CLASS II PERMISSIVE CHANGE TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	**FCC Part 15.209**
Product name	**Wireless Charger Module**
Model No.	**LPS-15WP K**
Trade name	**LUXSHAREICT**
Operation Freq.	**110-148 KHz**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of SGS Compliance Certification Services Inc. (Wugu Laboratory)

Approved by:

Dally Hong

Dally Hong
Sr. Engineer

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	January 16, 2023	Initial Issue	ALL	Doris Chu

Table of contents

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Lanto Electronic Ltd No 399, Baisheng Road, Jinxi Town, Kunshan City, Jiangsu , China 215234
Manufacturer	Lanto Electronic Ltd No 399, Baisheng Road, Jinxi Town, Kunshan City, Jiangsu , China 215234
Equipment	Wireless Charger Module
Model Name	LPS-15WP K
Model Discrepancy	N/A
Received Date	December 7, 2022
Date of Test	December 14 ~ 26, 2022
Power Operation	EUT Power from Adapter. Lenovo / ADL300SLC3A I/P: 100-240VAC, 4.5A, 50-60Hz O/P: 20.0VDC, 6.75A, 135.0W
Operation Frequency	110-148 KHz
SW version	N/A
HW Version	N/A
Class II Permissive Change	The major change filed under this application is: Additional Chassis added, brand: Lenovo, produce: Personal Computer, Model number: Yoga AIO 9 32IRH8.

Remark:
1. For more details, refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.2 EUT CHANNEL INFORMATION

Frequency Range	110-148 KHz
Modulation Type	TX: FSK RX: ASK

Remark:
Refer as ANSI 63.10:2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☒ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☐ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	Coil Antenna

Remark:
1. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.1183
Channel Bandwidth	± 2.1863
Radiated Emission_9kHz-30MHz	± 3.814
Radiated Emission_30MHz-200MHz	± 4.272
Radiated Emission_200MHz-1GHz	± 4.619

Remark:
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

☐ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Tony Chao	-
Radiation	Tony Chao	-
Conducted	Jack Chen	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

3M 966A Chamber Test Site_125K					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
PXA Signal Analyzer	Keysight Technologies	N9030B	MY62291089	2022-10-14	2023-10-13
Loop Antenna	COM-POWER	AL-130	121051	2022-04-13	2023-04-12
Preamplifier	EMEC	EM330	060609	2022-02-23	2023-02-22
Thermo-Hygro Meter	WISEWIND	1110	D06	2021-12-28	2022-12-27
Bi-Log Antenna	Sunol Sciences	JB3	A030105	2022-08-03	2023-08-02
Cable	Huber+Suhner	104PEA	20995+11112+182330	2022-02-23	2023-02-22
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Software	e3 V9-210616c				

Conducted					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
LOOP ANTENNA	COM-POWER	AL-130	121051	2022-04-13	2023-04-12
EXA Signal Analyzer	KEYSIGHT	N9010B	MY60242460	2022-01-30	2023-01-29
Software	N/A				

AC Power Line Conducted Test Room					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
CABLE	EMCI	CFD300-NL	CERF	2022-06-27	2023-06-26
EMI Test Receiver	R&S	ESCI	100064	2022-06-17	2023-06-16
LISN	SCHAFFNER	NNB 41	03/10013	2022-02-15	2023-02-14
Software	EZ-EMC(CCS-3A1-CE-WUGU)				

Remark:
1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

There are no accessories and support equipment be used during the test.

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	KeyBoard	DELL	SK-8115	N/A	DoC
2	Mouse	DELL	M-UAL-96	N/A	DoC
3	USB HUB	KTNET	KTHHUB2052BK	N/A	N/A
4	HDMI Cable	Atake	SHDMI-19MM01	N/A	N/A
5	Monitor	Lenovo	A20238FT0	N/A	N/A
6	Flash	SanDisk	SanDisk Ultra USB3.0 32G	N/A	N/A
7	Flash	SanDisk	128G Ultra USB Go Type USB3.1	N/A	N/A
8	Earphone	Samsung	Samsung Product J5	N/A	N/A

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC 15.209.

2. TEST SUMMARY

FCC Standard Sec.	Chapter	Test Item	Result
15.215	4.1	20dB Bandwidth & 99% OBW	Pass
15.209	4.2	Transmitter Radiated Emission	Pass
15.207	4.3	AC Power-line Conducted Emission	Pass
15.203	4.4	Antenna Requirement	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	128KHz
RF Field strength	3.10 dBuV/m @300m

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	**AC Power line conducted emission for line and neutral**
Power supply Mode	**Mode 1: EUT power by Adapter**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT power by Adapter**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

3.3 FCC PART 15.205 & RSS GEN SECTION 8.10 RESTRICTED BANDS OF OPERATIONS

According to FCC 15.205,

(a) Except as shown in other rules, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided by other rules, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

4. TEST RESULT

4.1 20DB BANDWIDTH

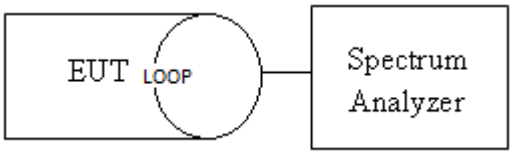
DEFINITION

According to FCC Part 15.215 (c) ,Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

For ISED, RSS-GEN, 6.7 Occupied bandwidth (or 99% emission bandwidth) and x dB bandwidth

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.
In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

TEST CONFIGURATION



TEST PROCEDURE

The Loop antenna connected to the spectrum analyzer, was touching to the transmitter antenna. Set the RBW=1KHz, VBW ≥ 3 x RBW, Detector = Peak, Trace mode = Max hold, Sweep = 500ms.Measure the maximum width of the emission that is constrained by the frequencies associated with the Occupied Bandwidth.

TEST RESULTS

Compliance

Test Data

Temperature: 20.7℃ **Test Date:** December 14, 2022

Humidity: 57% RH **Tested By:** Jack Chen

20 dB Bandwidth (kHz)			99% Bandwidth (kHz)
FL	FH	Bandwidth	
126.425	129.127	2.702	2.298

Test Plots
20dB & 99%OBW

4.2 TRANSMITTER RADIATED EMISSION

LIMIT

1. According to FCC PART 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
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

Remark: Except as provided in other rules, fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

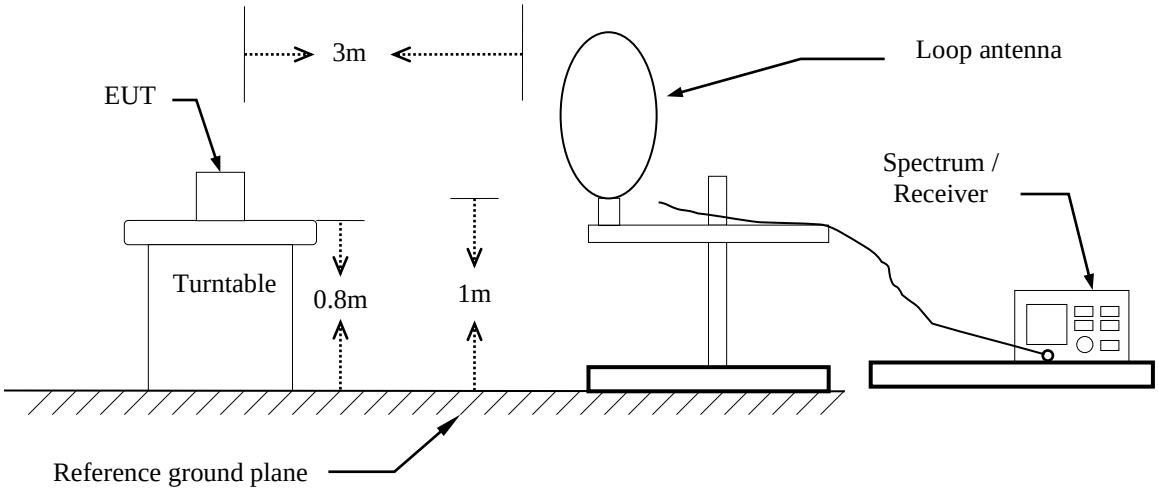
2. In the above emission table, the tighter limit applies at the band edges.

Above 30MHz

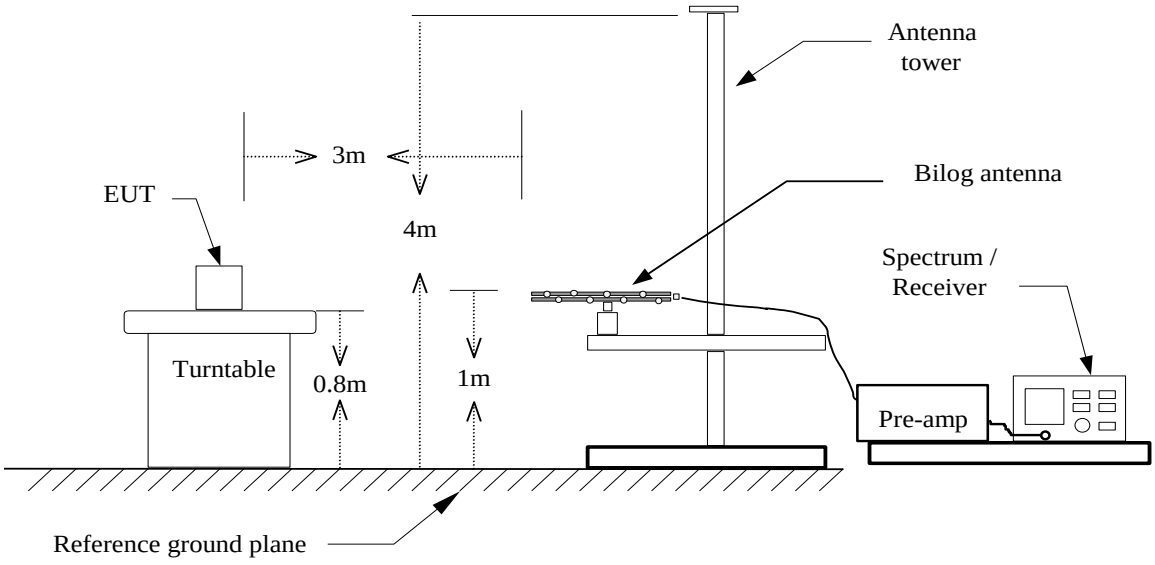
Frequency (MHz)	Field Strength		Measurement Distance (meter)
	(μV/m)	(dBμV/m)	
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Test Configuration

9kHz ~ 30MHz



30MHz ~ 1GHz



TEST PROCEDURE

For 9KHz ~ 30MHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
   Below 1GHz:
   RBW=200kHz / VBW=600kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.
8. Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

For 30MHz ~ 1GHz

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
   RBW=100kHz / VBW=300kHz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

Fundamental Strength

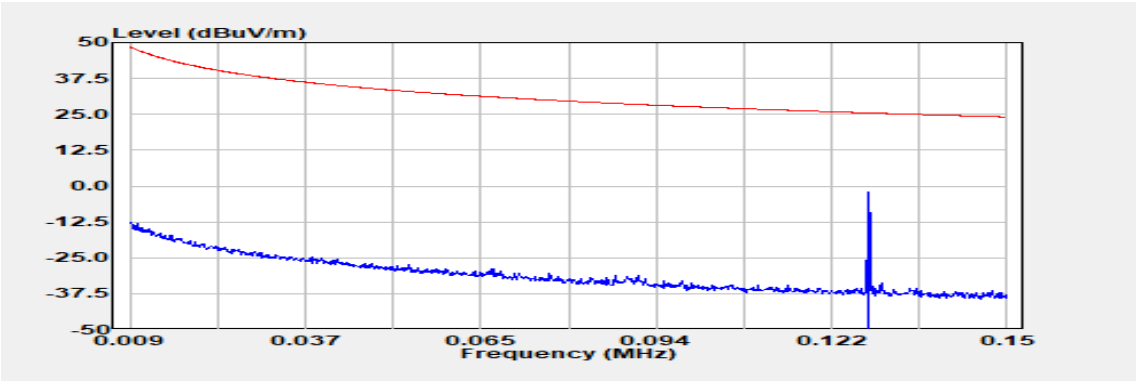
Operation Mode: Main

Temperature: 23.3℃ **Test Date:** December 14, 2022

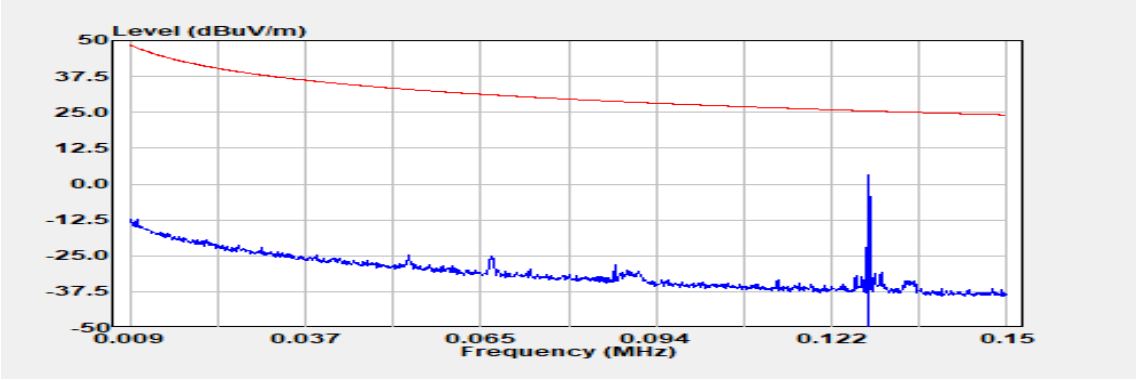
Humidity: 62% RH **Tested by:** Tony Chao

Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Antenna Pol.
0.128	Peak	64.82	-66.94	-2.12	25.48	-27.60	V
0.128	Peak	70.04	-66.94	3.10	25.48	-22.38	H
0.128	Peak	56.56	-66.94	-10.38	25.48	-35.85	G

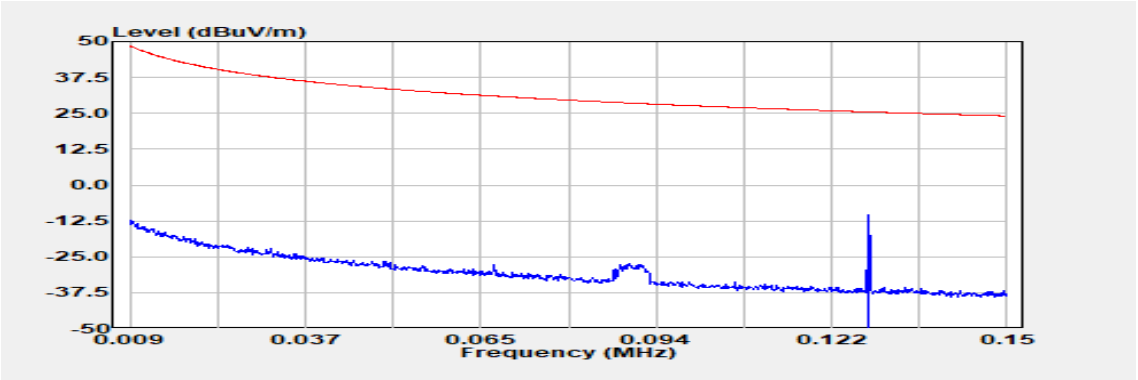
Antenna Pol.: Vertical



Antenna Pol.: Horizontal

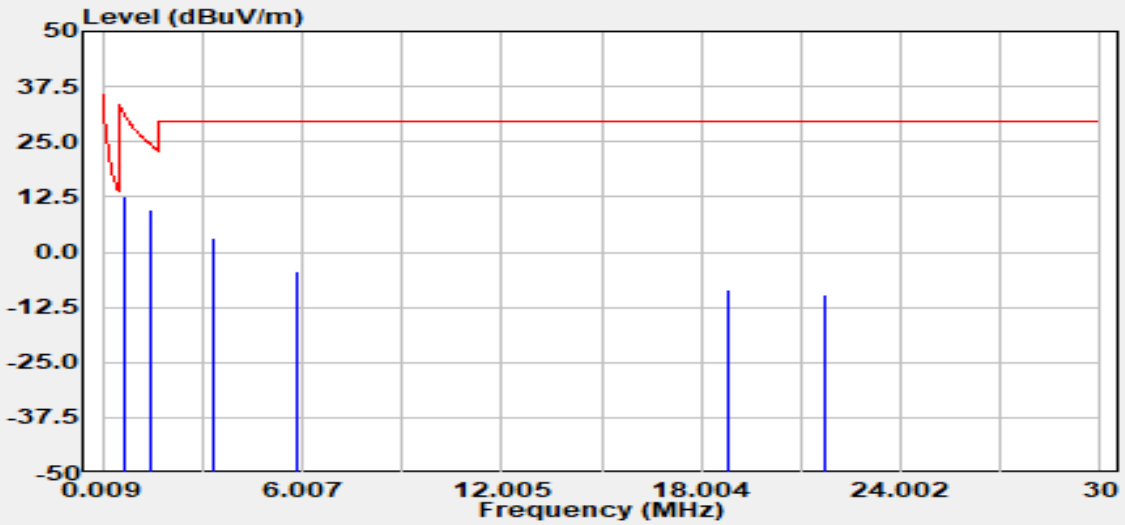


Antenna Pol.: Ground



9 kHz – 30MHz

Operation Mode: QI
Antenna Pol.: Horizontal
Temperature: 23.3℃
Test Date: December 14, 2022
Humidity: 62% RH
Tested by: Tony Chao



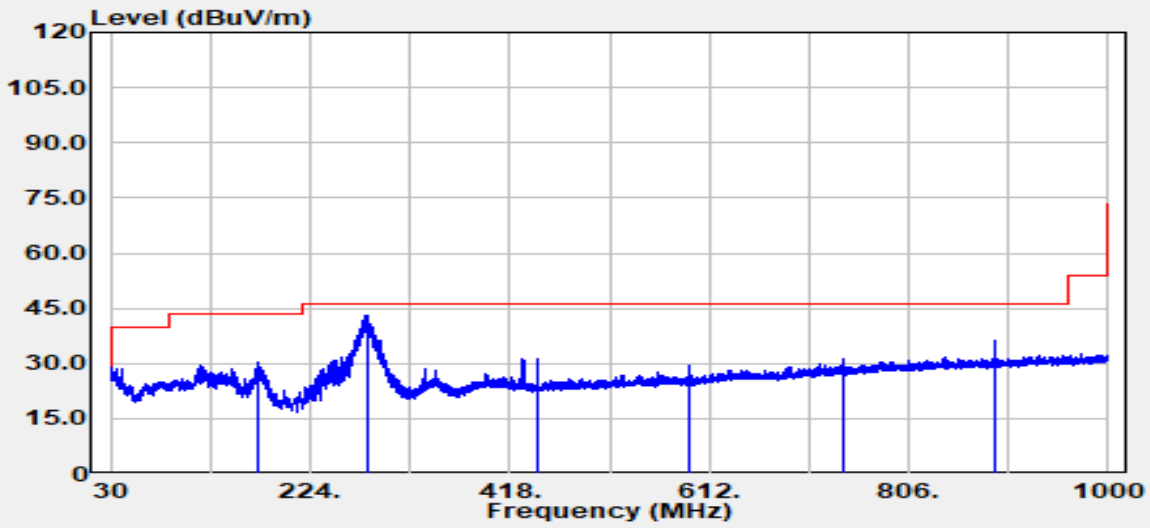
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.638	Peak	39.06	-26.48	12.58	31.51	-18.93
1.463	Peak	36.05	-26.34	9.72	24.30	-14.58
3.334	Peak	29.24	-26.10	3.13	29.54	-26.41
5.861	Peak	21.31	-25.68	-4.37	29.54	-33.91
18.816	Peak	16.42	-24.73	-8.31	29.54	-37.85
21.712	Peak	15.54	-25.00	-9.46	29.54	-39.00

Remark:

1. the frequency bands 9-90 kHz, 110-490 kHz measurements employing an average detector and other below 1GHz measurements employing a CISPR quasi-peak detector.
2. Since the Factor included the distance conversion factor, the distance of Actual FS is 300m or 30m. (9kHz~490kHz is 300m, 490kHz~30MHz is 30m)

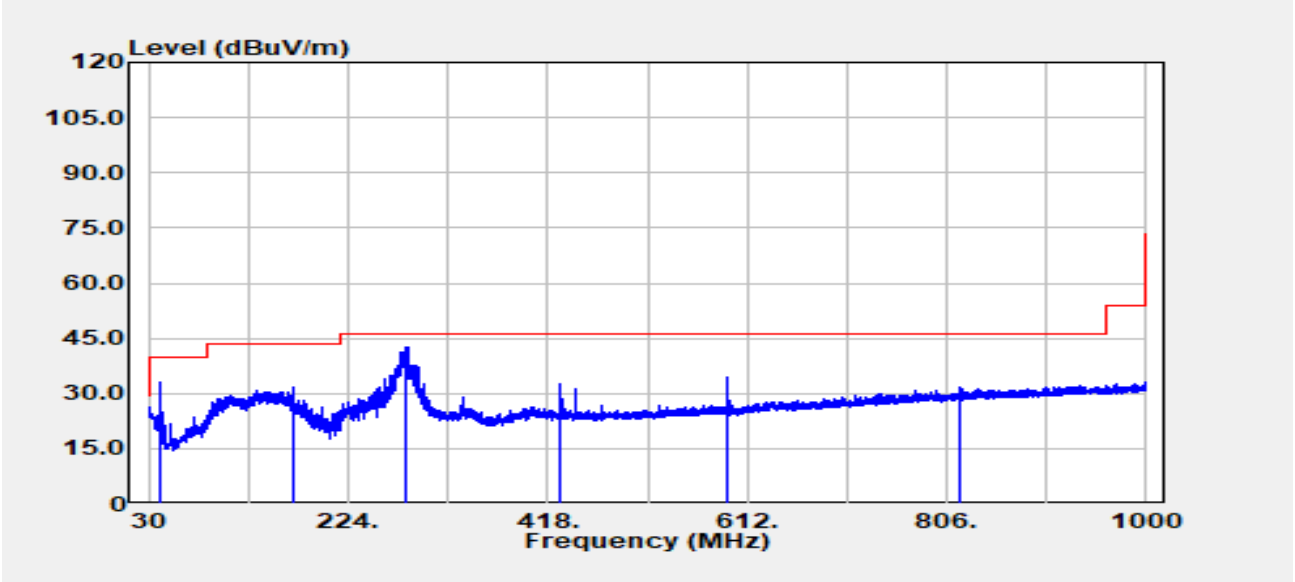
Below 1 GHz

Operation Mode: QI
Antenna Pol.: Vertical
Temperature: 23.3℃
Test Date: December 14, 2022
Humidity: 62% RH
Tested by: Tony Chao



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
173.681	Peak	42.02	-11.55	30.47	43.50	-13.03
278.684	Peak	52.31	-9.10	43.20	46.00	-2.80
444.796	Peak	36.47	-5.04	31.43	46.00	-14.57
593.449	Peak	32.18	-2.64	29.54	46.00	-16.46
741.616	Peak	30.97	0.23	31.21	46.00	-14.79
890.148	Peak	33.84	2.19	36.02	46.00	-9.98

Operation Mode: QI
Temperature: 23.3℃
Humidity: 62% RH
Antenna Pol.: Horizontal
Test Date: December 14, 2022
Tested by: Tony Chao



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBµV)	Factor (dB)	Actual FS (dBµV/m)	Limit @3m (dBµV/m)	Margin (dB)
40.185	Peak	43.04	-9.93	33.11	40.00	-6.89
170.408	Peak	43.11	-11.39	31.73	43.50	-11.77
281.109	Peak	51.77	-9.08	42.69	46.00	-3.31
430.731	Peak	37.65	-5.10	32.54	46.00	-13.46
592.964	Peak	37.11	-2.65	34.46	46.00	-11.54
819.823	Peak	30.06	1.53	31.59	46.00	-14.41

4.3 AC POWER LINE CONDUCTED EMISSION

4.3.1 Test Limit

According to §15.207(a), RSS-Gen Sec.8.8,

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

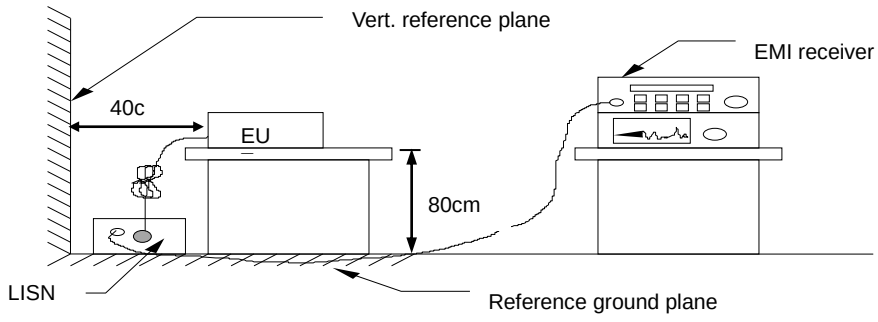
* Decreases with the logarithm of the frequency.

4.3.2 Test Procedure

Test method Refer as ANSI 63.10:2013 clause 6.2,

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete

4.3.3 Test Setup

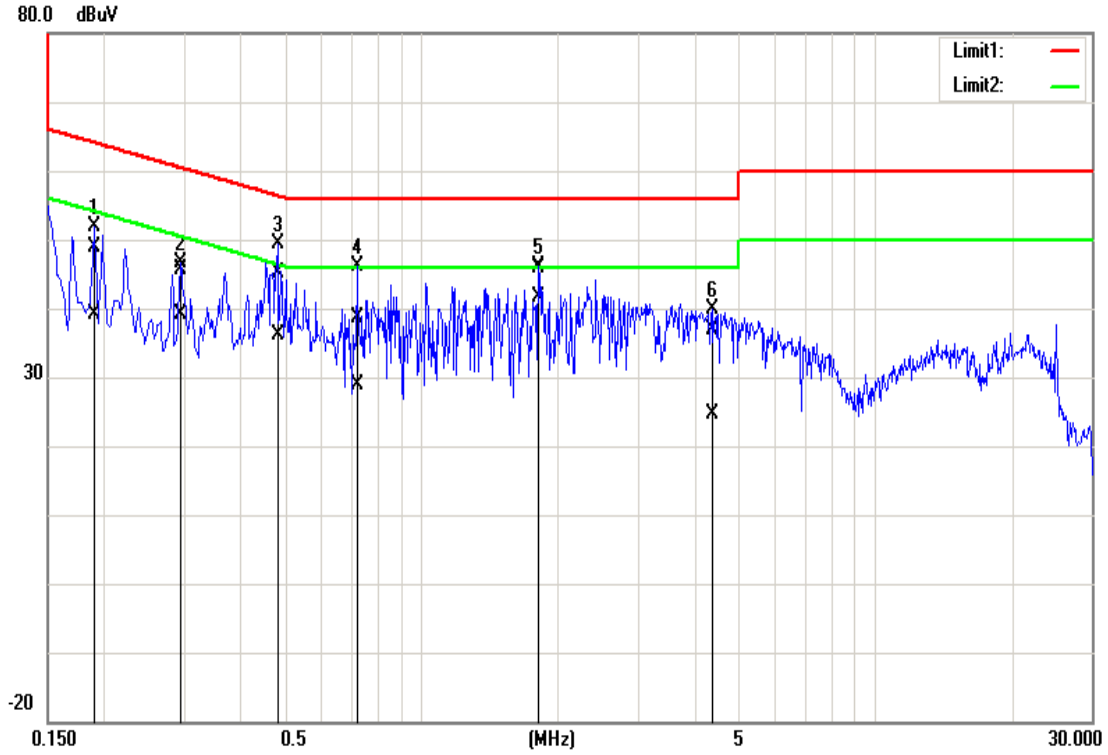


4.3.4 Test Result

Pass.

Test Data

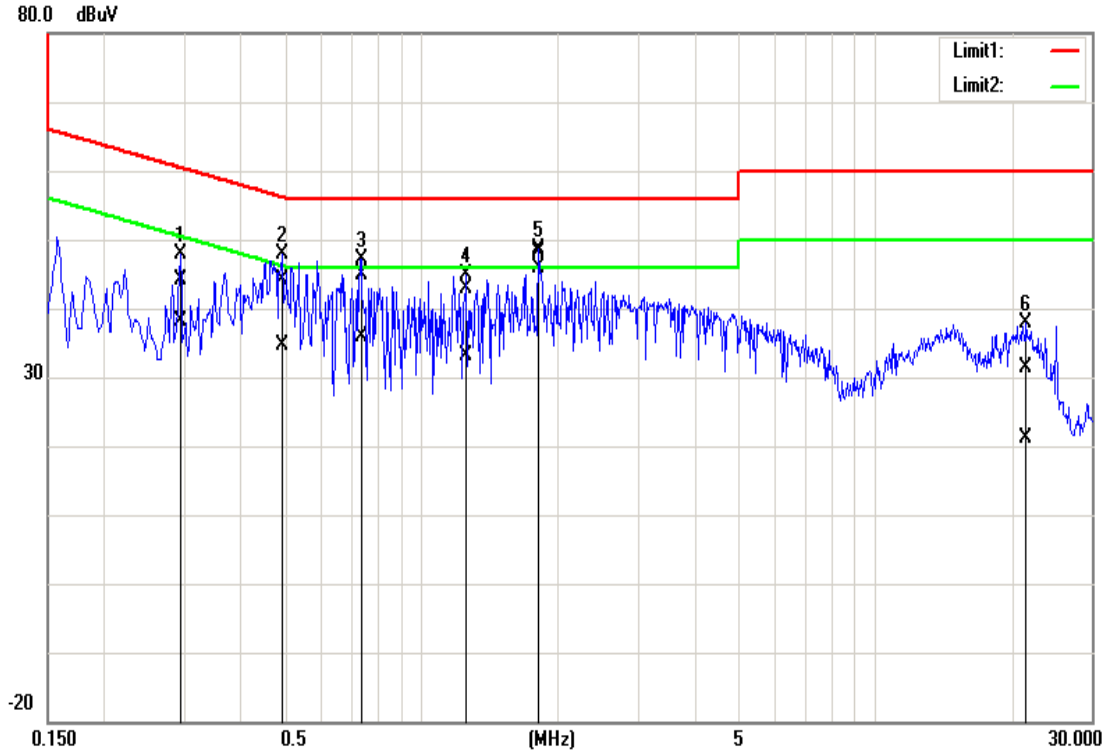
Test Mode:	Mode 1	Temp/Hum	18.7(℃) / 57%RH
Phase:	Line	Test Date	December 26, 2022
		Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (d uV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1900	38.69	28.98	10.18	48.87	39.16	64.04	54.04	-15.17	-14.88	Pass
0.2940	35.39	28.90	10.18	45.57	39.08	60.41	50.41	-14.84	-11.33	Pass
0.4820	34.98	25.89	10.19	45.17	36.08	56.30	46.30	-11.13	-10.22	Pass
0.7220	28.42	18.70	10.21	38.63	28.91	56.00	46.00	-17.37	-17.09	Pass
1.8140	35.75	31.35	10.25	46.00	41.60	56.00	46.00	-10.00	-4.40	Pass
4.3660	26.68	14.22	10.30	36.98	24.52	56.00	46.00	-19.02	-21.48	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 1	Temp/Hum	18.7(℃) / 57%RH
Phase:	Neutral	Test Date	December 26, 2022
		Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.2940	34.07	27.94	10.17	44.24	38.11	60.41	50.41	-16.17	-12.30	Pass
0.4940	33.89	24.35	10.18	44.07	34.53	56.10	46.10	-12.03	-11.57	Pass
0.7380	34.67	25.62	10.20	44.87	35.82	56.00	46.00	-11.13	-10.18	Pass
1.2580	32.62	22.86	10.21	42.83	33.07	56.00	46.00	-13.17	-12.93	Pass
1.8180	38.02	35.59	10.23	48.25	45.82	56.00	46.00	-7.75	-0.18	Pass
21.5060	20.93	10.61	10.44	31.37	21.05	60.00	50.00	-28.63	-28.95	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

4.4 ANTENNA REQUIREMENT

§ 15.203 Antenna requirement.

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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Antenna Type	Coil Antenna

Remark:
1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

- End of Test Report -