

FCC Part 15C

Measurement and Test Report

For

Shenzhen Maiqu Technology Co., Ltd.

FCC ID: 2BROX-K-51050

FCC Rule(s): FCC Part 15.209

Product Description: Solar street lights

Tested Model: K-51050

Report No.: MAX250831901601RF

Tested Date: Nov. 01~21, 2025

Issued Date: Nov. 22, 2025

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen Maiqu Technology Co., Ltd.

Address of applicant: Room 2309, Baotai Building, 182 Design Park, No. 182, Bulan Road, Shanglilang Community, Nanwan Street, Longgang District, Shenzhen City

Manufacturer: Jiangmen Changsu Lighting Technology Co., Ltd.

Address of manufacturer: Room 801 - 802, Building 2, Area A, Phase II of Wanyang Zhongchuang, No. 3, Shangwei North Third Road, Hetang Town, Pengjiang District, Jiangmen City, Guangdong Province

General Description of EUT	
Product Name:	Solar street lights
Trade Name:	MUCH
Model No.:	K-51050 streetlight
Adding Model(s):	N/A
Rated Voltage:	3.7V by battery
Power Adapter Model:	N/A

Technical Characteristics of EUT	
Frequency Range:	2912MHz
Data Rate:	N/A
Modulation:	GFSK
Antenna Type:	PCB antenna
Antenna Gain:	1.51dBi

Operation Frequency each of channel			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2912		

1.2 Test Standards

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2014, American National Standard for Testing Unlicensed Wireless Devices, and ANSI C63.4-2020, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz. The measurement guide KDB 558074 D01 v05r02 for digital transmission systems shall be performed also.

1.4 Test Facility

MAXLAB TESTING CO., LTD.

1/F, Building B, Xinshidai GR Park, Shiyan Street, Bao'an District, Shenzhen, Guangdong, 518052, People's Republic of China

FCC Test Firm Registration Number: 562200

Designation Number: CN1338

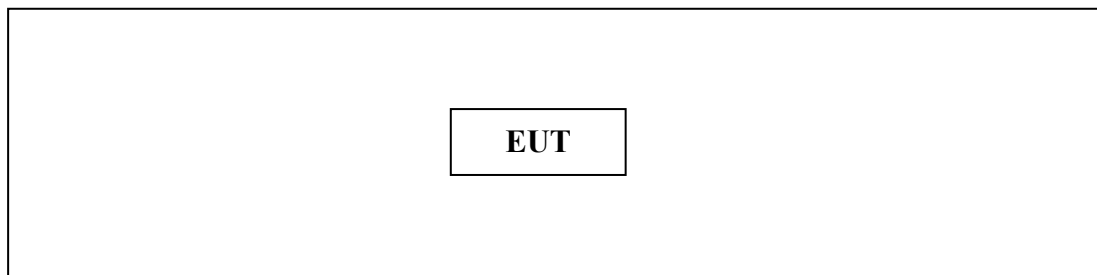
Tel: 400-882-9628

Fax: 86-755-26508703

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

TX Mode



1.5 EUT Setup and Test Mode

The EUT was operated at continuous transmitting mode that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Transmitting	Modulation
TM2		
TM3		

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Occupied Bandwidth	Conducted	$\pm 1.5\%$
Conducted Spurious Emission	Conducted	$\pm 2.17\text{dB}$
Transmission Time	Conducted	$\pm 5\%$
Conducted Emissions	Conducted	$\pm 2.88\text{dB}$
Transmitter Spurious Emissions	Radiated	$\pm 5.1\text{dB}$

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
Communication Tester	Rohde & Schwarz	CMW500	100358	2025-10-25	2026-10-24
Spectrum Analyzer	R&S	FSP40	100550	2025-10-25	2026-10-24
Test Receiver	R&S	ESCI7	US47140102	2025-10-25	2026-10-24
Signal Generator	HP	83630B	3844A01028	2025-10-25	2026-10-24
Test Receiver	R&S	ESPI-3	100180	2025-10-25	2026-10-24
Amplifier	Agilent	8449B	4035A00116	2025-10-25	2026-10-24
Amplifier	HP	8447E	2945A02770	2025-10-25	2026-10-24
Signal Generator	IFR	2023A	202307/242	2025-10-25	2026-10-24
Broadband Antenna	SCHAFFNER	2774	2774	2025-10-25	2026-10-24
Biconical and log periodic antennas	ELECTRO-METRI CS	EM-6917B-1	171	2025-10-25	2026-10-24
Horn Antenna	R&S	HF906	100253	2025-10-25	2026-10-24
Horn Antenna	EM	EM-6961	6462	2025-10-25	2026-10-24
LISN	R&S	ESH3-Z5	100196	2025-10-25	2026-10-24
LISN	COM-POWER	LI-115	02027	2025-10-25	2026-10-24
3m Semi-Anechoic Chamber	Chengyu Electron	9 (L)*6 (W)* 6 (H)	BSL086	2025-10-25	2026-10-24
Horn Antenna	A-INFOMW	LB-180400KF	BSL088	2025-10-25	2026-10-24
20dB Attenuator	ICPROBING	IATS1	BSL1003	2025-10-25	2026-10-24
POWER DIVIDER	Mini-circuits	PD-2SF-0010	N/A	2025-10-25	2026-10-24
Power Meter	DARE	RPR3006W	15I00041SN O03	2025-10-25	2026-10-24
Loop Antenna	Schwarz beck	FMZB 1516	9773	2025-10-25	2026-10-24
Antenna Tower	SKET	BK-4AT-BS	N/A	N/A	N/A

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§ 15.203	Antenna Requirement	Compliant
§ 15.207(e)	Conducted Emission	N/A
§ 15.215	20dB Bandwidth Test	Compliant
§15.209	Radiated Emission Test	Compliant

Note: PASS: applicable, N/A: not applicable.

3. Antenna Requirement

3.1 Standard Applicable

According to FCC Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.

3.2 Test Result

This product has a PCB antenna(1.51dBi), fulfill the requirement of this section.

4. Conducted Emissions

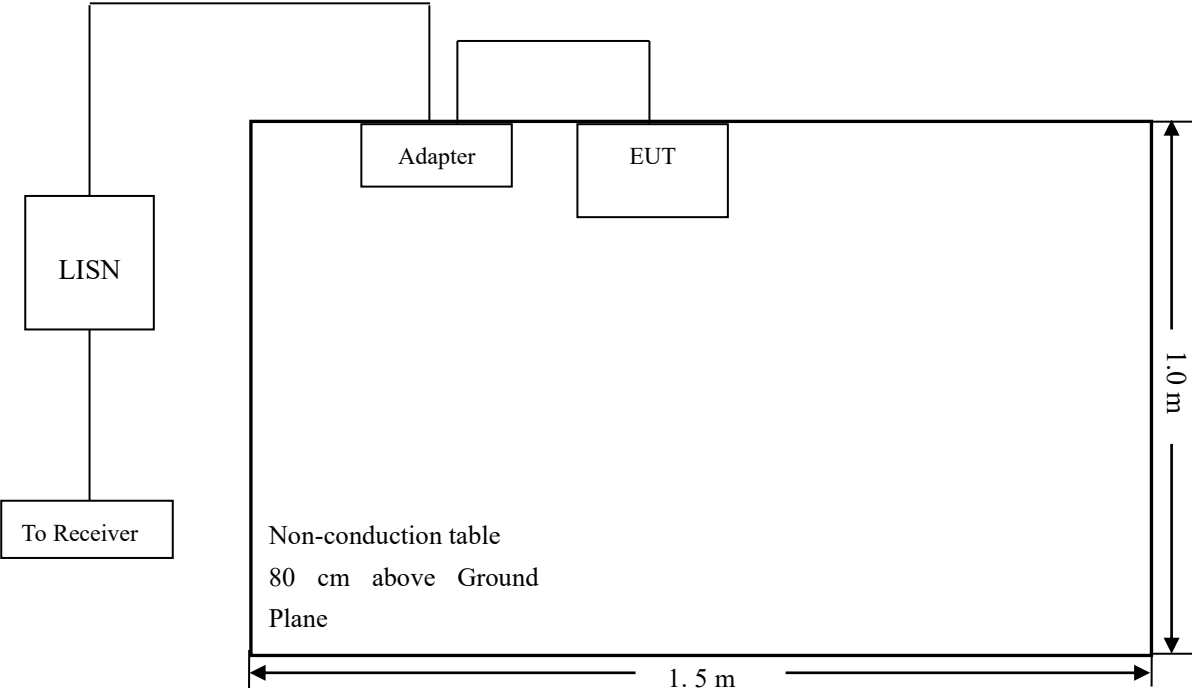
4.1 Test Procedure

The setup of EUT is according with per ANSI C63.4-2020 measurement procedure. The specification used was with the FCC Part 15.207 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

4.2 Basic Test Setup Block Diagram



4.3 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.4 Test Receiver Setup

During the conducted emission test, the test receiver was set with the following configurations:

- Start Frequency 150 kHz
- Stop Frequency 30 MHz
- Sweep Speed Auto
- IF Bandwidth..... 10 kHz
- Quasi-Peak Adapter Bandwidth 9 kHz

Quasi-Peak Adapter Mode Normal

4.6 Conducted Emissions Test Data

The equipment is battery powered, so do not test this item

5. Radiated Emissions

5.1 Standard Applicable

According to §15.209(a), In addition to the provisions of § 15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66–40.70	2,250	225
70–130	1,250	125
130–174	¹ 1,250 to 3,750	¹ 125 to 375
174–260	3,750	375
260–470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

(1) Linear interpolations.

(2) Emission level (dB)uV = 20 log Emission level uV/m

(3) The smaller limit shall apply at the cross point between two frequency bands.

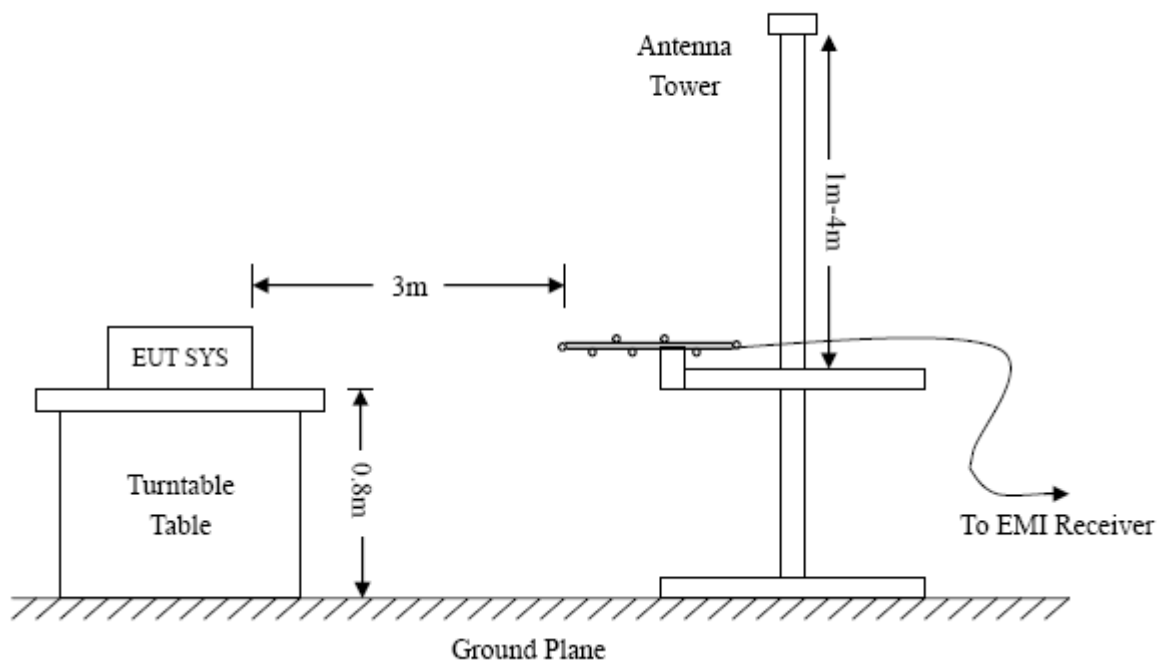
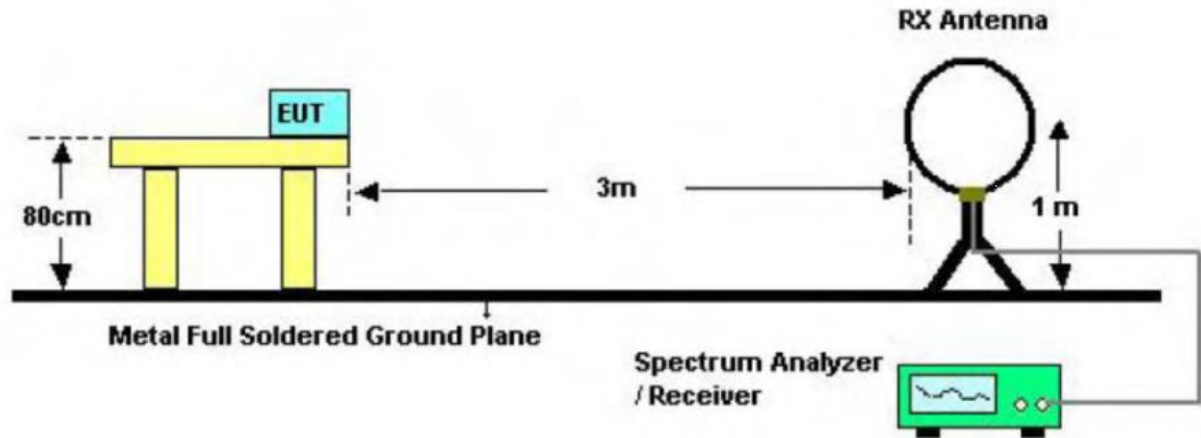
The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

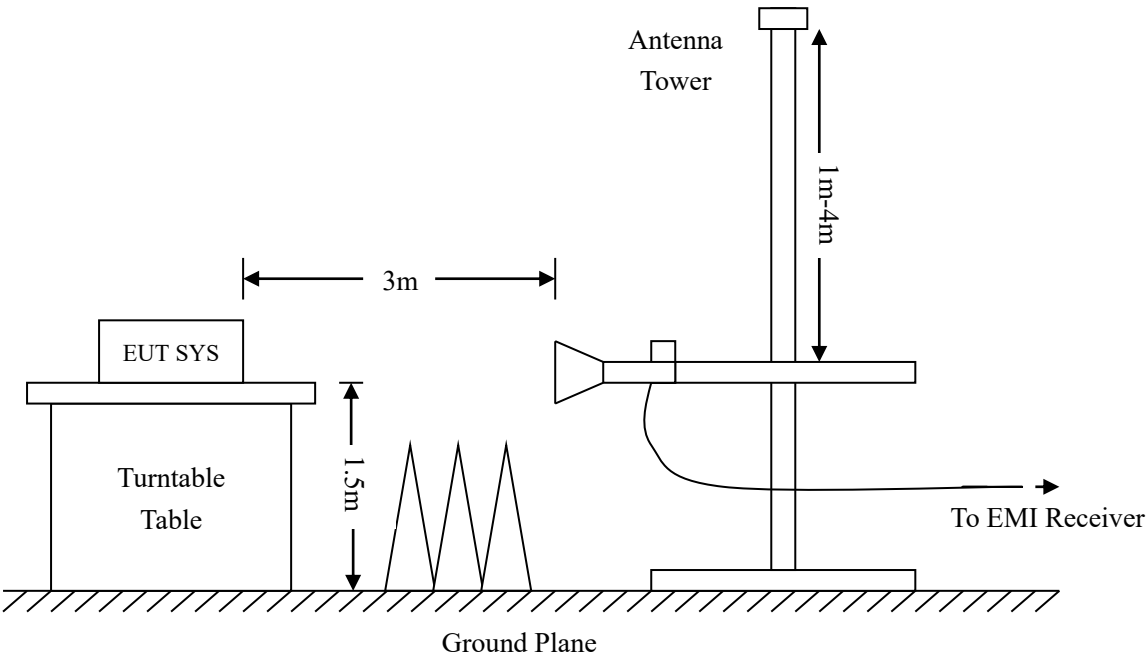
The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

Compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

5.2 Test Procedure

The setup of EUT is according with per ANSI C63.10-2014 measurement procedure. The specification used was with the FCC Part 15.205 and FCC Part 15.209 Limit.





5.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Loss} + \text{Cab. Loss} - \text{Ampl. Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15C Limit}$$

5.4 Environmental Conditions

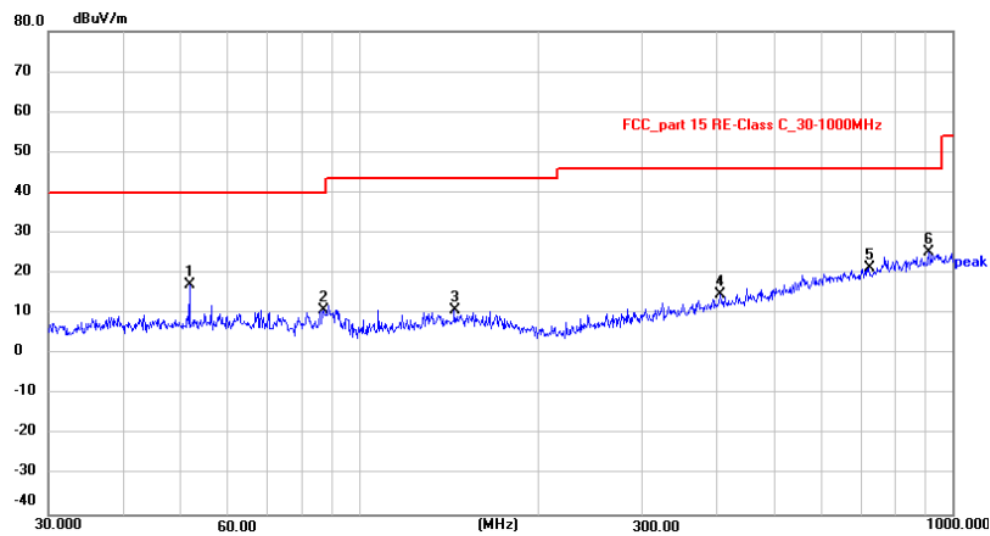
Temperature:	21° C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

5.5 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205 and 15.209 standards, and had the worst margin of:

Plot of Radiated Emissions

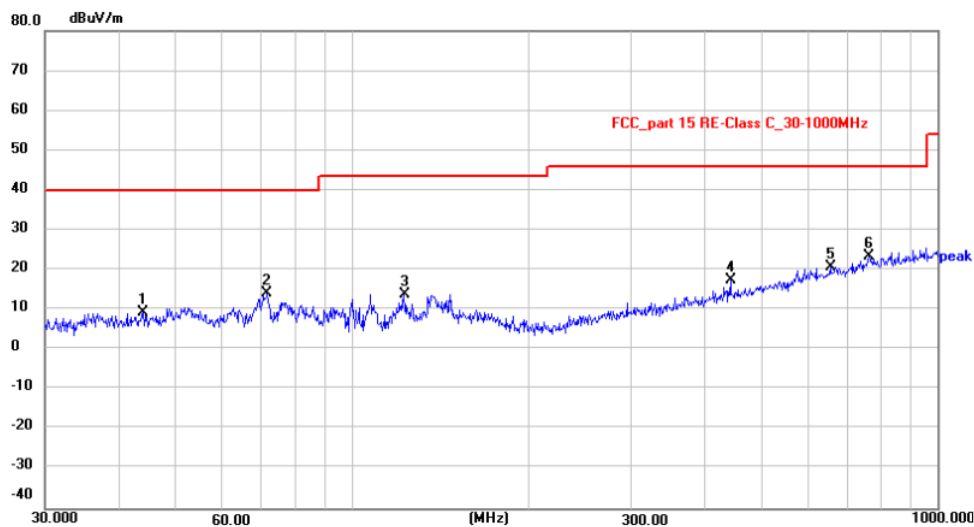
Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	51.8430	33.70	-16.55	17.15	40.00	-22.85	peak
2	87.1117	31.47	-20.64	10.83	40.00	-29.17	peak
3	144.8418	27.16	-16.36	10.80	43.50	-32.70	peak
4	406.0880	27.69	-12.92	14.77	46.00	-31.23	peak
5	721.7259	27.25	-5.99	21.26	46.00	-24.74	peak
6 *	912.8620	28.70	-3.59	25.11	46.00	-20.89	peak

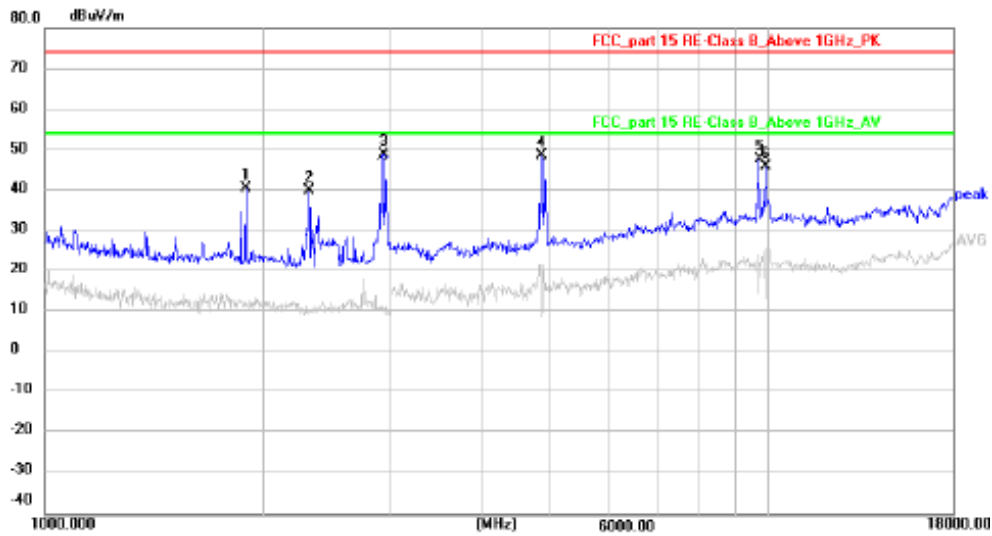
*:Maximum data
x:Over limit
!:over margin

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.1202	25.70	-16.48	9.22	40.00	-30.78	peak
2	71.8320	33.33	-19.03	14.30	40.00	-25.70	peak
3	122.8340	31.67	-17.71	13.96	43.50	-29.54	peak
4	443.2943	29.36	-11.85	17.51	46.00	-28.49	peak
5	656.5300	27.74	-6.98	20.76	46.00	-25.24	peak
6 *	763.3757	28.46	-5.13	23.33	46.00	-22.67	peak

*:Maximum data x:Over limit !:over margin

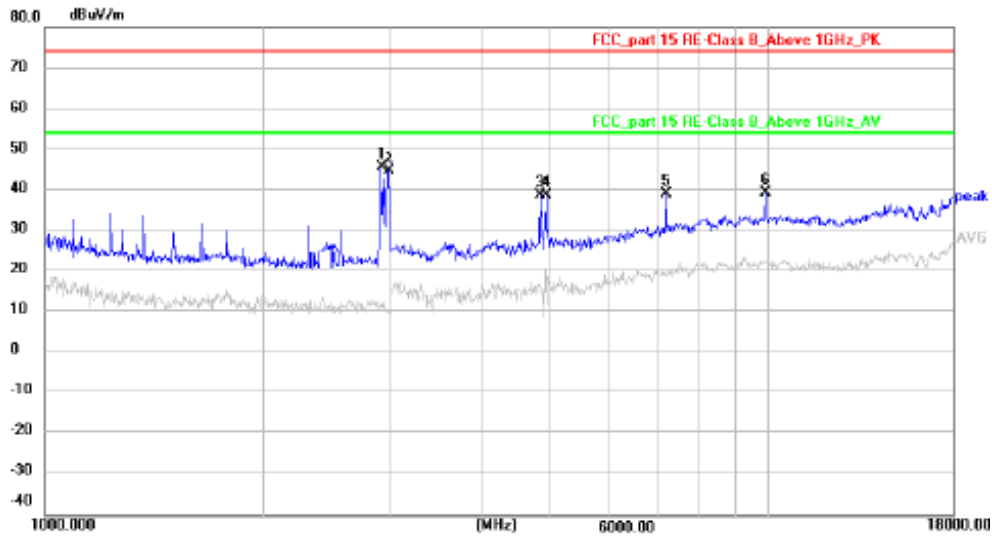
Peak value: Above 1GHz*Vertical*

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1899.636	60.33	-19.64	40.69	74.00	-33.31	peak
2	2318.912	58.33	-18.52	39.81	74.00	-34.19	peak
3 *	2912.661	67.29	-18.25	49.04	74.00	-24.96	peak
4	4859.975	60.96	-12.45	48.51	74.00	-25.49	peak
5	9697.152	53.53	-5.70	47.83	74.00	-26.17	peak
6	9923.991	51.69	-5.67	46.02	74.00	-27.98	peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.
3. The emission from 9 kHz to 30MHz was pre tested and found the result was 20dB lower than the limit, and the permissible value has no need to be reported.
4. In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.

Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2914.672	64.15	-18.26	45.89	74.00	-28.11	peak
2	2971.157	63.08	-18.12	44.96	74.00	-29.04	peak
3	4845.948	51.34	-12.50	38.84	74.00	-35.16	peak
4	4930.721	50.97	-12.24	38.73	74.00	-35.27	peak
5	7221.150	47.49	-8.36	39.13	74.00	-34.87	peak
6	9923.991	44.98	-5.67	39.31	74.00	-34.69	peak

Remark:

Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

“*”, means this data is the too weak instrument of signal is unable to test.

The emission from 9 kHz to 30MHz was pre tested and found the result was 20dB lower than the limit, and the permissible value has no need to be reported.

In frequency ranges 18 ~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.

6. 20dB Bandwidth

6.1 Standard Applicable

Test Requirement: 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2014) Section 6.9
imit: N/A

6.2 Test Procedure

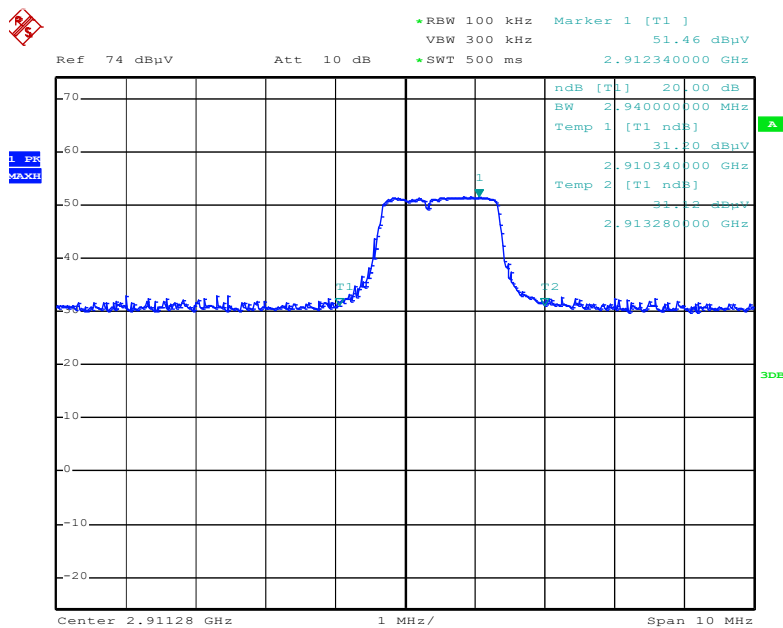
- a) Set RBW = 100 kHz.
- b) Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3 Environmental Conditions

Temperature:	25° C
Relative Humidity:	53%
ATM Pressure:	1018 mbar

6.4 Summary of Test Results/Plots

Please refer to the following test plots:



****END REPORT****