HUAK TESTING

FCC
TEST REPORT

Prepared for :

Westfield Outdoor Inc

8675 Purdue Road Indianapolis IN 46268

FCC ID: 2A3KCX-300

Product:	**Portable Power Station**
Trade Name:	**POWER RIDGE**
Model Name:	**X-300**
Date of Test:	**Sept. 21, 2021 ~ Sept. 29, 2021**
Date of Report:	**Sept. 29, 2021**
Report Number:	**HK2109233615-E**

Prepared By :

Shenzhen HUAK Testing Technology Co., Ltd.

1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping,

Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

TEL: +86-755-2302 9901 FAX: +86-755-2302 9901

E-mail: service@cer-mark.com http://www.cer-mark.com

TEST REPORT VERIFICATION

Applicant	:	Westfield Outdoor Inc
Address	:	8675 Purdue Road Indianapolis IN 46268
Manufacturer	:	NewVenture Electronic (Shenzhen) Co., Ltd.
Address	:	RM. A502, HuaFeng International Robot Industrial Park, HangCheng Rd., Xixiang Street, Bao'an,Shenzhen 518126, China
EUT Description	:	Portable Power Station
(A) Model No.	:	X-300
(B) Series Model	:	N/A
(C) Power Supply	:	DC input: 10-30VDC, Max 5A, 60W TYPE-C input: 5-20VDC, Max 3A, 60W USB-A QC3.0 output: 5-12VDC, 3.6A, 18W USB-A output: 5VDC, 2.4A TYPE-C output: 5-20VDC, Max 3.25A, 65W TYPE-C output: 5-12VDC, 3A, 18W DC output: 12VDC, 10A, 120W AC Output: 110V~, 60Hz, Rated 200W, Max 350W Battery: Lithium-ion Battery 14.8VDC, 20000mAh, 296Wh

Standards ..... FCC Part 15 Subpart B
ANSI C63.4:2014

This device described above has been tested by HUAK, and the test results show that the equipment under test (EUT) is in compliance with Part 15 of FCC Rules. And it is applicable only to the tested sample identified in the report.

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Date of Test.....

Date (s) of performance of tests ..... **Sept. 21, 2021 ~ Sept. 29, 2021**

Date of Issue ..... **Sept. 29, 2021**

Test Result ..... **Pass**

Testing Engineer : Gary Qian
(Gary Qian)

Technical Manager : Eden Hu
(Eden Hu)

Authorized Signatory : Jason Zhou
(Jason Zhou)

1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
FCC Part 15 Subpart B ANSI C63.4:2014	Conducted Emission	Class B	PASS	
	Radiated Emission	Class B	PASS	

NOTE:

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

(2) For client's request and manual description, the test will not be executed.

1.1 INFORMATION OF THE TEST LABORATORY

Shenzhen HUAK Testing Technology Co., Ltd.
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization：
A2LA Accreditation Code is 4781.01.
FCC Designation Number is CN1229.
Canada IC CAB identifier is CN0045.
CNAS Registration Number is L9589.

1.2 MEASUREMENT UNCERTAINTY

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

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Portable Power Station
Model Name	X-300
Series Model	N/A
Model Difference	N/A
Product Description	The EUT is a Portable Power Station Operating frequency: N/A Connecting I/O port: N/A Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification please refer to the User's Manual.
Power Source	AC Voltage
Power Rating	DC input: 10-30VDC, Max 5A, 60W TYPE-C input: 5-20VDC, Max 3A, 60W USB-A QC3.0 output: 5-12VDC, 3.6A, 18W USB-A output: 5VDC, 2.4A TYPE-C output: 5-20VDC, Max 3.25A, 65W TYPE-C output: 5-12VDC, 3A, 18W DC output: 12VDC, 10A, 120W AC Output: 110V~, 60Hz, Rated 200W, Max 350W Battery: Lithium-ion Battery 14.8VDC, 20000mAh, 296Wh

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

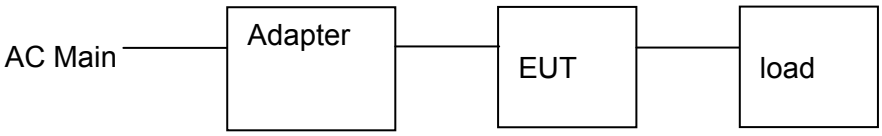
Pretest Mode	Description
Mode 1	Running

For Conducted Test	
Final Test Mode	Description
Mode 1	Running

For Radiated Test	
Final Test Mode	Description
Mode 1	Running

2.3 DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted, Radiation testing:



- Adapter information
  Model: AK65WG-1900342W2
  Input: 100-240V~ 50/60Hz, 1.5A
  Output: 19V, 3.42A 64.98W

2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

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
E-1	Portable Power Station	N/A	X-300	N/A	EUT
	Adapter	N/A	AK65WG-1900342W2	N/A	Adapter

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 10, 2020	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 10, 2020	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 10, 2020	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 10, 2020	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 10, 2020	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 10, 2020	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 10, 2020	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 10, 2020	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 10, 2020	1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Dec. 10, 2020	1 Year
11.	Pre-amplifier	EMCI	EMC051845SE	HKE-015	Dec. 10, 2020	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 10, 2020	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 10, 2020	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 10, 2020	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 10, 2020	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 10, 2020	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 10, 2020	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 10, 2020	3 Year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

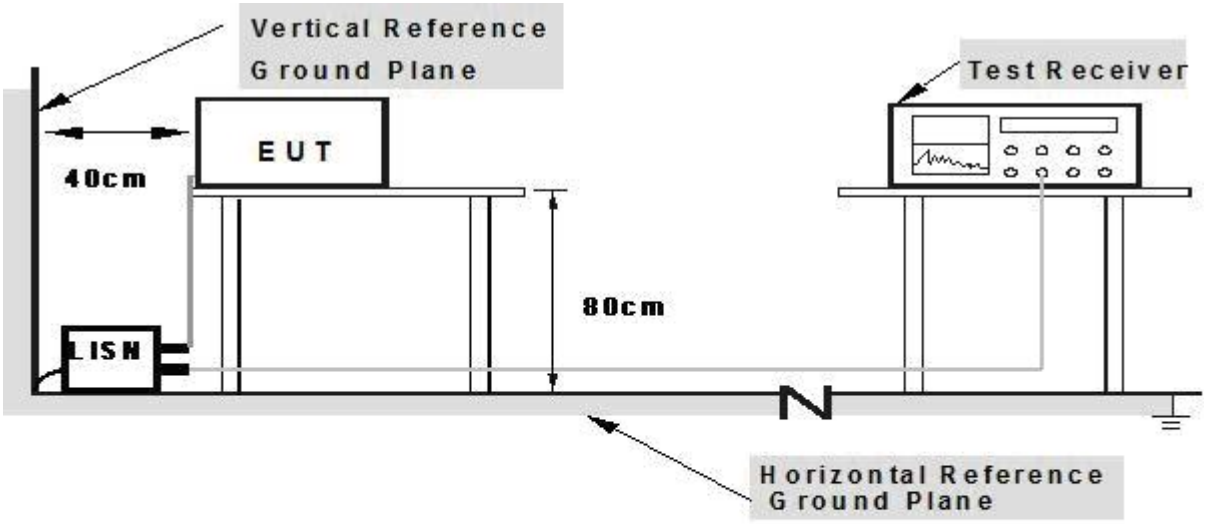
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 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.

3.1.3 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

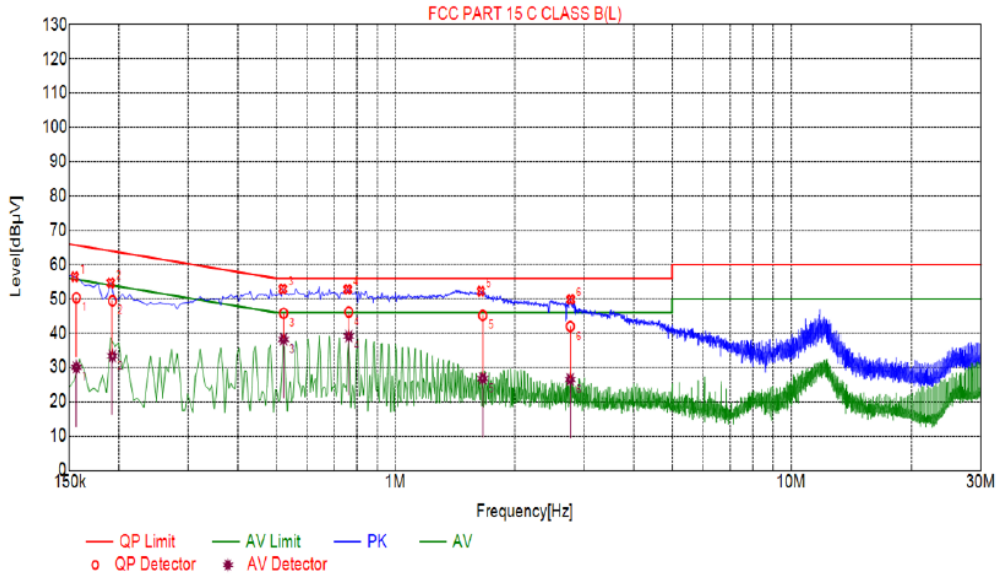
3.1.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

Remark: We tested AC 120V/60Hz and AC 240V/60Hz, the worst case was recorded.

3.1.5 TEST RESULTS

EUT :	Portable Power Station	Model Name. :	X-300
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-09-24
Test Mode :	Running	Phase :	L
Test Voltage :	AC120V/60Hz		



Suspected List

NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1545	56.47	20.03	65.75	9.28	36.44	PK	L
2	0.1905	54.69	20.04	64.01	9.32	34.65	PK	L
3	0.5190	52.90	20.04	56.00	3.10	32.86	PK	L
4	0.7575	52.78	20.06	56.00	3.22	32.72	PK	L
5	1.6440	52.23	20.12	56.00	3.77	32.11	PK	L
6	2.7735	49.84	20.21	56.00	6.16	29.63	PK	L

Final Data List

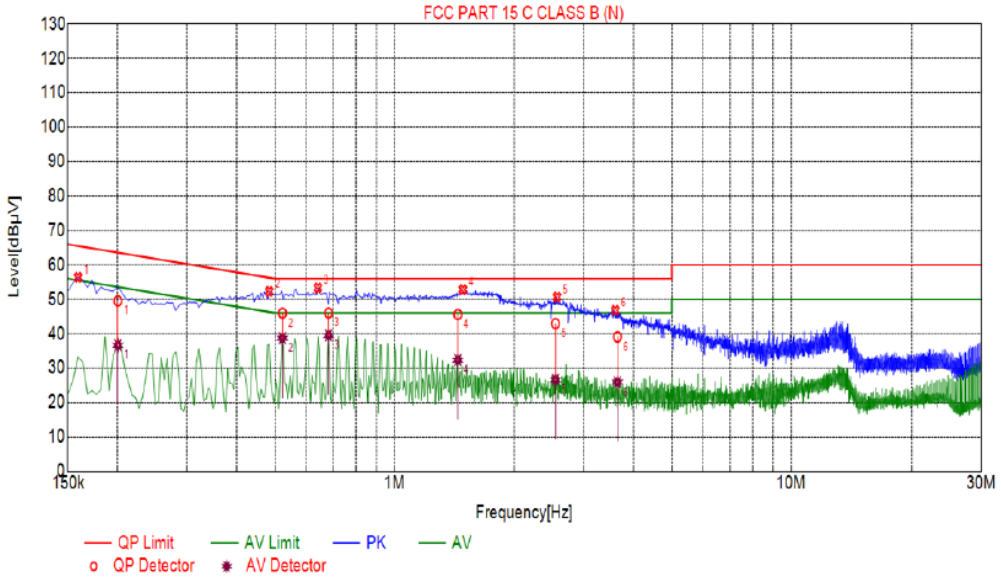
NO.	Freq. [MHz]	Correction factor[dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	QP Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	AV Reading [dBµV]	Type
1	0.1560	20.02	50.33	65.67	15.34	30.31	30.01	55.67	25.66	9.99	L
2	0.1924	20.04	49.44	63.93	14.49	29.40	33.33	53.93	20.60	13.29	L
3	0.5212	20.04	45.81	56.00	10.19	25.77	38.20	46.00	7.80	18.16	L
4	0.7616	20.05	46.18	56.00	9.82	26.13	39.11	46.00	6.89	19.06	L
5	1.6604	20.12	45.18	56.00	10.82	25.06	26.77	46.00	19.23	6.65	L
6	2.7659	20.21	41.96	56.00	14.04	21.75	26.46	46.00	19.54	6.25	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

EUT :	Portable Power Station	Model Name. :	X-300
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2021-09-24
Test Mode :	Running	Phase :	N
Test Voltage :	AC120V/60Hz		



Suspected List

NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Type
1	0.1590	56.40	20.01	65.52	9.12	36.39	PK	N
2	0.4830	52.28	20.04	56.29	4.01	32.24	PK	N
3	0.6405	53.33	20.05	56.00	2.67	33.28	PK	N
4	1.4865	52.81	20.10	56.00	3.19	32.71	PK	N
5	2.5710	50.66	20.20	56.00	5.34	30.46	PK	N
6	3.6015	46.78	20.25	56.00	9.22	26.53	PK	N

Final Data List

NO.	Freq. [MHz]	Correction factor[dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	QP Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	AV Reading [dBµV]	Type
1	0.2003	20.03	49.53	63.60	14.07	29.50	36.65	53.60	16.95	16.62	N
2	0.5211	20.04	45.96	56.00	10.04	25.92	38.70	46.00	7.30	18.66	N
3	0.6813	20.05	46.01	56.00	9.99	25.96	39.50	46.00	6.50	19.45	N
4	1.4425	20.10	45.59	56.00	10.41	25.49	32.31	46.00	13.69	12.21	N
5	2.5465	20.20	42.93	56.00	13.07	22.73	26.58	46.00	19.42	6.38	N
6	3.6480	20.25	39.07	56.00	16.93	18.82	25.89	46.00	20.11	5.64	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Notes:

(1) The limit for radiated test was performed according to as following: FCC PART 15B /ICES-003.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

3.2.2 TEST PROCEDURE

a. The measuring distance of at 10 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

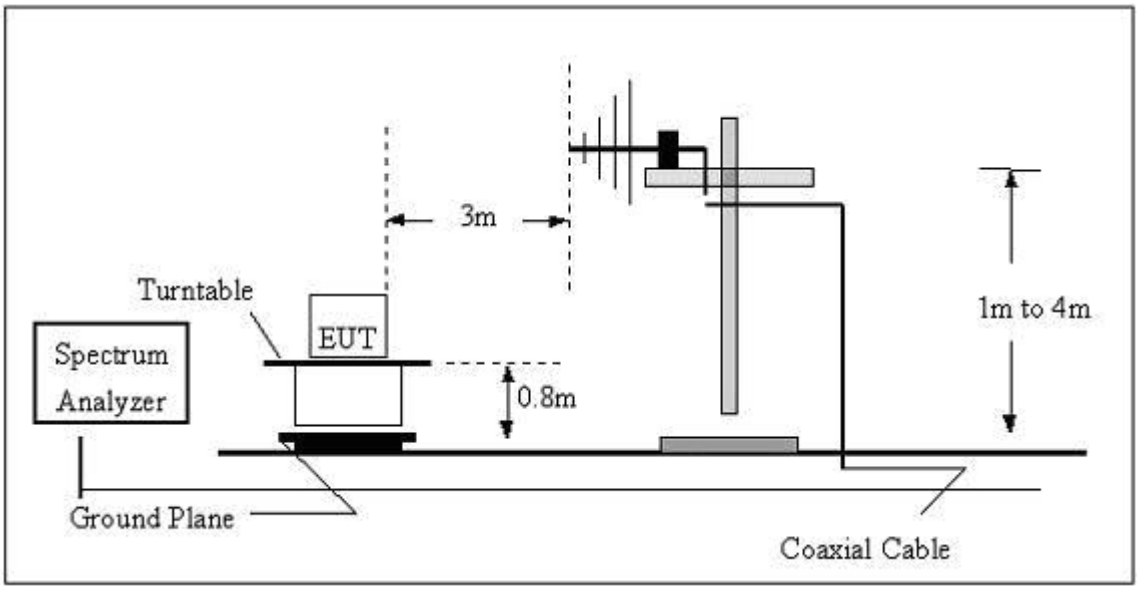
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.

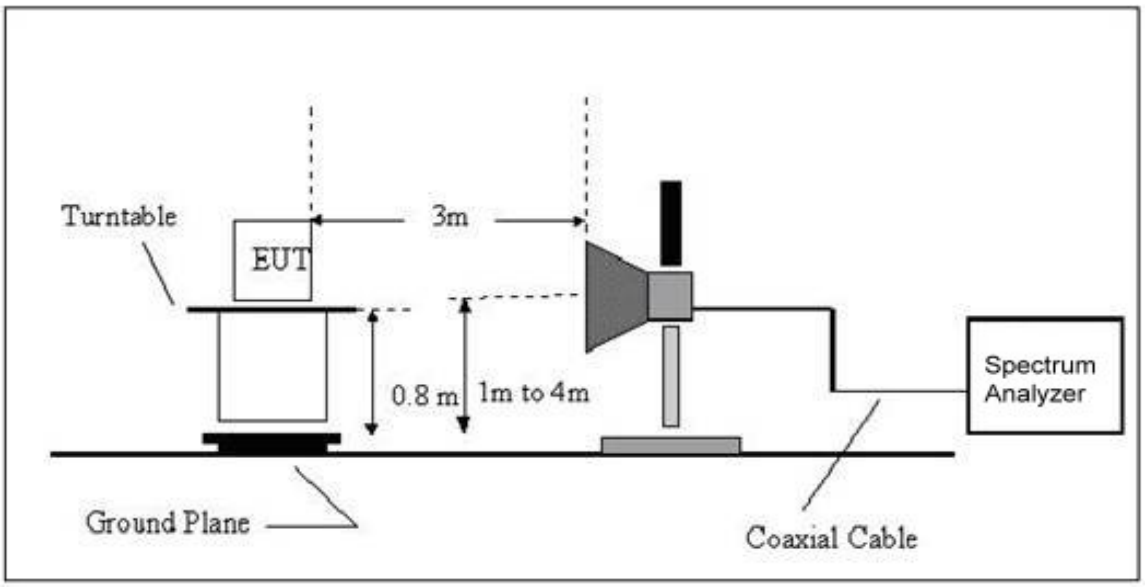
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1GHz



3.2.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

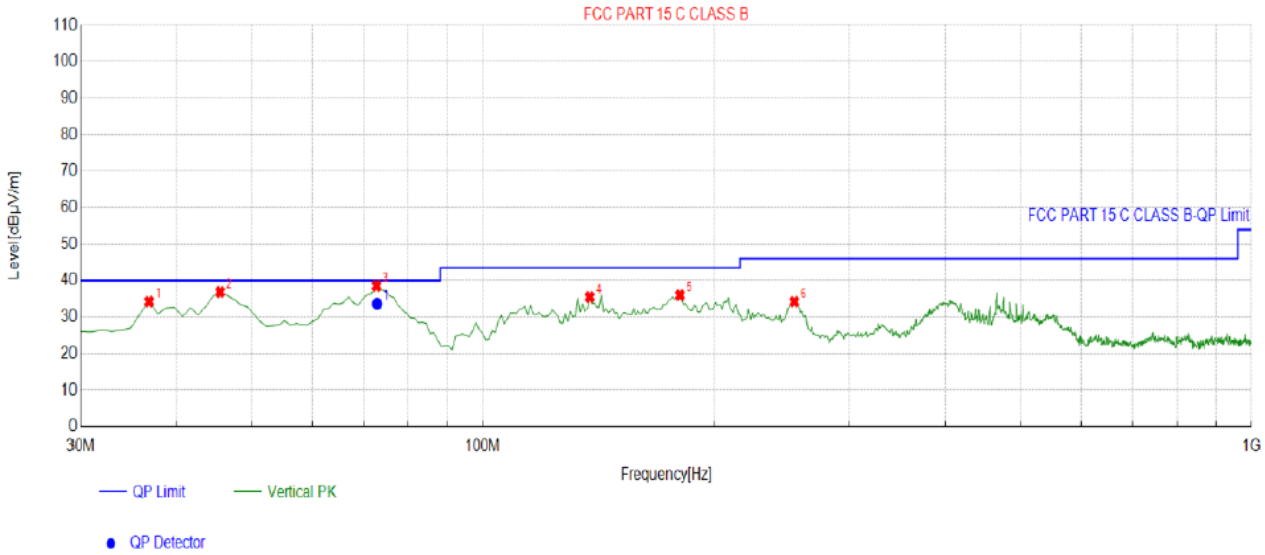
3.2.5 TEST RESULTS

EUT :	Portable Power Station	Model Name :	X-300
Temperature :	24 ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-09-24
Test Mode :	Running	Polarization :	Horizontal
Test Power :	AC120V/60Hz		

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	57.1872	-14.74	44.88	30.14	40.00	9.86	100	193	Horizontal
2	97.9680	-15.74	44.88	29.14	43.50	14.36	100	222	Horizontal
3	162.0521	-18.03	53.80	35.77	43.50	7.73	100	204	Horizontal
4	186.3263	-16.32	52.14	35.82	43.50	7.68	100	199	Horizontal
5	255.2653	-13.46	49.21	35.75	46.00	10.25	100	98	Horizontal
6	354.3043	-11.54	47.09	35.55	46.00	10.45	100	50	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

EUT :	Portable Power Station	Model Name :	X-300
Temperature :	24 ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2021-09-24
Test Mode :	Running	Polarization :	Vertical
Test Power :	AC120V/60Hz		



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBµV/m]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.7968	-15.57	49.83	34.26	40.00	5.74	100	285	Vertical
2	45.5355	-13.65	50.56	36.91	40.00	3.09	100	314	Vertical
3	72.7227	-18.16	56.71	38.55	40.00	1.45	100	111	Vertical
4	137.7778	-19.04	54.57	35.53	43.50	7.97	100	280	Vertical
5	180.5005	-16.81	52.84	36.03	43.50	7.47	100	114	Vertical
6	254.2943	-13.45	47.69	34.24	46.00	11.76	100	262	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBµV/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	72.8469	-18.16	51.82	33.66	40.00	6.34	190	91.8	Vertical

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

3.2.6 TEST RESULTS (Above 1GHz)

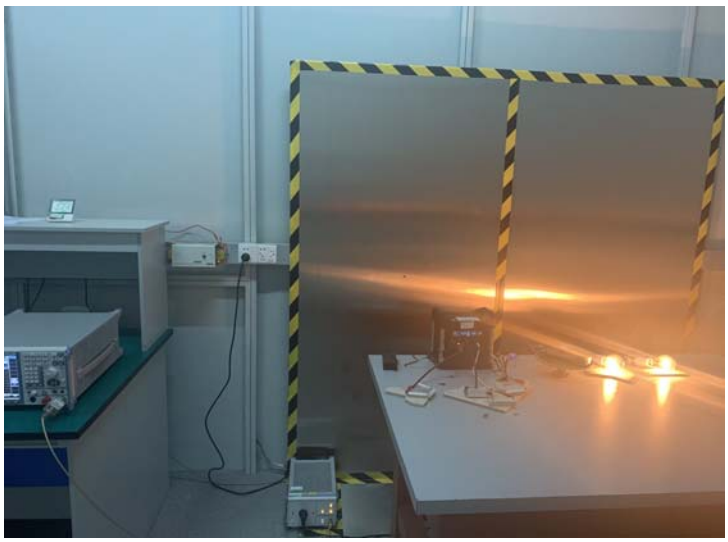
EUT :	Portable Power Station	Model Name :	X-300
Temperature :	24 ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	N/A
Test Mode :	N/A		
Test Power :	N/A		

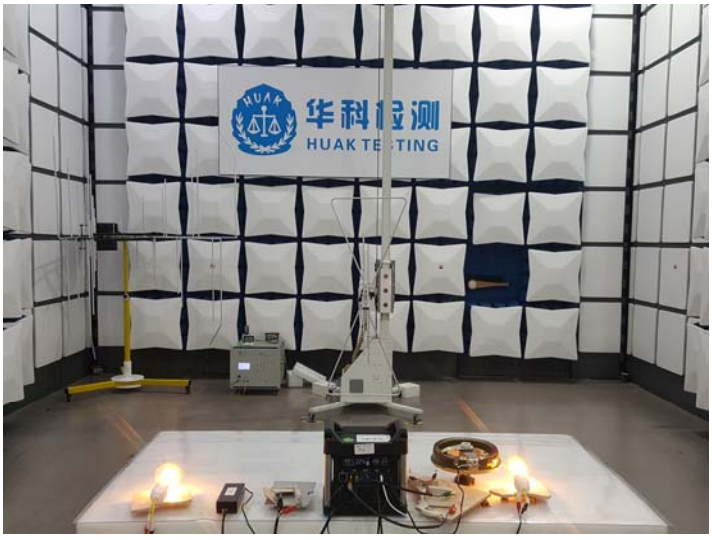
Note:

1) N/A - denotes test is not applicable in this test report

2) There was not any unintentional transmission in standby mode

4. EUT TEST PHOTO





5. PHOTOS OF THE EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos

----------End of report----------