

Report No.: ZR/2020/C003403

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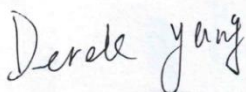
FCC TEST REPORT

Application No.: ZR/2020/C0034
Applicant: Sony Mobile Communications, Inc.
Address of Applicant: 4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan
Manufacturer: Sony Mobile Communications, Inc.
Address of Manufacturer: 4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan
EUT Description: GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC
Trade Mark: Sony
FCC ID: PY7-54955X
Standards: 47 CFR FCC Part 2, Subpart J
 47 CFR Part 15, Subpart C
Date of Receipt: 2020/12/11
Date of Test: 2020/12/11 to 2021/1/12
Date of Issue: 2021/3/18

Test Result :	PASS *
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* 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		2021-03-03		Original
02		2021-03-16		Comment Revised
03		2021-03-18		Comment Revised

Authorized for issue by:			
Tested By		 _____ (Mike Hu) /Project Engineer	
Checked By		 _____ (David Chen) /Reviewer	

2 Test Summary

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



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3 General Information

3.1 Details of Client

Applicant:	Sony Mobile Communications, Inc.
Address of Applicant	4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan
Manufacturer:	Sony Mobile Communications, Inc.
Address of Manufacturer	4-12-3 Higashi-shinagawa, Shinagawa-ku, Tokyo, 140-0002, Japan

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

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



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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:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, GPS and NFC
Trade Mark:	Sony
S/N:	005059ADNVM2
Operation Frequency:	2400MHz~2483.5MHz fc = 2402 MHz + N * 2 MHz, where: -fc = "Operating Frequency" in MHz, -N = "Channel Number" with the range from 0 to 39.
Bluetooth version:	Bluetooth V5.1
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	<input checked="" type="checkbox"/> Portable Device, <input type="checkbox"/> Module
Antenna Type:	<input type="checkbox"/> External, <input checked="" type="checkbox"/> Integrated
Antenna Gain:	2.0 dBi

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

Standard requirement:	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 2.0 dBi.</p>	



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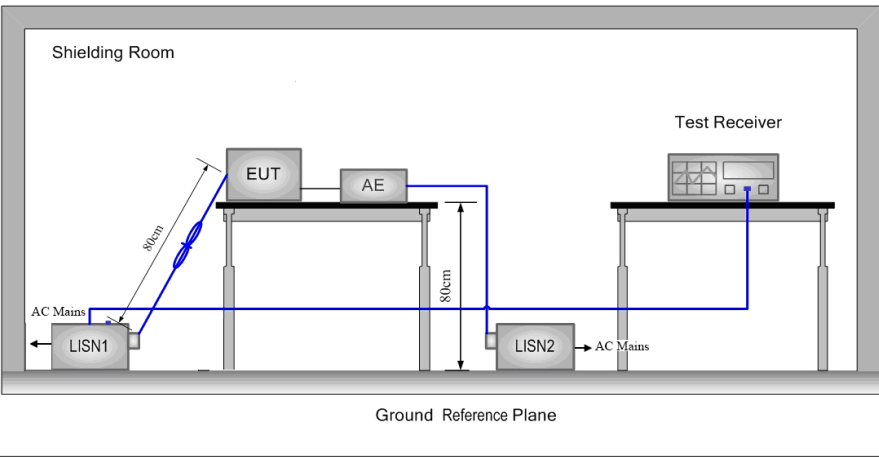
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4.2 AC Power Line Conducted Emissions

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"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 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. 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. 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. 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. 		



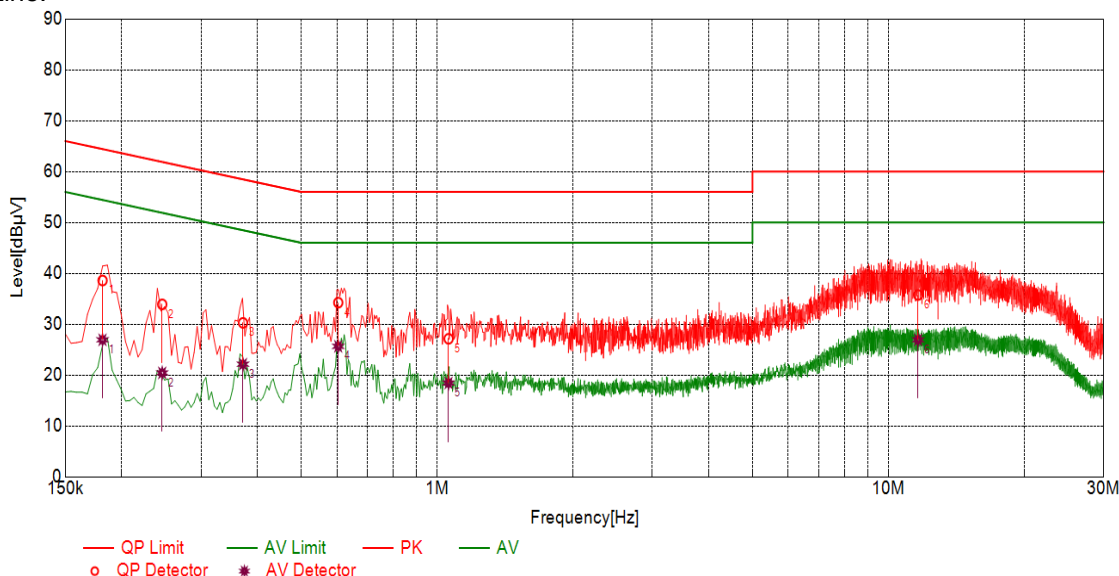
Test Setup:	
Test Mode:	Transmitting with GFSK modulation. Charge +Transmitting mode.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass
Remark:	The Emission Test is performed by the Lab B



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]
1	0.1814	10.10	38.59	64.42	25.83	26.93	54.42	27.49
2	0.2460	10.10	33.90	61.89	27.99	20.43	51.89	31.46
3	0.3715	10.10	30.26	58.47	28.21	22.13	48.47	26.34
4	0.6039	10.10	34.24	56.00	21.76	25.65	46.00	20.35
5	1.0604	10.10	27.14	56.00	28.86	18.44	46.00	27.56
6	11.6387	10.10	35.74	60.00	24.26	26.93	50.00	23.07

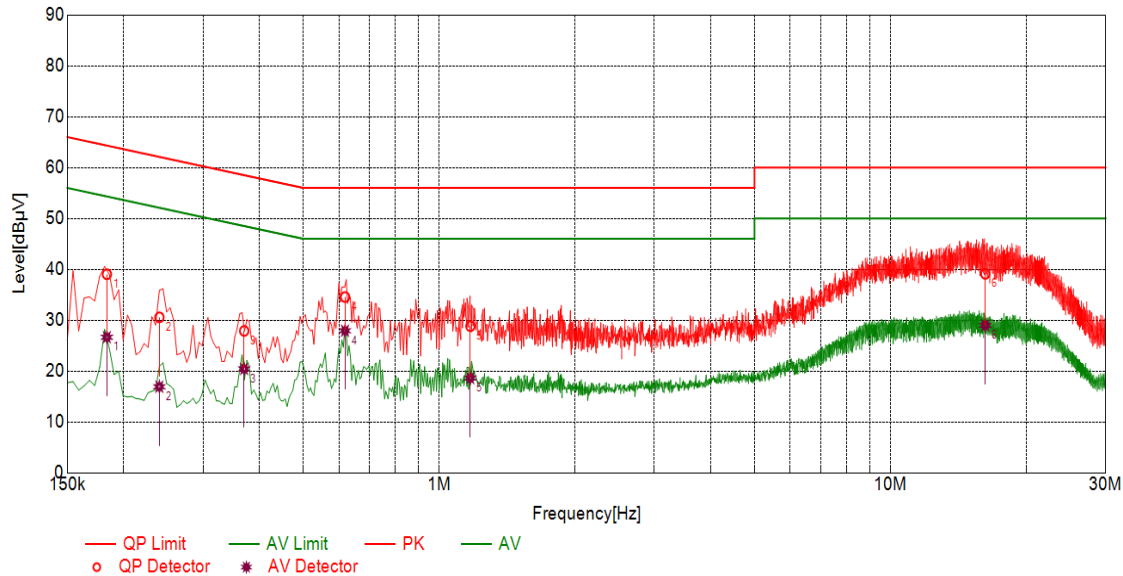


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Neutral Line:



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]
1	0.1836	10.10	39.04	64.32	25.28	26.65	54.32	27.67
2	0.2400	10.10	30.56	62.10	31.54	16.92	52.10	35.18
3	0.3699	10.10	27.90	58.50	30.60	20.43	48.50	28.07
4	0.6189	10.10	34.55	56.00	21.45	27.93	46.00	18.07
5	1.1729	10.10	28.84	56.00	27.16	18.63	46.00	27.37
6	16.2290	10.11	39.11	60.00	20.89	28.99	50.00	21.01

Remarks:

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



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Shenzhen Branch (SGS-CSTC Laboratory)

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4.3 Duty Cycle

4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]	T(ms)	1/T(kHz)	VBW(kHz)
BLE_1M	CH0, CH19, CH39	61.66	0.386	2.591	3
BLE_2M	CH0, CH19, CH39	31.94	0.199	5.025	10

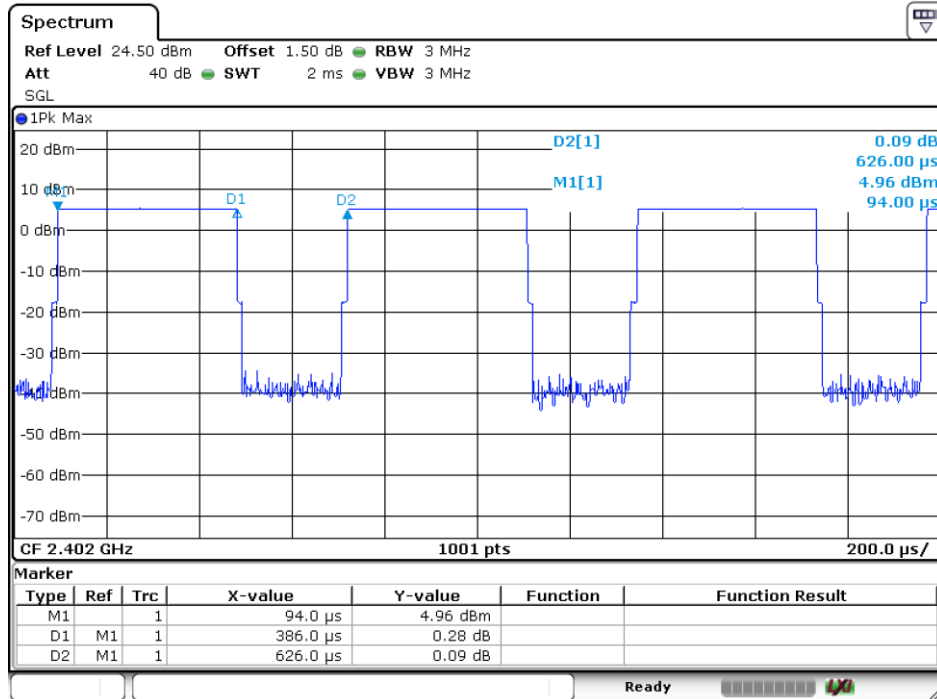


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4.3.2 Test Plots

4.3.2.1 ANT1

4.3.2.1.1 BLE_1M



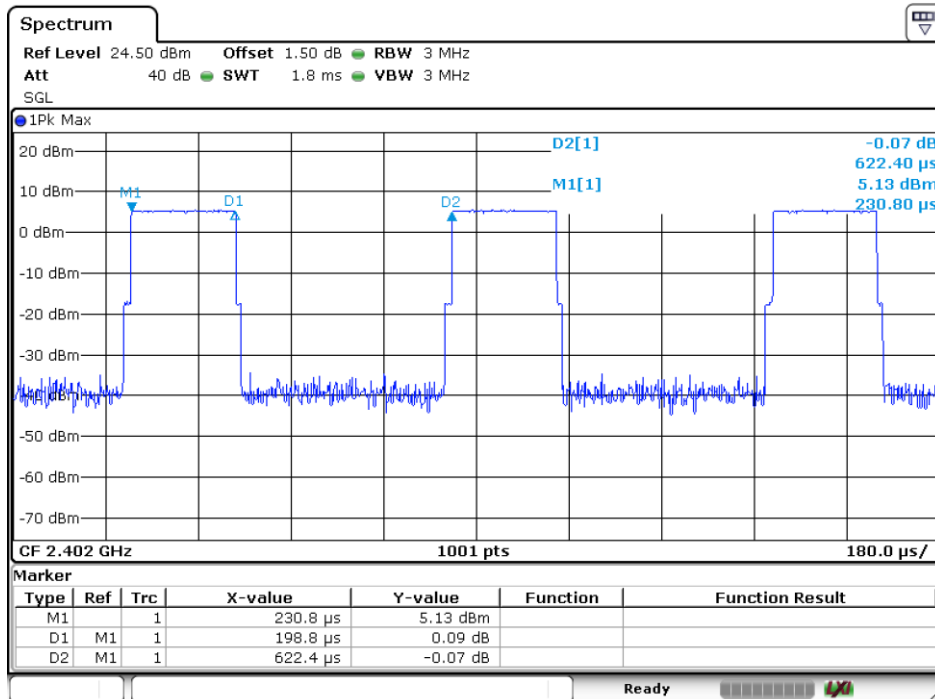
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4.3.2.1.2 BLE_2M



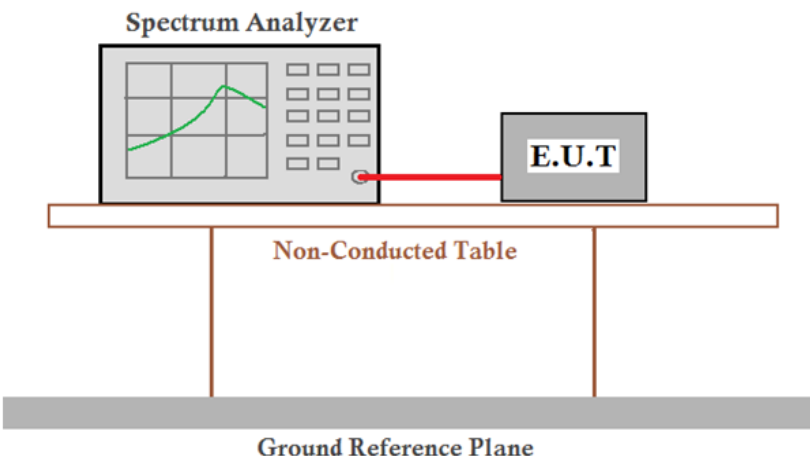
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4.4 Conducted Output Power

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 5.10 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	30dBm
Test Results:	Pass



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4.4.1 Test Results

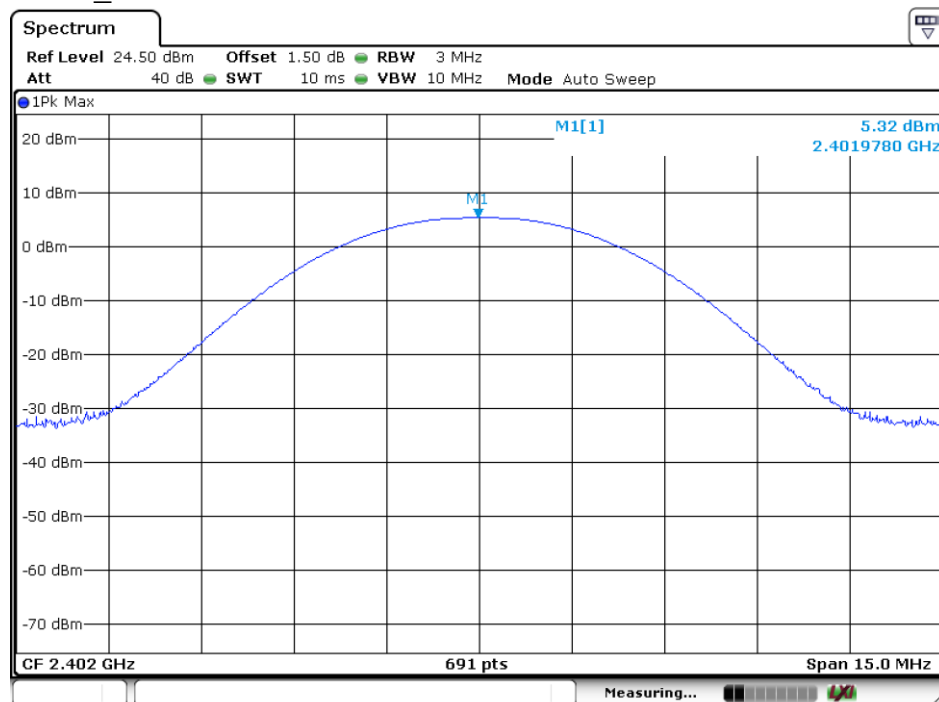
Measurement Data of Peak Power:

GFSK_1M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	5.32	30.00	Pass
Middle	7.98	30.00	Pass
Highest	7.54	30.00	Pass

GFSK_2M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	5.49	30.00	Pass
Middle	7.99	30.00	Pass
Highest	7.72	30.00	Pass

4.4.2 Test Plots

4.4.2.1 GFSK 1M_Lowest Channel



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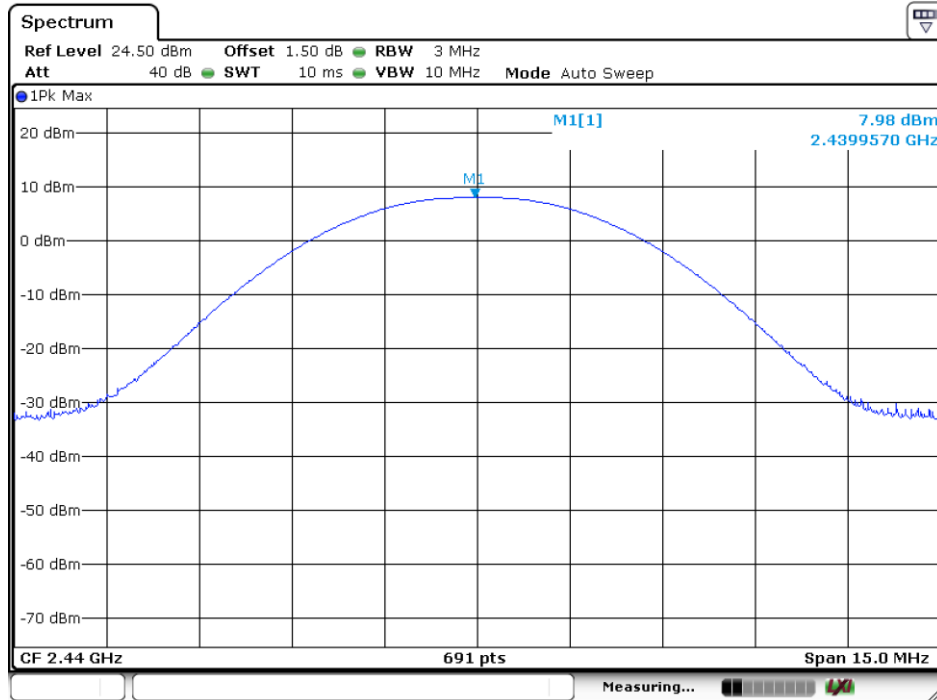
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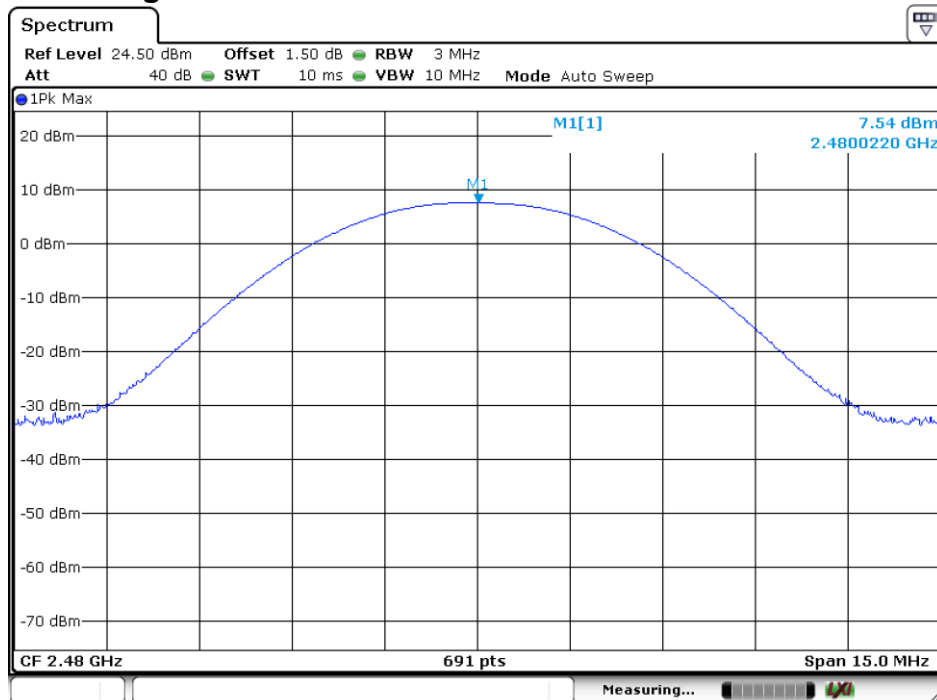
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4.4.2.2 GFSK 1M_Middle Channel



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4.4.2.3 GFSK 1M_Highest Channel

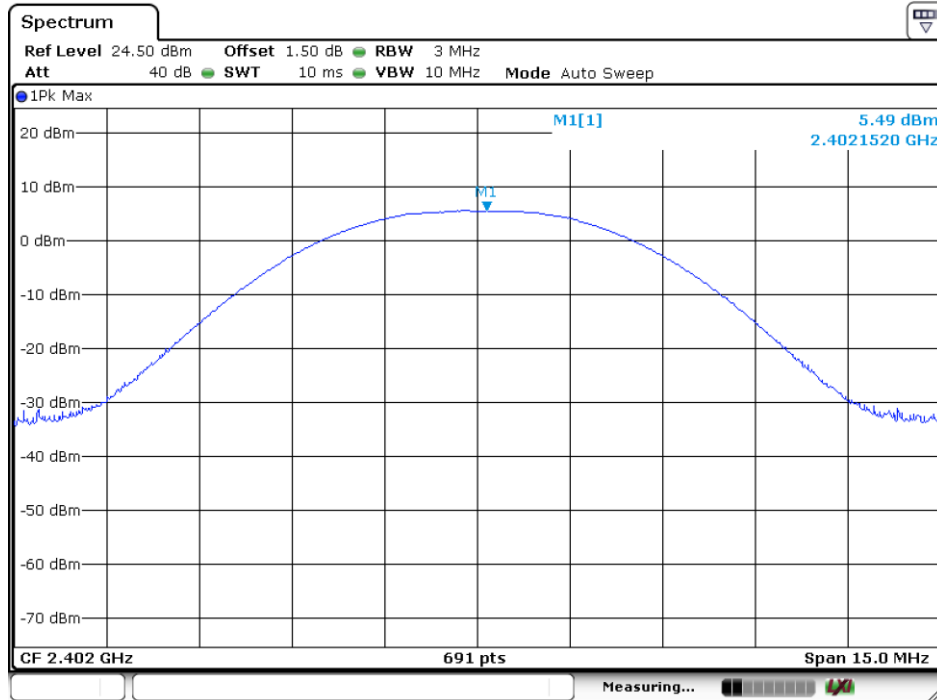


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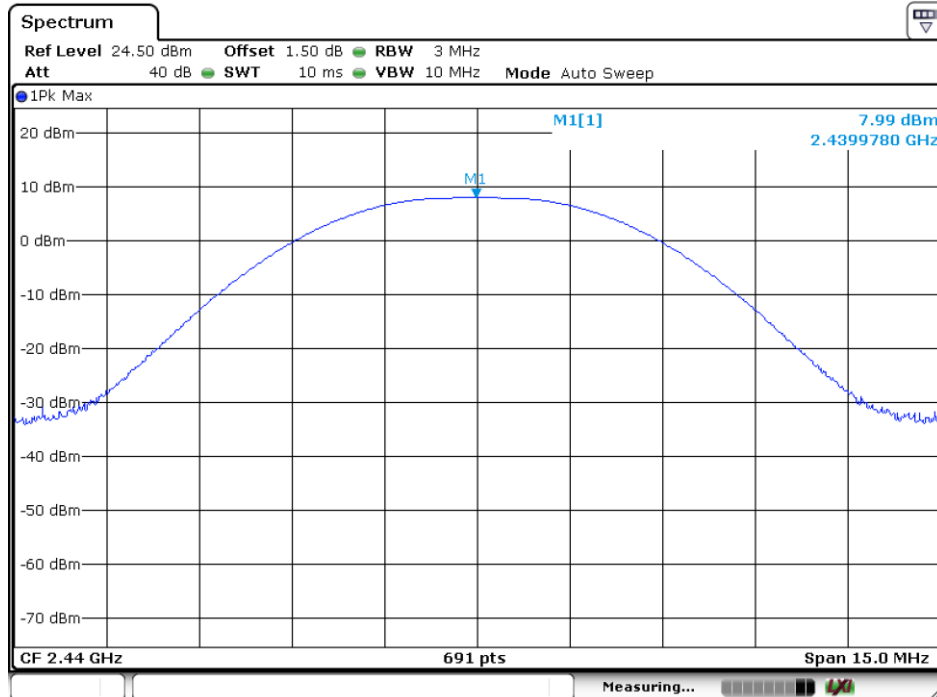
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4.4.2.4 GFSK 2M_Lowest Channel



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4.4.2.5 GFSK 2M_Middle Channel



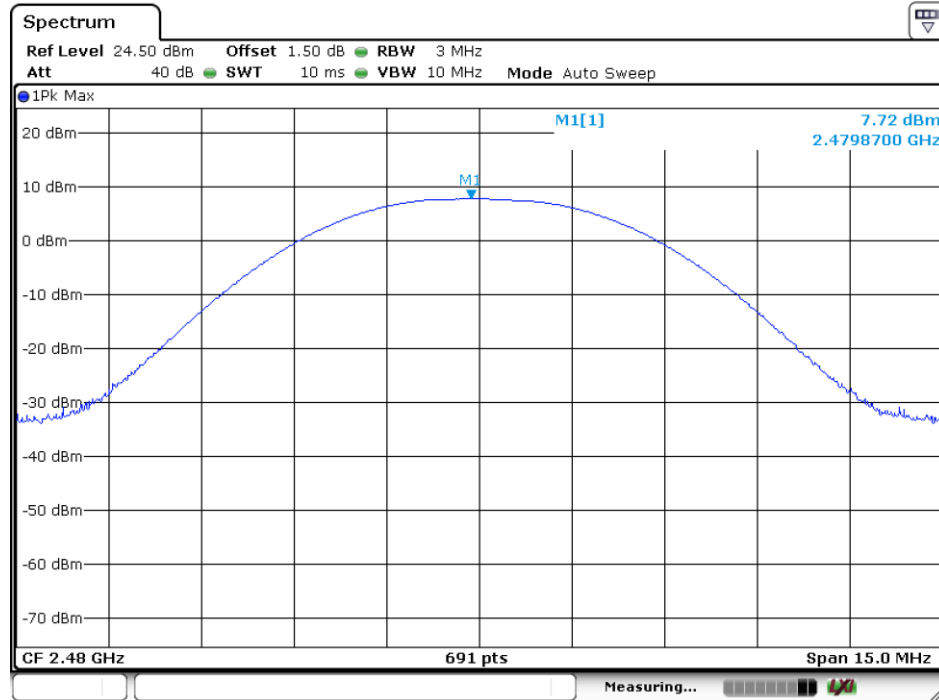
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4.4.2.6 GFSK 2M_Highest Channel



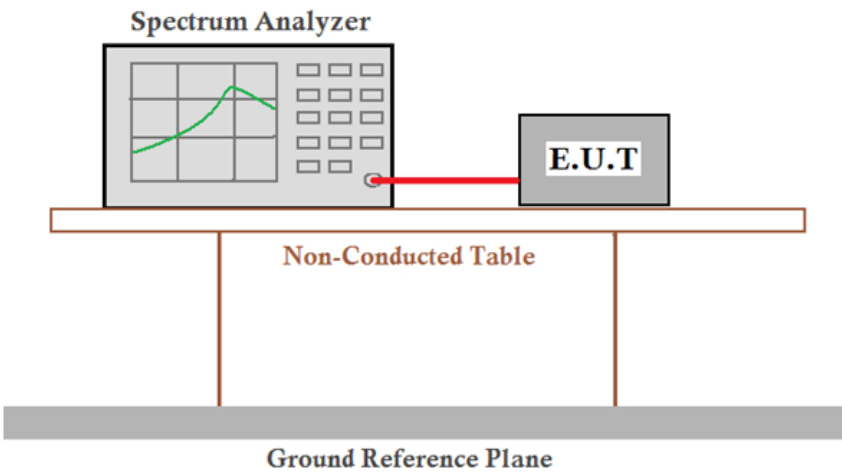
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4.5 DTS (6 dB) Bandwidth

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 5.10 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	≥ 500 kHz
Test Results:	Pass



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4.5.1 Test Results

Mode	Test Channel	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
GFSK_1M	Lowest	0.6686	≥500	Pass
	Middle	0.6773	≥500	Pass
	Highest	0.6860	≥500	Pass

Mode	Test Channel	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
GFSK_2M	Lowest	1.1433	≥500	Pass
	Middle	1.1577	≥500	Pass
	Highest	1.1563	≥500	Pass

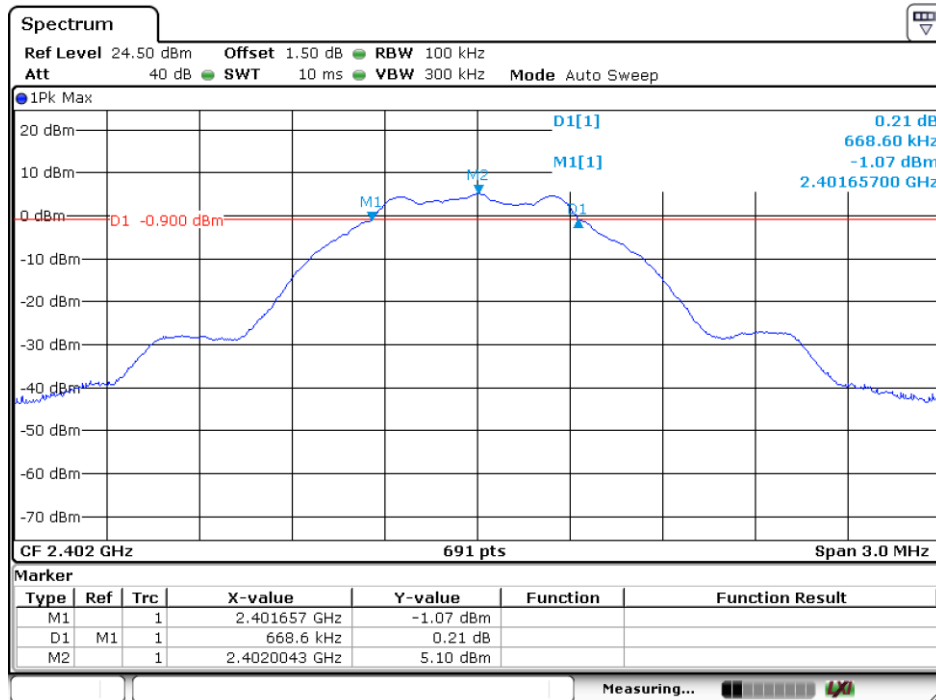


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4.5.2 Test Plots

4.5.2.1 GFSK 1M_Lowest Channel



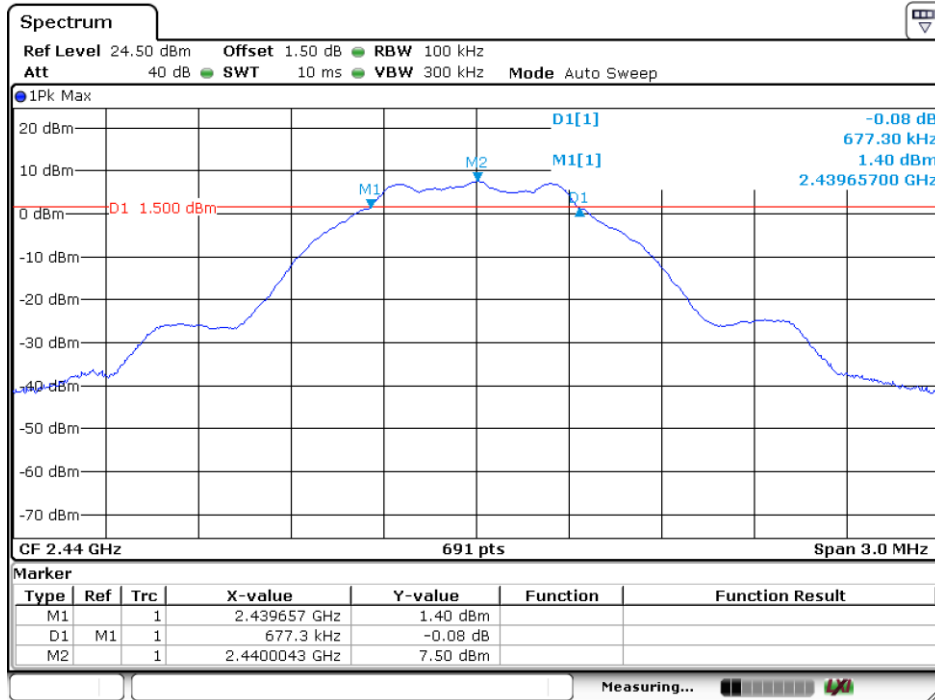
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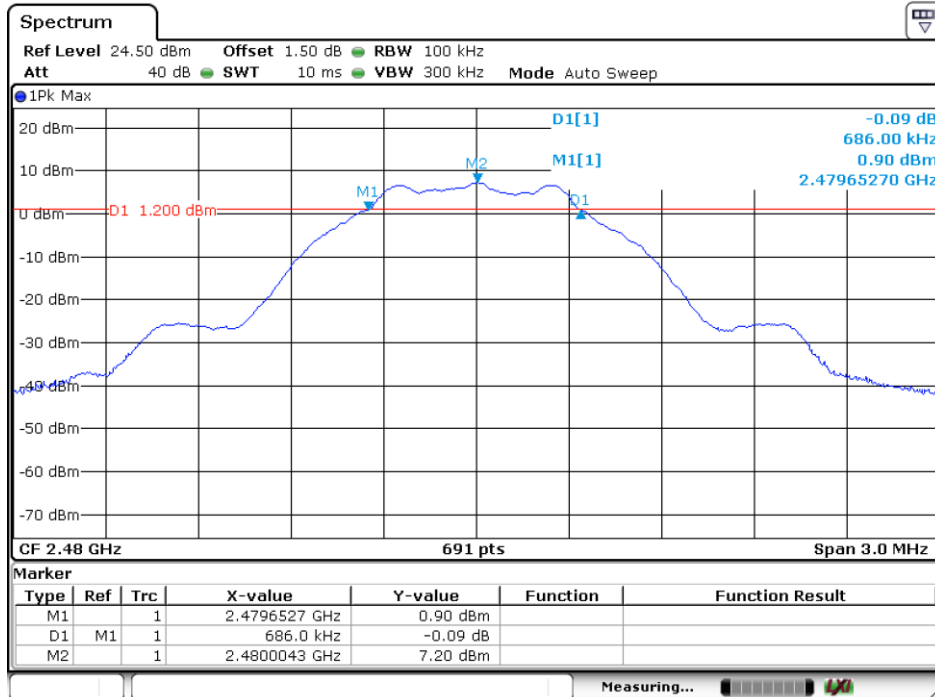
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4.5.2.2 GFSK 1M_Middle Channel



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4.5.2.3 GFSK 1M_Highest Channel



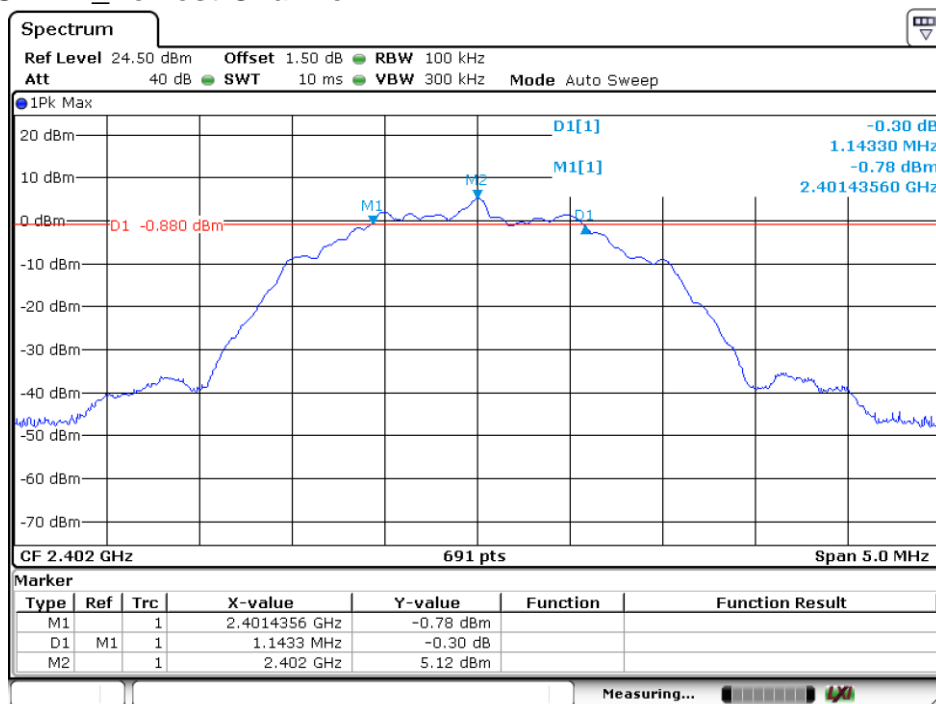
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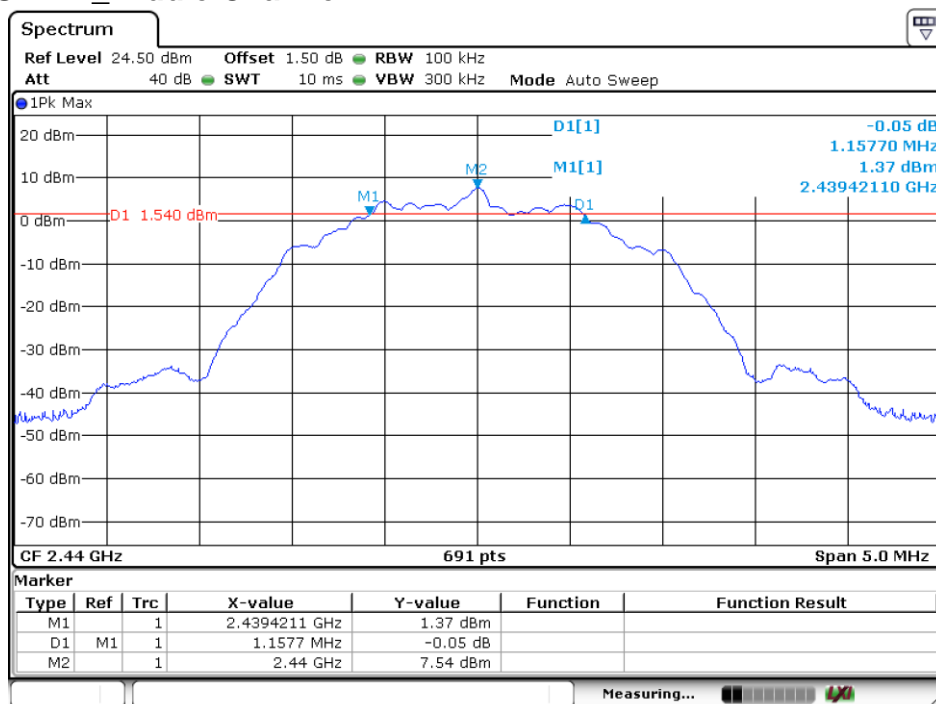
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4.5.2.4 GFSK 2M_Lowest Channel



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4.5.2.5 GFSK 2M_Middle Channel



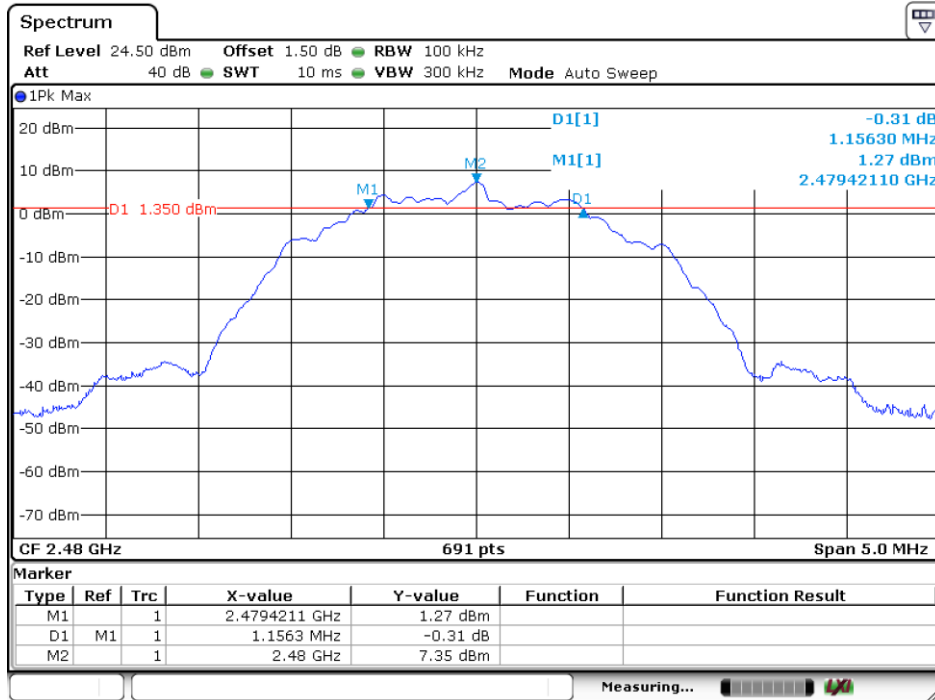
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4.5.2.6 GFSK 2M_Highest Channel



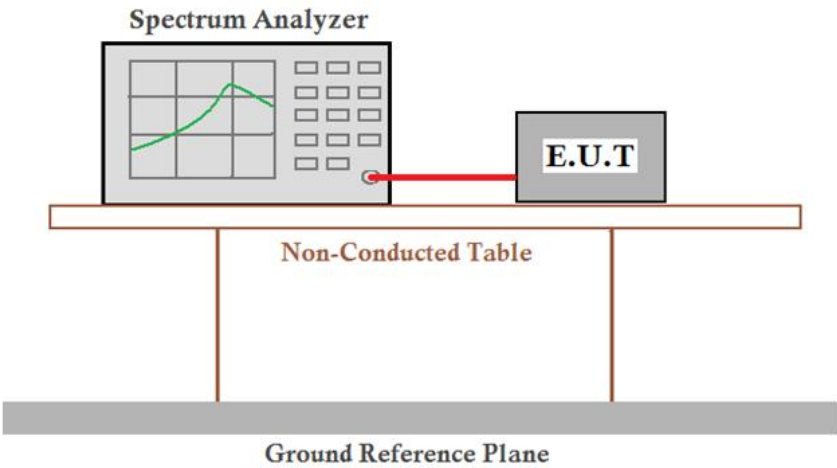
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4.6 Power Spectral Density

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 5.10 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 (dBm/3kHz)	Result
GFSK_1M	Lowest	-9.67	≤8.00	Pass
	Middle	-7.17	≤8.00	Pass
	Highest	-7.17	≤8.00	Pass

Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
GFSK_2M	Lowest	-12.67	≤8.00	Pass
	Middle	-10.02	≤8.00	Pass
	Highest	-10.32	≤8.00	Pass

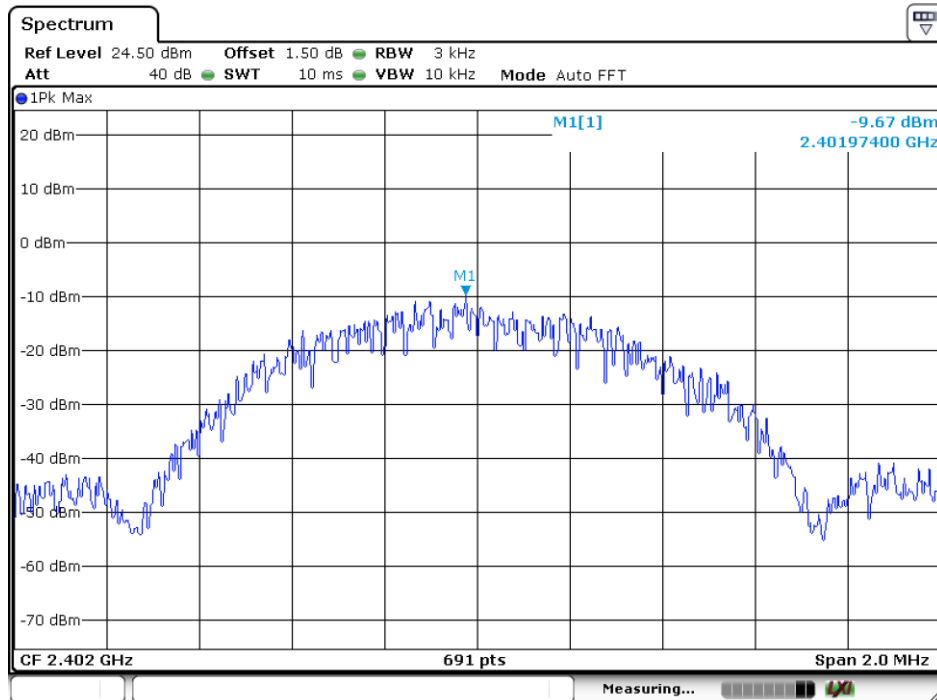


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4.6.2 Test Plots

4.6.2.1 GFSK 1M_Lowest Channel



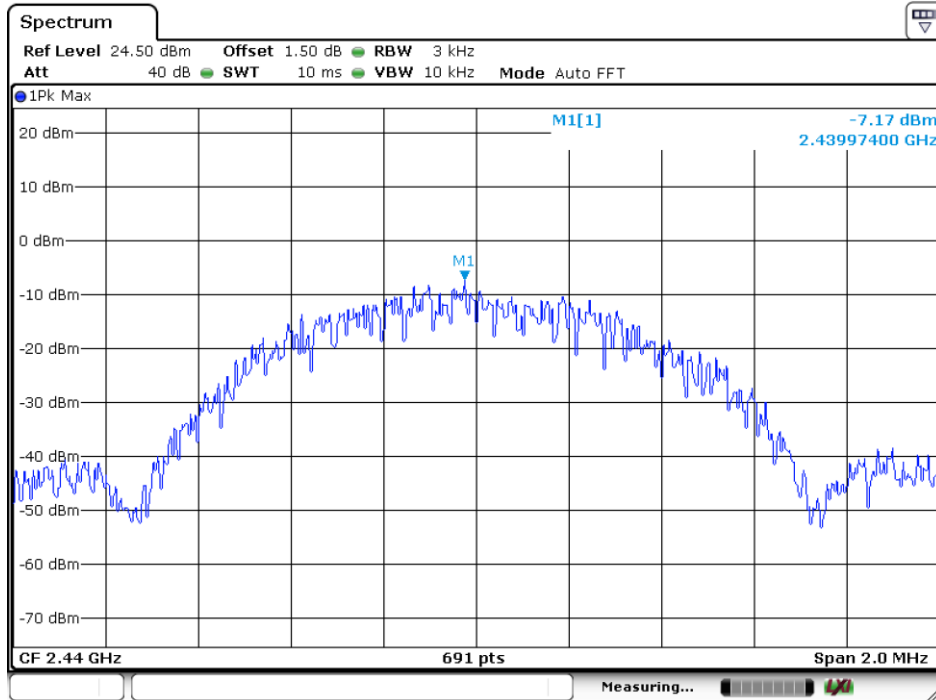
Date: 11.JAN.2021 10:22:21



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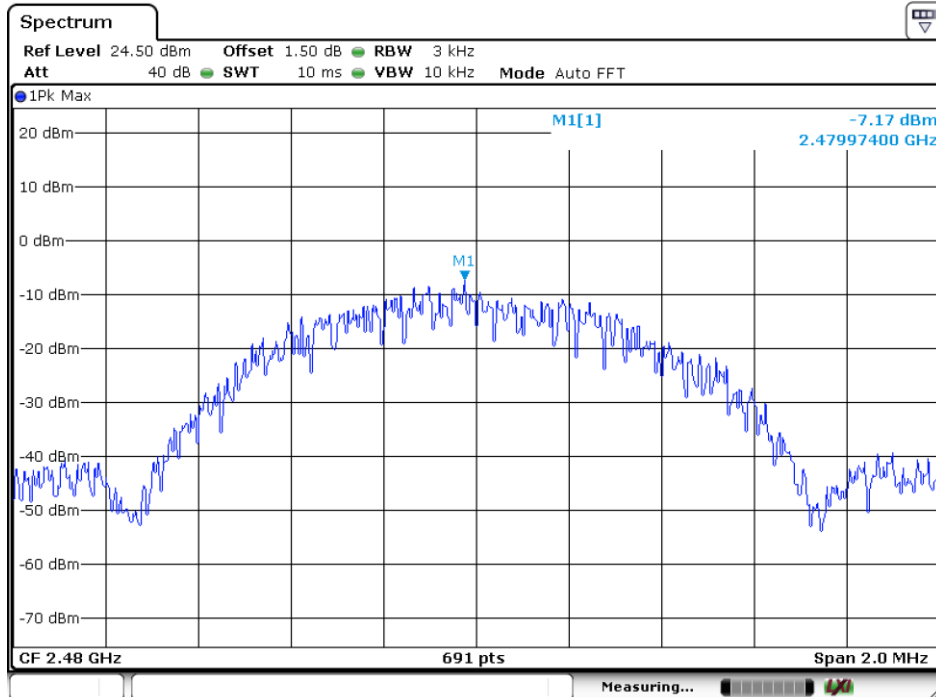
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4.6.2.2 GFSK 1M_Middle Channel



Date: 11.JAN.2021 10:22:08

4.6.2.3 GFSK 1M_Highest Channel



Date: 11.JAN.2021 10:21:53

4.6.2.4 GFSK 2M_Lowest Channel

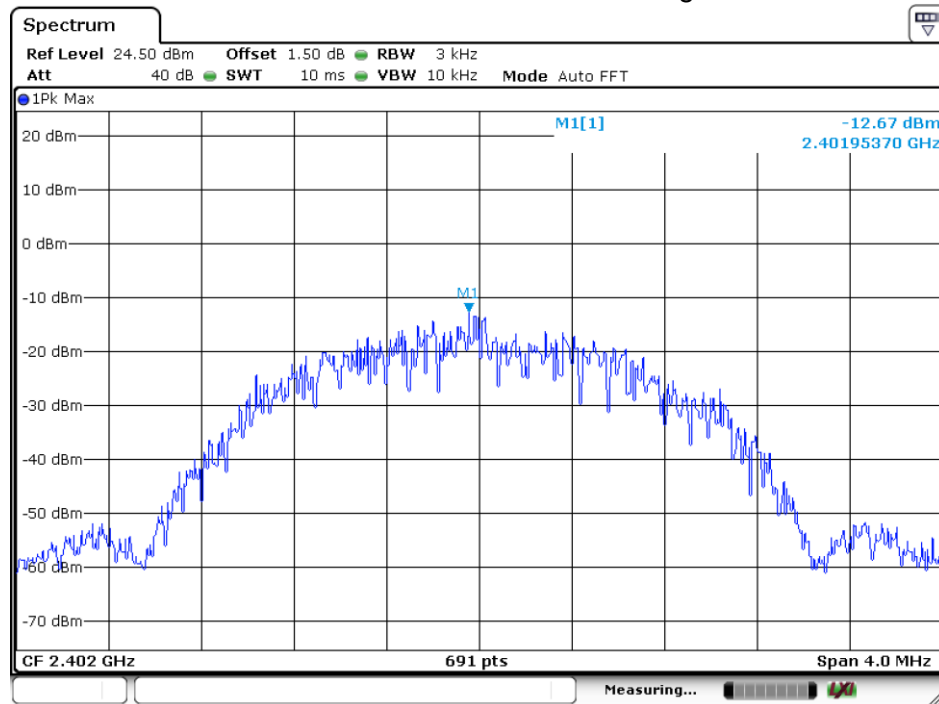


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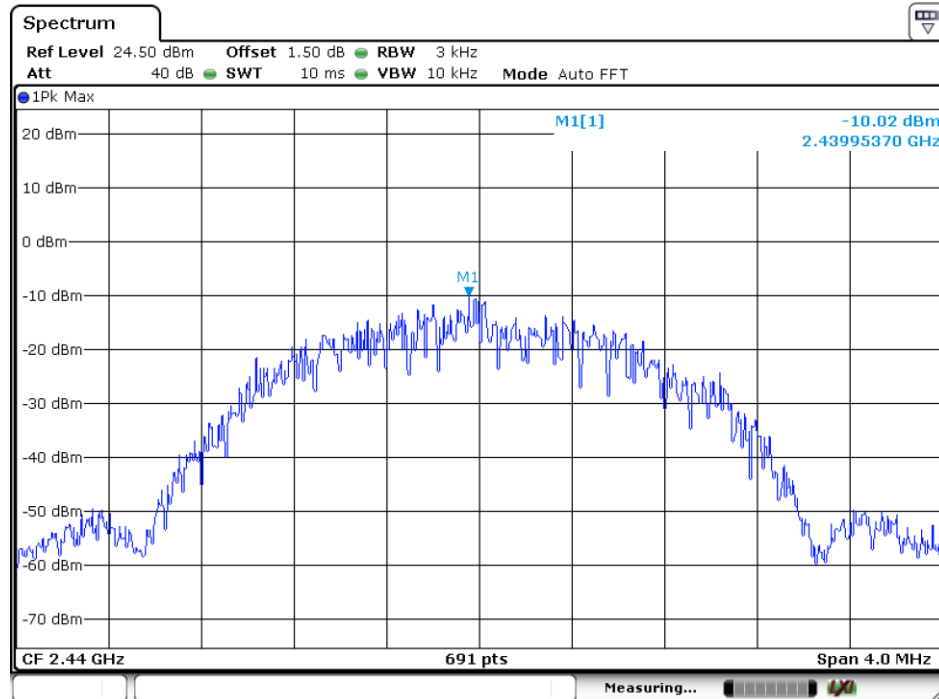
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Date: 11.JAN.2021 10:19:39

4.6.2.5 GFSK 2M_Middle Channel



Date: 11.JAN.2021 10:21:19

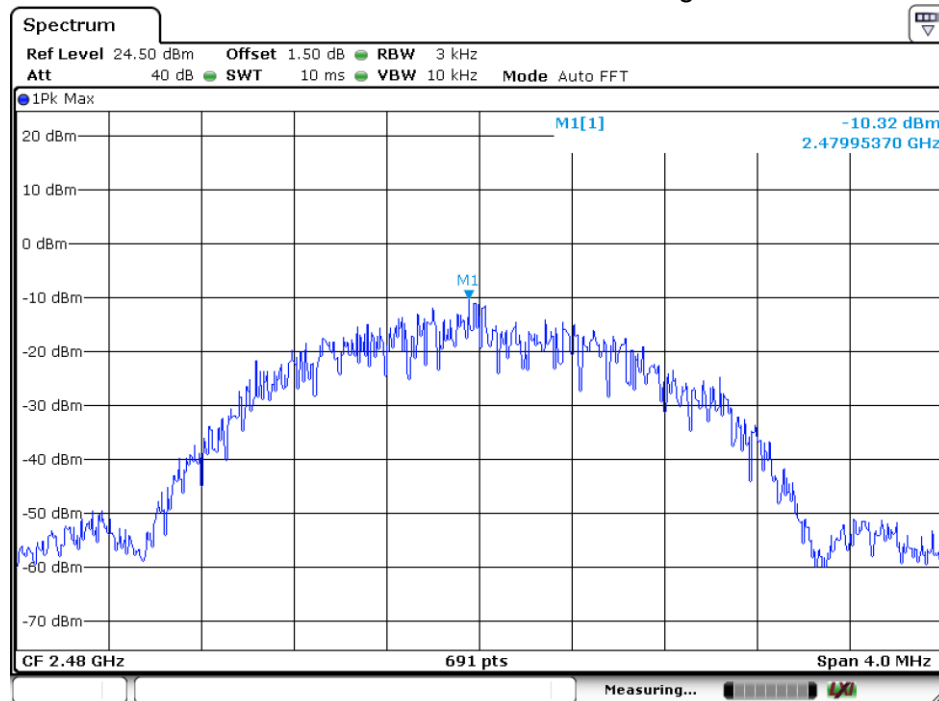
4.6.2.6 GFSK 2M_Highest Channel



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Report No.: ZR/2020/C003403

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Date: 11.JAN.2021 10:21:39



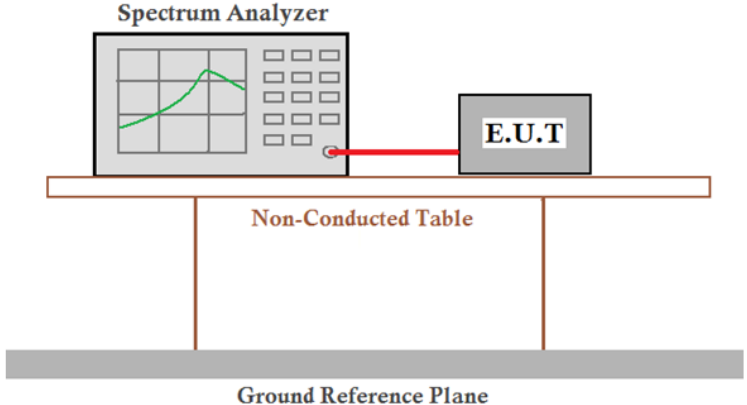
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4.7 Band-edge for RF Conducted Emissions

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 5.10 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

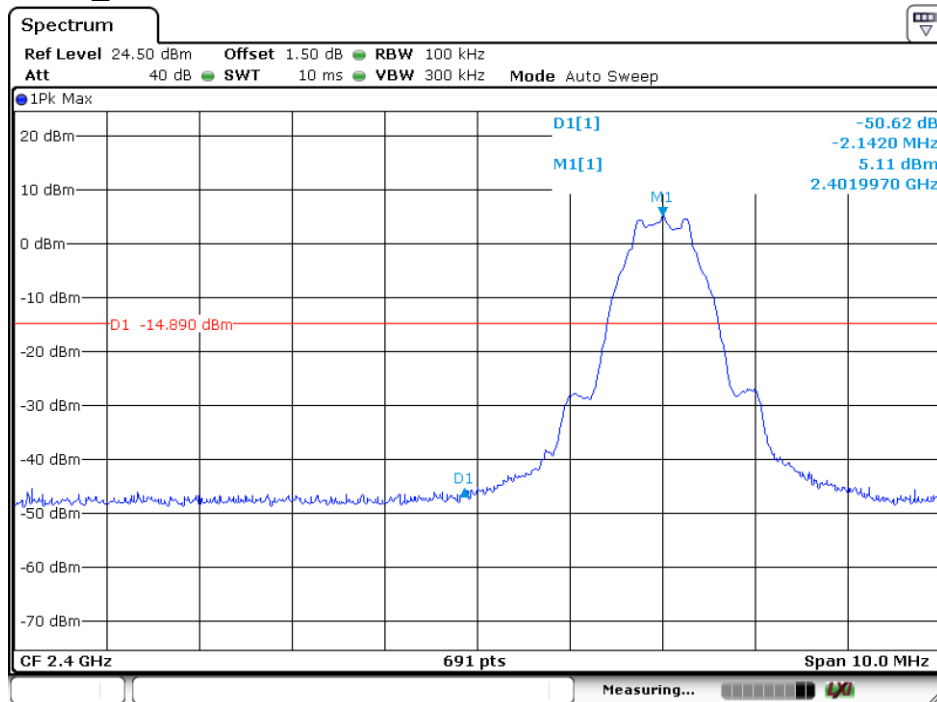


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4.7.1 Test Plots

4.7.1.1 GFSK 1M_Lowest Channel



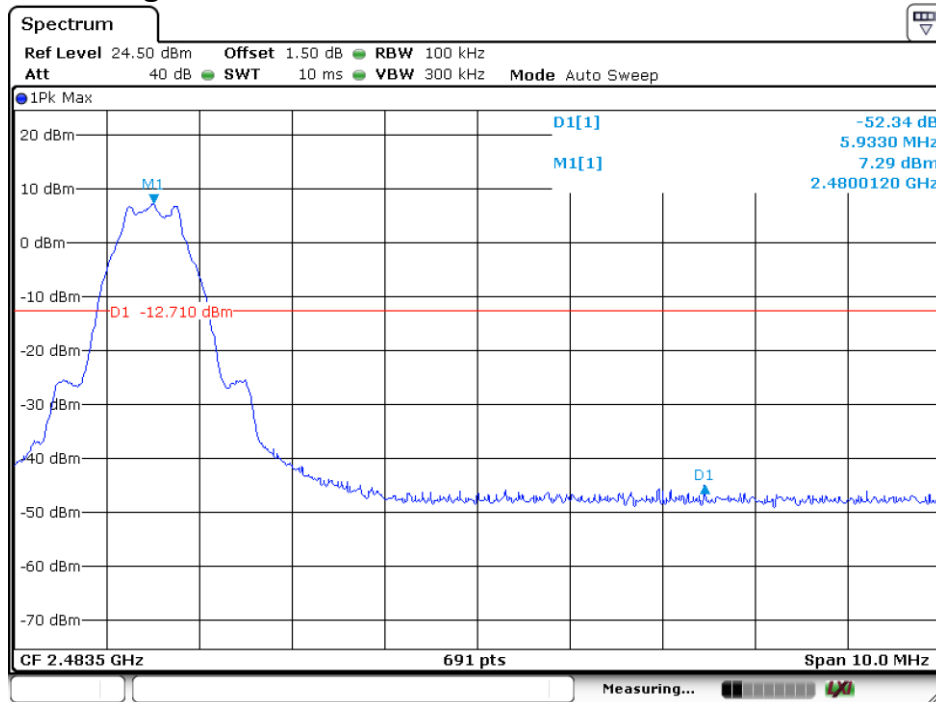
Date: 11.JAN.2021 10:29:27



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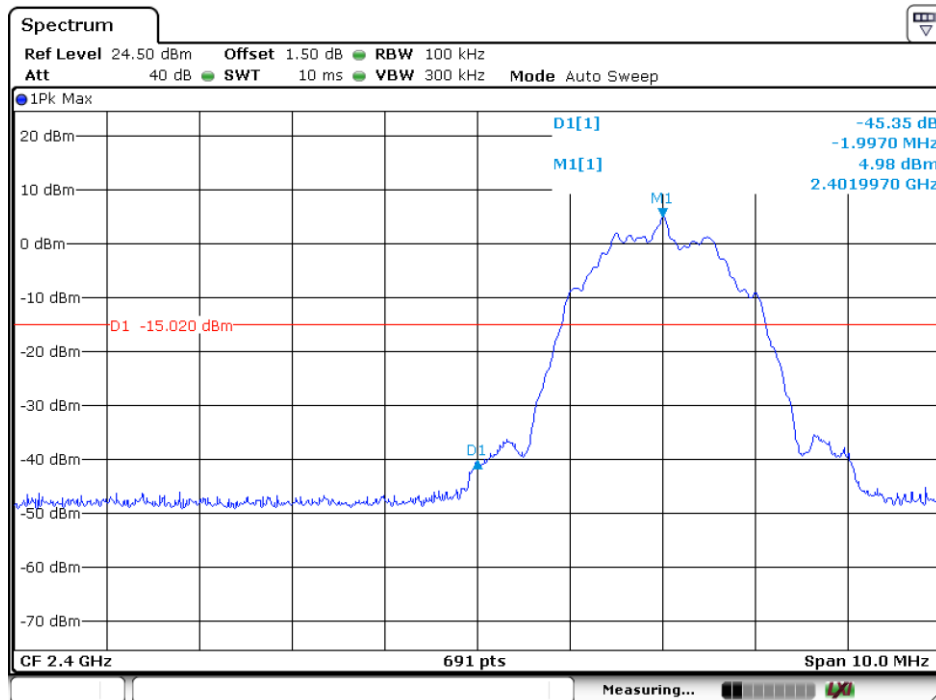
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4.7.1.2 GFSK 1M_Highest Channel



Date: 11.JAN.2021 10:31:24

4.7.1.3 GFSK 2M_Lowest Channel



Date: 11.JAN.2021 10:30:03

4.7.1.4 GFSK 2M_Highest Channel



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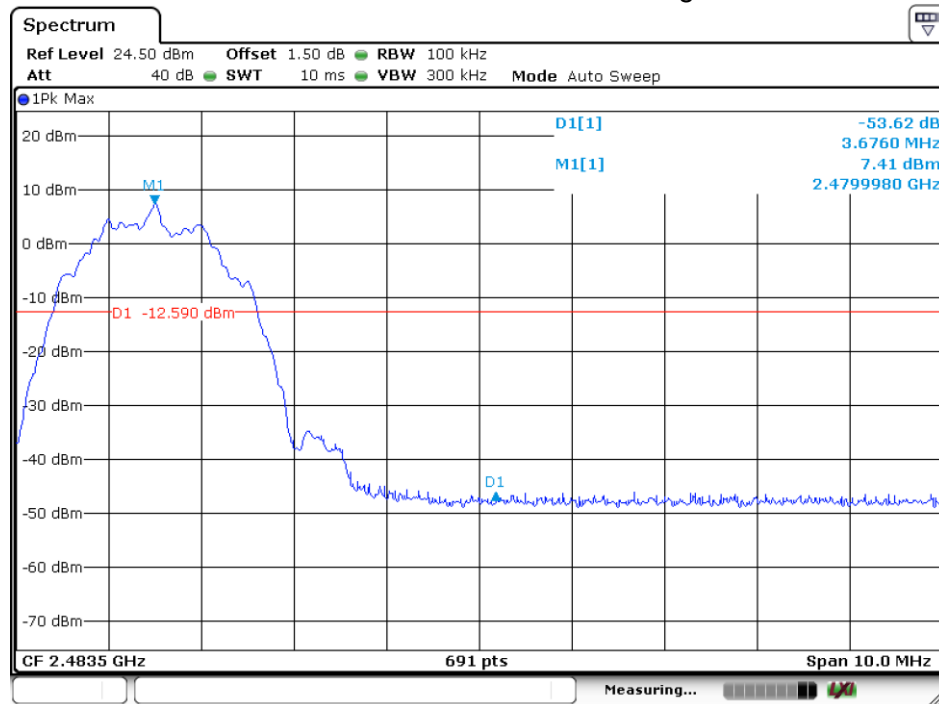
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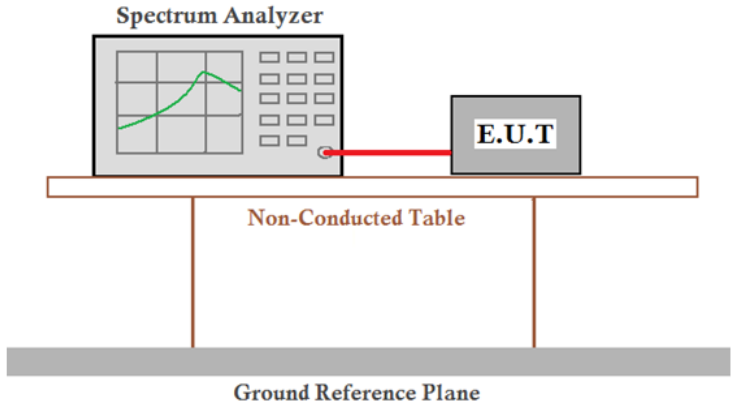
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4.8 RF Conducted Spurious Emissions

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 5.10 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

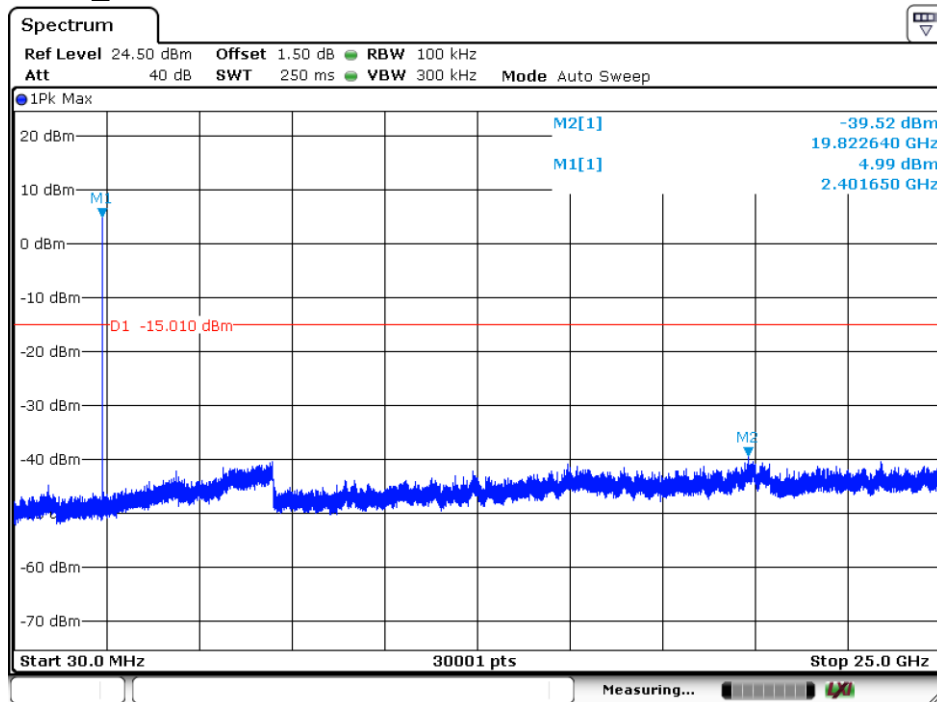


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4.8.1 Test Plots

4.8.1.1 GFSK 1M_Lowest Channel



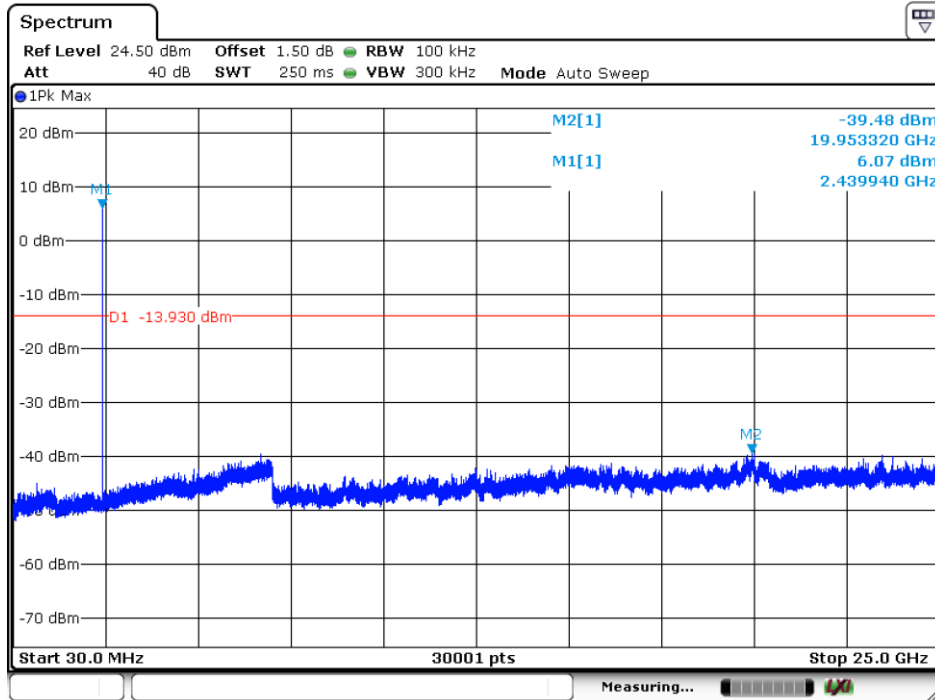
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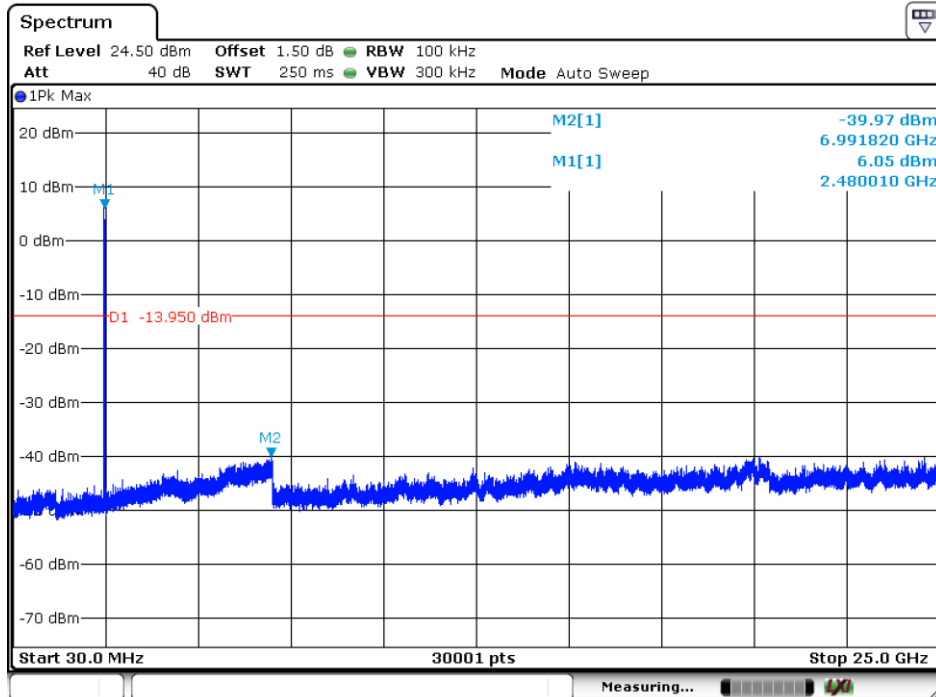
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4.8.1.2 GFSK 1M_Middle Channel



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4.8.1.3 GFSK 1M_Highest Channel

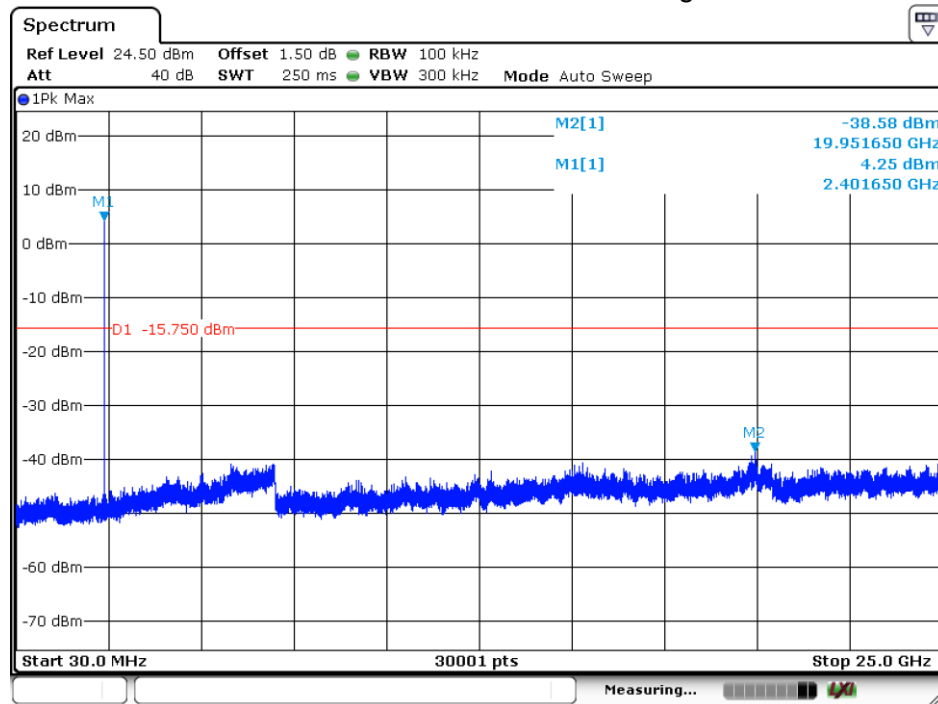


Date: 11.JAN.2021 10:32:42

4.8.1.4 GFSK 2M_Lowest Channel

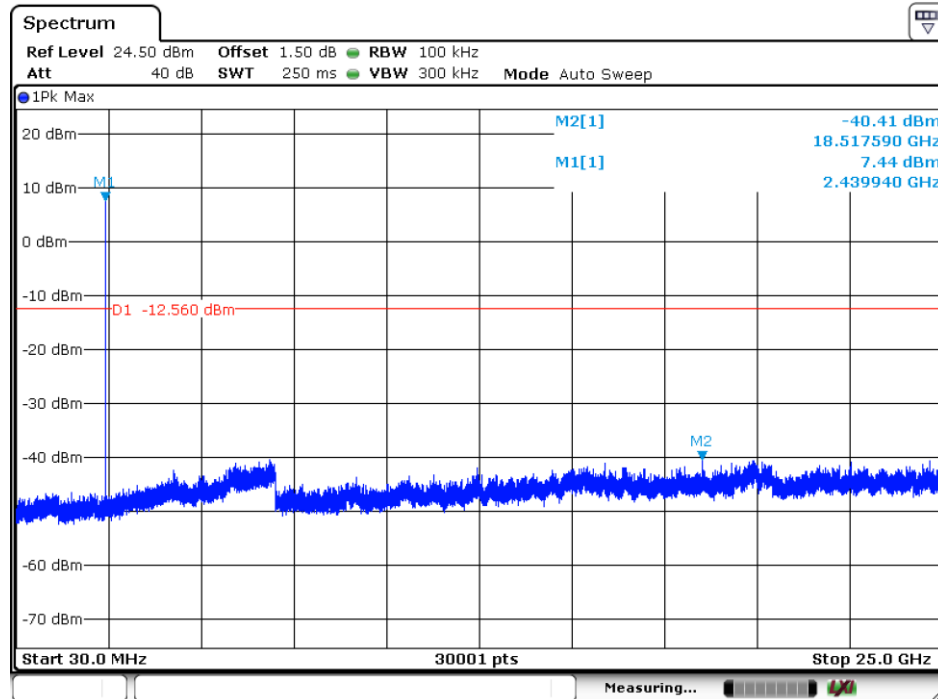


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4.8.1.5 GFSK 2M_Middle Channel



Date: 11.JAN.2021 10:33:43

4.8.1.6 GFSK 2M_Highest Channel

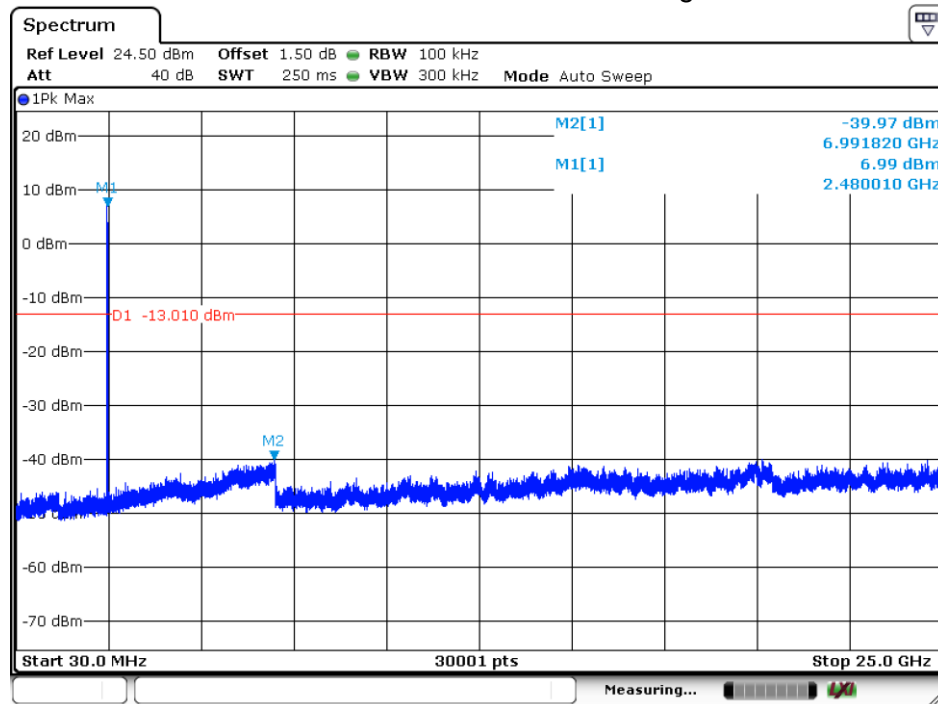


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Date: 11.JAN.2021 10:33:01

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)				
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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Test Setup:

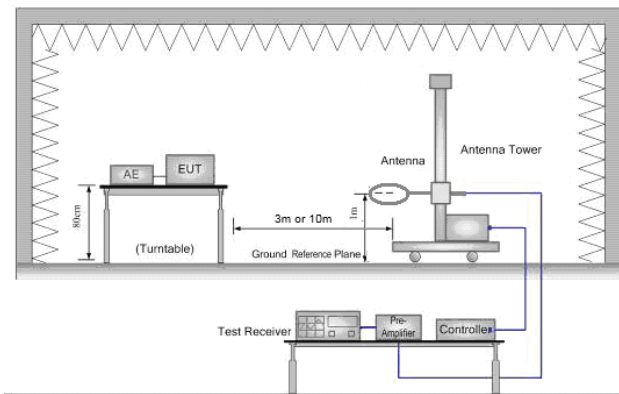


Figure 1. Below 30MHz

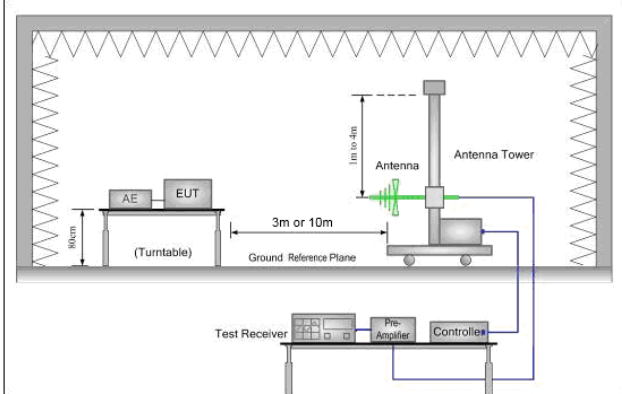


Figure 2. 30MHz to 1GHz

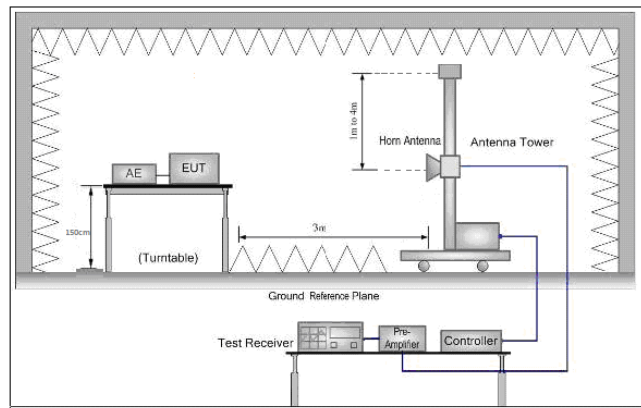


Figure 3. Above 1 GHz

Test Procedure:

- 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.
- 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
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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



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Report No.: ZR/2020/C003403

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	<p>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>h. Test the EUT in the lowest channel, the middle channel ,the Highest channel.</p> <p>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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>
Test Configuration:	<p>Measurements Below 1000MHz</p> <ul style="list-style-type: none"> • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold <p>Peak Measurements Above 1000 MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW \geq 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold <p>Average Measurements Above 1000MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	<p>Transmitting with GFSK modulation.</p> <p>Charge + Transmitting mode.</p>
Final Test Mode:	<p>Transmitting with GFSK modulation.</p> <p>Pretest the EUT at Charge + Transmitting mode,</p> <p>For below 1GHz part, through pre-scan, the worst case is the lowest channel. Only the worst case is recorded in the report.</p>
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass
Remark:	The Emission Test is performed by the Lab B



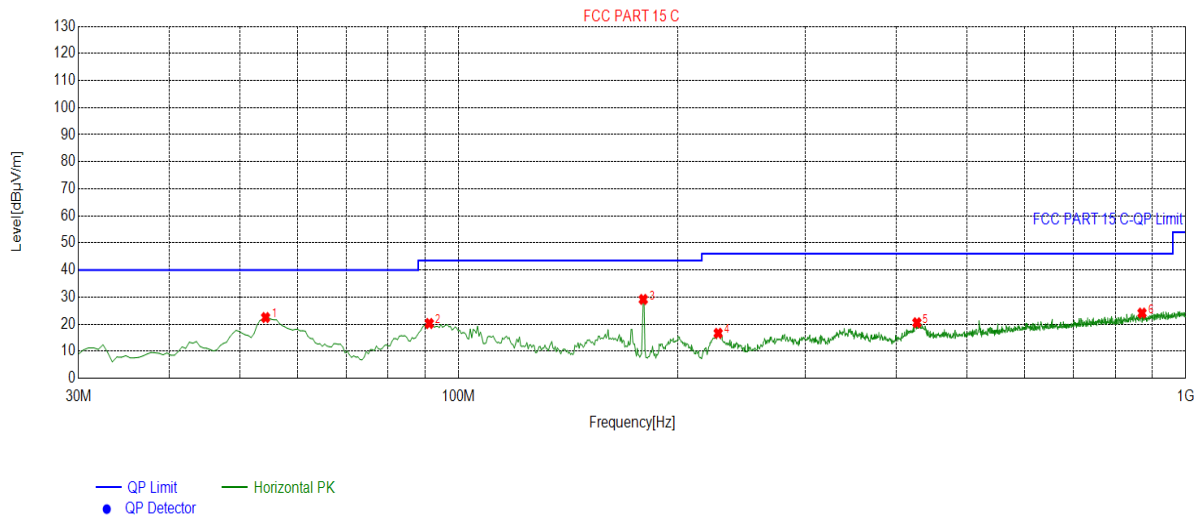
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4.9.1 Radiated Emission below 1GHz

4.9.1.1 Charge + Transmitting

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	54.2621	22.44	-30.82	40.00	17.56	175	230	Horizontal
2	91.1406	20.25	-33.23	43.50	23.25	254	106	Horizontal
3	179.454	29.14	-32.95	43.50	14.36	315	90	Horizontal
4	227.493	16.65	-30.05	46.00	29.35	150	109	Horizontal
5	426.928	20.52	-24.31	46.00	25.48	246	109	Horizontal
6	870.925	24.08	-15.70	46.00	21.92	179	47	Horizontal

Final Data List



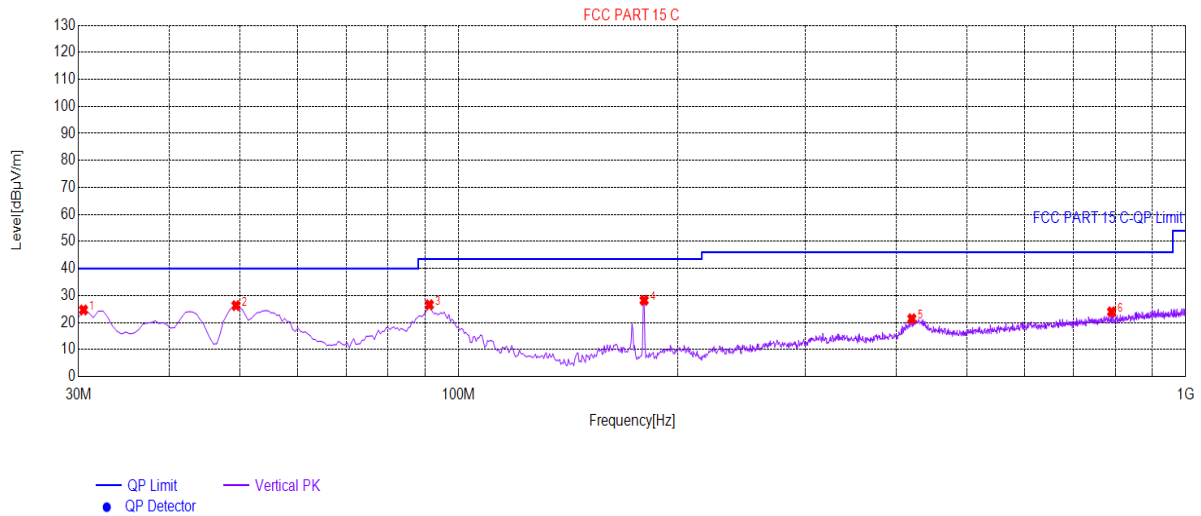
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Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.4852	24.66	-32.83	40.00	15.34	178	12	Vertical
2	49.4097	26.28	-30.18	40.00	13.72	136	329	Vertical
3	91.1406	26.57	-33.23	43.50	16.93	342	95	Vertical
4	179.940	28.21	-32.91	43.50	15.29	149	24	Vertical
5	420.135	21.41	-24.44	46.00	24.59	274	126	Vertical
6	790.860	23.98	-17.07	46.00	22.02	165	278	Vertical

Final Data List



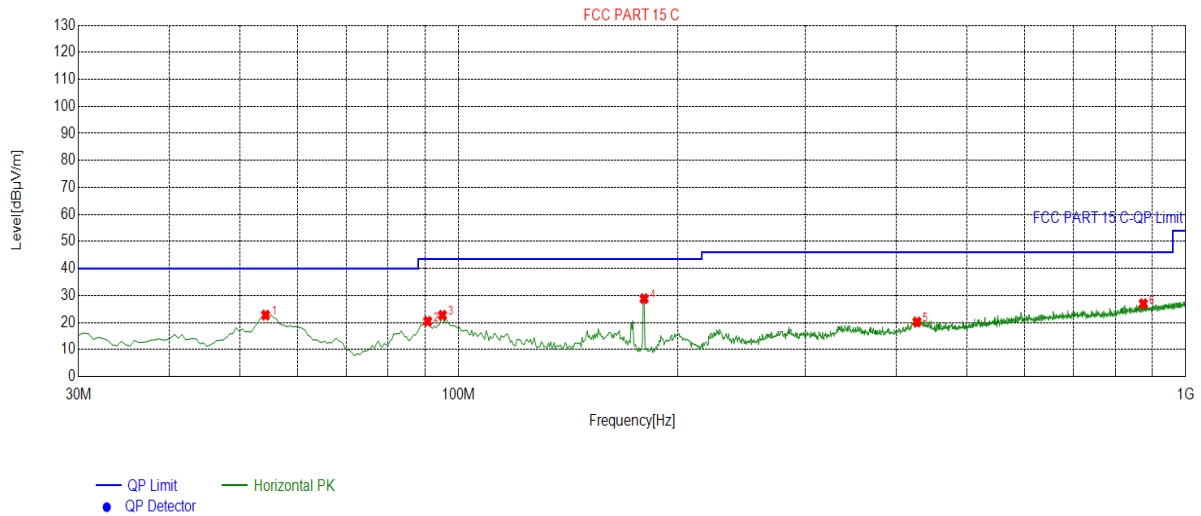
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Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	54.2621	22.75	-31.01	40.00	17.25	185	207	Horizontal
2	90.6553	20.45	-33.60	43.50	23.05	245	255	Horizontal
3	95.0225	22.69	-32.89	43.50	20.81	177	247	Horizontal
4	179.940	28.85	-33.29	43.50	14.65	136	86	Horizontal
5	426.928	20.20	-24.96	46.00	25.80	278	302	Horizontal
6	874.322	26.98	-16.47	46.00	19.02	354	195	Horizontal

Final Data List



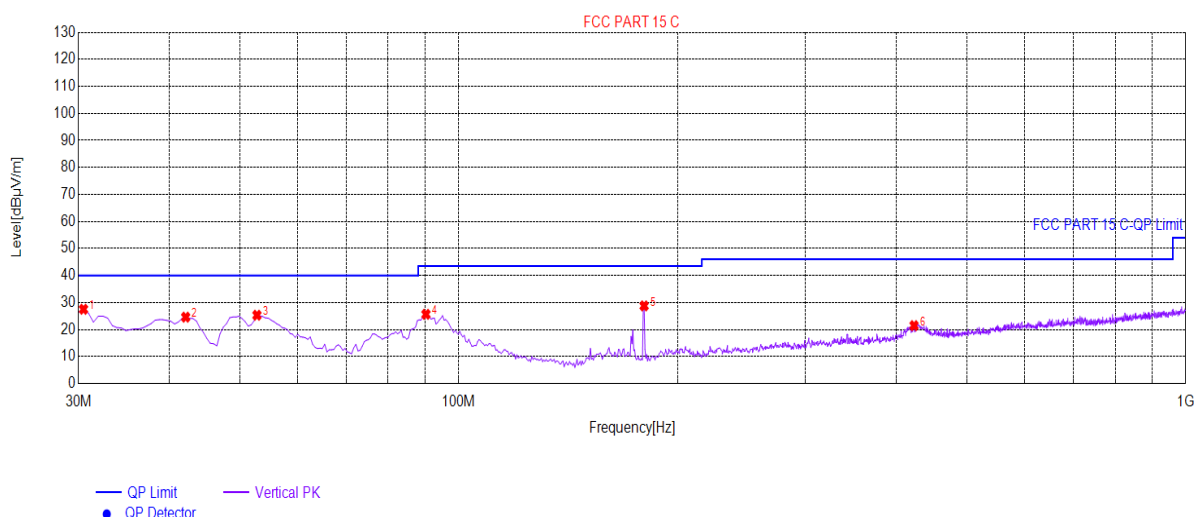
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Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	30.4852	27.51	-30.07	40.00	12.49	222	26	Vertical
2	42.1311	24.59	-29.23	40.00	15.41	247	346	Vertical
3	52.8064	25.31	-30.79	40.00	14.69	150	339	Vertical
4	90.1701	25.64	-33.68	43.50	17.86	178	80	Vertical
5	179.940	28.76	-33.29	43.50	14.74	253	346	Vertical
6	423.046	21.46	-25.09	46.00	24.54	256	128	Vertical

Final Data List



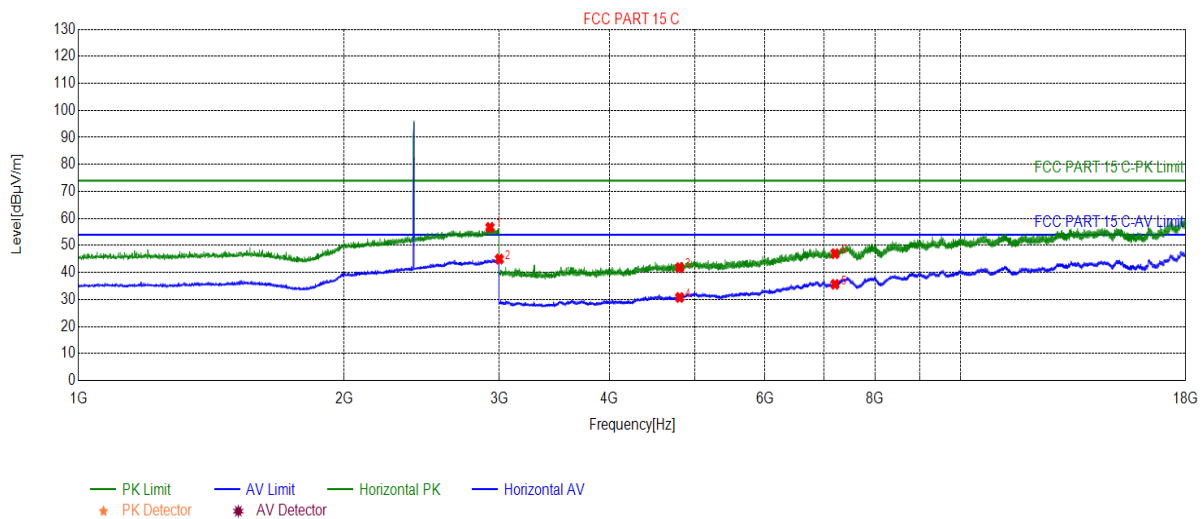
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4.9.2 Transmitter Emission above 1GHz

4.9.2.1 BLE 1M_Channel 0

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2927.98	56.68	10.70	74.00	17.32	150	341	Horizontal
2	3000.00	44.97	10.78	54.00	9.03	150	91	Horizontal
3	4804.00	41.82	-17.18	74.00	32.18	150	176	Horizontal
4	4804.00	30.77	-17.18	54.00	23.23	150	262	Horizontal
5	7206.00	35.63	-9.48	54.00	18.37	150	6	Horizontal
6	7206.00	46.97	-9.48	74.00	27.03	150	262	Horizontal

Final Data List

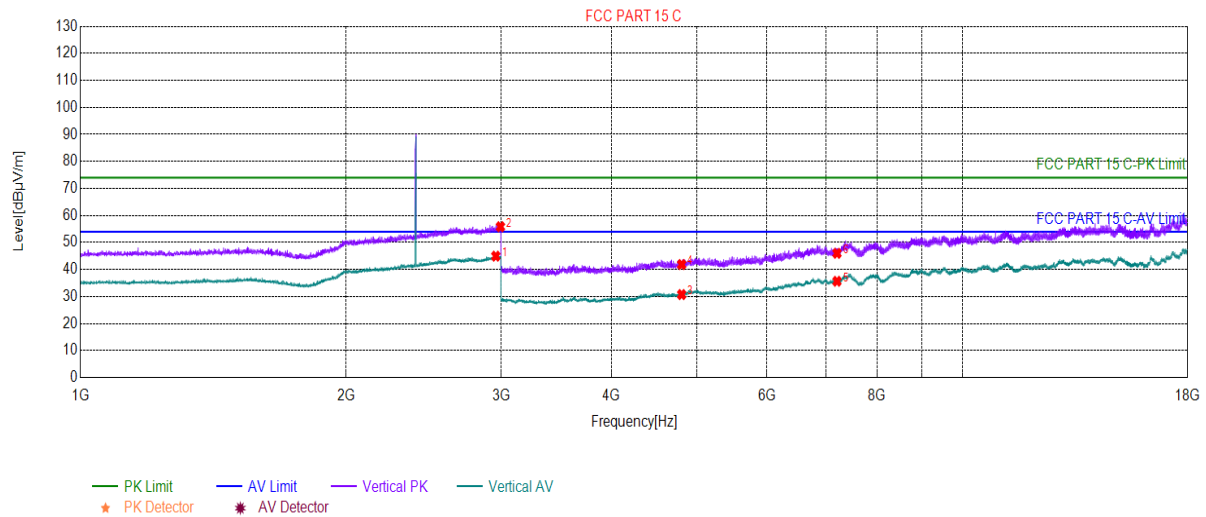


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4.9.2.2 BLE 1M_Channel 0

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2956.98	44.94	10.66	54.00	9.06	215	259	Vertical
2	2993.49	55.84	10.66	74.00	18.16	199	97	Vertical
3	4804.00	30.73	-17.18	54.00	23.27	163	71	Vertical
4	4804.00	41.85	-17.18	74.00	32.15	178	224	Vertical
5	7206.00	35.65	-9.48	54.00	18.35	221	37	Vertical
6	7206.00	45.98	-9.48	74.00	28.02	198	275	Vertical

Final Data List

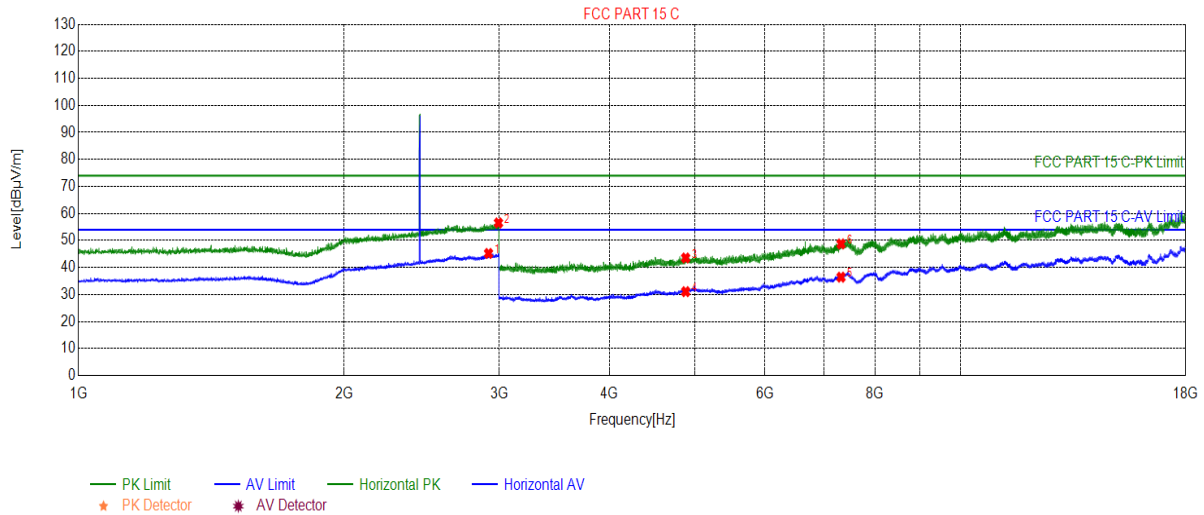


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4.9.2.3 BLE 1M_Channel 19

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2916.97	45.21	10.49	54.00	8.79	156	269	Horizontal
2	2993.49	56.50	10.66	74.00	17.50	179	289	Horizontal
3	4880.00	43.52	-16.81	74.00	30.48	167	90	Horizontal
4	4880.00	31.07	-16.81	54.00	22.93	189	192	Horizontal
5	7320.00	36.42	-9.28	54.00	17.58	168	159	Horizontal
6	7320.00	48.73	-9.28	74.00	25.27	198	330	Horizontal

Final Data List

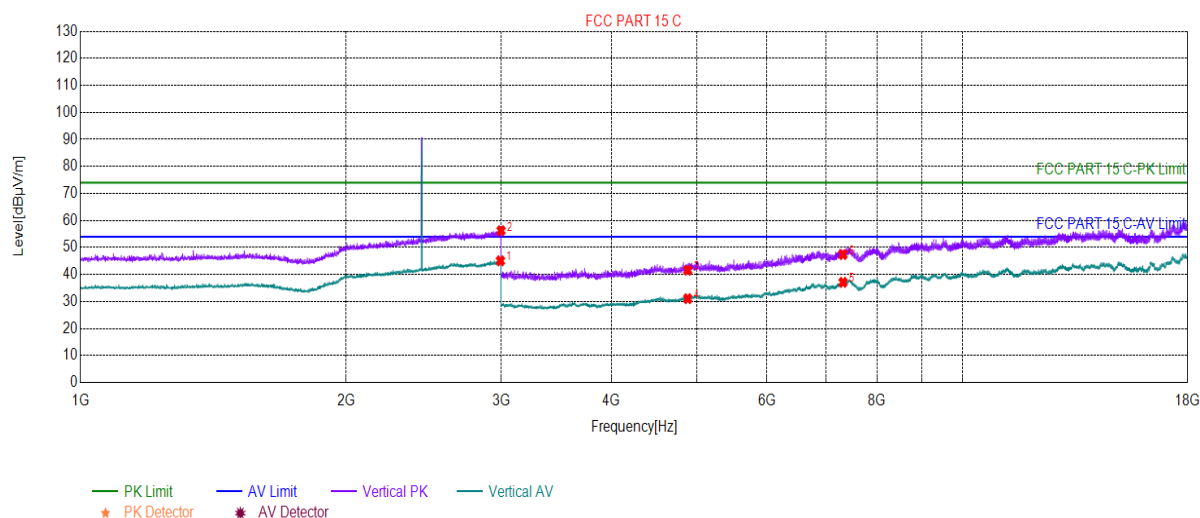


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4.9.2.4 BLE 1M_Channel 19

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2993.49	45.07	10.66	54.00	8.93	168	254	Vertical
2	2997.99	56.22	10.75	74.00	17.78	179	301	Vertical
3	4880.00	41.59	-16.81	74.00	32.41	214	252	Vertical
4	4880.00	31.07	-16.81	54.00	22.93	203	320	Vertical
5	7320.00	37.11	-9.28	54.00	16.89	189	252	Vertical
6	7320.00	47.39	-9.28	74.00	26.61	187	99	Vertical

Final Data List

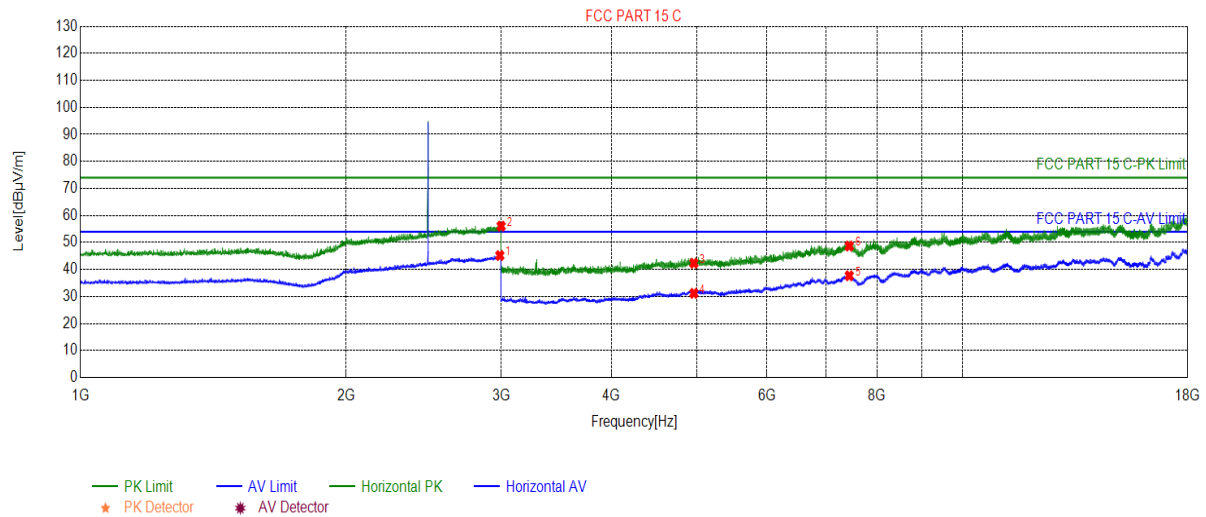


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4.9.2.5 BLE 1M_Channel 39

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2988.49	45.18	10.58	54.00	8.82	186	18	Horizontal
2	2998.49	56.05	10.75	74.00	17.95	189	331	Horizontal
3	4960.00	42.33	-16.28	74.00	31.67	196	312	Horizontal
4	4960.00	31.18	-16.28	54.00	22.82	176	346	Horizontal
5	7440.00	37.69	-8.83	54.00	16.31	176	329	Horizontal
6	7440.00	48.69	-8.83	74.00	25.31	185	126	Horizontal

Final Data List

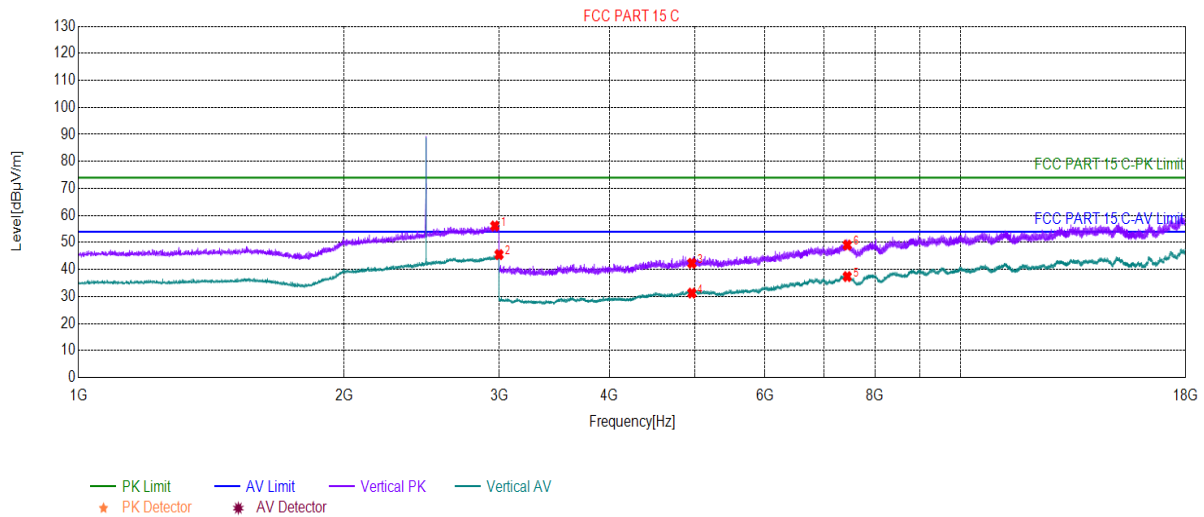


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4.9.2.6 BLE 1M_Channel 39

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2964.99	56.12	10.53	74.00	17.88	198	124	Vertical
2	2997.99	45.51	10.75	54.00	8.49	176	118	Vertical
3	4960.00	42.30	-16.28	74.00	31.70	163	200	Vertical
4	4960.00	31.25	-16.28	54.00	22.75	175	302	Vertical
5	7440.00	37.39	-8.83	54.00	16.61	162	234	Vertical
6	7440.00	49.05	-8.83	74.00	24.95	186	82	Vertical

Final Data List

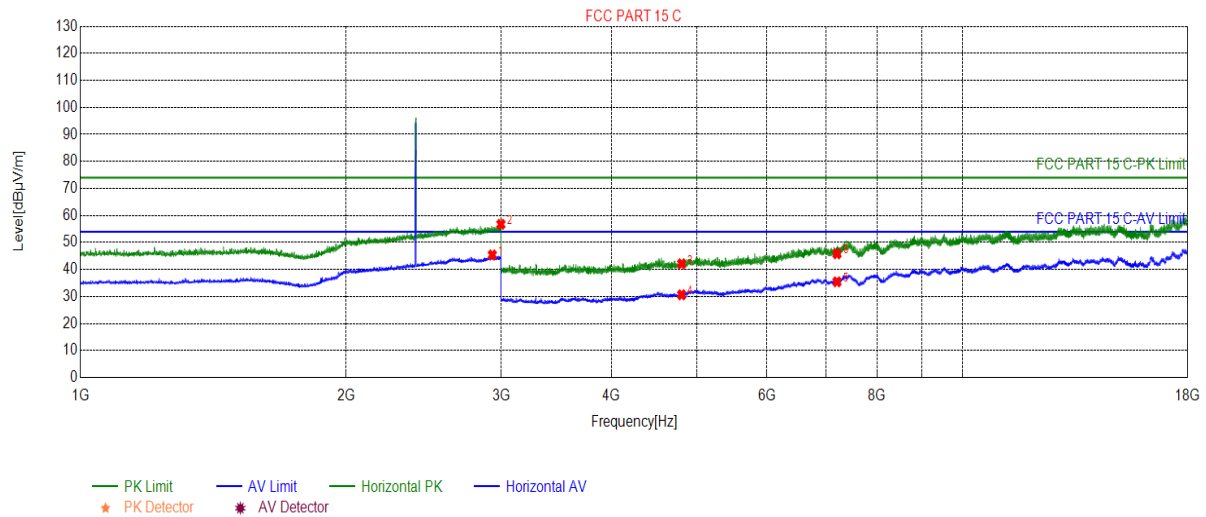


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4.9.2.7 BLE 2M_Channel 0

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2930.48	45.40	10.71	54.00	8.60	199	346	Horizontal
2	2996.99	56.73	10.73	74.00	17.27	155	174	Horizontal
3	4804.00	42.12	-17.18	74.00	31.88	168	244	Horizontal
4	4804.00	30.64	-17.18	54.00	23.36	169	210	Horizontal
5	7206.00	35.44	-9.48	54.00	18.56	176	125	Horizontal
6	7206.00	45.81	-9.48	74.00	28.19	203	5	Horizontal

Final Data List

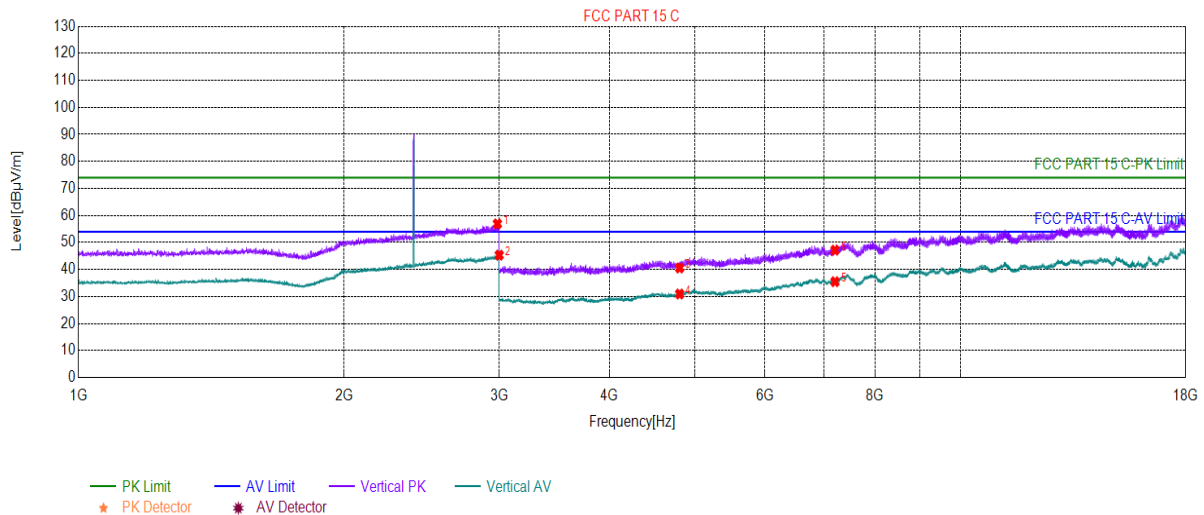


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4.9.2.8 BLE 2M_Channel 0

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2984.99	56.90	10.60	74.00	17.10	165	192	Vertical
2	2999.49	45.31	10.77	54.00	8.69	203	103	Vertical
3	4804.00	40.58	-17.18	74.00	33.42	178	356	Vertical
4	4804.00	30.93	-17.18	54.00	23.07	196	339	Vertical
5	7206.00	35.50	-9.48	54.00	18.50	213	48	Vertical
6	7206.00	47.15	-9.48	74.00	26.85	195	253	Vertical

Final Data List



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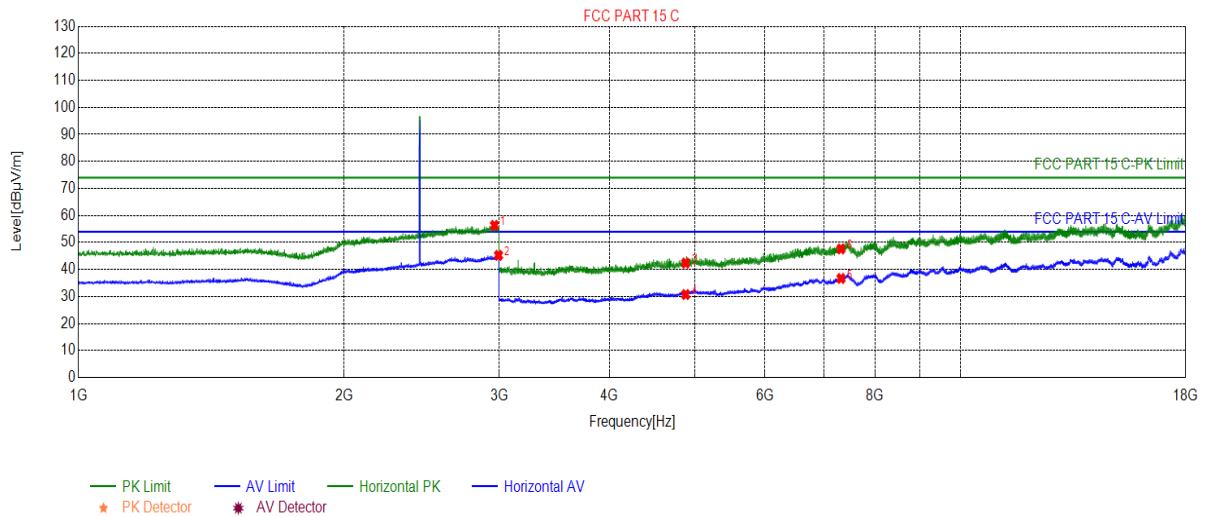
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4.9.2.9 BLE 2M_Channel 19

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2961.99	56.34	10.53	74.00	17.66	176	37	Horizontal
2	2993.99	45.24	10.67	54.00	8.76	186	284	Horizontal
3	4880.00	42.38	-16.81	74.00	31.62	198	193	Horizontal
4	4880.00	30.74	-16.81	54.00	23.26	176	261	Horizontal
5	7320.00	36.69	-9.28	54.00	17.31	185	261	Horizontal
6	7320.00	47.61	-9.28	74.00	26.39	194	158	Horizontal

Final Data List



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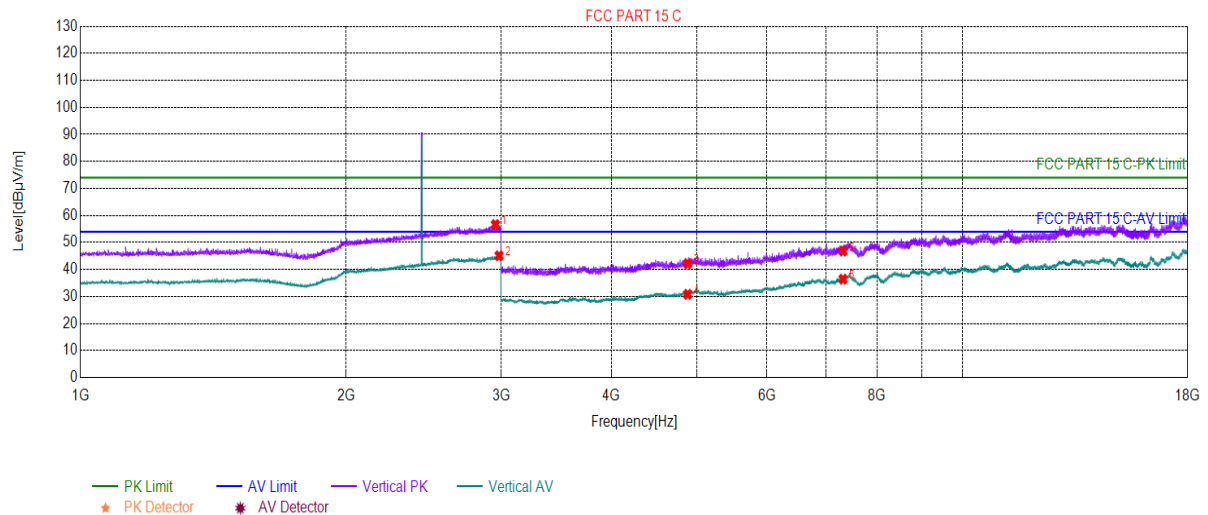
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4.9.2.10 BLE 2M_Channel 19

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2953.98	56.63	10.73	74.00	17.37	168	19	Vertical
2	2982.49	45.11	10.62	54.00	8.89	175	296	Vertical
3	4880.00	42.18	-16.81	74.00	31.82	169	64	Vertical
4	4880.00	30.83	-16.81	54.00	23.17	195	303	Vertical
5	7320.00	36.43	-9.28	54.00	17.57	175	64	Vertical
6	7320.00	46.83	-9.28	74.00	27.17	163	320	Vertical

Final Data List



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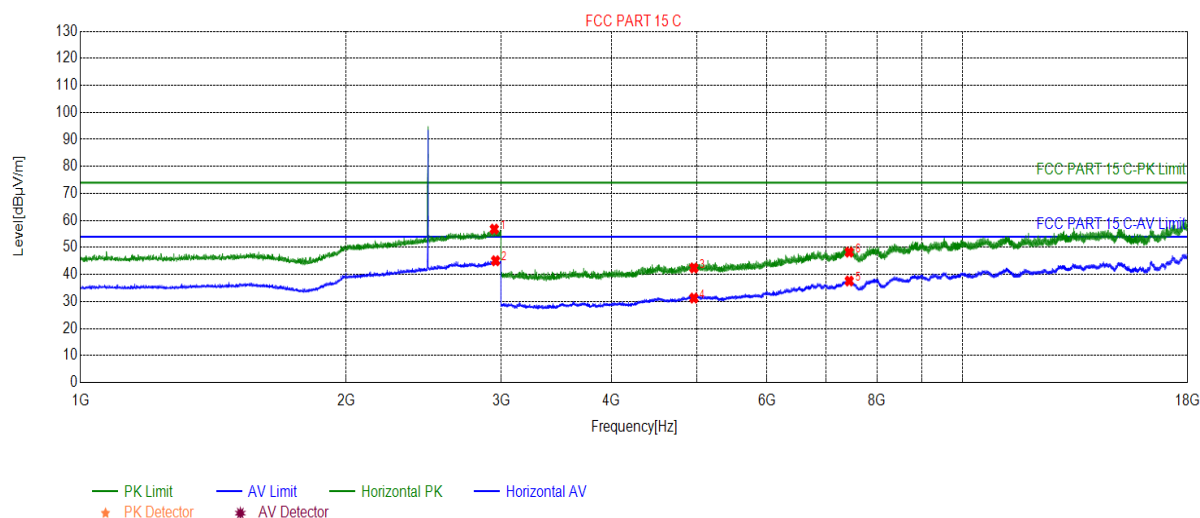
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4.9.2.11 BLE 2M_Channel 39

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2945.48	56.80	10.64	74.00	17.20	196	253	Horizontal
2	2955.48	45.09	10.72	54.00	8.91	163	12	Horizontal
3	4960.00	42.42	-16.28	74.00	31.58	176	312	Horizontal
4	4960.00	31.28	-16.28	54.00	22.72	185	329	Horizontal
5	7440.00	37.60	-8.83	54.00	16.40	195	56	Horizontal
6	7440.00	48.27	-8.83	74.00	25.73	176	346	Horizontal

Final Data List

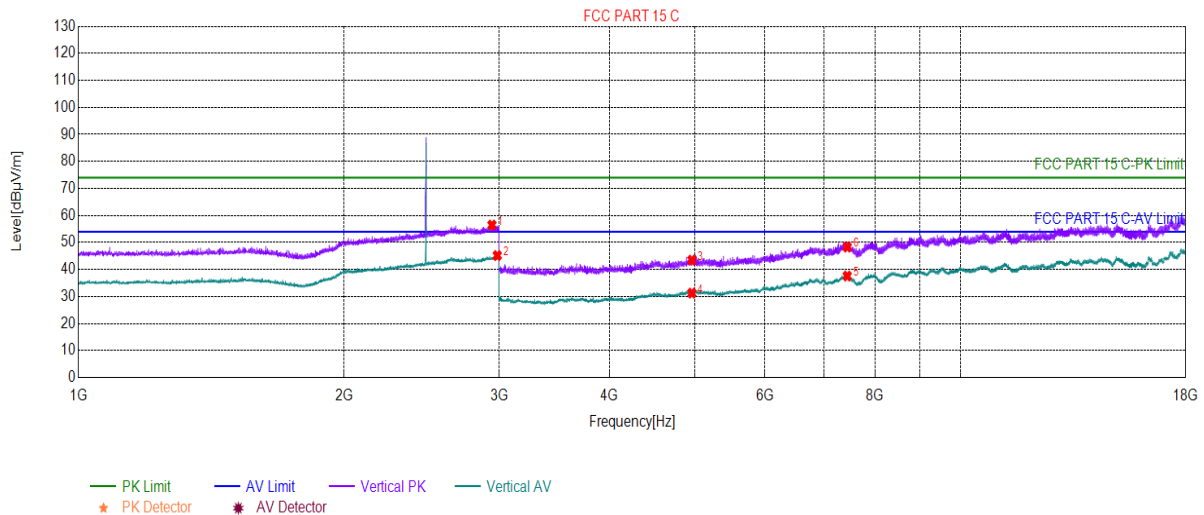


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4.9.2.12 BLE 2M_Channel 39

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2942.98	56.44	10.58	74.00	17.56	163	170	Vertical
2	2983.99	45.17	10.61	54.00	8.83	201	35	Vertical
3	4960.00	43.47	-16.28	74.00	30.53	199	269	Vertical
4	4960.00	31.25	-16.28	54.00	22.75	236	98	Vertical
5	7440.00	37.58	-8.83	54.00	16.42	215	269	Vertical
6	7440.00	48.31	-8.83	74.00	25.69	199	183	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:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 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.
- 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.
- 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:			

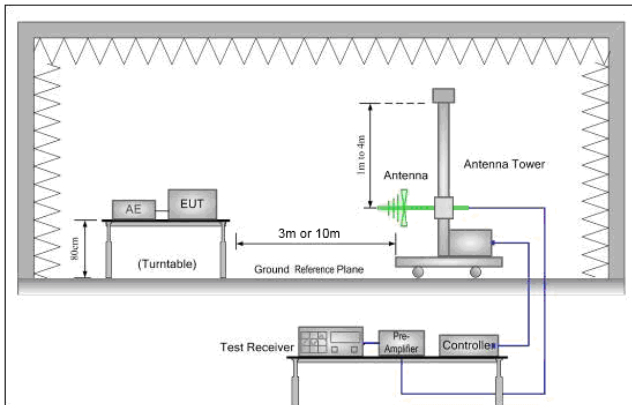


Figure 1. 30MHz to 1GHz

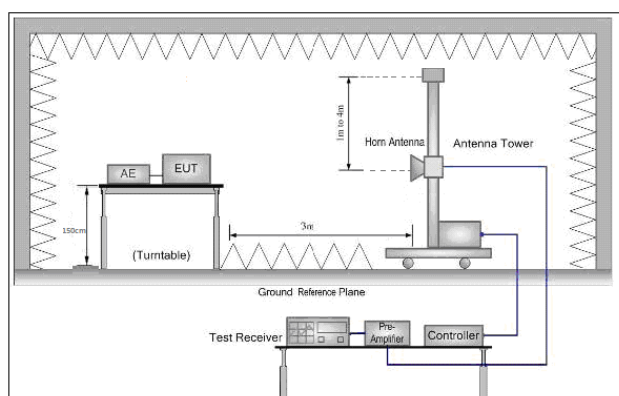


Figure 2. Above 1 GHz

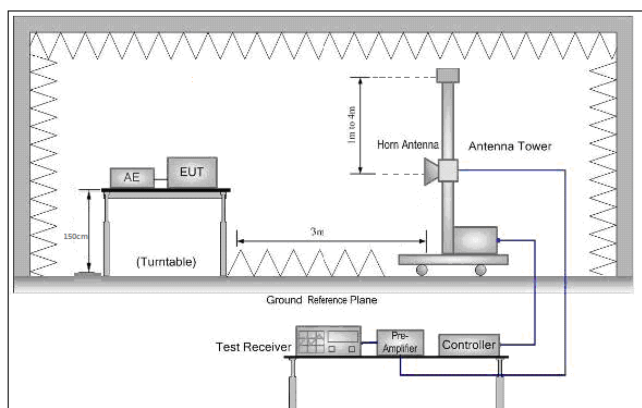


Figure 3. Above 1 GHz



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Test Procedure:	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>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</p> <p>h. Test the EUT in the lowest channel , the Highest channel</p> <p>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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>
Test Configuration:	<p>Measurements Below 1000MHz</p> <ul style="list-style-type: none"> • RBW = 120 kHz • VBW = 300 kHz • Detector = Peak • Trace mode = max hold <p>Peak Measurements Above 1000 MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW \geq 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold <p>Average Measurements Above 1000MHz</p> <ul style="list-style-type: none"> • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW \geq 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Exploratory Test Mode:	<p>Transmitting with GFSK modulation.</p> <p>Charge + Transmitting mode.</p>



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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 5.10 for details
Test Results:	Pass
Remark:	The Emission Test is performed by the Lab B



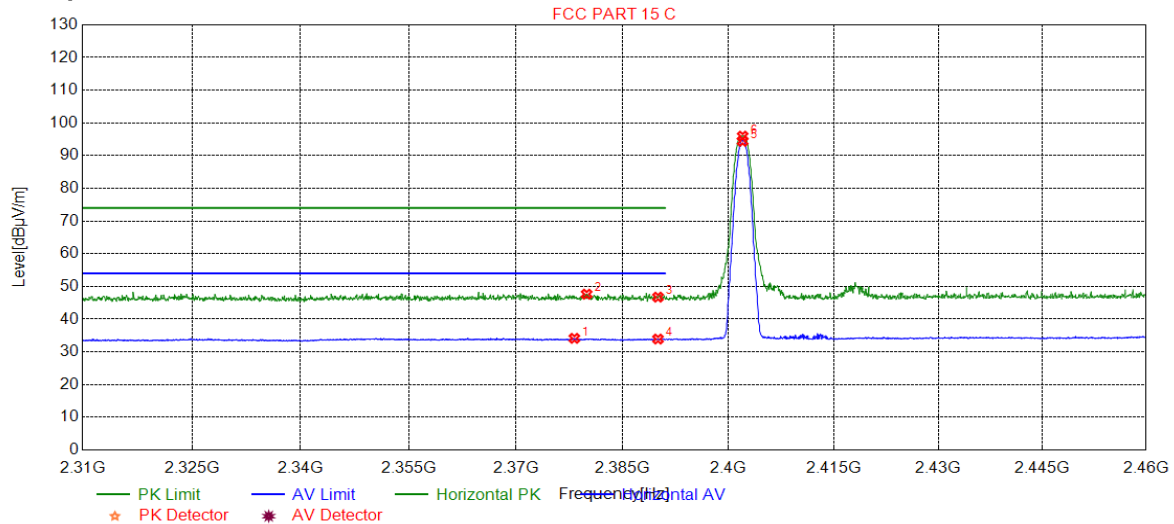
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4.10.1 Test Plots

4.10.1.1 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	2378.209	34.15	54.00	19.85	189	238	Horizontal
2	2379.935	47.65	74.00	26.35	163	288	Horizontal
3	2390.000	46.75	74.00	27.25	179	346	Horizontal
4	2390.000	33.93	54.00	20.07	169	156	Horizontal
5	2402.000	94.40	0.00	-94.40	168	145	Horizontal
6	2402.000	95.96	0.00	-95.96	189	153	Horizontal

Final Data List



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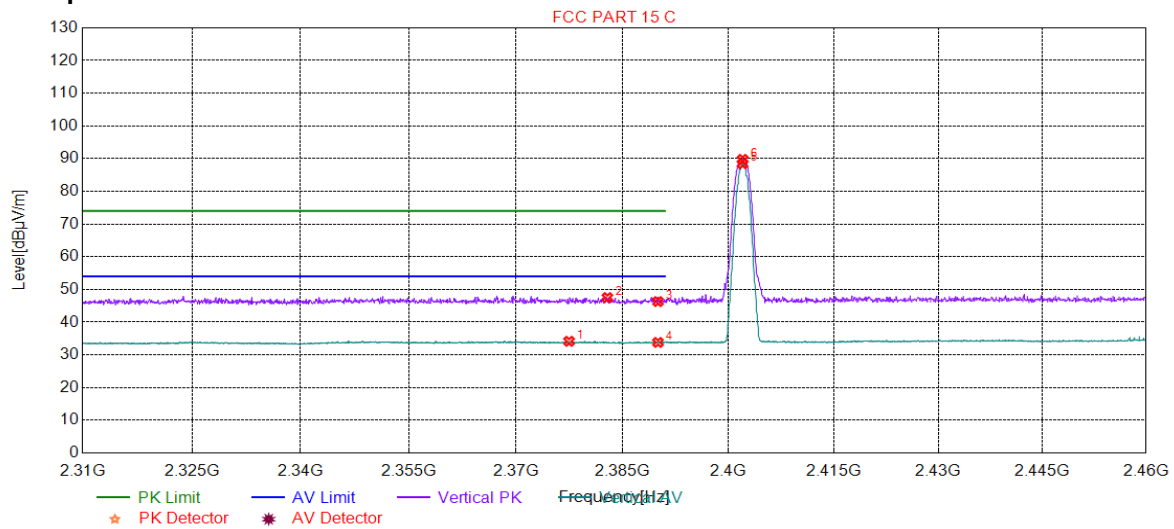
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4.10.1.2 BLE 1M_Channel 0

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2377.458	34.16	54.00	19.84	189	37	Vertical
2	2382.861	47.52	74.00	26.48	163	185	Vertical
3	2390.000	46.31	74.00	27.69	179	212	Vertical
4	2390.000	33.82	54.00	20.18	205	138	Vertical
5	2402.000	88.46	0.00	-88.46	189	131	Vertical
6	2402.000	89.79	0.00	-89.79	176	173	Vertical

Final Data List

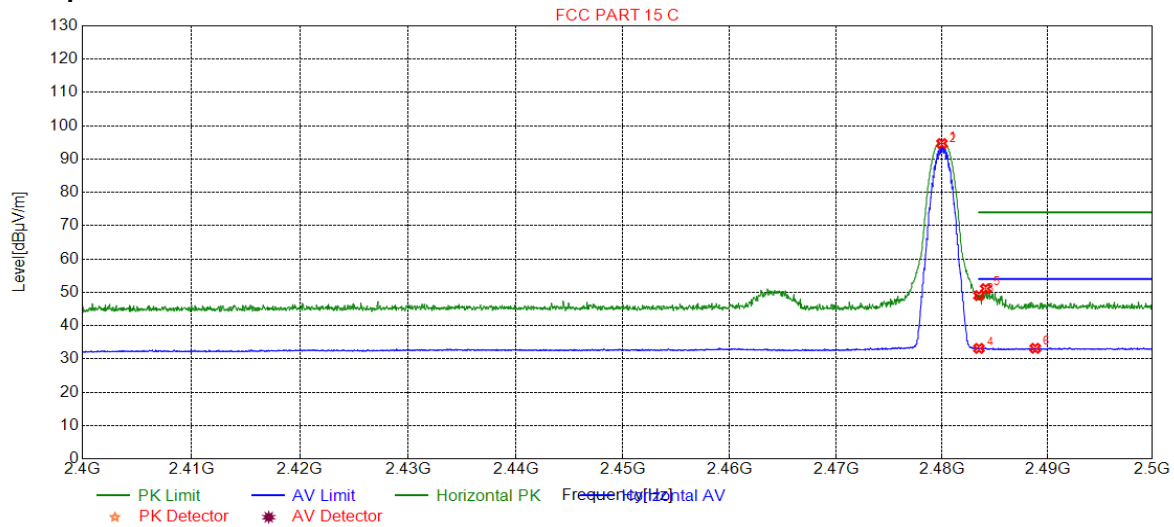


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4.10.1.3 BLE 1M_Channel 39

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	94.68	0.00	-94.68	144	142	Horizontal
2	2480.000	94.17	0.00	-94.17	153	142	Horizontal
3	2483.500	49.04	74.00	24.96	165	134	Horizontal
4	2483.500	33.19	54.00	20.81	178	138	Horizontal
5	2484.142	51.12	74.00	22.88	201	142	Horizontal
6	2488.844	33.22	54.00	20.78	198	169	Horizontal

Final Data List



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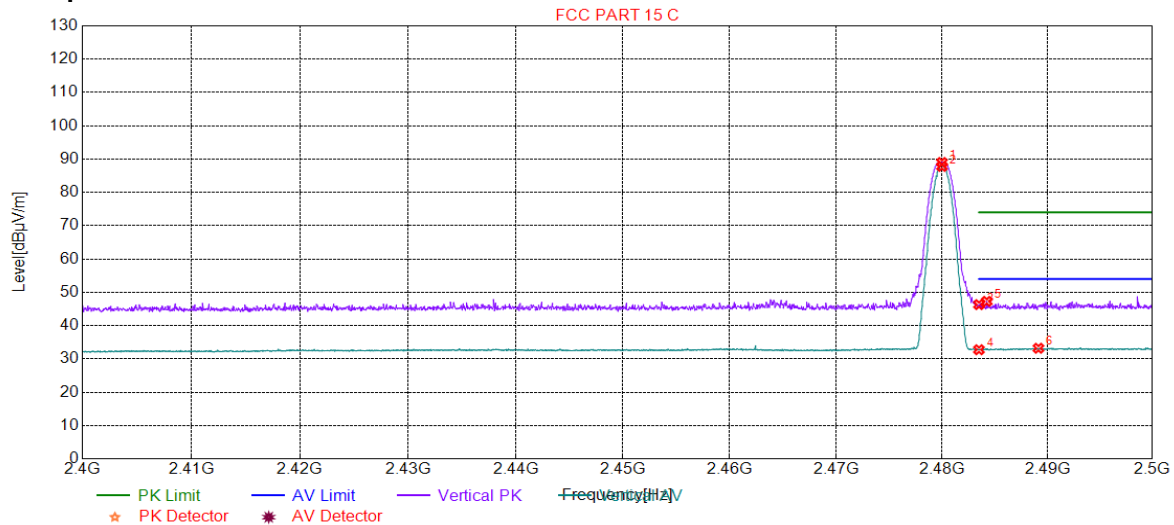
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4.10.1.4 BLE 1M_Channel 39

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	88.99	0.00	-88.99	179	17	Vertical
2	2480.000	87.80	0.00	-87.80	165	142	Vertical
3	2483.500	46.32	74.00	27.68	178	17	Vertical
4	2483.500	32.79	54.00	21.21	169	142	Vertical
5	2484.242	47.30	74.00	26.70	176	14	Vertical
6	2489.144	33.23	54.00	20.77	189	313	Vertical

Final Data List

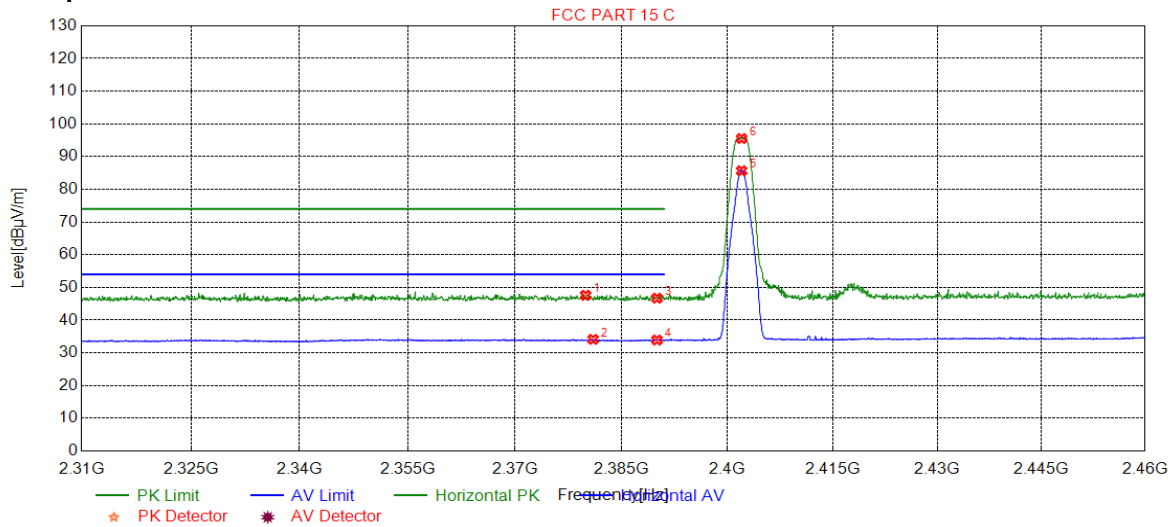


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4.10.1.5 BLE 2M_Channel 0

Test Graph



Suspected List

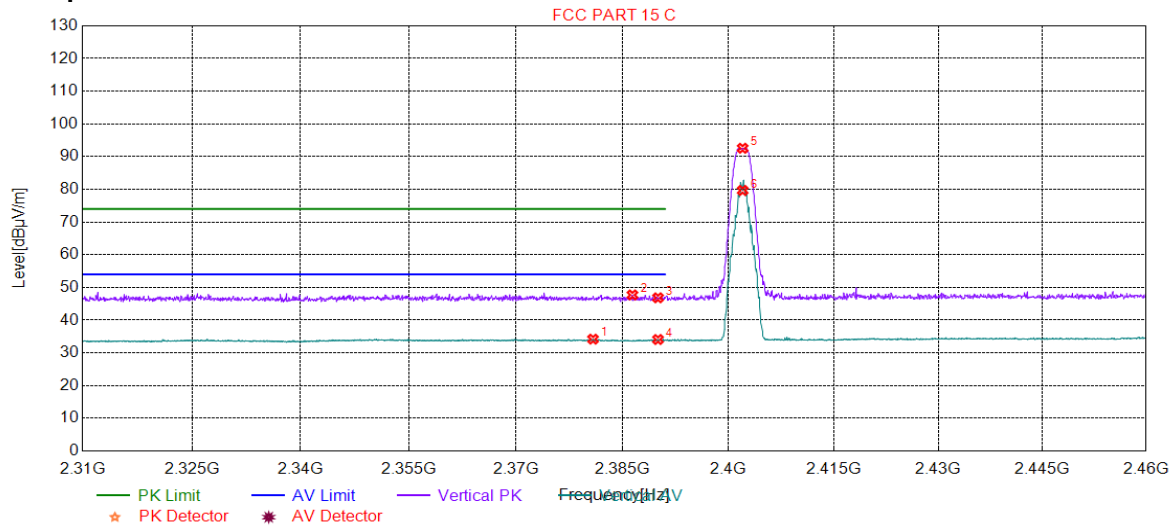
Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.935	47.62	74.00	26.38	159	14	Horizontal
2	2380.985	34.15	54.00	19.85	175	140	Horizontal
3	2390.000	46.73	74.00	27.27	189	102	Horizontal
4	2390.000	33.94	54.00	20.06	165	14	Horizontal
5	2402.000	85.69	0.00	-85.69	202	78	Horizontal
6	2402.000	95.55	0.00	-95.55	199	144	Horizontal

Final Data List

Final Data List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.935	47.62	74.00	26.38	159	14	Horizontal
2	2380.985	34.15	54.00	19.85	175	140	Horizontal
3	2390.000	46.73	74.00	27.27	189	102	Horizontal
4	2390.000	33.94	54.00	20.06	165	14	Horizontal
5	2402.000	85.69	0.00	-85.69	202	78	Horizontal
6	2402.000	95.55	0.00	-95.55	199	144	Horizontal

4.10.1.6 BLE 2M_Channel 0

Test Graph



Suspected List

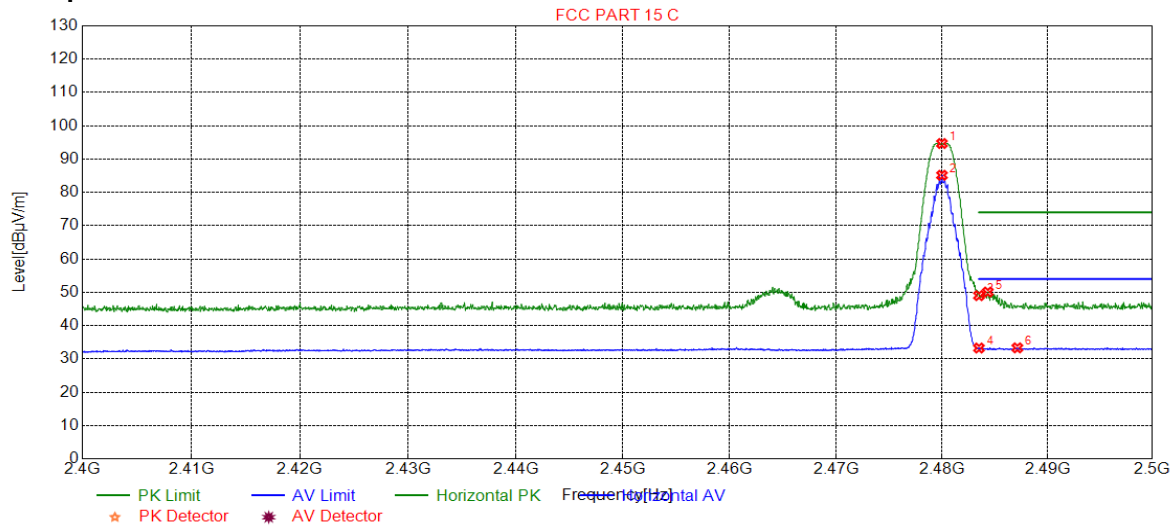
Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2380.835	34.21	54.00	19.79	202	250	Vertical
2	2386.388	47.72	74.00	26.28	213	28	Vertical
3	2390.000	46.85	74.00	27.15	199	160	Vertical
4	2390.000	34.10	54.00	19.90	186	346	Vertical
5	2402.000	92.57	0.00	-92.57	179	179	Vertical
6	2402.000	79.67	0.00	-79.67	196	176	Vertical

Final Data List

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4.10.1.7 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	2480.000	94.68	0.00	-94.68	169	143	Horizontal
2	2480.000	85.15	0.00	-85.15	159	150	Horizontal
3	2483.500	49.03	74.00	24.97	198	143	Horizontal
4	2483.500	33.29	54.00	20.71	169	21	Horizontal
5	2484.342	50.10	74.00	23.90	204	147	Horizontal
6	2487.143	33.34	54.00	20.66	198	246	Horizontal

Final Data List

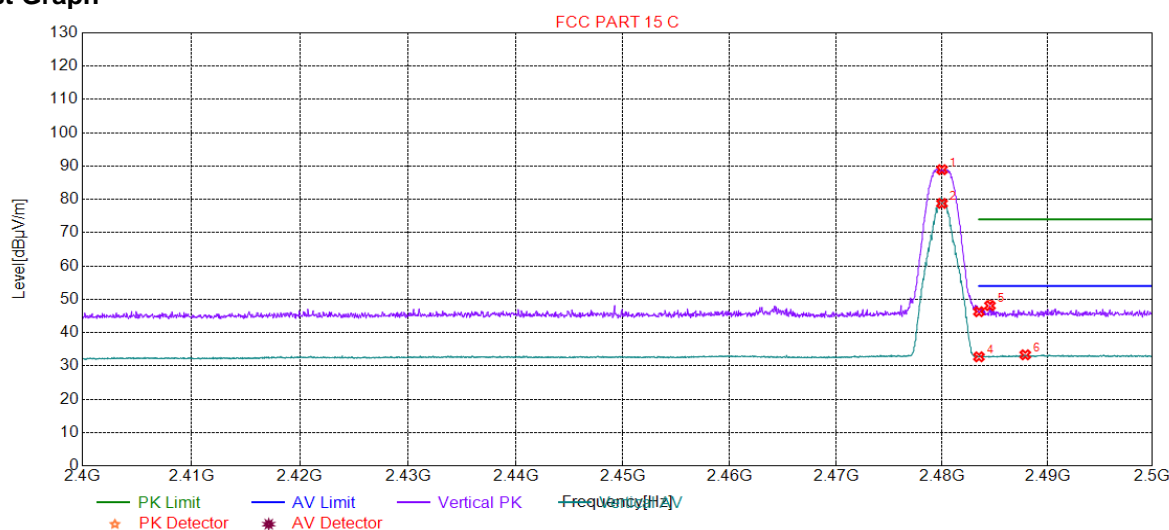


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4.10.1.8 BLE 2M_Channel 39

Test Graph



Suspected List

Suspected List							
NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	88.92	0.00	-88.92	176	21	Vertical
2	2480.000	78.79	0.00	-78.79	205	343	Vertical
3	2483.500	46.30	74.00	27.70	211	332	Vertical
4	2483.500	32.76	54.00	21.24	156	339	Vertical
5	2484.542	48.11	74.00	25.89	189	175	Vertical
6	2487.893	33.36	54.00	20.64	199	60	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:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – 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	$\pm 0.75\text{dB}$
2	RF power density, conducted	$\pm 2.84\text{dB}$
3	Spurious emissions, conducted	$\pm 0.75\text{dB}$
4	Temperature test	$\pm 1^\circ\text{C}$
5	Humidity test	$\pm 3\%$
6	DC and low frequency voltages	$\pm 0.5\%$

Lab B:

No.	Item	Measurement Uncertainty
1	Radiated Spurious emission test	$\pm 4.8\text{dB}$ (30MHz-1GHz)
		$\pm 5.2\text{dB}$ (1GHz-6GHz)
		$\pm 5.5\text{dB}$ (6GHz-18GHz)
		$\pm 5.02\text{dB}$ (18GHz-40GHz)
2	Conduct emission test	$\pm 3.4\text{ dB}$ (9KHz- 30MHz)



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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	2021/1/3	2022/1/2
				2020/1/4	2021/1/3
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



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RSE&RE&CE Test System					
Equipment	Manufacturer	Model No.	Cal Date	Cal Due Date	Inventory No.
Semi-Anechoic Chamber	Brilliant-emc	966	NCR	NCR	XAW03-35-01
MXA signal analyzer	Keysight	N9020A	2020-04-02	2021-04-02	XAW01-06-01
Radio communication analyzer	ROHDE&SCHWARZ	CMW 500	2020-04-02	2021-04-02	XAW01-03-02
Test receiver	ROHDE&SCHWARZ	ESR	2020-09-11	2021-09-10	XAW01-08-01
Receiving antenna	Rosenberger	VULB 9163	2019-10-13	2021-10-12	XAW01-09-01
Receiving antenna	Rosenberger	BBHA 9120D	2019-10-13	2021-10-12	XAW01-09-02
Receiving antenna	Rosenberger	BBHA 9170	2019-10-13	2021-10-12	XAW01-09-03
Directional antenna rack controller	Max-Full	MF-7802BS	NCR	NCR	XAW03-03-01
High-speed antenna rack controller	Max-Full	MF-7802	NCR	NCR	XAW03-04-01
Filter bank	Tonscend	JS0806-F	NCR	NCR	XAW03-05-01
Filter bank	Tonscend	JS0806s	NCR	NCR	XAW03-05-02
Amplifier	Tonscend	TAP00903040	2020-10-26	2021-10-25	XAW01-41-01
Amplifier	Tonscend	TAP01018048	2020-10-26	2021-10-25	XAW01-41-02
Amplifier	Tonscend	TAP18040048	2020-10-26	2021-10-25	XAW01-41-03
Amplifier	Shanghai Steed	YX28980930	2020-10-26	2021-10-25	XAW01-41-06
Artificial network	ROHDE&SCHWARZ	ENV216	2020-08-04	2021-08-03	XAW01-19-02
Temperature and humidity meter	MingGao	TH101B	2020-06-11	2021-05-11	XAW01-01-01
Measurement Software	Tonscend	TS+ RSE&RE	NCR	NCR	XAW02-05-01
Measurement Software	Tonscend	TS+ CE	NCR	NCR	XAW02-05-02



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7 Photographs - EUT Constructional Details

Refer to Appendix A PCE Setup Photos.

The End



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