



FCC PART15B TEST REPORT

For

FCC ID:	2AERTHBG-408A
Product Name:	Road Barrier
Trademark:	N/A
Model Number:	HBG-408A HBG-408B, HBG-408C, HBG-408D, HBG-408E, HBG-408F, HBG-406A, ABA02
Prepared For :	Hongmen Advanced Technology Corporation
Address :	Hongmen Technology Park, Jihua Rd., Buji Longgang District, Shenzhen CHINA
Prepared By :	Shenzhen BCTC Testing Co., Ltd.
Address :	BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Date:	Nov. 27 – Dec.03, 2017
Date of Report :	Dec. 03, 2017
Report No.:	BCTC-FY171107603E



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TEST REPORT DECLARATION

Applicant : Hongmen Advanced Technology Corporation
Address : Hongmen Technology Park, Jihua Rd., Buji Longgang District,
Shenzhen CHINA
EUT Description : Road Barrier
Model Number : HBG-408A
HBG-408B, HBG-408C, HBG-408D, HBG-408E, HBG-408F,
HBG-406A, ABA02
Operation : 433.92MHz(Only receiver)
Frequency
Rating(s) : AC120V/60Hz

Test Standards:

FCC Part 15 B: 2016
ANSI C63.4-2014

The EUT described above is tested by US to determine the maximum emission levels emanating from the EUT, the maximum emission levels are compared to the FCC Part 15 B Subpart Class B limits.

The measurement results are contained in this test report and Shenzhen BCTC Testing Co., Ltd is assumed of full responsibility for the accuracy and completeness of these measurements.

Also, this report shows that the EUT is to be technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen BCTC Testing Co., Ltd

Prepared by(Engineer): Eric Yang
Reviewer(Supervisor): Jade Yang
Approved(Manager): Carson Zhang





1. GENERAL INFORMATION

1.1. Report information

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BCTC approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BCTC in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BCTC therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

1.1.3. Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BCTC, unless the applicant has authorized BCTC in writing to do so.

1.2. Measurement Uncertainty

Available upon request.

1.3. Test Facility

Site Description

Name of Firm : Shenzhen BCTC Testing Co., Ltd

Site Location : BCTC Building & 1-2F, East of B Building,
Pengzhou Industrial, Fuyuan 1st Road, Qiaotou
Community, Fuyong Street, Bao'an District,
Shenzhen, China

FCC Test Firm Registration Number: 712850

IC Registered No.: 23583

1.4. Test Uncertainty

Conducted Emission Uncertainty = $\pm 2.66\text{dB}$

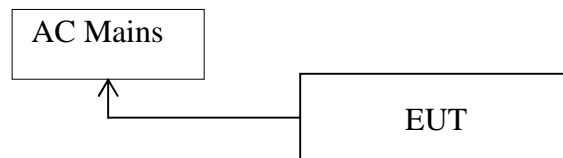
Radiated Emission Uncertainty = $\pm 4.15\text{dB}$

2. PRODUCT DESCRIPTION

2.1.EUT Description

Description	: Road Barrier
Applicant	: Hongmen Advanced Technology Corpoation Hongmen Technology Park, Jihua Rd., Buji Longgang District, Shenzhen CHINA
Manufacturer	: Hongmen Advanced Technology Corpoation Hongmen Technology Park, Jihua Rd., Buji Longgang District, Shenzhen CHINA
Model Number	: HBG-408A HBG-408B, HBG-408C, HBG-408D, HBG-408E, HBG-408F, HBG-406A, ABA02
Model Difference	: All the model are the same circuit and RF module, except model names.

2.2.Block Diagram of EUT Configuration



2.3.Test Conditions

Temperature: 23~25°C

Relative Humidity: 55~63 %



3. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Conducted disturbance	pass
Radiated disturbance	Pass

Remark: "N/A" means "Not applicable."



4. TEST EQUIPMENT USED

4.1. For Conducted Emission Test

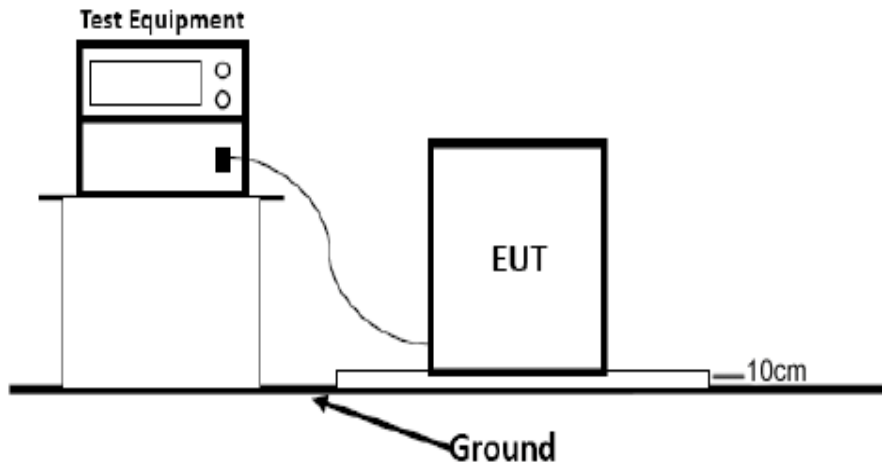
Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Test Receiver	R&S	ESCI	1166.5950K03-101165-ha	2017.08.27	2018.08.26
2	LISN	SCHWARZBECK	NSLK8127	8127739	2017.08.27	2018.08.26
3	LISN	R&S	NSLK8126	8126487	2017.08.27	2018.08.26
4	RF cables	R&S	R204	R20X	2017.08.27	2018.08.26
5	Attenuator	R&S	ESH3-Z2	143206	2017.08.27	2018.08.26

4.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4407B	MY45108040	2017.08.27	2018.08.26
2	Test Receiver (9kHz-7GHz)	R&S	ESPI	101318	2017.08.27	2018.08.26
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB 9168	VULB91 68-438	2017.08.27	2018.08.26
4	Horn Antenna (1GHz-18GHz)	SCHWARZBECK	BBHA9120D	1201	2017.09.03	2018.09.02
5	Horn Antenna (14GHz-40GHz)	SCHWARZBECK	BBHA 9170	9170-181	2017.09.03	2018.09.02
6	Amplifier (9kHz-6GHz)	SCHWARZBECK	BBV9744	9744-0037	2017.08.27	2018.08.26
7	Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV9718	9718-309	2017.08.27	2018.08.26
8	Amplifier (18GHz-40GHz)	SCHWARZBECK	BBV 9721	9721-205	2017.08.27	2018.08.26
9	Loop Antenna (9kHz-30MHz)	SCHWARZBECK	FMZB1519B	00014	2017.09.03	2018.09.02
10	RF cables1 (9kHz-1GHz)	R&S	R203	R20X	2017.08.27	2018.08.26
11	RF cables2 (1GHz-40GHz)	R&S	R204	R21X	2017.08.27	2018.08.26
12	Antenna connector	Florida RF Labs	N/A	RF 01#	2017.08.27	2018.08.26
13	Power Metter	ANRITSU	ML2487A	6K00001568	2017.08.27	2018.08.26
14	Power Sensor (AV)	ANRITSU	ML2491A	030989	2017.08.27	2018.08.26
15	Signal Analyzer 9kHz-26.5GHz	Agilent	N9010A	MY48030494	2017.08.27	2018.08.26
16	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	2017.08.27	2018.08.26
17	D.C. Power Supply	LongWei	PS-305D	010964729	2017.08.27	2018.08.26

5. CONDUCTED EMISSION TEST

5.1. Block Diagram of Test Setup



(EUT: Remote Control System)

5.2. Test Standard

FCC Part 15 B: 2016

5.3. Conducted Emission Limit (Class B)

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

5.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet Part 15 B requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1. Remote Control System

Model Number: HBG-408A



5.5. Operating Condition of EUT

5.5.1. Setup the EUT and simulators as shown in Section 5.1.

5.5.2. Turn on the power of all equipments.

5.5.3. Let the EUT work in test modes (EUT Working) and test it.

5.6. Test Procedure

The EUT is put on a table of non-conducting material that is 10cm high. The vertical conducting wall of shielding is located 40cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.). A EMI test receiver (R&S Test Receiver ESHS30) is used to test the emissions form both sides of AC line. The bandwidth of EMI test receiver is set at 9kHz.

The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.

5.7. Test Result

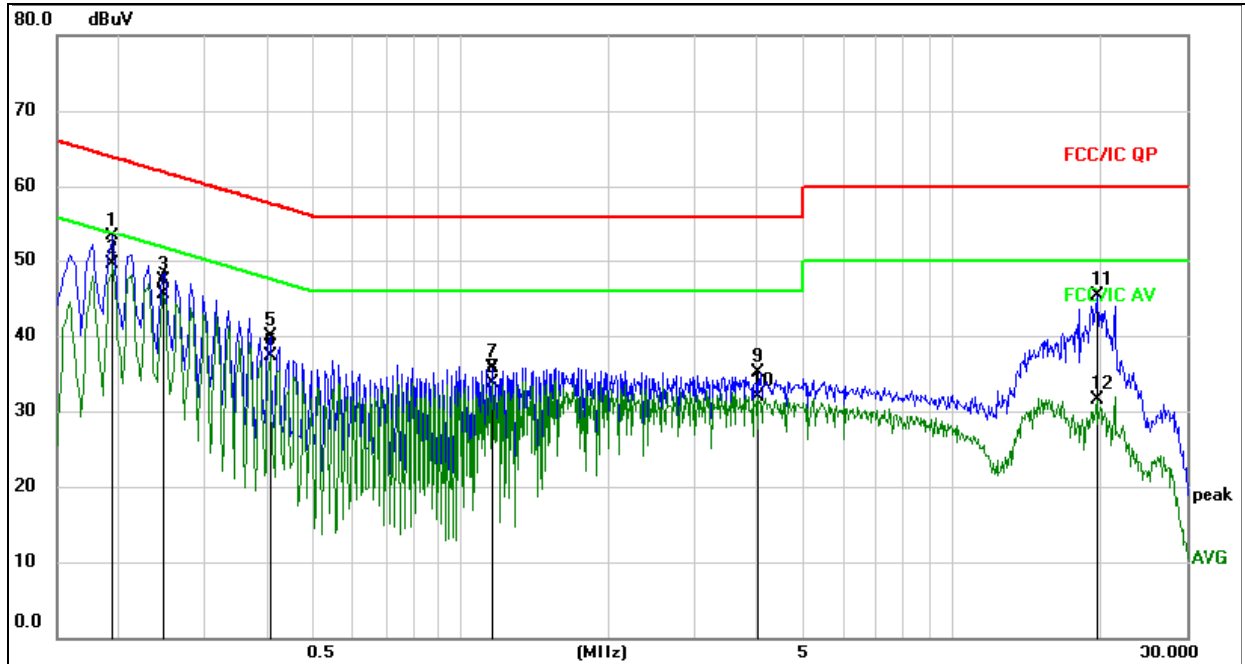
PASS

Please refer to the following pages.



Conducted Emission (Between 150KHz – 30MHz)

EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	L
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		



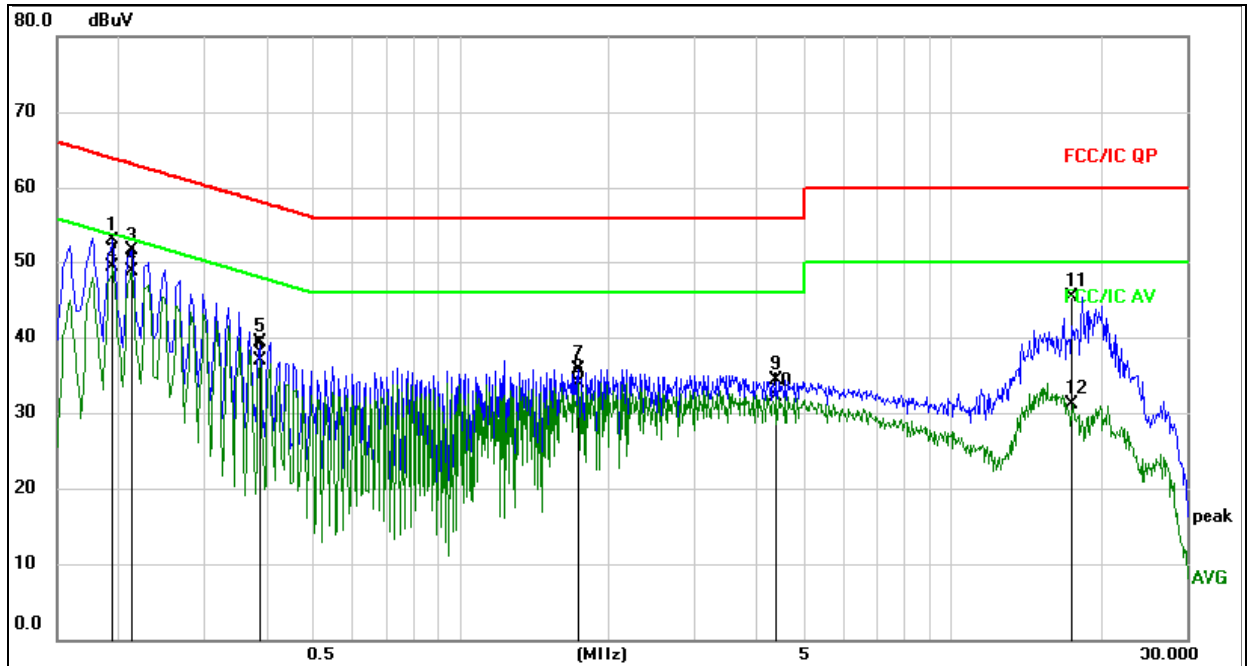
Remark:

- 1.All readings are Quasi-Peak and Average values.
- 2.Factor = Insertion Loss + Cable Loss .

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1949	43.61	9.65	53.26	63.83	-10.57	QP	
2	*	0.1949	39.82	9.65	49.47	53.83	-4.36	AVG	
3		0.2455	37.57	9.65	47.22	61.91	-14.69	QP	
4		0.2455	35.80	9.65	45.45	51.91	-6.46	AVG	
5		0.4065	30.26	9.67	39.93	57.72	-17.79	QP	
6		0.4065	27.60	9.67	37.27	47.72	-10.45	AVG	
7		1.1625	26.03	9.69	35.72	56.00	-20.28	QP	
8		1.1625	24.08	9.69	33.77	46.00	-12.23	AVG	
9		4.0335	25.41	9.73	35.14	56.00	-20.86	QP	
10		4.0335	22.15	9.73	31.88	46.00	-14.12	AVG	
11		19.7115	35.47	9.85	45.32	60.00	-14.68	QP	
12		19.7115	21.57	9.85	31.42	50.00	-18.58	AVG	



EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	N
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		



Remark:

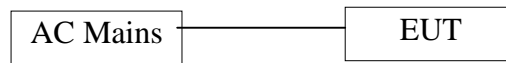
- 1.All readings are Quasi-Peak and Average values.
- 2.Factor = Insertion Loss + Cable Loss .

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1949	43.22	9.65	52.87	63.83	-10.96	QP	
2		0.1949	39.65	9.65	49.30	53.83	-4.53	AVG	
3		0.2130	41.84	9.65	51.49	63.09	-11.60	QP	
4	*	0.2130	39.09	9.65	48.74	53.09	-4.35	AVG	
5		0.3885	29.61	9.67	39.28	58.10	-18.82	QP	
6		0.3885	27.14	9.67	36.81	48.10	-11.29	AVG	
7		1.7430	25.92	9.70	35.62	56.00	-20.38	QP	
8		1.7430	24.27	9.70	33.97	46.00	-12.03	AVG	
9		4.3845	24.50	9.73	34.23	56.00	-21.77	QP	
10		4.3845	22.37	9.73	32.10	46.00	-13.90	AVG	
11		17.6279	35.50	9.88	45.38	60.00	-14.62	QP	
12		17.6279	21.15	9.88	31.03	50.00	-18.97	AVG	

6. RADIATED EMISSION MEASUREMENT

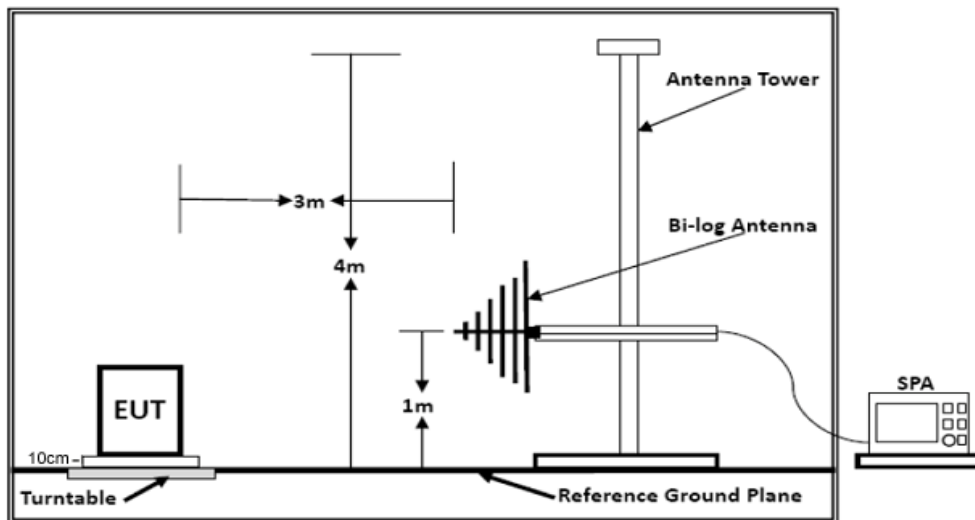
6.1. Block Diagram of Test Setup

6.1.1. Block Diagram of connection between the EUT and the simulators



(EUT: Remote Control System)

6.1.2. Anechoic Chamber Test Setup Diagram



6.2. Test Standard

FCC Part 15 B: 2016

6.3. Radiated Emission Limit(Class B)

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

Note:(1) The smaller limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT or system.



6.4.EUT Configuration on Test

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize Its emission characteristics in normal application.

Operating Condition of EUT

6.4.1.Setup the EUT as shown on Section 6.1

6.4.2.Turn on the power of all equipments.

6.4.3.Let the EUT work in test mode(EUT working) and measure it.

6.5.Test Procedure

The EUT is placed on a turn table which is 0.1 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

The bandwidth setting on the test receiver is 120 KHz.

The EUT is tested in Anechoic Chamber. The frequency range from 30MHz to 1000MHz is checked. All the test results are listed in Section 6.6.

6.6.Test Result

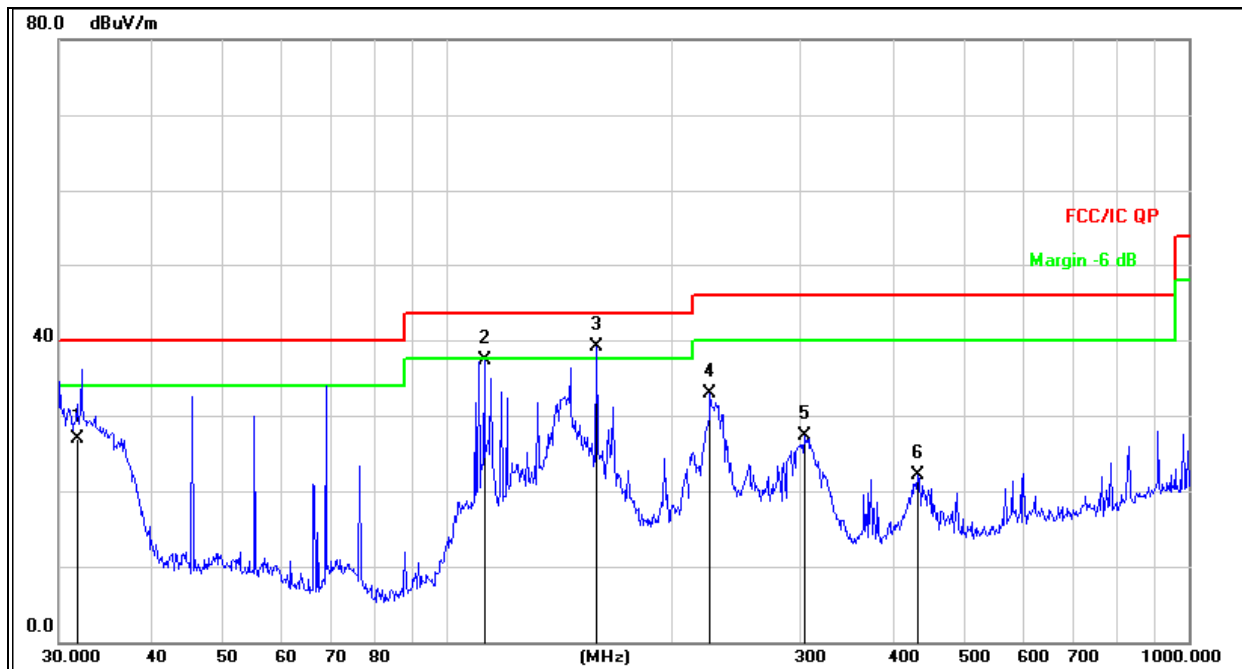
PASS

Please refer to the following pages.



Radiated Spurious Emission (Between 30MHz – 1GHz)

EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		

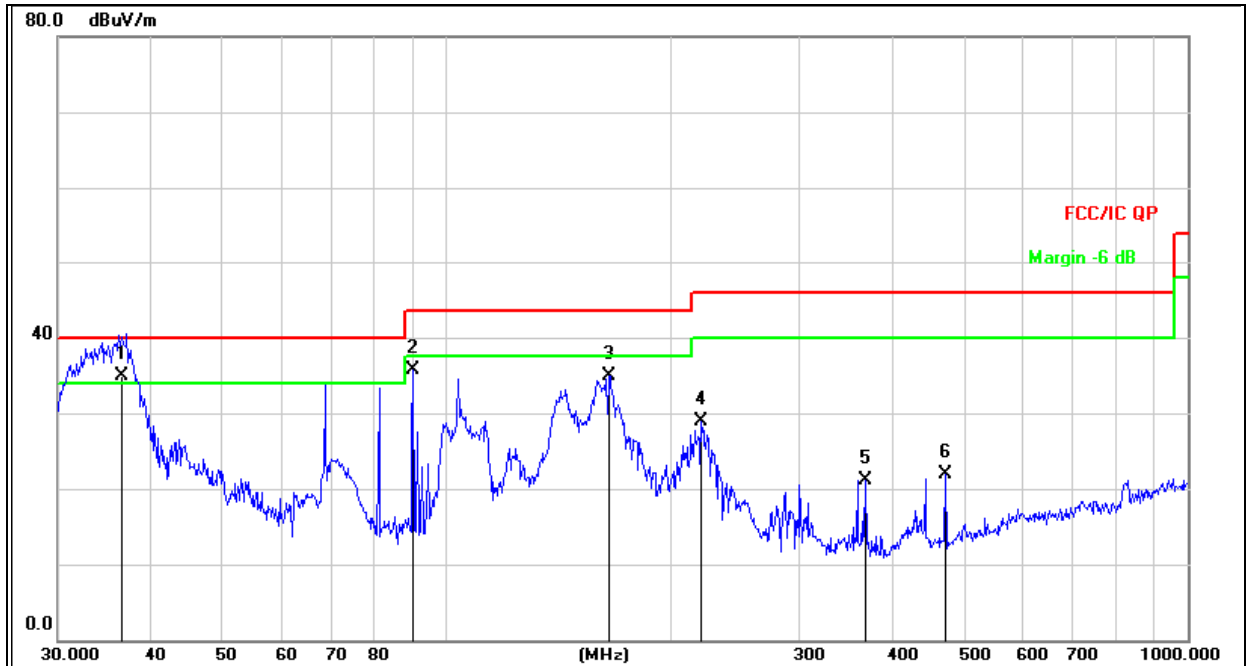


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1		31.8508	43.64	-16.71	26.93	40.00	-13.07	QP
2		112.1305	53.49	-16.10	37.39	43.50	-6.11	QP
3	*	158.6677	58.15	-19.06	39.09	43.50	-4.41	QP
4		226.8936	49.02	-16.06	32.96	46.00	-13.04	QP
5		304.6099	40.76	-13.49	27.27	46.00	-18.73	QP
6		431.0316	32.89	-10.87	22.02	46.00	-23.98	QP



EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		



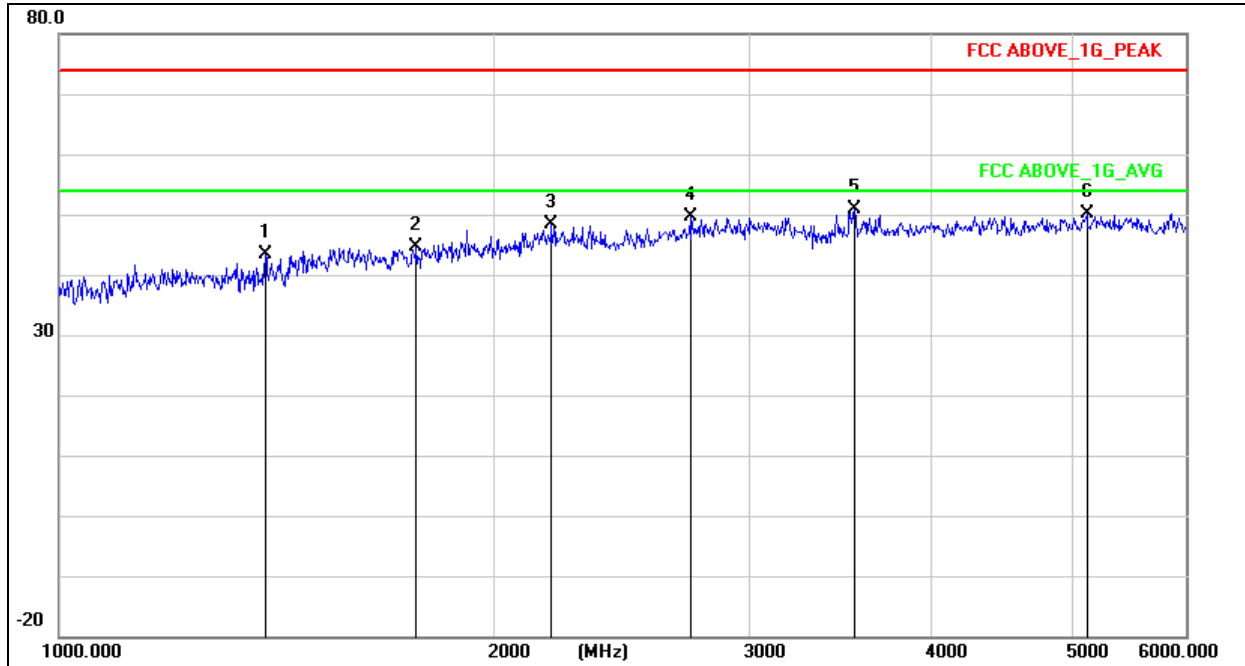
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector
		MHz	dBuV	dB	dBuV/m	dB/m	dB	
1	*	36.4197	50.95	-15.98	34.97	40.00	-5.03	QP
2		90.2205	53.09	-17.40	35.69	43.50	-7.81	QP
3		165.4866	53.64	-18.81	34.83	43.50	-8.67	QP
4		221.3918	45.16	-16.16	29.00	46.00	-17.00	QP
5		368.1116	33.27	-12.18	21.09	46.00	-24.91	QP
6		472.1759	32.39	-10.55	21.84	46.00	-24.16	QP



ABOVE 1GHz: (1G-6GHz)

EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		

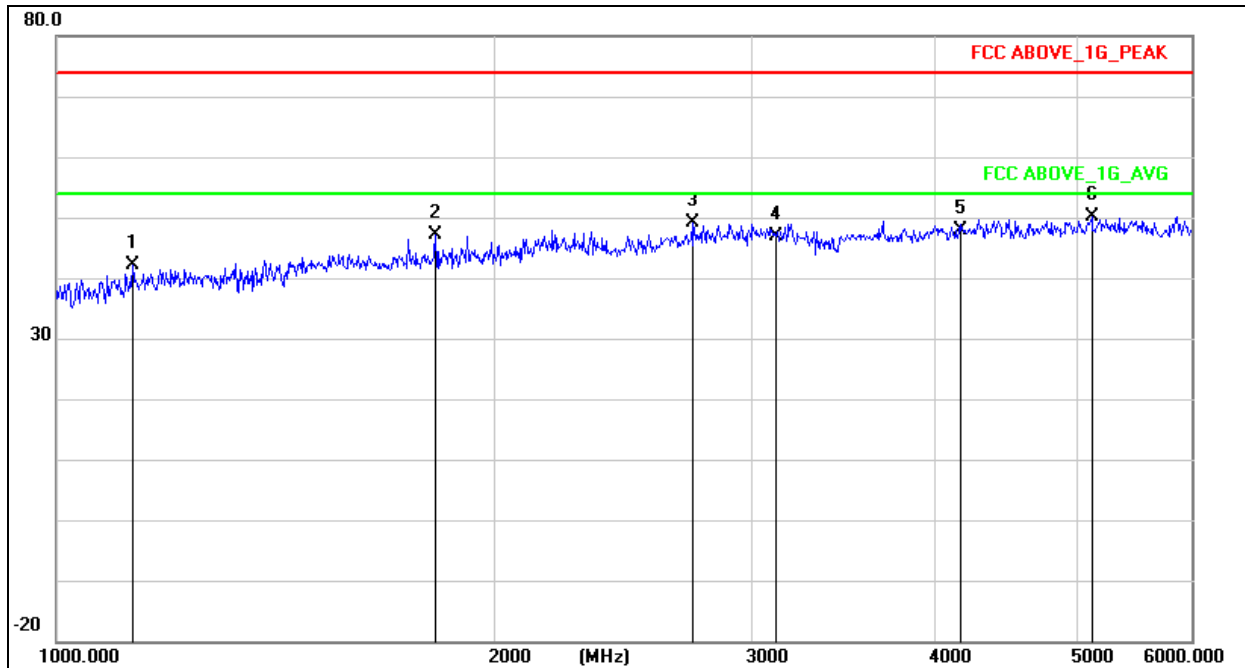


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1388.039	49.70	-6.25	43.45	74.00	-30.55	PK
1764.712	50.61	-6.03	44.58	74.00	-29.42	PK
2188.024	51.15	-2.86	48.29	74.00	-25.71	PK
2727.500	53.29	-3.57	49.72	74.00	-24.28	PK
3543.030	53.30	-2.47	50.83	74.00	-23.17	PK
5124.765	48.10	2.03	50.13	74.00	-23.87	PK



EUT:	Road Barrier	Model Name :	HBG-408A
Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		
Test Mode : (Worst)	Receive mode		



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
1127.551	49.67	-7.54	42.13	74.00	-31.87	PK
1819.293	52.87	-5.79	47.08	74.00	-26.92	PK
2727.500	52.79	-3.57	49.22	74.00	-24.78	PK
3114.210	49.95	-3.04	46.91	74.00	-27.09	PK
4155.567	48.34	-0.54	47.80	74.00	-26.20	PK
5124.765	48.10	2.03	50.13	74.00	-23.87	PK

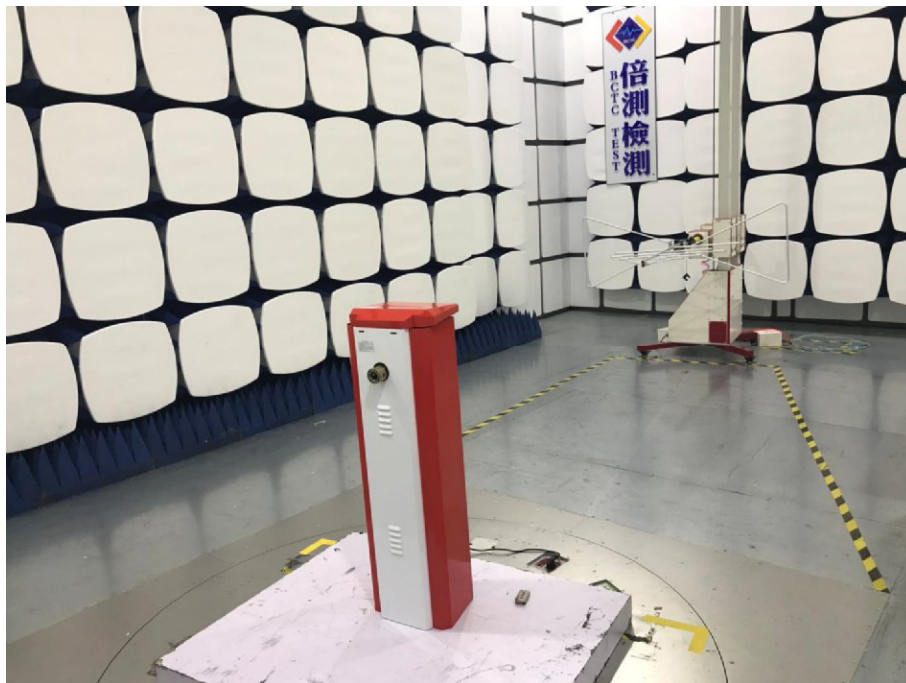


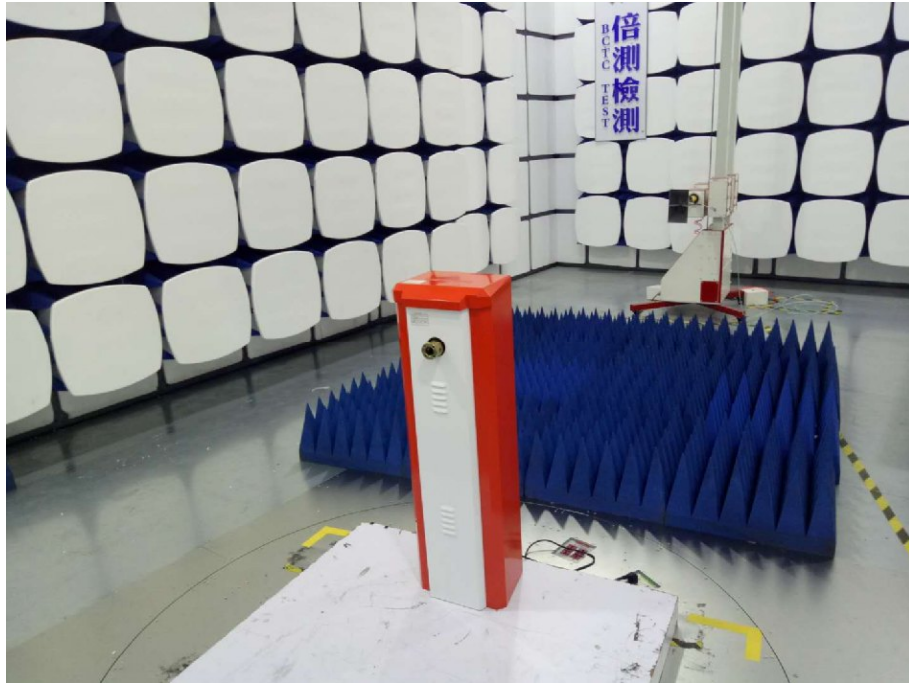
APPENDIX I (TEST PHOTOS OF THE EUT)

Conducted Measurement Photos



Radiated Measurement Photos



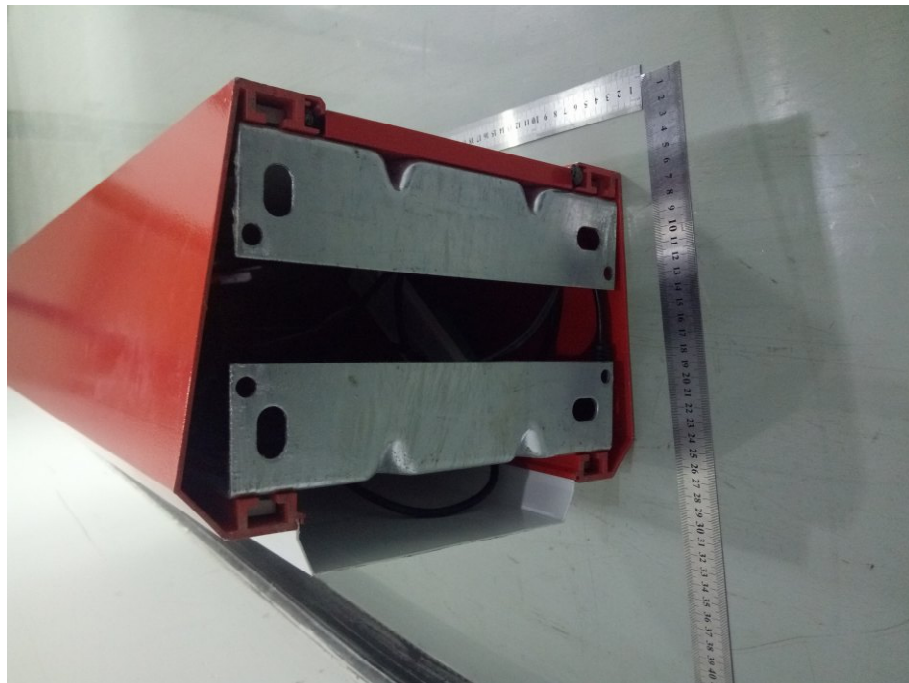


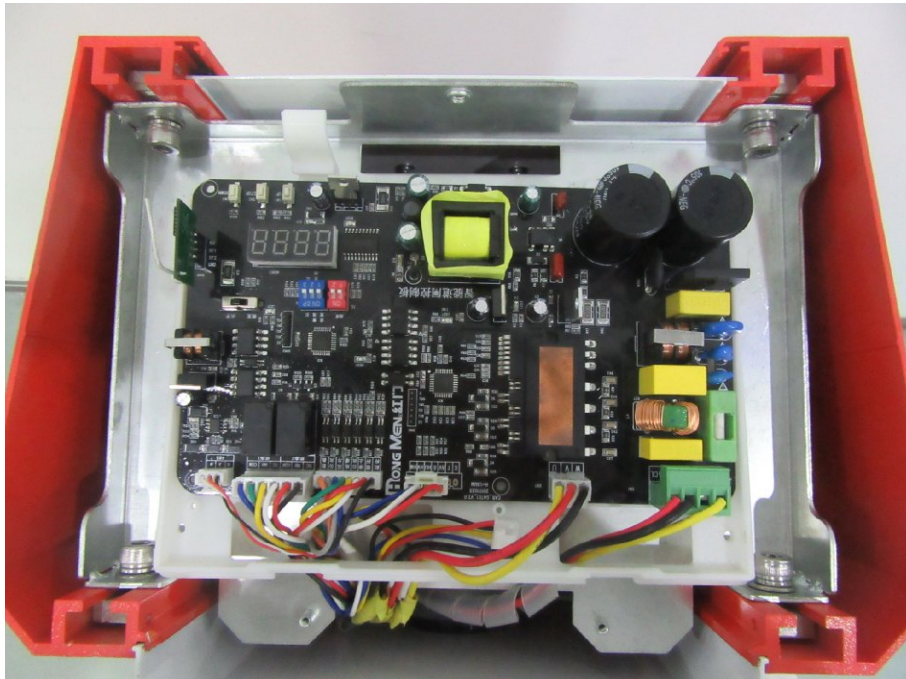
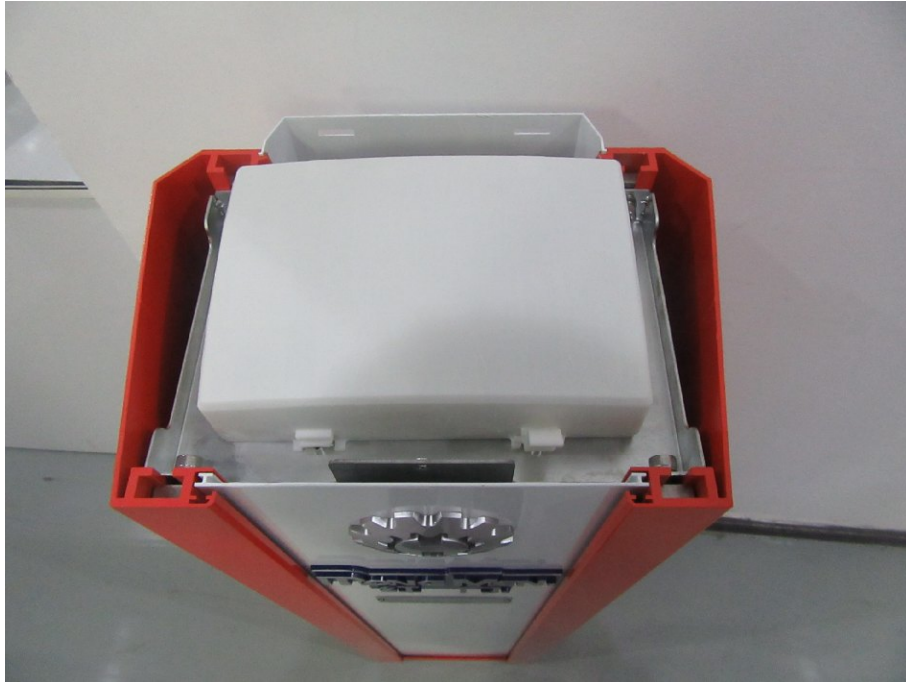


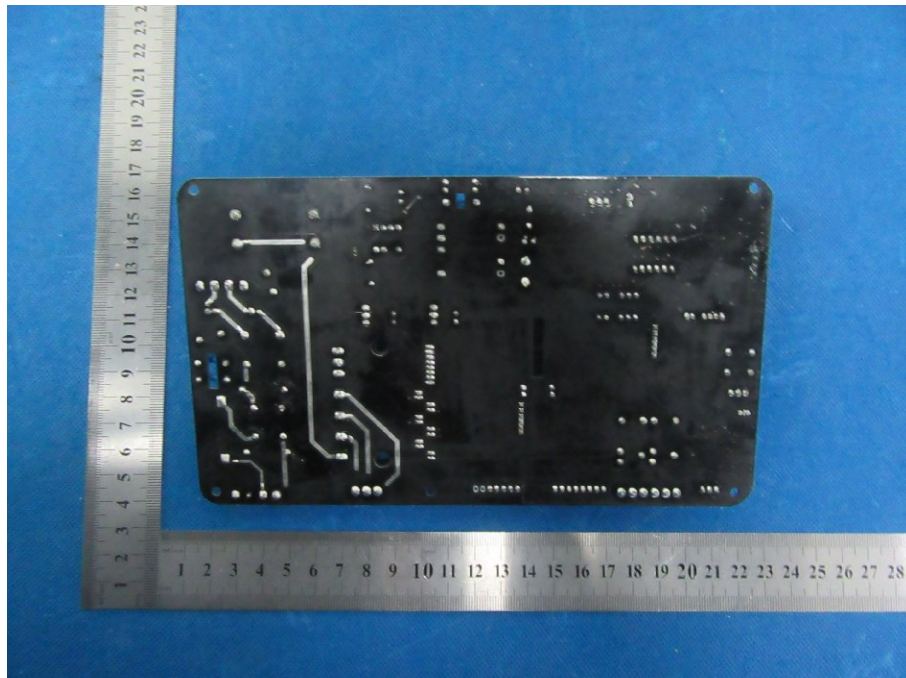
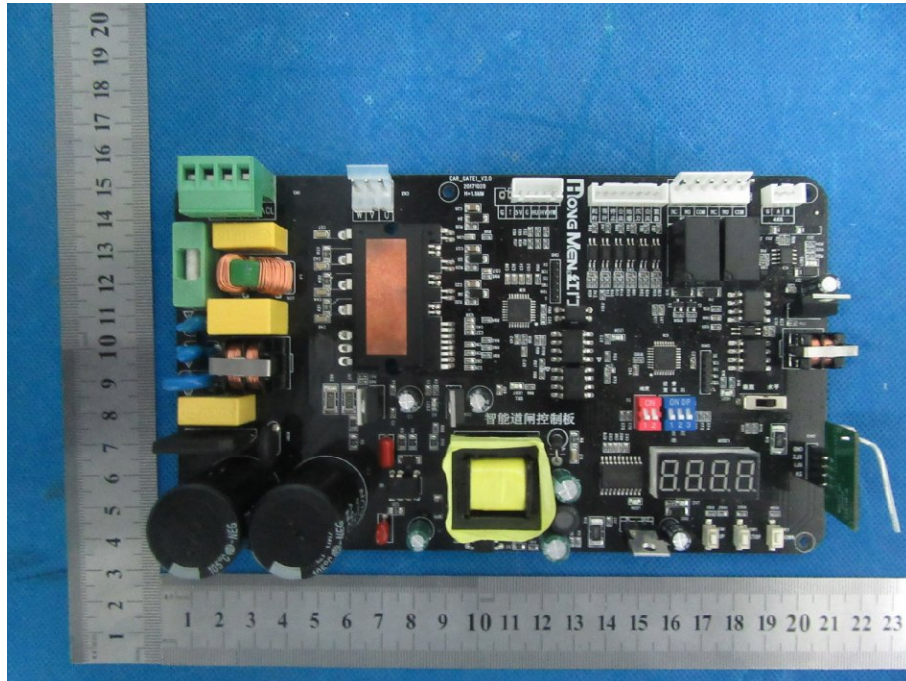
APPENDIX II (PHOTOS OF THE EUT)

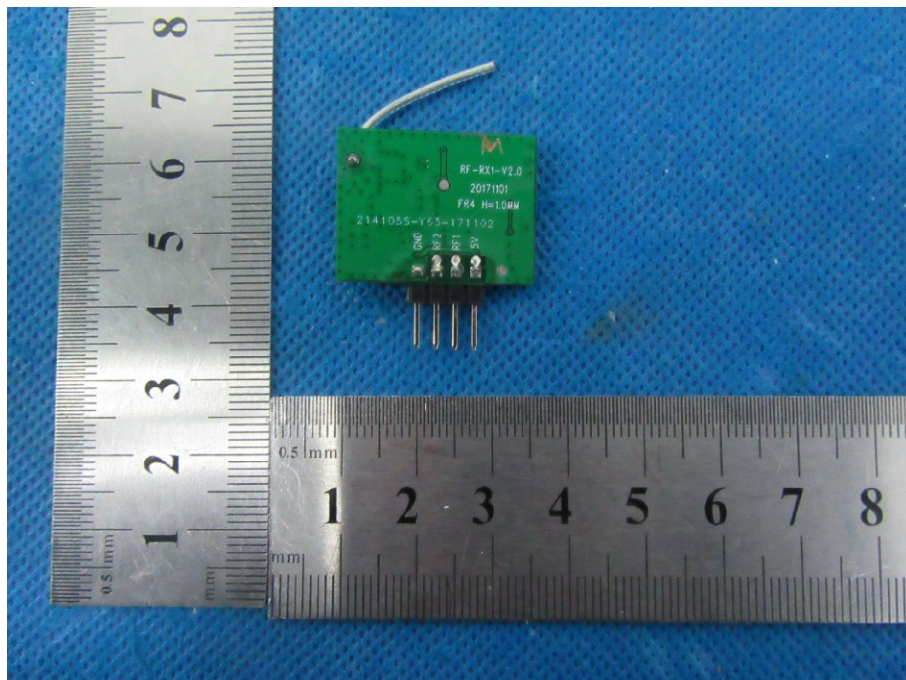
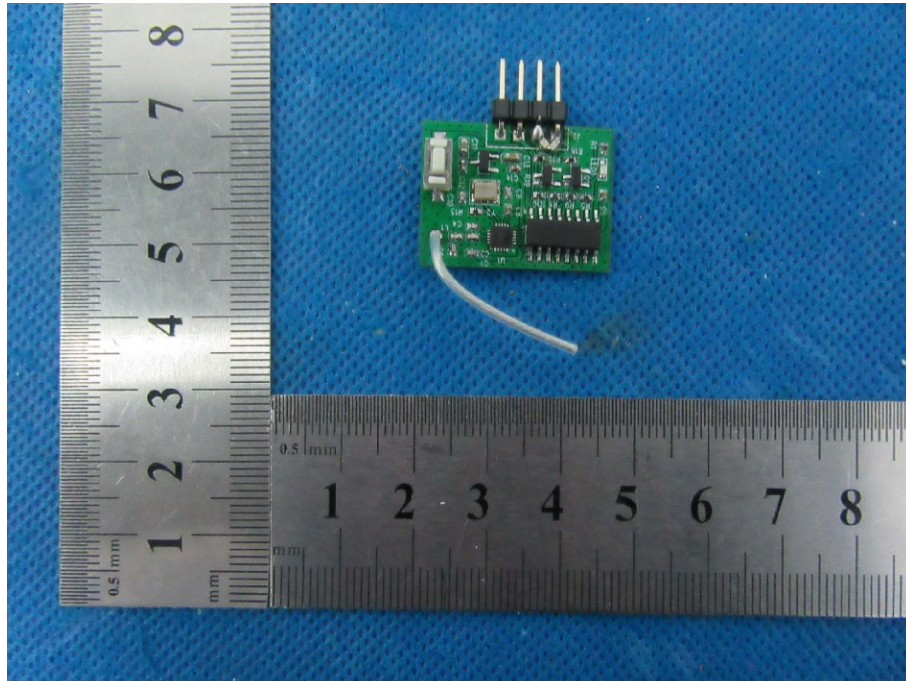


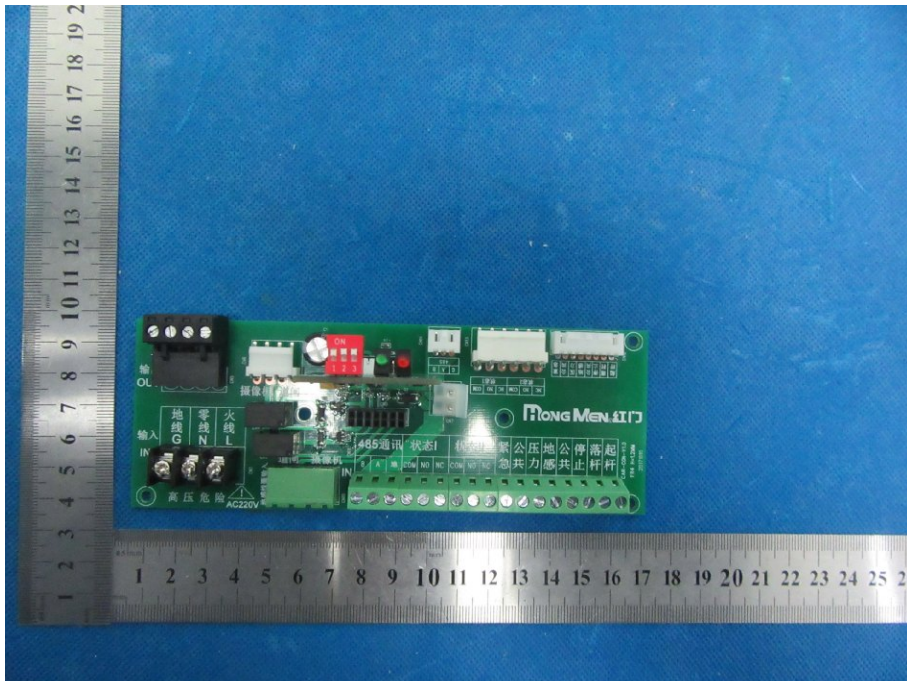


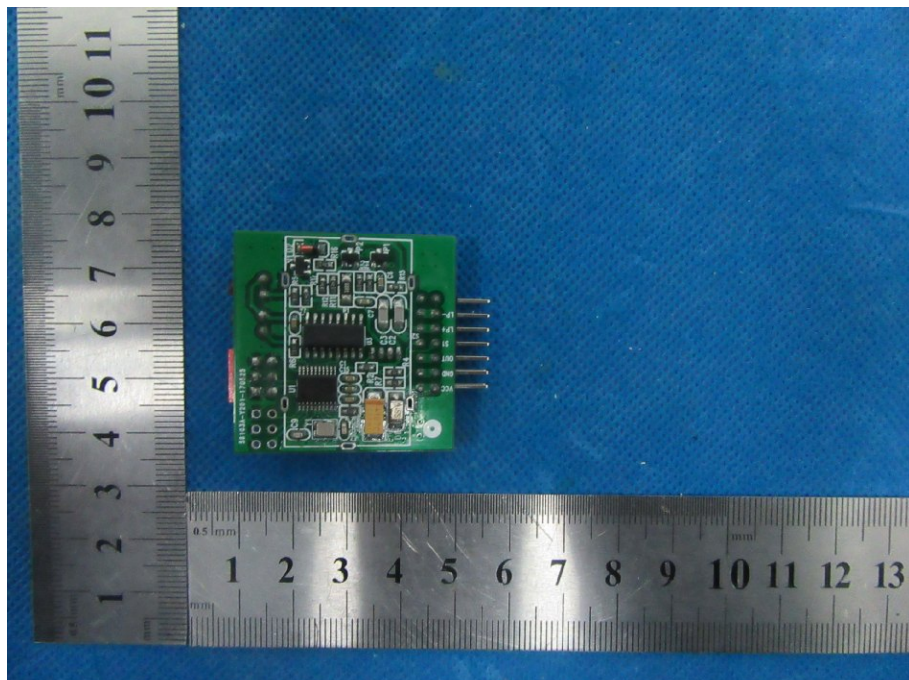
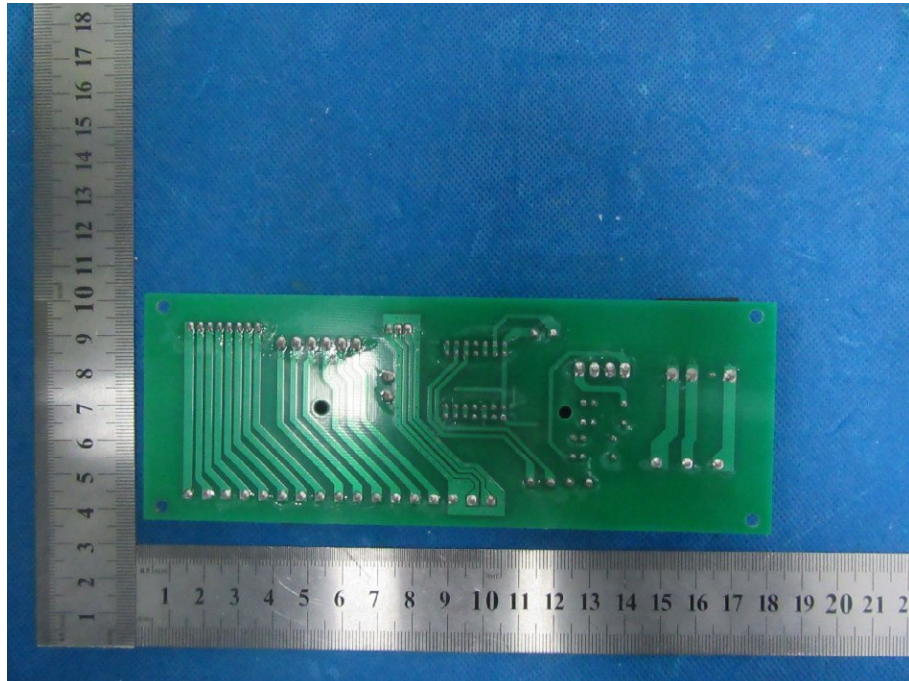


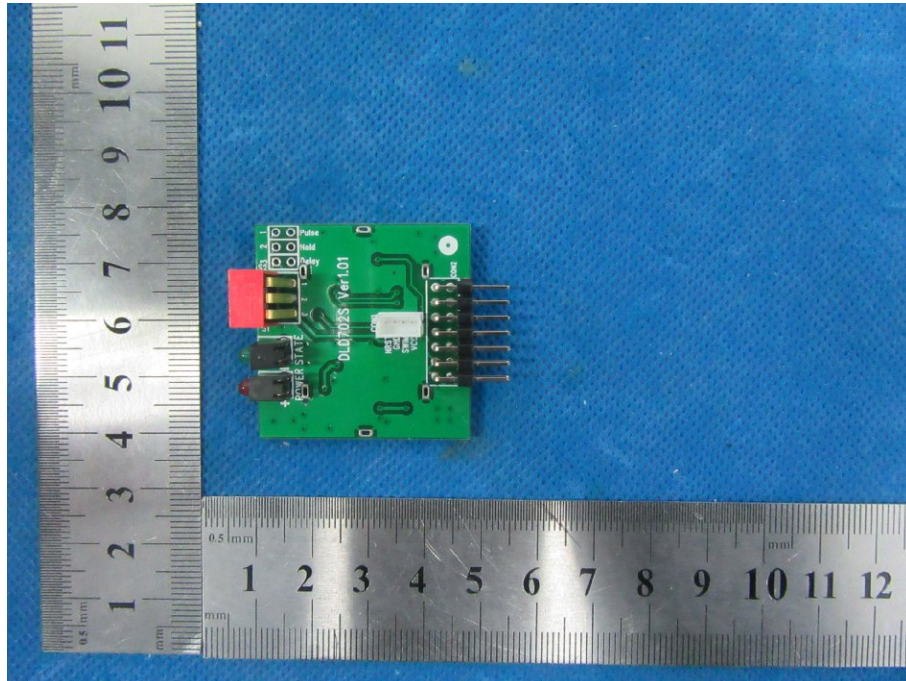












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