FCC SDoC TEST REPORT

Powerstick.com Inc.

PowerUSB

Test Model: 805132

Prepared for	:	Powerstick.com Inc.
Address	:	39 Camelot Drive, Ottawa, Ontario CANADA, K2G 5W6
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
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Date of receipt of test sample	:	April 26, 2023
Number of tested samples	:	1
Samples number	:	A042423102
Date of Test	:	April 26, 2023 ~ May 04, 2023
Date of Report	:	May 05, 2023

FCC SDoC TEST REPORT
FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014

Report Reference No.	**: LCSA042423102E**
Date Of Issue	: May 05, 2023
Testing Laboratory Name	**: Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Testing Location/ Procedure...	: Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name	**: Powerstick.com Inc.**
Address	: 39 Camelot Drive, Ottawa, Ontario CANADA, K2G 5W6
Test Specification	
Standard.....	: FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014
Test Report Form No.	: LCSEMC-1.0
TRF Originator.....	: Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.....	: Dated 2011-03

Test Item Description.	**: PowerUSB**
Test Model	: 805132
Trade Mark.....	: Powerstick.com
Ratings	: Please Refer to Page 7
Result	**: Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Cindy Nie	Baron Wen	Gavin Liang
Cindy Nie/ File administrators	Baron Wen/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCSA042423102E	May 05, 2023 Date of issue

Test Model	: 805132
EUT.....	: PowerUSB
Applicant.....	**: Powerstick.com Inc.**
Address.....	: 39 Camelot Drive, Ottawa, Ontario CANADA, K2G 5W6
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Powerstick.com Inc.**
Address.....	: 39 Camelot Drive, Ottawa, Ontario CANADA, K2G 5W6
Telephone.....	: /
Fax.....	: /
Factory.....	**: Powerstick.com Inc.**
Address.....	: 39 Camelot Drive, Ottawa, Ontario CANADA, K2G 5W6
Telephone.....	: /
Fax.....	: /

Test Result according to the standards on page 6: **Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revision content	Revised By
000	May 05, 2023	Initial Issue	/

TABLE OF CONTENTS

Test Report Description Page

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	---	PASS
Radiated disturbance	FCC 47 CFR Part 15 Subpart B, Class B(SDoC), ANSI C63.4 -2014	---	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:		
Mode 1	Full Load	Record
Mode 2	Half Load	Pre-scan
Mode 3	No load	Pre-scan
***Note: All test modes were tested, but we only recorded the worst case in this report.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : PowerUSB

Trade Mark : Powerstick.com

Test Model : 805132

Power Supply : Input: 100-240V~, 50/60Hz 0.8A MAX
USB-C Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A
USB-A Output: 5V⎓3A, 9V⎓2A, 12V⎓1.5A
US8-C *USB-A Output: 5V⎓3A

Highest internal frequency : Fx≤108MHz

Highest internal frequency (Fx)	Highest measured frequency
Fx ≤1.705 MHz	30 MHz
1.705 MHz < Fx ≤ 108 MHz	1 GHz
108 MHz < Fx ≤ 500 MHz	2 GHz
500 MHz < Fx ≤ 1000 MHz	5 GHz
Fx > 1 GHz	5 × Fx up to a maximum of 40 GHz

2.2. Support equipment List

Name	Manufacturers	M/N	S/N
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2.3. Description of Test Facility

Site Description
EMC Lab. : NVLAP Accreditation Code is 600167-0.
FCC Designation Number is CN5024.
CAB identifier is CN0071.
CNAS Registration Number is L4595.
FCC Test Firm Registration Number: 254912

2.4. 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 LCS 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.

2.5. Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (Ulab)	Expanded Uncertainty (Ucispr)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB

（1）Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

（2）The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. TEST RESULTS

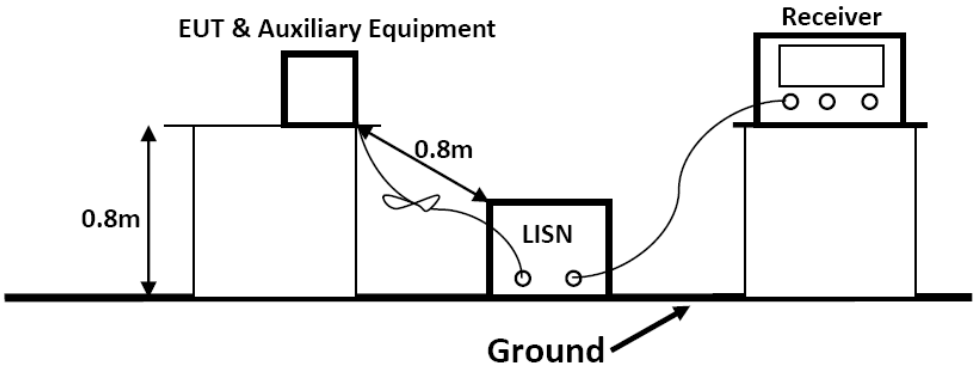
3.1. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	Farad	EZ	/	N/A	N/A
2	EMI Test Receiver	R&S	ESR3	102312	2023-02-25	2024-02-24
3	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
4	Pulse Limiter	R&S	ESH3-Z2	102750-NB	2022-08-17	2023-08-16

3.1.2.Block Diagram of Test Setup



3.1.3.Test Standard

Power Line Conducted Emission Limits

Frequency (MHz)			Limit (dBμV)	
			Quasi-peak Level	Average Level
0.15	~	0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50	~	5.00	56.0	46.0
5.00	~	30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.				

3.1.4.EUT Configuration on Test

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

3.1.5.Operating Condition of EUT

3.1.5.1.Setup the EUT as shown on Section 3.1.2

3.1.5.2.Turn on the power of all equipments.

3.1.5.3.Let the EUT work in measuring Mode 1 and measure it.

3.1.6.Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2014 on Conducted Emission Measurement.

The bandwidth of the test receiver is set at 9kHz.

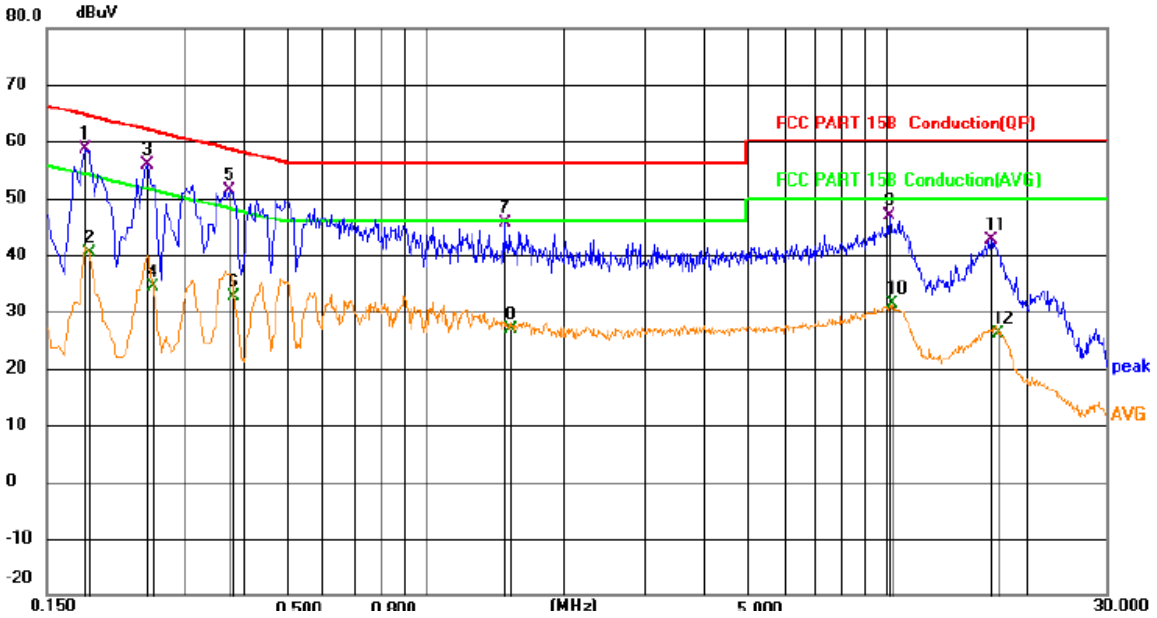
The frequency range from 150kHz to 30MHz is investigated

3.1.7.Test Results

PASS.

The test result please refer to the next page.

Test Model	805132	Test Mode	Mode 1
Environmental Conditions	23.7℃, 53.8% RH	Test Engineer	Hy Luo
Pol	Line	Test Voltage	AC 120V/60Hz



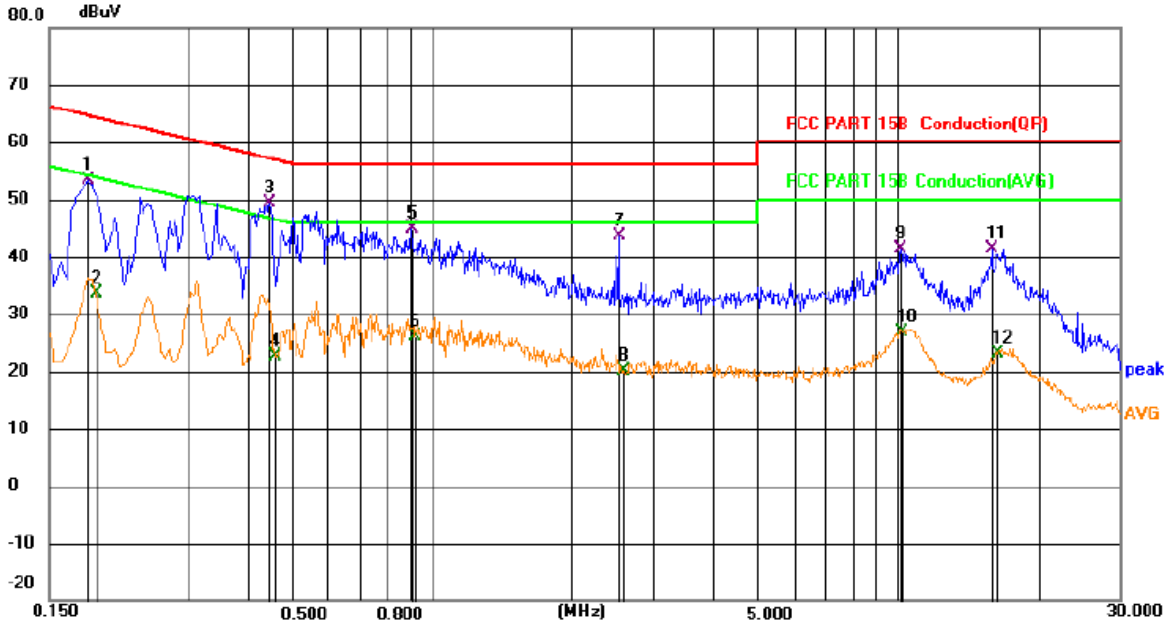
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1816	38.90	19.63	58.53	64.41	-5.88	QP	
2		0.1861	20.68	19.63	40.31	54.21	-13.90	AVG	
3	*	0.2491	36.28	19.63	55.91	61.79	-5.88	QP	
4		0.2548	14.83	19.63	34.46	51.60	-17.14	AVG	
5		0.3751	31.68	19.63	51.31	58.39	-7.08	QP	
6		0.3840	12.91	19.63	32.54	48.19	-15.65	AVG	
7		1.4866	25.91	19.66	45.57	56.00	-10.43	QP	
8		1.5271	7.31	19.67	26.98	46.00	-19.02	AVG	
9		10.1311	26.96	19.85	46.81	60.00	-13.19	QP	
10		10.2931	11.47	19.85	31.32	50.00	-18.68	AVG	
11		16.8451	22.65	20.01	42.66	60.00	-17.34	QP	
12		17.4976	5.98	20.09	26.07	50.00	-23.93	AVG	

Note: Margin= Reading level + Correct factor – Limit

Correct Factor= Lisn Factor+Cable Factor+Limiter Factor

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

Test Model	805132	Test Mode	Mode 1
Environmental Conditions	23.7℃, 53.8% RH	Test Engineer	Hy Luo
Pol	Neutral	Test Voltage	AC 120V/60Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1816	33.65	19.63	53.28	64.41	-11.13	QP	
2		0.1884	14.05	19.63	33.68	54.11	-20.43	AVG	
3	*	0.4471	29.78	19.64	49.42	56.93	-7.51	QP	
4		0.4606	2.95	19.64	22.59	46.68	-24.09	AVG	
5		0.9016	25.20	19.65	44.85	56.00	-11.15	QP	
6		0.9151	6.40	19.65	26.05	46.00	-19.95	AVG	
7		2.5216	23.86	19.71	43.57	56.00	-12.43	QP	
8		2.5756	0.39	19.71	20.10	46.00	-25.90	AVG	
9		10.1266	21.47	19.85	41.32	60.00	-18.68	QP	
10		10.2616	6.92	19.85	26.77	50.00	-23.23	AVG	
11		15.8866	21.57	19.91	41.48	60.00	-18.52	QP	
12		16.4490	3.09	19.97	23.06	50.00	-26.94	AVG	

Note: Margin= Reading level + Correct factor – Limit
Correct Factor= Lisn Factor+Cable Factor+Limiter Factor
Note: Pre-Scan all mode, Thus record worse case mode result in this report.

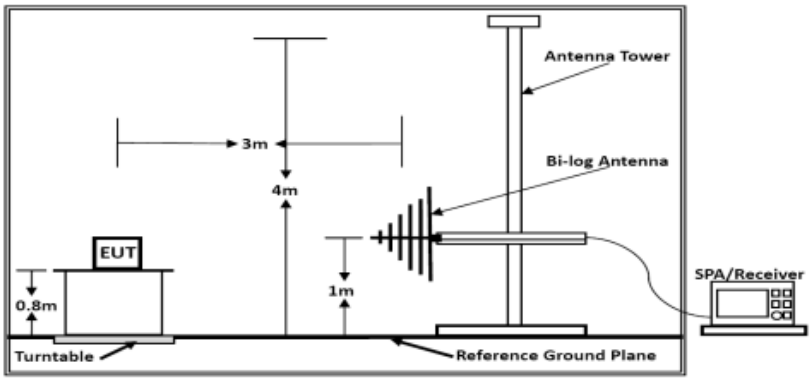
3.2. Radiated emission Measurement

3.2.1. Test Equipment

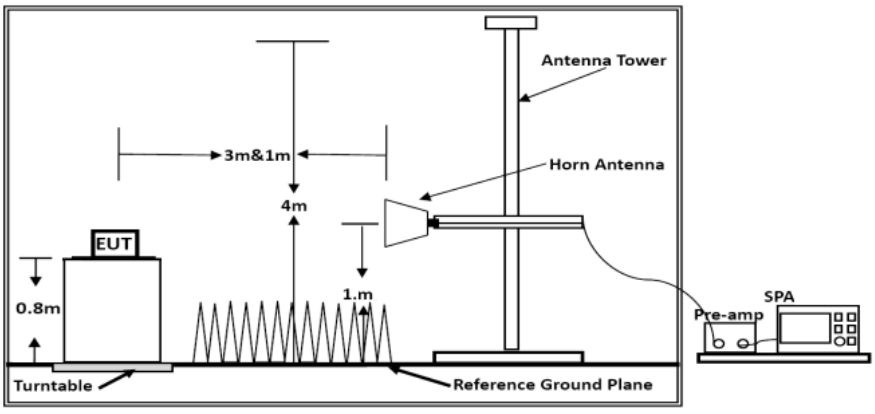
The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	EMI Test Software	AUDIX	E3	/	N/A	N/A
2	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
3	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2021-09-05	2024-09-04
4	EMI Test Receiver	R&S	ESR3	102311	2022-08-17	2023-08-16
5	Broadband Preamplifier	/	BP-01M18G	P190501	2022-06-16	2023-06-15

3.2.2. Block Diagram of Test Setup



Below 1GHz



Above 1GHz

3.2.3. Radiated Emission Limit

Limits for Radiated Disturbance Below 1GHz

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
30 ~ 88	3	100	40
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46
960 ~ 1000	3	500	54
Remark: (1) Emission level (dB)μV = 20 log Emission level μV/m (2) The smaller limit shall apply at the cross point between two frequency bands. (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.			

Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)
Above 1000	3	74	54
***Note: The lower limit applies at the transition frequency.			

3.2.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.2.5. Operating Condition of EUT

3.2.5.1.Setup the EUT as shown in Section 3.2.2.

3.2.5.2.Let the EUT work in test Mode 1 and measure it.

3.2.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated by-log antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4-2014 on radiated emission measurement.

3.2.7. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

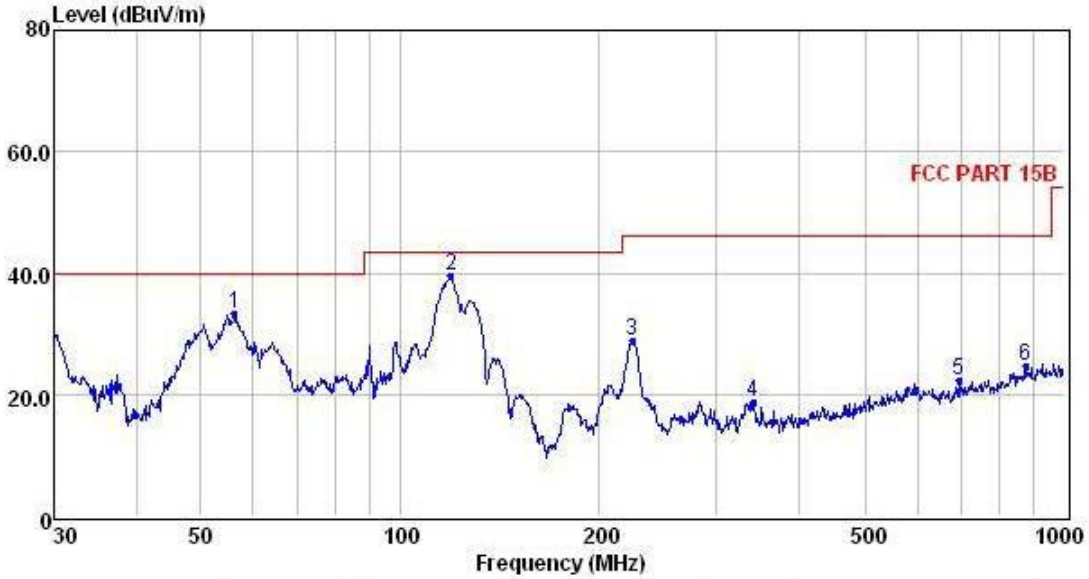
The frequency range from 30MHz to 1000MHz and above 1000MHz is checked.

3.2.8. Radiated Emission Noise Measurement Result

PASS.

The scanning waveforms please refer to the next page.

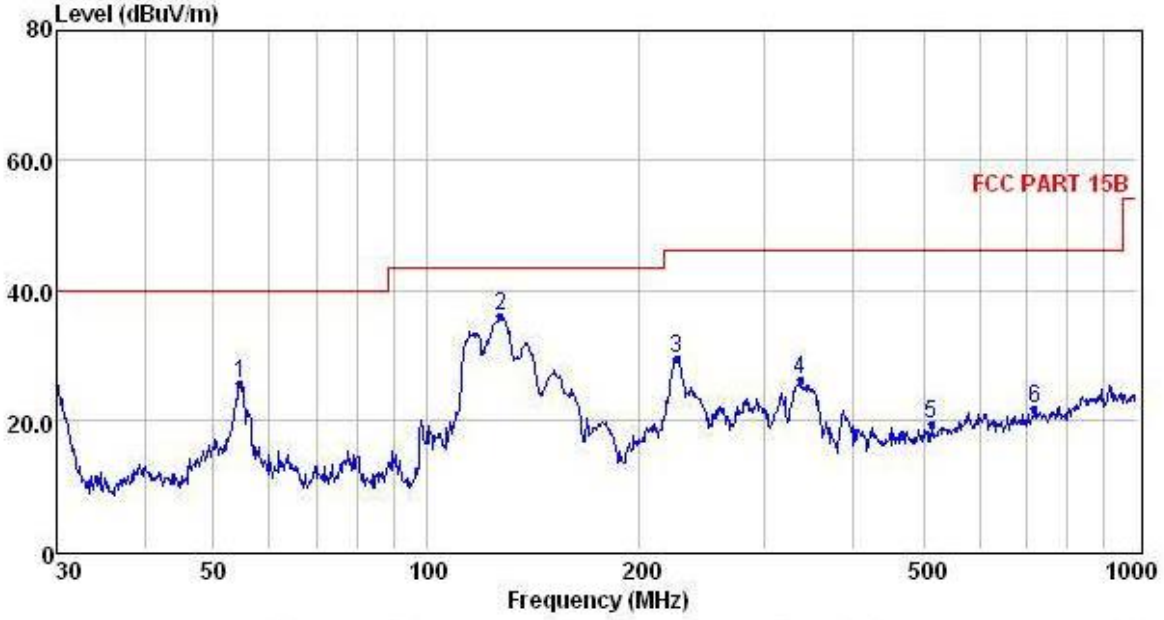
Test Model	805132	Test Mode	Mode 1
Environmental Conditions	22.3℃, 53% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	56.20	20.12	0.63	12.54	33.29	40.00	-6.71	QP
2	119.44	27.94	0.90	10.64	39.48	43.50	-4.02	QP
3	224.52	15.75	1.23	11.88	28.86	46.00	-17.14	QP
4	341.98	2.88	1.35	14.46	18.69	46.00	-27.31	QP
5	694.42	1.74	1.78	18.69	22.21	46.00	-23.79	QP
6	875.25	1.30	2.08	21.20	24.58	46.00	-21.42	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Test Model	805132	Test Mode	Mode 1
Environmental Conditions	22.3℃, 53% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Hy Luo	Test Voltage	AC 120V/60Hz



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	54.45	12.37	0.62	12.55	25.54	40.00	-14.46	QP
2	127.22	25.45	0.94	9.72	36.11	43.50	-7.39	QP
3	226.10	16.41	1.24	11.92	29.57	46.00	-16.43	QP
4	337.22	10.63	1.35	14.20	26.18	46.00	-19.82	QP
5	513.63	0.68	1.50	17.05	19.23	46.00	-26.77	QP
6	719.20	0.85	1.84	19.09	21.78	46.00	-24.22	QP

Note: 1. All readings are Quasi-peak values.
2. Measured= Reading + Antenna Factor + Cable Loss
3. The emission that are 20db below the official limit are not reported

Note: Pre-Scan all mode, Thus record worse case mode result in this report.

Remark: For above 1000MHz, Because the emission it too low to be reported.

4. TEST SETUP PHOTOGRAPHS OF EUT

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

5. EXTERIOR PHOTOGRAPHS OF THE EUT

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

6. INTERIOR PHOTOGRAPHS OF THE EUT

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

----------THE END OF TEST REPORT----------