REPORT No. : SZ22110254W02

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

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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

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

1.2. Equipment Under Test (EUT) Description

Product Name:	WiiM Wake-up Light	
Sample No.:	2#, 4#	
Hardware Version:	V04	
Software Version:	Linkplay.4.6.437761	
Equipment Type:	Bluetooth classic	
Bluetooth Version:	5.2	
Modulation Type:	FHSS (GFSK(1Mbps), π/4-DQPSK(EDR 2Mbps), 8-DPSK(EDR 3Mbps))	
Operating Frequency Range:	2402MHz–2480MHz	
Antenna Type:	Copper tube Antenna	
Antenna Gain:	2.80dBi	
Accessory Information:	AC Adapter	
	Brand Name:	N/A
	Model No.:	AD18W2002
	Serial No.:	N/A
	Rated Output:	12V⎓1.5A
	Rated Input:	100-240V~50/60Hz, 0.8A
	Manufacturer:	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.: SZ21070126W02, 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)
0	**2402**	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	**78**	**2480**
19	2421	**39**	**2441**	59	2461		

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$_{Note1}$	N/A
2	15.247(a) 15.247(h)	Hopping Mechanism	N/A	N/A	N/A$_{Note1}$	N/A
3	15.247(a)	Number of Hopping Frequency	N/A	N/A	N/A$_{Note1}$	N/A
4	ANSI C63.10	Duty Cycle	N/A	N/A	N/A$_{Note1}$	N/A
5	15.247(b)	Maximum Peak Conducted Output Power	N/A	N/A	N/A$_{Note1}$	N/A
6	15.247(b)	Maximum Average Conducted Output Power	N/A	N/A	N/A$_{Note1}$	N/A
7	15.247(a)	20dB Bandwidth	N/A	N/A	N/A$_{Note1}$	N/A
8	15.247(a)	Carrier Frequency Separation	N/A	N/A	N/A$_{Note1}$	N/A
9	15.247(a)	Time of Occupancy (Dwell time)	N/A	N/A	N/A$_{Note1}$	N/A
10	15.247(d)	Conducted Spurious Emission	N/A	N/A	N/A$_{Note1}$	N/A
11	15.207	Conducted Emission	Dec. 30, 2022	Fan Zehang	PASS	No deviation
12	15.247(d)	Restricted Frequency Bands	Dec. 27, 2022	Su Zhan	PASS	No deviation
13	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.: SZ21070126W02, 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 ANSI C63.10-2013, KDB558074 D01 v05r02 and DA 00-075.
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 50μH/50Ω line impedance stabilization network (LISN).

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5- 30	60	50

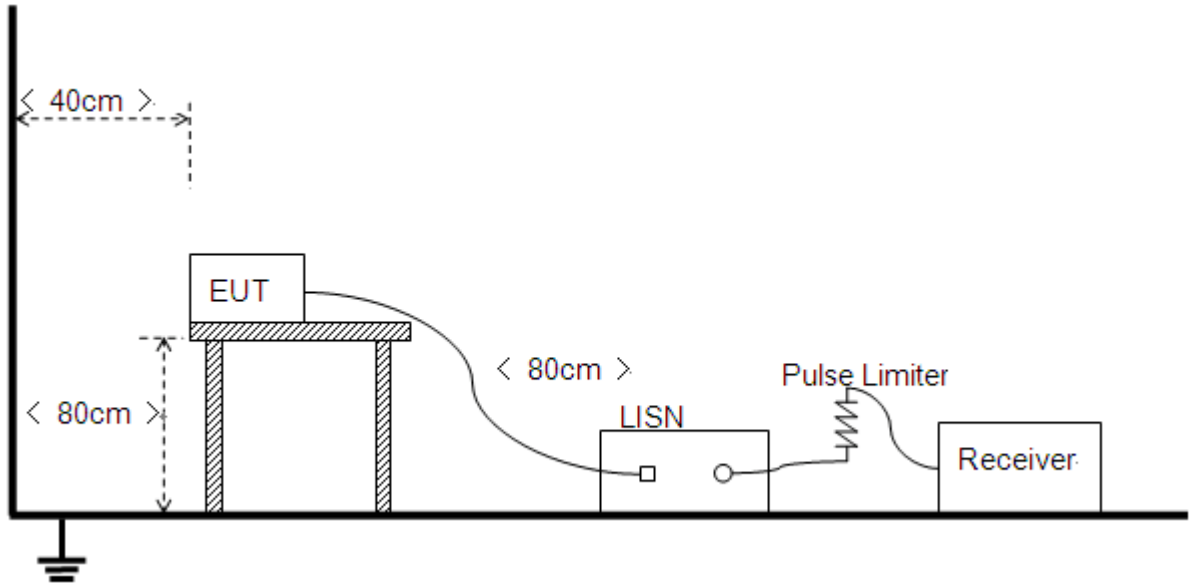
Note:

(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/50Hzwere 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

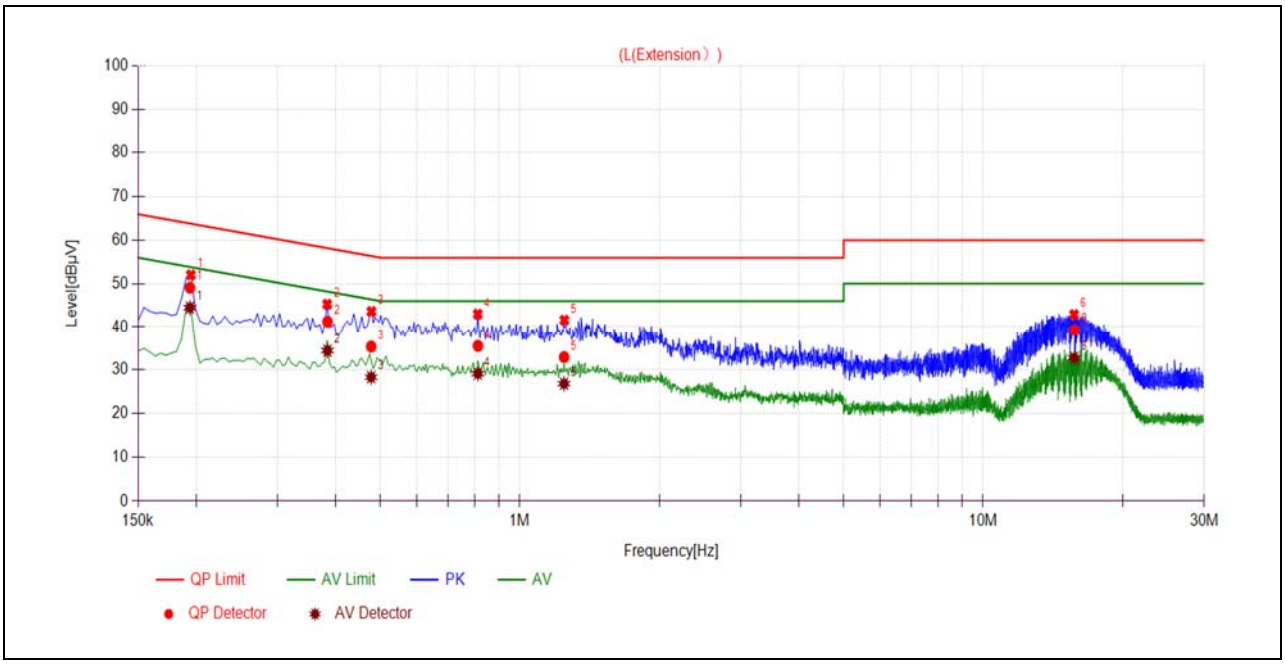
The measurement results are obtained as below:

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

U_R: Receiver Reading

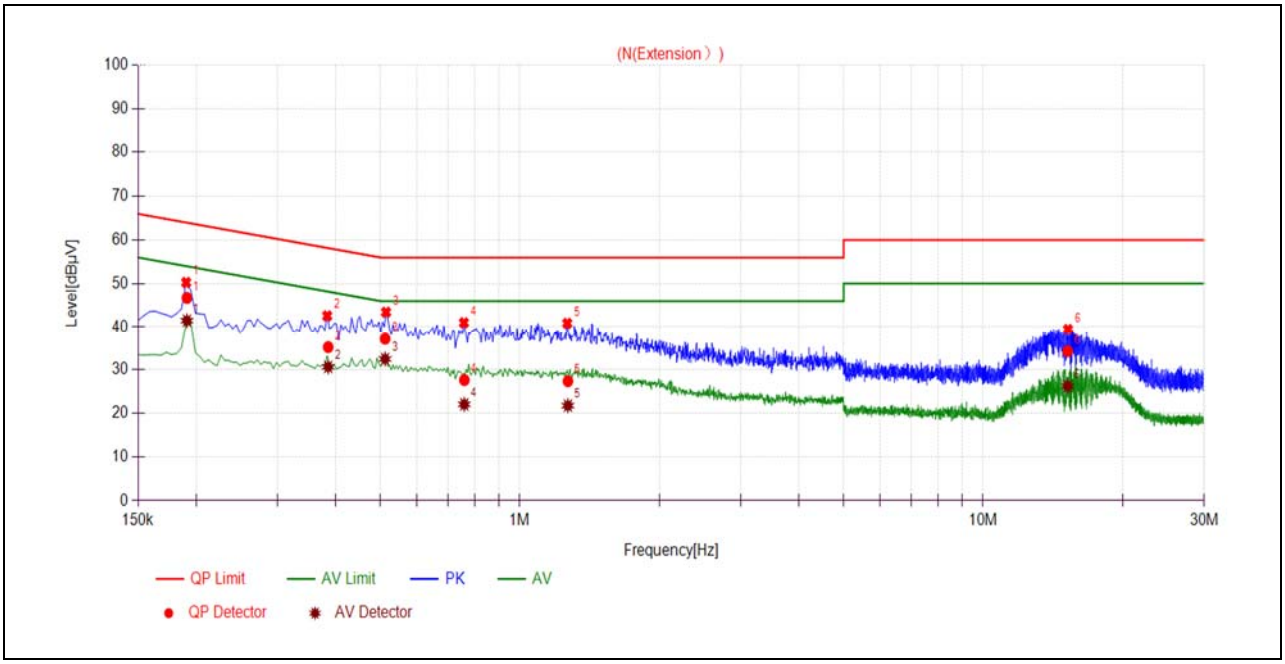
A_{Factor}: Voltage division factor of LISN

B. Test Plot:



(L Phase)

No.	Fre. (MHz)	Emission Level (dBµV)		Limit (dBµV)		Power-line	Verdict
		Quai-peak	Average	Quai-peak	Average		
1	0.1941	49.10	44.49	63.86	53.86	Line	PASS
2	0.3845	41.24	34.43	58.18	48.18		PASS
3	0.4778	35.37	28.31	56.38	46.38		PASS
4	0.8119	35.51	29.12	56.00	46.00		PASS
5	1.2461	32.93	26.81	56.00	46.00		PASS
6	15.7411	39.28	32.73	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	0.1912	46.72	41.50	63.99	53.99	Neutral	PASS
2	0.3858	35.22	30.65	58.15	48.15		PASS
3	0.5120	37.16	32.48	56.00	46.00		PASS
4	0.7590	27.64	22.03	56.00	46.00		PASS
5	1.2701	27.37	21.74	56.00	46.00		PASS
6	15.2237	34.28	26.22	60.00	50.00		PASS

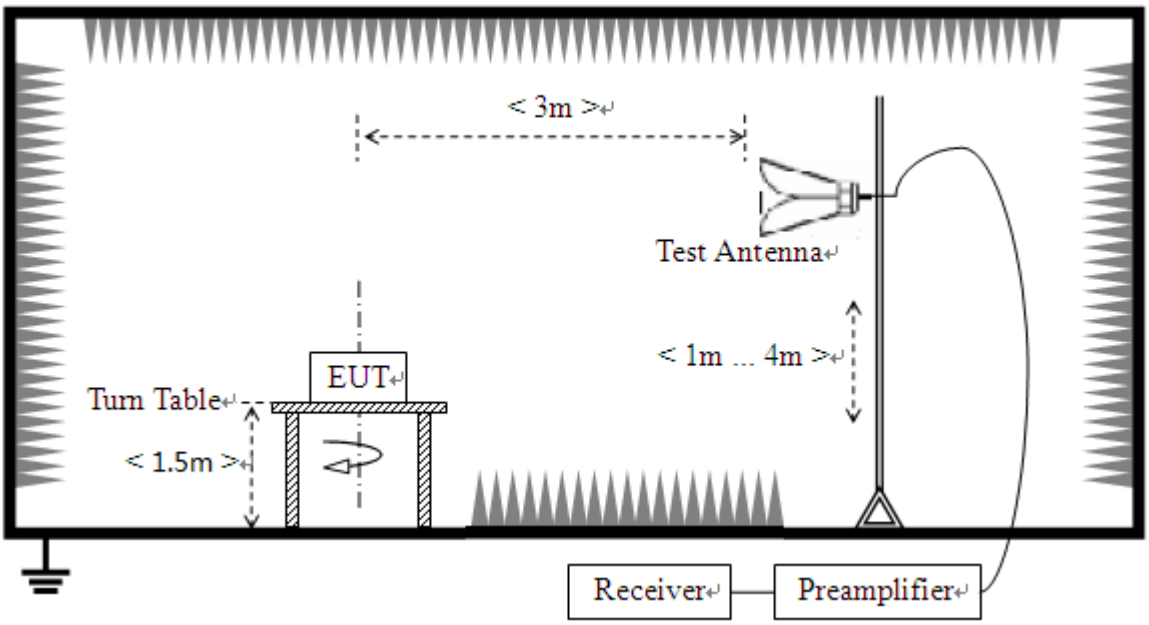
2.2. Restricted Frequency Bands

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:
Horn 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 ≥ 1GHz, 100 kHz for f < 1GHz
VBW = 3 MHz
Sweep = auto
Detector function = peak/average
Trace = max hold
Allow the trace to stabilize

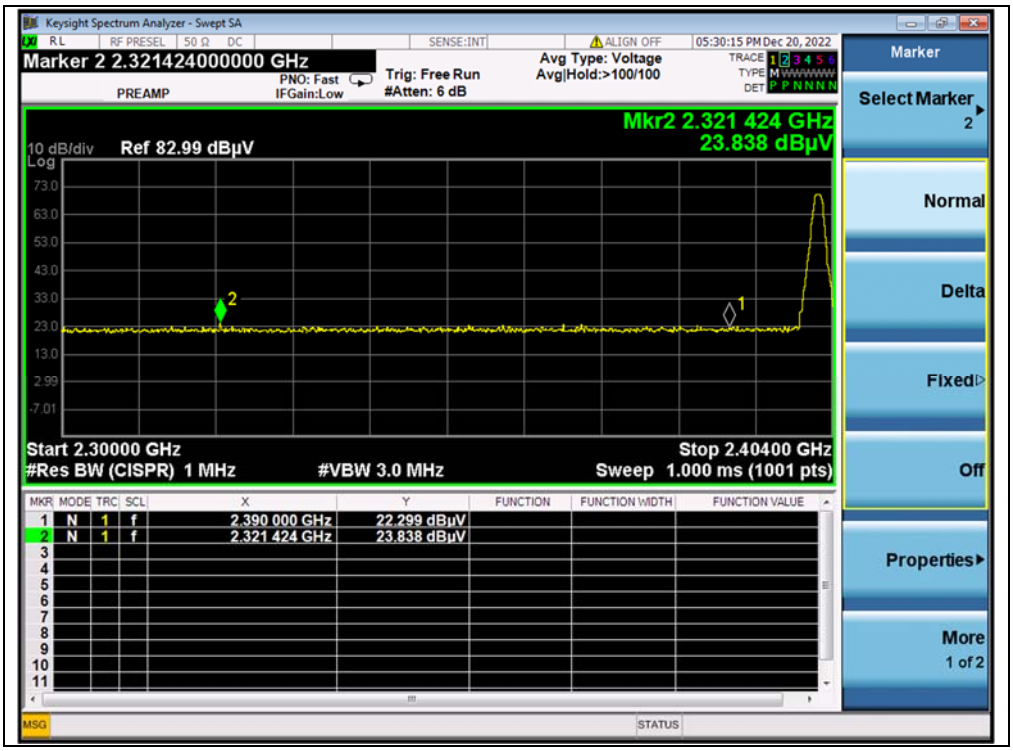
2.2.4. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =U_R + A_T + A_{Factor} [dB]; AT =$L_{Cable\ loss}$ [dB]-G_{preamp} [dB]
AT: Total correction Factor except Antenna
UR: Receiver Reading
G_{preamp}: Preamplifier Gain
A_{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.
GFSK Mode

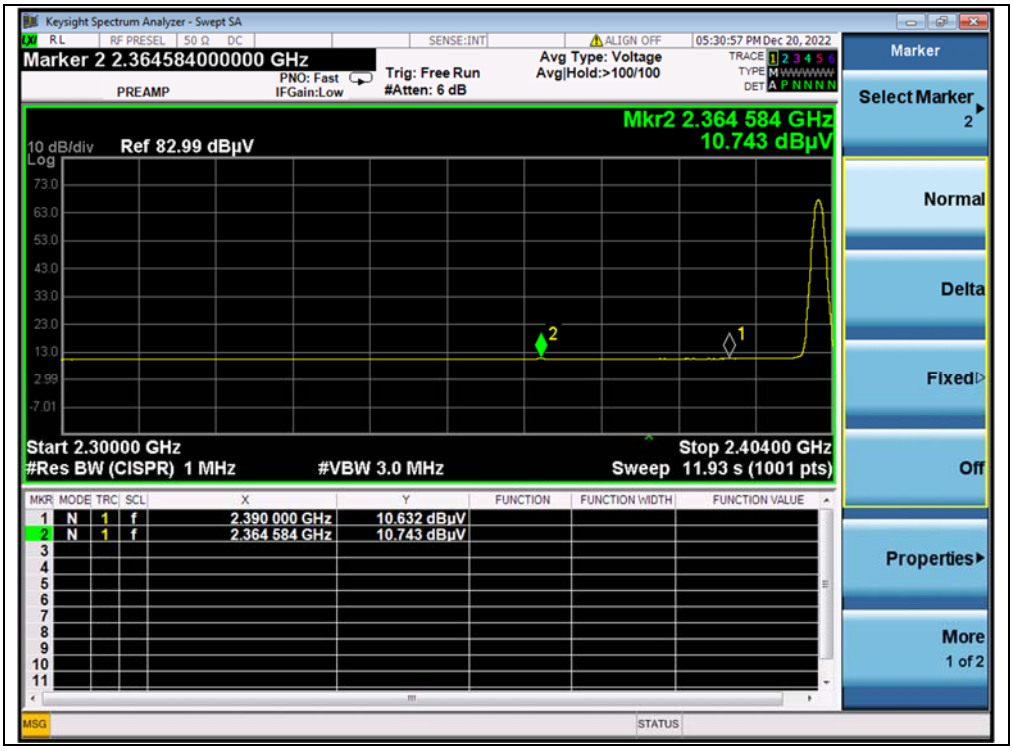
A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
0	2321.42	PK	23.84	6.74	27.20	57.78	74	PASS
0	2364.58	AV	10.74	6.74	27.20	44.68	54	PASS
78	2484.44	PK	23.35	6.74	27.20	57.29	74	PASS
78	2483.60	AV	10.92	6.74	27.20	44.86	54	PASS

B. Test Plot:

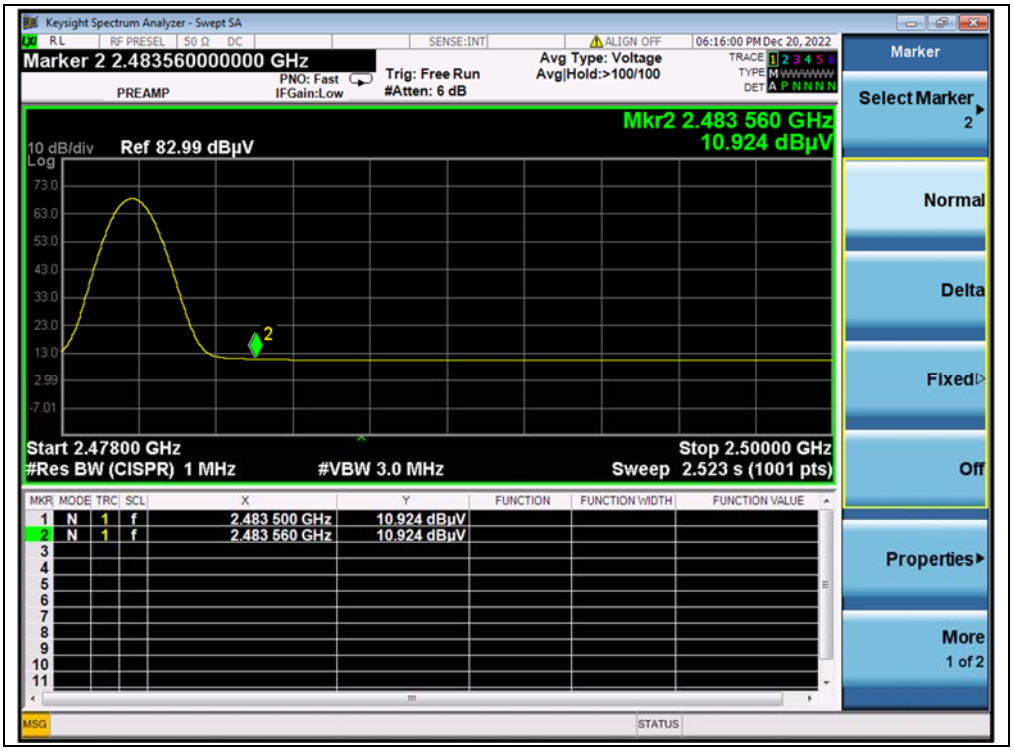


(PEAK, Channel 0, GFSK)



(AVERAGE, Channel 0, GFSK)

(PEAK, Channel 78, GFSK)



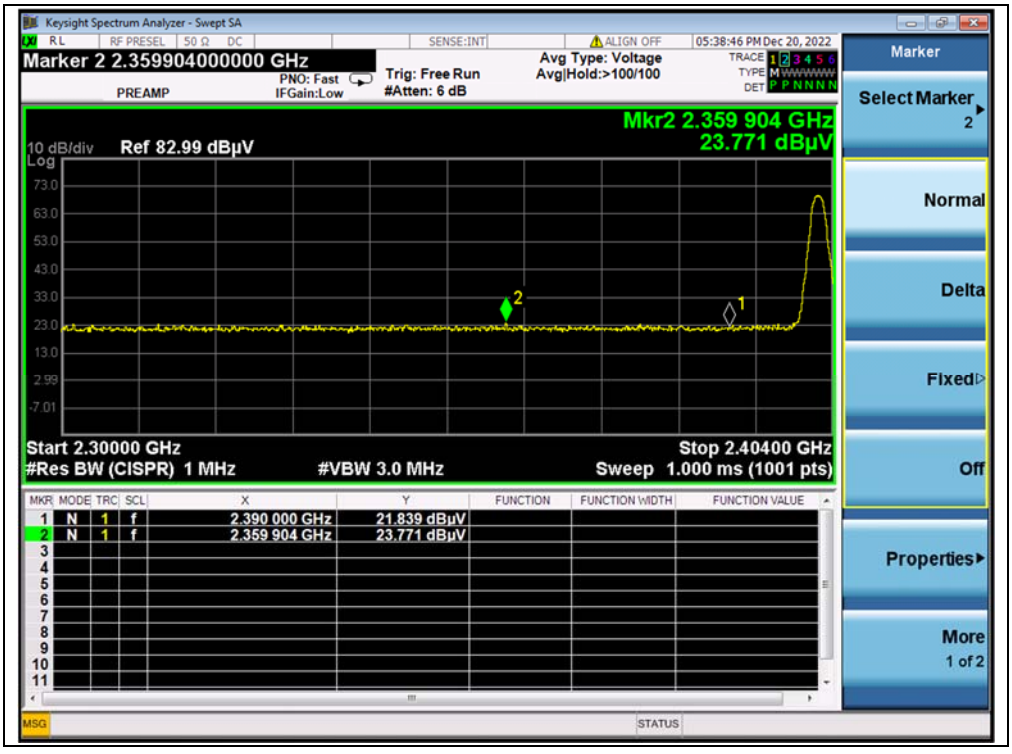
(AVERAGE, Channel 78, GFSK)

π/4-DQPSK Mode

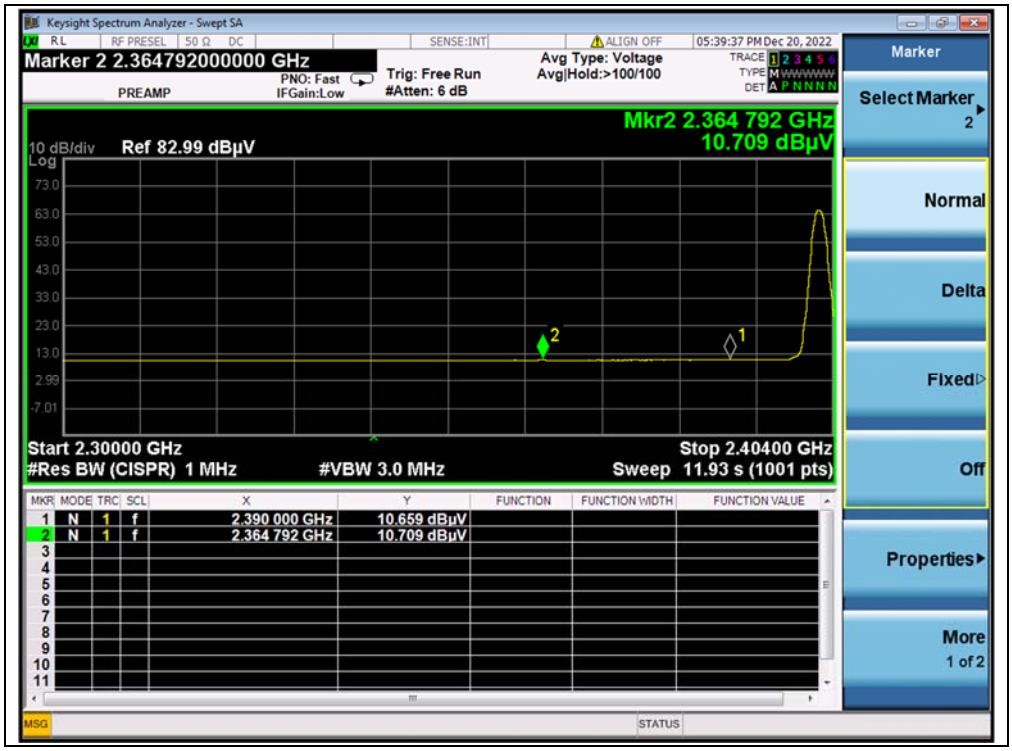
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
0	2359.90	PK	23.77	6.74	27.20	57.71	74	PASS
0	2364.79	AV	10.71	6.74	27.20	44.65	54	PASS
78	2487.85	PK	23.67	6.74	27.20	57.61	74	PASS
78	2483.50	AV	10.81	6.74	27.20	44.75	54	PASS

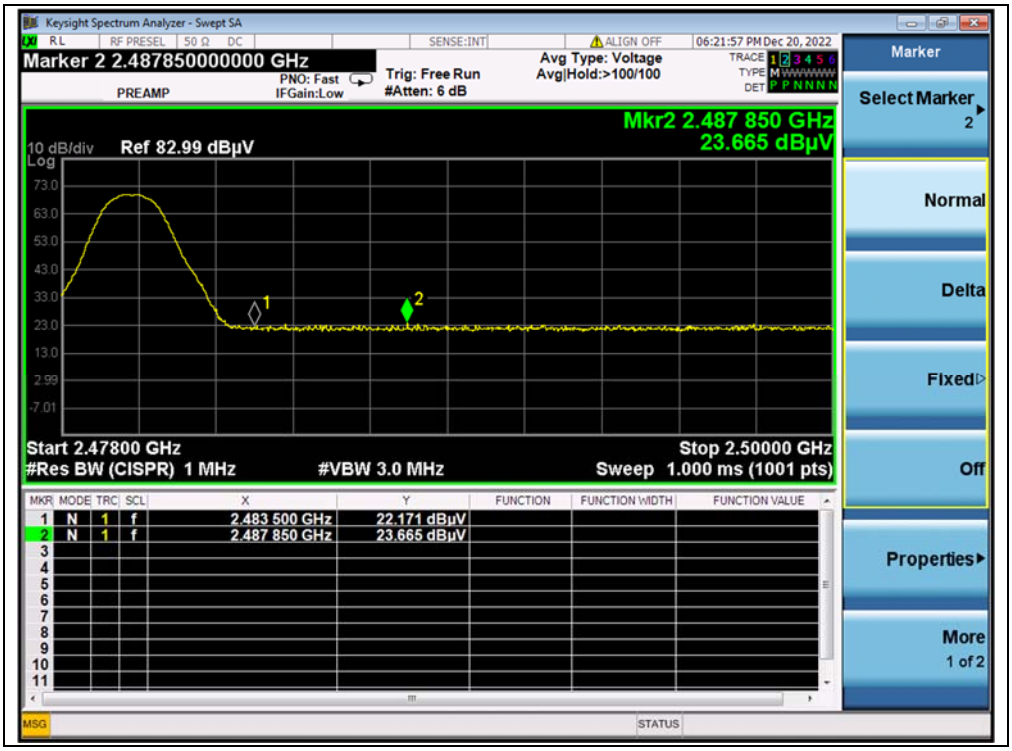
B. Test Plot:



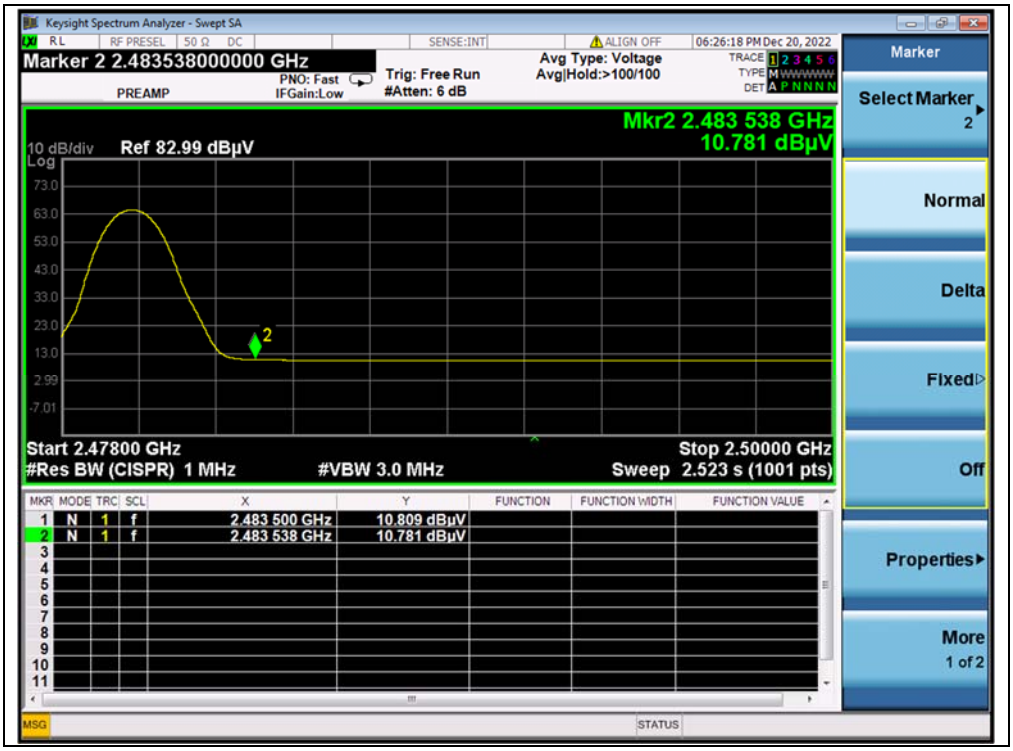
(PEAK, Channel 0,π/4-DQPSK)



(AVERAGE, Channel 0, π/4-DQPSK)



(PEAK, Channel 78, π/4-DQPSK)



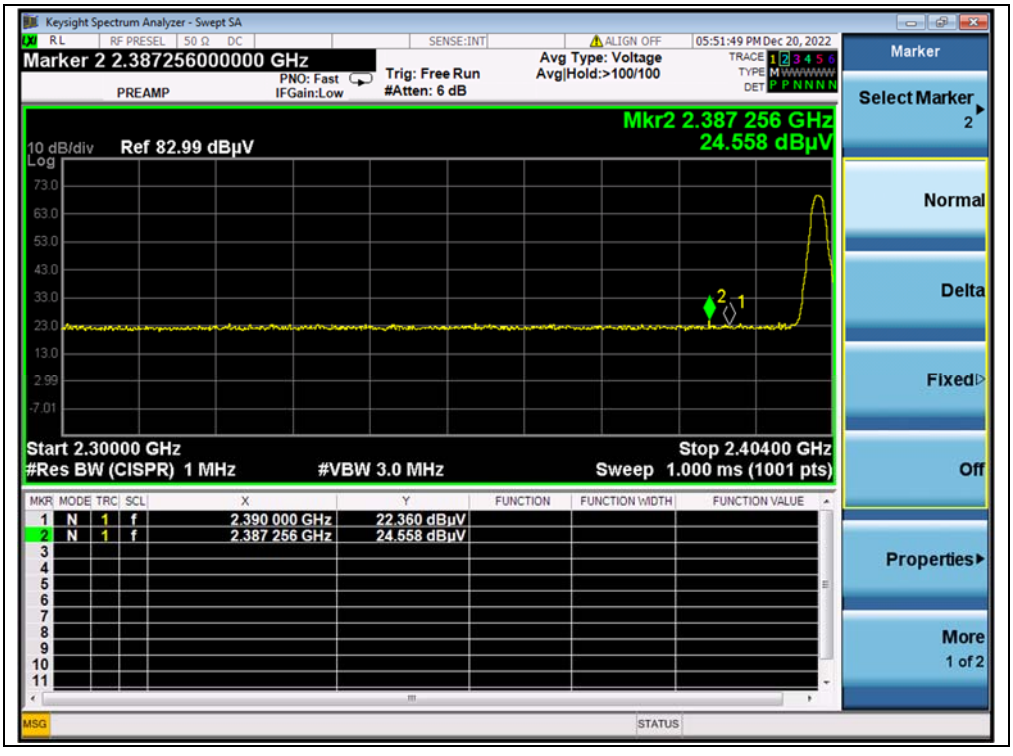
(AVERAGE, Channel 78, π/4-DQPSK)

8-DPSK Mode

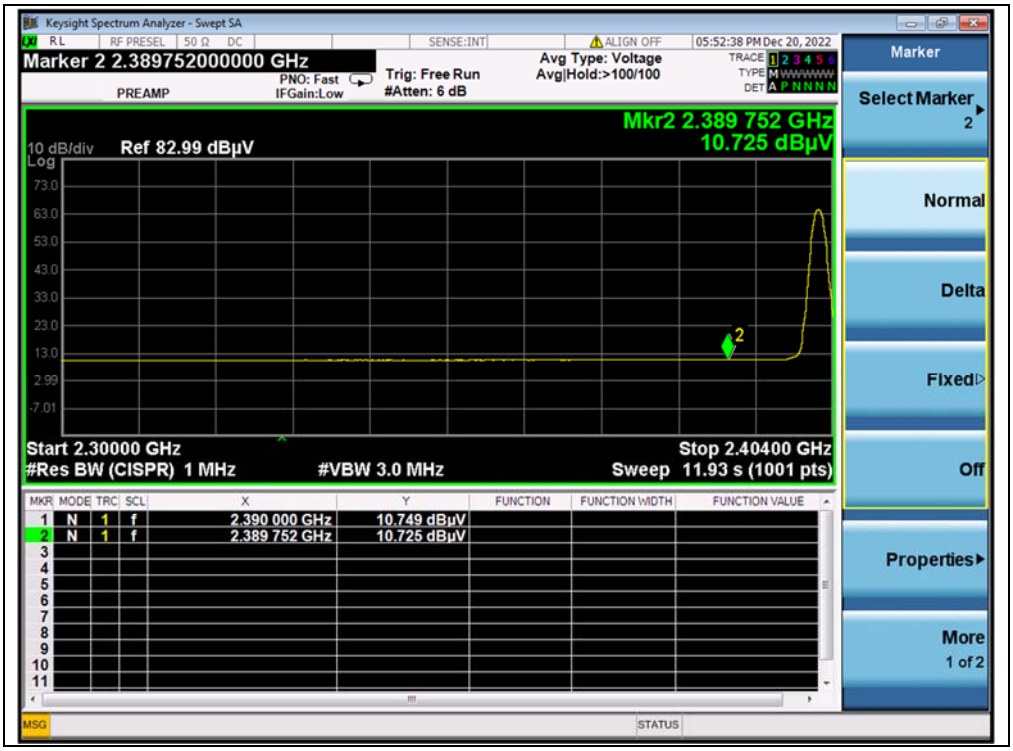
A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading U_R (dBμV)	A_T (dB)	A_{Factor} (dB@3m)	Max. Emission E (dBμV/m)	Limit (dBμV/m)	Verdict
		PK/ AV						
0	2387.26	PK	24.56	6.74	27.20	58.50	74	PASS
0	2390.00	AV	10.75	6.74	27.20	44.69	54	PASS
78	2491.13	PK	24.08	6.74	27.20	58.02	74	PASS
78	2483.50	AV	10.79	6.74	27.20	44.73	54	PASS

B. Test Plot:

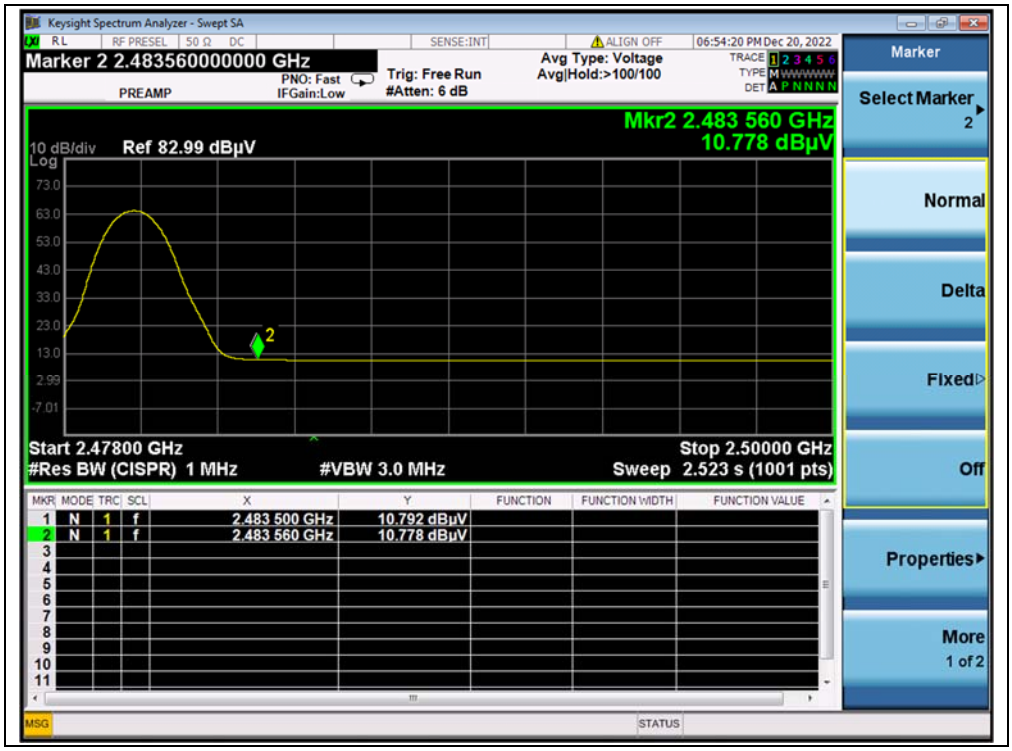


(PEAK, Channel 0, 8-DPSK)



(AVERAGE, Channel 0, 8-DPSK)

(PEAK, Channel 78, 8-DPSK)



(AVERAGE, Channel 78, 8-DPSK)

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:

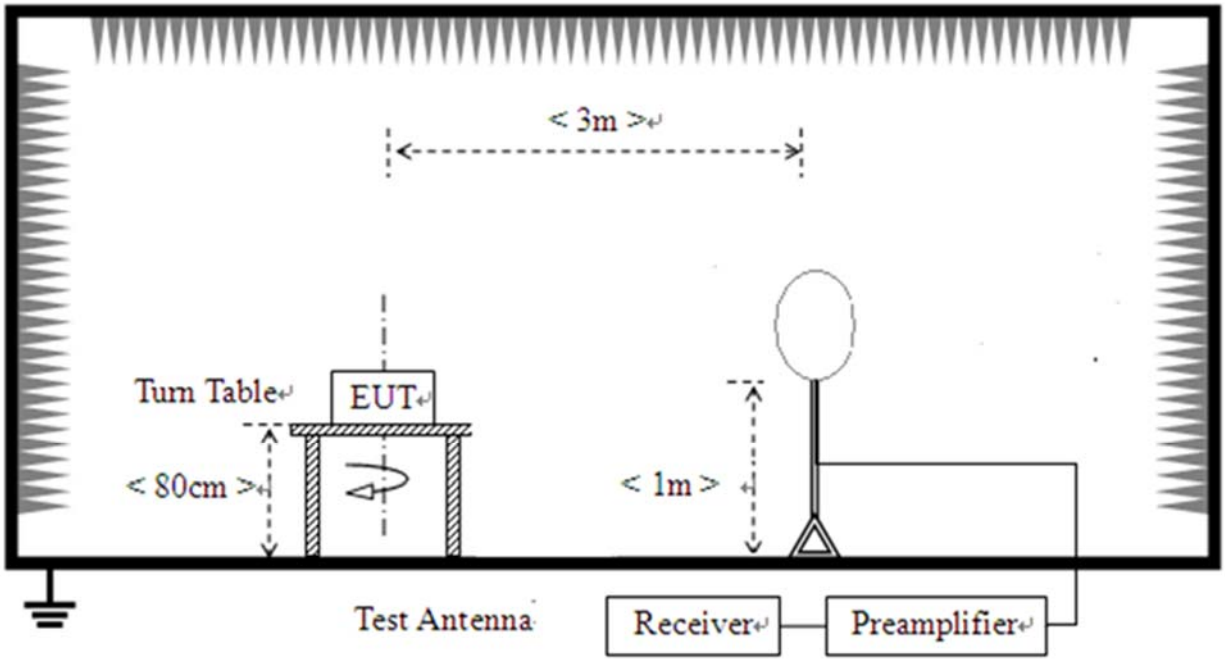
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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).

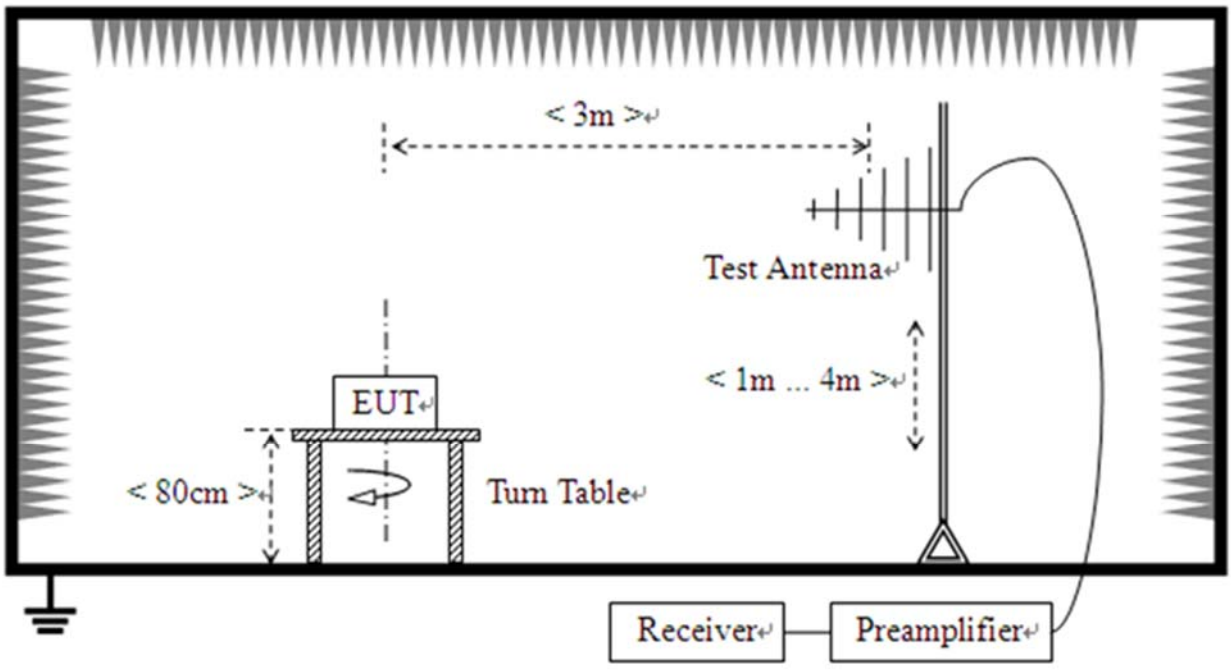
2.3.2. Test Description

Test Setup:

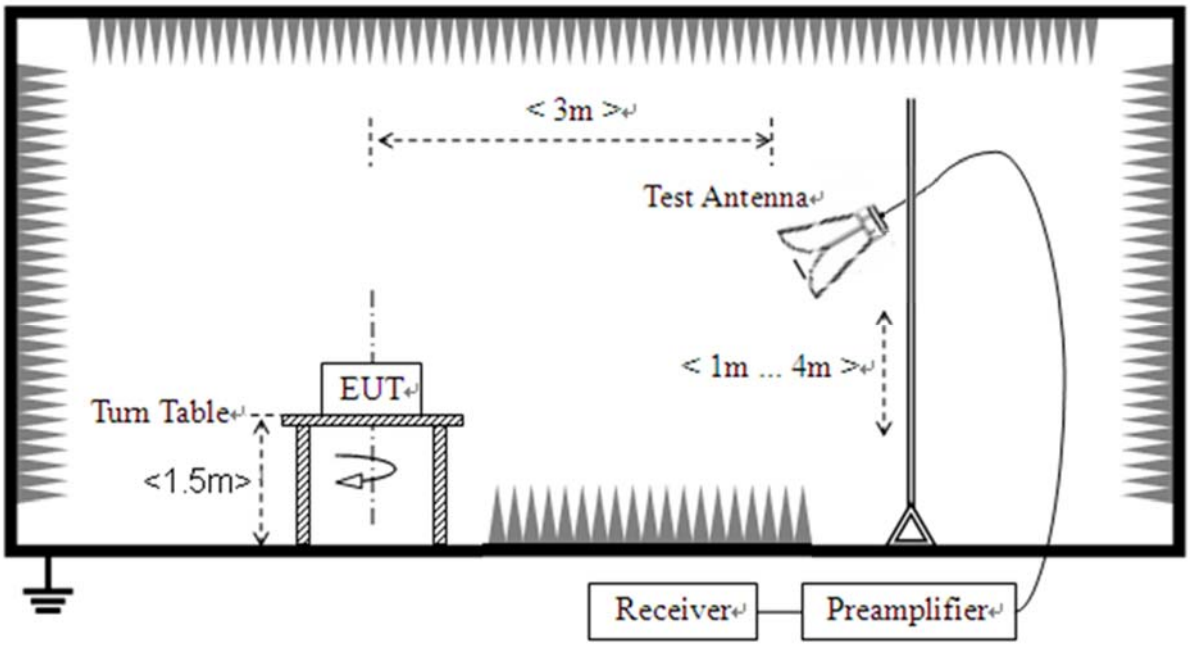
1) For radiated emissions from 9kHz to 30MHz



2) For radiated emissions from 30MHz to1GHz



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 3meters. 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:

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

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor AT and A_{Factor} were built in test software.

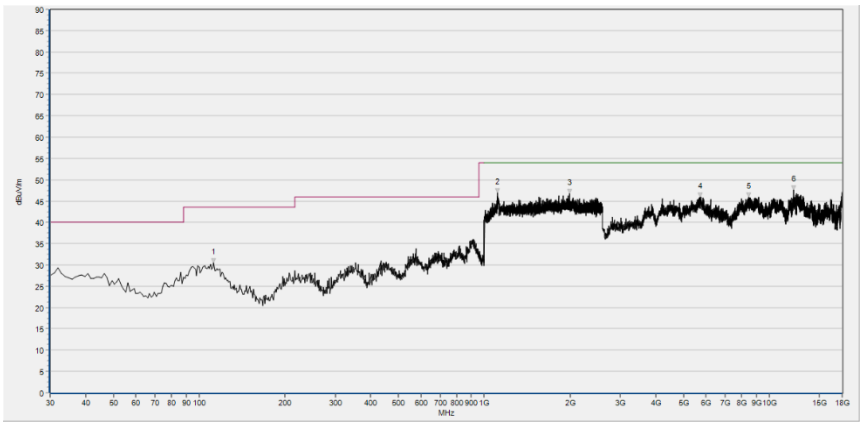
Note 1: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Note 2: 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.

Note 3: 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.

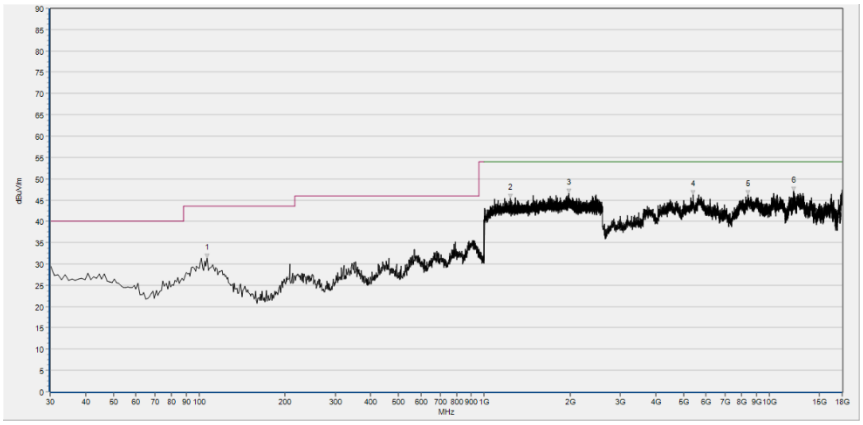
GFSK Mode

Plots 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
112.450	30.48	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1114.133	46.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1987.200	46.76	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5729.280	45.90	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8442.760	45.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12144.920	47.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

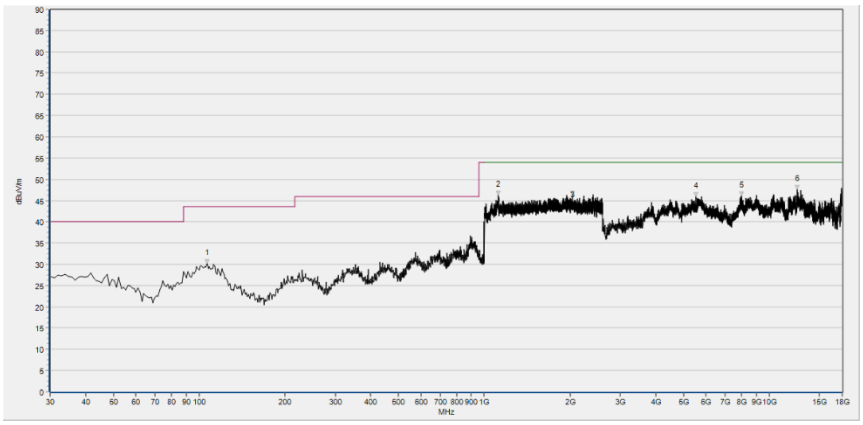
(Antenna Horizontal, 30MHz to 18GHz)



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
106.630	31.39	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1231.467	45.42	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1982.400	46.52	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5412.040	46.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8415.040	46.19	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12138.760	47.07	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

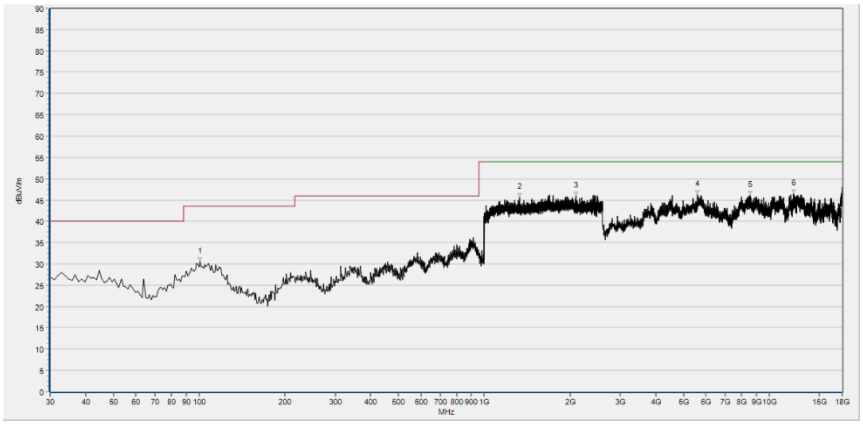
(Antenna Vertical, 30MHz to 18GHz)

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
106.630	30.09	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1122.133	46.28	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2041.067	46.21	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5516.760	46.00	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7974.600	46.11	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12539.160	47.65	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

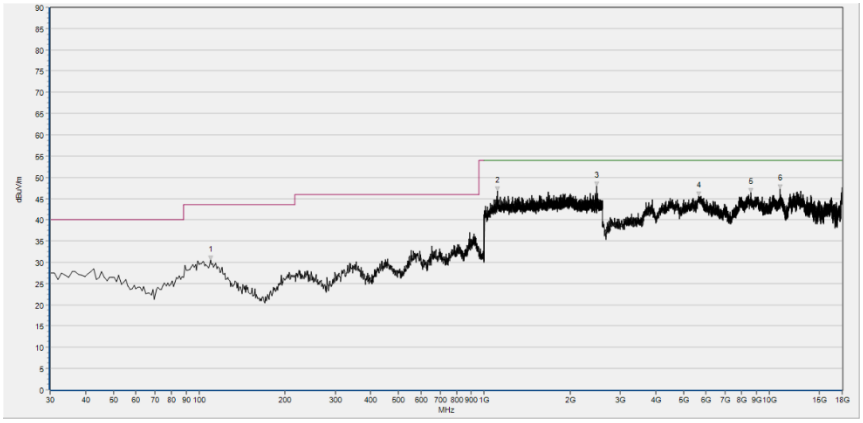
(Antenna Horizontal, 30MHz to 18GHz)



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
100.810	30.52	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1333.333	45.53	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2102.933	45.93	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5581.440	46.23	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8581.360	46.15	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12141.840	46.46	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

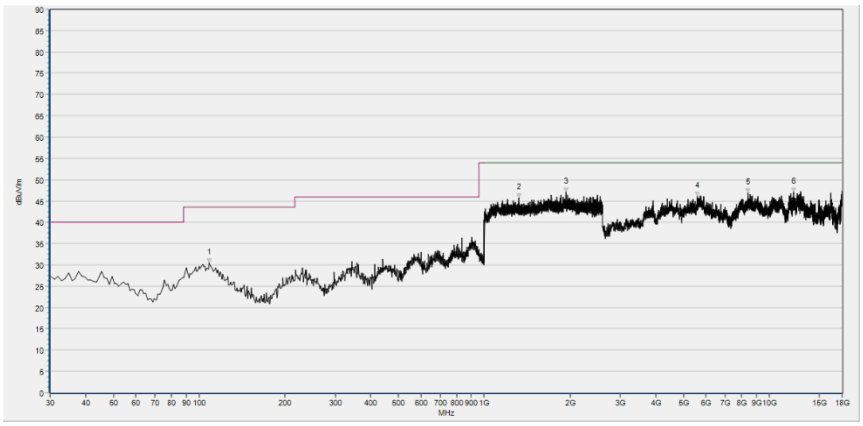
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 78



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	30.44	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1110.400	46.73	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
2480.000	47.95	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5661.520	45.55	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8630.640	46.35	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
10879.040	47.28	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

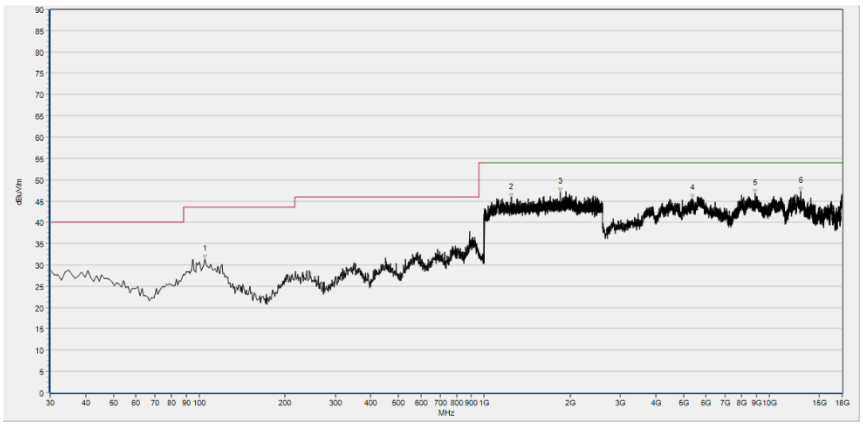


Fre. (MHz)	PK (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
108.570	30.55	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1319.467	45.82	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1930.133	47.07	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5587.600	46.11	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8424.280	46.95	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12191.120	47.10	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

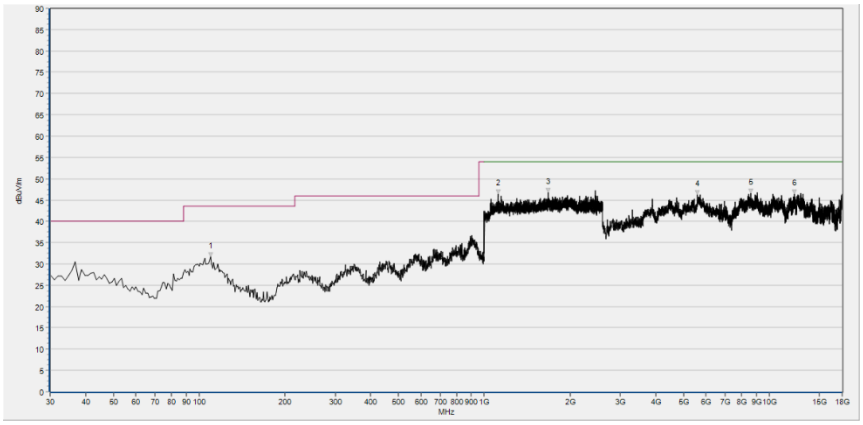
π/4-DQPSK Mode

Plots 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
104.690	31.33	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1244.800	45.79	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1850.133	47.09	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5359.680	45.57	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8923.240	46.71	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12905.680	47.30	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

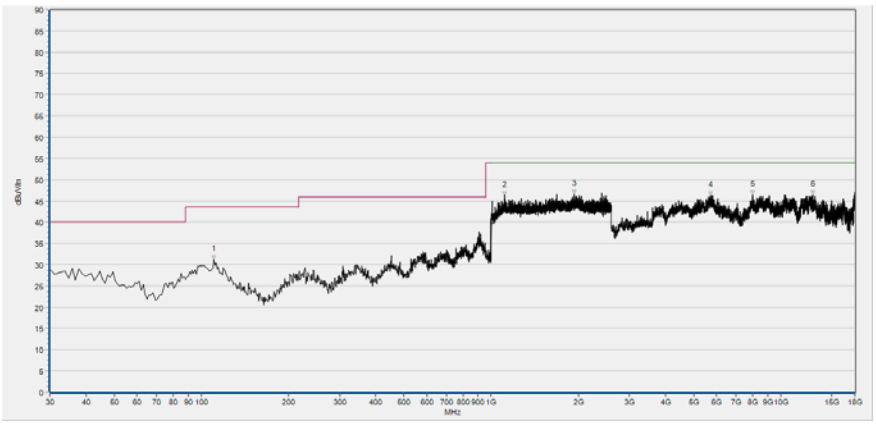
(Antenna Horizontal, 30MHz to 18GHz)



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	31.74	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1116.267	46.35	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1678.400	46.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5596.840	46.26	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8606.000	46.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12206.520	46.47	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

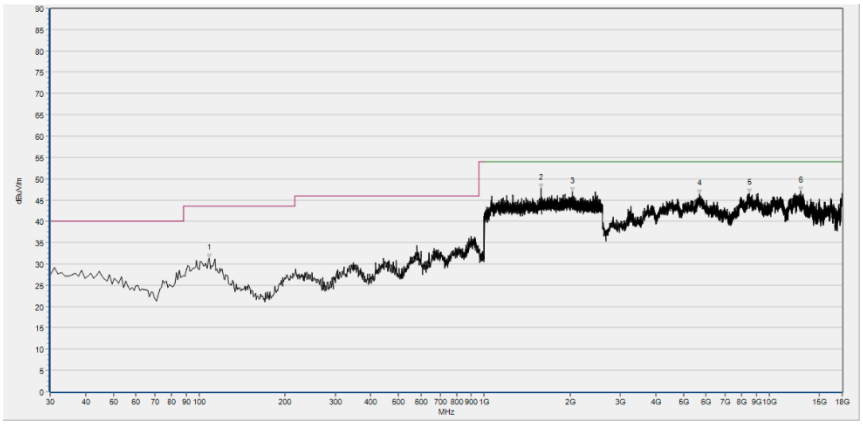
(Antenna Vertical, 30MHz to 18GHz)

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
110.510	31.17	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1111.467	46.25	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1937.067	46.54	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5716.960	46.22	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
7974.600	46.42	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12890.280	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

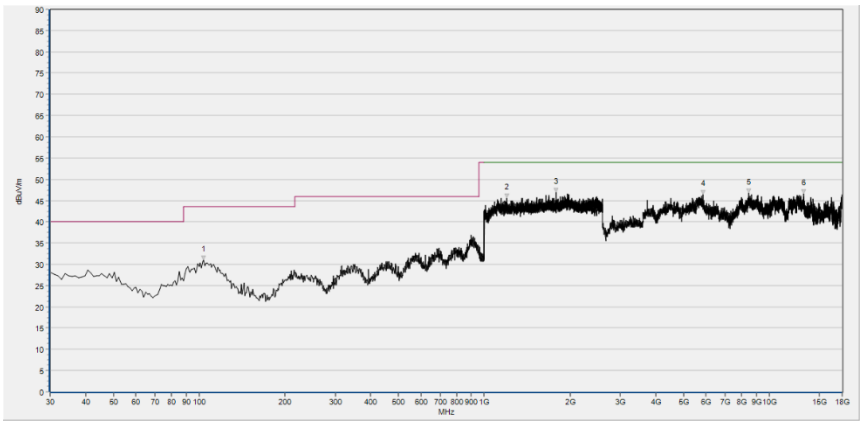
(Antenna Horizontal, 30MHz to 18GHz)



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
108.570	31.35	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1583.467	47.84	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2038.933	46.93	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5689.240	46.39	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8485.880	46.52	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12908.760	47.09	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

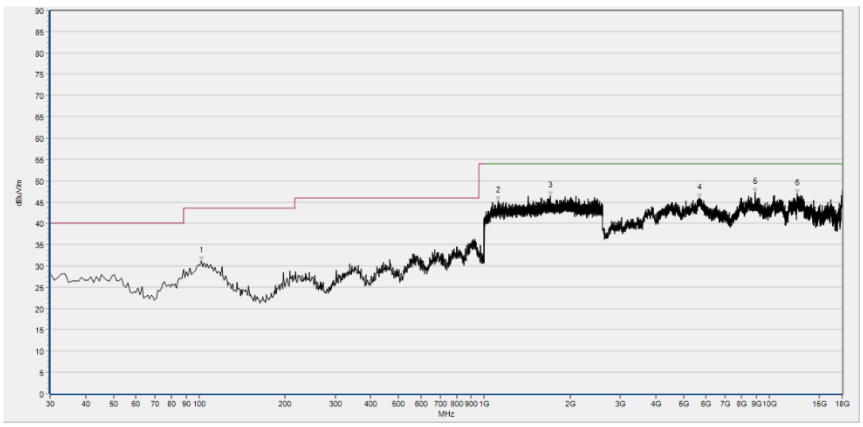
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 78



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	30.99	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1199.467	45.56	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1788.800	46.93	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5858.640	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8458.160	46.82	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
13185.960	46.64	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

(Antenna Horizontal, 30MHz to 18GHz)

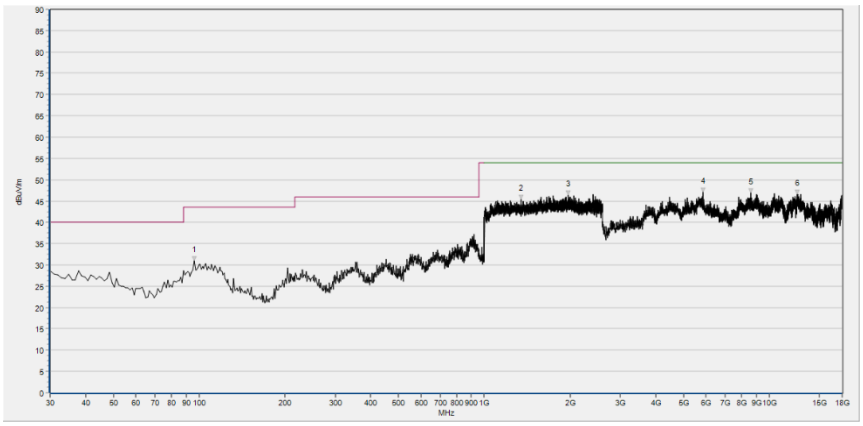


Fre. (MHz)	Pk (dBμV/m)	QP (dBμV/m)	AV (dBμV/m)	Limit-PK (dBμV/m)	Limit-QP (dBμV/m)	Limit-AV (dBμV/m)	Antenna	Verdict
101.780	31.14	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1116.267	45.31	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1707.733	46.41	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5683.080	45.94	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8898.600	47.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12526.840	46.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

(Antenna Vertical, 30MHz to 18GHz)

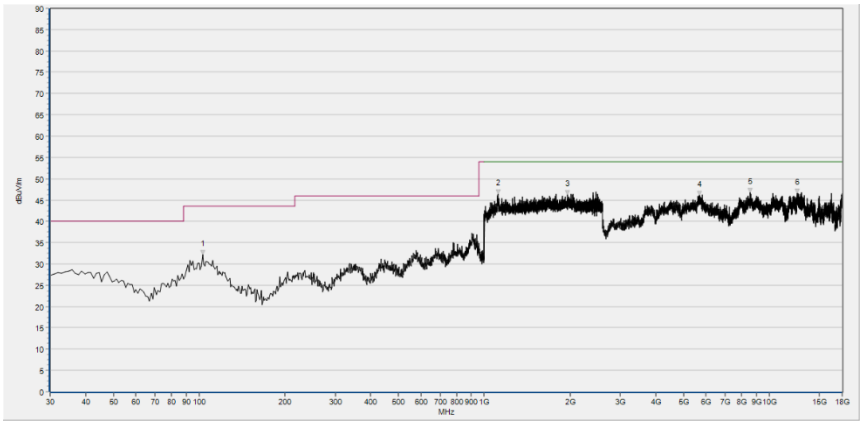
8-DPSK Mode

Plots 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
95.960	31.01	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1347.733	45.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1972.800	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5858.640	47.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8599.840	46.88	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12533.000	46.62	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

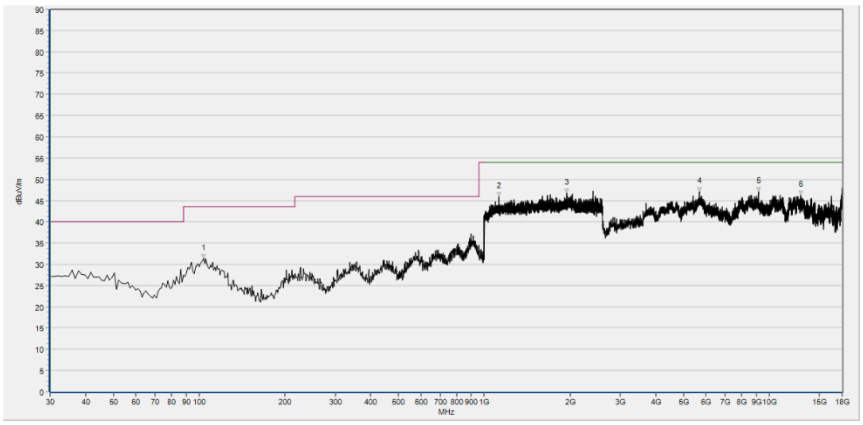
(Antenna Horizontal, 30MHz to 18GHz)



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
102.750	32.25	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1116.267	46.47	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1956.800	46.28	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5683.080	46.17	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8575.200	46.78	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12529.920	46.59	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

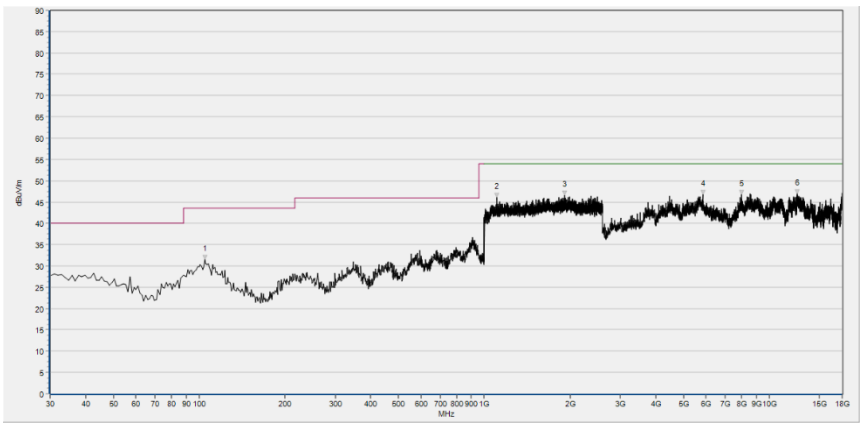
(Antenna Vertical, 30MHz to 18GHz)

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
103.720	31.39	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1123.733	45.86	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1948.800	46.80	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5670.760	47.05	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
9148.080	47.02	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12902.600	46.30	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS

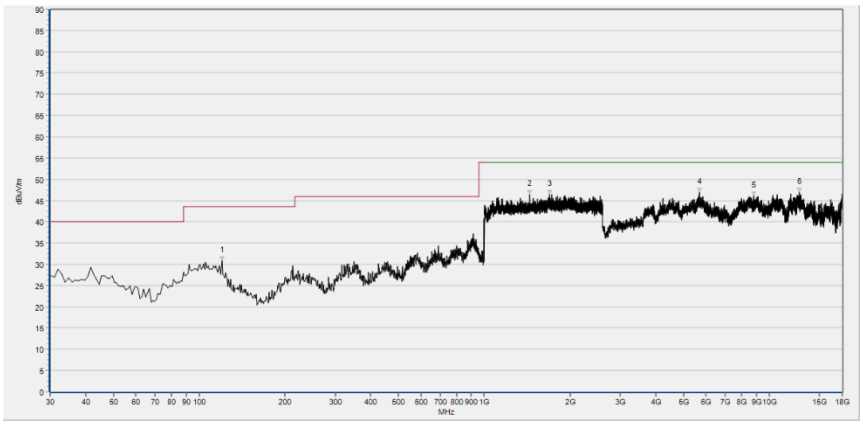
(Antenna Horizontal, 30MHz to 18GHz)



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
104.690	31.48	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1106.133	46.08	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
1909.333	46.63	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5837.080	46.76	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
7983.840	46.73	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
12511.440	47.00	N/A	N/A	74.00	N/A	54.00	Vertical	PASS

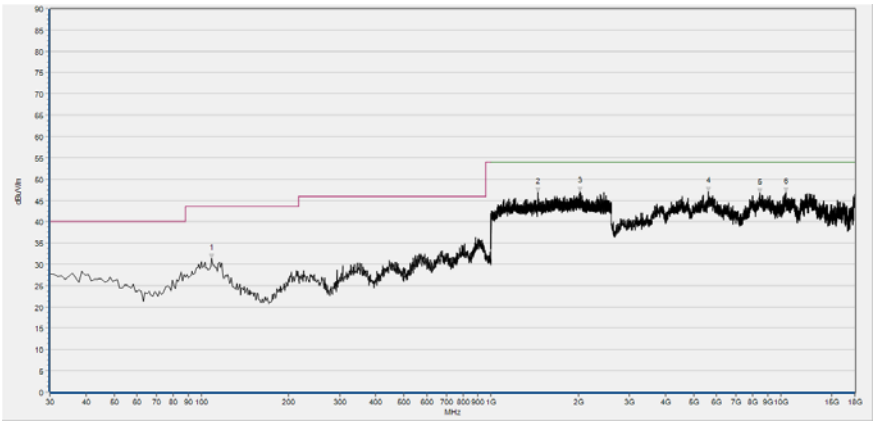
(Antenna Vertical, 30MHz to 18GHz)

Plot for Channel 78



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
120.210	30.87	N/A	N/A	N/A	43.50	N/A	Horizontal	PASS
1445.867	46.38	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
1692.800	46.50	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
5680.000	46.97	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
8815.440	46.10	N/A	N/A	74.00	N/A	54.00	Horizontal	PASS
12736.280	46.93	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	31.36	N/A	N/A	N/A	43.50	N/A	Vertical	PASS
1449.067	46.90	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
2027.733	47.13	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
5606.080	47.14	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
8476.640	46.72	N/A	N/A	74.00	N/A	54.00	Vertical	PASS
10413.960	47.01	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

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

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	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 C63.10-2013and 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	MY56400093	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