TEST REPORT

Applicant:	Guangde Ledup Enterprise Inc.
Address of Applicant:	Jingtang Road, Economic Development Zone, Xuancheng, Anhui 242200, China
Manufacturer:	Guangde Ledup Enterprise Inc.
Address of Manufacturer:	Jingtang Road, Economic Development Zone, Xuancheng, Anhui 242200, China
Product name:	control box for light string
Model:	137ITR5-1701B1W
Rating(s):	I/P: 120V~ 60Hz, 0.72A O/P: 5Vdc 6A
Trademark:	LEDUP
FCC register number：	935596
FCC ID:	2AEBHITR51701B1WC
Standards:	FCC Part15 subpart B：2017
Date of Receipt:	2017-05-08
Date of Test:	2017-05-08~2017-06-20
Date of Issue:	2017-06-20
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by:			***Reviewed by:***		
Jun.20, 2017	Galen Xiao	Galen Xiao	Jun.20, 2017	Pauler Li	Pauler Li
	Project Engineer			Project Manager	
Date	*Name/Position*	*Signature*	*Date*	*Name/Position*	*Signature*

Testing Laboratory information:

Testing Laboratory Name ..... :	I-Test Laboratory
Address ..... :	1-2 floor, South Block, Building A2 , No 3 Keyan Lu, Science City, Guangzhou, Guangdong Province, P.R. China
Testing location ..... :	Same as above
Tel..... :	0086-20-32209330
Fax ..... :	0086-20-62824387
E-mail ..... :	itl@i-testlab.com

Possible test case verdicts:

- test case does not apply to the test object.. : N/A
- test object does meet the requirement..... : P (Pass)
- test object does not meet the requirement . : F (Fail)

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.
This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

/

Test Summary:

The following standards have been applied to ensure the product conforms with the protection requirements of the council directive FCC part 15B.

Electromagnetic Emissions				
Test Item	**Test Standard**	**Test Method**	**Class/Severity**	**Result**
Conducted Emission(0.15-30MHz)	FCC part 15.107	ANSI C63.4:2014	Class B	PASS
Radiated Emission(30-1000MHz)	FCC part 15.109	ANSI C63.4:2014	Class B	PASS
Radiated Emission above 1GHz	FCC part 15.109	ANSI C63.4:2014	Class B	PASS

Test Location:

All the tests were performed in I-Test Laboratory. Which is located at 1-2 floor, South Block, Building A2 , No 3 Keyan Lu, Science City, Guangzhou, Guangdong Province, P.R. China

Tel: 0086-20-32209330, Fax: 0086-20-62824387

No test is subcontracted

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Section 1 General Information and Equipment Used

1.1 Client Information

Applicant:	Guangde Ledup Enterprise Inc.
Address of Applicant:	Jingtang Road, Economic Development Zone, Xuancheng, Anhui 242200, China

1.2 EUT General and Technical Descriptions

EUT Name:	control box for light string
EUT Model:	137ITR5-1701B1W
EUT Trademark:	LEDUP
Input Voltage:	120V~
Frequency:	60Hz
Input Power/Current:	0.72A
Output rated:	5Vdc 6A
Power Cable Description:	/
Other Cables Description:	/
I/O Ports:	/
Function(s) Description:	/
Accessories information:	/
Highest operating frequency:	3G

1.3 Support Equipment(s) and Test Configuration

1.3.1 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state

1.3.2 Working State of EUT

Power Supply of EUT:	5V
EUT Status:	RX

1.4 Equipment Used during Test

Conducted Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-102	EMI Test receiver	R&S	ESCI	100910	2017/06/17	2018/06/17
ITL-103	Two-line v-network	R&S	ENV216	100120	2017/06/17	2018/06/17
ITL-101	Shielded Room	ETS•Lindgren	8*4*3	CT09010	2015/03/09	2018/03/09

Radiated Emission						
No.	**Test Equipment**	**Manufacturer**	**Model**	**Serial No.**	**Last Cal.**	**Cal. Due**
ITL-100	Semi-Anechoic chamber	ETS•Lindgren	FACT3 2.0	CT09015	2016/11/02	2019/11/02
ITL-154	EMI test receiver 9kHz to 26.5GHz	R&S	ESR26	101257	2017/01/20	2018/01/20
ITL-105	Biconilog Antenna	ETS•Lindgren	3142D	00108096	2015/01/24	2018/01/24
ITL-116	Pre Amplifier	HP	8447F	3113A05905	2017/01/20	2018/01/20
ITL-157	Radiation Cable 1	Sat	RE1	R001	2017/01/19	2018/01/19
ITL-158	Radiation Cable 2	Sat	RE2	R002	2017/01/19	2018/01/19
ITL-117	Wideband Amplifier Super Ultra	Mini-circuits	ZVA-183-S+	469101134	2017/01/19	2018/01/19
ITL-110	Horn Antenna	A-INFOMW	JXTXLB-10180-N	J2031090612133	2015/01/24	2018/01/24

Section 2 Emission Test Results

2.1 Conducted Emission at Mains Terminals, 150 kHz to 30MHz

Test Requirement: FCC part 15.107

Test Method: ANSI C63.4:2014

Test Voltage: 120V AC, 60Hz

Test Date: 2017-06-12

Frequency Range: 150 kHz to 30MHz

Detector: Peak for pre-scan

Quasi-Peak and Average at frequency with maximum peak (9 kHz resolution bandwidth)

Uncertainty: 2Uc（V）= 2.3dB

Class / Limit: Class B

Frequency range MHz	**Class B Limits dB (μV)**	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 :The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE 2: The lower limit is applicable at the transition frequency.		

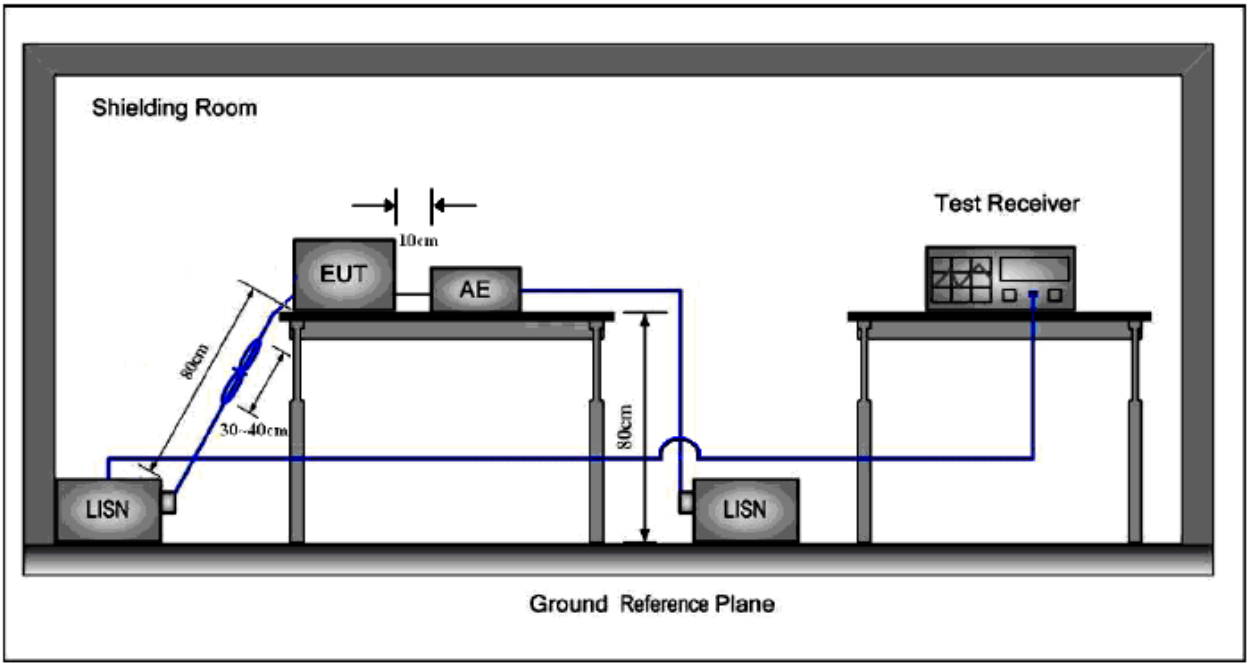
2.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 51 % RH Atmospheric Pressure: 101 kPa

EUT Operation: RX.

2.1.2 Test Setup and Procedure

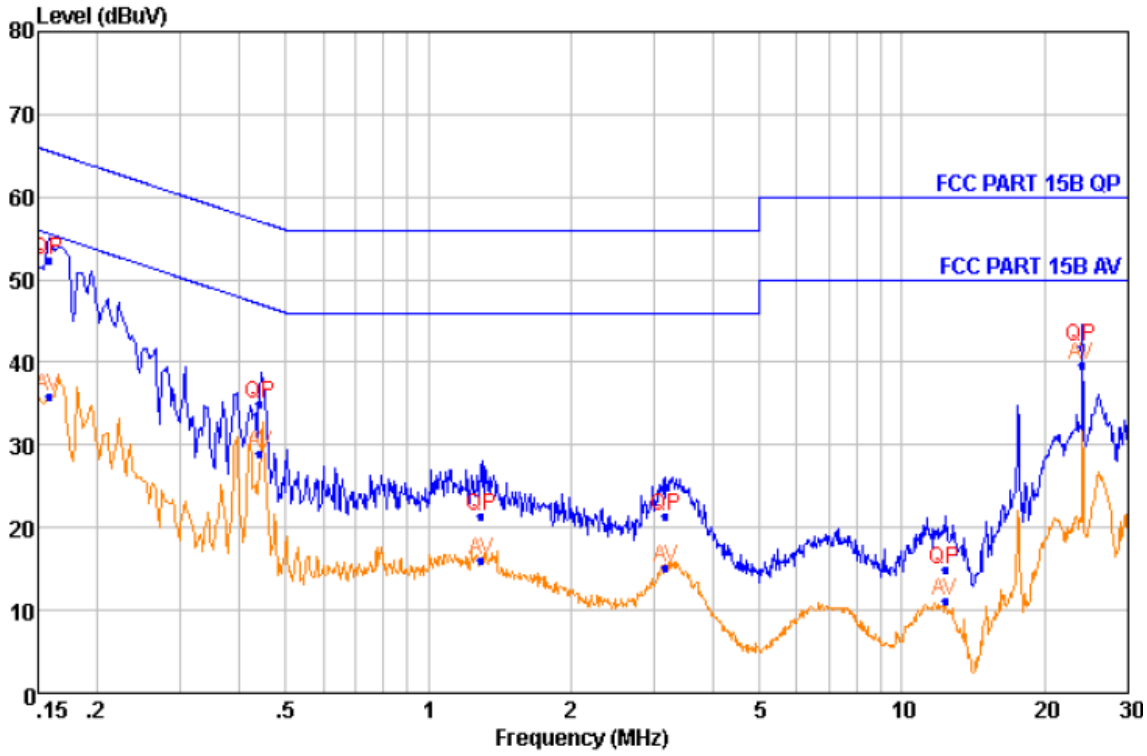


1. The mains terminal disturbance voltage test was conducted in a shielded room.
2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH+5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

2.1.3 Measurement Data

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.

Model: 137ITR5-1701B1W
Live Line:
Peak Scan:
Level (dBμV)



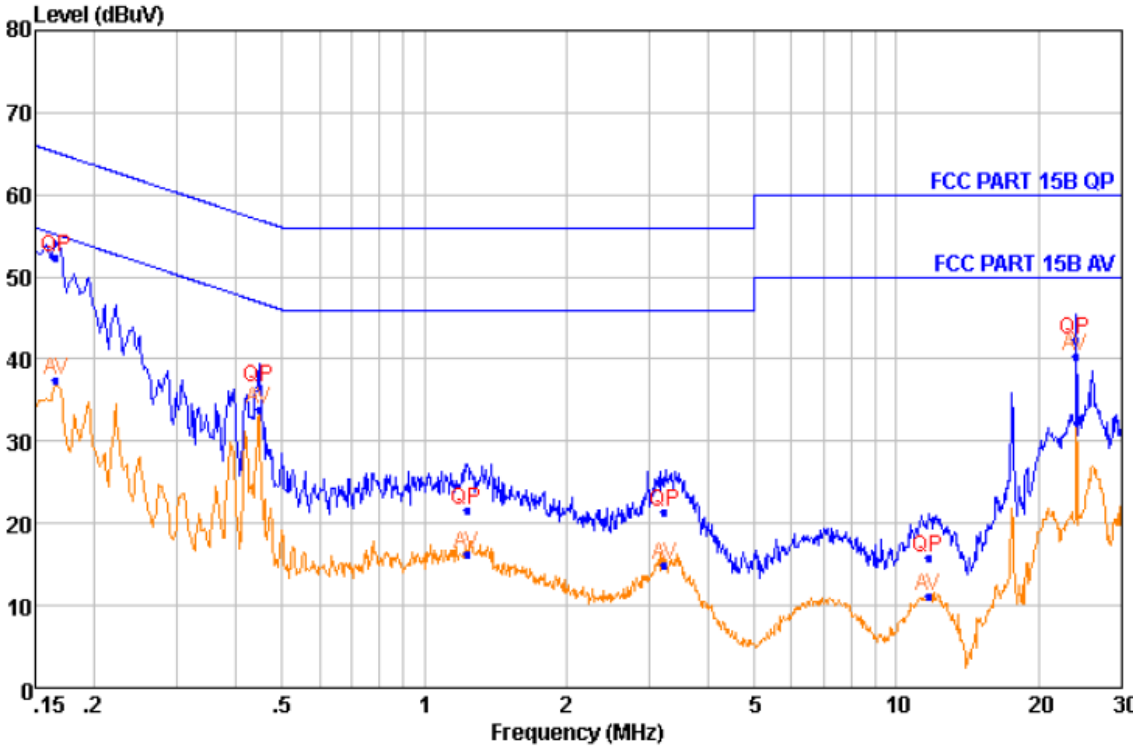
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Margin dB
1	0.158	52.48	QP	9.39	0.20	65.56	-13.08
2	0.158	35.91	Average	9.39	0.20	55.56	-19.65
3	0.441	35.04	QP	9.36	0.26	57.04	-22.00
4	0.441	29.01	Average	9.36	0.26	47.04	-18.03
5	1.293	21.49	QP	9.29	0.32	56.00	-34.51
6	1.293	16.03	Average	9.29	0.32	46.00	-29.97
7	3.165	21.34	QP	9.30	0.37	56.00	-34.66
8	3.165	15.13	Average	9.30	0.37	46.00	-30.87
9	12.295	14.95	QP	9.36	0.45	60.00	-45.05
10	12.295	11.07	Average	9.36	0.45	50.00	-38.93
11	23.966	41.79	QP	9.72	0.49	60.00	-18.21
12	23.966	39.76	Average	9.72	0.49	50.00	-10.24

Neutral Line:

Peak Scan:

Level (dB μ V)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Margin dB
1	0.166	52.36	QP	9.38	0.21	65.16	-12.80
2	0.166	37.52	Average	9.38	0.21	55.16	-17.64
3	0.446	36.64	QP	9.36	0.26	56.95	-20.31
4	0.446	33.90	Average	9.36	0.26	46.95	-13.05
5	1.233	21.62	QP	9.38	0.32	56.00	-34.38
6	1.233	16.25	Average	9.38	0.32	46.00	-29.75
7	3.233	21.30	QP	9.41	0.37	56.00	-34.70
8	3.233	14.85	Average	9.41	0.37	46.00	-31.15
9	11.664	15.84	QP	9.59	0.45	60.00	-44.16
10	11.664	11.15	Average	9.59	0.45	50.00	-38.85
11	23.966	42.38	QP	9.81	0.49	60.00	-17.62
12	23.966	40.28	Average	9.81	0.49	50.00	-9.72

2.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement:	FCC part 15.109
Test Method:	ANSI C63.4:2014
Test Voltage:	120V AC, 60Hz
Test Date:	2017-06-12
Frequency Range:	30MHz to 1GHz
Measurement Distance	3m
Detector:	Peak for pre-scan
	Quasi-Peak if maximised peak within 6dB of limit (120 kHz resolution bandwidth)
Uncertainty:	2Uc（V）= 3.35dB
Class / Limit:	Class B

Frequency range MHz	**Quasi-peak limits** dB (μV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
960 to 1000	54
At transitional frequencies the lower limit applies	

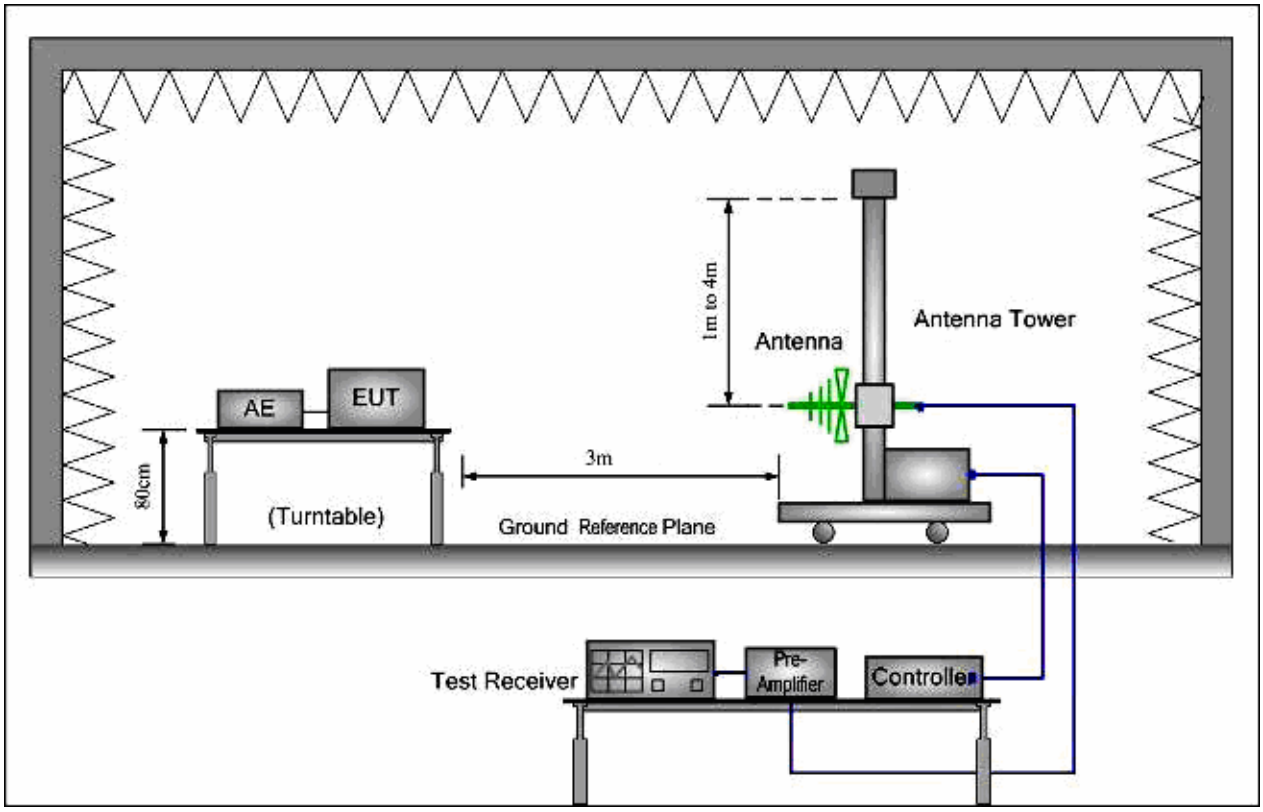
2.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 50 % RH Atmospheric Pressure: 101 kPa

EUT Operation: RX.

2.2.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

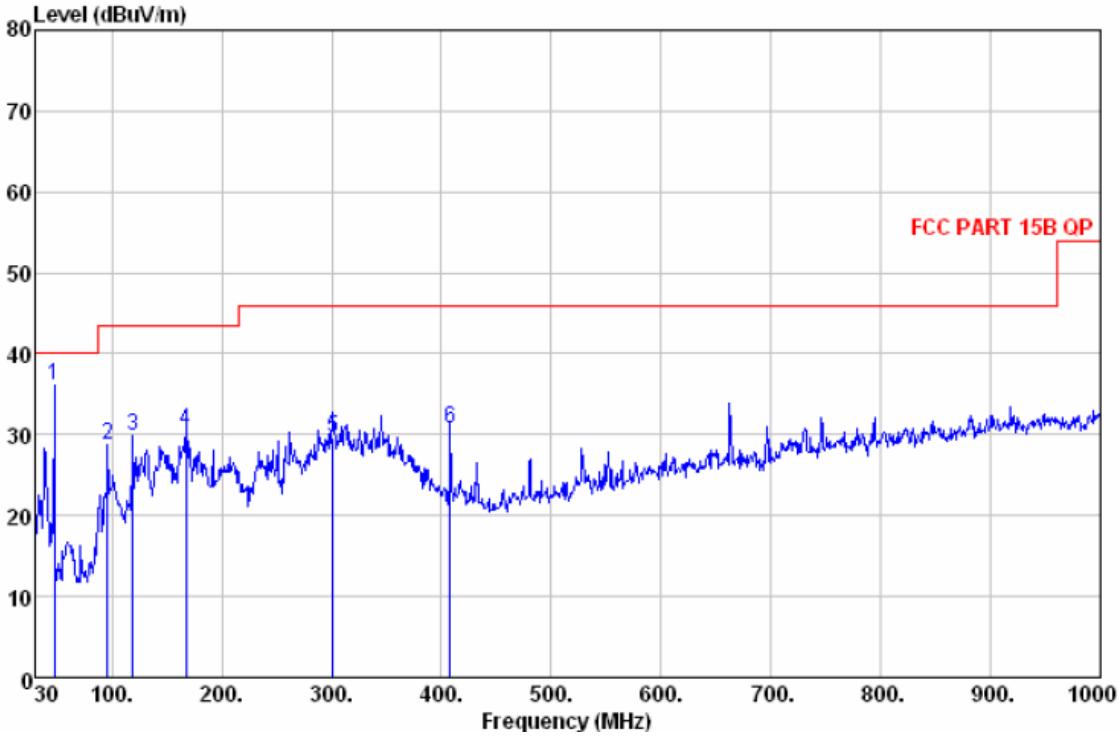
2.2.3 Measurement Data

Model: 137ITR5-1701B1W

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

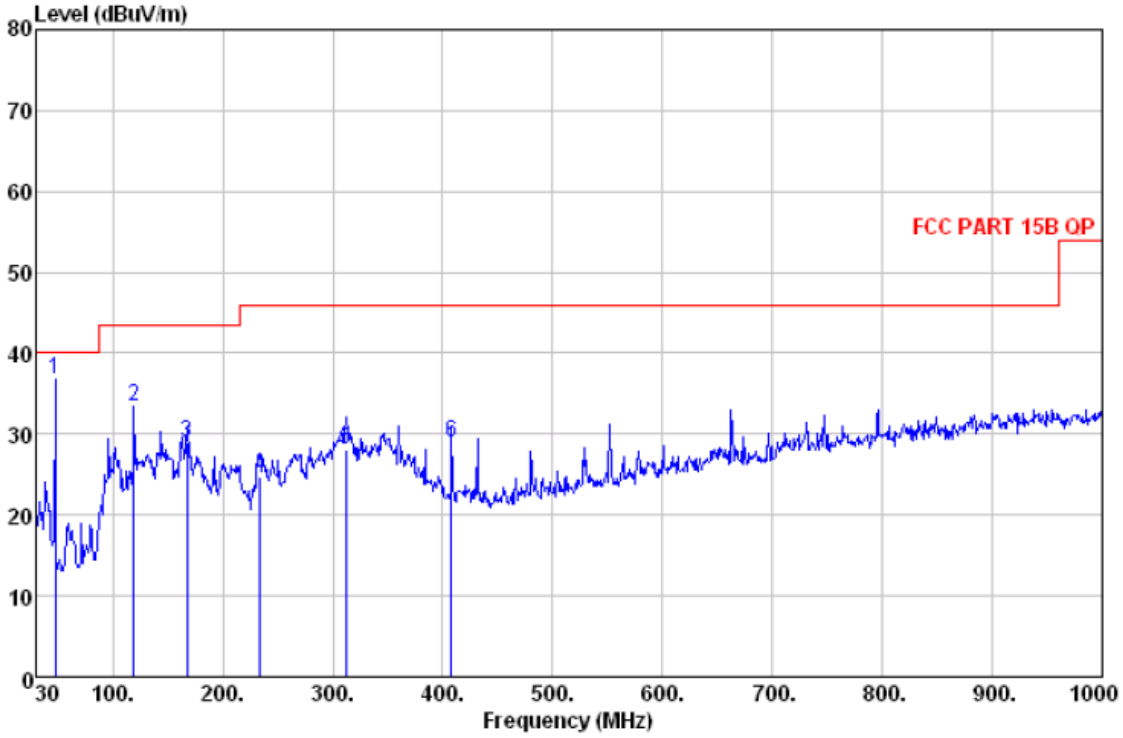
No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	47.460	54.18	9.76	0.78	28.55	36.17	40.00	-3.83	HORIZONTAL	QP
2	95.960	47.88	8.38	1.14	28.64	28.76	43.50	-14.74	HORIZONTAL	QP
3	119.240	49.28	7.76	1.29	28.51	29.82	43.50	-13.68	HORIZONTAL	QP
4	167.740	49.34	7.94	1.55	28.41	30.42	43.50	-13.08	HORIZONTAL	QP
5	301.600	41.56	13.58	2.13	27.59	29.68	46.00	-16.32	HORIZONTAL	QP
6	408.300	40.49	15.88	2.48	28.17	30.68	46.00	-15.32	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	47.460	54.73	9.76	0.78	28.55	36.72	40.00	-3.28	VERTICAL	QP
2	119.240	52.78	7.76	1.29	28.51	33.32	43.50	-10.18	VERTICAL	QP
3	167.740	47.88	7.94	1.55	28.41	28.96	43.50	-14.54	VERTICAL	QP
4	233.700	39.51	10.75	1.86	27.39	24.73	46.00	-21.27	VERTICAL	QP
5	312.270	39.98	13.57	2.17	27.55	28.17	46.00	-17.83	VERTICAL	QP
6	408.300	38.78	15.88	2.48	28.17	28.97	46.00	-17.03	VERTICAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

2.3 Radiated Emissions above 1 GHz

Test Requirement:	FCC part 15.109
Test Method:	ANSI C63.4:2014
Test Voltage:	120V AC, 60Hz
Test Date:	2017-06-12
Frequency Range:	1GHz to 18GHz
Measurement Distance	3m
Detector:	Peak for pre-scan
	Quasi-Peak if maximised peak within 6dB of limit (120 kHz resolution bandwidth)
Uncertainty:	2Uc（V）= 3.37dB
Class / Limit:	Class B

Frequency range GHz	**Peak limits** dB (μV/m)	**AV limits** dB (μV/m)
1 to 18	74	54

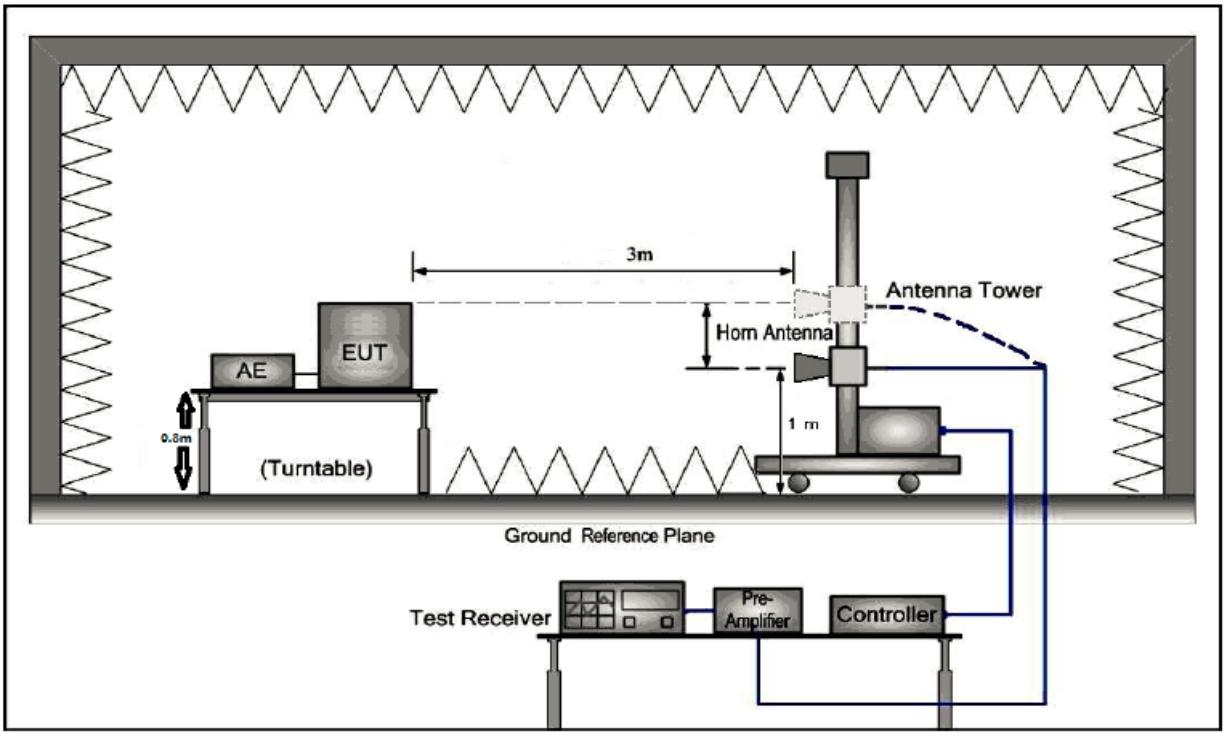
2.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24°C Humidity: 52 % RH Atmospheric Pressure: 101 kPa

EUT Operation: RX.

2.3.2Test Setup and Procedure



1. The radiated emissions test was conducted in a fully-anechoic chamber.
2. Horn antenna was used for the frequency above 1GHz
3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

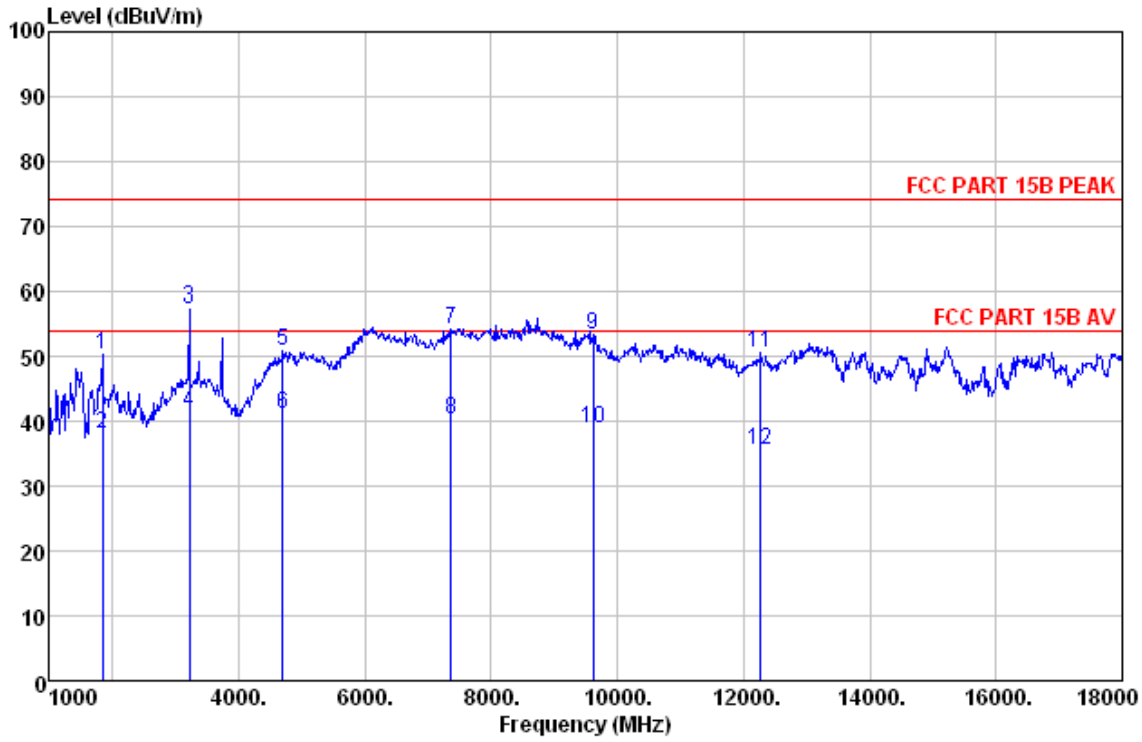
2.3.3 Measurement Data

Model: 137ITR5-1701B1W

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	1850.000	50.35	Peak	28.05	5.59	74.00	-23.65	100	57
2	1850.000	38.27	Average	28.05	5.59	54.00	-15.73	100	57
3	3210.000	57.52	Peak	31.52	7.61	74.00	-16.48	100	125
4	3210.000	41.41	Average	31.52	7.61	54.00	-12.59	100	125
5	4689.000	51.02	Peak	34.19	9.45	74.00	-22.98	100	235
6	4689.000	41.11	Average	34.19	9.45	54.00	-12.89	100	235
7	7358.000	54.45	Peak	35.28	12.28	74.00	-19.55	203	110
8	7358.000	40.47	Average	35.28	12.28	54.00	-13.53	203	110
9	9619.000	53.61	Peak	37.76	14.41	74.00	-20.39	203	256
10	9619.000	38.87	Average	37.76	14.41	54.00	-15.13	203	256
11	12254.000	50.59	Peak	38.37	16.57	74.00	-23.41	203	203
12	12254.000	35.59	Average	38.37	16.57	54.00	-18.41	203	203

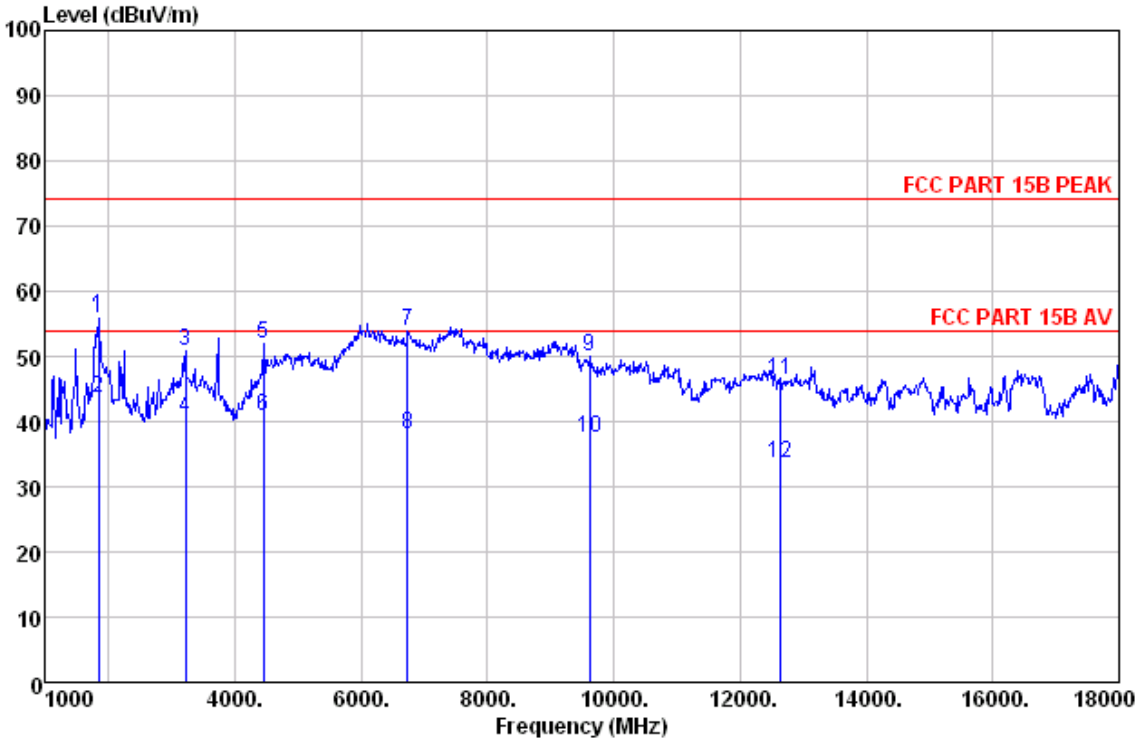
Level=Read Level + Antenna Factor + Cable Loss

Note: The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from radiated emission measurements

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq	Level	Remark	Antenna Factor	Cable Loss	Limit Line	Margin	A/pos	T/pos
	MHz	dBuV/m		dB/m	dB	dBuV/m	dB	cm	deg
1	1850.000	56.03	Peak	28.05	5.59	74.00	-17.97	100	193
2	1850.000	43.67	Average	28.05	5.59	54.00	-10.33	100	193
3	3210.000	50.92	Peak	31.52	7.61	74.00	-23.08	100	253
4	3210.000	40.62	Average	31.52	7.61	54.00	-13.38	100	253
5	4451.000	52.08	Peak	33.36	9.17	74.00	-21.92	100	144
6	4451.000	40.95	Average	33.36	9.17	54.00	-13.05	100	144
7	6729.000	54.10	Peak	34.35	11.65	74.00	-19.90	100	336
8	6729.000	38.18	Average	34.35	11.65	54.00	-15.82	100	336
9	9619.000	50.03	Peak	37.76	14.41	74.00	-23.97	200	152
10	9619.000	37.58	Average	37.76	14.41	54.00	-16.42	200	152
11	12611.000	46.46	Peak	39.94	16.87	74.00	-27.54	200	302
12	12611.000	33.73	Average	39.94	16.87	54.00	-20.27	200	302

Level=Read Level + Antenna Factor + Cable Loss

Note: The frequencies on which the transmitter part of the EUT is intended to operate shall be excluded from radiated emission measurements

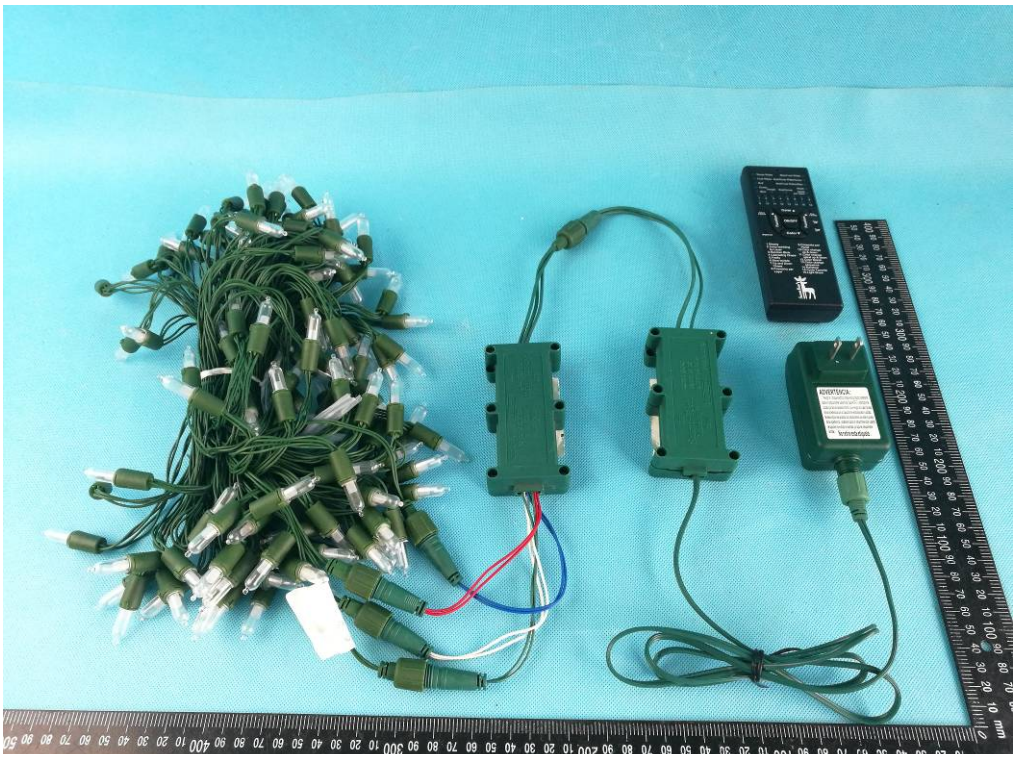
Section 3 Photographs

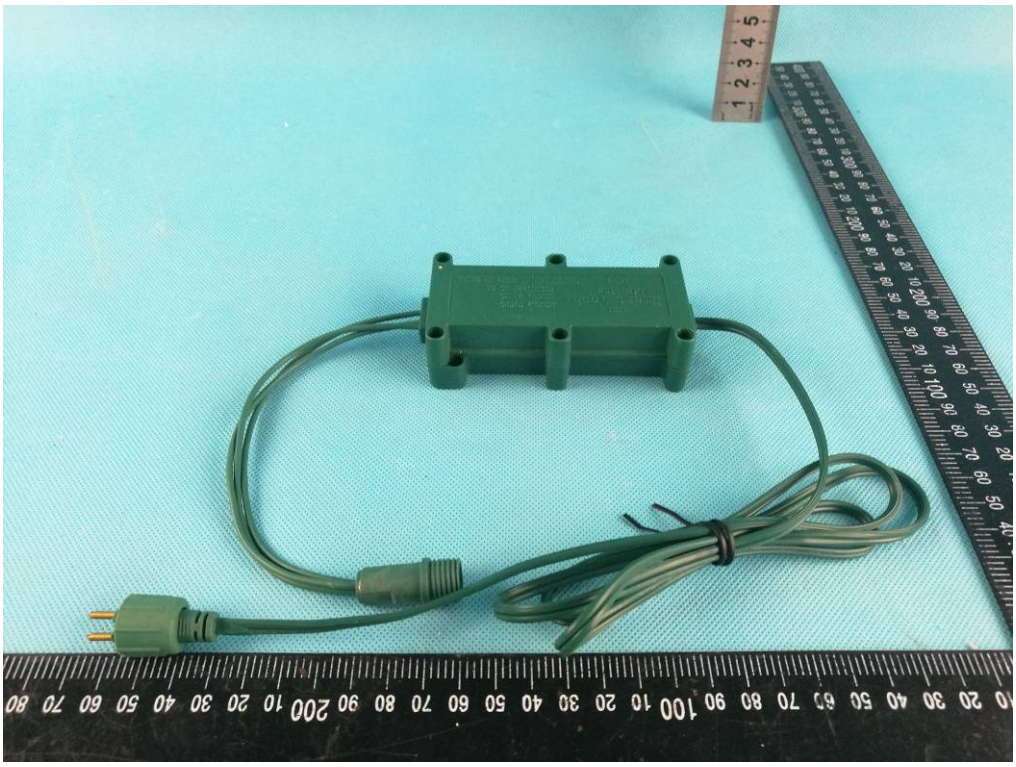
3.1 Conducted Emissions Mains Terminals Test Setup

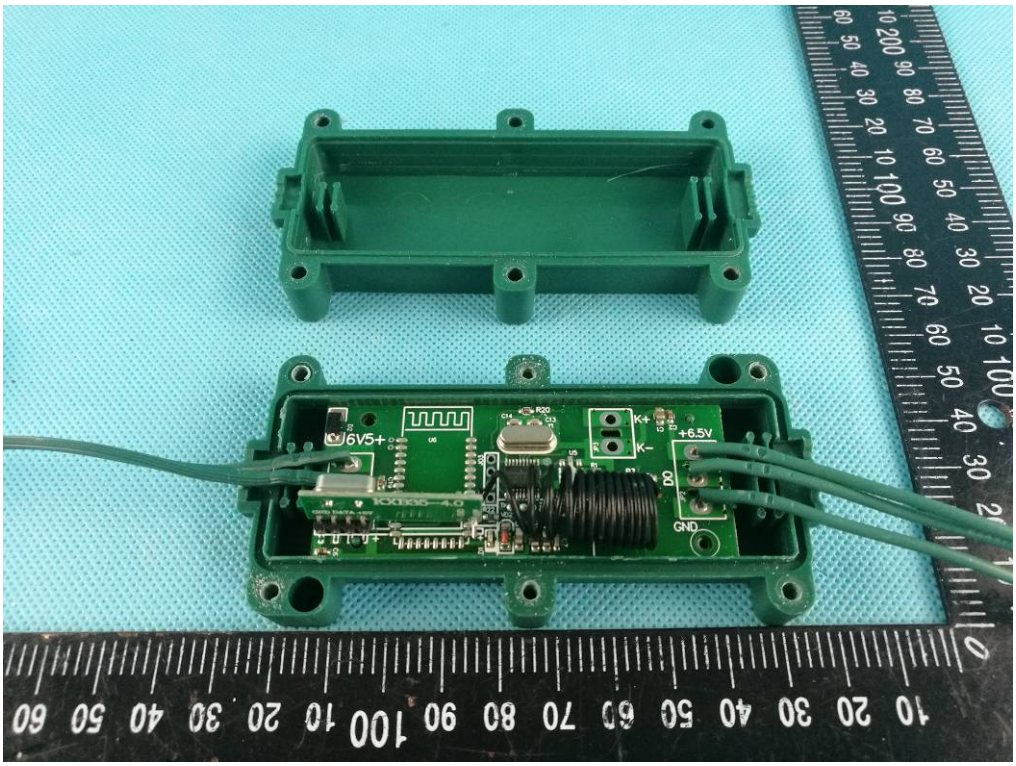
3.2 Radiated Emissions, 30MHz to 1GHz Test Setup

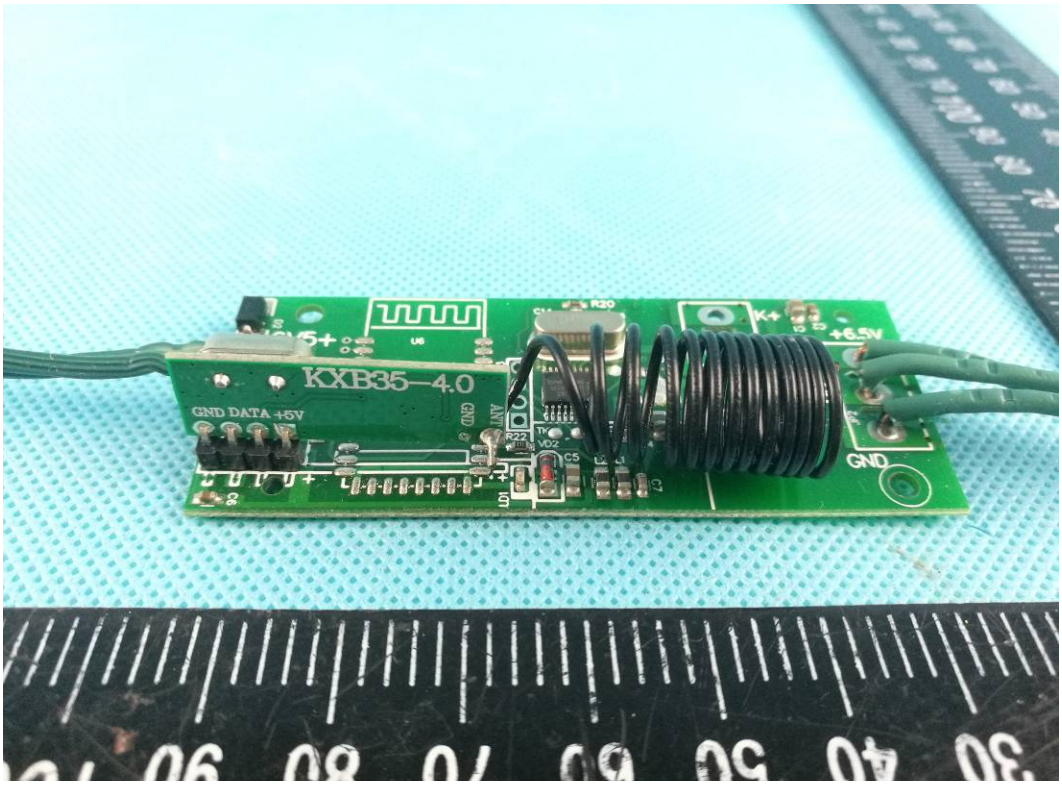
3.3 Radiated Emissions, above 1GHz Test Setup

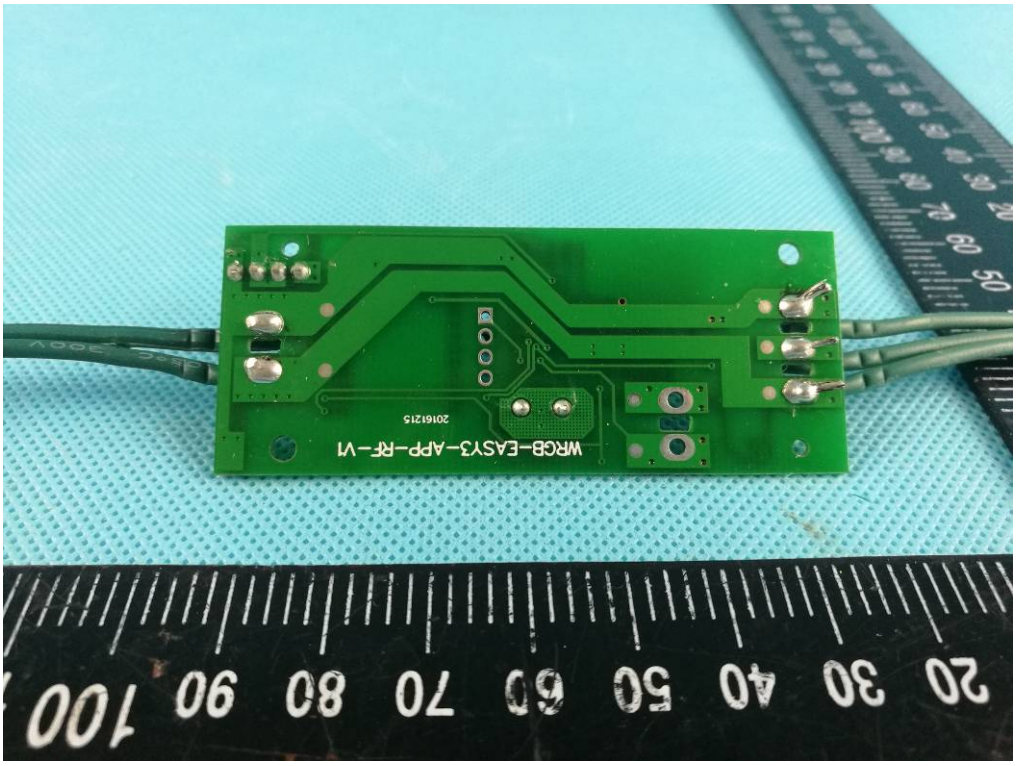
3.4 EUT Constructional Details

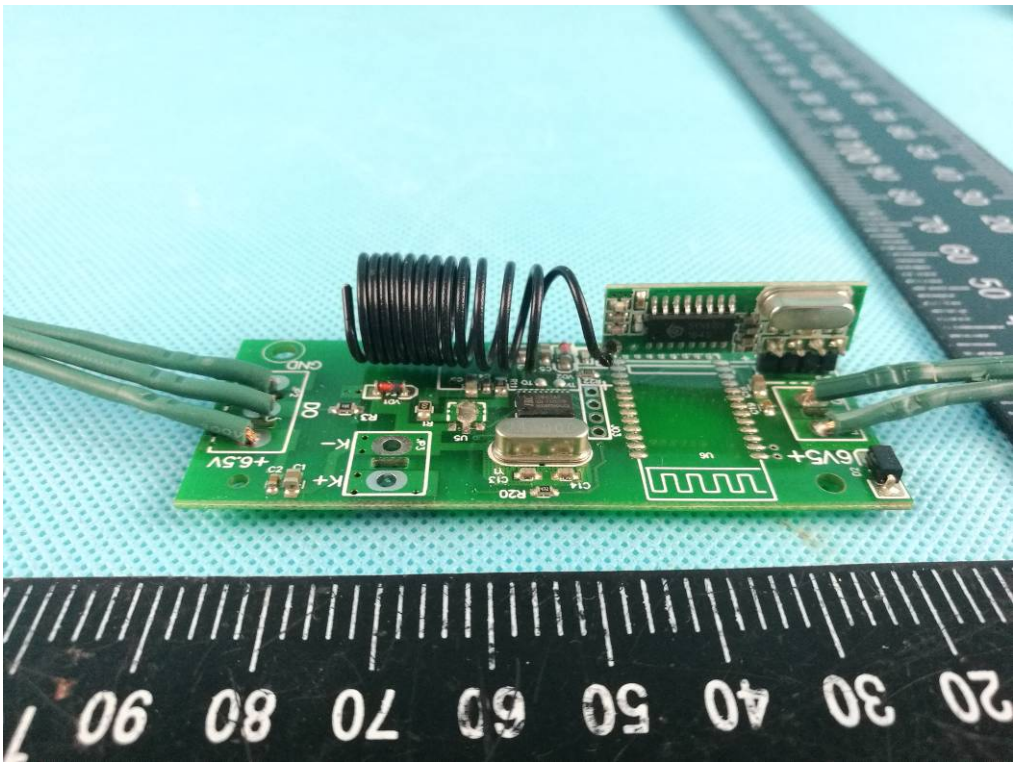


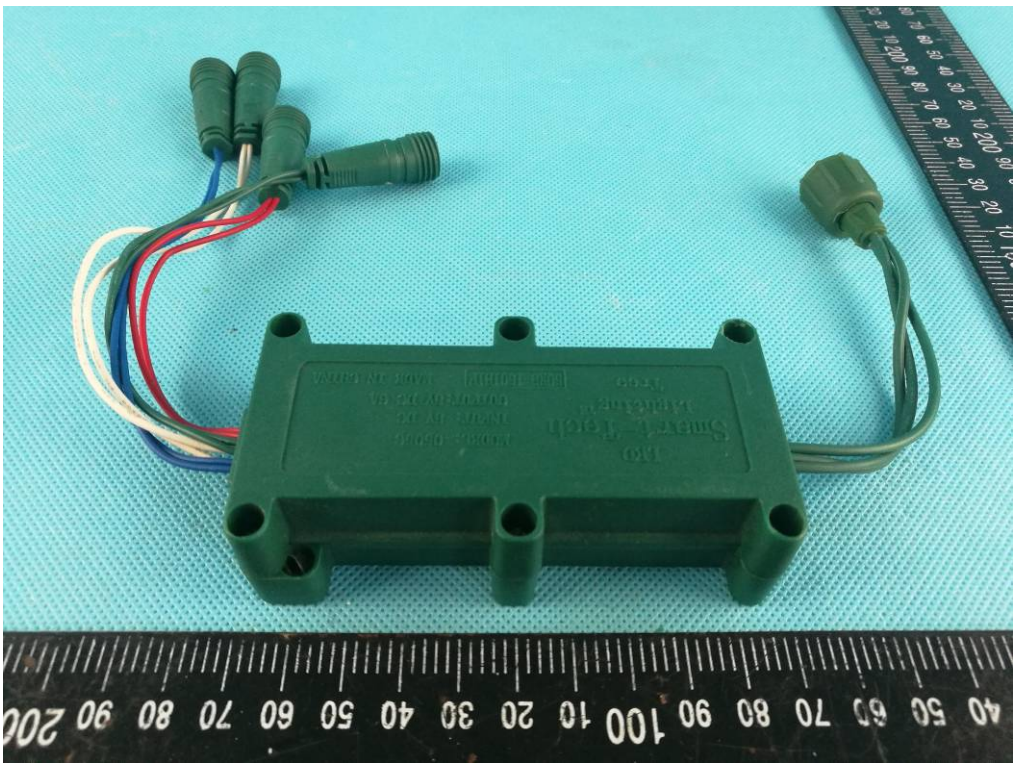


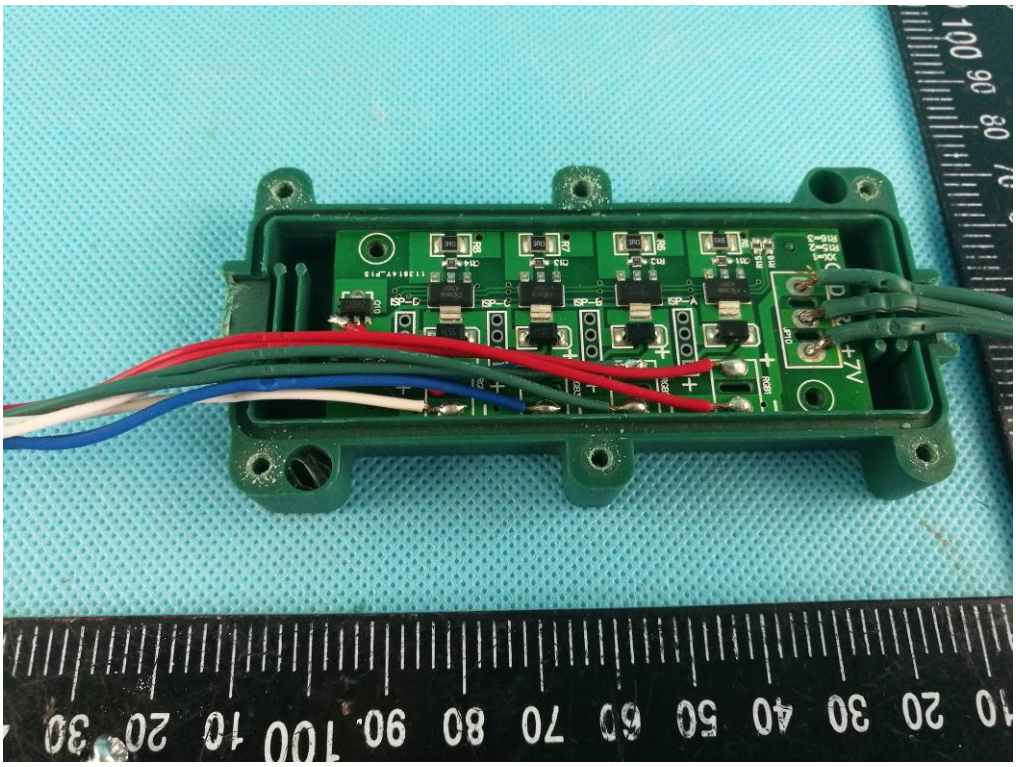


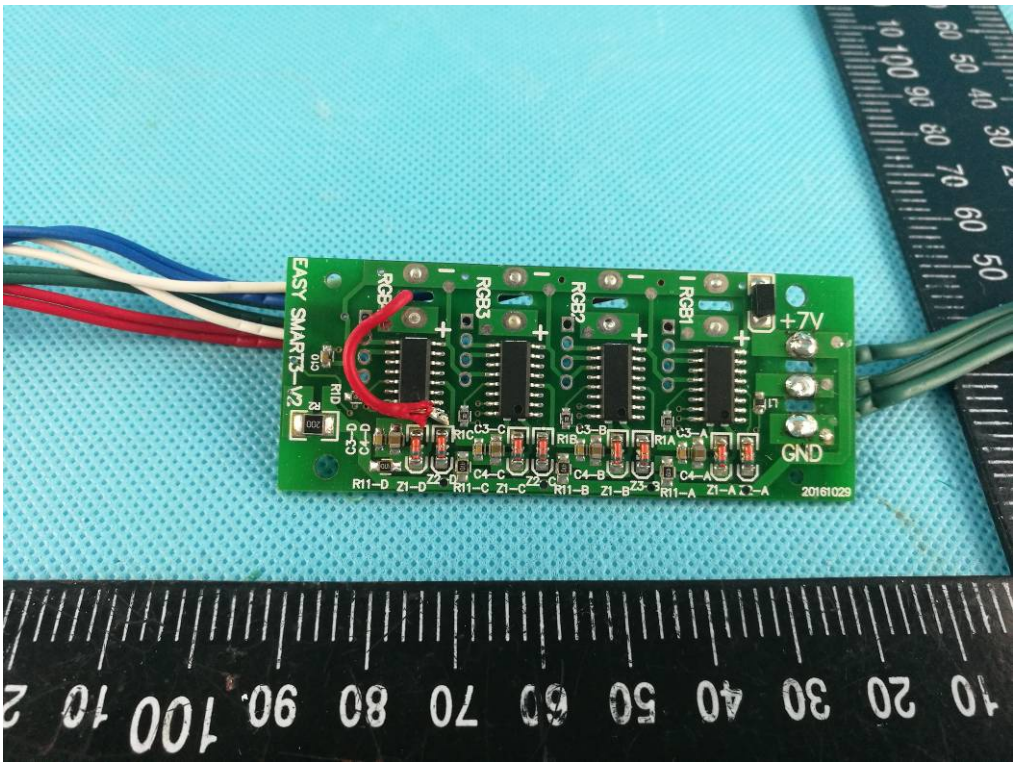


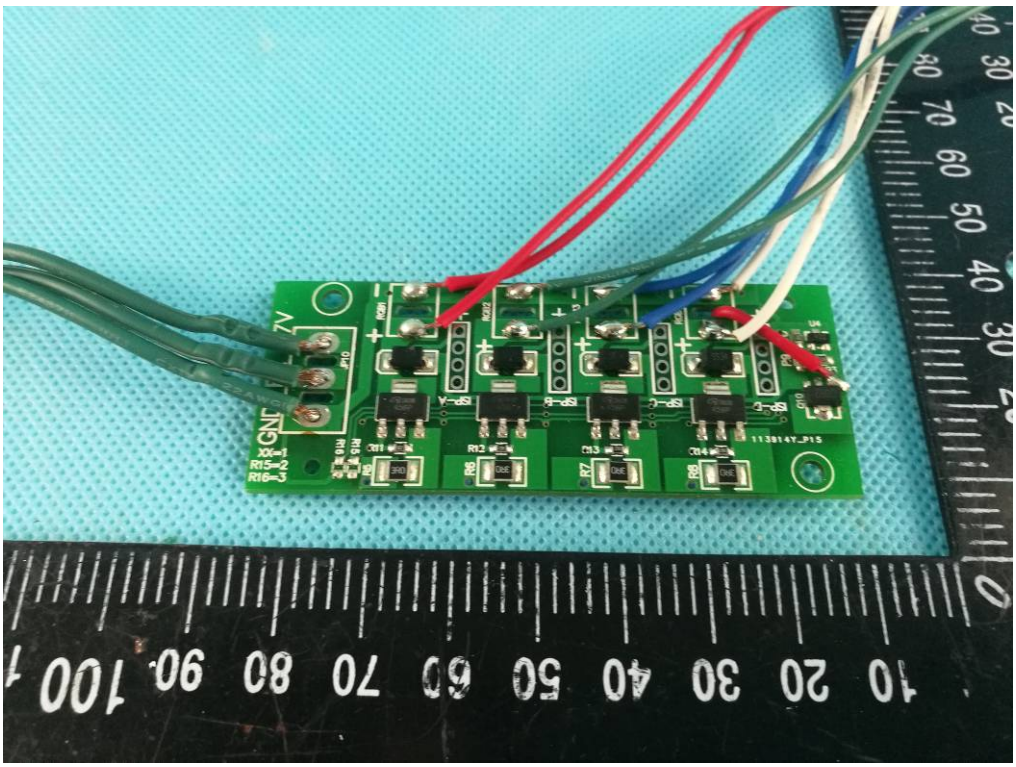


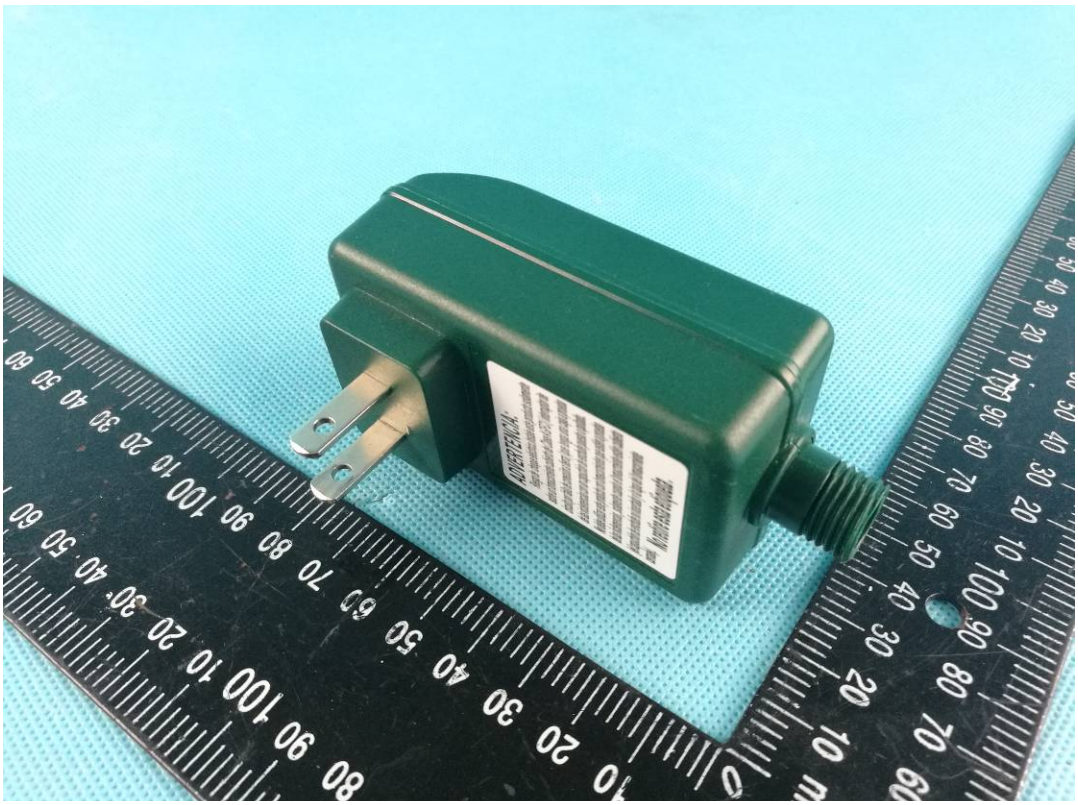


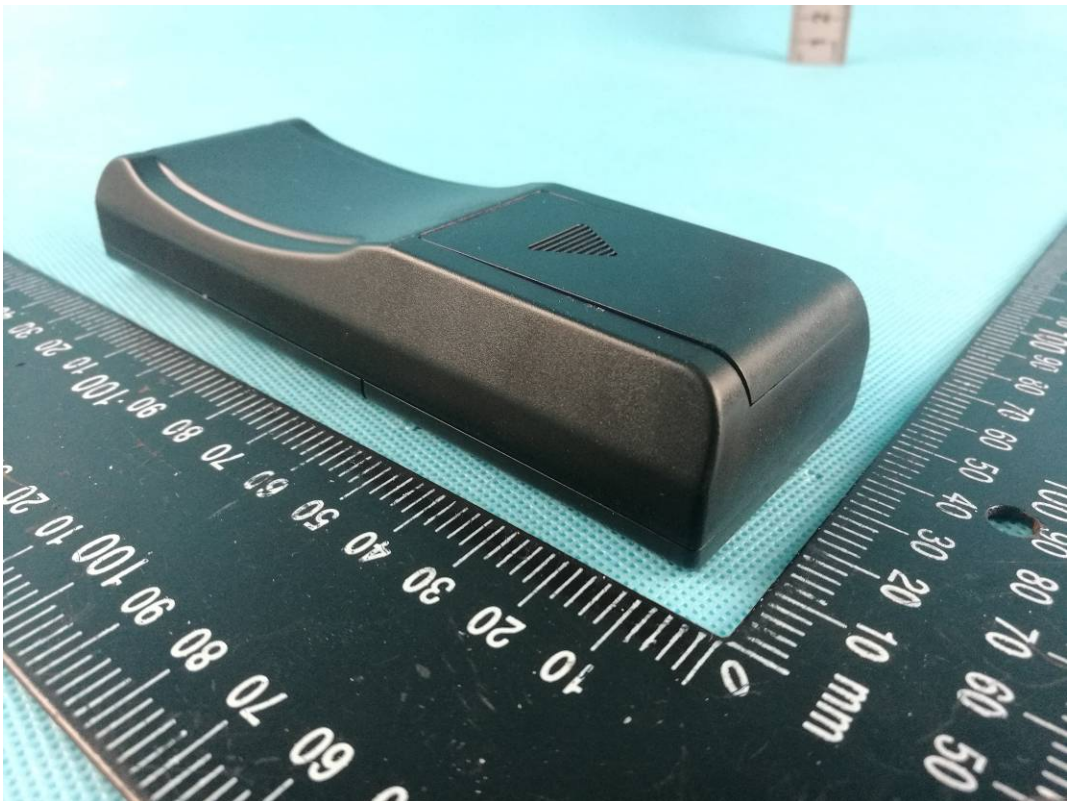


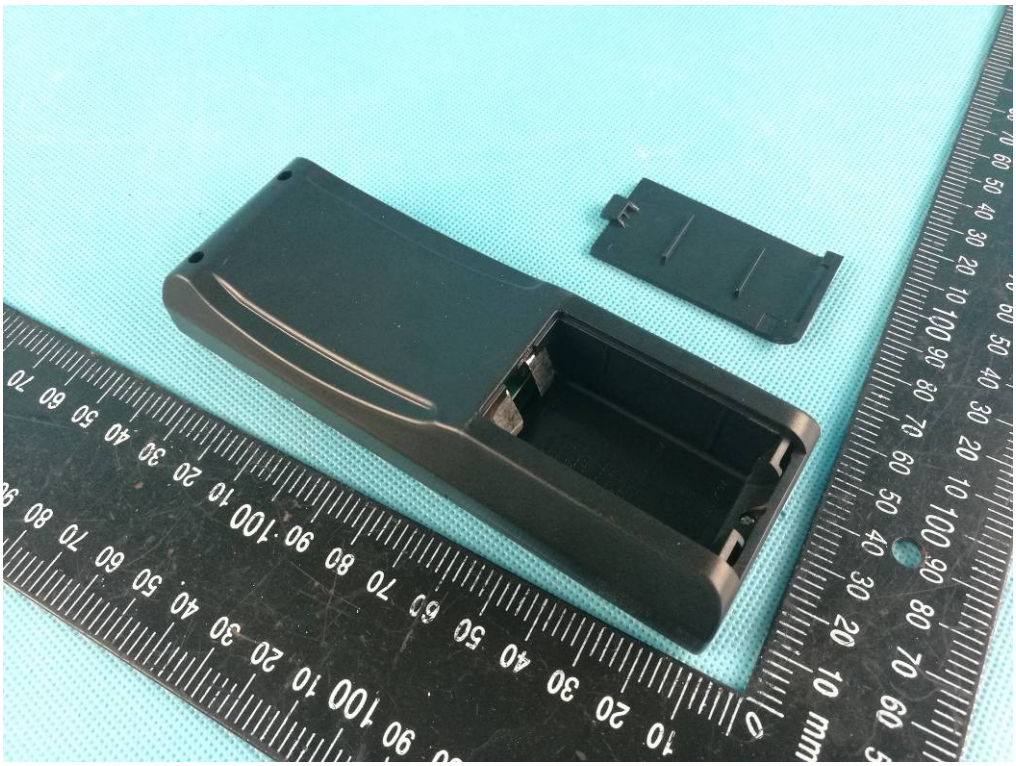


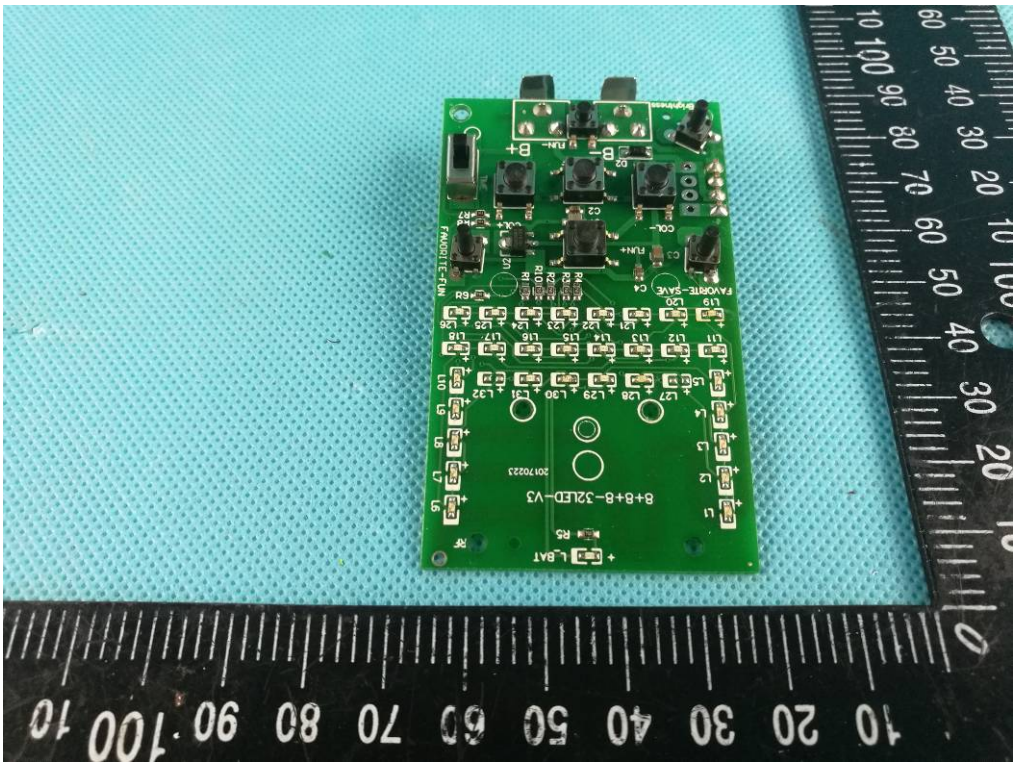


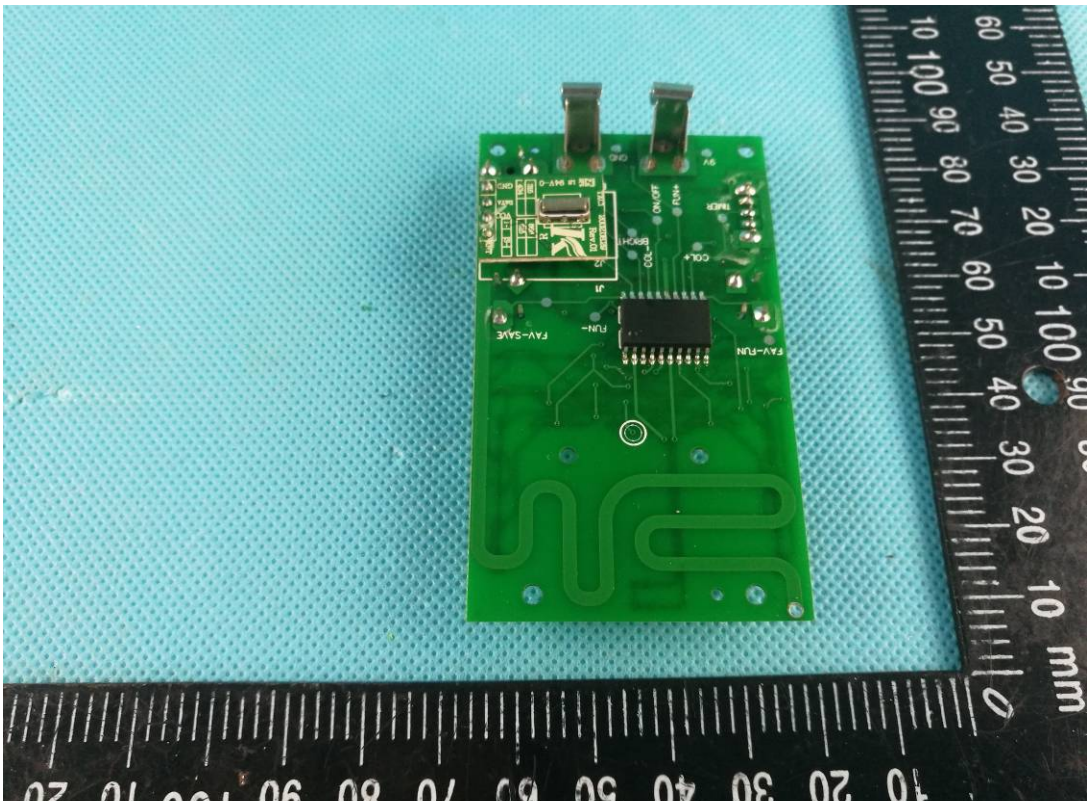












END OF THE TEST REPORT