



FCC TEST REPORT
FCC ID:2ASYM-QLAMP-36XX

Report Number..... : **ZHT-231124010E-1**

Date of Test..... Nov. 21, 2023 to Dec. 05, 2023

Date of issue..... : Dec. 05, 2023

Test Result : PASS

Testing Laboratory..... : **Guangdong Zhonghan Testing Technology Co., Ltd.**

Address : Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Applicant's name : **Shenzhen Qianghe Technology Co., Ltd.**

Address : 15G of block B, building 6, Baoneng Technology Park, Longhua District, Guangdong, China.

Manufacturer's name : **Shenzhen Qianghe Technology Co., Ltd.**

Address : 15G of block B, building 6, Baoneng Technology Park, Longhua District, Guangdong, China.

Factory's name : **Shenzhen Qianghe Technology Co., Ltd.**

Address : 15G of block B, building 6, Baoneng Technology Park, Longhua District, Guangdong, China.

Test specification:

Standard..... : FCC CFR Title 47 Part 15 Subpart C

Test procedure..... : /

Non-standard test method : N/A

This device described above has been tested by ZHT, and the test result/ show that the equipment under test (EUT) is in compliance with the FCC requirement/. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of ZHT, this document may be altered or revised by ZHT, personal only, and shall be noted in the revision of the document.

Product name..... : **Wireless charging smart ambient lighting**

Trademark : /

Model/Type reference..... : QLAMP-3601, QLAMP-36xx, QLAMP-46xx, QLAMP-56xx, QLIGHT-36xx, OLAMP-36xx, QH-xxxx, ("x"refers to "0-9" "A-Z" "a-z", means the number of LED beads)

Model Difference..... Only model name is different.

Ratings..... : Input : 5V-12V===2A
Output:: 5 W / 7.5 W / 10 W / 15 W



Testing procedure and testing location:

Testing Laboratory.....: Guangdong Zhonghan Testing Technology Co., Ltd.

Address.....: Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Tested by (name + signature).....: Leon Li

Leon Li

Reviewer (name + signature).....: Baret Wu

Baret Wu

Approved (name + signature).....: Levi Lee

Levi Lee



TABLE OF CONTENT

1. VERSION 4

2. TEST SUMMARY 5

 2.1 TEST FACILITY 6

 2.2 MEASUREMENT UNCERTAINTY 6

3. GENERAL INFORMATION 7

 3.1 GENERAL DESCRIPTION OF EUT 7

 3.2 Test mode 7

 3.3 Block Diagram of EUT Configuration 7

 3.4 Test Conditions 7

 3.5 Description Of Support Uni/ (Conducted Mode) 8

 3.6 EQUIPMEN/ LIST FOR ALL TEST ITEMS 9

4. CONDUCTED EMISSION TEST 10

 4.1 CONDUCTED EMISSION MEASUREMENT 10

 4.1.1 POWER LINE CONDUCTED EMISSION Limi/ 10

 4.1.2 TEST PROCEDURE 10

 4.1.3 DEVIATION FROM TEST STANDARD 10

 4.1.4 TEST SETUP 11

 4.1.5 EUT OPERATING CONDITIONS 11

 4.1.6 Test Result 12

5. RADIATED EMISSION MEASUREMENT 14

 5.1 Radiated Emission Limi/ 14

 5.2 Anechoic Chamber Test Setup Diagram 15

 5.3 Test Procedure 15

 5.4 DEVIATION FROM TEST STANDARD 15

 5.5 Test Result 16

6. BANDWIDTH TEST 19

7. ANTENNA REQUIREMENT 21

8. TEST SETUP PHOTO 22

9. EUT CONSTRUCTIONAL DETAILS 22



1. VERSION

Report No.	Version	Description	Approved
ZHT-231124010E-1	Rev.01	Initial issue of report	Dec. 05, 2023



2. TEST SUMMARY

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Spurious Emission	15.209(a)(f)	Pass
20dB Bandwidth	15.215	Pass

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report



2.1 TEST FACILITY

Guangdong Zhonghan Testing Technology Co., Ltd.
Add. : Room 104, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District
Shenzhen, Guangdong, China

FCC Registration Number:255941
Designation Number: CN0325
IC Registered No.: 29832
CAB identifier: CN0143

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power conducted	$\pm 0.16\text{dB}$
3	Spurious emissions conducted	$\pm 0.21\text{dB}$
4	All emissions radiated(9k-30MHz)	$\pm 4.68\text{dB}$
5	All emissions radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions radiated(>1G)	$\pm 4.89\text{dB}$
7	Temperature	$\pm 0.5^{\circ}\text{C}$
8	Humidity	$\pm 2\%$
9	Occupied Bandwidth	$\pm 4.96\%$



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

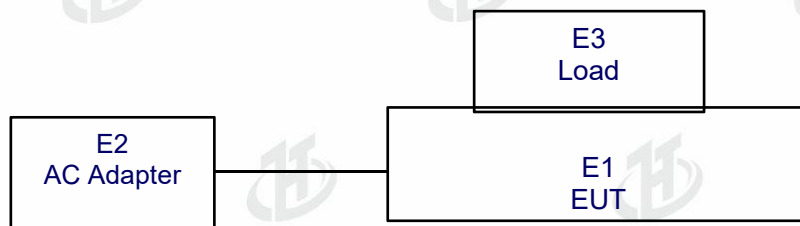
Product Name:	Wireless charging smart ambient lighting
Test Model No:	QLAMP-3601
Hardware version:	V1.0
Software version:	V1.0
Operation Frequency:	110-205KHz
Modulation type:	MSK
Antenna Type:	Coil Antenna
Antenna gain:	0dBi
Ratings :	Input : 5V-12V---2A Output:: 5 W / 7.5 W / 10 W / 15 W

3.2 Test mode

Test Modes:	
Mode 1	Wireless charging mode(15W)
Mode 2	Wireless charging mode(10W)
Mode 3	Wireless charging mode(7.5W)
Mode 4	Wireless charging mode(5W)

Note: All modes were tested, only the worst-case was recorded in the report. Mode 1 is the worst mode.

3.3 Block Diagram of EUT Configuration



3.4 Test Conditions

Temperature: 23~26°C
Relative Humidity: 54~63 %



3.5 Description Of Support Uni/ (Conducted Mode)

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

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Wireless charging smart ambient lighting	/	QLAMP-3601	/	EUT
E-2	AC Adapter	/	P062	/	EUT
E-3	Wireless charging load	/	EESON	N/A	AE

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.



3.6 EQUIPMEN/ LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Model	Asset NO.	Last Cal.	Next Cal.
1	Receiver	R&S	ESCI	ZH-E005	May 12, 2023	May 11, 2024
2	Loop antenna	EMCI	LAP600	ZH-E036	May 12, 2023	May 11, 2024
3	Amplifier	Schwarzbeck	BBV 9743 B	ZH-E019	May 12, 2023	May 11, 2024
4	Amplifier	Schwarzbeck	BBV 9718 B	ZH-E021	May 12, 2023	May 11, 2024
5	Bilog Antenna	Schwarzbeck	VULB9162	ZH-E017	May 17, 2023	May 16, 2024
6	Horn Antenna	Schwarzbeck	BBHA9120D	ZH-E020	May 17, 2023	May 16, 2024
7	966 Anechoic Chamber	EMToni	9m6m6m	ZH-E001	Nov. 25, 2021	Nov. 24, 2024
8	Spectrum Analyzer	KEYSIGHT	N9020A	ZH-E032	May 12, 2023	May 11, 2024
9	Power Sensor	MWRfTest	MW100-RFCB	ZH-E066	May 12, 2023	May 11, 2024
10	Power Amplifier Shielding Room	EMToni	2m3m3m	ZH-E003	Nov. 25, 2021	Nov. 24, 2024

Conduction Test equipment

Equipment	Manufacturer	Model	Asset NO.	Last Cal.	Next Cal.
Receiver	R&S	ESCI	ZH-E005	May 12, 2023	May 11, 2024
LISN	R&S	ENV216	ZH-E006	May 12, 2023	May 11, 2024
ISN CAT 6	Schwarzbeck	NTFM 8158	ZH-E012	May 12, 2023	May 11, 2024
ISN CAT 5	Schwarzbeck	CAT5 8158	ZH-E013	May 12, 2023	May 11, 2024
Capacitive Voltage Probe	Schwarzbeck	CVP 9222 C	ZH-E014	May 12, 2023	May 11, 2024
Current Transformer Clamp	Schwarzbeck	SW 9605	ZH-E015	May 12, 2023	May 11, 2024
CE Shielding Room	EMToni	9m4m3m	ZH-E002	Nov. 25, 2021	Nov. 24, 2024



4. CONDUCTED EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limi/

FREQUENCY (MHz)	Limit (dBuV)		Standard
	QP	AVG	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

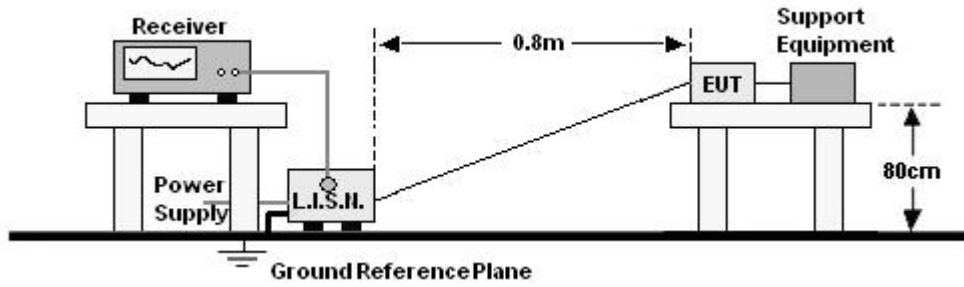
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipmen/ powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 TEST SETUP



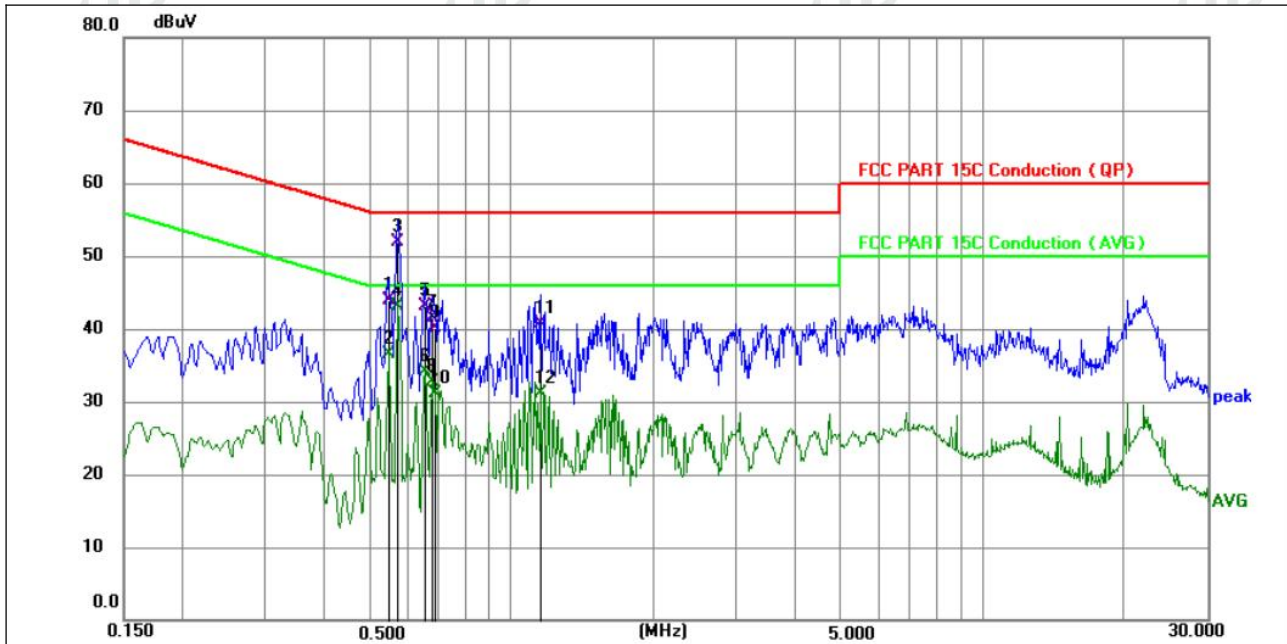
4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



4.1.6 Test Result

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage:	AC 120V/60Hz		



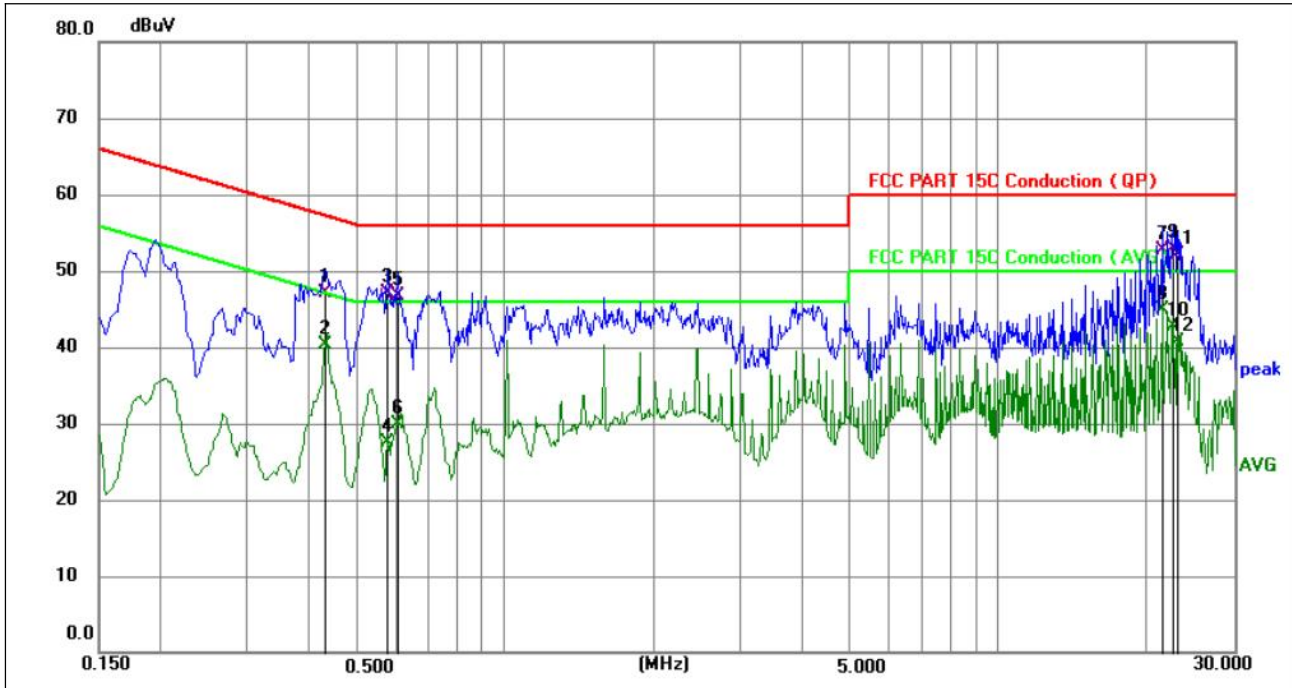
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.5460	33.88	10.02	43.90	56.00	-12.10	QP	P	
2	0.5460	26.41	10.02	36.43	46.00	-9.57	AVG	P	
3	0.5730	41.94	10.03	51.97	56.00	-4.03	QP	P	
4 *	0.5730	33.10	10.03	43.13	46.00	-2.87	AVG	P	
5	0.6540	33.15	10.03	43.18	56.00	-12.82	QP	P	
6	0.6540	24.01	10.03	34.04	46.00	-11.96	AVG	P	
7	0.6764	31.44	10.03	41.47	56.00	-14.53	QP	P	
8	0.6764	22.62	10.03	32.65	46.00	-13.35	AVG	P	
9	0.6854	30.16	10.03	40.19	56.00	-15.81	QP	P	
10	0.6854	21.07	10.03	31.10	46.00	-14.90	AVG	P	
11	1.1490	30.70	10.06	40.76	56.00	-15.24	QP	P	
12	1.1490	21.06	10.06	31.12	46.00	-14.88	AVG	P	

Notes:

- 1.An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3.Measurement Level = Reading level + Correct Factor



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.4290	37.18	9.99	47.17	57.27	-10.10	QP	P	
2	0.4290	30.36	9.99	40.35	47.27	-6.92	AVG	P	
3	0.5775	37.01	10.03	47.04	56.00	-8.96	QP	P	
4	0.5775	17.45	10.03	27.48	46.00	-18.52	AVG	P	
5	0.6045	36.64	10.03	46.67	56.00	-9.33	QP	P	
6	0.6045	19.94	10.03	29.97	46.00	-16.03	AVG	P	
7	21.4440	42.55	10.15	52.70	60.00	-7.30	QP	P	
8 *	21.4440	34.68	10.15	44.83	50.00	-5.17	AVG	P	
9	22.5914	42.66	10.18	52.84	60.00	-7.16	QP	P	
10	22.5914	32.51	10.18	42.69	50.00	-7.31	AVG	P	
11	23.0280	41.95	10.20	52.15	60.00	-7.85	QP	P	
12	23.0280	30.47	10.20	40.67	50.00	-9.33	AVG	P	

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor



5. RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 1GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

5.1 Radiated Emission Limi/

Limi/ for frequency below 30MHz

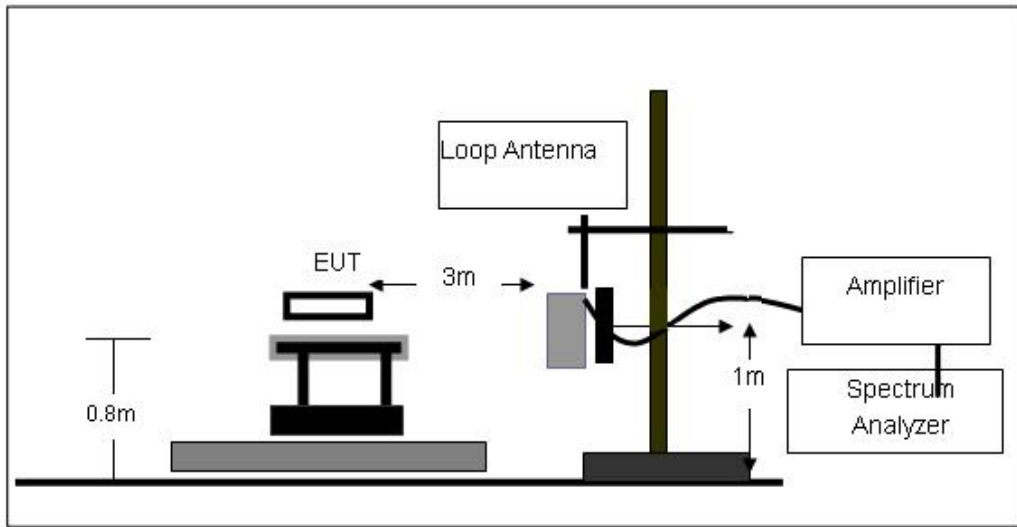
Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.490	2400/F(kHz)	300	Quasi-peak Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

Limi/ for frequency Above 30MHz

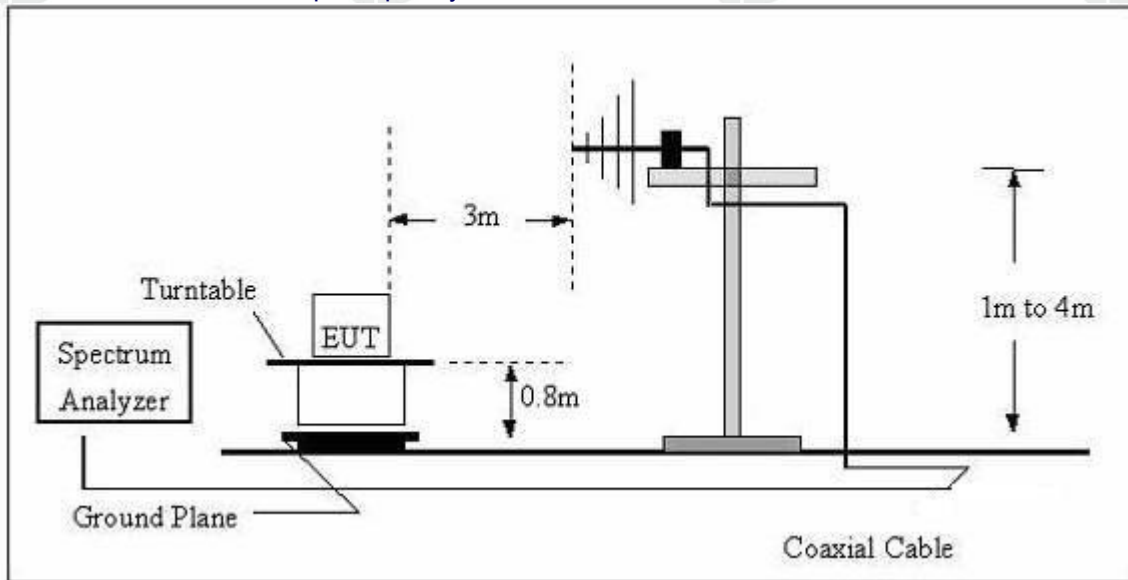
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.00	Quasi-peak Value
88MHz-216MHz	43.50	Quasi-peak Value
216MHz-960MHz	46.00	Quasi-peak Value
960MHz-1GHz	54.00	Quasi-peak Value
Above 1GHz	54.00	Average Value
	74.00	Peak Value

5.2 Anechoic Chamber Test Setup Diagram

(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.205 limits.

5.3 Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on an antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

5.4 DEVIATION FROM TEST STANDARD

No deviation



5.5 Test Result

Measurement data:

Note: Limit dBuV/m @3m = Limit dBuV/m @300m+ 80
Limit dBuV/m @3m = Limit dBuV/m @30m + 40

9 kHz~30 MHz

Frequency (kHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limi/ (dBμV/m)	Margin (dB)	Detector Type
65.83	49.63	15.15	64.78	111.85	-47.07	AVG
99.16	50.87	15.18	66.05	106.78	-40.73	AVG
185.32	74.15	15.2	89.35	105.58	-16.23	AVG
619.85	28.46	16.33	44.79	70.83	-26.04	QP
995.83	29.15	16.87	46.02	68.37	-22.35	QP
1205.86	20.11	17.62	37.73	65.29	-27.56	QP

Note:

Pre-scan in the all of mode, the worst case in of was recorded.

Factor = antenna factor + cable loss – pre-amplifier.

Emission Level = Meter Reading - Factor

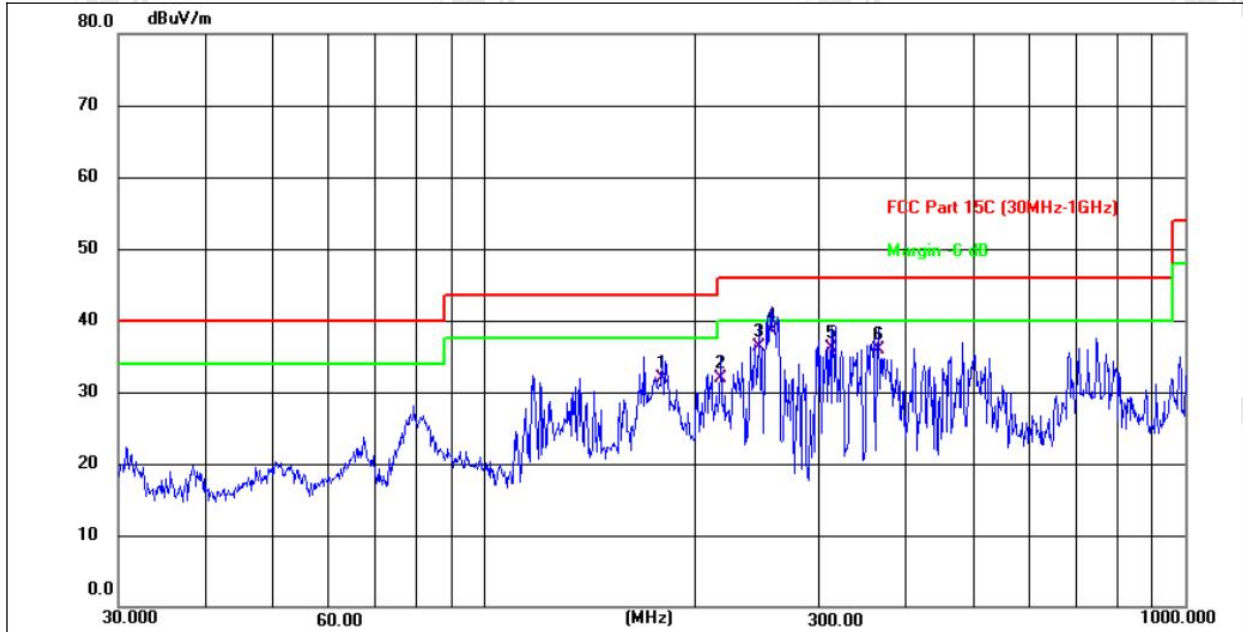
Margin = Emission Level- Limit.

The amplitude of emissions which are attenuated by more than 20db below the permissible value has no need to be reported.



30MHz-1GHz

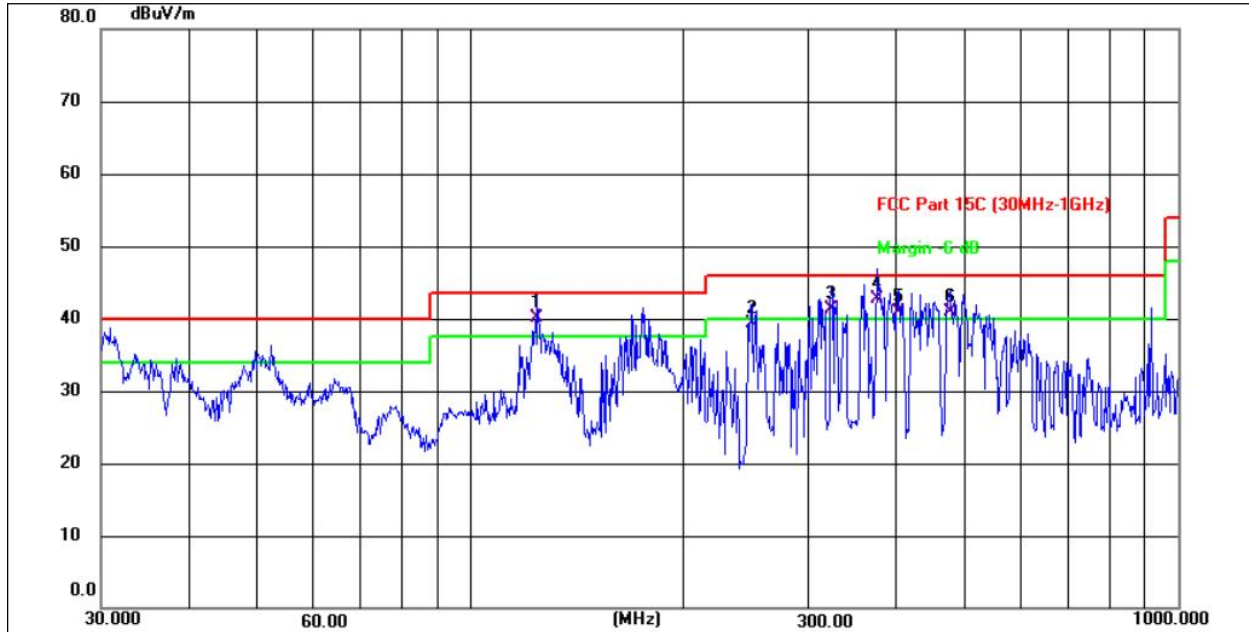
Temperature:	26°C	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	179.3863	44.22	-12.37	31.85	43.50	-11.65	QP
2	217.5443	42.16	-10.24	31.92	46.00	-14.08	QP
3	246.8149	45.39	-9.18	36.21	46.00	-9.79	QP
4 *	256.5211	47.45	-8.93	38.52	46.00	-7.48	QP
5	313.2760	43.85	-7.74	36.11	46.00	-9.89	QP
6	365.5391	42.41	-6.55	35.86	46.00	-10.14	QP



Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	124.1330	53.24	-13.12	40.12	43.50	-3.38	QP
2	249.4250	48.31	-9.08	39.23	46.00	-6.77	QP
3 !	323.3203	48.73	-7.51	41.22	46.00	-4.78	QP
4 *	374.6225	49.14	-6.34	42.80	46.00	-3.20	QP
5 !	401.8384	46.69	-5.73	40.96	46.00	-5.04	QP
6 !	475.4991	45.45	-4.49	40.96	46.00	-5.04	QP

Remarks:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier Factor
2. Level = Reading + Factor
3. Margin = Emission Level- Limit.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.



6. BANDWIDTH TEST

1. Set RBW = 10 Hz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude poin/ (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

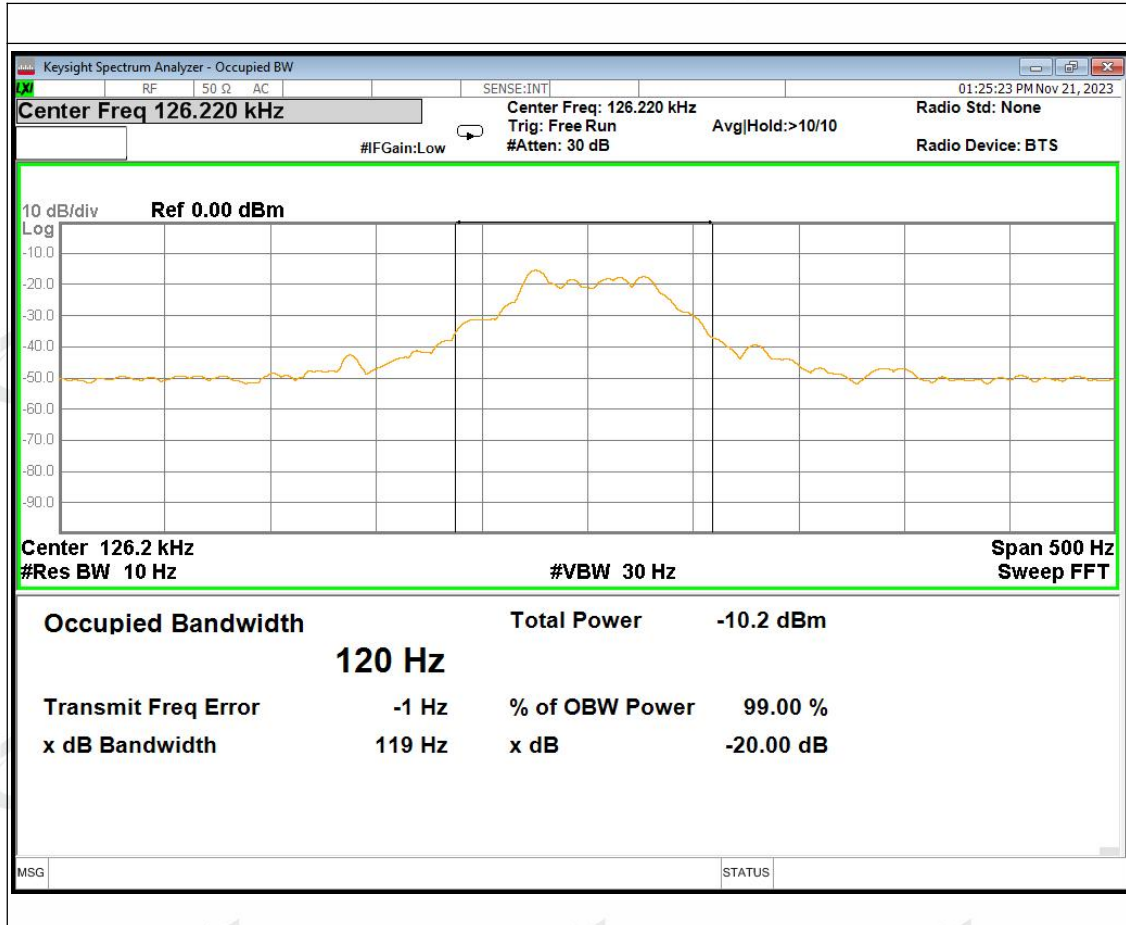
TEST SETUP





Temperature:	25.7 °C	Relative Humidity:	55%
Pressure:	101kPa		

Frequency (KHz)	20dB bandwidth (KHz)	Result
126.22	0.119	Pass





7. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203
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.	
EUT Antenna:	
The antenna is Coil Antenna, the best case gain of the antennas is 0dBi, reference to the appendix II for details	



8. TEST SETUP PHOTO



Reference to the appendix I for details.

9. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

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