RF Test Report

For

Applicant name:	**Dongguan Biduo Electronics Co., Ltd.**
Address:	No. 208, Lilang Road, Dongguan, Guangdong, 523000, CN
EUT name:	Nail Lamp Remote Control
Brand name:	N/A
Model number:	JC27
Series model name:	JC22, JC39
FCC ID:	2BVMD-JC27

Issued By

Company name:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Report number:	BTF260325R00801
Test standards:	47 CFR Part 15.231
Test conclusion:	Pass
Date of sample receipt:	2026-03-30
Test date:	2026-03-30 to 2026-04-07
Date of issue:	2026-04-13
Test by:	Sean.He
	Sean.He / Tester
Prepared by:	Chris Liu
	Chris.Liu / Project engineer
Approved by:	Ryan.GJ
	Ryan.GJ / 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.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Revision History		
Version	Issue Date	Revisions Content
R_V0	2026-04-13	Original

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

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Table of Contents

1 Introduction 4
1.1 Laboratory Location 4
1.2 Laboratory Facility 4
1.3 Announcement 4
2 Product Information 5
2.1 Application Information 5
2.2 Manufacturer Information 5
2.3 Factory Information 5
2.4 General Description of Equipment under Test (EUT) 5
2.5 Technical Information 5
3 Summary of Test Results 6
3.1 Test Standards 6
3.2 Uncertainty of Test 6
3.3 Summary of Test Result 6
3.4 Additions to, deviations, or exclusions from the method 6
4 Test Configuration 7
4.1 Test Equipment List 7
4.2 Test Auxiliary Equipment 8
4.3 Test Modes 8
4.4 Test Channel of EUT 8
5 Evaluation Results (Evaluation) 9
5.1 Antenna requirement 9
6 Radio Spectrum Matter Test Results (RF) 9
6.1 20dB Bandwidth 9
6.1.1 Test Data 11
6.2 Dwell Time 12
6.2.1 Test Data 13
6.3 Duty Cycle 14
6.3.1 Test Data 16
6.4 Field Strength of The Fundamental Signal 17
6.4.1 Test Data 19
6.5 Radiated Emission (below 1GHz) 22
6.5.1 Test Data 24
6.6 Radiated Emission (above 1GHz) 26
6.6.1 Test Data 28
7 Test Setup Photos 30
8 EUT Constructional Details (EUT Photos) 30

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

1 Introduction

1.1 Laboratory Location

Test location:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, 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 695374.
- **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.
(7) All entrusted information in this report is provided by the client and has been confirmed through consultation with the client; The testing items for this report have been discussed and confirmed with the client, and our company is only responsible for the content reflected in the report.

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

2 Product Information

2.1 Application Information

Company name:	Dongguan Biduo Electronics Co., Ltd.
Address:	No. 208, Lilang Road, Dongguan, Guangdong, 523000, CN

2.2 Manufacturer Information

Company name:	Dongguan Biduo Electronics Co., Ltd.
Address:	No. 208, Lilang Road, Dongguan, Guangdong, 523000, CN

2.3 Factory Information

Company name:	Dongguan Biduo Electronics Co., Ltd.
Address:	No. 208, Lilang Road, Dongguan, Guangdong, 523000, CN

2.4 General Description of Equipment under Test (EUT)

EUT name:	Nail Lamp Remote Control
Under test model name:	JC27
Series model name:	JC22, JC39
Description of model name differentiation:	Only the model name is different, everything else is the same
Ratings:	Input: DC 3V From Battery

2.5 Technical Information

Operation Frequency:	433.92MHz
Modulation technology:	OOK
Antenna type:	PCB Antenna
Antenna gain:	0.71dBi

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

3 Summary of Test Results

3.1 Test Standards

The tests were performed according to following standards:
47 CFR Part 15.231: Periodic operation in the band 40.66-40.70 MHz and above 70 MHz

3.2 Uncertainty of Test

Measurement	Value
Occupied Channel Bandwidth	±5 %
Time	±5 %
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.

3.3 Summary of Test Result

Item	Standard	Requirement	Result
Antenna requirement	47 CFR Part 15.231	47 CFR 15.203	Pass
20dB Bandwidth	47 CFR Part 15.231	47 CFR 15.231(c)	Pass
Dwell Time	47 CFR Part 15.231	47 CFR 15.231(a)(1) & (a)(2)	Pass
Duty Cycle	47 CFR Part 15.231	47 CFR 15.231(b) & (e)	Pass
Field Strength of The Fundamental Signal	47 CFR Part 15.231	47 CFR 15.231(b)	Pass
Radiated Emission (below 1GHz)	47 CFR Part 15.231	47 CFR 15.231	Pass
Radiated Emission (above 1GHz)	47 CFR Part 15.231	47 CFR 15.231	Pass

Remark:
1. *Pass: Meet the requirements.*
2. *N/A: not applicable.*

3.4 Additions to, deviations, or exclusions from the method

None

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

4 Test Configuration

4.1 Test Equipment List

20dB Bandwidth Dwell Time Duty Cycle					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Test Software	TST Pass	/	Version: 2.0	/	/
Cell Site Test Set	HP	8921A	US35010158	2025-10-17	2026-10-16
Spectrum Analyzer	Keysight	N9020A	MY50410020	2025-10-17	2026-10-16
ESG Vector Signal Generator	Agilent	E4438C	MY45094854	2025-10-17	2026-10-16
MXG Vector Signal Generator	Agilent	N5182A	MY46240163	2025-10-17	2026-10-16
Wideband Radio Communication Tester	Rohde&Schwarz	CMW500	161997	2025-10-17	2026-10-16
Programmable Constant Temperature And Humidity Test Chamber	ZZCKONG	ZZ-K02A	20210928007	2025-10-17	2026-10-16
DC Power Supply	Tongmen	etm-6050c	20211026123	2025-10-17	2026-10-16
RF Control Unit	Techy	TR1029-1	/	2025-10-17	2026-10-16
RF Sensor Unit	Techy	TR1029-2	/	2025-10-17	2026-10-16
RF shielding box	Yinuoxin Electronics	50*50*50 cm	/	2025-05-26	2026-05-25

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Field Strength of The Fundamental Signal Radiated Emission (below 1GHz) Radiated Emission (above 1GHz)					
Test Equipment	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Test Software	Frad	EZ_EMC	Version: FA-03A2 RE+	/	/
EMI Receiver	Rohde & Schwarz	ESCI7	101032	2025-10-17	2026-10-16
Signal Analyzer	Rohde & Schwarz	FSQ40	100010	2025-10-17	2026-10-16
Log periodic antenna	Schwarzbeck	VULB 9168	01328	2025-10-18	2026-10-17
Preamplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9744	00246	2025-05-26	2026-05-25
BELOW-Cable	REBES Talent	9K1G	21101576	2025-08-23	2026-08-22
Horn Antenna	Schwarzbeck	BBHA9120D	2597	2025-10-18	2026-10-17
Preamplifier (1GHz ~ 18GHz)	Schwarzbeck	BBV9718D	00008	2025-10-18	2026-10-17
Preamplifier	TSTPASS	LNA10180G45	TS2215007	2025-05-26	2026-05-25
ABOVE-Cable	REBES Talent	1~18G	21101558	2025-08-23	2026-08-22
Horn Antenna	SCHWARZBECK	BBHA9170	1157	2025-10-18	2026-10-17
Low Noise Pre-amplifier	Sket	LNPA_1840G-50	SK2022032902	2025-10-17	2026-10-16
ABOVE-Cable2	REBES Talent	18~40G	21101686	2025-08-23	2026-08-22
ABOVE-Cable1	REBES Talent	18~40G	21101687	2025-08-23	2026-08-22

4.2 Test Auxiliary Equipment

The EUT has been tested as an independent unit.

4.3 Test Modes

No.	Test Modes
(TM1)Transmitting mode:	Keep the EUT in continuously transmitting mode with modulation

4.4 Test Channel of EUT

Operation Band: 1

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
433.92	/	433.92	/

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.
E.U.T Antenna:	The Internal antenna is an PCB antenna which permanently attached, and the best case gain of the antenna is 0.71dBi. See product internal photos for details.

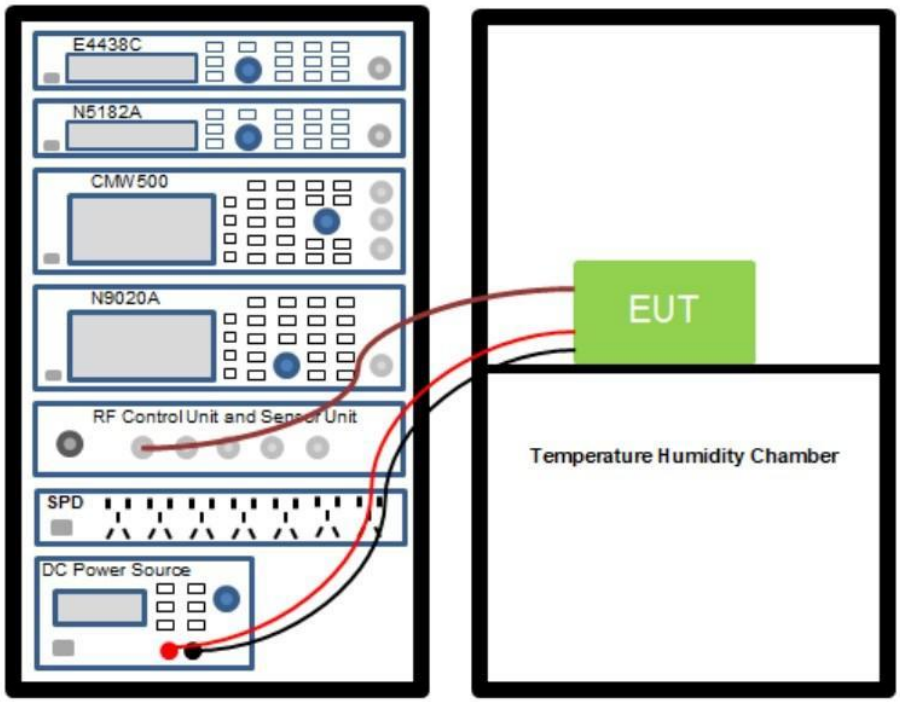
6 Radio Spectrum Matter Test Results (RF)

6.1 20dB Bandwidth

Test Requirement:	47 CFR 15.231(c)
Test Method:	ANSI C63.10-2020, section 6.9.2
Test Limit:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.
Procedure:	a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2. d) Steps a) through c) might require iteration to adjust within the specified tolerances. e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value. f) Set detection mode to peak and trace mode to max hold. g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value). h) Determine the “-xx dB down amplitude” using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

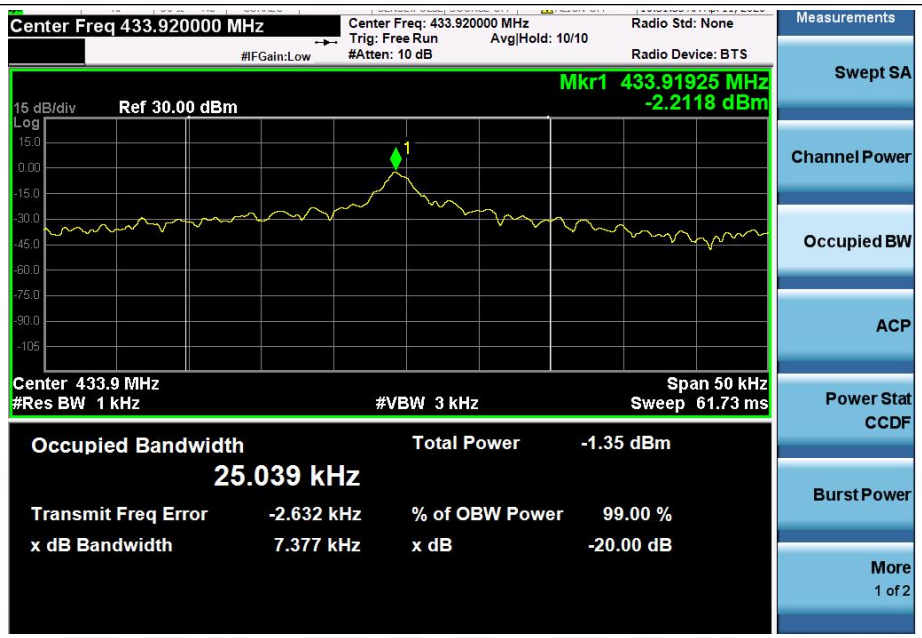
	i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j). j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “íxx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “íxx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth. k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).
Test Setup:	
Operating Environment:	

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Temperature:	23 °C
Humidity:	51.5 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 3V From Battery

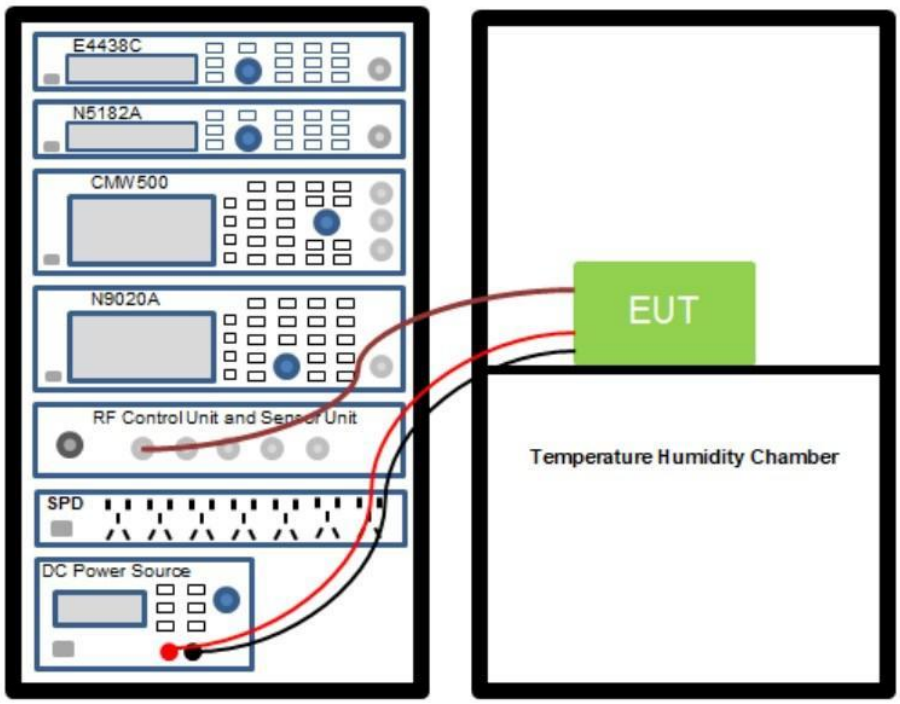
6.1.1 Test Data

Mode	Freq (MHz)	-20dB Bandwidth (kHz)	Limit (kHz)	Conclusion
Tx Mode	433.92	7.377	1084.8	PASS



BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.2 Dwell Time

Test Requirement:	47 CFR 15.231(a)(1) & (a)(2)
Test Method:	ANSI C63.10-2020, Section 7.4
Test Limit:	(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
Procedure:	For evaluation of periodic operation characteristics, the following procedure may be used: a) Trigger the spectrum analyzer sweep on the RF waveform of the unlicensed wireless device. b) Set the spectrum analyzer sweep time greater than the specified time for periodic operation. c) Manually activate and deactivate the unlicensed wireless device and confirm that it ceases transmission within the specified time of deactivation. d) Document the test results. e) Verify and document that periodic transmissions at regular predetermined intervals do not exist, except where regulatory requirements allow polling or supervision transmissions, including data, to determine system integrity. Compliance is addressed by an attestation supported by the equipment theory of operation.
Test Setup:	
Operating Environment:	
Temperature:	22.2 °C
Humidity:	54.5 %
Atmospheric Pressure:	1010 mbar

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Test voltage:	DC 3V From Battery

6.2.1 Test Data

Frequency (MHz)	Activation Time (s)	Limit: not more than 5 seconds of being released(s)	Conclusion
433.92	0.64	5	PASS

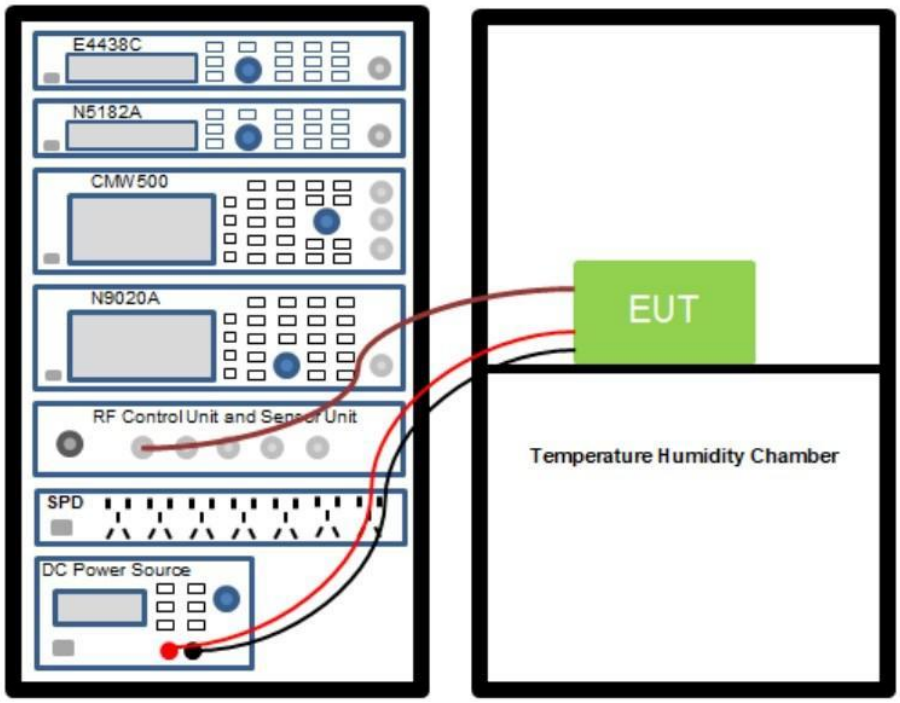
BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.3 Duty Cycle

Test Requirement:	47 CFR 15.231(b) & (e)
Test Method:	ANSI C63.10-2020, Section 7.5
Test Limit:	No limit, only for Report Use.
Procedure:	a) Adjust and configure any EUT switches, controls, or input data streams to ensure that the EUT is transmitting or encoded to obtain the “worst-case” pulse ON time. b) Couple the final radio frequency output signal to the input of a spectrum analyzer. This may be performed by a radiated, direct connection (i.e., conducted) or by a “near-field” coupling method. The signal received shall be of sufficient level to trigger adequately the spectrum analyzer sweep display. NOTE—If the bandwidth of the pulse is greater than the RBW of the spectrum analyzer, then a similar measurement may be performed using a wideband digital storage oscilloscope (DSO). c) Adjust the center frequency of the spectrum analyzer to the center of the RF signal. d) Set the spectrum analyzer for ZERO SPAN. e) Adjust the SWEEP TIME to obtain at least a 100 ms period of time on the horizontal display axis of the spectrum analyzer. f) If the pulse train is periodic (i.e., consists of a series of pulses that repeat in a characteristic pattern over a constant time period), and the period (T) is less than or equal to 100 ms, then: 1) Set the TRIGGER on the spectrum analyzer to capture at least one period of the pulse train, including any blanking intervals. 2) Determine the total maximum pulse “ON time” (t_{ON}) over one period of the pulse train. An example of a periodic pulse train and the associated period is shown in Figure 14. If the pulse train contains pulses of different widths, then t_{ON} is determined by summing the duration of all of the pulses within the pulse train [i.e., $t_{ON} = \Sigma(t1 + t2 + \ldots tn)$]. 3) The duty cycle is then determined by dividing the total maximum “ON time” by the period of the pulse train (t_{ON}/T). g) If the pulse train is nonperiodic or is periodic with a period that exceeds 100 ms, or as an alternative to step f), then: 1) Set the TRIGGER on the spectrum analyzer to capture the greatest amount of pulse “ON time” over 100 ms. 2) Find the 100 ms period that contains the maximum “on time”; this may require summing the duration of multiple pulses as described in step f2). 3) Determine the duty cycle by dividing the total maximum “ON time” by 100 ms (t_{ON}/100 ms).
Test Setup:	

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

	
Operating Environment:	
Temperature:	23 °C
Humidity:	48.2 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 3V From Battery

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

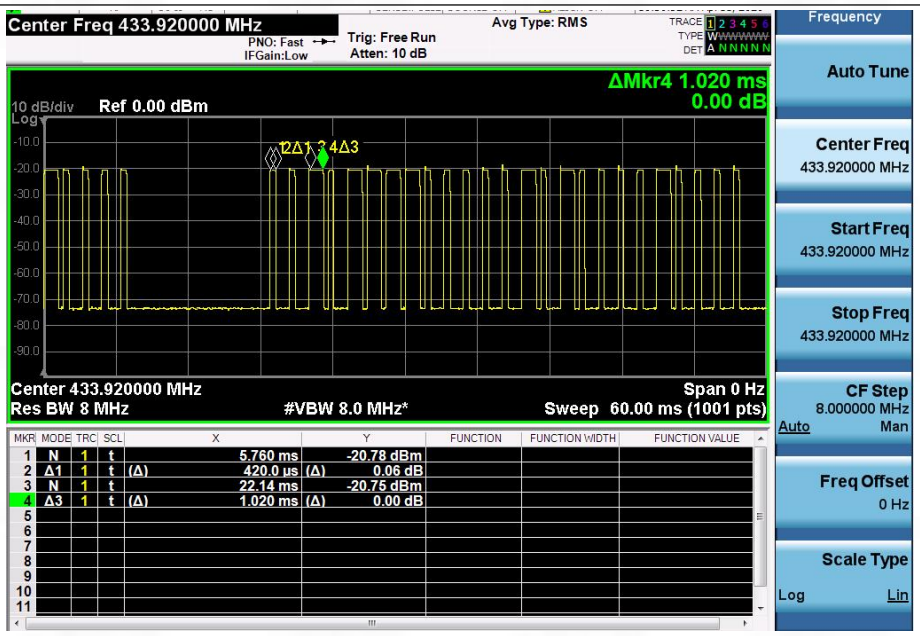
BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.3.1 Test Data

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	0.42	17	7.14	15.3
Pules 2	1.02	8	8.16	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor(dB)
50.82	15.3	30.11	5.21

Note 1: Duty Cycle Factor=10 log (100%/Duty Cycle)
Note 2: The maximum reference value of the test cycle is 100ms.



BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.4 Field Strength of The Fundamental Signal

Test Requirement:	47 CFR 15.231(b)
Test Method:	ANSI C63.10-2020, Section 6.5
Test Limit:	

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	[1] 1,250 to 3,750	[1] 125 to 375
174-260	3,750	375
260-470	[1] 3,750 to 12,500	[1] 375 to 1,250
Above 470	12,500	1,250

[1] Linear interpolations.

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

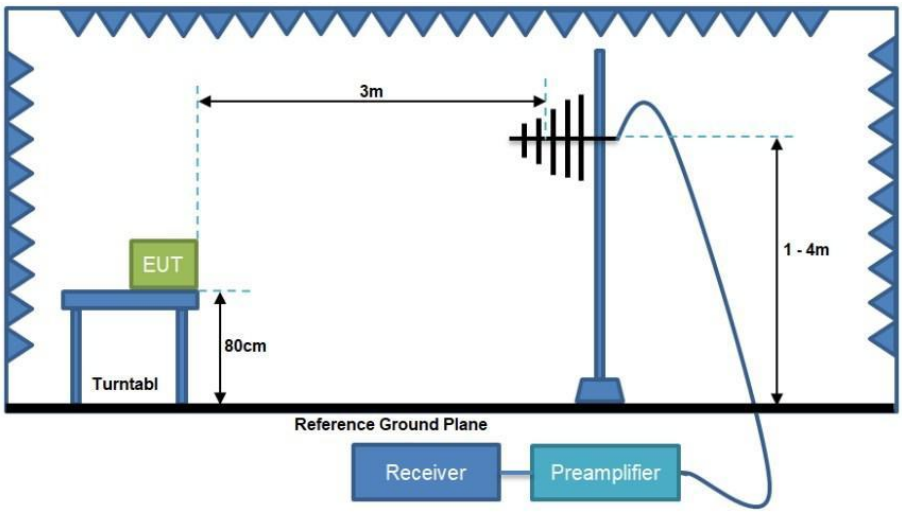
Procedure:

Below 1GHz:
a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
i. Repeat above procedures until all frequencies measured was complete.
Remark:
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.

Above 1GHz:

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

	a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
Test Setup:	
Operating Environment:	

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

Temperature:	22.7 °C
Humidity:	47.8 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 3V From Battery

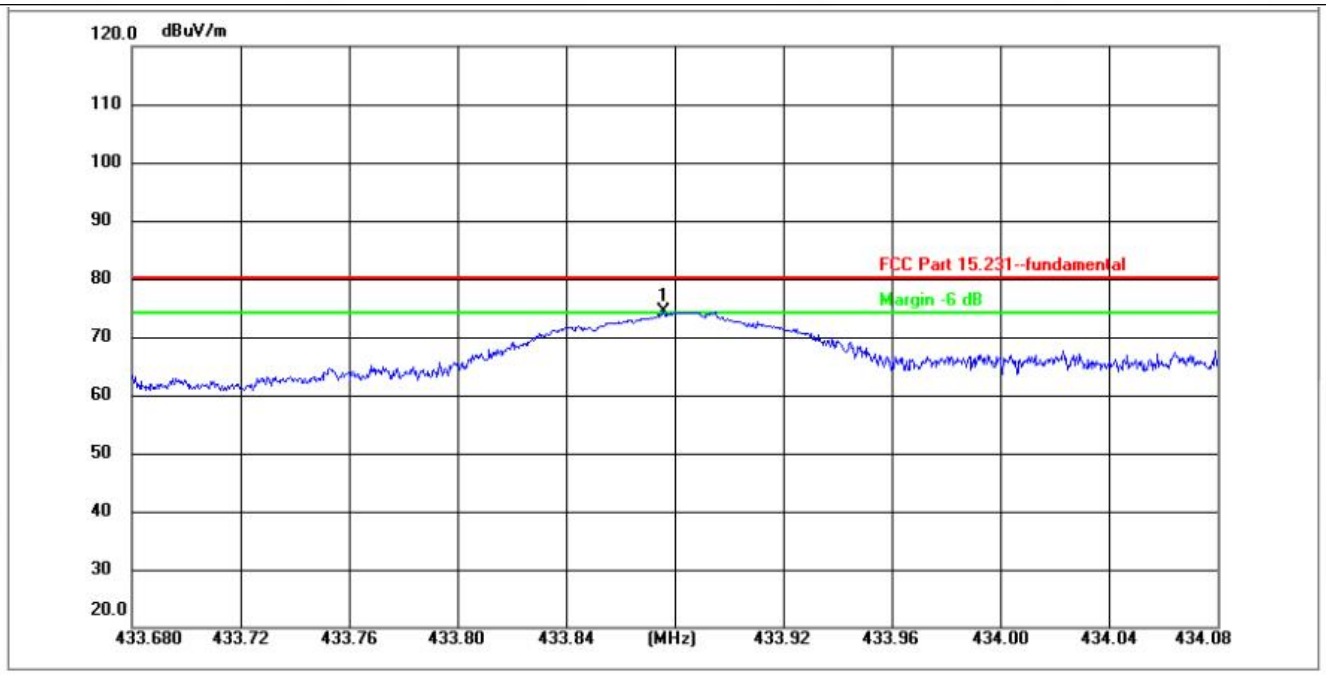
6.4.1 Test Data

Polarization	Level(dBuV/m)	Level(dBm)
Horizontal	74.35	-15.59
Vertical	72.53	-17.46
Note 1: Level(dBm)=Level(dBuV/m)-95.2+Duty Cycle Factor		

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

TM1 / Polarization: Horizontal / BW: 433.92 / CH: M

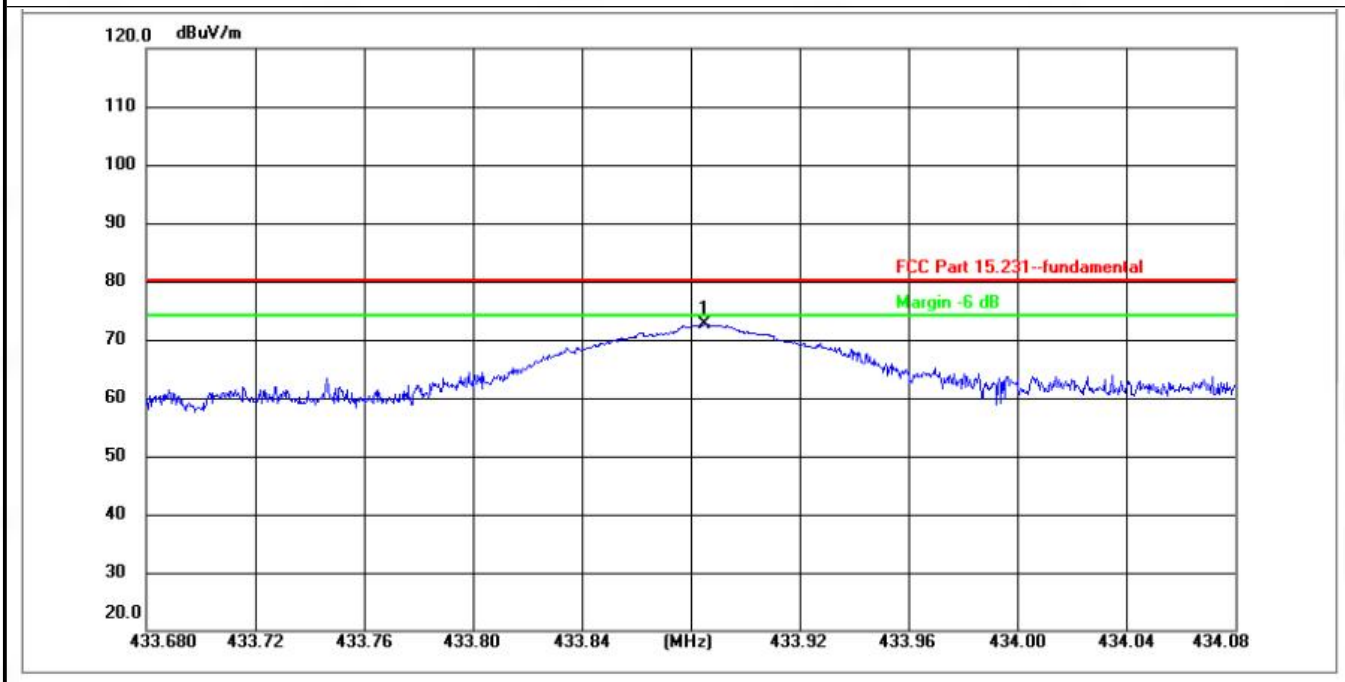


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	433.8760	77.28	-2.93	74.35	80.22	-5.87	peak	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

TM1 / Polarization: Vertical / BW: 433.92 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1 *	433.8847	75.46	-2.93	72.53	80.22	-7.69	peak	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

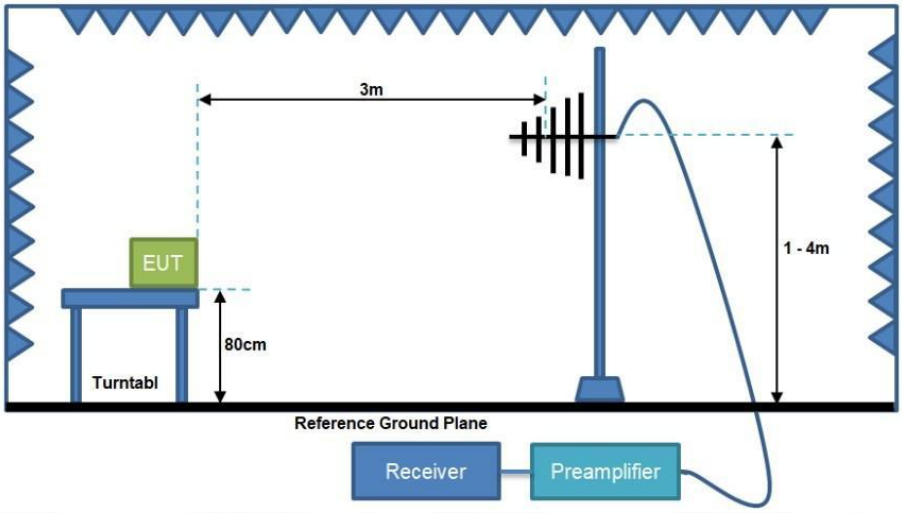
BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.5 Radiated Emission (below 1GHz)

Test Requirement:	47 CFR 15.231
Test Method:	ANSI C63.10-2020, Section 6.5
Test Limit:	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

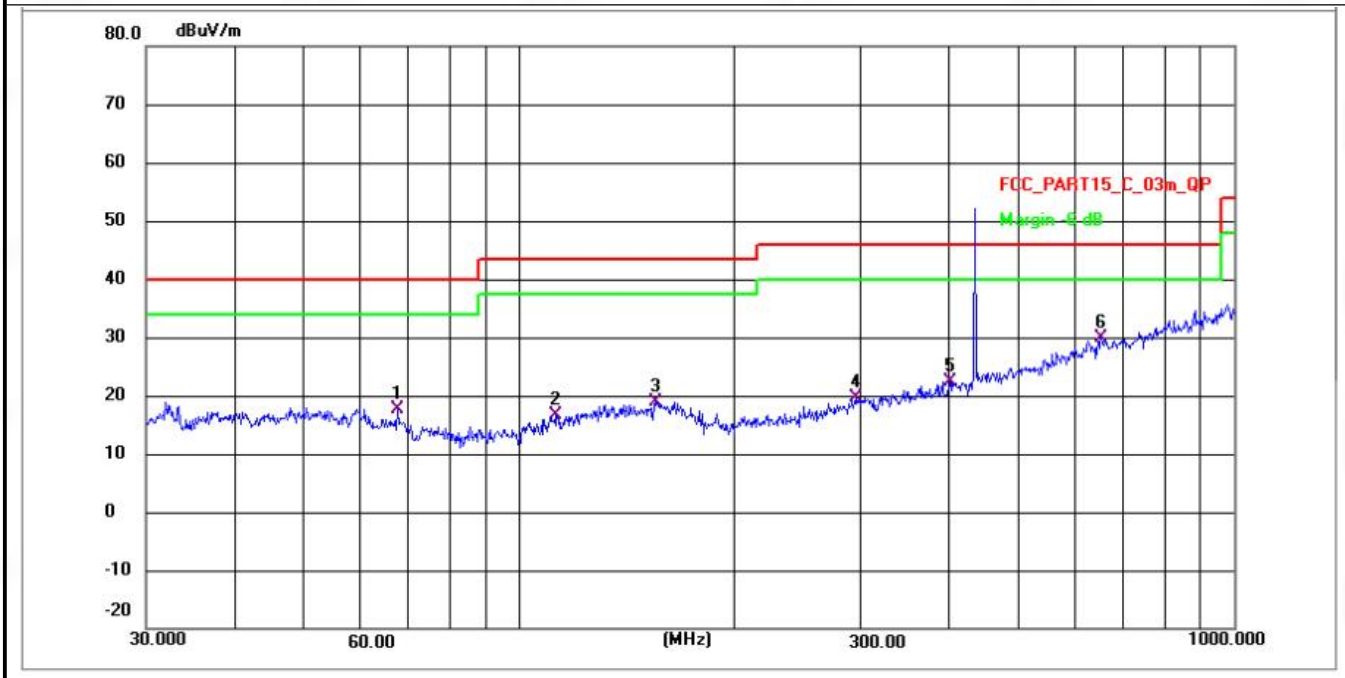
	3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
Test Setup:	
Operating Environment:	
Temperature:	23.5 °C
Humidity:	45.6 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 3V From Battery

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.5.1 Test Data

Remark: The report only reflects the test data of worst mode.

TM1 / Polarization: Horizontal / BW: 433.92 / CH: M

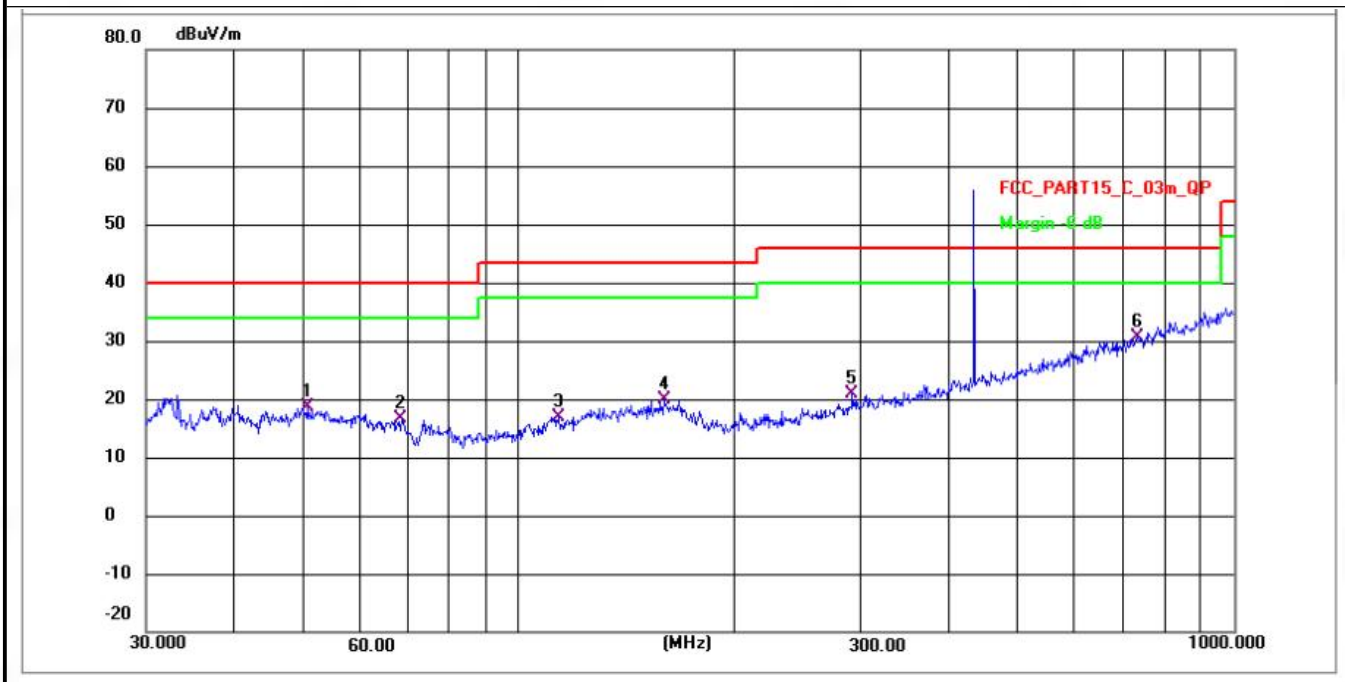


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	67.4382	27.13	-9.42	17.71	40.00	-22.29	QP	P
2	112.5244	44.37	-27.76	16.61	43.50	-26.89	QP	P
3	155.3644	46.12	-27.25	18.87	43.50	-24.63	QP	P
4	296.1836	45.44	-25.82	19.62	46.00	-26.38	QP	P
5	400.4319	47.39	-24.91	22.48	46.00	-23.52	QP	P
6 *	651.9417	52.82	-22.84	29.98	46.00	-16.02	QP	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

TM1 / Polarization: Vertical / BW: 433.92 / CH: M



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	50.4973	28.17	-9.58	18.59	40.00	-21.41	QP	P
2	68.5107	25.98	-9.40	16.58	40.00	-23.42	QP	P
3	113.5151	44.63	-27.75	16.88	43.50	-26.62	QP	P
4	159.7844	47.12	-27.20	19.92	43.50	-23.58	QP	P
5	293.0842	46.79	-25.85	20.94	46.00	-25.06	QP	P
6 *	734.4913	52.85	-22.19	30.66	46.00	-15.34	QP	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

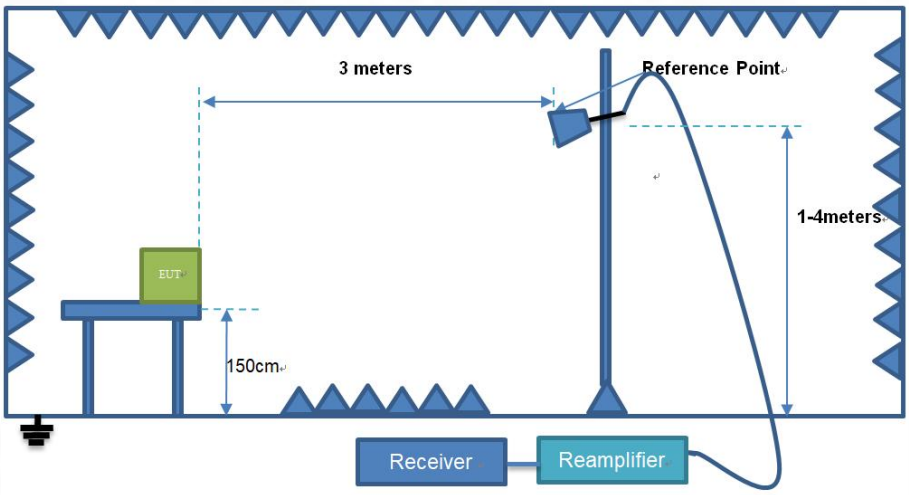
BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.6 Radiated Emission (above 1GHz)

<table>
<tr><td>Test Requirement:</td><td>47 CFR 15.231</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10-2020, Section 6.6</td></tr>
<tr><td>Test Limit:</td><td>
<table>
<tr><td>Frequency (MHz)</td><td>Field strength (microvolts/meter)</td><td>Measurement distance (meters)</td></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100 **</td><td>3</td></tr>
<tr><td>88-216</td><td>150 **</td><td>3</td></tr>
<tr><td>216-960</td><td>200 **</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
</td></tr>
<tr><td>Procedure:</td><td>a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
i. Repeat above procedures until all frequencies measured was complete.
Remark:
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit</td></tr>
</table>

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

	need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
Test Setup:	
Operating Environment:	
Temperature:	22.3 °C
Humidity:	45.3 %
Atmospheric Pressure:	1010 mbar
Test voltage:	DC 3V From Battery

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

6.6.1 Test Data

Remark: The report only reflects the test data of worst mode.

TM1 / Polarization: Horizontal / BW: 433.92 / CH: M

No.	Frequency (MHz)	Reading (dBuv)	Factor (dB/m)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	P/F
1	1354.430	69.33	-49.98	19.36	74.00	-54.64	peak	P
2	1354.430	59.50	-49.98	9.52	54.00	-44.48	AVG	P
3	2124.967	71.59	-49.72	21.87	74.00	-52.13	peak	P
4	2124.967	61.71	-49.72	11.99	54.00	-42.01	AVG	P
5	3408.373	68.06	-49.28	18.78	74.00	-55.22	peak	P
6	3408.373	58.13	-49.28	8.86	54.00	-45.14	AVG	P
7	4043.985	76.75	-49.37	27.38	74.00	-46.62	peak	P
8	4043.985	66.33	-49.37	16.96	54.00	-37.04	AVG	P
9	5117.736	78.21	-48.71	29.50	74.00	-44.50	peak	P
10	5117.736	67.79	-48.71	19.08	54.00	-34.92	AVG	P
11 *	5798.326	82.65	-48.42	34.23	74.00	-39.77	peak	P
12	5798.326	72.82	-48.42	24.40	54.00	-29.60	AVG	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

TM1 / Polarization: Vertical / BW: 433.92 / CH: M

No.	Frequency (MHz)	Reading (dBuv)	Factor (dB/m)	Level (dBuv/m)	Limit (dBuv/m)	Margin (dB)	Detector	P/F
1	1479.024	69.23	-49.94	19.29	74.00	-54.71	peak	P
2	1479.024	59.36	-49.94	9.42	54.00	-44.58	AVG	P
3	2293.795	70.70	-49.61	21.09	74.00	-52.91	peak	P
4	2293.795	60.15	-49.61	10.54	54.00	-43.46	AVG	P
5	3343.924	67.36	-49.26	18.10	74.00	-55.90	peak	P
6	3343.924	56.81	-49.26	7.55	54.00	-46.45	AVG	P
7	4239.995	78.01	-49.25	28.76	74.00	-45.24	peak	P
8	4239.995	67.84	-49.25	18.59	54.00	-35.41	AVG	P
9	5017.347	80.01	-48.75	31.26	74.00	-42.74	peak	P
10	5017.347	69.05	-48.75	20.30	54.00	-33.70	AVG	P
11 *	5742.613	81.91	-48.44	33.47	74.00	-40.53	peak	P
12	5742.613	71.20	-48.44	22.76	54.00	-31.24	AVG	P

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

7 Test Setup Photos

Please refer to the Appendix I Test Setup Photos.

8 EUT Constructional Details (EUT Photos)

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

Total or partial reproduction of this document without permission of the Laboratory is not allowed.

BTF Testing Lab (Shenzhen) Co., Ltd.
Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China
Email: info@btf-lab.com Tel: +86-0755-23146130 http://www.btf-lab.com

BTF Testing Lab (Shenzhen) Co., Ltd.

Plant 101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, Guangdong, China

www.btf-lab.com

-- END OF REPORT --