

Report No.: NTC2108509FV00

FCC RADIO TEST REPORT

Applicant.....: Power System Electronic Technology Co., Ltd.

Guangdong, China

Manufacturer..... : Power System Electronic Technology Co., Ltd.

Address...... : No.1 Shangbian Road, Puxin Industrial District, Shipai Town, Dongguan City,

Guangdong, China

Factory.....: Power System Electronic Technology Co., Ltd.

Address...... : No.1 Shangbian Road, Puxin Industrial District, Shipai Town, Dongguan City,

Guangdong, China

Product Name...... : Portable Multifunctional Power Bank

Brand Name.....: N/A

Model No. : PS-330US

FCC ID.....: 2AQTM-PS330US

Measurement Standard...... : 47 CFR FCC Part 15, Subpart C

Receipt Date of Samples.... : August 27, 2021

Date of Tested.....: October 28, 2021 to November 09, 2021

Date of Report.....: November 25, 2021

This report shows that above equipment is technically compliant with the requirements of the standards above.

All test results in this report apply only to the tested sample(s). Without prior written approval of Dongguan Nore

Testing Center Co., Ltd, this report shall not be reproduced except in full.

Prepared by

Jenny Liu / Project Engineer

Iori Fan / Authorized Signatory





Table of Contents

1. Summary of Test Result	4
2. General Description of EUT	5
3. Test Channels and Modes Detail	6
4. Configuration of EUT	6
5. Modification of EUT	6
6. Description of Support Device	8
7. Test Facility and Location	8
8. Applicable Standards and References	9
9. Deviations and Abnormalities from Standard Conditions	9
10. Test Conditions	9
11. Measurement Uncertainty	10
12. Sample Calculations	11
13. Test Items and Results	12
13.1 Conducted Emissions Measurement	12
13.2 Radiated Spurious Emissions and Restricted Bands Measurement	16
13.3 20dB Bandwidth Measurement	26
13.4 Antenna Requirement	28
14 Test Equipment List	20





Revision History

Report Number	Description	Issued Date
NTC2108509FV00	Initial Issue	2021-11-25





1. Summary of Test Result

FCC Rules	Description of Test	Result	Remarks
§15.207 (a)	AC Power Conducted Emission	PASS	
§15.209	Radiated Emissions	PASS	
§15.215	20dB Bandwidth	PASS	





2. General Description of EUT

Product Information	
Product Name:	Portable Multifunctional Power Bank
Main Model Name:	PS-330US
Additional Model Name:	N/A
Model Difference:	N/A
S/N:	2108-4792
Brand Name:	N/A
Hardware Version:	Not Stated
Software Version:	Not Stated
Rating:	DC14.8V come from Battery, USB-C Input: PD30W (DC5V 3A, DC9V 3A, DC12V 2.5A, DC15V 2A, DC20V 1.5A), USB-C Output: PD60W (DC5V 3A, DC9V 3A, DC12V 3A, DC15V 3A, DC20V 3A), USB-A1/2 Output: DC5V 2.4A, USB-A Total Output: DC5V 3.4A, Wireless Output: 5W/7.5W/10W, AC Output: AC110V 100W Max
Typical Arrangement:	Tabletop
I/O Port:	Refer to the user manual
Accessories Information	
Adapter:	N/A
Cable:	N/A
Other:	N/A
Additional Information	
Note:	N/A
Remark:	All the information above are provided by the manufacturer. More detailed feature of the EUT please refers to the user manual.

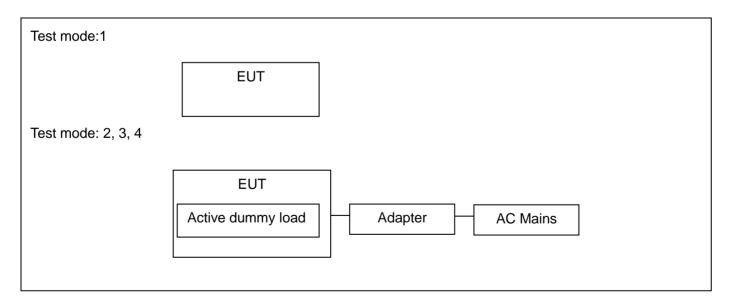


Technical Specification		
Frequency Range:	110.5-205KHz	
Modulation Type:	FSK	
Antenna Type:	Coil antenna	

3. Test Channels and Modes Detail

	Mode	Modulation
1.	Transmiting	
2.	wireless charging (5W)+ Transmiting	FSK
3.	wireless charging (7.5W)+ Transmiting	1 310
4.	wireless charging (10W)+ Transmiting	

4. Configuration of EUT



5. Modification of EUT

No modifications are made to the EUT during all test items.









6. Description of Support Device

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.

No.	Equipment	Brand	M/N	S/N	Cable Specification	Remarks
1.	Active dummy load	EESON	5/7.5/10/15W	N/A		Provided by the Lab
2.	Adapter	HUAWEI	HW-050200C 01			Provided by the Lab

7. Test Facility and Location

Test Site	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Accreditations and	:	The Laboratory has been assessed and proved to be in compliance with
Authorizations		CNAS/CL01
		Listed by CNAS, August 13, 2018
		The Certificate Registration Number is L5795.
		The Certificate is valid until August 13, 2024
		The Laboratory has been assessed and proved to be in compliance with
		ISO17025
		Listed by A2LA, November 01, 2017
		The Certificate Registration Number is 4429.01
		The Certificate is valid until December 31, 2021
		Listed by FCC, November 06, 2017
		Test Firm Registration Number is 907417
		Listed by Industry Canada, June 08, 2017
		The Certificate Registration Number is 46405-9743A
		The CAB identifier number is CN0015
Test Site Location	:	Building D, Gaosheng Science and Technology Park, Hongtu Road, Nancheng
		District, Dongguan City, Guangdong Province, China





8. Applicable Standards and References

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

Test Standards:

47 CFR Part 15, Subpart C ANSI C63.10-2013

References Test Guidance:

N/A

9. Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

10. Test Conditions

No.	Test Item	Test Mode	Test Voltage	Tested by	Remarks
1.	AC Power Conducted Emission	1-4	AC 120V 60Hz	Sean Yuan	See note 1
2.	Radiated Emissions	1-4	AC 120V 60Hz, DC14.8V	Sean Yuan	See note 1
3.	20dB Bandwidth	4	AC 120V 60Hz	Sean Yuan	See note 1

Note:

- 1. The testing climatic conditions for temperature, humidity, and atmospheric pressure are within: $15\sim35^{\circ}$ C, $30\sim70\%$, $86\sim106$ kPa.
- 2. For the test voltage, only the worst case was recorded in this report.





11. Measurement Uncertainty

No.	Test Item	Frequency	Uncertainty	Remarks
1.	Conducted Emission	150KHz ~ 30MHz	±2.52 dB	
2. Radiat		9kHz ~ 30MHz	±2.60 dB	
	Radiated Emission Test	30MHz ~ 1GHz	±4.68 dB	
		1GHz ~ 18GHz	±5.14 dB	
		18GHz ~ 40GHz	±5.14 dB	
3.	RF Conducted Test	10Hz ~ 40GHz	±1.06 dB	

Note:

- 1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2. The measurement uncertainly levels above are estimated and calculated according to CISPR 16-4-2.
- 3. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.





12. Sample Calculations

Conducted Emission						
Freq. Reading Level Correct Factor Measurement Limit Over (MHz) (dBuV) (dB) (dBuV) (dB)						Detector
0.1900	30.10	10.60	40.70	79.00	-38.30	QP

Where,

Freq. = Emission frequency in MHz

Reading Level = Uncorrected Analyzer/Receiver reading

Corrector Factor = Insertion loss of LISN + Cable Loss + RF Switching Unit attenuation

Measurement = Reading + Corrector Factor

Limit = Limit stated in standard

Margin = Measurement - Limit

Detector = Reading for Quasi-Peak / Average / Peak

Radiated Spurious Emissions and Restricted Bands							
Freq. (MHz)	. Detector						
60.0700	45.88	-18.38	27.50	49.00	-21.50	QP	

Where,

Freq. = Emission frequency in MHz

Reading Level = Uncorrected Analyzer/Receiver reading

Corrector Factor = Antenna Factor + Cable Loss - Pre-amplifier

Measurement = Reading + Corrector Factor
Limit = Limit stated in standard

Over = Margin, which calculated by Measurement - Limit

Detector = Reading for Quasi-Peak / Average / Peak

Note: For all conducted test items, the spectrum analyzer offset or transducer is derived from RF cable loss and attenuator factor. The offset or transducer is equal to the RF cable loss plus attenuator factor.



13. Test Items and Results

13.1 Conducted Emissions Measurement

LIMIT

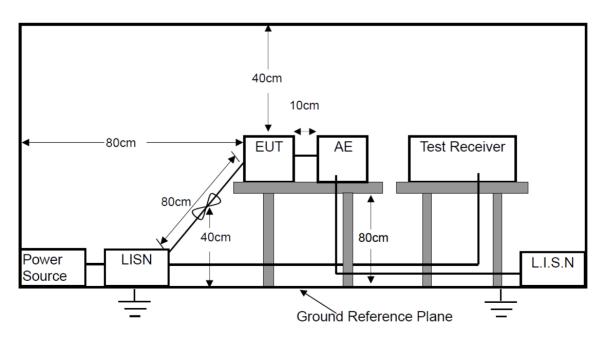
According to the requirements of FCC PART 15.207, the limits are as follows:

Frequency (MHz)	Quasi-peak	Average		
0.15 to 0.5	66 to 56	56 to 46		
0.5 to 5	56	46		
5 to 30	60	50		

Note: 1. If the limits for the average detector are met when using the quasi-peak detector, then the limits for the measurements with the average detector are considered to be met.

- 2. The lower limit shall apply at the transition frequencies.
- 3. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5MHz.

BLOCK DIAGRAM OF TEST SETUP







TEST PROCEDURES

- a. The EUT was placed on a wooden table 0.8m height from the metal ground plan and 0.4m from the conducting wall of the shielding room and it was kept at 0.8m from any other grounded conducting surface.
- b. All I/O cables and support devices were positioned as per ANSI C63.10.
- c. Connect mains power port of the EUT to a line impedance stabilization network (LISN).
- d. Connect all support devices to the other LISN and AAN, if needed.
- e. Scan the frequency range from 150KHz to 30MHz at both sides of AC line for maximum conducted interference checking and record the test data.

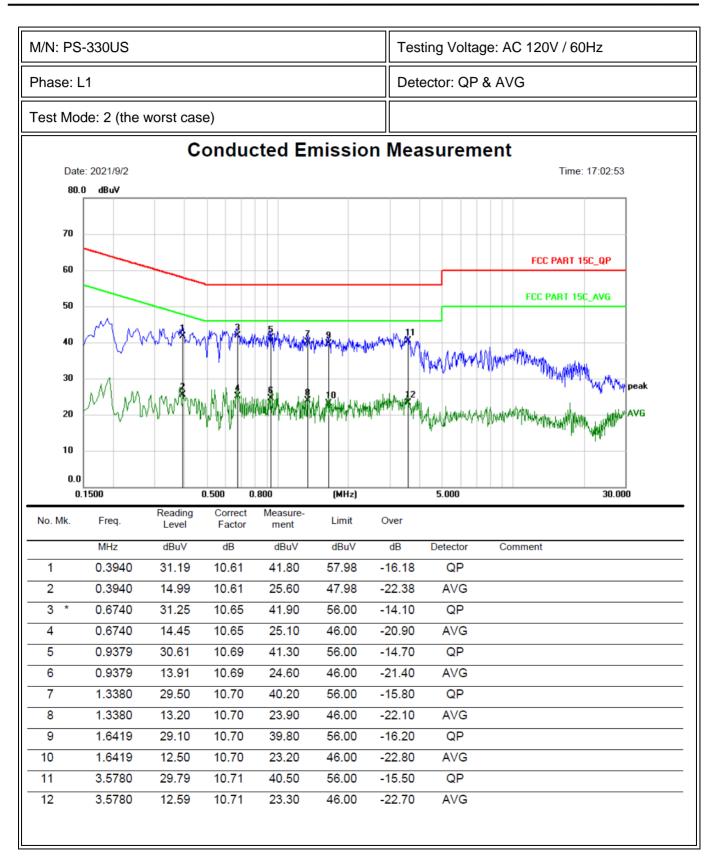
TEST RESULTS

PASS

Please refer to the following pages of the worst case.











12

3.3540

13.89

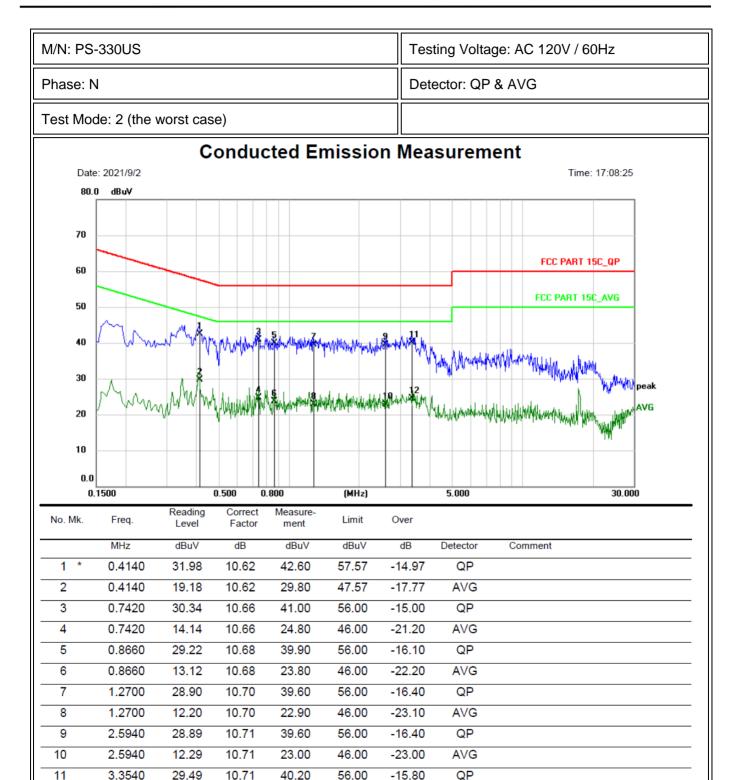
10.71

24.60

46.00

-21.40

AVG







13.2 Radiated Spurious Emissions and Restricted Bands Measurement

LIMIT

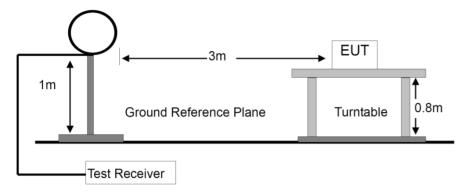
Frequency range	Distance Meters	Field Strengths Limit (15.209)			
MHz	Diotarios Motors	μV/m			
0.009 ~ 0.490	300	2400/F(kHz)			
0.490 ~ 1.705	30	24000/F(kHz)			
1.705 ~ 30	30	30			
30 ~ 88	3	100			
88 ~ 216	3	150			
216 ~ 960	3	200			
Above 960	3	500			

- Remark: (1) Emission level (dB) μ V = 20 log Emission level μ V/m
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
 - (4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.

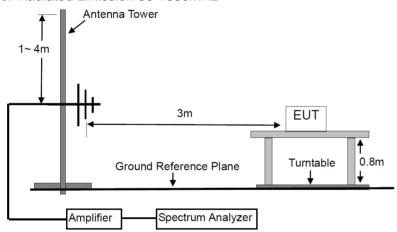


BLOCK DIAGRAM OF TEST SETUP

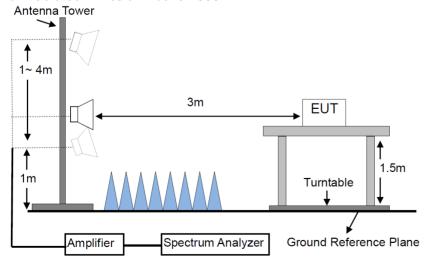
For Radiated Emission below 30MHz



For Radiated Emission 30-1000MHz



For Radiated Emission Above 1000MHz.





TEST PROCEDURES

- a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:
 - The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.
- g. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type.
 The worst case was found when the EUT was positioned on X axis for radiated emission.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band	Detector	Resolution Bandwidth	Video Bandwidth
9KHz to 150KHz	QP	300Hz	900Hz
150KHz to 30MHz	QP	10KHz	300KHz
30MHz to 1000MHz	QP	120 KHz	300 KHz
Above 1000MHz	Peak	1 MHz	3 MHz
Above 1000MHz	Average	1 MHz	10 Hz





TEST RESULTS

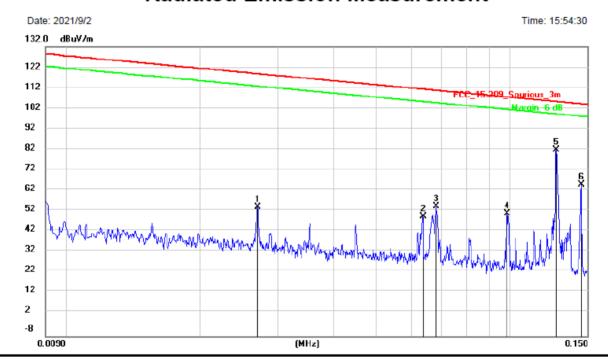
PASS

Please refer to the following pages of the worst case.





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Horizontal	Detector: Peak		
Test Mode: 2 (the worst case)	Distance: 3m		

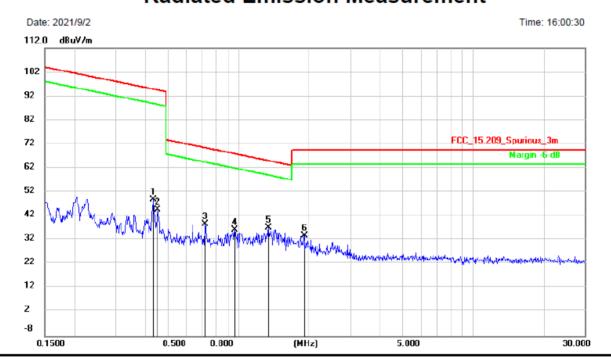


No. N	∕lk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		0.0270	34.16	20.49	54.65	118.84	-64.19	AVG		
2		0.0636	29.31	20.53	49.84	111.44	-61.60	AVG		
3		0.0684	34.47	20.52	54.99	110.81	-55.82	AVG		
4		0.0984	30.91	20.54	51.45	107.67	-56.22	QP		
5 *	1	0.1274	61.50	20.53	82.03	105.44	-23.41	AVG		
6		0.1450	44.74	20.53	65.27	104.32	-39.05	AVG		





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Horizontal	Detector: Peak		
Test Mode: 2 (the worst case)	Distance: 3m		

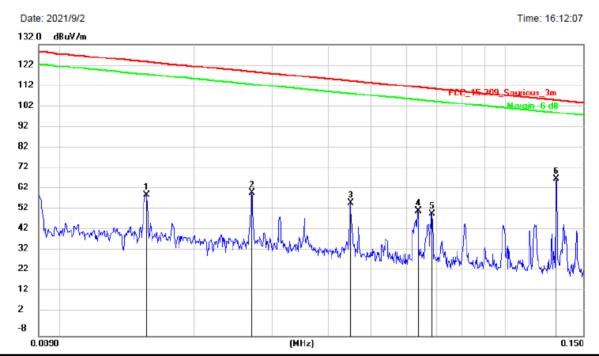


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		0.4351	28.44	20.46	48.90	94.83	-45.93	AVG		
2		0.4539	24.30	20.45	44.75	94.46	-49.71	AVG		
3		0.7235	18.10	20.42	38.52	70.42	-31.90	QP		
4		0.9632	15.83	20.40	36.23	67.93	-31.70	QP		
5	*	1.3449	16.83	20.40	37.23	65.03	-27.80	QP		
6		1.9080	13.53	20.40	33.93	69.50	-35.57	QP		





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Vertical	Detector: Peak		
Test Mode: 2 (the worst case)	Distance: 3m		

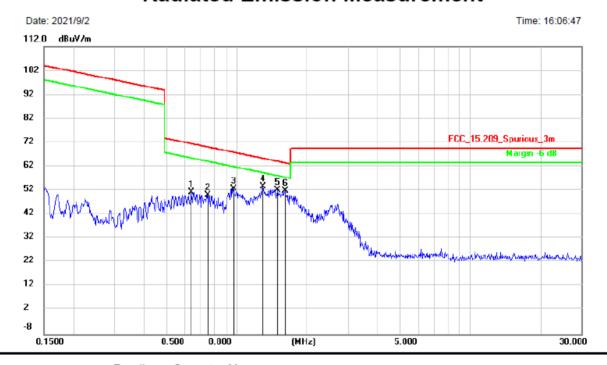


No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1	0.0157	39.70	20.06	59.76	123.52	-63.76	AVG		
2	0.0270	40.33	20.49	60.82	118.84	-58.02	AVG		
3	0.0450	35.21	20.59	55.80	114.42	-58.62	AVG		
4	0.0636	31.40	20.53	51.93	111.44	-59.51	AVG		
5	0.0686	30.02	20.52	50.54	110.78	-60.24	AVG		
6 *	0.1300	46.89	20.53	67.42	105.26	-37.84	AVG		





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Vertical	Detector: Peak		
Test Mode: 2 (the worst case)	Distance: 3m		

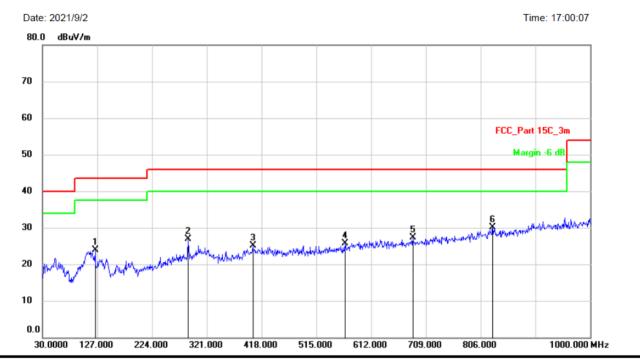


No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1	0.6372	30.91	20.43	51.34	71.52	-20.18	QP		
2	0.7470	29.54	20.42	49.96	70.14	-20.18	QP		
3	0.9633	32.34	20.40	52.74	67.93	-15.19	QP		
4	1.2892	33.30	20.40	53.70	65.40	-11.70	QP		
5	1.4953	31.65	20.40	52.05	64.11	-12.06	QP		
6 *	1.6105	31.56	20.40	51.96	63.47	-11.51	QP		





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Horizontal	Detector: QP		
Test Mode: 3 (the worst case)	Distance: 3m		

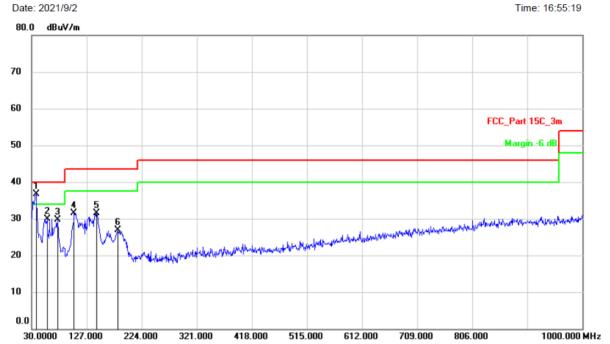


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		123.1200	33.60	-9.78	23.82	43.50	-19.68	QP		
2		288.0200	32.60	-5.76	26.84	46.00	-19.16	QP		
3		402.4800	28.34	-3.29	25.05	46.00	-20.95	QP		
4		565.4400	26.04	-0.32	25.72	46.00	-20.28	QP		
5		685.7199	25.29	1.92	27.21	46.00	-18.79	QP		
6	*	827.3400	25.61	4.43	30.04	46.00	-15.96	QP		





M/N: PS-330US	Testing Voltage: AC 120V 60Hz		
Polarization: Vertical	Detector: QP		
Test Mode: 3 (the worst case)	Distance: 3m		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1	*	37.7599	45.07	-8.31	36.76	40.00	-3.24	QP		
2		57.1600	37.65	-7.68	29.97	40.00	-10.03	QP		
3		75.5899	41.41	-11.66	29.75	40.00	-10.25	QP		
4		104.6900	40.80	-9.27	31.53	43.50	-11.97	QP		
5		144.4600	43.19	-11.62	31.57	43.50	-11.93	QP		
6		182.2899	36.29	-9.31	26.98	43.50	-16.52	QP		





13.3 20dB Bandwidth Measurement

LIMIT

There is no limit.

BLOCK DIAGRAM OF TEST SETUP

FUT	Attenuator	Spectrum Analyzer
	Attendator	Opectium/maryzer

TEST PROCEDURES

The 20dB bandwidth of the emission was contained within the frequency band designated which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered, FCC Rule 15.215:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the tested channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

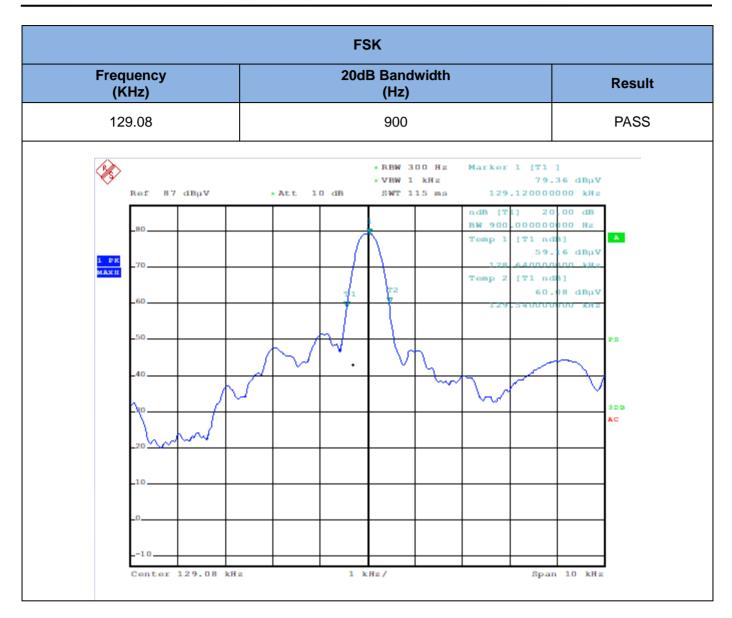
TEST RESULTS

PASS

Please refer to the following table.









13.4 Antenna Requirement

STANDARD APPLICABLE

According to of FCC part 15C 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.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

ANTENNA CONNECTED CONSTRUCTION

The antenna is Coil antenna that no antenna other than furnished by the responsible party shall be used with the device. Therefore, the antenna is consider meet the requirement.





14. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 13, 2021	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2021	1 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 13, 2021	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 13, 2021	1 Year
5.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101094	Mar. 13, 2021	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA9170	9170-172	Mar. 22, 2021	2 Year
7.	Power Sensor	DARE	RPR3006W	15I00041SNO 64	Mar. 13, 2021	1 Year
8.	Communication Tester	Rohde & Schwarz	CMW500	149004	Mar. 13, 2021	1 Year
9.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2021	1 Year
10.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 13, 2021	1 Year
11.	Pre-Amplifier	HP	HP 8447D 1145A00203		Mar. 13, 2021	1 Year
12.	Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	Mar. 23, 2021	1 Year
13.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 14, 2021	1 Year
14.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 13, 2021	1 Year
15.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	893606/014	Mar. 13, 2021	1 Year
16.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar.13, 2021	1 Year
17.	Temperature & Humidity Chamber	· REMARE		N/A	Mar. 13, 2021	1 Year
18.	DC Source	Maynuo	MY8811	N/A	Mar. 13, 2021	1 Year
19.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
20.	Chamber	SAEMC	9*7*7m	N/A	Apr. 21, 2021	2 Year
21.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.