FCC Test Report

Product Name	Wireless Charger Module
Model No.	LPS-15WP K
FCC ID.	2APYS-LPS15WPK

Applicant	Lanto Electronic Ltd
Address	No.399 baisheng Road,jinxi Town Kunshan, Jiangsu, China 215234

Date of Receipt	Dec. 10, 2021
Issued Date	Jan. 26, 2022
Report No.	21C0383R-RFUSOTHV02-A
Report Version	V1.0

Testing Laboratory
3023

Test Report

Issued Date: Jan. 26, 2022
Report No.: 21C0383R-RFUSOTHV02-A

Product Name	Wireless Charger Module
Applicant	Lanto Electronic Ltd
Address	No.399 baisheng Road,jinxi Town Kunshan, Jiangsu, China 215234
Manufacturer	Lanto Electronic Ltd
Model No.	LPS-15WP K
FCC ID.	2APYS-LPS15WPK
EUT Rated Voltage	DC20 V, 1A
EUT Test Voltage	AC 120 V / 60 Hz
Trade Name	LUXSHAREICT
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By : Ida Tung

(Project Specialist / Ida Tung)

Tested By : Ivan Chuang

(Senior Engineer / Ivan Chuang)

Approved By : Alan Chen

(Senior Engineer / Alan Chen)

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Revision History

Report No.	Version	Description	Issued Date
21C0383R-RFUSOTHV02-A	V1.0	Initial issue of report.	2022-01-26

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Wireless Charger Module
Trade Name	LUXSHAREICT
Model No.	LPS-15WP K
FCC ID.	2APYS-LPS15WPK
Frequency Range	110-148kHz
Type of antenna	Coil antenna
Test Platform	Product: Personal Computer Brand: Lenovo Model Name: IdeaCentre AIO 5 27IAH7 Machine Type:F0GQ******* (Where * maybe any alphanumeric, symbol or blank, for marketing purpose and no impact RF related critical components andconstructions.)

Note:

1. The EUT is a Wireless Charger Module with a built-in 110-148kHz transceiver.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209.
3. This module is “Limited Modular Approval” (LMA).

Test Mode	Mode 1: Transmit

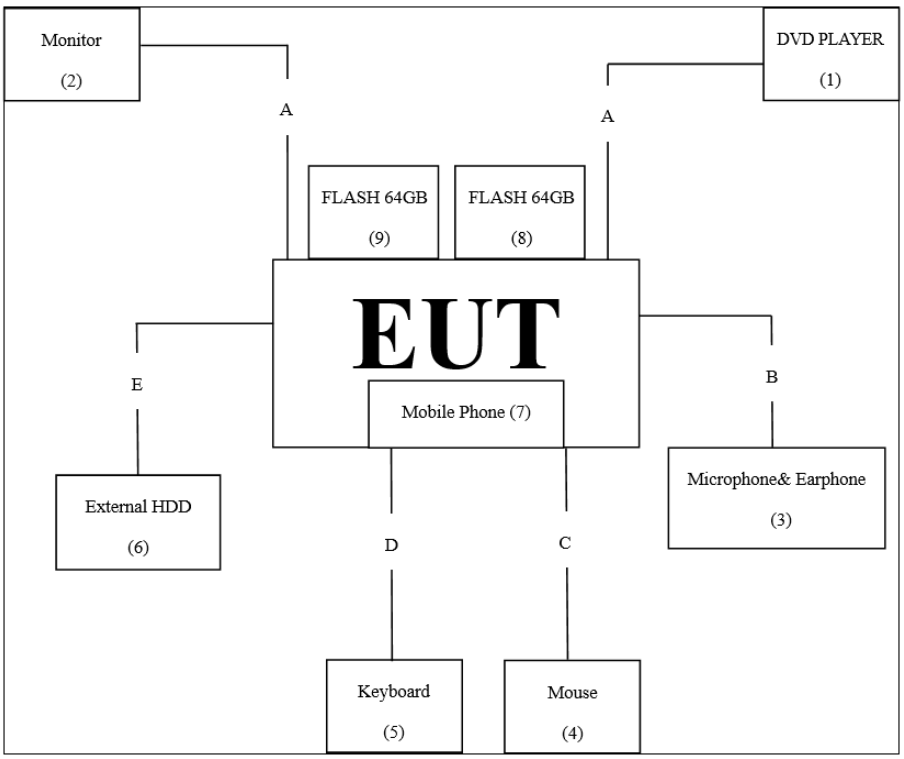
1.2. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	DVD PLAYER	SAMPO	DVB-123	12527058	Non-shielded, 1.8m
2	Monitor	Lenovo	A21215FS0	V5DMD987	Non-shielded, 1.8m
3	Microphone & Earphone	Verbatim	C09024VB	N/A	N/A
4	Mouse	Lenovo	MOJUUO	N/A	N/A
5	Keyboard	Lenovo	SK-8823	N/A	N/A
6	External HDD	Transcend	TS1TSJ25H3B	F21786-0005	N/A
7	Mobile Phone	SONY	H8296	43027566	N/A
8	FLASH 64GB	Transcend	JetFlash 790C	N/A	N/A
9	FLASH 64GB	Transcend	JetFlash 790C	N/A	N/A

Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.8m, two PCS.
B	Audio Cable	Non-shielded, 1.2m
C	USB Cable	Non-shielded, 1.8m
D	USB Cable	Non-shielded, 1.8m
E	USB Cable	Shielded, 0.5m

1.3. Configuration of Test System



1.4. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.3.

(2) Provide power to the EUT, Mobile Phone on the EUT to trigger the signal.

(3) Start the continuous transmitter.

(4) Verify that the EUT works properly.

1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 ℃	20.1 ℃
	Humidity (%RH)	10~90 %	67.5 %
Radiated Emission	Temperature (°C)	10~40 ℃	23.8 ℃
	Humidity (%RH)	10~90 %	64.2 %

USA : FCC Registration Number: TW0033

Canada : IC Registration Number: 26930

Site Description : Accredited by TAF
Accredited Number: 3023

Test Laboratory : DEKRA Testing and Certification Co., Ltd
Address : No. 5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan
Performed Location : No. 26, Huaya 1st Rd., Guishan Dist.,Taoyuan City 333411, Taiwan, R.O.C.
Phone number : +886-3-275-7255
Fax number : +866-3-327-8031
Email address : info.tw@dekra.com
Website : http://www.dekra.com.tw

1.6. List of Test Equipment

For Conduction measurements /SH1

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	EMI Test Receiver	R&S	ESR7	101601	2021/06/19	2022/06/18
X	Two-Line V-Network	R&S	ENV216	101306	2021/04/08	2022/04/07
X	Two-Line V-Network	R&S	ENV216	101307	2020/05/04	2022/05/03
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2021/05/24	2022/05/23

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : AUDIX e3 V9.

For Radiated measurements /966-3

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due. Date
X	Loop Antenna	AMETEK	HLA6121	56736	2021/04/14	2022/04/13
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-675	2021/08/11	2022/08/10
	Horn Antenna	ETS-Lindgren	3117	00227700	2021/10/12	2022/10/11
	Horn Antenna	Com-Power	AH-840	101100	2021/10/04	2022/10/03
	Pre-Amplifier	SGH	EM330	60736	2021/08/11	2022/08/10
	Pre-Amplifier	SGH	PRAMP118	20200202	2021/03/25	2022/03/24
X	Pre-Amplifier	EMCI	EMC001330	980254	2021/07/06	2022/07/05
	Pre-Amplifier	EMCI	EMC051835SE	980313	2021/11/24	2022/11/23
	Pre-Amplifier	EMCI	EMC05820SE	980309	2021/09/27	2022/09/26
	Pre-Amplifier	EMCI	EMC05820SE	980310	2021/07/07	2022/07/06
	Pre-Amplifier	EMCI	EMC184045SE	980369	2021/04/27	2022/04/26
	Coaxial Cable	EMCI	EMC102-KM-KM-600	1160314		
	Coaxial Cable	EMCI	EMC102-KM-KM-7000	170242		
	Filter	MICRO TRONICS	BRM50702	G251	2021/09/16	2022/09/15
	Filter	MICRO TRONICS	BRM50716	G188	2021/09/16	2022/09/15
X	EMI Test Receiver	R&S	ESR3	102793	2021/12/15	2022/12/14
X	Spectrum Analyzer	R&S	FSV3044	101114	2021/02/04	2022/02/03
X	Coaxial Cable	SGH	HA800	GD20110222-3	2021/03/05	2022/03/04
	Coaxial Cable	SGH	SGH18	20110223-1		
	Coaxial Cable	SGH	SGH18	2021001-1		
	Coaxial Cable	SGH	SGH18	2021001-18		

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : AUDIX e3 V9.

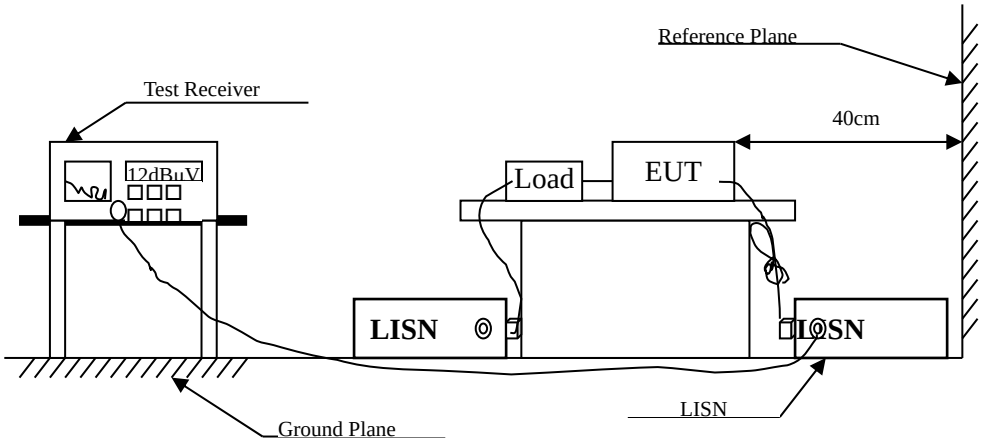
1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document.
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.
Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	**Uncertainty**	
Conducted Emission	±3.42 dB	
Radiated Emission	Under 1GHz ±4.06 dB	Above 1GHz ±3.73 dB

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56(註)	56-46(註)
0.50-5.0	56	46
5.0 - 30	60	50

2.3. Test Procedure

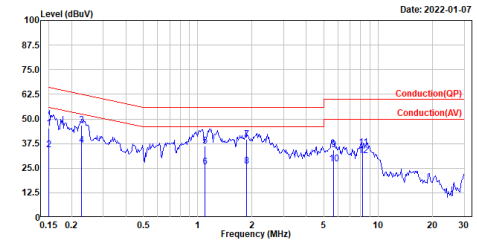
The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Test Result of Conducted Emission

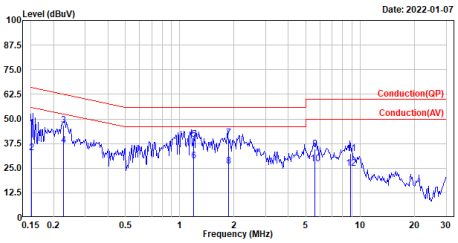
Site :SH1
Condition :Line
Mode :TX_128K
test by :JAMES



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.150	45.11	65.99	-20.88	35.45	9.66	QP
2	0.150	34.27	55.99	-21.72	24.61	9.66	Average
3	0.227	46.64	62.57	-15.93	36.99	9.65	QP
4	0.227	36.61	52.57	-15.96	26.96	9.65	Average
5	1.093	36.27	56.00	-19.73	26.58	9.69	QP
6	1.093	25.63	46.00	-20.37	15.94	9.69	Average
7	1.860	39.75	56.00	-16.25	30.03	9.72	QP
8	1.860	26.06	46.00	-19.94	16.34	9.72	Average
9	5.655	34.16	60.00	-25.84	24.34	9.82	QP
10	5.655	27.14	50.00	-22.86	17.32	9.82	Average
11	8.211	35.49	60.00	-24.51	25.63	9.86	QP
12	8.211	31.30	50.00	-18.70	21.44	9.86	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

Site :SH1
Condition :Neutral
Mode :TX_128K
test by :JAMES



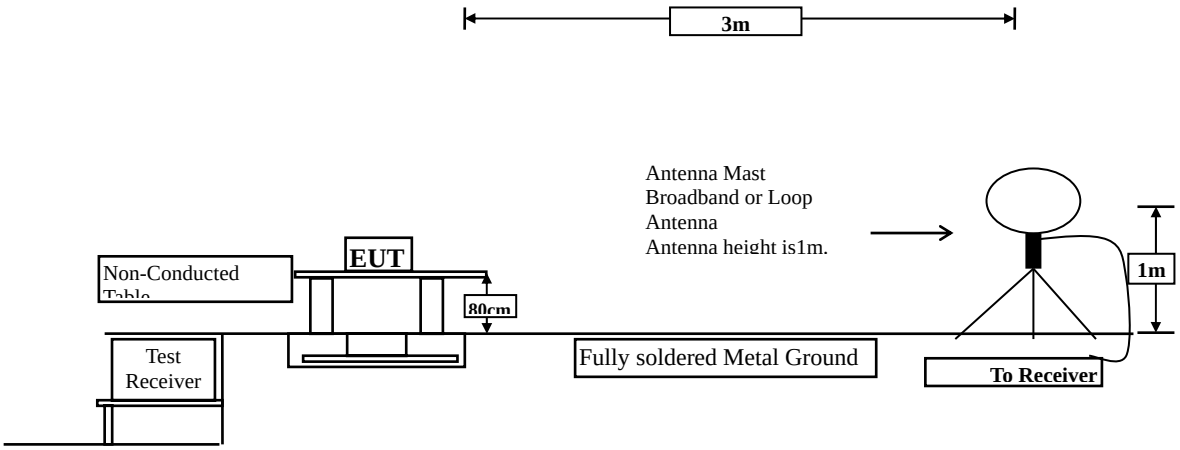
No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.151	45.37	65.95	-20.58	35.70	9.67	QP
2	0.151	32.89	55.95	-23.06	23.22	9.67	Average
3	0.228	46.65	62.53	-15.88	36.98	9.67	QP
4	0.228	36.66	52.53	-15.87	26.99	9.67	Average
5	1.193	39.67	56.00	-16.33	29.97	9.70	QP
6	1.193	28.77	46.00	-17.23	19.07	9.70	Average
7	1.860	40.46	56.00	-15.54	30.73	9.73	QP
8	1.860	26.22	46.00	-19.78	16.49	9.73	Average
9	5.618	34.67	60.00	-25.33	24.84	9.83	QP
10	5.618	27.33	50.00	-22.67	17.50	9.83	Average
11	8.873	32.46	60.00	-27.54	22.57	9.89	QP
12	8.873	24.84	50.00	-25.16	14.95	9.89	Average

Note:
1. Level = Read Level + Factor
2. Factor = LISN insertion loss + Cable loss
3. Over Limit = Level - Limit Line

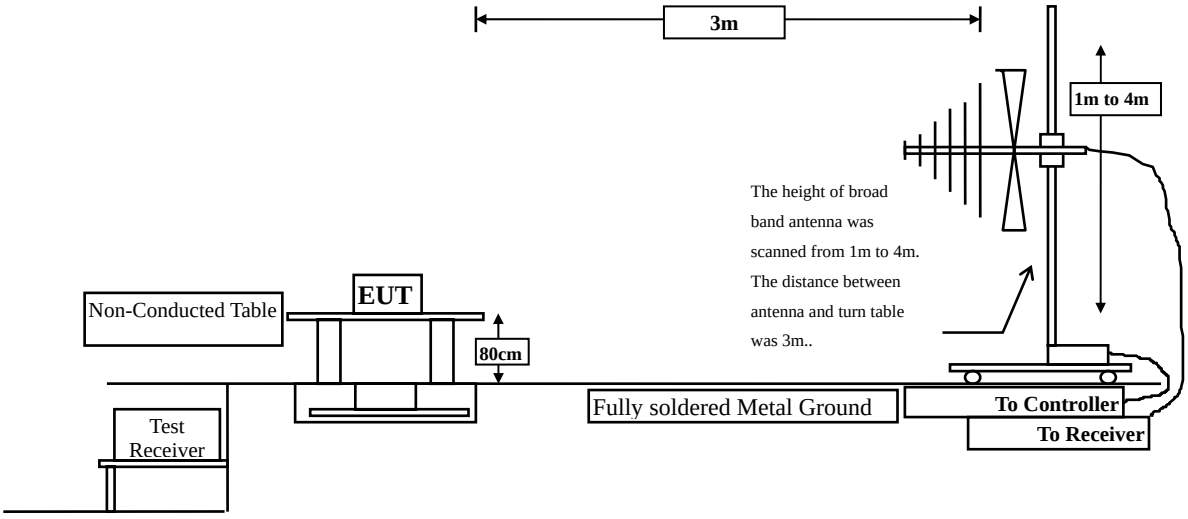
3. Radiated Emission

3.1. Test Setup

Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



3.2. Limits

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	Field strength (microvolts/meter)	**Measurement distance (meter)**
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks : 1. RF Voltage (dBμV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.209 requirements.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

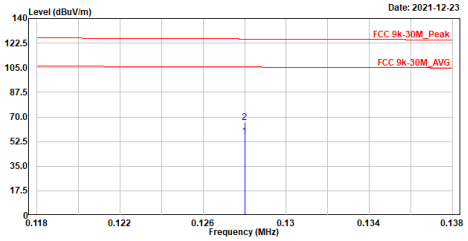
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

3.4. Test Result of Radiated Emission

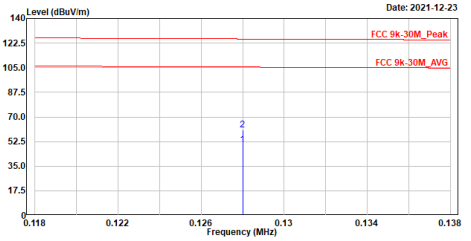
Site :966-3
Condition :3m ,Horizontal
Mode :TX_Fundamental_128kHz_X
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.128	55.78	105.46	-49.68	36.00	19.78	Average
2	0.128	66.18	125.46	-59.28	46.40	19.78	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

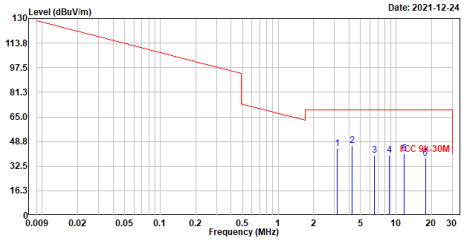
Site :966-3
Condition :3m ,Vertical
Mode :TX_Fundamental_128kHz_X
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	0.128	50.38	105.45	-55.07	30.60	19.78	Average
2	0.128	60.78	125.45	-64.67	41.00	19.78	Peak

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

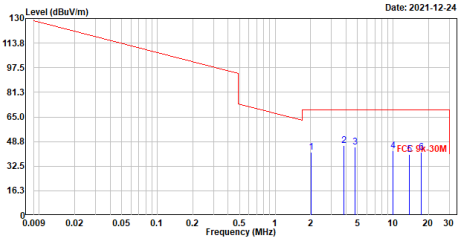
Site :966-3
Condition :3m ,Horizontal
Mode :TX_9k-30M
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	3.172	44.26	69.50	-25.24	24.43	19.83	QP
2	4.213	45.92	69.50	-23.58	25.94	19.98	QP
3	6.529	39.88	69.50	-29.62	19.35	20.53	QP
4	8.814	39.62	69.50	-29.88	18.45	21.17	QP
5	11.708	40.52	69.50	-28.98	18.97	21.55	QP
6	17.707	37.81	69.50	-31.69	16.08	21.73	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

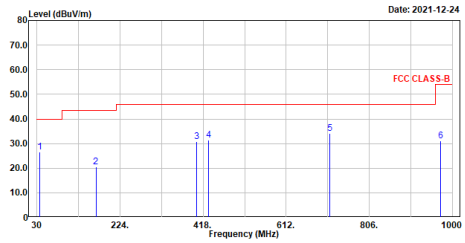
Site :966-3
Condition :3m ,Vertical
Mode :TX_9k-30M
Test BY :Jing Chang



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	2.014	41.78	69.50	-27.72	21.73	20.05	QP
2	3.822	46.10	69.50	-23.40	26.18	19.92	QP
3	4.758	45.25	69.50	-24.25	25.19	20.06	QP
4	10.035	42.84	69.50	-26.66	21.34	21.50	QP
5	13.770	40.36	69.50	-29.14	18.75	21.61	QP
6	17.422	41.90	69.50	-27.60	20.18	21.72	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

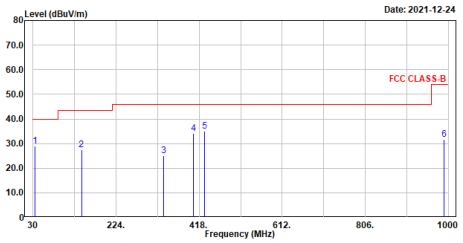
Site :966-3
Condition :3m ,Horizontal
Mode :TX_30M-1G
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	36.790	26.50	40.00	-13.50	38.78	-12.28	QP
2	167.740	20.60	43.50	-22.90	31.93	-11.33	QP
3	402.480	30.65	46.00	-15.35	38.86	-8.21	QP
4	431.580	31.39	46.00	-14.61	38.70	-7.31	QP
5	713.850	34.17	46.00	-11.83	36.31	-2.14	QP
6	972.840	31.17	54.00	-22.83	30.03	1.14	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

Site :966-3
Condition :3m ,Vertical
Mode :TX_30M-1G
Test BY :Ashton Chiu



No.	Frequency	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	
1	34.850	28.85	40.00	-11.15	41.39	-12.54	QP
2	143.490	27.52	43.50	-15.98	38.99	-11.47	QP
3	335.550	25.09	46.00	-20.91	34.67	-9.58	QP
4	405.390	34.03	46.00	-11.97	42.18	-8.15	QP
5	431.580	34.98	46.00	-11.02	42.29	-7.31	QP
6	990.300	31.76	54.00	-22.24	30.59	1.17	QP

Note:
1. Level = Read Level + Factor
2. Factor = Antenna Factor + Cable Loss - Preamp Factor
3. Over Limit = Level - Limit Line
4. The emission under 30MHz was not included since the emission levels are very low against the limit.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.