



# HAC Receive Volume Control Test Report

## For

**Applicant Name:** FOXX Development Inc.  
**Address:** 3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA  
**EUT Name:** Smart Phone  
**Brand Name:** FOXXD  
**Model Number:** FOXXD S67

## Issued By


**Company Name:** BTF Testing Lab (Shenzhen) Co., Ltd.  
**Address:** 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China

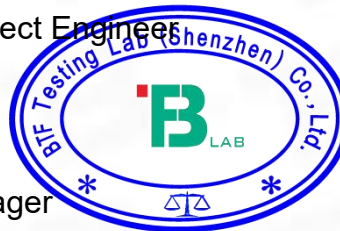
**Report Number:** BTF250513R00503  
**Test Standards:** ANSI C63.19:2019 FCC 47 CFR §20.19 TIA-5050:2018  
**FCC ID:** 2AQRMS67

**Test Conclusion:** Pass  
**Test Date:** 2025-06-26 to 2025-06-29  
**Date of Issue:** 2025-06-30

**Tested By:**   
Jim Yin / Tester  
**Date:** 2025-06-30

**Reviewed By:**   
Amenda Zhong / Project Engineer  
**Date:** 2025-06-30

**Approved By:**   
Ryan CJ / EMC Manager  
**Date:** 2025-06-30



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Revision History		
Version	Issue Date	Revisions Content
Rev_V0	2025-06-30	Original
Note:	Once the revision has been made, then previous versions reports are invalid.	

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## 1. Introduction

### 1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

### 1.2 Identification of the Responsible Testing Location

Test Location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
Description:	All measurement facilities used to collect the measurement data are located at 101/201/301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Subdistrict, Bao'an District, Shenzhen, China
FCC Registration Number	518915
Designation Number	CN1409

### 1.3 Laboratory Condition

Ambient Temperature:	18°C to 25°C
Ambient Relative Humidity:	32% to 49%
Ambient Pressure:	100 kPa to 102 kPa

### 1.4 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

## 2. Product Information

### 2.1 Application Information

Company Name:	FOXX Development Inc.
Address:	3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA

### 2.2 Manufacturer Information

Company Name:	FOXX Development Inc.
Address:	3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA

### 2.3 Factory Information

Company Name:	FOXX Development Inc.
Address:	3480 Preston Ridge Road, Suite500, Alpharetta, GA 30005, USA

### 2.4 General Description of Equipment under Test (EUT)

EUT Name	Smart Phone
Under Test Model Name	FOXXD S67
Hardware Version	N/A
Software and Firmware Version	N/A
Dimensions (Approx.)	166*76*7mm
Weight (Approx.)	191g

## 2.5 Equipment under Test Ancillary Equipment

Ancillary Equipment 1	Battery	
	Model No.	FOXXD S67
	Serial No.	N/A
	Capacity	Typical capacity: 4900mAh
	Rated Voltage	3.87V

## 2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/1900 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network FDD LTE Band 2/4/5/7/12/25/26/66/71 TDD LTE Band 40/41 5G Network FDD NR N2/5/7/25/66/71 TDD NR N41/77/78 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) BT (EDR+BLE)
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### 3. Summary of Test Results

#### 3.1 Test Standards

No.	Identity	Document Title
1	ANSI C63.19-2019	American National Standard for Methods of Measurement of Compatibility between Wireless Communication Devices and Hearing Aids
2	FCC 47 CFR §20.19	Hearing Aid Compatible Mobile Headsets
3	TIA-5050:2018	Telecommunications Communications Products Receive Volume Control Requirements for Wireless (Mobile) Devices
4	KDB285076 D05v01	HACWaiverDA23-914
5	KDB285076 D04v02	Volume Control
6	KDB285076 D01v06r04	HAC Guidance

#### 3.2 Air Interfaces / Bands Indicating Operating Modes

Air Interface	Band	Type	Simultaneous Transmitter	Name of Service
GSM	850	VO	WLAN & BT	CMRS Voice
	1900	VO	WLAN & BT	CMRS Voice
	GPRS/EGPRS	DT	N/A	N/A
WCDMA	Band II	VO	WLAN & BT	CMRS Voice
	Band IV	VO	WLAN & BT	CMRS Voice
	Band V	VO	WLAN & BT	CMRS Voice
	HSPA	DT	N/A	N/A
LTE	Band 2	VD	WLAN & BT	VoLTE
	Band 4	VD	WLAN & BT	VoLTE
	Band 5	VD	WLAN & BT	VoLTE
	Band 7	VD	WLAN & BT	VoLTE
	Band 12	VD	WLAN & BT	VoLTE
	Band 25	VD	WLAN & BT	VoLTE
	Band 26 part 90	VD	WLAN & BT	VoLTE
	Band 26 part 22	VD	WLAN & BT	VoLTE
	Band 40	VD	WLAN & BT	VoLTE
	Band 41	VD	WLAN & BT	VoLTE
	Band 66	VD	WLAN & BT	VoLTE
	Band 71	VD	WLAN & BT	VoLTE
NR	Band 2	VD	WLAN & BT	VoNR
	Band 5	VD	WLAN & BT	VoNR
	Band 7	VD	WLAN & BT	VoNR
	Band 25	VD	WLAN & BT	VoNR
	Band 41	VD	WLAN & BT	VoNR
	Band 66	VD	WLAN & BT	VoNR
	Band 71	VD	WLAN & BT	VoNR
	Band 77	VD	WLAN & BT	VoNR
WLAN	2.4g&5g	DT	WWAN	N/A
	BT	DT	WWAN	N/A

NA: Not Applicable  
VO: Voice Only  
VD: CMRS and IP Voice Service over Digital Transport  
DT: Digital Transport Only

Note:1. The hearing aid compatibility mode of the prototype was turned on during testing, and all tests were performed in HAC mode.

## 4. Test Uncertainty

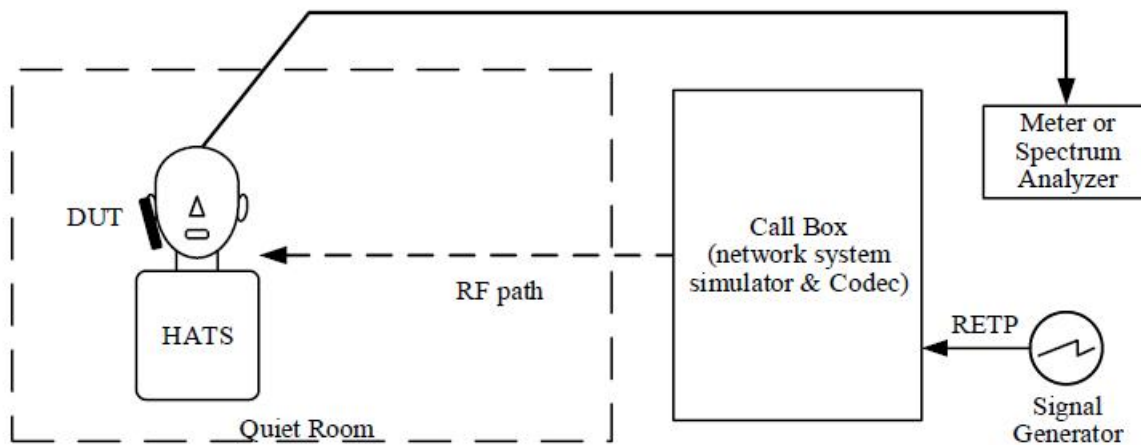
UNCERTAINTY EVALUATION FOR AUDIO HAC MEASUREMENT					
Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Uncertainty (dB)	Uncertainty (%)
Measurement System					
RF reflections	0.1	R	$\sqrt{3}$	0.06	
Acoustic noise	0.1	R	$\sqrt{3}$	0.06	
Probe coil sensitivity	0.49	R	$\sqrt{3}$	0.28	
Reference signal level	0.25	R	$\sqrt{3}$	0.14	
Positioning accuracy	0.4	R	$\sqrt{3}$	0.23	
Cable loss	0.1	N	2	0.05	
Frequency analyzer	0.15	R	$\sqrt{3}$	0.09	
System repeatability	0.2	N	1	0.20	
Repeatability of the WD	0.4	N	1	0.40	
<b>Combined Standard Uncertainty</b>		N	1	0.61	
<b>Expanded uncertainty (confidence level of 95%, k = 2)</b>		N	K=2	1.22	15.05
<b>REPORTED Expanded uncertainty (confidence level of 95%, k = 2)</b>		N	K=2	1.20	15.00



## 5. Measurement System

### 5.1 MEASUREMENT SET-UP

The general test arrangement is shown in Figure 1. The Call Box passes the voice channel stream to the DUT without modification. There is no gain or loss in the voice channel stream due to the Call Box interface.



#### NOTES:

1. Additional information related to the air interface for the various RF technologies is specified in several 3GPP documents. A list of these can be found in 3GPP TS 26.132 V14.0.0 clause 4
2. Additional information related to the test setup can be found in 3GPP TS 26.132, V14.0.0 clause 5.1.
3. The RETP (receive electrical test point) is the point in the device test arrangement where signals are applied to the DUT in the receive direction.

## 6. Evaluation of Test

### 6.1 RECEIVE VOLUME CONTROL PERFORMANCE

#### 6.1.1 Requirement

1. With a mounting force of 8N, the DUT shall have at least one volume control setting that will produce a conversational gain of  $\geq 6$  dB with the output distortion and the frequency response meeting the requirements in clause 5.2.1 & 5.3.1 respectively.
2. With a mounting force of 2N, the DUT shall have at least one volume control setting that will produce a conversational gain of  $\geq 6$  dB with the output distortion and the frequency response meeting the requirements in clause 5.2.1 & 5.3.1 respectively.

*NOTE: Other acoustic receive features may be available such as additional amplification, tone control, automatic gain control, etc. ANSI/TIA-4953-B contains performance requirements for output levels and tone control operation for amplified devices.*

#### 6.1.2 Method of Measurement

1. Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test.
2. Set the DUT volume control to the maximum setting.
3. If the DUT has an adjustable tone control feature, a tone control setting that meets the frequency response requirements in section 5.3.1 shall be used.
4. Apply the real speech test signal at a level of -20 dBm0 at the RETP and measure the acoustic output at the Drum Reference Point (DRP) over one complete sequence of the test signal.
5. Translate the measurement made at the DRP to the Free Field (FF) using the translation data in Annex B.
6. Over the applicable frequency band, determine the ASL in dBSPL for the resulting sound pressure level in accordance with Method B of ITU-T Recommendation P.56:
  - a. Narrowband 100 Hz through 4000 Hz.
  - b. Wideband 100 Hz through 7720 Hz.
7. Calculate the Conversational Gain by subtracting 70 dB from the measured dBSPL.  
[Conversational Gain = (Measured dBSPL Level – 70 dBSPL) dB]
8. Measure the output distortion per clause 5.2. If a distortion failure occurs at the maximum volume control setting, reduce the volume control setting and repeat the measurement to determine if a setting can be found for which the conversational gain requirement is met without a distortion failure.
9. Repeat steps 2-8 with a mounting force of 2N.

#### 6.1.3 Test Result

Refer to Part Nine test result.

Remark: The report only reflects the test data plots of worst mode (for GSM 850, WCDMA Band 2, LTE Band 2, NR Band 7)

#### 6.1.4 Test Conclusion

PASS.

## 6.2 RECEIVE DISTORTION AND NOISE PERFORMANCE

### 6.2.1 Requirement

With a mounting force of 8N and 2N, the ratio of the stimulus signal power to the 100 Hz to 8000 Hz total A-weighted distortion and noise power shall be  $\geq 20$  dB when tested over the range of 1/3 octave band center frequencies:

1. Narrowband transmission mode: Each 1/3 octave band center frequency from 400 Hz to 3150 Hz.
2. Wideband transmission mode: Each 1/3 octave band center frequency from 250 Hz to 5000 Hz.

### 6.2.2 Method of Measurement

1. Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test with the volume control at the setting determined in 5.1.1.
2. Receive distortion and noise is measured using the PN-SDNR procedure as described in Annex A.
3. To ensure DUT activation, apply the real speech test signal at a level of -20 dBm0 followed immediately by the initial 1/3 octave center frequency PN test signal in Table A.1 based on the narrowband or wideband operating mode. Measure the acoustic output at the DRP over the complete sequence of the PN test signal.
4. Translate the measurement made at the DRP to the FF using the translation data in Annex B.
5. Calculate the acoustic output unweighted total signal power of the stimulus measurement band as described in A.2.
6. Calculate the notched A-weighting distortion and noise components as described in A.3.
7. Calculate the ratio of the signal power to the total A-weighted distortion and noise power using Eq A-1.
8. Repeat for each of the remaining 1/3 octave center frequencies in Table A.1 based on the narrowband or wideband operating mode.
9. Repeat steps 2-8 with a mounting force of 2N.

### 6.2.3 Test Result

Refer to test Annex A.

Remark: The report only reflects the test data plots of worst mode (for GSM 850, WCDMA Band 2, LTE Band 2, NR Band 7)

### 6.2.4 Test Conclusion

PASS.

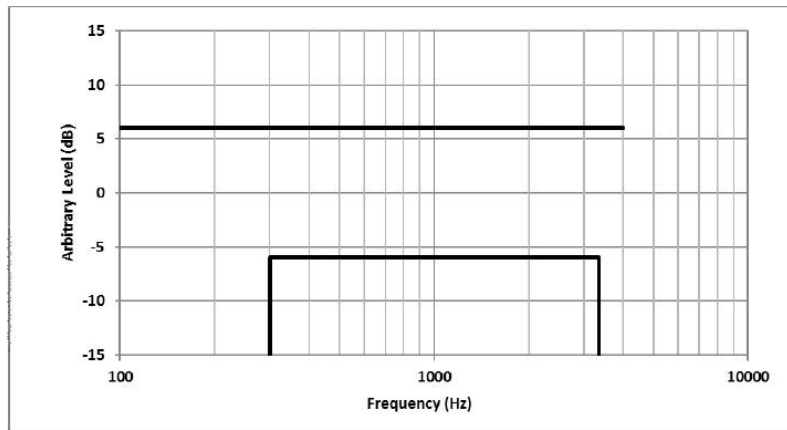
## 6.3 RECEIVE ACOUSTIC FREQUENCY RESPONSE PERFORMANCE

### 6.3.1 Requirement

1. Narrowband: The 1/12 octave band frequency response after translation to the FF or DF shall fall between the upper and lower limits given in Table 1 and shown in Figure below.

Table 1 – Narrowband Receive Frequency Response Limits

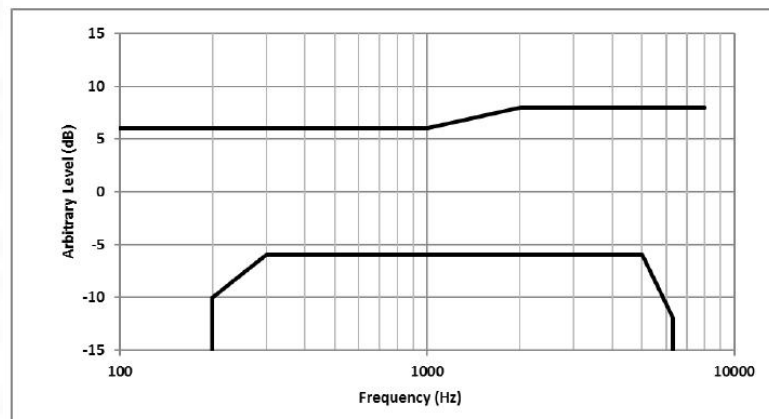
Lower Limit Frequency (Hz)	Lower Limit (dB)	Upper Limit Frequency (Hz)	Upper Limit (dB)
300	-6	100	+6
3400	-6	4000	+6



2. Wideband: The 1/12 octave band frequency response after translation to the FF or DF shall fall between the upper and lower limits given in Table 2 and shown in Figure below.

Table 2 – Wideband Receive Frequency Response Limits

Lower Limit Frequency (Hz)	Lower Limit (dB)	Upper Limit Frequency (Hz)	Upper Limit (dB)
200	-10	100	+6
300	-6	1000	+6
5000	-6	2000	+8
6300	-12	8000	+8



### 6.3.2 Method of Measurement

1. Configure the DUT with a mounting force of 8N and test equipment as shown in Figure 1 in an active call state with the applicable codec for the transmission mode under test with the volume control at the setting determined in 5.1.1.
2. If the DUT has an adjustable tone control feature the initial measurement is to be performed with the default tone control setting.
3. Apply the real speech test signal with a level of -20 dBm0 at the RETP.
4. Capture the frequency spectrum at the DRP of the HATS using real-time analysis with 1/12 octave bands over the frequency range from 100 Hz to 4000 Hz for narrowband measurements, or over the frequency range from 100 Hz to 8000 Hz for wideband measurements, averaged over the entire duration of the test signal.
5. Transform the DRP frequency spectrum measurement to the FF or DF (see Annex B).
6. Divide the 1/12 octave measurement data by the 1/12 octave frequency spectrum of the test signal at the RETP and present the measurement in terms of dB(Pa/V).
7. Apply the applicable frequency response limits to determine compliance.
8. If the default tone control setting does not meet the requirement, repeat the above steps for other tone control settings to determine a tone control setting that meets the requirements.
9. Repeat with a mounting force of 2N.

### 6.3.3 Test Result

Refer to test Annex A.

Remark: The report only reflects the test data plots of worst mode (for GSM 850, WCDMA Band 2, LTE Band 2, NR Band 7)

### 6.3.4 Test Conclusion

PASS.

## 7. Test Equipment List

Description	Manufacturer	Model	Internal number	Cal. Date	Cal. Due
WIDEBAND RADIO COMMUNICATION TESTER	ROHDE&SCHWARZ	CMW500	BTF-EM-023	2024/10/25	2025/10/24
Conditioning Amplifier	Brule&Kjaer	Type -2690--030	BTF-EM-146	2025/2/11	2026/2/10
Head and Torso Simulator	Brule&Kjaer	Type 4128C	BTF-EM-148	2025/2/11	2026/2/10
Sound Calibration	Brule&Kjaer	Type 4231	BTF-EM-149	2025/2/08	2026/2/07
Anechoic Test Chamber	MEC	Type 115	BTF-EM-150	N/A	N/A

## 8. Air Interfaces / Bands used for testing

Air-interface	Band	Tested Codec	Tested Rate(kbps)
GSM	850/1900	EFR	/
WCDMA(UMTS)	Band 2/4/5	AMR-NB	4.75/12.2
		AMR-WB	6.6/23.85
VoLTE	Band 2/4/5/7/12/25/26/40/41/66/71	AMR-NB	4.75/12.2
		AMR-WB	6.6/23.85
VoNR	Band 2/5/7/25/41/66/71/77/78	AMR-NB	4.75/12.2
		AMR-WB	6.6/23.85

## 9. Test Result

### 9.1 Receive volume control, distortion and noise performance

Plot No.	Mode	Channel/Freq.	BW	Codec B itrate	Volume Level	Codec Ty pe	Codec Ba ndwidth	Mounting Force (N)	Freque ncy(H Z)	Min PN-S DNR(dB)	PN-SDNR Limb(d B)	Signal Q uality (d B)	Conversa tional Gai n	Limit (dB)	Result
1	GSM850	128/824.2MHz	/	/	Max	EFR	NB	8N	3150	<b>21.55</b>	20.00	87.46	<b>17.46</b>	6.00	Pass
			/	/	Max	EFR	NB	2N	3150	<b>20.42</b>	20.00	83.75	<b>13.75</b>	6.00	
2	PCS1900	661/1880.0MHz	/	/	Max	EFR	NB	8N	800	22.35	20.00	88.56	18.56	6.00	Pass
			/	/	Max	EFR	NB	2N	3150	21.85	20.00	84.69	14.69	6.00	
3	WCDMA Band II	9538/1907.6MHz	/	12.20	Max	AMR	NB	8N	3150	25.43	20.00	89.32	19.32	6.00	Pass
			/	12.20	Max	AMR	NB	2N	3150	24.87	20.00	85.64	15.64	6.00	
			/	23.85	Max	AMR	WB	8N	5000	<b>20.66</b>	20.00	87.79	<b>17.79</b>	6.00	
			/	23.85	Max	AMR	WB	2N	5000	<b>21.02</b>	20.00	82.57	<b>12.57</b>	6.00	
4	WCDMA Band IV	1413/1732.6MHz	/	12.20	Max	AMR	NB	8N	3150	21.84	20.00	88.64	18.64	6.00	Pass
			/	12.20	Max	AMR	NB	2N	3150	22.65	20.00	84.52	14.52	6.00	
			/	23.85	Max	AMR	WB	8N	5000	23.61	20.00	88.79	18.79	6.00	
			/	23.85	Max	AMR	WB	2N	5000	24.11	20.00	83.99	13.99	6.00	
5	WCDMA Band V	4132/826.4MHz	/	12.20	Max	AMR	NB	8N	3150	23.12	20.00	90.13	20.13	6.00	Pass
			/	12.20	Max	AMR	NB	2N	3150	22.89	20.00	86.54	16.54	6.00	
			/	23.85	Max	AMR	WB	8N	5000	22.85	20.00	89.85	19.85	6.00	
			/	23.85	Max	AMR	WB	2N	5000	23.12	20.00	86.25	16.25	6.00	
6	LTE FDD Band 2	18900/1880MHz	20MHz_QPSK_1_50	12.20	Max	AMR	NB	8N	3150	23.58	20.00	91.09	21.09	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	24.93	20.00	86.75	16.75	6.00	
				23.85	Max	AMR	WB	8N	5000	<b>21.08</b>	20.00	88.16	<b>18.16</b>	6.00	
				23.85	Max	AMR	WB	2N	5000	<b>20.46</b>	20.00	85.22	<b>15.22</b>	6.00	
7	LTE FDD Band 4	20175/1732.5MHz	20MHz_QPSK_1_50	12.20	Max	AMR	NB	8N	2000	22.96	20.00	92.24	22.24	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.11	20.00	88.51	18.51	6.00	
				23.85	Max	AMR	WB	8N	2000	24.05	20.00	91.98	21.98	6.00	
				23.85	Max	AMR	WB	2N	5000	24.19	20.00	85.68	15.68	6.00	
8	LTE FDD Band 5	20600/844.0MHz	10MHz_QPSK_1_25	12.20	Max	AMR	NB	8N	2000	26.13	20.00	89.44	19.44	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	25.69	20.00	87.42	17.42	6.00	
				23.85	Max	AMR	WB	8N	2000	25.22	20.00	88.95	18.95	6.00	
				23.85	Max	AMR	WB	2N	5000	25.39	20.00	85.39	15.39	6.00	
9	LTE FDD Band 7	21350/2560.0MHz	20MHz_QPSK_1_0	12.20	Max	AMR	NB	8N	3150	24.51	20.00	92.16	22.16	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	24.32	20.00	87.40	17.40	6.00	
				23.85	Max	AMR	WB	8N	5000	22.09	20.00	92.03	22.03	6.00	
				23.85	Max	AMR	WB	2N	5000	22.54	20.00	86.84	16.84	6.00	
10	LTE FDD Band 12	23130/711.0MHz	10MHz_QPSK_1_0	12.20	Max	AMR	NB	8N	3150	23.68	20.00	91.35	21.35	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	24.54	20.00	87.23	17.23	6.00	
				23.85	Max	AMR	WB	8N	5000	26.12	20.00	90.79	20.79	6.00	
				23.85	Max	AMR	WB	2N	5000	25.85	20.00	86.98	16.98	6.00	
11	LTE FDD Band 25	26590/1905.0MHz	20MHz_QPSK_1_50	12.20	Max	AMR	NB	8N	2000	23.57	20.00	90.93	20.93	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.84	20.00	86.47	16.47	6.00	
				23.85	Max	AMR	WB	8N	2000	22.84	20.00	90.43	20.43	6.00	
				23.85	Max	AMR	WB	2N	5000	22.62	20.00	85.76	15.76	6.00	
12	LTE FDD Band 26 part 90	26740/819.0MHz	10MHz_QPSK_1_49	12.20	Max	AMR	NB	8N	2000	26.28	20.00	91.22	21.22	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	25.84	20.00	87.17	17.17	6.00	
				23.85	Max	AMR	WB	8N	2000	21.89	20.00	91.39	21.39	6.00	
				23.85	Max	AMR	WB	2N	5000	22.10	20.00	85.97	15.97	6.00	



Plot No.	Mode	Channel/Freq.	BW	Codec B ltrate	Volume Level	Codec T ype	Codec Ba ndwidth	Mounting Force (N)	Frequen cy(H Z)	Min PN-S DNR(dB)	PN-SDNR Limb(dB)	Signal Qu ality (dB)	Conversa tional Gai n	Limit (dB)	Result
13	LTE FDD Band 26 part 22	26865/831.5MHz	15MHz_QPSK_1_38	12.20	Max	AMR	NB	8N	3150	25.42	20.00	93.25	23.25	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	25.63	20.00	87.49	17.49	6.00	
				23.85	Max	AMR	WB	8N	5000	24.19	20.00	93.10	23.10	6.00	
				23.85	Max	AMR	WB	2N	5000	24.36	20.00	87.22	17.22	6.00	
14	LTE TDD Band 40	39200/2355.0MHz	10MHz_QPSK_1_0	12.20	Max	AMR	NB	8N	2000	22.70	20.00	92.86	22.86	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	22.46	20.00	87.11	17.11	6.00	
				23.85	Max	AMR	WB	8N	5000	23.08	20.00	92.53	22.53	6.00	
				23.85	Max	AMR	WB	2N	5000	22.79	20.00	86.86	16.86	6.00	
15	LTE TDD Band 41	41490/2680.0MHz	20MHz_QPSK_1_50	12.20	Max	AMR	NB	8N	3150	23.13	20.00	93.11	23.11	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	22.79	20.00	87.42	17.42	6.00	
				23.85	Max	AMR	WB	8N	5000	24.75	20.00	93.01	23.01	6.00	
				23.85	Max	AMR	WB	2N	5000	24.31	20.00	87.25	17.25	6.00	
16	LTE FDD Band 66	132322/1745MHz	20MHz_QPSK_1_50	12.20	Max	AMR	NB	8N	2000	26.25	20.00	92.75	22.75	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	25.97	20.00	86.84	16.84	6.00	
				23.85	Max	AMR	WB	8N	2000	25.71	20.00	92.53	22.53	6.00	
				23.85	Max	AMR	WB	2N	5000	25.32	20.00	86.34	16.34	6.00	
17	LTE FDD Band 71	133322/683MHz	20MHz_QPSK_1_0	12.20	Max	AMR	NB	8N	1600	23.48	20.00	91.87	21.87	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.08	20.00	85.67	15.67	6.00	
				23.85	Max	AMR	WB	8N	2000	24.13	20.00	91.51	21.51	6.00	
				23.85	Max	AMR	WB	2N	5000	24.29	20.00	85.39	15.39	6.00	
18	NR FDD Band 2	376000/1880MHz	20MHz_QPSK_Inner_1RB_Right	12.20	Max	AMR	NB	8N	3150	25.31	20.00	89.46	19.46	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	25.11	20.00	84.97	14.97	6.00	
				23.85	Max	AMR	WB	8N	5000	22.61	20.00	89.68	19.68	6.00	
				23.85	Max	AMR	WB	2N	5000	22.27	20.00	85.11	15.11	6.00	
19	NR FDD Band 5	166800/834.0MHz	20MHz_QPSK_Inner_1RB_Right	12.20	Max	AMR	NB	8N	3150	23.16	20.00	91.13	21.13	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.54	20.00	85.64	15.64	6.00	
				23.85	Max	AMR	WB	8N	5000	22.84	20.00	90.88	20.88	6.00	
				23.85	Max	AMR	WB	2N	5000	22.39	20.00	85.16	15.16	6.00	
20	NR FDD Band 7	512000/2560.0MHz	20MHz_QPSK_Inner_1RB_Right	12.20	Max	AMR	NB	8N	3150	21.68	20.00	89.11	19.11	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	22.12	20.00	84.59	14.59	6.00	
				23.85	Max	AMR	WB	8N	5000	21.07	20.00	88.42	18.42	6.00	
				23.85	Max	AMR	WB	2N	5000	21.27	20.00	84.08	14.08	6.00	
21	NR FDD Band 25	376500/1882.5MHz	20MHz_QPSK_Inner_1RB_Right	12.20	Max	AMR	NB	8N	3150	21.97	20.00	90.46	20.46	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	21.88	20.00	85.23	15.23	6.00	
				23.85	Max	AMR	WB	8N	5000	22.42	20.00	90.16	20.16	6.00	
				23.85	Max	AMR	WB	2N	5000	22.20	20.00	85.01	15.01	6.00	
22	NR FDD Band 41	518600/2593.0MHz	100MHz_QPSK_Outer_Full	12.20	Max	AMR	NB	8N	3150	23.09	20.00	96.25	26.25	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.41	20.00	86.79	16.79	6.00	
				23.85	Max	AMR	WB	8N	5000	22.10	20.00	95.81	25.81	6.00	
				23.85	Max	AMR	WB	2N	5000	22.62	20.00	86.20	16.20	6.00	



Plot No.	Mode	Channel/Freq.	BW	Codec B ltrate	Volume Level	Codec T ype	Codec Ba ndwidth	Mounting Force (N)	Frequen cy(H Z)	Min PN-S DNR(dB)	PN-SDNR Limb(dB)	Signal Qu ality (dB)	Conversa tional Gai n	Limit (dB)	Result
23	NR FDD Band 66	344000/1720MHz	20MHz_QPSK_Edge _1RB_Left	12.20	Max	AMR	NB	8N	3150	23.15	20.00	93.47	23.47	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.84	20.00	86.28	16.28	6.00	
				23.85	Max	AMR	WB	8N	5000	25.05	20.00	93.05	23.05	6.00	
				23.85	Max	AMR	WB	2N	5000	24.84	20.00	85.86	15.86	6.00	
24	NR TDD Band 71	137600/688.0MHz	20MHz_QPSK_Inner _1RB_Right	12.20	Max	AMR	NB	8N	3150	22.65	20.00	92.64	22.64	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	22.99	20.00	85.89	15.89	6.00	
				23.85	Max	AMR	WB	8N	5000	23.16	20.00	92.31	22.31	6.00	
				23.85	Max	AMR	WB	2N	5000	23.42	20.00	85.51	15.51	6.00	
25	NR TDD Band 77	648334/3725MHz	50MHz_QPSK_Outer _Full	12.20	Max	AMR	NB	8N	3150	22.85	20.00	90.66	20.66	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	22.61	20.00	85.78	15.78	6.00	
				23.85	Max	AMR	WB	8N	5000	21.87	20.00	90.18	20.18	6.00	
				23.85	Max	AMR	WB	2N	5000	22.06	20.00	85.21	15.21	6.00	
26	NR TDD Band 78	651667/3775MHz	50MHz_QPSK_Inner _1RB_Left	12.20	Max	AMR	NB	8N	3150	23.61	20.00	89.66	19.66	6.00	Pass
				12.20	Max	AMR	NB	2N	3150	23.18	20.00	85.26	15.26	6.00	
				23.85	Max	AMR	WB	8N	5000	22.51	20.00	89.16	19.16	6.00	
				23.85	Max	AMR	WB	2N	5000	22.89	20.00	85.02	15.02	6.00	

**Note:**

- 1.This device does not support VoWiFi, so VoWiFi is not tested and evaluated.
- 2.With a mounting force of 8N, the DUT shall have at least one volume control setting that will produce a conversational gain of  $\geq 6$  dB with the output distortion and the frequency response.
- 3.With a mounting force of 2N, the DUT shall have at least one volume control setting that will produce a conversational gain of  $\geq 6$  dB with the output distortion and the frequency response.
- 4.With a mounting force of 8N and 2N, the ratio of the stimulus signal power to the 100 Hz to 8000 Hz total A-weighted distortion and noise power shall be  $\geq 20$  dB.

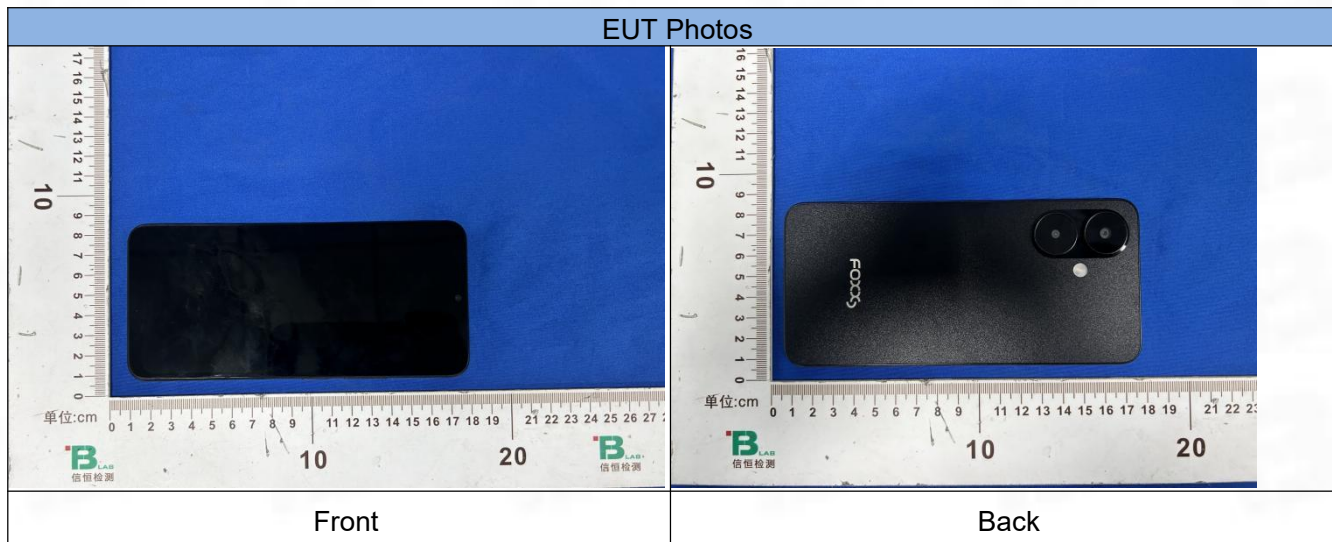
## 9.2 Receive acoustic frequency response performance

Plot No.	Mode	Channel/Freq.	BW	Volume Level	Codec Type	Codec Bandwidth	Mounting Force (N)	RFR
								Test Result
1	GSM850	128/824.2MHz	/	Max	EFR	NB	2N	Pass
				Max	EFR	NB	8N	
2	PCS1900	661/1880.0MHz	/	Max	EFR	NB	2N	Pass
				Max	EFR	NB	8N	
3	WCDMA Band II	9538/1907.6MHz	/	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
4	WCDMA Band IV	1413/1732.6MHz	/	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
5	WCDMA Band V	4132/826.4MHz	/	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
6	LTE FDD Band 2	18900/1880MHz	20MHz_QPSK_1_50	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
7	LTE FDD Band 4	20175/1732.5MHz	20MHz_QPSK_1_50	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
8	LTE FDD Band 5	20600/844.0MHz	10MHz_QPSK_1_25	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
9	LTE FDD Band 7	21350/2560.0MHz	20MHz_QPSK_1_0	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
10	LTE FDD Band 12	23130/711.0MHz	10MHz_QPSK_1_0	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
11	LTE FDD Band 25	26590/1905.0MHz	20MHz_QPSK_1_50	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	

Plot No.	Mode	Channel/Freq.	BW	Volume Level	Codec Type	Codec Bandwidth	Mounting Force (N)	RFR
								Test Result
12	LTE FDD Band 26 part 90	26740/819.0MHz	10MHz_QPSK_1_49	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
13	LTE FDD Band 26 part 22	26865/831.5MHz	15MHz_QPSK_1_38	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
14	LTE TDD Band 40	39200/2355.0MHz	10MHz_QPSK_1_0	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
15	LTE TDD Band 41	41490/2680.0MHz	20MHz_QPSK_1_50	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
16	LTE FDD Band 66	132322/1745MHz	20MHz_QPSK_1_50	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
17	LTE FDD Band 71	133322/683MHz	20MHz_QPSK_1_0	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
18	NR FDD Band 2	376000/1880MHz	20MHz_QPSK_Inner_1RB_Right	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
19	NR FDD Band 5	166800/834.0MHz	20MHz_QPSK_Inner_1RB_Right	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
20	NR FDD Band 7	512000/2560.0MHz	20MHz_QPSK_Inner_1RB_Right	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
21	NR FDD Band 25	376500/1882.5MHz	20MHz_QPSK_Inner_1RB_Right	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
22	NR FDD Band 41	518600/2593.0MHz	100MHz_QPSK_Outer_Full	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	

Plot No.	Mode	Channel/Freq.	BW	Volume Level	Codec Type	Codec Bandwidth	Mounting Force (N)	RFR
								Test Result
23	NR FDD Band 66	344000/1720MHz	20MHz_QPSK_Edge_1RB_Left	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
24	NR TDD Band 71	137600/688.0MHz	20MHz_QPSK_Inner_1RB_Right	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
25	NR TDD Band 77	648334/3725MHz	50MHz_QPSK_Outer_Full	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
26	NR TDD Band 78	651667/3775MHz	50MHz_QPSK_Inner_1RB_Left	Max	AMR	NB	2N	Pass
				Max	AMR	NB	8N	
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	

## 10. EUT photograph



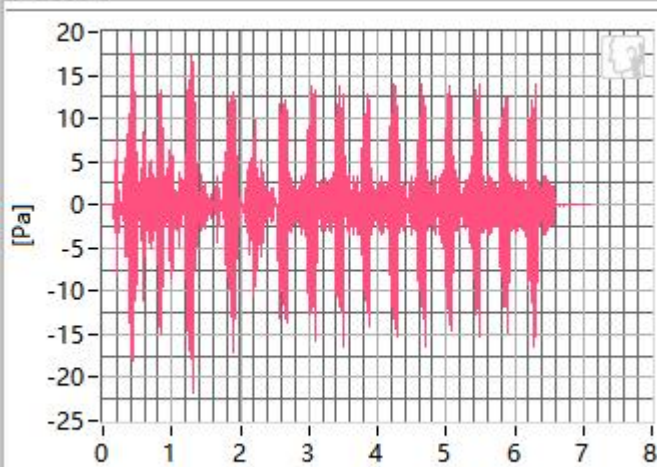
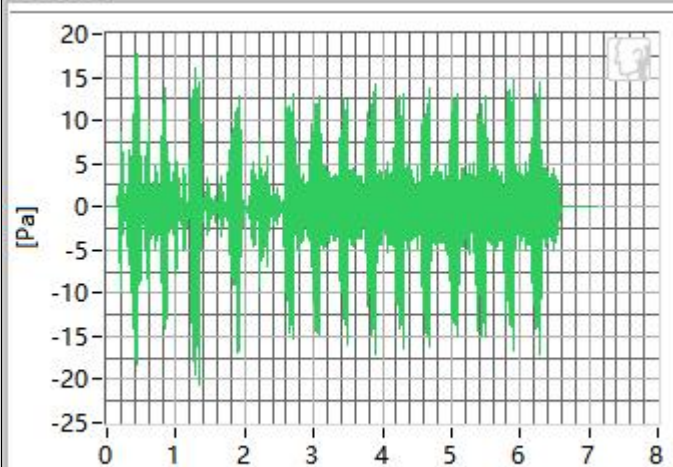
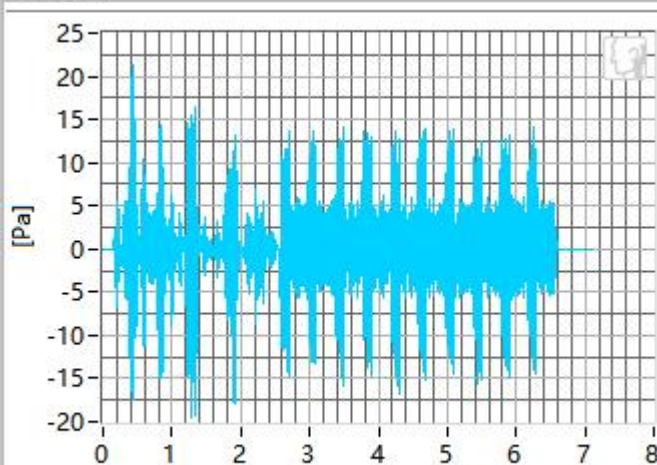
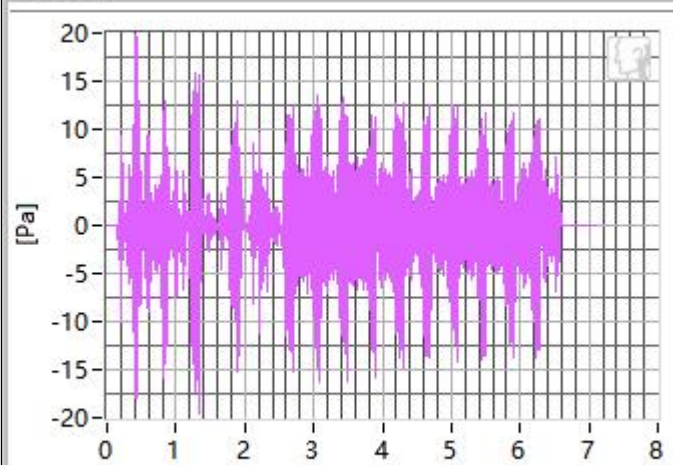
## Volume Control Verification Test Results

Date of Testing	Test Location	Air Interface Equipment	Acoustical Calibrator	HATS Sens.(dB)	Ambient Noise(dBA)
26/6/2025	JB HATS R	CMW 500	B&K 4231 & UA1546	97.21	34.28
27/6/2025	JB HATS R	CMW 500	B&K 4231 & UA1546	97.14	31.75
28/6/2025	JB HATS R	CMW 500	B&K 4231 & UA1546	97.18	33.28
29/6/2025	JB HATS R	CMW 500	B&K 4231 & UA1546	97.13	32.38

## ANNEX A Test Data

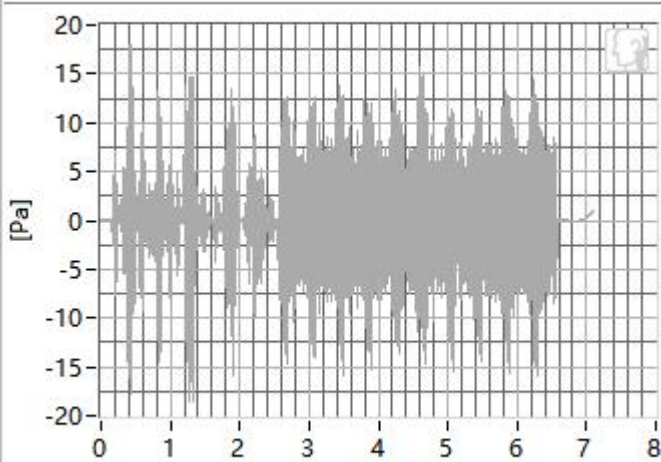
### 1. GSM 850 in channel 128

#### 1.1 Receive Distortion and Noise 8N NB

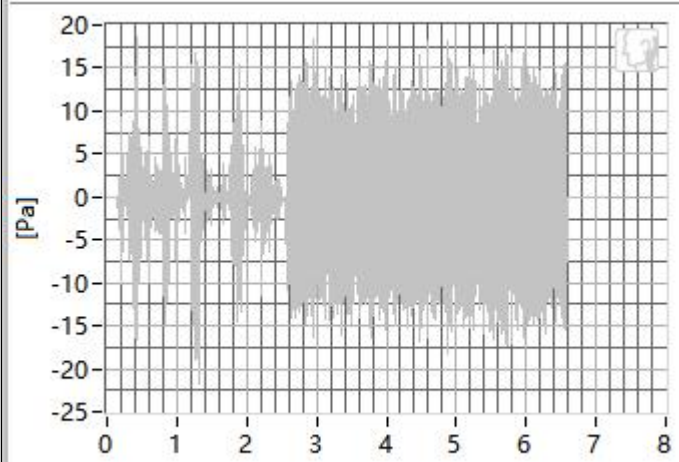
**400Hz****500Hz****630Hz****800Hz**



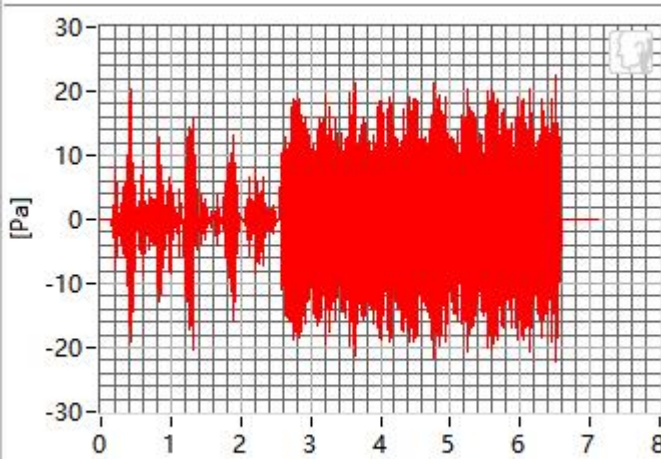
1000Hz



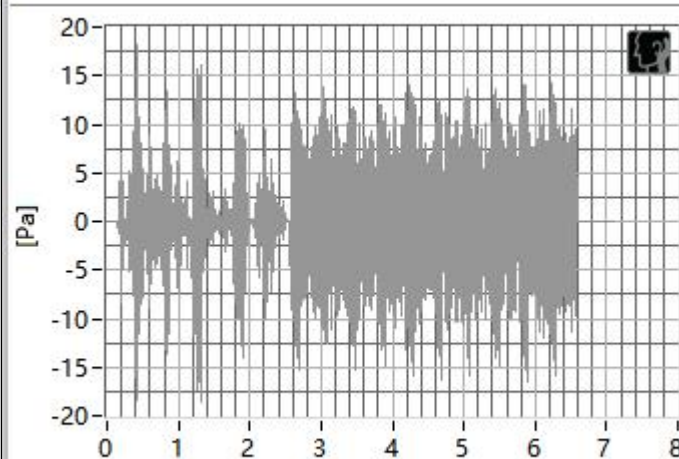
1250Hz



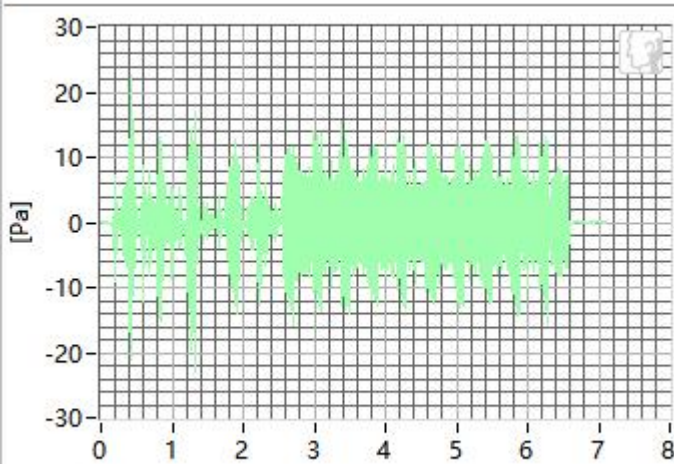
1600Hz



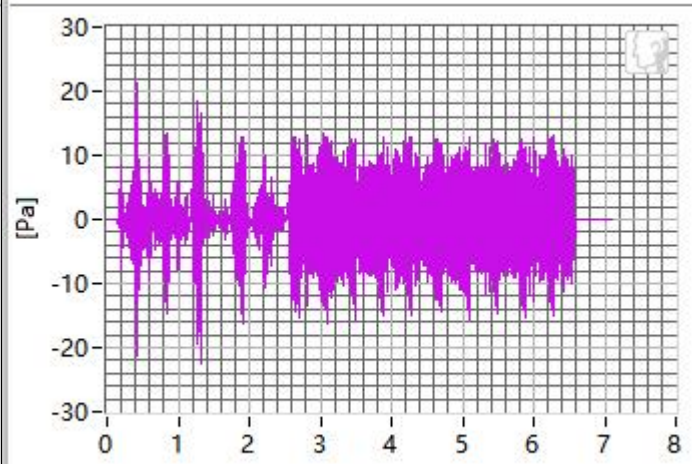
2000Hz



2500Hz



3150Hz

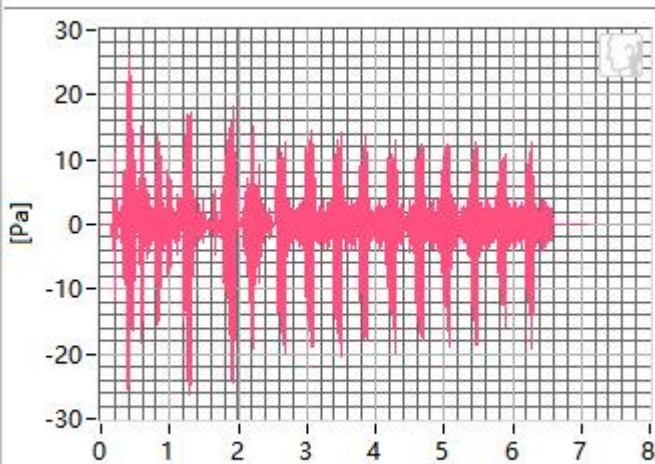


Frequency	SDNR	Frequency	SDNR
400Hz	31.54 dB	1250Hz	23.15 dB
500Hz	26.78 dB	1600Hz	24.85 dB
630Hz	27.84 dB	2000Hz	23.25 dB
800Hz	23.45 dB	2500Hz	22.32 dB
1000Hz	24.58 dB	3150Hz	21.55 dB

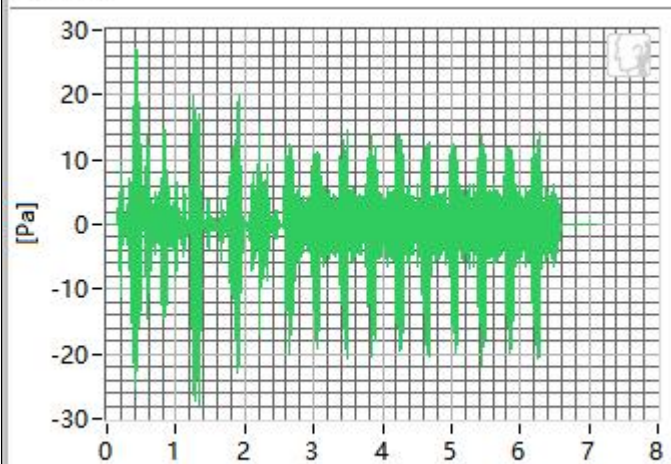
All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 21.55 dB at 3150Hz.

## 1.2 Receive Distortion and Noise 2N NB

400Hz

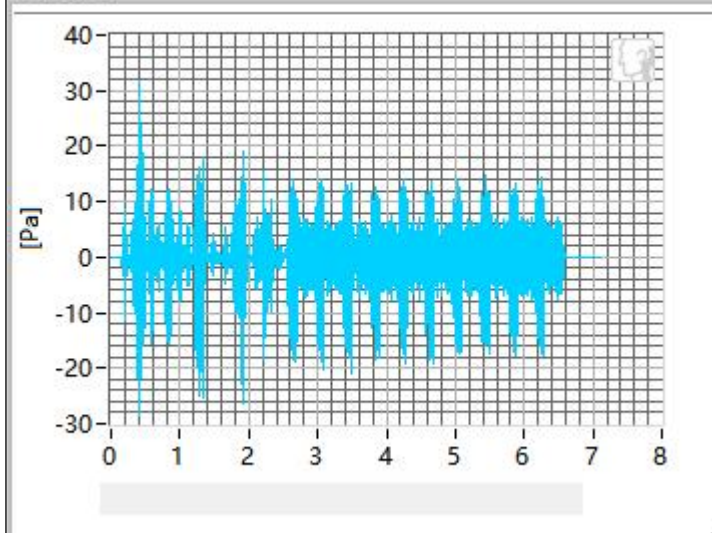


500Hz

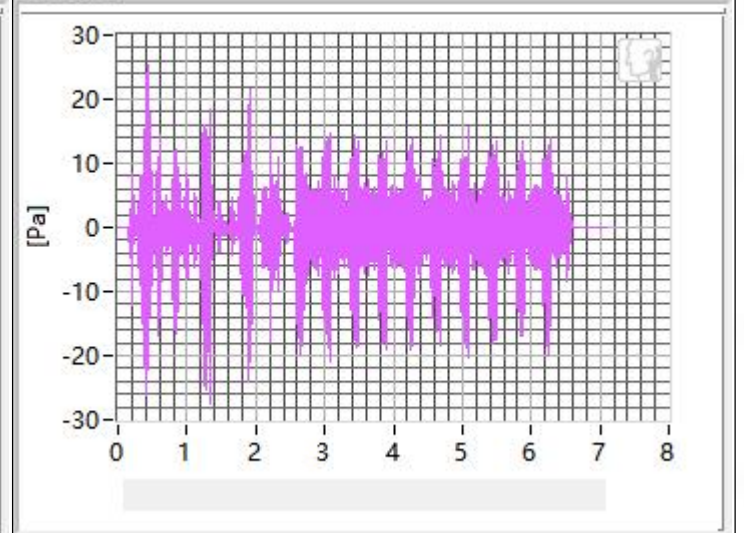




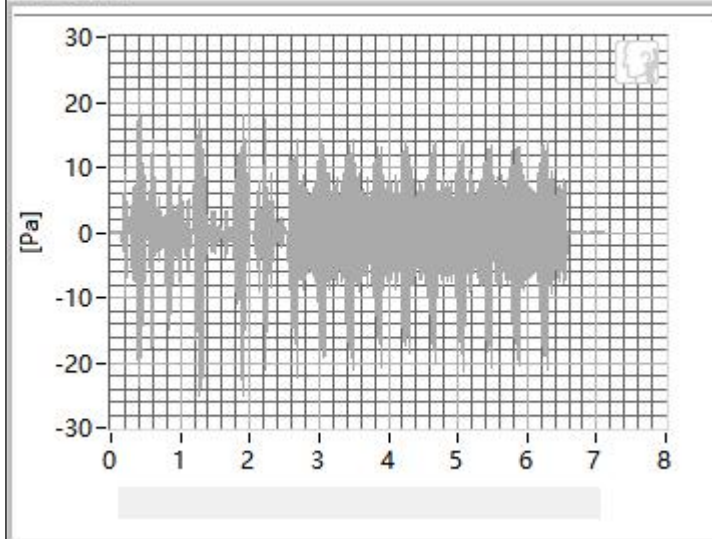
630Hz



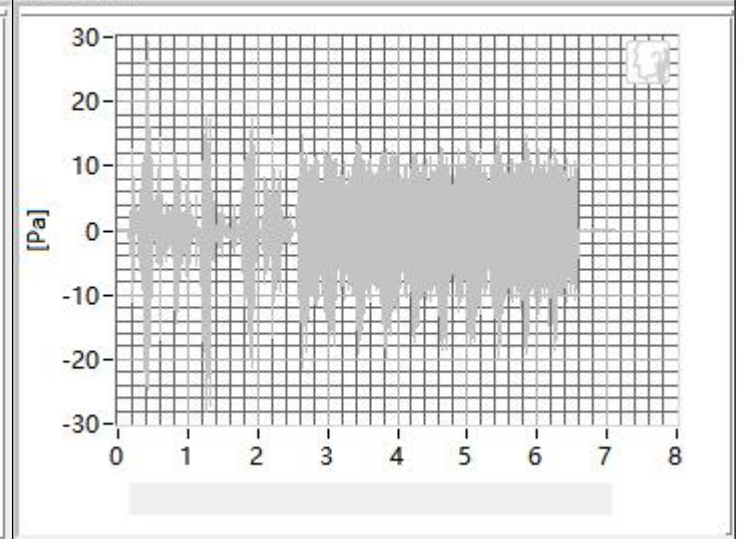
800Hz



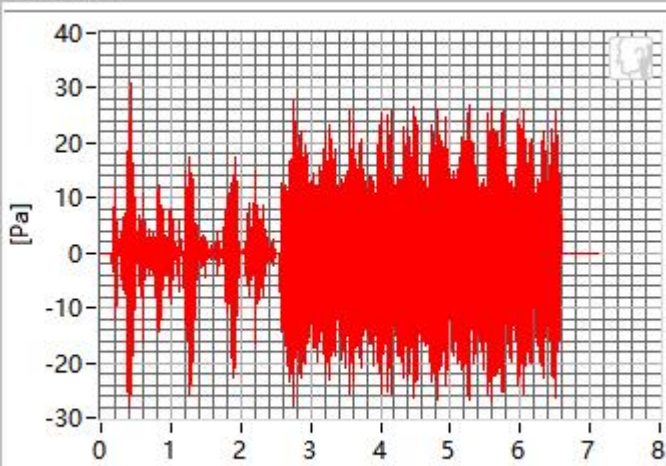
1000Hz



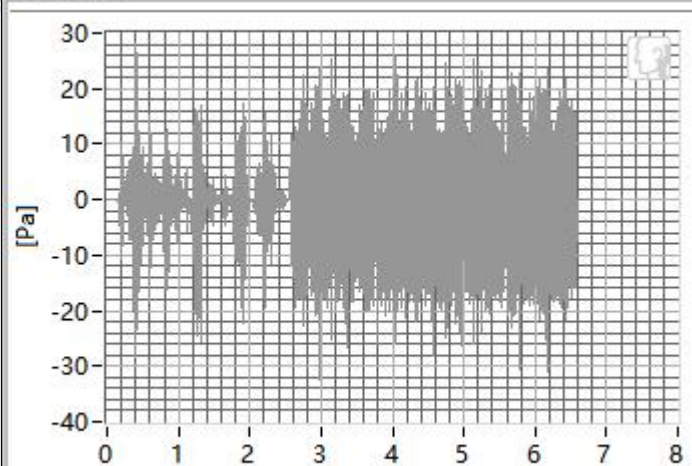
1250Hz



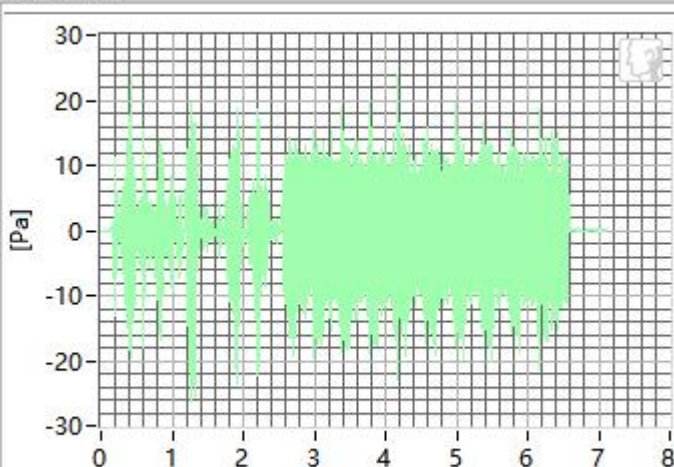
1600Hz



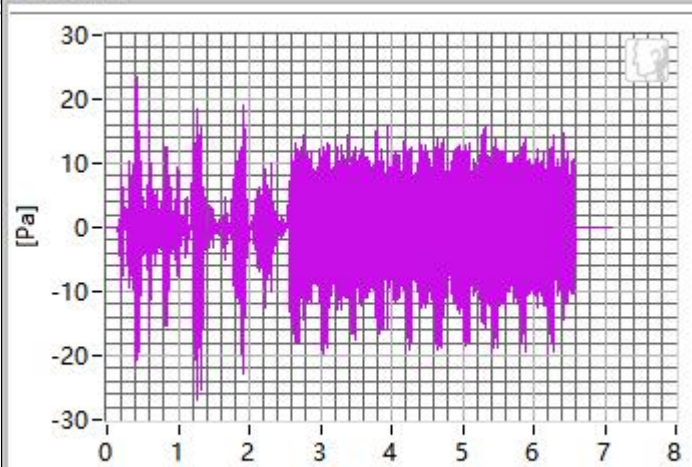
2000Hz



2500Hz



3150Hz

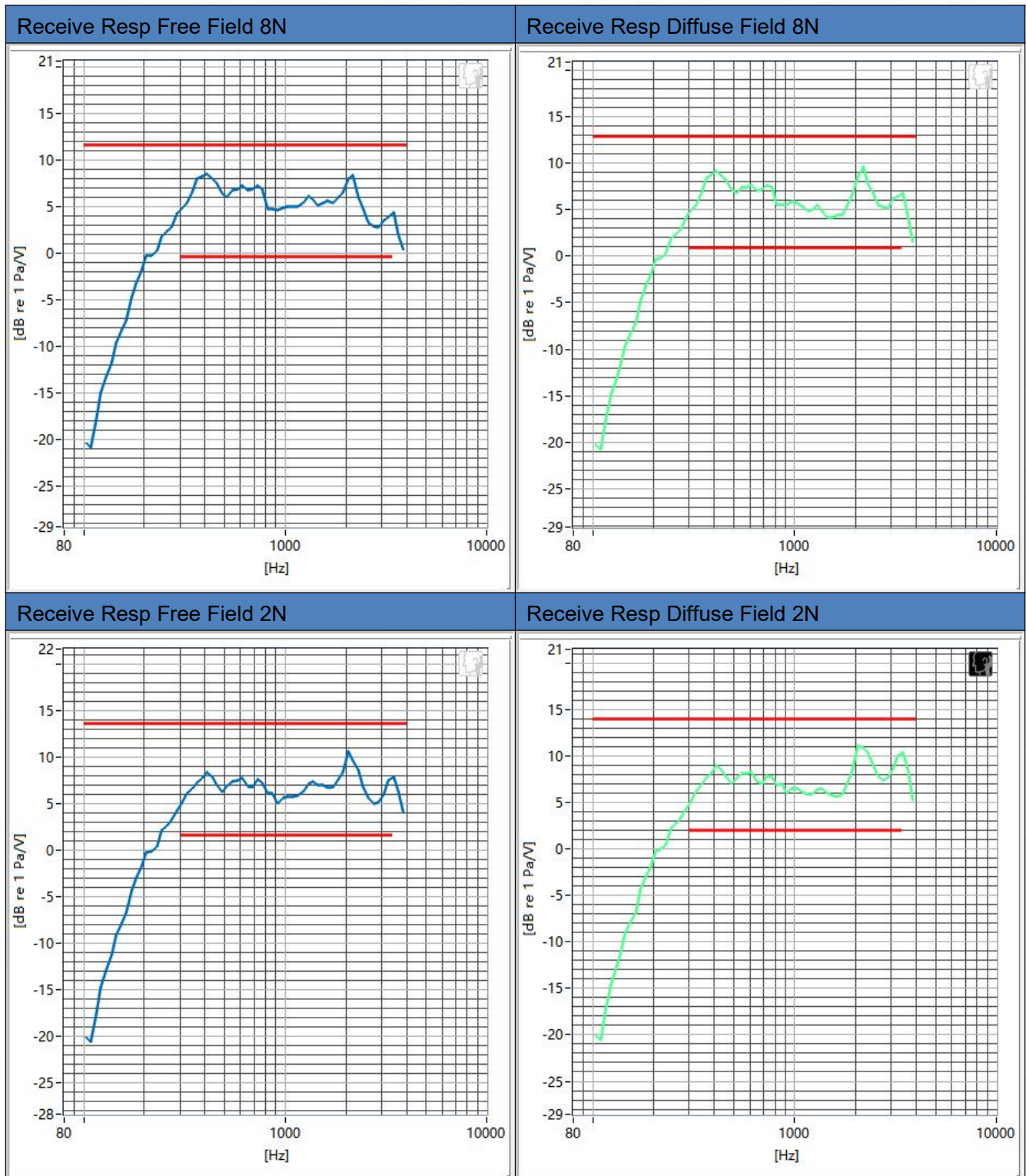


Frequency	SDNR	Frequency	SDNR
400Hz	32.12 dB	1250Hz	23.18 dB
500Hz	31.28 dB	1600Hz	25.16 dB
630Hz	28.35 dB	2000Hz	26.21 dB
800Hz	22.67 dB	2500Hz	22.87 dB
1000Hz	27.54 dB	3150Hz	20.42 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 20.42 dB at 3150Hz.

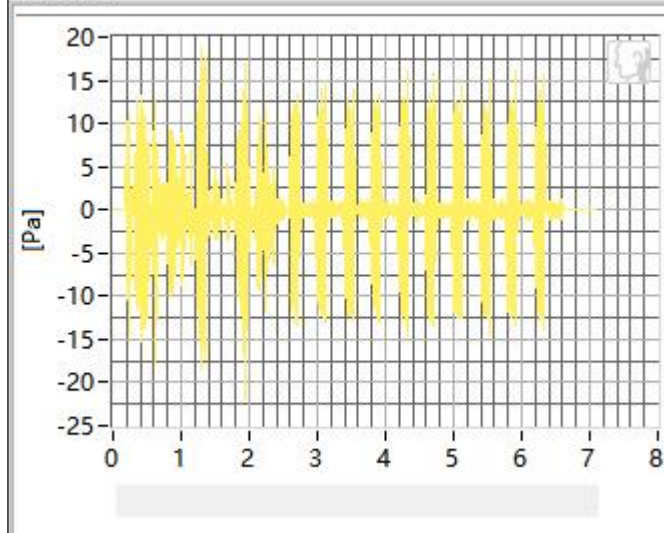
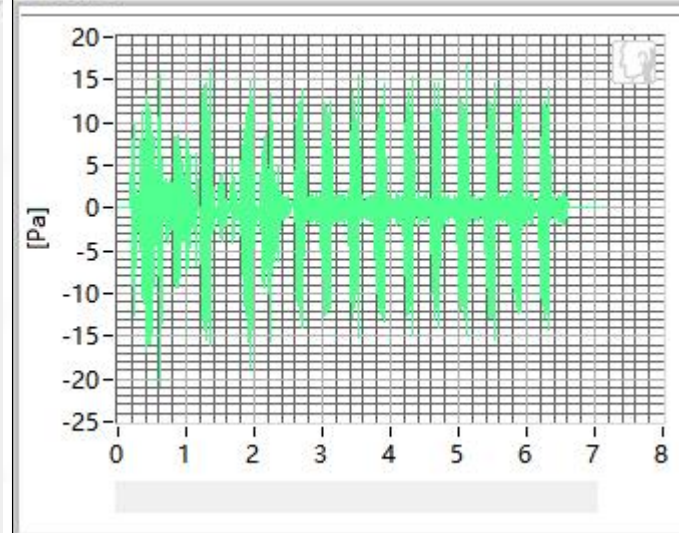
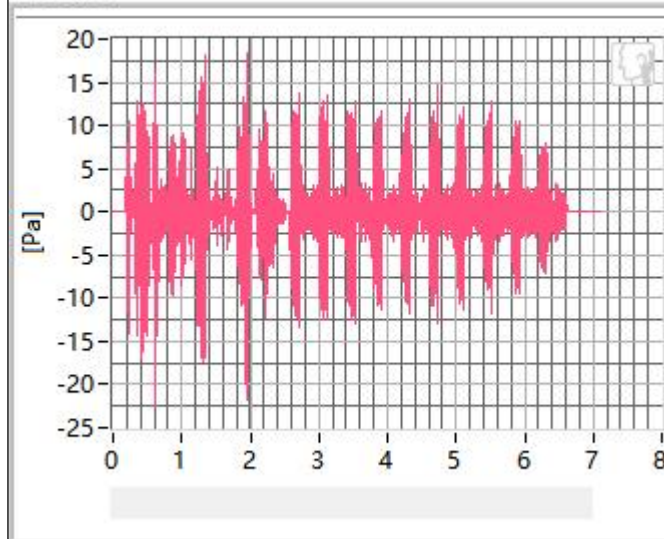
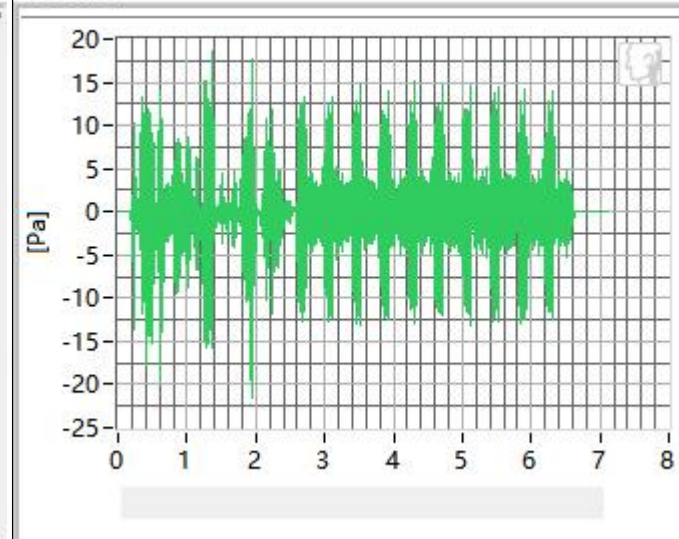


### 1.3 Receive Frequency Response



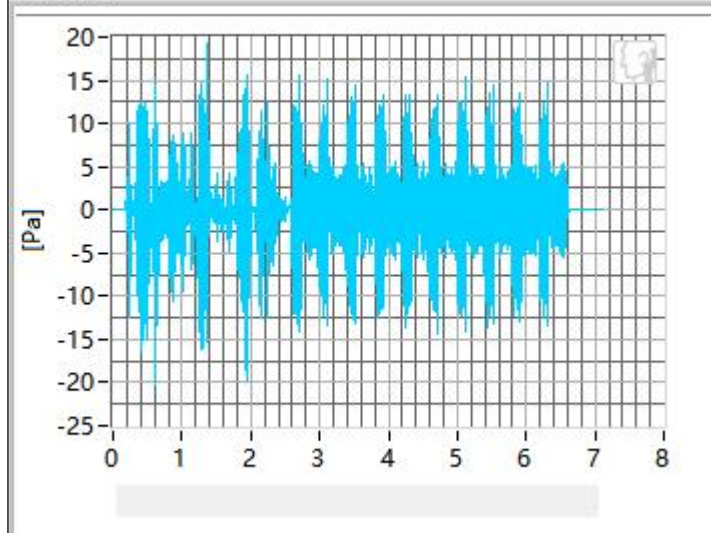
## 2. WCDMA band 2 in channel 9538

### 2.1 Receive Distortion and Noise 8N WB

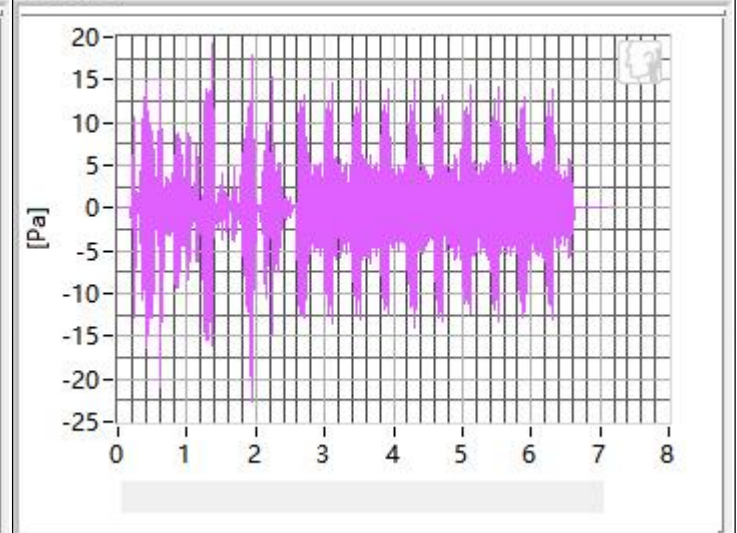
**250Hz****315Hz****400Hz****500Hz**



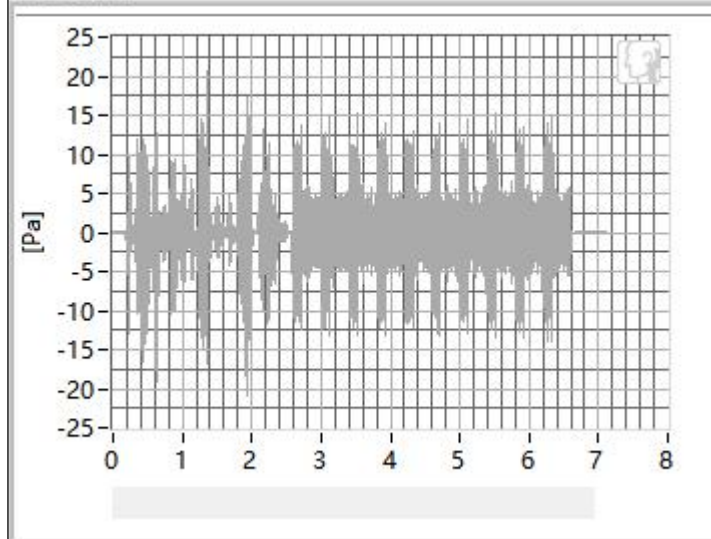
630Hz



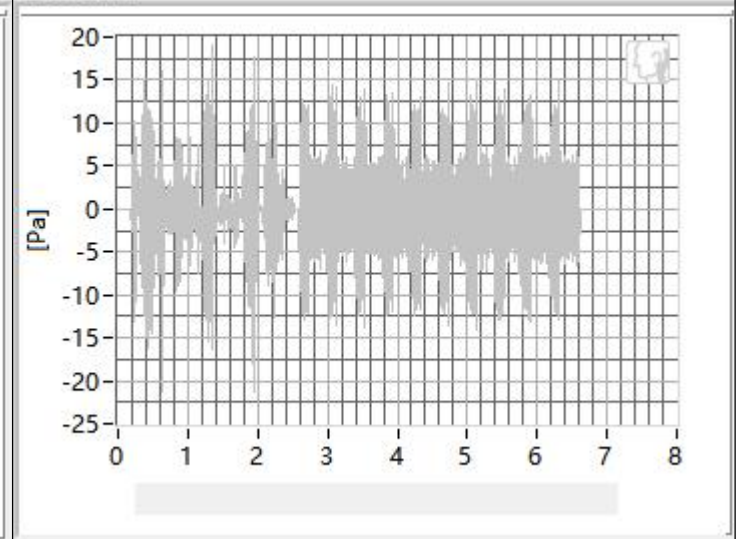
800Hz



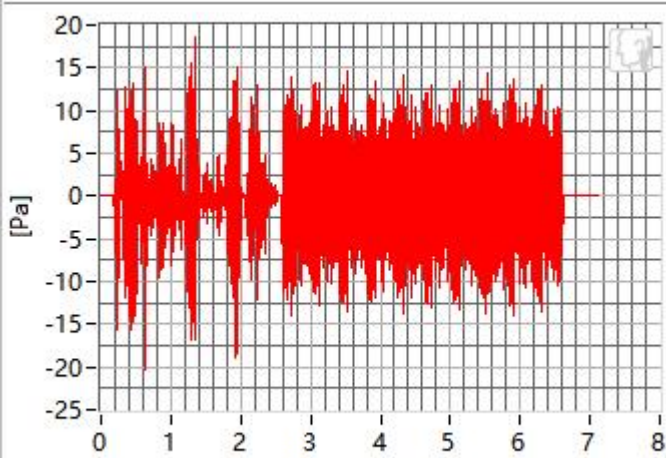
1000Hz



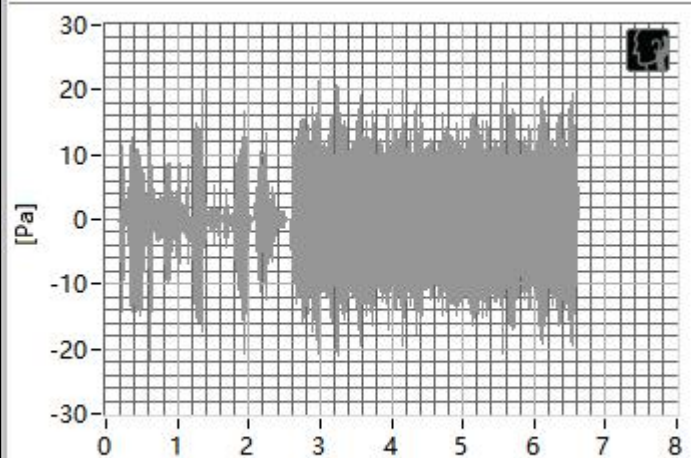
1250Hz



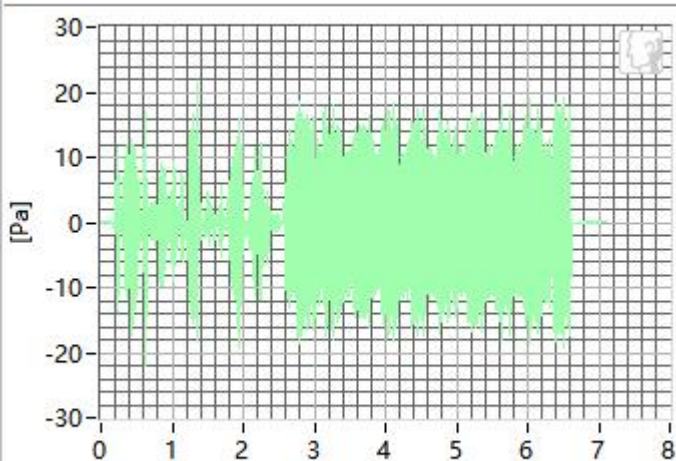
1600Hz



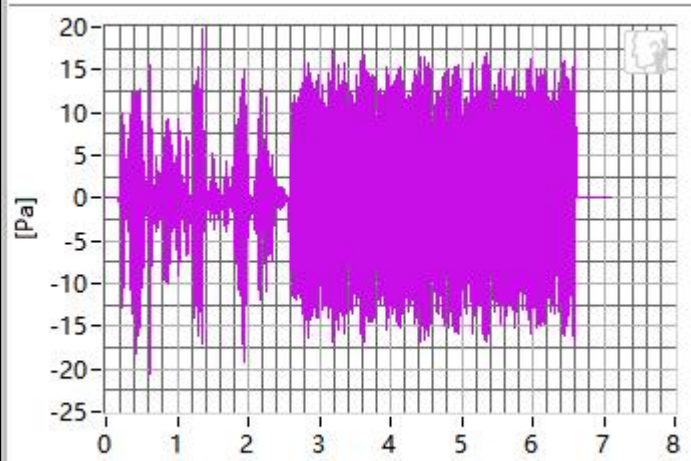
2000Hz



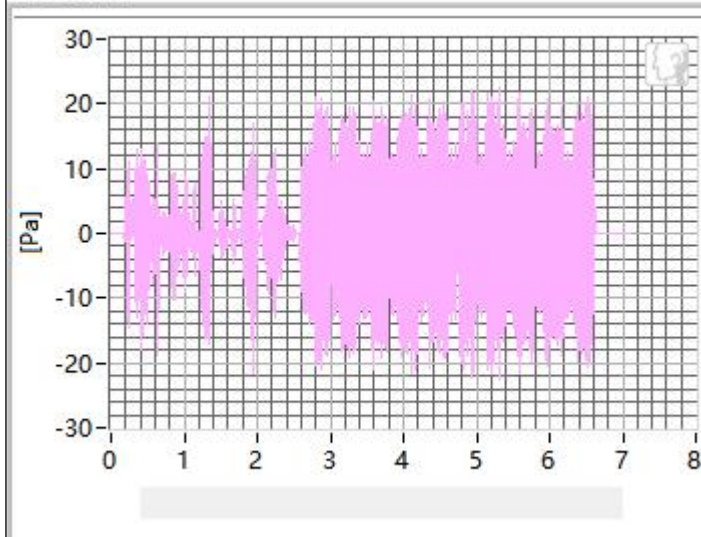
2500Hz



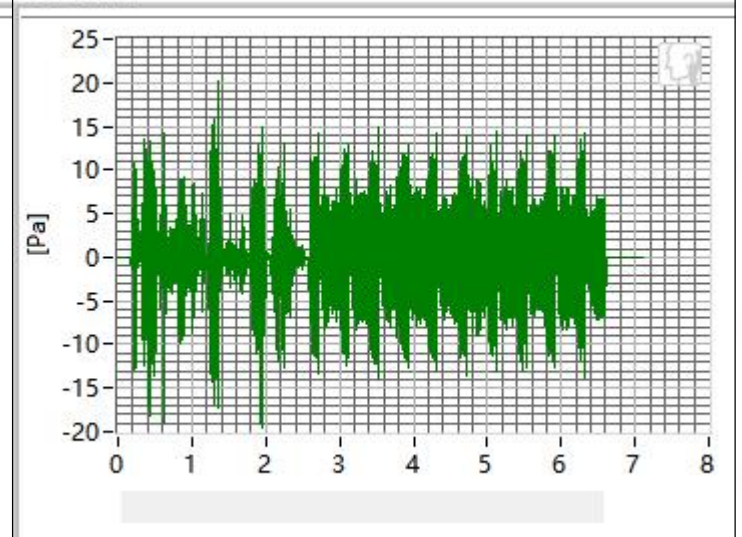
3150Hz



4000Hz



5000Hz

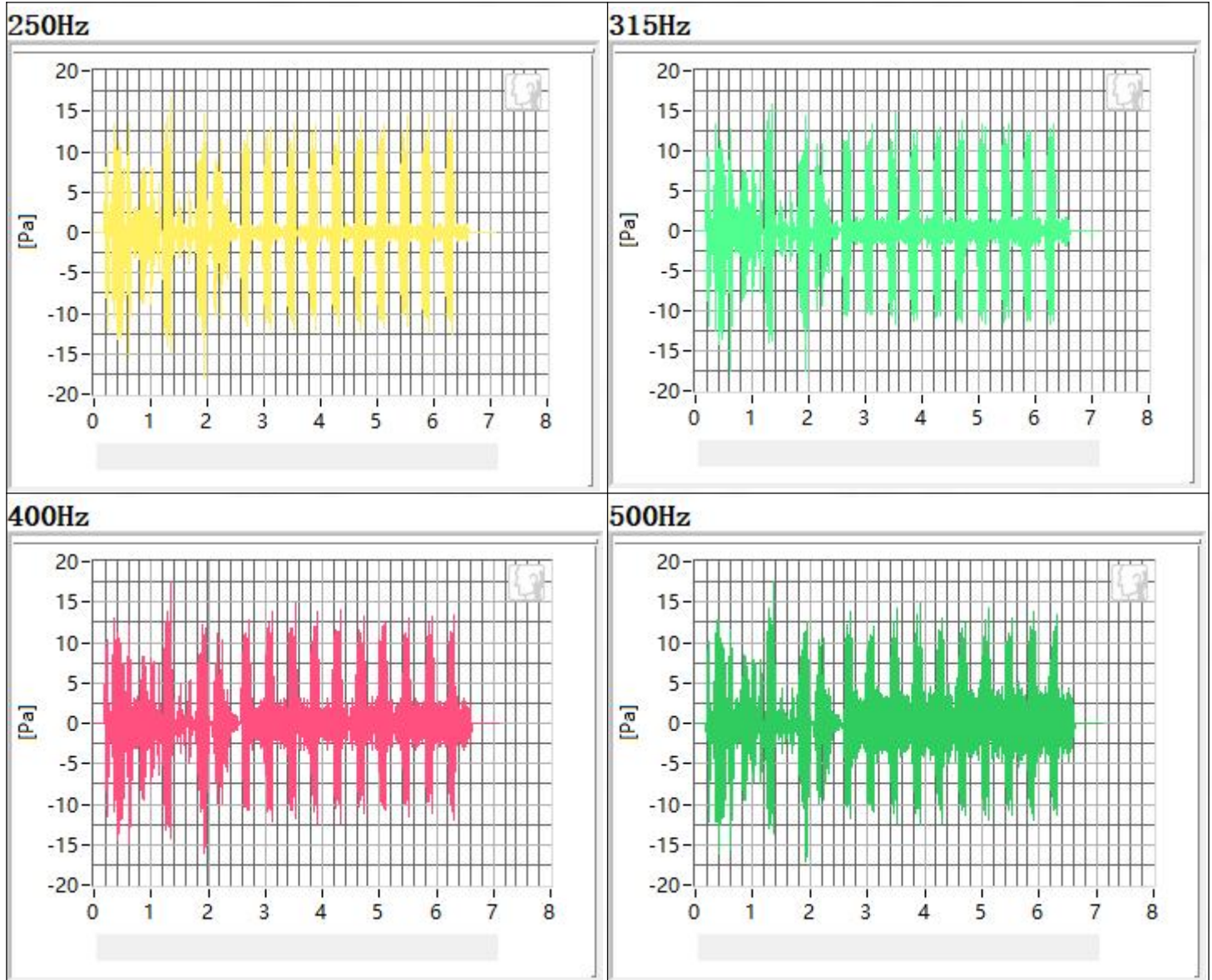


Frequency	SDNR	Frequency	SDNR
250Hz	29.18 dB	1250Hz	23.54 dB
315Hz	32.34 dB	1600Hz	22.85 dB
400Hz	31.84 dB	2000Hz	21.87 dB
500Hz	31.08 dB	2500Hz	21.61 dB
630Hz	30.64 dB	3150Hz	23.23 dB
800Hz	31.11 dB	4000Hz	24.12 dB
1000Hz	24.56 dB	5000Hz	20.66 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 20.66 dB at 5000Hz.

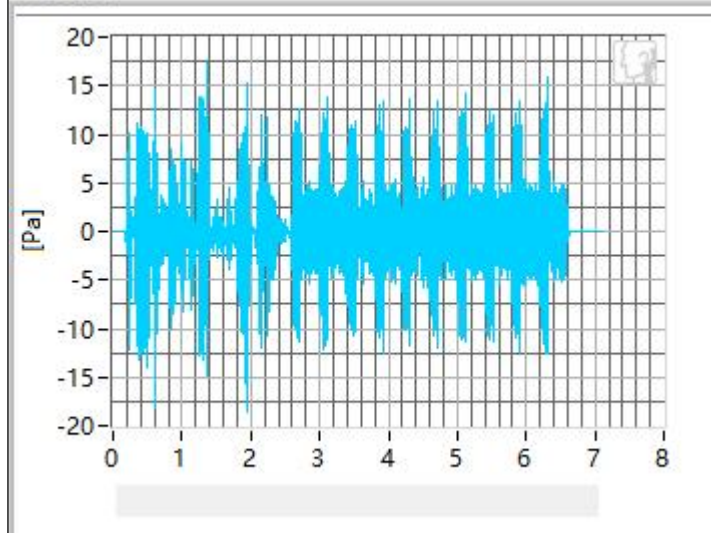


## 2.2 Receive Distortion and Noise 2N WB

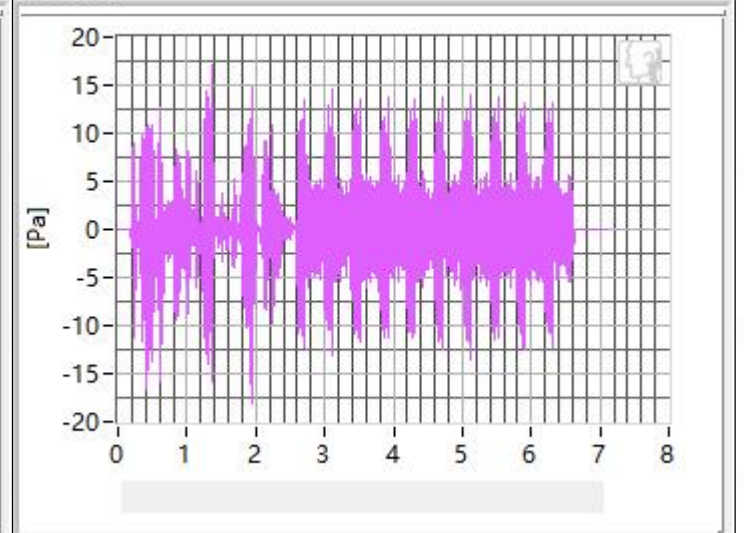




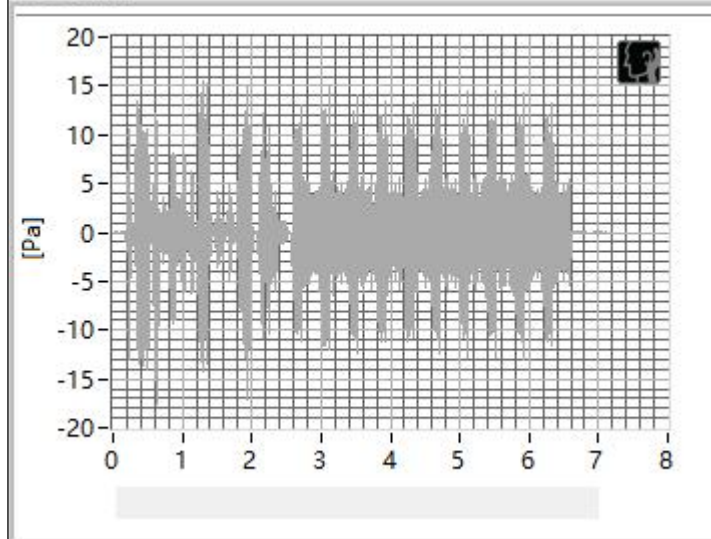
630Hz



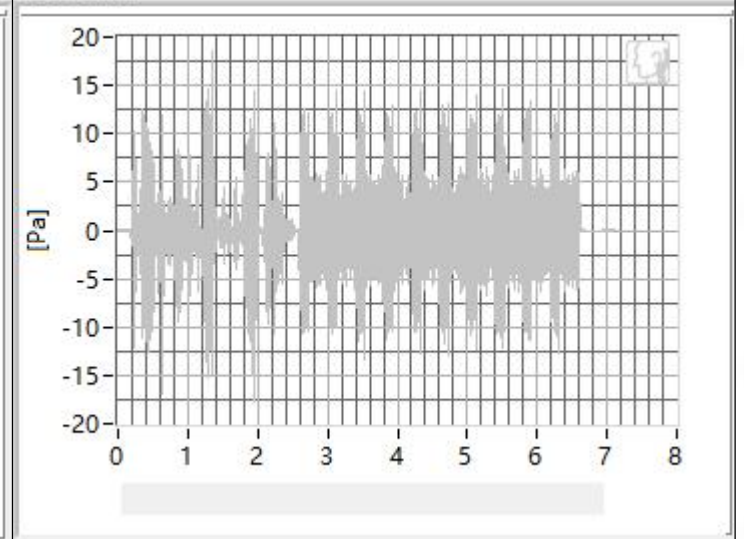
800Hz



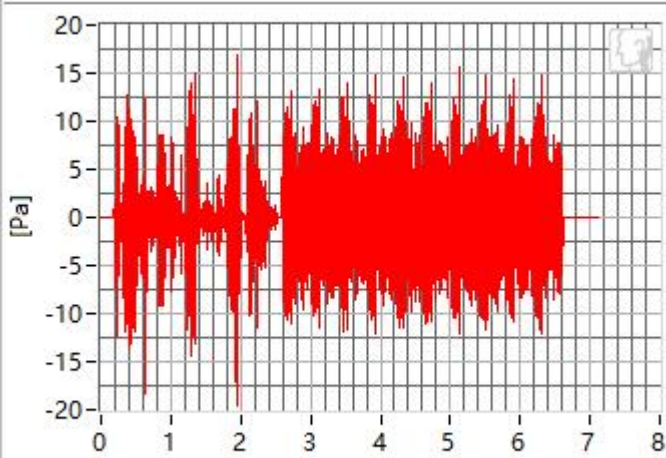
1000Hz



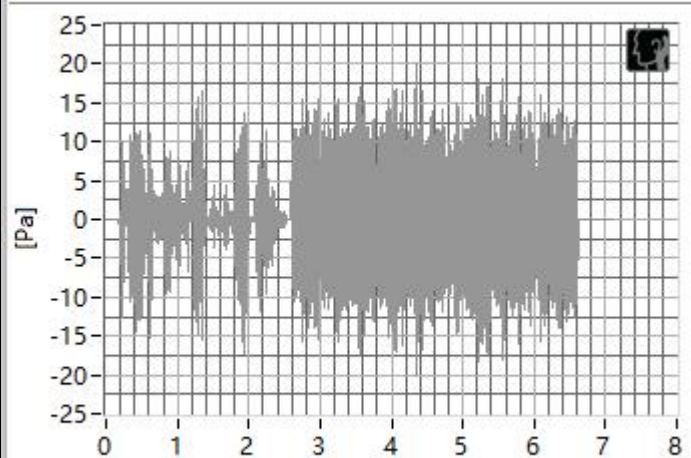
1250Hz



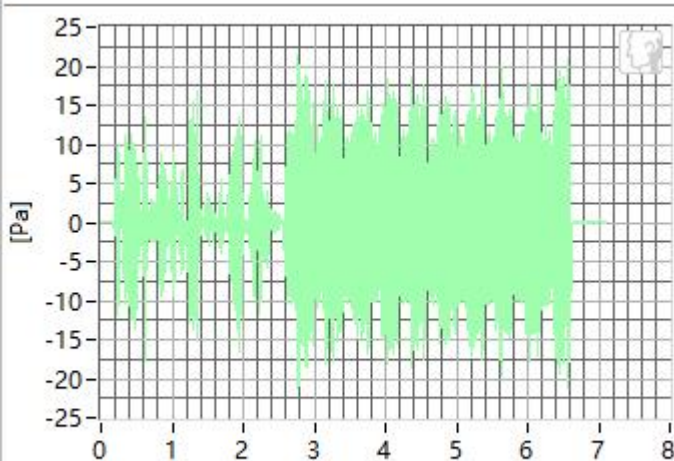
1600Hz



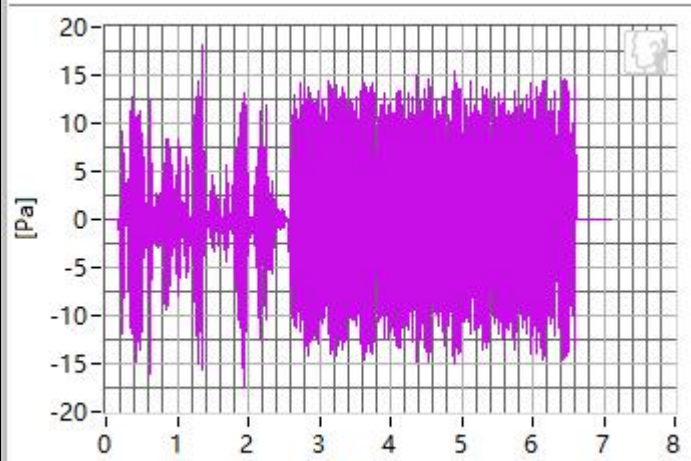
2000Hz



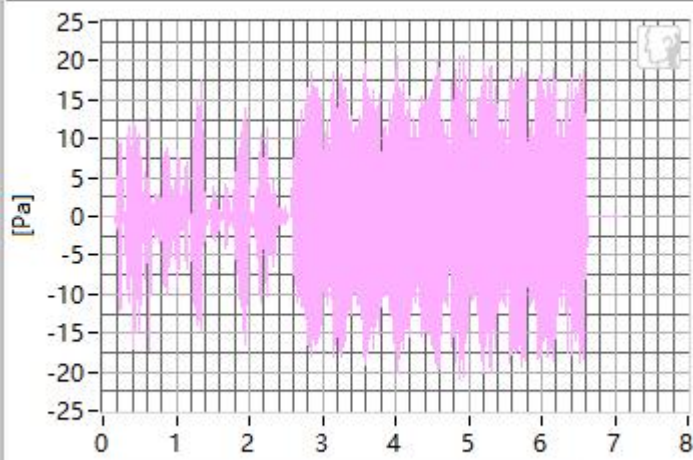
2500Hz



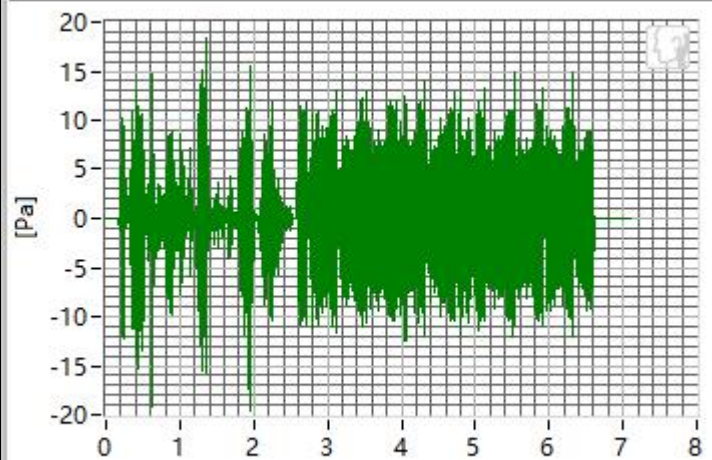
3150Hz



4000Hz



5000Hz

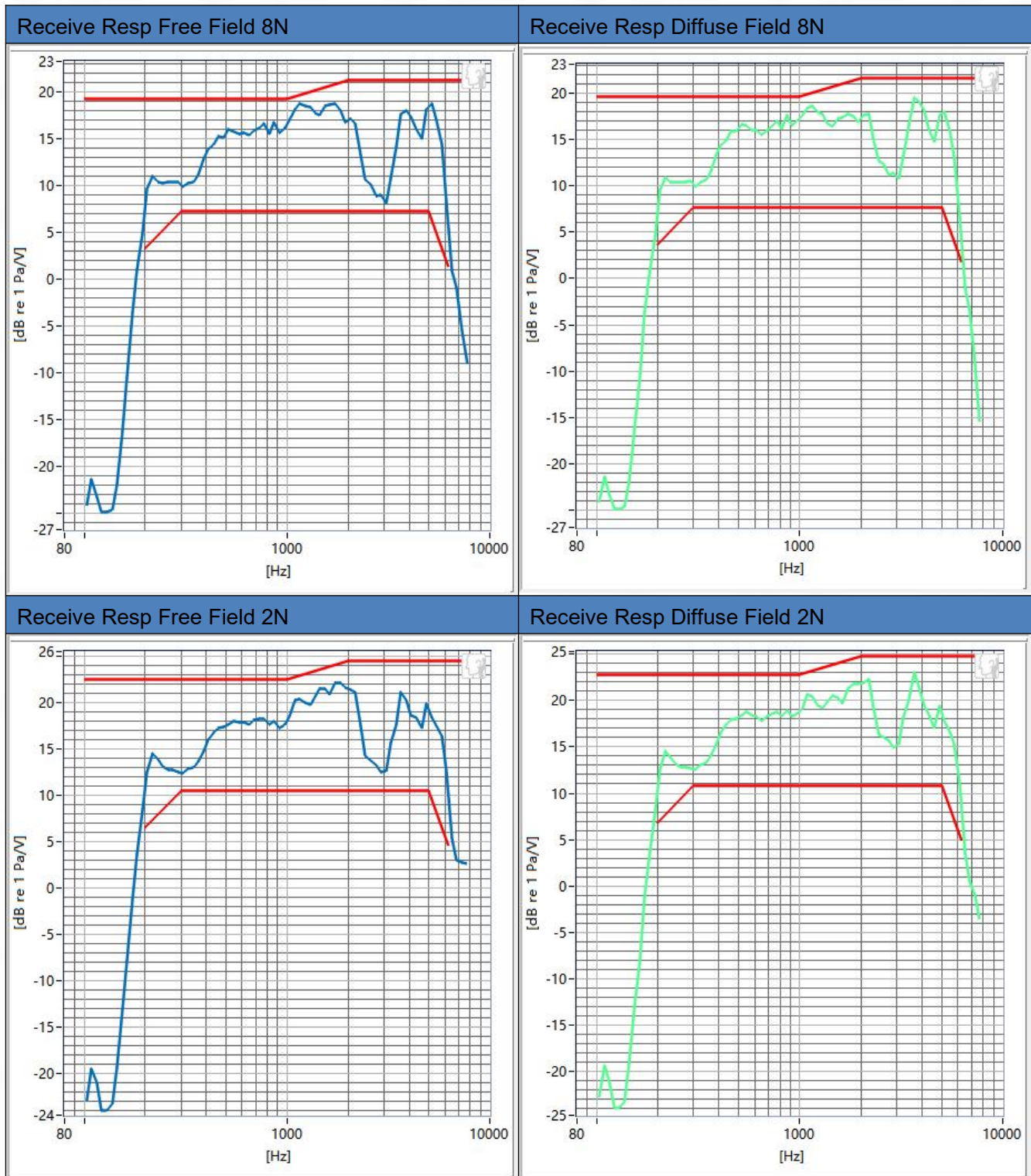


Frequency	SDNR	Frequency	SDNR
250Hz	34.21 dB	1250Hz	23.16 dB
315Hz	32.58 dB	1600Hz	24.53 dB
400Hz	31.64 dB	2000Hz	23.22 dB
500Hz	31.52 dB	2500Hz	22.09 dB
630Hz	29.57 dB	3150Hz	23.39 dB
800Hz	27.36 dB	4000Hz	21.64 dB
1000Hz	25.68 dB	5000Hz	21.02 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 21.02 dB at 5000Hz.



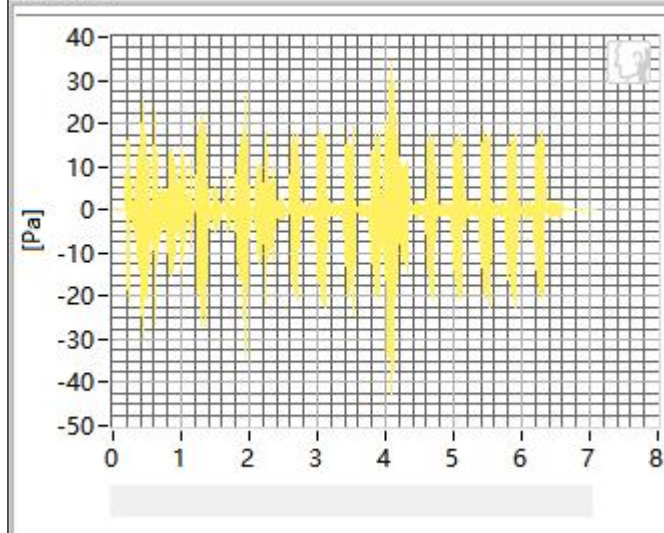
## 2.3 Receive Frequency Response



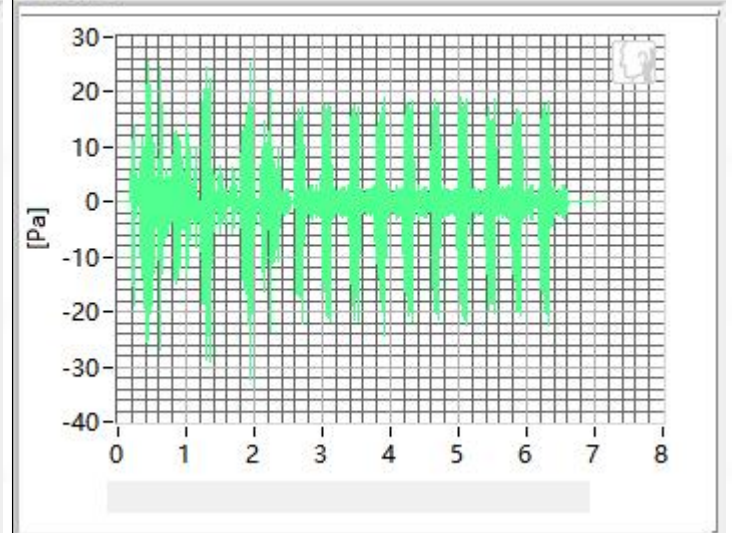
### 3. LTE band 2 in channel 18900

#### 3.1 Receive Distortion and Noise 8N WB

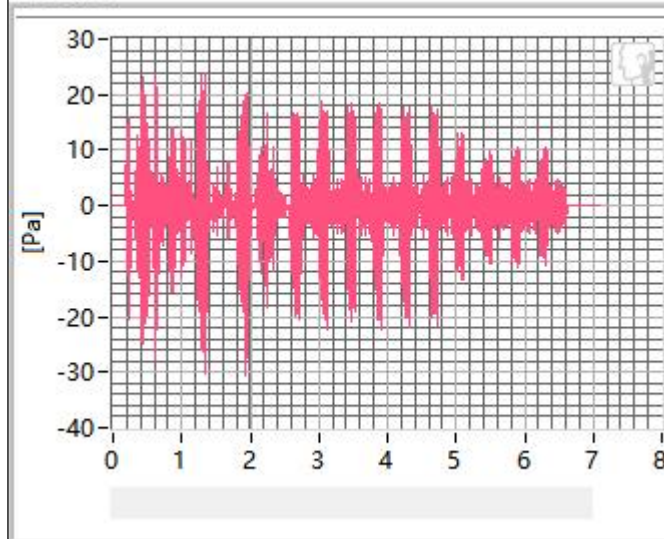
250Hz



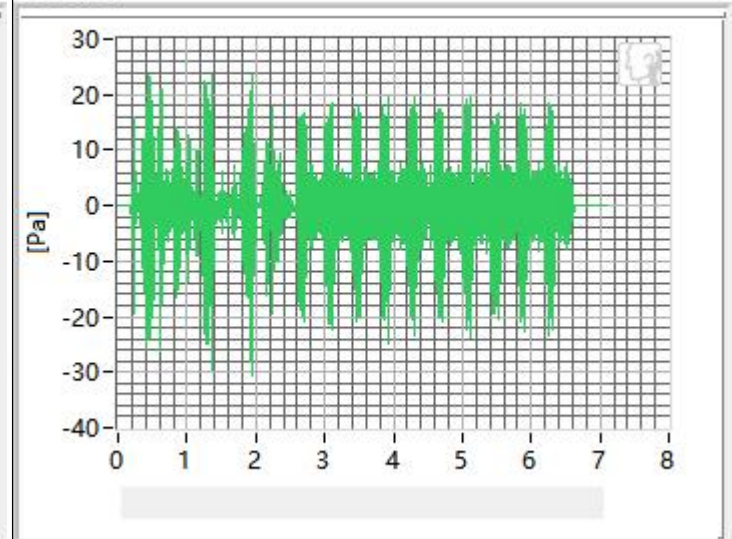
315Hz



400Hz

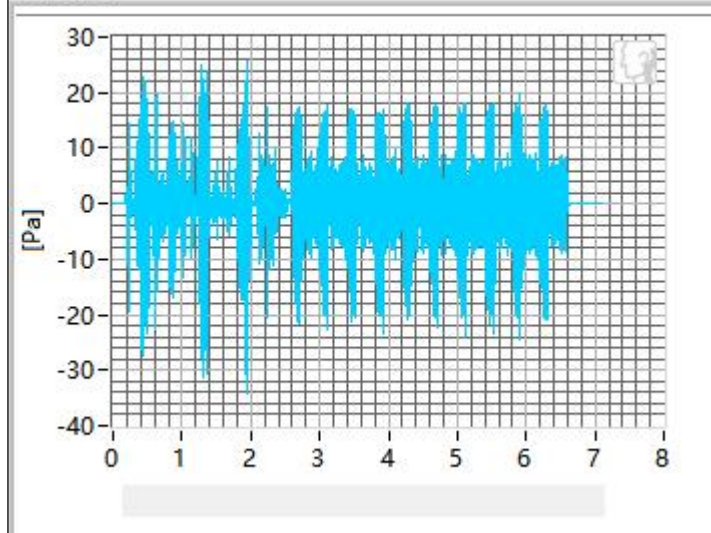


500Hz

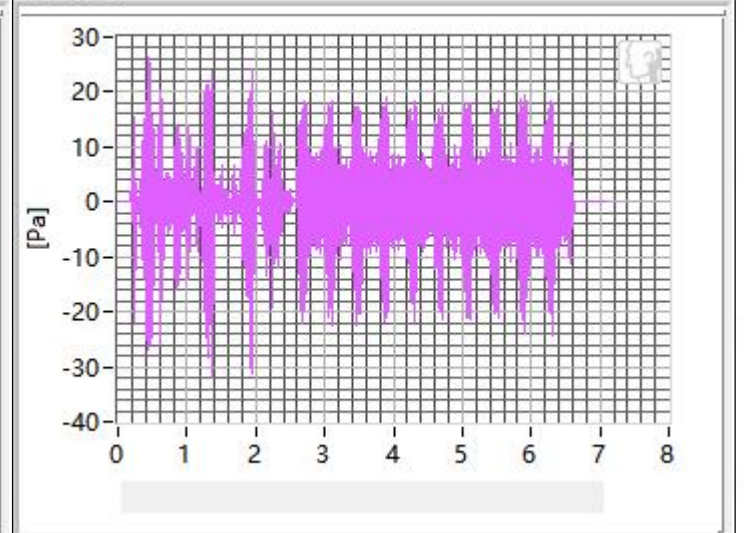




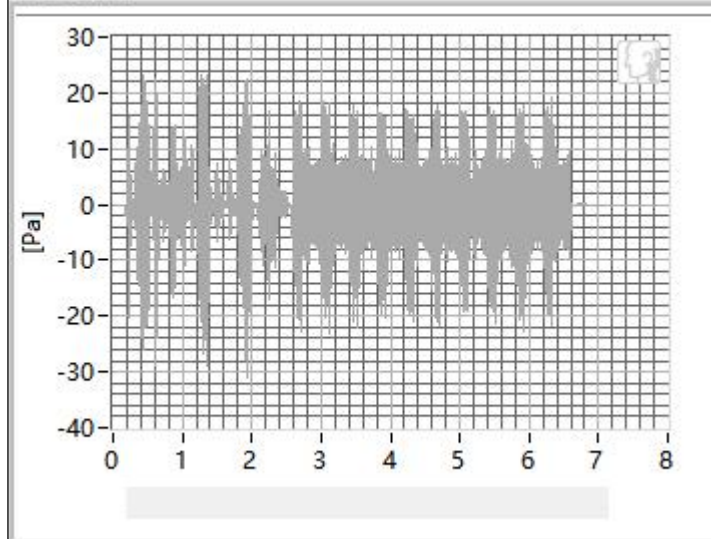
630Hz



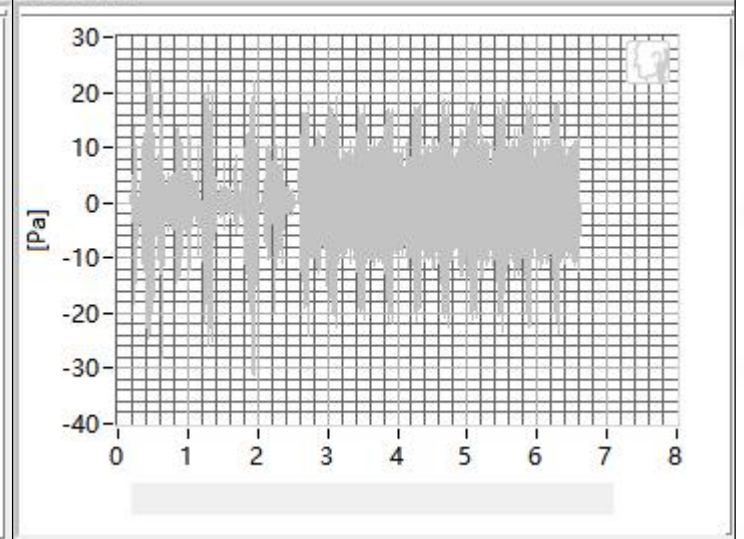
800Hz



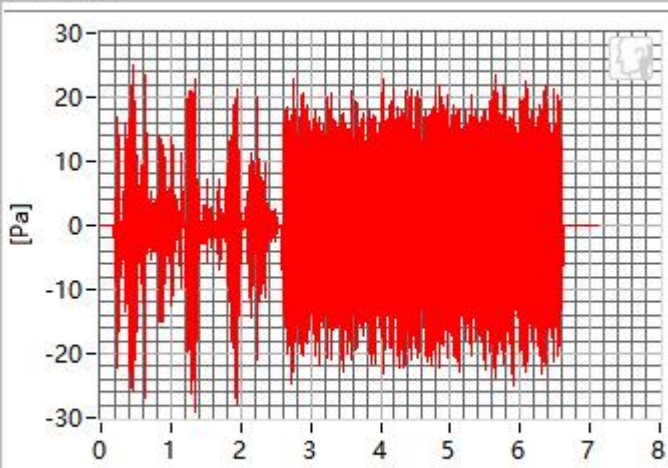
1000Hz



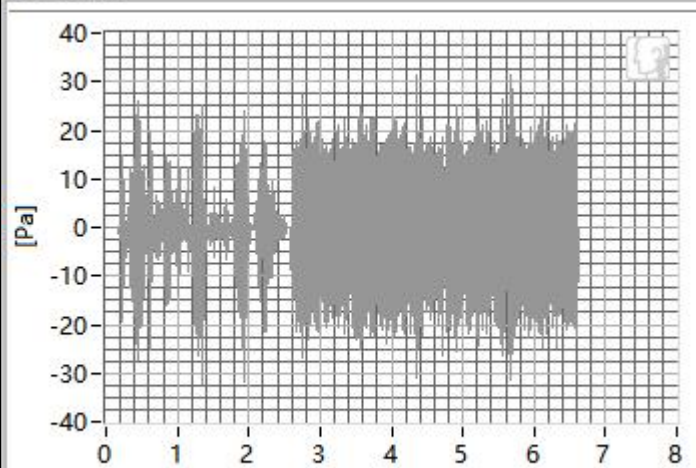
1250Hz



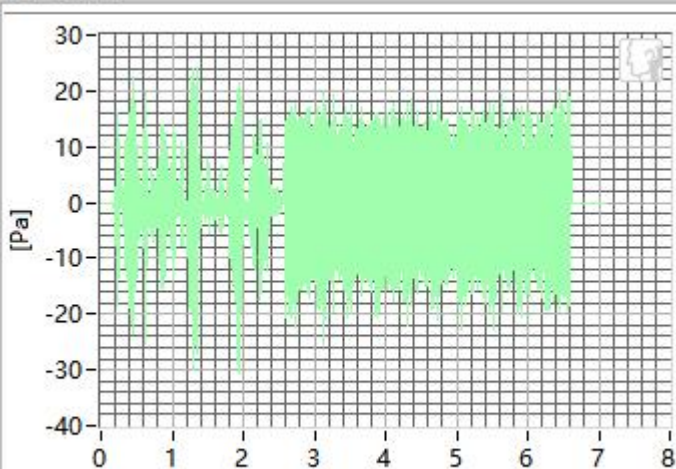
1600Hz



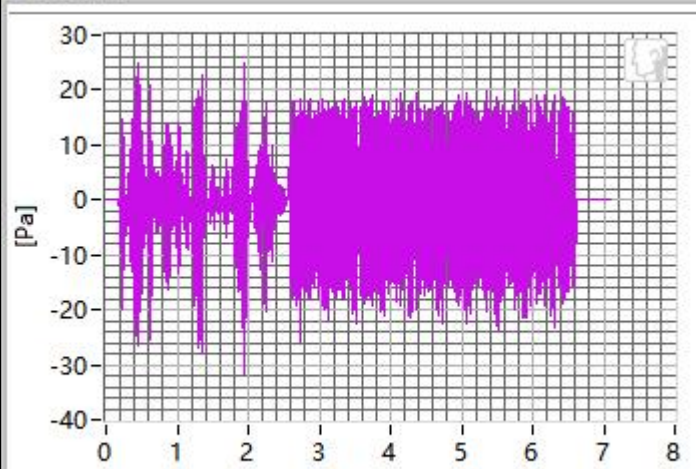
2000Hz



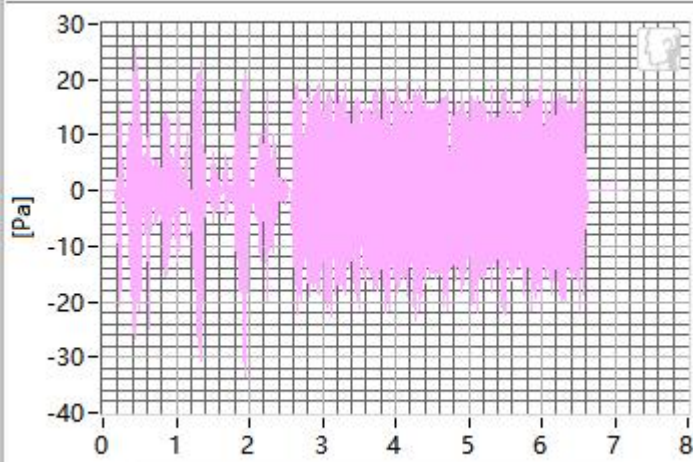
2500Hz



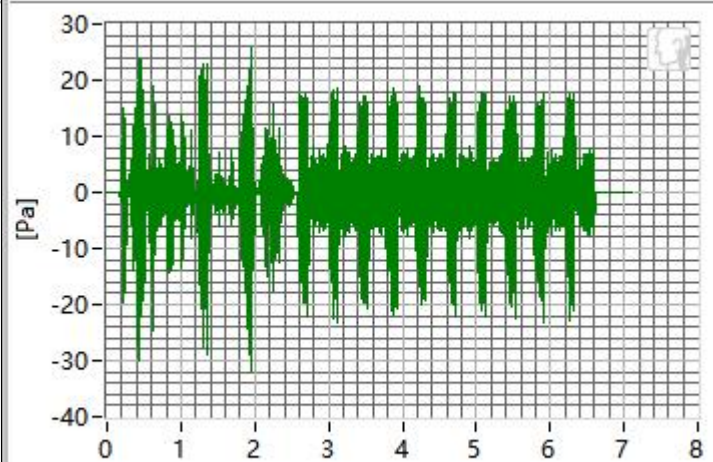
3150Hz



4000Hz



5000Hz



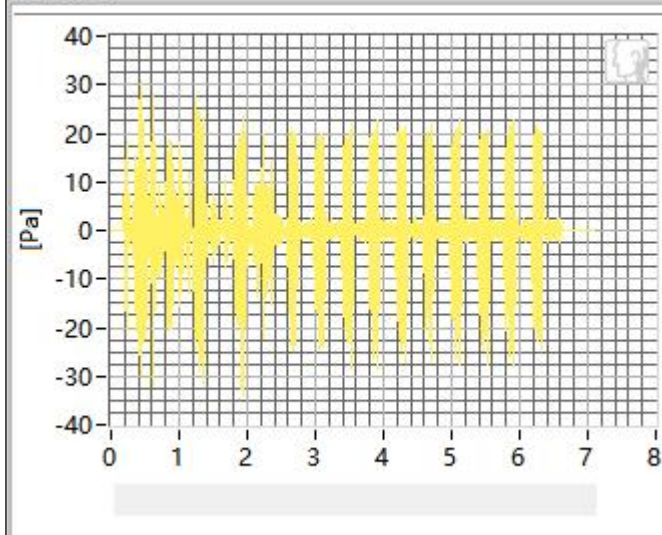
Frequency	SDNR	Frequency	SDNR
250Hz	31.15 dB	1250Hz	23.16 dB
315Hz	32.54dB	1600Hz	22.45 dB
400Hz	31.88 dB	2000Hz	21.50 dB
500Hz	30.97 dB	2500Hz	20.92 dB
630Hz	29.95 dB	3150Hz	22.35 dB
800Hz	29.57 dB	4000Hz	21.85 dB
1000Hz	27.54 dB	5000Hz	21.08 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 21.08 dB at 5000 Hz.

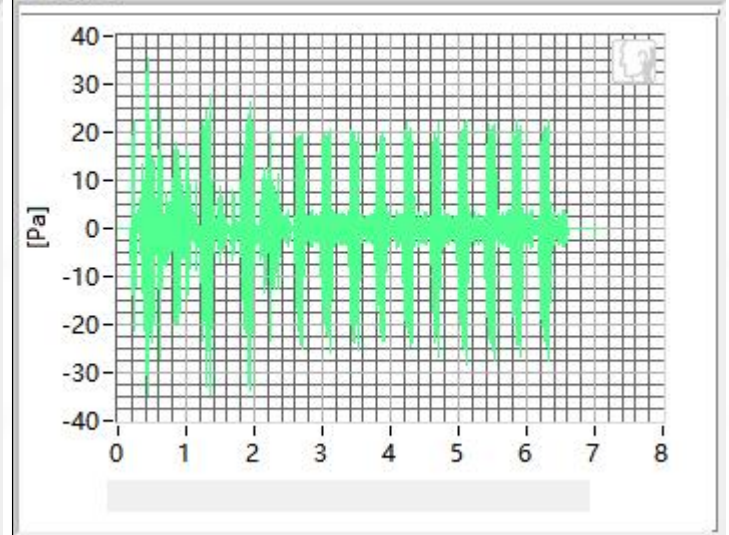


### 3.2 Receive Distortion and Noise 2N WB

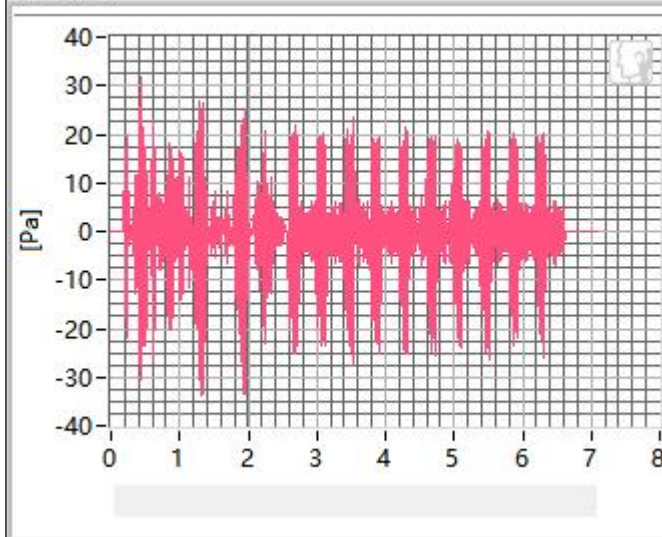
250Hz



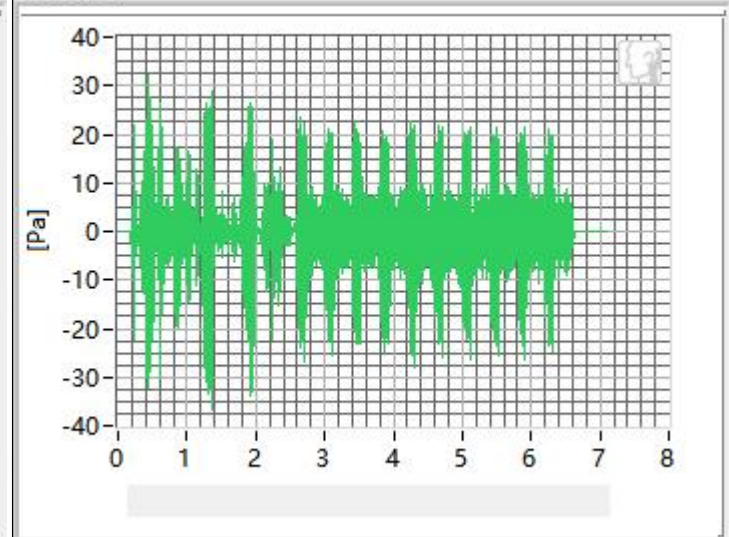
315Hz



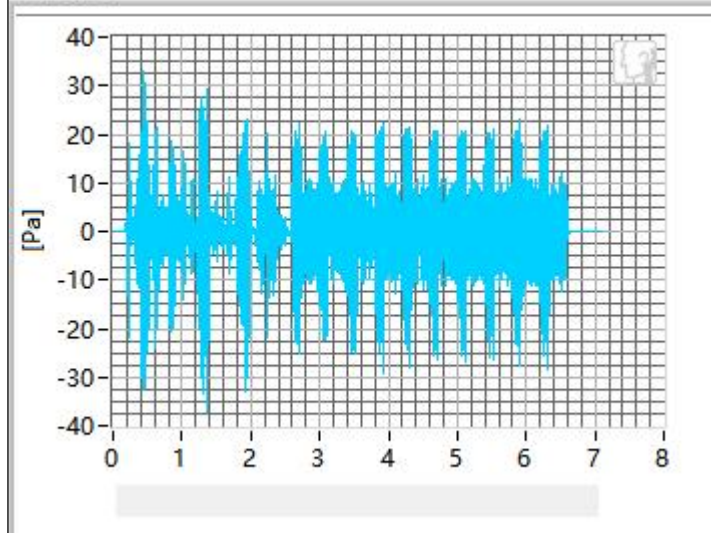
400Hz



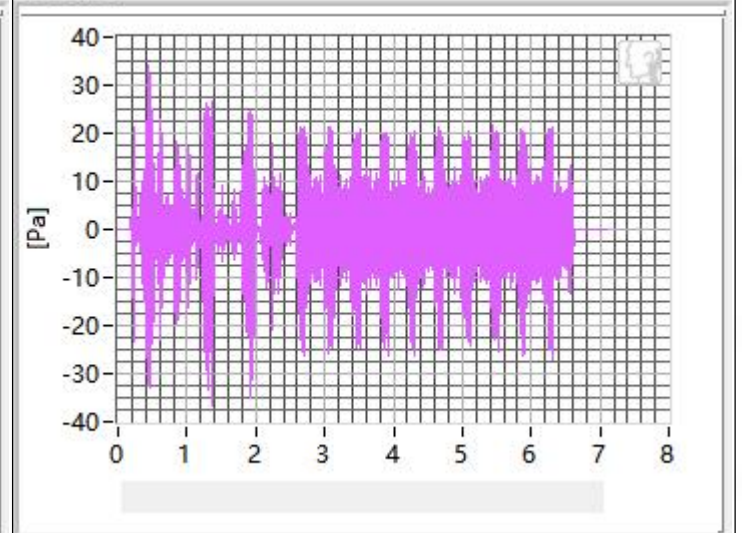
500Hz



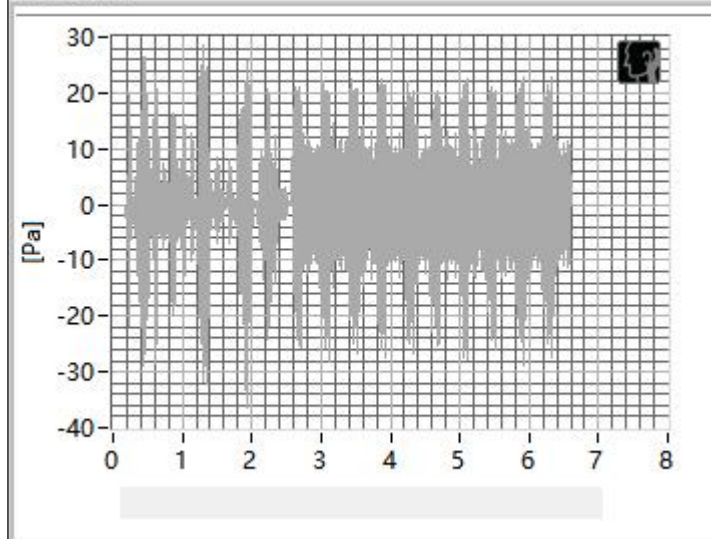
630Hz



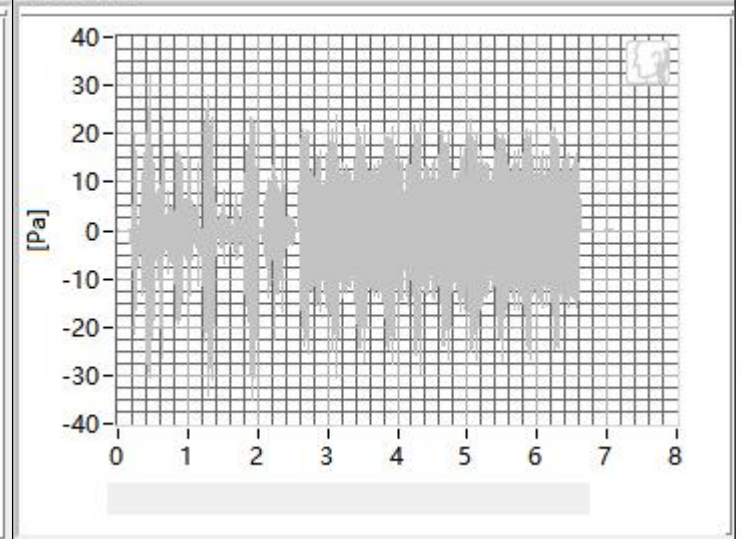
800Hz



1000Hz

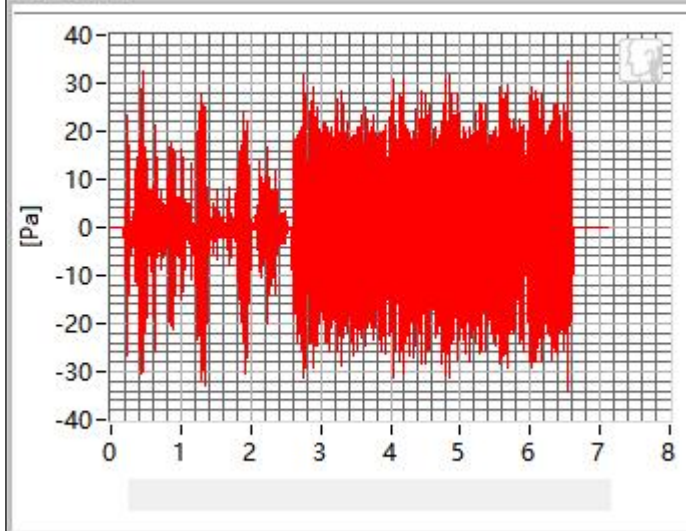


1250Hz

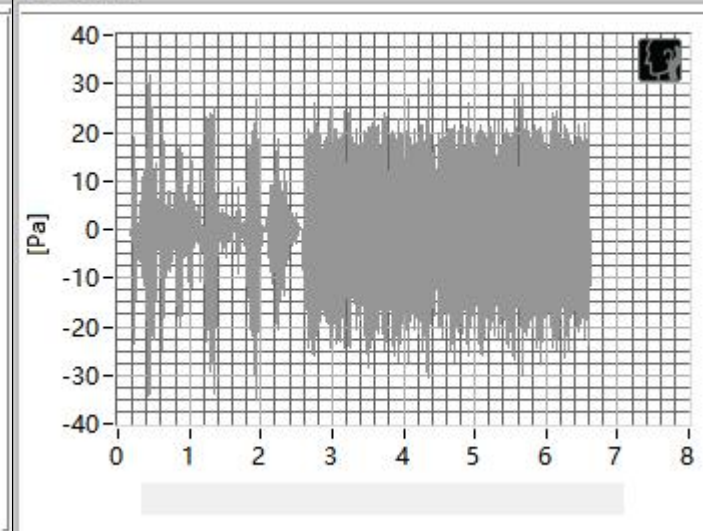




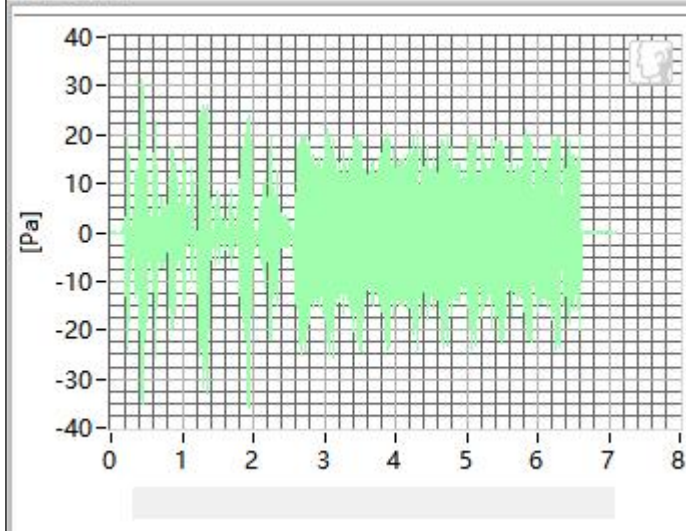
1600Hz



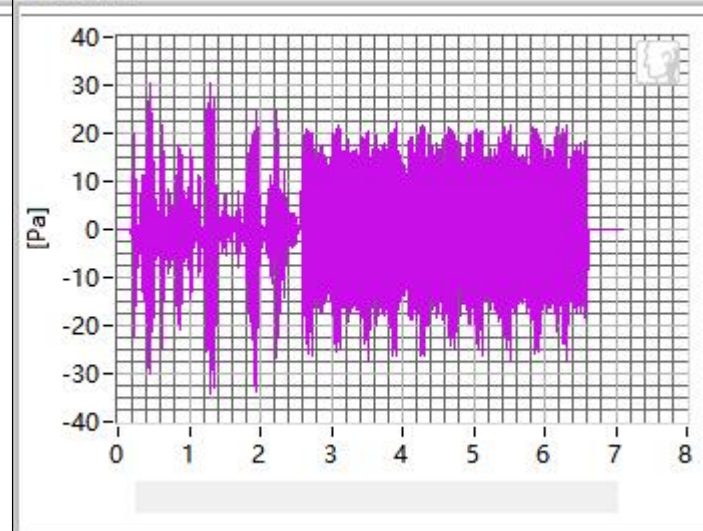
2000Hz



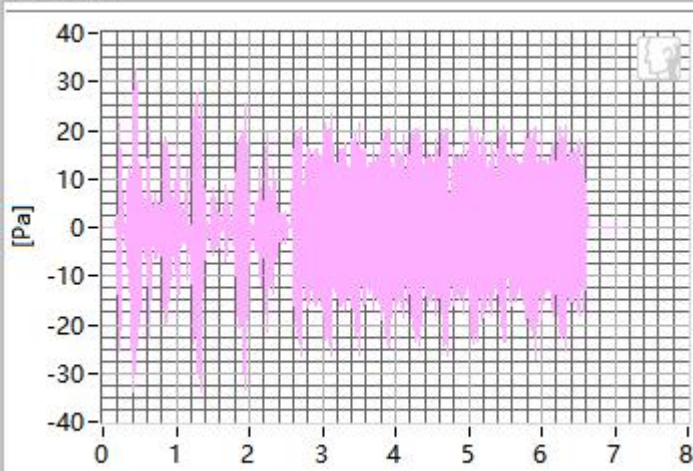
2500Hz



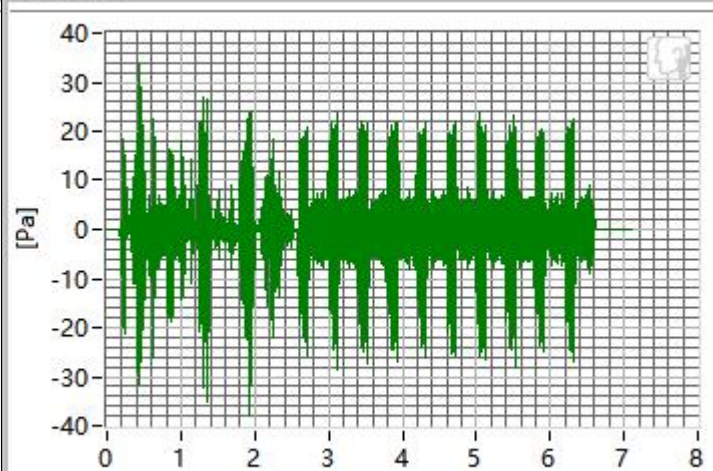
3150Hz



4000Hz



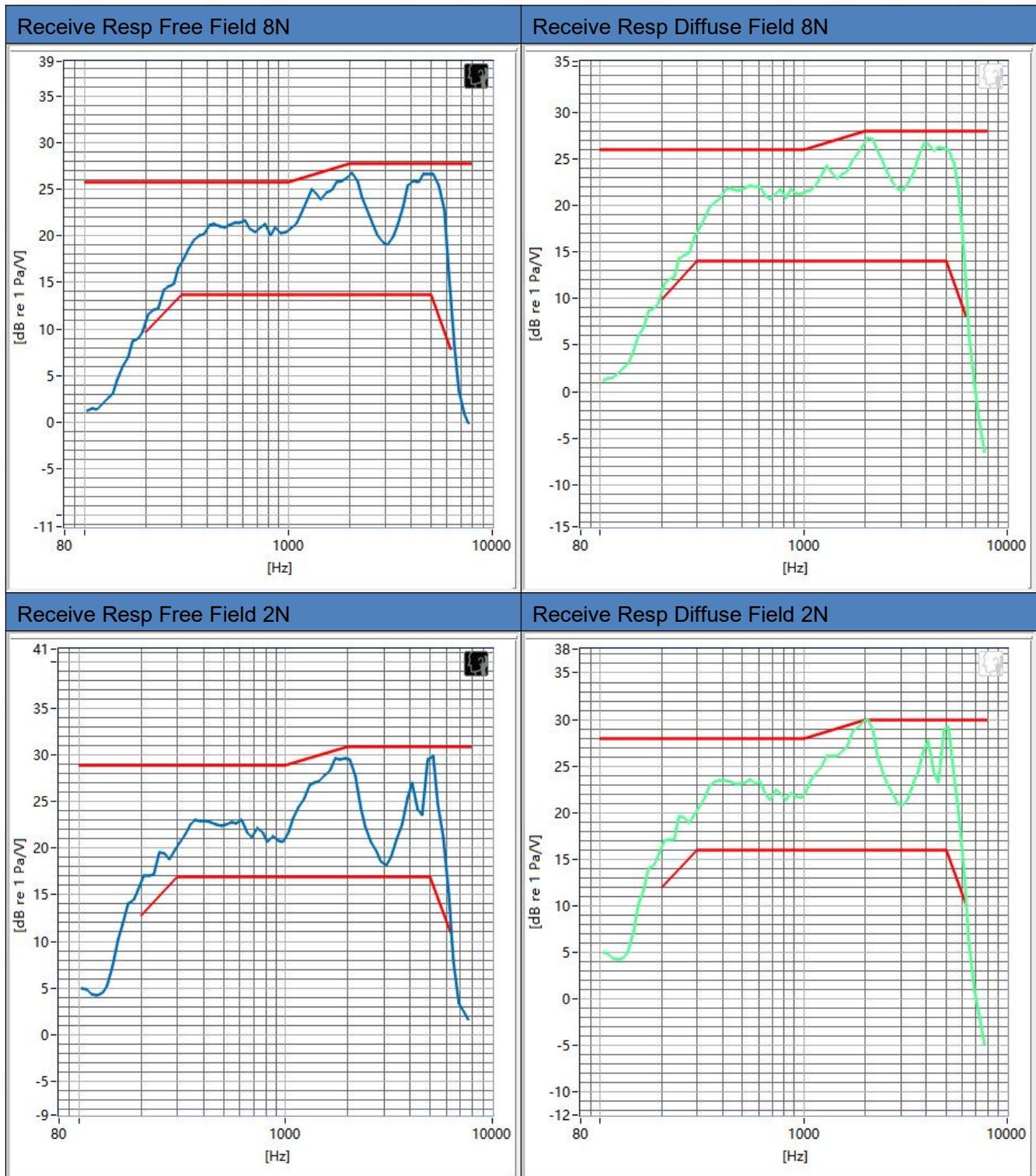
5000Hz



Frequency	SDNR	Frequency	SDNR
250Hz	30.28 dB	1250Hz	21.84 dB
315Hz	32.48 dB	1600Hz	24.21 dB
400Hz	32.36 dB	2000Hz	22.47 dB
500Hz	30.64 dB	2500Hz	22.22 dB
630Hz	29.25 dB	3150Hz	21.57 dB
800Hz	28.45 dB	4000Hz	22.06 dB
1000Hz	26.34 dB	5000Hz	20.46 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 20.46 dB at 5000Hz.

### 3.3 Receive Frequency Response

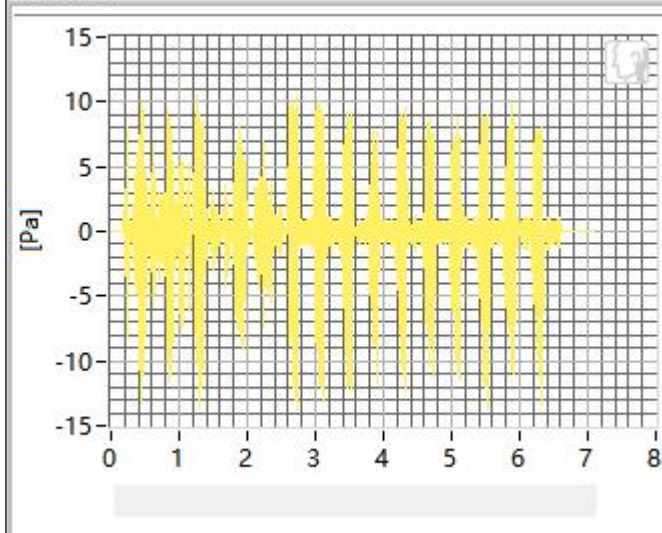




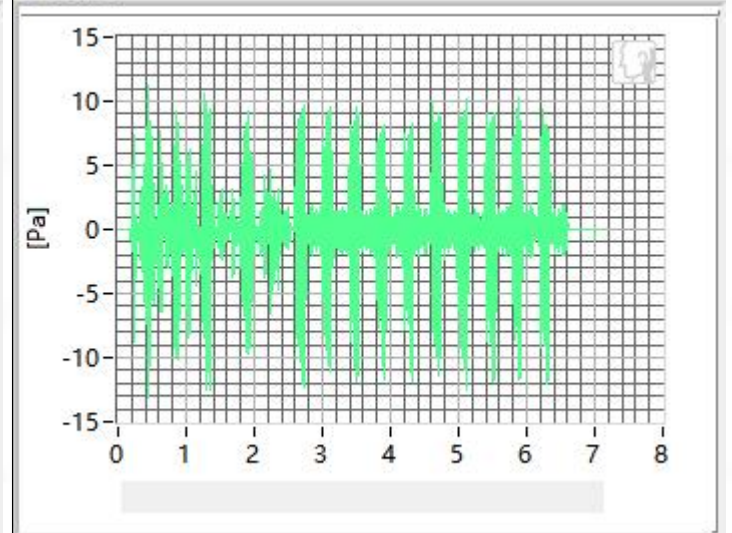
## 4. NR Band 7 in channel 512000

### 4.1 Receive Distortion and Noise 8N WB

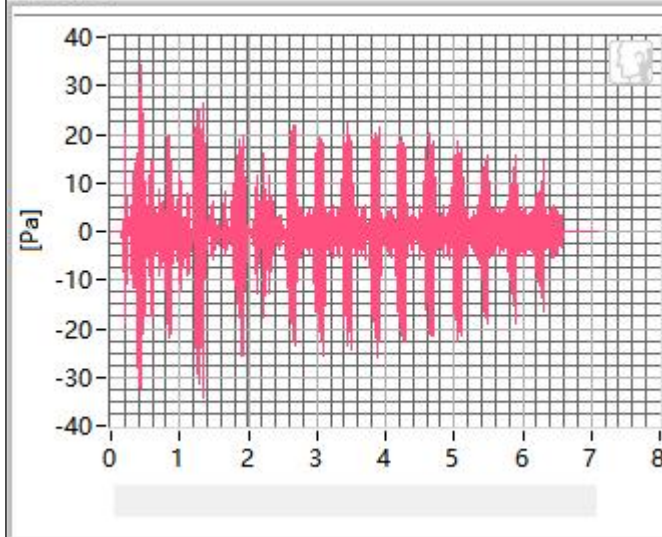
250Hz



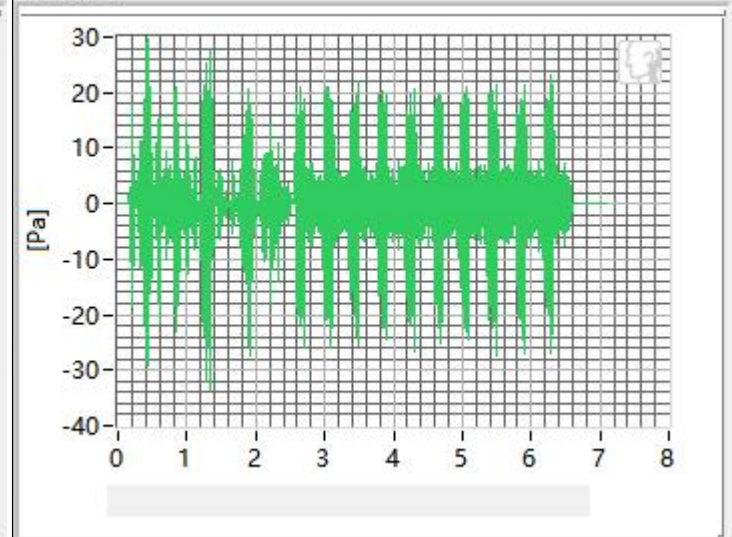
315Hz



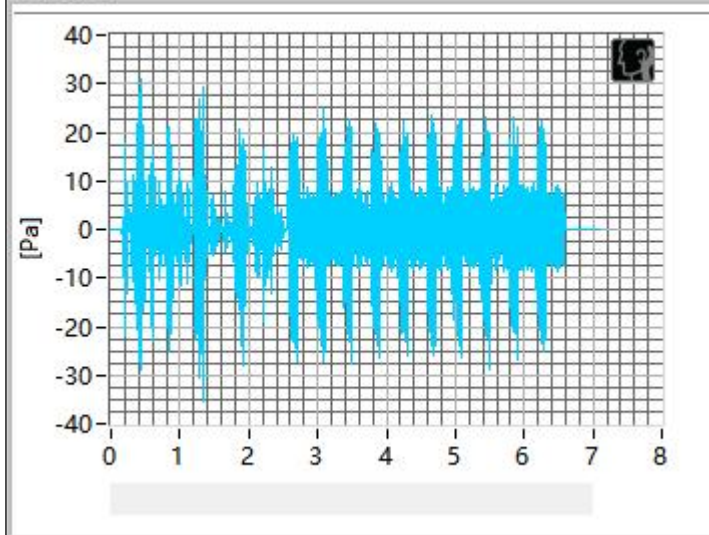
400Hz



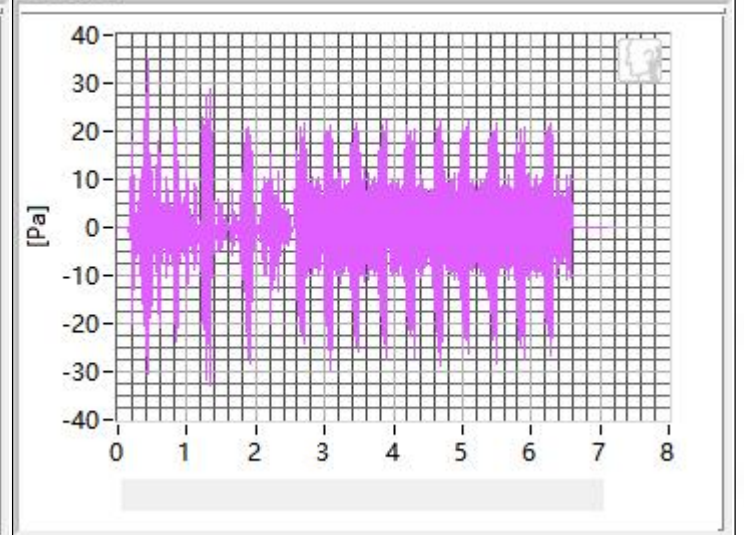
500Hz



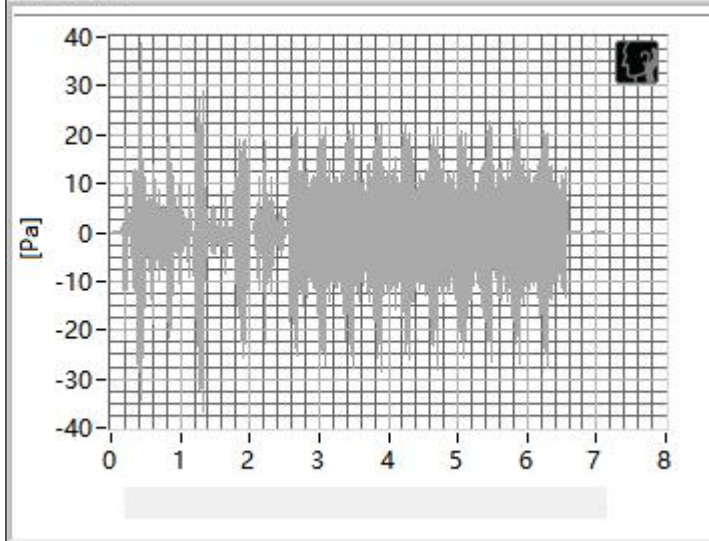
630Hz



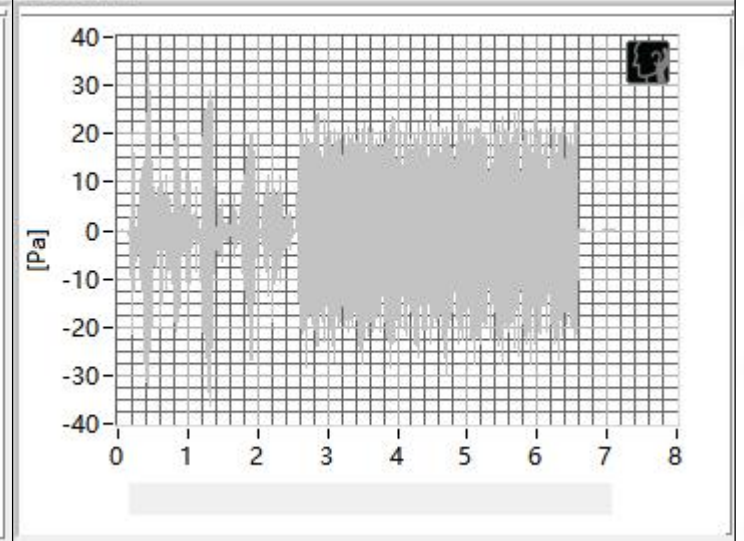
800Hz



1000Hz

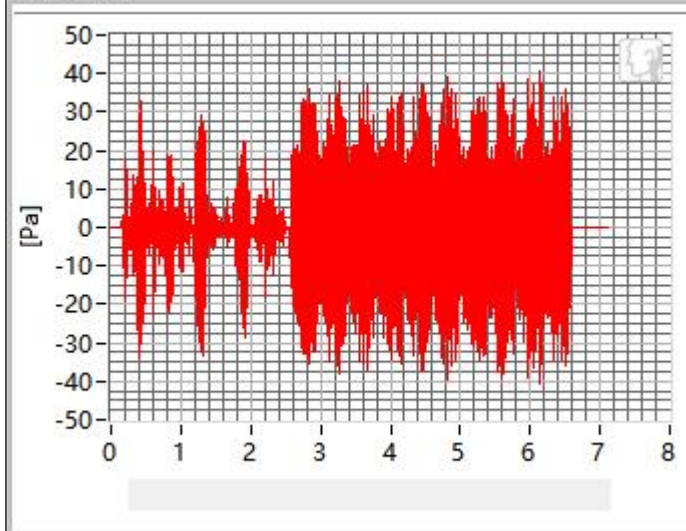


1250Hz

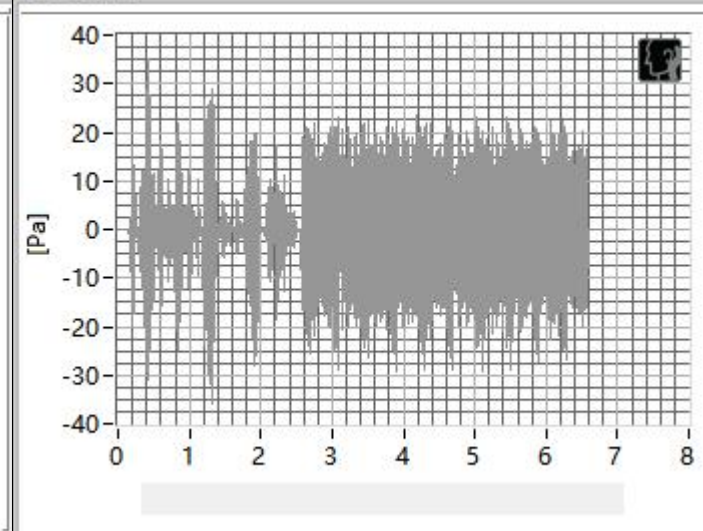




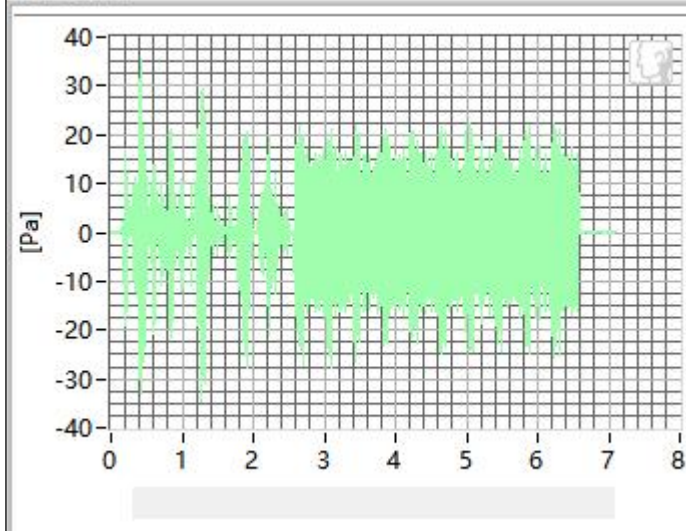
1600Hz



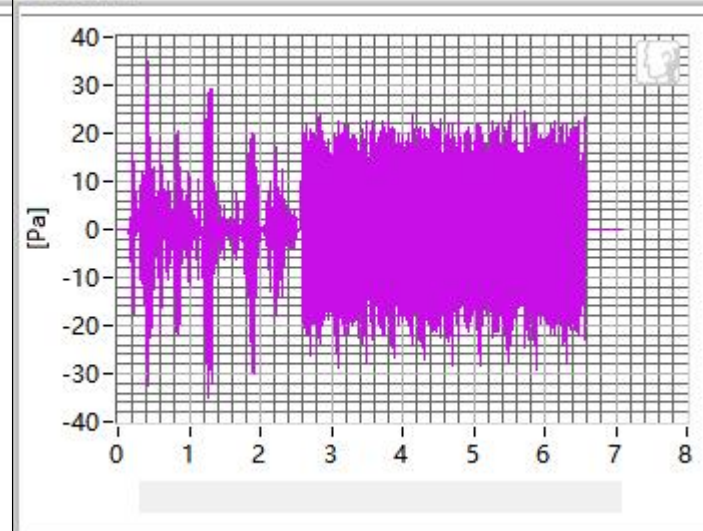
2000Hz



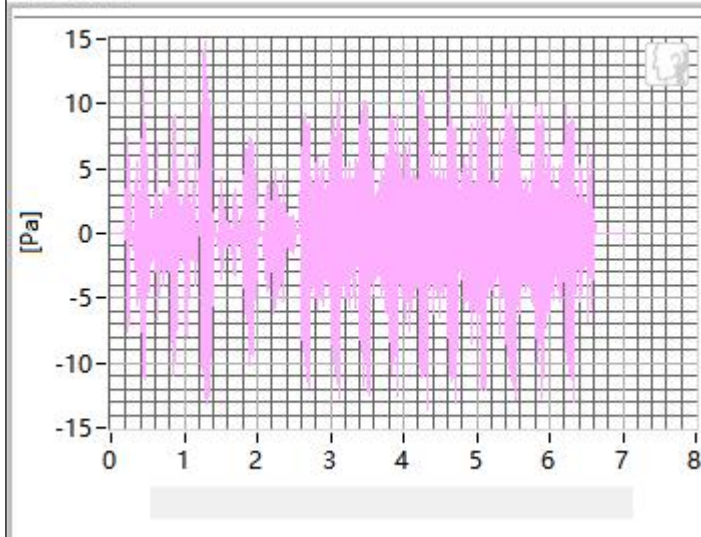
2500Hz



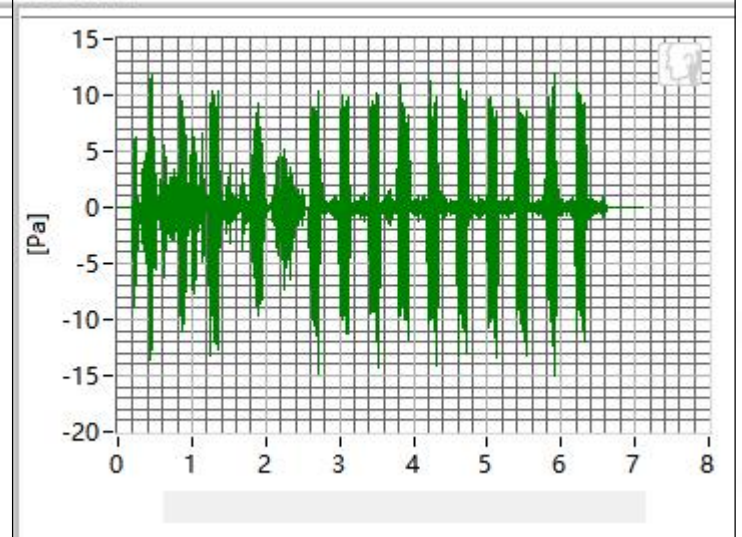
3150Hz



4000Hz



5000Hz

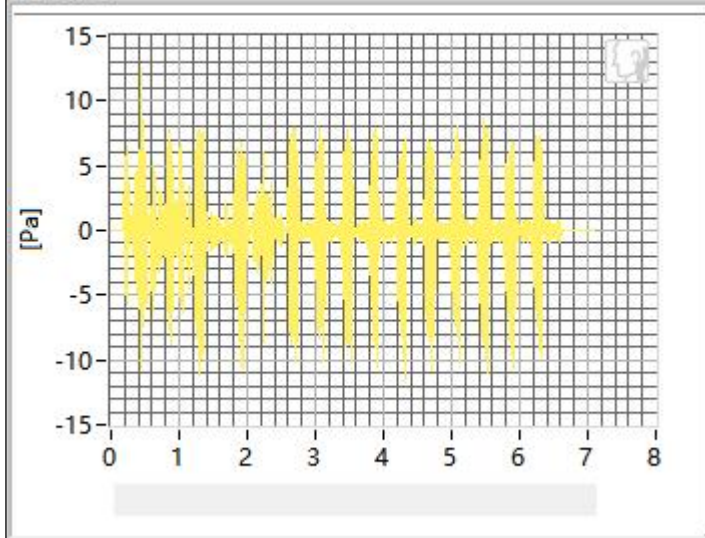


Frequency	SDNR	Frequency	SDNR
250Hz	29.65 dB	1250Hz	21.57 dB
315Hz	27.65 dB	1600Hz	22.21 dB
400Hz	28.42 dB	2000Hz	21.97 dB
500Hz	25.28 dB	2500Hz	22.37 dB
630Hz	24.64 dB	3150Hz	24.51 dB
800Hz	23.29 dB	4000Hz	21.31 dB
1000Hz	24.78 dB	5000Hz	21.07 dB

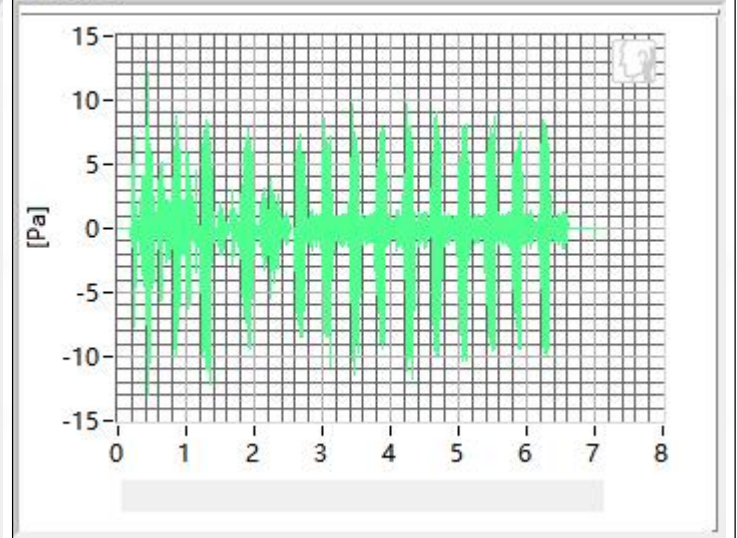
All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 21.07 dB at 5000Hz.

## 4.2 Receive Distortion and Noise 2N WB

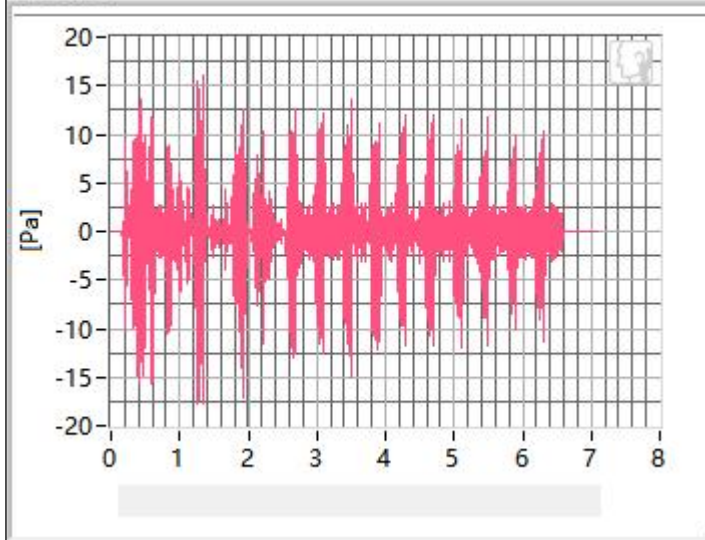
250Hz



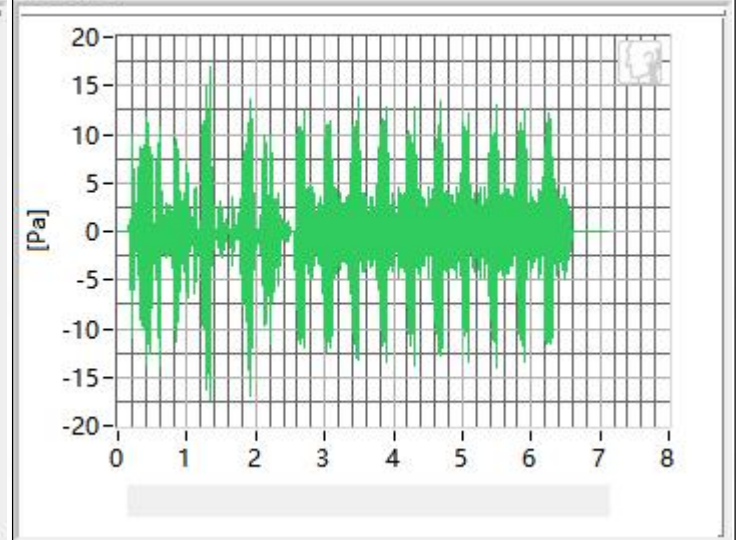
315Hz



400Hz

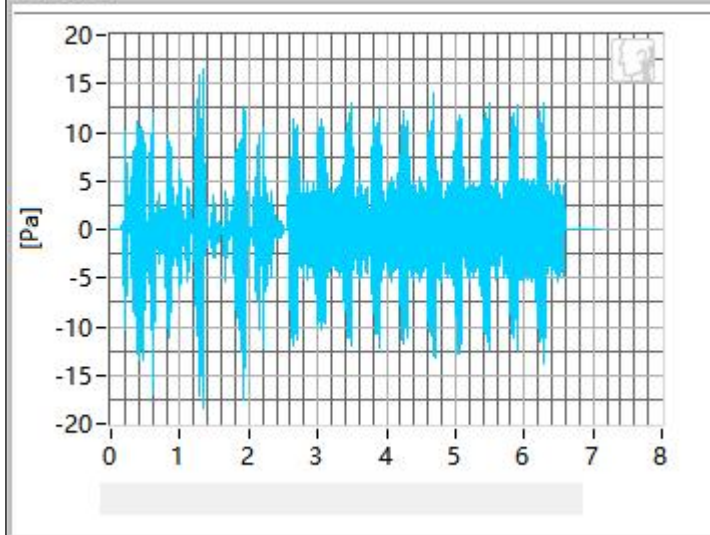


500Hz

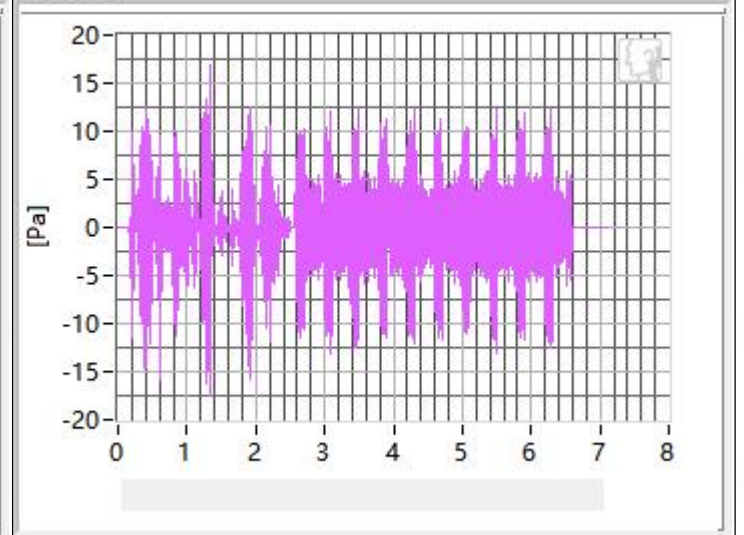




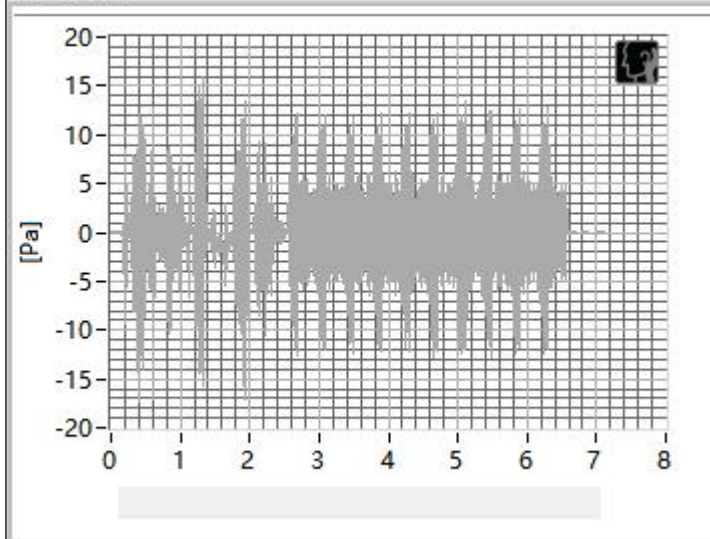
630Hz



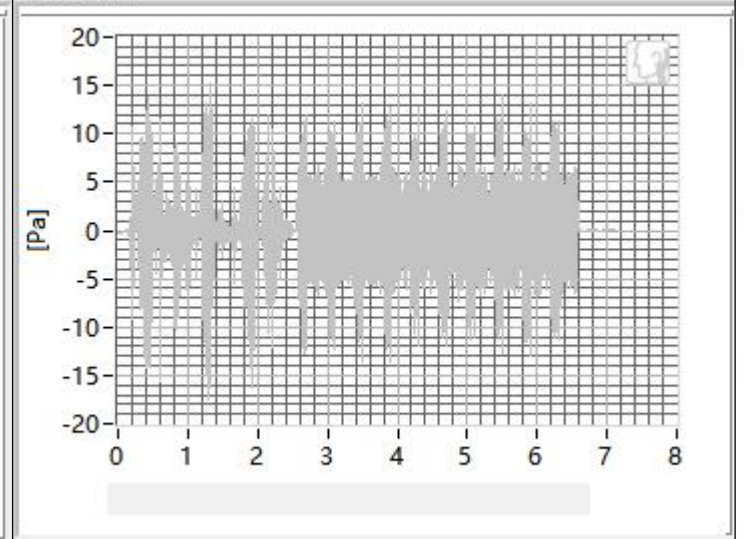
800Hz



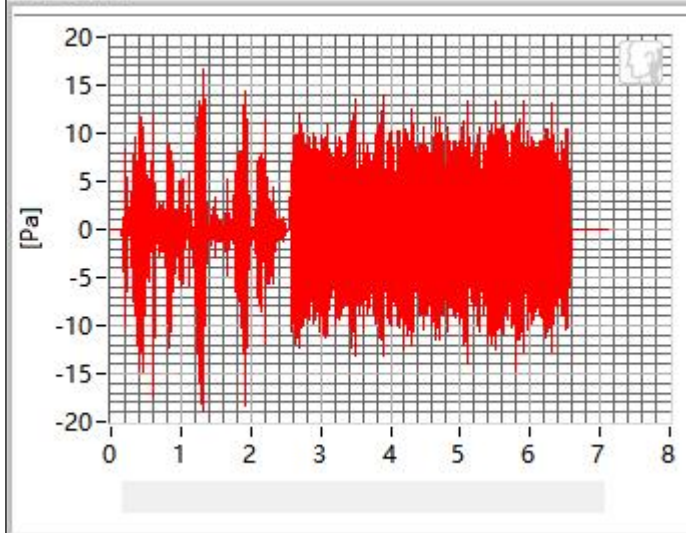
1000Hz



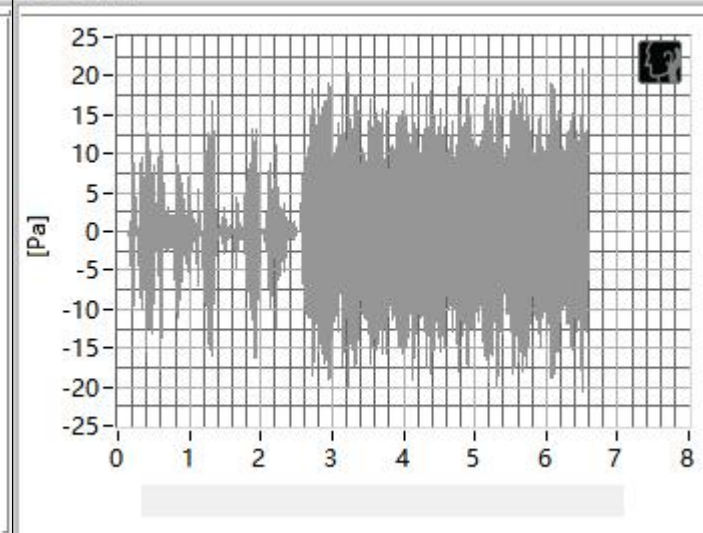
1250Hz



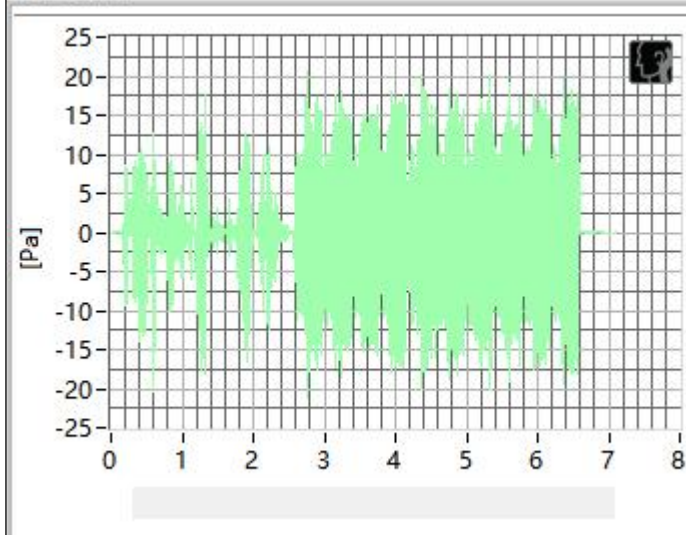
1600Hz



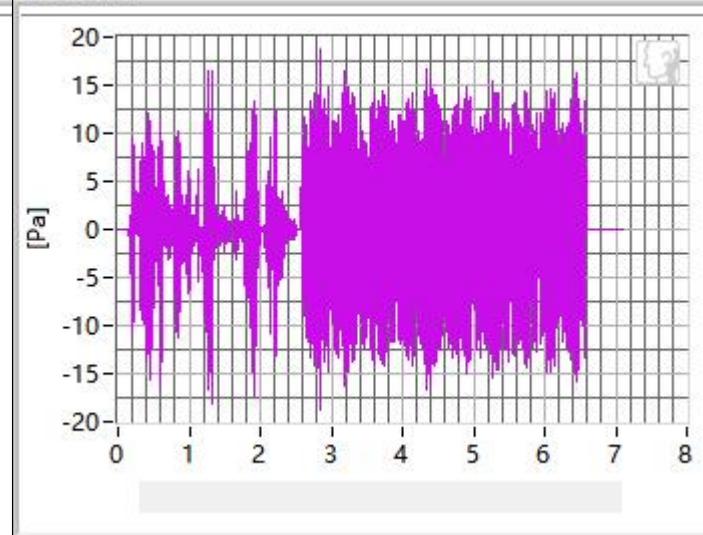
2000Hz



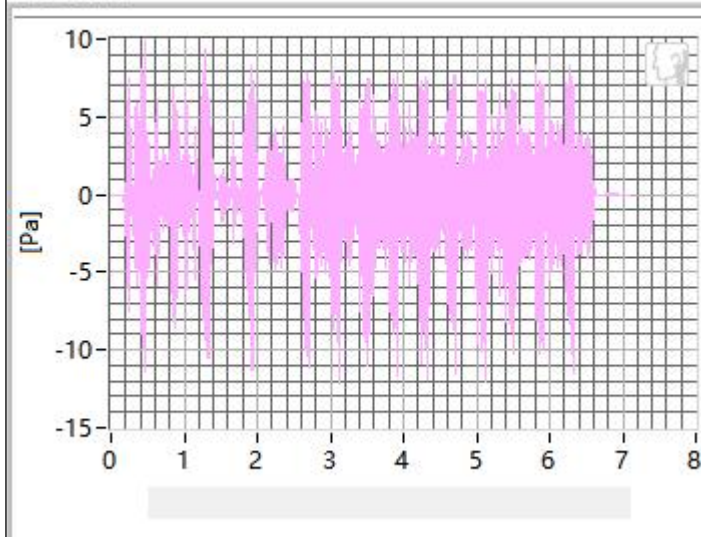
2500Hz



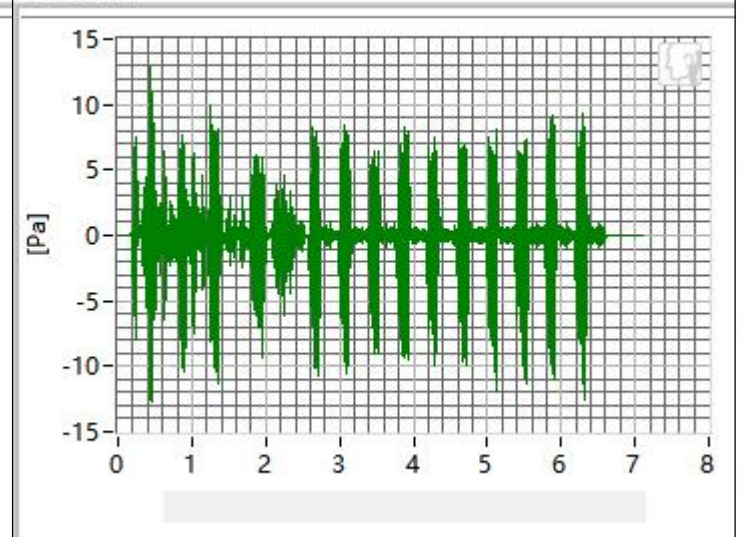
3150Hz



4000Hz



5000Hz

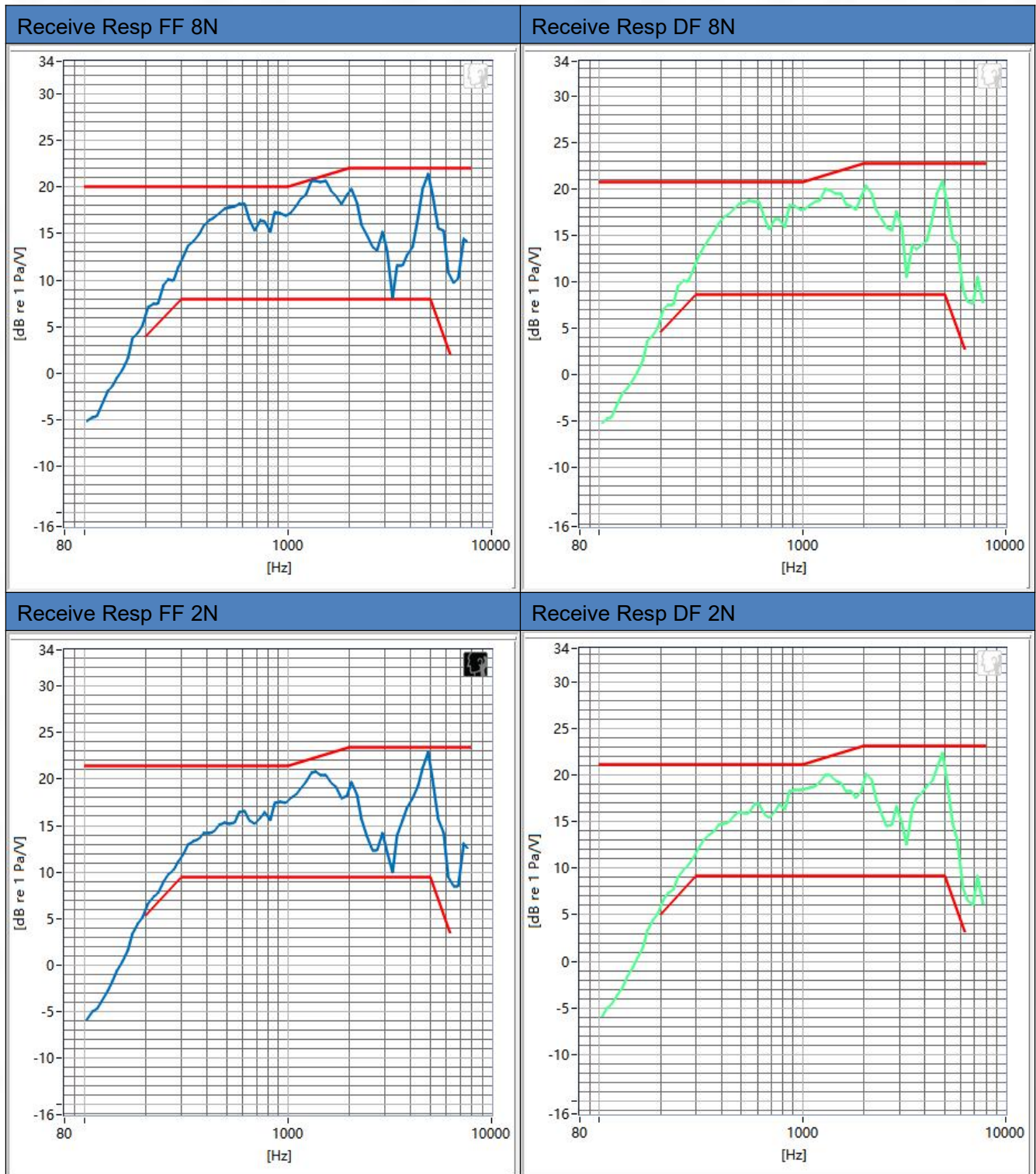


Frequency	SDNR	Frequency	SDNR
250Hz	30.28 dB	1250Hz	21.59 dB
315Hz	29.48 dB	1600Hz	22.41 dB
400Hz	26.84 dB	2000Hz	21.45 dB
500Hz	25.09 dB	2500Hz	20.87 dB
630Hz	25.71 dB	3150Hz	22.16 dB
800Hz	23.57 dB	4000Hz	21.35 dB
1000Hz	22.84 dB	5000Hz	21.27 dB

All SDNRs were greater than 20.0 dB, requirement was met. Smallest SDNR was 21.27 dB at 5000Hz.



### 4.3 Receive Frequency Response





## ANNEX B Test Setup Photo



## ANNEX C CALIBRATION REPORT

Please refer the document "CALIBRATION REPORT.pdf".



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**--END OF REPORT--**