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## **Measurement Protocol**

|                    |                                                             |
|--------------------|-------------------------------------------------------------|
| Measurement Object | LTE Band 30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
|--------------------|-------------------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/12 13:55 |
| Responsible Person     | AC01-KS        |

## Status Overview

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                         |
|-----------------------------------------------|--------|---------------------------------|--------------|----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 111.7        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.84        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.14        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.96        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 32.06        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 32.87        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.24        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 39.48        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.15        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.45        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 22.78        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 45.34        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.05        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 36.33        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.74        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.65        | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB]               | 22.78        | LTE Band                                                       |

ACQUA Report

Title: LTE Band

30\_10M\_QPSK\_1RB\_0Offset\_EVS WB 24.4kbps\_Ch27710\_2N

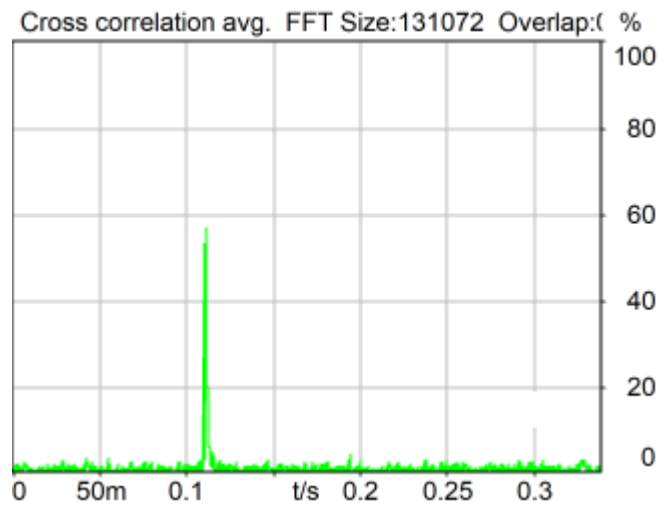
| and Noise (Conversational Gain) |    | , (occured at 1600Hz)                          |      | 30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N             |
|---------------------------------|----|------------------------------------------------|------|----------------------------------------------------------------|
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz  | 1.51 | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 4119.5 Hz | 0.84 | LTE Band<br>30_10M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch27710_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

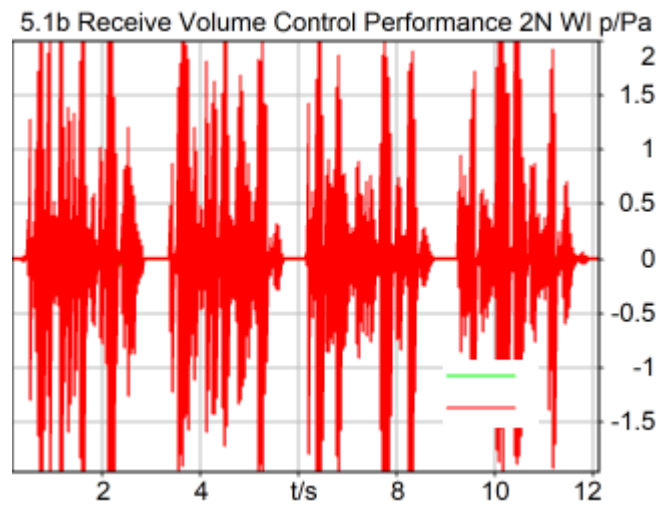


Delay (Cross): 111.7 ms

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## 5.1b Receive Volume Control Performance 2N WB

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



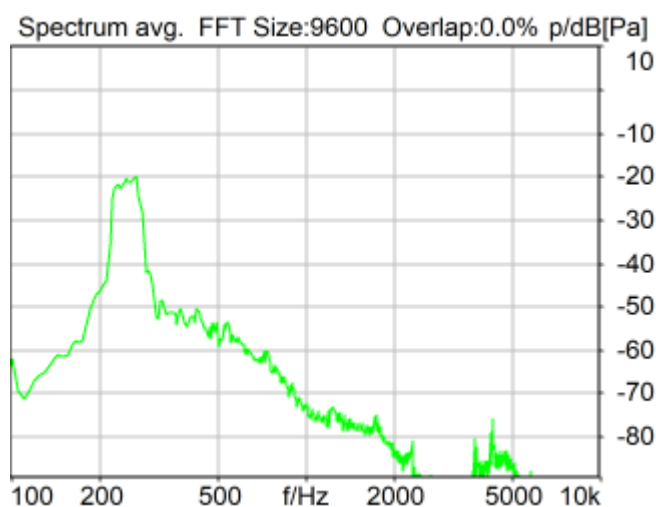
Speech Level RCV: 84.84 dB[SPL], Act.: 82.75% Ok

Ok

24/08/12 13:46 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 2N



Distortion (Noise) RCV (packed): 28.14 dB (3.92%) Ok

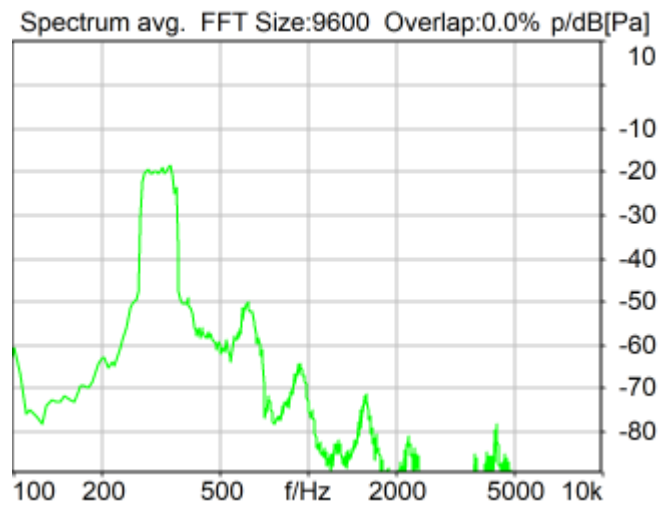
Ok

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## 5.2 RCV Distortion and Noise - 315 Hz WB

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



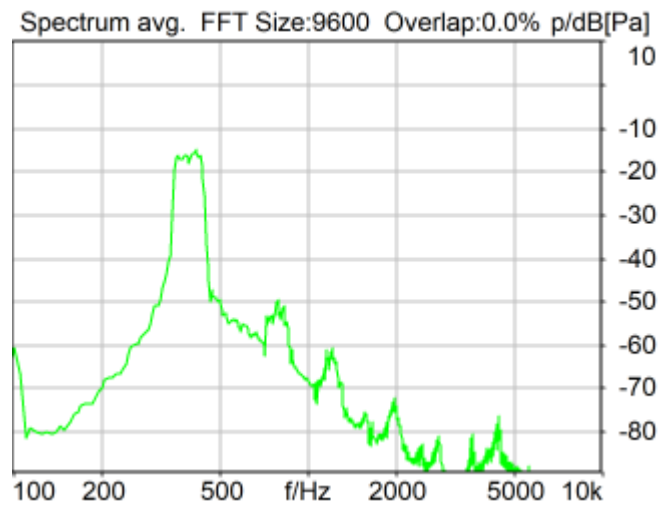
Distortion (Noise) RCV (packed): 31.96 dB (2.52%) Ok

Ok

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

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



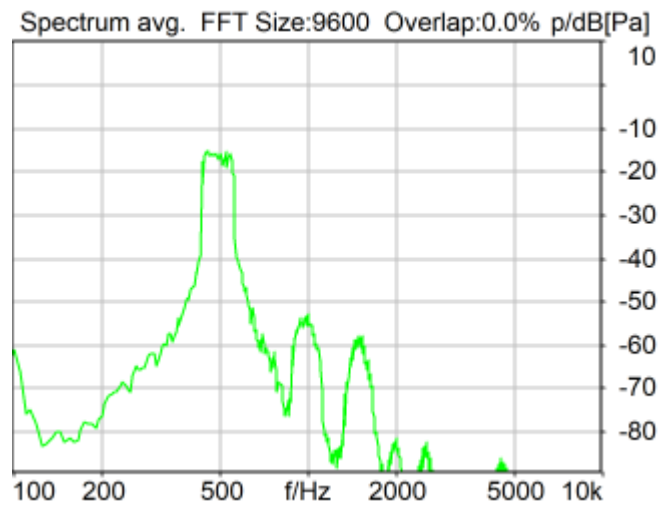
Distortion (Noise) RCV (packed): 32.06 dB (2.49%) Ok

**Ok**

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

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



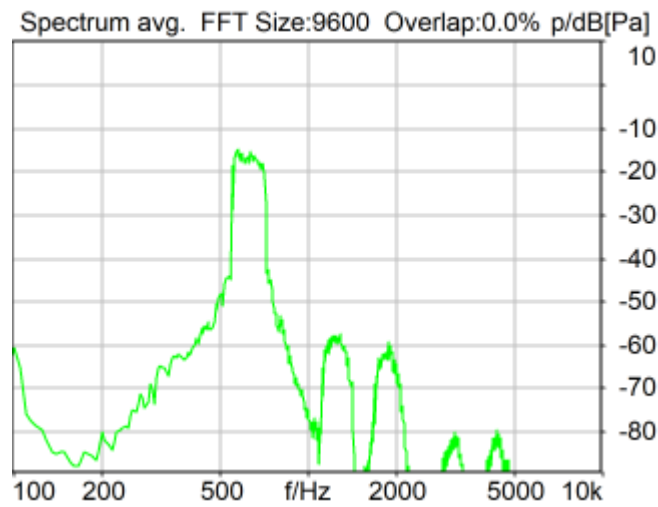
Distortion (Noise) RCV (packed): 32.87 dB (2.27%) Ok

**Ok**

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

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



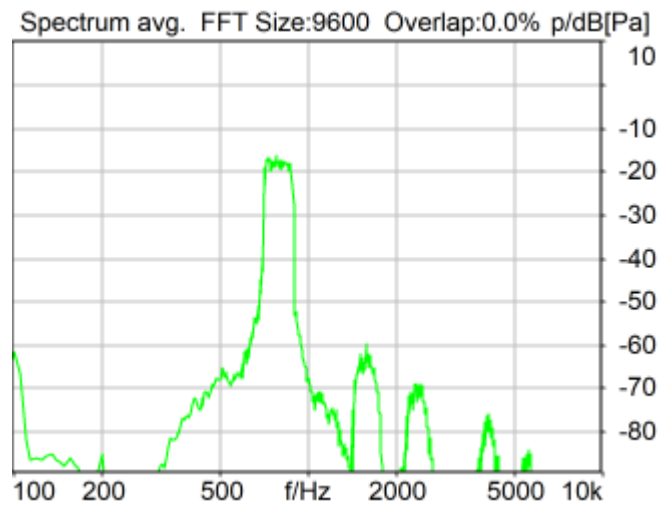
Distortion (Noise) RCV (packed): 34.24 dB (1.94%) Ok

**Ok**

24/08/12 13:48 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 2N



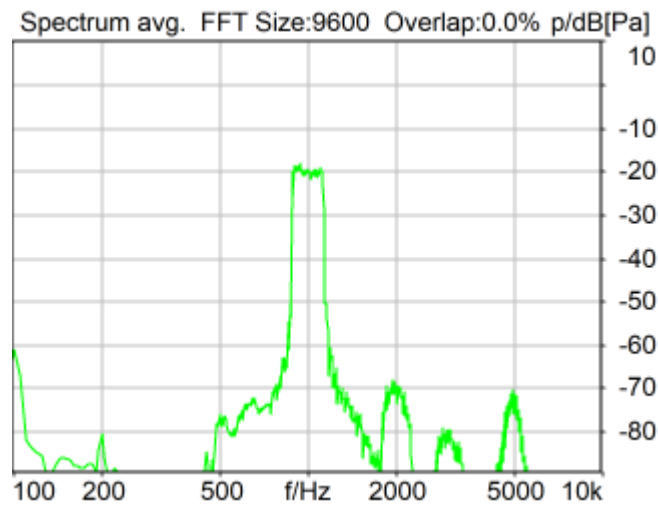
Distortion (Noise) RCV (packed): 39.48 dB (1.06%) Ok

**Ok**

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## 5.2 RCV Distortion and Noise - 1000 Hz WB

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



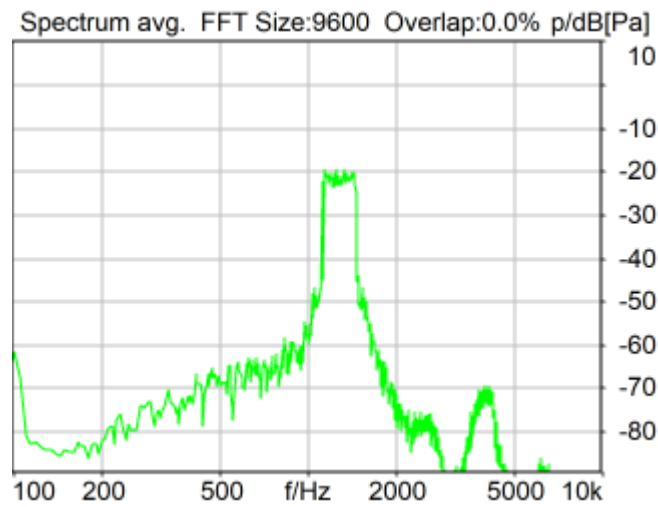
Distortion (Noise) RCV (packed): 42.15 dB (0.78%) Ok

Ok

24/08/12 13:49 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 2N



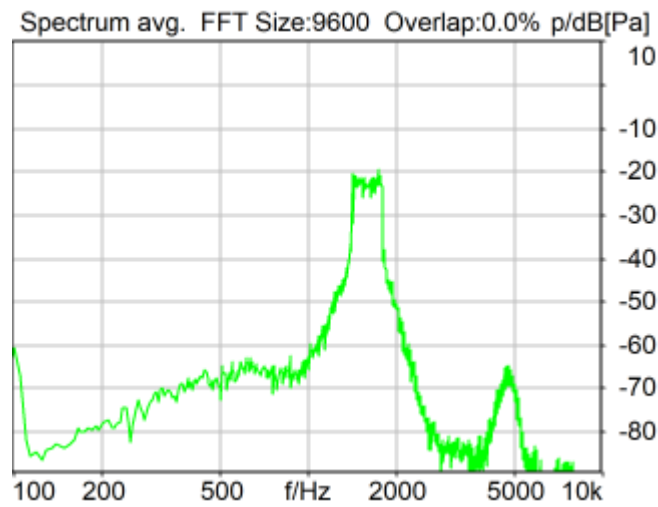
Distortion (Noise) RCV (packed): 27.45 dB (4.24%) Ok

Ok

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## 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): 22.78 dB (7.26%) Ok

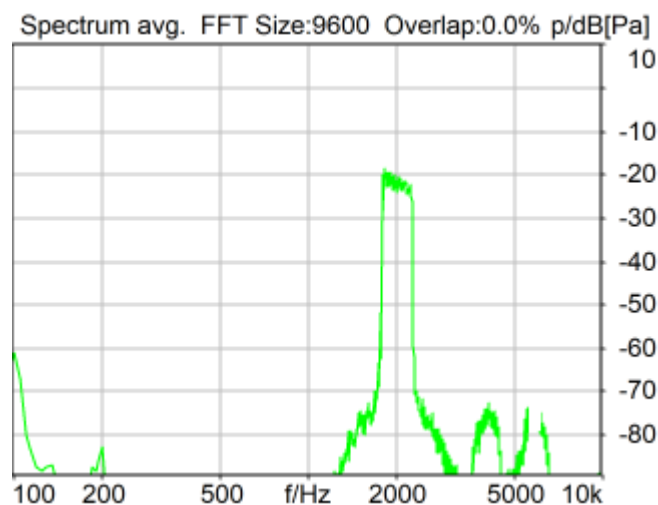
Ok

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## 5.2 RCV Distortion and Noise - 2000 Hz WB

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



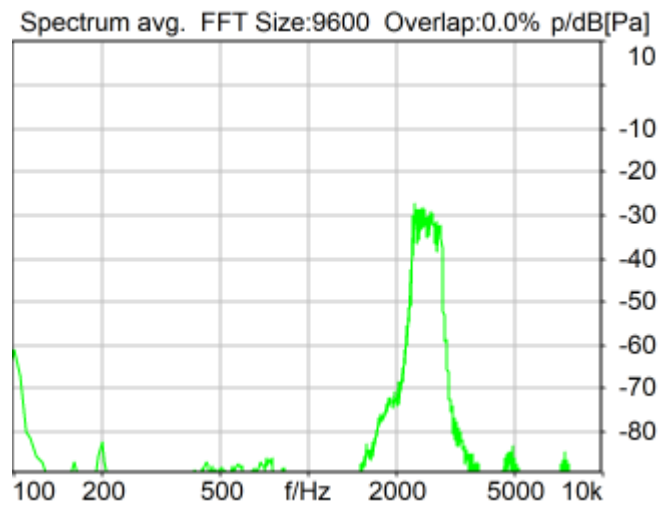
Distortion (Noise) RCV (packed): 45.34 dB (0.54%) Ok

Ok

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## 5.2 RCV Distortion and Noise - 2500 Hz WB

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



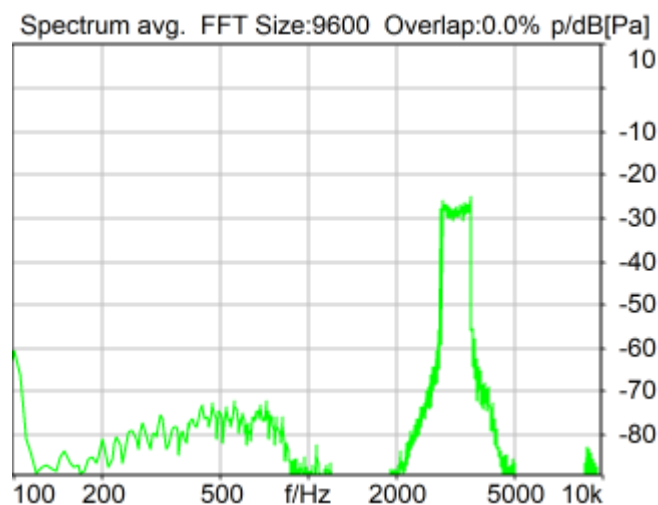
Distortion (Noise) RCV (packed): 28.05 dB (3.96%) Ok

Ok

24/08/12 13:51 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 2N



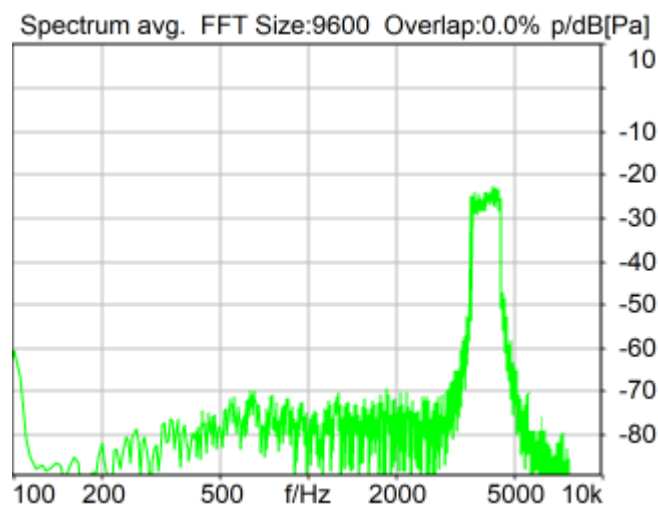
Distortion (Noise) RCV (packed): 36.33 dB (1.53%) Ok

Ok

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## 5.2 RCV Distortion and Noise - 4000 Hz WB

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



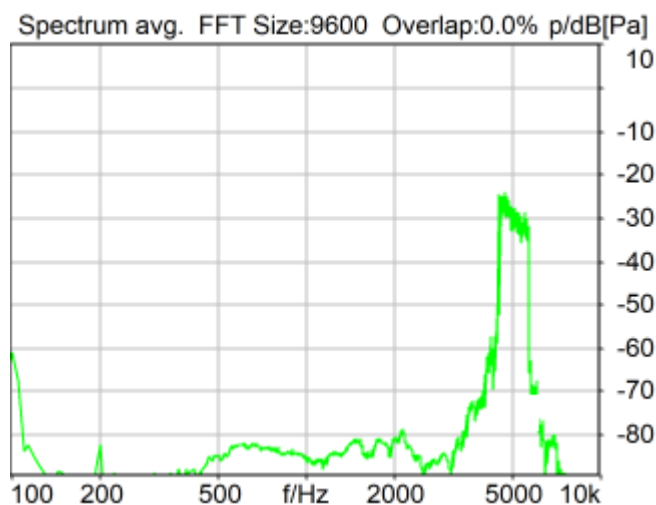
Distortion (Noise) RCV (packed): 30.74 dB (2.90%) Ok

Ok

24/08/12 13:52 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): 34.65 dB (1.85%) Ok

Ok

24/08/12 13:53 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     | 28.14 dB |
| 2      | 315Hz     | 31.96 dB |
| 3      | 400Hz     | 32.06 dB |
| 4      | 500Hz     | 32.87 dB |
| 5      | 630Hz     | 34.24 dB |
| 6      | 800Hz     | 39.48 dB |
| 7      | 1000Hz    | 42.15 dB |
| 8      | 1250Hz    | 27.45 dB |
| 9      | 1600Hz    | 22.78 dB |
| 10     | 2000Hz    | 45.34 dB |
| 11     | 2500Hz    | 28.05 dB |
| 12     | 3150Hz    | 36.33 dB |
| 13     | 4000Hz    | 30.74 dB |
| 14     | 5000Hz    | 34.65 dB |

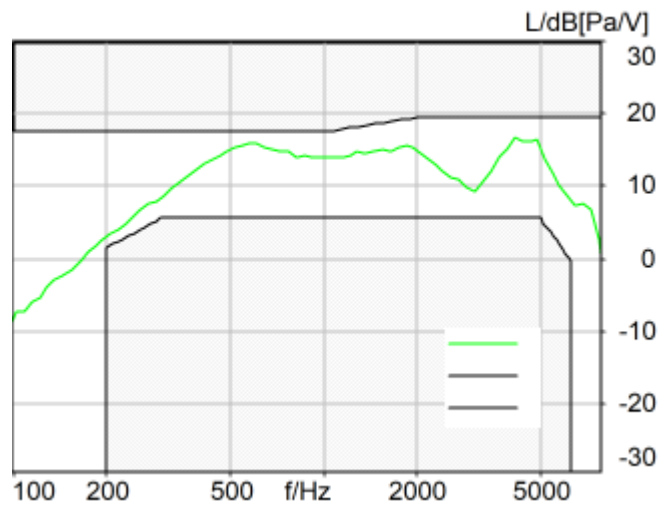
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 22.78dB at 1600Hz.

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### 5.3 Frequency Response 2N FF

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



Absolute minimal distance

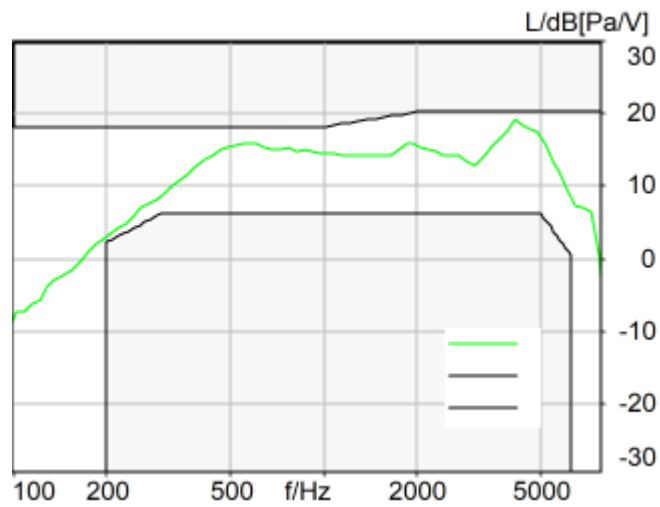
1.51 dB at 611.7 Hz Ok

Ok

24/08/12 13:53 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance

0.84 dB at 4119.5 Hz Ok

Ok

24/08/12 13:53 ACQUA 5.1.200



ACQUA Report  
WB 24.4kbps\_Ch136100\_2N

Title: 02\_FR1 n71\_30M\_QPSK\_1RB\_1Offset\_EVS

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## **Measurement Protocol**

|                    |                                                          |
|--------------------|----------------------------------------------------------|
| Measurement Object | FR1 n71_30M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch136100_2N |
|--------------------|----------------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/14 11:44 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                          |
|-----------------------------------------------|--------|---------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 110.8        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.37        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.63        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.02        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.67        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.21        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.44        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.00        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 41.26        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 21.32        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 25.13        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 27.48        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.80        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.07        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 35.35        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 39.30        | FR1<br>n71_30M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch136100_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],              | 21.32        | FR1                                                             |

ACQUA Report  
WB 24.4kbps\_Ch136100\_2N

Title: FR1 n71\_30M\_QPSK\_1RB\_1Offset\_EVS

|                                 |    |                                                |      |                                                             |
|---------------------------------|----|------------------------------------------------|------|-------------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                            |      | n71_30M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch136100_2N        |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 4369.4 Hz | 1.62 | FR1<br>n71_30M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch136100_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 4119.5 Hz | 0.36 | FR1<br>n71_30M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch136100_2N |

ACQUA Report  
WB 24.4kbps\_Ch136100\_2N

Title: FR1 n71\_30M\_QPSK\_1RB\_1Offset\_EVS

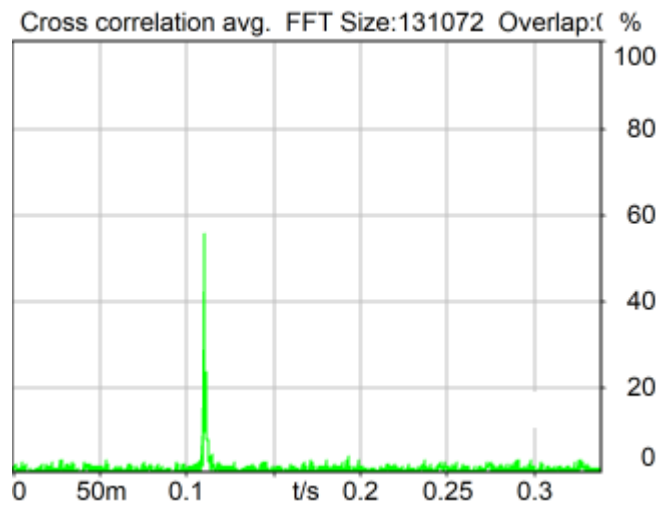
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance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

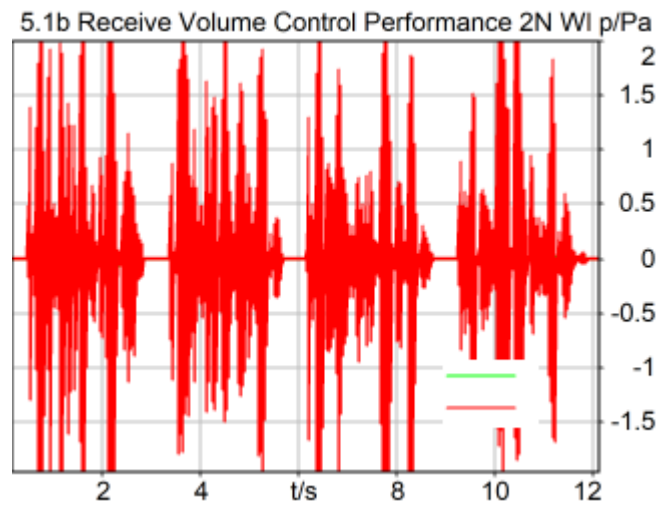


Delay (Cross): 110.8 ms

24/08/14 11:36 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N WB

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



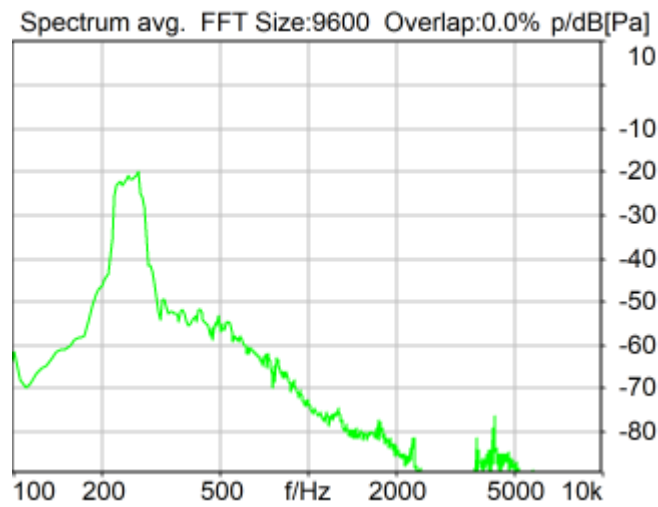
Speech Level RCV: 84.37 dB[SPL], Act.: 83.90% Ok

**Ok**

24/08/14 11:36 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): 28.63 dB (3.70%) Ok

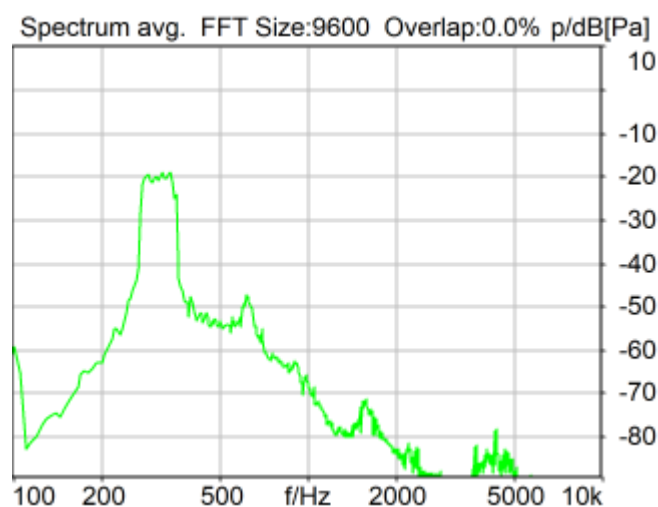
**Ok**

24/08/14 11:37 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



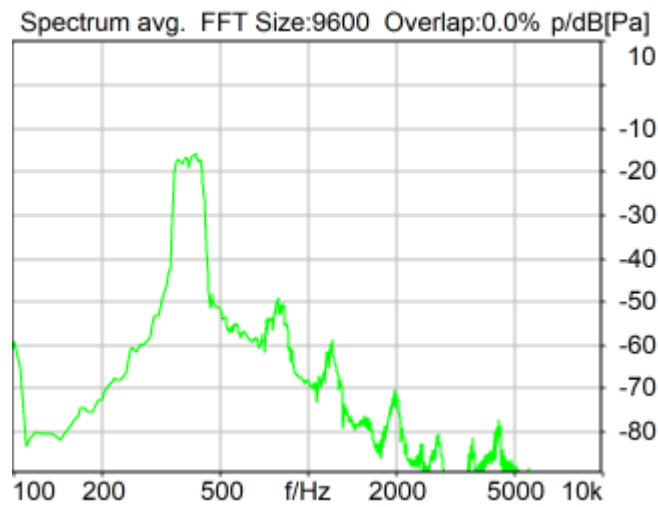
Distortion (Noise) RCV (packed): 28.02 dB (3.97%) Ok

**Ok**

24/08/14 11:37 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



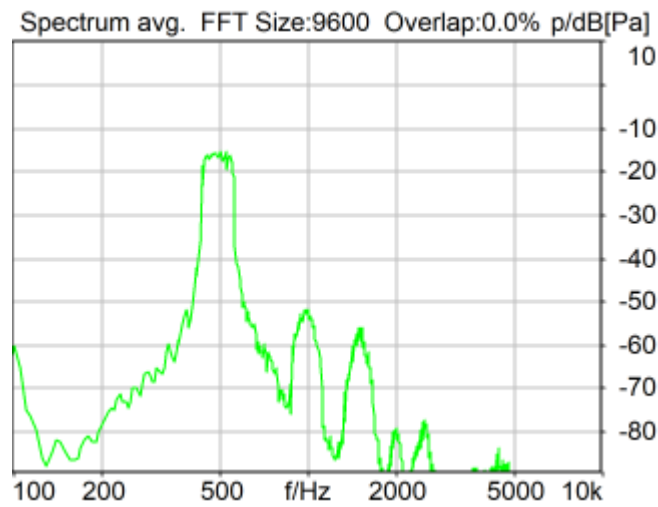
Distortion (Noise) RCV (packed): 31.67 dB (2.61%) Ok

**Ok**

24/08/14 11:37 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



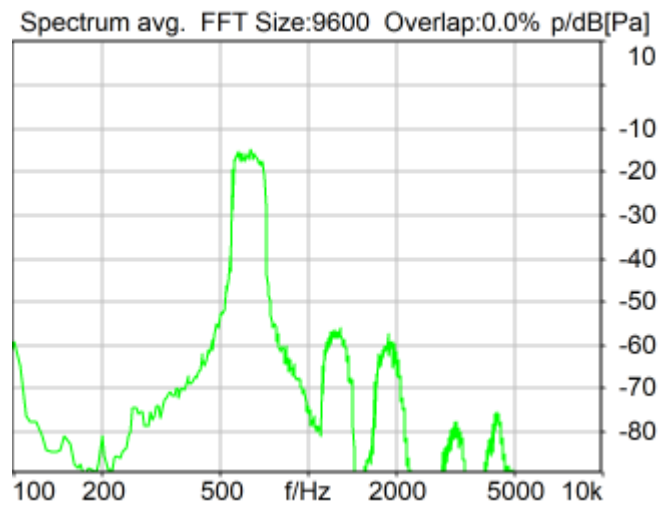
Distortion (Noise) RCV (packed): 33.21 dB (2.19%) Ok

Ok

24/08/14 11:38 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



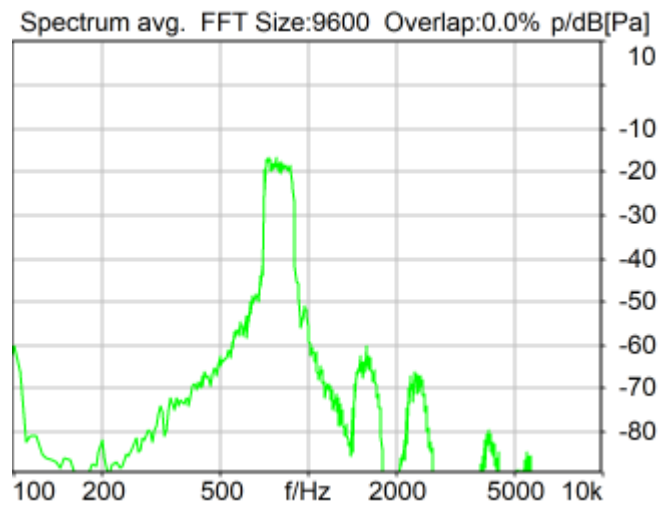
Distortion (Noise) RCV (packed): 35.44 dB (1.69%) Ok

**Ok**

24/08/14 11:38 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



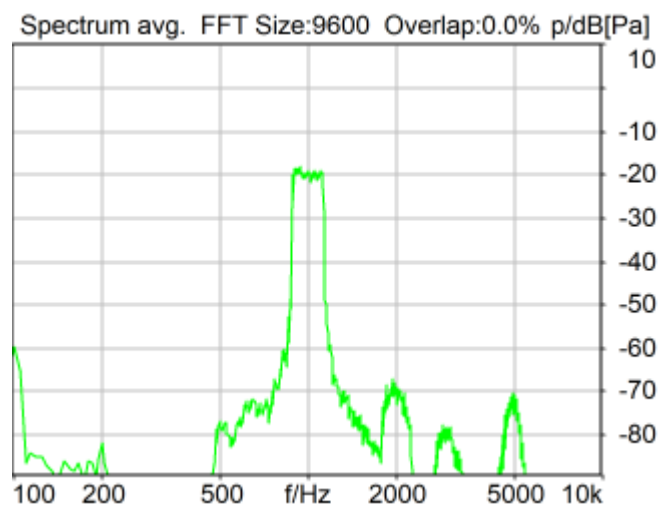
Distortion (Noise) RCV (packed): 34.00 dB (2.00%) Ok

**Ok**

24/08/14 11:39 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



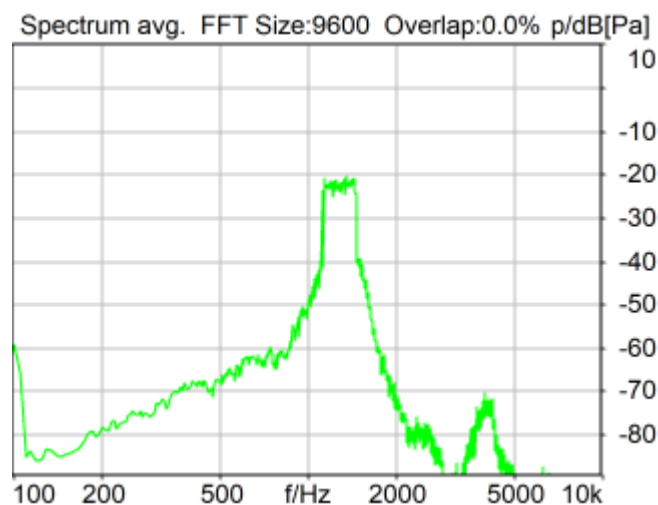
Distortion (Noise) RCV (packed): 41.26 dB (0.87%) Ok

Ok

24/08/14 11:39 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



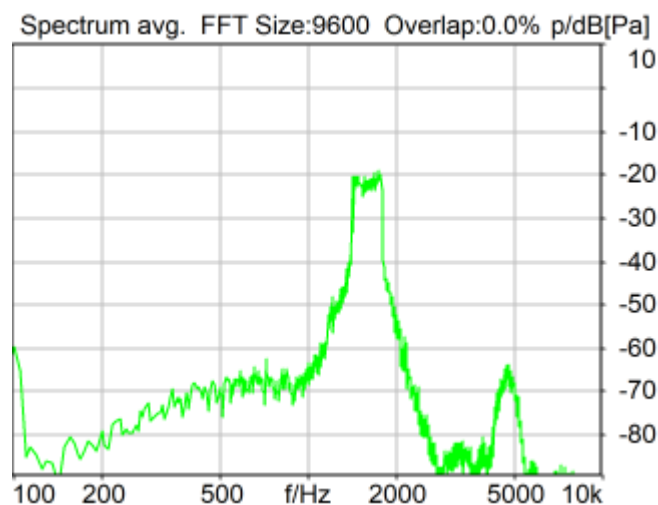
Distortion (Noise) RCV (packed): 21.32 dB (8.59%) Ok

Ok

24/08/14 11:40 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): 25.13 dB (5.54%) Ok

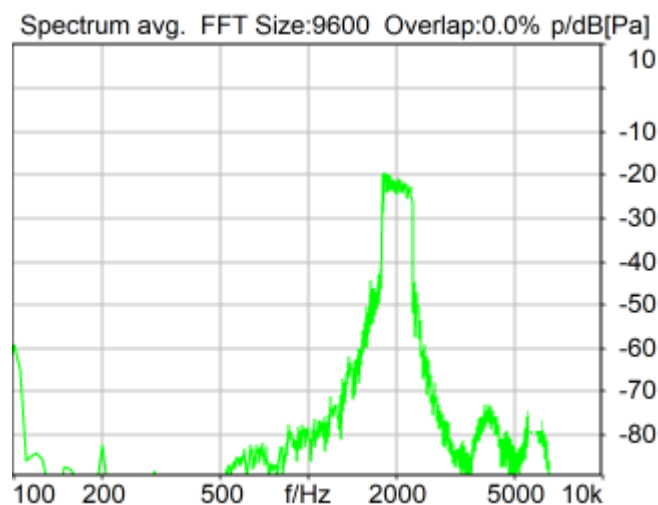
Ok

24/08/14 11:40 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



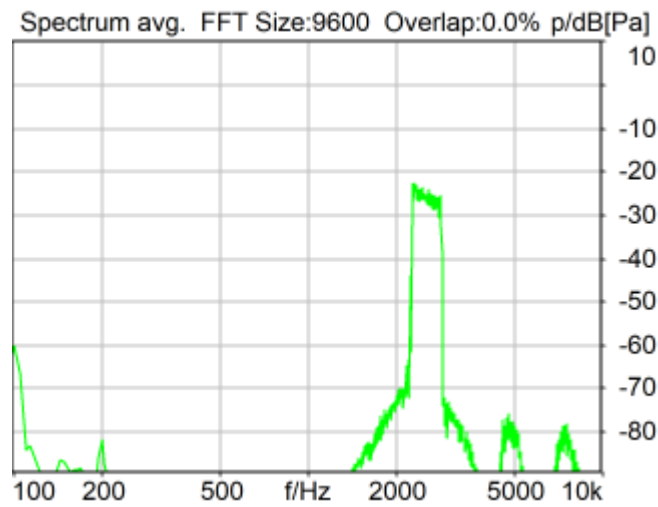
Distortion (Noise) RCV (packed): 27.48 dB (4.23%) Ok

Ok

24/08/14 11:41 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



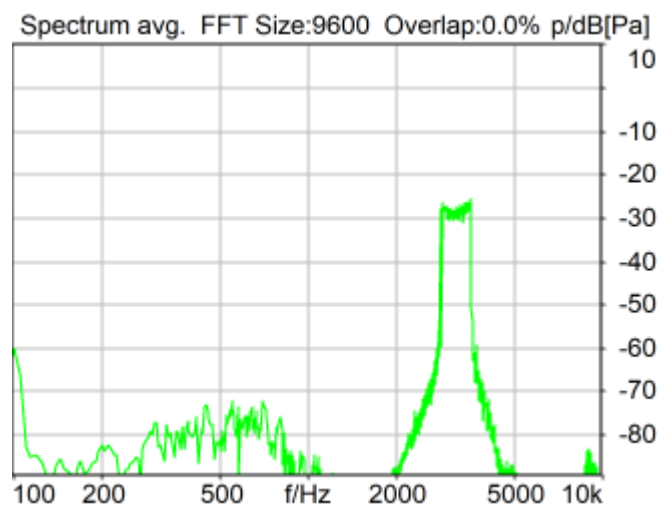
Distortion (Noise) RCV (packed): 43.80 dB (0.65%) Ok

Ok

24/08/14 11:41 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



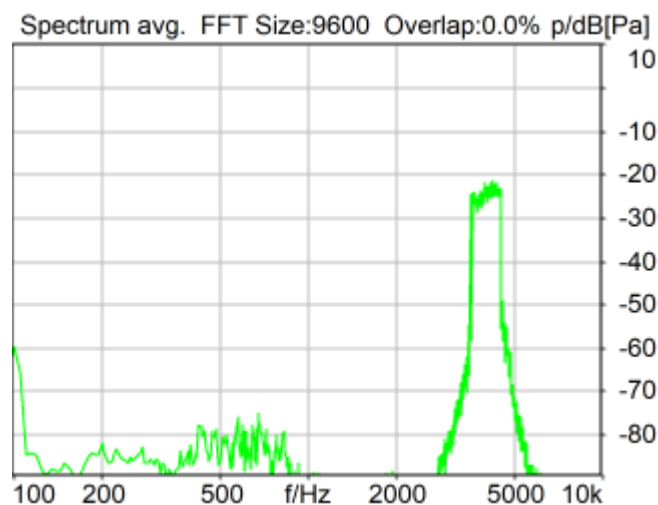
Distortion (Noise) RCV (packed): 35.07 dB (1.76%) Ok

Ok

24/08/14 11:41 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



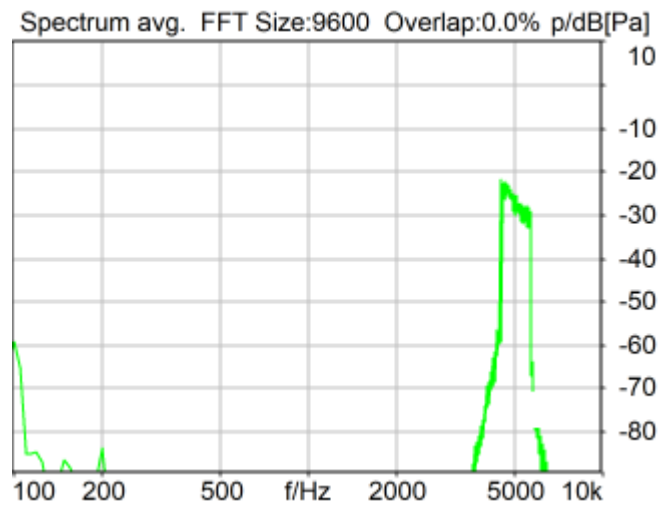
Distortion (Noise) RCV (packed): 35.35 dB (1.71%) Ok

Ok

24/08/14 11:42 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): 39.30 dB (1.08%) Ok

Ok

24/08/14 11:42 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     | 28.63 dB |
| 2      | 315Hz     | 28.02 dB |
| 3      | 400Hz     | 31.67 dB |
| 4      | 500Hz     | 33.21 dB |
| 5      | 630Hz     | 35.44 dB |
| 6      | 800Hz     | 34.00 dB |
| 7      | 1000Hz    | 41.26 dB |
| 8      | 1250Hz    | 21.32 dB |
| 9      | 1600Hz    | 25.13 dB |
| 10     | 2000Hz    | 27.48 dB |
| 11     | 2500Hz    | 43.80 dB |
| 12     | 3150Hz    | 35.07 dB |
| 13     | 4000Hz    | 35.35 dB |
| 14     | 5000Hz    | 39.30 dB |

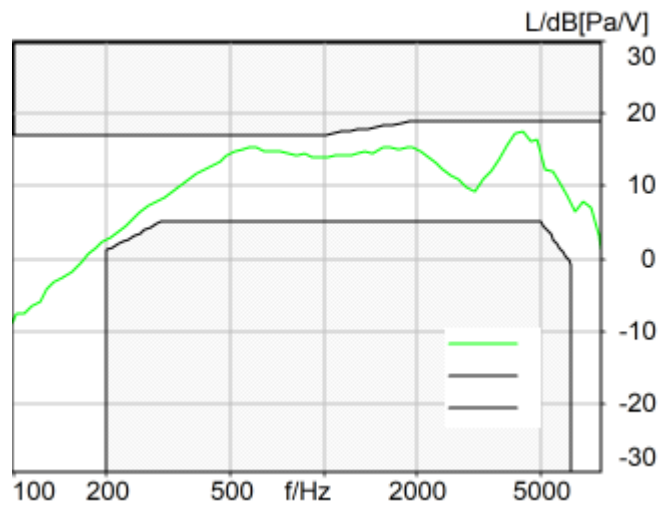
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.32dB at 1250Hz.

24/08/14 11:42 ACQUA

### 5.3 Frequency Response 2N FF

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



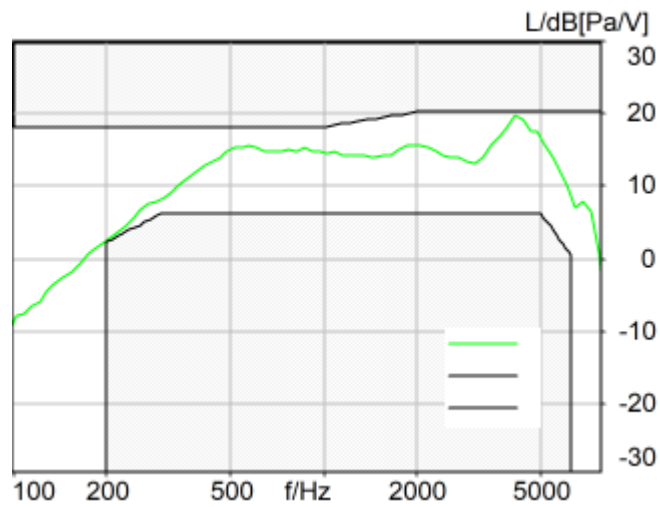
Absolute minimal distance  
1.62 dB at 4369.4 Hz Ok

Ok

24/08/14 11:43 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
0.36 dB at 4119.5 Hz Ok

Ok

24/08/14 11:43 ACQUA 5.1.200



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## **Measurement Protocol**

|                    |                                                 |
|--------------------|-------------------------------------------------|
| Measurement Object | WLAN2.4GHz_802.11b 1Mbps_EVS WB 24.4kbps_Ch6_8N |
|--------------------|-------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/15 16:45 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description           | Single Value | Object                                                 |
|-----------------------------------------------|--------|------------------------------------|--------------|--------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                 | 112.6        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.1a Receive Volume Control Performance 8N WB | Ok     | Speech Level [dB[SPL]]             | 89.17        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 27.78        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.71        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 32.61        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 32.40        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 35.39        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 36.01        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 42.30        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 21.37        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 23.43        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.36        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 42.13        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 34.09        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 29.69        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 35.87        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                 | 21.37        | WLAN2.4GHz_802.11b                                     |

ACQUA Report  
4kbps\_Ch6\_8N

Title: WLAN2.4GHz\_802.11b 1Mbps\_EVS WB 24.

|                                 |    |                                               |      |                                                        |
|---------------------------------|----|-----------------------------------------------|------|--------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                           |      | 1Mbps_EVS WB 24.<br>4kbps_Ch6_8N                       |
| 5.3 Frequency Response 8N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz | 1.48 | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |
| 5.3 Frequency Response 8N DF    | Ok | Min. dist. to tolerance scheme [dB], 576.7 Hz | 1.84 | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_8N |

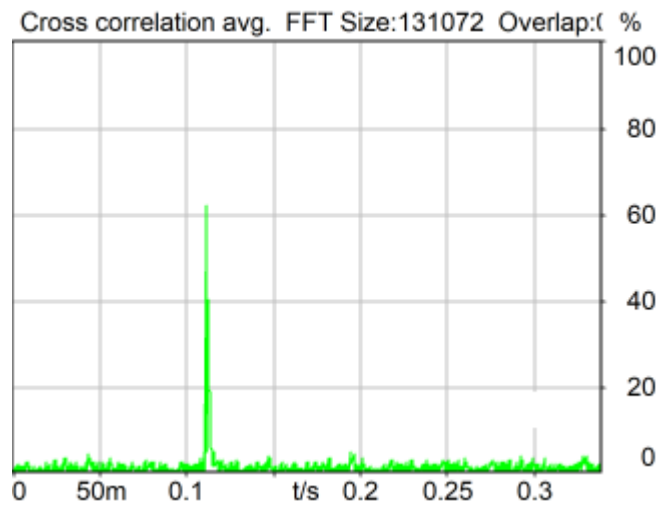
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1a Receive Volume Control Performance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

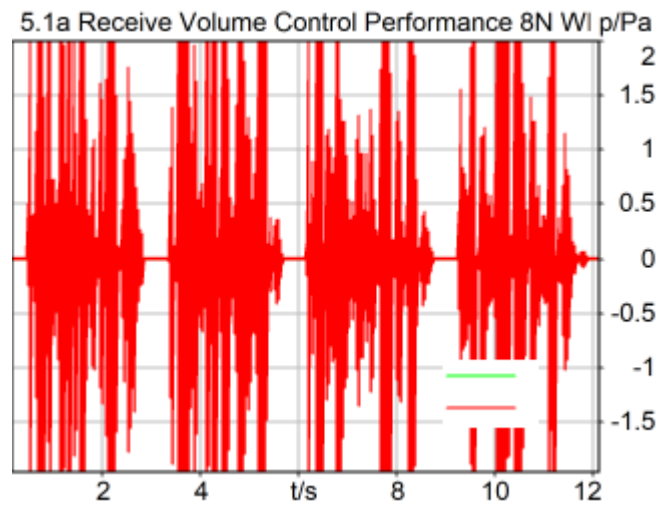


Delay (Cross): 112.6 ms

24/08/15 16:36 ACQUA 5.1.200

## 5.1a Receive Volume Control Performance 8N WB

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



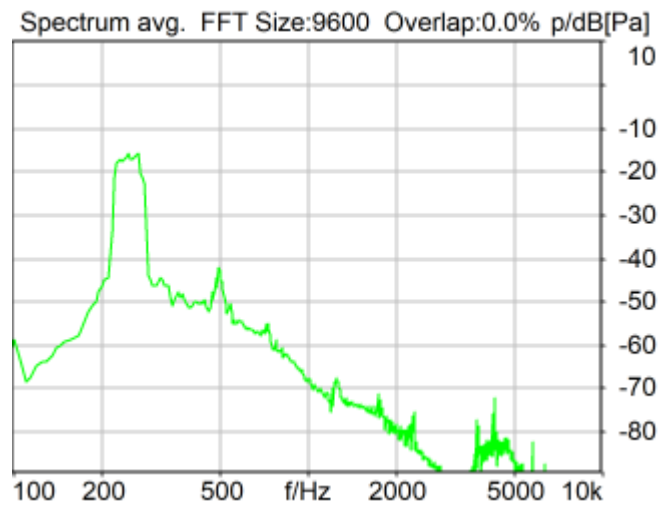
Speech Level RCV: 89.17 dB[SPL], Act.: 80.62% Ok

**Ok**

24/08/15 16:37 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): 27.78 dB (4.08%) Ok

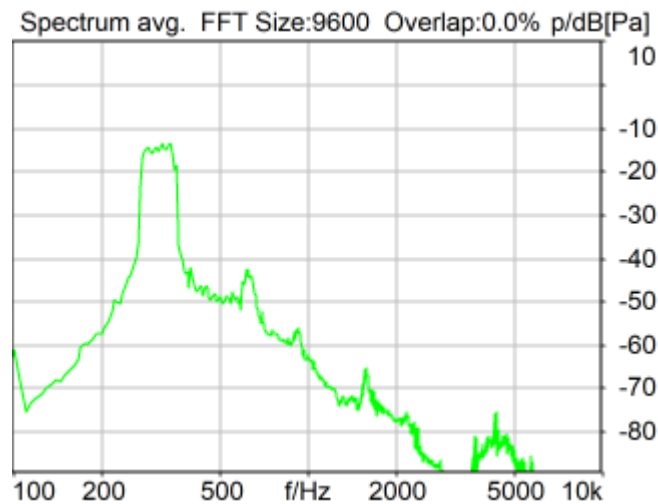
**Ok**

24/08/15 16:37 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



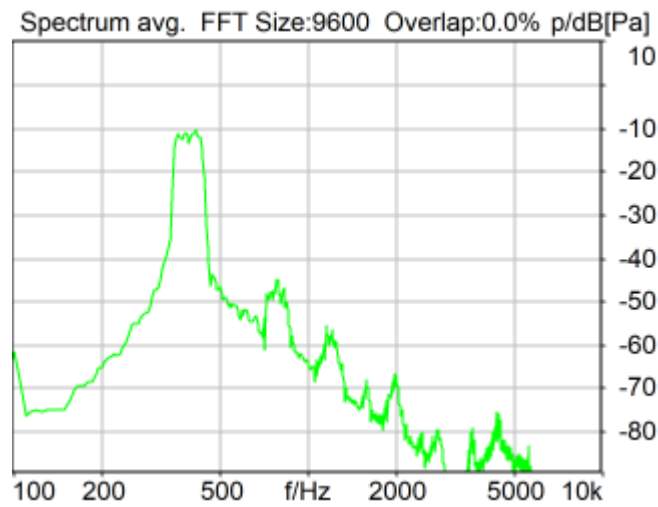
Distortion (Noise) RCV (packed): 28.71 dB (3.67%) Ok

**Ok**

24/08/15 16:38 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



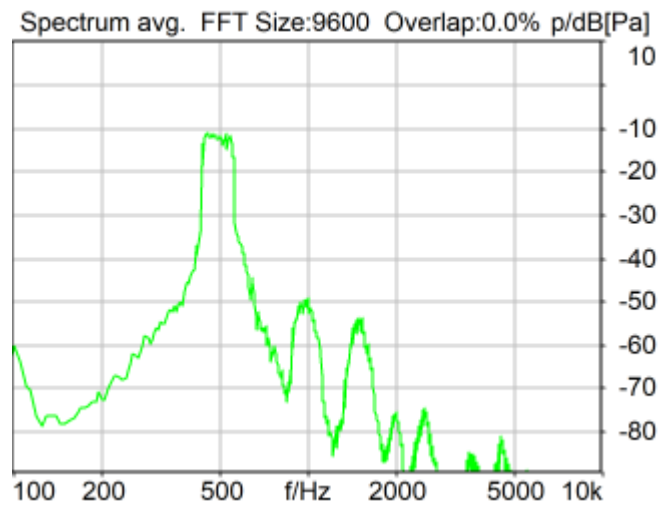
Distortion (Noise) RCV (packed): 32.61 dB (2.34%) Ok

**Ok**

24/08/15 16:38 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



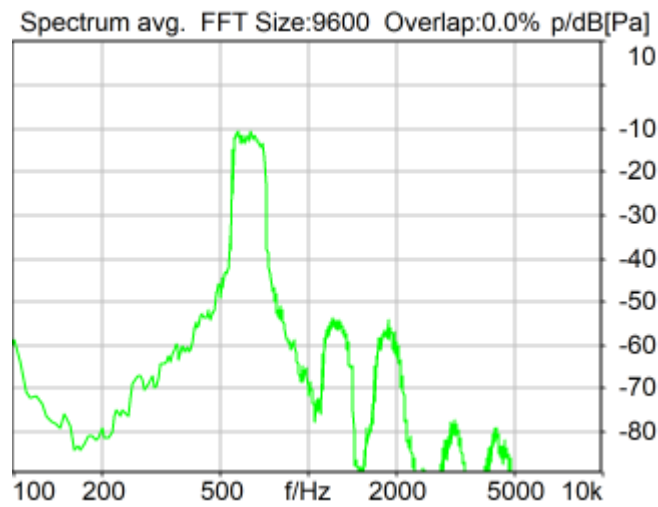
Distortion (Noise) RCV (packed): 32.40 dB (2.40%) Ok

**Ok**

24/08/15 16:39 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



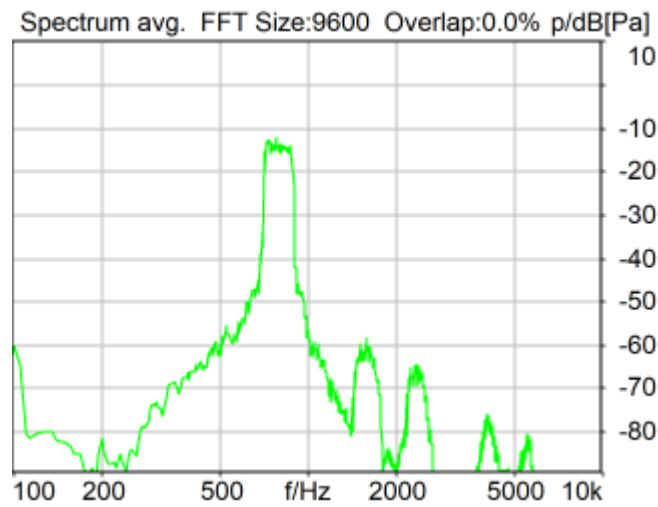
Distortion (Noise) RCV (packed): 35.39 dB (1.70%) Ok

**Ok**

24/08/15 16:39 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



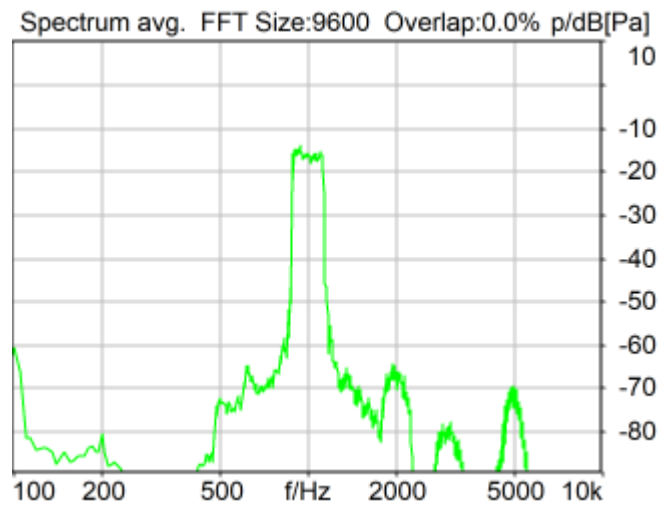
Distortion (Noise) RCV (packed): 36.01 dB (1.58%) Ok

**Ok**

24/08/15 16:39 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



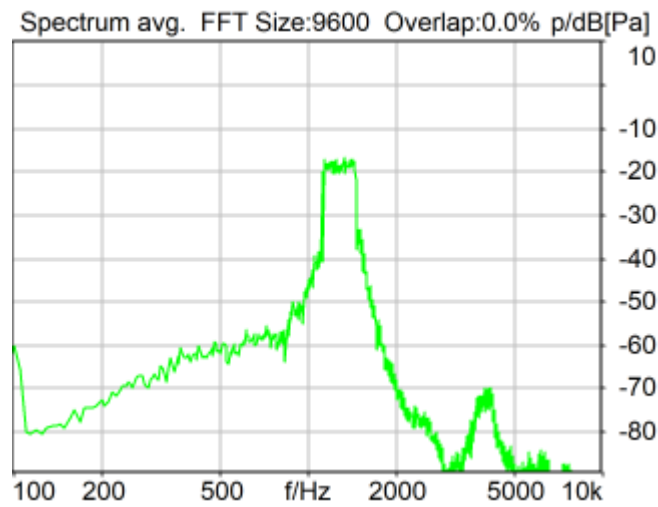
Distortion (Noise) RCV (packed): 42.30 dB (0.77%) Ok

Ok

24/08/15 16:40 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



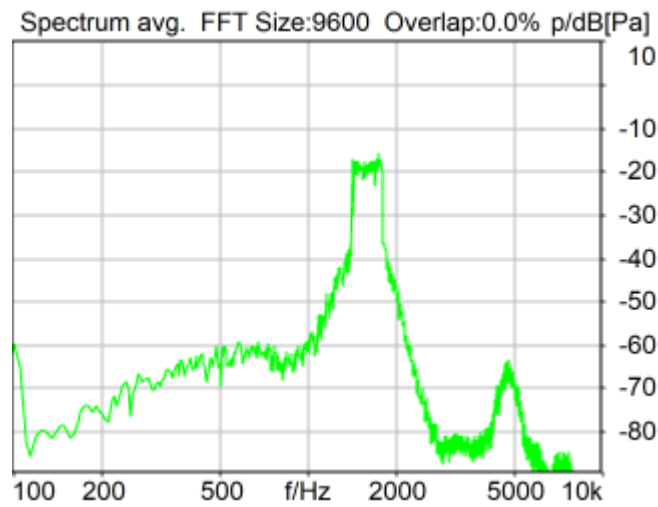
Distortion (Noise) RCV (packed): 21.37 dB (8.54%) Ok

**Ok**

24/08/15 16:40 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): 23.43 dB (6.74%) Ok

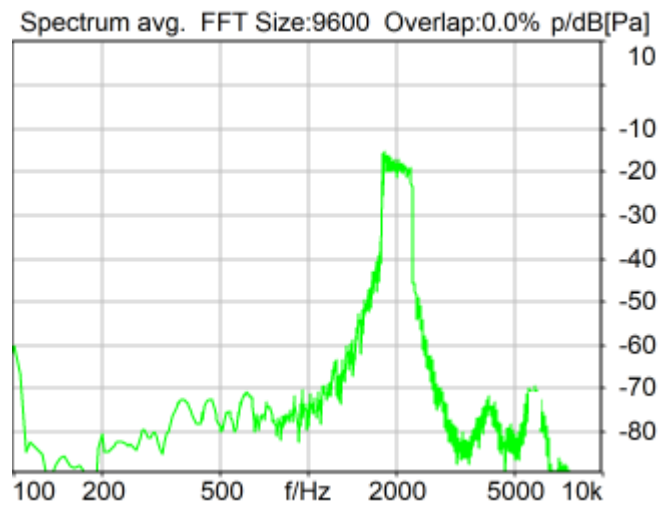
**Ok**

24/08/15 16:41 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



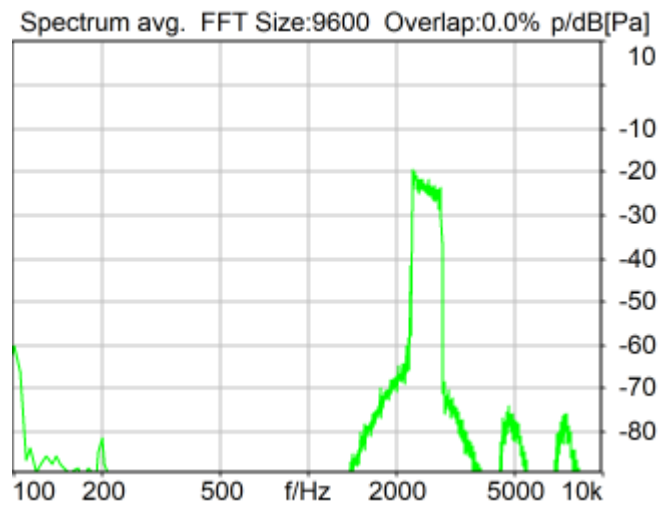
Distortion (Noise) RCV (packed): 28.36 dB (3.82%) Ok

**Ok**

24/08/15 16:41 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



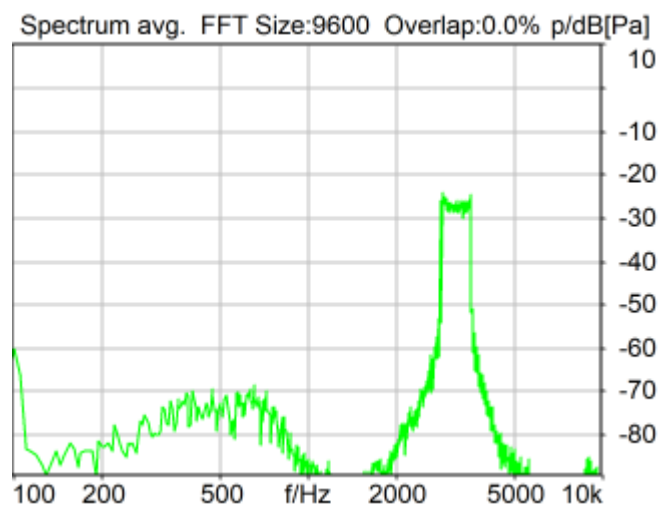
Distortion (Noise) RCV (packed): 42.13 dB (0.78%) Ok

Ok

24/08/15 16:42 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



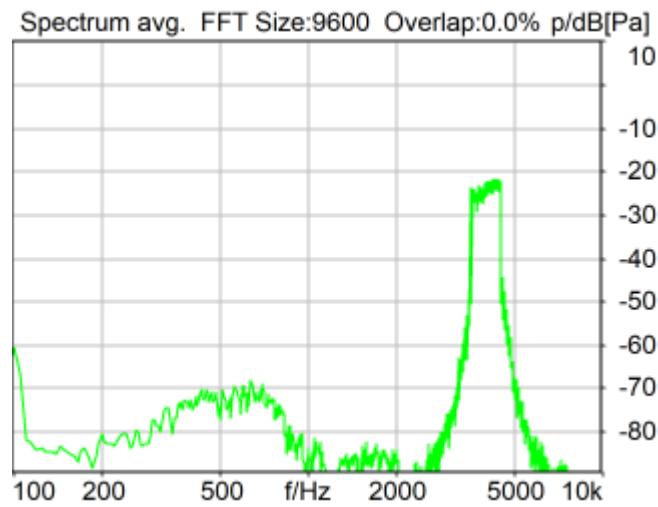
Distortion (Noise) RCV (packed): 34.09 dB (1.97%) Ok

Ok

24/08/15 16:42 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



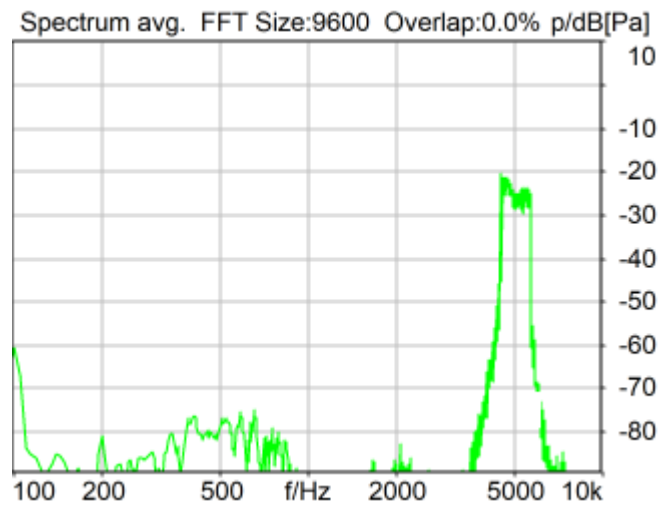
Distortion (Noise) RCV (packed): 29.69 dB (3.28%) Ok

**Ok**

24/08/15 16:43 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): 35.87 dB (1.61%) Ok

Ok

24/08/15 16:43 ACQUA 5.1.200

---

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

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

| Region | Frequency | SDNR     |
|--------|-----------|----------|
| 1      | 250Hz     | 27.78 dB |
| 2      | 315Hz     | 28.71 dB |
| 3      | 400Hz     | 32.61 dB |
| 4      | 500Hz     | 32.40 dB |
| 5      | 630Hz     | 35.39 dB |
| 6      | 800Hz     | 36.01 dB |
| 7      | 1000Hz    | 42.30 dB |
| 8      | 1250Hz    | 21.37 dB |
| 9      | 1600Hz    | 23.43 dB |
| 10     | 2000Hz    | 28.36 dB |
| 11     | 2500Hz    | 42.13 dB |
| 12     | 3150Hz    | 34.09 dB |
| 13     | 4000Hz    | 29.69 dB |
| 14     | 5000Hz    | 35.87 dB |

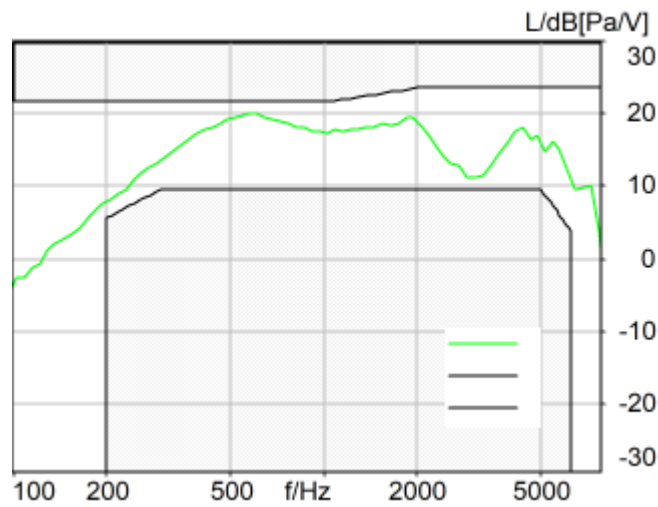
All SDNRs were greater than 20.0 dB, requirement was met.

Smallest SDNR was 21.37dB at 1250Hz.

24/08/15 16:43 ACQUA

### 5.3 Frequency Response 8N FF

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



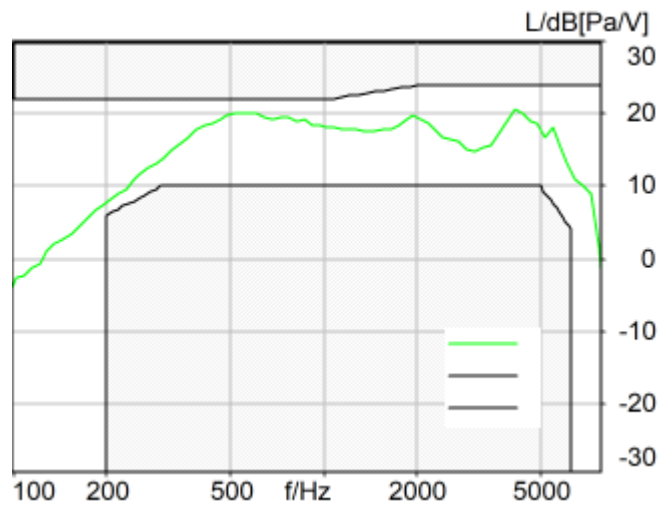
Absolute minimal distance  
1.48 dB at 611.7 Hz Ok

Ok

24/08/15 16:43 ACQUA 5.1.200

### 5.3 Frequency Response 8N DF

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



Absolute minimal distance  
1.84 dB at 576.7 Hz Ok

**Ok**

24/08/15 16:44 ACQUA 5.1.200



---

## **Measurement Protocol**

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

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/13 15:24 |
| Responsible Person     | AC01-KS        |

---

**Status Overview**

| SMD                                           | Status | Single Value Description | Single Value | Object                                      |
|-----------------------------------------------|--------|--------------------------|--------------|---------------------------------------------|
| Overall Receive Delay NB                      | Done   | Delay (Cross) [ms]       | 172.6        | GSM1900_GSM Voice_AMR NB 4. 75kbps_Ch661_2N |
| 5.1b Receive Volume Control Performance 2N NB | Ok     | Speech Level [dB[SPL]]   | 83.93        | GSM1900_GSM Voice_AMR NB 4. 75kbps_Ch661_2N |

ACQUA Report  
75kbps\_Ch661\_2N

Title: GSM1900\_GSM Voice\_AMR NB 4.

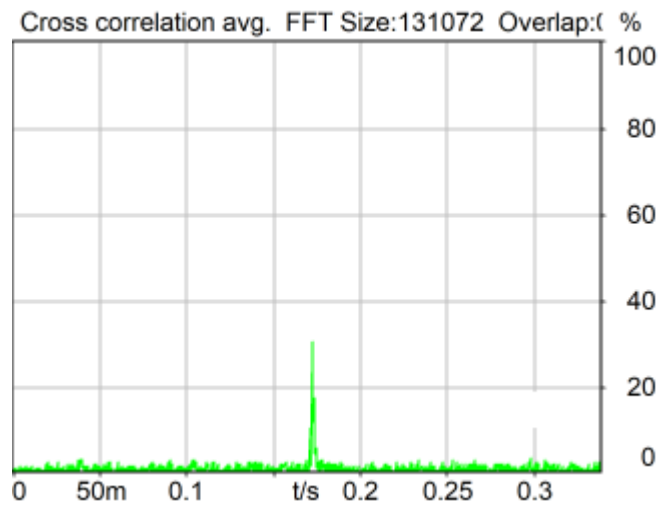
---

|                                               |   |
|-----------------------------------------------|---|
| 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

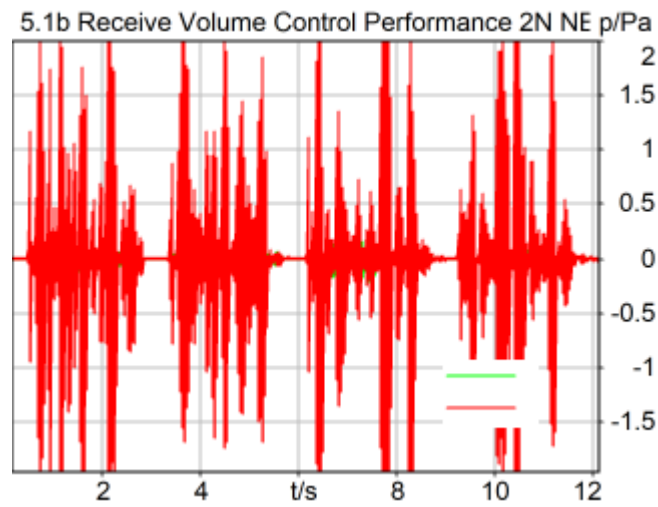


Delay (Cross): 172.6 ms

24/08/13 15:23 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 83.93 dB[SPL], Act.: 79.62% Ok

**Ok**

24/08/13 15:24 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                          |
|--------------------|------------------------------------------|
| Measurement Object | WCDMA II_Voice_AMR NB 4.75kbps_Ch9400_2N |
|--------------------|------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/13 16:15 |
| 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]       | 167.8           | WCDMA II_Voice_AMR NB 4.<br>75kbps_Ch9400_2N |
| 5.1b Receive Volume Control<br>Performance 2N NB | Ok     | Speech Level<br>[dB[SPL]]   | 83.37           | WCDMA II_Voice_AMR NB 4.<br>75kbps_Ch9400_2N |



ACQUA Report  
75kbps\_Ch9400\_2N

Title: WCDMA II\_Voice\_AMR NB 4.

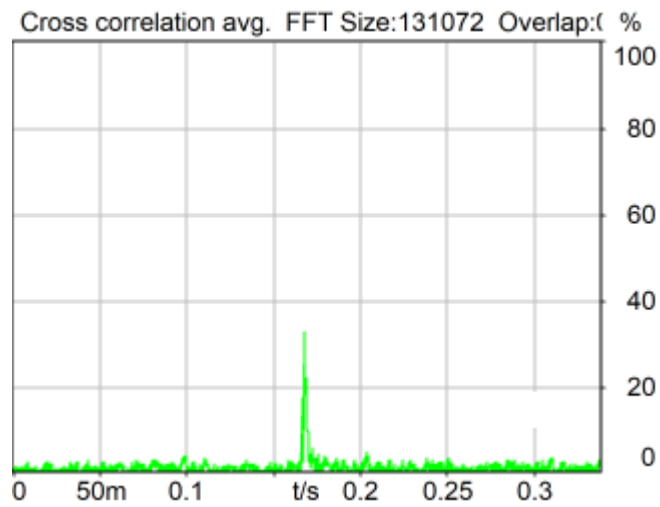
---

|                                               |   |
|-----------------------------------------------|---|
| 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

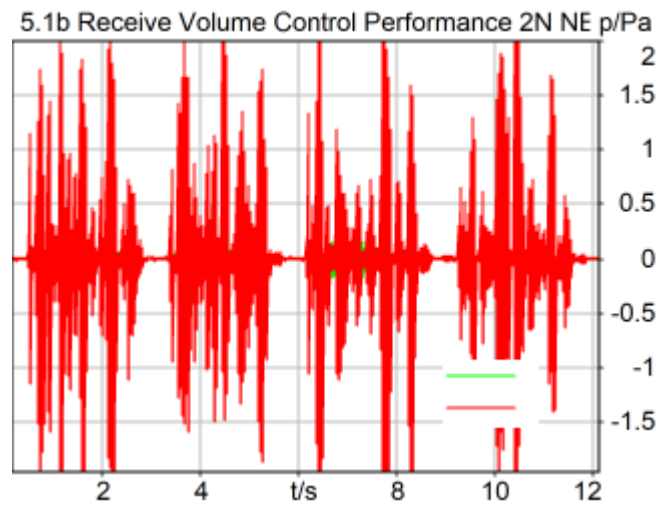


Delay (Cross): 167.8 ms

24/08/13 16:14 ACQUA 5.1.200

## 5.1b Receive Volume Control Performance 2N NB

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



Speech Level RCV: 83.37 dB[SPL], Act.: 80.23% Ok

**Ok**

24/08/13 16:14 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                          |
|--------------------|------------------------------------------|
| Measurement Object | WCDMA II_Voice_AMR NB 4.75kbps_Ch9400_8N |
|--------------------|------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/13 16:21 |
| Responsible Person     | AC01-KS        |

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**Status Overview**

| SMD                                              | Status | Single Value<br>Description | Single<br>Value | Object                                       |
|--------------------------------------------------|--------|-----------------------------|-----------------|----------------------------------------------|
| Overall Receive Delay NB                         | Done   | Delay (Cross)<br>[ms]       | 167.8           | WCDMA II_Voice_AMR NB 4.<br>75kbps_Ch9400_8N |
| 5.1a Receive Volume Control<br>Performance 8N NB | Ok     | Speech Level<br>[dB[SPL]]   | 87.65           | WCDMA II_Voice_AMR NB 4.<br>75kbps_Ch9400_8N |

ACQUA Report  
75kbps\_Ch9400\_8N

Title: WCDMA II\_Voice\_AMR NB 4.

---

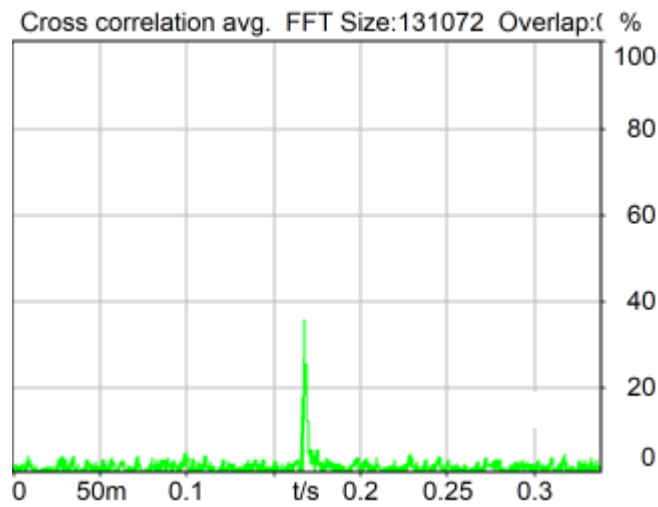
|                                               |   |
|-----------------------------------------------|---|
| Overall Receive Delay NB                      | 5 |
| 5.1a Receive Volume Control Performance 8N NB | 6 |





## Overall Receive Delay NB

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

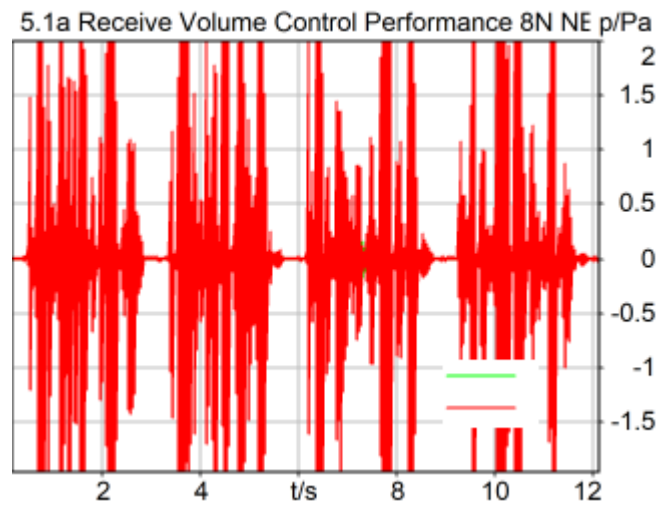


Delay (Cross): 167.8 ms

24/08/13 16:21 ACQUA 5.1.200

## 5.1a Receive Volume Control Performance 8N NB

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



Speech Level RCV: 87.65 dB[SPL], Act.: 80.47% Ok

**Ok**

24/08/13 16:21 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                                              |
|--------------------|--------------------------------------------------------------|
| Measurement Object | LTE Band 66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
|--------------------|--------------------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/12 15:42 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                          |
|-----------------------------------------------|--------|---------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 111.4        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.54        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.08        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 32.07        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 32.90        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.64        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 36.31        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 37.38        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.60        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.62        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.39        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.03        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.64        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.60        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 43.57        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 39.03        | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB]               | 28.08        | LTE Band                                                        |

ACQUA Report

Title: LTE Band

66\_20M\_QPSK\_1RB\_0Offset\_EVS WB 24.4kbps\_Ch132322\_2N

|                                 |    |                                                |      |                                                                 |
|---------------------------------|----|------------------------------------------------|------|-----------------------------------------------------------------|
| and Noise (Conversational Gain) |    | , (occured at 250Hz)                           |      | 66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N             |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz  | 1.90 | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 4369.4 Hz | 1.20 | LTE Band<br>66_20M_QPSK_1RB_0Offset_EVS WB 24.4kbps_Ch132322_2N |

ACQUA Report  
66\_20M\_QPSK\_1RB\_0Offset\_EVS WB 24.4kbps\_Ch132322\_2N

Title: LTE Band

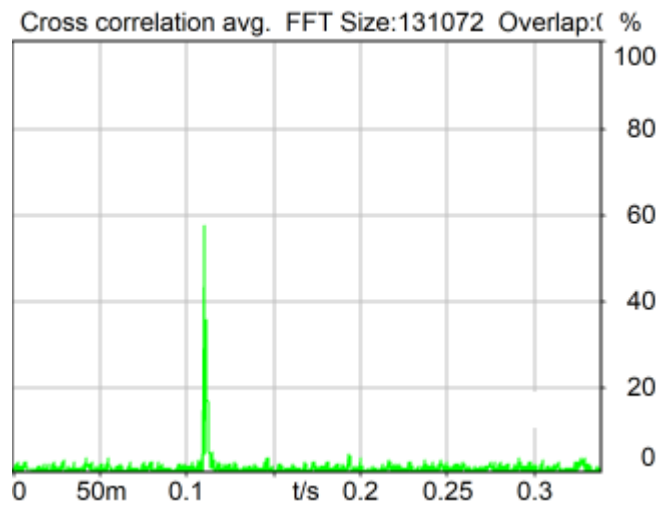
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance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



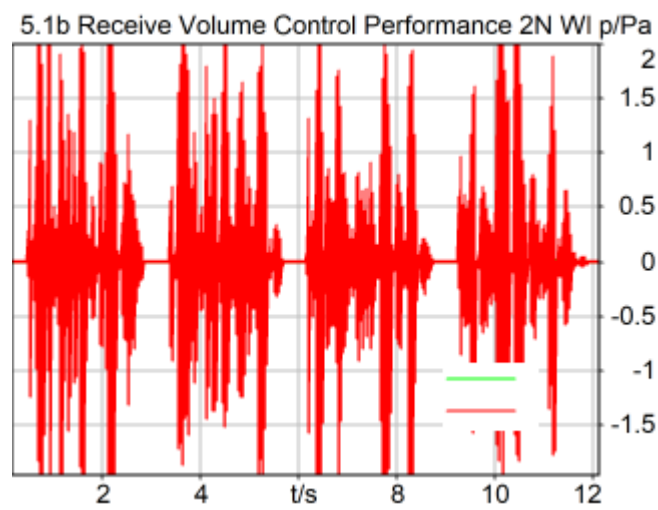
Delay (Cross): 111.4 ms

24/08/12 15:33 ACQUA 5.1.200



## 5.1b Receive Volume Control Performance 2N WB

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



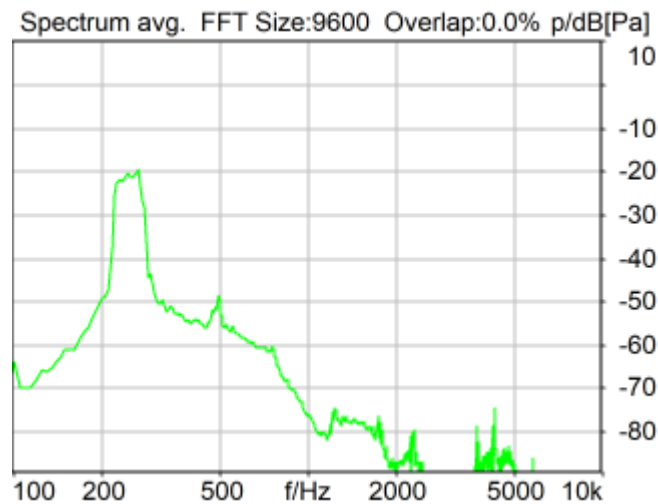
Speech Level RCV: 84.54 dB[SPL], Act.: 82.28% Ok

**Ok**

24/08/12 15:34 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



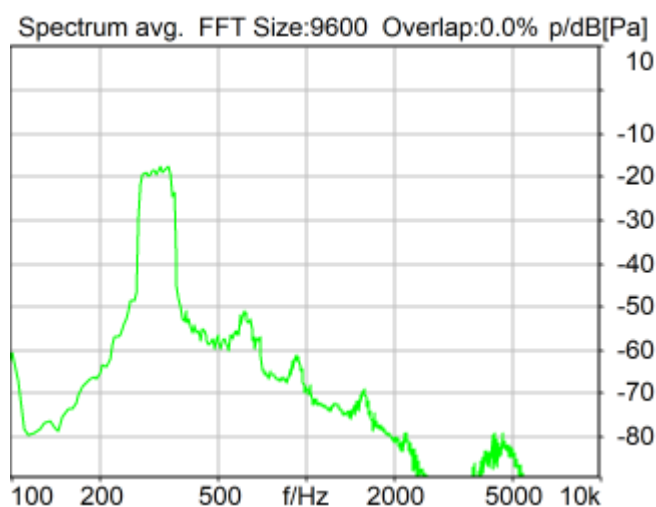
Distortion (Noise) RCV (packed): 28.08 dB (3.94%) Ok

**Ok**

24/08/12 15:34 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



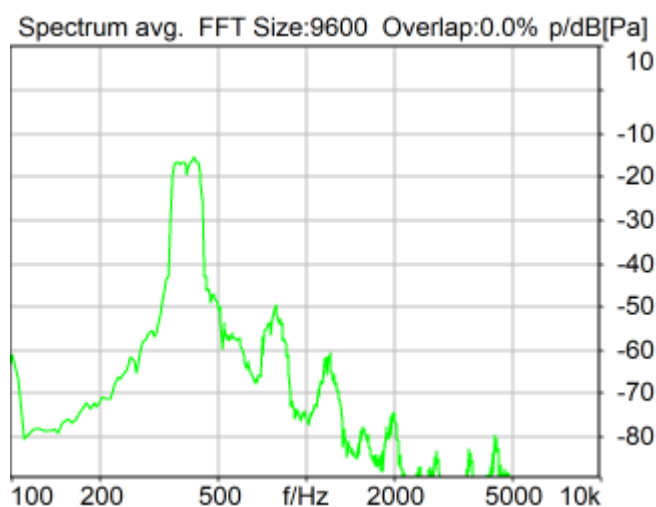
Distortion (Noise) RCV (packed): 32.07 dB (2.49%) Ok

Ok

24/08/12 15:35 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



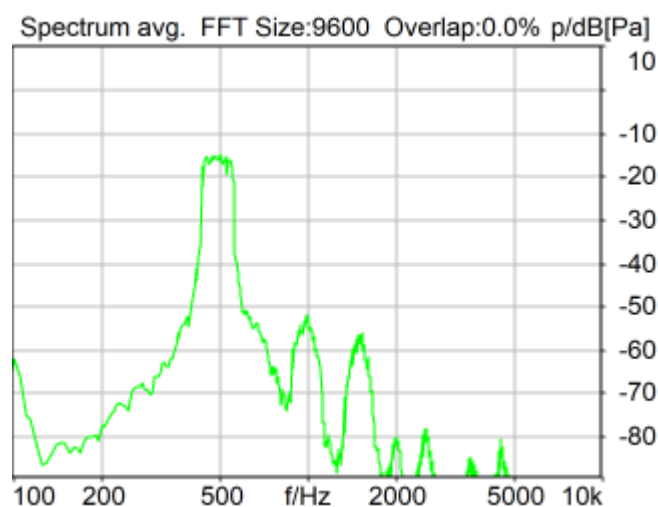
Distortion (Noise) RCV (packed): 32.90 dB (2.27%) Ok

**Ok**

24/08/12 15:35 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



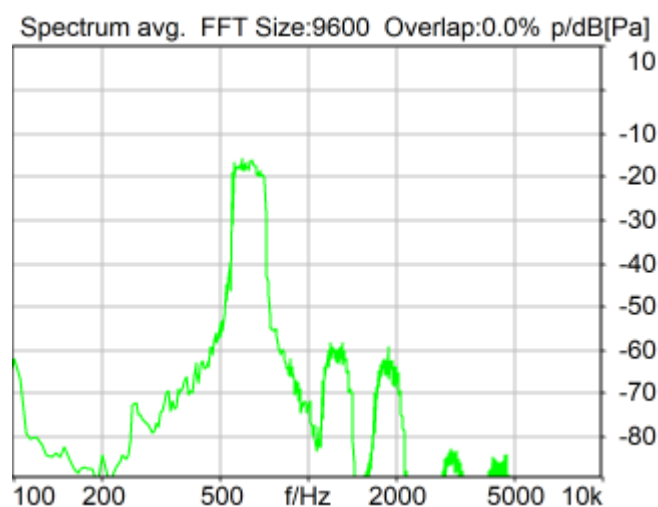
Distortion (Noise) RCV (packed): 33.64 dB (2.08%) Ok

**Ok**

24/08/12 15:36 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



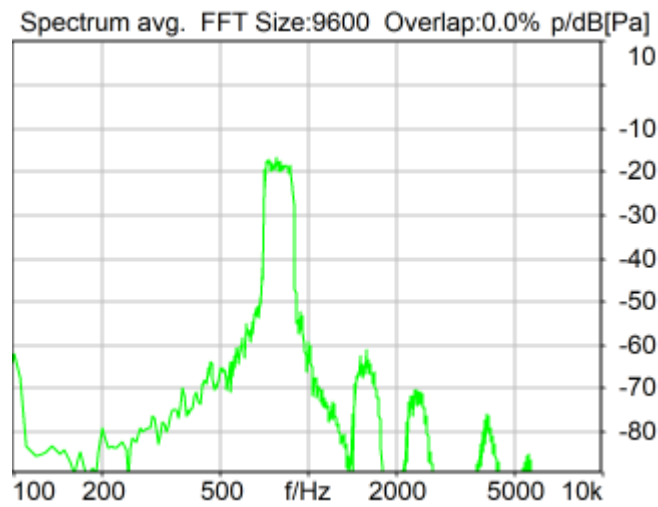
Distortion (Noise) RCV (packed): 36.31 dB (1.53%) Ok

**Ok**

24/08/12 15:36 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



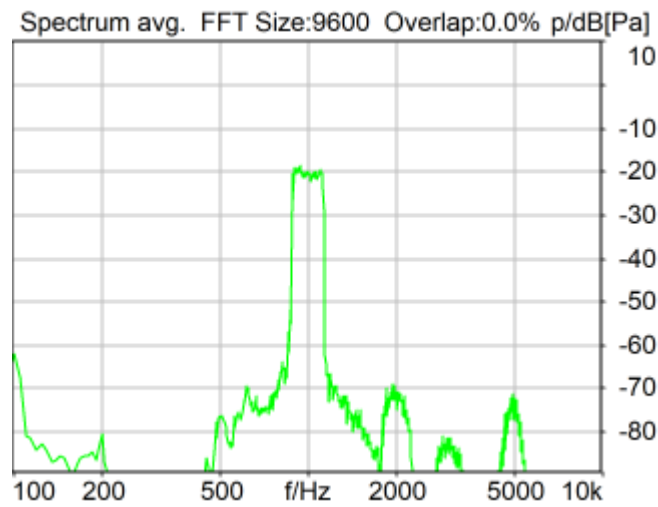
Distortion (Noise) RCV (packed): 37.38 dB (1.35%) Ok

Ok

24/08/12 15:37 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): 43.60 dB (0.66%) Ok

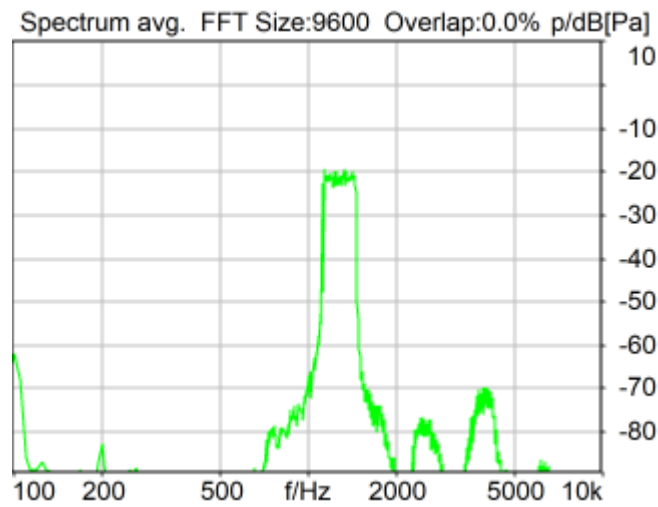
Ok

24/08/12 15:37 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



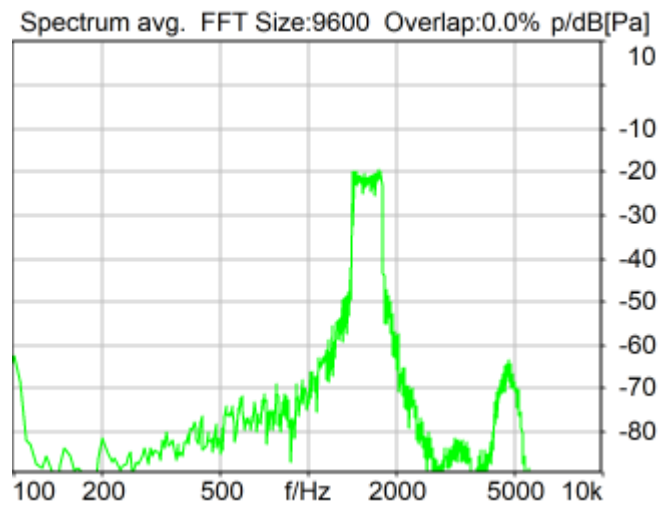
Distortion (Noise) RCV (packed): 33.62 dB (2.09%) Ok

Ok

24/08/12 15:38 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



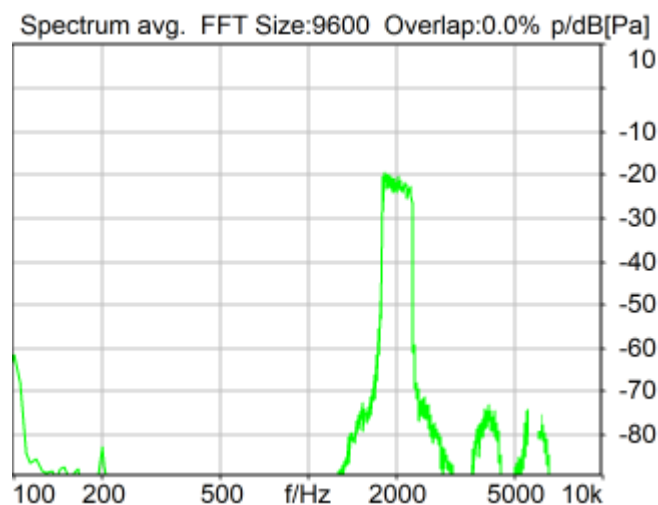
Distortion (Noise) RCV (packed): 30.39 dB (3.02%) Ok

**Ok**

24/08/12 15:38 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



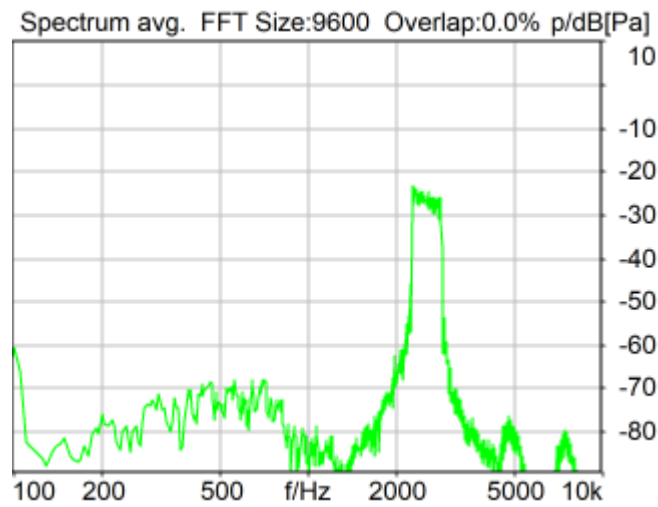
Distortion (Noise) RCV (packed): 43.03 dB (0.71%) Ok

Ok

24/08/12 15:38 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



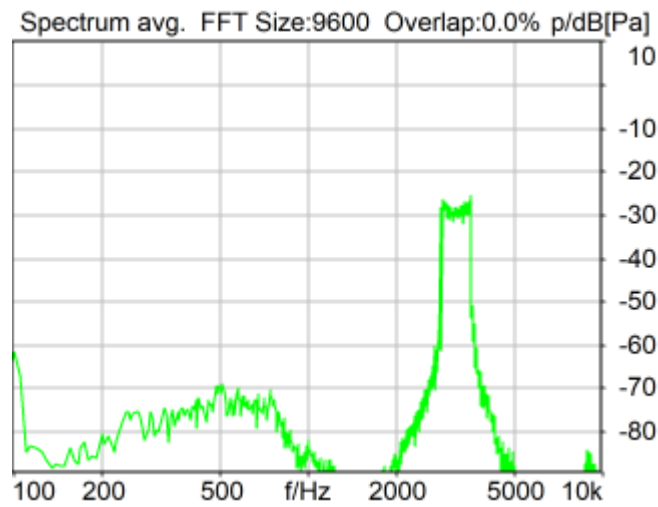
Distortion (Noise) RCV (packed): 33.64 dB (2.08%) Ok

**Ok**

24/08/12 15:39 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



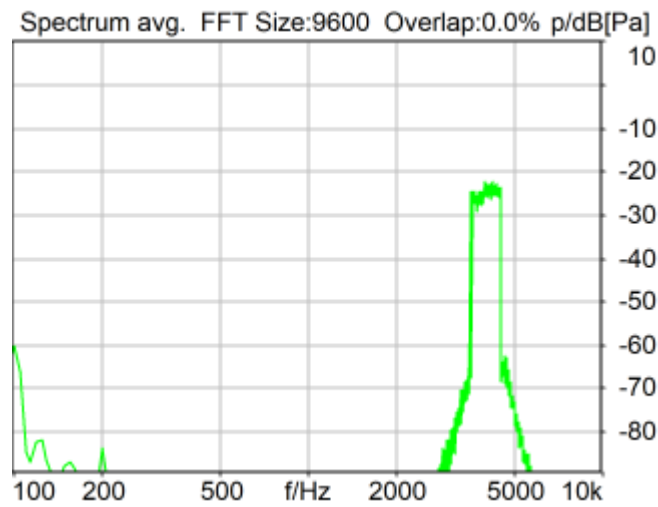
Distortion (Noise) RCV (packed): 33.60 dB (2.09%) Ok

Ok

24/08/12 15:39 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



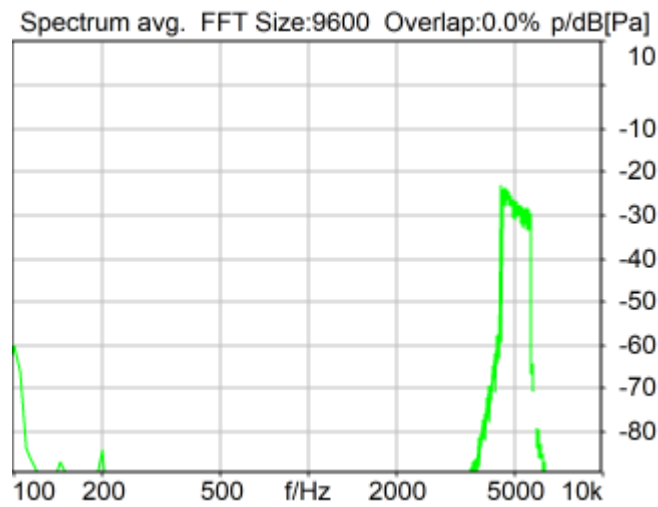
Distortion (Noise) RCV (packed): 43.57 dB (0.66%) Ok

**Ok**

24/08/12 15:40 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): 39.03 dB (1.12%) Ok

Ok

24/08/12 15:40 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     | 28.08 dB |
| 2      | 315Hz     | 32.07 dB |
| 3      | 400Hz     | 32.90 dB |
| 4      | 500Hz     | 33.64 dB |
| 5      | 630Hz     | 36.31 dB |
| 6      | 800Hz     | 37.38 dB |
| 7      | 1000Hz    | 43.60 dB |
| 8      | 1250Hz    | 33.62 dB |
| 9      | 1600Hz    | 30.39 dB |
| 10     | 2000Hz    | 43.03 dB |
| 11     | 2500Hz    | 33.64 dB |
| 12     | 3150Hz    | 33.60 dB |
| 13     | 4000Hz    | 43.57 dB |
| 14     | 5000Hz    | 39.03 dB |

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

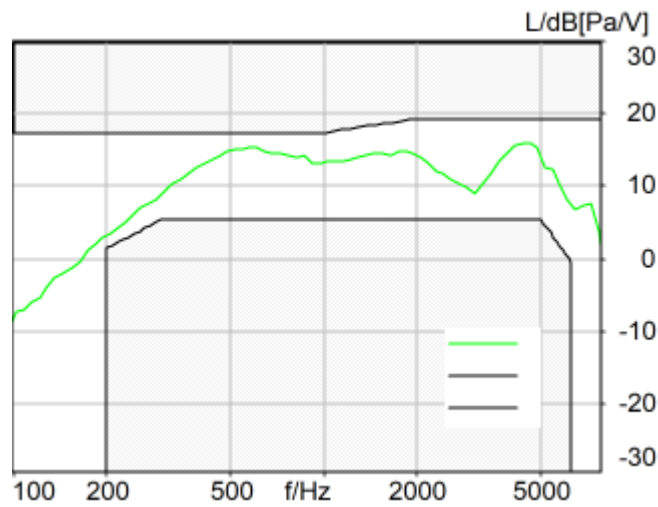
Smallest SDNR was 28.08dB at 250Hz.

24/08/12 15:40 ACQUA



### 5.3 Frequency Response 2N FF

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



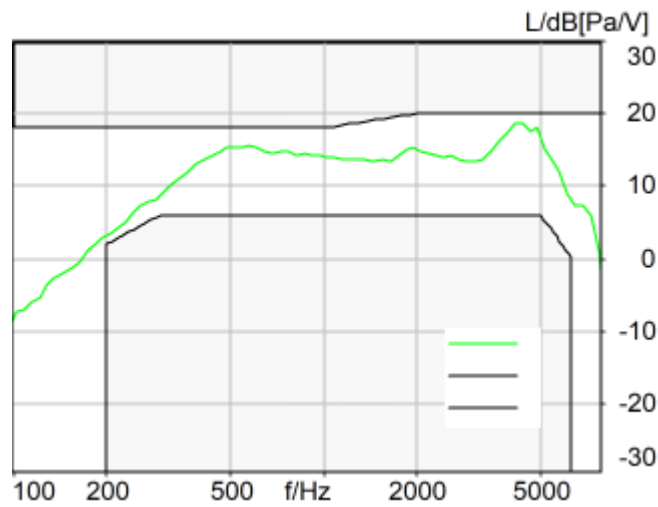
Absolute minimal distance  
1.90 dB at 611.7 Hz Ok

Ok

24/08/12 15:41 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.20 dB at 4369.4 Hz Ok

Ok

24/08/12 15:41 ACQUA 5.1.200

ACQUA Report  
WB 24.4kbps\_Ch349000\_2N

Title: 08\_FR1 n66\_40M\_QPSK\_1RB\_1Offset\_EVS

---

## **Measurement Protocol**

|                    |                                                          |
|--------------------|----------------------------------------------------------|
| Measurement Object | FR1 n66_40M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch349000_2N |
|--------------------|----------------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/14 14:09 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description        | Single Value | Object                                                          |
|-----------------------------------------------|--------|---------------------------------|--------------|-----------------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]              | 111.4        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]          | 84.15        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.59        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 33.05        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 31.99        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 32.22        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 34.02        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB], 0.0 dB | 38.78        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 30.18        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 23.52        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 26.05        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 23.74        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 29.95        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 42.80        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 28.63        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB], 0.0 dB | 39.72        | FR1<br>n66_40M_QPSK_1RB_1Offset_E<br>VS WB 24.4kbps_Ch349000_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],              | 23.52        | FR1                                                             |

ACQUA Report  
WB 24.4kbps\_Ch349000\_2N

Title: FR1 n66\_40M\_QPSK\_1RB\_1Offset\_EVS

|                                 |    |                                                |      |                                                             |
|---------------------------------|----|------------------------------------------------|------|-------------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                            |      | n66_40M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch349000_2N        |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 576.7 Hz  | 2.19 | FR1<br>n66_40M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch349000_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 4119.5 Hz | 1.07 | FR1<br>n66_40M_QPSK_1RB_1Offset_EVS WB 24.4kbps_Ch349000_2N |

ACQUA Report  
WB 24.4kbps\_Ch349000\_2N

Title: FR1 n66\_40M\_QPSK\_1RB\_1Offset\_EVS

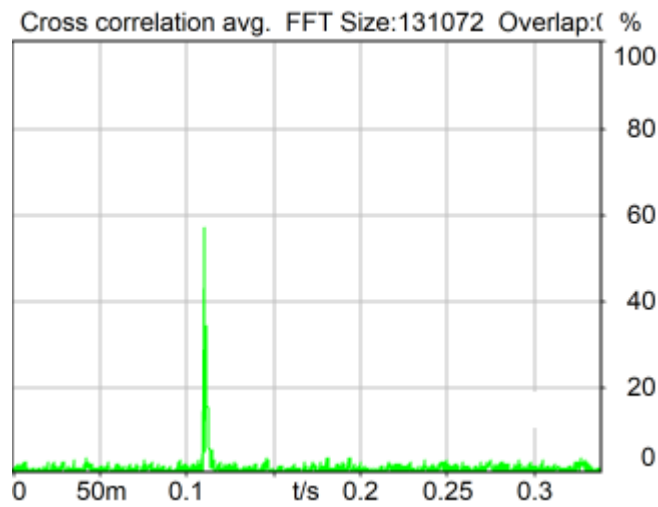
---

|                                                             |    |
|-------------------------------------------------------------|----|
| 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



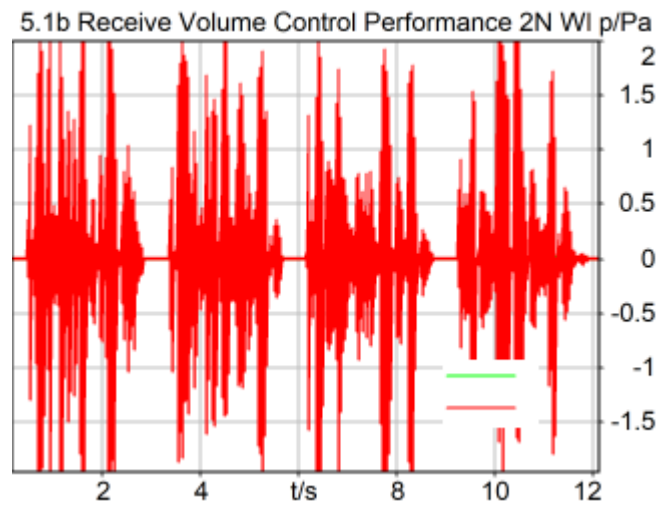
Delay (Cross): 111.4 ms

24/08/14 14:00 ACQUA 5.1.200



## 5.1b Receive Volume Control Performance 2N WB

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



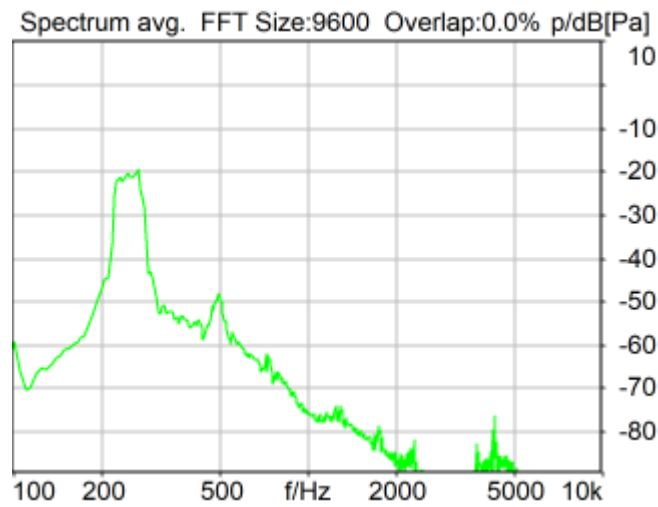
Speech Level RCV: 84.15 dB[SPL], Act.: 82.30% Ok

**Ok**

24/08/14 14:01 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



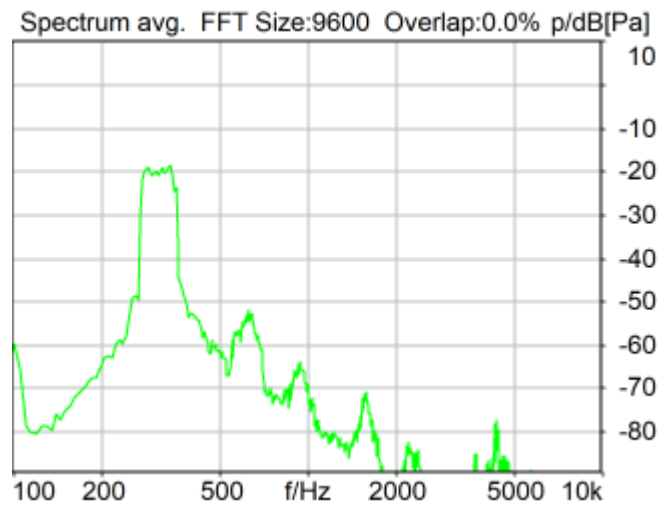
Distortion (Noise) RCV (packed): 28.59 dB (3.72%) Ok

**Ok**

24/08/14 14:01 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



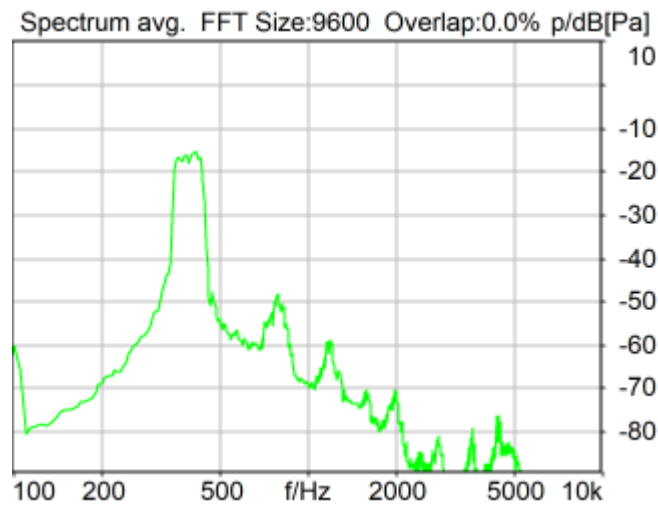
Distortion (Noise) RCV (packed): 33.05 dB (2.23%) Ok

**Ok**

24/08/14 14:02 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



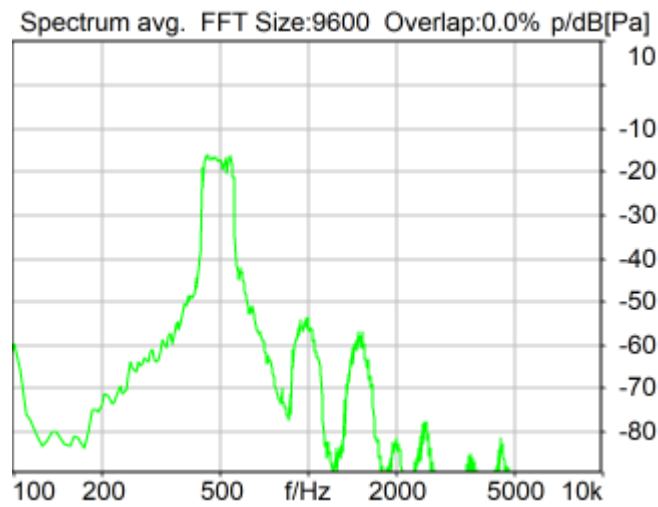
Distortion (Noise) RCV (packed): 31.99 dB (2.51%) Ok

**Ok**

24/08/14 14:02 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



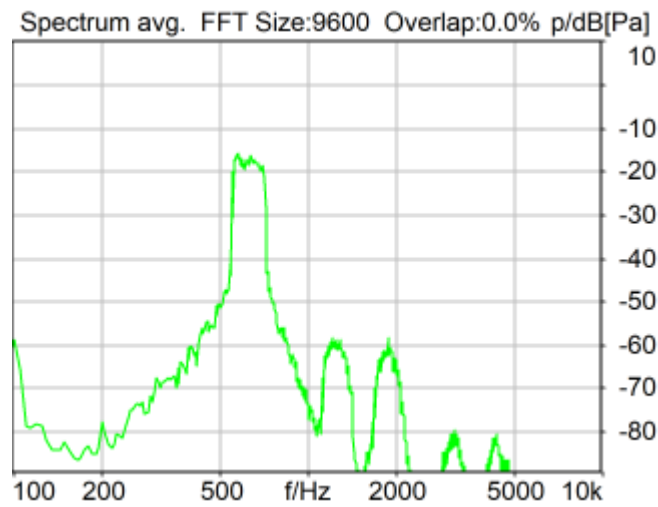
Distortion (Noise) RCV (packed): 32.22 dB (2.45%) Ok

**Ok**

24/08/14 14:02 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



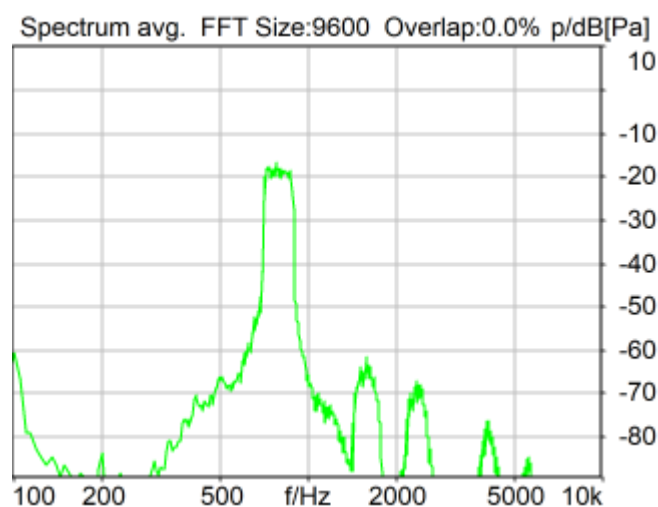
Distortion (Noise) RCV (packed): 34.02 dB (1.99%) Ok

**Ok**

24/08/14 14:03 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



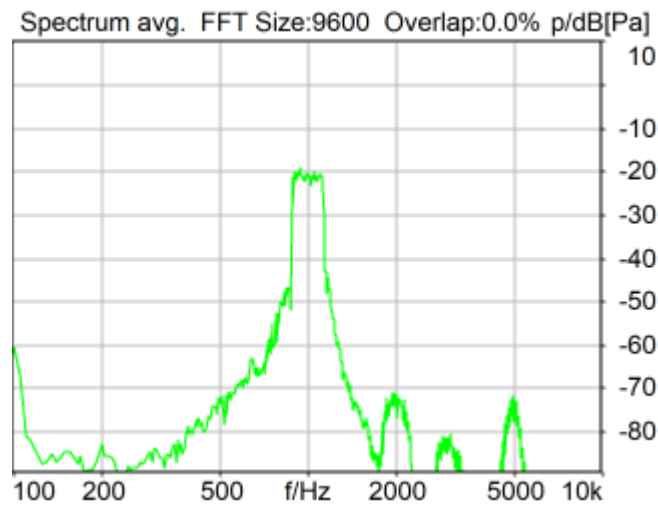
Distortion (Noise) RCV (packed): 38.78 dB (1.15%) Ok

**Ok**

24/08/14 14:03 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): 30.18 dB (3.10%) Ok

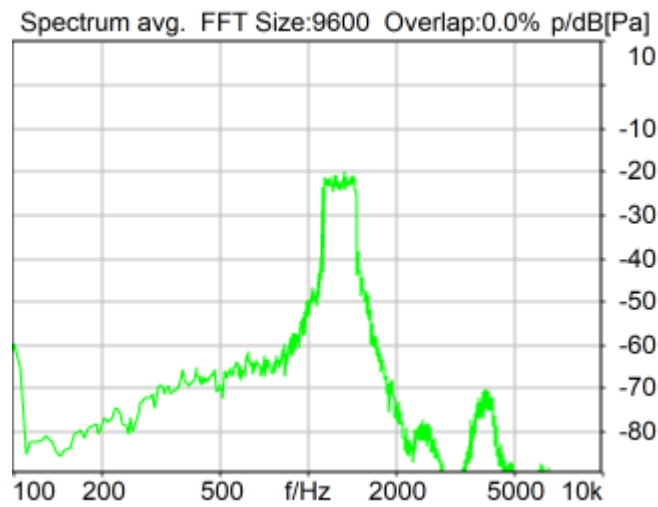
Ok

24/08/14 14:04 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



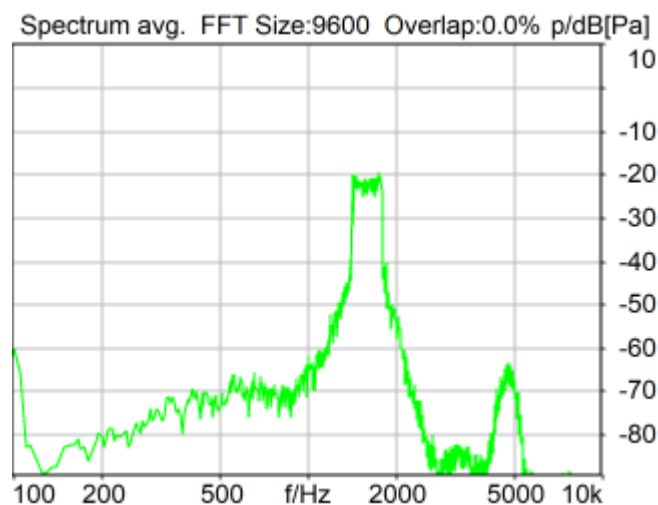
Distortion (Noise) RCV (packed): 23.52 dB (6.67%) Ok

Ok

24/08/14 14:04 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



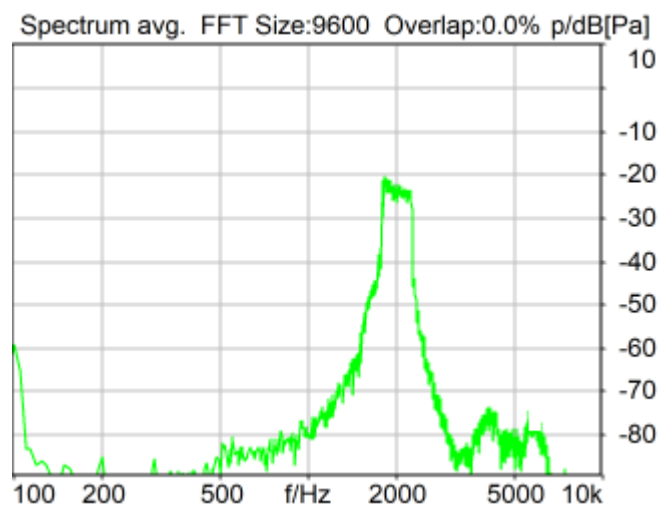
Distortion (Noise) RCV (packed): 26.05 dB (4.98%) Ok

Ok

24/08/14 14:05 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



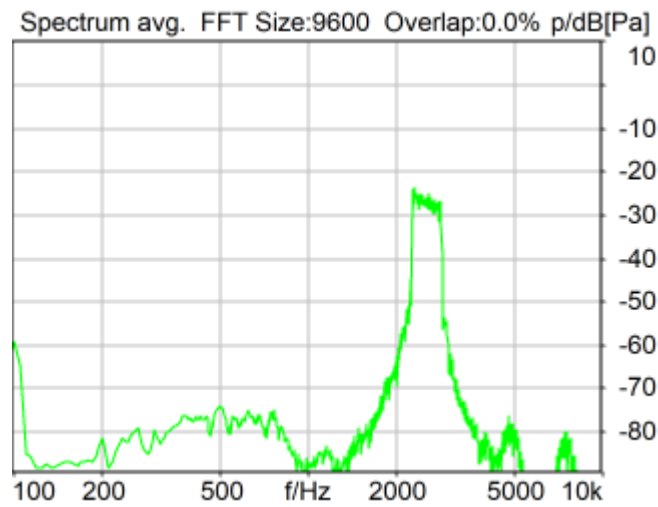
Distortion (Noise) RCV (packed): 23.74 dB (6.50%) Ok

Ok

24/08/14 14:05 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



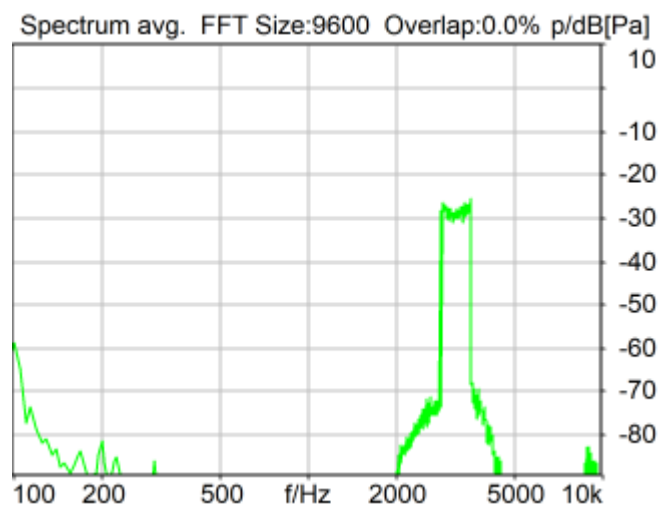
Distortion (Noise) RCV (packed): 29.95 dB (3.18%) Ok

Ok

24/08/14 14:06 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



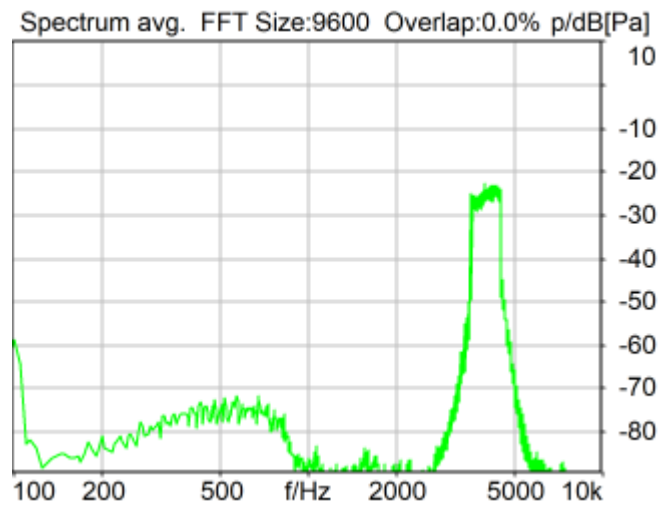
Distortion (Noise) RCV (packed): 42.80 dB (0.72%) Ok

Ok

24/08/14 14:06 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



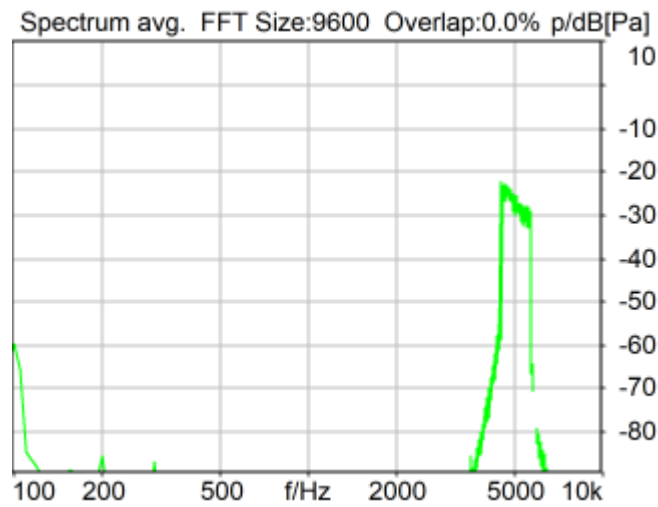
Distortion (Noise) RCV (packed): 28.63 dB (3.70%) Ok

Ok

24/08/14 14:07 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): 39.72 dB (1.03%) Ok

Ok

24/08/14 14:07 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     | 28.59 dB |
| 2      | 315Hz     | 33.05 dB |
| 3      | 400Hz     | 31.99 dB |
| 4      | 500Hz     | 32.22 dB |
| 5      | 630Hz     | 34.02 dB |
| 6      | 800Hz     | 38.78 dB |
| 7      | 1000Hz    | 30.18 dB |
| 8      | 1250Hz    | 23.52 dB |
| 9      | 1600Hz    | 26.05 dB |
| 10     | 2000Hz    | 23.74 dB |
| 11     | 2500Hz    | 29.95 dB |
| 12     | 3150Hz    | 42.80 dB |
| 13     | 4000Hz    | 28.63 dB |
| 14     | 5000Hz    | 39.72 dB |

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

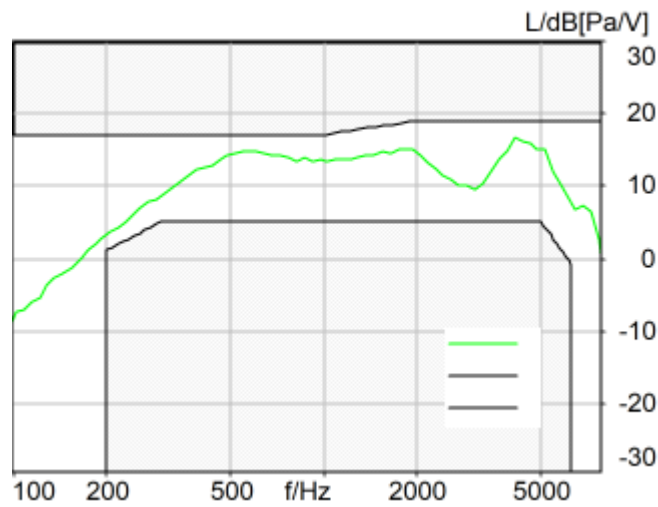
Smallest SDNR was 23.52dB at 1250Hz.

24/08/14 14:07 ACQUA



### 5.3 Frequency Response 2N FF

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



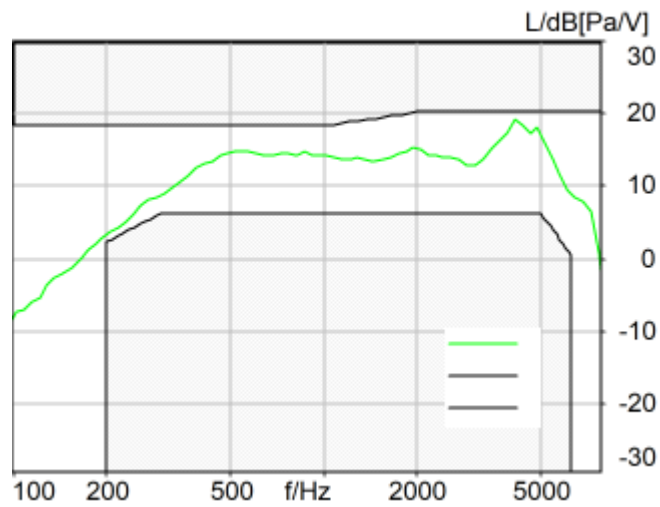
Absolute minimal distance  
2.19 dB at 576.7 Hz Ok

Ok

24/08/14 14:07 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.07 dB at 4119.5 Hz Ok

Ok

24/08/14 14:08 ACQUA 5.1.200

---

## **Measurement Protocol**

|                    |                                                 |
|--------------------|-------------------------------------------------|
| Measurement Object | WLAN2.4GHz_802.11b 1Mbps_EVS WB 24.4kbps_Ch6_2N |
|--------------------|-------------------------------------------------|

|                        |                |
|------------------------|----------------|
| Project                | 471902         |
| Report Generation Date | 24/08/15 19:36 |
| Responsible Person     | AC01-KS        |

**Status Overview**

| SMD                                           | Status | Single Value Description           | Single Value | Object                                                 |
|-----------------------------------------------|--------|------------------------------------|--------------|--------------------------------------------------------|
| Overall Receive Delay WB                      | Done   | Delay (Cross) [ms]                 | 110.9        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.1b Receive Volume Control Performance 2N WB | Ok     | Speech Level [dB[SPL]]             | 84.45        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 250 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 28.94        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 315 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 30.42        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 400 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 32.48        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 500 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 33.43        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 630 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 34.29        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 800 Hz WB      | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 38.21        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 1000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 41.48        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 1250 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 21.78        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 1600 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 38.95        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 2000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 26.58        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 2500 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 43.66        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 3150 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 30.29        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 4000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 21.90        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.2 RCV Distortion and Noise - 5000 Hz WB     | Ok     | Distortion (Noise) [dB],<br>0.0 dB | 39.32        | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| Report - Receive Distortion                   | Ok     | Minimum SDNR [dB],                 | 21.78        | WLAN2.4GHz_802.11b                                     |

ACQUA Report  
4kbps\_Ch6\_2N

Title: WLAN2.4GHz\_802.11b 1Mbps\_EVS WB 24.

|                                 |    |                                               |      |                                                        |
|---------------------------------|----|-----------------------------------------------|------|--------------------------------------------------------|
| and Noise (Conversational Gain) |    | (occured at 1250Hz)                           |      | 1Mbps_EVS WB 24.<br>4kbps_Ch6_2N                       |
| 5.3 Frequency Response 2N FF    | Ok | Min. dist. to tolerance scheme [dB], 611.7 Hz | 1.94 | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |
| 5.3 Frequency Response 2N DF    | Ok | Min. dist. to tolerance scheme [dB], 205.7 Hz | 1.51 | WLAN2.4GHz_802.11b<br>1Mbps_EVS WB 24.<br>4kbps_Ch6_2N |

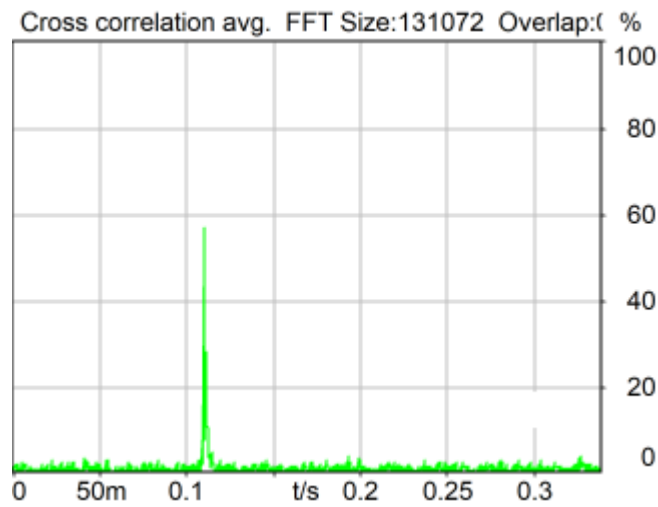
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|                                                             |    |
|-------------------------------------------------------------|----|
| Overall Receive Delay WB                                    | 6  |
| 5.1b Receive Volume Control Performance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



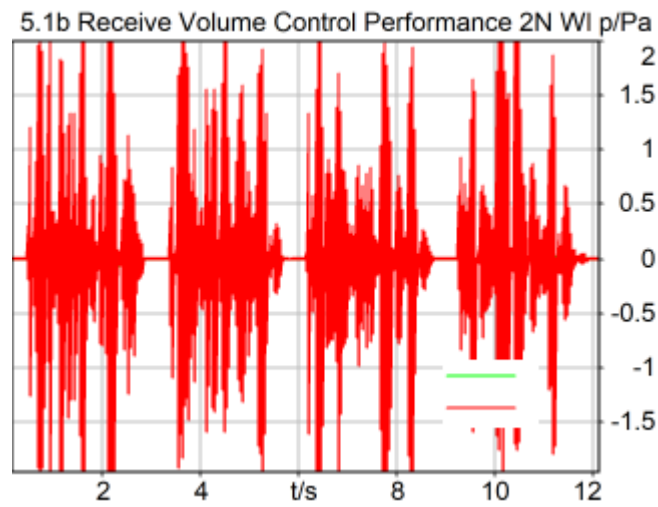
Delay (Cross): 110.9 ms

24/08/15 15:45 ACQUA 5.1.200



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

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



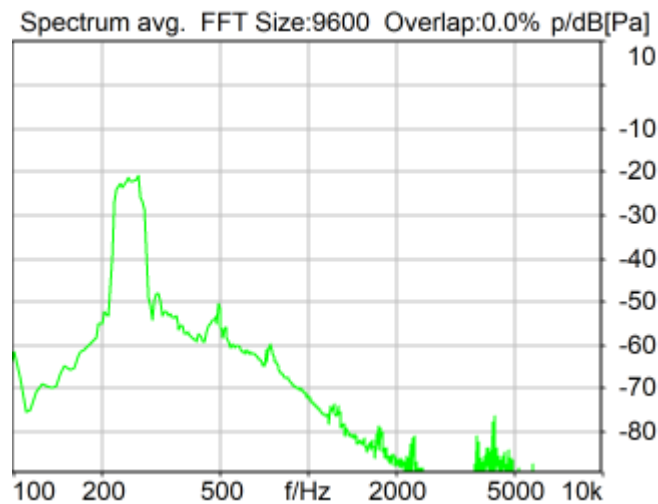
Speech Level RCV: 84.45 dB[SPL], Act.: 82.38% Ok

**Ok**

24/08/15 15:46 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 2N



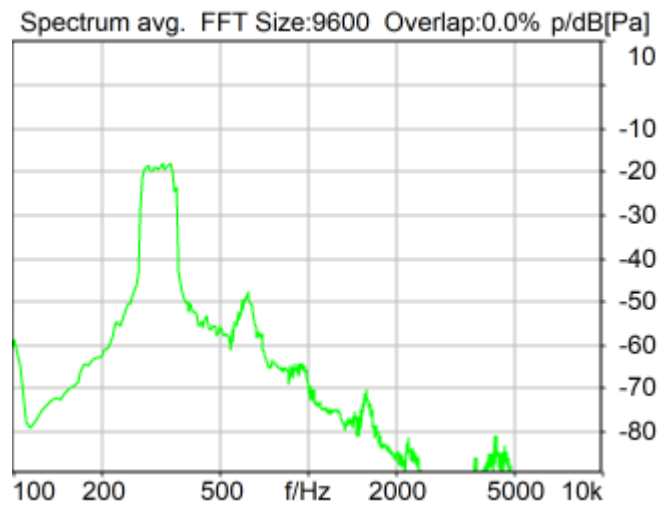
Distortion (Noise) RCV (packed): 28.94 dB (3.57%) Ok

**Ok**

24/08/15 15:46 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 2N



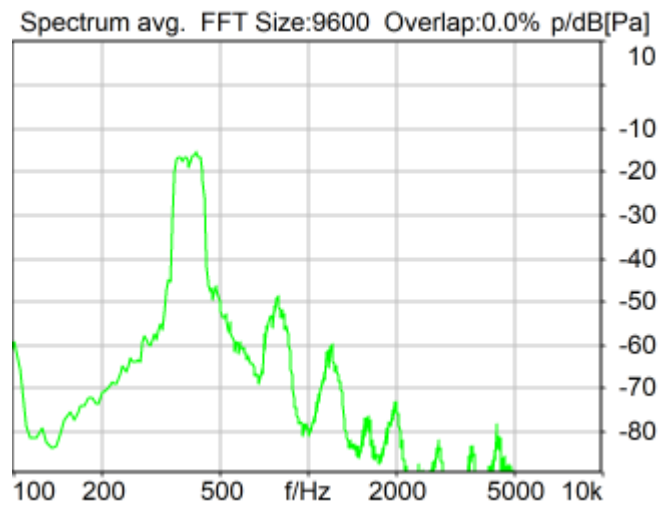
Distortion (Noise) RCV (packed): 30.42 dB (3.01%) Ok

**Ok**

24/08/15 15:47 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 2N



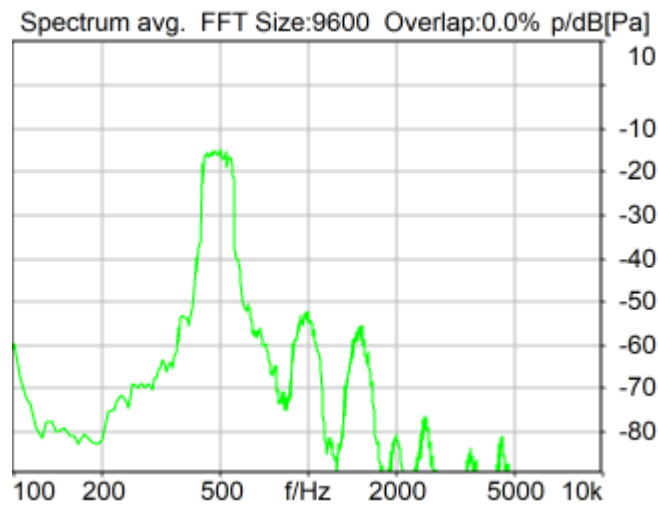
Distortion (Noise) RCV (packed): 32.48 dB (2.38%) Ok

**Ok**

24/08/15 15:47 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 2N



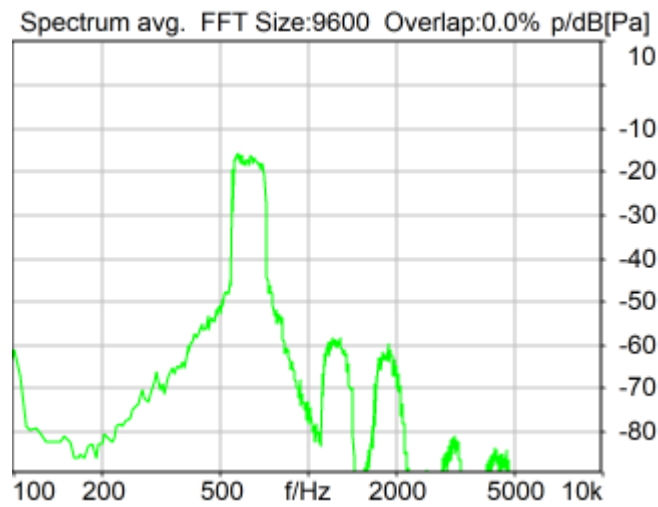
Distortion (Noise) RCV (packed): 33.43 dB (2.13%) Ok

**Ok**

24/08/15 15:48 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 2N



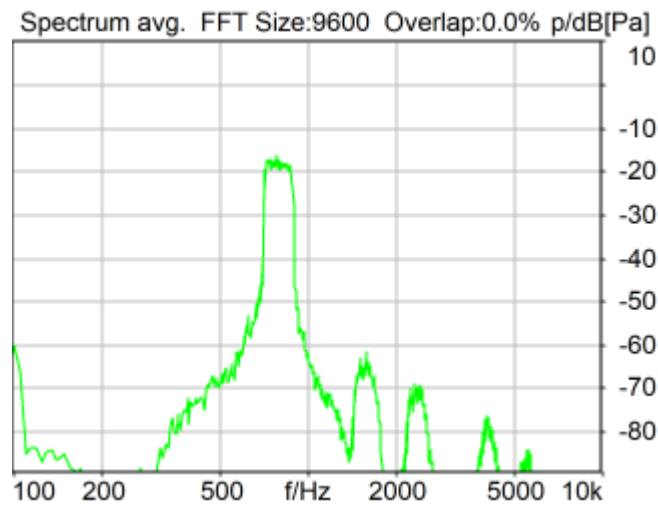
Distortion (Noise) RCV (packed): 34.29 dB (1.93%) Ok

**Ok**

24/08/15 15:48 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 2N



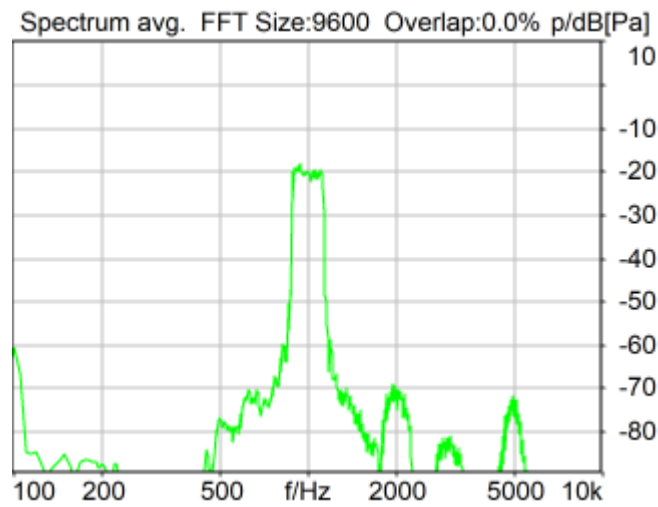
Distortion (Noise) RCV (packed): 38.21 dB (1.23%) Ok

**Ok**

24/08/15 15:48 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): 41.48 dB (0.84%) Ok

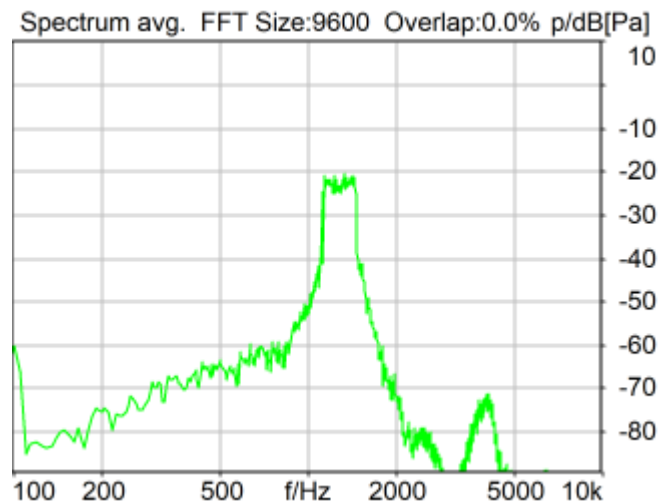
Ok

24/08/15 15:49 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 2N



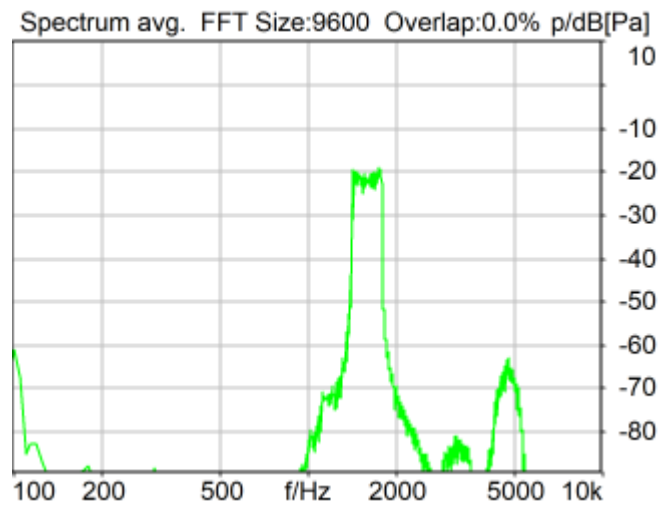
Distortion (Noise) RCV (packed): 21.78 dB (8.15%) Ok

Ok

24/08/15 15:49 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



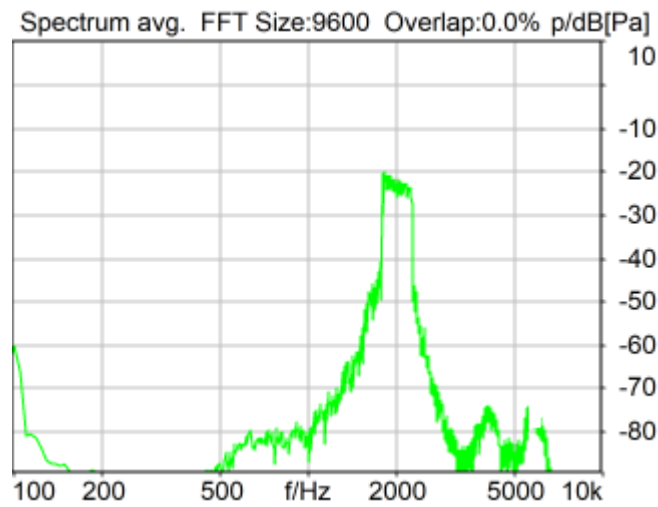
Distortion (Noise) RCV (packed): 38.95 dB (1.13%) Ok

**Ok**

24/08/15 15:50 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 2N



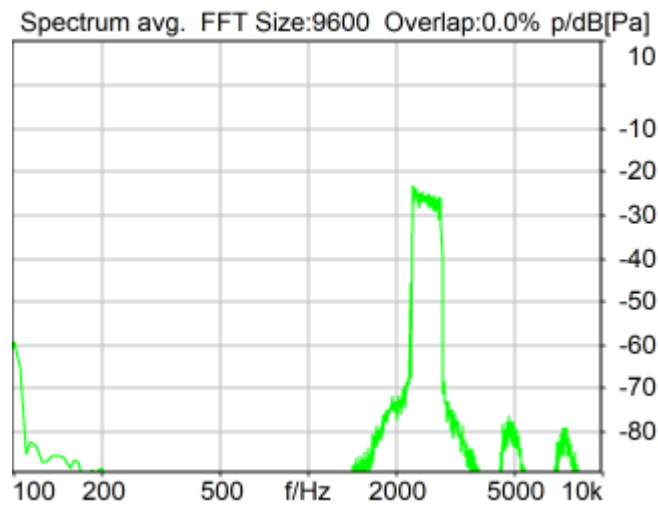
Distortion (Noise) RCV (packed): 26.58 dB (4.69%) Ok

**Ok**

24/08/15 15:50 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



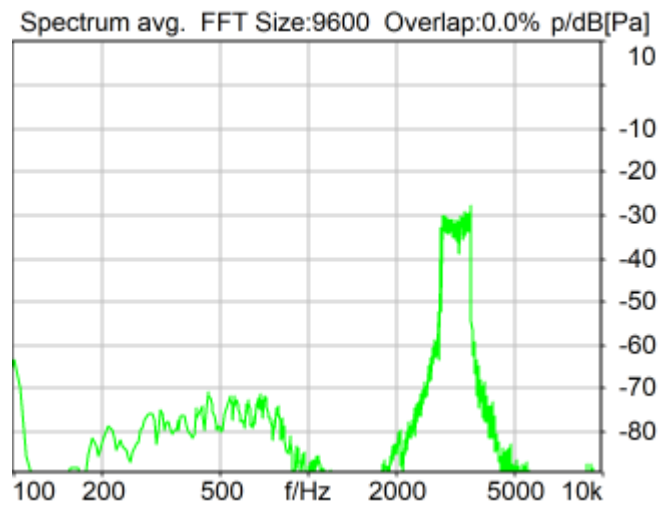
Distortion (Noise) RCV (packed): 43.66 dB (0.66%) Ok

Ok

24/08/15 15:53 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



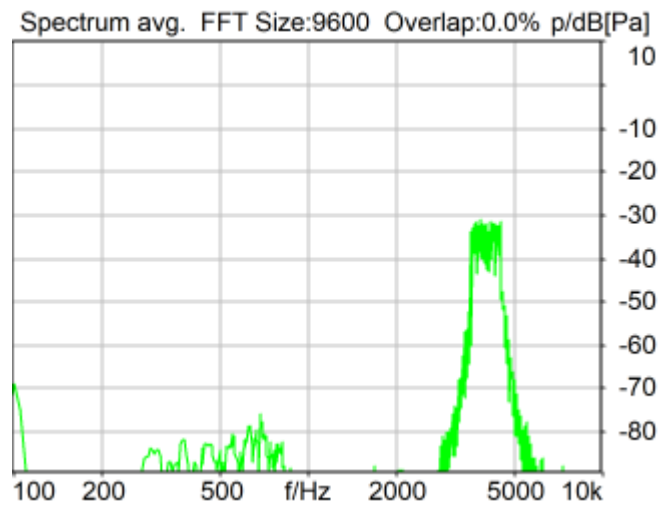
Distortion (Noise) RCV (packed): 30.29 dB (3.06%) Ok

Ok

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## **5.2 RCV Distortion and Noise - 4000 Hz WB**

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



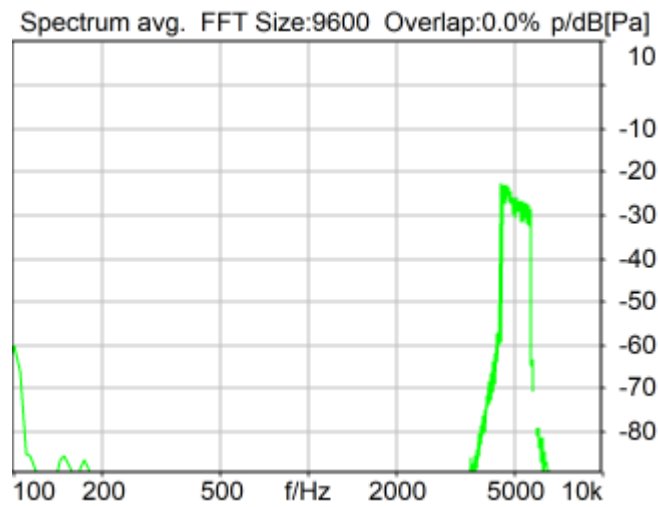
Distortion (Noise) RCV (packed): 21.90 dB (8.03%) Ok

**Ok**

24/08/15 15:52 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): 39.32 dB (1.08%) Ok

Ok

24/08/15 15:52 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     | 28.94 dB |
| 2      | 315Hz     | 30.42 dB |
| 3      | 400Hz     | 32.48 dB |
| 4      | 500Hz     | 33.43 dB |
| 5      | 630Hz     | 34.29 dB |
| 6      | 800Hz     | 38.21 dB |
| 7      | 1000Hz    | 41.48 dB |
| 8      | 1250Hz    | 21.78 dB |
| 9      | 1600Hz    | 38.95 dB |
| 10     | 2000Hz    | 26.58 dB |
| 11     | 3150Hz    | 30.29 dB |
| 12     | 4000Hz    | 21.90 dB |
| 13     | 5000Hz    | 39.32 dB |
| 14     | 2500Hz    | 43.66 dB |

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

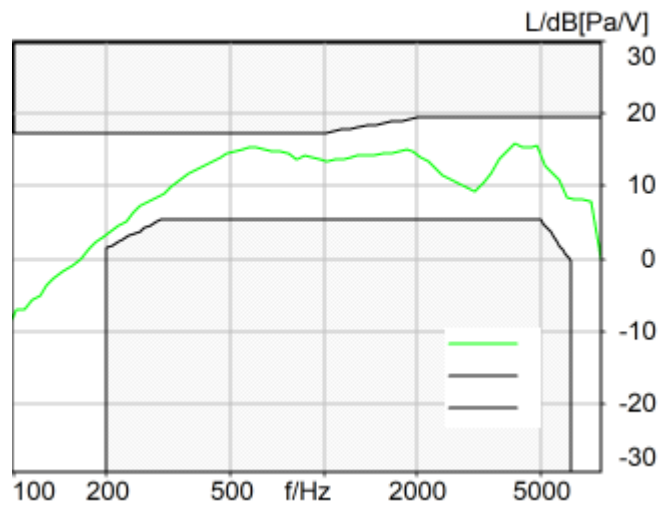
Smallest SDNR was 21.78dB at 1250Hz.

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### 5.3 Frequency Response 2N FF

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



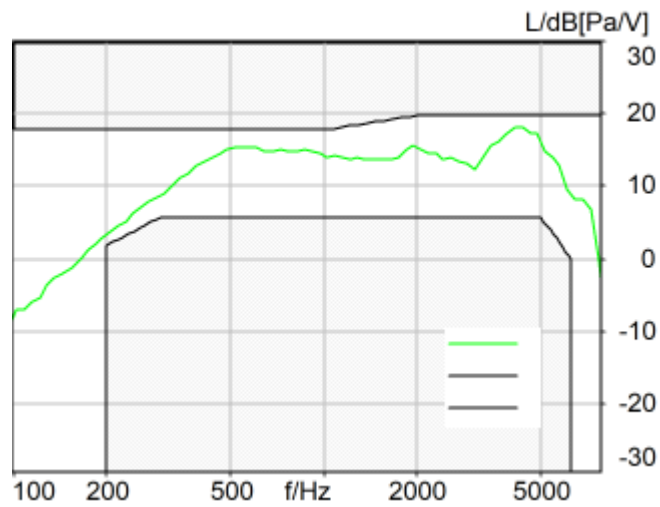
Absolute minimal distance  
1.94 dB at 611.7 Hz Ok

Ok

24/08/15 15:52 ACQUA 5.1.200

### 5.3 Frequency Response 2N DF

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



Absolute minimal distance  
1.51 dB at 205.7 Hz Ok

Ok

24/08/15 15:53 ACQUA 5.1.200