

**Produkte**  
*Products*

<b>Prüfbericht - Nr.:</b> 19660220 001		<b>Seite 1 von 45</b>	
<i>Test Report No.:</i>		<i>Page 1 of 45</i>	
<b>Auftraggeber:</b> <i>Client:</i>	Camera Vision Solutions, Inc. P.O Box 80249 Austin, TX 78708 United States		
<b>Gegenstand der Prüfung:</b> <i>Test item:</i>	On-board Video Vehicle Recorder		
<b>Bezeichnung:</b> <i>Identification:</i>	SentinelHDx	<b>Serien-Nr.:</b> <i>Serial No.</i>	Engineering Sample
<b>Wareneingangs-Nr.:</b> <i>Receipt No.:</i>	1803117312	<b>Eingangsdatum:</b> <i>Date of receipt:</i>	13.01.2016
<b>Prüfart:</b> <i>Testing location:</i>	Refer Page 4 of 45 for test facilities		
<b>Prüfgrundlage:</b> <i>Test specification:</i>	FCC Part 15: Subpart C ANSI C63.10-2013		
<b>Prüfergebnis:</b> <i>Test Result:</i>	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test items passed the test specification(s).</i>		
<b>Prüflaboratorium:</b> <i>Testing Laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd. 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100, India FCC Registration No.: 176555		
<b>geprüft / tested by:</b>		<b>kontrolliert / reviewed by:</b>	
27.04.2016	Saibaba Siddapur Sr.Engineer	16.05.2016	Raghavendra Kulkarni Sr. Manager
<b>Datum</b> <i>Date</i>	<b>Name/Stellung</b> <i>Name/Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other Aspects:</b> FCC ID: 2AFS2-SHDX			
<b>Abkürzungen:</b> P(ass) = entspricht Prüfgrundlage F(ail) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		<b>Abbreviations:</b> P(ass) = passed F(ail) = failed N/A = not applicable N/T = not tested	
<p><b>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</b></p> <p><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>			

TÜV Rheinland India Pvt. Ltd. 82/A, 3rd Main, West Wing Electronic City Phase 1, Hosur Road, Bangalore-560100, India  
 Tel.: +9180 6723 3500 · Fax: +9180 6723 3542 · Web: [www.tuv.com](http://www.tuv.com)

**Test Result Summary**

Clause	Test Item	Result
FCC 15.247 (b) (1)	Peak Output Power	Pass
FCC 15.247 (a)(1)	20dB Bandwidth	Pass
FCC 15.247 (a)(1)(III)	Number of Hopping Frequencies	Pass
FCC 15.247 (a)(1)	Carrier Frequency Separation	Pass
FCC 15.247 (a)(1)(III)	Time of Occupancy (Dwell Time)	Pass
FCC 15.247 (d)	Band-edge compliance of RF Conducted Emission	Pass
FCC 15.209 & 15.205	Radiated Spurious Emissions and Restricted bands of operation	Pass
FCC 15.207	Conducted Emissions on a.c Power Lines	N/A*

**Note:** Conducted measurements are done according to the procedure as per FCC/DA-00-705, Filing and Measurement Guidelines for 15.247 Frequency Hopping Spread Spectrum (FHSS) Systems, Mar. 30, 2000 mentioned in ANSI C63.10-2013

\* -> Device exclusively used in vehicle only, it will operate on vehicle battery & internal back up battery only.

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## List of Test and Measurement Instruments

Equipment	Manufacturer	Model Name	Serial Number	Calibration Due Date	Periodicity	Used for Test Items
EMI Test Receiver	Rohde & Schwarz	ESU 40	100288	023.11.2016	Yearly	Spurious Radiated Emissions
Broadband Antenna	Frankonia	ALX-4000	ALX-4000-806	08.04.2016	Yearly	
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	22.12.2016	Yearly	
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	14.03.2017	Yearly	
Emission Horn Antenna	ETS Lindgren	116706	00107323	02.11.2016	Yearly	
Anechoic Chamber	Frankonia	-	-	-	-	Antenna - Port Conducted Tests
Spectrum Analyser	Agilent Technologies	E4407B	US41192772	23.04.2017	Yearly	
Signal Analyzer	Rohde & Schwarz	FSV7	101644	07.12.1016	Yearly	

### Testing Facilities:

- 1) TUV Rheinland (India) Private Limited  
108 , Beside ISBR Business School,  
Electronic city Phase I  
Bangalore - 560 100.

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## General Product Information

### Product Function and Intended Use

Sentinel HDx unit is a Dual Camera Event Recorder and will be installed on the windshield of the vehicle. This product is going to be installed inside the vehicles like cars, truck, taxi etc.

### Ratings and System Details

Operating Frequency	2400 – 2483.5MHz	
No. of channel	79	
Channel Spacing	1MHz	
Transmit Power (dBm)	1Mbps	<b>-2.40 dBm / 0.57543mW</b>
	2Mbps	<b>-4.77 dBm / 0.33342mW</b>
	3Mbps	<b>-4.10 dBm / 0.38904mW</b>
Modulation	1Mbps	GFSK
	2Mbps	Pi/4-DQPSK
	3Mbps	8DQPSK
Antenna Type	Refer Table 1	
Number of antenna	Refer Table 1	
Antenna Gain	Refer Table 1	
Supply Voltage	9-17VDC from Vehicle Battery & Internal Back-up Battery Voltage: 3.0V to 4.2V DC	
Environmental Condition	Operational : -10°C to 50° C Storage : -20°C to +60° C	

### Test Conditions:

Supply Voltage: 12 VDC from Vehicle Battery & Internal Back-up Battery Voltage: 3.0V to 4.2V DC

### Environmental conditions:

Temperature: +24 °C      RH: 62%

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## Test Set-up and Operation Mode

### Principle of Configuration Selection

Transmission was enabled with hopping mode / highest possible duty cycle transmission on low, mid and high channel.

### Test Operation and Test Software

Test software (Labtool) was used to enable the hopping mode & highest possible duty cycle, changing channels (low/mid/high) and data rates on the EUT for the tests in this report.

### Special Accessories and Auxiliary Equipment

- None

### Countermeasures to achieve EMC Compliance

- None

### Test Modes – Data Rates and Modulations

For Radiated spurious emissions, the tests were performed for all data rates and only worst case results are reported in this report.

### Antenna Port measurements are performed on the following paths

Path A – J7 Connector –ANT1

Path B – J8 Connector – ANT2

Bluetooth (EDR+BDR) & Bluetooth LE will transmit only on ANT2 & Wi-Fi (IEEE802.11abgnHT20/HT40) will transmit on both ANT1 & ANT2

Product also has GPS functionality with operating frequency 1575.42MHz

Sample used for testing as identified with below number.

Sample Serial No.12

Sample Serial No.13

### List of Antenna: Table 1

Manufacturer	Antenna Type	Antenna Part No.	Operating Frequency (GHz)
TAIYO YUDEN	Multilayer Monopole Antenna	AH 104N2450D1	2.4 & 5
Laird	External Two-Way Radio Antenna	WTS 2450	2.4 & 5

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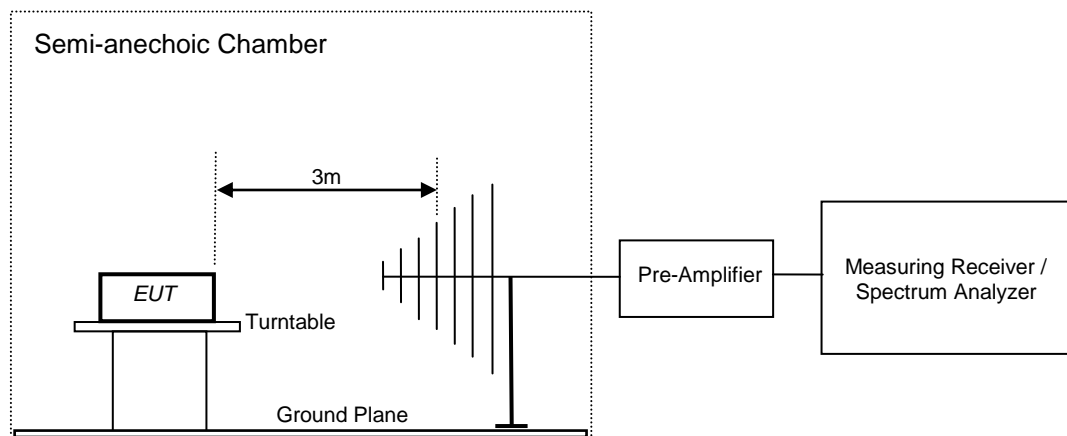
List of Centre Frequencies: Table 2

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
<b>2400 – 2483.5 BT(BDR+EDR)</b>	0	2402
	1	2403
	2	2404
	3	2405
	:	:
	:	:
	:	:
	37	2439
	38	2440
	39	2441
	40	2442
	:	:
	:	:
	:	:
	74	2476
	75	2477
	76	2478
	77	2479
	78	2480

## Test Methodology: Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1GHz & 1.5m height for above 1GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.





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## Test Results

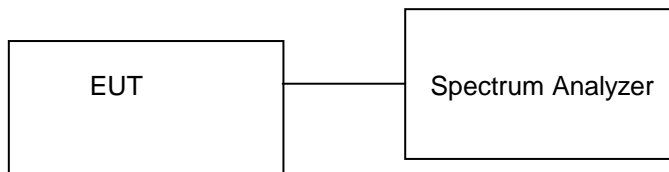
**Peak Output Power  
Result**

**Section 15.247 (b) (1)  
Pass**

Test Specification  
Measurement Bandwidth (RBW)  
Detector  
Requirement

FCC Part 15 subpart C  
1/3MHz  
Peak  
<125 mW

**Test Method:**



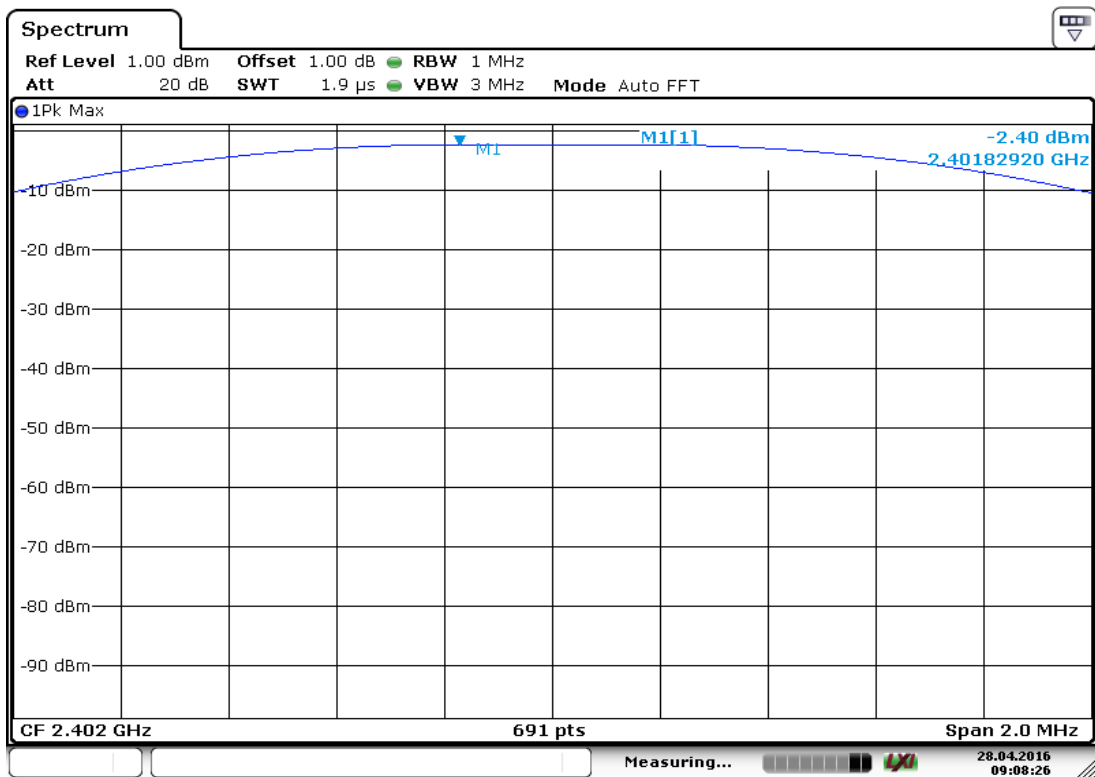
**Test Result:**

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result

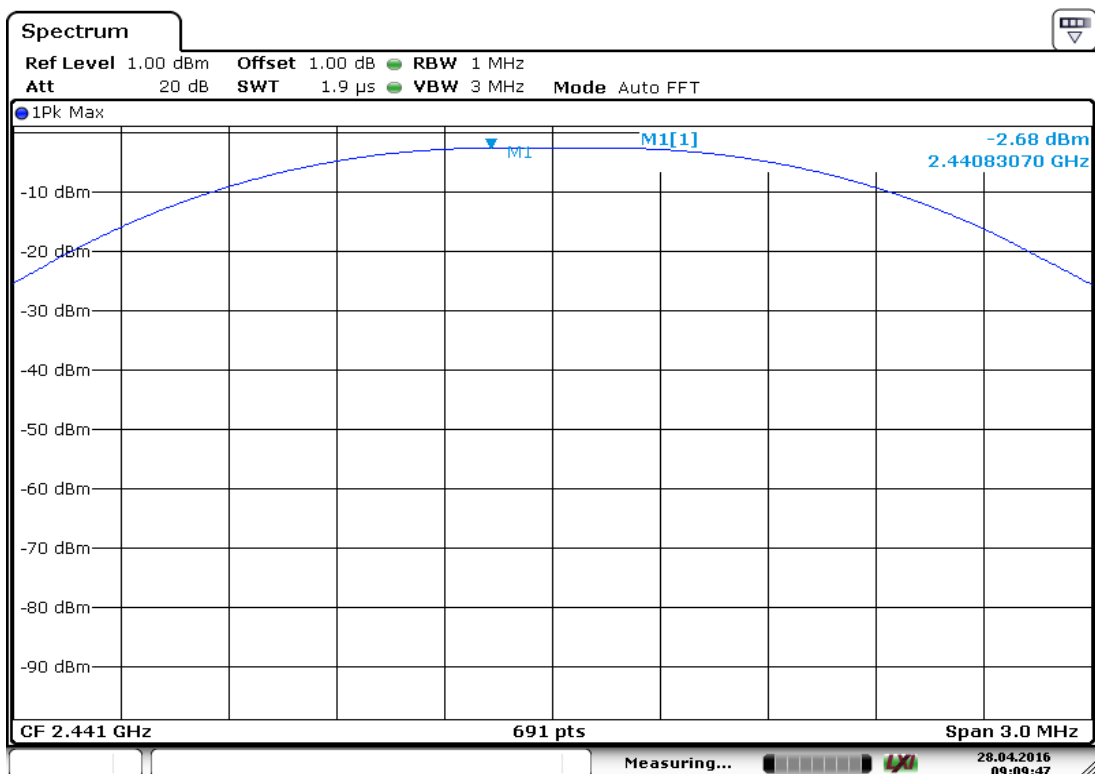
Modulation Type	Channel Frequency (MHz)	Output power (dBm)	Limit (dBm)
GFSK	2402	<b>-2.4</b>	20.96
	2441	-2.6	20.96
	2480	-2.95	20.96
Pi/4 DQPSK	2402	<b>-4.77</b>	20.96
	2441	-4.97	20.96
	2480	-5.22	20.96
8 DQPSK	2402	<b>-4.10</b>	20.96
	2441	-4.30	20.96
	2480	-4.65	20.96

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Modulation Type: GFSK

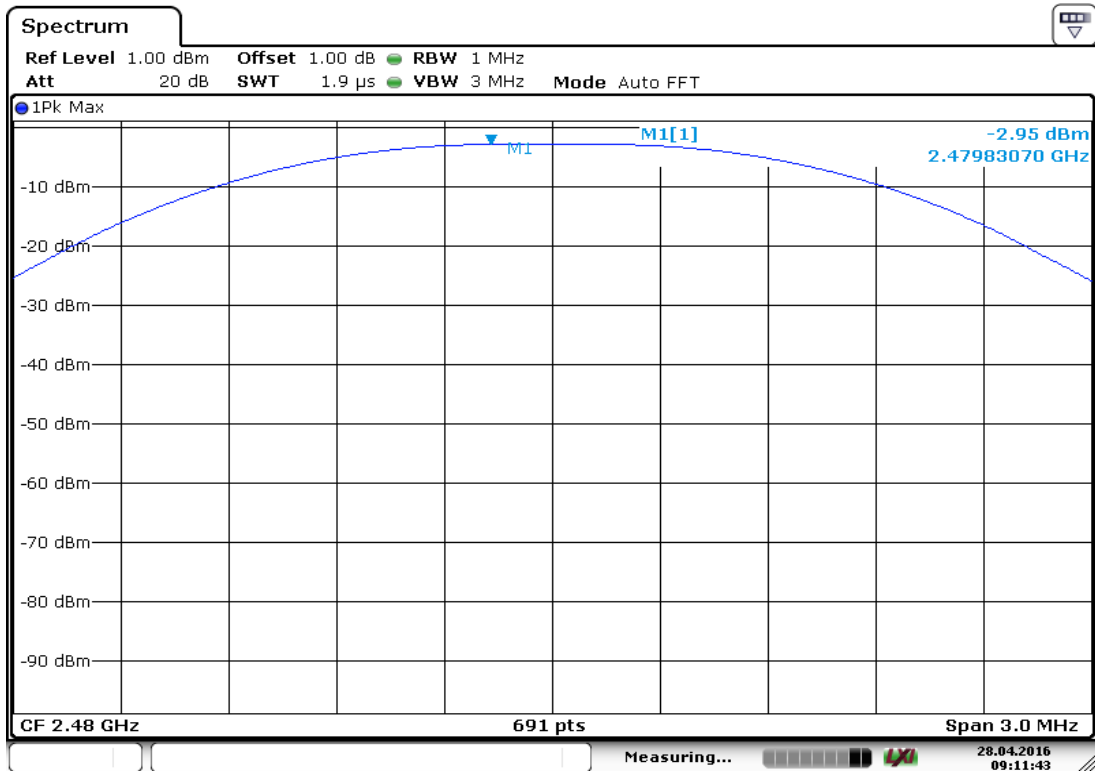


Channel Frequency: 2402 MHz



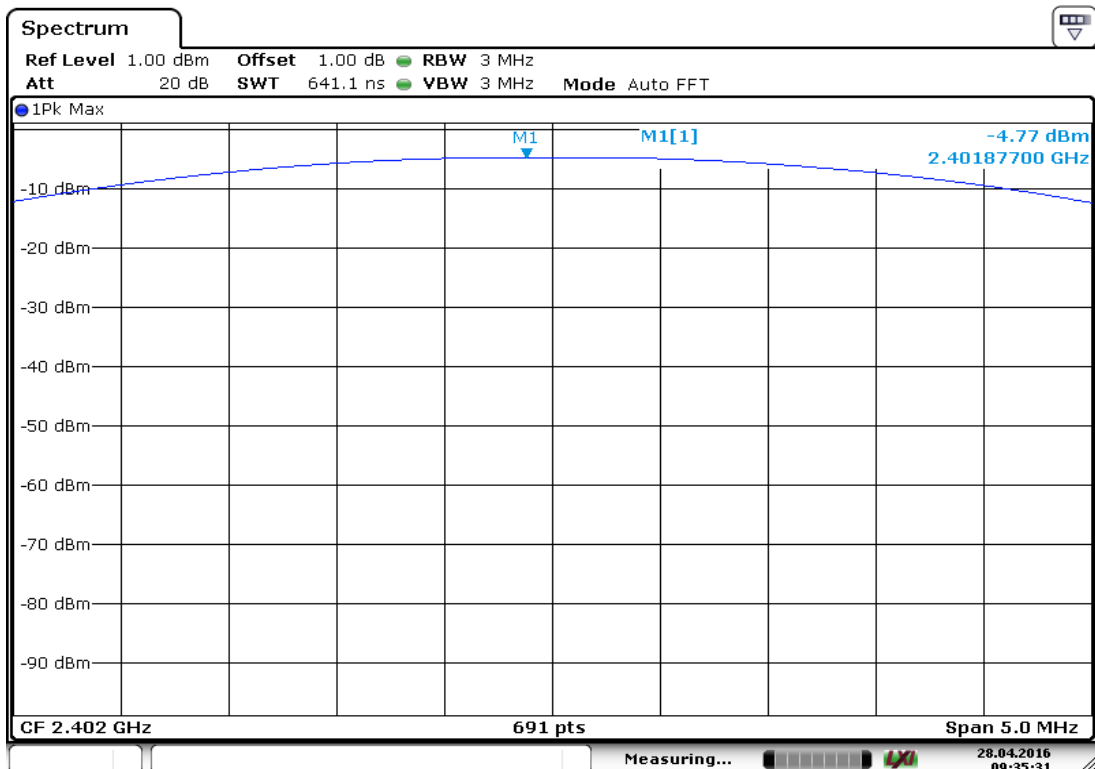
Channel Frequency: 2441 MHz

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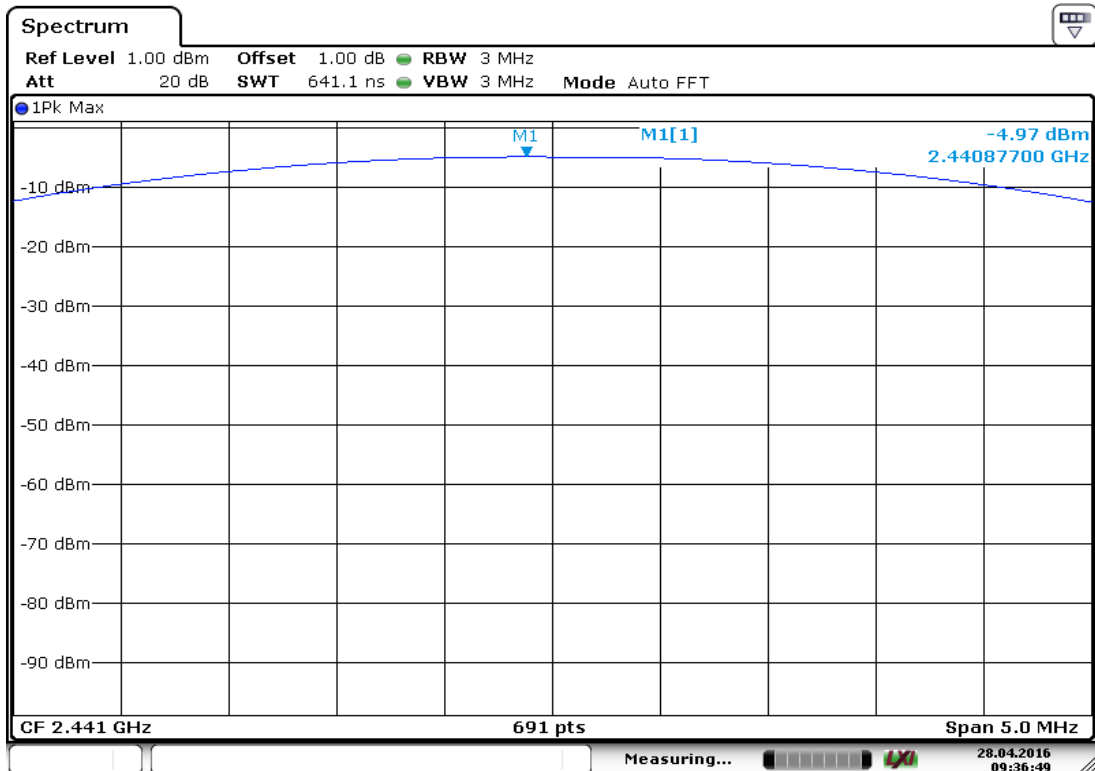


Channel Frequency: 2480 MHz

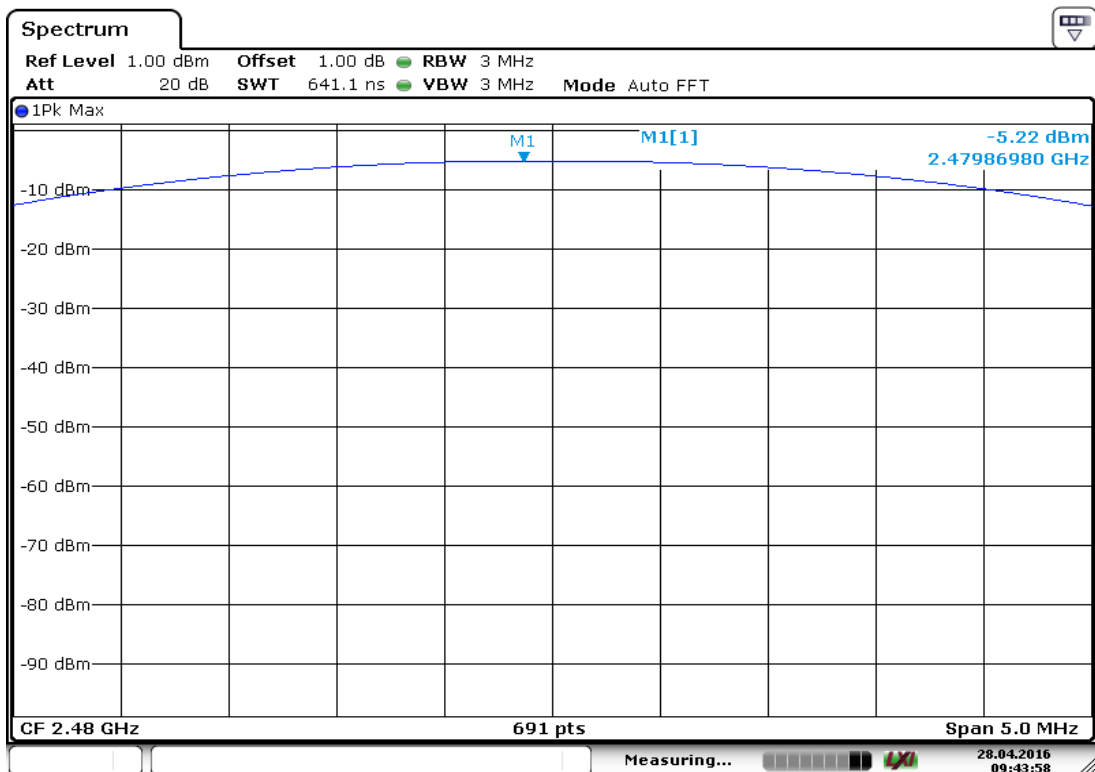
Modulation Type: Pi/4 DQPSK



Channel Frequency: 2402 MHz



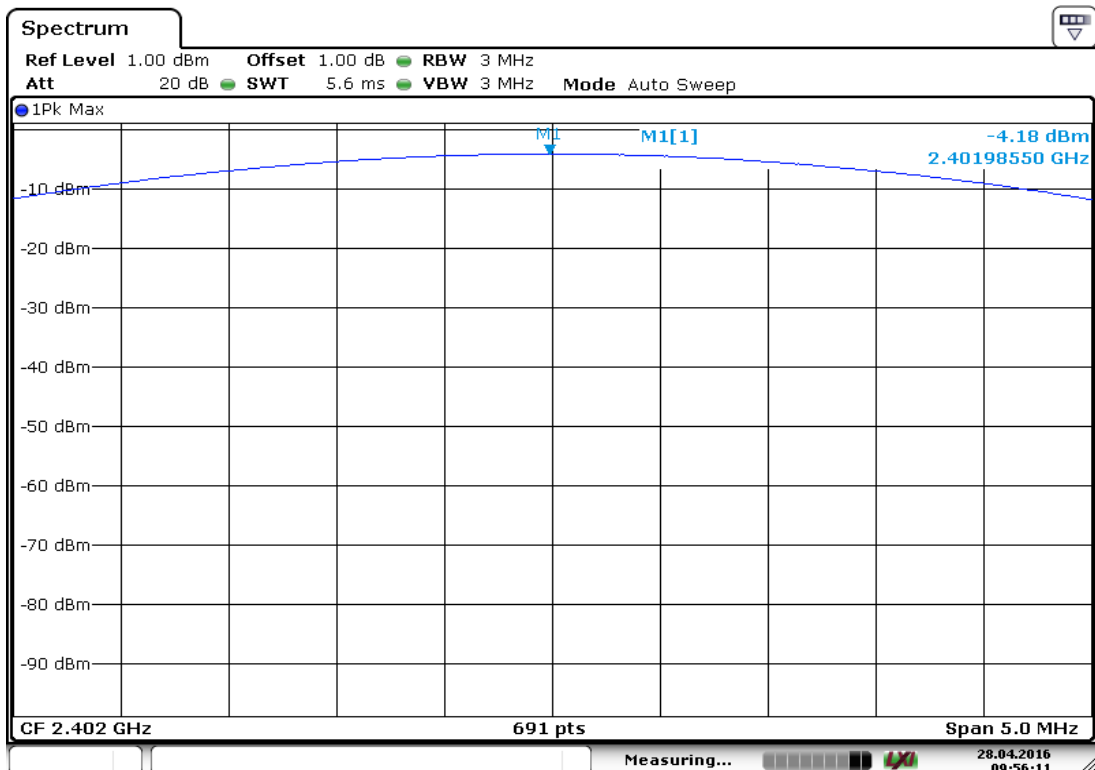
Channel Frequency: 2441 MHz



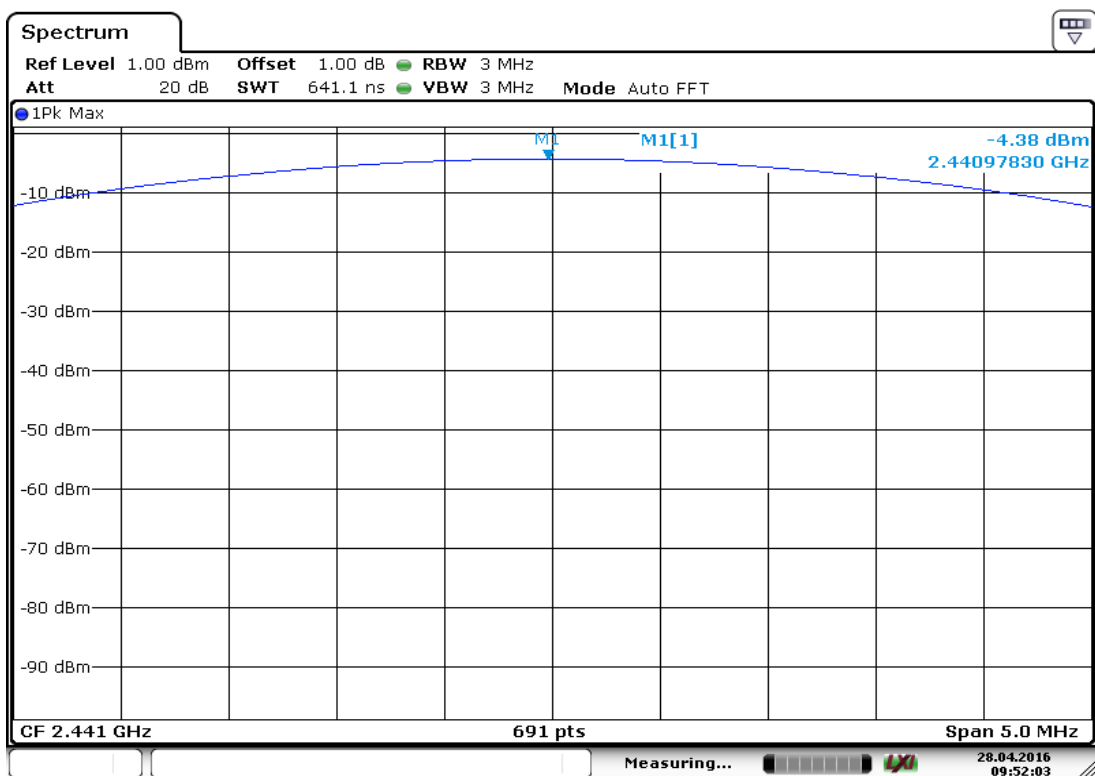
Channel Frequency: 2480 MHz

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Modulation Type: 8 DQPSK

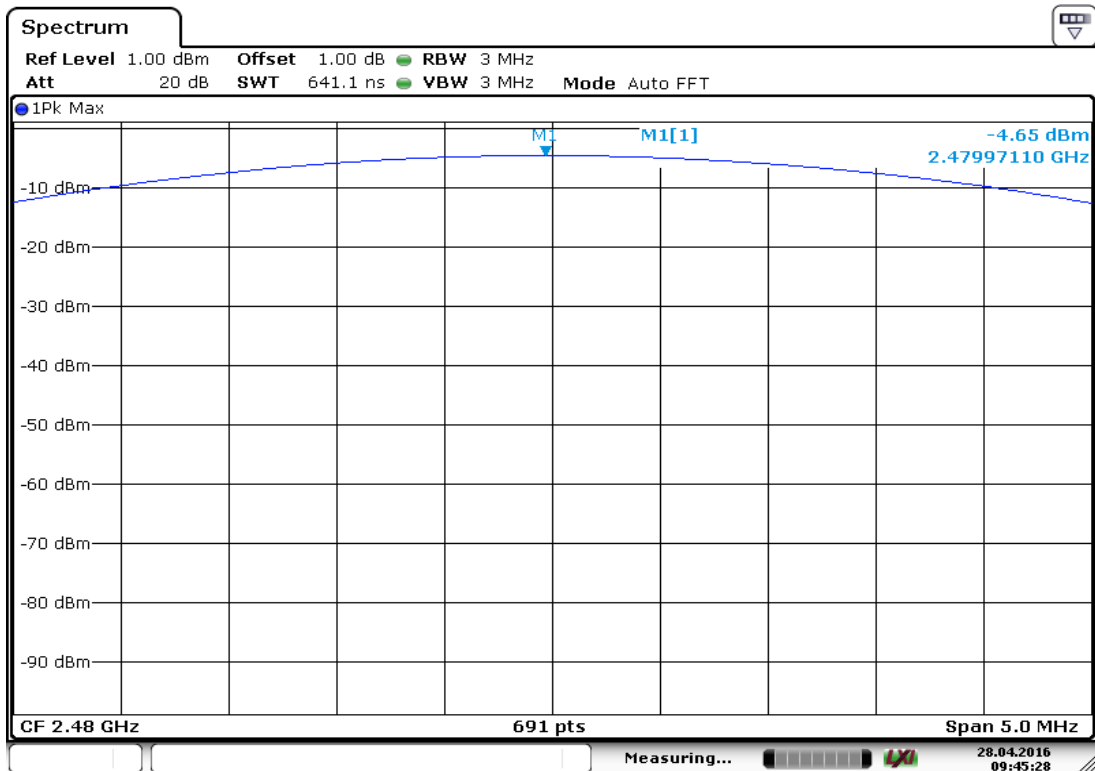


Channel Frequency: 2402 MHz



Channel Frequency: 2441 MHz

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Channel Frequency: 2480 MHz

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**20dB Bandwidth  
Result**

**Section 15.247 (a) (1)  
Pass**

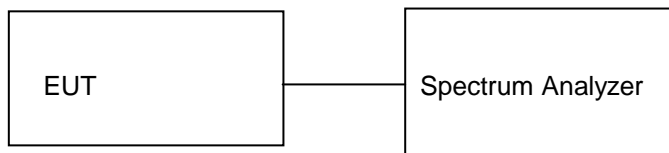
Test Specification  
Detector Function  
Requirement

FCC Part 15 Subpart C

Peak

The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near-term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long-term distribution appears evenly distributed.

**Test Method:**



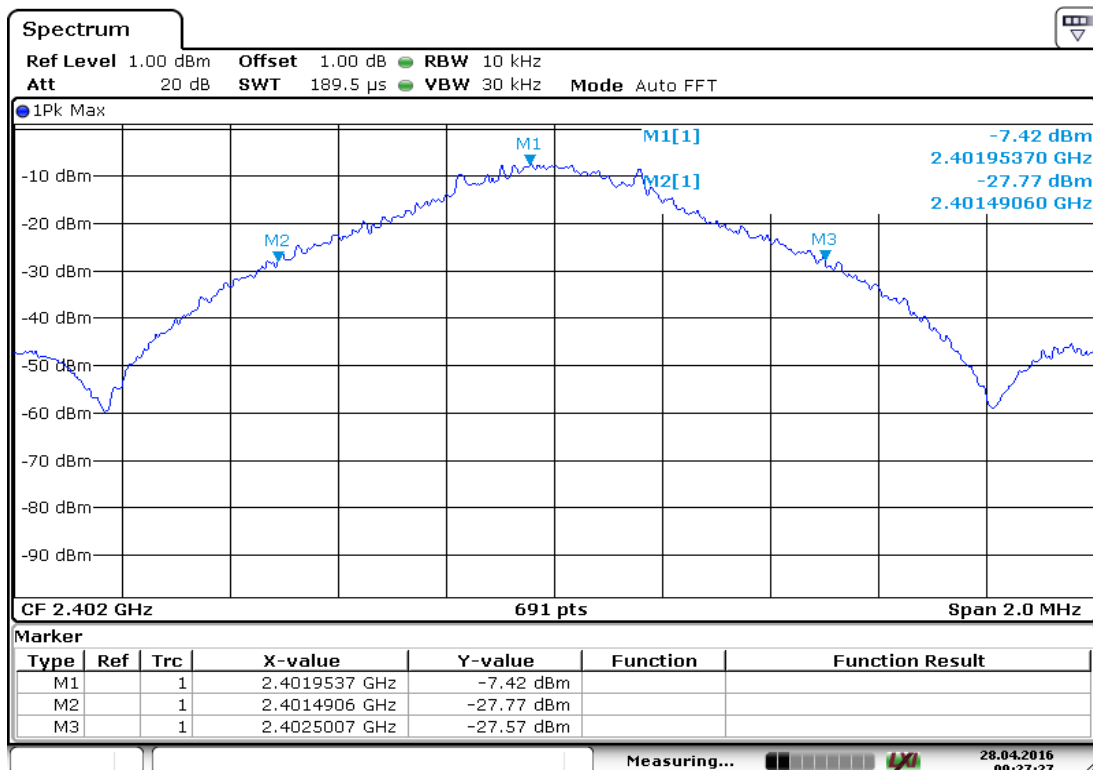
**Test Result:**

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result

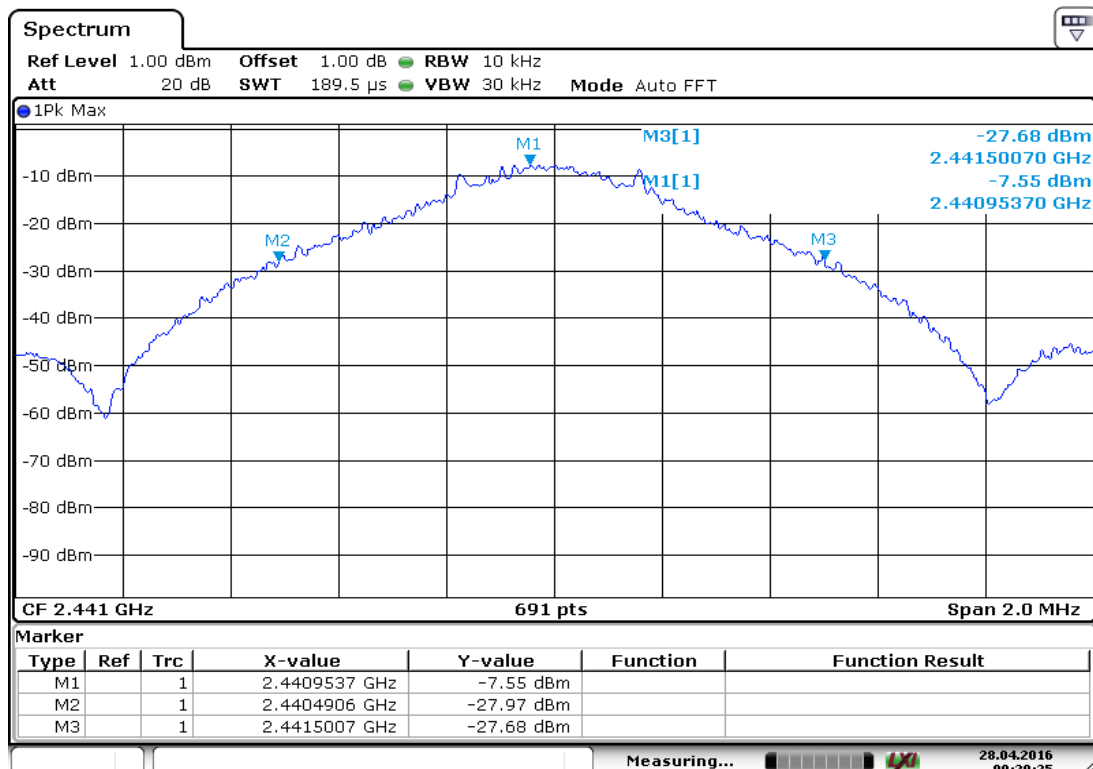
Modulation Type	Channel Frequency (MHz)	Lower 20dB Frequency (MHz)	Higher 20dB Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
GFSK	2402	2401.49	2402.5	1.01	0.963
	2441	2440.49	2441.5	1.01	0.963
	2480	2479.4	2480.48	1.08	0.968
P/4 DQPSK	2402	2401.33	2402.64	1.31	1.22
	2441	2440.33	2441.64	1.31	1.22
	2480	2479.33	2480.64	1.31	1.22
8 DQPSK	2402	2401.32	2402.65	1.33	1.22
	2441	2440.33	2441.64	1.31	1.21
	2480	2479.32	2480.65	1.33	1.21

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Modulation Type: GFSK

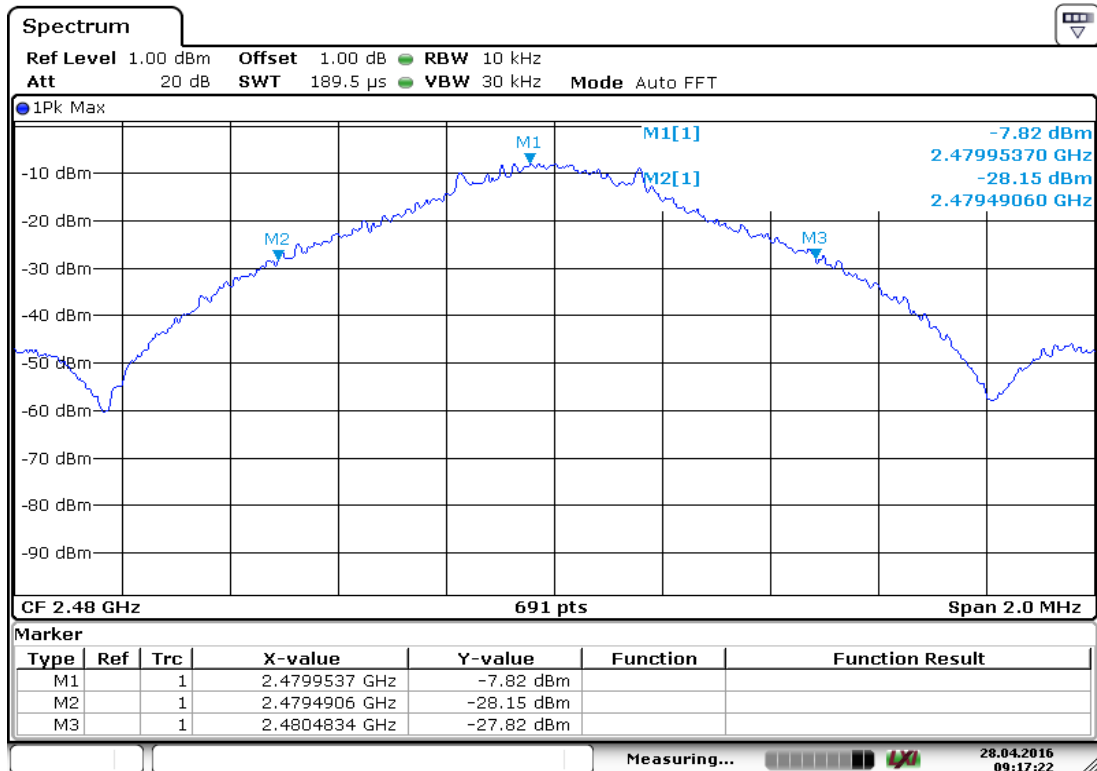


Channel 2402: 20dB Bandwidth Measurement

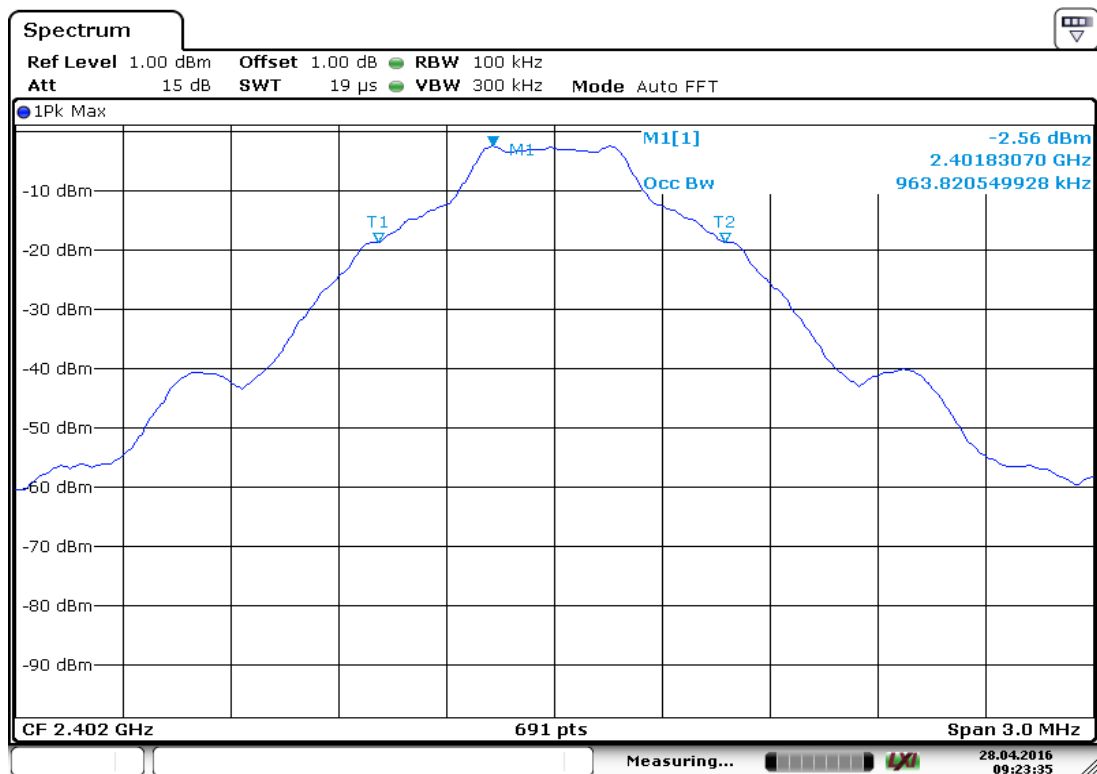


Channel 2441: 20dB Bandwidth Measurement

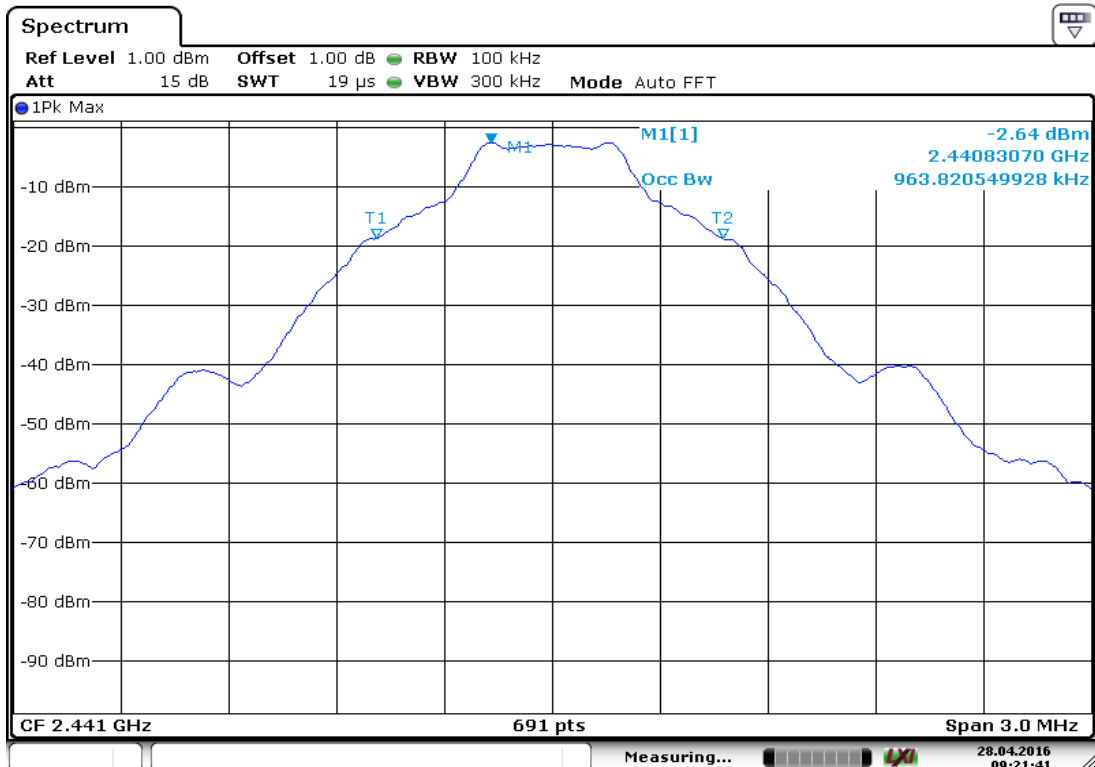




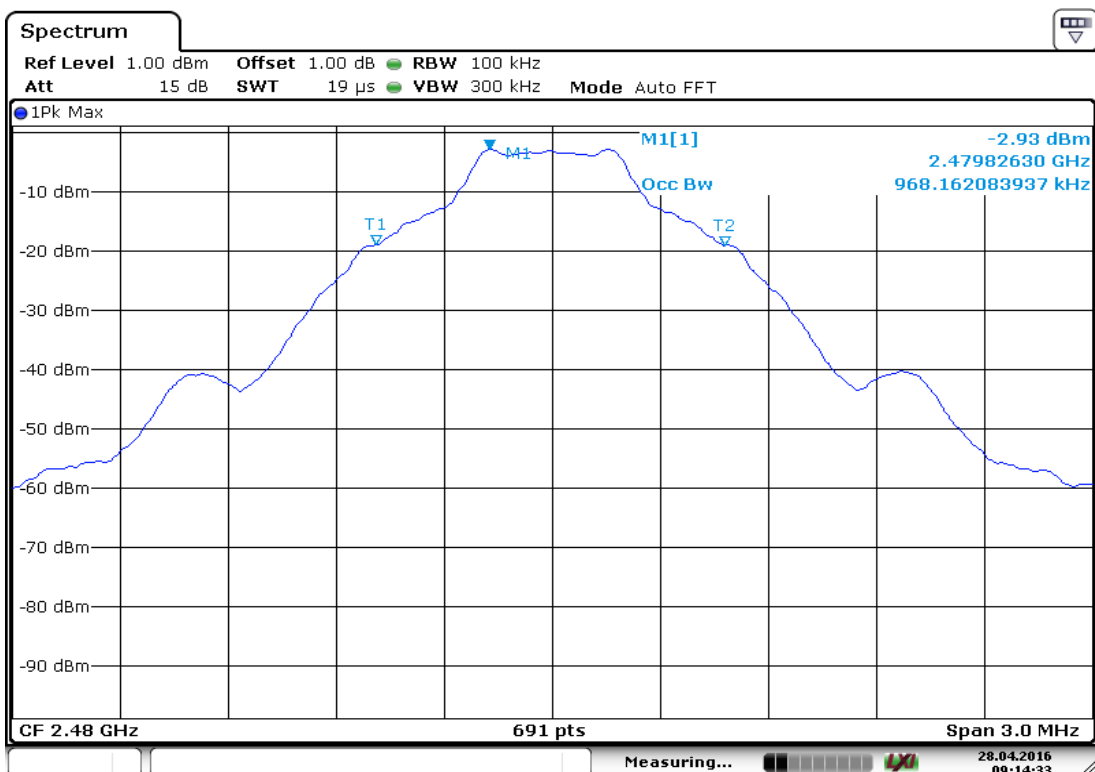
**Channel 2480: 20dB Bandwidth Measurement**



**99% Occupied Bandwidth: Channel 2402**



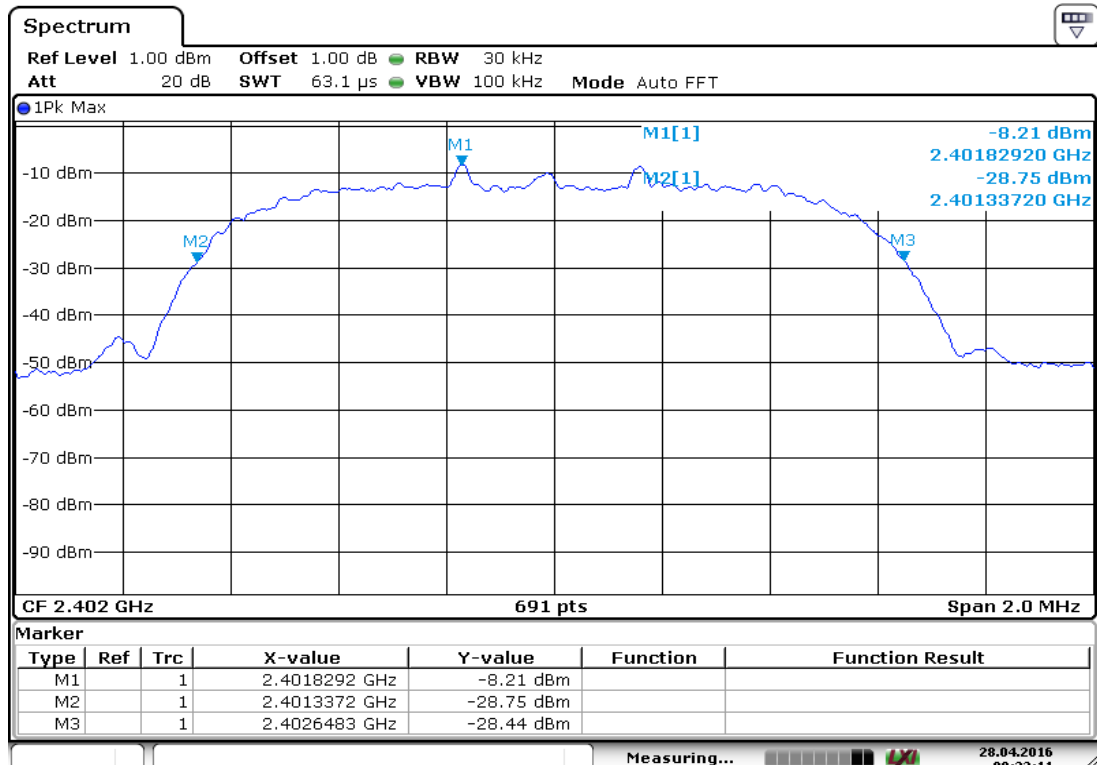
99% Occupied Bandwidth: Channel 2441



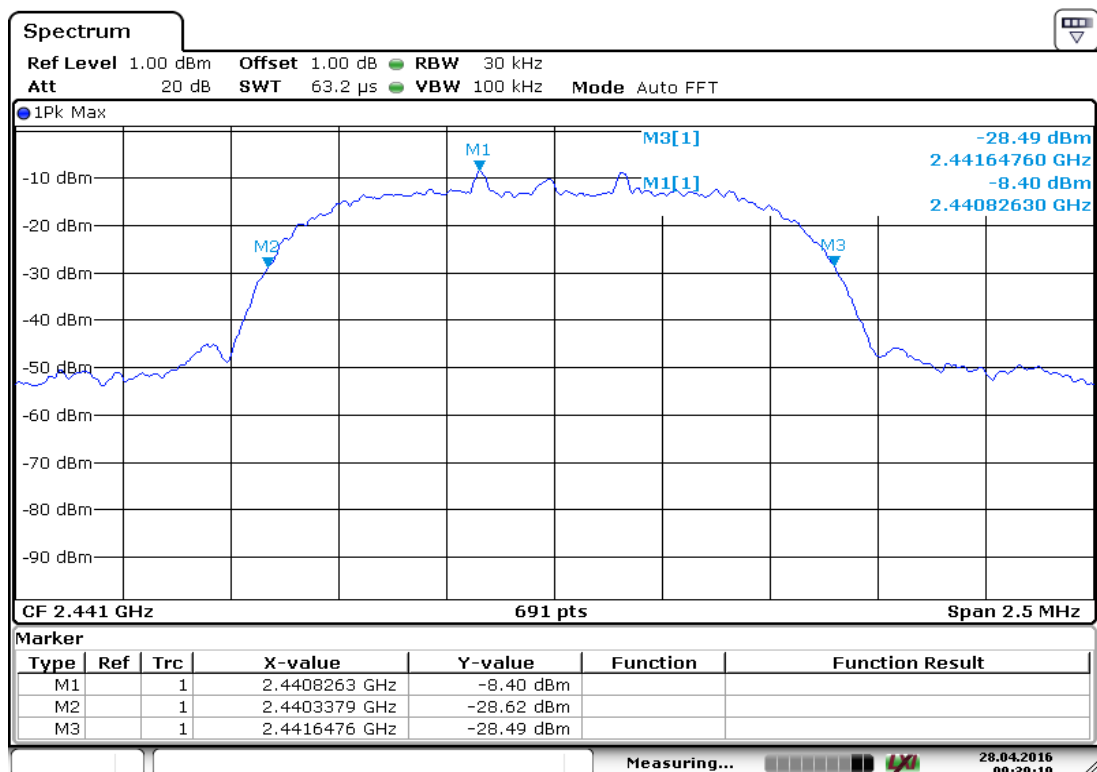
99% Occupied Bandwidth: Channel 2480

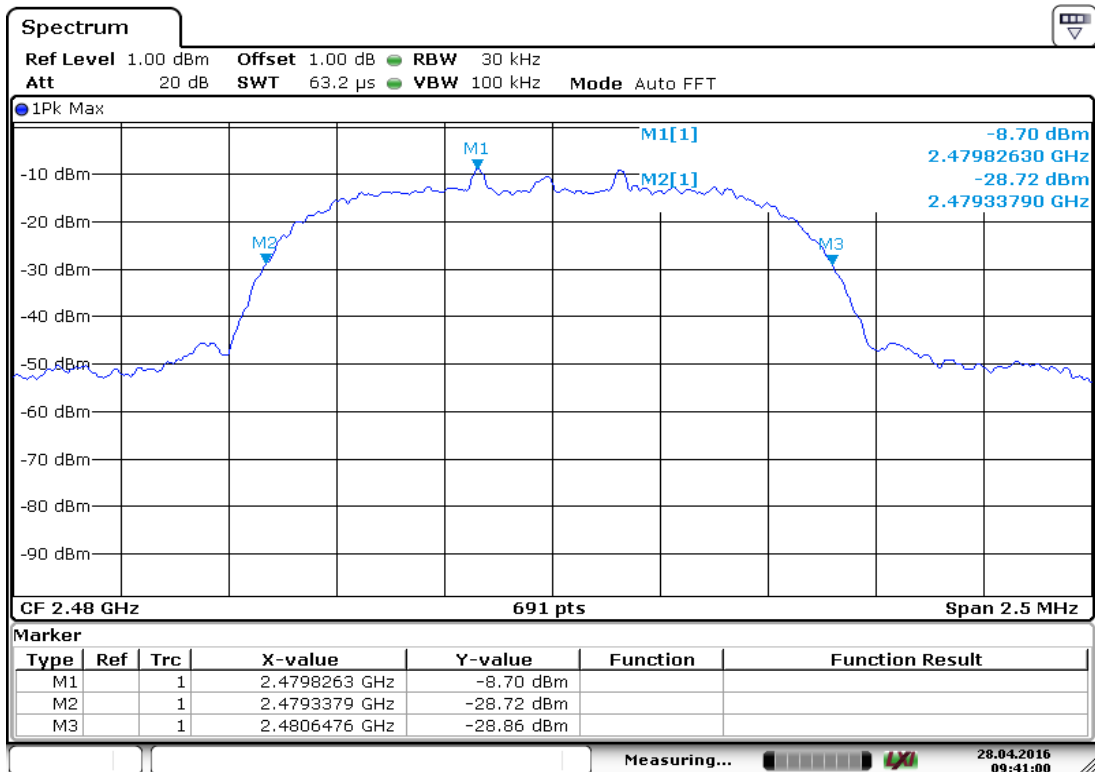
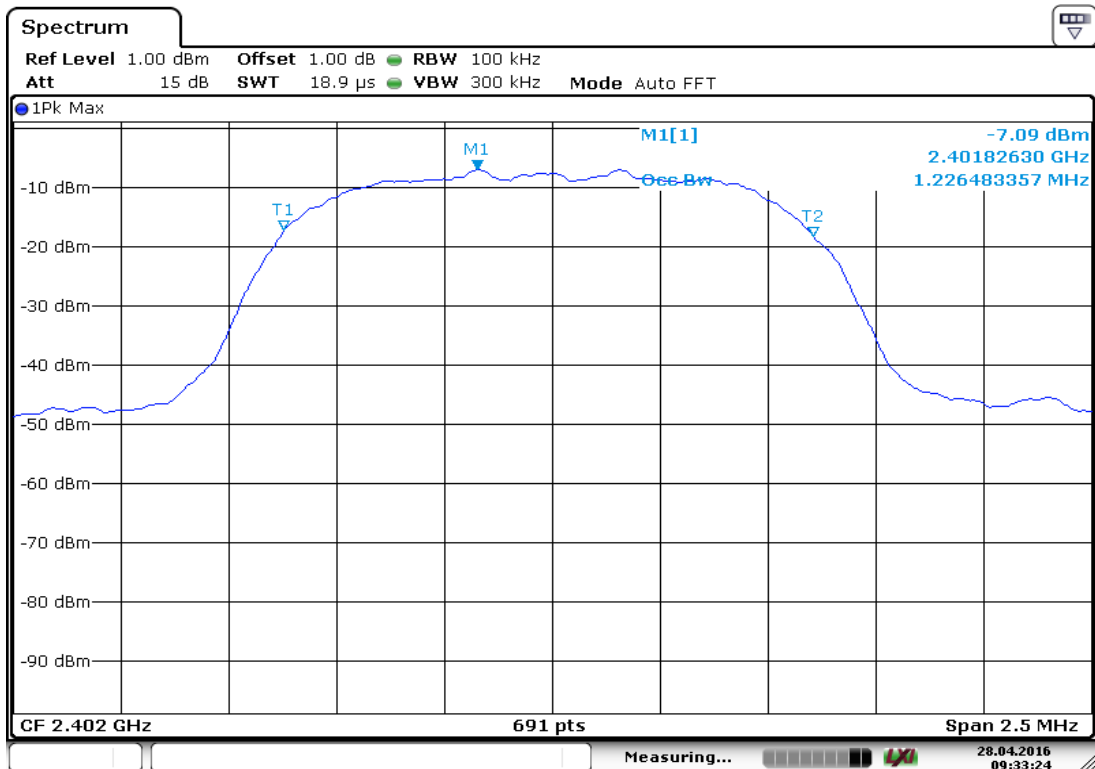
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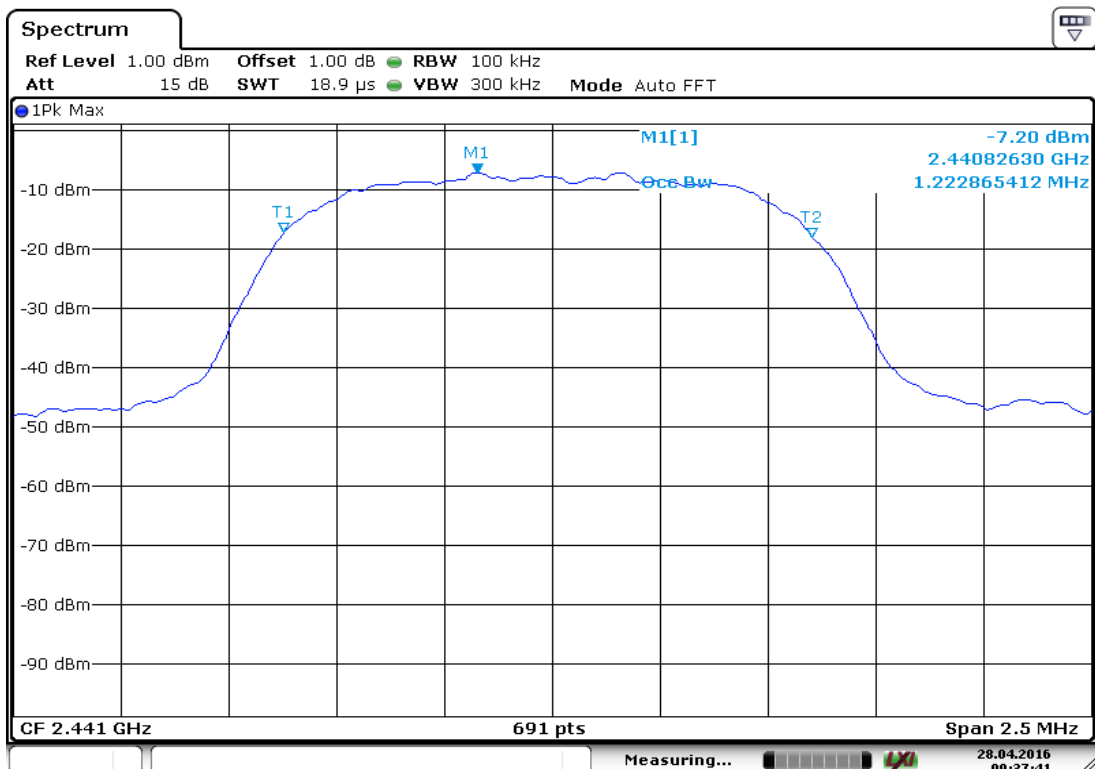
Modulation Type: P/4 DQPSK



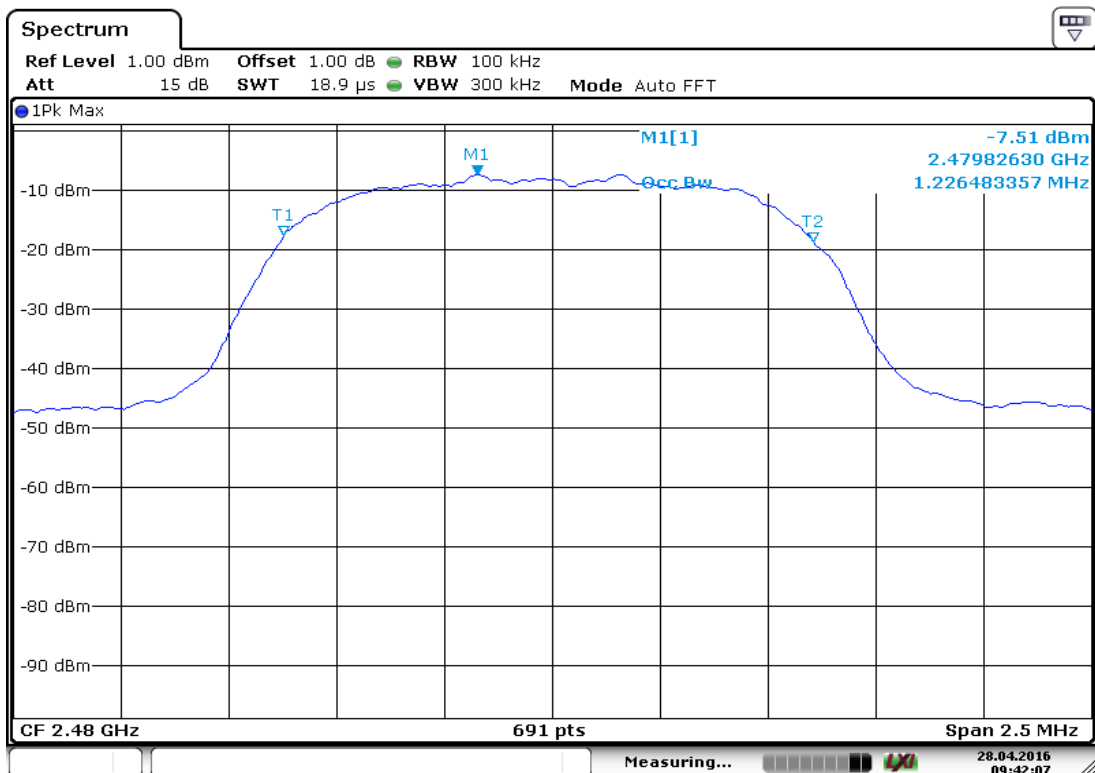
Channel 2402: 20dB Bandwidth Measurement



**Channel 2441: 20dB Bandwidth Measurement**

**Channel 2480: 20dB Bandwidth Measurement**

**99% Occupied Bandwidth: Channel 2402**



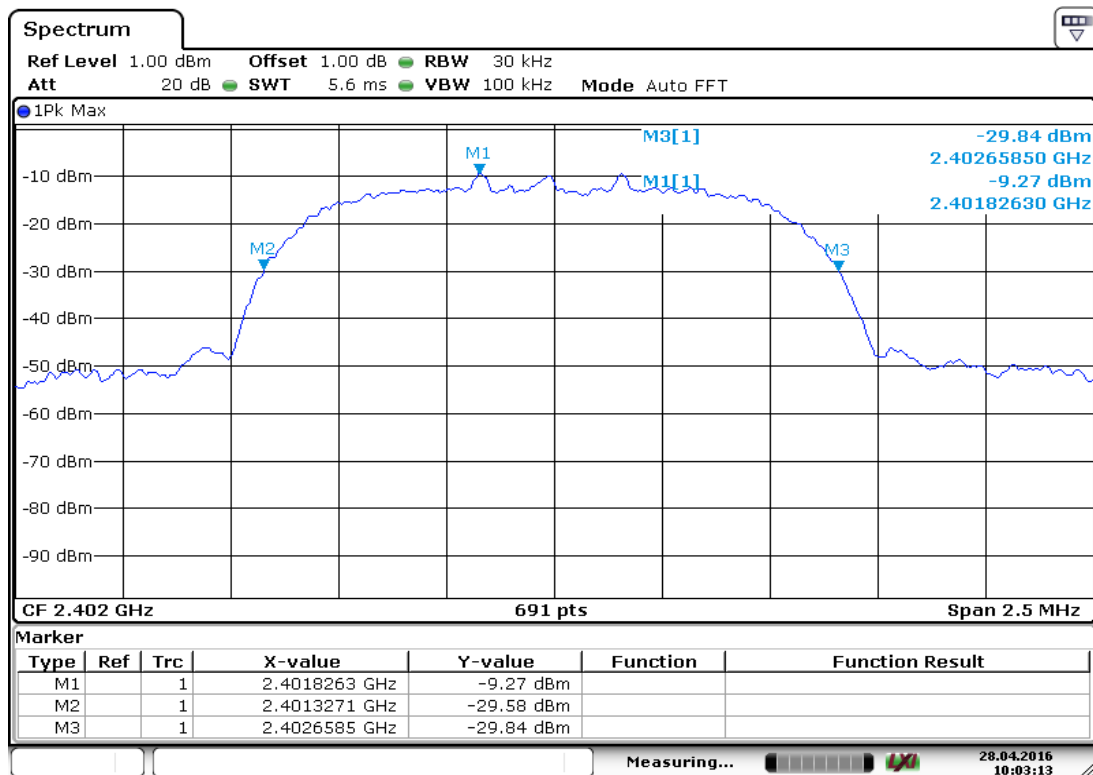
99% Occupied Bandwidth: Channel 2441



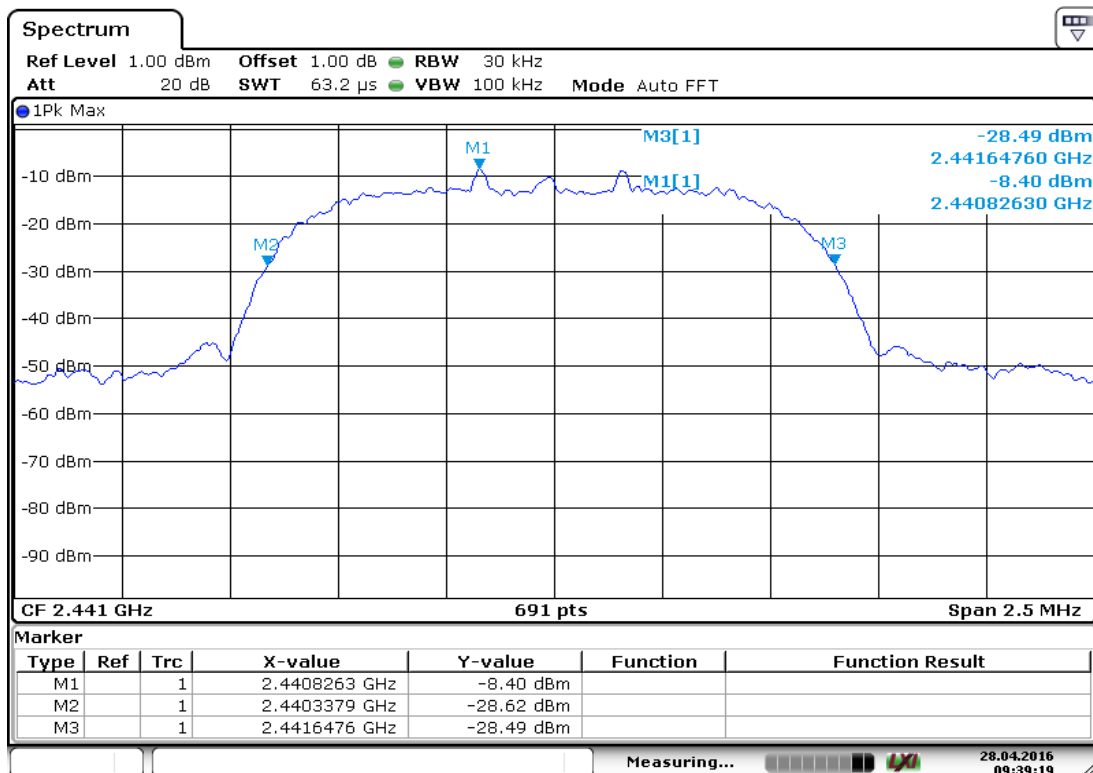
99% Occupied Bandwidth: Channel 2480

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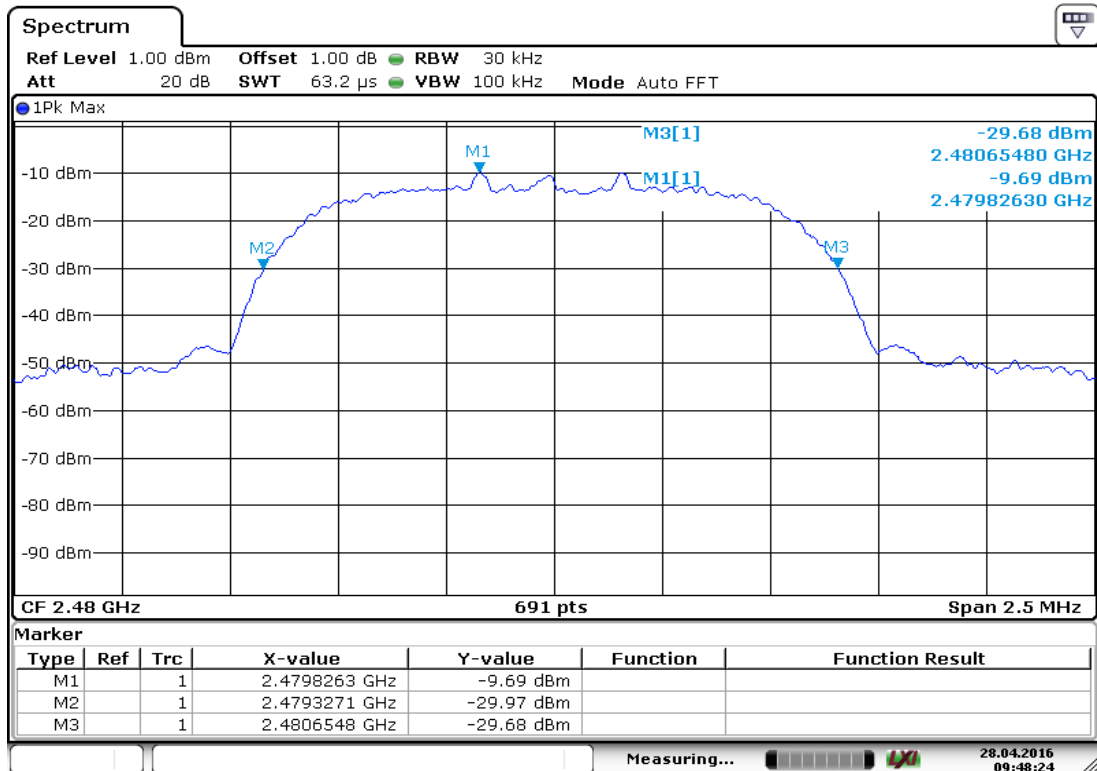
Modulation Type: 8 DQPSK



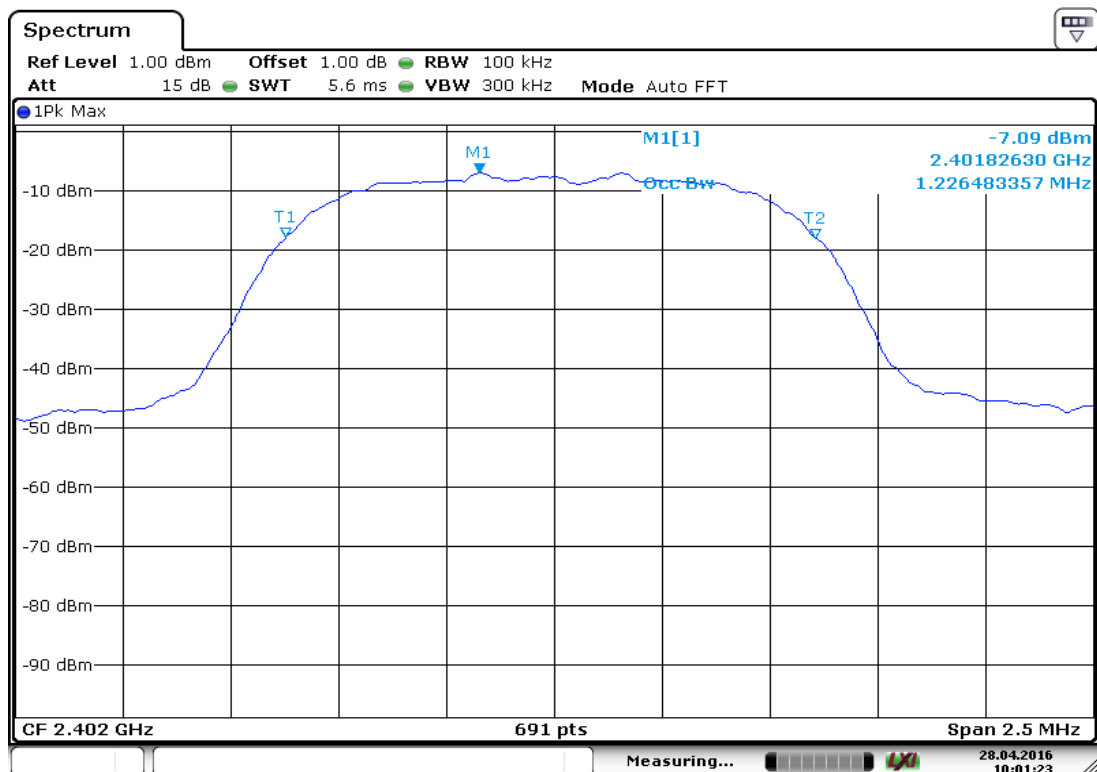
Channel 2402: 20dB Bandwidth Measurement



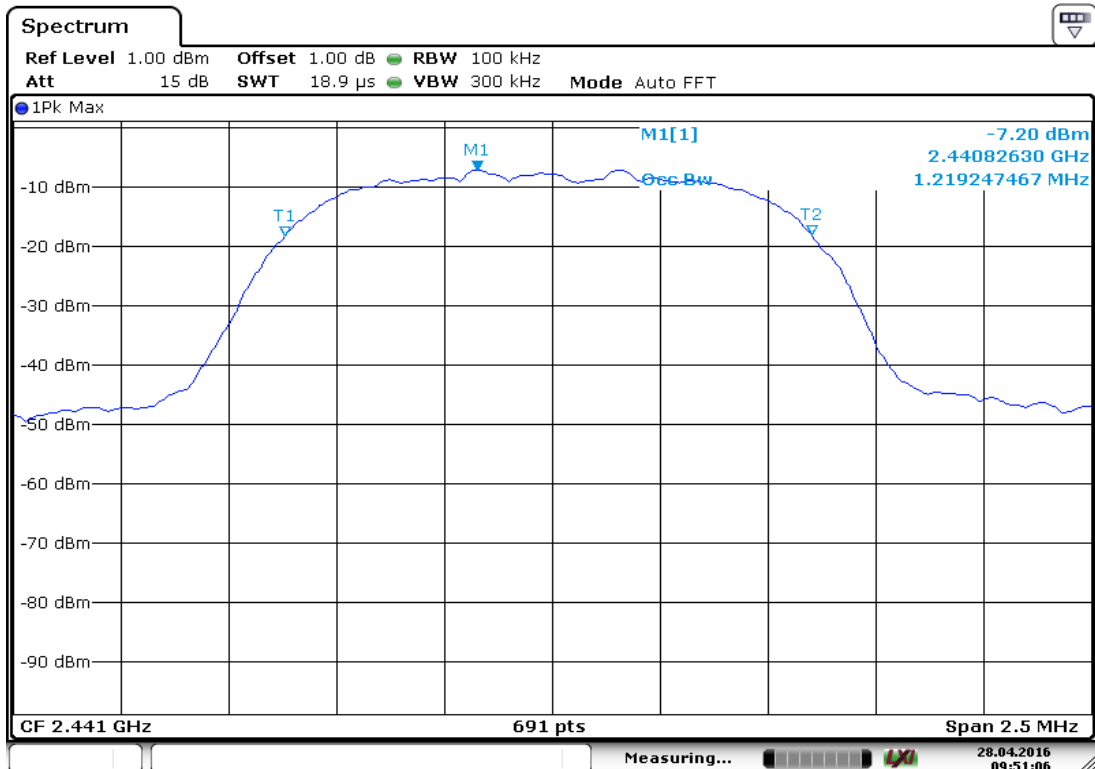
Channel 2441: 20dB Bandwidth Measurement



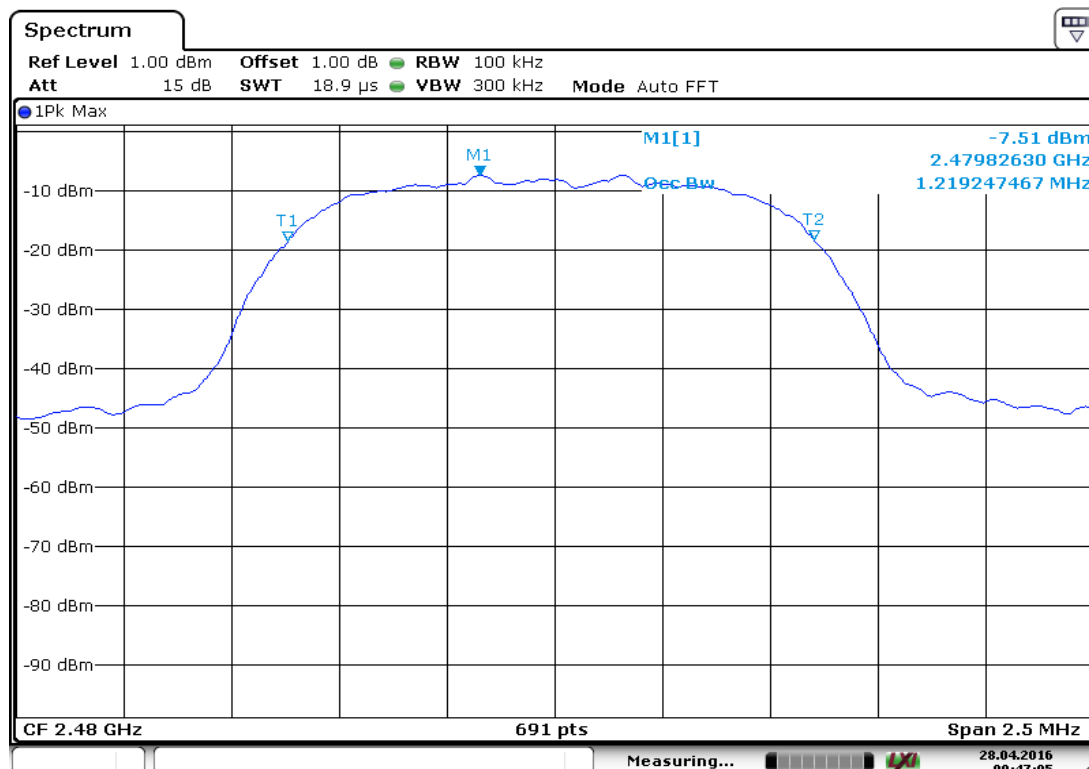
**Channel 2480: 20dB Bandwidth Measurement**



**99% Occupied Bandwidth: Channel 2480**



99% Occupied Bandwidth: Channel 2441



99% Occupied Bandwidth: Channel 2480



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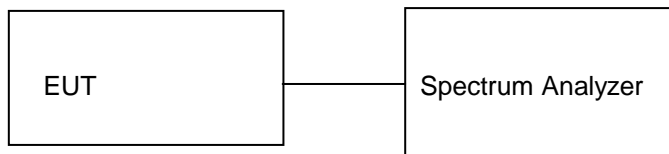
**Number of Hopping Frequencies**  
Result

**Section (a) (1) (iii)**  
Pass

Test Specification  
Detector Function  
Requirement

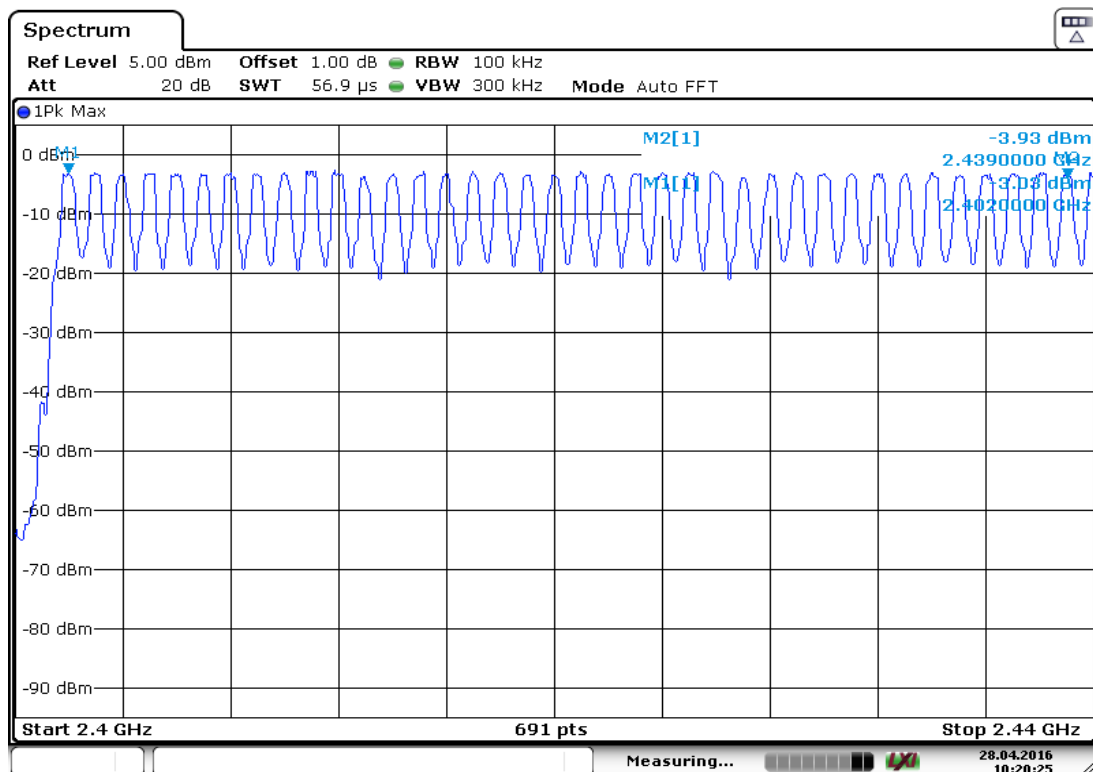
FCC part 15 subpart C  
Peak  
Frequency hopping systems operating in the band 2400-2483.5 MHz  
shall use at least 15 hopping channels

**Test Method:**



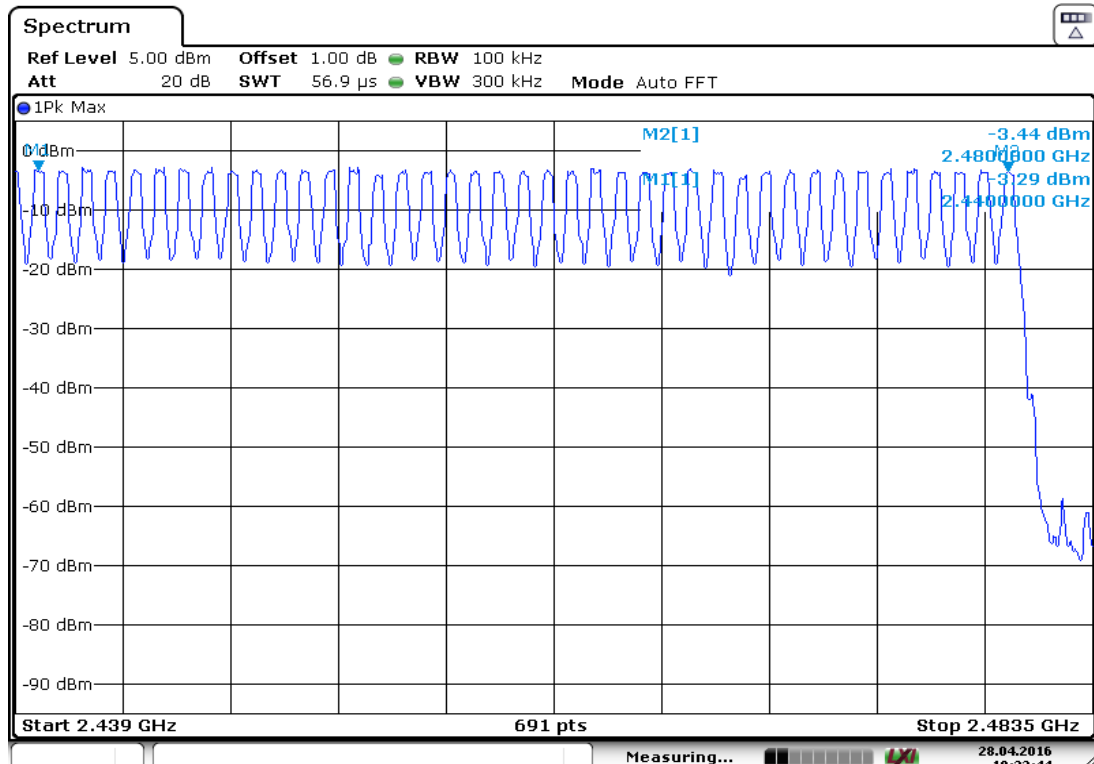
**Test Result:**

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result



**Number of Hopping Channels: 39**

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**Number of Hopping Channels: 40**

**Total Number of hopping channels = 79 (39+40)**

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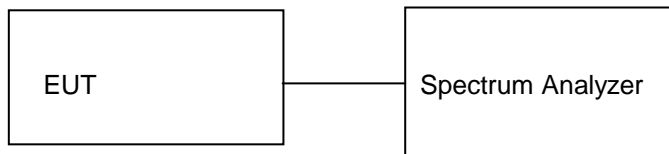
# Carrier Frequency Separation Result

**Section 15.247 (a) (1)**  
**Pass**

Test Specification  
Detector Function  
Requirement

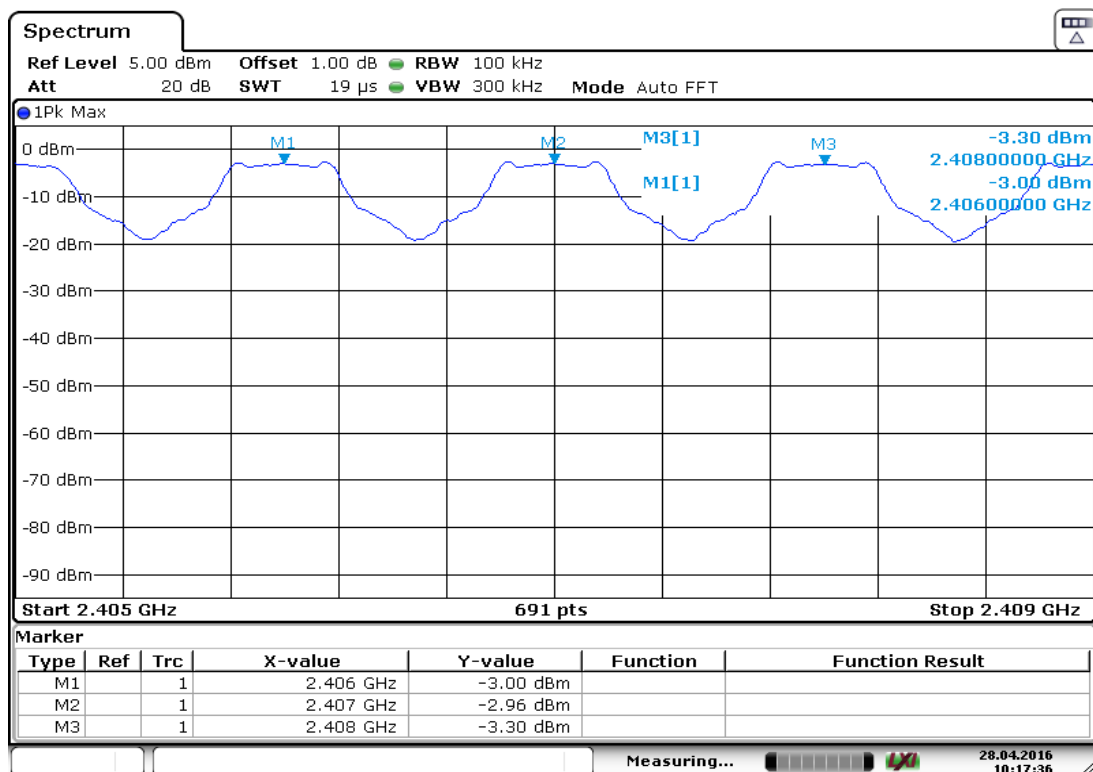
FCC Part 15 subpart C  
Peak  
Frequency hopping systems shall have hopping channel carrier frequency separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater

## Test Method:



## Test Result:

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result



## Channel Separation

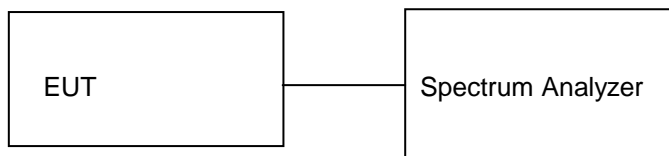
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**Time of Occupancy (Dwell Time)**  
**Result**

**Section 15.247 (a)(1)(III)**  
**Pass**

Test Specification FCC part 15 subpart C  
 Detector Function Peak  
 Requirement 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. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

**Test Method:**



**Test Result:**

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result

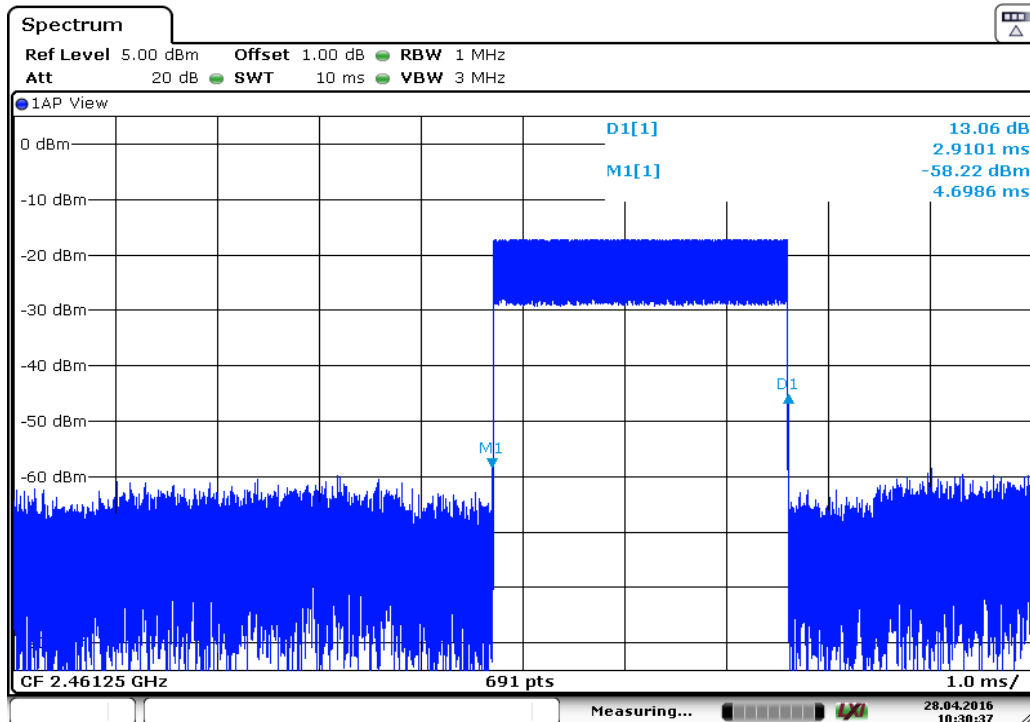
Modulation Type	Time slot		Time Slot (sec)
	DH	Measurement Value (sec)	
GFSK	1DH5	0.00291	0.312
P/4 DQPSK	2DH5	0.00292	0.314
8 DQPSK	3DH5	0.00292	0.314

**Measurement Method**

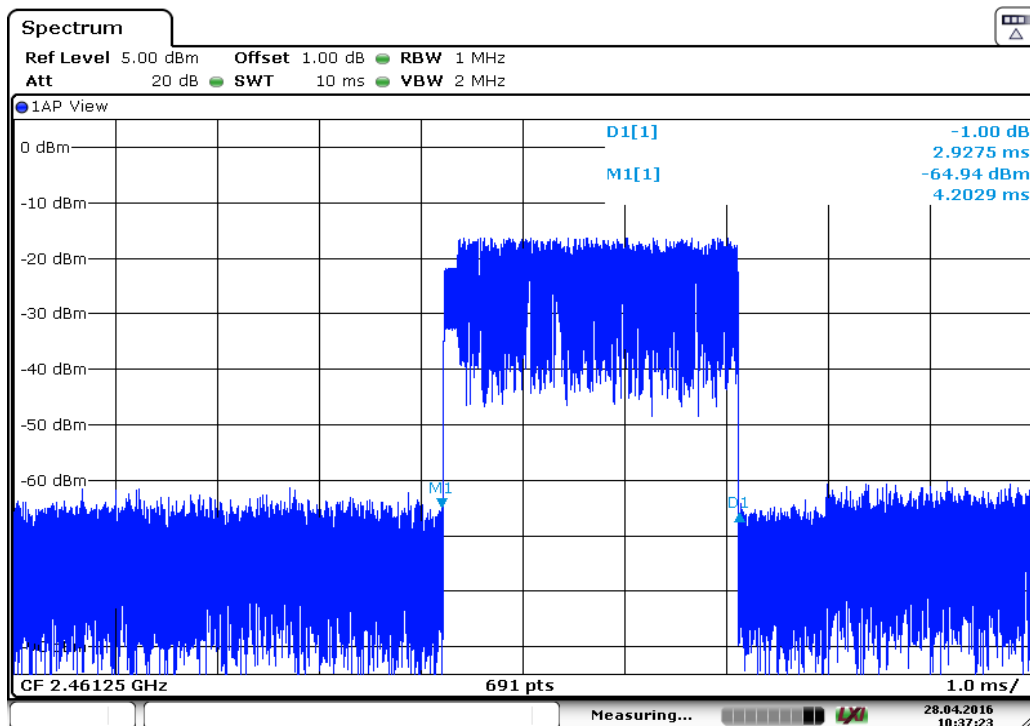
Period Time = 0.4sec\*79 hopping channel= 31.6 s

DH5 Time slot = Measurement value (Sec)\*(1600/ (6\*79))\*Period time

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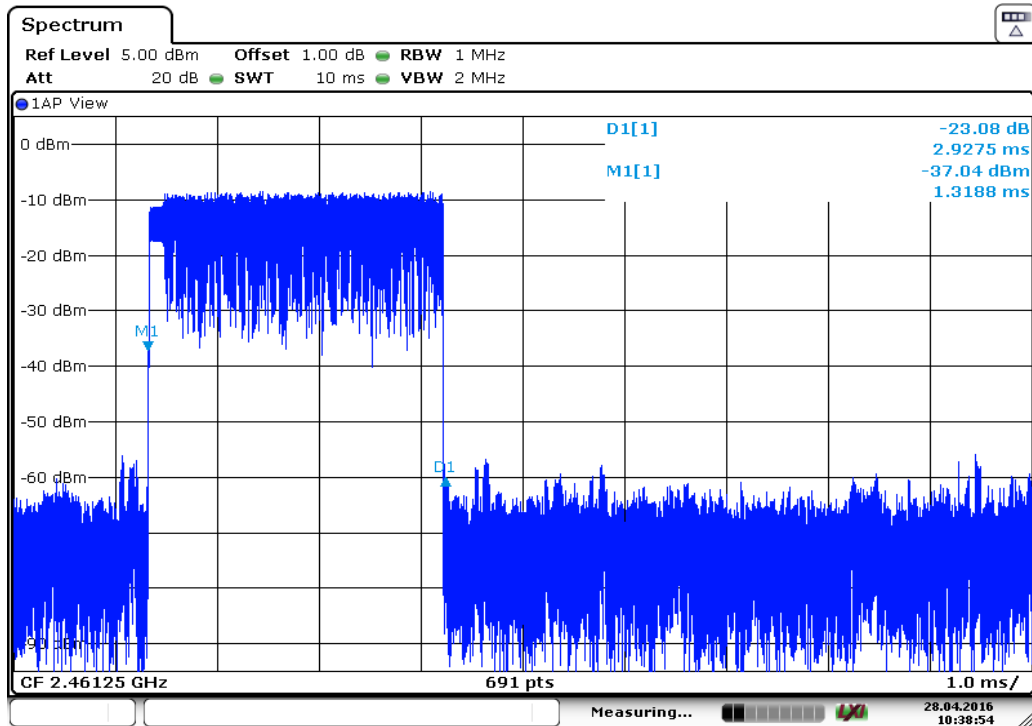
Dwell Time: 1DH5



Date: 28 APR 2016 10:37:24

Dwell Time: 2DH5

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Date: 28 APR 2016 10:38:54

Dwell Time: 3DH5

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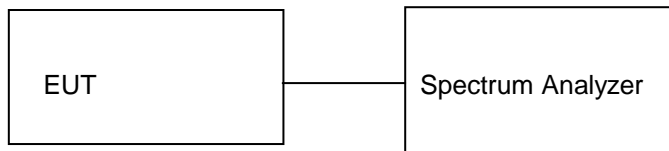
**Band-edge Compliance of RF Conducted Emission  
Result**

**Section 15.247 (d)  
Pass**

Test Specification  
Detector Function  
Requirement

FCC Part 15 subpart C  
Peak  
In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

**Test Method:**



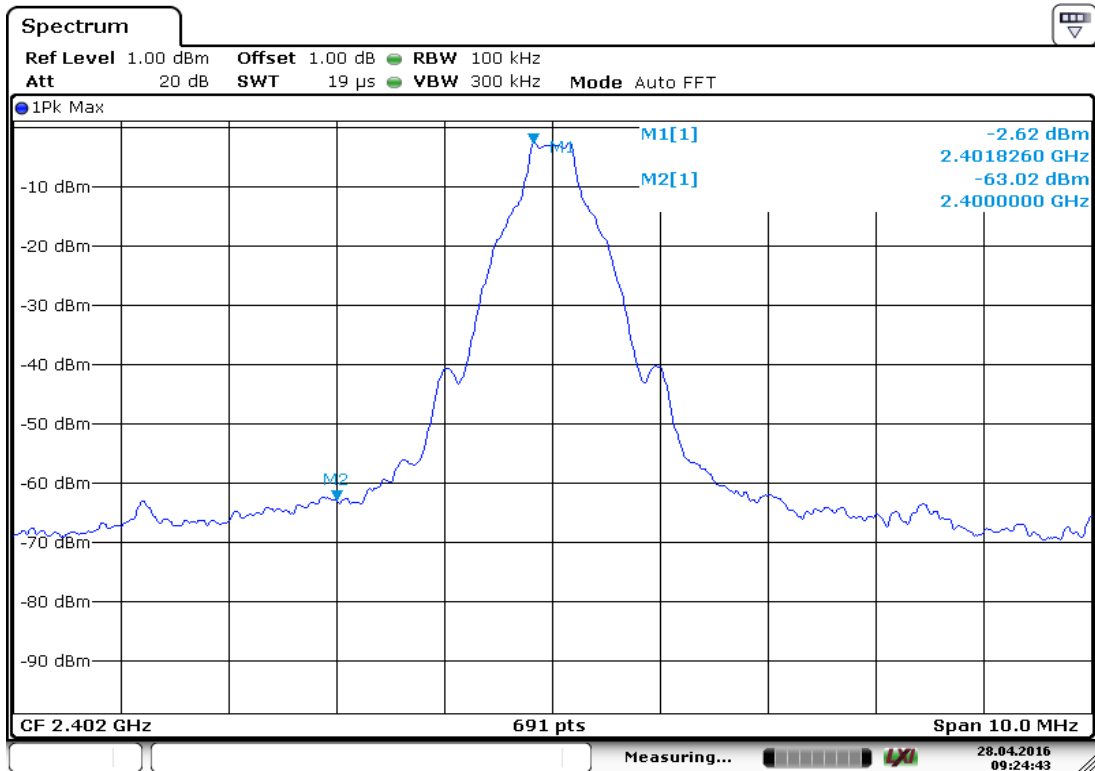
**Test Result:**

Attenuator (0dB) + cable loss (1dB) = 1dB Considered in the test result

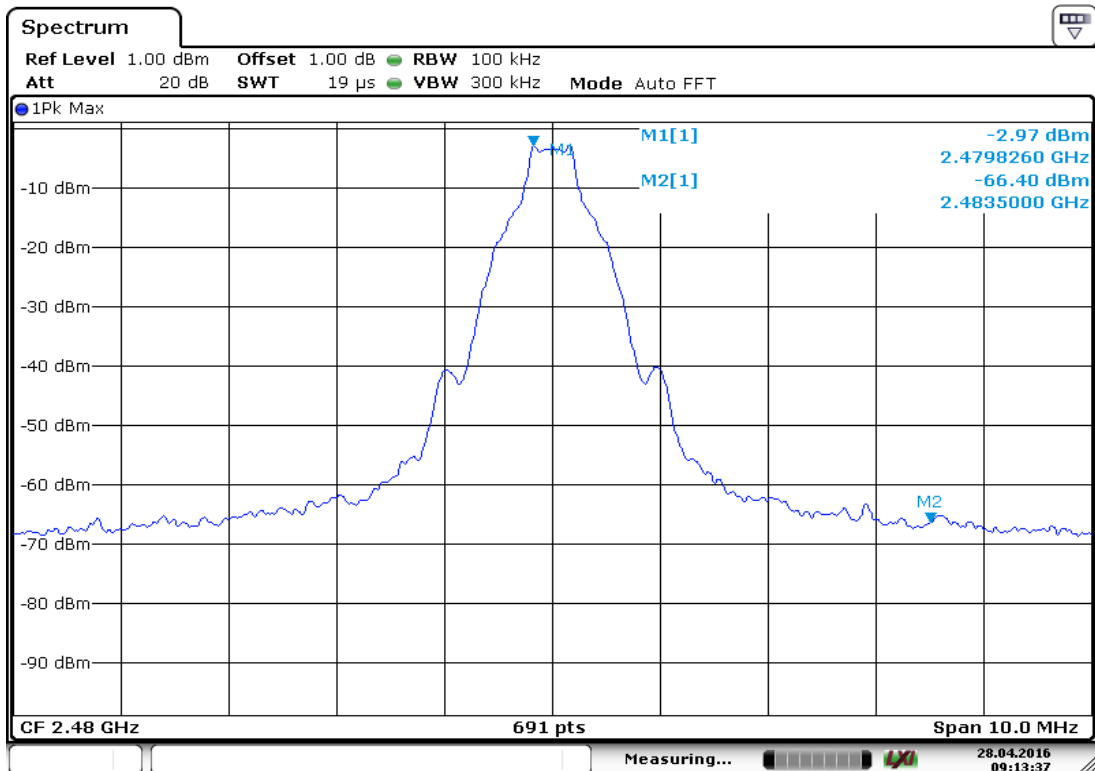
Modulation Type	Fundamental Frequency (MHz)	Value at Band Edge		Reference Value B (dBm)	Band Edge Value A~B (dBc)	Limit (dBc)
		Frequency (MHz)	Value (dBm)			
GFSK	2402	2400	-63.02	-2.62	60.4	20
	2480	2483.5	-66.4	-2.97	63.43	20
Pi/4 DQPSK	2402	2400	-58.95	-7.14	51.81	20
	2480	2483.5	-66.1	-7.58	58.52	20
8 DQPSK	2402	2400	-52.31	-7.16	45.15	-20
	2480	2483.5	-57.76	-7.59	50.17	-20

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Modulation Type: GFSK



Channel 2402

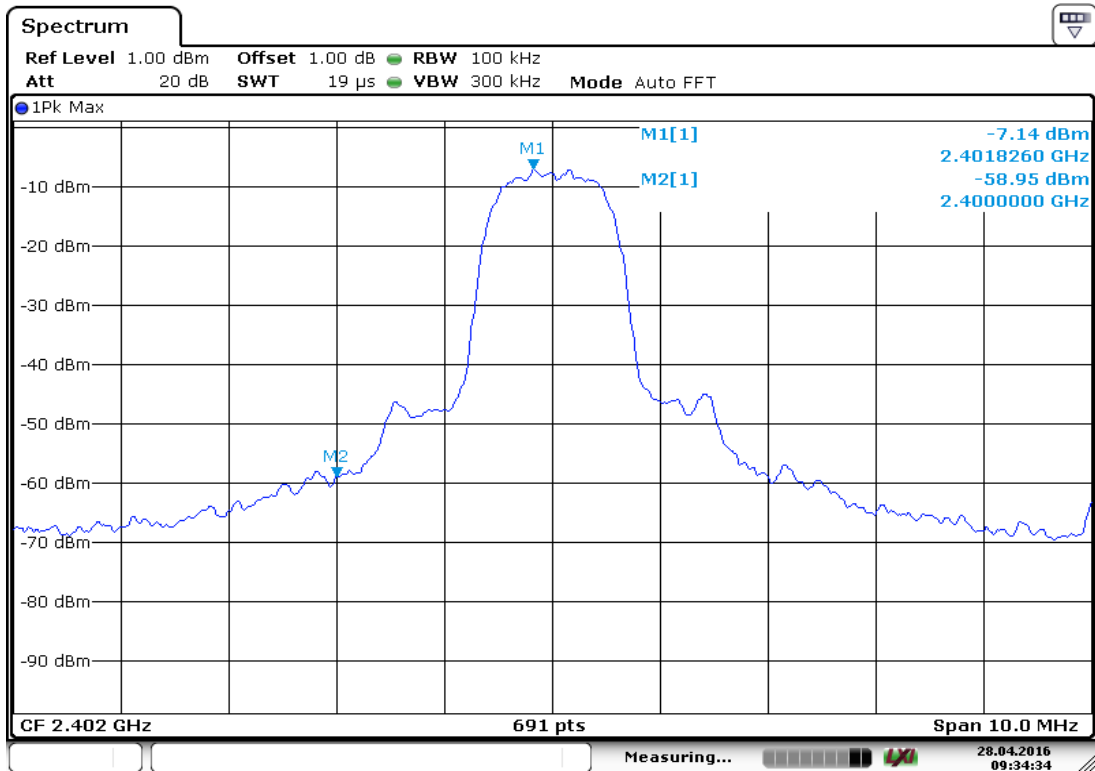


Channel 2480

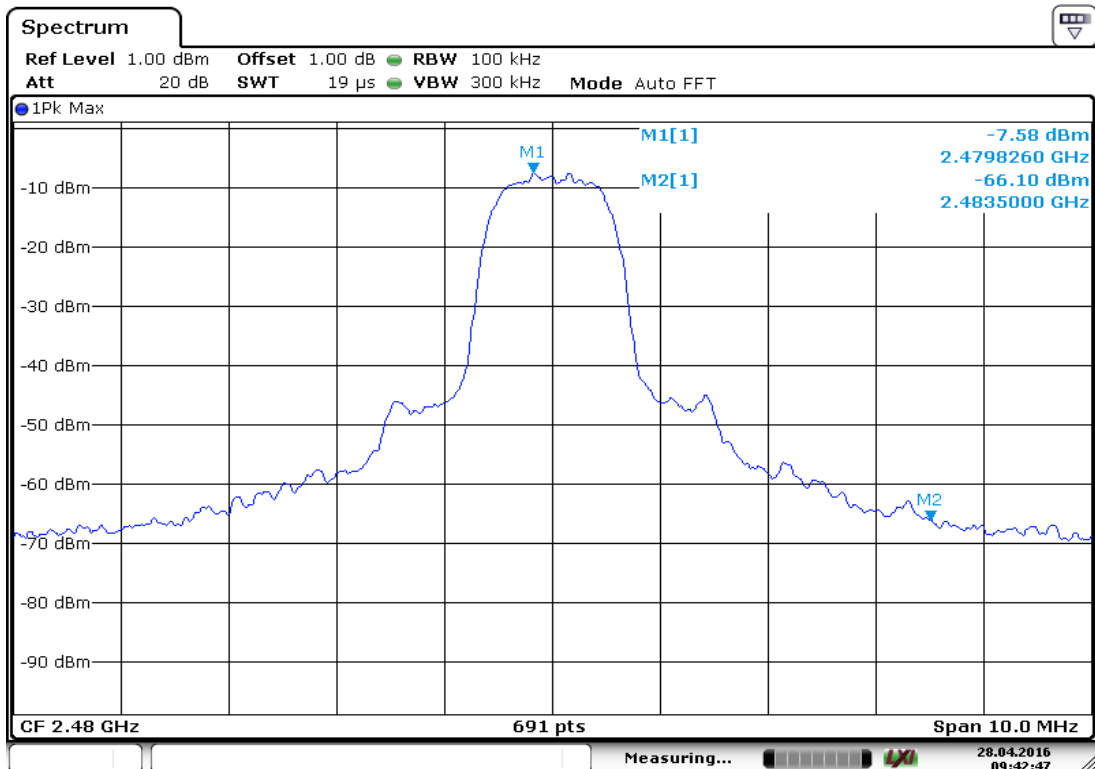


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Modulation Type: Pi/4 DQPSK



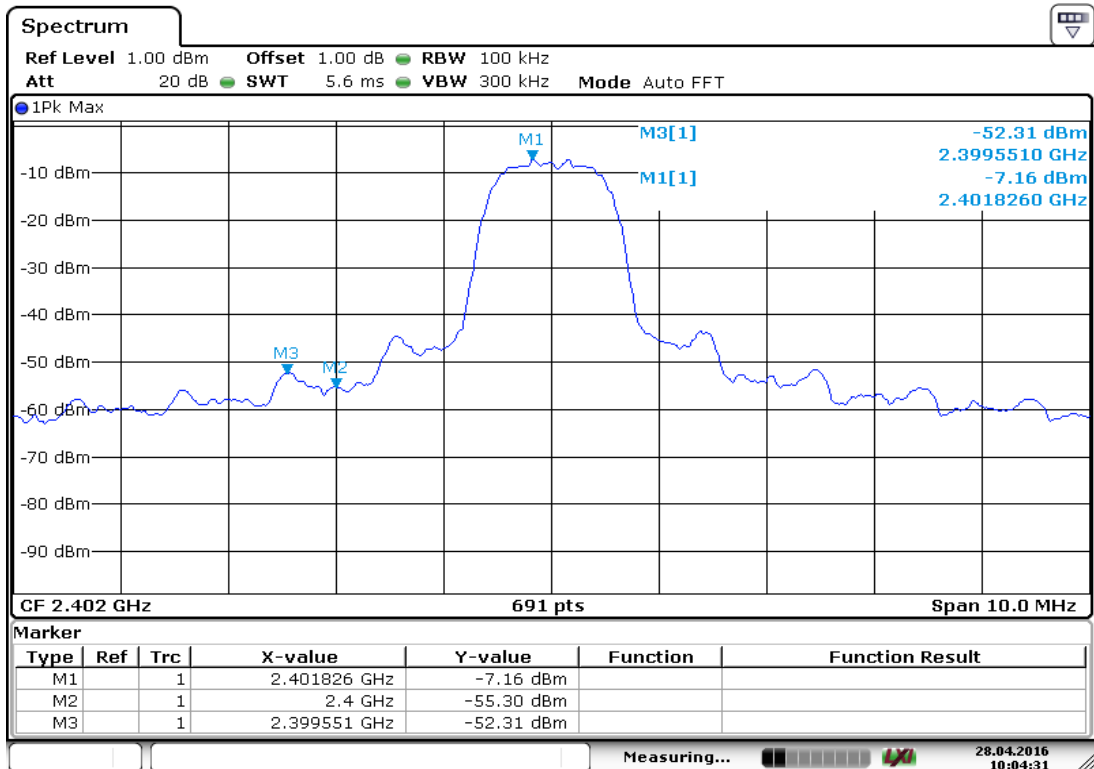
Channel 2402



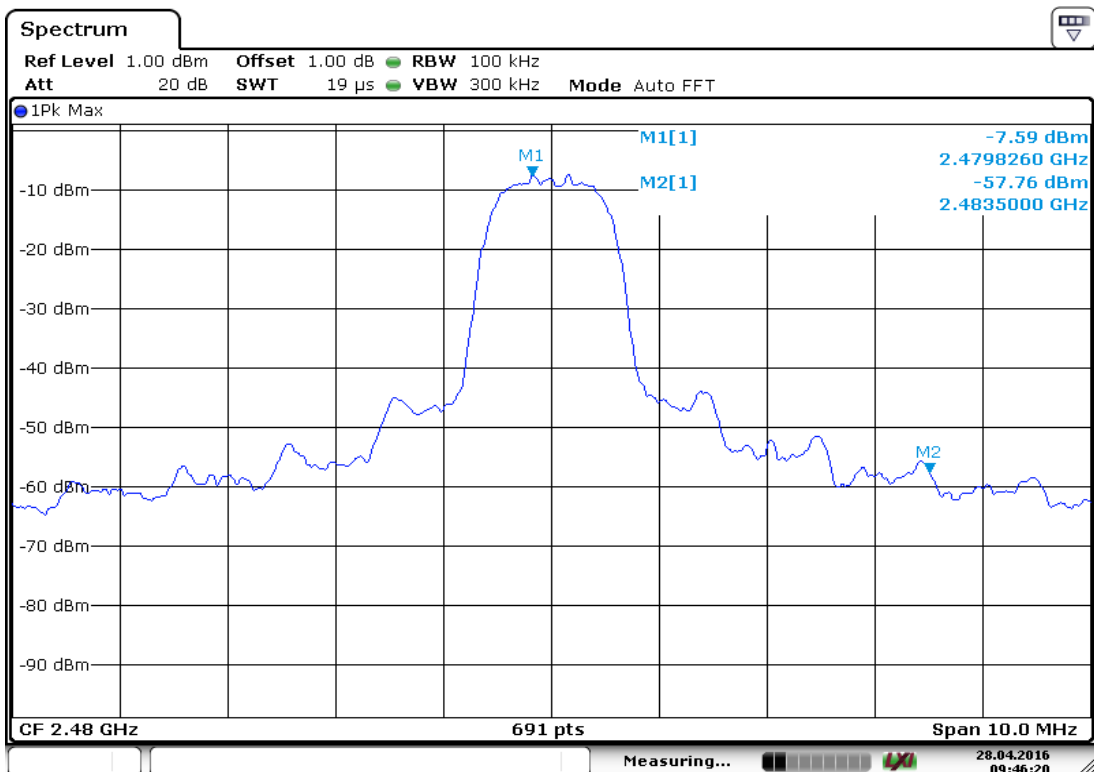
Channel 2480

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Modulation Type: 8 DQPSK



Channel 2402

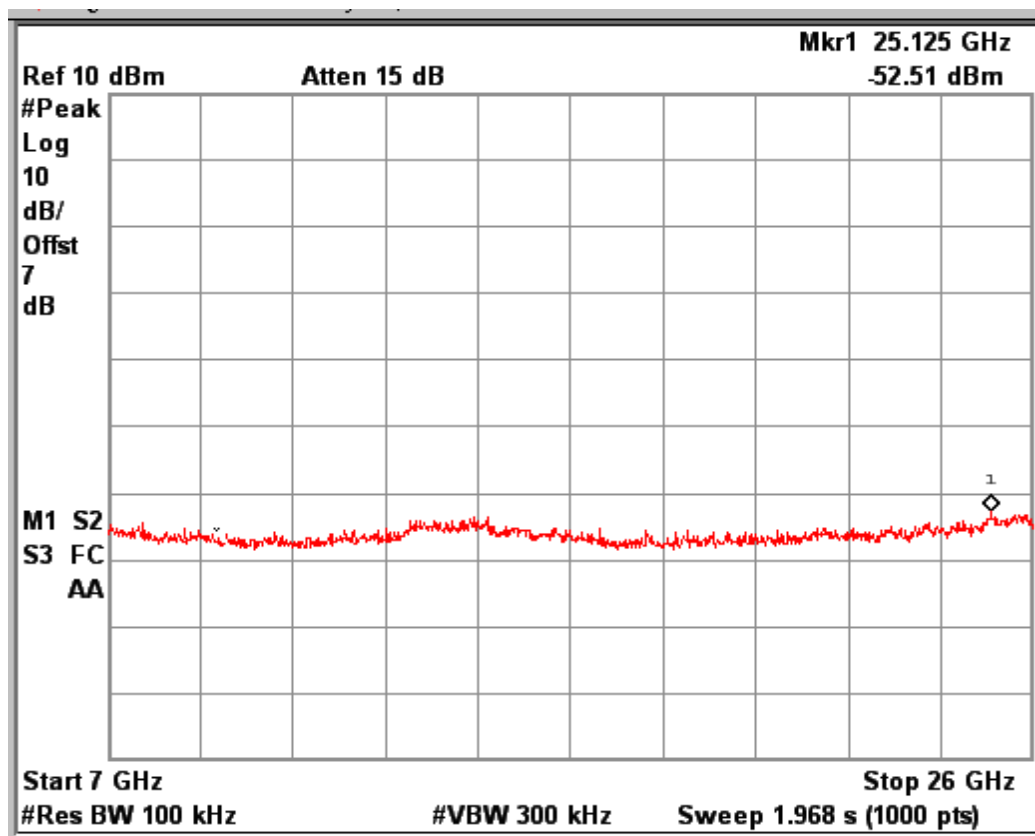
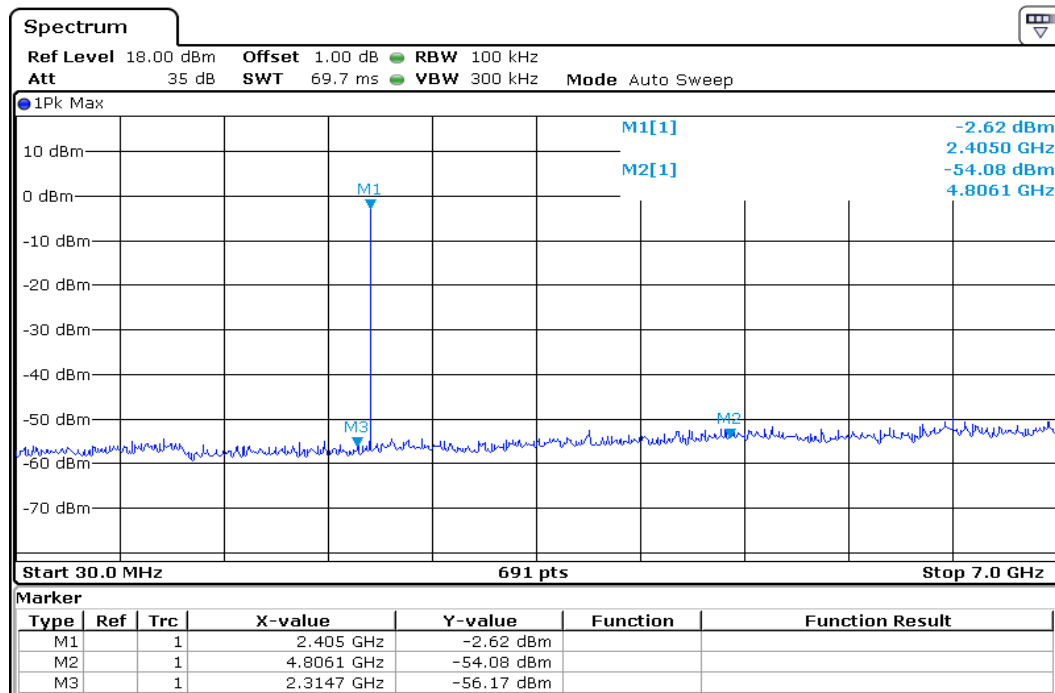


Channel 2480

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## Conducted Spurious Emissions

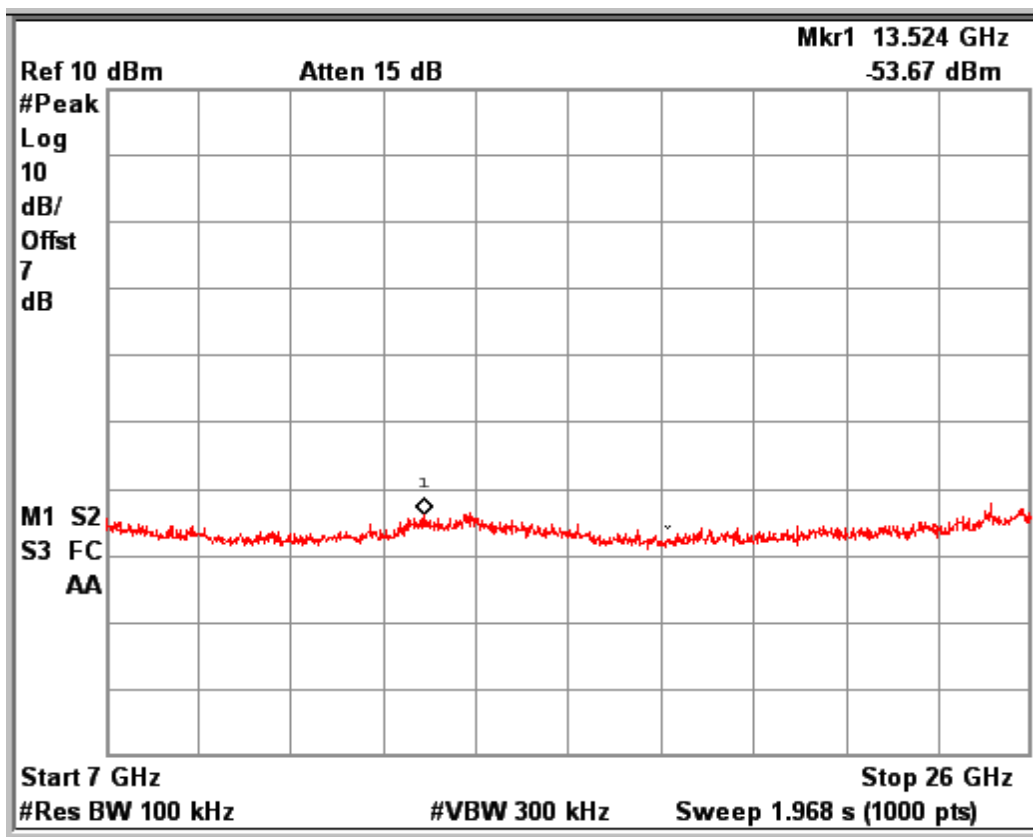
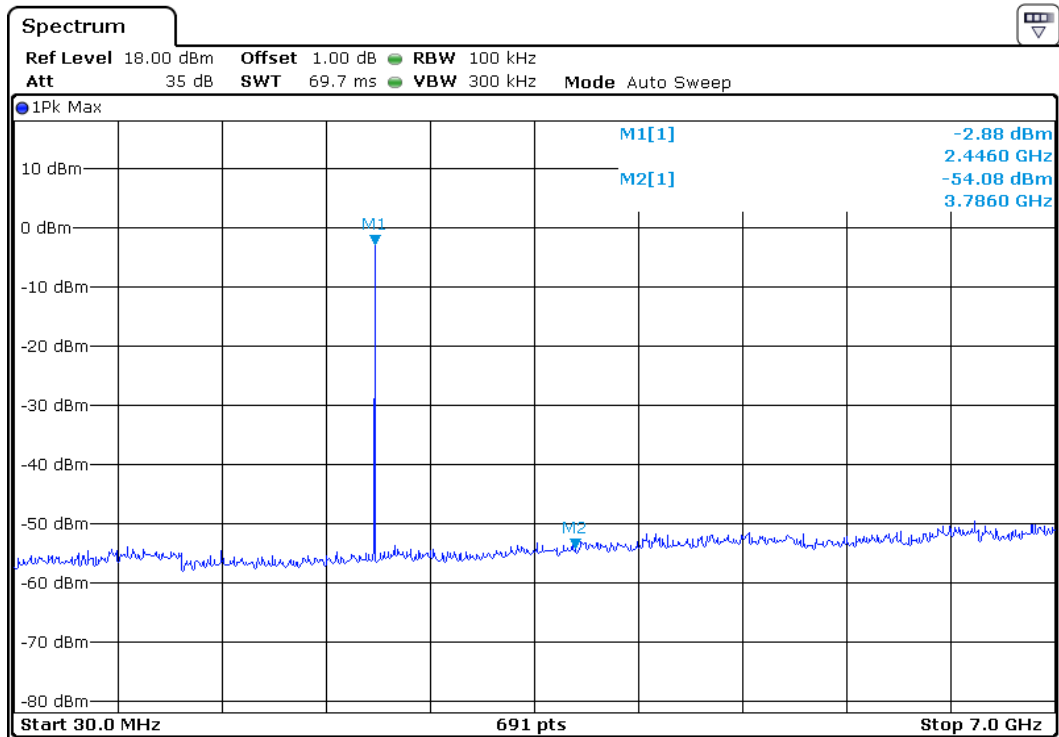
Note: Worst case data are reported



Channel: Low

Modulation: GFSK

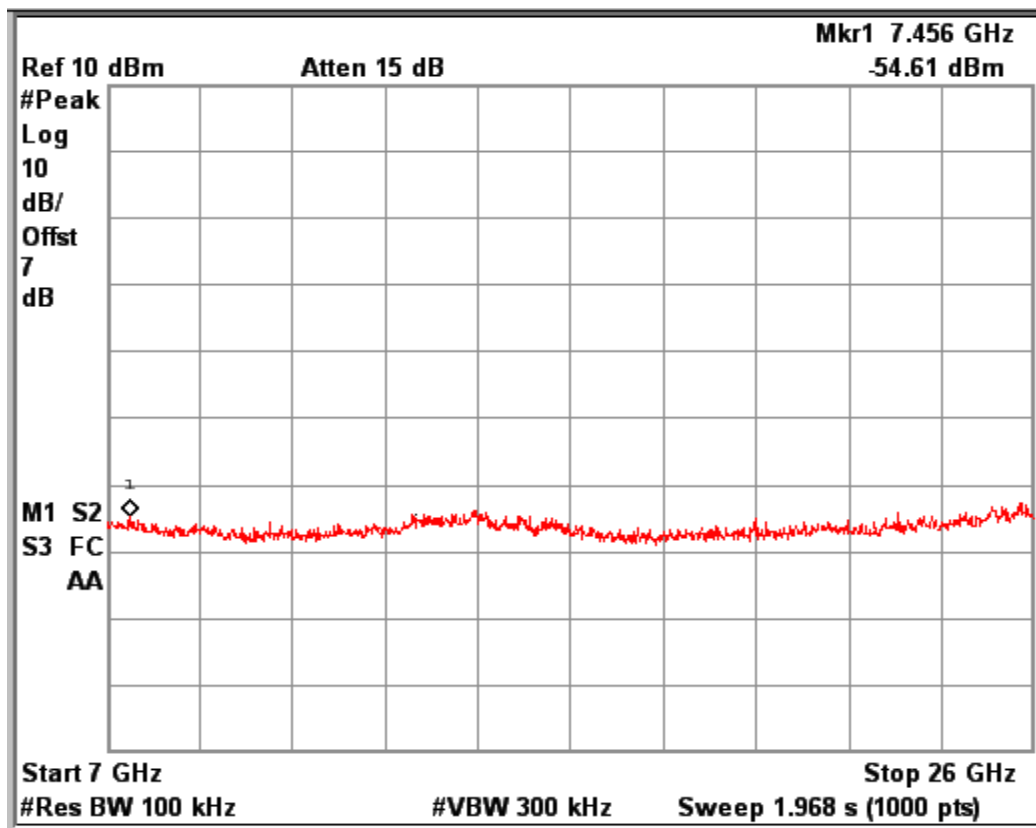
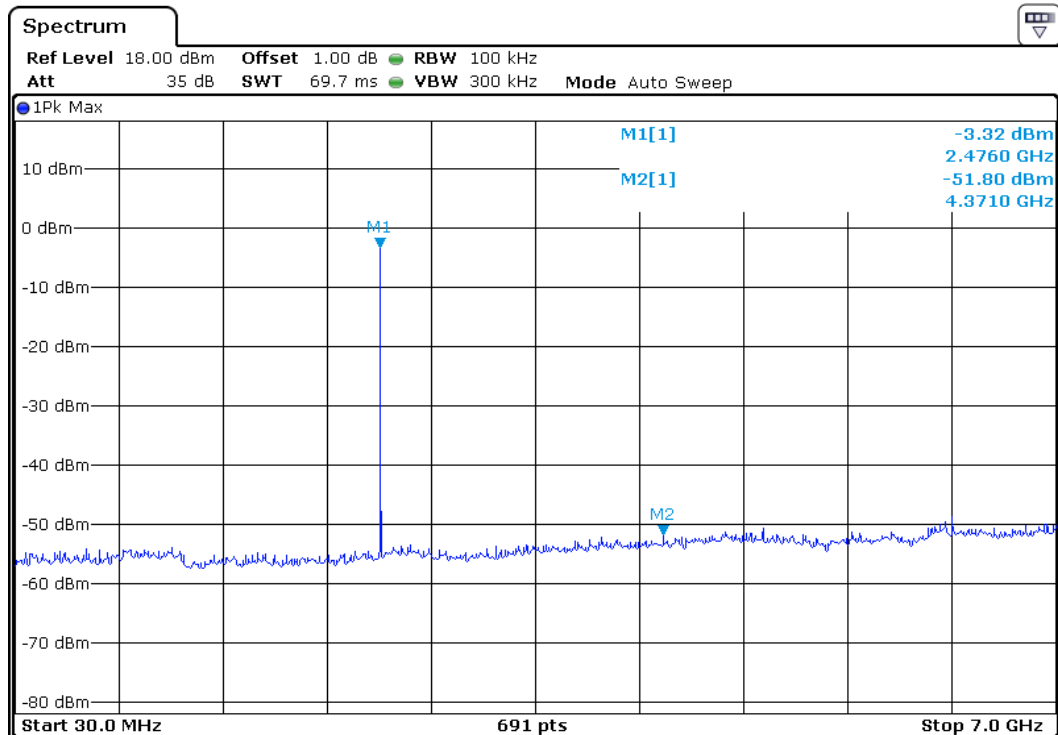
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Channel: Mid

Modulation: GFSK

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Channel: High

Modulation: GFSK

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**Radiated Spurious Emissions &  
Restricted Bands of Operation  
Result**

**Section 15.209 & 15.205  
Pass**

Test Specification	FCC Part 15 subpart C
Test Method	ANSI C63.10-2013
Measurement Location	Semi Anechoic Chamber
Measuring Frequency Range	9kHz to 40GHz (Up to 10 <sup>th</sup> harmonic of the highest fundamental frequency)
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Peak, Average for frequency above 1GHz
Requirement	As per the limits mentioned in the bellow table

**Limit for Radiated Emission of Section 15.209:**

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: \* the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88, 50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

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## Test results:

### For frequency Range 9kHz – 30MHz

No emissions found in this frequency range.

### For the Frequency range 30MHz -1GHz

#### Note:

The product has digital device (Camera interfaces, SD card,USB & GPI external Cable) which cannot control the functions of intentional radiator (Wi-Fi, BT(EDR+BDR),BLE)) in such condition Radiated spurious emission for the frequency range from 30MHz to 1GHz was performed as per FCC part 15 subpart B 15.109, Class A requirement & Product exclusively used in Vehicles. Only worst case test results are reported.

FCC Part 15 Subpart B 15.109 Class A limits

Frequency MHz	Field Strength dBuV/m	Measured Distance	Field Strength (dBuV/m)
30-88	90.00	10.00	39.08
88-216	150.00	10.00	43.52
216-960	210.00	10.00	46.43
above 960	300.00	10.00	49.54

External Battery (Vehicle Battery)

Polarization	Frequency(MHz)	Field Strength (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal	199.99	39.26	43.52	-4.26
	299.95	40.09	46.43	-6.34
	320.02	41.02	46.43	-5.41
	399.95	39.28	46.43	-7.15
	479.98	41.60	46.43	-4.83
	527.99	43.52	46.43	-2.91
	800.08	40.88	46.43	-5.55
	928.22	41.56	46.43	-4.87
Vertical	199.94	33.43	43.52	-10.09
	300.04	32.53	46.43	-13.90
	528.09	40.63	46.43	-5.80
	624.02	39.43	46.43	-7.00
	800.08	44.23	46.43	-2.20

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Internal Battery

Polarization	Frequency(MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Horizontal	199.94	39.47	43.52	-4.05
	300.04	36.3	46.43	-10.13
	379.97	39.35	46.43	-7.08
	399.95	37.99	46.43	-8.44
	528.09	43.47	46.43	-2.96
	928.22	42.91	46.43	-3.52
Vertical	479.98	37.59	46.43	-8.84
	527.99	40.63	46.43	-5.80
	800.08	42.03	46.43	-4.40

30MHz to 1GHz test performed with only Radio modules are turned on at 3m distance with FCC part 15 subparts C 15.209 limits

External Battery (Vehicle Battery)

Polarization	Frequency(MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Horizontal	296.97	44.29	46	-1.71
	371.24	44.51	46	-1.49
	631.10	40.01	46	-5.99
	779.66	44.05	46	-1.95
	853.91	42.65	46	-3.35
Vertical	371.24	40.91	46	-5.09
	556.90	40.69	46	-5.31
	928.22	42.15	46	-3.85

Internal Battery

Polarization	Frequency(MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
Horizontal	371.24	42.64	46	-3.36
	779.71	43.78	46	-2.22
	853.91	44.28	46	-1.72
	928.12	43.86	46	-2.14
Vertical	556.94	42.97	46	-3.03
	779.61	41.44	46	-4.56
	928.12	42.24	46	-3.76



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Worst case test results for the frequencies in the range 1 GHz 26.5 GHz are reported in below table.

Data Rate -> 1Mbps, External Antenna					
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390 (Pk)	50.90	74	
		2390 (Av)	28.64	54	
		2402 (Pk)	92.45	*	-
		2402 (Av)	91.93	*	-
		4804 (Pk)	50.30	74	-23.7
		4804 (Av)	40.26	54	-13.74
		7206 (Pk)	58.04	74	-15.96
		7206 (Av)	45.96	54	-8.04
	Horizontal	2390 (Pk)	41.91	74	
		2390 (Av)	28.84	54	
		2402 (Pk)	88.44	*	-
		2402 (Av)	87.91	*	-
		4804 (Pk)	50.30	74	-23.7
		4804 (Av)	39.29	54	-14.71
		7206 (Pk)	59.25	74	-14.75
		7206 (Av)	48.40	54	-5.6
2441	Vertical	2441 (Pk)	92.12	*	-
		2441 (Av)	90.37	*	-
		4882 (Pk)	49.29	74	-24.71
		4882 (Av)	39.89	54	-14.11
		7323 (Pk)	57.28	74	-16.72
		7323 (Av)	44.73	54	-9.27
	Horizontal	2441 (Pk)	87.29	*	-
		2441 (Av)	86.46	*	-
		4882 (Pk)	49.61	74	-24.39
		4882 (Av)	39.80	54	-14.2
		7323 (Pk)	59.22	74	-14.78
		7323 (Av)	47.28	54	-6.72
2480	Vertical	2480 (Pk)	93.01	*	-
		2480 (Av)	92.67	*	-
		2483.5 (Pk)	42.76	74	-31.24
		2483.5 (Av)	28.74	54	-25.26
		4960 (Pk)	50.30	74	-23.7
		4060 (Av)	40.82	54	-13.18
		7440 (Pk)	56.62	74	-17.38
		7440 (Av)	43.20	54	-10.8
	Horizontal	2480 (Pk)	87.67	*	-
		2480 (Av)	87.31	*	-
		2483.5 (Pk)	40.52	74	-33.48
		2483.5 (Av)	27.31	54	-26.69
		4960 (Pk)	48.29	74	-25.71
		4060 (Av)	38.20	54	-15.8
		7440 (Pk)	58.27	74	-15.73
		7440 (Av)	46.82	54	-7.18

Data Rate -> 3Mbps, External Antenna					
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2402	Vertical	2390 (Pk)	49.52	74	-24.48
		2390 (Av)	27.90	54	-26.1
		2402 (Pk)	89.51	*	-
		2402 (Av)	85.60	*	-
		4804 (Pk)	48.92	74	-25.08
		4804 (Av)	39.28	54	-14.72
		7206 (Pk)	57.99	74	-16.01
		7206 (Av)	44.95	54	-9.05
	Horizontal	2390 (Pk)	44.04	74	-29.96
		2390 (Av)	27.18	54	-26.82
		2402 (Pk)	85.40	*	-
		2402 (Av)	81.68	*	-
		4804 (Pk)	49.38	74	-24.62
		4804 (Av)	39.23	54	-14.77
		7206 (Pk)	58.61	74	-15.39
		7206 (Av)	45.89	54	-8.11
2441	Vertical	2441 (Pk)	90.99	*	-
		2441 (Av)	87.20	*	-
		4882 (Pk)	48.20	74	-25.8
		4882 (Av)	39.53	54	-14.47
		7323 (Pk)	56.34	74	-17.66
		7323 (Av)	43.82	54	-10.18
	Horizontal	2441 (Pk)	84.11	*	-
		2441 (Av)	80.24	*	-
		4882 (Pk)	48.34	74	-25.66
		4882 (Av)	37.84	54	-16.16
		7323 (Pk)	57.38	74	-16.62
		7323 (Av)	44.29	54	-9.71
2480	Vertical	2480 (Pk)	88.37	*	-
		2480 (Av)	82.72	*	-
		2483.5 (Pk)	40.74	74	-33.26
		2483.5 (Av)	29.26	54	-24.74
		4960 (Pk)	48.12	74	-25.88
		4060 (Av)	36.84	54	-17.16
		7440 (Pk)	59.86	74	-14.14
		7440 (Av)	47.28	54	-6.72
	Horizontal	2480 (Pk)	84.82	*	-
		2480 (Av)	80.20	*	-
		2483.5 (Pk)	43.28	74	-30.72
		2483.5 (Av)	29.56	54	-24.44
		4960 (Pk)	47.23	74	-26.77
		4060 (Av)	35.72	54	-18.28
		7440 (Pk)	59.28	74	-14.72
		7440 (Av)	46.28	54	-7.72

Data Rate -> 1Mbps, Chip Antenna					
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390 (Pk)	45.44	74	-28.56
		2390 (Av)	27.89	54	-26.11
		2402 (Pk)	87.34	*	-
		2402 (Av)	86.94	*	-
		4804 (Pk)	50.20	74	-23.8
		4804 (Av)	40.61	54	-13.39
		7206 (Pk)	58.36	74	-15.64
		7206 (Av)	47.02	54	-6.98
	Horizontal	2390 (Pk)	41.57	74	-32.43
		2390 (Av)	29.54	54	-24.46
		2402 (Pk)	90.19	*	-
		2402 (Av)	89.61	*	-
		4804 (Pk)	50.00	74	-24
		4804 (Av)	41.30	54	-12.7
		7206 (Pk)	60.48	74	-13.52
		7206 (Av)	50.48	54	-3.52
2441	Vertical	2441 (Pk)	87.86	*	-
		2441 (Av)	87.14	*	-
		4882 (Pk)	49.20	74	-24.8
		4882 (Av)	37.32	54	-16.68
		7323 (Pk)	59.61	74	-14.39
		7323 (Av)	47.54	54	-6.46
	Horizontal	2441 (Pk)	89.33	*	-
		2441 (Av)	88.92	*	-
		4882 (Pk)	49.32	74	-24.68
		4882 (Av)	39.92	54	-14.08
		7323 (Pk)	61.49	74	-12.51
		7323 (Av)	51.00	54	-3
2480	Vertical	2480 (Pk)	88.38	*	-
		2480 (Av)	87.99	*	-
		2483.5 (Pk)	42.53	74	-31.47
		2483.5 (Av)	27.54	54	-26.46
		4960 (Pk)	47.28	74	-26.72
		4060 (Av)	32.75	54	-21.25
		7440 (Pk)	60.94	74	-13.06
		7440 (Av)	49.62	54	-4.38
	Horizontal	2480 (Pk)	89.76	*	-
		2480 (Av)	89.29	*	-
		2483.5 (Pk)	41.00	74	-33
		2483.5 (Av)	27.82	54	-26.18
		4960 (Pk)	48.93	74	-25.07
		4060 (Av)	39.72	54	-14.28
		7440 (Pk)	62.22	74	-13.52
		7440 (Av)	51.68	54	-3.52

Data Rate -> 3Mbps, Chip Antenna					
Channel Frequency (MHz)	Polarization	Frequency (MHz)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	Vertical	2390 (Pk)	45.79	74	
		2390 (Av)	27.52	54	
		2402 (Pk)	84.42	*	-
		2402 (Av)	80.71	*	-
		4804 (Pk)	47.92	74	-26.08
		4804 (Av)	38.27	54	-15.73
		7206 (Pk)	57.11	74	-16.89
		7206 (Av)	44.22	54	-9.78
	Horizontal	2390 (Pk)	44.28	74	
		2390 (Av)	27.27	54	
		2402 (Pk)	87.29	*	-
		2402 (Av)	83.22	*	-
		4804 (Pk)	47.01	74	-26.99
		4804 (Av)	38.54	54	-15.46
		7206 (Pk)	56.05	74	-17.95
		7206 (Av)	43.82	54	-10.18
2441	Vertical	2441 (Pk)	83.28	*	-
		2441 (Av)	79.49	*	-
		4882 (Pk)	48.12	74	-25.88
		4882 (Av)	36.93	54	-17.07
		7323 (Pk)	56.28	74	-17.72
		7323 (Av)	43.64	54	-10.36
	Horizontal	2441 (Pk)	90.28	*	-
		2441 (Av)	88.95	*	-
		4882 (Pk)	47.26	74	-26.74
		4882 (Av)	36.75	54	-17.25
2480	Vertical	7323 (Pk)	55.92	74	-18.08
		7323 (Av)	42.40	54	-11.6
		2480 (Pk)	85.11	*	-
		2480 (Av)	81.33	*	-
		2483.5 (Pk)	44.45	74	-29.55
		2483.5 (Av)	28.09	54	-25.91
		4960 (Pk)	46.83	74	-27.17
		4060 (Av)	34.20	54	-19.8
	Horizontal	7440 (Pk)	59.55	74	-14.45
		7440 (Av)	47.60	54	-6.4
		2480 (Pk)	86.80	*	-
		2480 (Av)	83.07	*	-
		2483.5 (Pk)	41.34	74	-32.66
		2483.5 (Av)	28.29	54	-25.71
	Horizontal	4960 (Pk)	47.04	74	-26.96
		4060 (Av)	35.23	54	-18.77
	Horizontal	7440 (Pk)	60.54	74	-13.46
		7440 (Av)	48.44	54	-5.56

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\* \* -> Fundamental Frequency

Pk - > Peak Detector

Av->Average Detector

**\*\*\*END OF TEST REPORT\*\*\***