TCT 通测检测 TESTING CENTRE TECHNOLOGY

TEST REPORT

FCC ID: 2ADDG-CHIME

Product: Chime

Model No.: Chime

Additional Model No.: Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus

Trade Mark: N/A

Report No.: TCT200416E003

Issued Date: Apr. 23, 2020

Issued for:

EKEN GROUP LIMITED

Room 2511-2512, Meilan Business Center, Qianjin Two Road, XiXiang, Baoan District, Shenzhen, Guangdong, China

Issued By:

Shenzhen Tongce Testing Lab.

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TABLE OF CONTENTS

Hotline: 400-6611-140 Tel: 86-755- 27673339 Fax: 86-755-27673332 http://www.tct-lab.com

1. Test Certification

Product:	Chime
Model No.:	Chime
Additional Model No.:	Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus
Trade Mark:	**N/A**
Applicant:	EKEN GROUP LIMITED
Address:	Room 2511-2512, Meilan Business Center, Qianjin Two Road, XiXiang, Baoan District, Shenzhen, Guangdong, China
Manufacturer:	EKEN GROUP LIMITED
Address:	Room 2511-2512, Meilan Business Center, Qianjin Two Road, XiXiang, Baoan District, Shenzhen, Guangdong, China
Test Voltage:	AC 120V/60Hz
Date of Test:	Apr. 17, 2020 - Apr. 22, 2020
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: Brave. Zeng. ***Date:*** ***Apr. 22, 2020***

Brave Zeng

Reviewed By: Beryl zhao ***Date:*** ***Apr. 23, 2020***

Beryl Zhao

Approved By: Tomsin ***Date:*** ***Apr. 23, 2020***

Tomsin

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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.

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3. EUT Description

Product:	Chime
Model No.:	Chime
Power supply:	AC 120V/60Hz
USB Line:	☐ Shielded ☒ Unshielded, ☒ Detachable ☐ Un-detachable ☐ Not applicable ☒ Length: 0.75 m

Model(s) List

No.	Model Number	Tested With
1	Chime	☒
Other models	Chime 2, Chime 3, Chime 4, Chime 5, Chime 6, Chime 7, Chime 8, Chime 9, Chime Pro, Chime Plus	☐
Remark:	All models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.	

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4. Test Methodology

4.1. Decision of Final Test Mode

The EUT was tested together with the thereinafter 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: Working

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

The Worst Test Mode		
Emission	Conducted Emission	Working
	Radiated Emission(Below 1 GHz)	Working
	Radiated Emission(Above 1 GHz)	Working

4.2. EUT System Operation

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

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5. Setup of Equipment under Test

5.1. Description of Support Units

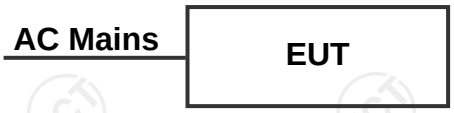
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
/	/	/	/	/

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



(EUT: Chime)

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	±0.1℃
2.	Humidity	±1.0 %
3.	Spurious Emissions, Conducted	±2.56 dB
4.	All Emissions, Radiated	±4.28 dB

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

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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

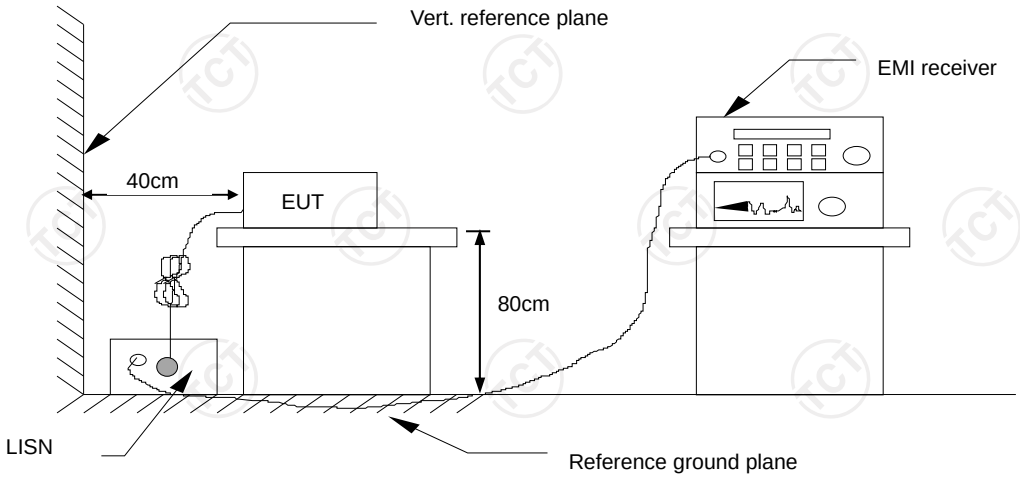
Conducted Emission Shielding Room Test Site (843)				
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESPI	101402	Jul. 29, 2020
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 11, 2020
Coax cable (9KHz-30MHz)	TCT	CE-05	N/A	Sep. 08, 2020
Test Software	Shurple Technology	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.:	26 ℃	Humid.:	54 %	Press.:	1008 kPa
Test Mode:	Mode 1					
Test Voltage:	AC 120V/60Hz					
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.

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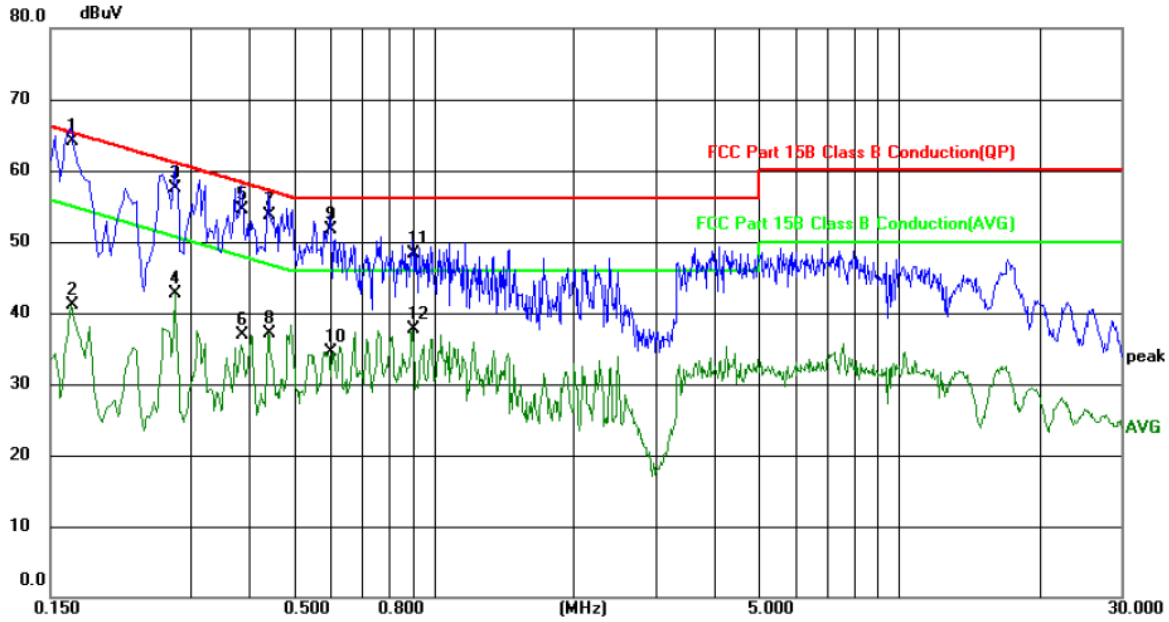
Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site

Limit: FCC Part 15B Class B Conduction(QP)

Phase: *L1*

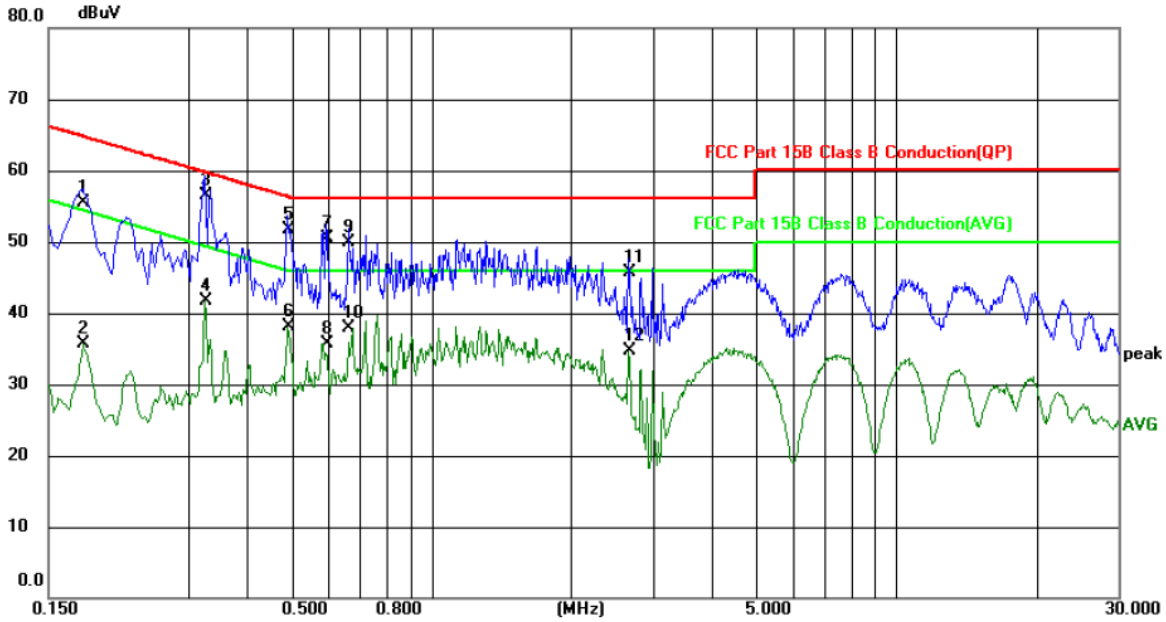
Power: AC120/60Hz

Temperature: 26 (C)

Humidity: 54 %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1660	53.87	10.22	64.09	65.16	-1.07	QP	
2		0.1660	30.97	10.22	41.19	55.16	-13.97	AVG	
3		0.2779	47.25	10.23	57.48	60.88	-3.40	QP	
4		0.2779	32.40	10.23	42.63	50.88	-8.25	AVG	
5		0.3860	44.22	10.22	54.44	58.15	-3.71	QP	
6		0.3860	26.70	10.22	36.92	48.15	-11.23	AVG	
7		0.4420	43.55	10.22	53.77	57.02	-3.25	QP	
8		0.4420	26.81	10.22	37.03	47.02	-9.99	AVG	
9		0.5980	41.55	10.23	51.78	56.00	-4.22	QP	
10		0.5980	24.35	10.23	34.58	46.00	-11.42	AVG	
11		0.9020	37.90	10.32	48.22	56.00	-7.78	QP	
12		0.9020	27.31	10.32	37.63	46.00	-8.37	AVG	

Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site

Limit: FCC Part 15B Class B Conduction(QP)

Phase: *N*

Power: AC120/60Hz

Temperature: 26 (C)

Humidity: 54 %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1780	45.27	10.22	55.49	64.58	-9.09	QP	
2		0.1780	25.44	10.22	35.66	54.58	-18.92	AVG	
3	*	0.3260	46.30	10.23	56.53	59.55	-3.02	QP	
4		0.3260	31.43	10.23	41.66	49.55	-7.89	AVG	
5		0.4900	41.47	10.22	51.69	56.17	-4.48	QP	
6		0.4900	27.79	10.22	38.01	46.17	-8.16	AVG	
7		0.5940	40.28	10.23	50.51	56.00	-5.49	QP	
8		0.5940	25.57	10.23	35.80	46.00	-10.20	AVG	
9		0.6620	39.76	10.23	49.99	56.00	-6.01	QP	
10		0.6620	27.62	10.23	37.85	46.00	-8.15	AVG	
11		2.6619	35.16	10.45	45.61	56.00	-10.39	QP	
12		2.6619	24.27	10.45	34.72	46.00	-11.28	AVG	

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 dB(μV/m) = 20 log Emission level (μV/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

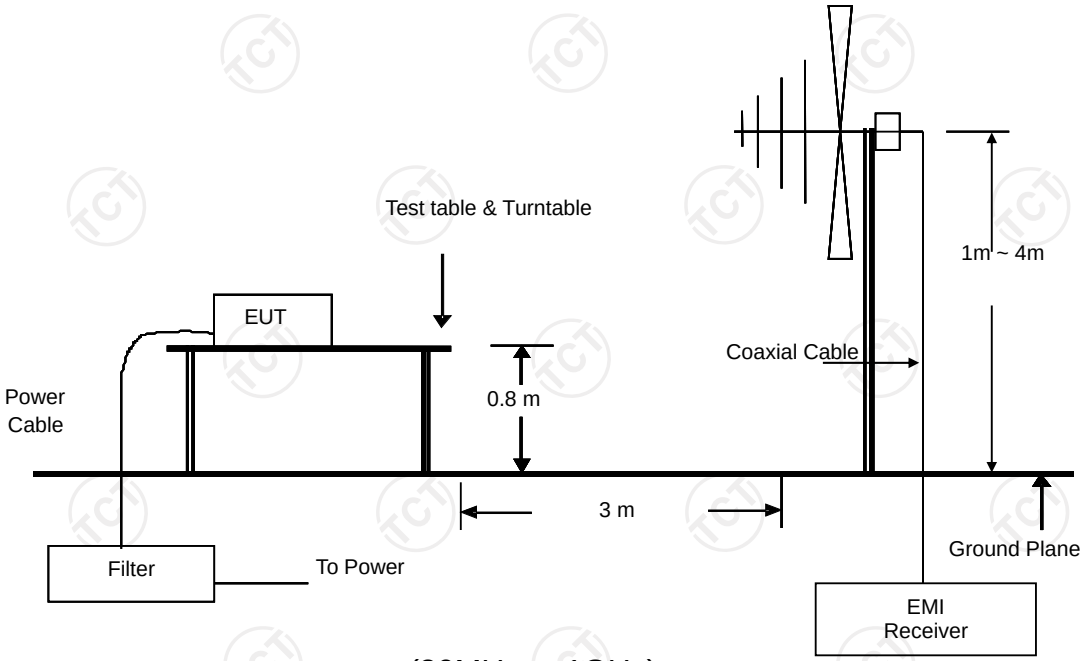
Antenna Mast	SKET	CC-A-4M	N/A	N/A
Coax cable (9KHz-40GHz)	TCT	RE-high-02	N/A	Sep. 08, 2020
Coax cable (9KHz-40GHz)	TCT	RE-high-04	N/A	Sep. 08, 2020
Test Software	Shurple Technology	EZ-EMC	FA-03A2	N/A

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

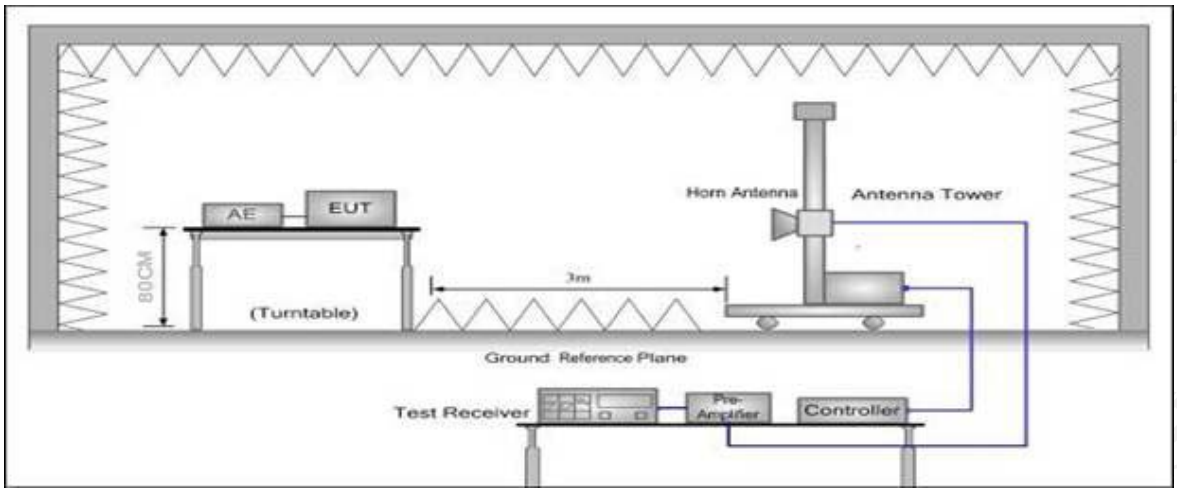
7.2.4. Test Method

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.

7.2.5. Block Diagram of Test Setup



(30MHz to 1GHz)



(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 ℃	Humid.:	55 %	Press.:	1008 kPa
Test Mode:	Mode 1					
Test Voltage:	AC 120V/60Hz					
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)

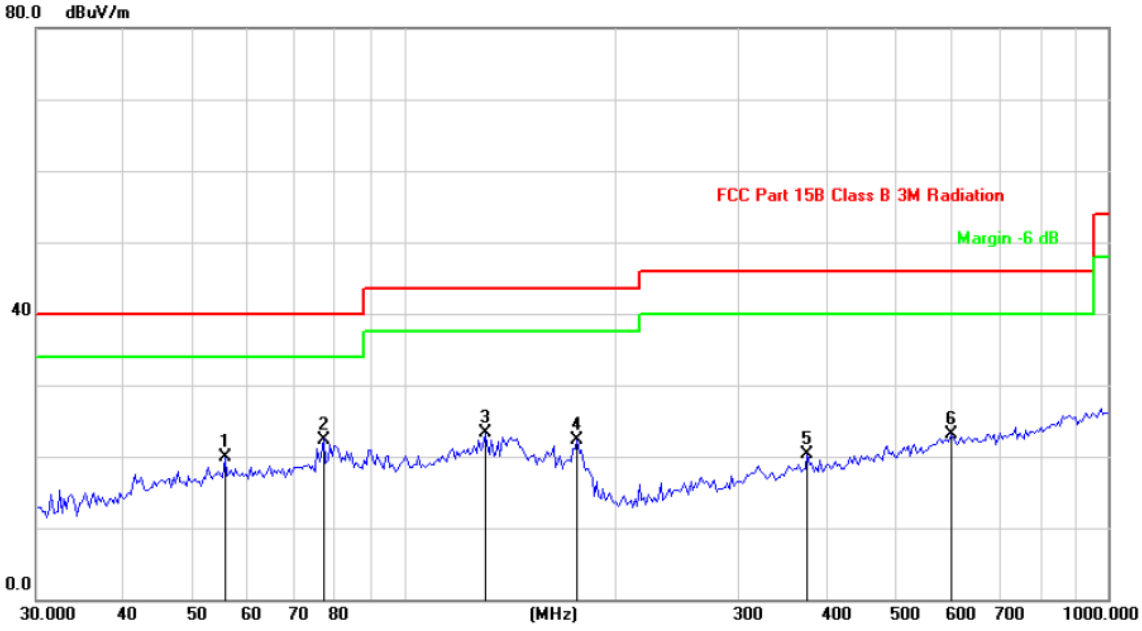
Limit (dBμV/m) = Limit stated in standard

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

Radiated Emission In Horizontal (30MHz----1000MHz)



Site

Limit: FCC Part 15B Class B 3M Radiation

Polarization: *Horizontal*

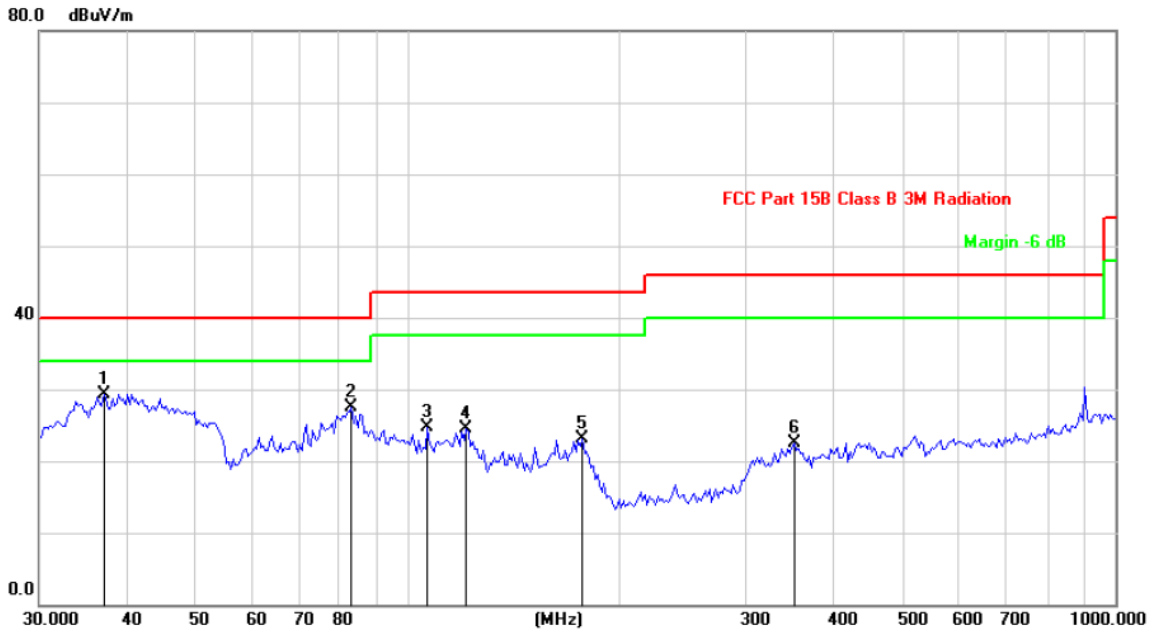
Power: AC 120V/60Hz

Temperature: 25

Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		55.6782	31.26	-11.35	19.91	40.00	-20.09	peak
2	*	76.9256	38.78	-16.38	22.40	40.00	-17.60	peak
3		130.3048	38.69	-15.43	23.26	43.50	-20.24	peak
4		176.2748	37.37	-15.07	22.30	43.50	-21.20	peak
5		373.8861	29.67	-9.34	20.33	46.00	-25.67	peak
6		598.7067	29.01	-5.82	23.19	46.00	-22.81	peak

Radiated Emission In Vertical (30MHz----1000MHz)



Site
Limit: FCC Part 15B Class B 3M Radiation
Polarization: *Vertical*
Power: AC 120V/60Hz
Temperature: 25
Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	37.0405	40.42	-11.04	29.38	40.00	-10.62	peak
2		83.1076	42.16	-14.74	27.42	40.00	-12.58	peak
3		106.2812	33.26	-8.55	24.71	43.50	-18.79	peak
4		120.6118	36.22	-11.78	24.44	43.50	-19.06	peak
5		176.2748	38.08	-15.07	23.01	43.50	-20.49	peak
6		350.9722	32.24	-9.67	22.57	46.00	-23.43	peak

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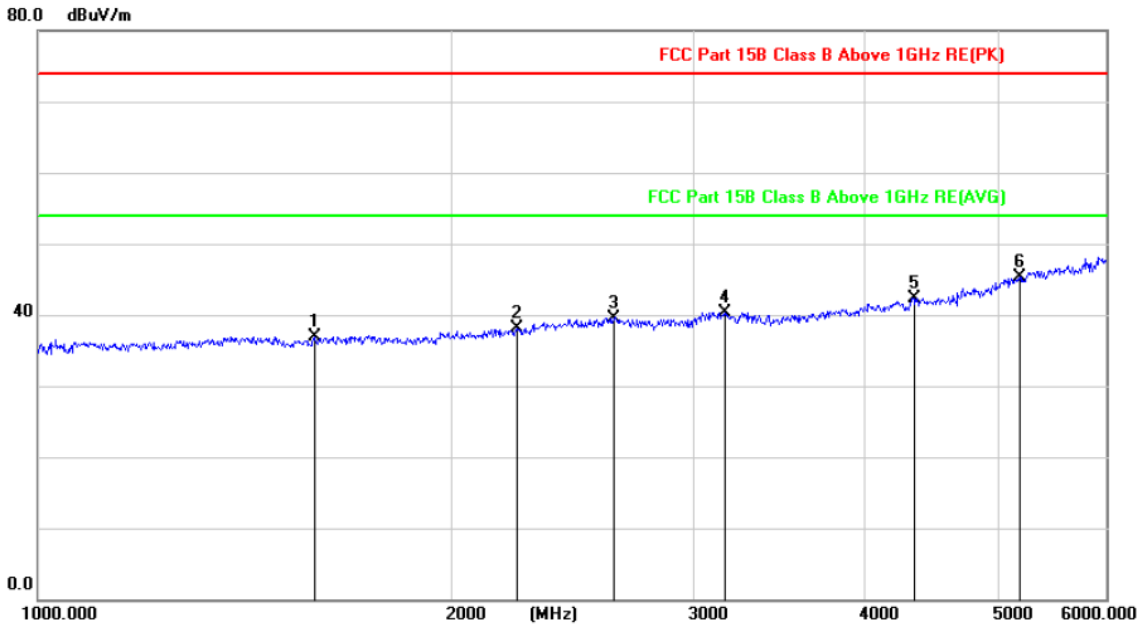
Radiated Emission In Horizontal (1000MHz----6000MHz)

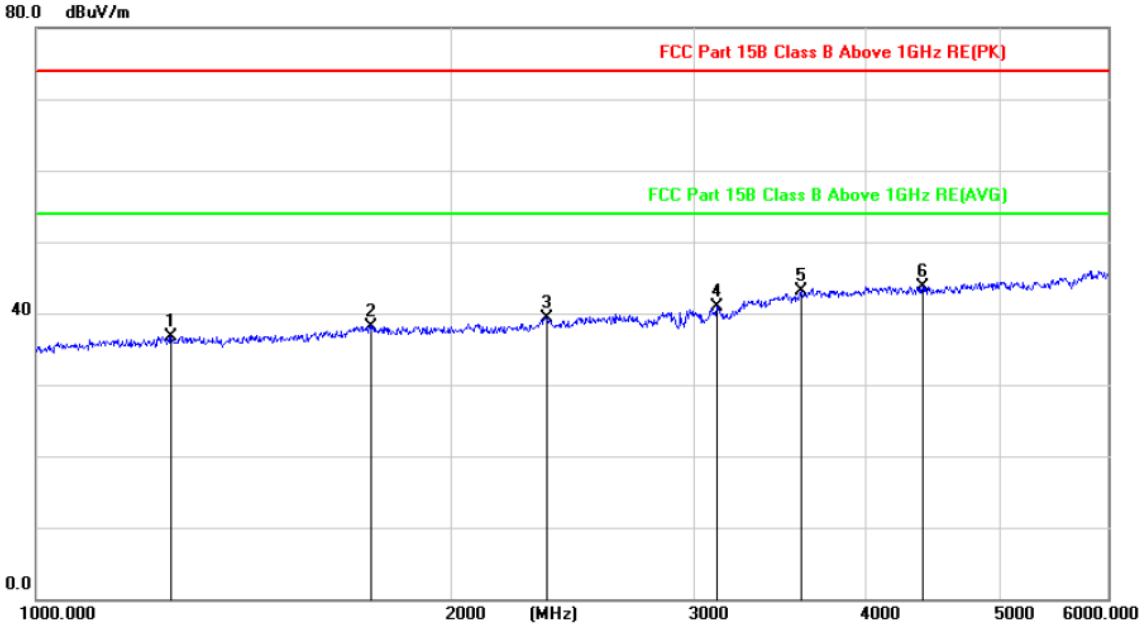


Site | Polarization: *Horizontal* | Temperature: 25

Limit: FCC Part 15B Class B Above 1GHz RE(PK) | Power: AC 120V/60Hz | Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1590.527	48.80	-11.90	36.90	74.00	-37.10	peak
2		2235.578	48.63	-10.56	38.07	74.00	-35.93	peak
3		2626.779	48.85	-9.33	39.52	74.00	-34.48	peak
4		3164.836	49.21	-8.83	40.38	74.00	-33.62	peak
5		4345.943	44.91	-2.51	42.40	74.00	-31.60	peak
6	*	5189.446	45.97	-0.65	45.32	74.00	-28.68	peak

Radiated Emission In Vertical (1000MHz----6000MHz)



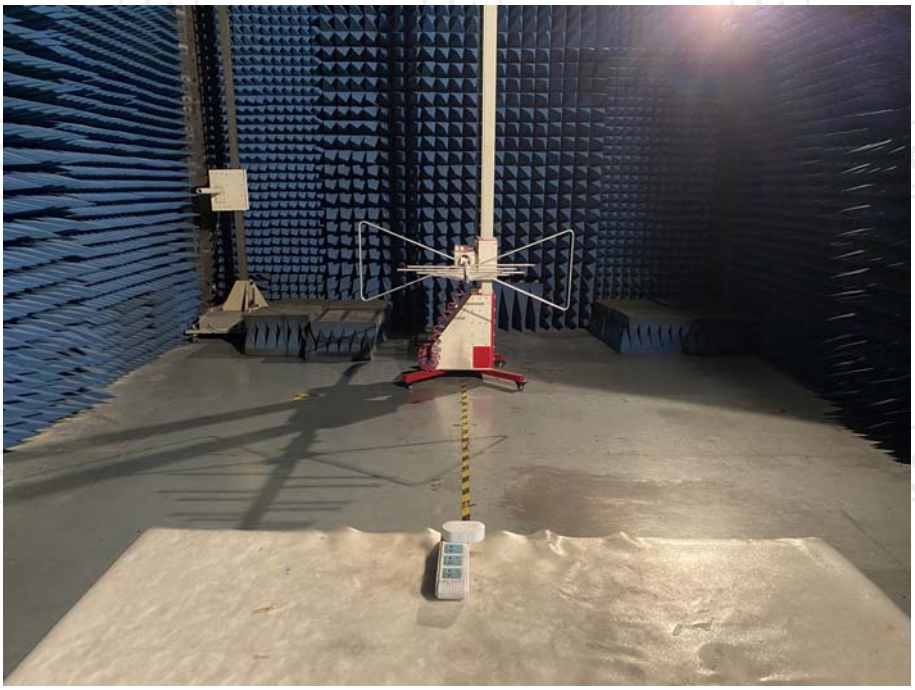
Site | Polarization: *Vertical* | Temperature: 25

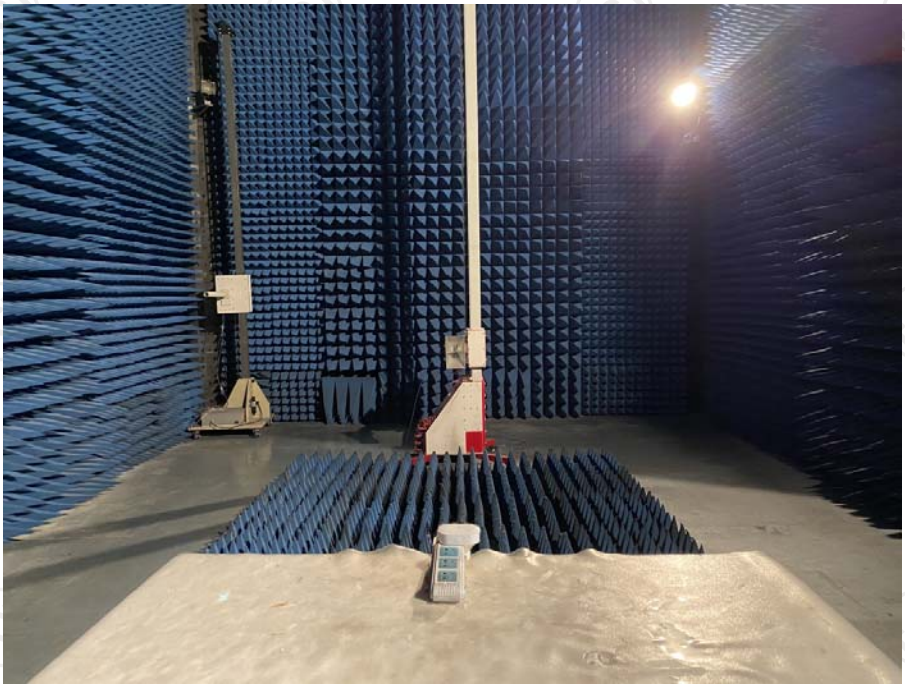
Limit: FCC Part 15B Class B Above 1GHz RE(PK) | Power: AC 120V/60Hz | Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		1253.277	48.76	-12.07	36.69	74.00	-37.31	peak
2		1752.110	50.36	-12.16	38.20	74.00	-35.80	peak
3		2346.389	49.42	-10.05	39.37	74.00	-34.63	peak
4		3119.795	49.76	-8.95	40.81	74.00	-33.19	peak
5		3594.181	50.13	-7.01	43.12	74.00	-30.88	peak
6	*	4400.794	46.19	-2.51	43.68	74.00	-30.32	peak

8. Photographs of Test Configuration

Radiated Emission





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9. Photographs of EUT

Outside View

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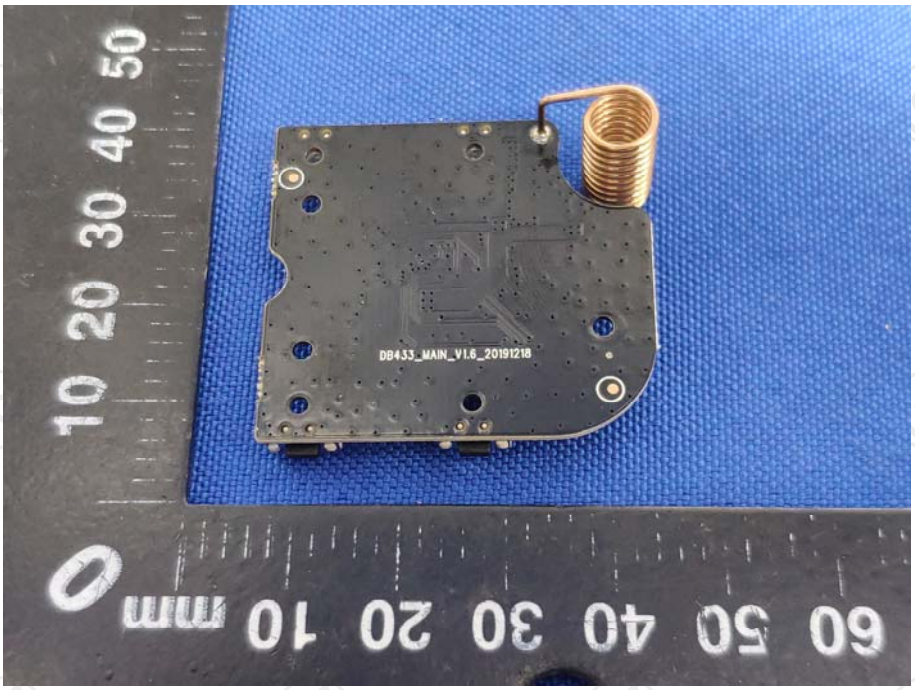
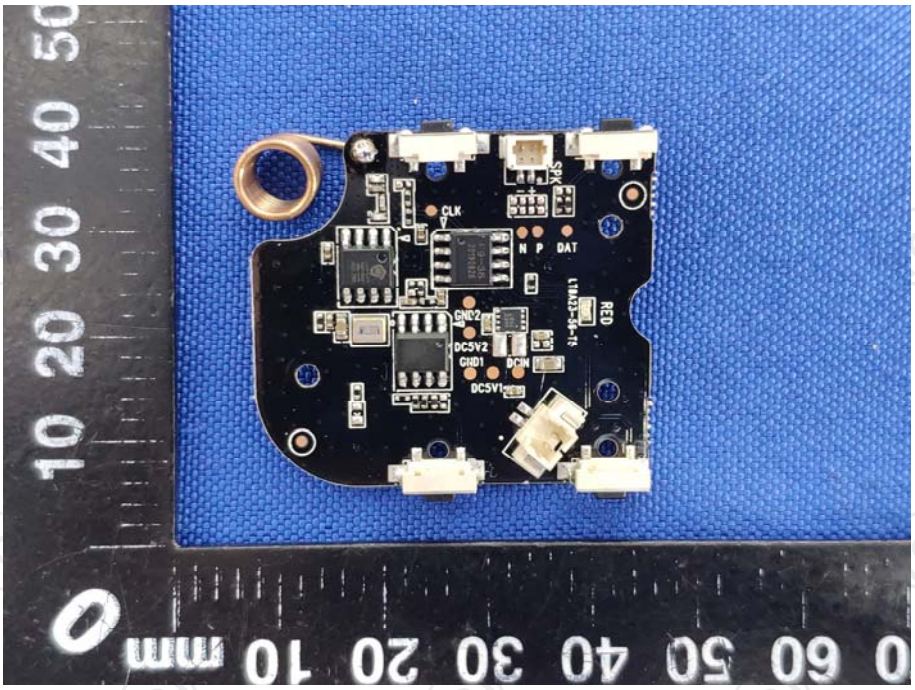
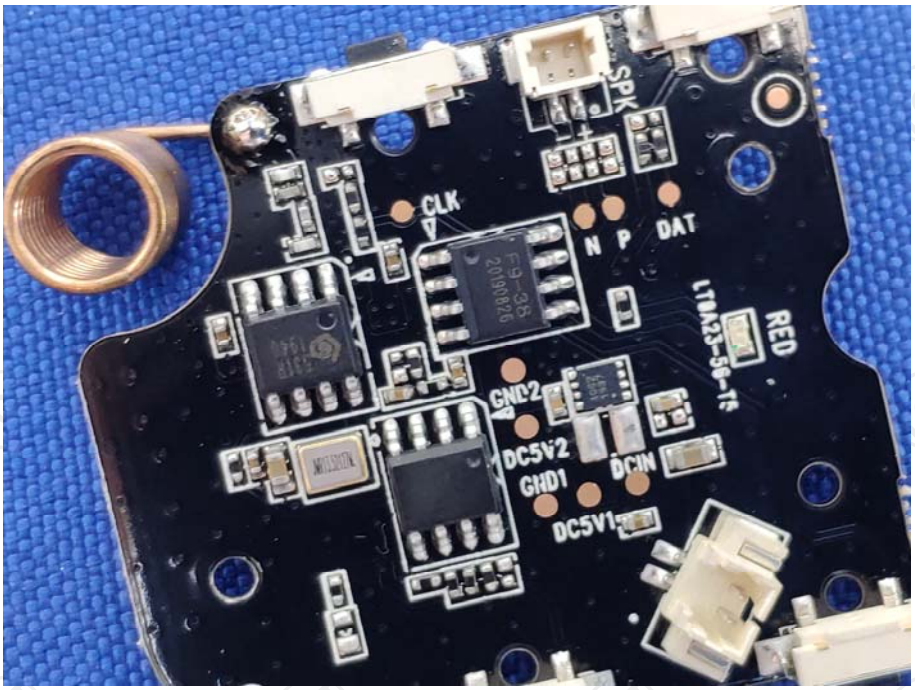
Inside View







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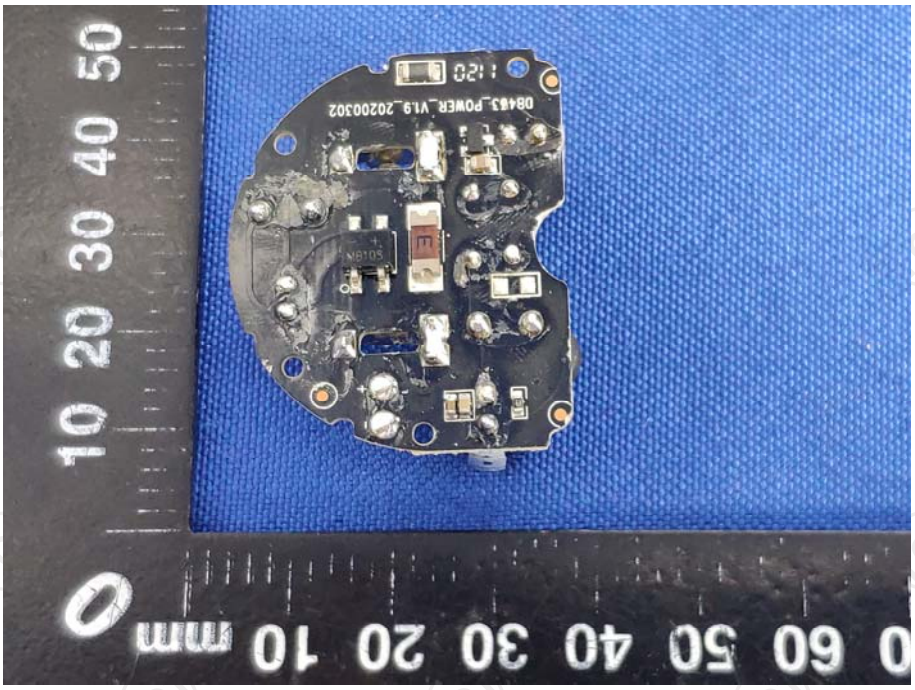

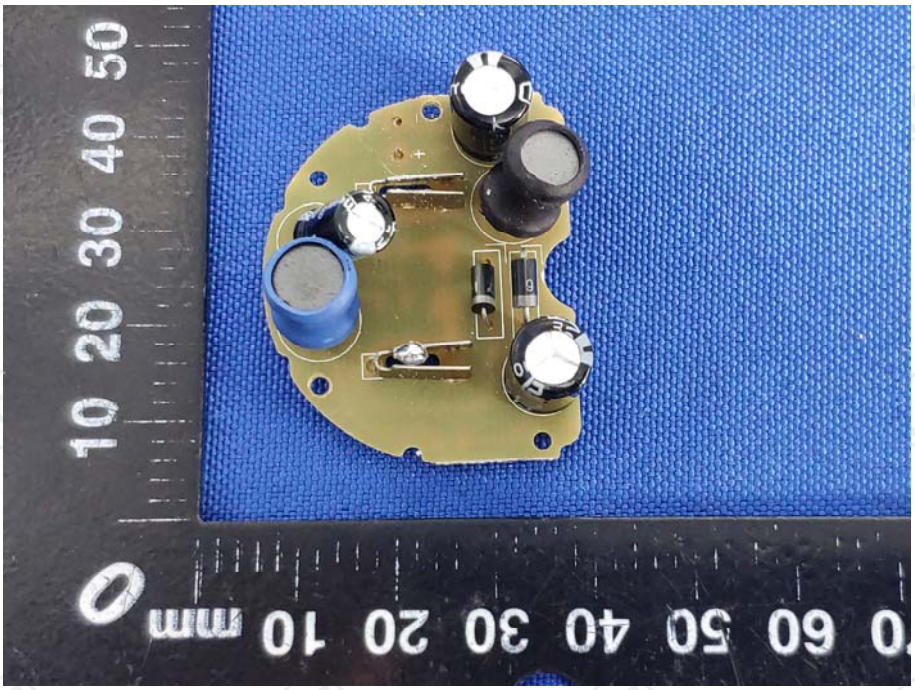

*****END OF REPORT*****

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