FCC TEST REPORT

Client Information:

Applicant:	Shenzhen Hongyou Technology Co., Ltd.
Applicant add.:	Room 702, Building 2AB, Qianqianling Row, Tangwei Community, Fenghuang Street, Guangming District, Shenzhen City, Guangdong Province, China
Manufacturer:	Shenzhen Hongyou Technology Co., Ltd.
Manufacturer add.:	Room 702, Building 2AB, Qianqianling Row, Tangwei Community, Fenghuang Street, Guangming District, Shenzhen City, Guangdong Province, China

Product Information:

Product Name:	Portable Power Station
Model No.:	HSECPTOW-G63, HSECPTOW-R63, HSECPTOW-G32, HSECPTOW-R32
Brand Name:	N/A
FCC ID:	2BDOR-HSECPTOW
Applicable standards:	**FCC CFR Title 47 Part 15 Subpart C**

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

No.22, Jinqianling 3rd Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

Tel.: +86-769-8202 0499 Fax.: +86-769-8202 0495

Date of Receipt:	Nov. 20, 2023	Date of Test:	Nov. 21, 2023~ Nov. 23, 2023
Date of Issue:	Nov. 24, 2023	Test Result:	Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited 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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Reviewed by: Simba Huang

Simba Huang

Approved by: Seal-Chen

Seal.chen

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Revision History

Revision	Issue Date	Revisions	Revised By
000	Nov. 24, 2023	Initial Issue	Seal Chen

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. *Test according to ANSI C63.10:2013.*
2. *The measurement uncertainty is not included in the test result.*
3. *Test results in other test report (RF Exposure Evaluation Report)*

2.1 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the AiT quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.2 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	0.009MHz-30MHz	3.10dB	(1)
Radiated Emission	30MHz-1GHz	3.75dB	(1)
Radiated Emission	1GHz-18GHz	3.88dB	(1)
Radiated Emission	18GHz-40GHz	3.88dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	1.20dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

.CNAS- Registration No: L6177

Dongguan Yaxu (AiT) technology Limited is accredited to ISO/IEC 17025:2017 general Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the competence of testing and calibration laboratories) on April 18, 2022

FCC-Registration No.: 703111 Designation Number: CN1313

Dongguan Yaxu (AiT) technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC —Registration No.: 6819A CAB identifier: CN0122

The 3m Semi-anechoic chamber of Dongguan Yaxu (AiT) technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 6819A

A2LA-Lab Cert. No.: 6317.01

Dongguan Yaxu (AiT) technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None

3.3 Test Location

Dongguan Yaxu (AiT) Technology Limited

Address: No.22, Jinqianling 3rd Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

Tel.: +86-769-8202 0499

Fax.: +86-769-8202 0495

4 General Information

EUT Name:	Portable Power Station
Model No:	HSECPTOW-G63
Serial Model:	HSECPTOW-R63, HSECPTOW-G32, HSECPTOW-R32
Test sample(s) ID:	23112003
Sample(s) Status:	Engineer sample
Serial No.:	N/A
Operation frequency:	113kHz-205kHz
Modulation Technology:	ASK
Antenna Type:	loop coil Antenna
Antenna gain:	0dBi
Hardware version.:	N/A
Software version.:	N/A
Adapter:	Model: LK150-2000350 Input: 100-240VAC 50/60Hz Max, 2.5A Output: DC 20.0V 3.5A
Power supply:	Input: DC 5-20V 120W Max Output: DC 12V 10A USB Output: DC 5V 3A, 9V 2A Type-C Output: DC 5V/9V/12V PD 65W AC Output: AC 110V~, 60Hz, 300W Wireless Charging Output: 5W/7.5W/10W15W
Battery:	DC 14.6V 18.2Ah
Model different:	PCB board, structure and internal of these model(s) are the same, So no additional models were tested.
Note:	For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.1 EUT Test Mode

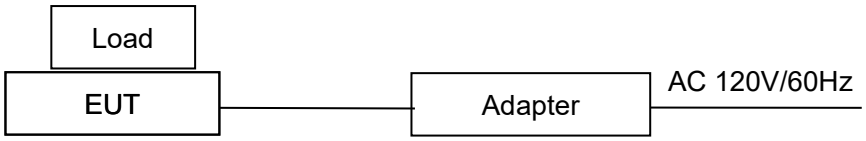
Equipment under test was operated during the measurement under the following conditions:

Test Mode	Description	
Mode 1	AC Adapter + EUT+Load	Record
Mode 2	Test the EUT in idle mode.	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		

4.2 Description of Test setup

EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration



4.3 Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	Wireless charger receiver	SLY	15W	N/A	N/A	N/A

4.4 EUT Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	Adapter	Shenzhen Liankelilong Electronic Technology Co.,Ltd.	CE	LK150-2000350	N/A	N/A	N/A

5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	R&S	FSV40	101470	2023.09.08	2024.09.07
2	EMI Measuring Receiver	R&S	ESR	101660	2023.09.08	2024.09.07
3	Low Noise Pre Amplifier	HP	HP8447E	1937A01855	2023.09.08	2024.09.07
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2023.09.08	2024.09.07
5	Passive Loop	ETS	6512	00165355	2022.09.04	2024.09.03
6	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2021.08.29	2024.08.28
7	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2021.08.29	2024.08.28
8	SHF-EHF Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367d	2020.11.24	2023.11.23
9	EMI Test Receiver	R&S	ESCI	100124	2023.09.08	2024.09.07
10	LISN	Kyoritsu	KNW-242	8-837-4	2023.09.08	2024.09.07
11	LISN	R&S	ESH3-Z2	0357.8810.54-101161-S2	2023.09.08	2024.09.07
12	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2023.09.08	2024.09.07
13	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
14	Signal Generator	Agilent	N5182A	MY50143009	2023.09.08	2024.09.07
15	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2023.09.08	2024.09.07
16	RF Automatic Test system	MW	MW100-RFCB	21033016	2023.09.08	2024.09.07
17	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
18	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
19	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
20	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A
21	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A

6 CONDUCTED EMISSION TEST

6.1 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

6.2 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quas-peak	Average	
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.

6.3 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 equipments 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.

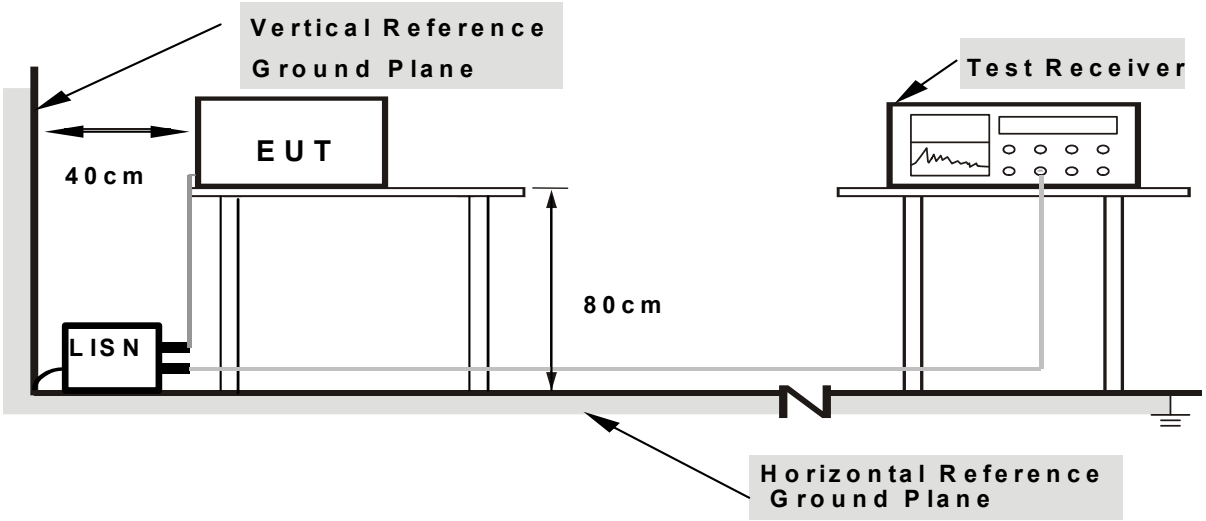
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

6.4 DEVIATION FROM TEST STANDARD

No deviation

6.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

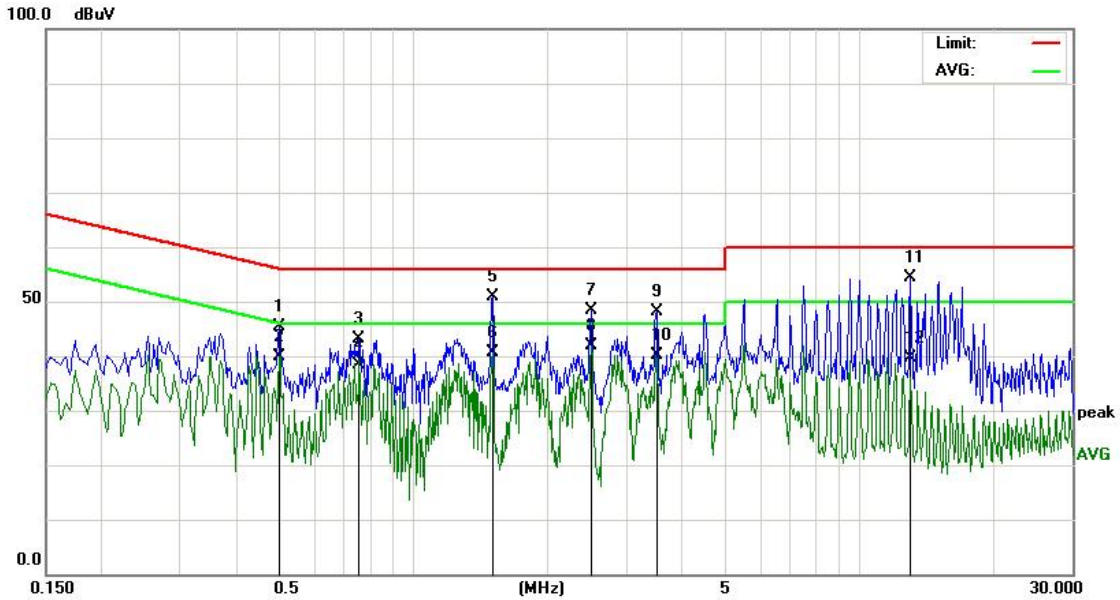
6.6 EUT OPERATING CONDITIONS

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.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

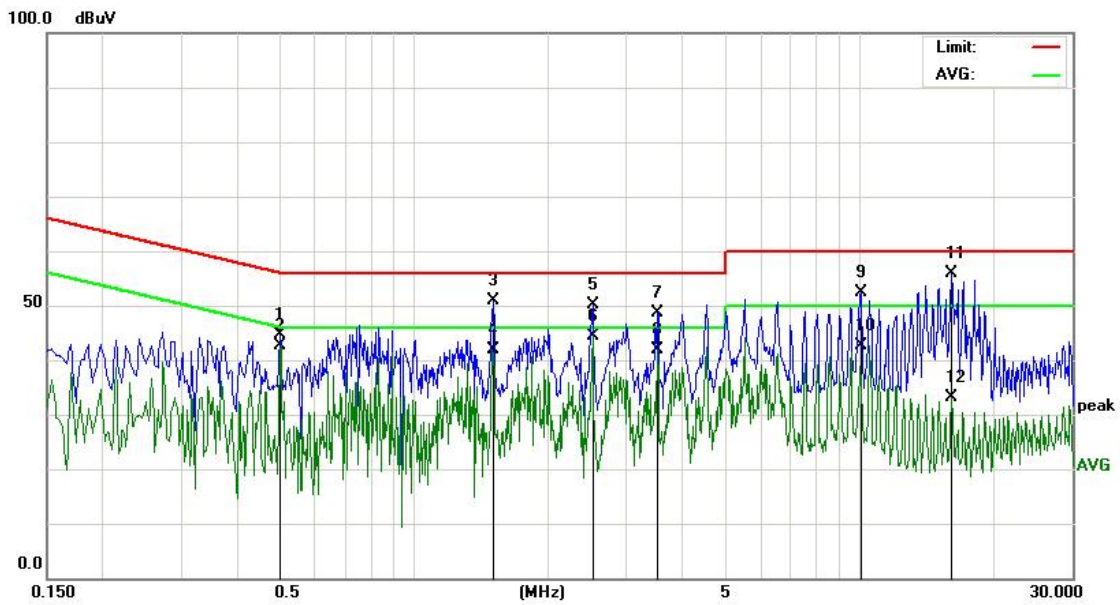
6.7 Test Result

Temperature:	25.5℃	Relative Humidity:	52.3%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5020	35.39	10.01	45.40	56.00	-10.60	QP
2		0.5020	29.98	10.01	39.99	46.00	-6.01	AVG
3		0.7580	33.18	9.97	43.15	56.00	-12.85	QP
4		0.7580	28.31	9.97	38.28	46.00	-7.72	AVG
5		1.5060	40.94	9.97	50.91	56.00	-5.09	QP
6		1.5060	30.61	9.97	40.58	46.00	-5.42	AVG
7		2.5059	38.41	10.01	48.42	56.00	-7.58	QP
8	*	2.5059	31.84	10.01	41.85	46.00	-4.15	AVG
9		3.5099	38.00	10.04	48.04	56.00	-7.96	QP
10		3.5099	30.08	10.04	40.12	46.00	-5.88	AVG
11		13.0099	43.94	10.36	54.30	60.00	-5.70	QP
12		13.0099	29.20	10.36	39.56	50.00	-10.44	AVG

Temperature:	25.5℃	Relative Humidity:	52.3%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.5020	34.67	10.01	44.68	56.00	-11.32	QP
2		0.5020	32.50	10.01	42.51	46.00	-3.49	AVG
3		1.5100	40.90	9.97	50.87	56.00	-5.13	QP
4		1.5100	31.82	9.97	41.79	46.00	-4.21	AVG
5		2.5139	40.04	10.01	50.05	56.00	-5.95	QP
6	*	2.5139	34.34	10.01	44.35	46.00	-1.65	AVG
7		3.5179	38.56	10.04	48.60	56.00	-7.40	QP
8		3.5179	31.85	10.04	41.89	46.00	-4.11	AVG
9		10.0739	42.02	10.25	52.27	60.00	-7.73	QP
10		10.0739	32.44	10.25	42.69	50.00	-7.31	AVG
11		16.0858	45.28	10.57	55.85	60.00	-4.15	QP
12		16.0858	22.54	10.57	33.11	50.00	-16.89	AVG

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.Mesurement Level = Reading level + Correct Factor

7 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

7.1 Radiated Emission Limits

Limits for frequency below 30MHz

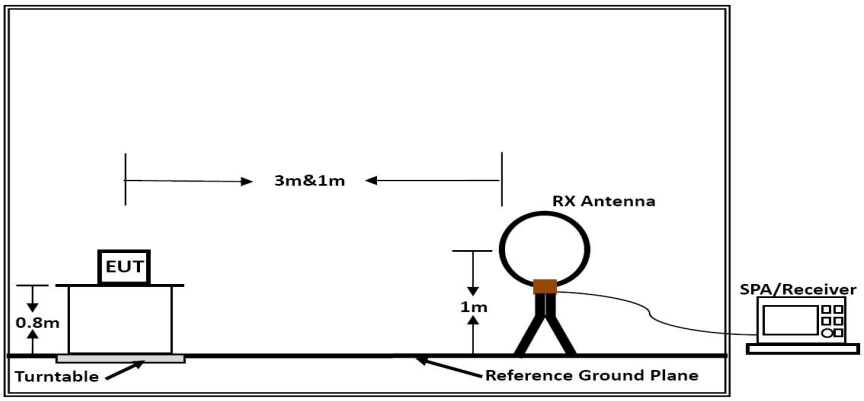
Frequency	Limit (uV/m)	Measurement Distance(m)	Remark
0.009-0.490	2400/F(kHz)	300	Quasi-peak Value
0.490-1.705	24000/F(kHz)	30	Quasi-peak Value
1.705-30	30	30	Quasi-peak Value

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

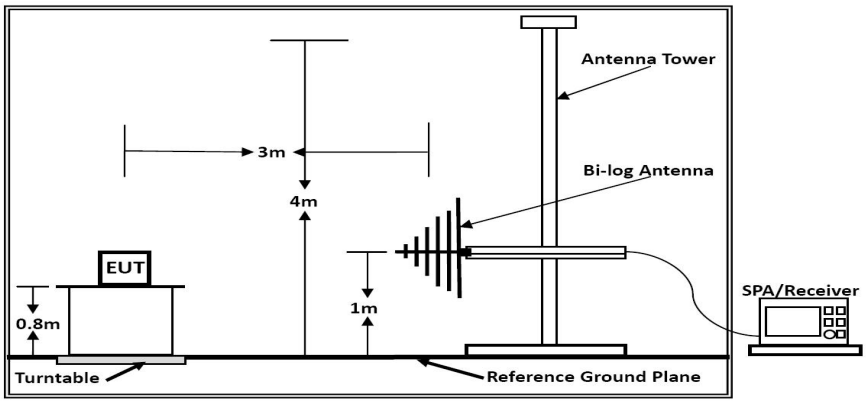
7.2 Anechoic Chamber Test Setup Diagram

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



Below 30MHz

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



Below 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.

7.3 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.

7.4 DEVIATION FROM TEST STANDARD

No deviation

7.5 Test Result

We pretest AC 120V and AC 230V in full load, half load and no load, the worst voltage was AC 120V in full load and the data recording in the report.

Measurement data:

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

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

Mode1 :

9 kHz~30 MHz

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB/m)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
0.0235	-22.86	66.46	43.60	120.0	-76.44	Quasi-Peak
0.1215	41.55	40.71	82.26	105.8	-23.58	Peak
0.1215	27.46	40.71	68.17	105.8	-37.67	Average
1.1506	19.46	25.44	44.90	66.41	-21.51	Quasi-Peak
3.0703	27.49	17.91	45.40	69.50	-24.10	Quasi-Peak
6.9100	25.78	14.62	40.40	69.50	-29.10	Quasi-Peak
14.5739	22.85	13.55	36.40	69.50	-33.10	Quasi-Peak

Note:

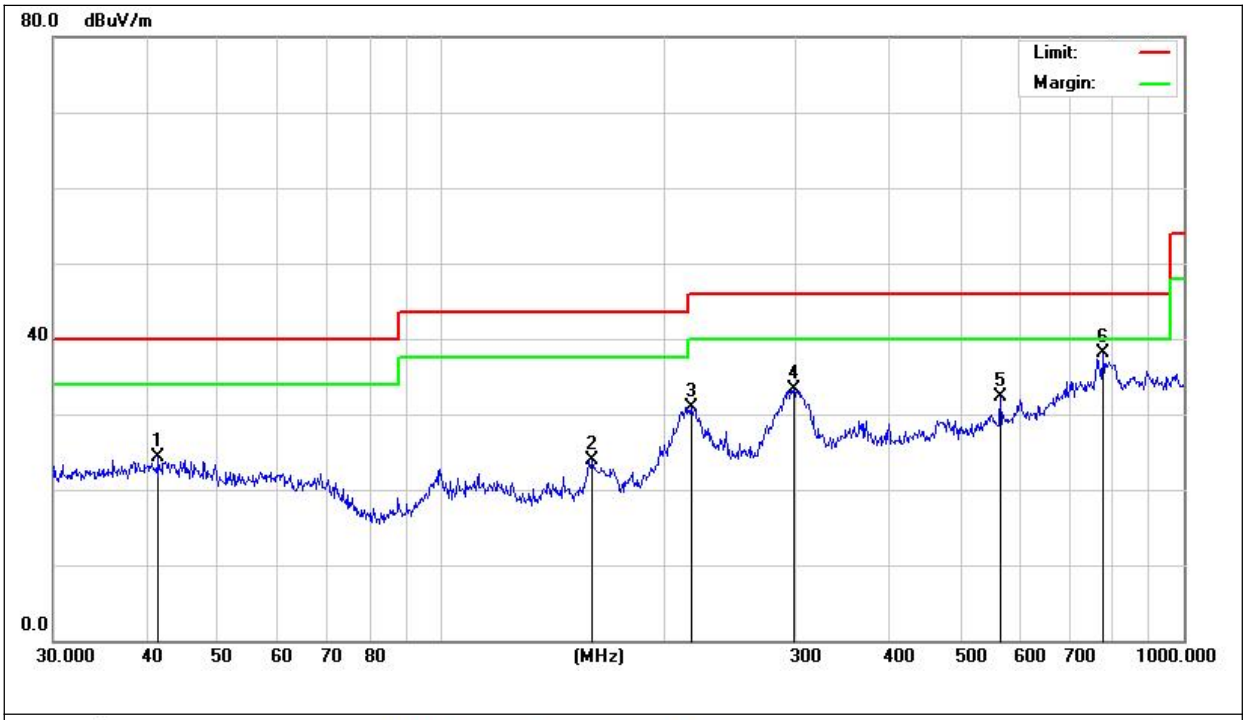
Pre-scan in the all of mode, the worst case in of was recorded.

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

Margin = Emission Level- Limit.

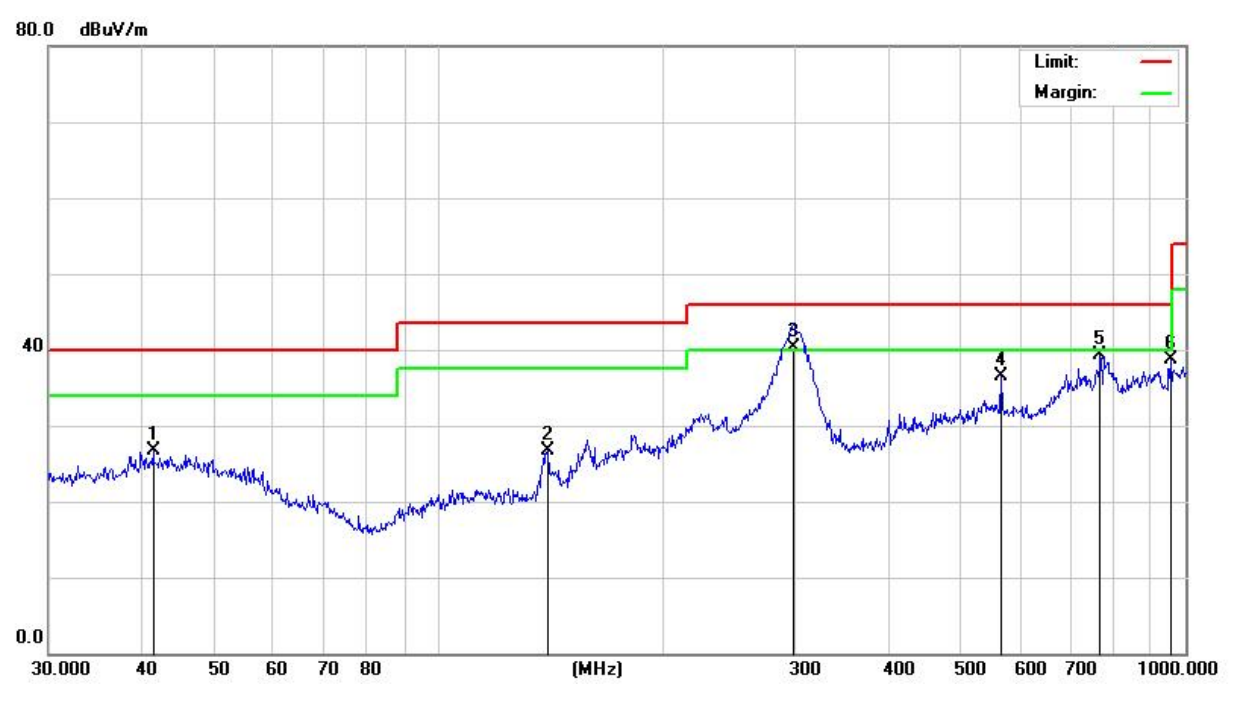
30MHz-1GHz

Temperature:	25.5℃	Relative Humidity:	52.3%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		41.5670	22.71	1.54	24.25	40.00	-15.75	QP
2		159.7844	26.60	-2.67	23.93	43.50	-19.57	QP
3		216.7828	30.65	0.34	30.99	46.00	-15.01	QP
4		298.2681	32.01	1.34	33.35	46.00	-12.65	QP
5		566.6223	25.30	6.94	32.24	46.00	-13.76	QP
6	*	779.6068	26.40	11.62	38.02	46.00	-7.98	QP

Temperature:	25.5℃	Relative Humidity:	52.3%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	AC 120V/60Hz		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		41.4215	22.66	3.97	26.63	40.00	-13.37	QP
2		139.8508	27.75	-1.07	26.68	43.50	-16.82	QP
3	*	298.3110	39.14	1.08	40.22	46.00	-5.78	QP
4		566.6223	27.10	9.47	36.57	46.00	-9.43	QP
5		768.7481	26.83	12.43	39.26	46.00	-6.74	QP
6		955.4381	26.06	12.66	38.72	46.00	-7.28	QP

Remarks:

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

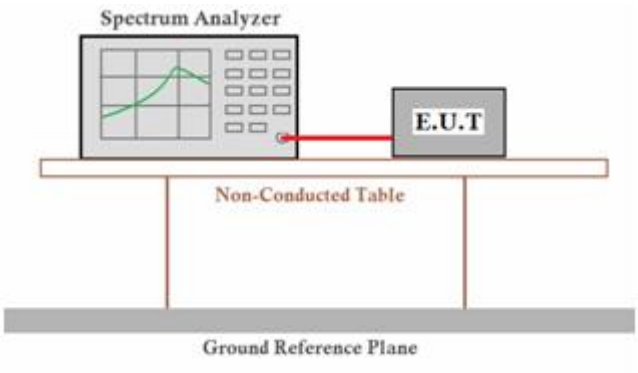
2.The emission levels of other frequencies are very lower than the limit and not show in test report.

8 BANDWIDTH TEST

8.1 Test Procedure

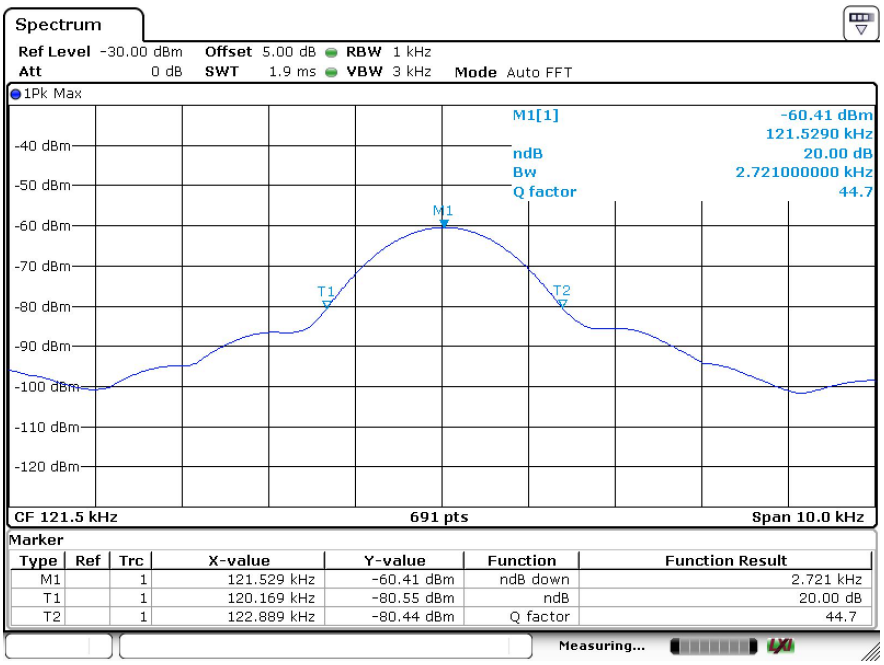
1. Set RBW = 3 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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

8.2 Test setup



Temperature:	20 ℃	Relative Humidity:	44%
Pressure:	101kPa		

Frequency (KHz)	20dB bandwidth (KHz)	99% bandwidth (KHz)	Result
121.5	2.721	-	Pass



9 ANTENNA REQUIREMENT:

Standard requirement: FCC Part15 C Section 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, 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 Inductive loop coil Antenna, the best case gain of the antenna is 0dBi, reference to the appendix for details.

10 Test Setup Photographs of EUT

Please refer to separated files for Test Setup Photos of the EUT.

11 External Photographs of EUT

Please refer to separated files for External Photos of the EUT.

12 Internal Photographs of EUT

Please refer to separated files for Internal Photos of the EUT.

** End of report **