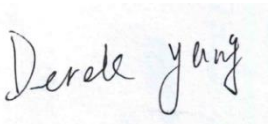
Report No.: ZR/2021/1004903
Page: 1 of 75

FCC TEST REPORT

Application No.:	ZR/2021/10049
Applicant:	HMD Global Oy
Address of Applicant	Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer:	HMD Global Oy
Address of Manufacturer	Bertel Jungin aukio 9, 02600 Espoo, Finland
EUT Description:	smart phone
Model No.:	TA-1341
Trade Mark:	Nokia
FCC ID:	2AJOTTA-1341
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR Part 15, Subpart C
Date of Receipt:	2021/1/29
Date of Test:	2021/1/29 to 2021/3/3
Date of Issue:	2021/3/9
Test Result :	**PASS ***

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

Authorized Signature:



Derek Yang
Wireless Laboratory Manager

1 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2021-03-09		Original

Authorized for issue by:			
Prepared By		Dee.Zheng **(Dee Zheng) / Engineer**	
Checked By		Daniel Wang **(Daniel Wang) / Reviewer**	

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	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

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3 General Information

3.1 Details of Client

Applicant:	HMD Global Oy
Address of Applicant	Bertel Jungin aukio 9, 02600 Espoo, Finland
Manufacturer:	HMD Global Oy
Address of Manufacturer	Bertel Jungin aukio 9, 02600 Espoo, Finland

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

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.

3.4 General Description of EUT

EUT Description:	smart phone
Model No.:	TA-1341
Trade Mark:	Nokia
Hardware Version:	V1.0
Software Version:	00WW_0_226
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:	☒ Portable Device, ☐Module
Antenna Type:	☐ External, ☒ Integrated
Antenna Gain:	-1.28dBi

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.

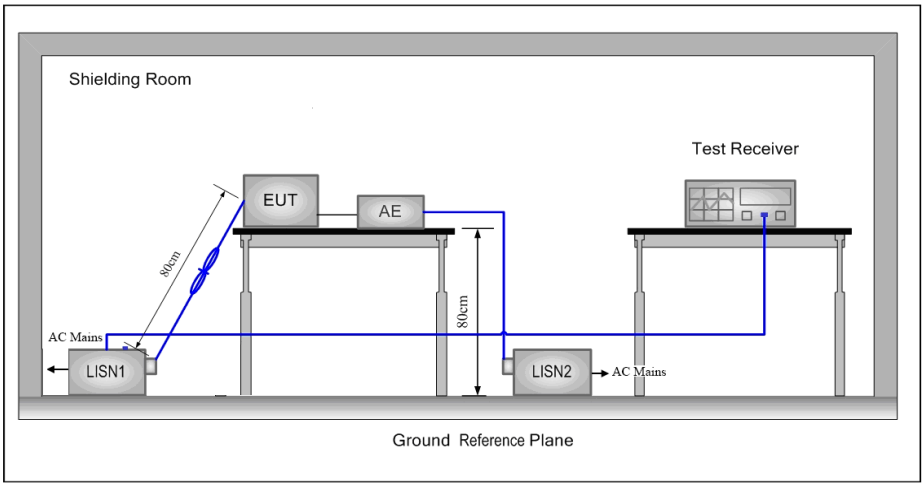
4 Test results and Measurement Data

4.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)
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. 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.	
The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -1.28dBi.	

4.2 AC Power Line Conducted Emissions

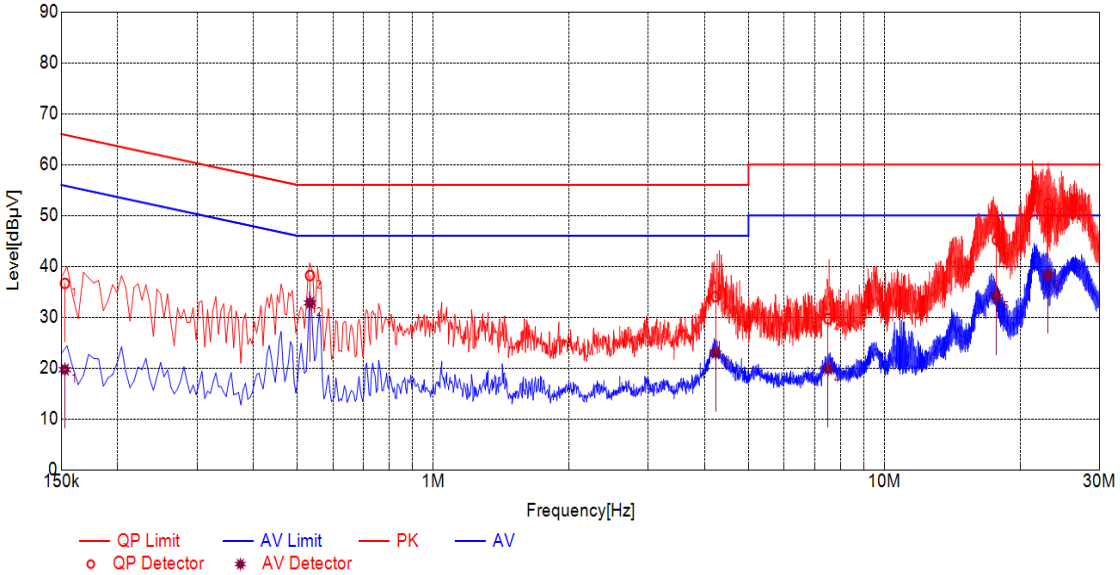
Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test Procedure:	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 6 for details.
Test Results:	Pass
Remark:	The Emission Test data were reused from the report no:XZR/2021/1004901

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.

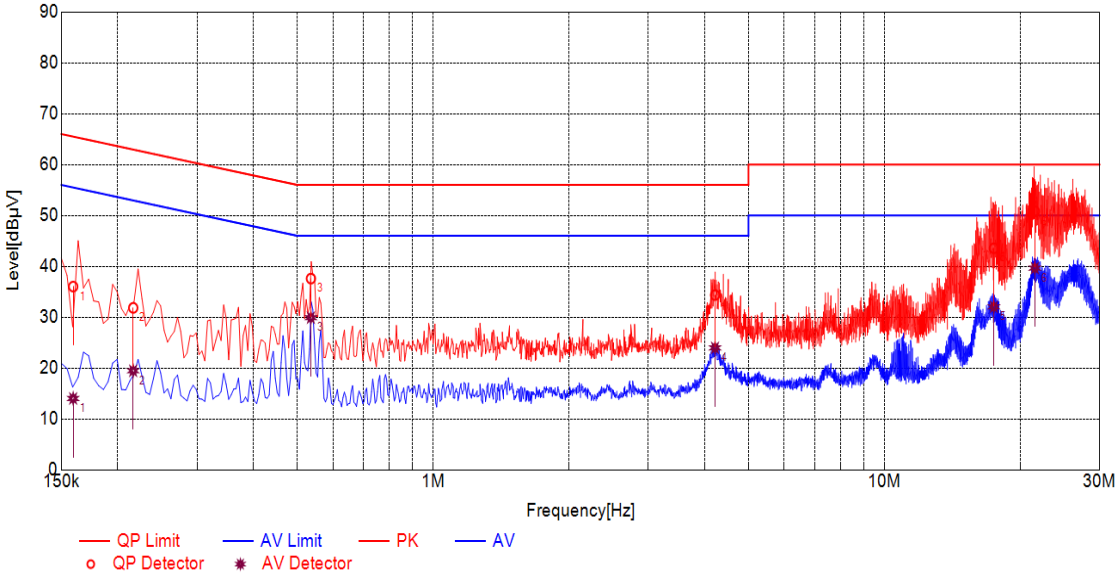
Live Line:



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	0.1528	10.10	36.65	65.84	29.19	19.70	55.84	36.14
2	0.5336	10.10	38.19	56.00	17.81	32.82	46.00	13.18
3	4.2270	10.10	34.05	56.00	21.95	22.97	46.00	23.03
4	7.5068	10.10	29.70	60.00	30.30	19.81	50.00	30.19
5	17.7444	10.11	45.21	60.00	14.79	34.06	50.00	15.94
6	23.0851	10.11	52.31	60.00	7.69	38.29	50.00	11.71

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	0.1594	10.10	36.02	65.49	29.47	14.02	55.49	41.47
2	0.2165	10.10	31.84	62.95	31.11	19.47	52.95	33.48
3	0.5361	10.10	37.60	56.00	18.40	29.91	46.00	16.09
4	4.2151	10.10	34.35	56.00	21.65	23.97	46.00	22.03
5	17.4849	10.11	43.56	60.00	16.44	32.03	50.00	17.97
6	21.5539	10.11	50.81	60.00	9.19	39.65	50.00	10.35

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

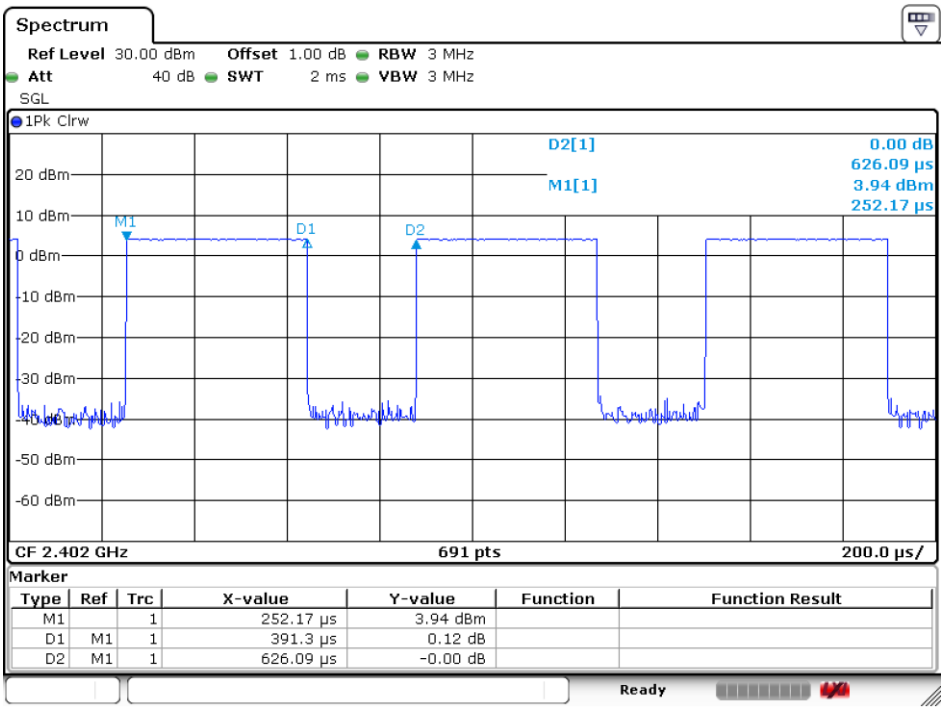
4.3.1 Test Results

Test Mode	TX Freq. [MHz]	Duty cycle [%]
BLE_1M	CH0, CH19, CH39	62.50
BLE_1M	CH0, CH19, CH39	32.92

4.3.2 Test Plots

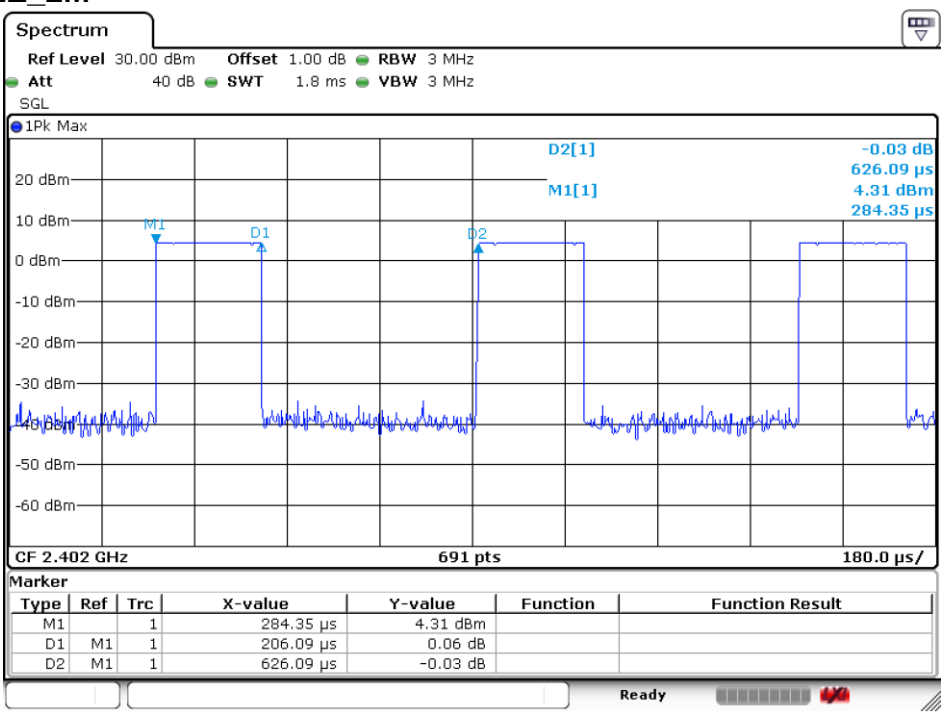
4.3.2.1 ANT1

4.3.2.1.1 BLE_1M



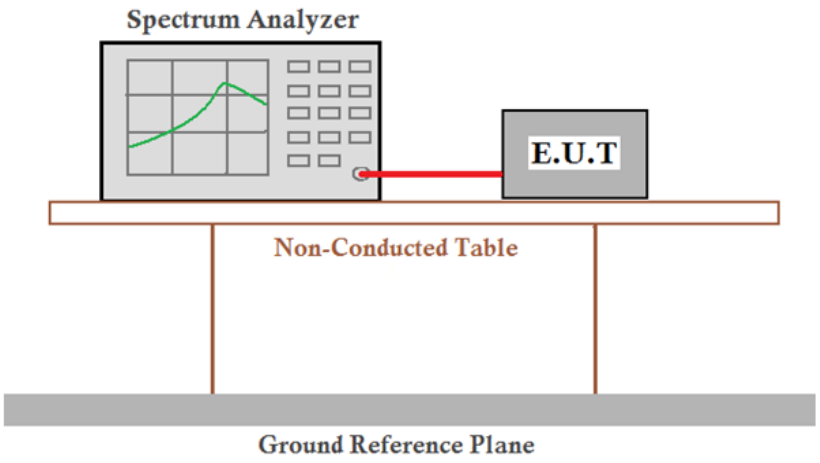
Date: 3.FEB.2021 17:04:38

4.3.2.1.2 BLE_2M



Date: 23.MAR.2021 11:26:12

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

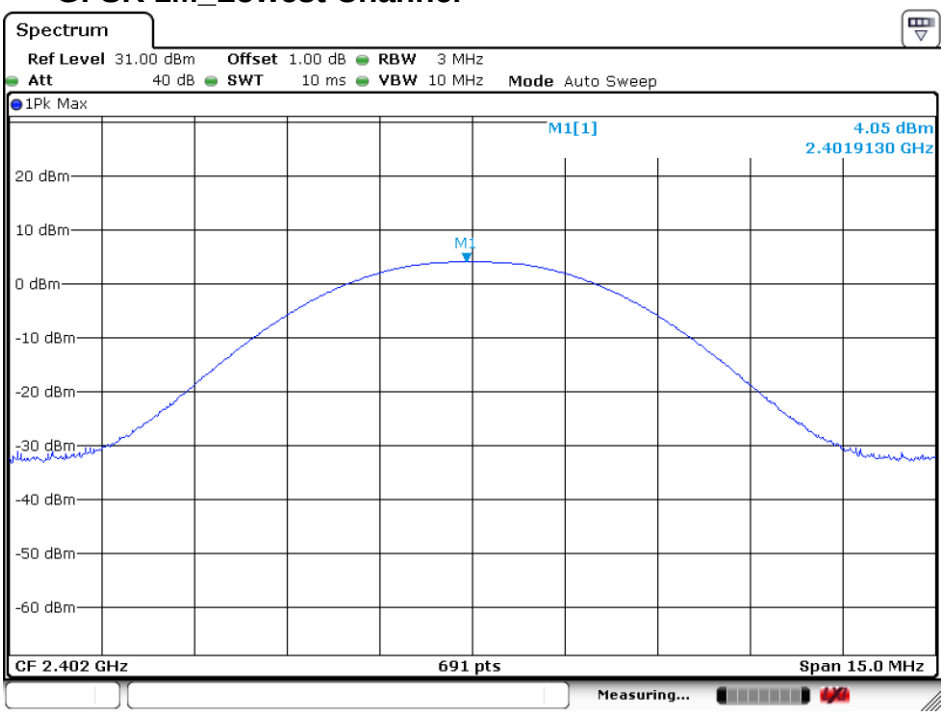
4.4.1 Test Results

Measurement Data of Peak Power:

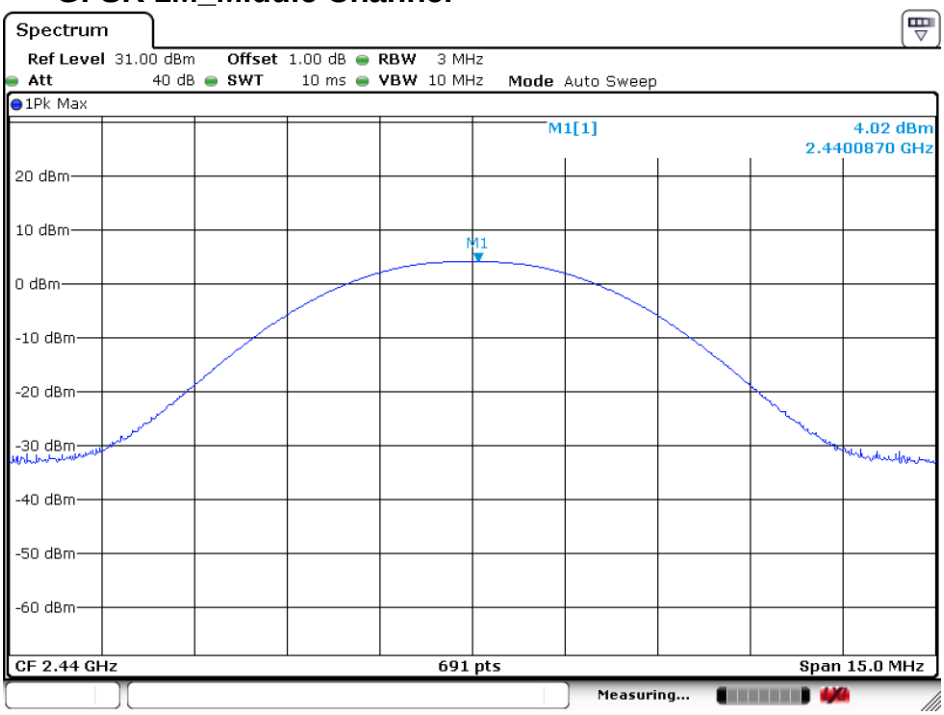
GFSK_1M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	4.05	30.00	Pass
Middle	4.02	30.00	Pass
Highest	6.51	30.00	Pass
GFSK_2M mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	4.70	30.00	Pass
Middle	4.46	30.00	Pass
Highest	7.47	30.00	Pass

4.4.2 Test Plots

4.4.2.1 GFSK 1M_Lowest Channel

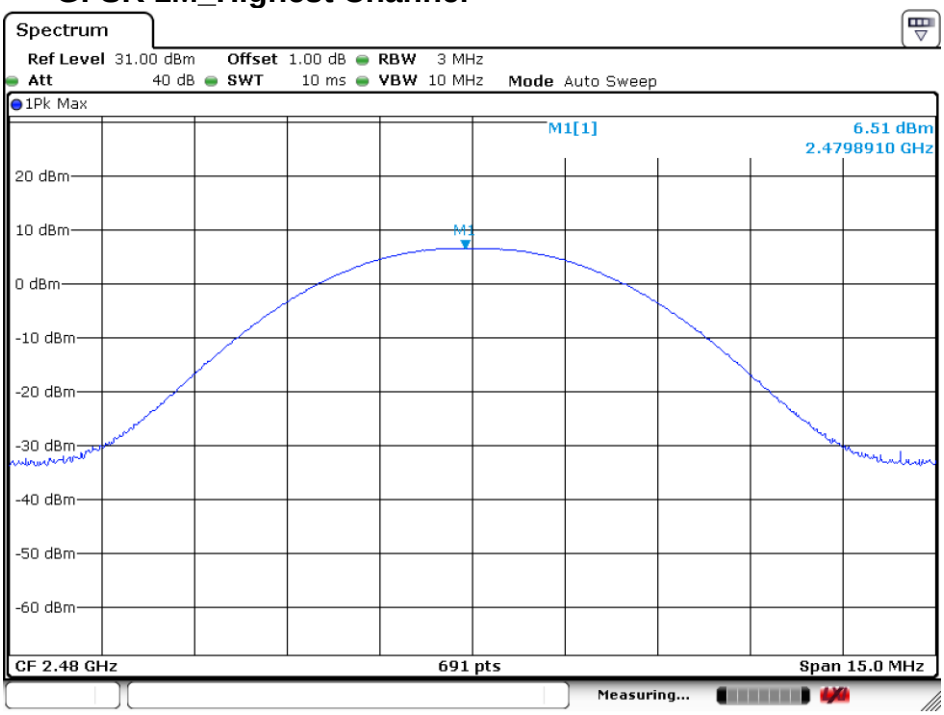


4.4.2.2 GFSK 1M_Middle Channel



Date: 3.FEB.2021 16:53:11

4.4.2.3 GFSK 1M_Highest Channel



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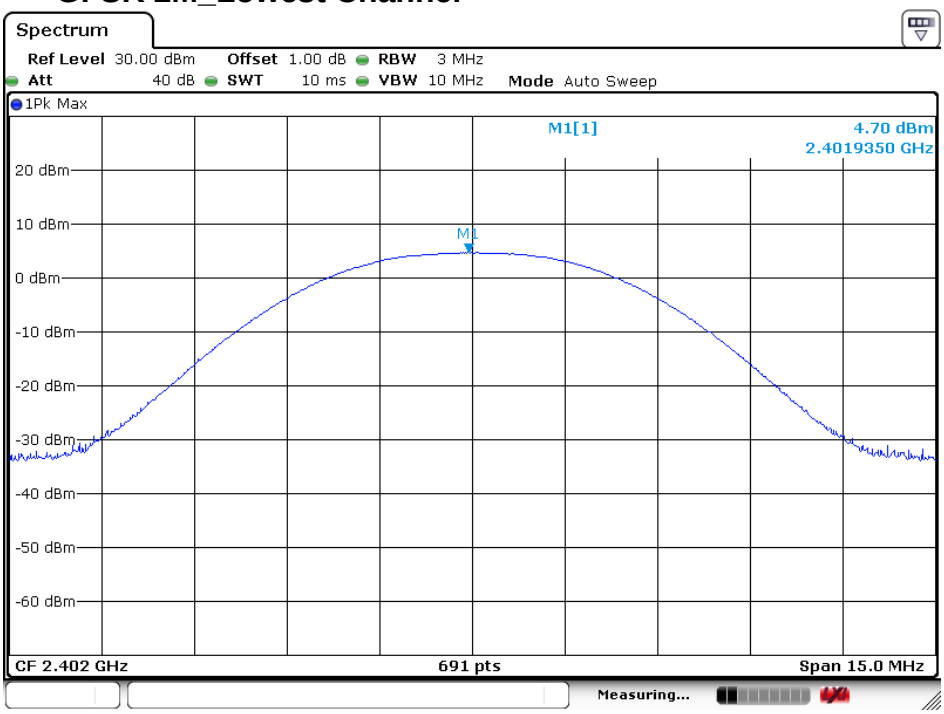
4.4.2.1 GFSK 2M_Lowest Channel



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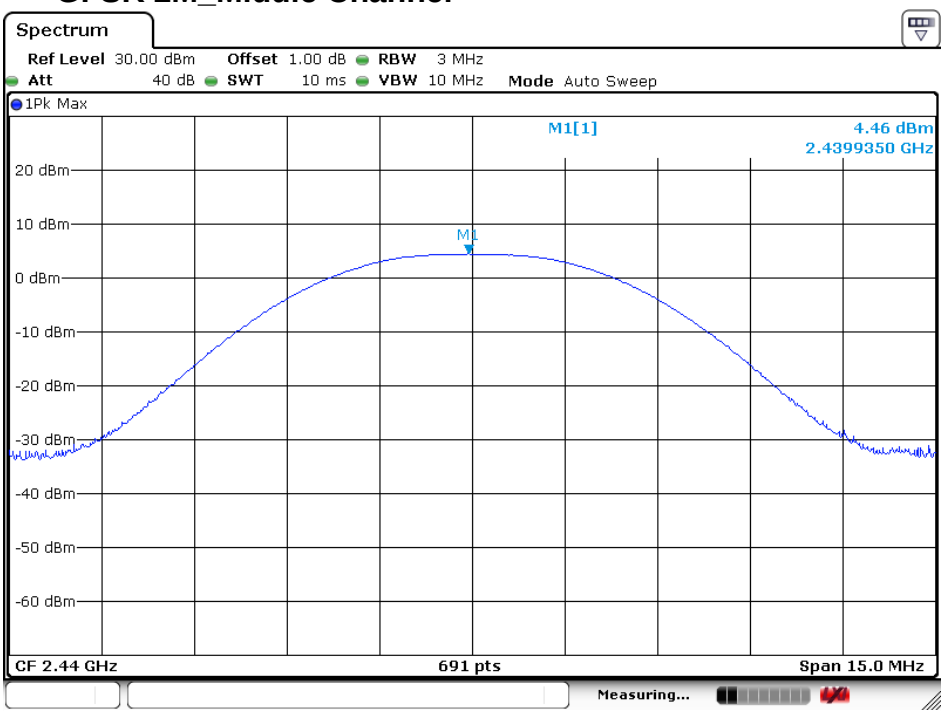
4.4.2.1 GFSK 2M_Middle Channel



Date: 23.MAR.2021 11:19:18

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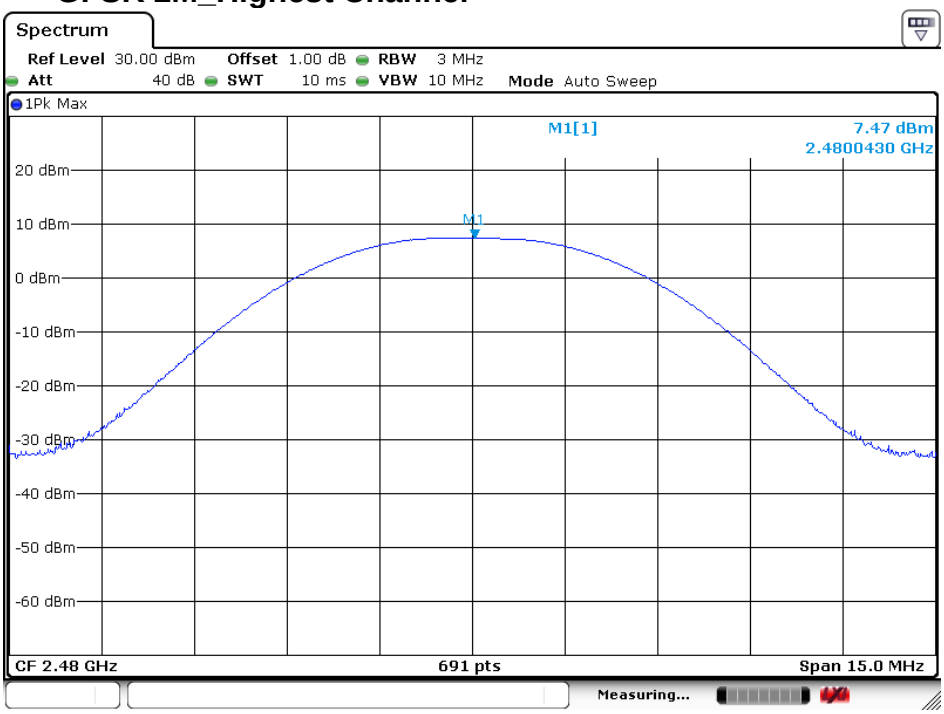
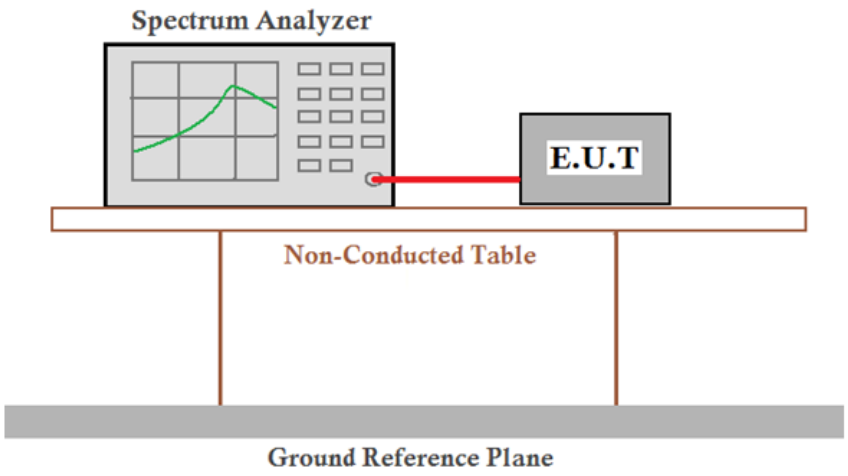
4.4.2.1 GFSK 2M_Highest Channel



4.5 DTS (6 dB) Bandwidth

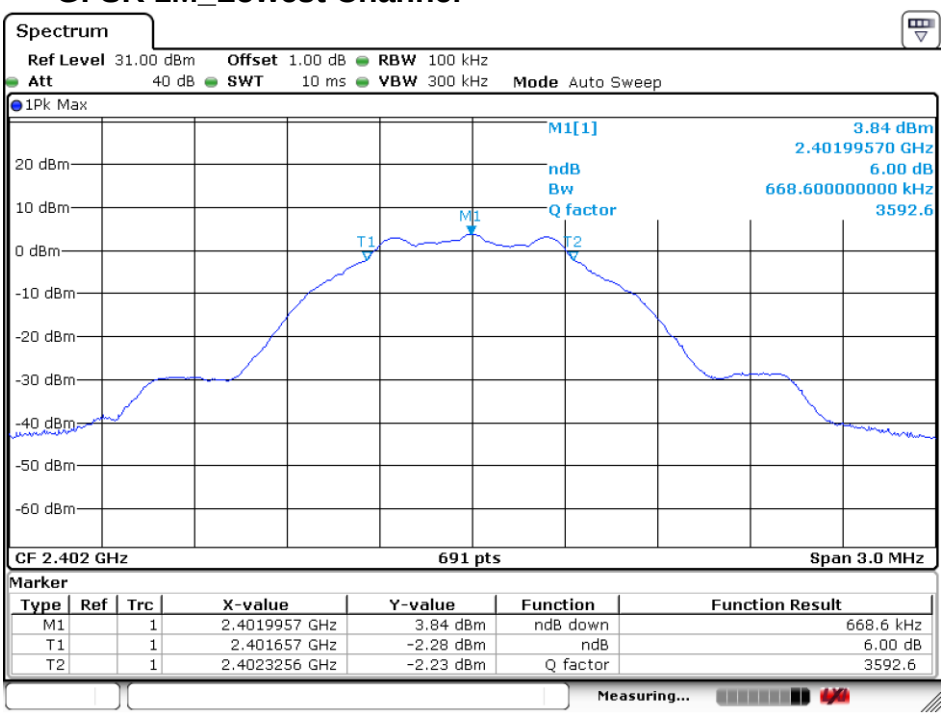
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)
Test Method:	ANSI C63.10: 2013 Section 11.8 Option 2
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	≥ 500 kHz
Test Results:	Pass

4.5.1 Test Results

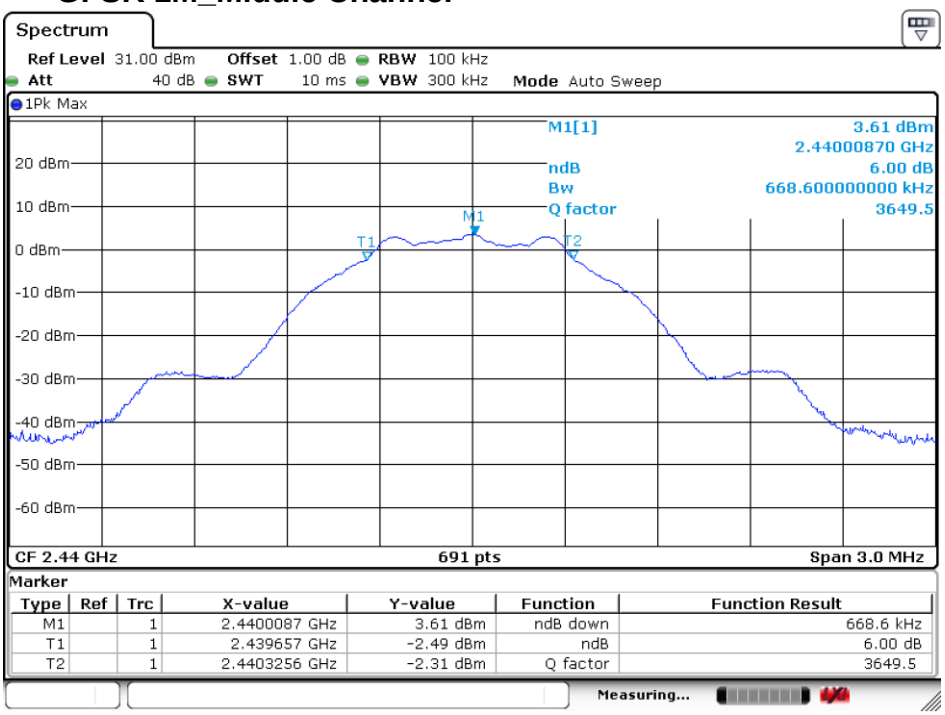
Mode	Test Channel	6dB Emission Bandwidth (MHz)	Limit (kHz)	Result
GFSK_1M	Lowest	0.67	≥500	Pass
	Middle	0.67	≥500	Pass
	Highest	0.67	≥500	Pass
Mode	**Test Channel**	**6dB Emission Bandwidth (MHz)**	**Limit (kHz)**	**Result**
GFSK_2M	Lowest	1.14	≥500	Pass
	Middle	1.16	≥500	Pass
	Highest	1.14	≥500	Pass

4.5.2 Test Plots

4.5.2.1 GFSK 1M_Lowest Channel



4.5.2.2 GFSK 1M_Middle Channel



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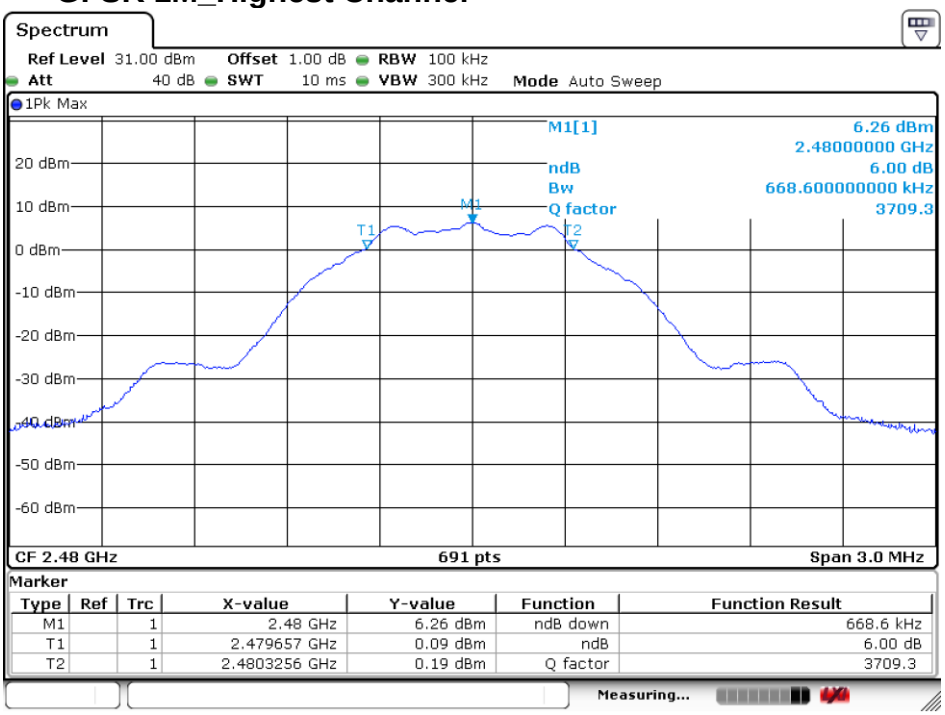
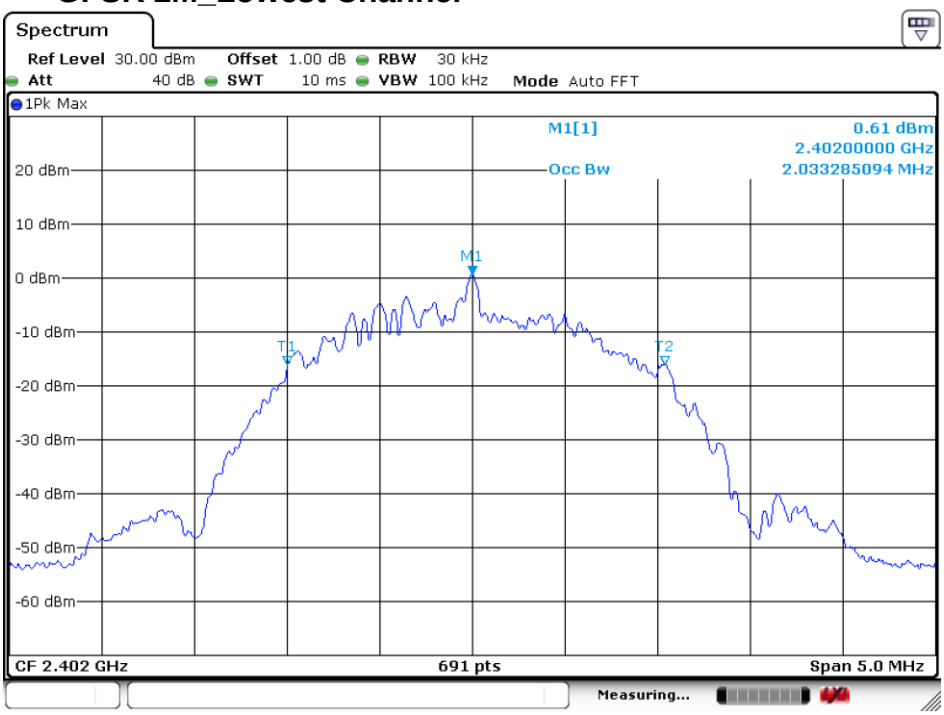
4.5.2.3 GFSK 1M_Highest Channel



Date: 3.FEB.2021 16:57:24

4.5.2.1 GFSK 2M_Lowest Channel



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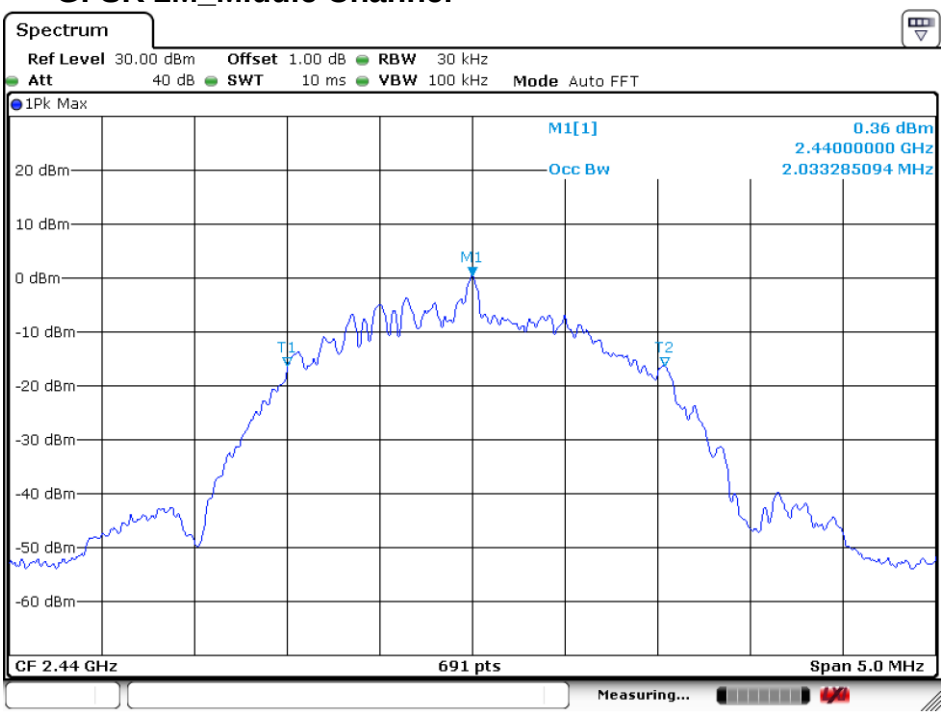
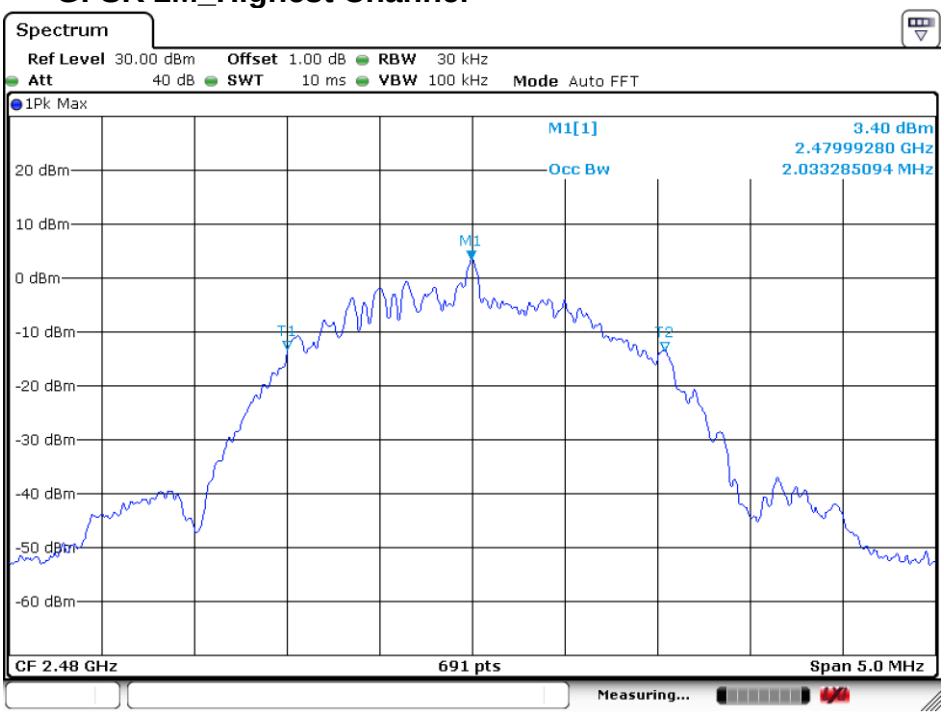
4.5.2.1 GFSK 2M_Middle Channel



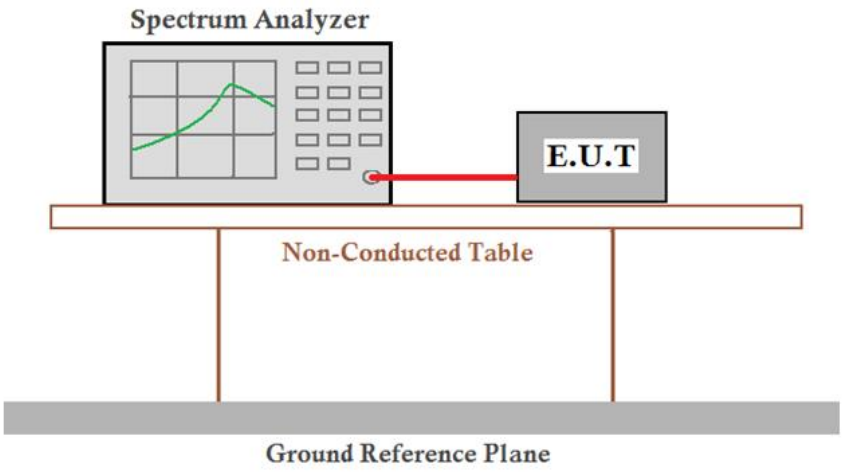
Date: 23.MAR.2021 11:21:19

4.5.2.1 GFSK 2M_Highest Channel



Date: 23.MAR.2021 11:21:00

4.6 Power Spectral Density

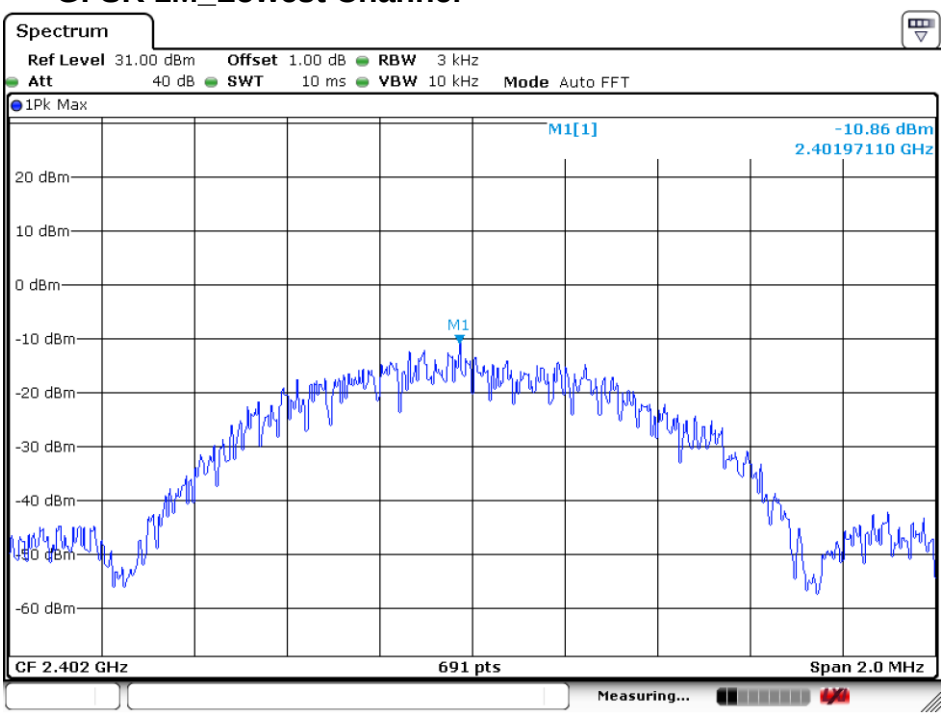
Test Requirement:	47 CFR Part 15C Section 15.247 (e)
Test Method:	ANSI C63.10 :2013 Section 11.10.2
Test Setup:	
Test Instruments:	Refer to section 6 for details
Test Mode:	Transmitting with GFSK modulation.
Limit:	≤8.00dBm/3kHz
Test Results:	Pass

4.6.1 Test Results

Mode	Test Channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
GFSK_1M	Lowest	-10.86	≤8.00	Pass
	Middle	-10.90	≤8.00	Pass
	Highest	-8.45	≤8.00	Pass
Mode	**Test Channel**	**Power Spectral Density (dBm/3kHz)**	**Limit (dBm/3kHz)**	**Result**
GFSK_1M	Lowest	-14.07	≤8.00	Pass
	Middle	-14.34	≤8.00	Pass
	Highest	-11.33	≤8.00	Pass

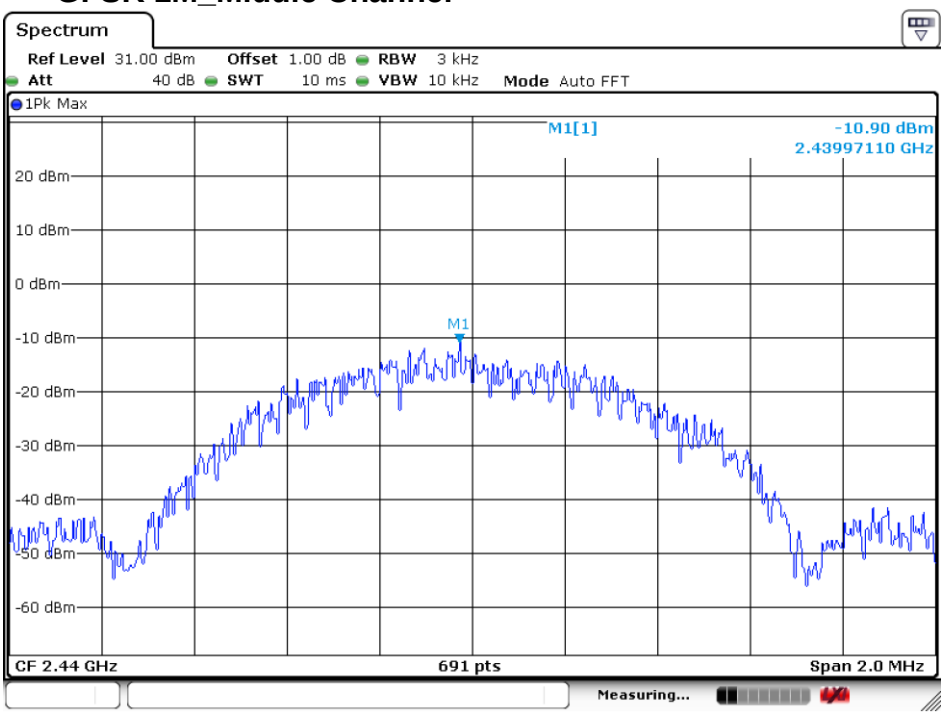
4.6.2 Test Plots

4.6.2.1 GFSK 1M_Lowest Channel



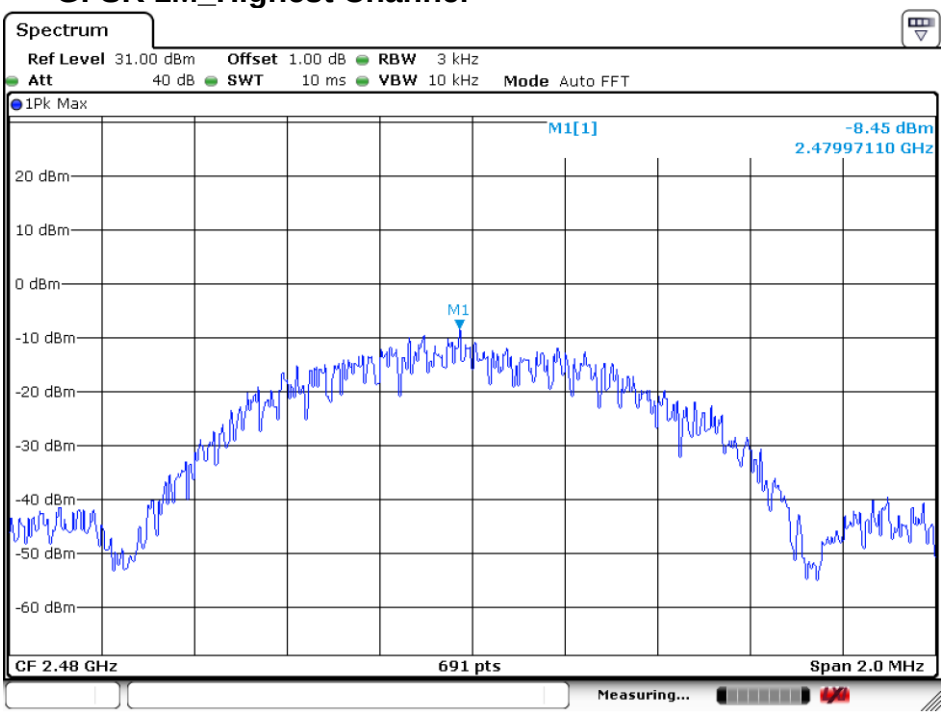
Date: 3.FEB.2021 16:54:55

4.6.2.2 GFSK 1M_Middle Channel



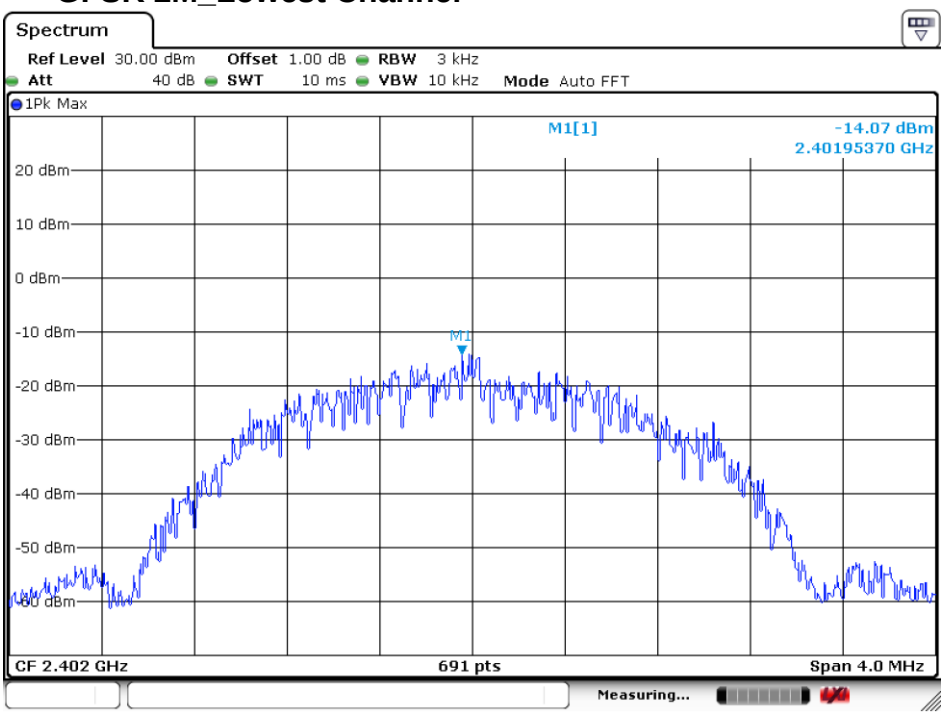
Date: 3.FEB.2021 16:54:41

4.6.2.3 GFSK 1M_Highest Channel

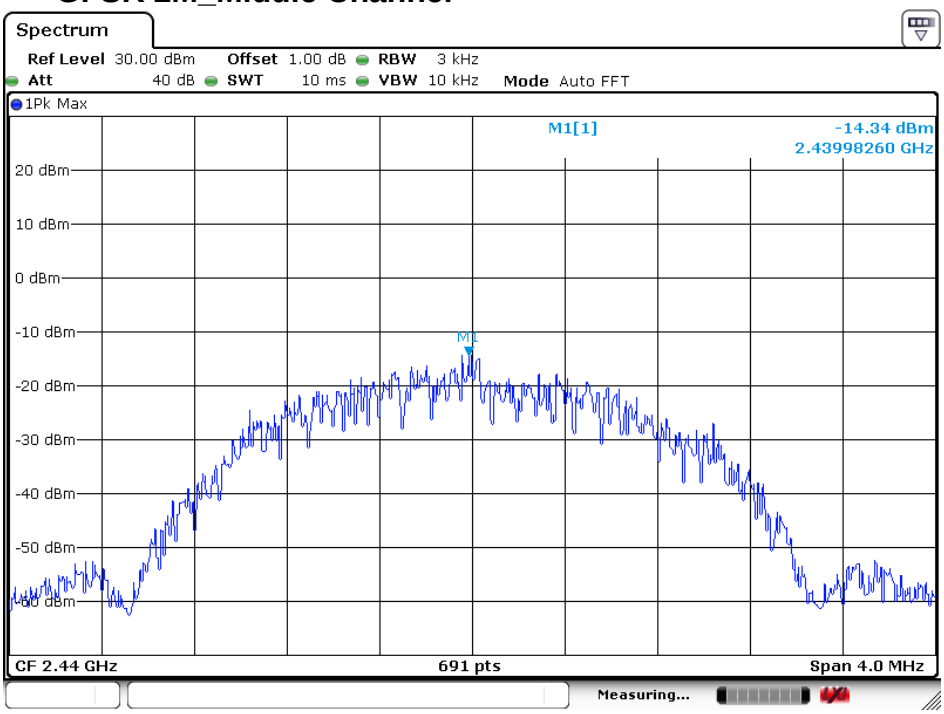


Date: 3.FEB.2021 16:53:40

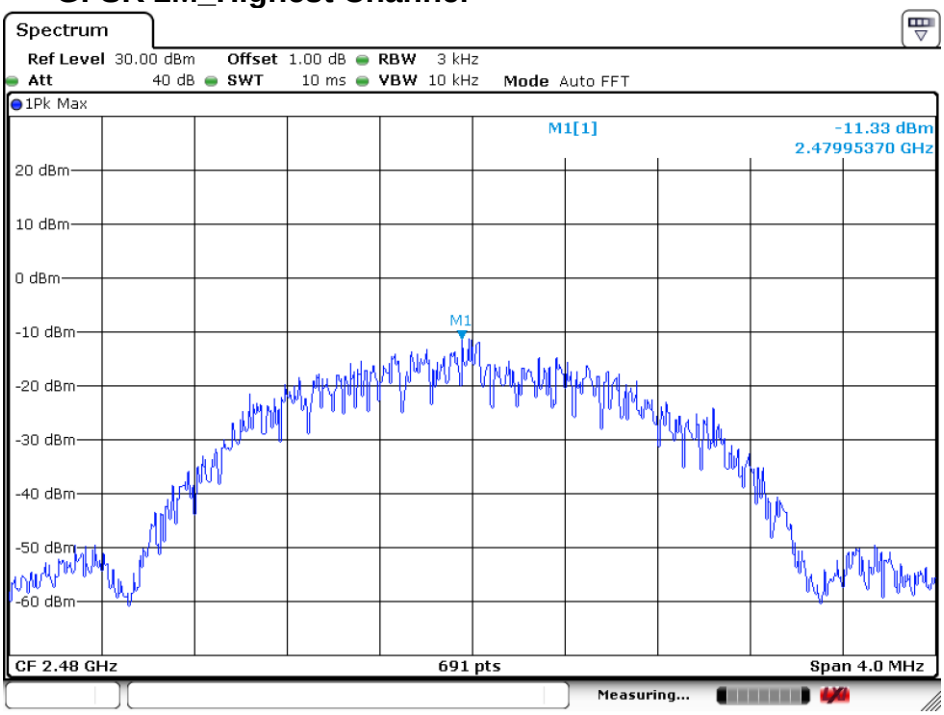
4.6.2.4 GFSK 2M_Lowest Channel



4.6.2.5 GFSK 2M_Middle Channel

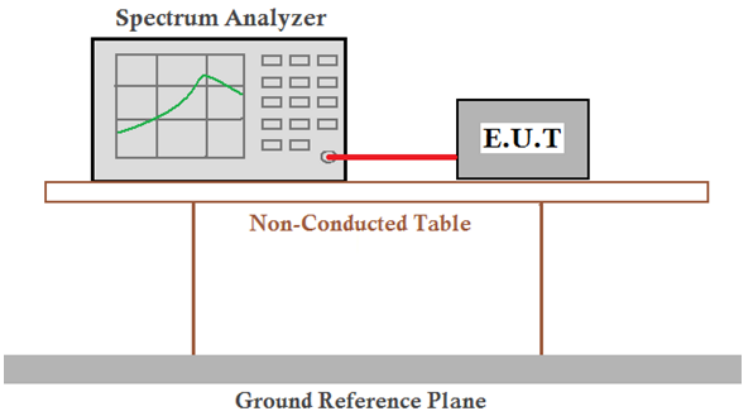


4.6.2.6 GFSK 2M_Highest Channel



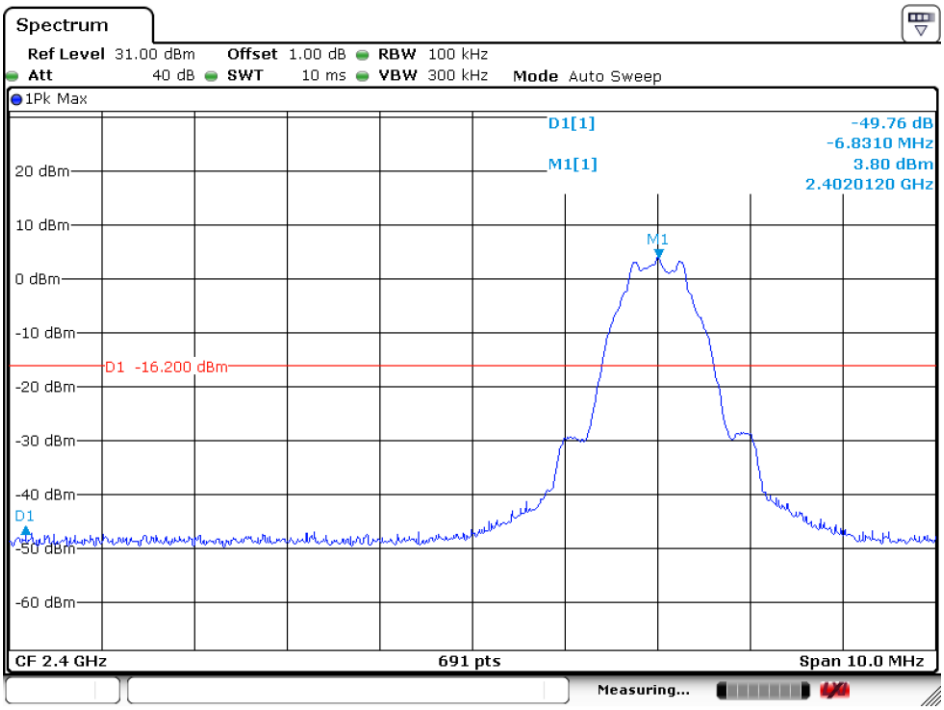
Date: 23.MAR.2021 11:20:48

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

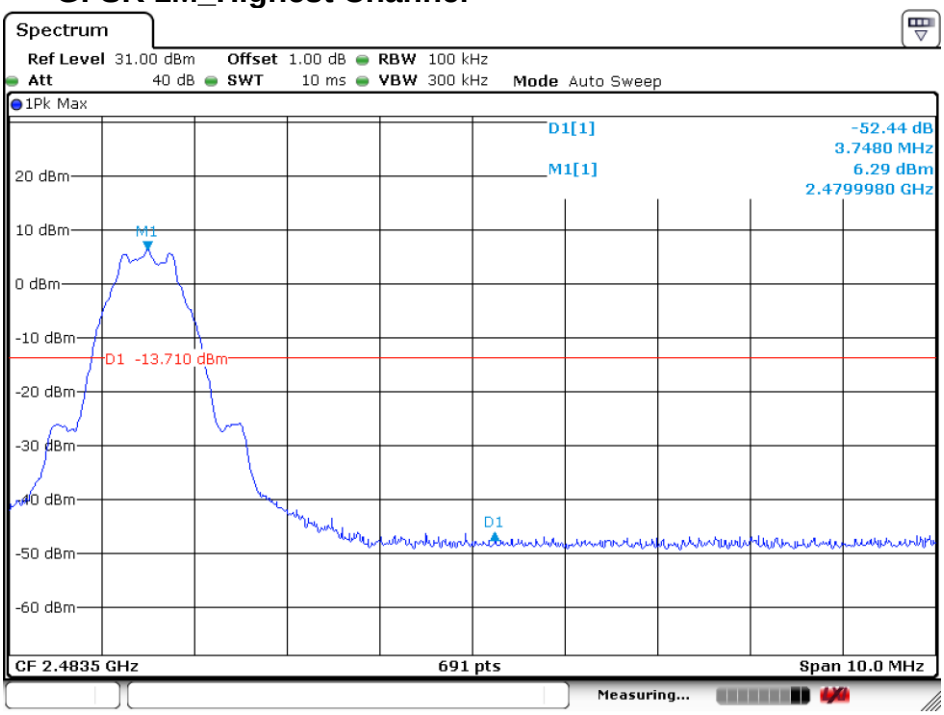
4.7.1 Test Plots

4.7.1.1 GFSK 1M_Lowest Channel



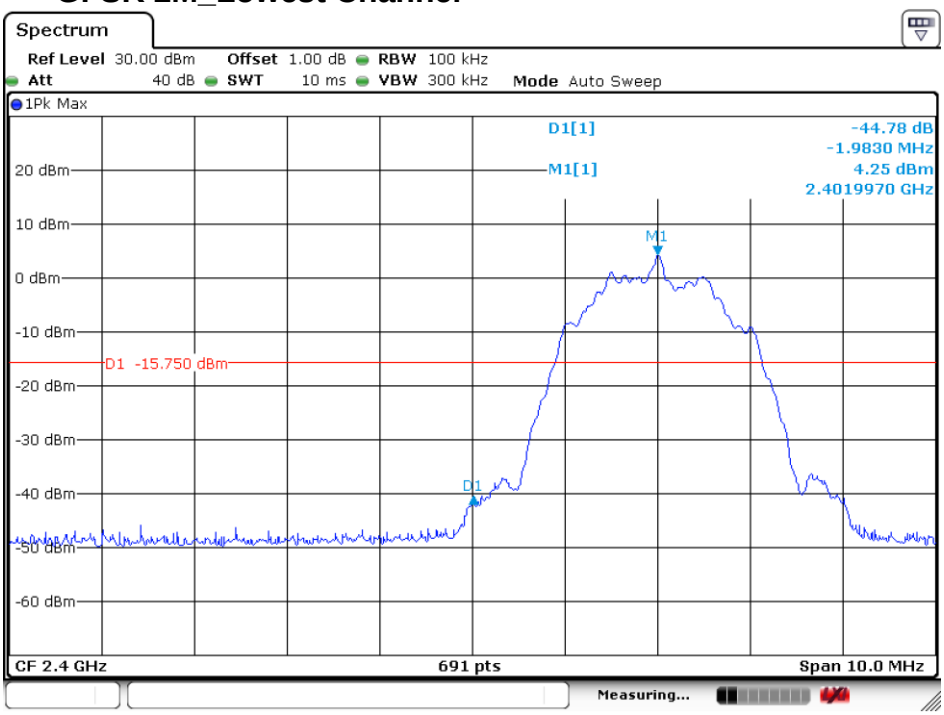
Date: 3.FEB.2021 17:00:24

4.7.1.2 GFSK 1M_Highest Channel



Date: 3.FEB.2021 17:01:16

4.7.1.1 GFSK 2M_Lowest Channel



Date: 23.MAR.2021 11:25:33

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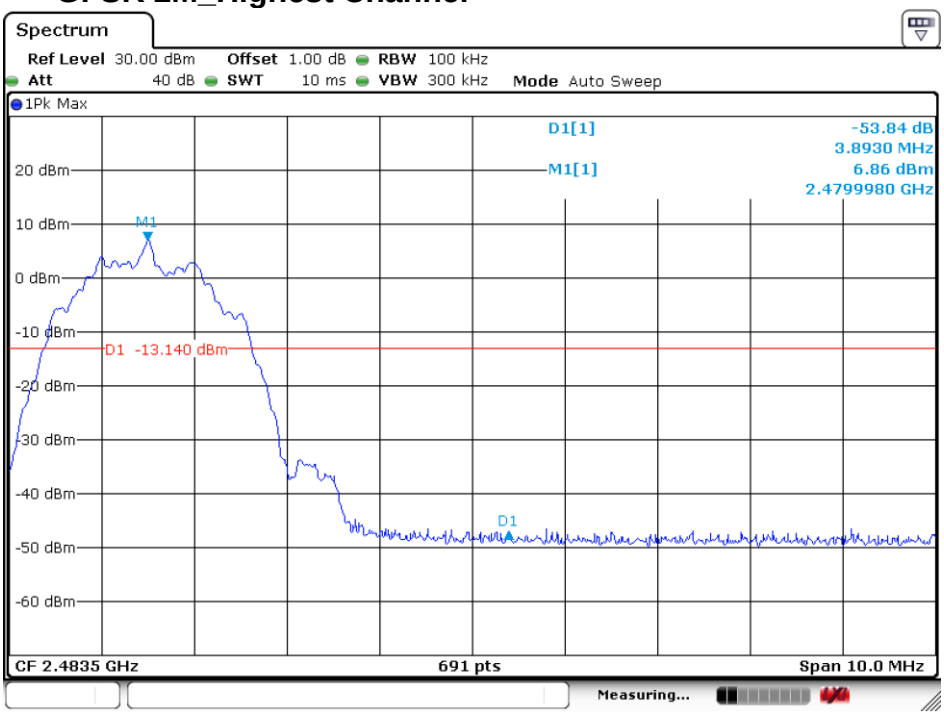
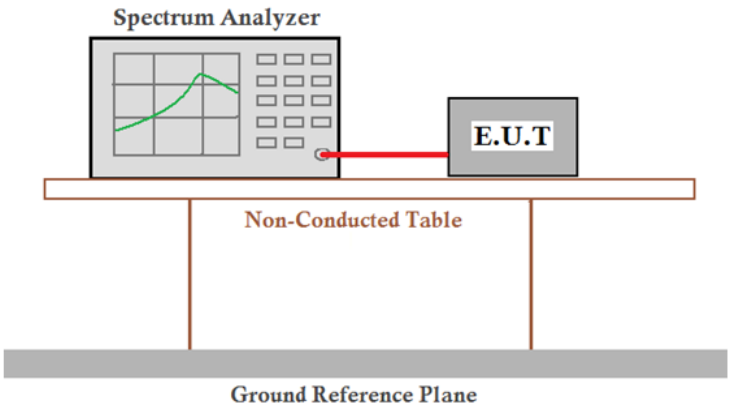
4.7.1.1 GFSK 2M_Highest Channel

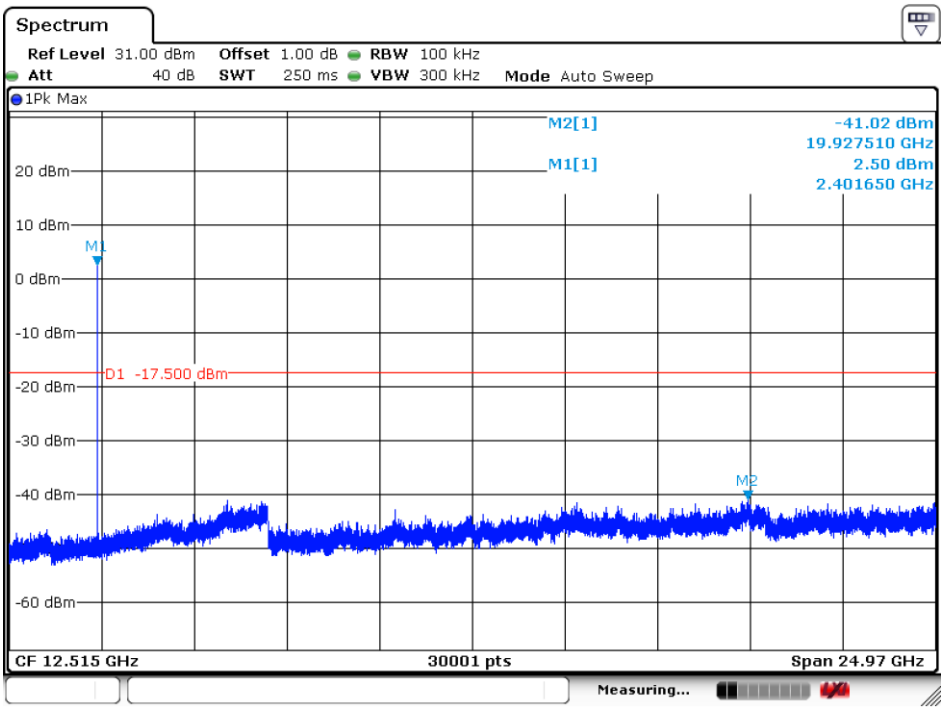


4.8 RF Conducted Spurious Emissions

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

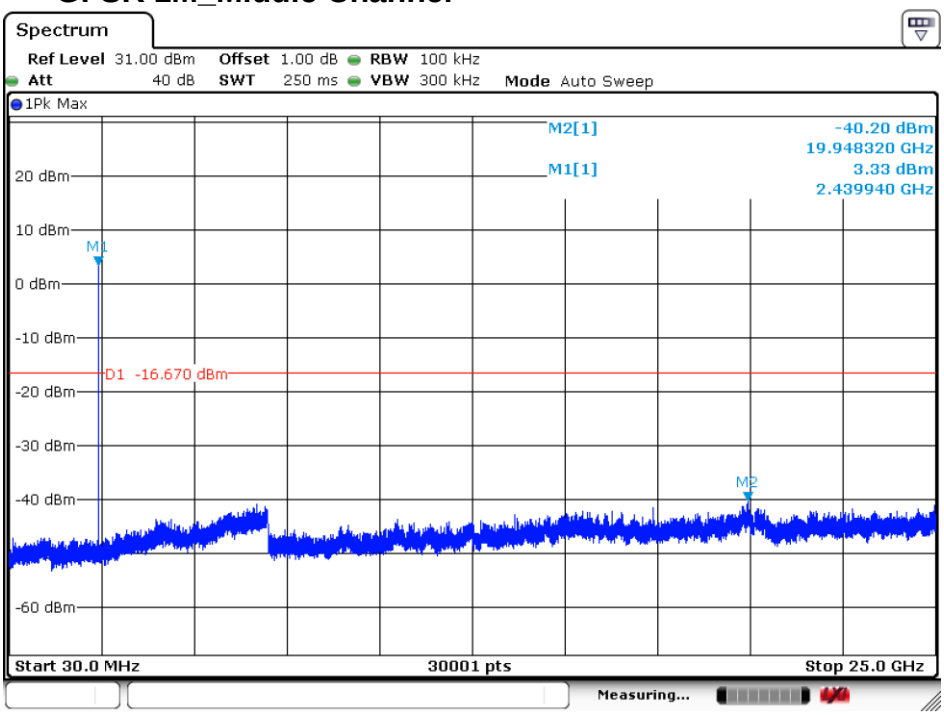
4.8.1 Test Plots

4.8.1.1 GFSK 1M_Lowest Channel



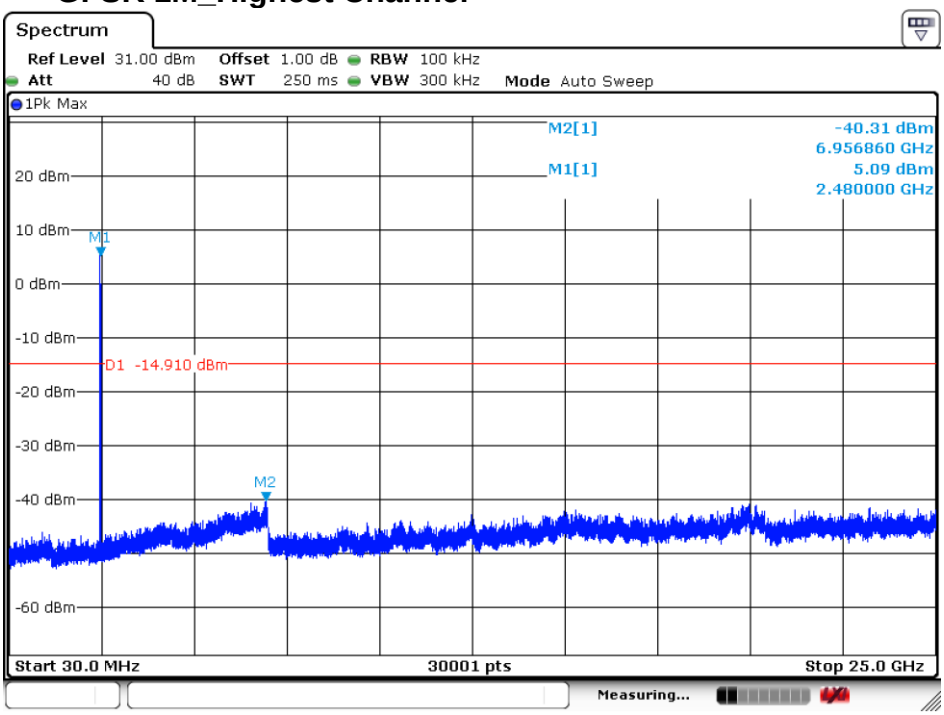
Date: 3.FEB.2021 17:03:36

4.8.1.2 GFSK 1M_Middle Channel



Date: 3.FEB.2021 17:02:55

4.8.1.3 GFSK 1M_Highest Channel



Date: 3.FEB.2021 17:02:07

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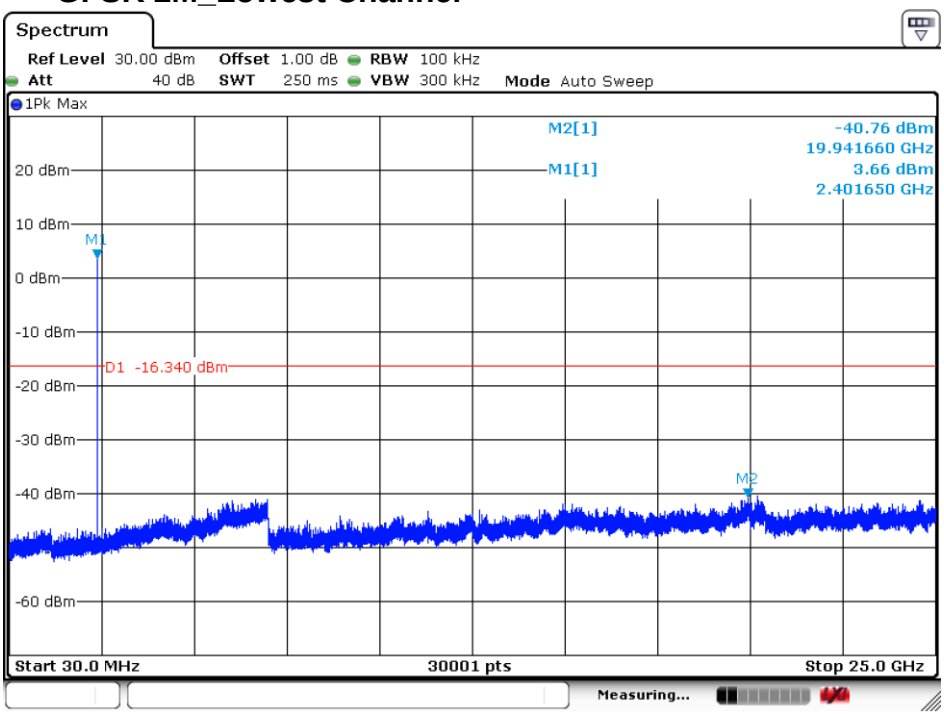
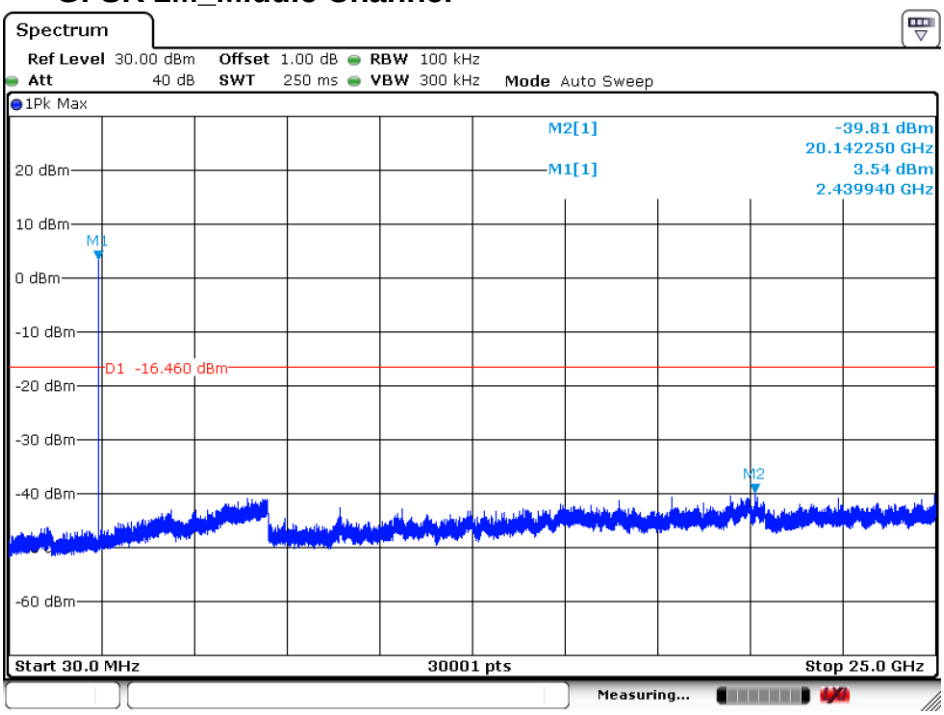
4.8.1.1 GFSK 2M_Lowest Channel



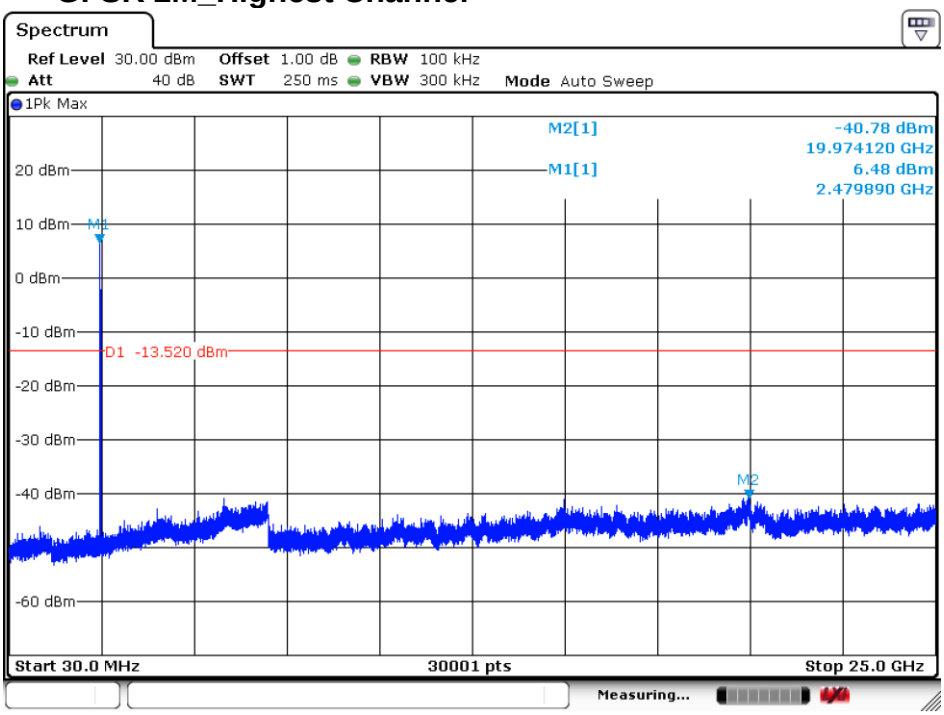
Date: 23.MAR.2021 11:28:04

4.8.1.1 GFSK 2M_Middle Channel



Date: 23.MAR.2021 11:30:02

4.8.1.1 GFSK 2M_Highest Channel



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.

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	120kHz	300kHz	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.				

Test Setup:	

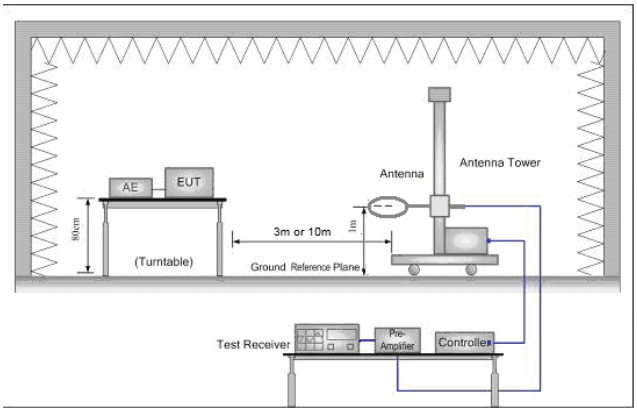


Figure 1. Below 30MHz

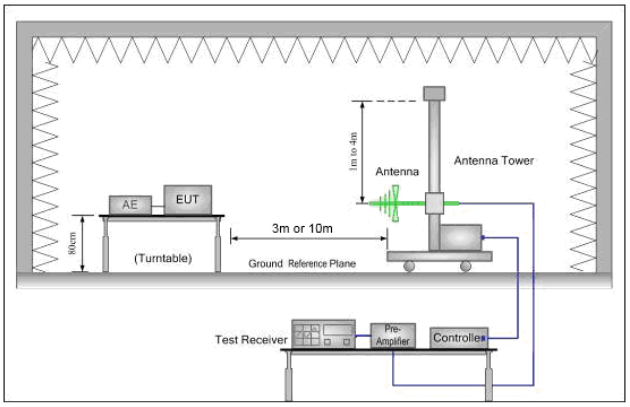


Figure 2. 30MHz to 1GHz

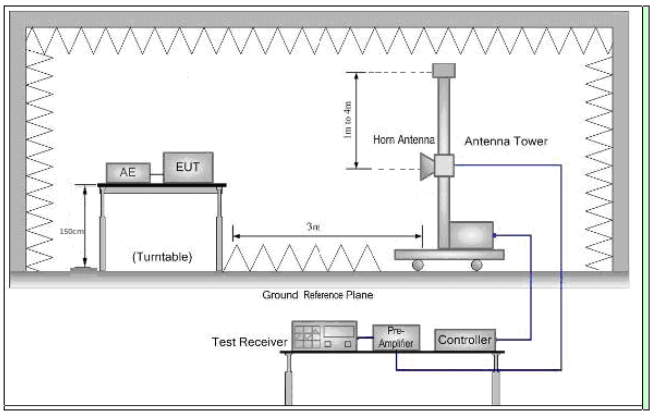


Figure 3. Above 1 GHz

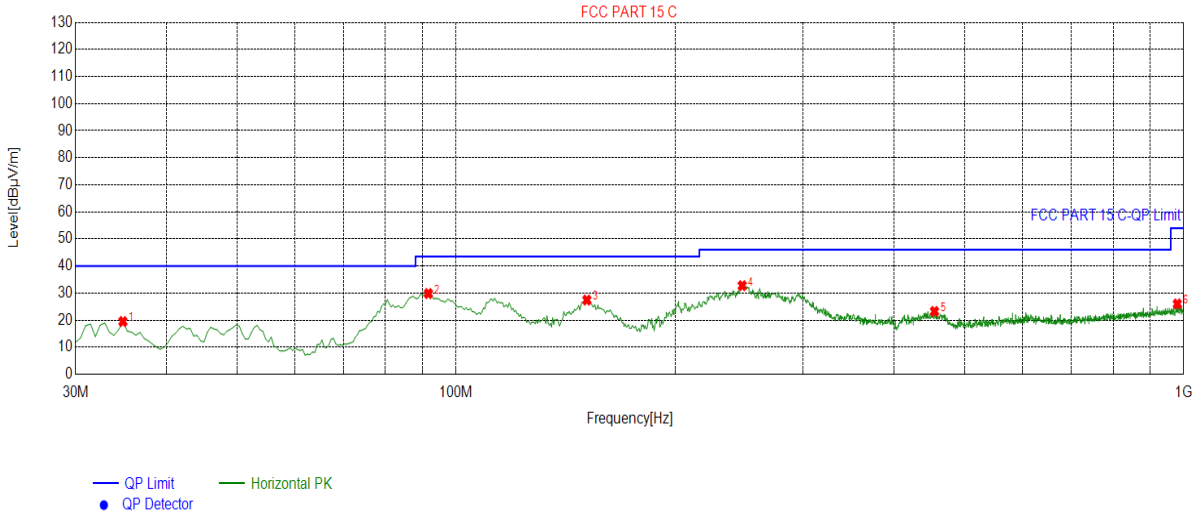
Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation 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. 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. e. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak (3) For average measurement: use duty cycle correction factor method per 15.35(c).

	Duty cycle = On time/100 milliseconds On time = N 1 *L 1 +N 2 *L 2 +...+N n-1 *LN n-1 +N n *L n Where N 1 is number of type 1 pulses, L 1 is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + 20*log(Duty cycle) 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. g. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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. i. Test the EUT in the lowest channel, the middle channel ,the Highest channel. 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. k. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with GFSK modulation. Charge + Transmitting mode.
Test Configuration:	Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ⩾ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ⩾ 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.
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
Remark:	The Emission Test data were reused from the report no:XZR/2021/1004901

4.9.1 Radiated Emission below 1GHz

4.9.1.1 Charge + Transmitting

Test Graph

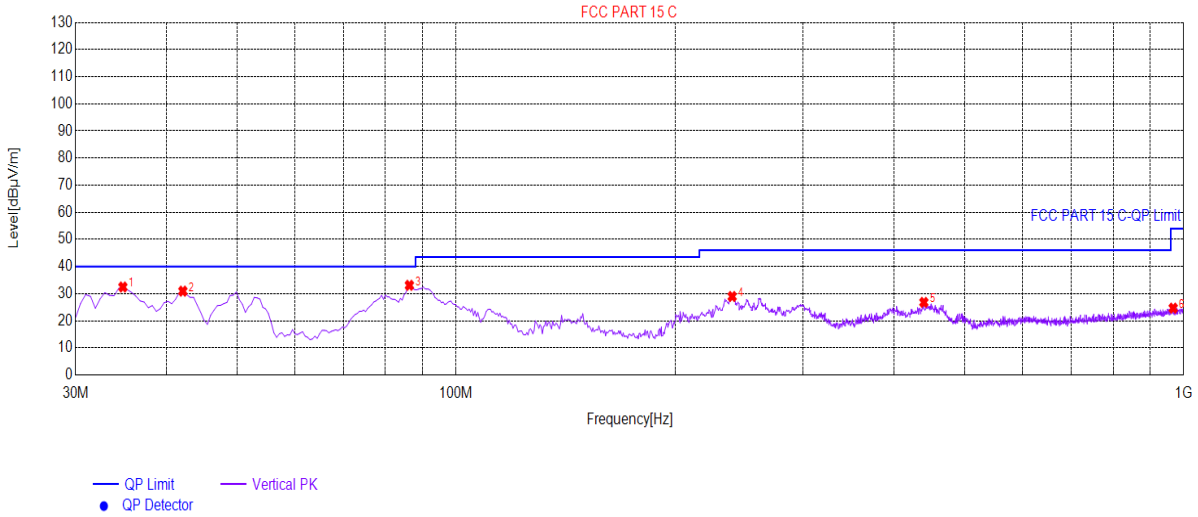


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.8524	19.50	-32.76	40.00	20.50	128	255	Horizontal
2	91.6258	29.84	-33.15	43.50	13.66	152	274	Horizontal
3	151.3107	27.43	-34.72	43.50	16.07	211	69	Horizontal
4	247.3887	32.74	-29.35	46.00	13.26	165	112	Horizontal
5	454.5873	23.24	-23.74	46.00	22.76	238	128	Horizontal
6	980.1051	26.00	-14.11	54.00	28.00	150	221	Horizontal

Final Data List

Test Graph

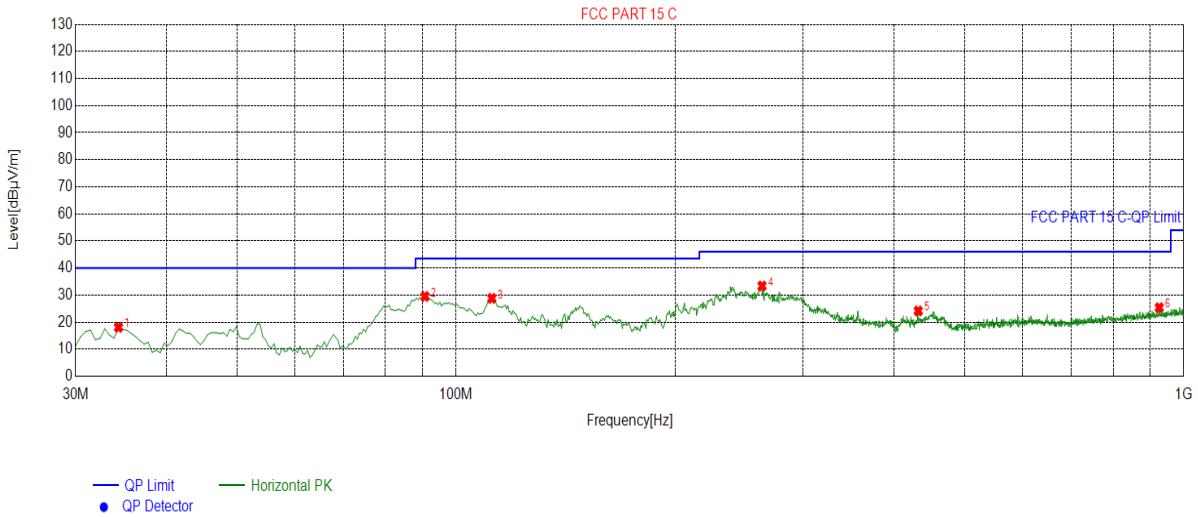


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.8524	32.44	-32.76	40.00	7.56	213	327	Vertical
2	42.1311	30.92	-30.76	40.00	9.08	145	330	Vertical
3	86.2881	33.07	-34.32	40.00	6.93	232	258	Vertical
4	239.6248	28.96	-29.61	46.00	17.04	182	16	Vertical
5	439.5448	26.79	-24.07	46.00	19.21	195	218	Vertical
6	967.4887	24.67	-14.26	54.00	29.33	150	75	Vertical

Final Data List

Test Graph

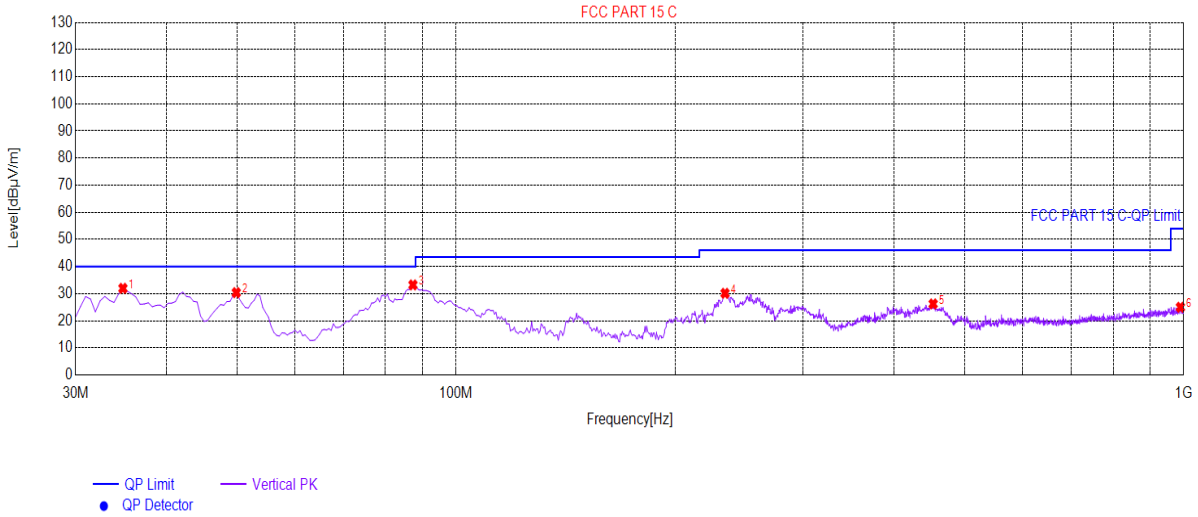


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.3672	18.09	-32.77	40.00	21.91	127	230	Horizontal
2	90.6553	29.51	-33.32	43.50	13.99	138	267	Horizontal
3	112.0060	28.81	-32.00	43.50	14.69	162	252	Horizontal
4	263.4017	33.38	-28.88	46.00	12.62	155	110	Horizontal
5	431.7809	24.15	-24.22	46.00	21.85	344	301	Horizontal
6	925.7579	25.36	-14.84	46.00	20.64	291	18	Horizontal

Final Data List

Test Graph



Suspected List

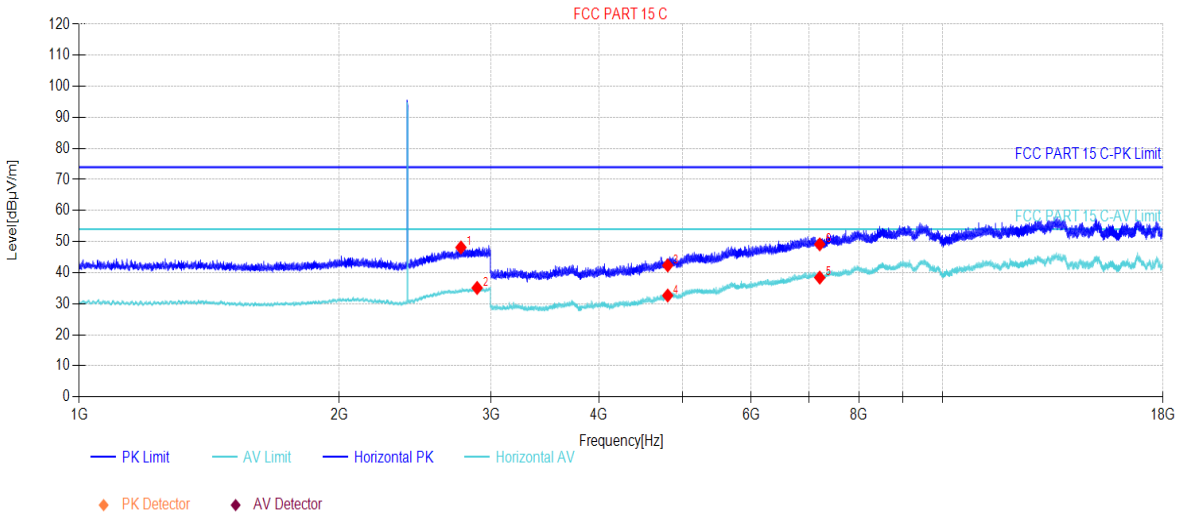
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.8524	31.96	-32.76	40.00	8.04	233	269	Vertical
2	49.8949	30.37	-30.18	40.00	9.63	209	297	Vertical
3	87.2586	33.22	-34.09	40.00	6.78	184	250	Vertical
4	234.2871	30.13	-29.81	46.00	15.87	305	16	Vertical
5	452.6463	26.23	-23.78	46.00	19.77	311	68	Vertical
6	989.8099	24.99	-13.99	54.00	29.01	150	192	Vertical

Final Data List

4.9.2 Transmitter Emission above 1GHz

4.9.2.1 BLE_1M_Channel 0

Test Graph



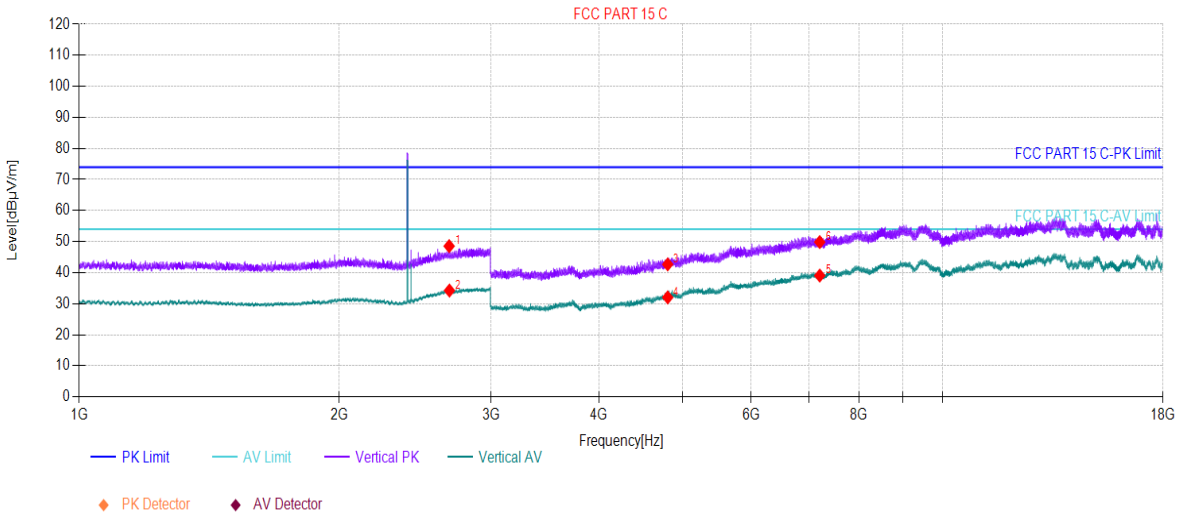
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2768.176	48.13	6.40	74.00	25.87	146	262	Horizontal
2	2890.389	35.09	6.93	54.00	18.91	178	245	Horizontal
3	4804.000	42.33	-10.62	74.00	31.67	185	115	Horizontal
4	4804.000	32.65	-10.62	54.00	21.35	165	16	Horizontal
5	7206.000	38.42	-2.56	54.00	15.58	147	325	Horizontal
6	7206.000	49.13	-2.56	74.00	24.87	169	192	Horizontal

Final Data List

4.9.2.2 BLE_1M_Channel 0

Test Graph



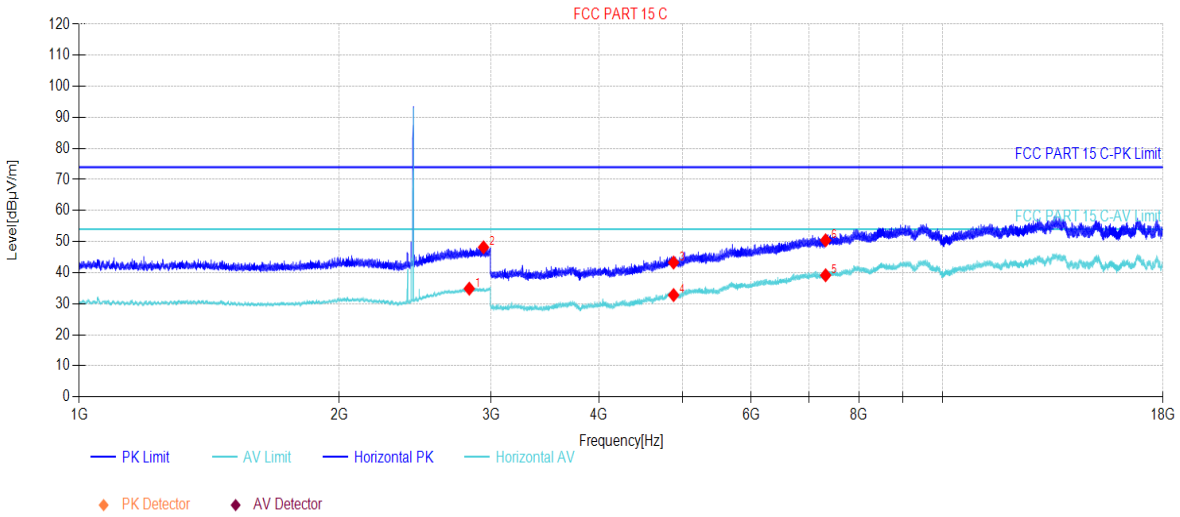
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2682.368	48.56	5.63	74.00	25.44	248	36	Vertical
2	2684.368	34.25	5.64	54.00	19.75	269	92	Vertical
3	4804.000	42.67	-10.62	74.00	31.33	247	82	Vertical
4	4804.000	32.04	-10.62	54.00	21.96	248	126	Vertical
5	7206.000	39.07	-2.56	54.00	14.93	269	247	Vertical
6	7206.000	49.85	-2.56	74.00	24.15	274	302	Vertical

Final Data List

4.9.2.3 BLE_1M_Channel 19

Test Graph



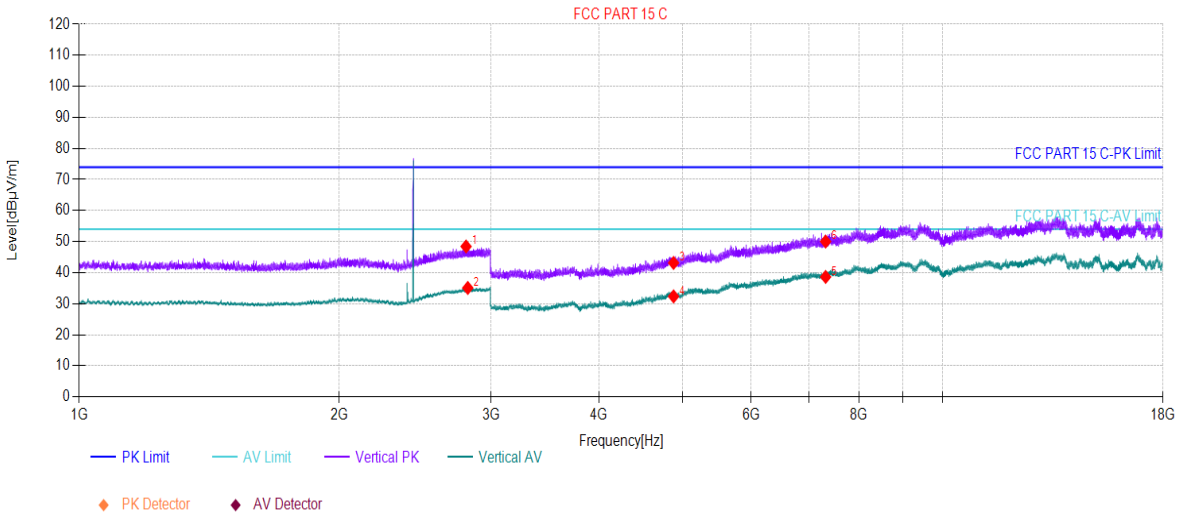
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2830.183	34.85	6.80	54.00	19.15	164	288	Horizontal
2	2939.994	48.17	7.13	74.00	25.83	168	59	Horizontal
3	4880.000	43.26	-10.38	74.00	30.74	147	357	Horizontal
4	4880.000	32.80	-10.38	54.00	21.20	132	126	Horizontal
5	7320.000	39.17	-2.51	54.00	14.83	174	225	Horizontal
6	7320.000	50.42	-2.51	74.00	23.58	165	192	Horizontal

Final Data List

4.9.2.4 BLE_1M_Channel 19

Test Graph



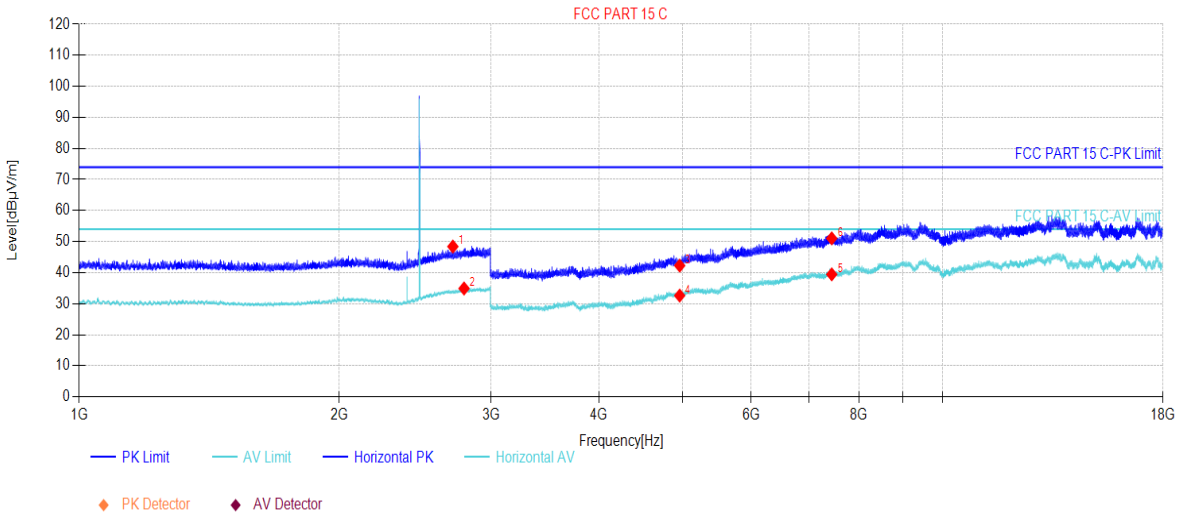
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2806.180	48.44	6.74	74.00	25.56	246	19	Vertical
2	2818.781	35.09	6.77	54.00	18.91	274	154	Vertical
3	4880.000	43.14	-10.38	74.00	30.86	269	59	Vertical
4	4880.000	32.36	-10.38	54.00	21.64	274	136	Vertical
5	7320.000	38.63	-2.51	54.00	15.37	241	3	Vertical
6	7320.000	50.04	-2.51	74.00	23.96	261	268	Vertical

Final Data List

4.9.2.5 BLE_1M_Channel 39

Test Graph



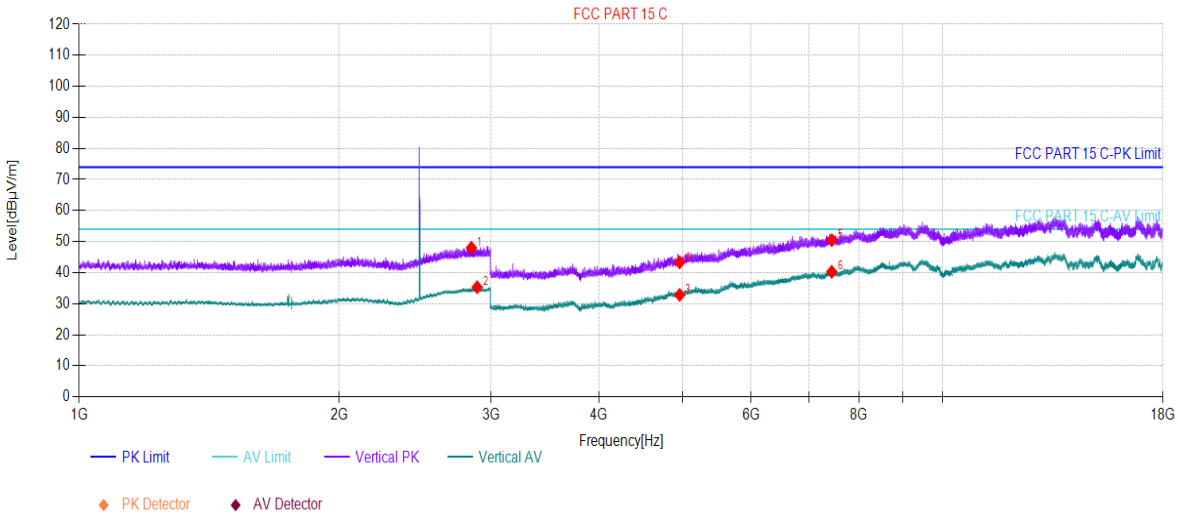
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2709.170	48.42	5.79	74.00	25.58	174	53	Horizontal
2	2790.979	34.91	6.64	54.00	19.09	168	42	Horizontal
3	4960.000	42.27	-10.07	74.00	31.73	147	25	Horizontal
4	4960.000	32.63	-10.07	54.00	21.37	174	125	Horizontal
5	7440.000	39.45	-1.94	54.00	14.55	162	169	Horizontal
6	7440.000	51.04	-1.94	74.00	22.96	174	257	Horizontal

Final Data List

4.9.2.6 BLE_1M_Channel 39

Test Graph



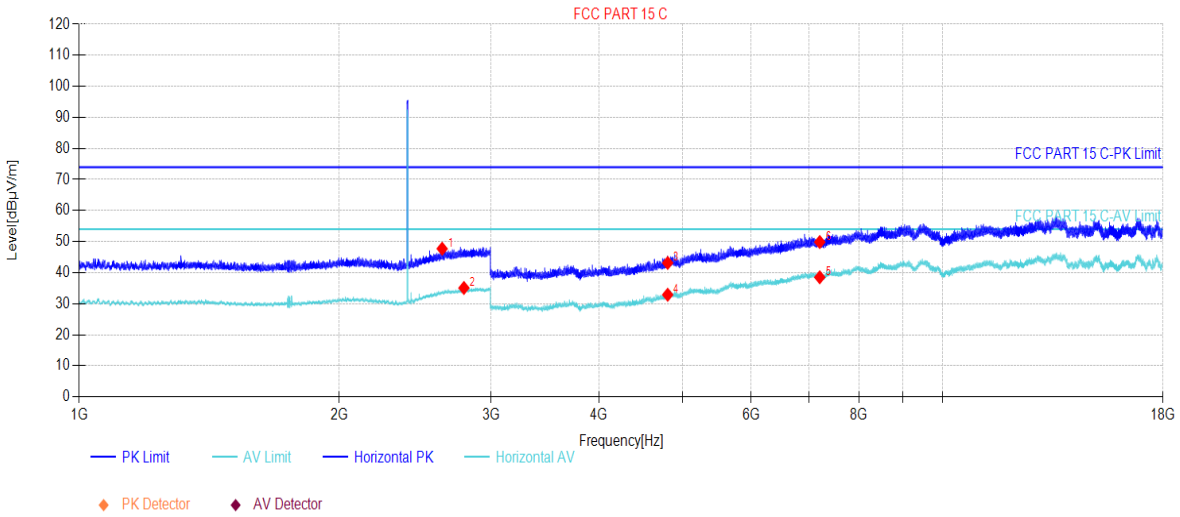
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2845.984	47.98	6.83	74.00	26.02	244	328	Vertical
2	2890.589	35.31	6.93	54.00	18.69	268	227	Vertical
3	4960.000	32.84	-10.07	54.00	21.16	174	148	Vertical
4	4960.000	43.34	-10.07	74.00	30.66	162	158	Vertical
5	7440.000	50.45	-1.94	74.00	23.55	274	180	Vertical
6	7440.000	40.28	-1.94	54.00	13.72	284	125	Vertical

Final Data List

4.9.2.7 BLE_2M_Channel 0

Test Graph



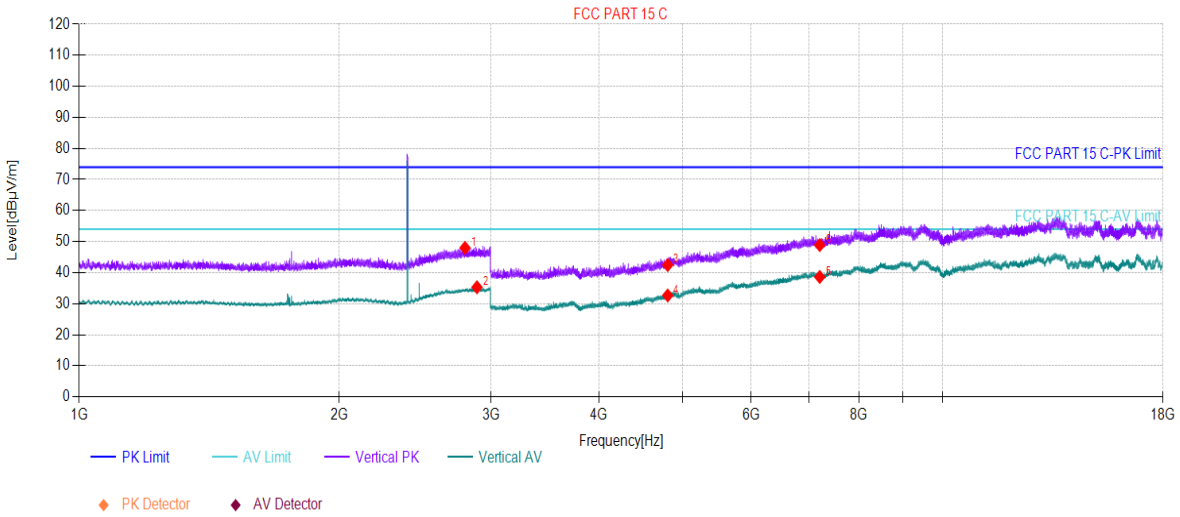
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2632.763	47.71	5.42	74.00	26.29	113	322	Horizontal
2	2790.179	35.08	6.63	54.00	18.92	136	226	Horizontal
3	4804.000	43.14	-10.62	74.00	30.86	187	137	Horizontal
4	4804.000	32.89	-10.62	54.00	21.11	158	213	Horizontal
5	7206.000	38.52	-2.56	54.00	15.48	186	324	Horizontal
6	7206.000	49.87	-2.56	74.00	24.13	187	70	Horizontal

Final Data List

4.9.2.8 BLE_2M_Channel 0

Test Graph



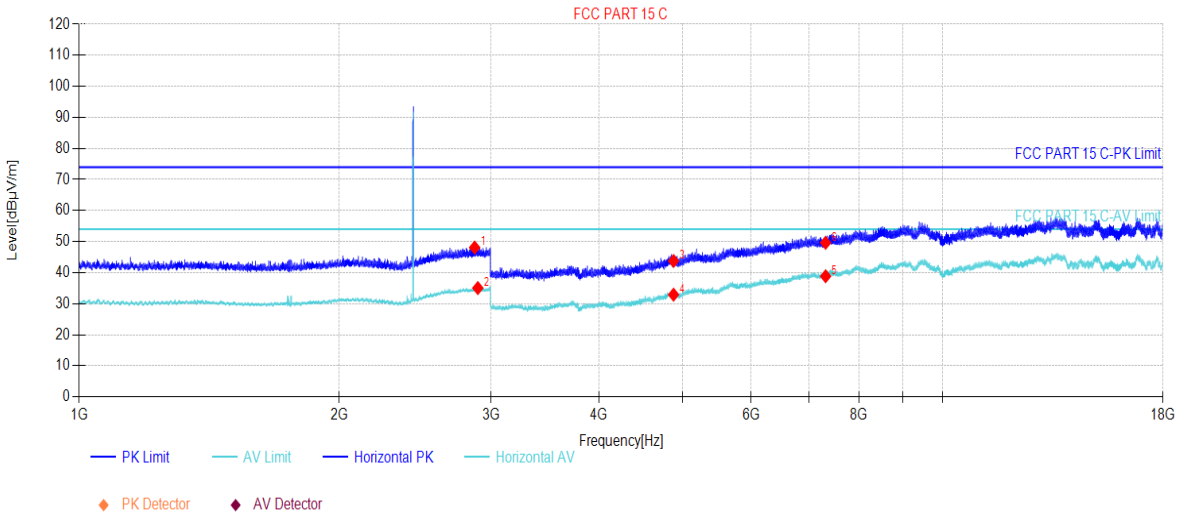
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2798.379	47.98	6.71	74.00	26.02	241	261	Vertical
2	2888.988	35.30	6.93	54.00	18.70	267	120	Vertical
3	4804.000	42.46	-10.62	74.00	31.54	274	53	Vertical
4	4804.000	32.66	-10.62	54.00	21.34	264	65	Vertical
5	7206.000	38.62	-2.56	54.00	15.38	241	124	Vertical
6	7206.000	48.89	-2.56	74.00	25.11	288	76	Vertical

Final Data List

4.9.2.9 BLE_2M_Channel 19

Test Graph



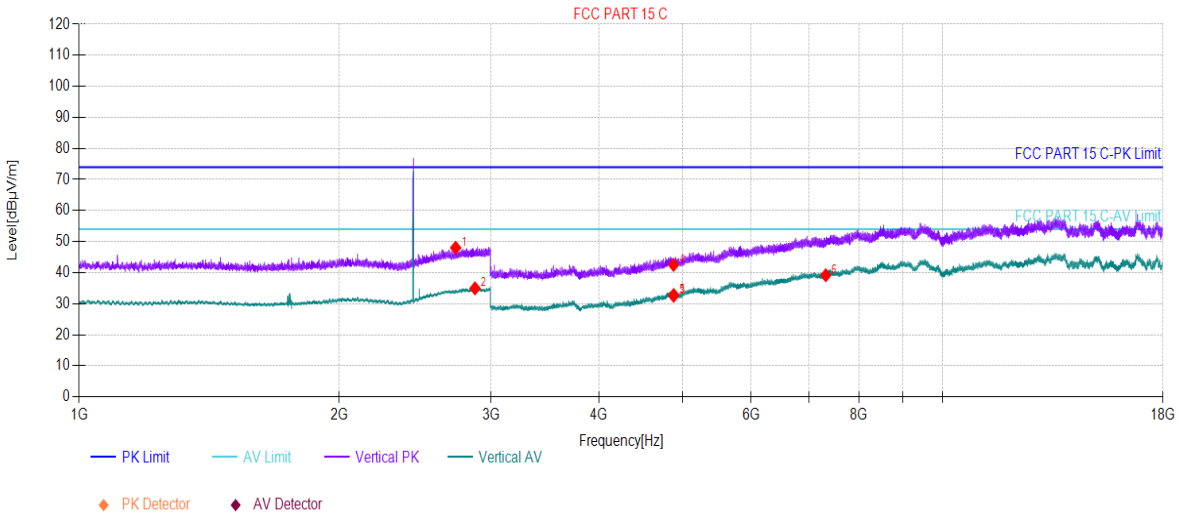
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2871.187	48.10	6.89	74.00	25.90	162	80	Horizontal
2	2895.589	35.05	6.94	54.00	18.95	174	35	Horizontal
3	4880.000	43.77	-10.38	74.00	30.23	162	92	Horizontal
4	4880.000	32.92	-10.38	54.00	21.08	174	0	Horizontal
5	7320.000	38.86	-2.51	54.00	15.14	165	92	Horizontal
6	7320.000	49.63	-2.51	74.00	24.37	184	26	Horizontal

Final Data List

4.9.2.10 BLE_2M_Channel 19

Test Graph



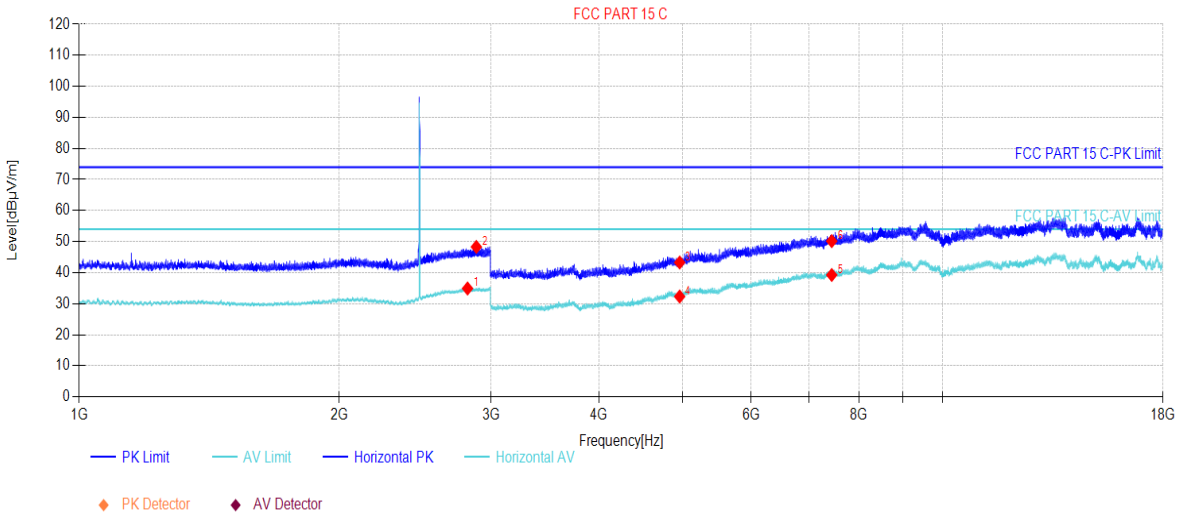
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2729.573	48.02	6.00	74.00	25.98	262	24	Vertical
2	2873.587	34.96	6.89	54.00	19.04	261	149	Vertical
3	4880.000	32.56	-10.38	54.00	21.44	245	169	Vertical
4	4880.000	42.52	-10.38	74.00	31.48	255	214	Vertical
5	4882.000	32.84	-10.38	54.00	21.16	284	5	Vertical
6	7323.000	39.17	-2.49	54.00	14.83	288	224	Vertical

Final Data List

4.9.2.11 BLE_2M_Channel 39

Test Graph



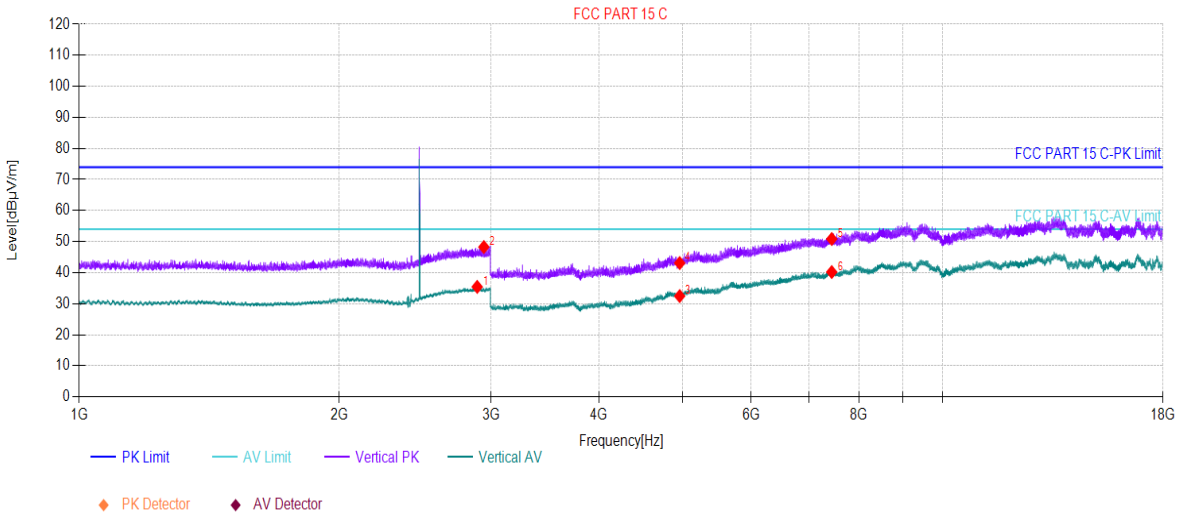
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2817.181	34.92	6.77	54.00	19.08	165	165	Horizontal
2	2884.188	48.30	6.92	74.00	25.70	164	294	Horizontal
3	4960.000	43.28	-10.07	74.00	30.72	165	171	Horizontal
4	4960.000	32.32	-10.07	54.00	21.68	157	237	Horizontal
5	7440.000	39.25	-1.94	54.00	14.75	155	237	Horizontal
6	7440.000	50.17	-1.94	74.00	23.83	149	60	Horizontal

Final Data List

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	2890.589	35.44	6.93	54.00	18.56	245	24	Vertical
2	2942.394	48.27	7.15	74.00	25.73	278	24	Vertical
3	4960.000	32.46	-10.07	54.00	21.54	264	246	Vertical
4	4960.000	43.10	-10.07	74.00	30.90	243	36	Vertical
5	7440.000	50.84	-1.94	74.00	23.16	284	291	Vertical
6	7440.000	40.20	-1.94	54.00	13.80	244	36	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.

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:			

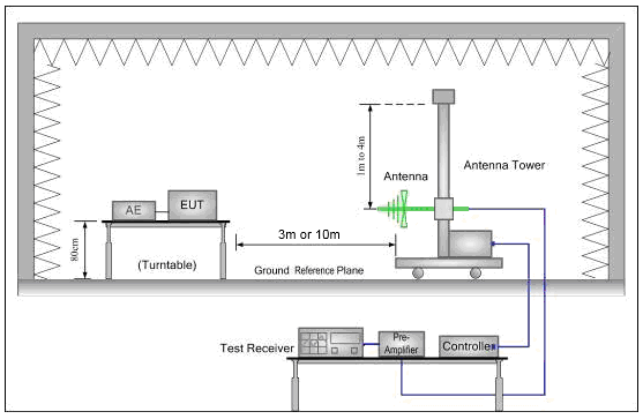


Figure 1. 30MHz to 1GHz

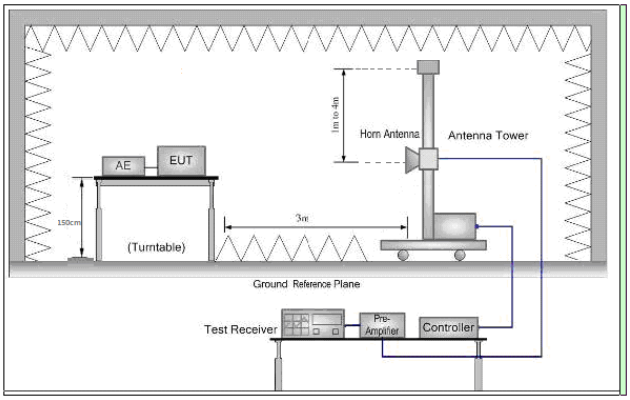


Figure 2. Above 1 GHz

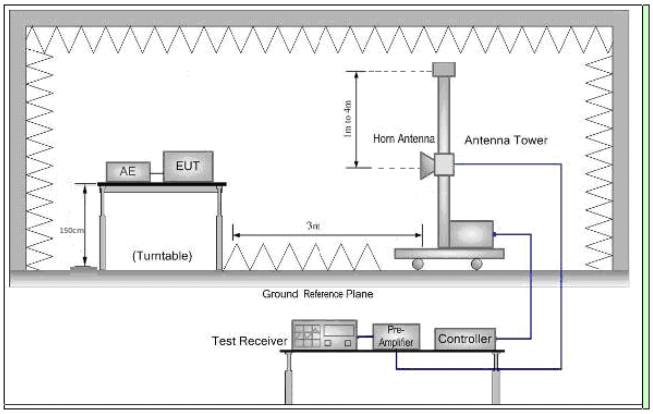


Figure 3. Above 1 GHz

Test Procedure:	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 camber. The table was rotated 360 degrees to determine the position of the highest radiation. 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 camber. The table was rotated 360 degrees to determine the position of the highest radiation. 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. 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. 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. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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 h. Test the EUT in the lowest channel , the Highest channel 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. j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with GFSK modulation. Charge + Transmitting mode.
Test Configuration:	Peak Measurements Above 1000 MHz • RBW = 1 MHz • VBW ⩾ 3 MHz • Detector = Peak • Sweep time = auto • Trace mode = max hold Average Measurements Above 1000MHz • RBW = 1 MHz • VBW = 10 Hz, when duty cycle is no less than 98 percent. • VBW ⩾ 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.
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

Remark:	The Emission Test data were reused from the report no:XZR/2021/1004901

SGS-CSTC Standards Technical Services Co.,Ltd. Shenzhen Branch Testing Center, EEC Laboratory.
No.1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, China 518057 t (86-755) 26012053 f (86-755) 26710594 www.sgsgroup.com.cn
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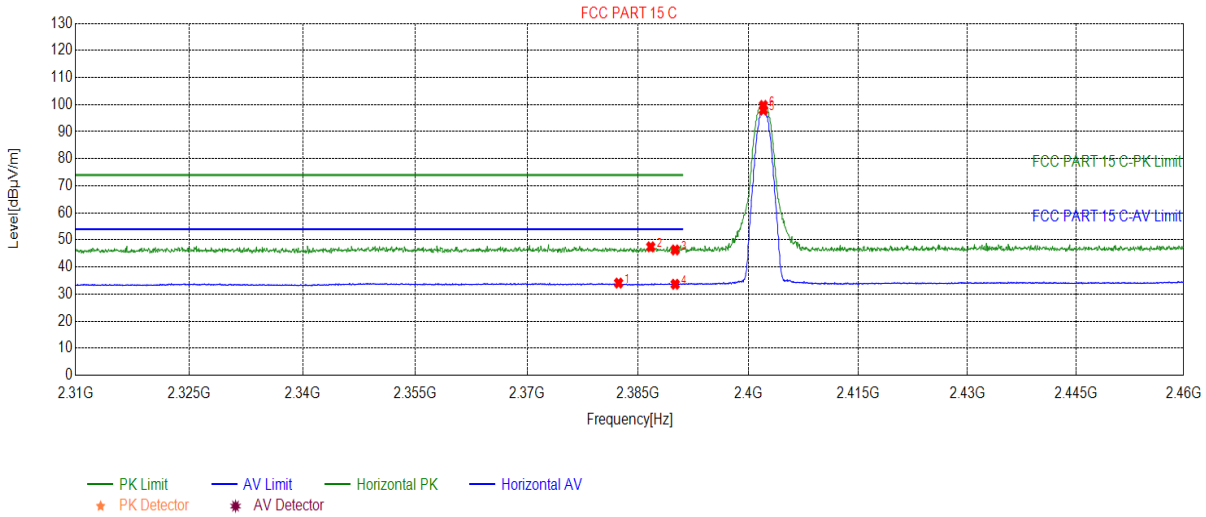
4.10.1 Test Plots

4.10.1.1 BLE 1M_Channel 0

Test Graph



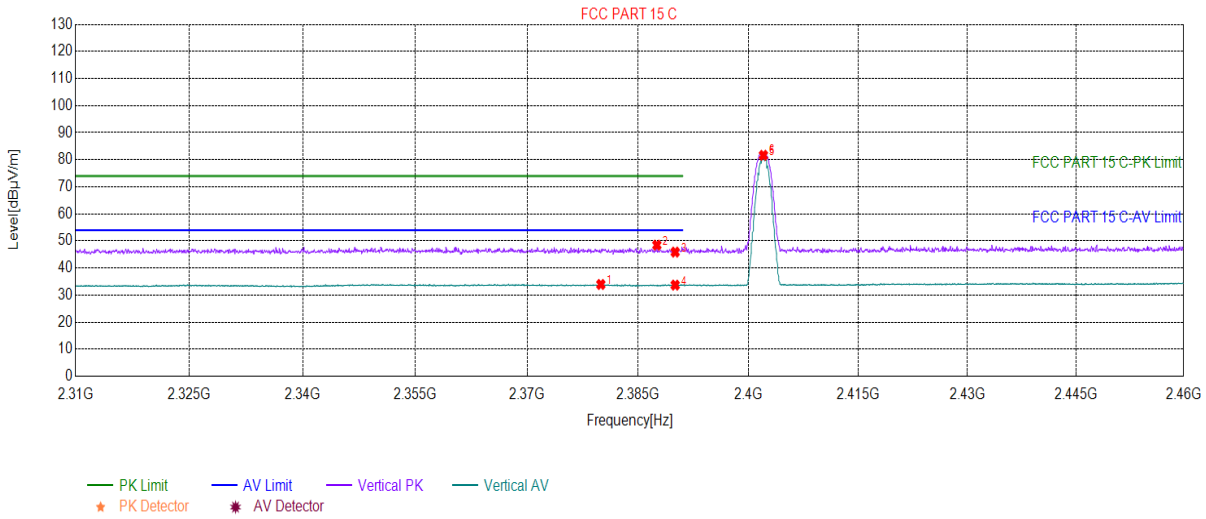
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2382.336	34.08	7.92	54.00	19.92	133	83	Horizontal
2	2386.688	47.47	7.88	74.00	26.53	127	319	Horizontal
3	2390.000	46.32	7.98	74.00	27.68	155	137	Horizontal
4	2390.000	33.64	7.98	54.00	20.36	172	41	Horizontal
5	2402.000	97.99	8.06	0.00	-97.99	152	52	Horizontal
6	2402.000	99.67	8.06	0.00	-99.67	168	60	Horizontal

Final Data List

4.10.1.2 BLE 1M_Channel 0

Test Graph



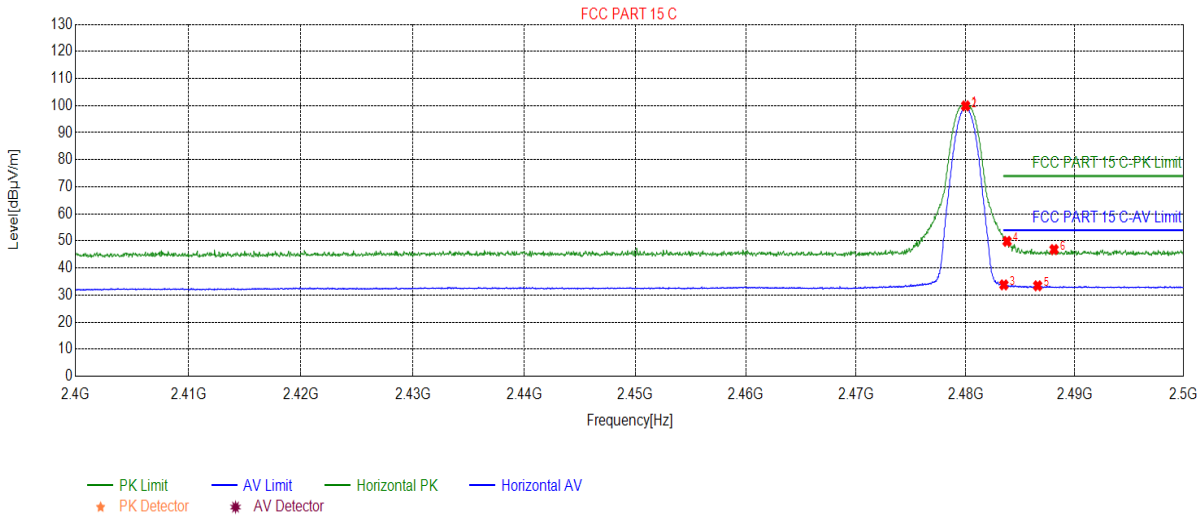
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.935	33.94	8.00	54.00	20.06	210	289	Vertical
2	2387.513	48.46	7.91	74.00	25.54	222	210	Vertical
3	2390.000	45.89	7.98	74.00	28.11	264	258	Vertical
4	2390.000	33.70	7.98	54.00	20.30	274	206	Vertical
5	2402.000	81.64	8.06	0.00	-81.64	253	331	Vertical
6	2402.000	82.24	8.06	0.00	-82.24	206	328	Vertical

Final Data List

4.10.1.3 BLE 1M_Channel 39

Test Graph



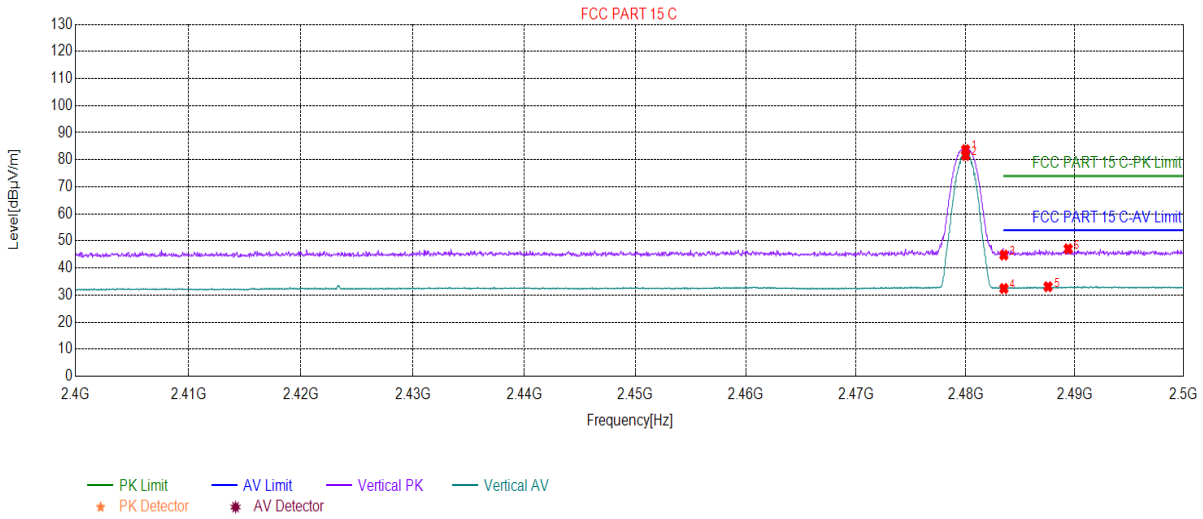
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	99.89	8.54	0.00	-99.89	111	64	Horizontal
2	2480.000	99.25	8.54	0.00	-99.25	120	72	Horizontal
3	2483.500	33.77	8.50	54.00	20.23	141	75	Horizontal
4	2483.791	49.86	8.50	74.00	24.14	132	72	Horizontal
5	2486.593	33.45	8.53	54.00	20.55	156	68	Horizontal
6	2488.094	46.82	8.57	74.00	27.18	151	14	Horizontal

Final Data List

4.10.1.4 BLE 1M_Channel 39

Test Graph



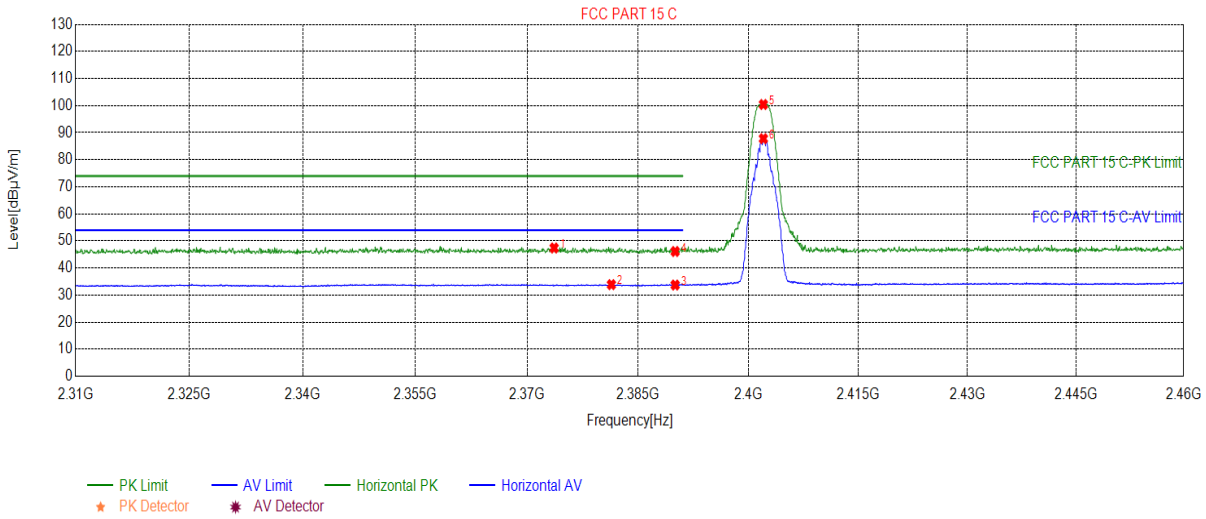
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	83.70	8.54	0.00	-83.70	282	196	Vertical
2	2480.000	81.56	8.54	0.00	-81.56	255	165	Vertical
3	2483.500	44.79	8.50	74.00	29.21	261	62	Vertical
4	2483.500	32.44	8.50	54.00	21.56	201	149	Vertical
5	2487.543	33.08	8.56	54.00	20.92	244	172	Vertical
6	2489.394	47.07	8.61	74.00	26.93	315	281	Vertical

Final Data List

4.10.1.5 BLE 2M_Channel 0

Test Graph



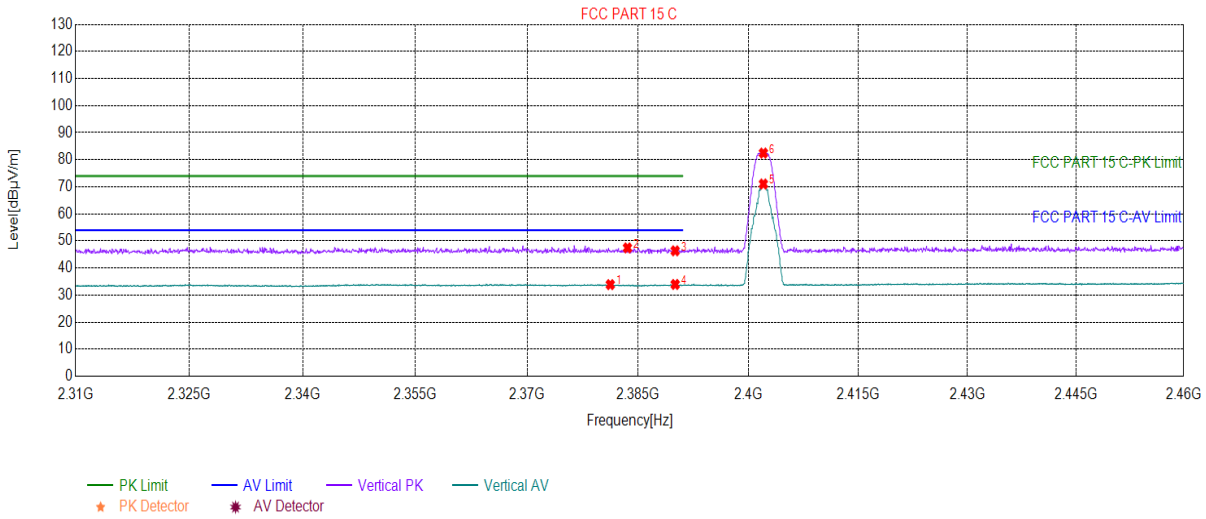
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2373.631	47.41	7.98	74.00	26.59	122	87	Horizontal
2	2381.360	33.87	7.95	54.00	20.13	164	269	Horizontal
3	2390.000	33.73	7.98	54.00	20.27	151	296	Horizontal
4	2390.000	46.12	7.98	74.00	27.88	162	129	Horizontal
5	2402.000	100.41	8.06	0.00	-100.41	174	63	Horizontal
6	2402.000	87.79	8.06	0.00	-87.79	135	71	Horizontal

Final Data List

4.10.1.6 BLE 2M_Channel 0

Test Graph



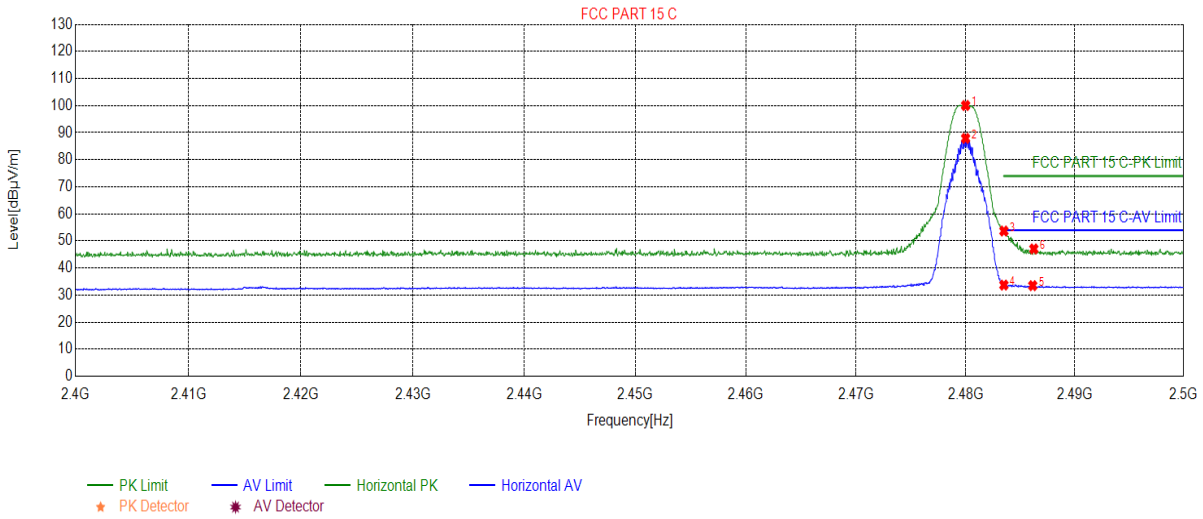
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2381.210	33.87	7.96	54.00	20.13	234	65	Vertical
2	2383.536	47.44	7.88	74.00	26.56	255	1	Vertical
3	2390.000	46.36	7.98	74.00	27.64	264	1	Vertical
4	2390.000	33.94	7.98	54.00	20.06	278	127	Vertical
5	2402.000	71.03	8.06	0.00	-71.03	204	331	Vertical
6	2402.000	82.45	8.06	0.00	-82.45	266	327	Vertical

Final Data List

4.10.1.7 BLE 2M_Channel 39

Test Graph



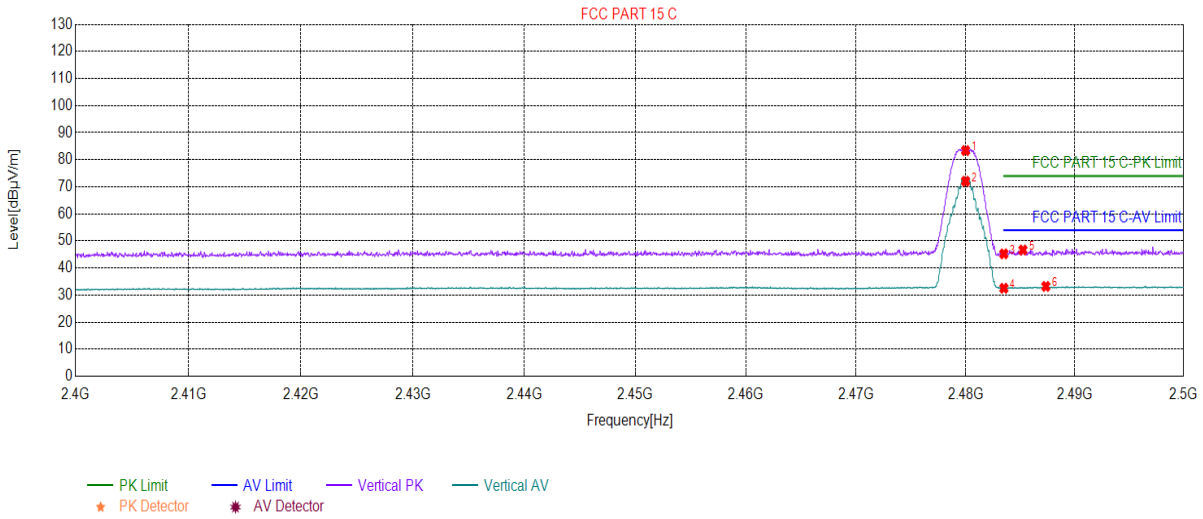
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.000	100.03	8.54	0.00	-100.03	141	68	Horizontal
2	2480.000	87.88	8.54	0.00	-87.88	155	64	Horizontal
3	2483.500	53.66	8.50	74.00	20.34	150	68	Horizontal
4	2483.500	33.71	8.50	54.00	20.29	174	110	Horizontal
5	2486.143	33.49	8.52	54.00	20.51	162	71	Horizontal
6	2486.243	47.06	8.52	74.00	26.94	144	64	Horizontal

Final Data List

4.10.1.8 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	2480.000	83.37	8.54	0.00	-83.37	274	211	Vertical
2	2480.000	72.06	8.54	0.00	-72.06	238	146	Vertical
3	2483.500	45.25	8.50	74.00	28.75	312	138	Vertical
4	2483.500	32.54	8.50	54.00	21.46	261	126	Vertical
5	2485.242	46.67	8.49	74.00	27.33	255	99	Vertical
6	2487.343	33.22	8.55	54.00	20.78	201	20	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.

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	Radiated Spurious emission test	±4.8dB (30MHz-1GHz)
		±5.2dB (1GHz-6GHz)
		±5.5dB (6GHz-18GHz)
		±5.02dB (18GHz-40GHz)
2	Conduct emission test	±3.4 dB (9KHz- 30MHz)

6 Equipment List

RF conducted test					
Test Equipment	Manufacturer	Model No.	Inventory No	Cal. date (yyyy-mm-dd)	Cal.Duedate (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

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&DSS&DTS&NII Setup Photos.

The End

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