

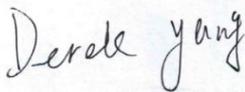
# FCC TEST REPORT

**Application No.:** AR/2020/B0003  
**Applicant:** Xiaomi Communications Co., Ltd.  
**Address of Applicant** #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085  
**Manufacturer:** Xiaomi Communications Co., Ltd.  
**Address of Manufacturer** #019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085  
**EUT Description:** Mobile Phone  
**Model No.:** M2101K9AG  
**Trade Mark:** XIAOMI  
**FCC ID:** 2AFZZK9AG  
**Standards:** 47 CFR FCC Part 2, Subpart J  
 47 CFR Part 15, Subpart C  
**Date of Receipt:** 2020/11/26  
**Date of Test:** 2020/11/26 to 2020/12/15  
**Date of Issue:** 2021/4/22

<b>Test Result :</b>	<b>PASS *</b>
----------------------	---------------

\* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:



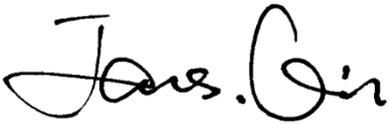
Derek Yang  
 Wireless Laboratory Manager



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# 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2020-12-15		Original
02		2021-4-22	James Qin	1.Add test site Information 2.Modify data conversion error of antenna height 3.Update equipment list

Authorized for issue by:	
Prepared By	 <hr/> <b>(James Qin) / Engineer</b>
Checked By	 <hr/> <b>(David Chen) / Reviewer</b>



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## 2 Test Summary

Test Item	Test Requirement	Test Method	Test Result	Result	Test Lab*
AC Power Line Conducted Emission	15.207	ANSI C63.10 2013	Clause 4.2	PASS	B
Conducted Output Power	15.247 (b)(3)	ANSI C63.10 2013	Clause 4.3	PASS	A
DTS (6 dB) Bandwidth & 99% Occupied Bandwidth	15.247 (a)(2)	ANSI C63.10 2013	Clause 4.4	PASS	A
Power Spectral Density	15.247 (e)	ANSI C63.10 2013	Clause 4.5	PASS	A
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10 2013	Clause 4.6	PASS	A
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10 2013	Clause 4.7	PASS	A
Radiated Spurious Emissions	15.205/15.209	ANSI C63.10 2013	Clause 4.8	PASS	B
Restricted bands around fundamental frequency (Radiated Emission)	15.205/15.209	ANSI C63.10 2013	Clause 4.9	PASS	B

**Remark:**

All test were performed by Lab A and B.

Parts of test items above were subcontracted to Lab B.

Lab A : SGS-CSTC Standards Technical Services Co., Ltd.Shenzhen Branch

Lab B: SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD



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### 3 General Information

#### 3.1 Details of Client

Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

#### 3.2 Test Location

##### Lab A:

Company:	SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch
Address:	No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
Post code:	518057
Test engineer:	Dee Zheng, Mike Hu

##### Lab B:

Company:	SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD.
Address:	1/F, Unit D, Building 1, Kanghong Orange Technology Park, No.137, Keyuan 3rd Road, Fengdong New City, Xi'an, Shaanxi China
Post code:	710086
Test engineer:	Ben Huang, Leah Chen



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### 3.3 Test Facility

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

**Lab A:**

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

**Lab B:**

**A2LA (Certificate No. 4854.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (XI 'AN) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4854.01.

Designation Number: CN1271.



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### 3.4 General Description of EUT

EUT Description:	Mobile Phone
Model No.:	M2101K9AG
Trade Mark:	XIAOMI
Hardware Version:	P2
Software Version:	MIUI 12
Operation Frequency:	2400MHz~2483.5MHz $f_c = 2402 \text{ MHz} + N * 2 \text{ MHz}$ , where: - $f_c$ = "Operating Frequency" in MHz, - $N$ = "Channel Number" with the range from 0 to 39.
Bluetooth version:	Bluetooth V5.1 LE
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	IFA
Antenna Gain:	1.1dBi
Power Supply	<input checked="" type="checkbox"/> AC/DC Adapter; <input type="checkbox"/> Battery <input type="checkbox"/> PoE;; <input type="checkbox"/> Other:

**Operation Frequency of each channel**

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	10	2422MHz	20	2442MHz	30	2462MHz
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	2480MHz



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**Remark:**

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel(CH0)	2402MHz
The Middle channel(CH19)	2440MHz
The Highest channel(CH39)	2480MHz

### 3.5 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	50 % RH
Atmospheric Pressure:	101.30 KPa

### 3.6 Description of Support Units

The EUT has been tested independent unit.



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## 4 Test results and Measurement Data

### 4.1 Antenna Requirement

<b>Standard requirement:</b>	47 CFR Part 15C Section 15.203 /247(c)
<p>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 may 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.</p> <p>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.</p>	
<p>The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.1dBi.</p>	



## 4.2 AC Power Line Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test Procedure:	<ol style="list-style-type: none"> <li>1) The mains terminal disturbance voltage test was conducted in a shielded room.</li> <li>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 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.</li> <li>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.</li> <li>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 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.</li> <li>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.</li> </ol>		



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<p>Test Setup:</p>	
<p>Test Mode:</p>	<p>Transmitting with GFSK modulation. Charge +Transmitting mode.</p>
<p>Instruments Used:</p>	<p>Refer to section 6 for details.</p>
<p>Test Results:</p>	<p>Pass</p>

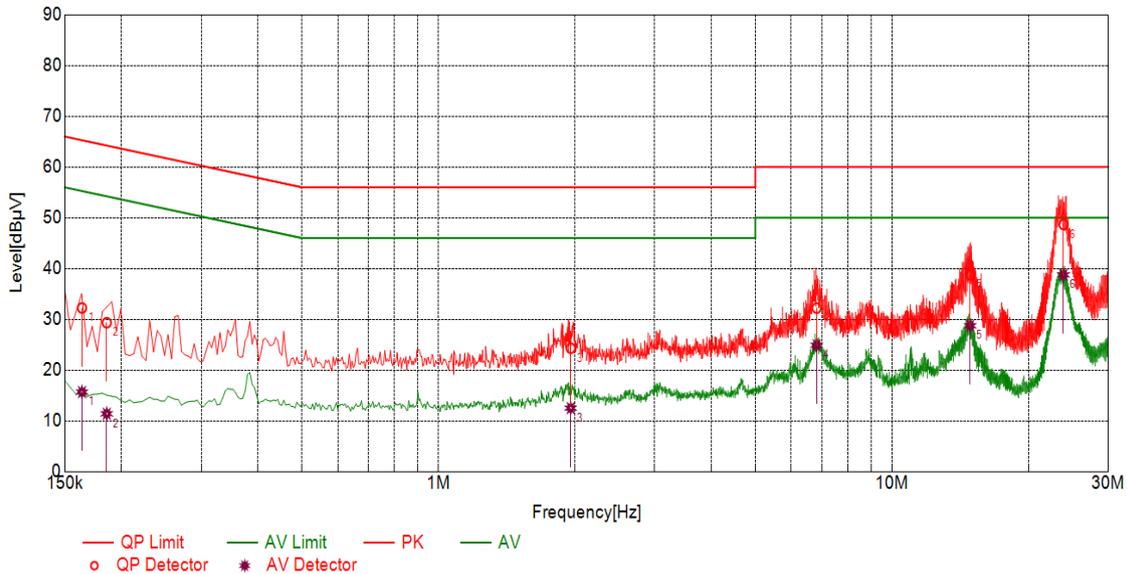


### Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

### Live Line:

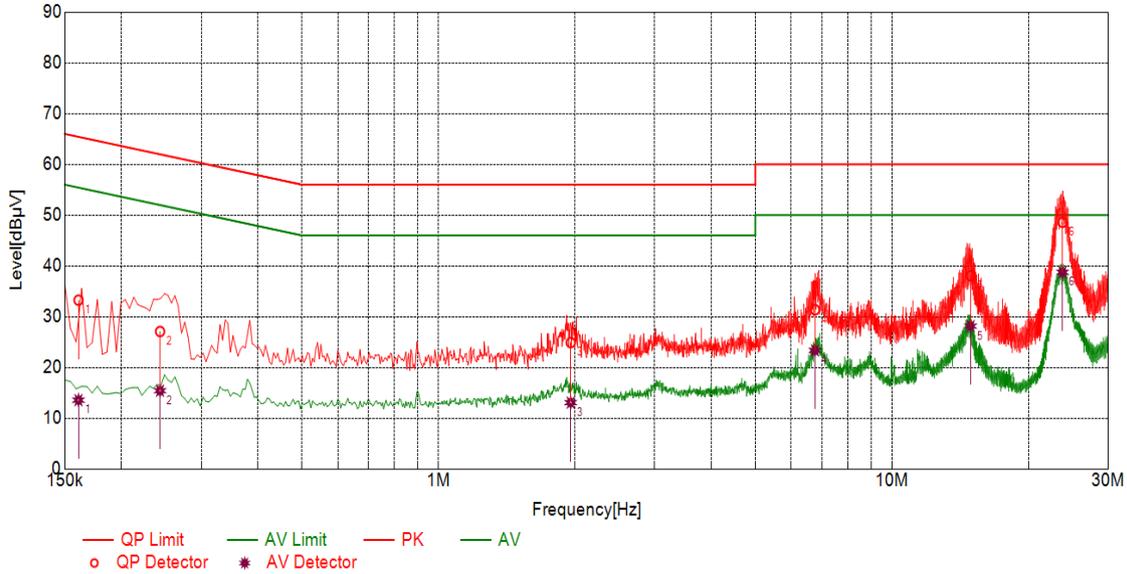


### Test Graph

Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1638	10.10	32.22	65.27	33.05	15.66	55.27	39.61	L
2	0.1857	10.10	29.33	64.22	34.89	11.39	54.22	42.83	L
3	1.9575	10.10	24.29	56.00	31.71	12.50	46.00	33.50	L
4	6.8226	10.10	32.20	60.00	27.80	24.88	50.00	25.12	L
5	14.8788	10.11	38.76	60.00	21.24	28.73	50.00	21.27	L
6	23.8970	10.11	48.68	60.00	11.32	38.76	50.00	11.24	L



Neutral Line:



Test Graph

Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1609	10.10	33.24	65.42	32.18	13.54	55.42	41.88	N
2	0.2434	10.10	27.08	61.98	34.90	15.40	51.98	36.58	N
3	1.9575	10.10	24.88	56.00	31.12	13.06	46.00	32.94	N
4	6.7670	10.10	31.36	60.00	28.64	23.34	50.00	26.66	N
5	14.9100	10.11	38.07	60.00	21.93	28.14	50.00	21.86	N
6	23.7795	10.11	48.59	60.00	11.41	38.73	50.00	11.27	N

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.



### 4.3 Duty Cycle

#### 4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
BLE_1M	CH0, CH19, CH39	62.50
BLE_2M	CH0, CH19, CH39	32.50

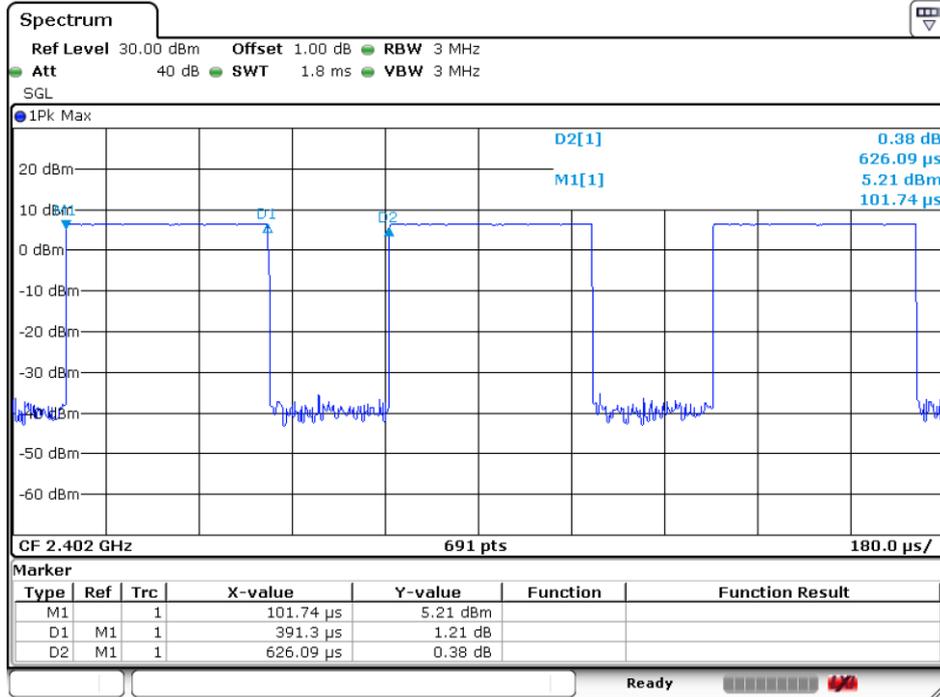


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### 4.3.2 Test Plots

#### 4.3.2.1 ANT1

##### 4.3.2.1.1 BLE\_1M

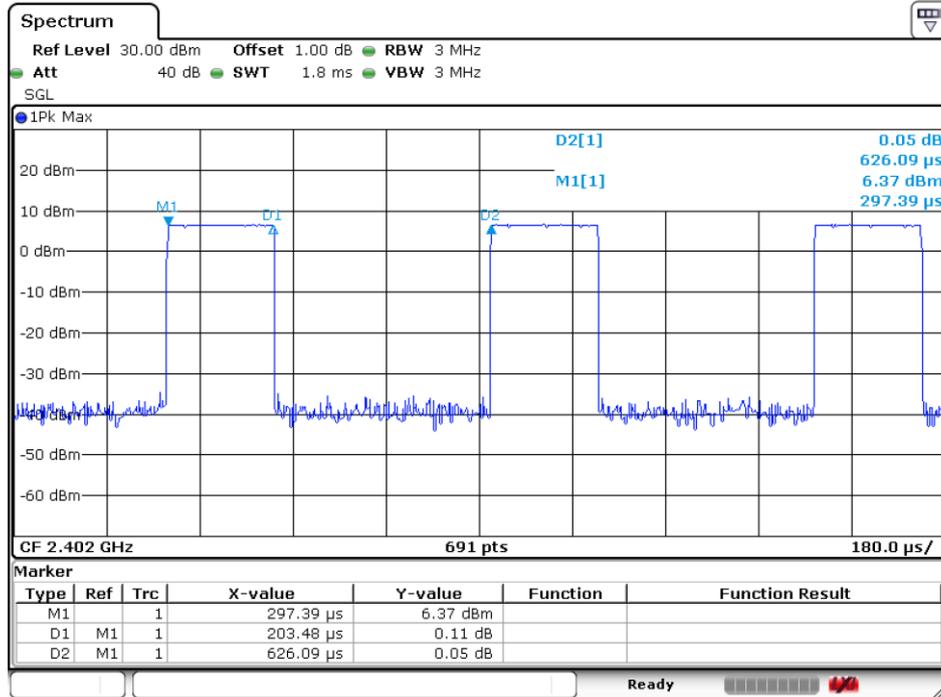


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### 4.3.2.1.2 BLE 2M



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### 4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)
Test Method:	ANSI C63.10 :2013 Section 11.9.1.1
Test Setup:	
Test Instruments:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	30dBm
Test Results:	Pass

#### 4.4.1 Test Results

**Measurement Data of Peak Power:**

GFSK_1M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	6.51	30.00	Pass
Middle	6.52	30.00	Pass
Highest	8.02	30.00	Pass

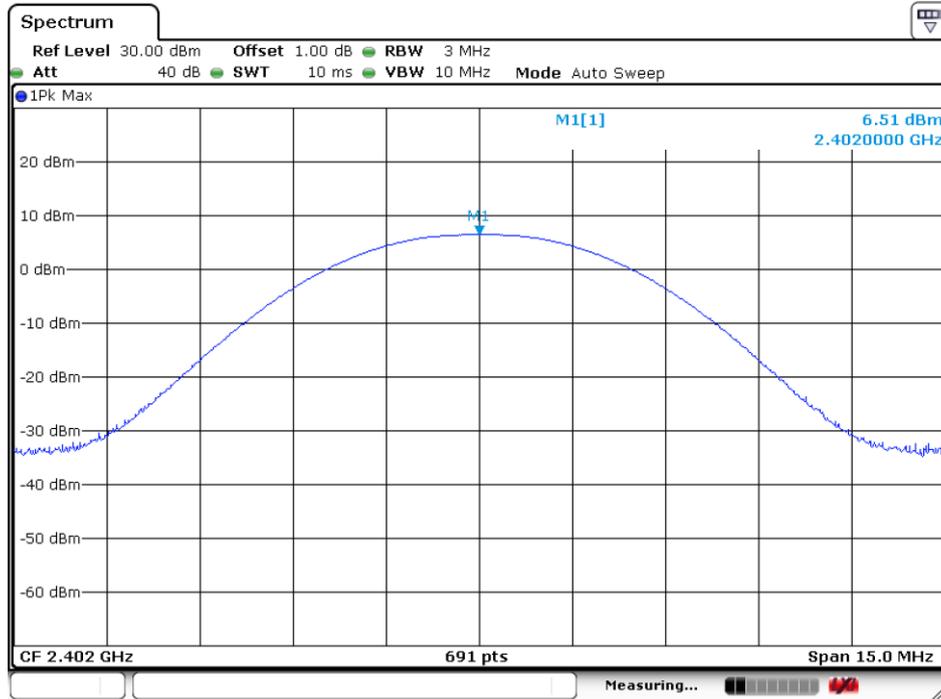
GFSK_2M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	6.62	30.00	Pass
Middle	6.64	30.00	Pass
Highest	8.18	30.00	Pass



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## 4.4.2 Test Plots

### 4.4.2.1 GFSK 1M\_Lowest Channel

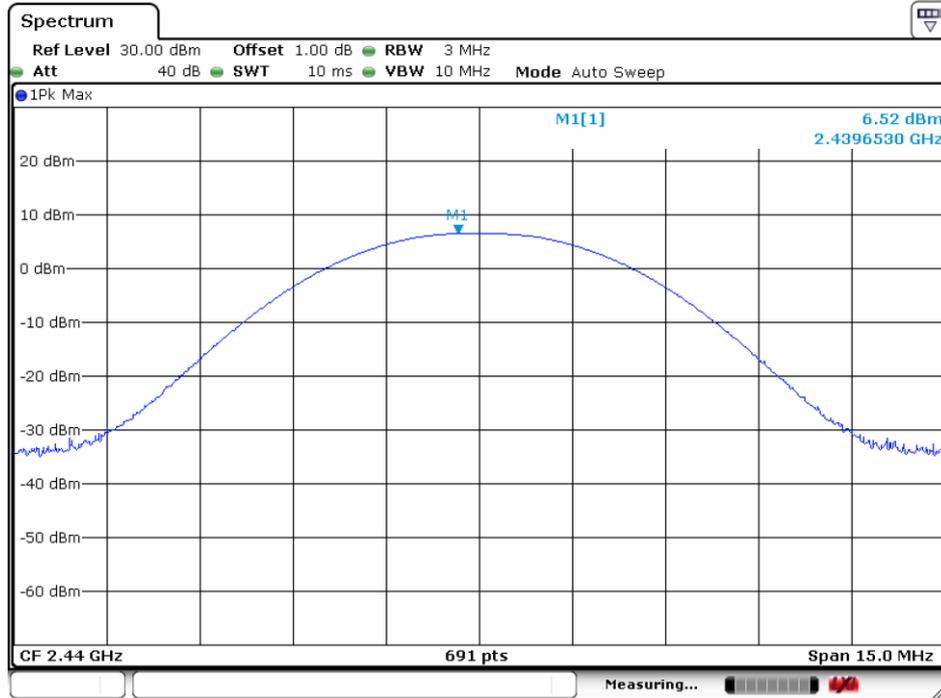


Date: 4.DEC.2020 15:51:01



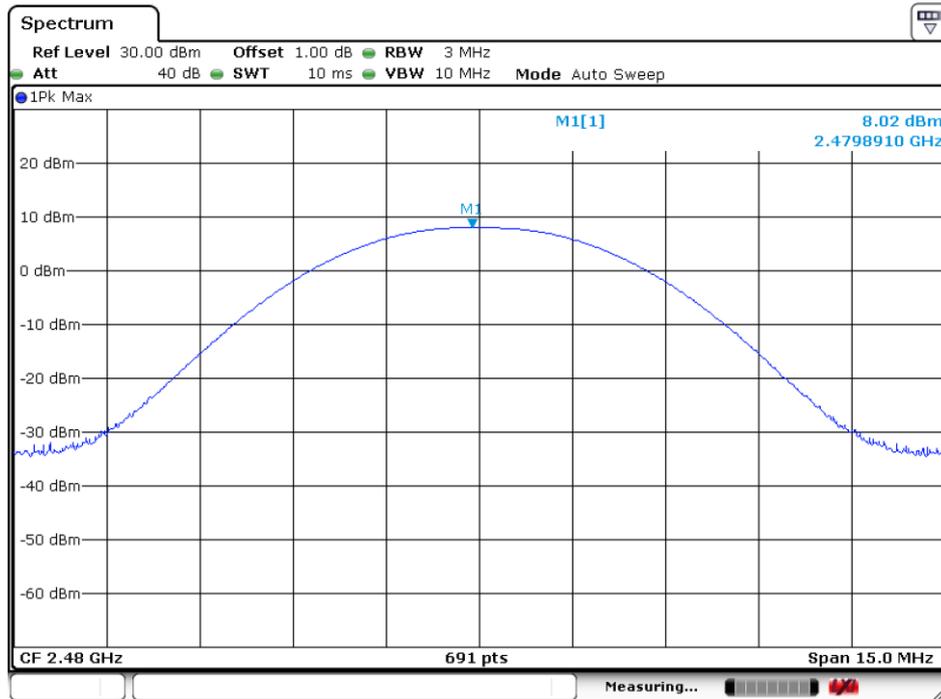
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### 4.4.2.2 GFSK 1M\_Middle Channel



Date: 4.DEC.2020 15:51:13

### 4.4.2.3 GFSK 1M\_Highest Channel

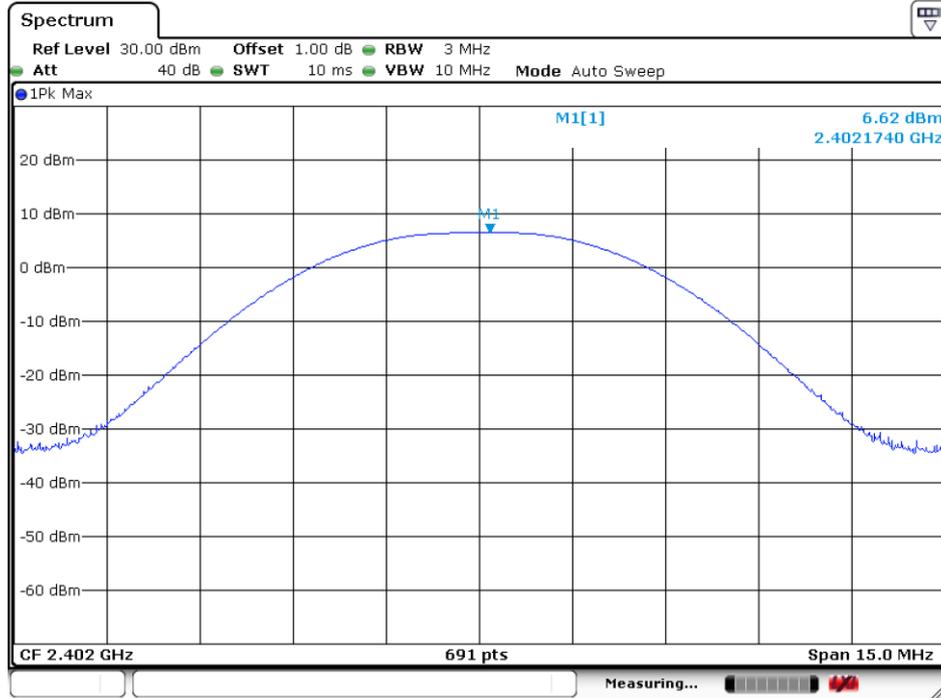


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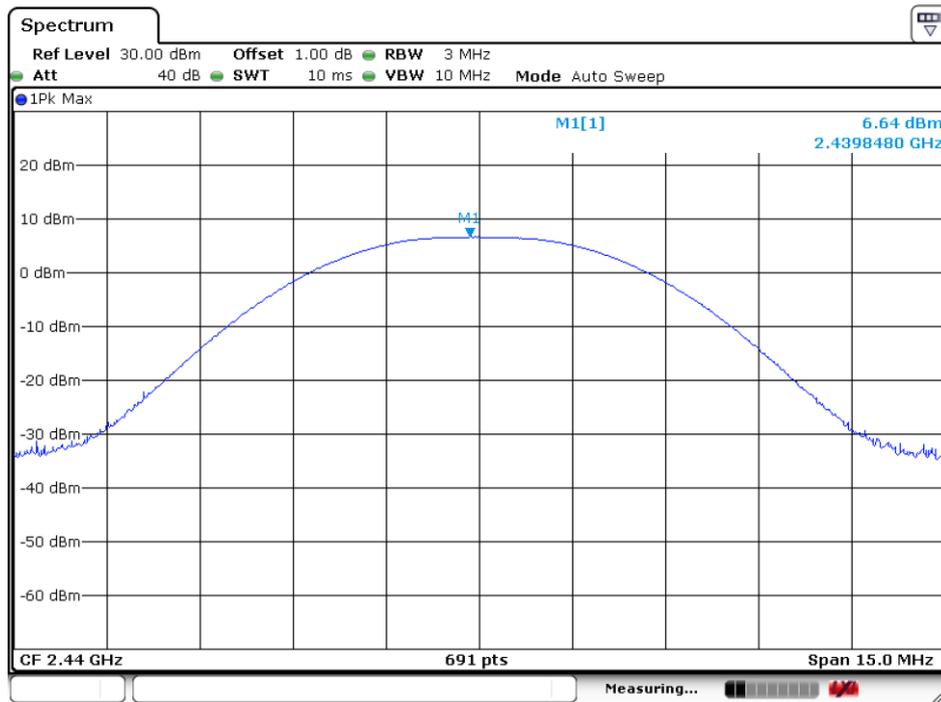
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### 4.4.2.4 GFSK 2M\_Lowest Channel



Date: 4.DEC.2020 15:50:33

### 4.4.2.5 GFSK 2M\_Middle Channel

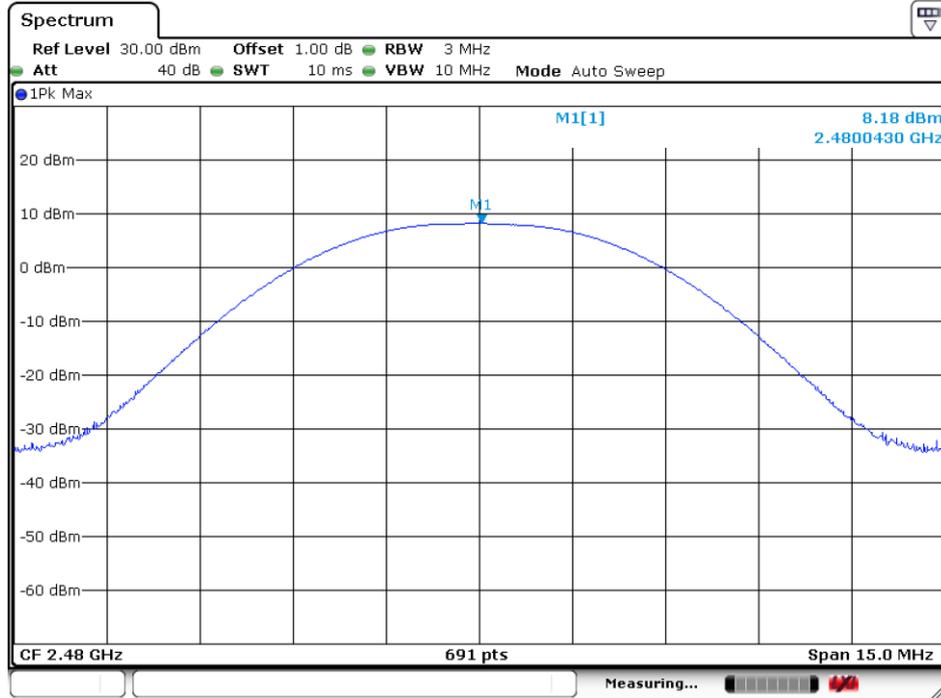


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**4.4.2.6 GFSK 2M\_Highest Channel**



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### 4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013 Section 11.8 Option 2
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	≥ 500 kHz
Test Results:	Pass

#### 4.5.1 Test Results

Mode	Test Channel	99% Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
GFSK_1M	Lowest	1.03	0.69	≥500	Pass
	Middle	1.02	0.68	≥500	Pass
	Highest	1.03	0.68	≥500	Pass

Mode	Test Channel	99% Occupied Bandwidth (MHz)	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
GFSK_2M	Lowest	2.07	1.17	≥500	Pass
	Middle	2.06	1.17	≥500	Pass
	Highest	2.06	1.17	≥500	Pass

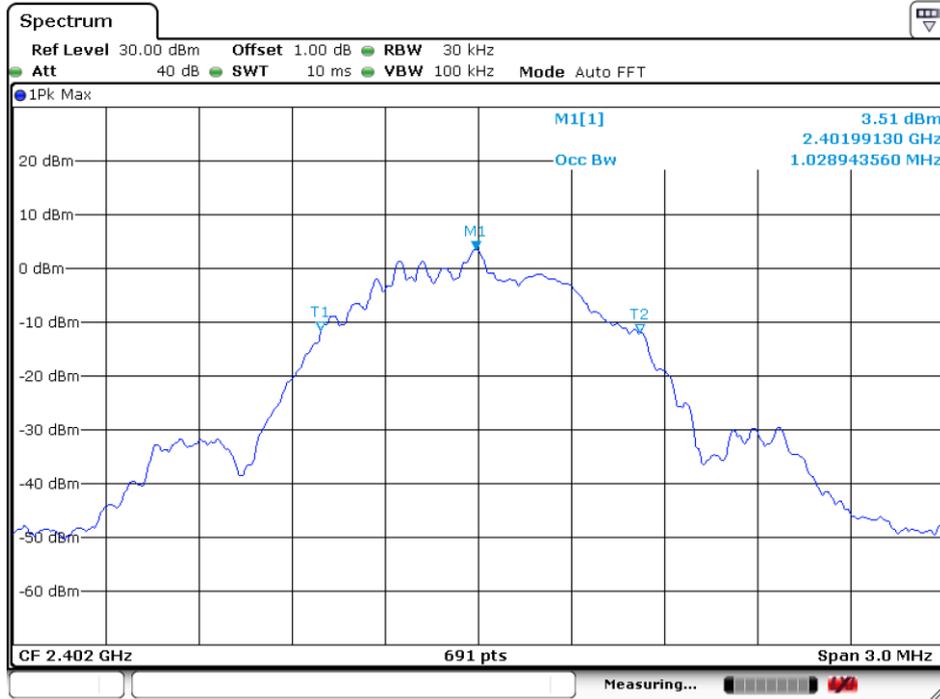


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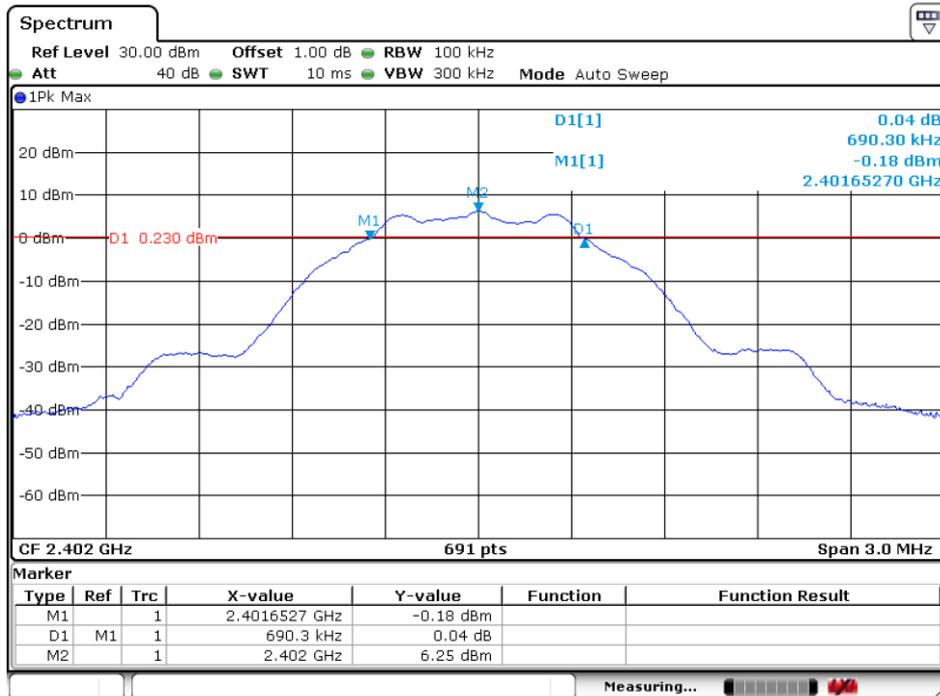
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### 4.5.2 Test Plots

#### 4.5.2.1 GFSK 1M\_Lowest Channel



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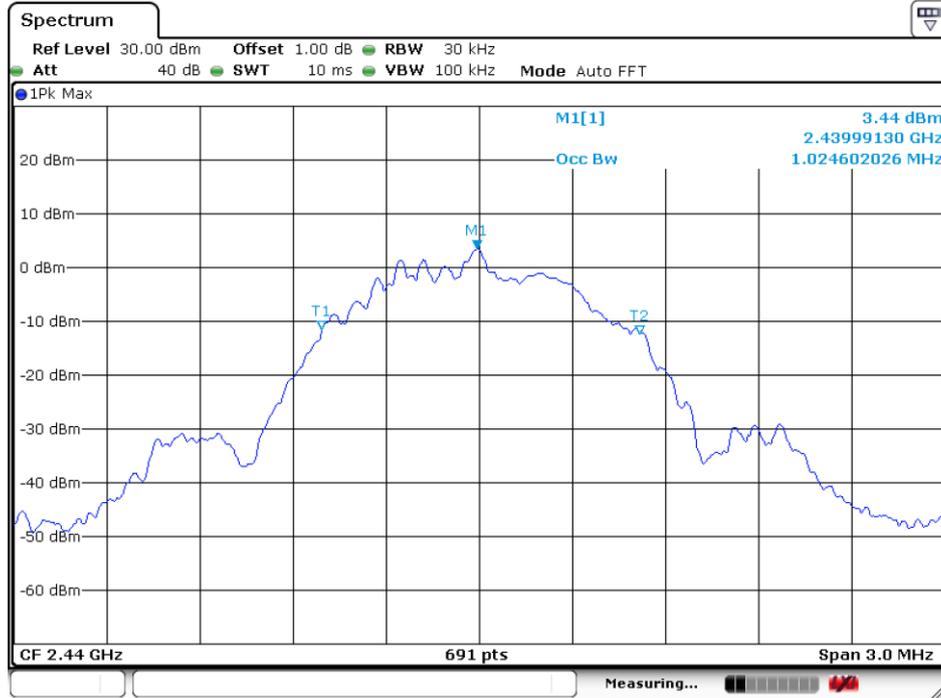


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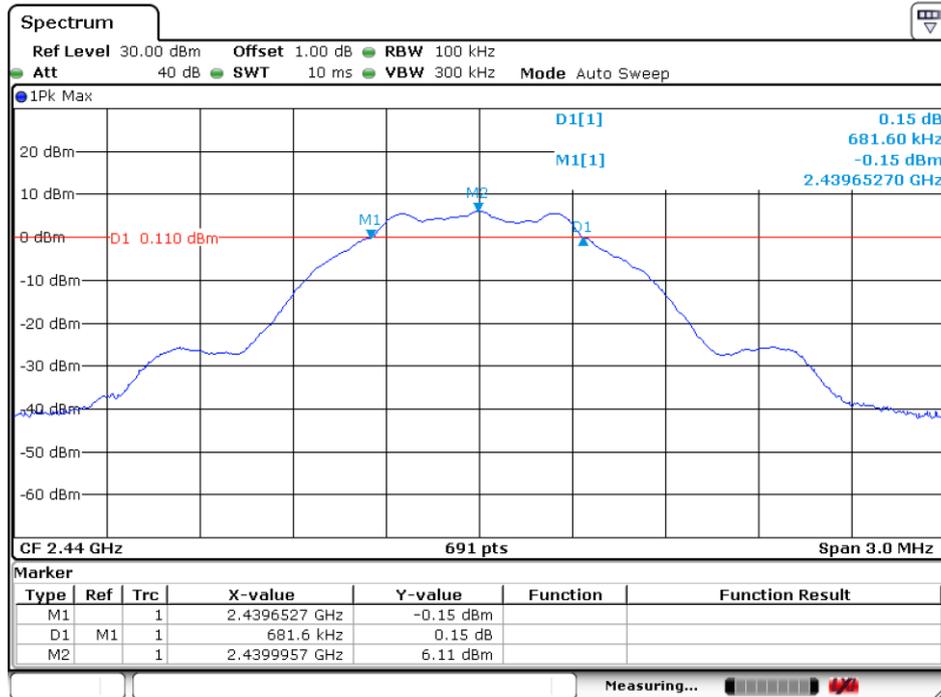


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### 4.5.2.2 GFSK 1M\_Middle Channel



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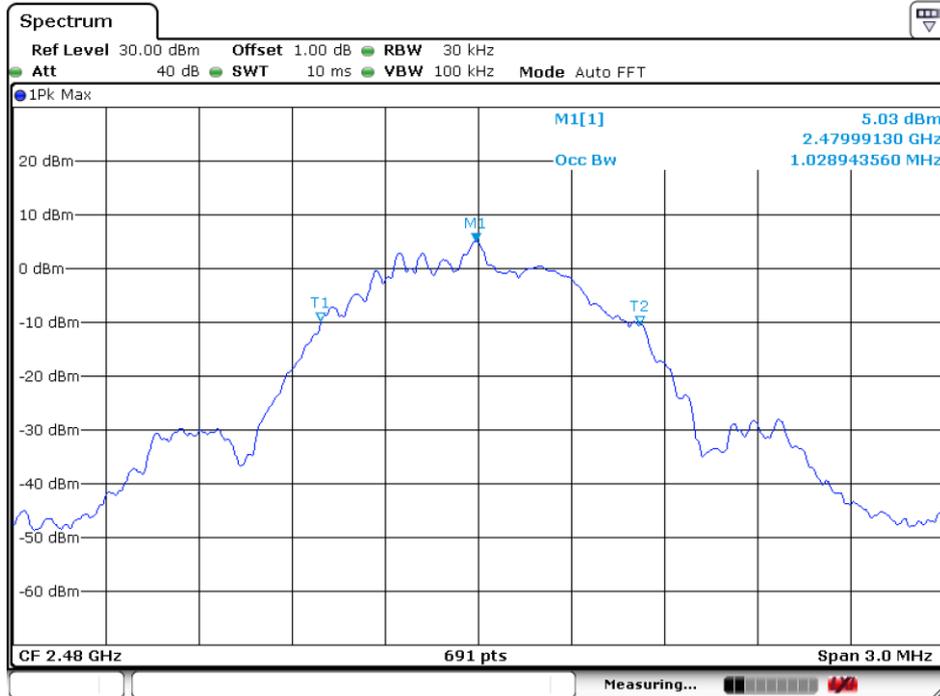
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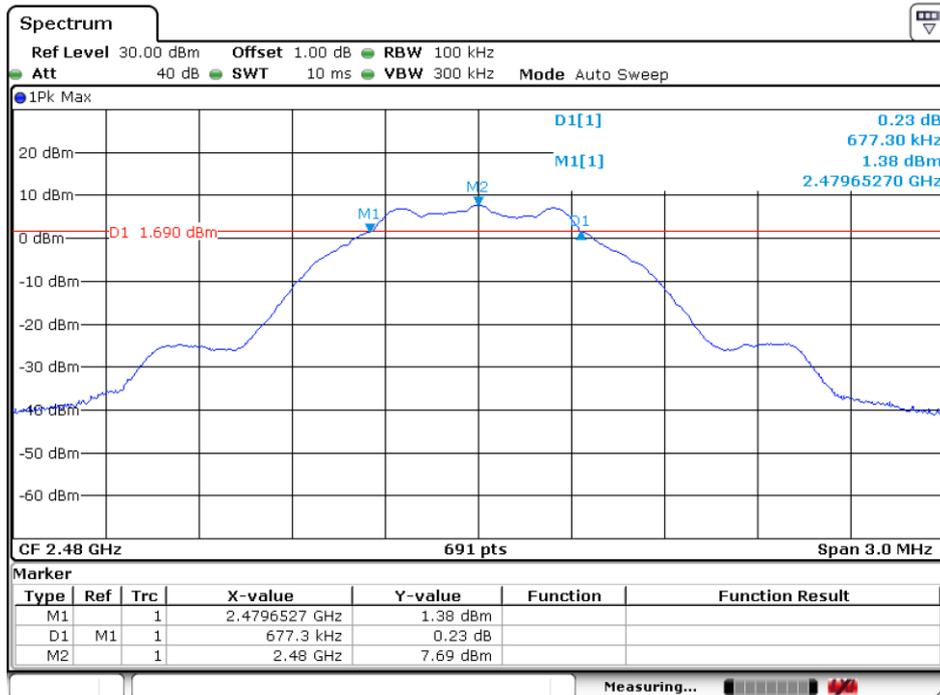
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### 4.5.2.3 GFSK 1M\_Highest Channel



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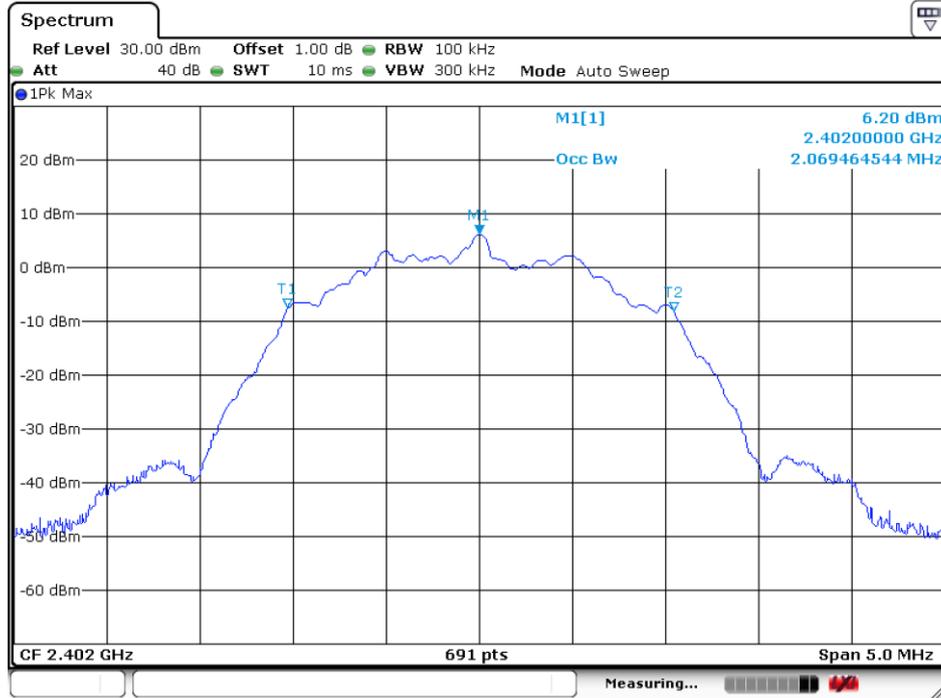


Date: 4.DEC.2020 15:58:50

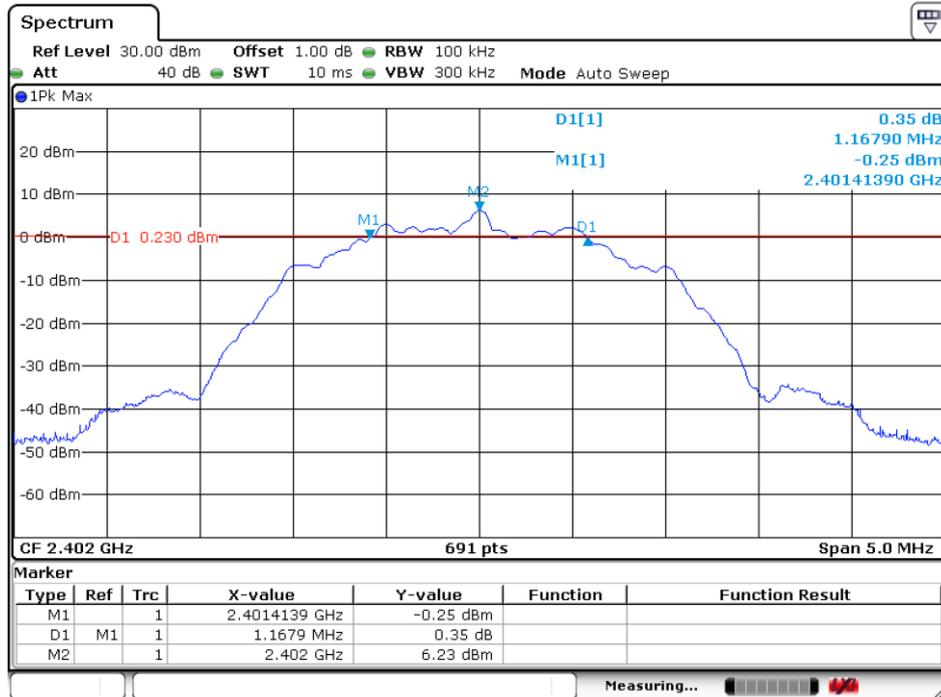


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### 4.5.2.4 GFSK 2M\_Lowest Channel



Date: 4.DEC.2020 15:57:08

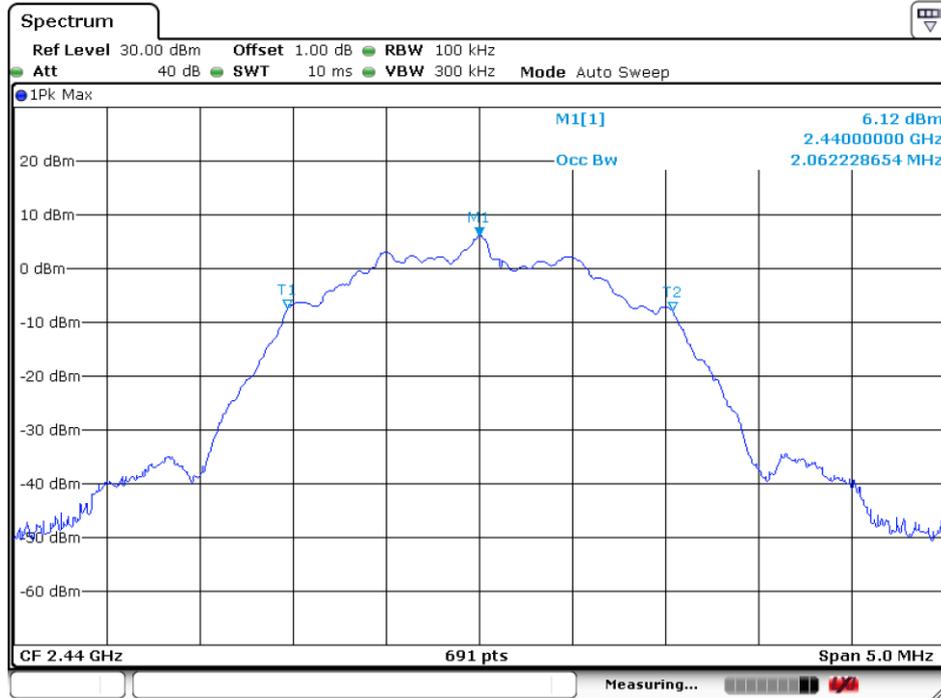


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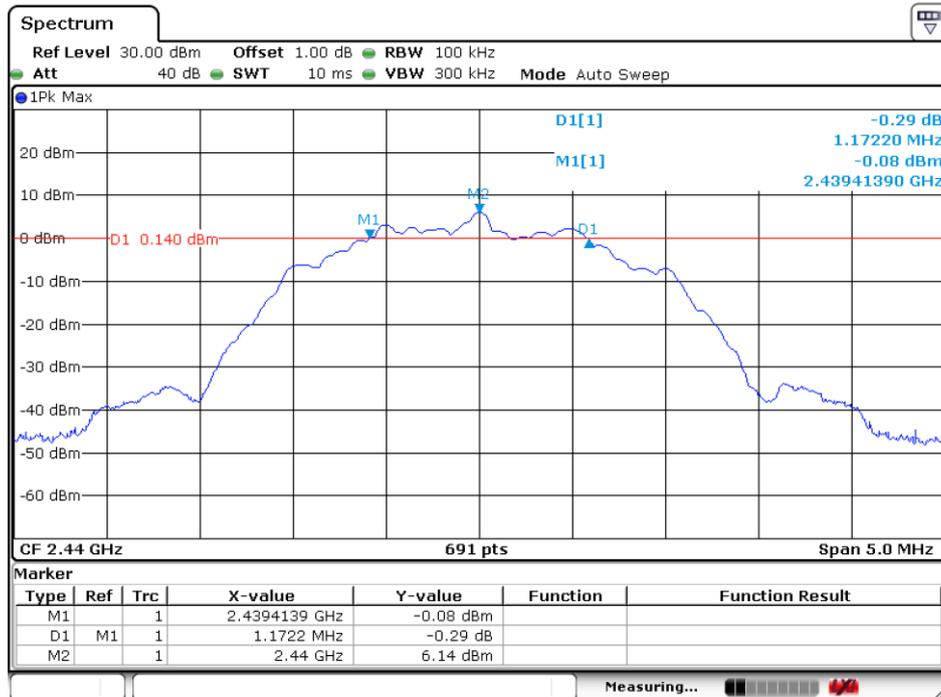


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### 4.5.2.5 GFSK 2M\_Middle Channel



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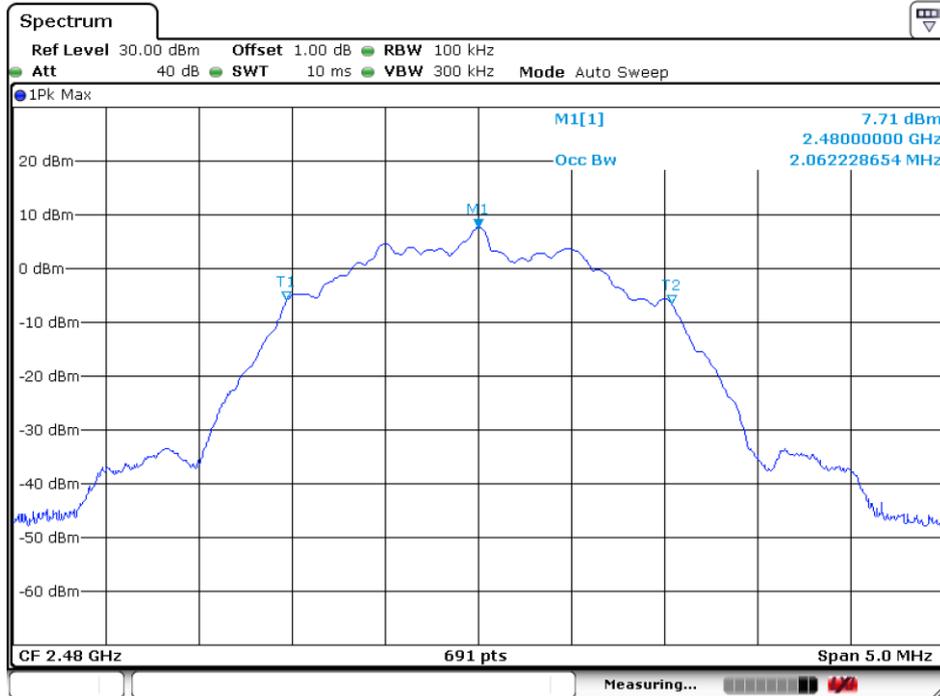


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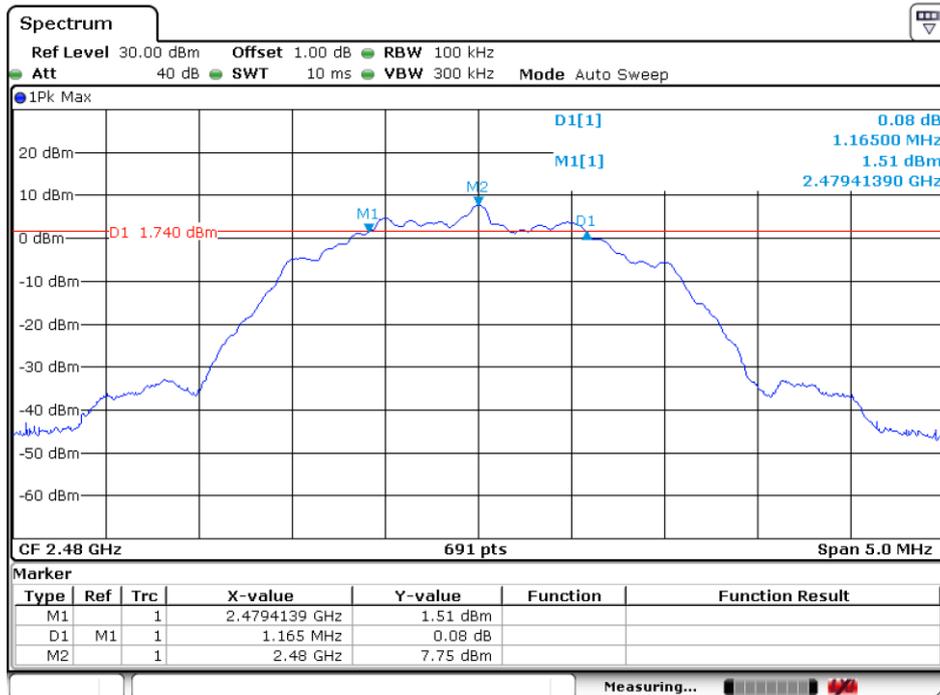


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### 4.5.2.6 GFSK 2M\_Highest Channel



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### 4.6 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 :2013 Section 11.10.2
Test Setup:	
Test Instruments:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	≤8.00dBm/3kHz
Test Results:	Pass

#### 4.6.1 Test Results

Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (kHz)	Result
GFSK_1M	Lowest	-8.46	≤8.00	Pass
	Middle	-8.41	≤8.00	Pass
	Highest	-6.86	≤8.00	Pass

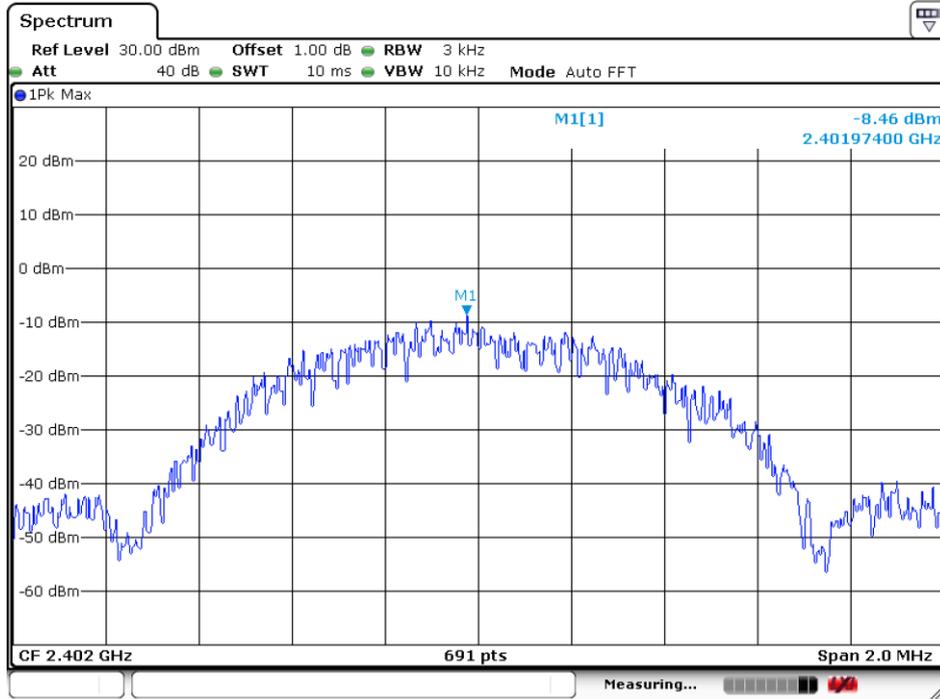
Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (kHz)	Result
GFSK_2M	Lowest	-12.12	≤8.00	Pass
	Middle	-12.04	≤8.00	Pass
	Highest	-10.50	≤8.00	Pass



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## 4.6.2 Test Plots

### 4.6.2.1 GFSK 1M\_Lowest Channel



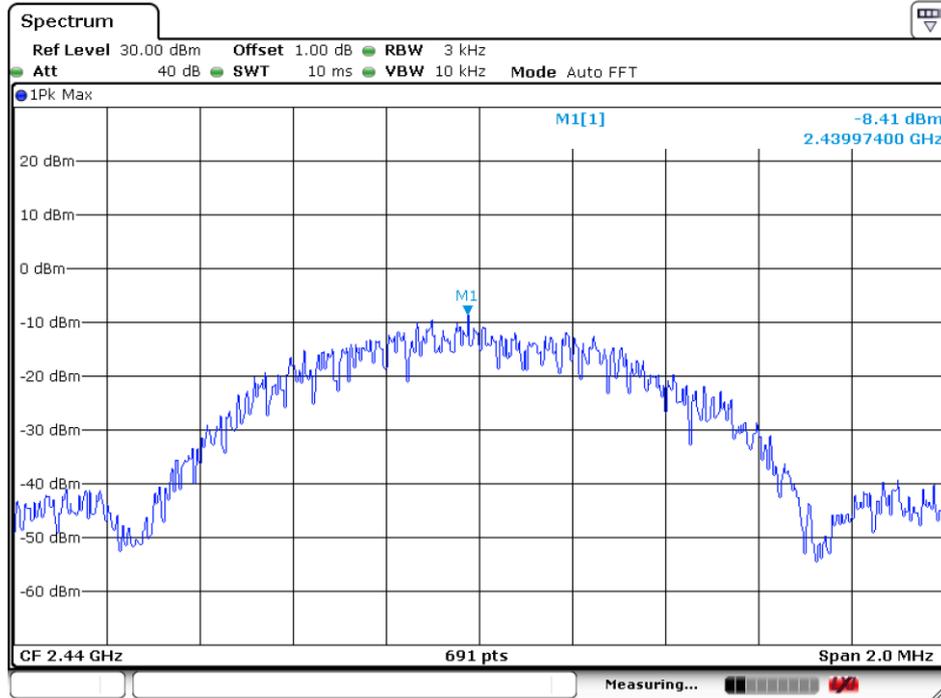
Date: 4.DEC.2020 15:55:08



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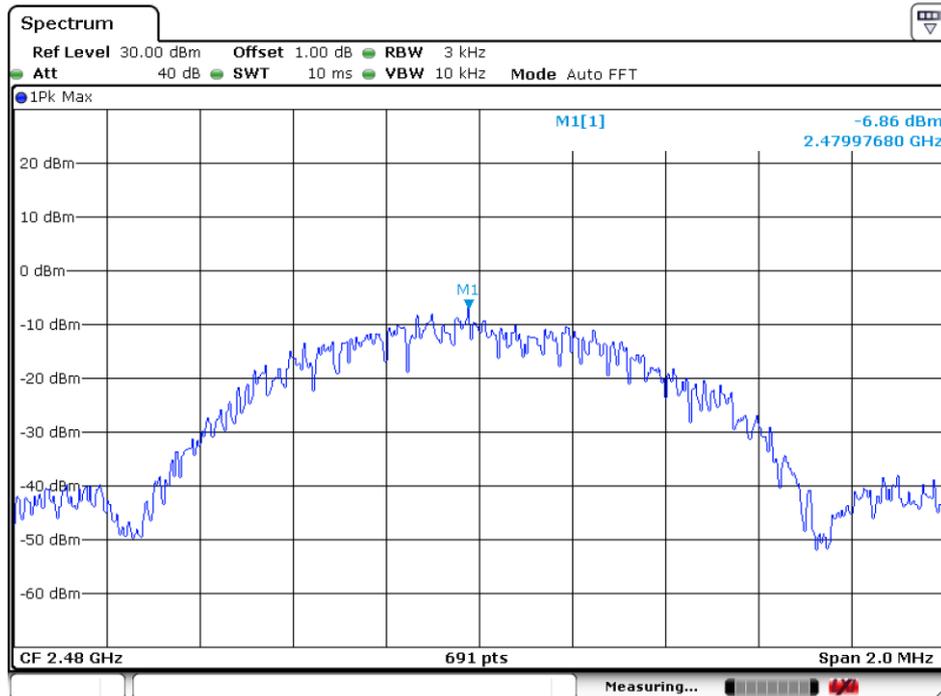
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### 4.6.2.2 GFSK 1M\_Middle Channel



Date: 4.DEC.2020 15:54:49

### 4.6.2.3 GFSK 1M\_Highest Channel

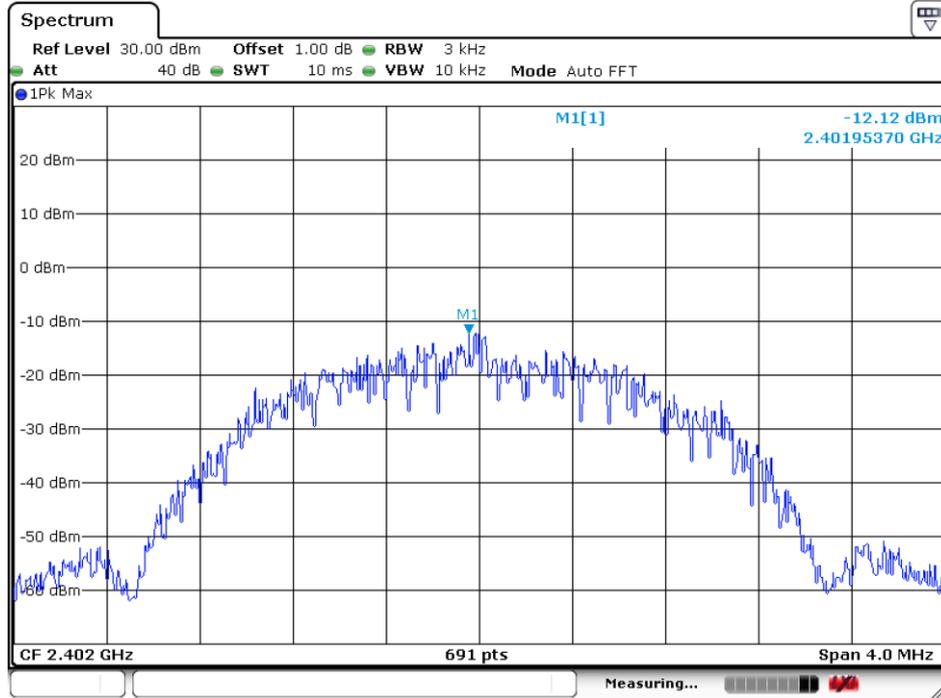


Date: 4.DEC.2020 15:54:26



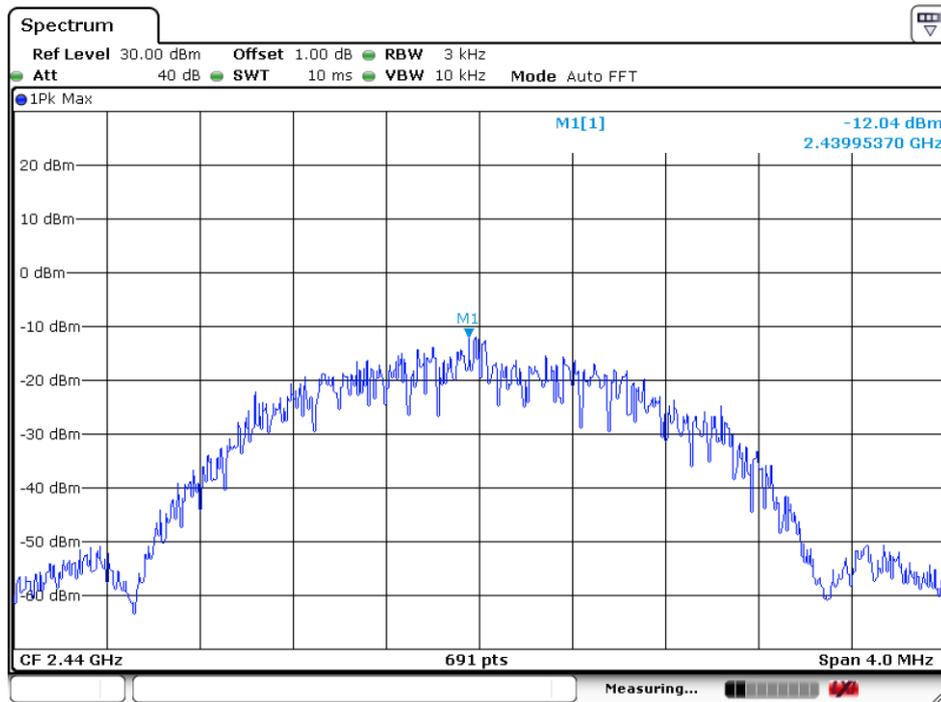
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### 4.6.2.4 GFSK 2M\_Lowest Channel



Date: 4.DEC.2020 15:55:25

### 4.6.2.5 GFSK 2M\_Middle Channel

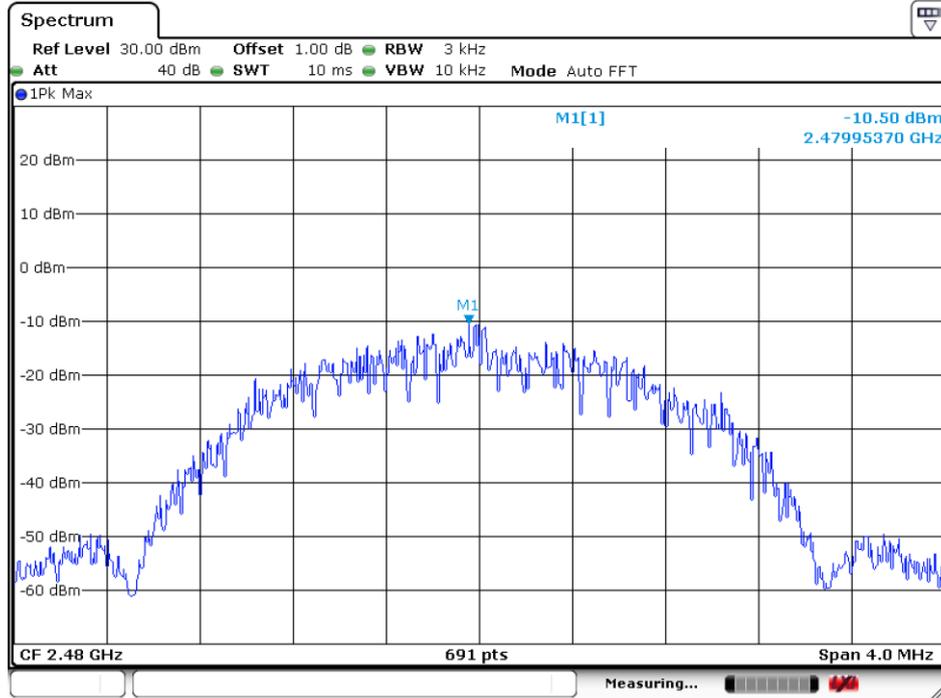


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### 4.6.2.6 GFSK 2M\_Highest Channel



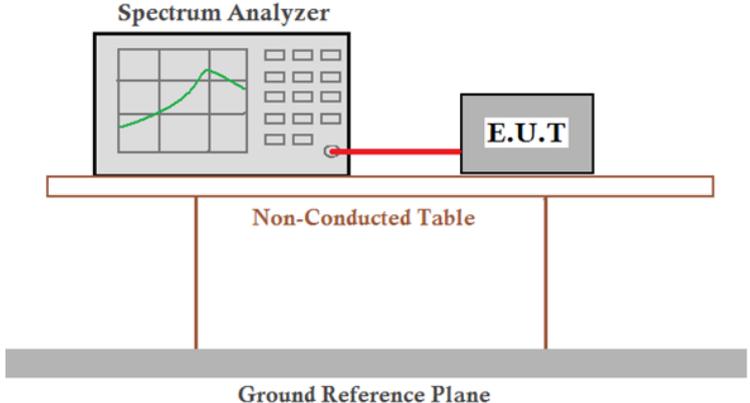
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### 4.7 Band-edge for RF Conducted Emissions

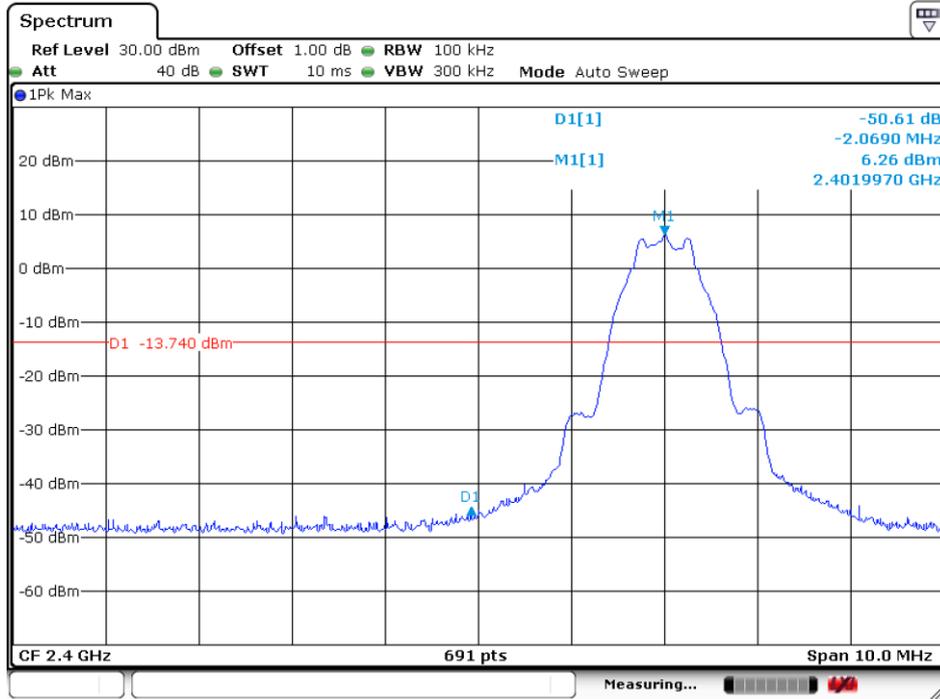
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.13
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional 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.
Test Results:	Pass



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## 4.7.1 Test Plots

### 4.7.1.1 GFSK 1M\_Lowest Channel



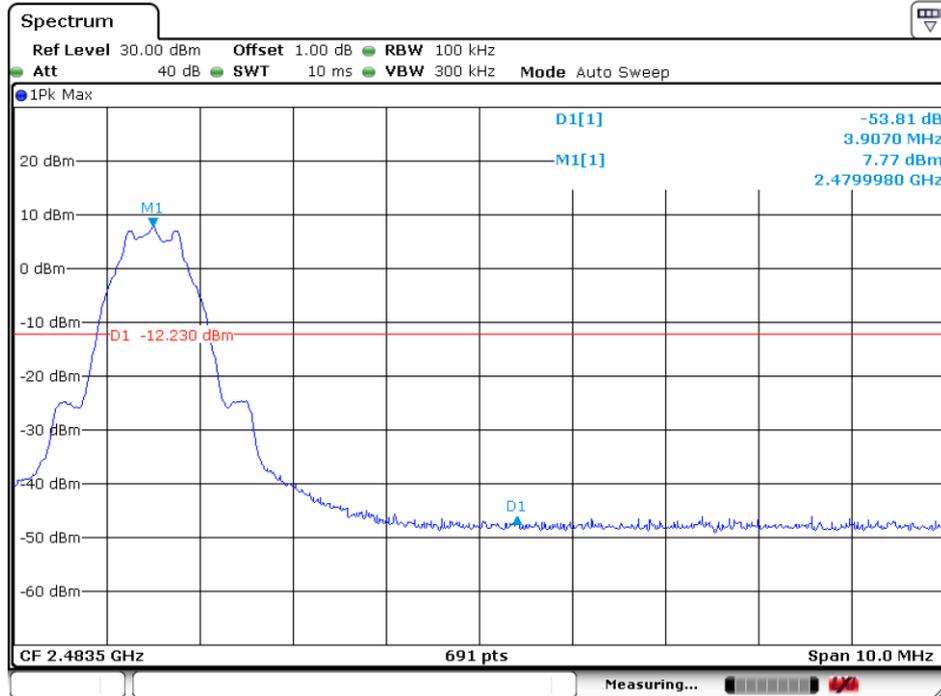
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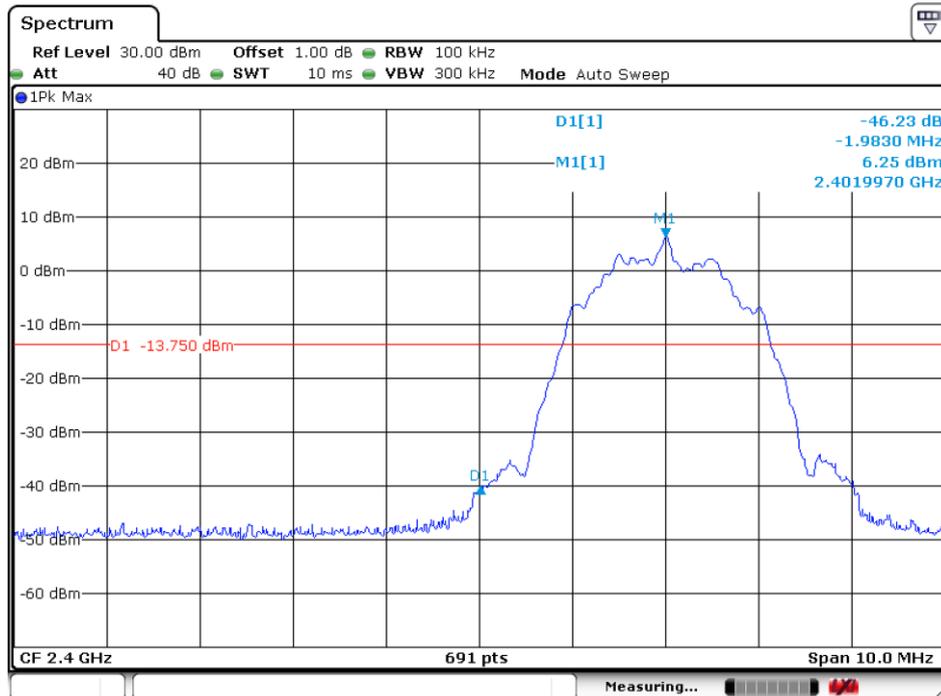
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### 4.7.1.2 GFSK 1M\_Highest Channel



Date: 4.DEC.2020 16:08:27

### 4.7.1.3 GFSK 2M\_Lowest Channel

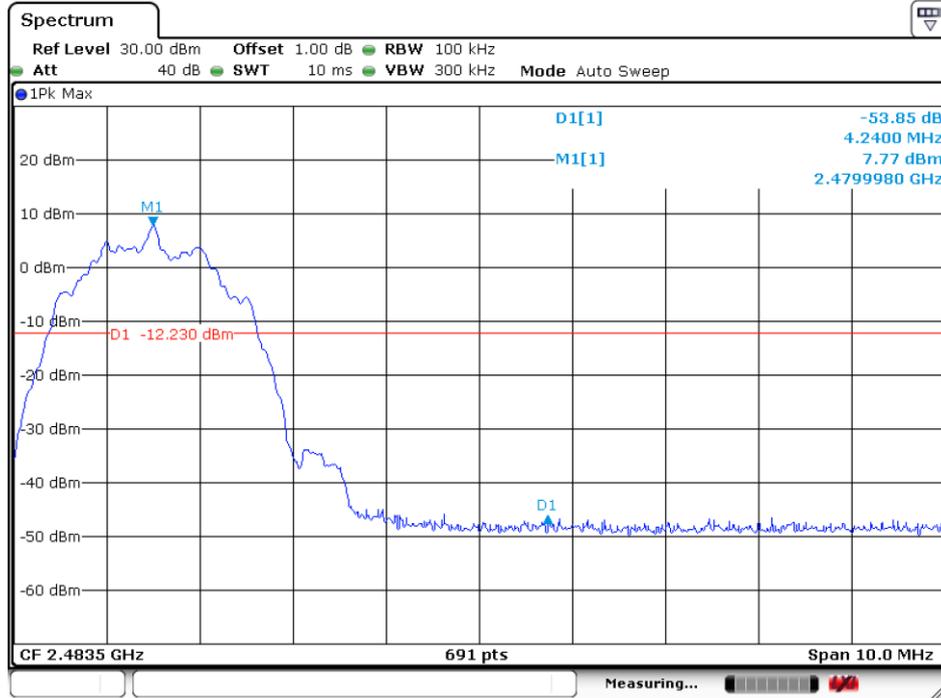


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### 4.7.1.4 GFSK 2M\_Highest Channel



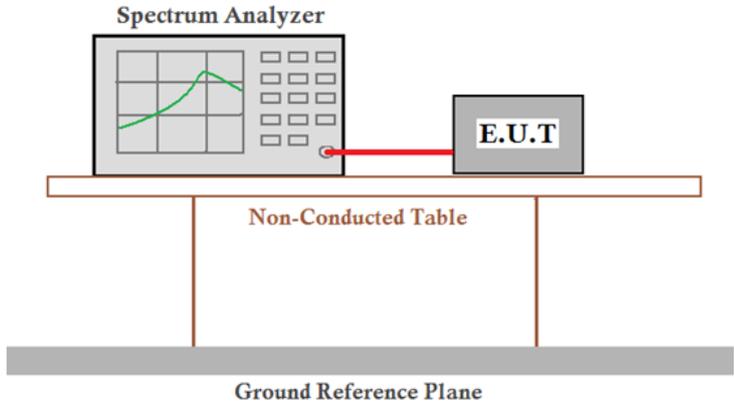
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### 4.8 RF Conducted Spurious Emissions

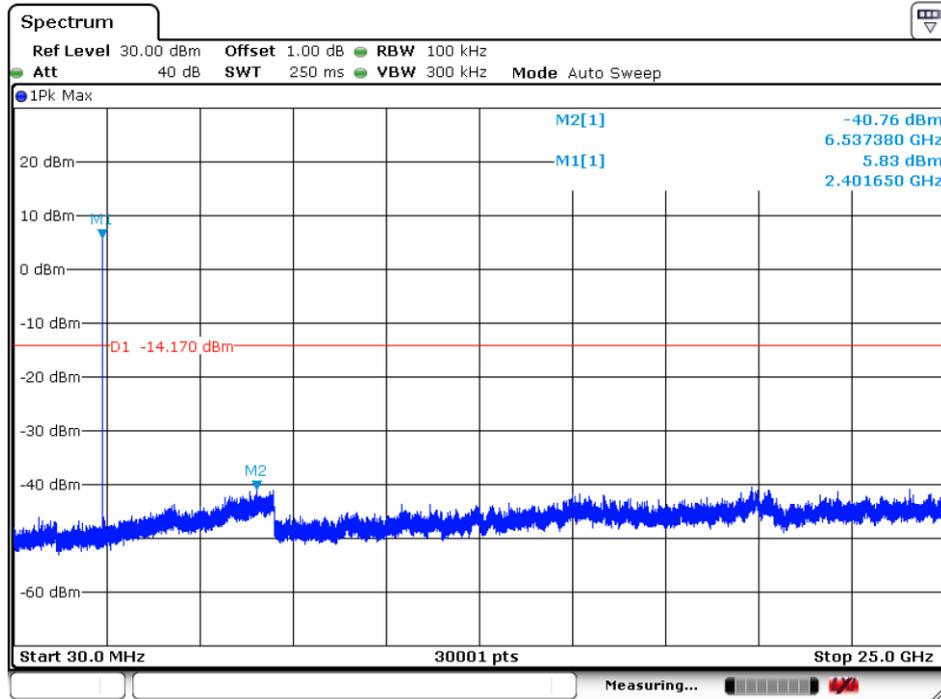
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10: 2013 Section 11.11
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional 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.
Test Results:	Pass



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## 4.8.1 Test Plots

### 4.8.1.1 GFSK 1M\_Lowest Channel

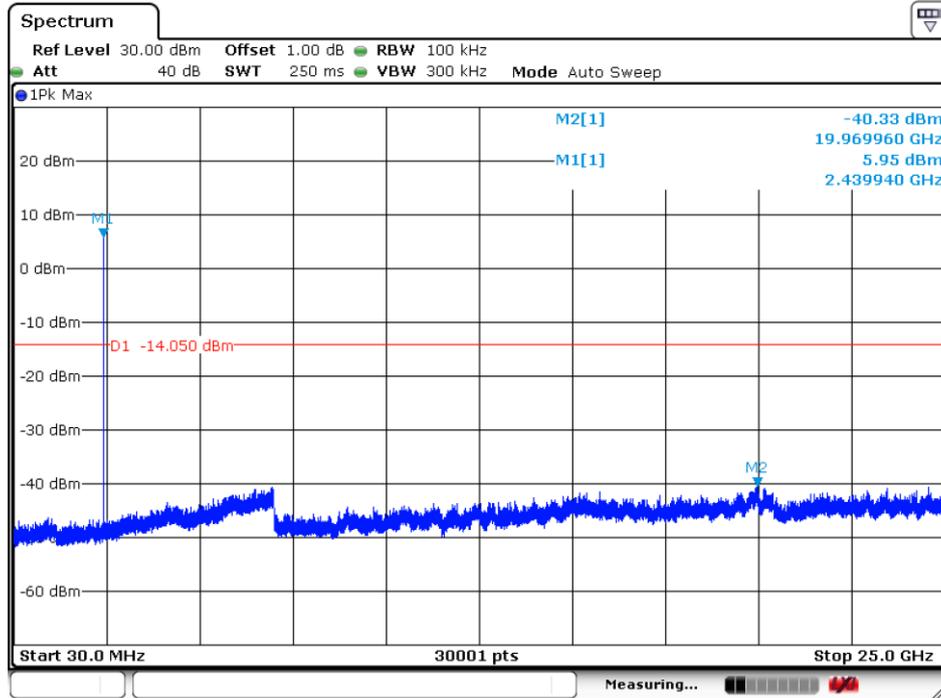


Date: 4.DEC.2020 16:15:31



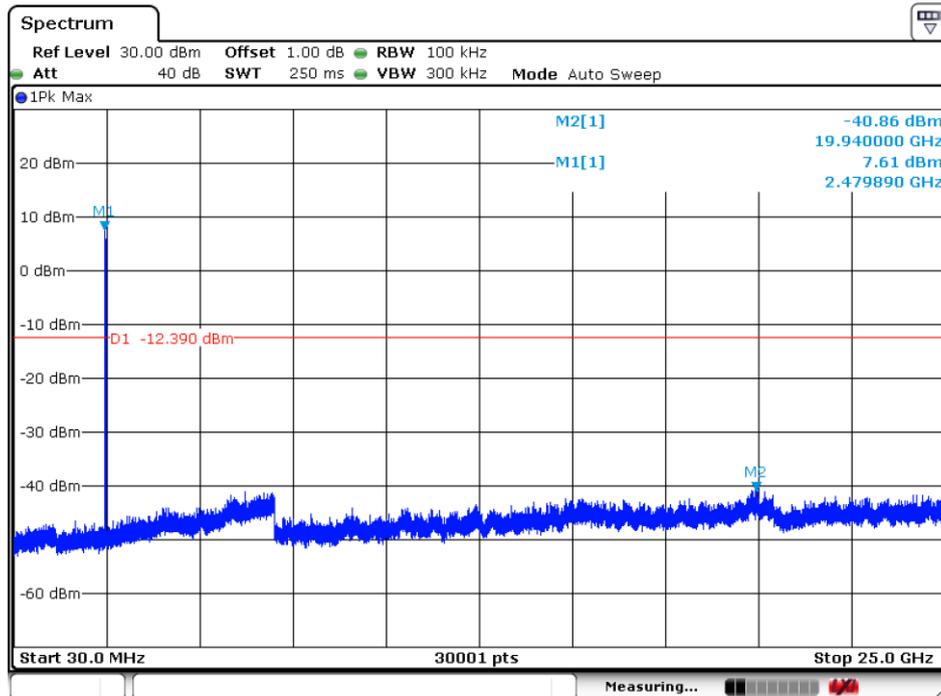
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### 4.8.1.2 GFSK 1M\_Middle Channel



Date: 4.DEC.2020 16:17:17

### 4.8.1.3 GFSK 1M\_Highest Channel

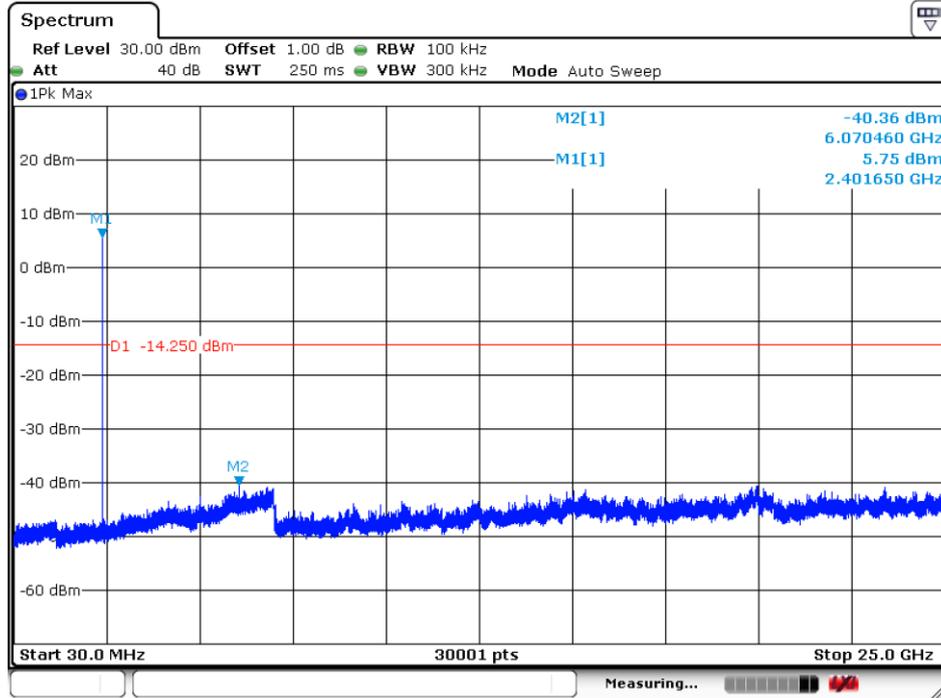


Date: 4.DEC.2020 16:18:01



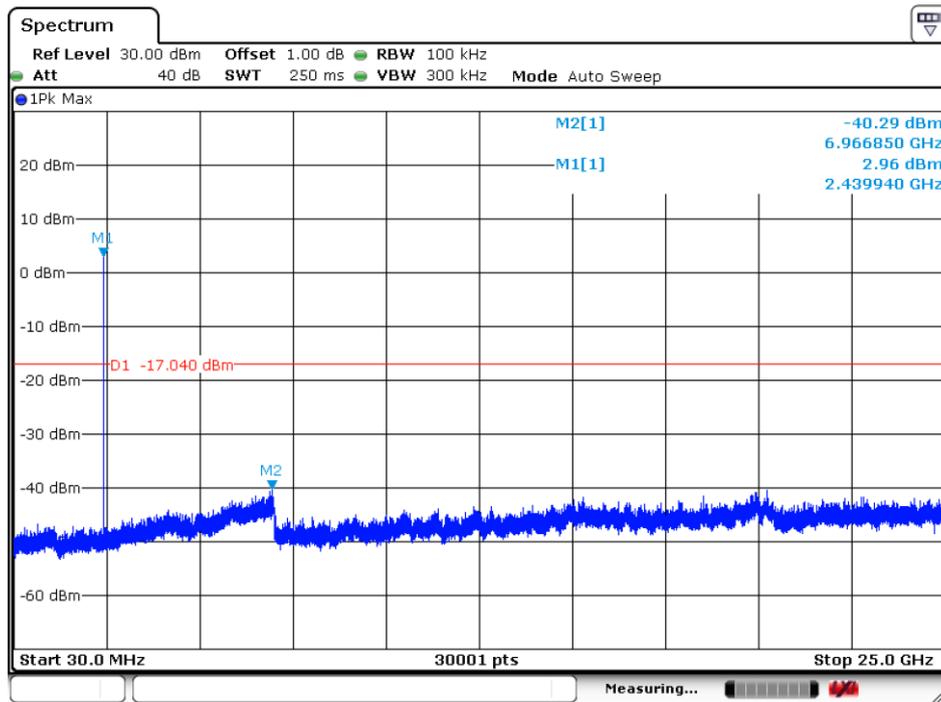
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### 4.8.1.4 GFSK 2M\_Lowest Channel



Date: 4.DEC.2020 16:12:25

### 4.8.1.5 GFSK 2M\_Middle Channel

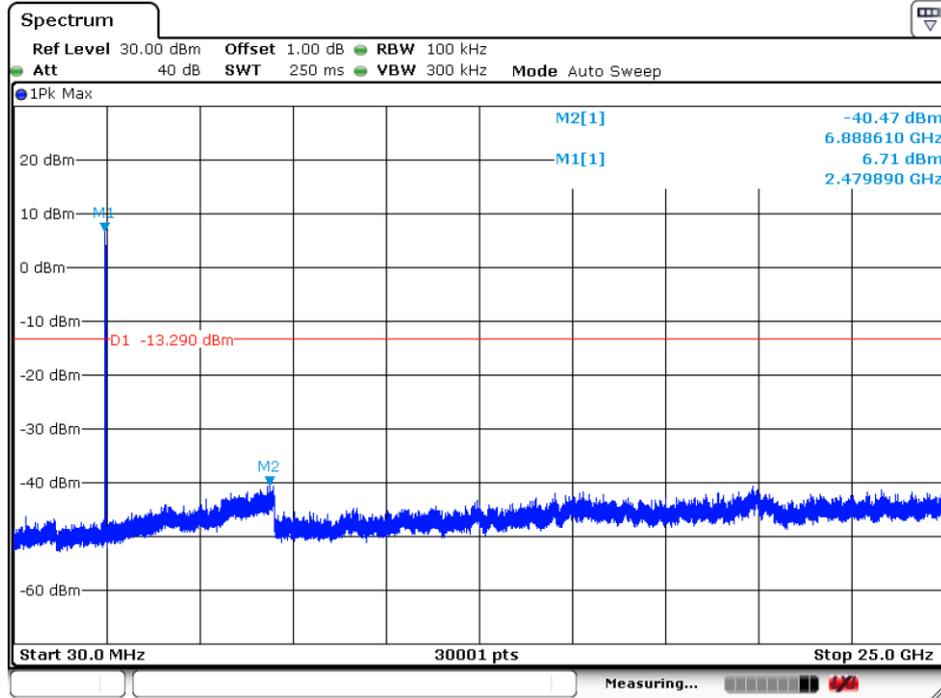


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### 4.8.1.6 GFSK 2M\_Highest Channel



Date: 4.DEC.2020 16:14:43

**Remark:**

Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



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### 4.9 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10 :2013 Section 11.12				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100kHz	30kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak	
	Peak	1MHz	10Hz	Average	
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Remark: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				



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<p><b>Test Setup:</b></p>	
<p>Figure 1. Below 30MHz</p>	<p>Figure 2. 30MHz to 1GHz</p>
<p>Figure 3. Above 1 GHz</p>	
<p><b>Test Procedure:</b></p>	<ol style="list-style-type: none"> <li>For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation</li> <li>The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>Use the following spectrum analyzer settings:             <ol style="list-style-type: none"> <li>Span shall wide enough to fully capture the emission being measured;</li> <li>Set RBW=100 kHz for <math>f &lt; 1</math> GHz, RBW=1MHz for <math>f &gt; 1</math>GHz ; VBW <math>\geq</math> RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak</li> <li>For average measurement: use duty cycle correction factor method per 15.35(c).</li> </ol> </li> </ol>



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	<p>Duty cycle = On time/100 milliseconds  On time = <math>N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n</math>  Where <math>N_1</math> is number of type 1 pulses, <math>L_1</math> is length of type 1 pulses, etc.  Average Emission Level = Peak Emission Level + 20*log(Duty cycle)</p> <p>f. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>g. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>h. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>i. Test the EUT in the lowest channel, the middle channel, the Highest channel.</p> <p>j. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</p> <p>k. Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	Transmitting with GFSK modulation. Charge + Transmitting mode.
Final Test Mode:	Transmitting with GFSK modulation. Pretest the EUT at Charge + Transmitting mode, For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details
Test Results:	Pass

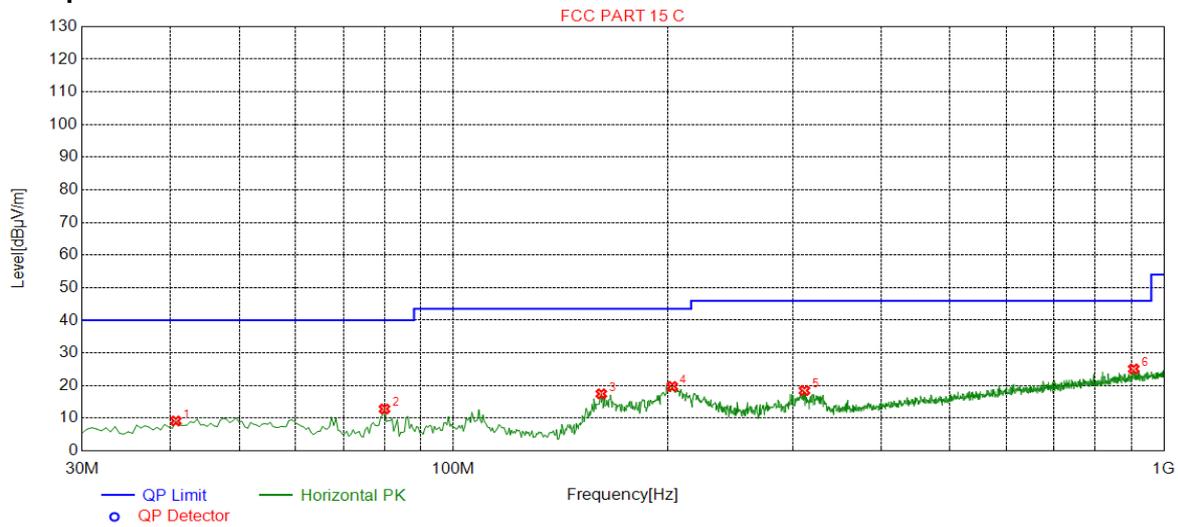


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### 4.9.1 Radiated emission below 1GHz

#### 4.9.1.1 Charge + Transmitting

##### Test Graph



##### Suspected List

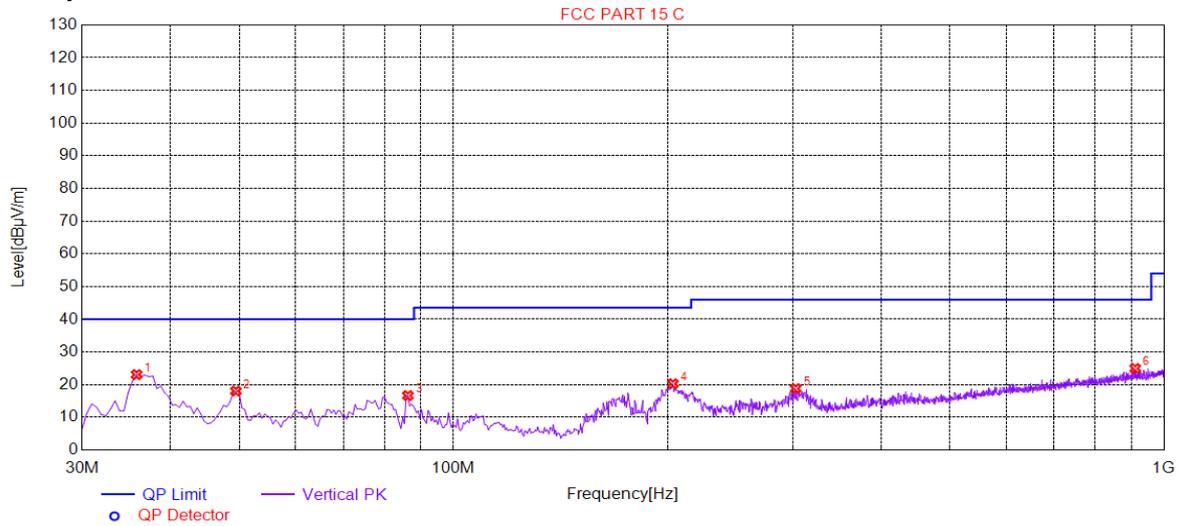
Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.6753	9.17	40.00	30.83	192	90	Horizontal
2	79.9800	12.84	40.00	27.16	126	71	Horizontal
3	161.5008	17.48	43.50	26.02	213	230	Horizontal
4	203.2316	19.74	43.50	23.76	224	233	Horizontal
5	311.9260	18.48	46.00	27.52	117	202	Horizontal
6	906.8334	25.11	46.00	20.89	240	284	Horizontal

##### Final Data List



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### Test Graph



### Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8229	23.08	40.00	16.92	201	311	Vertical
2	49.4097	18.07	40.00	21.93	190	330	Vertical
3	86.2881	16.67	40.00	23.33	191	238	Vertical
4	203.7169	20.28	43.50	23.22	270	333	Vertical
5	303.1916	18.82	46.00	27.18	192	19	Vertical
6	911.2006	24.97	46.00	21.03	222	283	Vertical

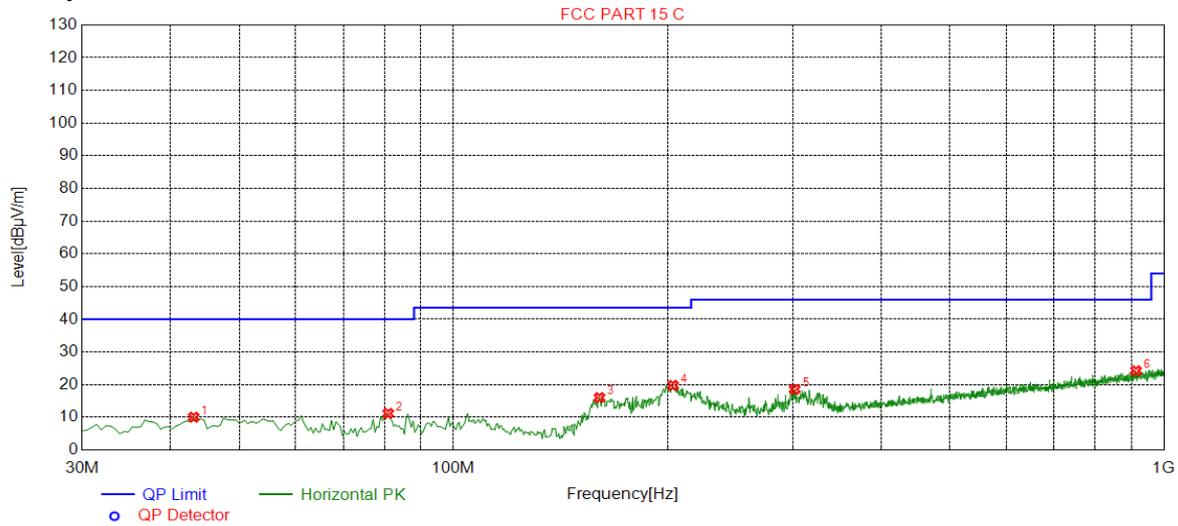
### Final Data List



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**Test Graph**



**Suspected List**

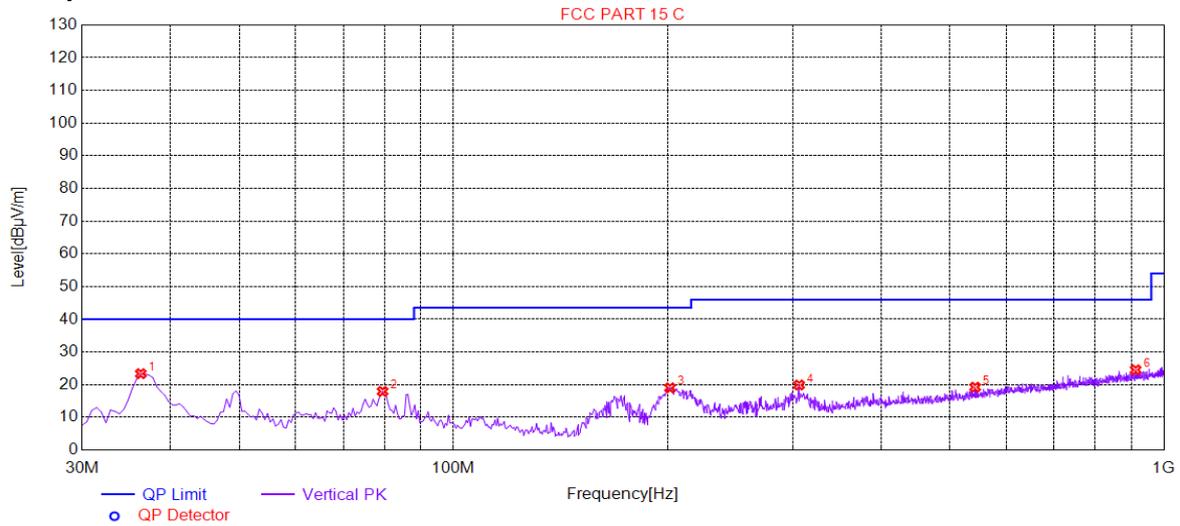
Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	43.1016	10.06	40.00	29.94	167	294	Horizontal
2	80.9505	11.20	40.00	28.80	209	253	Horizontal
3	160.5303	16.06	43.50	27.44	182	291	Horizontal
4	203.7169	19.81	43.50	23.69	111	224	Horizontal
5	302.2211	18.58	46.00	27.42	177	344	Horizontal
6	913.6268	24.25	46.00	21.75	146	215	Horizontal

**Final Data List**



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Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.3082	23.36	40.00	16.64	293	286	Vertical
2	79.4947	17.95	40.00	22.05	269	266	Vertical
3	201.7759	19.04	43.50	24.46	187	318	Vertical
4	306.5883	19.90	46.00	26.10	215	360	Vertical
5	542.4162	19.24	46.00	26.76	200	279	Vertical
6	912.6563	24.54	46.00	21.46	219	292	Vertical

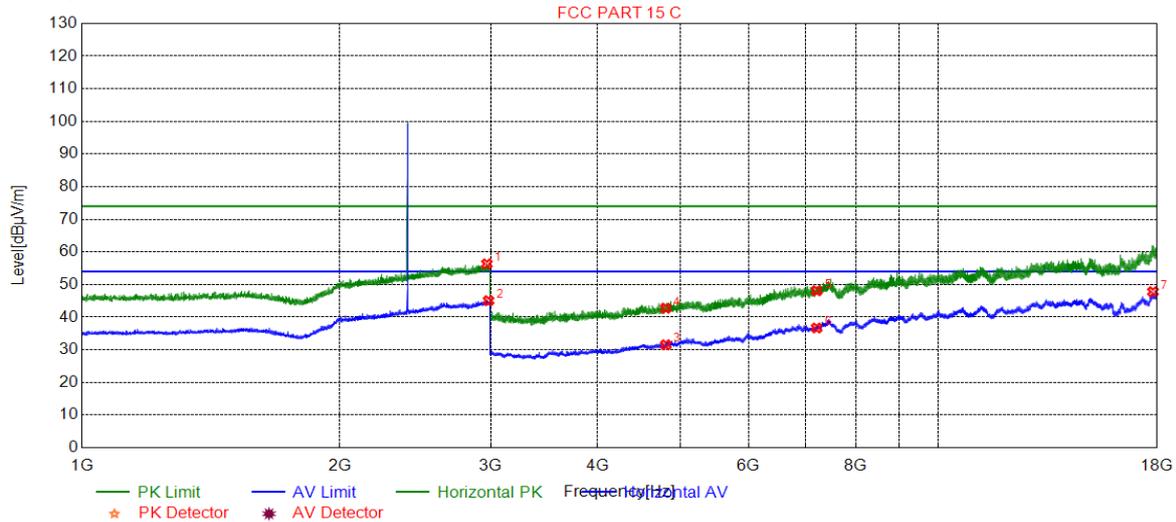
Final Data List



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4.9.1 Transmitter Emission above 1GHz  
4.9.1.1 BLE\_1M\_Channel 0

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2969.992	56.36	74.00	17.64	202	40	Horizontal
2	2983.495	45.07	54.00	8.93	183	29	Horizontal
3	4804.000	31.55	54.00	22.45	249	186	Horizontal
4	4804.000	42.76	74.00	31.24	112	65	Horizontal
5	7206.000	48.09	74.00	25.91	234	169	Horizontal
6	7206.000	36.70	54.00	17.30	108	117	Horizontal
7	17791.48	47.82	54.00	6.18	128	238	Horizontal

Final Data List

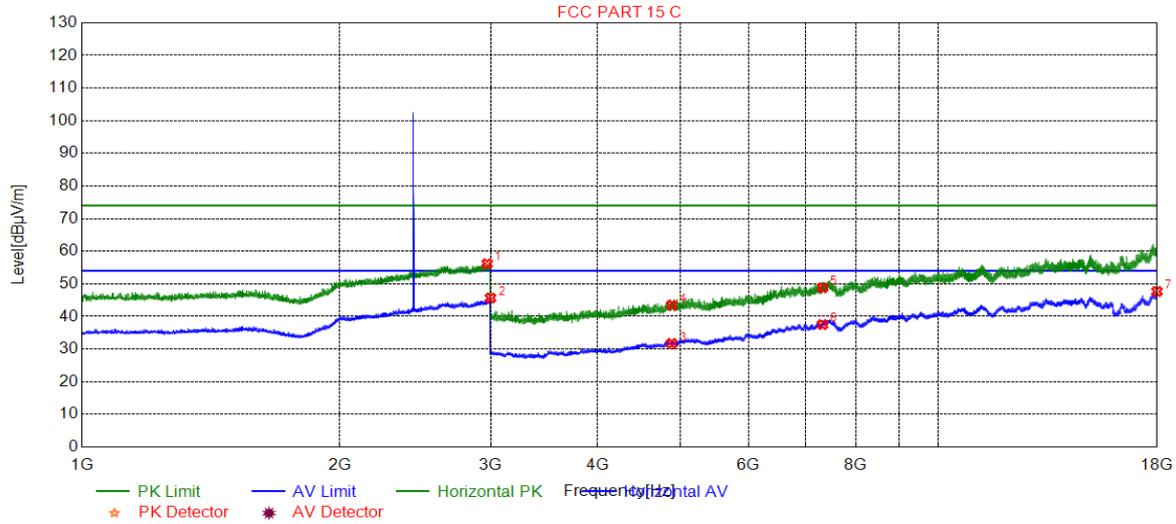


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4.9.1.3 BLE\_1M\_Channel 19

Test Graph



Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2971.993	56.21	74.00	17.79	109	14	Horizontal
2	2998.999	45.68	54.00	8.32	183	129	Horizontal
3	4880.000	31.76	54.00	22.24	232	14	Horizontal
4	4880.000	43.48	74.00	30.52	109	290	Horizontal
5	7320.000	48.81	74.00	25.19	234	324	Horizontal
6	7320.000	37.53	54.00	16.47	245	117	Horizontal
7	17986.49	47.67	54.00	6.33	215	65	Horizontal

Final Data List

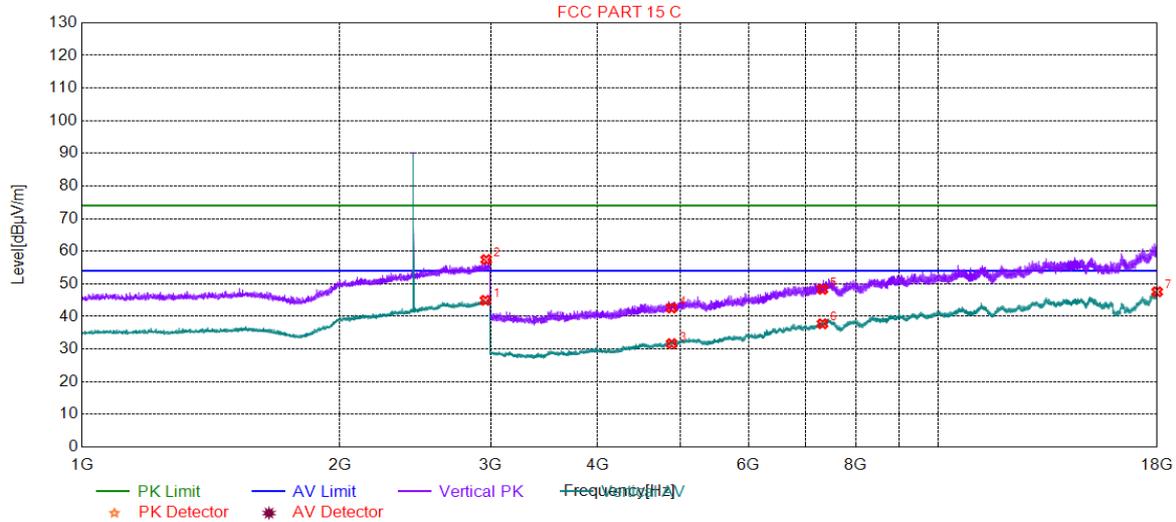
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4.9.1.4 BLE\_1M\_Channel 19

Test Graph



Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2957.989	44.97	54.00	9.03	168	336	Vertical
2	2963.991	57.44	74.00	16.56	188	5	Vertical
3	4880.000	31.70	54.00	22.30	236	272	Vertical
4	4880.000	42.62	74.00	31.38	235	135	Vertical
5	7320.000	48.34	74.00	25.66	283	152	Vertical
6	7320.000	37.78	54.00	16.22	282	83	Vertical
7	17994.74	47.58	54.00	6.42	252	237	Vertical

Final Data List

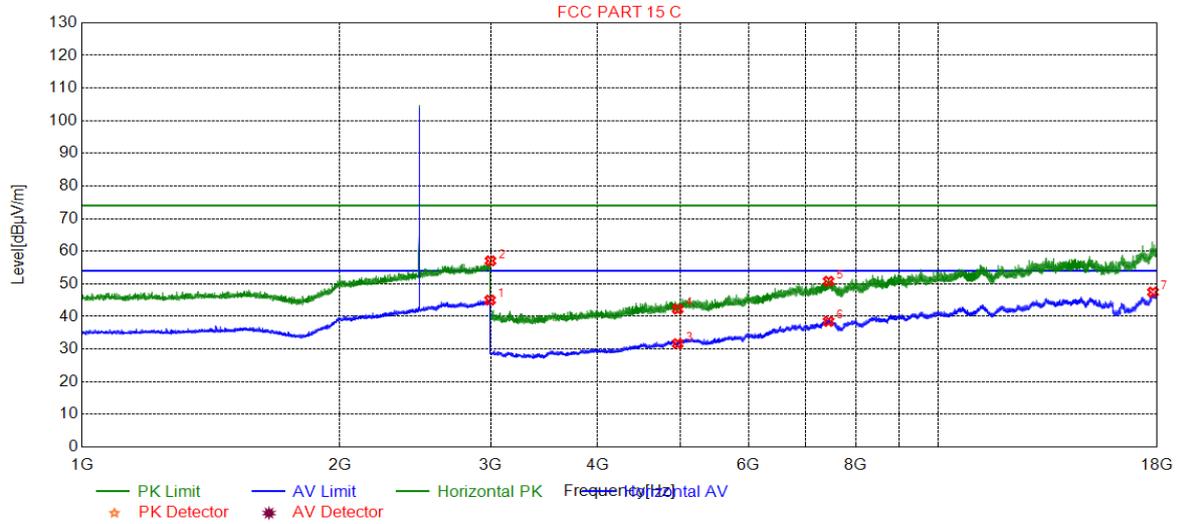
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4.9.1.5 BLE\_1M\_Channel 39

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2994.998	45.03	54.00	8.97	159	14	Horizontal
2	2998.499	57.06	74.00	16.94	219	119	Horizontal
3	4960.000	31.68	54.00	22.32	184	48	Horizontal
4	4960.000	42.26	74.00	31.74	113	31	Horizontal
5	7440.000	50.81	74.00	23.19	152	203	Horizontal
6	7440.000	38.50	54.00	15.50	187	290	Horizontal
7	17791.48	47.49	54.00	6.51	246	151	Horizontal

Final Data List

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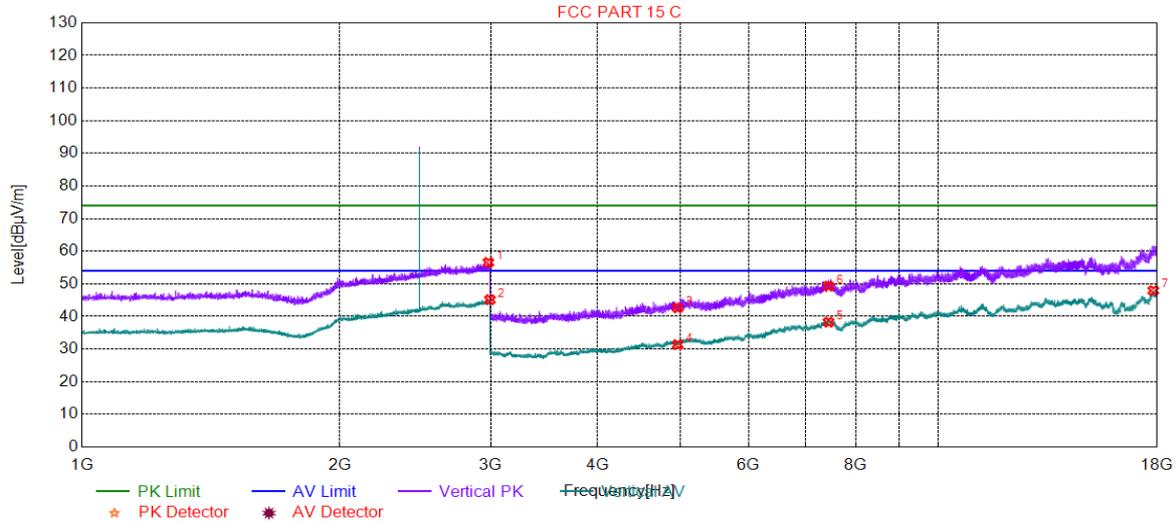


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**4.9.1.6 BLE\_1M\_Channel 39**

**Test Graph**



**Suspected List**

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2981.495	56.57	74.00	17.43	221	242	Vertical
2	2994.498	45.15	54.00	8.85	150	7	Vertical
3	4960.000	42.66	74.00	31.34	293	260	Vertical
4	4960.000	31.38	54.00	22.62	222	1	Vertical
5	7440.000	38.27	54.00	15.73	264	87	Vertical
6	7440.000	49.33	74.00	24.67	209	104	Vertical
7	17810.24	47.96	54.00	6.04	206	277	Vertical

**Final Data List**

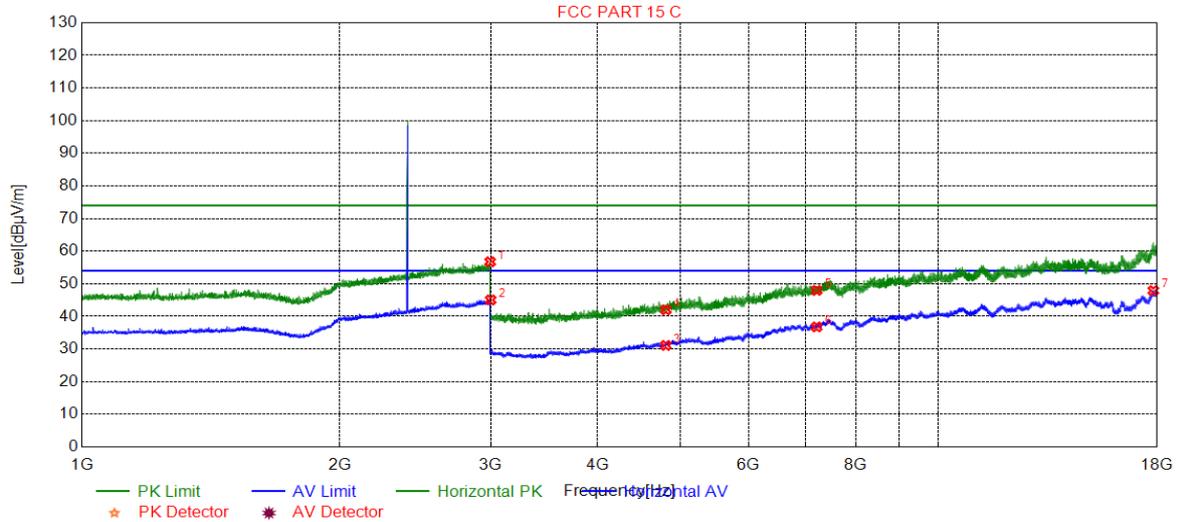
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4.9.1.1 BLE\_2M\_Channel 0

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2995.999	56.75	74.00	17.25	185	209	Horizontal
2	3000.000	45.05	54.00	8.95	125	141	Horizontal
3	4804.000	31.12	54.00	22.88	220	220	Horizontal
4	4804.000	42.03	74.00	31.97	185	66	Horizontal
5	7206.000	47.98	74.00	26.02	106	31	Horizontal
6	7206.000	36.80	54.00	17.20	138	134	Horizontal
7	17810.24	47.93	54.00	6.07	134	325	Horizontal

Final Data List

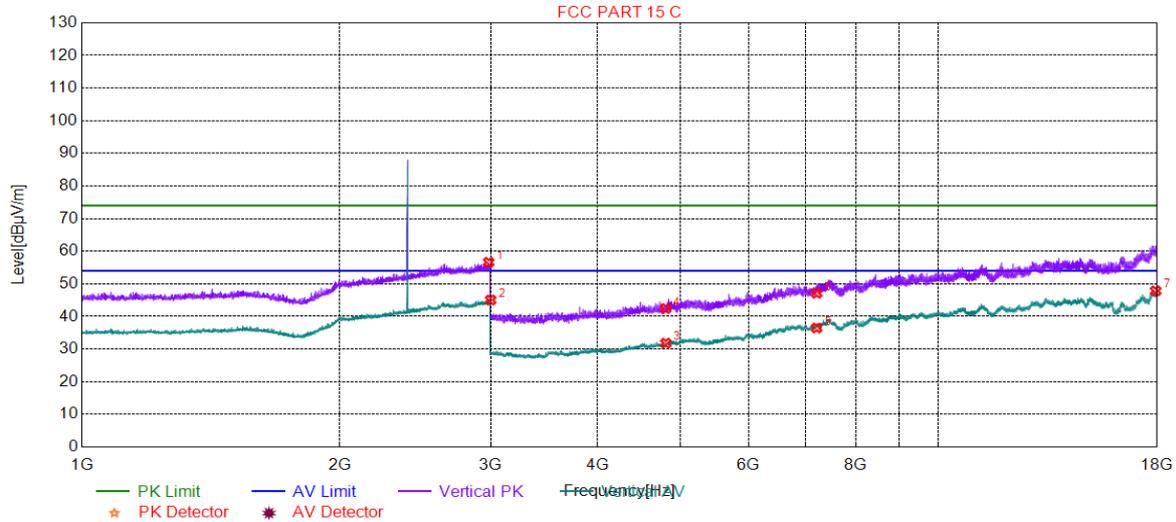
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4.9.1.2 BLE\_2M\_Channel 0

Test Graph



Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2983.996	56.63	74.00	17.37	190	289	Vertical
2	3000.000	45.06	54.00	8.94	203	142	Vertical
3	4804.000	31.84	54.00	22.16	289	329	Vertical
4	4804.000	42.46	74.00	31.54	200	18	Vertical
5	7206.000	36.49	54.00	17.51	195	208	Vertical
6	7206.000	47.13	74.00	26.87	230	173	Vertical
7	17923.49	47.86	54.00	6.14	267	294	Vertical

Final Data List

This section contains the same data as the Suspected List table above.

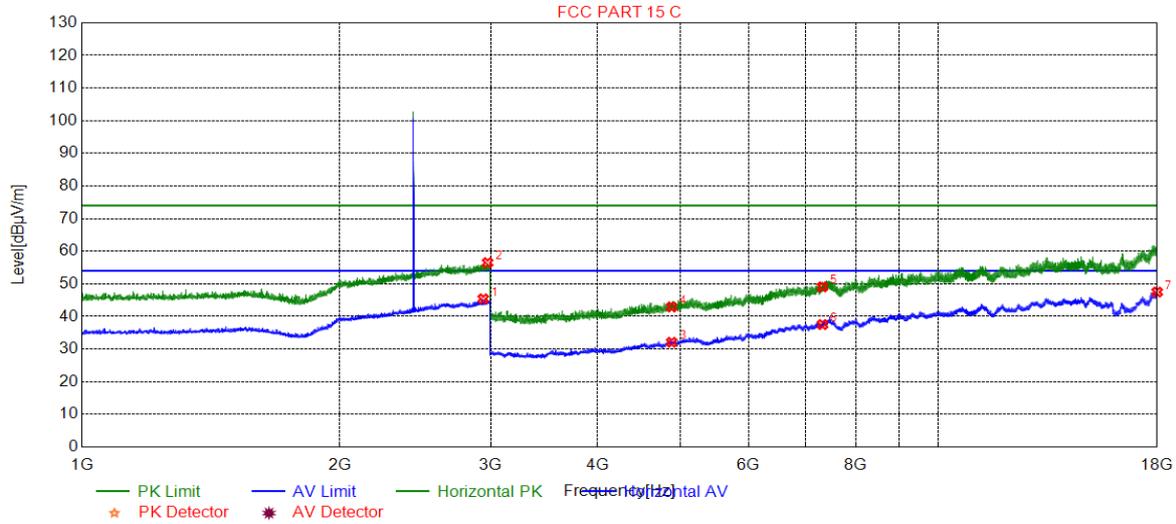


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4.9.1.3 BLE\_2M\_Channel 19

Test Graph



Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2940.985	45.42	54.00	8.58	132	19	Horizontal
2	2975.493	56.50	74.00	17.50	182	87	Horizontal
3	4880.000	32.11	54.00	21.89	154	273	Horizontal
4	4880.000	42.93	74.00	31.07	219	82	Horizontal
5	7320.000	49.11	74.00	24.89	123	308	Horizontal
6	7320.000	37.54	54.00	16.46	102	48	Horizontal
7	17995.49	47.51	54.00	6.49	171	256	Horizontal

Final Data List

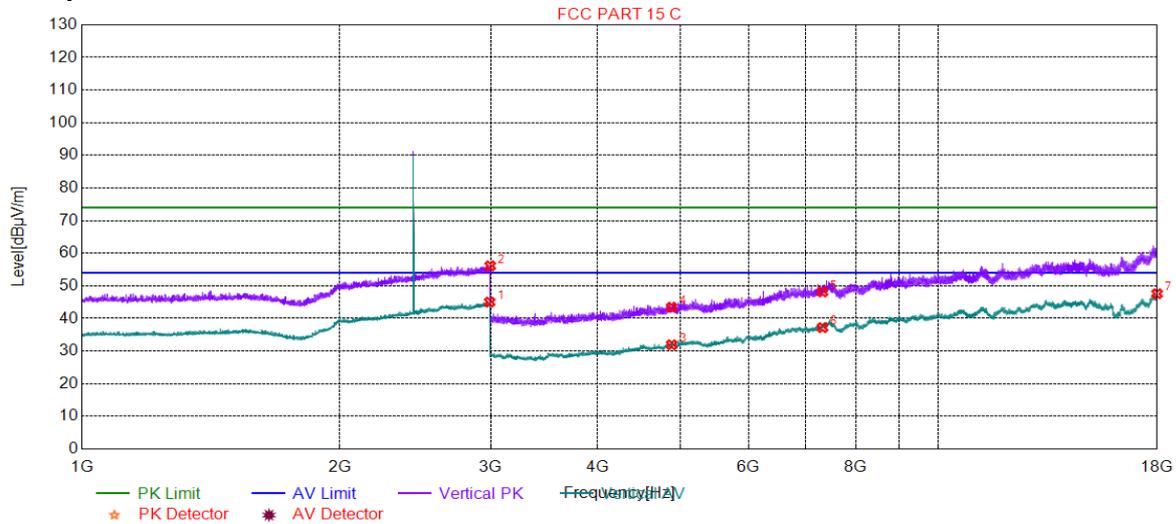
This section is reserved for the final data list, which is currently empty.



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**4.9.1.4 BLE\_2M\_Channel 19**

**Test Graph**



**Suspected List**

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2991.998	45.05	54.00	8.95	216	331	Vertical
2	2996.499	56.14	74.00	17.86	158	336	Vertical
3	4880.000	31.96	54.00	22.04	277	312	Vertical
4	4880.000	43.46	74.00	30.54	215	243	Vertical
5	7320.000	48.14	74.00	25.86	265	139	Vertical
6	7320.000	37.21	54.00	16.79	230	191	Vertical
7	17990.24	47.59	54.00	6.41	250	139	Vertical

**Final Data List**

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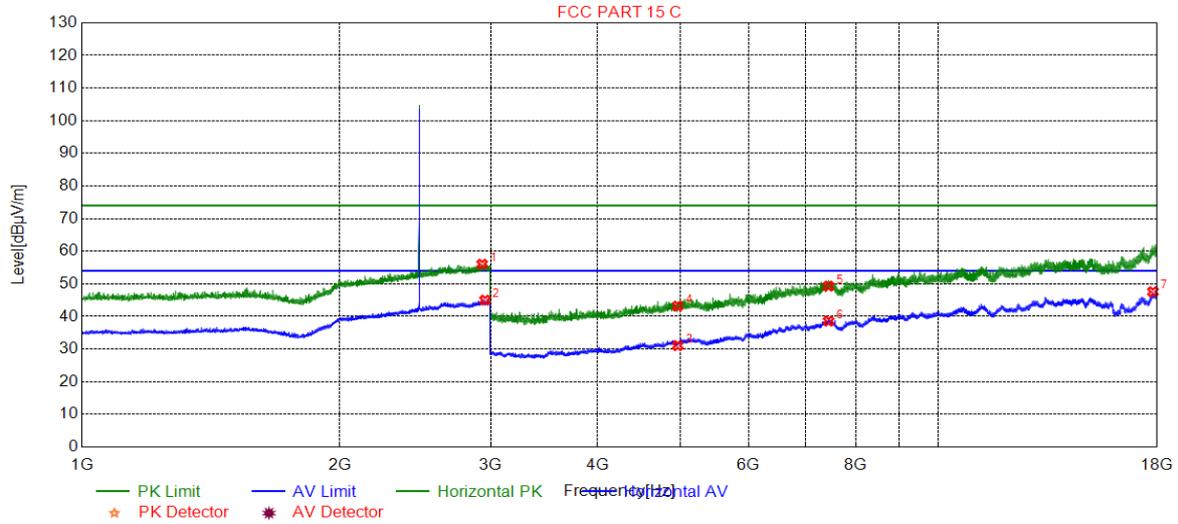


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4.9.1.5 BLE\_2M\_Channel 39

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2931.983	56.05	74.00	17.95	199	234	Horizontal
2	2954.988	45.03	54.00	8.97	242	192	Horizontal
3	4960.000	31.07	54.00	22.93	153	169	Horizontal
4	4960.000	43.19	74.00	30.81	187	100	Horizontal
5	7440.000	49.33	74.00	24.67	192	204	Horizontal
6	7440.000	38.59	54.00	15.41	126	221	Horizontal
7	17790.73	47.61	54.00	6.39	167	83	Horizontal

Final Data List

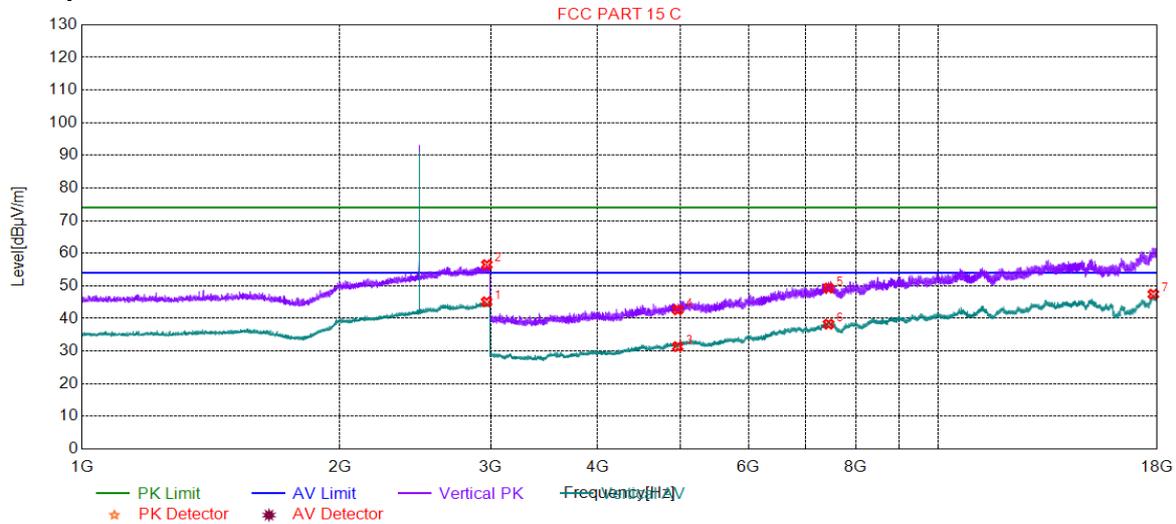
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**4.9.1.6 BLE\_2M\_Channel 39**

**Test Graph**



**Suspected List**

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2967.491	45.12	54.00	8.88	211	184	Vertical
2	2969.992	56.51	74.00	17.49	261	33	Vertical
3	4960.000	31.38	54.00	22.62	153	1	Vertical
4	4960.000	42.66	74.00	31.34	292	260	Vertical
5	7440.000	49.33	74.00	24.67	235	104	Vertical
6	7440.000	38.27	54.00	15.73	164	87	Vertical
7	17810.24	47.46	54.00	6.54	282	277	Vertical

**Final Data List**

**Remark:**

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:  
 Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 2) Scan from 9kHz to 25GHz, the disturbance between 9KHz to 30MHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
- 3) As shown in this section, for frequencies above 1GHz, the 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. So, only the peak measurements were shown in the report.
- 4) All Modes have been tested, but only the worst case data displayed in this report.



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### 4.10 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013 Section 11.12		
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m)	Remark
	30MHz-88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1GHz	54.0	Quasi-peak
Above 1GHz		54.0	Average Value
		74.0	Peak Value
Test Setup:			

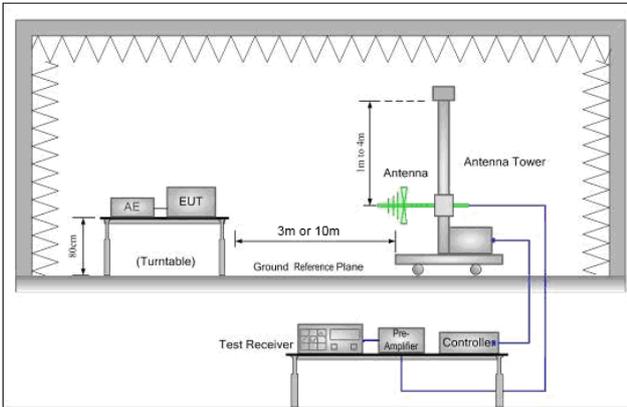


Figure 1. 30MHz to 1GHz

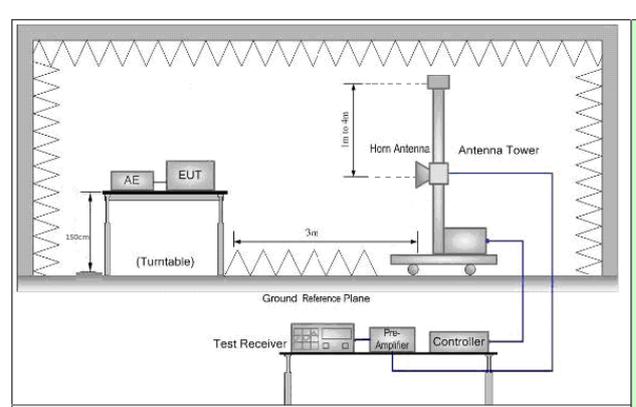


Figure 2. Above 1 GHz

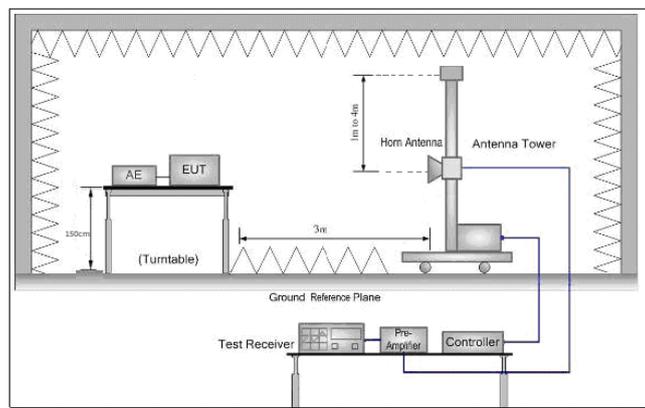


Figure 3. Above 1 GHz



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Test Procedure:	<ul style="list-style-type: none"> <li>a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</li> <li>e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</li> <li>h. Test the EUT in the lowest channel , the Highest channel</li> <li>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.</li> <li>j. Repeat above procedures until all frequencies measured was complete.</li> </ul>
Exploratory Test Mode:	Transmitting with GFSK modulation. Charge + Transmitting mode.
Final Test Mode:	Transmitting with GFSK modulation. Pretest the EUT at Charge + Transmitting mode. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 6 for details
Test Results:	Pass

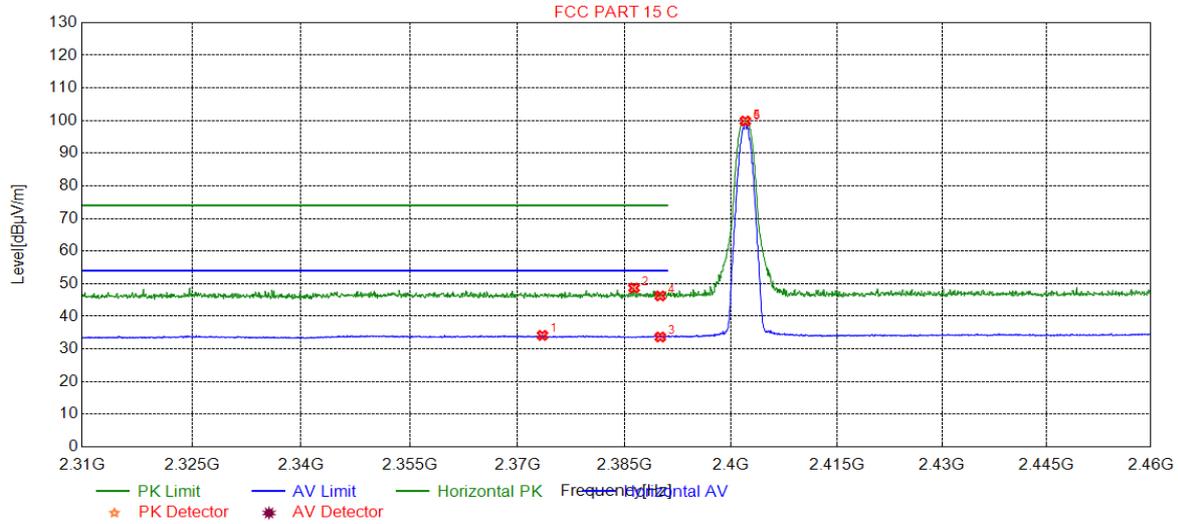


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### 4.10.1 Test Plots

#### 4.10.1.1 BLE\_1M\_Channel 0

#### Test Graph



#### Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2373.481	34.18	54.00	19.82	148	197	Horizontal
2	2386.313	48.71	74.00	25.29	125	170	Horizontal
3	2390.000	33.68	54.00	20.32	169	63	Horizontal
4	2390.000	46.27	74.00	27.73	221	312	Horizontal
5	2402.000	99.87	0.00	-99.87	220	315	Horizontal
6	2402.000	99.33	0.00	-99.33	169	315	Horizontal

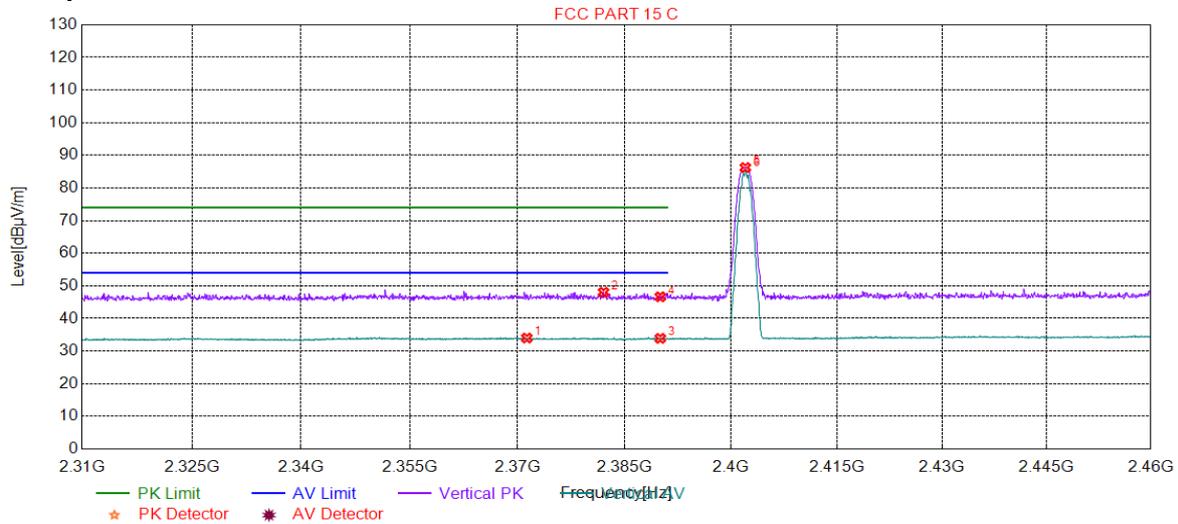
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### 4.10.1.2 BLE\_1M\_Channel 0

#### Test Graph



#### Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2371.305	34.02	54.00	19.98	208	346	Vertical
2	2382.036	48.06	74.00	25.94	258	278	Vertical
3	2390.000	33.92	54.00	20.08	296	1	Vertical
4	2390.000	46.66	74.00	27.34	264	225	Vertical
5	2402.000	86.26	0.00	-86.26	276	266	Vertical
6	2402.000	85.65	0.00	-85.65	181	266	Vertical

#### Final Data List

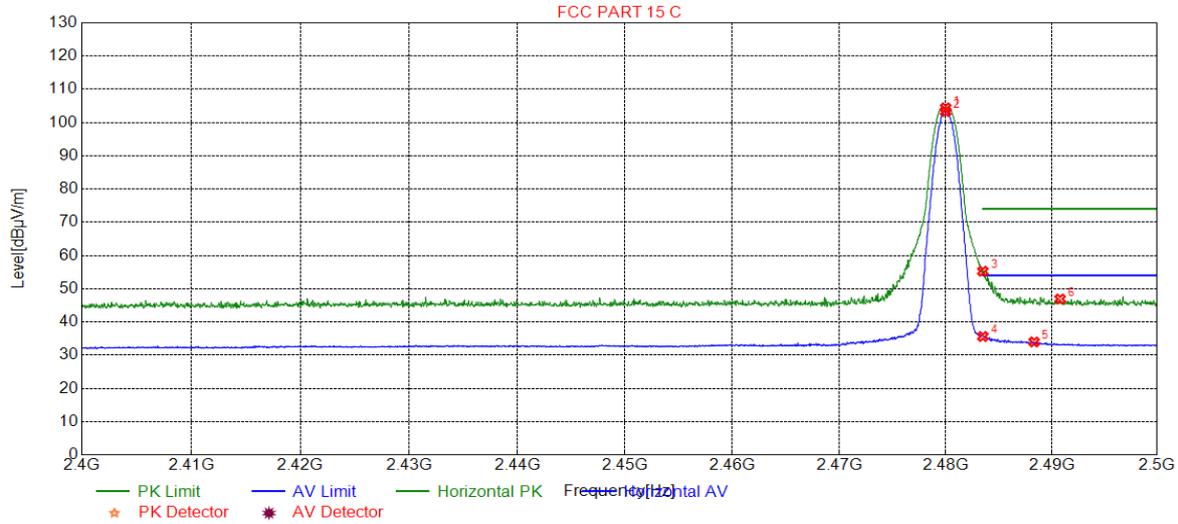
Final Data List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2371.305	34.02	54.00	19.98	208	346	Vertical
2	2382.036	48.06	74.00	25.94	258	278	Vertical
3	2390.000	33.92	54.00	20.08	296	1	Vertical
4	2390.000	46.66	74.00	27.34	264	225	Vertical
5	2402.000	86.26	0.00	-86.26	276	266	Vertical
6	2402.000	85.65	0.00	-85.65	181	266	Vertical



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### 4.10.1.3 BLE\_1M\_Channel 39

#### Test Graph



#### Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	104.42	0.00	-104.42	191	212	Horizontal
2	2480.000	103.30	0.00	-103.30	215	216	Horizontal
3	2483.500	55.28	74.00	18.72	104	208	Horizontal
4	2483.500	35.64	54.00	18.36	106	212	Horizontal
5	2488.344	34.00	54.00	20.00	189	243	Horizontal
6	2490.795	46.93	74.00	27.07	177	289	Horizontal

#### Final Data List

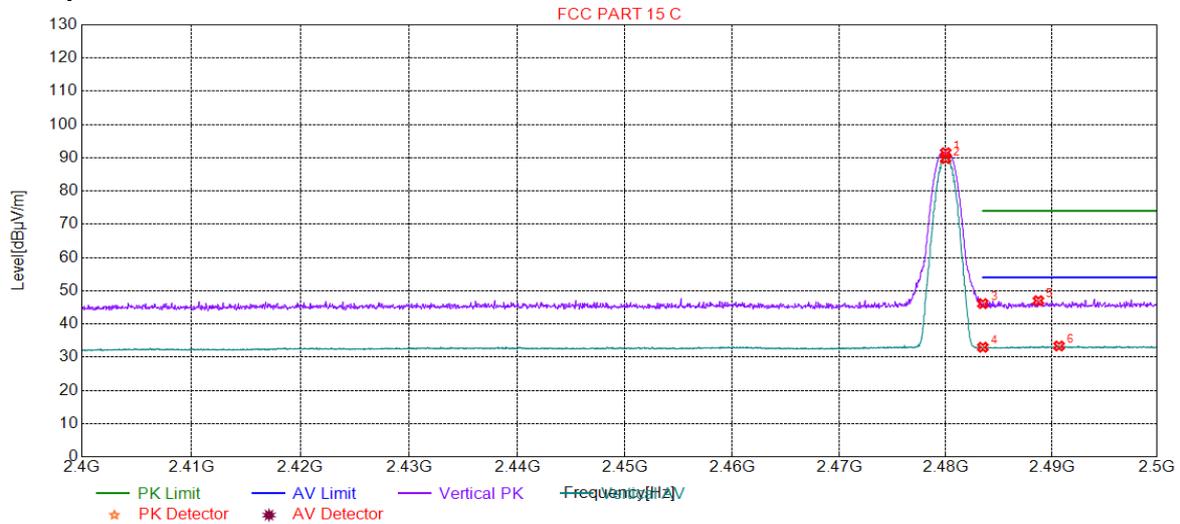


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4.10.1.4 BLE\_1M\_Channel 39

Test Graph



Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	91.52	0.00	-91.52	209	43	Vertical
2	2480.000	89.75	0.00	-89.75	293	43	Vertical
3	2483.500	46.13	74.00	27.87	291	270	Vertical
4	2483.500	33.01	54.00	20.99	197	43	Vertical
5	2488.744	47.01	74.00	26.99	162	343	Vertical
6	2490.695	33.39	54.00	20.61	235	24	Vertical

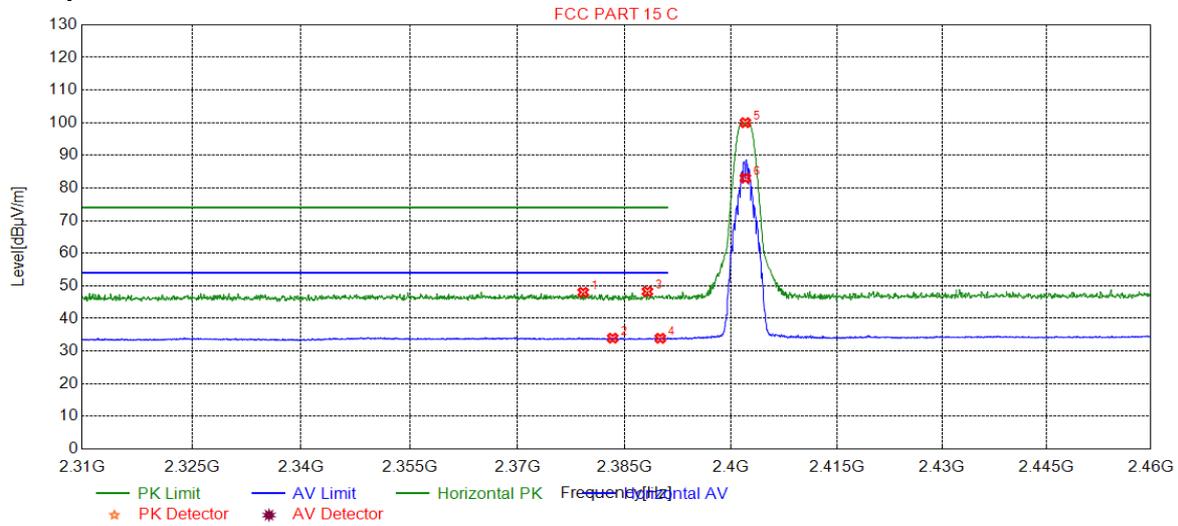
Final Data List



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### 4.10.1.5 BLE\_2M\_Channel 0

#### Test Graph



#### Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.184	48.03	74.00	25.97	177	250	Horizontal
2	2383.311	33.99	54.00	20.01	131	333	Horizontal
3	2388.189	48.27	74.00	25.73	192	71	Horizontal
4	2390.000	33.94	54.00	20.06	228	71	Horizontal
5	2402.000	100.01	0.00	-100.01	117	216	Horizontal
6	2402.000	83.02	0.00	-83.02	237	59	Horizontal

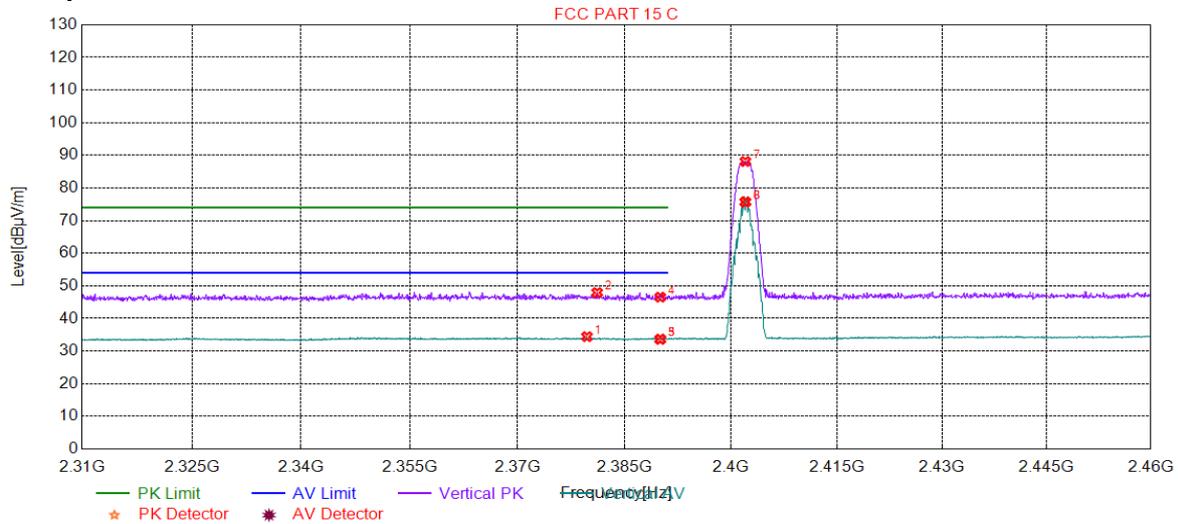
#### Final Data List



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### 4.10.1.6 BLE\_2M\_Channel 0

#### Test Graph



#### Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.709	34.44	54.00	19.56	150	174	Vertical
2	2381.135	47.95	74.00	26.05	271	139	Vertical
3	2390.000	33.66	54.00	20.34	281	182	Vertical
4	2390.000	46.56	74.00	27.44	280	162	Vertical
5	2390.000	33.66	54.00	20.34	221	182	Vertical
6	2402.000	75.72	0.00	-75.72	235	154	Vertical
7	2402.000	88.12	0.00	-88.12	219	48	Vertical
8	2402.000	75.72	0.00	-75.72	235	154	Vertical

#### Final Data List

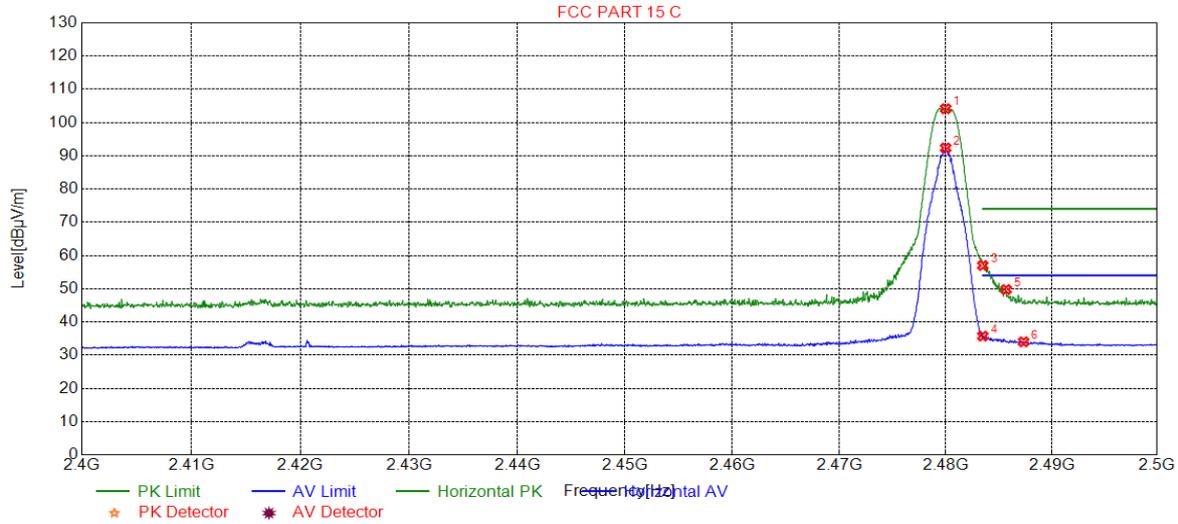


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### 4.10.1.7 BLE\_2M\_Channel 39

#### Test Graph



#### Suspected List

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	104.16	0.00	-104.16	122	218	Horizontal
2	2480.000	92.36	0.00	-92.36	225	210	Horizontal
3	2483.500	57.00	74.00	17.00	201	299	Horizontal
4	2483.500	35.76	54.00	18.24	126	210	Horizontal
5	2485.692	49.77	74.00	24.23	180	264	Horizontal
6	2487.343	34.03	54.00	19.97	128	206	Horizontal

#### Final Data List

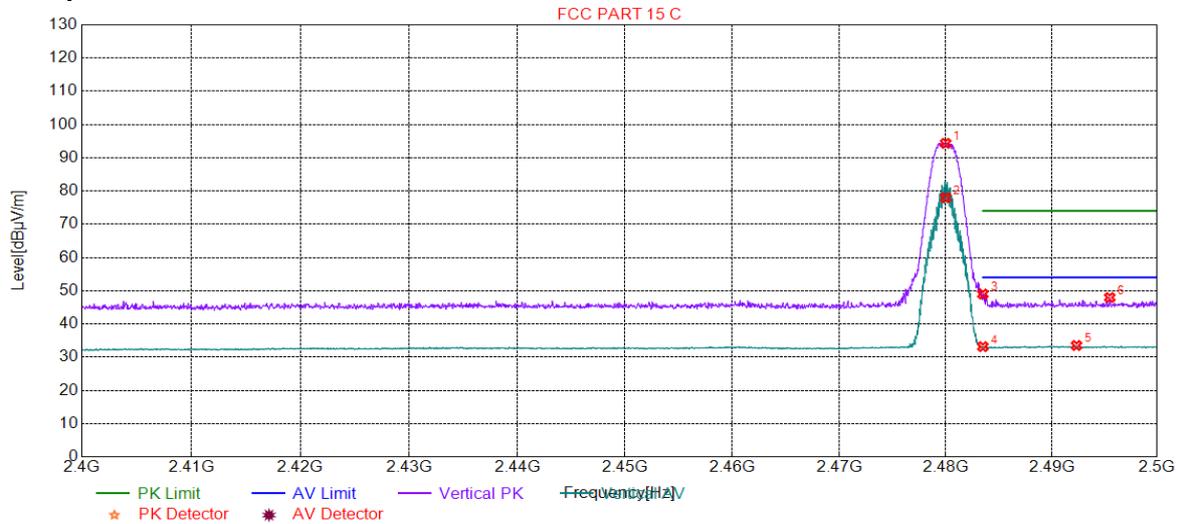


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**4.10.1.8 BLE\_2M\_Channel 39**

**Test Graph**



**Suspected List**

NO.	Freq. [MHz]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	94.34	0.00	-94.34	274	247	Vertical
2	2480.000	78.01	0.00	-78.01	246	202	Vertical
3	2483.500	49.02	74.00	24.98	271	247	Vertical
4	2483.500	33.18	54.00	20.82	231	228	Vertical
5	2492.346	33.54	54.00	20.46	269	312	Vertical
6	2495.497	47.97	74.00	26.03	155	73	Vertical

**Final Data List**

**Remark:**

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

All Modes have been tested, but only the worst case data displayed in this report.



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## 5 Measurement Uncertainty (95% confidence levels, k=2)

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.75dB
2	RF power density, conducted	±2.84dB
3	Spurious emissions, conducted	±0.75dB
4	Temperature test	±1°C
5	Humidity test	±3%
6	DC and low frequency voltages	±0.5%

Lab B:

No.	Item	Measurement Uncertainty
1	Conduct emission test	± 3.0dB (150kHz to 30MHz)
2	Radiated Spurious emission test	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)



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## 6 Equipment List

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date	Cal.Duedate
				(yyyy-mm-dd)	(yyyy-mm-dd)
DC Power Supply	Agilent Technologies Inc	66311B	W009-09	2020/7/15	2021/7/15
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2020/1/3	2021/1/2
Coaxial Cable	SGS	N/A	SEM031-01	2020/6/12	2021/6/11
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2020/7/14	2021/7/14
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2020/10/27	2021/10/27
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2020/7/14	2021/7/14

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020-09-11	2021-09-10
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2020-08-04	2021-08-03
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2020-11-06	2021-11-05
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR



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RSE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2020-04-02	2021-04-01
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2020-09-11	2021-09-10
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2020-10-26	2021-10-25
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2020-10-27	2021-10-26
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2020-10-26	2021-10-25
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2019-12-06	2020-12-05
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR



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## 7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of Set-Up for AR/2020/B0003.

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The End



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