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Report No.: SHEM130600102501
 Page 1 of 77

1 Cover page

FCC Part 15C TEST REPORT

Application No. :	SHEM1306001025RF
Applicant:	Lenbrook Industries Limited
FCC ID:	SVC-NADD3020
IC:	152C-NADD3020
Equipment Under Test (EUT):	
NOTE: The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	HYBRID DIGITAL AMPLIFIER
Brand Name:	NAD
Model:	D3020 HYBRID DIGITAL AMPLIFIER
Added Model:	N/A
Standards:	FCC PART 15 SUBPART C, Section 15.247:2012 RSS-210 Issue 8 (December 2010) RSS-Gen Issue 3 (December 2010)
Date of Receipt:	June 06, 2013
Date of Test:	June 08, 2013 to June 18, 2013
Date of Issue:	June 19, 2013
Test Result:	PASS *

* In the configuration tested, the EUT (Equipment under test) complied with the standards specified above.



Tony Wu
E&E Section Manager

SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	June 19, 2013	/	Original

Authorized for issue by:			
Engineer		Zenger Zhang _____ Print Name	
Clerk		Susie Liu _____ Print Name	
Reviewer		Keny Xu _____ Print Name	



2 Test Summary

Test Item	FCC Test Requirement	IC Test Requirement	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203/15.247 (c)	RSS-Gen 7.1.2	---	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	RSS-Gen Section 7.2.4	ANSI C63.10 (2009) Section 6.2	PASS
20dB Occupied Bandwidth	FCC Part 15, Subpart C Section 15.247 (a)(1)	RSS 210 A 8.1(a)	ANSI C63.10 (2009) Section 6.9.1	PASS
Conducted Peak Output Power	FCC Part 15, Subpart C Section 15.247 (b)(1)	RSS 210 A 8.4(2)	ANSI C63.10 (2009) Section 6.10.1	PASS
Carrier Frequencies Separation	FCC Part 15, Subpart C Section 15.247 (a)(1)	RSS 210 A 8.1(b)	ANSI C63.10 (2009) Section 7.7.2	PASS
Hopping Channel Number	FCC Part 15, Subpart C Section 15.247 (b)	RSS 210 A 8.1(d)	ANSI C63.10 (2009) Section 7.7.3	PASS
Dwell Time	FCC Part 15, Subpart C Section 15.247 (a)(1)	RSS 210 A 8.1(d)	ANSI C63.10 (2009) Section 7.7.4	PASS
RF Conducted Spurious Emissions	FCC Part 15, Subpart C Section 15.247(d)	RSS 210 A 8.5	ANSI C63.10 (2009) Section 7.7.10	PASS
Radiated Spurious emissions	FCC Part 15, Subpart C Section 15.209 and Section 15.205	RSS-Gen section 4.9	ANSI C63.10 (2009) Section 6.12	PASS
Radiated Band-edge	FCC Part 15, Subpart C Section 15.205	RSS-Gen section 4.9	ANSI C63.10 (2009) Section 6.5	PASS
99% Occupied Bandwidth	---	RSS-Gen section 4.6.1	RSS-Gen section 4.6.1	PASS



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4 General Information

4.1 Client Information

Applicant:	Lenbrook Industries Limited
Address of Applicant:	633 Granite Court, Pickering Ontario, Toronto L1W 3K1, Canada
Manufacturer:	Lenbrook Industries Limited
Address of Manufacturer:	633 Granite Court, Pickering Ontario, Toronto L1W 3K1, Canada
Factory:	Hansong (Nanjing) Technology Ltd.

4.2 General Description of E.U.T.

Product Name	HYBRID DIGITAL AMPLIFIER
Brand Name:	NAD
Model No:	D3020 HYBRID DIGITAL AMPLIFIER
Added Model:	N/A
Product Description:	Mobile production

4.3 Technical Specifications:

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	3.0+EDR
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channel:	79
Antenna Type	Integral
Antenna Gain	2.0dBi

4.4 Support Equipments and Software for Testing

Description	Manufacturer	Model No.	Serial No.	Supplied By
Laptop	Lenovo	ThinkPad X100e	2876A65	SGS

Software name	Manufacturer	Supplied By
Blue Test3 (For CSR)	CSR	SGS

4.5 Details of Test Mode

Test Mode	Description of Test Mode

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Transmitting mode	Using the Blue Test3 make the EUT continue transmitting on working frequency.
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4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China.201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

5 Equipments Used during Test

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2013-02-23	2014-02-22
2	Antenna	SCHWARZBE CK	VULB916 8	9168-313	2013-03-07	2014-03-06
3	CONTROLLER	INNCO	CO200	474	/	/
4	Antenna	SCHWARZBE CK	BBHA912 0D	9120D-67 9	2013-03-07	2014-03-06
5	Antenna	SCHWARZBE CK	BBHA917 0	9170-373	2013-03-07	2014-03-06
6	Low noise amplifier	LNA6900	TESEQ	71033	2013-02-23	2014-02-22

Conducted Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2013-02-23	2014-02-22
2	Line impedance stabilization network	SCHWARZBE CK	NSLK8127	8127-490	2013-02-23	2014-02-22
3	Line impedance stabilization network	ETS	3816/2	00034161	2013-02-23	2014-02-22

RF Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2013-03-07	2014-03-06
2	Horn Antenna	Rohde & Schwarz	HF906	100284	2013-06-03	2014-06-01
3	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2013-03-07	2014-03-06
4	Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA91703 73	2013-03-07	2014-03-06
5	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2012-10-09	2013-10-08
6	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2013-06-03	2014-06-01
7	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT1800.0/ 2000.0- 0.2/40-5SSK	11	2013-06-03	2014-06-01
8	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/ 880.0- 0.2/40-5SSK	9	2013-06-03	2014-06-01
9	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	2013-06-03	2014-06-01
10	Low noise amplifier	TESEQ	LNA6900	70133	2013-02-23	2014-02-22
11	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2013-02-23	2014-02-22
12	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2013-02-23	2014-02-22

6 Test Results

6.1 E.U.T. test conditions

Test Power: AC 120V, 60Hz

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:

Temperature: 20.0 -25.0 °C

Humidity: 35-75 % RH

Atmospheric Pressure: 992 -1020 mbar

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:

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

Pursuant to Part 15.31(c) For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported.

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

6.2 Antenna Requirement

Standard requirement

15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer June design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna

The antenna is integrated on the main PCB and no consideration of replacement. The gain of the antenna is less than 2.0 dBi.

6.3 Conducted Emissions on Mains Terminals

Test Requirement: FCC Part 15C, Section 15.207
RSS-Gen Section 7.2.4

Test Method: ANSI C63.10:2009 Section 6.2

Test Date: June 18, 2013

Test Result: Pass

Test Voltage: AC 120V 60Hz

Frequency Range: 150 KHz to 30 MHz

Class/Severity: Class B

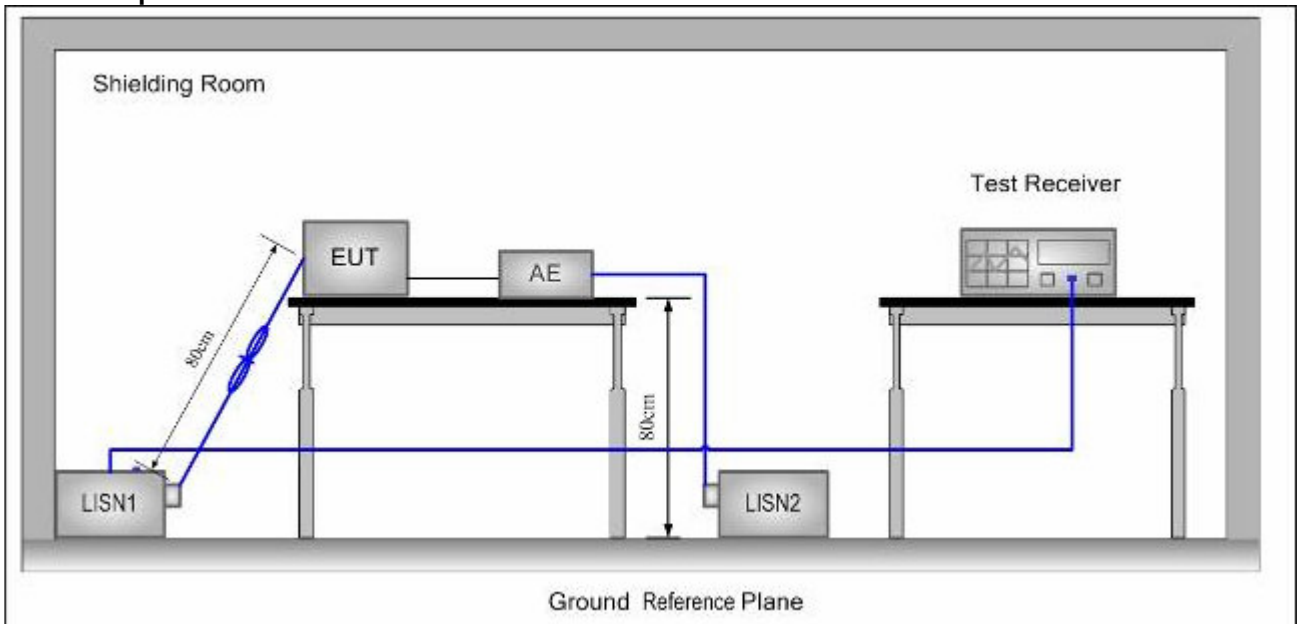
Test mode: Transmitting mode

Limit:

Frequency range MHz	Class B Limits dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.
Note2: The lower limit is applicable at the transition frequency.

Test Setup and Procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT was connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment was at least 0,8 m from the LISN.

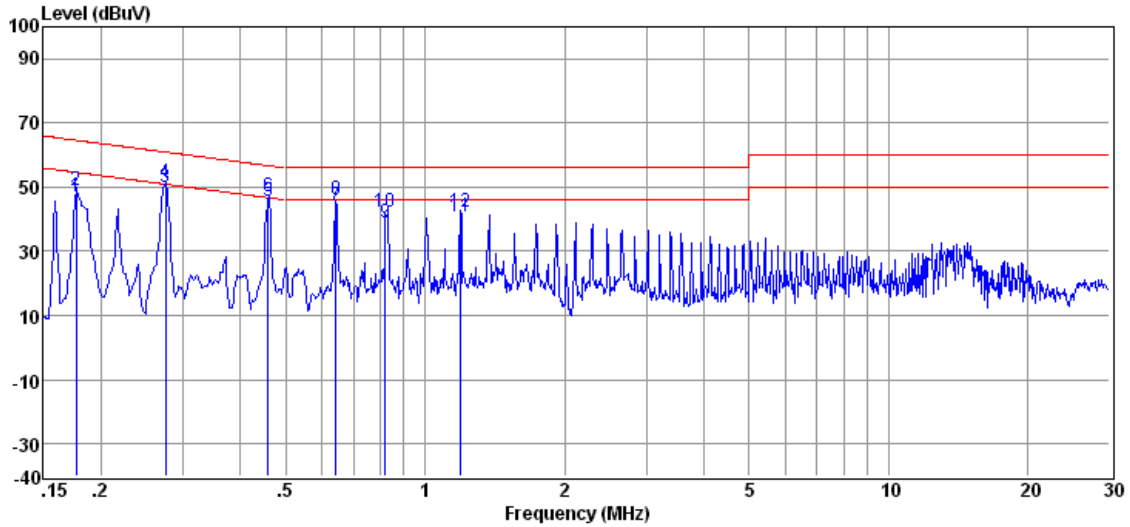
Measurement Data

Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Please see the attached Quasi-peak and Average test results.

Level = Read Level + LISN/ISN Factor + Cable Loss.

Test Mode: Transmitting mode

Test Port: AC Live Line

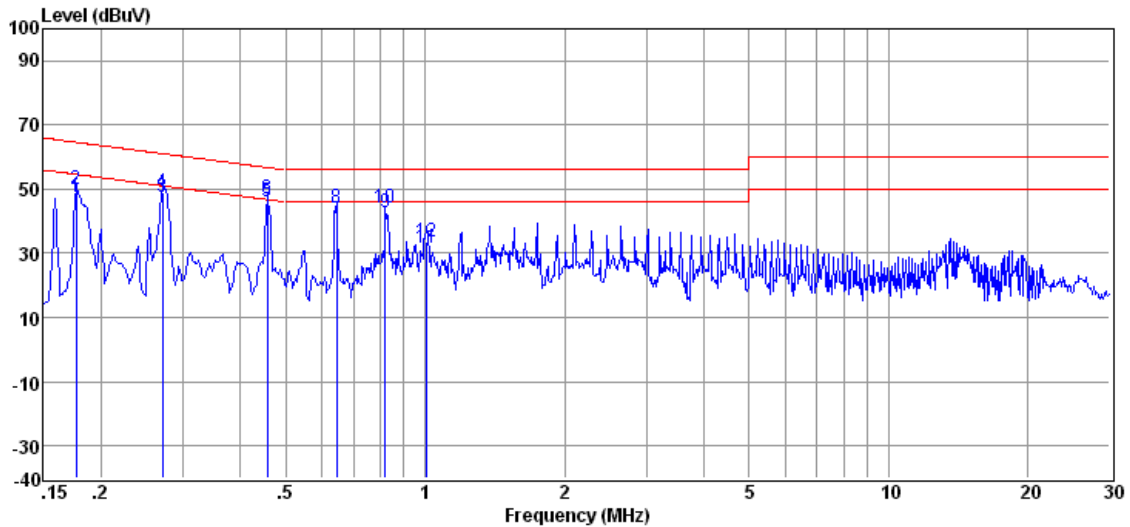


Freq (MHz)	Read Level (dBμV)	LISN Factor (dB)	Cable Loss (dB)	Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
0.177	46.78	0.15	0.10	47.03	54.64	-7.61	Average	Live
0.177	48.79	0.15	0.10	49.04	64.64	-15.60	QP	Live
0.276	49.83	0.13	0.10	50.06	50.94	-0.88	Average	Live
0.276	51.32	0.13	0.10	51.55	60.94	-9.39	QP	Live
0.459	45.54	0.19	0.10	45.83	46.72	-0.89	Average	Live
0.459	46.79	0.19	0.10	47.08	56.72	-9.64	QP	Live
0.641	43.86	0.20	0.10	44.16	46.00	-1.84	Average	Live
0.641	45.67	0.20	0.10	45.97	56.00	-10.03	QP	Live
0.822	38.68	0.20	0.10	38.98	46.00	-7.02	Average	Live
0.822	41.85	0.20	0.10	42.15	56.00	-13.85	QP	Live
1.191	40.57	0.22	0.10	40.89	46.00	-5.11	Average	Live
1.191	42.13	0.22	0.10	42.45	56.00	-13.55	QP	Live

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Test Mode: Transmitting mode

Test Port: AC Neutral Line



Freq (MHz)	Read Level (dB μ V)	LISN Factor (dB)	Cable Loss (dB)	Level (dB μ V)	Limit Line (dB μ V)	Over Limit (dB)	Detector	Phase
0.177	47.19	0.14	0.10	47.43	54.64	-7.21	Average	Neutral
0.177	49.75	0.14	0.10	49.99	64.64	-14.65	QP	Neutral
0.272	47.50	0.10	0.10	47.70	51.07	-3.37	Average	Neutral
0.272	48.84	0.10	0.10	49.04	61.07	-12.03	QP	Neutral
0.456	45.73	0.10	0.10	45.93	46.76	-0.83	Average	Neutral
0.456	47.12	0.10	0.10	47.32	56.76	-9.44	QP	Neutral
0.644	40.05	0.17	0.10	40.32	46.00	-5.68	Average	Neutral
0.644	44.12	0.17	0.10	44.39	56.00	-11.61	QP	Neutral
0.822	42.55	0.20	0.10	42.85	46.00	-3.15	Average	Neutral
0.822	43.89	0.20	0.10	44.19	56.00	-11.81	QP	Neutral
1.010	31.47	0.20	0.10	31.77	46.00	-14.23	Average	Neutral
1.010	33.17	0.20	0.10	33.47	56.00	-22.53	QP	Neutral

6.4 20dB Occupied Bandwidth

Test Requirement: FCC Part 15 C Section 15.247 (a)(1)

RSS 210 A 8.1(a)

Test Method: ANSI C63.10:2009 Clause 6.9.1

Test Date: June 12, 2013

Final Test Mode: Transmitting mode

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: Span = approximately 2 to 3 times the 20dB bandwidth, centered on the hopping channel;
3. Set the spectrum analyzer: RBW \geq 1% of the 20dB bandwidth (set 100kHz). VBW \geq RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and -20dB points.

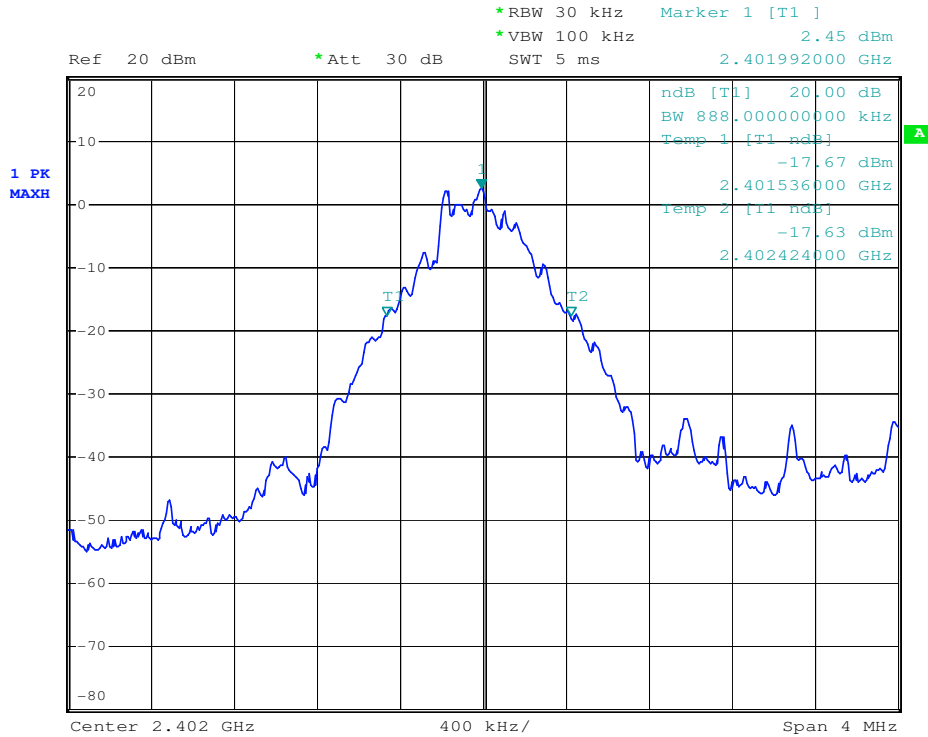
Test date

Test Channel	Channel Frequency (MHz)	Modulation	Bandwidth(MHz)
Low	2402	GFSK	0.888
Middle	2441	GFSK	0.840
High	2480	GFSK	0.848
Low	2402	π /4DQPSK	1.208
Middle	2441	π /4DQPSK	1.224
High	2480	π /4DQPSK	1.224
Low	2402	8DPSK	1.216
Middle	2441	8DPSK	1.216
High	2480	8DPSK	1.208

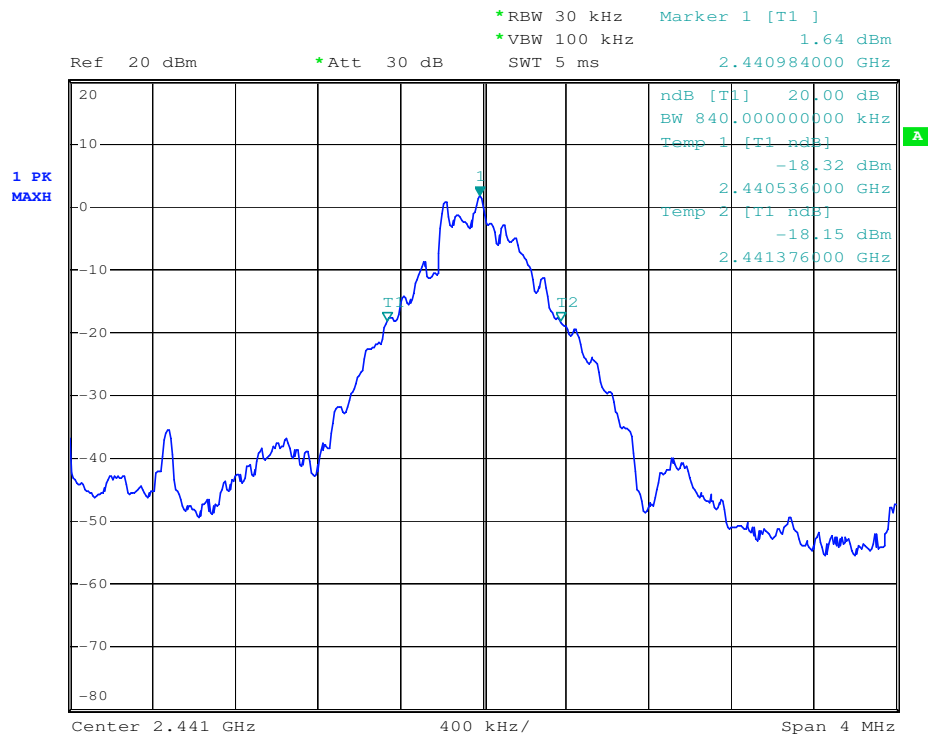


Test plot as follows:

Test mode:	GFSK	Test channel:	Lowest
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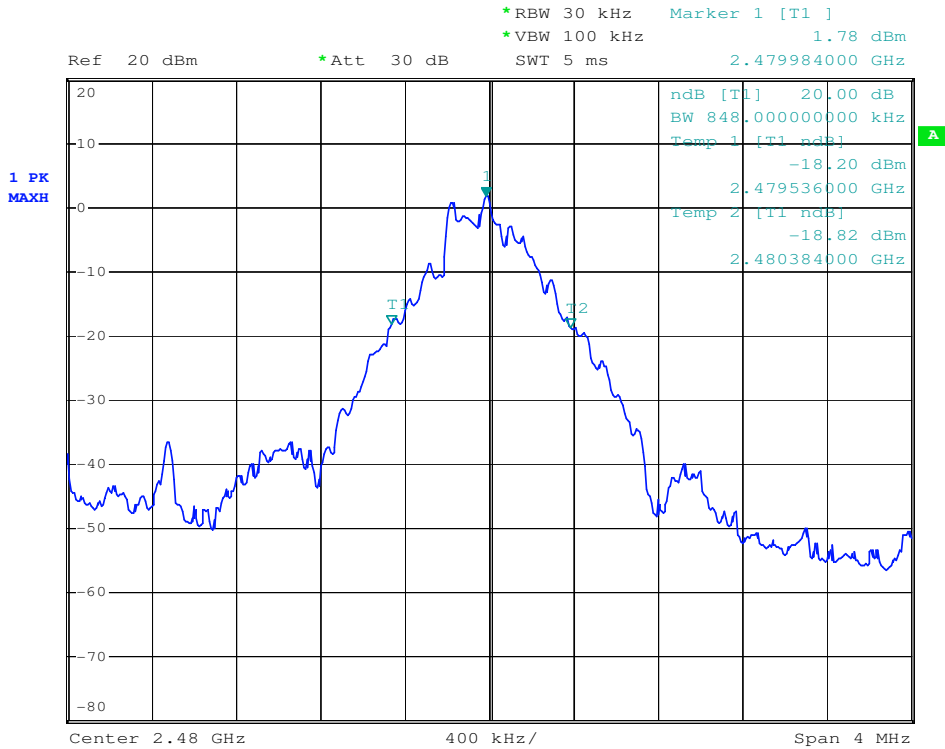
Test mode:	GFSK	Test channel:	Middle
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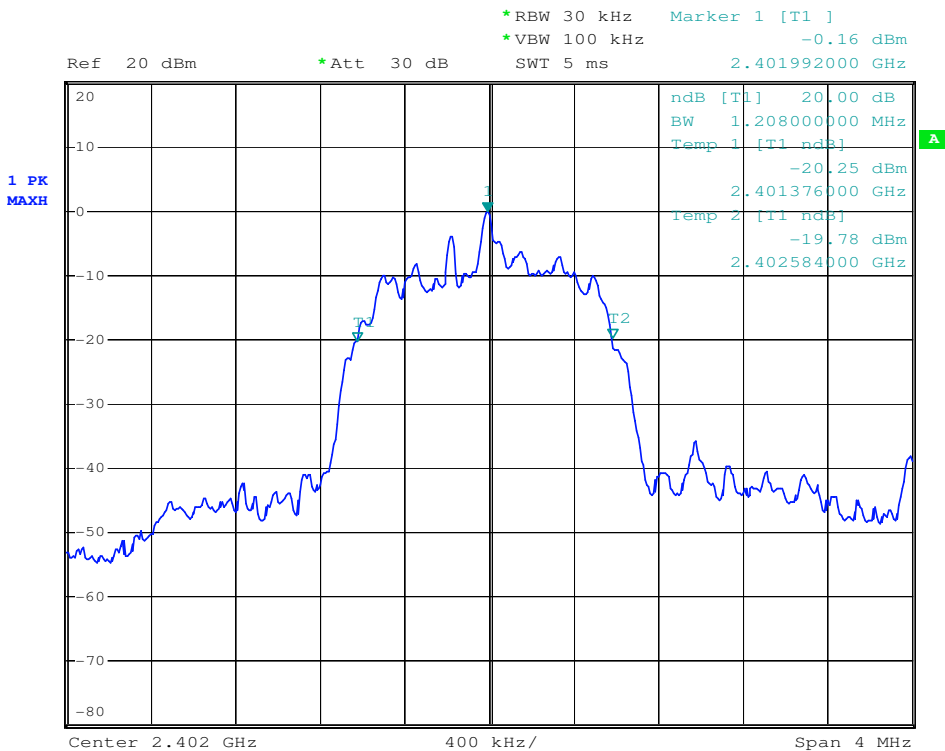
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Test mode:	GFSK	Test channel:	Highest
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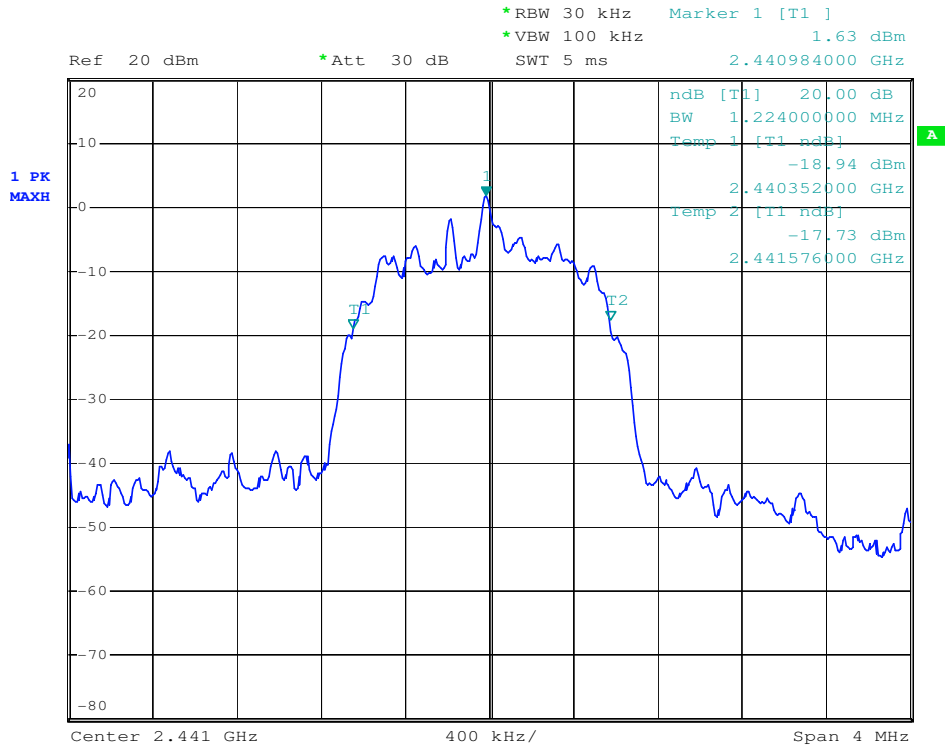
Test mode:	$\pi/4$ DQPSK	Test channel:	Lowest
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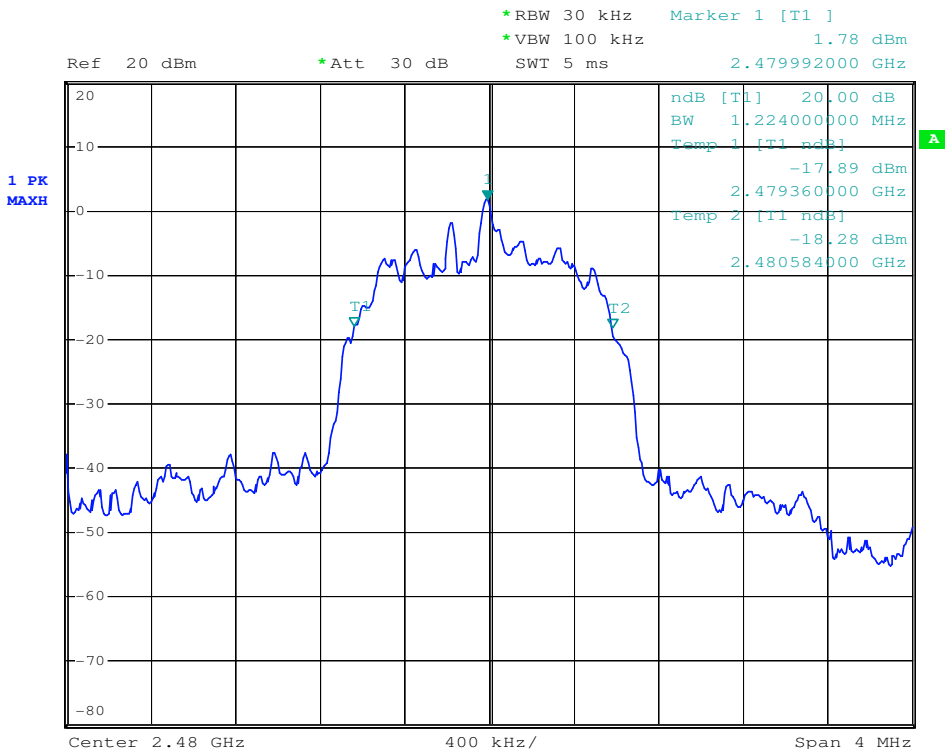
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Test mode:	$\pi/4$ DQPSK	Test channel:	Middle
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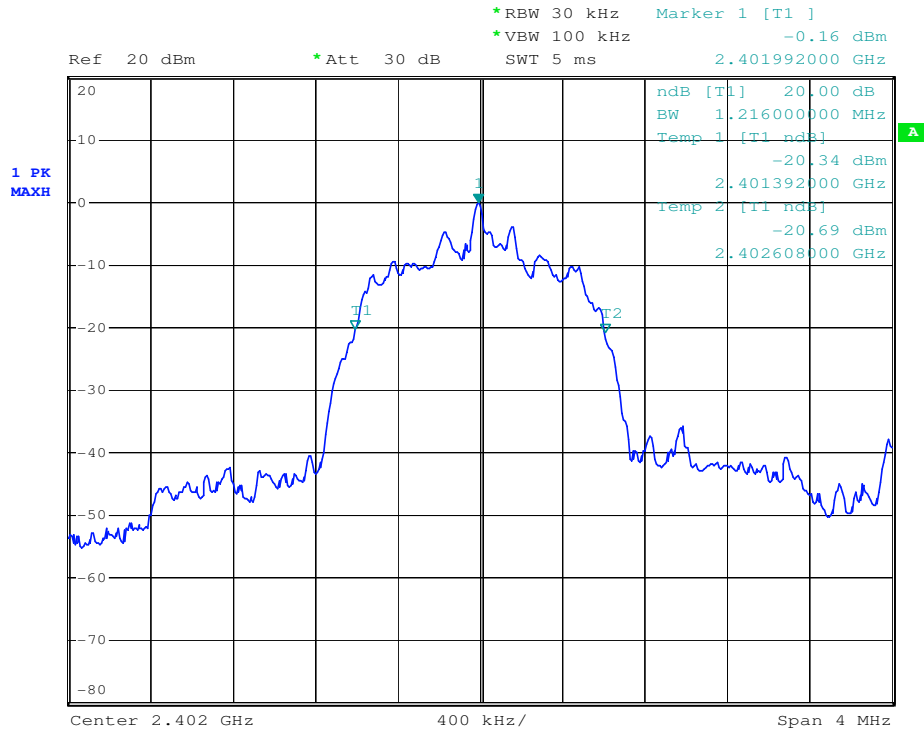
Test mode:	$\pi/4$ DQPSK	Test channel:	Highest
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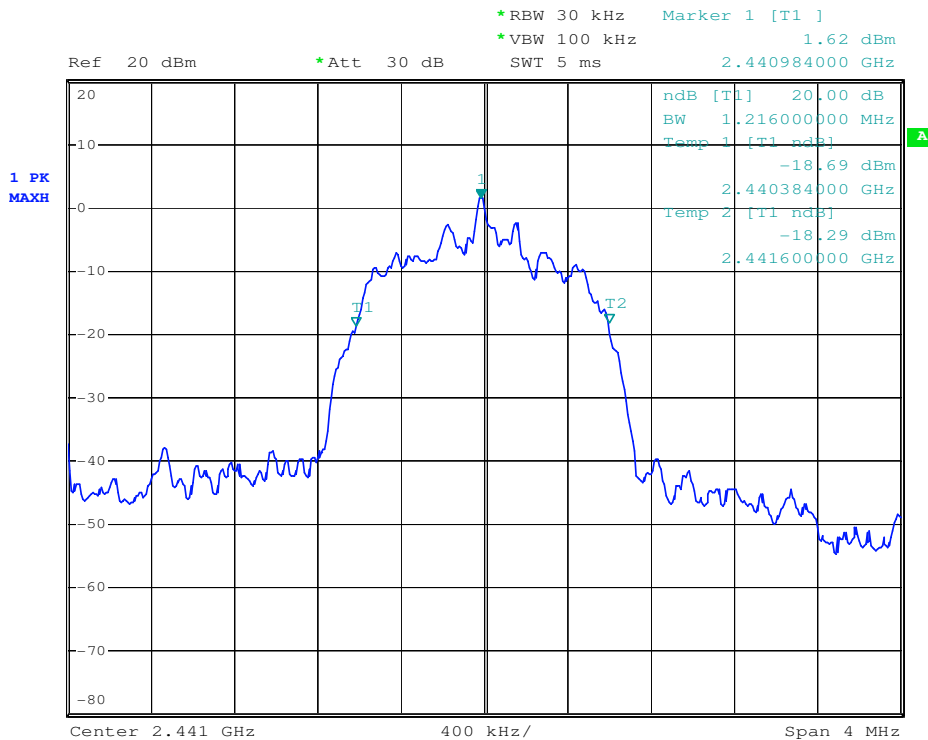
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Test mode:	8DPSK	Test channel:	Lowest
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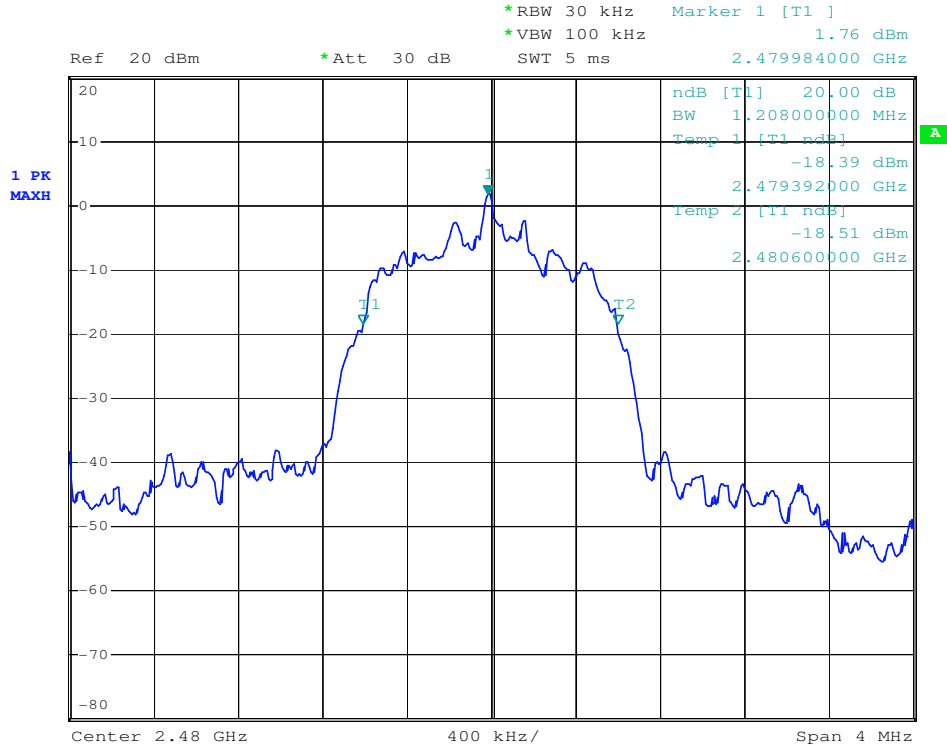
Test mode:	8DPSK	Test channel:	Middle
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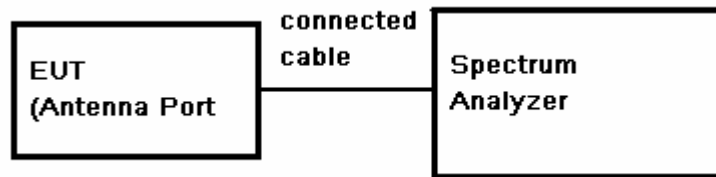
Test mode:	8DPSK	Test channel:	Highest
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6.5 Conducted Peak Output Power

Test Requirement:	FCC Part 15.247 Section 15.247(b)(1) RSS 210 A 8.4(2)
Test Method:	ANSI C64.10:2009 Section 6.10.1
Test Date:	June 12, 2013
Test Result:	Pass
Test Limit:	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. Refer to the result "Hopping channel number" of this document. The 0.125 watt (20.0dBm) limit applies.
Final Test Mode:	Transmitting mode
Test Configuration:	



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 = 3 MHz, VBW = 10 MHz, Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

Test Results record:

Test Channel	Modulation	Fundamental Frequency (MHz)	Reading Power (dBm)	Cable Loss (dB)	Output Power (dBm)	Limit (dBm)	Margin (dBm)
Lowest	GFSK	2402	6.05	0.5	6.55	30	-23.45
Middle	GFSK	2441	4.95	0.5	5.45	30	-24.55
Highest	GFSK	2480	5.01	0.5	5.51	30	-24.49
Lowest	$\pi/4$ DQPSK	2402	4.80	0.5	5.30	30	-24.7
Middle	$\pi/4$ DQPSK	2441	5.56	0.5	6.06	30	-23.94
Highest	$\pi/4$ DQPSK	2480	5.44	0.5	5.94	30	-24.06
Lowest	8DPSK	2402	5.08	0.5	5.58	30	-24.42
Middle	8DPSK	2441	5.78	0.5	6.28	30	-23.72
Highest	8DPSK	2480	5.66	0.5	6.15	30	-23.85

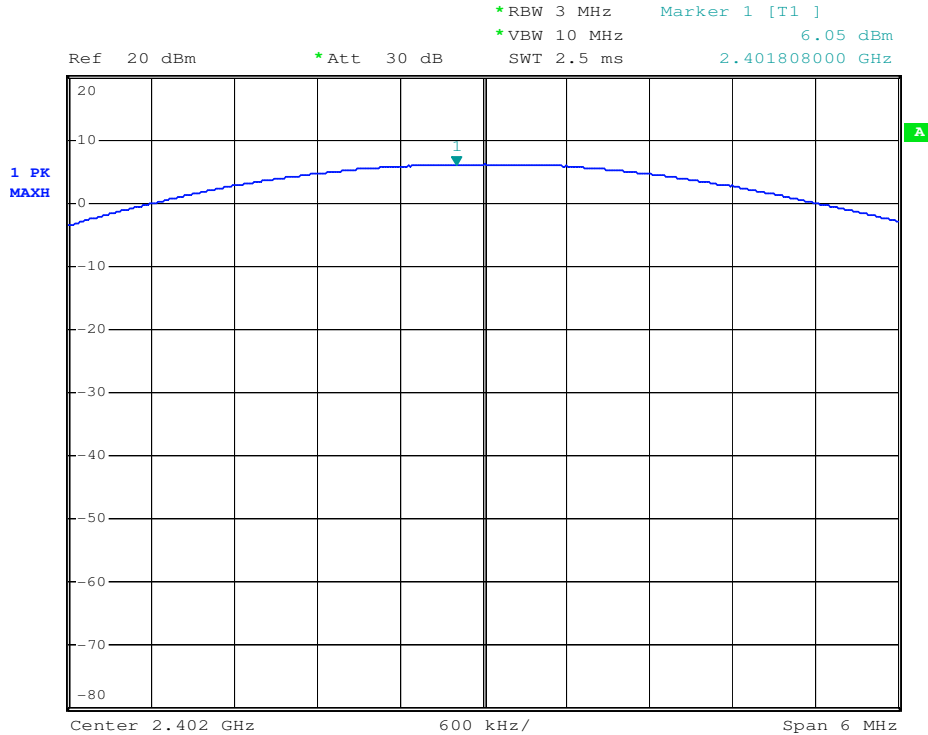
Remark: P=Reading power + Cable loss

Margin= P - Limit

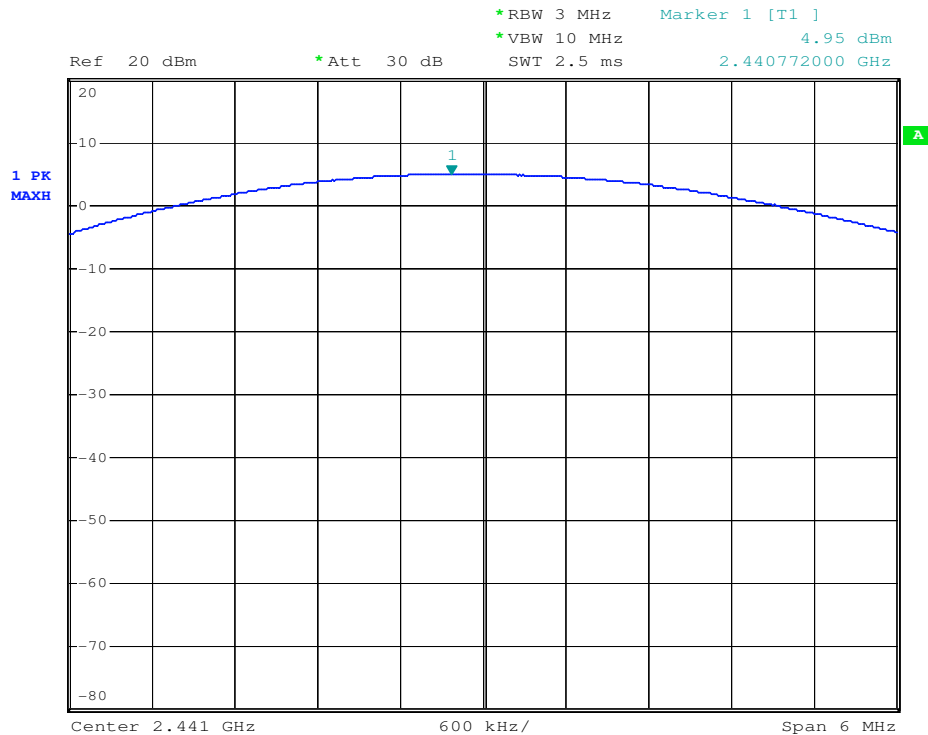


Test result plot as follows:

Test mode:	GFSK	Test channel:	Lowest
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Test mode:	GFSK	Test channel:	Middle
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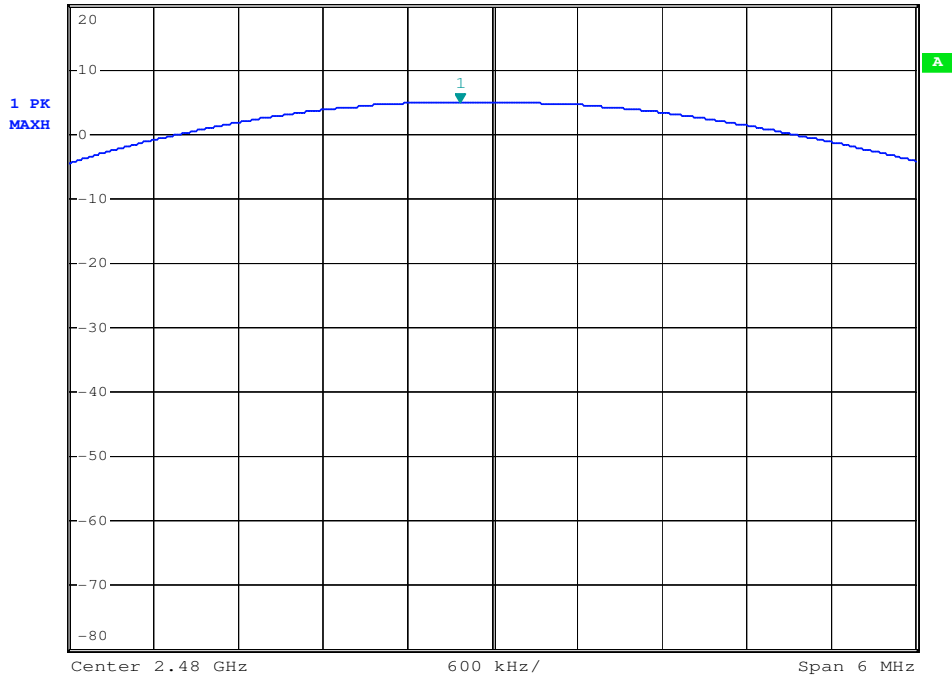


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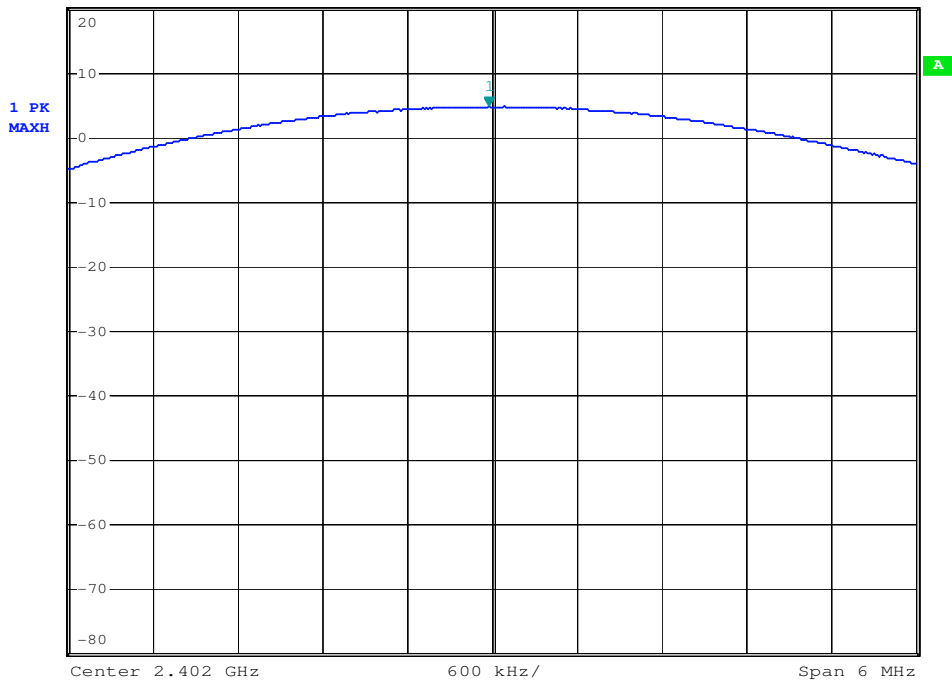
Test mode:	GFSK	Test channel:	Highest
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Ref 20 dBm *Att 30 dB RBW 3 MHz Marker 1 [T1] 5.01 dBm
*VBW 10 MHz SWT 2.5 ms 2.479772000 GHz



Test mode:	$\pi/4$ DQPSK	Test channel:	Lowest
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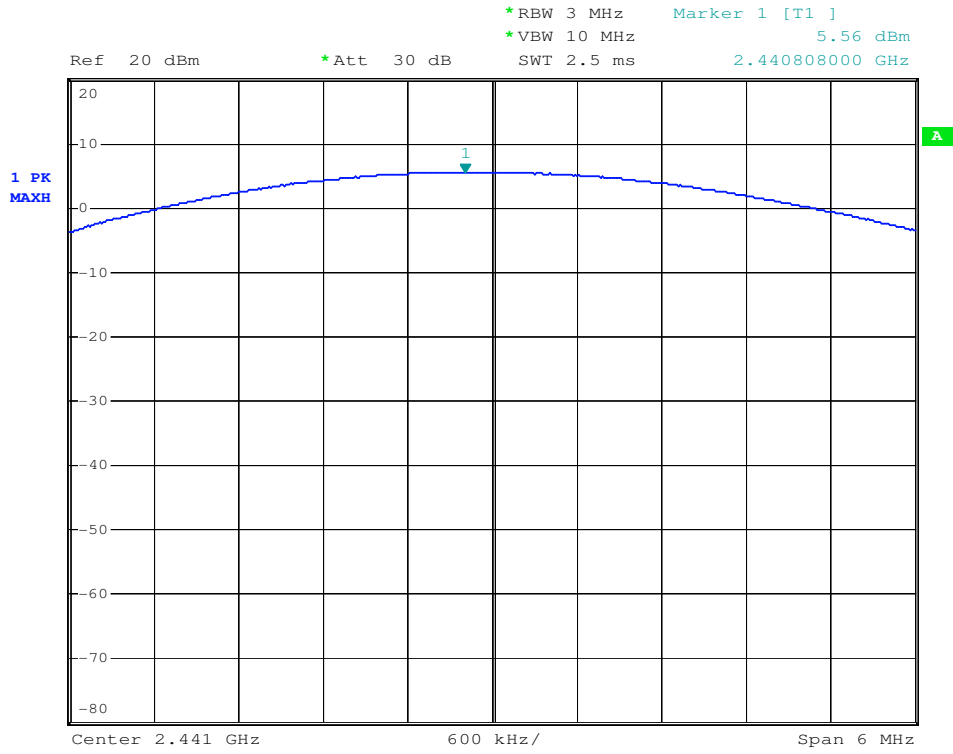
Ref 20 dBm *Att 30 dB RBW 3 MHz Marker 1 [T1] 4.80 dBm
*VBW 10 MHz SWT 2.5 ms 2.401976000 GHz



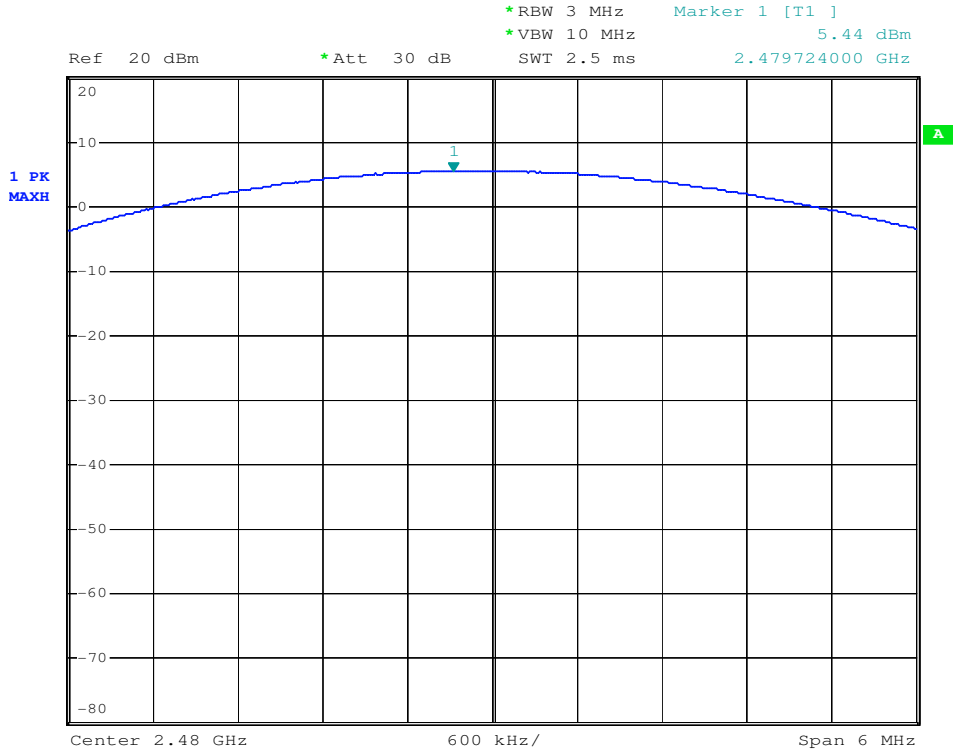
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Test mode:	$\pi/4$ DQPSK	Test channel:	Middle
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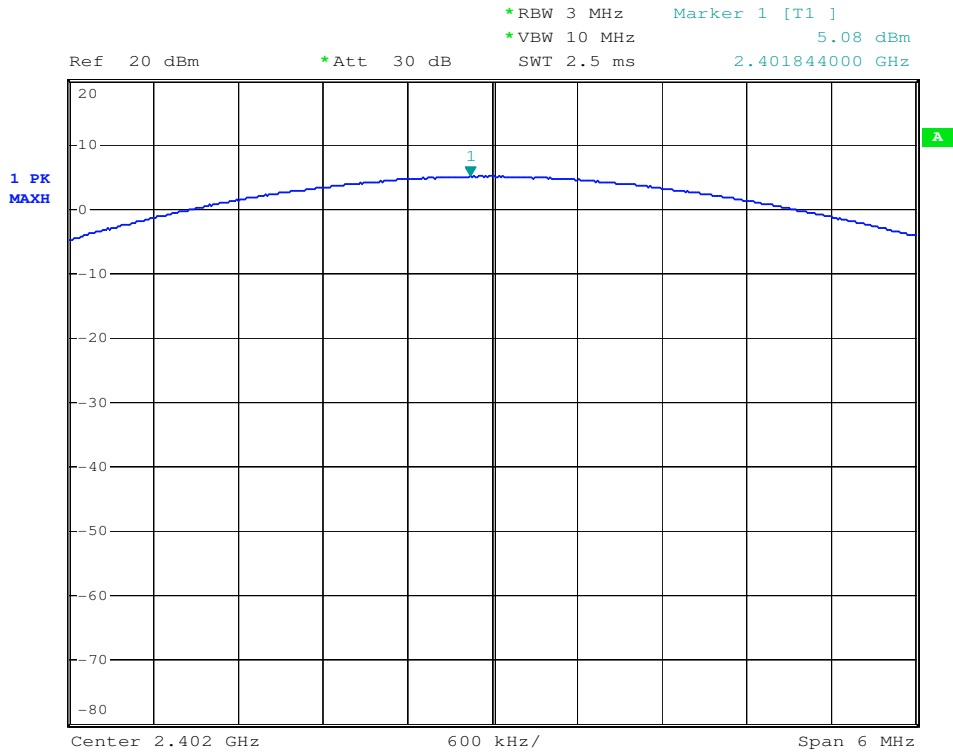
Test mode:	$\pi/4$ DQPSK	Test channel:	Highest
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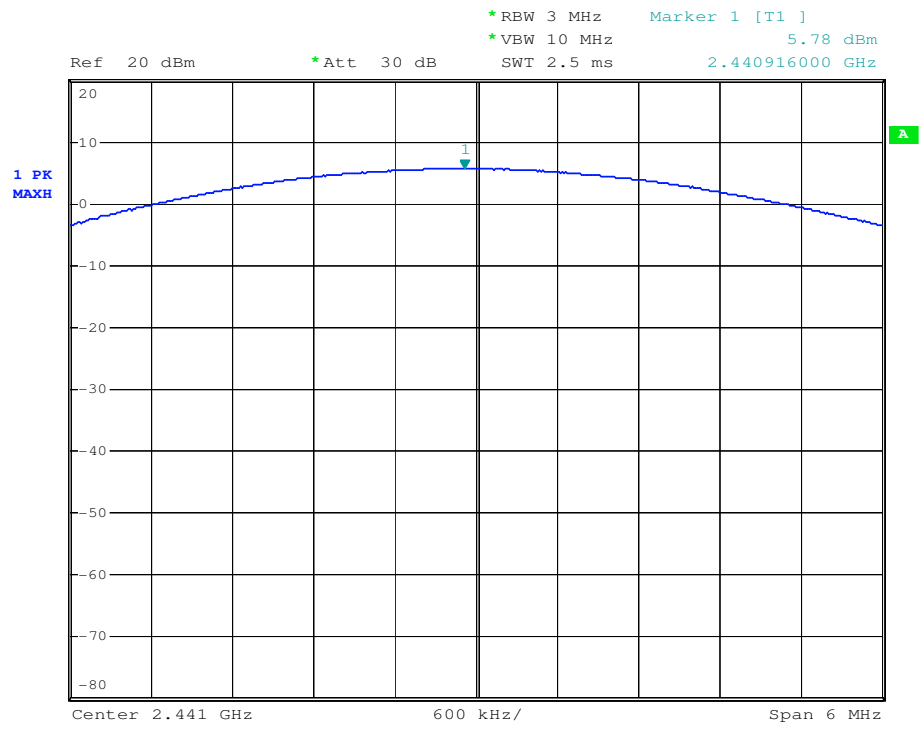
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Test mode:	8DPSK	Test channel:	Lowest
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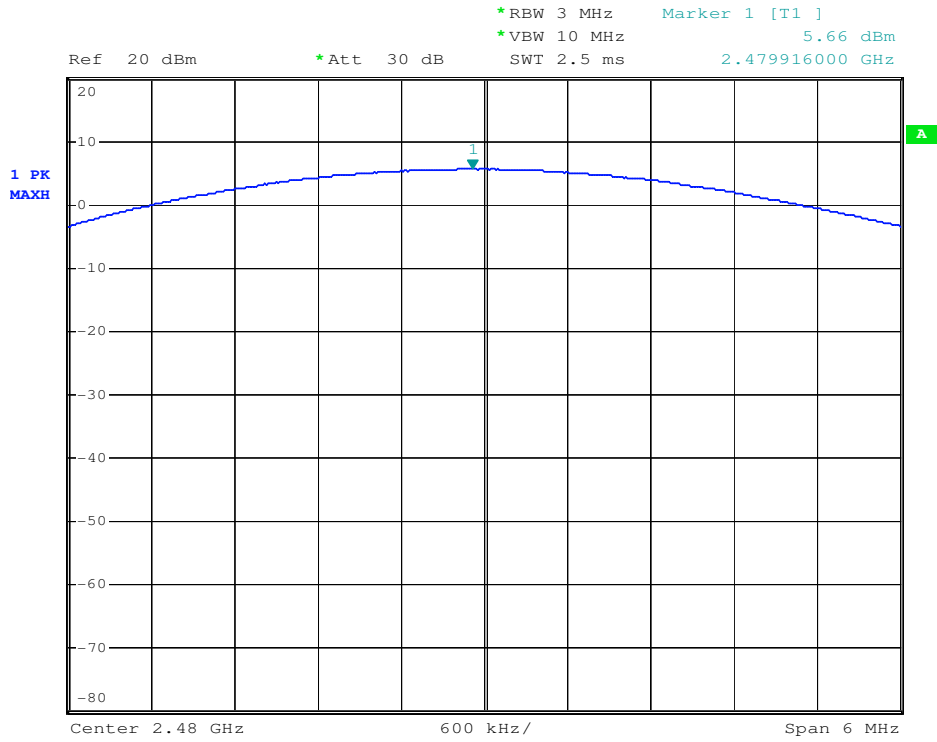
Test mode:	8DPSK	Test channel:	Middle
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Test mode:	8DPSK	Test channel:	Highest
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6.6 Carrier Frequencies Separated

Test Requirement: FCC Part 15 C Section 15.247 (a)(1)
RSS 210 A 8.4(2)

Test Method: ANSI C63.10:2009 Clause 7.7.2

Test Date: June 12, 2013

Limit: 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)

Test result: Pass

Final Test Mode: Transmitting mode

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 \geq 1% of the span (set 100 kHz). VBW \geq RBW , Span = 3MHz. 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.

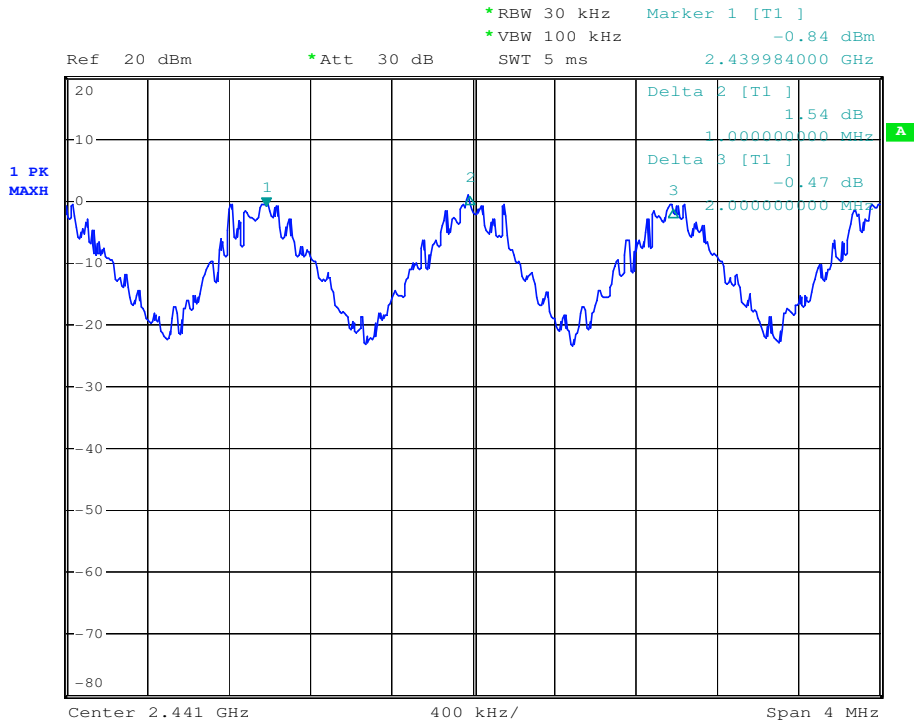
Test Channel	Modulation	Carrier Frequencies Separated (MHz)	Limit (25kHz or two-thirds of the 20 dB bandwidth)	Results
Middle Channels (channel 39 and channel 40)	$\pi/4$ DQPSK	1.00 MHz	25kHz/816kHz	PASS
Middle Channels (channel 39 and channel 40)	GFSK	1.00 MHz	25kHz/816kHz	PASS
Middle Channels (channel 39 and channel 40)	8DPSK	1.00 MHz	25kHz/816kHz	PASS

Note: 20dB bandwidth reference Section 7.4

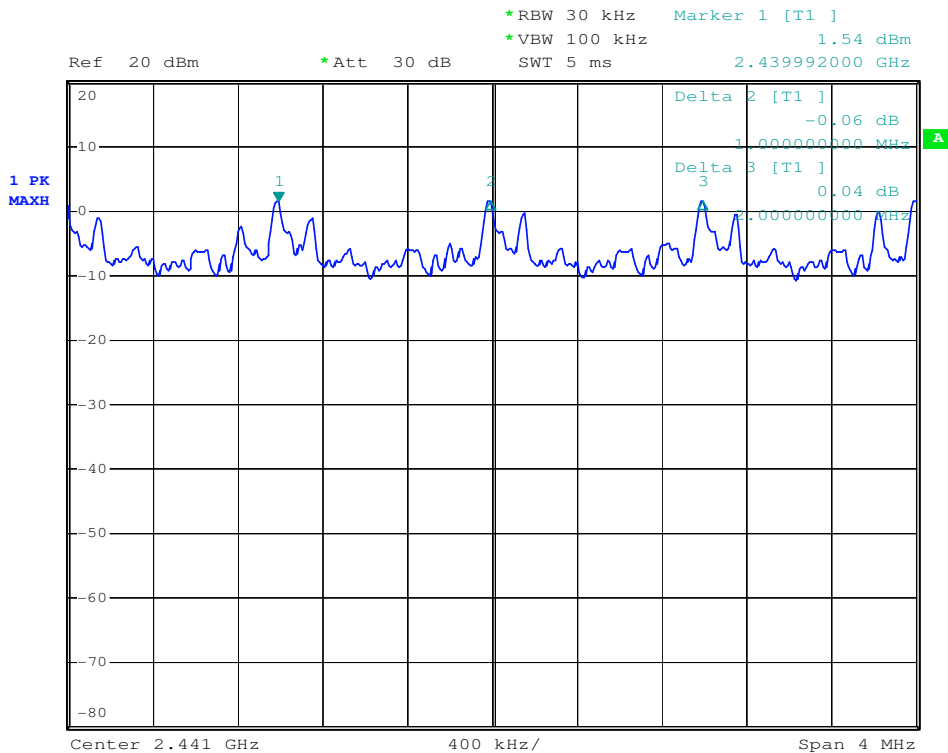


Test plot as follows:

Test mode:	GFSK	Test channel:	Middle
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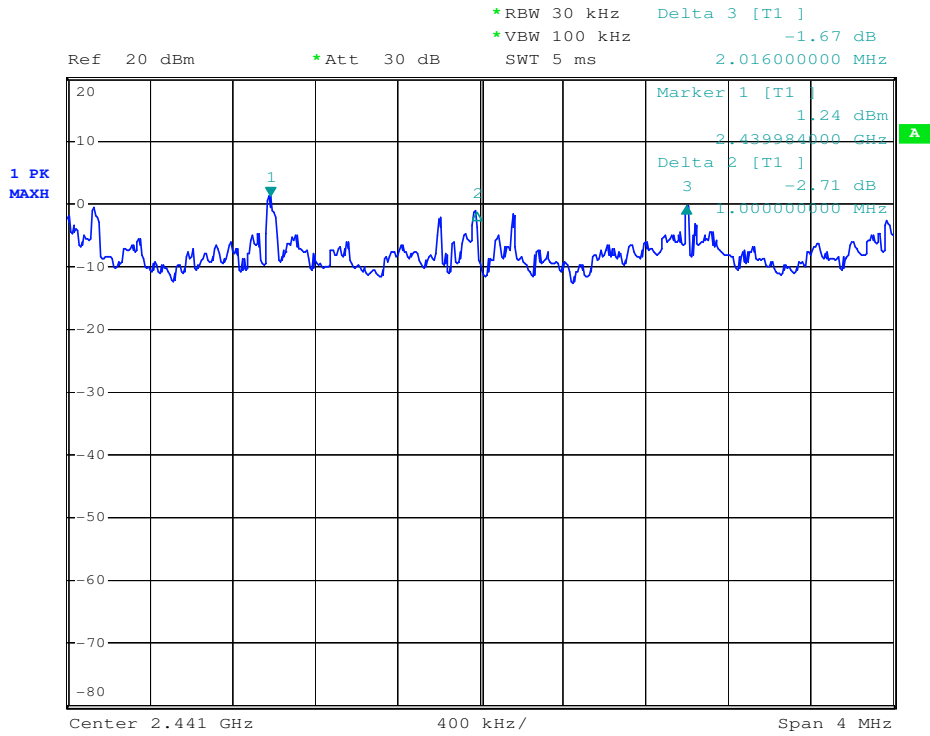
Test mode:	$\pi/4$ DQPSK	Test channel:	Middle
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Test mode:	8DPSK	Test channel:	Middle
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6.7 Hopping Channel Number

Test Requirement: FCC Part15 C Section 15.247(b)

RSS 210 A 8.1(d)

Test Method: ANSI C63.10:2009 Clause 7.7.3

Test Date: June 12, 2013

Limit: At least 15 channels

Test Result: Pass

Test Mode: Transmitting mode

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 = 100 kHz. VBW = 300 kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It June 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 = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

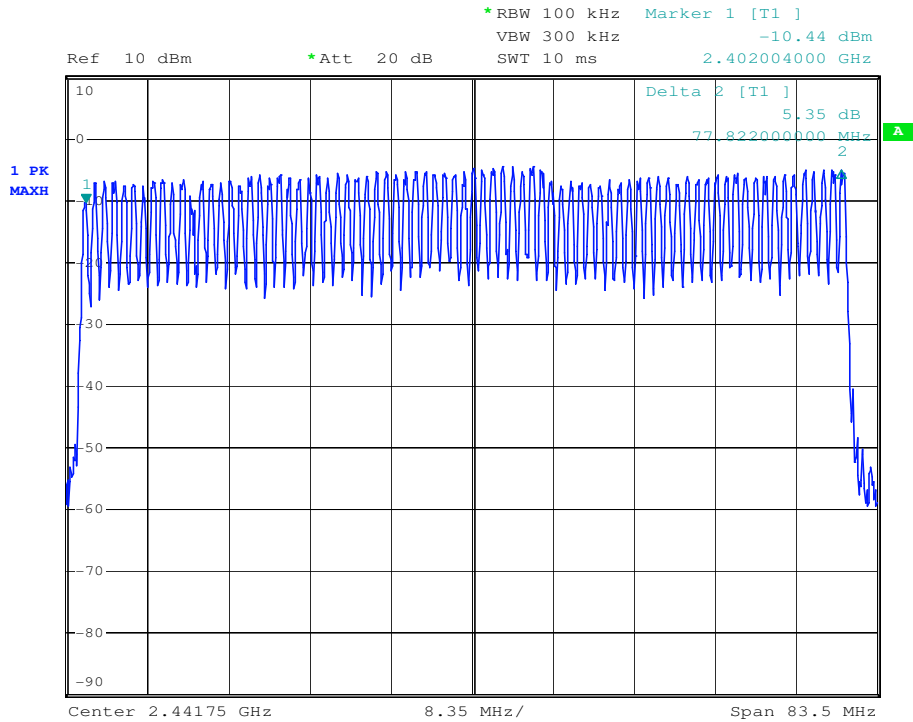
Measurement Data

Mode	Hopping channel numbers	Limit	Results
π/4DQPSK	79	≥15	Pass
GFSK	79	≥15	Pass
8DPSK	79	≥15	Pass

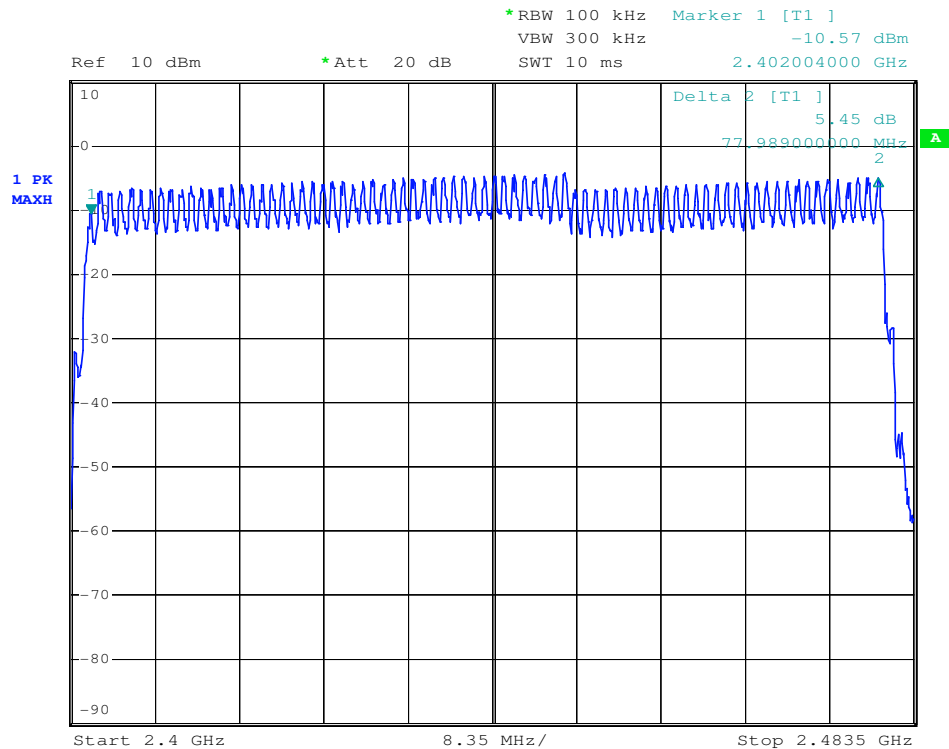


Test plot as follows:

Test mode:	GFSK	Test channel:	Middle
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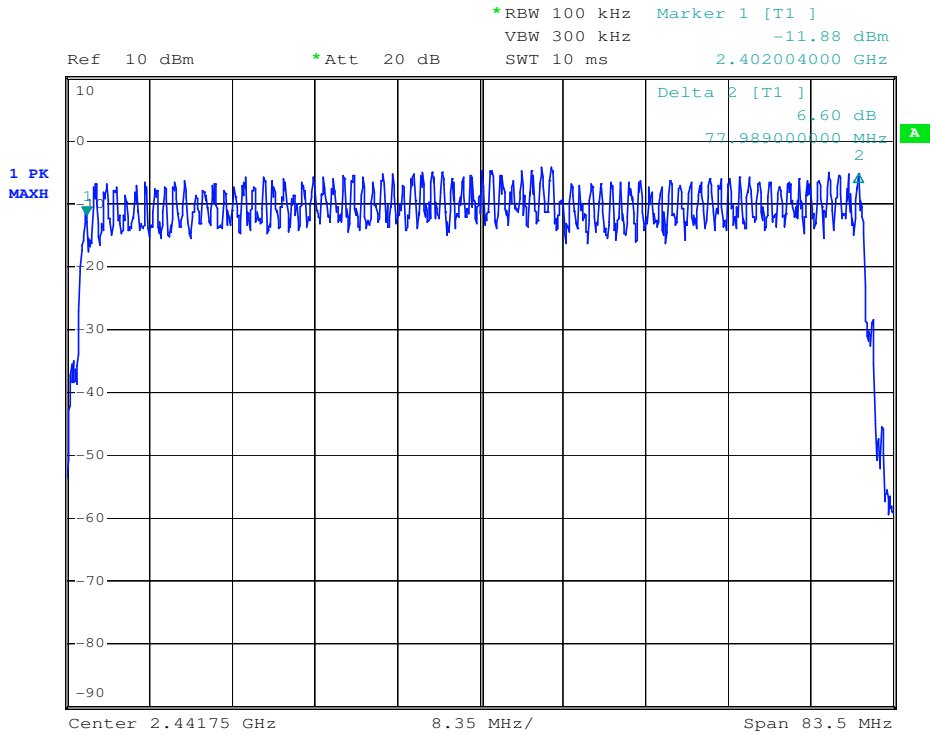
Test mode:	$\pi/4$ DQPSK	Test channel:	Middle
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Test mode:	8DPSK	Test channel:	Middle
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6.8 Dwell Time

Test Requirement: FCC Part 15 C Section 15.247(a)(1)
RSS 210 A 8.1(d)

Test Method: ANSI C63.10:2009 Clause 7.7.4

Test Date: June 12, 2013

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. Frequency hopping systems June avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Test Status: Hopping transmitting with all kind of modulation.

Test Result: Pass

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. centered on a hopping channel;
3. Use Emission width / No. of Hopping Channels in 31.6s to determine the dwell time.

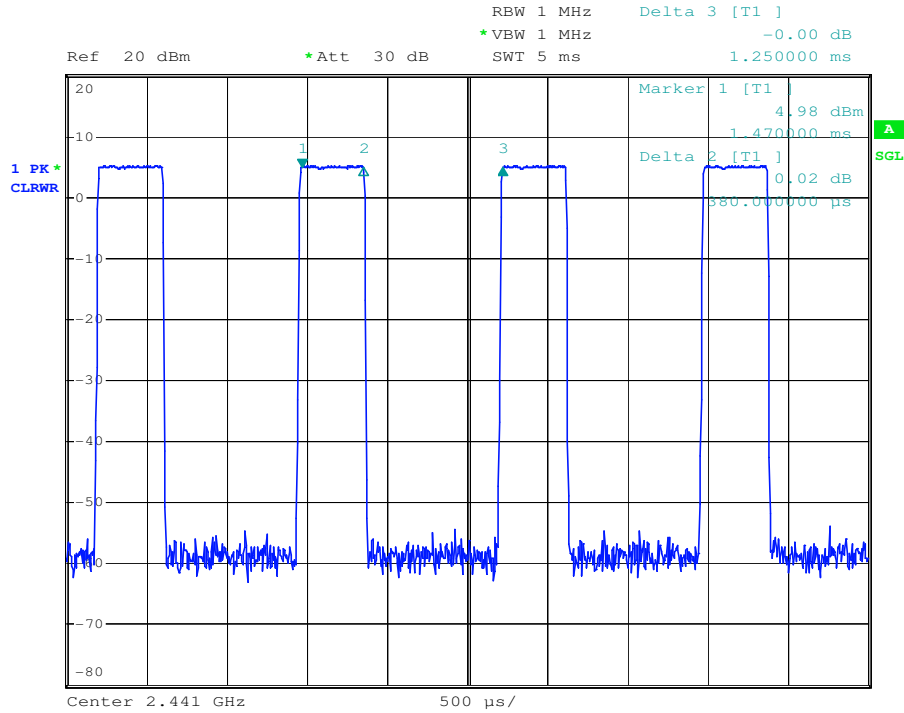
Frequency (MHz)	Modulation	Packet	Emission Width (ms)	Number of Hopping Channel in 31.6s	Average Time of Occupancy(s)	Limit(s)	Result
2441	GFSK	DH1	0.380	211	0.080	0.4	Pass
		DH3	1.620	140	0.227	0.4	Pass
		DH5	2.850	88	0.251	0.4	Pass
	π/4DQPSK	DH1	0.400	164	0.066	0.4	Pass
		DH3	1.620	123	0.199	0.4	Pass
		DH5	1.680	102	0.171	0.4	Pass
	8DPSK	DH1	0.390	201	0.078	0.4	Pass
		DH3	1.620	125	0.202	0.4	Pass
		DH5	2.88	90	0.259	0.4	Pass



Test plot as follows::

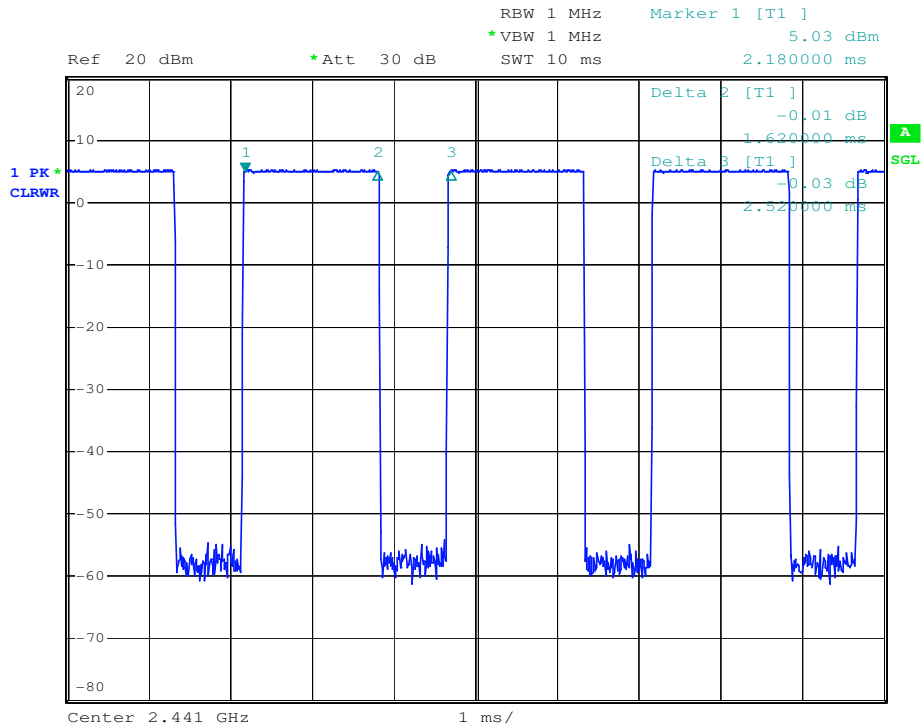
Frequency 2441MHz:

Modulation: GFSK-DH1



Frequency 2441MHz:

Modulation: GFSK- DH3

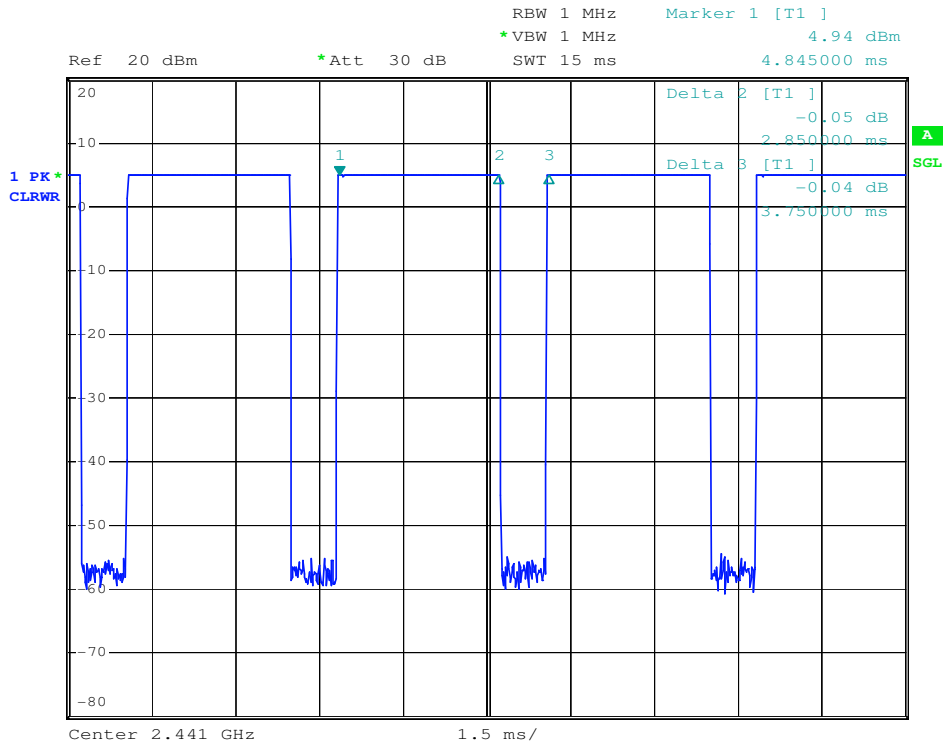


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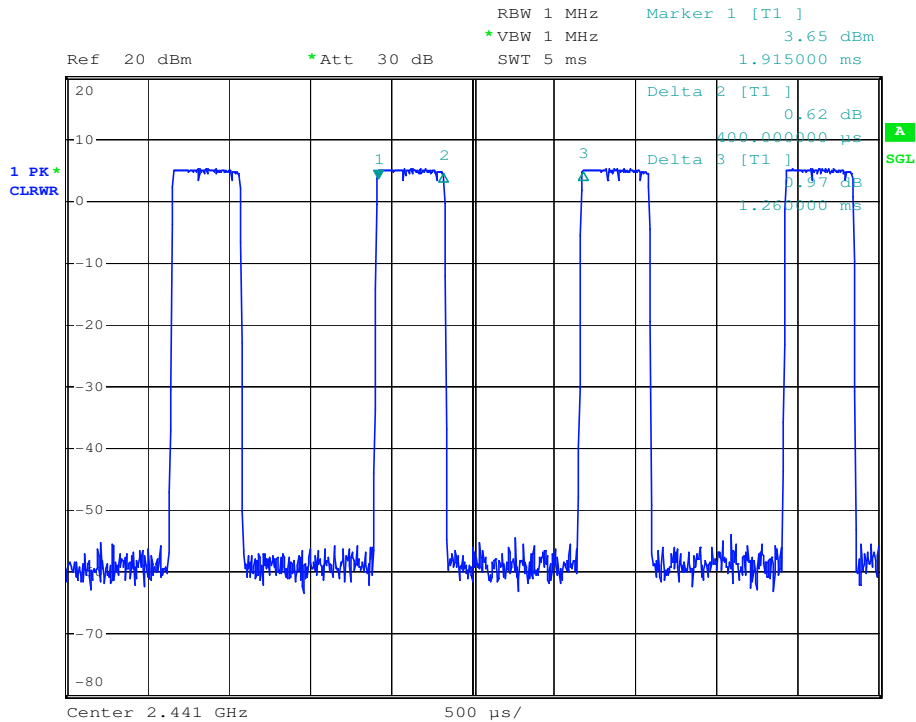
Frequency 2441MHz:

Modulation: GFSK- DH5



Frequency 2441MHz:

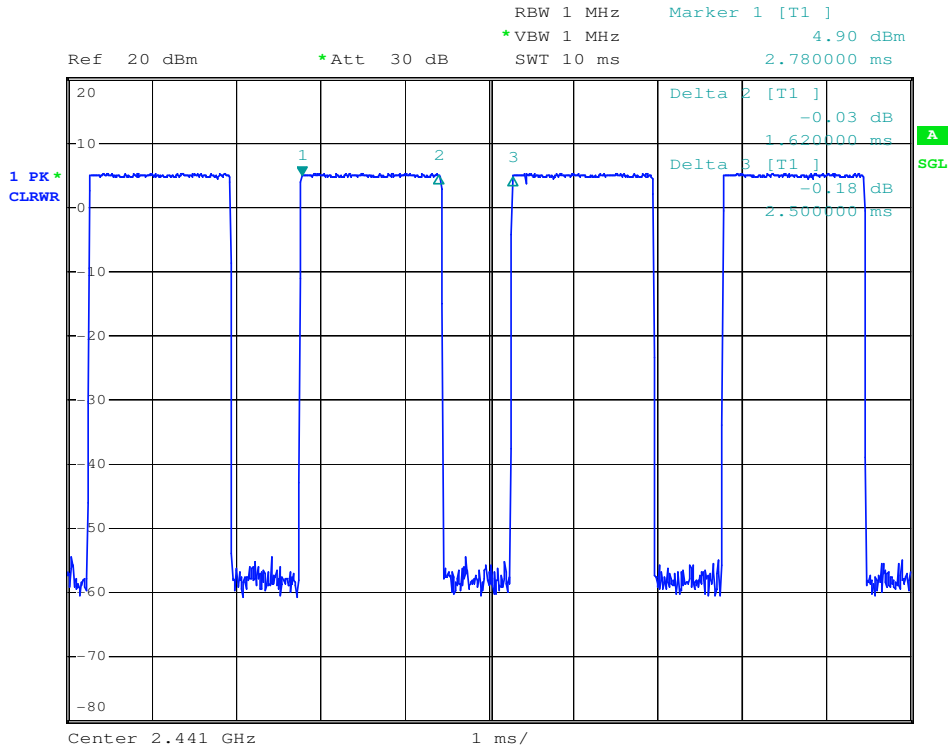
Modulation: $\pi/4$ DQPSK -DH1





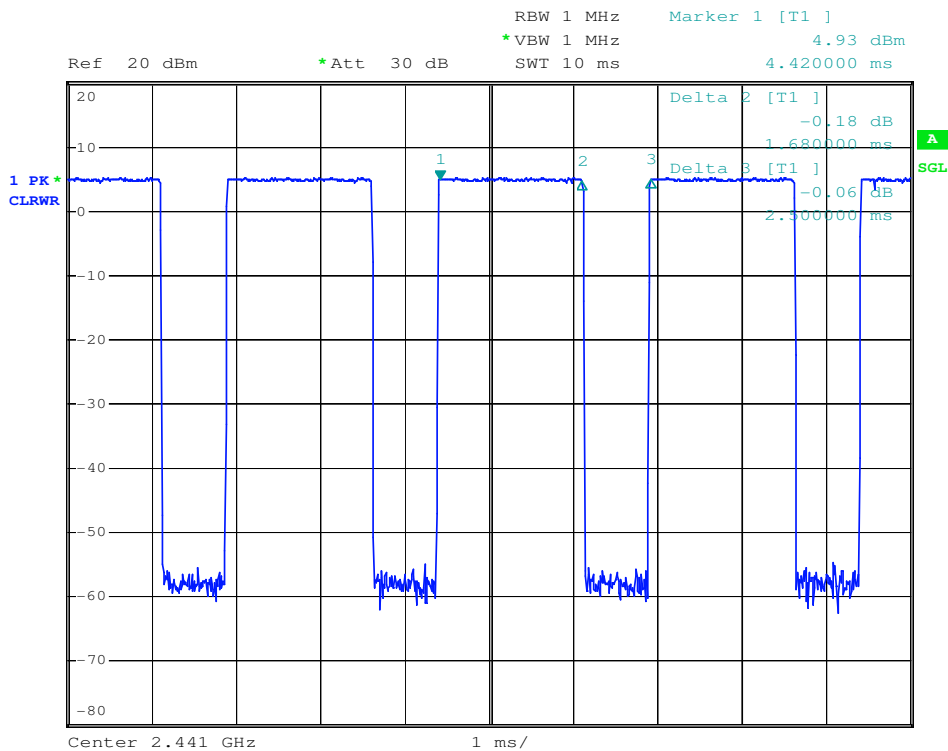
Frequency 2441MHz:

Modulation: $\pi/4$ DQPSK - DH3



Frequency 2441MHz:

Modulation: $\pi/4$ DQPSK - DH5

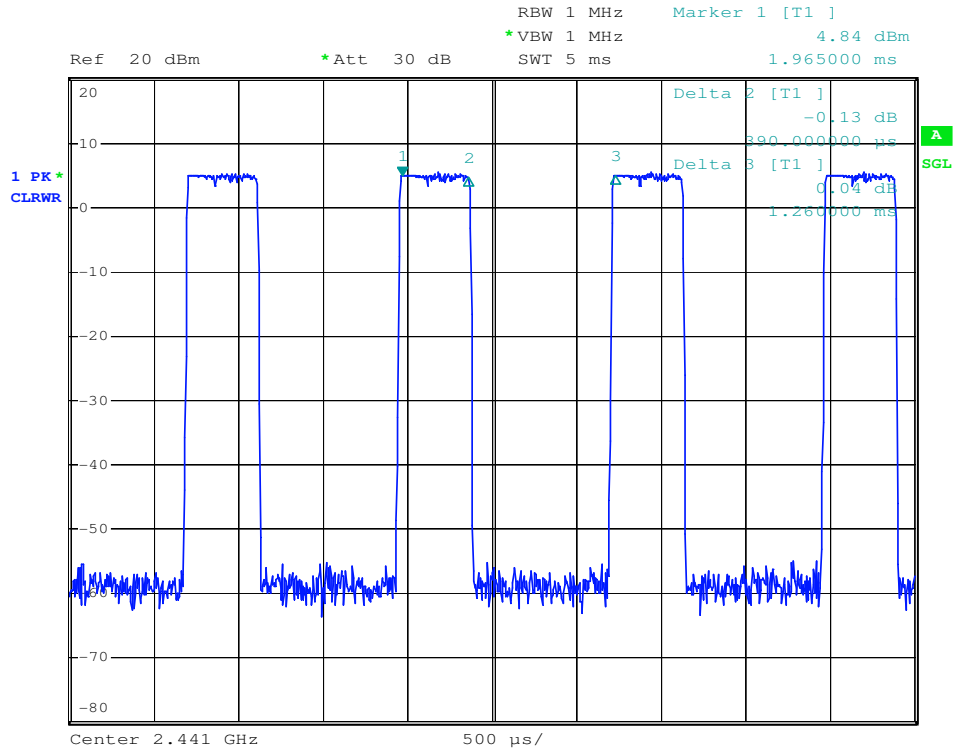


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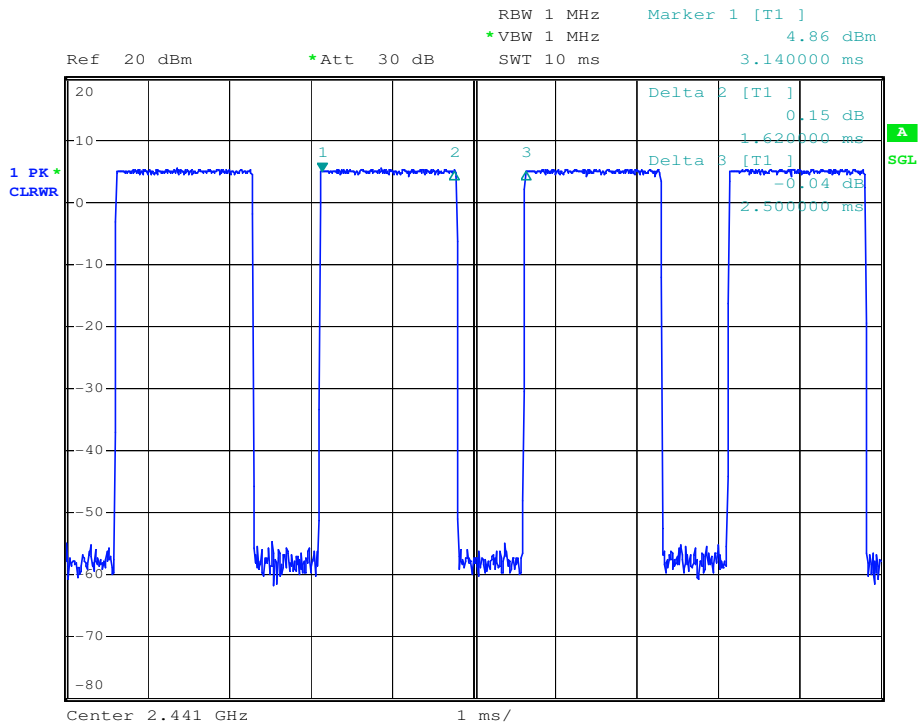
Frequency 2441MHz:

Modulation: 8DPSK -DH1



Frequency 2441MHz:

Modulation: 8DPSK - DH3

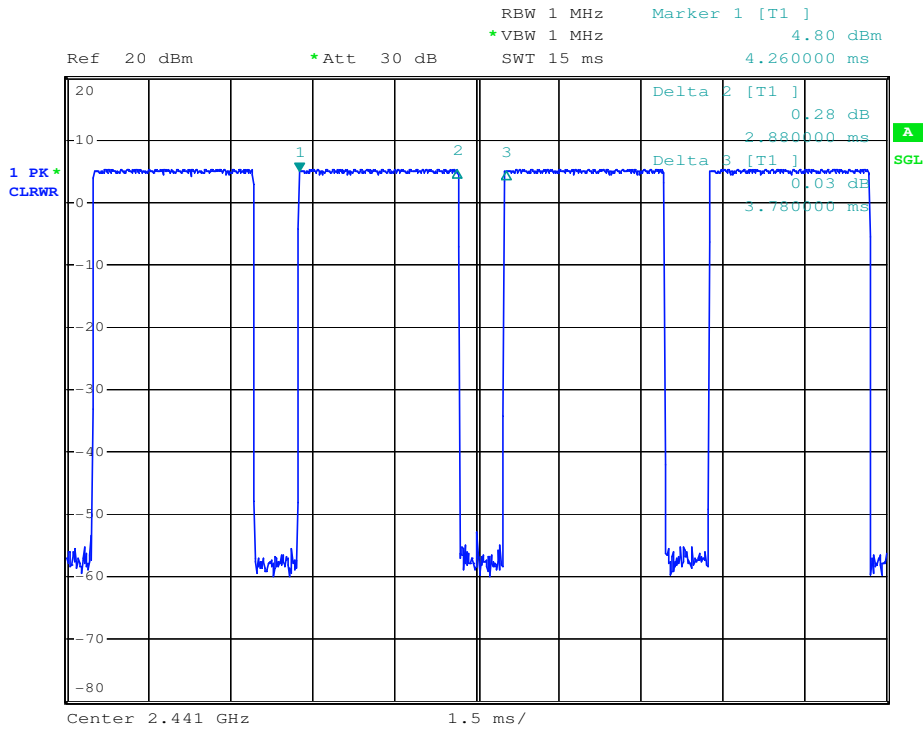


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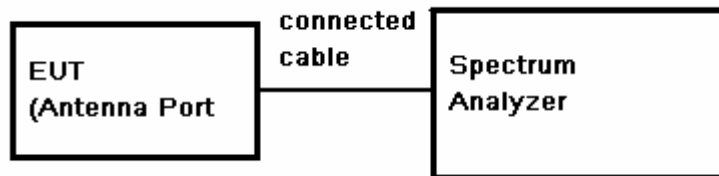
Frequency 2441MHz:

Modulation: 8DPSK - DH5



6.9 Conducted Spurious Emissions

Test Requirement:	FCC Part 15 Section 15.247(d) RSS 210 A 8.5
Test Method:	ANSI C63.10:2009 Clause 7.7.10
Test Date:	June 14, 2013
Limit:	(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.
Final Test Mode:	Transmitting mode
Test Result:	Pass
Test Configuration:	

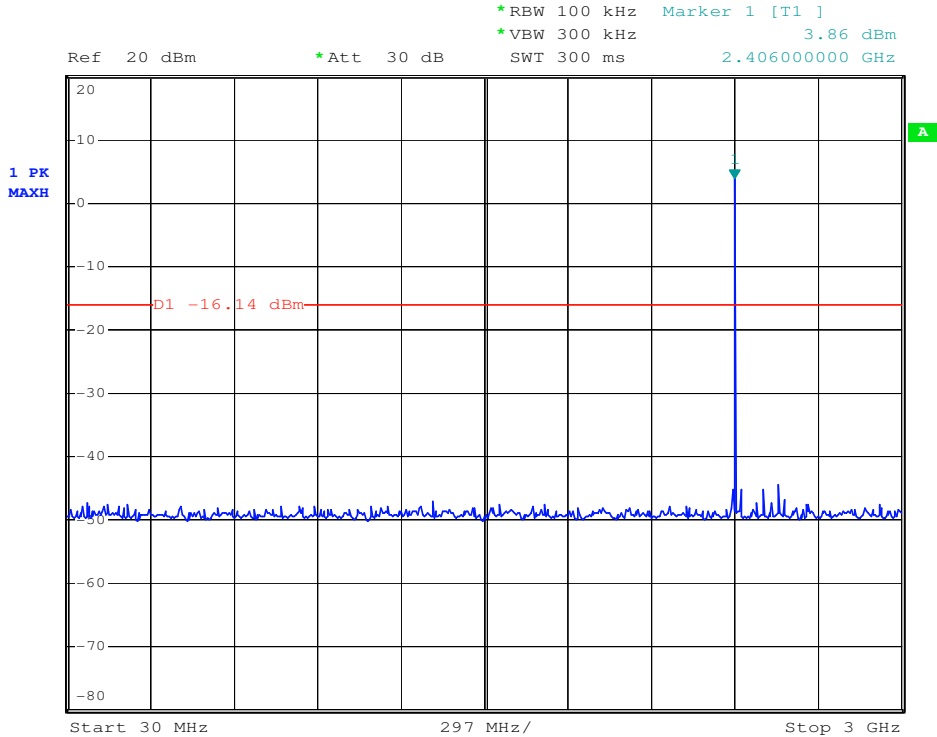


- Test Procedure:**
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
 2. Set the spectrum analyzer: RBW = 100KHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).
 3. Perform a pre-test to find the worst transmitting mode.

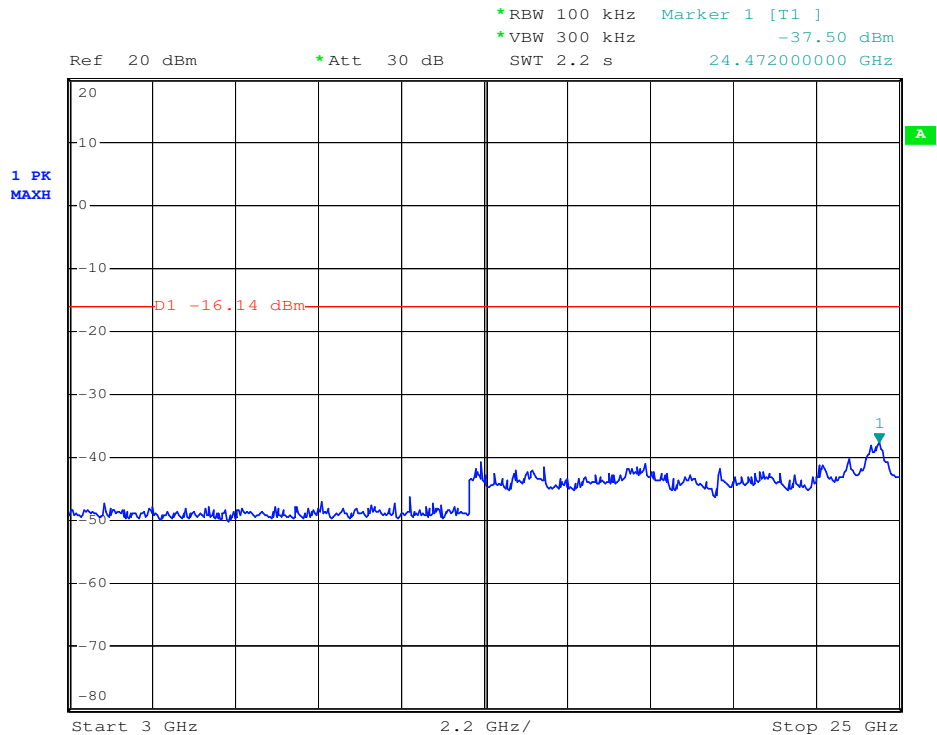


Below show the worst Test results:

Test Frequency 2402MHz:	30MHz-3GHz:	Transmitting mode:	GFSK
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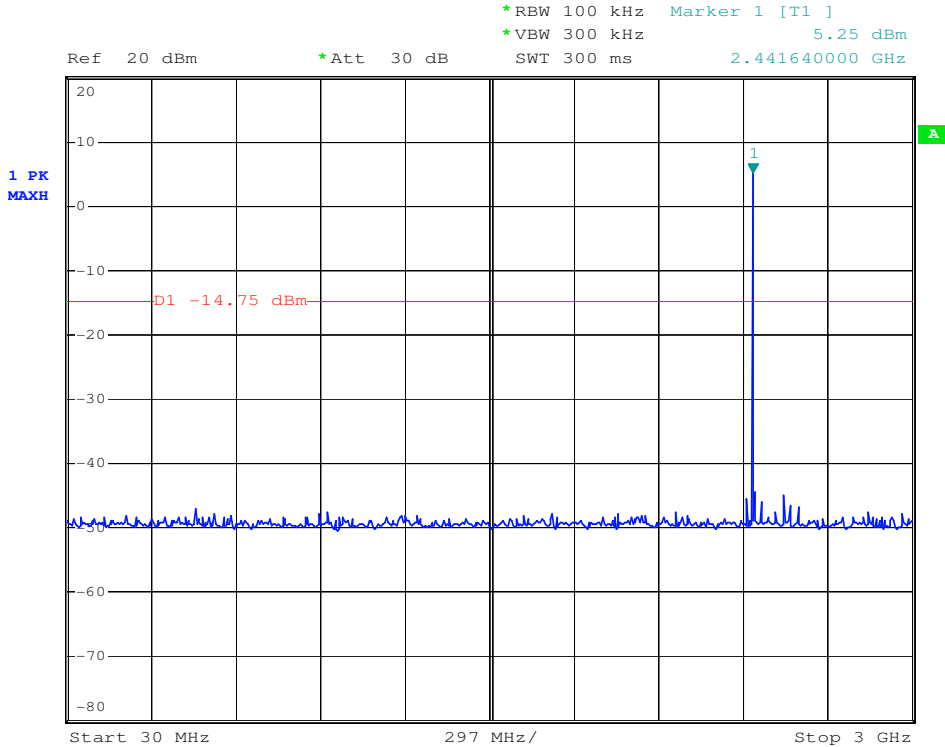
Test Frequency 2402MHz:	3GHz -25GHz:	Transmitting mode:	GFSK
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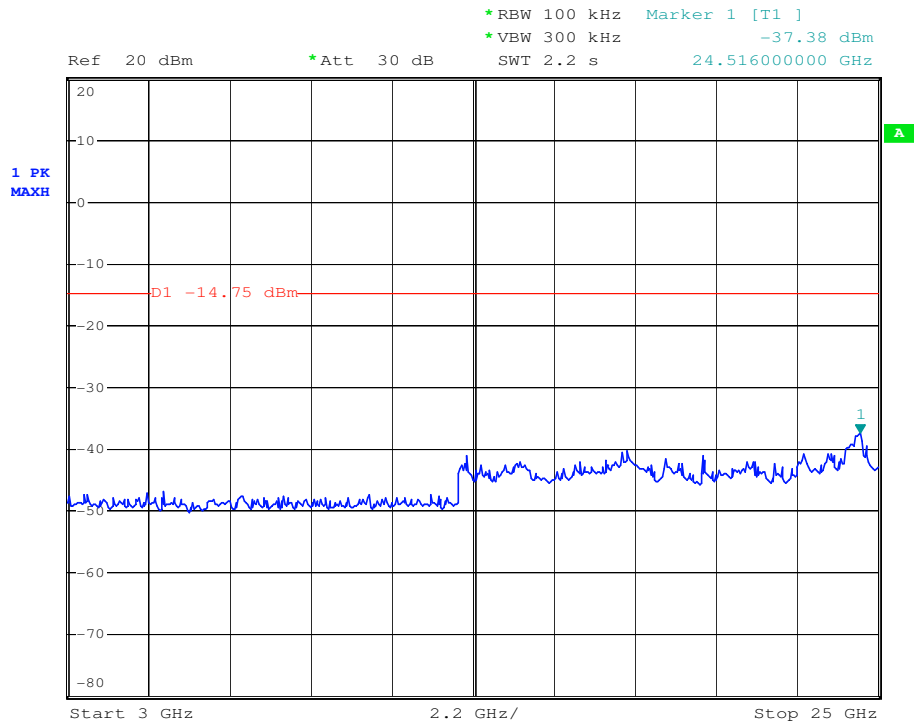
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Test Frequency 2441MHz:	30MHz-3GHz:	Transmitting mode:	8DPSK
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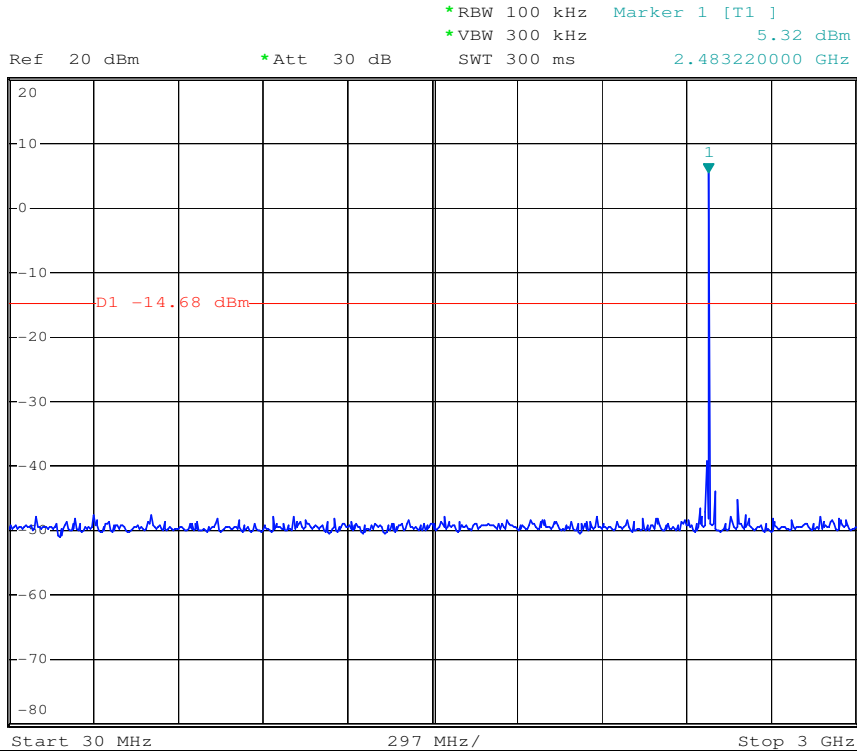
Test Frequency 2441MHz:	3GHz -25GHz:	Transmitting mode:	8DPSK
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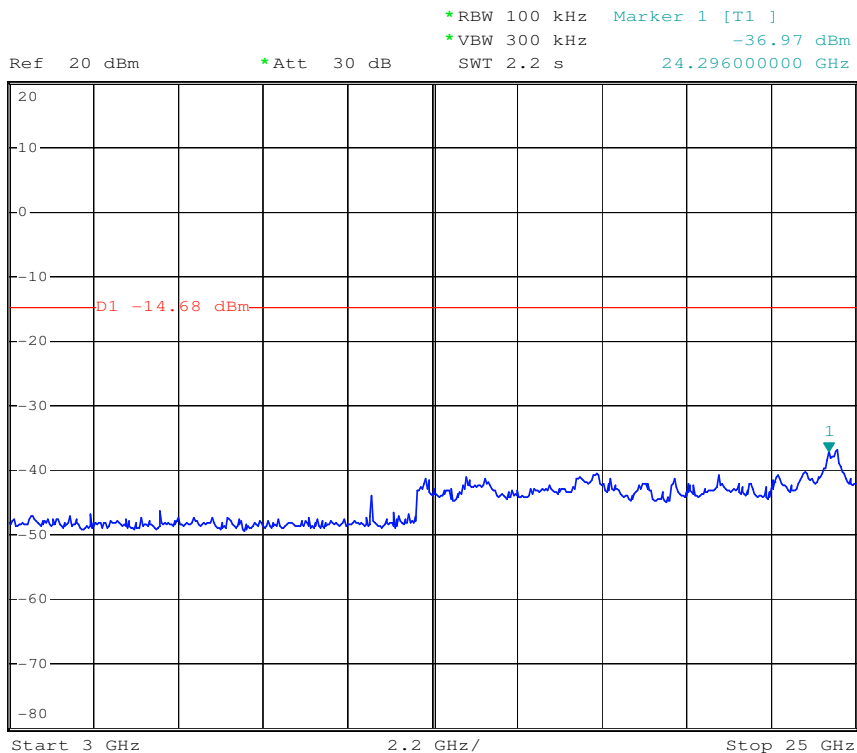
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Test Frequency 2480MHz:	30MHz-3GHz:	Transmitting mode:	8DPSK
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Test Frequency 2480MHz:	3GHz -25GHz:	Transmitting mode:	8DPSK
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6.10 Conducted Band-edge

Test Requirement: FCC Part 15 Section 15.247(d)
RSS-Gen section 4.9

Test Method: ANSI C63.10:2009 Clause 7.7.10

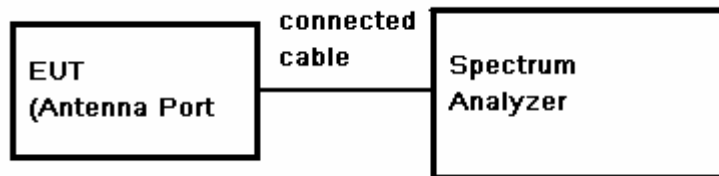
Test Date: June 14, 2013

Limit: (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.

Final Test Mode: Transmitting mode

Test Result: Pass

Test Configuration:



Test Procedure:

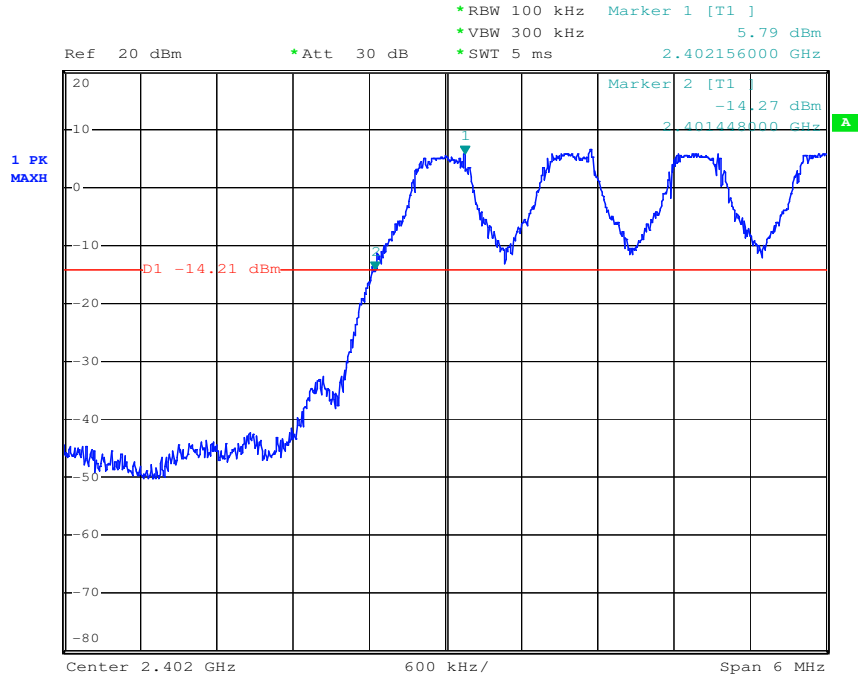
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100KHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).



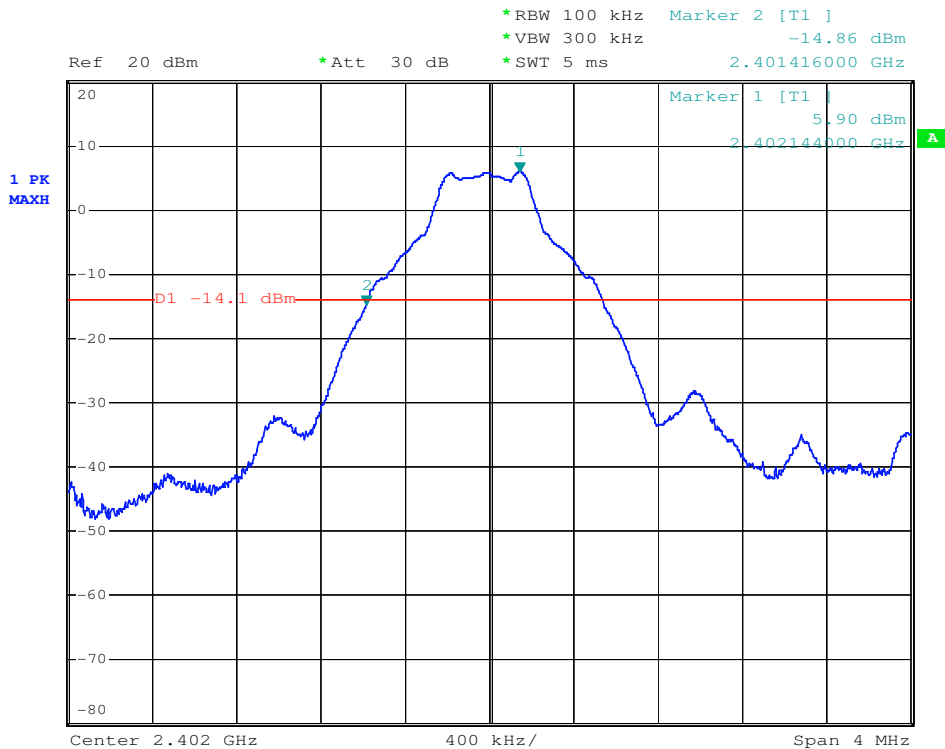
Test plot as follows:

Test mode:	GFSK	Test channel:	Lowest
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For Hopping:



For Static:

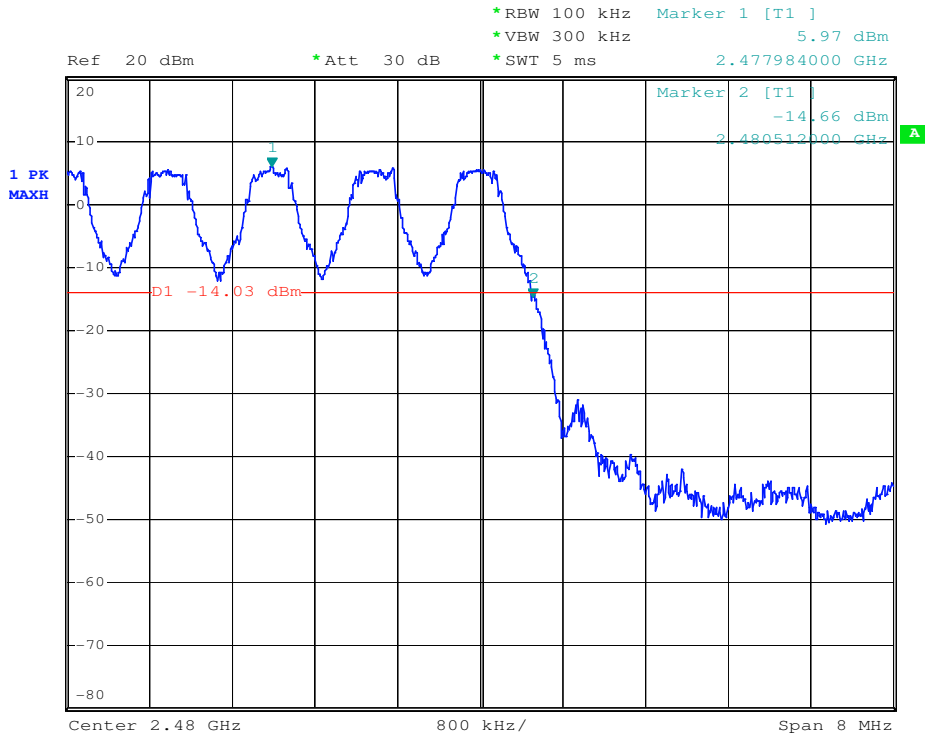


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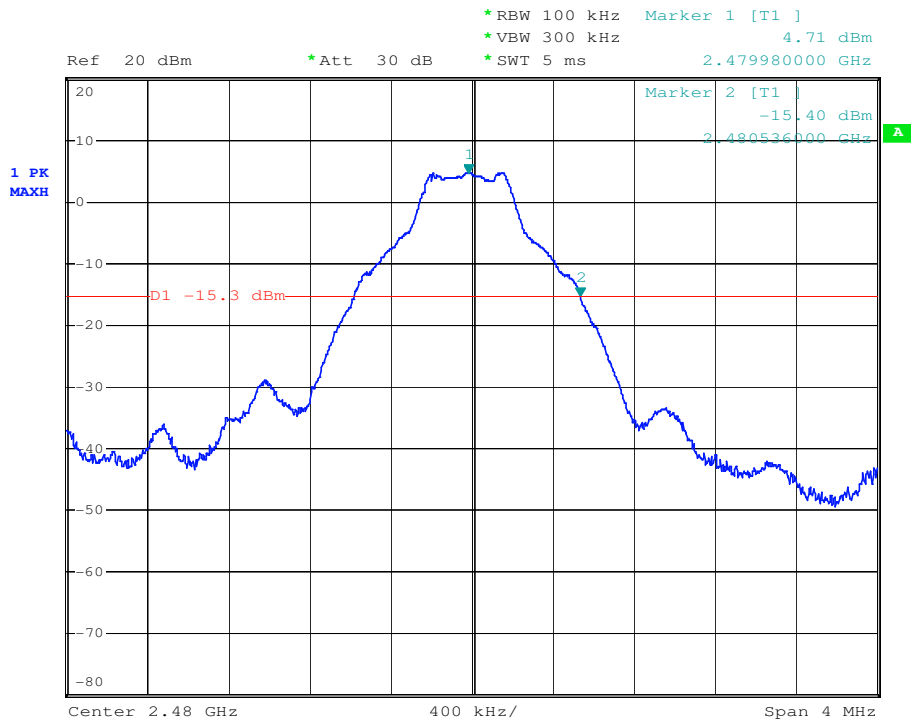


Test mode:	GFSK	Test channel:	Highest
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For Hopping:



For Static:

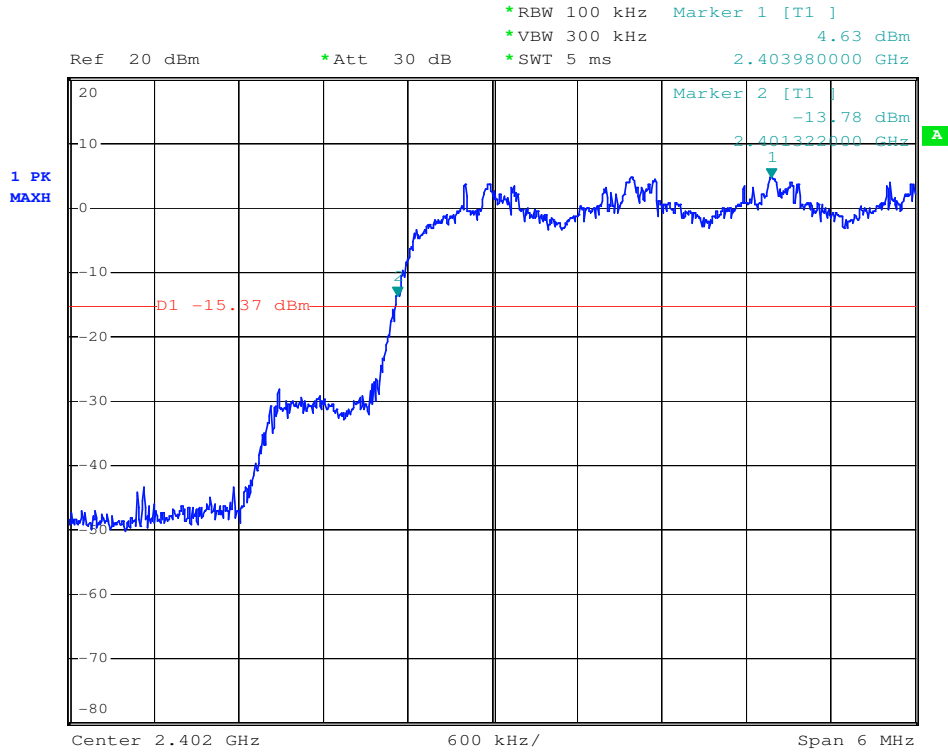


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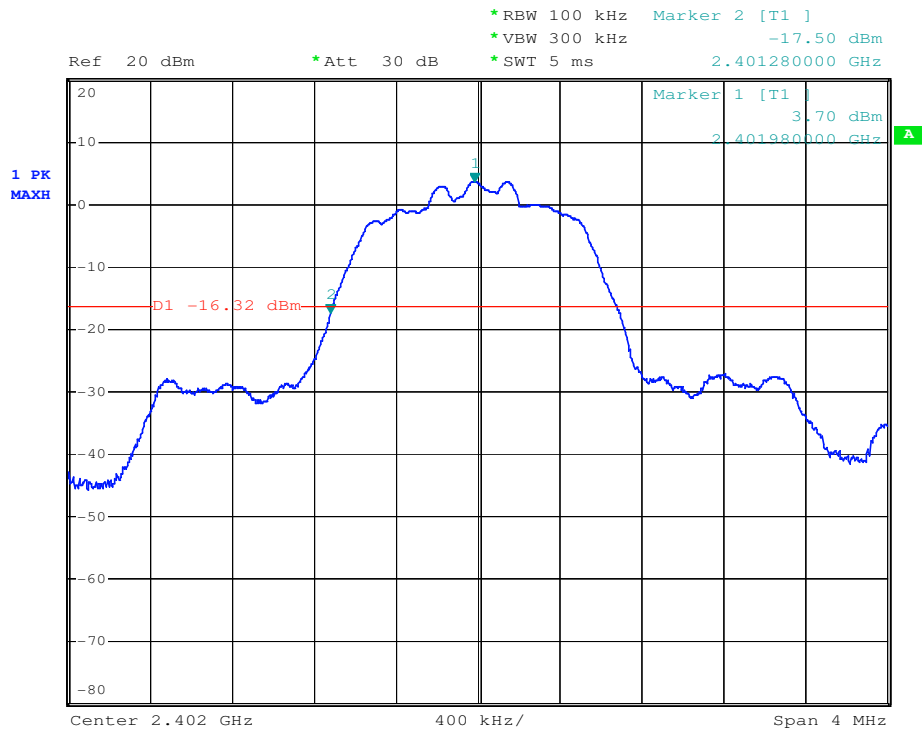


Test mode:	$\pi/4$ DQPSK	Test channel:	Lowest
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For Hopping:



For Static:

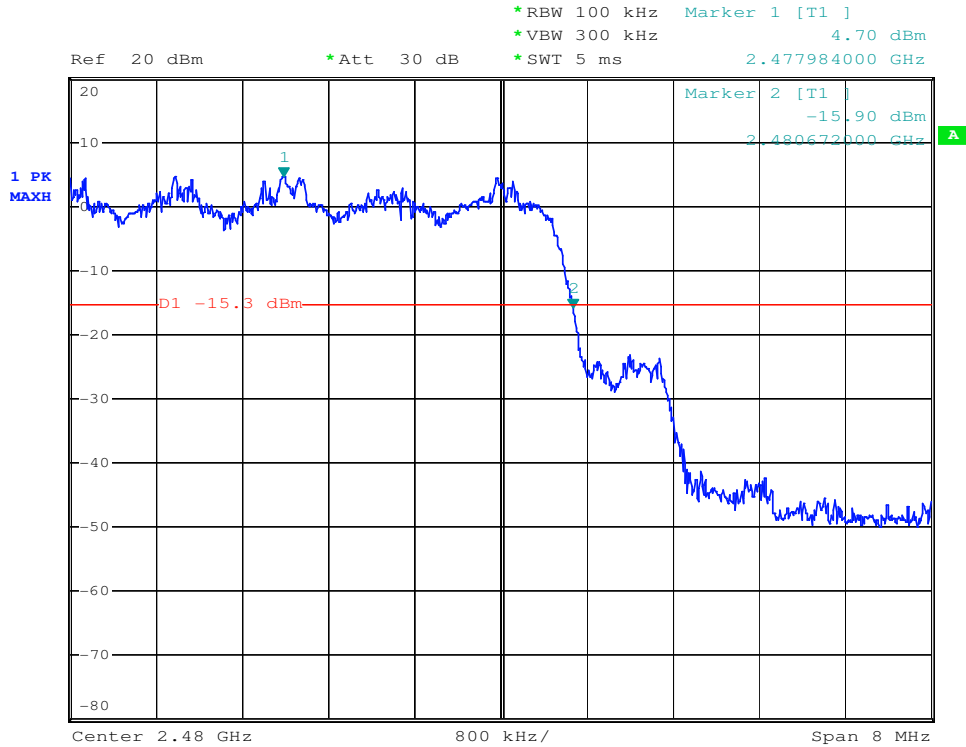


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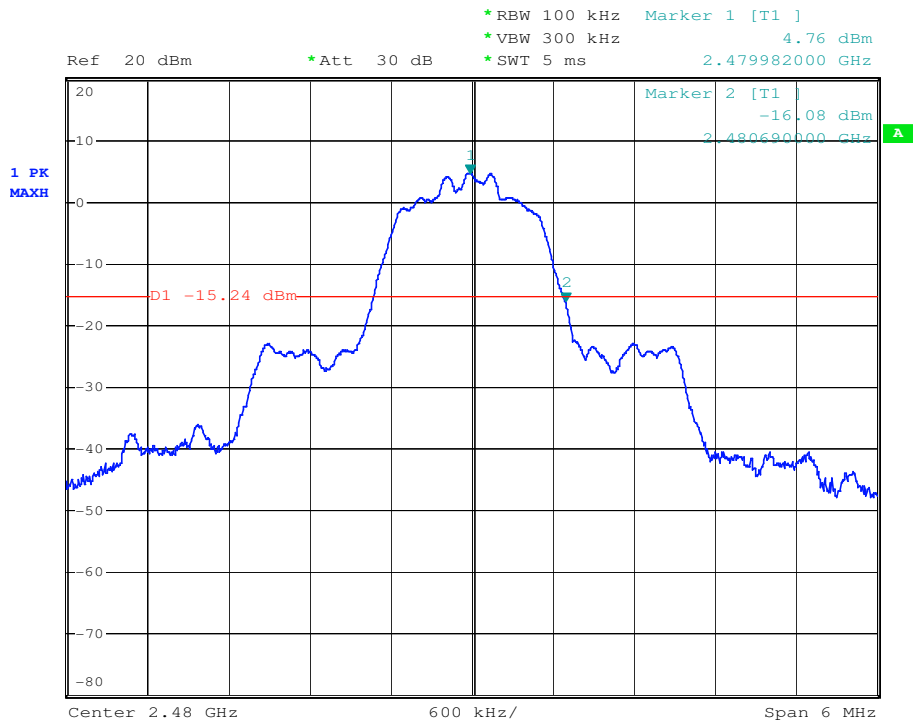


Test mode:	$\pi/4$ DQPSK	Test channel:	Highest
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For Hopping:



For Static:

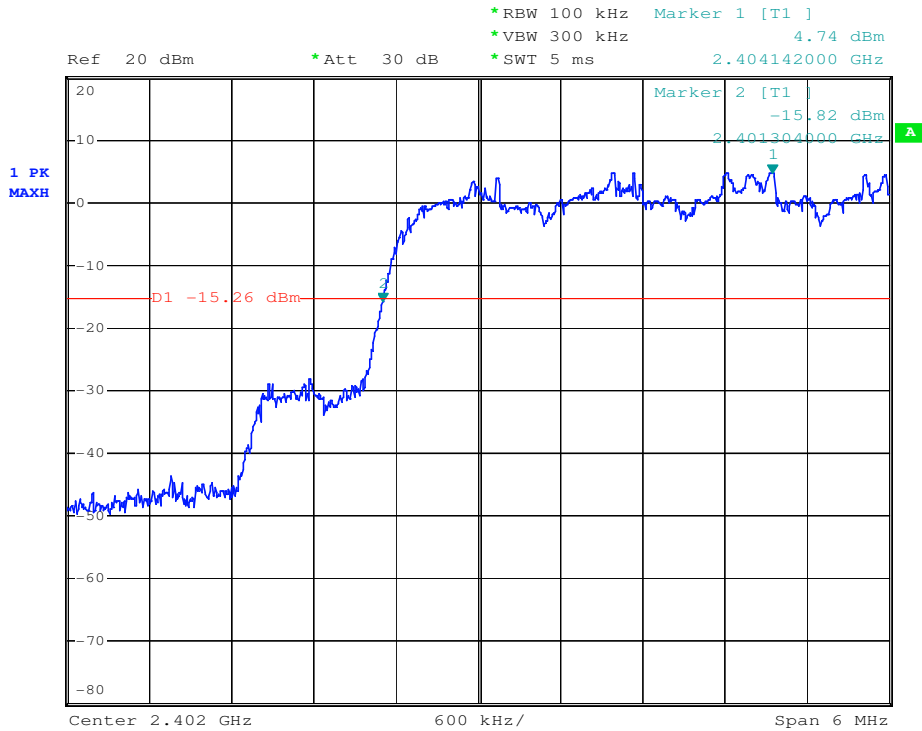


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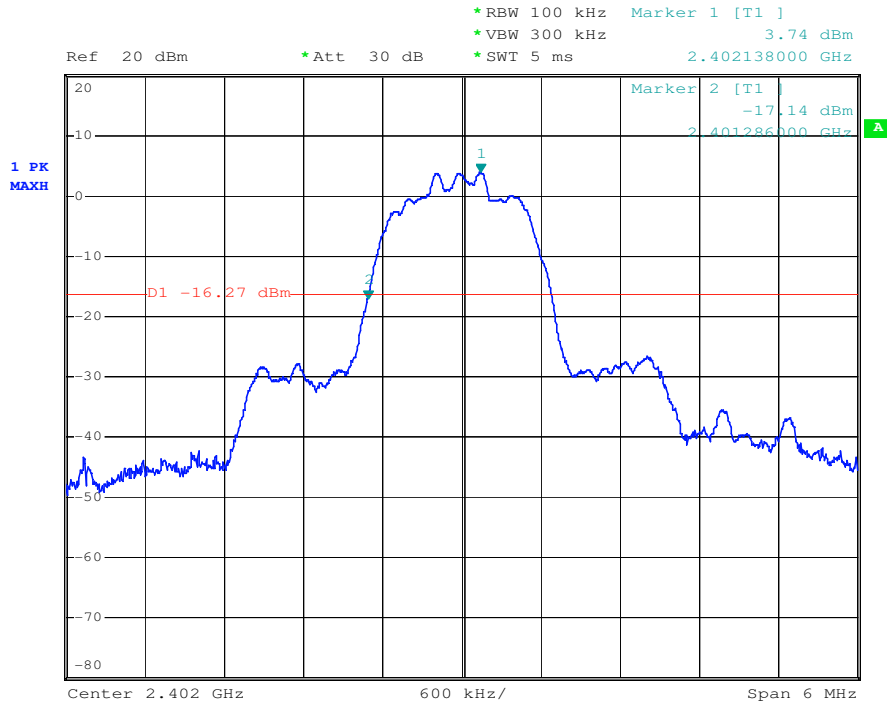


Test mode:	8DPSK	Test channel:	Lowest
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For Hopping:



For Static:

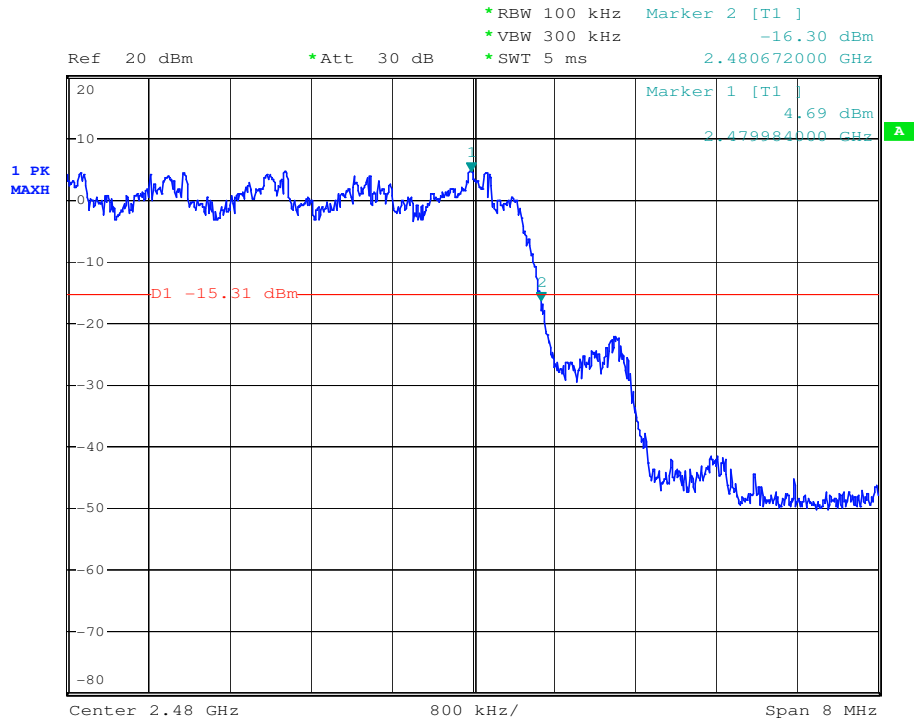


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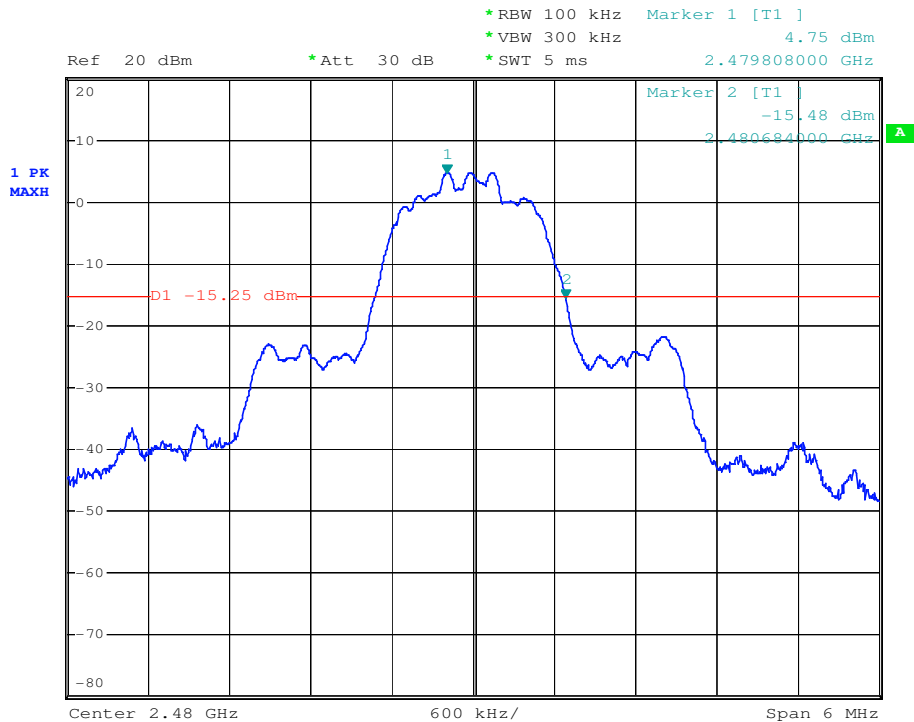


Test mode:	8DPSK	Test channel:	Highest
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For Hopping:



For Static:



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6.11 Radiated Spurious Emissions

Test Requirement:	FCC Part 15 Section 15.209 and Section 15.205 RSS-Gen section 4.9
Test Method:	ANSI C63.10:2009 Clause 6.12
Test Date:	June 14, 2013
Final Test Mode:	Transmitting mode
Test site/setup:	Measurement Distance: 3m (Semi-Anechoic Chamber) Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz - 1000 MHz). For PK value: RBW = 1 MHz for $f \geq 1$ GHz VBW \geq RBW; Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for $f \geq 1$ GHz VBW = 10Hz; Sweep = auto Detector function = peak Trace = max hold Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal
15.209 Limit:	40.0 dB μ V/m between 30MHz & 88MHz 43.5 dB μ V/m between 88MHz & 216MHz 46.0 dB μ V/m between 216MHz & 960MHz 54.0 dB μ V/m above 960MHz

Test Configuration:

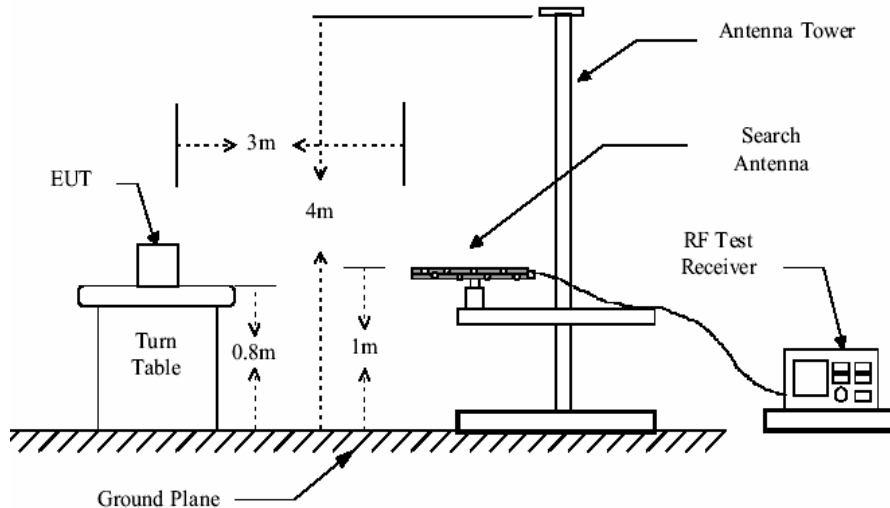


Figure 1. 30MHz to 1GHz radiated emissions test configuration

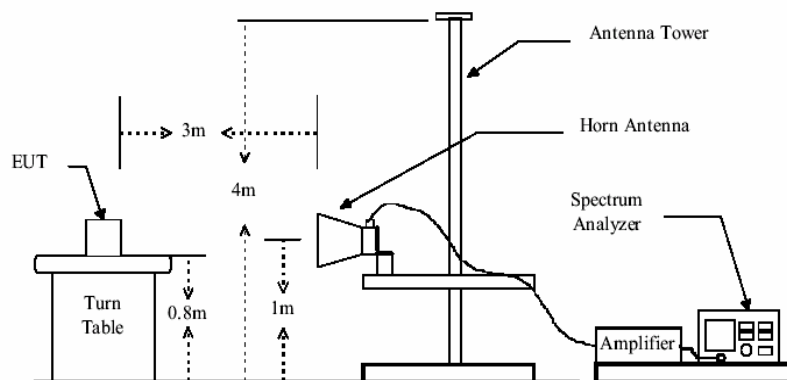


Figure 2. Above 1GHz radiated emissions test configuration

Test Procedure:

The procedure used was ANSI Standard C63.10:2009. The receiver was scanned from 30MHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz.

Between 1G and 3GHz, we did not use any amplifier or filter.

Perform a pre-test to find the worst transmitting mode, and record the worst results into report.

Test were performed for there spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.

1) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.

As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test Level =Receiver Reading + Antenna Factor + Cable Loss –Preamplifier Factor.

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.

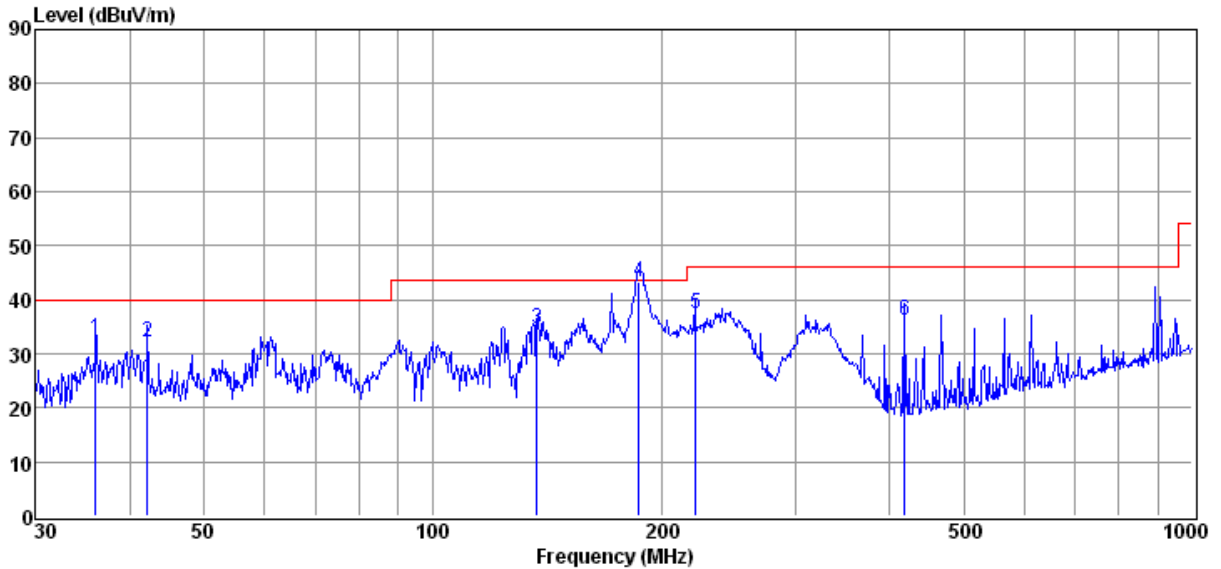
Below show the worst Test results:

30MHz to 1GHz

Transmitting mode

8DPSK

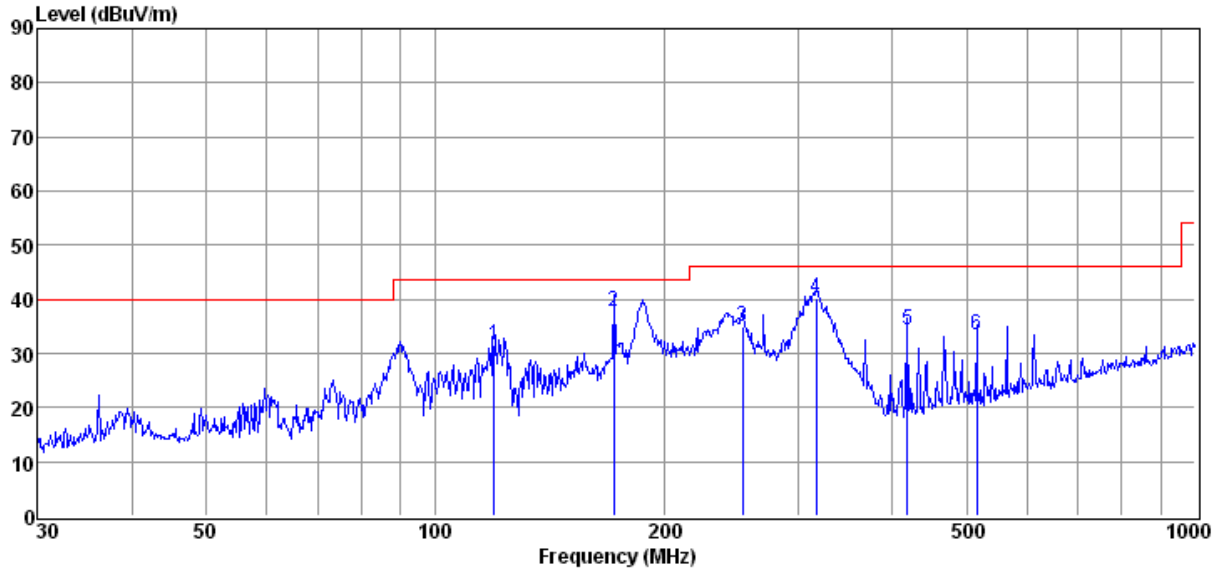
Test Antenna Status: Vertical



Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
35.96	15.90	17.01	0.00	0.00	32.91	40.00	-7.09	QP	Vertical
42.07	17.58	14.70	0.00	0.00	32.28	40.00	-7.72	QP	Vertical
137.13	22.79	11.74	0.00	0.00	34.53	43.50	-8.97	QP	Vertical
187.01	33.80	9.36	0.00	0.00	43.16	43.50	-0.34	QP	Vertical
221.84	27.13	10.23	0.00	0.00	37.36	46.00	-8.64	QP	Vertical
417.64	18.96	17.33	0.00	0.00	36.29	46.00	-9.71	QP	Vertical

Transmitting mode 8DPSK

Test Antenna Status: Horizontal



Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
119.52	20.15	11.47	0.00	0.00	31.62	43.50	-11.88	QP	Horizontal
172.00	27.72	10.06	0.00	0.00	37.78	43.50	-5.72	QP	Horizontal
253.64	22.70	12.39	0.00	0.00	35.09	46.00	-10.91	QP	Horizontal
317.31	26.15	14.10	0.00	0.00	40.25	46.00	-5.75	QP	Horizontal
418.37	17.04	17.35	0.00	0.00	34.39	46.00	-11.61	QP	Horizontal
516.11	14.71	18.55	0.00	0.00	33.26	46.00	-12.74	QP	Horizontal

1GHz-12GHz:

Transmitting mode		8DPSK		Test Channel:		Low		Test Antenna:		Horizontal	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	2175.00	45.23	-6.87	38.36	54	15.64	peak				
2	4807.00	44.95	-0.16	44.79	54	9.21	peak				
3	9577.50	41.08	11.79	52.87	54	1.13	peak				
4	11751.25	41.97	9.02	50.99	54	3.01	peak				

Transmitting mode		8DPSK		Test Channel:		Low		Test Antenna:		Vertical	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	5688.25	42.84	1.46	44.30	54	9.70	peak				
2	7533.00	40.73	7.73	48.46	54	5.54	peak				
3	9565.75	40.03	11.82	51.85	54	2.15	peak				
4	11234.25	40.76	9.60	50.36	54	3.64	peak				

Transmitting mode		8DPSK		Test Channel:		Middle		Test Antenna:		Horizontal	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4877.50	44.81	0.12	44.93	54	9.07	peak				
2	7497.75	41.32	7.72	49.04	54	4.96	peak				
3	9530.50	41.45	11.86	53.31	54	0.69	peak				
4	11657.25	41.68	9.07	50.75	54	3.25	peak				

Test Antenna: Vertical

Test Channel: Middle

Transmitting mode		8DPSK		Test Channel:		Middle		Test Antenna:		Vertical	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	5747.00	42.83	1.59	44.42	54	9.58	peak				
2	8085.25	41.11	7.87	48.98	54	5.02	peak				
3	9471.75	40.96	11.80	52.76	54	1.24	peak				
4	11786.50	40.90	8.99	49.89	54	4.11	peak				

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Transmitting mode		8DPSK		Test Channel:		High		Test Antenna:		Horizontal	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4959.75	47.37	0.45	47.82	54	6.18	peak				
2	8120.50	42.24	7.91	50.15	54	3.85	peak				
3	9460.00	41.17	11.75	52.92	54	1.08	peak				
4	11175.50	41.30	9.70	51.00	54	3.00	peak				

Transmitting mode		8DPSK		Test Channel:		High		Test Antenna:		Vertical	
Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4959.75	45.80	0.45	46.25	54	7.75	peak				
2	8155.75	40.79	7.98	48.77	54	5.23	peak				
3	9565.75	39.98	11.82	51.80	54	2.20	peak				
4	11774.75	41.26	8.99	50.25	54	3.75	peak				

6.12 Band edge (Radiated Emission)

Test Requirement:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c).
Test Method:	ANSI 63.10:2009 Clause 6.12
Test Date:	June 14, 2013
Measurement Distance:	3m (Semi-Anechoic Chamber)
Limit:	40.0 dB μ V/m between 30MHz & 88MHz; 43.5 dB μ V/m between 88MHz & 216MHz; 46.0 dB μ V/m between 216MHz & 960MHz; 54.0 dB μ V/m above 960MHz.
Detector:	For PK value: RBW = 1 MHz for $f \geq 1$ GHz VBW \geq RBW; Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for $f \geq 1$ GHz VBW =10Hz; Sweep = auto Detector function = peak Trace = max hold

According to section,15.35(b) for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Pre-test were performed for there spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.

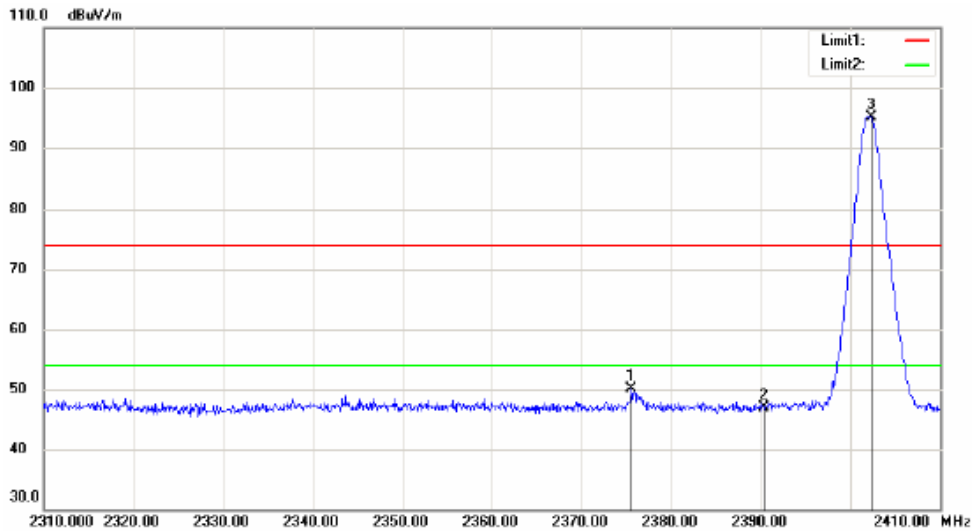
Test Result: The EUT does meet the FCC requirements.

Measurement Result:

CH Low 2402MHz Radiated Bandedge

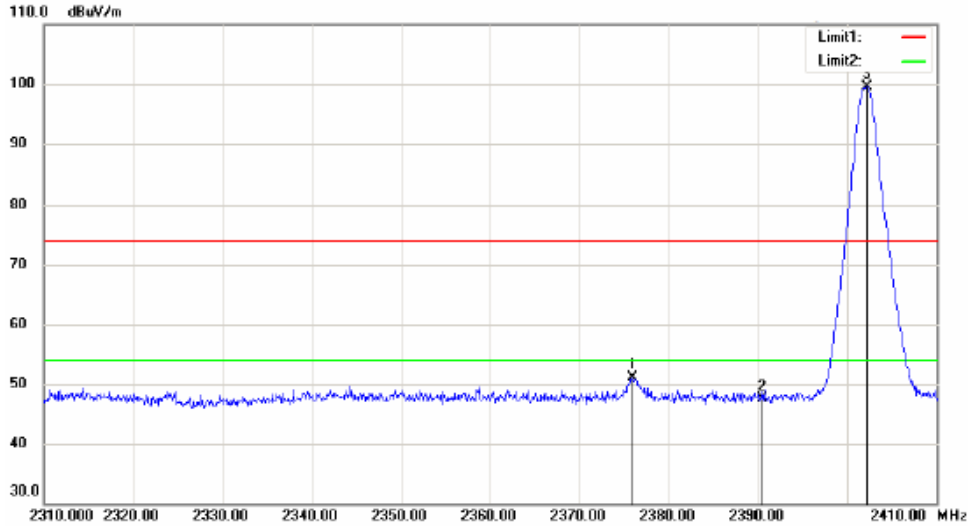
Modulation: GFSK

Horizontal, Peak Detector:



Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2375.500	44.56	peak	5.45	50.51	54	-3.49
2	2390.300	41.47	peak	5.46	46.93	54	-7.07
3	2402.300	89.69	peak	5.46	95.14	54	41.14

Vertical, Peak Detector:



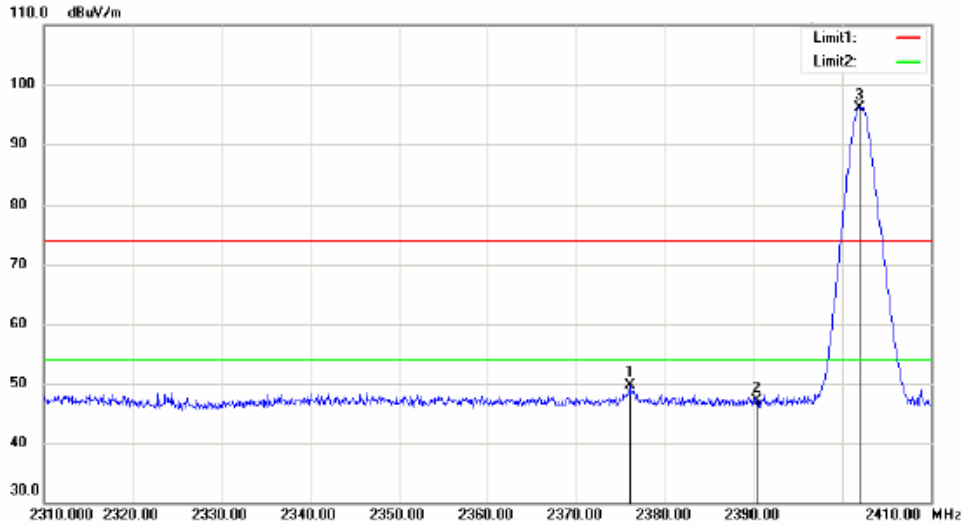
Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2375.900	45.72	peak	5.45	51.17	54	-2.83
2	2390.500	42.07	peak	5.46	47.53	54	-6.47
3	2402.200	94.08	peak	5.46	99.54	54	45.54

Measurement Result:

CH Low 2402MHz Radiated Bandedge

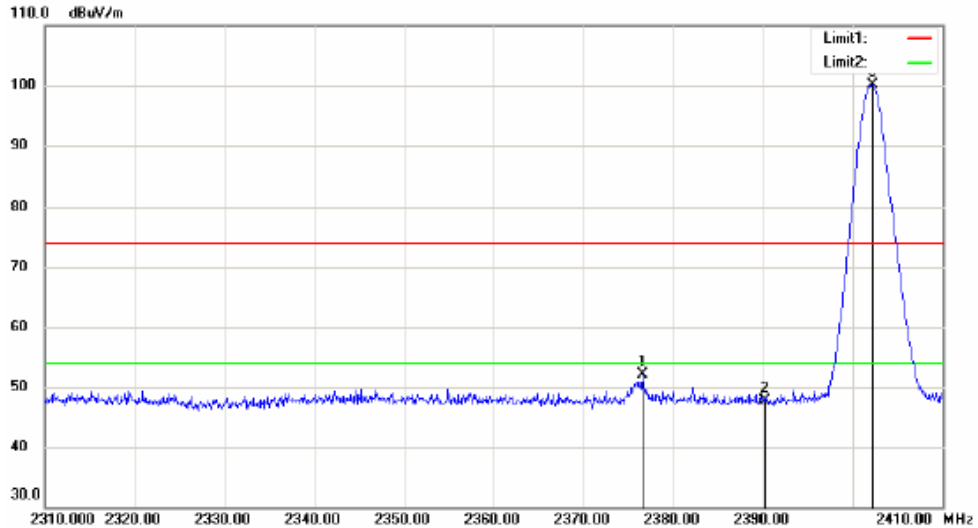
Modulation: $\pi/4$ DQPSK

Horizontal, Peak Detector:



Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2376.000	44.18	peak	5.45	49.63	54	-4.37
2	2390.000	41.71	peak	5.46	47.17	54	-6.83
3	2401.900	90.67	peak	5.46	96.13	54	42.13

Vertical, Peak Detector:

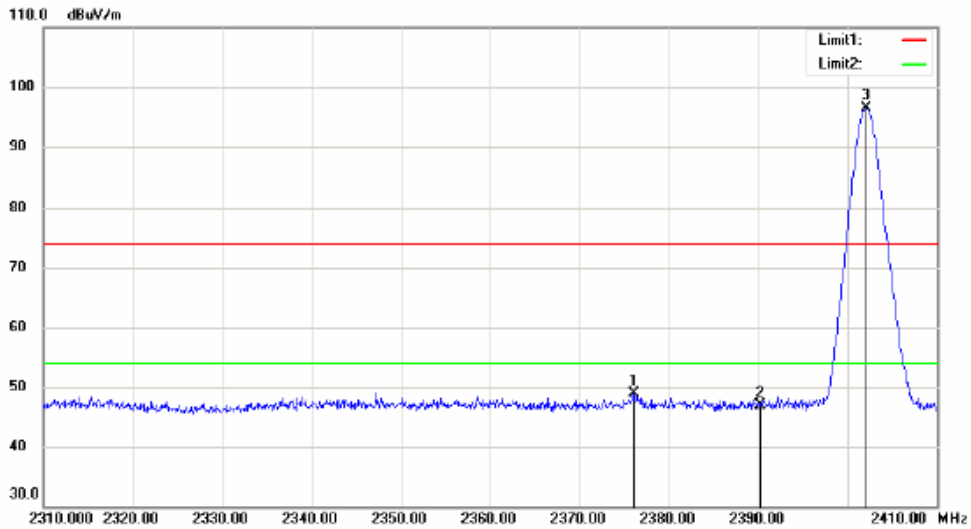


Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2376.600	46.62	peak	5.45	52.07	54	-1.93
2	2390.200	42.32	peak	5.46	47.78	54	-6.22
3	2402.200	94.70	peak	5.46	100.16	54	46.16



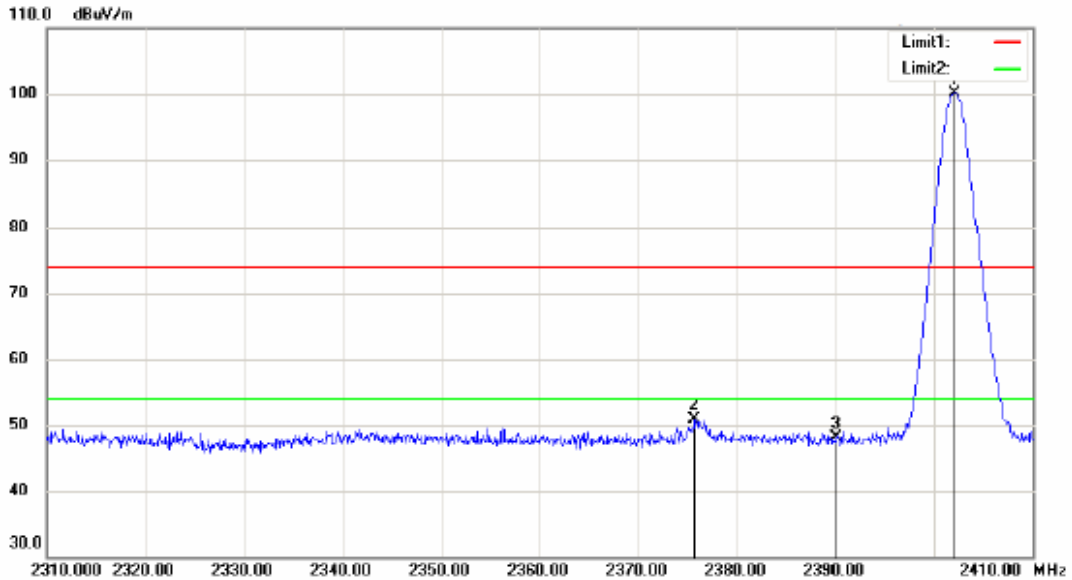
**CH Low 2402MHz Radiated Bandedge
Horizontal, Peak Detector:**

Modulation: 8DPSK



Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2376.600	43.38	peak	5.45	48.83	54	-5.17
2	2390.200	41.52	peak	5.46	46.98	54	-7.02
3	2402.200	91.02	peak	5.46	96.48	54	42.48

Vertical, Peak Detector:



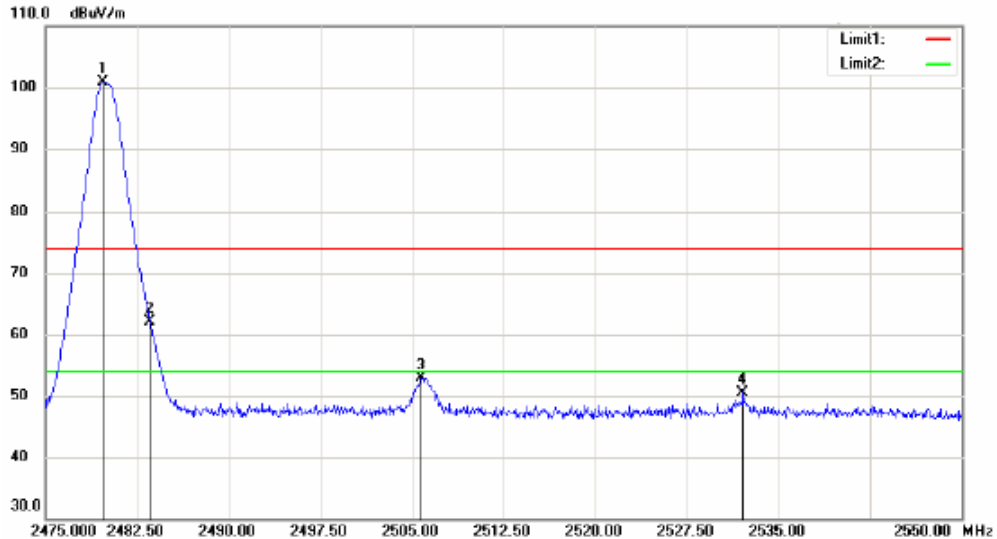
Mark	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2402.100	94.12	peak	5.46	100.18	54	46.18
2	2375.700	45.44	peak	5.45	50.89	54	-3.11
3	2390.100	42.64	peak	5.46	48.10	54	-5.90

Measurement Result:

CH Low 2480MHz Radiated Bandedge

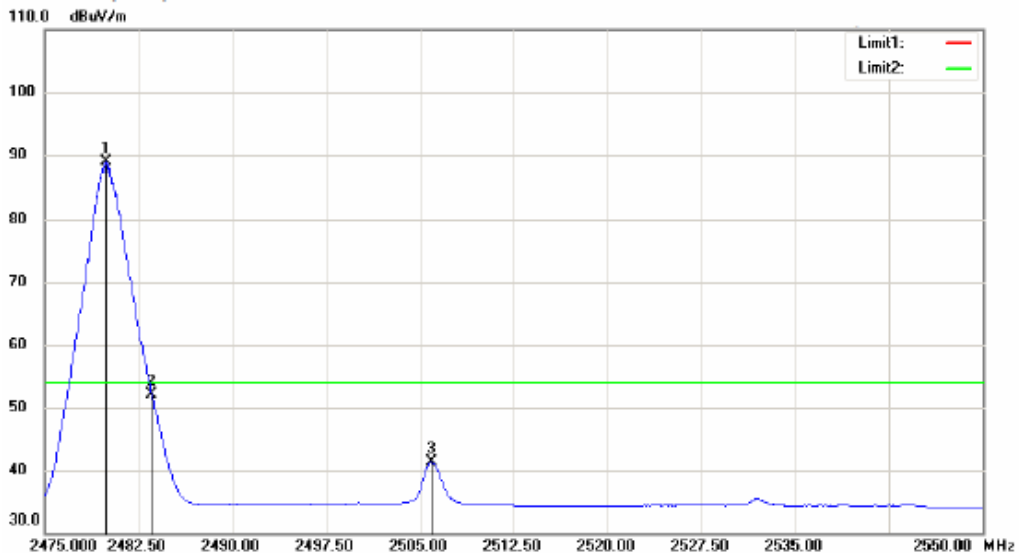
Modulation: GFSK

Horizontal, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.725	95.35	peak	5.50	100.85	74.00	26.85
2	2483.550	56.61	peak	5.50	62.11	74.00	-11.89
3	2505.750	47.49	peak	5.51	53.00	74.00	-21.00
4	2532.075	45.07	peak	5.53	50.60	74.00	-23.40

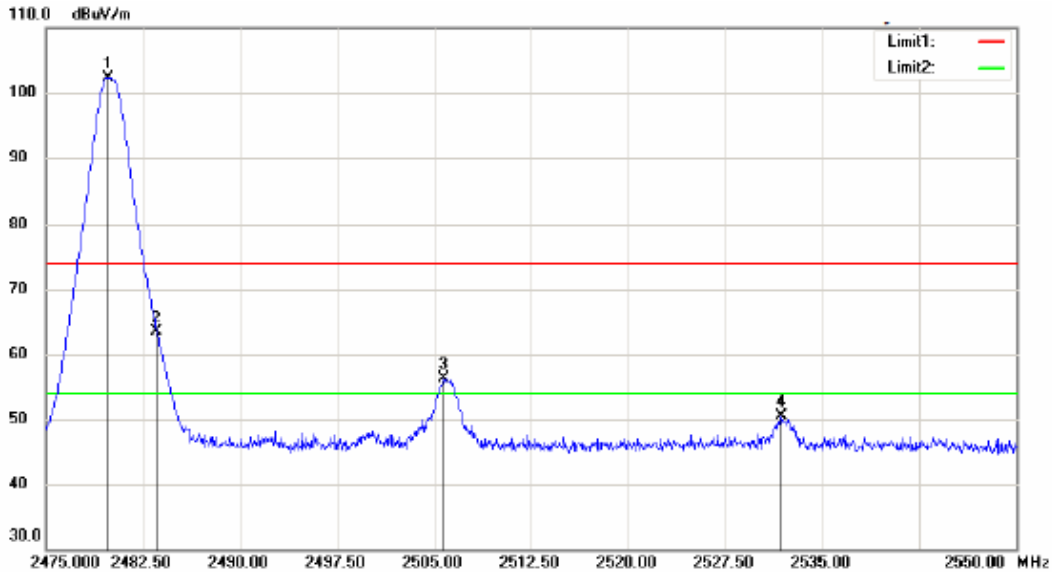
Horizontal, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	83.31	peak	5.50	88.81	54.00	34.81
2	2483.550	46.61	peak	5.50	52.11	54.00	-1.89
3	2505.975	35.83	peak	5.51	41.34	54.00	-12.66

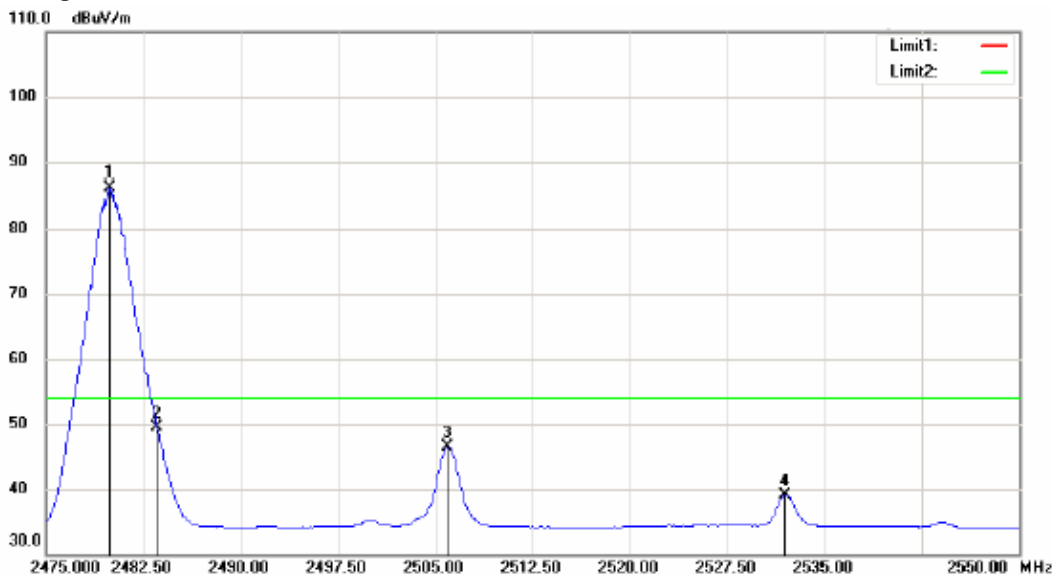
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Vertical, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.800	96.84	peak	5.50	102.34	74.00	28.34
2	2483.550	58.01	peak	5.50	63.51	74.00	-10.49
3	2505.750	50.77	peak	5.51	56.28	74.00	-17.72
4	2531.850	44.89	peak	5.53	50.42	74.00	-23.58

Vertical, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	80.78	peak	5.50	86.28	54.00	32.28
2	2483.550	43.98	peak	5.50	49.48	54.00	-4.52
3	2505.975	40.95	peak	5.51	46.46	54.00	-7.54
4	2531.925	33.64	peak	5.53	39.17	54.00	-14.83

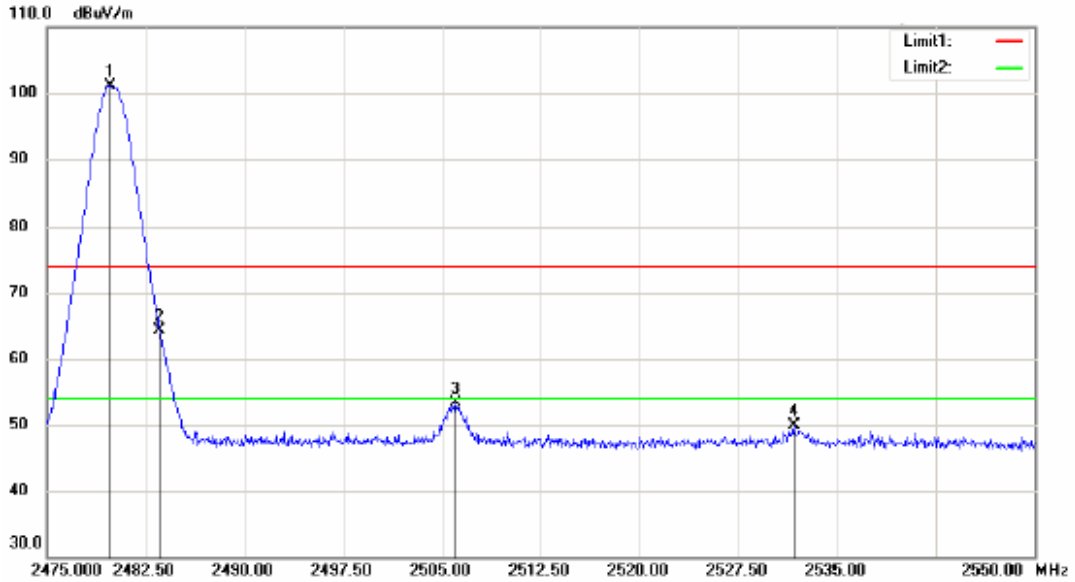
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Measurement Result:

CH Low 2480MHz Radiated Bandedge

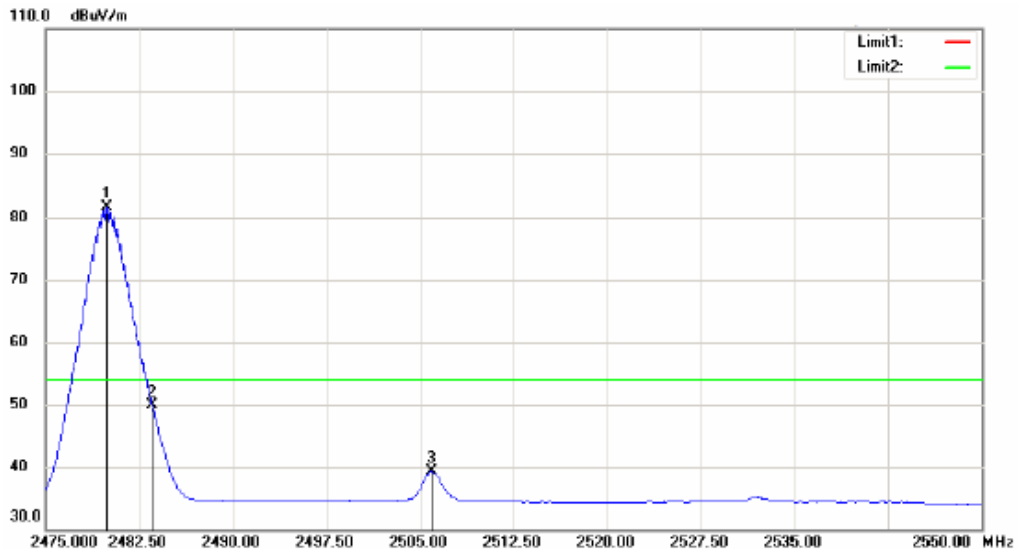
Modulation: $\pi/4$ DQPSK

Horizontal, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.800	95.70	peak	5.50	101.20	74.00	27.20
2	2483.550	58.73	peak	5.50	64.23	74.00	-9.77
3	2506.050	47.70	peak	5.51	53.21	74.00	-20.79
4	2531.700	44.41	peak	5.53	49.94	74.00	-24.06

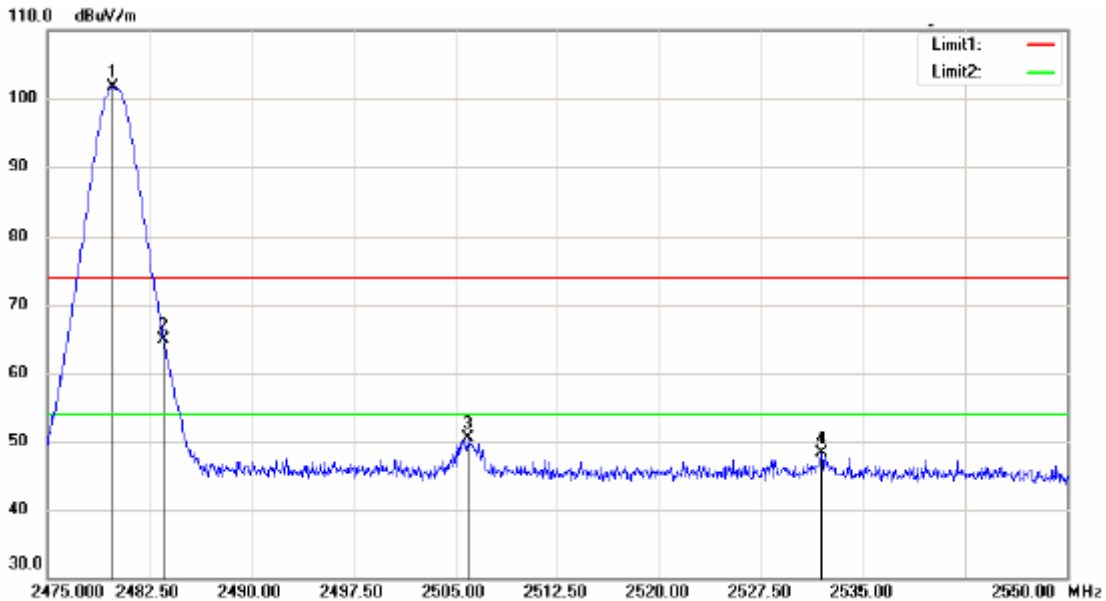
Horizontal, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	76.11	peak	5.50	81.61	54.00	27.61
2	2483.550	44.42	peak	5.50	49.92	54.00	-4.08
3	2505.975	33.73	peak	5.51	39.24	54.00	-14.76

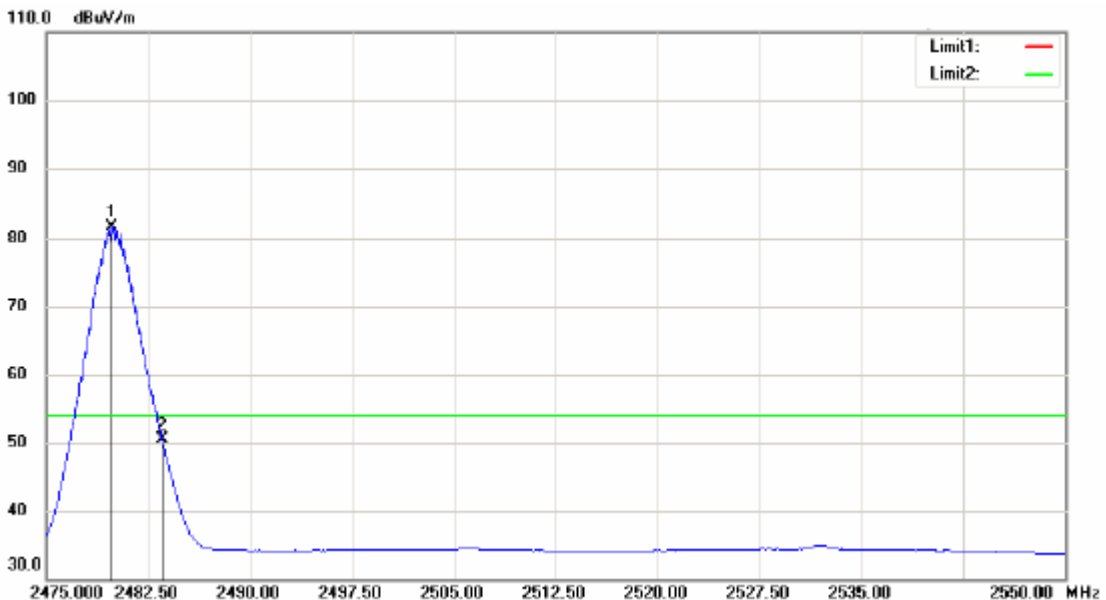
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Vertical, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.800	96.19	peak	5.50	101.69	74.00	27.69
2	2483.550	59.41	peak	5.50	64.91	74.00	-9.09
3	2505.975	44.98	peak	5.51	50.49	74.00	-23.51
4	2531.925	42.74	peak	5.53	48.27	74.00	-25.73

Vertical, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.800	76.28	peak	5.50	81.78	54.00	27.78
2	2483.550	44.95	peak	5.50	50.45	54.00	-3.55

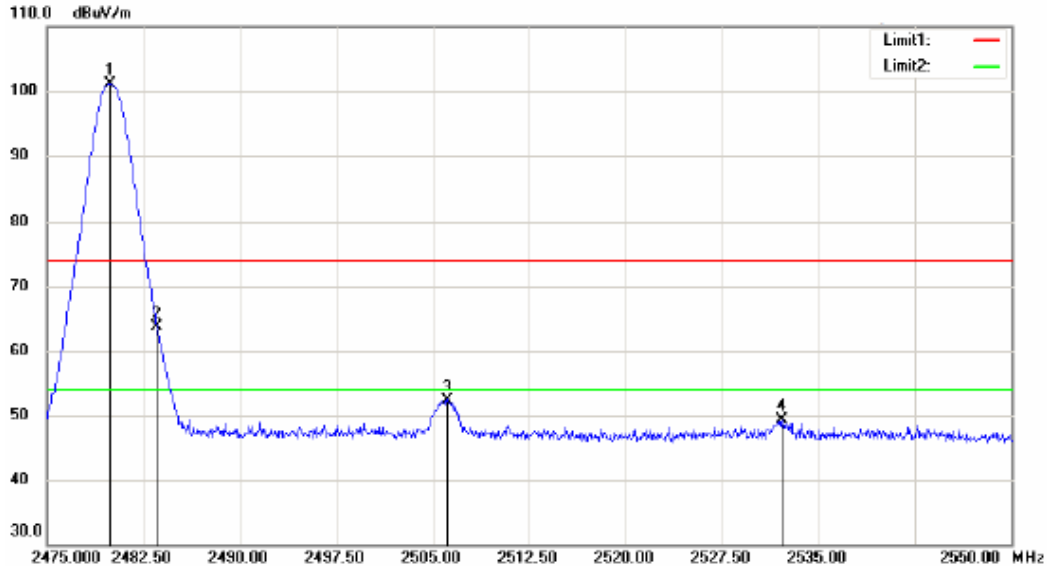
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Measurement Result:

CH Low 2480MHz Radiated Bandedge

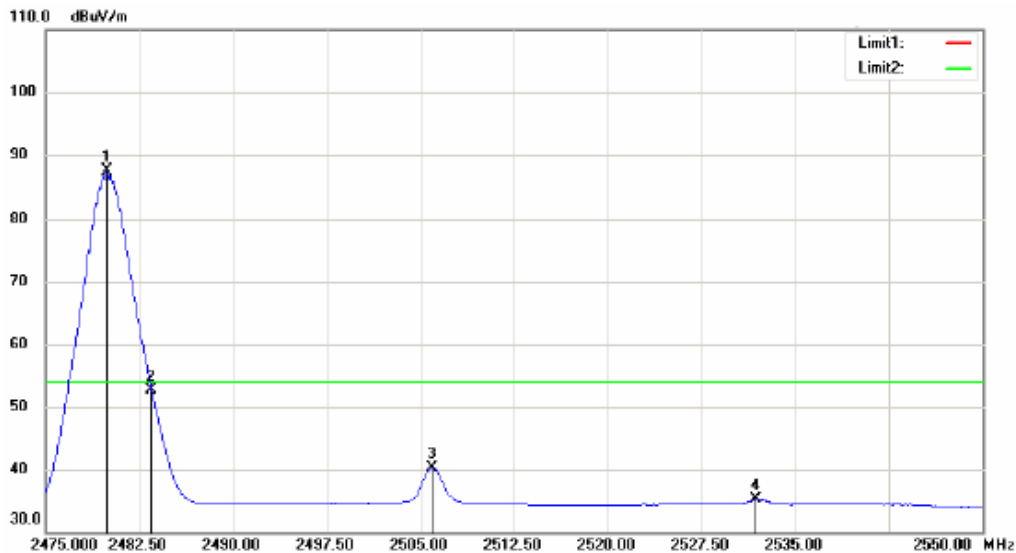
Modulation: 8DPSK

Horizontal, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	95.68	peak	5.50	101.18	74.00	27.18
2	2483.550	58.25	peak	5.50	63.75	74.00	-10.25
3	2506.125	46.89	peak	5.51	52.40	74.00	-21.60
4	2532.150	43.74	peak	5.53	49.27	74.00	-24.73

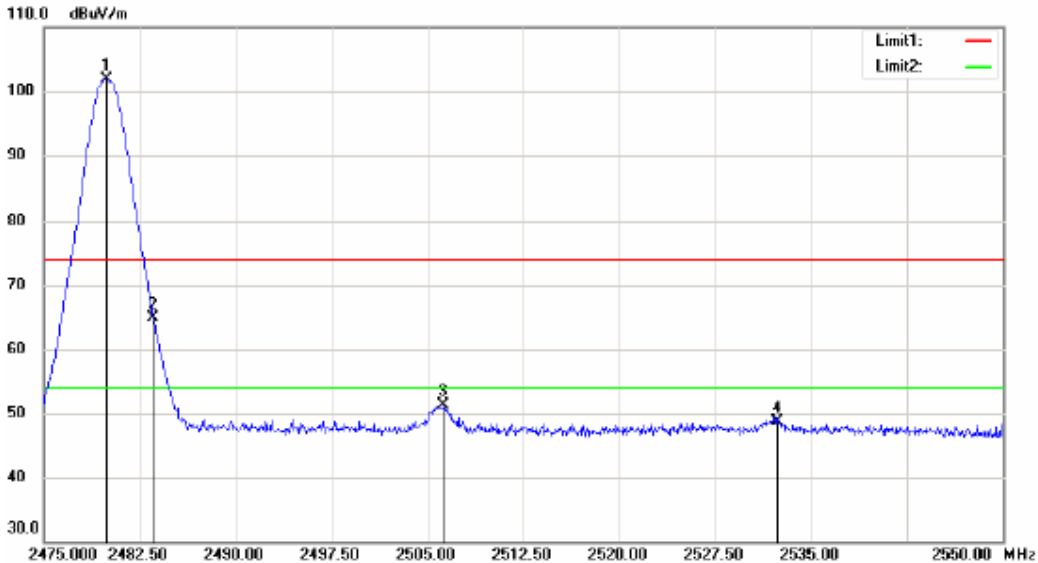
Horizontal, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	81.96	peak	5.50	87.46	54.00	33.46
2	2483.475	47.30	peak	5.50	52.80	54.00	-1.20
3	2505.975	34.83	peak	5.51	40.34	54.00	-13.66
4	2531.850	29.81	peak	5.53	35.34	54.00	-18.66

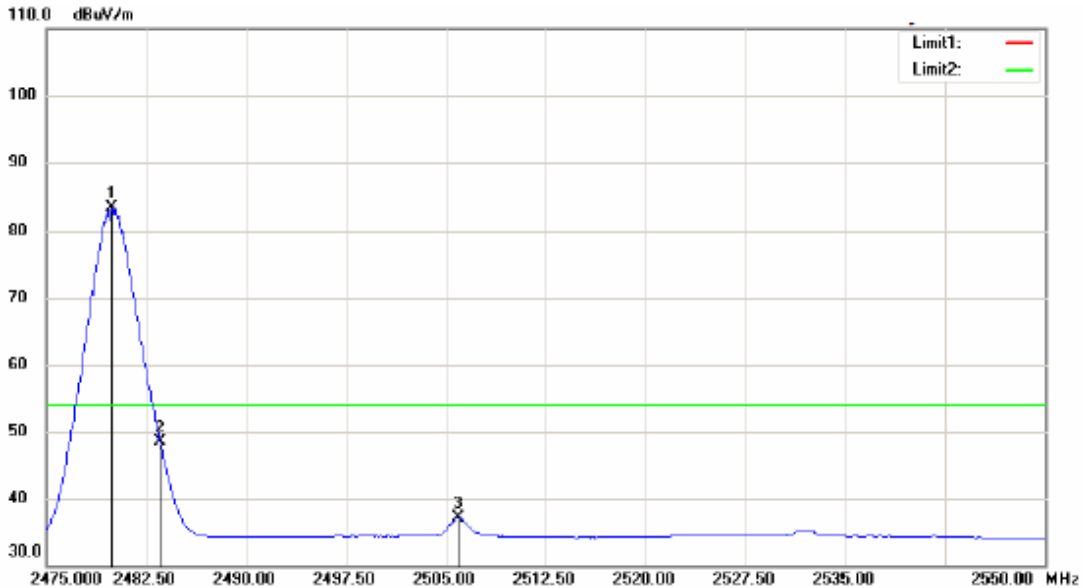
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Vertical, Peak Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	96.43	peak	5.50	101.93	74.00	27.93
2	2483.550	59.46	peak	5.50	64.96	74.00	-9.04
3	2506.275	45.70	peak	5.51	51.21	74.00	-22.79
4	2532.375	43.21	peak	5.53	48.74	74.00	-25.26

Vertical, Average Detector:



Mk.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	2479.950	78.04	peak	5.50	83.54	54.00	29.54
2	2483.550	42.95	peak	5.50	48.45	54.00	-5.55
3	2505.975	31.59	peak	5.51	37.10	54.00	-16.90

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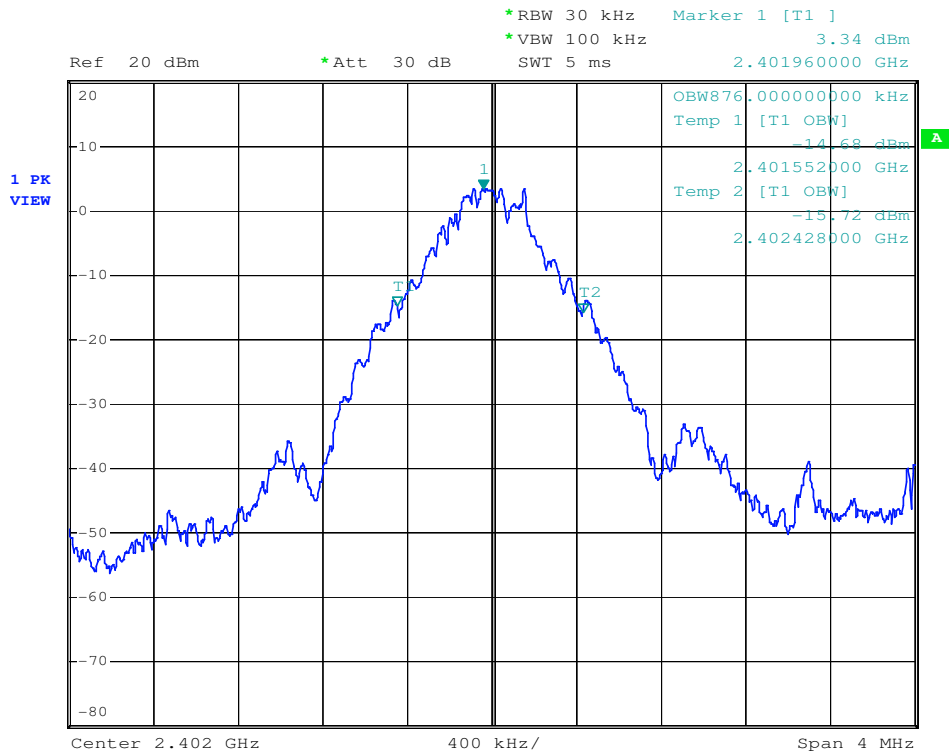
6.13 Occupied Bandwidth Test

Test Requirement: RSS-Gen Issue 3 Clause 4.6.1
Standard Applicable According to the section RSS-Gen Issue 3 Clause 4.6.1
EUT Setup The occupied bandwidth per RSS-Gen Issue 3 Clause 4.6.1 was measured using the Spectrum Analyzer with the resolutions set at 100kHz, the video bandwidth set at 300kHz.

Measurement Result:

Test Mode	Channel	Frequency (MHz)	Bandwidth (MHz)
GFSK	LOW	2402	0.876
	MID	2441	0.856
	HIGH	2480	0.856
π/4DQPSK	LOW	2402	1.196
	MID	2441	1.204
	HIGH	2480	1.216
8DPSK	LOW	2402	1.180
	MID	2441	1.200
	HIGH	2480	1.224

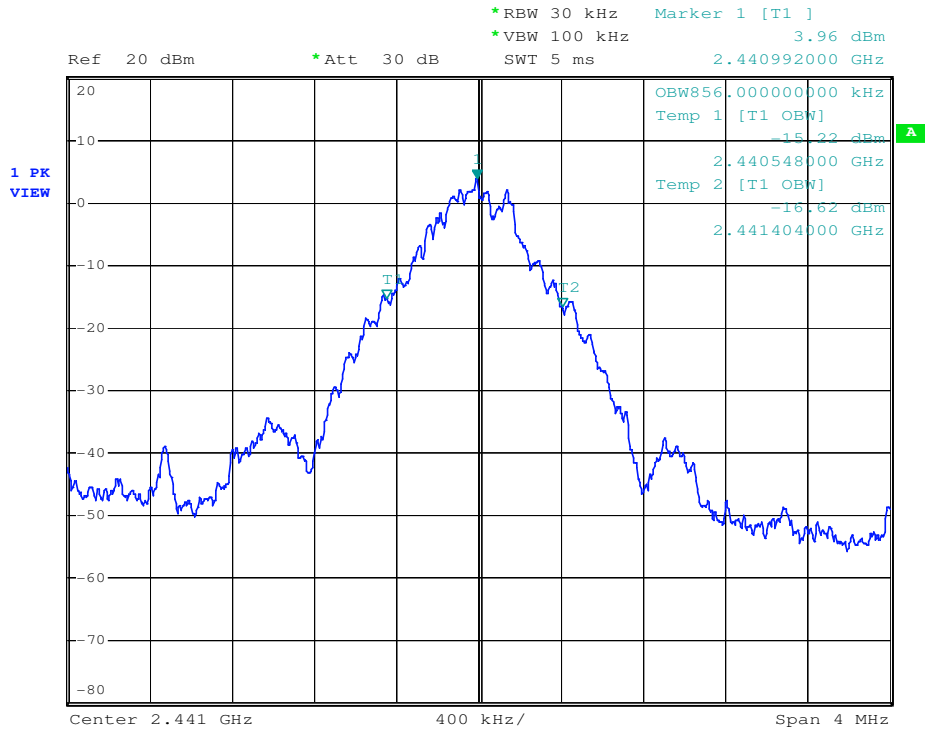
Test mode:	GFSK	Test channel:	Low
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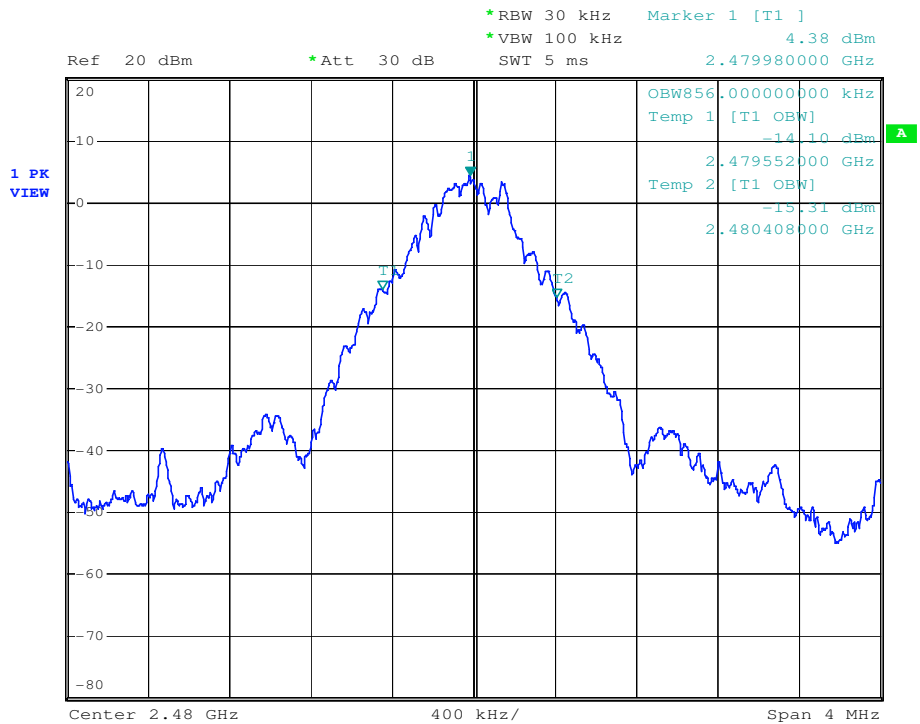
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Test mode:	GFSK	Test channel:	Middle
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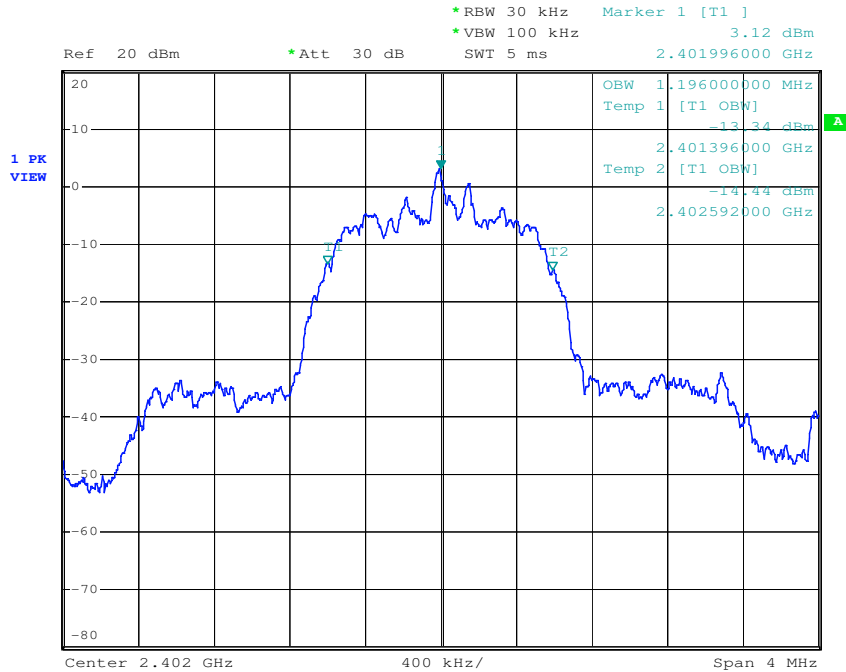
Test mode:	GFSK	Test channel:	High
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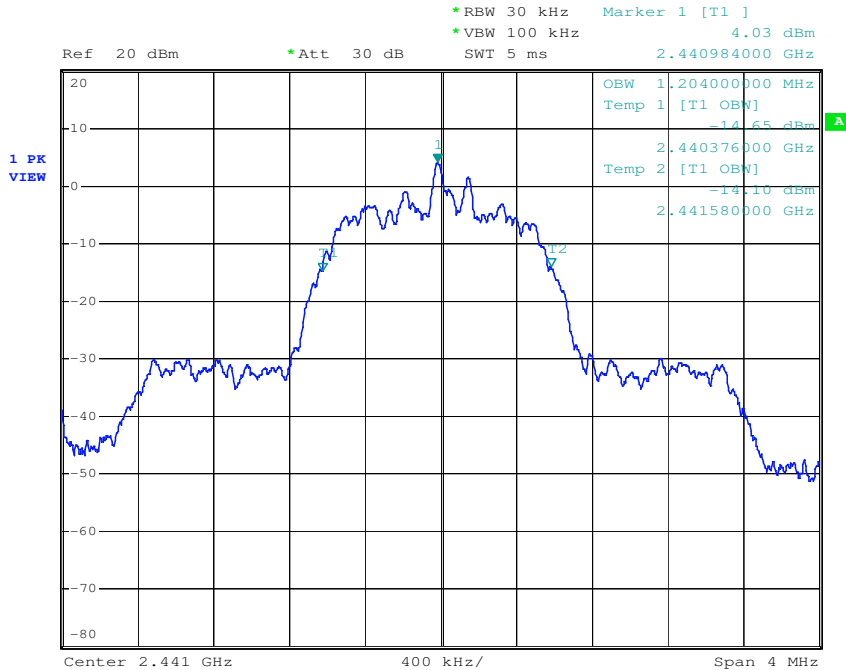
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Test mode:	$\pi/4$ DQPSK	Test channel:	Low
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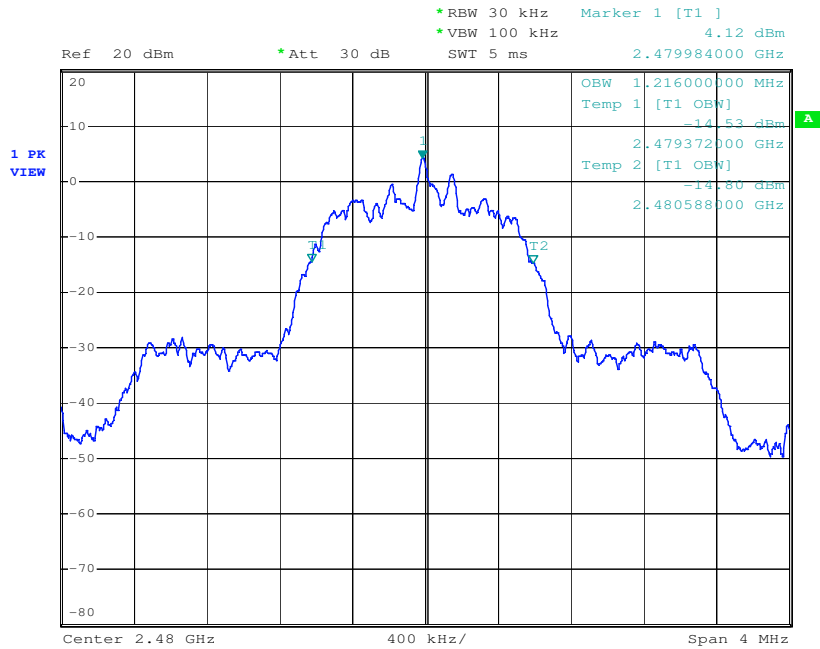
Test mode:	$\pi/4$ DQPSK	Test channel:	Middle
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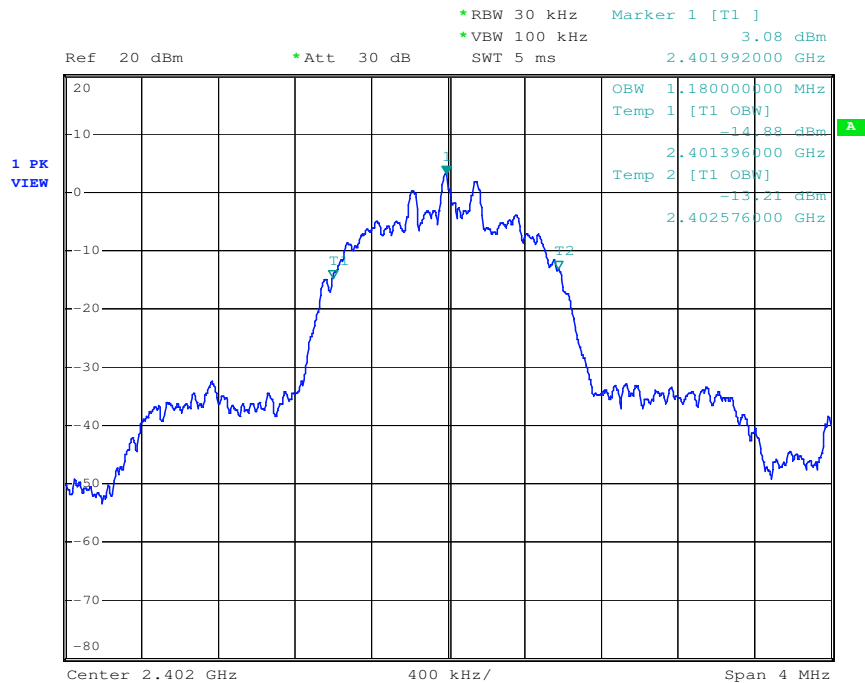
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Test mode:	$\pi/4$ DQPSK	Test channel:	High
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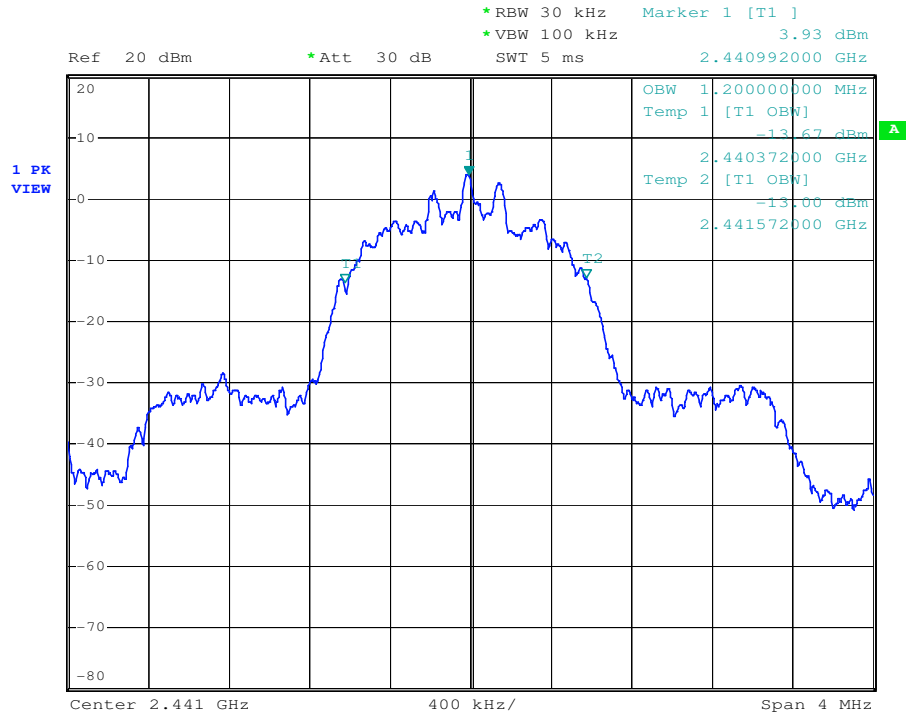
Test mode:	8DPSK	Test channel:	Low
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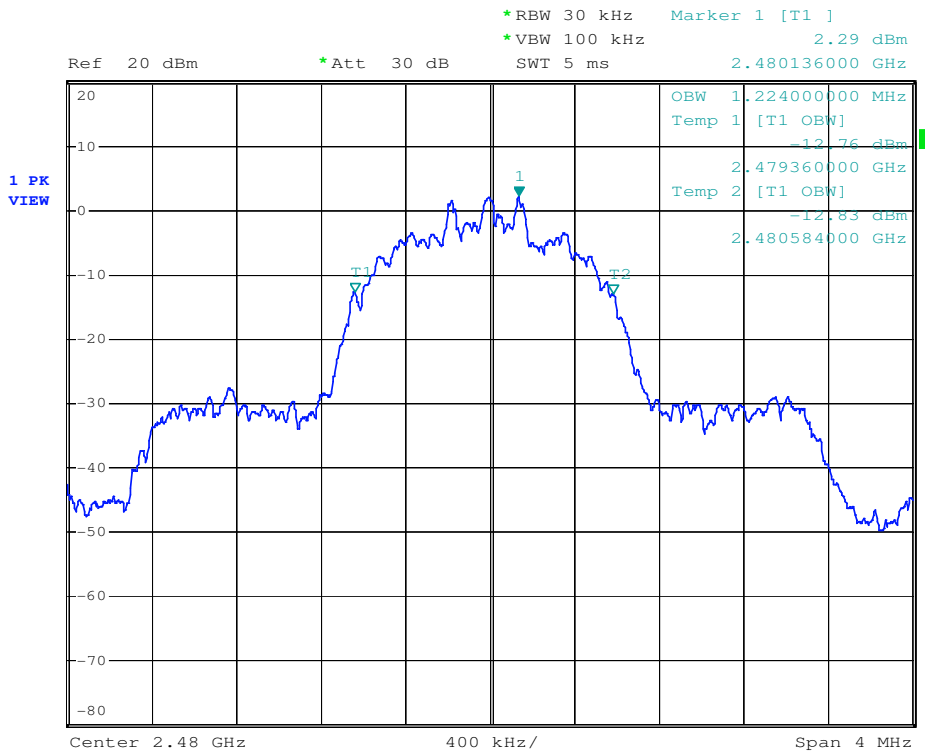
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Test mode:	8DPSK	Test channel:	Middle
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Test mode:	8DPSK	Test channel:	High
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7 Test Setup Photographs

Refer to the < D3020_Test Setup photos>.

8 EUT Constructional Details

Refer to the < D3020_External Photos > & < D3020_Internal Photos >.

End of Report