FCC TEST REPORT

FCC ID: 2AEOS-ST-4000

Product Name	:	Speaker Box
Model Name	:	ST-4000, ST-3000, LK-1690-15G, LK-1679-15G, LK-1689-15G, LK-1677-15G, LK-1700-15G, LK-1711-15G, LK-1676-15G, LK-1697-15G, LK-1692-15G, LK-1698-15G, LK-1712-15G, LK-1715-15G, LK-1713-15G, LK-1710-12G, LK-1711-12G, LK-1712-12G, LK-1713-12G, LK-1715-12G, LK-1692-12G, LK-1697-12G, LK-1689-12G, LK-1679-12G, LK-1690-12G
Brand Name	:	N/A
Report No.	:	PTC19071803501E-FC01

Prepared for

BRITELITF ENTERPRISES

11901 Santa Monica Blvd., suite 3413 Los Angeles, CA 90025

Prepared by

Dongguan Precise Testing & Certification Corp., Ltd.

Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China

1TEST RESULT CERTIFICATION

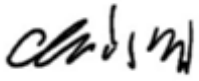
Applicant's name	:	BRITELITF ENTERPRISES
Address	:	11901 Santa Monica Blvd., suite 3413 Los Angeles, CA 90025
Manufacture's name	:	BRITELITF ENTERPRISES
Address	:	11901 Santa Monica Blvd., suite 3413 Los Angeles, CA 90025
Product name	:	Speaker Box
Model name	:	ST-4000, ST-3000, LK-1690-15G, LK-1679-15G, LK-1689-15G, LK-1677-15G, LK-1700-15G, LK-1711-15G, LK-1676-15G, LK-1697-15G, LK-1692-15G, LK-1698-15G, LK-1712-15G, LK-1715-15G, LK-1713-15G, LK-1710-12G, LK-1711-12G, LK-1712-12G, LK-1713-12G, LK-1715-12G, LK-1692-12G, LK-1697-12G, LK-1689-12G, LK-1679-12G, LK-1690-12G
Standards	:	FCC CFR47 Part 15 Section 15.247
Test procedure	:	ANSI C63.10:2013
Test Date	:	August 10, 2019 to August 29, 2019
Date of Issue	:	September 5, 2019
Test Result	:	Pass

This device described above has been tested by PTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of PTC, this document may be altered or revised by PTC, personal only, and shall be noted in the revision of the document.

Test Engineer:

Leo Yang / Engineer

Technical Manager:



Chris Du / Manager

Contents

2 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
Conduct Emission	15.207	PASS
20dB Bandwidth	15.247(a)(1)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Frequency Separation	15.247(a)(1)	PASS
Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
Dwell time	15.247(a)(1)(iii)	PASS
Antenna Requirement	15.203	PASS

3 TEST FACILITY

Dongguan Precise Testing & Certification Corp., Ltd.

Address: Building D, Baoding Technology Park, Guangming Road2, Dongcheng District, Dongguan, Guangdong, China

FCC Registration Number: 790290

A2LA Certificate No.: 4408.01

IC Registration Number: 12191A-1

4 General Information

4.1 General Description of E.U.T.

Product Name	:	Speaker Box
Model Name	:	ST-4000, ST-3000, LK-1690-15G, LK-1679-15G, LK-1689-15G, LK-1677-15G, LK-1700-15G, LK-1711-15G, LK-1676-15G, LK-1697-15G, LK-1692-15G, LK-1698-15G, LK-1712-15G, LK-1715-15G, LK-1713-15G, LK-1710-12G, LK-1711-12G, LK-1712-12G, LK-1713-12G, LK-1715-12G, LK-1692-12G, LK-1697-12G, LK-1689-12G, LK-1679-12G, LK-1690-12G
Bluetooth Version	:	BT 5.0
Operating frequency	:	2402-2480MHz
Numbers of Channel	:	79 channels
Antenna Type	:	Internal PCB Antenna
Antenna Gain	:	-0.68 dBi
Type of Modulation	:	GFSK, Π/4-DQPSK, 8DPSK
Power supply	:	AC 120V/60Hz
Hardware Version	:	V1.0
Software Version	:	V1.0

4.2 Test Mode

The EUT has been tested under its typical operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting. Only the worst case data were reported.

The EUT has been associated with peripherals pursuant to ANSI C63.10-2013 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: radiation (9 KHz to the 10th harmonics of the highest fundamental frequency or to 40 GHz, whichever is lower).

The EUT has been tested under TX operating condition.

This EUT is a FHSS system, were conducted to determine the final configuration from all possible combinations. We use software control the EUT, Let EUT hopping on and transmit with highest power, all the modes GFSK, Π/4-DQPSK, 8DPSK have been tested. 79 Channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	1	2403	2	2404	3	2405
4	2406	5	2407	6	2408	7	2409
8	2410	9	2411	10	2412	11	2413
12	2414	13	2415	14	2416	15	2417
16	2418	17	2419	18	2420	19	2421
20	2422	21	2423	22	2424	23	2425
24	2426	25	2427	26	2428	27	2429
28	2430	29	2431	30	2432	31	2433
32	2434	33	2435	34	2436	35	2437
36	2438	37	2439	38	2440	39	2441
40	2442	41	2443	42	2444	43	2445
44	2446	45	2447	46	2448	47	2449
48	2450	49	2451	50	2452	51	2453
52	2454	53	2455	54	2456	55	2457
56	2458	57	2459	58	2460	59	2461
60	2462	61	2463	62	2464	63	2465
64	2466	65	2467	66	2468	67	2469
68	2470	69	2471	70	2472	71	2473
72	2474	73	2475	74	2476	75	2477
76	2478	77	2479	78	2480	-	-

Channel	**Frequency(MHz)**
0	2402
39	2441
78	2480

5 Equipment During Test

5.1 Equipments List

RF Conducted Test

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
MXG Signal Analyzer	Agilent	N9020A	MY56070279	10Hz-30GHz	Apr 07, 2020
Coaxial Cable	CDS	79254	46107086	10Hz-30GHz	Oct 09, 2019
Antenna Connector	Florida RF Labs	N/A	RF01#	N/A	Aug. 26, 2019

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Aug. 28, 2020
Loop Antenna	Schwarzbeck	FMZB 1519	012	9 KHz -30MHz	Aug. 28, 2020
Bilog Antenna	SCHWARZBECK	VULB9160	9160-3355	25MHz-2GHz	Aug. 22, 2020
Preamplifier (low frequency)	SCHWARZBECK	BBV 9475	9745-0013	1MHz-1GHz	Aug. 21, 2020
Cable	Schwarzbeck	PLF-100	549489	9KHz-3GHz	Aug. 21, 2020
Spectrum Analyzer	Agilent	E4407B	MY45109572	9KHz-40GHz	Aug. 28, 2020
Horn Antenna	SCHWARZBECK	9120D	9120D-1246	1GHz-18GHz	Apr. 13, 2020
Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	1GHz-26.5GHz	Aug. 21, 2020
Horn Antenna	SCHWARZBECK	BBHA 9170	9170-181	14GHz-40GHz	Apr. 13, 2020
Amplifier	SCHWARZBECK	BBV 9721	9721-205	18GHz-40GHz	Aug. 21, 2020
Cable	H+S	CBL-26	N/A	1GHz-26.5GHz	Aug. 21, 2020
RF Cable	R&S	R204	R21X	1GHz-40GHz	Aug. 21, 2020

Conducted Emissions

Name of Equipment	Manufacturer	Model	Serial No.	Characteristics	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	9KHz-3GHz	Sep. 03, 2019
Artificial Mains Network	Rohde&Schwarz	L2-16B	000WX31025	9KHz-300MHz	Sep. 03, 2019
Artificial Mains Network	Rohde&Schwarz	ENV216	101342	9KHz-300MHz	Sep. 03, 2019

5.2 Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Remark: The coverage Factor (k=2), and measurement Uncertainty for a level of Confidence of 95%	

5.3 Description of Support Units

Equipment	Model No.	Series No.
N/A	N/A	N/A

6 Conducted Emission

Test Requirement:	:	FCC CFR 47 Part 15 Section 15.207
Test Method:	:	ANSI C63.10:2013
Test Result:	:	PASS
Frequency Range:	:	150kHz to 30MHz
Class/Severity:	:	Class B
Detector:	:	Peak for pre-scan (9kHz Resolution Bandwidth)

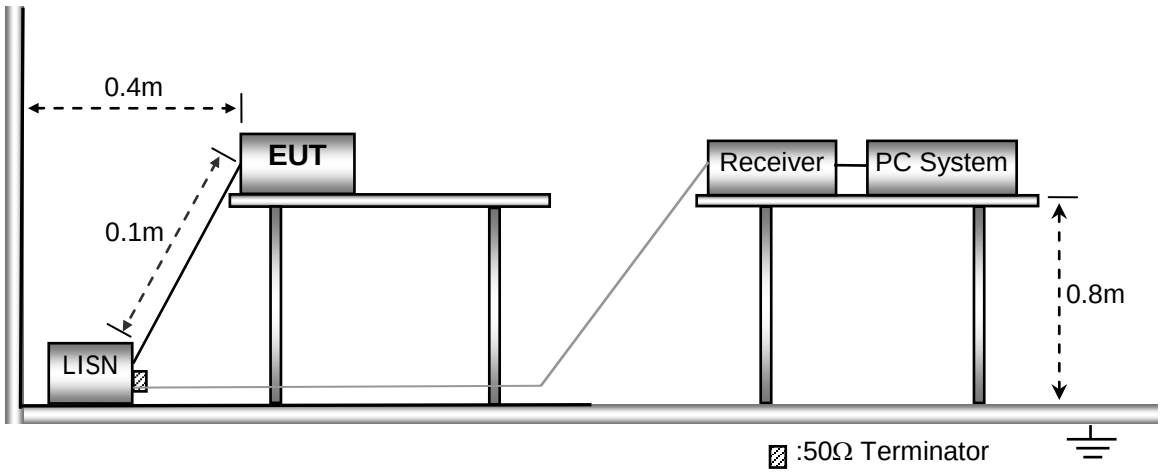
6.1 E.U.T. Operation

Operating Environment **:**

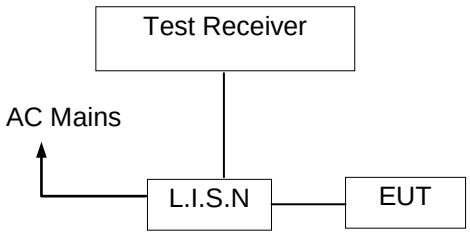
Temperature:	:	23.5 °C
Humidity:	:	49.5 % RH
Atmospheric Pressure:	:	101.18kPa
Test Voltage	:	AC 120V/60Hz

6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10: 2013



6.3 Test SET-UP (Block Diagram of Configuration)



6.4 Measurement Procedure:

1. The EUT was placed on a table, which is 0.1m above ground plane.

2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

3. Repeat above procedures until all frequency measured was complete.

6.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note:
1. The lower limit shall apply at the transition frequencies
2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

6.6 Measurement Description

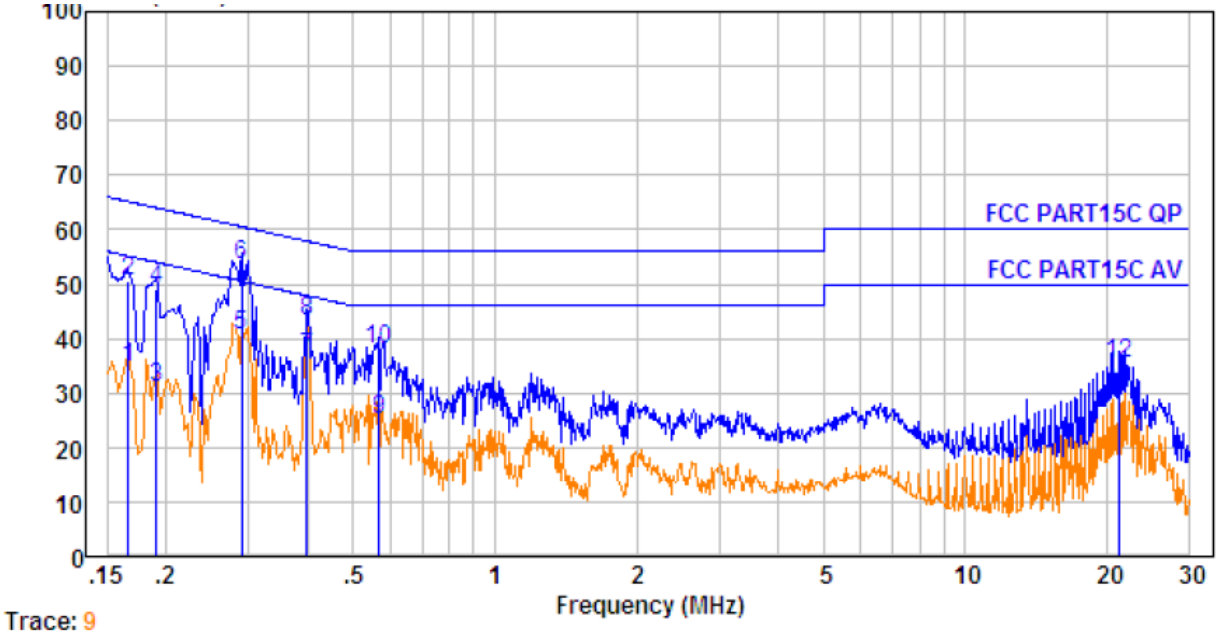
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.7 Conducted Emission Test Result

Pass.

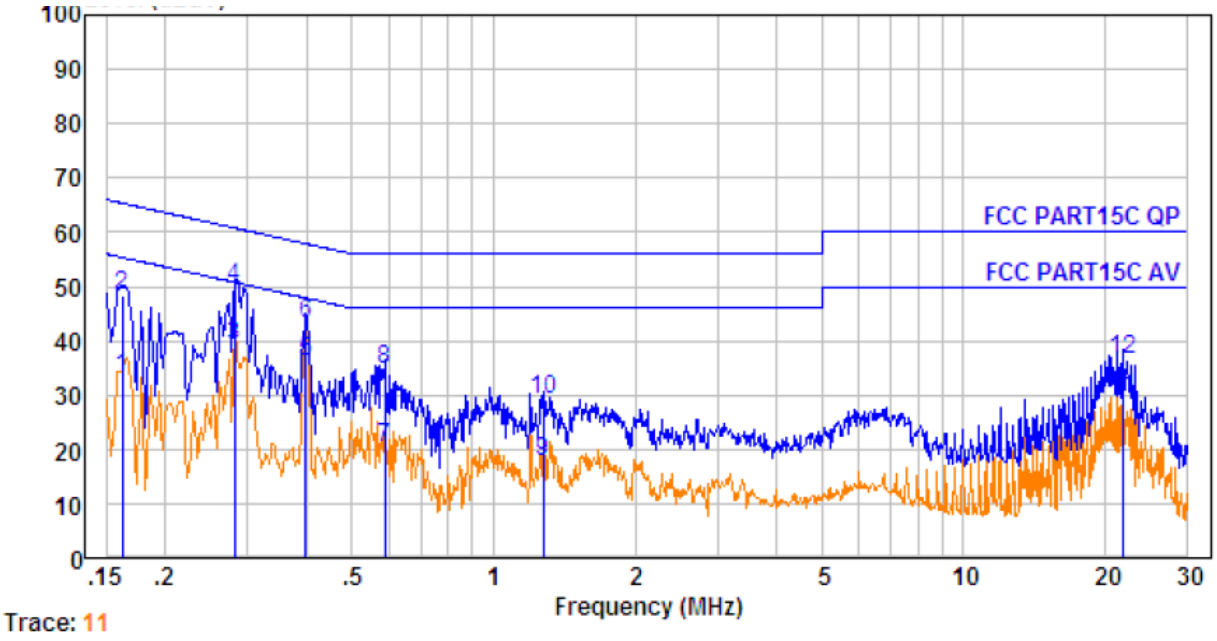
All the modulation modes were tested the data of the worst mode (AC 120V/60Hz, GFSK TX 2402MHz) are recorded in the following pages and the others modulation methods do not exceed the limits.

Line -120V/60Hz:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBµV	Emission Level dBµV	Limit dBµV	Over Limit dB	Remark
1.	0.166	0.23	9.53	24.90	34.66	55.16	-20.50	Average
2.	0.166	0.23	9.53	40.97	50.73	65.16	-14.43	QP
3.	0.190	0.27	9.57	21.32	31.16	54.02	-22.86	Average
4.	0.190	0.27	9.57	39.37	49.21	64.02	-14.81	QP
5.	0.289	0.36	9.67	30.66	40.69	50.54	-9.85	Average
6.	0.289	0.36	9.67	43.36	53.39	60.54	-7.15	QP
7.	0.398	0.40	9.73	26.42	36.55	47.90	-11.35	Average
8.	0.398	0.40	9.73	33.19	43.32	57.90	-14.58	QP
9.	0.567	0.43	9.79	14.99	25.21	46.00	-20.79	Average
10.	0.567	0.43	9.79	27.87	38.09	56.00	-17.91	QP
11.	21.147	0.43	9.85	19.49	29.77	50.00	-20.23	Average
12.	21.147	0.43	9.85	25.19	35.47	60.00	-24.53	QP

Neutral -120V/60Hz:



No.	Freq MHz	Cable Loss dB	AMN Factor dB	Receiver Reading dBµV	Emission Level dBµV	Limit dBµV	Over Limit dB	Remark
1.	0.162	0.23	9.55	23.46	33.24	55.34	-22.10	Average
2.	0.162	0.23	9.55	38.45	48.23	65.34	-17.11	QP
3.	0.282	0.36	9.69	29.24	39.29	50.76	-11.47	Average
4.	0.282	0.36	9.69	39.66	49.71	60.76	-11.05	QP
5.	0.398	0.40	9.76	25.99	36.15	47.90	-11.75	Average
6.	0.398	0.40	9.76	33.14	43.30	57.90	-14.60	QP
7.	0.589	0.43	9.82	10.10	20.35	46.00	-25.65	Average
8.	0.589	0.43	9.82	24.27	34.52	56.00	-21.48	QP
9.	1.276	0.46	9.86	7.48	17.80	46.00	-28.20	Average
10.	1.276	0.46	9.86	18.75	29.07	56.00	-26.93	QP
11.	21.946	0.45	10.00	19.07	29.52	50.00	-20.48	Average
12.	21.946	0.45	10.00	26.15	36.60	60.00	-23.40	QP

7 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method : ANSI C63.10:2013

Test Result : PASS

Measurement Distance : 3m

Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation

Operating Environment :

Temperature : 24.8 °C

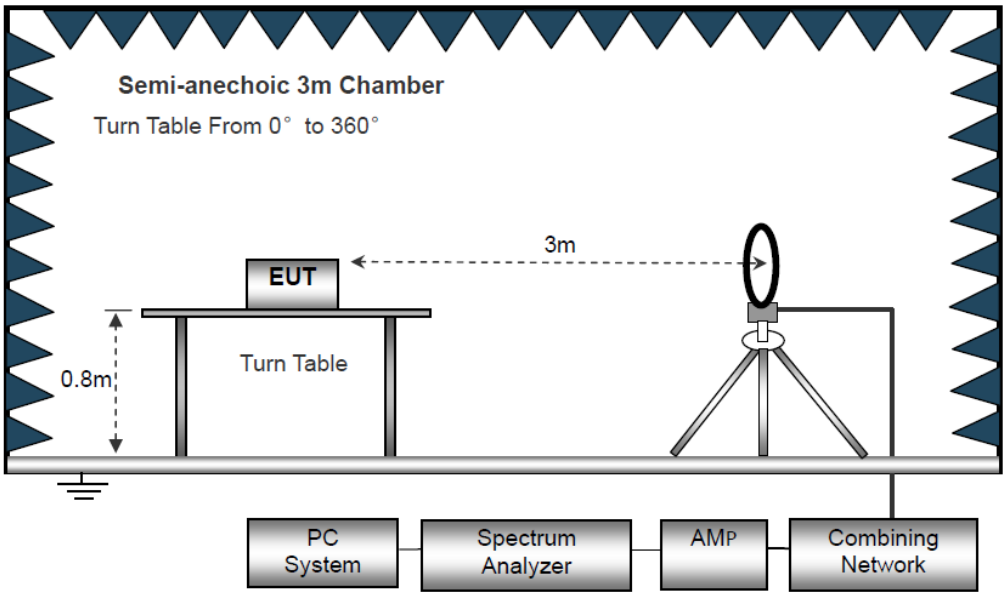
Humidity : 51.65 % RH

Atmospheric Pressure : 101.18kPa

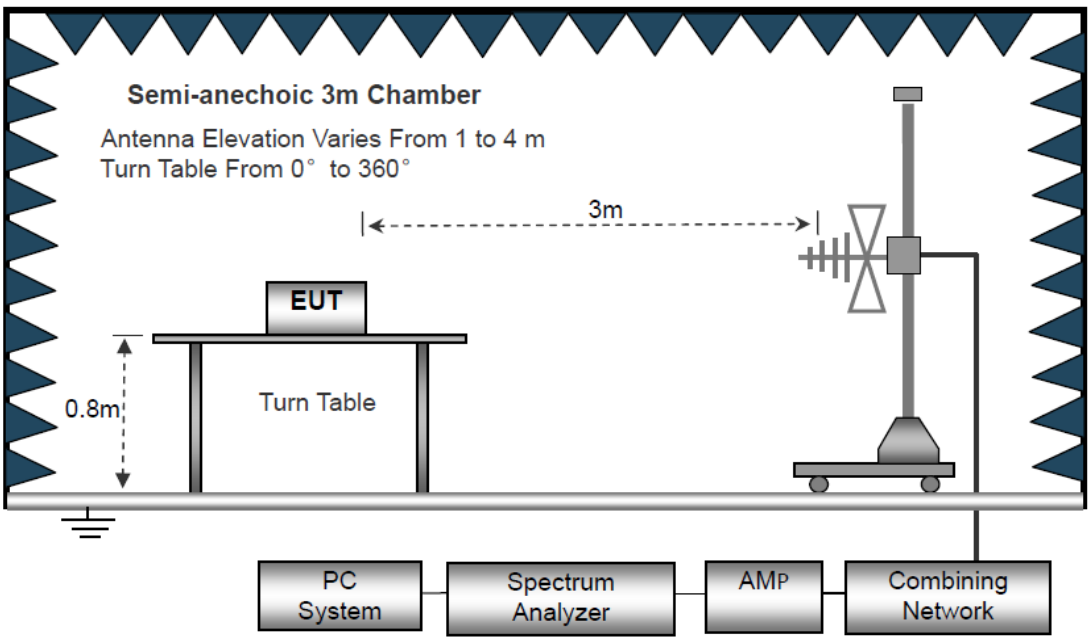
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

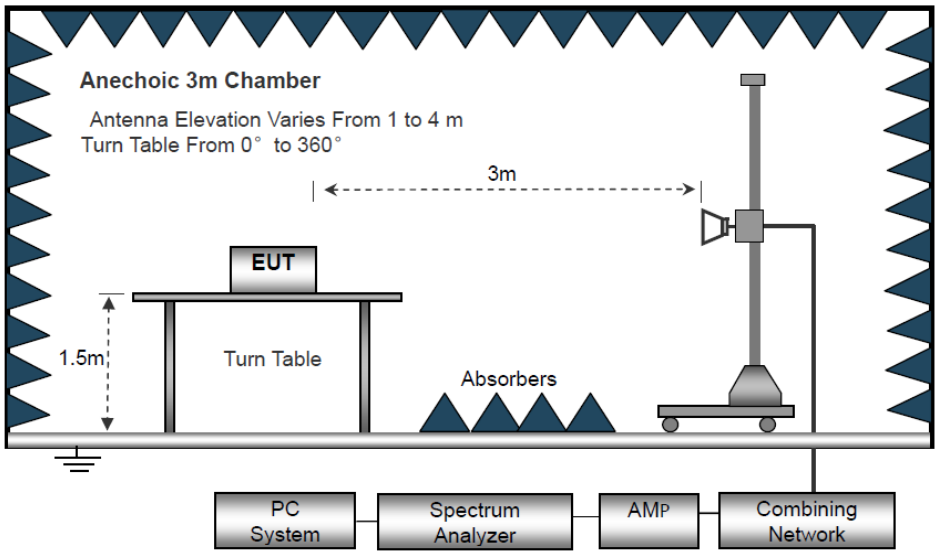
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

Below 30MHz			
IF Bandwidth	:	10kHz	
Resolution Bandwidth	:	10kHz	
Video Bandwidth	:	10kHz	
30MHz ~ 1GHz			
Detector	:	PK	QP
Resolution Bandwidth	:	100kHz	120kHz
Video Bandwidth	:	300kHz	300kHz
Above 1GHz			
Detector	:	PK	AV
Resolution Bandwidth	:	1MHz	1MHz
Video Bandwidth	:	3MHz	10Hz

7.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above 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 moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room

7.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

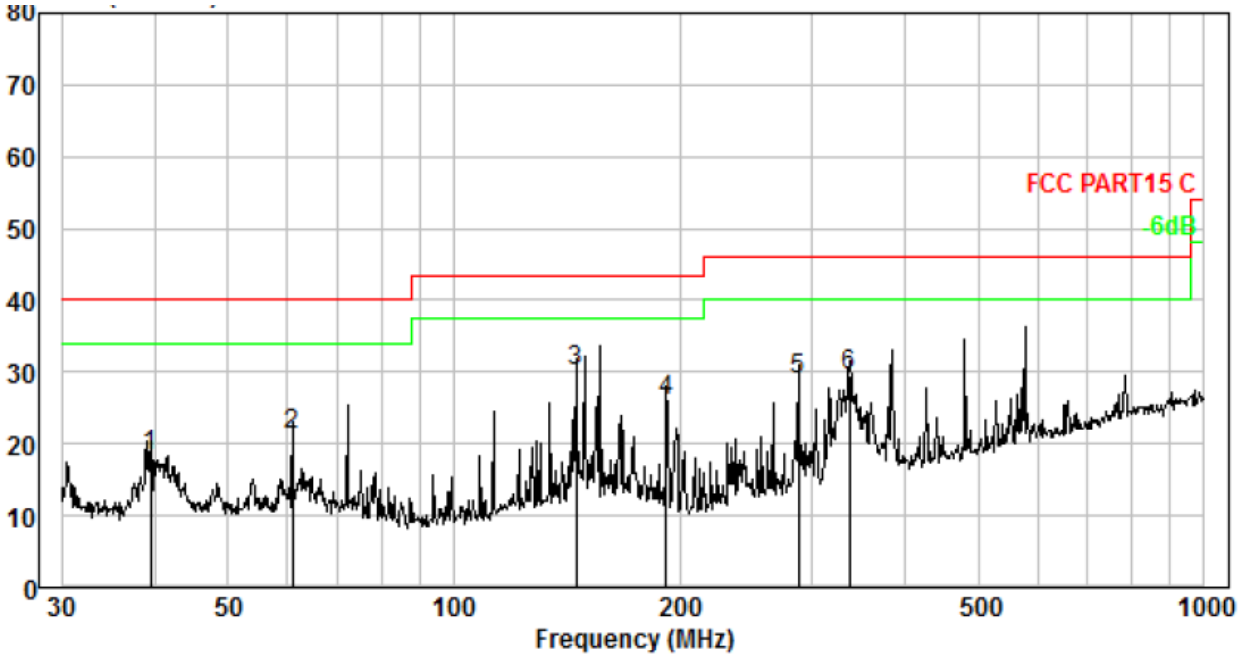
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

Please refer to the following test plots:

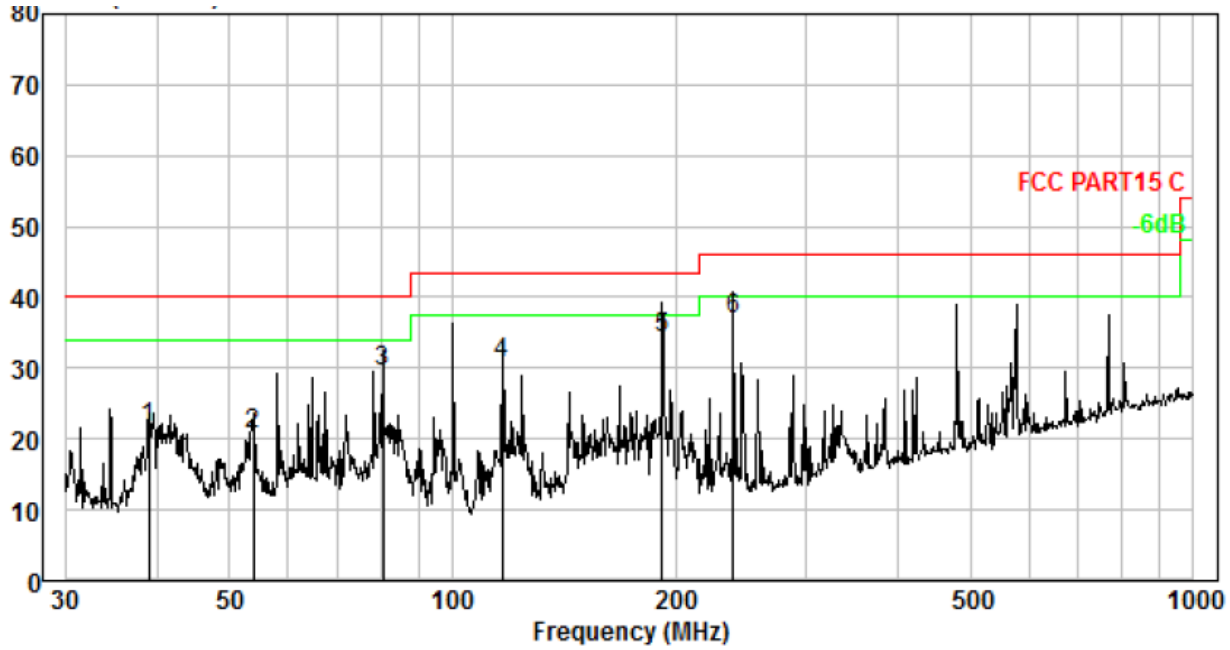
All the modulation modes were tested the data of the worst mode (AC 120V/60Hz, GFSK TX 2402MHz) are recorded in the following pages and the others modulation methods do not exceed the limits.

Test plot for Horizontal: GFSK(2402MHz)



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	39.437	1.68	13.67	33.13	30.07	18.41	40.00	-21.59	QP
2.	60.918	2.42	12.11	36.85	30.22	21.16	40.00	-18.84	QP
3.	145.351	3.91	13.65	42.95	30.52	29.99	43.50	-13.51	QP
4.	191.745	4.39	10.97	41.28	30.62	26.02	43.50	-17.48	QP
5.	287.990	5.09	12.96	41.77	30.76	29.06	46.00	-16.94	QP
6.	337.216	5.36	14.03	40.94	30.81	29.52	46.00	-16.48	QP

Test plot for Vertical: GFSK(2402MHz)



No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	38.888	1.65	13.62	36.32	30.06	21.53	40.00	-18.47	QP
2.	53.882	2.21	11.98	36.70	30.17	20.72	40.00	-19.28	QP
3.	80.644	2.90	8.76	48.16	30.31	29.51	40.00	-10.49	QP
4.	116.540	3.54	11.71	45.84	30.44	30.65	43.50	-12.85	QP
5.	191.745	4.39	10.97	49.51	30.62	34.25	43.50	-9.25	QP
6.	239.147	4.77	11.67	51.10	30.69	36.85	46.00	-9.15	QP

Test Frequency 1GHz-18GHz

Low Channel (2402MHz) Worst case GFSK

Frequency	S.A	Detector	Polarity	Ant.	Cable	Pre-	Emission	Limit	Margin

(MHz)	Reading (dBuV)	(PK/AV)	(H/V)	Factor (dB/m)	Loss (dB)	Amp. Gain (dB)	Level (dBuV/m)	(dBuV/m)	(dB)
4804	34.66	AV	V	30.35	5.69	29.75	40.95	54	-13.05
4804	33.15	AV	H	30.35	5.69	29.75	39.44	54	-14.56
4804	39.2	PK	V	30.35	5.69	29.75	45.49	74	-28.51
4804	40.35	PK	H	30.35	5.69	29.75	46.64	74	-27.36
17809	24.59	AV	V	38.72	7.36	30.11	40.56	54	-13.44
17809	25.36	AV	H	38.72	7.36	30.11	41.33	54	-12.67
17809	38.04	PK	V	38.72	7.36	30.11	54.01	74	-19.99
17809	37.46	PK	H	38.72	7.36	30.11	53.43	74	-20.57

Middle Channel (2441MHz) Worst case π/4-DQPSK

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4882	34.21	AV	V	29.66	6.69	26.49	44.07	54	-9.93
4882	31.05	AV	H	29.66	6.69	26.49	40.91	54	-13.09
4882	40.15	PK	V	29.66	6.69	26.49	50.01	74	-23.99
4882	38.06	PK	H	29.66	6.69	26.49	47.92	74	-26.08
17806	25.74	AV	V	38.25	9.43	37.69	35.73	54	-18.27
17806	23.69	AV	H	38.25	9.43	37.69	33.68	54	-20.32
17806	36.25	PK	V	38.25	9.43	37.69	46.24	74	-27.76
17806	35.75	PK	H	38.25	9.43	37.69	45.74	74	-28.26

High Channel (2480MHz) Worst case GFSK

Frequency (MHz)	S.A Reading (dBuV)	Detector (PK/AV)	Polarity (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4960	31.36	AV	V	28.75	6.99	26.72	40.38	54	-13.62
4960	32.05	AV	H	28.75	6.99	26.72	41.07	54	-12.93
4960	41.25	PK	V	28.75	6.99	26.72	50.27	74	-23.73
4960	42.69	PK	H	28.75	6.99	26.72	51.71	74	-22.29
17811	25.14	AV	V	39.67	7.14	30.33	41.62	54	-12.38
17811	23.68	AV	H	39.67	7.14	30.33	40.16	54	-13.84
17811	38.42	PK	V	39.67	7.14	30.33	54.9	74	-19.1
17811	34.69	PK	H	39.67	7.14	30.33	51.17	74	-22.83

Note: 1. The testing has been conformed to 10*2480MHz=24800MHz.

2. All other emissions more than 30dB below the limit.

3. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Emission Level = Reading + Factor
Margin=Emission Level-Limit

Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

Bluetooth (GFSK, Pi/4-DQPSK, 8DPSK, Hopping)mode have been tested, and the worst result(GFSK, Hopping) was report as below

Test Mode: GFSK Frequency: Channel 0 2402MHz							
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over (dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2385.936	H	49.54	74	-24.46	31.52	54	-22.48
2384.186	V	47.95	74	-26.05	32.41	54	-21.59

Test Mode: GFSK Frequency: Channel 78 2480MHz							
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over (dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2484.538	H	48.86	74	-25..14	30.75	54	-23.25
2485.135	V	48.14	74	-25.86	31.53	54	-22.47

Test Mode: GFSK Frequency: Hopping							
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over (dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2390.00	H	43.84	74	-30.16	30.42	54	-23.58
2483.50	H	45.24	74	-28.76	31.71	54	-22.29
2390.00	V	44.64	74	-29.36	29.74	54	-24.64
2483.50	V	43.47	74	-30.53	31.53	54	-22.47

Test Frequency: From 18GHz to 25GHz

The measurements were more than 20dB below the limit and not reported.

8 CONDUCTED BAND EDGE EMISSION

8.1 REQUIREMENT

Regulation 15.247 (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. Attenuation below the general limits specified in §15.209(a) is not required. 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)).

8.2 TEST PROCEDURE

. 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 = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold

8.3 TEST SETUP

1. The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100KHz. The video bandwidth is set to 300KHz.

2. The spectrum from 30MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

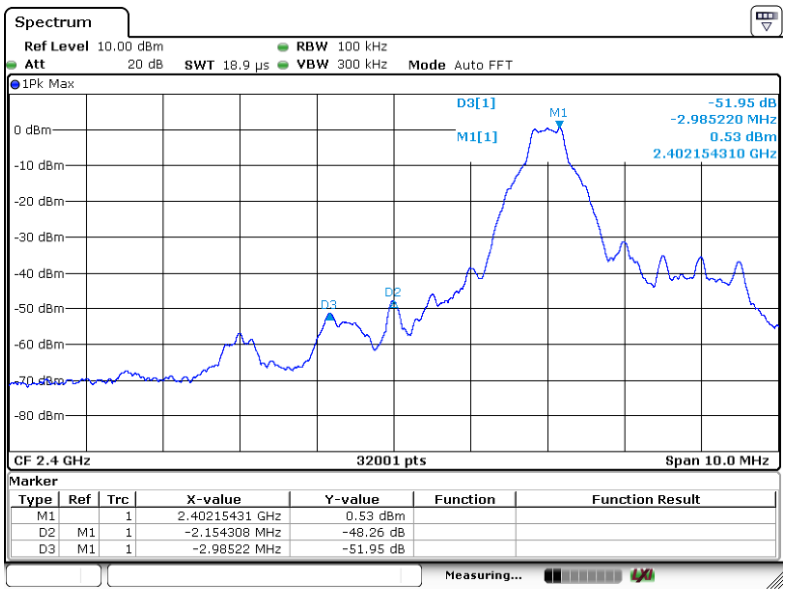
8.4 EUT OPERATION CONDITIONS

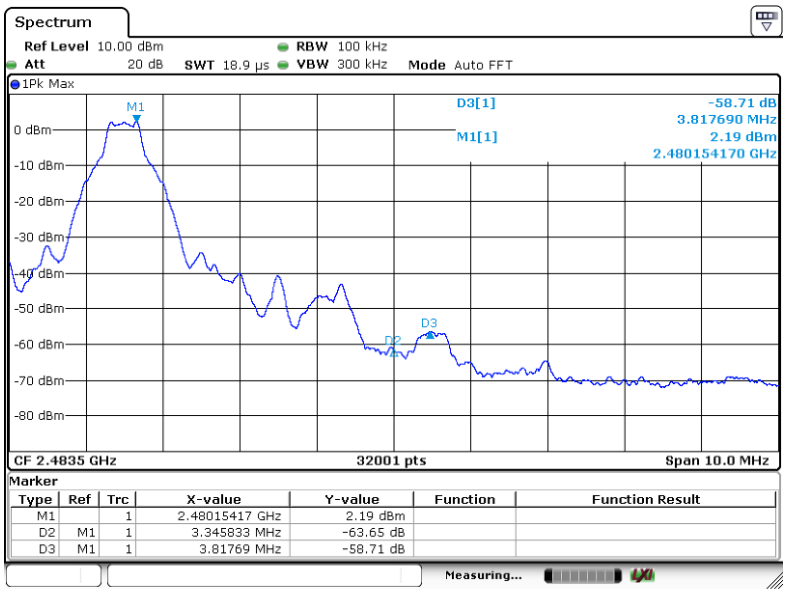
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

8.5 TEST RESULTS

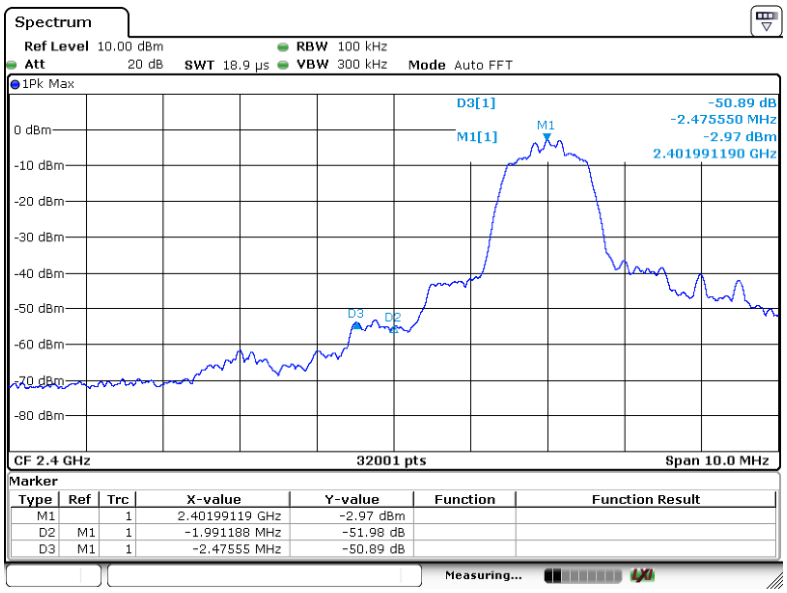
For Non-Hopping Mode:

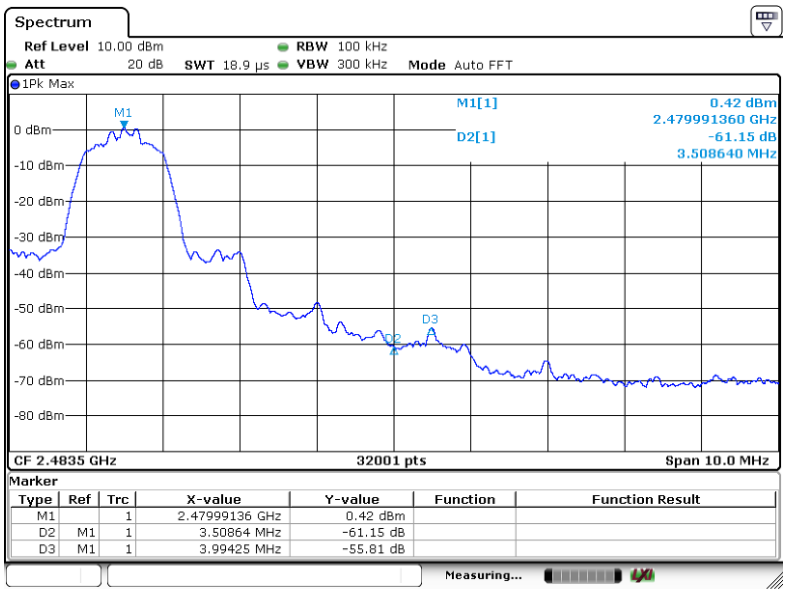
GFSK



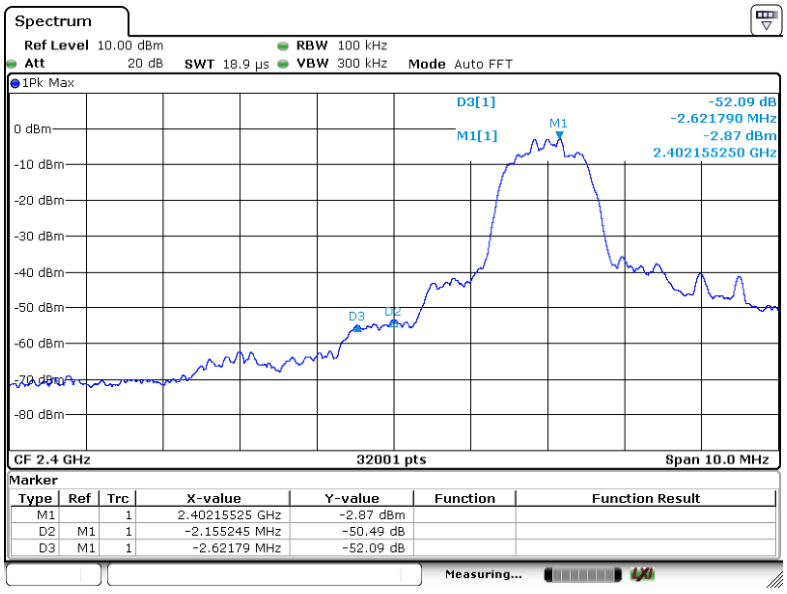

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1
D3[1]
-58.71 dB
3.817690 MHz
M1[1]
2.19 dBm
2.480154170 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D2
D3
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.48015417 GHz 2.19 dBm
D2 M1 1 3.345833 MHz -63.65 dB
D3 M1 1 3.81769 MHz -58.71 dB
Measuring...

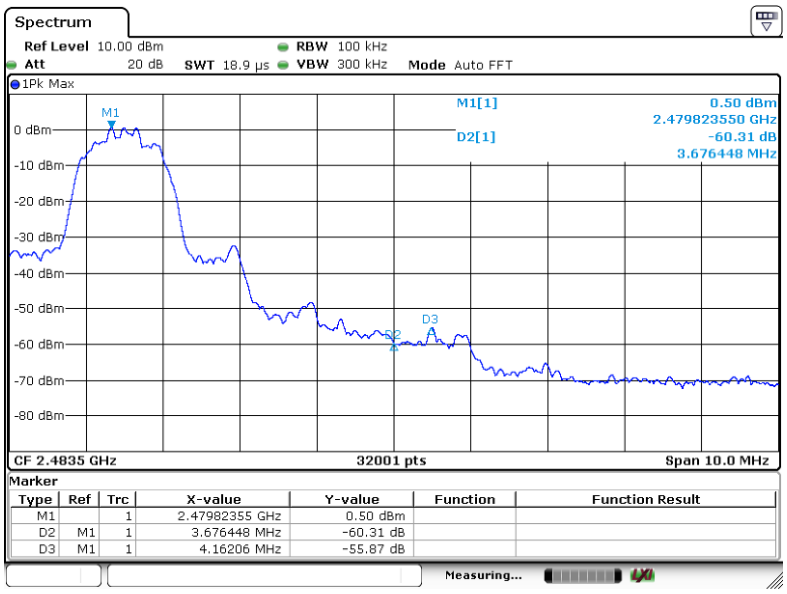
π/4-DQPSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-50.89 dB
-2.475550 MHz
M1[1]
-2.97 dBm
2.401991190 GHz
M1
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
D3
D2
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40199119 GHz -2.97 dBm
D2 M1 1 -1.991188 MHz -51.98 dB
D3 M1 1 -2.47555 MHz -50.89 dB
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
0.42 dBm
2.479991360 GHz
D2[1]
-61.15 dB
3.508640 MHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47999136 GHz 0.42 dBm
D2 M1 1 3.50864 MHz -61.15 dB
D3 M1 1 3.99425 MHz -55.81 dB
Measuring...

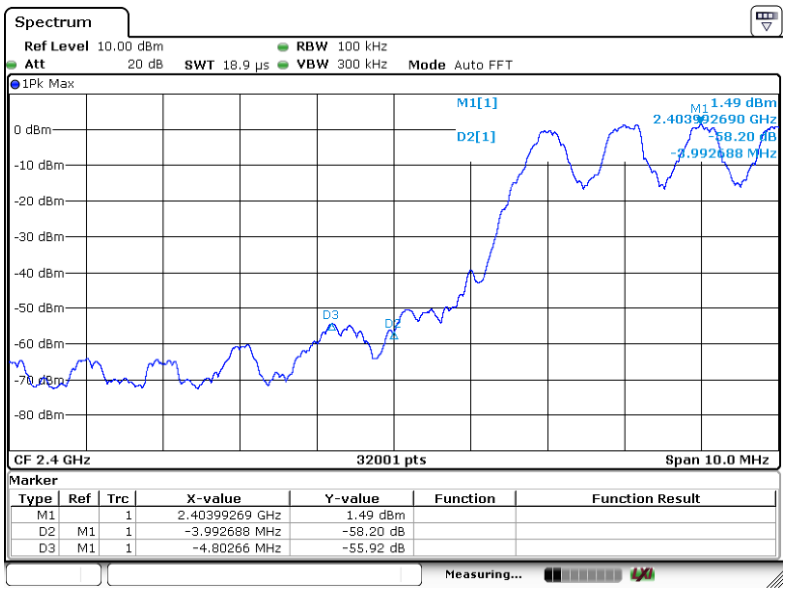
8DPSK

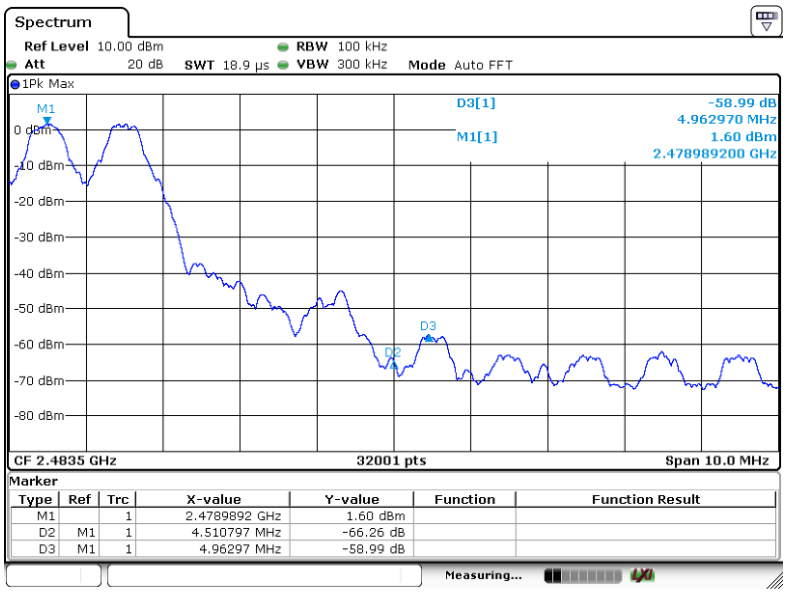

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-52.09 dB
-2.621790 MHz
M1[1]
-2.87 dBm
2.402155250 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40215525 GHz -2.87 dBm
D2 M1 1 -2.155245 MHz -50.49 dB
D3 M1 1 -2.62179 MHz -52.09 dB
Measuring...



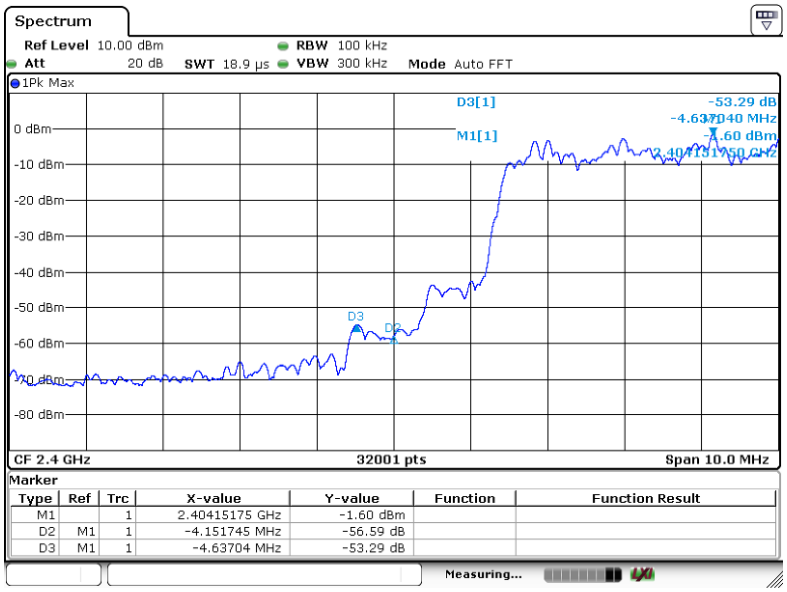
For Hopping Mode:

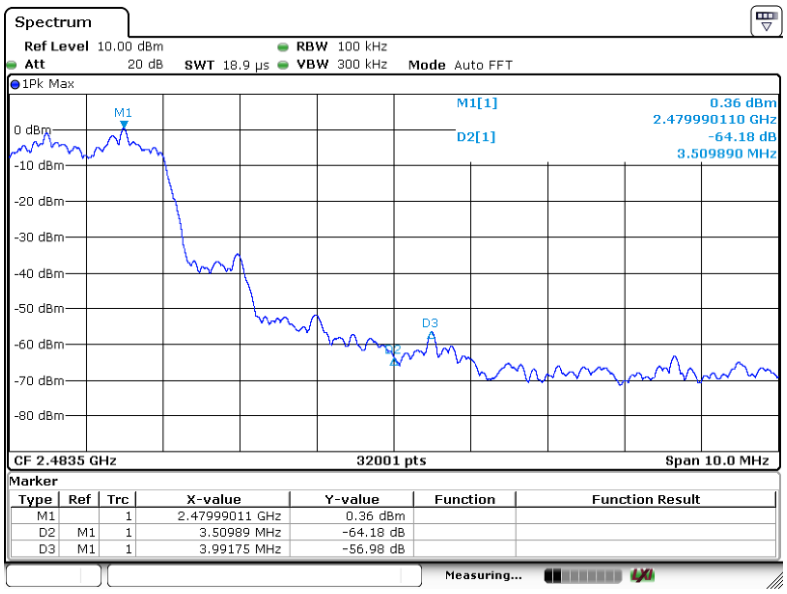
GFSK



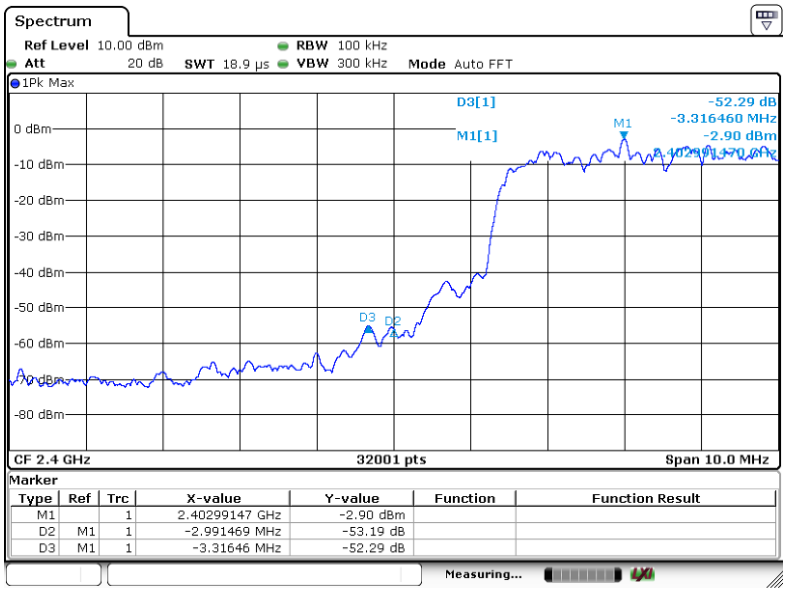

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-58.99 dB
4.962970 MHz
M1[1]
1.60 dBm
2.478989200 GHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.4789892 GHz 1.60 dBm
D2 M1 1 4.510797 MHz -66.26 dB
D3 M1 1 4.96297 MHz -58.99 dB
Measuring...

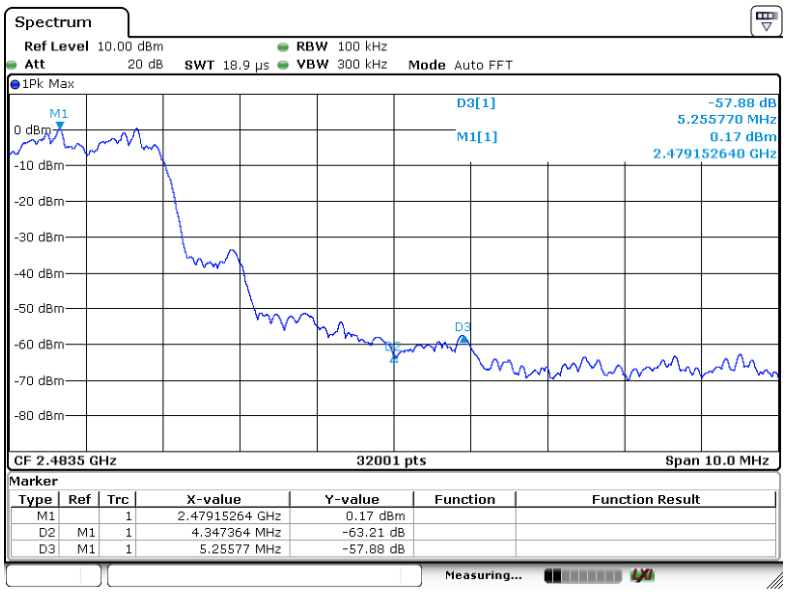
π/4-DQPSK


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-53.29 dB
M1[1]
-1.60 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40415175 GHz -1.60 dBm
D2 M1 1 -4.151745 MHz -56.59 dB
D3 M1 1 -4.63704 MHz -53.29 dB
Measuring...


Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
M1[1]
0.36 dBm
2.479990110 GHz
D2[1]
-64.18 dB
3.509890 MHz
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4835 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.47999011 GHz 0.36 dBm
D2 M1 1 3.50989 MHz -64.18 dB
D3 M1 1 3.99175 MHz -56.98 dB
Measuring...

8DPSK

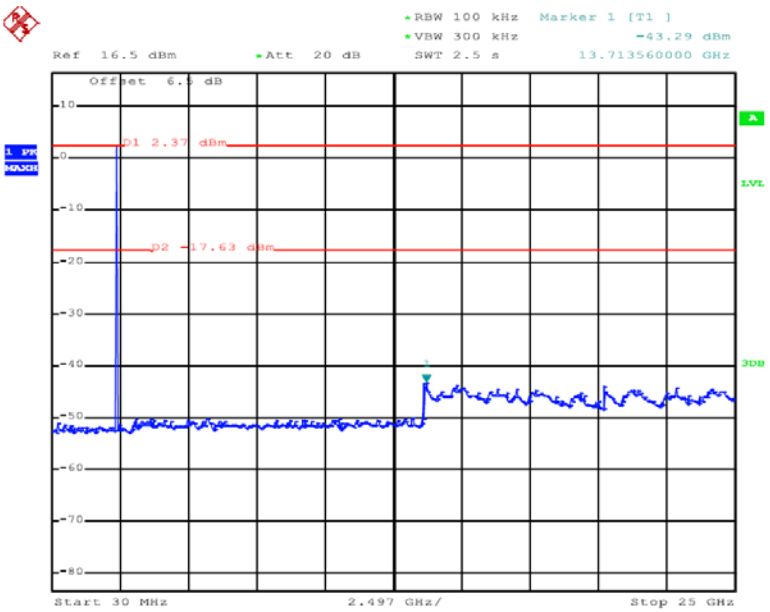

Spectrum
Ref Level 10.00 dBm
RBW 100 kHz
Att 20 dB
SWT 18.9 µs
VBW 300 kHz
Mode Auto FFT
1Pk Max
D3[1]
-52.29 dB
-3.316460 MHz
M1[1]
-2.90 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 2.4 GHz
32001 pts
Span 10.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.40299147 GHz -2.90 dBm
D2 M1 1 -2.991469 MHz -53.19 dB
D3 M1 1 -3.31646 MHz -52.29 dB
Measuring...



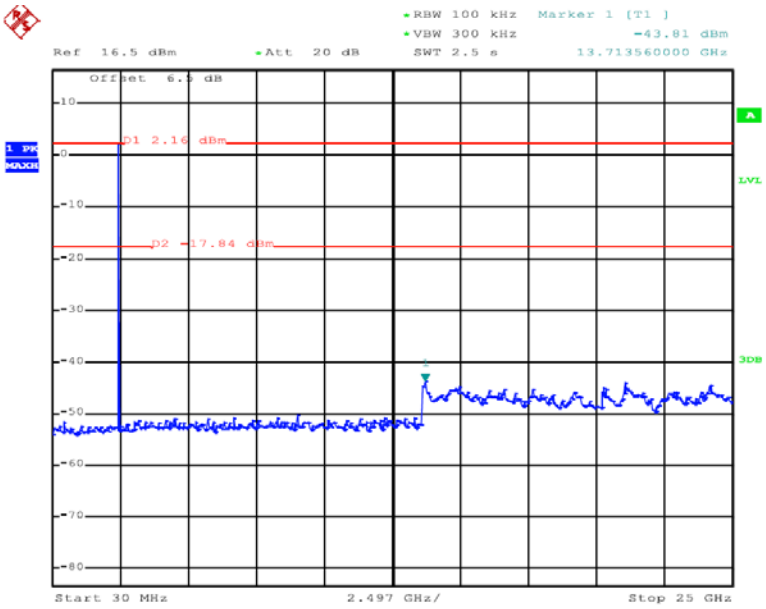
For Conduct spurious emissions

GFSK

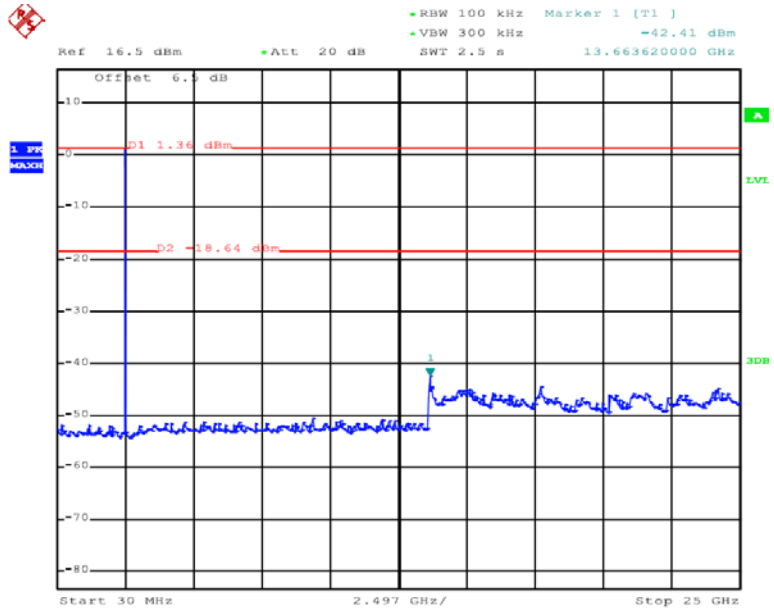
Low Channel



Middle Channel

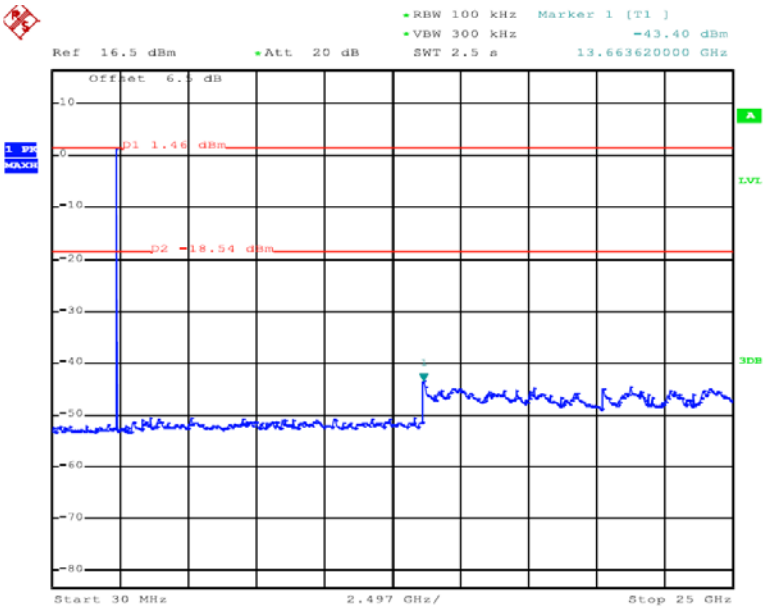


High Channel

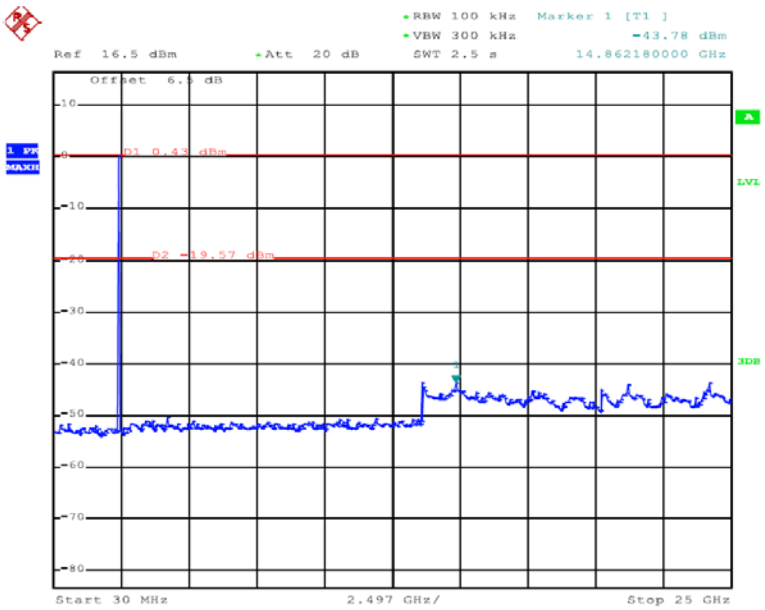


π/4-DQPSK

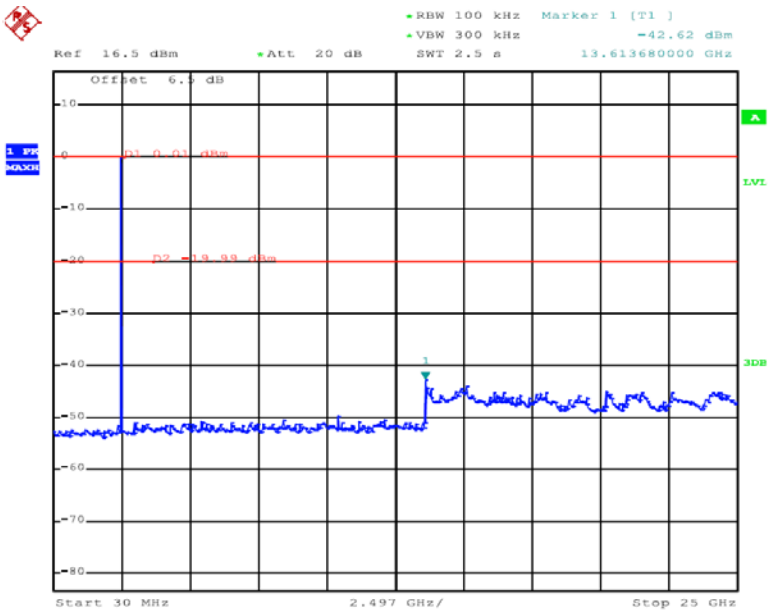
Low Channel



Middle Channel

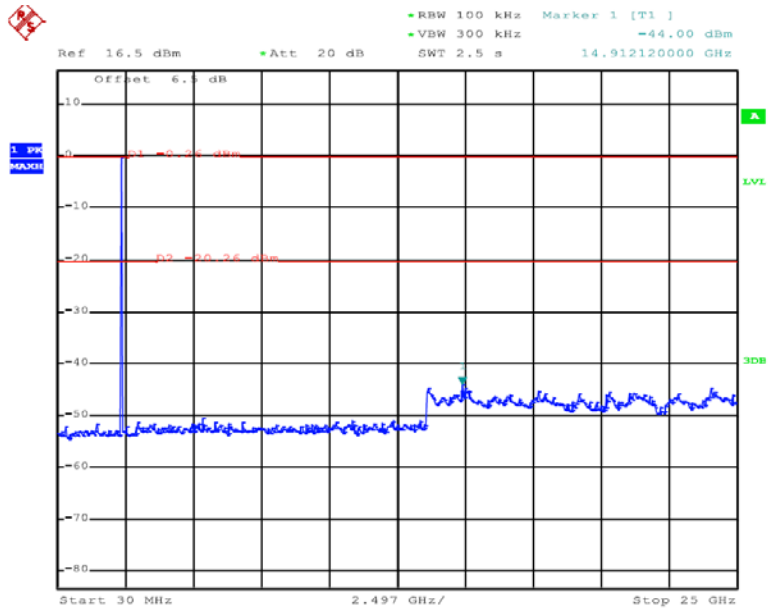


High Channel

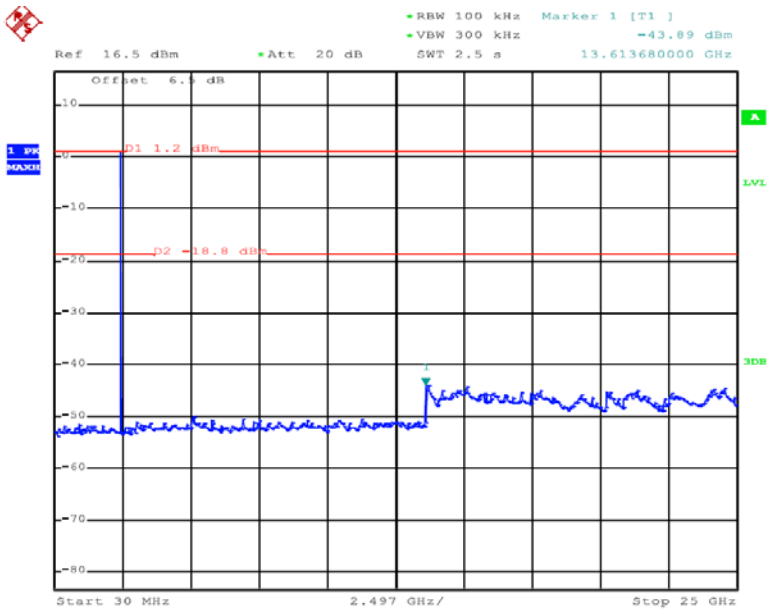


8DPSK

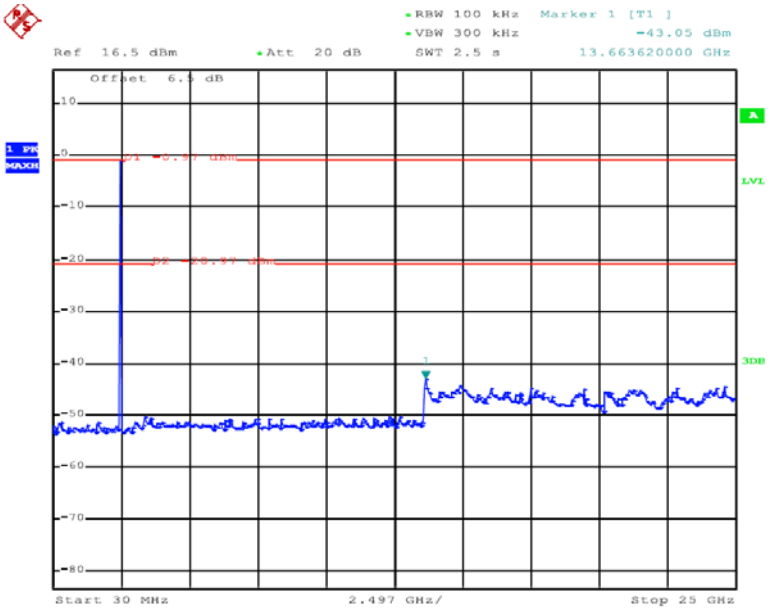
Low Channel



Middle Channel



High Channel



9 20 dB Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.247

Test Method : ANSI C63.10:2013

9.1 Test Procedure

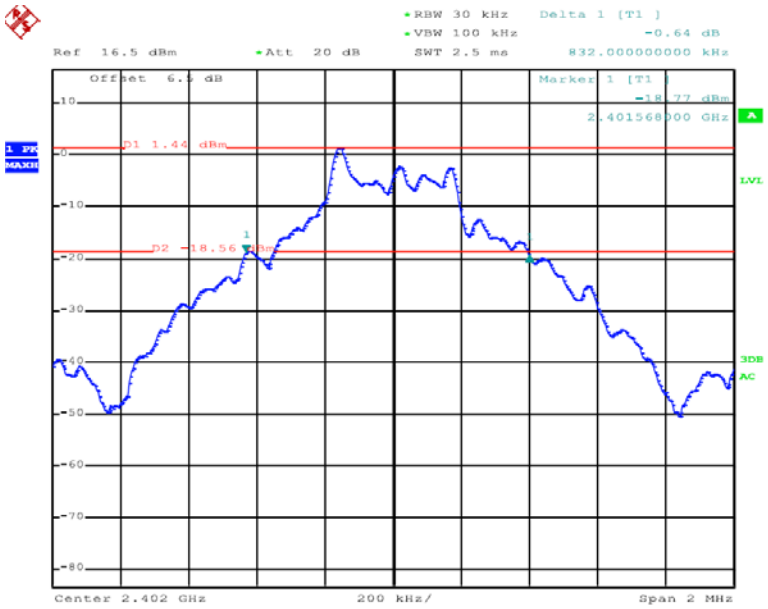
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

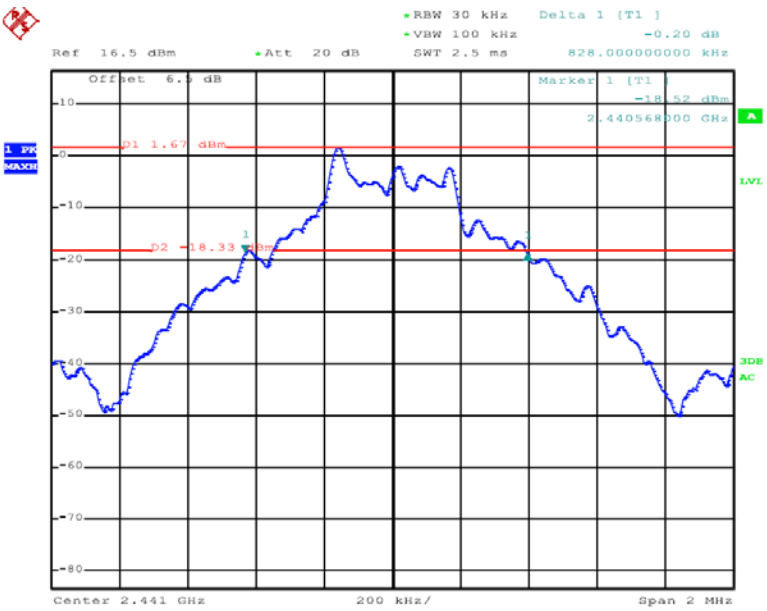
2. Set the spectrum analyzer: RBW =30kHz, VBW = 100kHz

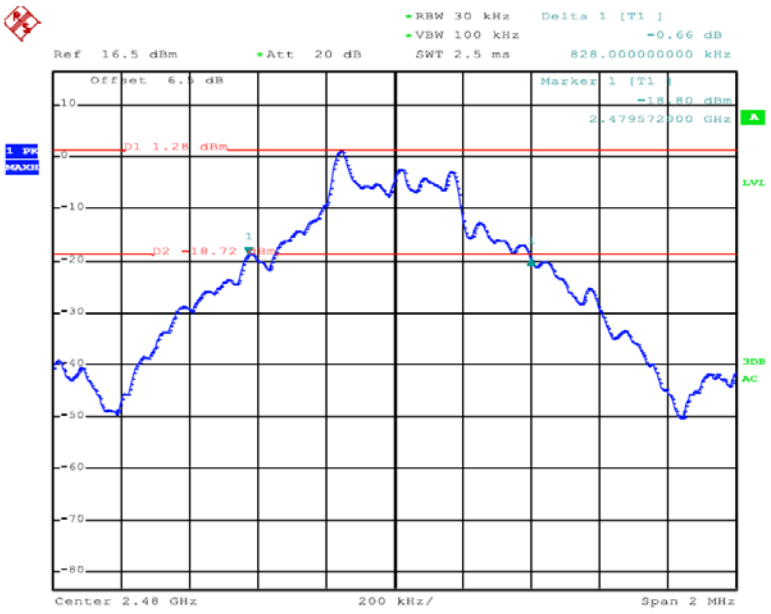
9.2 Test Result

Test Mode: CH00 / CH39 / CH78 (GFSK/(1Mbps)Mode)

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
00	2402	832
39	2441	828
78	2480	828

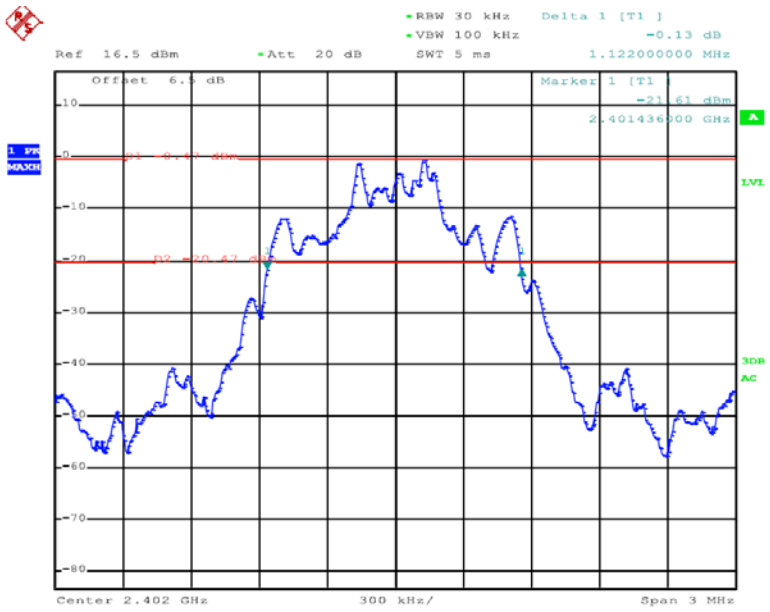


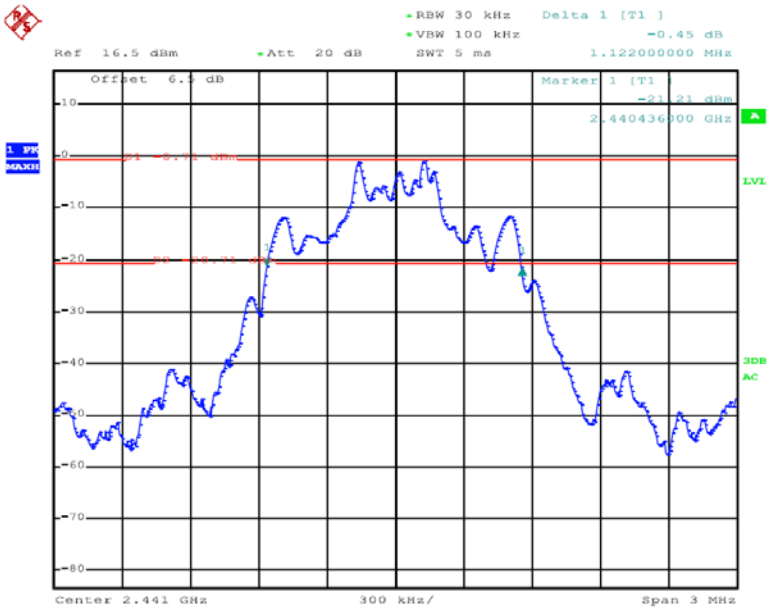

RBW 30 kHz
VBW 100 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.20 dB
828.000000000 kHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-18.52 dBm
2.440568000 GHz
D1 1.67 dBm
D2 -18.33 dBm
LVL
3DB
AC
Center 2.441 GHz
200 kHz/
Span 2 MHz

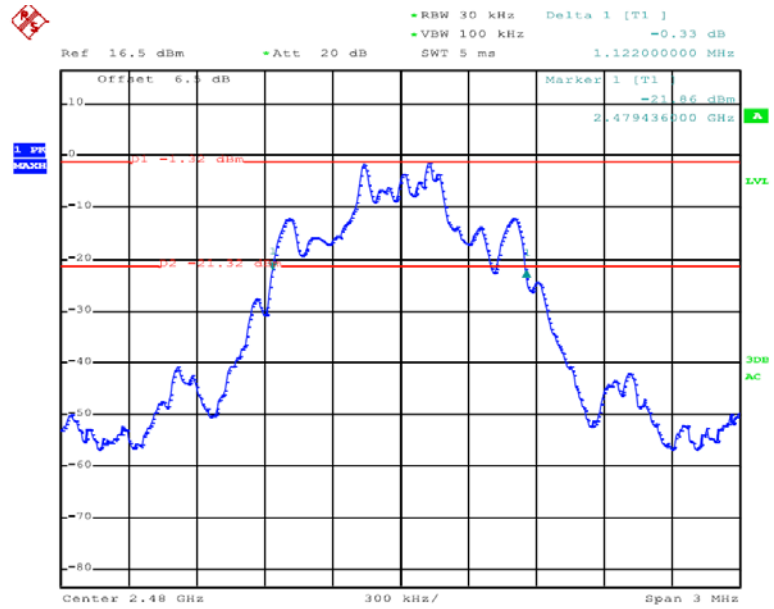

RBW 30 kHz
VBW 100 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.66 dB
828.000000000 kHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-18.80 dBm
2.479572000 GHz
D1 1.28 dBm
D2 -18.72 dBm
LVL
3DB
AC
Center 2.48 GHz
200 kHz/
Span 2 MHz

Test Mode: CH00 / CH39 / CH78 (Π/4-DQPSK /(2Mbps)Mode)

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
00	2402	1122
39	2441	1122
78	2480	1122

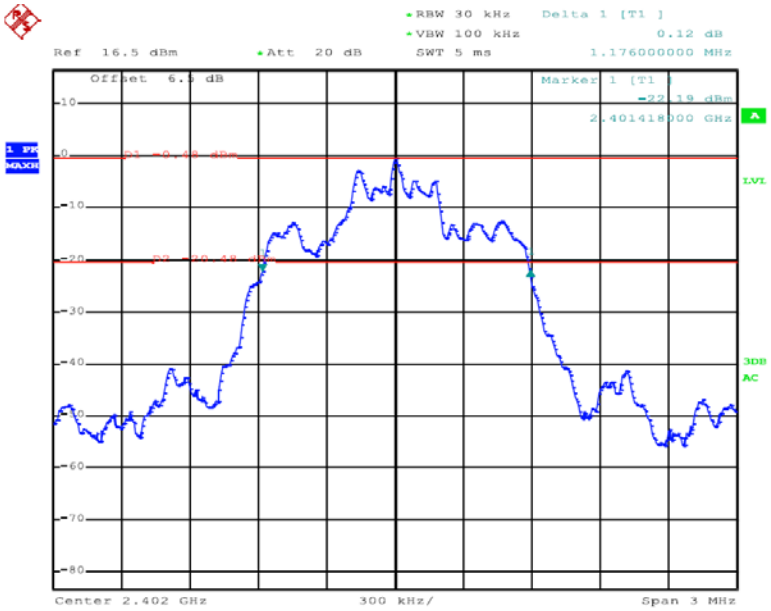


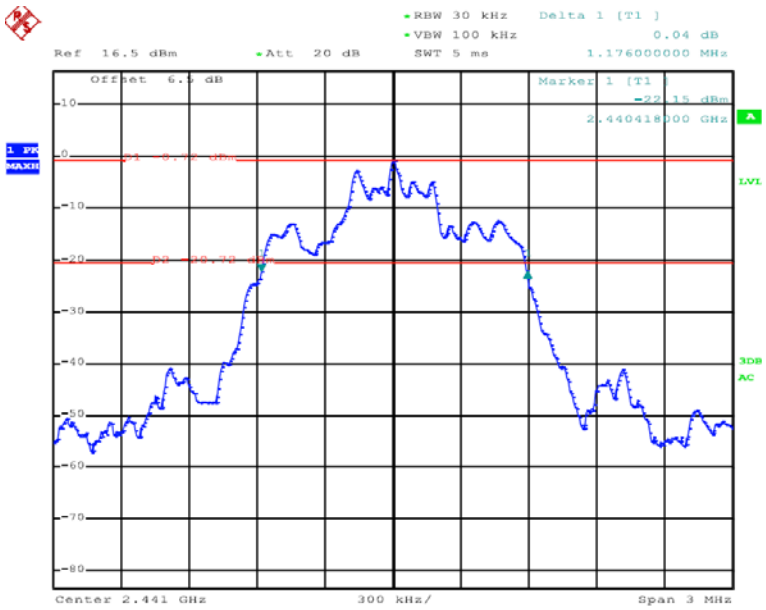

RBW 30 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.45 dB
1.122000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-21.21 dBm
2.440436000 GHz
D1 -4.71 dBm
D2 -26.71 dBm
LVL
3DB
AC
Center 2.441 GHz
300 kHz/
Span 3 MHz

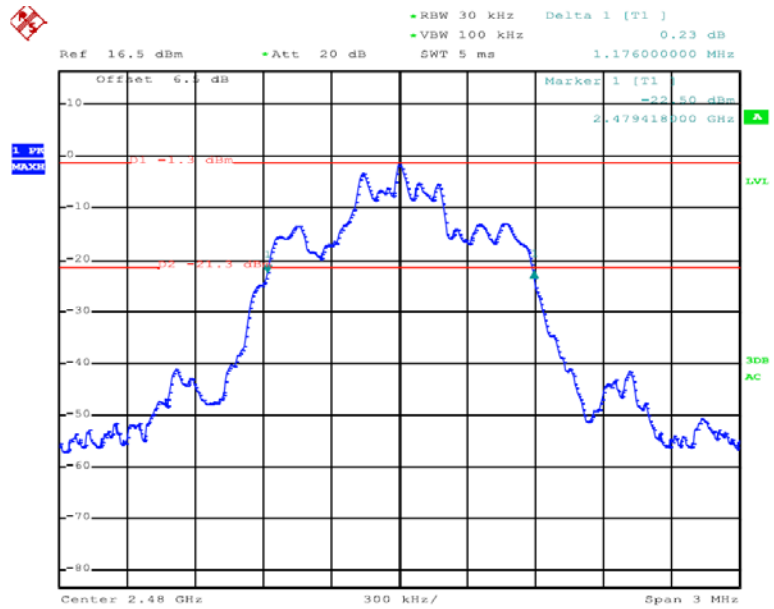

RBW 30 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.33 dB
1.122000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-21.86 dBm
2.479436000 GHz
D1 -4.82 dBm
D2 -26.82 dBm
LVL
3DB
AC
Center 2.48 GHz
300 kHz/
Span 3 MHz

Test Mode: CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode)

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
00	2402	1176
39	2441	1176
78	2480	1176




RBW 30 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.04 dB
1.176000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-22.15 dBm
2.440418000 GHz
D1 -8.5 dBm
D2 -28.5 dBm
LVL
3DB
AC
Center 2.441 GHz
300 kHz/
Span 3 MHz


RBW 30 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.23 dB
1.176000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-22.50 dBm
2.479418000 GHz
D1 -1.5 dBm
D2 -21.5 dBm
LVL
3DB
AC
Center 2.48 GHz
300 kHz/
Span 3 MHz

10 Maximum Peak Output Power

Test Requirement : FCC CFR47 Part 15 Section 15.247

Test Method : ANSI C63.10:2013

Test Limit : Regulation 15.247 (b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band eploying at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt (30dBm). For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

Refer to the result “Number of Hopping Frequency” of this document. The 0.125watts (20.97 dBm) limit applies.

10.1Test Procedure

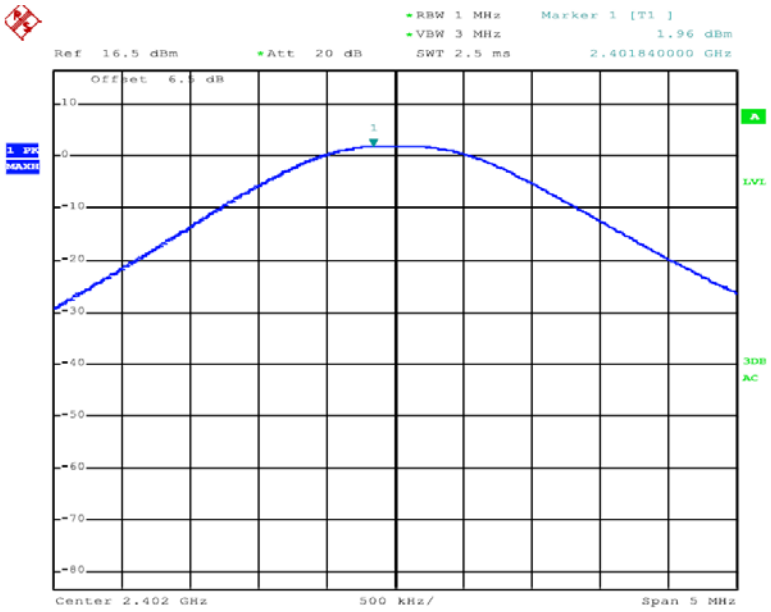
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

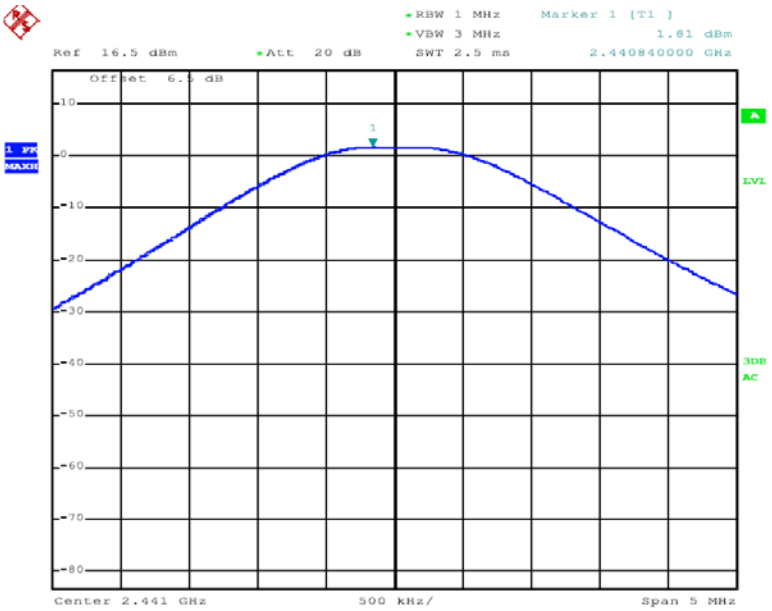
2. Set the spectrum analyser: RBW =3 MHz. VBW =10 MHz. Sweep = auto; Detector Function = Peak.

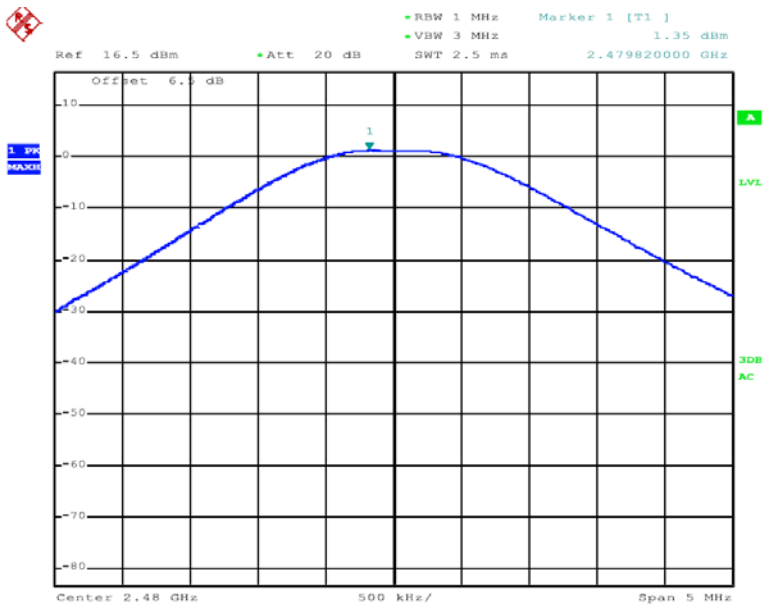
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

10.2Test Result

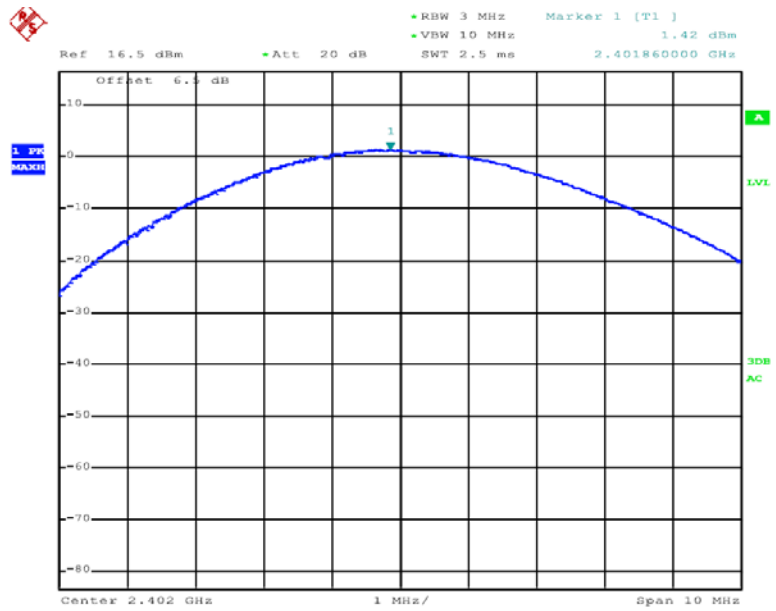
GFSK(1Mbps)					
Test Channel	Frequency	Conducted Output Peak Power	Conducted Output Peak Power	LIMIT	Pass/Fail
	(MHz)	(dBm)	(W)	(W)	
CH00	2402	1.96	0.00157	0.125	Pass
CH39	2441	1.81	0.00152	0.125	Pass
CH78	2480	1.35	0.00136	0.125	Pass

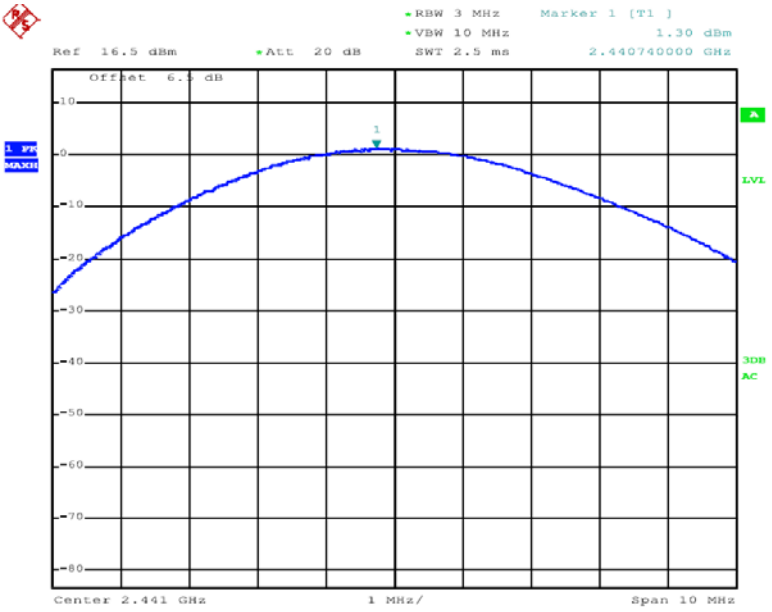

RBW 1 MHz
VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
1.96 dBm
2.401840000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
1 PK MAXH
A
LVL
3DB AC
Center 2.402 GHz
500 kHz/
Span 5 MHz

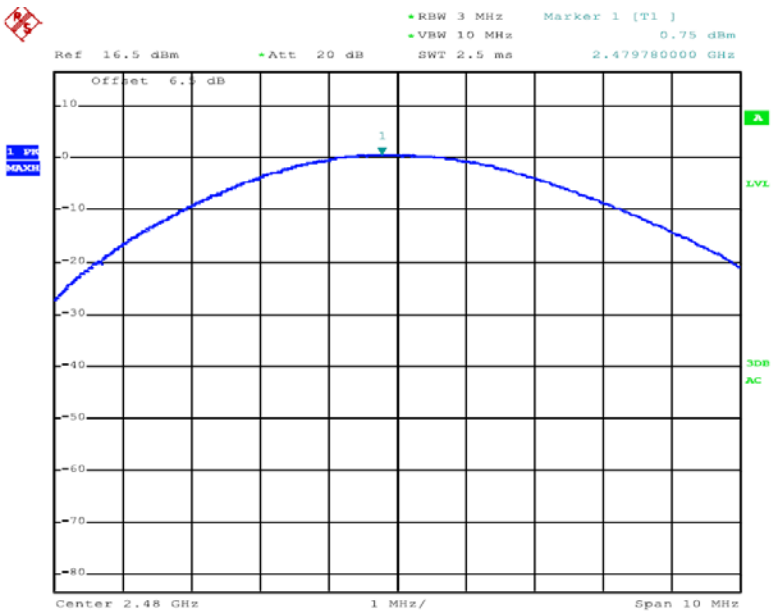

RBW 1 MHz
VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
1.81 dBm
2.440840000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
1 PK MAXH
A
LVL
3DB AC
Center 2.441 GHz
500 kHz/
Span 5 MHz



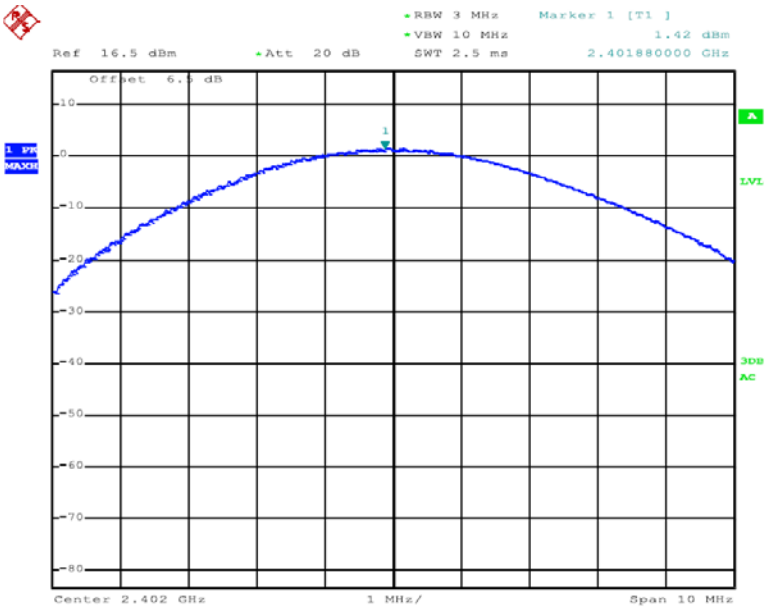
π/4QPSK(2Mbps)					
Test Channel	Frequency	Conducted Output Peak Power	Conducted Output Peak Power	LIMIT	Pass/Fail
	(MHz)	(dBm)	(W)	(W)	
CH00	2402	1.42	0.00139	0.125	Pass
CH39	2441	1.30	0.00135	0.125	Pass
CH78	2480	0.75	0.00119	0.125	Pass

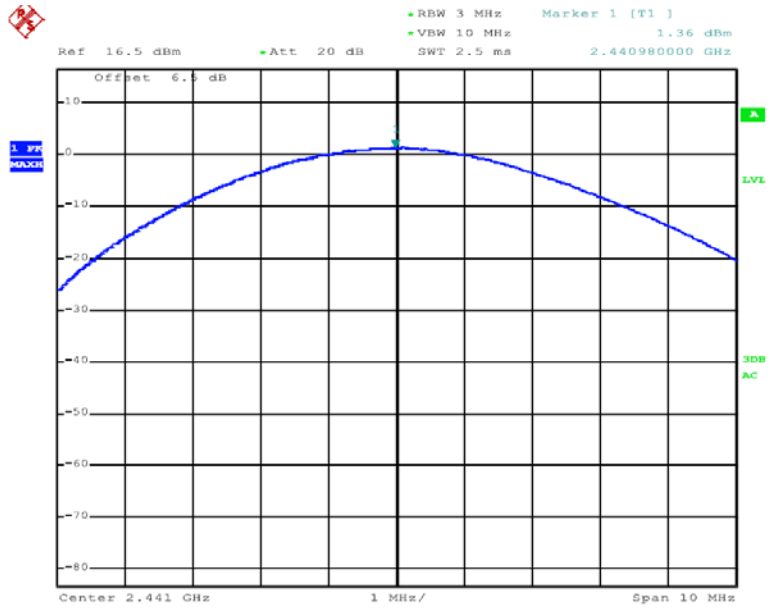

RBW 3 MHz
VBW 10 MHz
SWT 2.5 ms
Marker 1 [T1]
1.42 dBm
2.401860000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
LVL
3DB
AC
Center 2.402 GHz
1 MHz/
Span 10 MHz

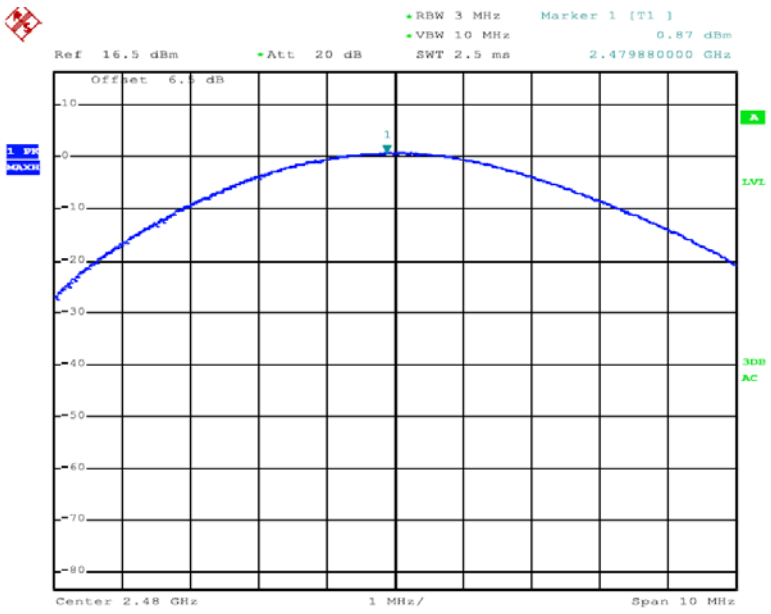

RBW 3 MHz
VBW 10 MHz
SWT 2.5 ms
Marker 1 [T1]
1.30 dBm
2.440740000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
LVL
3DB
AC
Center 2.441 GHz
1 MHz/
Span 10 MHz



8DPSK(3Mbps)					
Test Channel	Frequency	Conducted Output Peak Power	Conducted Output Peak Power	LIMIT	Pass/Fail
	(MHz)	(dBm)	(W)	(W)	
CH00	2402	1.42	0.00139	0.125	Pass
CH39	2441	1.36	0.00137	0.125	Pass
CH78	2480	0.87	0.00122	0.125	Pass


RBW 3 MHz
VBW 10 MHz
SWT 2.5 ms
Marker 1 [T1]
1.42 dBm
2.401880000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
LVL
3DB
AC
Center 2.402 GHz
1 MHz/
Span 10 MHz


RBW 3 MHz
VBW 10 MHz
SWT 2.5 ms
Marker 1 [T1]
1.36 dBm
2.440980000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
LVL
3DB
AC
Center 2.441 GHz
1 MHz/
Span 10 MHz


RBW 3 MHz
VBW 10 MHz
SWT 2.5 ms
Marker 1 [T1]
0.87 dBm
2.479880000 GHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1 PK
MAXH
A
LVL
3DB
AC
Center 2.48 GHz
1 MHz/
Span 10 MHz

11 Hopping Channel Separation

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	Regulation 15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5MHz 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 1W.
Test Mode	:	Hopping

11.1 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

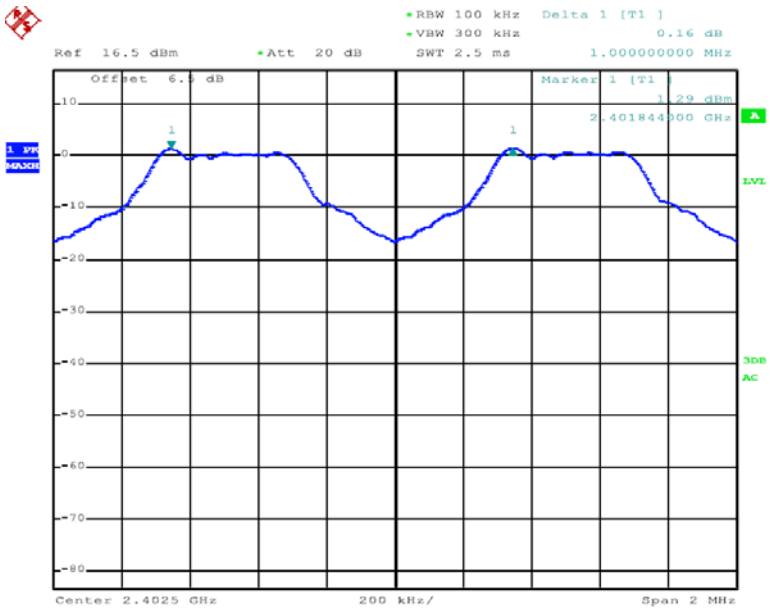
2. Set the spectrum analyzer: RBW = 100KHz. VBW = 300KHz, Sweep = auto; Detector Function = Peak. Trace = Max hold.

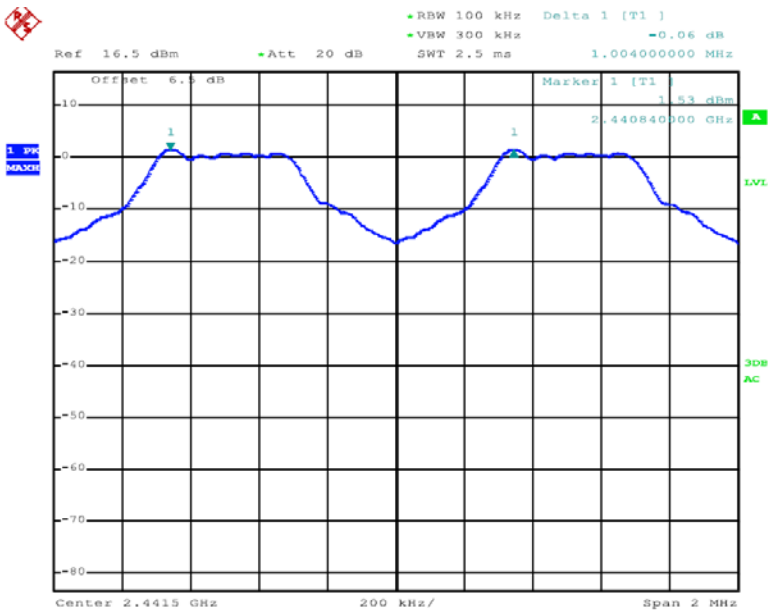
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

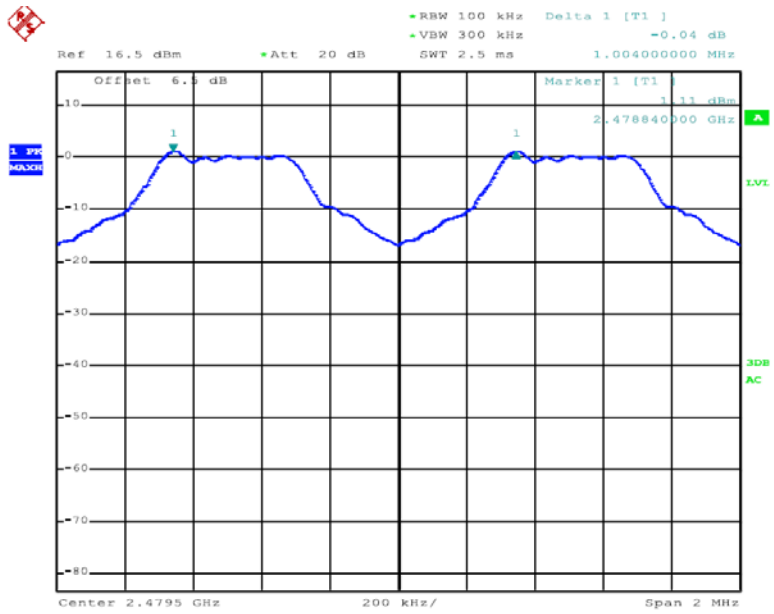
11.2 Test Result

Test Mode:	CH00 / CH39 / CH78 (GFSK(1Mbps) Mode)

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 20dB Down BW(kHz)
00	2402	1004	>832
39	2441	1004	>828
78	2480	1004	>828

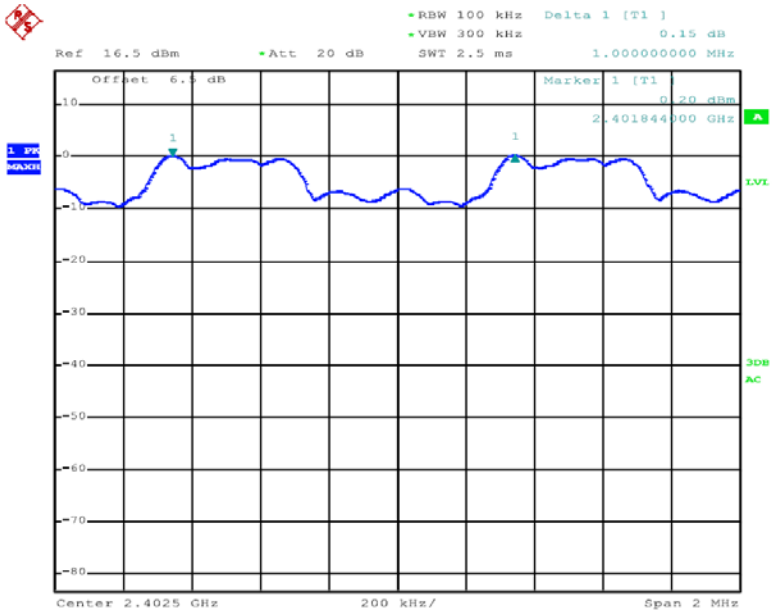


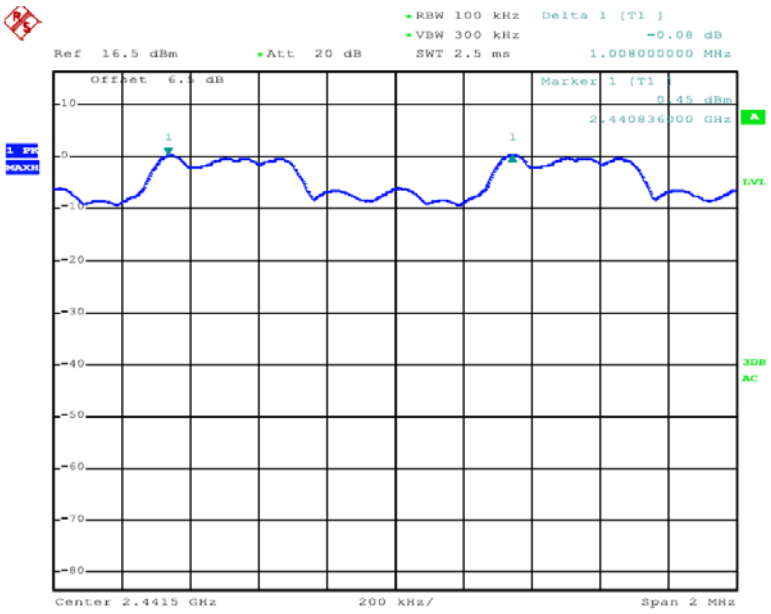

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.06 dB
1.004000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
1.53 dBm
2.440840000 GHz
1 PK MAXH
A
LVL
3DB AC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4415 GHz
200 kHz/
Span 2 MHz

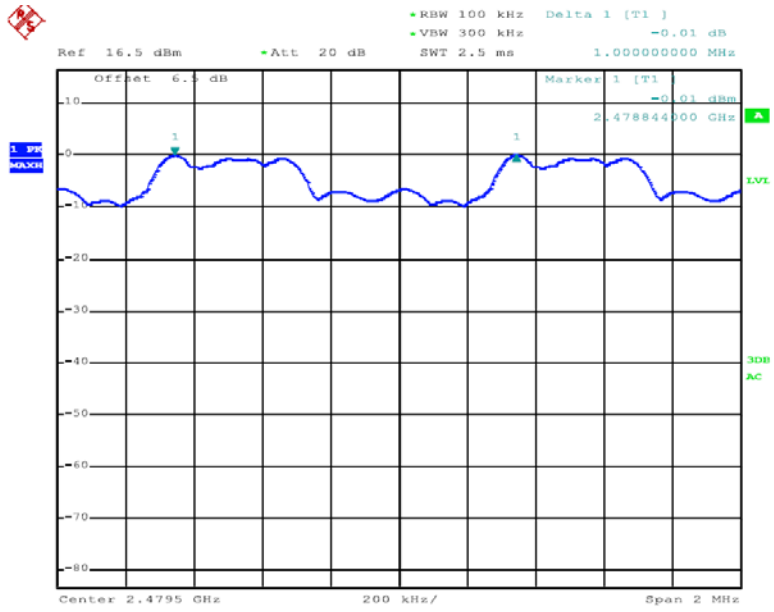

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.04 dB
1.004000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
1.11 dBm
2.478840000 GHz
1 PK MAXH
A
LVL
3DB AC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4795 GHz
200 kHz/
Span 2 MHz

Test Mode:	CH00 / CH39 / CH78 (π/4-DQPSK(2Mbps) Mode)

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
00	2402	1000	>748
39	2441	1008	>748
78	2480	1000	>748

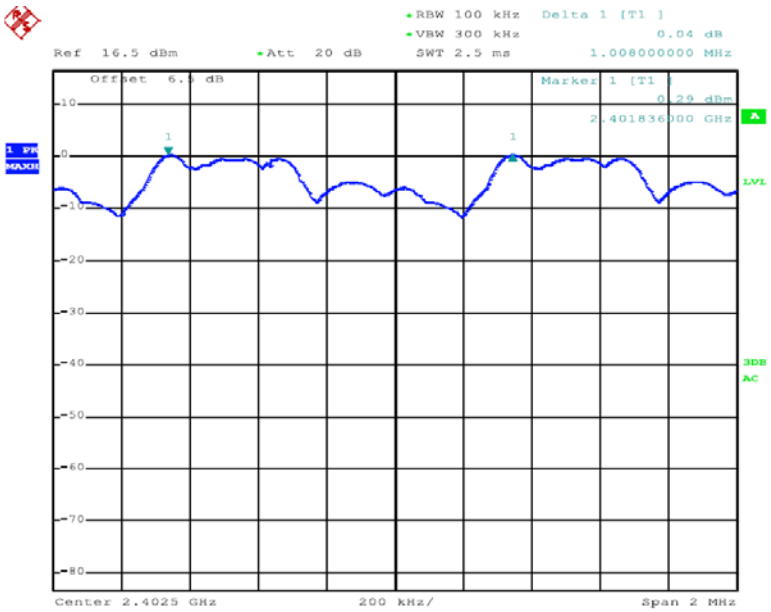


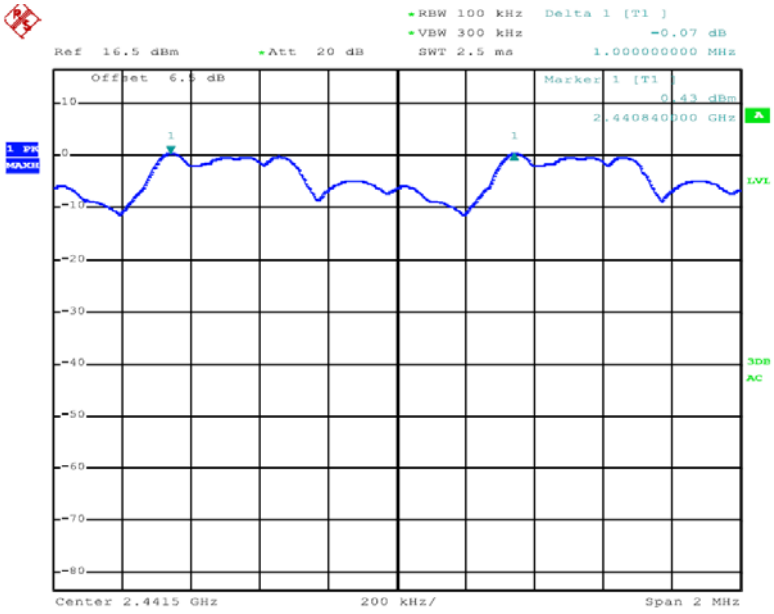

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.08 dB
1.008000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
0.45 dBm
2.440836000 GHz
1 PK MAXH
LVL
3DB AC
Center 2.4415 GHz
200 kHz/
Span 2 MHz

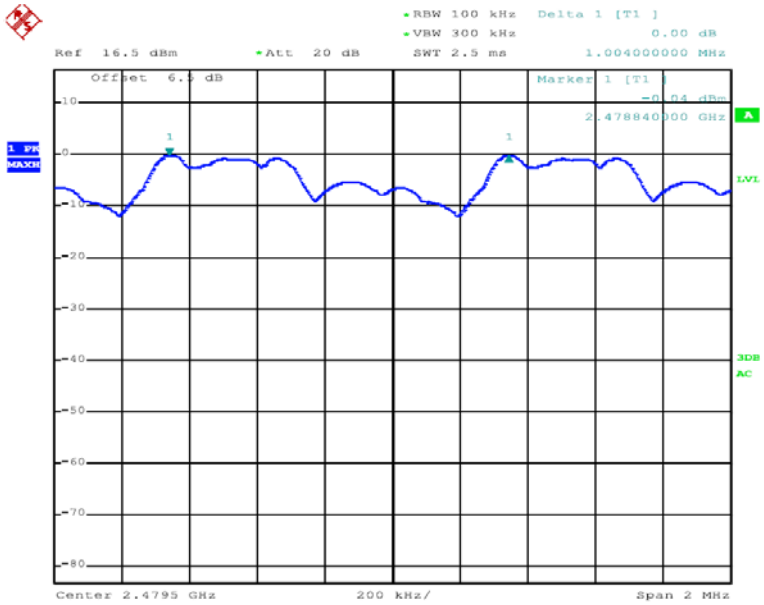

RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.01 dB
1.000000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-0.01 dBm
2.478844000 GHz
1 PK MAXH
LVL
3DB AC
Center 2.4795 GHz
200 kHz/
Span 2 MHz

Test Mode:	CH00 / CH39 / CH78 (8DPSK(3Mbps)Mode)

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
00	2402	1008	>784
39	2441	1000	>784
78	2480	1004	>784




RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
-0.07 dB
1.000000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
0.43 dBm
2.440840000 GHz
LVL
3DB
AC
Center 2.4415 GHz
200 kHz/
Span 2 MHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms
Delta 1 [T1]
0.00 dB
1.004000000 MHz
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-0.04 dBm
2.478840000 GHz
LVL
3DB
AC
Center 2.4795 GHz
200 kHz/
Span 2 MHz

12 Number of Hopping Frequency

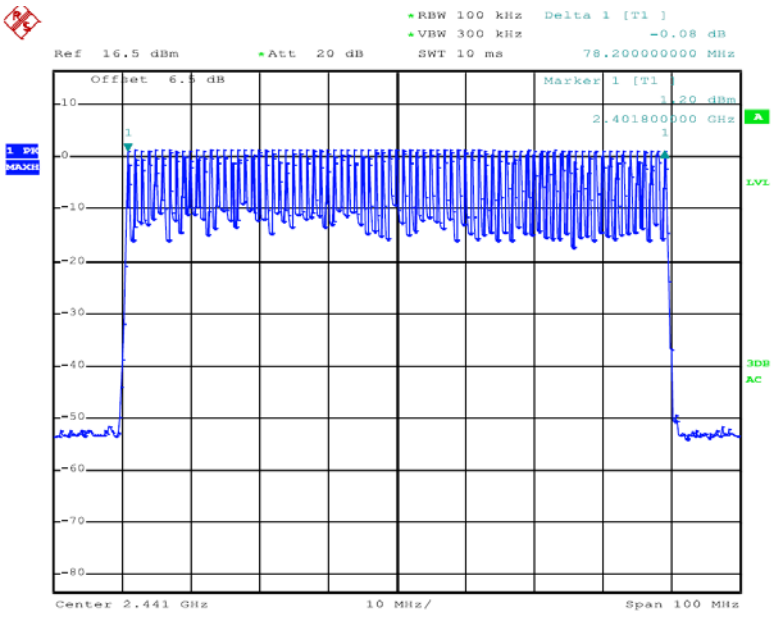
Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	Regulation 15.247 (a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Mode	:	Hopping(GFSK)

12.1 Test Procedure

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 = 100KHz. VBW = 300KHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.483GHz. Sweep=auto;

12.2 Test Result

Channel Number	Limit
79	≥15



13 Dwell Time

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10:2013
Test Limit	:	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.
Test Mode	:	The worst case(GFSK) was recorded

13.1 Test Procedure

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. Centred on a hopping channel;

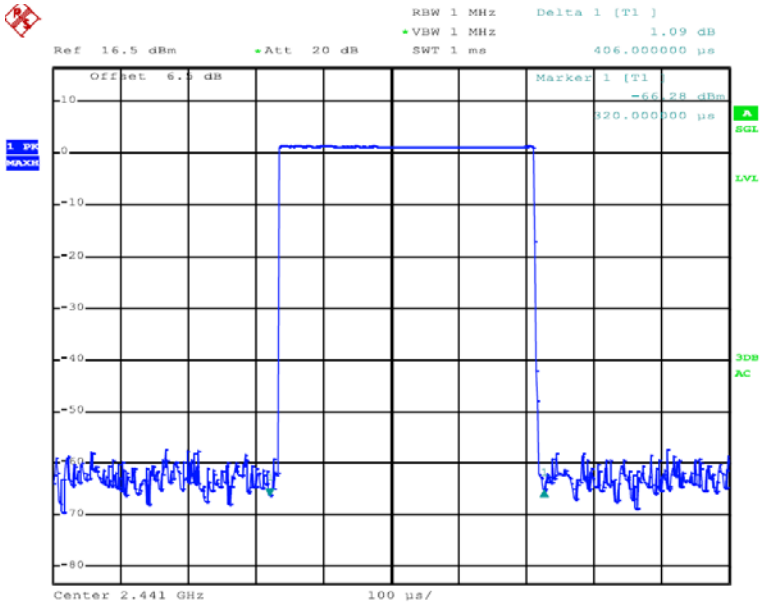
3. Set RBW = 1MHz and VBW = 1MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.

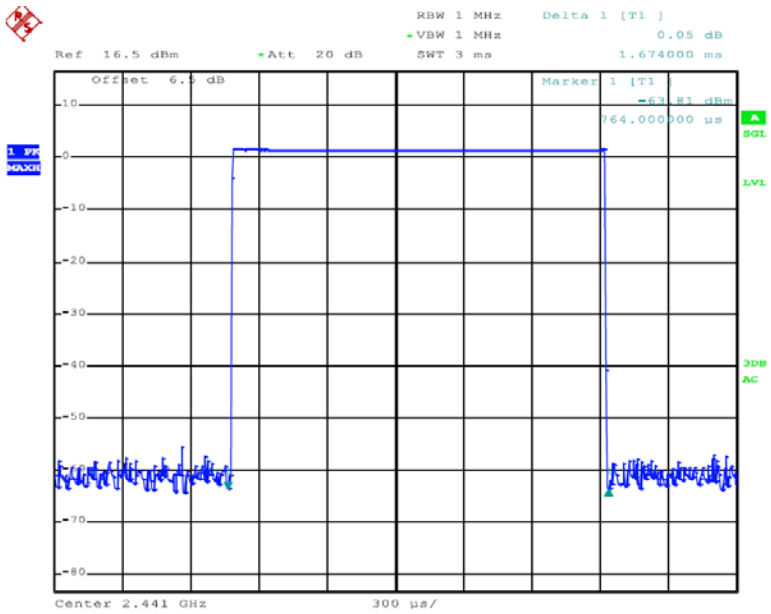
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

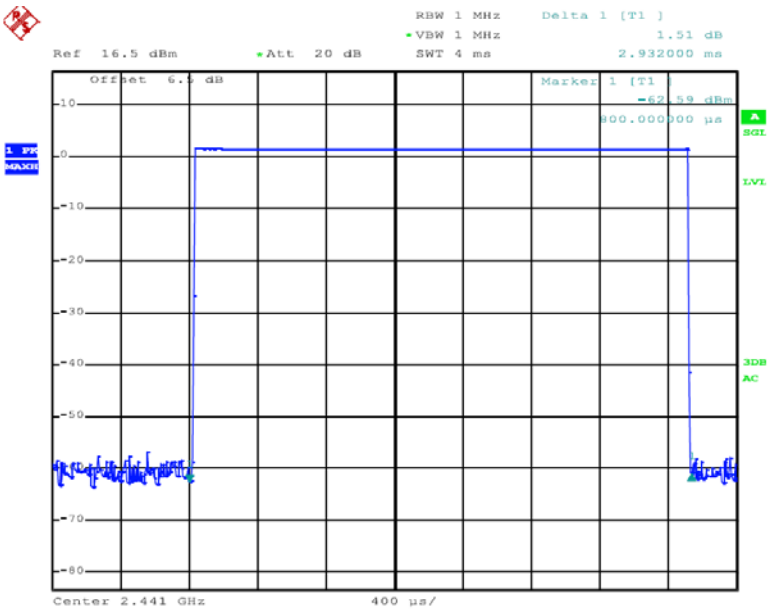
13.2 Test Result

Test Mode:	GFSK(1Mbps)

Mode	Packet	Length of transmissions time(sec)	Result (sec)	Limit (sec)
GFSK	DH1	0.406	0.130	0.4
	DH3	1.674	0.268	0.4
	DH5	2.932	0.313	0.4
	Note: The test period= 0.4 Second/channel * 79 channel = 31.6s Calculation Formula: Dwell time=Ton time per hop*Hopping numbers*Period For Example: DH1 time slot=0.406*(1600/(2*79))*31.6=130ms DH3 time slot=1.674*(1600/(4*79))*31.6=268ms DH5 time slot=2.932*(1600/(6*79))*31.6=313ms			


RBW 1 MHz
VBW 1 MHz
SWT 1 ms
Delta 1 [T1]
1.09 dB
406.000000 µs
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-66.28 dBm
320.000000 µs
SGL
LVL
3DB
AC
Center 2.441 GHz
100 µs/


RBW 1 MHz
VBW 1 MHz
SWT 3 ms
Delta 1 [T1]
0.05 dB
1.674000 ms
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-63.81 dBm
764.000000 µs
SGL
LVL
3DB
AC
Center 2.441 GHz
300 µs/


RBW 1 MHz
VBW 1 MHz
SWT 4 ms
Delta 1 [T1]
1.51 dB
2.932000 ms
Ref 16.5 dBm
Att 20 dB
Offset 6.5 dB
Marker 1 [T1]
-62.59 dBm
900.000000 µs
10
0
-10
-20
-30
-40
-50
-70
-80
SGL
LVL
3DB
AC
Center 2.441 GHz
400 µs/

14 Antenna Requirement

14.1 Antenna Requirement

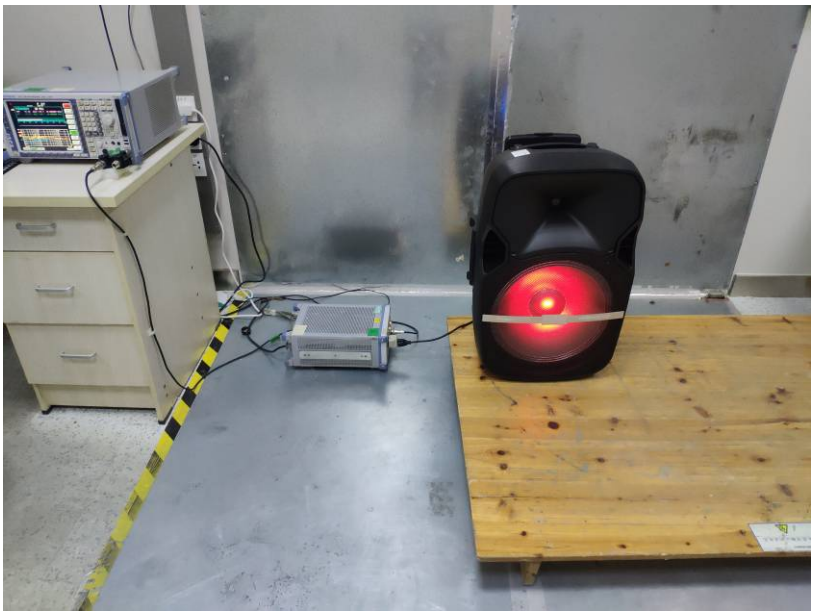
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

14.2 Result

The EUT'S antenna, permanent attached antenna, is Internal PCB Antenna. The antenna's gain is -0.68dBi and meets the requirement.

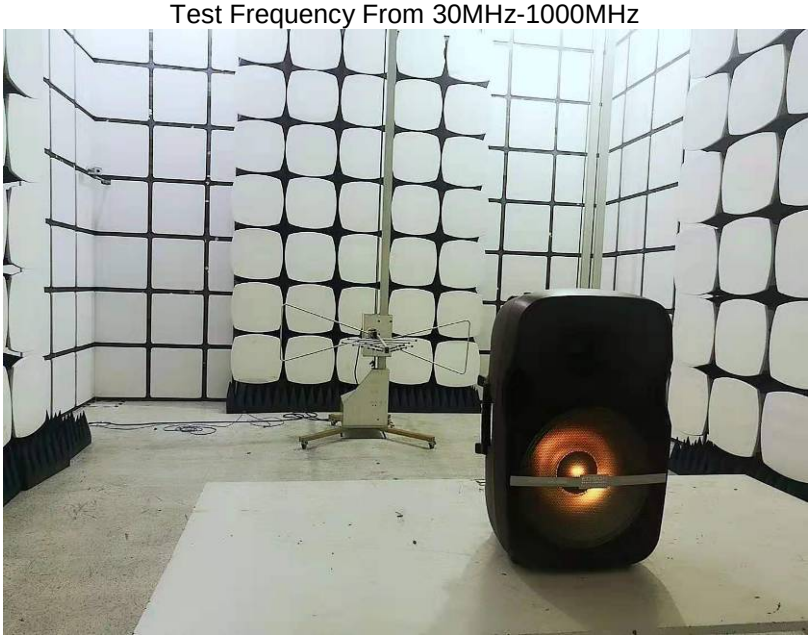
15 TEST PHOTOS

Conducted Emissions



Radiated Spurious Emissions

Test Frequency From 30MHz-1000MHz



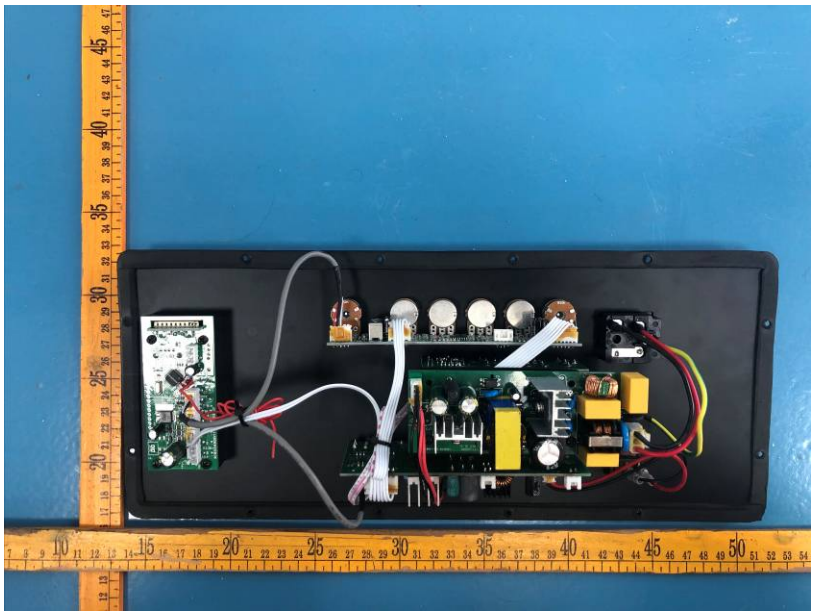
Test frequency from Above 1GHz

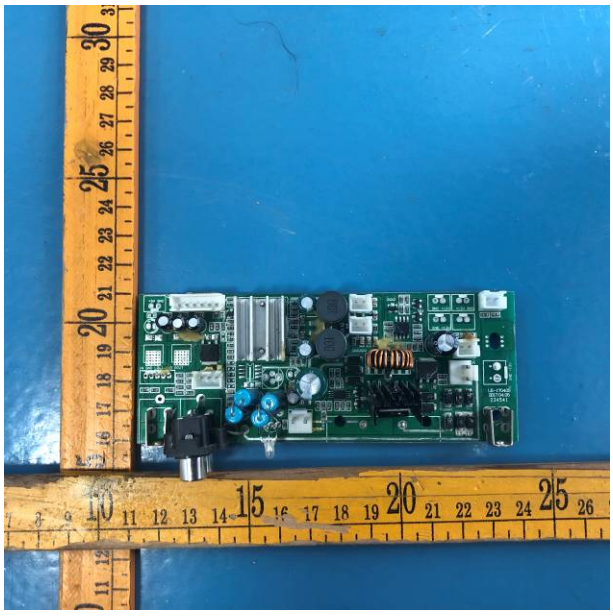
16 EUT PHOTOS

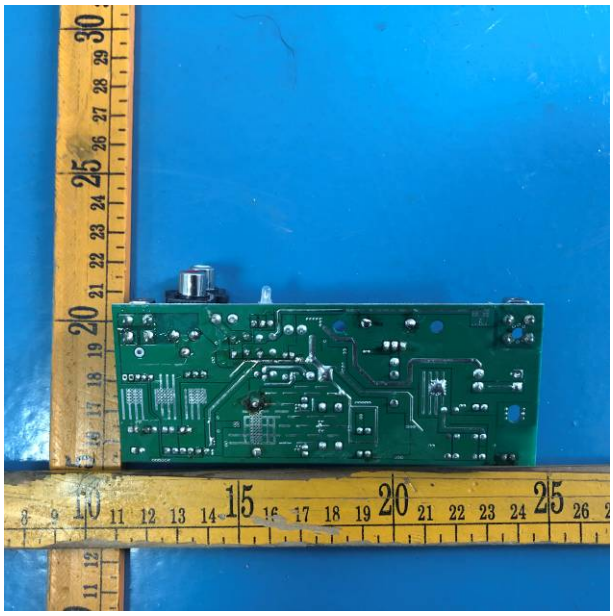

EDISON
PROFESSIONAL
ST-4000

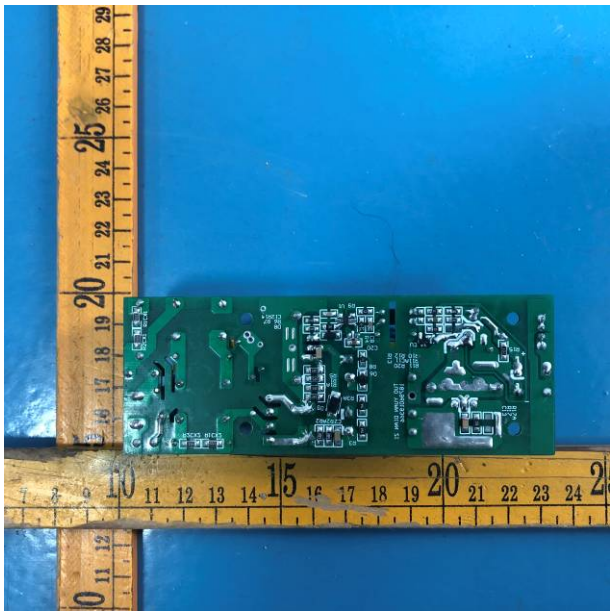

BASS
LINE IN
Charge
Chg-red
Full-green
ECHO
MIC1 IN
M.VOL
MIC2 IN
G.VOL
GUITAR IN
POWER
ON
OFF
AC110-240V 50/60Hz
MADE IN CHINA
WARNING:TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,DO NOT EXPOSE THIS EQUIOMENT TO RAIN OR MOISTURE.DO NOT REMOVE COVER.NO USER SERVICING TO QUALIFIED PERSONNEL.

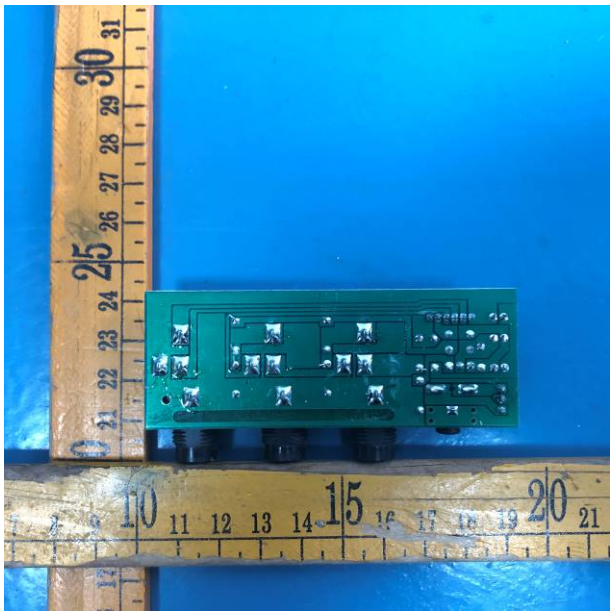

DIGITAL MEDIA PLAYER
SD/MMC
USB
Bluetooth
IR MODE
VOL-
VOL+
SCAN
EDISON
PROFESSIONAL
ST-4000
VOLUME
MIC PRIORITY
TREBLE
BASS
LINE IN
R
L
AUDIO IN
Charge
Chg-red
Full-green

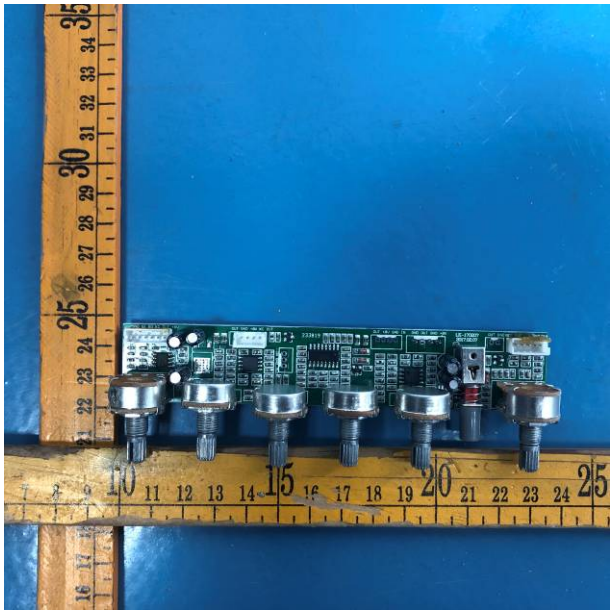


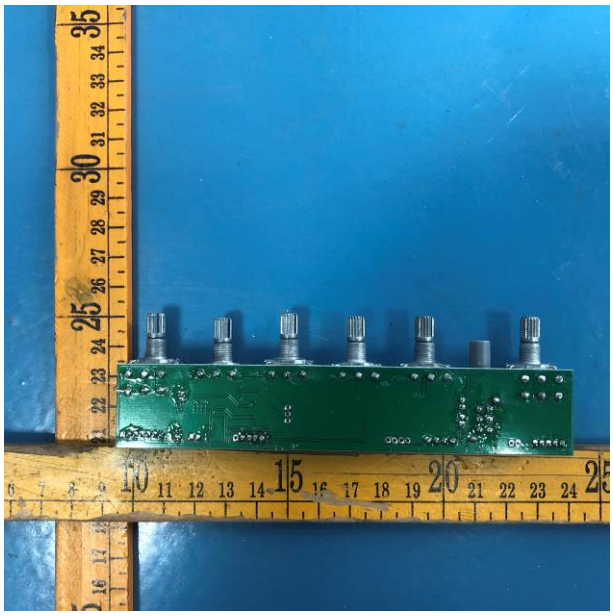


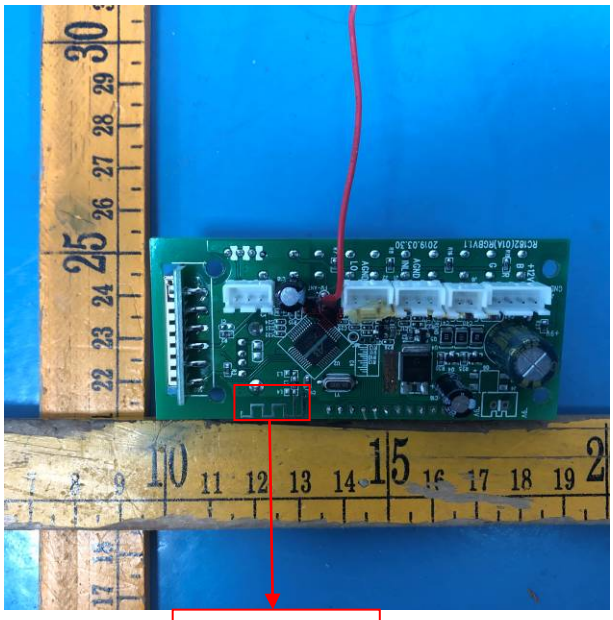


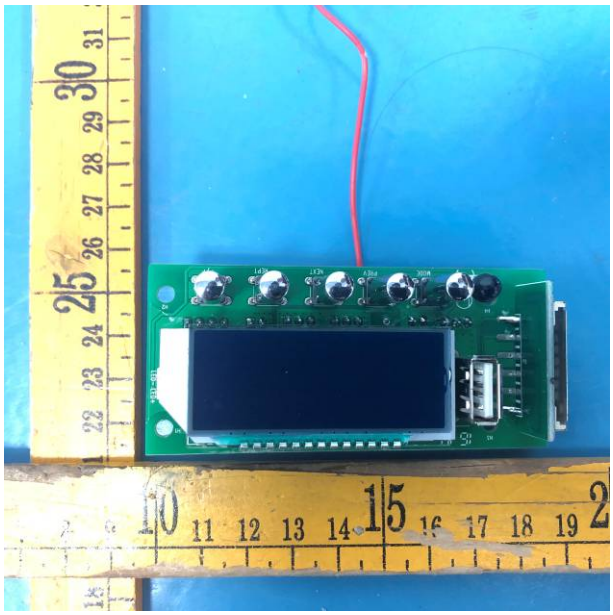


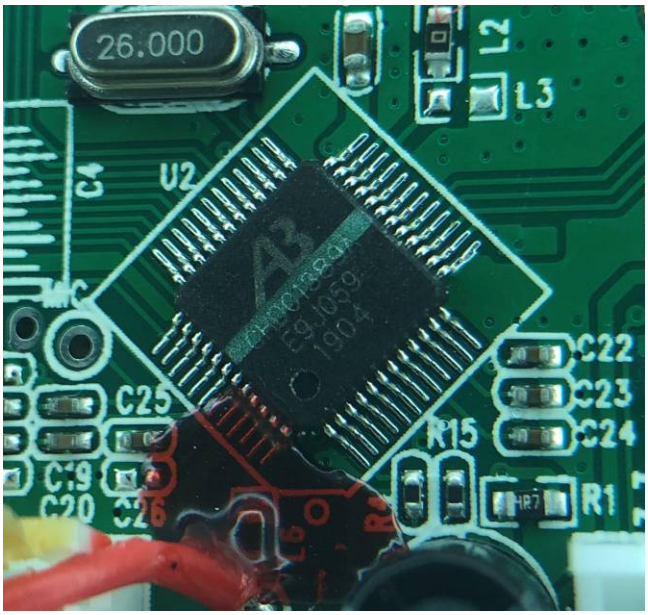







RF Antenna





********THE END REPORT********