

RF Test Report

For

Applicant name: **Huaxin (Dongguan)Technology Co., Ltd**
Address: Room 801, Building 4, No. 6, Yongsheng North Road, Fenggang, Dongguan City, Guangdong Province, China
EUT name: Remote Control
Brand name: N/A
Model number: HX-828 Remote Control
Series model number: N/A

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: BTF250318R00501
Test standards: FCC CFR Title 47 Part 15 Subpart C (§15.247)
FCC ID: 2BB6BHX-828R
Test conclusion: Pass
Date of sample receipt: 2025-04-16
Test date: 2025-04-17 to 2025-04-27
Date of issue: 2025-04-27
Test by: *Zero Zeng*
Zero Zeng / Tester

Prepared by: *Chris Liu*
Chris Liu / Project engineer

Approved by



Olic Huang / EMC Manager

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.

Revision History		
Version	Issue date	Revisions content
R_V0	2025-04-27	Original

Note:
Once the revision has been made, then previous versions reports are invalid.

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1 Introduction

1.1 Laboratory 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
Phone number:	+86-0755-23146130
Fax number:	+86-0755-23146130

1.2 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Designation No.: CN1409**

BTF Testing Lab (Shenzhen) Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The test firm Registration No. is 518915.

- **CNAS - Registration No.: CNAS L17568**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L17568.

- **A2LA - Registration No.: 6660.01**

BTF Testing Lab (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

1.3 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:	Huaxin (Dongguan)Technology Co., Ltd
Address:	Room 801, Building 4, No.6Yongsheng North Road, Fenggang Town, Dongguan City, Guangdong Province

2.2 Manufacturer Information

Company name:	Huaxin (Dongguan)Technology Co., Ltd
Address:	Room 801, Building 4, No.6Yongsheng North Road, Fenggang Town, Dongguan City, Guangdong Province

2.3 Factory Information

Company name:	Huaxin (Dongguan)Technology Co., Ltd
Address:	Room 801, Building 4, No.6Yongsheng North Road, Fenggang Town, Dongguan City, Guangdong Province

2.4 General Description of Equipment under Test (EUT)

EUT name	Remote Control
Under test model name	HX-828 Remote Control
Series model name	N/A
Description of model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Power supply:	DC 3V from Battery
AC adapter:	N/A

2.5 Technical Information

Operation frequency:	2402MHz
Channel numbers:	1
Modulation technology:	GFSK
Data rate:	1 Mbps
Max. E.I.R.P Power:	-3.58 dBm
Antenna type:	Internal Antenna
Antenna gain:	0.0 dBi (declare by Applicant)
Antenna transmit mode:	SISO (1TX, 1RX)

3 Test Information

3.1 Test Standards

Identity	Document Title
FCC CFR Title 47 Part 15 Subpart C (§15.247)	Intentional Radiators - Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10-2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 15.247 Meas Guidance v05r02	Guidance for Compliance Measurements on Digital Transmission System, Frequency Hopping Spread Spectrum System, and Hybrid System Devices Operating Under Section 15.247 of The FCC Rules

3.2 Summary of Test

Clauses	Test Items	Result
§ 15.203 § 15.247(b)(4)	Antenna Requirement	Pass
§ 15.207	AC Power Line Conducted Emission	N/A
§ 15.247(b)(3)	Duty Cycle	Pass
§ 15.247(b)(3)	Conducted Output Power	Pass
§ 15.247(a)(2)	6dB Emission Bandwidth 99% Occupied Bandwidth	Pass
§ 15.247(e)	Power Spectral Density	Pass
§ 15.247(d)	Band-edge Emission Conduction Spurious Emission	Pass
§ 15.205 § 15.247(d)	Emissions in Restricted Frequency Bands	Pass
§ 15.209 § 15.247(d)	Emissions in Non-restricted Frequency Bands	Pass
Remark:		
1. Pass: met the requirements. 2. N/A: not applicable.		

3.3 Uncertainty of Test

Measurement	Value
Conducted Emission for LISN (9kHz ~ 150kHz)	±2.97 dB
Conducted Emission for LISN (150kHz ~ 30MHz)	±2.45 dB
Radiated Emission (30MHz ~ 1000MHz)	±4.80 dB
Radiated Emission (1GHz ~ 18GHz)	±4.82 dB
Radiated Emission (18GHz ~ 40GHz)	±4.94dB
Conducted spurious emissions	±2.75dB

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.4 Additions to, deviations from, or exclusions from the method

None

3.5 Test Auxiliary Equipment

No.	Description	Manufacturer	Model	Serial Number	Certification
1	N/A	N/A	N/A	N/A	N/A

3.6 Test Equipment List

Radiated Emission Test						
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2024/10/25	2025/10/24	
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2024/10/25	2025/10/24	
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2024/10/28	2025/10/27	
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2024/09/24	2025/09/23	
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2024/10/30	2025/10/29	
Preamplifier (1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	00008	2024/09/24	2025/09/23	
Test Software	Frad	EZ_EMU	Version: FA-03A2 RE+			

Conducted Emission Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	
EMI Receiver	Rohde & Schwarz	ESCI3	101422	2024/10/25	2025/10/24	
V-LISN	Schwarzbeck	NSLK 8127	01073	2024/10/25	2025/10/24	
Coaxial Switcher	Schwarzbeck	CX210	CX210	/	/	
Pulse Limiter	Schwarzbeck	VTSD 9561-F	00953	/	/	
Test Software	Frad	EZ_EMU	Version: EMC-CON 3A1.1+			

Conducted test method					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Keysight	N9020A	MY50410020	2024/10/25	2025/10/24
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2024/10/25	2025/10/24
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2024/10/25	2025/10/24
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2024/10/25	2025/10/24
Temperature Humidity Chamber	ZZCKONG	ZZ-K02A	20210928007	2024/10/25	2025/10/24
DC Power Supply	Tongmen	etm-6050c	20211026123	2024/10/25	2025/10/24
RF Control Unit	Techy	TR1029-1	/	2024/10/25	2025/10/24
RF Sensor Unit	Techy	TR1029-2	/	2024/10/25	2025/10/24
Test Software	TST Pass	/	Version: 2.0		

4 Test Configuration

4.1 Environment Condition

Selected Values During Tests			
Temperature	Test Voltage	Relative Humidity	Ambient Pressure
Normal: +15°C to +35°C	3.0 Vdc	20% to 75%	86 kPa to 106 kPa

4.2 Test mode

Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation
Remark: Per-scan all kind of data rate, and report only reflects the test data of worst data rate mode.	

4.3 Test Channel of EUT

In section 15.31(m), regards to the operating frequency range over 10 MHz, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	2402	0	2402	0	2402

4.4 Test software

Note1:Press the key

4.5 Test procedure

AC Power Line Conducted Emission

The EUT is connected to the power mains through a LISN which provides $50\ \Omega/50\ \mu\text{H}$ of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

Radiated test method

For below 1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.

For above 1GHz:

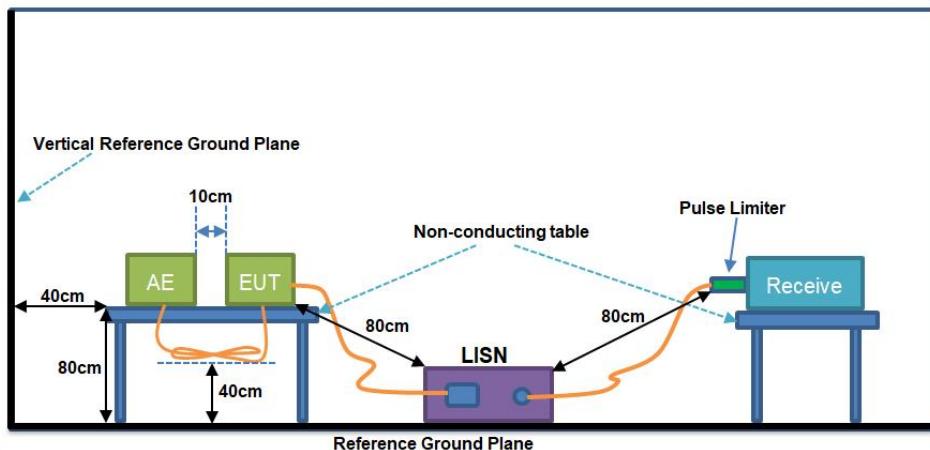
1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.

Conducted test method

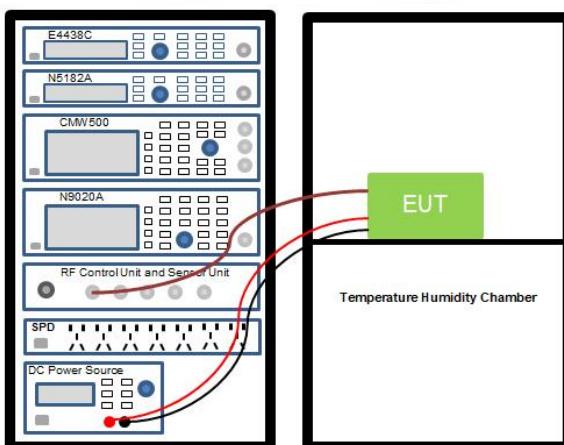
1. The Bluetooth antenna port of EUT was connected to the test port of the test system through an RF cable.
2. The EUT is keeping in continuous transmission mode and tested in all modulation modes.
3. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

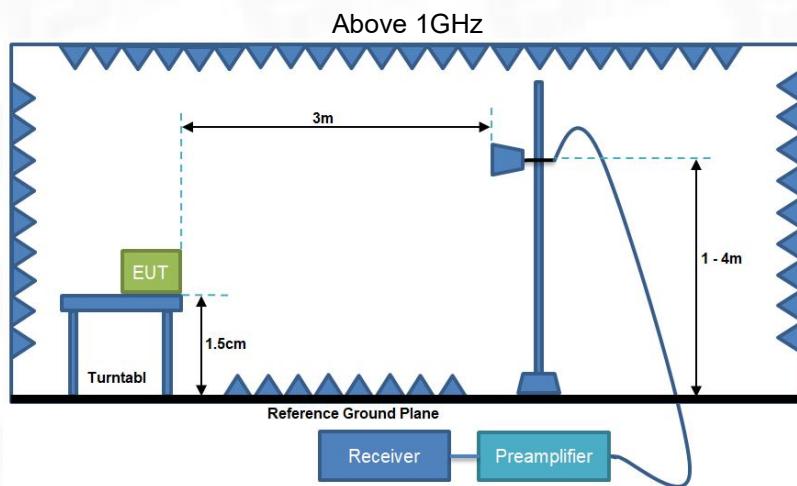
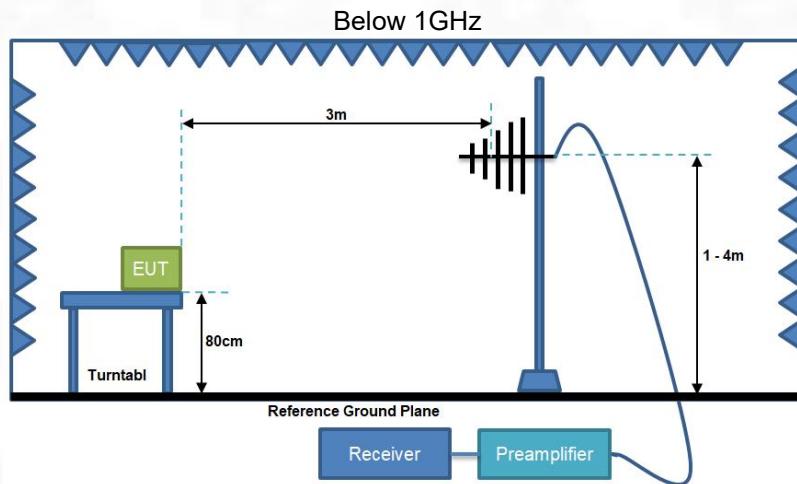
4.6 Test Setup Block

1) Conducted emission measurement:



2) Conducted test method:



3) Radiated test method:

5 Technical requirements specification

5.1 Summary of Test Result

Test Items	Limit	Test data	Verdict
Antenna Requirement	Please refer to §15.203 and §15.247(b)(4)	See Section 5.2	Pass
AC Power Line Conducted Emission	Please refer to §15.207	See Section 5.3	N/A
Conducted Output Power	For systems using digital modulation: 1 Watts (30 dBm).	See Appendix- 2.4G	Pass
Duty Cycle	No limits, only for report use.	See Appendix- 2.4G	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.	See Appendix- 2.4G	Pass
Power Spectral Density	For digitally modulated systems, the power spectral density shall not be greater than 8 dBm in any 3 kHz.	See Appendix- 2.4G	Pass
Band-edge Emission Conduction Spurious Emission	Please refer to §15.247(d)	See Appendix- 2.4G	Pass
Emissions in Restricted Frequency Bands	Please refer to §15.205	See Section 5.4	Pass
Emissions in Non-restricted Frequency Bands	Please refer to §15.209 and §15.247(d)	See Section 5.5	Pass

5.2 Antenna Requirement

§15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

§15.247(b) (4) requirement:

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

E.U.T Antenna:

The Bluetooth antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is 0.0 dBi. See product internal photos for details.

5.3 AC Power Line Conducted Emission

Temperature	22.5°C	Humidity	56%
Test voltage	DC 3V	Test Engineer	Zero Zeng

Test phase: Note1: The DC products are not applicable to this project

Note2: Level= Read Level+ Cable Loss+ LISN Factor

5.4 Emissions in Restricted Frequency Bands

Temperature	22.5°C	Humidity	56%
Test voltage	DC 3V	Test Engineer	Zero Zeng

Test Mode: Keep the EUT in continuously transmitting mode with modulation Test Channel: Lowest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
2310.00	50.75	3.85	54.60	74.00	-19.40	Peak	Pass
2310.00	40.99	3.85	44.84	54.00	-9.16	AVG	Pass
2390.00	51.55	3.91	55.47	74.00	-18.53	Peak	Pass
2390.00	41.36	3.91	45.28	54.00	-8.72	AVG	Pass
Test Channel: Lowest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
2310.00	51.82	3.85	55.68	74.00	-18.32	Peak	Pass
2310.00	42.08	3.85	45.93	54.00	-8.07	AVG	Pass
2390.00	51.54	3.91	55.45	74.00	-18.55	Peak	Pass
2390.00	41.22	3.91	45.14	54.00	-8.86	AVG	Pass
Test Channel: Highest channel, Test Polarization: Vertical							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
2483.50	50.87	3.99	54.86	74.00	-19.14	Peak	Pass
2483.50	41.24	3.99	45.22	54.00	-8.78	AVG	Pass
2500.00	51.73	3.91	55.64	74.00	-18.36	Peak	Pass
2500.00	41.02	3.91	44.93	54.00	-9.07	AVG	Pass
Test Channel: Highest channel, Test Polarization: Horizontal							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
2483.50	50.81	3.99	54.80	74.00	-19.20	Peak	Pass
2483.50	40.45	3.99	44.44	54.00	-9.56	AVG	Pass
2500.00	51.79	3.91	55.71	74.00	-18.29	Peak	Pass
2500.00	42.29	3.91	46.20	54.00	-7.80	AVG	Pass

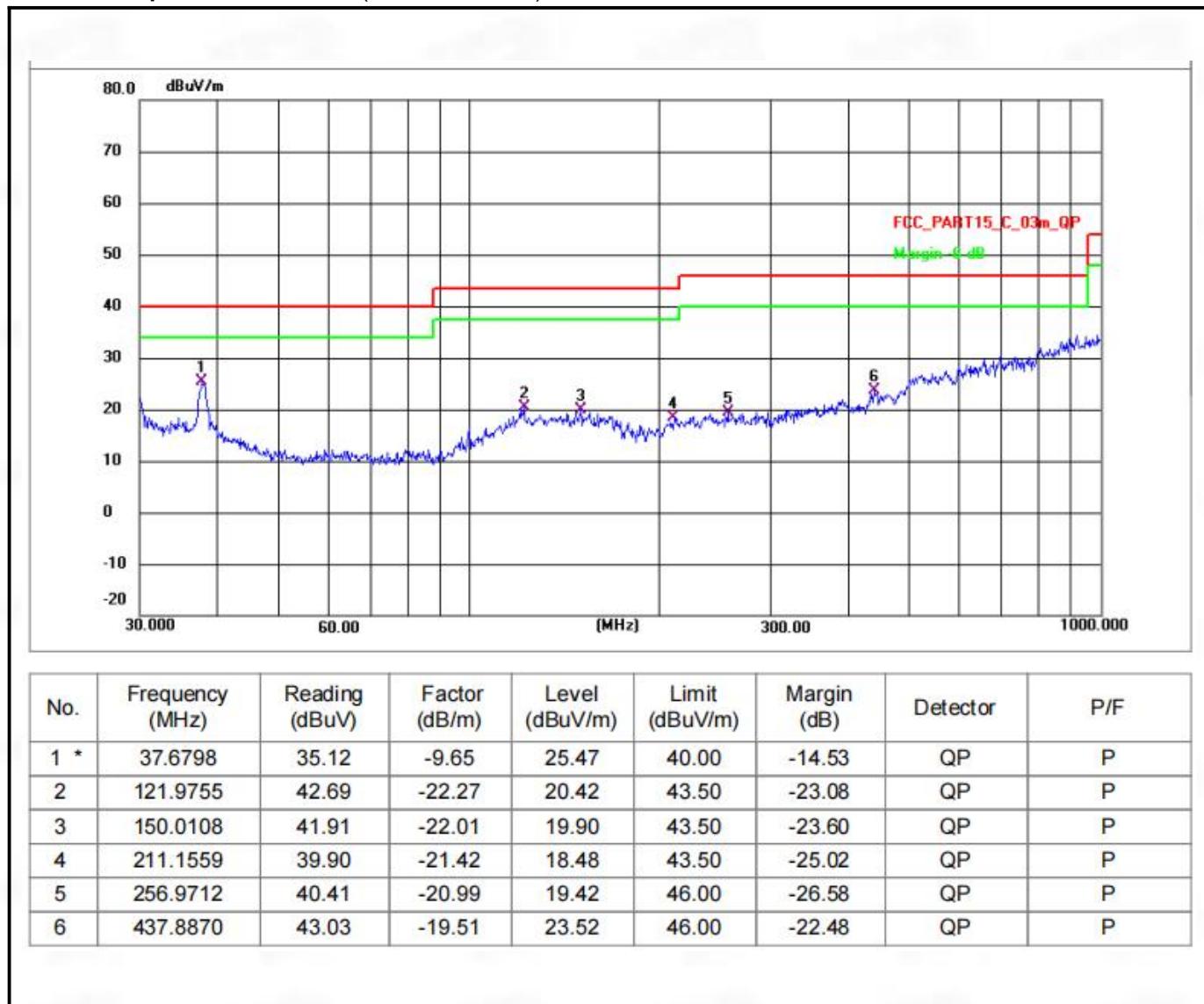
Note:Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

5.5 Emissions in Non-restricted Frequency Bands

Temperature	22.5°C	Humidity	56%
Test voltage	DC 3V	Test Engineer	Zero Zeng

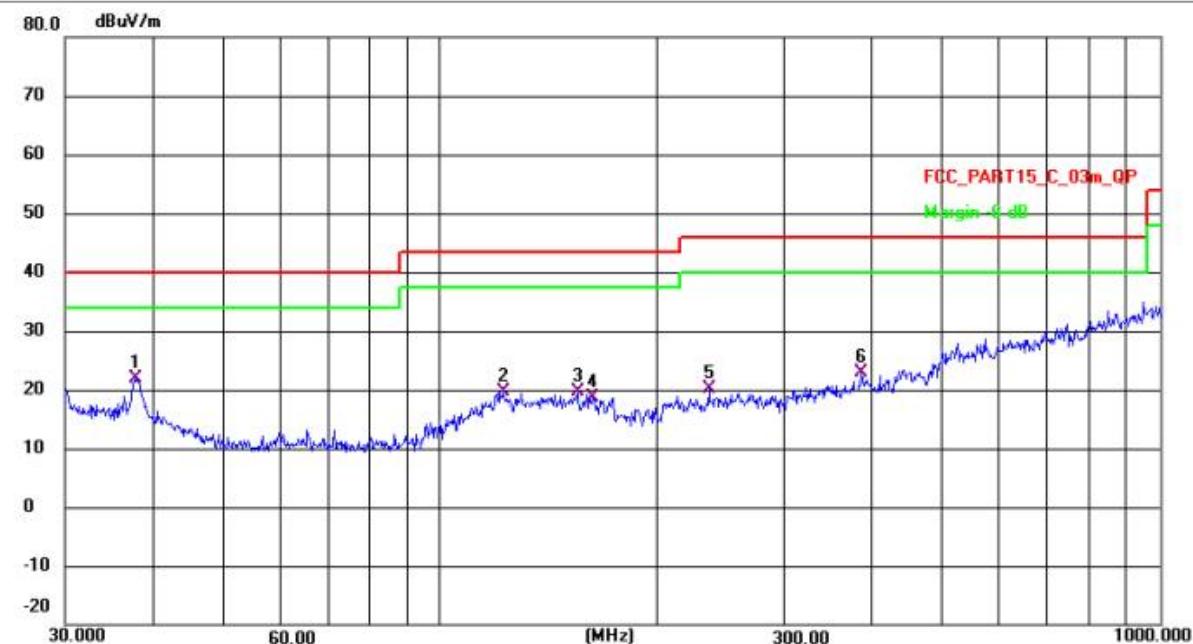
For below 1GHz:

Test antenna polarization: Vertical (30 MHz to 1 GHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	37.6798	35.12	-9.65	25.47	40.00	-14.53	QP	P
2	121.9755	42.69	-22.27	20.42	43.50	-23.08	QP	P
3	150.0108	41.91	-22.01	19.90	43.50	-23.60	QP	P
4	211.1559	39.90	-21.42	18.48	43.50	-25.02	QP	P
5	256.9712	40.41	-20.99	19.42	46.00	-26.58	QP	P
6	437.8870	43.03	-19.51	23.52	46.00	-22.48	QP	P

Test antenna polarization: Horizontal (30 MHz to 1 GHz)



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	37.6137	31.44	-9.65	21.79	40.00	-18.21	QP	P
2	122.1895	41.91	-22.26	19.65	43.50	-23.85	QP	P
3	155.3643	41.67	-21.96	19.71	43.50	-23.79	QP	P
4	162.8960	40.54	-21.88	18.66	43.50	-24.84	QP	P
5	236.6447	41.18	-21.17	20.01	46.00	-25.99	QP	P
6	385.2804	42.74	-19.94	22.80	46.00	-23.20	QP	P

Note:Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

For above 1GHz:

Test Mode: Keep the EUT in continuously transmitting mode with modulation							
Test Polarization: Vertical							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
4804.00	75.72	-48.89	26.83	74.00	-47.17	Peak	Pass
4804.00	65.27	-48.89	16.38	54.00	-37.62	AVG	Pass

Test Polarization: Horizontal							
Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Marging (dB)	Detector	Result
4804.00	75.54	-48.89	26.66	74.00	-47.34	Peak	Pass
4804.00	64.85	-48.89	15.96	54.00	-38.04	AVG	Pass

Note:Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

6 Test Setup Photos

Please refer to Appendix I Test Setup Photos.

7 EUT Constructional Details (EUT Photos)

Please refer to Appendix II External Photos and Appendix III Internal Photos.



BTF Testing Lab (Shenzhen) Co., Ltd.

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Bao'an District, Shenzhen, China

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--END OF REPORT--