TEST REPORT

Reference No.	:	WTS15S0425570E
FCC ID	:	2AERTHM-FSK01R
Applicant	:	Hongmen Advanced Technology Corporation
Address	:	Hongmen Technology Park, jihua Road shangxue section, xiashujing buji ShenZhen Guangdong Province, China
Manufacturer	:	Hongmen Advanced Technology Corporation
Address	:	Hongmen Technology Park, jihua Road shangxue section, xiashujing buji ShenZhen Guangdong Province, China
Product Name	:	Remote Control Receiver
Model No.	:	HM-FSK01R
Standards	:	FCC PART15 SUBPART B: 2014
Date of Receipt sample	:	May 13, 2015
Date of Test	:	May 13~ 16, 2015
Date of Issue	:	May 27, 2015
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
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Compiled by:

Zero Zhou / Project Engineer

Approved by:

Philo Zhong / Manager

1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Power Line Conducted Emission (150kHz to 30MHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2003	Pass
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2003	Pass
Radiated Emission (Above 1GHz)	FCC PART 15, SUBPART B: 2014	Class B	ANSI C63.4: 2003	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object

2 Contents

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3 General Information

3.1 General Description of E.U.T.

Product Name	:	Remote Control Receiver
Model No.	:	HM-FSK01R
Model Difference	:	N/A

3.2 Details of E.U.T.

Power supply	:	12 ~ 36V AC or DC
Power Consumption	:	220mW
RX Frequency	:	434MHz

3.3 Standards Applicable for Testing

The tests were performed according to following standards:
FCC PART 15, SUBPART B: Electronic Code of Federal Regulations- Unintentional Radiators 2014

3.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

  Waltek Services (Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A-1, July 12, 2012.

- **FCC Test Site 1# – Registration No.: 880581**

  Waltek Services (Shenzhen) 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 880581, April 29, 2014.

- **FCC Test Site 2# – Registration No.: 328995**

  Waltek Services(Shenzhen) 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 328995, December 3, 2014.

3.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

3.6 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

4.1 Equipment List

Conducted Emissions Test Site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.15,2014	Sep.14,2015
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.15,2014	Sep.14,2015
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.15,2014	Sep.14,2015
4.	Cable	LARGE	RF300	-	Sep.15,2014	Sep.14,2015
3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2014	Sep.14,2015
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2014	Sep.14,2015
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.19,2014	Apr.18,2016
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2014	Sep.14,2015
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.19,2014	Apr.18,2016
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.19,2014	Apr.18,2016
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Mar.17,2014	Mar.16,2016
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.10,2014	Apr.09,2016
3m Semi-anechoic Chamber for Radiation Emissions Test site 2#						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	Test Receiver	R&S	ESCI	101296	Sep.15,2014	Sep.14,2015
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3325	Sep.15,2014	Sep.14,2015
3	Amplifier	Compliance pirection systems inc	PAP-0203	22024	Sep.15,2014	Sep.14,2015
4	Cable	HUBER+SUHNER	CBL2	525178	Sep.15,2014	Sep.14,2015

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	30MHz~1000MHz	±5.03dB	(1)
	1GHz~6GHz	±5.47dB	(1)

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

5 Emission Test Results

5.1 Power Line Conducted Emission, 150kHz to 30MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4

Test Result ..... : Pass

Frequency Range ..... : 150kHz to 30MHz

Class ..... : Class B

Limit ..... :

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

5.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 53.6%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

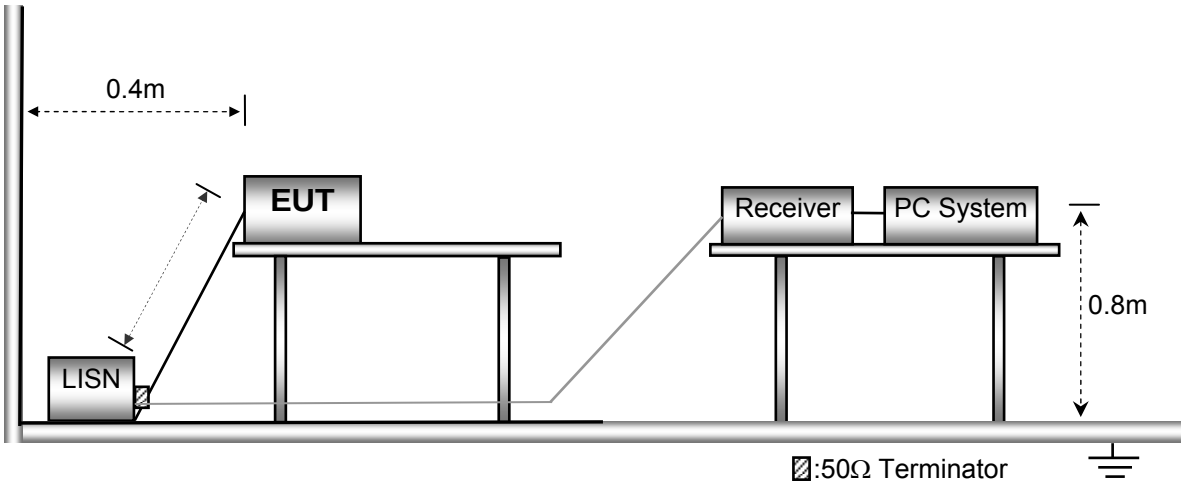
Input Voltage..... : AC 12V/50Hz, AC 36V/50Hz

Operating Mode ..... : Receiving mode

Remark ..... : The worst case is tested under the condition of AC 36V/50Hz and the data is shown as follow.

5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the ANSI C63.4 .

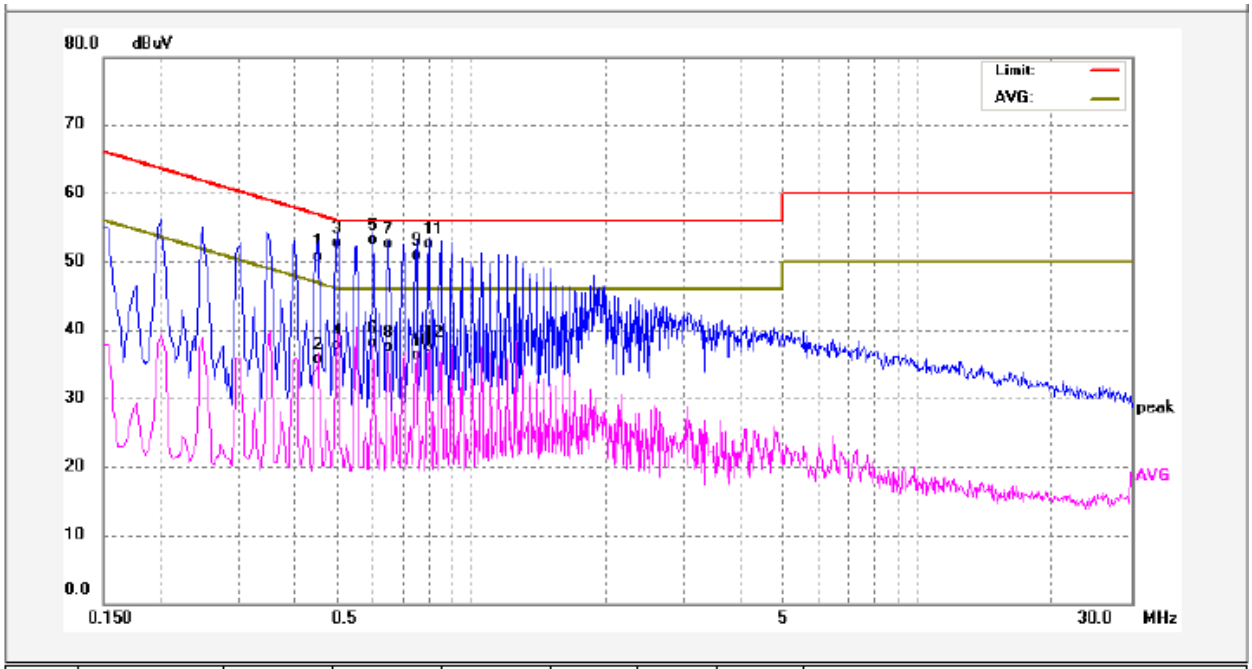


5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line. According to the data in section 5.1.4, the EUT complied with the FCC PART 15, SUBPART B standards.

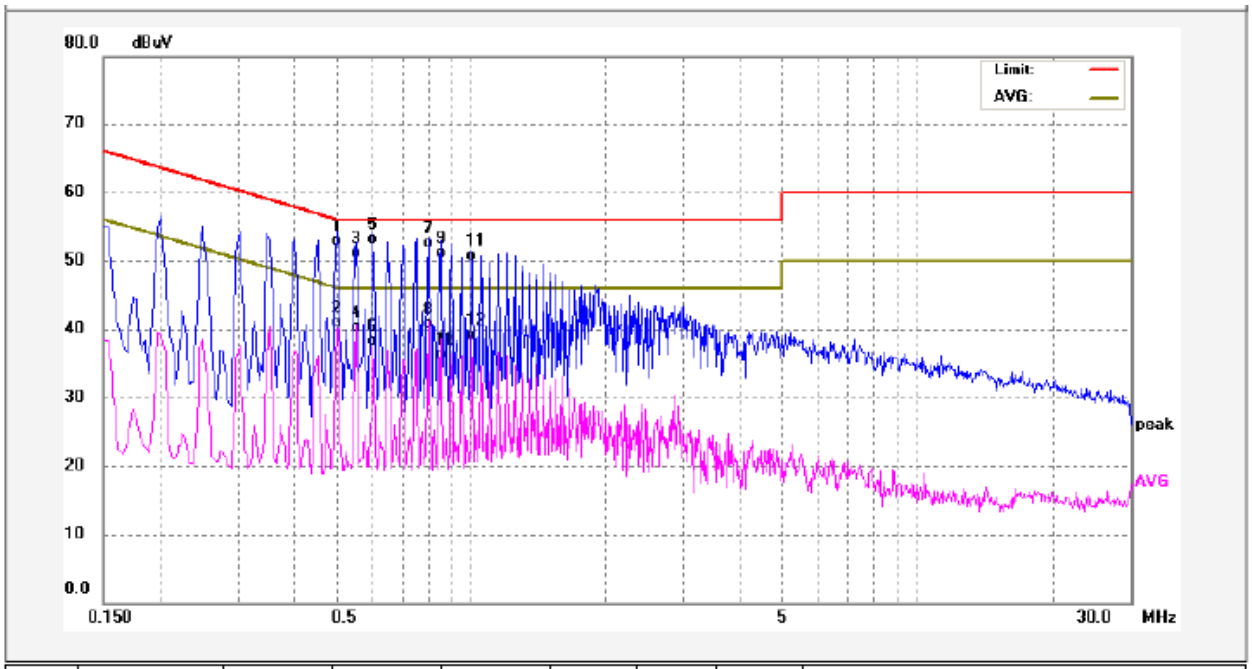
5.1.4 Power Line Conducted Emission Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.4540	40.57	10.12	50.69	56.80	-6.11	QP	
2	0.4540	25.63	10.12	35.75	46.80	-11.05	AVG	
3	0.5020	42.68	10.12	52.80	56.00	-3.20	QP	
4	0.5020	27.57	10.12	37.69	46.00	-8.31	AVG	
5	0.6020	42.92	10.15	53.07	56.00	-2.93	QP	
6	0.6020	27.86	10.15	38.01	46.00	-7.99	AVG	
7	0.6500	42.30	10.16	52.46	56.00	-3.54	QP	
8	0.6500	27.36	10.16	37.52	46.00	-8.48	AVG	
9	0.7539	40.77	10.18	50.95	56.00	-5.05	QP	
10	0.7539	26.03	10.18	36.21	46.00	-9.79	AVG	
11	0.8020	42.25	10.18	52.43	56.00	-3.57	QP	
12	0.8020	27.39	10.18	37.57	46.00	-8.43	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.5020	42.82	10.12	52.94	56.00	-3.06	QP	
2	0.5020	30.83	10.12	40.95	46.00	-5.05	AVG	
3	0.5540	40.99	10.13	51.12	56.00	-4.88	QP	
4	0.5540	30.21	10.13	40.34	46.00	-5.66	AVG	
5	0.6020	42.95	10.15	53.10	56.00	-2.90	QP	
6	0.6020	28.06	10.15	38.21	46.00	-7.79	AVG	
7	0.8020	42.31	10.18	52.49	56.00	-3.51	QP	
8	0.8020	30.47	10.18	40.65	46.00	-5.35	AVG	
9	0.8540	40.88	10.19	51.07	56.00	-4.93	QP	
10	0.8540	26.19	10.19	36.38	46.00	-9.62	AVG	
11	1.0020	40.59	10.21	50.80	56.00	-5.20	QP	
12	1.0020	28.98	10.21	39.19	46.00	-6.81	AVG	

5.2 Radiation Emission, 30MHz ~ 1000MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4

Test Result ..... : Pass

Frequency Range ..... : 30MHz to 1000MHz

Class. ..... : Class B

Limit..... :

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 54.1%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

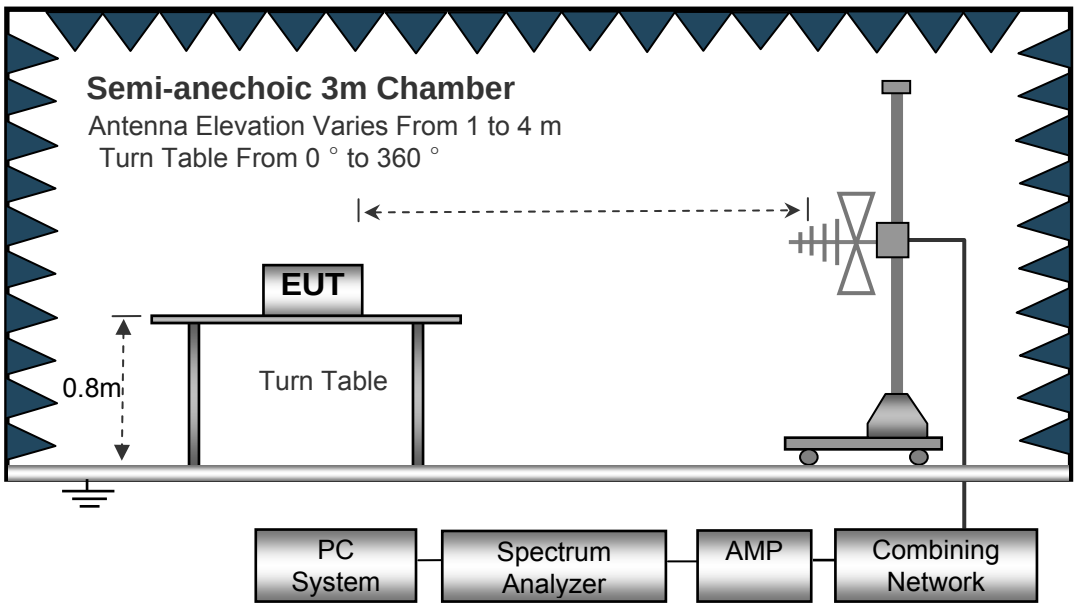
Input Voltage..... : AC 12V/50Hz, AC 36V/50Hz, DC 12V, DC 36V

Operating Mode ..... : Receiving mode

Remark ..... : The worst case is tested under the condition of AC 36V/50Hz and the data is shown as follow.

5.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.

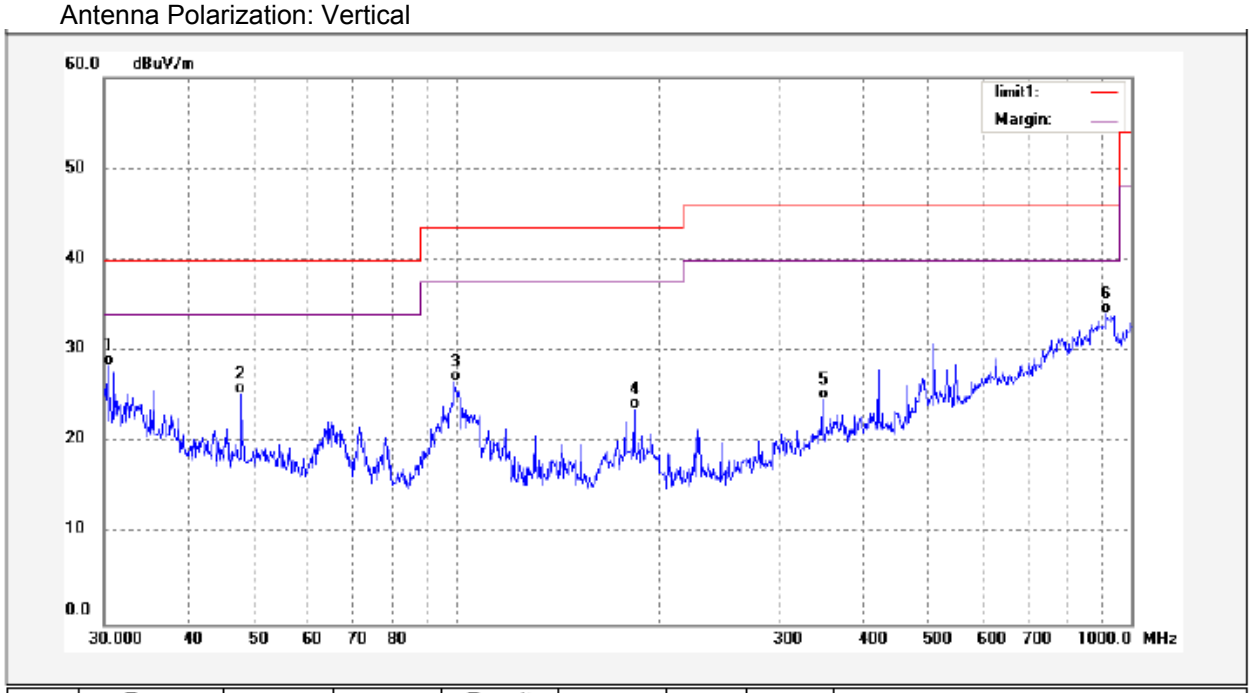


5.2.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

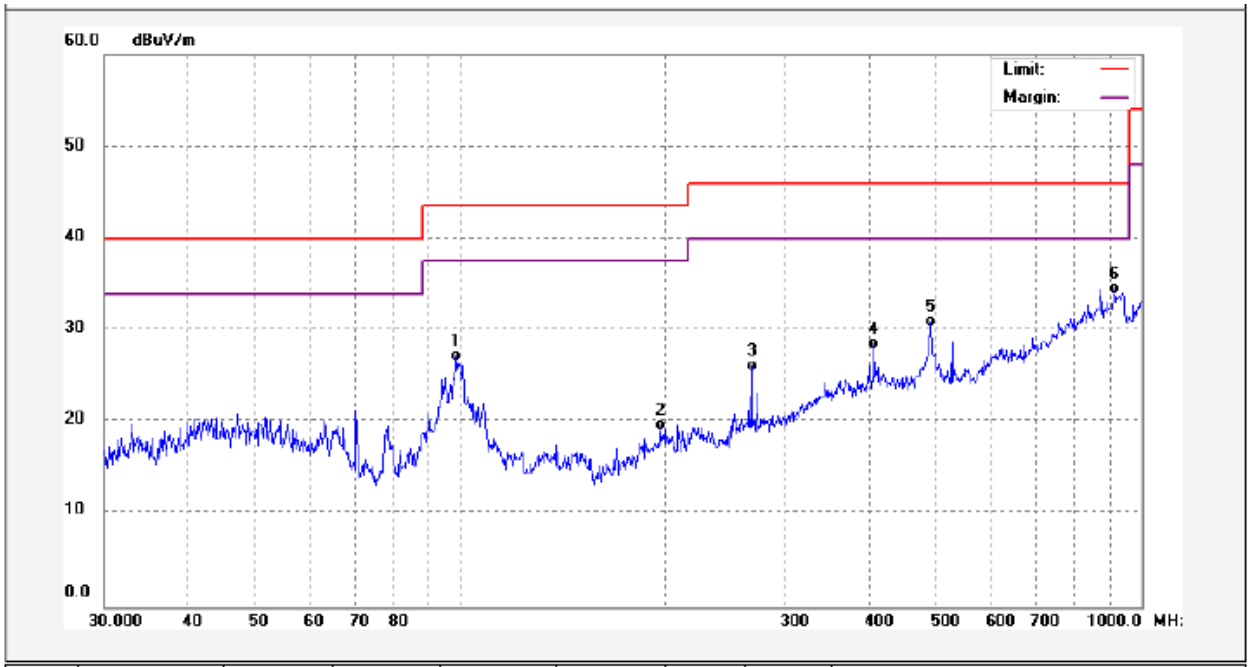
5.2.4 Radiated Emission Test Data

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	30.3179	8.19	20.22	28.41	40.00	-11.59	QP	
2	47.8707	6.83	18.43	25.26	40.00	-14.74	QP	
3	99.0690	8.74	17.90	26.64	43.50	-16.86	QP	
4	183.2211	5.70	17.96	23.66	43.50	-19.84	QP	
5	348.5145	5.19	19.48	24.67	46.00	-21.33	QP	
6	919.1315	2.96	31.16	34.12	46.00	-11.88	QP	

Antenna Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	98.7215	9.84	17.39	27.23	43.50	-16.27	QP	
2	196.5595	3.15	16.57	19.72	43.50	-23.78	QP	
3	267.7787	8.32	17.85	26.17	46.00	-19.83	QP	
4	405.3553	5.93	22.62	28.55	46.00	-17.45	QP	
5	490.0451	4.03	26.89	30.92	46.00	-15.08	QP	
6	912.6953	3.53	31.00	34.53	46.00	-11.47	QP	

5.3 Radiation Emission, Above 1000MHz

Test Requirement ..... : FCC PART 15, SUBPART B

Test Method ..... : ANSI C63.4

Test Result..... : Pass

Frequency Range ..... : 1GHz~6GHz

Class. : Class B

Limit. ..... :

Frequency Range (MHz)	Distance (Meter)	Average Limit dB(uV/m)	Peak Limit (dBuV/m)
Above 1GHz	3	54	74

5.3.1 E.U.T. Operation

Operating Environment:

Temperature..... : 23°C

Humidity ..... : 52.6%RH

Atmospheric Pressure..... : 101.3kPa

EUT Operation:

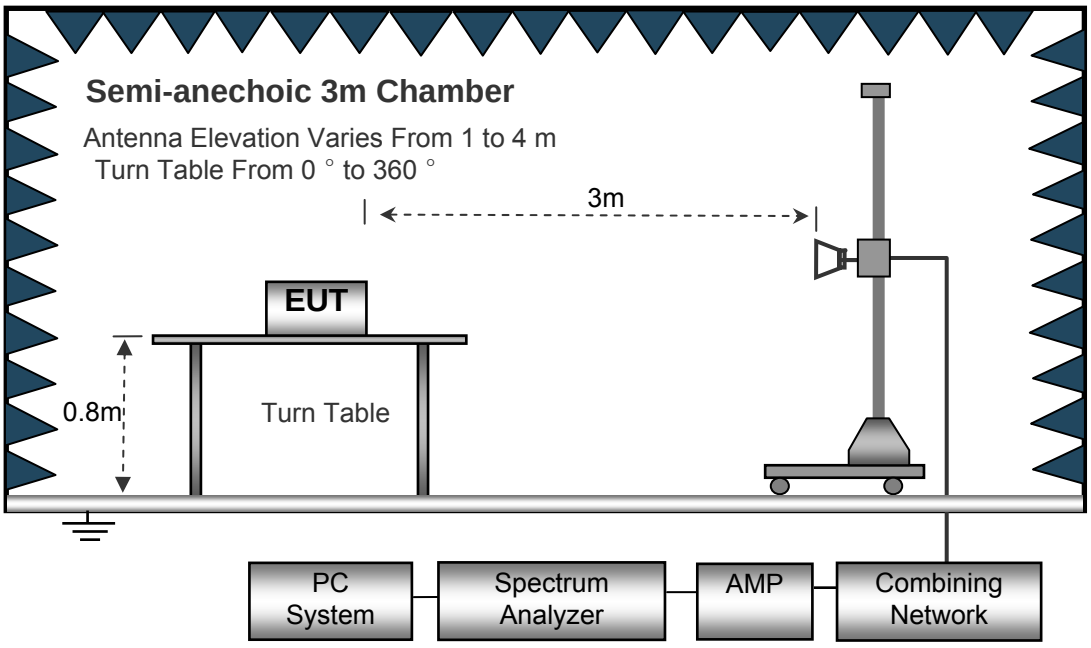
Input Voltage ..... : AC 12V/50Hz, AC 36V/50Hz, DC 12V, DC 36V

Operating Mode ..... : Receiving mode

Remark..... : The worst case is tested under the condition of AC 36V/50Hz and the data is shown as follow.

5.3.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.

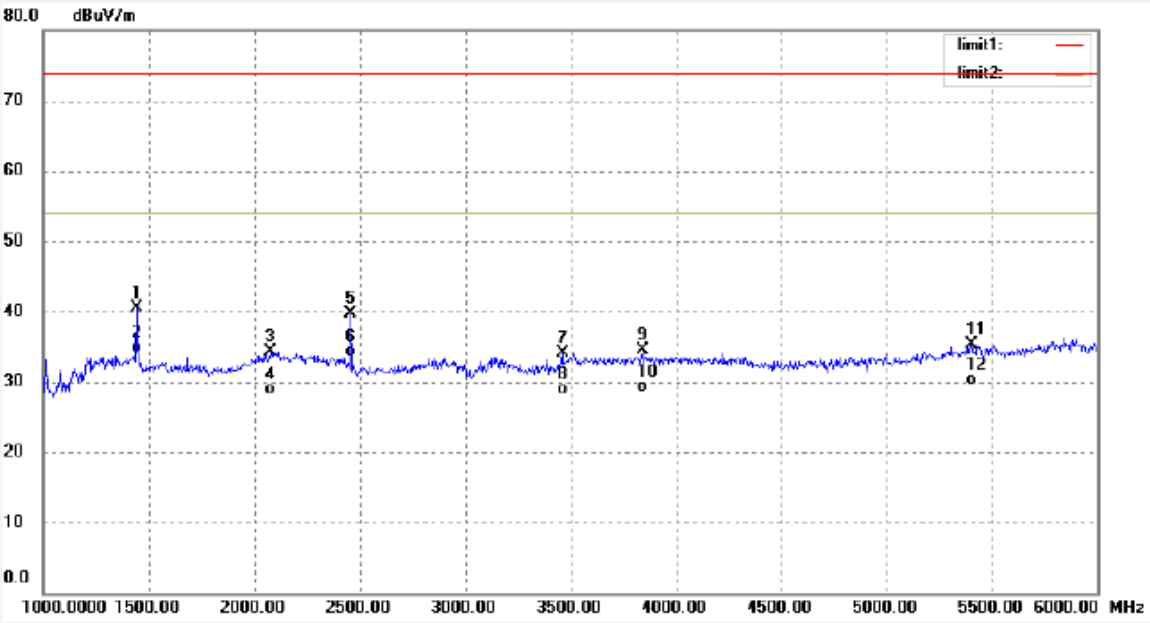


5.3.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Average measurements were performed if peak emissions were within 6dB of the average limit line

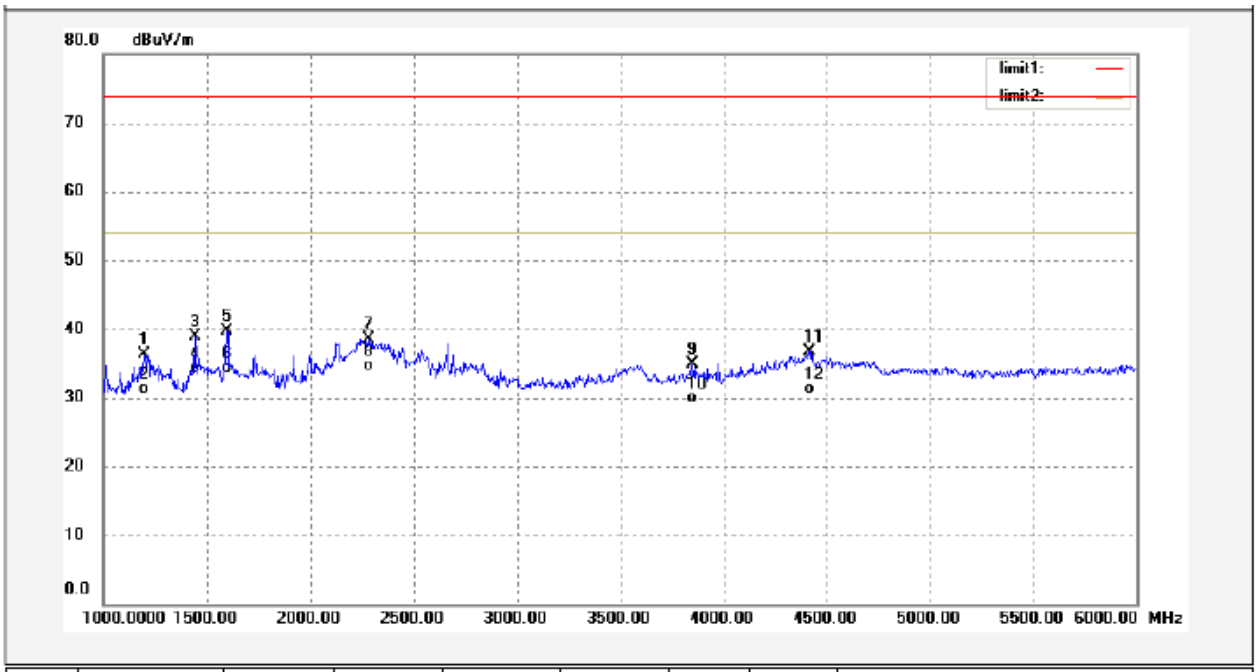
5.3.4 Radiated Emission Test Data, Above 1000MHz

Antenna Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1440.000	57.78	-17.37	40.41	74.00	-33.59	peak	
2	1440.000	51.47	-17.37	34.10	54.00	-19.90	AVG	
3	2075.000	50.09	-15.79	34.30	74.00	-39.70	peak	
4	2075.000	43.98	-15.79	28.19	54.00	-25.81	AVG	
5	2455.000	55.50	-15.71	39.79	74.00	-34.21	peak	
6	2455.000	49.22	-15.71	33.51	54.00	-20.49	AVG	
7	3460.000	48.67	-14.56	34.11	74.00	-39.89	peak	
8	3460.000	42.69	-14.56	28.13	54.00	-25.87	AVG	
9	3840.000	48.14	-13.65	34.49	74.00	-39.51	peak	
10	3840.000	42.21	-13.65	28.56	54.00	-25.44	AVG	
11	5400.000	47.02	-11.79	35.23	74.00	-38.77	peak	
12	5400.000	41.26	-11.79	29.47	54.00	-24.53	AVG	

Antenna Polarization: Horizontal

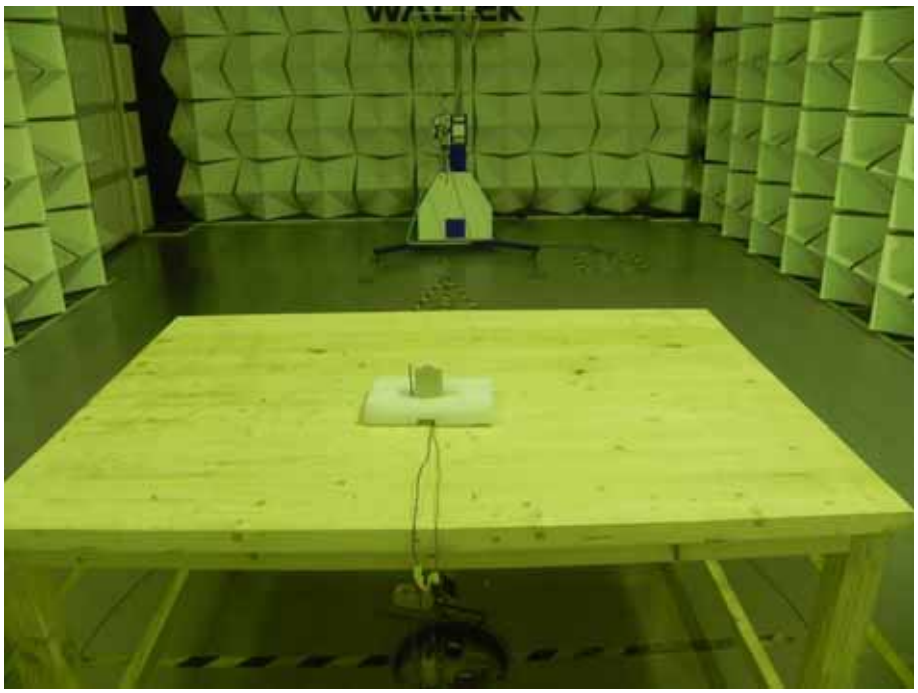


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1195.000	53.95	-17.70	36.25	74.00	-37.75	peak	
2	1195.000	48.24	-17.70	30.54	54.00	-23.46	AVG	
3	1440.000	56.21	-17.37	38.84	74.00	-35.16	peak	
4	1440.000	50.89	-17.37	33.52	54.00	-20.48	AVG	
5	1595.000	57.57	-17.85	39.72	74.00	-34.28	peak	
6	1595.000	51.42	-17.85	33.57	54.00	-20.43	AVG	
7	2285.000	53.61	-15.12	38.49	74.00	-35.51	peak	
8	2285.000	48.99	-15.12	33.87	54.00	-20.13	AVG	
9	3850.000	48.43	-13.62	34.81	74.00	-39.19	peak	
10	3850.000	42.74	-13.62	29.12	54.00	-24.88	AVG	
11	4415.000	49.69	-12.90	36.79	74.00	-37.21	peak	
12	4415.000	43.42	-12.90	30.52	54.00	-23.48	AVG	

6 Photographs – Test Setup

6.1 Photograph –Power Line Conducted Emission Test Setup at Test Site 2#

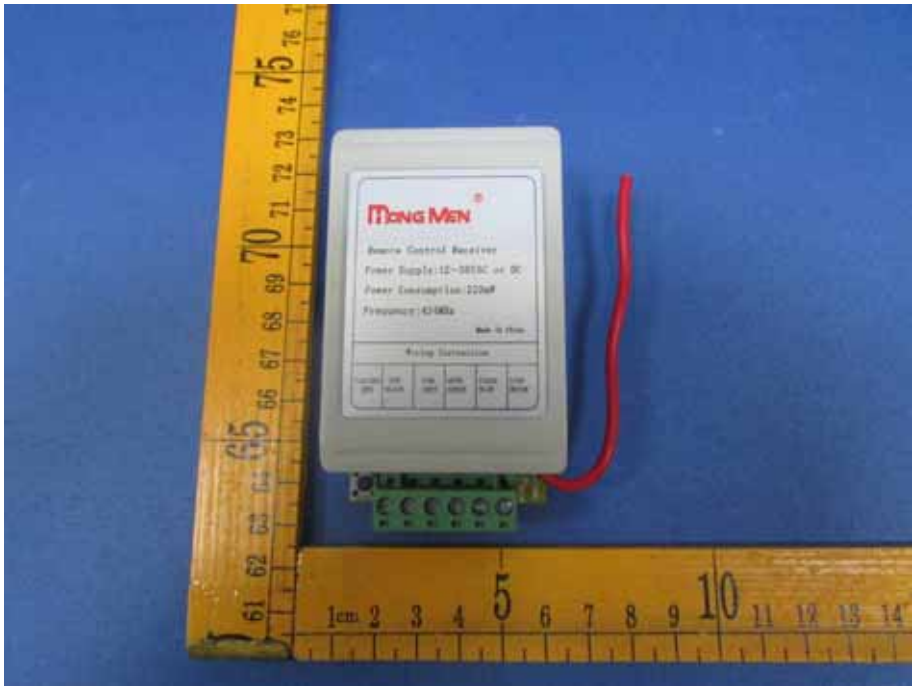
6.2 Photograph – Radiated Emission Test Setup for 30MHz ~ 1000MHz at Test Site 2#

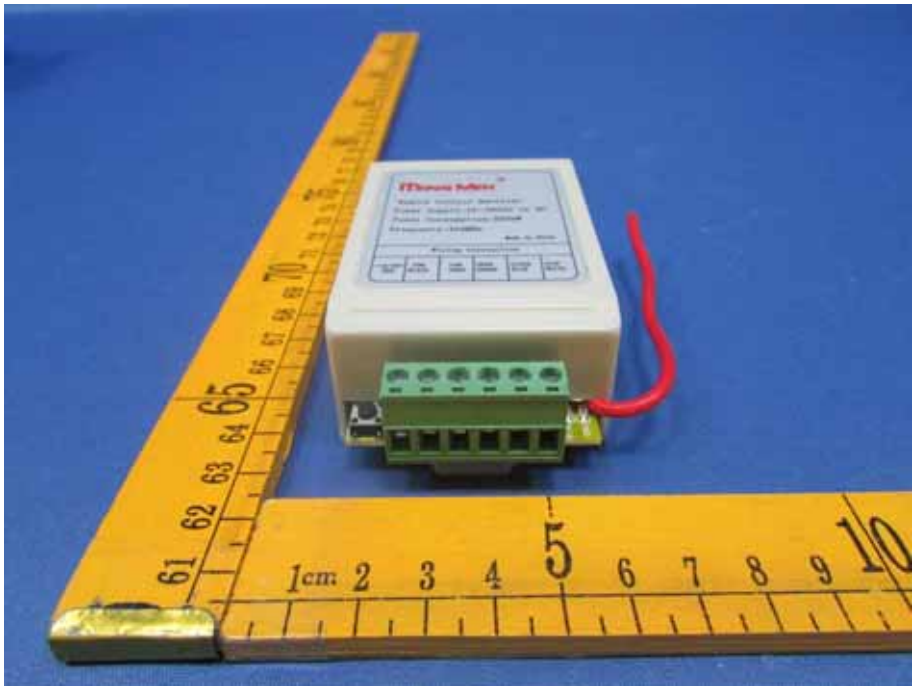


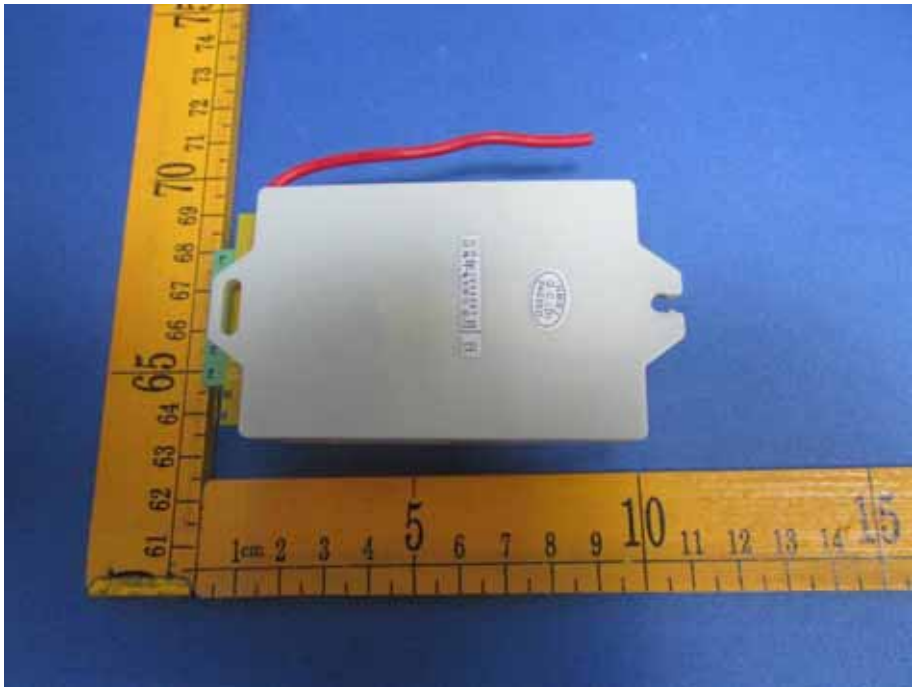
6.3 Photograph – Radiated Emission Test Setup for 1GHz ~ 6GHz at Test Site 1#

7 Photographs – Constructional Details

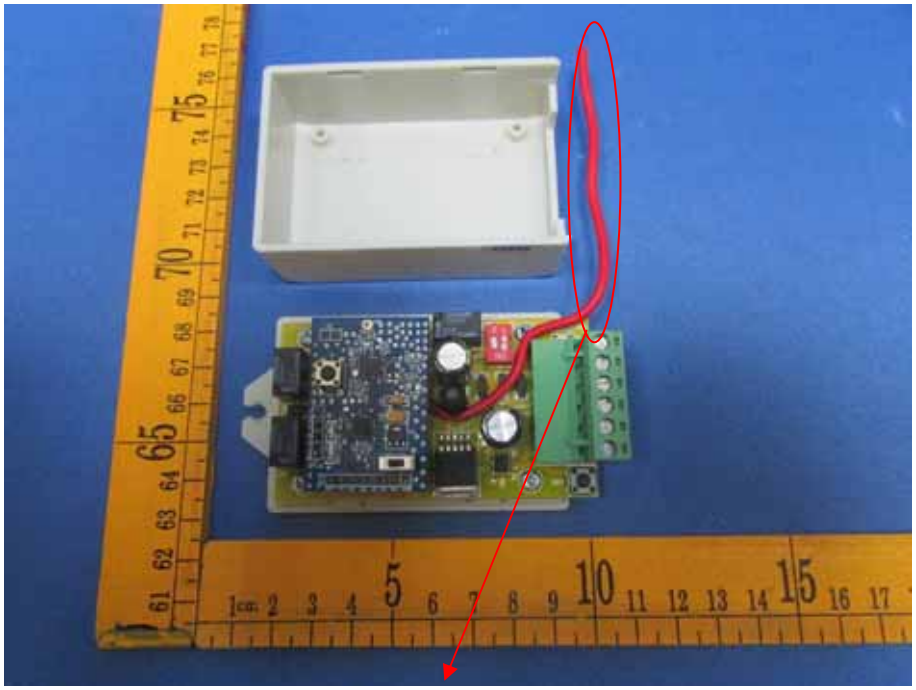
7.1 EUT – Appearance View



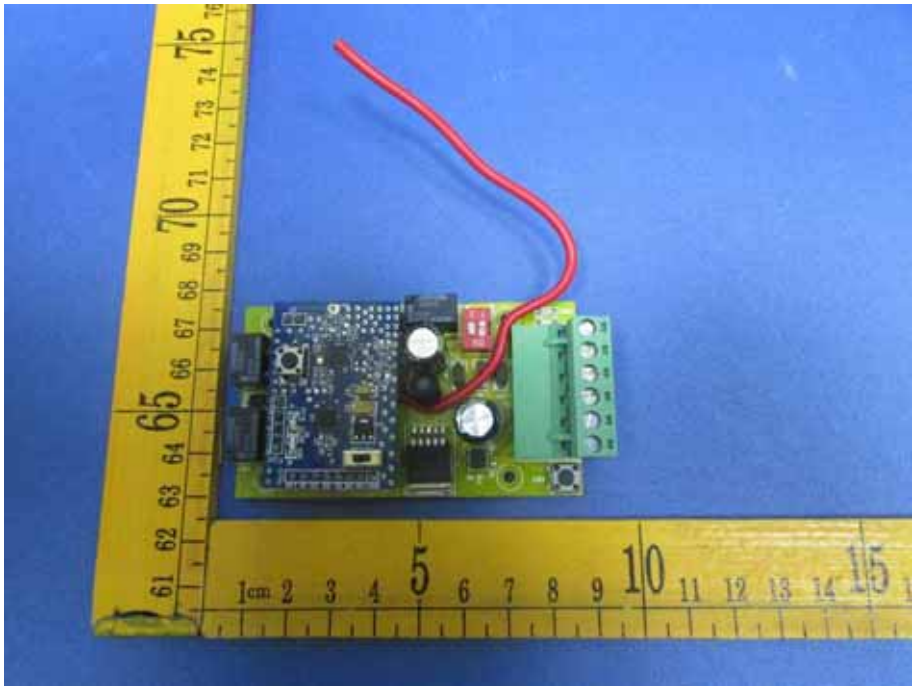


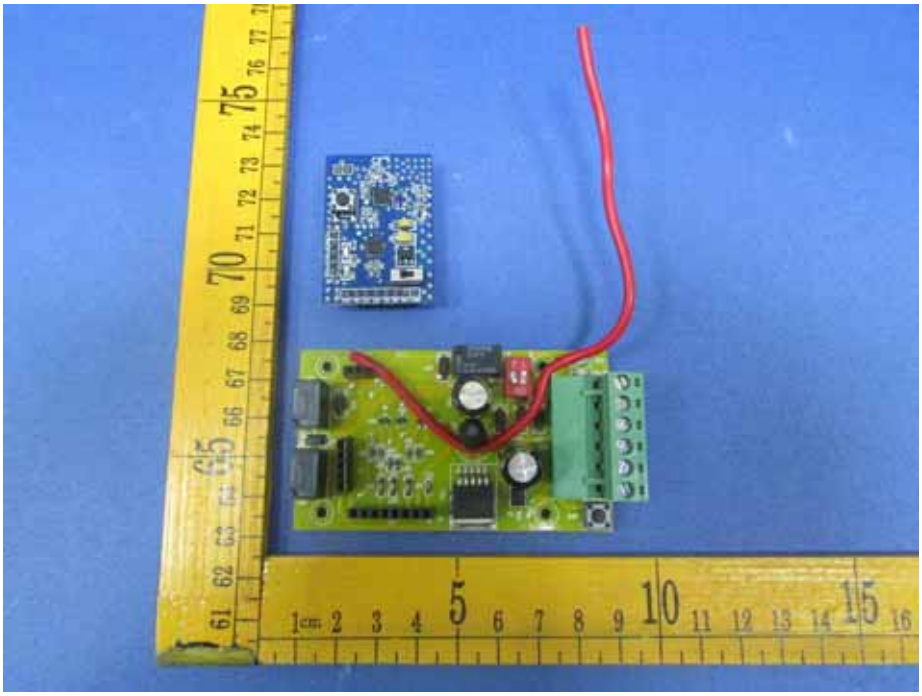


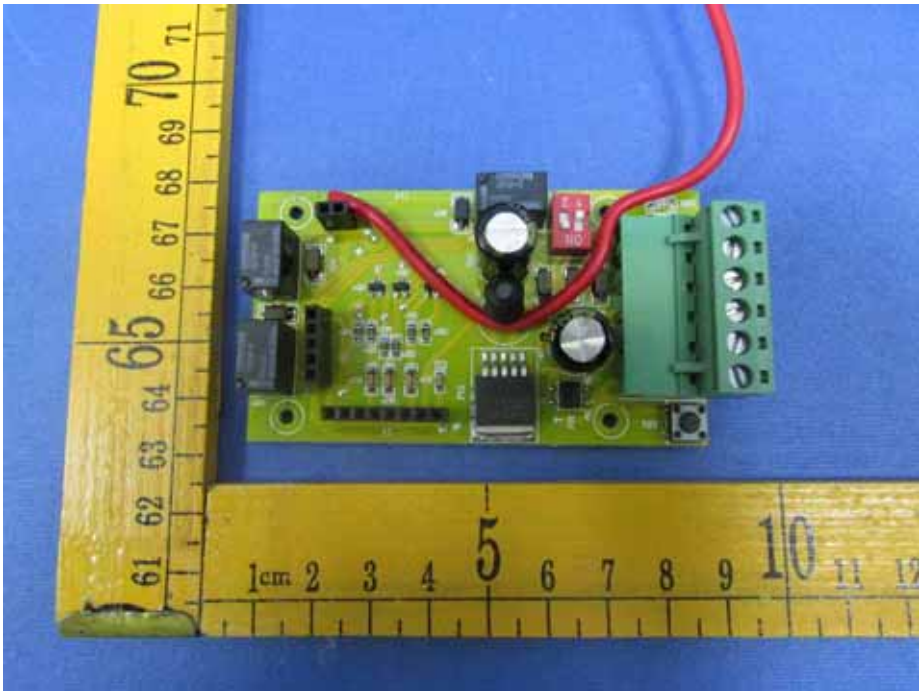
7.2 EUT – Open View

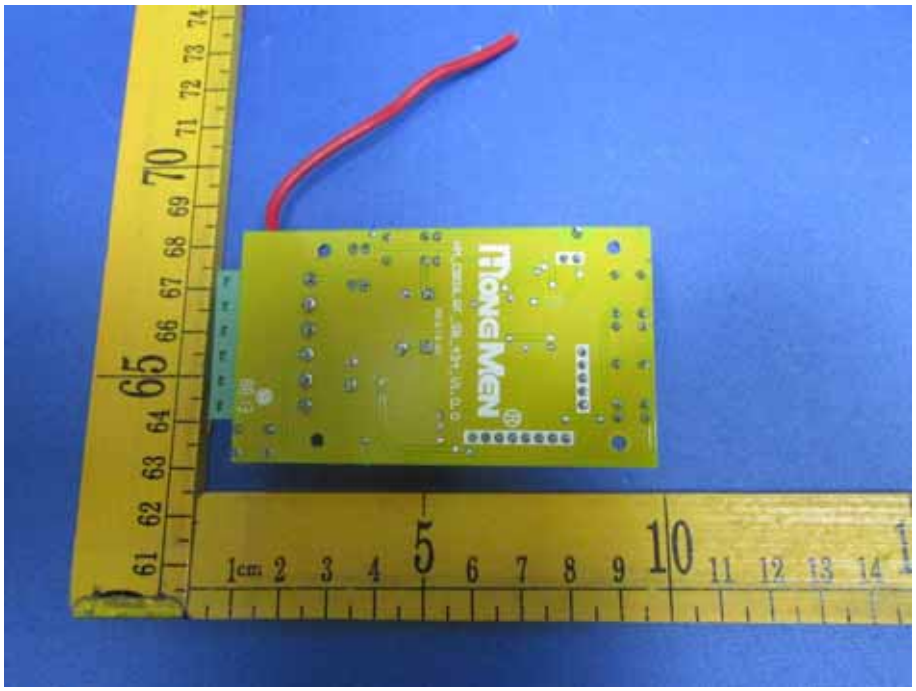


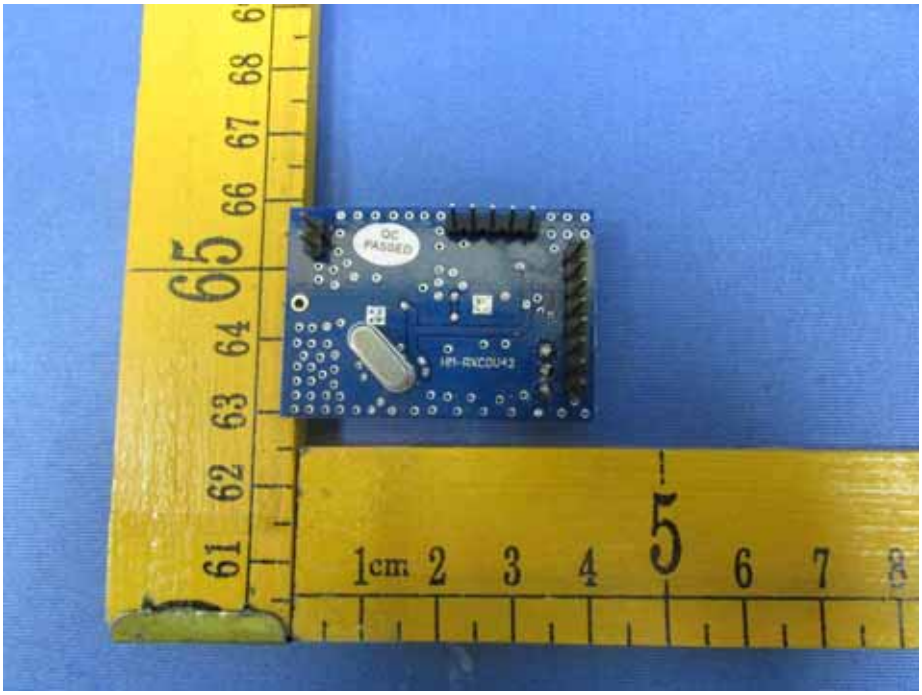
RX ANT

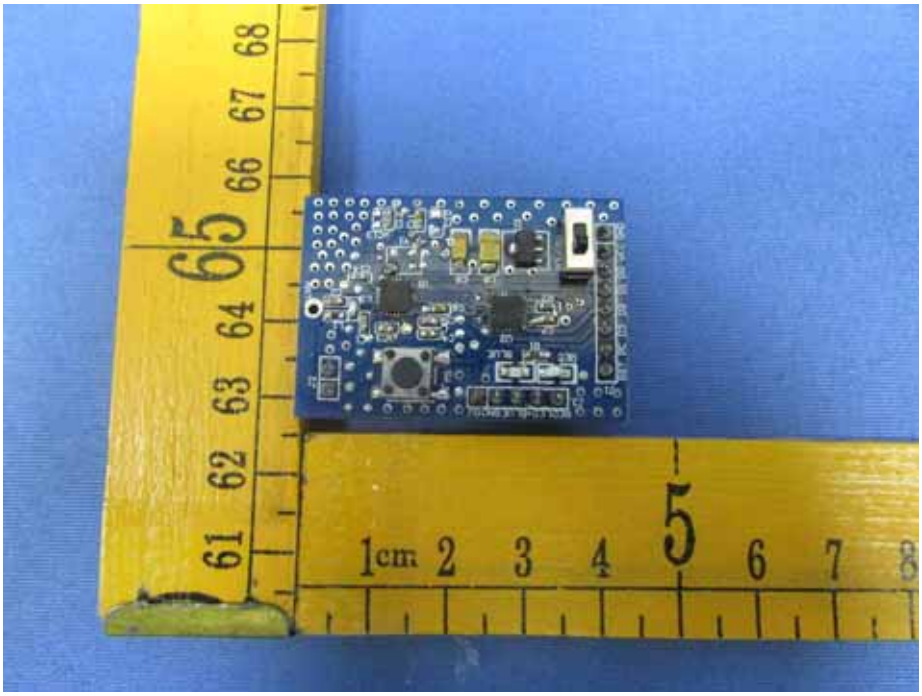












======End of Report======