

---

## **Measurement Protocol**

|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| Measurement Object | LTE Band 25_20M_QPSK_100RB_0Offset_EVS NB 24.4Kbps_Ch26340_2N |
|--------------------|---------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/20 17:53             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                               |
|-----------------------------------------------|--------|------------------------------------------------|--------------|----------------------------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]                             | 218.9        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]                         | 86.23        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 24.88        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.40        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.41        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.58        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.97        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.78        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.48        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.57        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.78        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.42        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.3 Frequency Response 2N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 1447.5 Hz | 0.30         | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |
| 5.3 Frequency Response 2N DF HANB             | Not Ok | Min. dist. to tolerance scheme [dB], 2177.4 Hz | -0.28        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_2N |

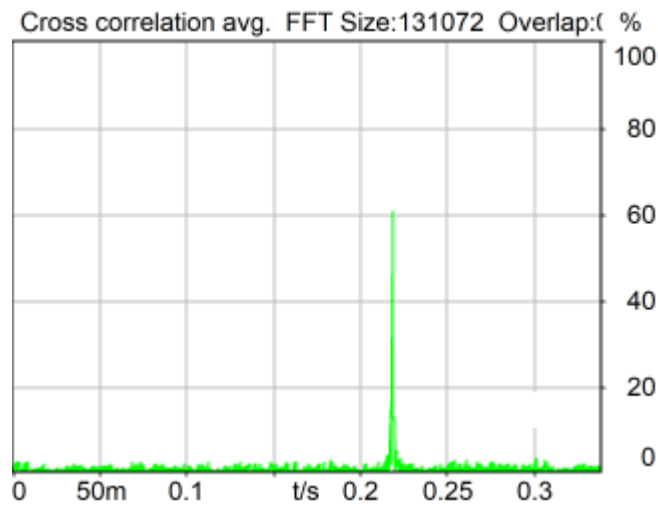
---

|                                               |    |
|-----------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF HANB             | 17 |
| 5.3 Frequency Response 2N DF HANB             | 18 |



## **Overall Receive Delay NB**

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



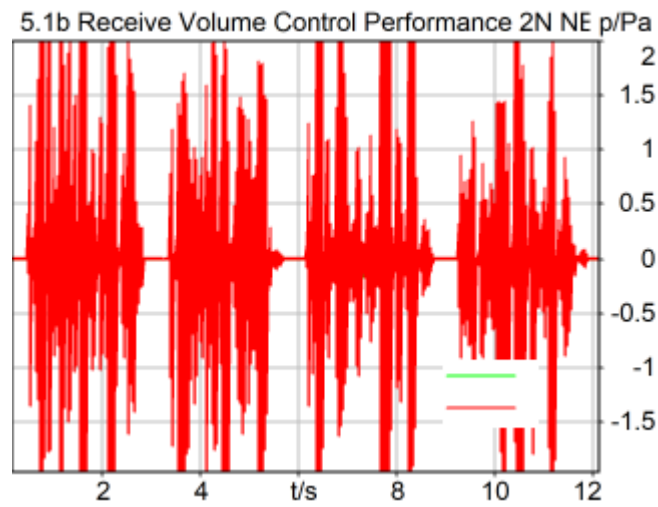
Delay (Cross): 218.9 ms

2023/11/10 15:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N NB**

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



Speech Level RCV: 86.23 dB[SPL], Act.: 82.30% Ok

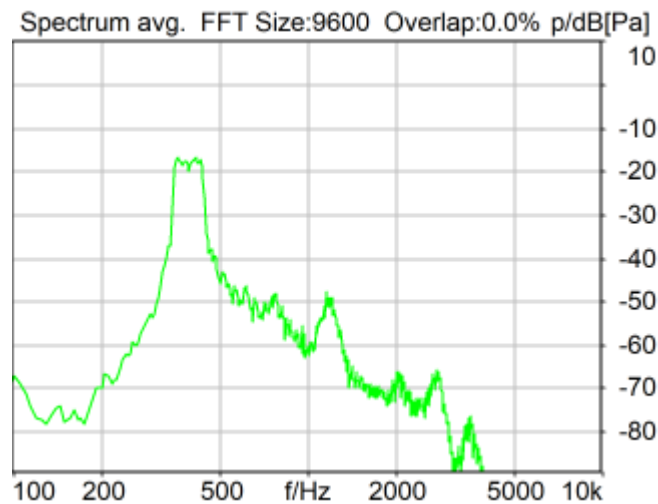
**Ok**

2023/11/10 15:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.88 dB (5.70%) Ok

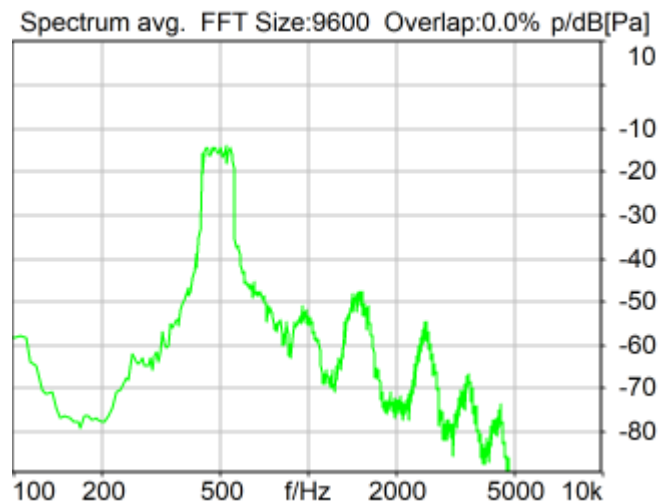
**Ok**

2023/11/10 15:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.2 RCV Distortion and Noise - 500 Hz NB**

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



Distortion (Noise) RCV (packed): 27.40 dB (4.27%) Ok

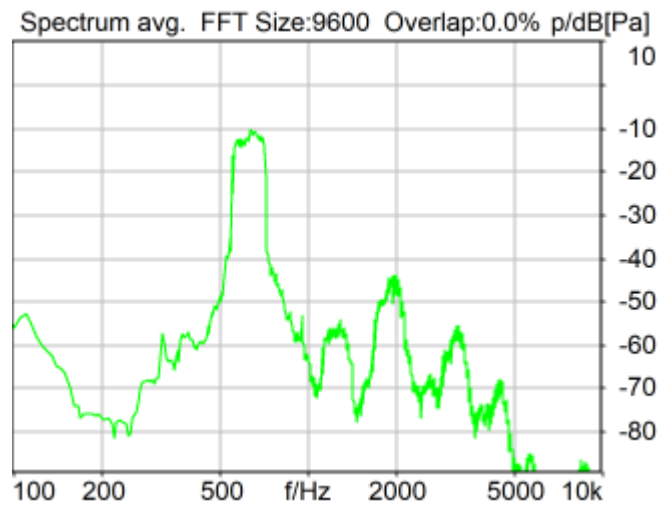
**Ok**

2023/11/10 15:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.41 dB (3.80%) Ok

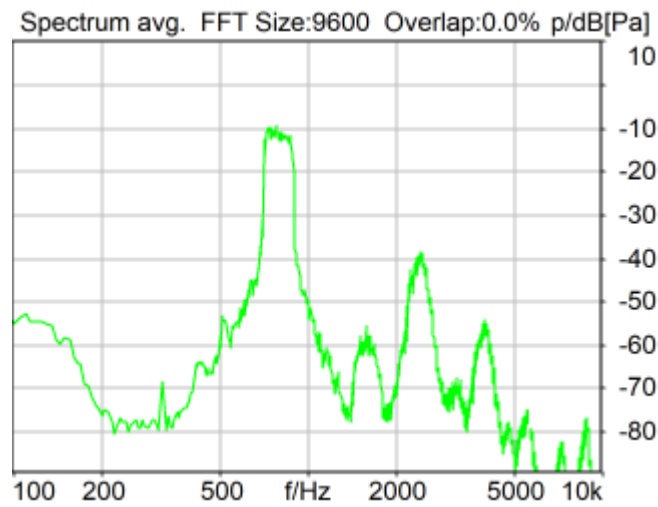
**Ok**

2023/11/10 15:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.58 dB (5.26%) Ok

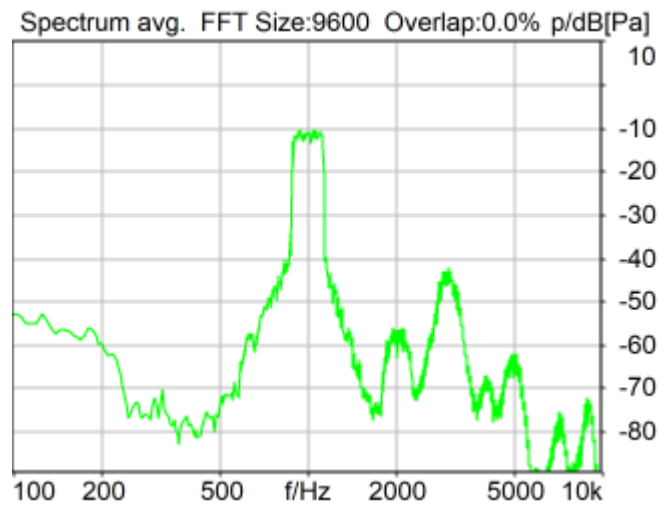
**Ok**

2023/11/10 15:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.97 dB (3.99%) Ok

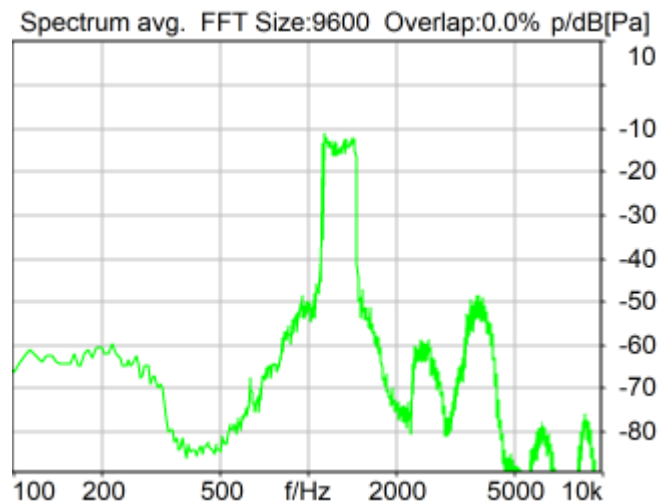
**Ok**

2023/11/10 15:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.78 dB (3.24%) Ok

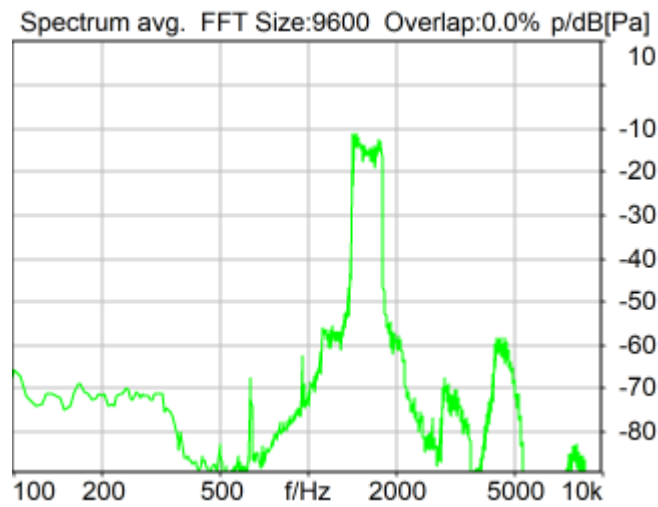
**Ok**

2023/11/10 15:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.48 dB (1.19%) Ok

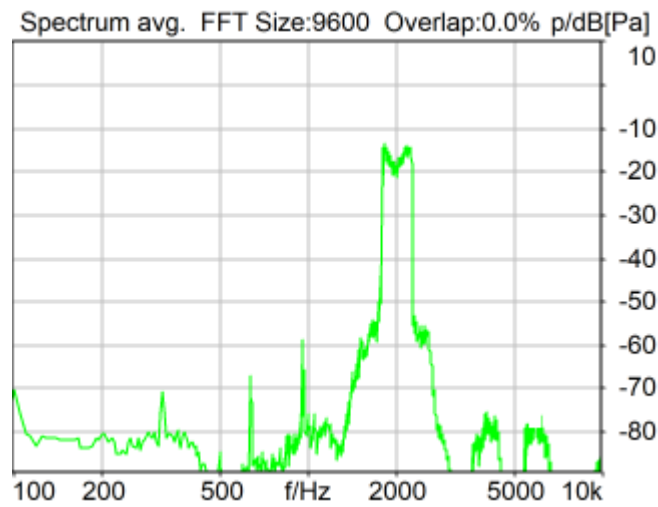
**Ok**

2023/11/10 15:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.57 dB (1.18%) Ok

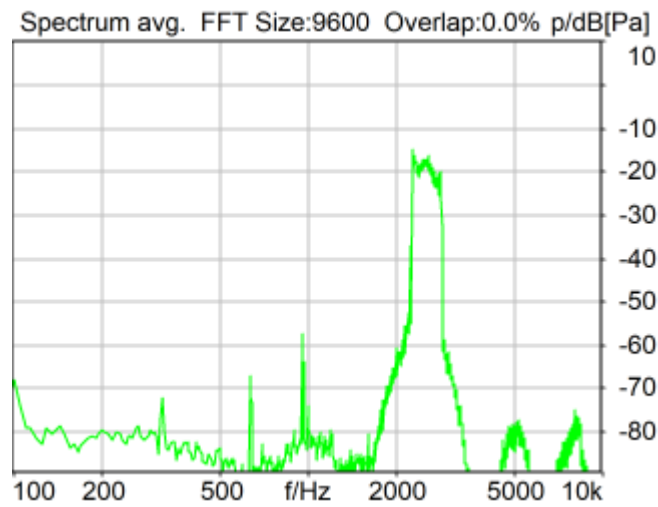
**Ok**

2023/11/10 15:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.78 dB (0.91%) Ok

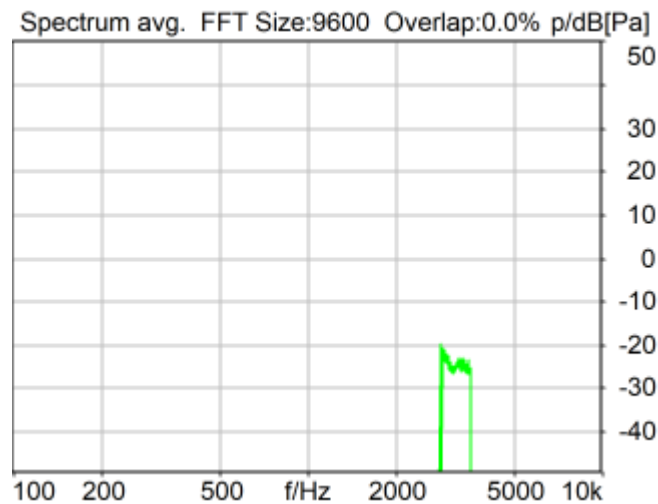
**Ok**

2023/11/10 15:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.42 dB (1.35%) Ok

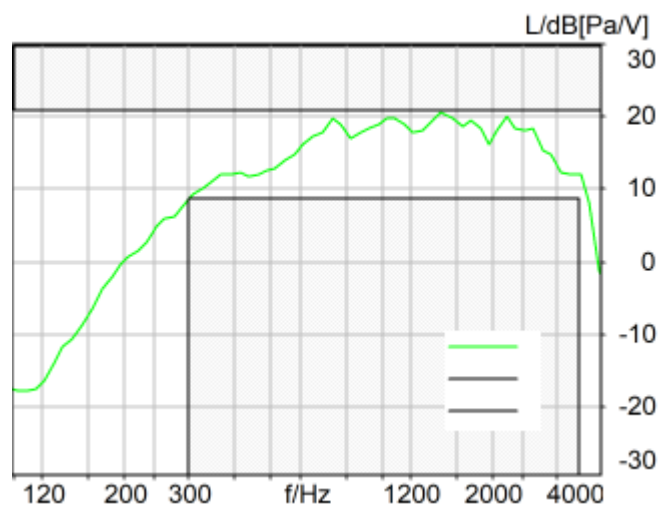
**Ok**

2023/11/10 15:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance  
0.30 dB at 1447.5 Hz Ok

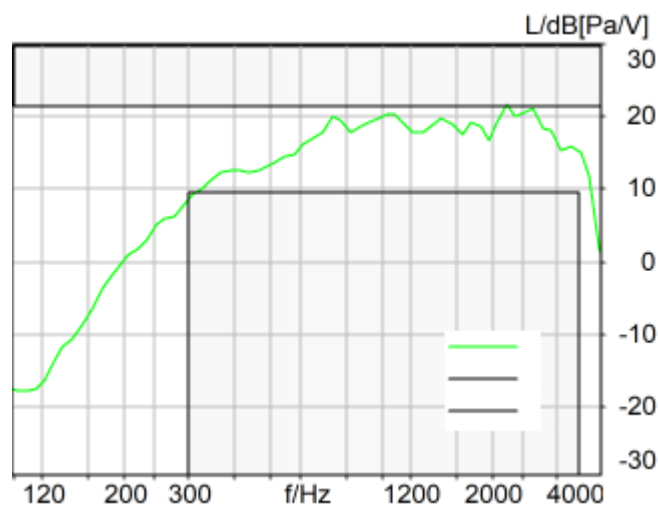
Ok

2023/11/10 15:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
-0.28 dB at 2177.4 Hz Not Ok

**Not Ok**

2023/11/10 15:58 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| Measurement Object | LTE Band 25_20M_QPSK_100RB_0Offset_EVS NB 24.4Kbps_Ch26340_8N |
|--------------------|---------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/20 17:51             |
|                        |                              |

## Status Overview

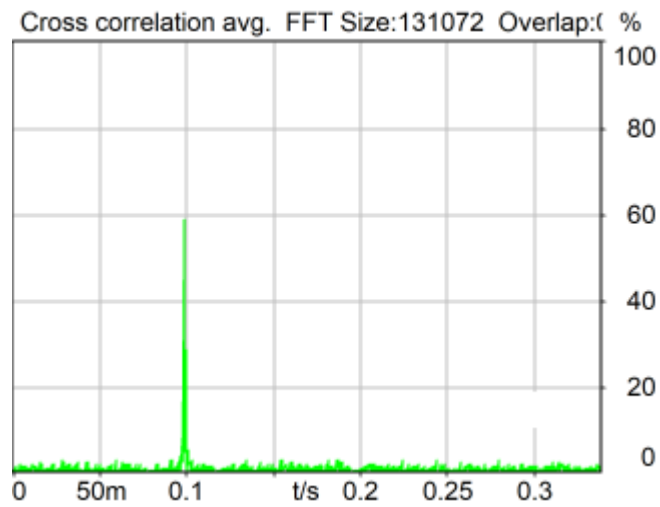
| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                               |
|-----------------------------------------------|--------|------------------------------------------------|--------------|----------------------------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]                             | 99.2         | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.1a Receive Volume Control Performance 8N NB | Ok     | Speech Level [dB[SPL]]                         | 90.53        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.07        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.19        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.59        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.04        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.23        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 30.15        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.74        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.67        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 31.07        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 35.56        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.3 Frequency Response 8N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 305.9 Hz  | 0.37         | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |
| 5.3 Frequency Response 8N DF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 2177.4 Hz | 0.07         | LTE Band<br>25_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch26340_8N |

|                                               |    |
|-----------------------------------------------|----|
| Overall Receive Delay NB                      | 5  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF HANB             | 17 |
| 5.3 Frequency Response 8N DF HANB             | 18 |



## Overall Receive Delay NB

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



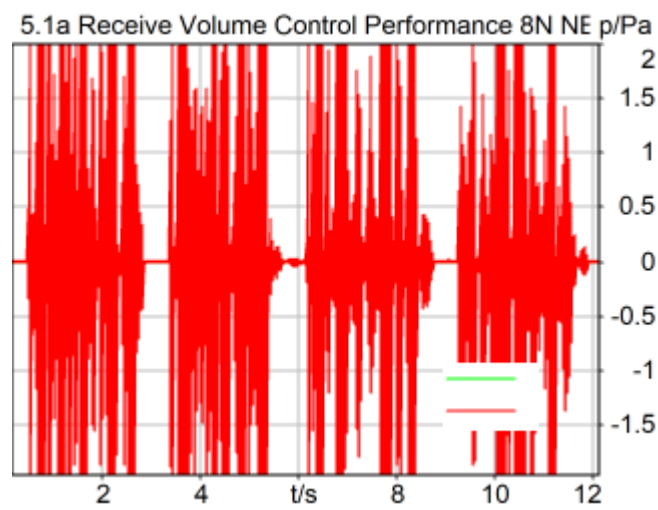
Delay (Cross): 99.2 ms

2023/11/10 15:38 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N NB**

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



Speech Level RCV: 90.53 dB[SPL], Act.: 81.01% Ok

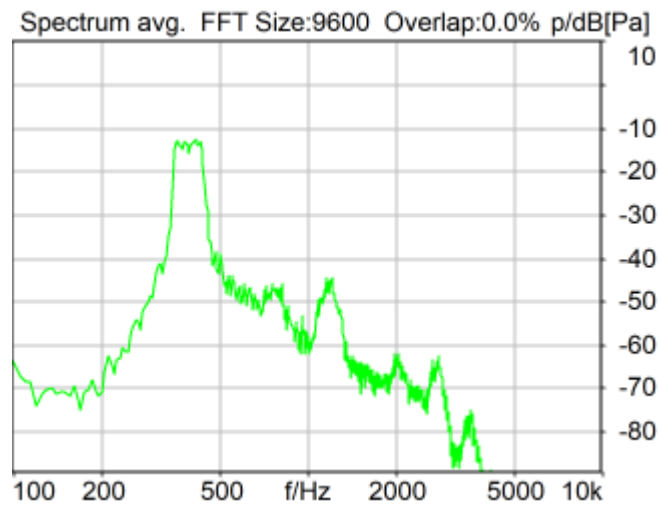
**Ok**

2023/11/10 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 26.07 dB (4.97%) Ok

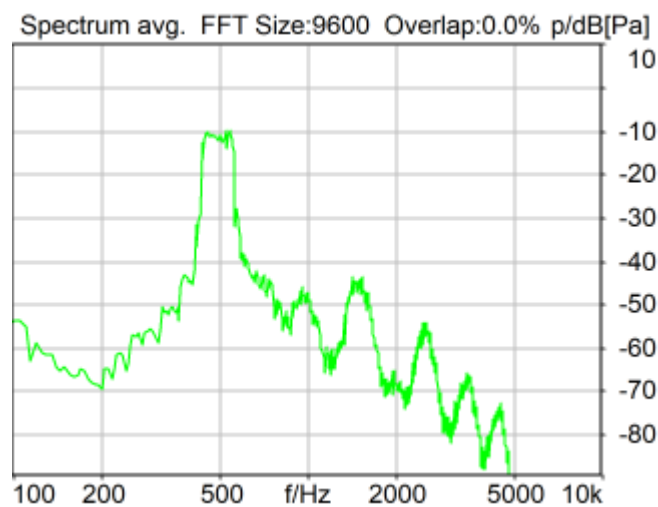
**Ok**

2023/11/10 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 27.19 dB (4.37%) Ok

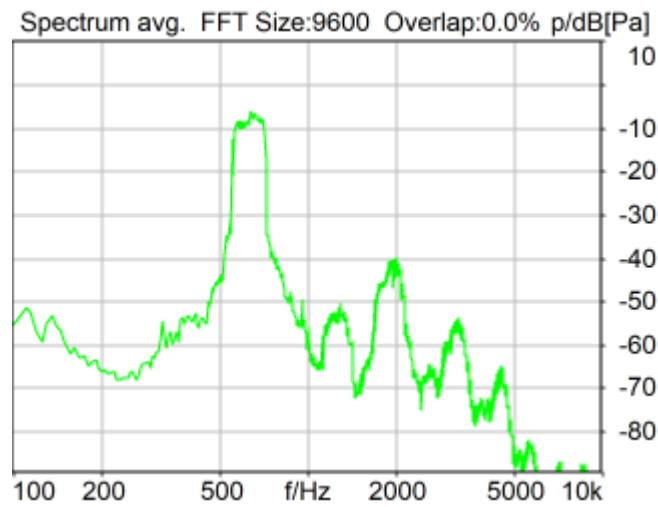
Ok

2023/11/10 15:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 28.59 dB (3.72%) Ok

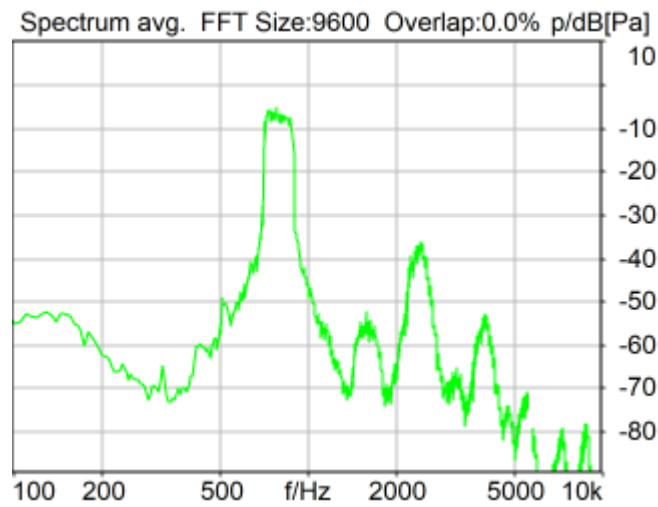
**Ok**

2023/11/10 15:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 27.04 dB (4.45%) Ok

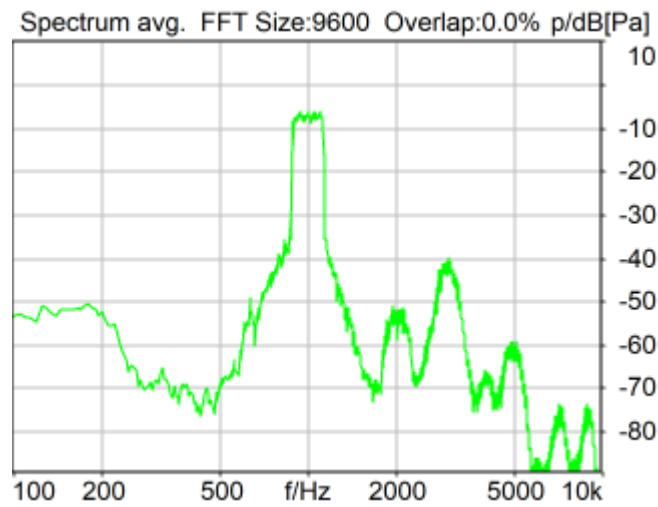
**Ok**

2023/11/10 15:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 29.23 dB (3.46%) Ok

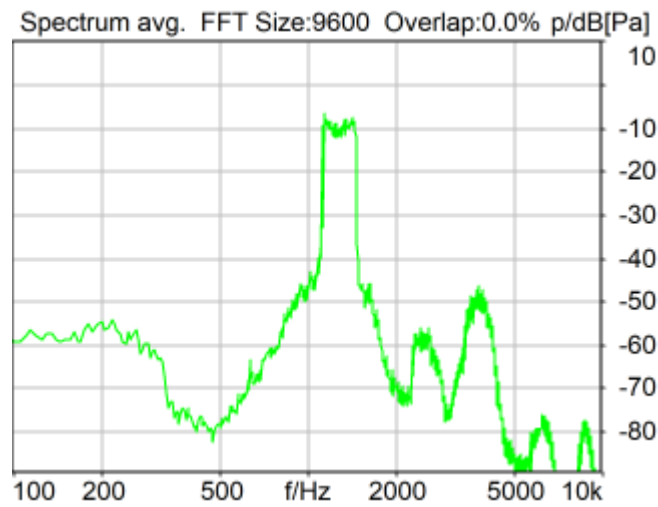
**Ok**

2023/11/10 15:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.15 dB (3.11%) Ok

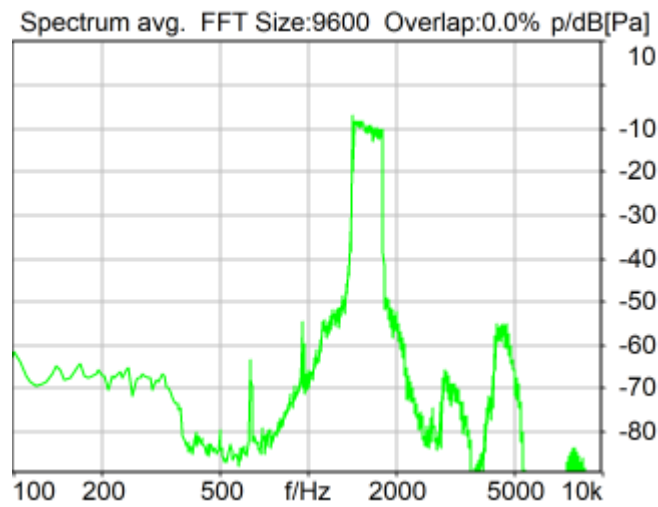
**Ok**

2023/11/10 15:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 38.74 dB (1.16%) Ok

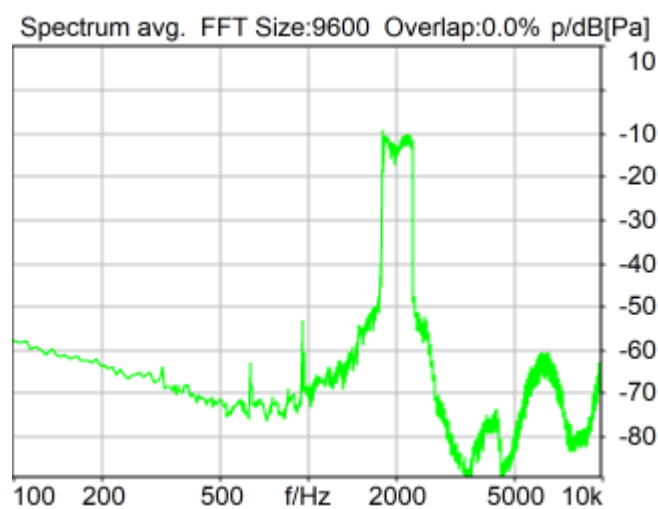
**Ok**

2023/11/10 15:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 37.67 dB (1.31%) Ok

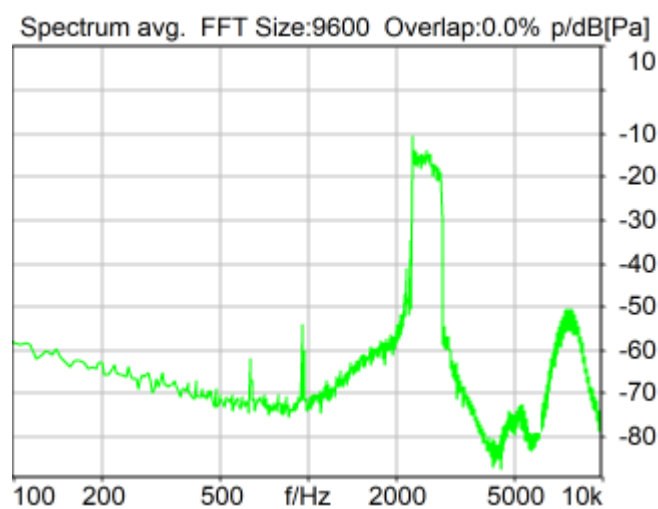
Ok

2023/11/10 15:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 31.07 dB (2.79%) Ok

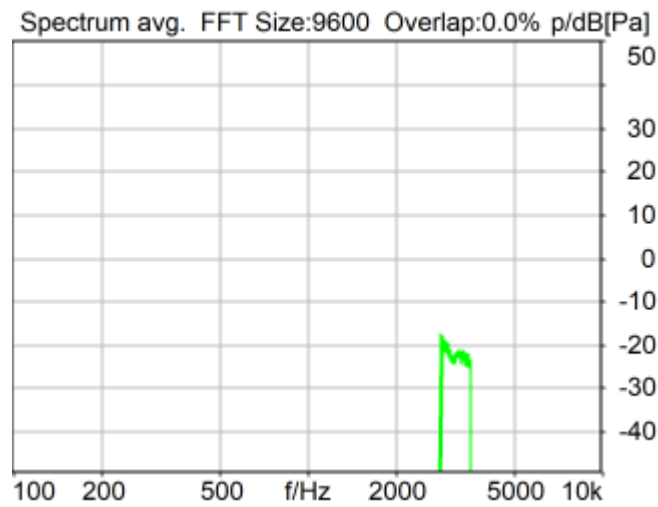
Ok

2023/11/10 15:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 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): 35.56 dB (1.67%) Ok

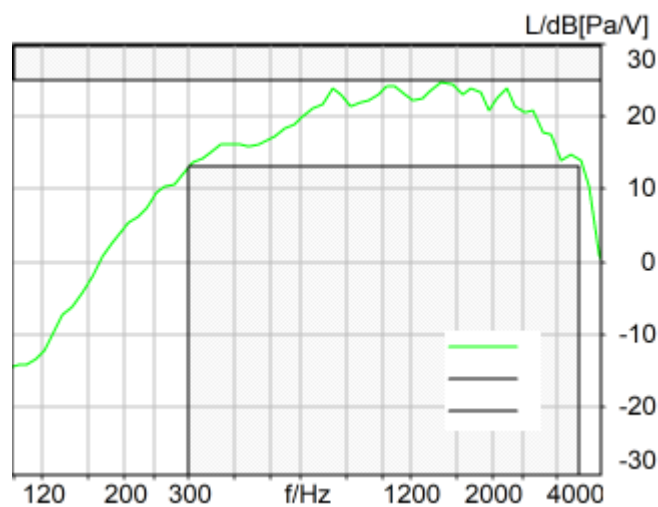
Ok

2023/11/10 15:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance

0.37 dB at 305.9 Hz Ok

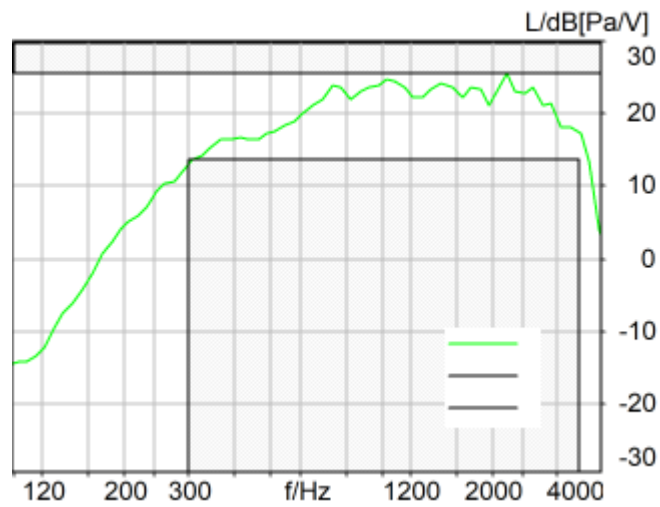
**Ok**

2023/11/10 15:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
0.07 dB at 2177.4 Hz Ok

**Ok**

2023/11/10 15:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| Measurement Object | LTE Band 25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
|--------------------|---------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/12 19:05             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                           |
|-----------------------------------------------|--------|---------------------------------|--------------|------------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 218.1        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.59        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.05        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 25.16        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 26.88        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.69        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.98        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.68        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.57        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.81        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.70        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.38        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.48        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.76        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.80        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.66        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.05        | LTE Band                                                         |

|                                 |    |                                                |      |                                                                  |
|---------------------------------|----|------------------------------------------------|------|------------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                       |      | 25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1             |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 1285.9 Hz | 1.43 | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 217.7 Hz  | 1.11 | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-2N-1 |

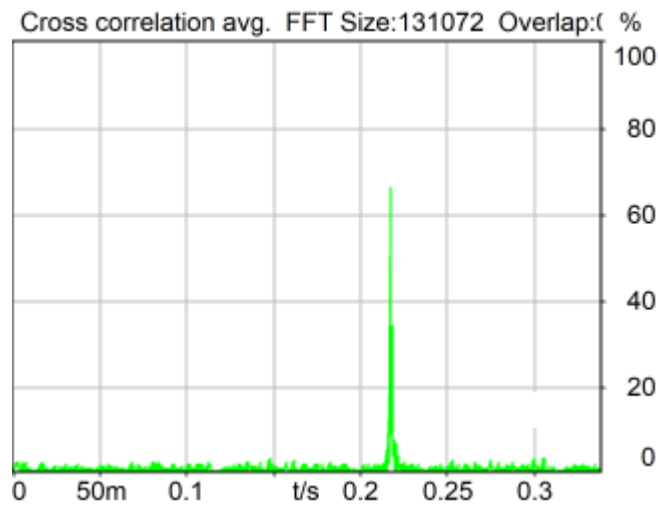
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF                                | 23 |
| 5.3 Frequency Response 2N DF                                | 24 |



## Overall Receive Delay WB

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



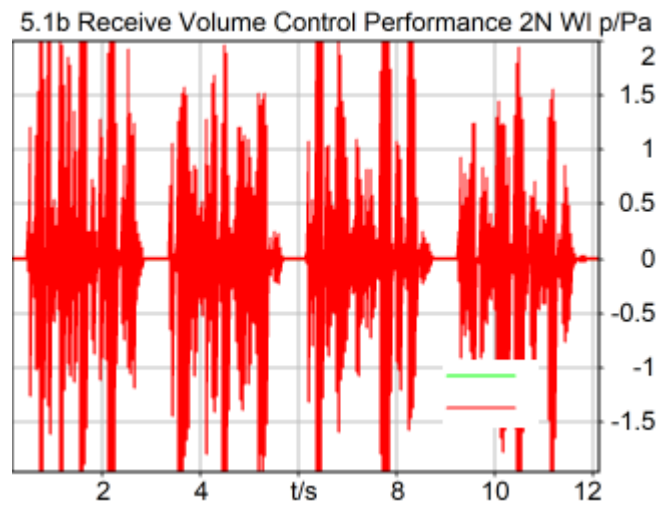
Delay (Cross): 218.1 ms

2023/11/12 11:37 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N WB**

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



Speech Level RCV: 84.59 dB[SPL], Act.: 80.75% Ok

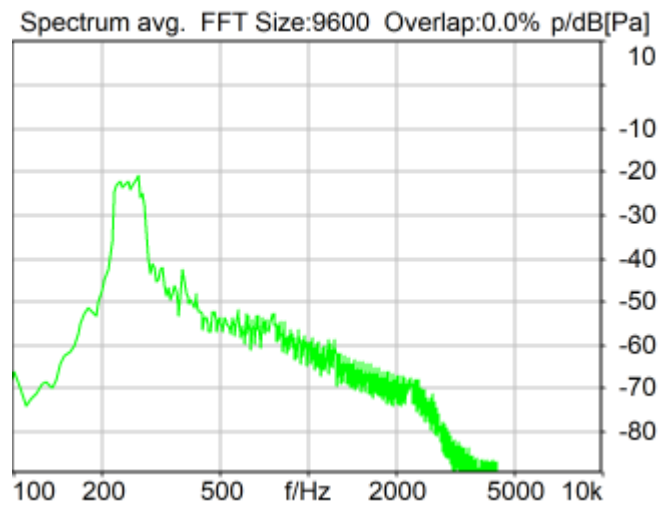
**Ok**

2023/11/12 11:37 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.05 dB (7.90%) Ok

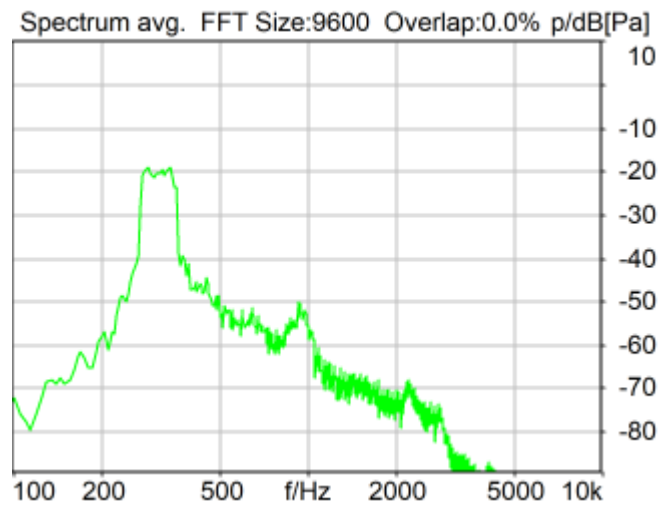
**Ok**

2023/11/12 11:37 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.16 dB (5.52%) Ok

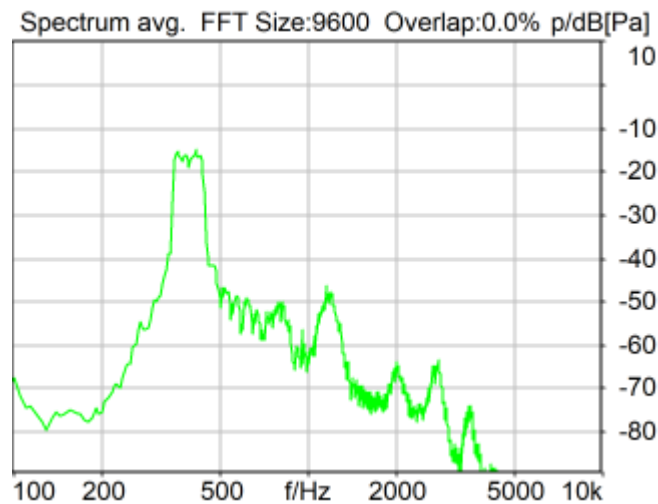
**Ok**

2023/11/12 11:38 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.88 dB (4.53%) Ok

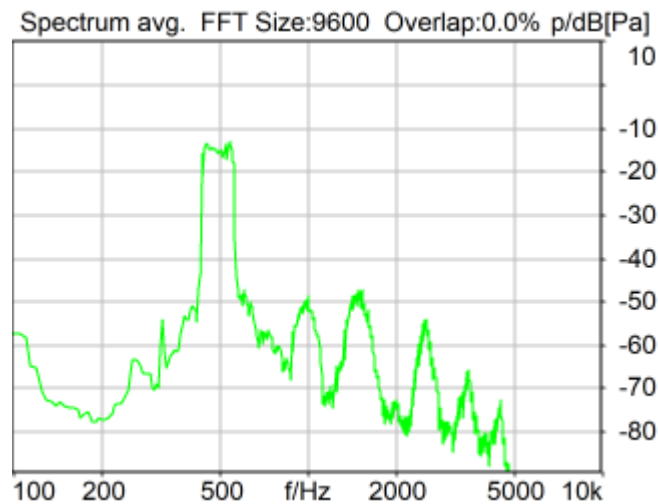
**Ok**

2023/11/12 11:38 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.69 dB (3.68%) Ok

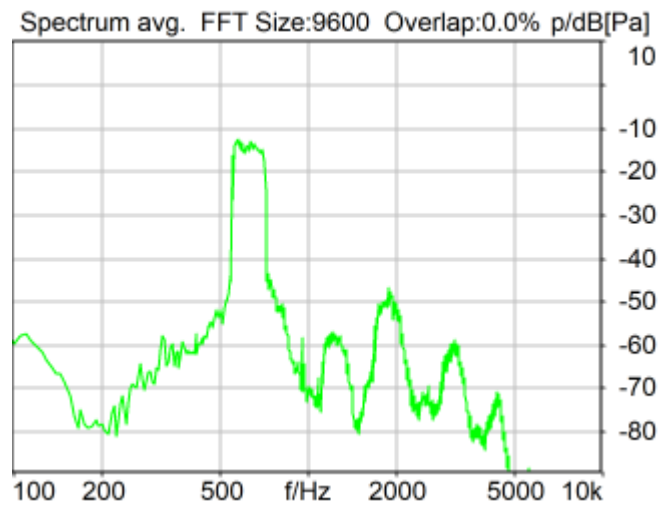
**Ok**

2023/11/12 11:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.98 dB (3.17%) Ok

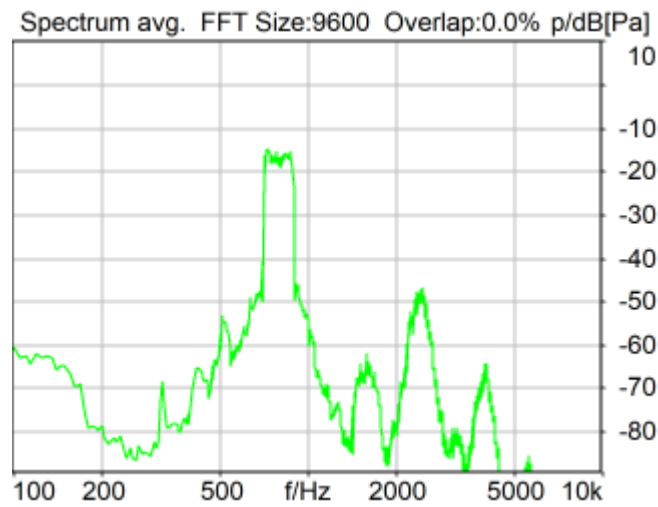
**Ok**

2023/11/12 11:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.68 dB (3.68%) Ok

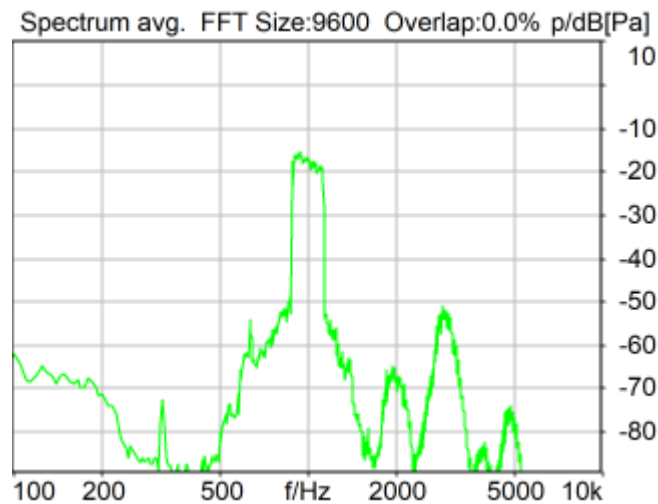
**Ok**

2023/11/12 11:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 31.57 dB (2.64%) Ok

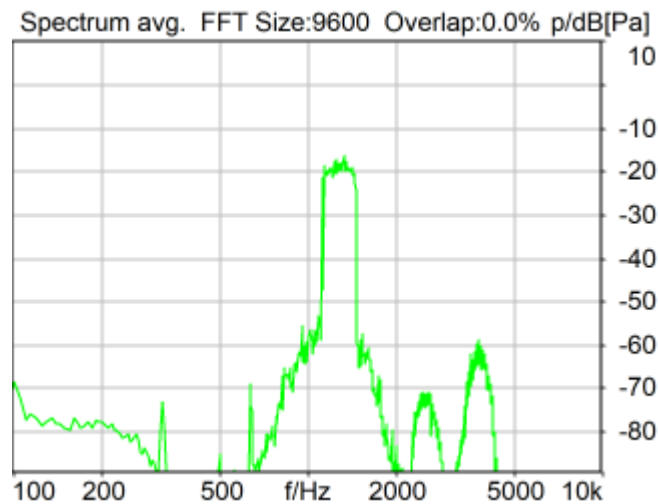
**Ok**

2023/11/12 11:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 33.81 dB (2.04%) Ok

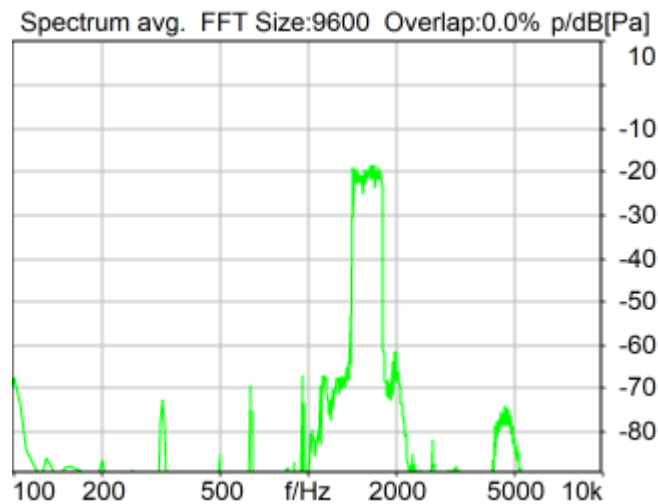
**Ok**

2023/11/12 11:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.70 dB (0.58%) Ok

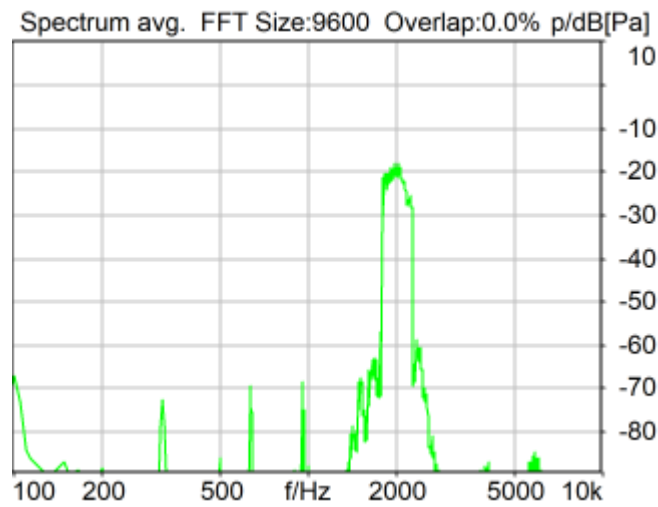
**Ok**

2023/11/12 11:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.38 dB (0.76%) Ok

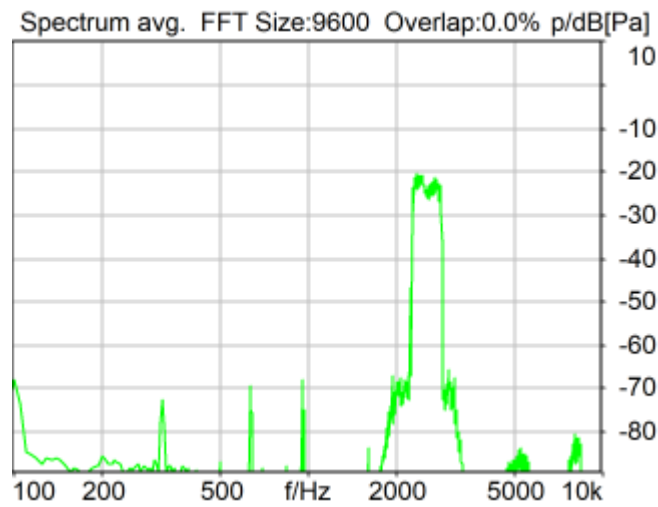
**Ok**

2023/11/12 11:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.48 dB (0.53%) Ok

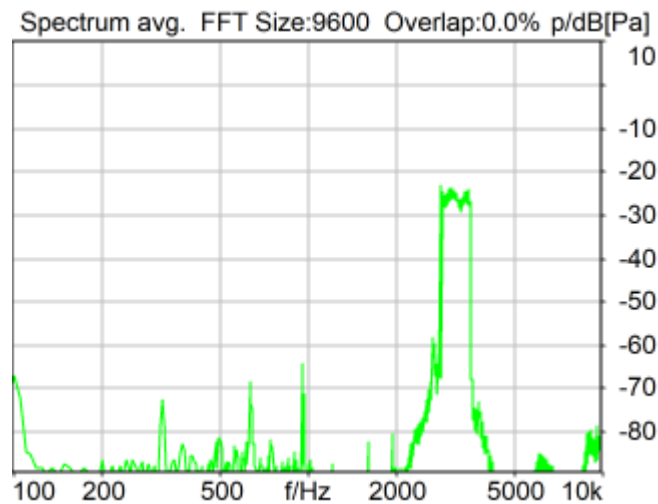
**Ok**

2023/11/12 11:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.76 dB (0.92%) Ok

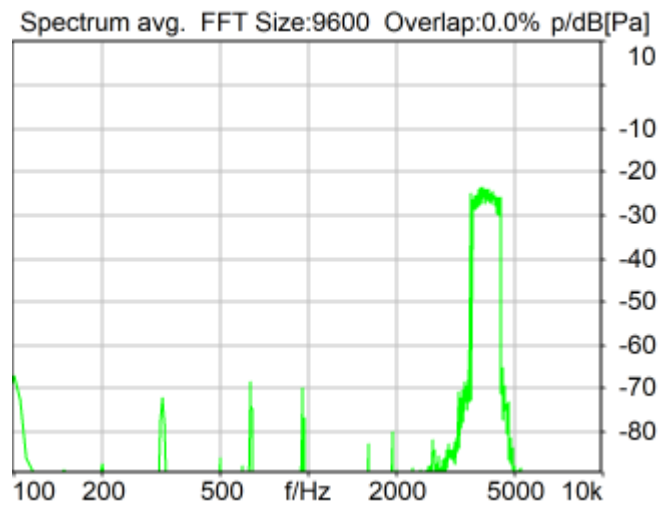
**Ok**

2023/11/12 11:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.80 dB (0.51%) Ok

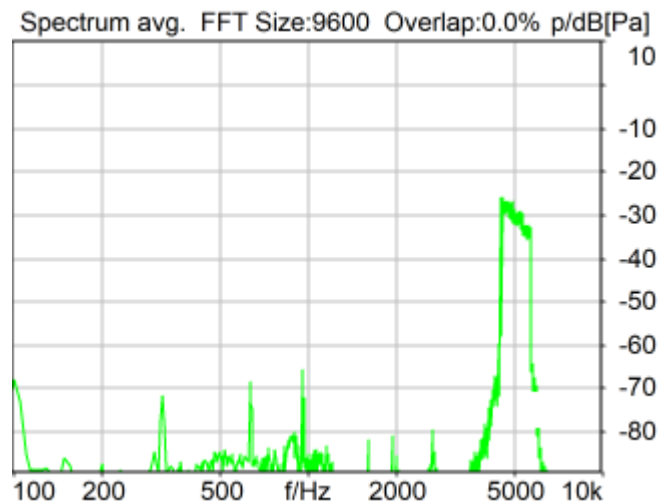
**Ok**

2023/11/12 11:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.66 dB (0.93%) Ok

**Ok**

2023/11/12 11:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.05 dB |
| 2      | 315Hz     | 25.16 dB |
| 3      | 400Hz     | 26.88 dB |
| 4      | 500Hz     | 28.69 dB |
| 5      | 630Hz     | 29.98 dB |
| 6      | 800Hz     | 28.68 dB |
| 7      | 1000Hz    | 31.57 dB |
| 8      | 1250Hz    | 33.81 dB |
| 9      | 1600Hz    | 44.70 dB |
| 10     | 2000Hz    | 42.38 dB |
| 11     | 2500Hz    | 45.48 dB |
| 12     | 3150Hz    | 40.76 dB |
| 13     | 4000Hz    | 45.80 dB |
| 14     | 5000Hz    | 40.66 dB |

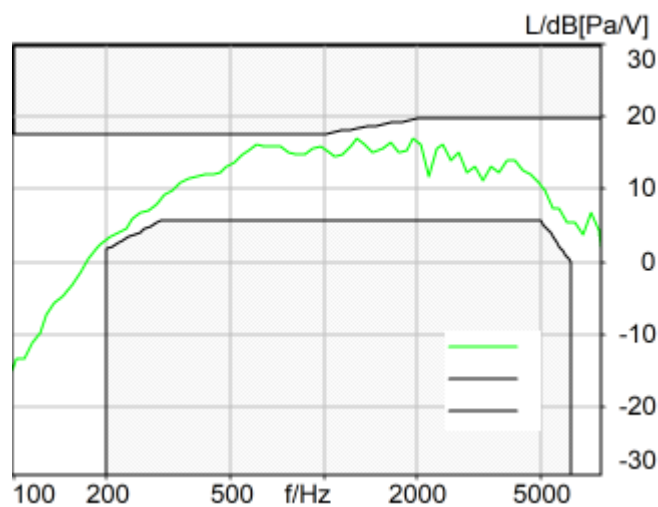
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.05dB at 250Hz.

2023/11/12 11:43 ACQUA

## 5.3 Frequency Response 2N FF

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



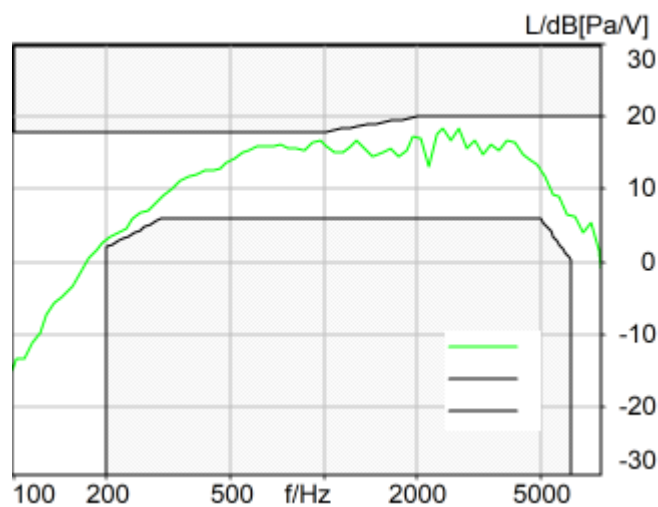
Absolute minimal distance  
1.43 dB at 1285.9 Hz Ok

Ok

2023/11/12 11:43 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.11 dB at 217.7 Hz Ok

Ok

2023/11/12 11:43 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                               |
|--------------------|---------------------------------------------------------------|
| Measurement Object | LTE Band 25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
|--------------------|---------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/12 19:07             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                           |
|-----------------------------------------------|--------|---------------------------------|--------------|------------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 258.7        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]          | 88.99        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.47        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.47        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 26.28        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.68        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.02        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.45        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.04        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.37        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.37        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.18        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.51        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 41.54        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.57        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.28        | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.47        | LTE Band                                                         |

|                                 |    |                                                |      |                                                                  |
|---------------------------------|----|------------------------------------------------|------|------------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                       |      | 25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1             |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 1285.9 Hz | 1.48 | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 217.7 Hz  | 1.22 | LTE Band<br>25_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch26340-8N-1 |

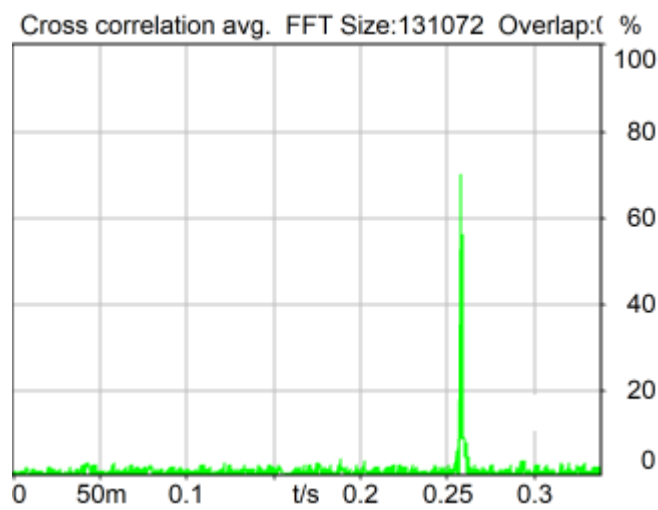
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF                                | 23 |
| 5.3 Frequency Response 8N DF                                | 24 |



## Overall Receive Delay WB

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



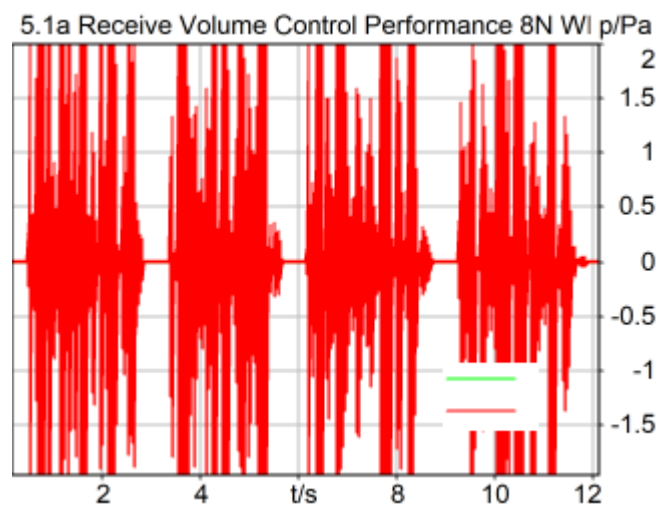
Delay (Cross): 258.7 ms

2023/11/12 11:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N WB**

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



Speech Level RCV: 88.99 dB[SPL], Act.: 80.76% Ok

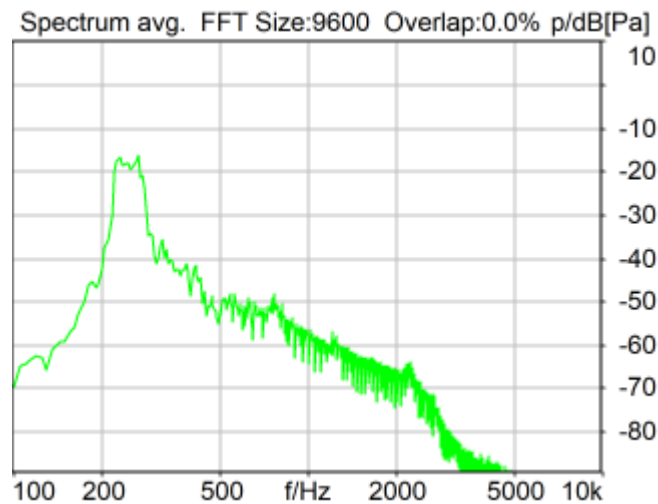
**Ok**

2023/11/12 11:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.47 dB (7.52%) Ok

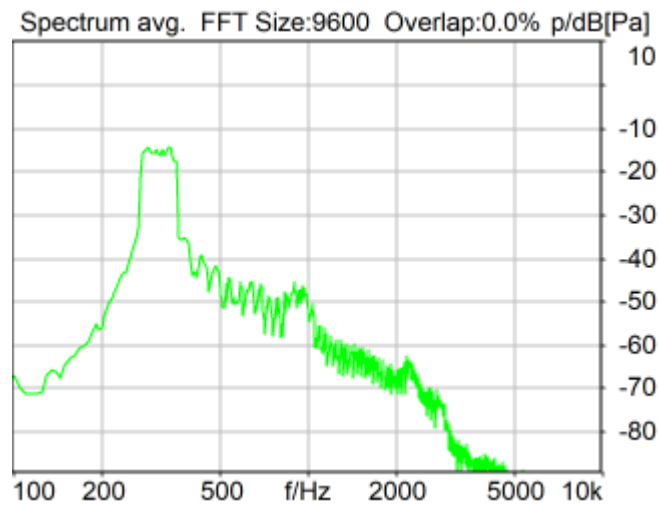
**Ok**

2023/11/12 11:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.47 dB (5.97%) Ok

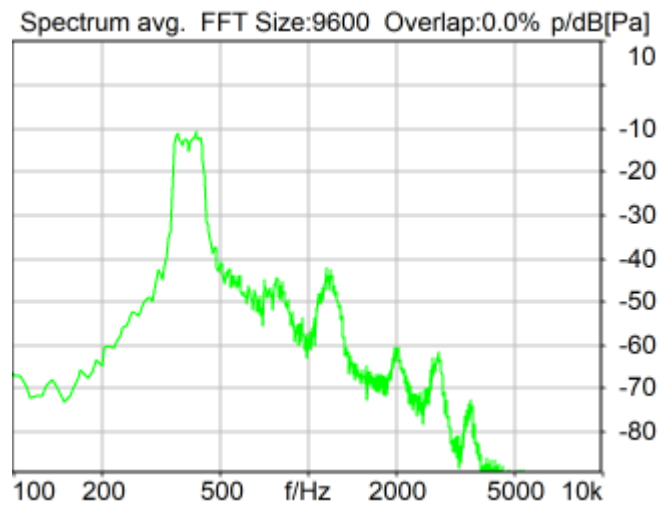
**Ok**

2023/11/12 11:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.28 dB (4.85%) Ok

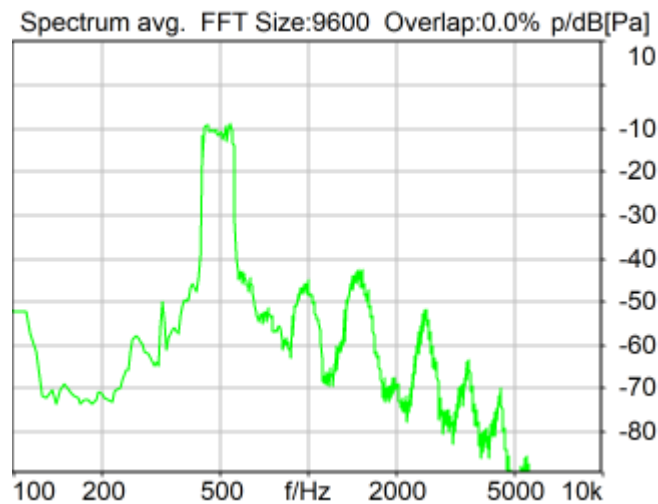
**Ok**

2023/11/12 11:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.68 dB (3.68%) Ok

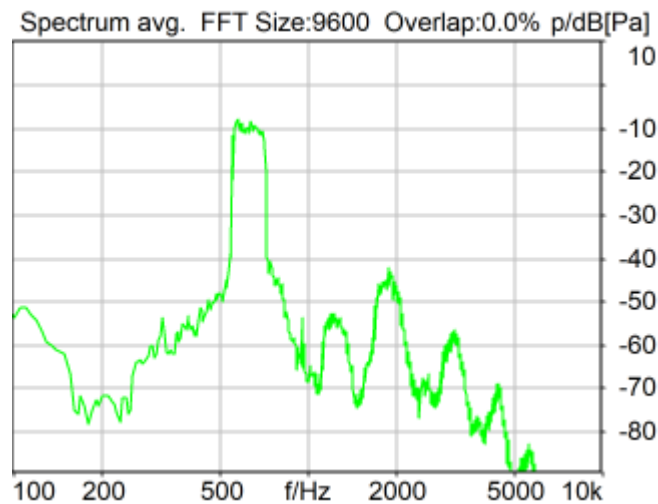
**Ok**

2023/11/12 11:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.02 dB (3.15%) Ok

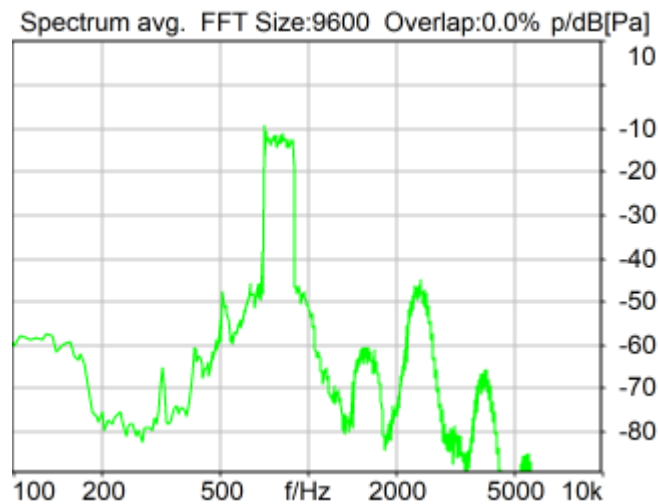
**Ok**

2023/11/12 11:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.45 dB (3.00%) Ok

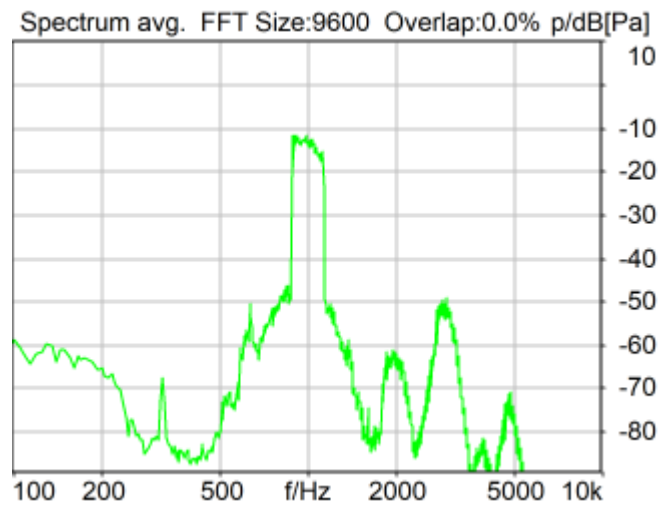
**Ok**

2023/11/12 11:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 33.04 dB (2.23%) Ok

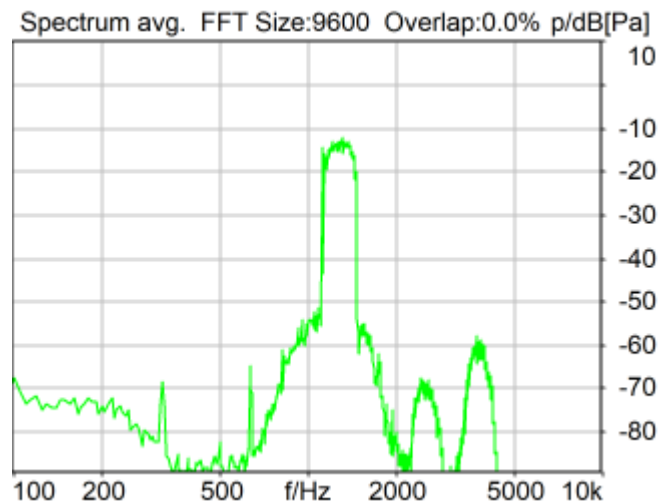
**Ok**

2023/11/12 11:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.37 dB (1.91%) Ok

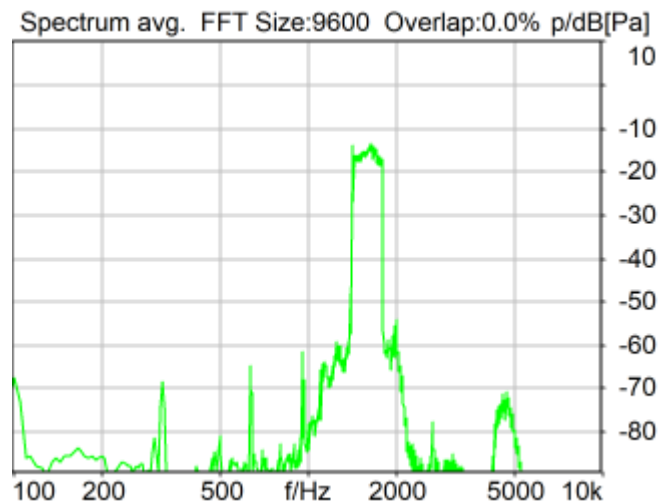
**Ok**

2023/11/12 11:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 43.37 dB (0.68%) Ok

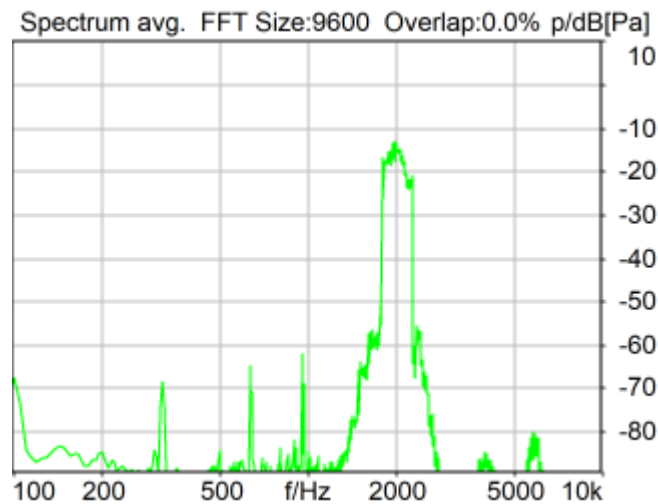
**Ok**

2023/11/12 11:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.18 dB (0.78%) Ok

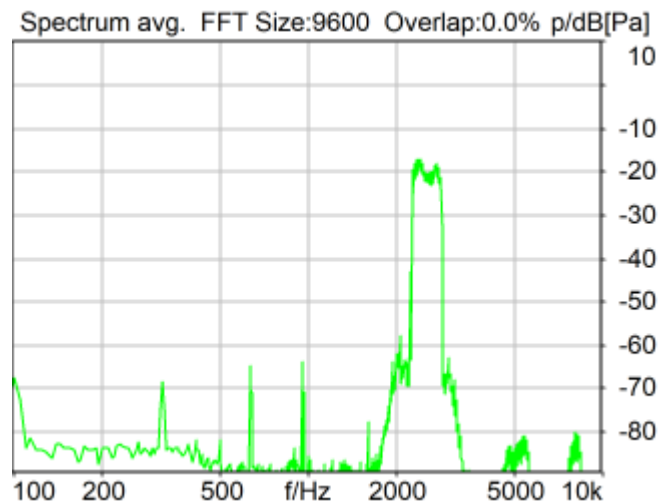
**Ok**

2023/11/12 11:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.51 dB (0.60%) Ok

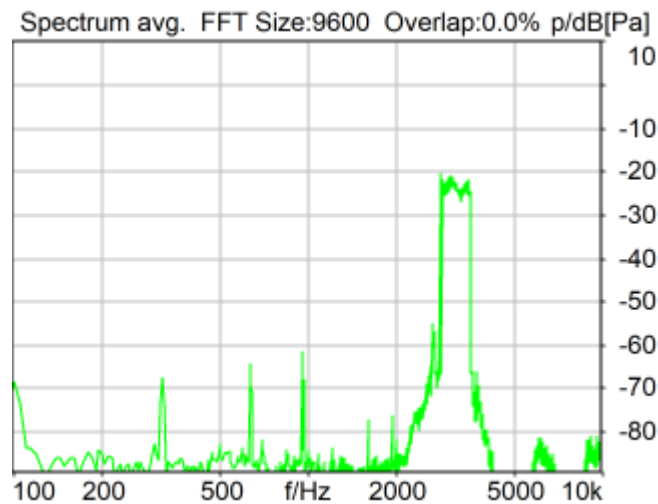
**Ok**

2023/11/12 11:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 41.54 dB (0.84%) Ok

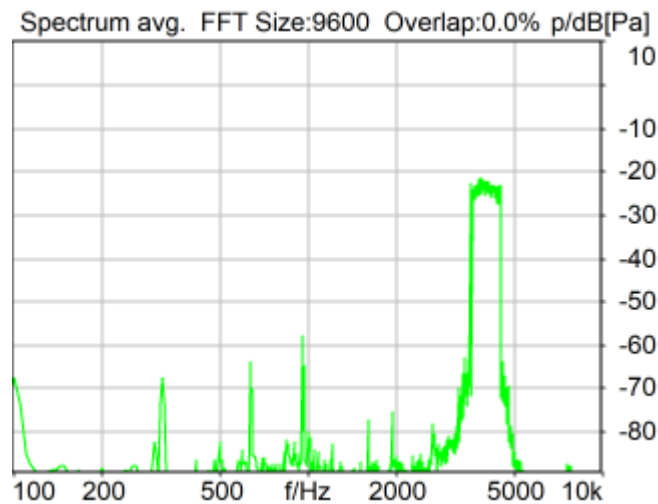
**Ok**

2023/11/12 11:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.57 dB (0.59%) Ok

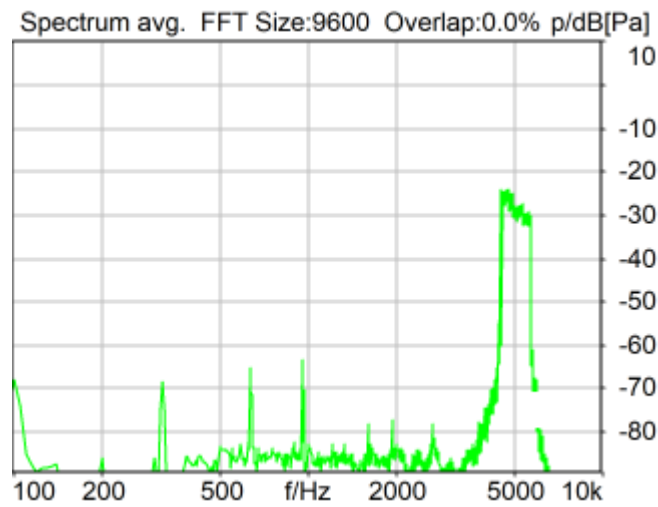
**Ok**

2023/11/12 11:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.28 dB (0.97%) Ok

**Ok**

2023/11/12 11:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.47 dB |
| 2      | 315Hz     | 24.47 dB |
| 3      | 400Hz     | 26.28 dB |
| 4      | 500Hz     | 28.68 dB |
| 5      | 630Hz     | 30.02 dB |
| 6      | 800Hz     | 30.45 dB |
| 7      | 1000Hz    | 33.04 dB |
| 8      | 1250Hz    | 34.37 dB |
| 9      | 1600Hz    | 43.37 dB |
| 10     | 2000Hz    | 42.18 dB |
| 11     | 2500Hz    | 44.51 dB |
| 12     | 3150Hz    | 41.54 dB |
| 13     | 4000Hz    | 44.57 dB |
| 14     | 5000Hz    | 40.28 dB |

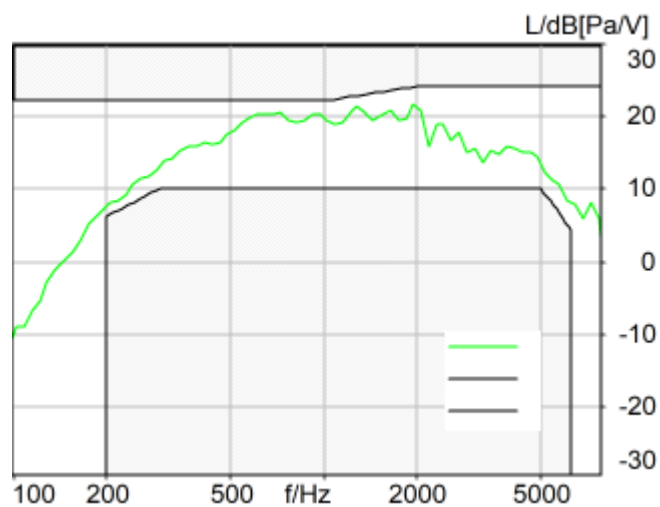
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.47dB at 250Hz.

2023/11/12 11:52 ACQUA

## 5.3 Frequency Response 8N FF

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



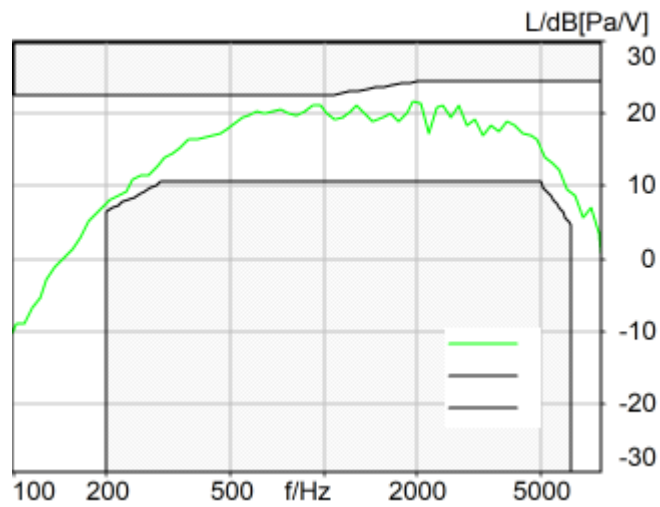
Absolute minimal distance  
1.48 dB at 1285.9 Hz Ok

Ok

2023/11/12 11:52 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
1.22 dB at 217.7 Hz Ok

Ok

2023/11/12 11:52 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                                |
|--------------------|----------------------------------------------------------------|
| Measurement Object | LTE Band 71_20M_QPSK_100RB_0Offset_EVS NB 24.4Kbps_Ch133322_2N |
|--------------------|----------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/20 17:55             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                                |
|-----------------------------------------------|--------|------------------------------------------------|--------------|-----------------------------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]                             | 119.5        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]                         | 86.20        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.87        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.95        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.44        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.04        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.46        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.22        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.79        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 39.07        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.14        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.46        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.3 Frequency Response 2N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 2177.4 Hz | 0.30         | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |
| 5.3 Frequency Response 2N DF HANB             | Not Ok | Min. dist. to tolerance scheme [dB], 2177.4 Hz | -0.21        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_2N |

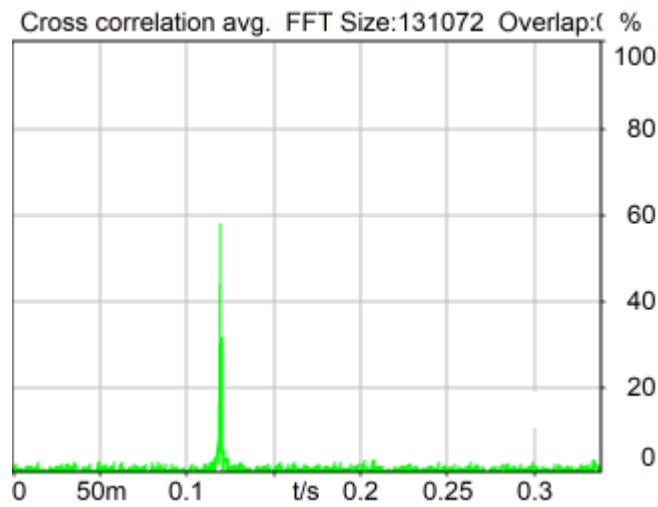
---

|                                               |    |
|-----------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF HANB             | 17 |
| 5.3 Frequency Response 2N DF HANB             | 18 |



## Overall Receive Delay NB

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



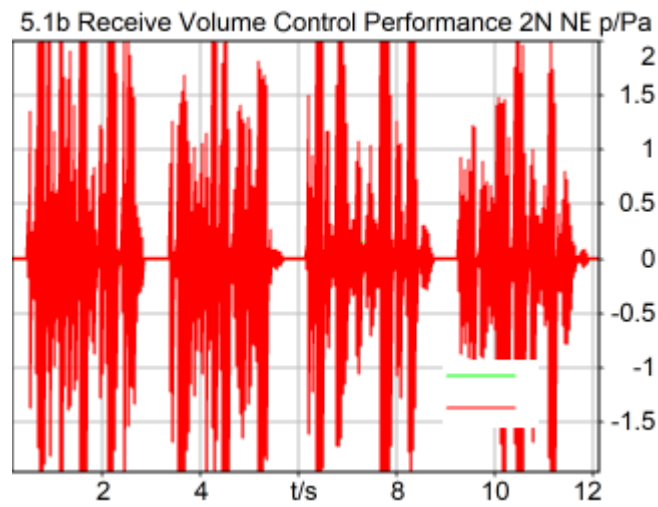
Delay (Cross): 119.5 ms

2023/11/10 16:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N NB**

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



Speech Level RCV: 86.20 dB[SPL], Act.: 80.81% Ok

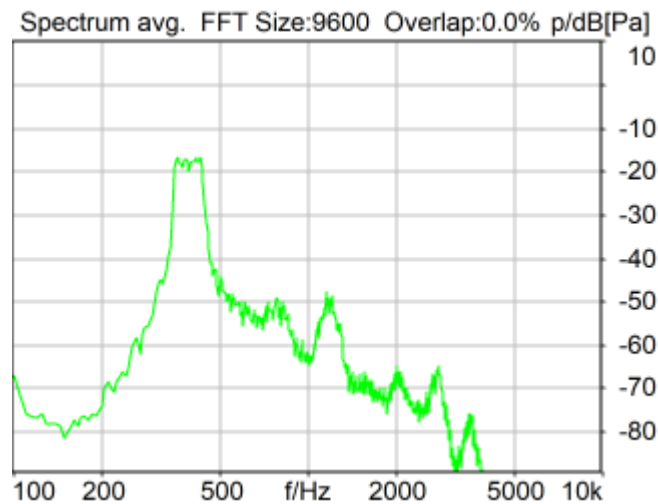
**Ok**

2023/11/10 16:46 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.87 dB (5.09%) Ok

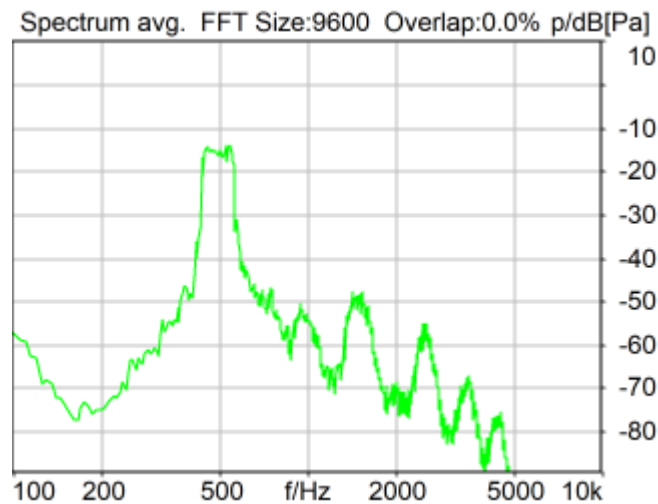
**Ok**

2023/11/10 16:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.95 dB (4.49%) Ok

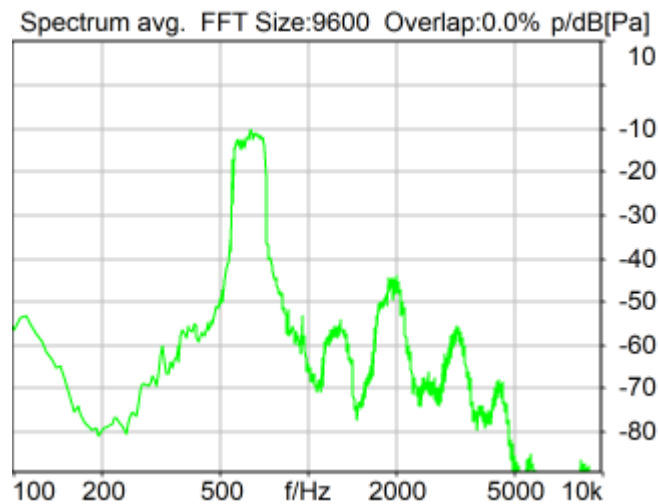
**Ok**

2023/11/10 16:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.44 dB (3.78%) Ok

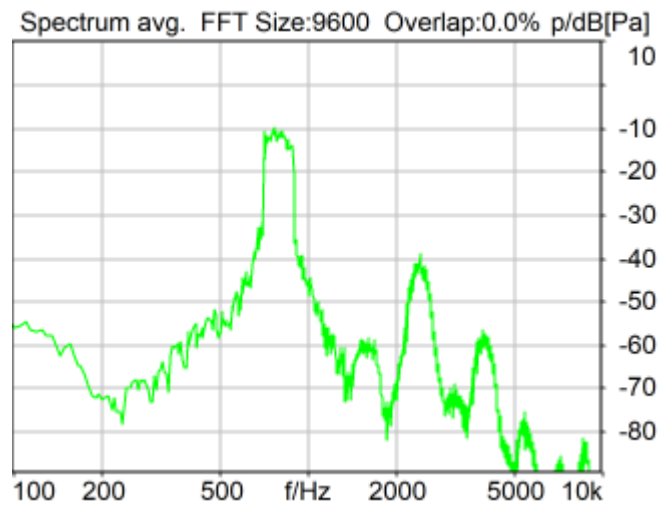
**Ok**

2023/11/10 16:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.04 dB (5.59%) Ok

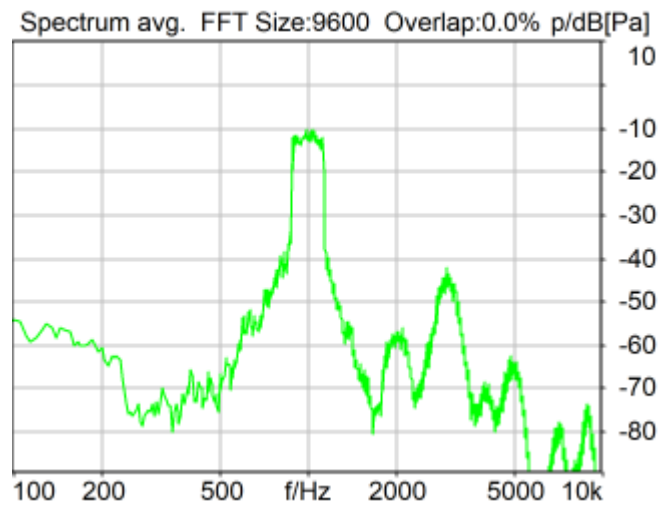
**Ok**

2023/11/10 16:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.46 dB (4.23%) Ok

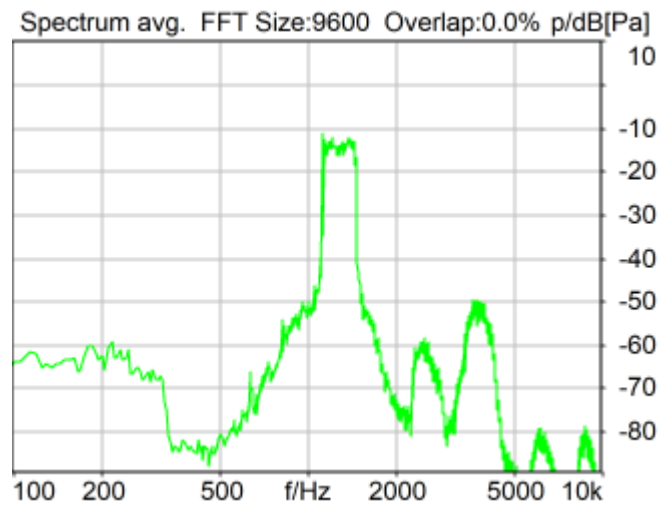
**Ok**

2023/11/10 16:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.22 dB (3.46%) Ok

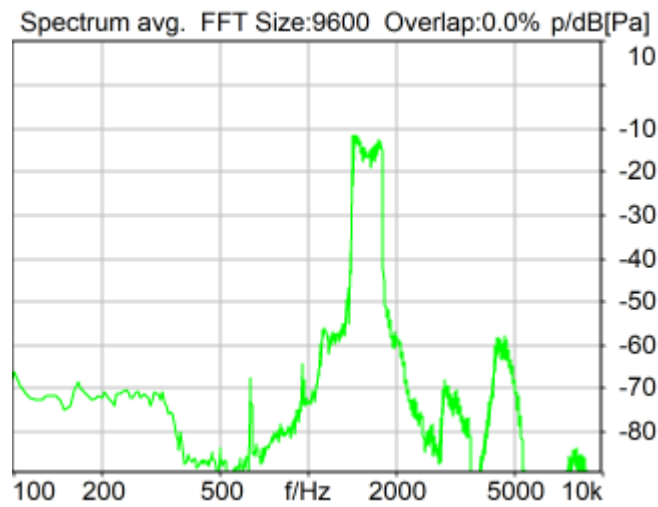
**Ok**

2023/11/10 16:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.79 dB (1.29%) Ok

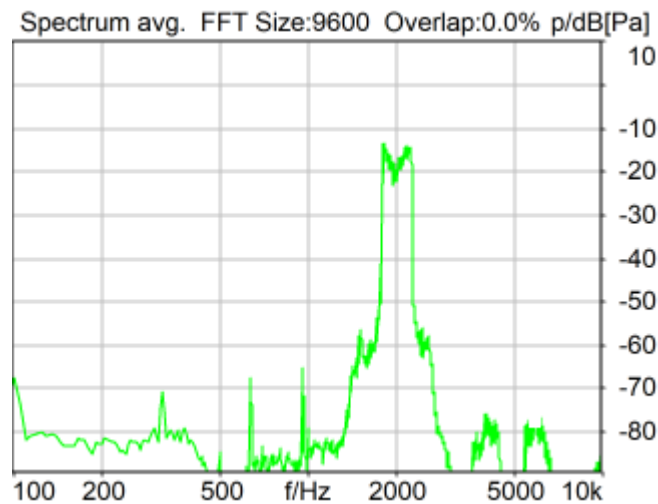
**Ok**

2023/11/10 16:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 39.07 dB (1.11%) Ok

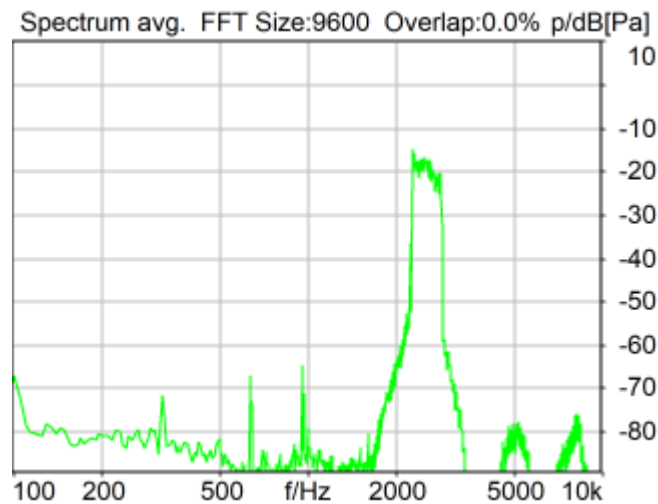
**Ok**

2023/11/10 16:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.14 dB (0.98%) Ok

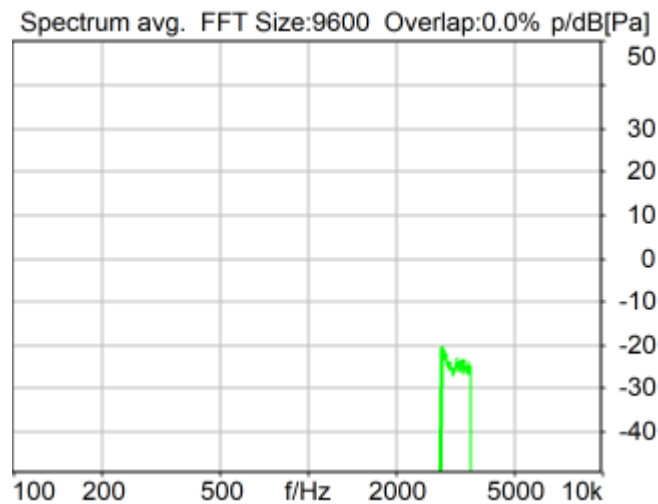
**Ok**

2023/11/10 16:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.46 dB (1.34%) Ok

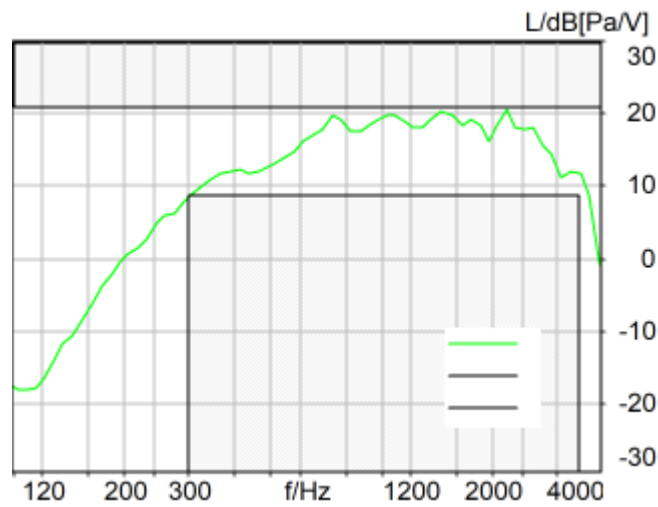
**Ok**

2023/11/10 16:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 2N FF HANB

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



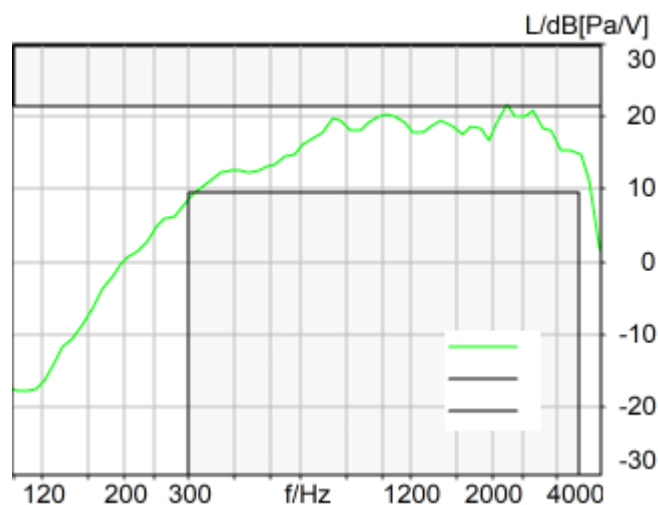
Absolute minimal distance  
0.30 dB at 2177.4 Hz Ok

Ok

2023/11/10 16:51 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
-0.21 dB at 2177.4 Hz Not Ok

**Not Ok**

2023/11/10 16:51 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                                |
|--------------------|----------------------------------------------------------------|
| Measurement Object | LTE Band 71_20M_QPSK_100RB_0Offset_EVS NB 24.4Kbps_Ch133322_8N |
|--------------------|----------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/20 17:56             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                                |
|-----------------------------------------------|--------|------------------------------------------------|--------------|-----------------------------------------------------------------------|
| 5.1a Receive Volume Control Performance 8N NB | Ok     | Speech Level [dB[SPL]]                         | 90.42        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.26        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.10        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.43        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.97        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.02        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.26        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 35.86        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 34.02        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.06        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 36.61        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.3 Frequency Response 8N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 1447.5 Hz | 0.41         | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |
| 5.3 Frequency Response 8N DF HANB             | Not Ok | Min. dist. to tolerance scheme [dB], 2177.4 Hz | -0.15        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EV<br>S NB 24.4Kbps_Ch133322_8N |

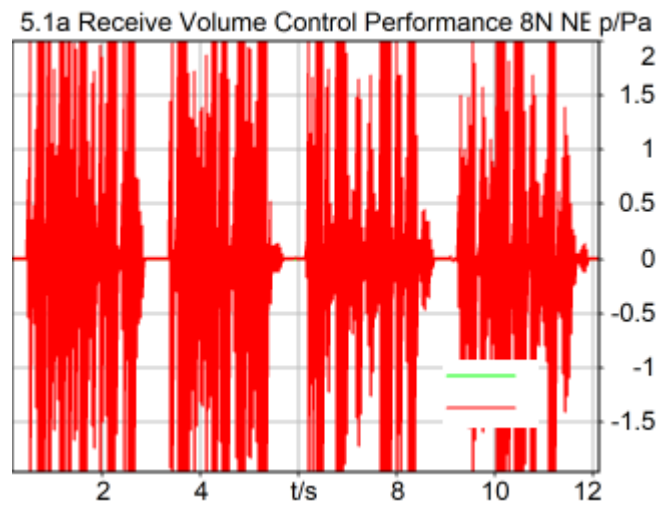
---

|                                               |    |
|-----------------------------------------------|----|
| 5.1a Receive Volume Control Performance 8N NB | 5  |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | 6  |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | 7  |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | 8  |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | 9  |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | 10 |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | 11 |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | 12 |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | 13 |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | 14 |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | 15 |
| 5.3 Frequency Response 8N FF HANB             | 16 |
| 5.3 Frequency Response 8N DF HANB             | 17 |



## **5.1a Receive Volume Control Performance 8N NB**

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



Speech Level RCV: 90.42 dB[SPL], Act.: 82.14% Ok

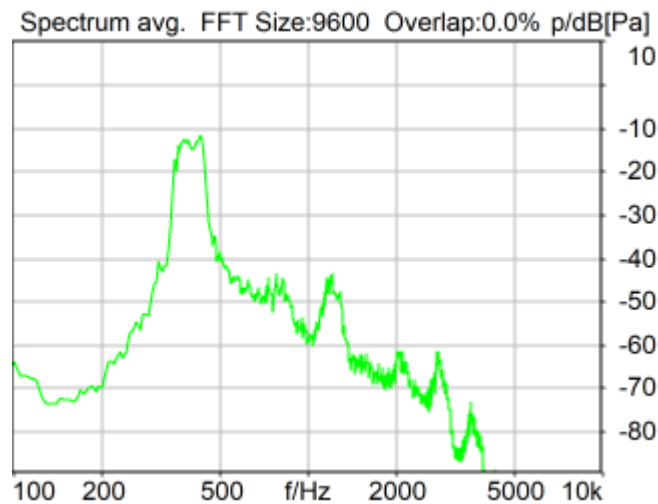
**Ok**

2023/11/10 16:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.26 dB (5.46%) Ok

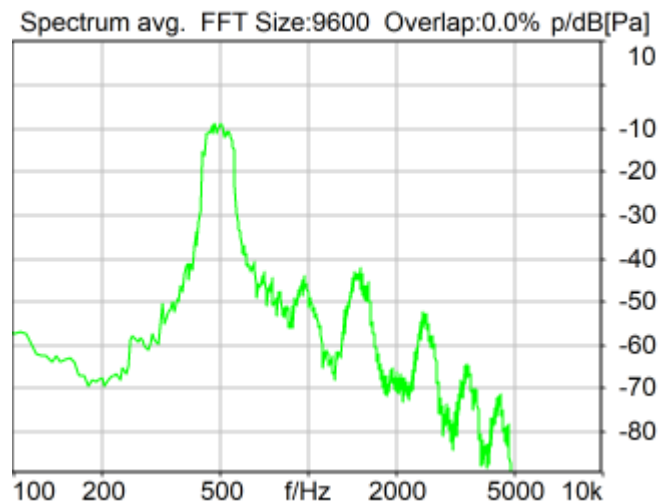
**Ok**

2023/11/10 16:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.10 dB (4.41%) Ok

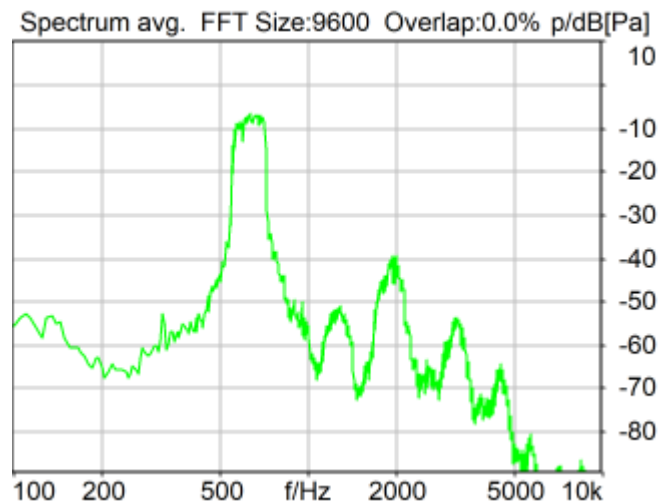
**Ok**

2023/11/10 16:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.43 dB (3.79%) Ok

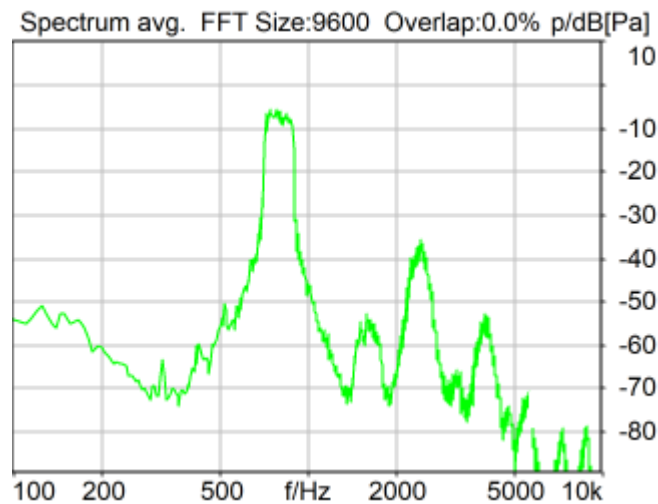
**Ok**

2023/11/10 16:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.97 dB (4.48%) Ok

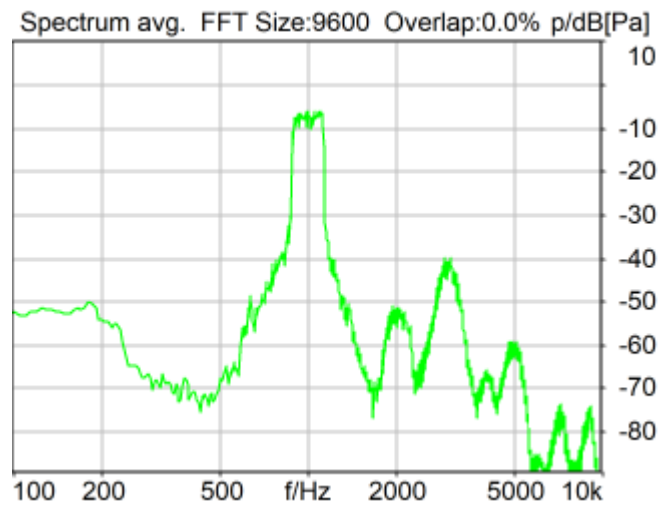
**Ok**

2023/11/10 16:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.02 dB (3.54%) Ok

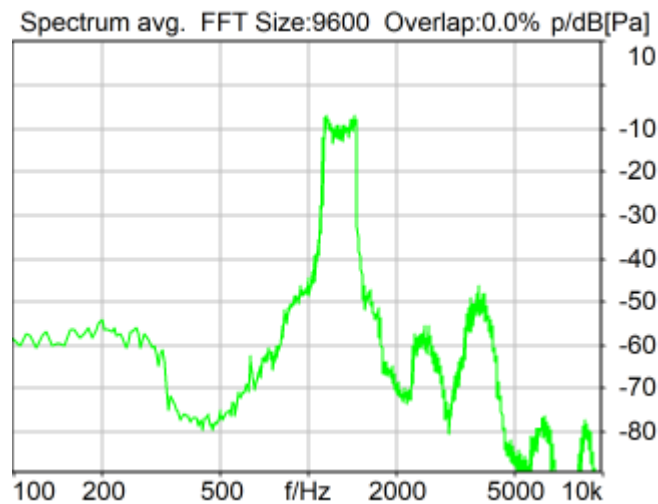
**Ok**

2023/11/10 16:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.26 dB (4.33%) Ok

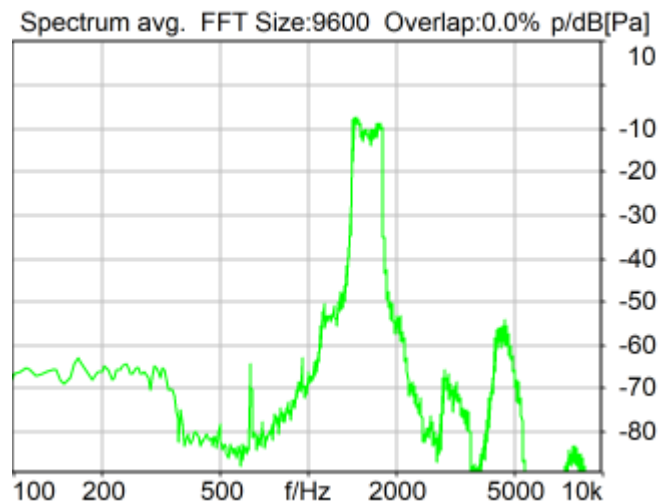
**Ok**

2023/11/10 16:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.86 dB (1.61%) Ok

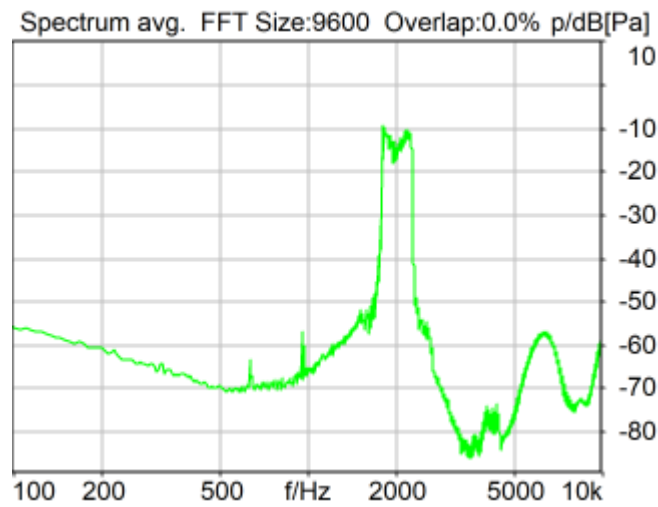
**Ok**

2023/11/10 16:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.02 dB (1.99%) Ok

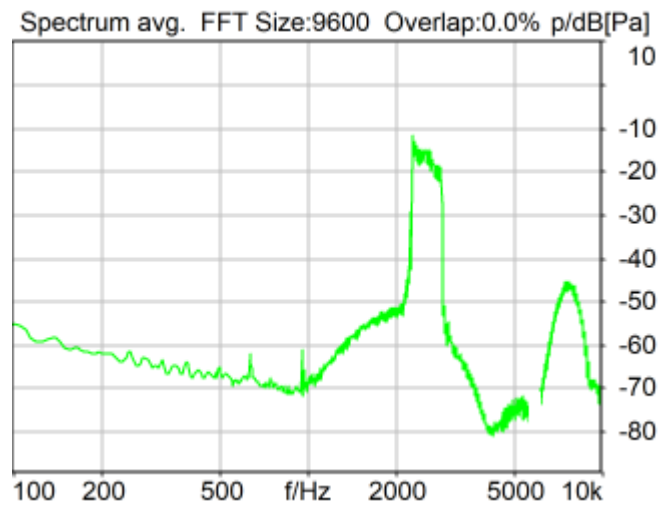
**Ok**

2023/11/10 16:59 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.06 dB (4.98%) Ok

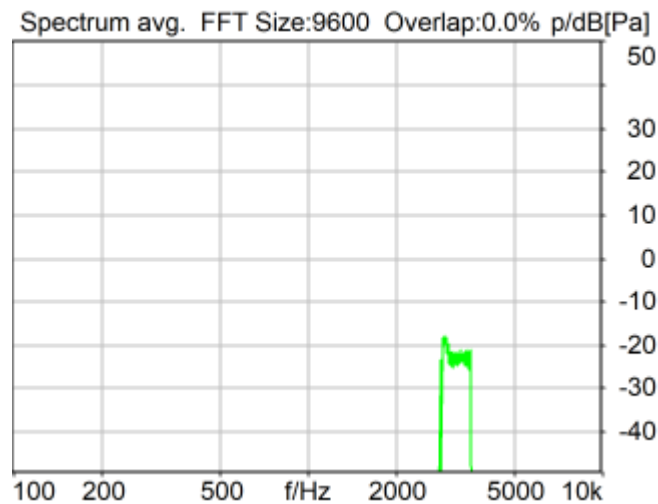
**Ok**

2023/11/10 16:59 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 36.61 dB (1.48%) Ok

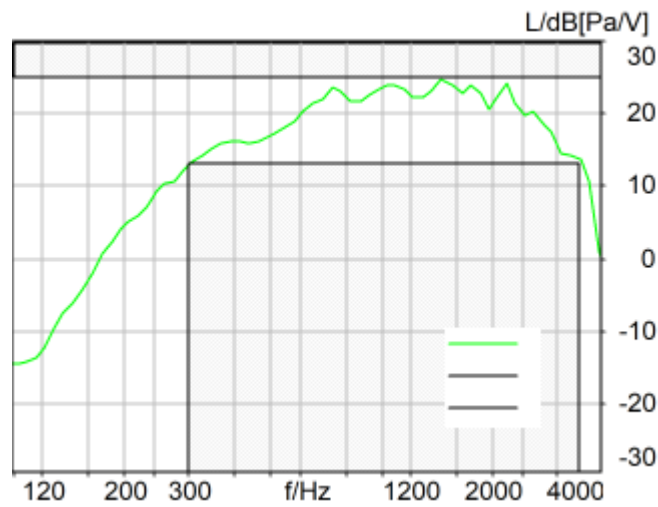
**Ok**

2023/11/10 17:00 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 8N FF HANB

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



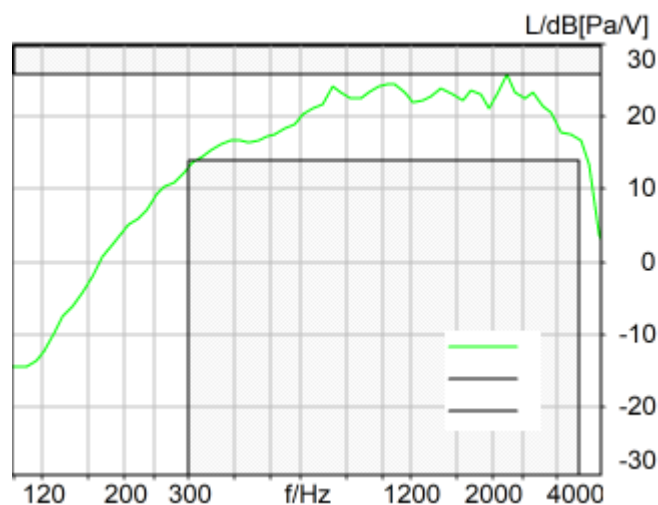
Absolute minimal distance  
0.41 dB at 1447.5 Hz Ok

Ok

2023/11/10 17:00 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
-0.15 dB at 2177.4 Hz Not Ok

**Not Ok**

2023/11/10 17:00 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/12 12:14             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                          |
|-----------------------------------------------|--------|---------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 118.4        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.71        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.37        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 25.13        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 26.68        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.34        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.86        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.85        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.95        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.08        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.16        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.77        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 41.41        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.00        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.58        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 37.85        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.37        | LTE Band                                                        |

|                                 |    |                                               |      |                                                                 |
|---------------------------------|----|-----------------------------------------------|------|-----------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N             |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 649.1 Hz | 1.53 | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.21 | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_2N |

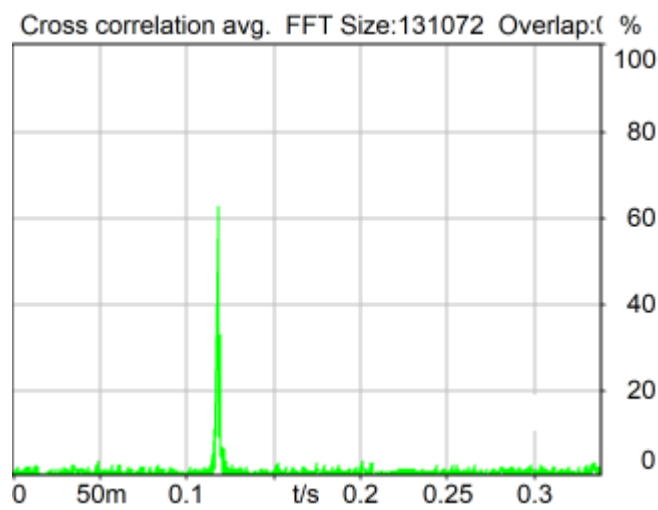
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF                                | 23 |
| 5.3 Frequency Response 2N DF                                | 24 |



## Overall Receive Delay WB

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



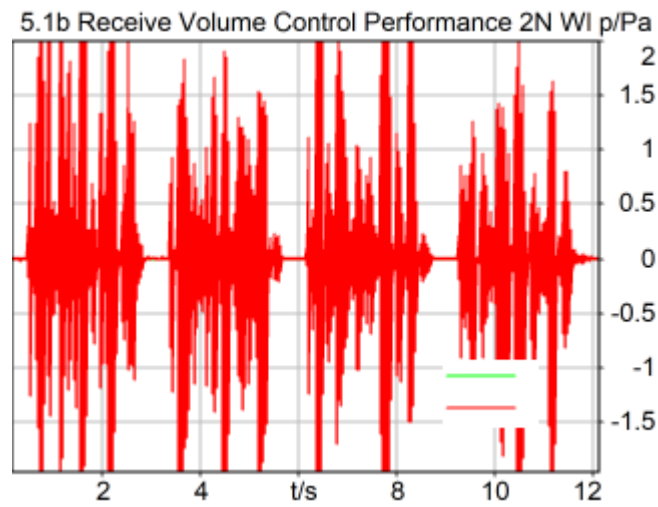
Delay (Cross): 118.4 ms

2023/11/12 12:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N WB**

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



Speech Level RCV: 84.71 dB[SPL], Act.: 80.86% Ok

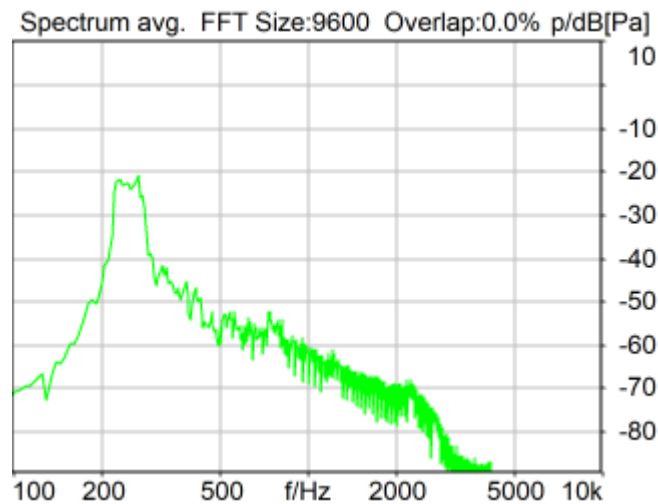
**Ok**

2023/11/12 12:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.37 dB (7.61%) Ok

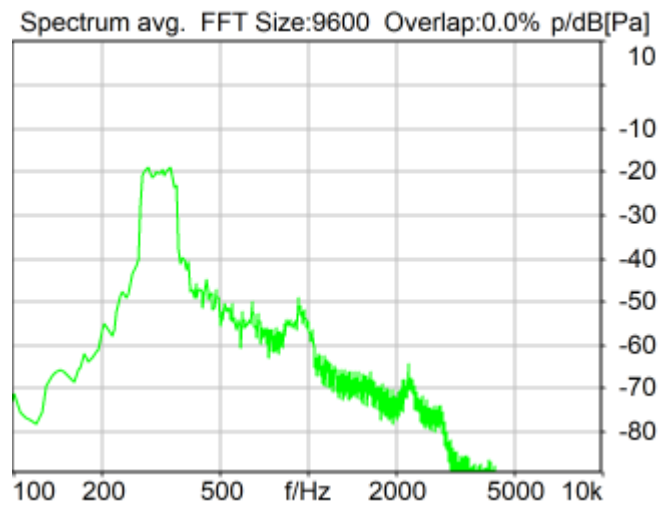
**Ok**

2023/11/12 12:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.13 dB (5.54%) Ok

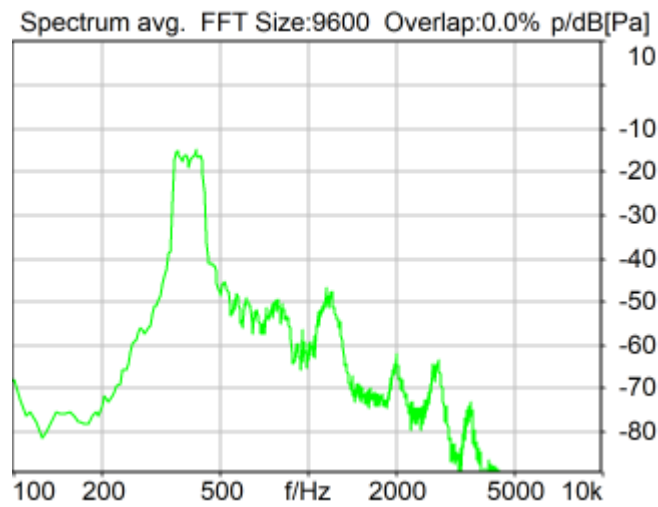
**Ok**

2023/11/12 12:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.68 dB (4.63%) Ok

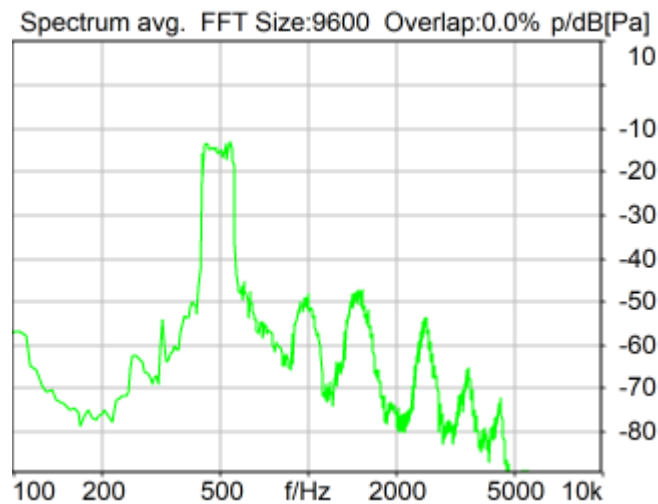
**Ok**

2023/11/12 12:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.34 dB (3.83%) Ok

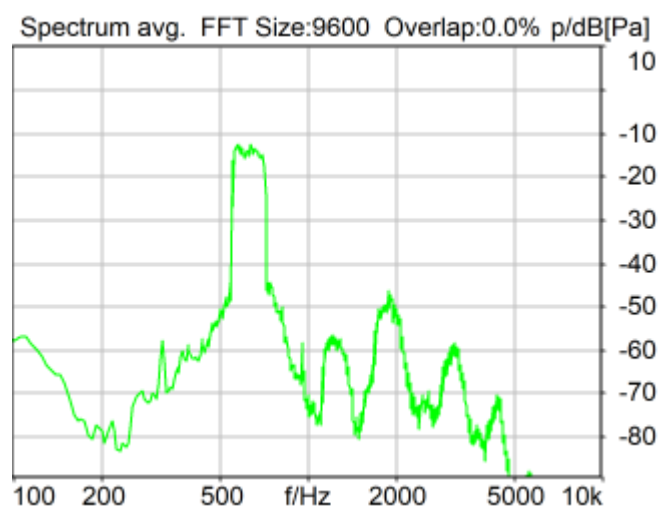
**Ok**

2023/11/12 12:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.86 dB (3.21%) Ok

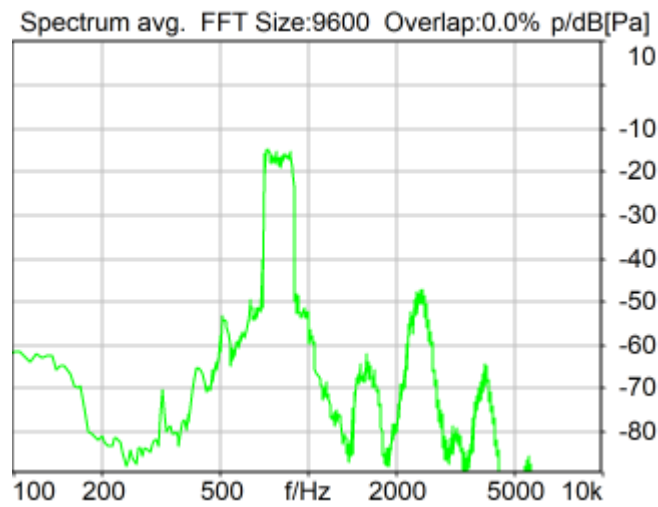
**Ok**

2023/11/12 12:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.85 dB (3.61%) Ok

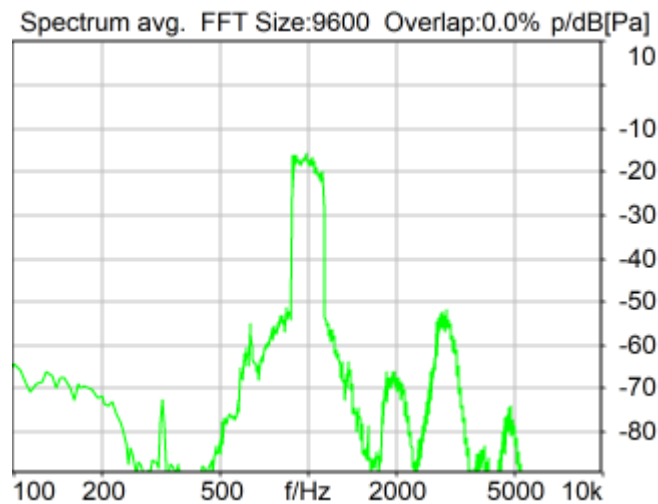
**Ok**

2023/11/12 12:07 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 31.95 dB (2.53%) Ok

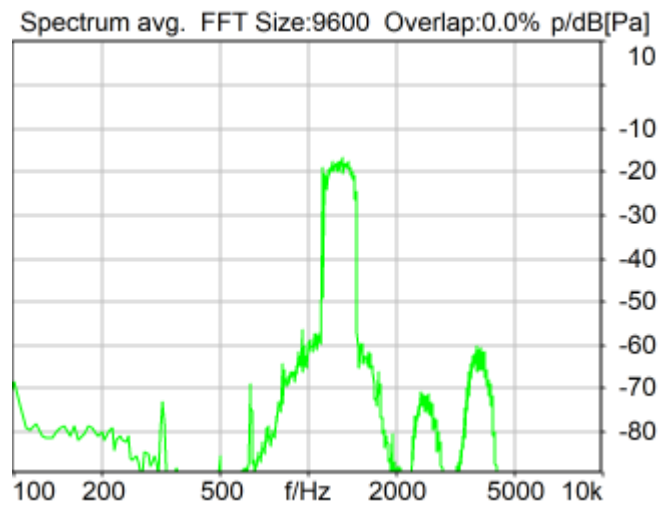
**Ok**

2023/11/12 12:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.08 dB (1.98%) Ok

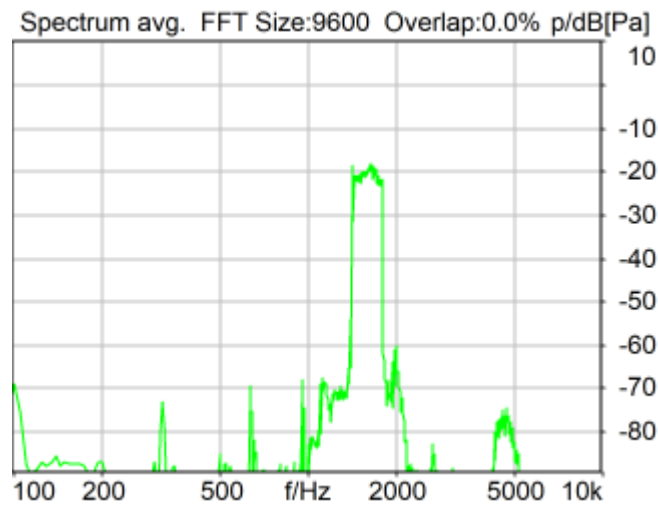
**Ok**

2023/11/12 12:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.16 dB (0.55%) Ok

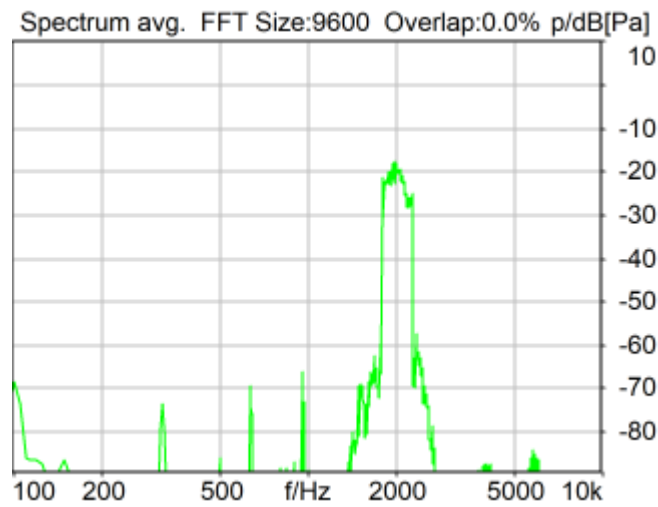
**Ok**

2023/11/12 12:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.77 dB (0.73%) Ok

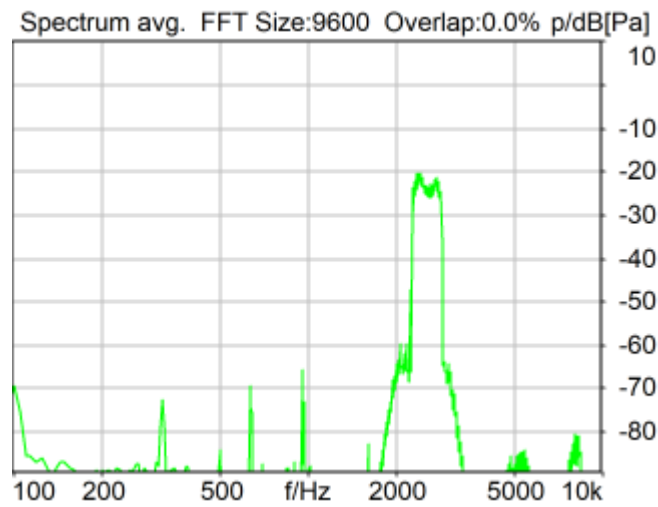
**Ok**

2023/11/12 12:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 41.41 dB (0.85%) Ok

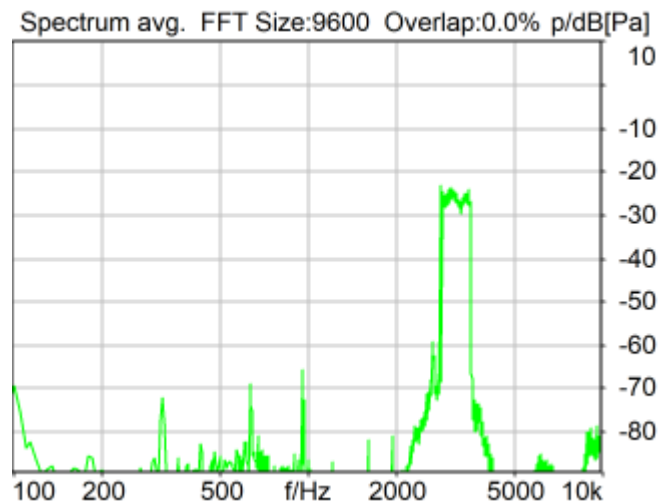
**Ok**

2023/11/12 12:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.00 dB (0.79%) Ok

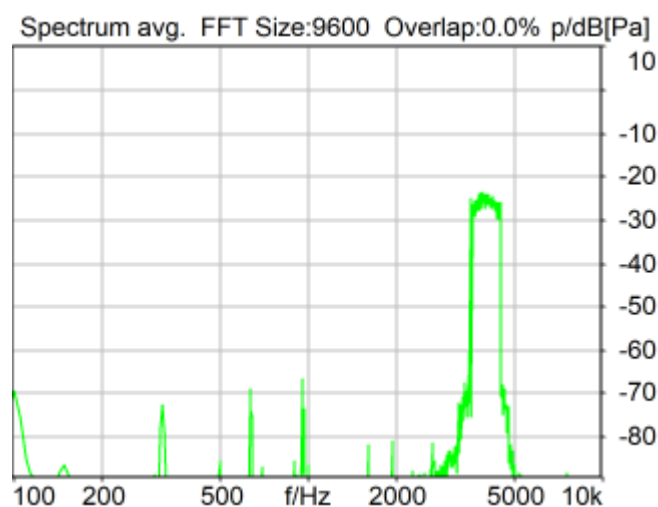
**Ok**

2023/11/12 12:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.58 dB (0.53%) Ok

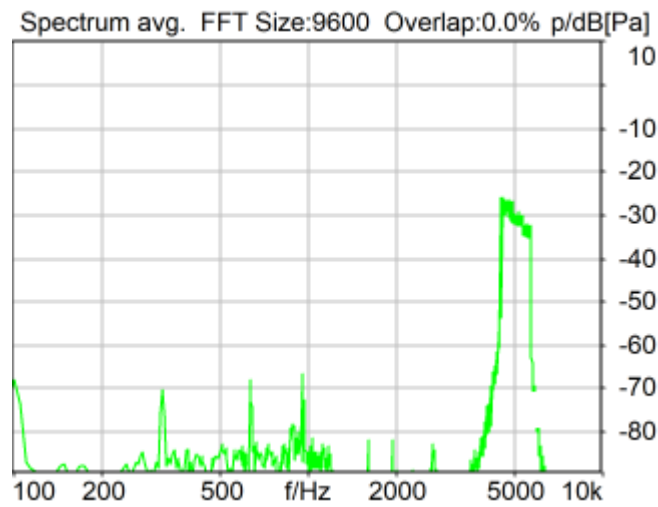
**Ok**

2023/11/12 12:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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**

2023/11/12 12:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.37 dB |
| 2      | 315Hz     | 25.13 dB |
| 3      | 400Hz     | 26.68 dB |
| 4      | 500Hz     | 28.34 dB |
| 5      | 630Hz     | 29.86 dB |
| 6      | 800Hz     | 28.85 dB |
| 7      | 1000Hz    | 31.95 dB |
| 8      | 1250Hz    | 34.08 dB |
| 9      | 1600Hz    | 45.16 dB |
| 10     | 2000Hz    | 42.77 dB |
| 11     | 2500Hz    | 41.41 dB |
| 12     | 3150Hz    | 42.00 dB |
| 13     | 4000Hz    | 45.58 dB |
| 14     | 5000Hz    | 37.85 dB |

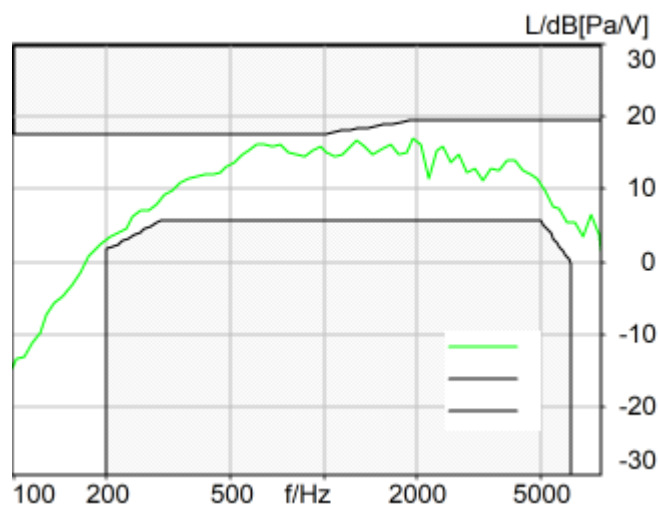
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.37dB at 250Hz.

2023/11/12 12:13 ACQUA

## 5.3 Frequency Response 2N FF

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



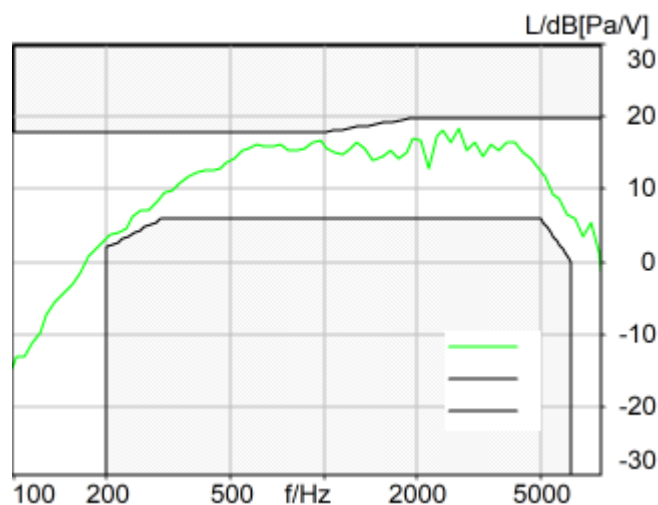
Absolute minimal distance  
1.53 dB at 649.1 Hz Ok

Ok

2023/11/12 12:13 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.21 dB at 974.0 Hz Ok

Ok

2023/11/12 12:13 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/12 12:25             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                          |
|-----------------------------------------------|--------|---------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 199.0        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]          | 89.10        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.82        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.17        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 25.01        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.84        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.15        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.43        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.12        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.51        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.56        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.29        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.58        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 37.44        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.79        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.58        | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.82        | LTE Band                                                        |

|                                 |    |                                               |      |                                                                 |
|---------------------------------|----|-----------------------------------------------|------|-----------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N             |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 217.7 Hz | 1.54 | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.30 | LTE Band<br>71_20M_QPSK_100RB_0Offset_EVS WB 64Kbps_Ch133322_8N |

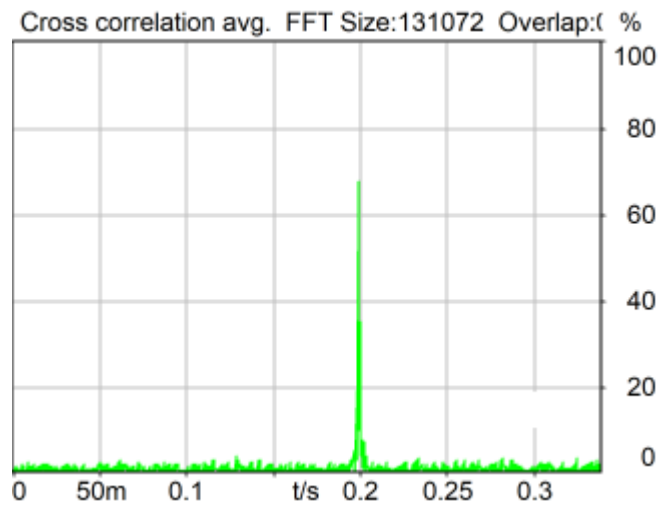
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF                                | 23 |
| 5.3 Frequency Response 8N DF                                | 24 |



## **Overall Receive Delay WB**

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



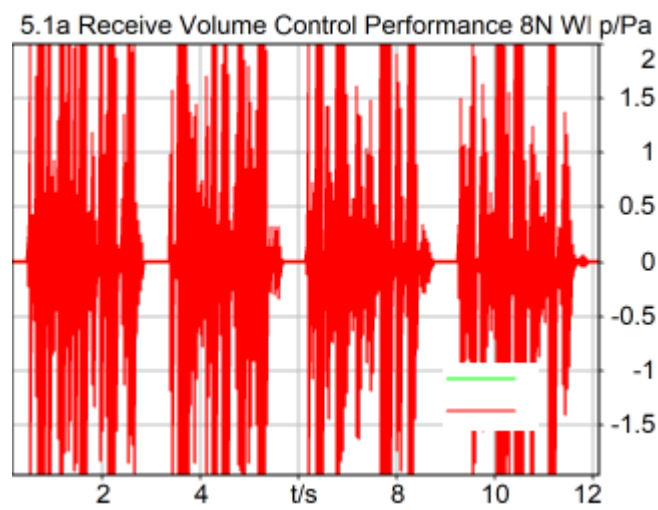
Delay (Cross): 199.0 ms

2023/11/12 12:15 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N WB**

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



Speech Level RCV: 89.10 dB[SPL], Act.: 80.72% Ok

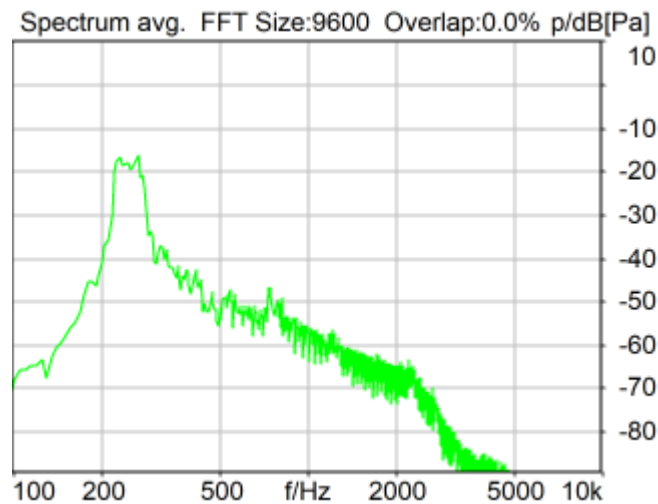
**Ok**

2023/11/12 12:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.82 dB (7.23%) Ok

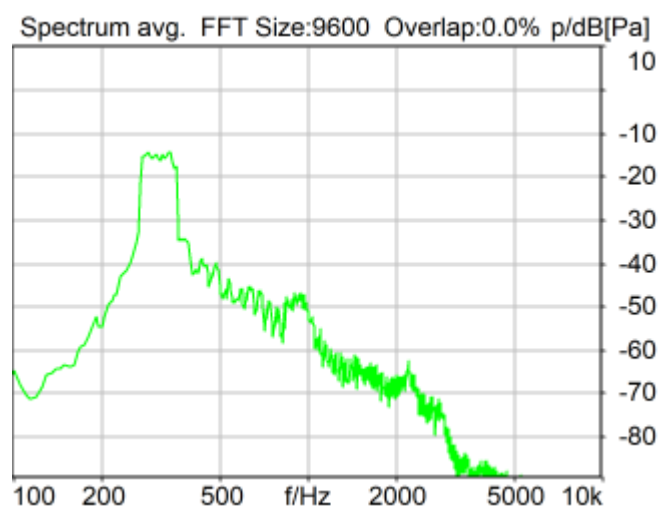
**Ok**

2023/11/12 12:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.17 dB (6.19%) Ok

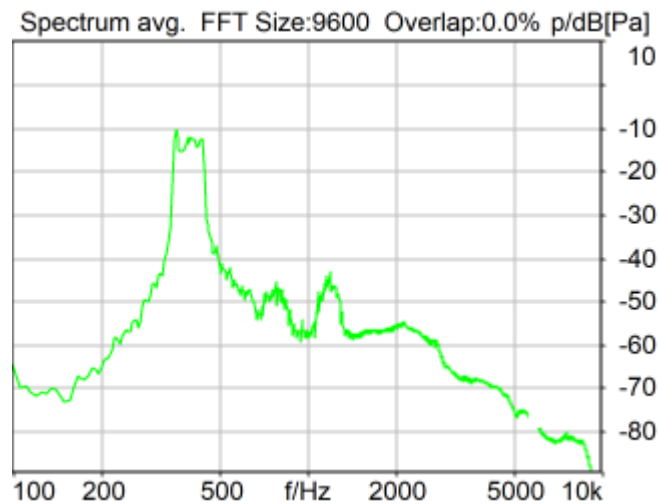
**Ok**

2023/11/12 12:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.01 dB (5.62%) Ok

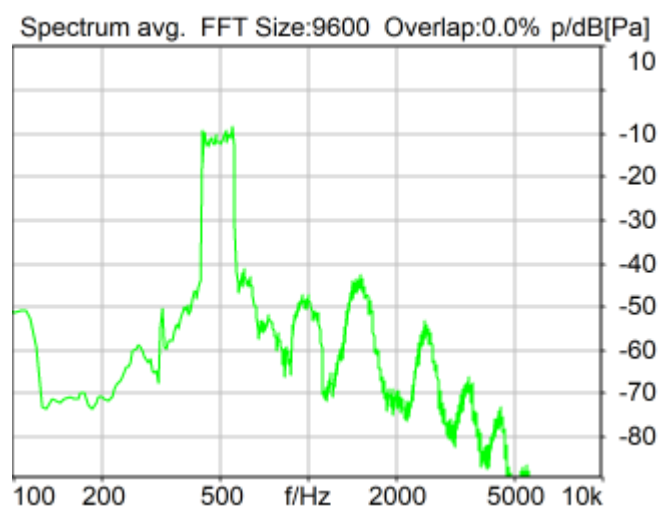
**Ok**

2023/11/12 12:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.84 dB (3.61%) Ok

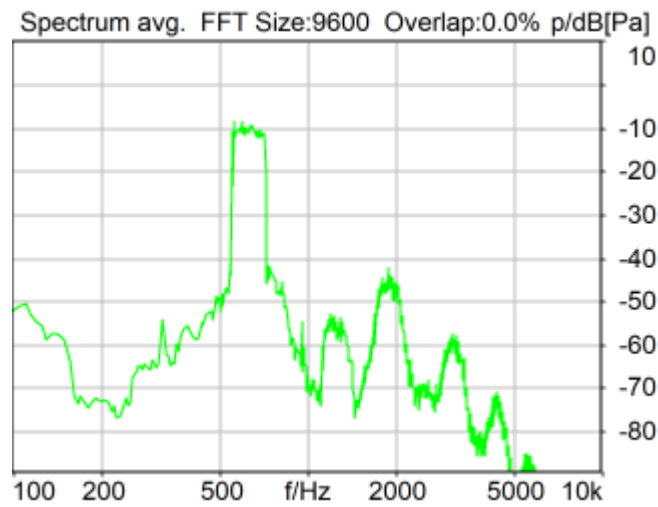
**Ok**

2023/11/12 12:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.15 dB (3.11%) Ok

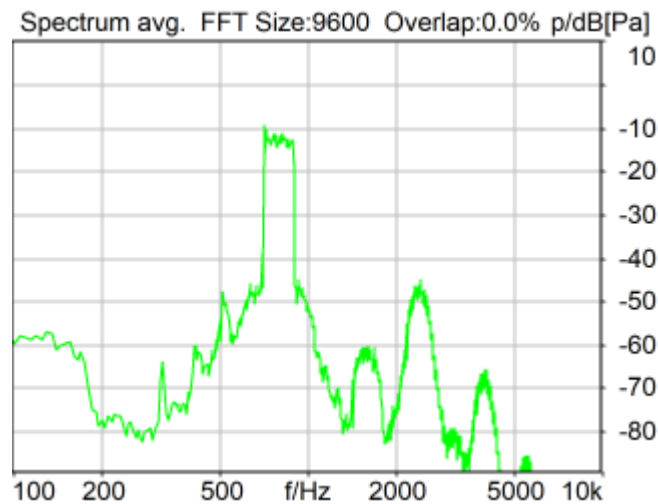
**Ok**

2023/11/12 12:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.43 dB (3.01%) Ok

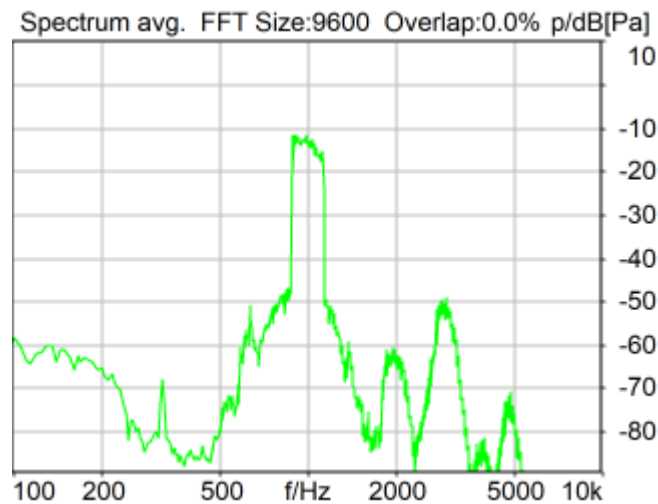
**Ok**

2023/11/12 12:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 33.12 dB (2.21%) Ok

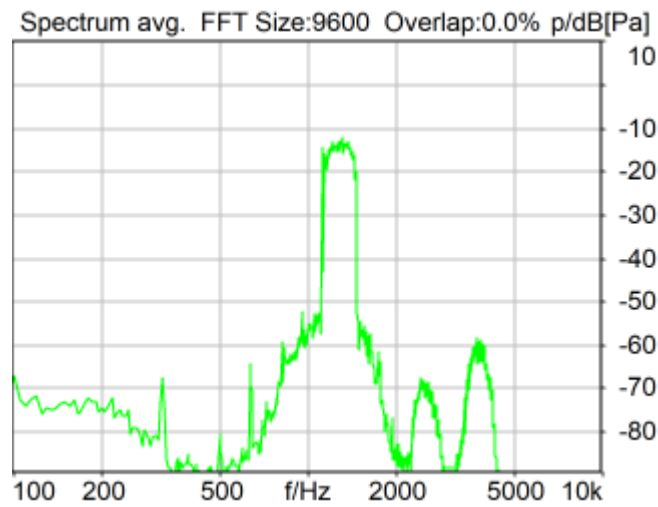
**Ok**

2023/11/12 12:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.51 dB (1.88%) Ok

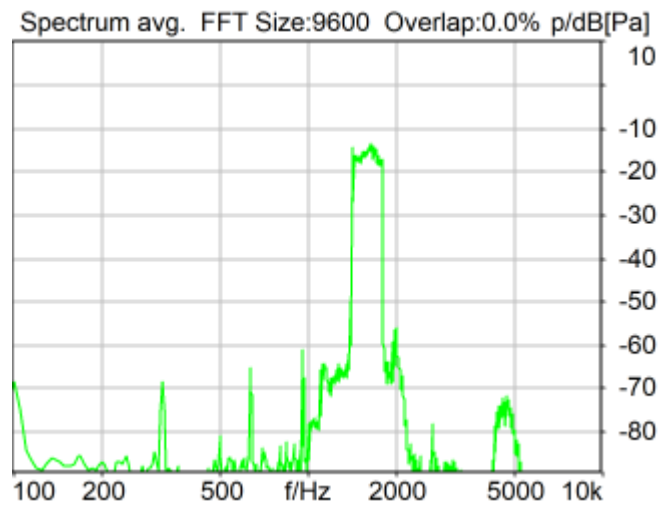
**Ok**

2023/11/12 12:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.56 dB (0.53%) Ok

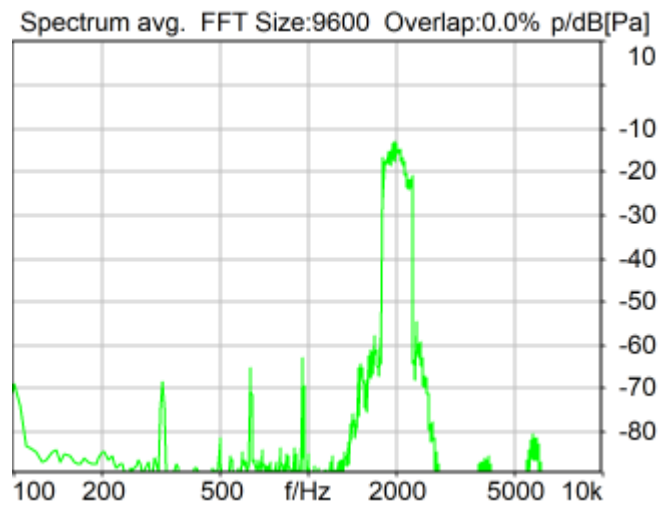
**Ok**

2023/11/12 12:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.29 dB (0.61%) Ok

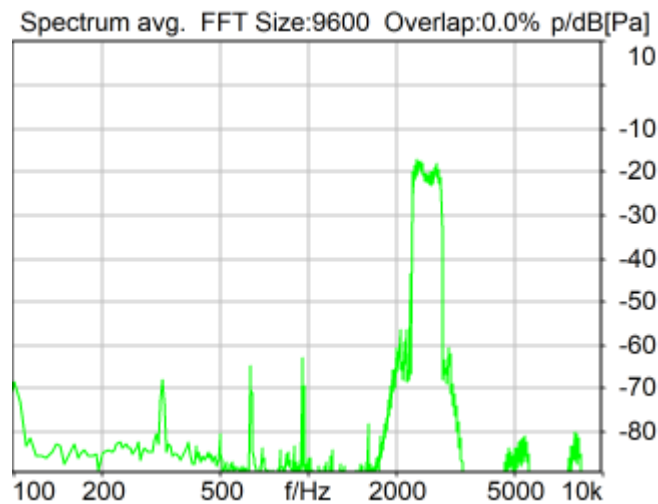
**Ok**

2023/11/12 12:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.58 dB (0.74%) Ok

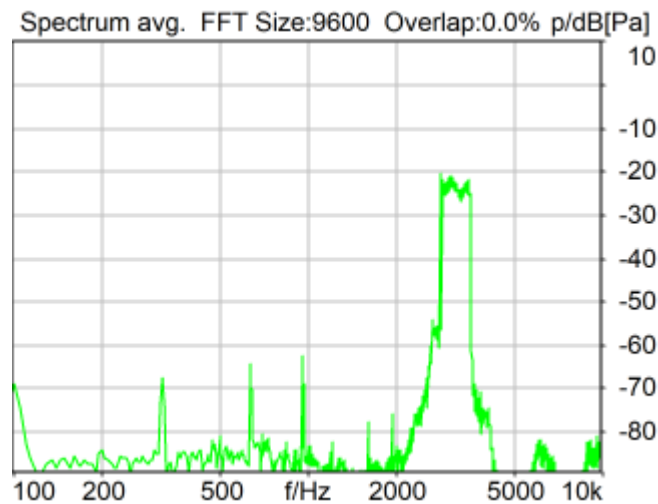
**Ok**

2023/11/12 12:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.44 dB (1.34%) Ok

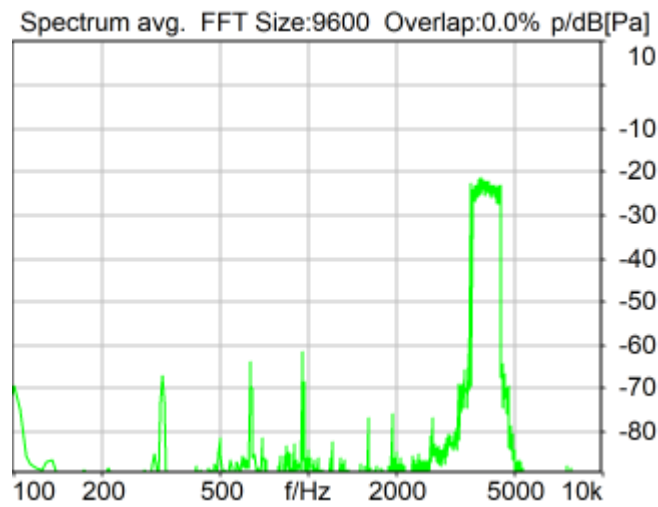
**Ok**

2023/11/12 12:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.79 dB (0.58%) Ok

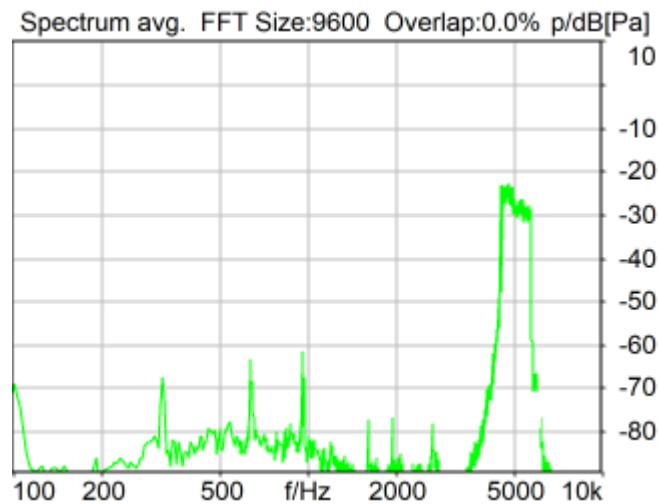
**Ok**

2023/11/12 12:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.58 dB (1.66%) Ok

**Ok**

2023/11/12 12:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.82 dB |
| 2      | 315Hz     | 24.17 dB |
| 3      | 400Hz     | 25.01 dB |
| 4      | 500Hz     | 28.84 dB |
| 5      | 630Hz     | 30.15 dB |
| 6      | 800Hz     | 30.43 dB |
| 7      | 1000Hz    | 33.12 dB |
| 8      | 1250Hz    | 34.51 dB |
| 9      | 1600Hz    | 45.56 dB |
| 10     | 2000Hz    | 44.29 dB |
| 11     | 2500Hz    | 42.58 dB |
| 12     | 3150Hz    | 37.44 dB |
| 13     | 4000Hz    | 44.79 dB |
| 14     | 5000Hz    | 35.58 dB |

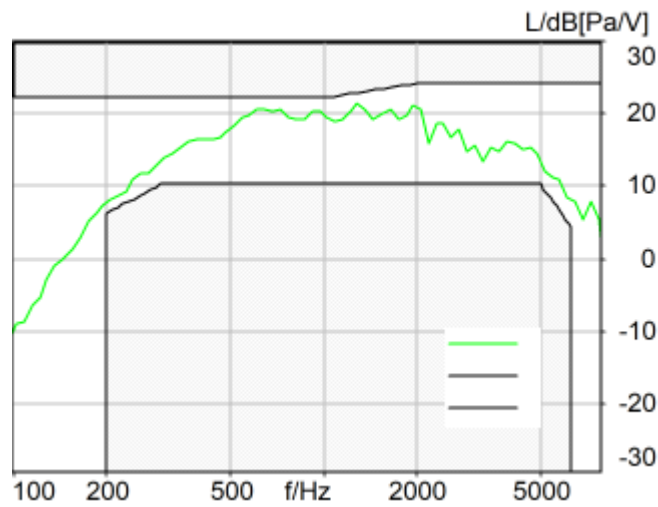
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.82dB at 250Hz.

2023/11/12 12:24 ACQUA

## 5.3 Frequency Response 8N FF

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



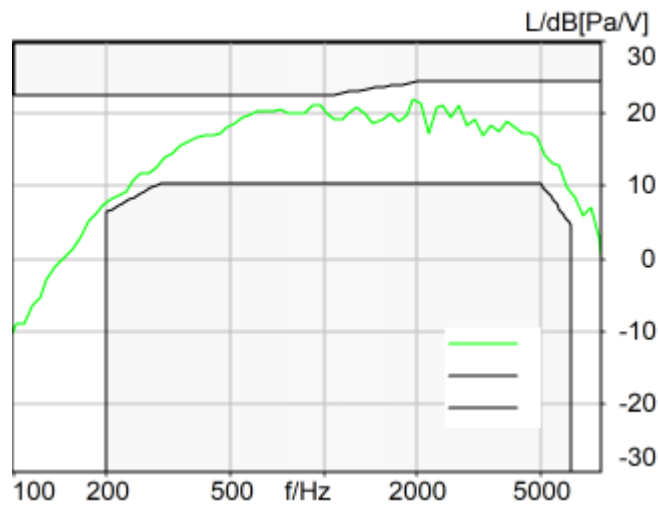
Absolute minimal distance  
1.54 dB at 217.7 Hz Ok

Ok

2023/11/12 12:25 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
1.30 dB at 974.0 Hz Ok

Ok

2023/11/12 12:25 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:33             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                          |
|-----------------------------------------------|--------|------------------------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]                             | 99.6         | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]                         | 86.37        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.28        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.12        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.44        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.62        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.75        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.87        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 32.71        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 33.11        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 41.30        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 35.25        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.3 Frequency Response 2N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 2177.4 Hz | 0.30         | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |
| 5.3 Frequency Response 2N DF HANB             | Not Ok | Min. dist. to tolerance scheme [dB], 2177.4 Hz | -0.07        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_2N |

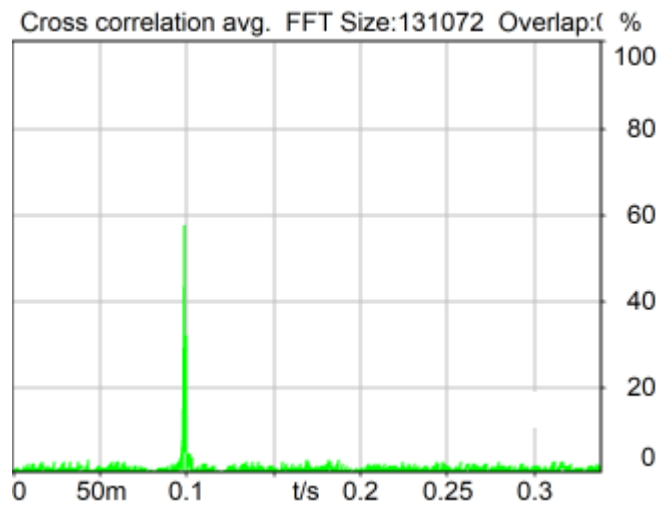
---

|                                               |    |
|-----------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF HANB             | 17 |
| 5.3 Frequency Response 2N DF HANB             | 18 |



## Overall Receive Delay NB

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



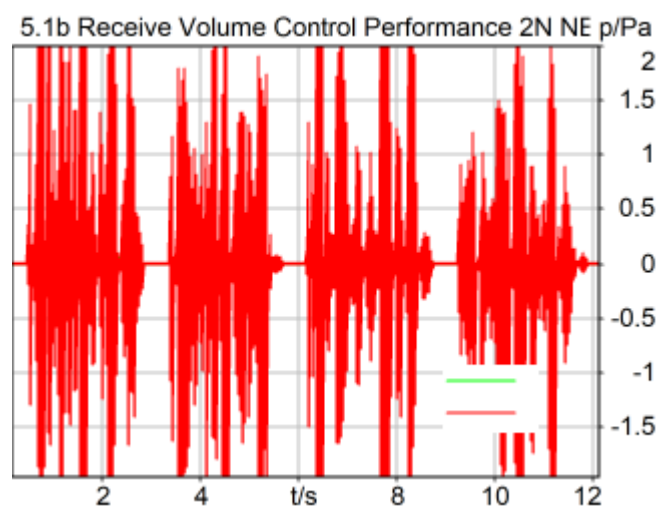
Delay (Cross): 99.6 ms

2023/11/10 17:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N NB**

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



Speech Level RCV: 86.37 dB[SPL], Act.: 80.69% Ok

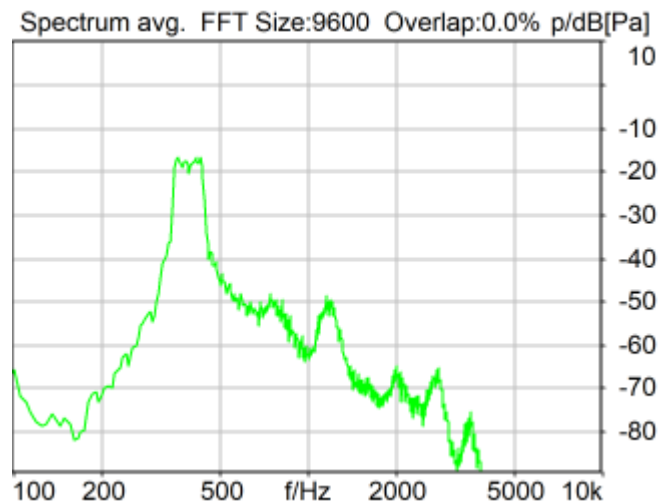
**Ok**

2023/11/10 17:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.28 dB (5.45%) Ok

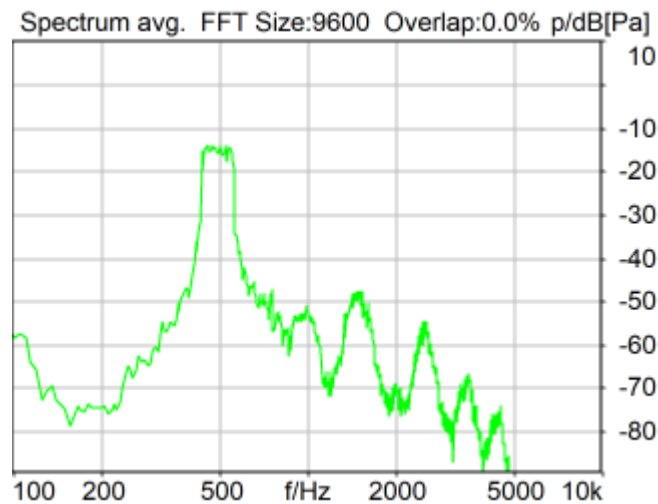
**Ok**

2023/11/10 17:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.2 RCV Distortion and Noise - 500 Hz NB**

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



Distortion (Noise) RCV (packed): 27.12 dB (4.41%) Ok

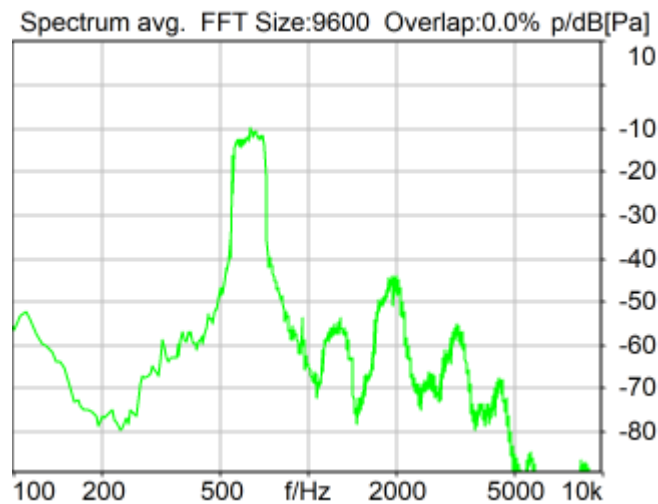
**Ok**

2023/11/10 17:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.44 dB (3.78%) Ok

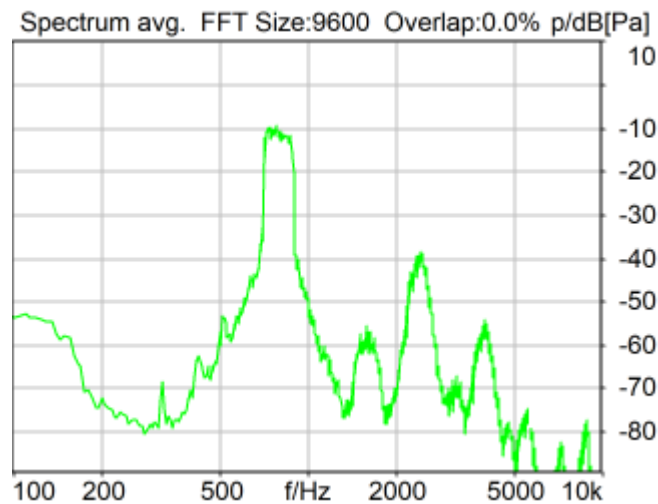
**Ok**

2023/11/10 17:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.62 dB (5.24%) Ok

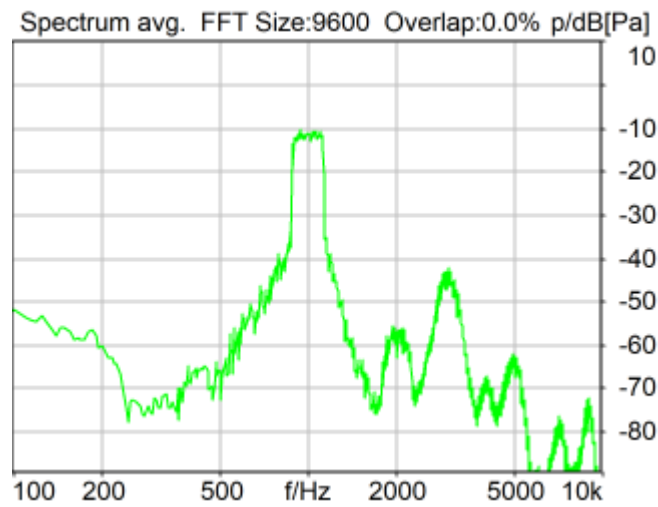
**Ok**

2023/11/10 17:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.75 dB (4.60%) Ok

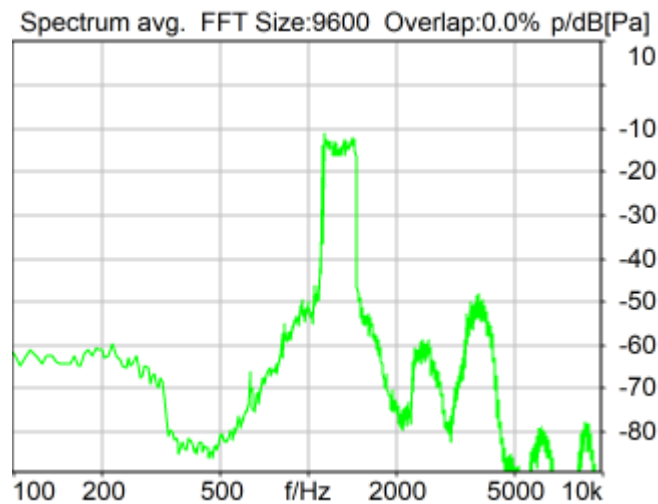
**Ok**

2023/11/10 17:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.87 dB (3.21%) Ok

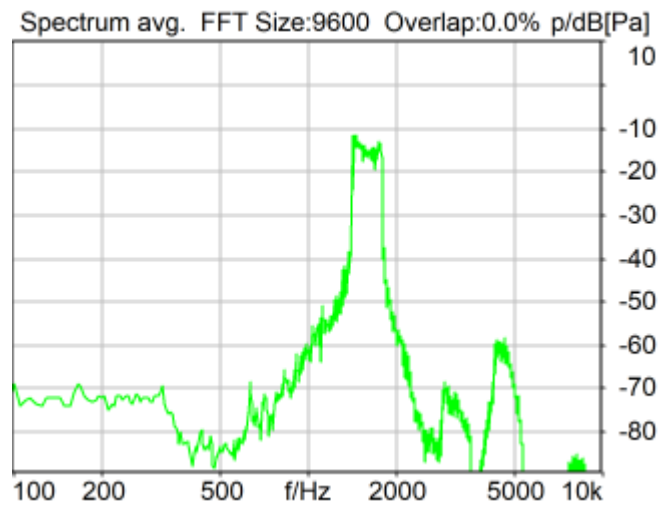
**Ok**

2023/11/10 17:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 32.71 dB (2.31%) Ok

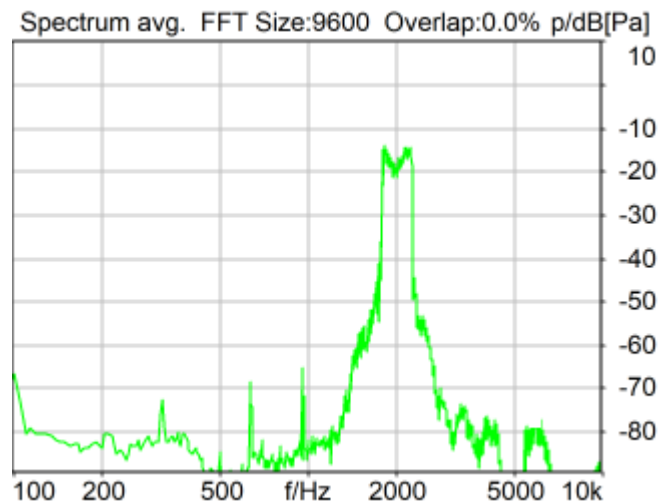
**Ok**

2023/11/10 17:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 33.11 dB (2.21%) Ok

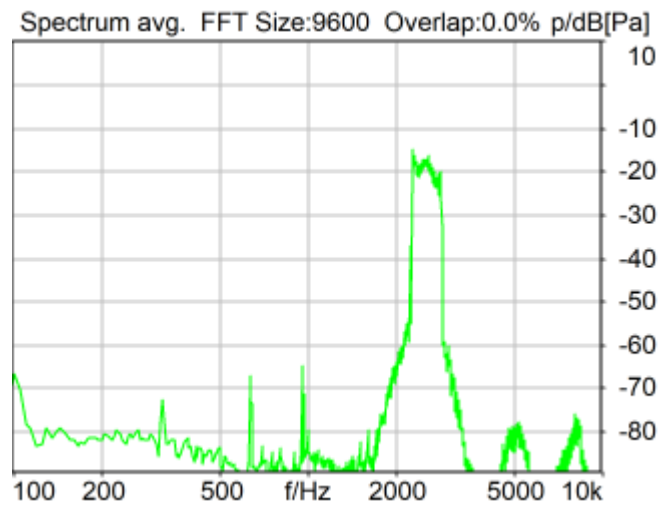
**Ok**

2023/11/10 17:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 41.30 dB (0.86%) Ok

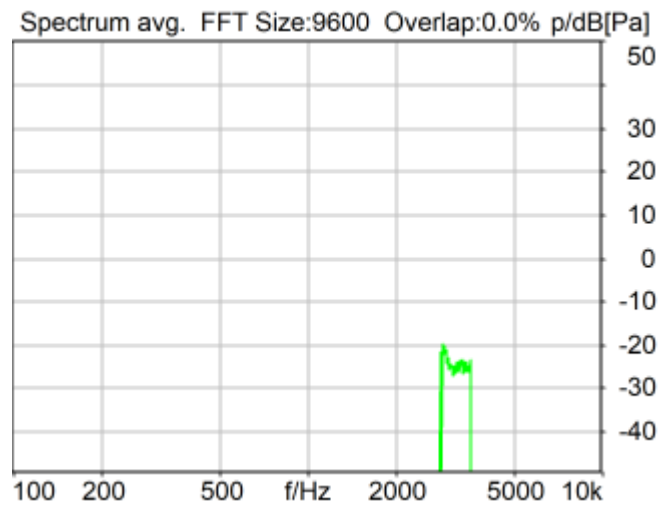
**Ok**

2023/11/10 17:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.25 dB (1.73%) Ok

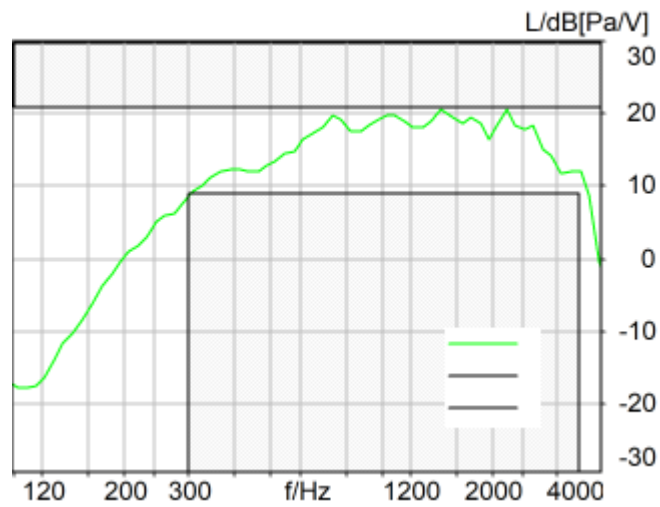
**Ok**

2023/11/10 17:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 2N FF HANB

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



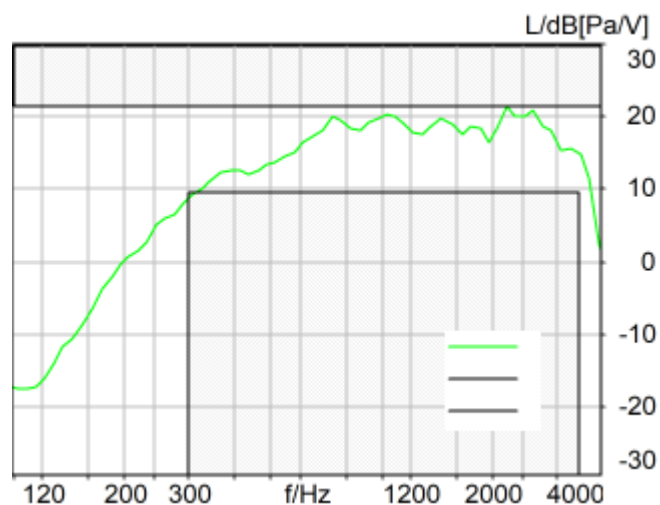
Absolute minimal distance  
0.30 dB at 2177.4 Hz Ok

Ok

2023/11/10 17:13 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
-0.07 dB at 2177.4 Hz Not Ok

**Not Ok**

2023/11/10 17:14 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 12_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23095_8N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:35             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description                       | Single Value | Object                                                             |
|-----------------------------------------------|--------|------------------------------------------------|--------------|--------------------------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]                             | 101.0        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.1a Receive Volume Control Performance 8N NB | Ok     | Speech Level [dB[SPL]]                         | 90.52        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 400 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.72        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 500 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.30        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 630 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.64        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 800 Hz NB      | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.87        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.32        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 30.75        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.85        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 35.80        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.63        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB     | Ok     | Distortion (Noise) [dB], 0.0 dB                | 35.77        | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.3 Frequency Response 8N FF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 305.9 Hz  | 0.34         | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |
| 5.3 Frequency Response 8N DF HANB             | Ok     | Min. dist. to tolerance scheme [dB], 2177.4 Hz | 0.11         | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS<br>NB 24.4Kbps_Ch23095_8N |

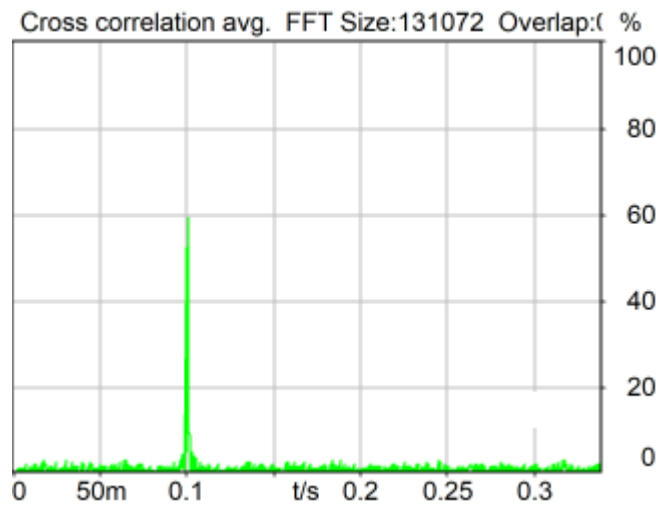
---

|                                               |    |
|-----------------------------------------------|----|
| Overall Receive Delay NB                      | 5  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF HANB             | 17 |
| 5.3 Frequency Response 8N DF HANB             | 18 |



## Overall Receive Delay NB

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



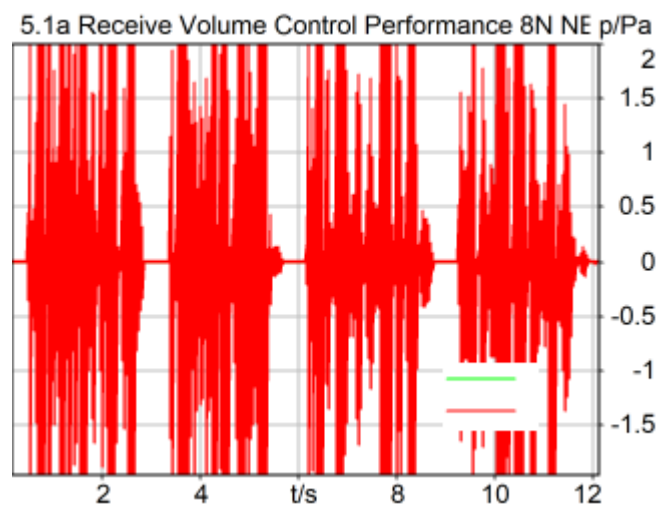
Delay (Cross): 101.0 ms

2023/11/10 17:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N NB**

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



Speech Level RCV: 90.52 dB[SPL], Act.: 81.00% Ok

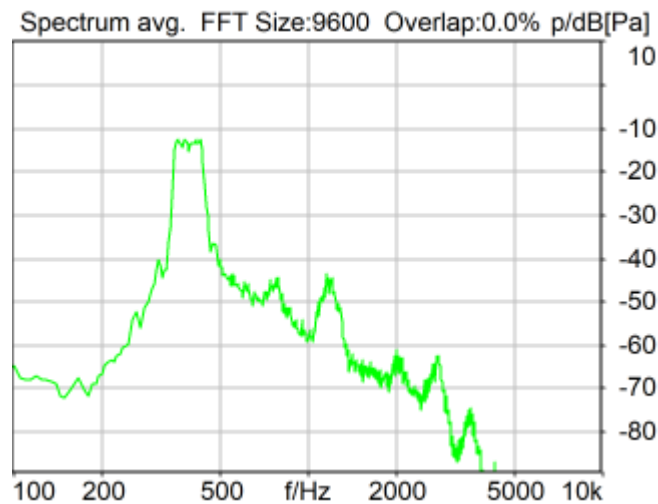
**Ok**

2023/11/10 17:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.72 dB (5.17%) Ok

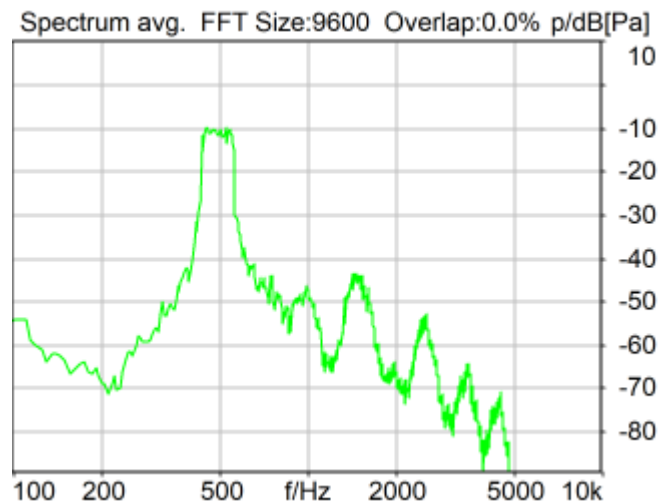
**Ok**

2023/11/10 17:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.30 dB (4.32%) Ok

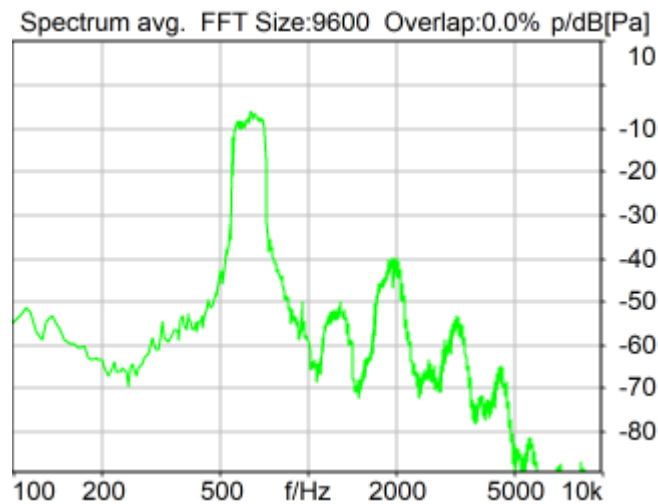
**Ok**

2023/11/10 17:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.64 dB (3.70%) Ok

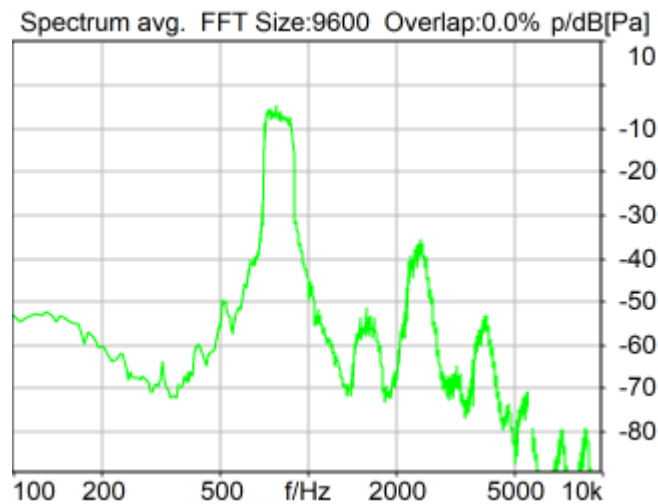
**Ok**

2023/11/10 17:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.87 dB (4.53%) Ok

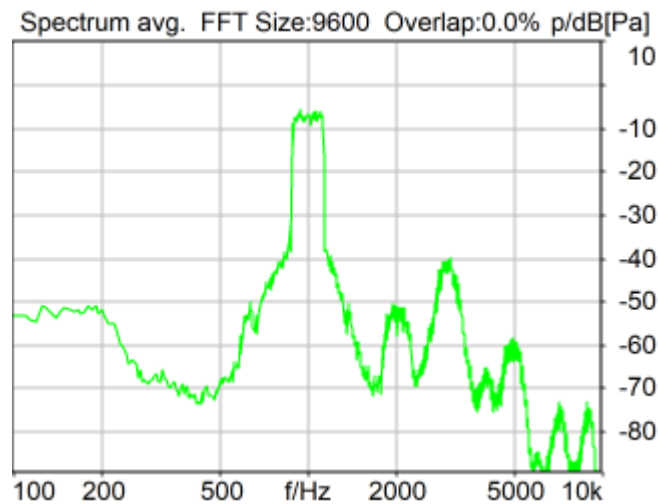
**Ok**

2023/11/10 17:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.32 dB (3.42%) Ok

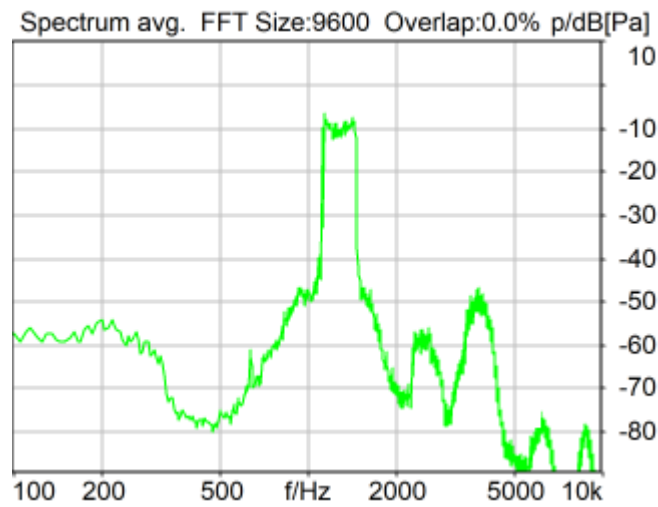
**Ok**

2023/11/10 17:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.75 dB (2.90%) Ok

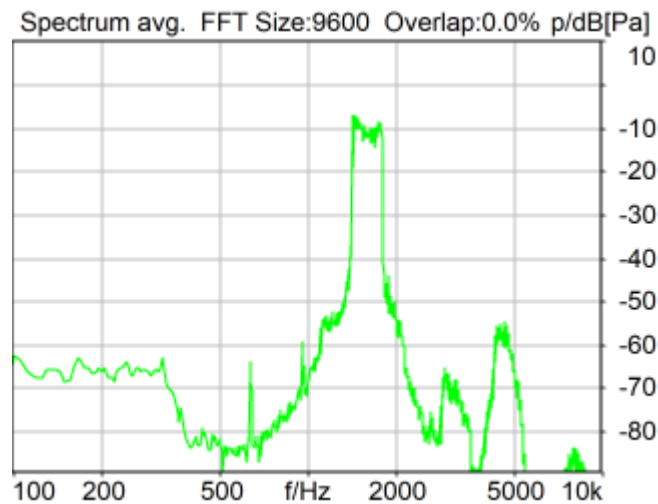
**Ok**

2023/11/10 17:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.85 dB (1.28%) Ok

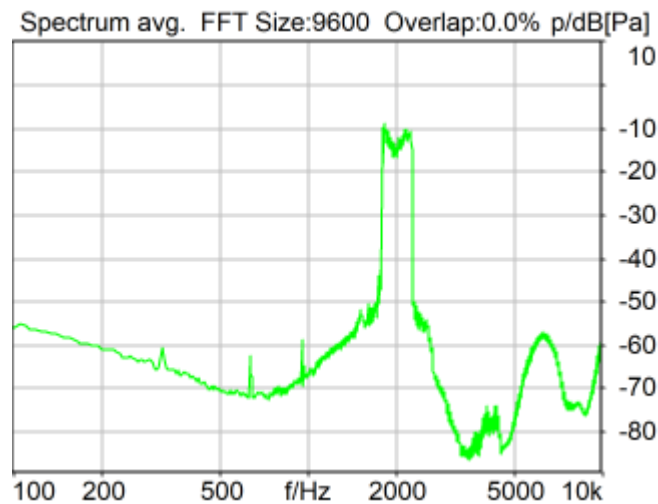
**Ok**

2023/11/10 17:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.80 dB (1.62%) Ok

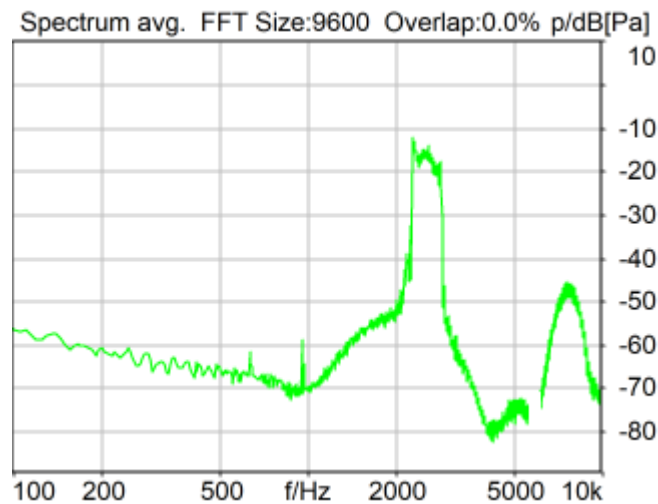
**Ok**

2023/11/10 17:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.63 dB (5.23%) Ok

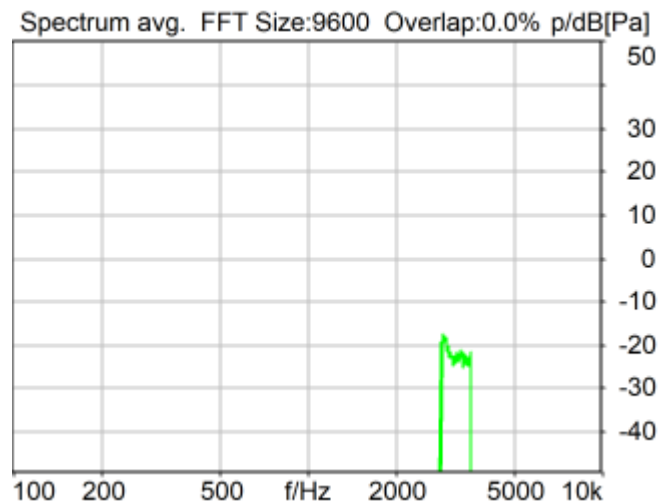
**Ok**

2023/11/10 17:21 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.77 dB (1.63%) Ok

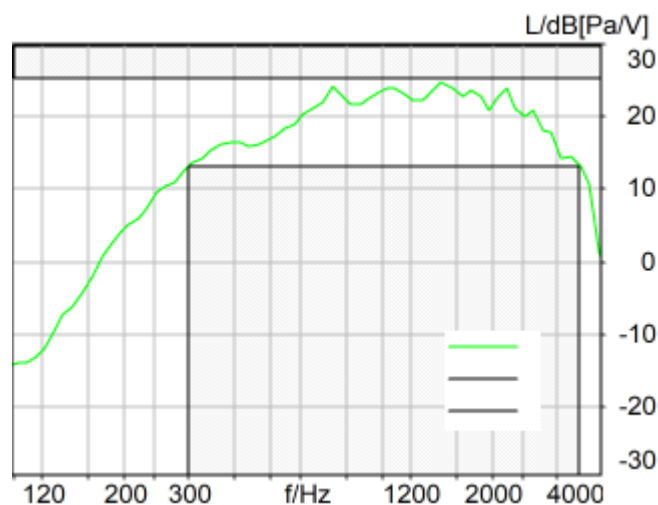
**Ok**

2023/11/10 17:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N FF HANB

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



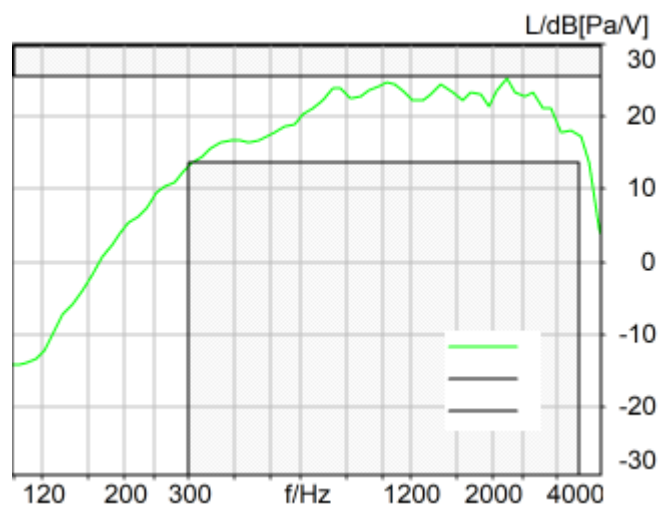
Absolute minimal distance  
0.34 dB at 305.9 Hz Ok

Ok

2023/11/10 17:22 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
0.11 dB at 2177.4 Hz Ok

Ok

2023/11/10 17:22 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Measurement Object | LTE Band 12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_2N |
|--------------------|------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:37             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                            |
|-----------------------------------------------|--------|---------------------------------|--------------|-------------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 98.9         | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.81        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 23.19        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.89        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.72        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.79        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.12        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.38        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.97        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.10        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.22        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.34        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.97        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.54        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.51        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.29        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 23.19        | LTE Band                                                          |

|                                 |    |                                               |      |                                                               |
|---------------------------------|----|-----------------------------------------------|------|---------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_2N             |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz | 1.48 | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.20 | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_2N |

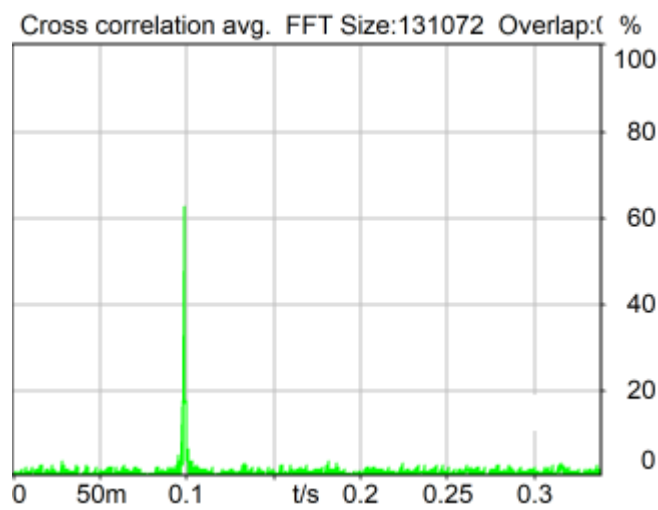
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF                                | 23 |
| 5.3 Frequency Response 2N DF                                | 24 |



## Overall Receive Delay WB

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



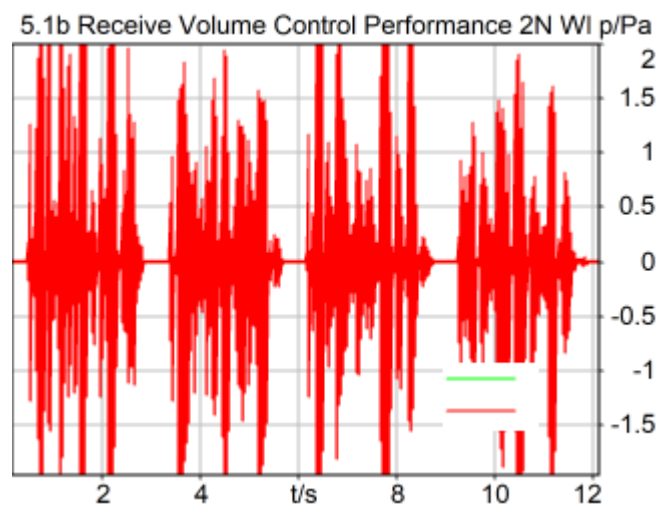
Delay (Cross): 98.9 ms

2023/11/12 12:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N WB**

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



Speech Level RCV: 84.81 dB[SPL], Act.: 80.54% Ok

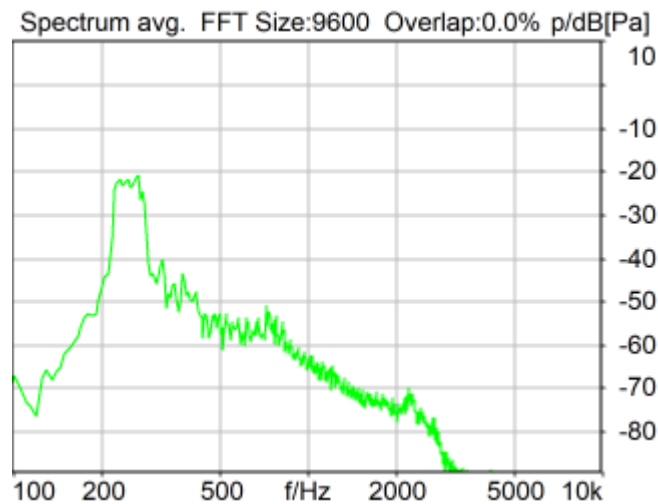
**Ok**

2023/11/12 12:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 23.19 dB (6.93%) Ok

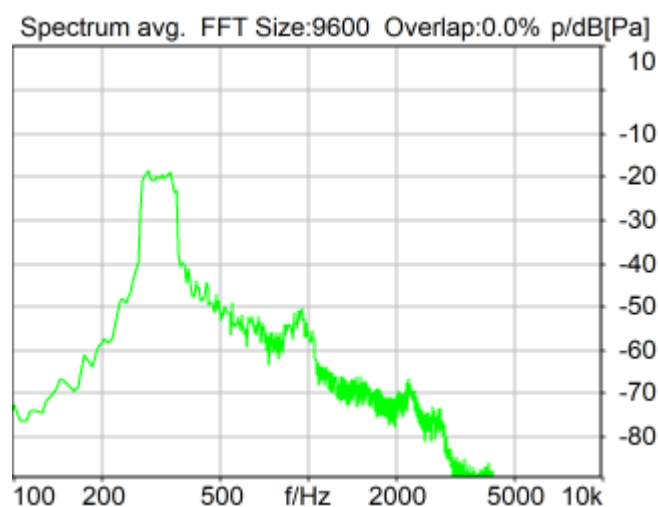
**Ok**

2023/11/12 12:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.89 dB (5.70%) Ok

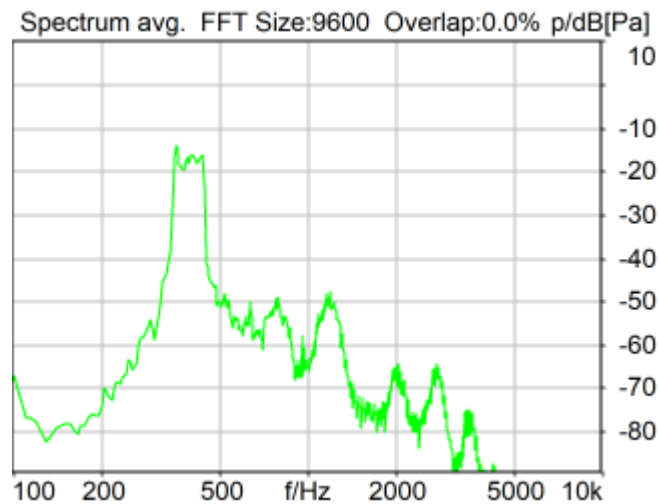
**Ok**

2023/11/12 12:29 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.72 dB (4.11%) Ok

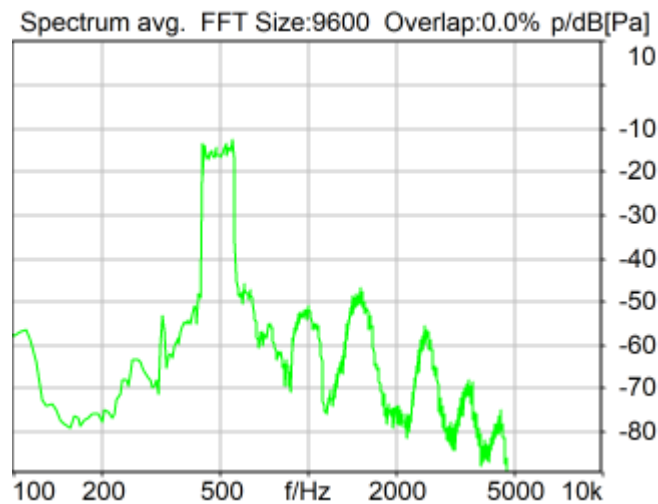
**Ok**

2023/11/12 12:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.79 dB (3.63%) Ok

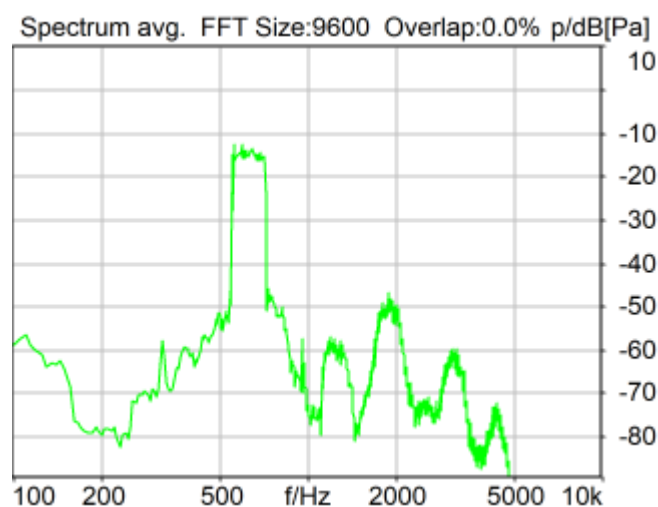
**Ok**

2023/11/12 12:30 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.12 dB (3.12%) Ok

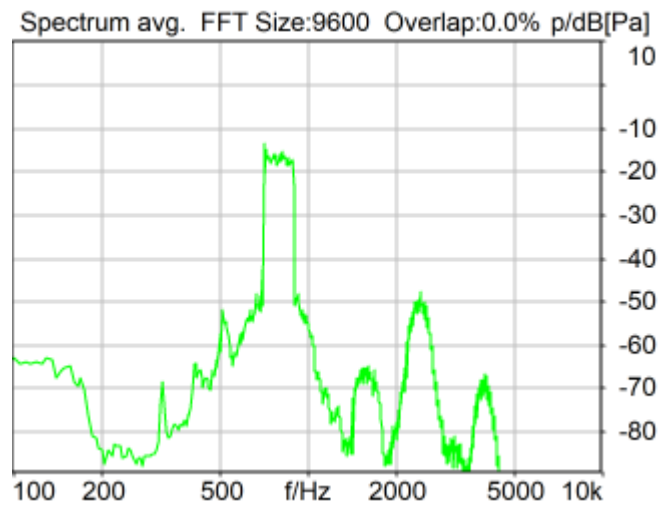
**Ok**

2023/11/12 12:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.38 dB (3.40%) Ok

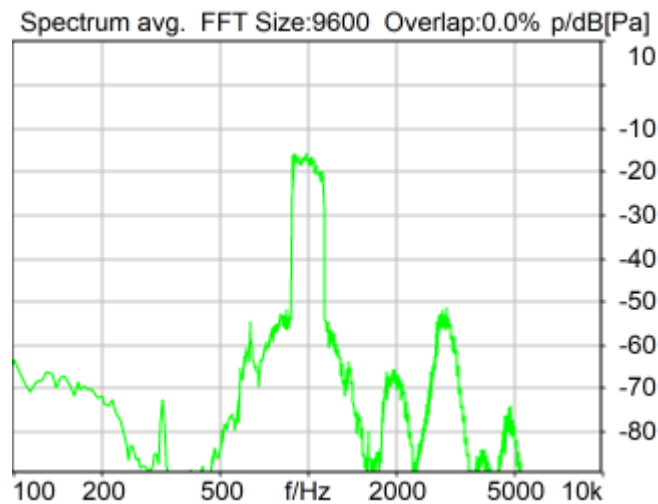
**Ok**

2023/11/12 12:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 31.97 dB (2.52%) Ok

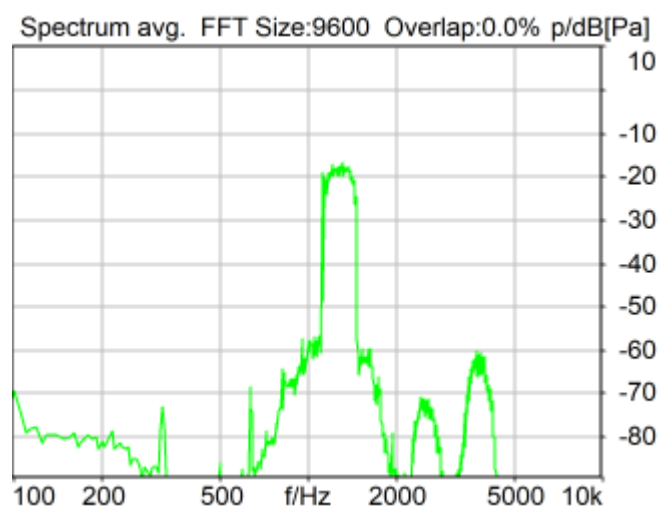
**Ok**

2023/11/12 12:31 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.10 dB (1.97%) Ok

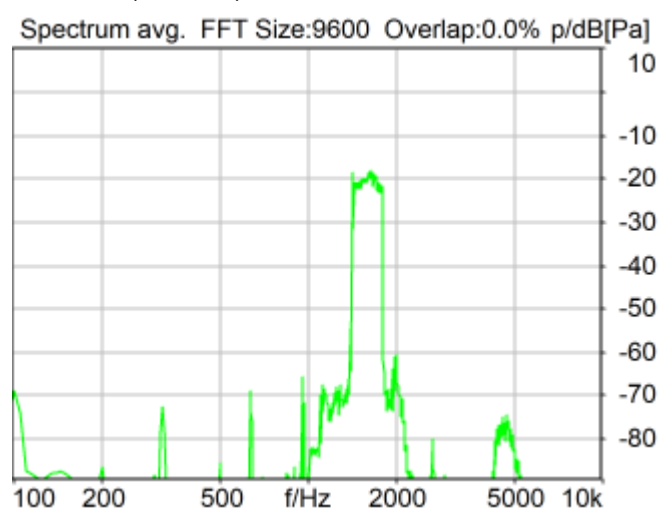
**Ok**

2023/11/12 12:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.22 dB (0.55%) Ok

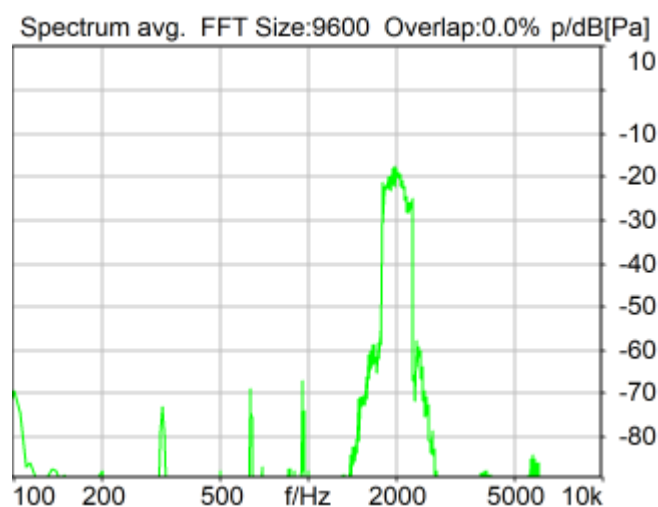
**Ok**

2023/11/12 12:32 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.34 dB (0.96%) Ok

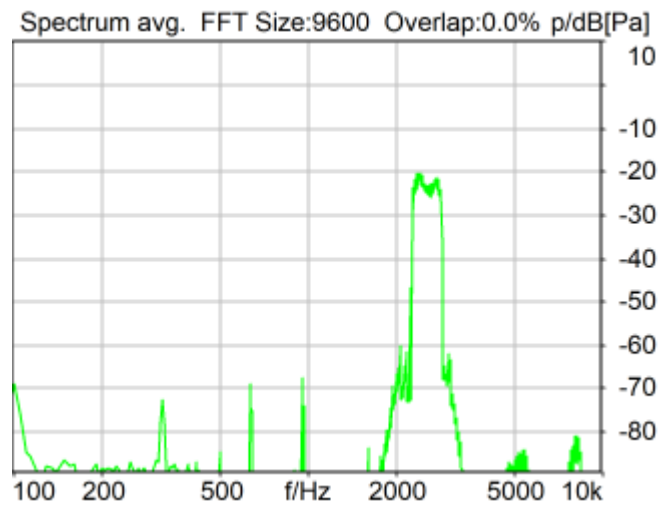
**Ok**

2023/11/12 12:33 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 42.97 dB (0.71%) Ok

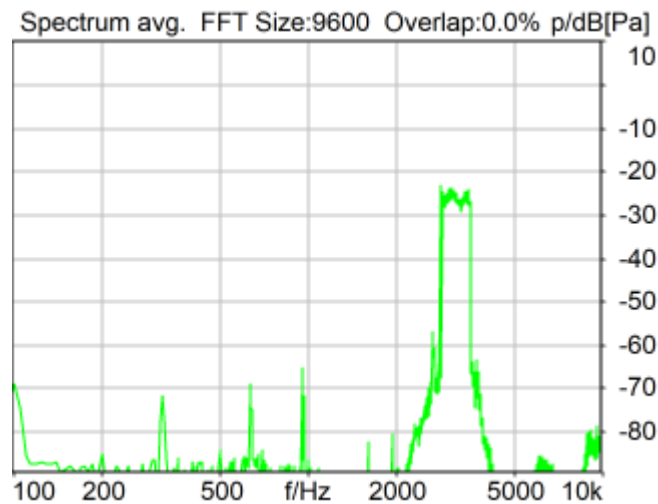
**Ok**

2023/11/12 12:33 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.54 dB (0.94%) Ok

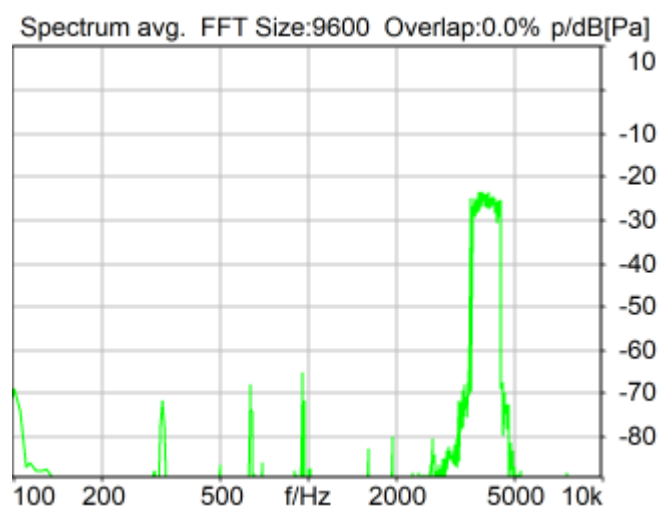
**Ok**

2023/11/12 12:33 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.51 dB (0.53%) Ok

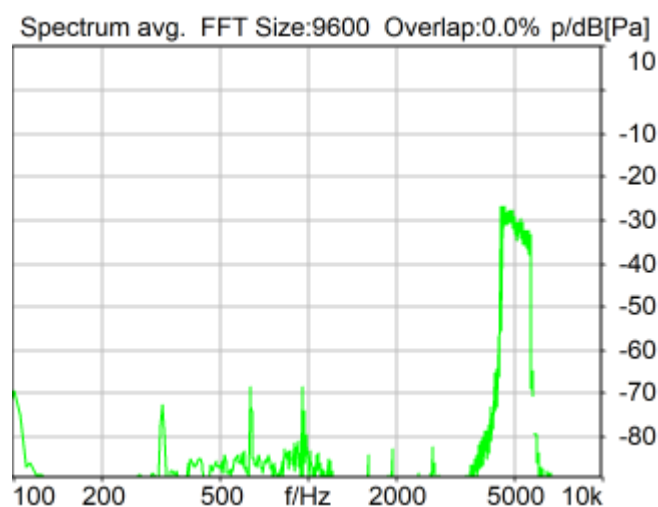
**Ok**

2023/11/12 12:34 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.29 dB (0.97%) Ok

**Ok**

2023/11/12 12:34 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 23.19 dB |
| 2      | 315Hz     | 24.89 dB |
| 3      | 400Hz     | 27.72 dB |
| 4      | 500Hz     | 28.79 dB |
| 5      | 630Hz     | 30.12 dB |
| 6      | 800Hz     | 29.38 dB |
| 7      | 1000Hz    | 31.97 dB |
| 8      | 1250Hz    | 34.10 dB |
| 9      | 1600Hz    | 45.22 dB |
| 10     | 2000Hz    | 40.34 dB |
| 11     | 2500Hz    | 42.97 dB |
| 12     | 3150Hz    | 40.54 dB |
| 13     | 4000Hz    | 45.51 dB |
| 14     | 5000Hz    | 40.29 dB |

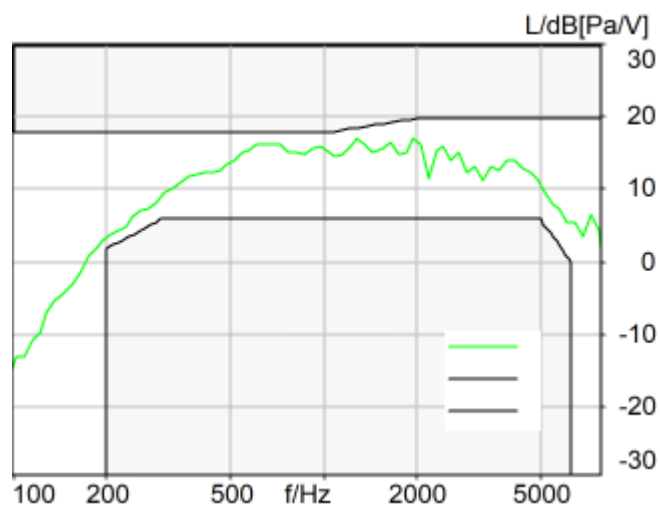
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 23.19dB at 250Hz.

2023/11/12 12:38 ACQUA

## 5.3 Frequency Response 2N FF

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



Absolute minimal distance  
1.48 dB at 611.7 Hz Ok

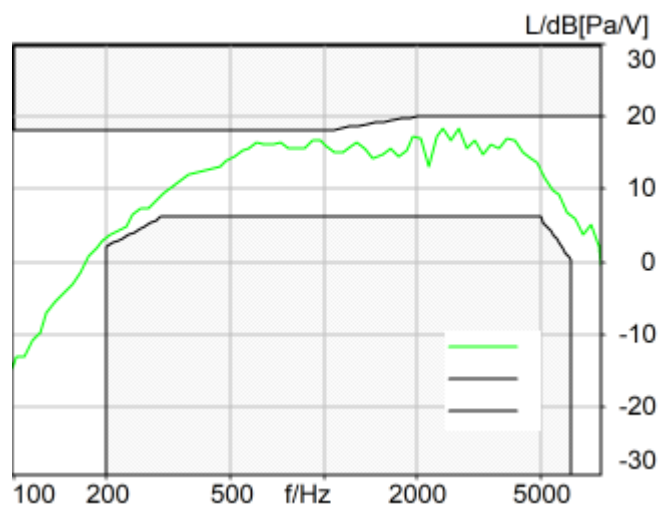
Ok

2023/11/12 12:38 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.20 dB at 974.0 Hz Ok

Ok

2023/11/12 12:38 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Measurement Object | LTE Band 12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_8N |
|--------------------|------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:38             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                            |
|-----------------------------------------------|--------|---------------------------------|--------------|-------------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 97.7         | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]          | 89.15        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.64        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.65        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.71        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.89        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.17        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.41        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.11        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.41        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.79        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.04        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.35        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 40.71        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.26        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.29        | LTE Band<br>12_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23095_8N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.64        | LTE Band                                                          |

|                                 |    |                                               |      |                                                               |
|---------------------------------|----|-----------------------------------------------|------|---------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_8N             |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 731.5 Hz | 1.50 | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_8N |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.21 | LTE Band<br>12_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23095_8N |

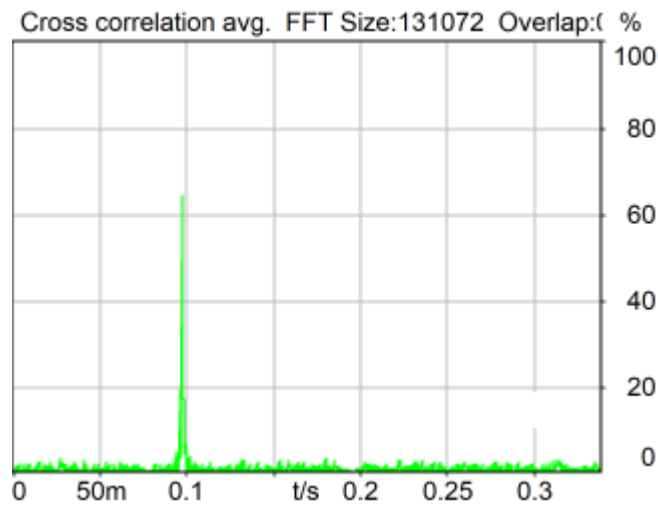
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF                                | 23 |
| 5.3 Frequency Response 8N DF                                | 24 |



## Overall Receive Delay WB

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



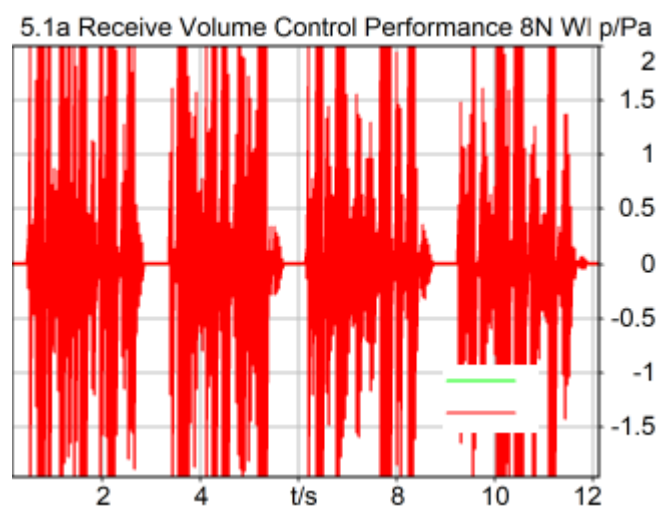
Delay (Cross): 97.7 ms

2023/11/12 16:22 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N WB**

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



Speech Level RCV: 89.15 dB[SPL], Act.: 80.77% Ok

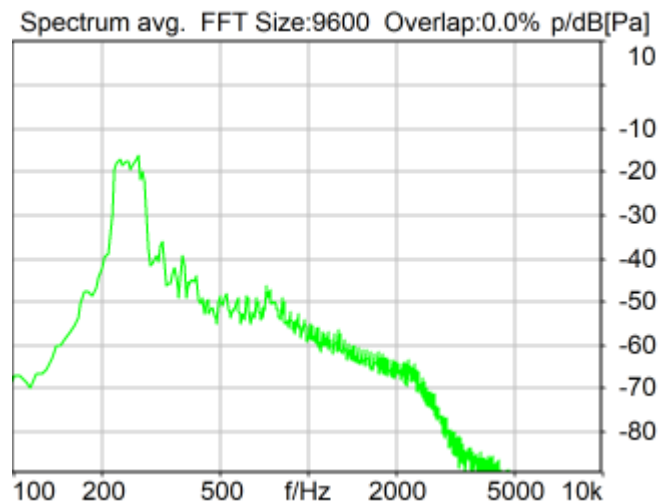
**Ok**

2023/11/12 16:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.64 dB (7.38%) Ok

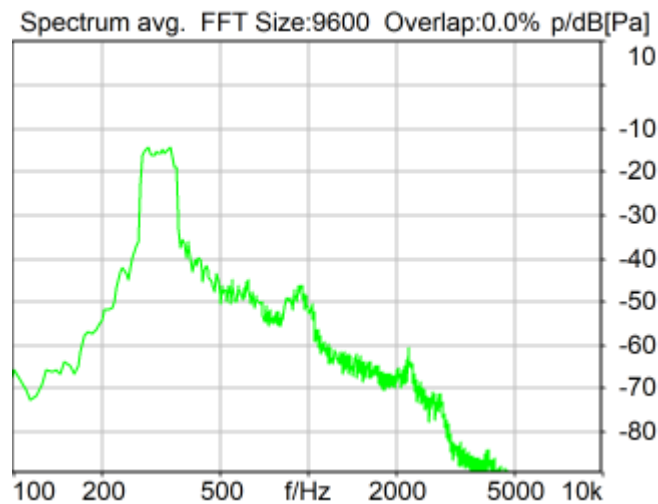
**Ok**

2023/11/12 16:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.65 dB (5.85%) Ok

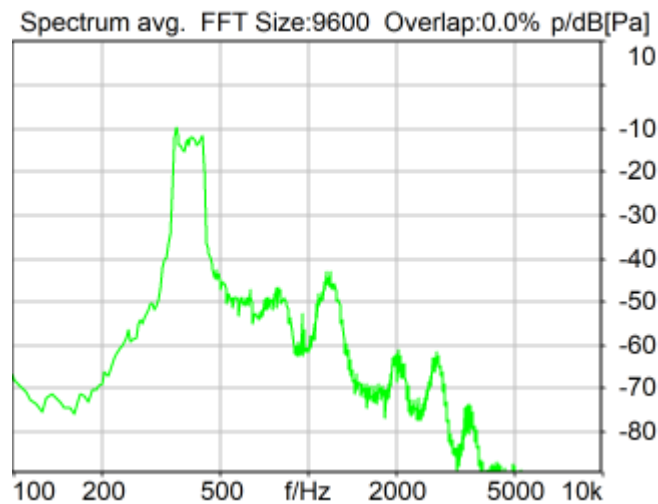
**Ok**

2023/11/12 16:23 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.71 dB (4.12%) Ok

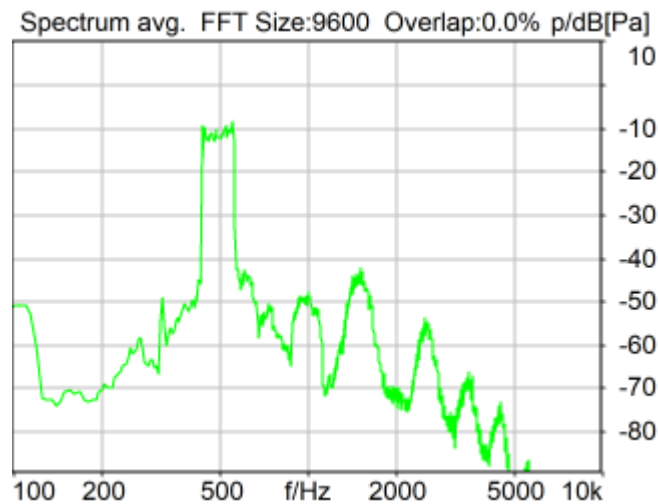
**Ok**

2023/11/12 16:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.89 dB (3.59%) Ok

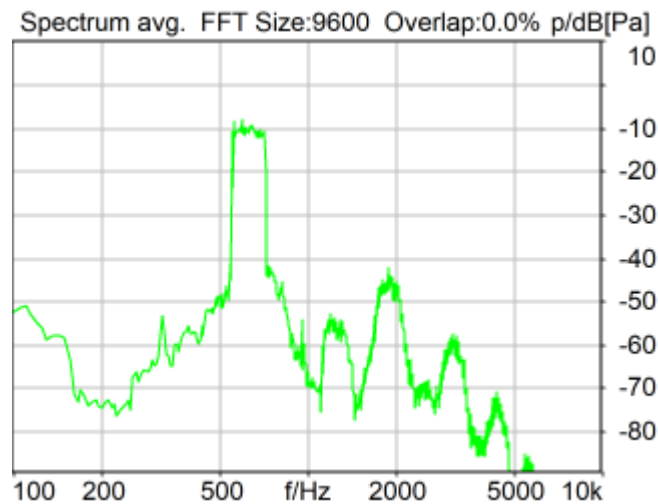
**Ok**

2023/11/12 16:24 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.17 dB (3.10%) Ok

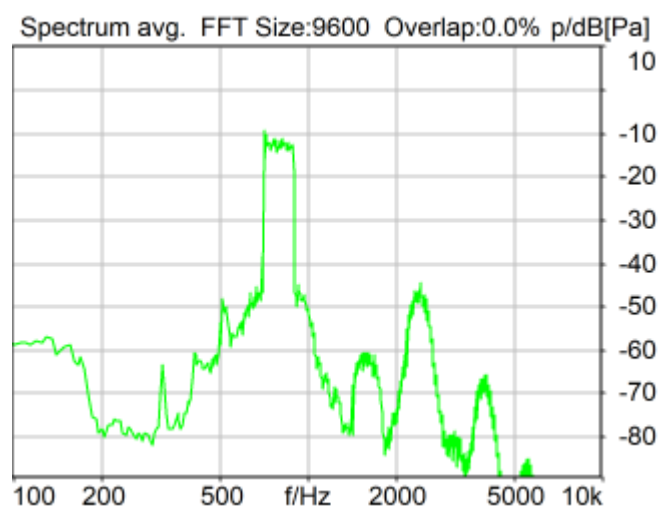
**Ok**

2023/11/12 16:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.41 dB (3.02%) Ok

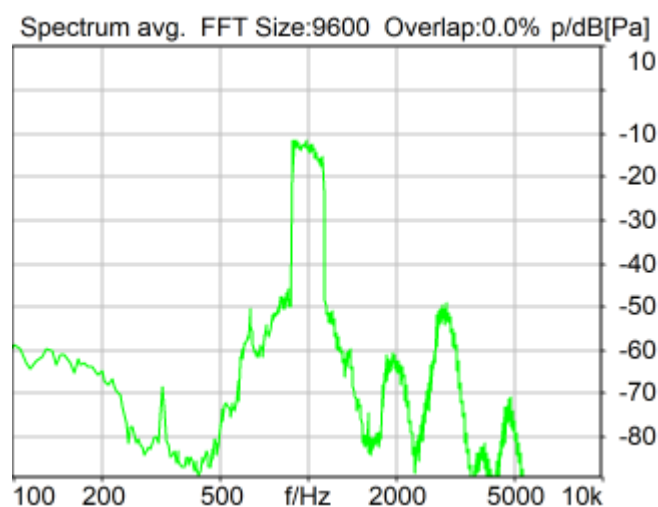
**Ok**

2023/11/12 16:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 33.11 dB (2.21%) Ok

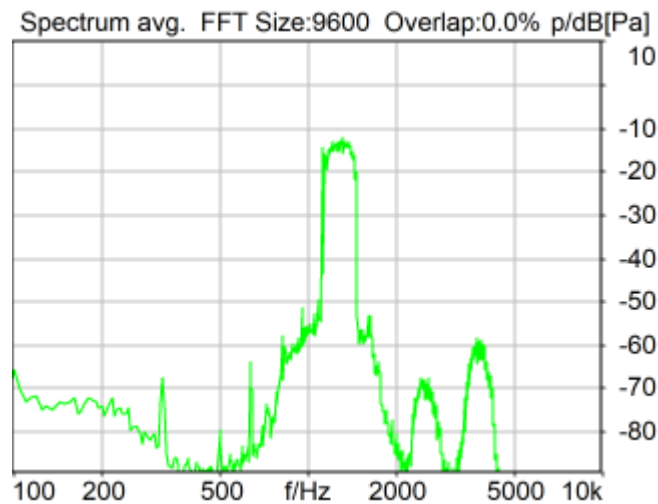
**Ok**

2023/11/12 16:25 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.41 dB (1.90%) Ok

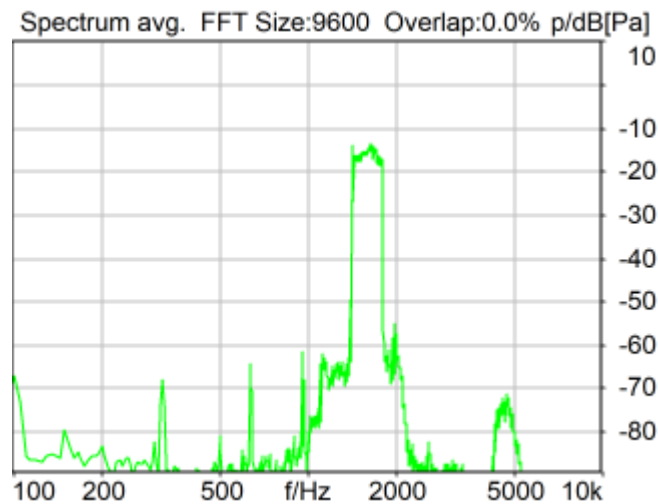
**Ok**

2023/11/12 16:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.79 dB (0.58%) Ok

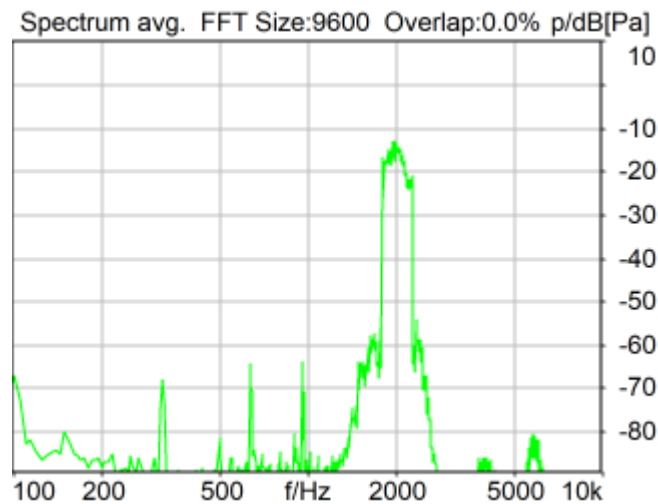
**Ok**

2023/11/12 16:26 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 43.04 dB (0.70%) Ok

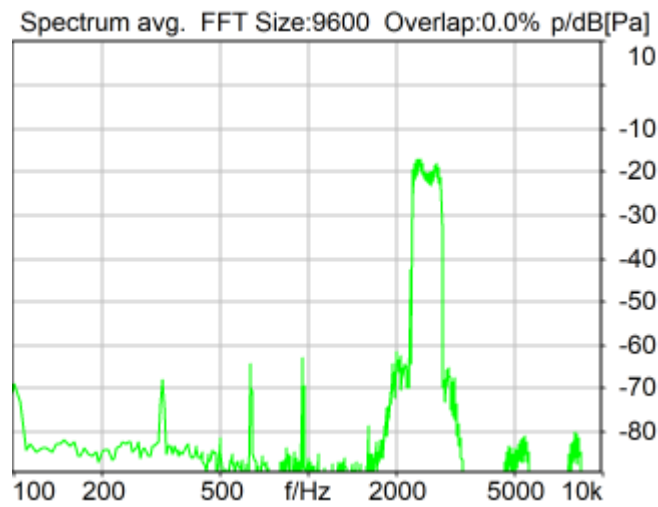
**Ok**

2023/11/12 16:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.35 dB (0.54%) Ok

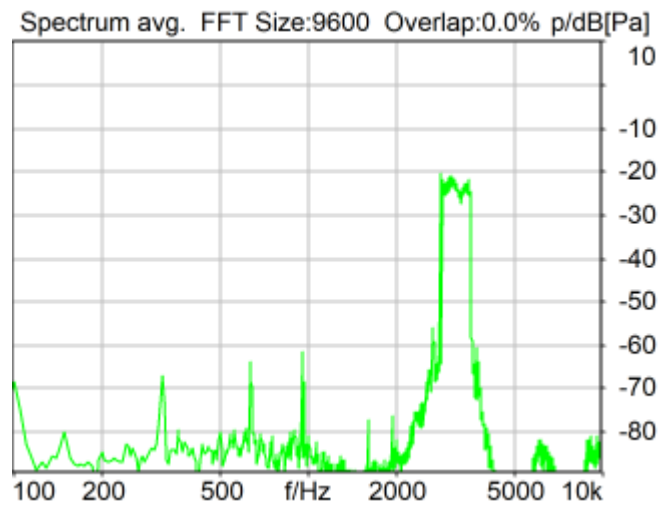
**Ok**

2023/11/12 16:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.71 dB (0.92%) Ok

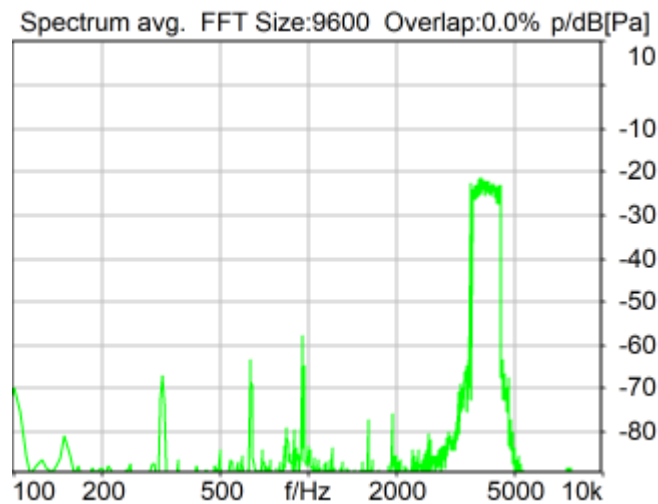
**Ok**

2023/11/12 16:27 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.26 dB (0.61%) Ok

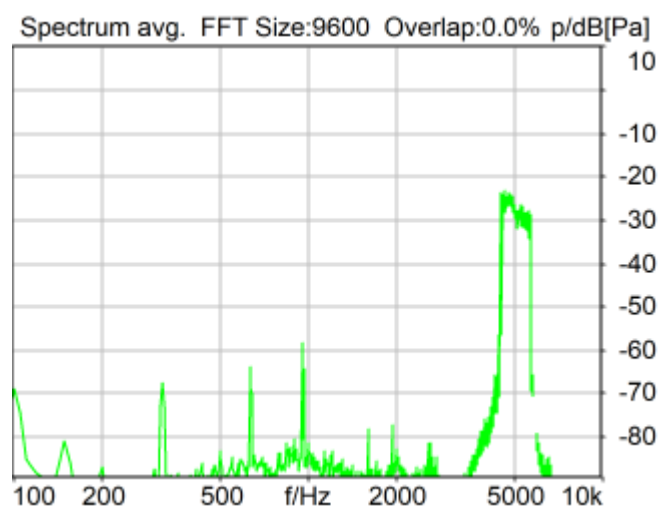
**Ok**

2023/11/12 16:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 43.29 dB (0.68%) Ok

**Ok**

2023/11/12 16:28 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.64 dB |
| 2      | 315Hz     | 24.65 dB |
| 3      | 400Hz     | 27.71 dB |
| 4      | 500Hz     | 28.89 dB |
| 5      | 630Hz     | 30.17 dB |
| 6      | 800Hz     | 30.41 dB |
| 7      | 1000Hz    | 33.11 dB |
| 8      | 1250Hz    | 34.41 dB |
| 9      | 1600Hz    | 44.79 dB |
| 10     | 2000Hz    | 43.04 dB |
| 11     | 2500Hz    | 45.35 dB |
| 12     | 3150Hz    | 40.71 dB |
| 13     | 4000Hz    | 44.26 dB |
| 14     | 5000Hz    | 43.29 dB |

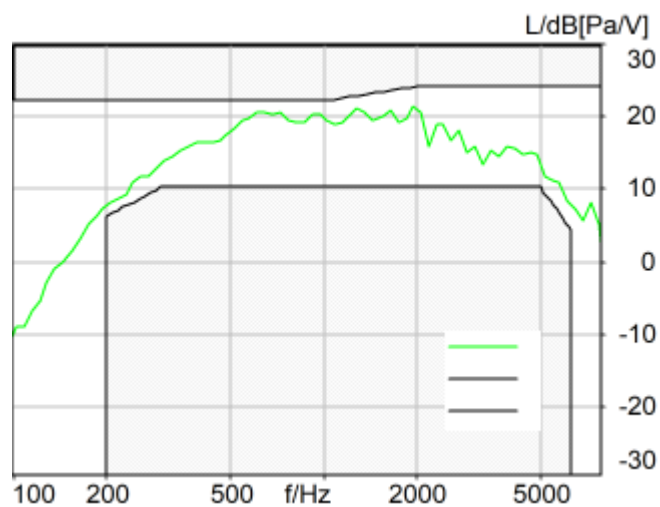
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.64dB at 250Hz.

2023/11/12 16:33 ACQUA

## 5.3 Frequency Response 8N FF

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



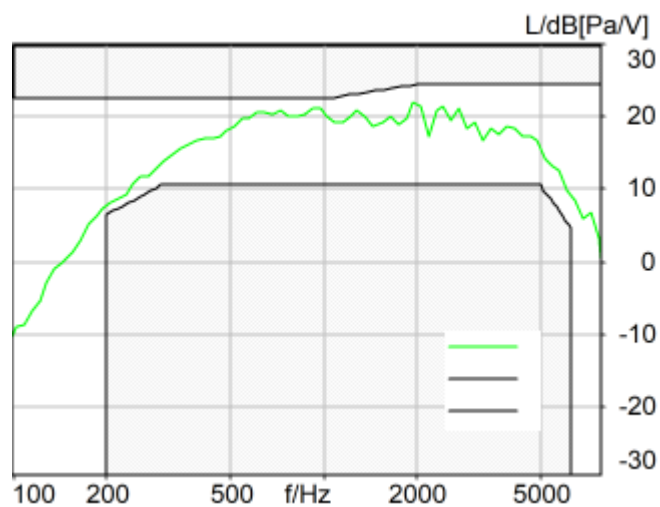
Absolute minimal distance  
1.50 dB at 731.5 Hz Ok

Ok

2023/11/12 16:34 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF

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



Absolute minimal distance

1.21 dB at 974.0 Hz Ok

Ok

2023/11/12 16:34 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 13_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23230_2N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:39             |
|                        |                              |

## Status Overview

| SMD                                                         | Status | Single Value Description                       | Single Value | Object                                                              |
|-------------------------------------------------------------|--------|------------------------------------------------|--------------|---------------------------------------------------------------------|
| Overall Receive Delay NB                                    | Done   | Delay (Cross) [ms]                             | 99.6         | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.1b Receive Volume Control Performance 2N NB               | Ok     | Speech Level [dB[SPL]]                         | 86.51        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 400 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.08        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 500 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.81        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 630 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.18        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 800 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.53        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.44        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 30.02        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.62        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.31        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.83        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.14        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| Report - Receive Distortion and Noise (Conversational Gain) | Ok     | Minimum SDNR [dB], (occured at 400Hz)          | 25.08        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.3 Frequency Response 2N FF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 1028.7 Hz | 0.81         | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |
| 5.3 Frequency Response 2N DF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 1028.7 Hz | 0.49         | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_2N |

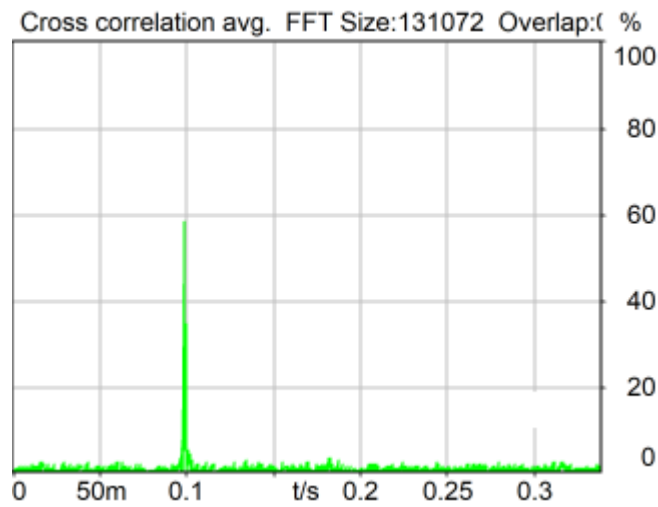
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF HANB                           | 18 |
| 5.3 Frequency Response 2N DF HANB                           | 19 |



## Overall Receive Delay NB

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



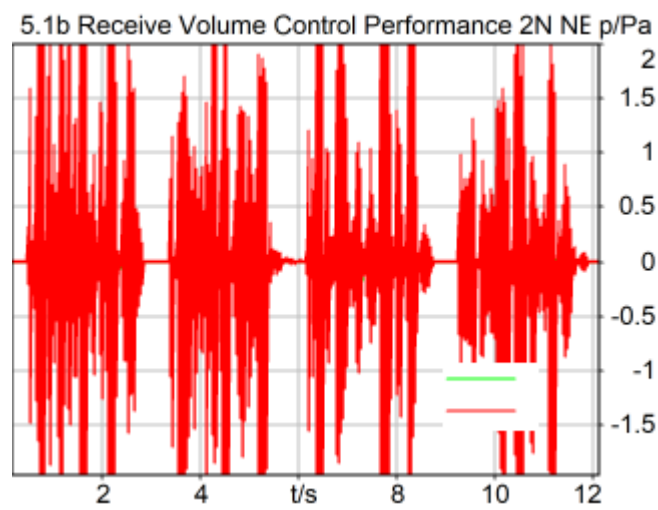
Delay (Cross): 99.6 ms

2023/11/12 20:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N NB**

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



Speech Level RCV: 86.51 dB[SPL], Act.: 80.92% Ok

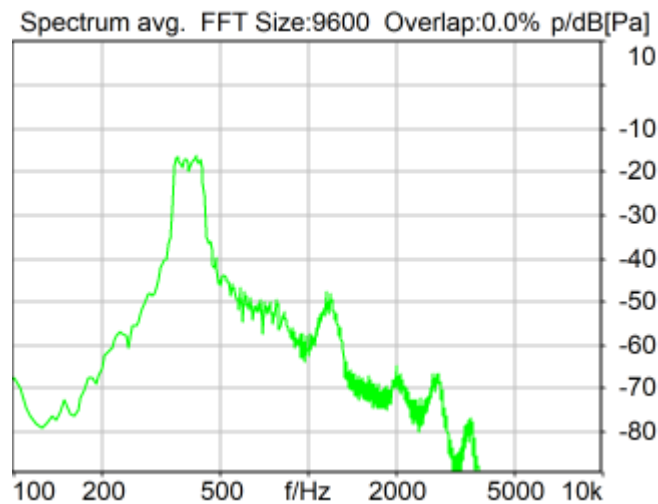
**Ok**

2023/11/12 20:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.08 dB (5.57%) Ok

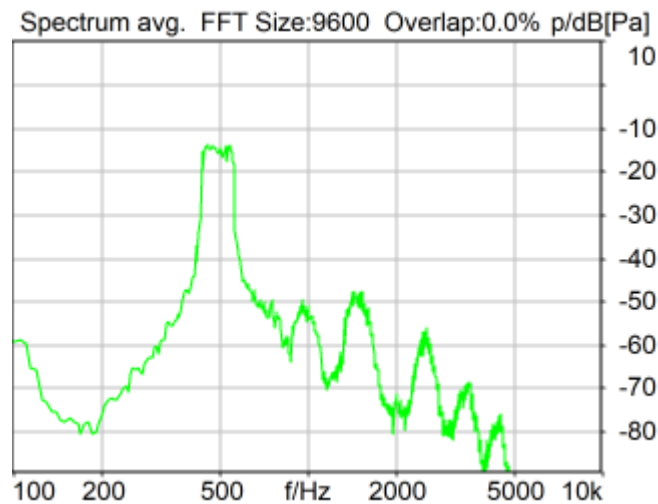
**Ok**

2023/11/12 20:16 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.2 RCV Distortion and Noise - 500 Hz NB**

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



Distortion (Noise) RCV (packed): 27.81 dB (4.07%) Ok

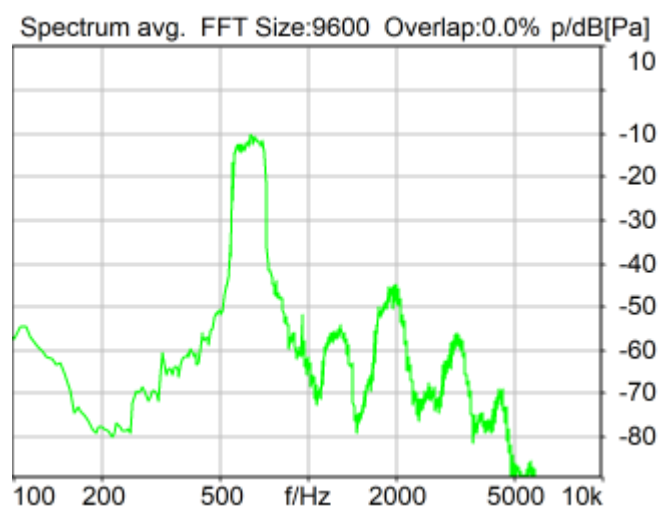
**Ok**

2023/11/12 20:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.18 dB (3.48%) Ok

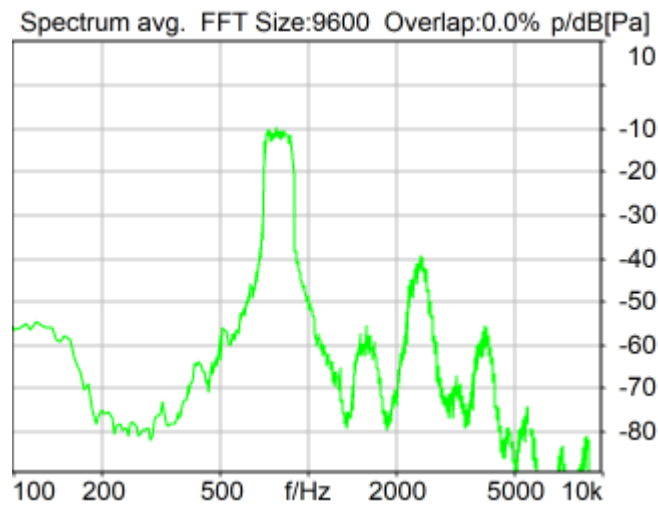
**Ok**

2023/11/12 20:17 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.53 dB (4.71%) Ok

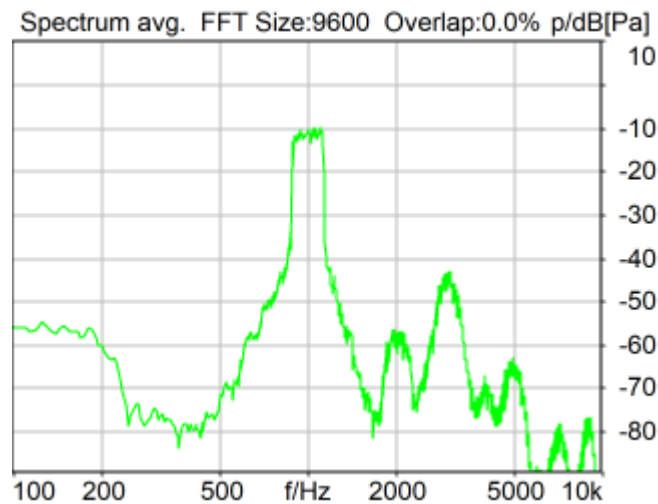
**Ok**

2023/11/12 20:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.44 dB (3.78%) Ok

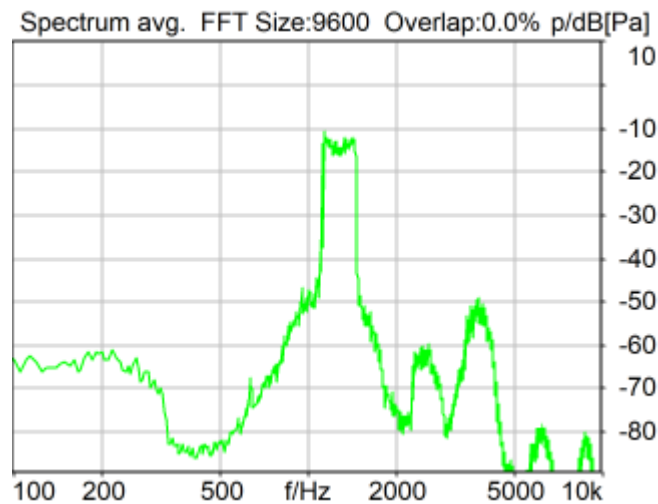
**Ok**

2023/11/12 20:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.02 dB (3.16%) Ok

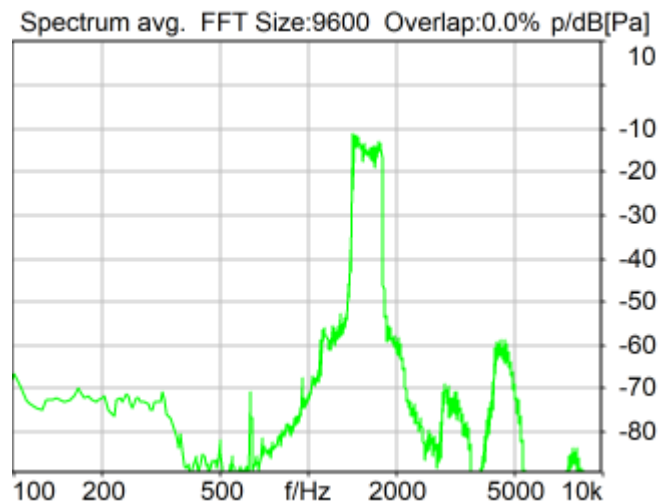
**Ok**

2023/11/12 20:18 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.62 dB (1.17%) Ok

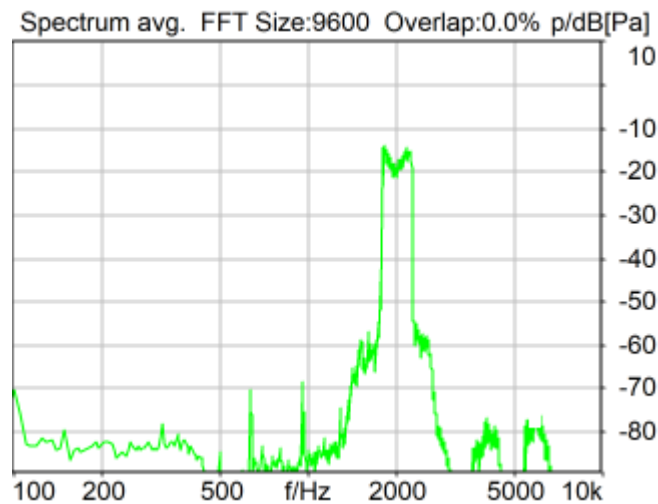
**Ok**

2023/11/12 20:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.31 dB (0.96%) Ok

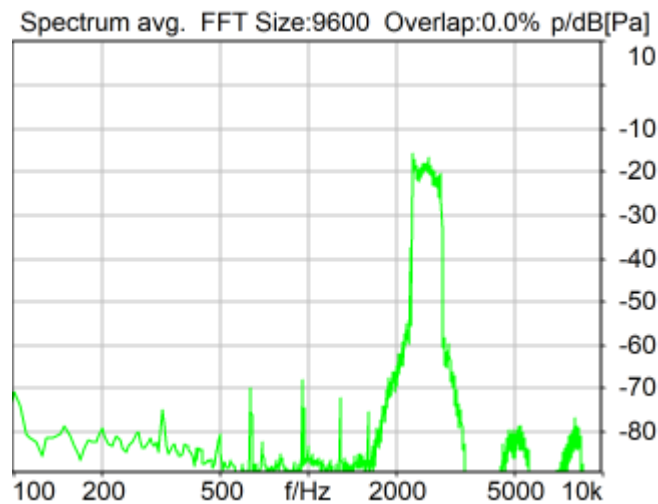
**Ok**

2023/11/12 20:19 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.83 dB (0.91%) Ok

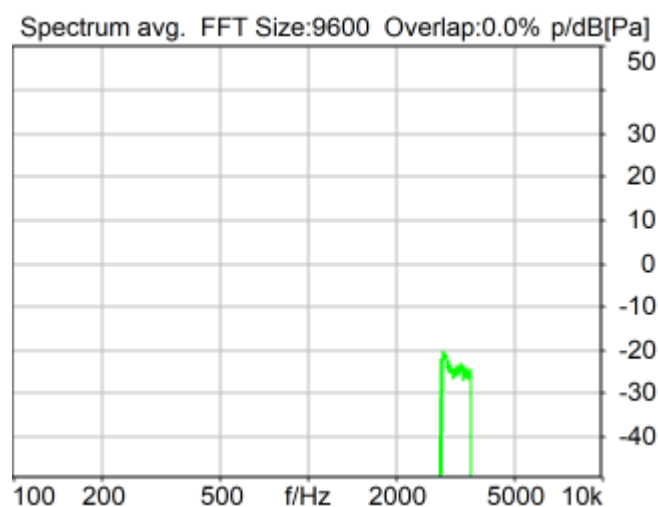
**Ok**

2023/11/12 20:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.14 dB (1.24%) Ok

**Ok**

2023/11/12 20:20 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 25.08 dB |
| 2      | 500Hz     | 27.81 dB |
| 3      | 630Hz     | 29.18 dB |
| 4      | 800Hz     | 26.53 dB |
| 5      | 1000Hz    | 28.44 dB |
| 6      | 1250Hz    | 30.02 dB |
| 7      | 1600Hz    | 38.62 dB |
| 8      | 2000Hz    | 40.31 dB |
| 9      | 2500Hz    | 40.83 dB |
| 10     | 3150Hz    | 38.14 dB |

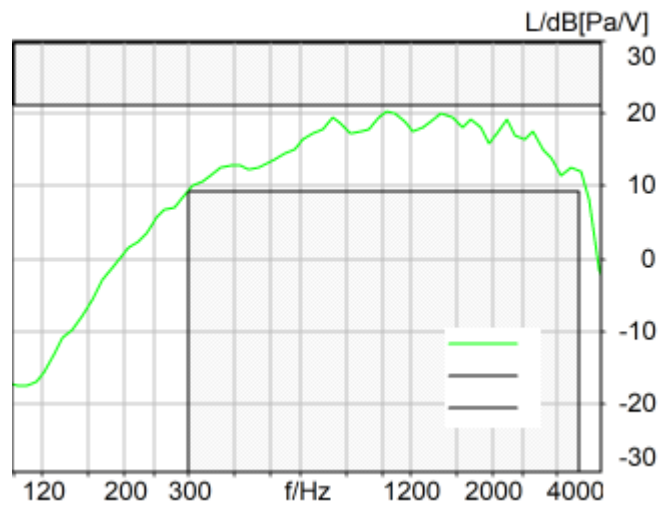
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 25.08dB at 400Hz.

2023/11/12 20:36 ACQUA

## 5.3 Frequency Response 2N FF HANB

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



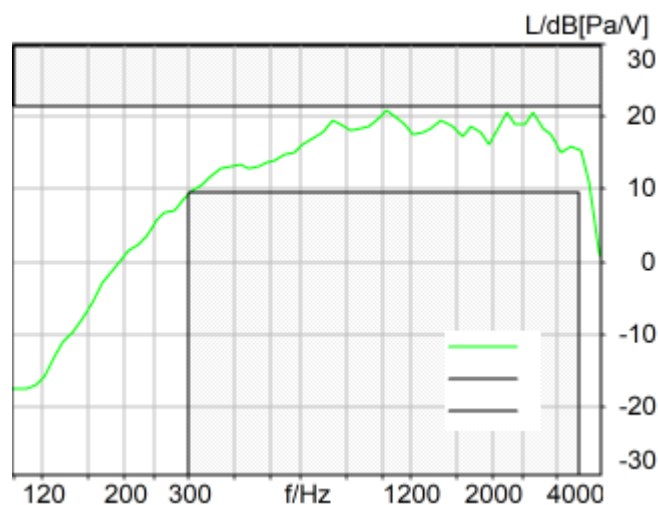
Absolute minimal distance  
0.81 dB at 1028.7 Hz Ok

Ok

2023/11/12 20:37 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
0.49 dB at 1028.7 Hz Ok

Ok

2023/11/12 20:37 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 13_10M_QPSK_50RB_0Offset_EVS NB 24.4Kbps_Ch23230_8N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:40             |
|                        |                              |

## Status Overview

| SMD                                                         | Status | Single Value Description                       | Single Value | Object                                                              |
|-------------------------------------------------------------|--------|------------------------------------------------|--------------|---------------------------------------------------------------------|
| Overall Receive Delay NB                                    | Done   | Delay (Cross) [ms]                             | 121.0        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.1a Receive Volume Control Performance 8N NB               | Ok     | Speech Level [dB[SPL]]                         | 90.76        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 400 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 24.64        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 500 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.97        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 630 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.01        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 800 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.68        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.57        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.21        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 37.86        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.49        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.69        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.09        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| Report - Receive Distortion and Noise (Conversational Gain) | Ok     | Minimum SDNR [dB], (occured at 400Hz)          | 24.64        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.3 Frequency Response 8N FF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 1447.5 Hz | 0.86         | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |
| 5.3 Frequency Response 8N DF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 1028.7 Hz | 0.71         | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS NB 24.4Kbps_Ch23230_8N |

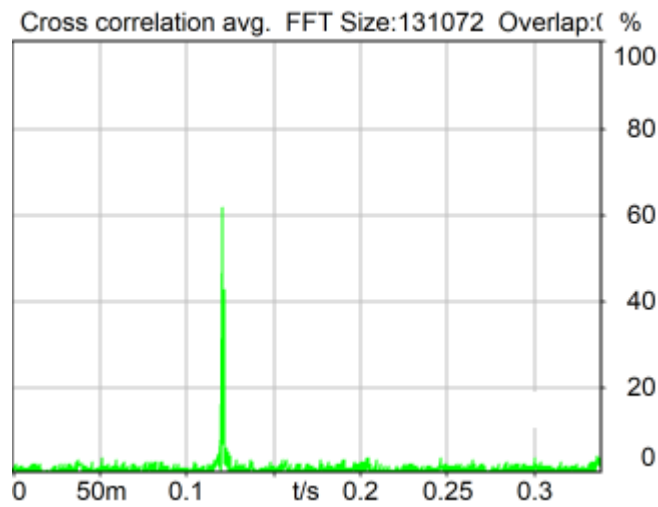
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay NB                                    | 5  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF HANB                           | 18 |
| 5.3 Frequency Response 8N DF HANB                           | 19 |



## Overall Receive Delay NB

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



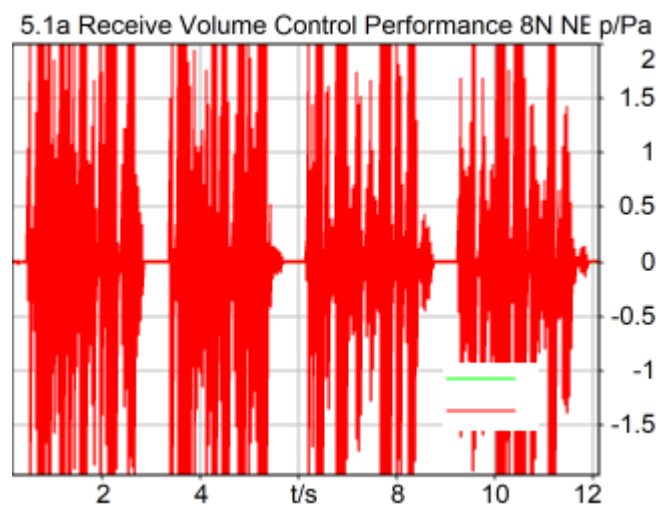
Delay (Cross): 121.0 ms

2023/11/12 20:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N NB**

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



Speech Level RCV: 90.76 dB[SPL], Act.: 80.80% Ok

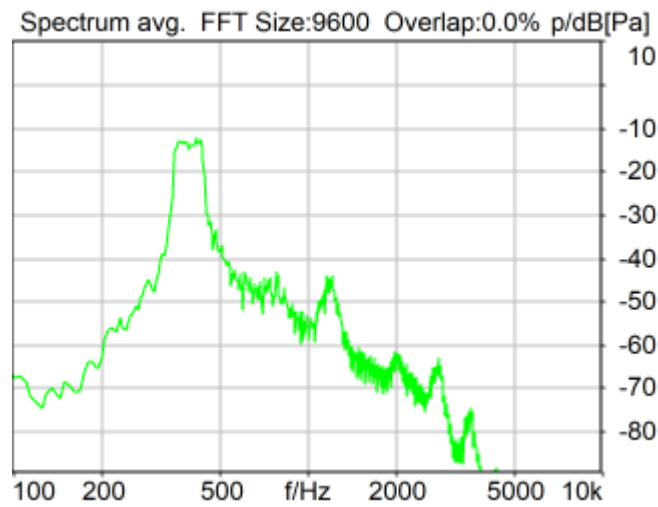
**Ok**

2023/11/12 20:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.64 dB (5.86%) Ok

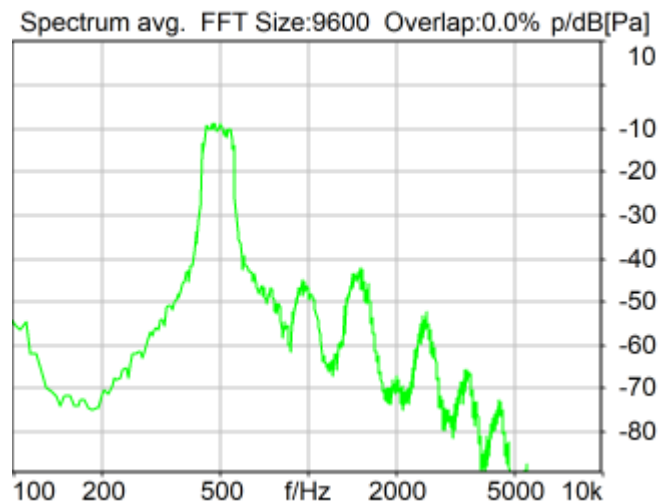
**Ok**

2023/11/12 20:39 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.97 dB (3.99%) Ok

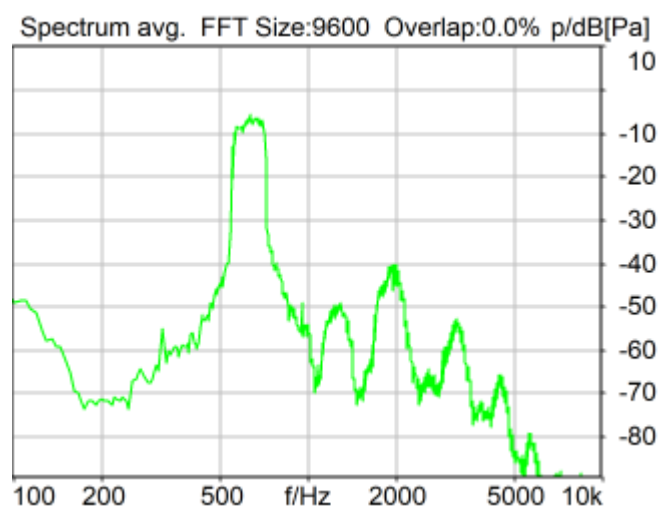
**Ok**

2023/11/12 20:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.01 dB (3.55%) Ok

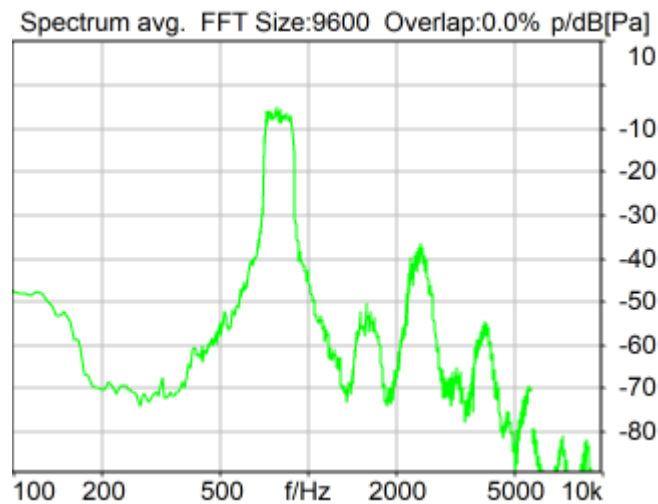
**Ok**

2023/11/12 20:40 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.68 dB (4.13%) Ok

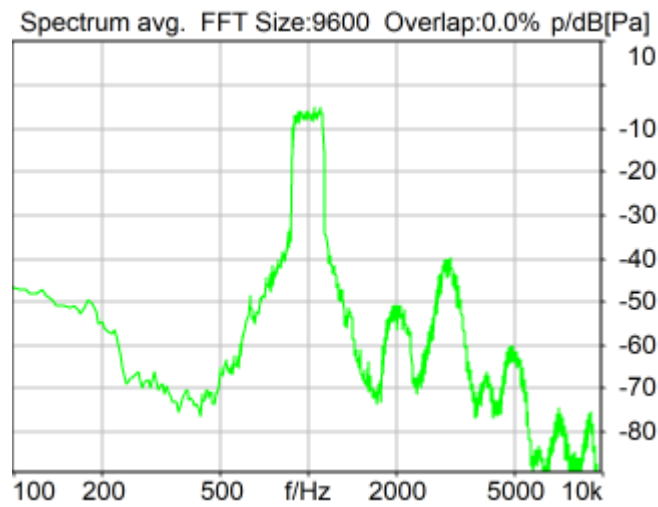
**Ok**

2023/11/12 20:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.57 dB (3.32%) Ok

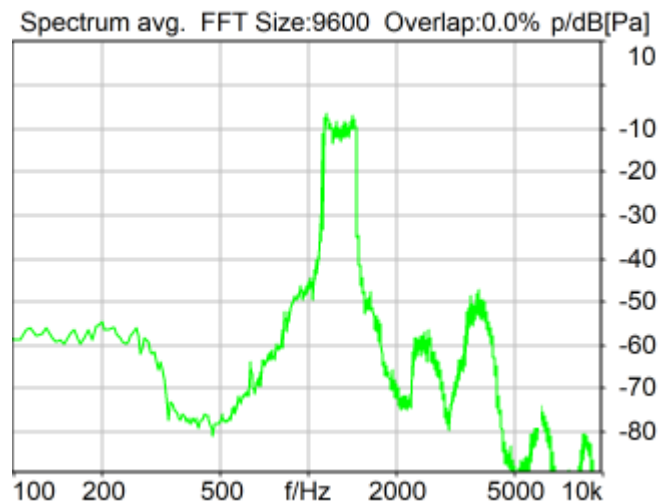
**Ok**

2023/11/12 20:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.21 dB (3.46%) Ok

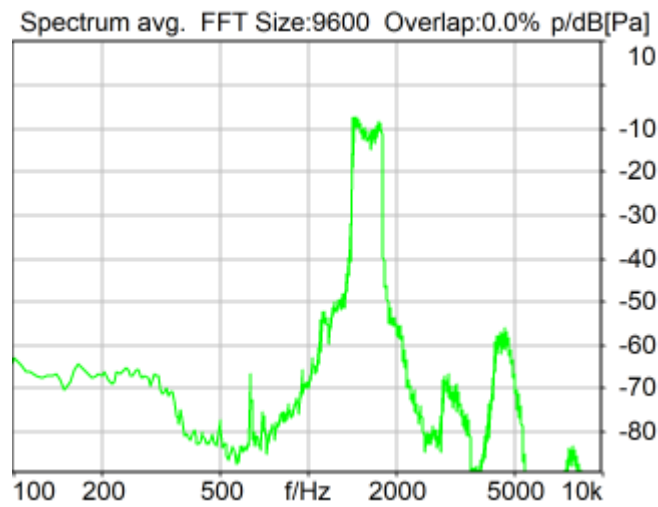
**Ok**

2023/11/12 20:41 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.86 dB (1.28%) Ok

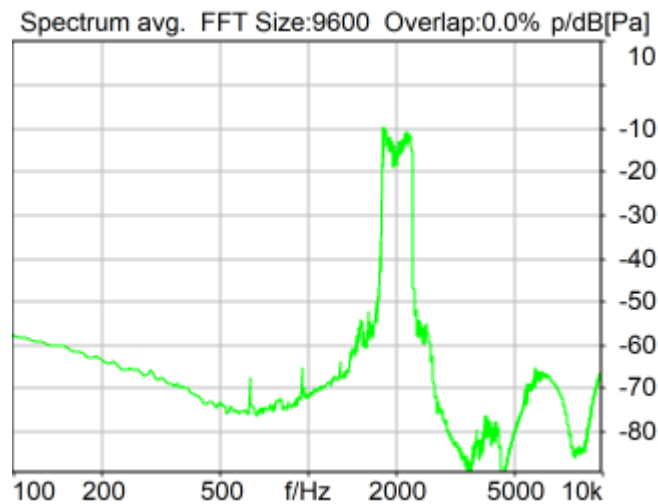
**Ok**

2023/11/12 20:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.49 dB (1.19%) Ok

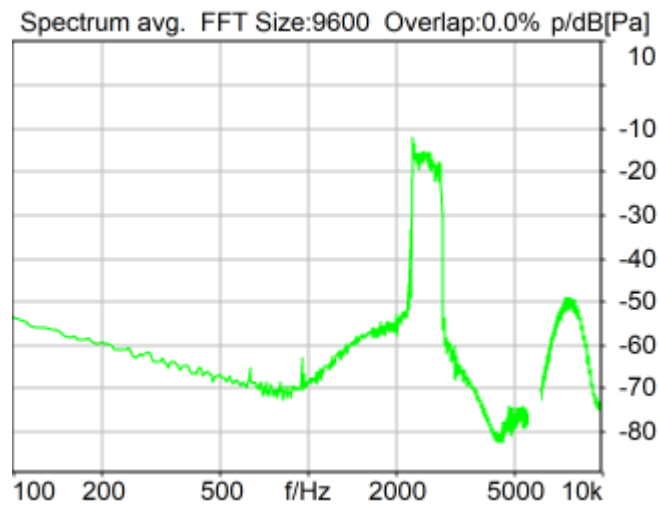
**Ok**

2023/11/12 20:42 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.69 dB (3.68%) Ok

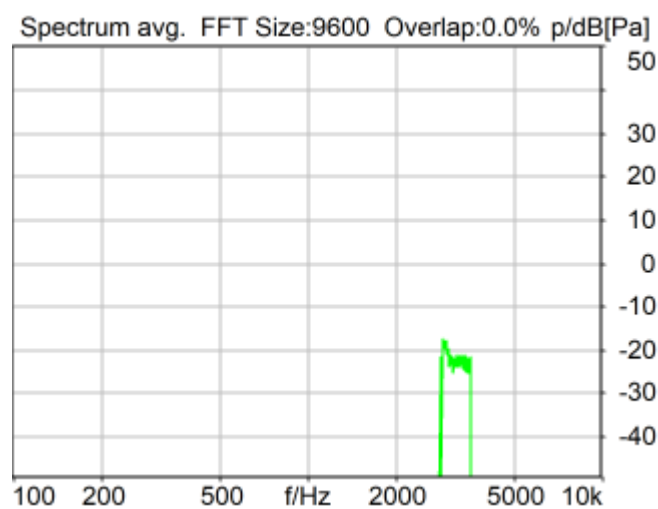
**Ok**

2023/11/12 20:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.09 dB (1.25%) Ok

**Ok**

2023/11/12 20:43 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 24.64 dB |
| 2      | 500Hz     | 27.97 dB |
| 3      | 630Hz     | 29.01 dB |
| 4      | 800Hz     | 27.68 dB |
| 5      | 1000Hz    | 29.57 dB |
| 6      | 1250Hz    | 29.21 dB |
| 7      | 1600Hz    | 37.86 dB |
| 8      | 2000Hz    | 38.49 dB |
| 9      | 2500Hz    | 28.69 dB |
| 10     | 3150Hz    | 38.09 dB |

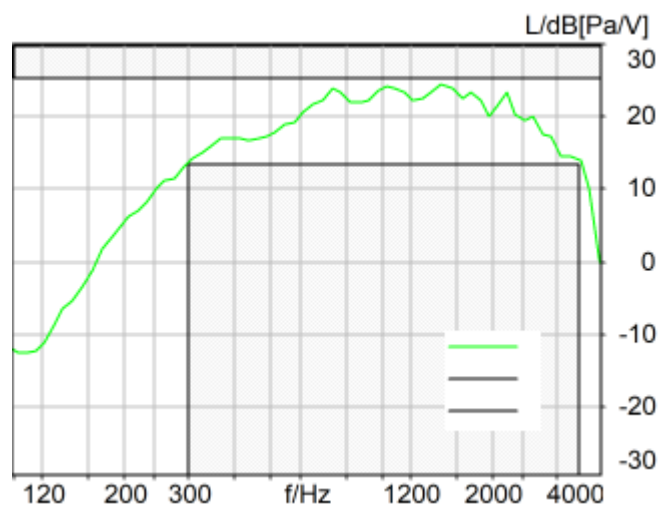
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 24.64dB at 400Hz.

2023/11/12 20:47 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



Absolute minimal distance  
0.86 dB at 1447.5 Hz Ok

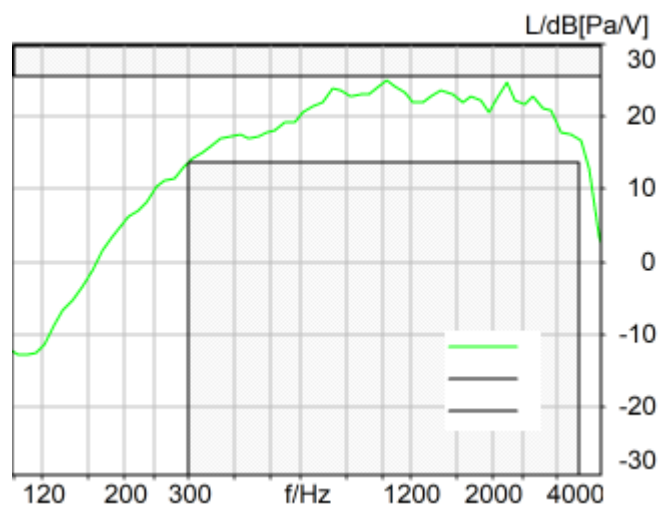
Ok

2023/11/12 20:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
0.71 dB at 1028.7 Hz Ok

Ok

2023/11/12 20:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Measurement Object | LTE Band 13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
|--------------------|------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:41             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                        |
|-----------------------------------------------|--------|---------------------------------|--------------|---------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 119.1        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.53        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 23.73        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.06        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.61        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.68        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.94        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.50        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.52        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.23        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 44.82        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.16        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.73        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 41.97        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.19        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 38.06        | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 23.73        | LTE Band                                                      |

|                                 |    |                                               |      |                                                               |
|---------------------------------|----|-----------------------------------------------|------|---------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N             |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz | 1.37 | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.25 | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_2N |

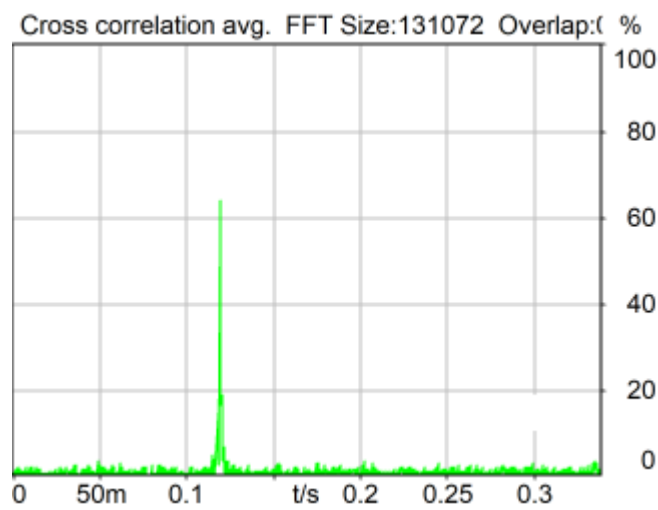
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF                                | 23 |
| 5.3 Frequency Response 2N DF                                | 24 |



## Overall Receive Delay WB

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



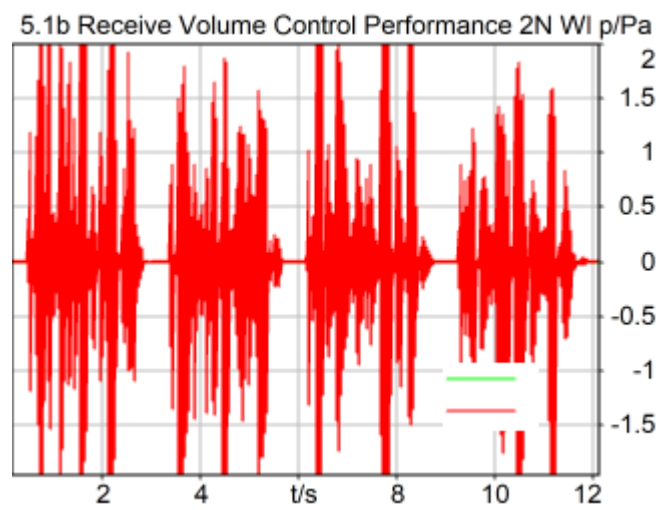
Delay (Cross): 119.1 ms

2023/11/12 20:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N WB**

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



Speech Level RCV: 84.53 dB[SPL], Act.: 80.74% Ok

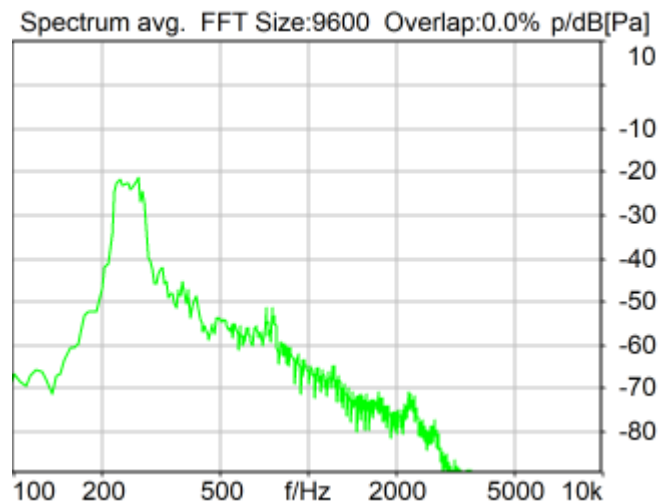
**Ok**

2023/11/12 20:53 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 23.73 dB (6.51%) Ok

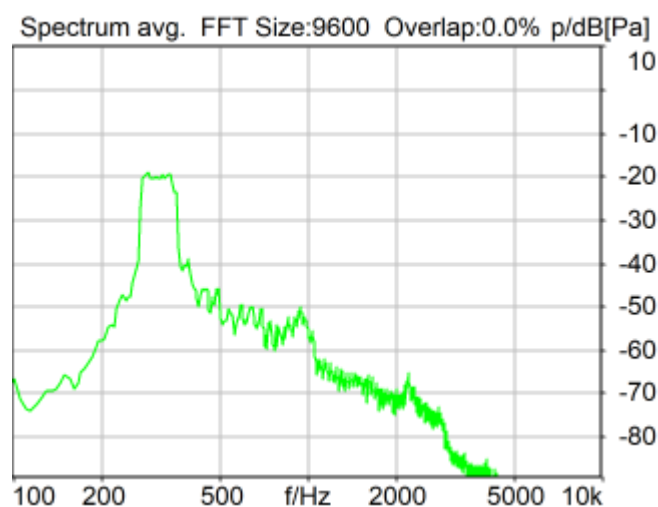
**Ok**

2023/11/12 20:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.06 dB (6.27%) Ok

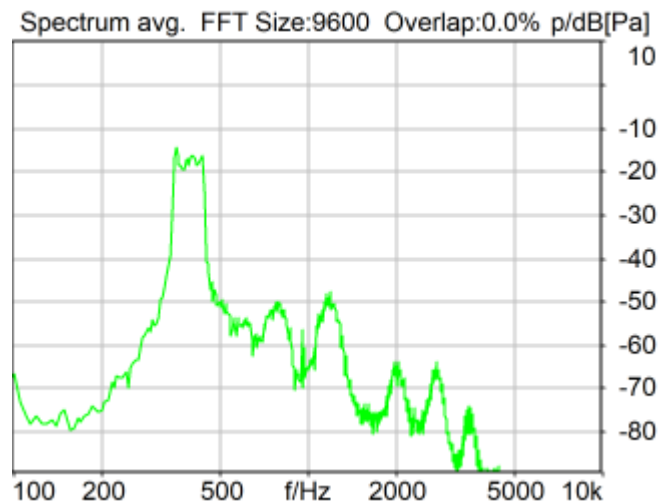
**Ok**

2023/11/12 20:54 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.61 dB (4.16%) Ok

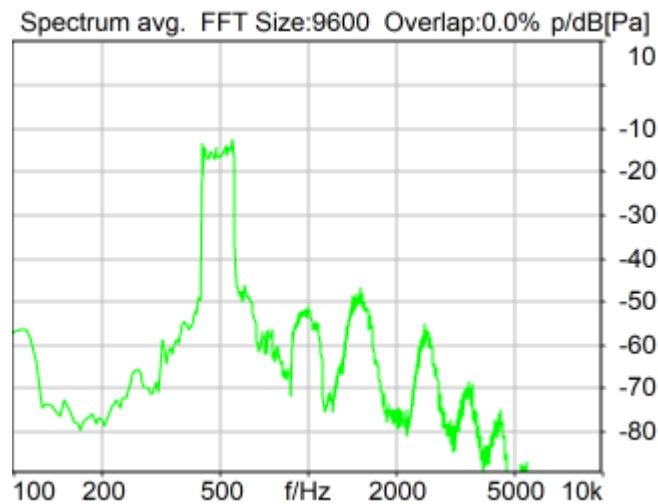
**Ok**

2023/11/12 20:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.68 dB (3.68%) Ok

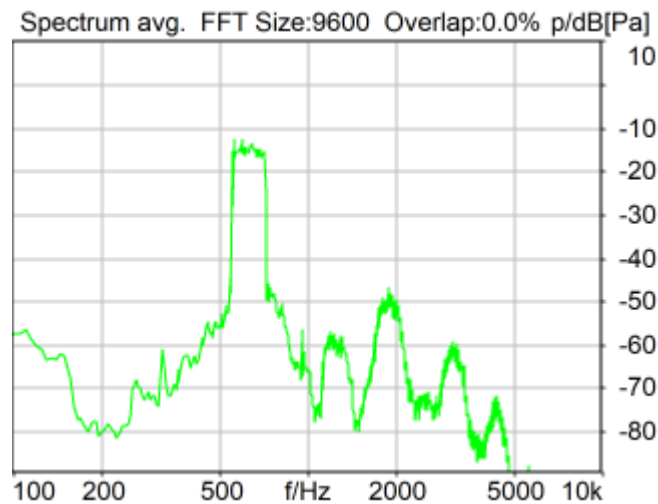
**Ok**

2023/11/12 20:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.94 dB (3.18%) Ok

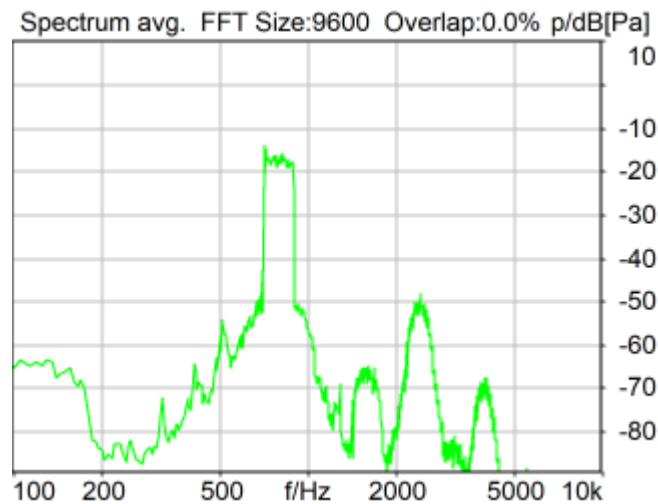
**Ok**

2023/11/12 20:55 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.50 dB (3.35%) Ok

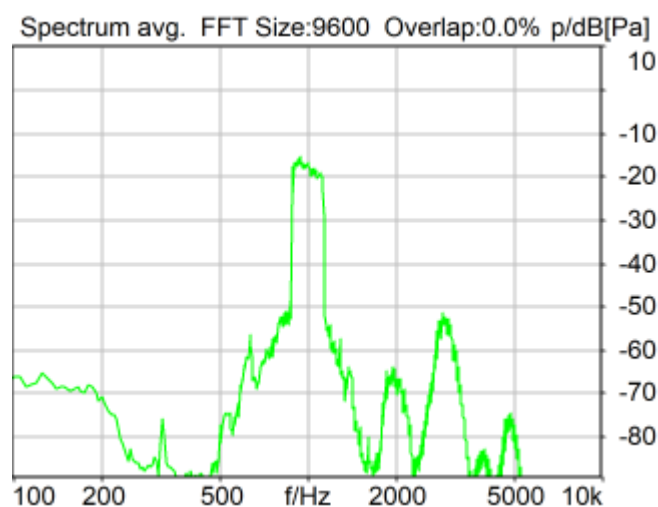
**Ok**

2023/11/12 20:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 31.52 dB (2.66%) Ok

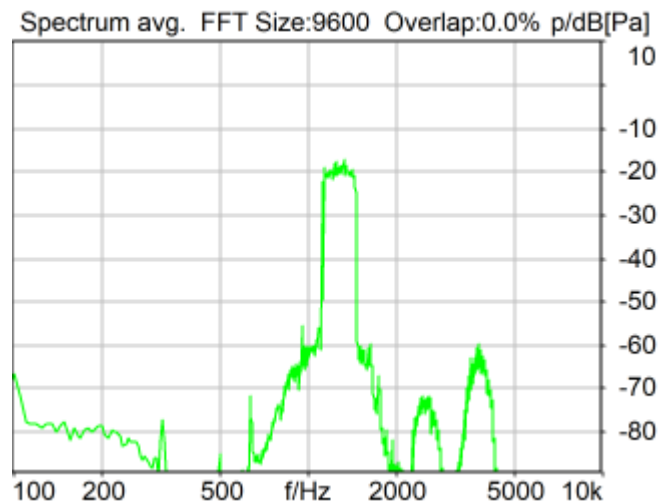
**Ok**

2023/11/12 20:56 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.23 dB (1.94%) Ok

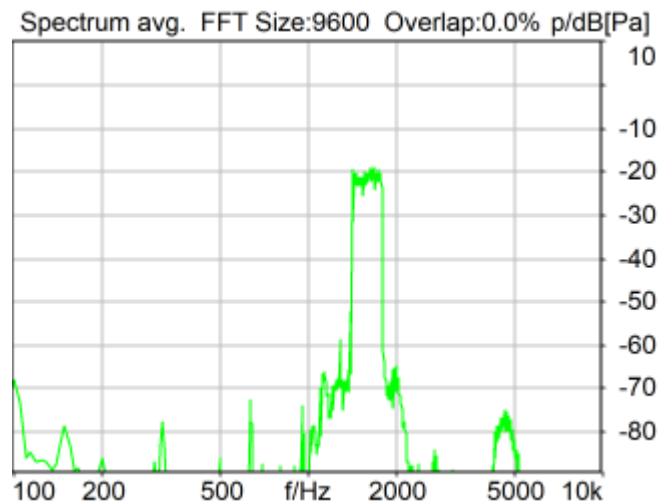
**Ok**

2023/11/12 20:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 44.82 dB (0.57%) Ok

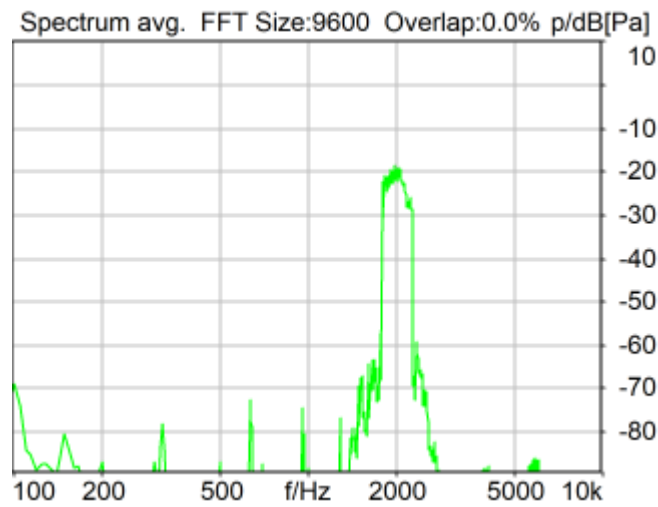
**Ok**

2023/11/12 20:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 43.16 dB (0.70%) Ok

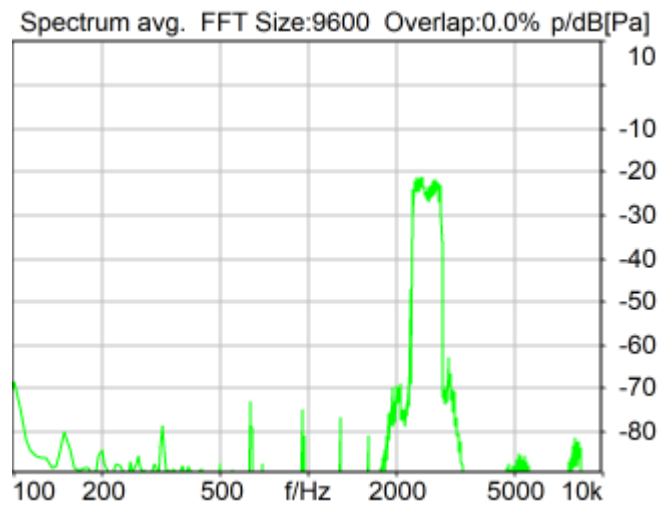
**Ok**

2023/11/12 20:57 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.73 dB (0.52%) Ok

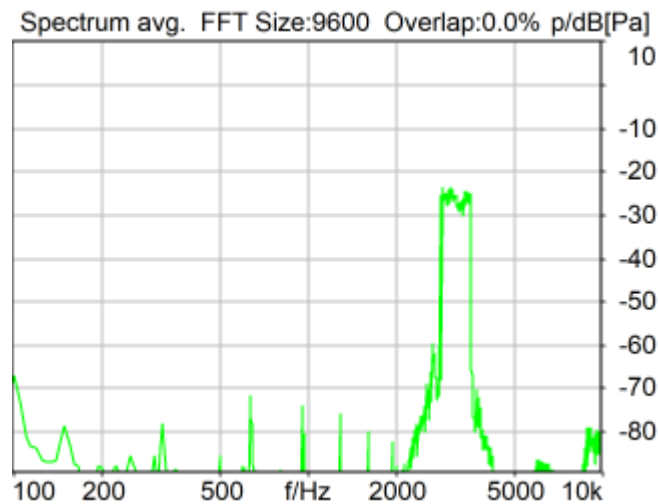
**Ok**

2023/11/12 20:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 41.97 dB (0.80%) Ok

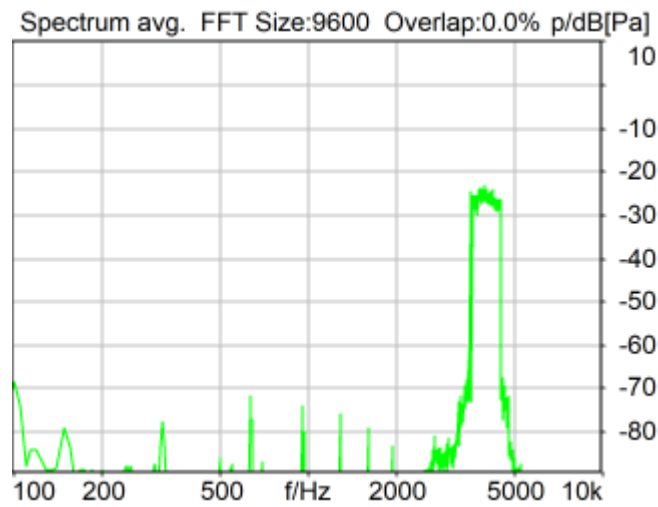
**Ok**

2023/11/12 20:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 45.19 dB (0.55%) Ok

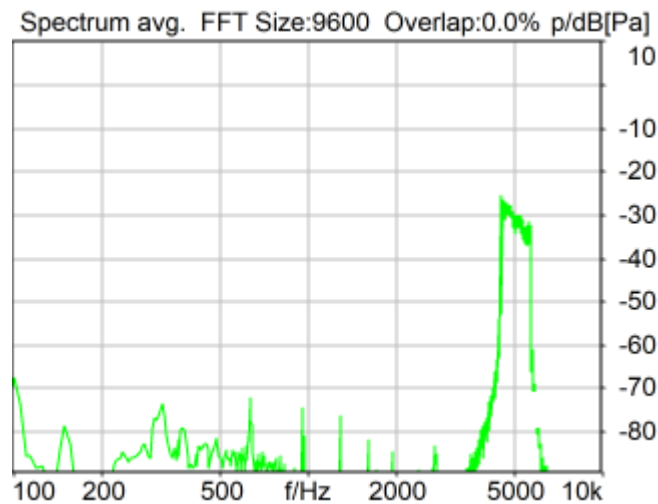
**Ok**

2023/11/12 20:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.06 dB (1.25%) Ok

**Ok**

2023/11/12 20:59 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 23.73 dB |
| 2      | 315Hz     | 24.06 dB |
| 3      | 400Hz     | 27.61 dB |
| 4      | 500Hz     | 28.68 dB |
| 5      | 630Hz     | 29.94 dB |
| 6      | 800Hz     | 29.50 dB |
| 7      | 1000Hz    | 31.52 dB |
| 8      | 1250Hz    | 34.23 dB |
| 9      | 1600Hz    | 44.82 dB |
| 10     | 2000Hz    | 43.16 dB |
| 11     | 2500Hz    | 45.73 dB |
| 12     | 3150Hz    | 41.97 dB |
| 13     | 4000Hz    | 45.19 dB |
| 14     | 5000Hz    | 38.06 dB |

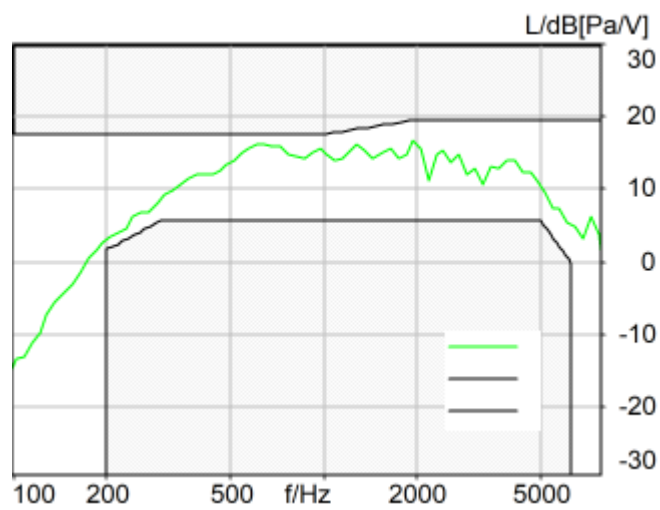
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 23.73dB at 250Hz.

2023/11/12 21:02 ACQUA

## 5.3 Frequency Response 2N FF

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



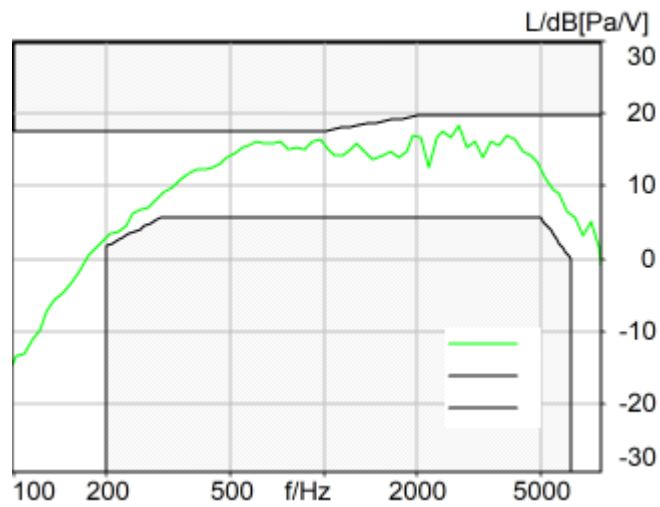
Absolute minimal distance  
1.37 dB at 611.7 Hz Ok

Ok

2023/11/12 21:02 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.25 dB at 974.0 Hz Ok

Ok

2023/11/12 21:03 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Measurement Object | LTE Band 13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_8N |
|--------------------|------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:42             |
|                        |                              |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                            |
|-----------------------------------------------|--------|---------------------------------|--------------|-------------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 158.4        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]          | 89.03        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.68        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 24.66        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 25.61        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.68        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.79        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.53        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.49        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.01        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.08        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.09        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 38.66        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.16        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 37.88        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.37        | LTE Band<br>13_10M_QPSK_50RB_0Offset_E<br>VS WB 64Kbps_Ch23230_8N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR                    | 22.68        | LTE Band                                                          |

|                                 |    |                                               |      |                                                               |
|---------------------------------|----|-----------------------------------------------|------|---------------------------------------------------------------|
| and Noise (Conversational Gain) |    | [dB], (occured at 250Hz)                      |      | 13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_8N             |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 217.7 Hz | 1.46 | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_8N |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 974.0 Hz | 1.43 | LTE Band<br>13_10M_QPSK_50RB_0Offset_EVS WB 64Kbps_Ch23230_8N |

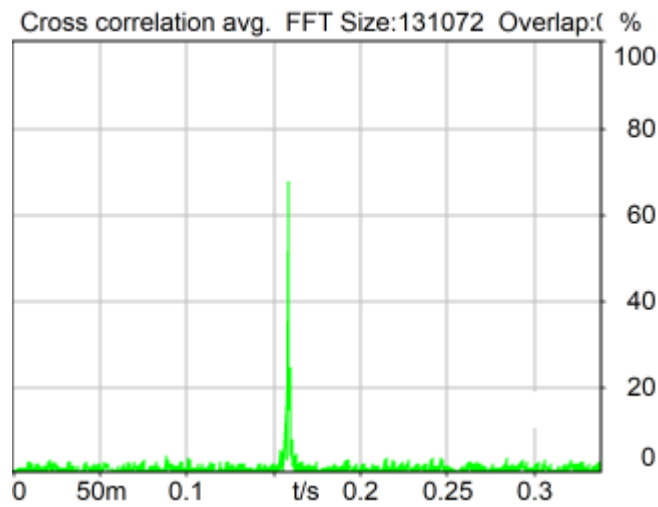
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF                                | 23 |
| 5.3 Frequency Response 8N DF                                | 24 |



## Overall Receive Delay WB

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



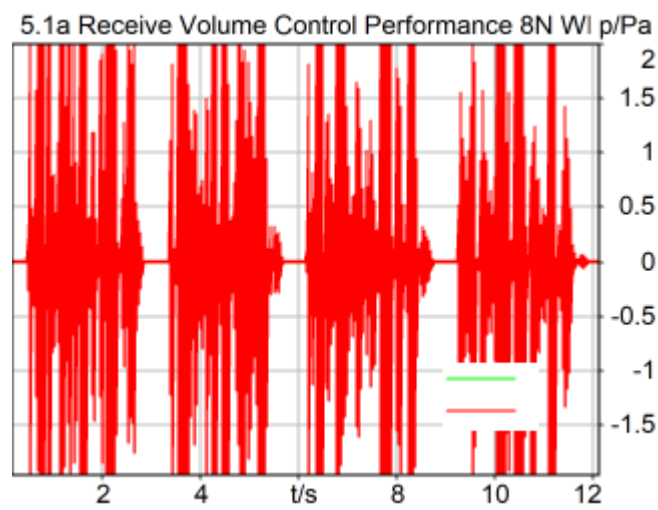
Delay (Cross): 158.4 ms

2023/11/12 21:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N WB**

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



Speech Level RCV: 89.03 dB[SPL], Act.: 80.88% Ok

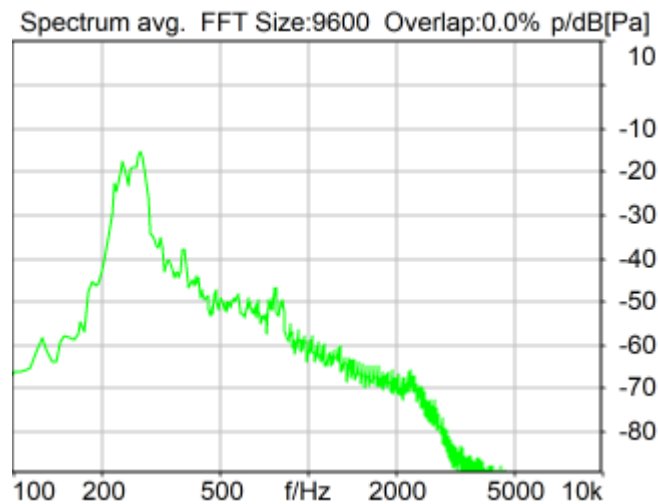
**Ok**

2023/11/12 21:08 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 22.68 dB (7.35%) Ok

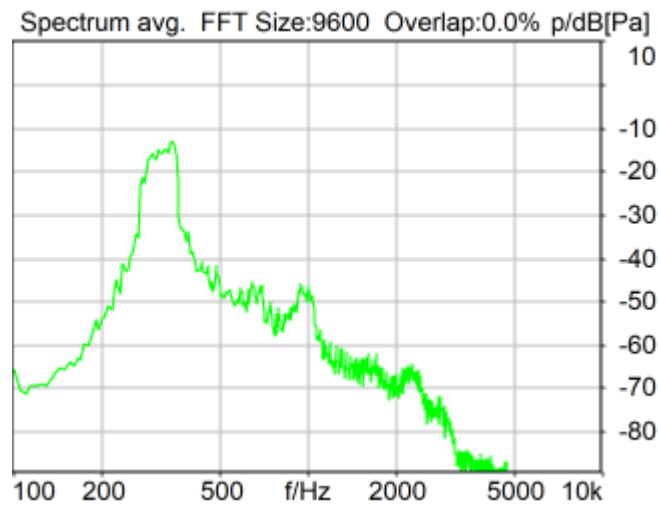
**Ok**

2023/11/12 21:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 24.66 dB (5.85%) Ok

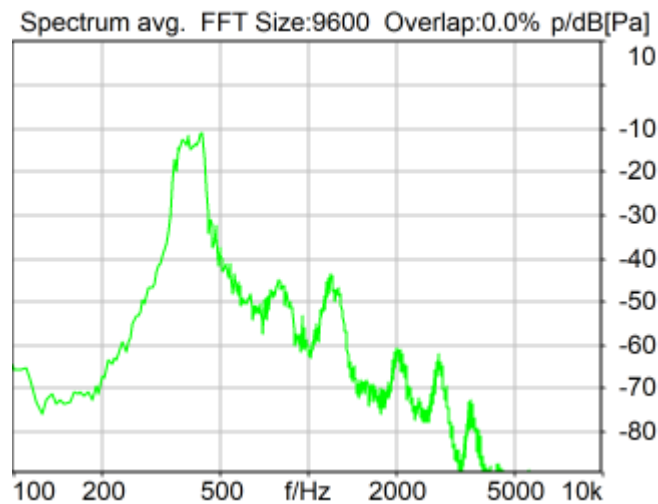
**Ok**

2023/11/12 21:09 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.61 dB (5.24%) Ok

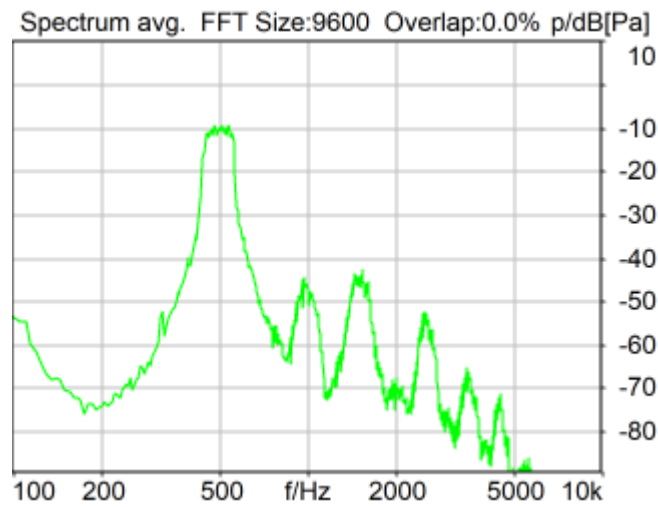
**Ok**

2023/11/12 21:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.68 dB (4.13%) Ok

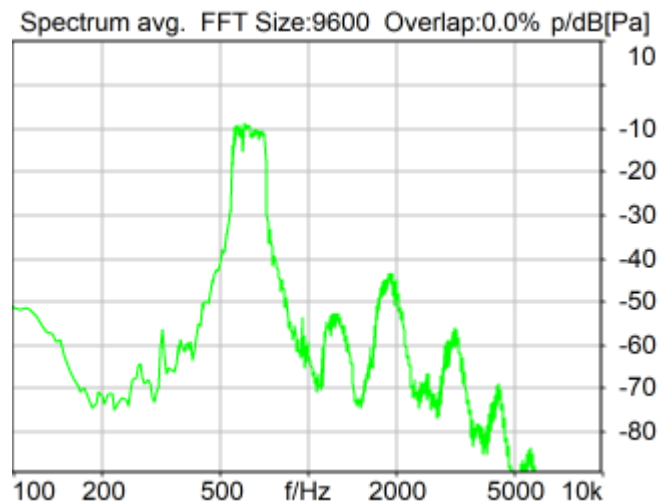
**Ok**

2023/11/12 21:10 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.79 dB (3.63%) Ok

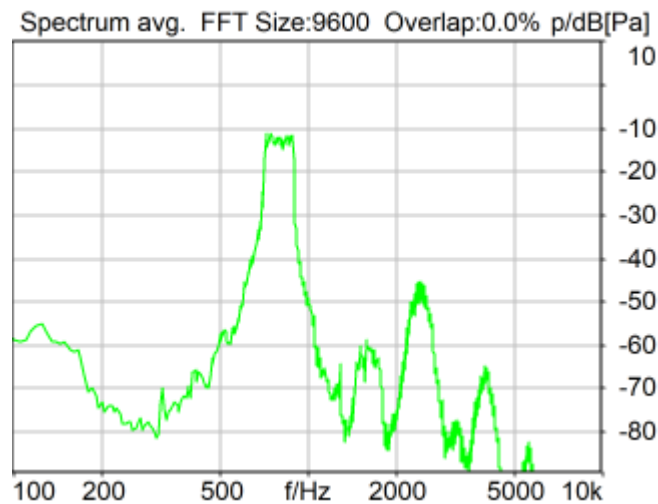
**Ok**

2023/11/12 21:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.53 dB (3.75%) Ok

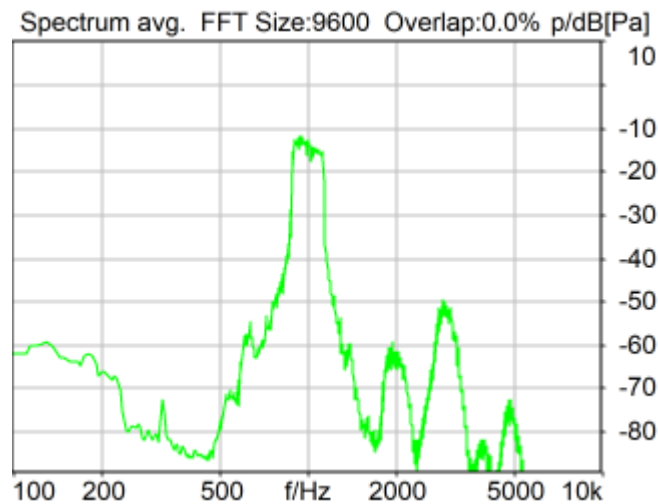
**Ok**

2023/11/12 21:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 30.49 dB (2.99%) Ok

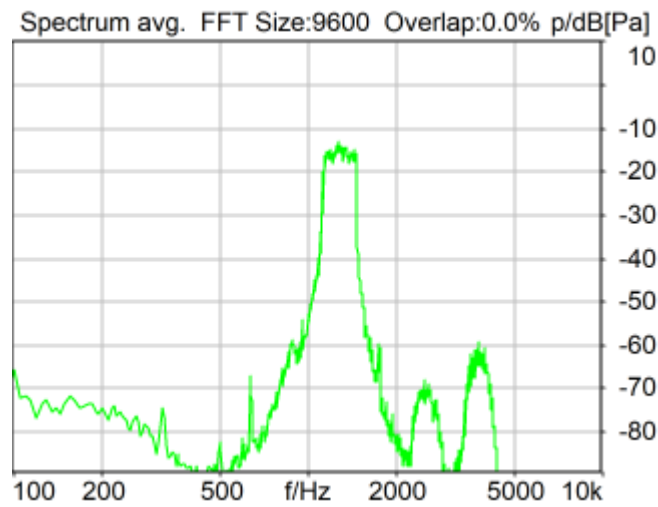
**Ok**

2023/11/12 21:11 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.01 dB (4.46%) Ok

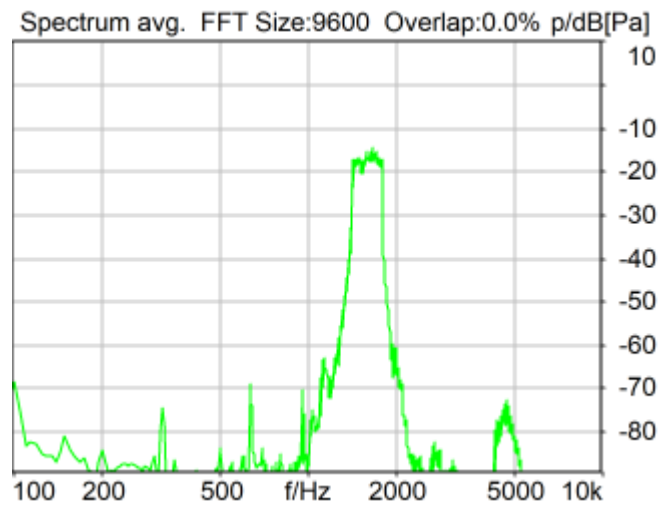
**Ok**

2023/11/12 21:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.08 dB (1.98%) Ok

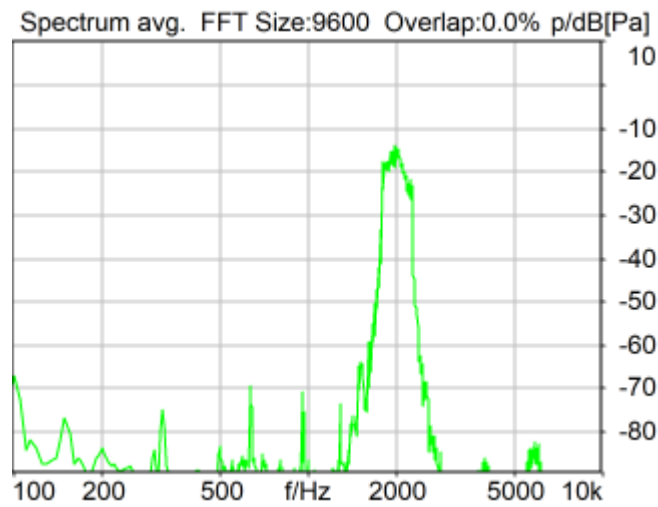
**Ok**

2023/11/12 21:12 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 34.09 dB (1.97%) Ok

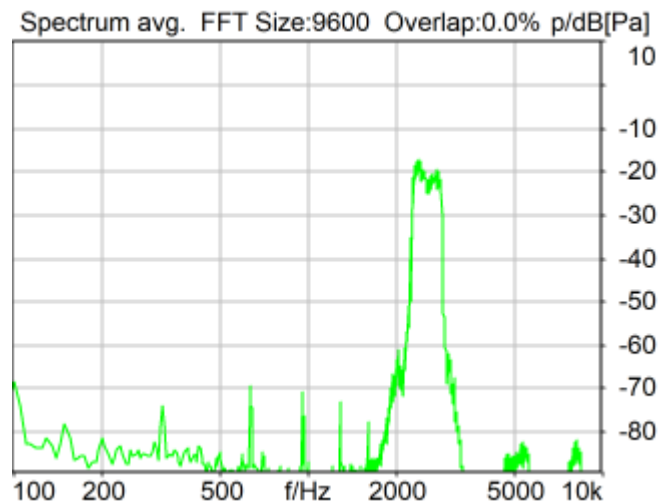
**Ok**

2023/11/12 21:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.66 dB (1.17%) Ok

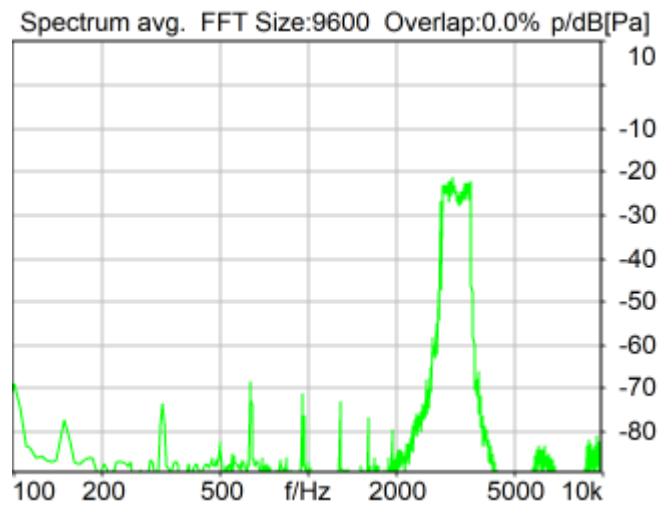
**Ok**

2023/11/12 21:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.16 dB (1.75%) Ok

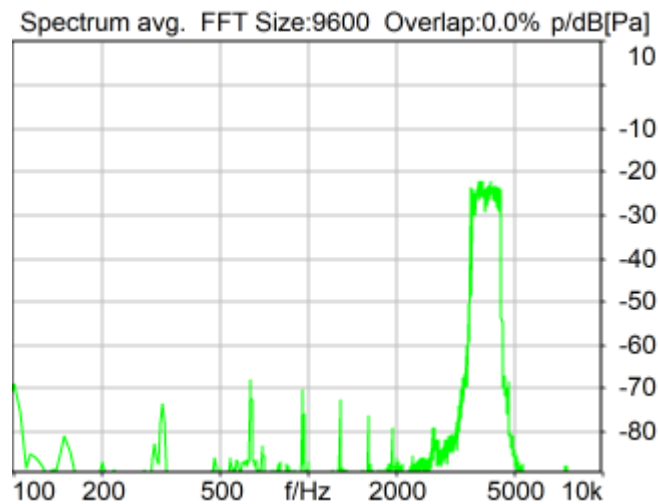
**Ok**

2023/11/12 21:13 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.88 dB (1.28%) Ok

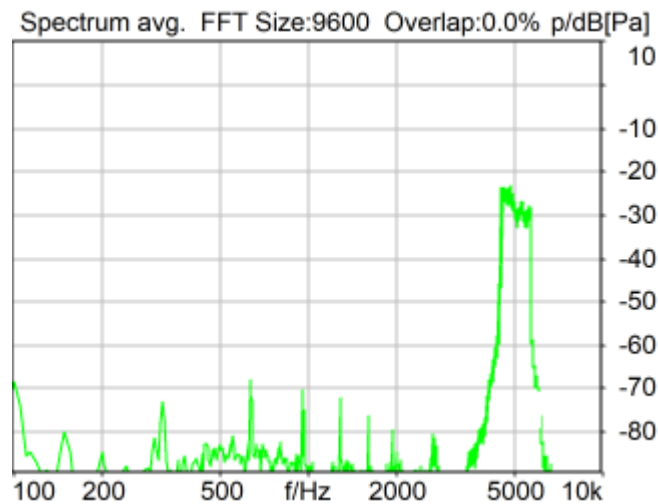
**Ok**

2023/11/12 21:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 35.37 dB (1.70%) Ok

**Ok**

2023/11/12 21:14 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 22.68 dB |
| 2      | 315Hz     | 24.66 dB |
| 3      | 400Hz     | 25.61 dB |
| 4      | 500Hz     | 27.68 dB |
| 5      | 630Hz     | 28.79 dB |
| 6      | 800Hz     | 28.53 dB |
| 7      | 1000Hz    | 30.49 dB |
| 8      | 1250Hz    | 27.01 dB |
| 9      | 1600Hz    | 34.08 dB |
| 10     | 2000Hz    | 34.09 dB |
| 11     | 2500Hz    | 38.66 dB |
| 12     | 3150Hz    | 35.16 dB |
| 13     | 4000Hz    | 37.88 dB |
| 14     | 5000Hz    | 35.37 dB |

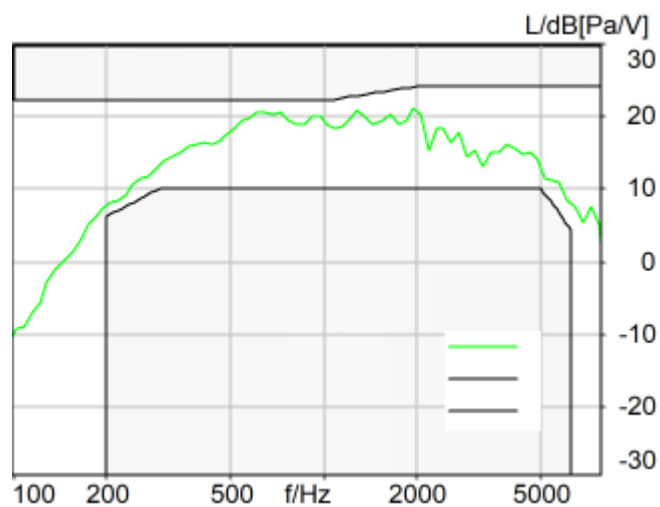
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.68dB at 250Hz.

2023/11/12 21:14 ACQUA

## 5.3 Frequency Response 8N FF

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



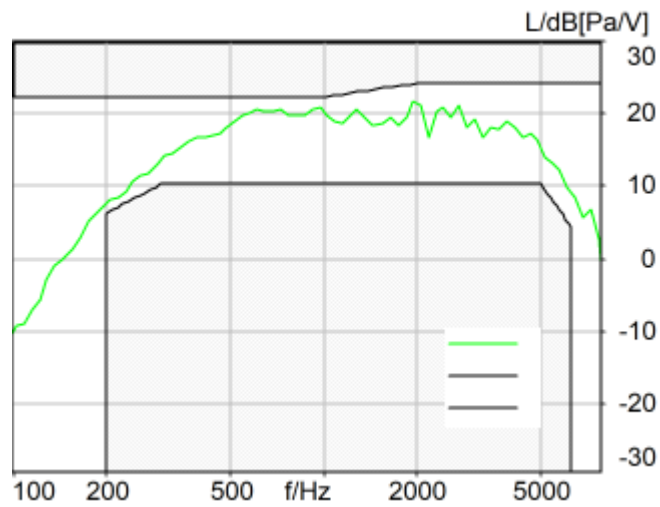
Absolute minimal distance  
1.46 dB at 217.7 Hz Ok

Ok

2023/11/12 21:15 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

## 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
1.43 dB at 974.0 Hz Ok

Ok

2023/11/12 21:15 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 26_15M_QPSK_75RB_0Offset_EVS NB 24.4Kbps_Ch26865_2N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:44             |
|                        |                              |

## Status Overview

| SMD                                                         | Status | Single Value Description                       | Single Value | Object                                                              |
|-------------------------------------------------------------|--------|------------------------------------------------|--------------|---------------------------------------------------------------------|
| Overall Receive Delay NB                                    | Done   | Delay (Cross) [ms]                             | 119.1        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.1b Receive Volume Control Performance 2N NB               | Ok     | Speech Level [dB[SPL]]                         | 86.06        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 400 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 25.39        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 500 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 27.81        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 630 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.07        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 800 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB                | 26.88        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 28.31        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 29.77        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.77        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.66        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 40.75        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB                | 38.56        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| Report - Receive Distortion and Noise (Conversational Gain) | Ok     | Minimum SDNR [dB], (occured at 400Hz)          | 25.39        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.3 Frequency Response 2N FF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 1028.7 Hz | 0.71         | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |
| 5.3 Frequency Response 2N DF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 2177.4 Hz | 0.46         | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_2N |

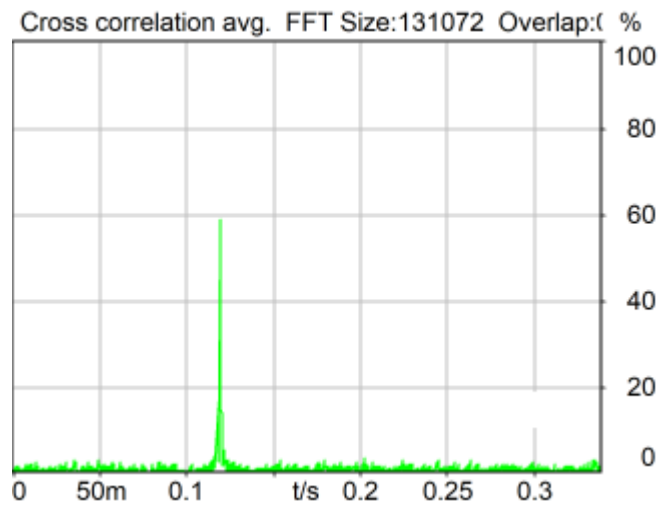
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay 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 |
| 5.3 Frequency Response 2N FF HANB                           | 18 |
| 5.3 Frequency Response 2N DF HANB                           | 19 |



## Overall Receive Delay NB

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



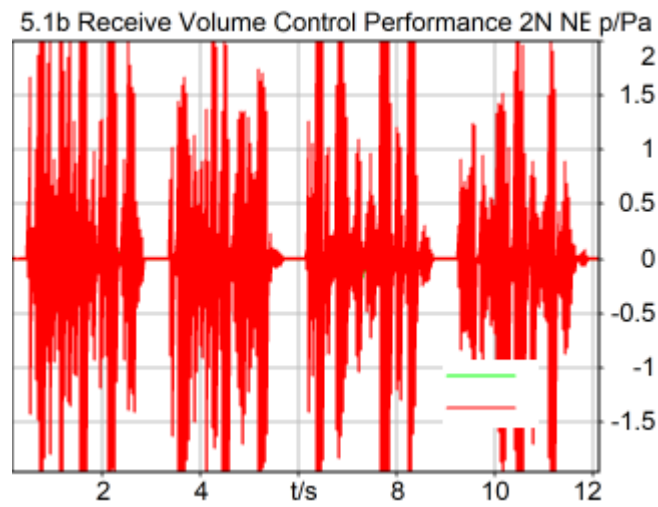
Delay (Cross): 119.1 ms

2023/11/12 21:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1b Receive Volume Control Performance 2N NB**

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



Speech Level RCV: 86.06 dB[SPL], Act.: 82.02% Ok

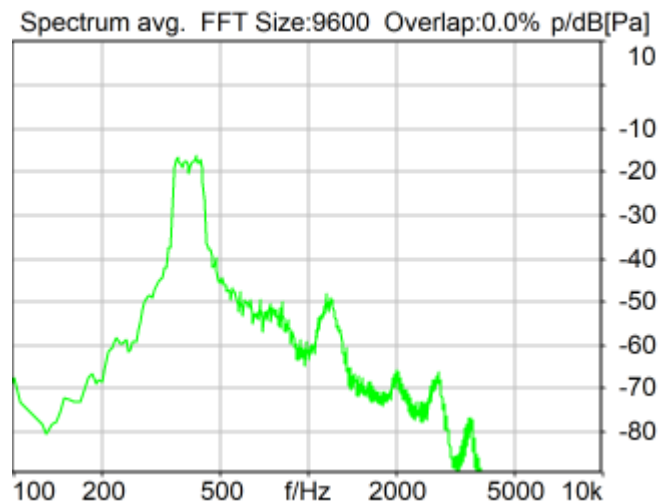
**Ok**

2023/11/12 21:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.39 dB (5.37%) Ok

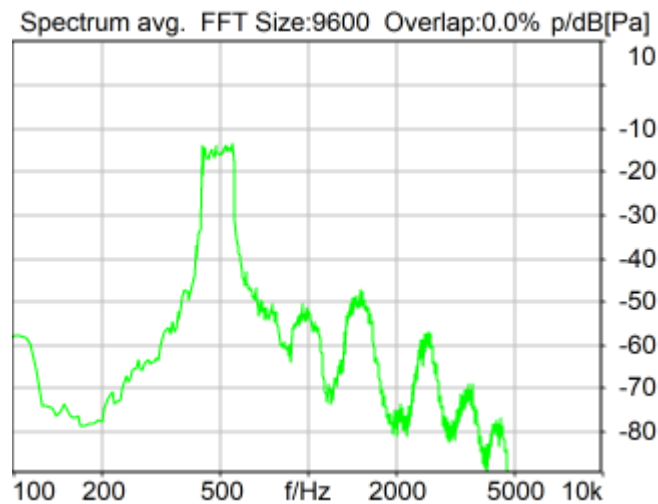
**Ok**

2023/11/12 21:47 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.2 RCV Distortion and Noise - 500 Hz NB**

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



Distortion (Noise) RCV (packed): 27.81 dB (4.07%) Ok

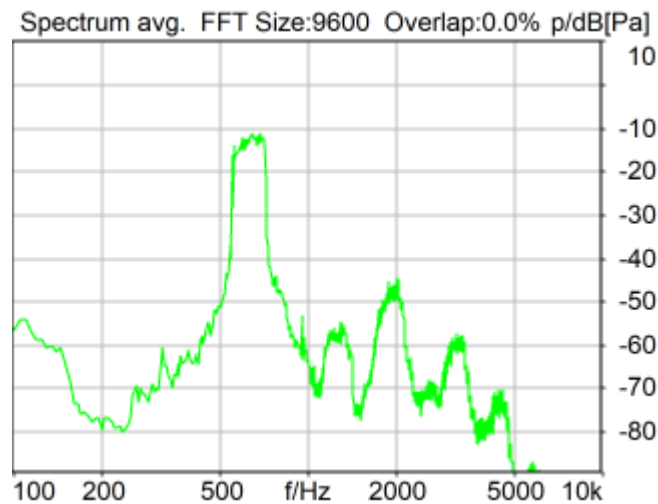
**Ok**

2023/11/12 21:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.07 dB (3.52%) Ok

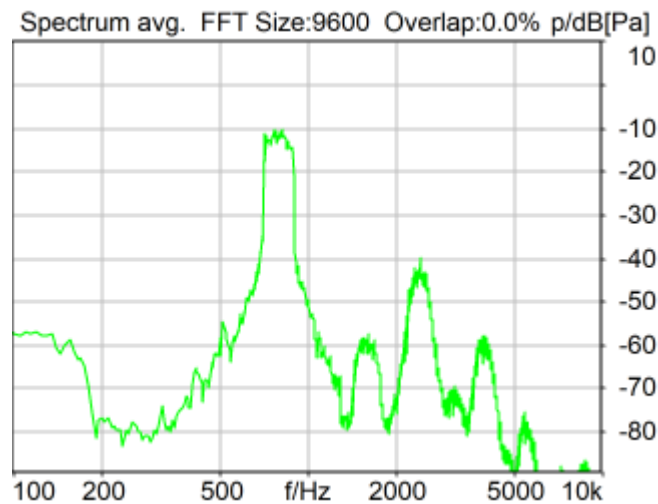
**Ok**

2023/11/12 21:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 26.88 dB (4.53%) Ok

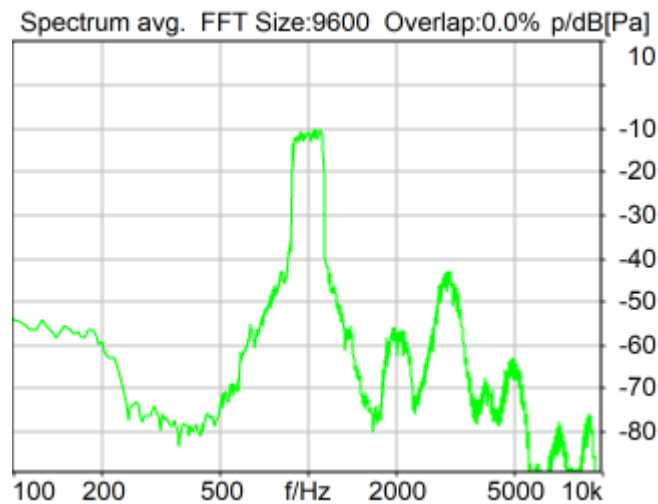
**Ok**

2023/11/12 21:48 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.31 dB (3.84%) Ok

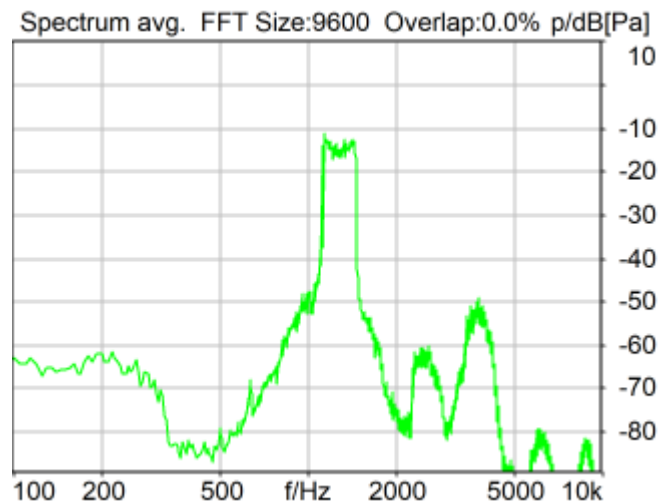
**Ok**

2023/11/12 21:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.77 dB (3.25%) Ok

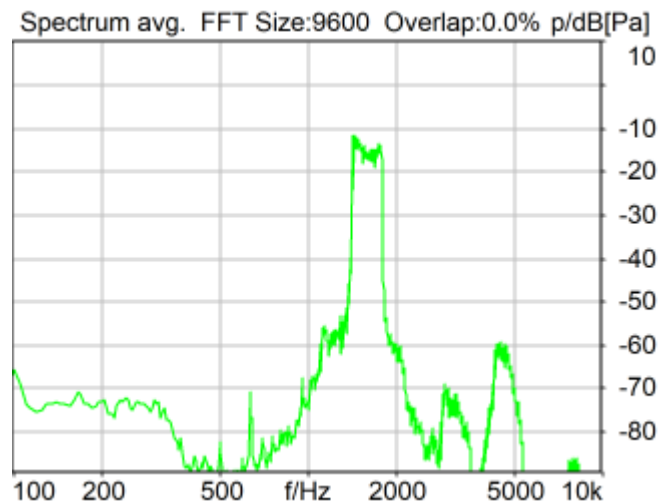
**Ok**

2023/11/12 21:49 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.77 dB (1.15%) Ok

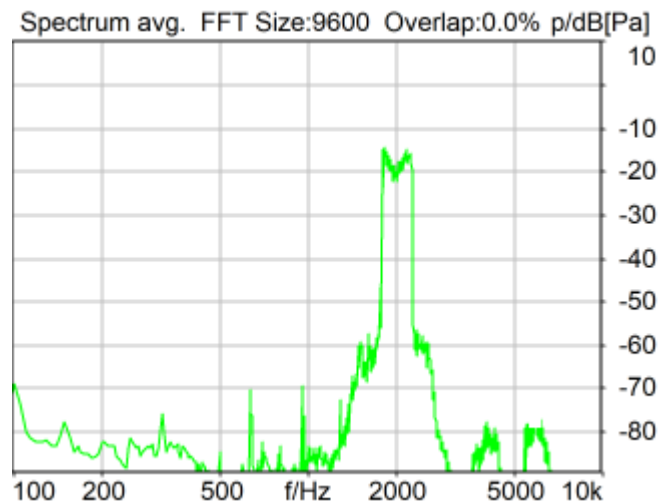
**Ok**

2023/11/12 21:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.66 dB (0.93%) Ok

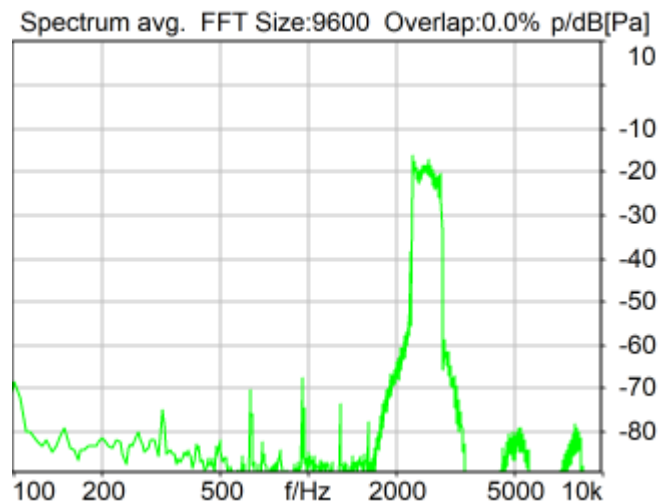
**Ok**

2023/11/12 21:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 40.75 dB (0.92%) Ok

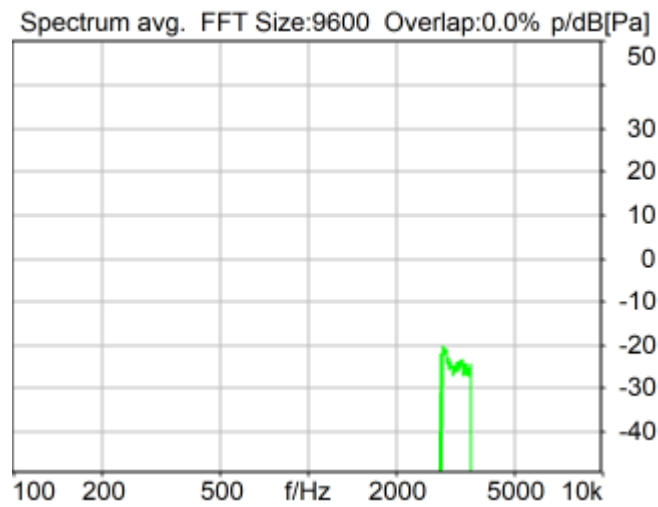
**Ok**

2023/11/12 21:50 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 38.56 dB (1.18%) Ok

**Ok**

2023/11/12 21:51 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 25.39 dB |
| 2      | 500Hz     | 27.81 dB |
| 3      | 630Hz     | 29.07 dB |
| 4      | 800Hz     | 26.88 dB |
| 5      | 1000Hz    | 28.31 dB |
| 6      | 1250Hz    | 29.77 dB |
| 7      | 1600Hz    | 38.77 dB |
| 8      | 2000Hz    | 40.66 dB |
| 9      | 2500Hz    | 40.75 dB |
| 10     | 3150Hz    | 38.56 dB |

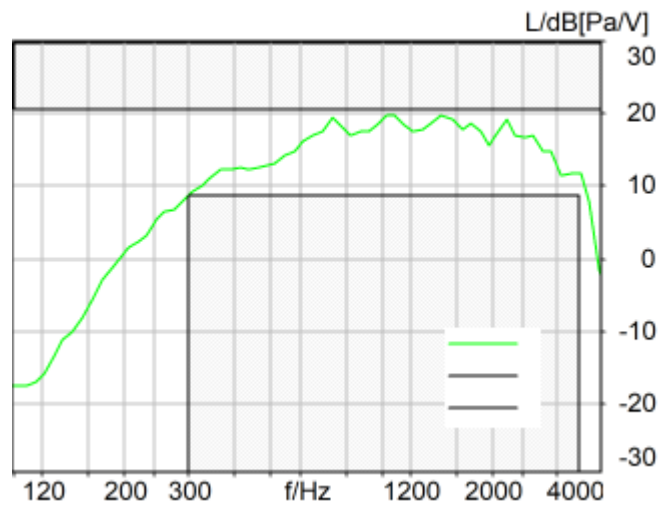
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 25.39dB at 400Hz.

2023/11/12 21:58 ACQUA

### 5.3 Frequency Response 2N FF HANB

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



Absolute minimal distance  
0.71 dB at 1028.7 Hz Ok

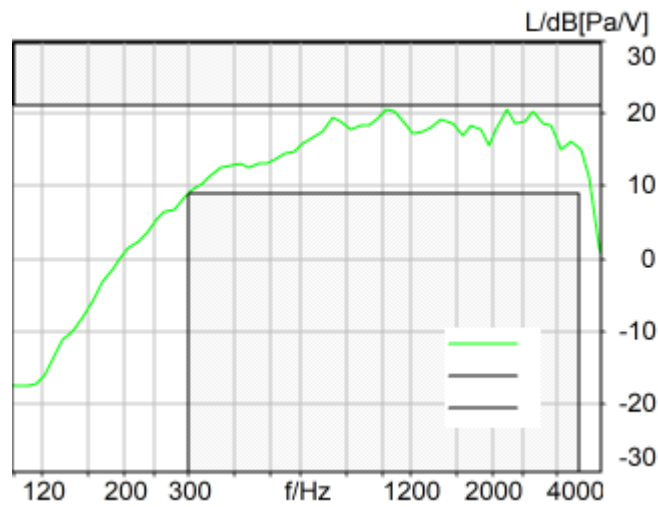
Ok

2023/11/12 21:58 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 2N DF HANB

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



Absolute minimal distance  
0.46 dB at 2177.4 Hz Ok

Ok

2023/11/12 21:58 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 26_15M_QPSK_75RB_0Offset_EVS NB 24.4Kbps_Ch26865_8N |
|--------------------|--------------------------------------------------------------|

|                        |                              |
|------------------------|------------------------------|
| Project                | 3O1004 of TIA-5050 (2018-01) |
| Report Generation Date | 2023/11/21 20:45             |
|                        |                              |

## Status Overview

| SMD                                                         | Status | Single Value Description                      | Single Value | Object                                                              |
|-------------------------------------------------------------|--------|-----------------------------------------------|--------------|---------------------------------------------------------------------|
| Overall Receive Delay NB                                    | Done   | Delay (Cross) [ms]                            | 158.4        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.1a Receive Volume Control Performance 8N NB               | Ok     | Speech Level [dB[SPL]]                        | 90.74        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 400 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB               | 25.37        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 500 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB               | 27.57        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 630 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB               | 28.66        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 800 Hz NB                    | Ok     | Distortion (Noise) [dB], 0.0 dB               | 27.45        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 29.12        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 27.56        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 37.09        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 32.89        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 28.20        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz NB                   | Ok     | Distortion (Noise) [dB], 0.0 dB               | 37.09        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| Report - Receive Distortion and Noise (Conversational Gain) | Ok     | Minimum SDNR [dB], (occured at 400Hz)         | 25.37        | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.3 Frequency Response 8N FF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 305.9 Hz | 0.46         | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |
| 5.3 Frequency Response 8N DF HANB                           | Ok     | Min. dist. to tolerance scheme [dB], 305.9 Hz | 0.19         | LTE Band<br>26_15M_QPSK_75RB_0Offset_E<br>VS NB 24.4Kbps_Ch26865_8N |

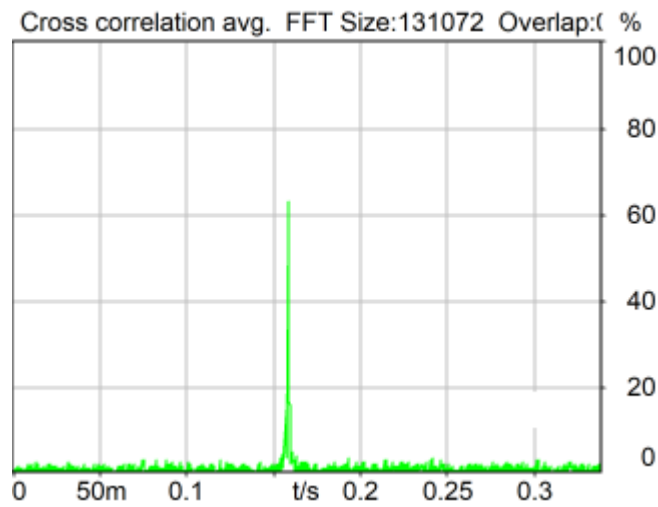
---

|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay NB                                    | 5  |
| 5.1a Receive Volume Control Performance 8N 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 |
| 5.3 Frequency Response 8N FF HANB                           | 18 |
| 5.3 Frequency Response 8N DF HANB                           | 19 |



## Overall Receive Delay NB

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



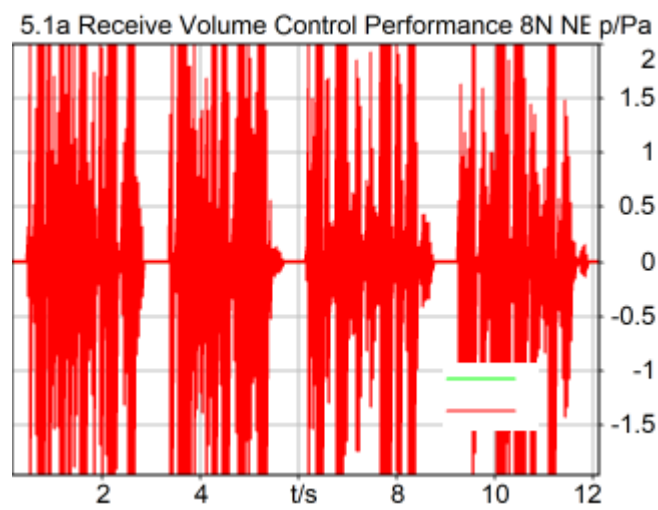
Delay (Cross): 158.4 ms

2023/11/12 22:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **5.1a Receive Volume Control Performance 8N NB**

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



Speech Level RCV: 90.74 dB[SPL], Act.: 80.82% Ok

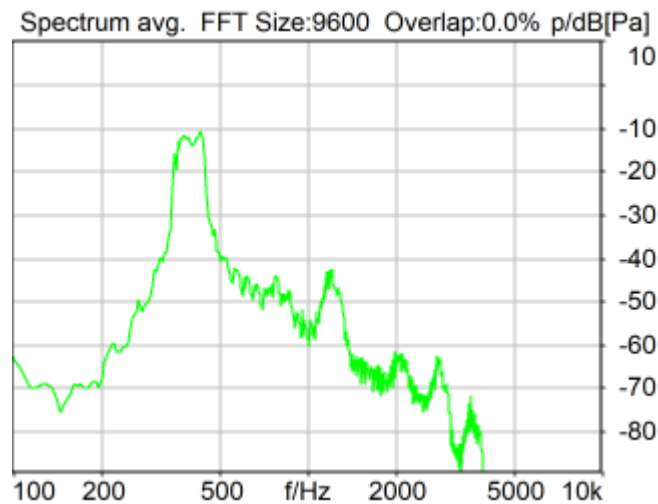
**Ok**

2023/11/12 22:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 25.37 dB (5.39%) Ok

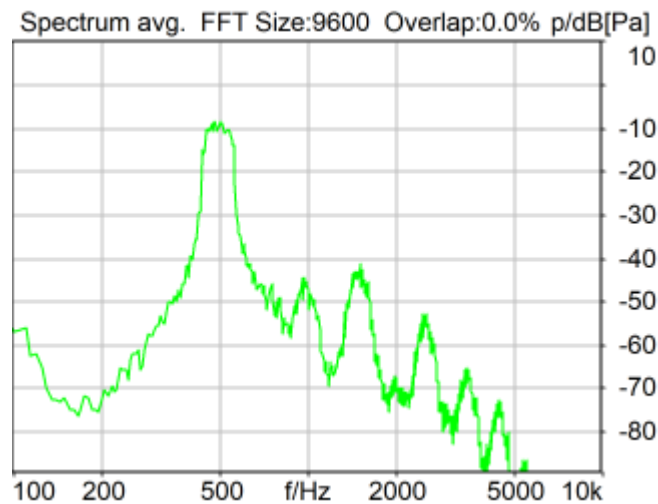
**Ok**

2023/11/12 22:02 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.57 dB (4.18%) Ok

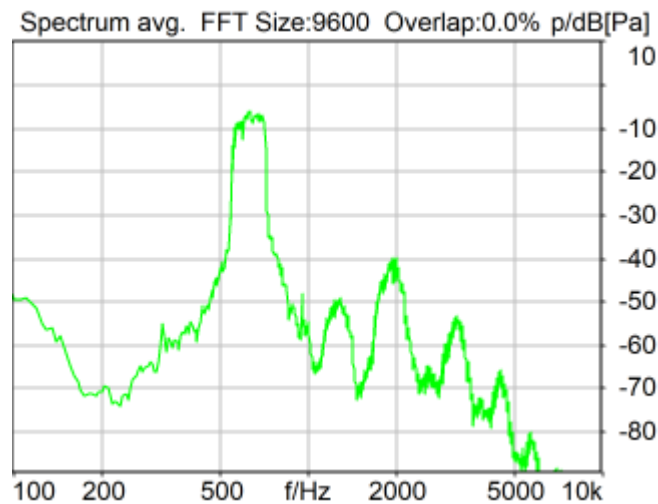
**Ok**

2023/11/12 22:03 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.66 dB (3.69%) Ok

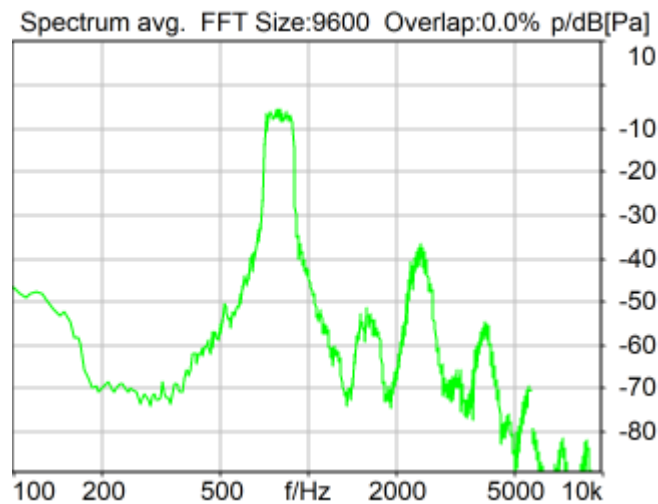
**Ok**

2023/11/12 22:03 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.45 dB (4.24%) Ok

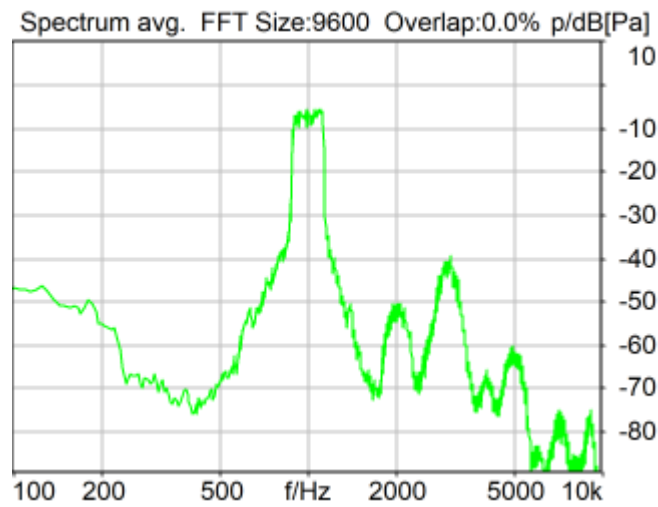
**Ok**

2023/11/12 22:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 29.12 dB (3.50%) Ok

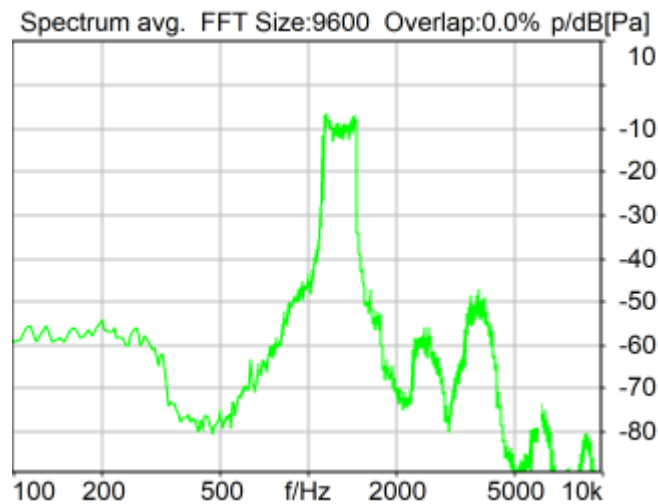
**Ok**

2023/11/12 22:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 27.56 dB (4.19%) Ok

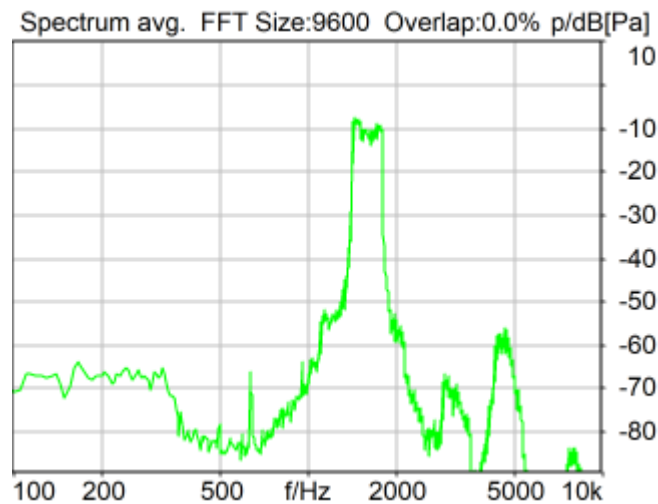
**Ok**

2023/11/12 22:04 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.09 dB (1.40%) Ok

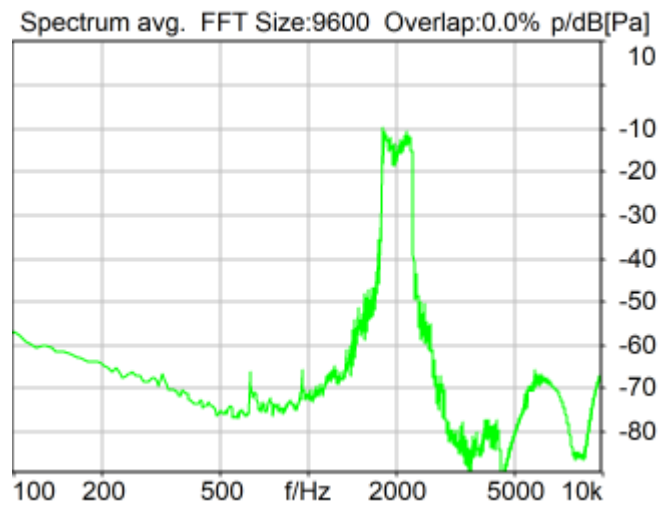
**Ok**

2023/11/12 22:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 32.89 dB (2.27%) Ok

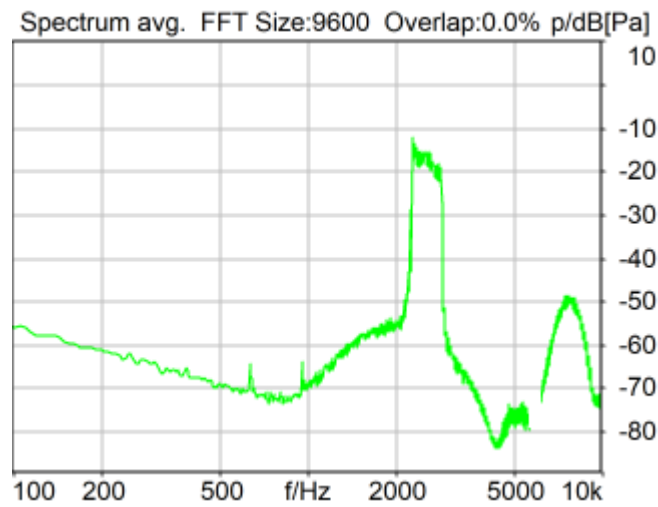
**Ok**

2023/11/12 22:05 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 28.20 dB (3.89%) Ok

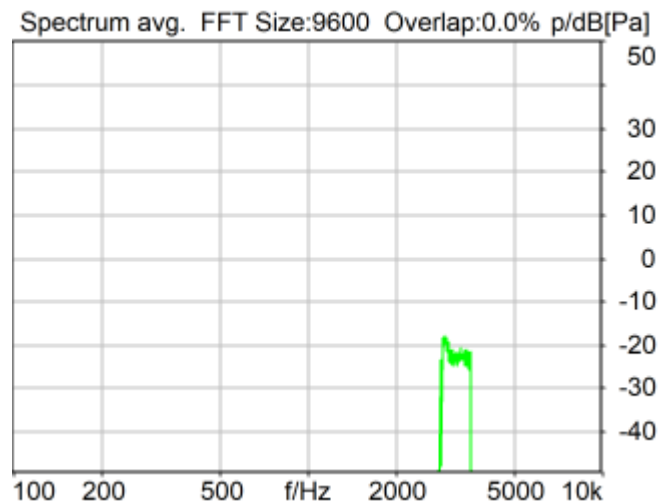
**Ok**

2023/11/12 22:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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): 37.09 dB (1.40%) Ok

**Ok**

2023/11/12 22:06 ACQUA 5.1.200

Unmodified HEAD acoustics Measurement Descriptor

## **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     | 25.37 dB |
| 2      | 500Hz     | 27.57 dB |
| 3      | 630Hz     | 28.66 dB |
| 4      | 800Hz     | 27.45 dB |
| 5      | 1000Hz    | 29.12 dB |
| 6      | 1250Hz    | 27.56 dB |
| 7      | 1600Hz    | 37.09 dB |
| 8      | 2000Hz    | 32.89 dB |
| 9      | 2500Hz    | 28.20 dB |
| 10     | 3150Hz    | 37.09 dB |

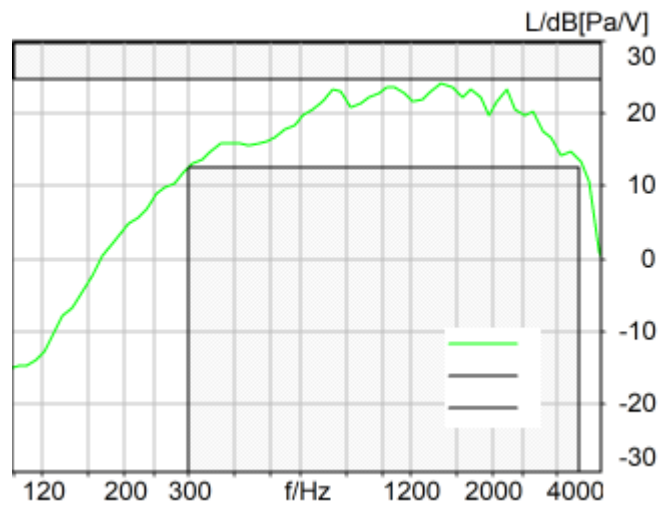
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 25.37dB at 400Hz.

2023/11/12 22:10 ACQUA

### 5.3 Frequency Response 8N FF HANB

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



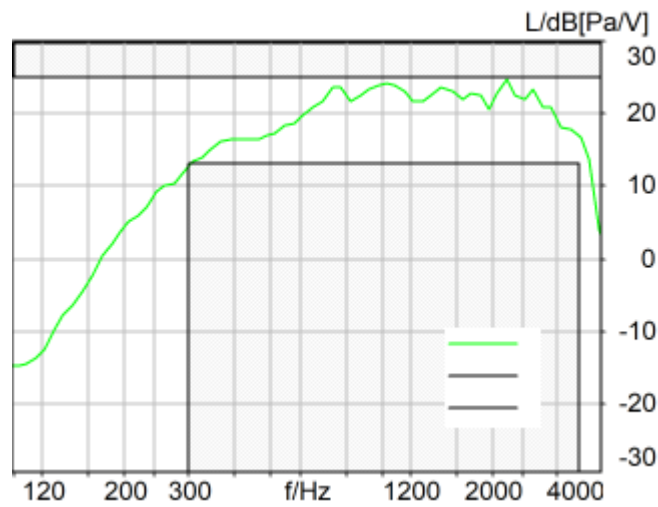
Absolute minimal distance  
0.46 dB at 305.9 Hz Ok

Ok

2023/11/13 1:21 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor

### 5.3 Frequency Response 8N DF HANB

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



Absolute minimal distance  
0.19 dB at 305.9 Hz Ok

**Ok**

2023/11/13 1:22 ACQUA 5.1.200  
Unmodified HEAD acoustics Measurement Descriptor