



# TEST REPORT

**APPLICANT** : Linkplay Technology Inc.  
**PRODUCT NAME** : WiiM Wake-up Light  
**MODEL NAME** : WWL001  
**BRAND NAME** : WiiM  
**FCC ID** : 2BABF-WWL001  
**STANDARD(S)** : 47 CFR Part 15 Subpart C  
**RECEIPT DATE** : 2022-12-08  
**TEST DATE** : 2022-12-27 to 2022-12-30  
**ISSUE DATE** : 2023-02-22

Edited by: Peng Mi  
Peng Mi (Rapporteur)

Approved by: Shen Junsheng  
Shen Junsheng (Supervisor)

**NOTE:** This document is issued by Shenzhen Morlab Communications Technology Co., Ltd., the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.





# DIRECTORY

- 1. Technical Information ..... 3**
- 1.1. Applicant and Manufacturer Information ..... 3**
- 1.2. Equipment Under Test (EUT) Description ..... 3**
- 1.3. The Channel Number and Frequency ..... 4**
- 1.4. Test Standards and Results ..... 5**
- 1.5. Environmental Conditions ..... 6**
- 2. 47 CFR Part 15C Requirements ..... 7**
- 2.1. Conducted Emission ..... 7**
- 2.2. Restricted Frequency Bands ..... 11**
- 2.3. Radiated Emission ..... 18**
- Annex A Test Uncertainty ..... 28**
- Annex B Testing Laboratory Information ..... 29**

Change History		
Version	Date	Reason for change
1.0	2023-02-22	First edition



# 1. Technical Information

**Note:** Provide by applicant.

## 1.1. Applicant and Manufacturer Information

<b>Applicant:</b>	Linkplay Technology Inc.
<b>Applicant Address:</b>	8000 Jarvis Avenue Suite #130, Newark, CA 94560
<b>Manufacturer:</b>	Linkplay Technology Inc.
<b>Manufacturer Address:</b>	8F-8036, Qianren Building, No.7, Yingcui Road, Jiangning District, Nanjing, China

## 1.2. Equipment Under Test (EUT) Description

<b>Product Name:</b>	WiiM Wake-up Light	
<b>Serial No.:</b>	2#, 4#	
<b>Hardware Version:</b>	V04	
<b>Software Version:</b>	Linkplay.4.6.437761	
<b>Equipment Type:</b>	Bluetooth LE	
<b>Bluetooth Version:</b>	5.2	
<b>Modulation Type:</b>	GFSK	
<b>Data Rate:</b>	1Mbps, 2Mbps	
<b>Operating Frequency Range:</b>	2402MHz-2480MHz	
<b>Antenna Type:</b>	Copper tube Antenna	
<b>Antenna Gain:</b>	2.80dBi	
<b>Accessory Information:</b>	AC Adapter	
	<b>Brand Name:</b>	N/A
	<b>Model No.:</b>	AD18W2002
	<b>Serial No.:</b>	N/A
	<b>Rated Output:</b>	12V $\pm$ 1.5A
	<b>Rated Input:</b>	100-240V $\sim$ 50/60Hz, 0.8A
	<b>Manufacturer:</b>	Jiangsu Chenyang Electron Co.,Ltd.



**Note 1:** The test results of all conducted test items please refer to the module FCC test report (Report No.: SZ21070126W01, FCC ID: 2ANOG-A97), which issued on September 06, 2021 by Shenzhen Morlab Communications Technology Co., Ltd. We only recorded the radiated test result in this report.

**Note 2:** We use the dedicated software to control the EUT continuous transmission.

**Note 3:** For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

### 1.3. The Channel Number and Frequency

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
<b>0</b>	<b>2402</b>	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	<b>19</b>	<b>2440</b>	29	2460	<b>39</b>	<b>2480</b>

**Note 1:** The black bold channels were selected for test.



## 1.4. Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result	Method Determination /Remark
1	15.203	Antenna Requirement	N/A	N/A	N/A <sup>Note1</sup>	N/A
2	N/A	Duty Cycle of Test Signal	N/A	N/A	N/A <sup>Note1</sup>	N/A
3	15.247(b)	Maximum Peak Conducted Output Power	N/A	N/A	N/A <sup>Note1</sup>	N/A
4	15.247(b)	Maximum Average Conducted Output Power	N/A	N/A	N/A <sup>Note1</sup>	N/A
5	15.247(a)	Bandwidth	N/A	N/A	N/A <sup>Note1</sup>	N/A
6	15.247(d)	Conducted Spurious Emission and Band Edge	N/A	N/A	N/A <sup>Note1</sup>	N/A
7	15.247(e)	Power Spectral Density	N/A	N/A	N/A <sup>Note1</sup>	N/A
8	15.207	Conducted Emission	Dec. 30, 2022	Fan Zehang	PASS	No deviation
9	15.247(d)	Restricted Frequency Bands	Dec. 27, 2022	Su Zhan	PASS	No deviation
10	15.209, 15.247(d)	Radiated Emission	Dec. 27, 2022	Su Zhan	PASS	No deviation

**Note 1:** The test results of all conducted test items please refer to the module FCC test report (Report No.: SZ21070126W01, FCC ID: 2ANOG-A97), which issued on September 06, 2021 by



Shenzhen Morlab Communications Technology Co., Ltd.

**Note 2:** The tests were performed according to the method of measurements prescribed in ANSIC63.10-2013 and KDB558074 D01 v05r02.

**Note 3:** The path loss during the RF test is calibrated to correct the results by the offset setting in the test equipments. The Ref offset 1.5dB means the cable loss is 1.5dB.

**Note 4:** Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.

**Note 5:** When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.

## 1.5. Environmental Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15-35
Relative Humidity (%):	30-60
Atmospheric Pressure (kPa):	86-106

## 2. 47 CFR Part 15C Requirements

### 2.1. Conducted Emission

#### 2.1.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

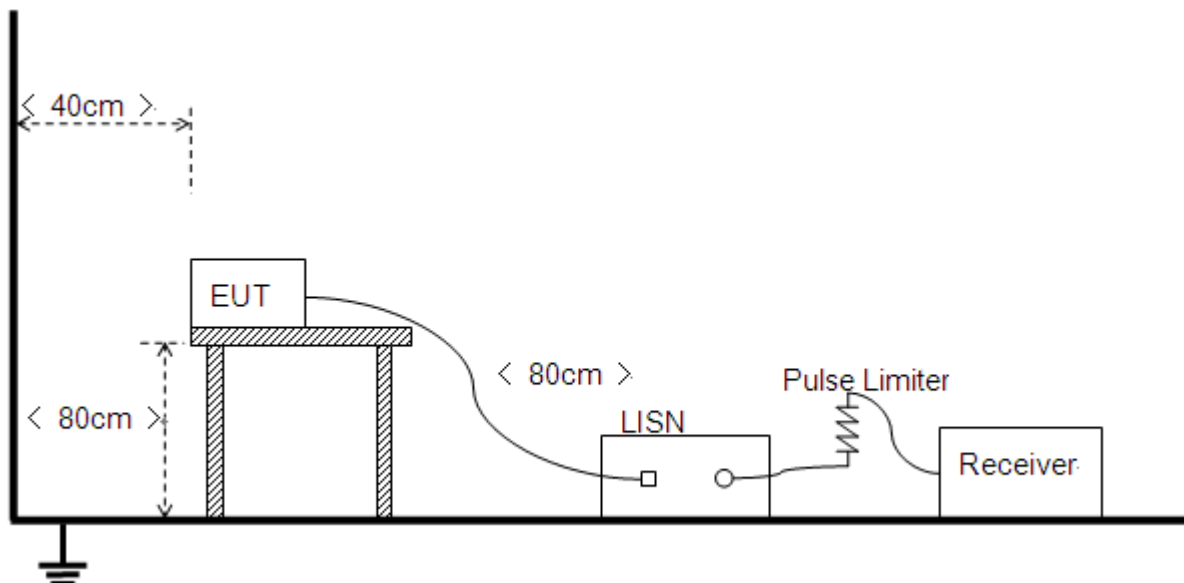
Frequency Range (MHz)	Conducted Limit (dB $\mu$ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

Note:

- (a) The lower limit shall apply at the band edges.
- (b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

#### 2.1.2. Test Description

Test Setup:



The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference



Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.10: 2013.

### 2.1.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Set RBW=9kHz, VBW=30kHz. Refer to recorded points and plots below.

**Note:** Both of the test voltage AC 120V/60Hz and AC 230V/50Hz were considered and tested respectively, only the results of the worst case AC 120V/60Hz were recorded in this report.

#### A. Test Setup:

Test Mode: EUT + ADAPTER + USB CABLE + PC +BT TX

Test voltage: AC 120V/60Hz

The measurement results are obtained as below:

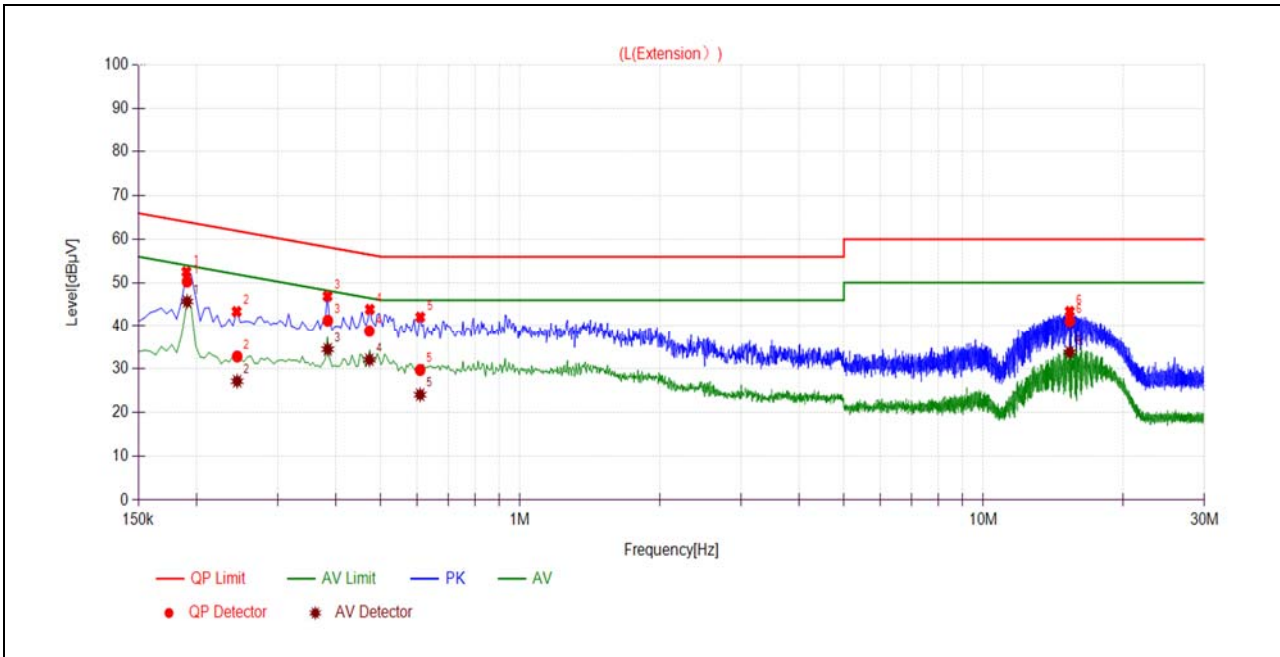
$$E \text{ [dB}\mu\text{V]} = U_R + L_{\text{Cable loss}} \text{ [dB]} + A_{\text{Factor}}$$

$U_R$ : Receiver Reading

$A_{\text{Factor}}$ : Voltage division factor of LISN

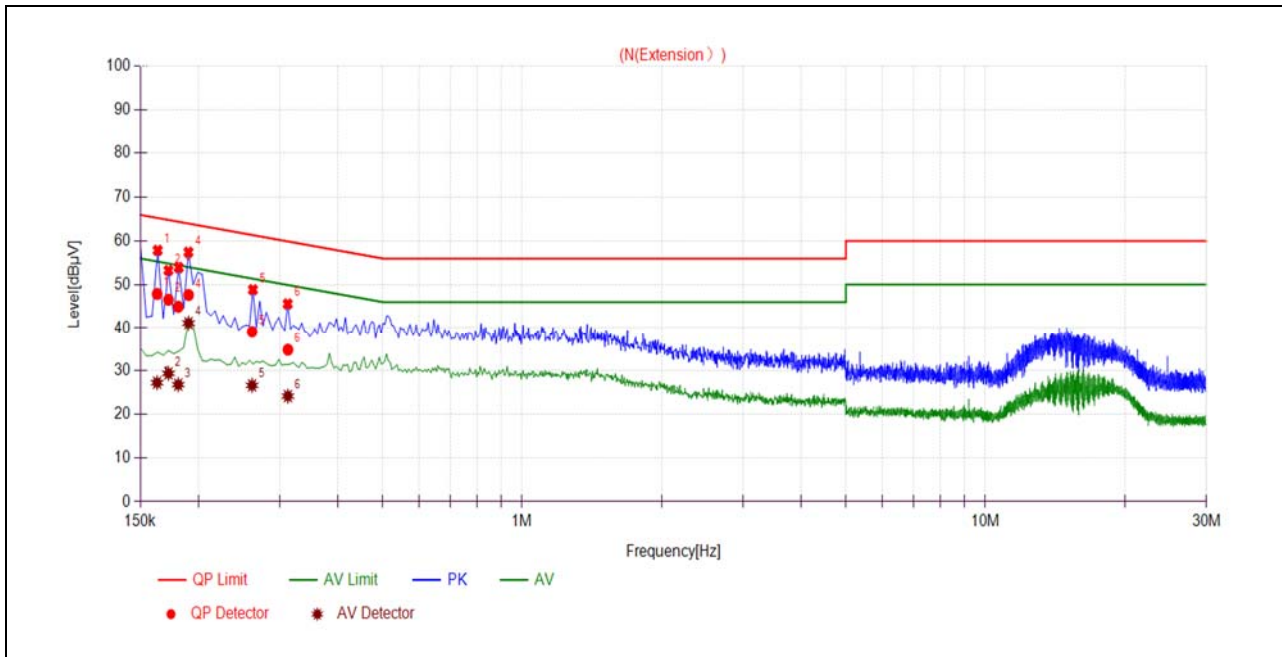


**B. Test Plot:**



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1911	50.28	45.68	63.99	53.99	Line	PASS
2	0.2451	32.83	27.14	61.92	51.92		PASS
3	0.3845	41.26	34.48	58.18	48.18		PASS
4	0.4729	38.77	32.08	56.46	46.46		PASS
5	0.6086	29.73	24.06	56.00	46.00		PASS
6	15.3618	41.13	33.82	60.00	50.00		PASS



(N Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1630	47.87	27.24	65.31	55.31	Neutral	PASS
2	0.1725	46.54	29.38	64.84	54.84		PASS
3	0.1811	44.93	26.80	64.44	54.44		PASS
4	0.1906	47.63	41.16	64.01	54.01		PASS
5	0.2614	39.08	26.63	61.39	51.39		PASS
6	0.3123	34.86	24.16	59.91	49.91		PASS

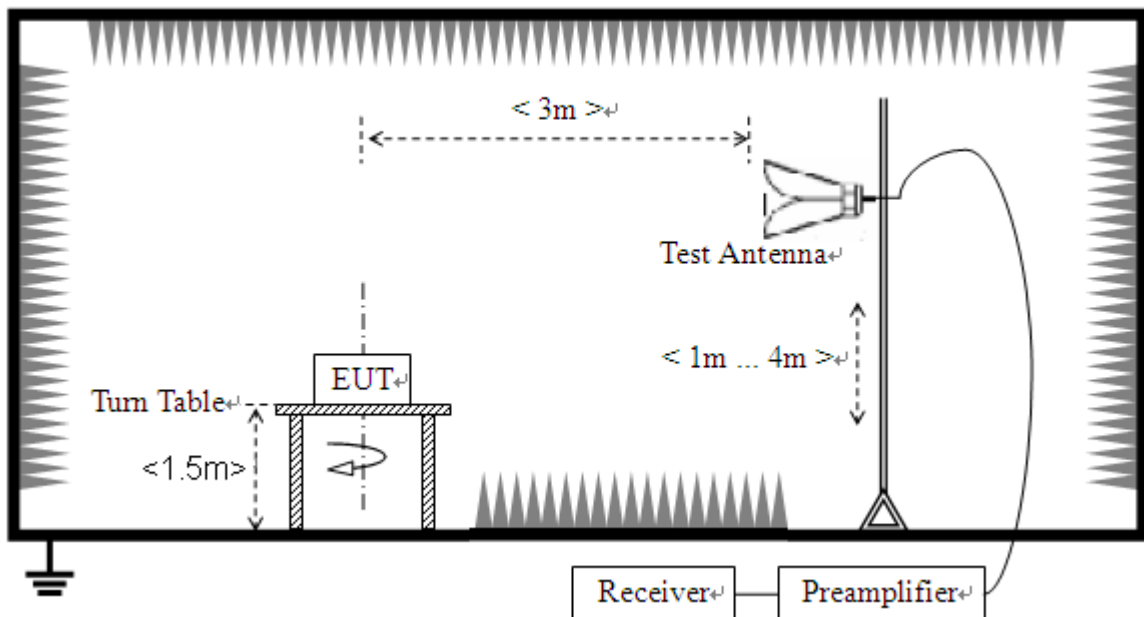
## 2.2. Restricted Frequency Bands

### 2.2.1. Requirement

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in 15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 2.2.2. Test Description

#### Test Setup



The EUT is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading.

For the Test Antenna:

Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.



### 2.2.3. Test Procedure

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for  $f \geq 1\text{GHz}$ , 100 kHz for  $f < 1\text{GHz}$

VBW = 3 MHz

Sweep = auto

Detector function = peak/average

Trace = max hold

Allow the trace to stabilize

### 2.2.4. Test Result

The lowest and highest channels are tested to verify the Restricted Frequency Bands.

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

$A_T$ : Total correction Factor except Antenna

$U_R$ : Receiver Reading

$G_{\text{preamp}}$ : Preamplifier Gain

$A_{\text{Factor}}$ : Antenna Factor at 3m

Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

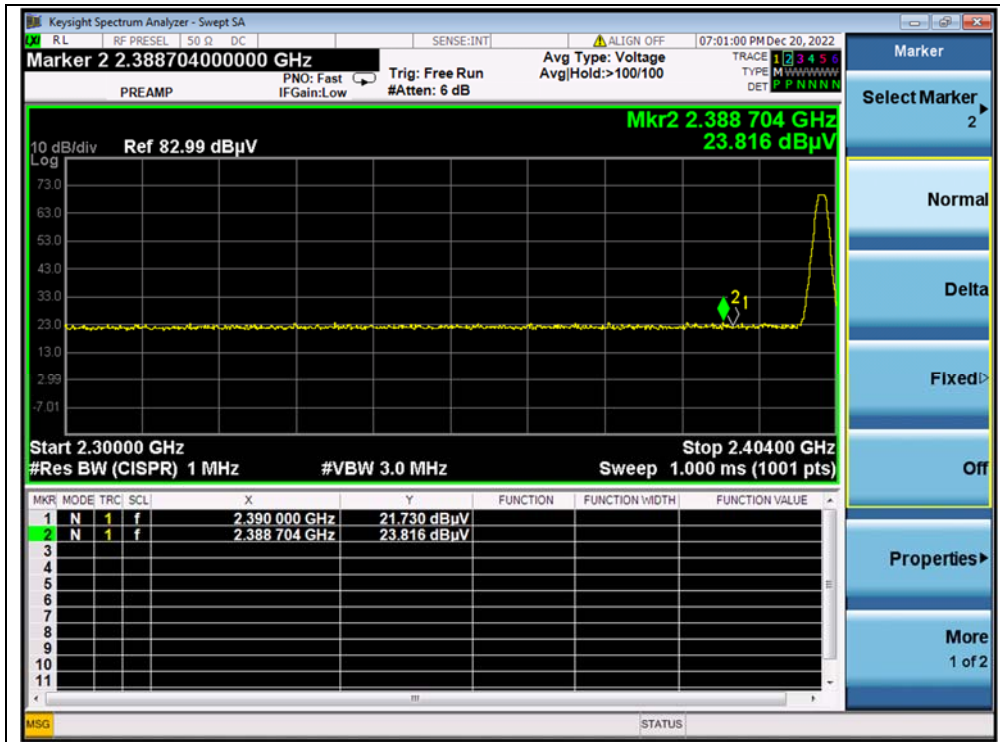
### 1Mbps

#### A. Test Verdict:

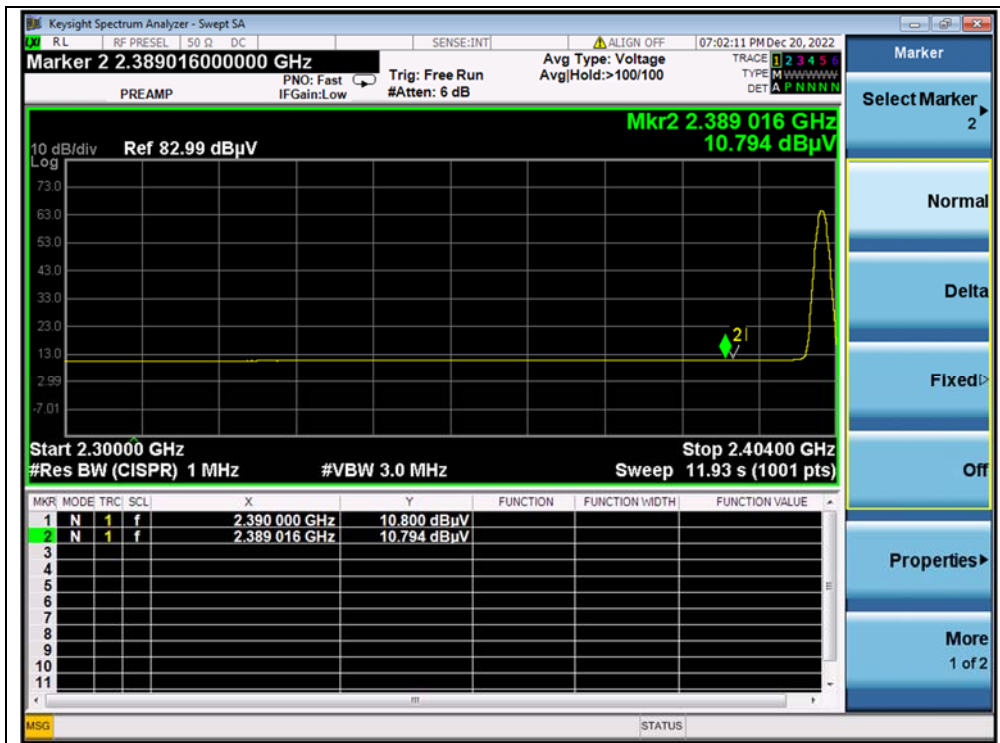
Channel	Frequency (MHz)	Detector	Receiver Reading	$A_T$ (dB)	$A_{\text{Factor}}$ (dB@3m)	Max. Emission E (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Verdict
		PK/ AV	$U_R$ (dB $\mu$ V)					
0	2388.70	PK	23.82	6.74	27.20	57.76	74	PASS
0	2390.00	AV	10.80	6.74	27.20	44.74	54	PASS
39	2497.71	PK	23.43	6.74	27.20	57.37	74	PASS
39	2483.50	AV	10.73	6.74	27.20	44.67	54	PASS



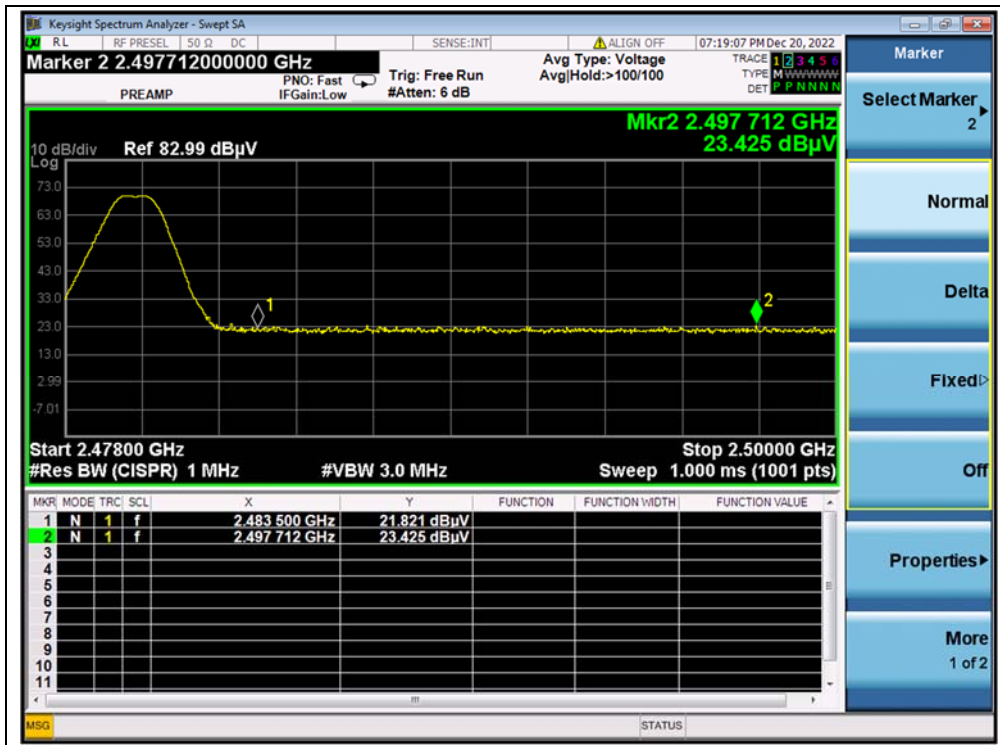
B. Test Plot:



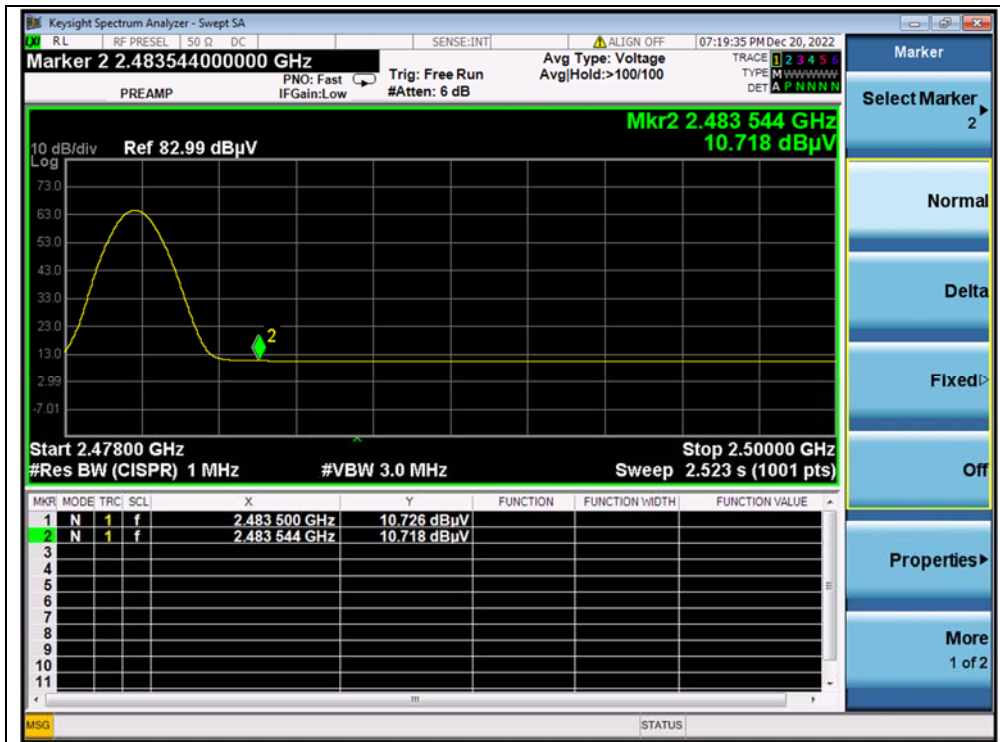
(PEAK, Channel 0)



(AVERAGE, Channel 0)



(PEAK, Channel 39)



(AVERAGE, Channel 39)

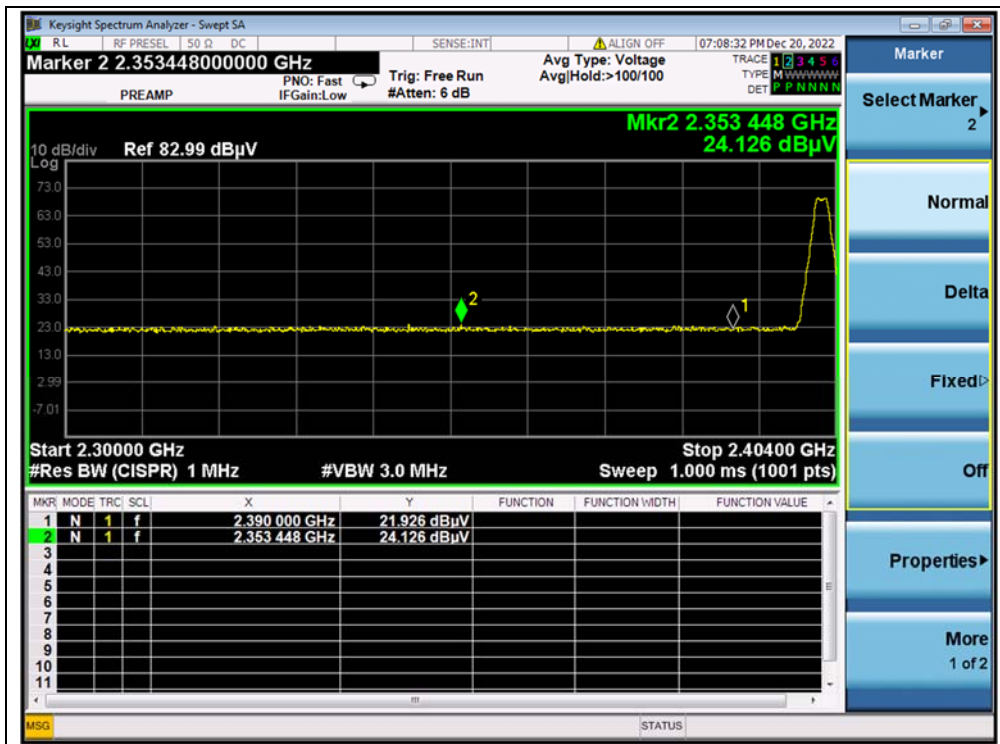


2Mbps

A. Test Verdict:

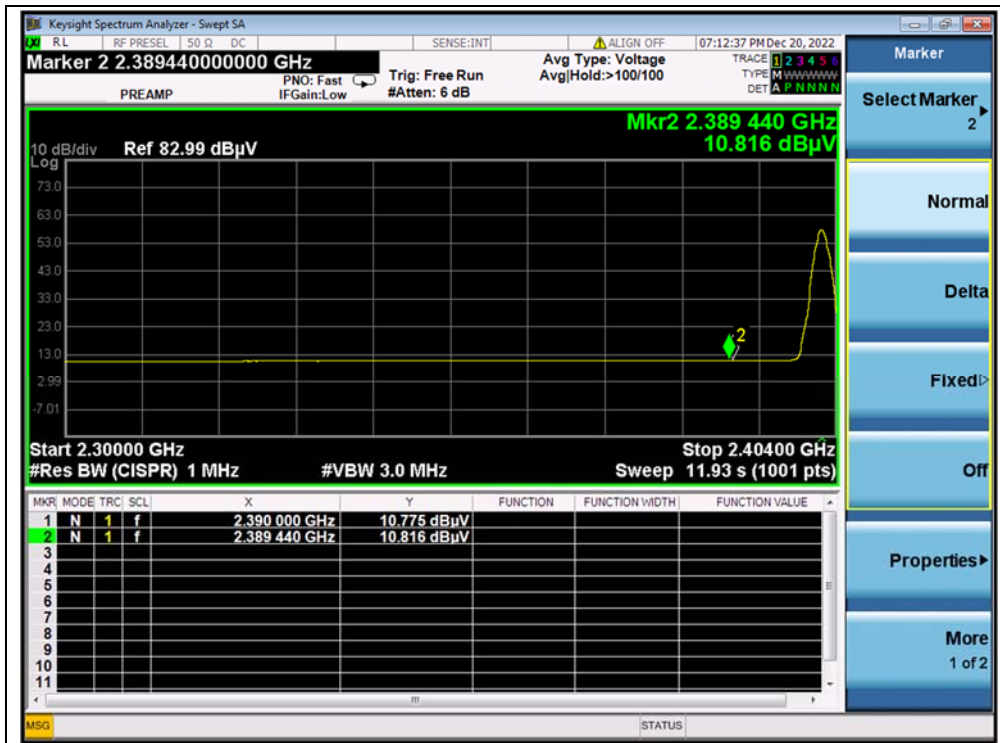
Channel	Frequency (MHz)	Detector	Receiver Reading	A <sub>T</sub> (dB)	A <sub>Factor</sub> (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV	U <sub>R</sub> (dBμV)					
0	2353.45	PK	24.13	6.74	27.20	58.07	74	PASS
0	2389.44	AV	10.82	6.74	27.20	44.76	54	PASS
39	2498.39	PK	24.35	6.74	27.20	58.29	74	PASS
39	2483.50	AV	11.02	6.74	27.20	44.96	54	PASS

B. Test Plot:

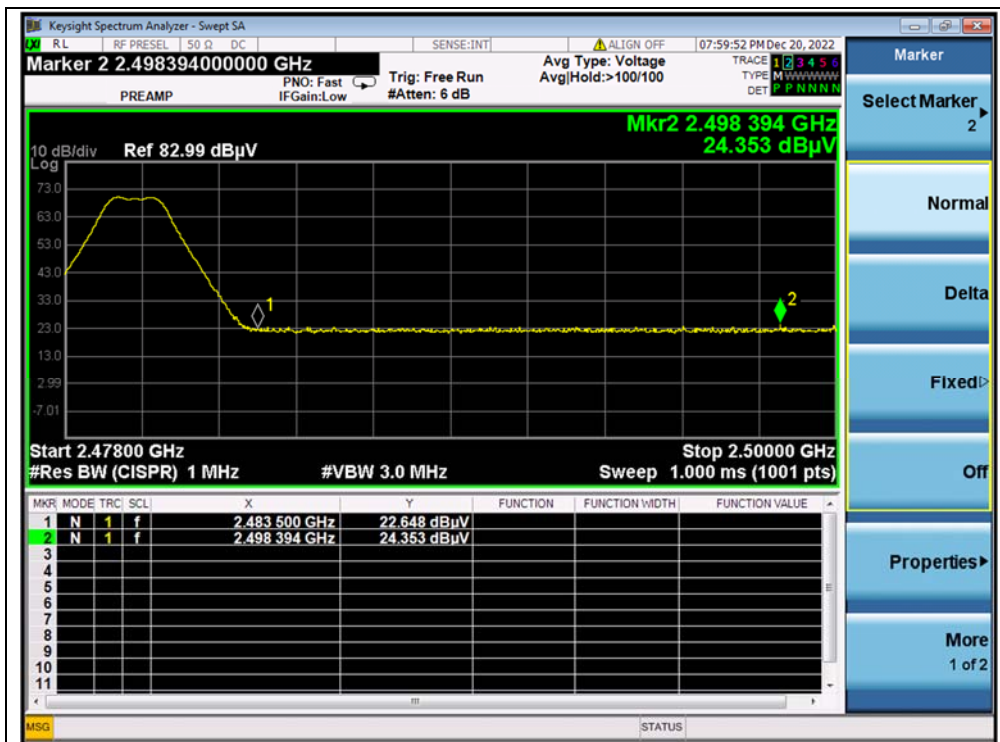


(PEAK, Channel 0)



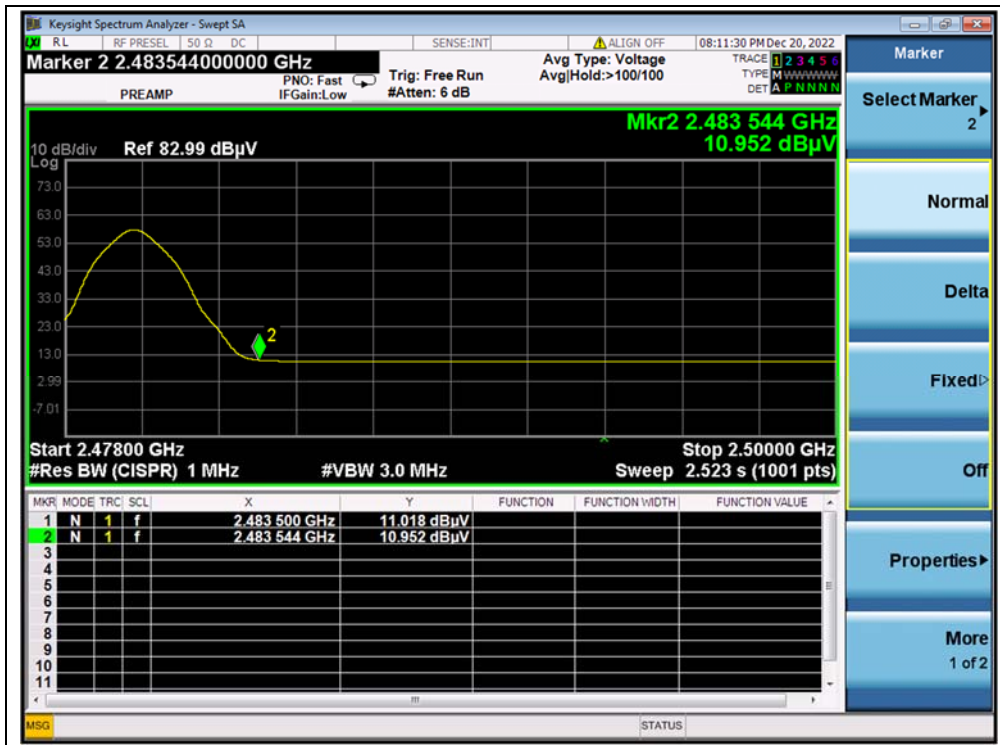


(AVERAGE, Channel 0)



(PEAK, Channel 39)





(AVERAGE, Channel 39)



## 2.3. Radiated Emission

### 2.3.1. Requirement

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 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 ( $\mu\text{V}/\text{m}$ )	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

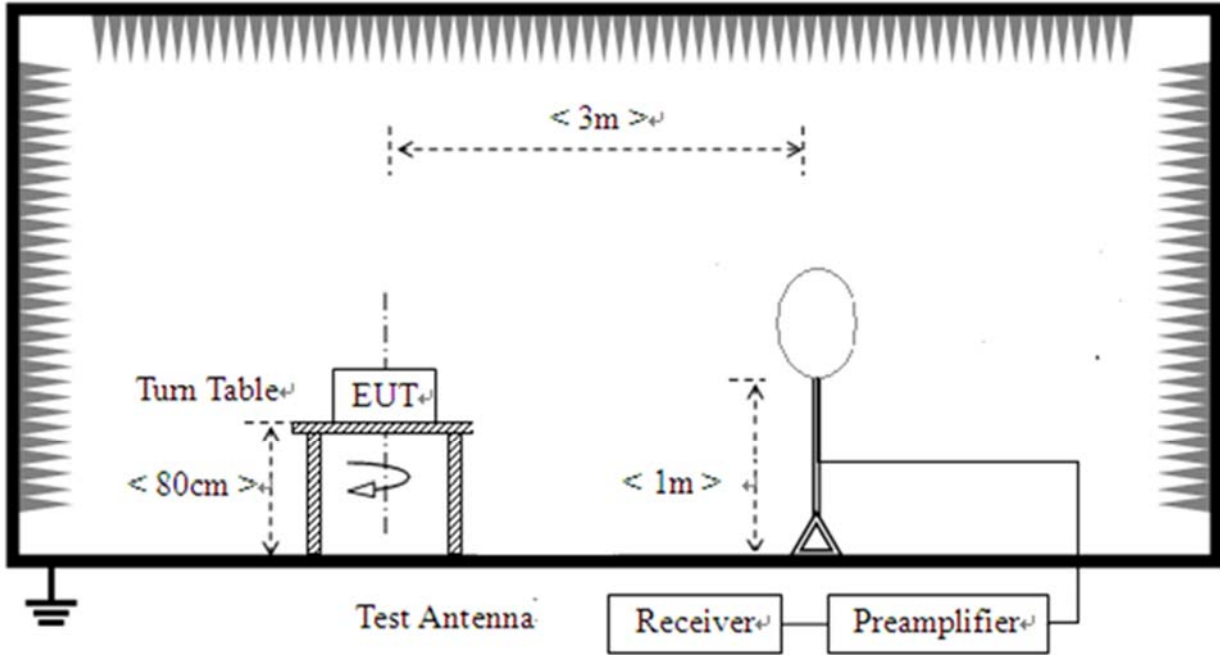
**Note1:** For above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

**Note2:** For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK). In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table).

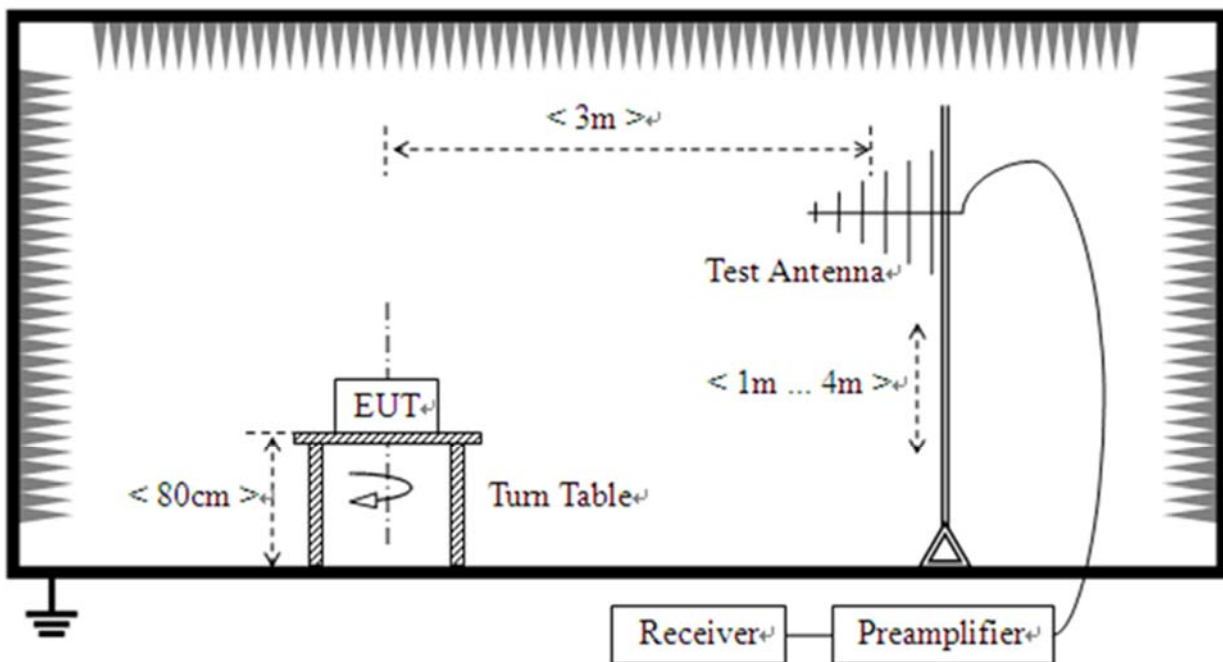
### 2.3.2. Test Description

#### Test Setup:

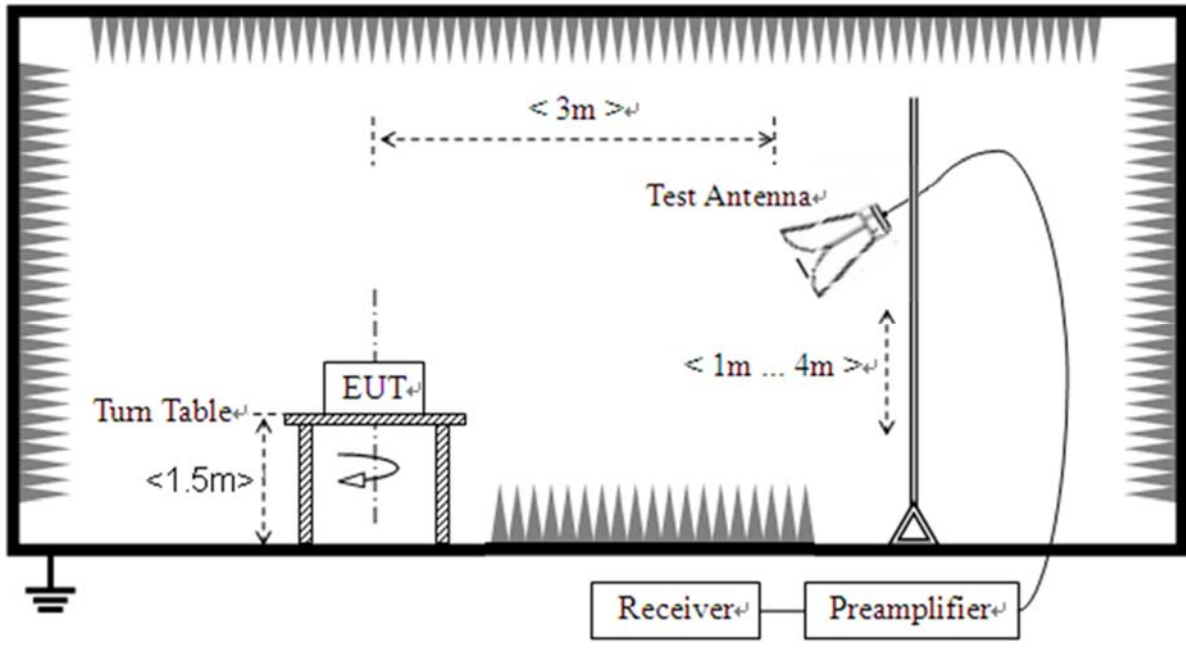
- 1) For radiated emissions from 9kHz to 30MHz



- 2) For radiated emissions from 30MHz to 1GHz



## 3) For radiated emissions above 1GHz



The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 30MHz, the emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9kHz-90 kHz, 110kHz-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For measurements below 1GHz the resolution bandwidth is set to 100kHz for peak detection measurements or 120kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1GHz the resolution bandwidth is set to 1MHz, the video band width is set to 3MHz for peak measurements and as applicable for average measurements.

The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions. For measurements above 1 GHz, keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response.



### 2.3.3. Test Result

According to ANSI C63.10, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak (or average) limit, it is unnecessary to perform an quasi-peak measurement (or average).

The measurement results are obtained as below:

$$E \text{ [dB}\mu\text{V/m]} = U_R + A_T + A_{\text{Factor}} \text{ [dB]}; A_T = L_{\text{Cable loss}} \text{ [dB]} - G_{\text{preamp}} \text{ [dB]}$$

$A_T$ : Total correction Factor except Antenna

$U_R$ : Receiver Reading

$G_{\text{preamp}}$ : Preamplifier Gain

$A_{\text{Factor}}$ : Antenna Factor at 3m

During the test, the total correction Factor  $A_T$  and  $A_{\text{Factor}}$  were built in test software.

**Note1:** All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

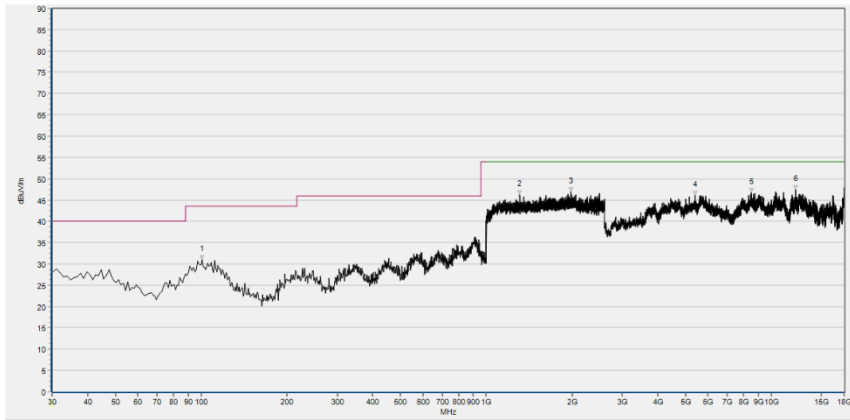
**Note2:** For the frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit was not recorded.

**Note3:** For the frequency, which started from 18GHz to 10th harmonic of the highest frequency, was pre-scanned and the result which was 20dB lower than the limit was not recorded.



**1Mbps**

**Plot for Channel 0**



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
100.810	31.04	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1310.933	46.34	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1985.600	46.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5393.560	46.01	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8525.920	46.80	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12154.160	47.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

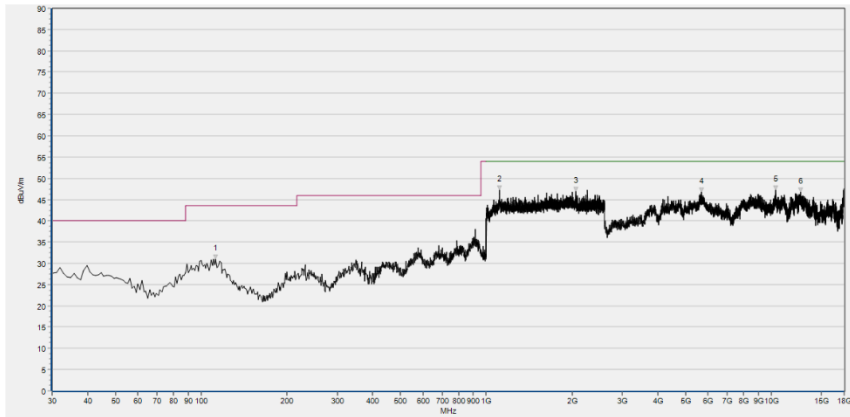
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
98.870	31.72	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1150.400	46.69	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1891.733	46.25	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5689.240	46.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8411.960	46.62	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12908.760	47.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

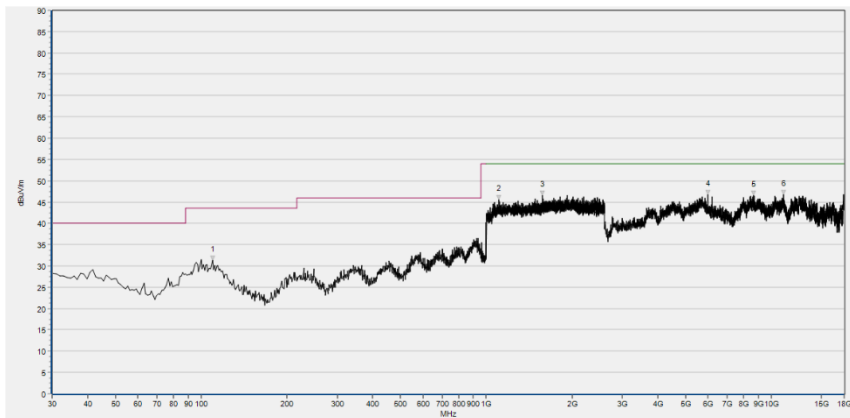
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 19



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
112.450	30.95	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1113.067	47.18	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2064.000	46.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5695.400	46.78	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10343.120	47.20	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12653.120	46.71	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

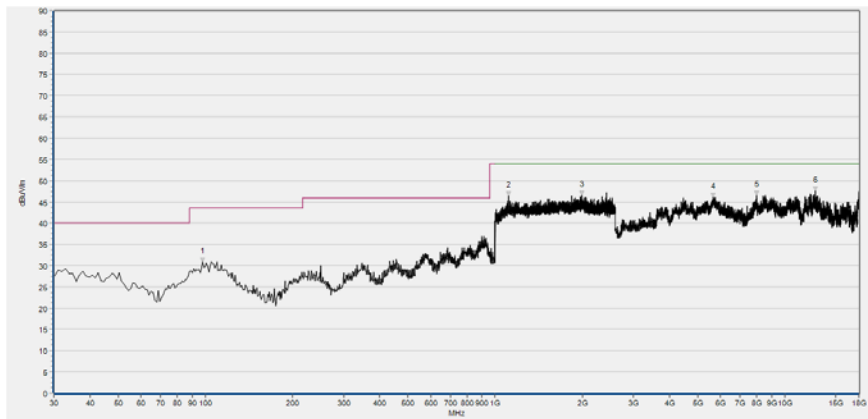
(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
109.540	31.35	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1107.733	45.58	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1576.533	46.55	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5994.160	46.82	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8639.880	46.61	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
11026.880	46.76	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

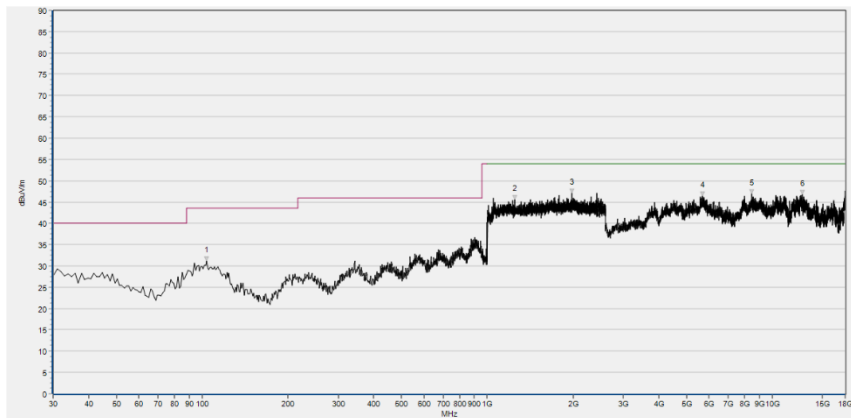
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 39



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
97.900	30.81	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1114.667	46.50	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1986.133	46.52	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5667.680	46.14	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7983.840	46.55	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12745.520	47.63	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
103.720	31.13	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1250.133	45.64	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1982.933	47.14	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5670.760	46.48	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8455.080	46.94	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12751.680	46.72	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

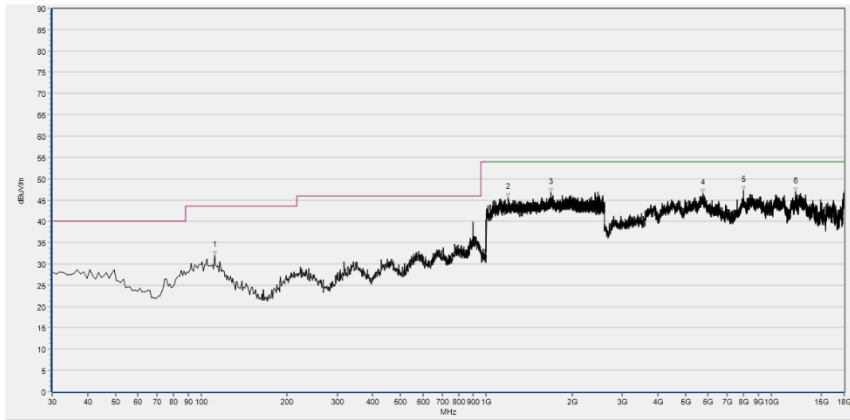
(Antenna Vertical, 30MHz to 18GHz)





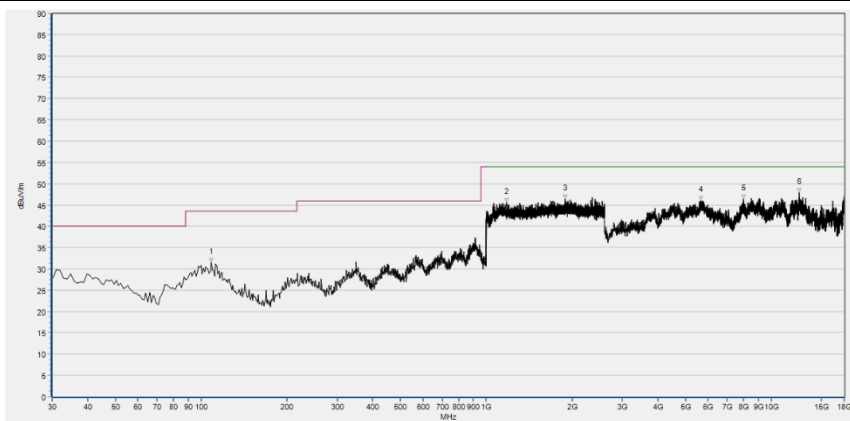
**2Mbps**

**Plot for Channel 0**



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
111.480	32.09	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1195.733	45.66	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1682.133	46.75	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5753.920	46.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7980.760	47.32	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12138.760	46.85	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

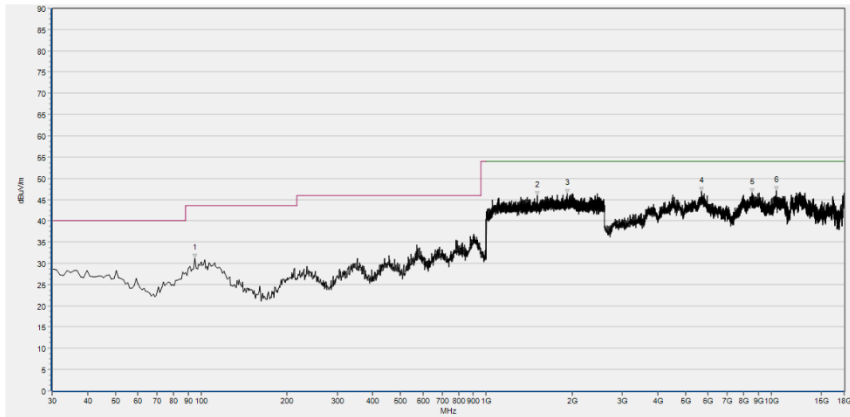


Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
108.570	31.55	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1178.133	45.53	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1893.333	46.38	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5646.120	46.06	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7980.760	46.36	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12489.880	47.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

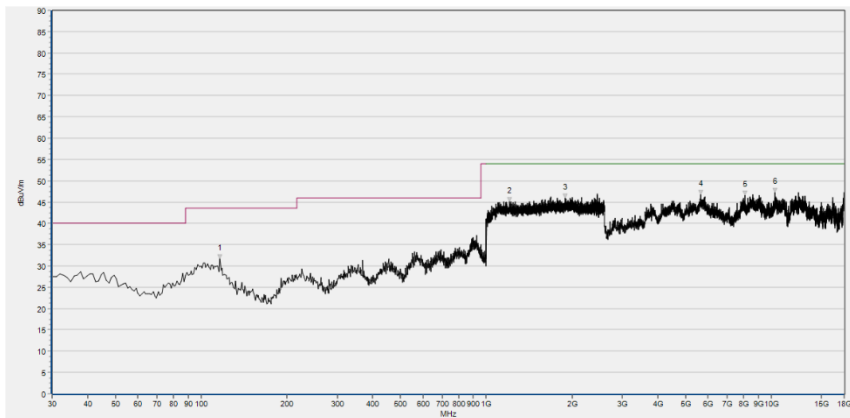


Plot for Channel 19



Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
94.990	31.24	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1511.467	45.99	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1918.400	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5698.480	46.92	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8578.280	46.54	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10426.280	47.02	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

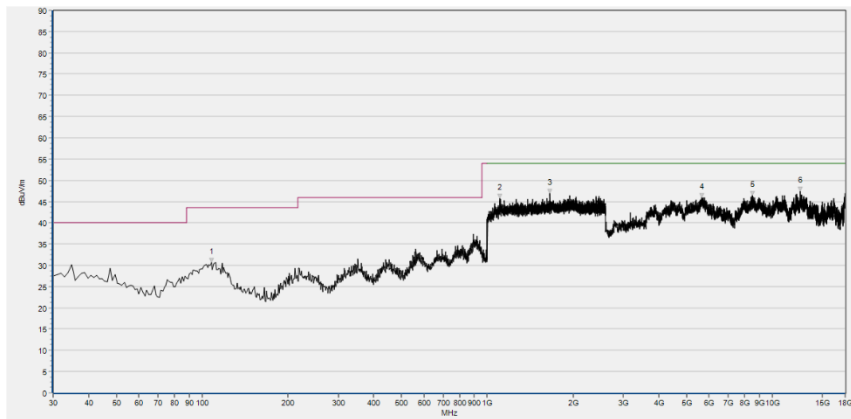


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
116.330	31.67	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1209.067	45.11	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1886.400	45.92	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5658.440	46.84	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8067.000	46.55	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10303.080	47.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

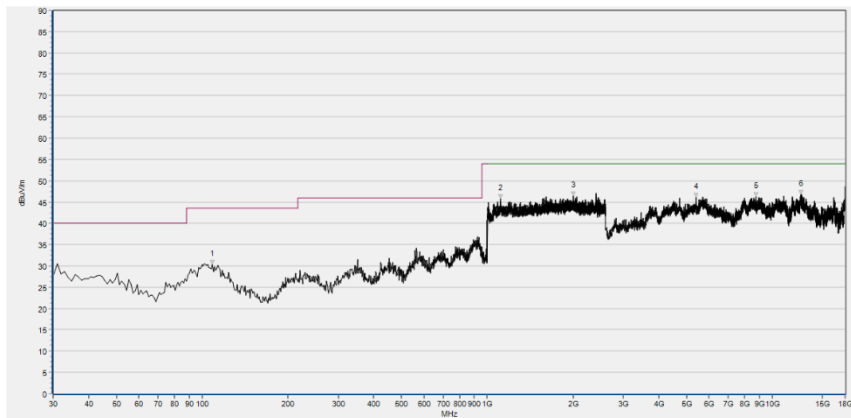


Plot for Channel 39



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
107.600	30.70	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1107.733	45.70	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1660.800	46.94	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5649.200	45.87	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8492.040	46.48	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12502.200	47.37	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)



Fre. (MHz)	PK (dBµV/m)	QP (dBµV/m)	AV (dBµV/m)	Limit-PK (dBµV/m)	Limit-QP (dBµV/m)	Limit-AV (dBµV/m)	Antenna	Verdict
108.570	30.30	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1113.600	45.74	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2007.467	46.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5399.720	46.03	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8747.680	46.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12579.200	46.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)



## Annex A Test Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for test performed on the EUT as specified in CISPR 16-1-2:

Test Items	Uncertainty
Restricted Frequency Bands	±5%
Radiated Emission	±2.95dB
Conducted Emission	±2.44dB

This uncertainty represent an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



## Annex B Testing Laboratory Information

### 1. Identification of the Responsible Testing Laboratory

<b>Laboratory Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Laboratory Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
<b>Telephone:</b>	+86 755 36698555
<b>Facsimile:</b>	+86 755 36698525

### 2. Identification of the Responsible Testing Location

<b>Name:</b>	Shenzhen Morlab Communications Technology Co., Ltd.
<b>Address:</b>	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

### 3. Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.3, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10-2013 and CISPR Publication 22; the FCC designation number is CN1192, the test firm registration number is 226174.



#### 4. Test Equipments Utilized

##### 4.1 Conducted Emission Test Equipments

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY5640009 3	N9038A	KEYSIGHT	2022.03.03	2023.03.02
LISN	8127449	NSLK 8127	Schwarzbeck	2022.03.03	2023.03.02
Pulse Limiter (10dB)	VTSD 9561 F-B #206	VTSD 9561-F	Schwarzbeck	2022.07.06	2023.07.05
Coaxial Cable(BNC) (30MHz-26GHz)	CB01	EMC01	Morlab	N/A	N/A
mobile phone	N/A	PLK-AL10	HONOR	N/A	N/A

##### 4.2 List of Software Used

Description	Manufacturer	Software Version
Morlab EMCR V1.2	Morlab	V1.0
TS+ -[JS32-CE]	Tonscend	V2.5.0.0

**4.3 Radiated Test Equipments**

Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Due Date
Receiver	MY54130016	N9038A	Agilent	2022.07.06	2023.07.05
Test Antenna - Bi-Log	9163-519	VULB 9163	Schwarzbeck	2022.05.25	2025.05.24
Test Antenna - Loop	1519-022	FMZB1519	Schwarzbeck	2022.02.11	2025.02.10
Test Antenna – Horn	01774	BBHA 9120D	Schwarzbeck	2022.07.13	2025.07.12
Test Antenna – Horn	BBHA9170#773	BBHA 9170	Schwarzbeck	2022.07.14	2025.07.13
Coaxial Cable (N male) (9KHz-30MHz)	CB04	EMC04	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB02	EMC02	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-26GHz)	CB03	EMC03	Morlab	N/A	N/A
Coaxial Cable (N male) (30MHz-40GHz)	CB05	EMC05	Morlab	N/A	N/A
1-18GHz pre-Amplifier	61171/61172	S020180L3203	Tonscend	2022.07.08	2023.07.07
18-26.5GHz pre-Amplifier	46732	S10M100L3802	Tonscend	2022.07.08	2023.07.07
26-40GHz pre-Amplifier	56774	S40M400L4002	Tonscend	2022.07.08	2023.07.07
Notch Filter	N/A	WRCG-2400-2483.5-60SS	Wainwright	2022.07.08	2023.07.07
Anechoic Chamber	N/A	9m*6m*6m	CRT	2020.01.06	2023.01.05

END OF REPORT