FCC/ISEDC Test Report

Report No.:	RWAY202300005
Applicant:	Hengdian Group Tospo Lighting CO.,Ltd
Address:	Hengdian Electronic Industrial Zone, Dongyang City, Zhejiang Province, P.R.China
Product Name:	LED Fixture
Product Model:	CNY LED ALO SWW2 UVOLT PE PIR DDB
Multiple Models:	CNY LED ALO SWW2 UVOLT PE PIR WH
Trade Mark:	TOSPO
FCC ID:	2AZJ6CNY969229
IC:	26082-CNY284HU8
Standards:	FCC CFR Title 47 Part 15C (§15.249) RSS-GEN Issue 5, February 2021 Amendment 2 RSS-210 Issue 10, April 2020 Amendment
Test Date:	22 Nov, 2023 to 25 Nov, 2023
Test Result:	Complied
Report Date:	27 Nov, 2023

Reviewed by: Abel Chen — Abel Chen, Project Engineer

Approved by: Jacob Kong — Jacob Kong, Manager

Prepared by:

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

NVLAP TESTING NVLAP LAB CODE 600335-0

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Announcement

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2. The results in this report apply only to the sample tested.

3. This sample tested is in compliance with the limits of the above regulation.

4. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

5. The information marked "#" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

Revision History

Version No.	Issued Date	Description
00	27 Nov, 2023	*Original*

Contents

1 General Information

1.1 Client Information

Applicant:	Hengdian Group Tospo Lighting CO.,Ltd
Address:	Hengdian Electronic Industrial Zone, Dongyang City, Zhejiang Province, P.R.China
Manufacturer:	Hengdian Group Tospo Lighting CO.,Ltd
Address:	Hengdian Electronic Industrial Zone, Dongyang City, Zhejiang Province, P.R.China

1.2 Product Description of EUT

The EUT is LED Fixture that contains a 5.8G SRD radio, this report covers the full testing of the 5.8G SRD radio.

HVIN	CNY969229, CNY962930
Sample Serial Number	2DIS-1 for Low channel, 2DIS-2 for middle channel, 2DIS-3 for High channel (assigned by WATC)
Sample Received Date	21 Nov, 2023
Sample Status	Good Condition
Frequency Range	5730-5870MHz
Maximum E-field Strength:	70.34dBuV/m@3m
Modulation Technology	CW
Antenna Gain#	0.35dBi
Spatial Streams#	SISO (1TX, 1RX)
Power Supply	AC 120-347V; 50/60Hz
Operating temperature#	-40 deg.C to +85 deg.C
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Antenna information

15.203 requirement:

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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

RSS-GEN Clause 6.8 requirement:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer. The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Device Antenna information:	

The antenna is an internal antenna which cannot replace by end-user. Please see product internal photos for details.

Antenna type	Antenna gain	Frequency Range	Input impedance
PCB	0.35dBi	5725-5875	50Ω

1.4 Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s)

1.5 Measurement Uncertainty

Parameter		**Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))**
AC Power Lines Conducted Emissions		±3.14dB
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Bandwidth		0.34%

Note 1: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Note 2: The Decision Rule is based on simple acceptance with ISO Guide 98-4:2012 Clause 8.2 (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

1.6 Laboratory Location

World Alliance Testing and Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

ANSI C63.10-2020

RSS-GEN Issue 5, February 2021 Amendment 2

2 Description of Measurement

2.1 Test Configuration

Operating channels:					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	5730	…	…	…	…
2	5731	70	5799	139	5868
3	5732	71	5800	140	5869
…	…	…	…	141	5870
According to ANSI C63.10-2020 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	5730	71	5800	141	5870

Test Mode:			
Transmitting mode:	Keep the EUT in continuous transmitting with modulation		
Exercise software#:	The EUT was configured to transmitting by manufacturer.		
Mode	**Powel Level Setting#**		
	Low Channel	**Middle Channel**	**High Channel**
SRD	Default	Default	Default
The exercise software and the maximum power setting that provided by manufacturer.			

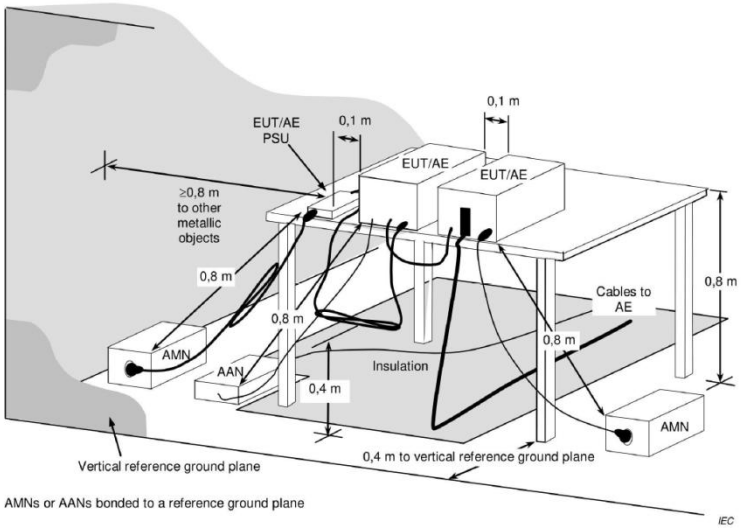
Worst-Case Configuration:
For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report For AC power line conducted emission and radiated emission 9kHz-30MHz and above 18GHz were performed with the EUT transmits at the channel with highest output power as worst-case scenario.

2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
/	/	/	/

2.3 Test Setup

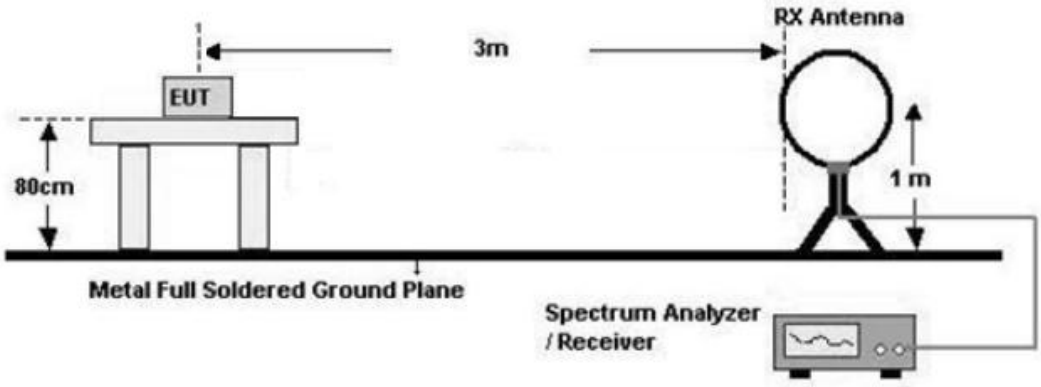
1) Conducted emission measurement:



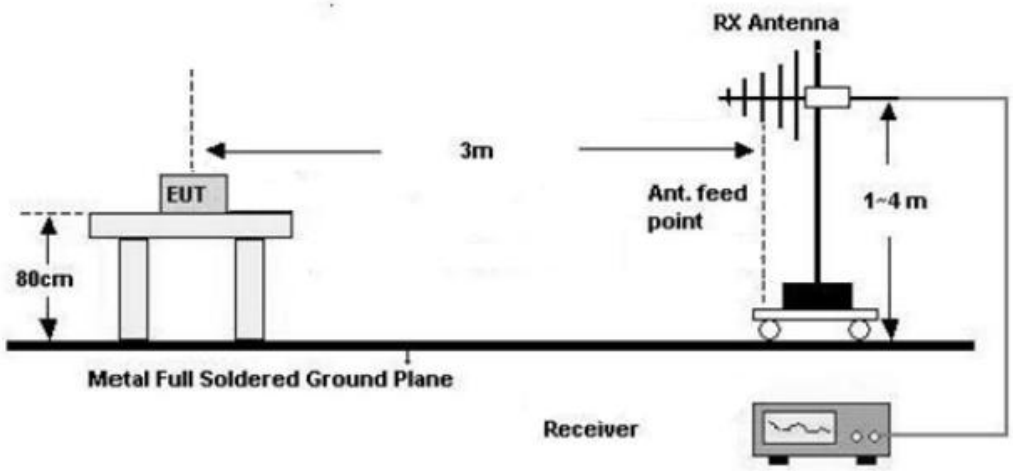
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

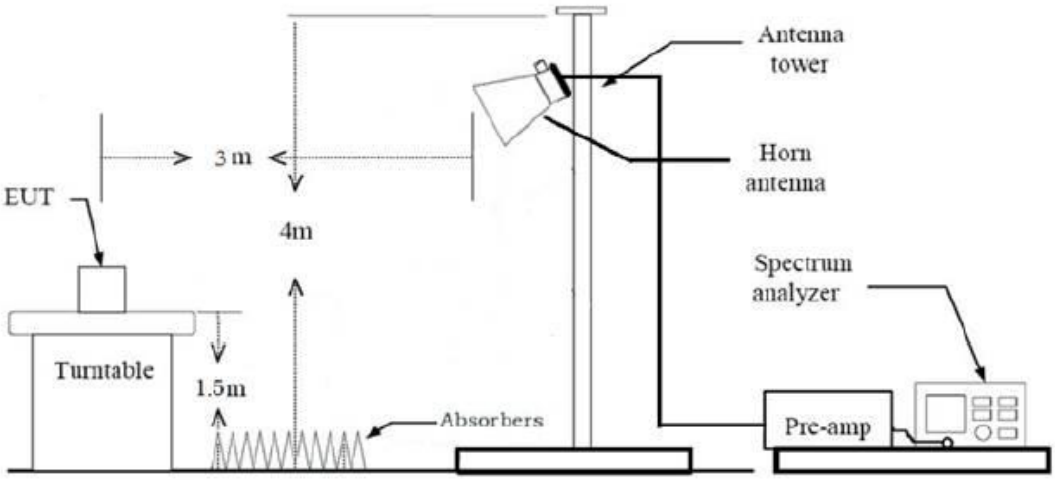
Below 30MHz (3m SAC)



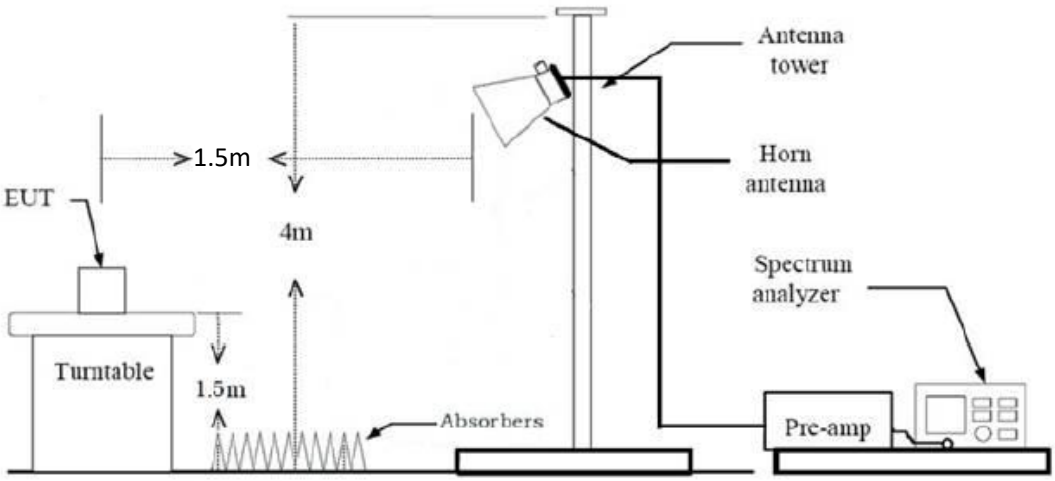
30MHz-1GHz (3m SAC)



1GHz-18GHz(3m FAC)



Above 18GHz (3m FAC)



2.4 Test Procedure

Conducted emission:

1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
3. Line conducted data is recorded for both Line and Neutral

Radiated Emission Procedure:

a) For below 30MHz

1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).
2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)

b) For 30MHz-1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

c) For above 1GHz:

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m (1-18GHz) and 1.5 m (above 18GHz).
2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
4. Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

Bandwidth Test:

1. Use the same setup for radiated above 1GHz, found the maximum fundamental level.

2. Change the spectrum analyzer setting for bandwidth testing
3. Test the bandwidth and record the result

2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2020 Section 6.2
20dB Emission Bandwidth	ANSI C63.10-2020 Section 6.9.3
99% Occupied Bandwidth	RSS-GEN Section 6.7
Field strength of fundamental and Radiated emission	ANSI C63.10-2020 Section 6.3&6.4&6.5&6.6

2.6 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2023/7/3	2024/7/2
R&S	LISN	ENV216	101748	2023/7/3	2024/7/2
N/A	Coaxial Cable	NO.12	N/A	2023/7/3	2024/7/2
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
Radiated Emission Test					
R&S	EMI test receiver	ESR3	102758	2023/7/3	2024/7/2
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2023/7/3	2024/7/2
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2023/7/12	2024/7/11
COM-POWER	preamplifier	PAM-118A	18040152	2023/8/21	2024/8/20
COM-POWER	Amplifier	PAM-840A	461306	2023/8/8	2024/8/7
ETS	Passive Loop Antenna	6512	29604	2023/7/7	2024/7/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2024/7/6
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2024/7/5
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2024/7/9
Ducommun technologies	Horn Antenna	ARH-2823-02	1007726-03	2023/7/10	2024/7/9
N/A	Coaxial Cable	N/A	NO.9	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.10	2023/8/8	2024/8/7
N/A	Coaxial Cable	N/A	NO.11	2023/8/8	2024/8/7
Audix	Test Software	E3	191218 V9	/	/

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

3 Test Results

3.1 Test Summary

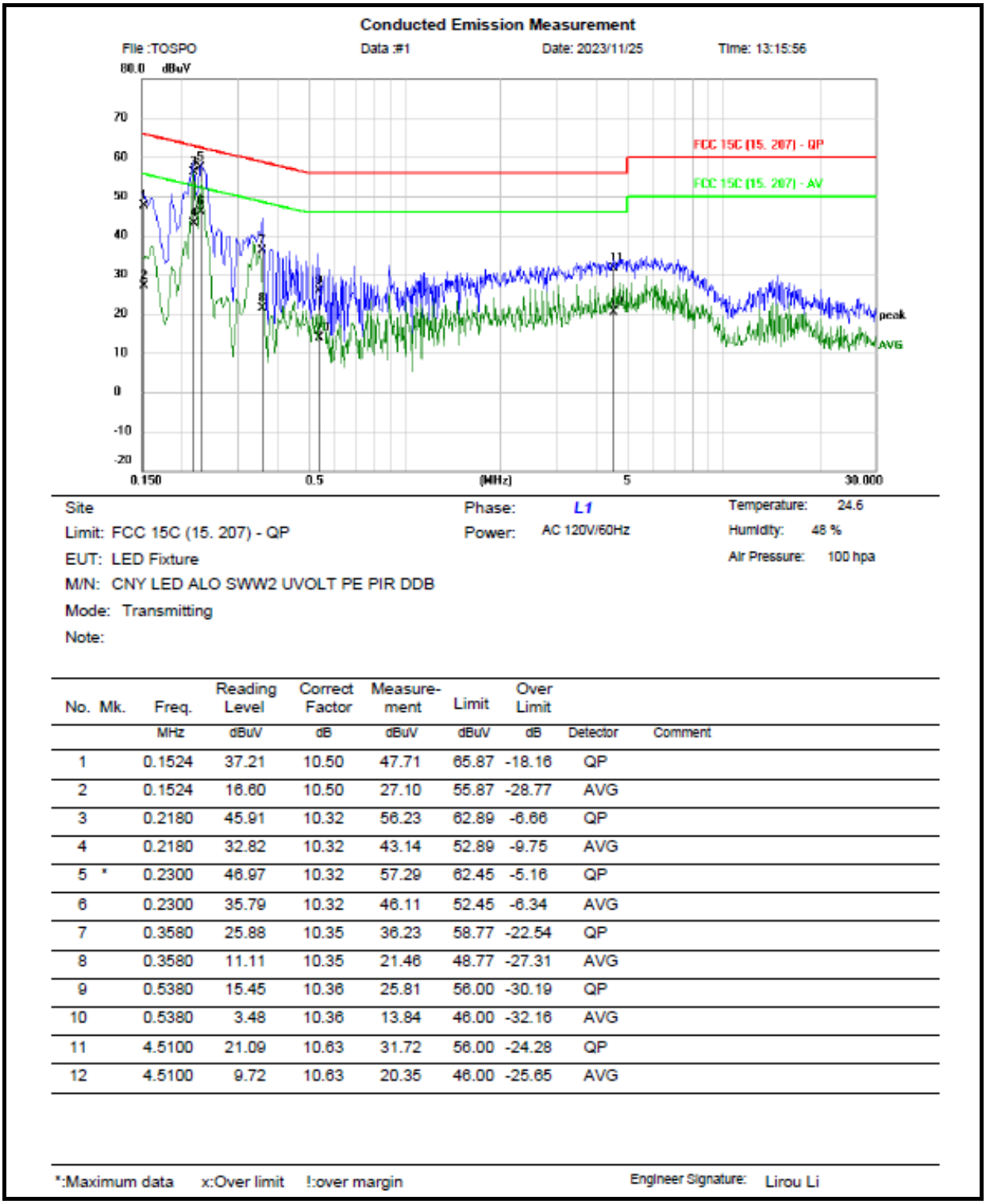
FCC/ISEDC Rules	Description of Test	Result
FCC §15.203 RSS-GEN §6.8	Antenna Requirement	Compliance
FCC §15.207(a) RSS-GEN §8.8	AC Line Conducted Emissions	Compliance
FCC §15.215(c)	20dB Emission Bandwidth	Report only
RSS-GEN §6.7	99% Occupied Bandwidth	Report only
FCC §15.205, §15.209, §15.249 RSS-GEN §8.10 RSS-210 Annex B.10	Field strength of fundamental and Radiated emission	Compliance

3.2 Limit

<table>
<tr><th>Test items</th><th>Limit</th></tr>
<tr><td>AC Line Conducted Emissions</td><td>See details §15.207 (a)</td></tr>
<tr><td>Field strength of fundamental and Radiated emission</td><td>The field strength of fundamental and harmonic emissions measured at 3 m shall not exceed the limits as below:
<table>
<tr><th>Fundamental frequency</th><th>Field strength of fundamental (millivolts/meter)</th><th>Field strength of harmonics (microvolts/meter)</th></tr>
<tr><td>902–928 MHz</td><td>50</td><td>500</td></tr>
<tr><td>2400–2483.5 MHz</td><td>50</td><td>500</td></tr>
<tr><td>5725–5875 MHz</td><td>50</td><td>500</td></tr>
<tr><td>24.0–24.25 GHz</td><td>250</td><td>2500</td></tr>
</table>
The field strength shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209/RSS-GEN, whichever is the lesser attenuation.
For frequencies above 1000 MHz, the field strength limits in above table are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.</td></tr>
</table>

3.3 AC Line Conducted Emissions Test Data

Test Date:	2023-11-25	Test By:	Lirou Li
Environment condition:	Temperature: 24.5°C; Relative Humidity:48%; ATM Pressure: 100kPa		

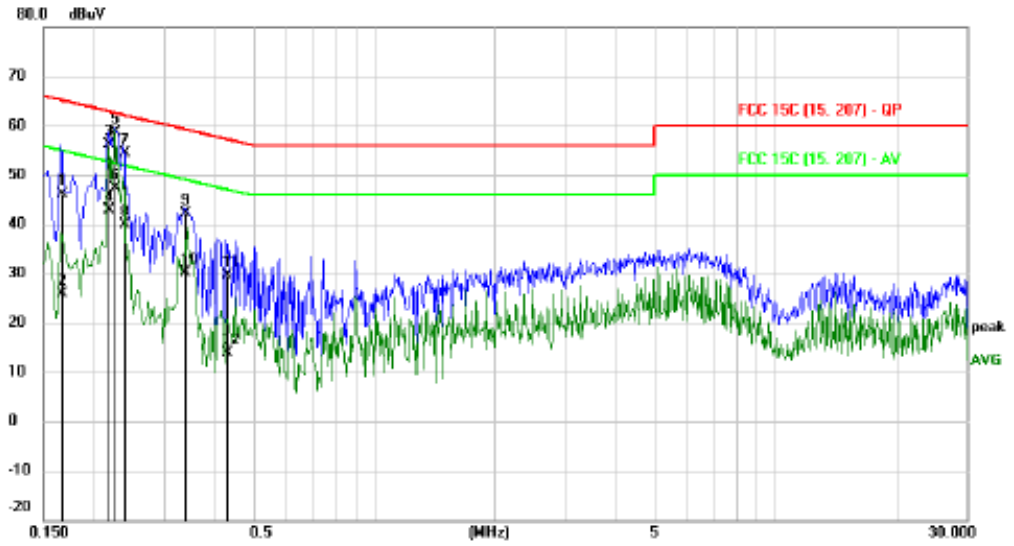


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1524	37.21	10.50	47.71	65.87	-18.16	QP	
2		0.1524	16.60	10.50	27.10	55.87	-28.77	AVG	
3		0.2180	45.91	10.32	56.23	62.89	-6.66	QP	
4		0.2180	32.82	10.32	43.14	52.89	-9.75	AVG	
5	*	0.2300	46.97	10.32	57.29	62.45	-5.16	QP	
6		0.2300	35.79	10.32	46.11	52.45	-6.34	AVG	
7		0.3580	25.88	10.35	36.23	58.77	-22.54	QP	
8		0.3580	11.11	10.35	21.46	48.77	-27.31	AVG	
9		0.5380	15.45	10.36	25.81	56.00	-30.19	QP	
10		0.5380	3.48	10.36	13.84	46.00	-32.16	AVG	
11		4.5100	21.09	10.63	31.72	56.00	-24.28	QP	
12		4.5100	9.72	10.63	20.35	46.00	-25.65	AVG	

*:Maximum data x:Over limit !:over margin Engineer Signature: Lirou Li

Conducted Emission Measurement

File :TOSPO Data :#2 Date: 2023/11/25 Time: 13:22:18



Site
Limit: FCC 15C (15. 207) - QP
EUT: LED Fixture
M/N: CNY LED ALO SWW2 UVOLT PE PIR DDB
Mode: Transmitting
Note:

Phase: N
Power: AC 120V/60Hz

Temperature: 24.6
Humidity: 48 %
Air Pressure: 100 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	35.75	10.38	46.13	65.16	-19.03	QP	
2		0.1660	15.44	10.38	25.82	55.16	-29.34	AVG	
3		0.2180	45.89	10.33	56.22	62.89	-6.67	QP	
4		0.2180	32.51	10.33	42.84	52.89	-10.05	AVG	
5	*	0.2260	48.41	10.34	58.75	62.60	-3.85	QP	
6		0.2260	36.95	10.34	47.29	52.60	-5.31	AVG	
7		0.2380	44.04	10.35	54.39	62.17	-7.78	QP	
8		0.2380	29.56	10.35	39.91	52.17	-12.26	AVG	
9		0.3379	31.81	10.43	42.24	59.25	-17.01	QP	
10		0.3379	19.79	10.43	30.22	49.25	-19.03	AVG	
11		0.4300	19.12	10.49	29.61	57.25	-27.64	QP	
12		0.4300	3.37	10.49	13.86	47.25	-33.39	AVG	

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

Engineer Signature: Lirou Li

Remark:

Measurement (dBuV)= Reading Level (dBuV) + Correct Factor(dB)

Correct Factor (dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over = Measurement – Limit

3.4 Radiated emission Test Data

9 kHz-30MHz:

Test Date:	2023-11-22	**Test By:**	Luke Li
Environment condition:	Temperature: 24°C; Relative Humidity:54%; ATM Pressure: 101kPa		

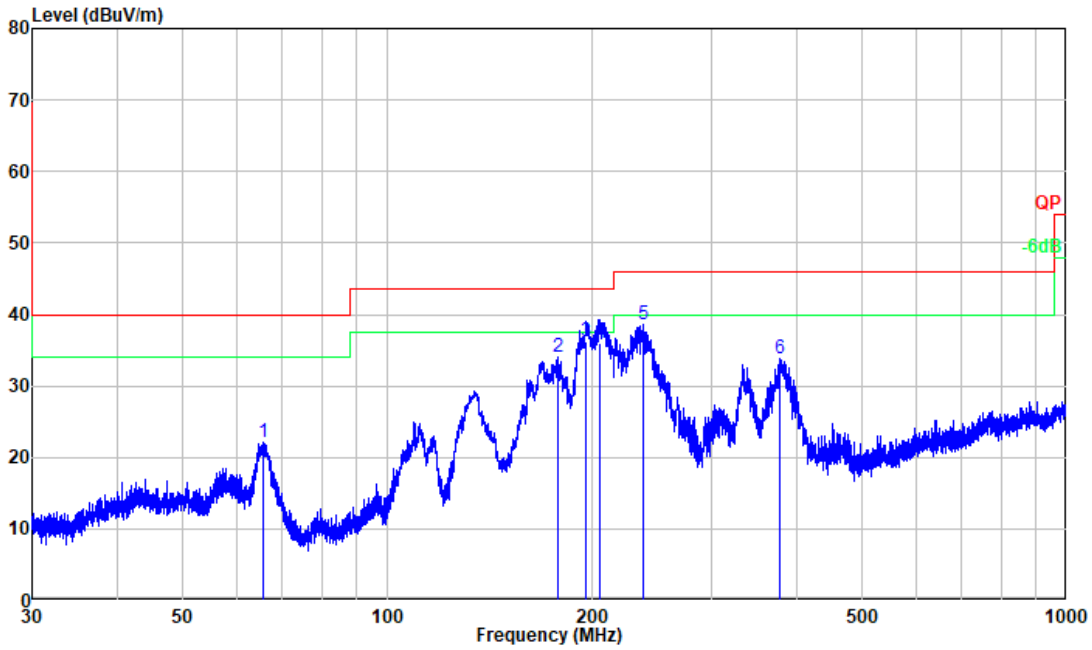
For radiated emissions below 30MHz, there were no emissions found within 20dB of limit.

30MHz-1GHz:

Test Date:	2023-11-22	Test By:	Luke Li
Environment condition:	Temperature: 24°C; Relative Humidity:54%; ATM Pressure: 101kPa		

Low channel

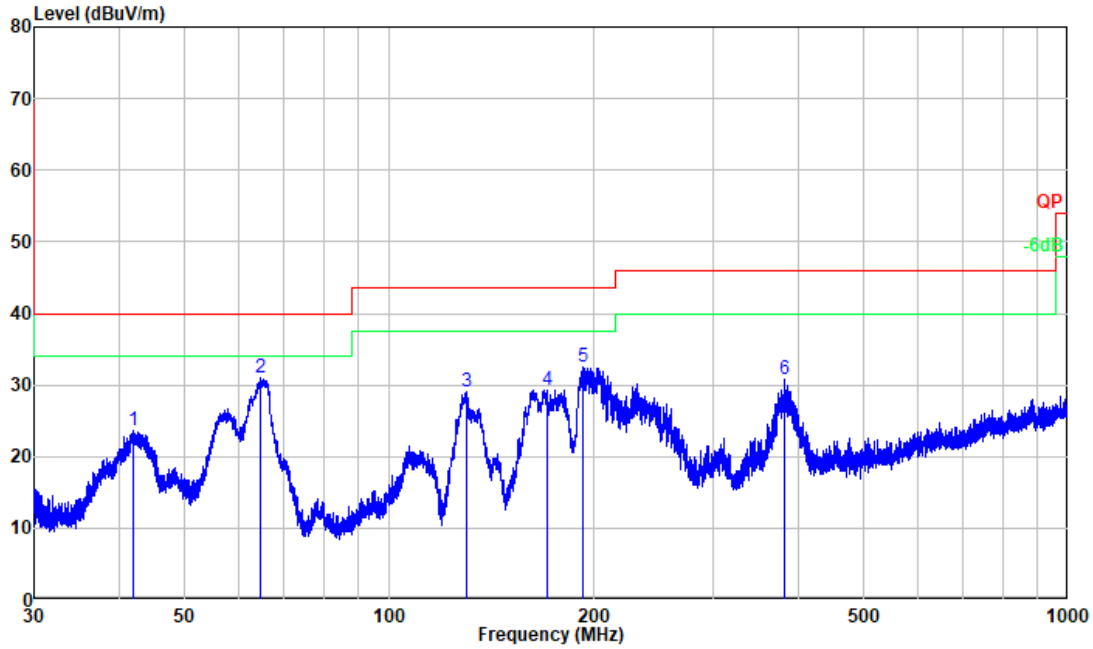
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5730MHz



--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	65.694	36.48	-14.28	22.20	40.00	-17.80	Peak
2	178.329	49.56	-15.57	33.99	43.50	-9.51	Peak
3	195.868	50.10	-13.84	36.26	43.50	-7.24	QP
4	205.634	49.60	-13.62	35.98	43.50	-7.52	QP
5	238.163	51.20	-12.55	38.65	46.00	-7.35	Peak
6	378.870	42.80	-8.94	33.86	46.00	-12.14	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5730MHz

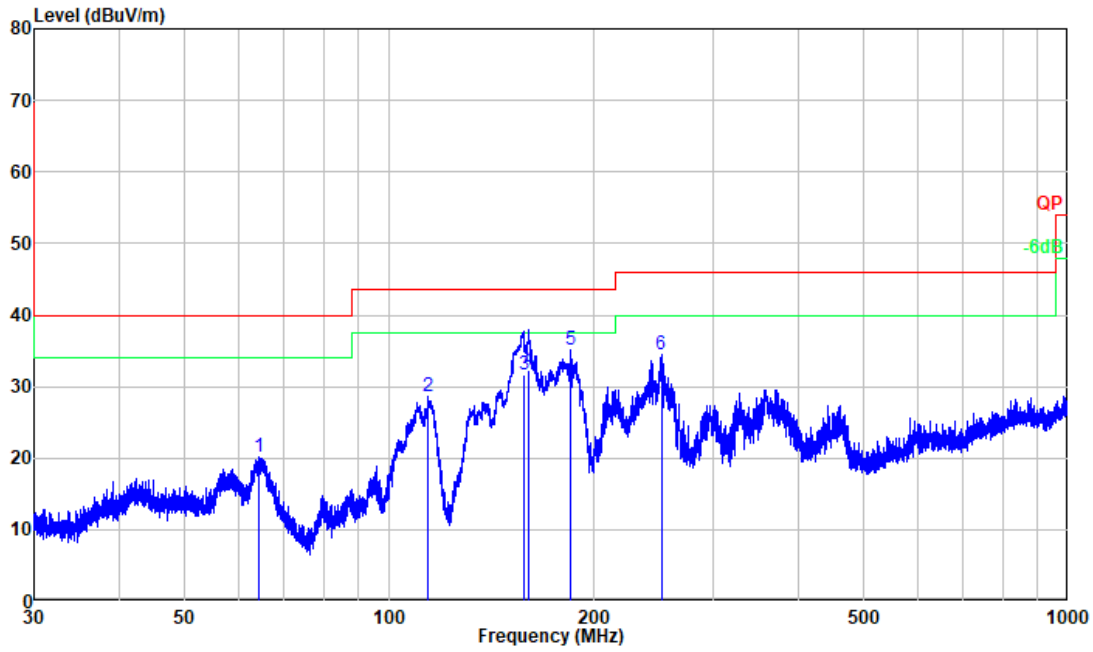


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	41.916	35.94	-12.29	23.65	40.00	-16.35	Peak
2	64.609	44.99	-14.06	30.93	40.00	-9.07	Peak
3	130.289	46.14	-17.04	29.10	43.50	-14.40	Peak
4	170.830	45.47	-16.14	29.33	43.50	-14.17	Peak
5	192.970	46.72	-14.14	32.58	43.50	-10.92	Peak
6	382.207	39.74	-8.86	30.88	46.00	-15.12	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Middle channel

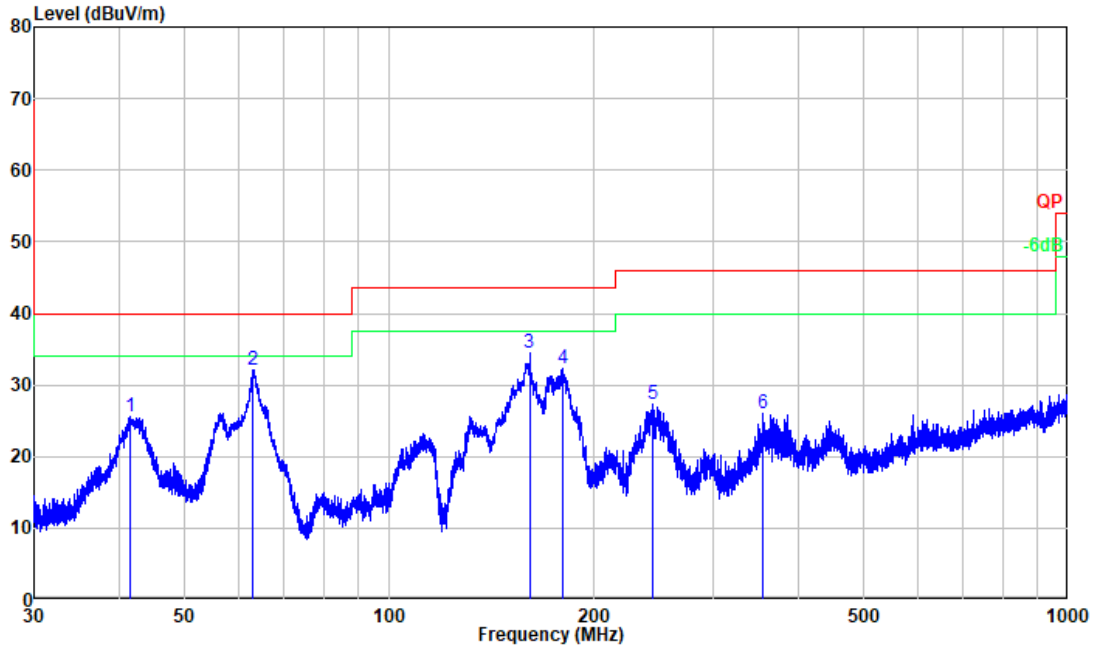
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5800MHz



--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	64.411	34.16	-14.02	20.14	40.00	-19.86	Peak
2	114.233	43.14	-14.57	28.57	43.50	-14.93	Peak
3	157.799	48.49	-16.79	31.70	43.50	-11.80	QP
4	160.590	48.90	-16.62	32.28	43.50	-11.22	QP
5	184.775	50.20	-15.00	35.20	43.50	-8.30	Peak
6	251.578	46.57	-12.18	34.39	46.00	-11.61	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5800MHz

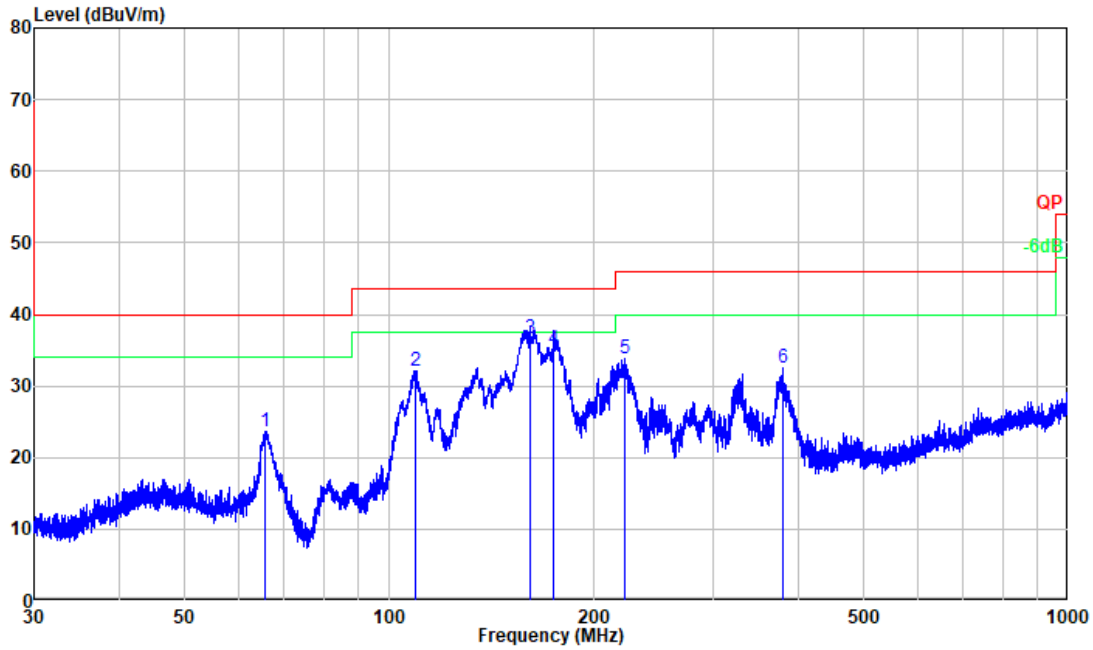


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	41.496	37.94	-12.41	25.53	40.00	-14.47	Peak
2	63.015	45.83	-13.74	32.09	40.00	-7.91	Peak
3	160.943	51.17	-16.59	34.58	43.50	-8.92	Peak
4	179.820	47.90	-15.50	32.40	43.50	-11.10	Peak
5	244.618	39.58	-12.33	27.25	46.00	-18.75	Peak
6	355.537	35.35	-9.30	26.05	46.00	-19.95	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

High channel

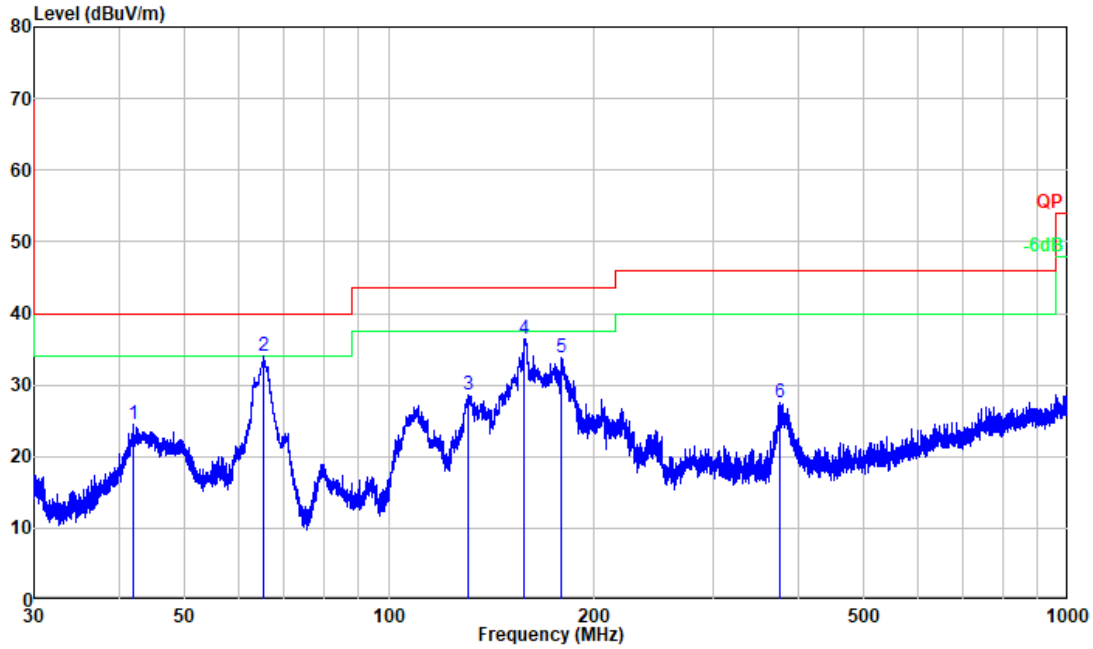
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5870MHz



--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	65.723	37.92	-14.28	23.64	40.00	-16.36	Peak
2	109.142	46.05	-13.86	32.19	43.50	-11.31	Peak
3	161.084	53.20	-16.58	36.62	43.50	-6.88	QP
4	174.922	50.90	-15.83	35.07	43.50	-8.43	QP
5	222.615	47.04	-13.25	33.79	46.00	-12.21	Peak
6	380.035	41.50	-8.91	32.59	46.00	-13.41	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5870MHz



--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	42.045	36.69	-12.26	24.43	40.00	-15.57	Peak
2	65.350	48.20	-14.21	33.99	40.00	-6.01	Peak
3	130.746	45.75	-17.04	28.71	43.50	-14.79	Peak
4	158.076	53.26	-16.78	36.48	43.50	-7.02	Peak
5	179.191	49.24	-15.50	33.74	43.50	-9.76	Peak
6	375.728	36.51	-9.04	27.47	46.00	-18.53	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Remark:

Level = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Over Limit = Result – Limit

Above 1GHz:

Test Date:	2023-11-22	Test By:	Luke Li
Environment condition:	Temperature: 24°C; Relative Humidity:54%; ATM Pressure: 101kPa		

Frequency (MHz)	Reading level (dBμV)	Polar	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
Low Channel							
5730.000	67.85	horizontal	1.58	69.43	94.00	-24.57	Average
5730.000	68.76	horizontal	1.58	70.34	114.00	-43.66	Peak
11460.000	36.31	horizontal	7.12	43.43	54.00	-10.57	Average
11460.000	45.36	horizontal	7.12	52.48	74.00	-21.52	Peak
5730.000	64.66	vertical	1.58	66.24	94.00	-27.76	Average
5730.000	65.25	vertical	1.58	66.83	114.00	-47.17	Peak
11460.000	34.11	vertical	7.12	41.23	54.00	-12.77	Average
11460.000	44.48	vertical	7.12	51.60	74.00	-22.40	Peak
5725.000	34.65	horizontal	1.56	36.21	54.00	-17.79	Average
5725.000	47.28	horizontal	1.56	48.84	74.00	-25.16	Peak
5725.000	34.28	vertical	1.56	35.84	54.00	-18.16	Average
5725.000	48.19	vertical	1.56	49.75	74.00	-24.25	Peak
Middle Channel							
5800.000	67.52	horizontal	1.79	69.31	94.00	-24.69	Average
5800.000	68.33	horizontal	1.79	70.12	114.00	-43.88	Peak
11600.000	36.92	horizontal	7.18	44.10	54.00	-9.90	Average
11600.000	45.18	horizontal	7.18	52.36	74.00	-21.64	Peak
5800.000	64.81	vertical	1.79	66.60	94.00	-27.40	Average
5800.000	65.06	vertical	1.79	66.85	114.00	-47.15	Peak
11600.000	34.83	vertical	7.18	42.01	54.00	-11.99	Average
11600.000	45.49	vertical	7.18	52.67	74.00	-21.33	Peak
High Channel							
5870.000	65.55	horizontal	1.79	67.34	94.00	-26.66	Average
5870.000	66.06	horizontal	1.79	67.85	114.00	-46.15	Peak
11740.000	36.26	horizontal	7.20	43.46	54.00	-10.54	Average
11740.000	43.67	horizontal	7.20	50.87	74.00	-23.13	Peak
5870.000	62.30	vertical	1.79	64.09	94.00	-29.91	Average
5870.000	62.99	vertical	1.79	64.78	114.00	-49.22	Peak
11740.000	35.50	vertical	7.20	42.70	54.00	-11.30	Average
11740.000	43.64	vertical	7.20	50.84	74.00	-23.16	Peak

5875.000	34.12	horizontal	1.79	35.91	54.00	-18.09	Average
5875.000	47.79	horizontal	1.79	49.58	74.00	-24.42	Peak
5875.000	34.05	vertical	1.79	35.84	54.00	-18.16	Average
5875.000	46.13	vertical	1.79	47.92	74.00	-26.08	Peak

Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss – Amplifier gain

Margin = Corrected Amplitude – Limit

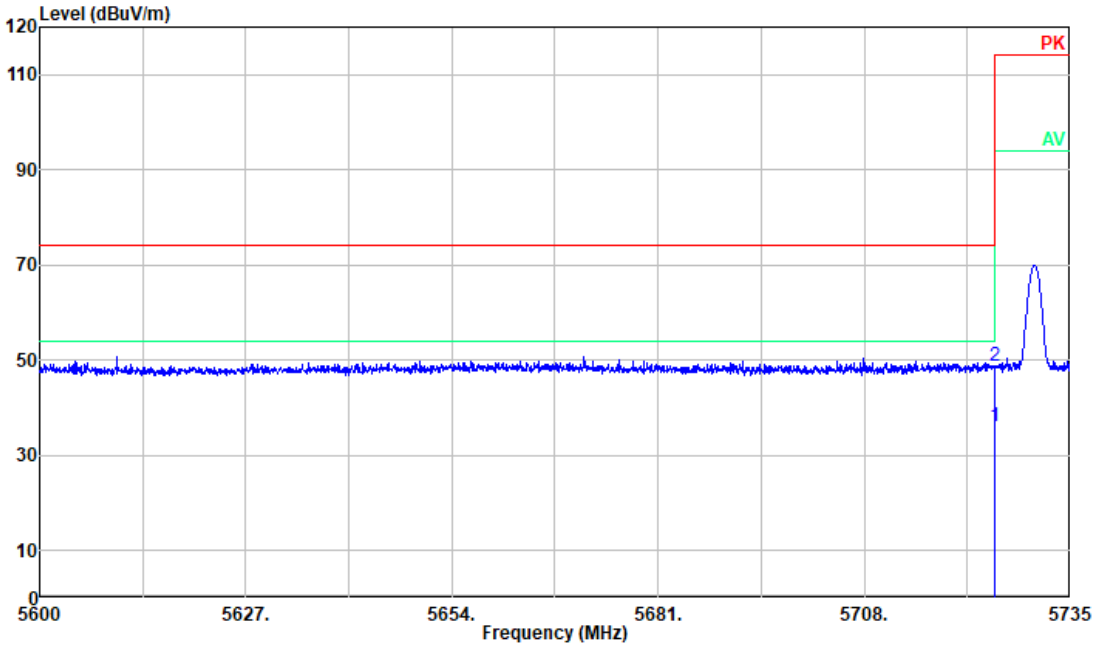
The emission levels of other frequencies that were lower than the limit 20dB not show in test report.

For emissions in 18GHz-40GHz range, all emissions were investigated and in the noise floor level.

Test plot for Band edge:

Channel:	Low channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5730MHz

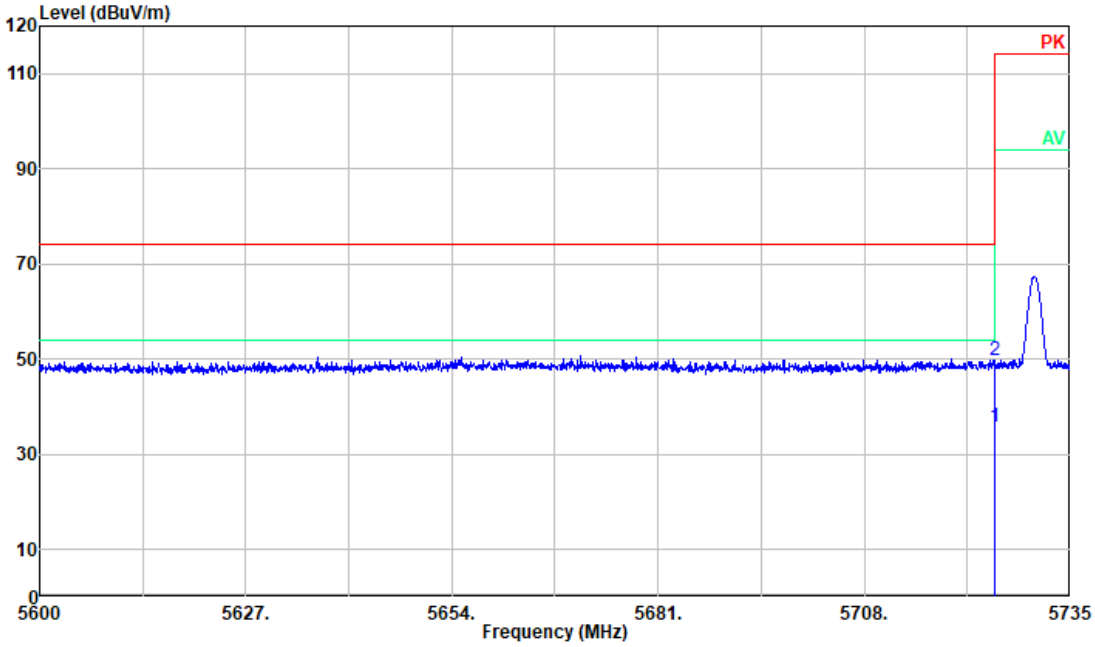


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5725.000	34.65	1.56	36.21	54.00	-17.79	Average
2	5725.000	47.28	1.56	48.84	74.00	-25.16	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Channel:	Low channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5730MHz

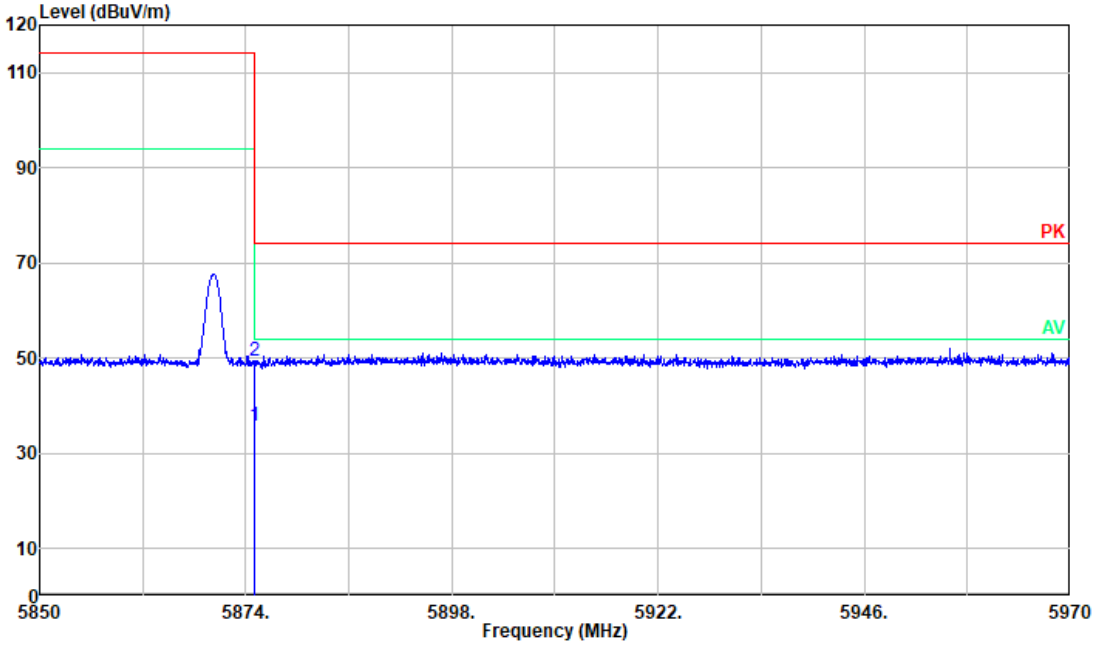


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5725.000	34.28	1.56	35.84	54.00	-18.16	Average
2	5725.000	48.19	1.56	49.75	74.00	-24.25	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Channel:	High channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5870MHz

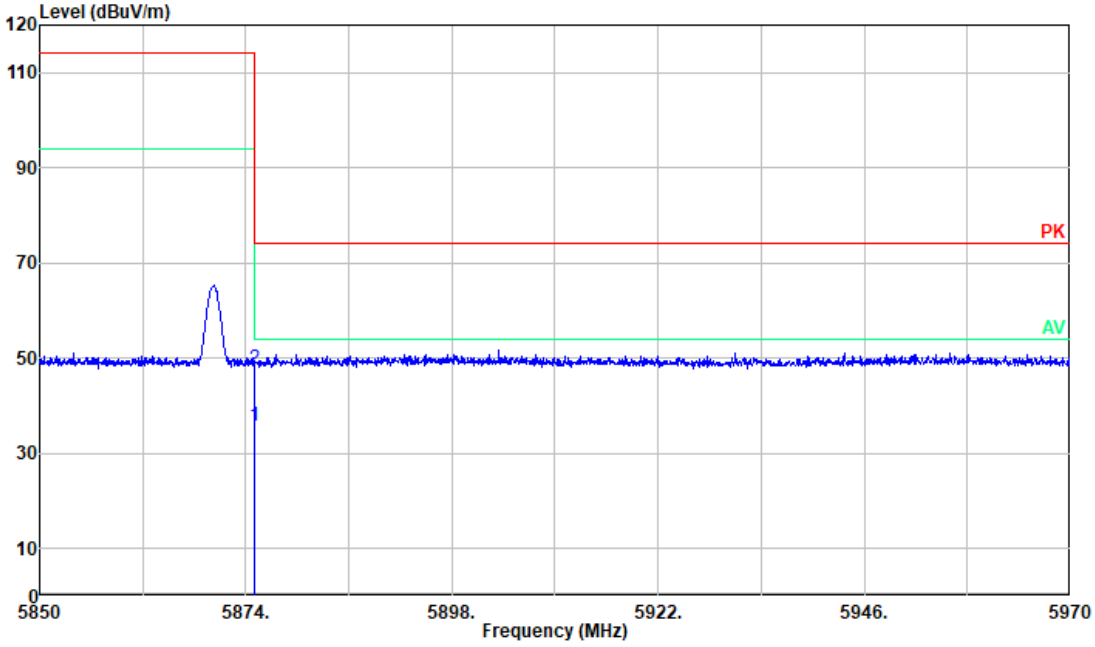


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5875.000	34.12	1.79	35.91	54.00	-18.09	Average
2	5875.000	47.79	1.79	49.58	74.00	-24.42	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Channel:	High channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5870MHz



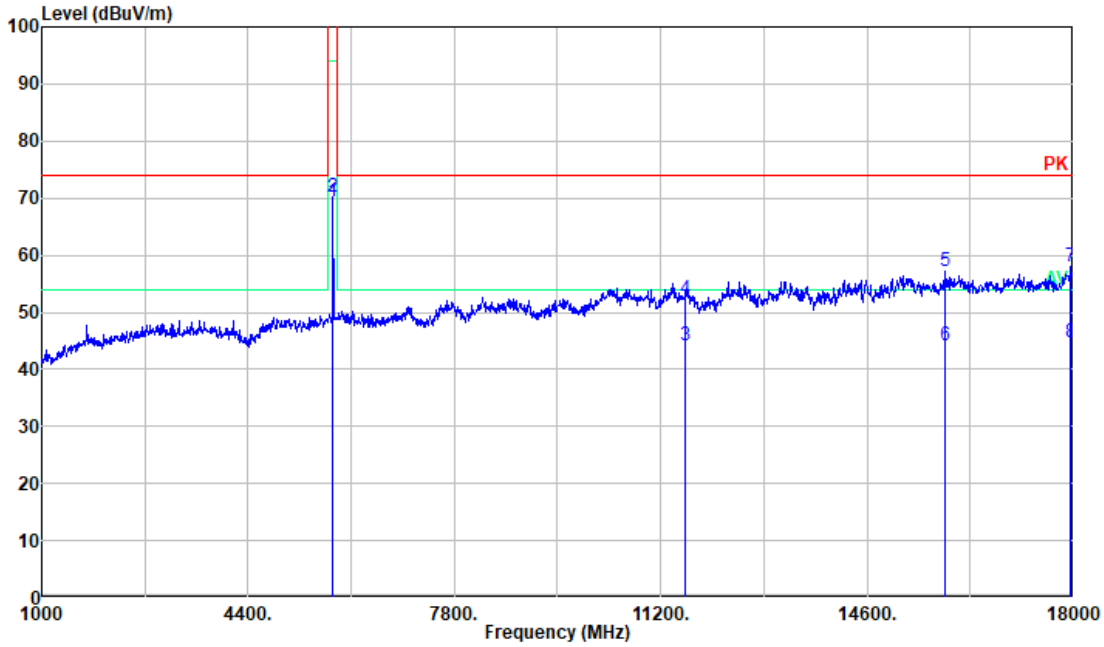
--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5875.000	34.05	1.79	35.84	54.00	-18.16	Average
2	5875.000	46.13	1.79	47.92	74.00	-26.08	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Test plot for example as below:

Channel:	Middle channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 5800MHz

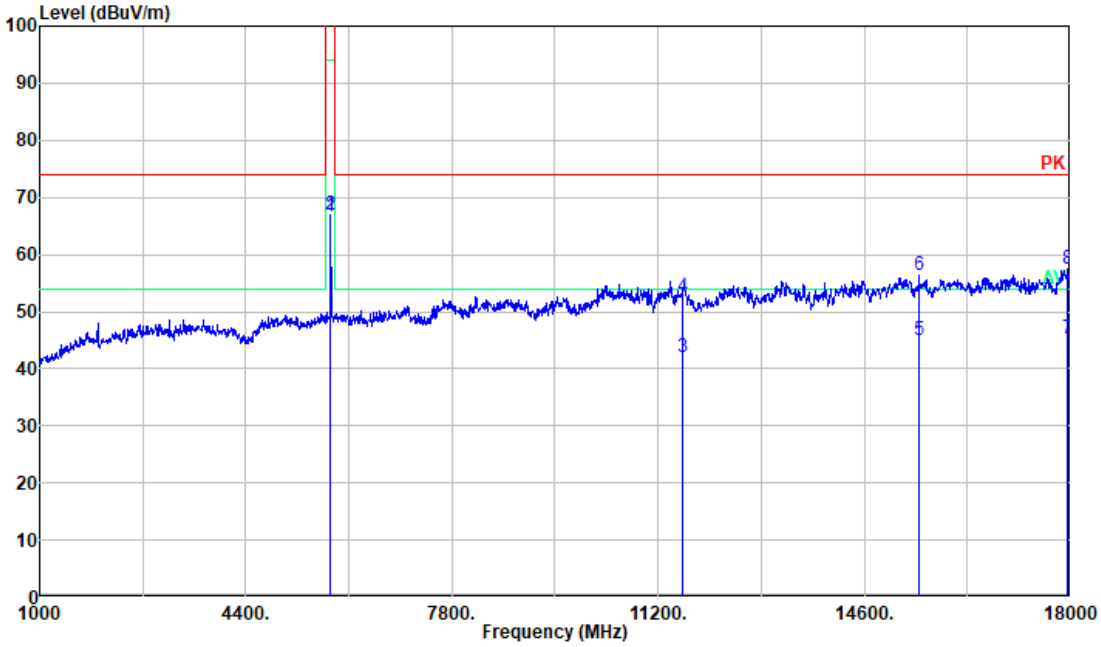


--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5800.000	67.52	1.79	69.31	94.00	-24.69	Average
2	5800.000	68.33	1.79	70.12	114.00	-43.88	Peak
3	11600.000	36.92	7.18	44.10	54.00	-9.90	Average
4	11600.000	45.18	7.18	52.36	74.00	-21.64	Peak
5	15890.950	47.63	9.45	57.08	74.00	-16.92	Peak
6	15890.950	34.71	9.45	44.16	54.00	-9.84	Average
7	17957.480	47.69	10.30	57.99	74.00	-16.01	Peak
8	17957.480	34.45	10.30	44.75	54.00	-9.25	Average

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Channel:	Middle channel

EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB
Test Mode : Transmitting
Test Voltage : AC 120V/60Hz
Environment : 24℃/54%R.H./101kPa
Tested by : Luke Li
Polarization : vertical
Remark : 5800MHz



--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	5800.000	64.81	1.79	66.60	94.00	-27.40	Average
2	5800.000	65.06	1.79	66.85	114.00	-47.15	Peak
3	11600.000	34.83	7.18	42.01	54.00	-11.99	Average
4	11600.000	45.49	7.18	52.67	74.00	-21.33	Peak
5	15499.750	35.06	9.90	44.96	54.00	-9.04	Average
6	15499.750	46.44	9.90	56.34	74.00	-17.66	Peak
7	17948.970	34.83	10.30	45.13	54.00	-8.87	Average
8	17948.970	47.04	10.30	57.34	74.00	-16.66	Peak

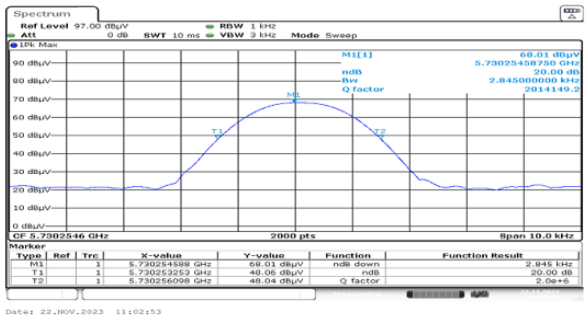
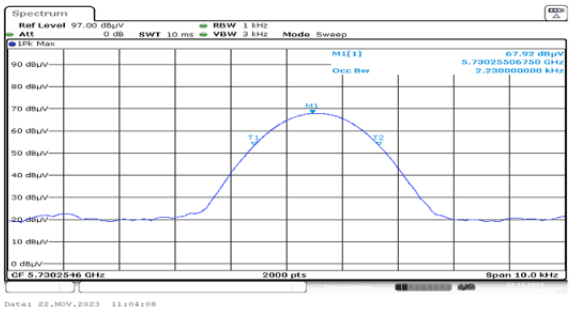
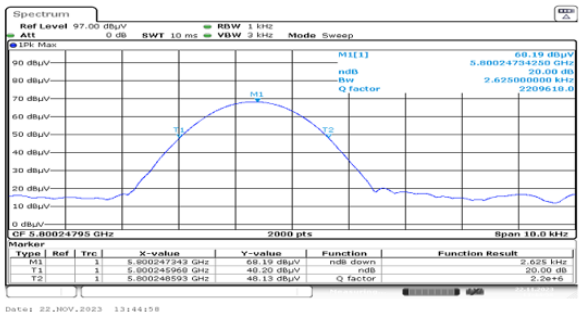
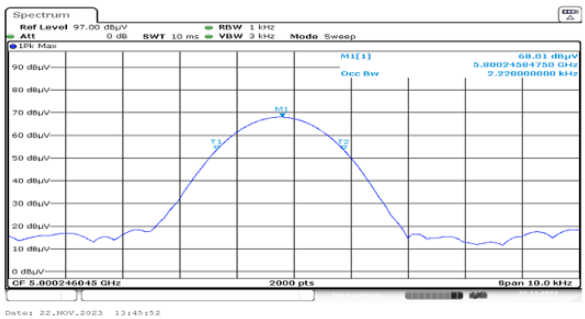
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

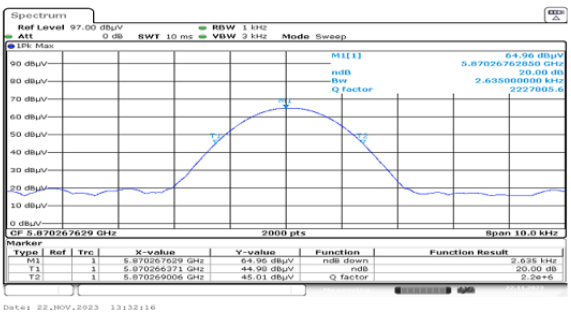
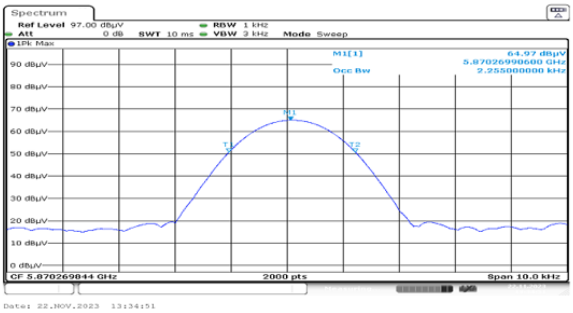
3.5 Bandwidth Test Data

Test Date:	2023-11-22	Test By:	Luke Li
Environment condition:	Temperature: 24°C; Relative Humidity:54%; ATM Pressure: 101kPa		

Channel	20dB BW [kHz]	99% OBW[kHz]
Low	2.845	2.230
Middle	2.625	2.220
High	2.635	2.225

Test Plots:

20dB BW	99% OBW
Lowest channel	Lowest channel
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5730MHz -20dB Bandwidth 	EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5730MHz 99%OBW 
Middle channel	Middle channel
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5800MHz -20dB Bandwidth 	EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5800MHz 99%OBW 

High channel	High channel
EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5870MHz -20dB Bandwidth	EUT/Model No.: CNY LED ALO SWW2 UVOLT PE PIR DDB Test Mode : Transmitting Test Voltage : AC 120V/60Hz Temp/Humi : 24℃/54% Tested by : Luke Li Polarization : Horizontal Remark : 5870MHz 99%OBW
	

4 Test Setup Photo

Please refer to the attachment: RWAY202300005 Test Setup photo.

5 E.U.T Photo

Please refer to the attachment:

(1).RWAY202300005 External photo(CNY LED ALO SWW2 UVOLT PE PIR DDB);

(2).RWAY202300005 External photo(CNY LED ALO SWW2 UVOLT PE PIR WH);

(3).RWAY202300005 Internal photo(CNY LED ALO SWW2 UVOLT PE PIR DDB);

(4).RWAY202300005 Internal photo(CNY LED ALO SWW2 UVOLT PE PIR WH).

---End of Report---