

FCC REPORT

Product Name : Wireless Driveway Alarm
Trade mark : Wuloo
Model No. : WL-T1905
FCC ID : 2AQQS-T1905
Report Number : BLA-EMC-201906-A01-01
Date of sample receipt : June 3, 2019
Date of Test : June 6, 2019–June 20 , 2019
Date of Issue : June 25, 2019
Test standard : FCC CFR Title 47 Part 15 Subpart C Section 15.231
Test result : PASS

Prepared for:

Shenzhen Todakj Co., Ltd

No. 40 Huan Dong Road Tie Gang Industrial District, Baoan, Shenzhen

Prepared by:

Qianhai BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

IOT Test Centre of BlueAsia

No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China

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Date: June 25, 2019



2 Version

Version No.	Date	Description
00	June 25, 2019	<i>Original</i>

BlueAsia

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.231 (b)	Pass
Spurious emissions	15.231 (b)/15.209	Pass
20dB Bandwidth	15.231(c)	Pass
Dwell time	15.231 (a) (2)	Pass
Conducted Emission	15.207	Pass

Remarks:

N/A: The EUT not applicable of the test item.

Pass: The EUT complies with the essential requirements in the standard.

Test according to ANSI C63.4:2014 and ANSI C63.10:2013.

5 General Information

5.1 Client Information

Applicant:	Shenzhen Todakj Co., Ltd
Address of Applicant:	No. 40 Huan Dong Road Tie Gang Industrial District, Baoan, Shenzhen
Manufacturer/ Factory:	Shenzhen Todakj Co., Ltd
Address of Manufacturer/ Factory:	No. 40 Huan Dong Road Tie Gang Industrial District, Baoan, Shenzhen

5.2 General Description of E.U.T.

Product Name:	Wireless Driveway Alarm
Model No.:	WL-T1905
Serial No.:	TD-T1905, TD-T1906
Operation Frequency:	433.92MHz
Channel numbers:	1
Modulation type:	ASK
Antenna Type:	Integrated antenna
Antenna gain:	1dBi
Power supply:	DC 3.7V

5.3 Test mode

Transmitting mode:	Keep the EUT in transmitting mode with modulation (Full battery is used)
Final Test Mode:	
According to ANSI C63.4 standards, the test results are both the "worst case" and "worst setup": X axis (see the test setup photo)	

5.4 Description of Support Units

N/A

5.5 Laboratory Facility

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

- **FCC — Designation No.: CN1252**

Qianhai BlueAsia of Technical Services(Shenzhen) Co.,Ltd 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 files. Designation CN1252.

- **ISED — CAB identifier No.: CN0028**

Qianhai BlueAsia of Technical Services(Shenzhen) Co.,Ltd has been registered by Certification and Engineering Bureau of ISED for radio equipment testing with CAB identifier CN0028

5.6 Laboratory Location

Qianhai BlueAsia of Technical Services(Shenzhen) Co.,Ltd.
IOT Test Centre of BlueAsia,
No. 448 Bulong Road, Bantian Street, Longgang District, Shenzhen, China
Telephone: TEL: +86-755-28682673
FAX: +86-755-28682673

5.7 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

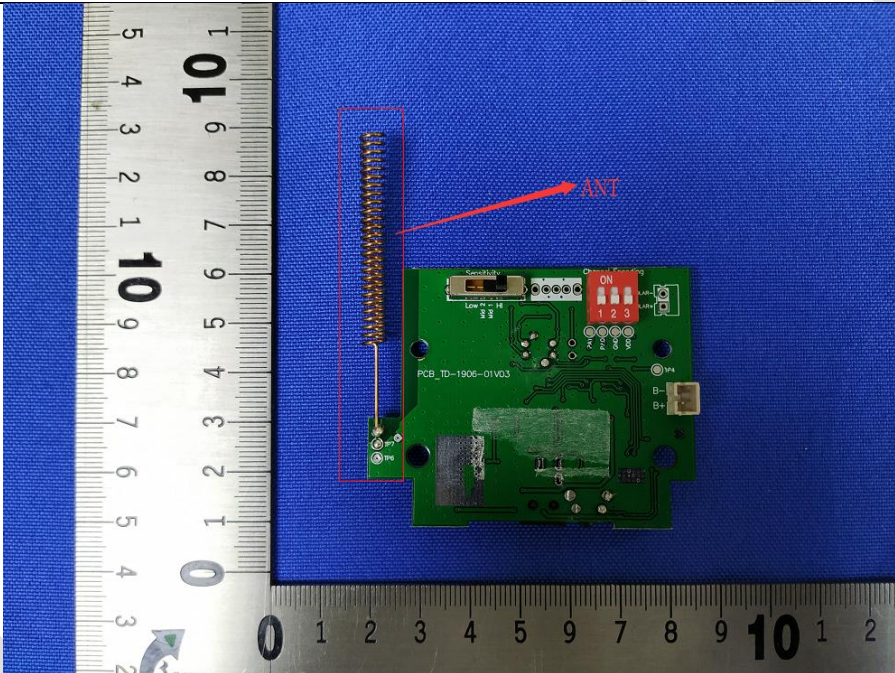
5.8 Test Instrumentslist

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m SAC	SKET	9m*6 m*6m	966	06-10-2018	06-09-2023
2	Broadband Antenna	SCHWARZBECK	VULB9168	00836 P:00227	07-14-2018	07-13-2019
3	Horn Antenna	SCHWARZBECK	9120D	01892 P:00331	07-14-2018	07-13-2019
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A
5	Pre-amplifier	SKET	N/A	N/A	07-19-2018	07-18-2019
6	Spectrum analyzer	Rohde & Schwarz	FSP40	100817	05-24-2019	05-23-2020
7	EMI Test Receiver	Rohde & Schwarz	ESR7	101199	03-21-2019	03-20-2020
8	Controller	SKET	N/A	N/A	N/A	N/A
9	Vector Signal Generator	Agilent	E4438C	MY45092582	05-24-2019	05-23-2020
10	Signal Generator	Agilent	E8257D	MY44320250	05-24-2019	05-23-2020
11	Coaxial Cable	BlueAsia	BLA-XC-02	N/A	N/A	N/A
12	Coaxial Cable	BlueAsia	BLA-XC-03	N/A	N/A	N/A
13	Coaxial Cable	BlueAsia	BLA-XC-01	N/A	N/A	N/A

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	EMI Test Receiver	Rohde & Schwarz	ESPI3	101082	06-10-2018 06-10-2019	06-09-2019 06-09-2020
2	LISN	CHASE	MN2050D	1447	12-18-2018	12-17-2019
3	LISN	Rohde & Schwarz	ENV216	3560.6550.15	07-19-2018	07-18-2019
4	EMI Test Software	EZ	EZ	N/A	N/A	N/A
5	Temperature Humidity Chamber	Mingle	TH101B	N/A	07-19-2018	07-18-2019
6	Coaxial Cable	BlueAsia	BLA-XC-05	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement

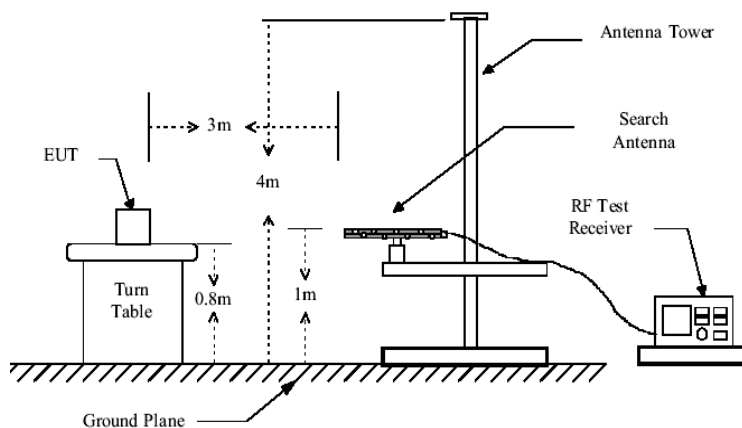
Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.	
E.U.T Antenna:	
The EUT make use of an integrated antenna, The typical gain of the antenna is 1dBi.	
	

6.2 Radiated Emission

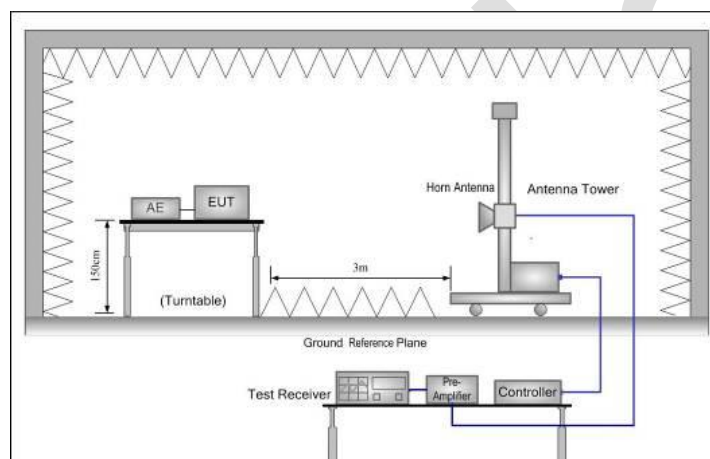
Test Requirement:	FCC Part15 C Section 15.231(a) and 15.209				
Test Method:	ANSI C63.4:2014				
TestFrequencyRange:	30MHz to 5000MHz				
Test site:	Measurement Distance: 3m(Semi-Anechoic Chamber)				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	433.92 MHz		80.8		Average Value
			100.8		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (dBuV/m @3m)		Remark
	30MHz-88MHz		40.0		Quasi-peak Value
	88MHz-216MHz		43.5		Quasi-peak Value
	216MHz-960MHz		46.0		Quasi-peak Value
	960MHz-1GHz		54.0		Quasi-peak Value
	Above 1GHz		54.0		Average Value
			74.0		Peak Value
Or The maximum permitted unwanted emission level is 20 dB below themaximum permitted fundamental level whichever limit permits higher field strength.					
Test Procedure:	a. The EUT was placed on the top of a rotating table 0.8m(below 1GHz) /1.5m(above 1GHz) above the ground at a 3 meter 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, whichwas 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 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 limitspecified, then testing could be stopped and the peak values of the EUT wouldbe reported. Otherwise the emissions that did not have 10dB margin would bere-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.				

Test setup:

Below 1GHz



Above 1GHz



Test Instruments:

Refer to section 5.7 for details

Test mode:

Refer to section 5.3 for details

Test results:

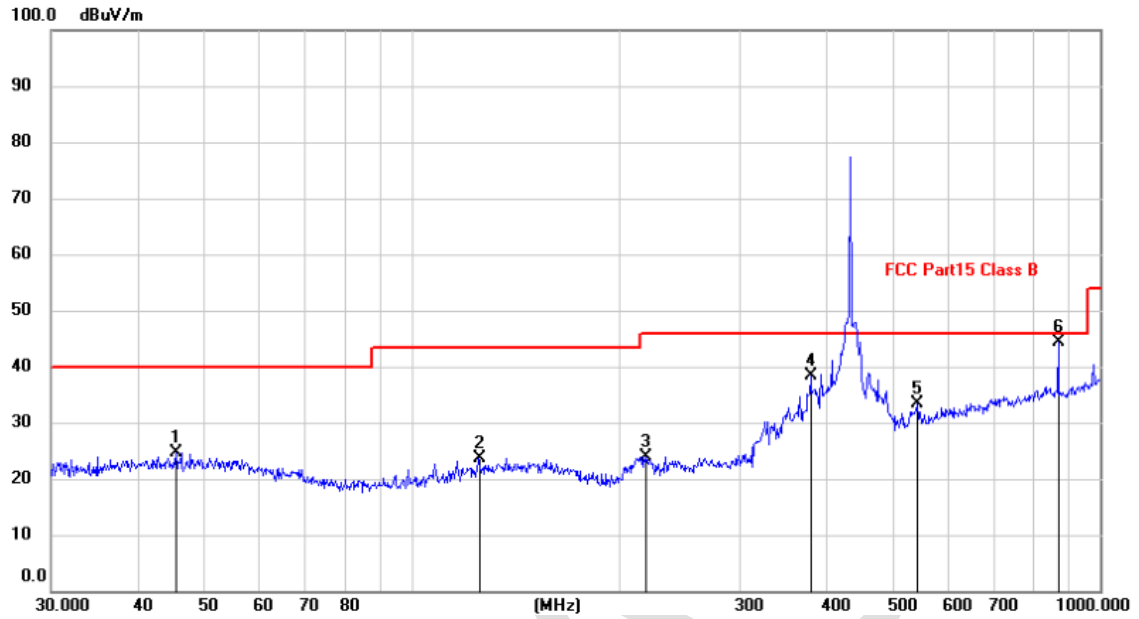
Pass

6.2.1 Field Strength Of The Fundamental Signal

Peak value						
Frequency (MHz)	Read Level (dBuV)	Correct Facor (dB)	Level (dBuV/m)	AV Limit (dBuV/m)	Over Limit (dB)	Polarization
433.92	59.83	17.31	77.14	80.83	-3.69	Vertical
433.92	61.98	17.31	79.29	80.83	-1.54	Horizontoal

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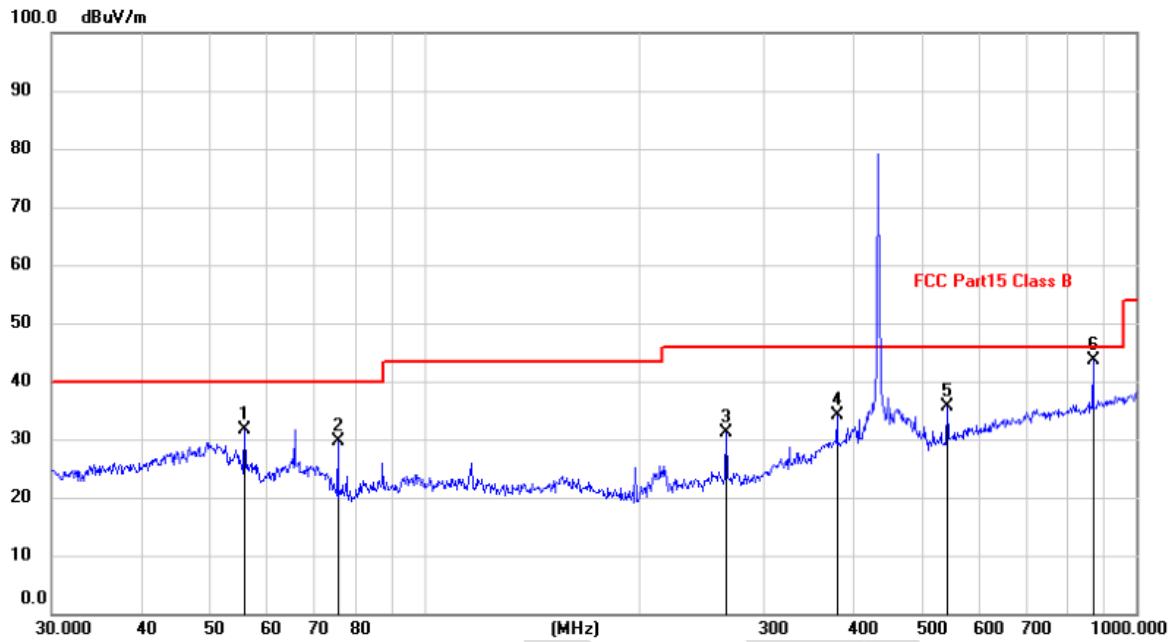
Below 1G
Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		45.5347	10.81	13.86	24.67	40.00	-15.33	QP
2		125.0066	11.09	12.55	23.64	43.50	-19.86	QP
3		219.0751	12.70	11.21	23.91	46.00	-22.09	QP
4		379.9141	22.54	15.92	38.46	46.00	-7.54	QP
5		543.2740	13.63	19.77	33.40	46.00	-12.60	QP
6	*	869.1300	19.62	24.76	44.38	46.00	-1.62	QP

Below 1G

Vertical

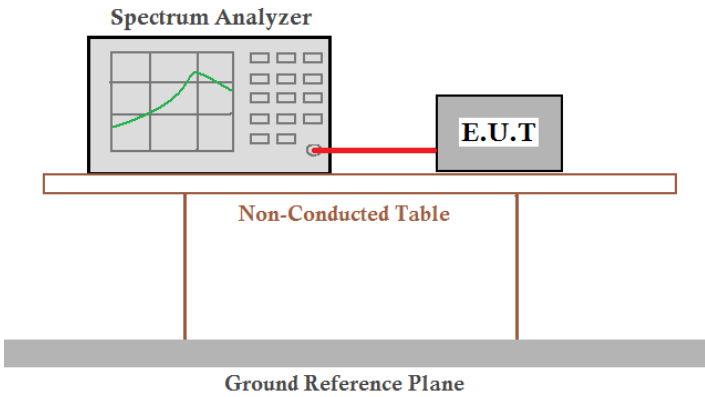


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		56.0007	18.36	13.36	31.72	40.00	-8.28	QP
2		75.7112	19.79	9.80	29.59	40.00	-10.41	QP
3		265.6757	18.40	12.77	31.17	46.00	-14.83	QP
4		379.9141	18.23	15.92	34.15	46.00	-11.85	QP
5		543.2740	15.77	19.77	35.54	46.00	-10.46	QP
6	*	869.1300	18.93	24.76	43.69	46.00	-2.31	QP

Above 1GHz						
Frequency (MHz)	PK Read Level (dBuV)	Correct Factor (dB)	PK Value (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
1224.81	54.90	-20.17	34.73	74.00	-39.27	Vertical
1745.19	55.10	-17.33	37.77	74.00	-36.23	Vertical
2276.00	55.06	-15.00	40.06	74.00	-33.94	Vertical
1144.76	56.89	-20.36	36.53	74.00	-37.47	Horizontal
1459.68	57.06	-18.47	38.59	74.00	-35.41	Horizontal
1852.27	57.00	-16.65	40.35	74.00	-33.65	Horizontal

Note:Correct Factor=Antenna factor+Cable loss- Pre-amplifier factor

6.3 20dB Bandwidth

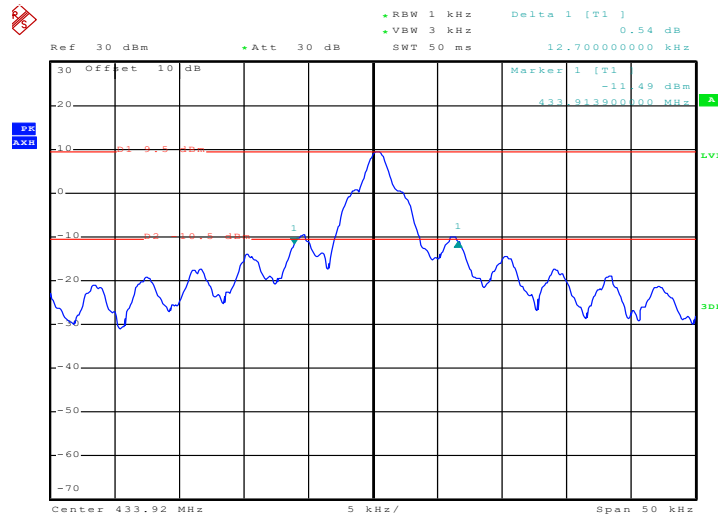
Test Requirement:	FCC Part15 C Section 15.231 (c)
Test Method:	ANSI C63.4:2014
Receiver setup:	RBW=1kHz, VBW=3kHz, detector: Peak
Limit:	The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 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.
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read 20dB bandwidth.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane, which is represented by a thick grey bar at the bottom.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

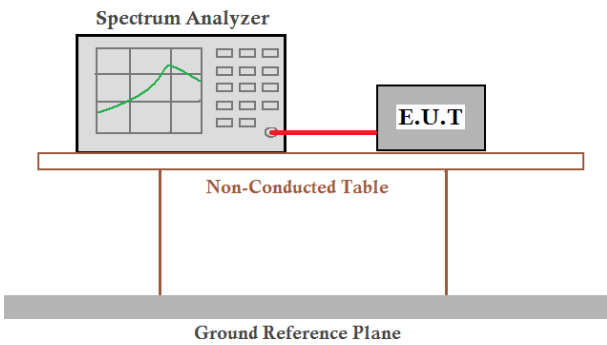
20dB bandwidth (MHz)	Limit (MHz)	Results
0.013	1.0848	Passed

Note: Limit= Fundamental frequency×0.25%=433.92×0.25%=1.0848MHz

Test plot as follows:



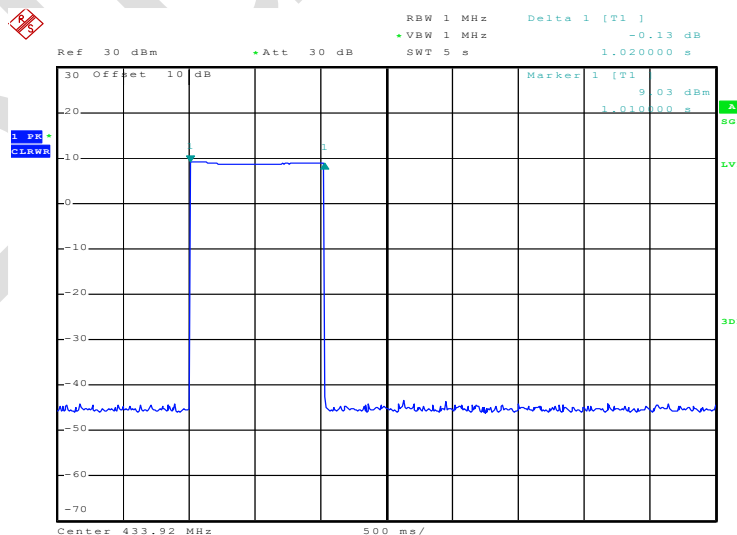
6.4 Duration Time

Test Requirement:	FCC Part15 C Section 15.231 (a) (2)
Test Method:	ANSI C63.4:2014
Receiver setup:	RBW=100 kHz, VBW=300 kHz, span=0Hz, Detector: Peak
Limit:	Not more than 5 seconds
Test mode:	Transmitting mode
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Single scan the transmission, and read the transmission time.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

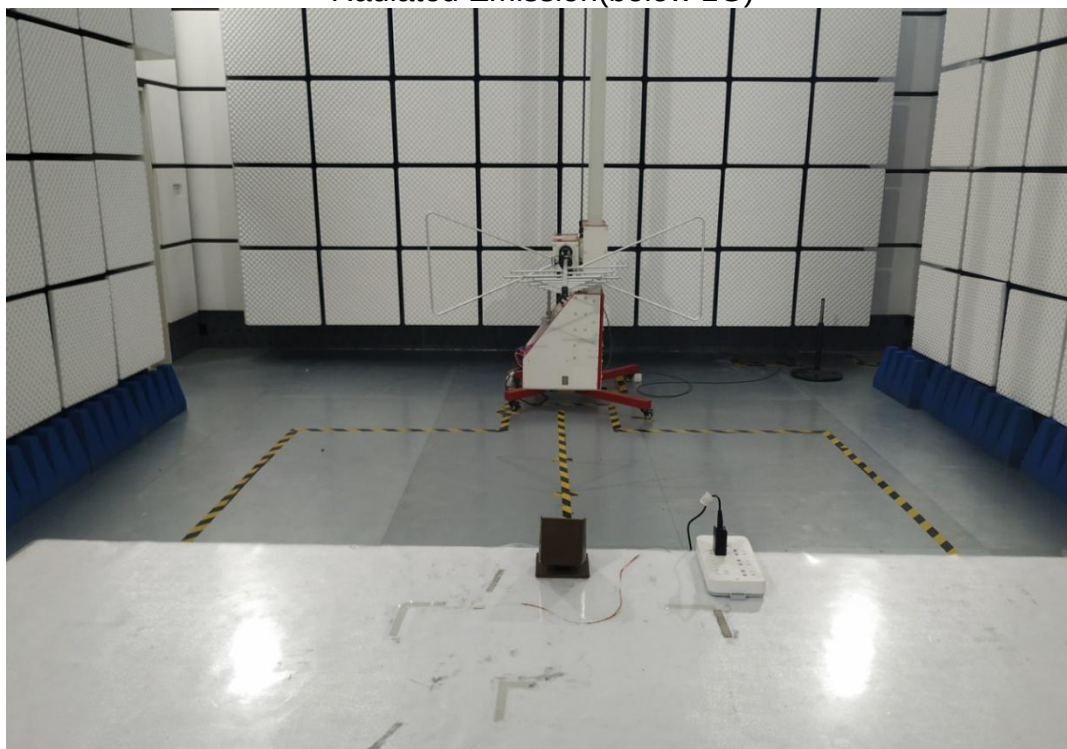
Duration time (second)	Limit (second)	Result
1.02	<5.0	Pass

Test plot as follows:



7 Test Setup Photos

Radiated Emission(below 1G)

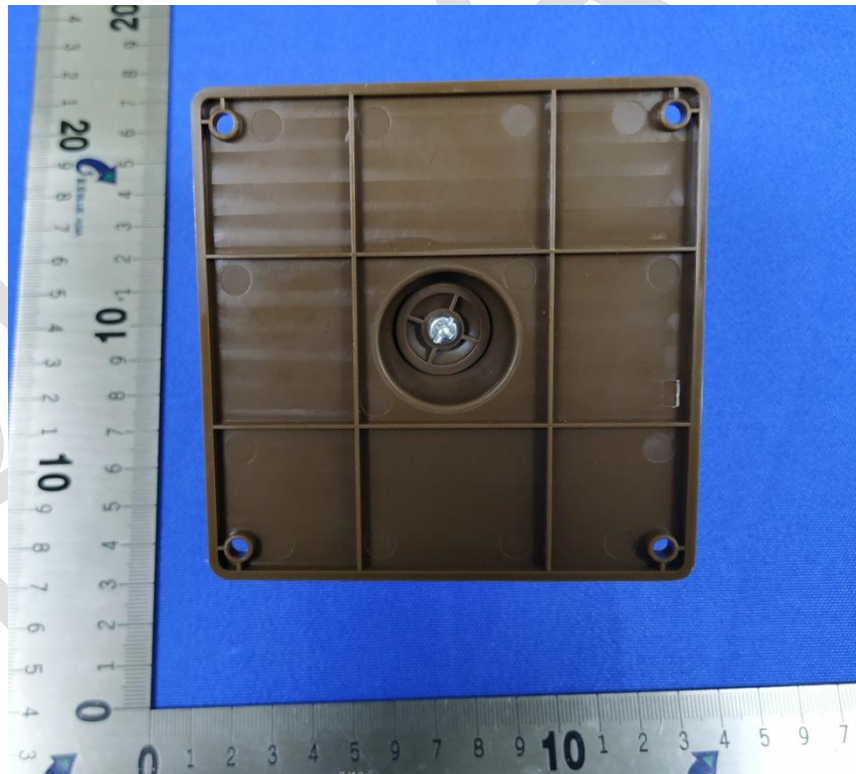
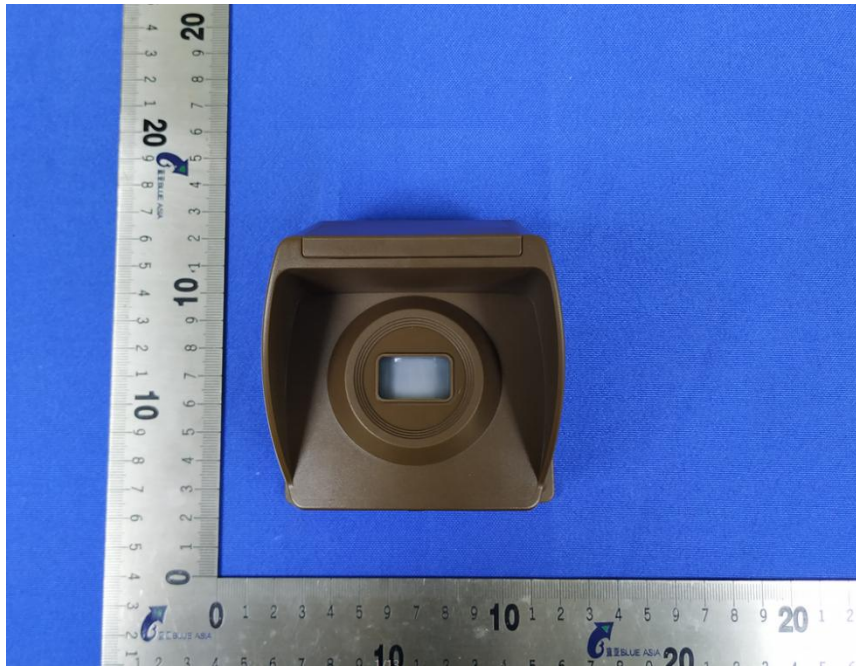


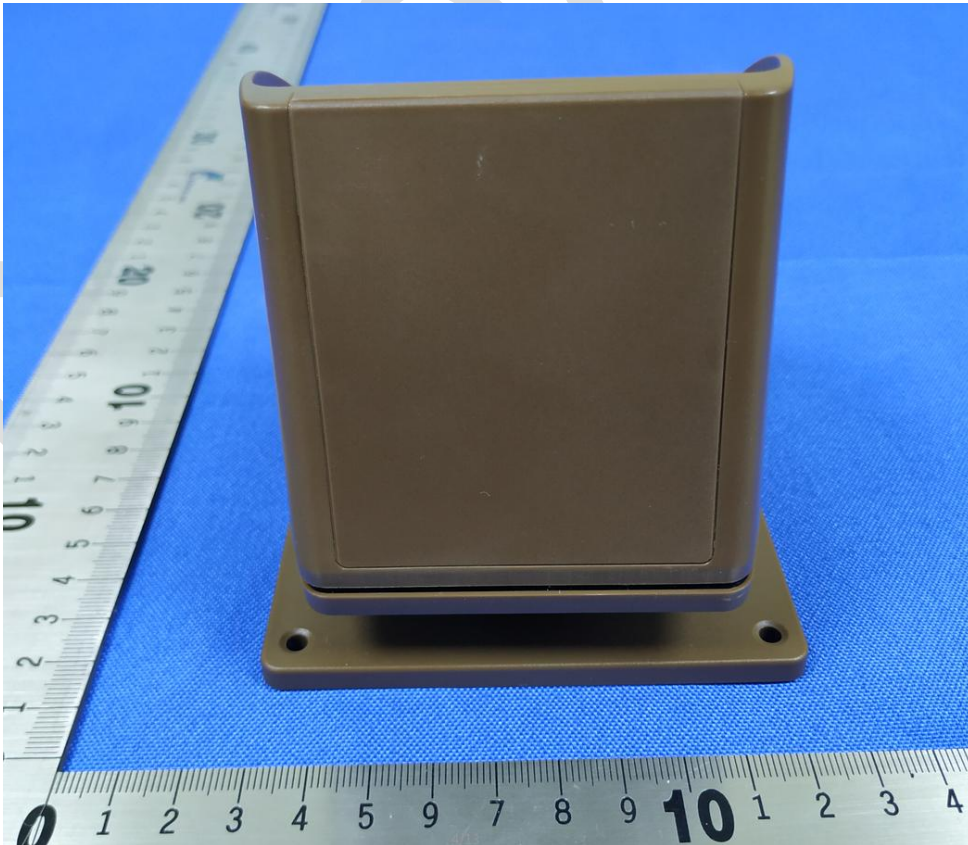
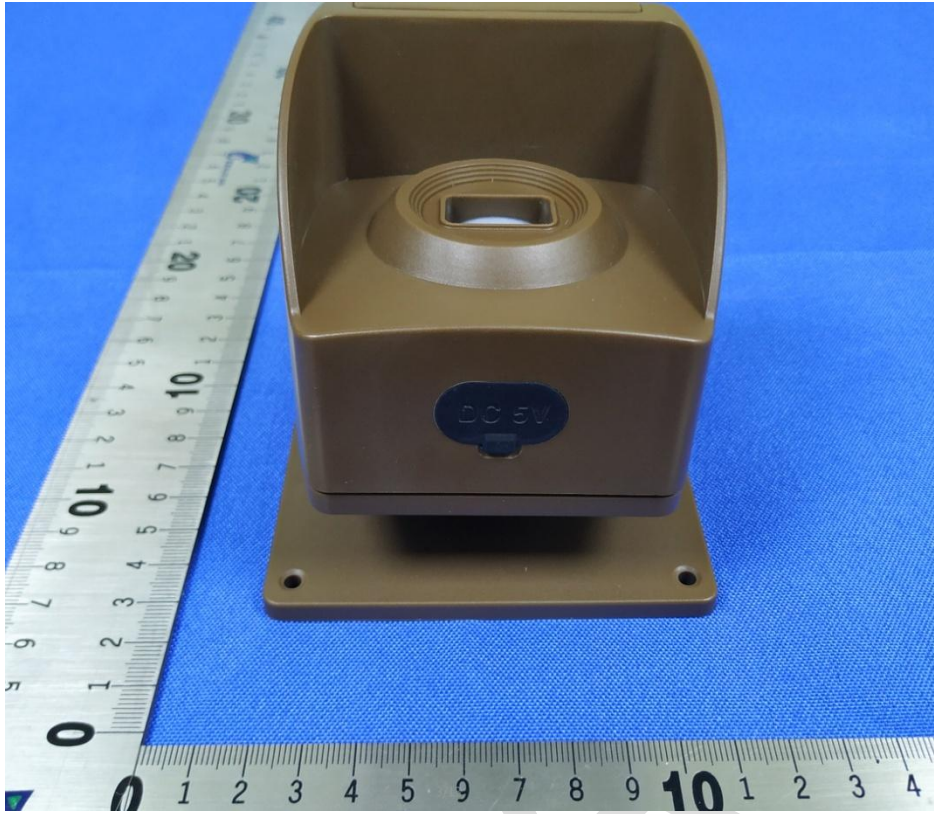
Radiated Emission(above 1G)

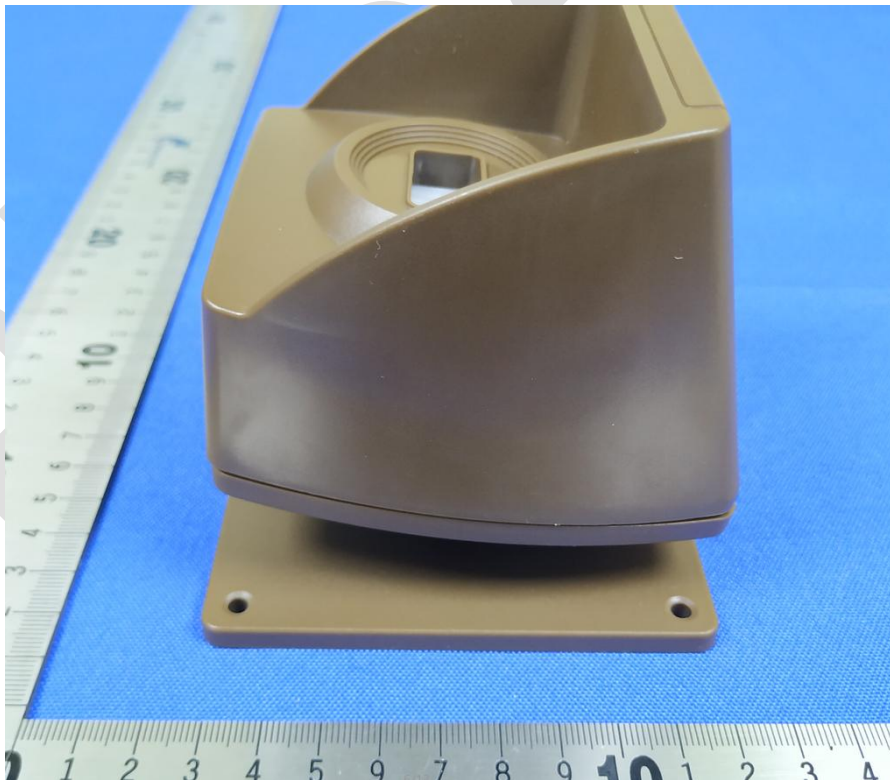
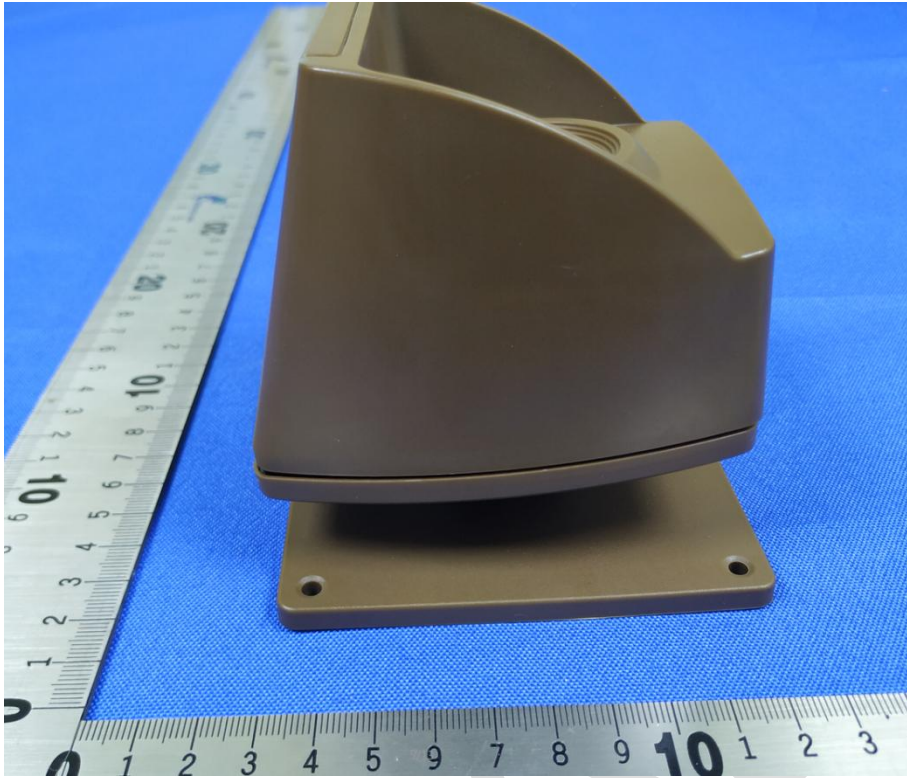


8 EUT Construnctional Photos

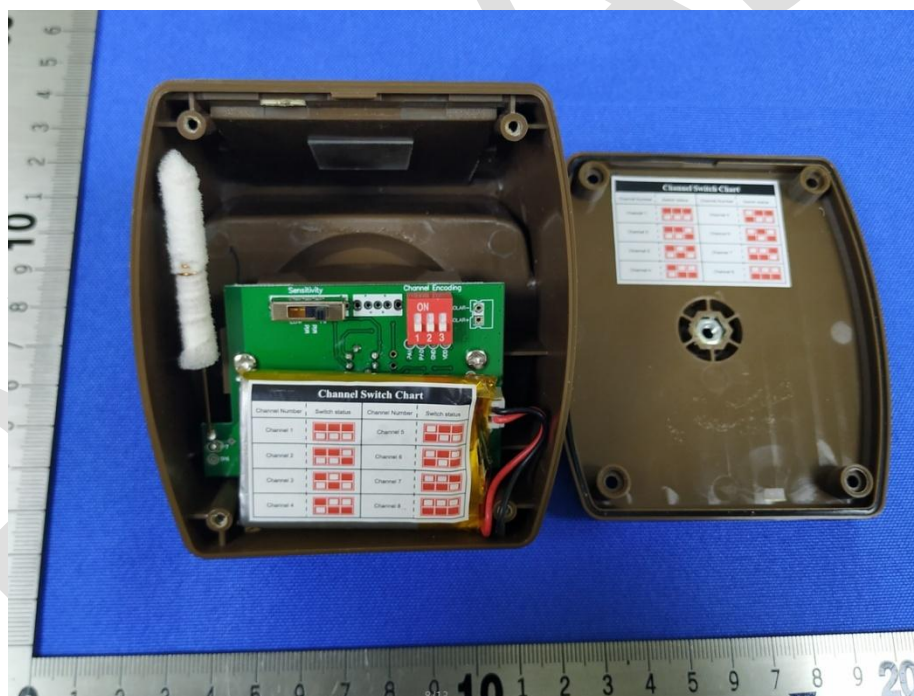
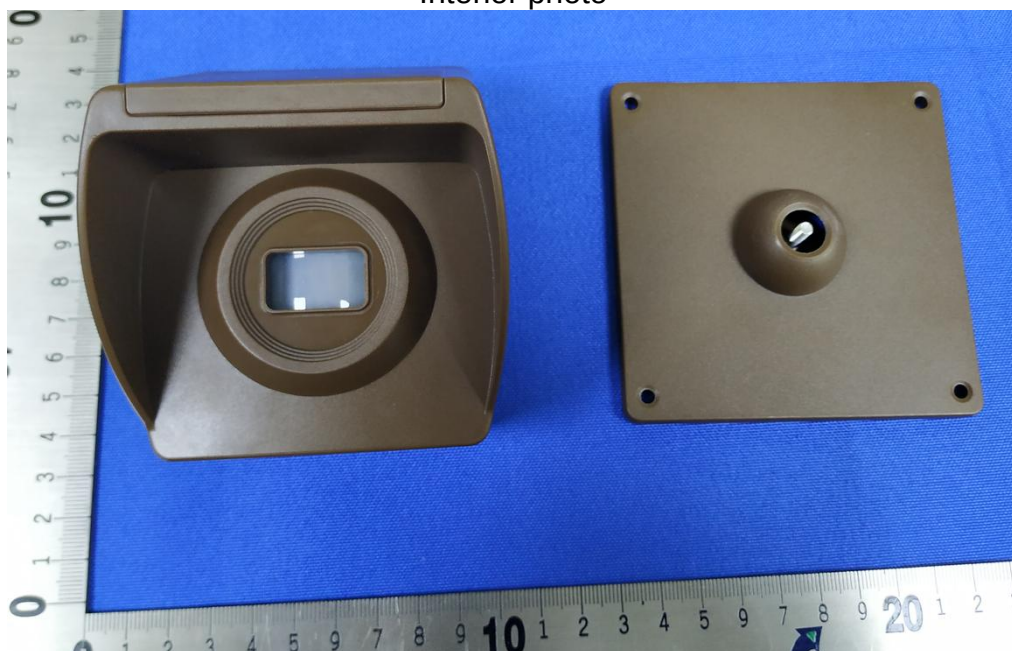
Exterior Photo

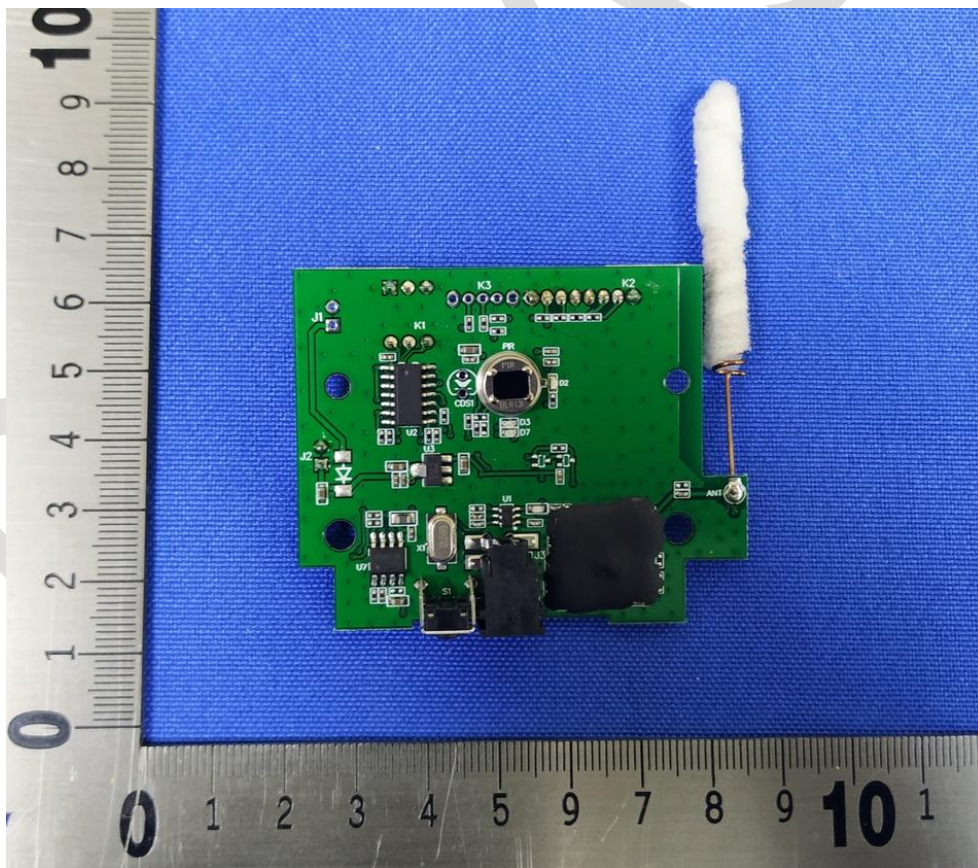
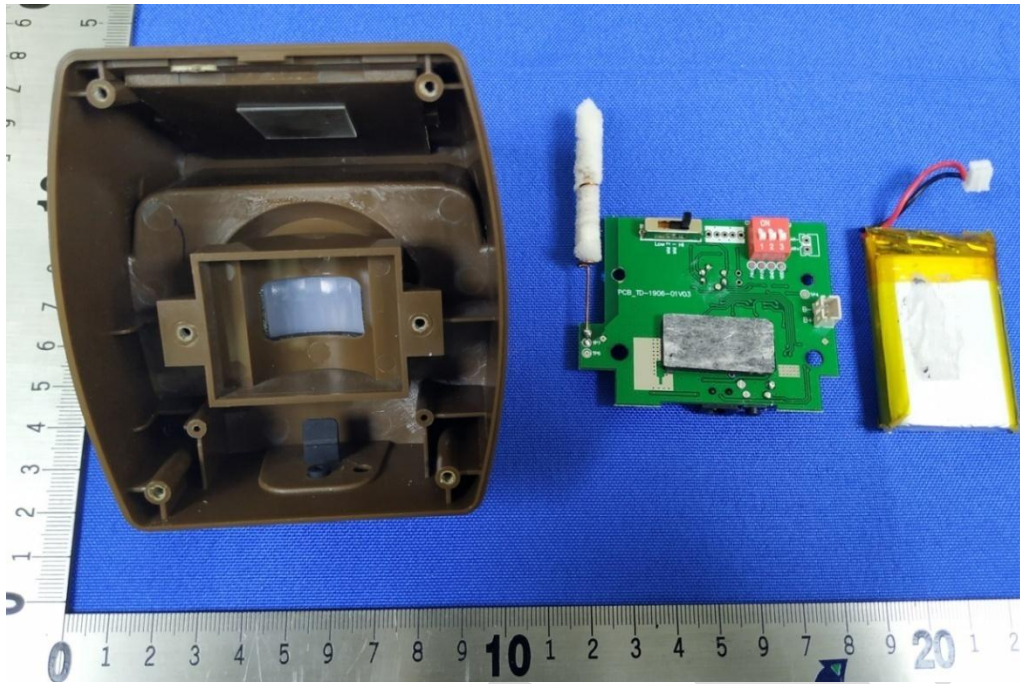


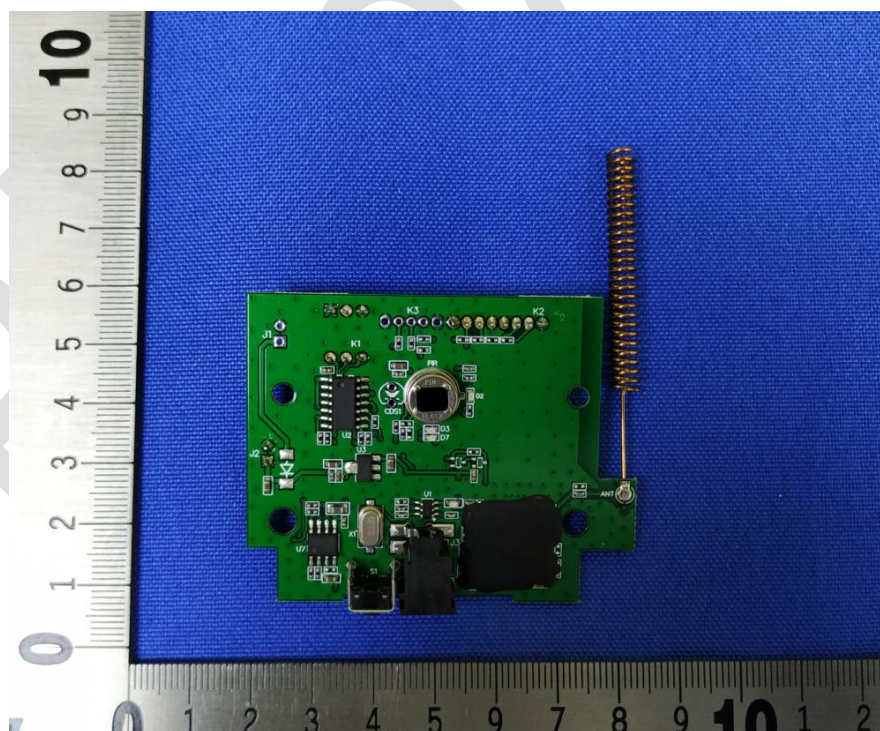
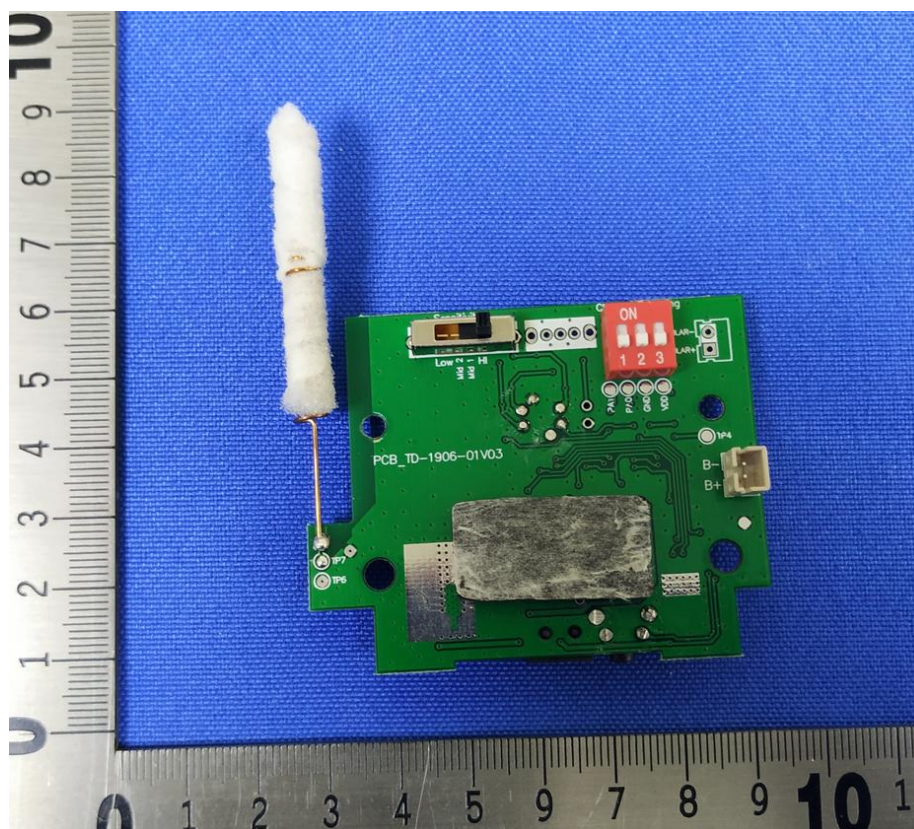


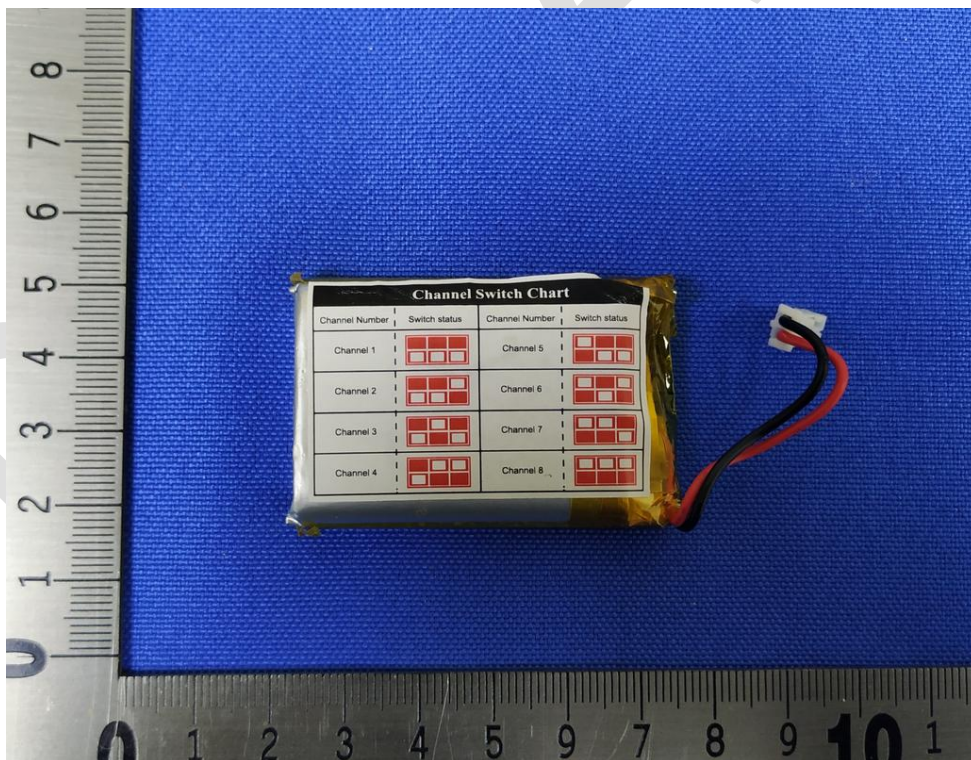
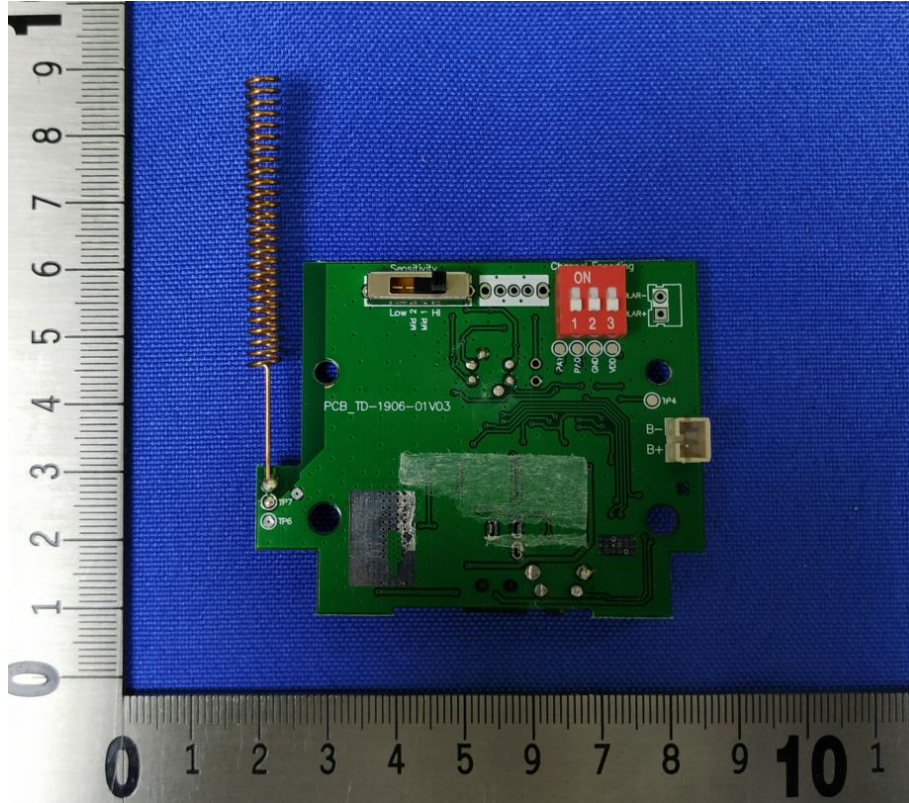


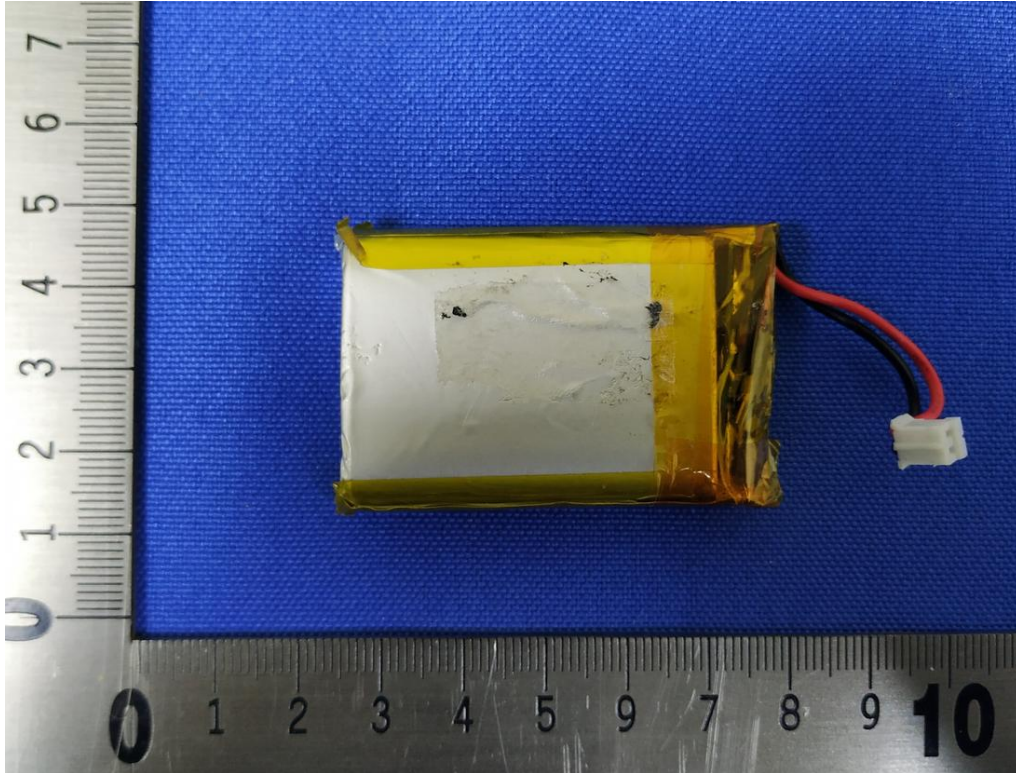
Interior photo











-----End of report-----