

HAC Receive Volume Control Test Report

For

Applicant Name:	Xwireless LLC
Address:	11565 Old Georgetown Road, Rockville, MD, USA
EUT Name:	Mobile Phone
Brand Name:	Vortex
Model Number:	A24
	Issued By

Company Name:BTF Testing Lab (Shenzhen) Co., Ltd.Address:F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park,
Tantou Community, Songgang Street, Bao'an District, Shenzhen,
China

Report Number: Test Standards: FCC ID: BTF240415R00303 ANSI C63.19:2019 FCC 47 CFR §20.19 TIA-5050:2018 2ADLJ-A24

Test Conclusion: Test Date: Date of Issue: Pass 2024-05-28 to 2024-06-20 2024-06-21

Prepared By:

Zoey Zhang

Zoey Zhang / Project Engineer 2024-06-21 Ryan.CJ / EMC Manage

Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.

Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

Date:

Approved By:

Date:



Revision History		
Version	Issue Date	Revisions Content
Rev_V0	2024-05-30	Original
Rev_V1	2024-06-21	Supplement the test data of VoWIFI
Note:	Once the revision has been replaced by the latest version of the second	n made, then previous versions reports are ion.



Table of Contents

1. Introduction	
1.1 Identification of Testing Laboratory	4
1.2 Identification of the Responsible Testing Location	
1.3 Laboratory Condition	4
1.4 Announcement	4
2. Product Information	5
2.1 Application Information	5
2.2 Manufacturer Information	5
2.3 Factory Information	
2.4 General Description of Equipment under Test (EUT)	5
2.5 Equipment under Test Ancillary Equipment	6
2.6 Technical Information	
3. Summary of Test Results	
3.1 Test Standards	
3.2 Air Interfaces / Bands Indicating Operating Modes	
4. Test Uncertainty	
5. Measurement System	9
5.1 MEASURÉMENT SET-UP	
6. Evaluation of Test	
6.1 RECEIVE VOLUME CONTROL PERFORMANCE	
6.2 RECEIVE DISTORTION AND NOISE PERFORMANCE	11
	12
6.3 RECEIVE ACOUSTIC FREQUENCY RESPONSE PERFORMANCE	12
7. Test Equipment List	14
7. Test Equipment List8. Air Interfaces / Bands used for testing	14 14
 7. Test Equipment List	
 7. Test Equipment List	
 7. Test Equipment List	14 14 15 15 17
 7. Test Equipment List	
 7. Test Equipment List	
 7. Test Equipment List 8. Air Interfaces / Bands used for testing 9. Test Result 9.1 Receive volume control, distortion and noise performance 9.2 Receive acoustic frequency response performance 10. EUT photograph ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB 	14 15 15 15 17 19 20 20
 7. Test Equipment List 8. Air Interfaces / Bands used for testing 9. Test Result 9.1 Receive volume control, distortion and noise performance 9.2 Receive acoustic frequency response performance 10. EUT photograph ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB 1.2 Receive Distortion and Noise 2N NB 	14 15 15 17 17
 7. Test Equipment List 8. Air Interfaces / Bands used for testing 9. Test Result 9.1 Receive volume control, distortion and noise performance 9.2 Receive acoustic frequency response performance 10. EUT photograph ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB 1.2 Receive Distortion and Noise 2N NB 1.3 Receive Frequency Response 	14 14 15 15 17 19 20 20 20 22 25
 7. Test Equipment List	14 14 15 15 15 17 19 20 20 20 22 22 25 26
 7. Test Equipment List	14 15 15 17 19 20 20 22 25 26 28
 7. Test Equipment List	14 15 15 15 17 19 20 20 25 26 28 31
 7. Test Equipment List	14 15 15 15 17 19 20 20 20 20 25 26 26 28 31 32
 7. Test Equipment List. 8. Air Interfaces / Bands used for testing	14 15 15 17 19 20 20 20 26 26 26 28 31 32 34
 7. Test Equipment List 8. Air Interfaces / Bands used for testing 9. Test Result 9.1 Receive volume control, distortion and noise performance 9.2 Receive acoustic frequency response performance 10. EUT photograph ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB 1.2 Receive Distortion and Noise 2N NB 1.3 Receive Frequency Response 2.1 Receive Distortion and Noise 8N NB 2.2 Receive Distortion and Noise 8N NB 3.3 Receive Frequency Response 3.3 Receive Frequency Response 	14 14 15 15 17 19 20 20 20 20 22 25 26 28 31 32 34 37
 7. Test Equipment List	14 14 15 15 17 19 20 20 20 20 22 25 26 28 31 32 34 37 38
 7. Test Equipment List. 8. Air Interfaces / Bands used for testing 9. Test Result. 9.1 Receive volume control, distortion and noise performance. 9.2 Receive acoustic frequency response performance. 10. EUT photograph. ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB. 1.2 Receive Distortion and Noise 2N NB. 1.3 Receive Frequency Response. 2.1 Receive Distortion and Noise 8N NB. 2.2 Receive Distortion and Noise 8N NB. 2.3 Receive Frequency Response. 3.1 Receive Distortion and Noise 8N NB. 2.3 Receive Frequency Response. 3.1 Receive Distortion and Noise 8N NB. 3.2 Receive Distortion and Noise 8N NB. 3.3 Receive Frequency Response. 4.1 Receive Distortion and Noise 8N NB. 3.2 Receive Distortion and Noise 8N NB. 	14 14 15 15 17 19 20 20 20 22 25 26 28 31 32 34 37 38 32
 7. Test Equipment List. 8. Air Interfaces / Bands used for testing. 9. Test Result. 9.1 Receive volume control, distortion and noise performance. 9.2 Receive acoustic frequency response performance. 10. EUT photograph ANNEX A Test Data. 1.1 Receive Distortion and Noise 8N NB. 1.2 Receive Distortion and Noise 2N NB 1.3 Receive Frequency Response. 2.1 Receive Distortion and Noise 8N NB. 2.2 Receive Distortion and Noise 8N NB. 2.3 Receive Frequency Response. 3.1 Receive Distortion and Noise 8N NB. 3.2 Receive Frequency Response. 3.3 Receive Frequency Response. 4.1 Receive Distortion and Noise 8N NB. 3.2 Receive Frequency Response. 3.3 Receive Frequency Response. 3.4 Receive Frequency Response. 3.5 Receive Frequency Response. 3.6 Receive Frequency Response. 3.7 Receive Frequency Response. 3.8 Receive Frequency Response. 3.9 Receive Frequency Response. 3.1 Receive Frequency Response. 3.1 Receive Frequency Response. 3.3 Receive Frequency Response. 3.4 Receive Frequency Response. 3.5 Receive Frequency Response. 3.6 Receive Frequency Response. 3.7 Receive Distortion and Noise 2N NB. 3.8 Receive Frequency Response. 	14 14 15 15 17 19 20 20 20 22 25 26 28 31 32 34 37 38 40 43
 7. Test Equipment List. 8. Air Interfaces / Bands used for testing 9. Test Result. 9.1 Receive volume control, distortion and noise performance. 9.2 Receive acoustic frequency response performance. 10. EUT photograph. ANNEX A Test Data 1.1 Receive Distortion and Noise 8N NB. 1.2 Receive Distortion and Noise 2N NB. 1.3 Receive Frequency Response. 2.1 Receive Distortion and Noise 8N NB. 2.2 Receive Distortion and Noise 8N NB. 2.3 Receive Frequency Response. 3.1 Receive Distortion and Noise 8N NB. 2.3 Receive Frequency Response. 3.1 Receive Distortion and Noise 8N NB. 3.2 Receive Distortion and Noise 8N NB. 3.3 Receive Frequency Response. 4.1 Receive Distortion and Noise 8N NB. 3.2 Receive Distortion and Noise 8N NB. 	14 14 15 15 17 19 20 20 20 22 25 26 28 31 32 34 37 38 40 43 44



1. Introduction

1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.	
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, 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:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Description:	All measurement facilities used to collect the measurement data are located at F101,201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

1.3 Laboratory Condition

Ambient Temperature:	18℃ to 25℃
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:	Xwireless LLC
Address:	11565 Old Georgetown Road, Rockville, MD, USA

2.2 Manufacturer Information

Company Name:	Xwireless LLC
Address:	11565 Old Georgetown Road, Rockville, MD, USA

2.3 Factory Information

Company Name:	ZTECH COMMNICATION(SZ) CO LTD
Address:	FL 7 BLOCK D BAO' AN ZHIGU INNOVATION PARK YIN' TIAN ROAD NO.4 XI' XIANG STR' BAO' AN DISTRICT SZ CHINA

2.4 General Description of Equipment under Test (EUT)

EUT Name	Mobile Phone
Under Test Model Name	A24
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software and Firmware Version	N/A
Dimensions (Approx.)	164*75*10mm
Weight (Approx.)	198g



2.5 Equipment under Test Ancillary Equipment

	Battery	Battery	
	Brand Name	Vortex	
	Model No.	A24	
Ancillary Equipment 1	Serial No.	N/A	
	Capacity	Typical capacity: 3000mAh	
	Rated Voltage	3.8 V	

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS 850/1900
	3G Network WCDMA/HSDPA/HSUPA Band 2/4/5
	4G Network FDD LTE Band 2/4/5/12/13/25/26/66/71 TDD LTE Band 41
	2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40)
	BT (EDR+BLE)



3. Summary of Test Results

3.1 Test Standards

No.	Identity	Document Title
1	ANSI 062 10 2010	American National Standard for Methods of Measurement of Compatibility
	ANSI C63.19-2019	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	Туре	Simultaneous Transmitter	Name of Service
	850	VO	WLAN & BT	CMRS Voice
GSM	1900	VO	WLAN & BT	CMRS Voice
	GPRS/EGPRS	DT	N/A	N/A
	Band II	VO	WLAN & BT	CMRS Voice
	Band IV	VO	WLAN & BT	CMRS Voice
WCDMA	Band V	VO	WLAN & BT	CMRS Voice
	HSPA	DT	N/A	N/A
	Band 2	VD	WLAN & BT	VoLTE
	Band 4	VD	WLAN & BT	VoLTE
	Band 5	VD	WLAN & BT	VoLTE
	Band 12	VD	WLAN & BT	VoLTE
	Band 13	VD	WLAN & BT	VoLTE
LTE	Band 25	VD	WLAN & BT	VoLTE
	Band 26	VD	WLAN & BT	VoLTE
	Band 41	VD	WLAN & BT	VoLTE
	Band 66	VD	WLAN & BT	VoLTE
	Band 71	VD	WLAN & BT	VoLTE
WLAN	2.4g	DT	WWAN	N/A
BT	2450	DT	WWAN	N/A

NA: Not Applicable

VO: Voice Only VD: CMRS and IP Voice Service over Digital Transport

DT: Digital Transport Only

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

Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



4. Test Uncertainty

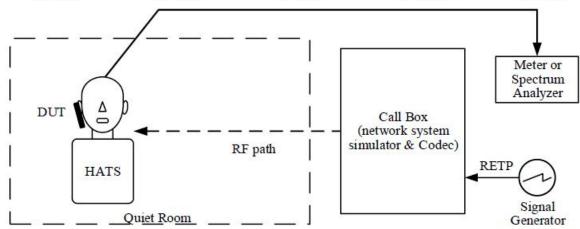
UNCERTAINTY EVA	LUATION FOR AU	DIO HAC I	MEASURE	MENT	
Uncertainty Component	Tol (+- %)	Prob. Dist.	Div.	Uncertainty (dB)	Uncertainty (%)
	Measurement Sys	stem			
RF reflections	0.1	R	√3	0.06	
Acoustic noise	0.1	R	√3	0.06	
Probe coil sensitivity	0.49	R	√3	0.28	
Reference signal level	0.25	R	√3	0.14	
Positioning accuracy	0.4	R	√3	0.23	
Cable loss	0.1	N	2	0.05	
Frequency analyzer	0.15	R	√3	0.09	
System repeatability	0.2	N	1	0.20	
Repeatability of the WD	0.4	N	1	0.40	
Combined Standard Uncertainty		N	1	0.61	
Expanded uncertainty (confidence level of 95%,k = 2)		N	K=2	1.22	15.05
REPORTED Expanded uncertainty (confidence level of 95%, k = 2)		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 ≥ 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 ≥ 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 test Annex A.

Remark: The report only reflects the test data plots of worst mode (for GSM 1900, WCDMA Band 5, LTE Band 5, 2.4G WIFI)

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 1900, WCDMA Band 5, LTE Band 5, 2.4G WIFI)

6.2.4 Test Conclusion

PASS.



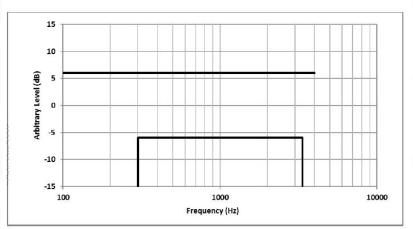
6.3 RECEIVE ACOUSTIC FREQUENCY RESPONSE PERFORMANCE

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.

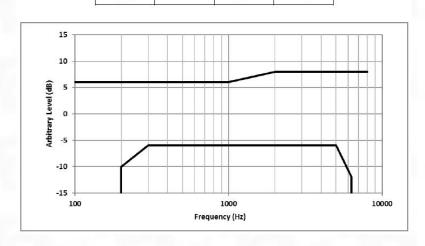
Lower Limit Frequency (Hz)	Lower Limit (dB)	Upper Limit Frequency (Hz)	Upper Limit (dB)		
300	-6	100	+6		
3400	-6	4000	+6		





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		



Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

Page 12 of 44



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 1900, WCDMA Band 5, LTE Band 5, 2.4G WIFI)

6.3.4 Test Conclusion

PASS.



7. Test Equipment List

Description	Manufacturer	Model	Internal number	Cal. Date	Cal. Due
WIDEBAND RADIO COMMU NICATION TESTER	ROHDE&SCHWARZ	CMW500	BTF-EM-023	2023/11/16	2024/11/15
Conditioning Amplifier	Brule&Kjaer	Туре -2690030	2690030 BTF-EM-146		2025/1/29
Head and Torso Simulator	Brule&Kjaer	Type 4128C	BTF-EM-148	2024/1/30	2025/1/29
Sound Calibration	Brule&Kjaer	Туре 4231	BTF-EM-149	2024/1/30	2025/1/29
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)		AMR-NB	4.75/12.2
	Band 2/4/5	AMR-WB	6.6/23.85
	Band 2/4/5/12/13/25/26/	AMR-NB	4.75/12.2
VoLTE	41/66/71	AMR-WB	6.6/23.85
	240	AMR-NB	4.75/12.2
VoWIFI	2.4G	AMR-WB	6.6/23.85



9. Test Result

9.1 Receive volume control, distortion and noise performance

I GSM850 H0988.6MH2 / / Max EFR NB MB MB 22.8 3150 22.4 20.00 97.4 20.74 0.00 14.74 2 PG1800 6107902.MBH2 / / Max EFR NB 24.0 3150 21.4 20.0 90.8 20.00 60.0 13.68 3 WCDMA Bard II 96301907.6MH2 / 1 12.0 Max AMR NB 24.0 20.00 90.8 20.9 60.0 13.69 3 WCDMA Bard II 96301907.6MH2 / 12.00 Max AMR NB 24.0 20.00 90.00 90.00 90.00 90.00 10.00 14.90 4 WCDMA Bard II 11217172.4MH2 / 12.00 Max AMR NB 24.0 21.00 90.07 20.7 6.00 14.02 5 WCDMA Bard V 11230 Max AMR NB 24.0 21.00<	Plot No.	Mode	Channel/Freq.	BW	Codec B itrate	Volume Level	Codec T ype	Codec B andwidt h	Mountin g Force (N)	Freque ncy(H Z)	Min PN- SDNR(d B)	PN-SDN R Limb (dB)	Signal Q uality (d B)	Convers ational Gain	FCC CG Limit (d B)	CG Mar gin (dB)	Verdi ct
Image: border index		0014050	100/000 01/11	1	1	Max	EFR										
2 PC51900 810'190.8M+z // // Max EFR NB 2.N 310 2.0.77 2.0.00 81.19 10.19 6.0.0 13.19 3 WCDMA Band II 95381'107.6M*z // 12.00 Max AMR NB 2.N 2.000 20.00 90.89 2.000 40.00 14.89 4 WCDMA Band II 95381'107.6M*z // 2.285 Max AMR WB 2.N 2.000 90.07 2.000 40.07 2.000 14.07 4 WCDMA Band IV 13'12'171.2 AM*z // 12.00 Max AMR NB 8.N 3150 21.61 2.000 90.07 2.000 10.61 14.12 4 WCDMA Band IV 13'12'1714.4M*z // 12.20 Max AMR NB 2.N 2.000 90.14 2.102 2.000 14.72 5 WCDMA Band IV 112.20 Max AMR NB 2.N 2.000 2.00	1	GSM850	190/836.6MHZ	1	1	Max	EFR	NB	2N	3150	21.04	20.00	89.68	19.68	6.00	13.68	Pass
Image: bord bord bord bord bord bord bord bord	_	D004000	040/4000 0MU	1	1	Max	EFR	NB	8N	3150	21.42	20.00	90.37	20.37	6.00	14.37	Dere
3 WCDMA Band II 9538/1907.6MHz // 12.0 Max AMR NB 2N 2507 20.0 88.7 18.7 6.00 13.37 4 // 23.55 Max AMR WB 8N 3150 21.11 20.00 90.90 20.00 90.90 20.00 90.07 20.07 6.00 14.367 4 // 12.20 Max AMR WB 8N 3150 21.00 90.00 90.07 20.07 6.00 16.55 1 12.20 Max AMR NB 2N 2500 21.00 90.07 20.07 6.00 16.55 1 12.20 Max AMR NB 2N 2500 20.41 20.00 90.72 20.75 6.00 16.75 1 22.35 Max AMR NB 2N 2500 20.41 20.00 90.52 20.02 6.00 16.351 1 22.35 Ma	2	PCS1900	810/1909.8MHz	1	1	Max	EFR	NB	2N	3150	20.77	20.00	89.19	19.19	6.00	13.19	Pass
3 WCDMA Band II 9538/107.0MHz / 23.8 Max AMR WB 8N 3150 21.11 20.00 90.96 20.90 60.00 14.81 4 // 23.85 Max AMR WB 2N 29.00 20.00 90.07 20.07 6.00 14.27 4 WCDMA Band IV // 12.20 Max AMR NB 2N 25.00 20.00 90.07 20.07 6.00 14.20 4 1312/1712.4MHz // 12.20 Max AMR NB 2N 3150 21.66 20.00 90.75 20.75 6.00 14.27 5 WCDMA Band V 4132/826.4MHz // 12.20 Max AMR NB 2N 2500 20.01 20.00 90.25 20.22 6.00 14.37 6 // 12.00 Max AMR NB 2N 2500 20.77 20.00 90.55 20.55 6.00				1	12.20	Max	AMR	NB	8N	3150	20.99	20.00	90.89	20.89	6.00	14.89	
Image: border in the state in the			0500/4007 0144	1	12.20	Max	AMR	NB	2N	2500	20.67	20.00	89.87	19.87	6.00	13.87	
4 MCDMA Band IV 1312/1712.4MHz / 1220 Max AMR NB 2N 2500 21.32 20.00 91.05 21.05 6.00 15.05 4 MCDMA Band IV 1312/1712.4MHz / 12.20 Max AMR NB 2N 2500 21.10 20.00 91.04 21.64 6.00 14.12 / 23.85 Max AMR WB 2N 3750 21.06 20.00 90.25 20.27 6.00 14.20 / 12.20 Max AMR WB 2N 2500 20.44 20.00 90.25 20.27 6.00 14.20 / 12.20 Max AMR NB 2N 2500 20.44 20.00 80.47 19.47 6.00 13.44 / 12.20 Max AMR NB 20.00 20.07 20.00 80.44 18.46 6.00 13.44 / 23.85 Max AMR<	3	WCDMA Band II	9538/1907.6MHZ	/	23.85	Max	AMR	WB	8N	3150	21.11	20.00	90.96	20.96	6.00	14.96	Pass
4 WCDMA Band IV 1312/1712.4MHz / 1220 Max AMR NB 2N 2500 21.10 20.00 90.12 20.12 6.00 15.41 / 23.85 Max AMR WB 8N 3150 21.66 20.00 90.14 21.44 6.00 15.41 5 WCDMA Band V 4132/626.4MHz / 12.20 Max AMR NB 2N 2500 20.14 20.00 90.22 20.00 14.22 6 // 12.20 Max AMR NB 2N 2500 20.44 20.00 90.52 20.00 14.20 14.27 7 23.85 Max AMR NB 2N 2500 20.01 80.64 14.60 13.44 7 23.85 Max AMR NB 2N 1500 21.60 90.65 20.66 60.01 14.60 7 16001900.MHz 200Hz_0PSK_150 12.20 Max				1	23.85	Max	AMR	WB	2N	2500	20.96	20.00	90.07	20.07	6.00	14.07	
4 WCDAA Band W 13/21/712.4MHz / 23.85 Max AMR WB 8N 3160 21.66 20.00 91.64 21.64 6.00 16.64 7 23.85 Max AMR WB 2N 3150 21.02 20.00 90.75 20.75 6.00 14.75 5 WCDMA Band V 4132/262.4MHz / 12.00 Max AMR NB 2N 2500 20.01 90.22 20.22 6.00 14.42 6 // 12.00 Max AMR NB 2N 2500 20.01 90.01 90.15 20.01 13.47 7 USDMAA Band V 12.00 Max AMR NB 2N 2500 20.78 20.00 90.84 19.44 6.00 13.44 7 USMF2_OPSK_10 12.00 Max AMR NB 2N 150 21.66 20.00 90.65 20.65 16.00 14.45 7				/	12.20	Max	AMR	NB	8N	3150	21.32	20.00	91.05	21.05	6.00	15.05	
index index <th< td=""><td></td><td></td><td>4040/4740 4041-</td><td>1</td><td>12.20</td><td>Max</td><td>AMR</td><td>NB</td><td>2N</td><td>2500</td><td>21.10</td><td>20.00</td><td>90.12</td><td>20.12</td><td>6.00</td><td>14.12</td><td>Dara</td></th<>			4040/4740 4041-	1	12.20	Max	AMR	NB	2N	2500	21.10	20.00	90.12	20.12	6.00	14.12	Dara
Number Number<	4	WCDIMA Band IV	1312/1712.4MHz	/	23.85	Max	AMR	WB	8N	3150	21.66	20.00	91.64	21.64	6.00	15.64	Pass
$ \ \ \ \ \ \ \ \ \ \ \ \ \$				/	23.85	Max	AMR	WB	2N	3150	21.02	20.00	90.75	20.75	6.00	14.75	
5 WCDMA Band V 4132/826.4MHz / 23.85 Max AMR WB 8N 2500 21.07 20.00 90.56 20.56 6.00 14.55 6 // 23.85 Max AMR WB 2N 2500 20.78 20.00 88.84 19.84 6.00 13.84 6 J19100/1900.0MHz 20MHz_QPSK_150 12.20 Max AMR NB 8N 3150 21.08 20.00 89.94 19.94 6.00 14.73 7 LTE FDD Band 2 19100/1900.0MHz 20MHz_QPSK_150 12.20 Max AMR NB 8N 3150 22.06 20.00 90.86 20.86 6.00 14.61 208 2001/1720.0MHz 20014/z_QPSK_150 12.20 Max AMR NB 8N 2160 20.00 90.65 20.65 6.00 14.85 23.85 Max AMR NB 2N 3150 21.28 20.00 90.85 20.86 <td></td> <td></td> <td></td> <td>/</td> <td>12.20</td> <td>Max</td> <td>AMR</td> <td>NB</td> <td>8N</td> <td>2500</td> <td>20.91</td> <td>20.00</td> <td>90.22</td> <td>20.22</td> <td>6.00</td> <td>14.22</td> <td></td>				/	12.20	Max	AMR	NB	8N	2500	20.91	20.00	90.22	20.22	6.00	14.22	
Image: book of the temp of temp	_		4400/000 4941	/	12.20	Max	AMR	NB	2N	2500	20.44	20.00	89.47	19.47	6.00	13.47	
A LTE FDD Band 2 19100/1900.0MHz 20MHz_QPSK_1-6 1220 Max AMR NB 2N 3150 21.86 20.00 90.73 20.73 6.00 14.73 20MHz_QPSK_1 1220 Max AMR NB 2N 3150 21.09 20.00 89.94 19.94 6.00 13.94 23.85 Max AMR WB 2N 1500 21.05 20.00 90.66 20.66 6.00 14.86 23.85 Max AMR WB 2N 1600 21.25 20.00 90.66 20.65 6.00 14.65 23.85 Max AMR NB 2N 3150 22.46 20.00 89.88 19.88 6.00 13.88 20.050/1720.0MHz 20MHz_QPSK_10 12.20 Max AMR NB 2N 3150 21.38 20.00 89.88 19.88 6.00 13.38 3.8 LTE FDD Band 5 20450/829.0MHz 10MHz_QPSK_126 <td< td=""><td>5</td><td>WCDMA Band V</td><td>4132/826.4MHZ</td><td>1</td><td>23.85</td><td>Max</td><td>AMR</td><td>WB</td><td>8N</td><td>2500</td><td>21.07</td><td>20.00</td><td>90.56</td><td>20.56</td><td>6.00</td><td>14.56</td><td>Pass</td></td<>	5	WCDMA Band V	4132/826.4MHZ	1	23.85	Max	AMR	WB	8N	2500	21.07	20.00	90.56	20.56	6.00	14.56	Pass
6 LTE FDD Band 2 19100/1900.0MHz 20MHz_OPSK_1_50 12.20 Max AMR NB 2N 3150 21.00 20.00 89.94 19.94 6.00 13.94 23.85 Max AMR WB BN 3150 22.06 20.00 90.66 20.86 6.00 14.66 23.85 Max AMR WB 2N 1600 21.25 20.00 90.65 20.65 6.00 14.65 23.85 Max AMR NB 2N 3150 22.46 20.00 90.65 20.65 6.00 14.65 20.050/1720.0MHz 20MHz_OPSK_10 12.20 Max AMR NB 2N 3150 21.28 20.00 89.88 19.88 6.00 13.88 20.050/1720.0MHz 20MHz_OPSK_10 12.20 Max AMR NB 2N 3150 21.38 20.00 89.38 19.88 6.00 13.84 21.20 Max AMR NB				/	23.85	Max	AMR	WB	2N	2500	20.78	20.00	89.84	19.84	6.00	13.84	
6 LTE FDD Band 2 1910/1900.0MHz 20MHz_QPSK_1 9 3.88 AMR WB 8N 3150 22.06 20.00 90.86 20.86 6.00 14.86 23.85 Max AMR WB 2N 1600 21.25 20.00 90.01 20.01 6.00 14.86 7 LTE FDD Band 4 20050/1720.0MHz 20050/1720.0MHz 200Hz_QPSK_10 12.20 Max AMR NB 8N 3150 22.46 20.00 90.65 20.65 6.00 14.65 20050/1720.0MHz 20050/1720.0MHz 200Hz_QPSK_10 12.20 Max AMR NB 2N 3150 21.28 20.00 89.88 19.88 6.00 14.79 23.85 Max AMR NB 2N 3150 21.28 20.00 89.88 19.88 6.00 14.79 23.85 Max AMR NB 2N 2500 22.31 20.00 89.81 19.88 6.00 14.86					12.20	Max	AMR	NB	8N	3150	21.86	20.00	90.73	20.73	6.00	14.73	
$ \left[\begin{array}{c c c c c c c c c c c c c c c c c c c $					12.20	Max	AMR	NB	2N	3150	21.09	20.00	89.94	19.94	6.00	13.94	
A LTE FDD Band 4 20050/1720.0MHz 20MHz_QPSK_10 12.20 Max AMR NB 8N 3150 22.46 20.00 90.65 20.65 6.00 14.65 12.20 Max AMR NB 2N 3150 21.28 20.00 98.88 19.88 6.00 13.88 23.85 Max AMR VB 8N 2500 22.31 20.00 90.79 20.79 6.00 14.65 23.85 Max AMR VB 8N 2500 21.31 20.00 90.79 20.79 6.00 13.92 4 HTE FDD Band 5 20450/829.0MHz 12.20 Max AMR NB 8N 2500 21.77 20.00 90.16 20.16 6.00 14.65 23.85 Max AMR NB 8N 2500 21.77 20.00 90.16 20.16 6.00 14.65 23.85 Max AMR NB 8N 2500	6	LIE FDD Band 2	19100/1900.0MHz	20MHZ_QPSK_1_50	23.85	Max	AMR	WB	8N	3150	22.06	20.00	90.86	20.86	6.00	14.86	Pass
$ \frac{1}{10} + \frac{1}{10}$					23.85	Max	AMR	WB	2N	1600	21.25	20.00	90.01	20.01	6.00	14.01	
7 LTE FDD Band 4 20050/1720.0MHz 20MHz_QPSK_1_0 23.85 Max AMR WB 8N 2500 22.31 20.00 90.79 20.79 6.00 14.79 23.85 Max AMR WB 2N 3150 21.39 20.00 89.92 19.92 6.00 13.92 8 LTE FDD Band 5 20450/829.0MHz 12.20 Max AMR NB 8N 2500 21.77 20.00 89.92 19.92 6.00 14.76 12.20 Max AMR NB 8N 2500 21.77 20.00 89.92 19.92 6.00 14.76 12.20 Max AMR NB 2N 2500 21.77 20.00 89.38 19.38 6.00 13.38 20450/829.0MHz 10MHz_QPSK_125 Max AMR NB 2N 2500 20.97 20.00 89.71 19.71 6.00 14.58 2385 Max AMR NB 2					12.20	Max	AMR	NB	8N	3150	22.46	20.00	90.65	20.65	6.00	14.65	
Image: border	_		00050/4700 0040		12.20	Max	AMR	NB	2N	3150	21.28	20.00	89.88	19.88	6.00	13.88	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		LIE FDD Band 4	20050/1720.0MHz	20MHZ_QPSK_1_0	23.85	Max	AMR	WB	8N	2500	22.31	20.00	90.79	20.79	6.00	14.79	Pass
$ \left[12.0 \\ 12.$					23.85	Max	AMR	WB	2N	3150	21.39	20.00	89.92	19.92	6.00	13.92	
8 LTE FDD Band 5 20450/829.0MHz 10MHz_QPSK_125 23.85 Max AMR WB 8N 2500 21.89 20.00 90.58 20.58 6.00 14.58 9 LTE FDD Band 12 23090/707.5MHz 10MHz_QPSK_125 12.20 Max AMR WB 8N 2500 20.97 20.00 89.71 19.71 6.00 13.71 9 LTE FDD Band 12 23090/707.5MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 2500 20.97 20.00 90.92 20.92 6.00 14.92 12.20 Max AMR NB 8N 2500 21.85 20.00 90.06 20.00 6.00 14.92 12.20 Max AMR NB 8N 3150 22.62 20.00 90.102 21.30 6.00 15.30 23.85 Max AMR WB 8N 3150 22.09 20.00 90.12 21.20 6.00 15.30 <td></td> <td></td> <td></td> <td></td> <td>12.20</td> <td>Max</td> <td>AMR</td> <td>NB</td> <td>8N</td> <td>2500</td> <td>21.77</td> <td>20.00</td> <td>90.16</td> <td>20.16</td> <td>6.00</td> <td>14.16</td> <td></td>					12.20	Max	AMR	NB	8N	2500	21.77	20.00	90.16	20.16	6.00	14.16	
Image: bit			00450/000 0041		12.20	Max	AMR	NB	2N	2500	20.85	20.00	89.38	19.38	6.00	13.38	
9 LTE FDD Band 12 23090/707.5MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 2500 22.59 20.00 90.92 20.92 6.00 14.92 12.20 Max AMR NB 2N 3150 21.85 20.00 90.92 20.92 6.00 14.92 12.20 Max AMR NB 2N 3150 21.85 20.00 90.92 20.92 6.00 14.92 23.85 Max AMR NB 8N 3150 22.62 20.00 91.30 21.30 6.00 15.30 23.85 Max AMR WB 8N 3150 22.09 20.00 90.12 20.12 6.00 14.12 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 1600 22.87 20.00 90.35 20.35 6.00 14.35 10 23230/782.0MHz 10MHz_QPSK_125 12.20 <td>8</td> <td>LIE FDD Band 5</td> <td>20450/829.0MHZ</td> <td>10MHZ_QPSK_1_25</td> <td>23.85</td> <td>Max</td> <td>AMR</td> <td>WB</td> <td>8N</td> <td>2500</td> <td>21.89</td> <td>20.00</td> <td>90.58</td> <td>20.58</td> <td>6.00</td> <td>14.58</td> <td>Pass</td>	8	LIE FDD Band 5	20450/829.0MHZ	10MHZ_QPSK_1_25	23.85	Max	AMR	WB	8N	2500	21.89	20.00	90.58	20.58	6.00	14.58	Pass
9 LTE FDD Band 12 23090/707.5MHz 10MHz_QPSK_125 12.20 Max AMR NB 2N 3150 21.85 20.00 90.06 20.06 6.00 14.06 23.85 Max AMR WB 8N 3150 22.62 20.00 91.30 21.30 6.00 15.30 23.85 Max AMR WB 8N 3150 22.09 20.00 90.12 20.12 6.00 14.06 23.85 Max AMR WB 2N 3150 22.09 20.00 90.12 20.12 6.00 14.12 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 1600 22.87 20.00 91.22 21.22 6.00 15.22 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 2N 2500 21.74 20.00 90.35 20.35 6.00 14.35 </td <td></td> <td></td> <td></td> <td></td> <td>23.85</td> <td>Max</td> <td>AMR</td> <td>WB</td> <td>2N</td> <td>2500</td> <td>20.97</td> <td>20.00</td> <td>89.71</td> <td>19.71</td> <td>6.00</td> <td>13.71</td> <td></td>					23.85	Max	AMR	WB	2N	2500	20.97	20.00	89.71	19.71	6.00	13.71	
9 LTE FDD Band 12 23090/707.5MHz 10MHz_QPSK_125 23.85 Max AMR WB 8N 3150 22.62 20.00 91.30 21.30 6.00 15.30 23.85 Max AMR WB 8N 3150 22.62 20.00 91.30 21.30 6.00 15.30 10 LTE FDD Band 13 23230/782.0MHz 12.20 Max AMR NB 8N 1600 22.87 20.00 90.12 21.22 6.00 15.22 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 1600 22.87 20.00 91.32 21.22 6.00 15.22 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 2N 2500 21.74 20.00 90.35 20.35 6.00 14.35 23.85 Max AMR WB 8N 1600 22.95 20.00					12.20	Max	AMR	NB	8N	2500	22.59	20.00	90.92	20.92	6.00	14.92	
Image: biological definition of the state of th			00000/707 5141		12.20	Max	AMR	NB	2N	3150	21.85	20.00	90.06	20.06	6.00	14.06	
10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 8N 1600 22.87 20.00 91.22 21.22 6.00 15.22 10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 Max AMR NB 2N 2500 21.74 20.00 90.35 20.35 6.00 14.35 23.85 Max AMR WB 8N 1600 22.95 20.00 91.36 21.36 6.00 15.36	9	LIE FDD Band 12	23090/707.5MHZ	10MHZ_QPSK_1_25	23.85	Max	AMR	WB	8N	3150	22.62	20.00	91.30	21.30	6.00	15.30	Pass
10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_125 12.20 Max AMR NB 2N 2500 21.74 20.00 90.35 20.35 6.00 14.35 23.85 Max AMR WB 8N 1600 22.95 20.00 91.36 21.36 6.00 15.36					23.85	Max	AMR	WB	2N	3150	22.09	20.00	90.12	20.12	6.00	14.12	
10 LTE FDD Band 13 23230/782.0MHz 10MHz_QPSK_1_25 23.85 Max AMR WB 8N 1600 22.95 20.00 91.36 21.36 6.00 15.36					12.20	Max	AMR	NB	8N	1600	22.87	20.00	91.22	21.22	6.00	15.22	
23.85 Max AMR WB 8N 1600 22.95 20.00 91.36 21.36 6.00 15.36					12.20	Max	AMR	NB	2N	2500	21.74	20.00	90.35	20.35	6.00	14.35	
23.85 Max AMR WB 2N 2500 21.63 20.00 90.92 20.92 6.00 14.92	10	LIE FDD Band 13	23230/782.0MHz	10MHz_QPSK_1_25	23.85	Max	AMR	WB	8N	1600	22.95	20.00	91.36	21.36	6.00	15.36	Pass
					23.85	Max	AMR	WB	2N	2500	21.63	20.00	90.92	20.92	6.00	14.92	
12.20 Max AMR NB 8N 2500 22.94 20.00 91.14 21.14 6.00 15.14					12.20	Max	AMR	NB	8N	2500	22.94	20.00	91.14	21.14	6.00	15.14	
12.20 Max AMR NB 2N 3150 21.79 20.00 89.82 19.82 6.00 13.82					12.20	Max	AMR	NB	2N	3150	21.79	20.00	89.82	19.82	6.00	13.82	
11 LTE FDD Band 25 26590/1905.0MHz 20MHz_QPSK_1_99 23.85 Max AMR WB 8N 2500 23.04 20.00 91.23 21.23 6.00 15.23	11	LIE FDD Band 25	26590/1905.0MHz	20MHz_QPSK_1_99	23.85	Max	AMR	WB	8N	2500	23.04	20.00	91.23	21.23	6.00	15.23	Pass
23.85 Max AMR WB 2N 3150 21.96 20.00 90.08 20.08 6.00 14.08					23.85	Max	AMR	WB	2N	3150	21.96	20.00	90.08	20.08	6.00	14.08	



Plot No.	Mode	Channel/Freq.	BW	Codec B itrate	Volume Level	Codec T ype	Codec B andwidt h	Mountin g Force (N)	Freque ncy(H Z)	Min PN- SDNR(d B)	PN-SDN R Limb (dB)	Signal Q uality (d B)	Convers ational Gain	FCC CG Limit (d B)	CG Mar gin (dB)	Verdi ct
				12.20	Max	AMR	NB	8N	3150	22.86	20.00	91.85	21.85	6.00	15.85	
12		26965/841.5MHz		12.20	Max	AMR	NB	2N	1600	21.93	20.00	90.37	20.37	6.00	14.37	Pass
12	LTE FDD Band 26	20905/641.510102	15MHz_QPSK_1_0	23.85	Max	AMR	WB	8N	3150	22.91	20.00	92.16	22.16	6.00	16.16	Pass
				23.85	Max	AMR	WB	2N	2500	22.24	20.00	90.62	20.62	6.00	14.62	
				12.20	Max	AMR	NB	8N	3150	21.98	20.00	91.41	21.41	6.00	15.41	
13	LTE TDD Band 41	41490/2680.0MHz		12.20	Max	AMR	NB	2N	3150	21.06	20.00	90.21	20.21	6.00	14.21	Pass
13	LIE IDD Band 41	41490/2680.0MHz	20MHz_QPSK_1_50	23.85	Max	AMR	WB	8N	1250	22.08	20.00	91.95	21.95	6.00	15.95	Pass
				23.85	Max	AMR	WB	2N	3150	21.19	20.00	90.04	20.04	6.00	14.04]
			20MHz_QPSK_1_0	12.20	Max	AMR	NB	8N	3150	23.11	20.00	92.07	22.07	6.00	16.07	– Pass
		132072/1720MHz		12.20	Max	AMR	NB	2N	2000	22.72	20.00	91.26	21.26	6.00	15.26	
14	LTE FDD Band 66	132072/1720MHZ		23.85	Max	AMR	WB	8N	3150	23.25	20.00	92.34	22.34	6.00	16.34	
				23.85	Max	AMR	WB	2N	3150	22.99	20.00	91.76	21.76	6.00	15.76	
				12.20	Max	AMR	NB	8N	3150	23.01	20.00	91.61	21.61	6.00	15.61	
45		400070/000 00411-		12.20	Max	AMR	NB	2N	2500	22.85	20.00	90.99	20.99	6.00	14.99	
15	LTE FDD Band 71	133372/688.0MHz	20MHz_QPSK_1_50	23.85	Max	AMR	WB	8N	3150	23.14	20.00	91.85	21.85	6.00	15.85	Pass
				23.85	Max	AMR	WB	2N	2500	22.80	20.00	91.22	21.22	6.00	15.22	
	16 2.4G WIFI 6/2437.0MHz			12.20	Max	AMR	NB	8N	3150	21.05	20.00	90.26	20.26	6.00	14.26	
40		0/0407 00411-	MHz /	12.20	Max	AMR	NB	2N	3150	21.45	20.00	90.15	20.15	6.00	14.15	Pass
16		0/2437.UMHZ		23.85	Max	AMR	WB	8N	3150	21.29	20.00	90.39	20.39	6.00	14.39	
			23.85	Max	AMR	WB	2N	3150	21.61	20.00	90.47	20.47	6.00	14.47		



9.2 Receive acoustic frequency response performance

Plot No.	Mode	Channel/Freq.	BW	Volume Level	Codec Type	Codec Bandwidth	Mounting Force (N)	RFR
110.				Max	EFR	NB	2N	Test Result
1	GSM850	190/836.6MHz	/	Мах	EFR	NB	8N	Pass
				Мах	EFR	NB	2N	
2	PCS1900	810/1909.8MHz	/	Мах	EFR	NB	8N	Pass
				Max	AMR	NB	2N	
				Max	AMR	NB	8N	
3	WCDMA Band II	9538/1907.6MHz	/	Мах	AMR	WB	2N	Pass
				Мах	AMR	WB	8N	
				Max	AMR	NB	2N	-
				Мах	AMR	NB	2N 8N	
4	WCDMA Band IV	1312/1712.4MHz	1	Мах	AMR	WB	2N	Pass
					AMR	WB	2N 8N	
				Max Max	AMR	NB	2N	
				Мах	AMR	NB	2N 8N	
5	WCDMA Band V	4132/826.4MHz	/					Pass
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	_
		1. M. A.		Max	AMR	NB	2N	
6	LTE FDD Band 2	19100/1900.0MHz	20MHz_QPSK_1_50	Max	AMR	NB	8N	Pass
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
				Max	AMR	NB	2N	
7	LTE FDD Band 4	20050/1720.0MHz	20MHz_QPSK_1_0	Max	AMR	NB	8N	Pass
				Max	AMR	WB	2N	
				Max	AMR	WB	8N	
				Max	AMR	NB	2N	
8	LTE FDD Band 5	20450/829.0MHz	10MHz_QPSK_1_25	Max	AMR	NB	8N	Pass
0		20400/020.00012		Max	AMR	WB	2N	
				Max	AMR	WB	8N	
				Max	AMR	NB	2N	
9	LTE FDD Band 12	23090/707.5MHz		Max	AMR	NB	8N	
9	LIE FDD Ballu 12	23090/707.510172	10MHz_QPSK_1_25	Max	AMR	WB	2N	Pass
				Max	AMR	WB	8N	
				Max	AMR	NB	2N	
10		00000/700 014/		Max	AMR	NB	8N	Durin
10	LTE FDD Band 13	23230/782.0MHz	10MHz_QPSK_1_25	Max	AMR	WB	2N	Pass
				Max	AMR	WB	8N	
				Max	AMR	NB	2N	
				Max	AMR	NB	8N	Pass
11	LTE FDD Band 25	26590/1905.0MHz	20MHz_QPSK_1_99	Max	AMR	WB	2N	
				Max	AMR	WB	8N	

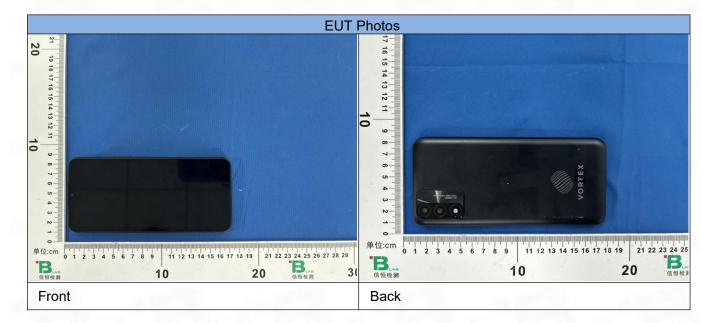
Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



Plot	Marda	Channel/Freq.	BW		Cadaa Turaa	Carlas Danduidth		RFR	
No.	Mode	Channel/Freq.	BW	Volume Level	Codec Type	Codec Bandwidth	Mounting Force (N)	Test Result	
				Max	AMR	NB	2N		
10		20005/044 FMU		Max	AMR	NB	8N	Dees	
12	LTE FDD Band 26	26965/841.5MHz	15MHz_QPSK_1_0	Max	AMR	WB	2N	Pass	
				Max	AMR	WB	8N		
				Max	AMR	NB	2N		
10		44 400/0000 01411-		Max	AMR	NB	8N	D	
13	LTE TDD Band 41	41490/2680.0MHz	20MHz_QPSK_1_50	Max	AMR	WB	2N	Pass	
				Max	AMR	WB	8N		
				Max	AMR	NB	2N		
		132072/1720MHz	20MHz_QPSK_1_0	Max	AMR	NB	8N	Duri	
14	LTE FDD Band 66			Max	AMR	WB	2N	Pass	
				Max	AMR	WB	8N		
				Max	AMR	NB	2N		
45		100070/000 00411-		Max	AMR	NB	8N	Duri	
15	LTE FDD Band 71	133372/688.0MHz	20MHz_QPSK_1_50	Max	AMR	WB	2N	Pass	
				Max	AMR	WB	8N		
				Max	AMR	NB	2N		
	2.4G WIFI		Max	AMR	NB	8N			
16	802.11b	6/2437.0MHz	/	Max	AMR	WB	2N	Pass	
				Max	AMR	WB	8N		



10. EUT photograph



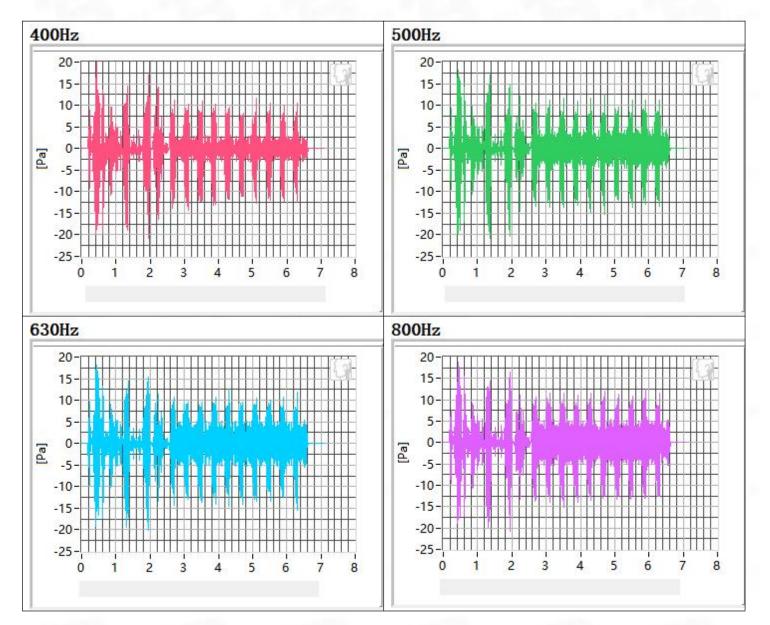
Volume Control Verification Test Results

Date of Testing	Test Location	Air Interface Equipment	Acoustical Calibrator	HATS Sens.(dB)	Ambient Noise(dBA)
28/5/2024	Whisper 1	CMW 500	Type 4182C	97.26	32.27
28/5/2024	Whisper 1	CMW 500	Type 4182C	97.21	31.20
28/5/2024	Whisper 1	CMW 500	Type 4182C	97.18	32.15



ANNEX A Test Data 1. GSM 1900 in channel 810

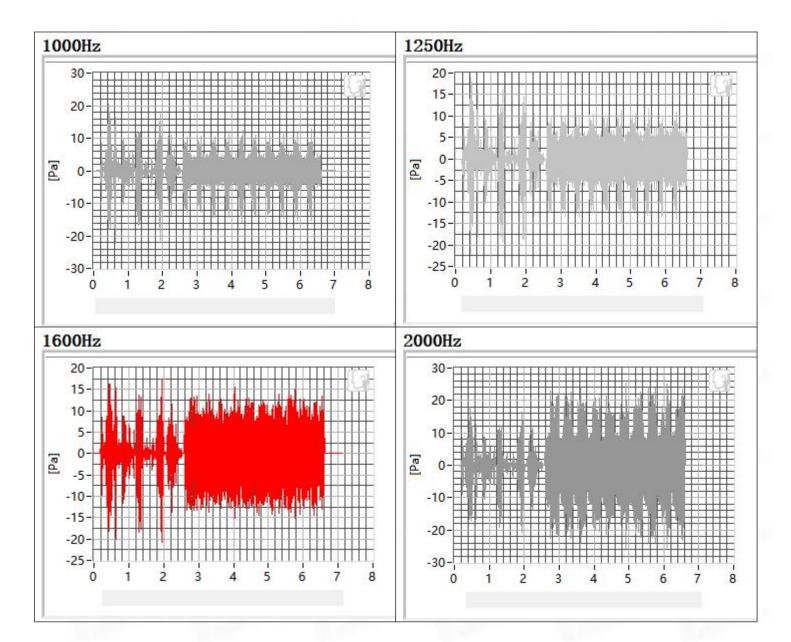
1.1 Receive Distortion and Noise 8N NB



Total or partial reproduction of this document without permission of the Laboratory is not allowed.FBTF Testing Lab (Shenzhen) Co., Ltd.F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

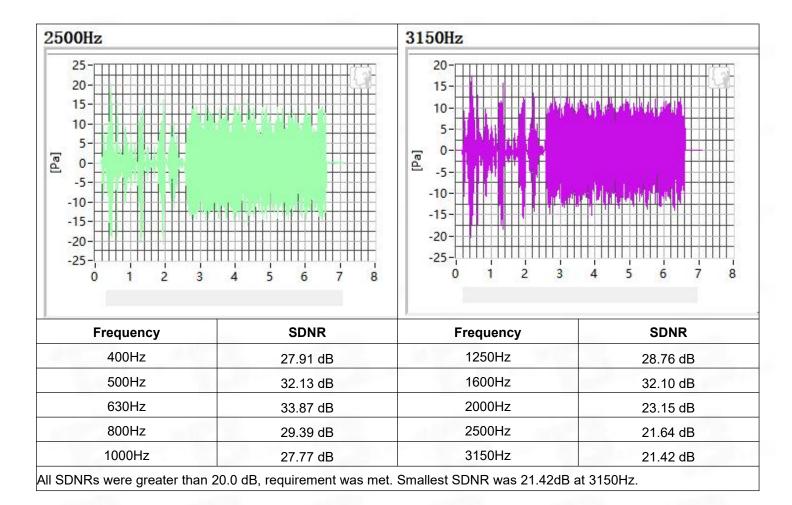
Page 20 of 44



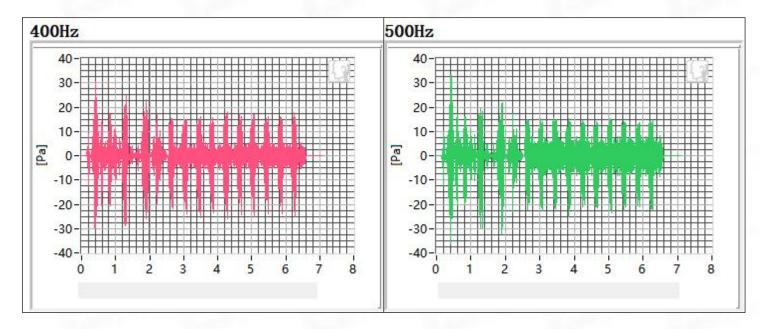


Page 21 of 44





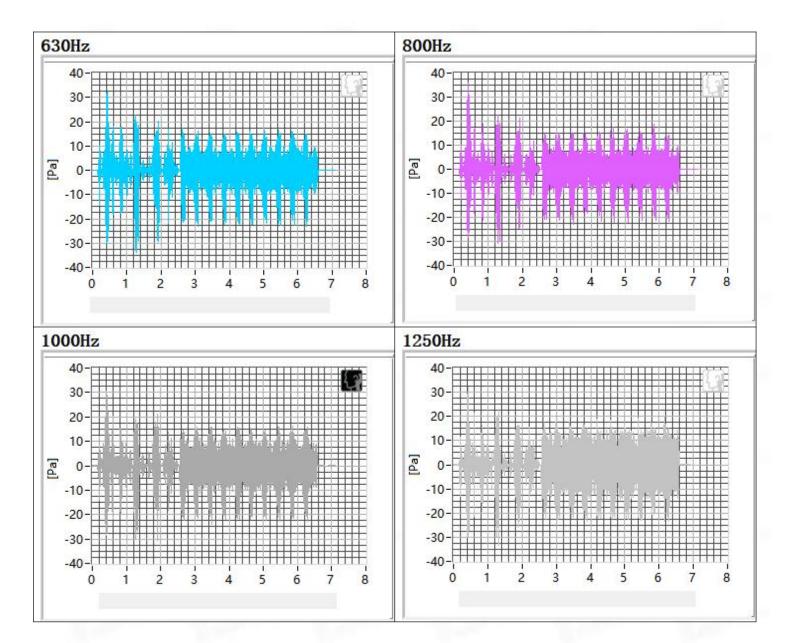
1.2 Receive Distortion and Noise 2N NB



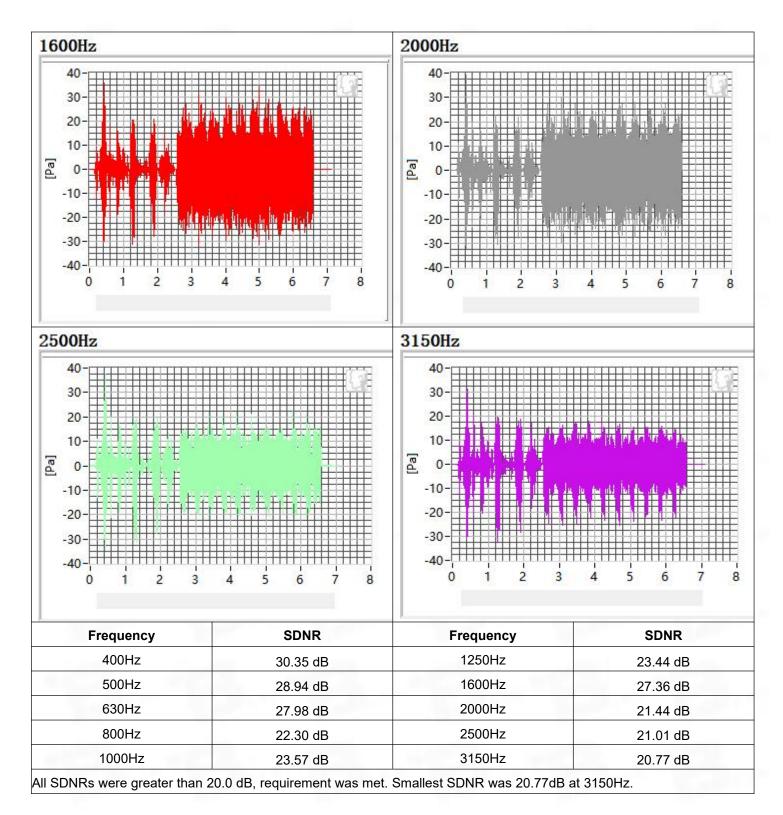
Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. Page 22 of 44

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



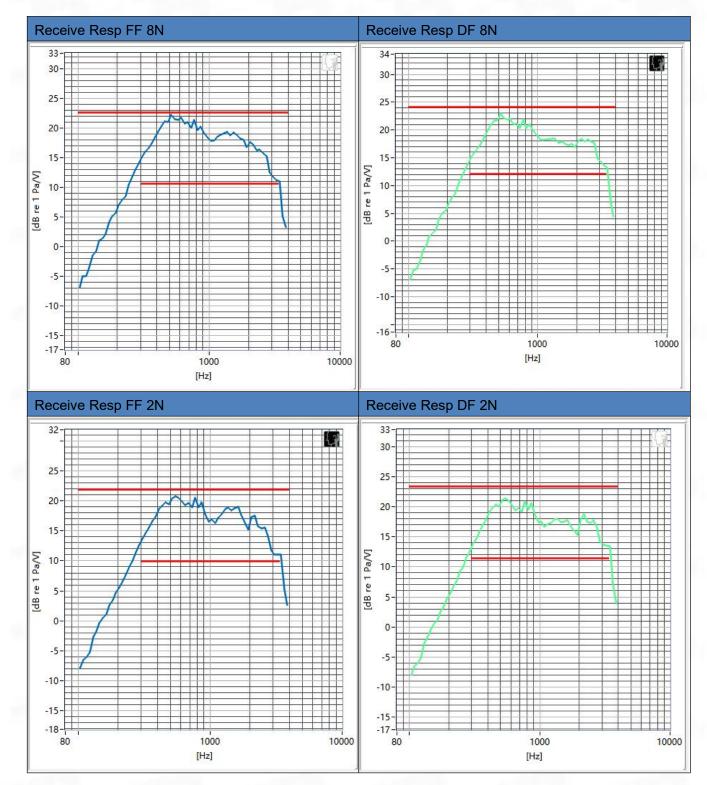








1.3 Receive Frequency Response

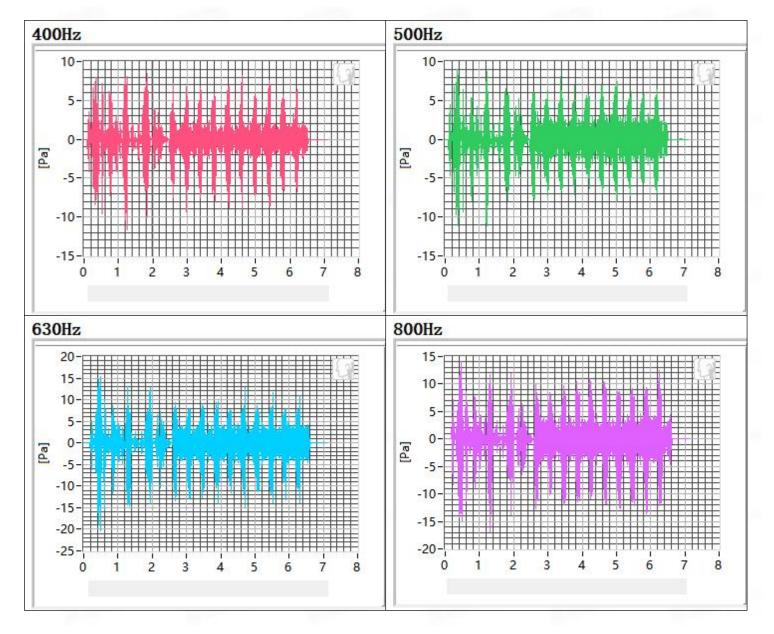


Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

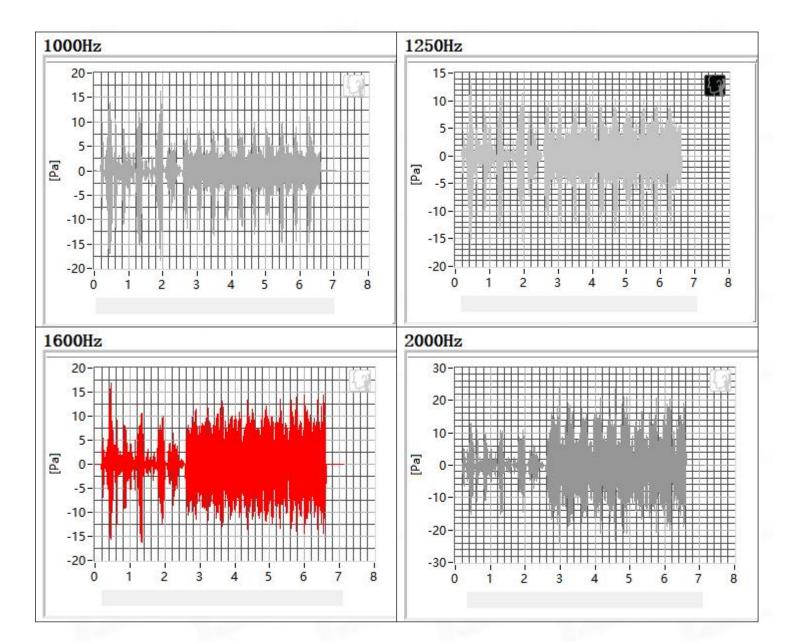


2. WCDMA band 5 in channel 4132

2.1 Receive Distortion and Noise 8N NB

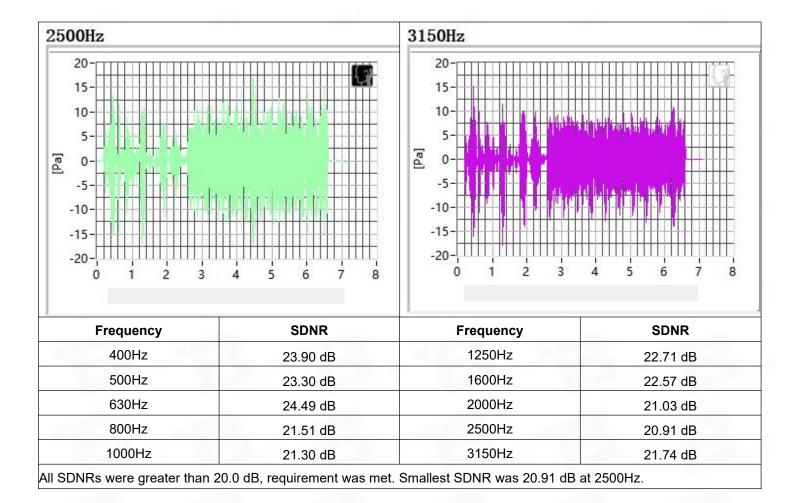




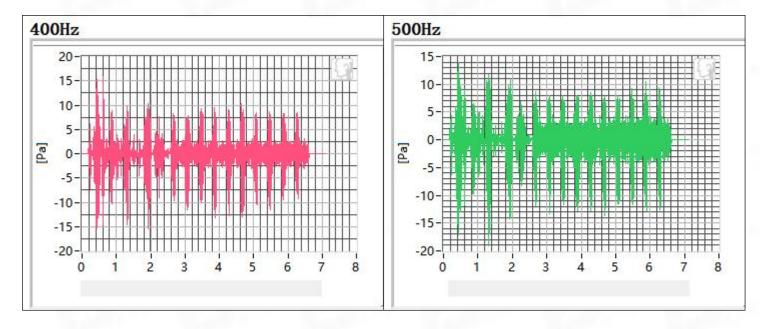


Page 27 of 44





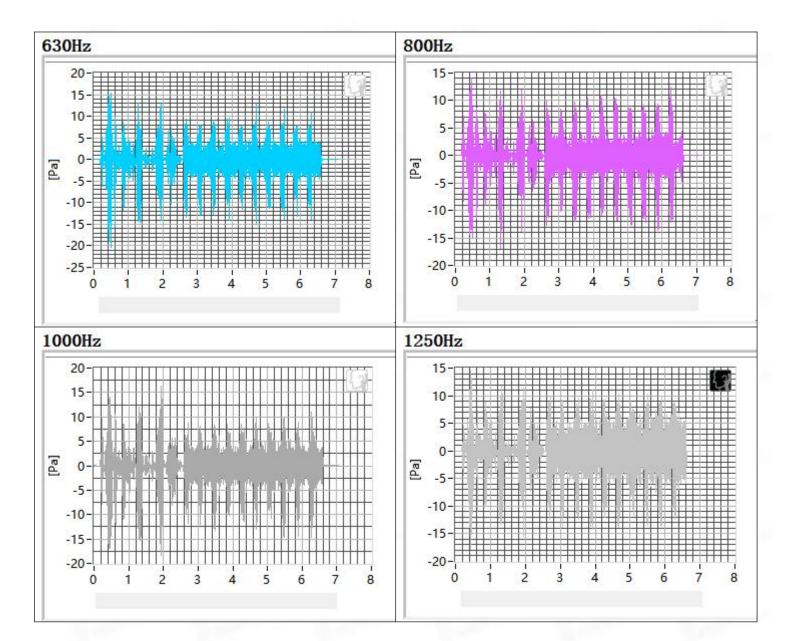
2.2 Receive Distortion and Noise 2N NB



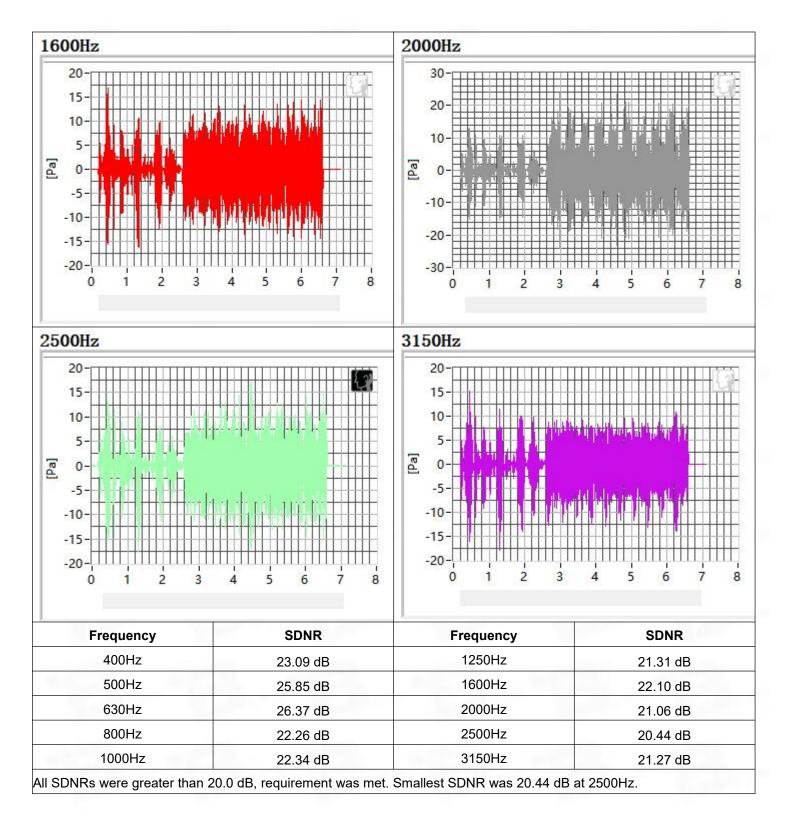
Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. Page 28 of 44

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



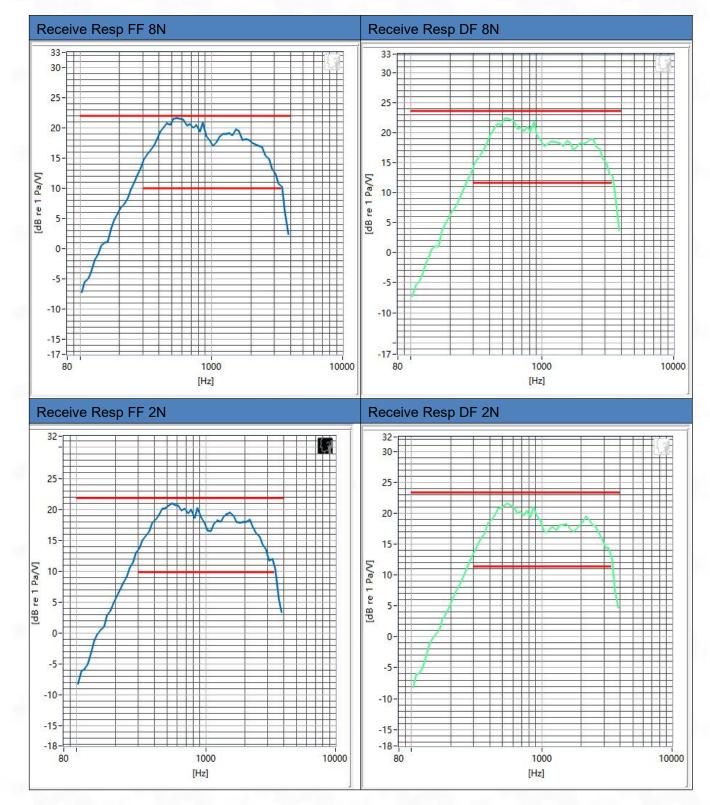








2.3 Receive Frequency Response

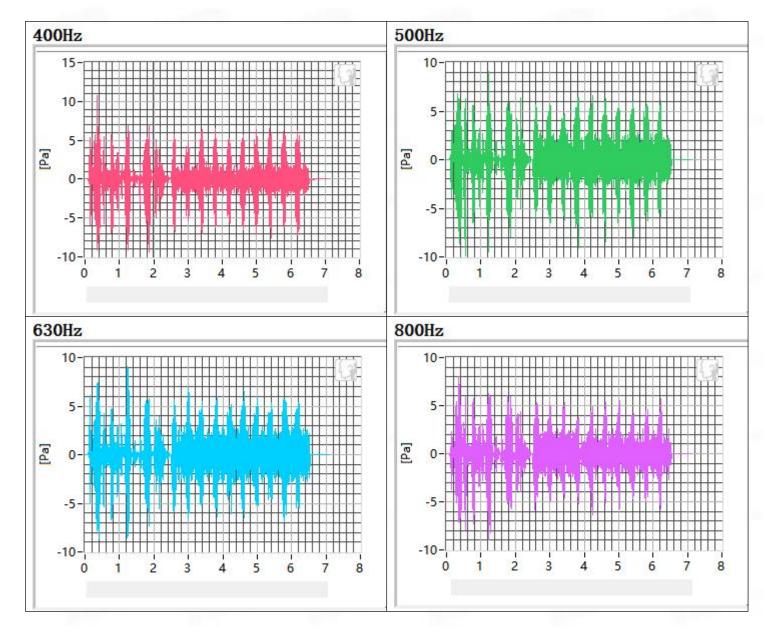


Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

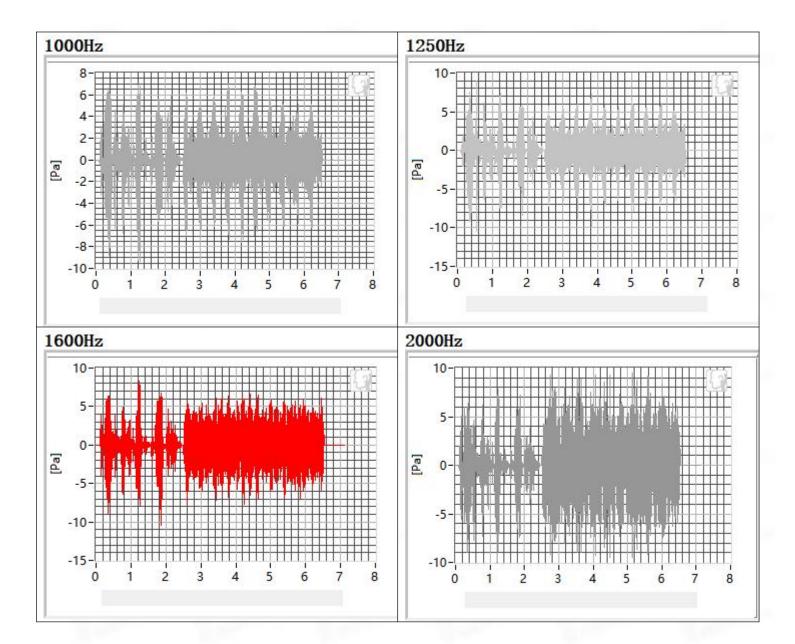


3. LTE band 5 in channel 20450

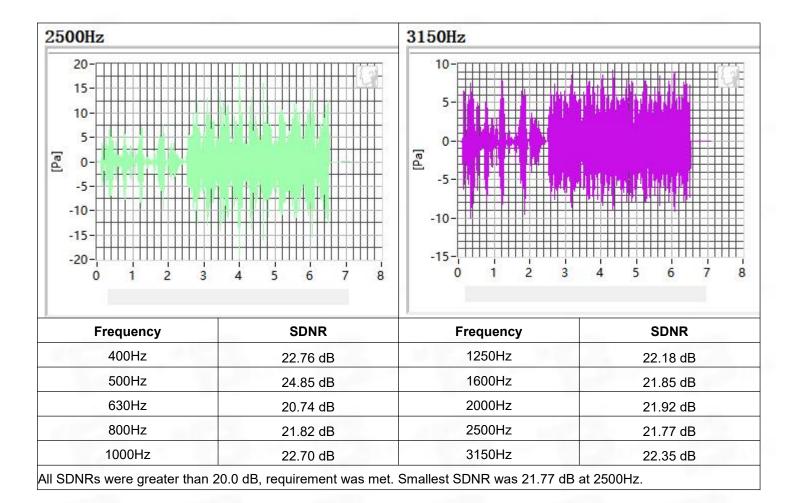
3.1 Receive Distortion and Noise 8N NB



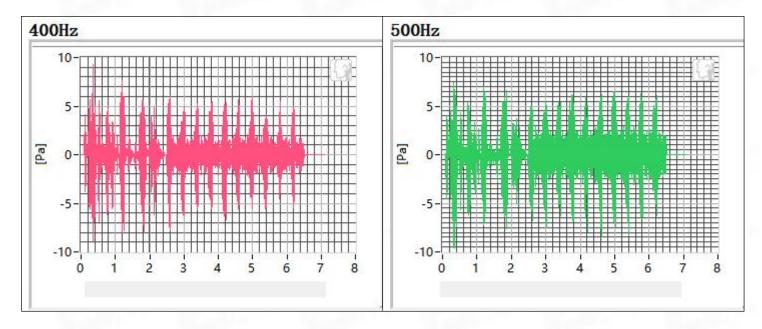








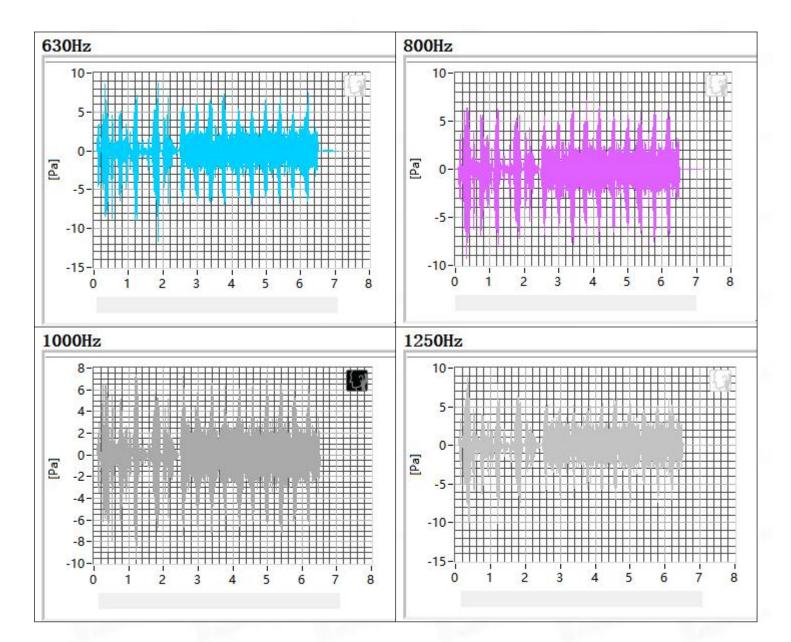
3.2 Receive Distortion and Noise 2N NB



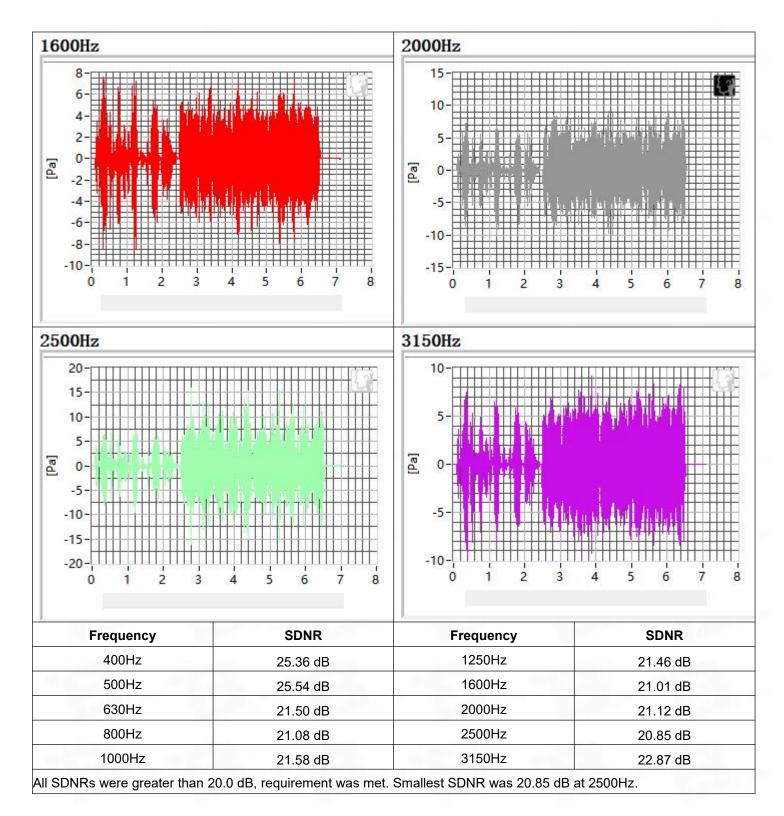
Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. Page 34 of 44

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China





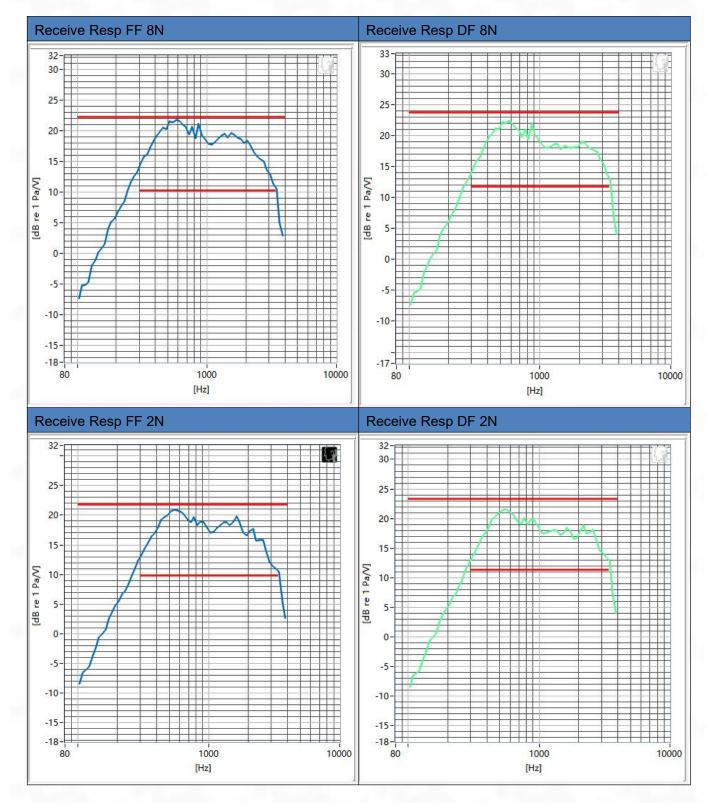




Page 36 of 44



3.3 Receive Frequency Response

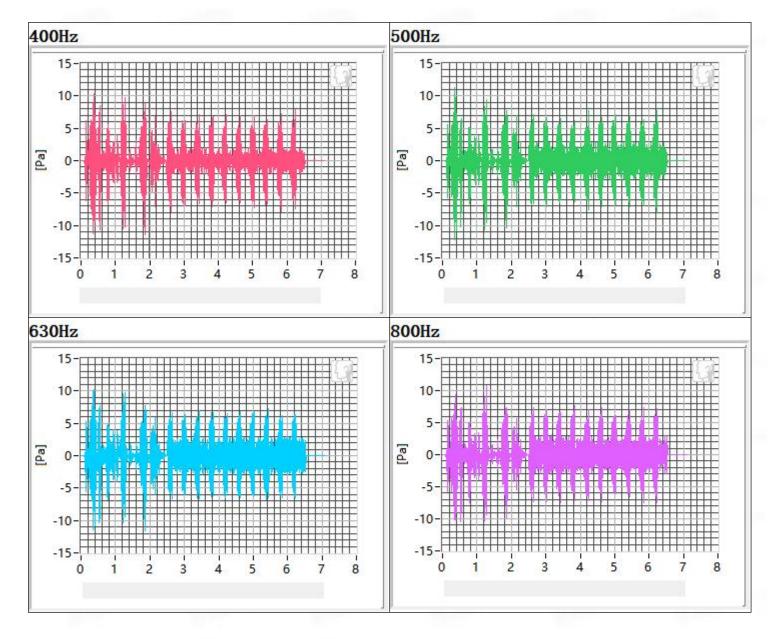


Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



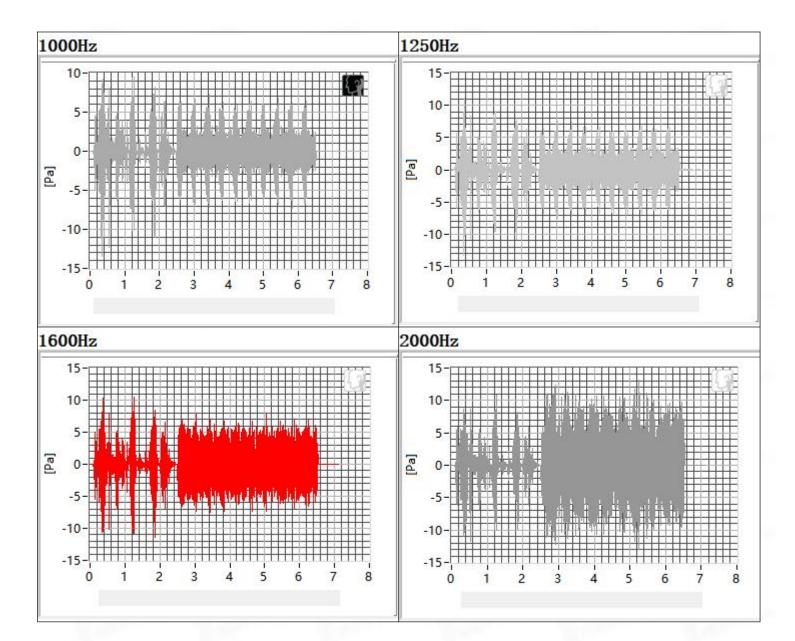
4. 2.4G WIFI in channel 6

4.1 Receive Distortion and Noise 8N NB



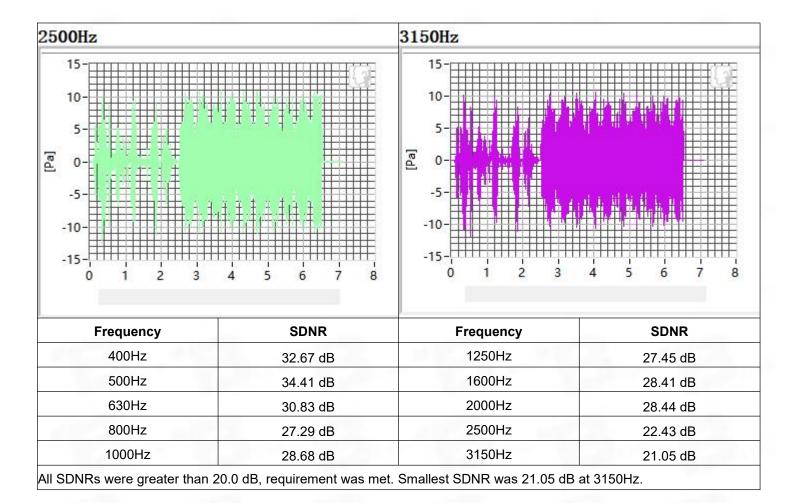
Total or partial reproduction of this document without permission of the Laboratory is not allowed.Page 38 of 44BTF Testing Lab (Shenzhen) Co., Ltd.F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, ChinaStreet, Bao'an District, Shenzhen, China



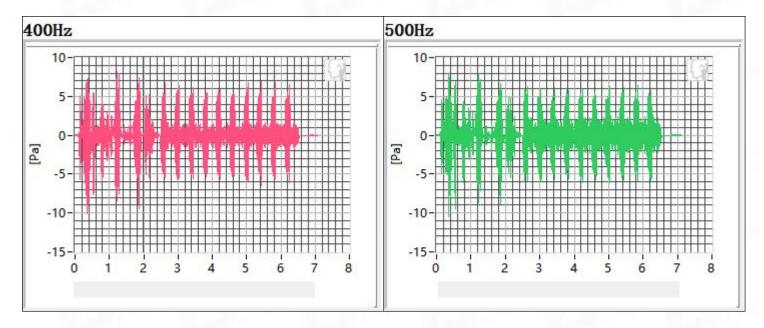


Page 39 of 44





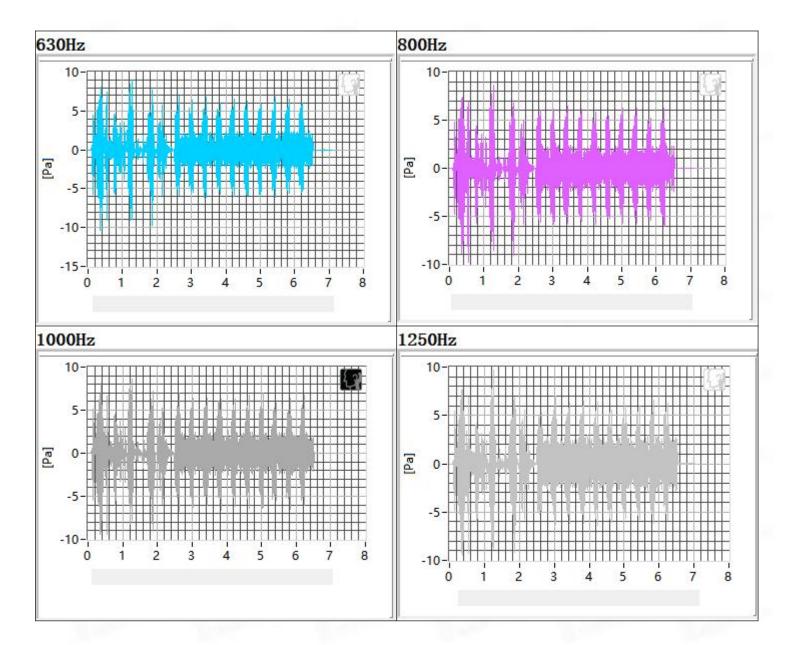
3.2 Receive Distortion and Noise 2N NB



Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

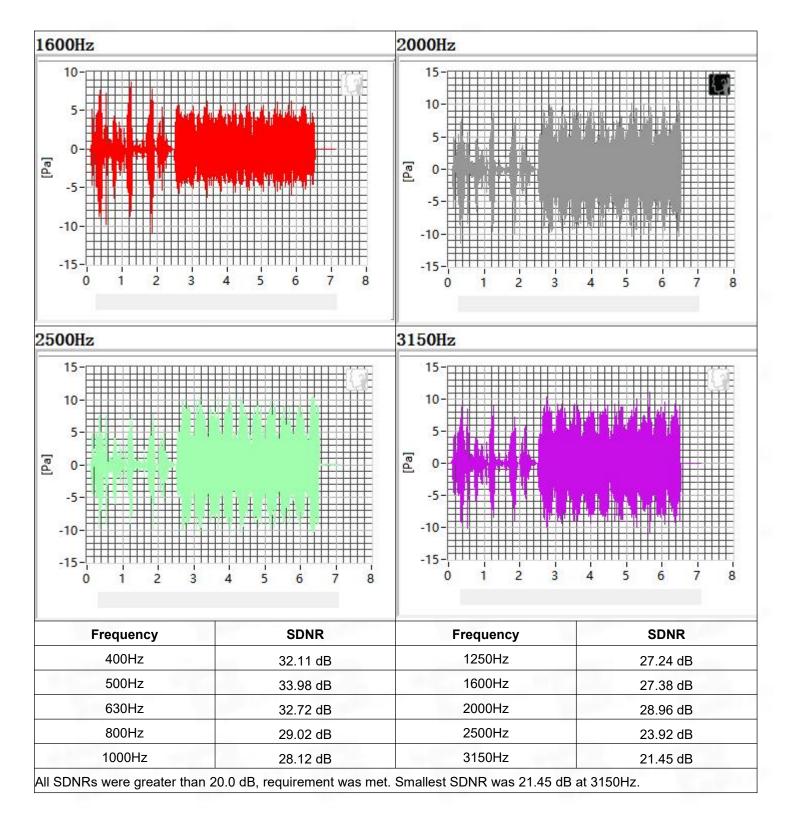
Page 40 of 44





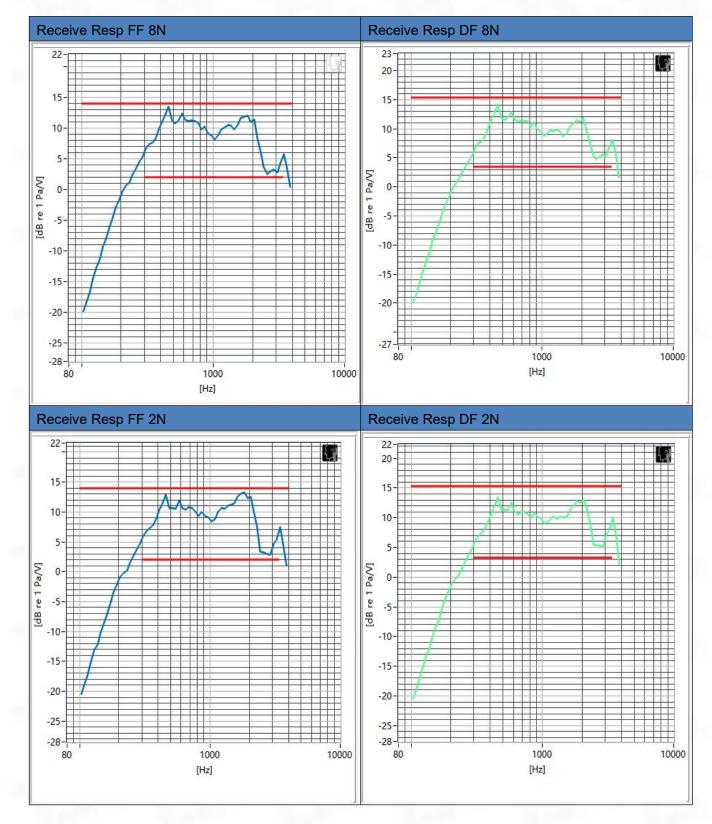
Page 41 of 44







3.3 Receive Frequency Response



Total or partial reproduction of this document without permission of the Laboratory is not allowed. BTF Testing Lab (Shenzhen) Co., Ltd. F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China



ANNEX B Test Setup Photo



ANNEX C CALIBRATION REPORT

Please refer the document "CALIBRATION REPORT.pdf".



BTF Testing Lab (Shenzhen) Co., Ltd.

F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

www.btf-lab.com

--END OF REPORT--

Total or partial reproduction of this document without permission of the Laboratory is not allowed.Page 44 of 44BTF Testing Lab (Shenzhen) Co., Ltd.F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, ChinaStreet, Bao'an District, Shenzhen, China