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FCC Test Report FCC PART 15 Subpart B Class B

Report Reference No.....: CTL1806047012-F

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Date of issue.....: Jun. 28, 2018

Representative Laboratory Name.: Shenzhen CTL Testing Technology Co., Ltd.

Address.....: Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

Test Firm.....: Shenzhen CTL Testing Technology Co., Ltd.

Address.....: Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road, Nanshan District, Shenzhen, China 518055

Applicant's name : SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO.,LTD.

Address.....: Room 506,Building F, Dong Hai Wang, No.369,Bu Long Road,Bantian Street, Long Gang District, Shenzhen, China

Test specification:

Standard.....: FCC PART 15 Subpart B Class B

TRF Originator.....: Shenzhen CTL Testing Technology Co., Ltd.

Shenzhen CTL Testing Technology Co., Ltd.

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Test item description.....: **Stun receiver**

FCC ID: 2AKG5-TC01-R1

Test voltage.....: DC 5V

Result.....: **Pass**

FCC Test Report

Test Report No. : CTL1806047012-F	Jun. 28, 2018 Date of issue
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Equipment under Test : Stun receiver

Type / Model : TC01-R1

Applicant : SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO.,LTD.

Address : Room 506,Building F, Dong Hai Wang, No.369,Bu Long Road,Bantian Street, Long Gang District, Shenzhen, China

Manufacturer : SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO.,LTD.

Address : Room 506,Building F, Dong Hai Wang, No.369,Bu Long Road,Bantian Street, Long Gang District, Shenzhen, China

Receive Frequency : 433.5MHz

Test Result	Pass
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The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

History of this test report

Report No.	Version	Description	Issued Date
CTL1806047012-F	V1.0	Initial Issued Report	Jun. 28, 2018



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1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15 Subpart B - Unintentional Radiators](#)

[ANSI C63.4-2014](#)



2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Jun. 08, 2018

Testing commenced on : Jun. 08, 2018

Testing concluded on : Jun. 28, 2018

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : 120V / 60 Hz 115V / 60Hz
 12 V DC 24 V DC
 Other (specified in blank below)

DC 5V

2.3. Short description of the Equipment under Test (EUT)

Stub receiver

For more details, refer to the user's manual of the EUT.

2.4. EUT operation mode

The EUT has been tested under typical operating condition.

2.5. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

2.7. Related Submittal(s) / Grant (s)

This test report is intended for Stun receiver filing to comply with the FCC Part 15, Subpart B Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

2.9. Test Result Summary

TestItem	TestRequirement	StandardParagrph	Result
Conducted Emissions	FCC PART 15 Subpart B Class B	Section15.107	PASS
Radiated Emission	FCC PART 15 Subpart B Class B	Section15.109	PASS



3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

3.2. Test Facility

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

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B on November 13, 2013.

FCC-Registration No.: 399832

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832, December 08, 2017.

Certificated by A2LA, USA

Registration No.:4343.01

Date of registration: December 27, 2017

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

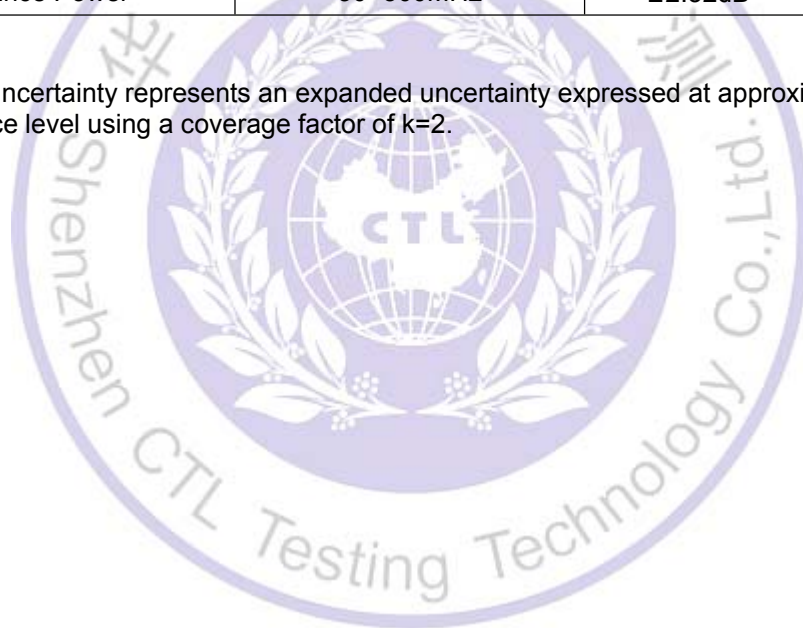
3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission(chamber 1)	30~1000MHz	±3.20dB	(1)
Radiated Emission(chamber 2)	30~1000MHz	±3.53dB	(1)
Radiated Emission	1~12.75GHz	±4.32dB	(1)
Conducted Emission	0.15~30MHz	±2.66dB	(1)
Disturbance Power	30~300MHz	±2.32dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



3.5 Equipments Used during the Test

Conducted Emissions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	R&S	ESCI	101247	11/11/2017	11/10/2018
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	11/11/2017	11/10/2018
3	2-Line V-Network	R&S	ESH3-Z5	100049	11/11/2017	11/10/2018
4	Pulse Limiter	R&S	ESH3-Z2	101488	11/11/2017	11/10/2018
5	RF Connection Cable	HUBER+SUHNER	EF400	N/A	11/21/2017	11/20/2018
6	Test Software	R&S	ES-K1	N/A	N/A	N/A

Radiated Emission(Chamber1)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Sunol SciencesCorp.	JB1	A061713	2018/05/20	2019/05/19
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2018/05/20	2019/05/19
3	Horn Antenna	Sunol SciencesCorp	DRH-118	A062013	2018/05/20	2019/05/19
4	Amplifier	Agilent	8447D	2944A10176	2018/05/20	2019/05/19
5	Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2018/05/20	2019/05/19
6	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A

3.6. SOFTWARE USED DURING THE TEST

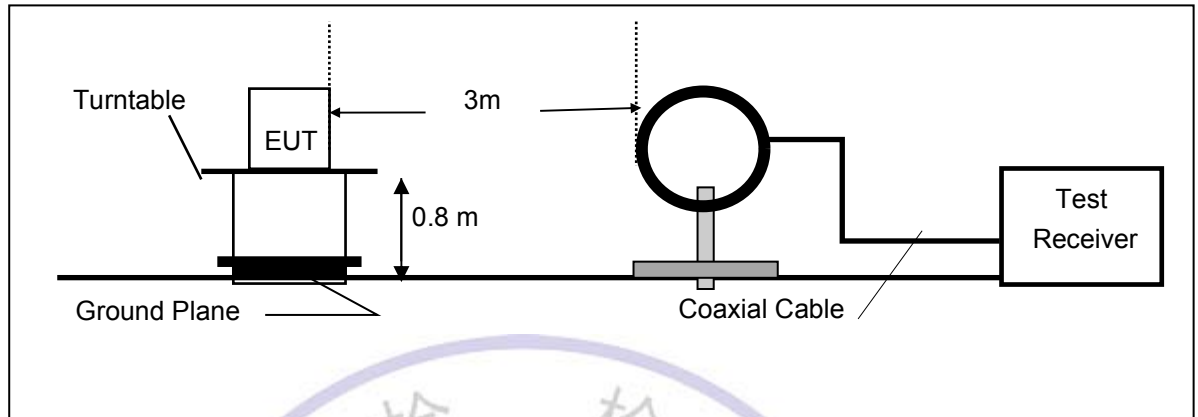
The EUT has been tested under typical operating condition. and we use software(ES-K1) for testing.

4 TEST CONDITIONS AND RESULTS

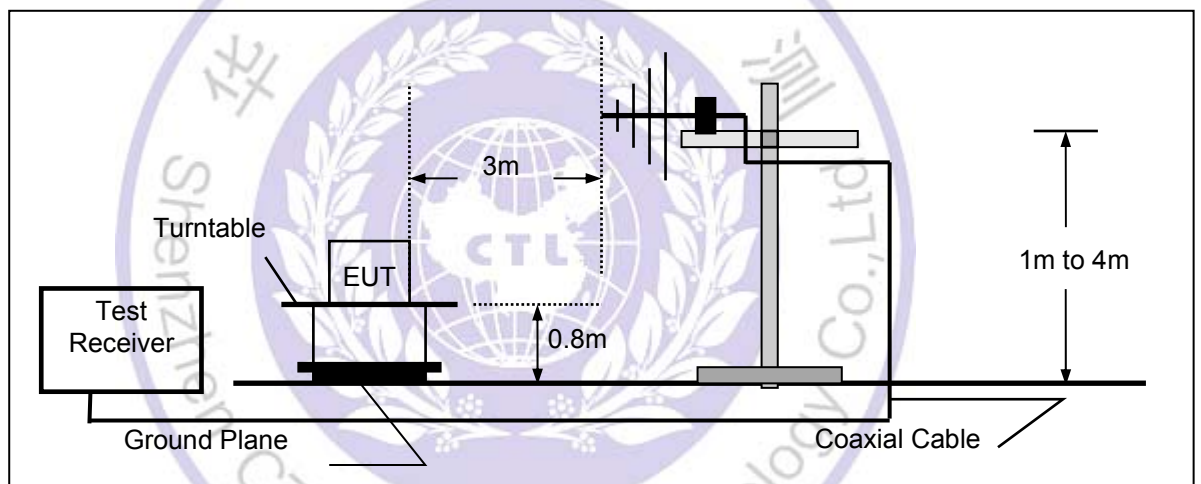
4.1. Radiated Emission Test

TEST CONFIGURATION

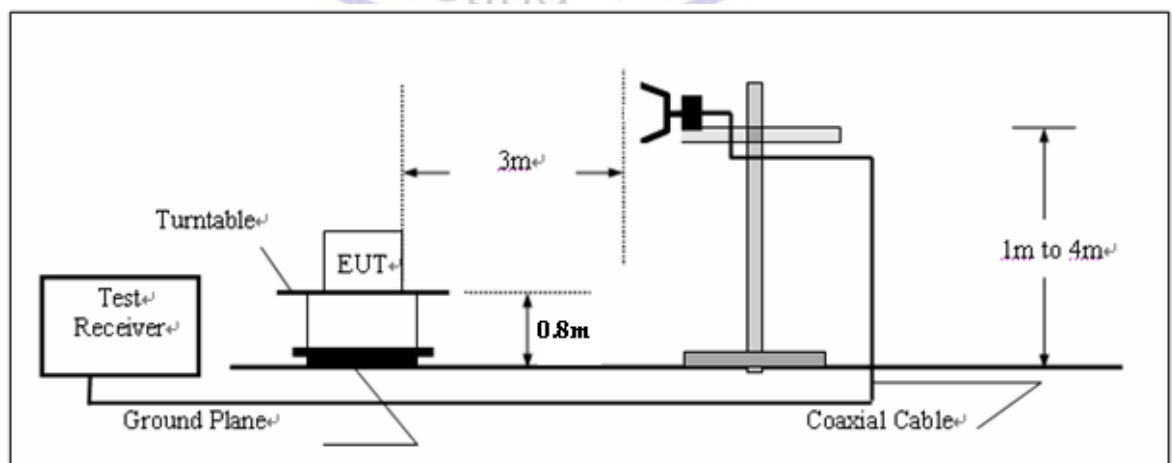
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the

Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.

Radiation Test Results

Note:We pre-scan all available voltages(AC120V/240V),and recorded the worst case for the report.

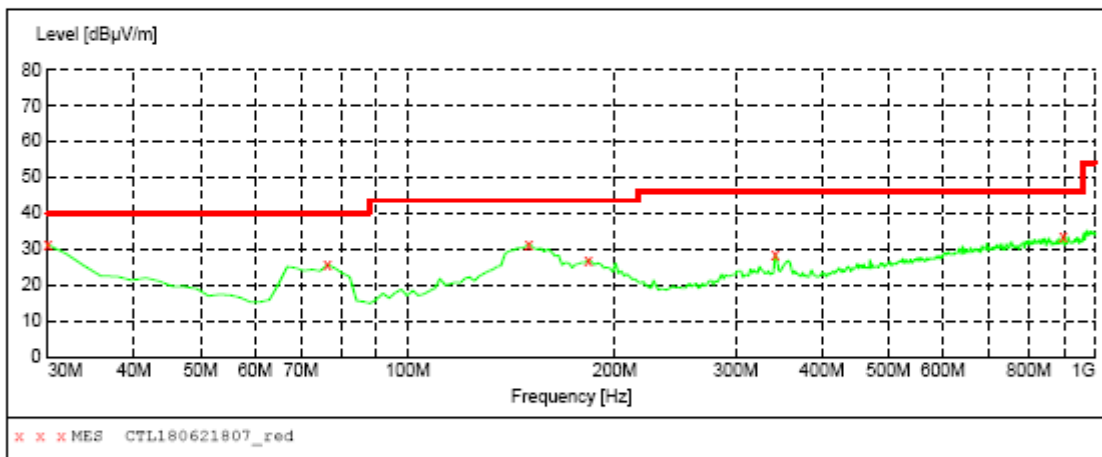
Shenzhen CTL Testing Technology Co.,Ltd

Radiation Emission Test FCC PART 15B

EUT: DOG TRAINING COLLAR
 Manufacturer: /
 Operating Condition: WORKING
 Test Site: Chamber 1
 Operator: ZBS
 Test Specification: DC 5V
 Comment: /
 Start of Test: 6/21/2018 / 9:48:41PM

SWEEP TABLE: "test (30M-1G)"

Short Description: Field Strength
 Start Stop Detector Meas. IF Transducer
 Frequency Frequency Time Bandw.
 30.0 MHz 1.0 GHz MaxPeak 300.0 ms 120 kHz JB1



MEASUREMENT RESULT: "CTL180621807_red"

6/21/2018 9:50PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	31.20	22.1	40.0	8.8	---	0.0	0.00	VERTICAL
76.560000	25.70	9.0	40.0	14.3	---	0.0	0.00	VERTICAL
150.280000	31.50	14.4	43.5	12.0	---	0.0	0.00	VERTICAL
183.260000	27.00	14.6	43.5	16.5	---	0.0	0.00	VERTICAL
342.340000	28.30	17.1	46.0	17.7	---	0.0	0.00	VERTICAL
899.120000	33.70	26.3	46.0	12.3	---	0.0	0.00	VERTICAL



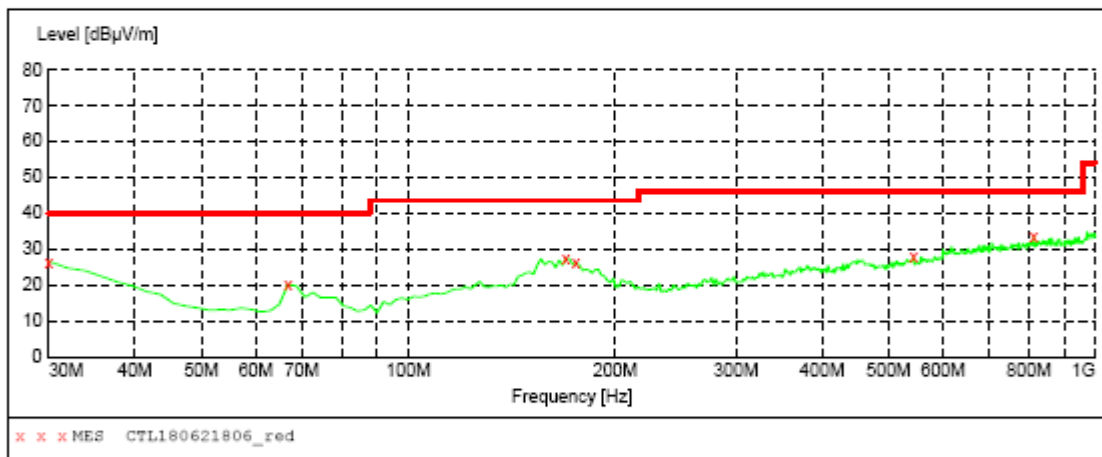
Shenzhen CTL Testing Technology Co.,Ltd

Radiation Emission Test FCC PART 15B

EUT: DOG TRAINING COLLAR
 Manufacturer: /
 Operating Condition: WORKING
 Test Site: Chamber 1
 Operator: ZBS
 Test Specification: DC 5V
 Comment: /
 Start of Test: 6/21/2018 / 9:46:21PM

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	120 kHz	JB1



MEASUREMENT RESULT: "CTL180621806_red"

6/21/2018 9:48PM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	26.50	22.1	40.0	13.5	---	0.0	0.00	HORIZONTAL
66.860000	20.10	8.6	40.0	19.9	---	0.0	0.00	HORIZONTAL
169.680000	27.40	14.5	43.5	16.1	---	0.0	0.00	HORIZONTAL
175.500000	26.10	14.6	43.5	17.4	---	0.0	0.00	HORIZONTAL
544.100000	27.70	21.7	46.0	18.3	---	0.0	0.00	HORIZONTAL
813.760000	33.50	25.7	46.0	12.5	---	0.0	0.00	HORIZONTAL



4.2. Conducted Emissions Test

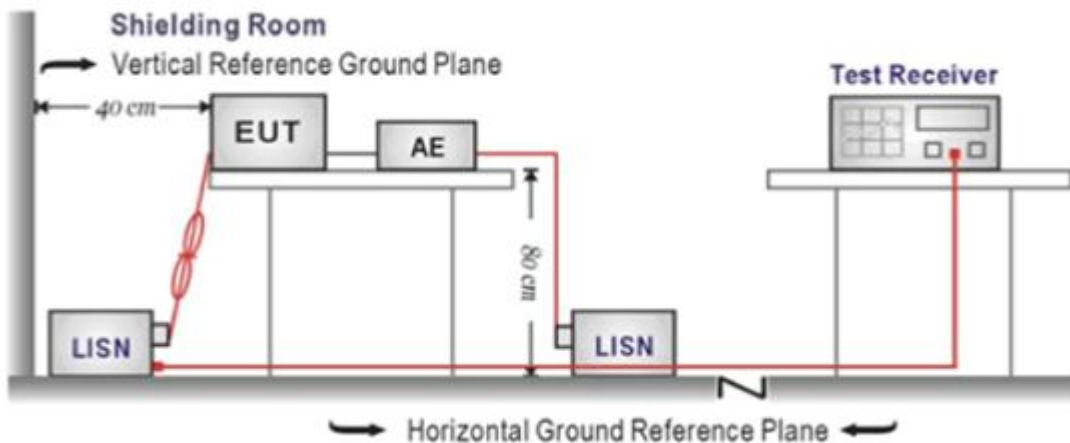
LIMIT

FCC CFR Title 47 Part 15 Subpart B Section 15.107:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.4:2014
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50ohm / 50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

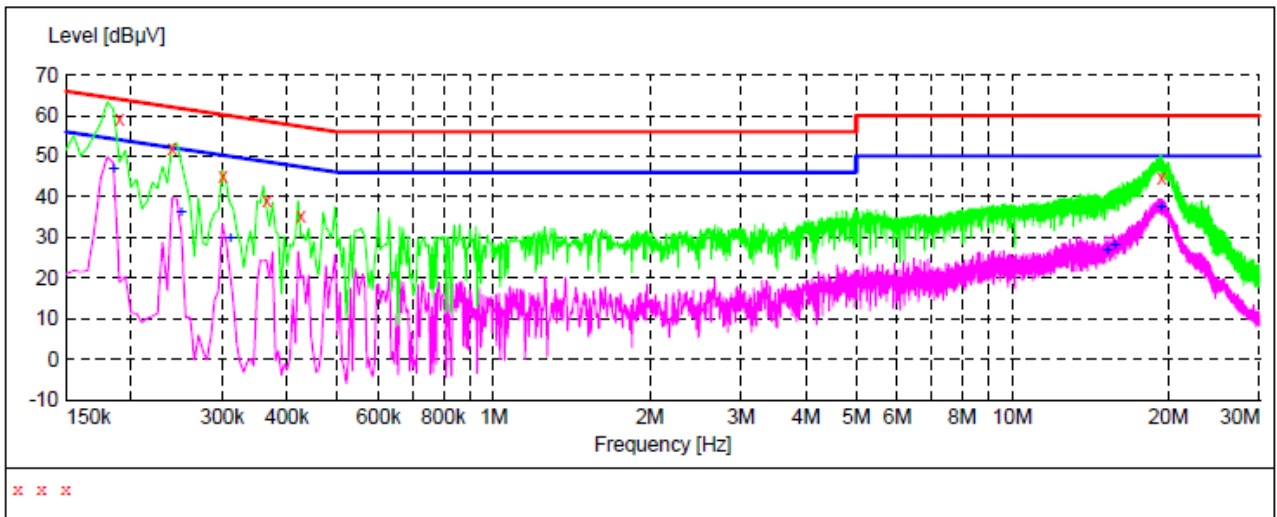
Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable

Note: We pre-scan all available voltages (AC 120V/240V), and recorded the worst case for the report.

SCAN TABLE: "Voltage (150K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

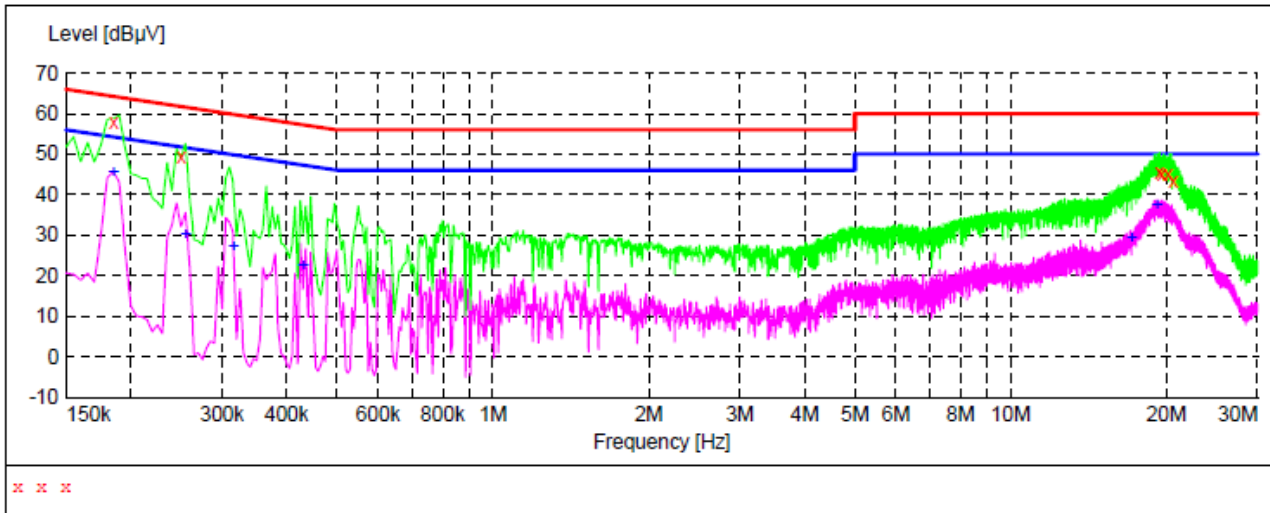
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.190000	59.10	11.5	64	4.9	QP	L1	GND
0.240000	51.90	11.0	62	10.2	QP	L1	GND
0.300000	45.00	10.8	60	15.2	QP	L1	GND
0.365000	39.20	10.6	59	19.4	QP	L1	GND
0.425000	35.20	10.5	57	22.1	QP	L1	GND
19.430000	44.80	10.6	60	15.2	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	46.70	11.7	54	7.6	AV	L1	GND
0.250000	36.20	11.0	52	15.6	AV	L1	GND
0.310000	29.60	10.8	50	20.4	AV	L1	GND
15.245000	27.00	10.8	50	23.0	AV	L1	GND
15.760000	28.10	10.7	50	21.9	AV	L1	GND
19.340000	37.40	10.6	50	12.6	AV	L1	GND



SCAN TABLE: "Voltage (150K-30M) FIN"
 Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	58.10	11.7	64	6.2	QP	N	GND
0.250000	49.60	11.0	62	12.2	QP	N	GND
19.345000	45.70	10.6	60	14.3	QP	N	GND
19.560000	45.20	10.6	60	14.8	QP	N	GND
20.090000	45.20	10.6	60	14.8	QP	N	GND
20.600000	43.60	10.6	60	16.4	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.185000	45.70	11.7	54	8.6	AV	N	GND
0.255000	30.20	10.9	52	21.4	AV	N	GND
0.315000	27.30	10.8	50	22.5	AV	N	GND
0.430000	22.60	10.5	47	24.7	AV	N	GND
17.085000	29.20	10.7	50	20.8	AV	N	GND
19.115000	37.30	10.6	50	12.7	AV	N	GND

1. TEST SETUP PHOTOS OF THE EUT

Conducted Emissions (AC Mains)

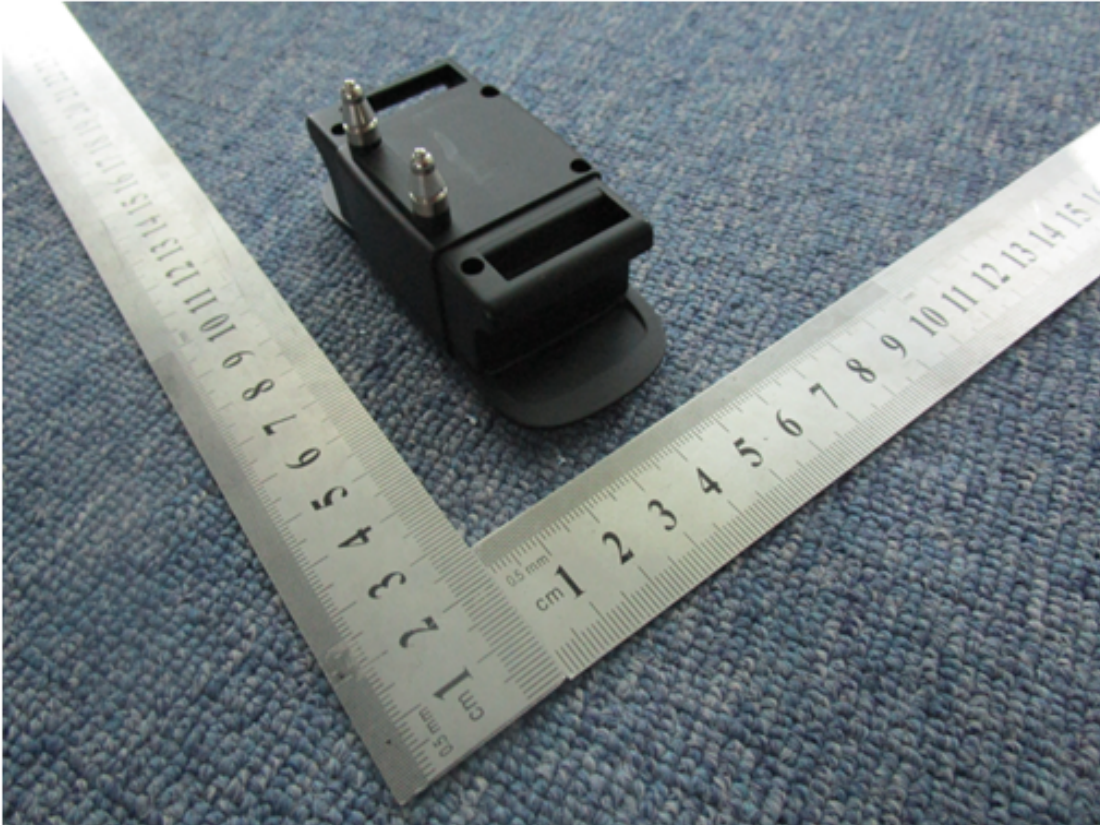


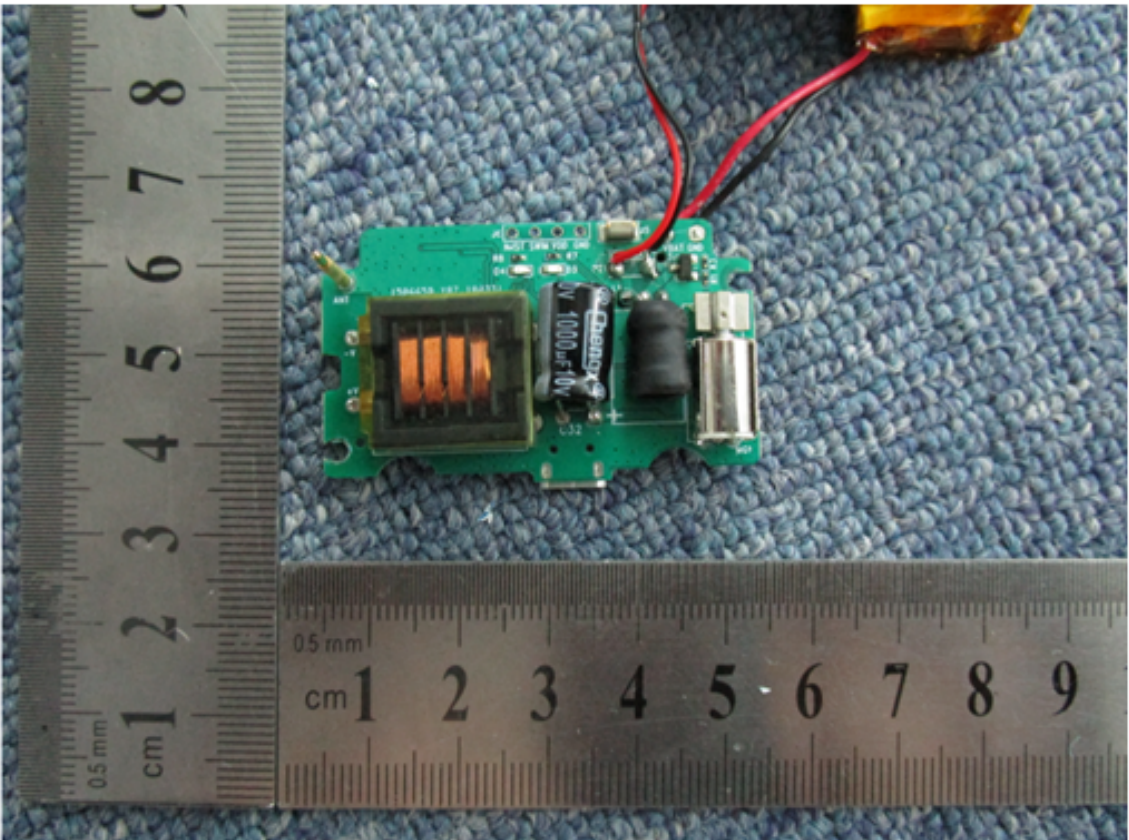
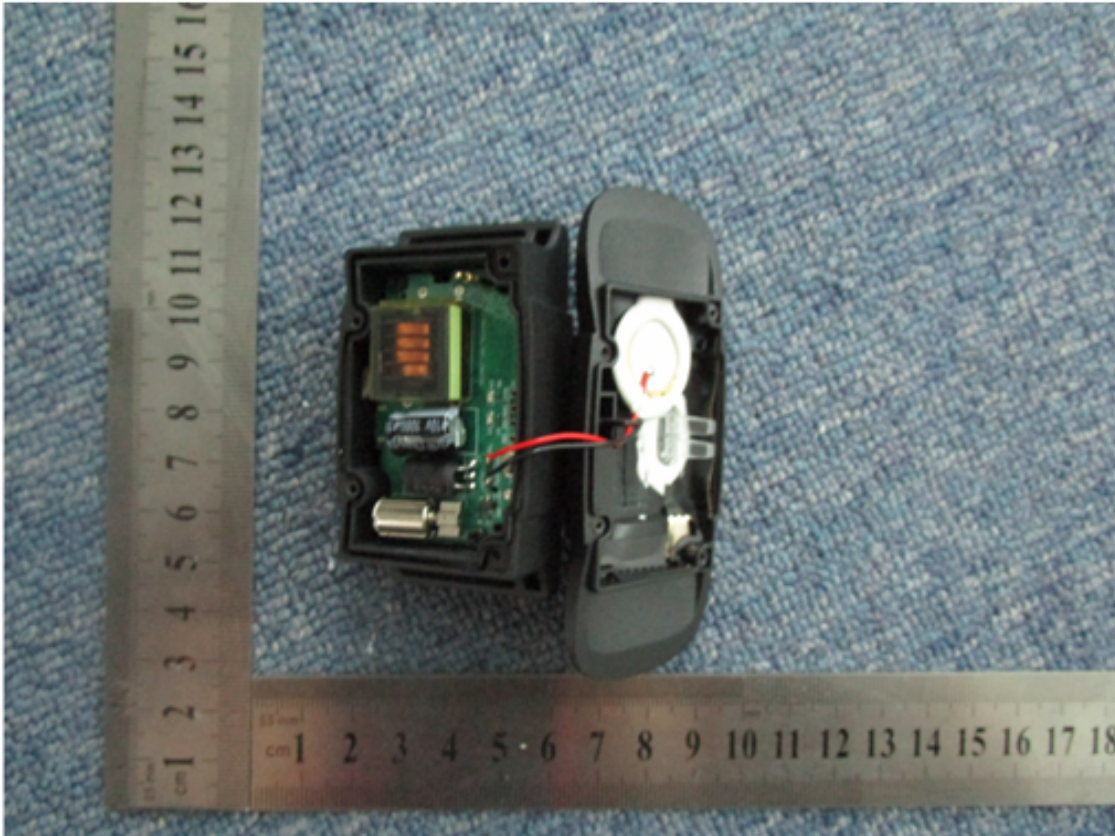
Radiated Emissions (30MHz-1GHz)

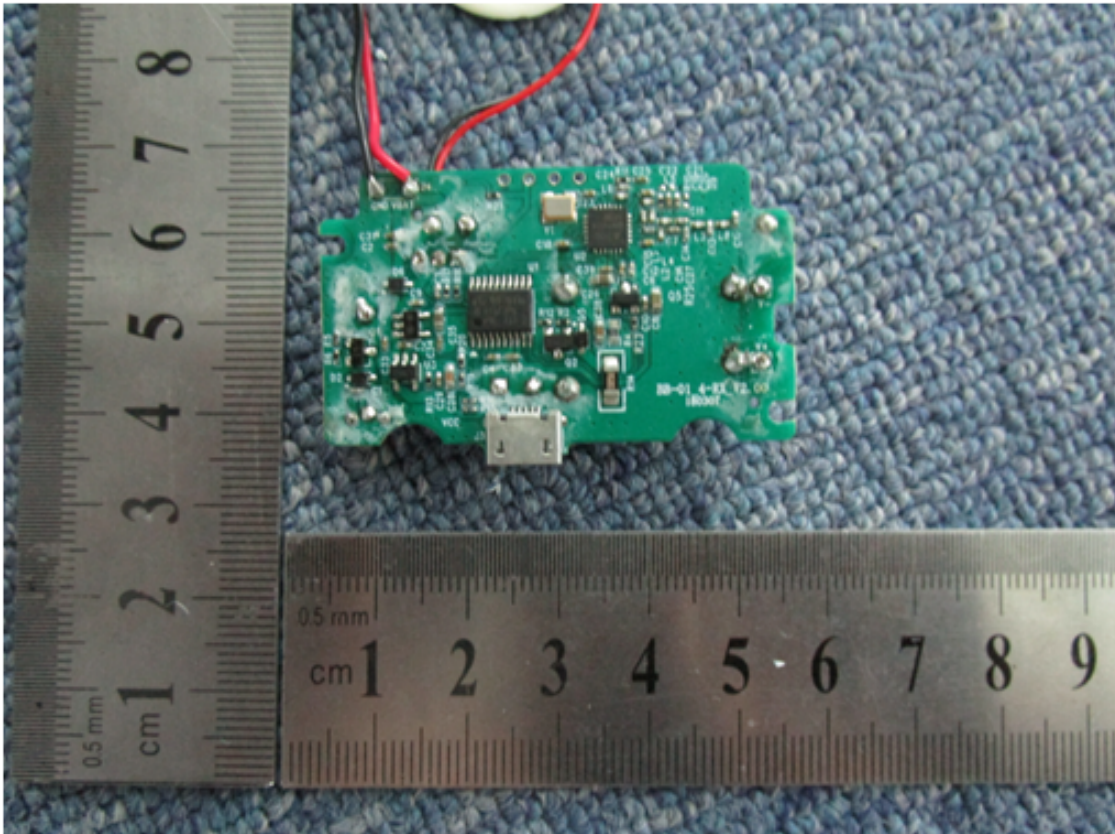


6. Photos of the EUT









.....End of Report.....