






Test report No: 2410272R-E3012110001-A

## FCC TEST REPORT

Product Name	Peplink Pepwave Wireless Product
Trademark	
Model and /or type reference	MAX Adapter MAX-ADP-LTE-US-T-PRM
FCC ID	U8G-P1234
Applicant's name / address	PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Manufacturer's name / address	PISMO LABS TECHNOLOGY LIMITED A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart B: 2022, Class A
Verdict Summary	IN COMPLIANCE
Documented By ( Adm. Specialist / Peggy Tu )	
Approved By ( Director / Vincent Lin )	
Date of Report	2024/01/10
Date of Issue	2024/02/22
Report No.	2410272R-E3012110001-A
Report Version	V1.0

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Product Photos: Please refer to the file: 2410272R-Product Photos

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## Competences and Guarantees

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DEKRA is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

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1. The test results relate only to the samples tested.
2. The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.
3. This report must not be used to claim product endorsement by TAF or any agency of the government.
4. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.
5. 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.

## **Revision History**

<b>Report No.</b>	<b>Version</b>	<b>Description</b>	<b>Issued Date</b>
2410272R-E3012110001-A	V1.0	Initial issue of report.	2024-02-22

## 1. General Information

### 1.1. EUT Description

Product Name	Peplink Pepwave Wireless Product
Trademark	
Model No.	MAX Adapter MAX-ADP-LTE-US-T-PRM
EUT Max. Frequency	2690 MHz
EUT Rated Voltage	DC 9-36V (Power Port) DC 5V (USB Port)
EUT Test Voltage (Final Test Mode)	AC 120V/60Hz to DC 12V (AC Adapter)

Component	
Adapter	MFR: Zhuzhou Dachuan Electronic Technology Co Ltd M/N: DCT24W120200US-E0 AC Input: 100-240Vac~50/60Hz, 0.7A max. DC Output: 12.0V, 2.0A 24.0W Cable Out: Shielded. 1.5m
GPS Antenna	Brand: INPAQ M/N: RFDPA49373ASMGBA01 Antenna Type: Omni-directional
Cellular Antenna	Brand: Matser Wave M/N: 98619ZSAX053 Antenna Type: Omni-directional

Note: The EUT is including two models for different marketing requirement.

## 1.2. Mode of Operation

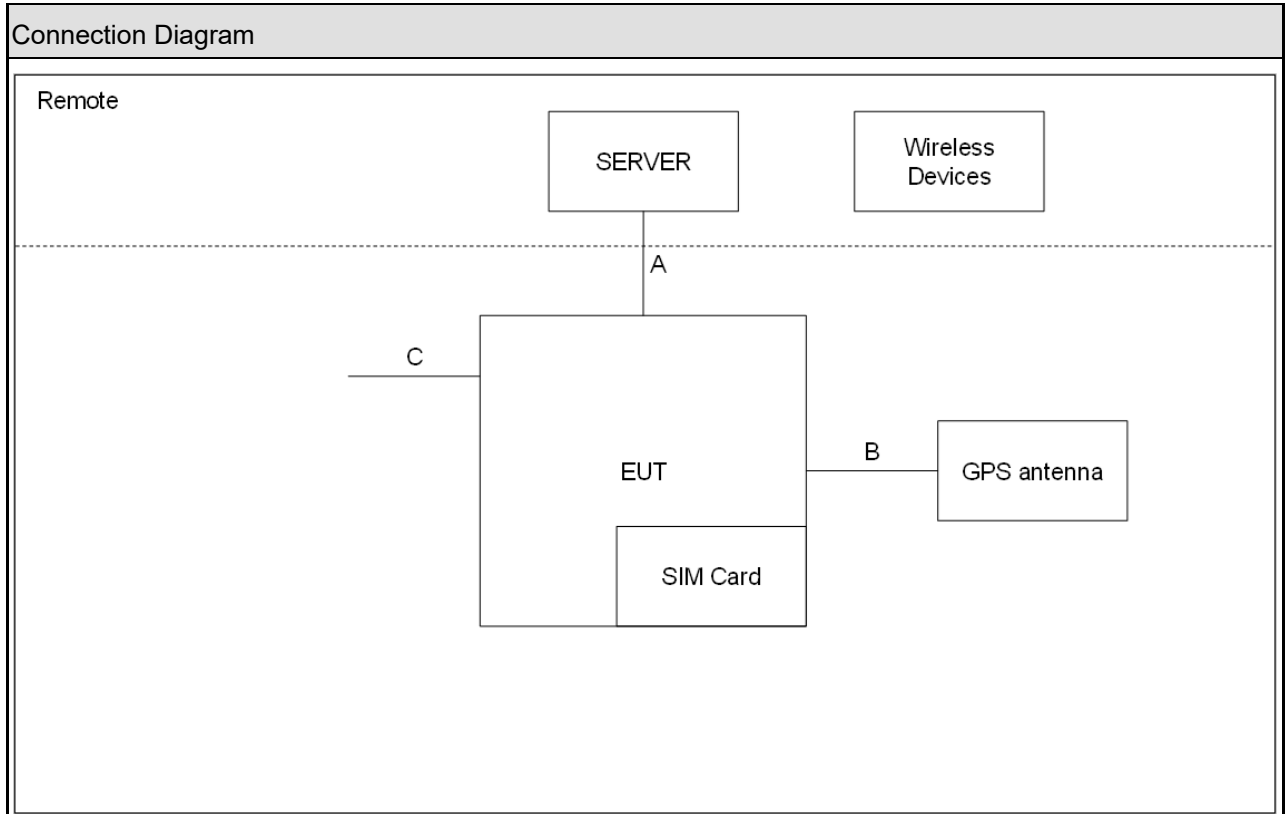
DEKRA has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
Mode 1: Normal Operation (LAN 1Gbps + WWAN LTE B2 Link + GPS), Power Port, DC 12V By Adapter: Zhuzhou Dachuan Electronic Technology Co Ltd/DCT24W120200US-E0	
Mode 2: Normal Operation (LAN 1Gbps + WWAN LTE B2 Link + GPS), Power Port, DC 36V	
Mode 3: Normal Operation (LAN 1Gbps + WWAN LTE B2 Link + GPS), Power Port, DC 9V	
Mode 4: Normal Operation (LAN 1Gbps + WWAN LTE B2 Link + GPS), USB Port (DC 5V)	
Mode 5: Normal Operation (LAN 1Gbps + WWAN WCDMA B2 Link + GPS), Power Port, DC 12V By Adapter: Zhuzhou Dachuan Electronic Technology Co Ltd/DCT24W120200US-E0	
Final Test Mode	
Conducted Emission	Mode 1
Radiated Emission Below 1GHz	Mode 1
Radiated Emission Above 1GHz	Mode 1

Note:

1. Refer to Certified Cellular module report worst band to test.
2. This product supports client/master mode, but it does not affect EMC testing after evaluation.

### 1.3. Configuration & Details of Tested System



Tested System Details				
Product	Manufacturer	Model No.	No.	Cable Type & Description
SERVER	Lenovo	5464	A	LAN *2, non-shielded 7m
GPS antenna	INPAQ	RFDPA49373ASMGBA01	B	SMA, shielded 3m
Floating	N/A	N/A	C	USB-C, shielded 1.8m
SIM Card	R&S	GP-CMW-Z06		
Wireless Devices Inf.				
Product	Manufacturer	Model No.		
Wireless Router	ASUS	ROG RAPTURE GT-AXE11000		
Wireless Router	ASUS	RT-AC58U		
Base Station	R&S	CMW500		
UXM 5G Wireless Test Platform	Keysight	E7515B		
GPS Simulator	Oroila	GSG-5		

Note:

- Use Full system setup configuration determines Worst-Case Mode.
- Use 2dB law program determines Max. Cable Configuration and Worst-Case Mode.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth to 3m from the EUT size sufficient to cover the procedure.
- Radiated emission item test: Performed using the Horn Antenna 3dB Beamwidth non 3m distance sufficient to cover the size of the EUT program.

#### 1.4. EUT Exercise Software

1	Setup the EUT and simulators as shown on 1.3.
2	Turn on the power of all equipments.
3	All the features of the EUT operation normally.



## 2. Technical Test

### 2.1. Summary of Test Result

- No deviations from the test standards  
 Deviations from the test standards as below description:

Emission				
Performed Item	Normative References	Test Performed	Test Site	Verdict
Conducted Emission	FCC CFR Title 47 Part 15 Subpart B:2022, Class A CISPR 22:2008, ANSI C63.4-2014 ANSI C63.4a-2017	Yes	LK-SR02	Pass
Radiated Emission	FCC CFR Title 47 Part 15 Subpart B:2022, Class A CISPR 22:2008, ANSI C63.4-2014 ANSI C63.4a-2017	Yes	LK-Site02 LK-CB06	Pass

Note:

1. Test Site information refers to test Laboratory Information.

Test Laboratory:	DEKRA Testing and Certification Co., Ltd. Linkou Laboratory
Address:	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
Phone number:	+886-2-8601-3788
Fax number:	+886-2-8601-3789
Test Site	
LK:	No.5-22, Ruishukeng Linkou District, New Taipei City, 24451, Taiwan, R.O.C
FS:	No.6, Lane 75, Wenlin St., Linkou Dist., New Taipei City, 244017, Taiwan, R.O.C No. 85, Wenlin St., Linkou Dist., New Taipei City, 244017, Taiwan, R.O.C
HY:	No.26, Huaya 1 st Rd., Guishan Dist., Taoyuan City 333411, Taiwan, R.O.C

## 2.2. List of Test Equipment

### Conducted Emission / LK-SR02

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Due Date
Receiver	R&S	ESR3	102472	2023/11/7	2024/11/6
Two-Line V-Network	R&S	ENV216	101105	2022/07/01	2024/6/30
Two-Line V-Network	R&S	ENV216	102202	2022/8/8	2024/8/7
Impedance Stabilization Network	TESEQ	T800	30892	2023/6/1	2024/5/31
Impedance Stabilization Network	TESEQ	ISN T8-Cat6	65513	2023/6/19	2024/6/18
Impedance Stabilization Network	TESEQ	ISN ST08	56935	2023/6/19	2024/6/18
Coaxial Cable	SUHNER	RG 400	LC017-RG	2023/6/17	2024/6/16
Note : ISN T800 for LAN 10Mbps to 1Gbps, T8-Cat6 for LAN above 1Gbps, ST08 for Shielded LAN					
Test Software version : e3 V9					

**Note: Test Receiver Detector: Quasipeak and Average Bandwidth:9kHz**

### Radiated Emission (Below 1GHz) / LK-Site02

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Due Date
Bilog Antenna	Schaffner	CBL6112B	2922	2023/11/23	2024/11/22
Receiver	R&S	ESCI	100647	2023/7/11	2024/7/10
Coaxial Cable	SUHNER	RG 214	LC002A-RG	2023/5/23	2024/5/22
Coaxial Cable	SUHNER	RG 214	LC002B-RG	2023/5/23	2024/5/22
Coaxial Switch	Anritsu	MP59B	6200436230	2023/5/23	2024/5/22
Preamplifier	Jet-Power	JPA-10M1G33	170101000330009	2023/5/23	2024/5/22
NSA	DEKRA	N/A	N/A	2023/5/23	2024/5/22
Test Software version : e3 V9					

**Note: Test Receiver Detector: Quasipeak Bandwidth:120kHz**

### Radiated Emission (Above 1GHz) / LK-CB06

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Due Date
Double Ridged Guide Horn Antenna	ETS-Lindgren	3117	00135205	2023/6/8	2024/6/7
Horn Antenna	COM-POWER	AH-840	101043	2023/5/11	2024/5/10
Receiver	R&S	ESR26	101385	2024/1/30	2025/1/29
Signal Analyzer	R&S	FSV40	101176	2023/4/27	2024/4/26
Coaxial Cable	SGH	SGH118	2021001-3	2023/6/19	2024/6/18
Coaxial Cable	SUHNER	SUCOFLEX 106	LC035-SF	2023/6/19	2024/6/18
Coaxial Cable	SUHNER	SUCOFLEX 106	LC037-SF	2023/6/19	2024/6/18
Preamplifier	SGH	PRAMP118	20200921-1	2023/04/07	2024/4/6
Microwave Preamplifier with cable	EMCI	EMC184045SE	980370	2023/04/07	2024/4/6
VSWR	DEKRA	N/A	N/A	2023/6/22	2024/6/21
Test Software version : e3 V9					

### 2.3. Measurement Uncertainty

Test Items	Uncertainty
Conducted Emission	$\pm 2.40$ dB
Radiated Emission (Below 1GHz)	$\pm 5.50$ dB
Radiated Emission (Above 1GHz)	$\pm 4.70$ dB

## 2.4. Test Environment

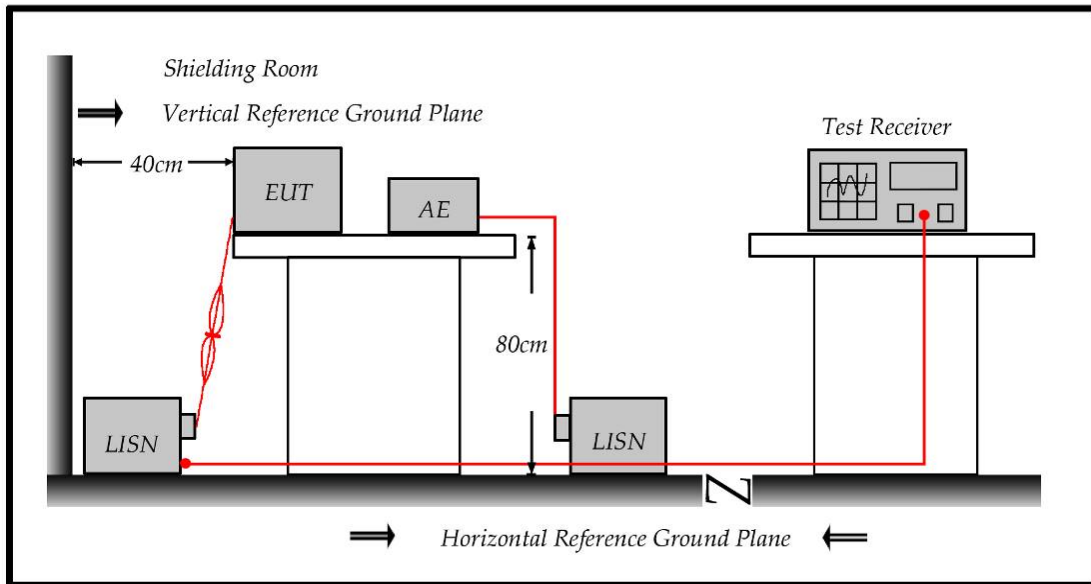
Performed Item	Items	Required
Conducted Emission	Temperature (°C)	10-40
	Humidity (%RH)	10-90
Radiated Emission	Temperature (°C)	10-40
	Humidity (%RH)	10-90

### 3. Conducted Emission

#### 3.1. Test Specifications

According to Standard : FCC Part 15 Subpart B & CISPR 22

#### 3.2. Test Setup



#### 3.3. Limit

Conducted emissions limits (AC mains power terminals)				
Frequency range (MHz)	Class A Quasi-peak (dBuV)	Class A Average (dBuV)	Class B Quasi-peak (dBuV)	Class B Average (dBuV)
0.15 - 0.5	79	66	66 to 56	56 to 46
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50

Note:

- The more stringent limit applies at transition frequencies.
- The limit level in dBuV decreases linearly with the logarithm of frequency

### **3.4. 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 50ohm/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.

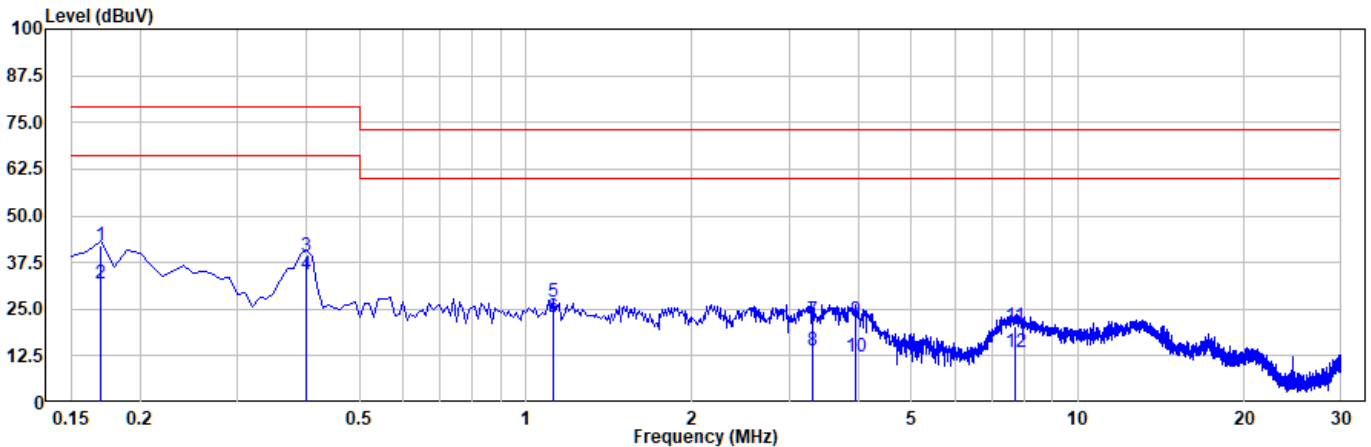
(Please refers to the block diagram of the test setup and photographs.)

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 on conducted measurement.

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

### 3.5. Test Result

Model No	MAX Adapter	Site	LK-SR02
Test Voltage	AC 120V/60Hz	Test Date	2024-02-05
Test Mode	Mode 1	Engineer	NICK LIN
Phase	Line	Temperature (°C)	21
Test Condition	--	Humidity (%RH)	57

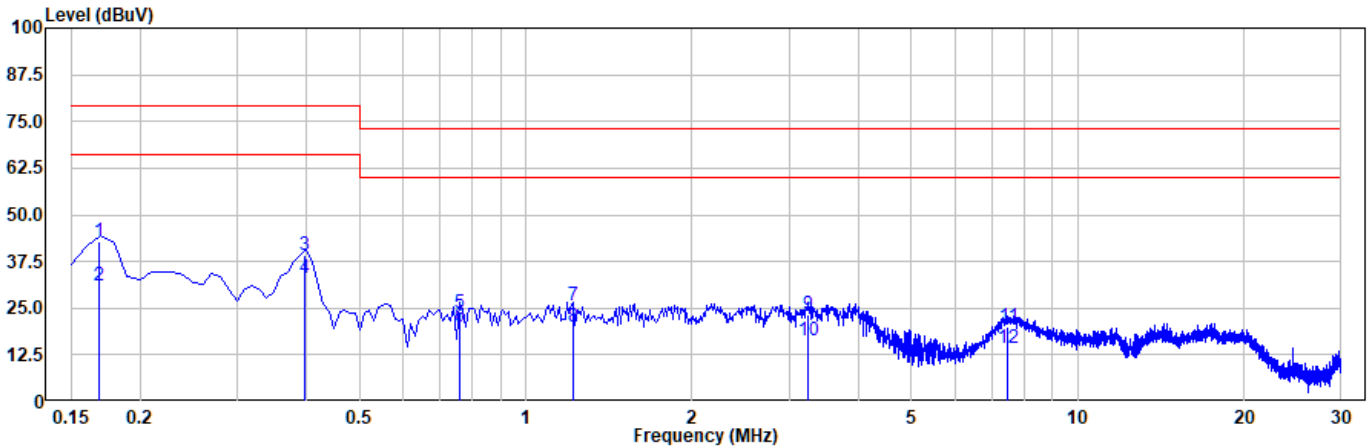


No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.170	42.19	79.00	-36.81	32.55	9.64	QP
2	0.170	31.65	66.00	-34.35	22.01	9.64	Average
3	0.399	39.18	79.00	-39.82	29.53	9.64	QP
4*	0.399	34.15	66.00	-31.85	24.50	9.64	Average
5	1.120	26.82	73.00	-46.18	17.11	9.71	QP
6	1.120	22.65	60.00	-37.35	12.95	9.71	Average
7	3.311	21.99	73.00	-51.01	12.18	9.81	QP
8	3.311	14.02	60.00	-45.98	4.22	9.81	Average
9	3.965	22.24	73.00	-50.76	12.40	9.84	QP
10	3.965	12.43	60.00	-47.57	2.60	9.84	Average
11	7.683	20.26	73.00	-52.74	10.31	9.95	QP
12	7.683	13.61	60.00	-46.39	3.66	9.95	Average

**Remark:**

1. "\*" means this data is the worst margin;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Emission Level-Limit

Model No	MAX Adapter	Site	LK-SR02
Test Voltage	AC 120V/60Hz	Test Date	2024-02-05
Test Mode	Mode 1	Engineer	NICK LIN
Phase	Neutral	Temperature (°C)	21
Test Condition	--	Humidity (%RH)	57



No	Frequency (MHz)	Emission Level (dBUV)	Limit (dBUV)	Margin (dB)	Reading Level (dBUV)	Correct Factor (dB)	Detector Type
1	0.169	42.88	79.00	-36.12	33.25	9.63	QP
2	0.169	31.01	66.00	-34.99	21.38	9.63	Average
3	0.399	39.00	79.00	-40.00	29.36	9.64	QP
4*	0.399	33.11	66.00	-32.89	23.47	9.64	Average
5	0.760	23.80	73.00	-49.20	14.12	9.68	QP
6	0.760	19.83	60.00	-40.17	10.15	9.68	Average
7	1.216	25.52	73.00	-47.48	15.82	9.71	QP
8	1.216	19.89	60.00	-40.11	10.18	9.71	Average
9	3.250	23.09	73.00	-49.91	13.30	9.80	QP
10	3.250	16.37	60.00	-43.63	6.58	9.80	Average
11	7.480	20.08	73.00	-52.92	10.12	9.96	QP
12	7.480	14.29	60.00	-45.71	4.33	9.96	Average

Remark:

1. "\*" means this data is the worst margin;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Emission Level-Limit



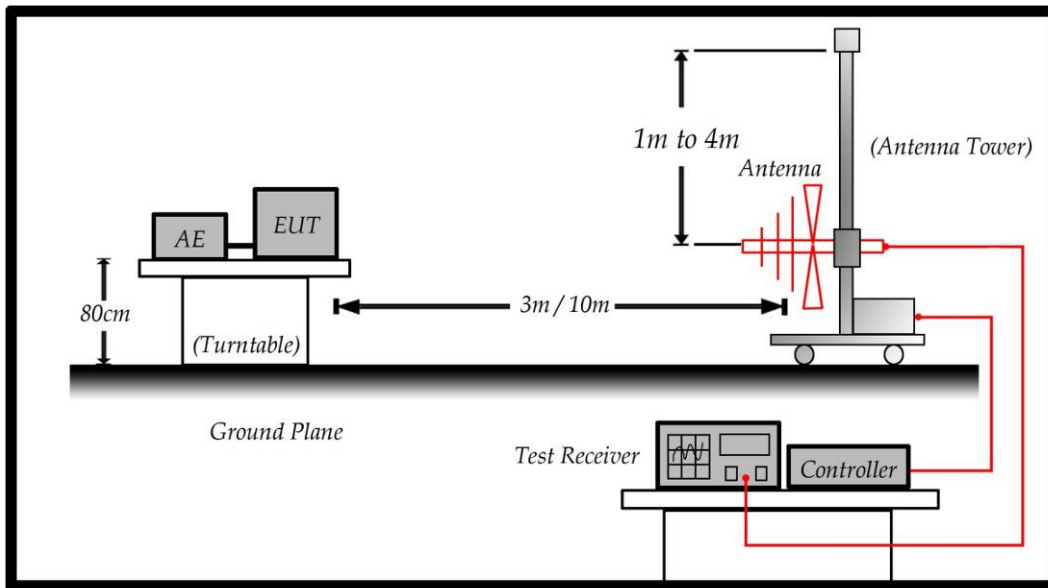
## 4. Radiated Emission

### 4.1. Test Specification

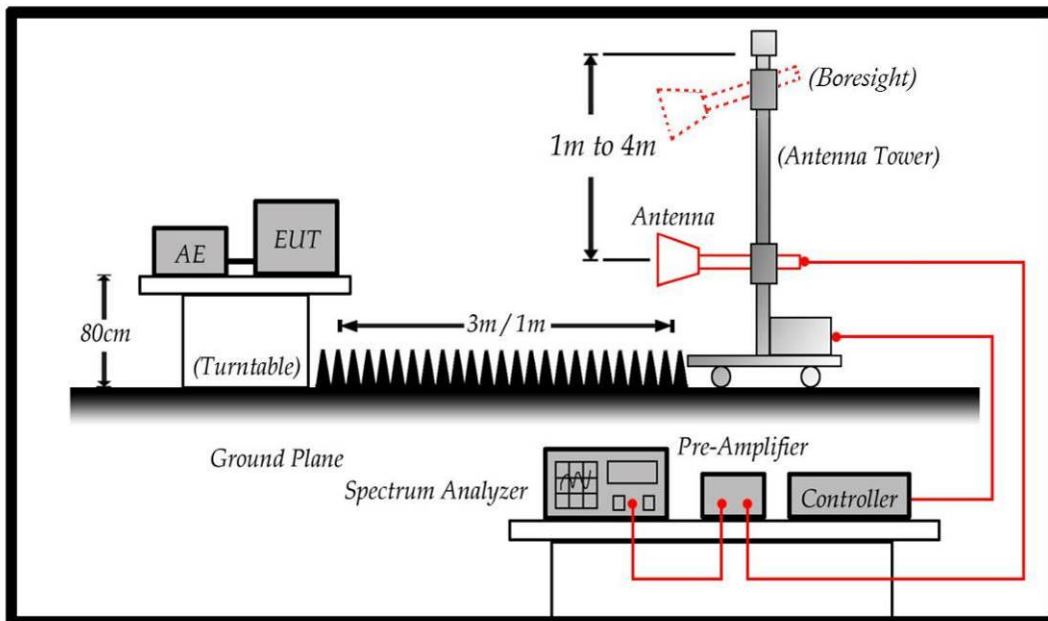
According to Standard : FCC Part 15 Subpart B & CISPR 22

### 4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



### 4.3. Limit

Test shall not exceed the following value:

FCC Part 15 Subpart B Paragraph 15.109 Limits (dBuV/m)		
Frequency (MHz)	Distance(m)	dBuV/m
30-88	10	39
88-216	10	43.5
216-960	10	46.4
960-1000	10	49.5
1000-40000	3	60
18000-40000	1	69.5

Remark:

1. The tighter limit shall apply at the edge between two frequency bands.
2. 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.  $RF\ Voltage\ (dBuV/m) = 20\ \log\ RF\ Voltage\ (\mu V/m)$

#### 4.4. Test Procedure

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 and the antenna (boresight antenna tower) 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 on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

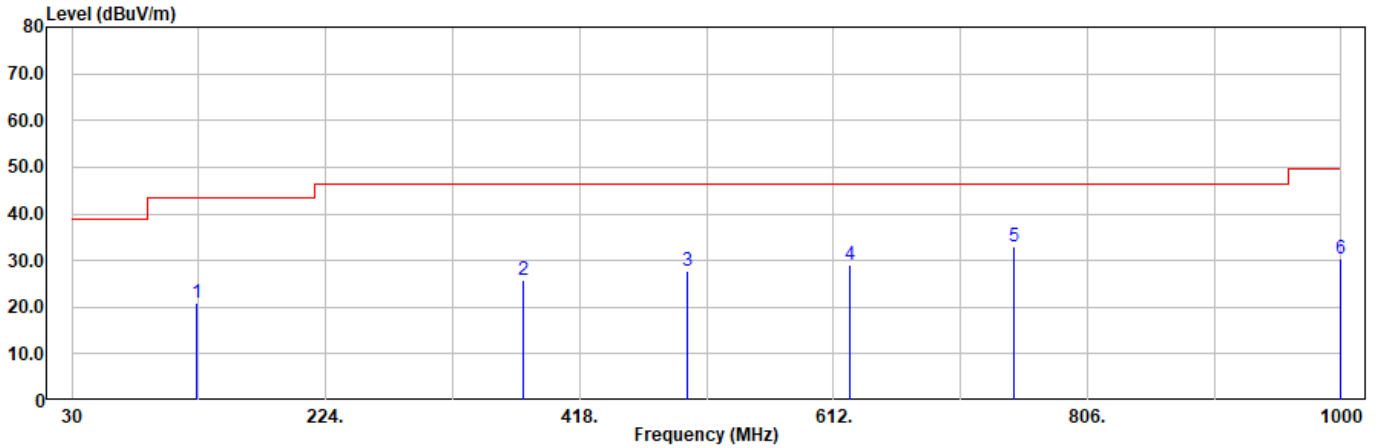
For class A, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and above 1GHz.

For class B, the measurement distance between the EUT and antenna is 10 meters for under 1GHz and 3 meters for above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (Test Receiver) is 120 kHz and above 1GHz is 1MHz.

### 4.5. Test Result

Model No	MAX Adapter	Site	LK-Site02
Test Voltage	AC 120V/60Hz	Test Date	2024-02-05
Test Mode	Mode 1	Engineer	Way Hsieh
Polarity	Horizontal	Temperature (°C)	17.4
Test Condition	--	Humidity (%RH)	76

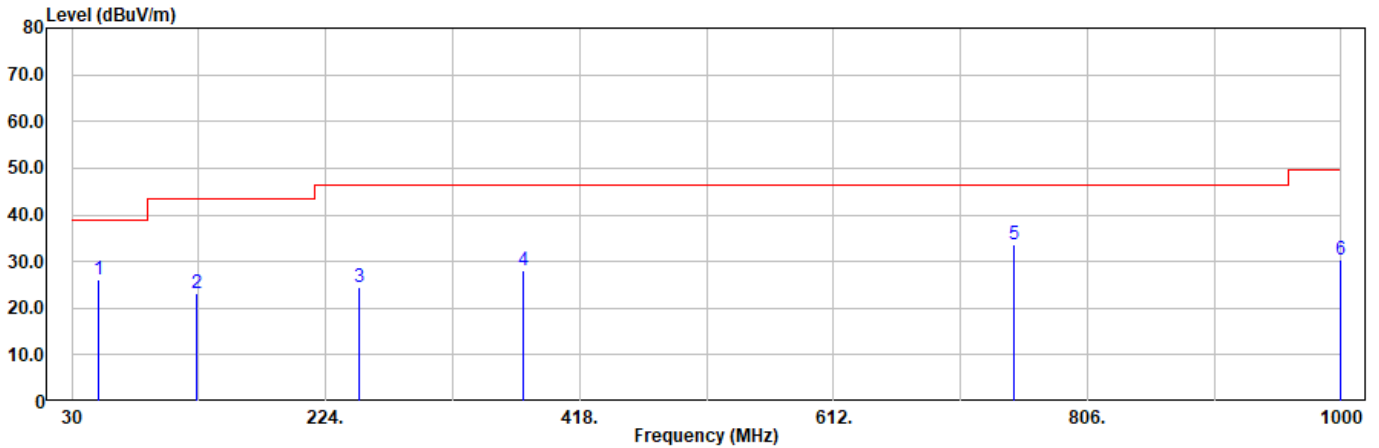


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	125.000	20.88	43.50	-22.62	33.10	-12.22	370	-195	QP
2	375.000	25.95	46.40	-20.45	33.20	-7.25	300	95	QP
3	500.000	27.62	46.40	-18.78	31.20	-3.58	200	194	QP
4	625.000	29.00	46.40	-17.40	29.80	-0.80	100	76	QP
5*	750.000	33.01	46.40	-13.40	32.00	1.01	100	88	QP
6	1000.000	30.22	49.50	-19.28	25.50	4.72	100	-98	QP

Remark:

1. "\*" means this data is the worst margin; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level - Limit.

Model No	MAX Adapter	Site	LK-Site02
Test Voltage	AC 120V/60Hz	Test Date	2024-02-05
Test Mode	Mode 1	Engineer	Way Hsieh
Polarity	Vertical	Temperature (°C)	17.4
Test Condition	--	Humidity (%RH)	76

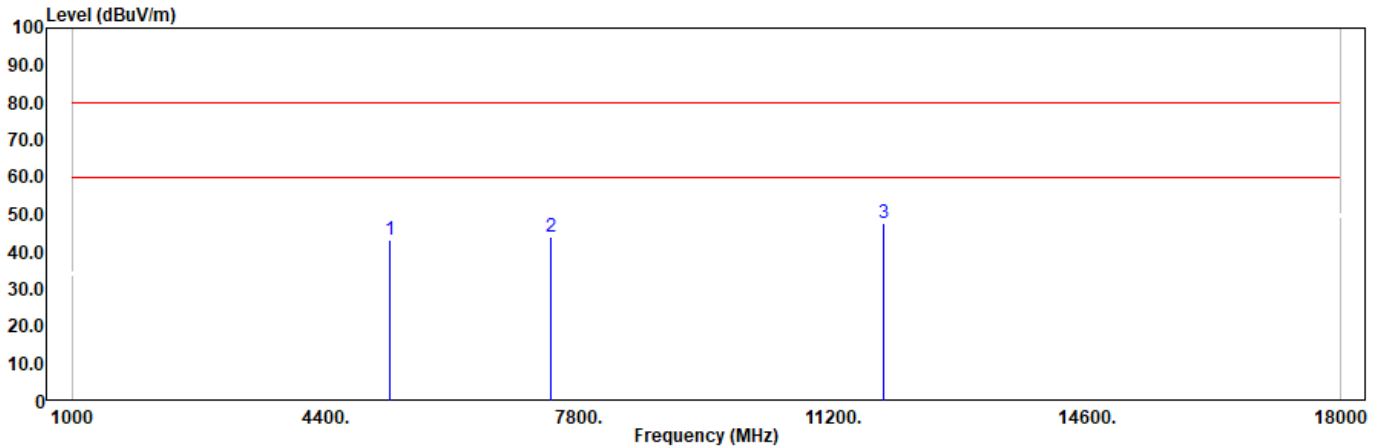


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1*	50.400	26.23	39.00	-12.77	43.20	-16.97	100	-188	QP
2	125.000	23.18	43.50	-20.32	35.40	-12.22	100	78	QP
3	250.000	24.38	46.40	-22.02	34.90	-10.52	100	16	QP
4	375.000	27.95	46.40	-18.45	35.20	-7.25	100	-188	QP
5	750.000	33.51	46.40	-12.90	32.50	1.01	250	-50	QP
6	1000.000	30.22	49.50	-19.28	25.50	4.72	150	-187	QP

Remark:

1. "\*" means this data is the worst margin; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level - Limit.

Model No	MAX Adapter	Site	LK-CB06
Test Voltage	AC 120V/60Hz	Test Date	2024-02-06
Test Mode	Mode 1	Engineer	Quenching Fang
Polarity	Horizontal	Temperature (°C)	19.3
Test Condition	--	Humidity (%RH)	63

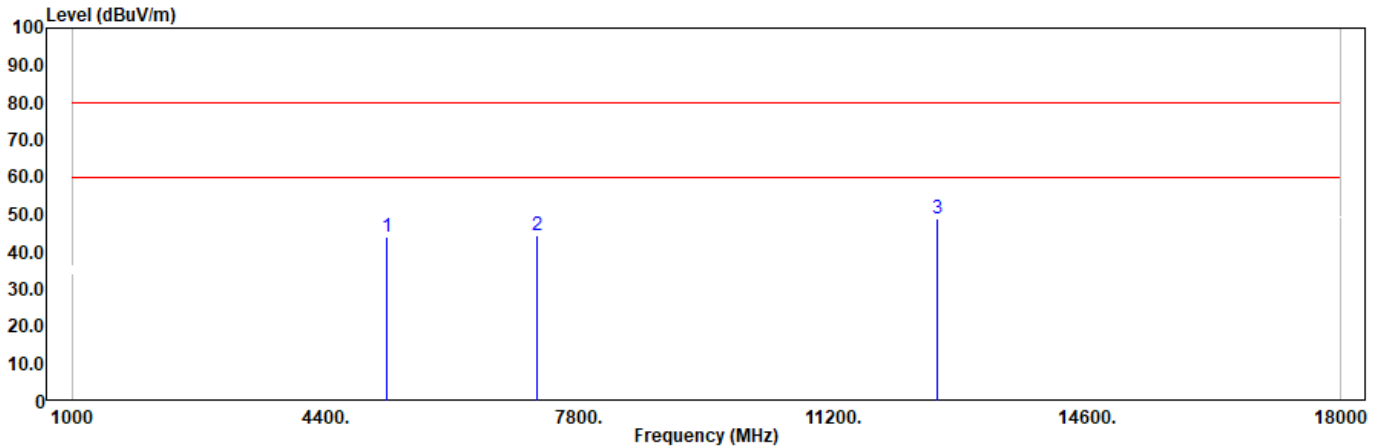


No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	5267.000	43.09	80.00	-36.91	49.37	-6.28	100	164	Peak
2	7409.000	44.25	80.00	-35.75	47.45	-3.20	110	122	Peak
3*	11880.000	47.91	80.00	-32.09	44.88	3.03	100	188	Peak

Remark:

1. "\*" means this data is the worst margin;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level - Limit.
4. The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBuV, its average is not measured separately.

Model No	MAX Adapter	Site	LK-CB06
Test Voltage	AC 120V/60Hz	Test Date	2024-02-06
Test Mode	Mode 1	Engineer	Quenching Fang
Polarity	Vertical	Temperature (°C)	19.3
Test Condition	--	Humidity (%RH)	63



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Ant Pos (cm)	TT Pos (deg)	Detector Type
1	5216.000	44.24	80.00	-35.76	50.59	-6.35	100	180	Peak
2	7239.000	44.65	80.00	-35.35	47.81	-3.16	120	144	Peak
3*	12594.000	48.80	80.00	-31.20	44.24	4.55	100	255	Peak

Remark:

1. "\*" means this data is the worst margin;"!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=Ant Factor+Cable Loss-Pre Amp).
3. Margin=Emission Level - Limit.
4. The above 1 GHz test. When PEAK measures level less than AV limit by 20 dBuV, its average is not measured separately.