

TEST REPORT

FCC ID: 2AKG5-TC06-R

Product: TC01-R1

Model No.: TC01

Trade mark:



Report No.: TCT191017E010

Issued Date: Oct. 23, 2019

Issued for:

SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO., LTD.
Room 201, Building A, No. 1 Qianwan Road, Qianhai Shenzhen-HK
Cooperation Zone, Shenzhen, China

Issued By:

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1. Test Certification

Product:	TC01-R1
Model No.:	TC01
Applicant:	SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO., LTD.
Address:	Room 201, Building A, No. 1 Qianwan Road, Qianhai Shenzhen-HK Cooperation Zone, Shenzhen, China
Manufacturer:	SHENZHEN DOGCARE INNOVATION & TECHNOLOGY CO., LTD.
Address:	Room 201, Building A, No. 1 Qianwan Road, Qianhai Shenzhen-HK Cooperation Zone, Shenzhen, China
Test Voltage:	DC 5 V (Adapter Input AC 120 V/ 60 Hz), DC 3.7 V
Date of Test:	Oct. 17, 2019 ~ Oct. 23, 2019
Applicable Standards:	47 CFR FCC Part 15 Subpart B ANSI C63.4: 2014

The above equipment has been tested by Shenzhen Tongce Testing Lab and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By:

Zak

Zak

Date:

Oct. 23, 2019

Check By:

Howie

Howie

Date:

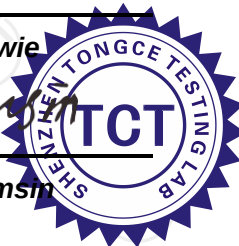
Oct. 23, 2019

Approved By:

Tomsin

Tomsin

Date:

Oct. 23, 2019

2. Test Result Summary

Emission		
Test Method	Item	Result
FCC 47 CFR Part 15 Subpart B	Conducted Emission at Mains Terminals	Pass
	Radiated Emission	Pass

Note:

1. Pass: Test item meets the requirement.
2. Fail: Test item does not meet the requirement.
3. N/A: Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.
5. The information of measurement uncertainty is available upon the customer's request.

3. EUT Description

Product Name:	TC01-R1
Model No.:	TC01
Power supply:	Battery Capacity: 0.93 Wh, DC 3.7 V
DC Line:	☐ Shielded ☒ Unshielded, ☒ Detachable ☐ Un-detachable ☐ Not applicable ☒ Length: 0.47 m
Aux Line:	☐ Shielded ☐ Unshielded, ☐ Detachable ☐ Un-detachable ☒ Not applicable ☐ Length:

4. Test Methodology

4.1. Decision of Final Test Mode

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were assessed:

Test Mode
Mode 1: Charging
Mode 2: Working

The following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Radiated Emission	Mode 2: Receiver 433.5MHz Working

4.2. EUT System Operation

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

5. Setup of Equipment under Test

5.1. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

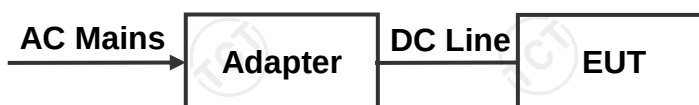
Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	JD-050200	20120109075 76735	/	JD

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5.2. Configuration of System Under Test

Mode 1



Mode 2



(EUT: TC01-R1)

6. Facilities and Accreditations

6.1. Facilities

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

FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	Item	MU
1.	Temperature	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0 \%$
3.	Spurious Emissions, Conducted	$\pm 2.56 \text{ dB}$
4.	All Emissions, Radiated	$\pm 4.28 \text{ dB}$

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

7. Emission Test

7.1. Conducted Emission at Mains Terminals

7.1.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	150 kHz to 30 MHz

7.1.2. Limits

Frequency (MHz)	Class B dB(uV)	
	Quasi-peak	Average
0.15 - 0.5	66 – 56 ^a	56 – 46 ^a
0.50 - 5.0	56	46
5.0 - 30.0	60	50

a. Decreases with the logarithm of the frequency

7.1.3. Test Instruments

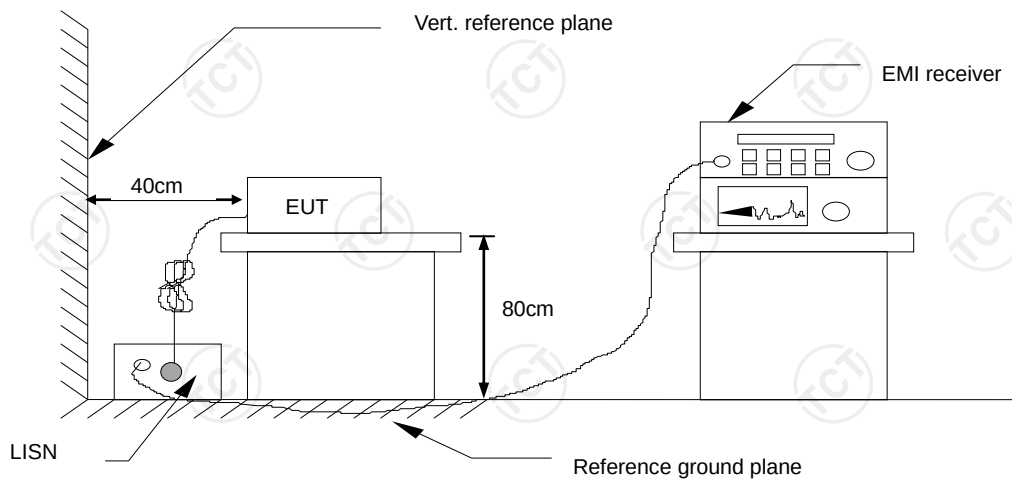
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESPI	101402	Jul. 29, 2020
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2020
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 08, 2020
Test Software	Shurple Technology	EZ-EMC	EMEC-3A1	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.1.4. Test Method

The AMN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN). Conducted voltage measurements on mains lines were made at the output of the AMN

7.1.5. Block Diagram of Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.1.6. Test Results

Test Environment:	Temp.:	25 °C	Humid.:	55 %	Press.:	96 kPa
Test Mode:	Mode 1					
Test Voltage:	DC 5 V (Adapter Input AC 120 V/ 60 Hz)					
Test Result:	Pass					

Note:

L1 = Live Line / N = Neutral Line

Freq. = Emission frequency in MHz

Reading level (dBμV) = Receiver reading

Correct Factor (dB) = LISN factor + Cable loss

Measurement (dBμV) = Reading level (dBμV) + Corr. Factor (dB)

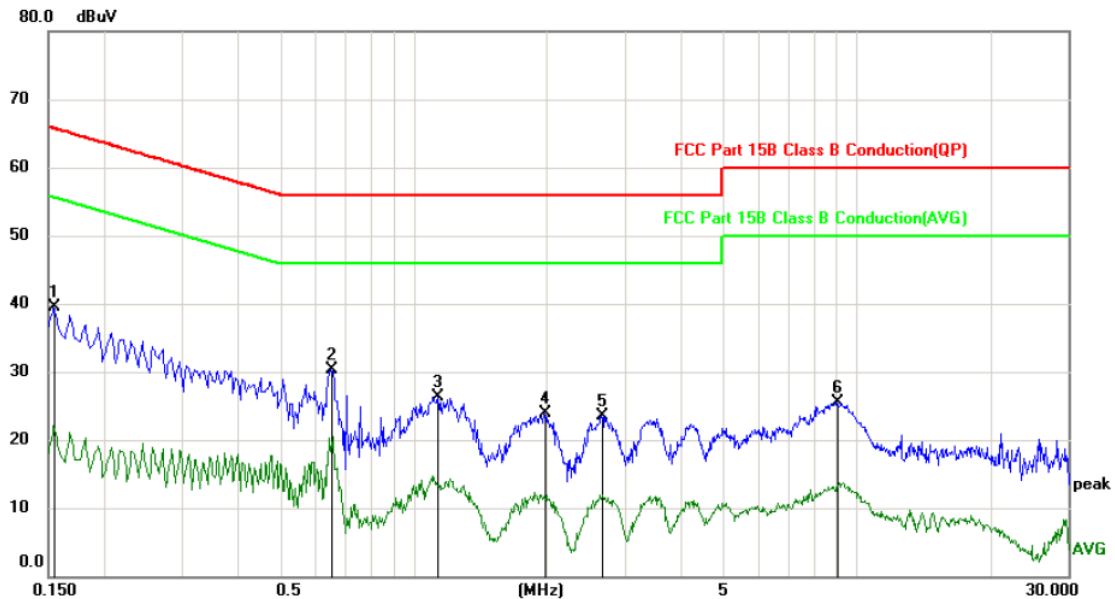
Limit (dBμV) = Limit stated in standard

Margin (dB) = Measurement (dBμV) – Limits (dBμV)

Q.P. =Quasi-Peak AVG =average

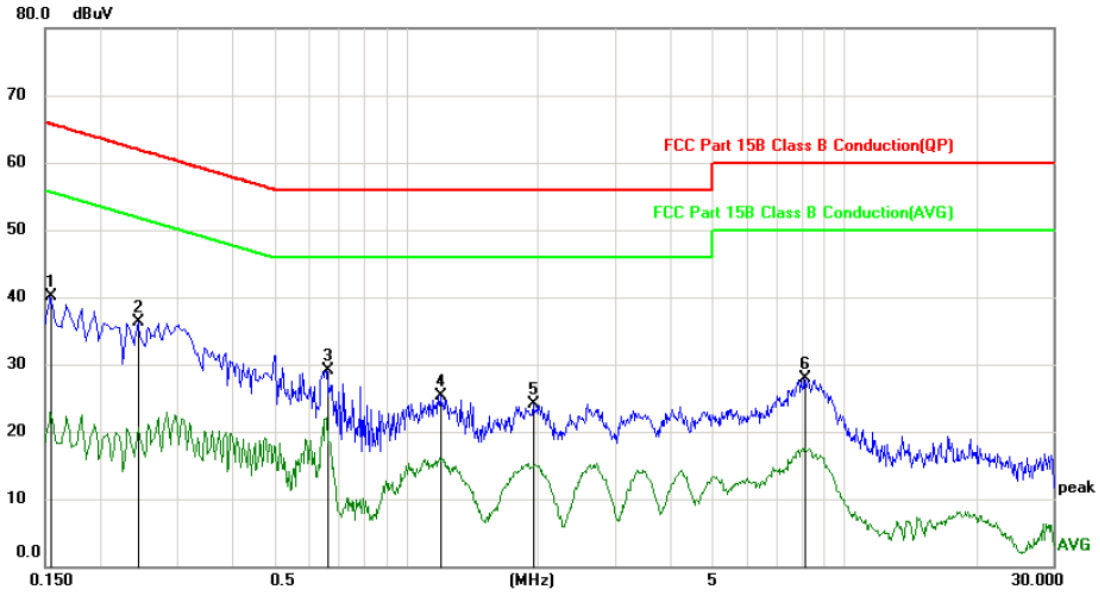
* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.

Please refer to following diagram for individual



Site: Phase: **L1** Temperature: 25
 Limit: FCC Part 15B Class B Conduction(QP) Power: Humidity: 55 %
 Mode: Charging
 Note: DC 5V(Adapter Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1544	29.35	10.12	39.47	65.76	-26.29	peak	
2	*	0.6539	20.09	10.12	30.21	56.00	-25.79	peak	
3		1.1350	16.12	10.12	26.24	56.00	-29.76	peak	
4		1.9769	13.76	10.12	23.88	56.00	-32.12	peak	
5		2.6610	13.37	10.12	23.49	56.00	-32.51	peak	
6		9.0464	15.44	10.15	25.59	60.00	-34.41	peak	



Site: Phase: **N** Temperature: 25
 Limit: FCC Part 15B Class B Conduction(QP) Power: Humidity: 55 %
 Mode: Charging
 Note: DC 5V(Adapter Input AC 120V/60Hz)

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1544	30.06	10.12	40.18	65.76	-25.58	peak	
2		0.2444	26.20	10.13	36.33	61.95	-25.62	peak	
3		0.6582	19.02	10.12	29.14	56.00	-26.86	peak	
4		1.1978	15.26	10.12	25.38	56.00	-30.62	peak	
5		1.9538	14.00	10.12	24.12	56.00	-31.88	peak	
6		8.1105	17.67	10.14	27.81	60.00	-32.19	peak	

7.2. Radiated Emission

7.2.1. Test Specification

Test Requirement:	FCC 47 CFR Part 15 Subpart B
Test Method:	ANSI C63.4: 2014
Frequency Range:	30 MHz to 6000 MHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical

7.2.2. Limits

Below 1 GHz

Frequency (MHz)	Class B (at 3m)
	dBuV/m
30 ~ 88	40.0
88 ~ 216	43.5
216 ~ 960	46.0
960 ~ 1000	54.0

Above 1 GHz

Frequency (MHz)	Peak Value (at 3m)	Average (at 3m)
	dBuV/m	dBuV/m
Above 1GHz	74.0	54.0

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level $\text{dB}(\mu\text{V/m}) = 20 \log \text{Emission level } (\mu\text{V/m})$.

7.2.3. Test Instruments

Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESIB7	100197	Jul. 29, 2020
Spectrum Analyzer	R&S	FSQ40	200061	Sep. 11, 2020
Amplifier	HP	8447D	2727A05017	Sep. 08, 2020
Amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 08, 2020
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 06, 2020
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 06, 2020

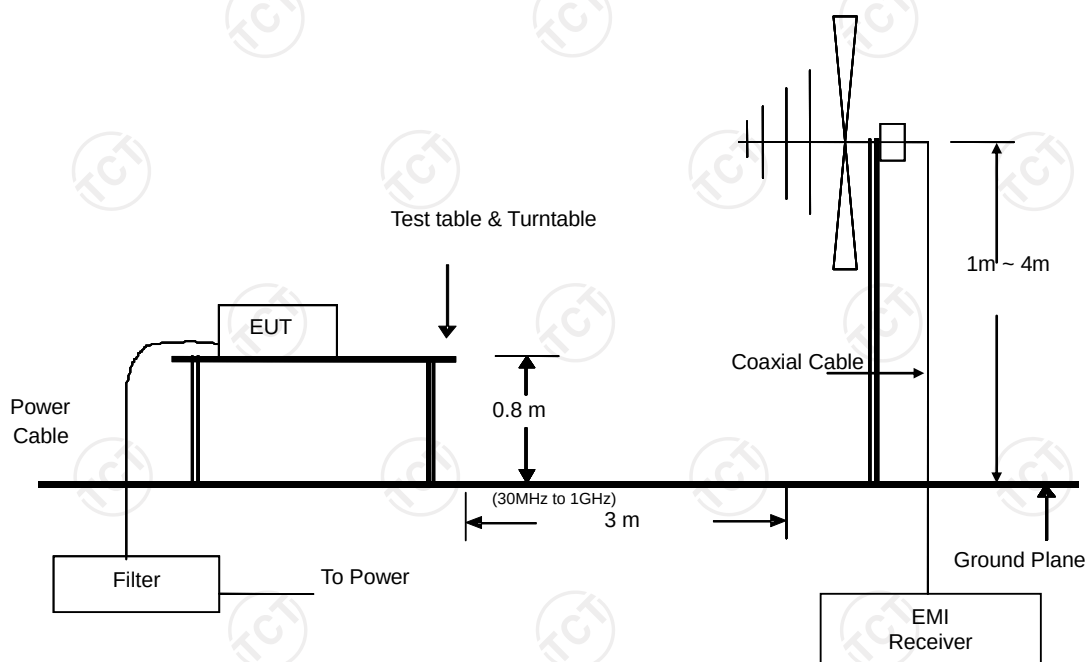
Antenna Mast	SKET	CC-A-4M	N/A	N/A
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 08, 2020
Test Software	Shurple Technology	EZ-EMC	FA-03A2	N/A

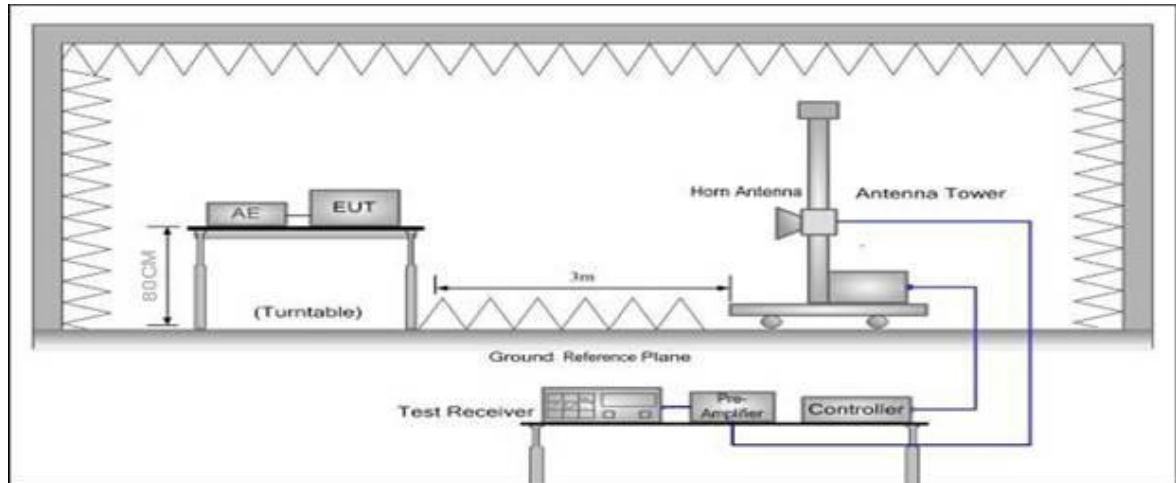
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

7.2.4. Test Method

Measurements were made in a 3-meter semi-anechoic chamber that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meter. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable. Block Diagram of Test Setup. X, Y, Z axes of EUT all have been tested, only worst case is reported.

7.2.5. Block Diagram of Test Setup





(Above 1GHz)

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration

7.2.6. Test Results

Test Environment:	Temp.: 25 °C	Humid.: 55 %	Press.: 96 kPa
Test Mode:	Mode 1, Mode 2		
Test Voltage:	DC 5 V (Adapter Input AC 120 V/ 60 Hz), DC 3.7 V		
Test Result:	Pass		

Note:

Freq. = Emission frequency in MHz

Reading level (dBμV/m) = Receiver reading

Corr. Factor (dB) = Antenna Factor + Cable Loss - AMP Factor

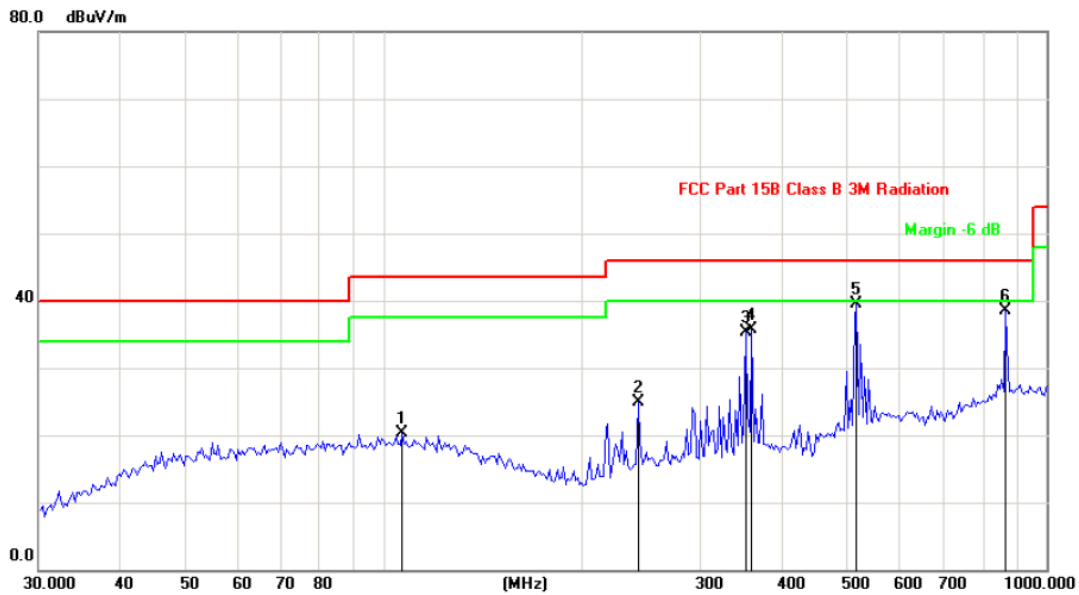
Measurement (dBμV/m) = Reading level (dBμV/m) + Corr. Factor (dB)

Limit (dBμV/m) = Limit stated in standard

Margin (dB) = Measurement (dBμV/m) – Limit (dBμV/m)

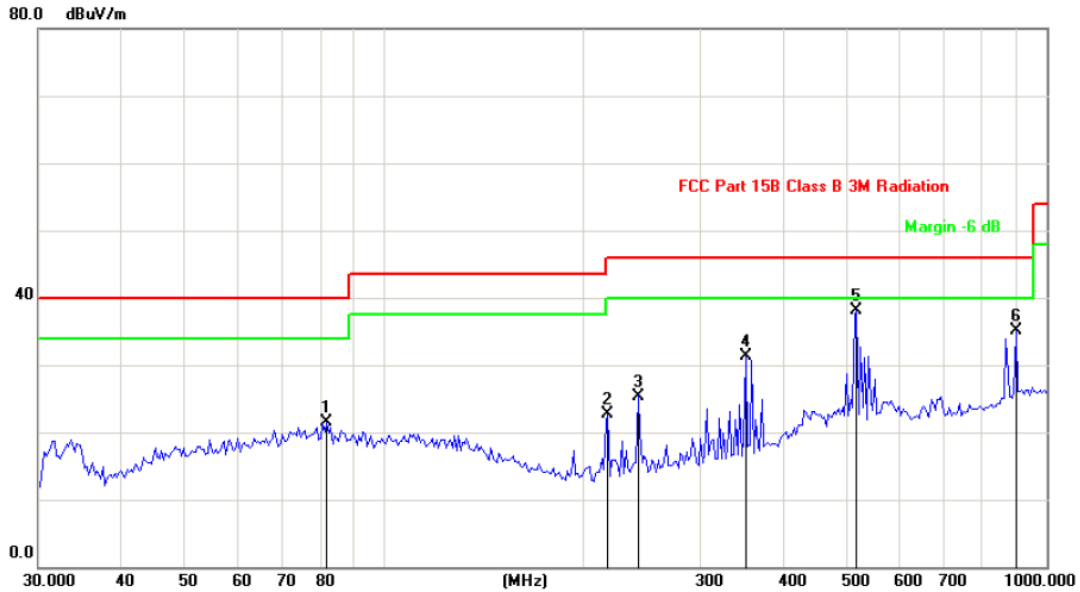
* is meaning the worst frequency has been tested in the test frequency range

Please refer to following diagram for individual



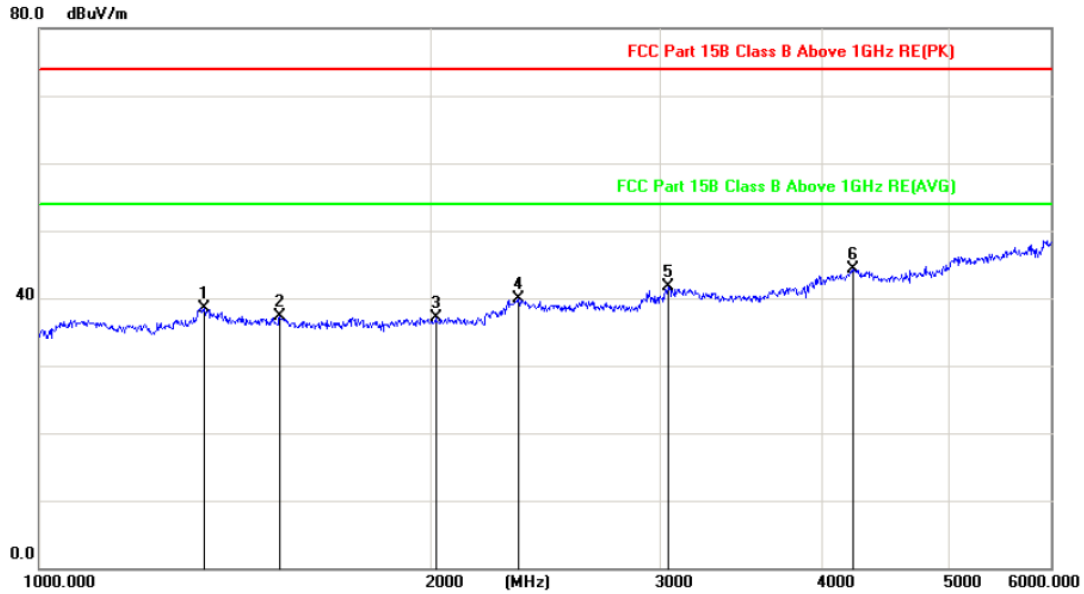
Site: Polarization: **Horizontal** Temperature: 25
 Limit: FCC Part 15B Class B 3M Radiation Power: DC 3.7V Humidity: 55 %
 Mode: Working
 Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
	MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree
1	106.2810	28.76	-8.55	20.21	43.50	-23.29	peak	
2	241.8377	37.80	-12.80	25.00	46.00	-21.00	peak	
3	350.9721	44.88	-9.67	35.21	46.00	-10.79	peak	
4	358.4497	45.28	-9.56	35.72	46.00	-10.28	peak	
5 *	516.5651	46.82	-7.26	39.56	46.00	-6.44	peak	
6	868.8858	42.03	-3.61	38.42	46.00	-7.58	peak	



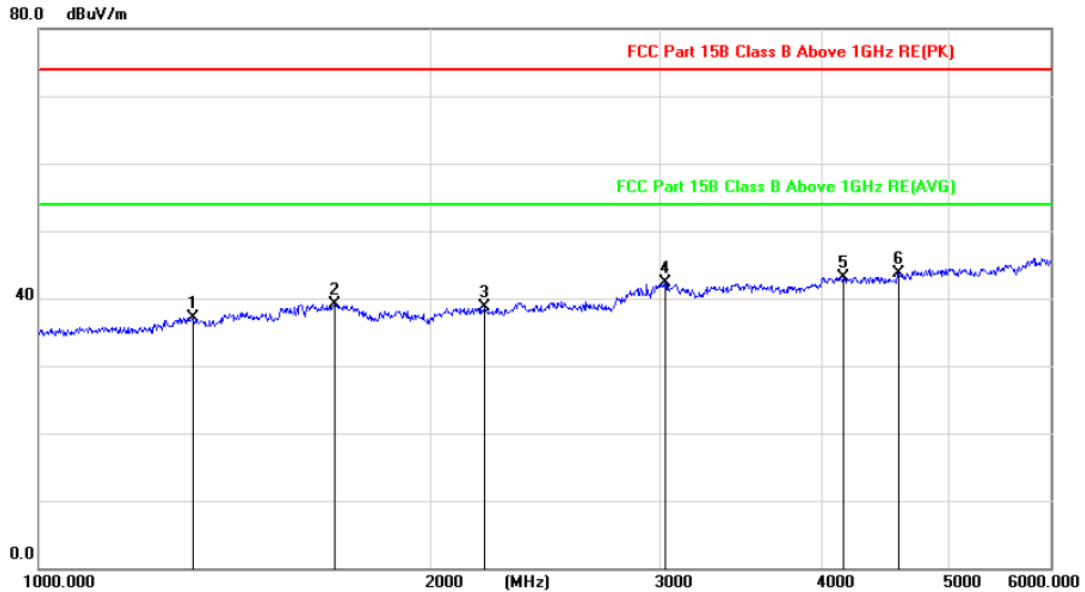
Site: Polarization: **Vertical** Temperature: 25
 Limit: FCC Part 15B Class B 3M Radiation Power: DC 3.7V Humidity: 55 %
 Mode: Working
 Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree
1	81.9477	37.02	-15.47	21.55	40.00	-18.45	peak		
2	217.6434	36.25	-13.50	22.75	46.00	-23.25	peak		
3	241.8377	38.20	-12.80	25.40	46.00	-20.60	peak		
4	350.9721	41.05	-9.67	31.38	46.00	-14.62	peak		
5 *	516.5651	45.32	-7.26	38.06	46.00	-7.94	peak		
6	899.9577	38.32	-3.26	35.06	46.00	-10.94	peak		



Site: Polarization: **Horizontal** Temperature: 25
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: DC 3.7V Humidity: 55 %
 Mode: Working
 Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1	1339.179	50.37	-11.85	38.52	74.00	-35.48	peak		
2	1531.793	49.14	-11.79	37.35	74.00	-36.65	peak		
3	2018.530	48.68	-11.53	37.15	74.00	-36.85	peak		
4	2337.996	50.08	-10.08	40.00	74.00	-34.00	peak		
5	3047.966	50.86	-9.11	41.75	74.00	-32.25	peak		
6 *	4223.122	46.80	-2.49	44.31	74.00	-29.69	peak		



Site Polarization: **Vertical** Temperature: 25
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: DC 3.7V Humidity: 55 %
 Mode: Working
 Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1	1315.398	49.03	-11.91	37.12	74.00	-36.88	peak		
2	1687.408	51.16	-12.05	39.11	74.00	-34.89	peak		
3	2199.817	49.40	-10.71	38.69	74.00	-35.31	peak		
4	3031.626	51.52	-9.15	42.37	74.00	-31.63	peak		
5	4155.567	45.65	-2.50	43.15	74.00	-30.85	peak		
6 *	4585.942	46.09	-2.30	43.79	74.00	-30.21	peak		

8. Photographs of Test Configuration

Conducted Emission Test View



Radiated Emission Test View



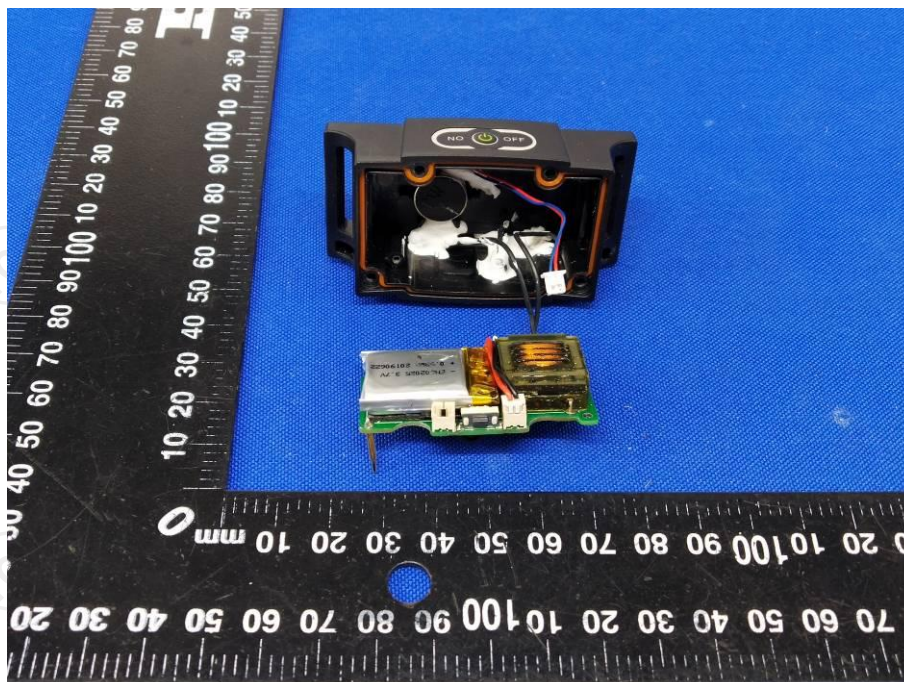


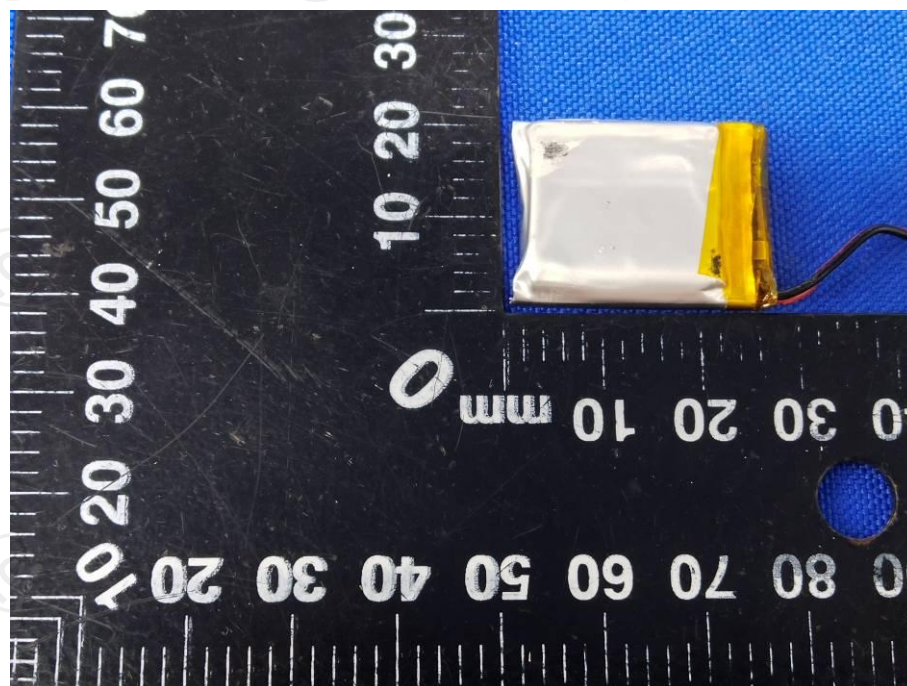
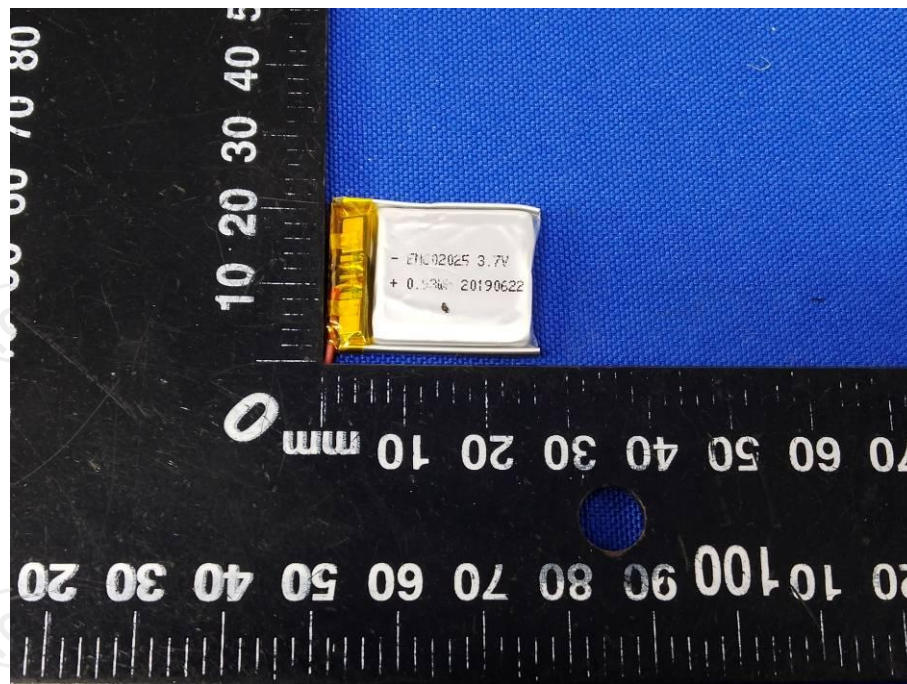
9. Photographs of EUT

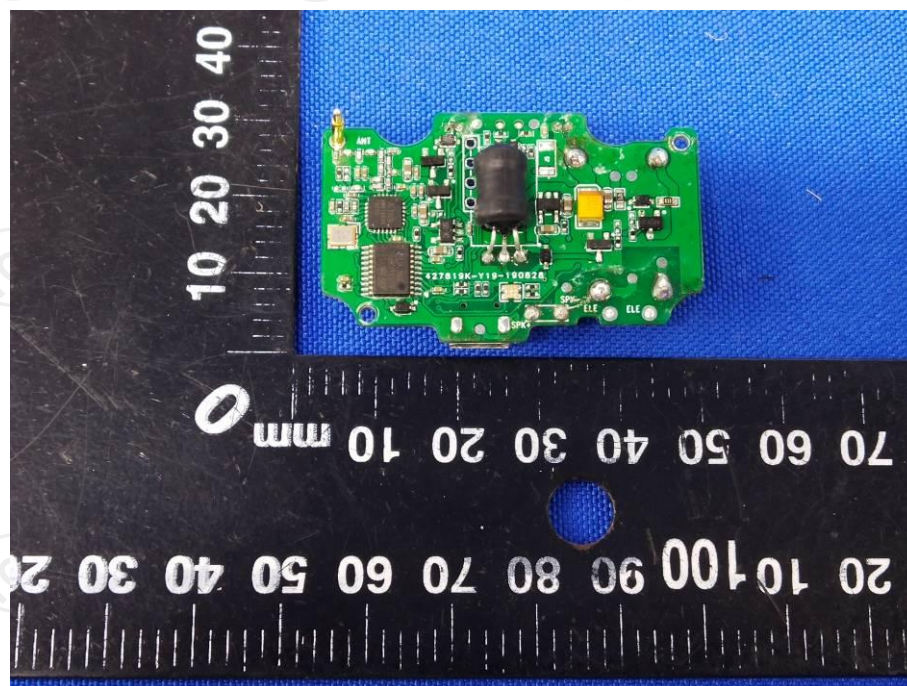
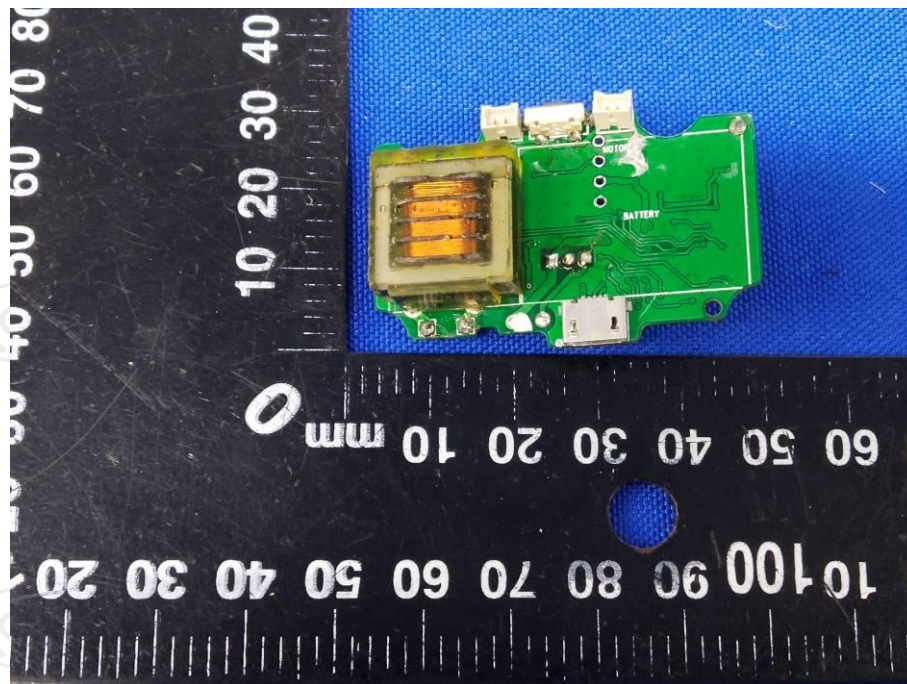


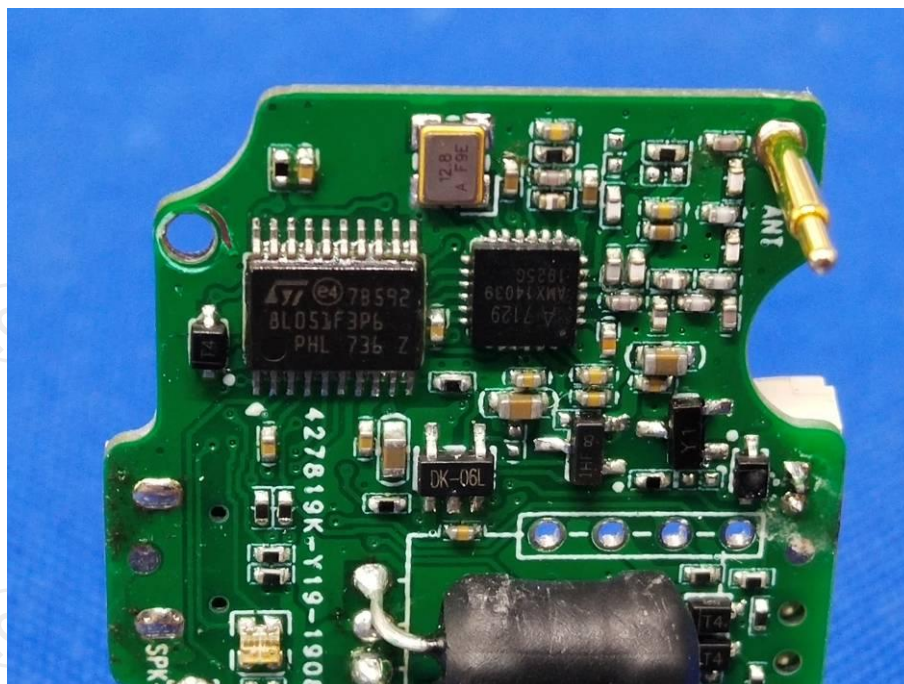












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