

FCC TEST REPORT

FCC ID:2BCU9-TS3001

Report Number : ZHT-230913002E

Date of Test : Sep. 13, 2023 to Sep. 15, 2023

Date of issue : Sep. 15, 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 : Dongguan Taishen Electronics Co., Ltd.

Address : 4th Floor, No. 1, Alley 5, Dihao Street, Baiguodong, Zhangmutou Town, Dongguan, Guangdong, China

Manufacturer's name : Dongguan Taishen Electronics Co., Ltd.

Address : 4th Floor, No. 1, Alley 5, Dihao Street, Baiguodong, Zhangmutou Town, Dongguan, 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 results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Product name : Wireless Charging Night Light Alarm Clock

Trademark : TS

Model/Type reference : TS-3001

TS-3002, TS-3003, TS-3004, TS-3005, TS-3006, TS-3007, TS-3008, TS-3009

Ratings : Input: 9 V \pm 3 A (27 W)

USB-A output: 5 V \pm 1 A

Wireless charging output: 5 W or 7.5 W or 10 W or 15 W Max

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



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



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



TABLE OF CONTENTS

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 Units (Conducted Mode)	8
3.6 EQUIPMENTS LIST FOR ALL TEST ITEMS	9
4. CONDUCTED EMISSION TEST	11
4.1 CONDUCTED EMISSION MEASUREMENT	11
4.1.1 POWER LINE CONDUCTED EMISSION Limits	11
4.1.2 TEST PROCEDURE	11
4.1.3 DEVIATION FROM TEST STANDARD	11
4.1.4 TEST SETUP	12
4.1.5 EUT OPERATING CONDITIONS	12
4.1.6 Test Result	13
5. RADIATED EMISSION MEASUREMENT	15
5.1 Radiated Emission Limits	15
5.2 Anechoic Chamber Test Setup Diagram	16
5.3 Test Procedure	16
5.4 DEVIATION FROM TEST STANDARD	16
5.5 Test Result	17
6. BANDWIDTH TEST	20
7. ANTENNA REQUIREMENT	22
8. TEST SETUP PHOTO	23
9. EUT CONSTRUCTIONAL DETAILS	23

1. VERSION

Report No.	Version	Description	Approved
ZHT-230913002E	Rev.01	Initial issue of report	Sep. 15, 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.

Address: 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	$\pm 4.96\text{dB}$

3. GENERAL INFORMATION

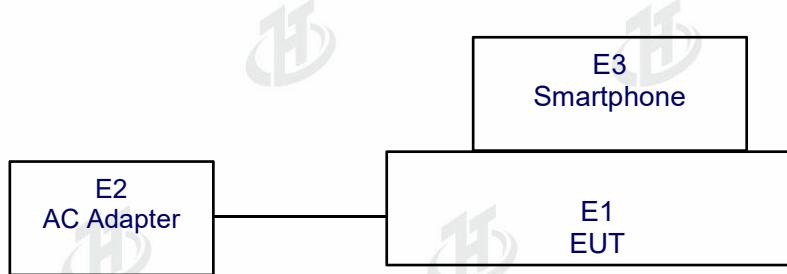
3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Wireless Charging Night Light Alarm Clock
Model No:	TS-3001 TS-3002, TS-3003, TS-3004, TS-3005, TS-3006, TS-3007, TS-3008, TS-3009
Model Difference:	All models use the same circuit and RF module, but the model name and exterior color are different, and all tests are based on the TS-3001.
Hardware version:	V1.0
Software version:	V1.0
Operation Frequency:	110-148KHz
Modulation type:	MSK
Antenna Type:	MPA2-10uH
Antenna gain:	0dBi
Power supply:	Input: 9 V \pm 3 A (27 W) USB-A output: 5 V \pm 1 A Wireless charging output: 5 W or 7.5 W or 10 W or 15 W Max

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 Units (Conducted Mode)

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E2	Power adapter	/	GS-551E	/	AE
E3	Smartphone	APPLE	iphone13	/	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 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Model	Last Cal.	Next Cal.
1	Receiver	R&S	ESCI	May 12, 2023	May 11, 2024
2	Loop antenna	EMCI	LAP600	May 12, 2023	May 11, 2024
3	Amplifier	Schwarzbeck	BBV 9743 B	May 12, 2023	May 11, 2024
4	Amplifier	Schwarzbeck	BBV 9718 B	May 12, 2023	May 11, 2024
5	Bilog Antenna	Schwarzbeck	VULB9162	May 17, 2023	May 16, 2024
6	Horn Antenna	Schwarzbeck	BBHA9120D	May 17, 2023	May 16, 2024
7	966 Anechoic Chamber	EMToni	9m6m6m	Nov. 25, 2021	Nov. 24, 2024
8	Spectrum Analyzer	KEYSIGHT	N9020A	May 12, 2023	May 11, 2024
9	Power Sensor	MWRFtest	MW100-RFCB	May 12, 2023	May 11, 2024
10	Power Amplifier Shielding Room	EMToni	2m3m3m	Nov. 25, 2021	Nov. 24, 2024

Conduction Test equipment

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 12, 2023	May 11, 2024
LISN	R&S	ENV216	May 12, 2023	May 11, 2024
ISN CAT 6	Schwarzbeck	NTFM 8158	May 12, 2023	May 11, 2024
ISN CAT 5	Schwarzbeck	CAT5 8158	May 12, 2023	May 11, 2024
Capacitive Voltage Probe	Schwarzbeck	CVP 9222 C	May 12, 2023	May 11, 2024
Current Transformer Clamp	Schwarzbeck	SW 9605	May 12, 2023	May 11, 2024
CE Shielding Room	EMToni	9m4m3m	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 Limits

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.

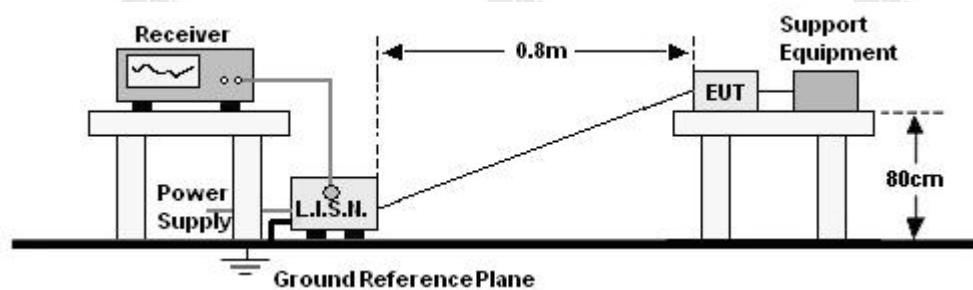
4.1.2 TEST PROCEDURE

- 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 equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- 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

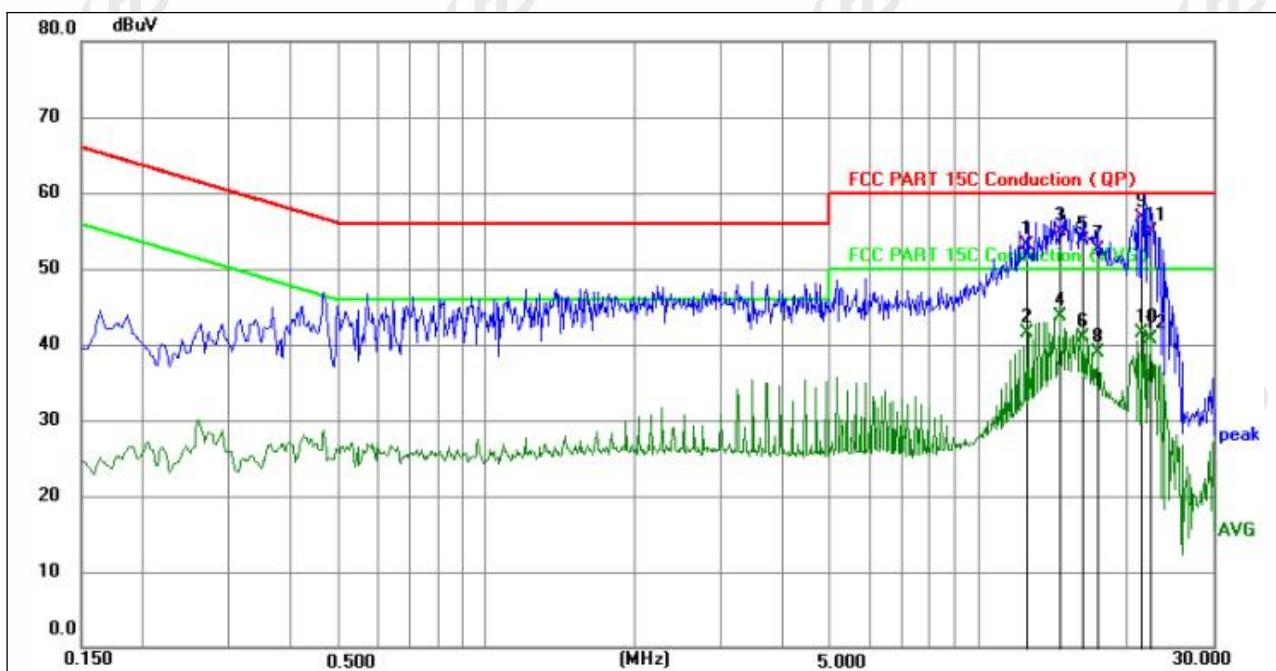


4.1.5 EUT OPERATING CONDITIONS

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		

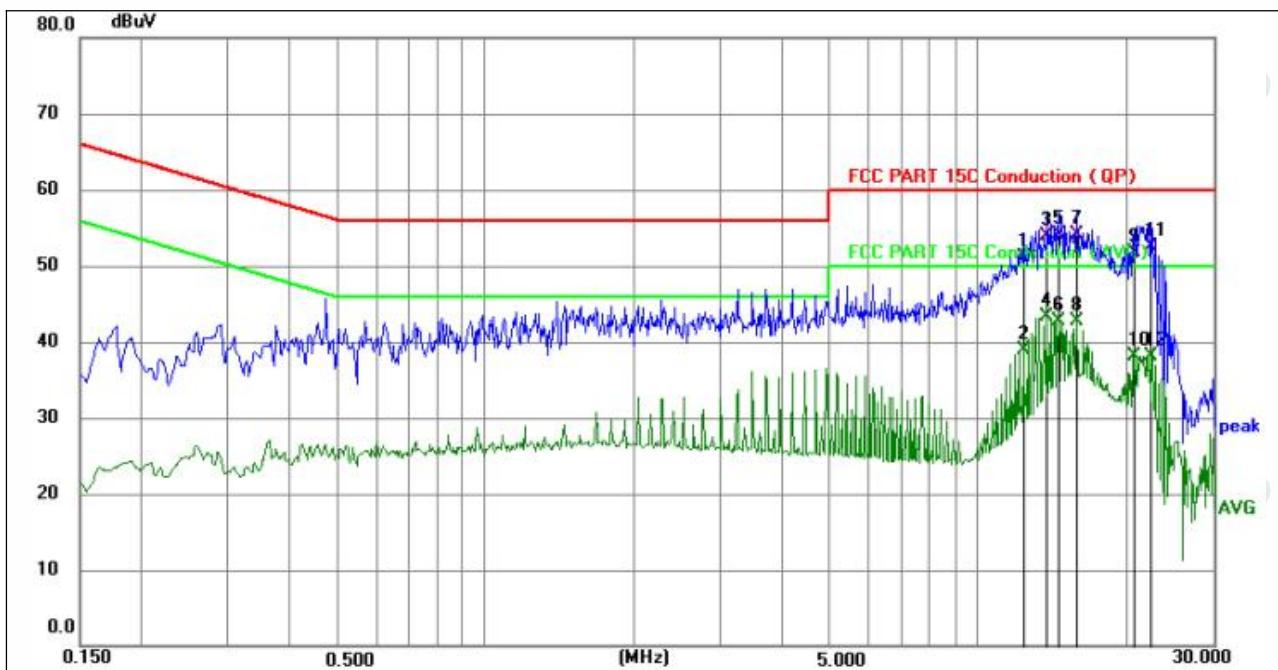


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	12.6284	42.95	10.09	53.04	60.00	-6.96	QP	P
2	12.6284	31.43	10.09	41.52	50.00	-8.48	AVG	P
3	14.6715	44.87	10.09	54.96	60.00	-5.04	QP	P
4	14.6715	33.71	10.09	43.80	50.00	-6.20	AVG	P
5	16.3140	43.57	10.10	53.67	60.00	-6.33	QP	P
6	16.3140	30.74	10.10	40.84	50.00	-9.16	AVG	P
7	17.5155	42.48	10.10	52.58	60.00	-7.42	QP	P
8	17.5155	28.71	10.10	38.81	50.00	-11.19	AVG	P
9 *	21.7139	46.61	10.16	56.77	60.00	-3.23	QP	P
10	21.7139	31.44	10.16	41.60	50.00	-8.40	AVG	P
11	22.4340	44.74	10.18	54.92	60.00	-5.08	QP	P
12	22.4340	30.51	10.18	40.69	50.00	-9.31	AVG	P

Notes:

- An initial pre-scan was performed on the line and neutral lines with peak detector.
- Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 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
1	12.3584	41.11	10.09	51.20	60.00	-8.80	QP	P
2	12.3584	28.77	10.09	38.86	50.00	-11.14	AVG	P
3	13.7985	43.83	10.09	53.92	60.00	-6.08	QP	P
4	13.7985	33.14	10.09	43.23	50.00	-6.77	AVG	P
5	14.5184	43.99	10.09	54.08	60.00	-5.92	QP	P
6	14.5184	32.62	10.09	42.71	50.00	-7.29	AVG	P
7 *	15.8774	44.09	10.10	54.19	60.00	-5.81	QP	P
8	15.8774	32.64	10.10	42.74	50.00	-7.26	AVG	P
9	20.8094	41.63	10.13	51.76	60.00	-8.24	QP	P
10	20.8094	27.95	10.13	38.08	50.00	-11.92	AVG	P
11	22.3710	42.36	10.18	52.54	60.00	-7.46	QP	P
12	22.3710	27.87	10.18	38.05	50.00	-11.95	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 Limits

Limits for frequency below 30MHz

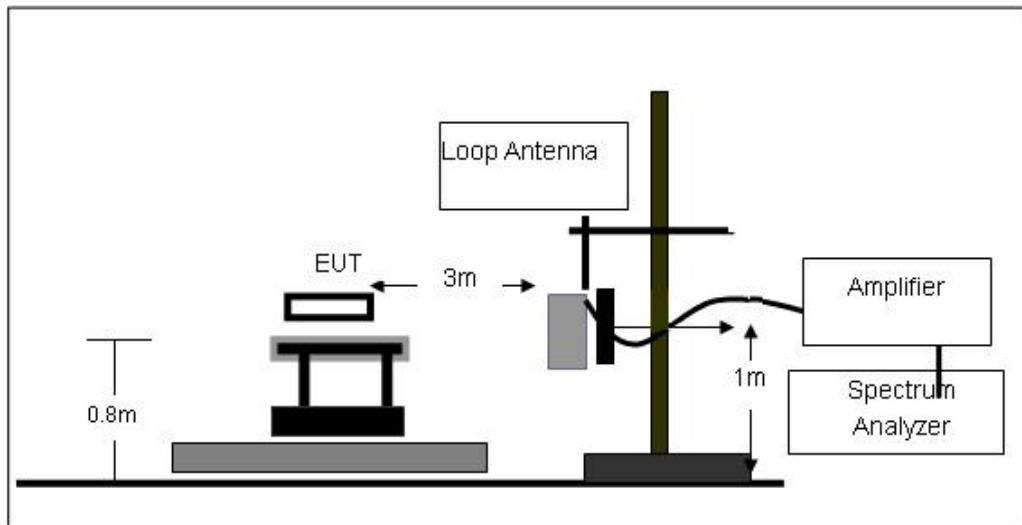
Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.490	2400/F(kHz)	300	Quasi-peak Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

Limits for frequency Above 30MHz

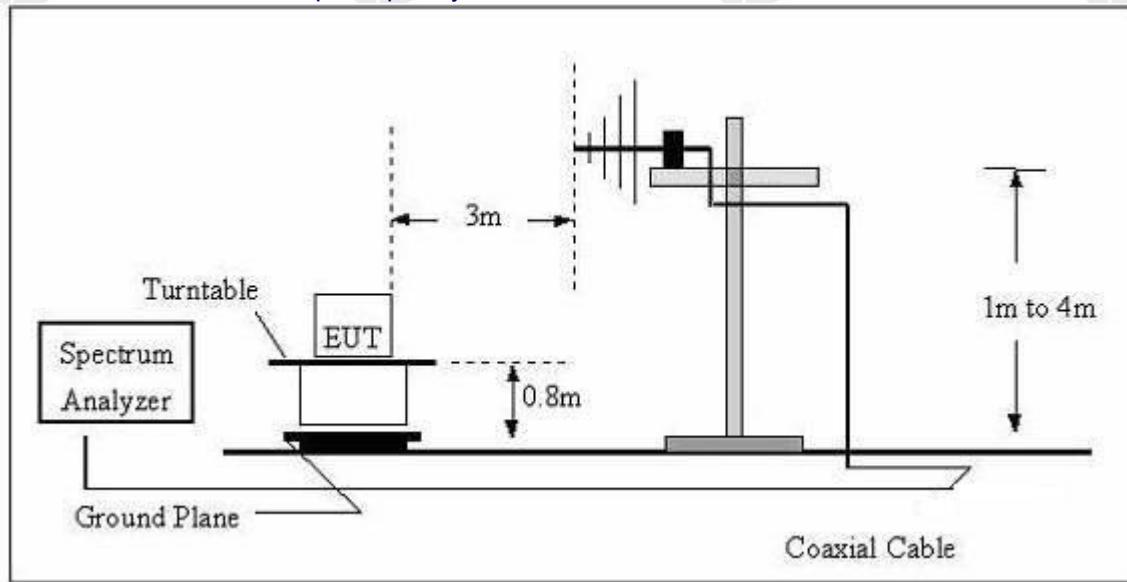
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.00	Quasi-peak Value
88MHz-216MHz	43.50	Quasi-peak Value
216MHz-960MHz	46.00	Quasi-peak Value
960MHz-1GHz	54.00	Quasi-peak Value
Above 1GHz	54.00	Average Value
	74.00	Peak Value

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 a 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 dB μ V/m @3m = Limit dB μ V/m @300m+ 80
 Limit dB μ V/m @3m = Limit dB μ V/m @30m + 40

9 kHz~30 MHz

Frequency (kHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
63.08	55.64	15.15	70.79	111.85	-41.06	
121.13	57.36	15.18	70.94	106.78	-35.84	AVG
184.19	75.1	15.2	90.97	105.58	-14.61	AVG
731.48	26.24	16.33	43.46	70.83	-27.37	QP
974.25	25.5	16.87	41.99	68.37	-26.38	QP
1418.49	21.14	17.62	38.17	65.29	-27.12	QP

Note:

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

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

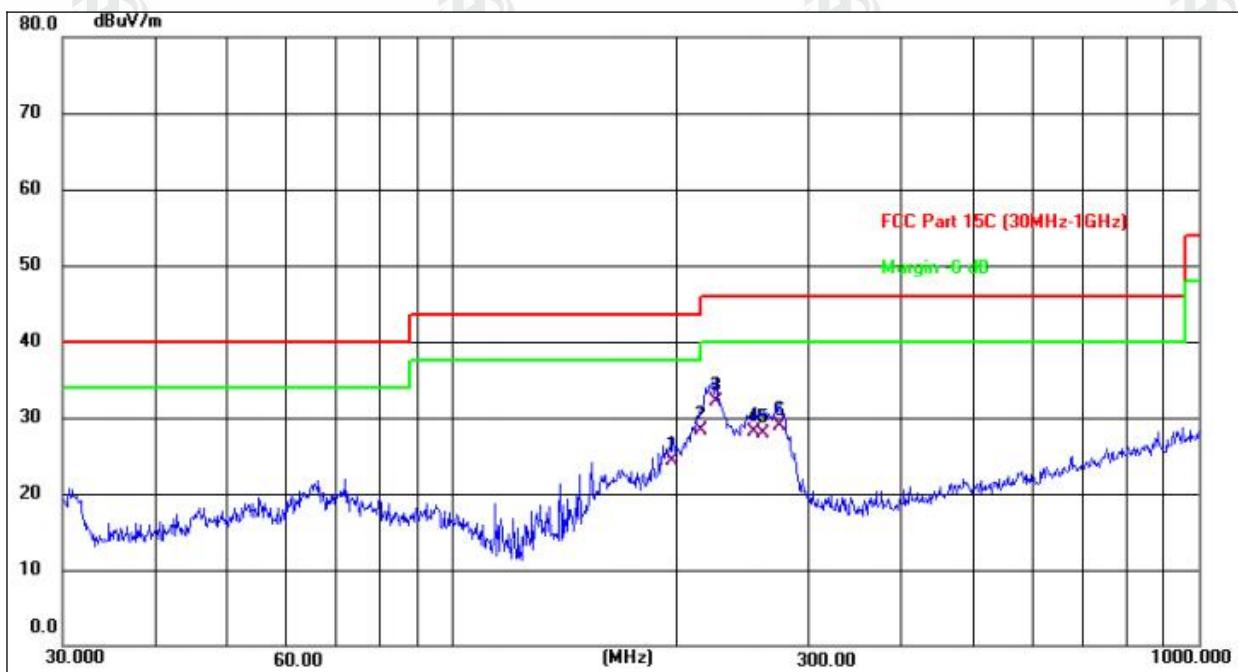
Emission Level = Meter Reading - Factor

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.

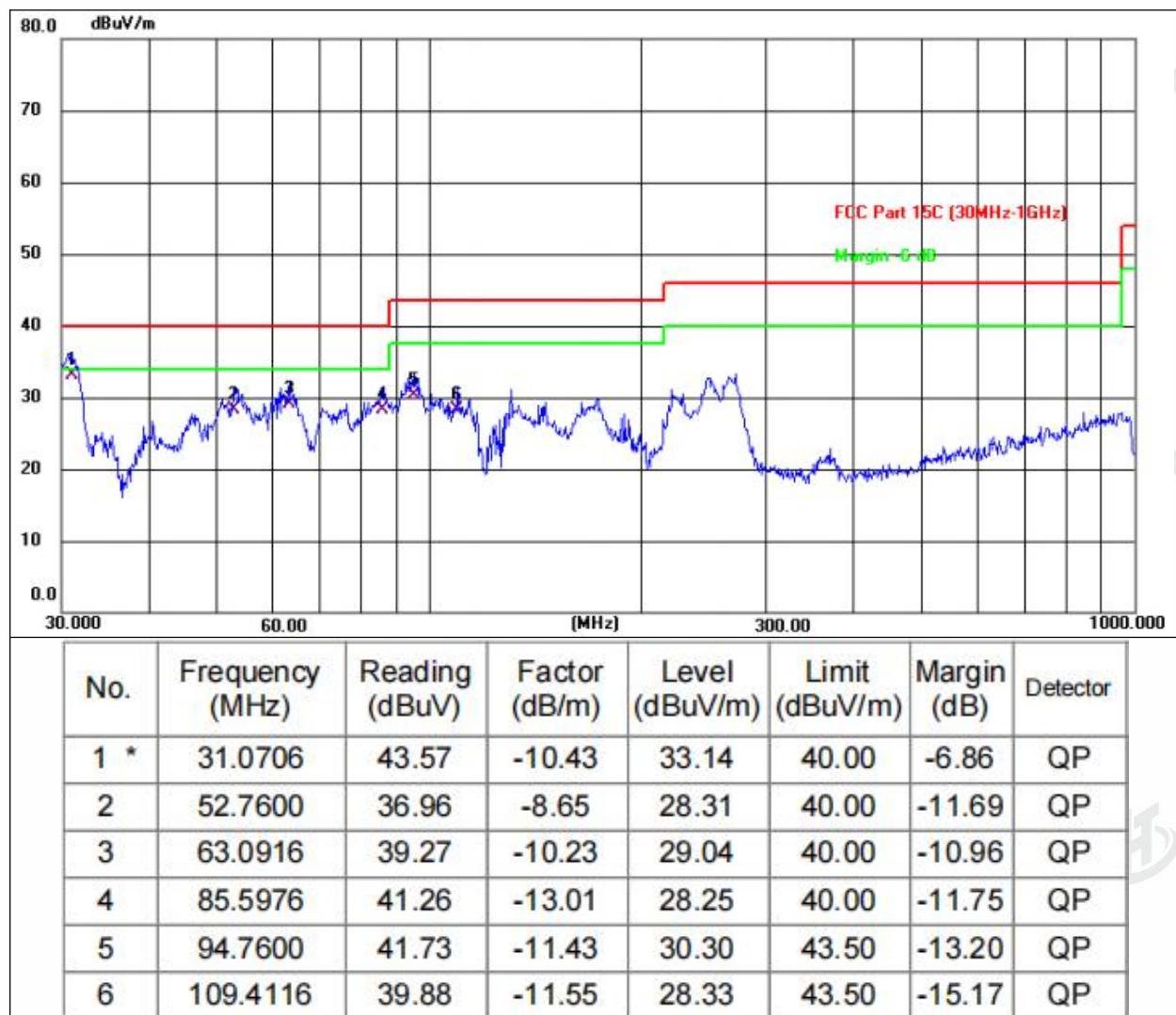
30MHz-1GHz

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	197.2001	34.95	-10.61	24.34	43.50	-19.16	QP
2	215.2678	38.15	-9.92	28.23	43.50	-15.27	QP
3 *	225.3080	41.65	-9.61	32.04	46.00	-13.96	QP
4	252.9482	36.87	-8.80	28.07	46.00	-17.93	QP
5	261.0583	36.51	-8.62	27.89	46.00	-18.11	QP
6	274.1939	37.21	-8.32	28.89	46.00	-17.11	QP

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


Remarks:

1. Factor = Antenna Factor + Cable Loss – Preamplifier 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

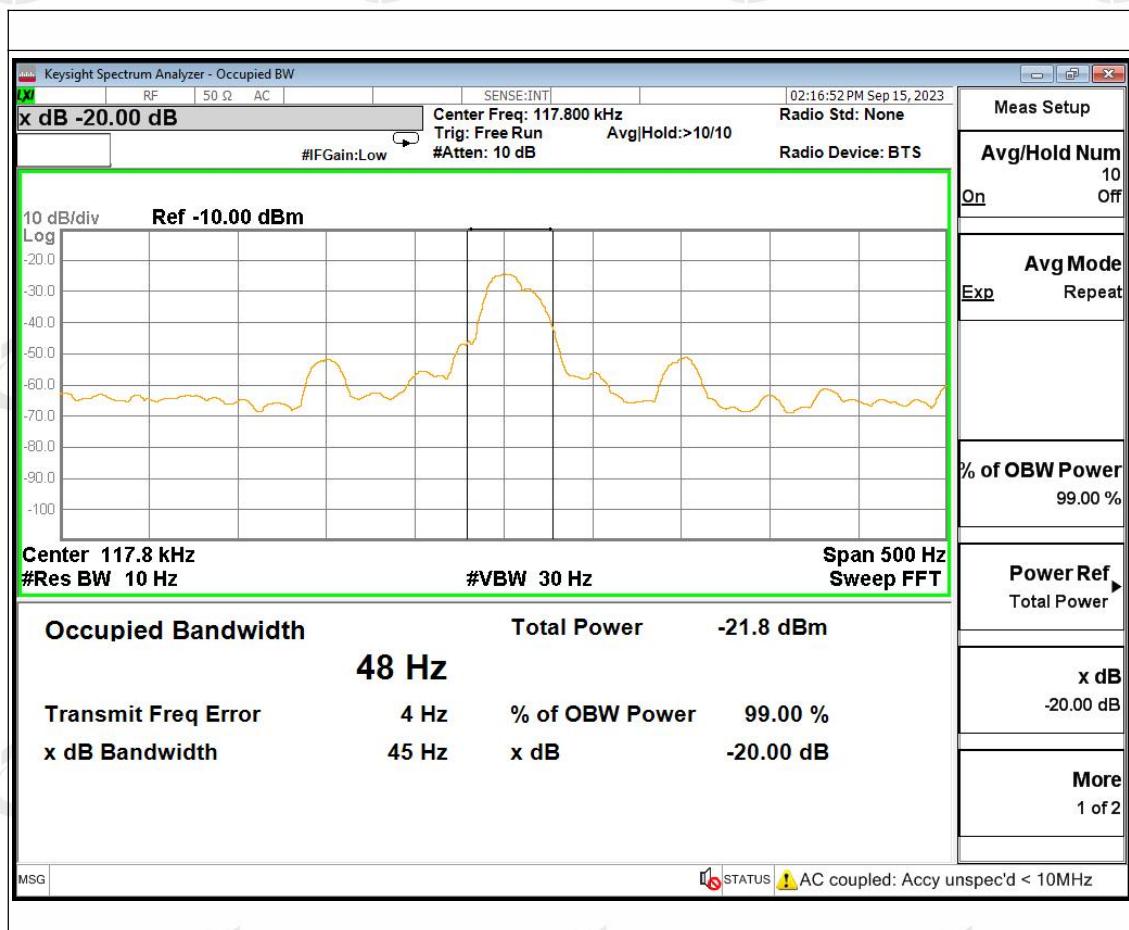
1. Set RBW = 10 Hz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (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
117.800	0.045	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 MPA2-10uH, 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 *****