FCC Radio Test Report

FCC ID: 2A5N8AR500

This report concerns: Original Grant

Project No.	:	2110H005
Equipment	:	Rechargeable Lithium-ion Battery
Brand Name	:	PYLONTECH
Test Model	:	AR500
Series Model	:	N/A
Applicant	:	Pylon Technologies Co., Ltd.
Address	:	5 / F, No.72, Lane 887,Zu Chongzhi Road, Zhangjiang Hi-Tech Park Pudong,Shanghai201203, China
Manufacturer	:	Pylon Technologies Co., Ltd.
Address	:	Plant 8, No.505 Kunkai Road, JinXi Town, Kunshan City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA
Factory	:	Pylon Technologies Co., Ltd.
Address	:	Plant 8, No.505 Kunkai Road, JinXi Town, Kunshan City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA
Date of Receipt	:	Oct. 11, 2021
Date of Test	:	Feb. 23, 2022~ Aug. 02, 2022
Issued Date	:	Aug. 03, 2022
Report Version	:	R02
Test Sample	:	Engineering Sample No.: SH2021102596 for EUT
Standard(s)	:	FCC Part15, Subpart C ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Maker Qi

Prepared by : Maker Qi

Ryan. Wang

Approved by : Ryan Wang

TESTING CERT #5123.03

BTL Inc.

Add: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China.

Tel: +86-021-61765666 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.
Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCP-1-2110H005	R00	Original Issue.	May 25, 2022	Invalid
BTL-FCCP-1-2110H005	R01	Revised report to address TCB's comments.	Jul. 26, 2022	Invalid
BTL-FCCP-1-2110H005	R02	Revised report to address TCB's comments.	Aug. 03, 2022	Valid

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.209)				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	APPENDIX A	PASS	------
15.209(a)	Radiated Emissions	APPENDIX B APPENDIX C	PASS	------
15.215	Bandwidth	APPENDIX D	PASS	------

NOTE:

(1) “N/A” denotes test is not applicable to this device.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210,China
BTL's Test Firm Registration Number for FCC: 476765
BTL's Designation Number for FCC: CN1241

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U, (dB)
SH-C01	CISPR	150 kHz ~ 30 MHz	2.64

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
SH-CB02	CISPR	9 KHz~30 MHz	-	2.16
		30 MHz~200 MHz	V	4.04
		30 MHz~200 MHz	H	2.90
		200 MHz~1,000 MHz	V	3.76
		200 MHz~1,000 MHz	H	3.82

C. Conducted test:

Parameter	U
Occupied Channel Bandwidth	±3.8 %
Temperature	±0.08 °C
Humidity	±1.5 %
Supply voltages	±0.3 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
AC Power Line Conducted Emissions	16°C	53%	AC 120V/60Hz	Max Liu
Radiated Emissions-9K-30MHz	24°C	58%	AC 120V/60Hz	Forest Li
Radiated Emissions-30 MHz to 1GHz	24°C	58%	AC 120V/60Hz	Forest Li
Bandwidth	18°C	62%	AC 120V/60Hz	Danny Dang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Rechargeable Lithium-ion Battery
Brand Name	PYLONTECH
Test Model	AR500
Series Model	N/A
Model Difference(s)	N/A
Software Version	N/A
Hardware Version	N/A
Power Source	Supplied from wireless charger.
Power Rating	Output power: 5W/7.5W/10W/15W
Operation Frequency(MHz)	0.110~0.148

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the user's manual.

2.2 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	WPC-5W
Mode 2	WPC-7.5W
Mode 3	WPC-10W
Mode 4	WPC-15W

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

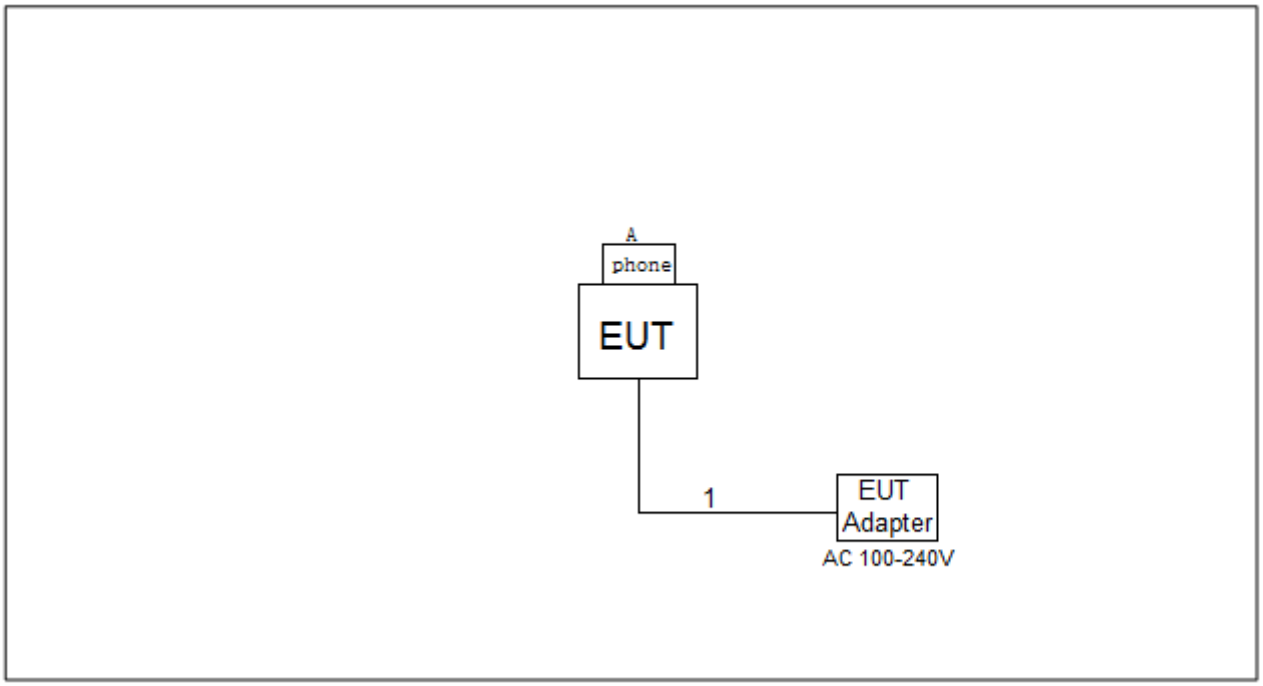
AC power line conducted emissions test	
Final Test Mode	Description
Mode 4	WPC-15W

Radiated emissions test	
Final Test Mode	Description
Mode 4	WPC-15W

Bandwidth test	
Final Test Mode	Description
Mode 4	WPC-15W

Note:
(1) The EUT has the maximum average output power when the support unit is in low power and being charged by EUT.
(2) All the models have been evaluated and tested, and the worst case was recorded in this report.

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 SUPPORT UNITS

Item	Equipment	Brand	Model No.	Series No.
A	Mobile phone	Samsung	S20	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	DC Cable	NO	NO	1.2m

3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency of Emission (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.50	66 to 56*	56 to 46*
0.50 - 5.0	56	46
5.0 - 30.0	60	50

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.

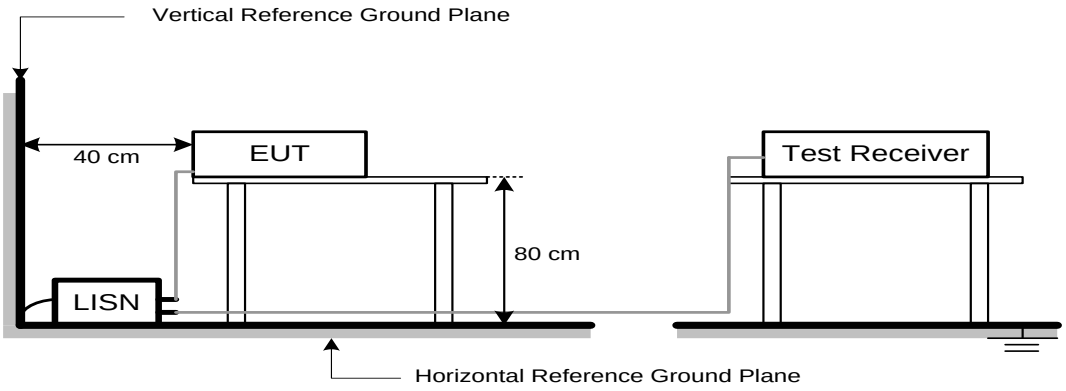
3.2 TEST PROCEDURE

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 equipment 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.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP



3.5 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.

3.6 TEST RESULTS

Please refer to the APPENDIX A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform.In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150 kHz to 30 MHz.

4. RADIATED EMISSION TEST

4.1 LIMIT

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT(9 kHz-1000 MHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

(1) The limit for radiated test was performed according to FCC PART 15C.

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

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

4.2 TEST PROCEDURE

a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1 GHz)

b. The height of the equipment or of the substitution antenna shall be 0.8m or 1.5m; 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.

c. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).

d. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

e. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1 GHz)

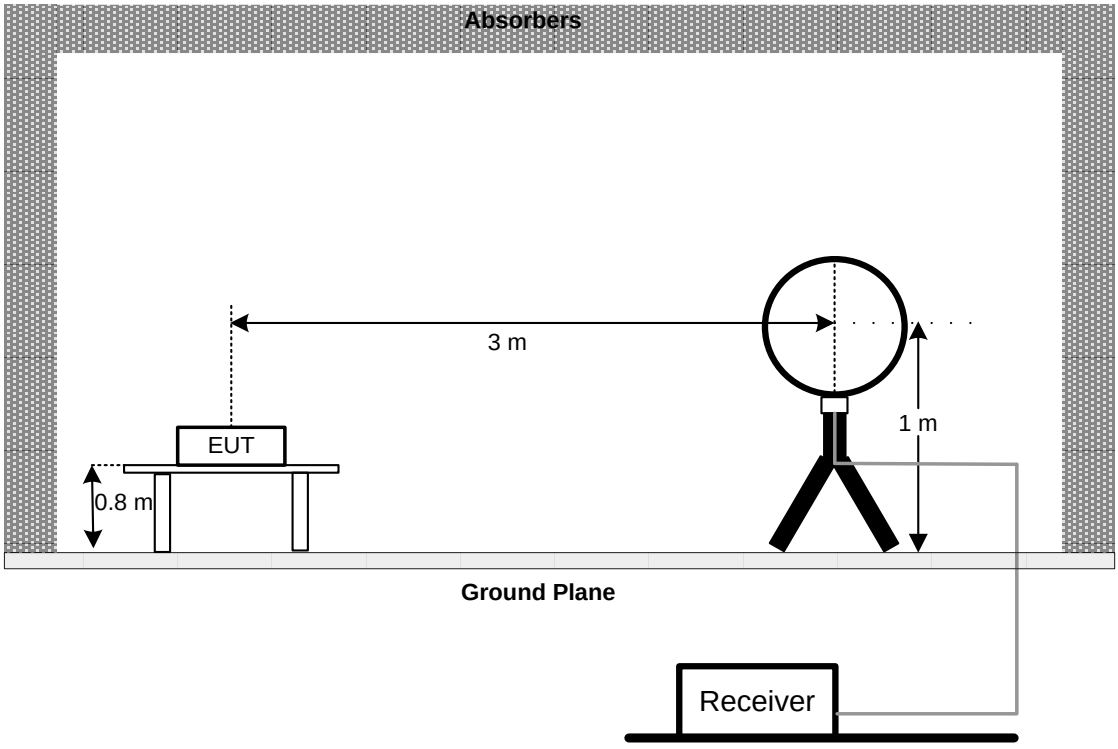
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.3 DEVIATION FROM TEST STANDARD

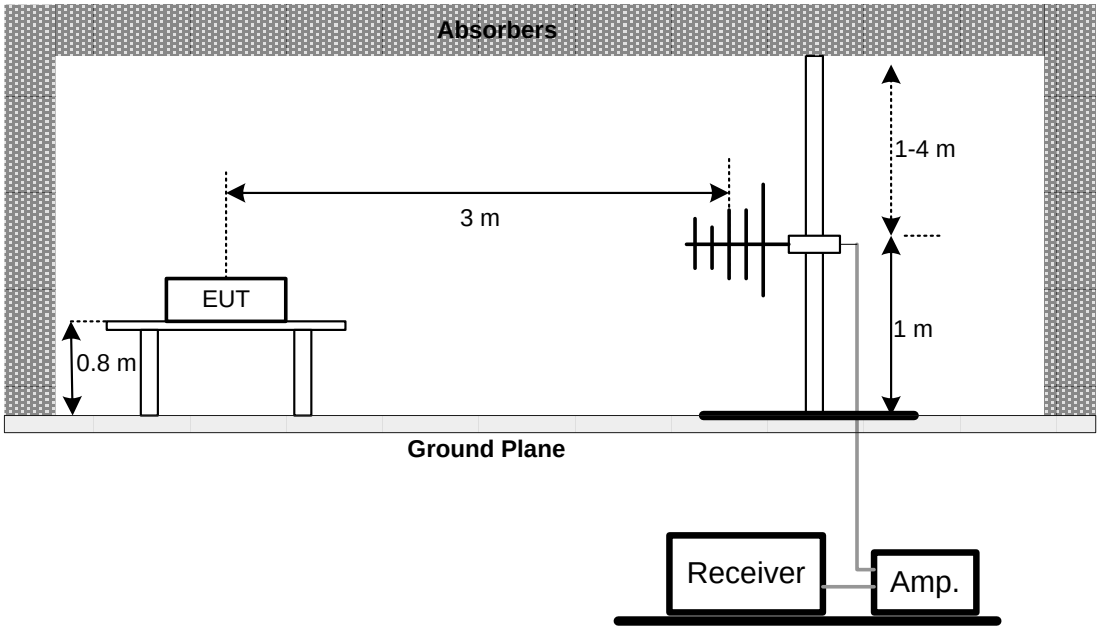
No deviation.

4.4 TEST SETUP

9 kHz-30 MHz



30 MHz to 1 GHz



4.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

4.6 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the APPENDIX B

Remark:

(1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).

(2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.7 TEST RESULTS - 30 MHZ TO 1000 MHZ

Please refer to the APPENDIX C.

5. BANDWIDTH

5.1 LIMIT

Section	Test Item
FCC 15.215	Bandwidth

5.2 TEST PROCEDURE

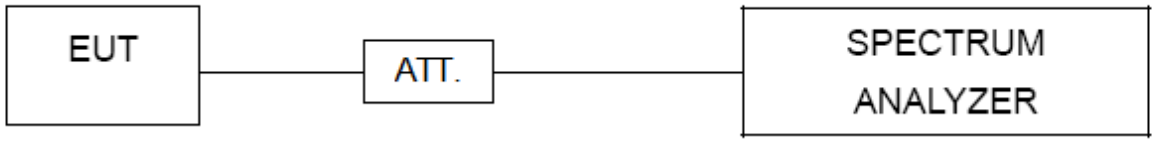
a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. The following table is the setting of the spectrum analyzer:

Spectrum Parameters	Setting
Span Frequency	> Measurement Bandwidth
RBW	1 kHz
VBW	3 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.3 DEVIATION FROM STANDARD

No deviation.

5.4 TEST SETUP



5.5 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

5.6 TEST RESULTS

Please refer to the APPENDIX D.

6. MEASUREMENT INSTRUMENTS LIST

AC Power Line Conducted Emissions					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Line Impedance Stabilisation Network	Schwarzbeck	NNLK 8121	8121-822	Mar. 20, 2022 Mar. 19, 2023
2	TWO-LINE V-NETWORK	R&S	ENV216	101340	Aug. 23, 2022
3	Test Cable	emci	EMCRG400-BM-NM-10000	N/A	Apr. 11, 2022 Apr. 05, 2023
4	EMI Test Receiver	R&S	ESCI	100082	Mar. 20, 2022 Mar. 19, 2023
5	50Ω Terminator	SHX	TF2-1G-A	17051602	Mar. 20, 2022 Mar. 19, 2023
6	50Ω coaxial switch	Anritsu	MP59B	6201750902	Mar. 20, 2022 Mar. 19, 2023
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Loop Antenna	EMCI	EMCI LPA600	275	Mar. 26, 2022 Mar. 25, 2023
2	MXE EMI Receiver	Keysight	N9038A	MY56400088	Mar. 20, 2022 Mar. 19, 2023
3	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3233	Mar. 19, 2022 Mar. 18, 2023
2	Pre-Amplifier	emci	EMC9135	980401	Mar. 20, 2022 Mar. 19, 2023
3	MXE EMI Receiver	Keysight	N9038A	MY56400088	Mar. 20, 2022 Mar. 19, 2023
4	Test Cable	emci	EMC104-SM-SM-7000	181020	Apr. 11, 2022 Apr. 05, 2023
5	Test Cable	emci	EMC104-SM-SM-2500	170618	Apr. 11, 2022 Apr. 05, 2023
6	Test Cable	emci	EMC104-SM-SM-800	170647	Apr. 11, 2022 Apr. 05, 2023
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Bandwidth					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100626	May 29, 2022 May 28, 2023
2	Attenuator	JUK	ATT-2W6G-S-10	N/A	N/A

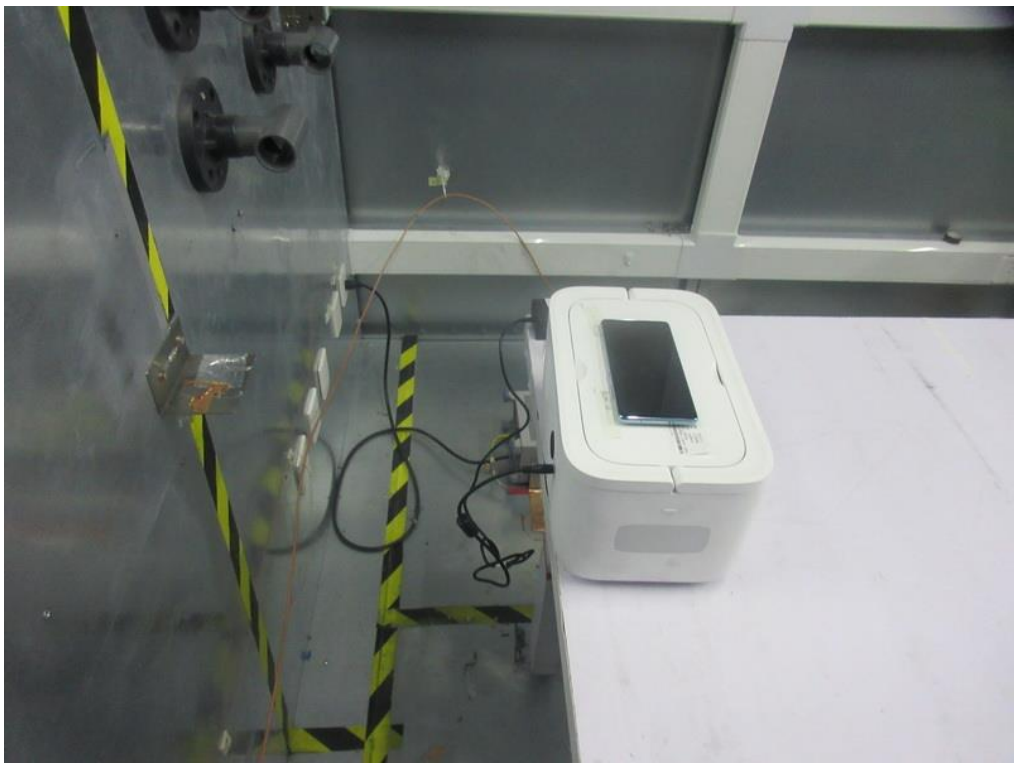
Remark: “N/A” denotes no model name, serial no. or calibration specified.

“*” calibration period of equipment list is three year.

Except * item, all calibration period of equipment list is one year.

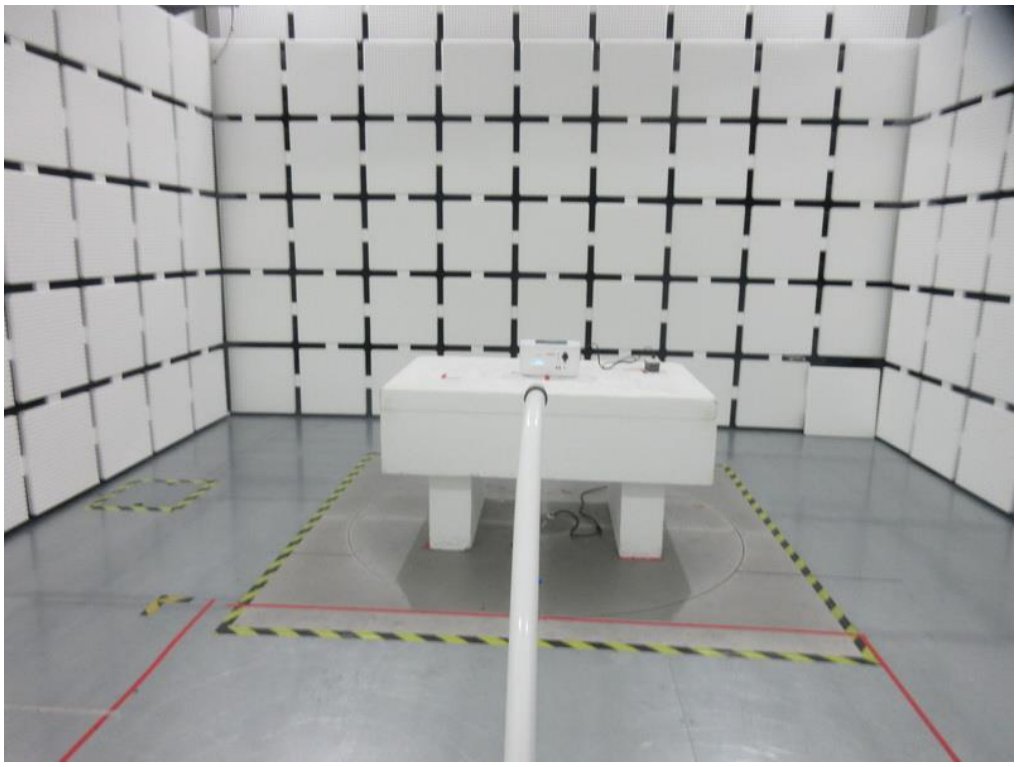
7. EUT TEST PHOTO

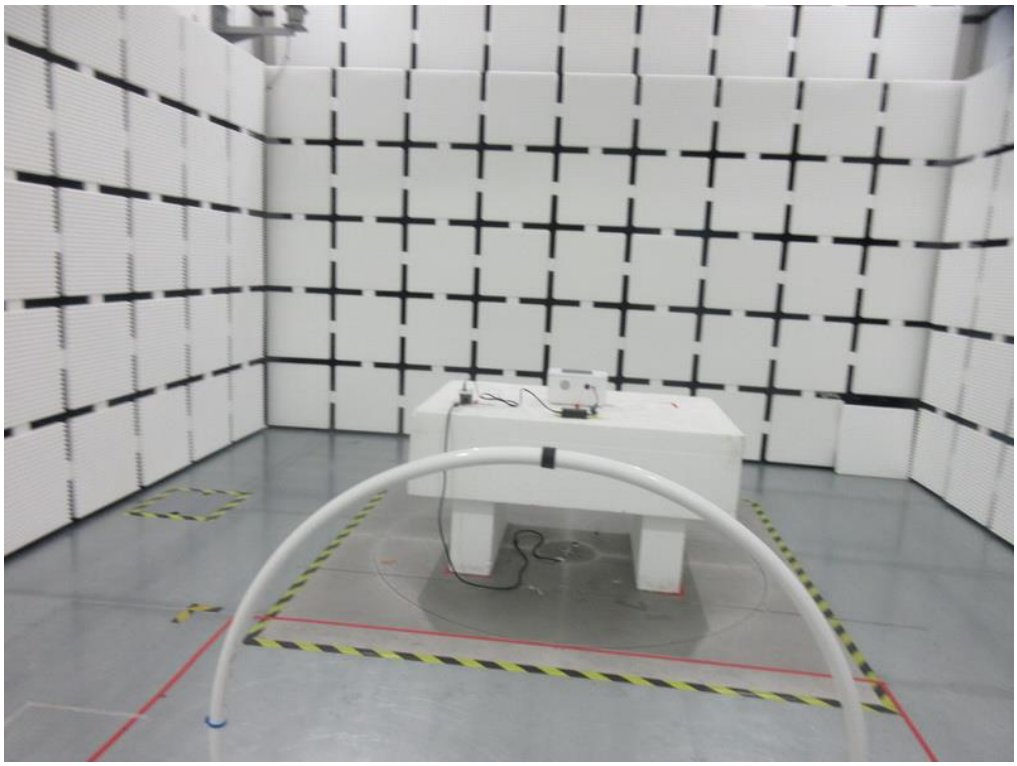
AC Power Line Conducted Emissions Test Photos



Radiated Measurement Photos

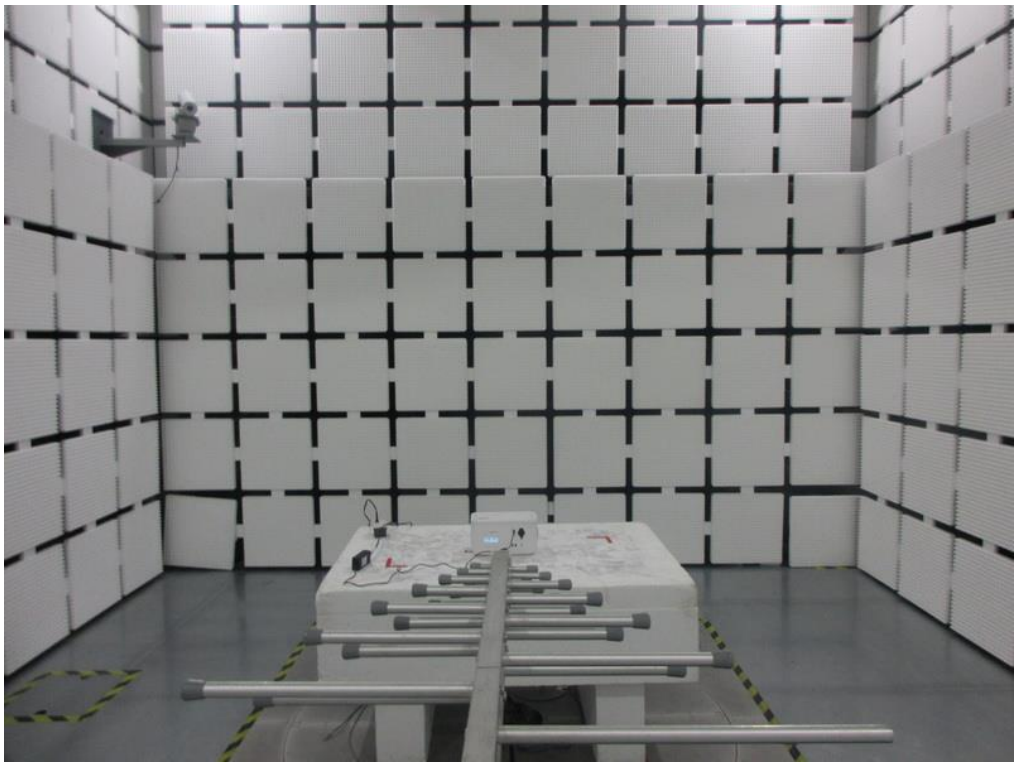
9 kHz to 30 MHz

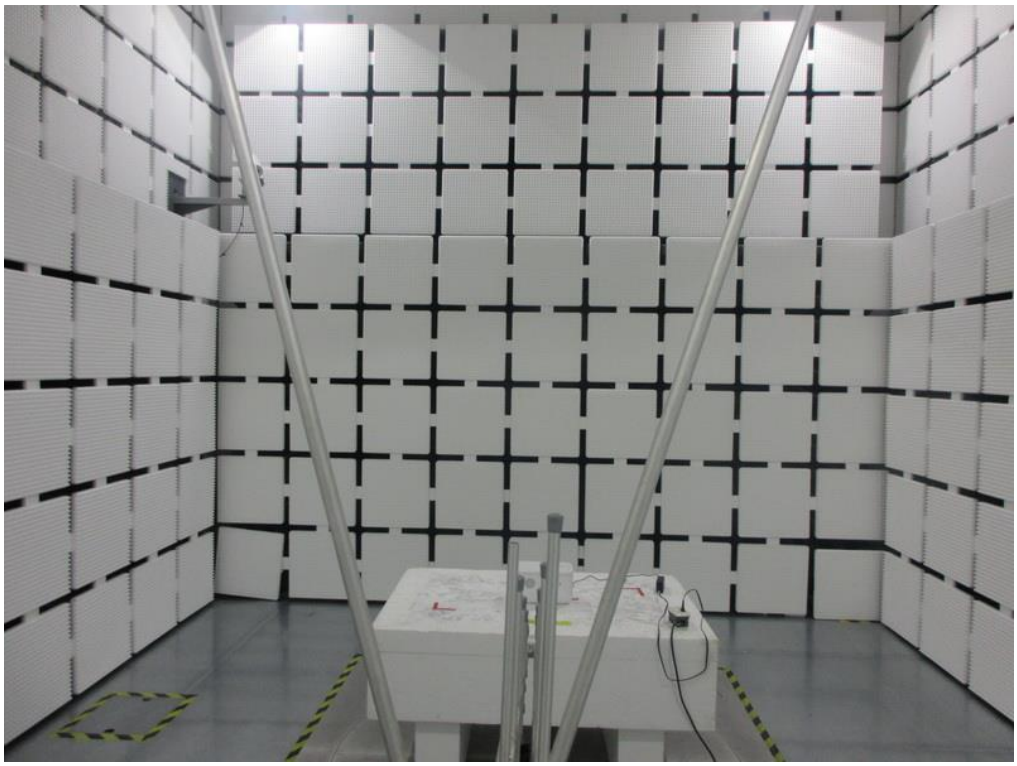




Radiated Measurement Photos

30 MHz to 1 GHz

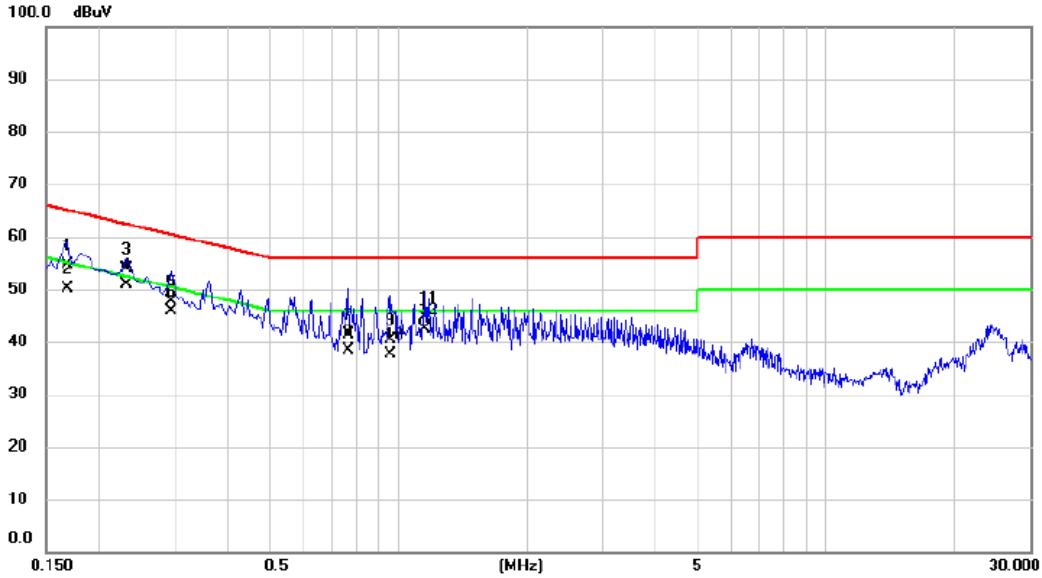




APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

Test Mode:	WPC-15W

Line

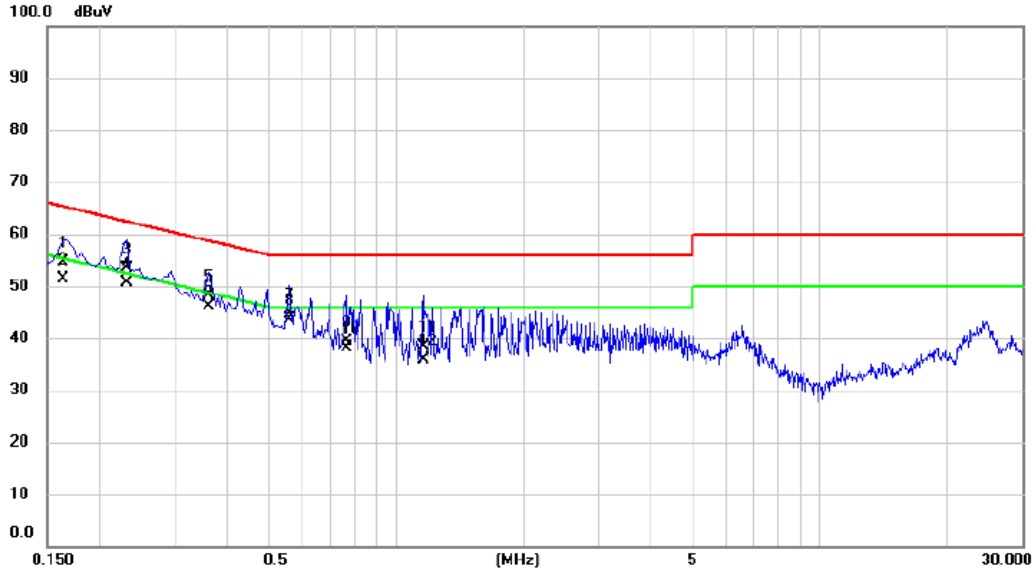


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1680	44.90	9.69	54.59	65.06	-10.47	QP	
2		0.1680	40.50	9.69	50.19	55.06	-4.87	AVG	
3		0.2310	44.20	9.70	53.90	62.41	-8.51	QP	
4	*	0.2310	41.20	9.70	50.90	52.41	-1.51	AVG	
5		0.2940	38.00	9.72	47.72	60.41	-12.69	QP	
6		0.2940	36.10	9.72	45.82	50.41	-4.59	AVG	
7		0.7620	31.50	9.77	41.27	56.00	-14.73	QP	
8		0.7620	28.70	9.77	38.47	46.00	-7.53	AVG	
9		0.9600	30.60	9.80	40.40	56.00	-15.60	QP	
10		0.9600	27.90	9.80	37.70	46.00	-8.30	AVG	
11		1.1535	34.80	9.81	44.61	56.00	-11.39	QP	
12		1.1535	32.50	9.81	42.31	46.00	-3.69	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	WPC-15W

Neutral



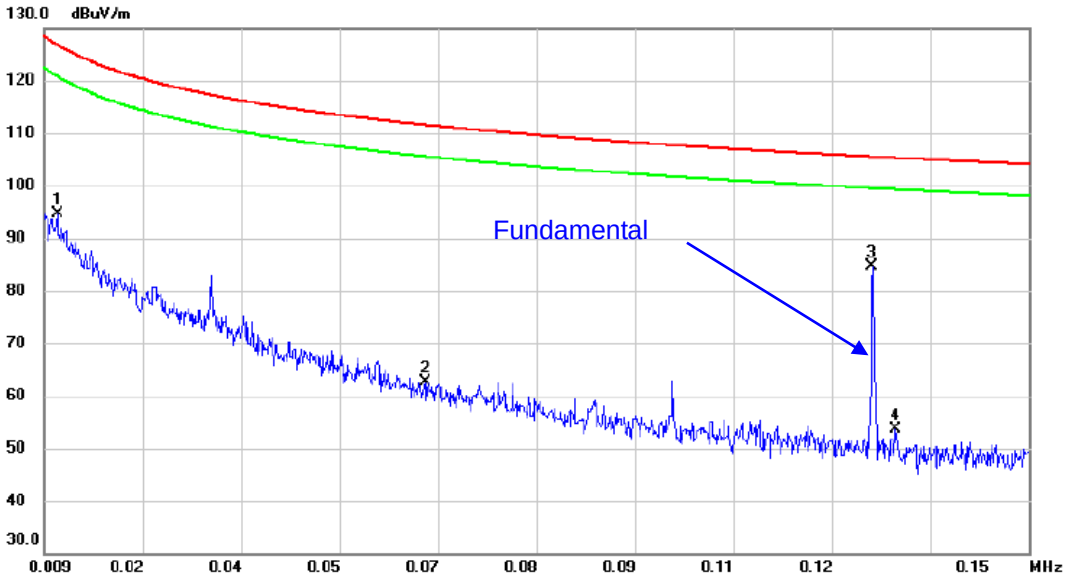
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1635	45.00	9.66	54.66	65.28	-10.62	QP	
2		0.1635	41.80	9.66	51.46	55.28	-3.82	AVG	
3		0.2310	43.70	9.67	53.37	62.41	-9.04	QP	
4	*	0.2310	40.90	9.67	50.57	52.41	-1.84	AVG	
5		0.3615	38.50	9.71	48.21	58.69	-10.48	QP	
6		0.3615	36.50	9.71	46.21	48.69	-2.48	AVG	
7		0.5595	34.90	9.74	44.64	56.00	-11.36	QP	
8		0.5595	33.80	9.74	43.54	46.00	-2.46	AVG	
9		0.7620	29.70	9.76	39.46	56.00	-16.54	QP	
10		0.7620	28.30	9.76	38.06	46.00	-7.94	AVG	
11		1.1580	28.70	9.79	38.49	56.00	-17.51	QP	
12		1.1580	26.20	9.79	35.99	46.00	-10.01	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode:	WPC-15W

Ant 0°

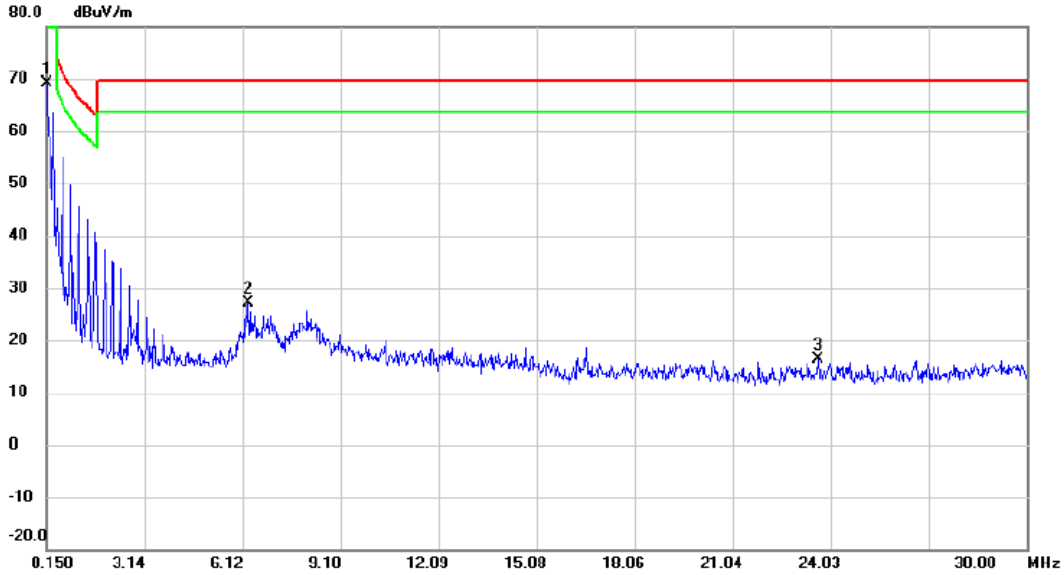


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0110	53.74	40.81	94.55	126.78	-32.23	peak	
2		0.0636	36.49	26.18	62.67	111.54	-48.87	peak	
3	*	0.1276	64.68	19.90	84.58	105.49	-20.91	peak	
4		0.1310	33.94	19.73	53.67	105.26	-51.59	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3)The measurement points between 9-90 kHz, 110-490 KHz satisfy the peak limit and can also satisfy the AVG limit.

Test Mode:	WPC-15W

Ant 0°

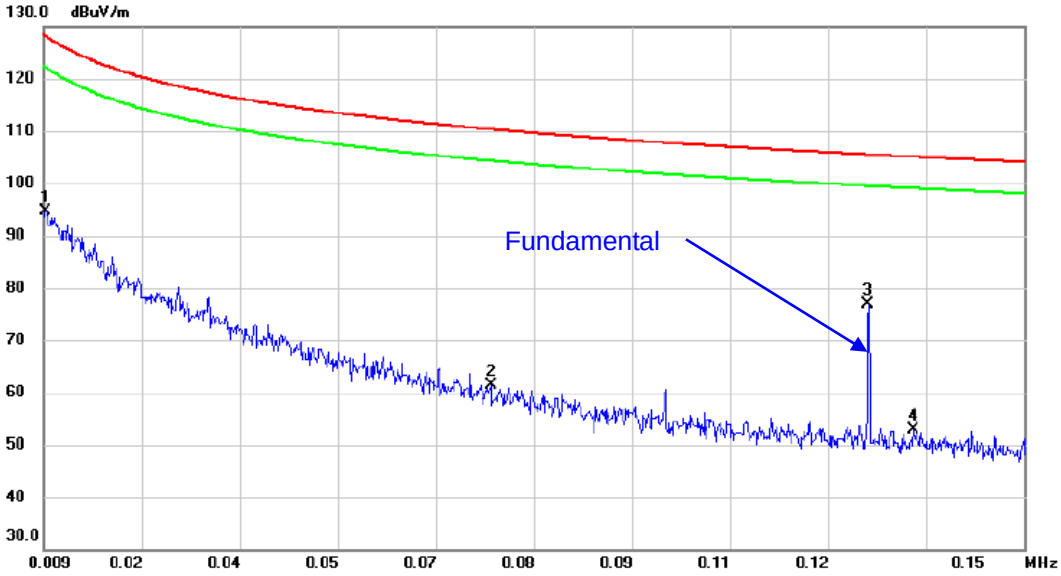


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.1500	50.35	18.76	69.11	104.09	-34.98	peak	
2		6.2991	27.91	-0.86	27.05	69.54	-42.49	peak	
3		23.6570	21.26	-4.89	16.37	69.54	-53.17	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3)The measurement points between 9-90 kHz, 110-490 KHz satisfy the peak limit and can also satisfy the AVG limit.

Test Mode:	WPC-15W

Ant 90°

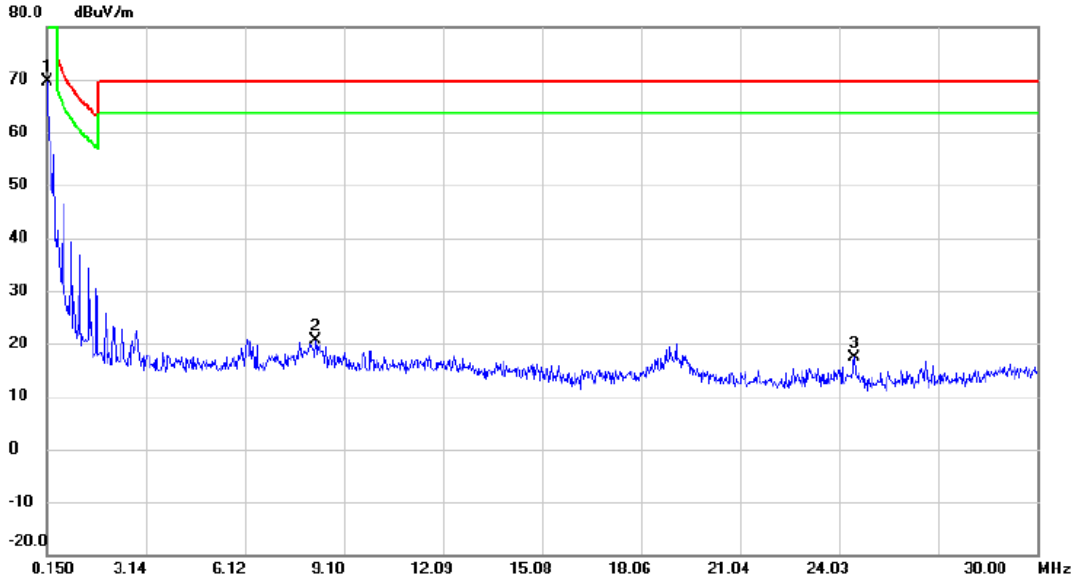


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0093	52.79	41.87	94.66	128.24	-33.58	peak	
2		0.0734	36.64	24.69	61.33	110.29	-48.96	peak	
3	*	0.1276	56.86	19.90	76.76	105.49	-28.73	peak	
4		0.1341	33.39	19.57	52.96	105.06	-52.10	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3)The measurement points between 9-90 kHz, 110-490 KHz satisfy the peak limit and can also satisfy the AVG limit.

Test Mode:	WPC-15W

Ant 90°



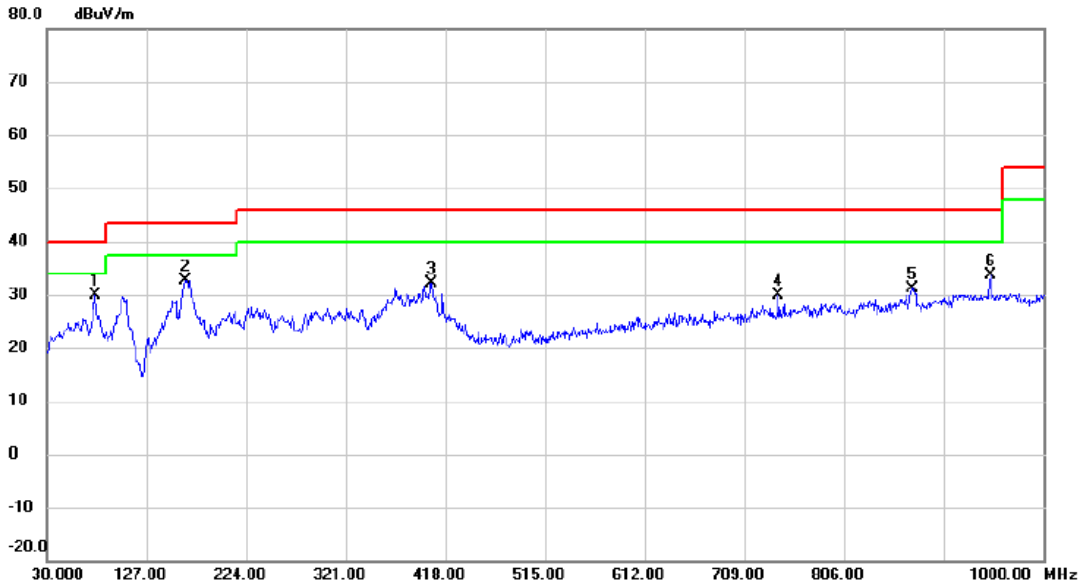
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.1500	50.94	18.76	69.70	104.09	-34.39	peak	
2		8.2543	21.66	-1.08	20.58	69.54	-48.96	peak	
3		24.4778	22.71	-5.29	17.42	69.54	-52.12	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.
(3)The measurement points between 9-90 kHz, 110-490 KHz satisfy the peak limit and can also satisfy the AVG limit.

APPENDIX C - RADIATED EMISSION - 30 MHZ TO 1000 MHZ

Test Mode:	WPC-15W

Vertical

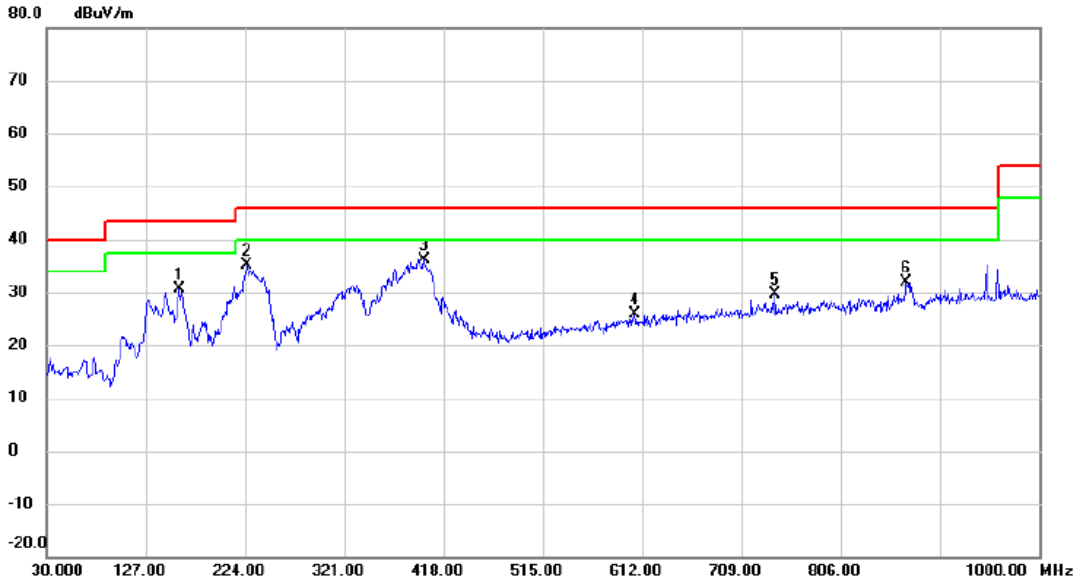


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	76.5600	49.17	-19.38	29.79	40.00	-10.21	peak	
2		165.3150	48.11	-15.47	32.64	43.50	-10.86	peak	
3		404.4200	44.41	-12.20	32.21	46.00	-13.79	peak	
4		742.4650	35.20	-5.37	29.83	46.00	-16.17	peak	
5		871.9600	35.40	-4.15	31.25	46.00	-14.75	peak	
6		948.5900	36.99	-3.27	33.72	46.00	-12.28	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	WPC-15W

Horizontal



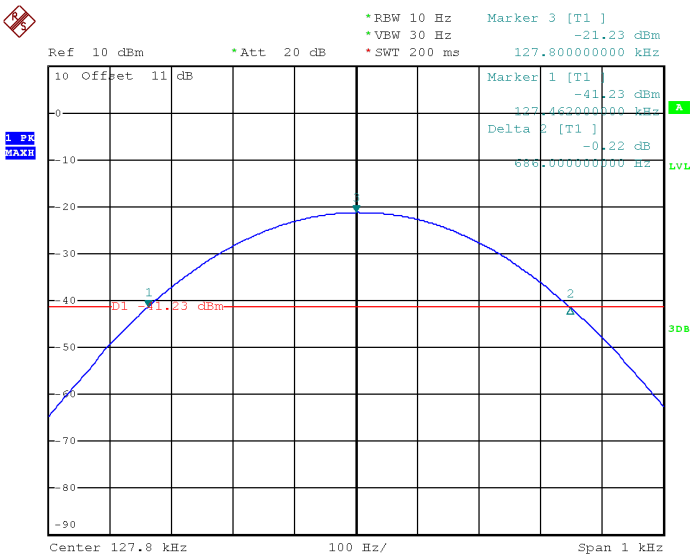
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		159.4950	45.87	-15.28	30.59	43.50	-12.91	peak	
2		225.4550	53.22	-18.21	35.01	46.00	-10.99	peak	
3	*	399.0850	48.52	-12.32	36.20	46.00	-9.80	peak	
4		605.2100	33.75	-7.79	25.96	46.00	-20.04	peak	
5		742.4650	35.07	-5.37	29.70	46.00	-16.30	peak	
6		870.0200	36.08	-4.16	31.92	46.00	-14.08	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX D - BANDWIDTH

Test Mode	WPC-15W

Frequency (KHz)	20 dB Bandwidth (KHz)
127.8	0.686



Date: 2.AUG.2022 20:15:45

End of Test Report