



FCC EMC Test Report

FCC ID: RLY-R100MAGNETIC

This report concerns: Original Grant

Project No. : 2401G139
Equipment : Rechargeable Li-Polymer Magnetic Power Bank
Brand Name : ADATA
Test Model : R100 Magnetic
Series Model : N/A
Applicant : ADATA Technology Co., Ltd.
Address : 18F, No.258, Liancheng Rd., Zhonghe Dist, New Taipei City, Taiwan
Manufacturer : ADATA Technology Co., Ltd.
Address : 18F, No.258, Liancheng Rd., Zhonghe Dist, New Taipei City, Taiwan
Factory : DONGGUAN ARUN INDUSTRIAL CO.,LTD
Address : N0.13,Xinfeng Street,Changlong,Huangjiang Town, Dongguan City, China
Date of Receipt : Jan. 31, 2024
Date of Test : Feb. 01, 2024 ~ Mar. 07, 2024
Issued Date : May 24, 2024
Report Version : R01
Test Sample : Engineering Sample No.: SSL20240130151
Standard(s) : FCC CFR Title 47, Part 18

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

Prepared by : Jason Liang
Jason Liang

Approved by : Kang Zhang
Kang Zhang

Room 108, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.

Tel: +86-769-8318-3000 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** assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by **BTL**.

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

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BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 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-FCCE-1-2401G139	R00	Original Report.	May 09, 2024	Invalid
BTL-FCCE-1-2401G139	R01	Revised report to address comments	May 24, 2024	Valid

1. SUMMARY OF TEST RESULTS

Emission		
Ref Standard(s)	Test Item	Result
FCC/OST MP-5 (1986)	AC Power Line Conducted Emissions	PASS
	Radiated emission below 30MHz	PASS
	Radiated emission 30MHz to 1000MHz	N/A
	Radiated emission above 1 GHz	N/A

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.3, Jinshagang 1st Road, Dalang, Dongguan City, Guangdong People's Republic of China.

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)
DG-C01	CISPR	150kHz ~ 30MHz	2.98

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	2.36

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	Tested By	Test Date
AC Power Line Conducted Emissions	22°C	60%	Jack Zhang	Mar. 06, 2024
Radiated Emissions below 30MHz test	23°C	51%	Trey Chen	Feb. 03, 2024

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Rechargeable Li-Polymer Magnetic Power Bank
Brand Name	ADATA
Test Model	R100 Magnetic
Series Model	N/A
Model Difference(s)	N/A
Hardware Version	V1.0.0
Software Version	V1.0.1
Identification No. of EUT(S/N)	400971386809
Dimensions and mass	105mm x 67.5mm x 22.8mm
Component unit of EUT	<input checked="" type="checkbox"/> Single unit <input type="checkbox"/> Multiple unit
Sample Status	<input checked="" type="checkbox"/> Engineering sample <input type="checkbox"/> Final shipment prototype
Power Source	Supplied from USB port.
Power Rating	Capacity: 3.85V / 3.85Wh Rated Capacity: 5V / 6500mAh, 9V / 3300mAh, 12V / 2500mAh Input: USB-C: DC 5V/3A, 9V/2A Output: USB-C: DC 5V/3A, 9V/2.22A, 12V/1.67A, 20W Max USB-A: DC 5V/3A, 9V/2A, 12V/1.5A, 18W Max Wireless Charge: 5W/7.5W/10W/15W Max Output: USB-C + USB-A + Wireless: DC 5V/3A, 15W
Connecting I/O Port	1* USB-C IN / OUT port 1* USB-A OUT port
Highest Internal Frequency(Fx)	350kHz

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

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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	Wireless Output: 15W
Mode 2	USB-C In + Wireless Output: 5V/3A+5W

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 2	USB-C In + Wireless Output: 5V/3A+5W

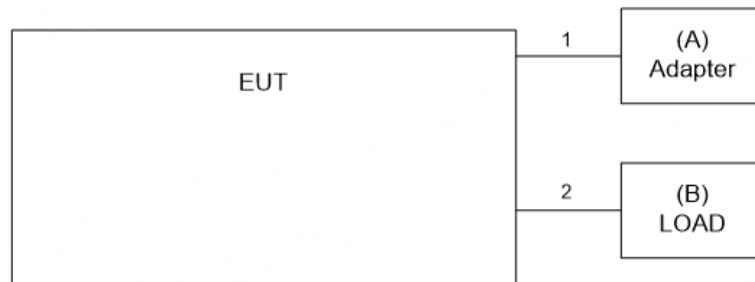
Radiated Emissions below 30MHz test	
Final Test Mode	Description
Mode 1	Wireless Output: 15W

2.3 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The standard test signals and output signal as following:

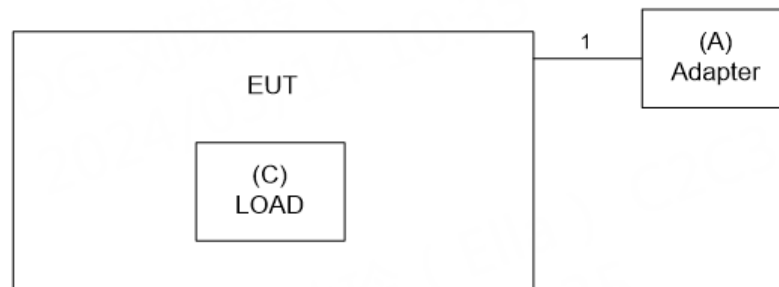
1. EUT connected to Adapter (A) via USB-C Cable.
2. EUT connected to LOAD (B) via USB Cable.
3. LOAD is put on the EUT for wireless charging.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



Ground Plane

Remote system



Ground Plane

Remote system

2.5 DESCRIPTION OF SUPPORT UNITS

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.
A	Adapter	Huawei	W12-010N3A	N/A
B	LOAD	N/A	N/A	N/A
C	LOAD	N/A	N/A	N/A

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB-C Cable	YES	NO	0.2m
2	USB Cable	YES	NO	1.2m
3	USB-C Cable	YES	NO	1.8m

3. EMC EMISSION TEST

3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1.1 LIMIT

Frequency of Emission (MHz)	(dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5.0	56.00	46.00
5.0 - 30.0	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.
- (3) The test result calculated as following:
 Measurement Value = Reading Level + Correct Factor
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
 Margin Level = Measurement Value - Limit Value

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	100526	Jun. 16, 2024
2	EMI Test Receiver	R&S	ESR3	101862	Dec. 22, 2024
3	Cable	N/A	SFT205-NMNM-12 M-001	12M	Nov. 27, 2024
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

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

All calibration period of equipment list is one year.

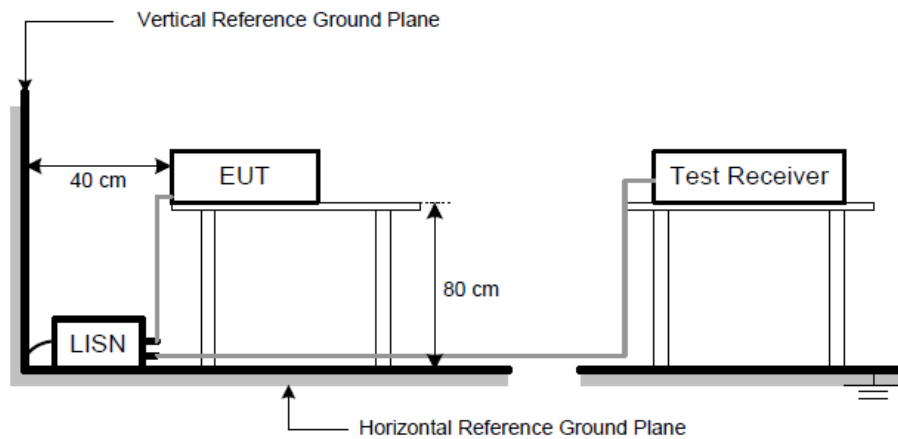
3.1.3 TEST PROCEDURE

- 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 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.
- f. Measuring frequency range from 150KHz to 30MHz.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP

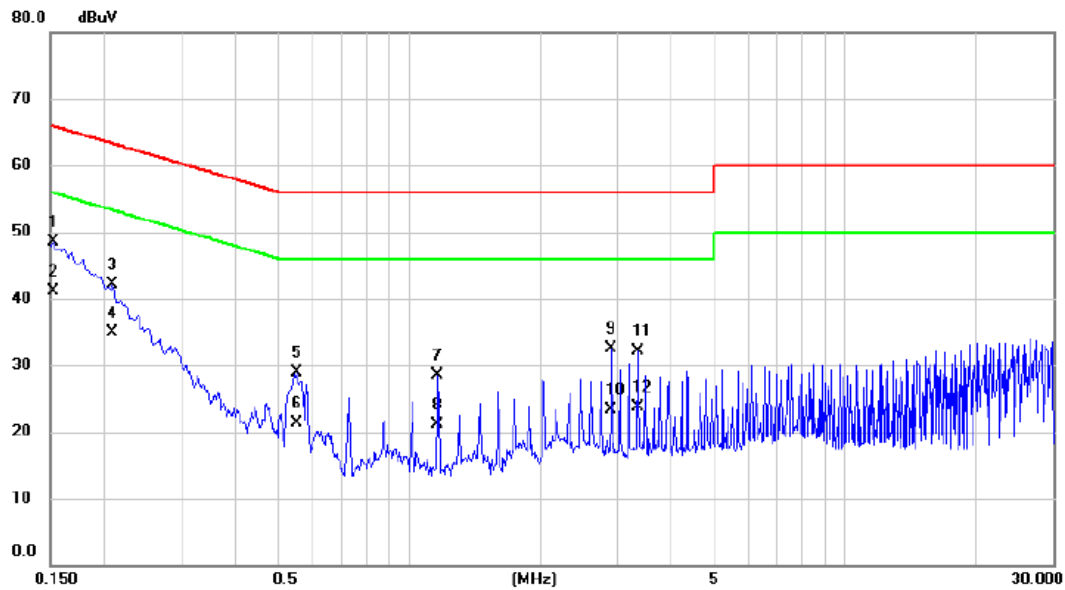


3.1.6 TEST RESULTS

Remark:

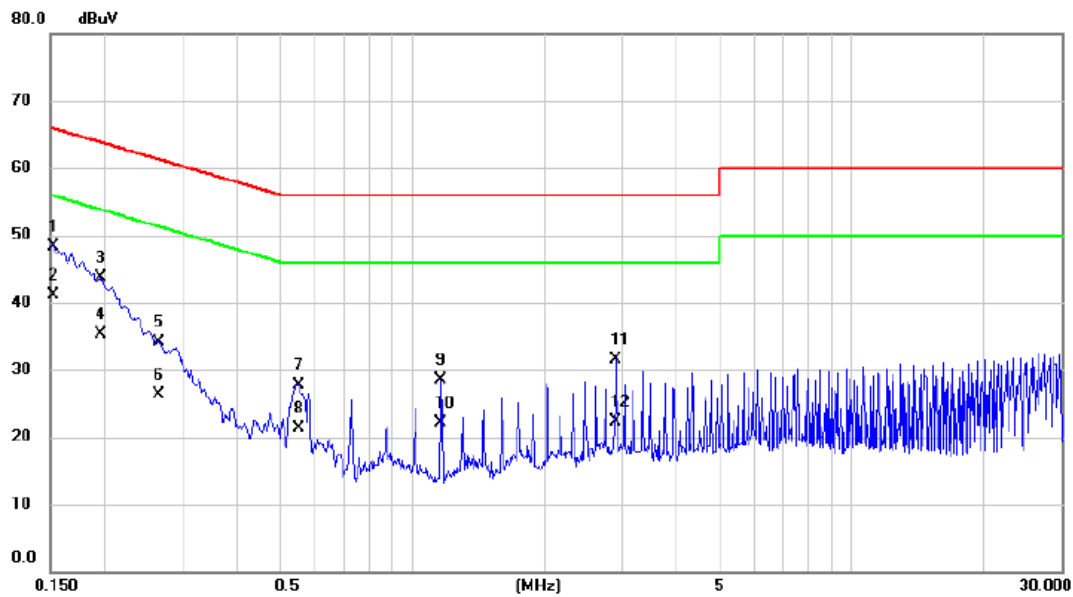
- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.3 sec./MHz.
- (2) 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.

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 2		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	38.92	9.67	48.59	65.88	-17.29	QP	
2	*	0.1522	31.50	9.67	41.17	55.88	-14.71	AVG	
3		0.2085	32.38	9.69	42.07	63.26	-21.19	QP	
4		0.2085	25.30	9.69	34.99	53.26	-18.27	AVG	
5		0.5505	19.18	9.73	28.91	56.00	-27.09	QP	
6		0.5505	11.50	9.73	21.23	46.00	-24.77	AVG	
7		1.1625	18.74	9.76	28.50	56.00	-27.50	QP	
8		1.1625	11.40	9.76	21.16	46.00	-24.84	AVG	
9		2.9063	22.67	9.84	32.51	56.00	-23.49	QP	
10		2.9063	13.50	9.84	23.34	46.00	-22.66	AVG	
11		3.3428	22.22	9.87	32.09	56.00	-23.91	QP	
12		3.3428	13.80	9.87	23.67	46.00	-22.33	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 2		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1532	38.58	9.67	48.25	65.82	-17.57	QP	
2	*	0.1532	31.50	9.67	41.17	55.82	-14.65	AVG	
3		0.1950	33.94	9.69	43.63	63.82	-20.19	QP	
4		0.1950	25.70	9.69	35.39	53.82	-18.43	AVG	
5		0.2647	24.50	9.70	34.20	61.28	-27.08	QP	
6		0.2647	16.70	9.70	26.40	51.28	-24.88	AVG	
7		0.5527	18.03	9.73	27.76	56.00	-28.24	QP	
8		0.5527	11.50	9.73	21.23	46.00	-24.77	AVG	
9		1.1625	18.77	9.76	28.53	56.00	-27.47	QP	
10		1.1625	12.40	9.76	22.16	46.00	-23.84	AVG	
11		2.9040	21.67	9.84	31.51	56.00	-24.49	QP	
12		2.9040	12.50	9.84	22.34	46.00	-23.66	AVG	

3.2 RADIATED EMISSIONS

3.2.1 LIMITS

Operating frequency	Field Strength ($\mu\text{V/m}$)	Measurement Distance (meters)	F.S Limitation at 3m Distance
			(dB $\mu\text{V/m}$) Average
Any non-ISM	15	300	63.5

NOTE:

- (1) The Equipment is for 18.305(b) Any type unless otherwise specified (miscellaneous) Operating frequency in any non-ISM frequency
- (2) Operation of ISM equipment within the following safety, search and rescue frequency bands is prohibited: 490-510 kHz, 2170-2194 kHz, 8354-8374 kHz, 121.4-121.6 MHz, 156.7-156.9 MHz and 242.8-243.2 MHz.
- (3) Distance extrapolation factor = $20 \log$ (specific distance / test distance) (dB);
Limit line = specific limits (dB μV) + distance extrapolation factor.
- (4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

Required highest frequency for radiated measurement

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz	30 MHz
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz	400 MHz
30 to 500	Lowest frequency generated in the device or 25 MHz, whichever is lower	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100 MHz, whichever is lower	Tenth harmonic
Above 1,000do	Tenth harmonic or highest detectable emission.

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Triple Loop Antenna	Schwarzbeck	HXYZ9170	9170-110	Jun. 16, 2024
2	Active Loop Antenna	Schwarzbeck	FMZB 1513-60B	1513-60 B-034	Apr. 01, 2024
3	MXE EMI Receiver	Keysight	N9038A	MY56400091	Dec. 22, 2024
4	Cable	N/A	RW2350-3.8A-NMB M-1.5M	N/A	Jun. 10, 2024
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

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

All calibration period of equipment list is one year.

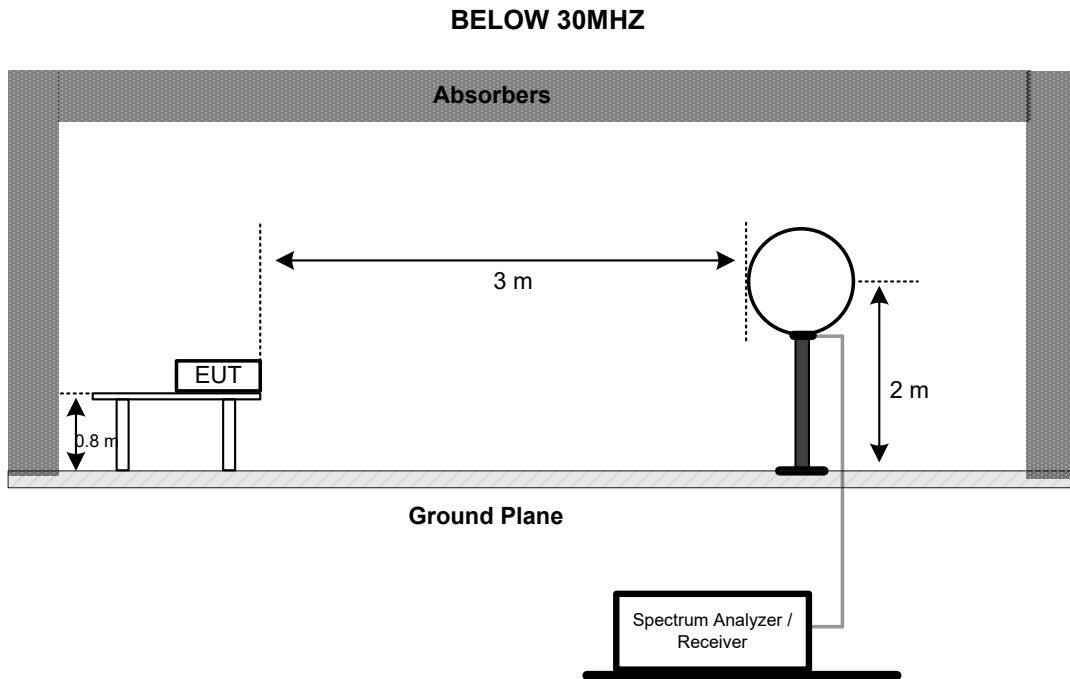
3.2.3 TEST PROCEDURE

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The height of test antenna shall be 2 m.
- c. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AVG detector mode re-measured.
- d. If the Peak Mode measured value compliance with and lower than AVG Mode Limit, the EUT shall be deemed to meet AVG Limits and then no additional AVG Mode measurement performed.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP

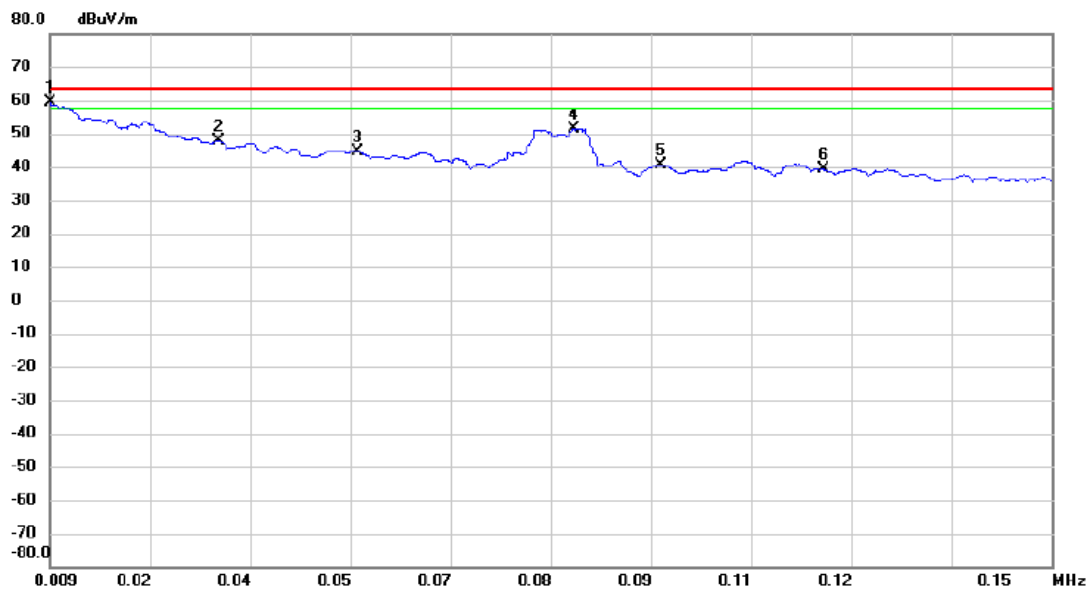


3.2.6 TEST RESULTS- BELOW 30 MHZ

Remark:

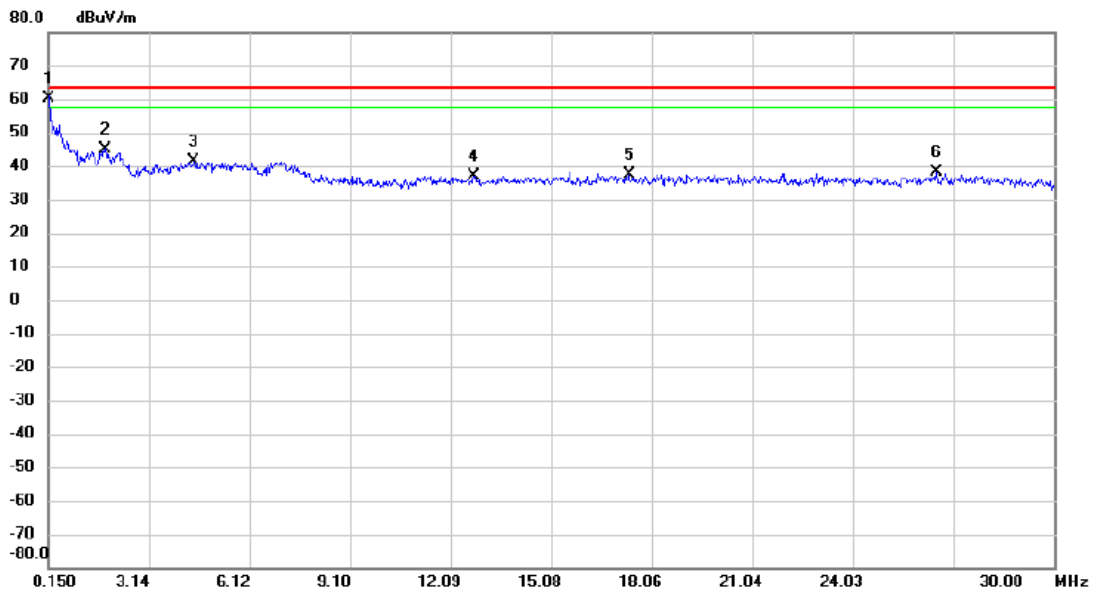
- (1) All readings are Peak unless otherwise stated AVG in column of [Note] . Peak denotes that the Peak reading compliance with the AVG Limits and then AVG Mode measurement didn't perform.
- (2) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

Test Voltage	AC 120V/60Hz
Test Mode	Mode 2_ 0°



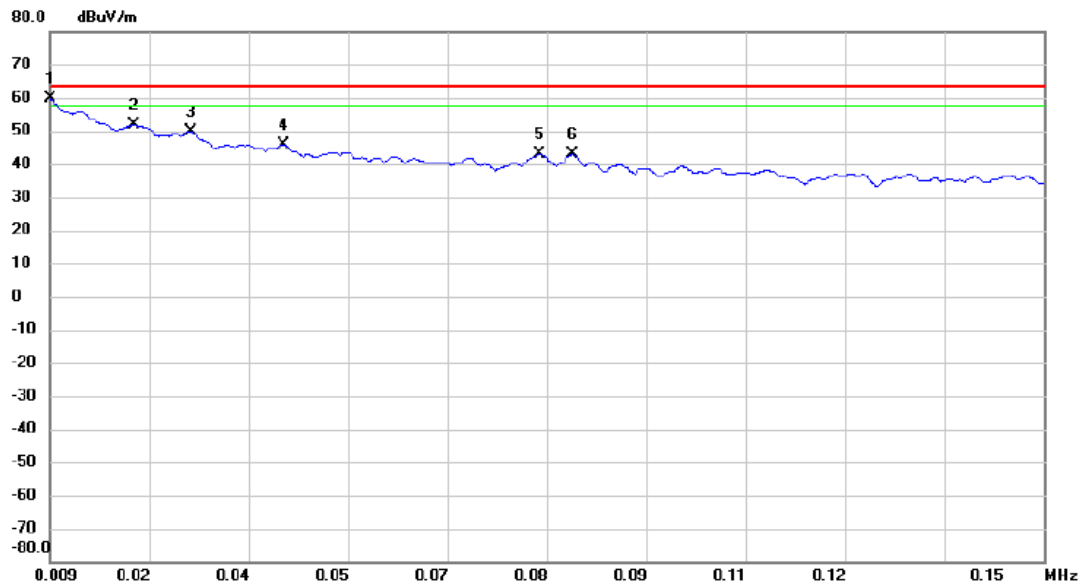
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1 *	0.0090	38.63	20.60	59.23	63.50	-4.27	peak	
2	0.0328	27.90	19.80	47.70	63.50	-15.80	peak	
3	0.0524	24.88	19.81	44.69	63.50	-18.81	peak	
4	0.0827	31.70	19.89	51.59	63.50	-11.91	peak	
5	0.0950	20.87	19.85	40.72	63.50	-22.78	peak	
6	0.1180	19.73	19.83	39.56	63.50	-23.94	peak	

Test Voltage	AC 120V/60Hz
Test Mode	Mode 2_ 0°



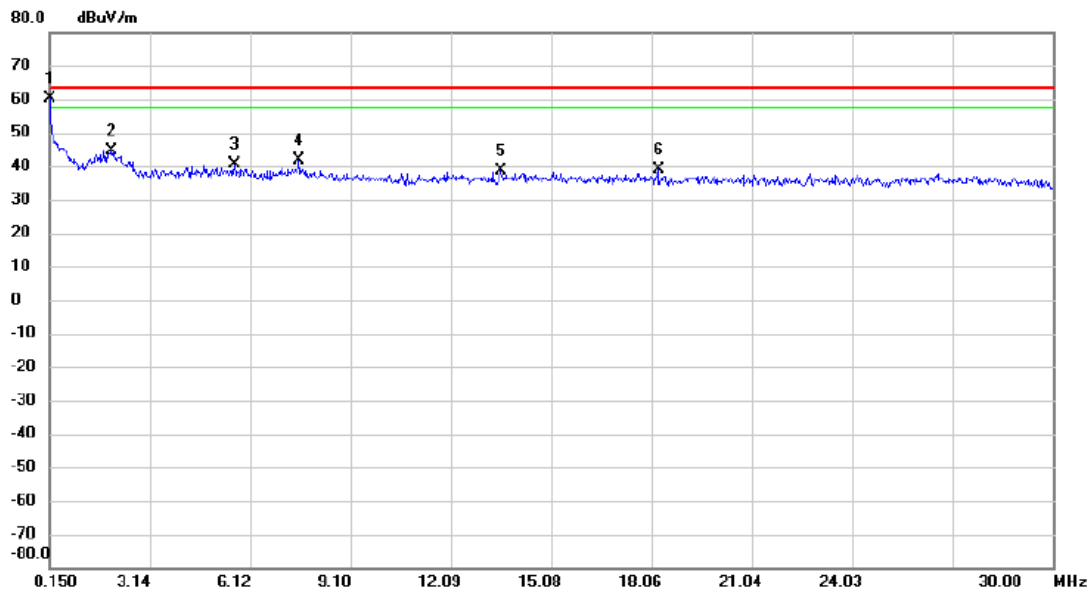
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.1500	40.49	19.83	60.32	63.50	-3.18	QP	
2		1.8216	25.39	19.81	45.20	63.50	-18.30	QP	
3		4.4633	21.32	19.94	41.26	63.50	-22.24	QP	
4		12.8063	16.88	20.24	37.12	63.50	-26.38	QP	
5		17.3883	17.09	20.45	37.54	63.50	-25.96	QP	
6		26.5075	17.13	21.08	38.21	63.50	-25.29	QP	

Test Voltage	AC 120V/60Hz
Test Mode	Mode 2_ 90°



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.0090	39.36	20.60	59.96	63.50	-3.54	QP	
2		0.0210	31.37	20.29	51.66	63.50	-11.84	QP	
3		0.0290	29.97	19.86	49.83	63.50	-13.67	QP	
4		0.0421	26.07	19.80	45.87	63.50	-17.63	QP	
5		0.0785	23.03	19.89	42.92	63.50	-20.58	QP	
6		0.0831	22.98	19.88	42.86	63.50	-20.64	QP	

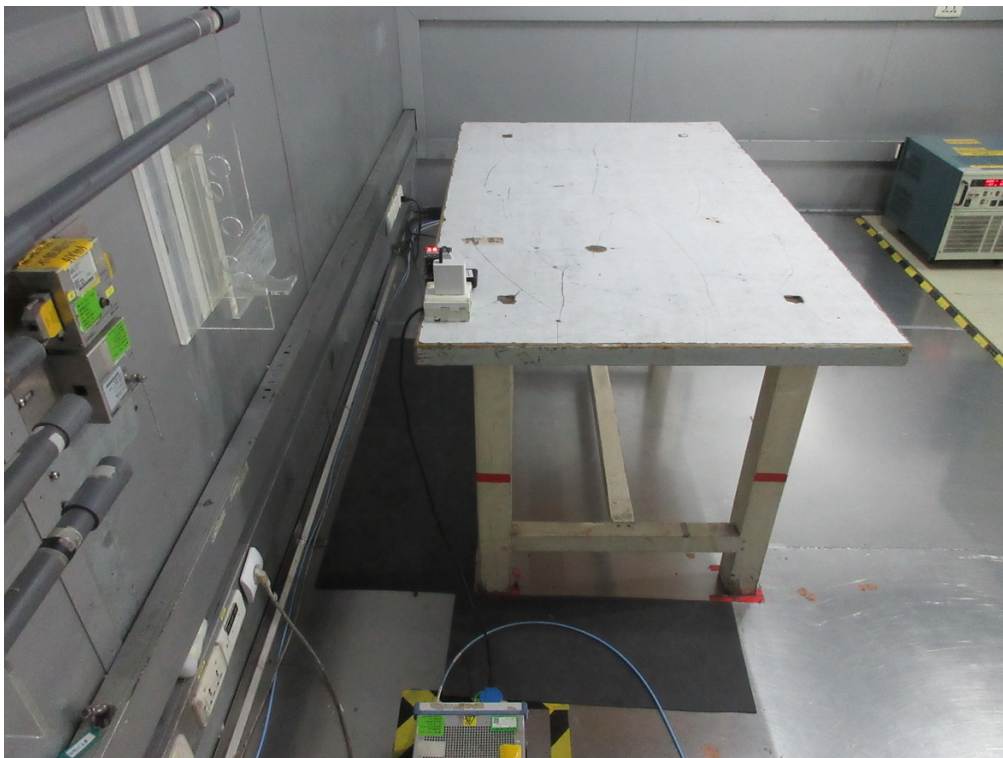
Test Voltage	AC 120V/60Hz
Test Mode	Mode 2_ 90°

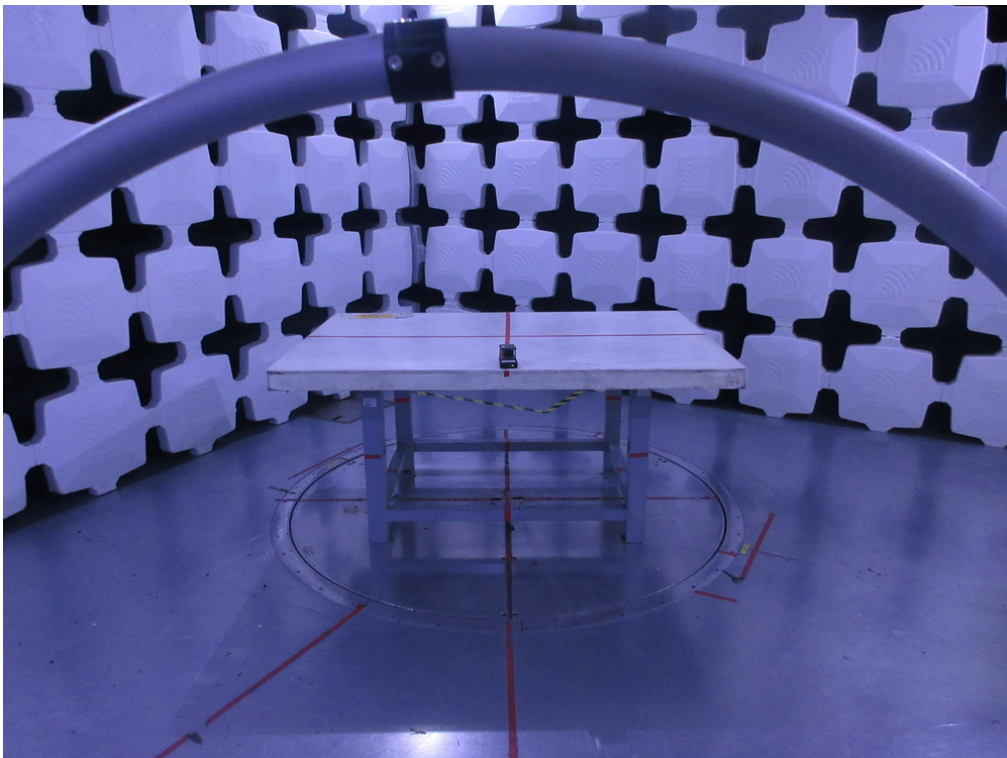
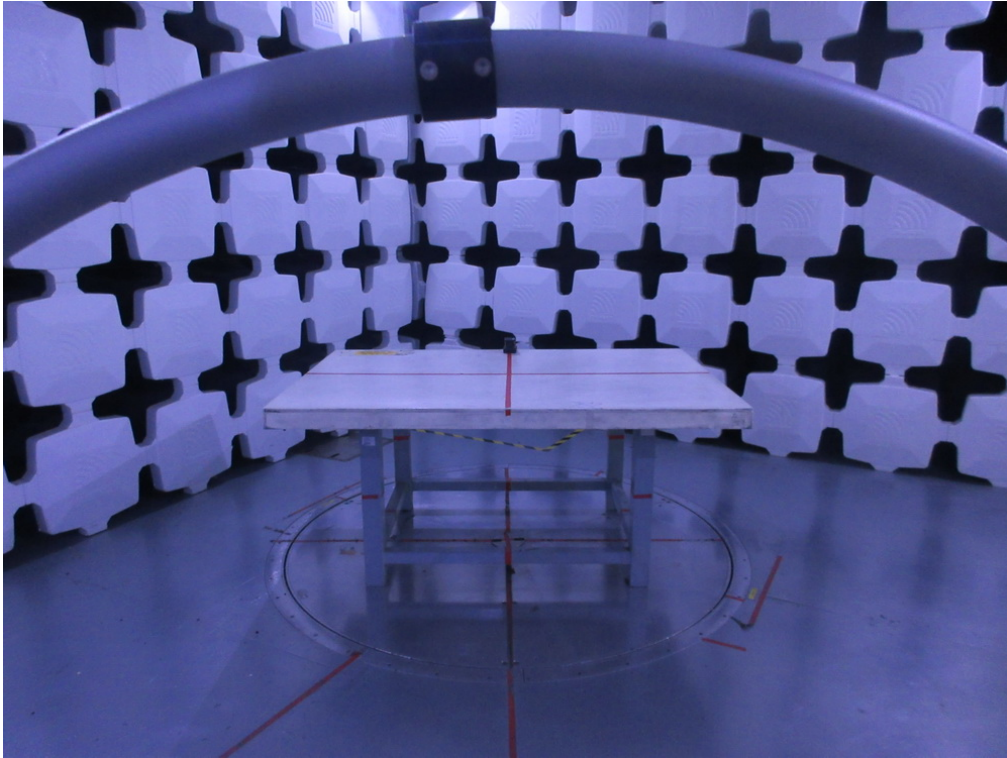


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	*	0.1500	40.18	19.83	60.01	63.50	-3.49	QP	
2		1.9858	24.87	19.79	44.66	63.50	-18.84	QP	
3		5.6573	20.56	19.96	40.52	63.50	-22.98	QP	
4		7.5827	21.66	20.06	41.72	63.50	-21.78	QP	
5		13.5825	18.20	20.25	38.45	63.50	-25.05	QP	
6		18.2690	18.58	20.50	39.08	63.50	-24.42	QP	

4. EUT TEST PHOTO

AC Power Line Conducted Emissions



Radiated Emissions Below 30MHz**End of Test Report**