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## **Measurement Protocol**

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Measurement Object | LTE Band 13_10M_QPSK_1_0_EVS WB 24.4kbps_Ch23230_2N |
|--------------------|-----------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/14 18:23 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description            | Single Value | Object                                                    |
|-----------------------------------------------|--------|-------------------------------------|--------------|-----------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                  | 109.8        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]              | 86.77        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 25.80        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 28.82        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 30.60        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 30.41        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 32.25        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 35.88        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 31.48        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 29.47        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 23.28        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 22.76        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 32.71        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 32.56        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 44.02        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB]<br>, 0.0 dB | 38.54        | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                  | 22.76        | LTE Band                                                  |

ACQUA Report  
4kbps\_Ch23230\_2N

Title: LTE Band 13\_10M\_QPSK\_1\_0\_EVS WB 24.

|                                 |    |                                                      |      |                                                           |
|---------------------------------|----|------------------------------------------------------|------|-----------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 2000Hz)                                  |      | 13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N             |
| 5.3 Frequency Response 2N<br>FF | Ok | Min. dist. to tolerance<br>scheme [dB], 611.7<br>Hz  | 0.52 | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |
| 5.3 Frequency Response 2N<br>DF | Ok | Min. dist. to tolerance<br>scheme [dB], 4369.4<br>Hz | 0.34 | LTE Band<br>13_10M_QPSK_1_0_EVS WB<br>24.4kbps_Ch23230_2N |

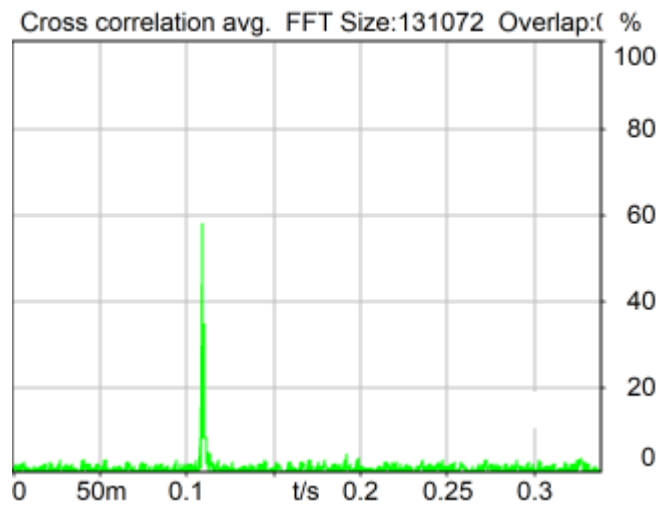
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance 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

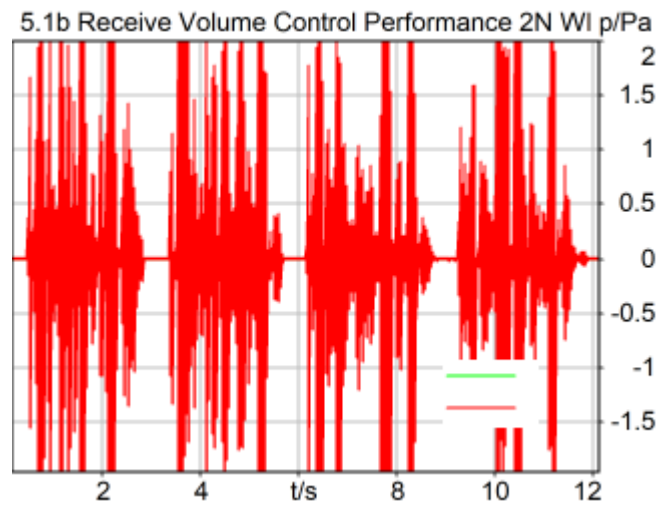


Delay (Cross): 109.8 ms

26/04/14 18:15 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N WB

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



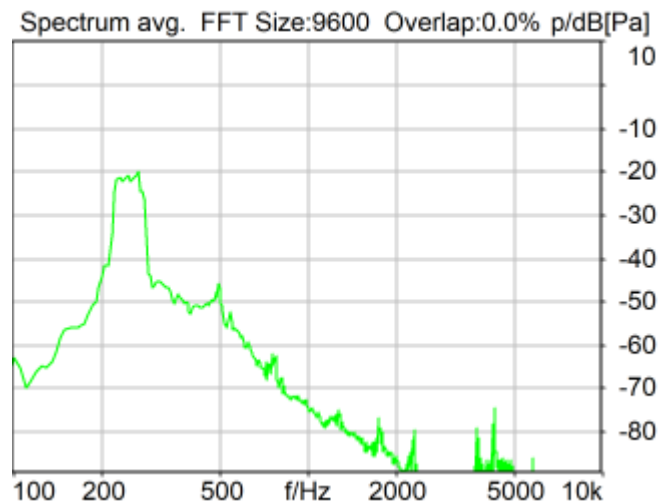
Speech Level RCV: 86.77 dB[SPL], Act.: 82.16% Ok

**Ok**

26/04/14 18:15 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 250 Hz WB**

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



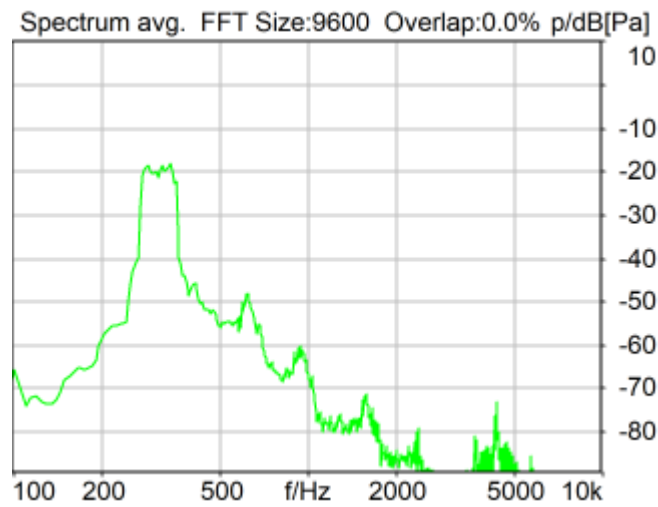
Distortion (Noise) RCV (packed): 25.80 dB (5.13%) Ok

**Ok**

26/04/14 18:16 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 315 Hz WB

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



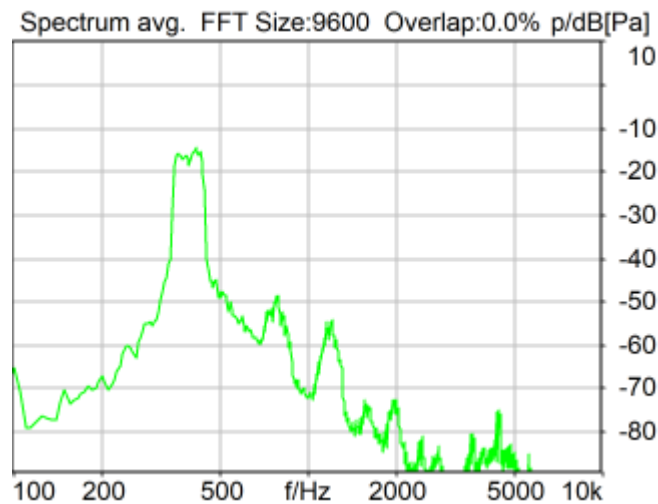
Distortion (Noise) RCV (packed): 28.82 dB (3.62%) Ok

Ok

26/04/14 18:16 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 400 Hz WB**

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



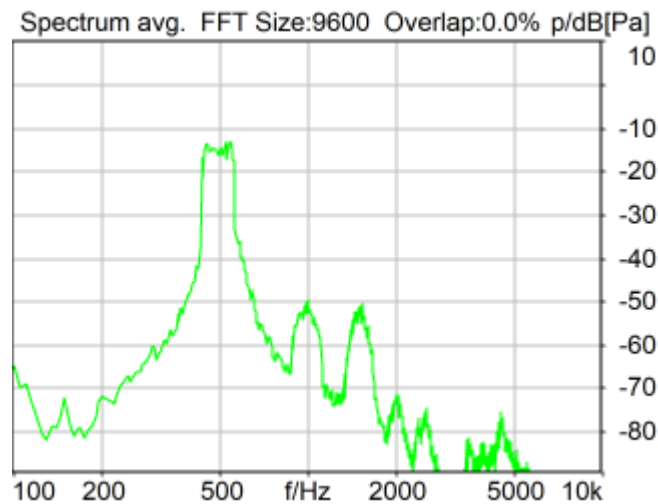
Distortion (Noise) RCV (packed): 30.60 dB (2.95%) Ok

**Ok**

26/04/14 18:17 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 500 Hz WB

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



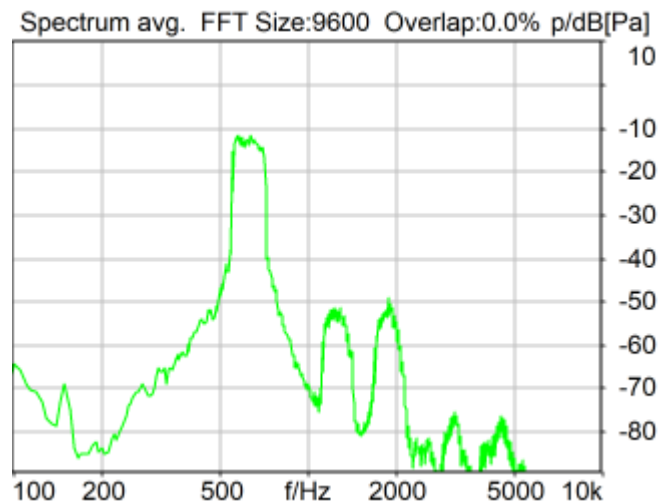
Distortion (Noise) RCV (packed): 30.41 dB (3.02%) Ok

Ok

26/04/14 18:17 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 630 Hz WB**

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



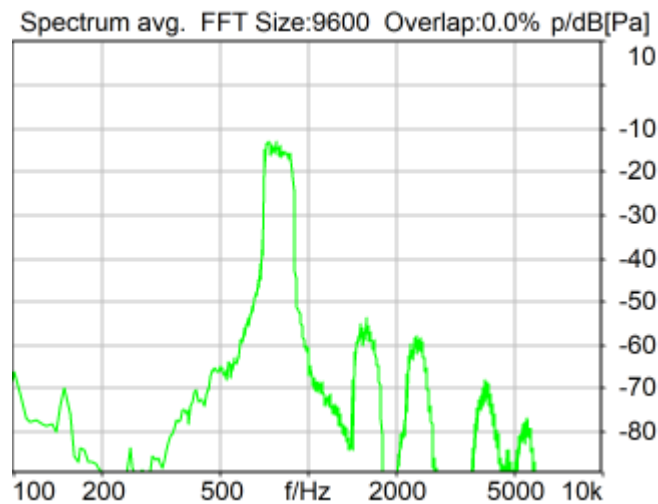
Distortion (Noise) RCV (packed): 32.25 dB (2.44%) Ok

**Ok**

26/04/14 18:17 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 800 Hz WB

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



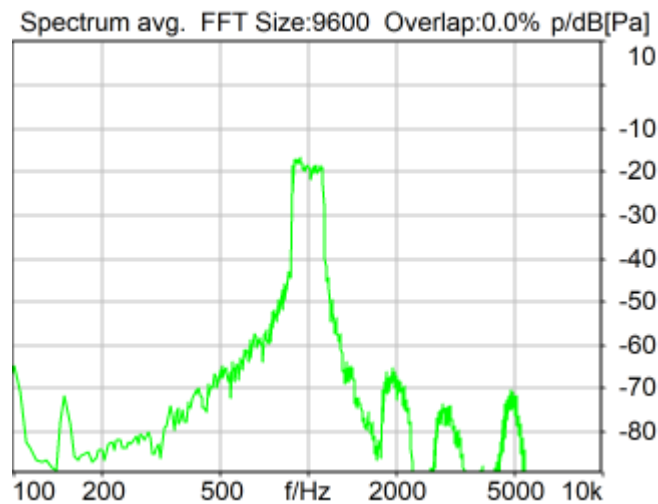
Distortion (Noise) RCV (packed): 35.88 dB (1.61%) Ok

Ok

26/04/14 18:18 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



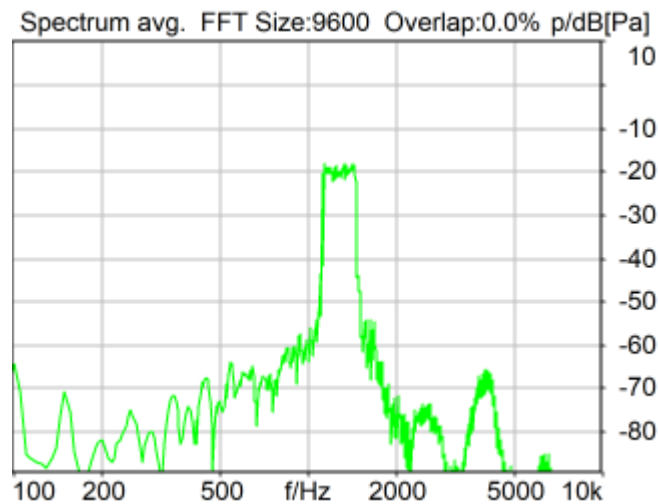
Distortion (Noise) RCV (packed): 31.48 dB (2.67%) Ok

Ok

26/04/14 18:18 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1250 Hz WB

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



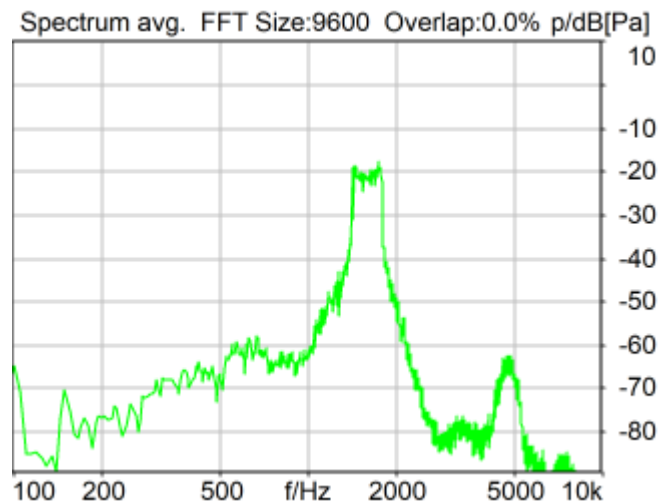
Distortion (Noise) RCV (packed): 29.47 dB (3.36%) Ok

Ok

26/04/14 18:19 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1600 Hz WB

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



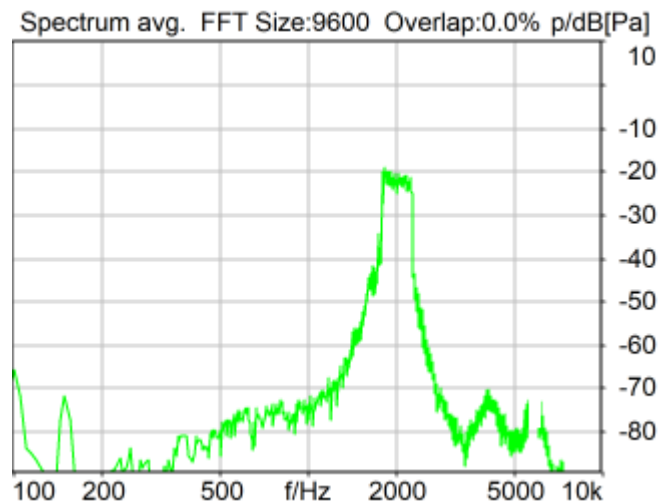
Distortion (Noise) RCV (packed): 23.28 dB (6.86%) Ok

Ok

26/04/14 18:19 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 2000 Hz WB

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



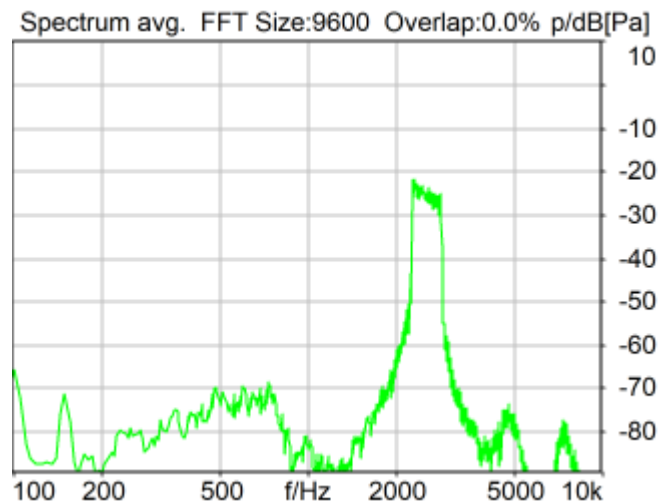
Distortion (Noise) RCV (packed): 22.76 dB (7.28%) Ok

Ok

26/04/14 18:20 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



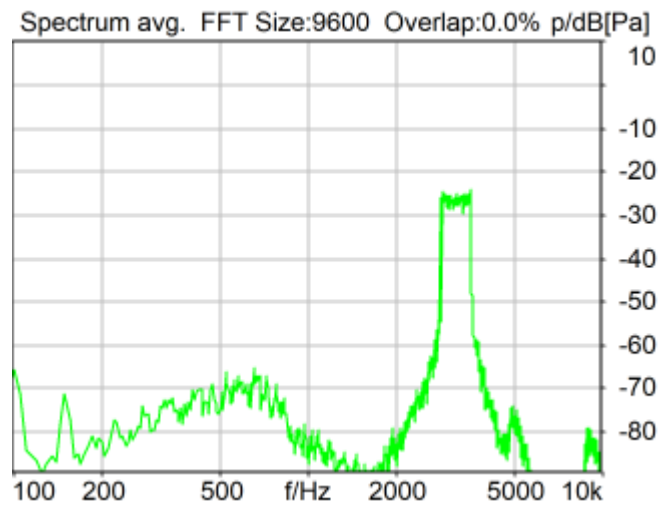
Distortion (Noise) RCV (packed): 32.71 dB (2.32%) Ok

Ok

26/04/14 18:20 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 3150 Hz WB

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



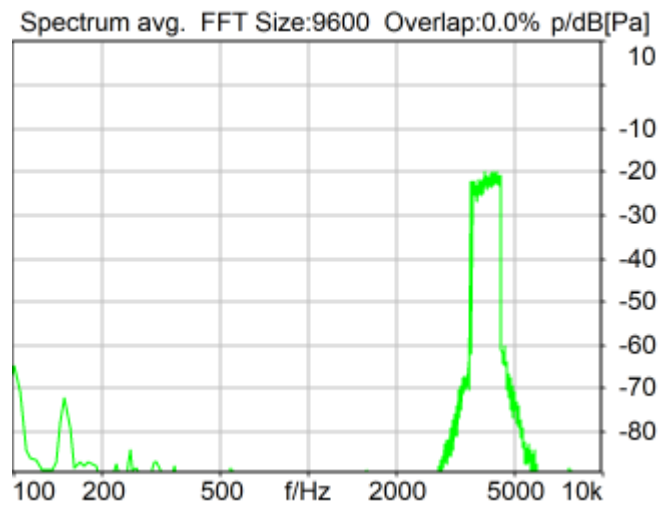
Distortion (Noise) RCV (packed): 32.56 dB (2.35%) Ok

Ok

26/04/14 18:21 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



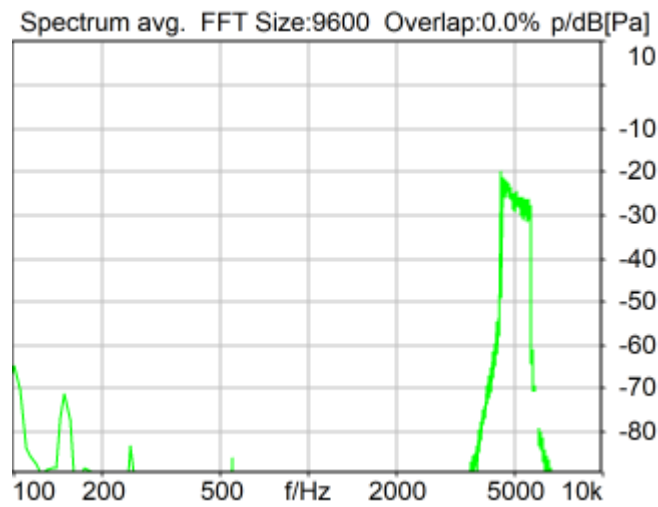
Distortion (Noise) RCV (packed): 44.02 dB (0.63%) Ok

Ok

26/04/14 18:21 ACQUA 5.1.200

## 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): 38.54 dB (1.18%) Ok

Ok

26/04/14 18:22 ACQUA 5.1.200

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**Report - Receive Distortion and Noise (Conversational Gain)**

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

| Region | Frequency | SDNR     |
|--------|-----------|----------|
| 1      | 250Hz     | 25.80 dB |
| 2      | 315Hz     | 28.82 dB |
| 3      | 400Hz     | 30.60 dB |
| 4      | 500Hz     | 30.41 dB |
| 5      | 630Hz     | 32.25 dB |
| 6      | 800Hz     | 35.88 dB |
| 7      | 1000Hz    | 31.48 dB |
| 8      | 1250Hz    | 29.47 dB |
| 9      | 1600Hz    | 23.28 dB |
| 10     | 2000Hz    | 22.76 dB |
| 11     | 2500Hz    | 32.71 dB |
| 12     | 3150Hz    | 32.56 dB |
| 13     | 4000Hz    | 44.02 dB |
| 14     | 5000Hz    | 38.54 dB |

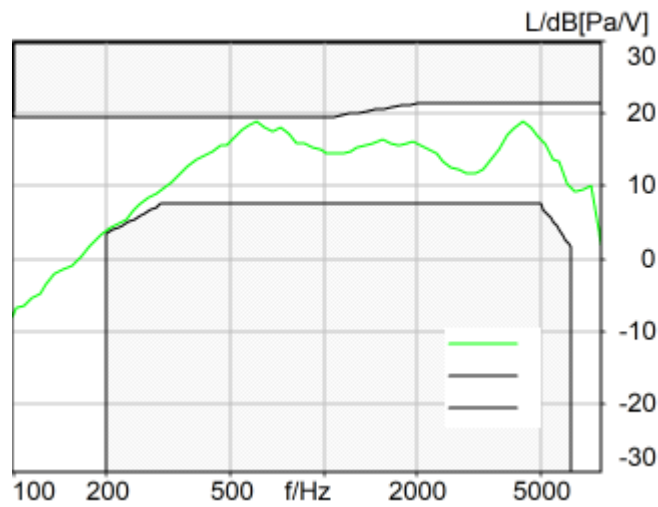
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.76dB at 2000Hz.

26/04/14 18:22 ACQUA

### 5.3 Frequency Response 2N FF

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



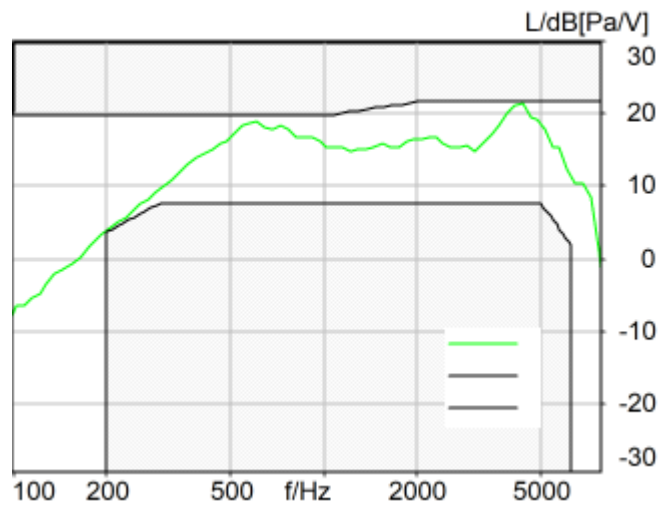
Absolute minimal distance  
0.52 dB at 611.7 Hz Ok

Ok

26/04/14 18:22 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
0.34 dB at 4369.4 Hz Ok

Ok

26/04/14 18:23 ACQUA 5.1.200

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## **Measurement Protocol**

|                    |                                                   |
|--------------------|---------------------------------------------------|
| Measurement Object | FR1 n48_100M_QPSK_1_1_EVS WB 24.4kbps_Ch641666_2N |
|--------------------|---------------------------------------------------|

|                        |               |
|------------------------|---------------|
| Project                | 471902-02     |
| Report Generation Date | 26/04/16 5:36 |
| Responsible Person     | AC01-KS       |

**Status Overview**

| SMD                                           | Status | Single Value Description           | Single Value | Object                                                  |
|-----------------------------------------------|--------|------------------------------------|--------------|---------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                 | 111.5        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]             | 86.92        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.66        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 30.78        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 30.54        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 30.08        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 32.14        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 34.51        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 41.15        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 22.15        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 39.13        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 22.18        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 34.00        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 34.40        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 44.13        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 31.37        | FR1<br>n48_100M_QPSK_1_1_EVS<br>WB 24.4kbps_Ch641666_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                 | 22.15        | FR1                                                     |

ACQUA Report  
4kbps\_Ch641666\_2N

Title: FR1 n48\_100M\_QPSK\_1\_1\_EVS WB 24.

|                                 |    |                                                |      |                                                      |
|---------------------------------|----|------------------------------------------------|------|------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                            |      | n48_100M_QPSK_1_1_EVS WB 24.4kbps_Ch641666_2N        |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz  | 0.39 | FR1<br>n48_100M_QPSK_1_1_EVS WB 24.4kbps_Ch641666_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 4119.5 Hz | 0.25 | FR1<br>n48_100M_QPSK_1_1_EVS WB 24.4kbps_Ch641666_2N |

ACQUA Report  
4kbps\_Ch641666\_2N

Title: FR1 n48\_100M\_QPSK\_1\_1\_EVS WB 24.

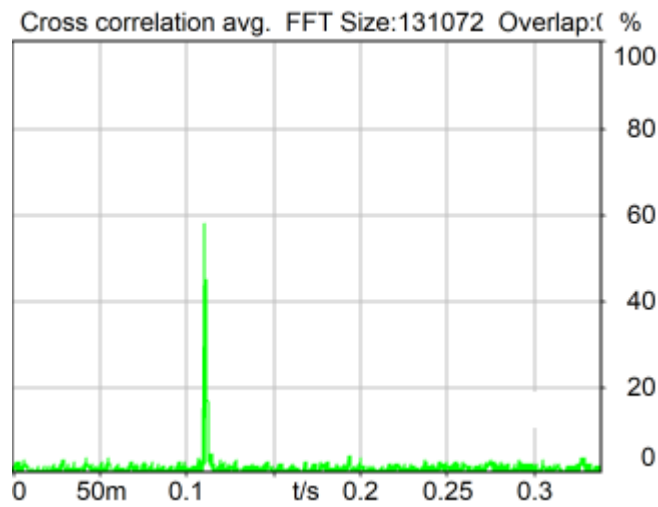
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance 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

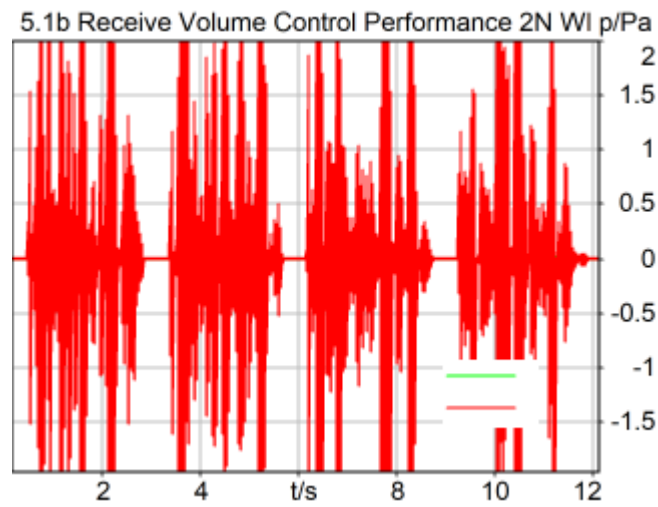


Delay (Cross): 111.5 ms

26/04/16 5:23 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N WB

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



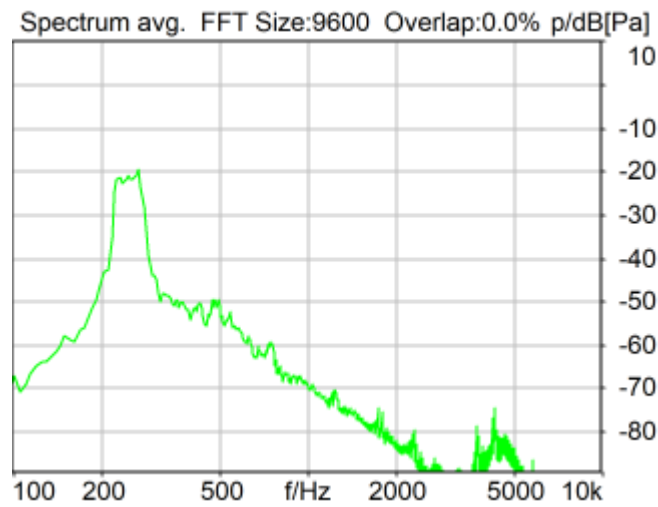
Speech Level RCV: 86.92 dB[SPL], Act.: 81.28% Ok

**Ok**

26/04/16 5:24 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 250 Hz WB

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



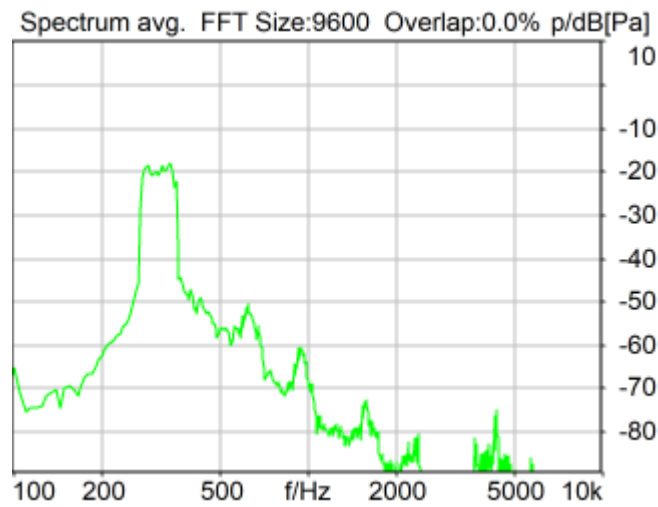
Distortion (Noise) RCV (packed): 26.66 dB (4.65%) Ok

Ok

26/04/16 5:24 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 315 Hz WB**

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



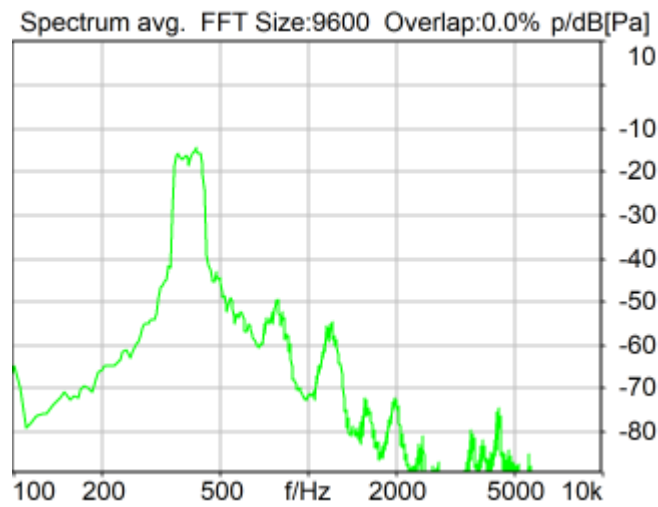
Distortion (Noise) RCV (packed): 30.78 dB (2.89%) Ok

**Ok**

26/04/16 5:25 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 400 Hz WB**

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



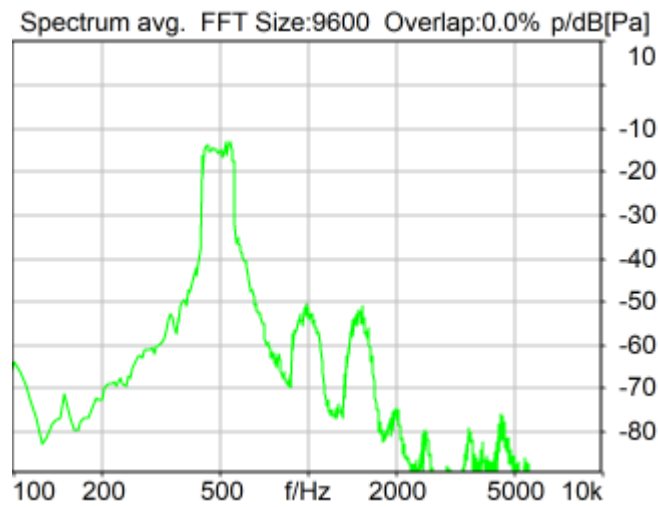
Distortion (Noise) RCV (packed): 30.54 dB (2.97%) Ok

**Ok**

26/04/16 5:25 ACQUA 5.1.200

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

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



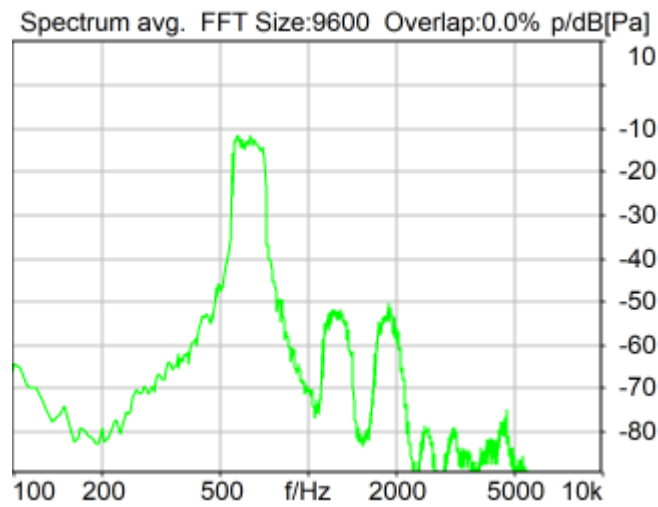
Distortion (Noise) RCV (packed): 30.08 dB (3.13%) Ok

**Ok**

26/04/16 5:26 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 630 Hz WB**

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



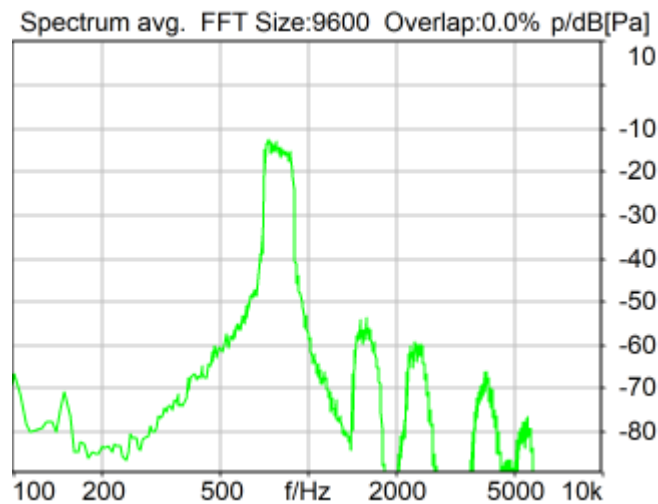
Distortion (Noise) RCV (packed): 32.14 dB (2.47%) Ok

**Ok**

26/04/16 5:27 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 800 Hz WB

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



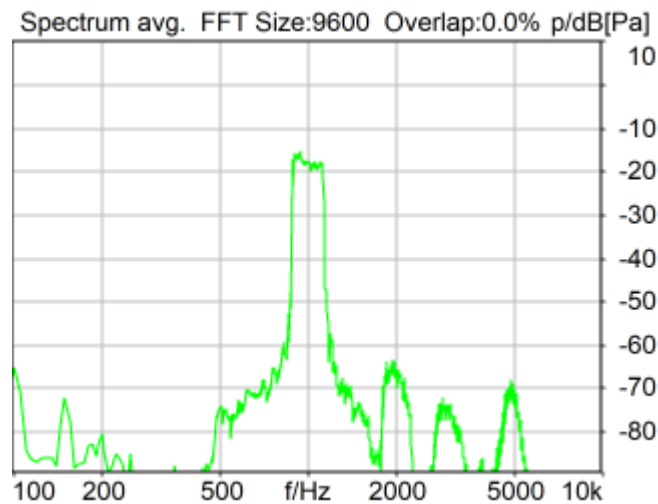
Distortion (Noise) RCV (packed): 34.51 dB (1.88%) Ok

Ok

26/04/16 5:27 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



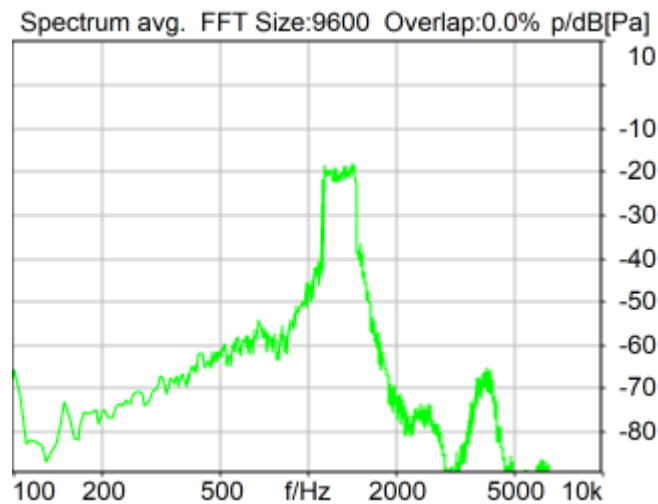
Distortion (Noise) RCV (packed): 41.15 dB (0.88%) Ok

Ok

26/04/16 5:28 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 1250 Hz WB**

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



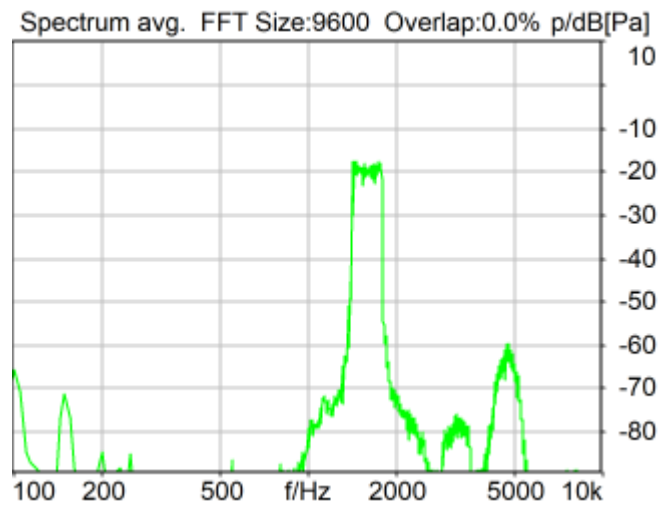
Distortion (Noise) RCV (packed): 22.15 dB (7.80%) Ok

**Ok**

26/04/16 5:28 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 1600 Hz WB**

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



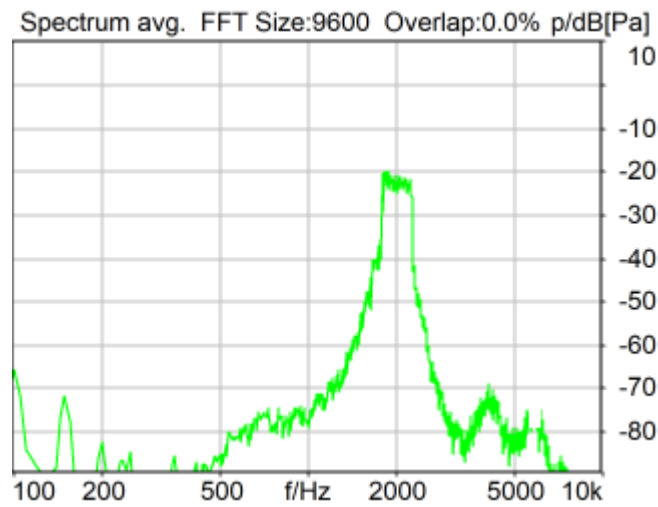
Distortion (Noise) RCV (packed): 39.13 dB (1.11%) Ok

**Ok**

26/04/16 5:29 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 2000 Hz WB**

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



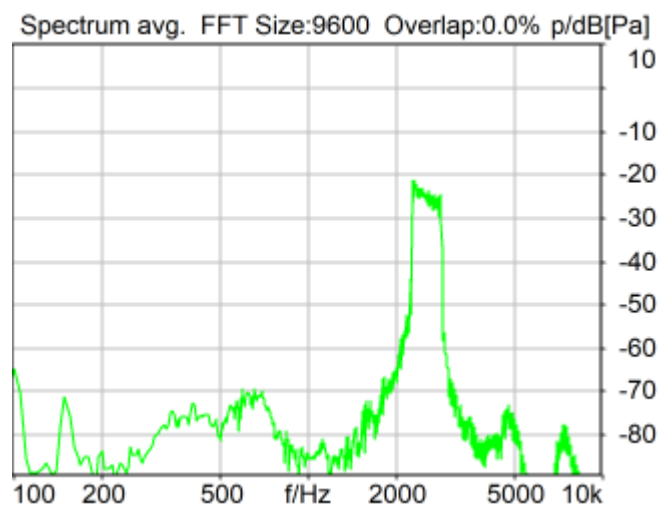
Distortion (Noise) RCV (packed): 22.18 dB (7.78%) Ok

**Ok**

26/04/16 5:29 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



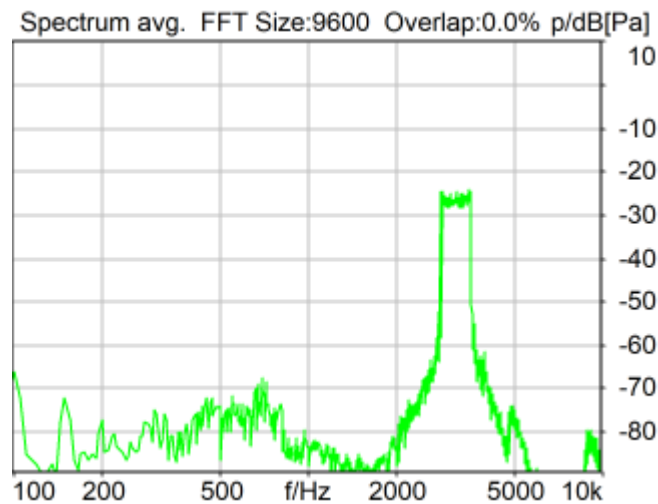
Distortion (Noise) RCV (packed): 34.00 dB (2.00%) Ok

Ok

26/04/16 5:30 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 3150 Hz WB

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



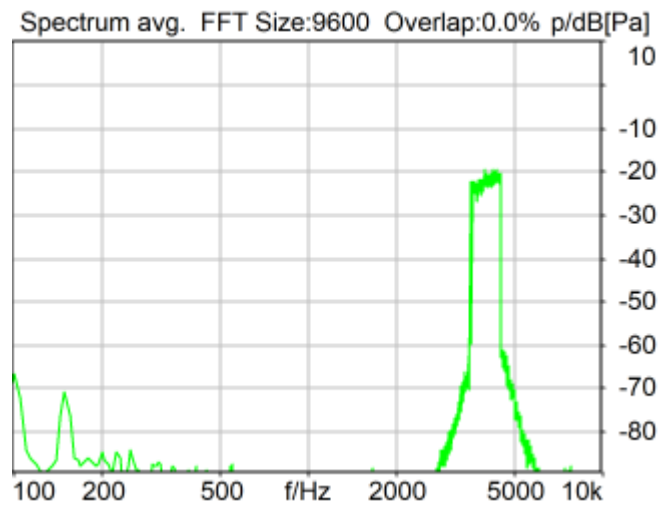
Distortion (Noise) RCV (packed): 34.40 dB (1.91%) Ok

Ok

26/04/16 5:30 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



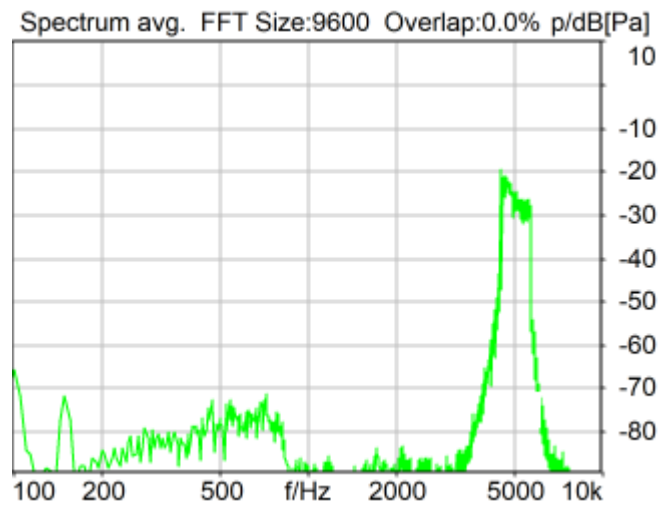
Distortion (Noise) RCV (packed): 44.13 dB (0.62%) Ok

Ok

26/04/16 5:31 ACQUA 5.1.200

## 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): 31.37 dB (2.70%) Ok

Ok

26/04/16 5:31 ACQUA 5.1.200

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**Report - Receive Distortion and Noise (Conversational Gain)**

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

| Region | Frequency | SDNR     |
|--------|-----------|----------|
| 1      | 250Hz     | 26.66 dB |
| 2      | 315Hz     | 30.78 dB |
| 3      | 400Hz     | 30.54 dB |
| 4      | 500Hz     | 30.08 dB |
| 5      | 630Hz     | 32.14 dB |
| 6      | 800Hz     | 34.51 dB |
| 7      | 1000Hz    | 41.15 dB |
| 8      | 1250Hz    | 22.15 dB |
| 9      | 1600Hz    | 39.13 dB |
| 10     | 2000Hz    | 22.18 dB |
| 11     | 2500Hz    | 34.00 dB |
| 12     | 3150Hz    | 34.40 dB |
| 13     | 4000Hz    | 44.13 dB |
| 14     | 5000Hz    | 31.37 dB |

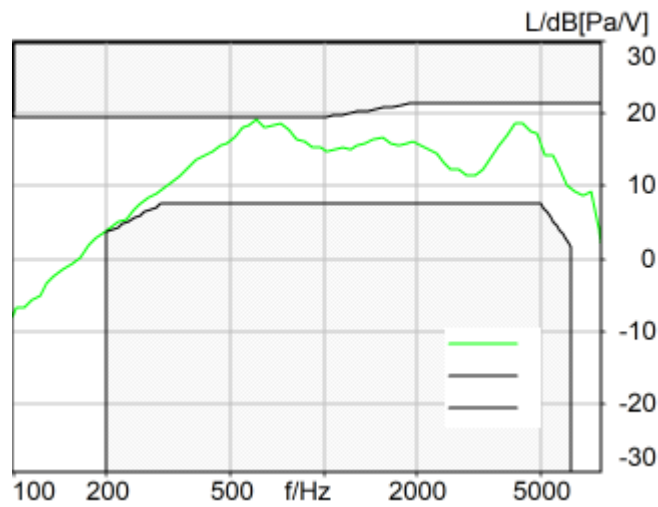
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.15dB at 1250Hz.

26/04/16 5:33 ACQUA

### 5.3 Frequency Response 2N FF

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



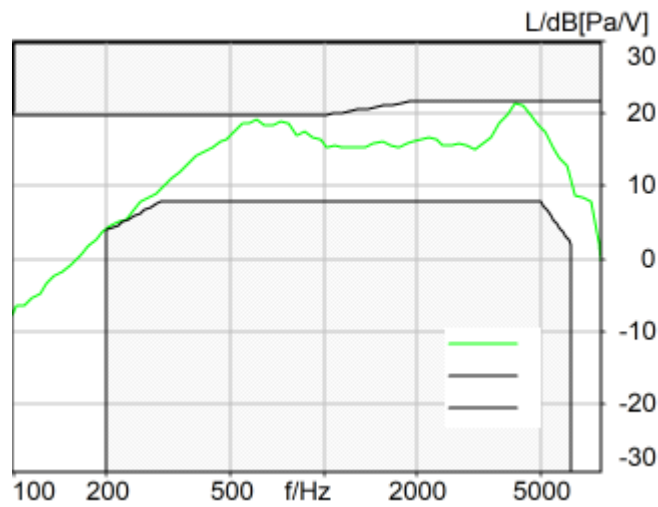
Absolute minimal distance  
0.39 dB at 611.7 Hz Ok

Ok

26/04/16 5:34 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
0.25 dB at 4119.5 Hz Ok

Ok

26/04/16 5:34 ACQUA 5.1.200

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## **Measurement Protocol**

|                    |                                                |
|--------------------|------------------------------------------------|
| Measurement Object | WLAN5GHz_802.11a 6Mbps_EVS WB 24.4kbps_Ch60_8N |
|--------------------|------------------------------------------------|

|                        |               |
|------------------------|---------------|
| Project                | 471902-02     |
| Report Generation Date | 26/04/18 4:47 |
| Responsible Person     | AC01-KS       |

**Status Overview**

| SMD                                           | Status | Single Value Description           | Single Value | Object                                                |
|-----------------------------------------------|--------|------------------------------------|--------------|-------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                 | 255.3        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]             | 91.36        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 25.76        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.07        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.95        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.60        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.55        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.17        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.49        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 21.67        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 24.64        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.57        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 24.05        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.71        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.64        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 32.92        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                 | 21.67        | WLAN5GHz_802.11a                                      |

ACQUA Report  
4kbps\_Ch60\_8N

Title: WLAN5GHz\_802.11a 6Mbps\_EVS WB 24.

|                                 |    |                                               |      |                                                       |
|---------------------------------|----|-----------------------------------------------|------|-------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                           |      | 6Mbps_EVS WB 24.<br>4kbps_Ch60_8N                     |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 230.2 Hz | 0.02 | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz | 0.04 | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch60_8N |

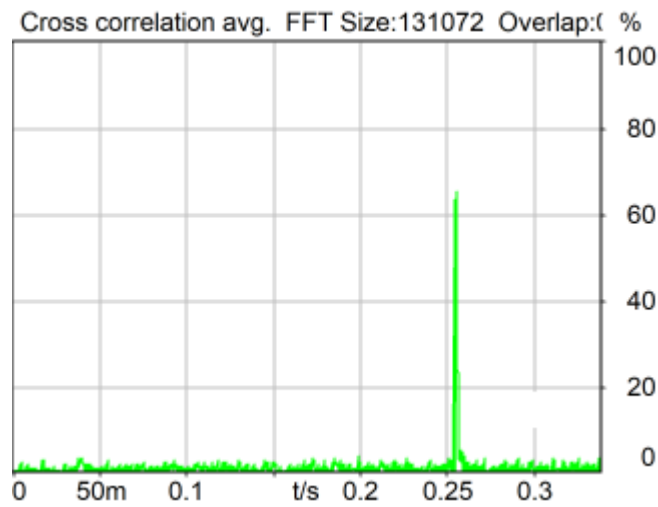
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance 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

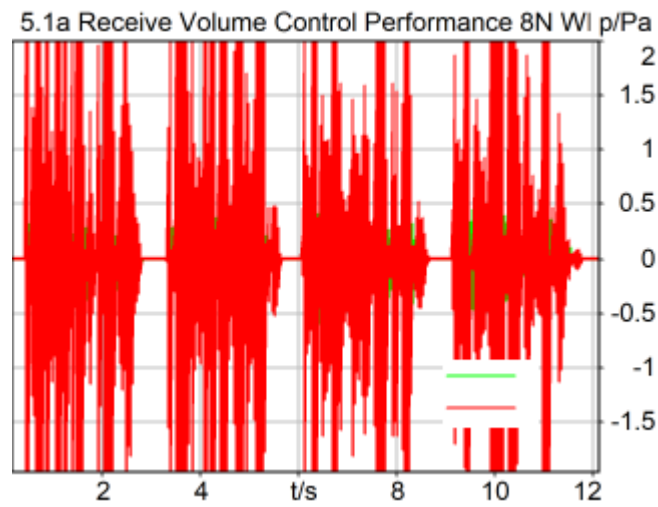


Delay (Cross): 255.3 ms

26/04/18 3:55 ACQUA 5.1.200

## 5.1a Receive Volume Control Performance 8N WB

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



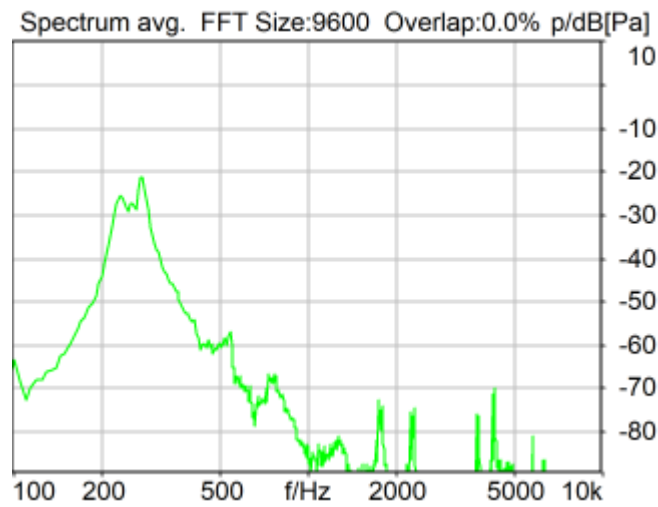
Speech Level RCV: 91.36 dB[SPL], Act.: 81.08% Ok

**Ok**

26/04/18 3:46 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 250 Hz WB

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



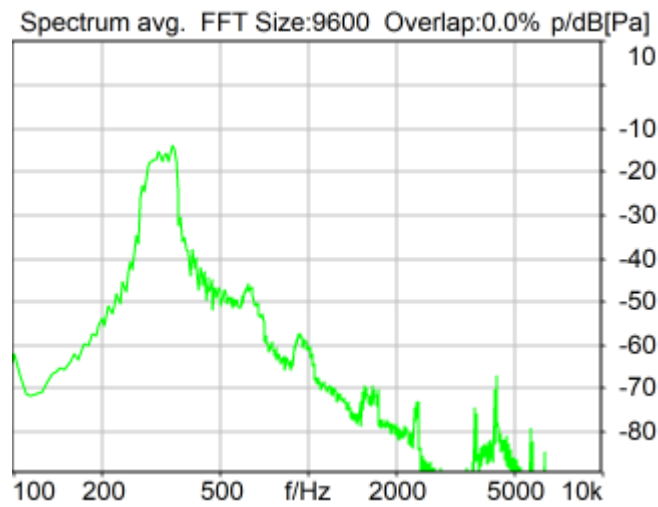
Distortion (Noise) RCV (packed): 25.76 dB (5.15%) Ok

Ok

26/04/18 3:46 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 315 Hz WB**

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



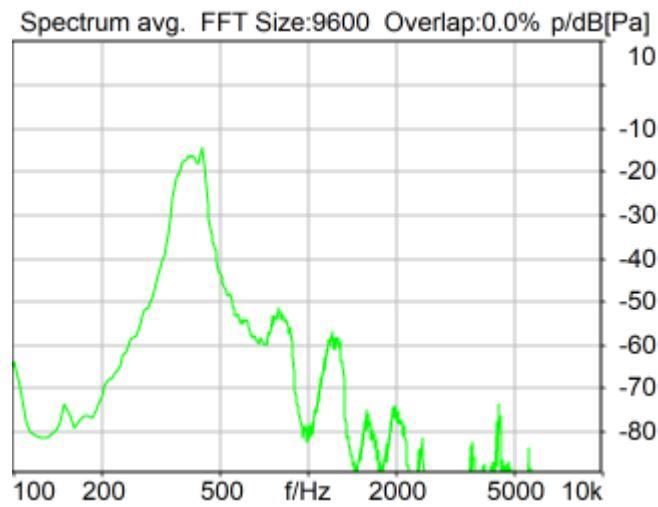
Distortion (Noise) RCV (packed): 27.07 dB (4.43%) Ok

**Ok**

26/04/18 3:47 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 400 Hz WB**

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



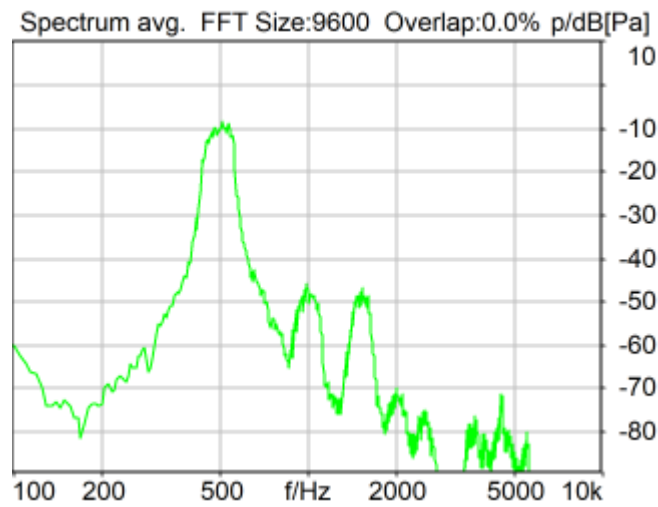
Distortion (Noise) RCV (packed): 28.95 dB (3.57%) Ok

**Ok**

26/04/18 3:47 ACQUA 5.1.200

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

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



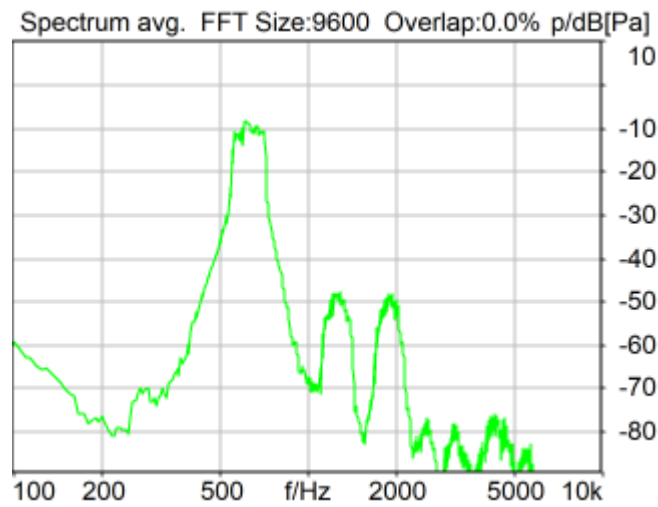
Distortion (Noise) RCV (packed): 29.60 dB (3.31%) Ok

**Ok**

26/04/18 3:48 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 630 Hz WB**

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



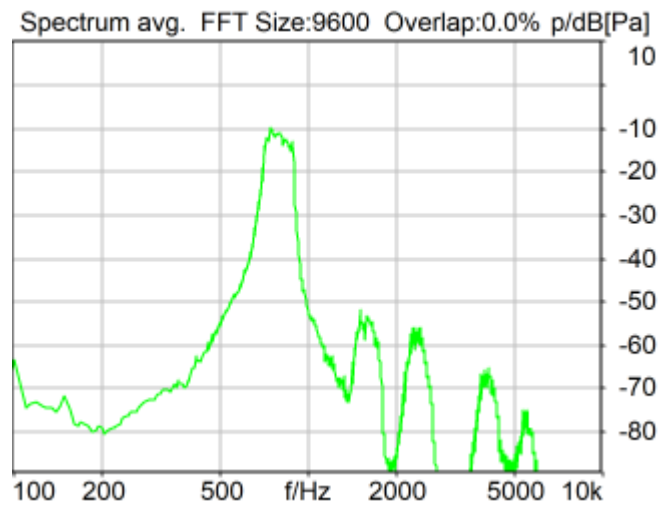
Distortion (Noise) RCV (packed): 28.55 dB (3.74%) Ok

**Ok**

26/04/18 3:48 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 800 Hz WB**

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



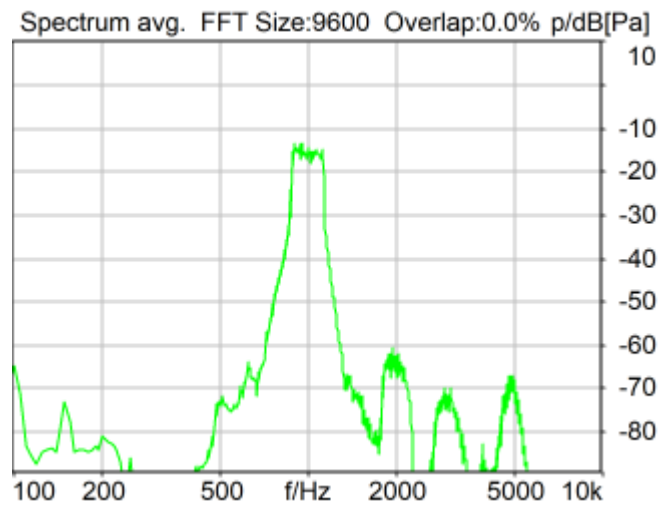
Distortion (Noise) RCV (packed): 29.17 dB (3.48%) Ok

**Ok**

26/04/18 3:49 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



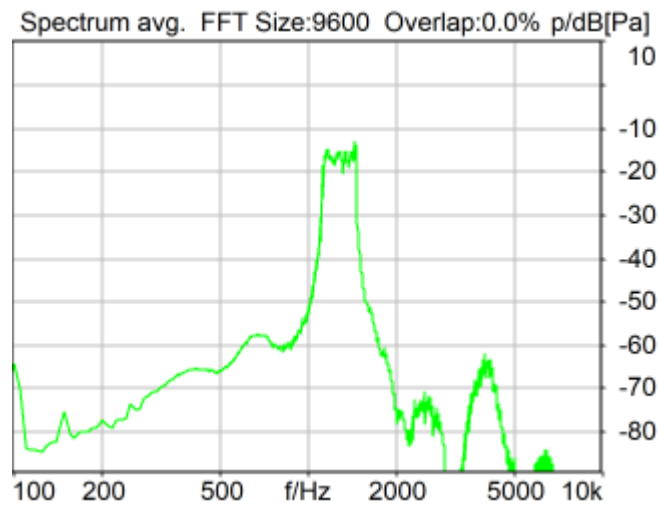
Distortion (Noise) RCV (packed): 28.49 dB (3.76%) Ok

Ok

26/04/18 3:49 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 1250 Hz WB**

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



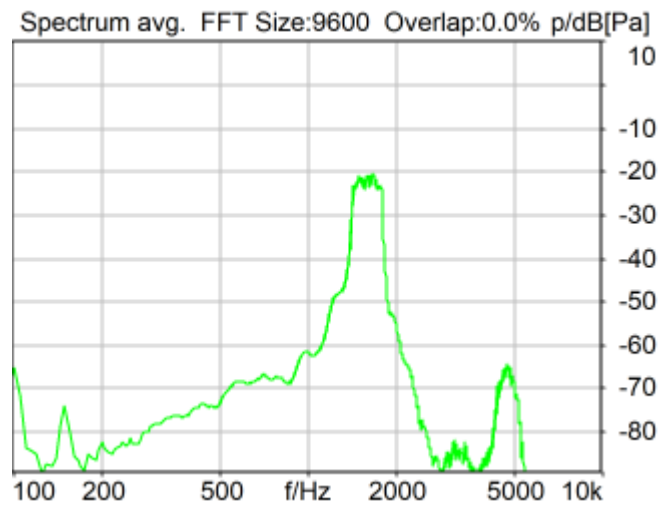
Distortion (Noise) RCV (packed): 21.67 dB (8.25%) Ok

**Ok**

26/04/18 3:56 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1600 Hz WB

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



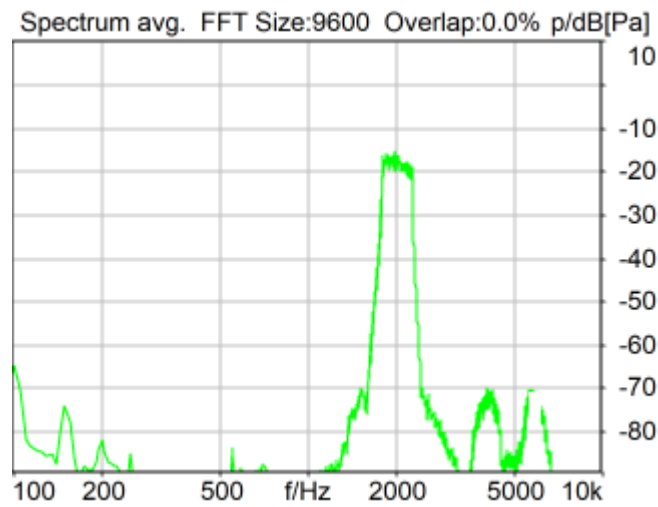
Distortion (Noise) RCV (packed): 24.64 dB (5.86%) Ok

Ok

26/04/18 3:50 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 2000 Hz WB**

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



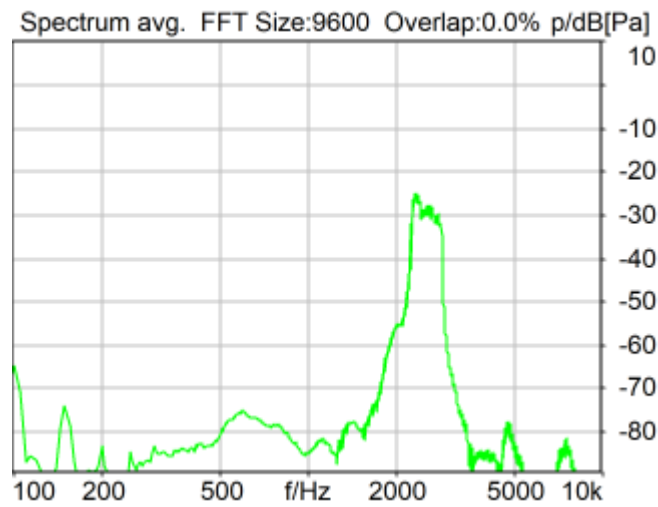
Distortion (Noise) RCV (packed): 29.57 dB (3.32%) Ok

**Ok**

26/04/18 3:51 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 2500 Hz WB**

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



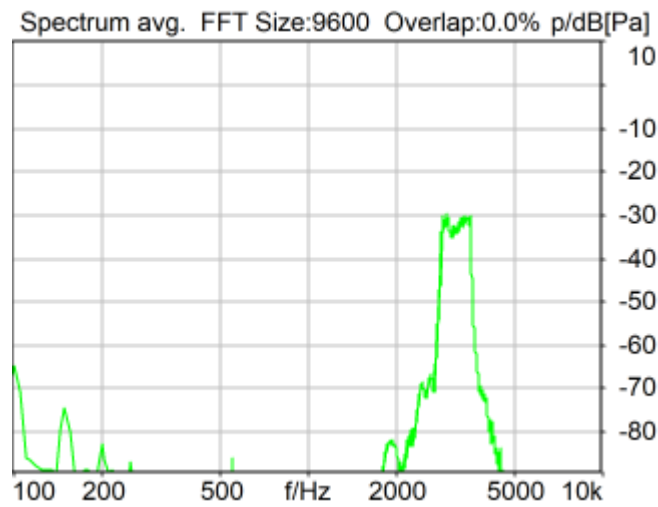
Distortion (Noise) RCV (packed): 24.05 dB (6.27%) Ok

**Ok**

26/04/18 3:51 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 3150 Hz WB

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



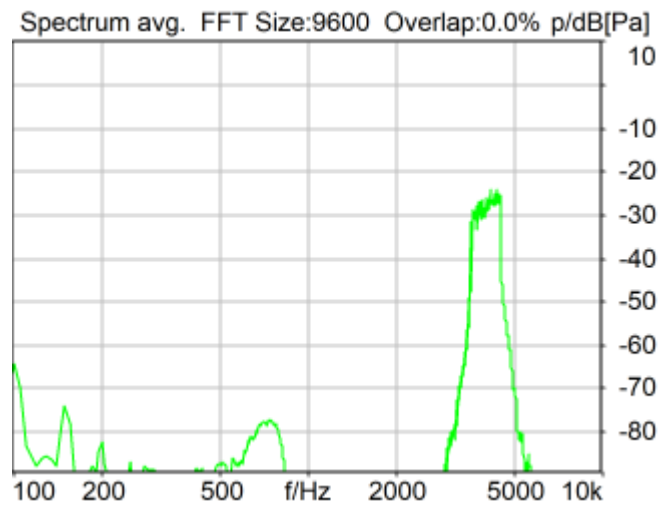
Distortion (Noise) RCV (packed): 26.71 dB (4.62%) Ok

Ok

26/04/18 3:52 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



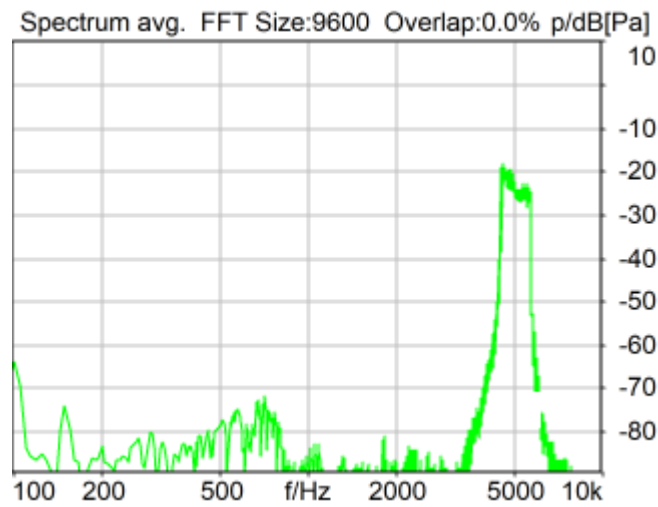
Distortion (Noise) RCV (packed): 27.64 dB (4.15%) Ok

Ok

26/04/18 3:53 ACQUA 5.1.200

## **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): 32.92 dB (2.26%) Ok

**Ok**

26/04/18 3:54 ACQUA 5.1.200

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**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     | 25.76 dB |
| 2      | 315Hz     | 27.07 dB |
| 3      | 400Hz     | 28.95 dB |
| 4      | 500Hz     | 29.60 dB |
| 5      | 630Hz     | 28.55 dB |
| 6      | 800Hz     | 29.17 dB |
| 7      | 1000Hz    | 28.49 dB |
| 8      | 1600Hz    | 24.64 dB |
| 9      | 2000Hz    | 29.57 dB |
| 10     | 2500Hz    | 24.05 dB |
| 11     | 3150Hz    | 26.71 dB |
| 12     | 4000Hz    | 27.64 dB |
| 13     | 5000Hz    | 32.92 dB |
| 14     | 1250Hz    | 21.67 dB |

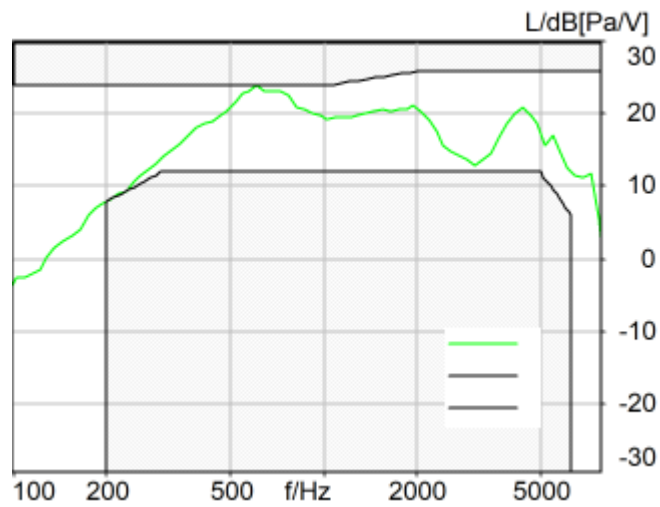
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.67dB at 1250Hz.

26/04/18 3:56 ACQUA

### 5.3 Frequency Response 8N FF

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



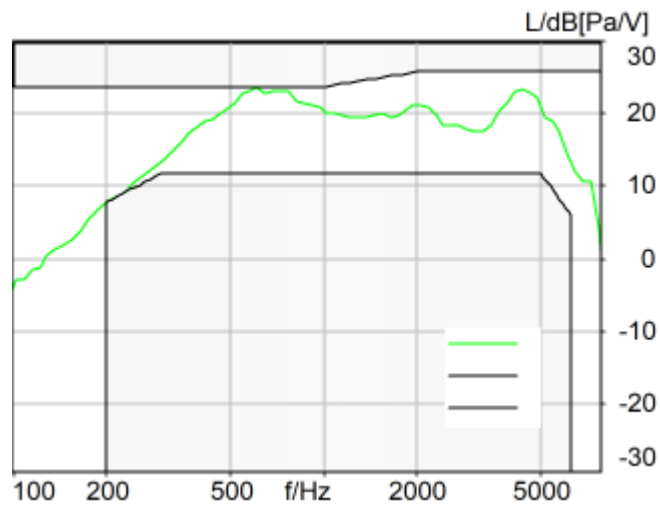
Absolute minimal distance  
0.02 dB at 230.2 Hz Ok

Ok

26/04/18 4:41 ACQUA 5.1.200

### 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
0.04 dB at 611.7 Hz Ok

**Ok**

26/04/18 3:54 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                                 |
|--------------------|-------------------------------------------------|
| Measurement Object | WLAN5GHz_802.11a 6Mbps_EVS WB 24.4kbps_Ch157_2N |
|--------------------|-------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/17 23:33 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description           | Single Value | Object                                                 |
|-----------------------------------------------|--------|------------------------------------|--------------|--------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                 | 106.6        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]             | 87.07        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.13        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.69        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.72        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.09        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.26        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.48        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.53        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 21.37        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.27        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.40        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.76        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 33.71        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.90        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.89        | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                 | 21.37        | WLAN5GHz_802.11a                                       |

ACQUA Report  
4kbps\_Ch157\_2N

Title: WLAN5GHz\_802.11a 6Mbps\_EVS WB 24.

|                                 |    |                                                     |      |                                                        |
|---------------------------------|----|-----------------------------------------------------|------|--------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                                 |      | 6Mbps_EVS WB 24.<br>4kbps_Ch157_2N                     |
| 5.3 Frequency Response 2N<br>FF | Ok | Min. dist. to tolerance<br>scheme [dB], 205.7<br>Hz | 0.09 | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |
| 5.3 Frequency Response 2N<br>DF | Ok | Min. dist. to tolerance<br>scheme [dB], 611.7<br>Hz | 0.12 | WLAN5GHz_802.11a<br>6Mbps_EVS WB 24.<br>4kbps_Ch157_2N |

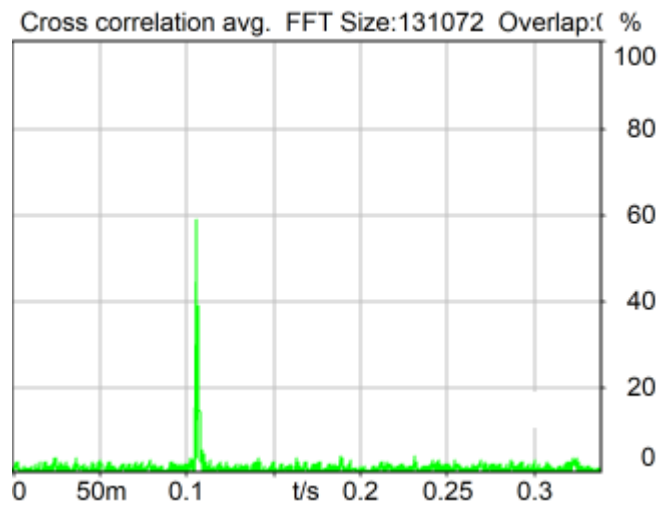
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance 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

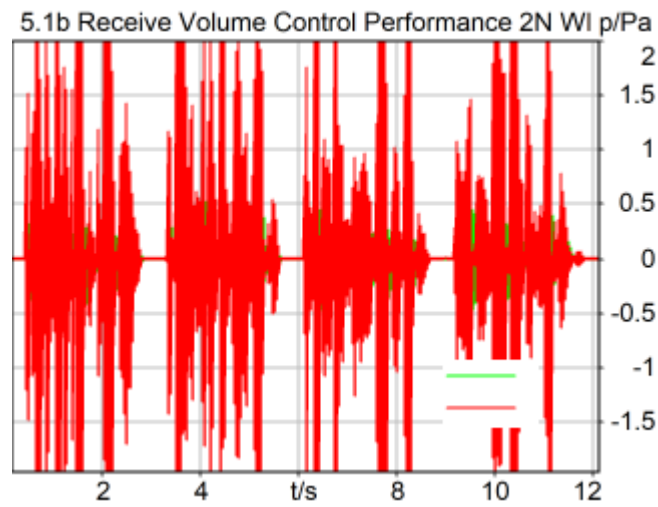


Delay (Cross): 106.6 ms

26/04/17 22:55 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N WB

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



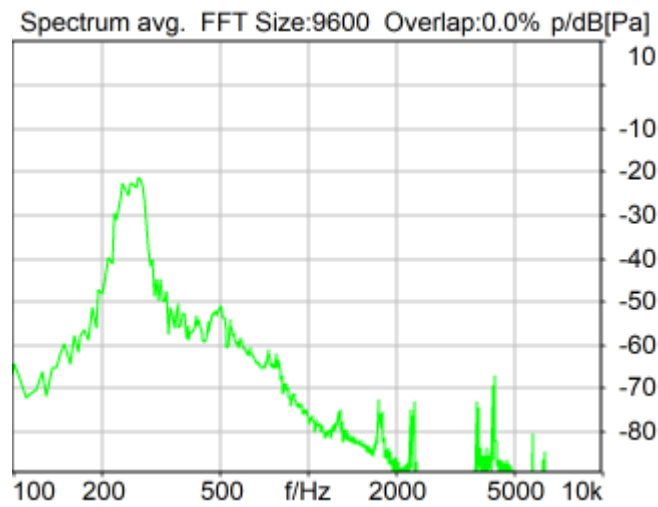
Speech Level RCV: 87.07 dB[SPL], Act.: 81.98% Ok

**Ok**

26/04/17 22:36 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 250 Hz WB**

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



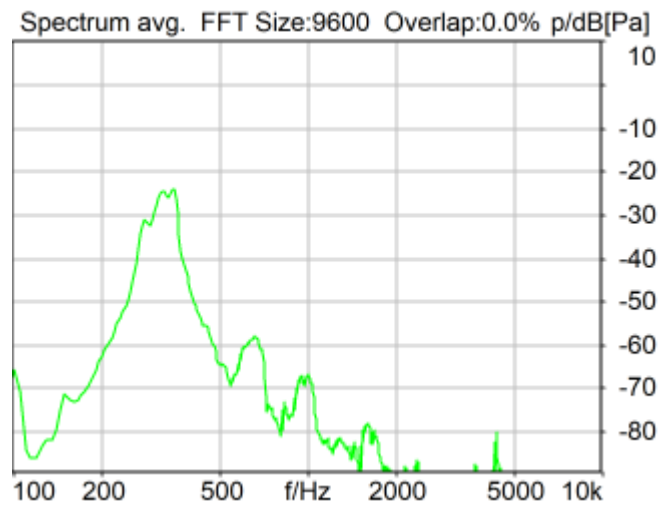
Distortion (Noise) RCV (packed): 27.13 dB (4.40%) Ok

**Ok**

26/04/17 22:36 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 315 Hz WB**

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



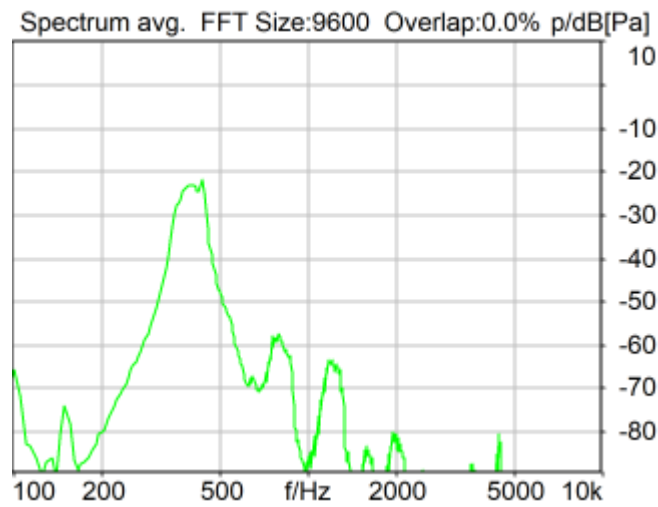
Distortion (Noise) RCV (packed): 27.69 dB (4.13%) Ok

**Ok**

26/04/17 22:37 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 400 Hz WB**

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



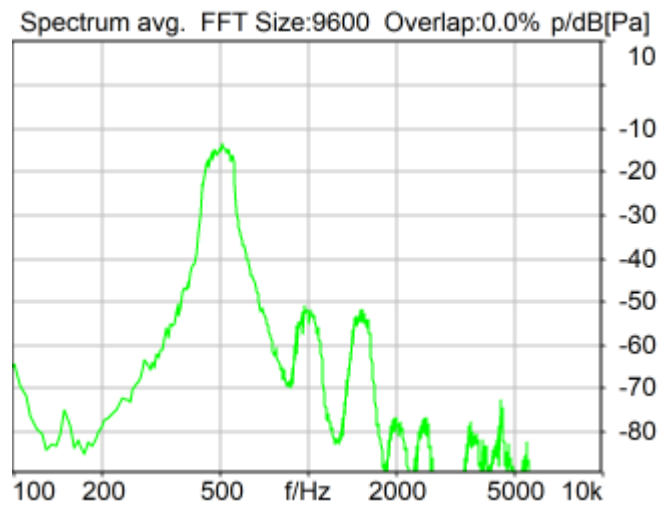
Distortion (Noise) RCV (packed): 27.72 dB (4.11%) Ok

**Ok**

26/04/17 22:37 ACQUA 5.1.200

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

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



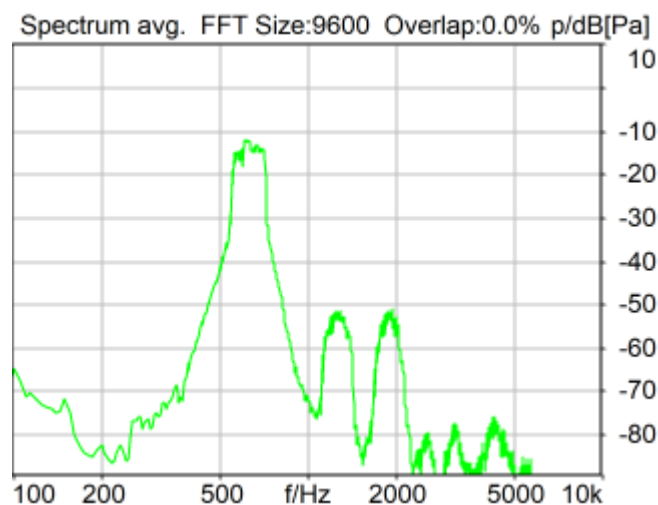
Distortion (Noise) RCV (packed): 27.09 dB (4.42%) Ok

**Ok**

26/04/17 22:37 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 630 Hz WB**

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



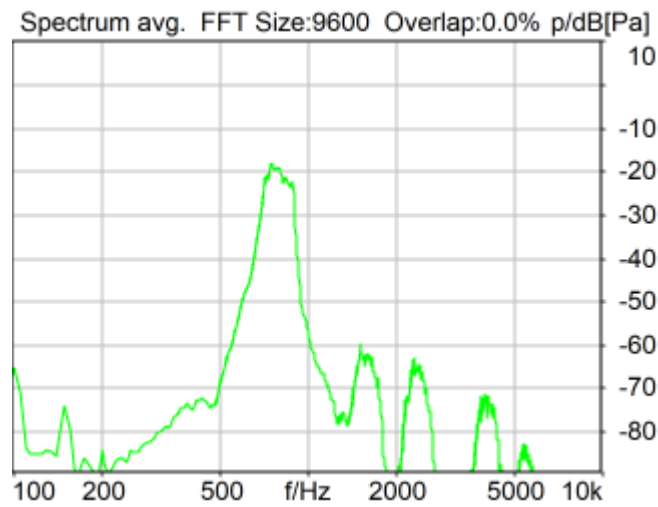
Distortion (Noise) RCV (packed): 29.26 dB (3.44%) Ok

**Ok**

26/04/17 22:38 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 800 Hz WB**

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



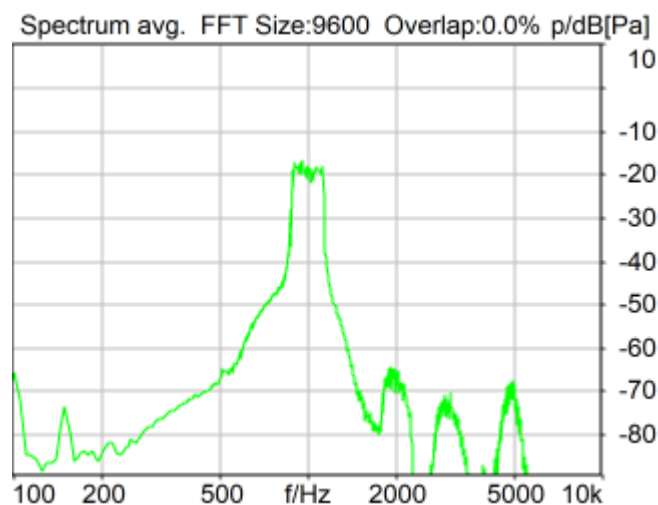
Distortion (Noise) RCV (packed): 26.48 dB (4.74%) Ok

**Ok**

26/04/17 22:38 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



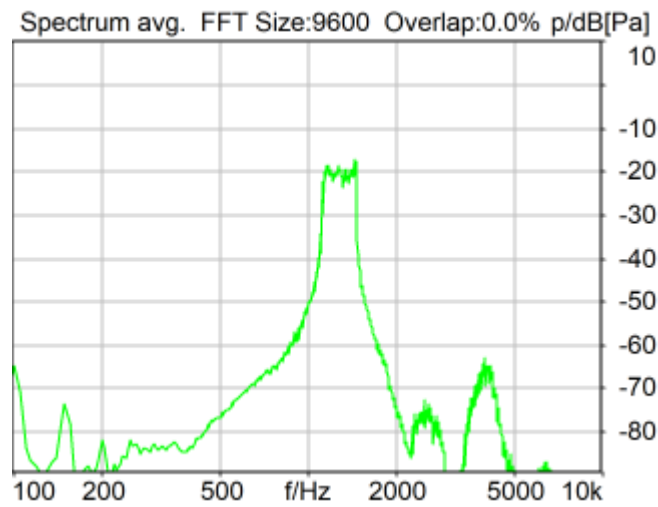
Distortion (Noise) RCV (packed): 27.53 dB (4.20%) Ok

Ok

26/04/17 22:39 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 1250 Hz WB**

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



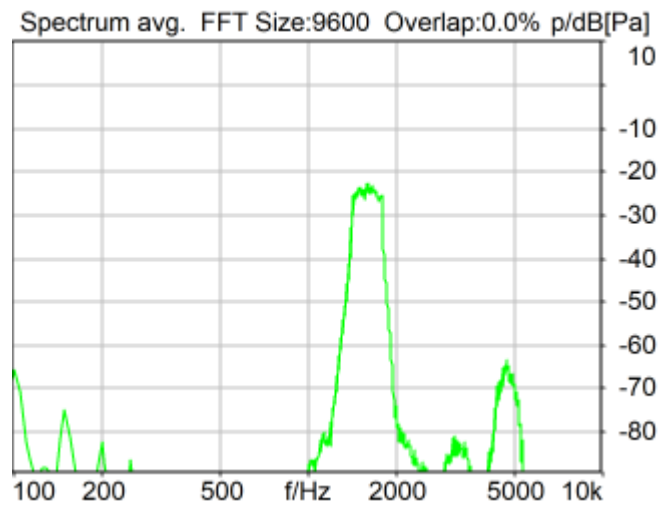
Distortion (Noise) RCV (packed): 21.37 dB (8.54%) Ok

**Ok**

26/04/17 22:39 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 1600 Hz WB

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



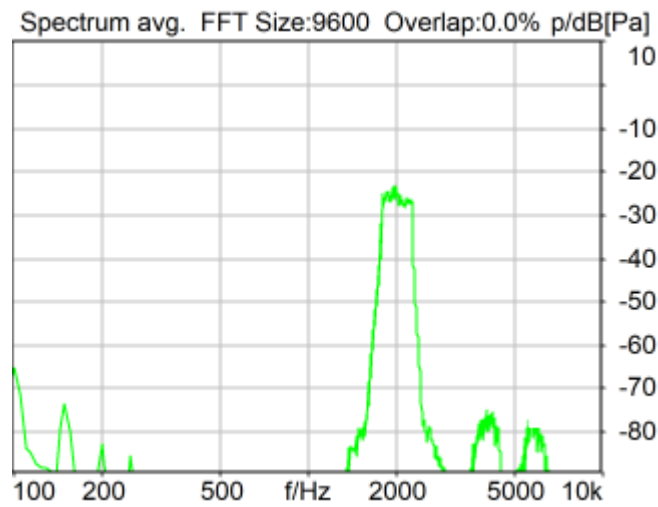
Distortion (Noise) RCV (packed): 27.27 dB (4.33%) Ok

Ok

26/04/17 22:40 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 2000 Hz WB

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



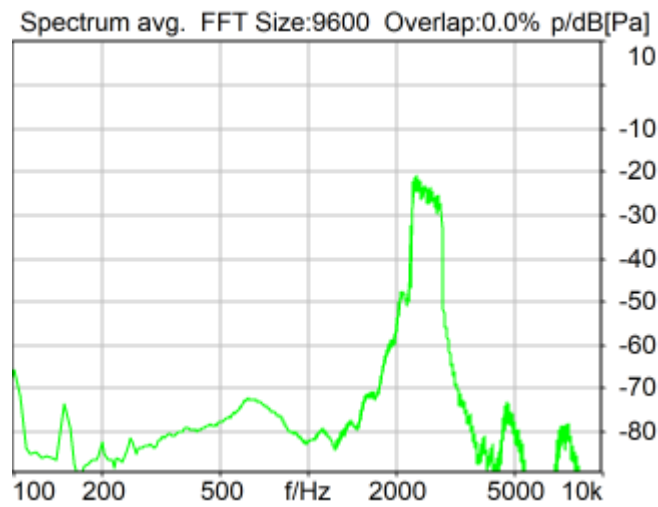
Distortion (Noise) RCV (packed): 26.40 dB (4.79%) Ok

Ok

26/04/17 22:40 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



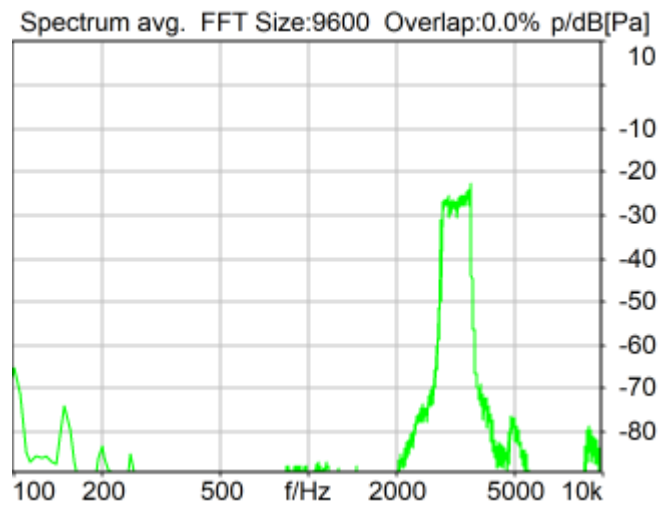
Distortion (Noise) RCV (packed): 26.76 dB (4.59%) Ok

Ok

26/04/17 22:41 ACQUA 5.1.200

## **5.2 RCV Distortion and Noise - 3150 Hz WB**

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



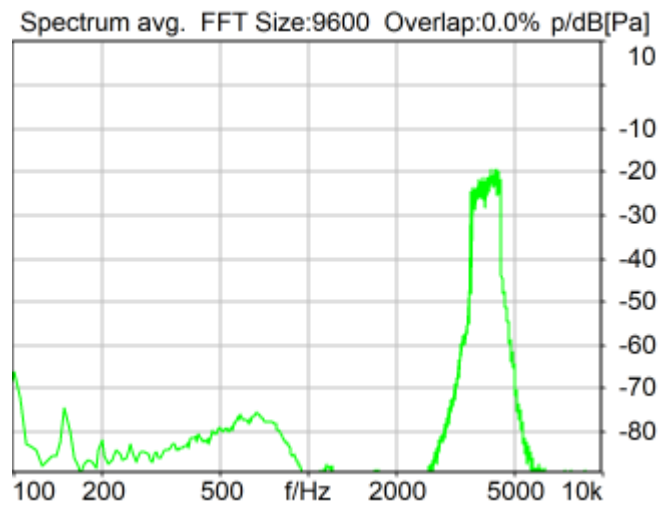
Distortion (Noise) RCV (packed): 33.71 dB (2.06%) Ok

**Ok**

26/04/17 22:41 ACQUA 5.1.200

## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



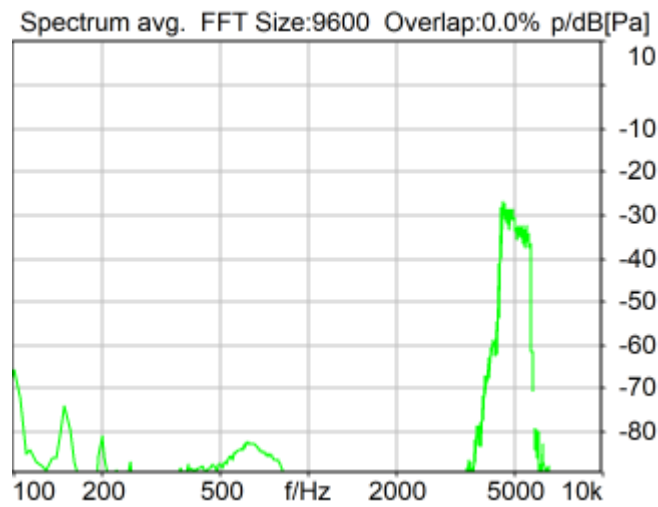
Distortion (Noise) RCV (packed): 29.90 dB (3.20%) Ok

Ok

26/04/17 22:42 ACQUA 5.1.200

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

**Ok**

26/04/17 22:42 ACQUA 5.1.200

---

**Report - Receive Distortion and Noise (Conversational Gain)**

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

| Region | Frequency | SDNR     |
|--------|-----------|----------|
| 1      | 250Hz     | 27.13 dB |
| 2      | 315Hz     | 27.69 dB |
| 3      | 400Hz     | 27.72 dB |
| 4      | 500Hz     | 27.09 dB |
| 5      | 630Hz     | 29.26 dB |
| 6      | 800Hz     | 26.48 dB |
| 7      | 1000Hz    | 27.53 dB |
| 8      | 1250Hz    | 21.37 dB |
| 9      | 1600Hz    | 27.27 dB |
| 10     | 2000Hz    | 26.40 dB |
| 11     | 2500Hz    | 26.76 dB |
| 12     | 3150Hz    | 33.71 dB |
| 13     | 4000Hz    | 29.90 dB |
| 14     | 5000Hz    | 28.89 dB |

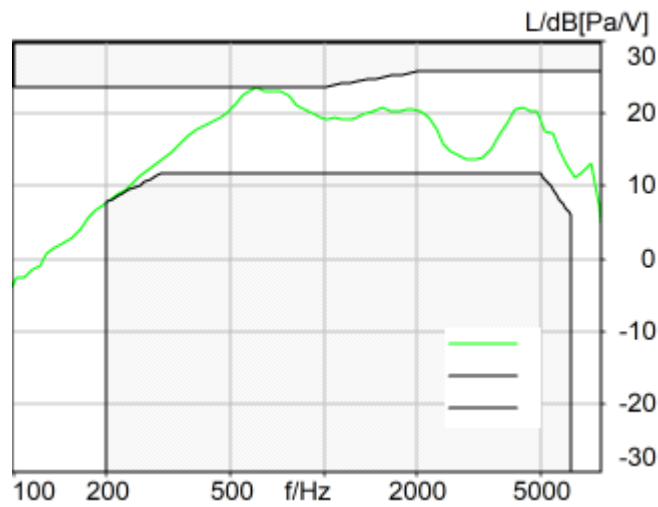
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.37dB at 1250Hz.

26/04/17 22:42 ACQUA

### 5.3 Frequency Response 2N FF

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



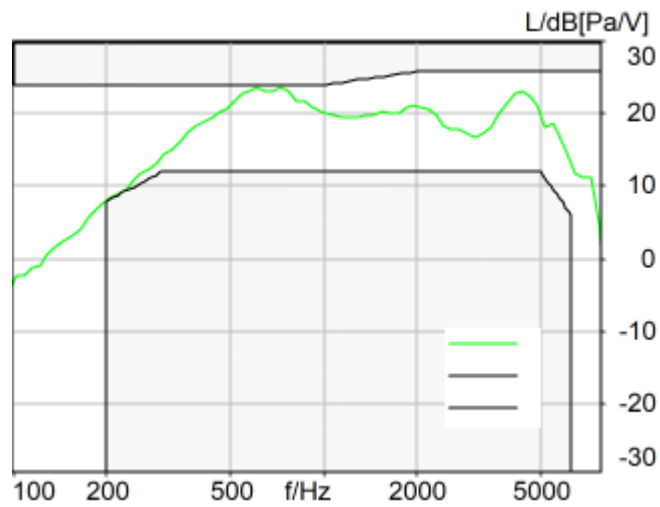
Absolute minimal distance  
0.09 dB at 205.7 Hz Ok

Ok

26/04/17 22:57 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
0.12 dB at 611.7 Hz Ok

Ok

26/04/17 22:58 ACQUA 5.1.200

ACQUA Report  
75kbps\_Ch661\_2N

Title: 05\_GSM1900\_GSM Voice\_AMR NB 4.

---

## **Measurement Protocol**

|                    |                                            |
|--------------------|--------------------------------------------|
| Measurement Object | GSM1900_GSM Voice_AMR NB 4.75kbps_Ch661_2N |
|--------------------|--------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/14 15:04 |
| Responsible Person     | AC01-KS        |

---

**Status Overview**

| SMD                                              | Status | Single Value<br>Description | Single<br>Value | Object                                         |
|--------------------------------------------------|--------|-----------------------------|-----------------|------------------------------------------------|
| Overall Receive Delay NB                         | Done   | Delay (Cross)<br>[ms]       | 172.6           | GSM1900_GSM Voice_AMR NB 4.<br>75kbps_Ch661_2N |
| 5.1b Receive Volume Control<br>Performance 2N NB | Ok     | Speech Level<br>[dB[SPL]]   | 85.88           | GSM1900_GSM Voice_AMR NB 4.<br>75kbps_Ch661_2N |

ACQUA Report  
75kbps\_Ch661\_2N

Title: GSM1900\_GSM Voice\_AMR NB 4.

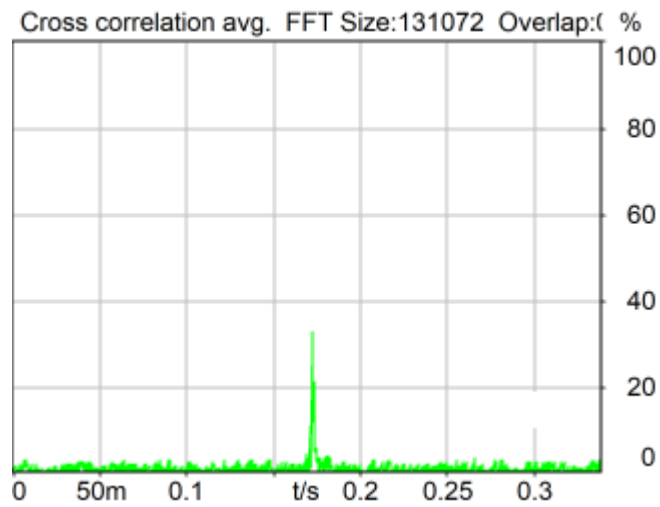
---

|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1b Receive Volume Control Performance 2N NB | 6 |



## Overall Receive Delay NB

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

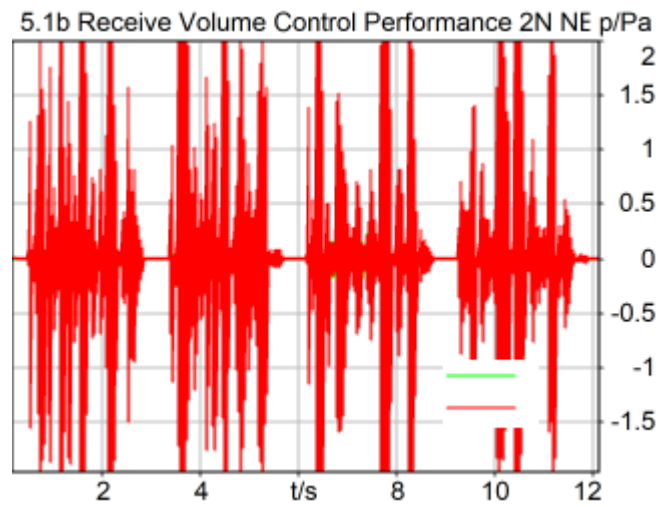


Delay (Cross): 172.6 ms

26/04/14 15:04 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 85.88 dB[SPL], Act.: 80.13% Ok

**Ok**

26/04/14 15:04 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                          |
|--------------------|------------------------------------------|
| Measurement Object | WCDMA IV_Voice_AMR NB 4.75kbps_Ch1413_2N |
|--------------------|------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/14 10:53 |
| Responsible Person     | AC01-KS        |

---

**Status Overview**

| SMD                                              | Status | Single Value<br>Description | Single<br>Value | Object                                       |
|--------------------------------------------------|--------|-----------------------------|-----------------|----------------------------------------------|
| Overall Receive Delay NB                         | Done   | Delay (Cross)<br>[ms]       | 180.6           | WCDMA IV_Voice_AMR NB 4.<br>75kbps_Ch1413_2N |
| 5.1b Receive Volume Control<br>Performance 2N NB | Ok     | Speech Level<br>[dB[SPL]]   | 85.94           | WCDMA IV_Voice_AMR NB 4.<br>75kbps_Ch1413_2N |

ACQUA Report  
75kbps\_Ch1413\_2N

Title: WCDMA IV\_Voice\_AMR NB 4.

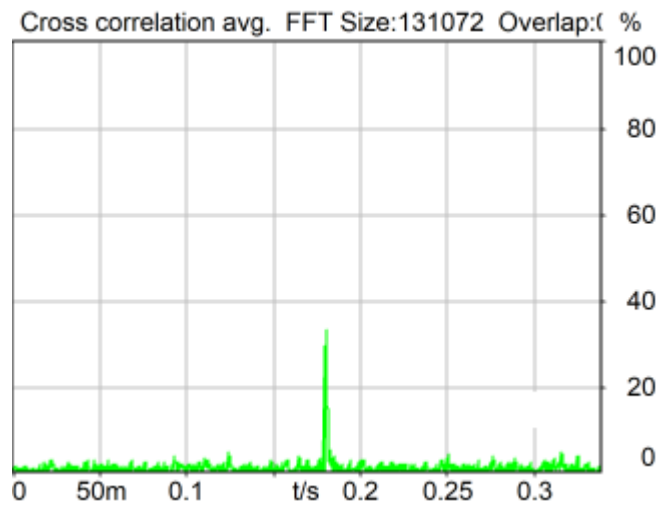
---

|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1b Receive Volume Control Performance 2N NB | 6 |



## Overall Receive Delay NB

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

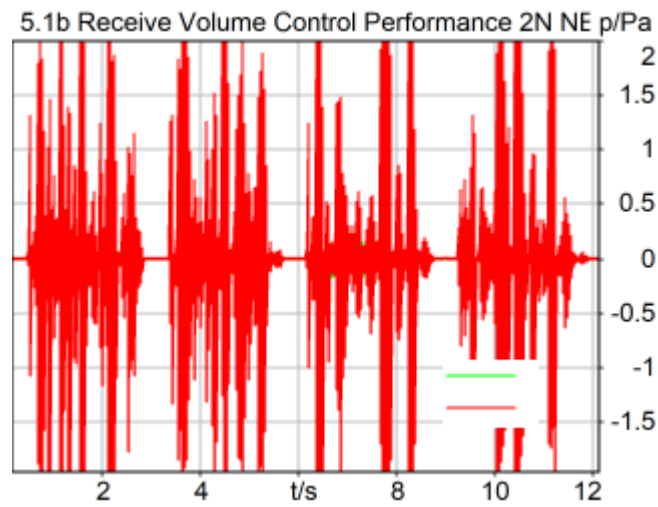


Delay (Cross): 180.6 ms

26/04/14 10:51 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 85.94 dB[SPL], Act.: 80.02% Ok

**Ok**

26/04/14 10:52 ACQUA 5.1.200

ACQUA Report  
75kbps\_Ch23095\_2N

Title: 07\_LTE Band 12\_10M\_QPSK\_1\_0\_AMR NB 4.

---

## **Measurement Protocol**

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Measurement Object | LTE Band 12_10M_QPSK_1_0_AMR NB 4.75kbps_Ch23095_2N |
|--------------------|-----------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/13 19:04 |
| Responsible Person     | AC01-KS        |

ACQUA Report  
75kbps\_Ch23095\_2N

Title: LTE Band 12\_10M\_QPSK\_1\_0\_AMR NB 4.

---

## **Status Overview**

| SMD                                              | Status | Single Value<br>Description | Single<br>Value | Object                                                 |
|--------------------------------------------------|--------|-----------------------------|-----------------|--------------------------------------------------------|
| Overall Receive Delay NB                         | Done   | Delay (Cross)<br>[ms]       | 92.0            | LTE Band 12_10M_QPSK_1_0_AMR<br>NB 4.75kbps_Ch23095_2N |
| 5.1b Receive Volume Control<br>Performance 2N NB | Ok     | Speech Level<br>[dB[SPL]]   | 85.48           | LTE Band 12_10M_QPSK_1_0_AMR<br>NB 4.75kbps_Ch23095_2N |

ACQUA Report  
75kbps\_Ch23095\_2N

Title: LTE Band 12\_10M\_QPSK\_1\_0\_AMR NB 4.

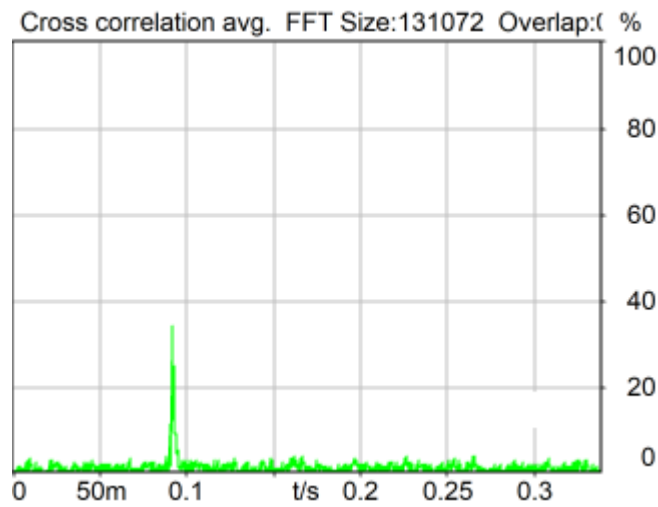
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|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1b Receive Volume Control Performance 2N NB | 6 |



## Overall Receive Delay NB

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

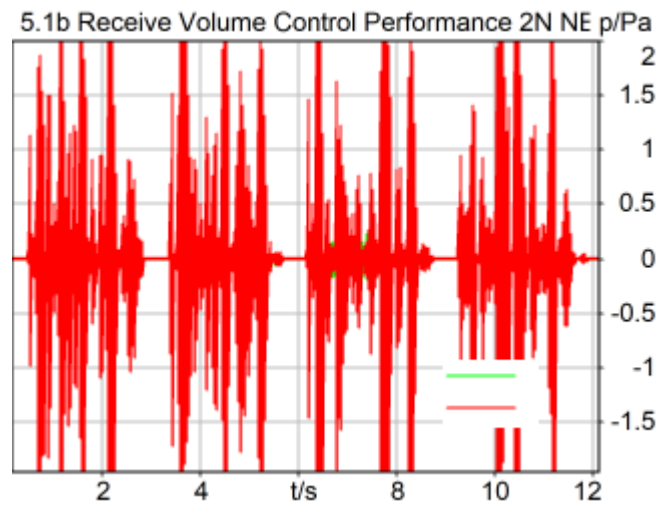


Delay (Cross): 92.0 ms

26/04/13 19:03 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 85.48 dB[SPL], Act.: 80.26% Ok

**Ok**

26/04/13 19:03 ACQUA 5.1.200

ACQUA Report  
75kbps\_Ch133297\_8N

Title: 08\_LTE Band 71\_20M\_QPSK\_1\_0\_AMR NB 4.

---

## **Measurement Protocol**

|                    |                                                      |
|--------------------|------------------------------------------------------|
| Measurement Object | LTE Band 71_20M_QPSK_1_0_AMR NB 4.75kbps_Ch133297_8N |
|--------------------|------------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/17 10:28 |
| Responsible Person     | AC01-KS        |

ACQUA Report  
75kbps\_Ch133297\_8N

Title: LTE Band 71\_20M\_QPSK\_1\_0\_AMR NB 4.

---

## **Status Overview**

| SMD                                              | Status | Single Value<br>Description | Single<br>Value | Object                                                  |
|--------------------------------------------------|--------|-----------------------------|-----------------|---------------------------------------------------------|
| Overall Receive Delay NB                         | Done   | Delay (Cross)<br>[ms]       | 91.2            | LTE Band 71_20M_QPSK_1_0_AMR<br>NB 4.75kbps_Ch133297_8N |
| 5.1a Receive Volume Control<br>Performance 8N NB | Ok     | Speech Level<br>[dB[SPL]]   | 89.84           | LTE Band 71_20M_QPSK_1_0_AMR<br>NB 4.75kbps_Ch133297_8N |

ACQUA Report  
75kbps\_Ch133297\_8N

Title: LTE Band 71\_20M\_QPSK\_1\_0\_AMR NB 4.

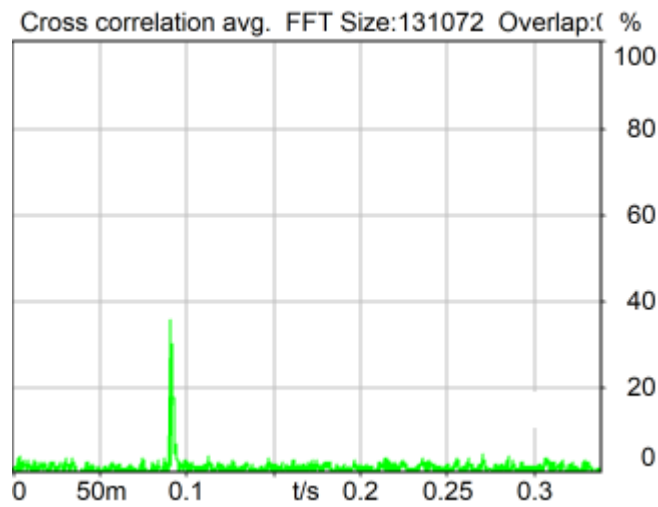
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|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1a Receive Volume Control Performance 8N NB | 6 |



## Overall Receive Delay NB

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

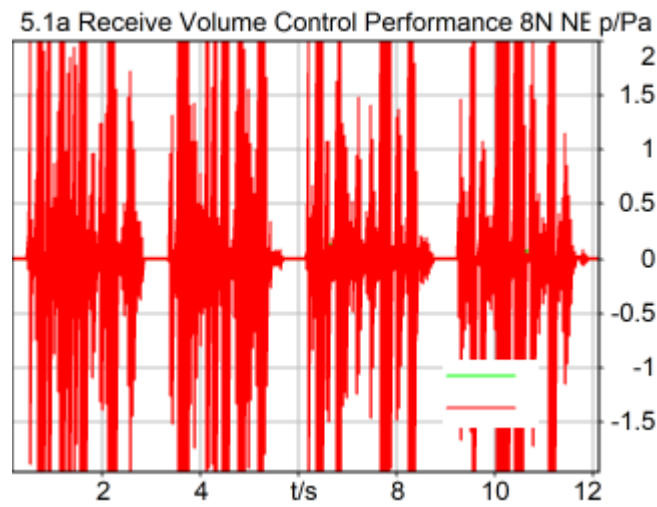


Delay (Cross): 91.2 ms

26/04/17 10:27 ACQUA 5.1.200

## 5.1a Receive Volume Control Performance 8N NB

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



Speech Level RCV: 89.84 dB[SPL], Act.: 80.17% Ok

**Ok**

26/04/17 10:27 ACQUA 5.1.200

ACQUA Report  
75kbps\_Ch376500\_2N

Title: 09\_FR1 n25\_40M\_QPSK\_1\_1\_AMR NB 4.

---

## **Measurement Protocol**

|                    |                                                  |
|--------------------|--------------------------------------------------|
| Measurement Object | FR1 n25_40M_QPSK_1_1_AMR NB 4.75kbps_Ch376500_2N |
|--------------------|--------------------------------------------------|

|                        |               |
|------------------------|---------------|
| Project                | 471902-02     |
| Report Generation Date | 26/04/17 1:46 |
| Responsible Person     | AC01-KS       |

ACQUA Report  
75kbps\_Ch376500\_2N

Title: FR1 n25\_40M\_QPSK\_1\_1\_AMR NB 4.

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## **Status Overview**

| SMD                                           | Status | Single Value Description | Single Value | Object                                           |
|-----------------------------------------------|--------|--------------------------|--------------|--------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]       | 112.5        | FR1 n25_40M_QPSK_1_1_AMR NB 4.75kbps_Ch376500_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]   | 85.83        | FR1 n25_40M_QPSK_1_1_AMR NB 4.75kbps_Ch376500_2N |

ACQUA Report  
75kbps\_Ch376500\_2N

Title: FR1 n25\_40M\_QPSK\_1\_1\_AMR NB 4.

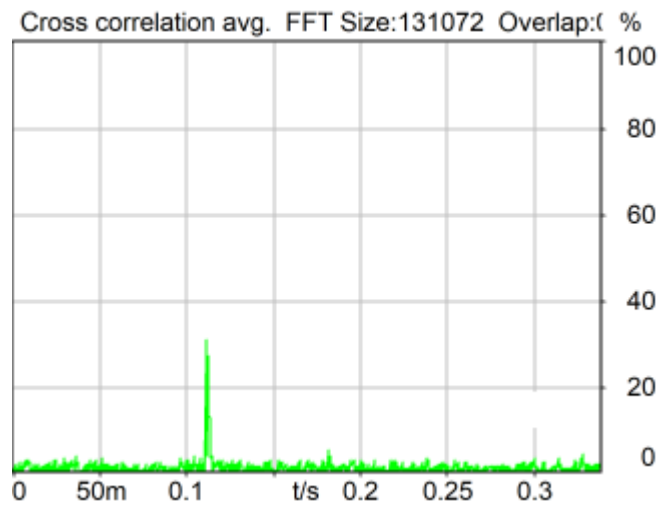
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|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1b Receive Volume Control Performance 2N NB | 6 |



## Overall Receive Delay NB

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

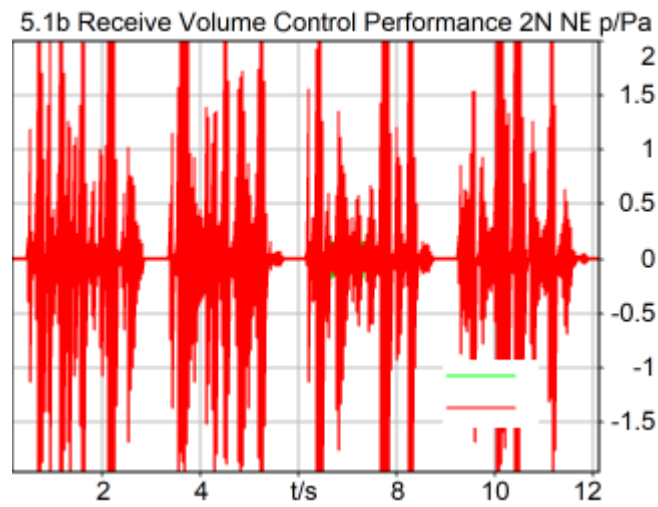


Delay (Cross): 112.5 ms

26/04/17 1:45 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 85.83 dB[SPL], Act.: 79.90% Ok

**Ok**

26/04/17 1:45 ACQUA 5.1.200

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## **Measurement Protocol**

|                    |                                                |
|--------------------|------------------------------------------------|
| Measurement Object | WLAN5GHz_802.11a 6Mbps_AMR NB 4.75kbps_Ch40_2N |
|--------------------|------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902-02      |
| Report Generation Date | 26/04/18 22:39 |
| Responsible Person     | AC01-KS        |

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## **Status Overview**

| SMD                                           | Status | Single Value Description | Single Value | Object                                         |
|-----------------------------------------------|--------|--------------------------|--------------|------------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]       | 104.9        | WLAN5GHz_802.11a 6Mbps_AMR NB 4.75kbps_Ch40_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]   | 85.90        | WLAN5GHz_802.11a 6Mbps_AMR NB 4.75kbps_Ch40_2N |

ACQUA Report  
75kbps\_Ch40\_2N

Title: WLAN5GHz\_802.11a 6Mbps\_AMR NB 4.

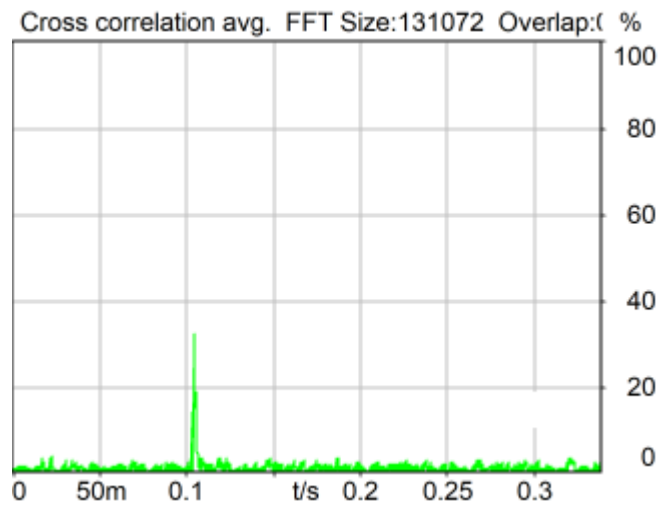
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|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1b Receive Volume Control Performance 2N NB | 6 |



## Overall Receive Delay NB

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

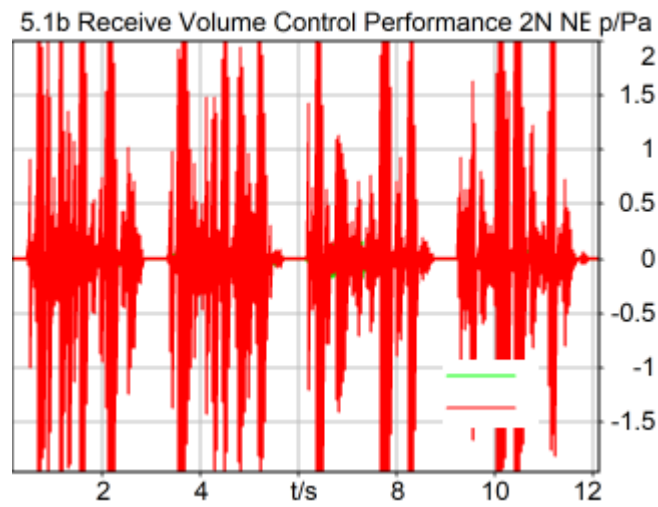


Delay (Cross): 104.9 ms

26/04/18 22:38 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 85.90 dB[SPL], Act.: 79.97% Ok

**Ok**

26/04/18 22:38 ACQUA 5.1.200