

RF Test Report

For

Applicant name: Shenzhen Torras Technology Co., Ltd.
Address: RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China
EUT name: Power Bank
Brand name: TORRAS
Model number: PB20B
Series model number: N/A
FCC ID: 2AN4Y-PB20B

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: BTF250418R00401
Test standards: FCC CFR Title 47 Part 15 Subpart C (§15.209)
Test conclusion: Pass
Date of sample receipt: 2025-04-18
Test date: 2025-04-19 to 2024-05-09
Date of issue: 2025-06-17
Test by: Sean He
Sean He / Tester
Prepared by: Chris Liu
Chris Liu / Project engineer

 Approved by B LAB
Ryan.CJ / 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	2025-06-17	Original
<i>Note:</i> <i>Once the revision has been made, then previous versions reports are invalid.</i>		

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1 Introduction

1.1 Laboratory 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
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:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.2 Manufacturer Information

Company name:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.3 Factory Information

Company name:	Shenzhen Torras Technology Co., Ltd.
Address:	RM1215, BLK C, Zhantao Technology BLDG, Minzhi Avenue, Minzhi ST, Longhua DIST, Shenzhen, China

2.4 General Description of Equipment under Test (EUT)

EUT name:	Power Bank
Under test model name:	PB20B
Series model name:	N/A
Description of model name differentiation:	N/A
Hardware version:	N/A
Software version:	N/A
Rating:	Multi-port Output: 15W MAX Wireless Charging Output: 15W MAX Lithium Battery Energy: 10000mAh/3.85V/38.5Wh Output Power: 22.5W MAX Rate Capacity: 6000mAh(5.0V===2.0A) Cell Capacity: 10000mAh

2.5 Technical Information

Operation frequency:	120kHz ~ 400kHz
Modulation technology:	ASK
Antenna type:	Coil Antenna

3 Test Information

3.1 Test Standards

Identity	Document Title
FCC CFR Title 47 Part 15 Subpart C (§15.209)	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

3.2 Summary of Test

Clauses	Test Items	Result
§ 15.203	Antenna Requirement	Pass
§ 15.207	AC Power Line Conducted Emission	Pass
§ 15.215(c)	20dB Bandwidth	Pass
§ 15.209	Field Strength of Spurious Emissions	Pass
Remark: 1. Pass: met the requirements. 2. N/A: not applicable.		

3.3 Uncertainty of Test

Measurement	Value
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Supply voltages	±3 %
Time	±5 %
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
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, or exclusions from the method

None

3.5 Test Auxiliary Equipment

Description	Manufacturer	Model	Serial No.	Length	Description
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USB-C Power Adapter	Apple Inc.	A2166	/	/	/
Wireless load	YBZ	F18			

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_EMC	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_EMC	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
Temperature Humidity Chamber	ZZCKONG	ZZ-K02A	20210928007	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	Relative Humidity	Ambient Pressure
Normal: +15°C to +35°C Extreme: -30°C to +50°C	20% to 75%	86 kPa to 106 kPa

4.2 Test mode

Test item	Test mode	Description
Radiated& Conducted Test cases	ANT1	Mode 1: AC/DC Adapter + EUT + Wireless load (Full Load) Mode 2: AC/DC Adapter + EUT + Wireless load (Half Load) Mode 3: AC/DC Adapter + EUT + Wireless load (Null Load)
	No Loads	Mode 4: AC/DC Adapter + EUT(Null Load)

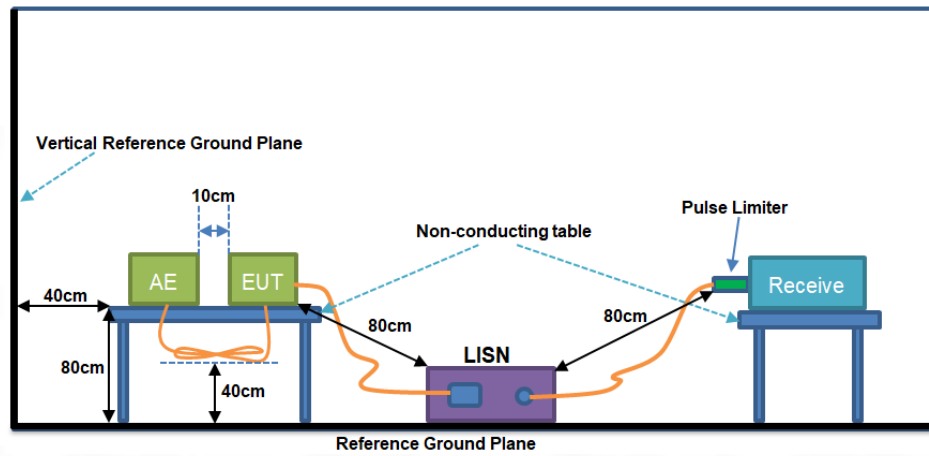
Note: All modes have been tested, and only the worst case Mode 1 are in the report.

4.3 Test procedure

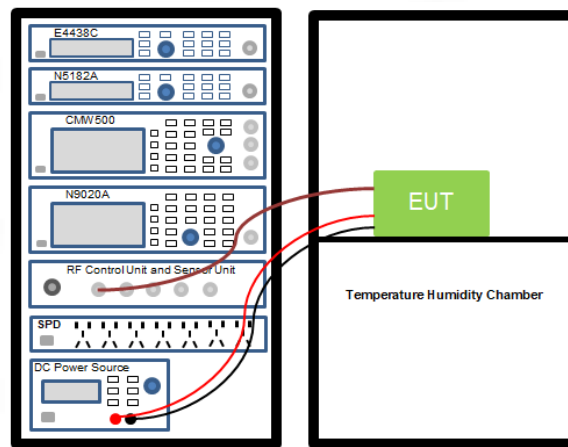
AC Power Line Conducted Emission
The EUT is connected to the power mains through a LISN which provides 50 Ω /50 μ H of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and 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
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.
Conducted test method
1. The 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.

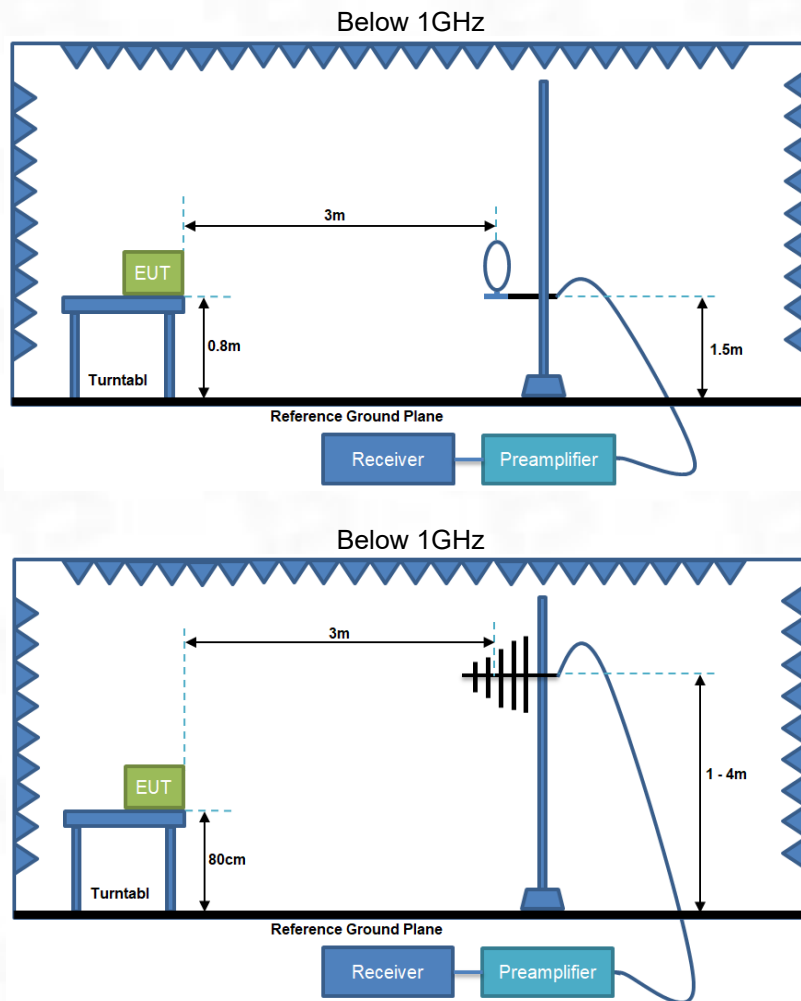
4.4 Test Setup Block

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	See Section 5.2	Pass
AC Power Line Conducted Emission	Please refer to §15.207	See Section 5.3	Pass
20dB Bandwidth	Please refer to § 15.215(c)	See Section 5.4	Pass
Field Strength of Spurious Emissions	Please refer to §15.209	See Section 5.6	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.

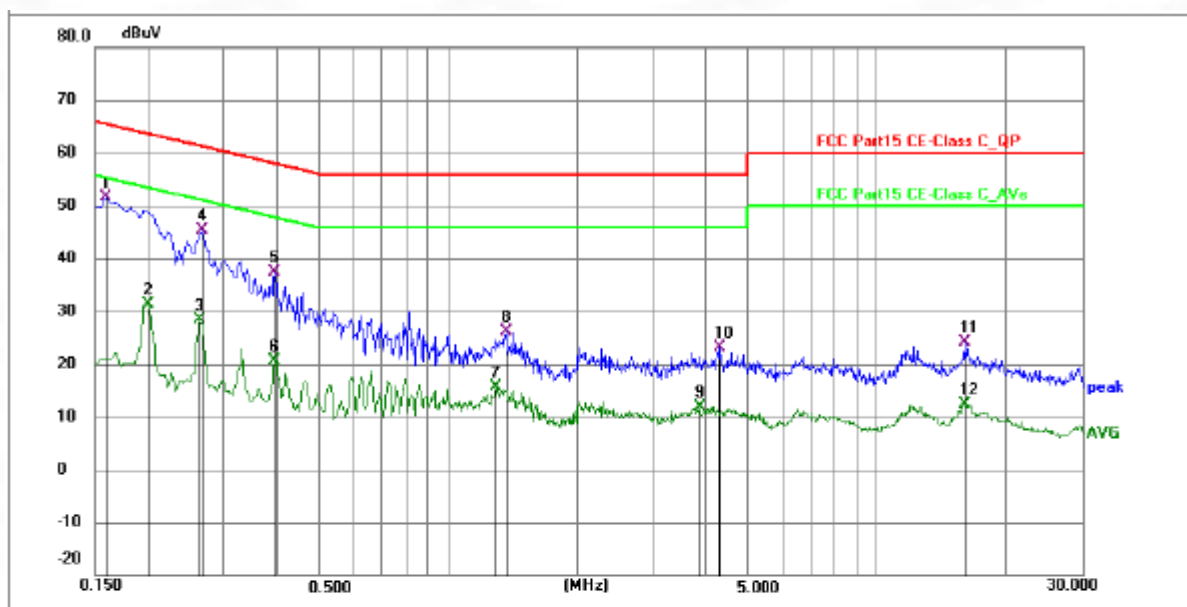
E.U.T Antenna:

The Bluetooth antenna is an Coil 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℃	Humidity	56%
Test voltage	AC 120V 60Hz	Test Engineer	Sean He

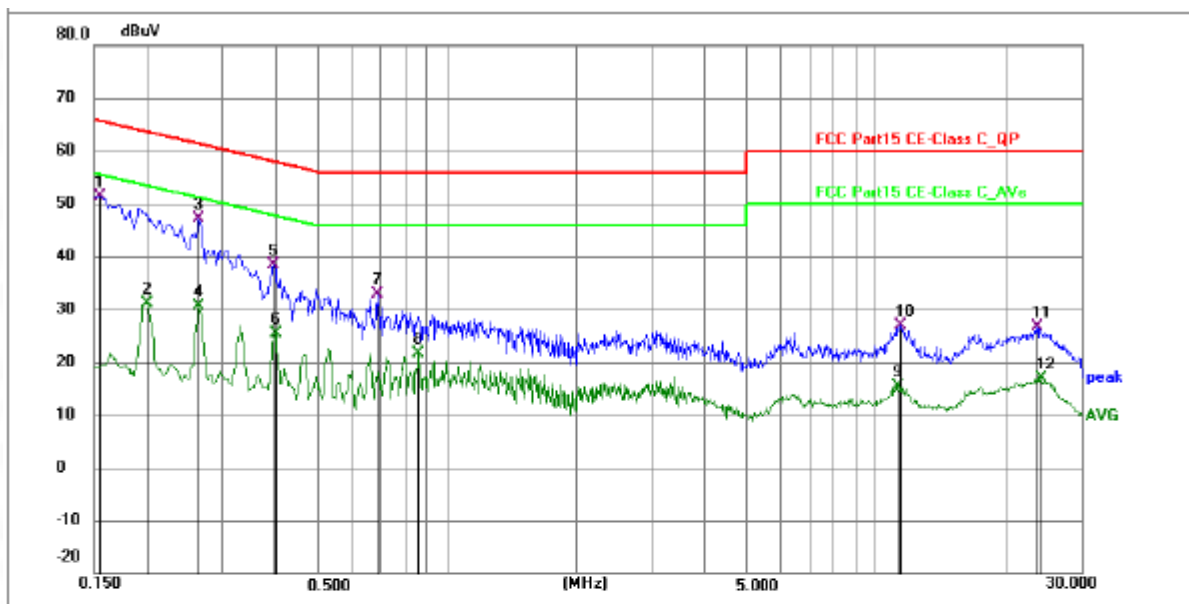
Test phase: L phase



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1590	41.04	10.57	51.61	65.52	-13.91	QP	P	
2	0.1995	20.72	10.66	31.38	53.63	-22.25	AVG	P	
3	0.2625	17.73	10.66	28.39	51.35	-22.96	AVG	P	
4	0.2670	34.78	10.66	45.44	61.21	-15.77	QP	P	
5	0.3930	26.81	10.67	37.48	58.00	-20.52	QP	P	
6	0.3930	9.90	10.67	20.57	48.00	-27.43	AVG	P	
7	1.2930	4.83	10.80	15.63	46.00	-30.37	AVG	P	
8	1.3650	15.39	10.79	26.18	56.00	-29.82	QP	P	
9	3.8445	1.20	10.75	11.95	46.00	-34.05	AVG	P	
10	4.2900	12.21	10.85	23.06	56.00	-32.94	QP	P	
11	15.9180	13.10	11.14	24.24	60.00	-35.76	QP	P	
12	15.9180	1.17	11.14	12.31	50.00	-37.69	AVG	P	

Note: Margin=Level-Limit=Reading+factor-Limit

Test phase: N phase



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	40.72	10.55	51.27	65.76	-14.49	QP	P	
2	0.1995	20.52	10.56	31.08	53.63	-22.55	AVG	P	
3 *	0.2625	36.62	10.60	47.22	61.35	-14.13	QP	P	
4	0.2625	19.95	10.60	30.55	51.35	-20.80	AVG	P	
5	0.3930	27.74	10.70	38.44	58.00	-19.56	QP	P	
6	0.3975	14.56	10.70	25.26	47.91	-22.65	AVG	P	
7	0.6854	21.94	10.87	32.81	56.00	-23.19	QP	P	
8	0.8610	10.81	10.88	21.69	46.00	-24.31	AVG	P	
9	11.2470	4.41	11.02	15.43	50.00	-34.57	AVG	P	
10	11.3772	15.85	11.01	26.86	60.00	-33.14	QP	P	
11	23.6802	15.39	11.29	26.68	60.00	-33.32	QP	P	
12	24.2340	5.50	11.29	16.79	50.00	-33.21	AVG	P	

Note: Margin=Level-Limit=Reading+factor-Limit

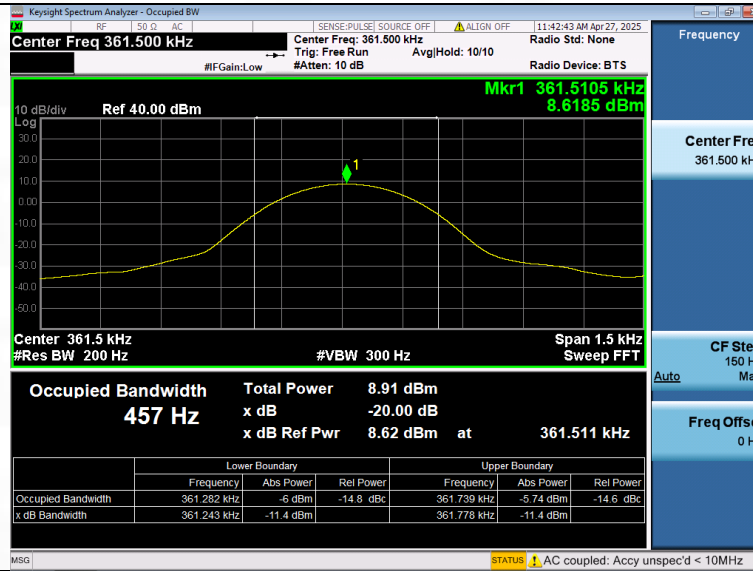
5.4 20dB Bandwidth

Test Frequency (kHz)	f_L (kHz)	f_H (kHz)	20dB Bandwidth (kHz)	Limits
124.2	123.948	124.451	0.508	N/A
144.3	144.046	144.546	0.500	N/A
361.6	361.243	361.778	0.545	N/A

Test Plot as Follows:



Test Frequency: 361.6 kHz



5.5 Field Strength of Spurious Emissions

Temperature	22.5℃	Humidity	56%
Test voltage	DC3.85V	Test Engineer	Sean He

Test Frequency: 9 kHz to 30 MHz, Vertical

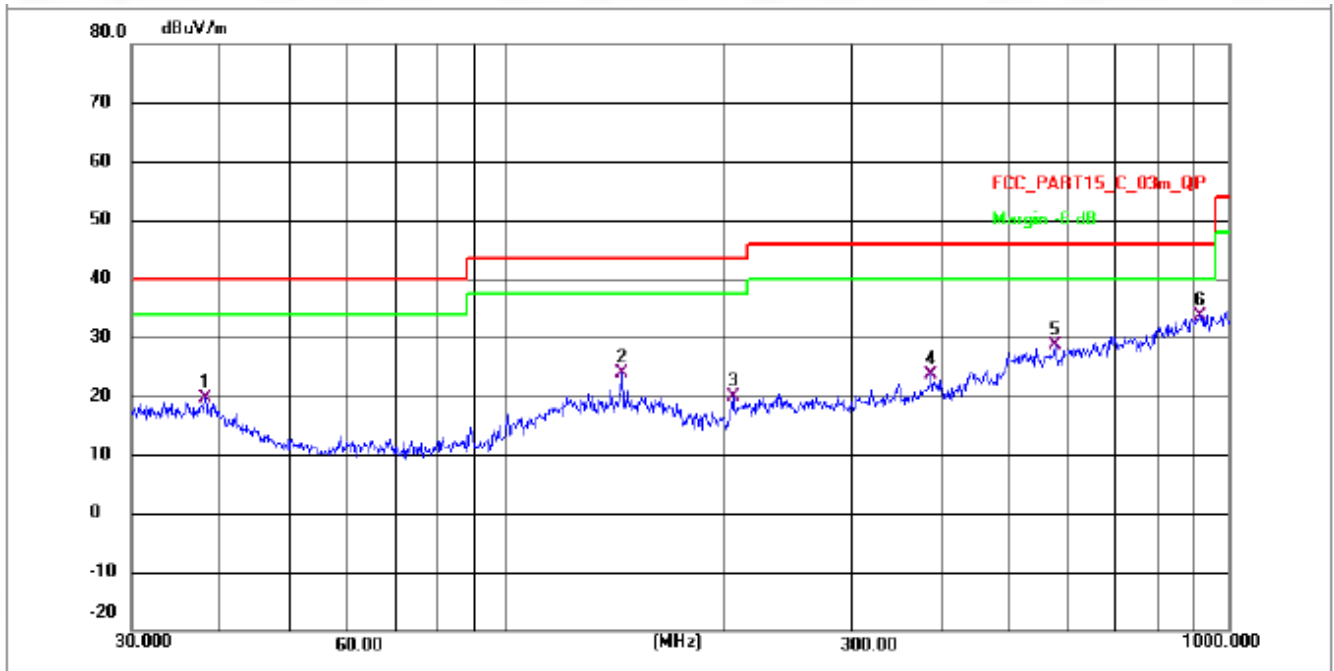
Suspected Date List							
No.	Freq.(MHz)	Reading (dB μ V/m)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	0.019	76.87	-30.47	46.40	127.80	-74.10	PK
2	0.05921	73.26	-30.34	42.92	124.89	-77.58	PK
3	0.1448	101.21	-30.16	71.05	118.42	-47.37	PK
4	0.7628	71.94	-29.07	42.87	82.46	-38.66	PK
5	3.9029	65.42	-23.57	41.85	40.00	-29.98	PK
6	11.1156	72.93	-30.12	42.81	40.00	-20.69	PK

Test Frequency: 9 kHz to 30 MHz, Horizontal

Suspected Date List							
No.	Freq.(MHz)	Reading (dB μ V/m)	Factor (dB)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	0.0337	72.36	-30.4	41.96	126.74	-84.78	PK
2	0.1442	99.12	-30.16	68.96	118.42	-49.46	PK
3	0.3755	62.35	-29.66	32.69	102.05	-69.36	PK
4	0.8947	59.62	-28.58	31.04	76.99	-45.95	PK
5	4.915	56.36	-25.2	31.16	40	-8.84	PK
6	14.109	52.32	-30.25	22.07	40	-17.93	PK

Note: Margin=Level-Limit=Reading+factor-Limit

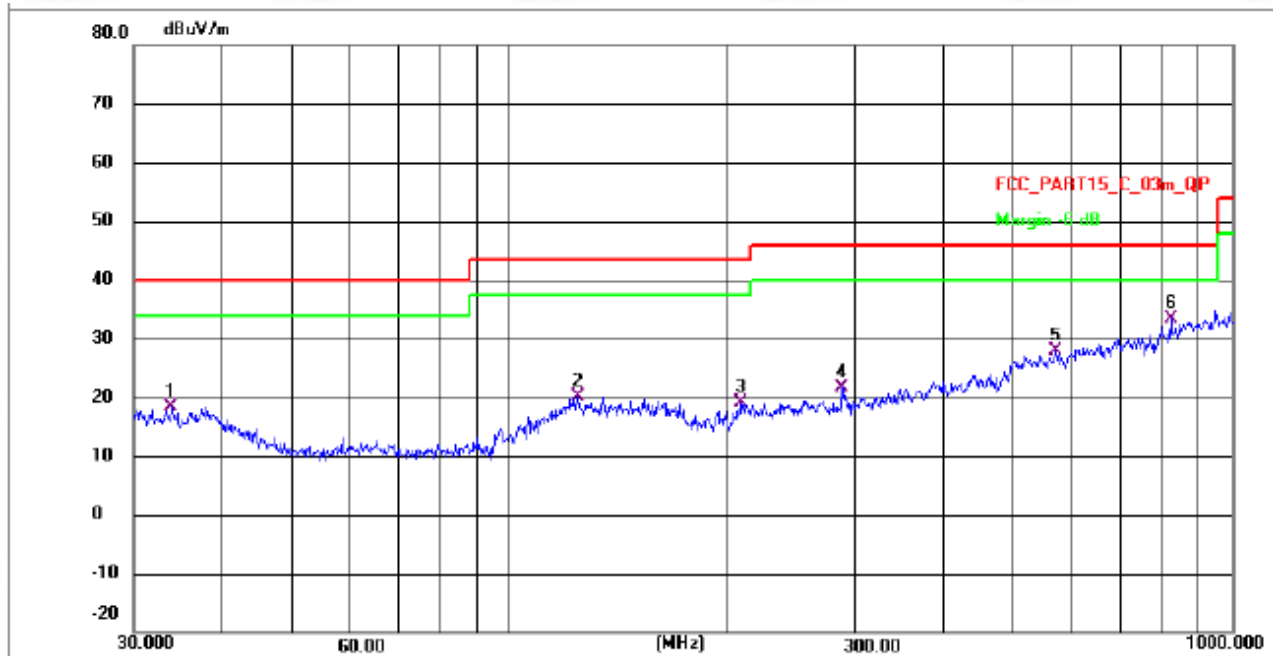
Test Frequency: 30 MHz to 1 GHz, Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	38.0782	29.38	-9.64	19.74	40.00	-20.26	QP	P
2	144.0820	46.04	-22.06	23.98	43.50	-19.52	QP	P
3	205.3146	41.42	-21.48	19.94	43.50	-23.56	QP	P
4	387.3123	43.48	-19.93	23.55	46.00	-22.45	QP	P
5	576.6443	47.08	-18.50	28.58	46.00	-17.42	QP	P
6 *	916.0686	49.85	-16.13	33.72	46.00	-12.28	QP	P

Note: Margin = Level - Limit = Reading + factor - Limit

Test Frequency: 30 MHz to 1 GHz, Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	34.0363	28.16	-9.68	18.48	40.00	-21.52	QP	P
2	124.5690	42.44	-22.24	20.20	43.50	-23.30	QP	P
3	208.5801	40.66	-21.45	19.21	43.50	-24.29	QP	P
4	287.9904	42.46	-20.72	21.74	46.00	-24.26	QP	P
5	568.6126	46.35	-18.54	27.81	46.00	-18.19	QP	P
6 *	823.1523	50.87	-17.48	33.39	46.00	-12.61	QP	P

Note: Margin = Level - Limit = Reading + factor - Limit

6 Test Setup Photos

Please refer to the Appendix I Test Setup Photos

7 EUT Constructional Details (EUT Photos)

Please refer to the Appendix II External Photos & Appendix III External Photos



BTF Testing Lab (Shenzhen) Co., Ltd.

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--END OF REPORT--