

TEST REPORT

FCC ID: 2ACT9ES-77279RX

Product: EZ-Wireless Command

Model No.: ES-77279

Additional Model No.: N/A

Trade Mark: N/A

Report No.: TCT151222E014

Issued Date: Dec. 25, 2015

Issued for:

Zhe Jiang Eastsun Autocar Things Co., Ltd.

No. 97 North Chezhan Road, Jiashan County, zhejiang, China.

Issued By:

Shenzhen Tongce Testing Lab

1F, Leinuo Watch Building, Fuyong Town, Baoan Dist, Shenzhen, China

TEL: +86-755-27673339

FAX: +86-755-27673332

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1. Test Certification

Product:	EZ-Wireless Command
Model No.:	ES-77279
Applicant:	Zhe Jiang Eastsun Autocar Things Co., Ltd.
Address:	No. 97 North Chezhan Road, Jiashan County, zhejiang, China.
Manufacturer:	Zhe Jiang Eastsun Autocar Things Co., Ltd.
Address:	No. 97 North Chezhan Road, Jiashan County, zhejiang, China.
Test Voltage:	DC 12V from Battery
Date of Test:	Dec. 21, 2015~ Dec. 25, 2015
Applicable Standards:	47 CFR FCC Part 15 Subpart B: 2014 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:



SKY

Date:

Dec. 25, 2015

Check By:



Joe Zhou

Date:

Dec. 26, 2015

Approved By:



Tomsin

Date:

Dec. 26, 2015

2. Test Result Summary

Emission		
Test Method	Item	Result
FCC 47 CFR Part 15 Subpart B	Conducted Emission at Mains Terminals	N/A
	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.

3. EUT Description

Product Name:	EZ-Wireless Command
Model No.:	ES-77279
Power supply:	DC 12V from battery
Operation Frequency:	433.92MHz
Modulation Technology:	ASK
Antenna Type:	Integral Antenna
Antenna Gain:	0dBi
Power Supply:	DC 12V from battery

4. Test Methodology

4.1. Decision of Final Test Mode

The EUT was tested together with the thereafter 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
Rx(433.92MHz)+Charging

4.2. EUT System Operation

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

5. Setup of Equipment under Test

5.1. Description of Support Units

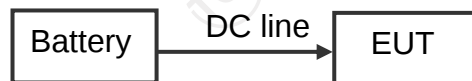
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Battery	95D31R	/	/.	FEIFAN

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: EZ-Wireless Command)

6. Facilities and Accreditations

6.1. Facilities

All measurement facilities used to collect the measurement data are located at TCT Lab.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. 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	$\pm 0.1^{\circ}\text{C}$
2.	Humidity	$\pm 1.0 \%$
3.	Spurious Emissions, Conducted	$\pm 2.56 \text{ dB}$
4.	All Emissions, Radiated	$\pm 4.28 \text{ dB}$

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

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

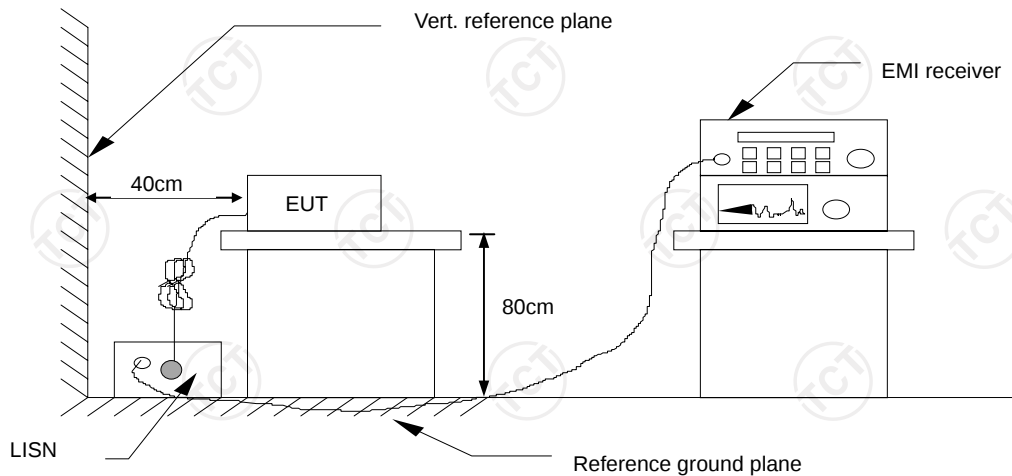
Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCS30	100139	Sep. 11, 2016
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 16, 2016

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.: 22 °C	Humid.: 54 %	Press.: 96 kPa
Test Mode:	N/A		
Test Voltage:	AC 120 V/60 Hz		
Test Result:	N/A, The EUT powered by battery DC 12V, so this test item is not applicable		

Note:

L1 = Live Line / N = Neutral Line

“---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level dB(μV) = Receiver reading

Corr. Factor (dB) = Attenuator factor + Cable loss

Level dB(μV) = Reading level dB(μV) + Corr. Factor (dB)

Limit dB(μV) = Limit stated in standard

Margin (dB) = Level dB(μV) – Limits dB(μV)

Q.P. =Quasi-Peak

AVG=Average

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 5000 MHz
Measurement Distance:	3 m
Antenna Polarization:	Horizontal & Vertical

7.2.2. Limits

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 1GHz	74.0(PK)
	54.0(AV)

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level $\text{dB}(\mu\text{V}/\text{m}) = 20 \log \text{Emission level } (\mu\text{V}/\text{m})$.

7.2.3. Test Instruments

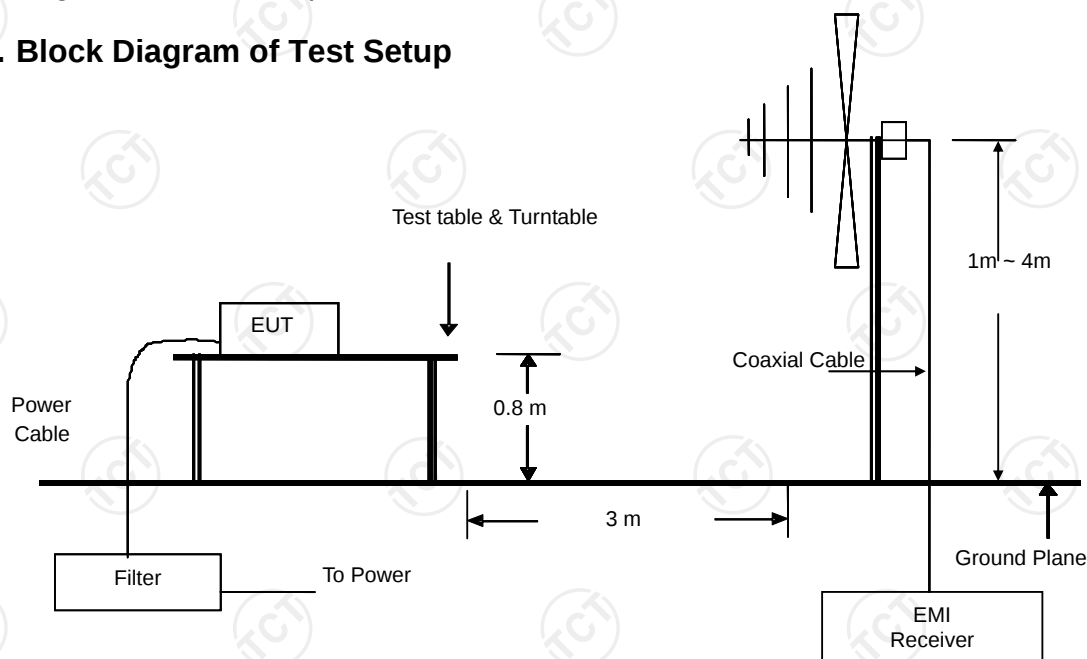
Radiated Emission Test Site (966)				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESVD	100008	Sep. 16, 2016
Spectrum Analyzer	R&S	FSEM	848597-001	Sep. 16, 2016
Amplifier	HP	8447D	2727A05017	Sep. 16, 2016
Amplifier	EM	EM30265	07032613	Sep. 16, 2016
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 17, 2016
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 17, 2016
Antenna Mater	CCS	CC-A-4M	N/A	Sep.15 , 2016
Coax cable	TCT	RE-low-01	N/A	Sep.15 , 2016
Coax cable	TCT	RE-high-02	N/A	Sep.15 , 2016
Coax cable	TCT	RE-low-03	N/A	Sep.15 , 2016
Coax cable	TCT	RE-high-04	N/A	Sep.15 , 2016

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

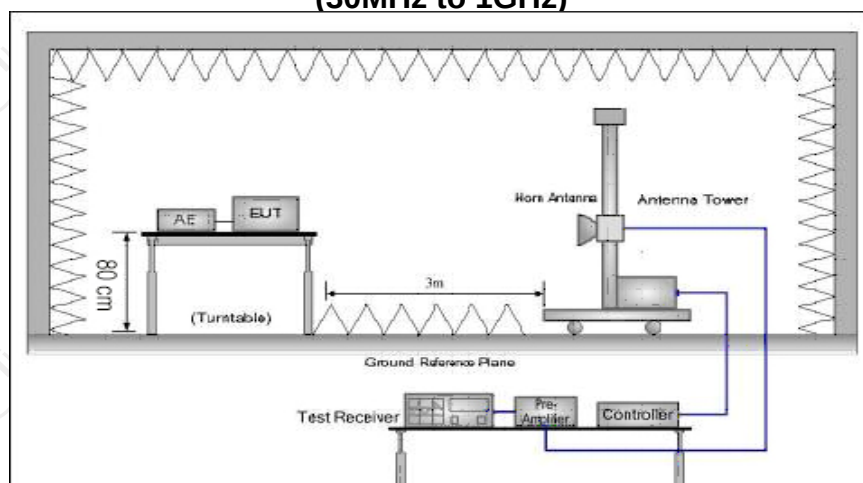
7.2.4. Test Method

Measurements were made in a 3-meter semi-anechoic chamber or Open Area Test Site 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.: 23 °C	Humid.: 53 %	Press.: 96 kPa
Test Mode:	Rx(433.92MHz)+Charging		
Test Voltage:	DC 12 V		
Test Result:	Pass		

Note:

Freq. = Emission frequency in MHz

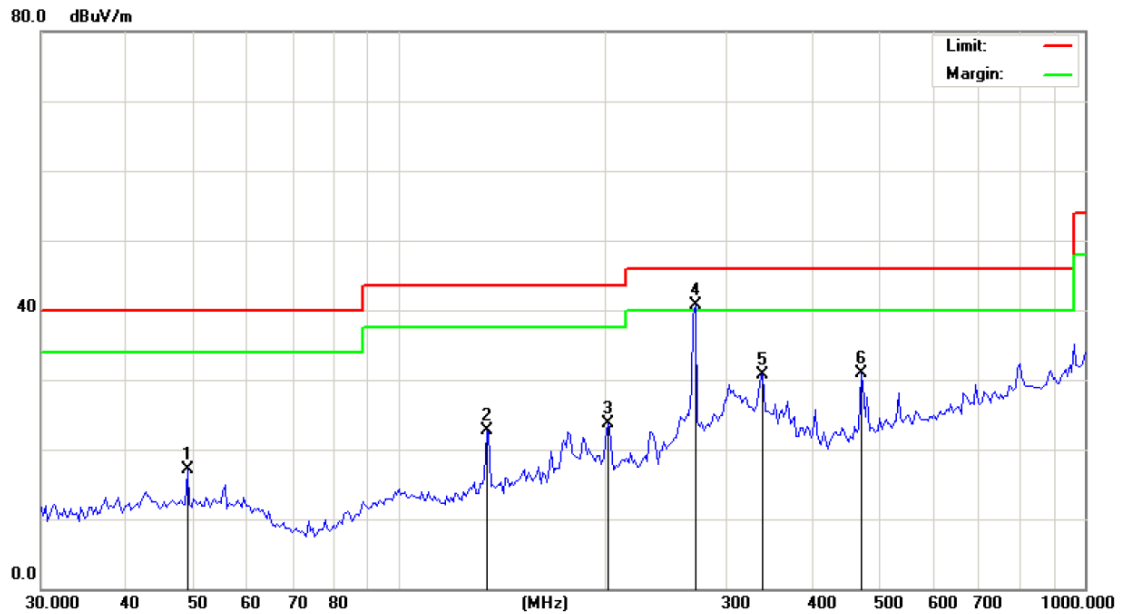
Reading level dB(μ V) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement dB(μ V/m) = Reading level dB(μ V) + Corr. Factor (dB)Limit dB(μ V/m) = Limit stated in standardMargin (dB) = Measurement dB(μ V/m) – Limits dB(μ V/m)

Q.P. =Quasi-Peak

Please refer to following diagram for individual



Site

Polarization: **Horizontal**

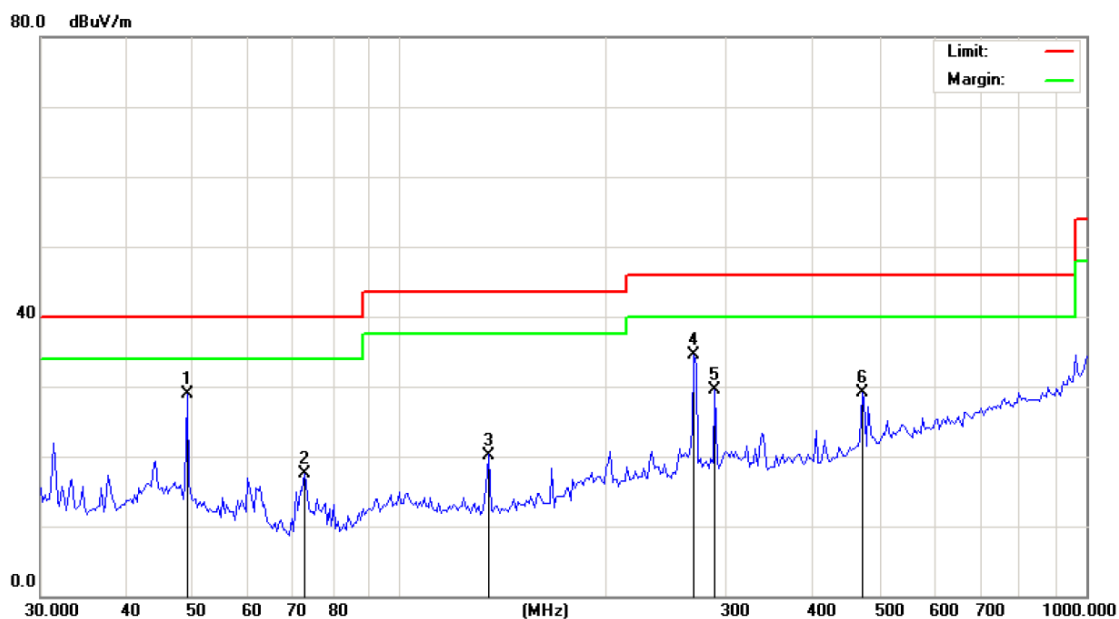
Temperature: 23

Limit: FCC Part 15B Class B RE_3 m

Power: DC 120V/60Hz

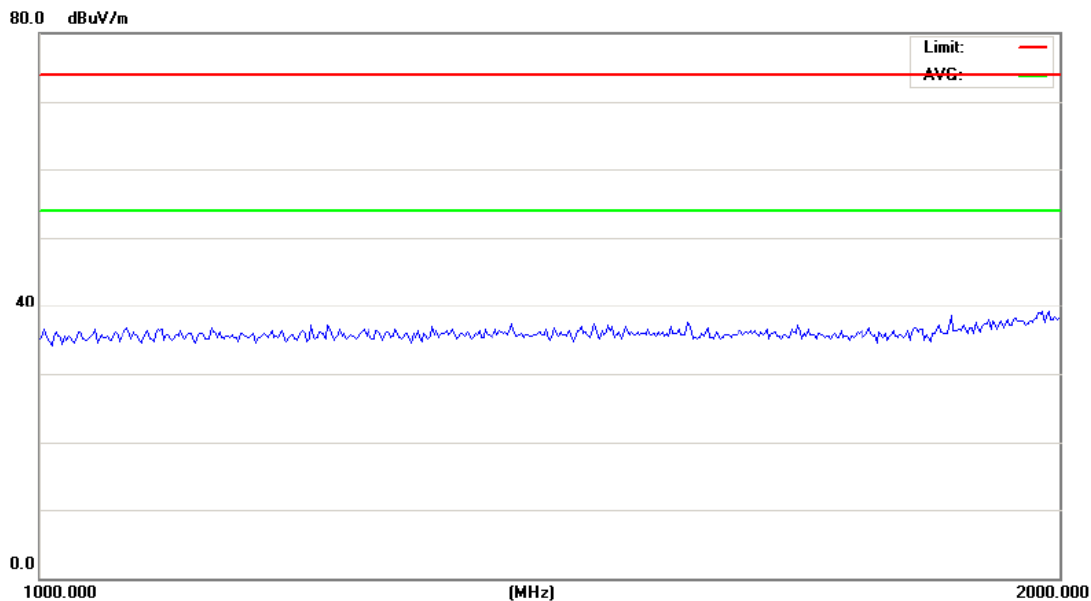
Humidity: 54 %

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	49.0627	29.21	-12.08	17.13	40.00	-22.87	peak	0	
2	134.0194	37.95	-15.17	22.78	43.50	-20.72	peak	0	
3	201.4540	35.27	-11.62	23.65	43.50	-19.85	peak	0	
4 *	270.6162	49.97	-9.25	40.72	46.00	-5.28	peak	0	
5	338.8546	38.15	-7.45	30.70	46.00	-15.30	peak	0	
6	471.4665	34.86	-3.89	30.97	46.00	-15.03	peak	0	



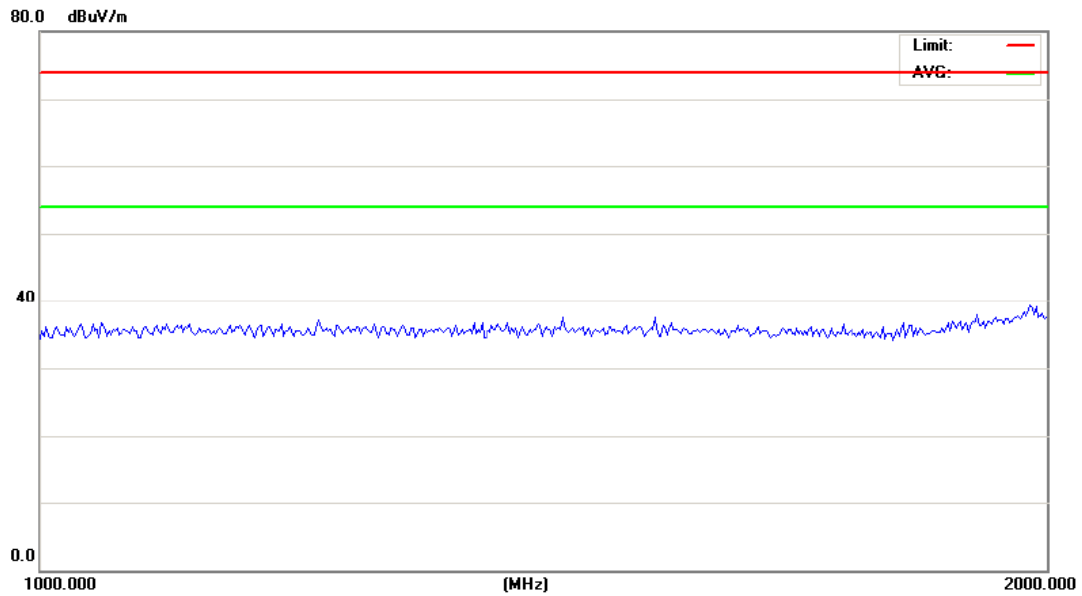
Site: Polarization: **Vertical** Temperature: 23
 Limit: FCC Part 15B Class B RE_3 m Power: DC 120V/60Hz Humidity: 54 %

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	
1	*	49.0627	40.95	-12.08	28.87	40.00	-11.13	peak	0	
2		72.7203	33.91	-16.46	17.45	40.00	-22.55	peak	0	
3		134.9645	35.41	-15.21	20.20	43.50	-23.30	peak	0	
4		268.7212	43.89	-9.32	34.57	46.00	-11.43	peak	0	
5		288.2840	38.20	-8.65	29.55	46.00	-16.45	peak	0	
6		471.4665	33.03	-3.89	29.14	46.00	-16.86	peak	0	



Site Polarization: **Horizontal** Temperature: 23
 Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: DC 12V Humidity: 54 %

No. Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment



Site: Polarization: **Horizontal** Temperature: 23
Limit: FCC Part 15B Class B Above 1GHz RE(PK) Power: DC 12V Humidity: 54 %

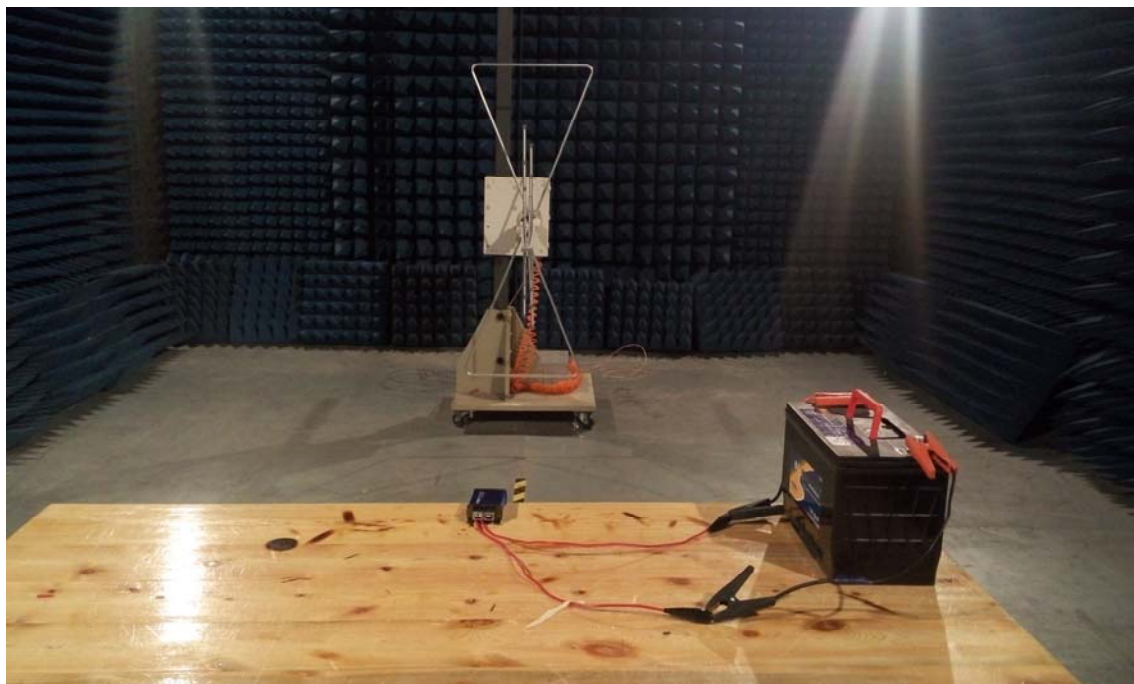
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment

Note: 1. Any value more than 10 dB below limit have not been specifically reported.

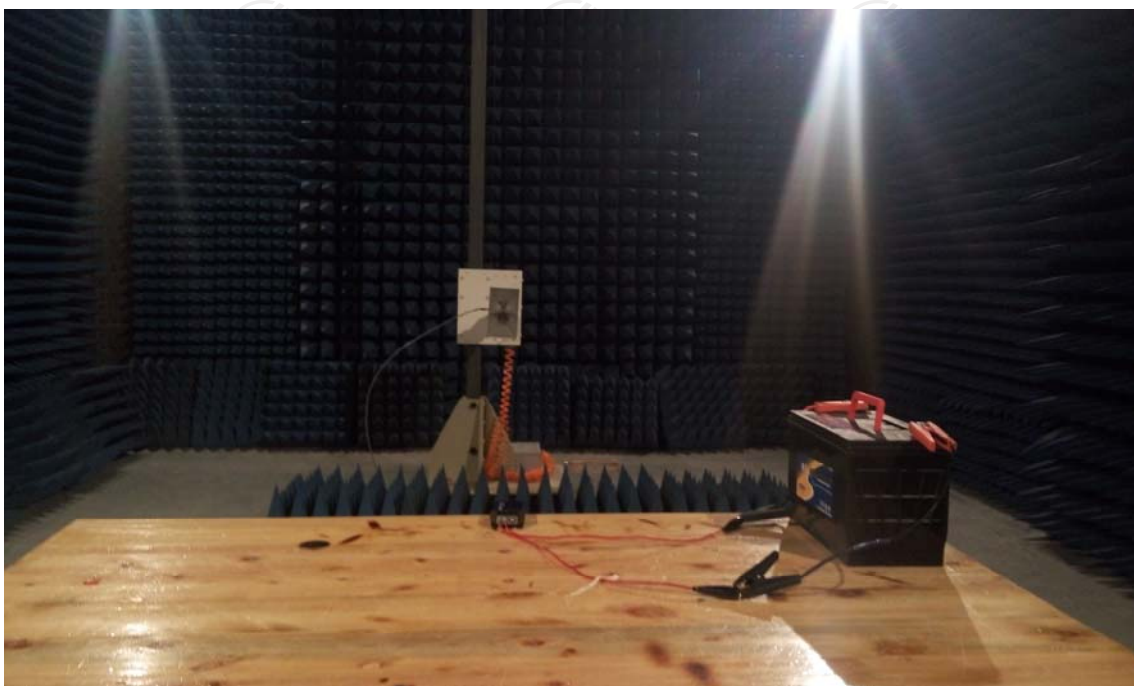
2. The emission level which started from 2GHz~5GHz was 20dB lower than the limit line, so not reported

8. Photographs of Test Configuration

Radiated Emission Test View (Below 1 GHz)

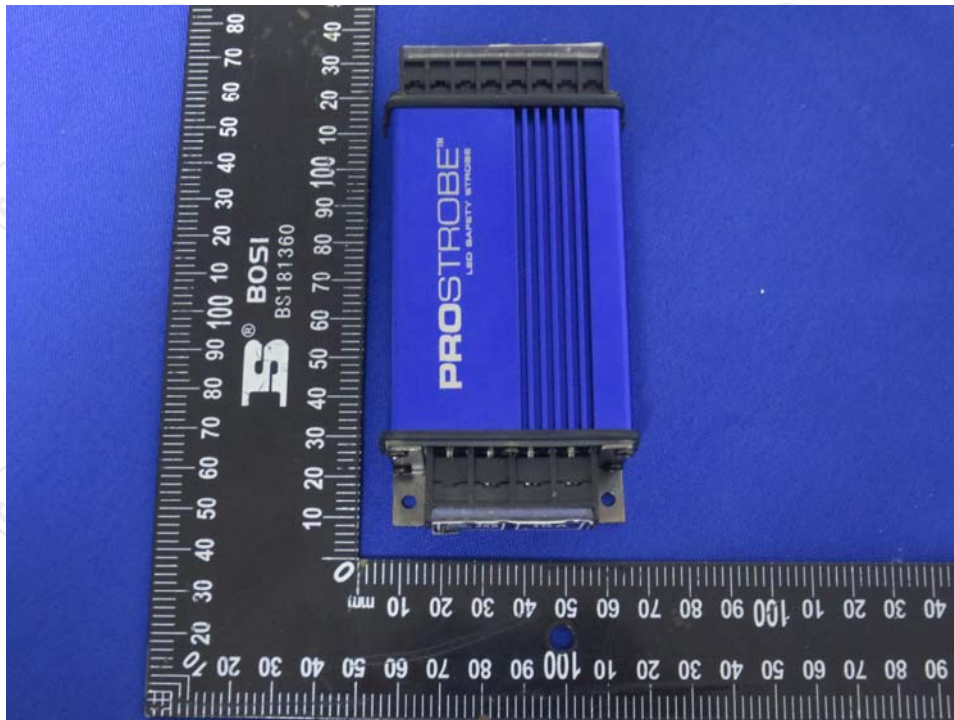


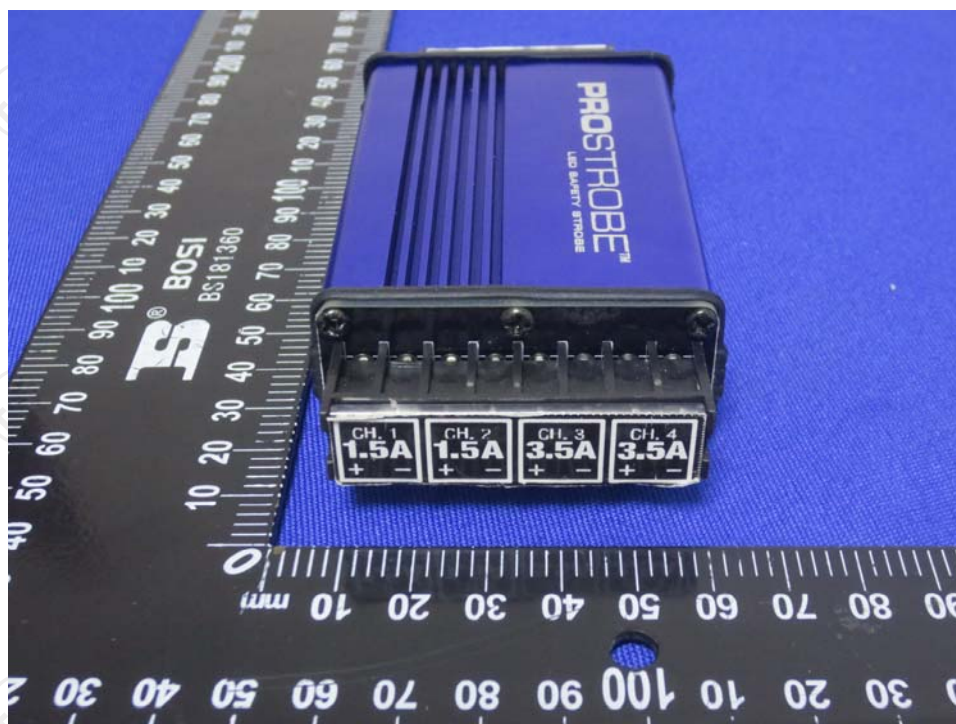
Radiated Emission Test View (Above 1 GHz)

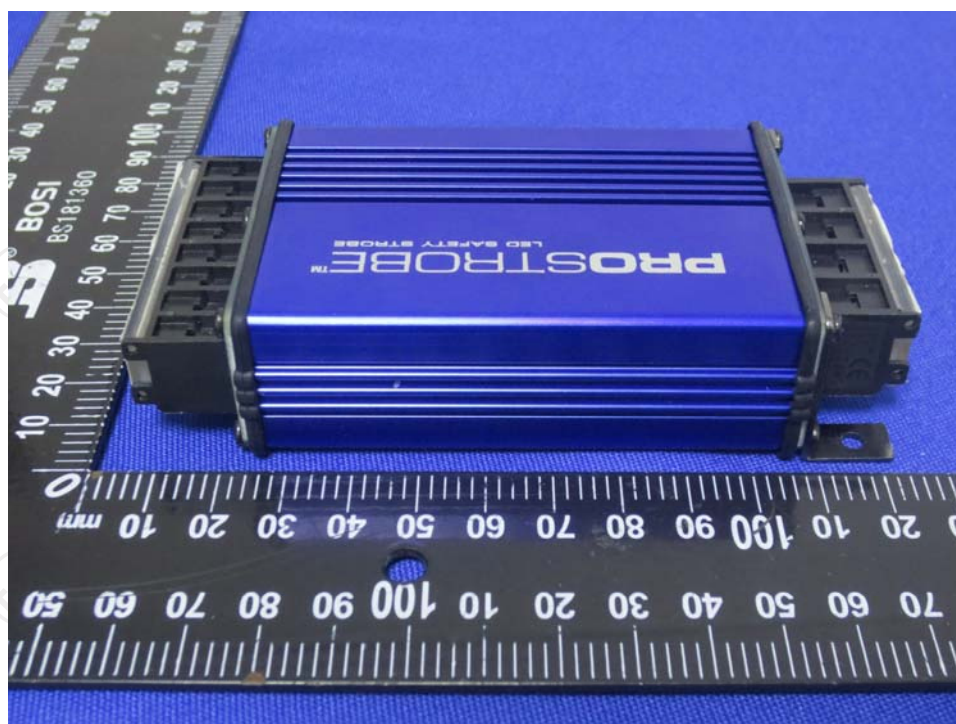


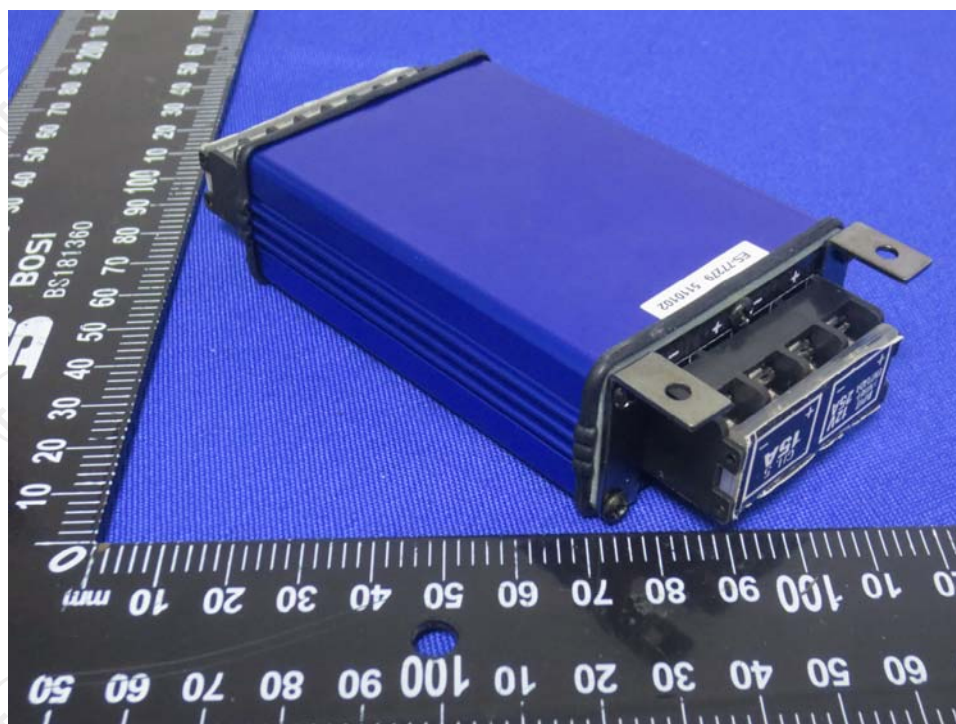
9. Photographs of EUT

External Photos

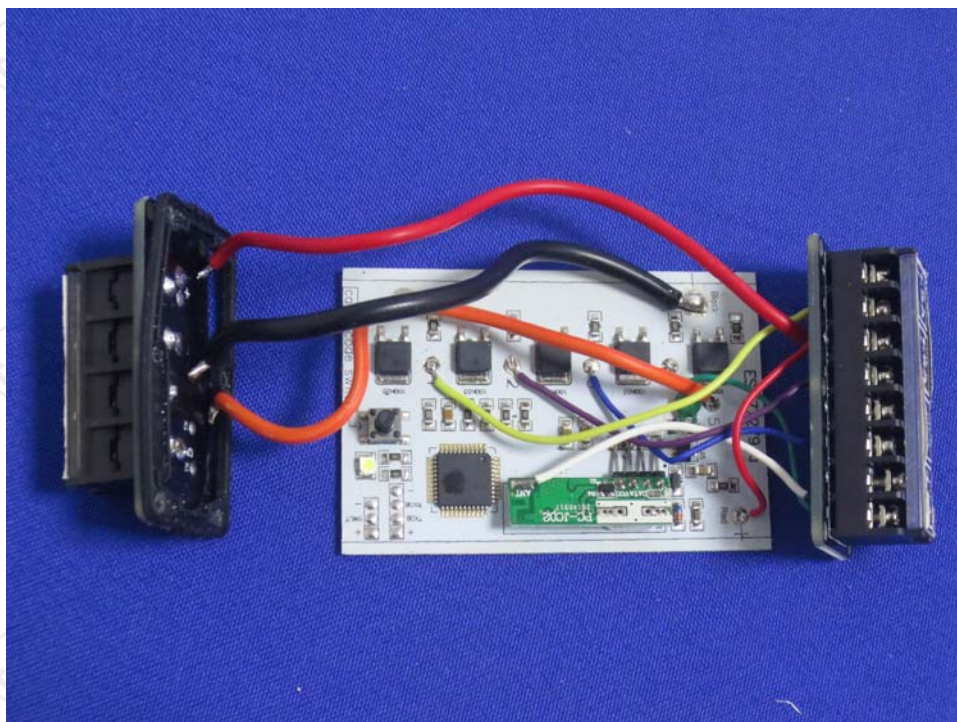


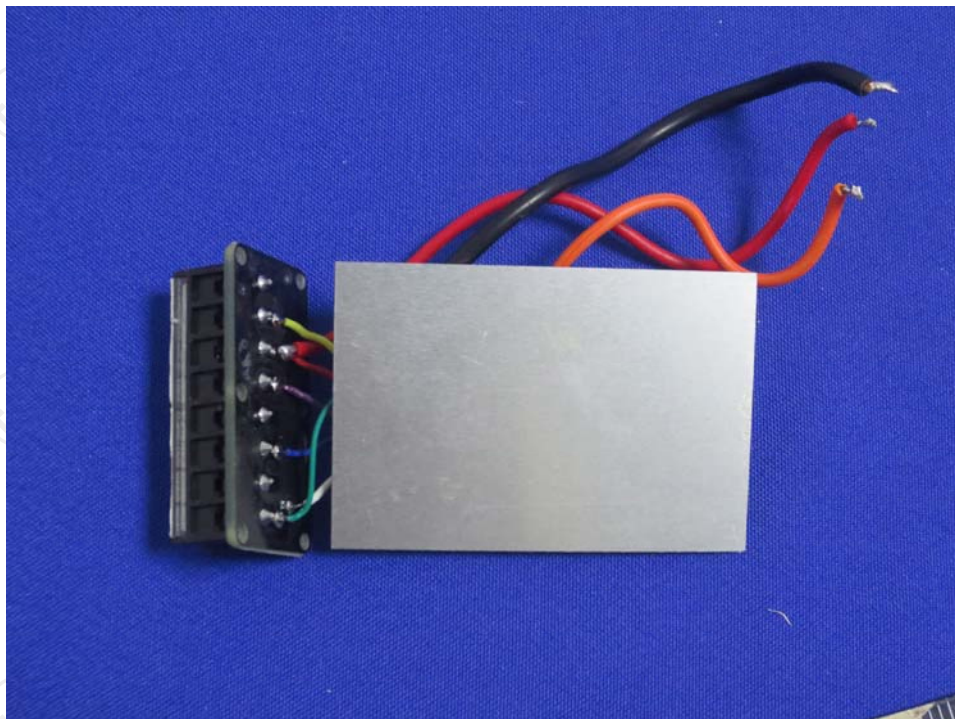
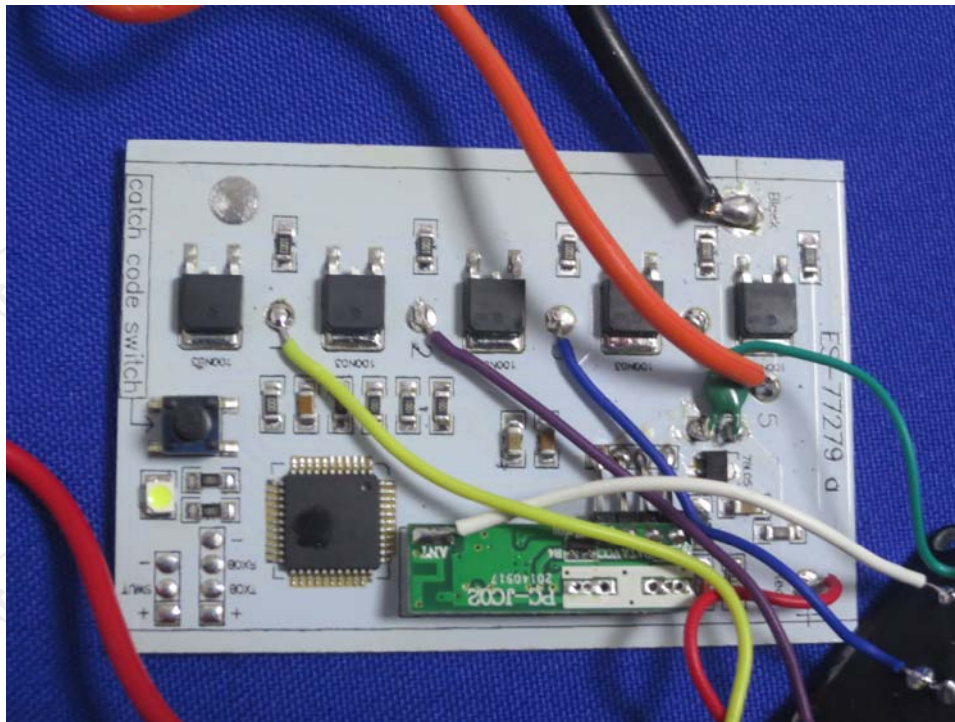


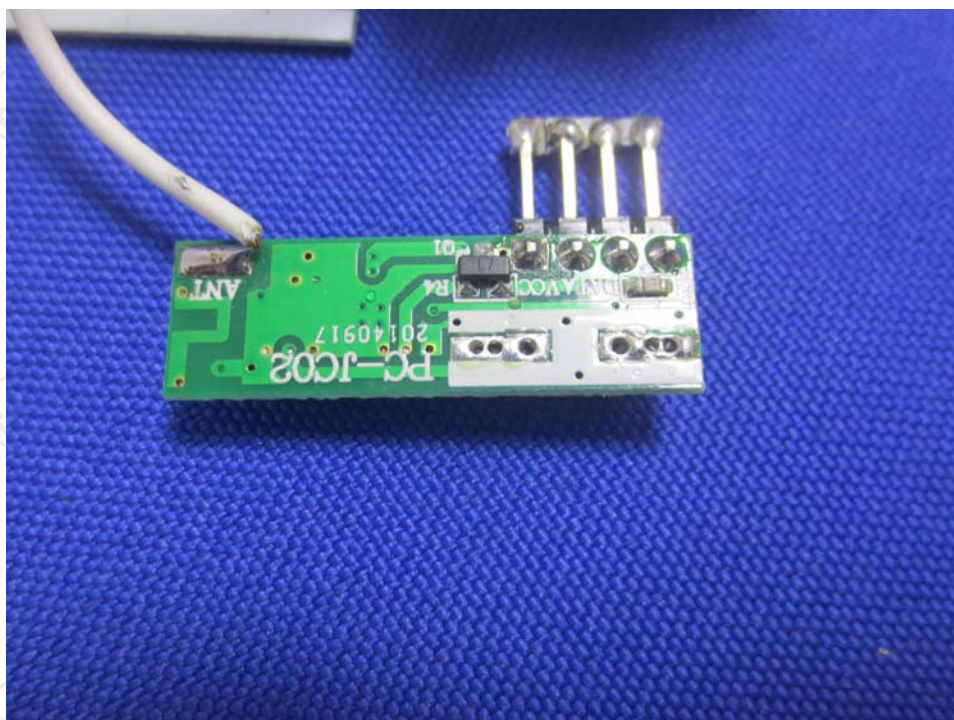




Model: ES-77279
Internal Photos







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