







TEST REPORT

GRGTEST

Verified code: 992121

Report No.:	E201910118649-1	Application No.:	E201910118649
Client:	Dalian Golden Hualu Digital Technology Co.,Ltd.		
Address:	No.1, Hua Road, High-Tech Zone, Dalian,Liaoning,116023,China		
Sample Description:	BT module		
Model:	BM78SPP05MC2		
Test Location:	GRG METROLOGY & TEST (SHENZHEN) CO., LTD		
Test Specification:	FCC 47 CFR Part 15 Subpart C		
Test Date:	2019/10/25 to 2020/01/07		
Issue Date:	2020/01/16		
Test Result:	Pass		
Prepared By: Test Engineer 	Reviewed By: Technical Manager 	Approved By: Manager  	
Other Aspects:			
Note: /			
Abbreviations: ok / P = passed; fail / F = failed; n.a. / N = not applicable;			
The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.			

DIRECTIONS OF TEST

1. This company carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.
2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.
3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

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1. TEST RESULT SUMMARY

FCC 47 CFR Part 15 Subpart C			
Standard	Item	Limit / Severity	Result
FCC Part 15, Subpart C (15.247)	Antenna Requirement	Section 15.203	PASS
	20dB Bandwidth	Section 15.247(a)(1)	PASS
	Carrier Frequencies Separated	Section 15.247(a)(1)	PASS
	Hopping Channel Number	Section 15.247(a)(1)(ii)	PASS
	Dwell Time	Section 15.247(a)(1)(iii)	PASS
	Maximum Peak Output Power	Section 15.247(b)(1)	PASS
	Conducted Emission	Section 15.207	PASS
	Conducted band edges and Spurious Emission (30MHz to 25GHz)	Section 15.209 & 15.247(d)	PASS
	Radiated Spurious Emission (30MHz to 25GHz)	Section 15.209 & 15.247(d)	PASS
	Restricted bands of operation	Section 15.247 (d) & 15.205	PASS

2. GENERAL DESCRIPTION OF EUT

2.1. APPLICANT

Name: Dalian Golden Hualu Digital Technology Co.,Ltd.
Address: No.1, Hua Road, High-Tech Zone, Dalian,Liaoning,116023,China

2.2. MANUFACTURER

Name: Dalian Golden Hualu Digital Technology Co.,Ltd.
Address: No.1, Hua Road, High-Tech Zone, Dalian,Liaoning,116023,China

2.3. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment: BT module
Model No.: BM78SPP05MC2
Adding Model: /
FCC ID: 2ADKJ-BM78MC2
Trade Name: /
Power supply: DC 3.3V-4.2V supplied by battery or DC5V supplied by adapter
Frequency Range: 2402MHz~2480MHz
Transmit Power: GFSK: 2.06dBm
 $\pi/4$ -DQPSK: 2.03dBm
8DPSK: 2.48dBm
Type of Modulation: FHSS (GFSK for 1Mbps, $\pi/4$ -DQPSK for 2Mbps,8DPSK for 3Mbps)
Antenna Specification: Internal antenna with 2dBi gain (Max)
Temperature Range: -20 °C ~+70 °C
Hardware Version: 1.0
Software Version: 1.36
I/O Port: /
Note: /

2.4. TEST OPERATION MODE

Test Item	Mode No.	Description of the modes
Conducted Emission	1	Continuously Transmitting
Radiated Emission	1	Continuously Transmitting

2.5. LOCAL SUPPORTIVE

Name of Equipment	Manufacturer	Model	Serial Number	Note
Notebook	LENOVO	Lenovo Tian Yi 310-14ISK	MP18DLC6	/
Adapter (Notebook)	LENOVO	ADLX65NCC3A	N/A	/
Adapter	APPLE	A1443	/	/
Cable				
AC Cable	/	/	/	Unshielded 1.00m
DC Cable	/	/	/	Shielded 1.80m
DC Cable	/	/	/	Unshielded 1.00m

Test software:

Software version	Test level
ISRT_V2.1.32.5881	/

3. LABORATORY AND ACCREDITATIONS

3.1. LABORATORY

The tests and measurements refer to this report were performed by EMC Laboratory of GRG METROLOGY & TEST (SHENZHEN) CO., LTD

Add.: No. 1301, Guanguang Road, Xinlan Community, Guanlan Street, Longhua District, Shenzhen, 518110, People's Republic of China

Telephone: +86-755-61180008

Fax: /

3.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies.

A2LA	Certificate Number 2861.01
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3.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Uncertainty
Radiated Emission, 30 to 200 MHz Test Site : 966(2)	+/-3.6880dB
Radiated Emission, 200 to 1000 MHz Test Site : 966(2)	+/-3.6695dB
Radiated Emission, 1 to 8 GHz	+/-5.1782dB
Radiated Emission, 8 to 18 GHz	+/-5.2173dB
Conducted Emissions	+/-3.6836dB
Band Width	178kHz
Peak Output Power MU	+/-1.906dB
Band Edge MU	+/-0.182dB
Channel Separation MU	416.178Hz
Duty Cycle MU	0.054ms
Frequency Stability MU	226Hz

This uncertainty represents an expanded uncertainty factor of $k=2$.

4. LIST OF USED TEST EQUIPMENT AT GREGT

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Conducted Emissions				
RECEIVER	ROHDE&SCHWARTZ	ESCI	100783	2020/01/09
LISN(EUT)	ROHDE&SCHWARTZ	ENV216	101543	2020/03/05
Hopping Channel Number				
Spectrum Analyzer	Agilent	N9020A	MY50510140	2020/10/24
Dwell Time				
Spectrum Analyzer	Agilent	N9020A	MY50510140	2020/10/24
Radiated Spurious Emission & Restricted bands of operation				
Spectrum Analyzer	Agilent	N9010A	MY52221469	2020/01/10
Receiver	ROHDE&SCHWARTZ	ESCI	100783	2020/01/09
Bilog Antenna	Schwarzbeck	VULB 9160	9160-3401	2020/11/27
Horn Antenna	Schwarzbeck	BBHA9120	D286	2020/11/27
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	2020/01/15
Amplifier	EM Electronics Corporation	EM330	N/A	2020/04/12
Amplifier	Agilent	8449B	3008A02060	2020/11/18
20 dB Bandwidth				
Spectrum Analyzer	Agilent	N9020A	MY50510140	2020/10/24
Maximum Peak Output Power				
Pulse Power Sensor	Agilent	MA2411B	1126150	2020/04/24
Power Meter	Anritsu	ML2495A	1204003	2020/04/24
Conducted band edges and Spurious Emission				
Spectrum Analyzer	Agilent	N9020A	MY50510140	2020/10/24
Carrier Frequencies Separated				
Spectrum Analyzer	Agilent	N9020A	MY50510140	2020/10/24

5. TEST RESULTS

5.1. E.U.T. TEST CONDITIONS

Type of antenna: Internal

Test frequencies: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

the range	Frequency range over which device operates	Number of frequencies	Location in of operation
Middle near top and 1 near bottom near middle and 1 near bottom	1 MHz or less	1	
	1 to 10 MHz	2	1
	More than 10 MHz	3	1 near top. 1

EUT channels and frequencies list:

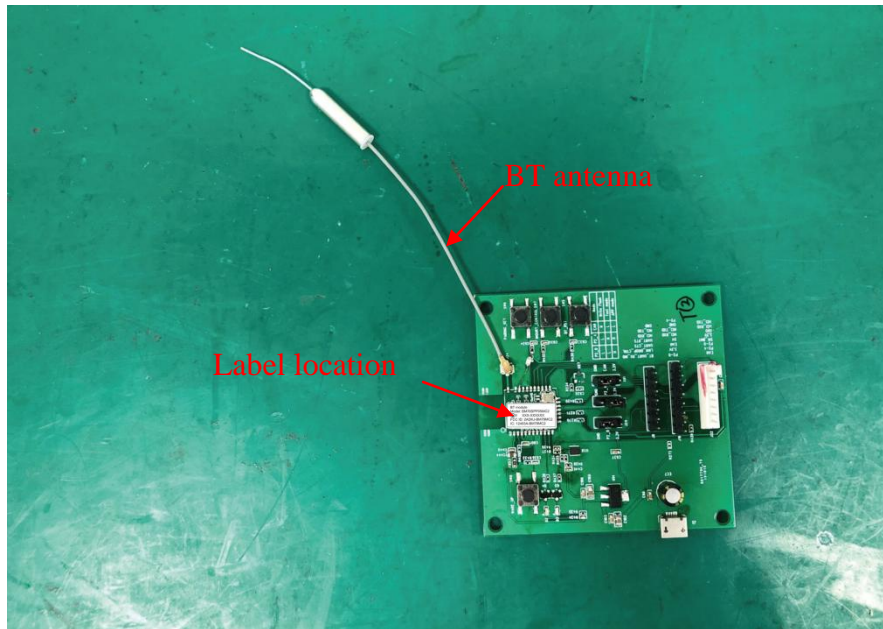
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2416	28	2430
1	2403	15	2417	29	2431
2	2404	16	2418	30	2432
3	2405	17	2419	31	2433
4	2406	18	2420	32	2434
5	2407	19	2421	33	2435
6	2408	20	2422	34	2436
7	2409	21	2423	35	2437
8	2410	22	2424	36	2438
9	2411	23	2425	37	2439
10	2412	24	2426	38	2440
11	2413	25	2427	39	2441
12	2414	26	2428	40	2442
13	2415	27	2429	41	2443

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	2444	55	2457	68	2470
43	2445	56	2458	69	2471
44	2446	57	2459	70	2472
45	2447	58	2460	71	2473
46	2448	59	2461	72	2474
47	2449	60	2462	73	2475
48	2450	61	2463	74	2476
49	2451	62	2464	75	2477
50	2452	63	2465	76	2478
51	2453	64	2466	77	2479
52	2454	65	2467	78	2480
53	2455	66	2468		
54	2456	67	2469		

Test frequency is the lowest channel: 0 channel(2402MHz), middle channel: 39 channel(2441MHz) and highest channel: 78 channel(2480MHz)

5.2. ANTENNA REQUIREMENT

The EUT antenna is internal antenna. Max Antenna gain is 2dBi .which accordance 15.203.is considered sufficient to comply with the provisions of this section



5.3. 20dB BANDWIDTH

5.3.1. LIMITS

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

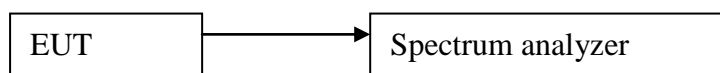
5.3.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- 2) Set the spectrum analyzer as RBW=30 kHz, VBW=100 kHz, Span=3MHz, Sweep = auto. Allow the trace to stabilize, record 20dB bandwidth value
- 3) Repeat until all the test channels are investigated.

Remark:

Pre-test the 3 modulation to find GFSK and 8DPSK is worse case, so only record GFSK and 8DPSK test data.

5.3.3. TEST SETUP



5.3.4. TEST RESULTS

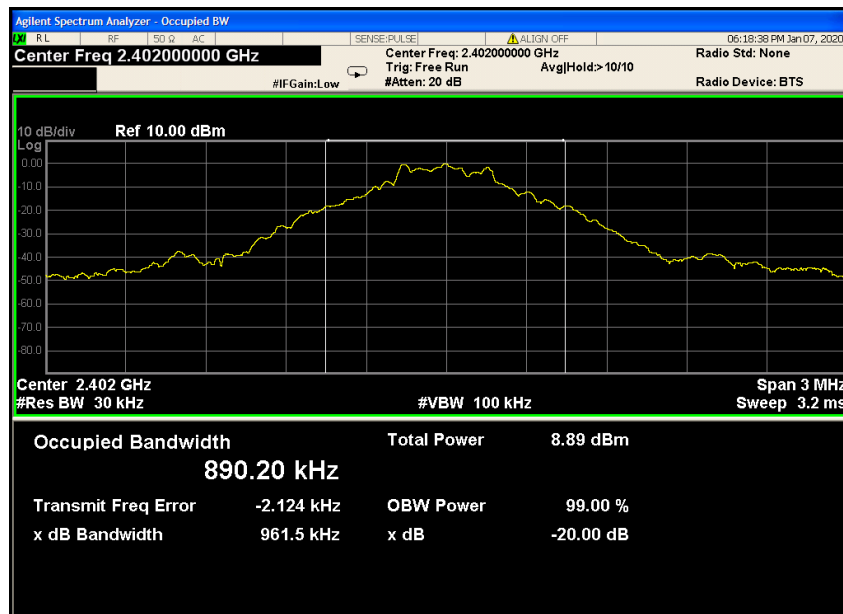
Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
GFSK	Low	2402	961.5
	Mid	2441	995.5
	High	2480	956.5

Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
8DPSK	Low	2402	1270
	Mid	2441	1267
	High	2480	1260

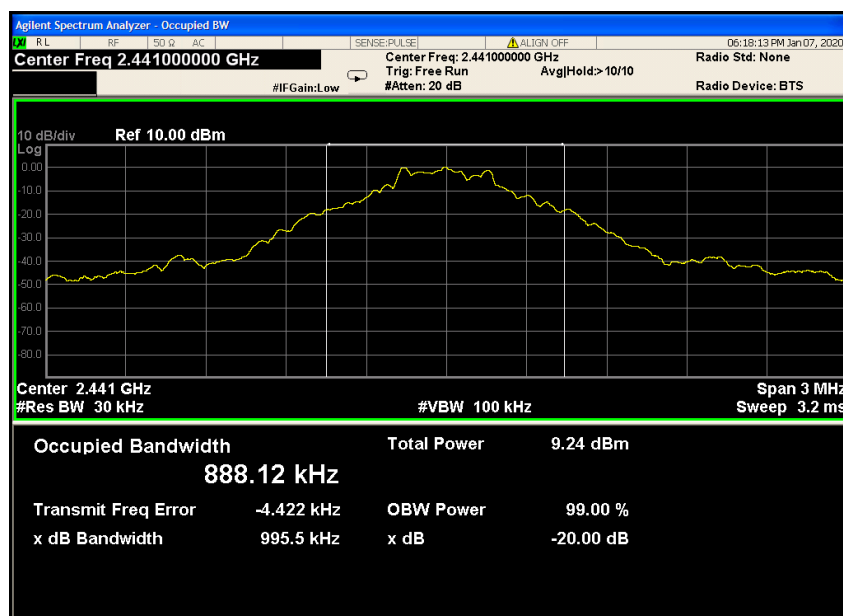
Result plot as follows:

GFSK

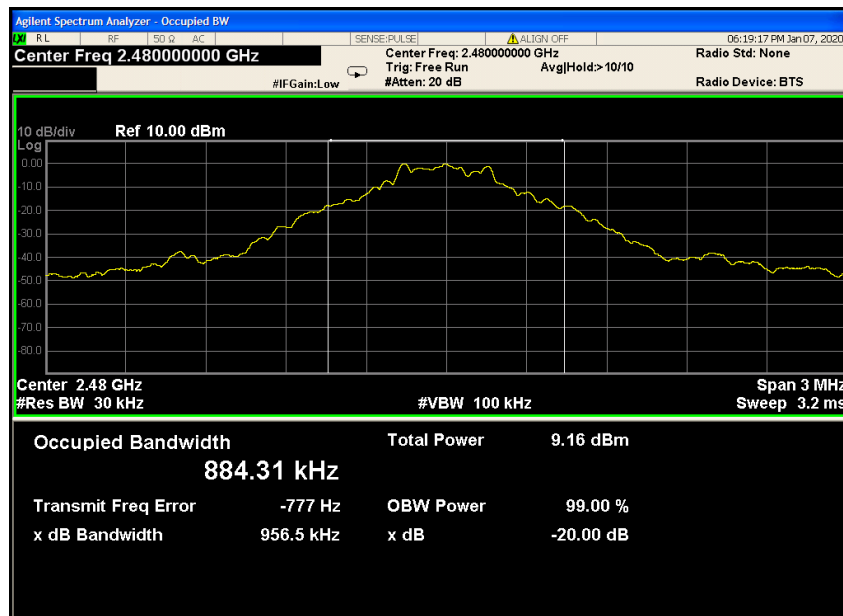
Low Channel



Mid Channel

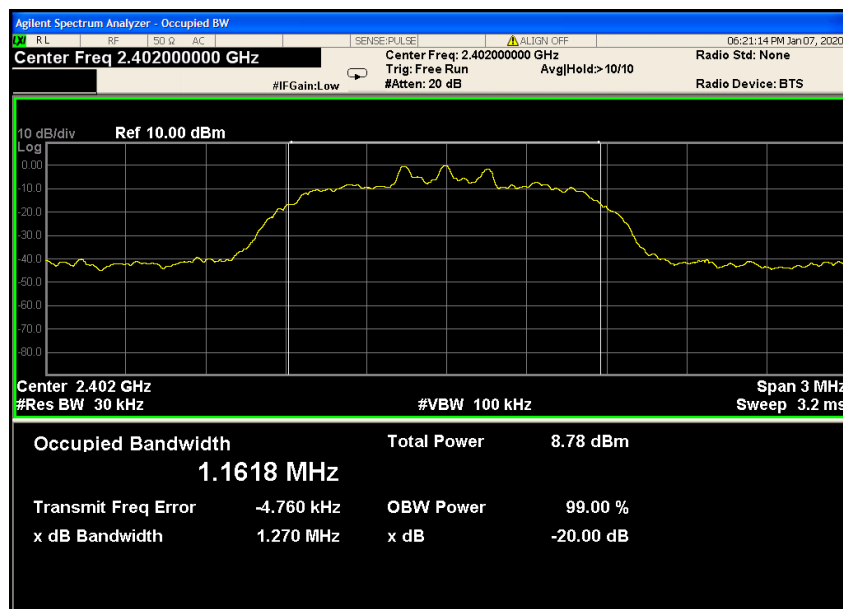


High Channel

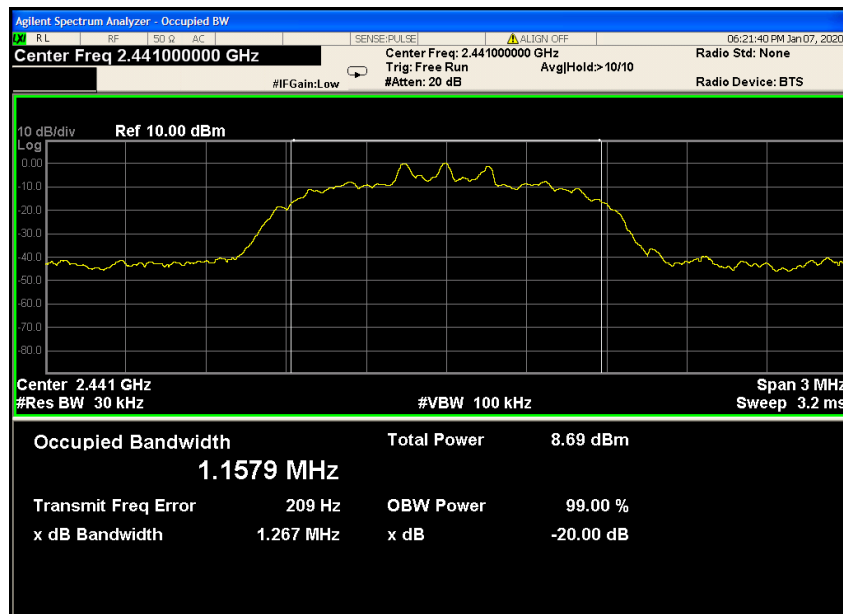


8DPSK

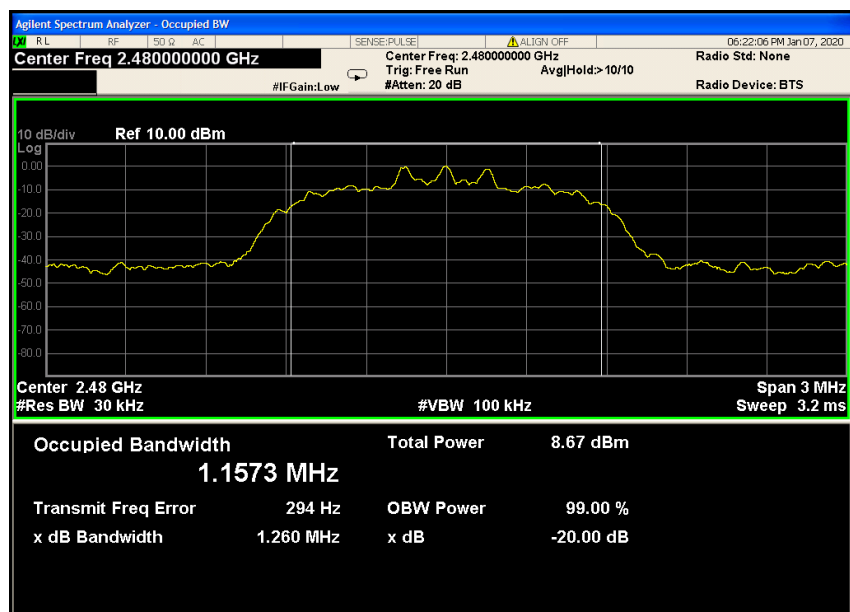
Low Channel



Mid Channel



High Channel



5.4. CARRIER FREQUENCIES SEPARATED

5.4.1. LIMITS

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

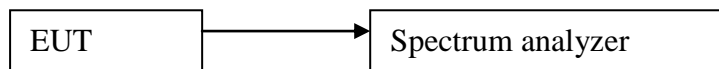
5.4.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2) Set center frequency of spectrum analyzer = middle of hopping channel.
- 3) Set the spectrum analyzer as RBW=30kHz, VBW=30kHz, Adjust Span to 3 MHz, Sweep = auto
- 4) Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

Remark :

Pre-test the 3 modulation to find GFSK and 8DPSK is worse case, so only record GFSK and 8DPSK test data.

5.4.3. TEST SETUP



5.4.4. TEST RESULTS

GFSK

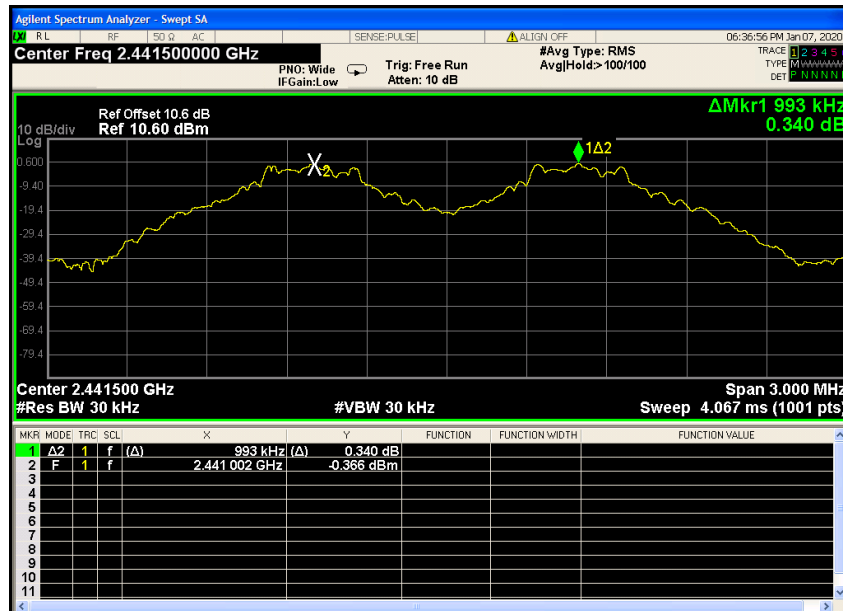
Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.000	663.667	> Two-thirds of the 20 dB Bandwidth	Pass

8DPSK

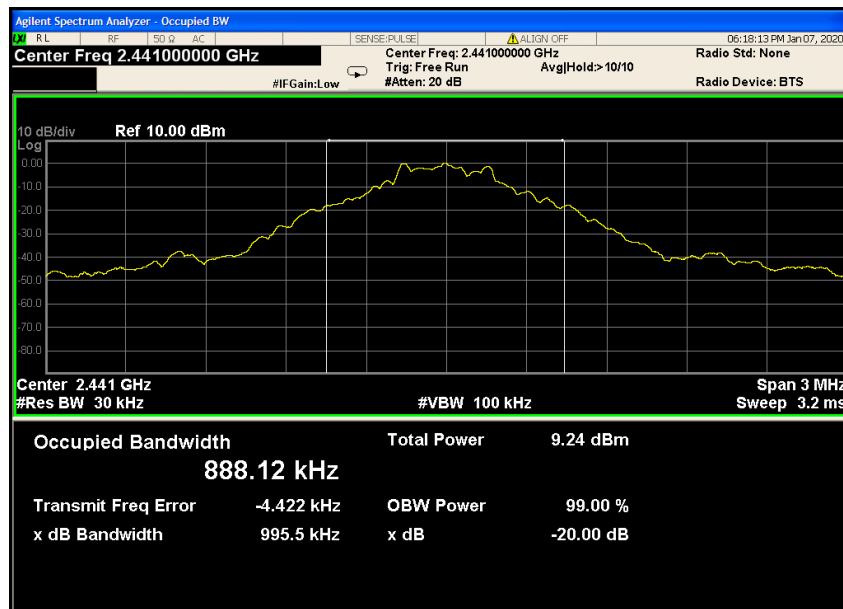
Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.000	846.667	> Two-thirds of the 20 dB Bandwidth	Pass

Result plot as follows:

GFSK Measurement of Channel Separation

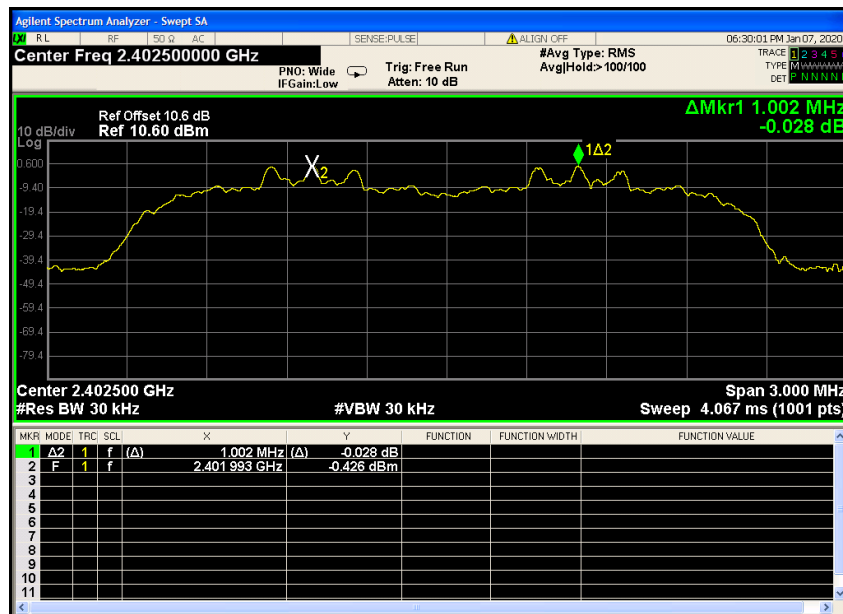


20 dB bandwidth(CH Mid)

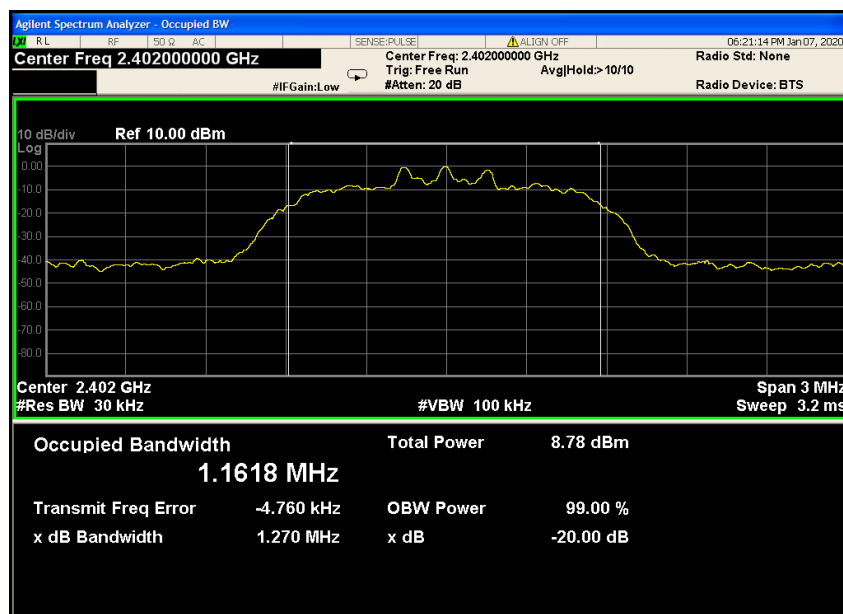


8DPSK

Measurement of Channel Separation



20 dB bandwidth(CH Low)



Test result: The unit does meet the FCC requirements.

5.5. HOPPING CHANNEL NUMBER

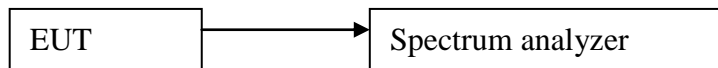
5.5.1. LIMITS

Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

5.5.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2) Set the spectrum analyzer as RBW, VBW=300kHz,
- 3) Set the spectrum analyzer: start frequency = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

5.5.3. TEST SETUP



5.5.4. TEST RESULTS

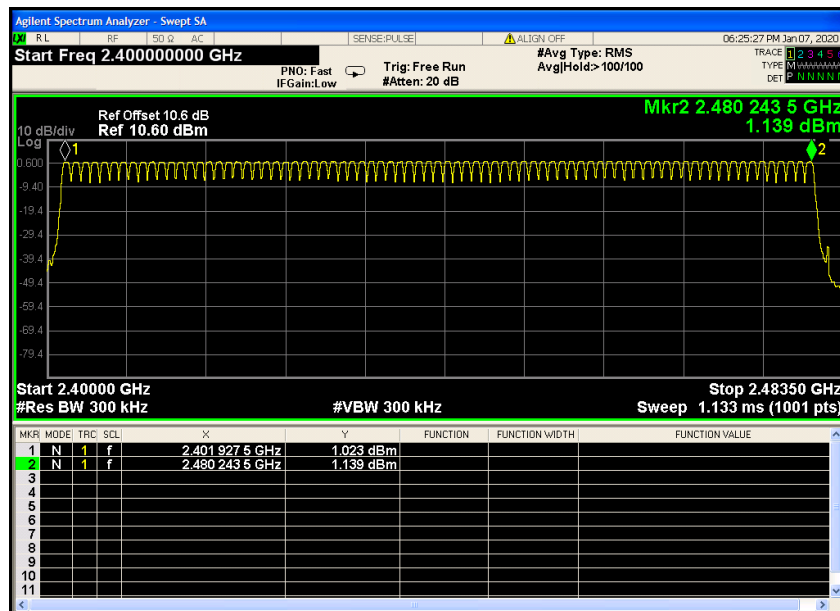
Test result

Result (No. of CH)	Limit (No. of CH)	Result
79	>15	PASS

Result plot as follows:

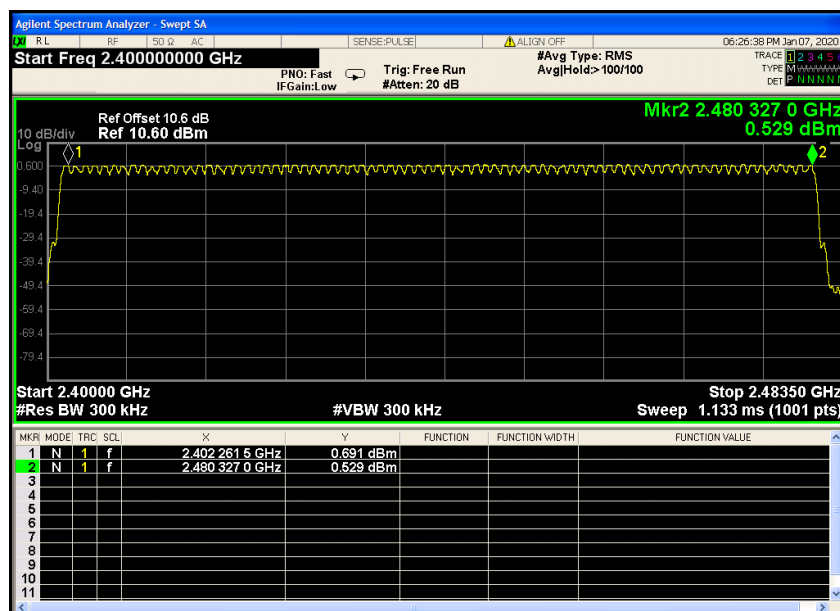
GFSK

2.400 GHz – 2.4835 GHz



8DPSK

2.400 GHz – 2.4835 GHz



Test result: The unit does meet the FCC requirements.

5.6. DWELL TIME

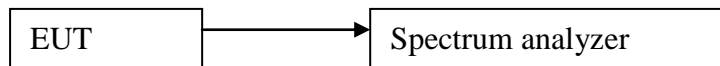
5.6.1. LIMITS

Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

5.6.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2) Set spectrum analyzer span = 0. centered on a hopping channel;
- 3) Set RBW = 1MHz and VBW = 3MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Detector Function = Peak. Trace = Max hold;
- 4) Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.). Repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

5.6.3. TEST SETUP



5.6.4. TEST RESULTS

The test period: $T = 0.4 \text{ Second/Channel} \times 79 \text{ Channel} = 31.6 \text{ s}$

GFSK: Mid Channel (2.441GHz)

DH1	time slot=	0.412	(ms)*	$(1600/(2*79))$	*	31.6	=	131.84	ms
DH3	time slot=	1.680	(ms)*	$(1600/(4*79))$	*	31.6	=	268.8	ms
DH5	time slot=	2.952	(ms)*	$(1600/(6*79))$	*	31.6	=	314.88	ms

8DPSK: Mid Channel (2.441GHz)

3DH1	time slot=	0.410	(ms)*	$(1600/(2*79))$	*	31.6	=	131.2	ms
3DH3	time slot=	1.704	(ms)*	$(1600/(4*79))$	*	31.6	=	272.64	ms
3DH5	time slot=	2.936	(ms)*	$(1600/(6*79))$	*	31.6	=	313.17	ms

The results are not greater than 0.4 seconds.

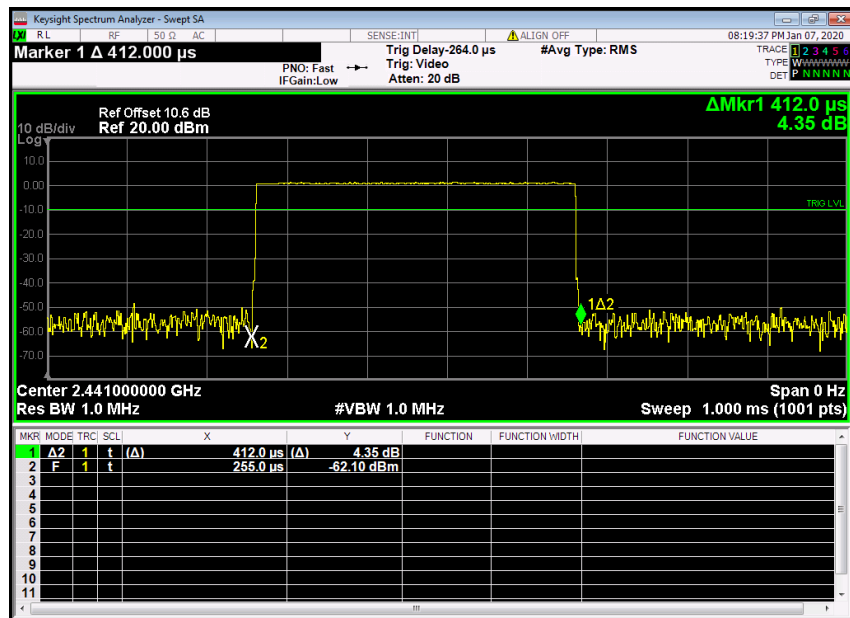
The unit does meet the requirements.

Please refer the graph as below:

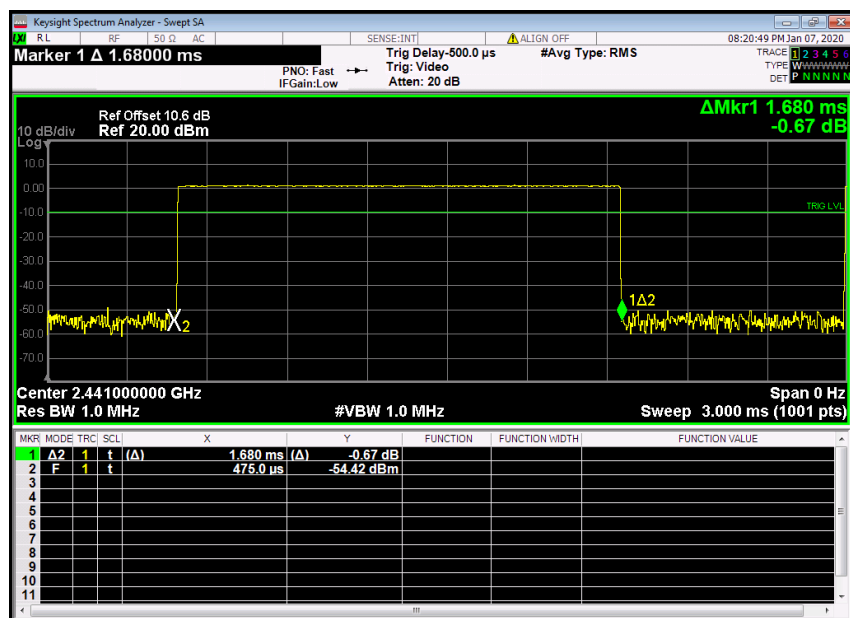
GFSK

Mid Channel (2.441GHz)

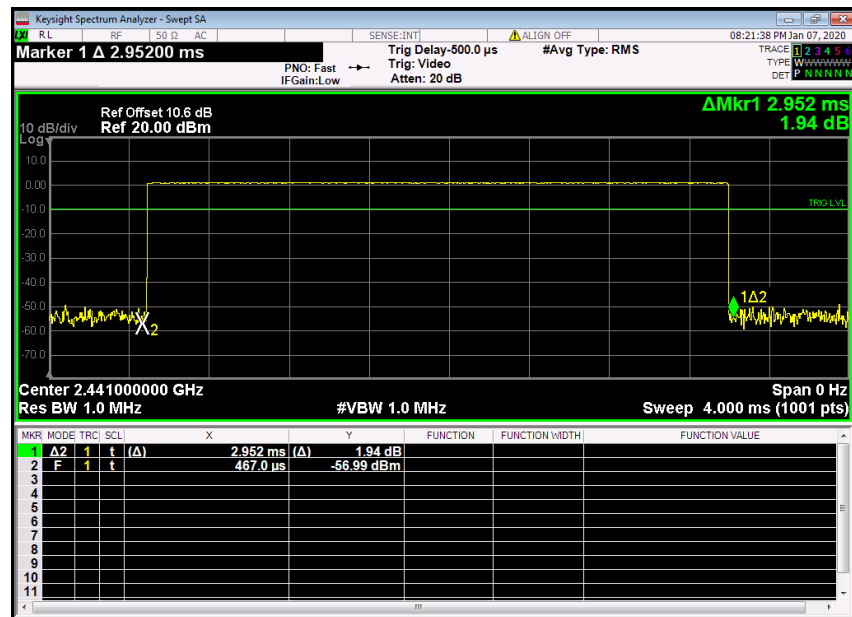
DH1



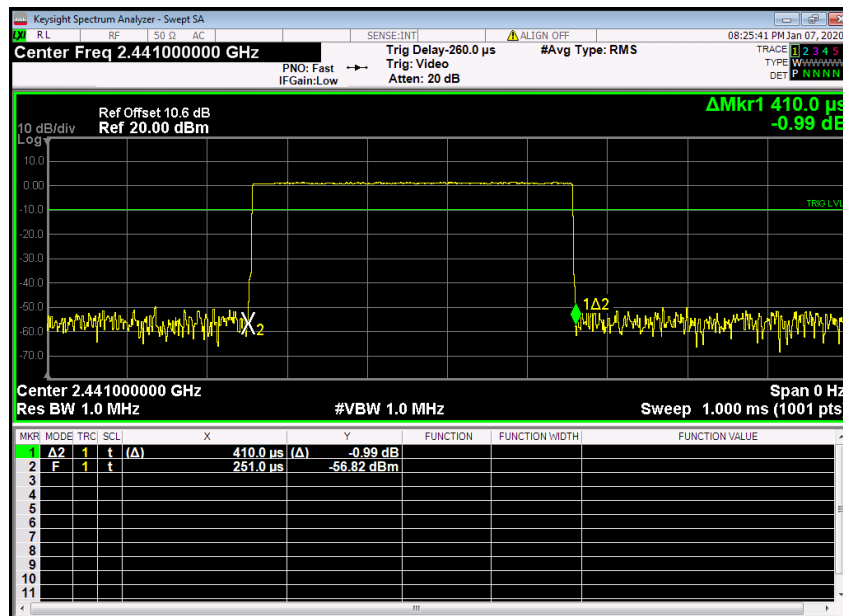
DH3



DH5



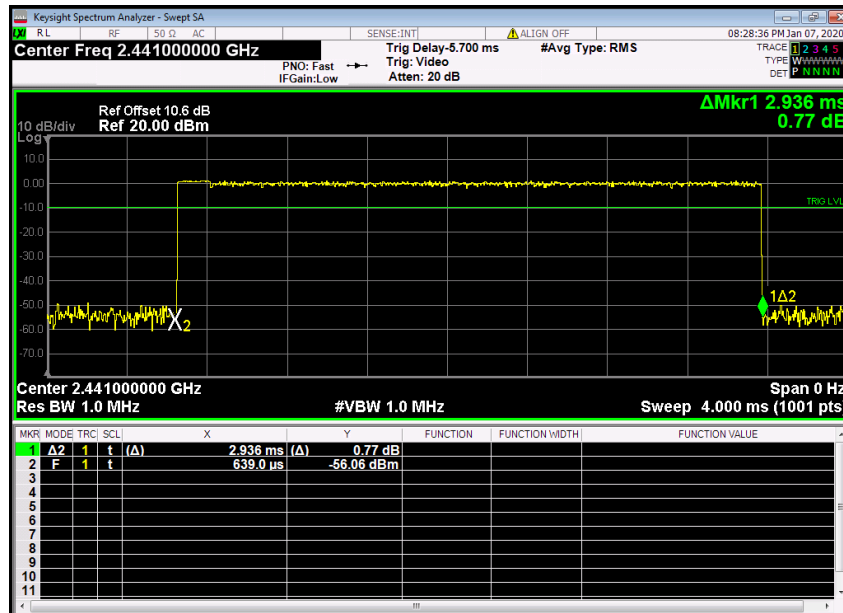
8DPSK
Mid Channel (2.441GHz)
3DH1



3DH3



3DH5



5.7. CONDUCTED EMISSION MEASUREMENT

5.7.1. LIMITS

Frequency range	Limits (dB μ V)	
	Quasi-peak	Average
150kHz \sim 0.5MHz	66 \sim 56	56 \sim 46
0.5 MHz \sim 5 MHz	56	46
5 MHz \sim 30 MHz	60	50

5.7.2. TEST PROCEDURES

Procedure of Preliminary Test

For measurement of the disturbance voltage the equipment under test (EUT) is connected to the power supply mains and any other extended network via one or more artificial network(s). An EUT, whether intended to be grounded or not, and which is to be used on a table is configured as follows:

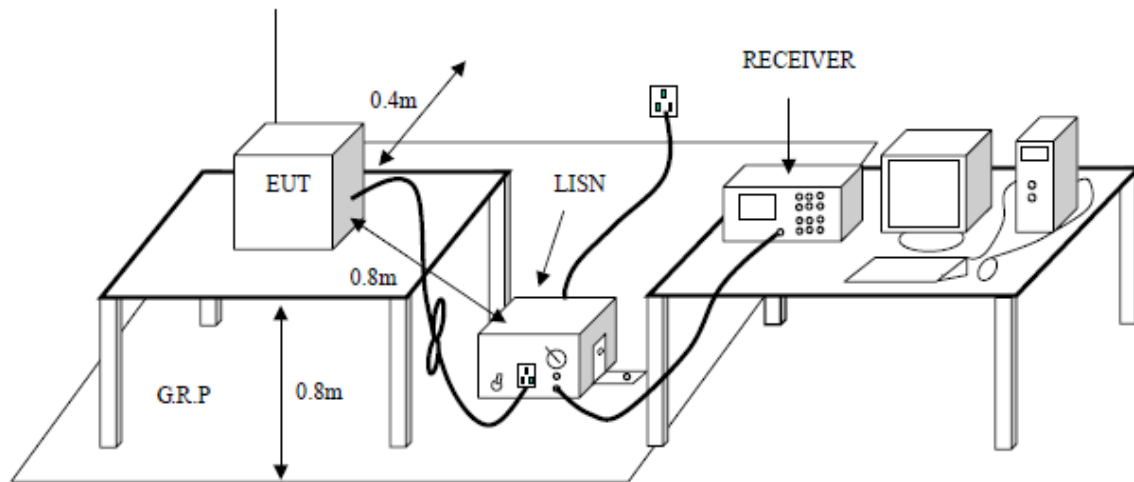
- Either the bottom or the rear of the EUT shall be at a controlled distance of 40 cm from a reference ground plane. This ground plane is normally the wall or floor of a shielded room. It may also be a grounded metal plane of at least 2 m by 2 m. This is physically accomplished as follows:
 - 1) Place the EUT on a table of non-conducting material which is at least 80 cm high. Place the EUT so that it is 40 cm from the wall of the shielded room, or
 - 2) place the EUT on a table of non-conducting material which is 40 cm high so that the bottom of the EUT is 40 cm above the ground plane;
- All other conductive surfaces of the EUT shall be at least 80 cm from the reference ground plane;
- The EUT are placed on the floor that one side of the housings is 40 cm from the vertical reference ground plane and other metallic parts;
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth forming a bundle 30 cm to 40 cm long, hanging approximately in the middle between the ground plane and the table.
- I/O cables that are connected to a peripheral shall be bundled in the centre. The end of the cable may be terminated if required using correct terminating impedance. The total length shall not exceed 1 m.

The test mode(s) described in Item 2.4 were scanned during the preliminary test. After the preliminary scan, we found the test mode described in Item 2.4 producing the highest emission level. The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

Procedure of Final Test

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test. A scan was taken on both power lines, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. The test data of the worst-case condition(s) was recorded.

5.7.3. TEST SETUP



5.7.4. DATA SAMPLE

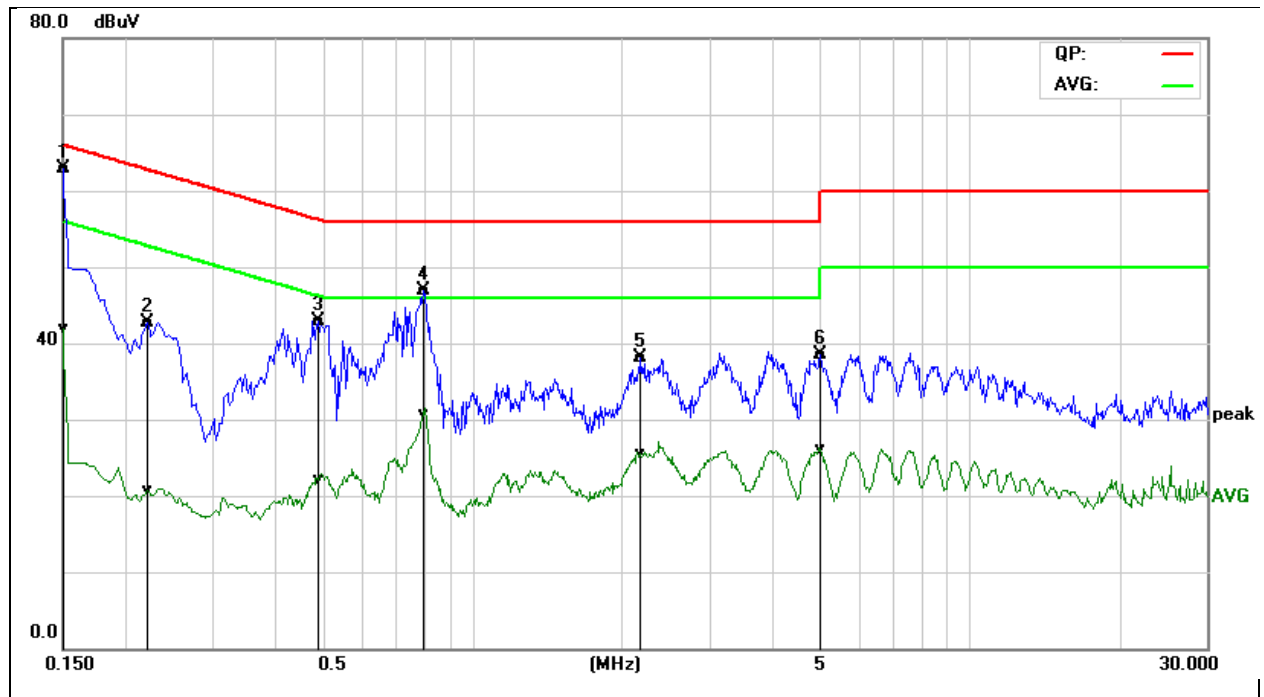
Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss
 Result = Quasi-peak Reading/ Average Reading + Factor
 Limit = Limit stated in standard
 Margin = Result (dBuV) – Limit (dBuV)

5.7.5. TEST RESULTS

Model No.	BM78SPP05MC2	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested By	Zhu Yulin	Line	L
Tested Date	2019/10/31	Test Voltage	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)

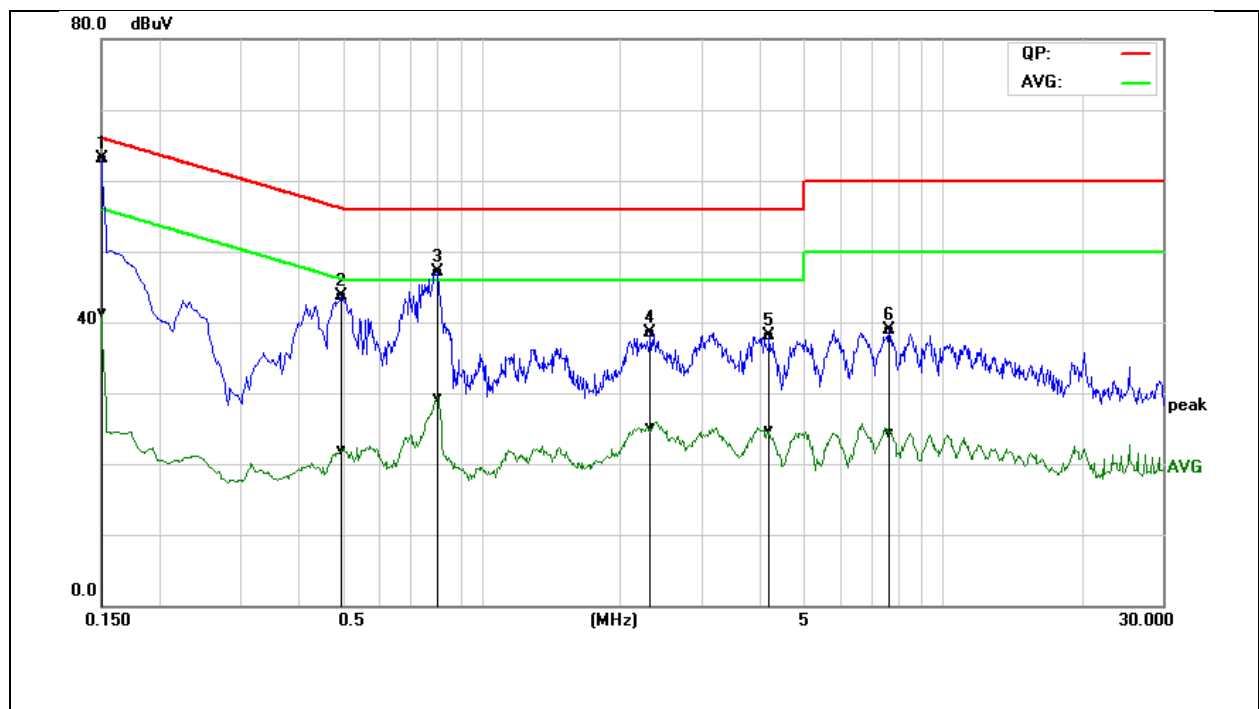


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1500	42.97	22.10	19.88	62.85	41.98	65.99	56.00	-3.14	-14.02	Pass
0.2220	22.87	0.77	19.86	42.73	20.63	62.74	52.74	-20.01	-32.11	Pass
0.4900	23.15	2.24	19.82	42.97	22.06	56.17	46.17	-13.20	-24.11	Pass
0.7980	26.98	10.79	19.88	46.86	30.67	56.00	46.00	-9.14	-15.33	Pass
2.1820	18.23	5.60	19.92	38.15	25.52	56.00	46.00	-17.85	-20.48	Pass
5.0060	18.56	6.08	19.93	38.49	26.01	60.00	50.00	-21.51	-23.99	Pass

REMARKS: L = Live Line

Model No.	BM78SPP05MC2	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested By	Zhu Yulin	Line	N
Tested Date	2019/10/31	Test Voltage	AC120V/60Hz

(The chart below shows the highest readings taken from the final data.)

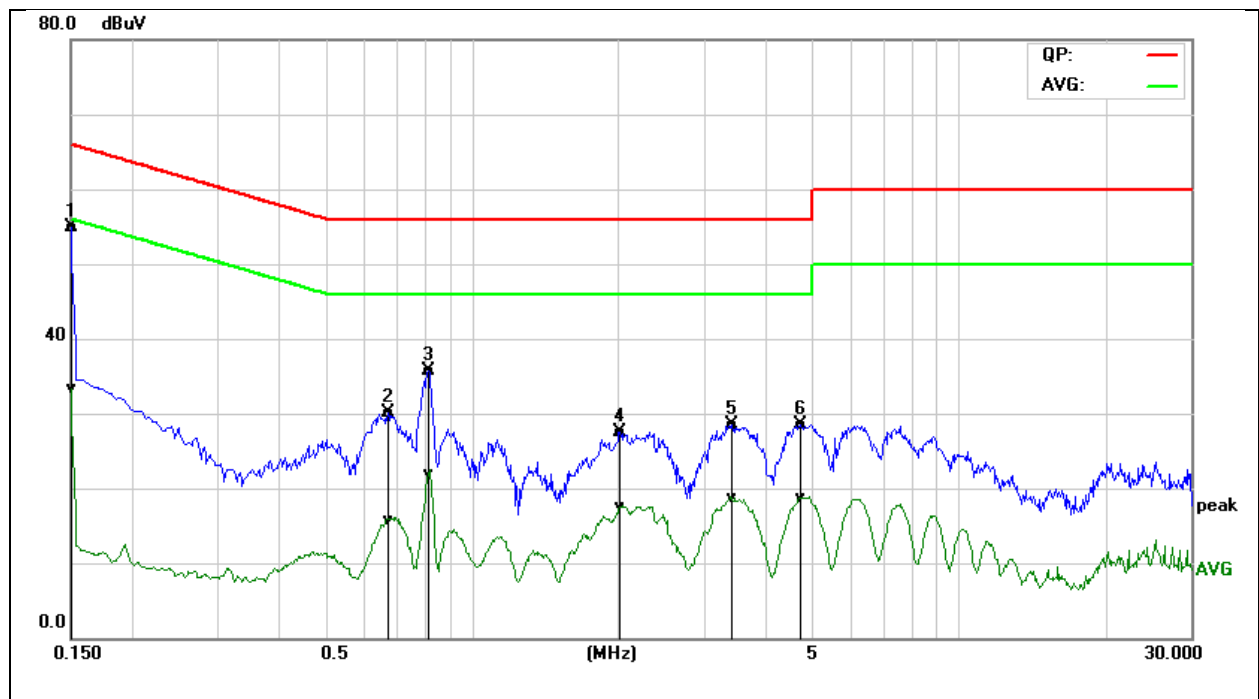


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1500	43.21	21.46	19.87	63.08	41.33	65.99	56.00	-2.91	-14.67	Pass
0.4980	23.86	2.12	19.82	43.68	21.94	56.03	46.03	-12.35	-24.09	Pass
0.8020	27.32	9.42	19.88	47.20	29.30	56.00	46.00	-8.80	-16.70	Pass
2.3260	18.50	5.14	19.91	38.41	25.05	56.00	46.00	-17.59	-20.95	Pass
4.2220	18.09	4.78	19.92	38.01	24.70	56.00	46.00	-17.99	-21.30	Pass
7.6860	18.97	4.39	19.99	38.96	24.38	60.00	50.00	-21.04	-25.62	Pass

REMARKS: N = Neutral Line.

Model No.	BM78SPP05MC2	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested By	Zhu Yulin	Line	L
Tested Date	2019/10/31	Test Voltage	AC230V/50Hz

(The chart below shows the highest readings taken from the final data.)

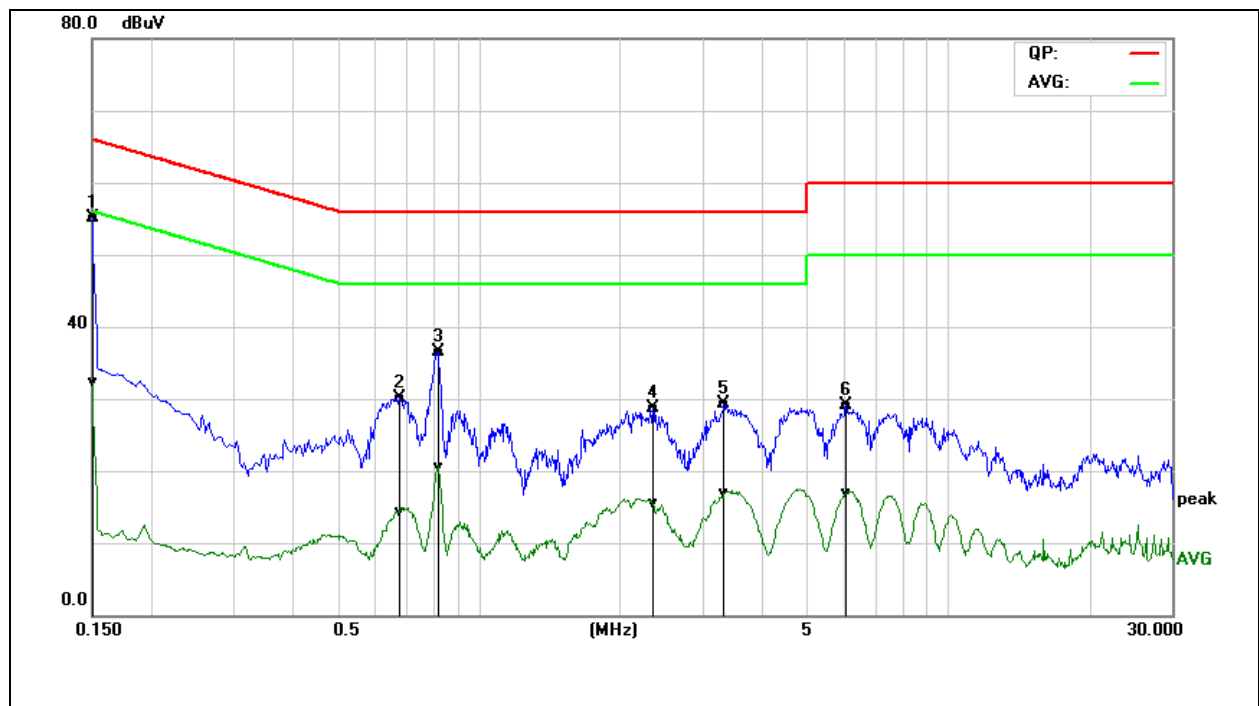


Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1500	45.01	23.31	9.94	54.95	33.25	65.99	56.00	-11.04	-22.75	Pass
0.6740	20.21	5.92	9.88	30.09	15.80	56.00	46.00	-25.91	-30.20	Pass
0.8139	25.75	12.11	9.89	35.64	22.00	56.00	46.00	-20.36	-24.00	Pass
2.0220	17.65	7.57	9.93	27.58	17.50	56.00	46.00	-28.42	-28.50	Pass
3.4220	18.57	8.69	9.95	28.52	18.64	56.00	46.00	-27.48	-27.36	Pass
4.7300	18.60	8.71	9.98	28.58	18.69	56.00	46.00	-27.42	-27.31	Pass

REMARKS: L = Live Line

Model No.	BM78SPP05MC2	RBW,VBW	9 kHz
Environmental Conditions	26°C, 60% RH	Test Mode	Mode 1
Tested By	Zhu Yulin	Line	N
Tested Date	2019/10/31	Test Voltage	AC230V/50Hz

(The chart below shows the highest readings taken from the final data.)



Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
0.1500	45.12	22.42	9.94	55.06	32.36	65.99	56.00	-10.93	-23.64	Pass
0.6820	20.20	4.38	9.88	30.08	14.26	56.00	46.00	-25.92	-31.74	Pass
0.8180	26.53	10.66	9.89	36.42	20.55	56.00	46.00	-19.58	-25.45	Pass
2.3500	18.67	5.64	9.94	28.61	15.58	56.00	46.00	-27.39	-30.42	Pass
3.3420	19.40	6.97	9.95	29.35	16.92	56.00	46.00	-26.65	-29.08	Pass
6.0739	19.08	6.95	9.98	29.06	16.93	60.00	50.00	-30.94	-33.07	Pass

REMARKS: N = Neutral Line.

5.8. MAXIMUM PEAK OUTPUT POWER

5.8.1. LIMITS

Regulation 15.247 (b)(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

5.8.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW = 3 MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak.
- 3) Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

Remark:/

5.8.3. TEST SETUP



5.8.4. TEST RESULTS

GFSK

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	1.86	20.97	Peak	Pass
Middle	2.441	2.06			Pass
Highest	2.480	1.98			Pass
Lowest	2.402	0.46		Average	Pass
Middle	2.441	0.68			Pass
Highest	2.480	0.59			Pass

$\pi/4$ -DQPSK

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	1.83	20.97	Peak	Pass
Middle	2.441	2.03			Pass
Highest	2.480	1.93			Pass
Lowest	2.402	-1.23		Average	Pass
Middle	2.441	-1.13			Pass
Highest	2.480	-1.19			Pass

8DPSK

Test Channel	Fundamental Frequency (GHz)	Max Output Power(dBm)	Limit (dBm)	Peak/Average	Pass/Fail
Lowest	2.402	2.31	20.97	Peak	Pass
Middle	2.441	2.48			Pass
Highest	2.480	2.36			Pass
Lowest	2.402	-1.21		Average	Pass
Middle	2.441	-0.94			Pass
Highest	2.480	-1.13			Pass

Test result: The unit does meet the FCC requirements.

5.9. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

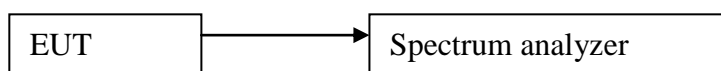
5.9.1. LIMITS

(d) In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.9.2. TEST PROCEDURES

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100KHz; VBW =300KHz, Span = 10MHz to 26GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

5.9.3. TEST SETUP



5.9.4. TEST RESULTS

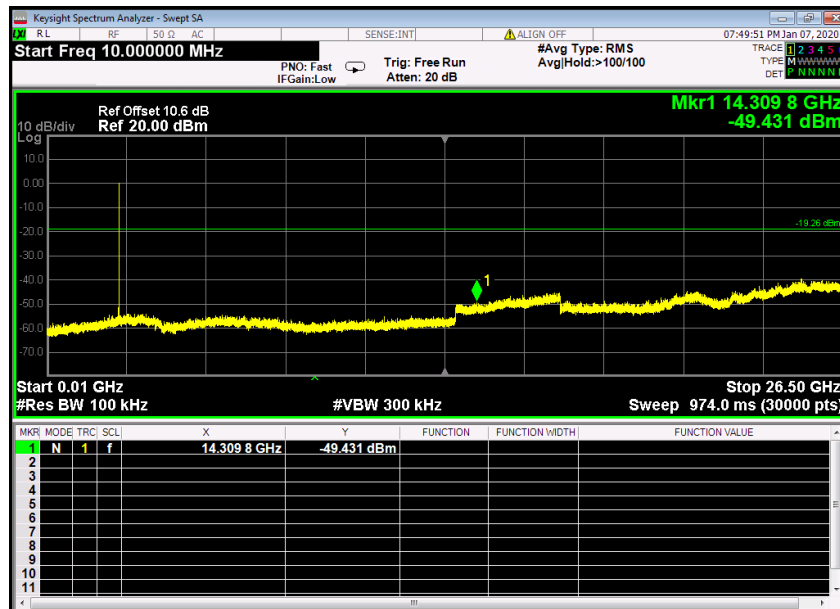
The unit does meet the FCC requirements.

Test result plot as follows:

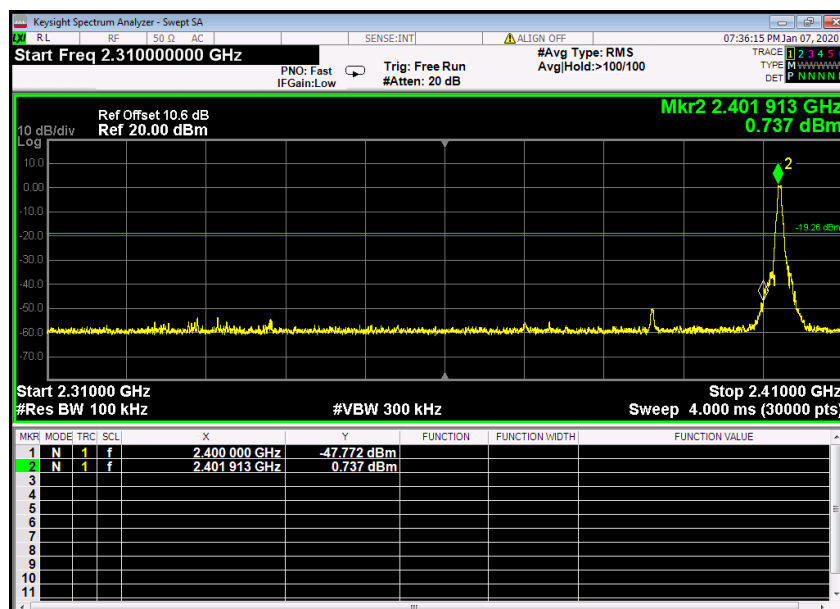
Hopping Off

GFSK

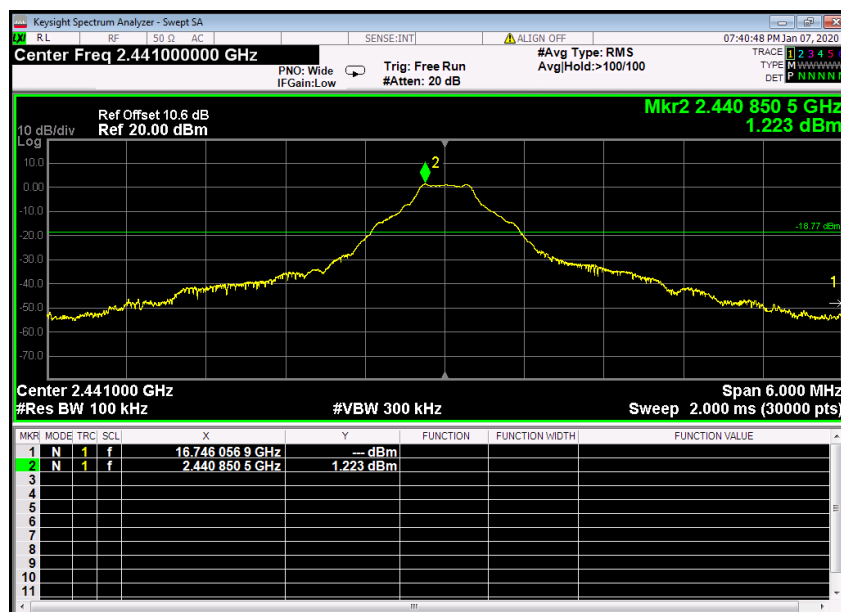
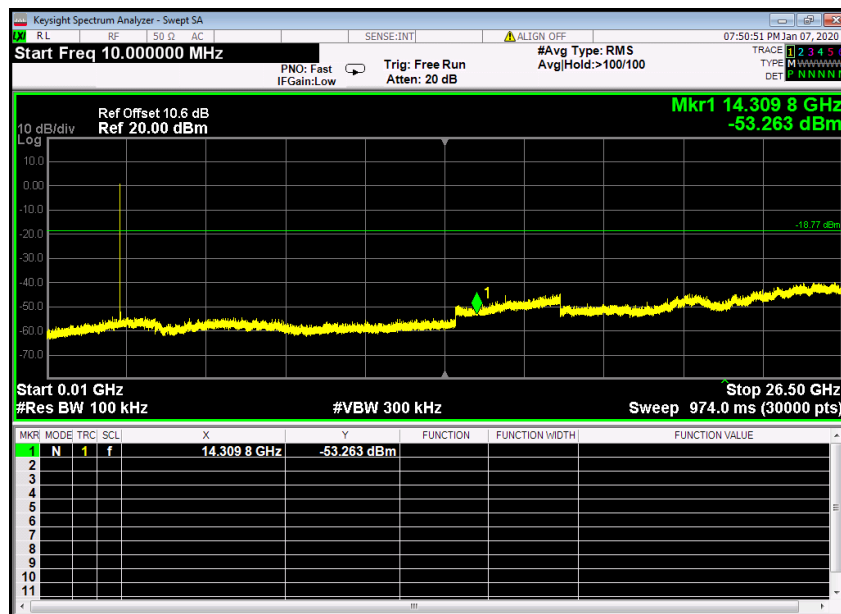
CH Low (10MHz ~26.5GHz)



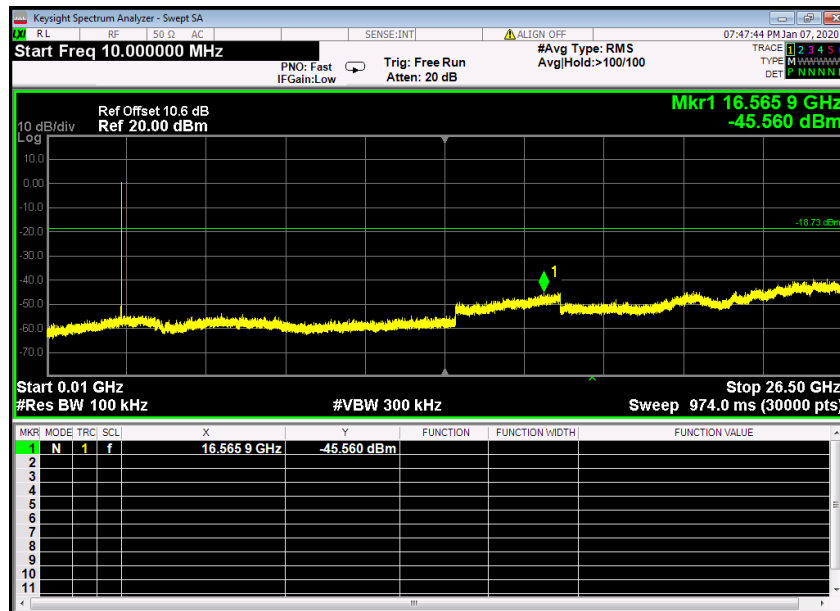
CH Low (2.31GHz ~2.41GHz)



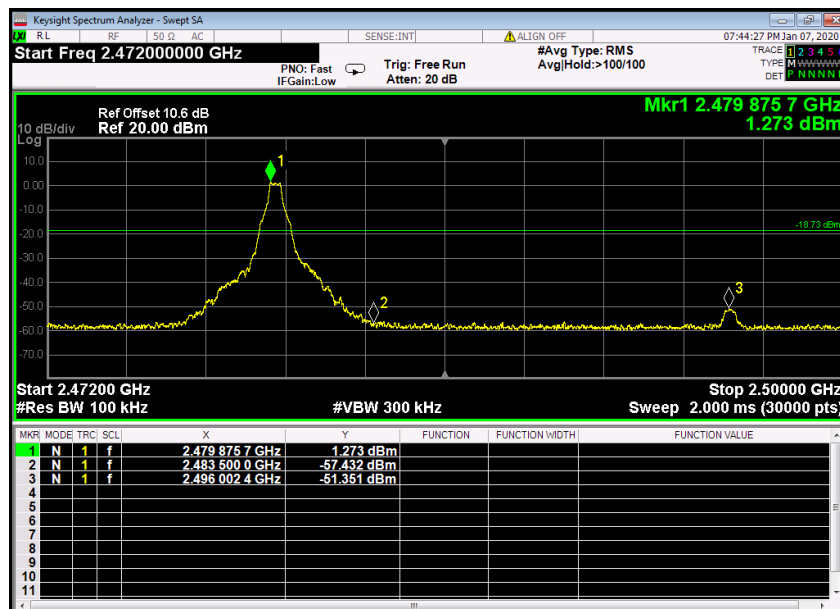
CH Mid (10MHz ~26.5GHz)



CH High (10MHz ~26.5GHz)

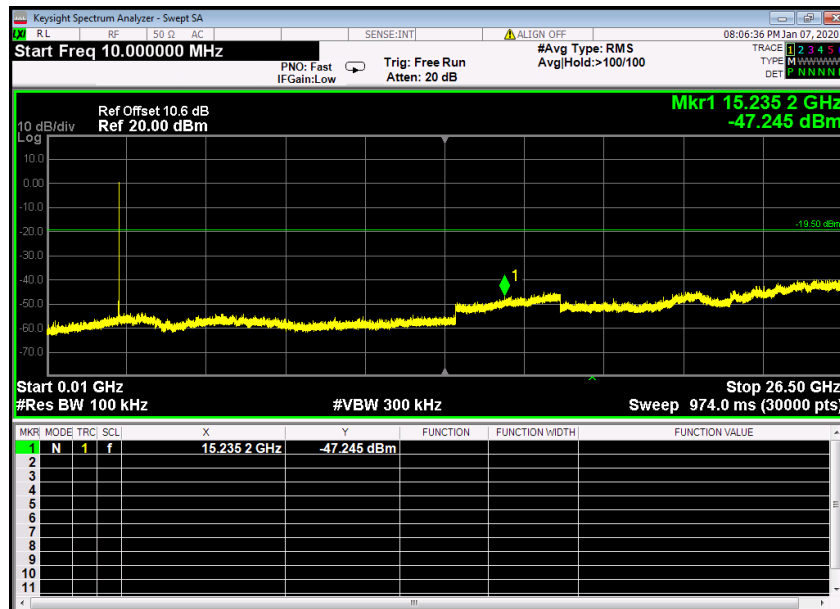


CH High (2.475GHz ~ 2.5GHz)

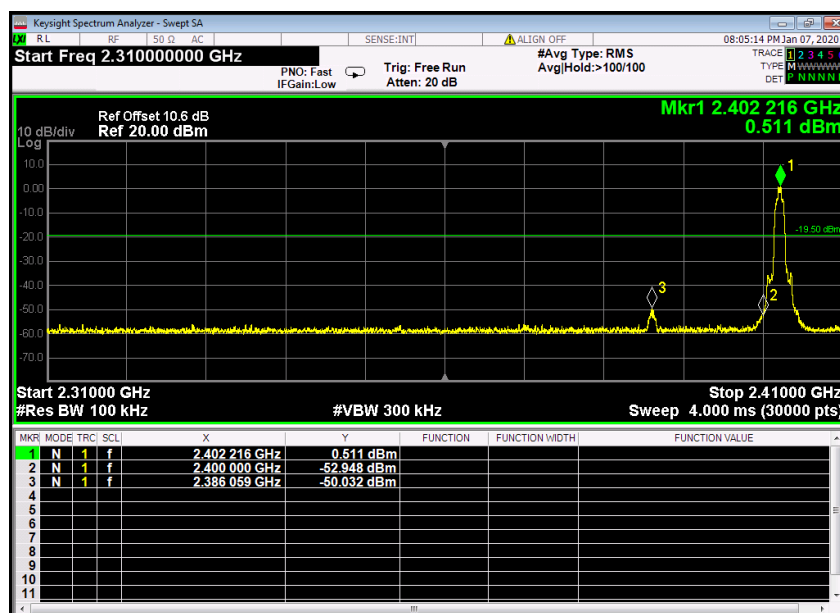


8DPSK

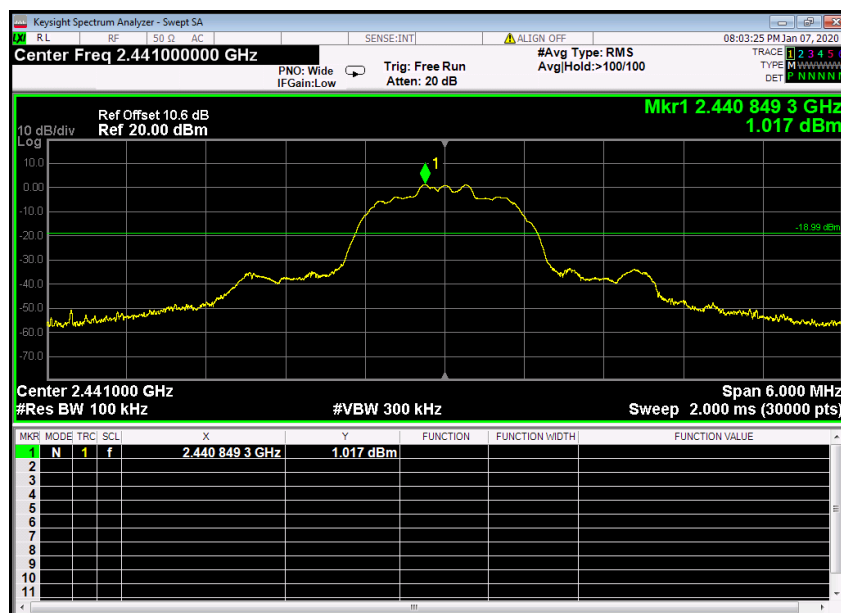
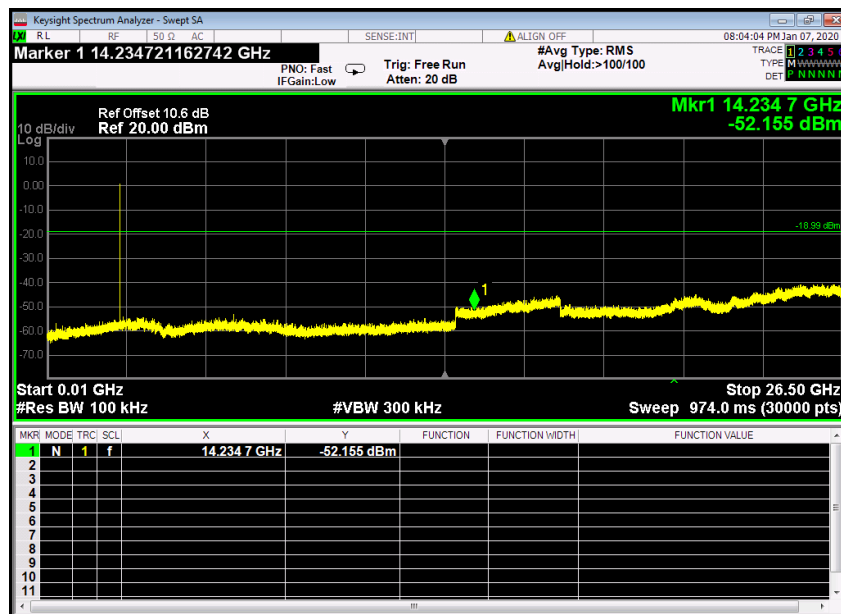
CH Low (10MHz ~26.5GHz)



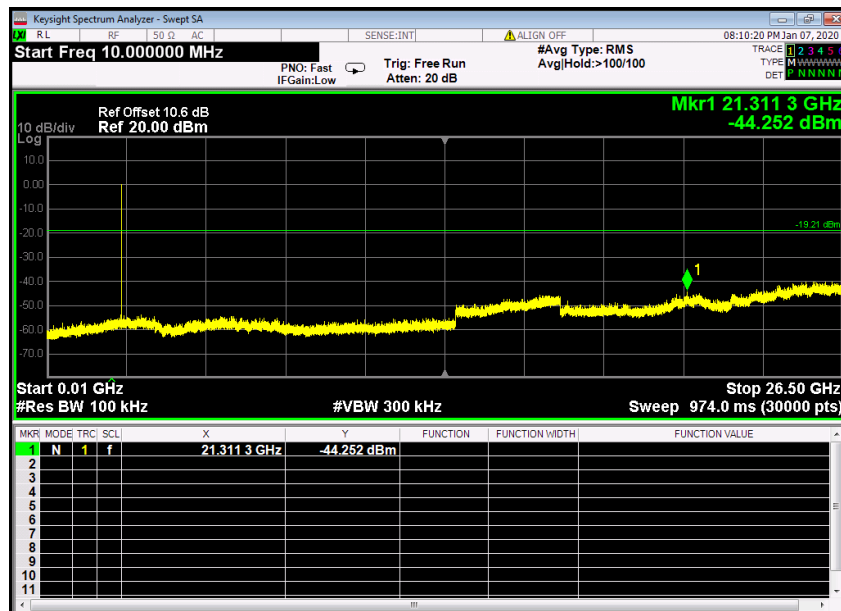
CH Low (2.31GHz ~2.41GHz)



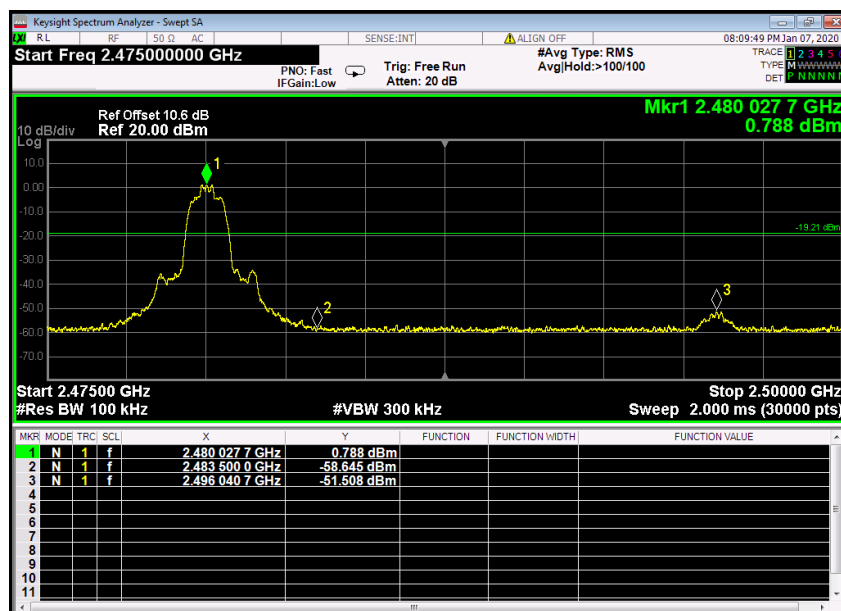
CH Mid (10MHz ~26.5GHz)



CH High (10MHz ~26.5GHz)



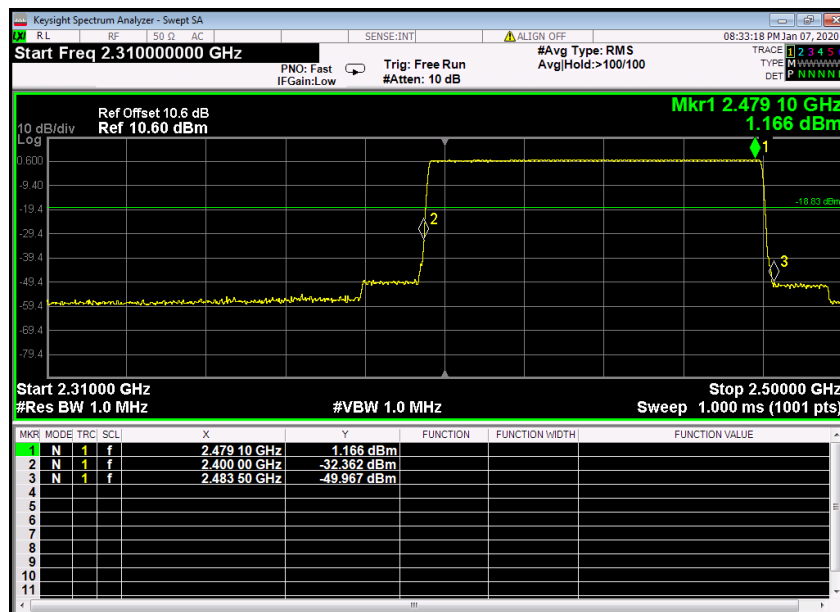
CH High (2.475GHz ~ 2.5GHz)



Hopping On

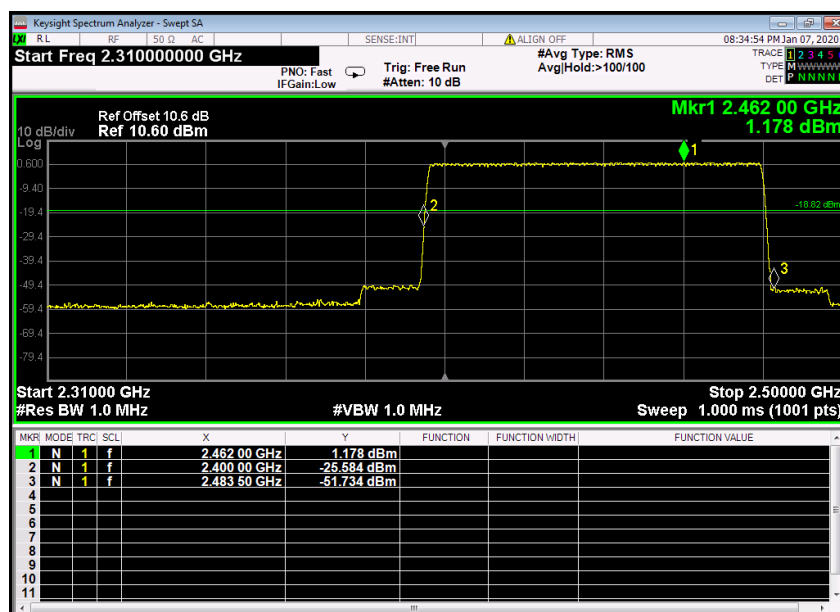
GFSK

CH Low (2.31GHz ~2.5GHz)



8DPSK

CH Low (2.31GHz ~2.5GHz)



5.10. RADIATED SPURIOUS EMISSIONS

5.10.1. LIMITS

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Frequency (MHz)	Quasi-peak($\mu\text{V/m}$)	Measurement distance(m)	Quasi-peak($\text{dB}\mu\text{V/m}$)@distance 3m
0.009-0.490	2400/F(kHz)	300	53.8~88.5
0.490-1.705	24000/F(kHz)	30	43~53.8
1.705-30.0	30	30	49.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

NOTE: (1) The lower limit shall apply at the transition frequencies.

5.10.2. TEST PROCEDURES

- 1) The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 3) Height of receiving antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 4) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 5) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 6) If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported.
Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Pre-test for normal mode and EDR mode, to find the EDR is the worst case. Pre-test for EUT in three axes and find the X axe is the worst case.

The worst case emissions were reported.

5.10.3. TEST SETUP

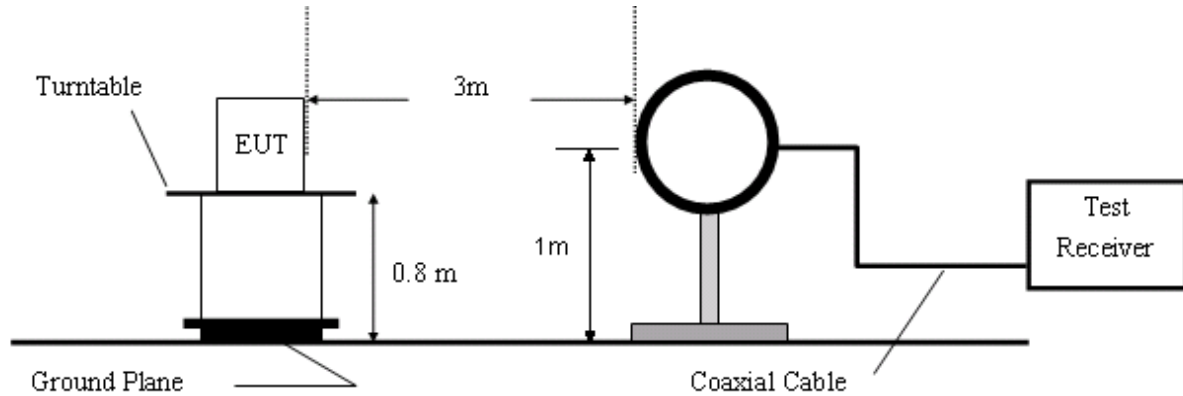


Figure 1. 9 KHz to 30MHz radiated emissions test configuration

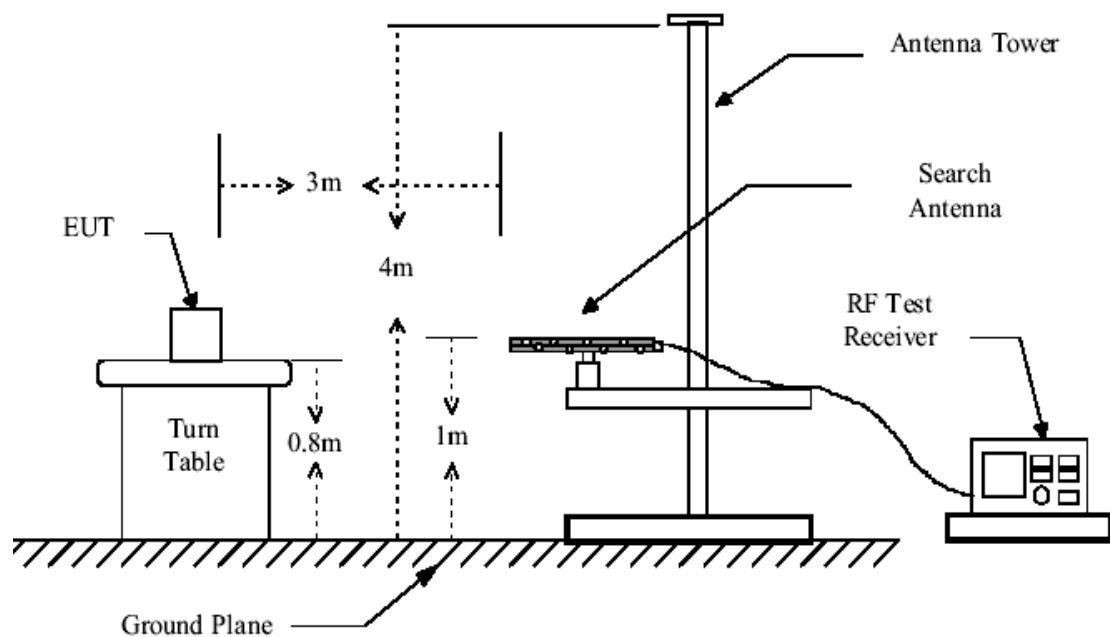


Figure 2. 30MHz to 1GHz radiated emissions test configuration

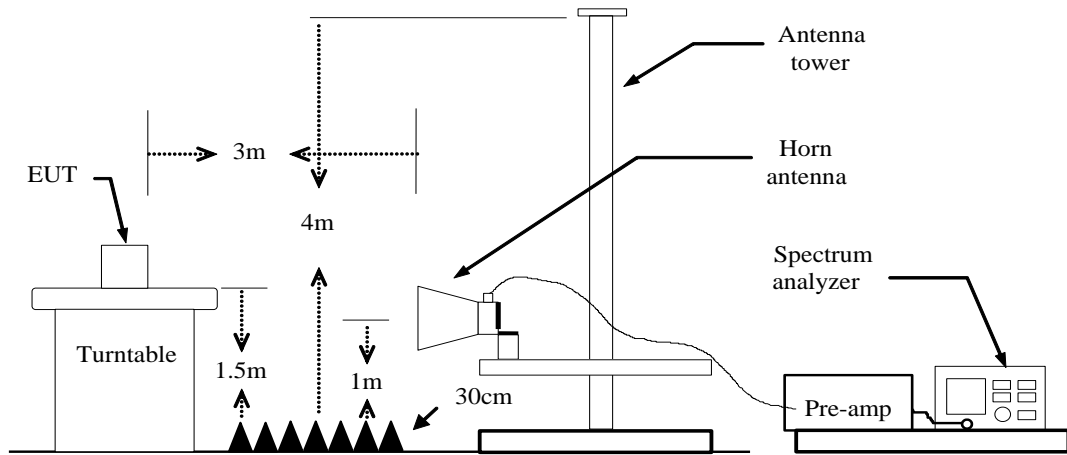


Figure 3. Above 1GHz radiated emissions test configuration

5.10.4. DATA SAMPLE

30MHz to 1GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
xxx	xxx	37.06	-15.48	21.58	40.00	-18.42	QP	Vertical

Above 1 GHz

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
xxx	xxx	65.45	-11.12	54.33	74.00	-19.67	peak	Vertical
xxx	xxx	63.00	-11.12	51.88	54.00	-2.12	AVG	Vertical

Frequency (MHz)	= Emission frequency in MHz
Ant.Pol. (H/V)	= Antenna polarization
Reading (dBuV)	= Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m)	= Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m)	= Reading (dBuV) + Correction Factor (dB/m)
Limit (dBuV/m)	= Limit stated in standard
Margin (dB)	= Remark Result (dBuV/m) – Limit (dBuV/m)
Peak	= Peak Reading
QP	= Quasi-peak Reading
AVG	= Average Reading

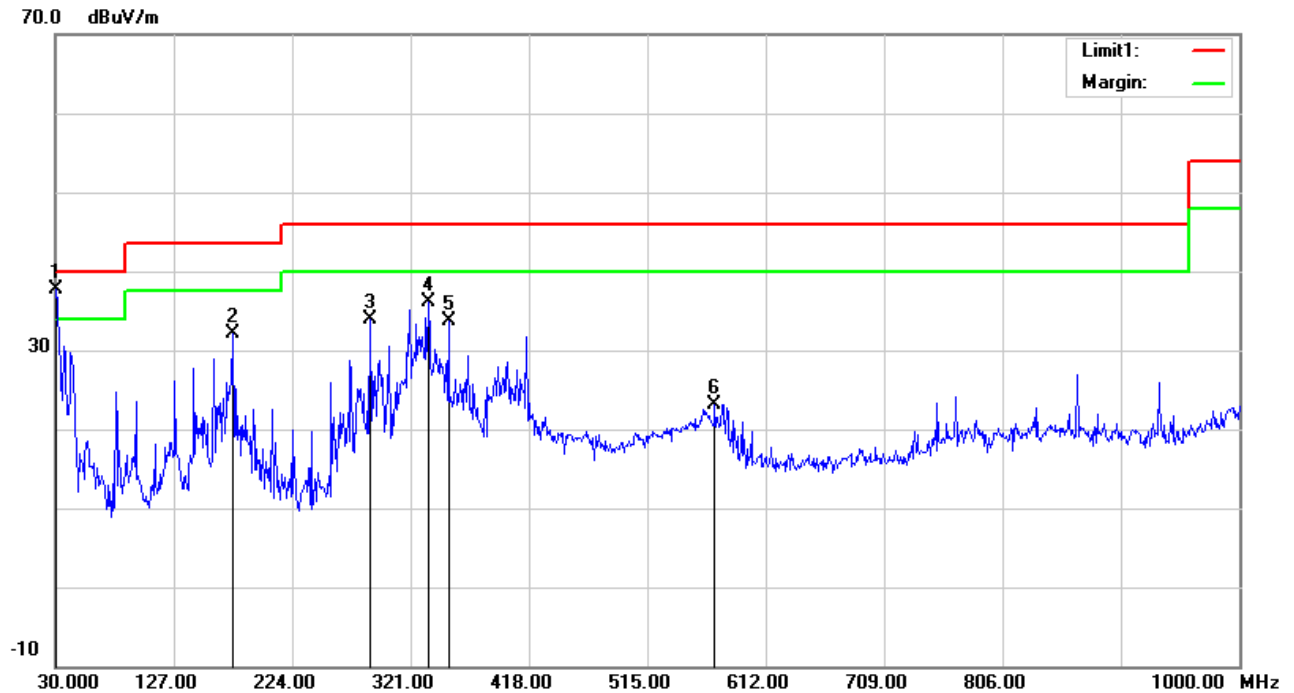
5.10.5. TEST RESULTS

30MHz to 1GHz:

Mode: TX/GFSK

Lowest channel (2402MHz)

Date: 2019/10/30

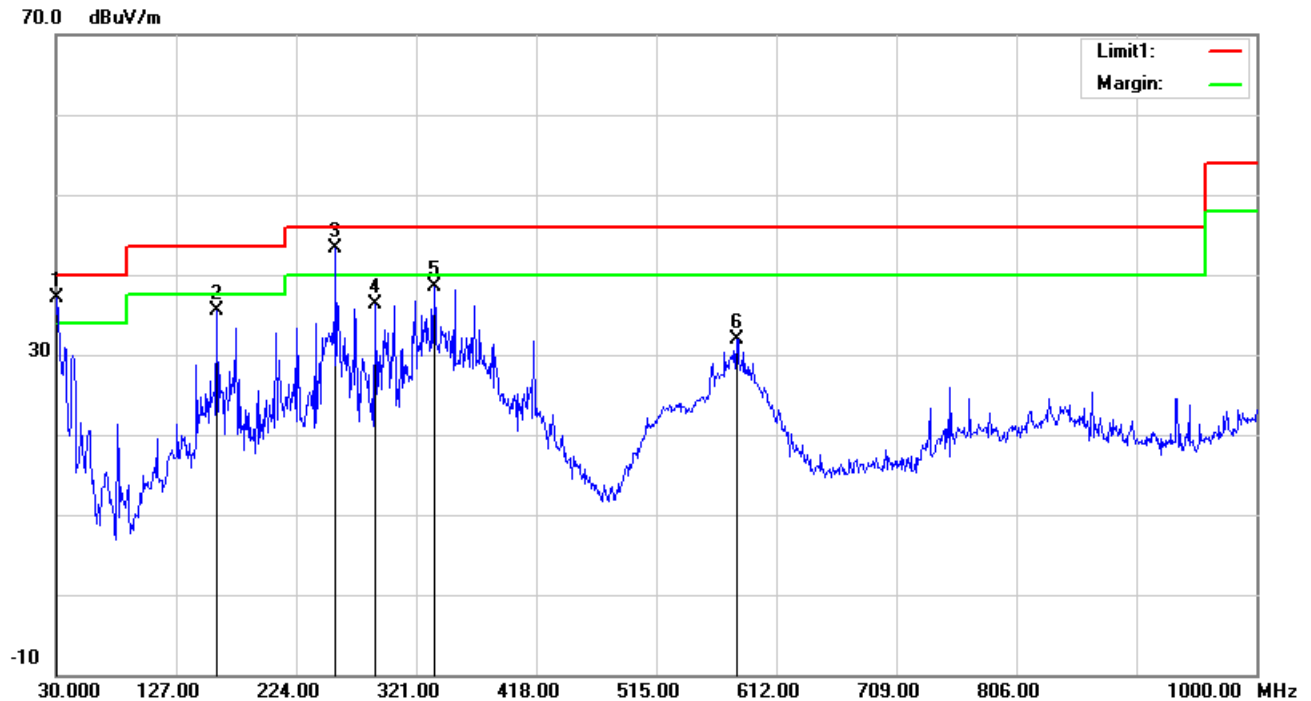


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	30.9700	65.30	-27.66	37.64	40.00	-2.36	QP	Vertical
2	175.5000	58.90	-26.81	32.09	43.50	-11.41	QP	Vertical
3	288.0200	60.67	-26.82	33.85	46.00	-12.15	QP	Vertical
4	335.5500	61.49	-25.38	36.11	46.00	-9.89	QP	Vertical
5	352.0400	58.50	-24.86	33.64	46.00	-12.36	QP	Vertical
6	570.2900	43.03	-19.84	23.19	46.00	-22.81	QP	Vertical

Mode: TX/GFSK

Lowest channel (2402MHz)

Date: 2019/10/30



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
1	30.9700	64.83	-27.66	37.17	40.00	-2.83	QP	Horizontal
2	159.9800	60.20	-24.75	35.45	43.50	-8.05	QP	Horizontal
3	256.0100	71.13	-27.89	43.24	46.00	-2.76	QP	Horizontal
4	288.0200	63.13	-26.82	36.31	46.00	-9.69	QP	Horizontal
5	335.5500	63.83	-25.38	38.45	46.00	-7.55	QP	Horizontal
6	579.9900	51.49	-19.58	31.91	46.00	-14.09	QP	Horizontal

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps))
- 3 Measuring frequencies from 9kHz to the 1GHz.
- 4 Radiated emissions measured in frequency range from 30MHz to 1GHz were made with an instrument using Peak/Quasi-peak detector mode.
- 5 Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 6 The IF bandwidth of SPA between 30MHz to 1GHz was 120kHz.

Above 1GHz:**GFSK**

Mode: TX

Lowest channel (2402MHz)

Date: 2019/10/30

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	1999.000	50.04	-2.35	47.69	74.00	-26.31	peak	Vertical
2	2503.000	46.36	-1.22	45.14	74.00	-28.86	peak	Vertical
3	2854.000	44.23	0.28	44.51	74.00	-29.49	peak	Vertical
4	3079.000	43.62	0.91	44.53	74.00	-29.47	peak	Vertical
5	4807.000	42.77	2.35	45.12	74.00	-28.88	peak	Vertical
6	7498.000	41.82	8.28	50.10	74.00	-23.90	peak	Vertical
7	1837.000	47.86	-4.92	42.94	74.00	-31.06	peak	Horizontal
8	1999.000	47.58	-4.04	43.54	74.00	-30.46	peak	Horizontal
9	2512.000	45.53	-3.19	42.34	74.00	-31.66	peak	Horizontal
10	3061.000	44.78	-1.26	43.52	74.00	-30.48	peak	Horizontal
11	3367.000	43.22	-1.15	42.07	74.00	-31.93	peak	Horizontal
12	4807.000	42.75	0.96	43.71	74.00	-30.29	peak	Horizontal

Mode: TX

Middle channel (2441MHz)

Date: 2019/10/30

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	Pole
	(MHz)	(dBuV/m)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)		
1	1999.000	50.04	-2.35	47.69	74.00	-26.31	peak	Vertical
2	3349.000	43.96	0.92	44.88	74.00	-29.12	peak	Vertical
3	4861.000	44.08	2.32	46.40	74.00	-27.60	peak	Vertical
4	5662.000	42.59	4.18	46.77	74.00	-27.23	peak	Vertical
5	6958.000	41.21	6.97	48.18	74.00	-25.82	peak	Vertical
6	7498.000	42.82	8.28	51.10	74.00	-22.90	peak	Vertical
7	1999.000	47.58	-4.04	43.54	74.00	-30.46	peak	Horizontal
8	3061.000	45.28	-1.26	44.02	74.00	-29.98	peak	Horizontal
9	3340.000	45.25	-1.16	44.09	74.00	-29.91	peak	Horizontal
10	5689.000	41.10	2.82	43.92	74.00	-30.08	peak	Horizontal
11	7345.000	40.59	6.19	46.78	74.00	-27.22	peak	Horizontal
12	8884.000	40.71	9.09	49.80	74.00	-24.20	peak	Horizontal

Mode: TX

Highest channel (2480MHz)

Date: 2019/10/30

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
1	1594.000	49.07	-4.77	44.30	74.00	-29.70	peak	Vertical
2	1999.000	50.79	-2.35	48.44	74.00	-25.56	peak	Vertical
3	2521.000	45.84	-1.15	44.69	74.00	-29.31	peak	Vertical
4	3052.000	43.86	0.91	44.77	74.00	-29.23	peak	Vertical
5	3349.000	43.98	0.92	44.90	74.00	-29.10	peak	Vertical
6	8137.000	41.26	9.12	50.38	74.00	-23.62	peak	Vertical
7	1999.000	49.08	-4.04	45.04	74.00	-28.96	peak	Horizontal
8	2629.000	45.10	-2.72	42.38	74.00	-31.62	peak	Horizontal
9	3079.000	44.28	-1.26	43.02	74.00	-30.98	peak	Horizontal
10	3349.000	43.20	-1.15	42.05	74.00	-31.95	peak	Horizontal
11	4204.000	42.43	0.30	42.73	74.00	-31.27	peak	Horizontal
12	9343.000	41.40	9.98	51.38	74.00	-22.62	peak	Horizontal

8DPSK

Mode: TX

Lowest channel (2402MHz)

Date: 2019/10/30

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
1	2494.000	46.94	-1.25	45.69	74.00	-28.31	peak	Vertical
2	3331.000	43.68	0.92	44.60	74.00	-29.40	peak	Vertical
3	4204.000	41.89	1.98	43.87	74.00	-30.13	peak	Vertical
4	5545.000	40.70	3.80	44.50	74.00	-29.50	peak	Vertical
5	7246.000	41.32	7.65	48.97	74.00	-25.03	peak	Vertical
6	8344.000	41.25	8.99	50.24	74.00	-23.76	peak	Vertical
7	1999.000	47.88	-4.04	43.84	74.00	-30.16	peak	Horizontal
8	3079.000	44.52	-1.26	43.26	74.00	-30.74	peak	Horizontal
9	5158.000	41.04	1.39	42.43	74.00	-31.57	peak	Horizontal
10	6805.000	40.67	5.16	45.83	74.00	-28.17	peak	Horizontal
11	7696.000	40.98	6.89	47.87	74.00	-26.13	peak	Horizontal
12	9433.000	41.23	10.15	51.38	74.00	-22.62	peak	Horizontal

Mode: TX

Middle channel (2441 MHz)

Date: 2019/10/30

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
1	2233.000	46.22	-1.83	44.39	74.00	-29.61	peak	Vertical
2	3079.000	44.71	0.91	45.62	74.00	-28.38	peak	Vertical
3	4618.000	42.89	2.47	45.36	74.00	-28.64	peak	Vertical
4	5122.000	41.28	2.58	43.86	74.00	-30.14	peak	Vertical
5	6940.000	40.70	6.93	47.63	74.00	-26.37	peak	Vertical
6	7489.000	45.20	8.25	53.45	74.00	-20.55	peak	Vertical
7	3061.000	45.78	-1.26	44.52	74.00	-29.48	peak	Horizontal
8	4861.000	45.57	0.98	46.55	74.00	-27.45	peak	Horizontal
9	7345.000	41.09	6.19	47.28	74.00	-26.72	peak	Horizontal
10	7651.000	40.87	6.80	47.67	74.00	-26.33	peak	Horizontal
11	8164.000	40.96	7.81	48.77	74.00	-25.23	peak	Horizontal
12	9640.000	39.53	10.51	50.04	74.00	-23.96	peak	Horizontal

Mode: TX

Highest channel (2480MHz)

Date: 2019/10/30

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Pole
1	3079.000	44.71	0.91	45.62	74.00	-28.38	peak	Vertical
2	4519.000	41.27	2.53	43.80	74.00	-30.20	peak	Vertical
3	5338.000	41.47	3.20	44.67	74.00	-29.33	peak	Vertical
4	6292.000	41.11	5.70	46.81	74.00	-27.19	peak	Vertical
5	7489.000	45.20	8.25	53.45	74.00	-20.55	peak	Vertical
6	8362.000	41.45	8.98	50.43	74.00	-23.57	peak	Vertical
7	1999.000	46.42	-4.04	42.38	74.00	-31.62	peak	Horizontal
8	2494.000	45.07	-3.24	41.83	74.00	-32.17	peak	Horizontal
9	2845.000	43.85	-1.89	41.96	74.00	-32.04	peak	Horizontal
10	3097.000	42.87	-1.25	41.62	74.00	-32.38	peak	Horizontal
11	3358.000	43.27	-1.15	42.12	74.00	-31.88	peak	Horizontal
12	4834.000	40.87	0.97	41.84	74.00	-32.16	peak	Horizontal

Remark:

- 1 Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2 Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3 Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4 Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = auto.
 - b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = auto.

Test result: The unit does meet the requirements.

5.11. RESTRICTED BANDS OF OPERATION

5.11.1. LIMITS

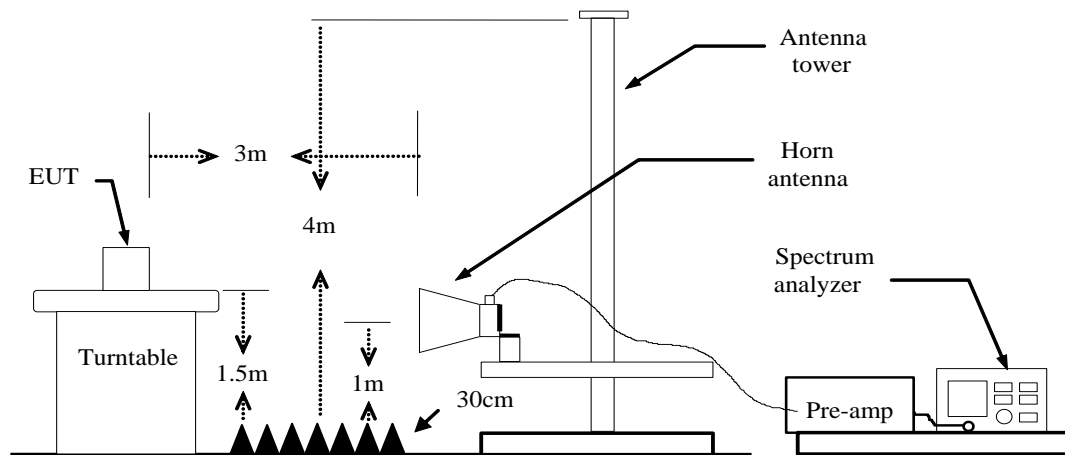
Section 15.247(d) In addition, Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

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

5.11.2. TEST PROCEDURES

- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO
 - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO
- 5) Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

5.11.3. TEST SETUP



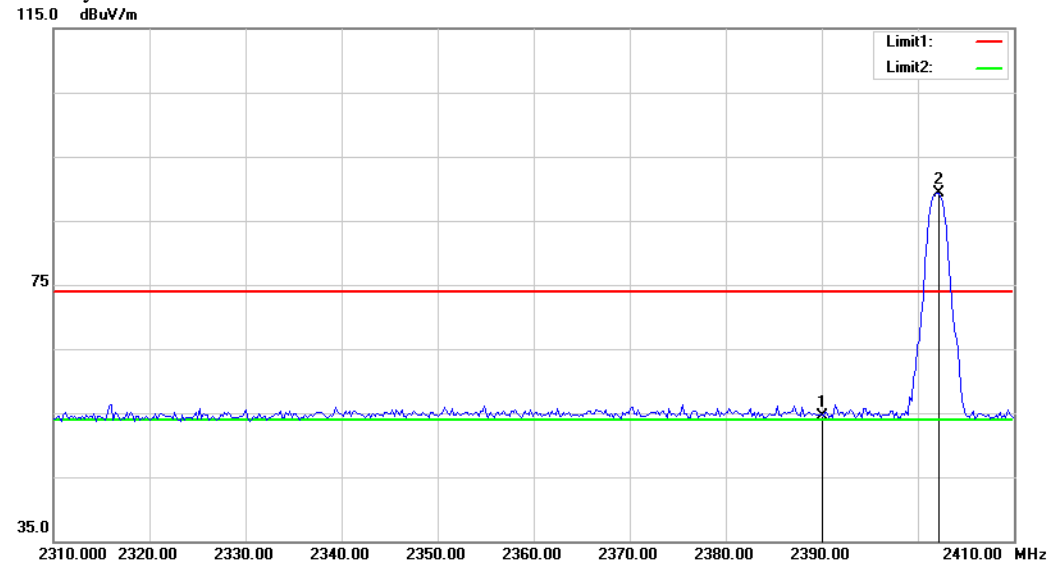
5.11.4. TEST RESULTS

GFSK

Channel Low

Detector mode: Peak

Polarity: Vertical

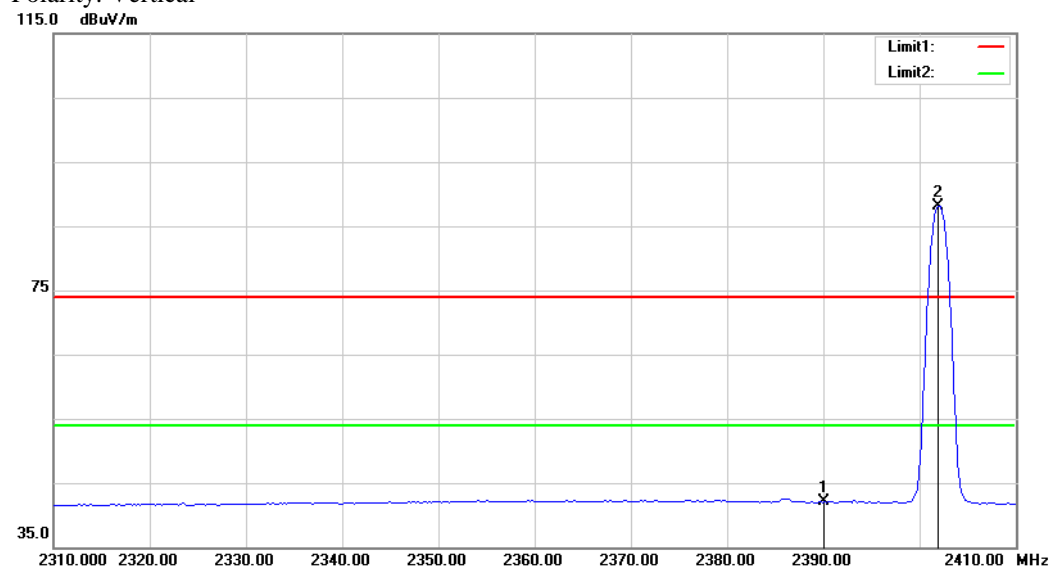


Detector

mode:

Average

Polarity: Vertical



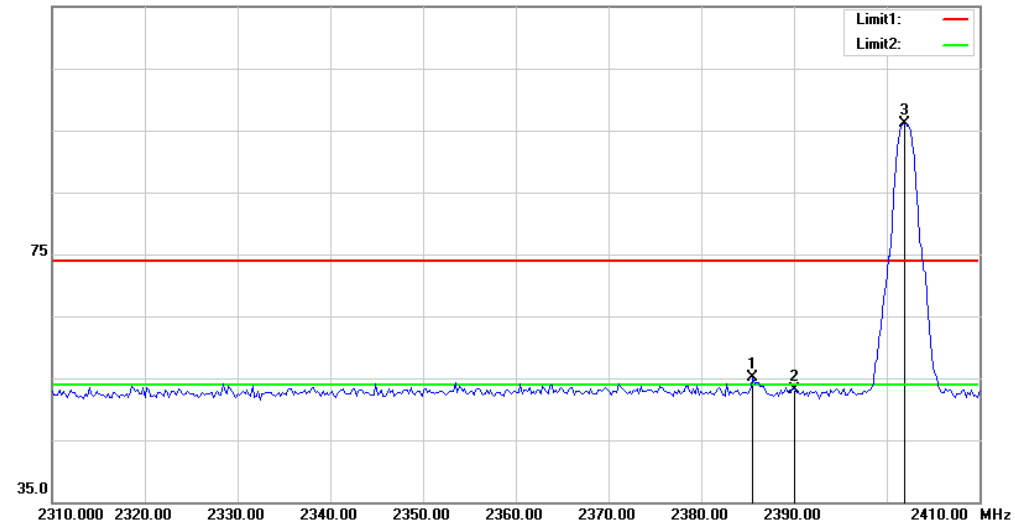
No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2390.000	55.95	-1.48	54.47	74.00	-19.53	Peak	Vertical
2	2402.184	90.68	-1.45	89.23	---	---	Peak	Vertical
1	2390.000	43.52	-1.48	42.04	54.00	-11.96	Average	Vertical
2	2401.984	89.61	-1.46	88.15	---	---	Average	Vertical

Channel Low

Detector mode: Peak

Polarity: Horizontal

115.0 dBuV/m



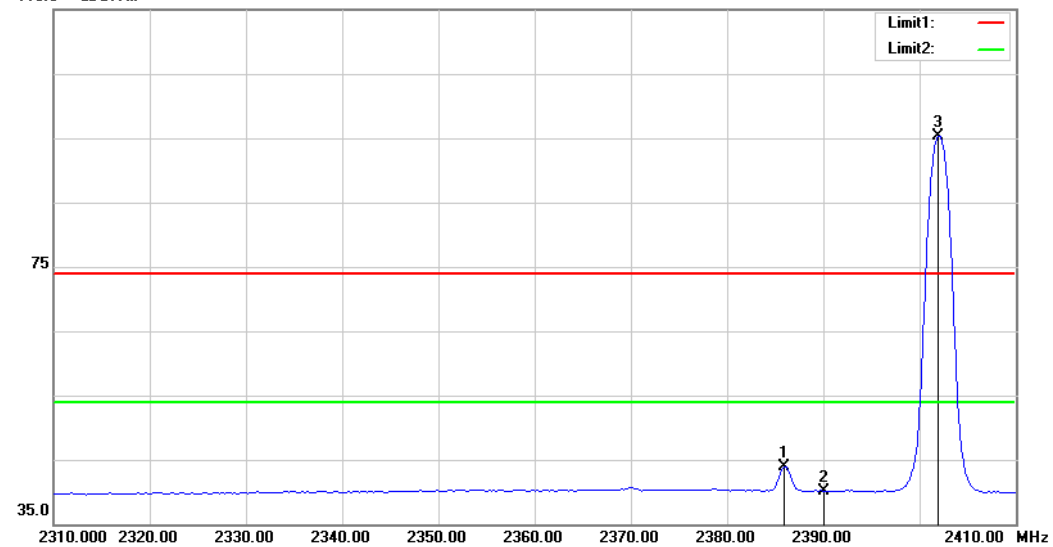
Detector

mode:

Average

Polarity: Horizontal

115.0 dBuV/m



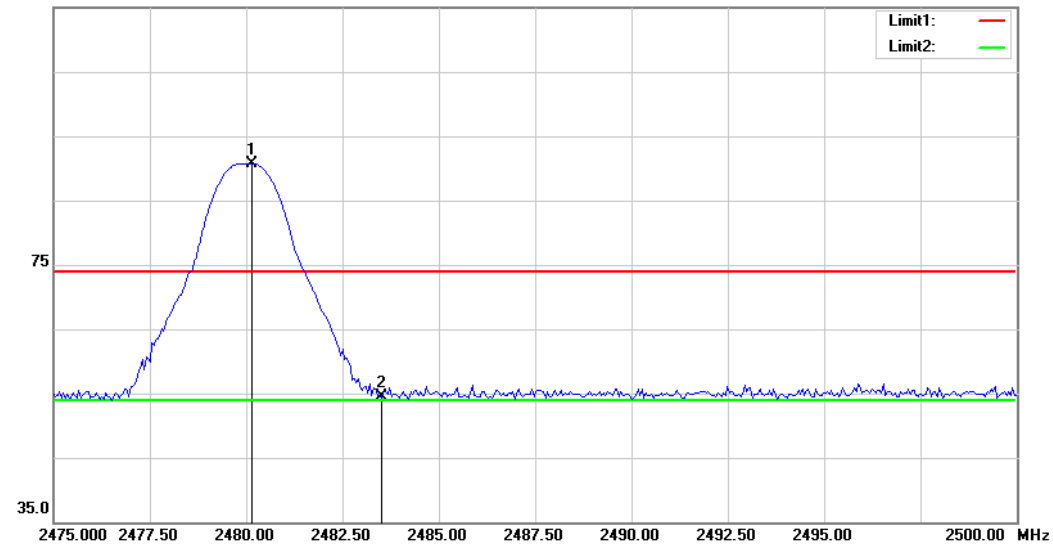
No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2385.551	58.50	-3.42	55.08	74.00	-18.92	Peak	Horizontal
2	2390.000	56.54	-3.41	53.13	74.00	-20.87	Peak	Horizontal
3	2401.984	99.49	-3.39	96.10	---	---	Peak	Horizontal
1	2385.952	47.26	-3.42	43.84	54.00	-10.16	Average	Horizontal
2	2390.000	43.59	-3.41	40.18	54.00	-13.82	Average	Horizontal
3	2401.984	98.64	-3.39	95.25	---	---	Average	Horizontal

Channel High

Detector mode: Peak

Polarity: Vertical

115.0 dBuV/m



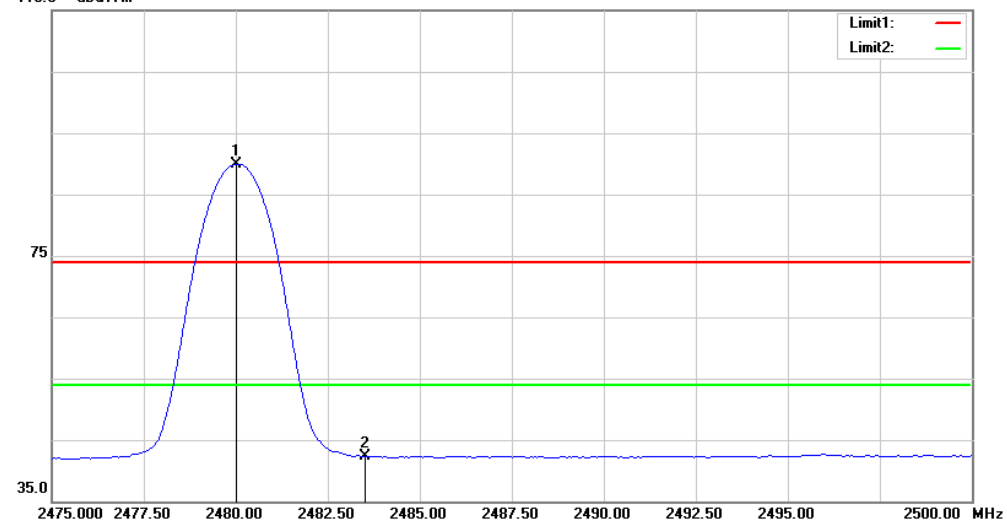
Detector

mode:

Average

Polarity: Vertical

115.0 dBuV/m

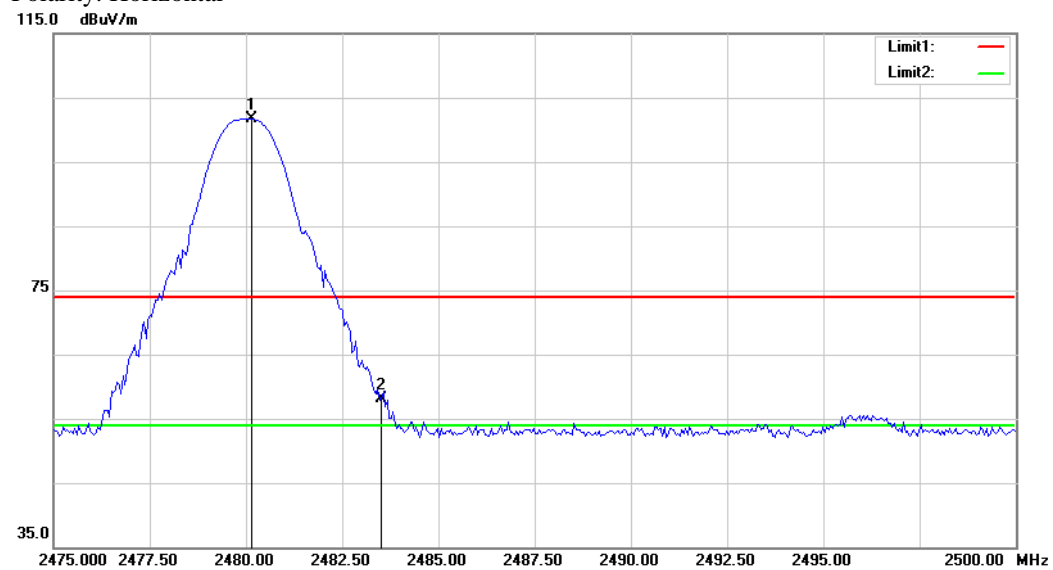


No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2480.160	92.04	-1.28	90.76	---	---	Peak	Vertical
2	2483.500	55.73	-1.27	54.46	74.00	-19.54	Peak	Vertical
1	2480.010	91.27	-1.28	89.99	---	---	Average	Vertical
2	2483.500	43.52	-1.27	42.25	54.00	-11.75	Average	Vertical

Channel High

Detector mode: Peak

Polarity: Horizontal

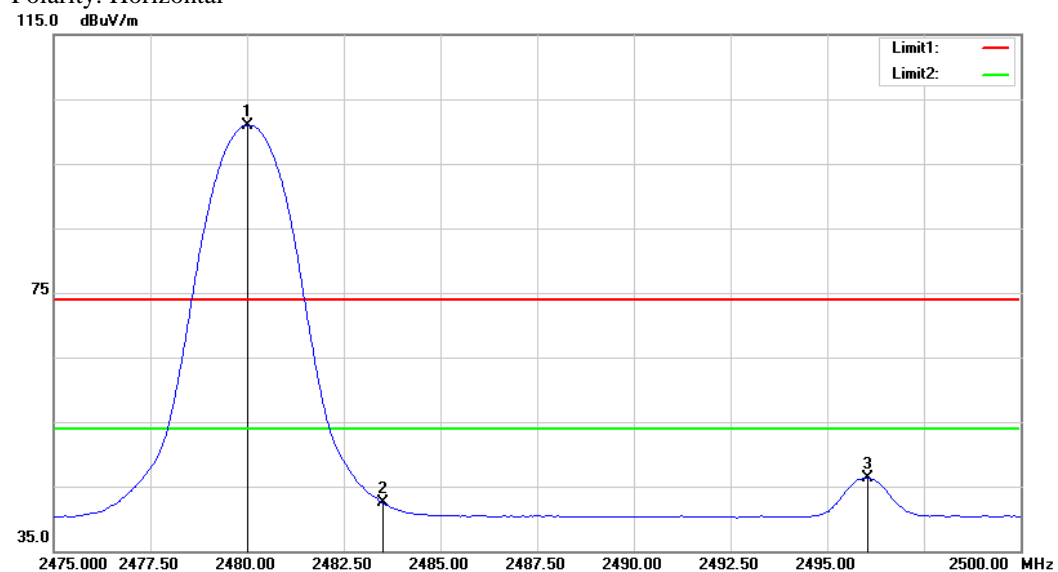


Detector

mode:

Average

Polarity: Horizontal



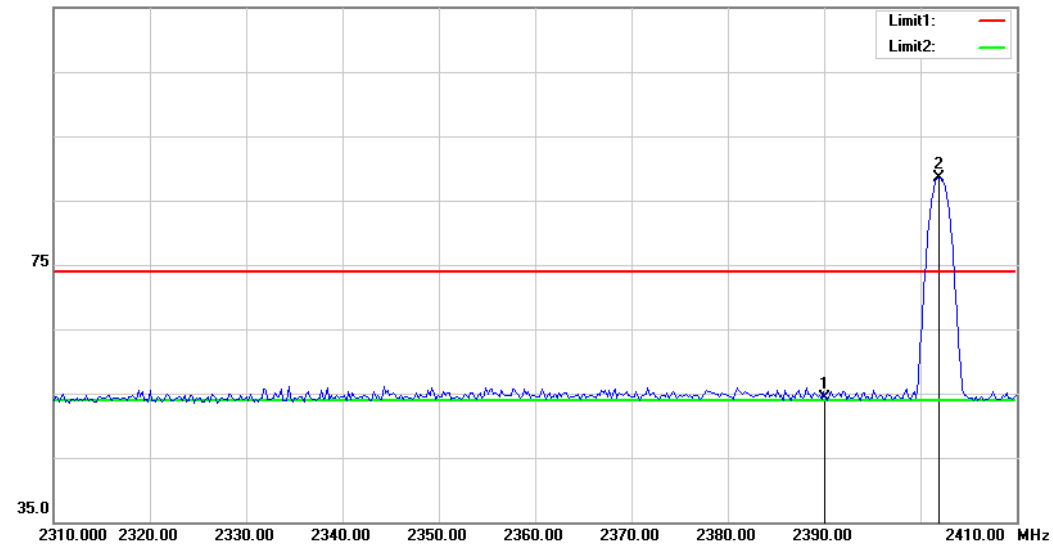
No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2480.160	104.90	-3.26	101.64	---	---	Peak	Vertical
2	2483.500	61.26	-3.25	58.01	74.00	-15.99	Peak	Vertical
1	2480.010	104.23	-3.26	100.97	---	---	Average	Vertical
2	2483.500	45.79	-3.25	42.54	54.00	-11.46	Average	Vertical
3	2496.042	49.60	-3.24	46.36	54.00	-7.64	Average	Vertical

8DPSK**Channel Low**

Detector mode: Peak

Polarity: Vertical

115.0 dBuV/m



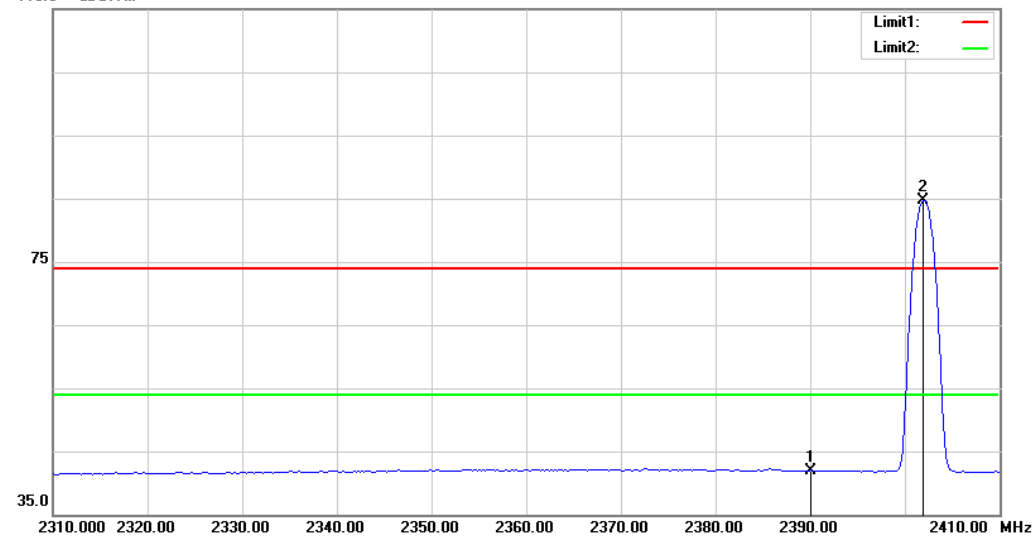
Detector

mode:

Average

Polarity: Vertical

115.0 dBuV/m



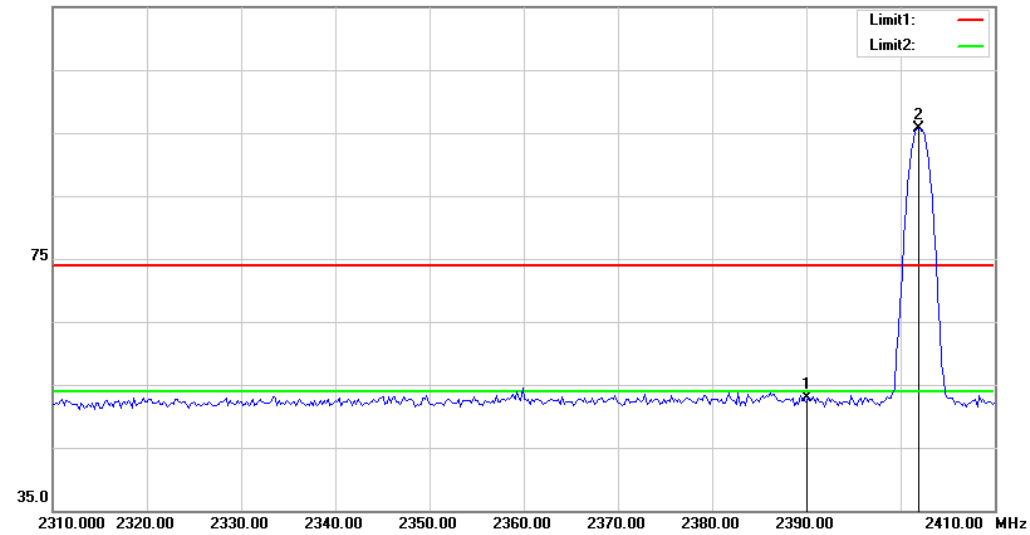
No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2390.000	55.72	-1.48	54.24	74.00	-19.76	Peak	Vertical
2	2401.984	90.01	-1.46	88.55	---	---	Peak	Vertical
1	2390.000	43.48	-1.48	42.00	54.00	-12.00	Average	Vertical
2	2401.984	86.17	-1.46	84.71	---	---	Average	Vertical

Channel Low

Detector mode: Peak

Polarity: Horizontal

115.0 dBuV/m



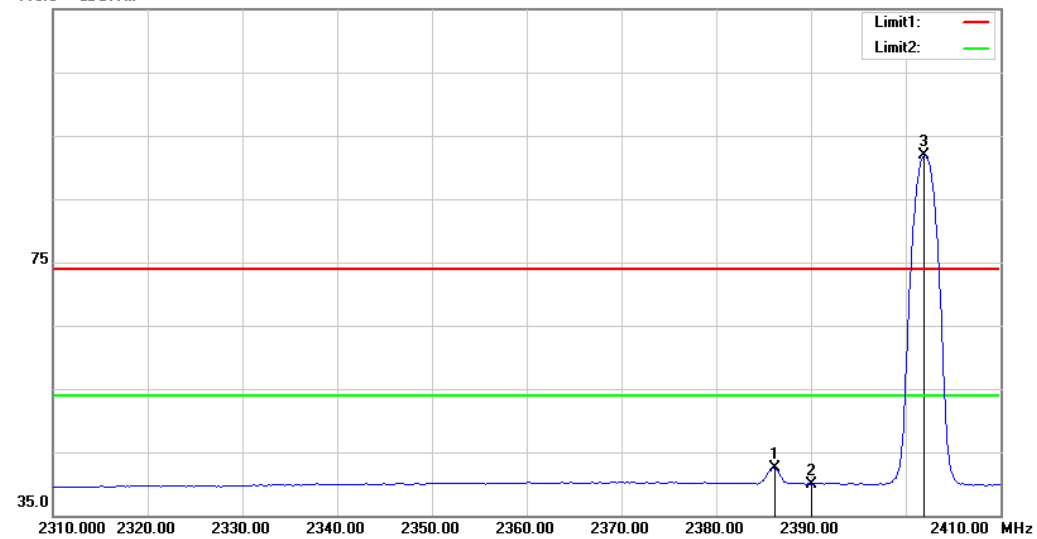
Detector

mode:

Average

Polarity: Horizontal

115.0 dBuV/m



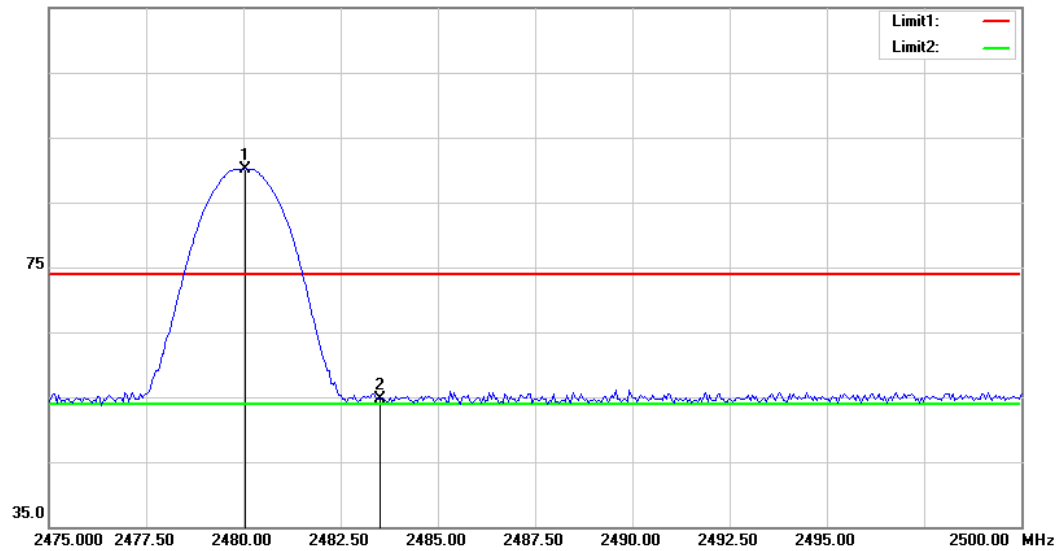
No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2390.000	56.33	-3.41	52.92	74.00	-21.08	Peak	Horizontal
2	2401.984	99.11	-3.39	95.72	---	---	Peak	Horizontal
1	2386.152	45.98	-3.42	42.56	54.00	-11.44	Average	Horizontal
2	2390.000	43.37	-3.41	39.96	54.00	-14.04	Average	Horizontal
3	2401.984	95.27	-3.39	91.88	---	---	Average	Horizontal

Channel High

Detector mode: Peak

Polarity: Vertical

115.0 dBuV/m



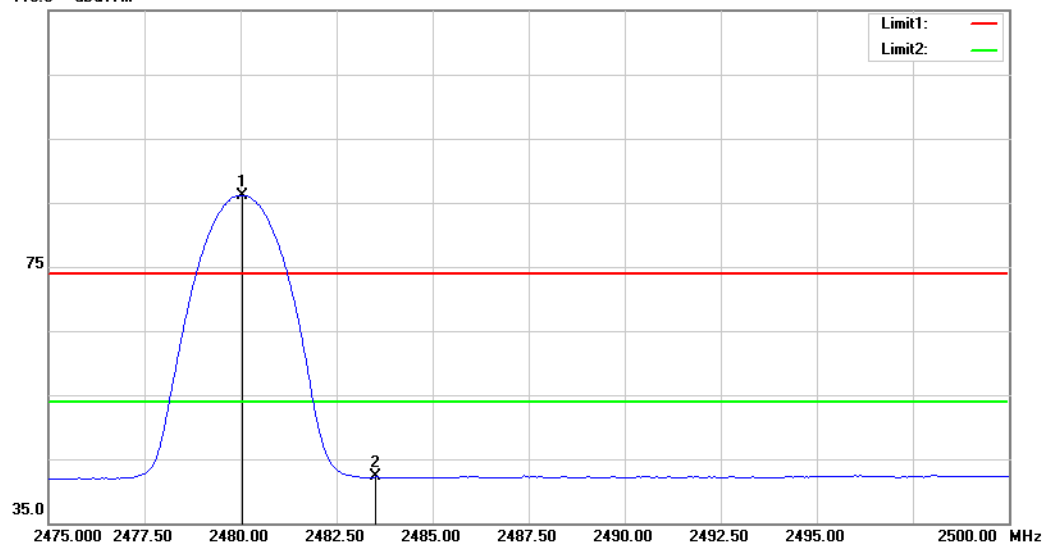
Detector

mode:

Average

Polarity: Vertical

115.0 dBuV/m

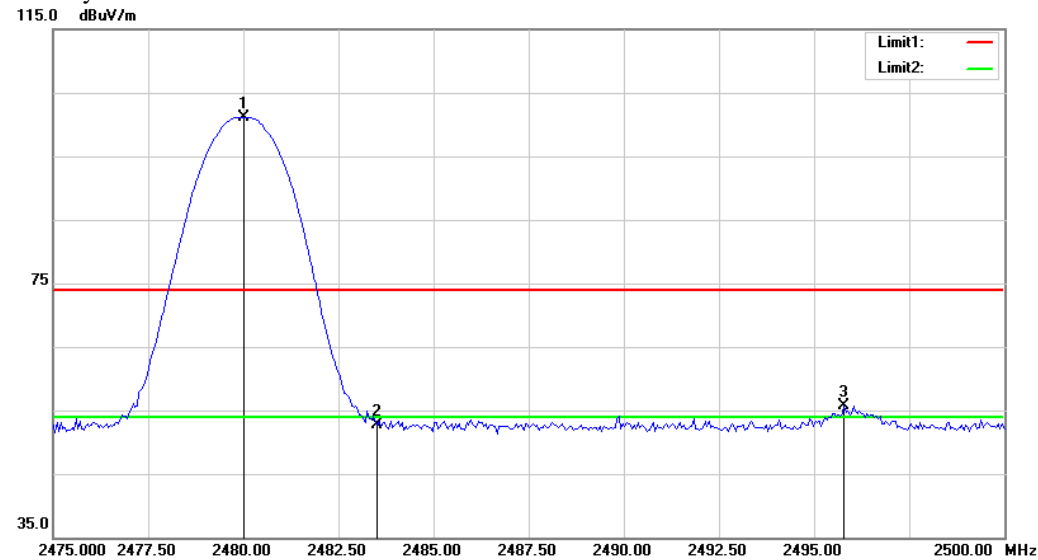


No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2480.060	91.48	-1.28	90.20	---	---	Peak	Vertical
2	2483.500	55.89	-1.27	54.62	74.00	-19.38	Peak	Vertical
1	2480.060	87.47	-1.28	86.19	---	---	Average	Vertical
2	2483.500	43.48	-1.27	42.21	54.00	-11.79	Average	Vertical

Channel High

Detector mode: Peak

Polarity: Horizontal

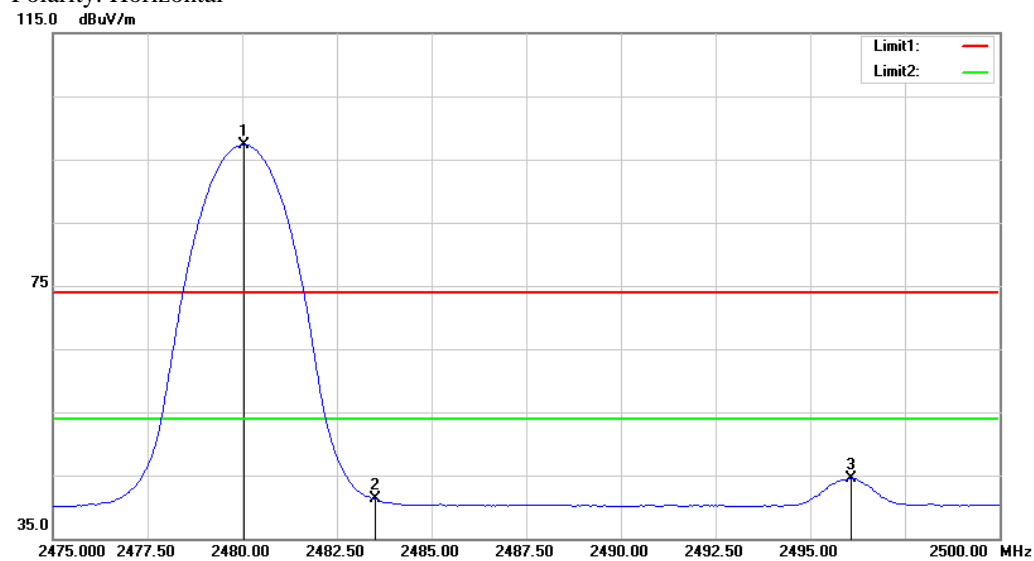


Detector

mode:

Average

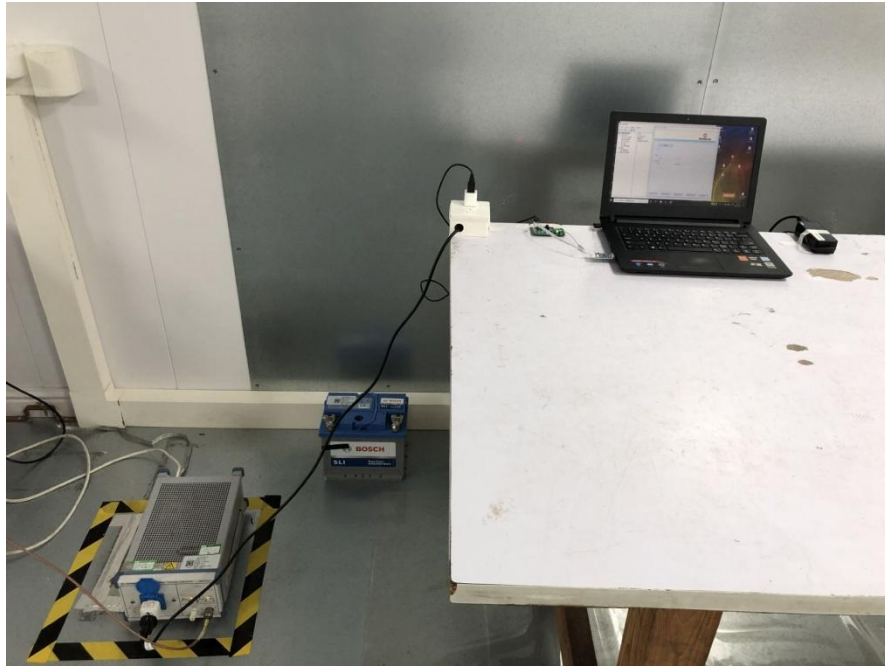
Polarity: Horizontal



No.	Frequency MHz	Reading dBuV	Factor dB	Result dBuV/m	Limit dBuV/m	Margin dB	Remark	Pole
1	2480.010	104.40	-3.26	101.14	---	---	Peak	Vertical
2	2483.500	55.97	-3.25	52.72	74.00	-21.28	Peak	Vertical
3	2495.792	58.88	-3.24	55.64	74.00	-18.36	Peak	Vertical
1	2480.060	100.53	-3.26	97.27	---	---	Average	Vertical
2	2483.500	44.54	-3.25	41.29	54.00	-12.71	Average	Vertical
3	2496.092	47.70	-3.24	44.46	54.00	-9.54	Average	Vertical

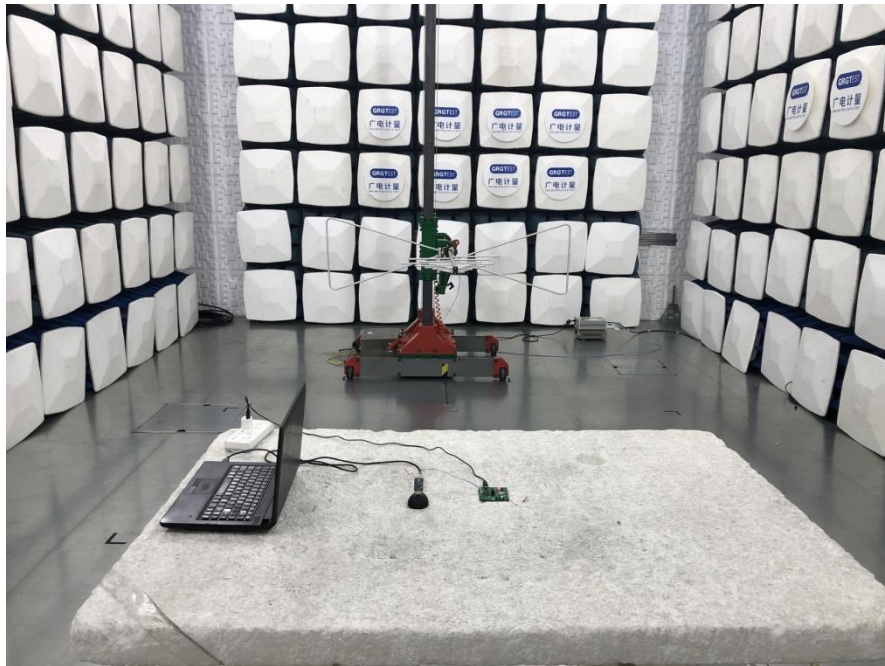
Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

APPENDIX A: PHOTOGRAPH OF THE TEST ARRANGEMENT



CE-Power Line

RSE (Below 1GHz)



RSE (Above 1GHz)



-----This is the last page of the report. -----