

FCC EMC Test Report

Project No. : 2009C236
Equipment : Wireless Charging Forecaster
Brand Name : ACURITE
Test Model : 01194L
Series Model : 01193, 01193M
Applicant : Chaney Instrument Co.
Address : Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Manufacturer : Chaney Instrument Co.
Address : Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Factory : Chaney Instrument Co.
Address : Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Date of Receipt : Sep. 27, 2020
Date of Test : Sep. 28, 2020 ~ Oct. 20, 2020
Issued Date : Oct. 28, 2020
Report Version : R00
Test Sample : Engineering Sample No.: DG2020092728
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.

Dave Hong

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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.

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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 Version	Description	Issued Date
R00	Original Issue.	Oct. 28, 2020

1. SUMMARY OF TEST RESULTS

Emission		
Ref Standard(s)	Test Item	Result
FCC CFR Title 47, Part 18 FCC/OET MP-5	AC Power Line Conducted Emissions	PASS
	Radiated emission 9kHz to 30MHz	PASS
	Radiated emission between 30MHz and 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 at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

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	3.18

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB01	CISPR	9kHz ~ 30MHz	3.02

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
AC Power Line Conducted Emissions	25°C	53%	Heng Lao
Radiated emissions 9kHz to 30MHz	25°C	60%	Luca Jiang

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wireless Charging Forecaster
Brand Name	ACURITE
Test Model	01194L
Series Model	01193, 01193M
Model Difference(s)	Only differ in model name and packaging.
Power Source	1# DC Voltage supplied from AC adapter. Model: XZ0500-2000 2# Supplied from 2*AA battery
Power Rating	1# I/P: 100-240V~ 50/60Hz 0.4A O/P: 5.0V  2000mA 2# DC 3V
Connecting I/O Port (s)	1* Type-c Port 1* USB Port
Intended Operating Frequency(Fo)	110kHz~148kHz
Highest Internal Frequency(Fx)	148kHz

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 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	Operating

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	Operating

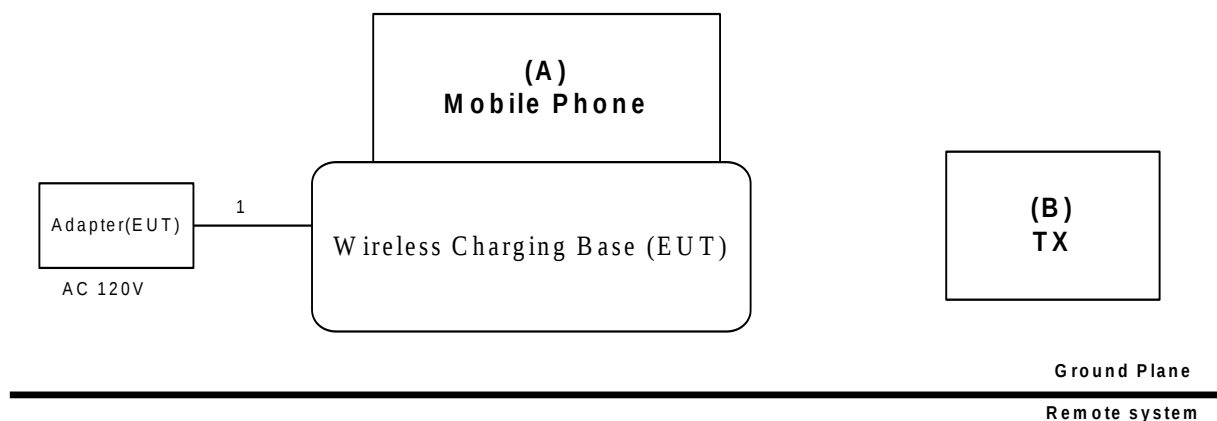
Radiated Emissions 9kHz to 30MHz test	
Final Test Mode	Description
Mode 1	Operating

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 via DC Cable for power supply.
2. Mobile Phone is charged on the EUT.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



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.
1	Mobile Phone	APPLE	MQA82ZP/A	G6TWW7UDJCL6
2	TX	ACURITE	00609A2TX	NA

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

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	50Ω Terminator	SHX	TF2-3G-A	8122901	Feb. 28, 2021
2	TWO-LINE V-NETWORK	R&S	ENV216	100526	Mar. 01, 2021
3	EMI Test Receiver	R&S	ESR3	101862	Jul. 25, 2021
4	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Mar. 01, 2021
5	Cable	N/A	RG400	N/A(12m)	Mar. 10, 2021
6	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.

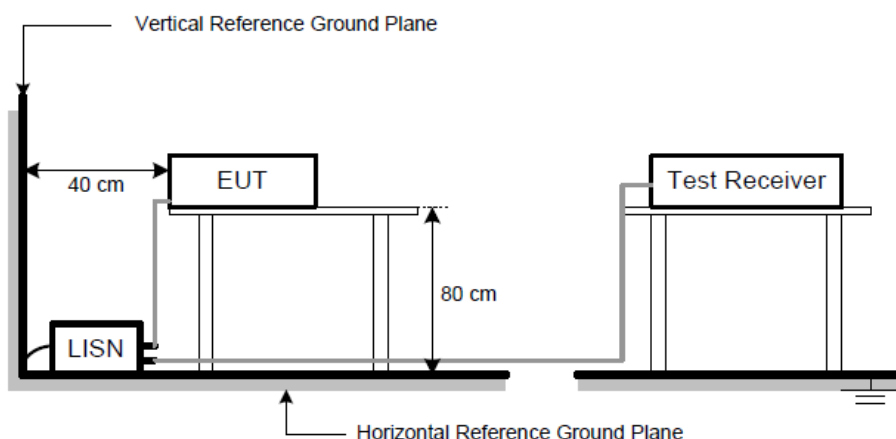
3.1.3 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.
- Measuring frequency range from 150KHz to 30MHz.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP

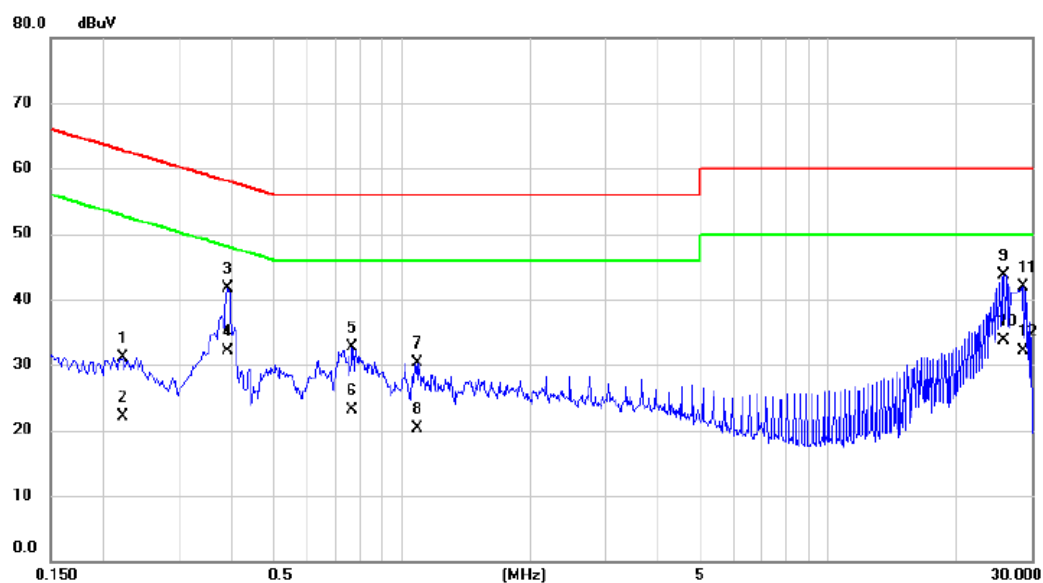


3.1.6 TEST RESULTS

Remark

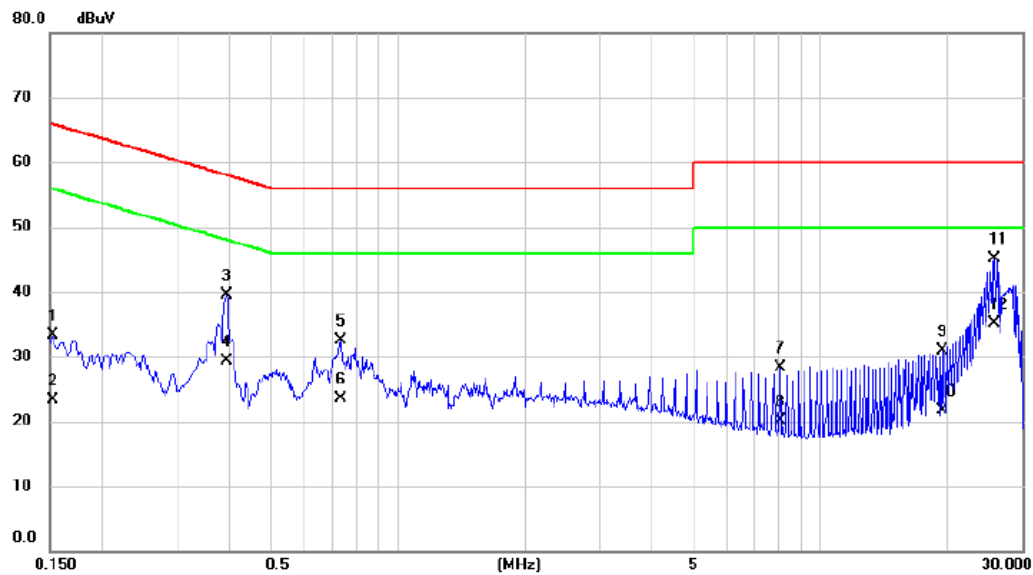
- Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp.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



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	0.2220	21.52	9.59	31.11	62.74	-31.63	QP	
2	0.2220	12.50	9.59	22.09	52.74	-30.65	AVG	
3	0.3907	32.06	9.61	41.67	58.05	-16.38	QP	
4 *	0.3907	22.50	9.61	32.11	48.05	-15.94	AVG	
5	0.7665	23.14	9.65	32.79	56.00	-23.21	QP	
6	0.7665	13.50	9.65	23.15	46.00	-22.85	AVG	
7	1.0905	20.62	9.68	30.30	56.00	-25.70	QP	
8	1.0905	10.70	9.68	20.38	46.00	-25.62	AVG	
9	25.8180	32.62	11.07	43.69	60.00	-16.31	QP	
10	25.8180	22.70	11.07	33.77	50.00	-16.23	AVG	
11	28.7273	30.79	11.19	41.98	60.00	-18.02	QP	
12	28.7273	20.90	11.19	32.09	50.00	-17.91	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	23.68	9.57	33.25	65.88	-32.63	QP	
2		0.1522	13.70	9.57	23.27	55.88	-32.61	AVG	
3		0.3930	29.86	9.60	39.46	58.00	-18.54	QP	
4		0.3930	19.80	9.60	29.40	48.00	-18.60	AVG	
5		0.7304	22.98	9.62	32.60	56.00	-23.40	QP	
6		0.7304	13.90	9.62	23.52	46.00	-22.48	AVG	
7		8.0228	18.11	10.13	28.24	60.00	-31.76	QP	
8		8.0228	9.90	10.13	20.03	50.00	-29.97	AVG	
9		19.3988	20.11	10.81	30.92	60.00	-29.08	QP	
10		19.3988	10.80	10.81	21.61	50.00	-28.39	AVG	
11	*	25.8113	33.95	11.16	45.11	60.00	-14.89	QP	
12		25.8113	23.90	11.16	35.06	50.00	-14.94	AVG	

3.2 RADIATED EMISSIONS

3.2.1 LIMITS

Operating frequency	Field Strength (uV/m)	Measurement Distance (meters)	F.S Limitation at 3m Distance
			(dBuV/m)
Any non-ISM	15	3	103.5

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 = $40 \log (\text{specific distance} / \text{test distance})$ (dB);
Limit line = specific limits (dBuV) + 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

3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	EMI Test Receiver	R&S	ESCI	100895	Feb. 28, 2021
2	Antenna	EM	EM-6876-1	230	Apr. 16, 2021
3	Cable	N/A	RG 213/U	N/A	May 29, 2021
4	Controller	ETS-Lindgren	2090	N/A	N/A
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.

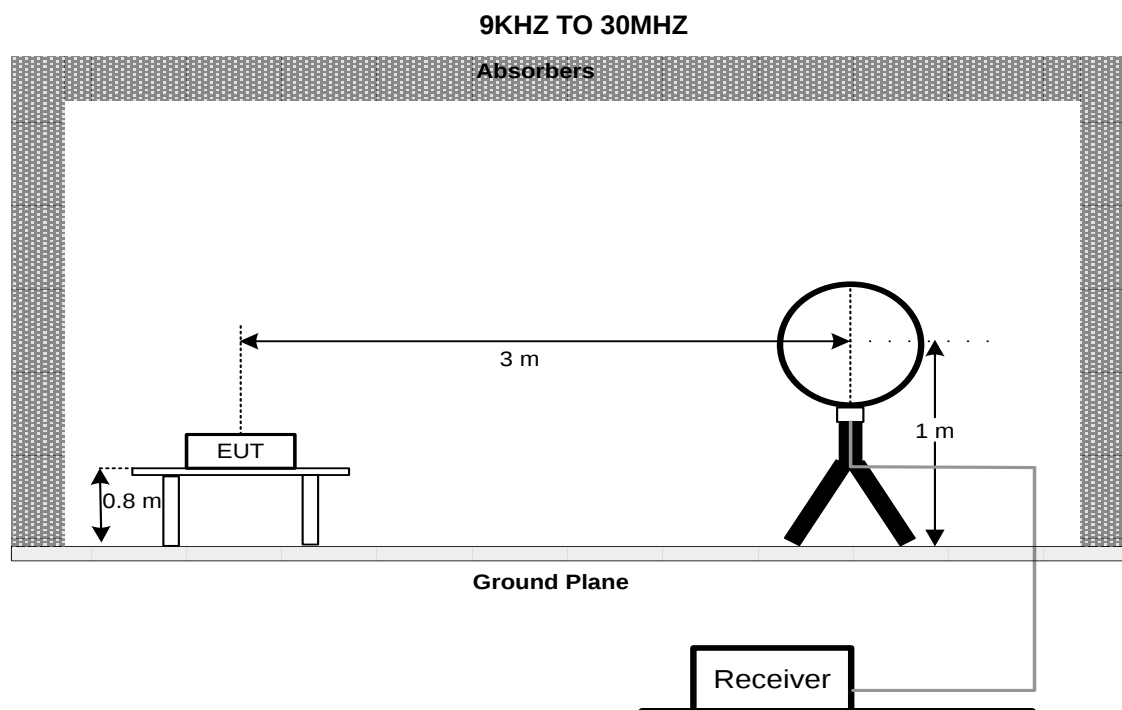
3.2.3 TEST PROCEDURE

- 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.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall be 1 m.
- 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 Quasi Peak (for below 1GHz) or AVG (for above 1GHz) detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- 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

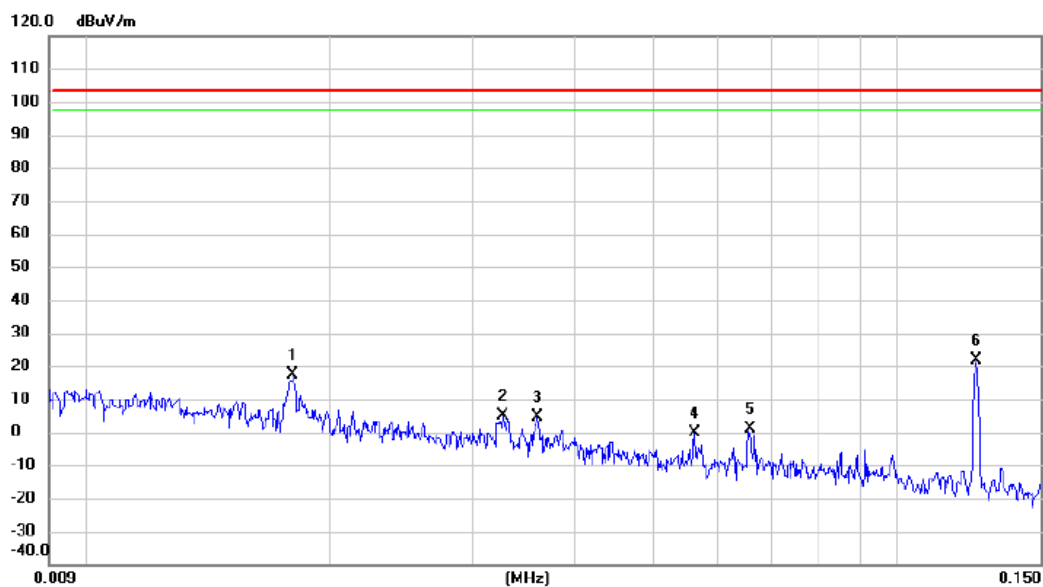


3.2.6 TEST RESULTS-9 KHZ to 30 MHZ

Remark:

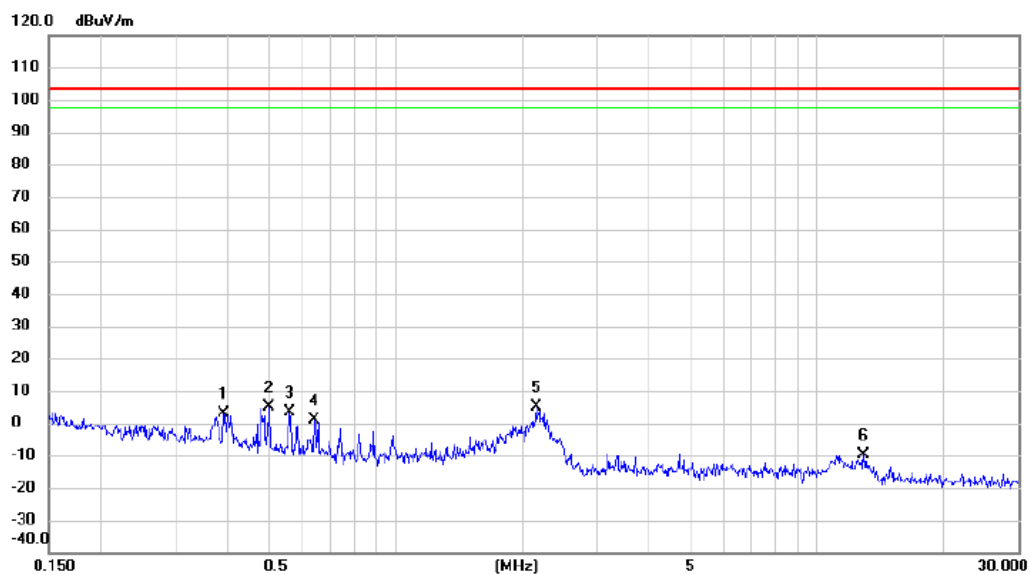
- (1) All readings are Peak unless otherwise stated QP in column of 『Note』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- (2) Measuring frequency range from 9kHz to 30MHz
- (3) If the peak scan value lower limit more than 20dB, then this signal data does not show in table.

Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 1



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.0180	54.94	-37.66	17.28	103.50	-86.22	QP	
2		0.0326	43.81	-38.62	5.19	103.50	-98.31	QP	
3		0.0360	43.23	-38.71	4.52	103.50	-98.98	QP	
4		0.0563	38.65	-39.04	-0.39	103.50	-103.89	QP	
5		0.0658	40.10	-38.99	1.11	103.50	-102.39	QP	
6	*	0.1250	60.43	-38.77	21.66	103.50	-81.84	QP	

Test Voltage:	AC 120V/60Hz
Test Mode:	Mode 1



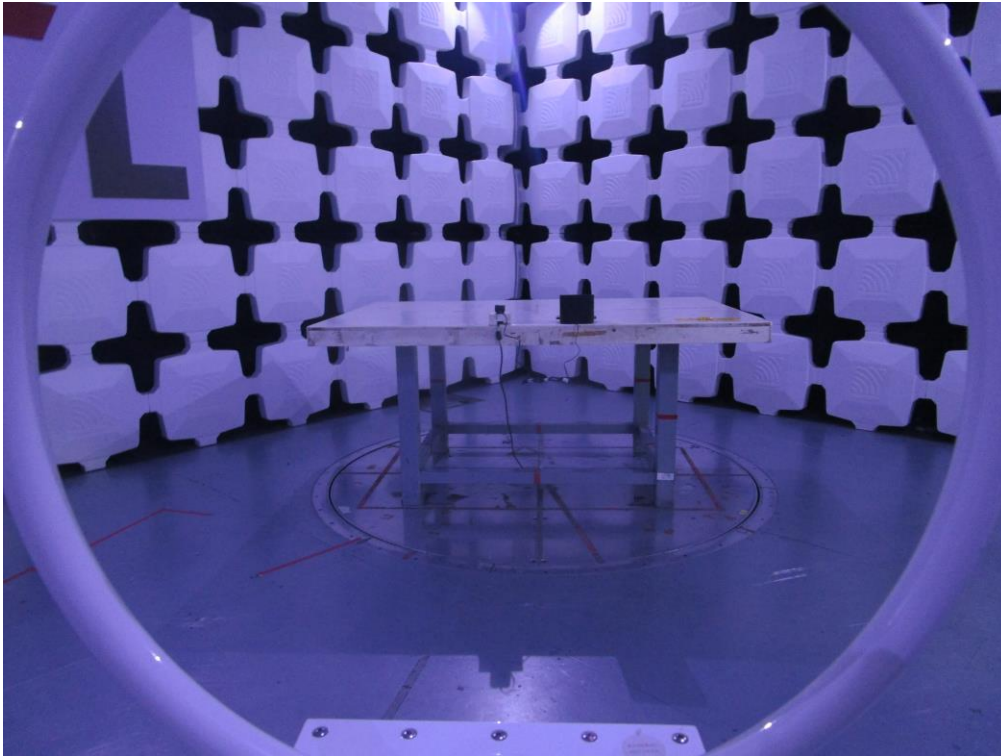
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	0.3914	42.04	-39.21	2.83	103.50	-100.67	QP	
2 *	0.5020	44.31	-39.49	4.82	103.50	-98.68	QP	
3	0.5611	42.81	-39.51	3.30	103.50	-100.20	QP	
4	0.6406	40.59	-39.55	1.04	103.50	-102.46	QP	
5	2.1552	45.08	-40.27	4.81	103.50	-98.69	QP	
6	12.9200	30.04	-39.94	-9.90	103.50	-113.40	QP	

4. EUT TEST PHOTO

AC Power Line Conducted Emissions



Radiated Emissions 9kHz to 30MHz



End of Test Report