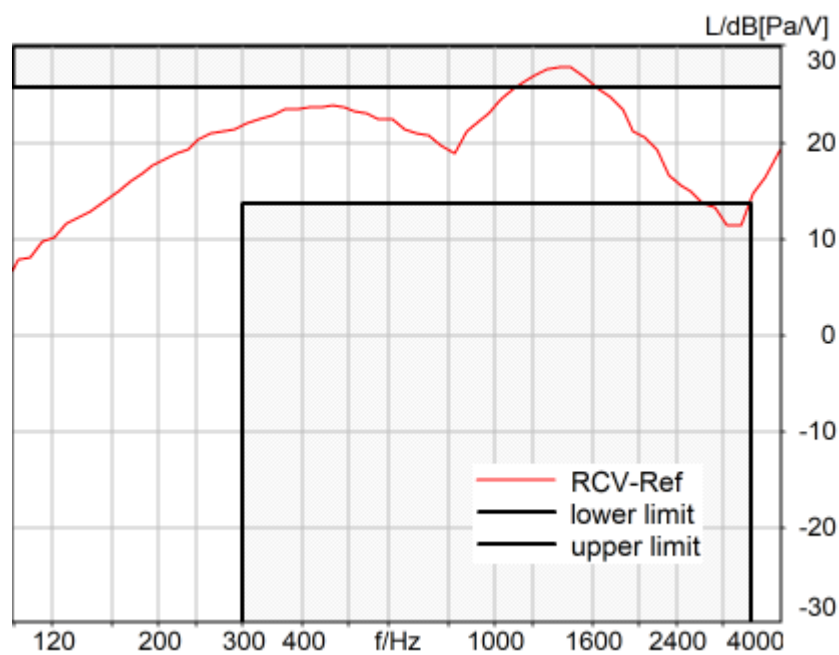
Region	Frequency	SDNR
1	400Hz	33.35 dB
2	500Hz	33.27 dB
3	630Hz	35.21 dB
4	800Hz	34.67 dB
5	1000Hz	33.05 dB
6	1250Hz	23.38 dB
7	1600Hz	24.49 dB
8	2000Hz	22.21 dB
9	2500Hz	29.05 dB
10	3150Hz	31.23 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.21dB at 2000Hz.

2025/1/26 15:14 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
 -2.26 dB at 3058.6 Hz Not Ok

Not Ok

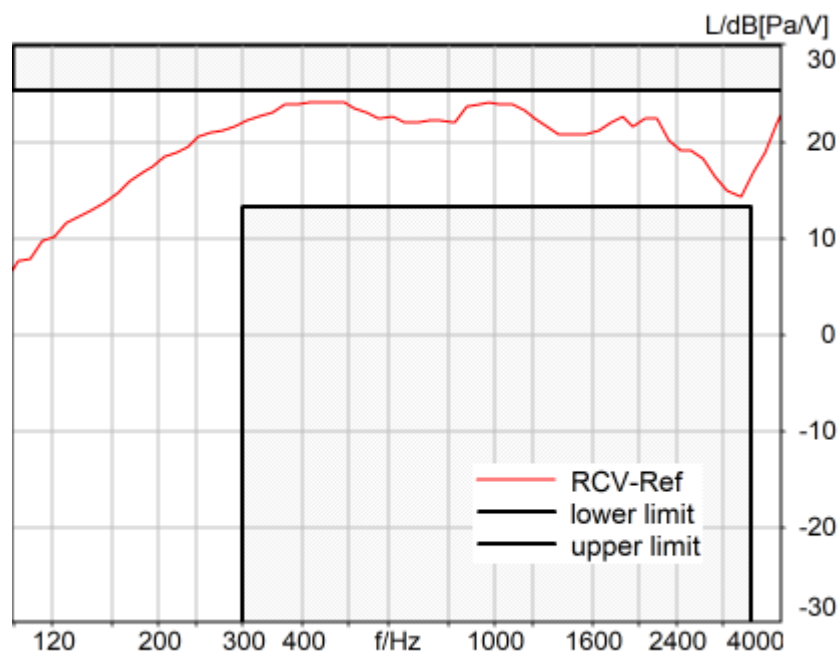
2025/1/26 15:19 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance

1.09 dB at 3245.6 Hz Ok

Ok

2025/1/26 15:18 ACQUA 6.0.200

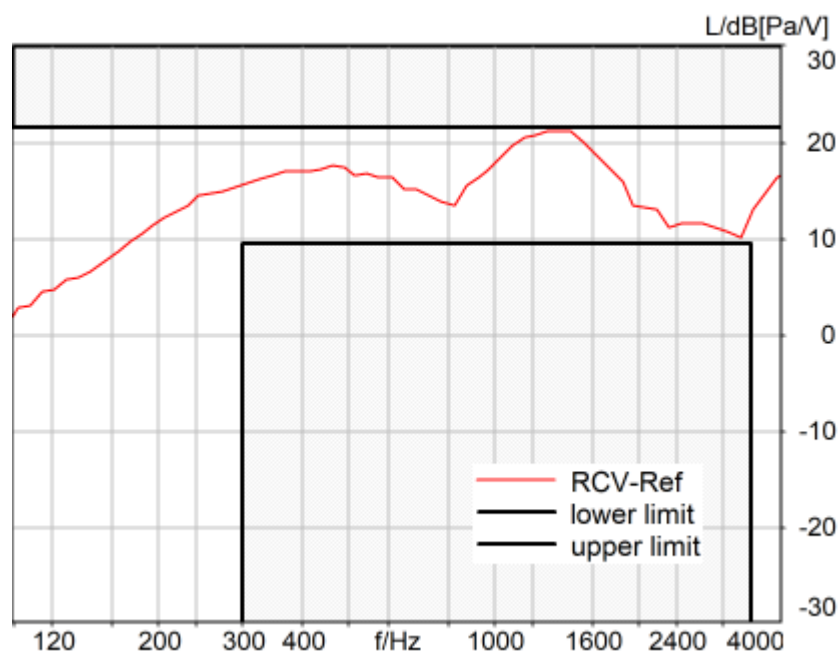
Unmodified HEAD acoustics Measurement Descriptor

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 1360.9 Hz Ok

Ok

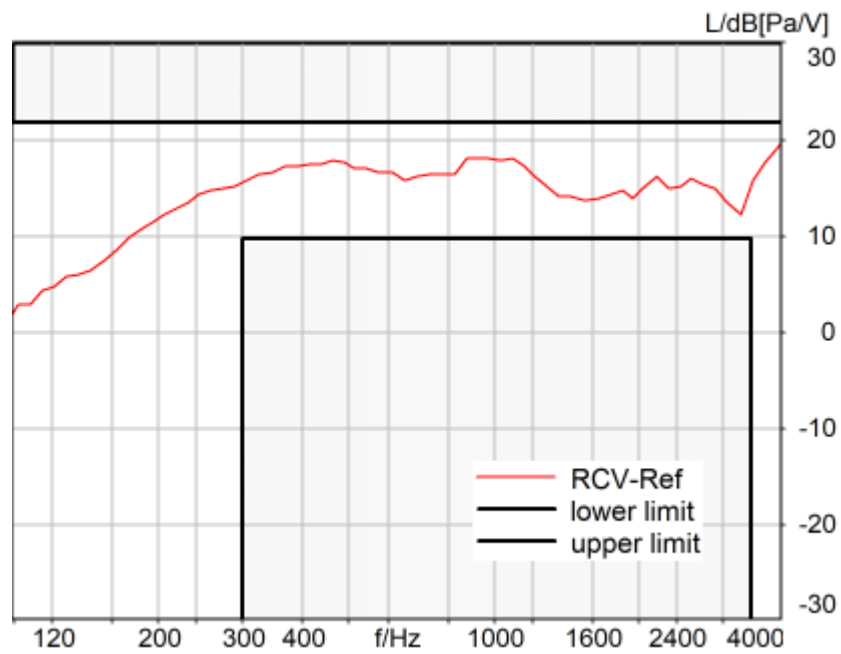
2025/1/26 15:16 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
 2.57 dB at 3882.4 Hz Ok

Ok

2025/1/26 15:17 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
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Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:51
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	124.5	HUHAO_2403_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]]	21.96	HUHAO_2403_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]]	16.46	HUHAO_2403_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	28.01	HUHAO_2403_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	31.76	HUHAO_2403_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	34.52	HUHAO_2403_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	33.42	HUHAO_2403_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	35.03	HUHAO_2403_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	34.15	HUHAO_2403_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	31.87	HUHAO_2403_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	23.42	HUHAO_2403_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	24.39	HUHAO_2403_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	22.05	HUHAO_2403_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	23.63	HUHAO_2403_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	28.59	HUHAO_2403_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	24.73	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and	Ok	Distortion (Noise)	24.83	HUHAO_2403_LTE

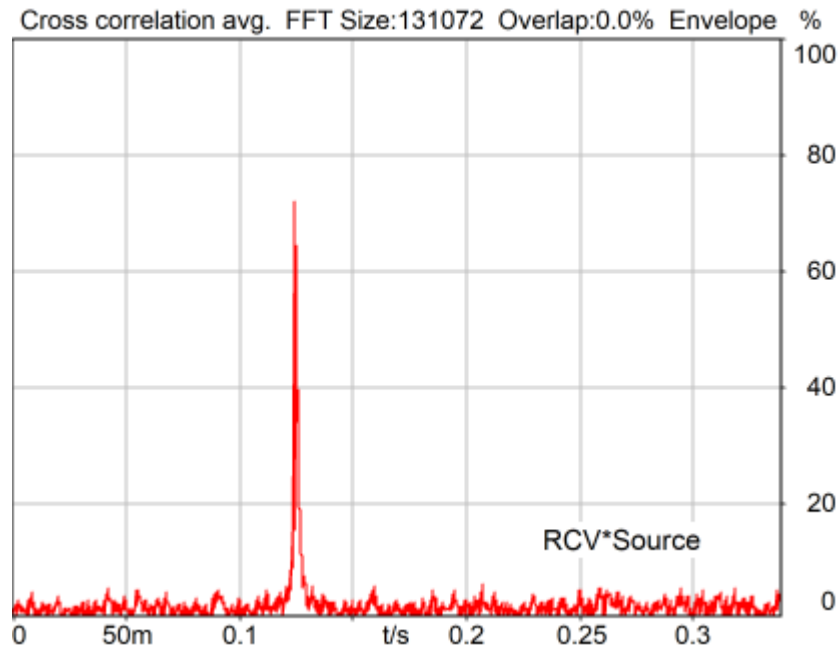
Noise - 5000 Hz WB		[dB], 0.0 dB		Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.05	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.54	HUHAO_2403_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	32.46	HUHAO_2403_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	34.16	HUHAO_2403_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	31.98	HUHAO_2403_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	34.75	HUHAO_2403_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	34.79	HUHAO_2403_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	32.29	HUHAO_2403_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	23.78	HUHAO_2403_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	24.11	HUHAO_2403_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	21.18	HUHAO_2403_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	28.80	HUHAO_2403_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	30.38	HUHAO_2403_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	27.01	HUHAO_2403_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	33.84	HUHAO_2403_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)	21.18	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.27	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
5.3 Frequency Response	Ok	Min. dist. to	1.00	HUHAO_2403_LTE

2N DF		tolerance scheme [dB], 5443.6 Hz		Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095
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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 DF	37
5.3 Frequency Response 2N DF	38

Overall Receive Delay WB

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

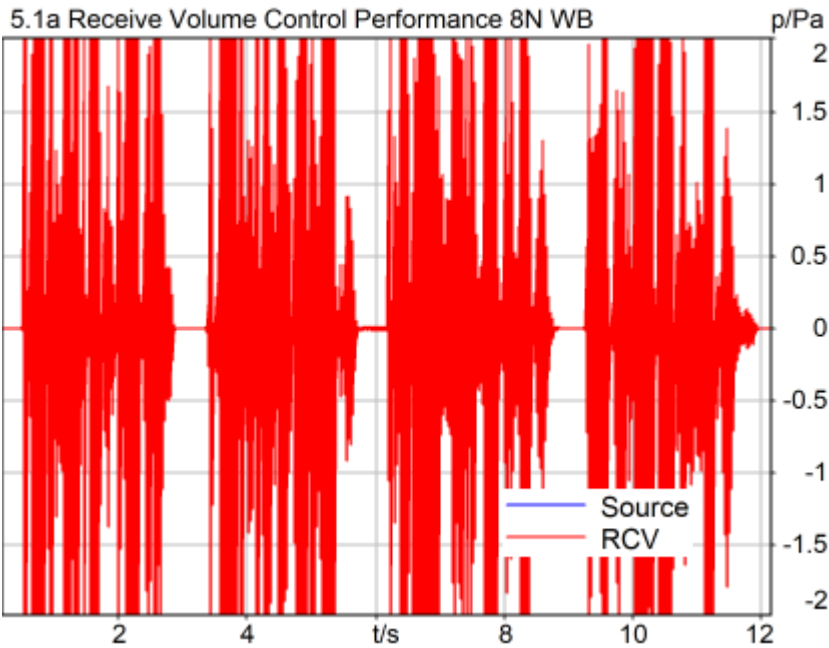


Channel	Delay
RCV*Source	124.5 ms

2025/1/26 15:50 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	91.96 dB[SPL]	84.31%	21.96 dB[SPL]	Ok

Ok

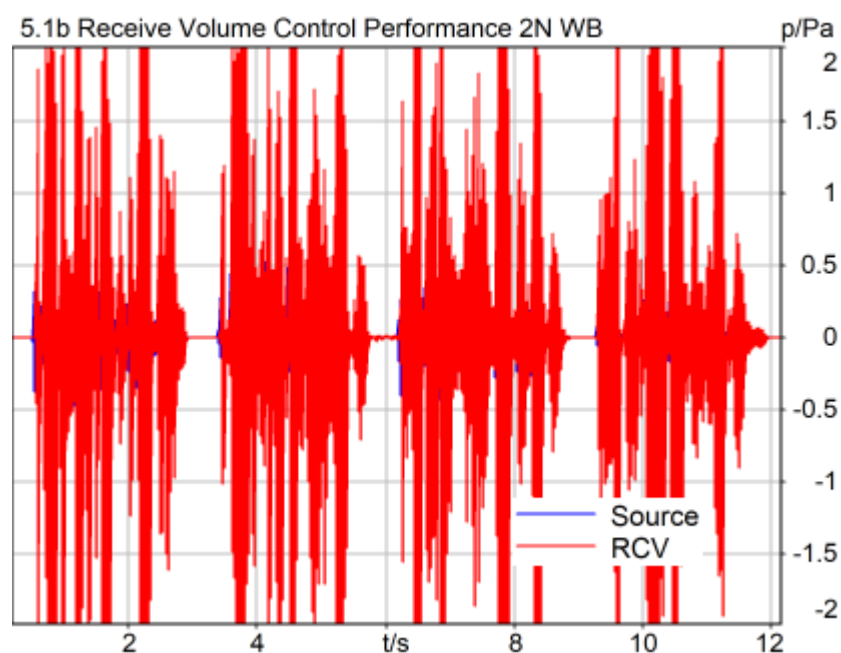
2025/1/26 15:28 ACQUA 6.0.200

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	86.46 dB[SPL]	84.24%	16.46 dB[SPL]	Ok

Ok

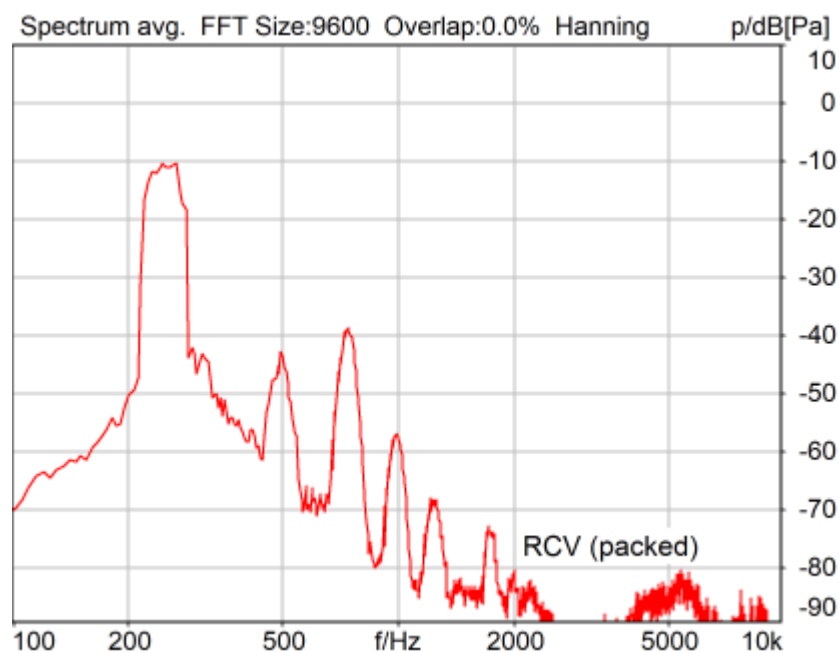
2025/1/26 17:23 ACQUA 6.0.200

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): 28.01 dB (3.98%) Ok

Ok

2025/1/26 15:28 ACQUA 6.0.200

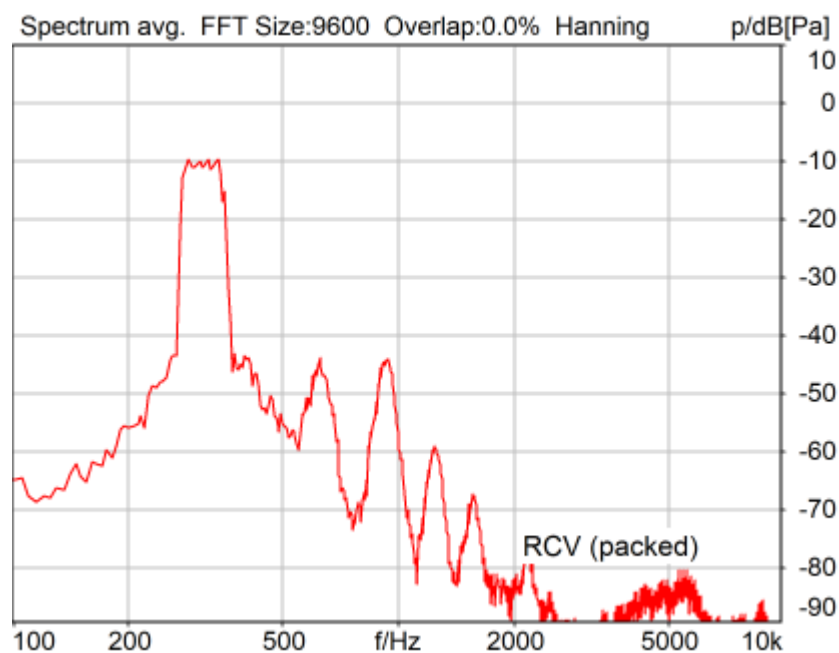
Unmodified HEAD acoustics Measurement Descriptor

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): 31.76 dB (2.58%) Ok

Ok

2025/1/26 15:29 ACQUA 6.0.200

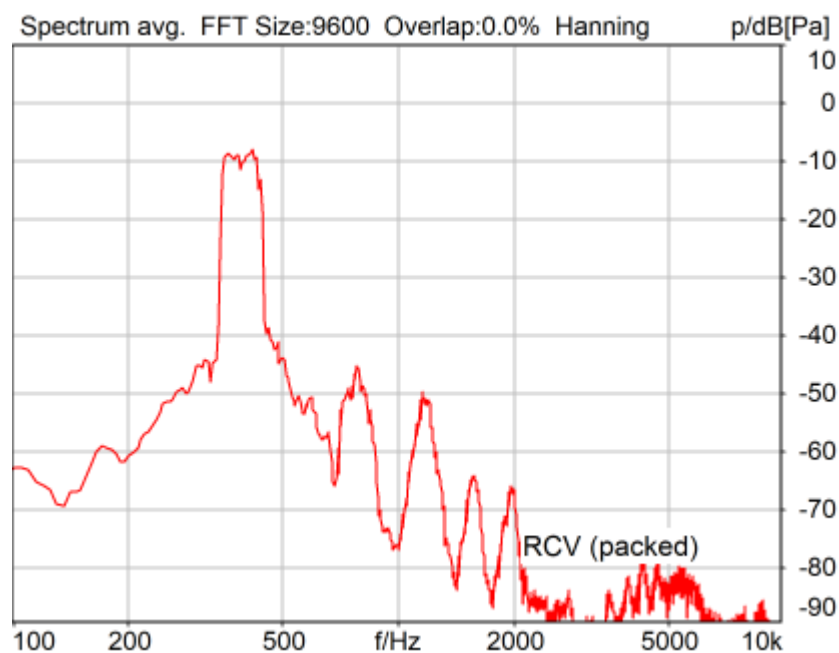
Unmodified HEAD acoustics Measurement Descriptor

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): 34.52 dB (1.88%) Ok

Ok

2025/1/26 15:29 ACQUA 6.0.200

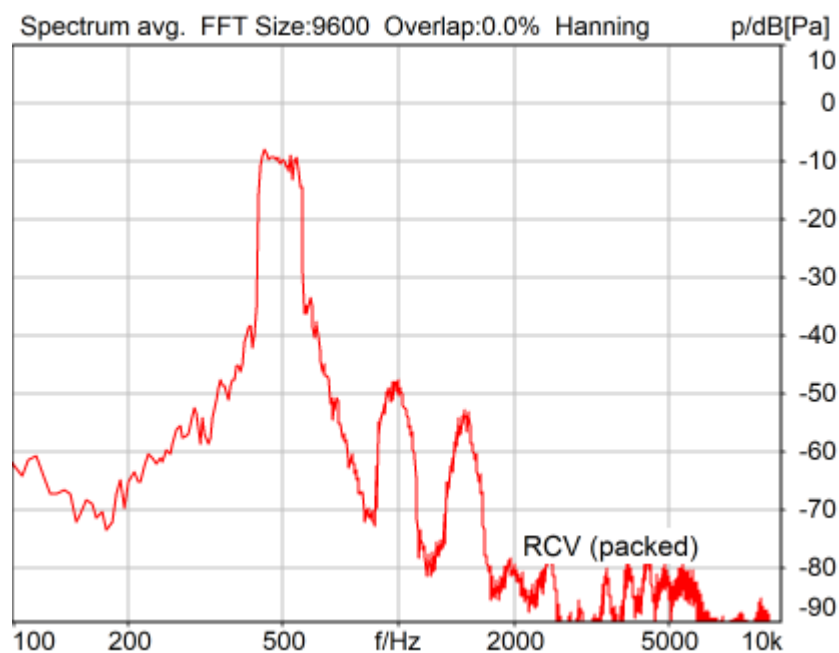
Unmodified HEAD acoustics Measurement Descriptor

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): 33.42 dB (2.13%) Ok

Ok

2025/1/26 15:29 ACQUA 6.0.200

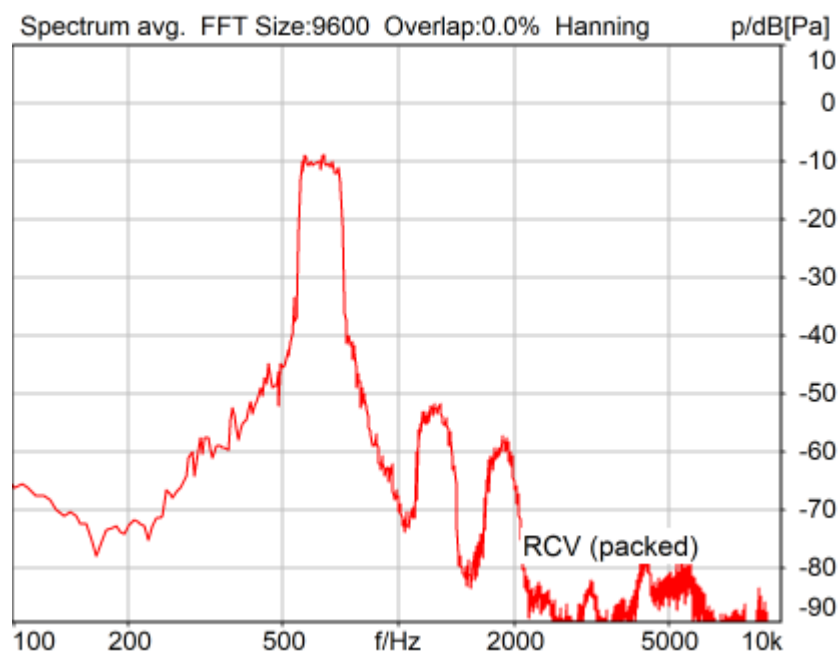
Unmodified HEAD acoustics Measurement Descriptor

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): 35.03 dB (1.77%) Ok

Ok

2025/1/26 15:30 ACQUA 6.0.200

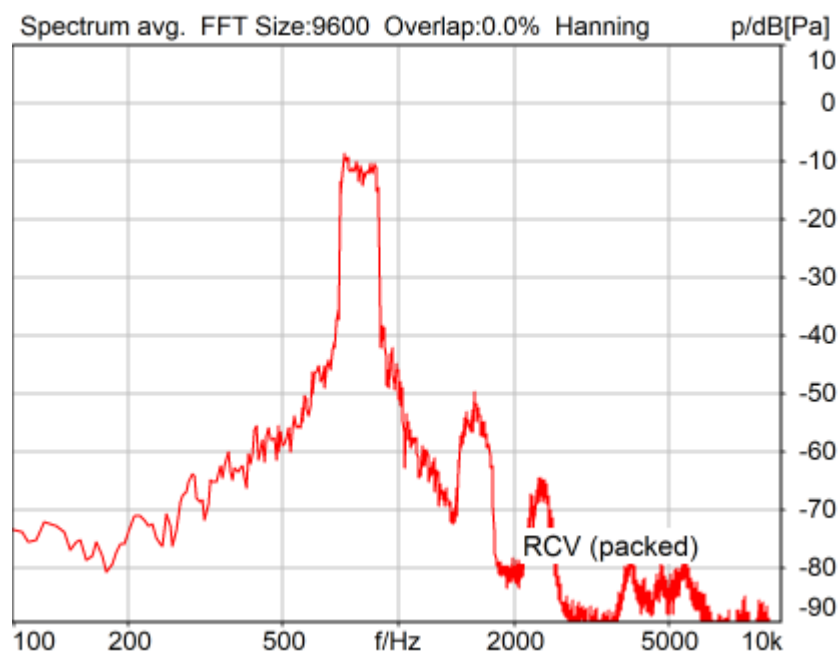
Unmodified HEAD acoustics Measurement Descriptor

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): 34.15 dB (1.96%) Ok

Ok

2025/1/26 15:30 ACQUA 6.0.200

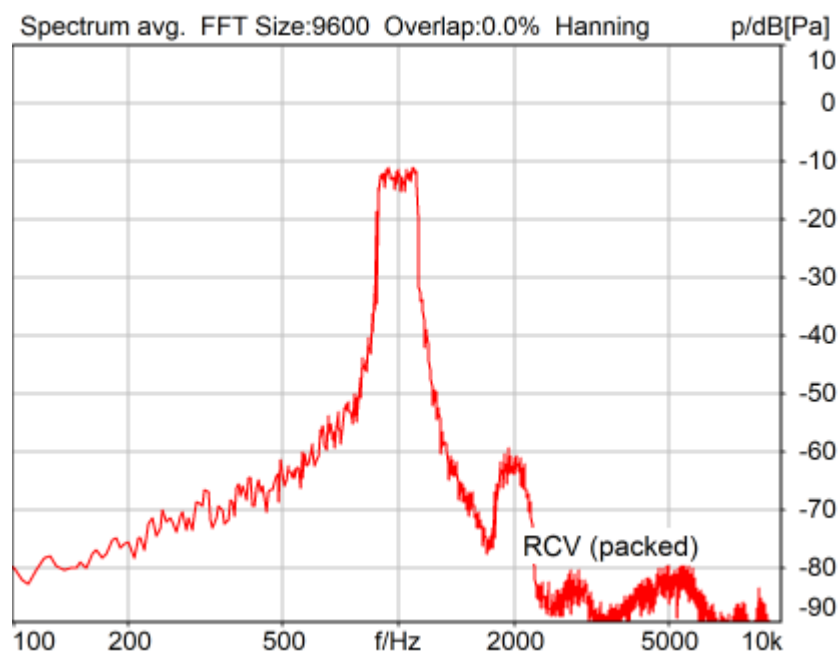
Unmodified HEAD acoustics Measurement Descriptor

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): 31.87 dB (2.55%) Ok

Ok

2025/1/26 15:30 ACQUA 6.0.200

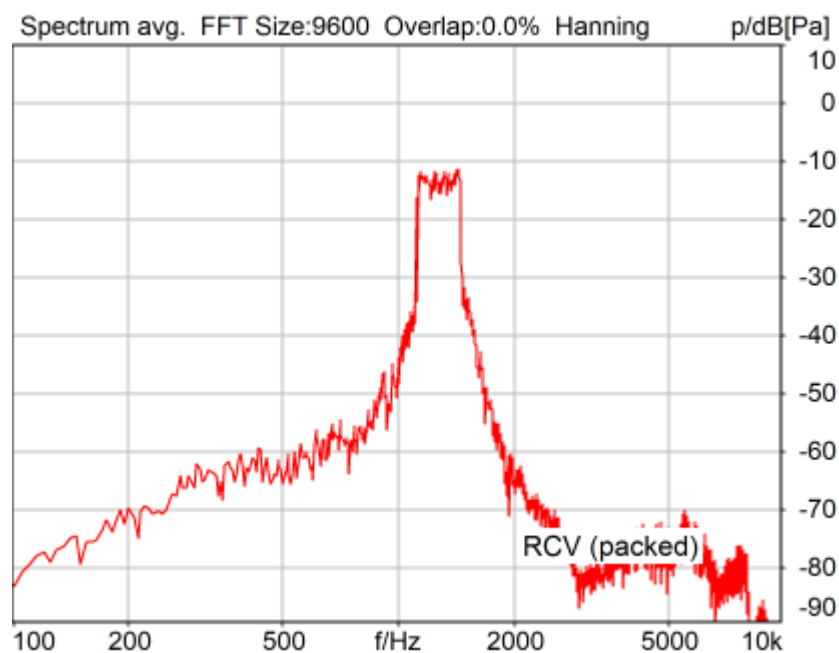
Unmodified HEAD acoustics Measurement Descriptor

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): 23.42 dB (6.74%) Ok

Ok

2025/1/26 15:31 ACQUA 6.0.200

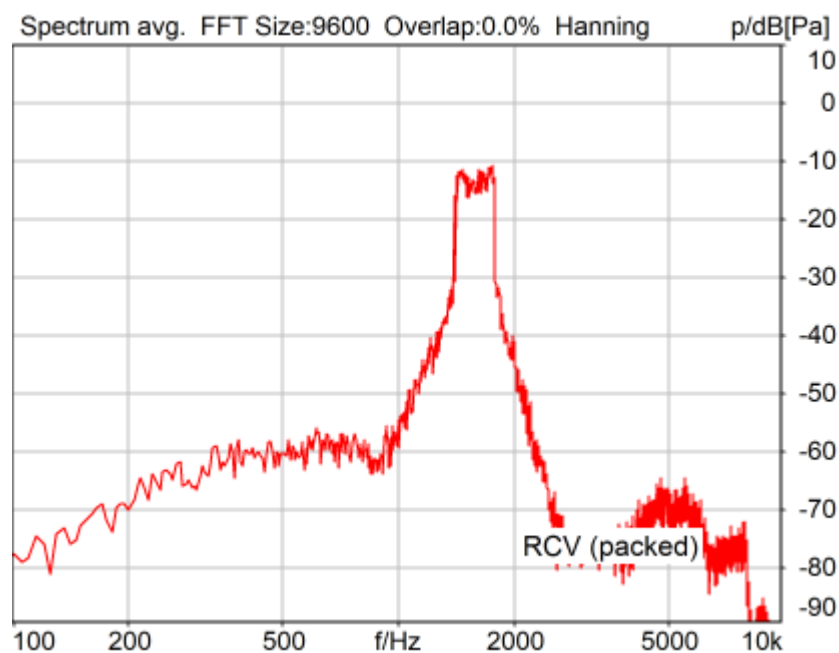
Unmodified HEAD acoustics Measurement Descriptor

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): 24.39 dB (6.03%) Ok

Ok

2025/1/26 15:31 ACQUA 6.0.200

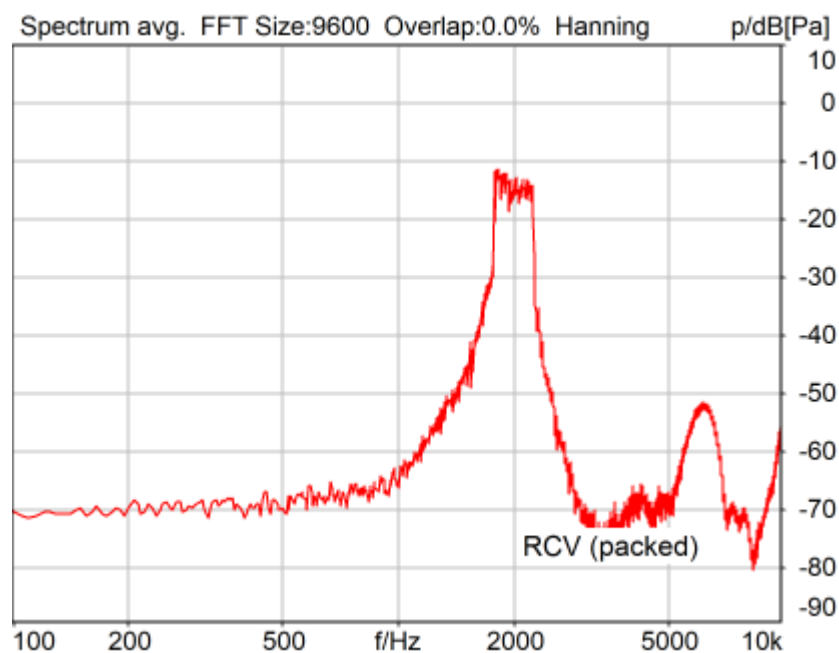
Unmodified HEAD acoustics Measurement Descriptor

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): 22.05 dB (7.90%) Ok

Ok

2025/1/26 15:32 ACQUA 6.0.200

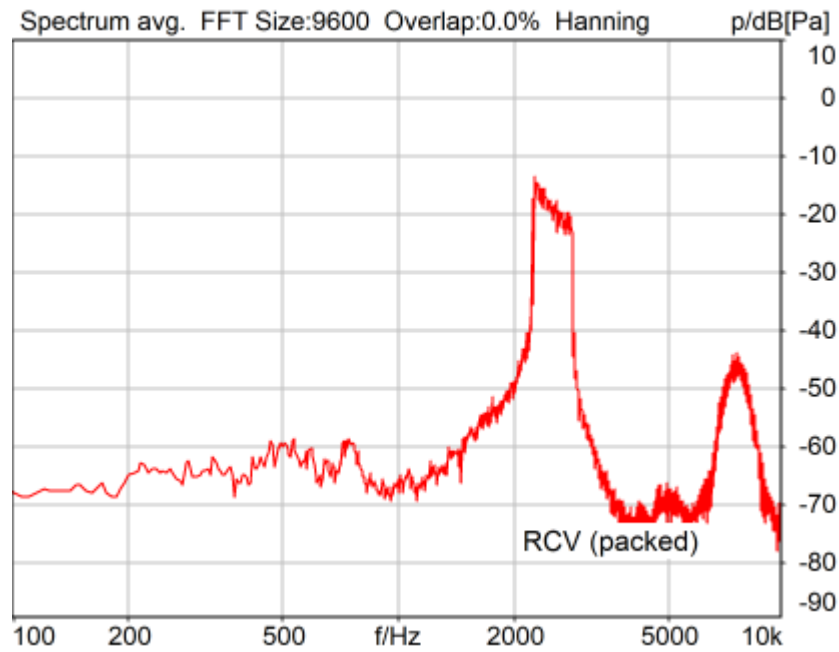
Unmodified HEAD acoustics Measurement Descriptor

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): 23.63 dB (6.58%) Ok

Ok

2025/1/26 15:32 ACQUA 6.0.200

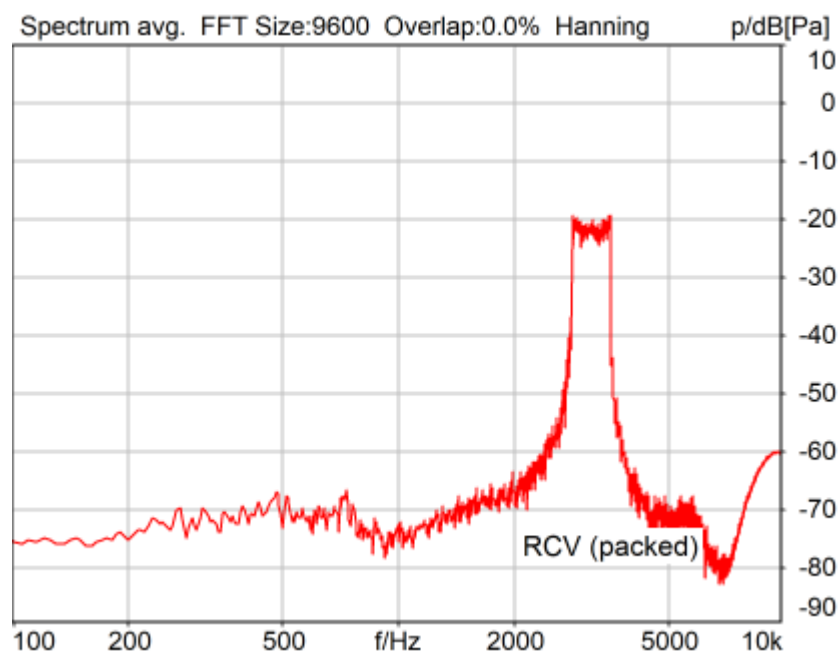
Unmodified HEAD acoustics Measurement Descriptor

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): 28.59 dB (3.72%) Ok

Ok

2025/1/26 15:32 ACQUA 6.0.200

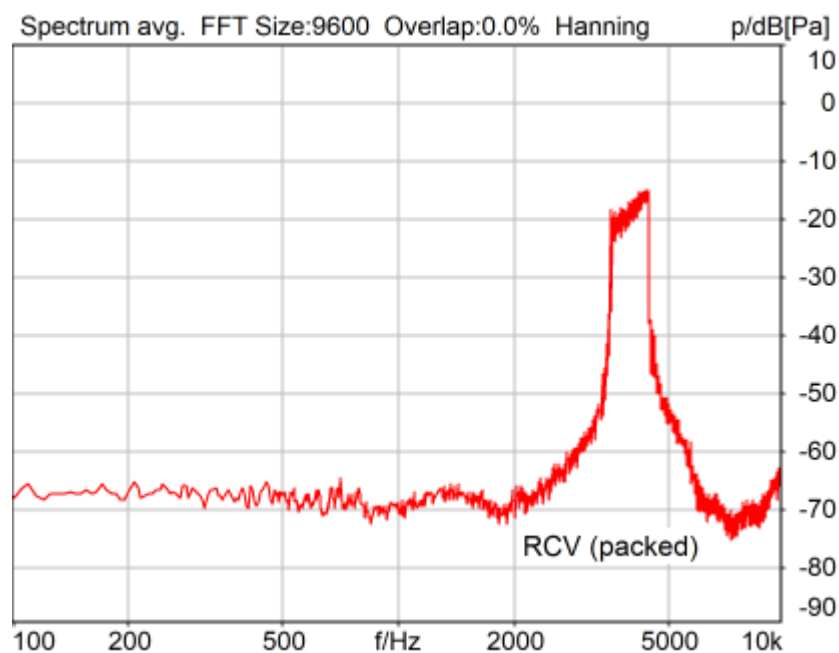
Unmodified HEAD acoustics Measurement Descriptor

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): 24.73 dB (5.80%) Ok

Ok

2025/1/26 15:33 ACQUA 6.0.200

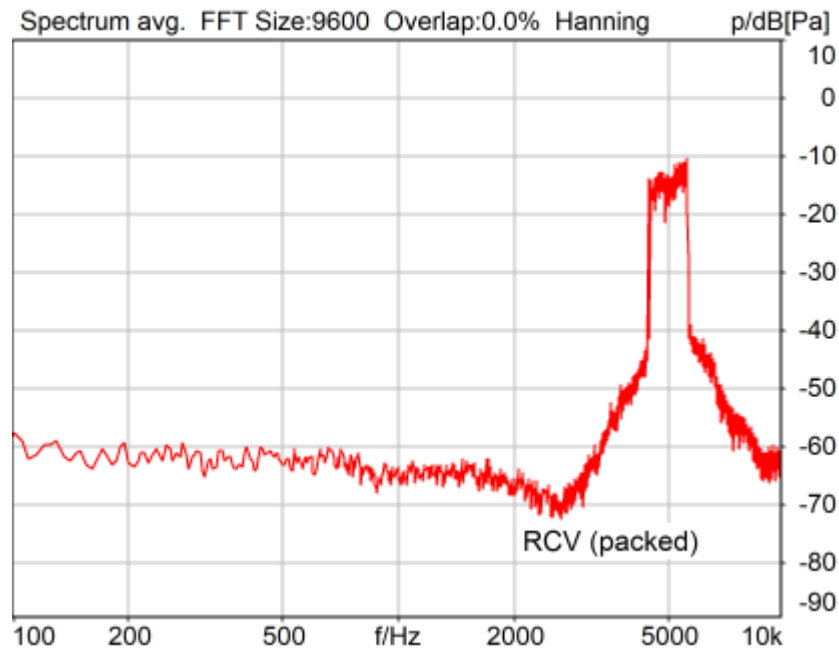
Unmodified HEAD acoustics Measurement Descriptor

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): 24.83 dB (5.73%) Ok

Ok

2025/1/26 15:33 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	28.01 dB
2	315Hz	31.76 dB
3	400Hz	34.52 dB
4	500Hz	33.42 dB
5	630Hz	35.03 dB
6	800Hz	34.15 dB
7	1000Hz	31.87 dB
8	1250Hz	23.42 dB
9	1600Hz	24.39 dB
10	2000Hz	22.05 dB

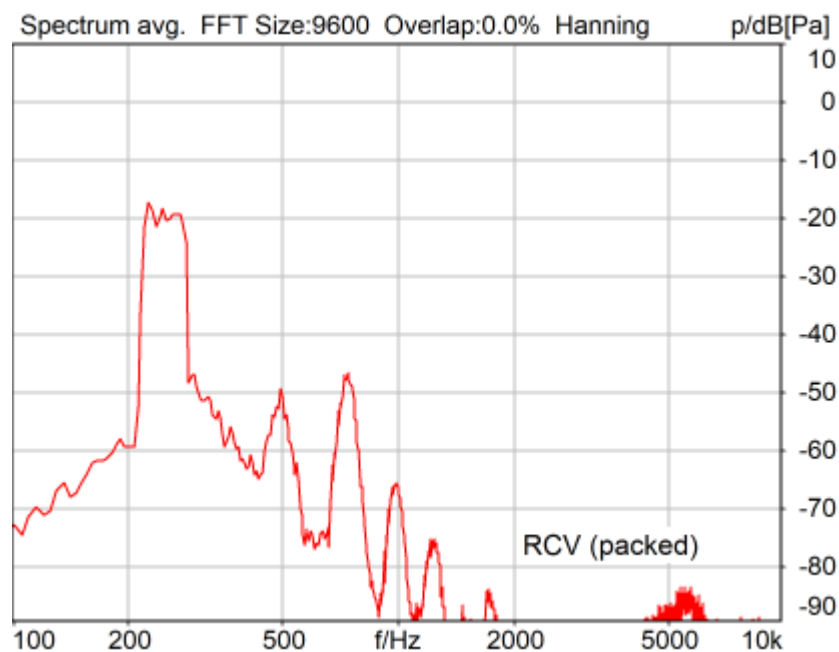
11	2500Hz	23.63 dB
12	3150Hz	28.59 dB
13	4000Hz	24.73 dB
14	5000Hz	24.83 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.05dB at 2000Hz.

2025/1/26 15:34 ACQUA

5.2 RCV Distortion and Noise - 250 Hz WB

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



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

Ok

2025/1/26 17:23 ACQUA 6.0.200

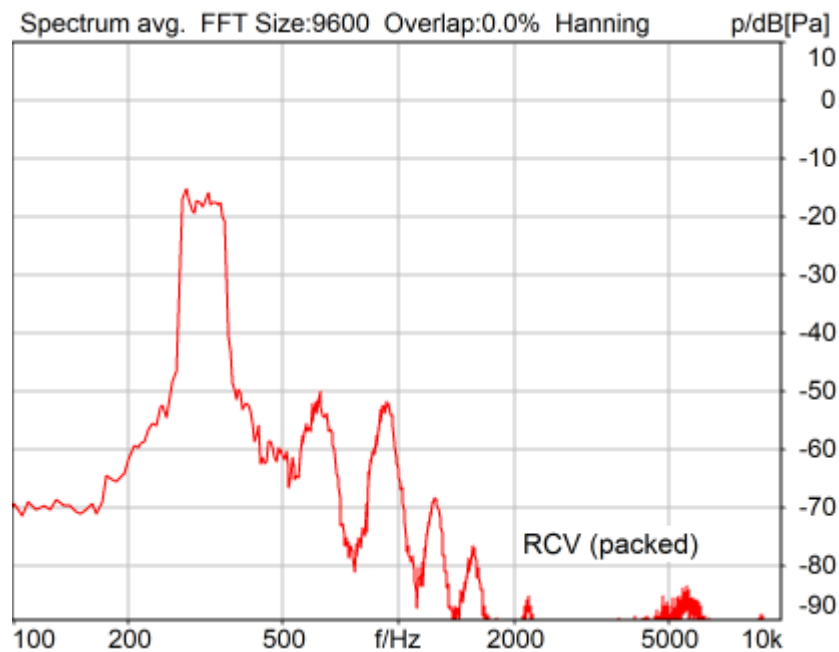
Unmodified HEAD acoustics Measurement Descriptor

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): 32.46 dB (2.38%) Ok

Ok

2025/1/26 17:23 ACQUA 6.0.200

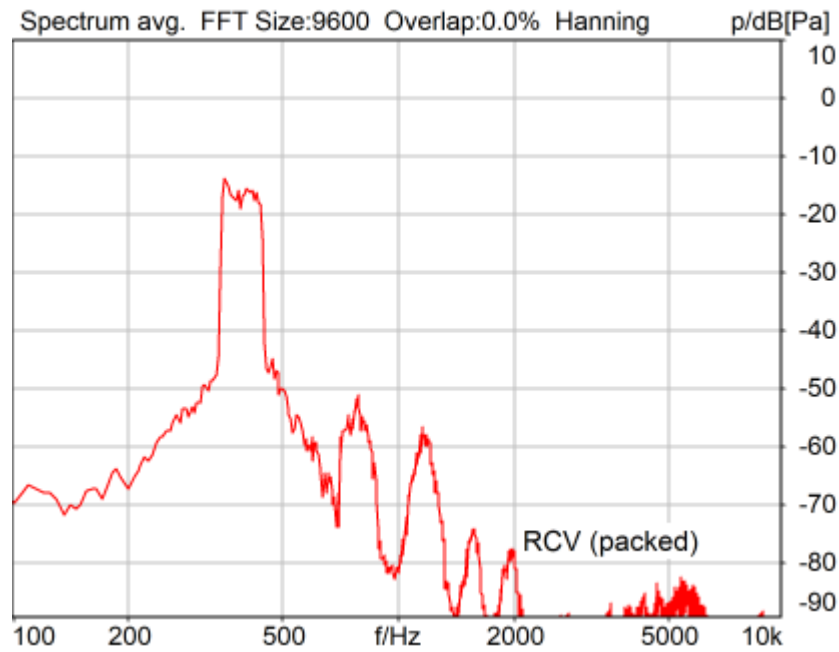
Unmodified HEAD acoustics Measurement Descriptor

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): 34.16 dB (1.96%) Ok

Ok

2025/1/26 17:24 ACQUA 6.0.200

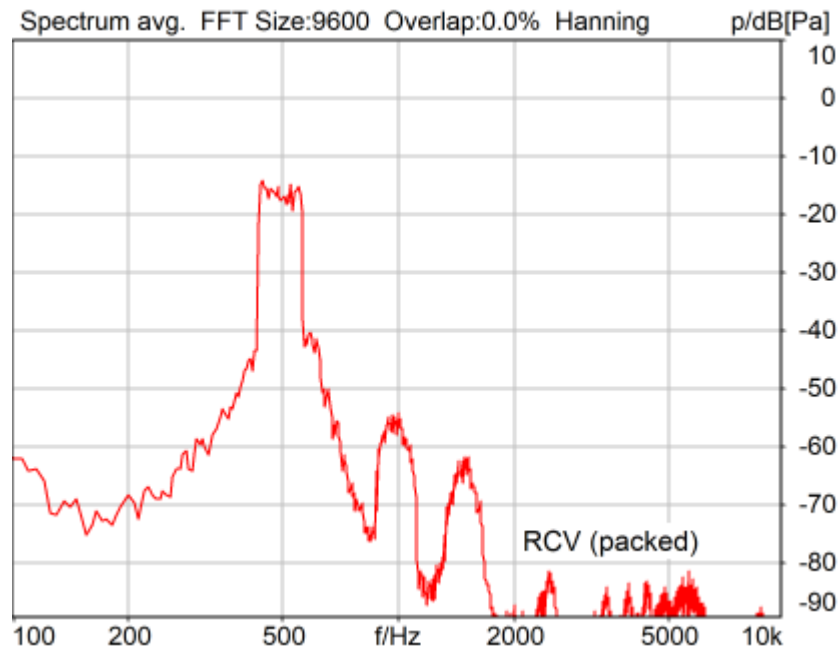
Unmodified HEAD acoustics Measurement Descriptor

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): 31.98 dB (2.52%) Ok

Ok

2025/1/26 17:24 ACQUA 6.0.200

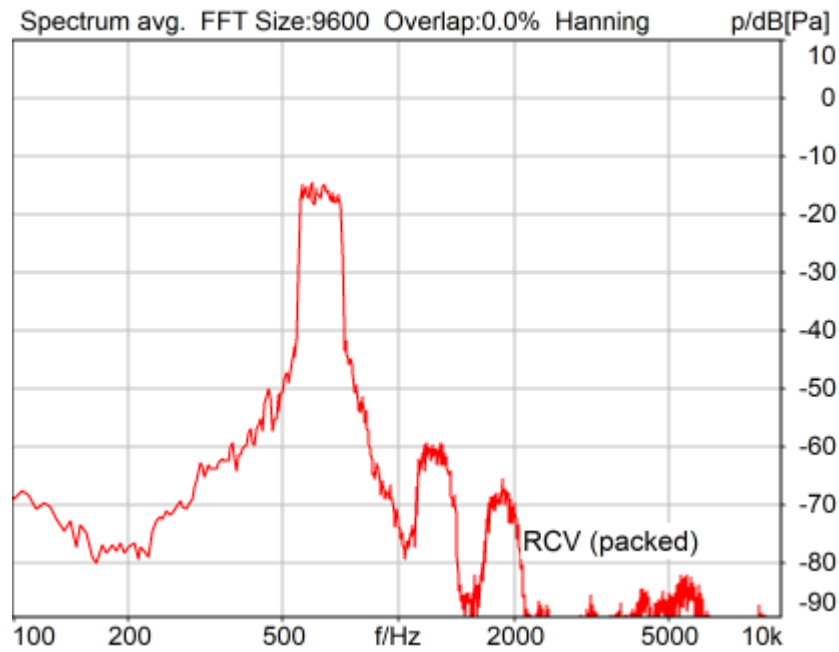
Unmodified HEAD acoustics Measurement Descriptor

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): 34.75 dB (1.83%) Ok

Ok

2025/1/26 17:25 ACQUA 6.0.200

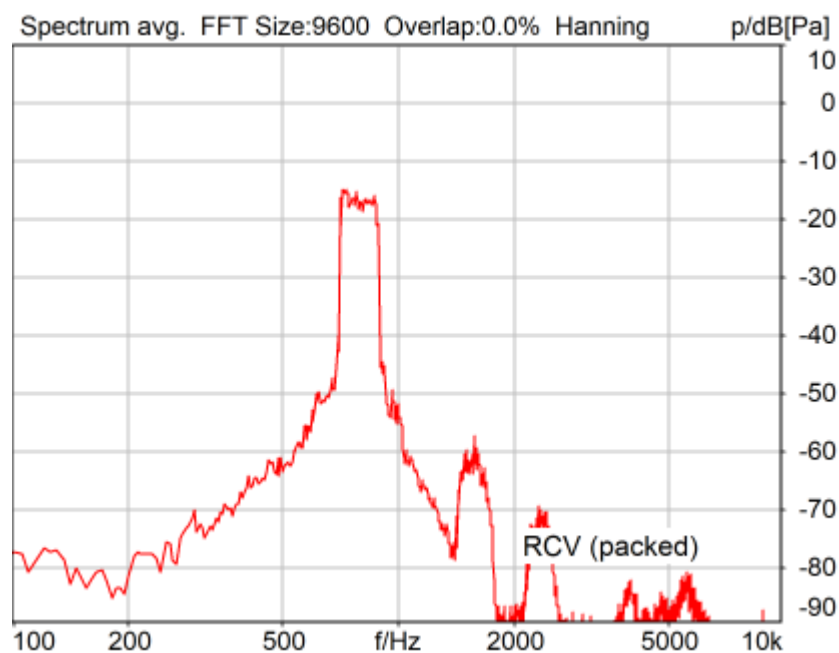
Unmodified HEAD acoustics Measurement Descriptor

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): 34.79 dB (1.82%) Ok

Ok

2025/1/26 17:25 ACQUA 6.0.200

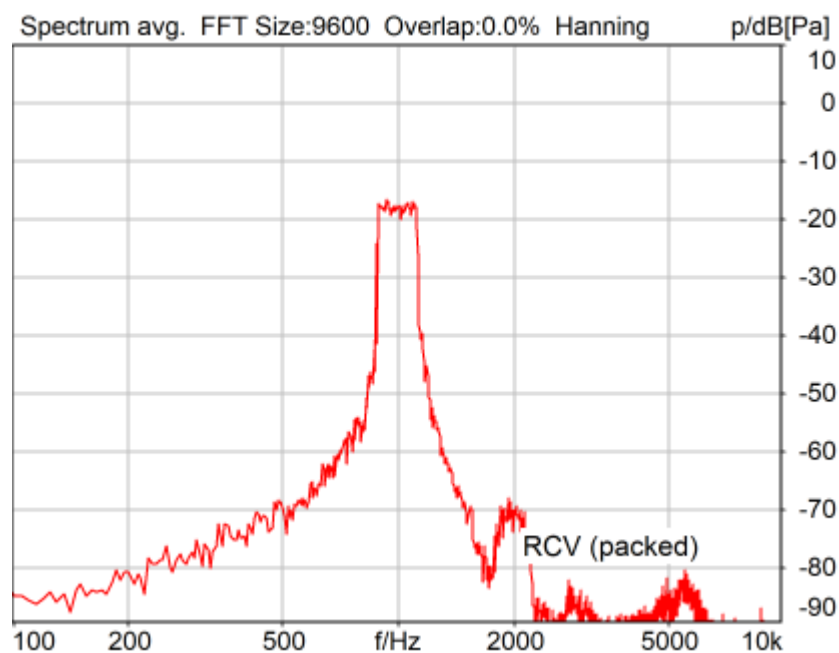
Unmodified HEAD acoustics Measurement Descriptor

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): 32.29 dB (2.43%) Ok

Ok

2025/1/26 17:25 ACQUA 6.0.200

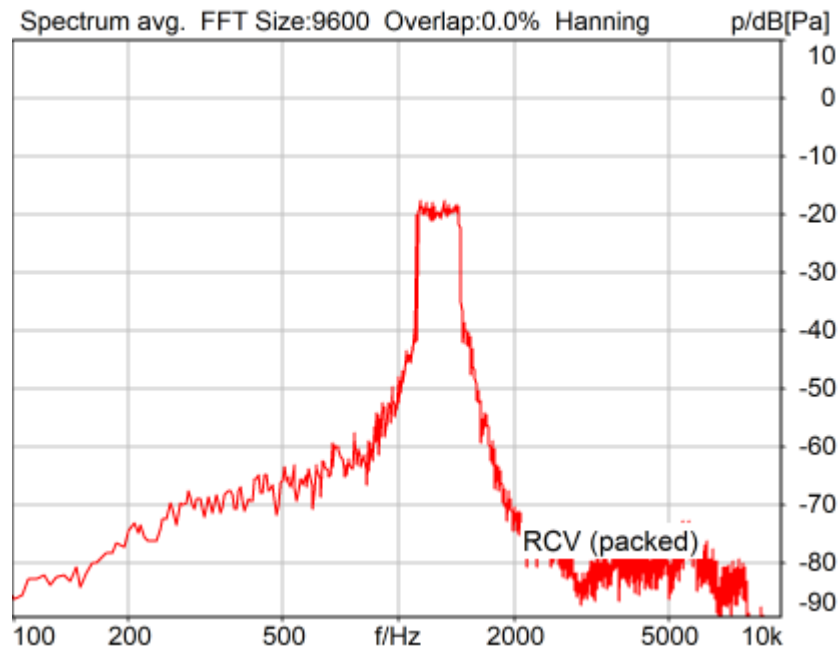
Unmodified HEAD acoustics Measurement Descriptor

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): 23.78 dB (6.47%) Ok

Ok

2025/1/26 17:26 ACQUA 6.0.200

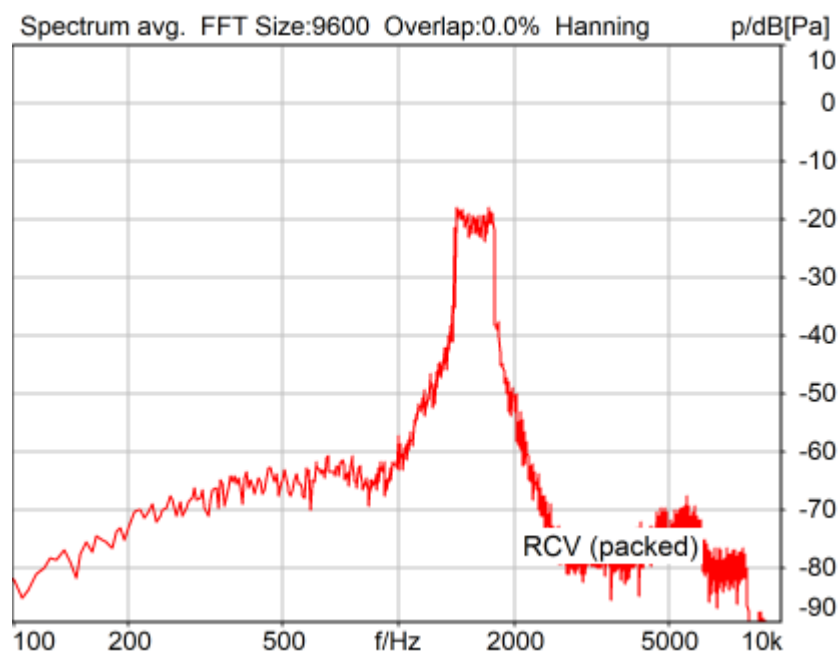
Unmodified HEAD acoustics Measurement Descriptor

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): 24.11 dB (6.23%) Ok

Ok

2025/1/26 17:26 ACQUA 6.0.200

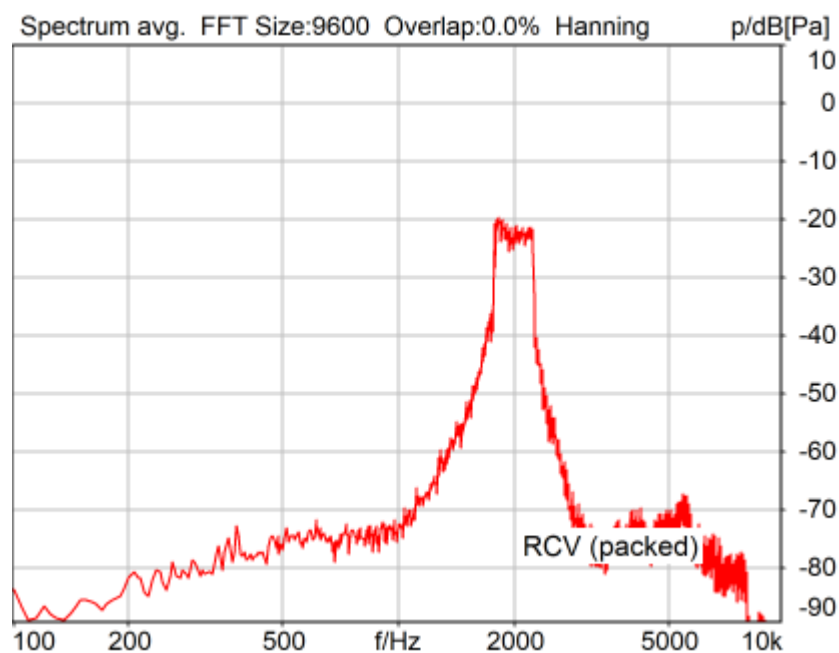
Unmodified HEAD acoustics Measurement Descriptor

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): 21.18 dB (8.73%) Ok

Ok

2025/1/26 17:27 ACQUA 6.0.200

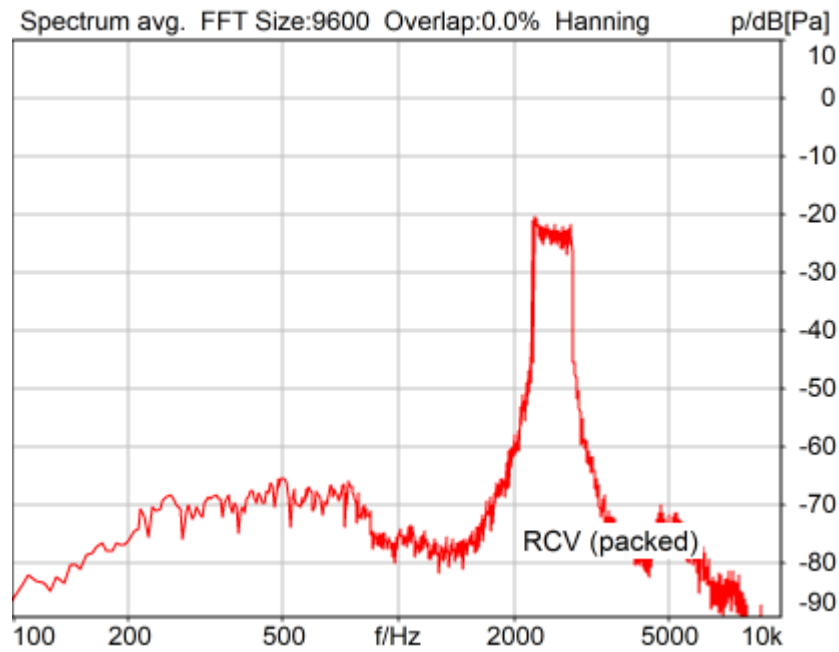
Unmodified HEAD acoustics Measurement Descriptor

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): 28.80 dB (3.63%) Ok

Ok

2025/1/26 17:27 ACQUA 6.0.200

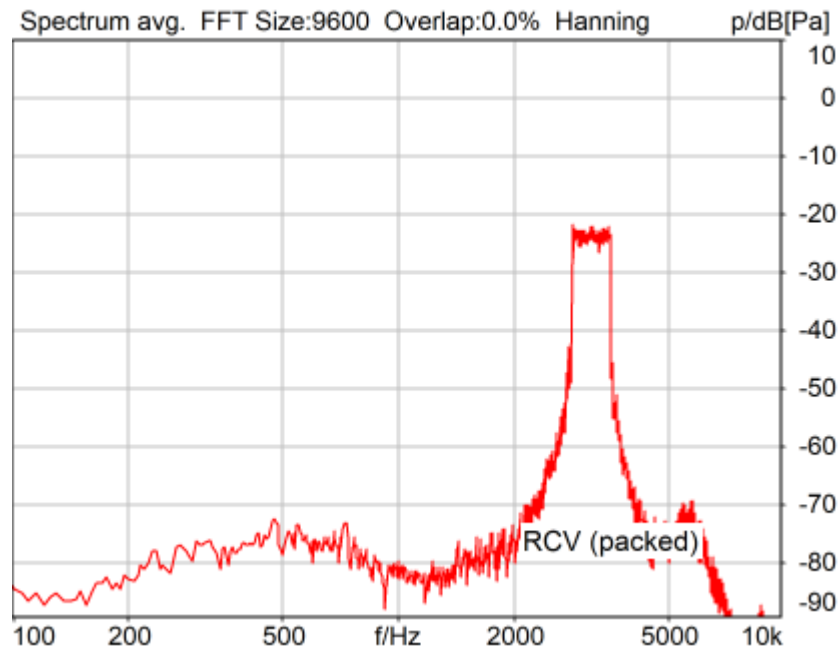
Unmodified HEAD acoustics Measurement Descriptor

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

2025/1/26 17:27 ACQUA 6.0.200

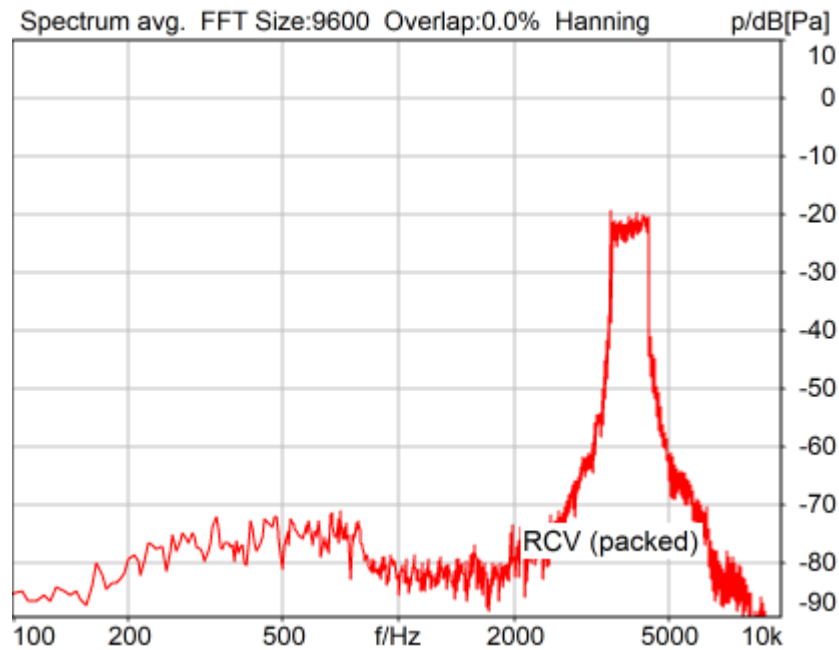
Unmodified HEAD acoustics Measurement Descriptor

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): 27.01 dB (4.46%) Ok

Ok

2025/1/26 17:28 ACQUA 6.0.200

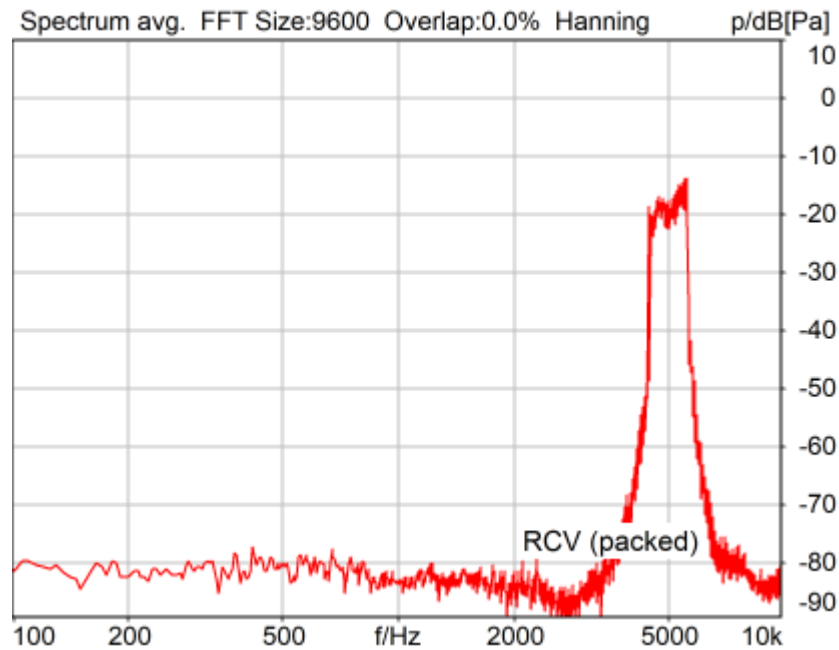
Unmodified HEAD acoustics Measurement Descriptor

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): 33.84 dB (2.03%) Ok

Ok

2025/1/26 17:28 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	32.46 dB
3	400Hz	34.16 dB
4	500Hz	31.98 dB
5	630Hz	34.75 dB
6	800Hz	34.79 dB
7	1000Hz	32.29 dB
8	1250Hz	23.78 dB
9	1600Hz	24.11 dB
10	2000Hz	21.18 dB

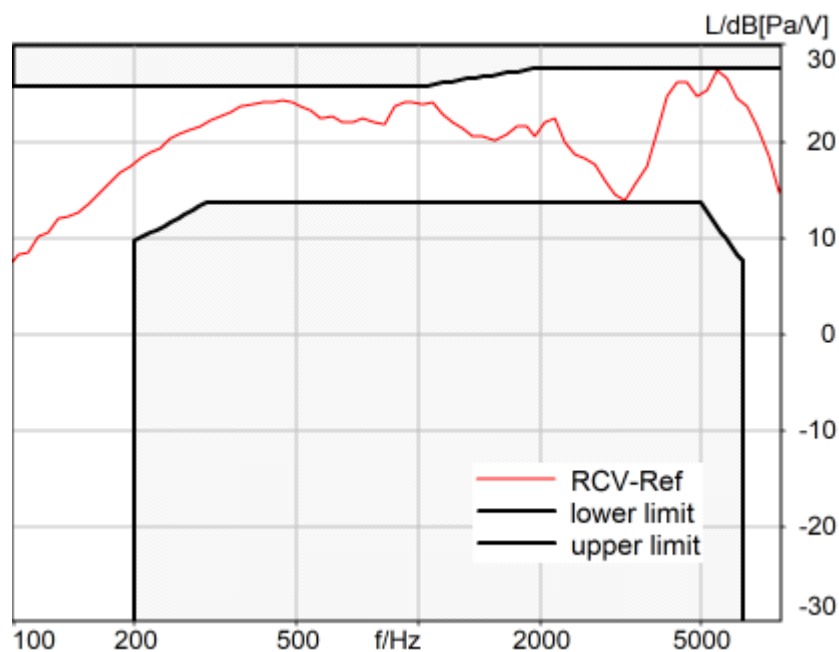
11	2500Hz	28.80 dB
12	3150Hz	30.38 dB
13	4000Hz	27.01 dB
14	5000Hz	33.84 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 21.18dB at 2000Hz.

2025/1/26 17:28 ACQUA

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.27 dB at 5443.6 Hz Ok

Ok

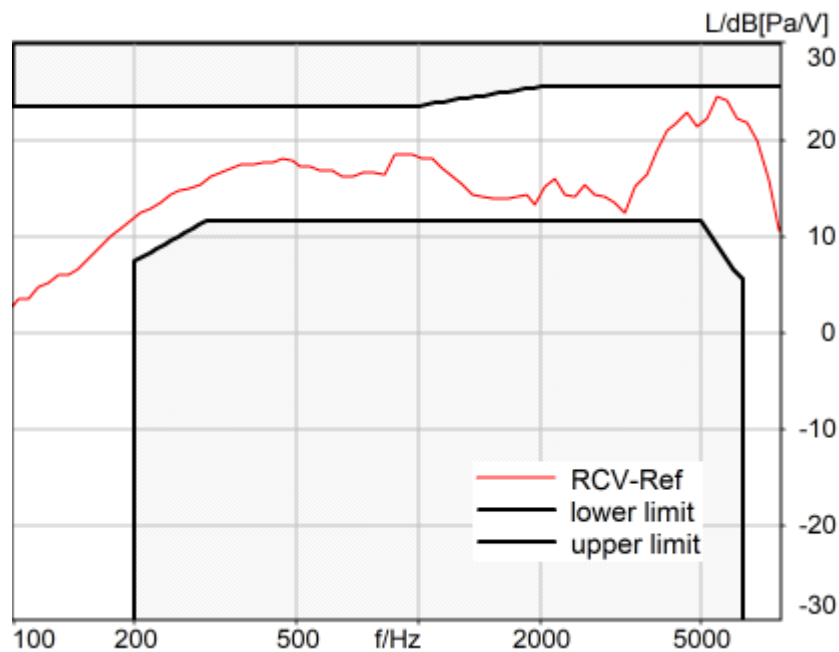
2025/1/26 15:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
 1.00 dB at 5443.6 Hz Ok

Ok

2025/1/26 15:41 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
--------------------	--

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:52
Responsible Person	audio

Status Overview

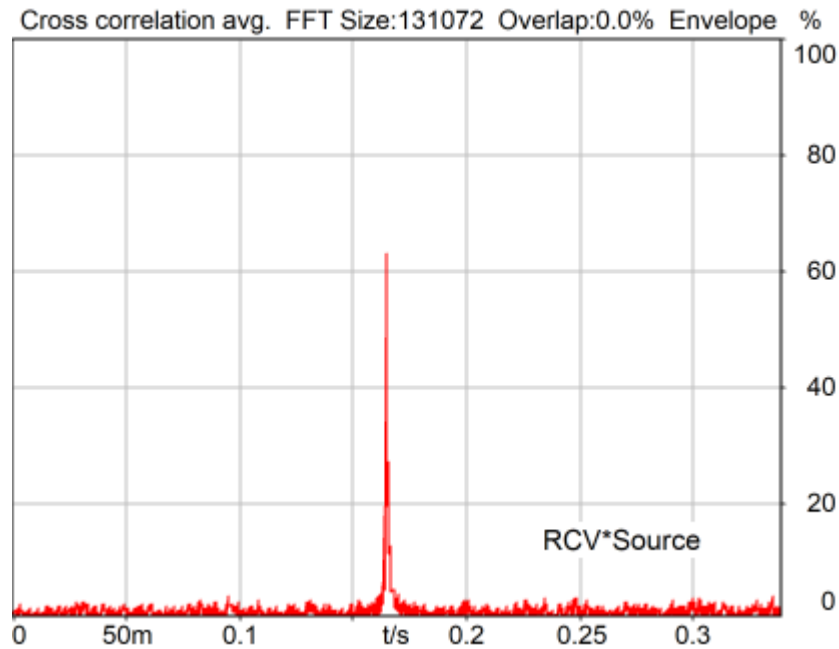
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	165.3	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	16.63	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.06	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.62	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.32	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.84	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.02	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.10	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.64	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.00	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.22	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.56	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.40	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.80	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.37	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	36.52	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
Report - Receive	Ok	Minimum SDNR	22.56	HUHAO_2403_LTE

Distortion and Noise (Conversational Gain)		[dB], (occured at 2000Hz)		Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2
5.3 Frequency Response 2N DF	Ok	Min. dist. to tolerance scheme [dB], 3245.6 Hz	0.55	HUHAO_2403_LTE Band12_10_QPSK_1_0_EVS WB 24.4kbps_CH23095_Sample2

Overall Receive Delay WB	5
5.1b Receive Volume Control Performance 2N 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 2N DF	21

Overall Receive Delay WB

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

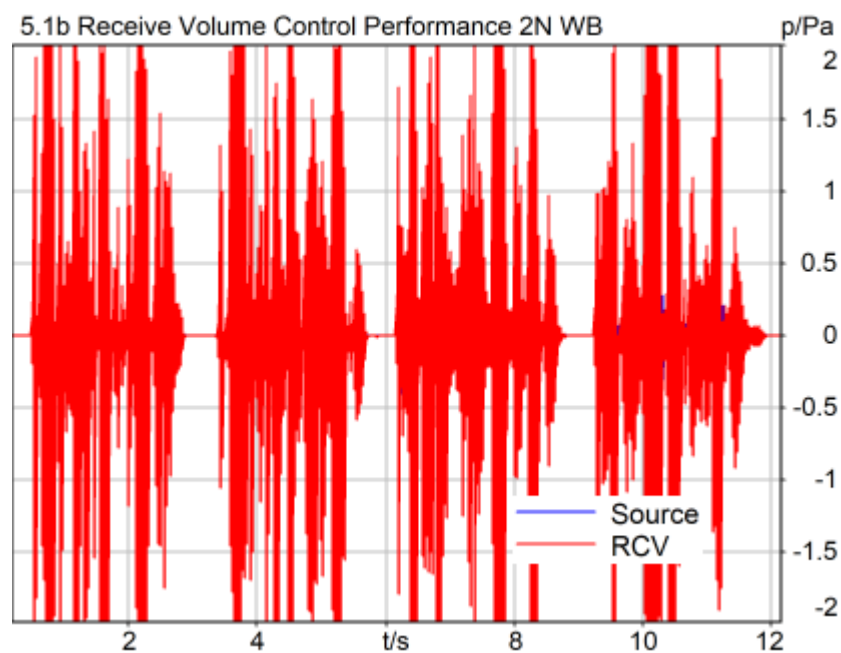


Channel	Delay
RCV*Source	165.3 ms

2025/3/18 16:39 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

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	86.63 dB[SPL]	84.27%	16.63 dB[SPL]	Ok

Ok

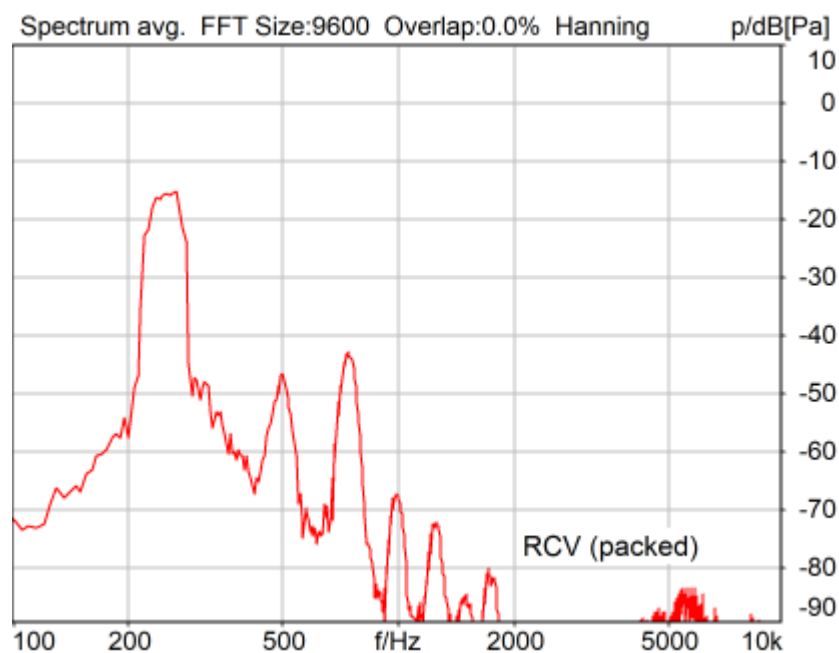
2025/3/18 16:40 ACQUA 6.0.200

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 2N



Distortion (Noise) RCV (packed): 27.06 dB (4.44%) Ok

Ok

2025/3/18 16:40 ACQUA 6.0.200

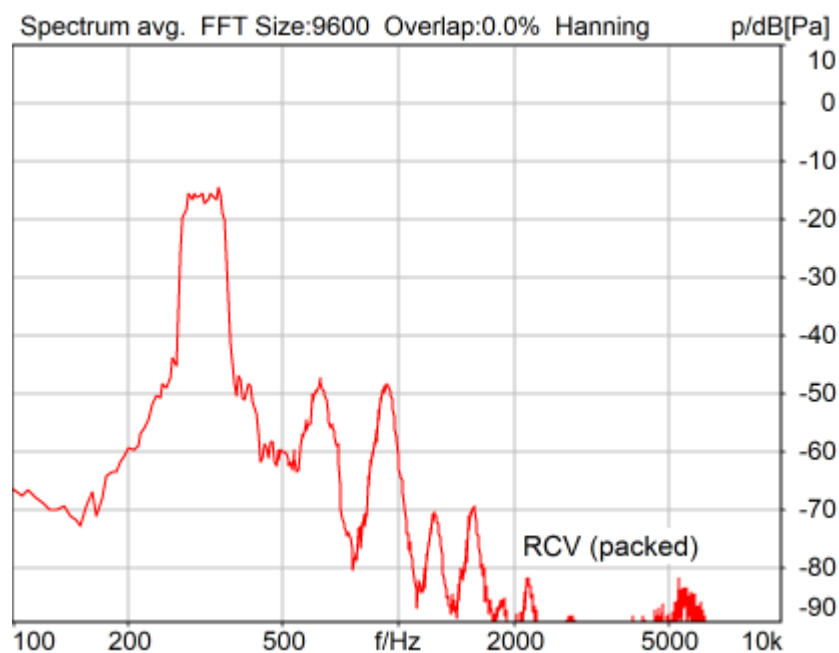
Unmodified HEAD acoustics Measurement Descriptor

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): 30.62 dB (2.94%) Ok

Ok

2025/3/18 16:41 ACQUA 6.0.200

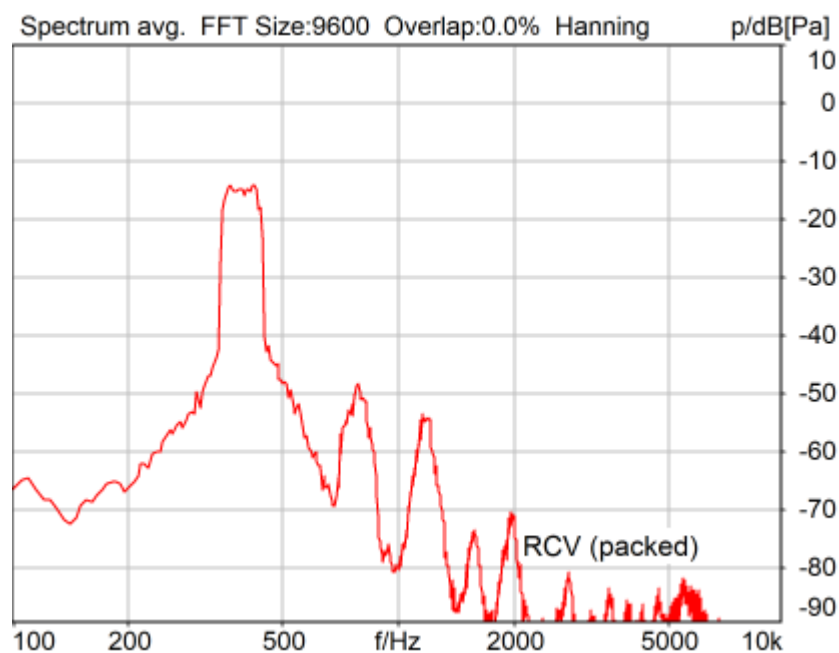
Unmodified HEAD acoustics Measurement Descriptor

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): 32.32 dB (2.42%) Ok

Ok

2025/3/18 16:41 ACQUA 6.0.200

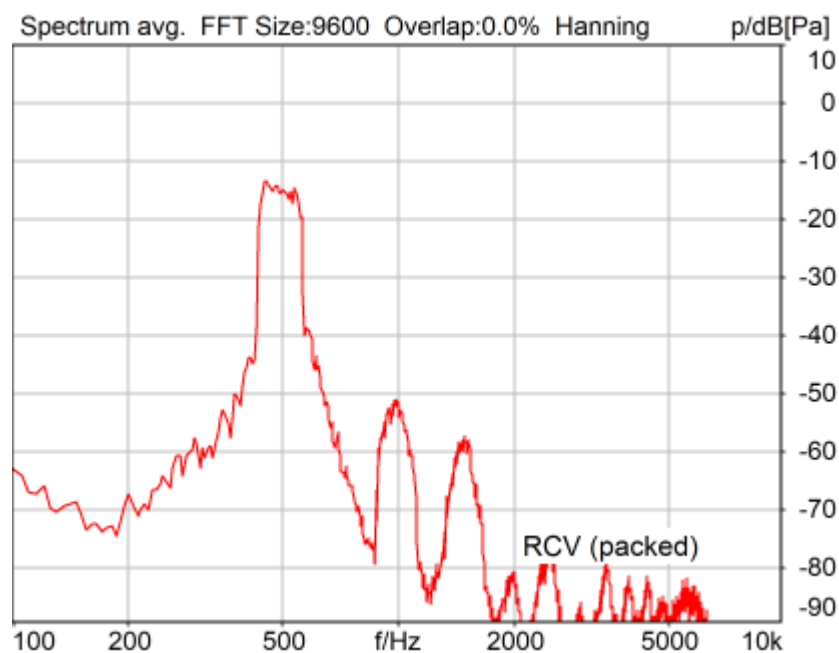
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz WB

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



Distortion (Noise) RCV (packed): 32.84 dB (2.28%) Ok

Ok

2025/3/18 16:41 ACQUA 6.0.200

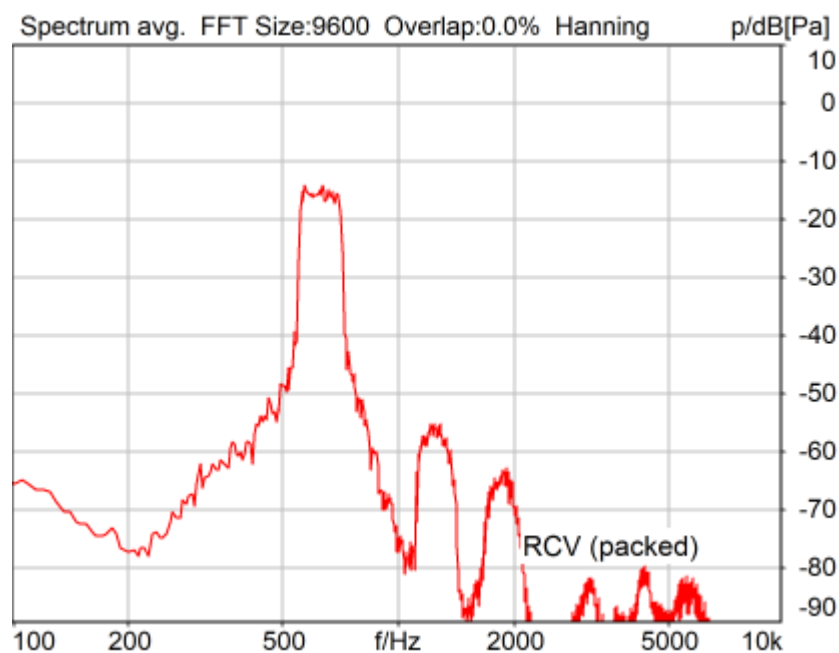
Unmodified HEAD acoustics Measurement Descriptor

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 2N



Distortion (Noise) RCV (packed): 34.02 dB (1.99%) Ok

Ok

2025/3/18 16:42 ACQUA 6.0.200

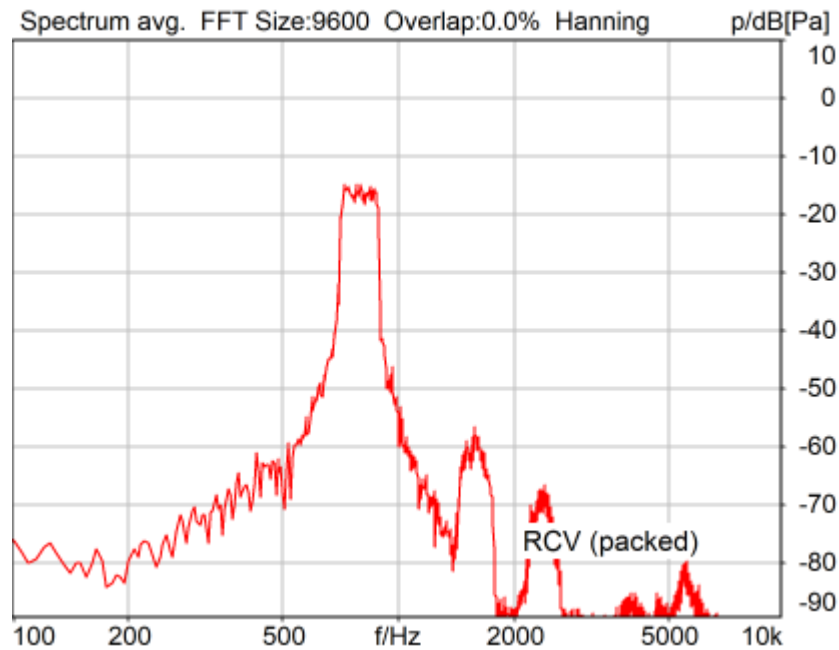
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz WB

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



Distortion (Noise) RCV (packed): 33.10 dB (2.21%) Ok

Ok

2025/3/18 16:42 ACQUA 6.0.200

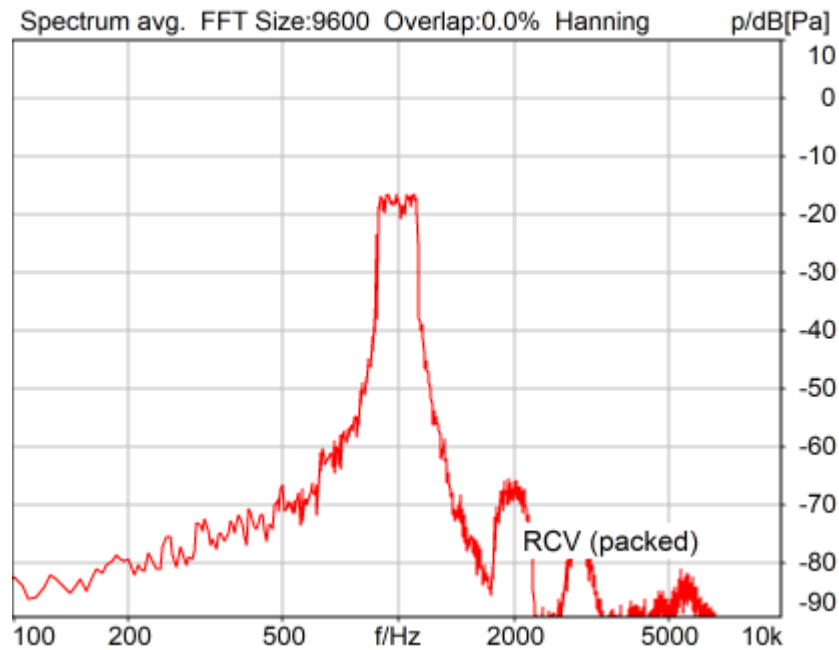
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz WB

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



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

Ok

2025/3/18 16:43 ACQUA 6.0.200

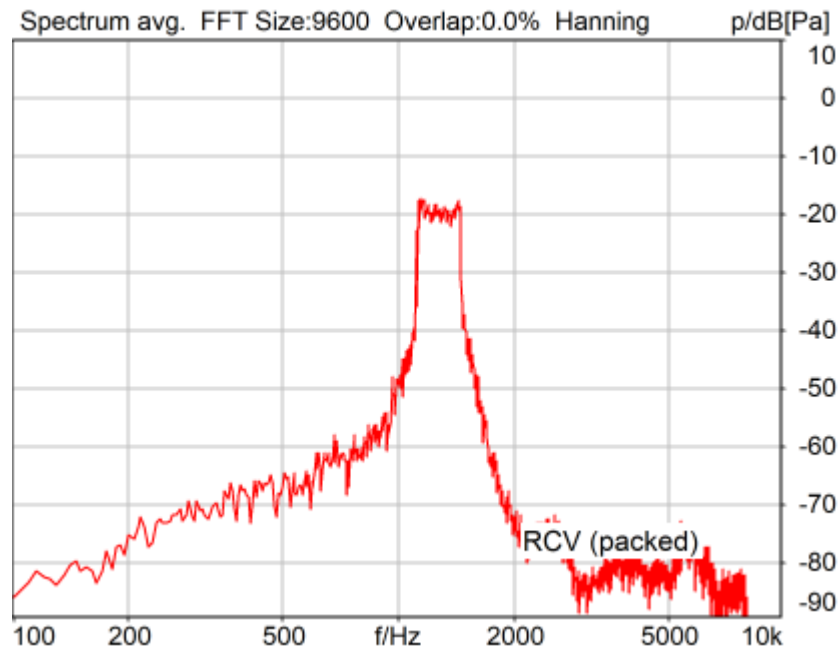
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1250 Hz WB

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



Distortion (Noise) RCV (packed): 23.00 dB (7.08%) Ok

Ok

2025/3/18 16:43 ACQUA 6.0.200

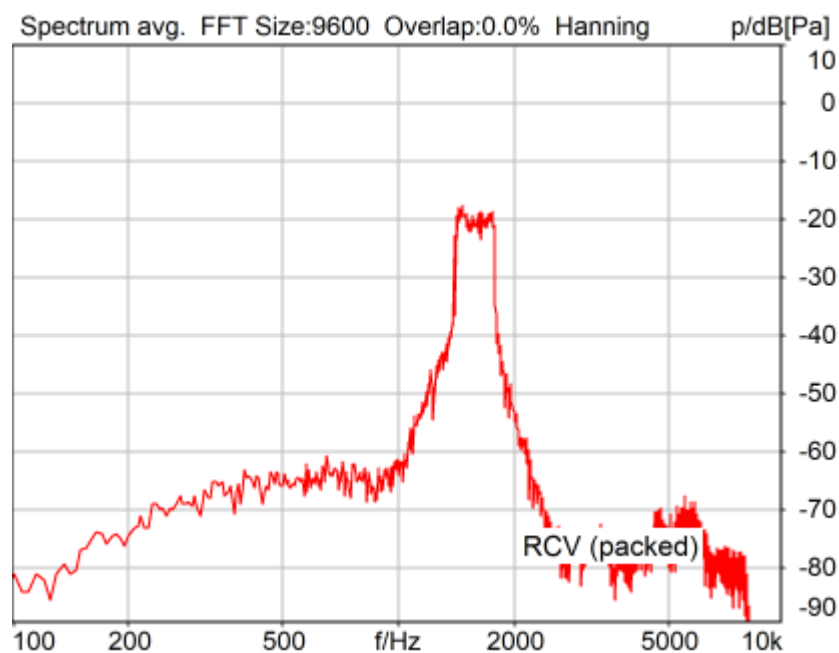
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz WB

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



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

Ok

2025/3/18 16:44 ACQUA 6.0.200

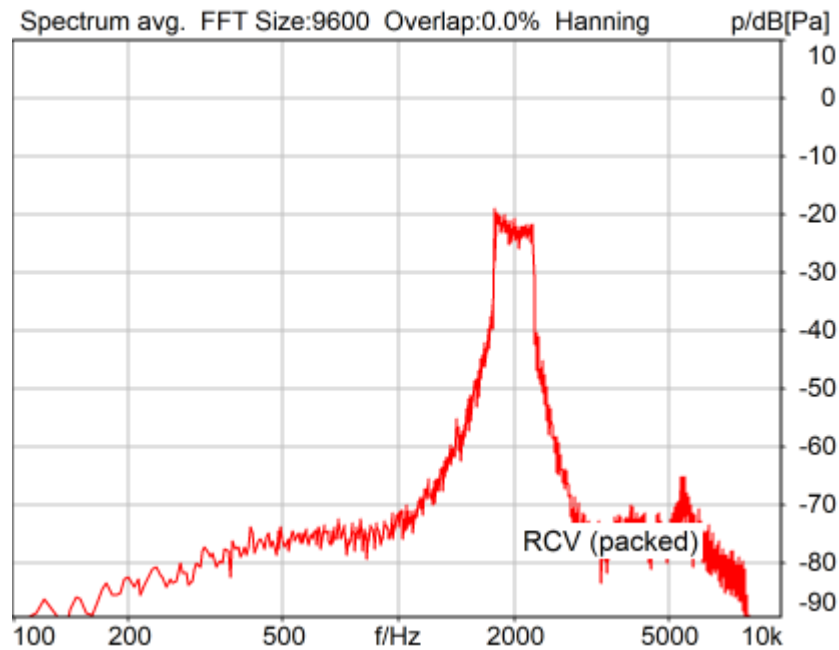
Unmodified HEAD acoustics Measurement Descriptor

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): 22.56 dB (7.45%) Ok

Ok

2025/3/18 16:44 ACQUA 6.0.200

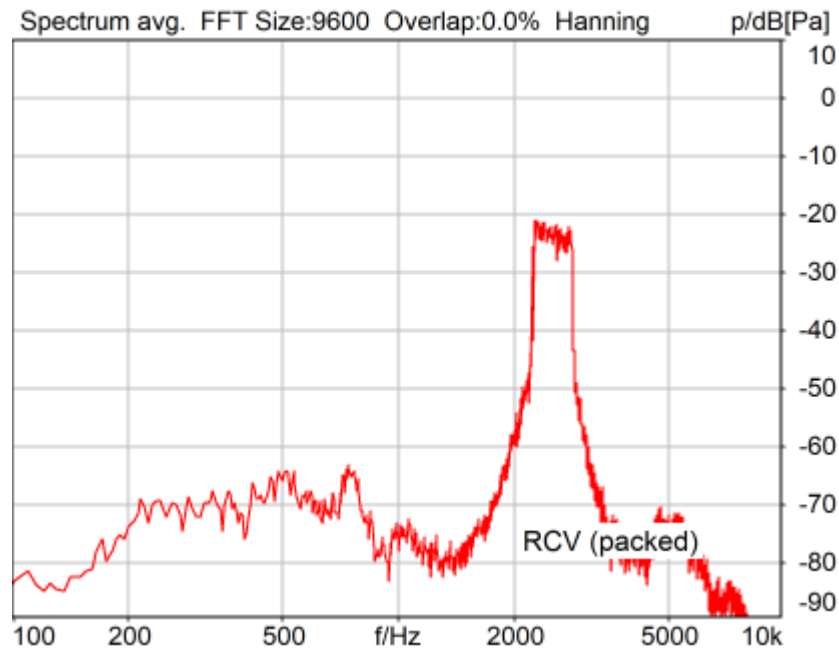
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz WB

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



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

Ok

2025/3/18 16:44 ACQUA 6.0.200

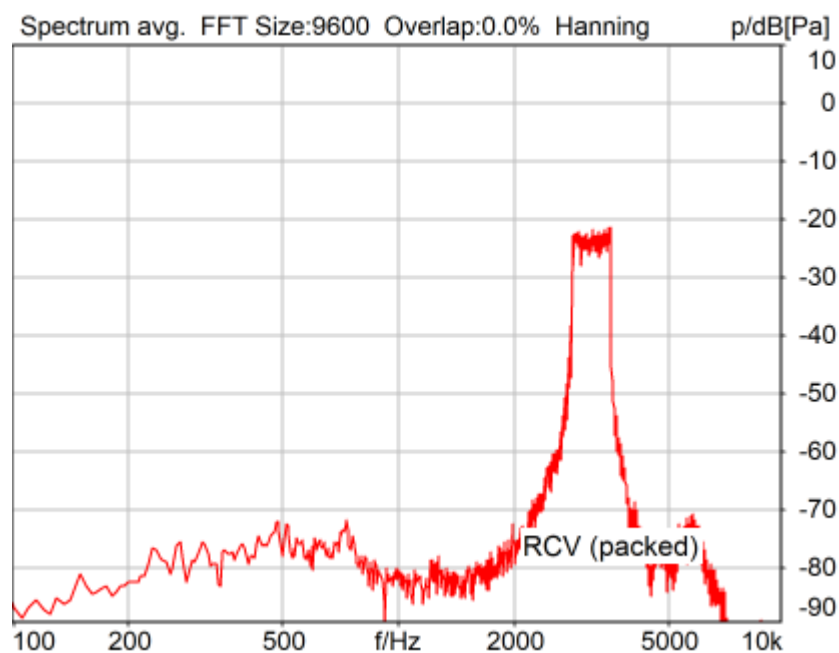
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz WB

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



Distortion (Noise) RCV (packed): 30.80 dB (2.89%) Ok

Ok

2025/3/18 16:45 ACQUA 6.0.200

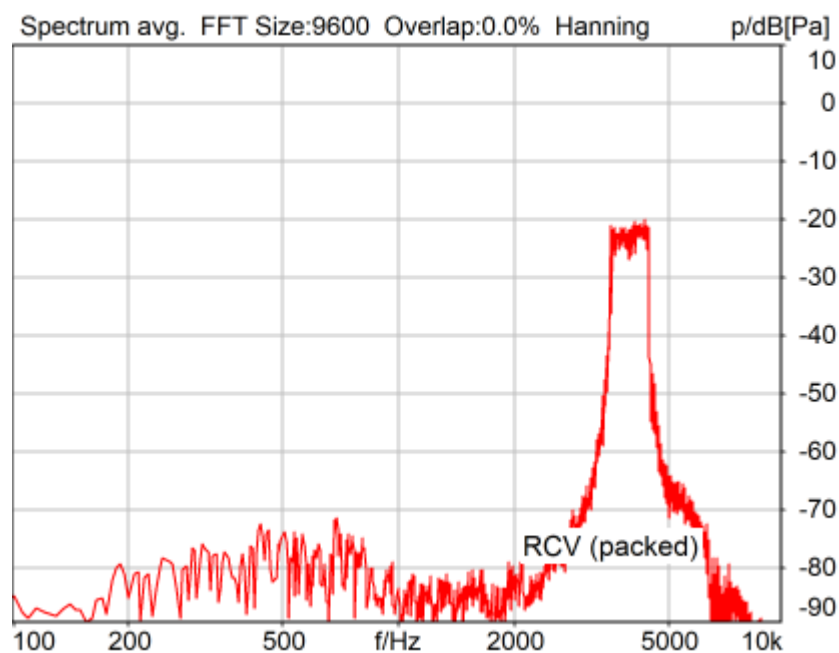
Unmodified HEAD acoustics Measurement Descriptor

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): 29.37 dB (3.40%) Ok

Ok

2025/3/18 16:45 ACQUA 6.0.200

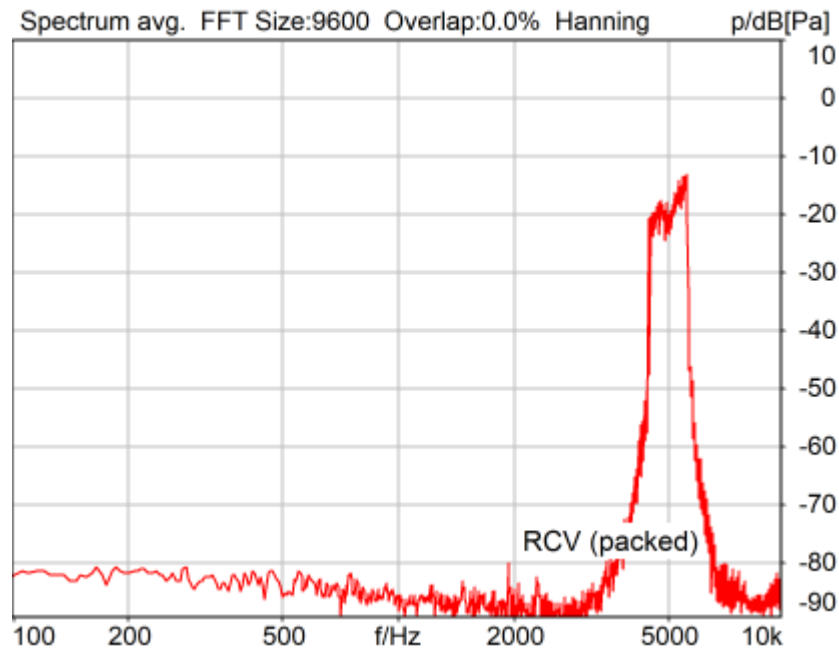
Unmodified HEAD acoustics Measurement Descriptor

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): 36.52 dB (1.49%) Ok

Ok

2025/3/18 16:46 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	27.06 dB
2	315Hz	30.62 dB
3	400Hz	32.32 dB
4	500Hz	32.84 dB
5	630Hz	34.02 dB
6	800Hz	33.10 dB
7	1000Hz	31.64 dB
8	1250Hz	23.00 dB
9	1600Hz	24.22 dB
10	2000Hz	22.56 dB

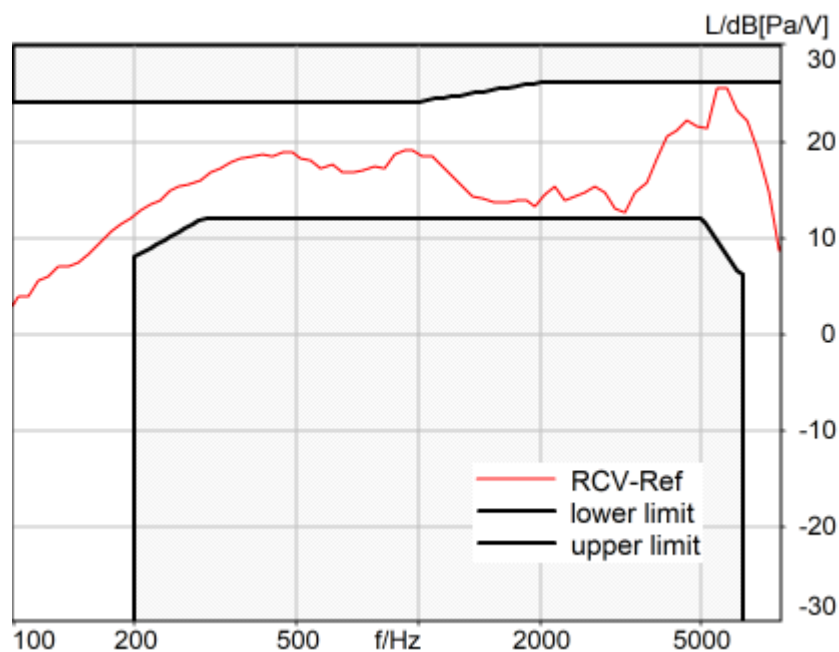
11	2500Hz	28.40 dB
12	3150Hz	30.80 dB
13	4000Hz	29.37 dB
14	5000Hz	36.52 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.56dB at 2000Hz.

2025/3/18 16:46 ACQUA

5.3 Frequency Response 2N DF

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



Absolute minimal distance
 0.55 dB at 3245.6 Hz Ok

Ok

2025/3/18 16:49 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
--------------------	---

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:54
Responsible Person	audio

Status Overview

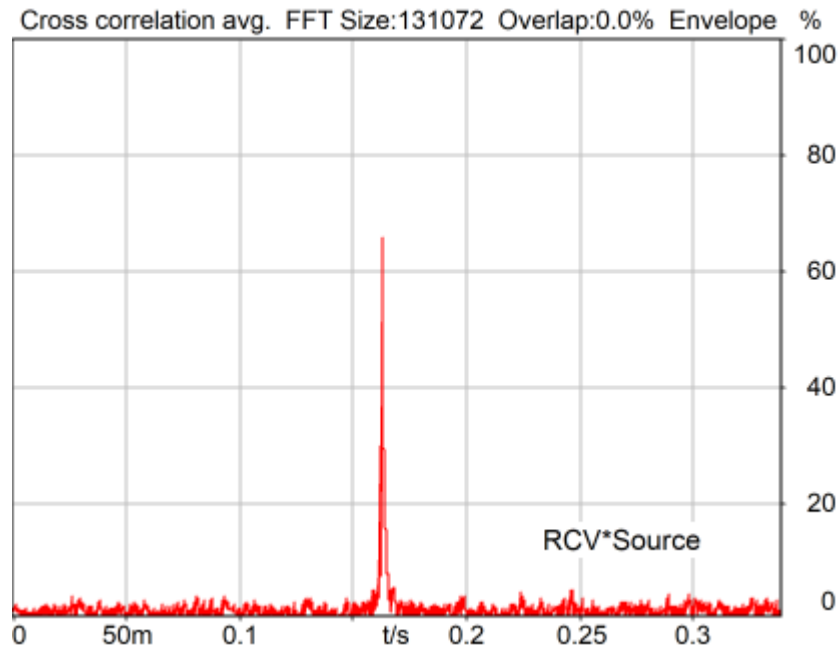
SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay NB	Done	Delay (Cross) [ms]	163.4	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.1a Receive Volume Control Performance 8N NB	Ok	Corrected Speech Level [dB[SPL]]	21.54	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.1b Receive Volume Control Performance 2N NB	Ok	Corrected Speech Level [dB[SPL]]	16.57	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.11	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.83	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 630 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	35.27	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	34.28	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.54	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.00	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.11	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.60	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.70	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	29.37	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.60	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.25	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.18	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and	Ok	Distortion (Noise)	35.78	HUHAO_2403_LTE

Noise - 630 Hz NB		[dB], 0.0 dB		Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	33.33	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	32.72	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	23.71	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	24.34	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	22.16	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	28.69	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz NB	Ok	Distortion (Noise) [dB], 0.0 dB	31.15	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.16	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.3 Frequency Response 8N FF HANB	Not Ok	Min. dist. to tolerance scheme [dB], 1447.5 Hz	-1.85	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.3 Frequency Response 8N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 412.0 Hz	0.71	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.3 Frequency Response 2N FF HANB	Ok	Min. dist. to tolerance scheme [dB], 1360.9 Hz	0.40	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230
5.3 Frequency Response 2N DF HANB	Ok	Min. dist. to tolerance scheme [dB], 3882.4 Hz	2.61	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS NB 24.4kbps_CH23230

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

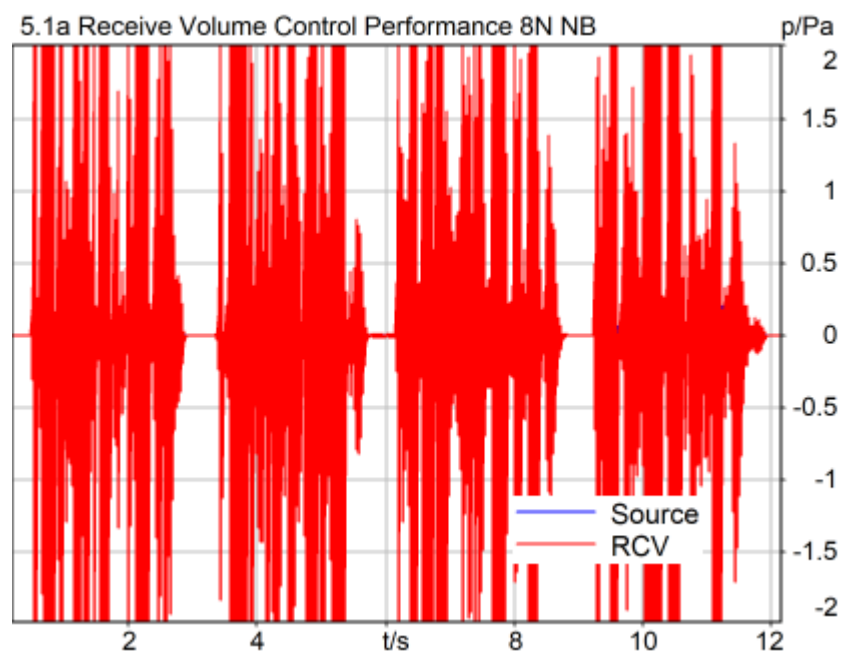


Channel	Delay
RCV*Source	163.4 ms

2025/1/26 17:05 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	91.54 dB[SPL]	84.34%	21.54 dB[SPL]	Ok

Ok

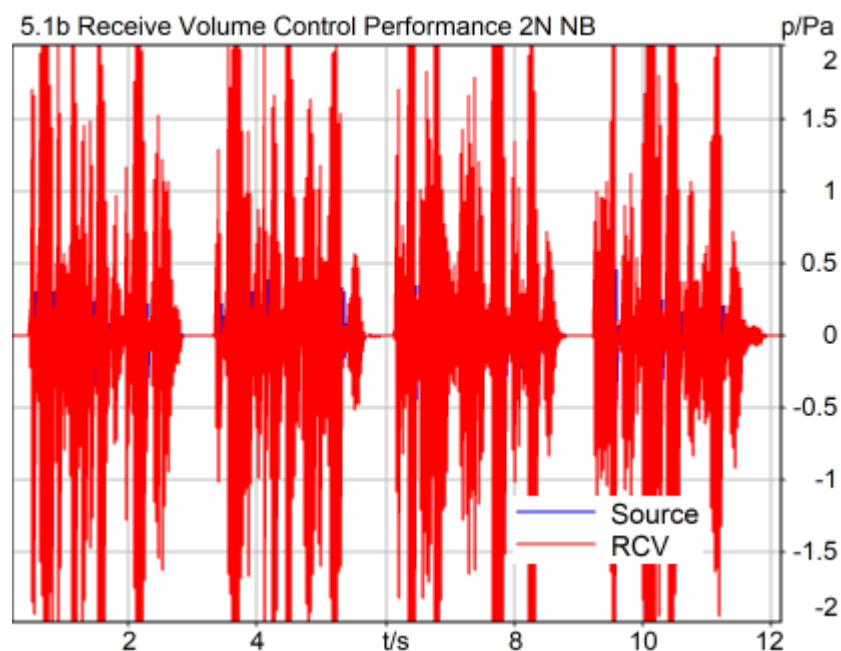
2025/1/26 17:06 ACQUA 6.0.200

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	86.57 dB[SPL]	84.18%	16.57 dB[SPL]	Ok

Ok

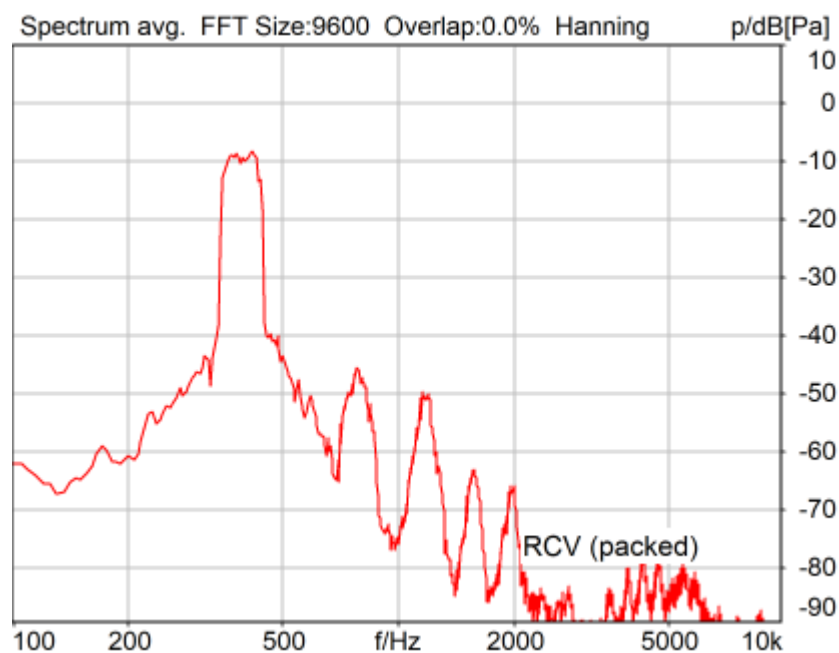
2025/1/26 17:16 ACQUA 6.0.200

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): 34.11 dB (1.97%) Ok

Ok

2025/1/26 17:06 ACQUA 6.0.200

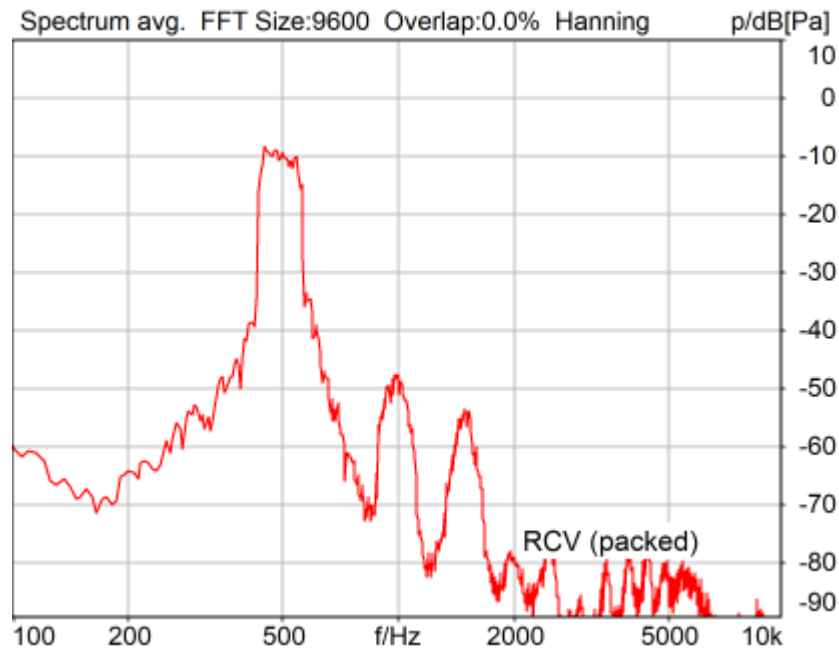
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 500 Hz NB

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



Distortion (Noise) RCV (packed): 33.83 dB (2.04%) Ok

Ok

2025/1/26 17:06 ACQUA 6.0.200

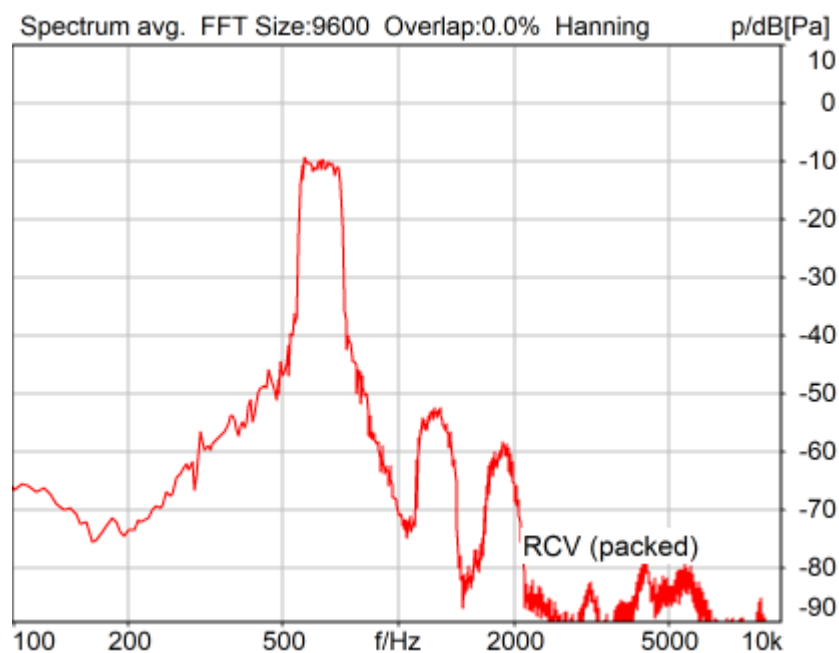
Unmodified HEAD acoustics Measurement Descriptor

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): 35.27 dB (1.72%) Ok

Ok

2025/1/26 17:07 ACQUA 6.0.200

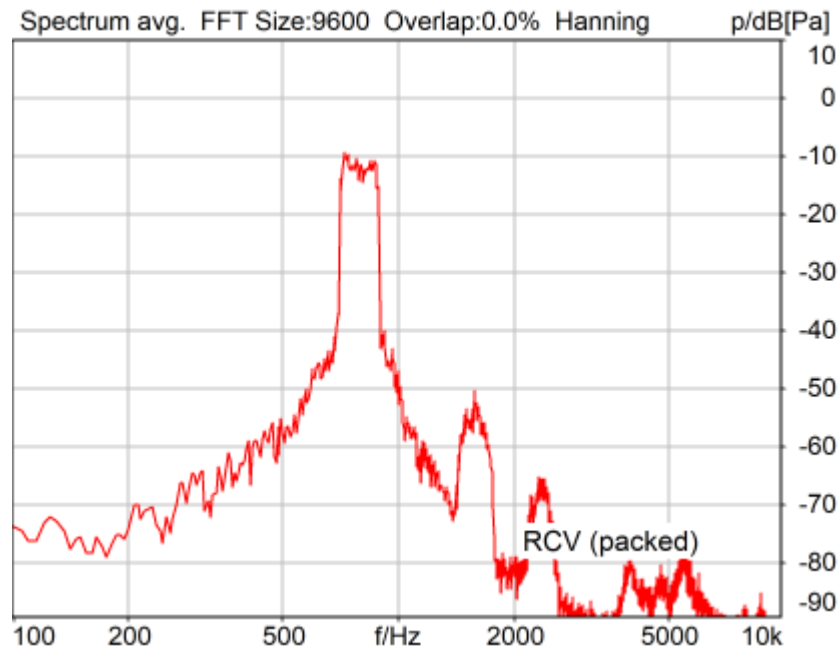
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 800 Hz NB

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



Distortion (Noise) RCV (packed): 34.28 dB (1.93%) Ok

Ok

2025/1/26 17:07 ACQUA 6.0.200

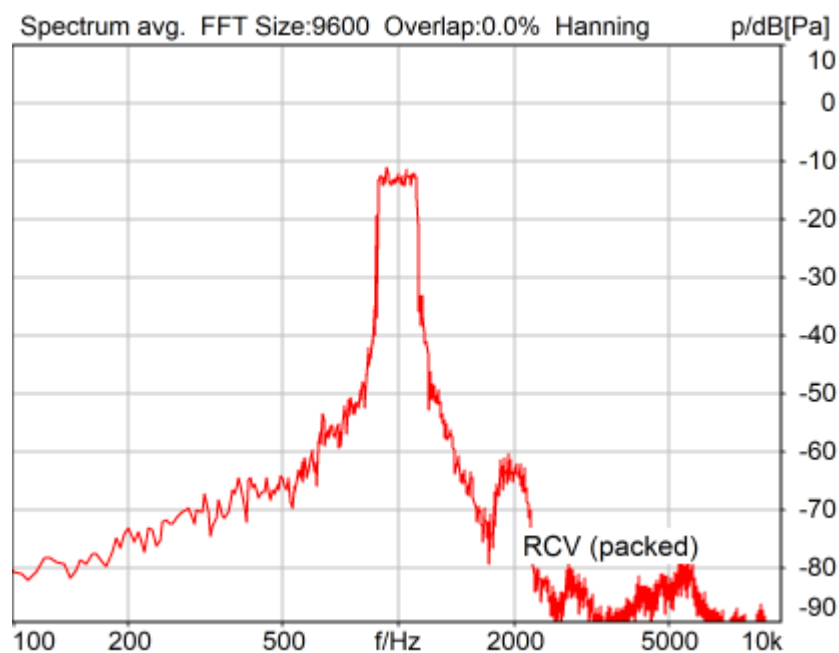
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1000 Hz NB

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



Distortion (Noise) RCV (packed): 32.54 dB (2.36%) Ok

Ok

2025/1/26 17:07 ACQUA 6.0.200

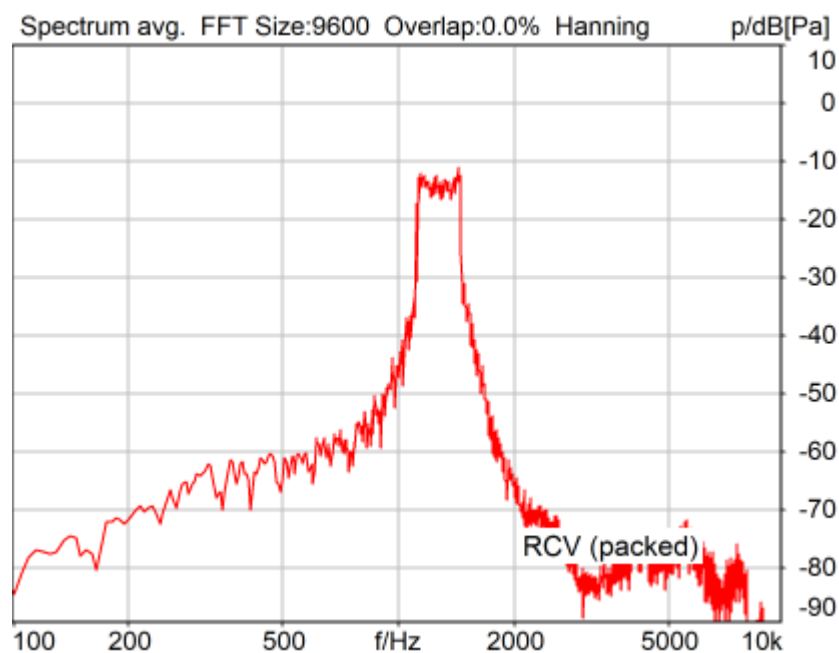
Unmodified HEAD acoustics Measurement Descriptor

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): 23.00 dB (7.08%) Ok

Ok

2025/1/26 17:08 ACQUA 6.0.200

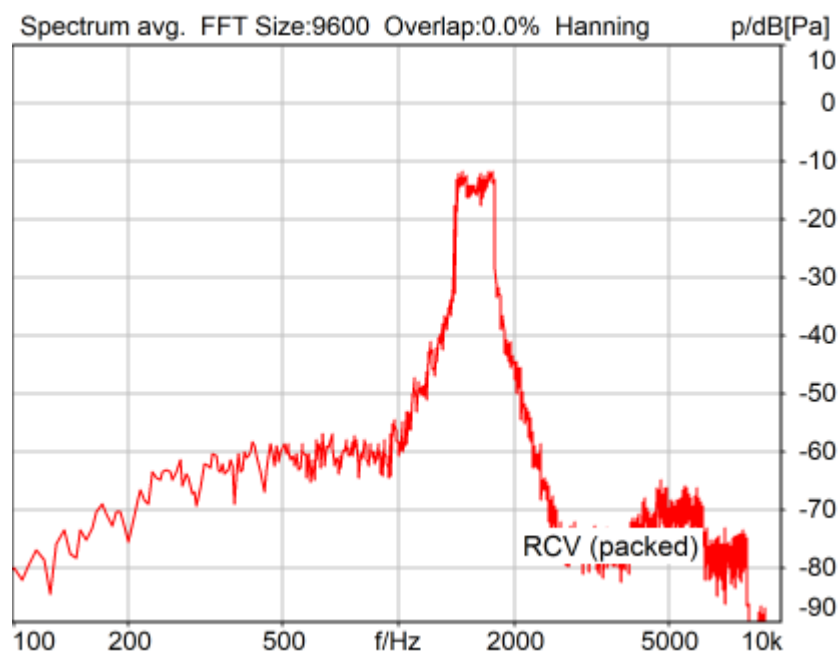
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 1600 Hz NB

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



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

Ok

2025/1/26 17:08 ACQUA 6.0.200

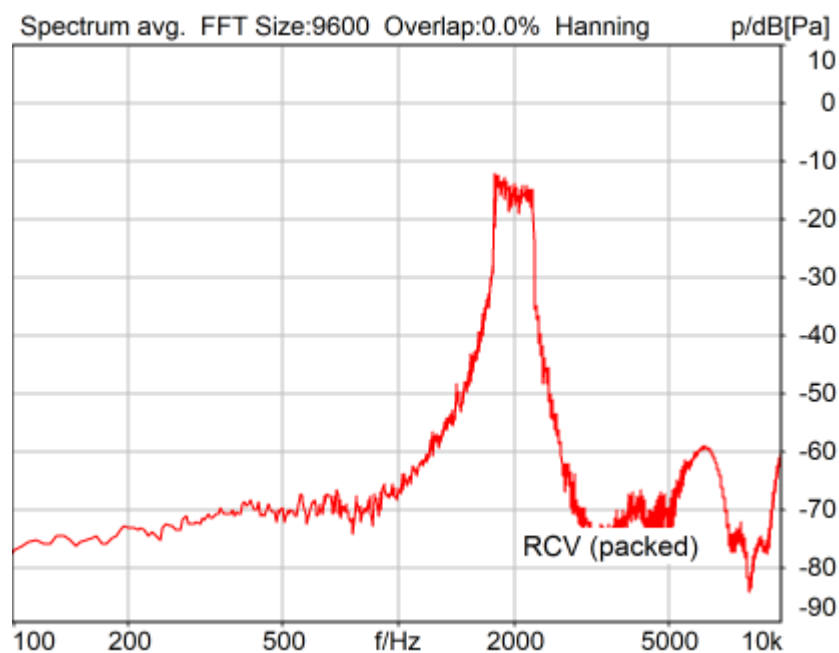
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2000 Hz NB

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



Distortion (Noise) RCV (packed): 22.60 dB (7.41%) Ok

Ok

2025/1/26 17:09 ACQUA 6.0.200

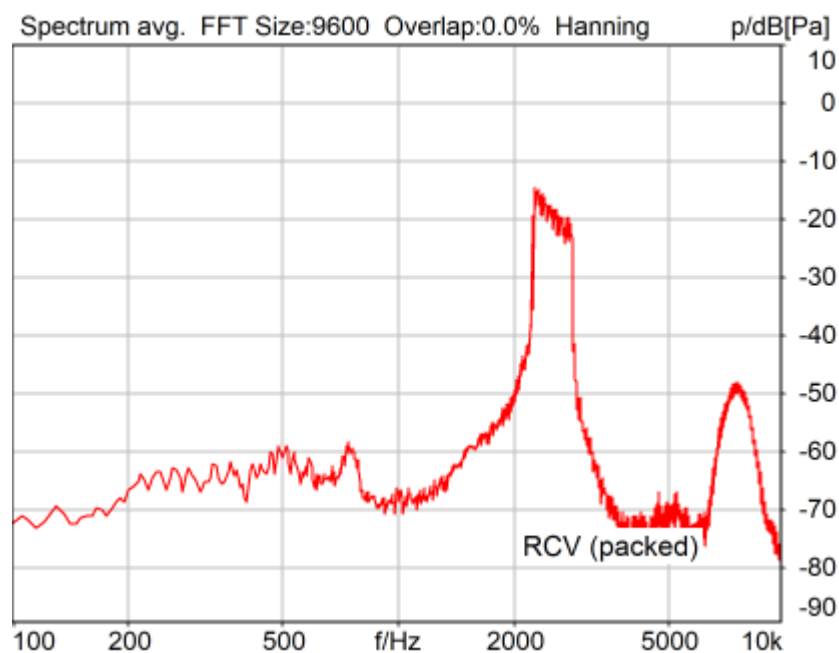
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 2500 Hz NB

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



Distortion (Noise) RCV (packed): 24.70 dB (5.82%) Ok

Ok

2025/1/26 17:09 ACQUA 6.0.200

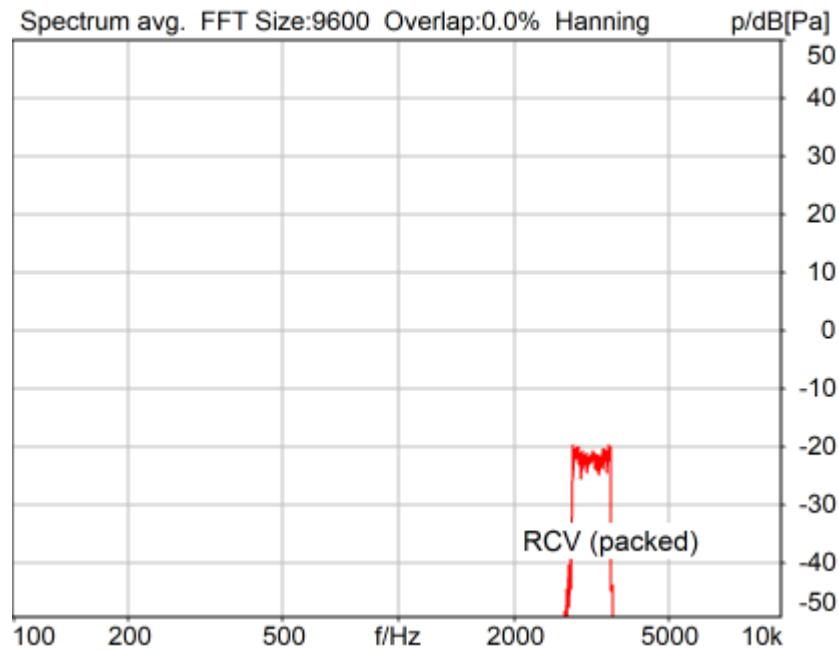
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	20.00 dB

5.2 RCV Distortion and Noise - 3150 Hz NB

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



Distortion (Noise) RCV (packed): 29.37 dB (3.40%) Ok

Ok

2025/1/26 17:09 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

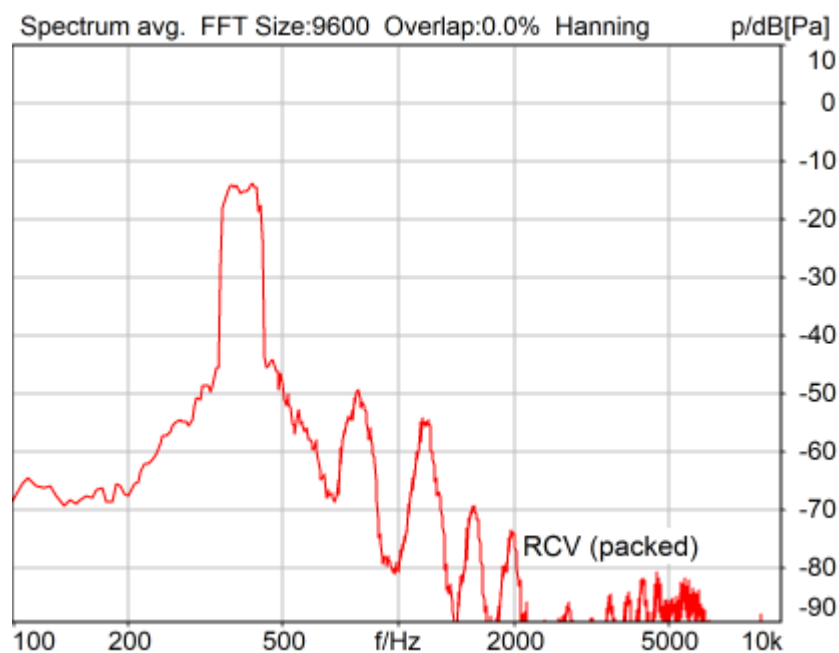
Region	Frequency	SDNR
1	400Hz	34.11 dB
2	500Hz	33.83 dB
3	630Hz	35.27 dB
4	800Hz	34.28 dB
5	1000Hz	32.54 dB
6	1250Hz	23.00 dB
7	1600Hz	24.11 dB
8	2000Hz	22.60 dB
9	2500Hz	24.70 dB
10	3150Hz	29.37 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.60dB at 2000Hz.

2025/1/26 17:10 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): 33.25 dB (2.17%) Ok

Ok

2025/1/26 17:16 ACQUA 6.0.200

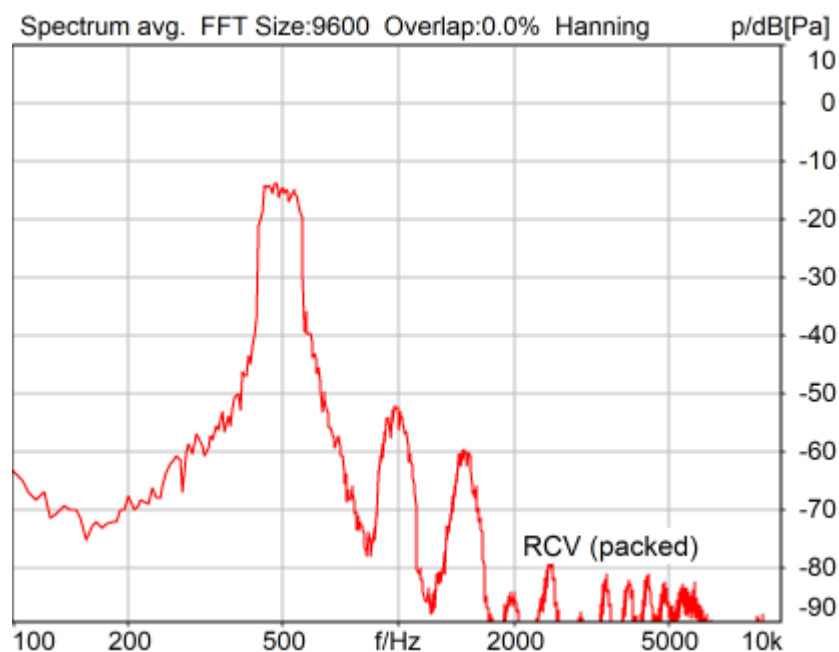
Unmodified HEAD acoustics Measurement Descriptor

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): 33.18 dB (2.19%) Ok

Ok

2025/1/26 17:16 ACQUA 6.0.200

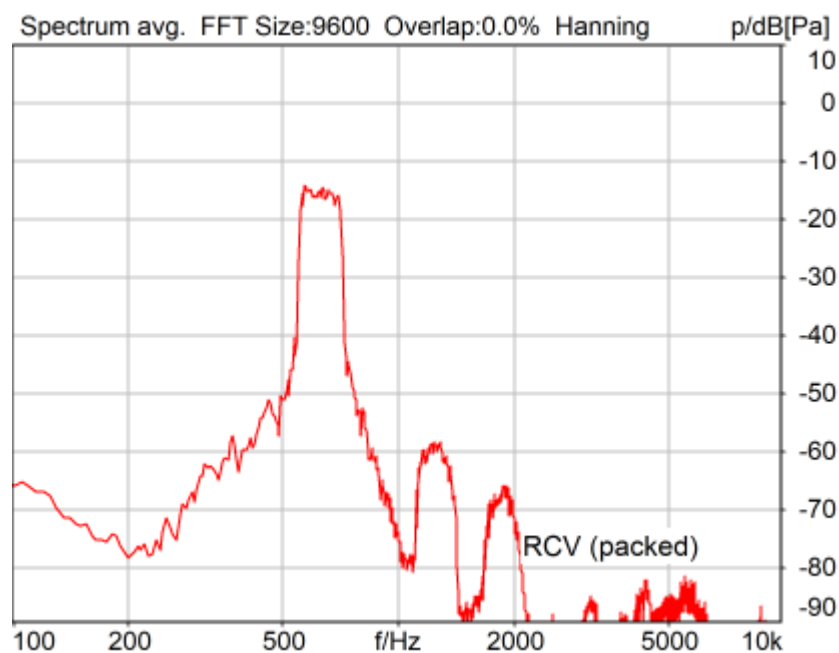
Unmodified HEAD acoustics Measurement Descriptor

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): 35.78 dB (1.63%) Ok

Ok

2025/1/26 17:17 ACQUA 6.0.200

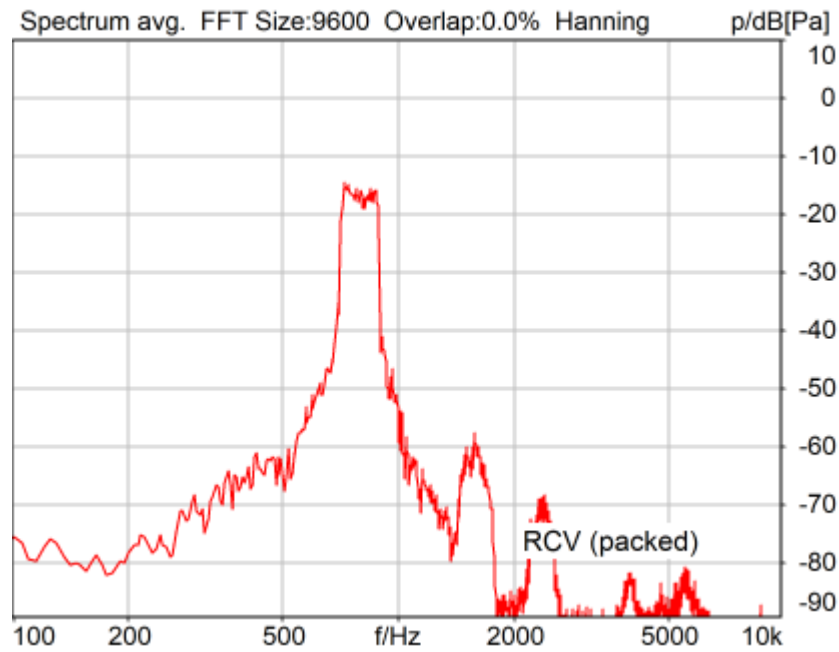
Unmodified HEAD acoustics Measurement Descriptor

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): 33.33 dB (2.16%) Ok

Ok

2025/1/26 17:17 ACQUA 6.0.200

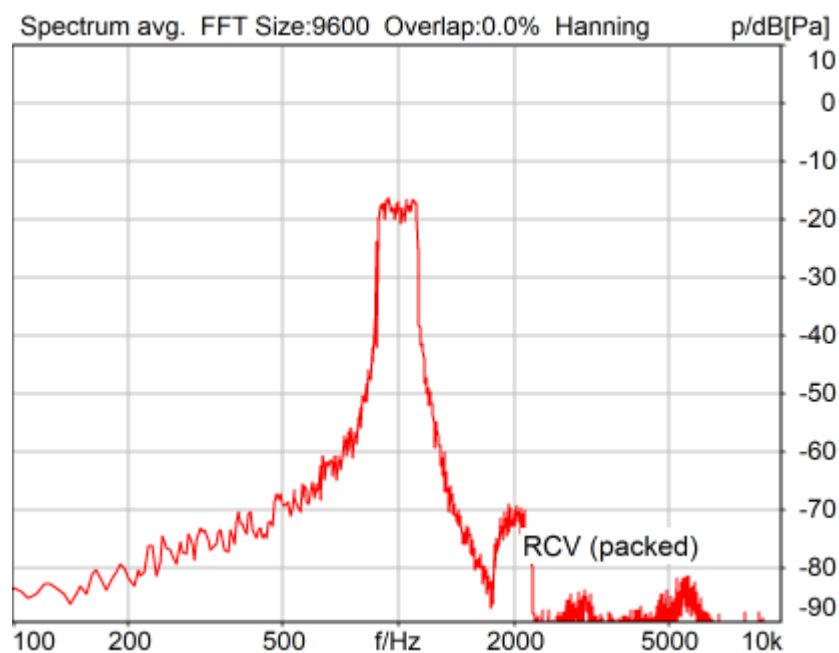
Unmodified HEAD acoustics Measurement Descriptor

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): 32.72 dB (2.31%) Ok

Ok

2025/1/26 17:18 ACQUA 6.0.200

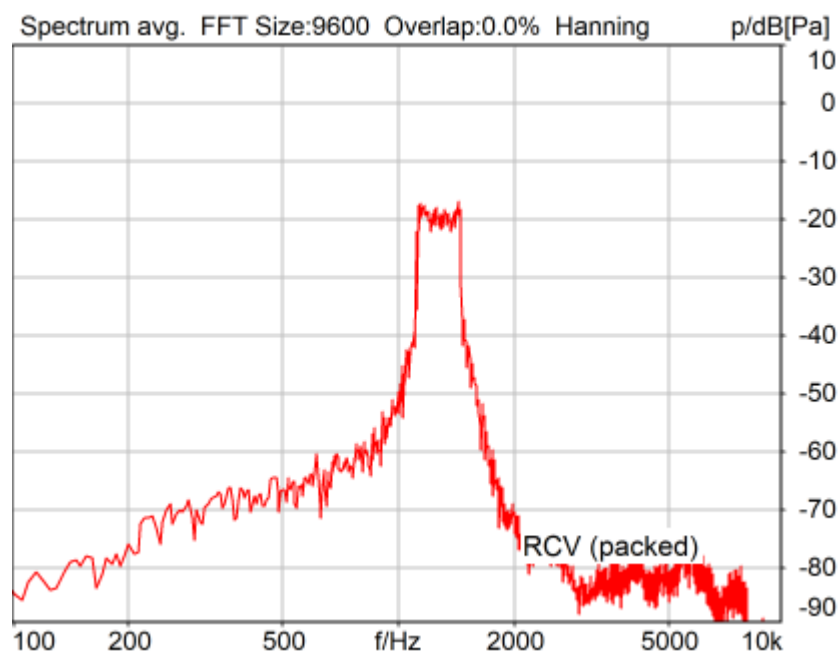
Unmodified HEAD acoustics Measurement Descriptor

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): 23.71 dB (6.53%) Ok

Ok

2025/1/26 17:18 ACQUA 6.0.200

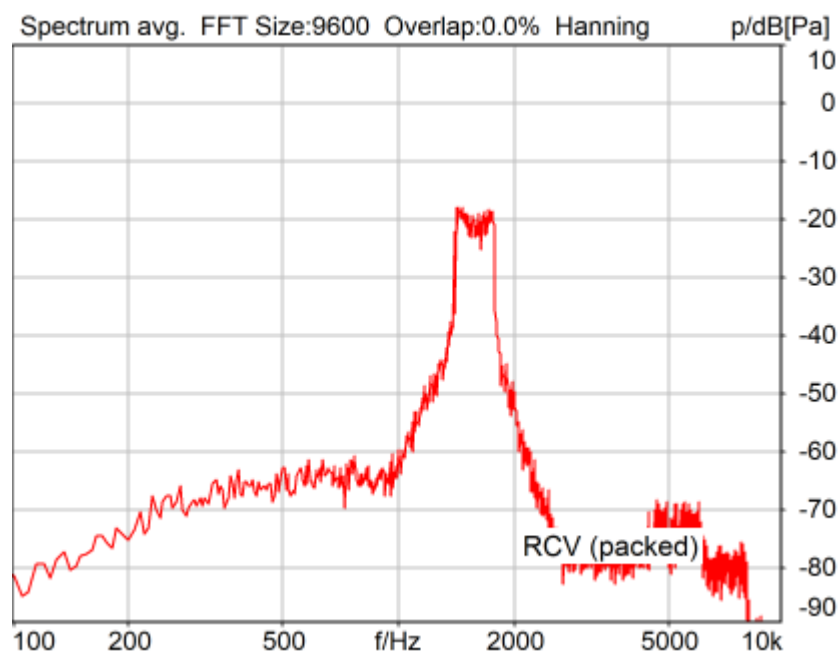
Unmodified HEAD acoustics Measurement Descriptor

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): 24.34 dB (6.07%) Ok

Ok

2025/1/26 17:18 ACQUA 6.0.200

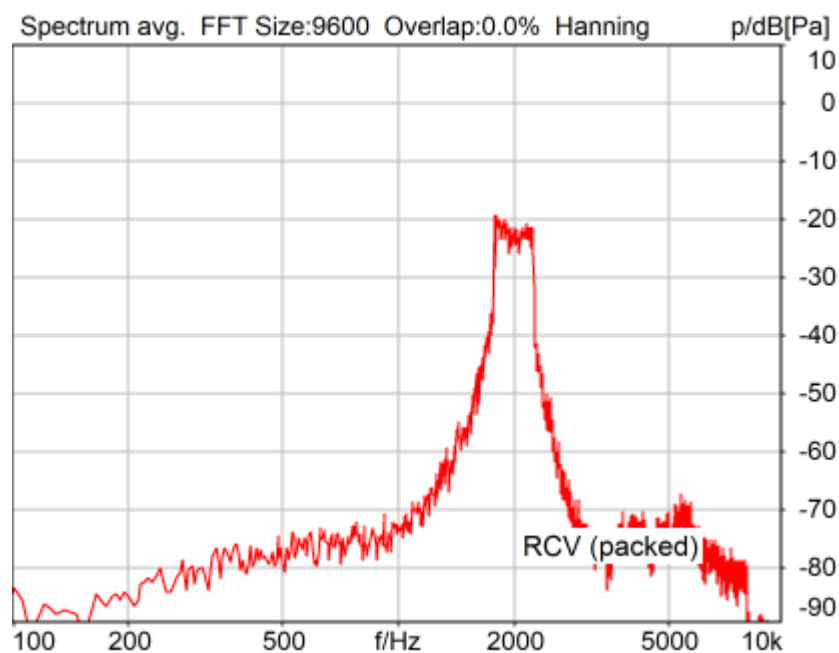
Unmodified HEAD acoustics Measurement Descriptor

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): 22.16 dB (7.79%) Ok

Ok

2025/1/26 17:19 ACQUA 6.0.200

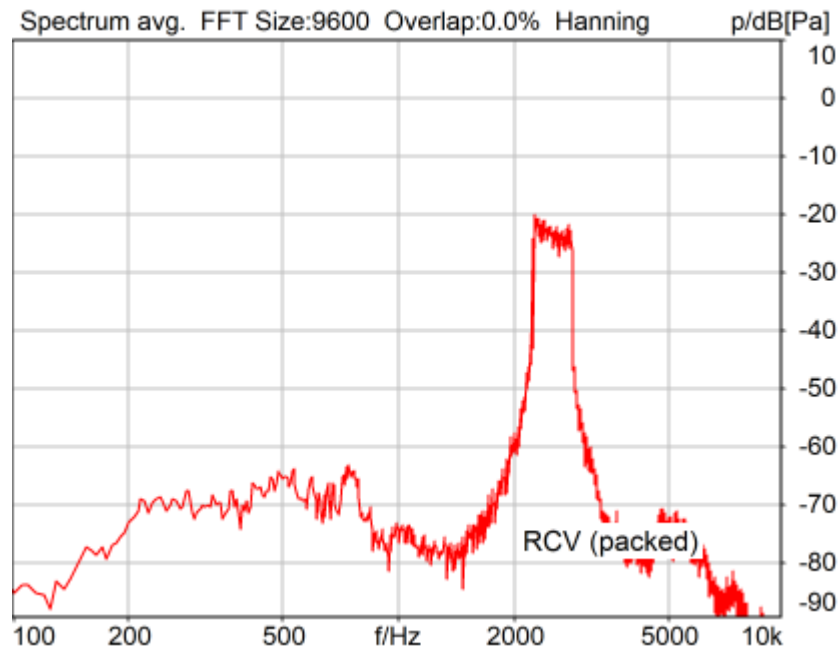
Unmodified HEAD acoustics Measurement Descriptor

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): 28.69 dB (3.68%) Ok

Ok

2025/1/26 17:19 ACQUA 6.0.200

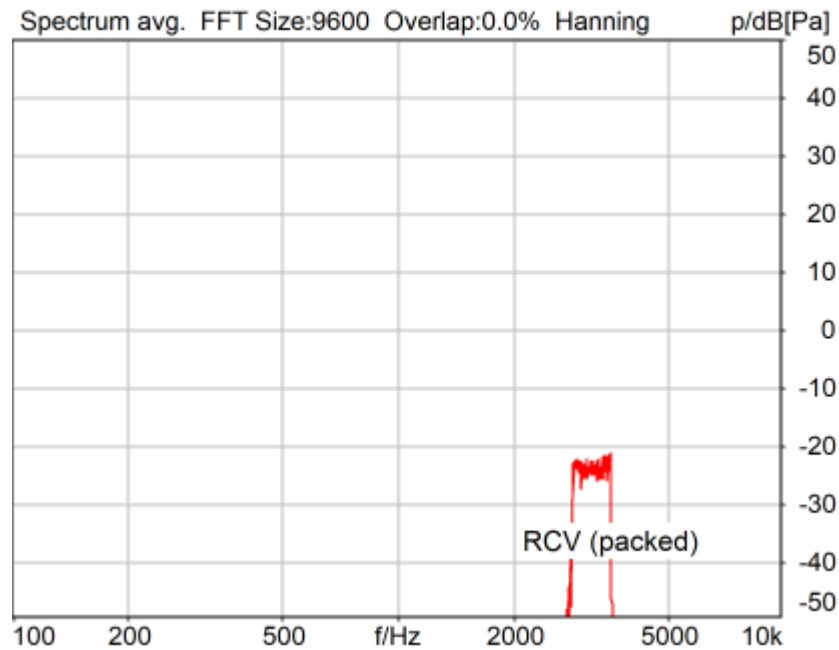
Unmodified HEAD acoustics Measurement Descriptor

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): 31.15 dB (2.77%) Ok

Ok

2025/1/26 17:20 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

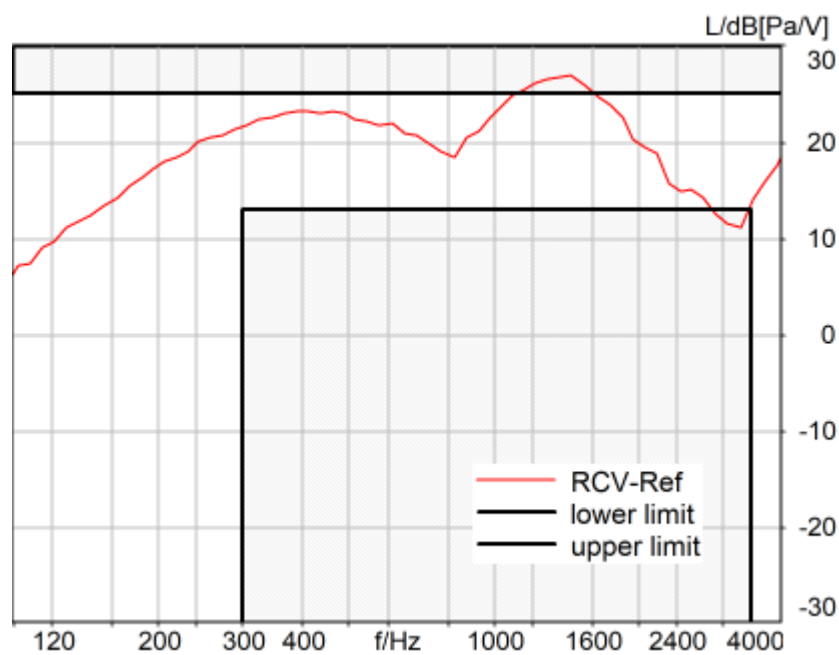
Region	Frequency	SDNR
1	400Hz	33.25 dB
2	500Hz	33.18 dB
3	630Hz	35.78 dB
4	800Hz	33.33 dB
5	1000Hz	32.72 dB
6	1250Hz	23.71 dB
7	1600Hz	24.34 dB
8	2000Hz	22.16 dB
9	2500Hz	28.69 dB
10	3150Hz	31.15 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 22.16dB at 2000Hz.

2025/1/26 17:20 ACQUA

5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance
 -1.85 dB at 1447.5 Hz Not Ok

Not Ok

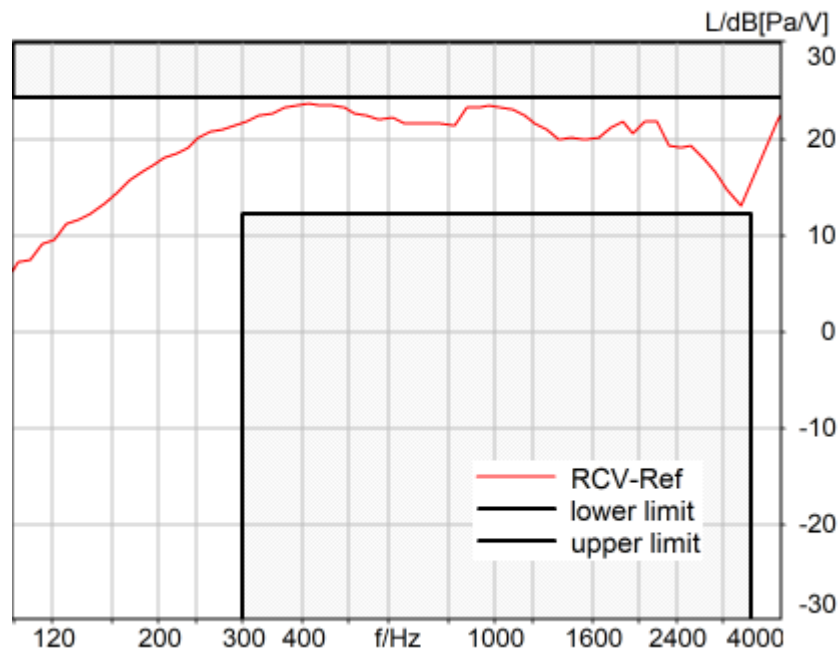
2025/1/26 17:11 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance

0.71 dB at 412.0 Hz Ok

Ok

2025/1/26 17:11 ACQUA 6.0.200

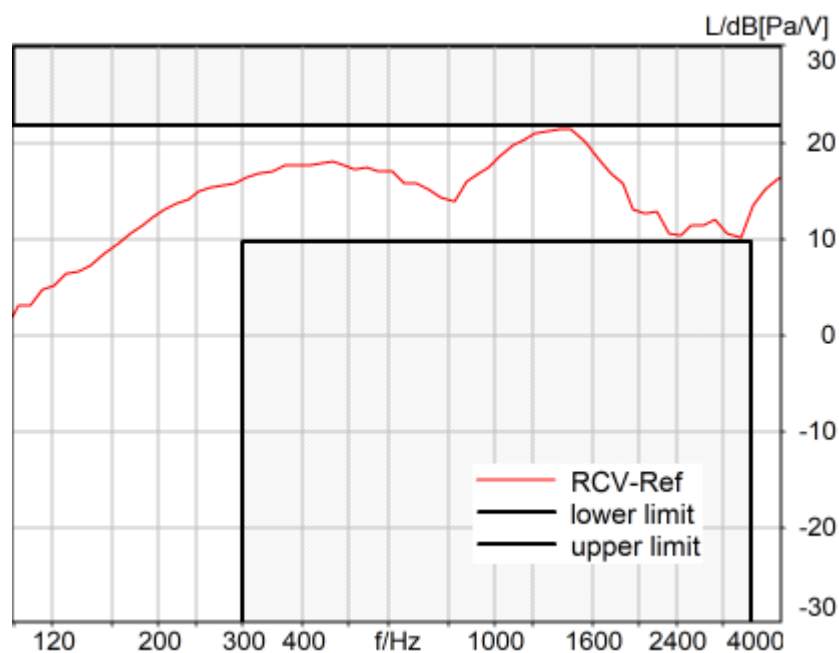
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance
 0.40 dB at 1360.9 Hz Ok

Ok

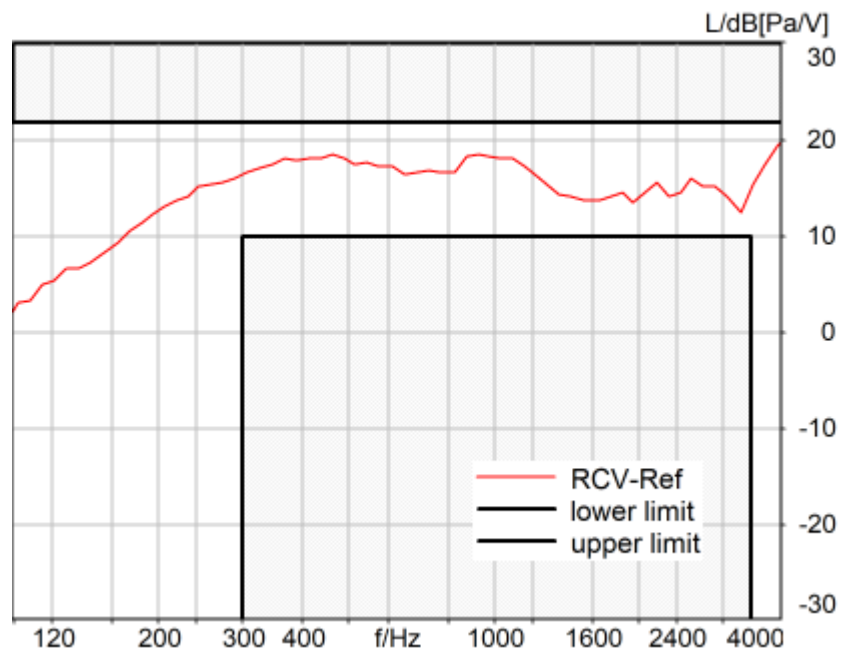
2025/1/26 17:14 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance
 2.61 dB at 3882.4 Hz Ok

Ok

2025/1/26 17:14 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

Measurement Protocol

Measurement Object	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
--------------------	---

Project	TIA-5050 (2018-01)
Report Generation Date	2025/3/20 14:54
Responsible Person	audio

Status Overview

SMD	Status	Single Value Description	Single Value	Object
Overall Receive Delay WB	Done	Delay (Cross) [ms]	131.1	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.1a Receive Volume Control Performance 8N WB	Ok	Corrected Speech Level [dB[SPL]]	21.51	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.1b Receive Volume Control Performance 2N WB	Ok	Corrected Speech Level [dB[SPL]]	16.66	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.90	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	31.57	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.32	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.65	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	35.65	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.99	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.48	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.17	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.44	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	21.70	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.61	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	28.97	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	26.05	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and	Ok	Distortion (Noise)	27.66	HUHAO_2403_LTE

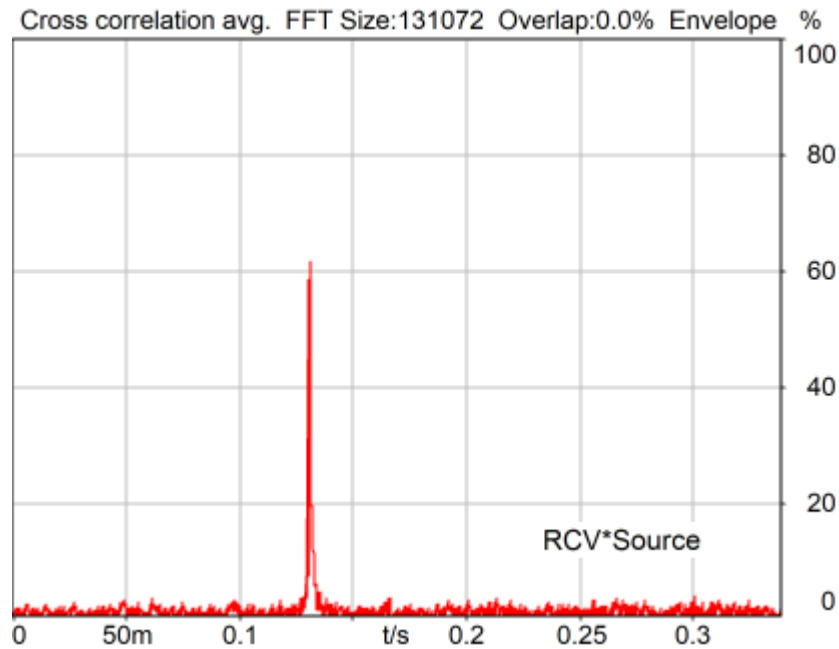
Noise - 5000 Hz WB		[dB], 0.0 dB		Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	21.70	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	27.51	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 315 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.50	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 400 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.72	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.94	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 630 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	34.18	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 800 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	33.53	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	32.03	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1250 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	23.26	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 1600 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	24.63	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	22.54	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 2500 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.02	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 3150 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	30.97	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 4000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	29.32	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.2 RCV Distortion and Noise - 5000 Hz WB	Ok	Distortion (Noise) [dB], 0.0 dB	37.85	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
Report - Receive Distortion and Noise (Conversational Gain)	Ok	Minimum SDNR [dB], (occured at 2000Hz)	22.54	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.3 Frequency Response 8N DF	Ok	Min. dist. to tolerance scheme [dB], 5443.6 Hz	0.32	HUHAO_2403_LTE Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
5.3 Frequency Response	Ok	Min. dist. to	1.24	HUHAO_2403_LTE

2N DF		tolerance scheme [dB], 5443.6 Hz		Band13_10_QPSK_1_0_EVS WB 24.4kbps_CH23230
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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 DF	37
5.3 Frequency Response 2N DF	38

Overall Receive Delay WB

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



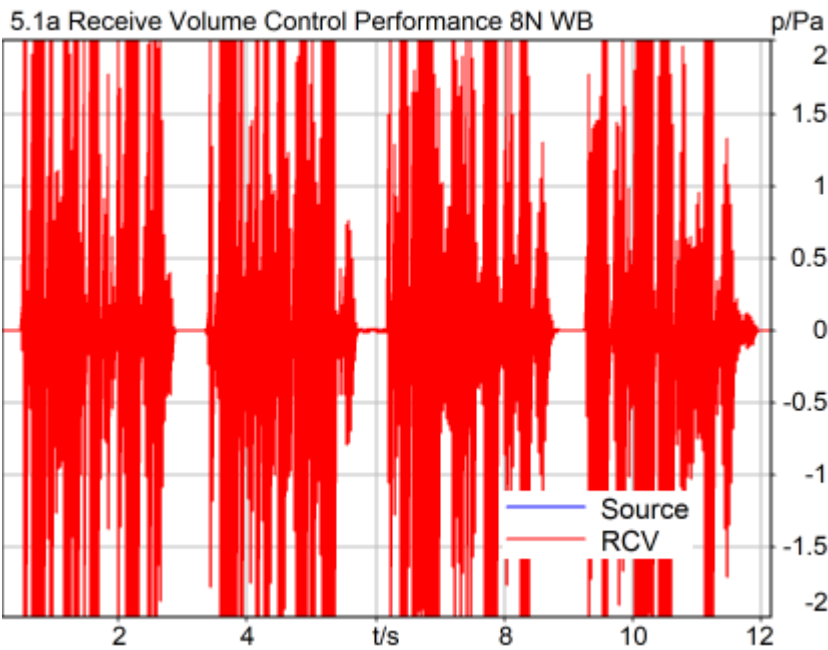
Channel	Delay
RCV*Source	131.1 ms

2025/1/26 16:57 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	91.51 dB[SPL]	84.35%	21.51 dB[SPL]	Ok

Ok

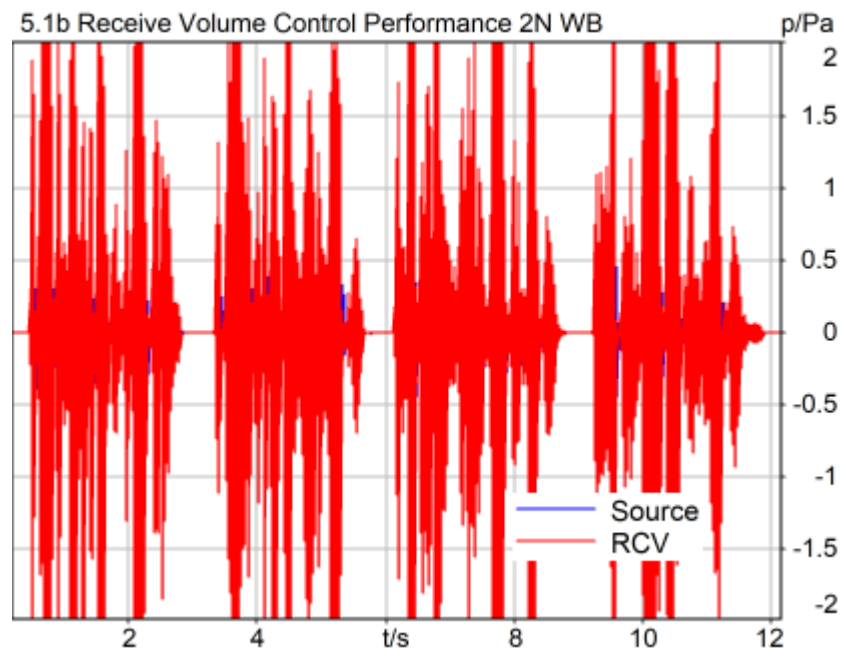
2025/1/26 16:57 ACQUA 6.0.200

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	86.66 dB[SPL]	84.52%	16.66 dB[SPL]	Ok

Ok

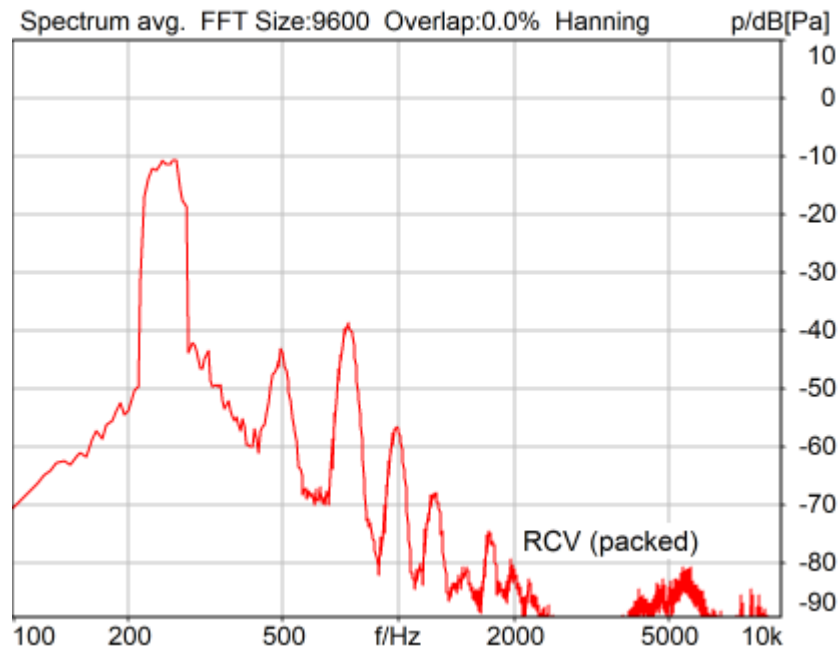
2025/1/26 16:43 ACQUA 6.0.200

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): 27.90 dB (4.03%) Ok

Ok

2025/1/26 16:57 ACQUA 6.0.200

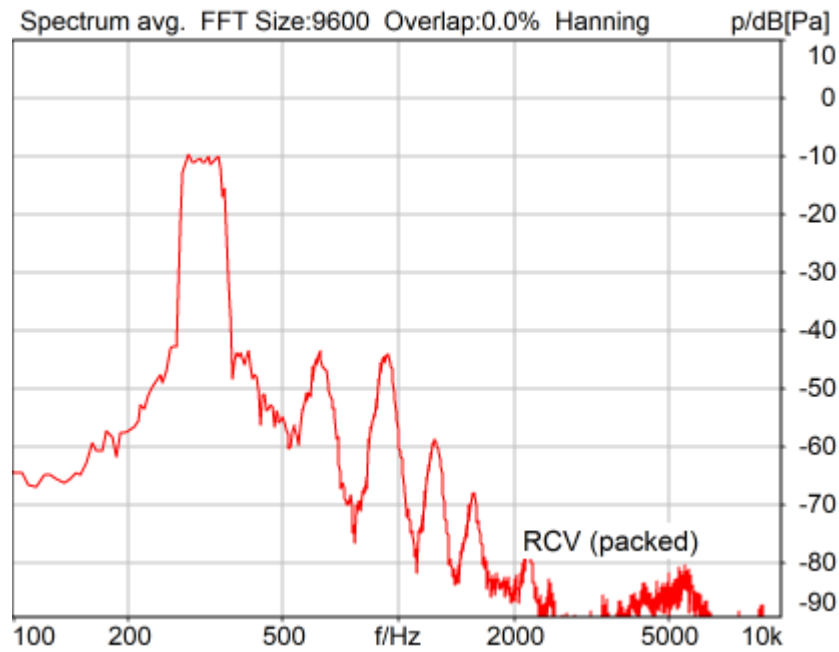
Unmodified HEAD acoustics Measurement Descriptor

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): 31.57 dB (2.64%) Ok

Ok

2025/1/26 16:58 ACQUA 6.0.200

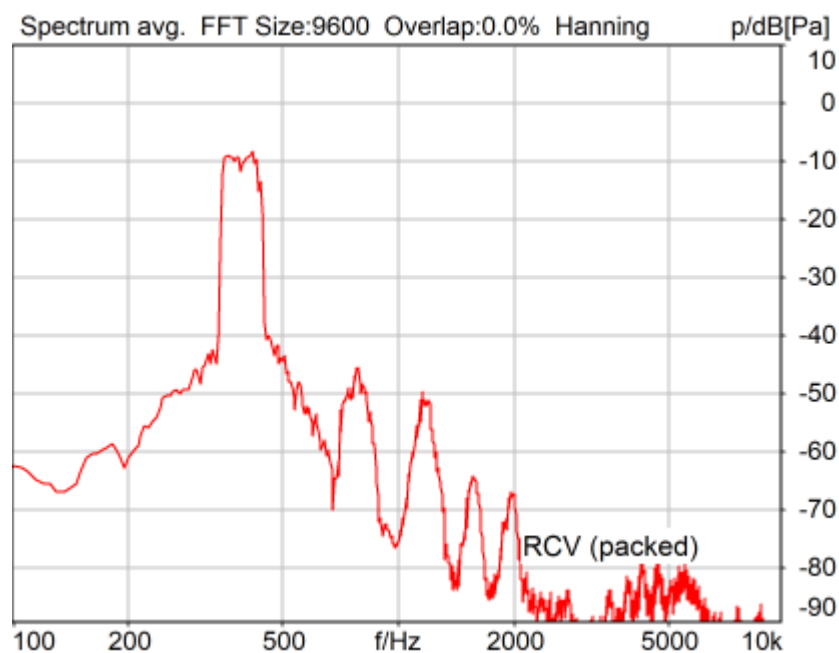
Unmodified HEAD acoustics Measurement Descriptor

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): 34.32 dB (1.92%) Ok

Ok

2025/1/26 16:58 ACQUA 6.0.200

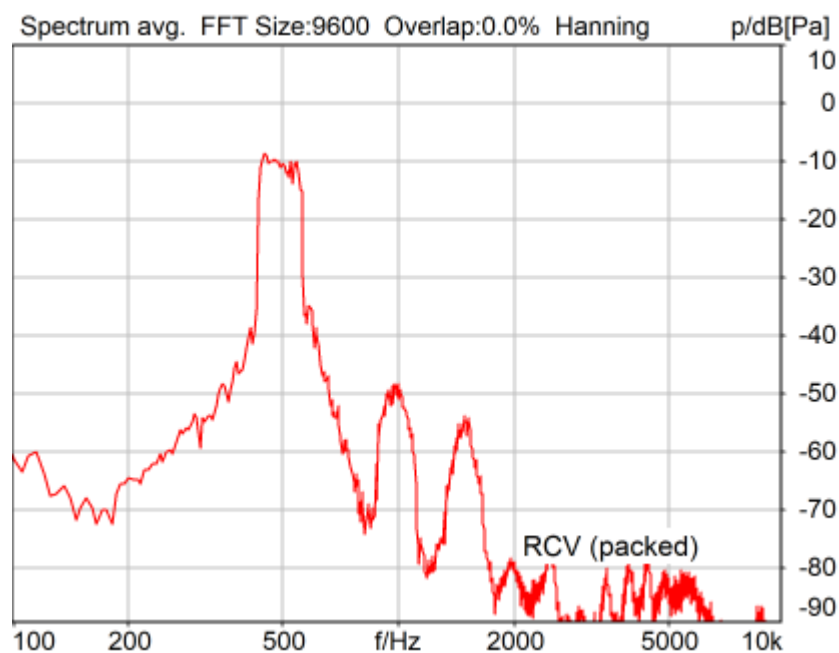
Unmodified HEAD acoustics Measurement Descriptor

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): 33.65 dB (2.08%) Ok

Ok

2025/1/26 16:58 ACQUA 6.0.200

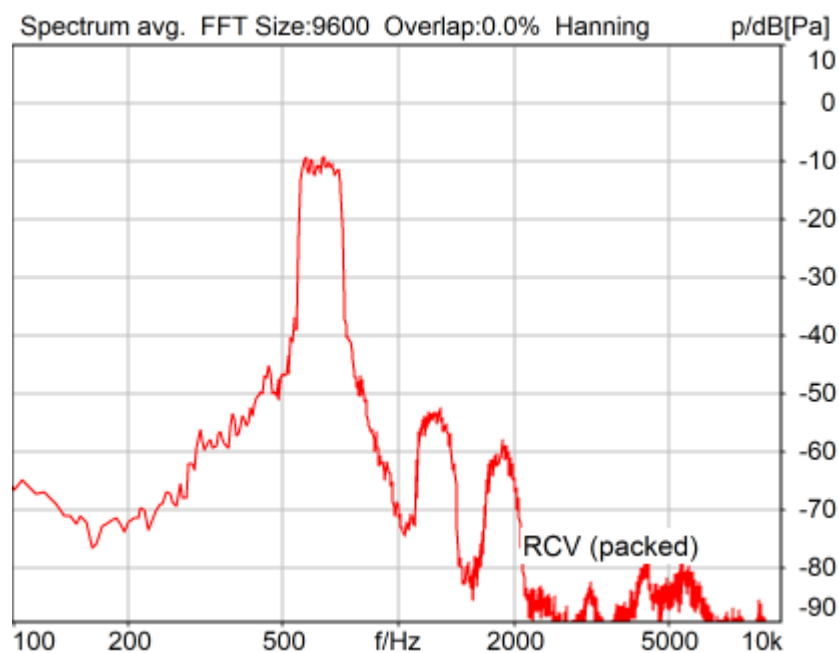
Unmodified HEAD acoustics Measurement Descriptor

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): 35.65 dB (1.65%) Ok

Ok

2025/1/26 16:59 ACQUA 6.0.200

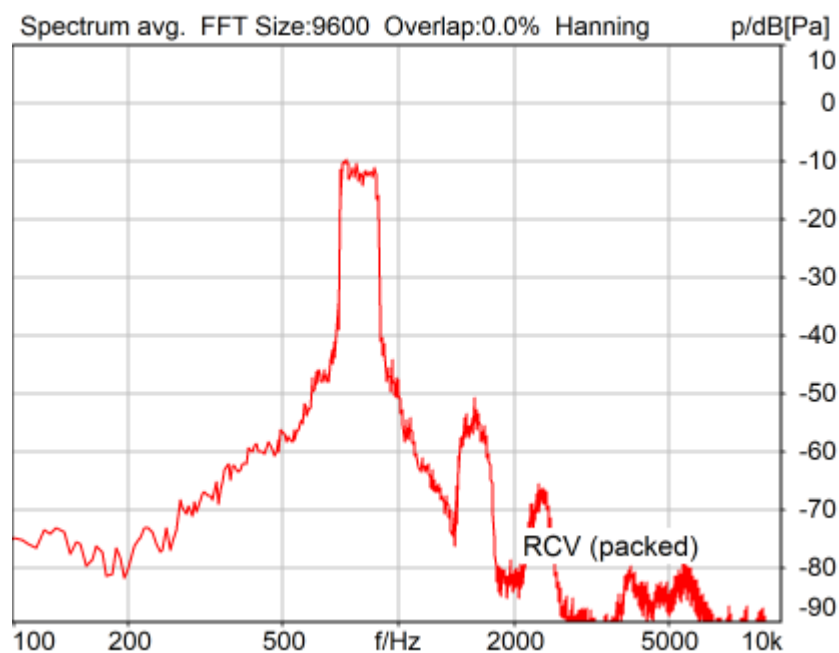
Unmodified HEAD acoustics Measurement Descriptor

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): 34.99 dB (1.78%) Ok

Ok

2025/1/26 16:59 ACQUA 6.0.200

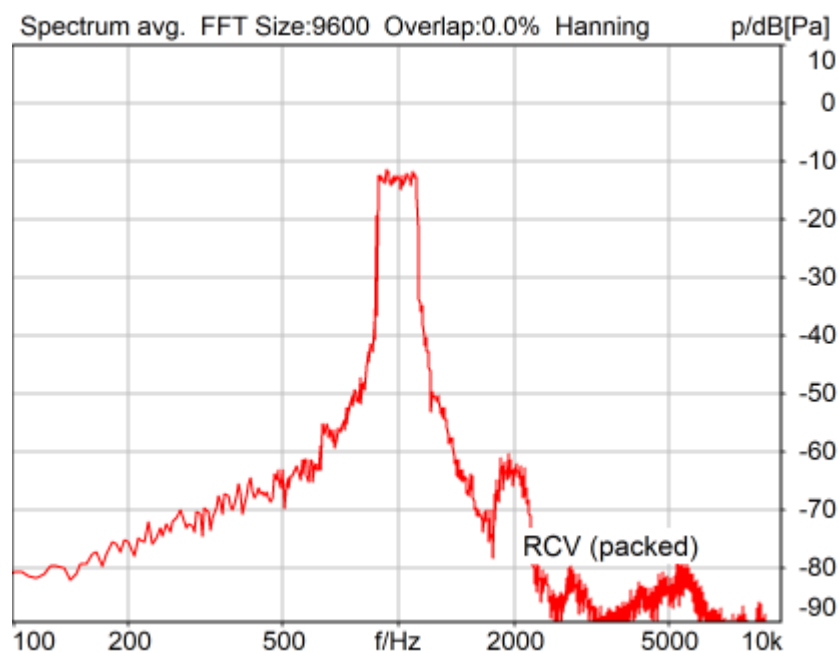
Unmodified HEAD acoustics Measurement Descriptor

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): 32.48 dB (2.38%) Ok

Ok

2025/1/26 17:00 ACQUA 6.0.200

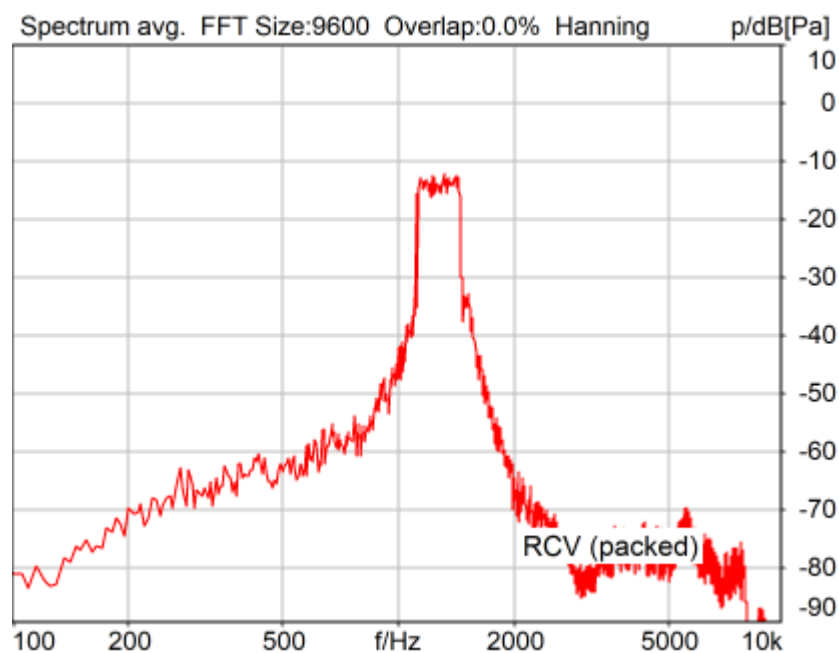
Unmodified HEAD acoustics Measurement Descriptor

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): 23.17 dB (6.94%) Ok

Ok

2025/1/26 17:00 ACQUA 6.0.200

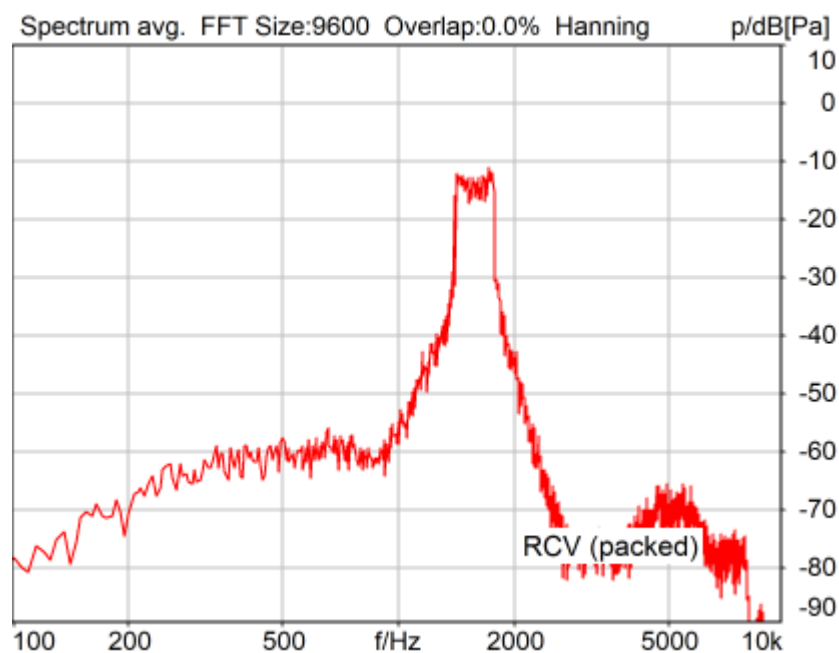
Unmodified HEAD acoustics Measurement Descriptor

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): 24.44 dB (6.00%) Ok

Ok

2025/1/26 17:00 ACQUA 6.0.200

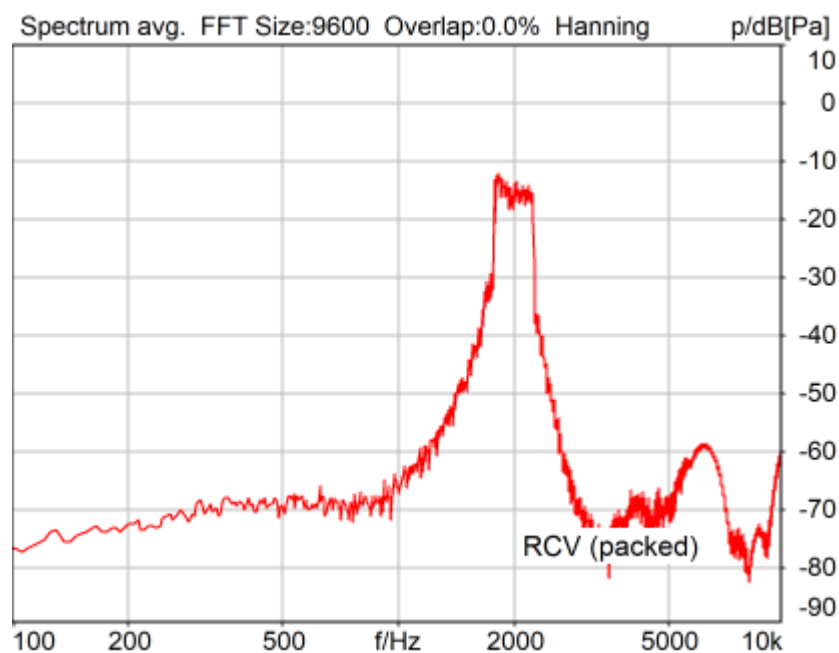
Unmodified HEAD acoustics Measurement Descriptor

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): 21.70 dB (8.22%) Ok

Ok

2025/1/26 17:01 ACQUA 6.0.200

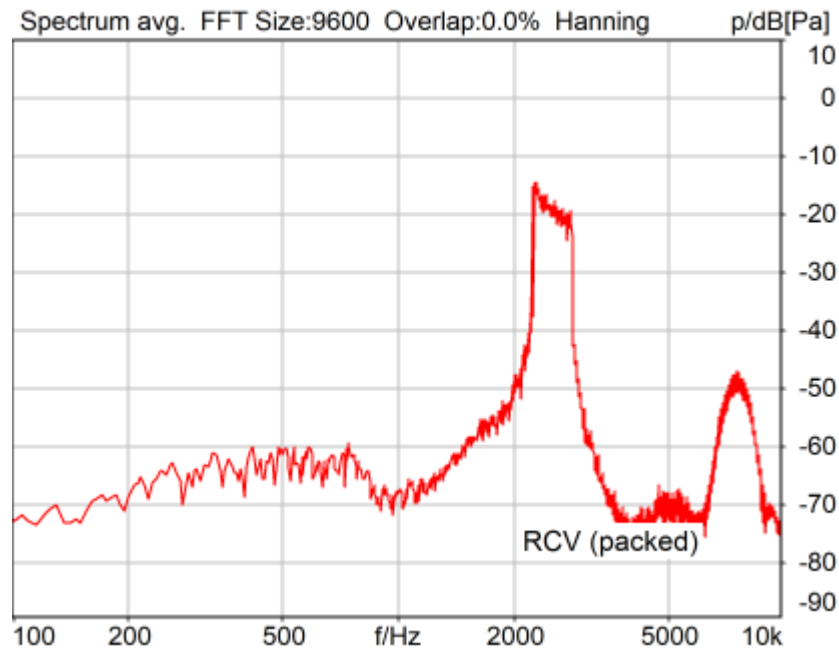
Unmodified HEAD acoustics Measurement Descriptor

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): 24.61 dB (5.88%) Ok

Ok

2025/1/26 17:01 ACQUA 6.0.200

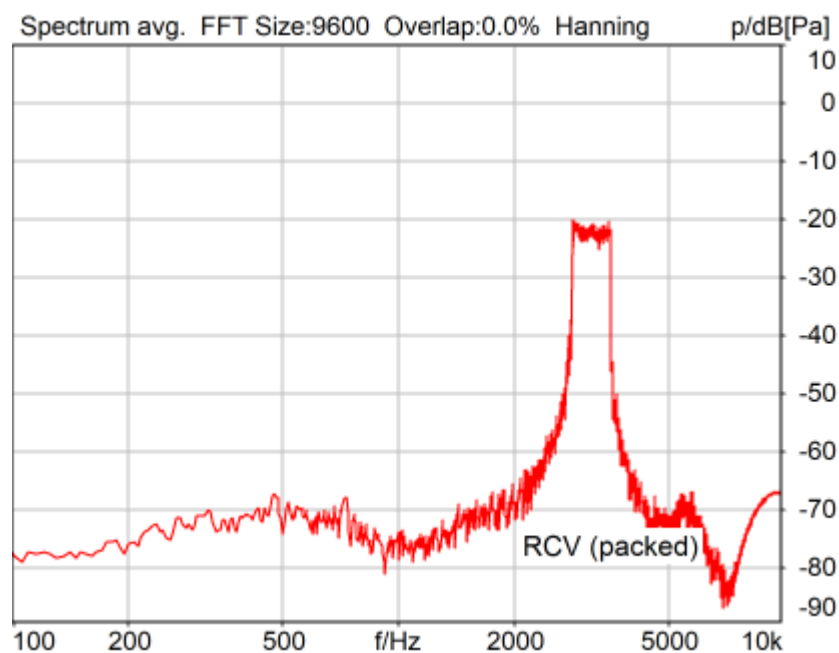
Unmodified HEAD acoustics Measurement Descriptor

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): 28.97 dB (3.56%) Ok

Ok

2025/1/26 17:02 ACQUA 6.0.200

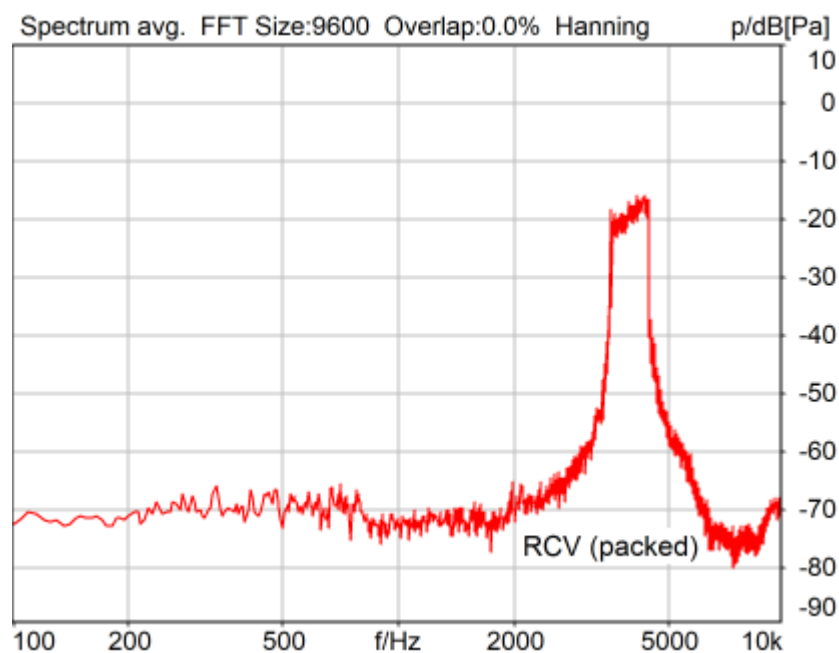
Unmodified HEAD acoustics Measurement Descriptor

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): 26.05 dB (4.98%) Ok

Ok

2025/1/26 17:02 ACQUA 6.0.200

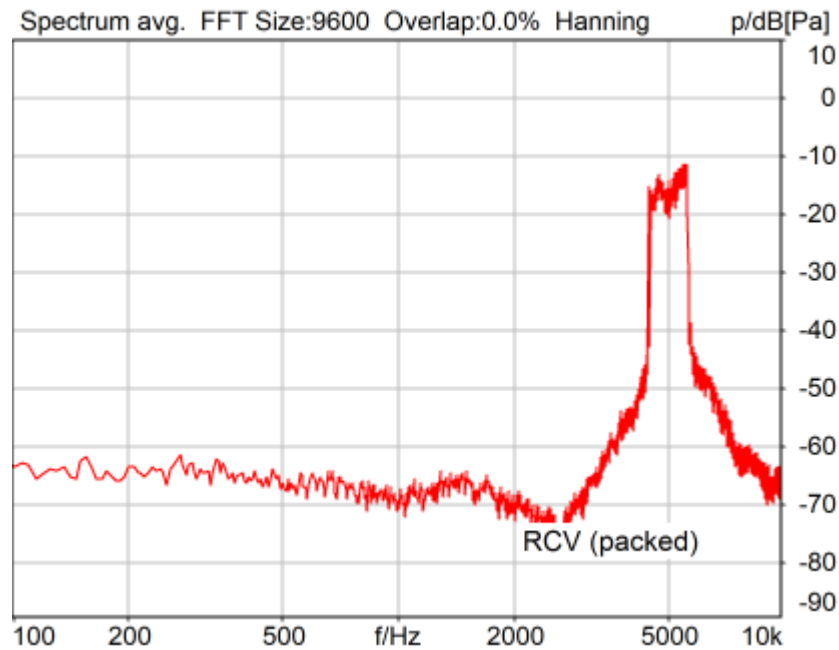
Unmodified HEAD acoustics Measurement Descriptor

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): 27.66 dB (4.14%) Ok

Ok

2025/1/26 17:02 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	27.90 dB
2	315Hz	31.57 dB
3	400Hz	34.32 dB
4	500Hz	33.65 dB
5	630Hz	35.65 dB
6	800Hz	34.99 dB
7	1000Hz	32.48 dB
8	1250Hz	23.17 dB
9	1600Hz	24.44 dB
10	2000Hz	21.70 dB

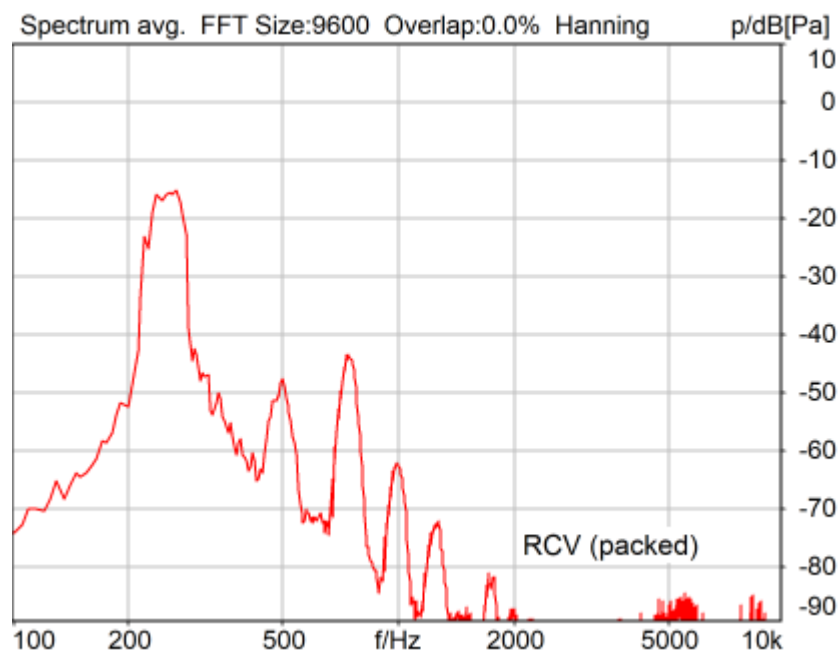
11	2500Hz	24.61 dB
12	3150Hz	28.97 dB
13	4000Hz	26.05 dB
14	5000Hz	27.66 dB

All SDNRs were greater than 20.0 dB, requirement was met.
 Smallest SDNR was 21.70dB at 2000Hz.

2025/1/26 17:03 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): 27.51 dB (4.21%) Ok

Ok

2025/1/26 16:44 ACQUA 6.0.200

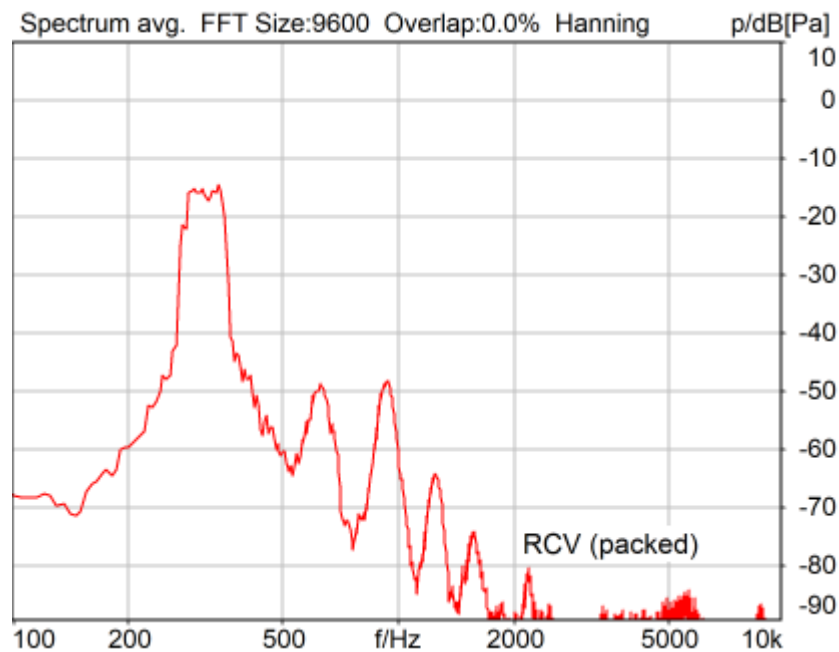
Unmodified HEAD acoustics Measurement Descriptor

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): 30.50 dB (2.99%) Ok

Ok

2025/1/26 16:44 ACQUA 6.0.200

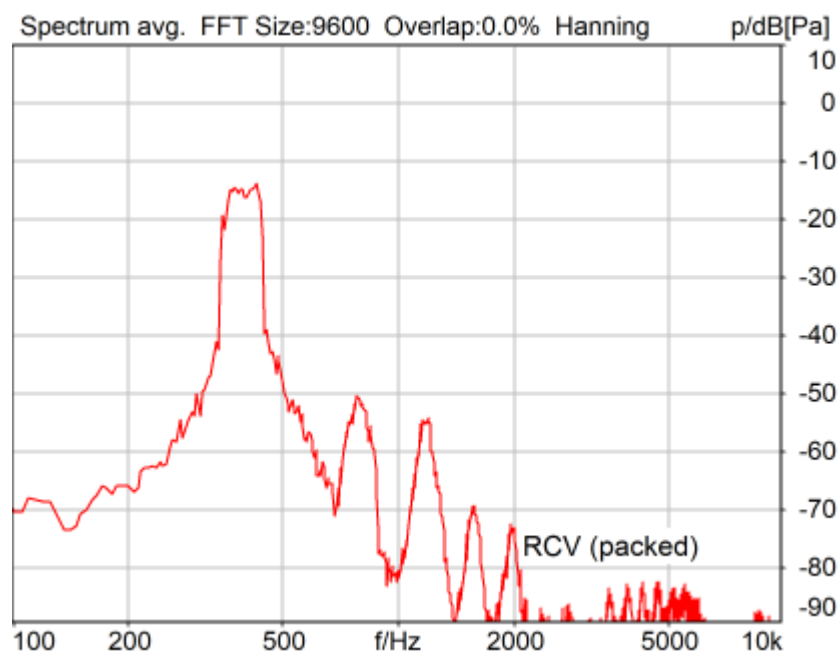
Unmodified HEAD acoustics Measurement Descriptor

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): 32.72 dB (2.31%) Ok

Ok

2025/1/26 16:45 ACQUA 6.0.200

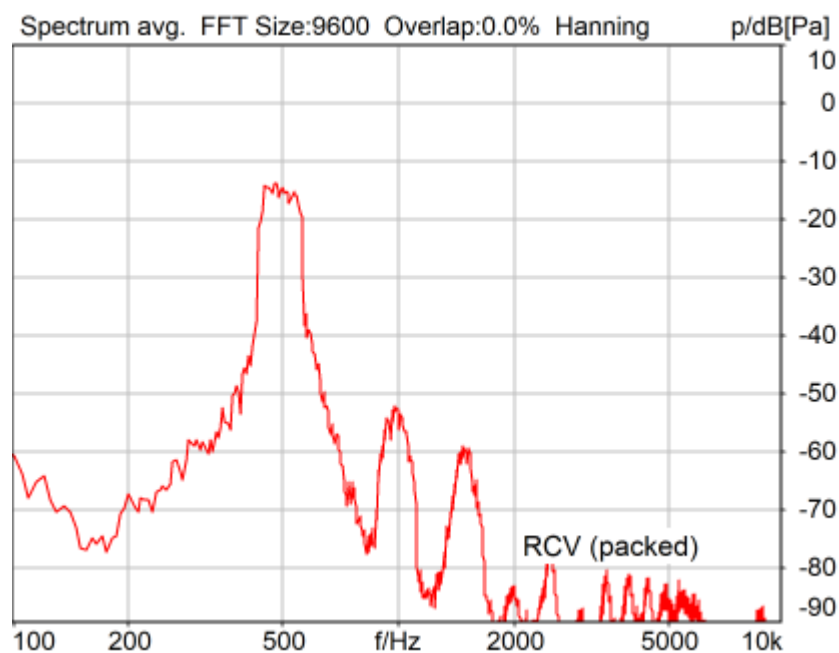
Unmodified HEAD acoustics Measurement Descriptor

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): 32.94 dB (2.25%) Ok

Ok

2025/1/26 16:45 ACQUA 6.0.200

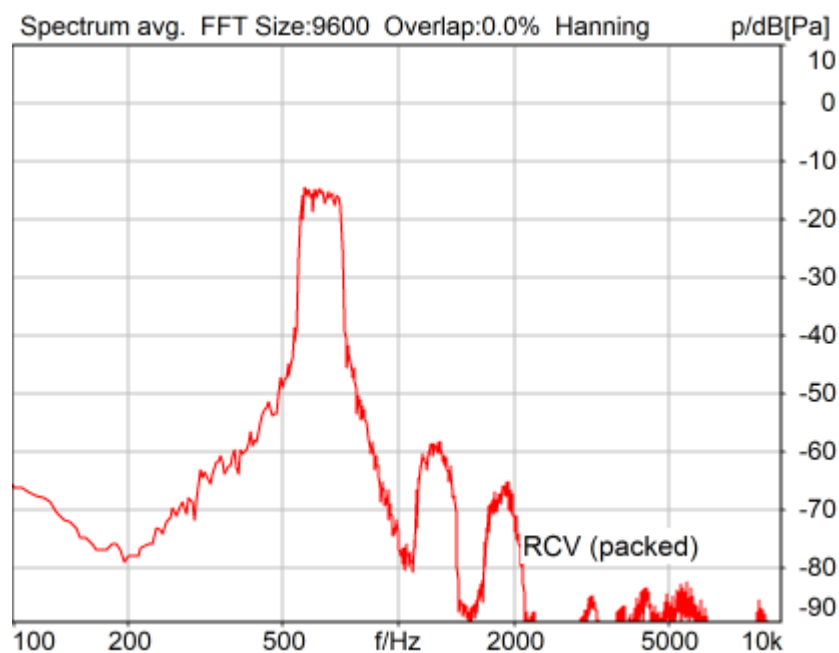
Unmodified HEAD acoustics Measurement Descriptor

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): 34.18 dB (1.95%) Ok

Ok

2025/1/26 16:45 ACQUA 6.0.200

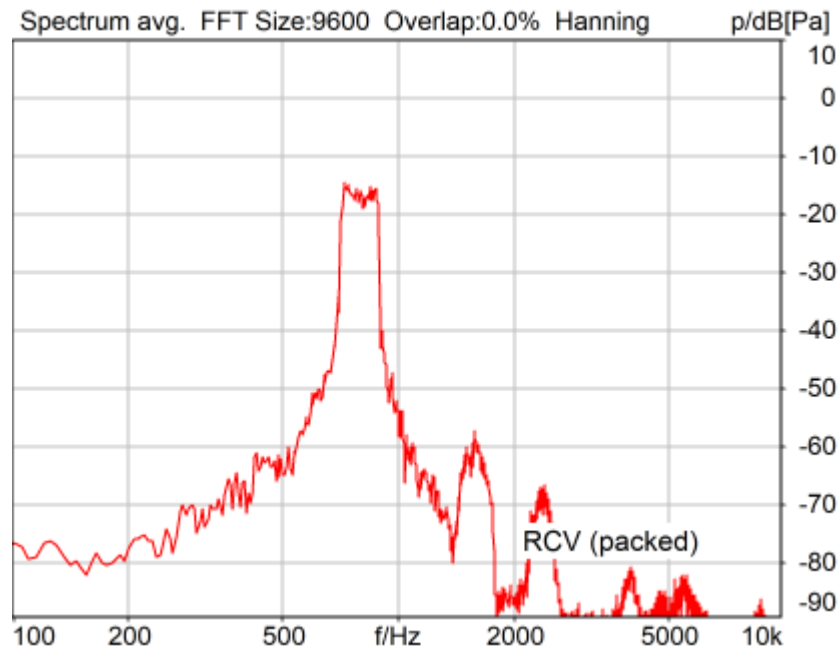
Unmodified HEAD acoustics Measurement Descriptor

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): 33.53 dB (2.11%) Ok

Ok

2025/1/26 16:46 ACQUA 6.0.200

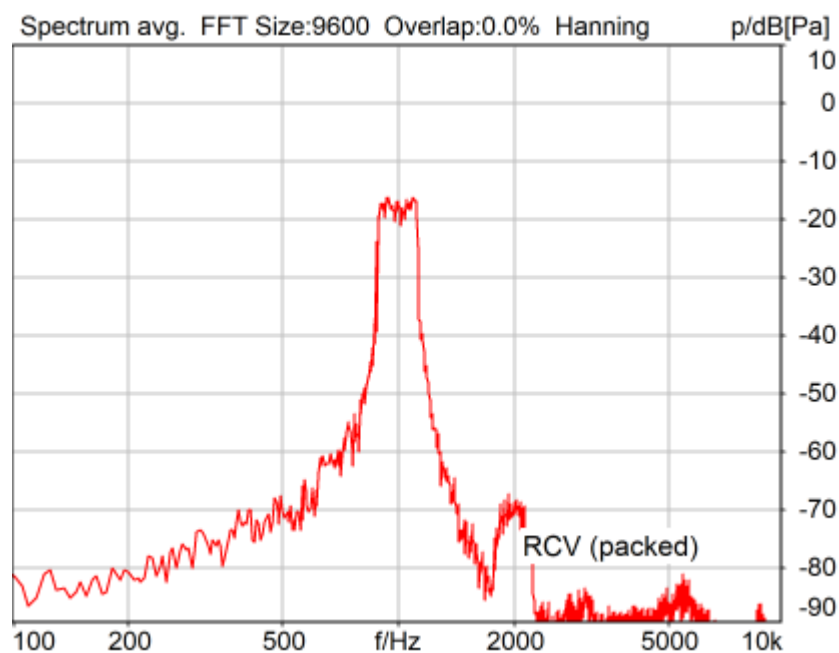
Unmodified HEAD acoustics Measurement Descriptor

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): 32.03 dB (2.50%) Ok

Ok

2025/1/26 16:46 ACQUA 6.0.200

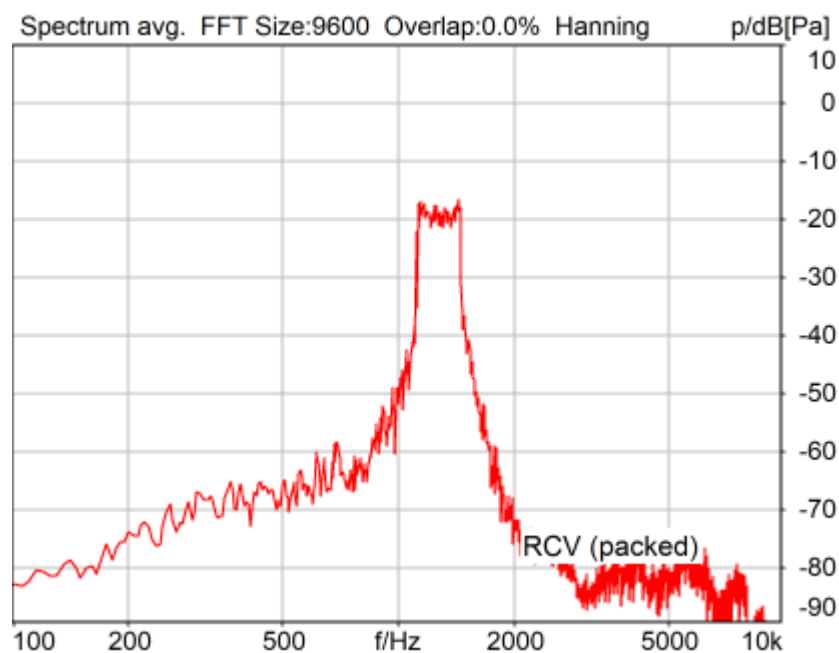
Unmodified HEAD acoustics Measurement Descriptor

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): 23.26 dB (6.87%) Ok

Ok

2025/1/26 16:47 ACQUA 6.0.200

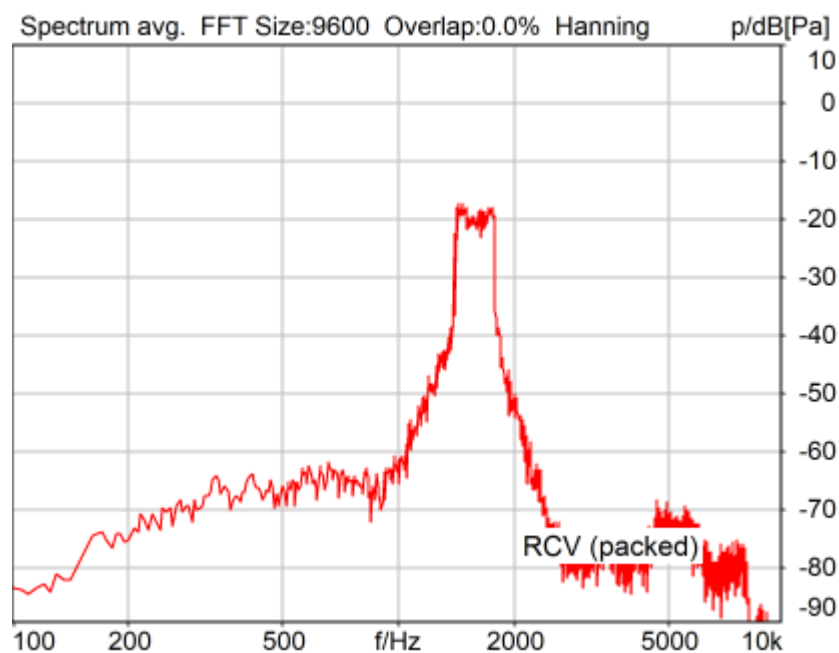
Unmodified HEAD acoustics Measurement Descriptor

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): 24.63 dB (5.87%) Ok

Ok

2025/1/26 16:47 ACQUA 6.0.200

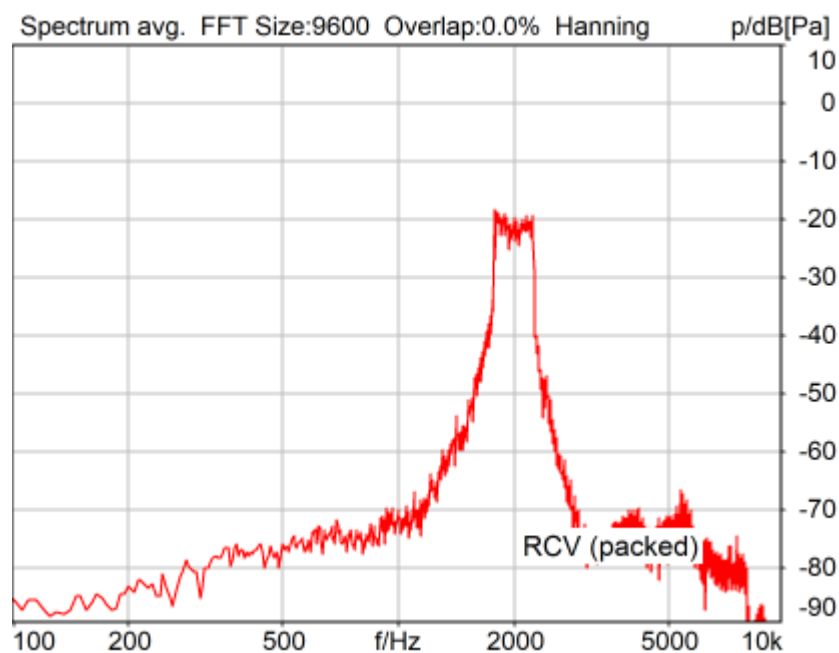
Unmodified HEAD acoustics Measurement Descriptor

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): 22.54 dB (7.47%) Ok

Ok

2025/1/26 16:47 ACQUA 6.0.200

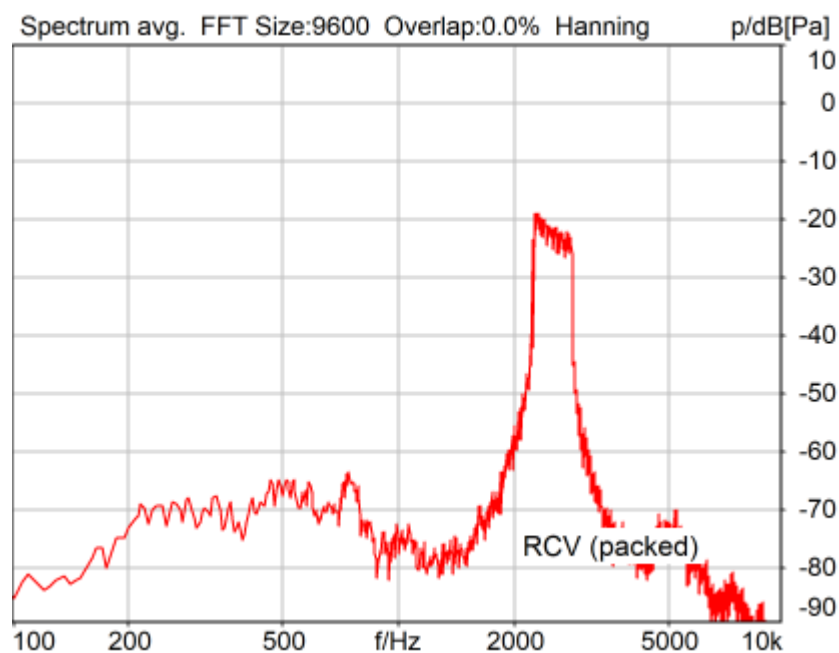
Unmodified HEAD acoustics Measurement Descriptor

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): 29.02 dB (3.54%) Ok

Ok

2025/1/26 16:48 ACQUA 6.0.200

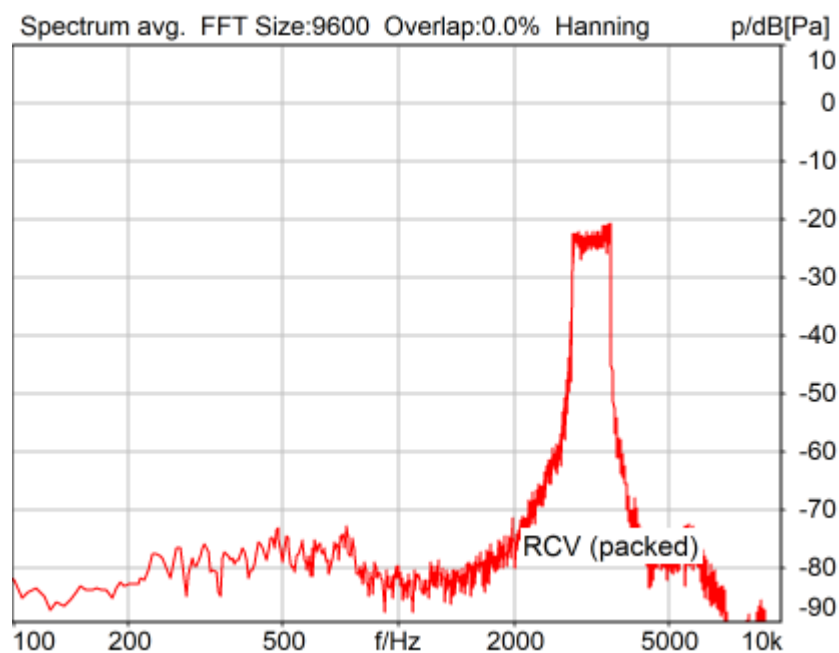
Unmodified HEAD acoustics Measurement Descriptor

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): 30.97 dB (2.83%) Ok

Ok

2025/1/26 16:48 ACQUA 6.0.200

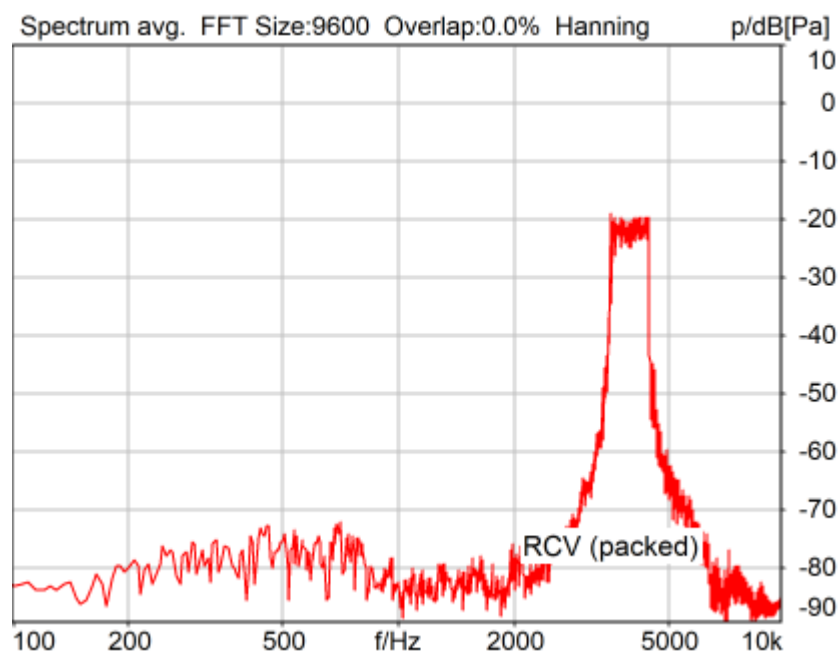
Unmodified HEAD acoustics Measurement Descriptor

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): 29.32 dB (3.42%) Ok

Ok

2025/1/26 16:49 ACQUA 6.0.200

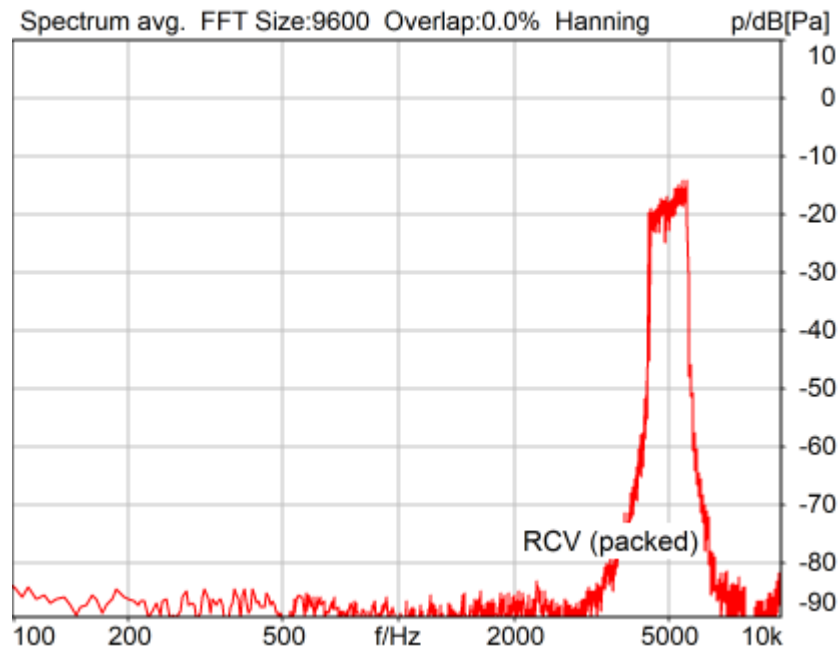
Unmodified HEAD acoustics Measurement Descriptor

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): 37.85 dB (1.28%) Ok

Ok

2025/1/26 16:49 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	27.51 dB
2	315Hz	30.50 dB
3	400Hz	32.72 dB
4	500Hz	32.94 dB
5	630Hz	34.18 dB
6	800Hz	33.53 dB
7	1000Hz	32.03 dB
8	1250Hz	23.26 dB
9	1600Hz	24.63 dB
10	2000Hz	22.54 dB

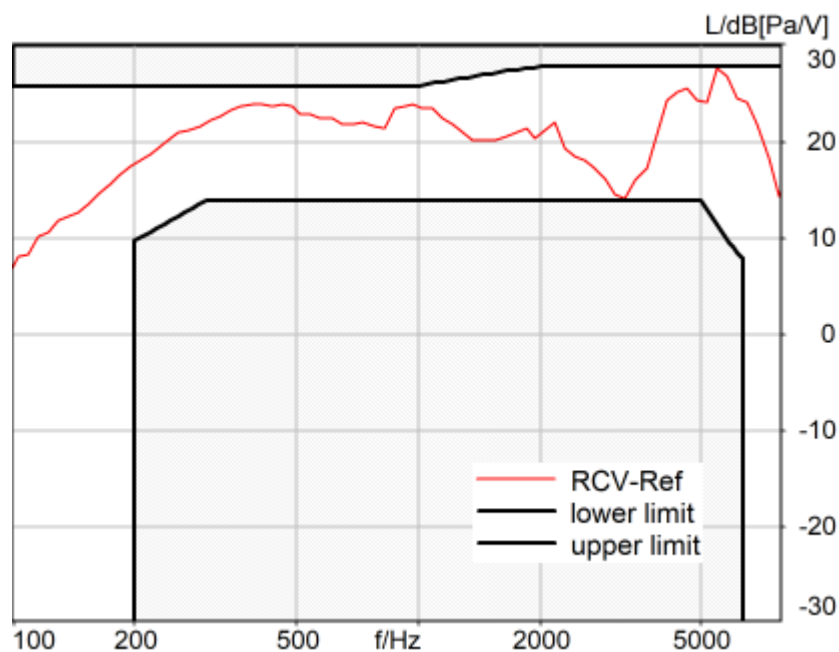
11	2500Hz	29.02 dB
12	3150Hz	30.97 dB
13	4000Hz	29.32 dB
14	5000Hz	37.85 dB

All SDNRs were greater than 20.0 dB, requirement was met.
Smallest SDNR was 22.54dB at 2000Hz.

2025/1/26 16:49 ACQUA

5.3 Frequency Response 8N DF

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



Absolute minimal distance
0.32 dB at 5443.6 Hz Ok

Ok

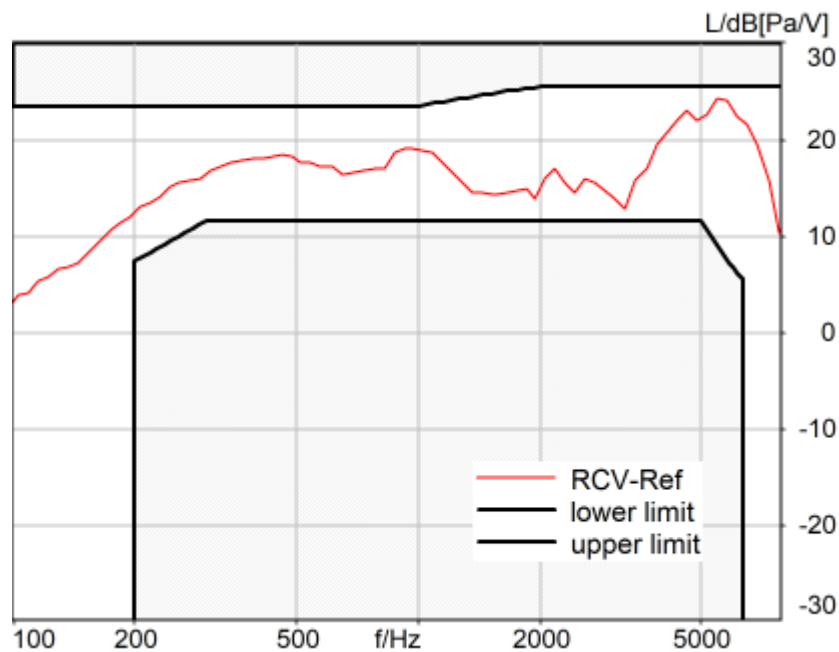
2025/1/26 16:55 ACQUA 6.0.200
Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance

5.3 Frequency Response 2N DF

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



Absolute minimal distance
 1.24 dB at 5443.6 Hz Ok

Ok

2025/1/26 16:52 ACQUA 6.0.200
 Unmodified HEAD acoustics Measurement Descriptor

Limits

	lower
Run 1	Fit into tolerance