Report No.: AR/2020/C001002
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FCC TEST REPORT

Application No.:	AR/2020/C0010
Applicant:	Xiaomi Communications Co., Ltd.
Address of Applicant	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Manufacturer:	Xiaomi Communications Co., Ltd.
Address of Manufacturer	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
EUT Description:	Mobile Phone
Model No.:	M2012K11G
Trade Mark:	Xiaomi
FCC ID:	2AFZZK11G
Standards:	47 CFR FCC Part 2, Subpart J 47 CFR Part 15, Subpart C
Date of Receipt:	2021/1/31
Date of Test:	2021/1/31 to 2021/2/22
Date of Issue:	2021/3/12
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		2021-03-12		Original

Authorized for issue by:				
Prepared By		Dee.Zheng (Dee Zheng) /Project Engineer		
Checked By		Daniel (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 4.3	PASS	B
Conducted Peak Output Power	15.247 (b)(1)	ANSI C63.10 (2013)	Clause 4.4	PASS	A
20dB Emission Bandwidth	15.247 (a)(1)	ANSI C63.10 (2013)	Clause 4.5	PASS	A
Carrier Frequencies Separation	15.247 (a)(1)	ANSI C63.10 (2013)	Clause 4.6	PASS	A
Hopping Channel Number	15.247 (a)(1)	ANSI C63.10 (2013)	Clause 4.7	PASS	A
Dwell Time	15.247 (a)(1)	ANSI C63.10 (2013)	Clause 4.8	PASS	A
Band-edge for RF Conducted Emissions	15.247(d)	ANSI C63.10 (2013)	Clause 4.9	PASS	A
RF Conducted Spurious Emissions	15.247(d)	ANSI C63.10 (2013)	Clause 4.10	PASS	A
Radiated Spurious emissions	15.247(d); 15.205/15.209	ANSI C63.10 (2013)	Clause 4.11	PASS	B
Restricted bands around fundamental frequency (Radiated Emission)	15.247(d); 15.205/15.209	ANSI C63.10 (2013)	Clause 4.12	PASS	B

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Contents

3 General Information

3.1 Details of Client

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

3.2 Test Location

Lab A:

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

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:	Mobile Phone
Model No.:	M2012K11G
Trade Mark:	Xiaomi
Hardware Version:	P2.1
Software Version:	MIUI12
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 V5.2
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK, π/4DQPSK, 8DPSK
Number of Channel:	79
Hopping Channel Type:	Adaptive Frequency Hopping systems
Sample Type:	☒ Portable Device, ☐Module
Antenna Type:	PIFA Antenna
Antenna Gain:	-3.1dBi(ANT1); -3.4dBi(ANT2);

Operation Frequency of each channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
6	2408MHz	26	2428MHz	46	2448MHz	66	2468MHz
7	2409MHz	27	2429MHz	47	2449MHz	67	2469MHz
8	2410MHz	28	2430MHz	48	2450MHz	68	2470MHz
9	2411MHz	29	2431MHz	49	2451MHz	69	2471MHz
10	2412MHz	30	2432MHz	50	2452MHz	70	2472MHz
11	2413MHz	31	2433MHz	51	2453MHz	71	2473MHz
12	2414MHz	32	2434MHz	52	2454MHz	72	2474MHz
13	2415MHz	33	2435MHz	53	2455MHz	73	2475MHz
14	2416MHz	34	2436MHz	54	2456MHz	74	2476MHz
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz

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16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		

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(CH39)	2441MHz
The Highest channel(CH78)	2480MHz

3.5 Test Environment

Operating Environment:	
Temperature:	25.0 ℃
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 -3.1dBi(ANT1);-3.4(ANT2).	

4.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence

4.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)

4.2.2 Conclusion

Standard Requirement:

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Compliance for section 15.247(a)(1):

According to Technical Specification, the pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

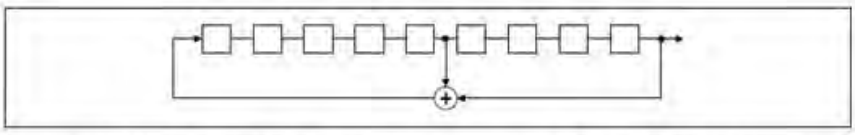
> Number of shift register stages: 9

> Length of pseudo-random sequence: 29 -1 = 511 bits

> Longest sequence of zeros: 8 (non-inverted signal)

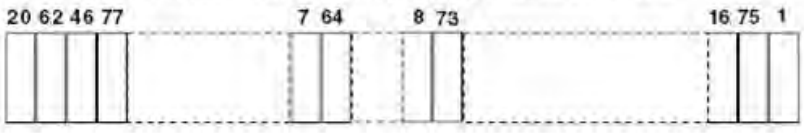
Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Linear Feedback Shift Register for Generation of the PRBS sequence

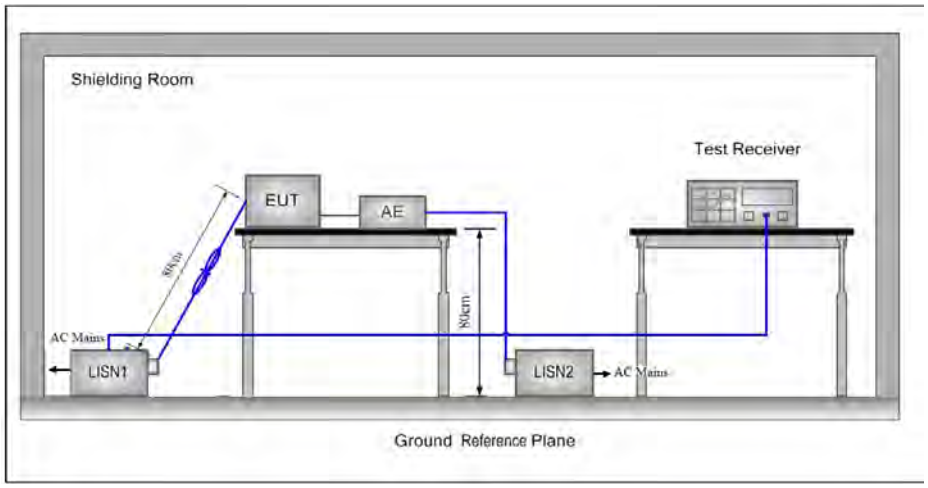
An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.
According to Technical Specification, the receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any transmitters and shift frequencies in synchronization with the transmitted signals.
Compliance for section 15.247(g):
According to Technical Specification, the system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the RF system is also transmitted under the frequency hopping system with the pseudorandom hopping frequency system.
Compliance for section 15.247(h):
According to Technical specification, the system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels. The system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

4.3 AC Power Line Conducted Emissions

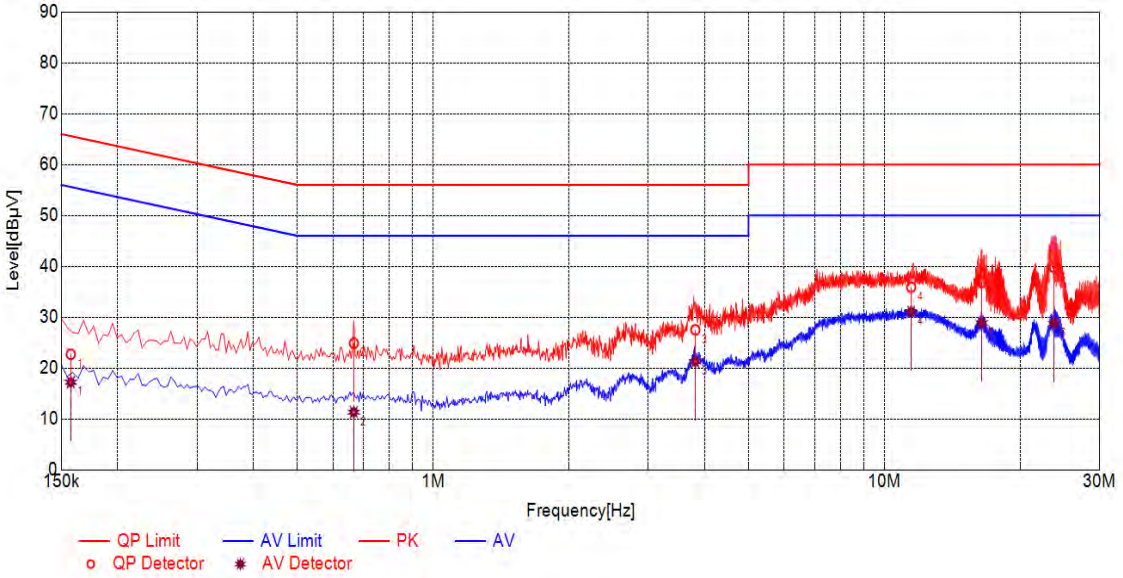
Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test Procedure:	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:	Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel. Charge + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation at the lowest channel is the worst case. 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:XAR/2020/C001002

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

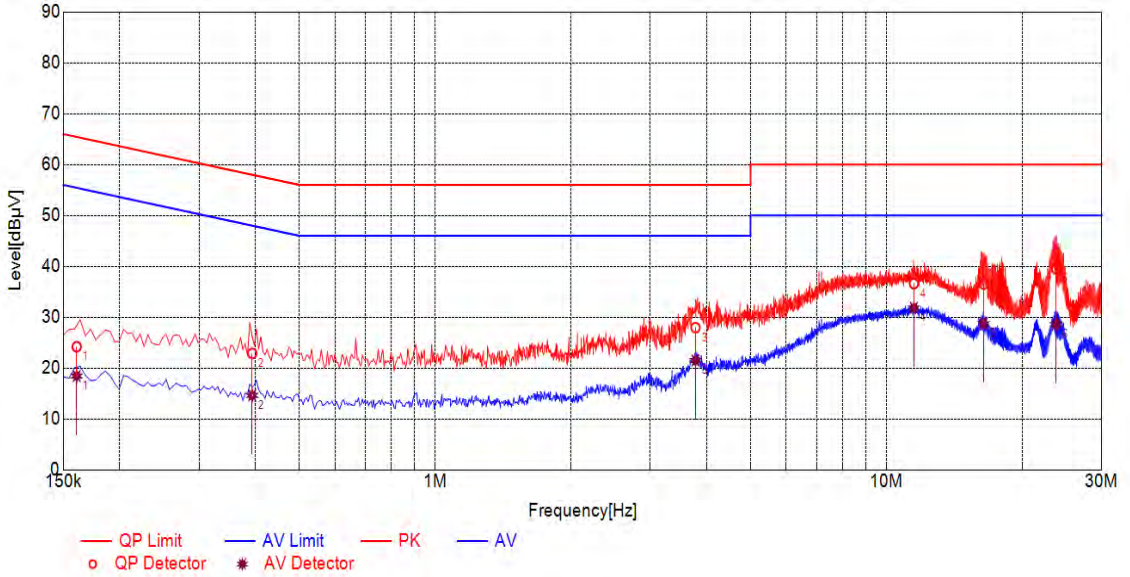
Live Line:



Test Graph

Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1575	10.10	22.72	65.60	42.88	17.22	55.60	38.38	L
2	0.6674	10.10	24.88	56.00	31.12	11.34	46.00	34.66	L
3	3.8118	10.10	27.51	56.00	28.49	21.26	46.00	24.74	L
4	11.4625	10.10	35.88	60.00	24.12	31.09	50.00	18.91	L
5	16.4400	10.11	36.83	60.00	23.17	28.87	50.00	21.13	L
6	23.7730	10.11	39.75	60.00	20.25	28.74	50.00	21.26	L

Neutral Line:



Test Graph

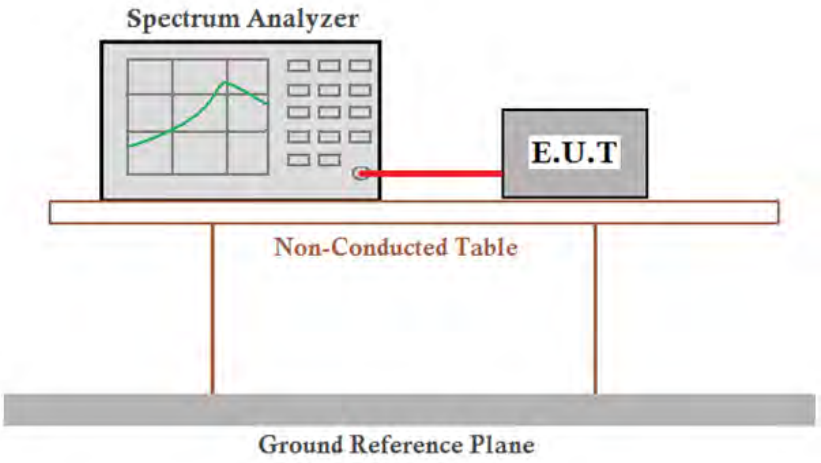
Final Data List									
NO.	Freq. [MHz]	Factor [dB]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type
1	0.1606	10.10	24.20	65.44	41.24	18.44	55.44	37.00	N
2	0.3934	10.10	22.87	57.99	35.12	14.63	47.99	33.36	N
3	3.7761	10.10	27.94	56.00	28.06	21.49	46.00	24.51	N
4	11.5080	10.10	36.60	60.00	23.40	31.82	50.00	18.18	N
5	16.4360	10.11	36.53	60.00	23.47	28.72	50.00	21.28	N
6	23.7735	10.11	39.50	60.00	20.50	28.58	50.00	21.42	N

Remarks:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

4.4 Conducted Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.5
Test Setup:	
Test Instruments:	Refer to section 6 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	(20.97dBm) 125mW
Test Results:	Pass

4.4.1 Test Results

Measurement Data of Peak Power:

ANT1:

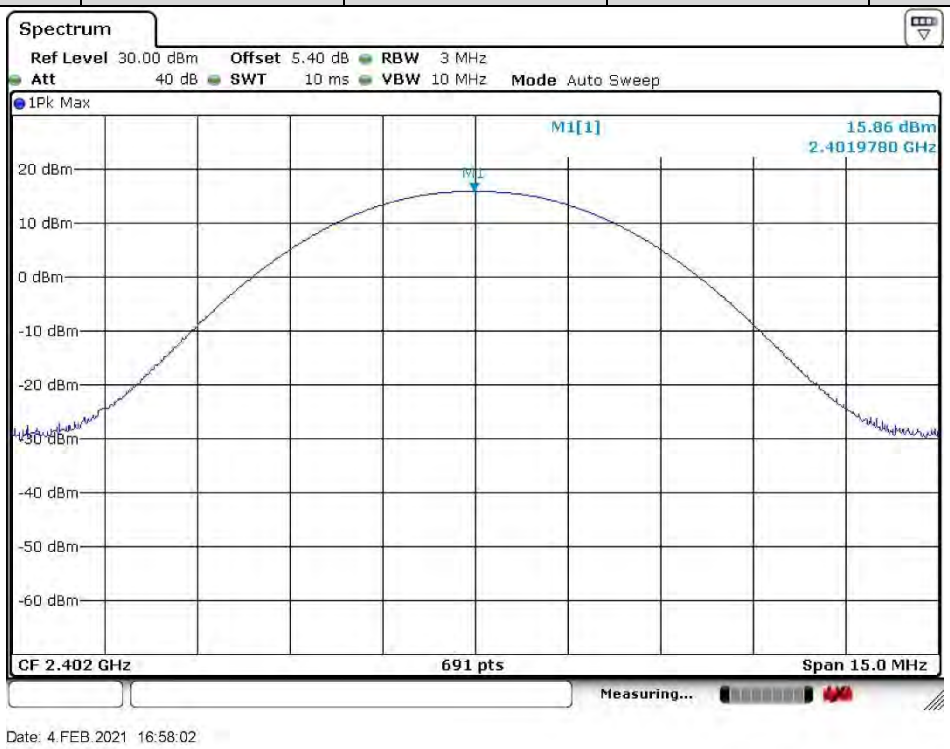
GFSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	15.86	20.97	Pass
Middle	16.39	20.97	Pass
Highest	15.23	20.97	Pass
π/4DQPSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	16.06	20.97	Pass
Middle	16.64	20.97	Pass
Highest	15.46	20.97	Pass
8DPSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	16.48	20.97	Pass
Middle	16.99	20.97	Pass
Highest	15.93	20.97	Pass

ANT2:

GFSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	15.88	20.97	Pass
Middle	16.42	20.97	Pass
Highest	15.34	20.97	Pass
π/4DQPSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	15.65	20.97	Pass
Middle	16.35	20.97	Pass
Highest	15.35	20.97	Pass
8DPSK mode			
Test Channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	16.01	20.97	Pass
Middle	16.61	20.97	Pass
Highest	15.68	20.97	Pass

4.4.1 Test Plots

Test mode:	GFSK	Test channel:	Lowest	ANT1



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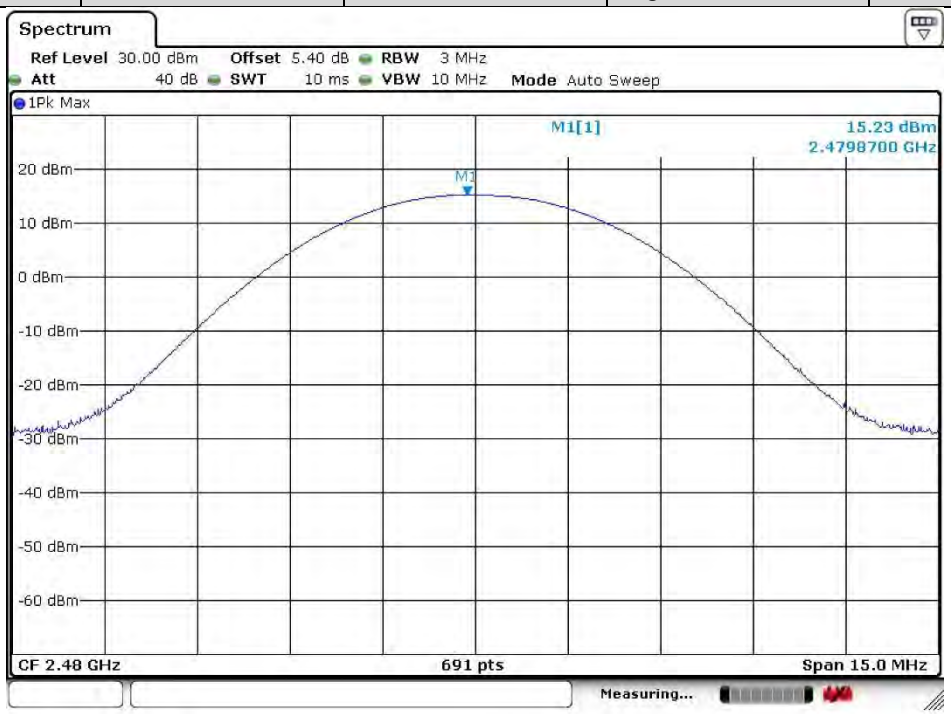
Test mode:	GFSK	Test channel:	Middle	ANT1

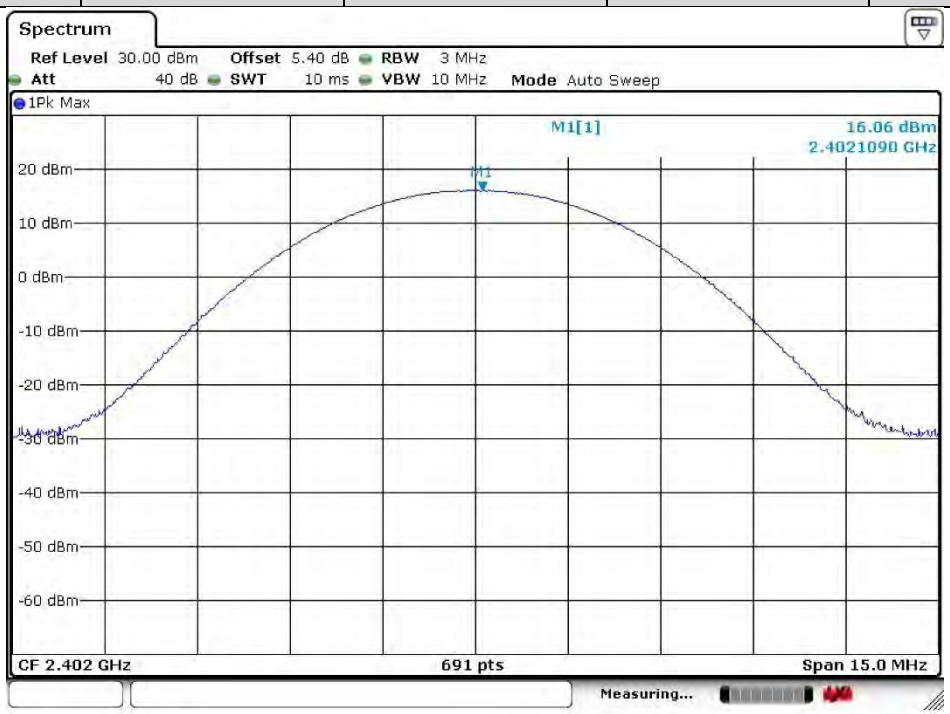
Date: 4.FEB.2021 16:58:14

Test mode:	GFSK	Test channel:	High	ANT1



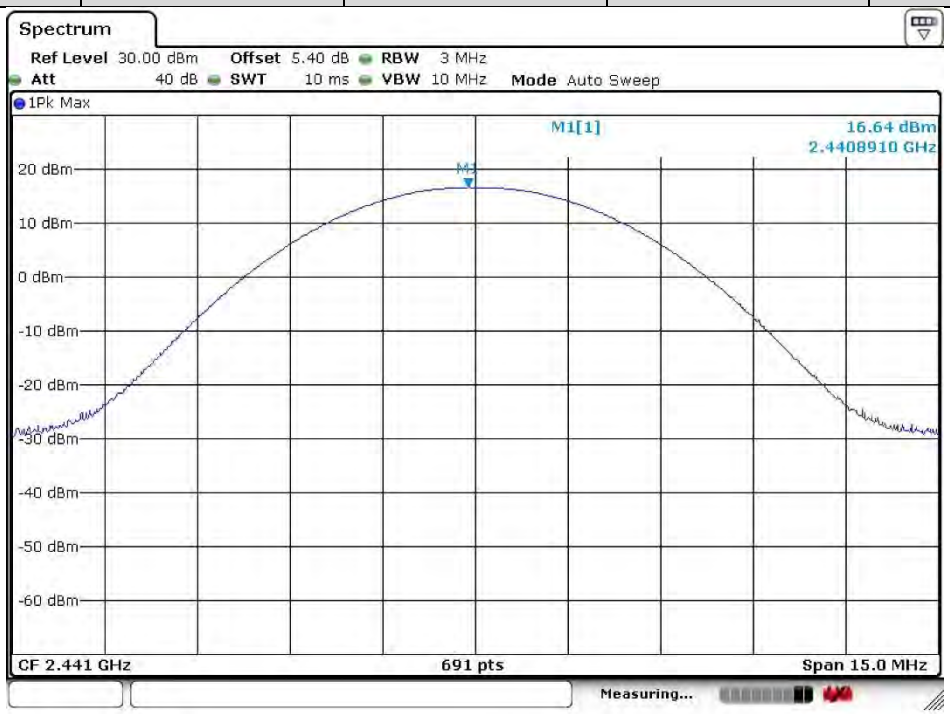
Date: 4.FEB.2021 16:58:29

Test mode:	π/4DQPSK	Test channel:	Lowest	ANT1



Date: 4.FEB.2021 16:55:42

Test mode:	π/4DQPSK	Test channel:	Middle	ANT1



Date: 4.FEB.2021 17:13:18

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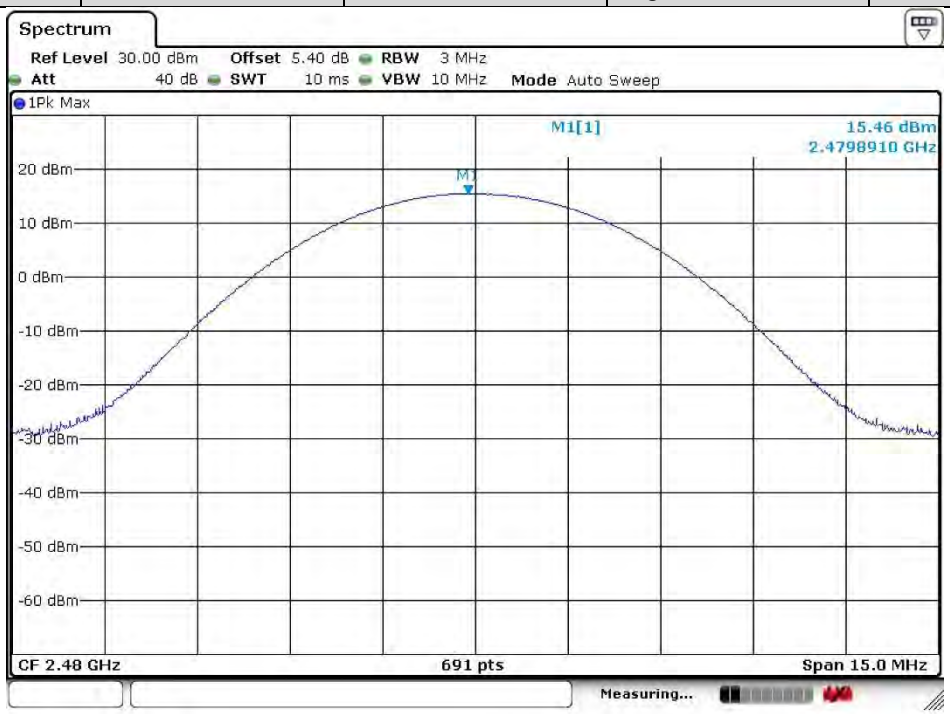
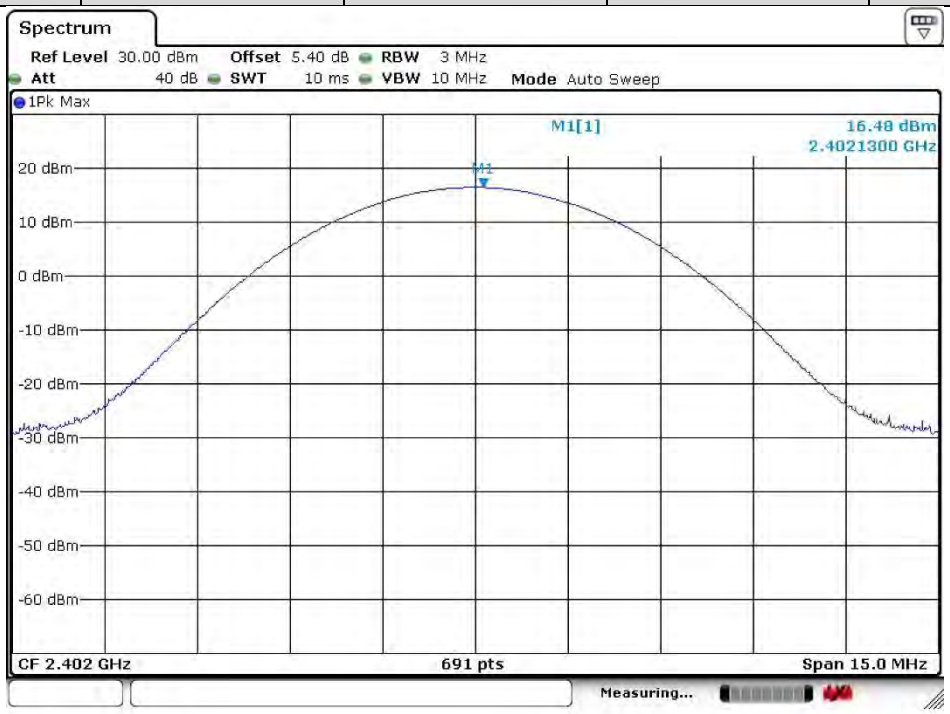
Test mode:	π/4DQPSK	Test channel:	High	ANT1



Date: 4.FEB.2021 16:55:19

Test mode:	8DPSK	Test channel:	Lowest	ANT1



Date: 4.FEB.2021 17:12:38

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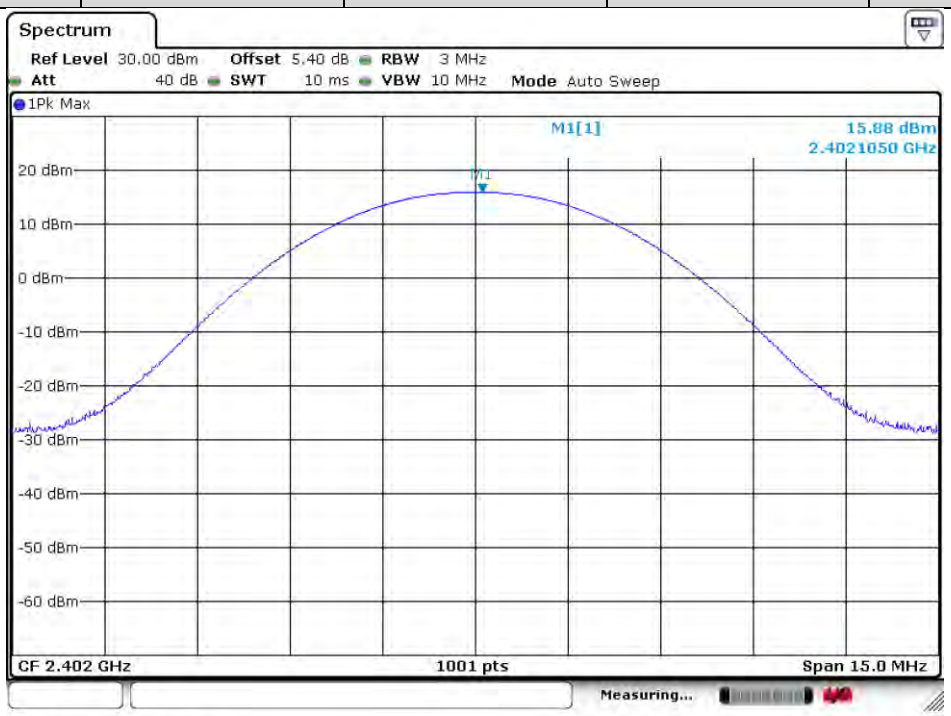
Test mode:	8DPSK	Test channel:	Middle	ANT1

Date: 4.FEB.2021 17:12:56

Test mode:	8DPSK	Test channel:	High	ANT1

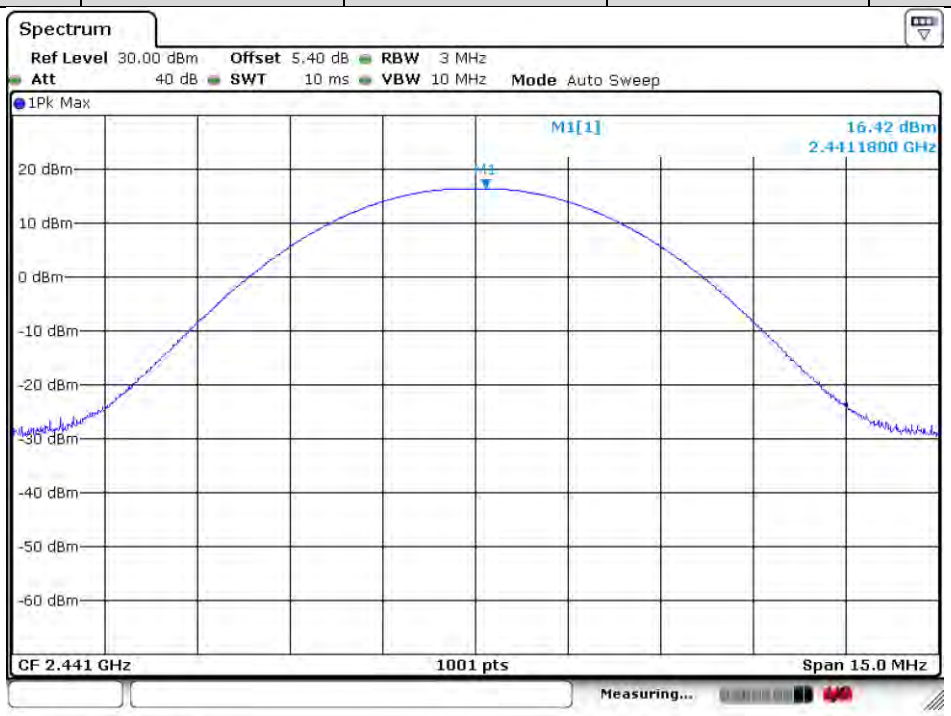
Date: 4.FEB.2021 17:12:18

Test mode:	GFSK	Test channel:	Lowest	ANT2



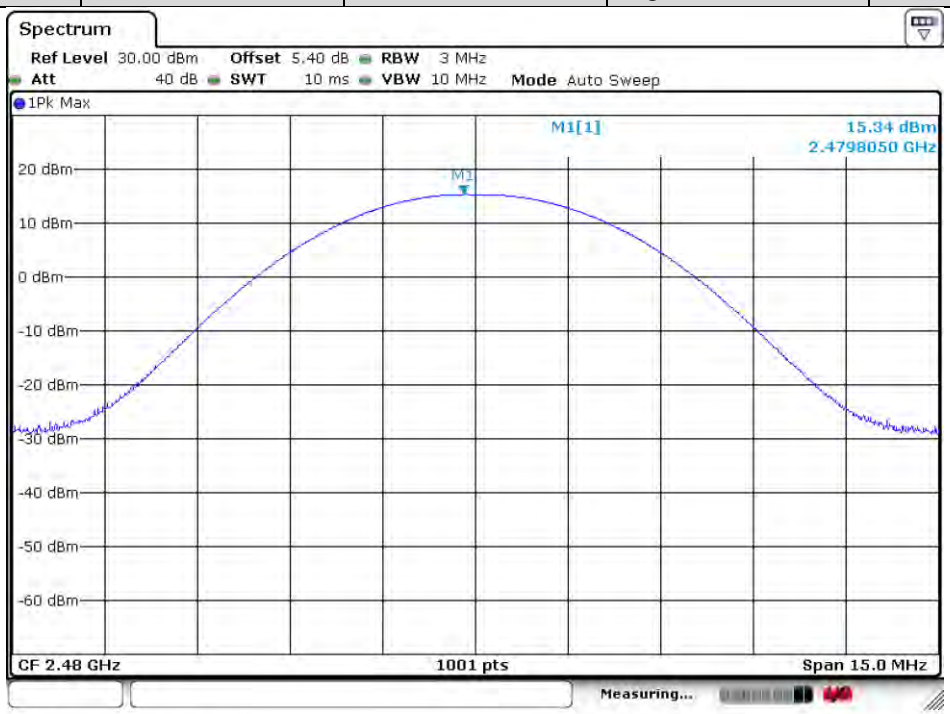
Date: 8.FEB.2021 16:35:47

Test mode:	GFSK	Test channel:	Middle	ANT2



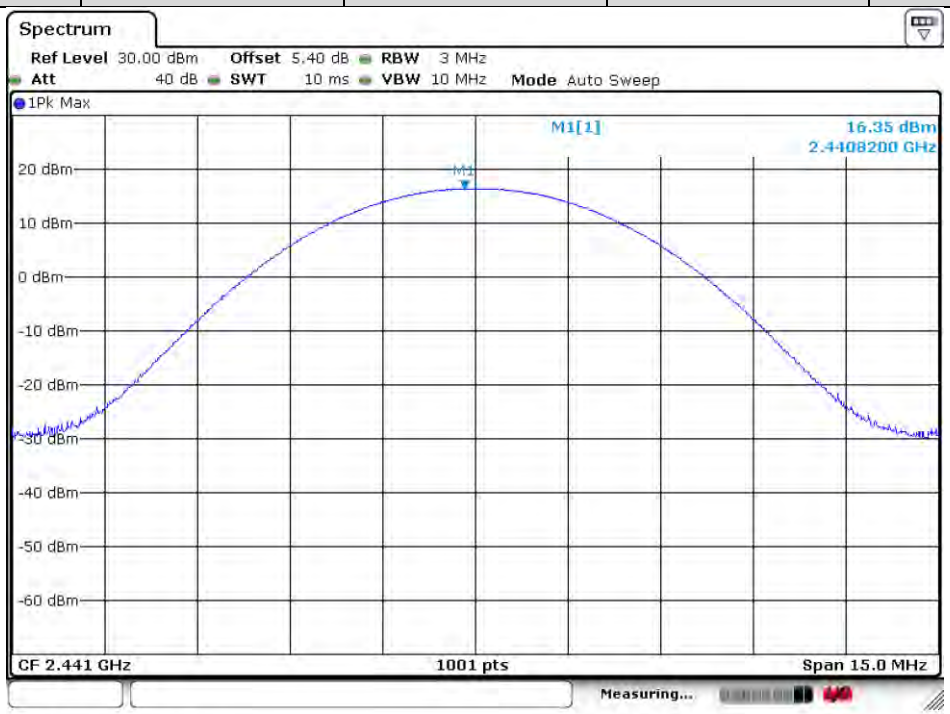
Date: 8.FEB.2021 16:36:06

Test mode:	GFSK	Test channel:	High	ANT2



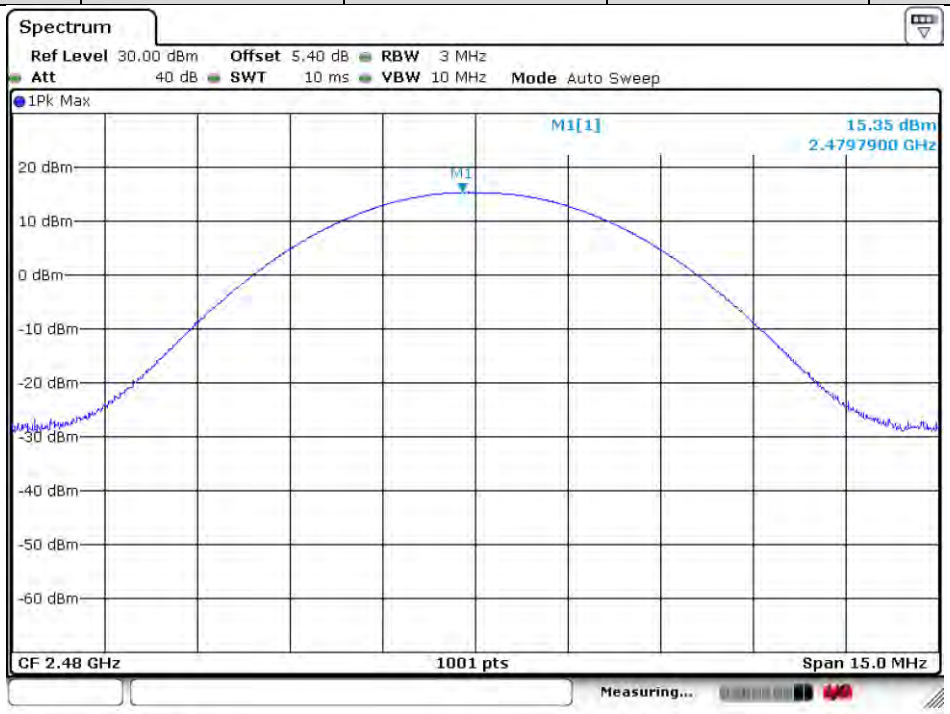
Test mode:	π/4DQPSK	Test channel:	Lowest	ANT2

Test mode:	π/4DQPSK	Test channel:	Middle	ANT2



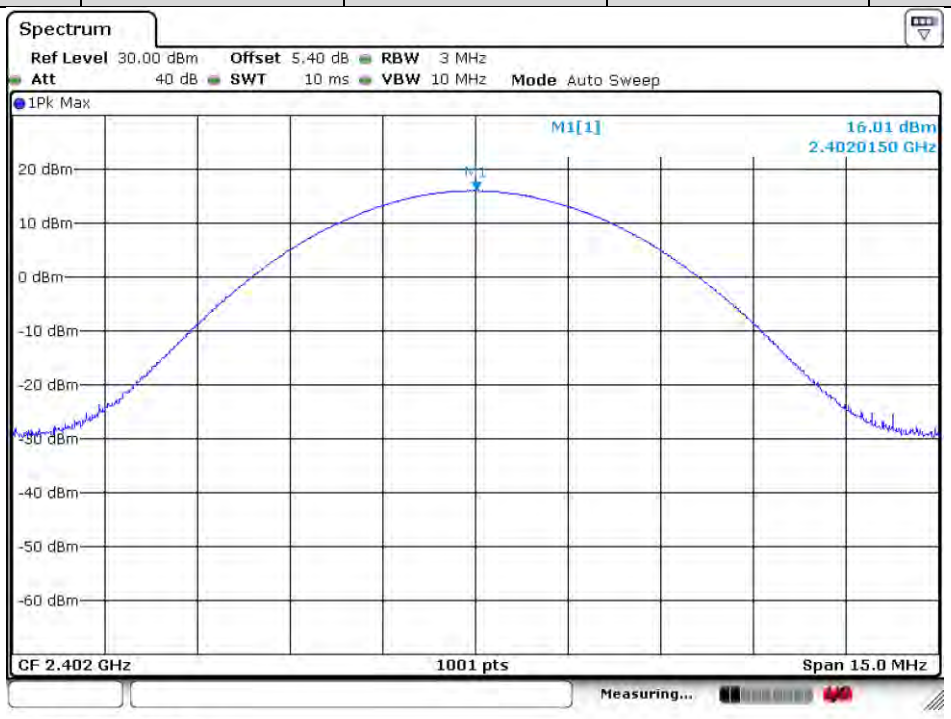
Date: 8.FEB.2021 16:37:22

Test mode:	π/4DQPSK	Test channel:	High	ANT2



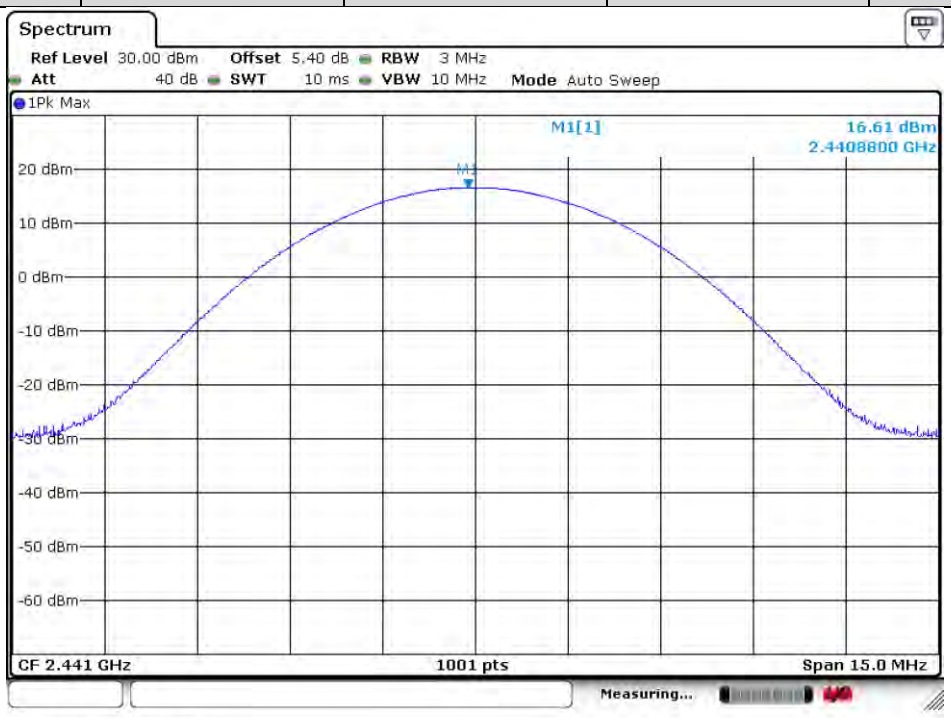
Date: 8.FEB.2021 16:37:12

Test mode:	8DPSK	Test channel:	Lowest	ANT2



Date: 8.FEB.2021 16:37:52

Test mode:	8DPSK	Test channel:	Middle	ANT2



Date: 8.FEB.2021 16:38:05

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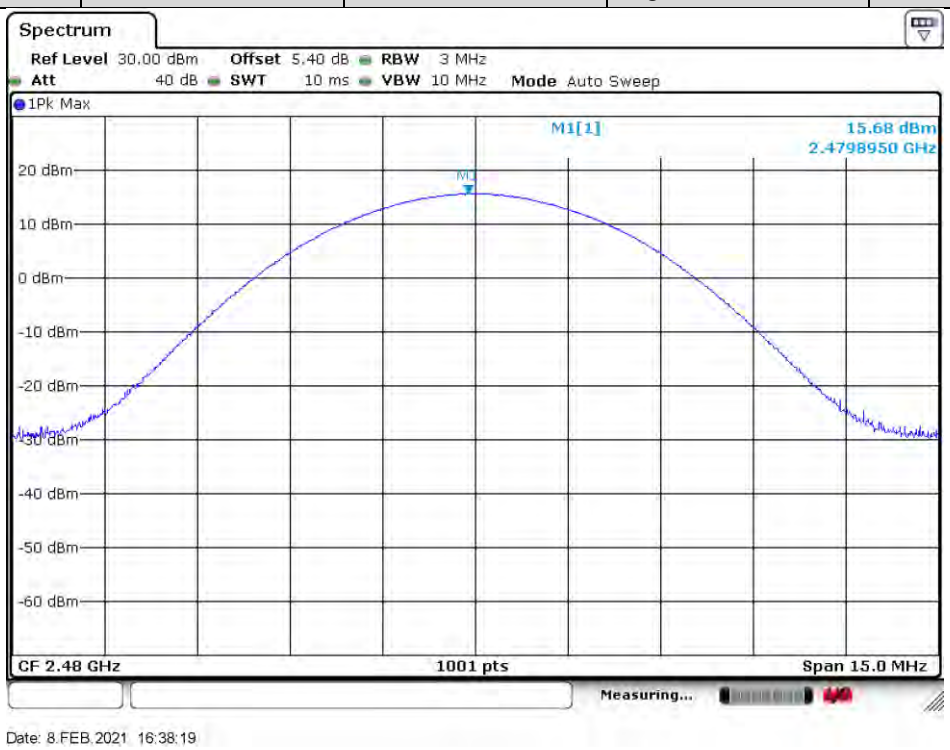
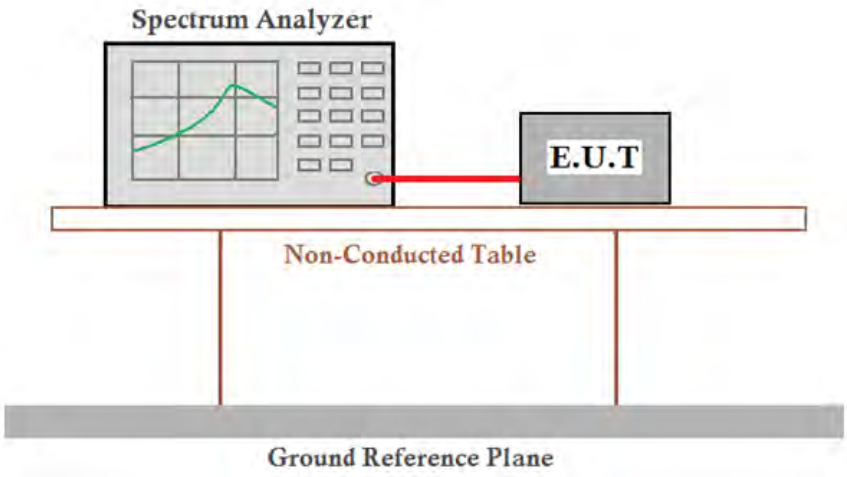
Test mode:	8DPSK	Test channel:	High	ANT2



4.5 20dB Emission Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.7
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	NA
Test Results:	Pass

Ant1:

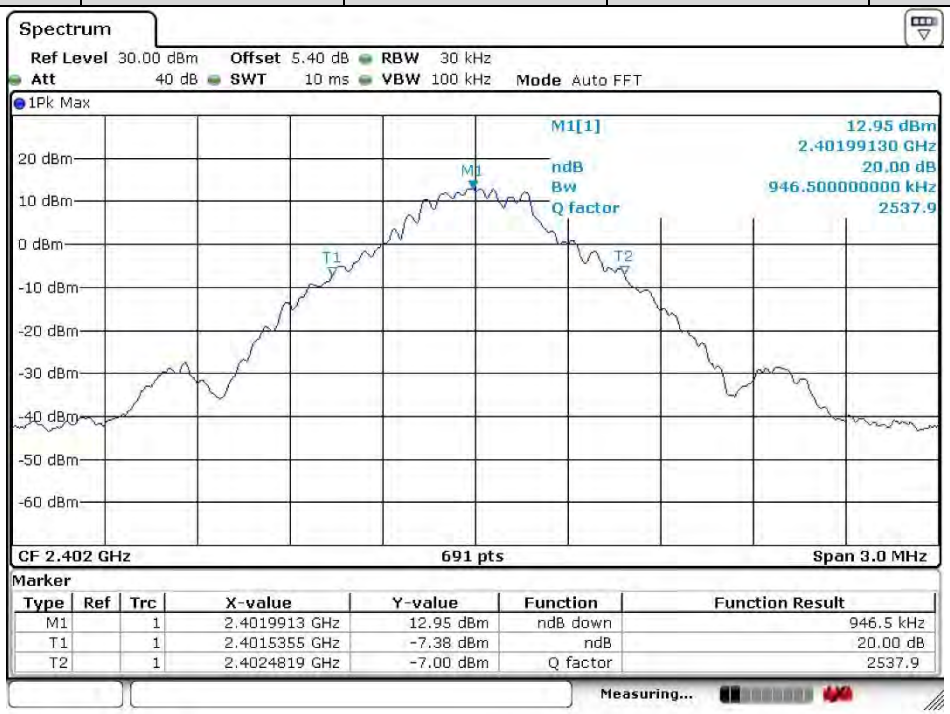
Mode	Test Channel	20dB Emission Bandwidth (KHz)	Result
GFSK	Lowest	946.5	Pass
	Middle	942.1	Pass
	Highest	946.5	Pass
π/4DQPSK	Lowest	1293.8	Pass
	Middle	1293.8	Pass
	Highest	1302.5	Pass
8DPSK	Lowest	1302.5	Pass
	Middle	1302.5	Pass
	Highest	1298.1	Pass

Ant2:

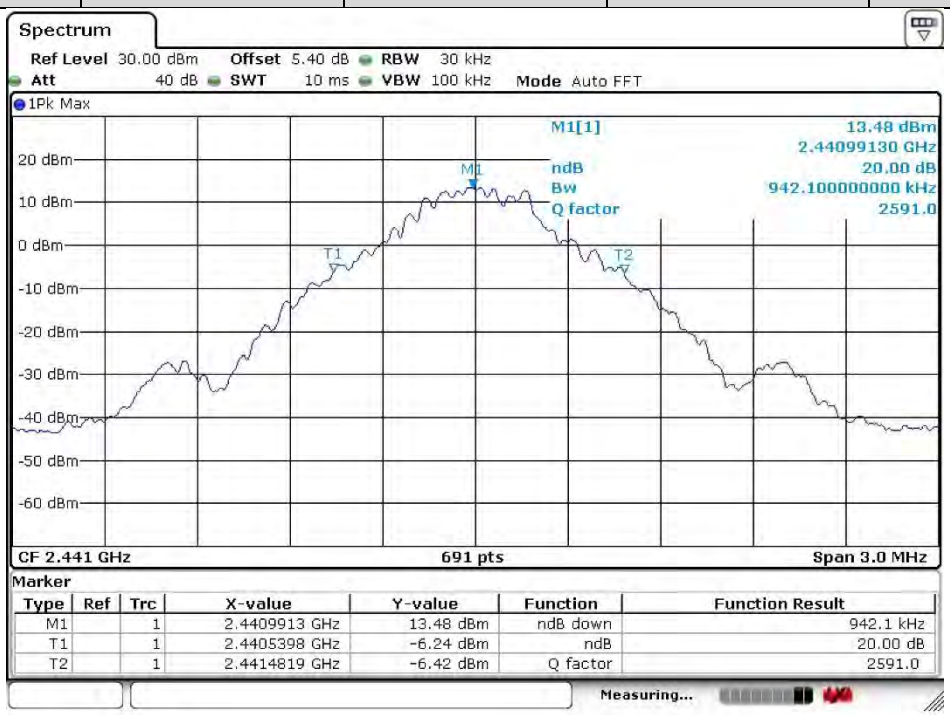
Mode	Test Channel	20dB Emission Bandwidth (KHz)	Result
GFSK	Lowest	946.5	Pass
	Middle	942.1	Pass
	Highest	942.1	Pass
π/4DQPSK	Lowest	1293.8	Pass
	Middle	1293.8	Pass
	Highest	1293.8	Pass
8DPSK	Lowest	1302.5	Pass
	Middle	1302.5	Pass
	Highest	1298.1	Pass

4.5.1 Test Plots

Test mode:	GFSK	Test channel:	Lowest	ANT1

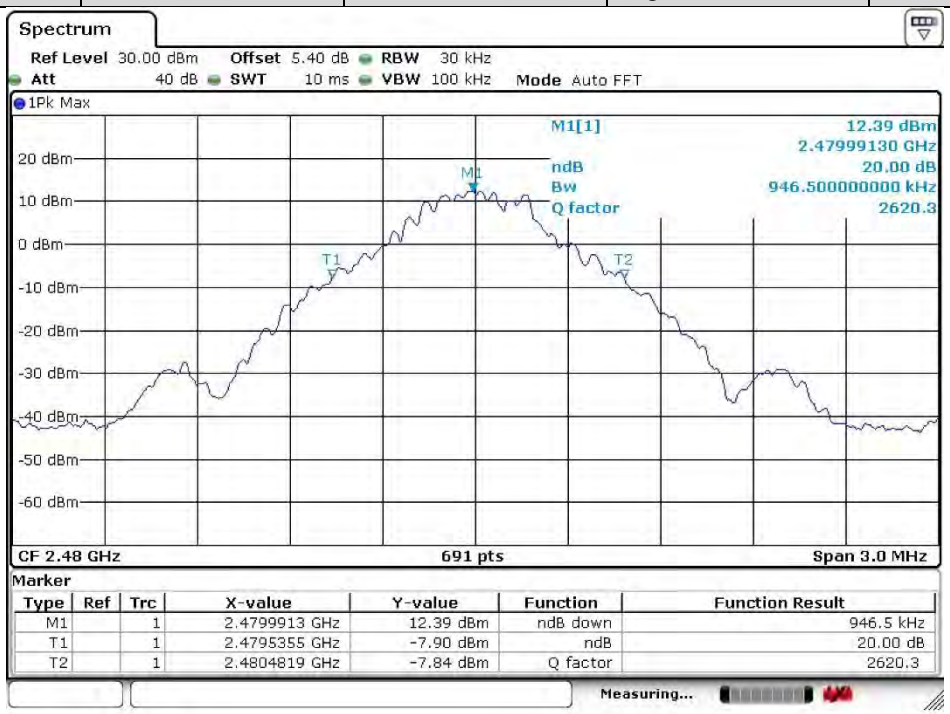


Test mode:	GFSK	Test channel:	Middle	ANT1



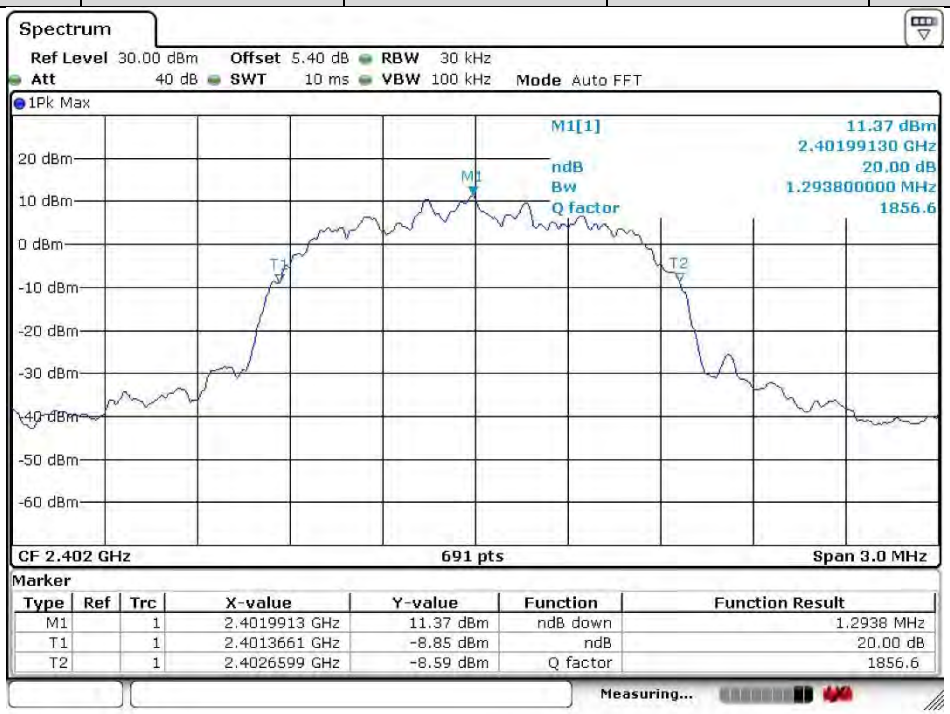
Date: 4.FEB.2021 16:59:10

Test mode:	GFSK	Test channel:	High	ANT1



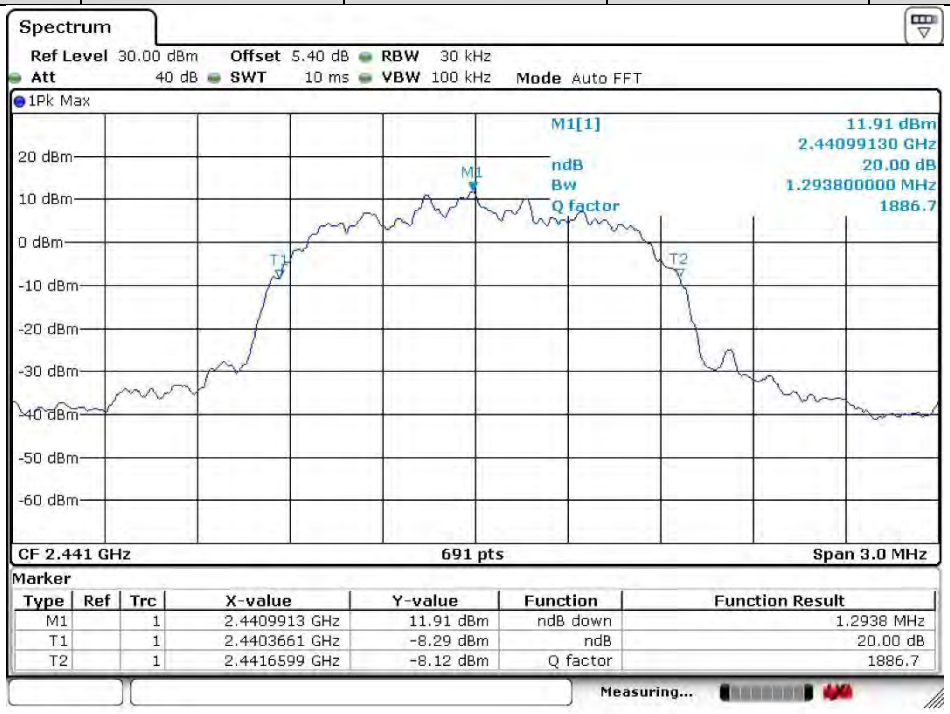
Date: 4.FEB.2021 16:58:55

Test mode:	π/4DQPSK	Test channel:	Lowest	ANT1



Date: 4.FEB.2021 17:06:07

Test mode:	π/4DQPSK	Test channel:	Middle	ANT1



Date: 4.FEB.2021 17:05:32

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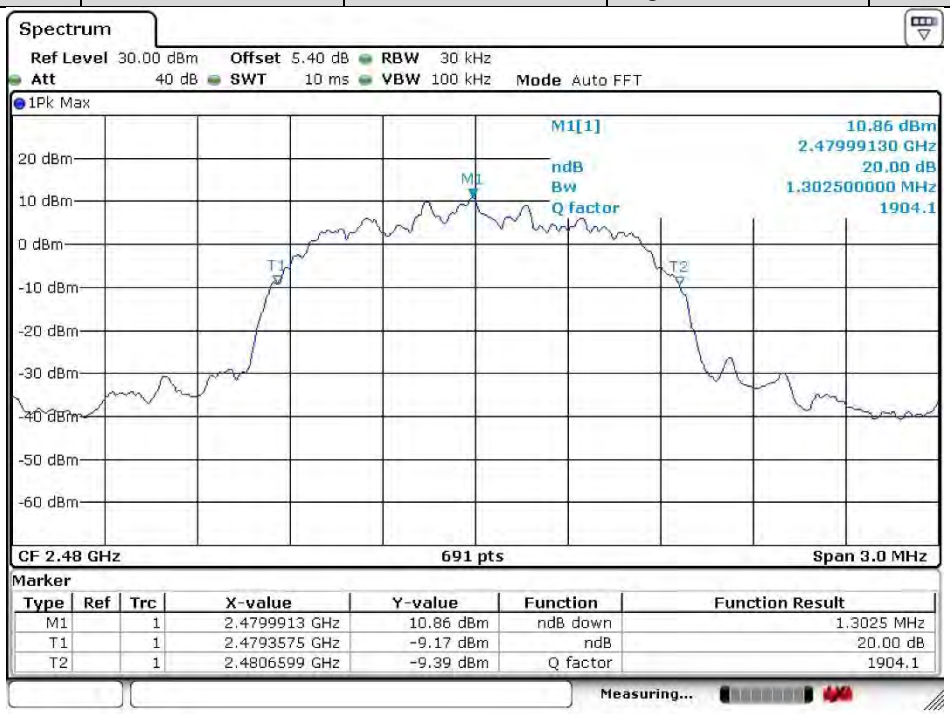
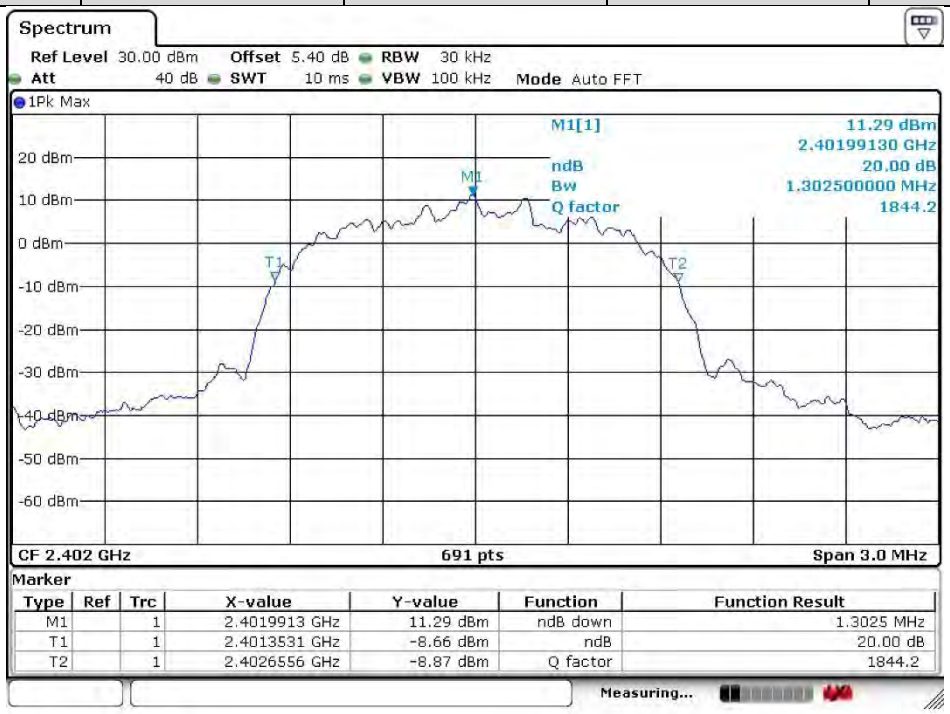
Test mode:	π/4DQPSK	Test channel:	High	ANT1



Test mode:	8DPSK	Test channel:	Lowest	ANT1



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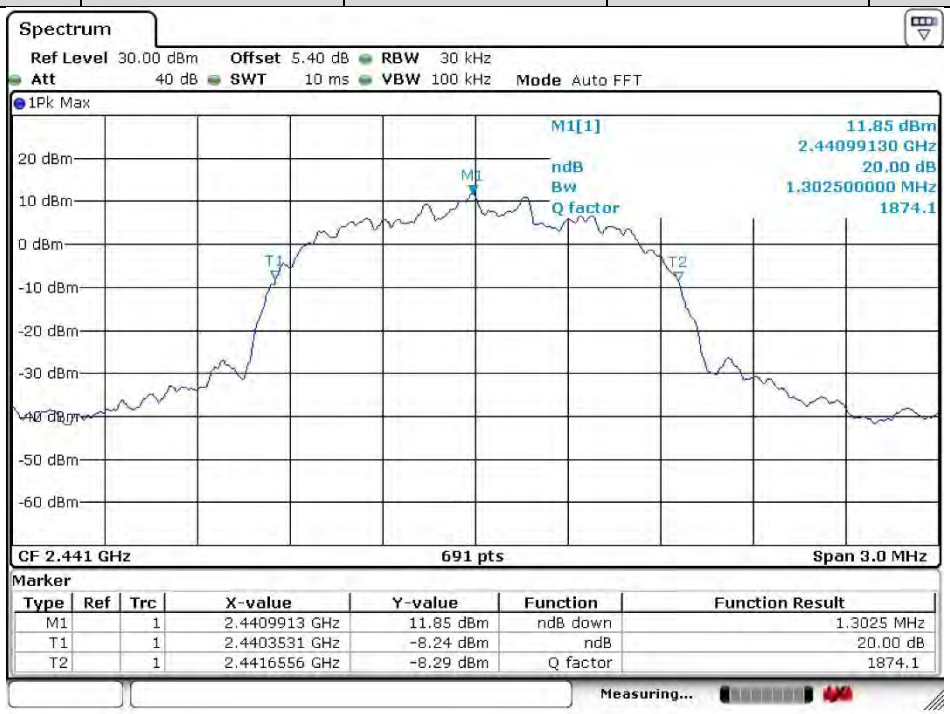
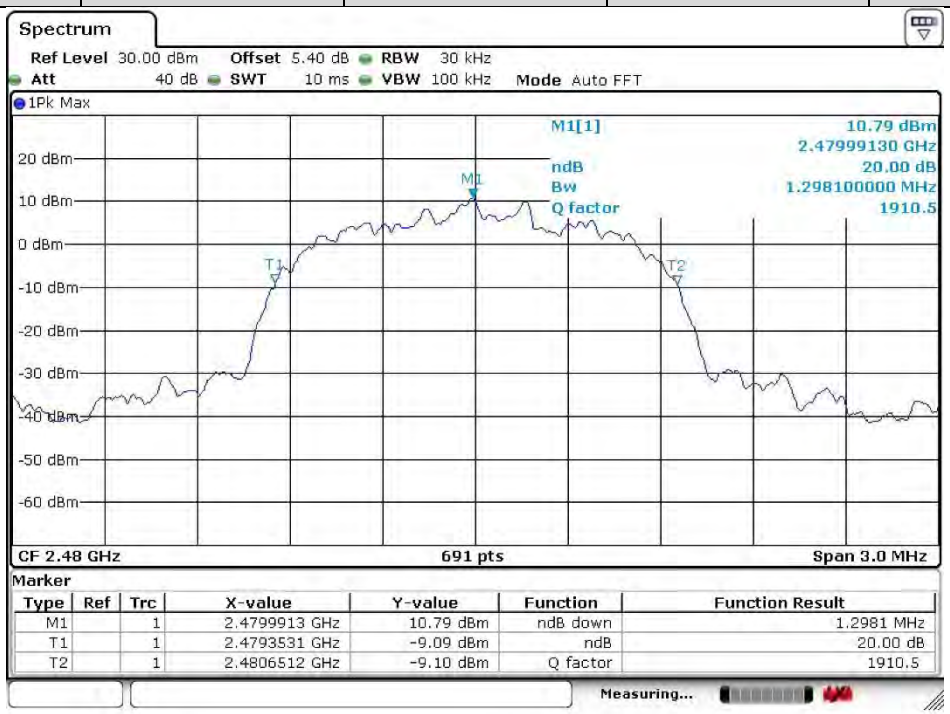
Test mode:	8DPSK	Test channel:	Middle	ANT1



Date: 4.FEB.2021 17:00:50

Test mode:	8DPSK	Test channel:	High	ANT1



Date: 4.FEB.2021 17:01:18

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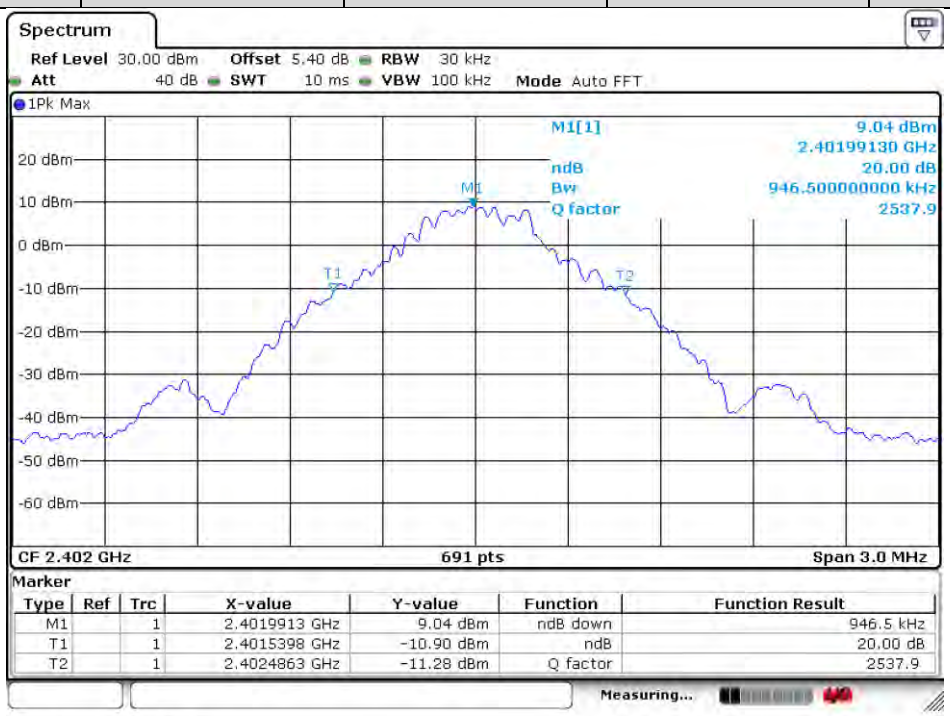
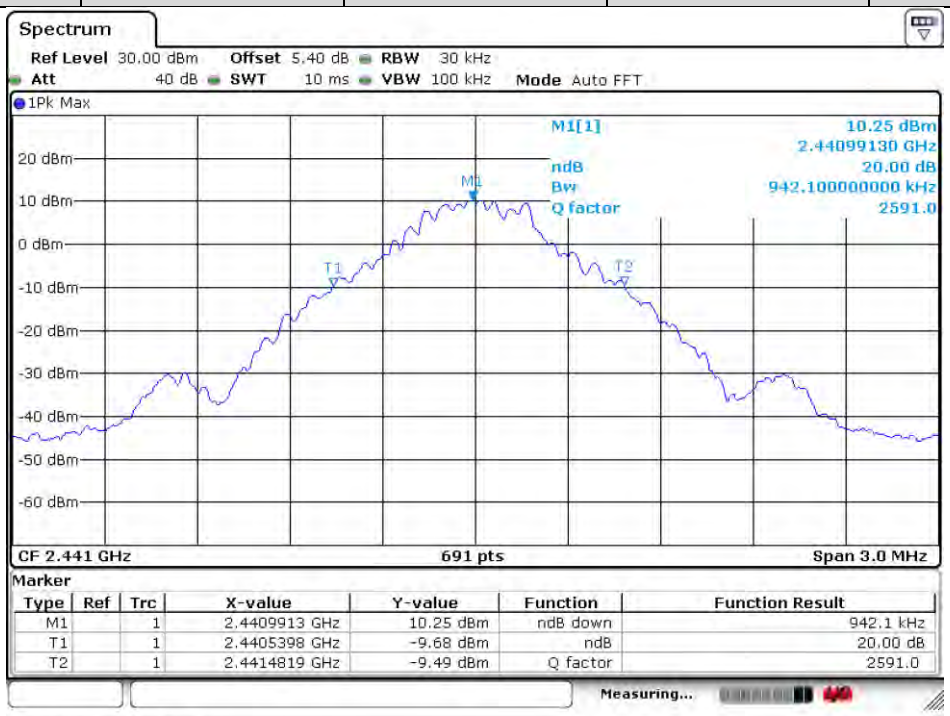
Test mode:	GFSK	Test channel:	Lowest	ANT2



Date: 4.FEB.2021 20:50:17

Test mode:	GFSK	Test channel:	Middle	ANT2



Date: 4.FEB.2021 20:50:49

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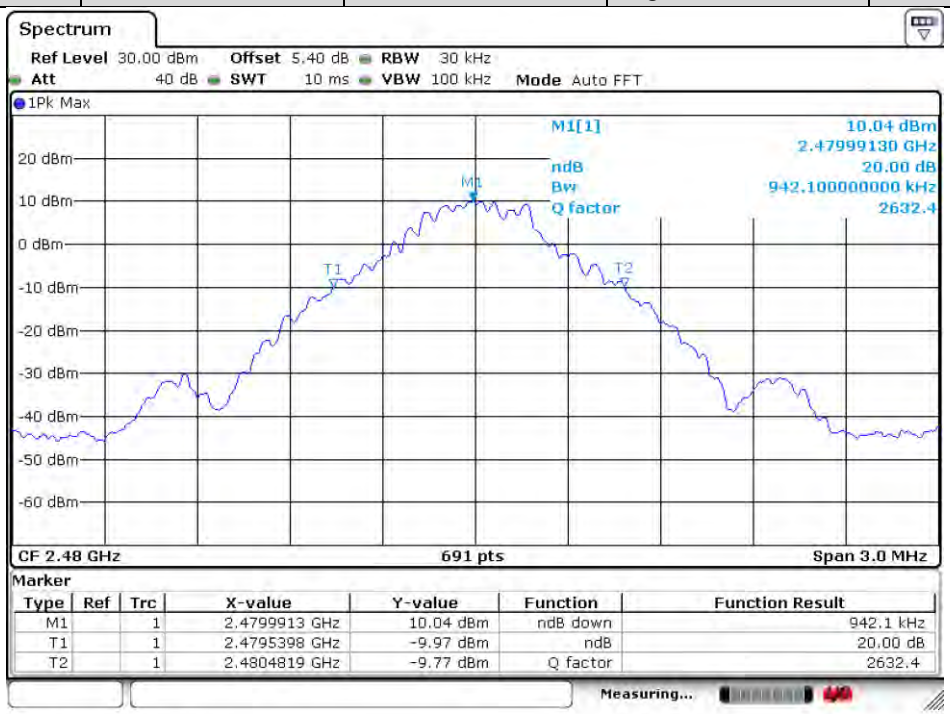
Test mode:	GFSK	Test channel:	High	ANT2



Test mode:	π/4DQPSK	Test channel:	Lowest	ANT2

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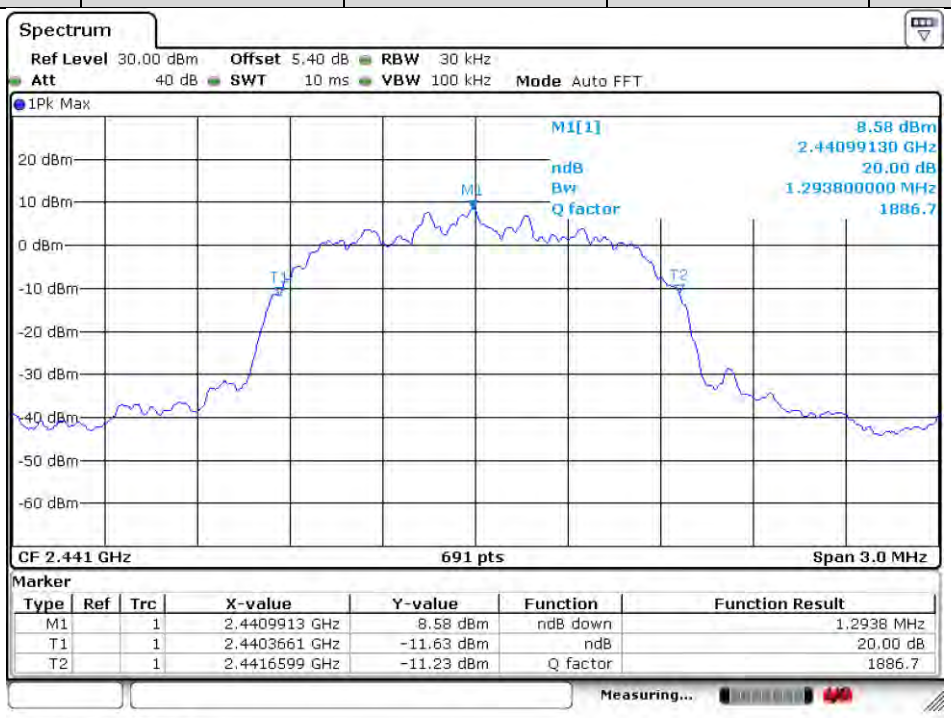
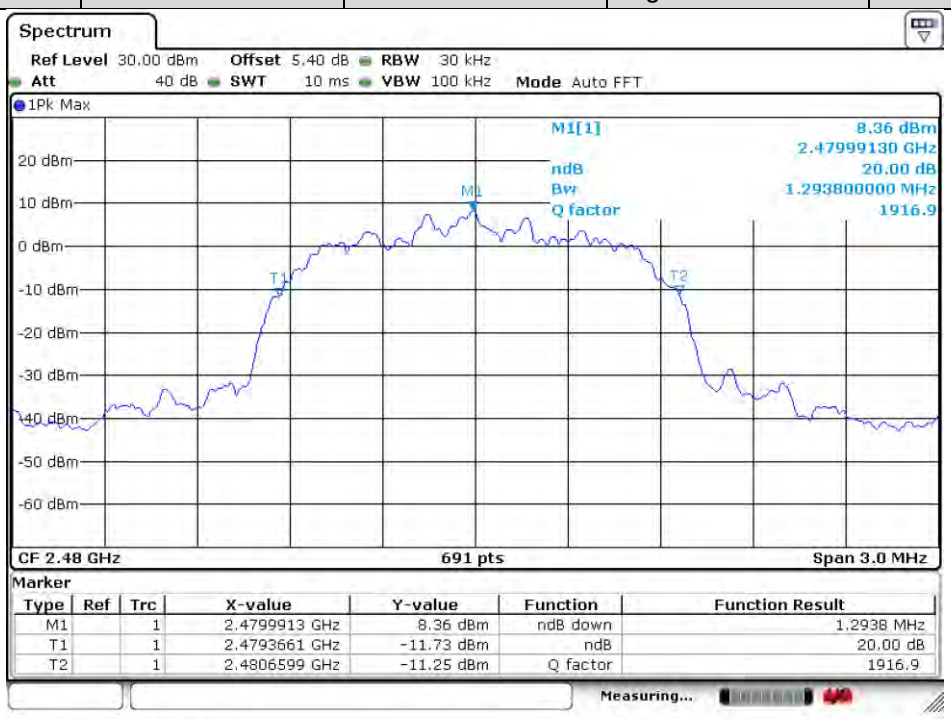
Test mode:	π/4DQPSK	Test channel:	Middle	ANT2



Date: 4.FEB.2021 20:51:51

Test mode:	π/4DQPSK	Test channel:	High	ANT2



Date: 4.FEB.2021 20:51:36

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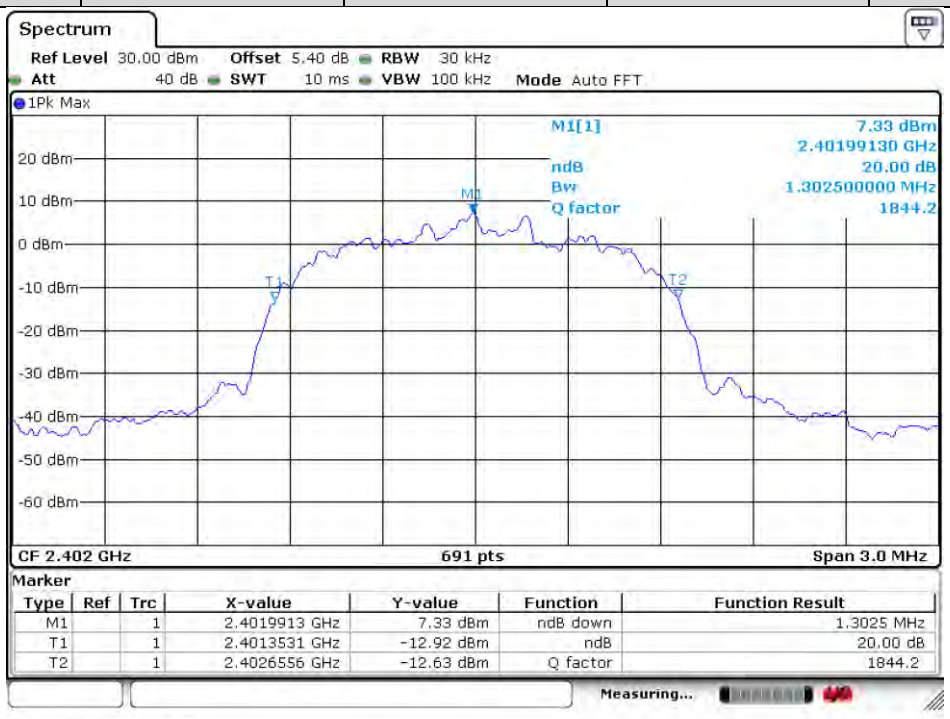
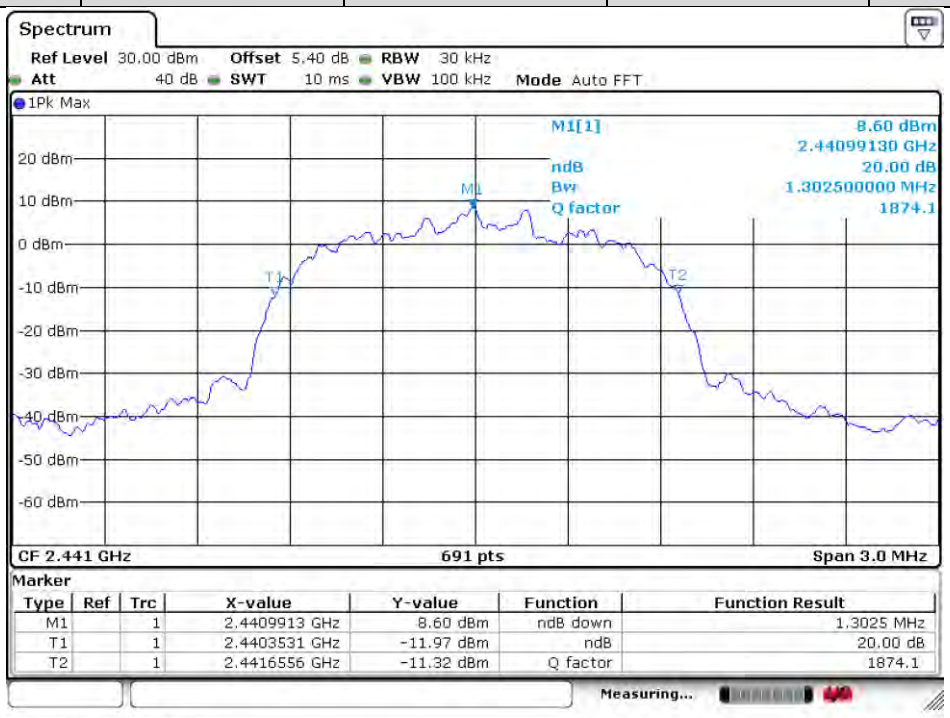
Test mode:	8DPSK	Test channel:	Lowest	ANT2



Date: 4.FEB.2021 20:49:45

Test mode:	8DPSK	Test channel:	Middle	ANT2



Date: 4.FEB.2021 20:45:52

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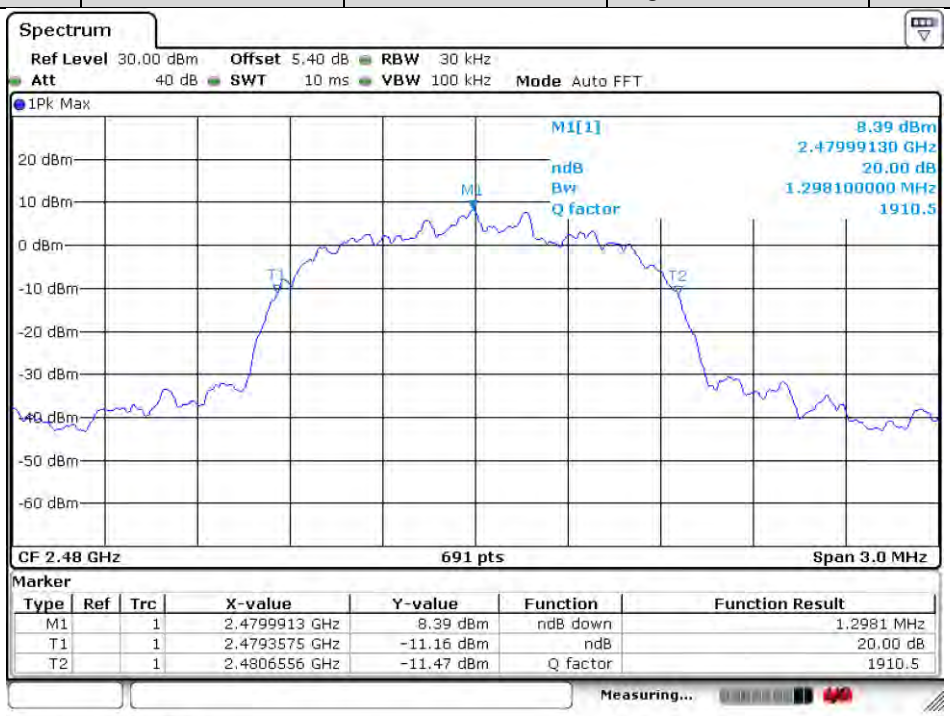
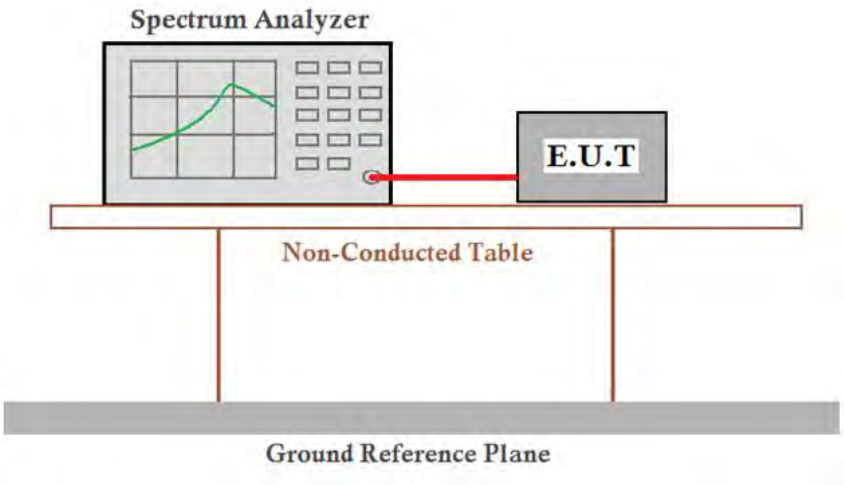
Test mode:	8DPSK	Test channel:	High	ANT2



4.6 Carrier Frequencies Separationy

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.2
Test Setup:	
Test Instruments:	Refer to section 6 for details
Exploratory Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
Limit:	2/3 of the 20dB bandwidth
	Remark: the transmission power is less than 0.125W.
Test Results:	Pass

4.6.1 Test Results

ANT1：

GFSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1003	631.0	PASS
π/4DQPSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1016	868.3	PASS
8DPSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1012	868.3	PASS

Remark: According to section 4.5,

Mode	20dB bandwidth (kHz) (worse case)	Limit (kHz) (Carrier Frequencies Separation)
GFSK	946.5	631.0
π/4DQPSK	1302.5	868.3
8DPSK	1302.5	868.3

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ANT2：

GFSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1003	631.0	PASS
π/4DQPSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1016	862.5	PASS
8DPSK mode			
Test channel	**Carrier Frequencies Separation (kHz)**	**Limit (kHz)**	**Result**
Middle	1007	868.3	PASS

Remark: According to section 4.5,

Mode	20dB bandwidth (kHz) (worse case)	Limit (kHz) (Carrier Frequencies Separation)
GFSK	946.5	631.0
π/4DQPSK	1293.8	862.5
8DPSK	1302.5	868.3

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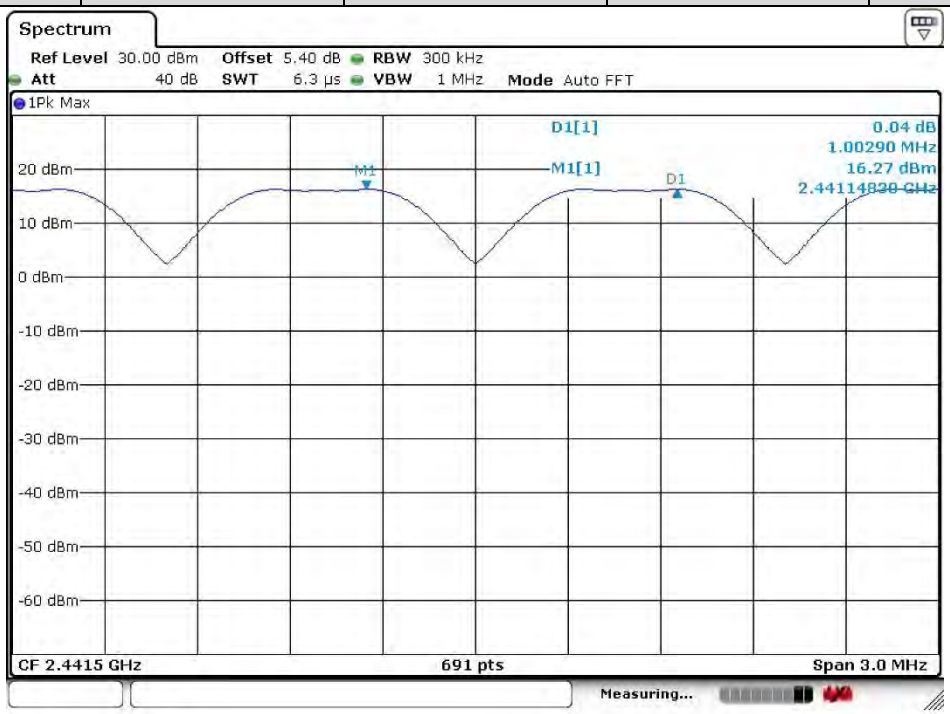
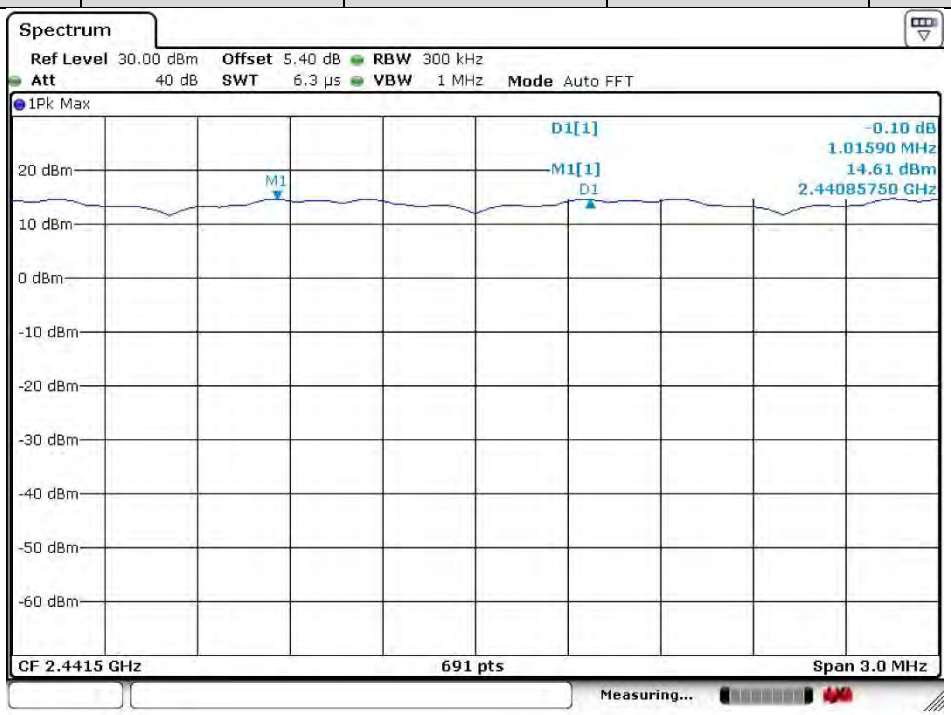
4.6.2 Test Plots

Test mode:	GFSK	Test channel:	Middle	ANT1

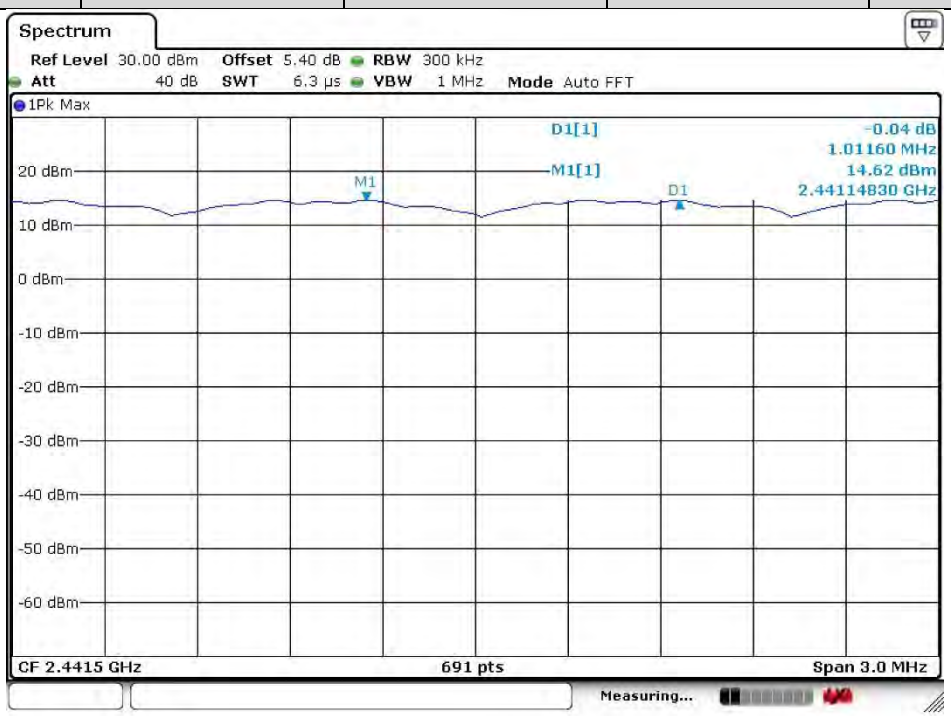


Test mode:	π/4DQPSK	Test channel:	Middle	ANT1



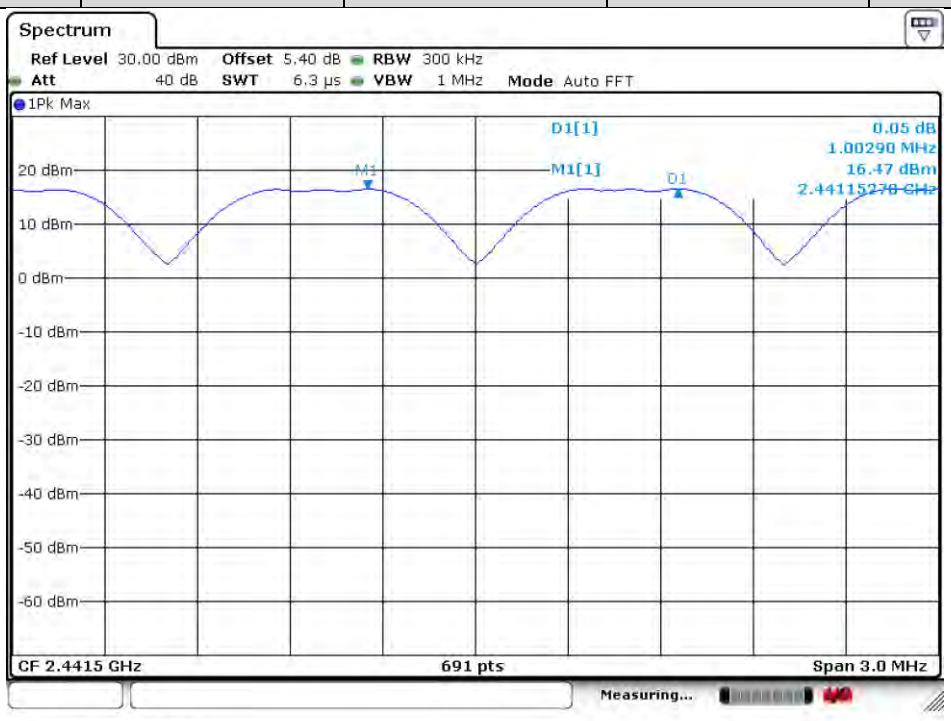
Date: 4.FEB.2021 17:22:21

Test mode:	8DPSK	Test channel:	Middle	ANT1



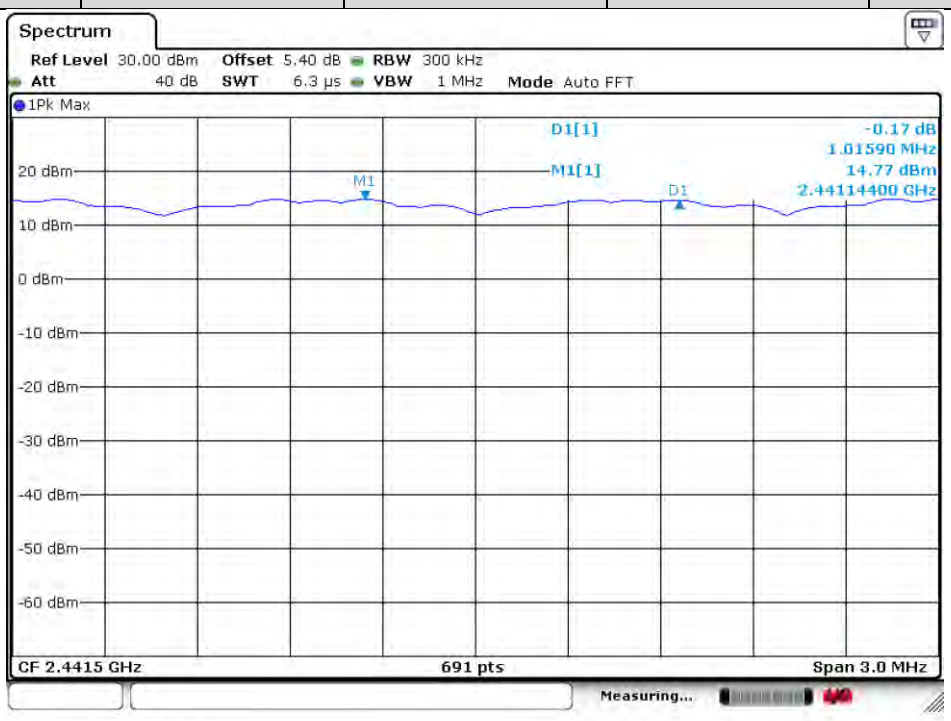
Date: 4.FEB.2021 17:21:37

Test mode:	GFSK	Test channel:	Middle	ANT2



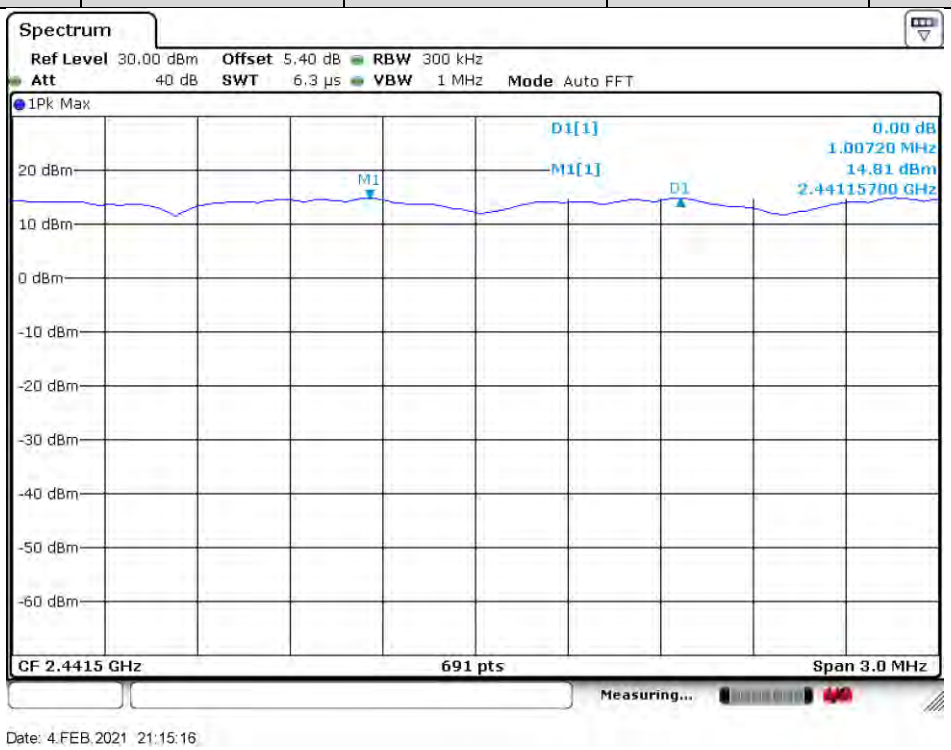
Date: 4.FEB.2021 21:16:03

Test mode:	π/4DQPSK	Test channel:	Middle	ANT2

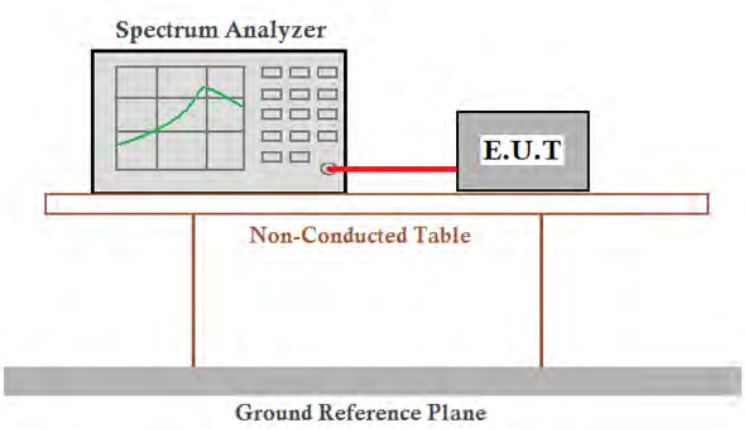


Date: 4.FEB.2021 21:15:43

Test mode:	8DPSK	Test channel:	Middle	ANT2



4.7 Hopping Channel Number

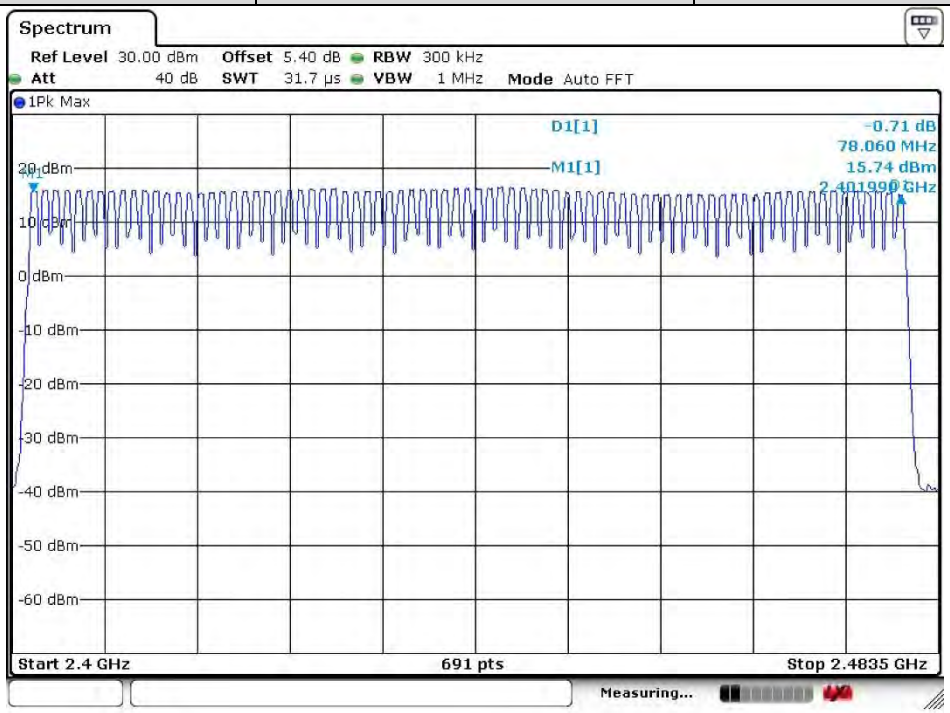
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.3
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Hopping transmitting with all kind of modulation
Limit:	At least 15 channels
Test Results:	Pass

4.7.1 Test Results

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

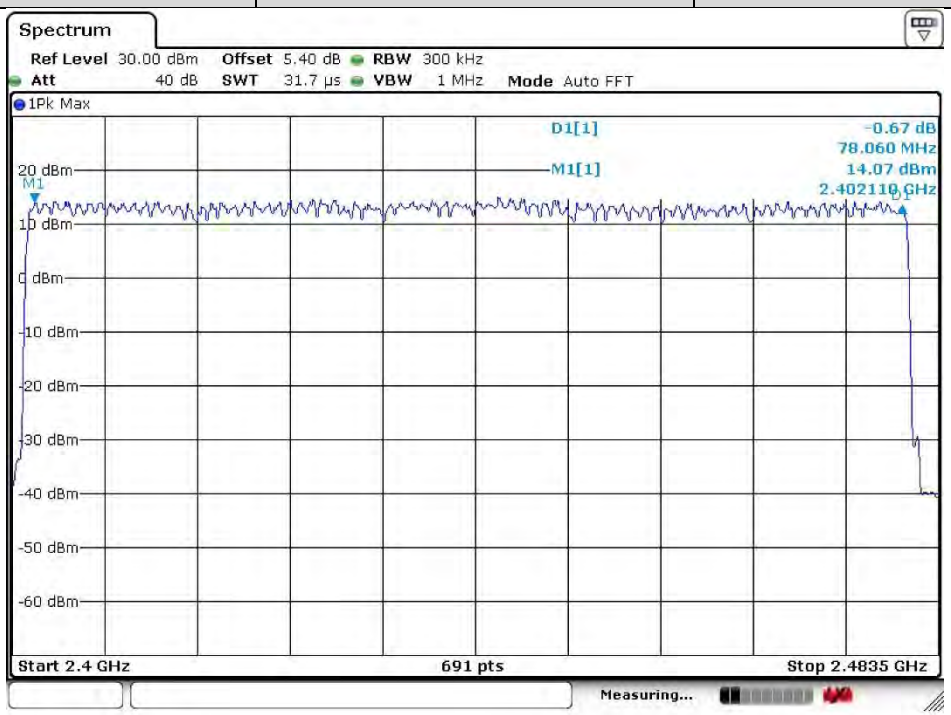
4.7.2 Test Plots

Test mode:	GFSK	ANT1



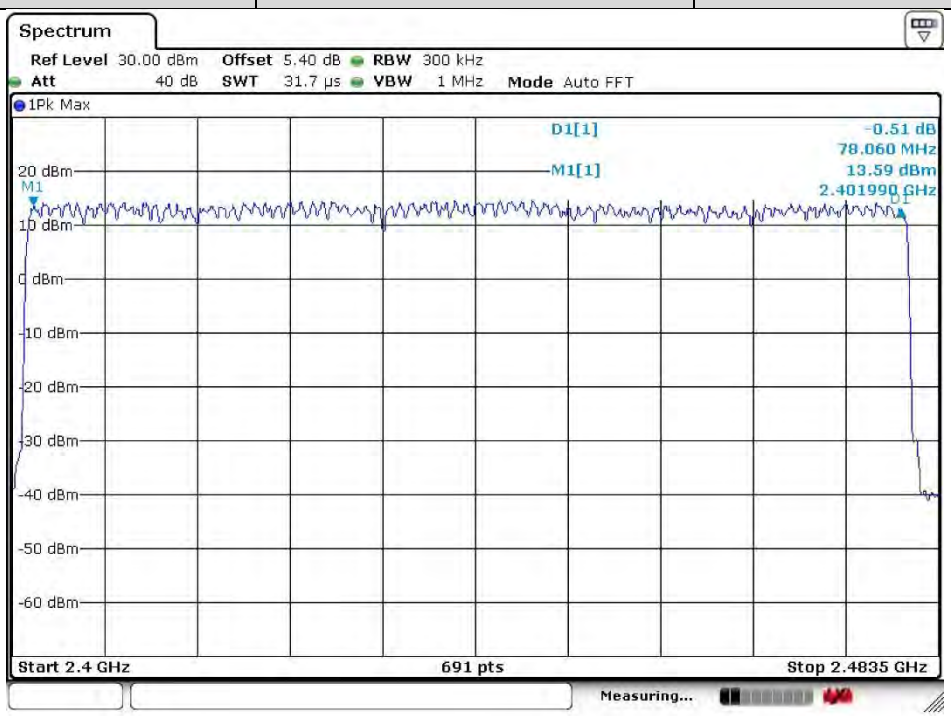
Date: 4.FEB.2021 17:25:18

Test mode:	π/4DQPSK	ANT1



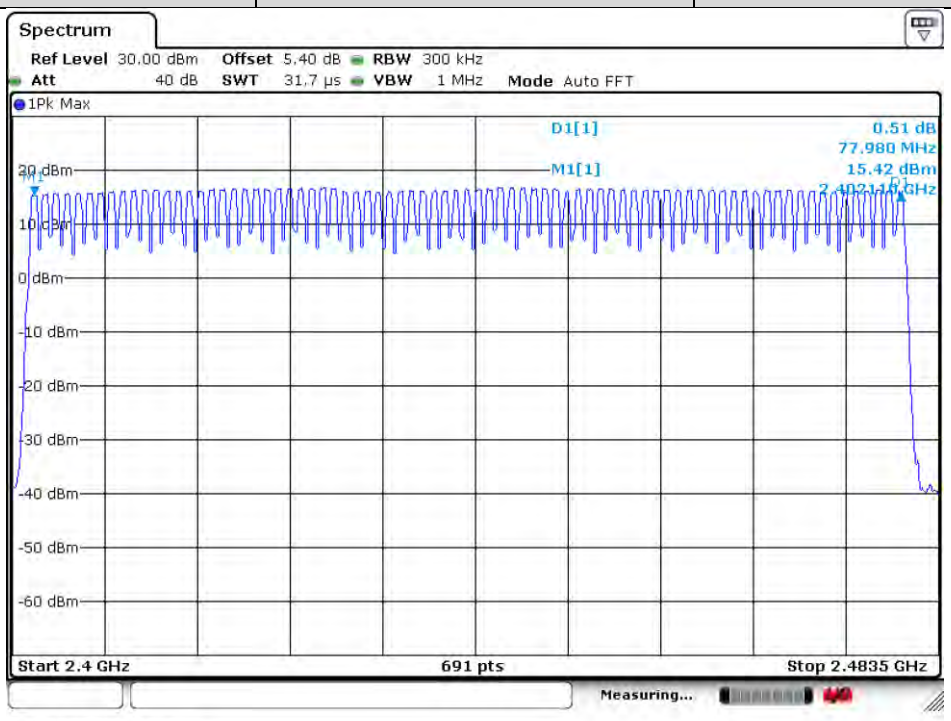
Date: 4.FEB.2021 17:23:17

Test mode:	8DPSK	ANT1



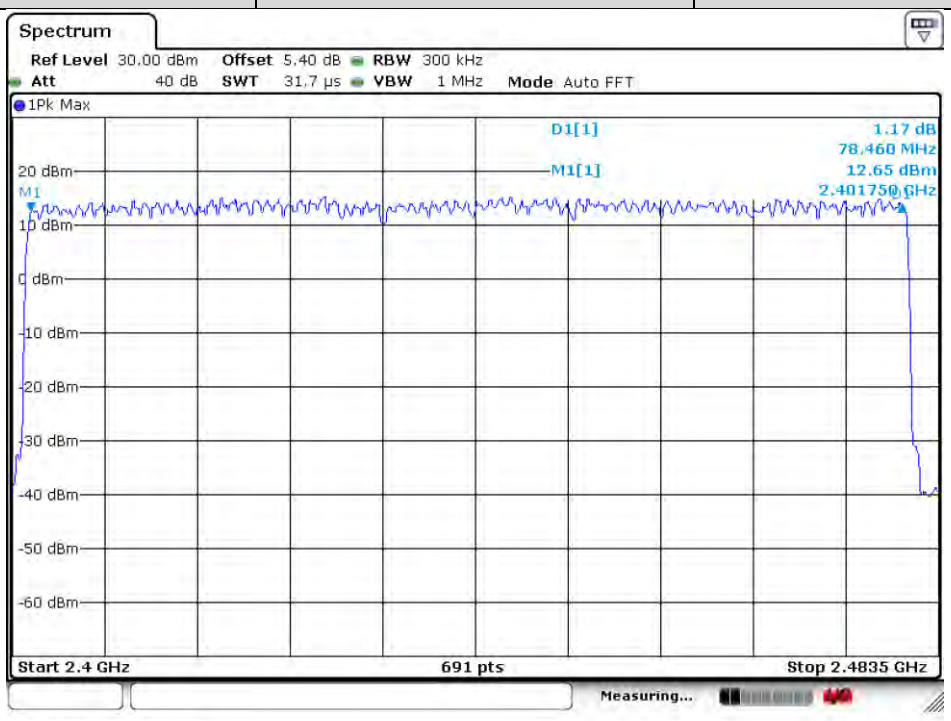
Date: 4.FEB.2021 17:24:03

Test mode:	GFSK	ANT2



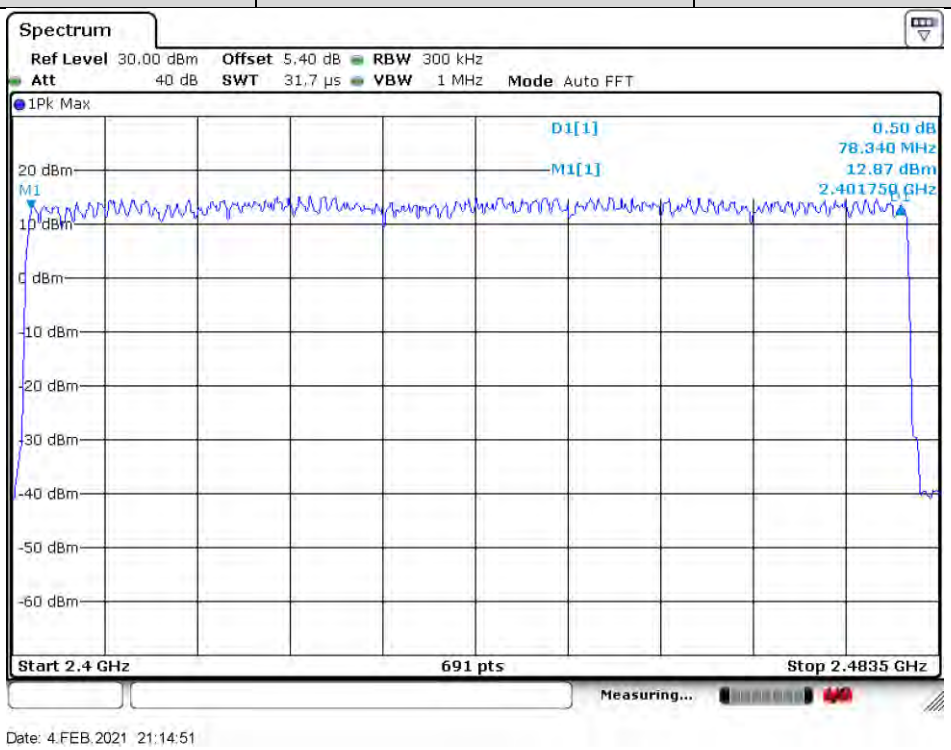
Date: 4.FEB.2021 21:13:41

Test mode:	π/4DQPSK	ANT2

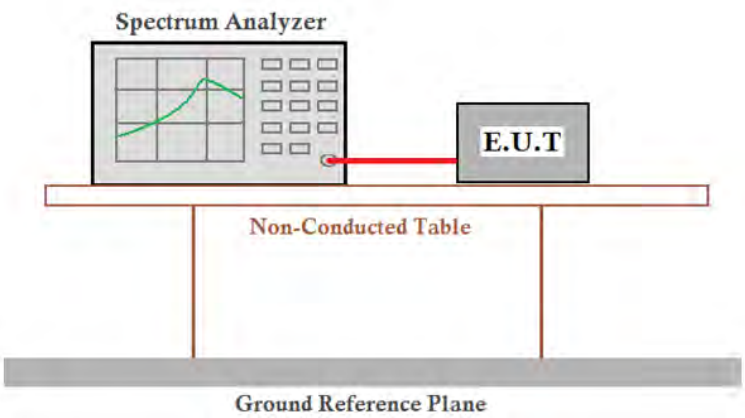


Date: 4.FEB.2021 21:14:17

Test mode:	8DPSK	ANT2



4.8 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 Section 7.8.4
Test Setup:	
Instruments Used:	Refer to section 6 for details
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Limit:	0.4 Second
Test Results:	Pass

4.8.1 Test Results

ANT1：

Operation Modes	On time（ms）on one channel
DH1	0.393
DH3	1.672
DH5	2.913
2-DH1	0.406
2-DH3	1.668
2-DH5	2.934
3-DH1	0.404
3-DH2	1.681
3-DH5	2.920

Bluetooth Time of Occupancy Calculation

Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s, since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of 1600/6=266.67 hops/slot

400ms x 79 Channel = 31.6 s (Time of Occupancy Limit)

Worst case BT has 266.67 hops/second （for 1x/EDR modes with 3-DH5 operation）

266.67 hops/second/79 channels=3.38 hops/second (# of hops/second on one channel)

3.38 hops/second/channel*31.6seconds=106.67 hops (#hops over a 31.6 second period)

106.67 hops *2.920 ms/channel =311.48 ms(worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800hops/s, AFH mode also uses 6 slots so the Bluetooth transmitter hops at a rate of 800/6=133.3 hops/s/slot

400ms x 20 Channel = 8 s (Time of Occupancy Limit)

Worst case BT has 133.3 hops/second/slot (for AFH mode with 3-DH5 operation)

133.3 hops/second/20 channels=6.67 hops/second (#hops/second on one channel)

6.67 hops/second *8seconds=53.34 hops (#hops over a 8 seconds period)

53.34 hops x2.920 ms/channel=155.75 ms(worst case dwell time for one channel in AFH mode)

ANT2：

Operation Modes	On time（ms）on one channel
DH1	0.401
DH3	1.664
DH5	2.949
2-DH1	0.402
2-DH3	1.673
2-DH5	2.942
3-DH1	0.402
3-DH2	1.668
3-DH5	2.942

Bluetooth Time of Occupancy Calculation

Typically, Bluetooth 1x/EDR mode has a channel hopping rate of 1600 hops/s, since 1x/EDR modes use 5 transmit and 1 receive slot, for a total of 6 slots, the Bluetooth transmitter is actually hopping at a rate of 1600/6=266.67 hops/slot

400ms x 79 Channel = 31.6 s (Time of Occupancy Limit)

Worst case BT has 266.67 hops/second （for 1x/EDR modes with 1-DH5 operation）

266.67 hops/second/79 channels=3.38 hops/second (# of hops/second on one channel)

3.38 hops/second/channel*31.6seconds=106.67 hops (#hops over a 31.6 second period)

106.67 hops *2.949 ms/channel =314.57 ms(worst case dwell time for one channel in 1x/EDR modes)

With AFH, the number of channels is reduced to a minimum of 20 channels and the channel hopping rate is reduced by 50% to 800hops/s, AFH mode also uses 6 slots so the Bluetooth transmitter hops at a rate of 800/6=133.3 hops/s/slot

400ms x 20 Channel = 8 s (Time of Occupancy Limit)

Worst case BT has 133.3 hops/second/slot (for AFH mode with 1-DH5 operation)

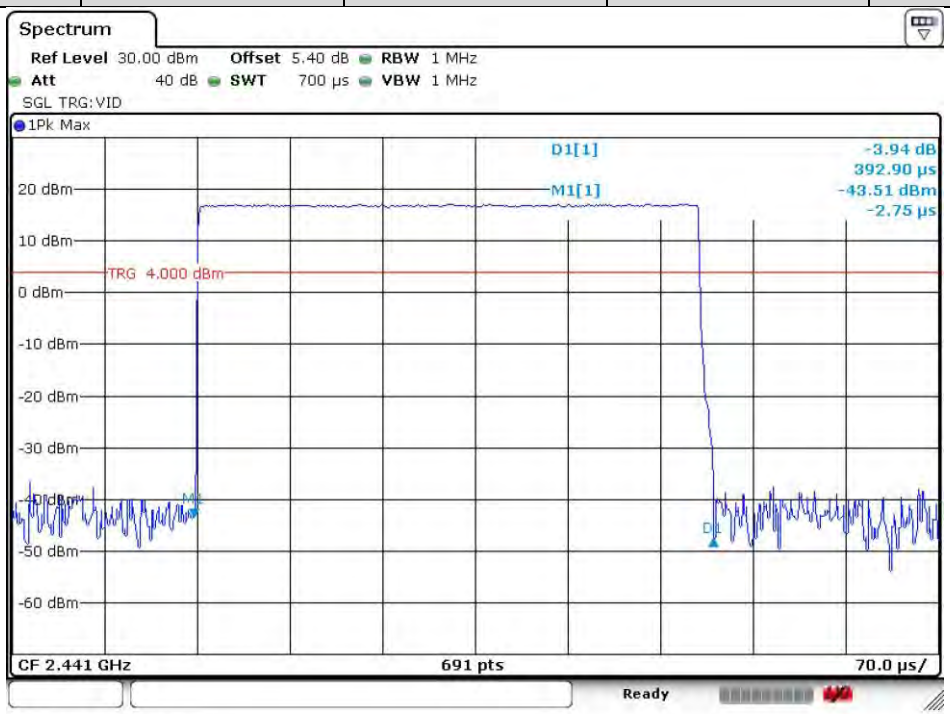
133.3 hops/second/20 channels=6.67 hops/second (#hops/second on one channel)

6.67 hops/second *8seconds=53.34 hops (#hops over a 8 seconds period)

53.34 hops x2.949 ms/channel=154.30 ms(worst case dwell time for one channel in AFH mode)

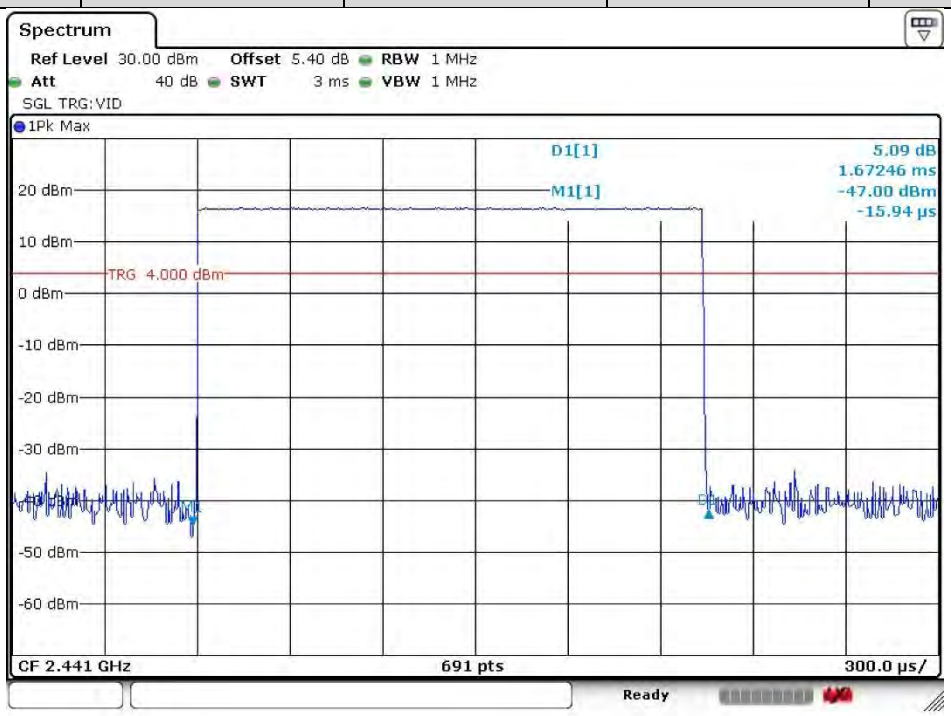
4.8.2 Test Plots

Test mode:	DH1	Test channel:	Middle	ANT1



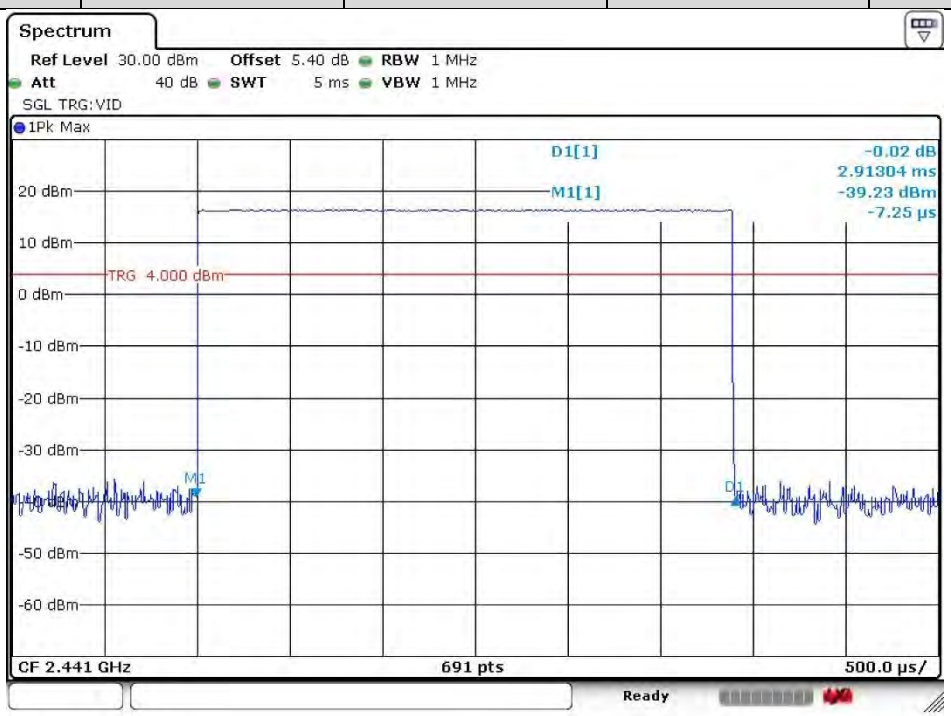
Date: 4.FEB.2021 17:29:15

Test mode:	DH3	Test channel:	Middle	ANT1



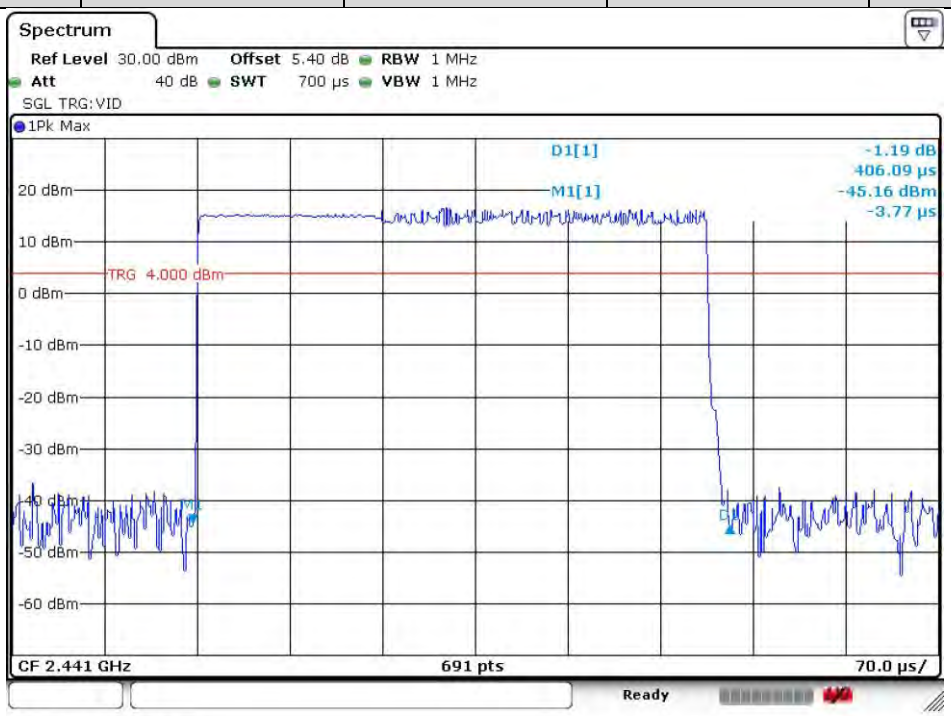
Date: 4.FEB.2021 17:28:02

Test mode:	DH5	Test channel:	Middle	ANT1



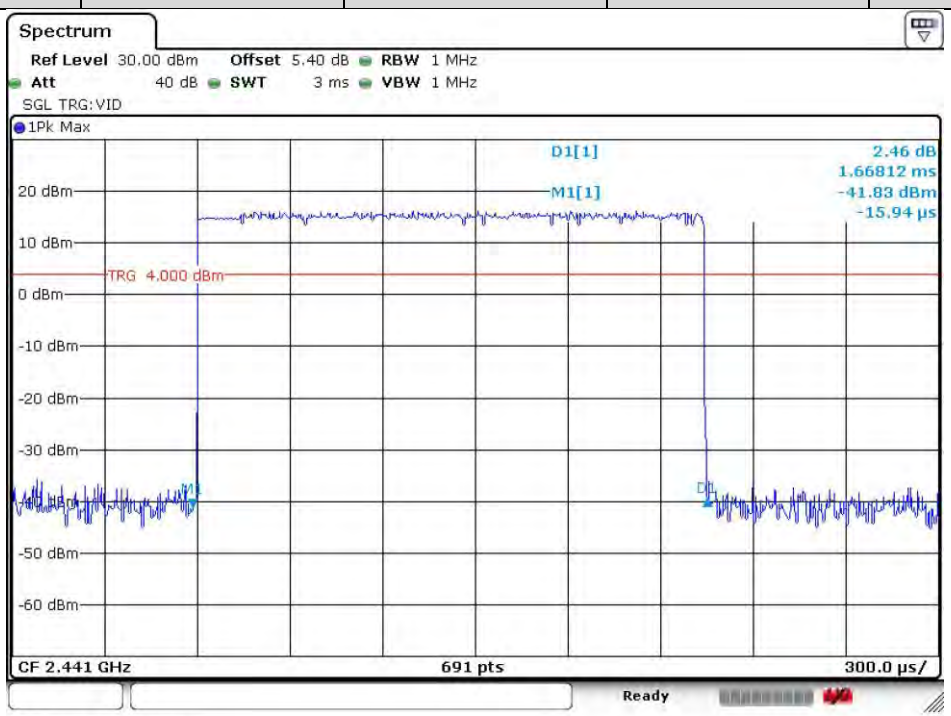
Date: 4.FEB.2021 17:25:58

Test mode:	2-DH1	Test channel:	Middle	ANT1



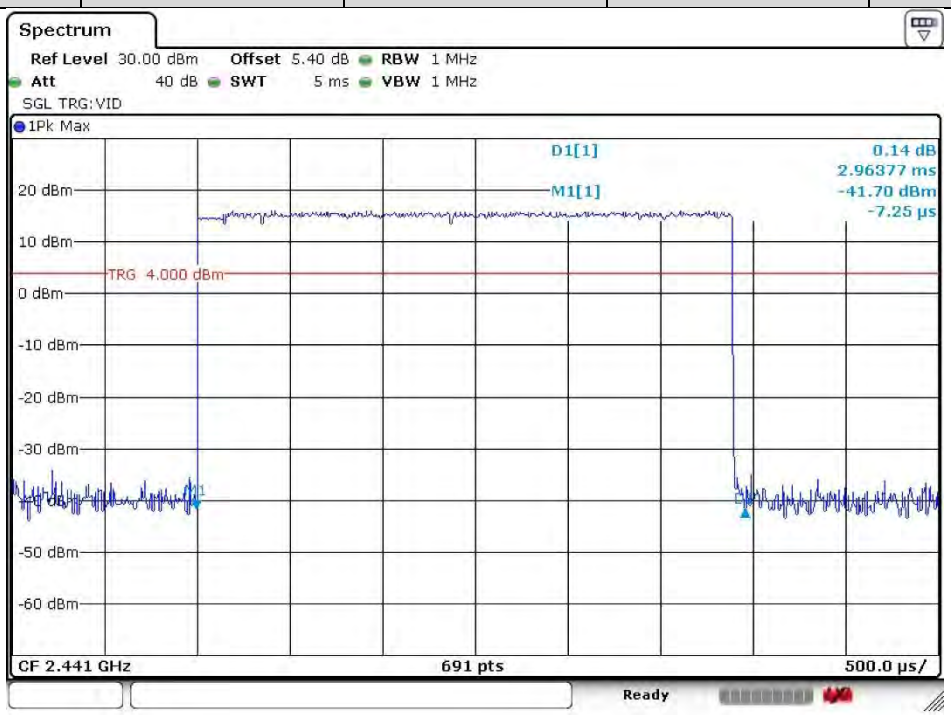
Date: 4.FEB.2021 17:29:39

Test mode:	2-DH3	Test channel:	Middle	ANT1



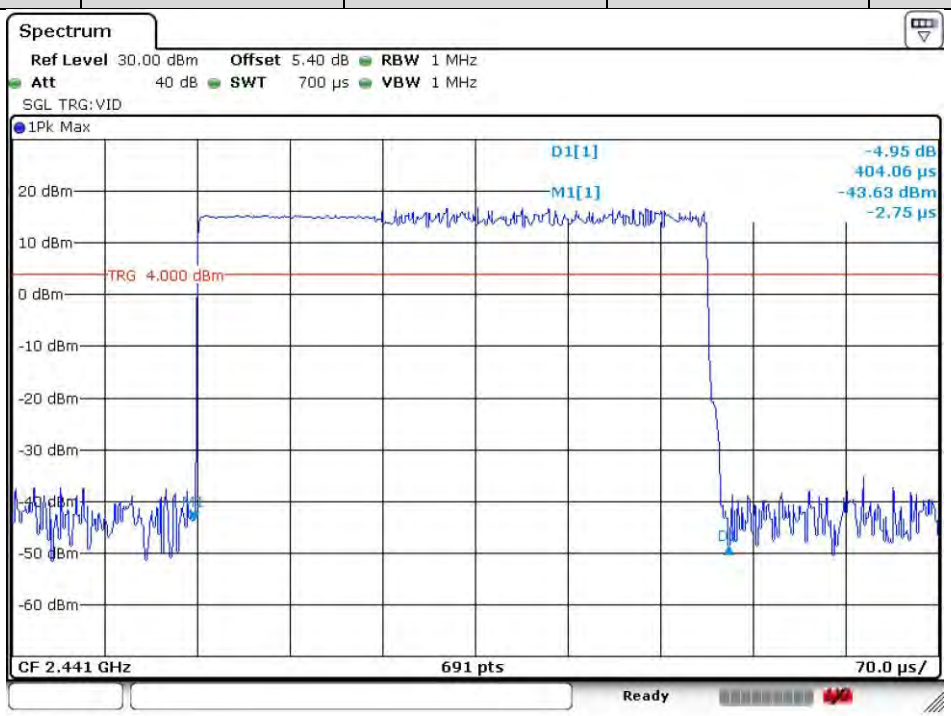
Date: 4.FEB.2021 17:27:15

Test mode:	2-DH5	Test channel:	Middle	ANT1



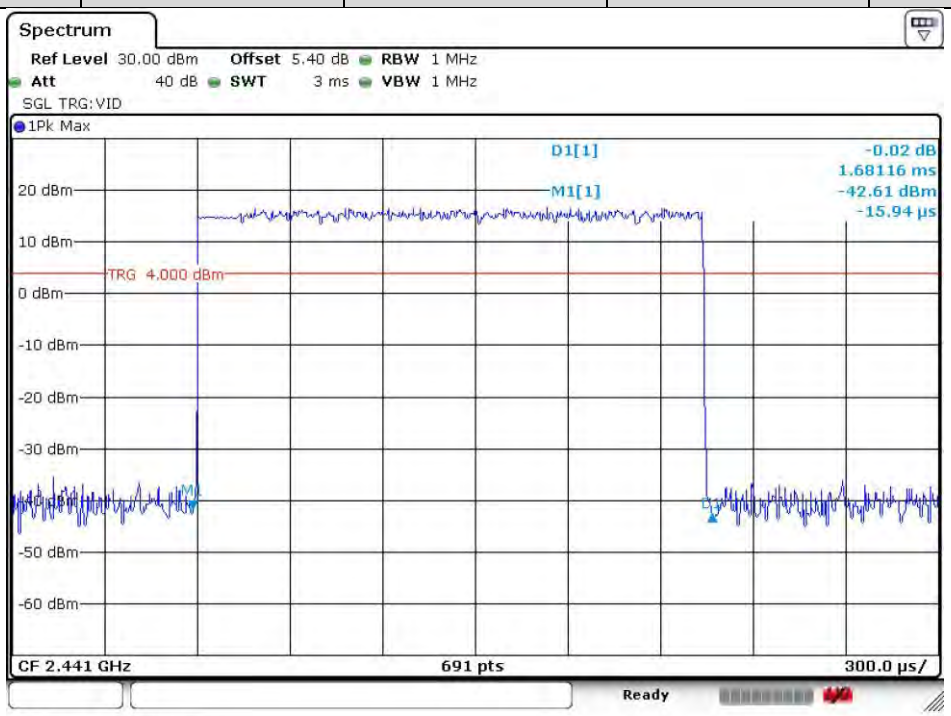
Date: 4.FEB.2021 17:26:41

Test mode:	3-DH1	Test channel:	Middle	ANT1



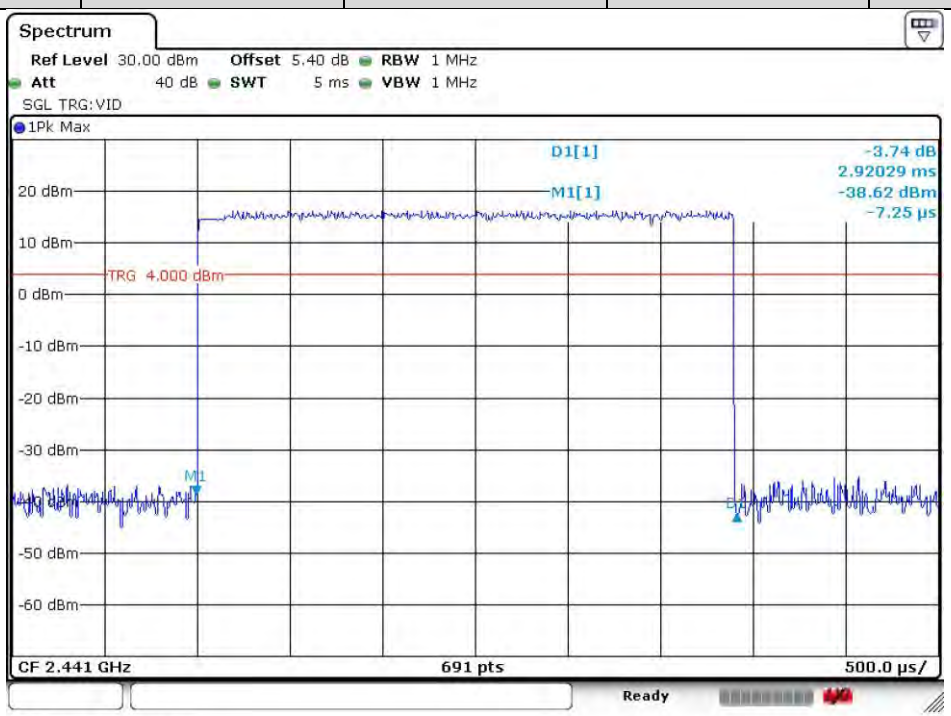
Date: 4.FEB.2021 17:29:57

Test mode:	3-DH3	Test channel:	Middle	ANT1



Date: 4.FEB.2021 17:27:30

Test mode:	3-DH5	Test channel:	Middle	ANT1



Date: 4.FEB.2021 17:26:21

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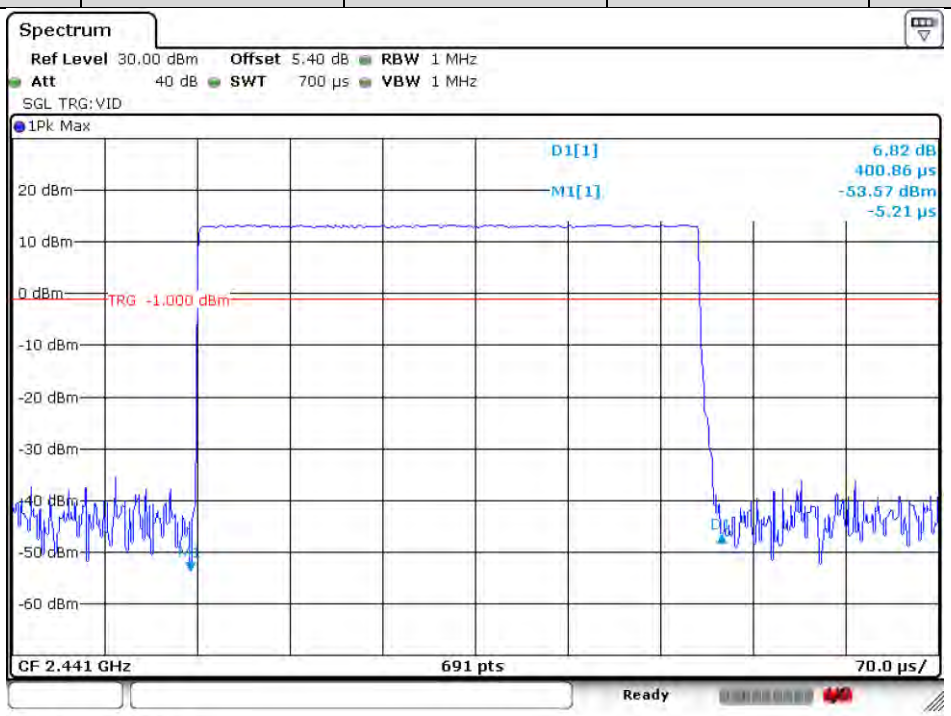
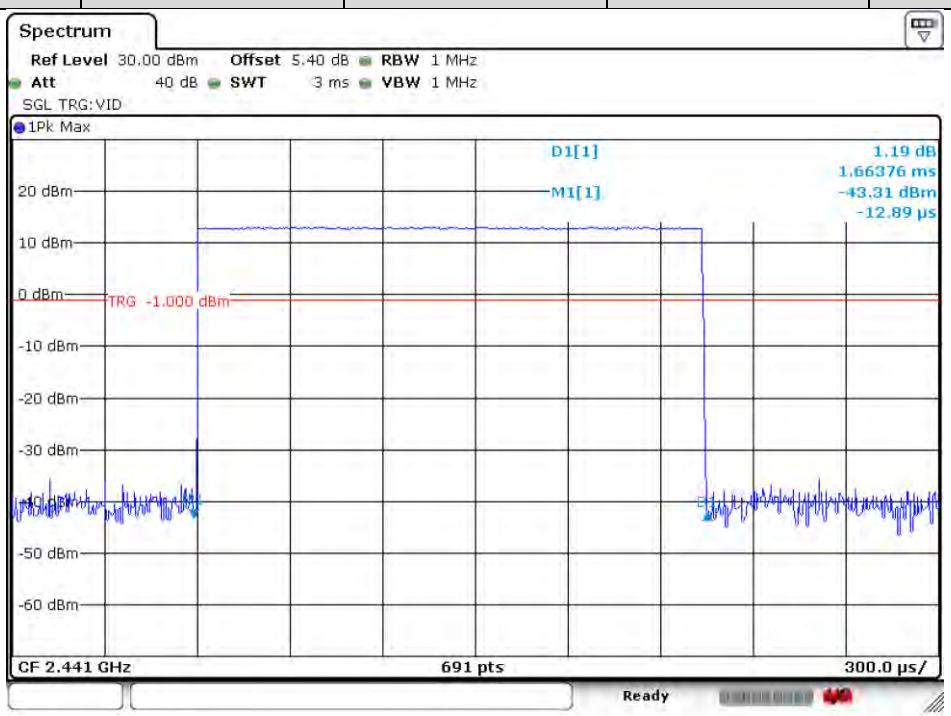
Test mode:	DH1	Test channel:	Middle	ANT2



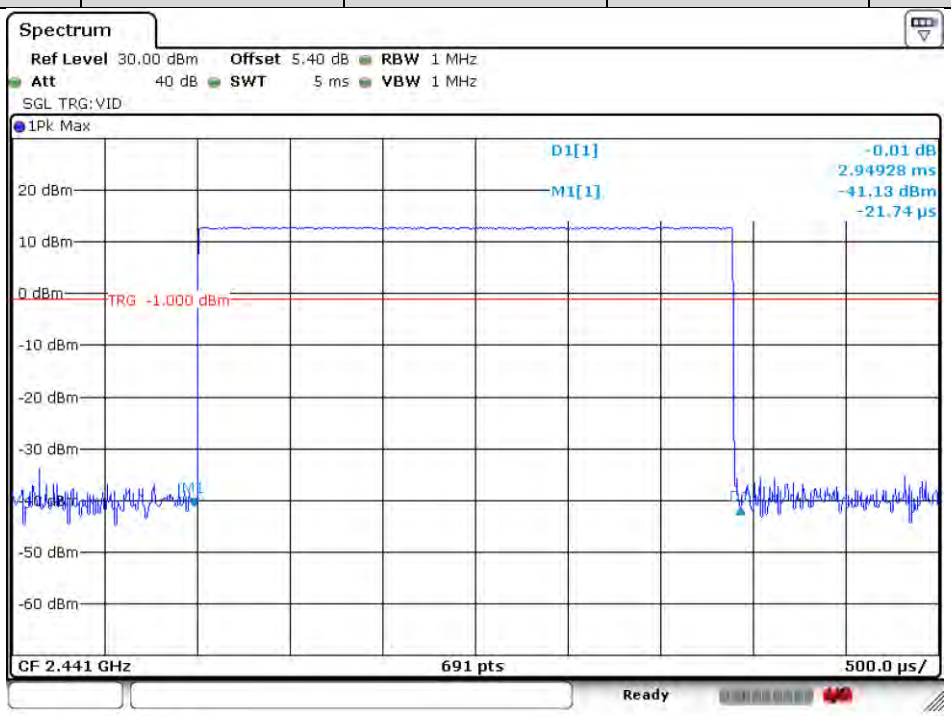
Date: 4.FEB.2021 21:02:13

Test mode:	DH3	Test channel:	Middle	ANT2



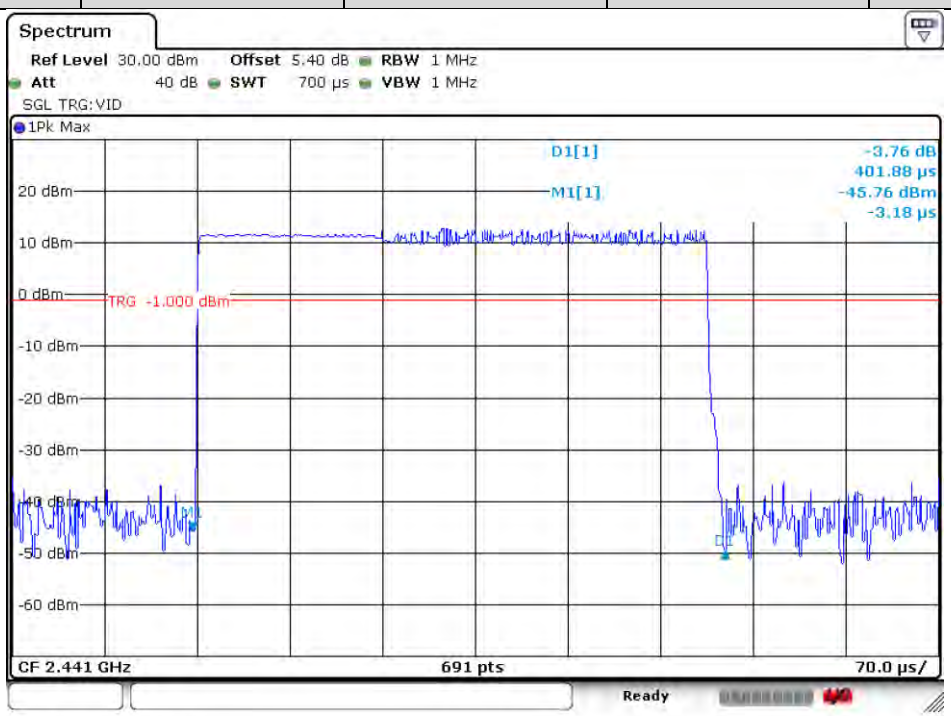
Date: 4.FEB.2021 21:05:21

Test mode:	DH5	Test channel:	Middle	ANT2



Date: 4.FEB.2021 21:01:41

Test mode:	2-DH1	Test channel:	Middle	ANT2



Date: 4.FEB.2021 21:02:35

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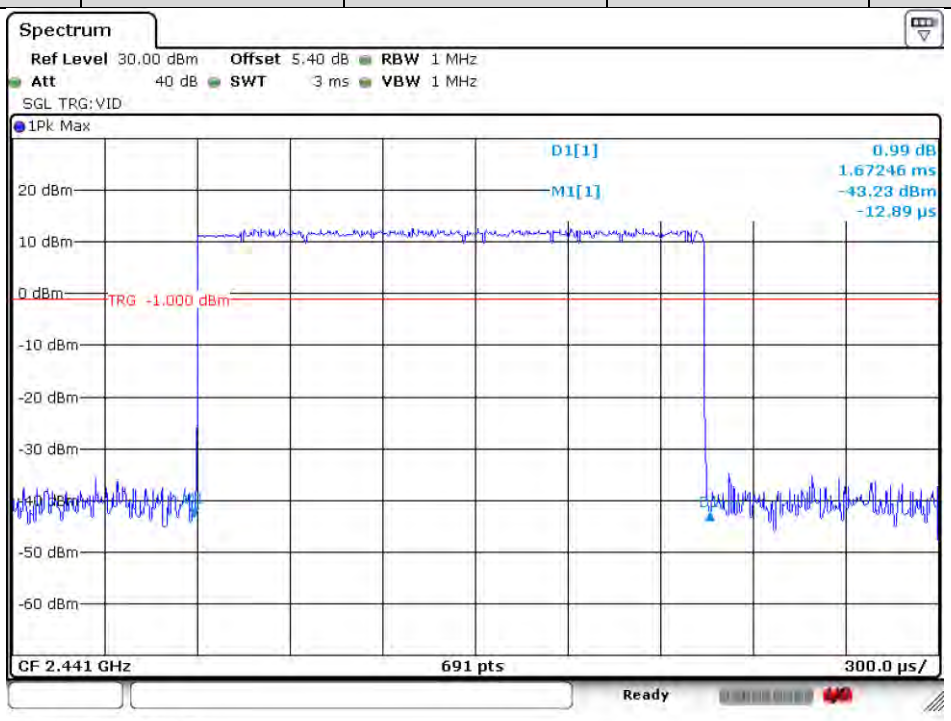
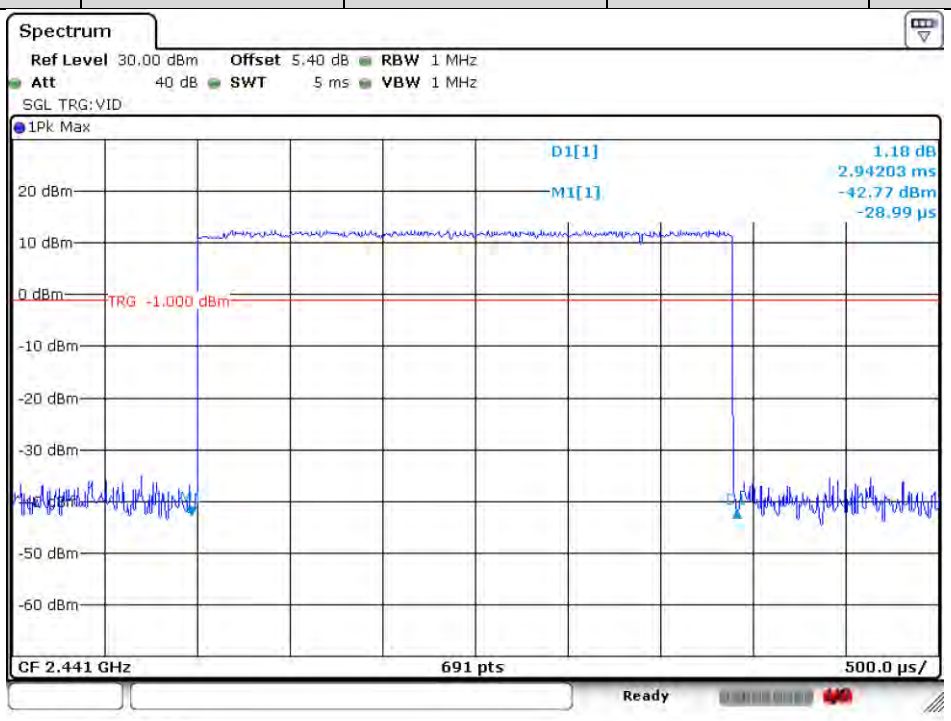
Test mode:	2-DH3	Test channel:	Middle	ANT2



Date: 4.FEB.2021 21:04:59

Test mode:	2-DH5	Test channel:	Middle	ANT2



Date: 4.FEB.2021 21:00:54

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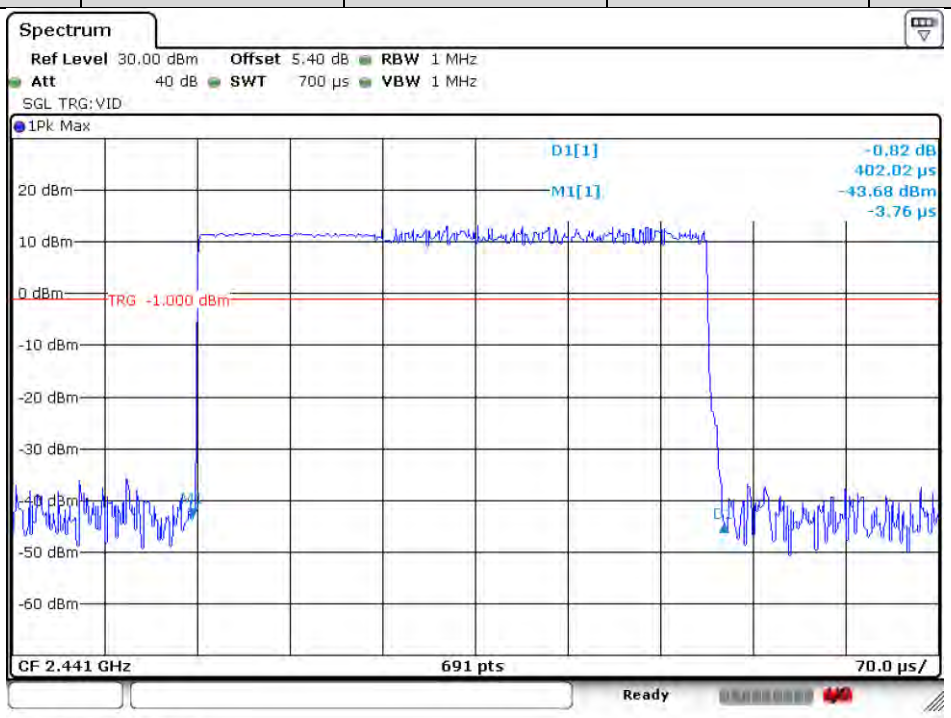
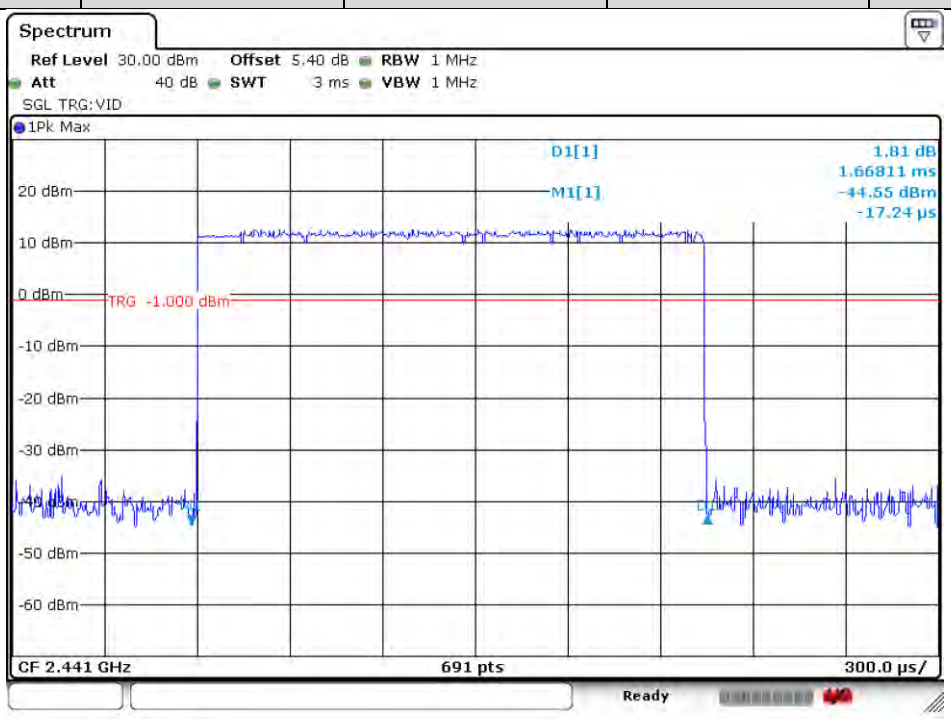
Test mode:	3-DH1	Test channel:	Middle	ANT2



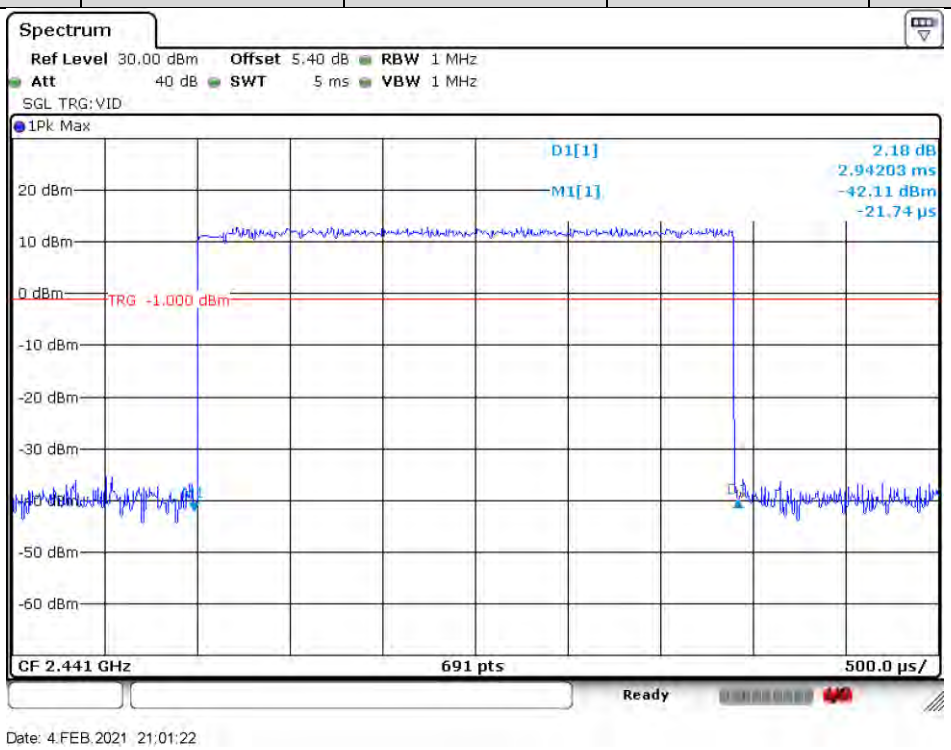
Date: 4.FEB.2021 21:05:53

Test mode:	3-DH3	Test channel:	Middle	ANT2

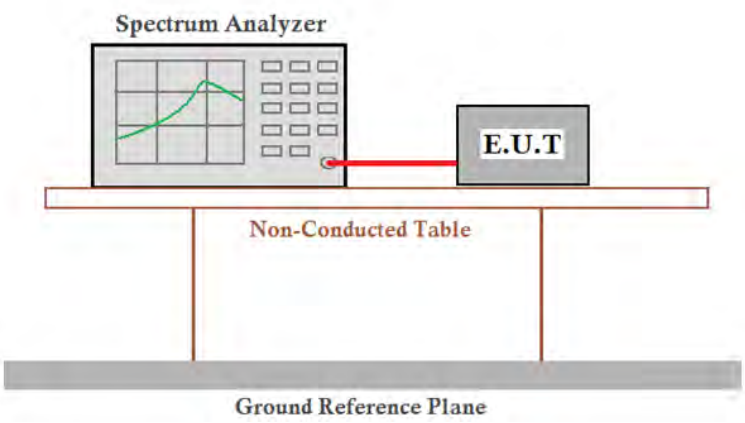


Date: 4.FEB.2021 21:04:31

Test mode:	3-DH5	Test channel:	Middle	ANT2

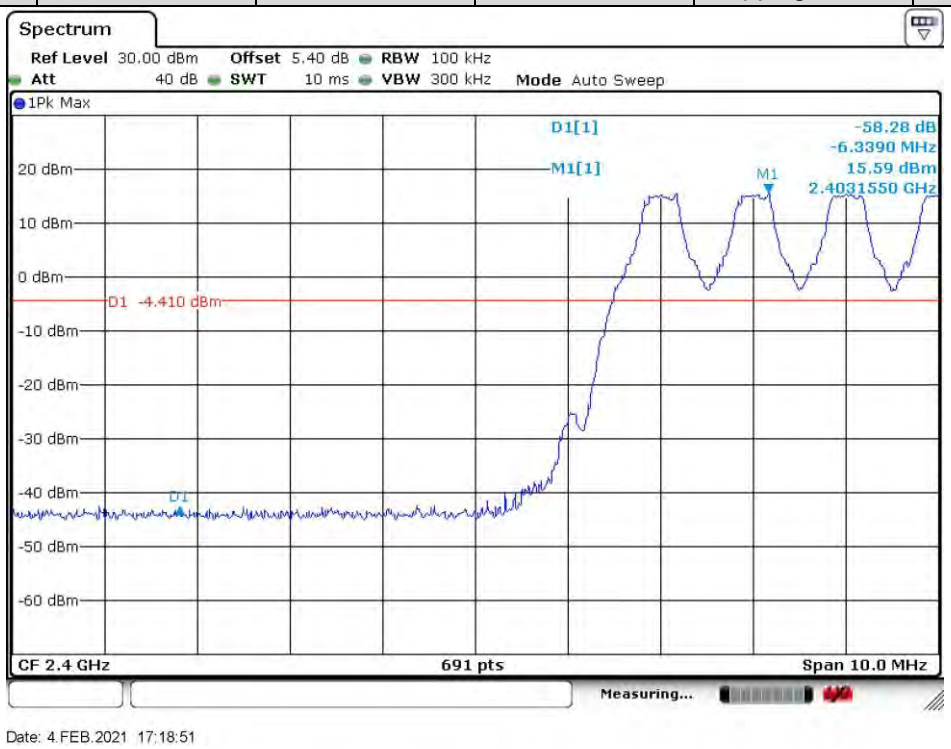


4.9 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 Section 7.8.6
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Hopping and Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
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

4.9.1 Test Plots

Test mode:	GFSK	Test channel:	Lowest	Hopping ON	ANT1



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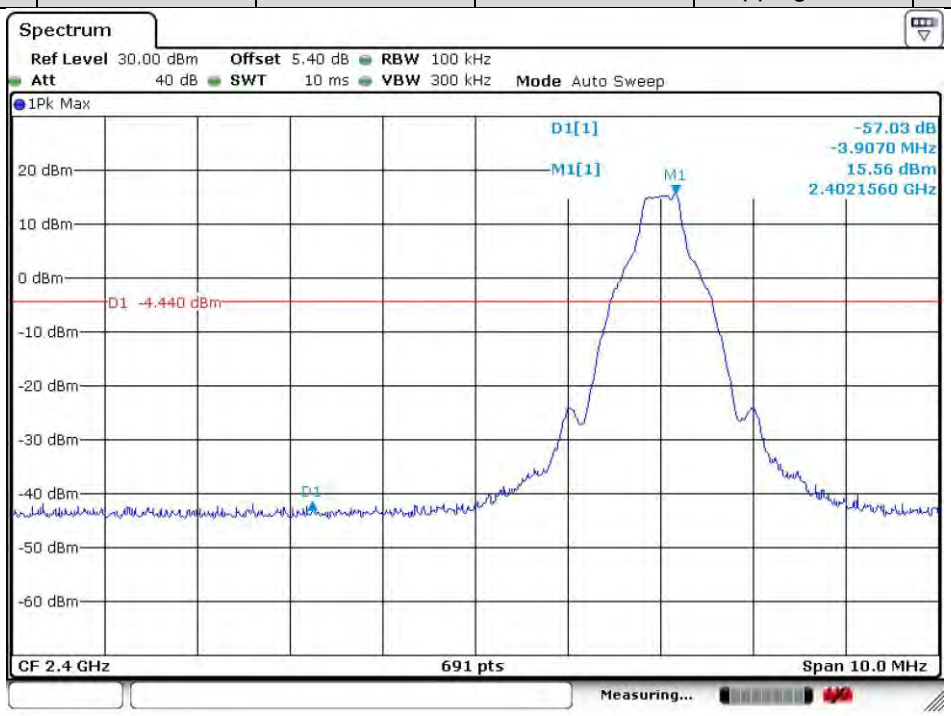
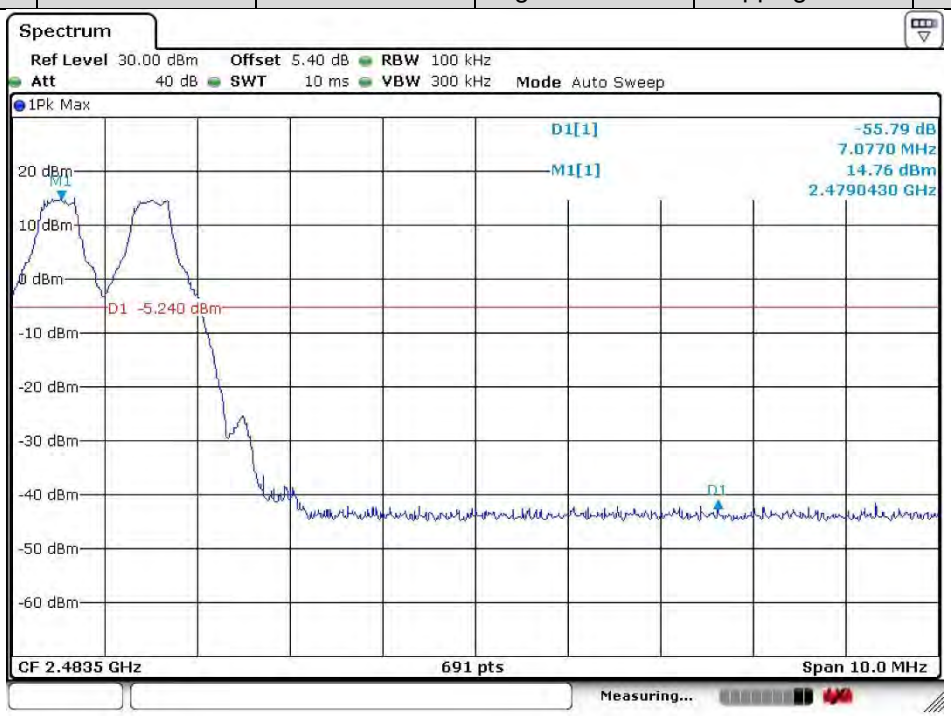
Test mode:	GFSK	Test channel:	Lowest	Hopping OFF	ANT1



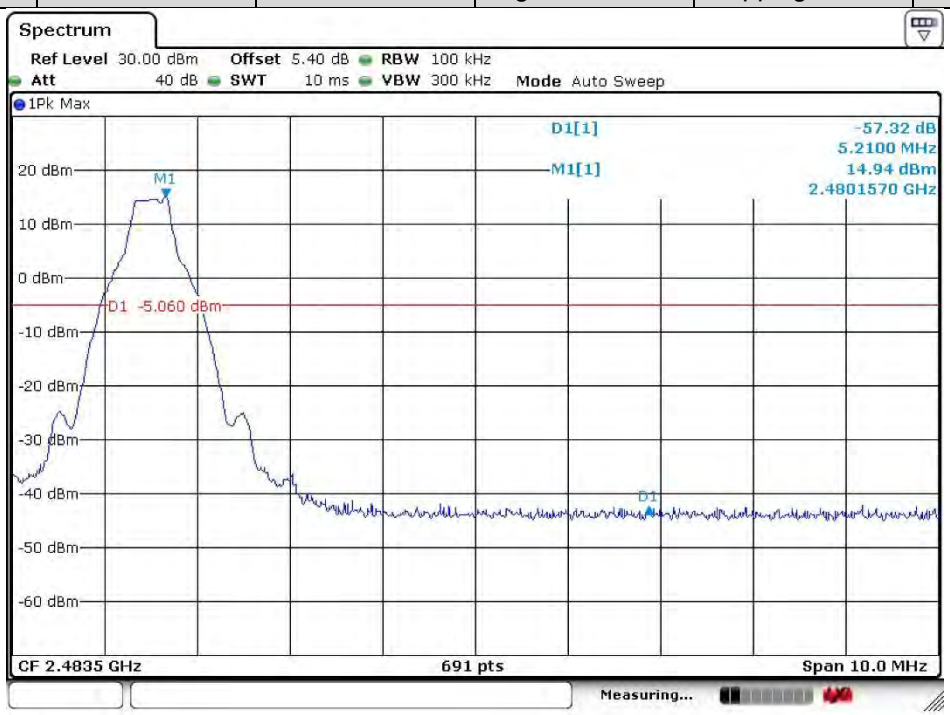
Date: 4.FEB.2021 17:10:47

Test mode:	GFSK	Test channel:	Highest	Hopping ON	ANT1



Date: 4.FEB.2021 17:19:40

Test mode:	GFSK	Test channel:	Highest	Hopping OFF	ANT1

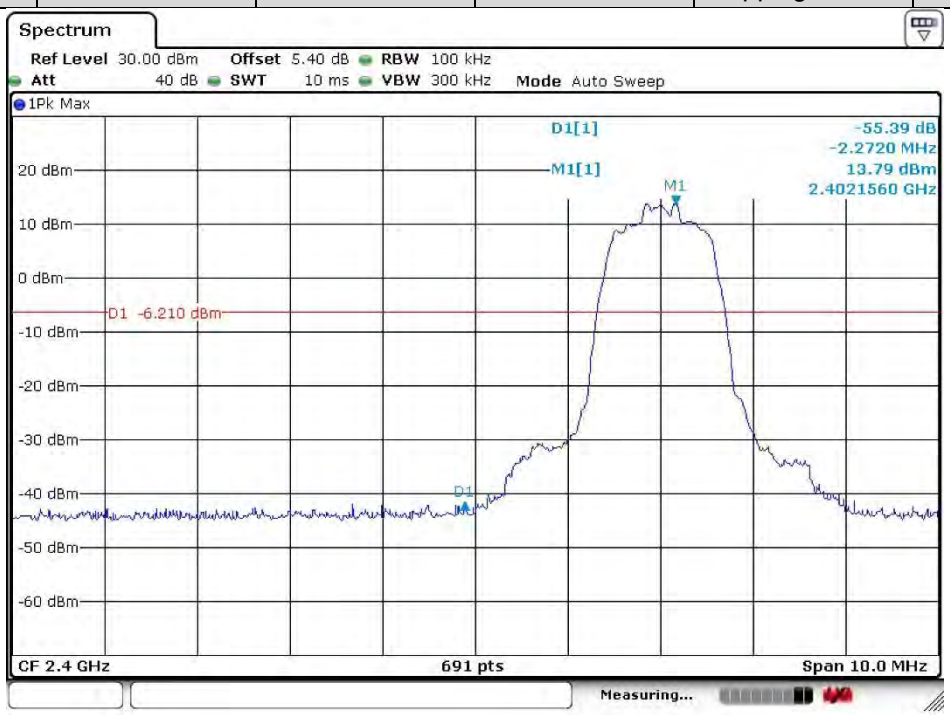


Date: 4.FEB.2021 17:11:32

Test mode:	π/4DQPSK	Test channel:	Lowest	Hopping ON	ANT1

Date: 4.FEB.2021 17:14:25

Test mode:	π/4DQPSK	Test channel:	Lowest	Hopping OFF	ANT1



Date: 4.FEB.2021 17:07:11

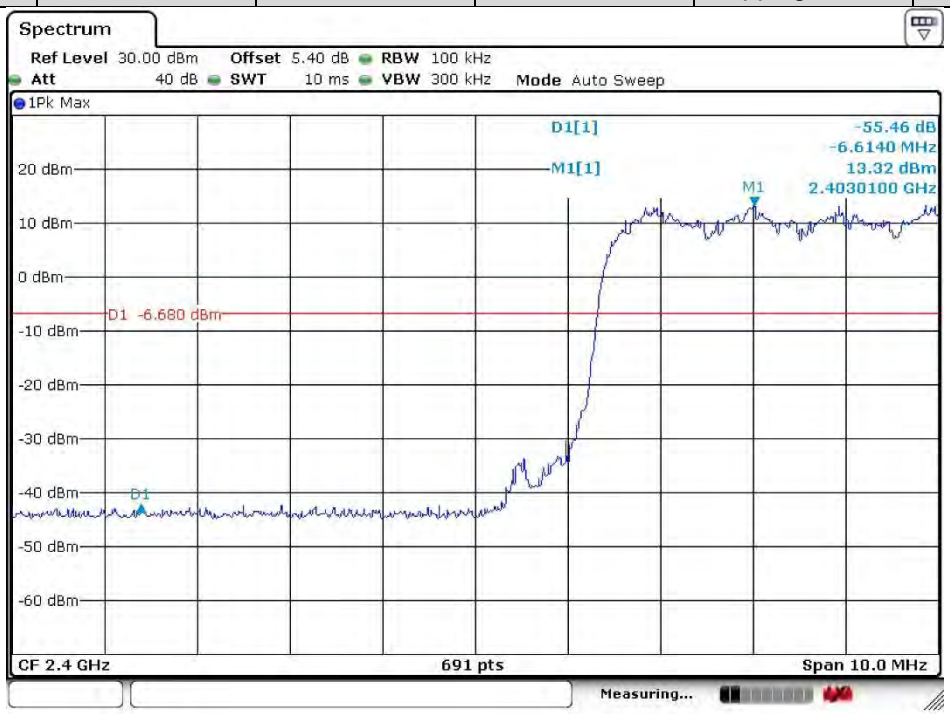
Test mode:	π/4DQPSK	Test channel:	Highest	Hopping ON	ANT1

Date: 4.FEB.2021 17:15:17

Test mode:	π/4DQPSK	Test channel:	Highest	Hopping OFF	ANT1

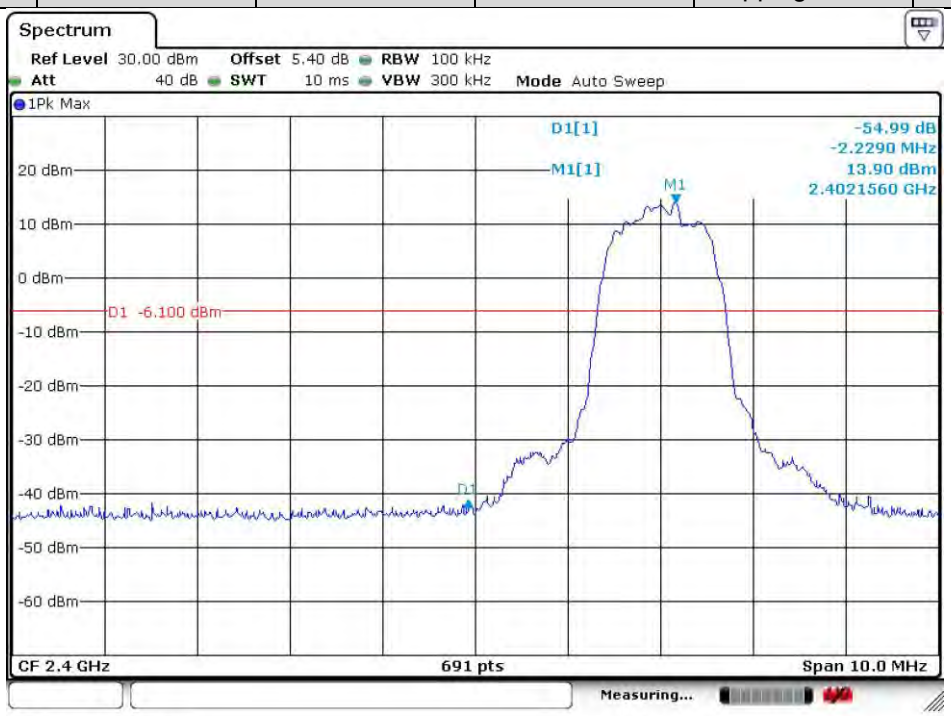
Date: 4.FEB.2021 17:07:45

Test mode:	8DPSK	Test channel:	Lowest	Hopping ON	ANT1



Date: 4.FEB.2021 17:17:29

Test mode:	8DPSK	Test channel:	Lowest	Hopping OFF	ANT1



Date: 4.FEB.2021 17:09:17

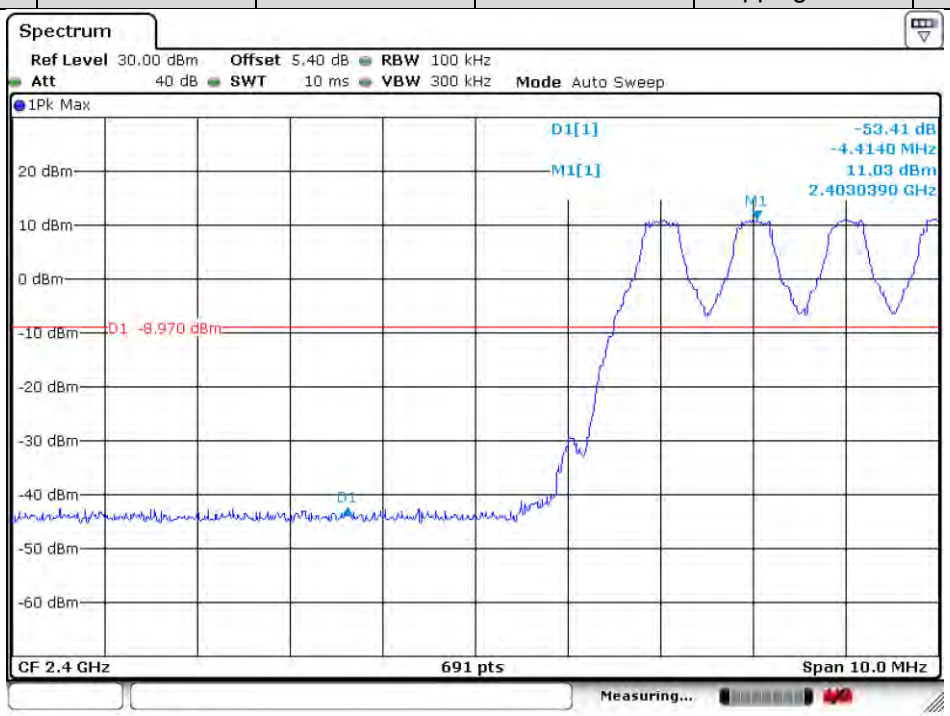
Test mode:	8DPSK	Test channel:	Highest	Hopping ON	ANT1

Date: 4.FEB.2021 17:16:13

Test mode:	8DPSK	Test channel:	Highest	Hopping OFF	ANT1

Date: 4.FEB.2021 17:08:17

Test mode:	GFSK	Test channel:	Lowest	Hopping ON	ANT2



Date: 4.FEB.2021 20:57:14

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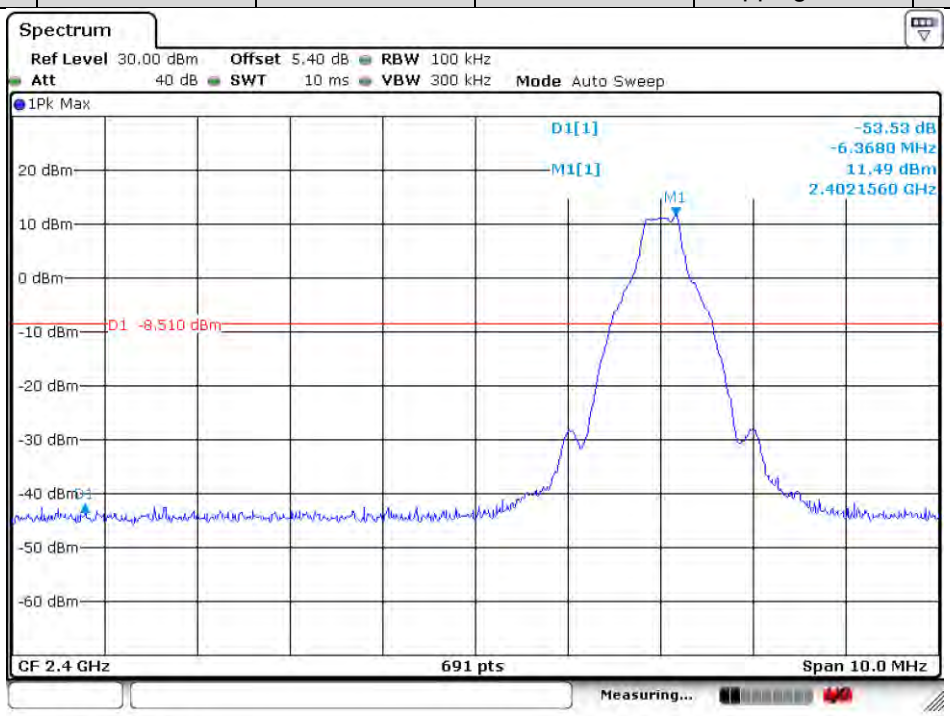
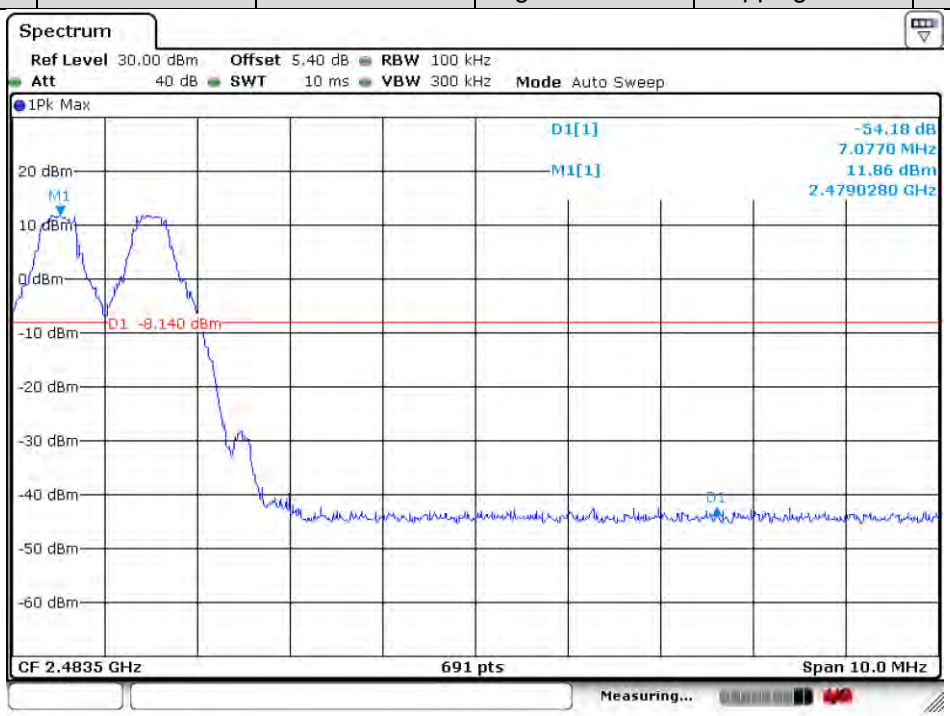
Test mode:	GFSK	Test channel:	Lowest	Hopping OFF	ANT2



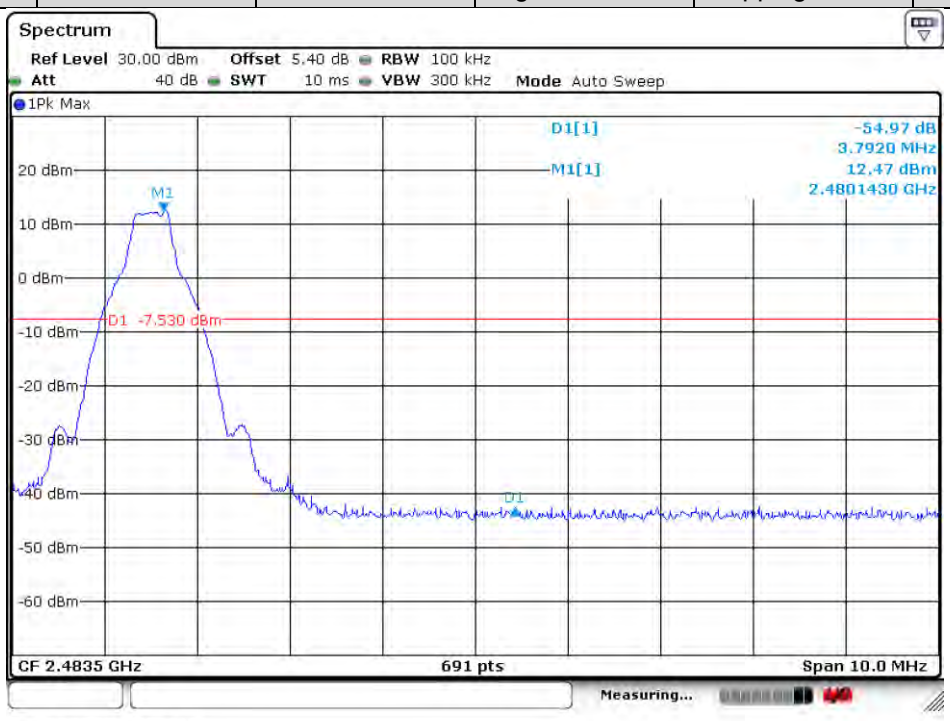
Date: 4.FEB.2021 20:55:18

Test mode:	GFSK	Test channel:	Highest	Hopping ON	ANT2

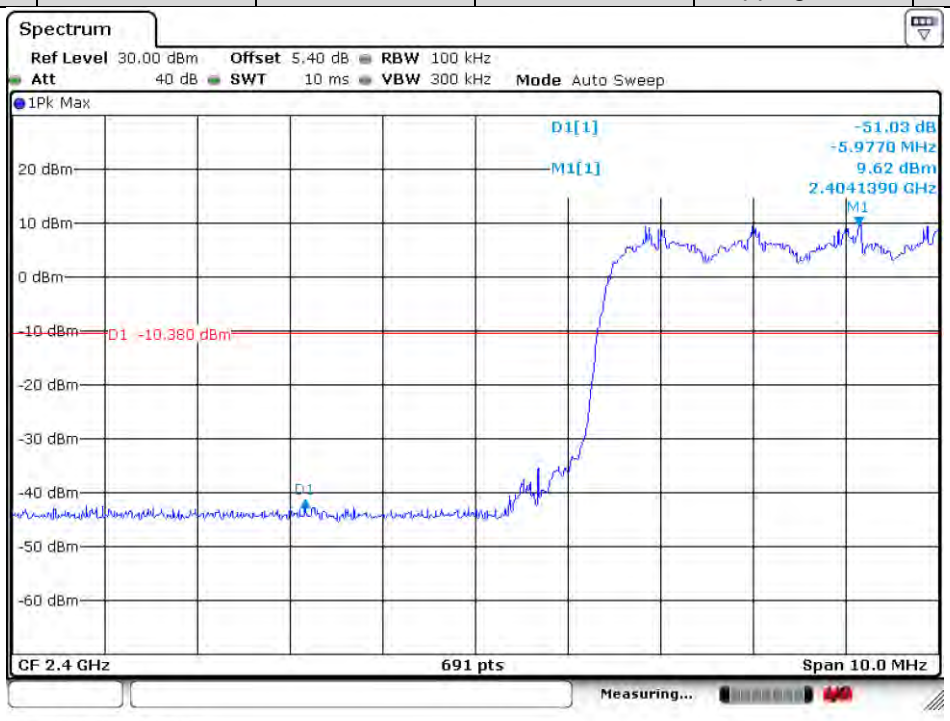


Date: 4.FEB.2021 20:56:27

Test mode:	GFSK	Test channel:	Highest	Hopping OFF	ANT2



Test mode:	π/4DQPSK	Test channel:	Lowest	Hopping ON	ANT2



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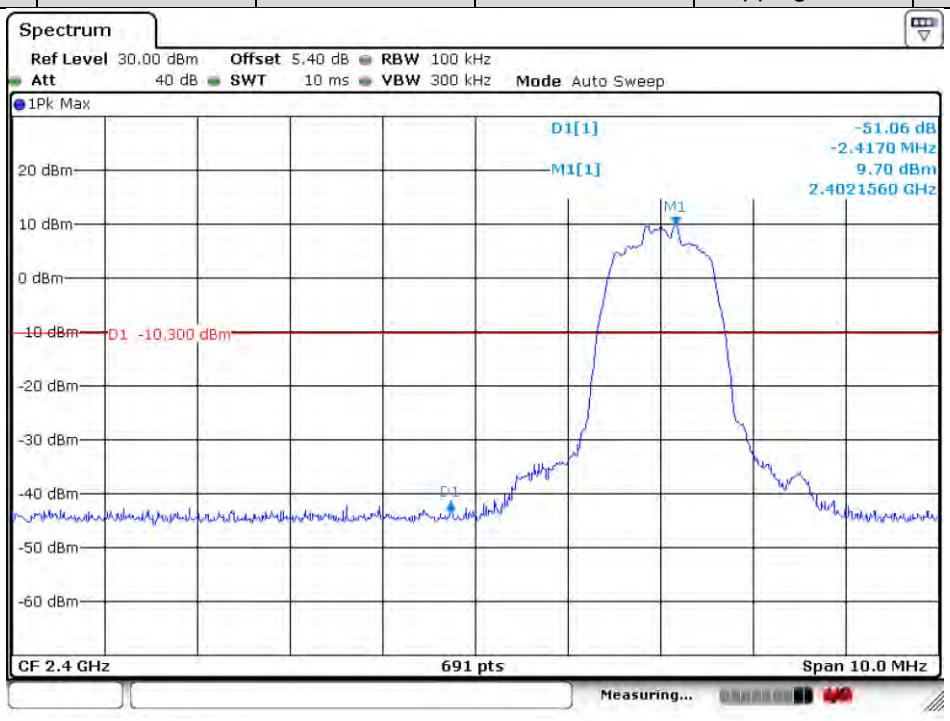
Test mode:	π/4DQPSK	Test channel:	Lowest	Hopping OFF	ANT2



Date: 4.FEB.2021 20:53:02

Test mode:	π/4DQPSK	Test channel:	Highest	Hopping ON	ANT2

Date: 4.FEB.2021 20:59:24

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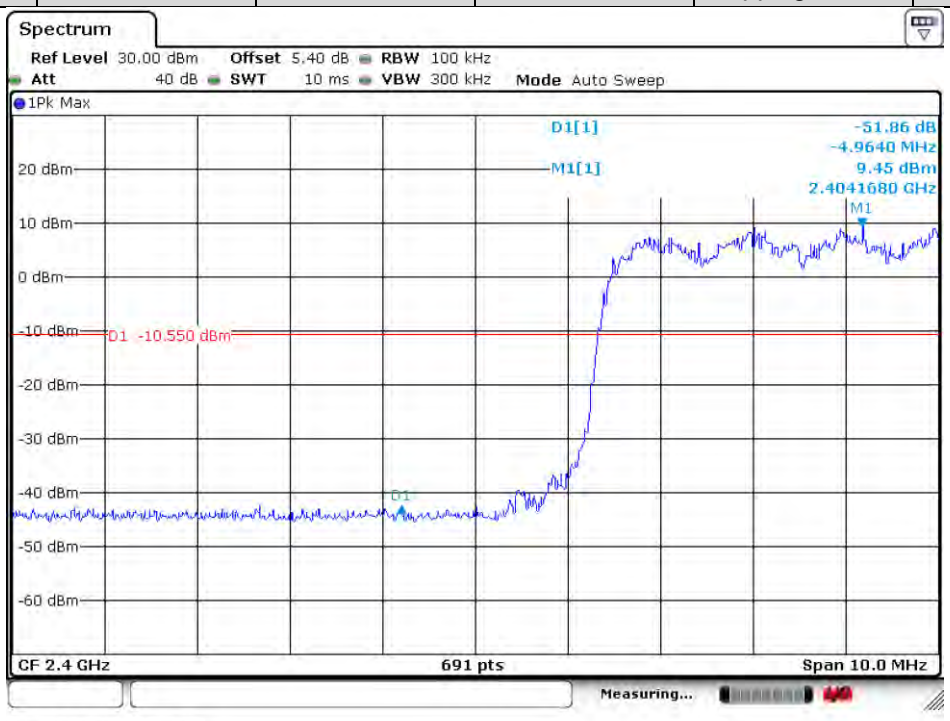
Test mode:	π/4DQPSK	Test channel:	Highest	Hopping OFF	ANT2

Test mode:	8DPSK	Test channel:	Lowest	Hopping ON	ANT2



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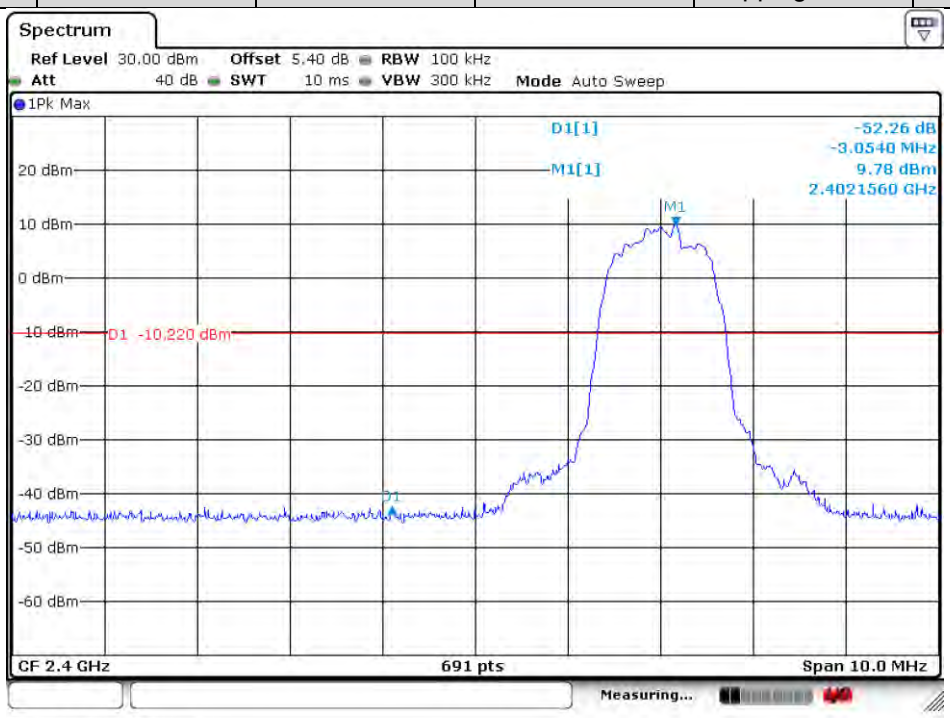
Test mode:	8DPSK	Test channel:	Lowest	Hopping OFF	ANT2

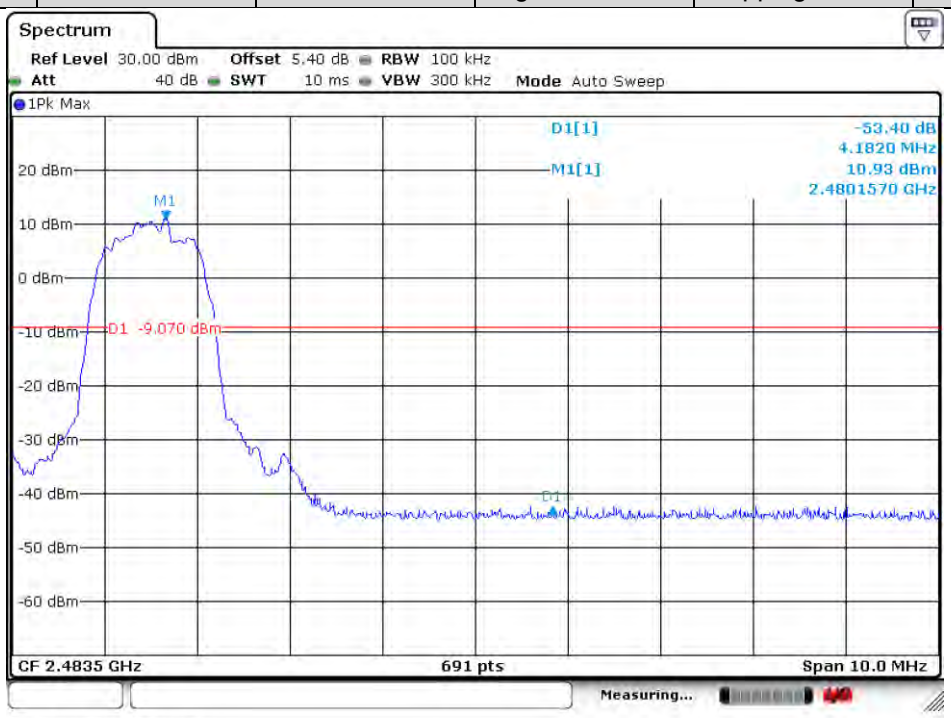


Date: 4.FEB.2021 20:54:45

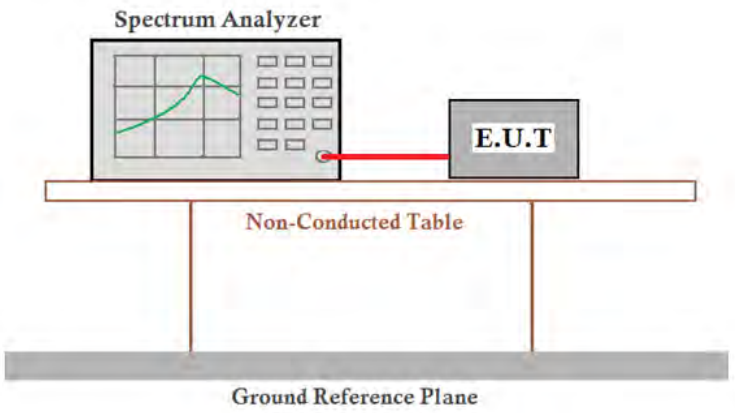
Test mode:	8DPSK	Test channel:	Highest	Hopping ON	ANT2

Date: 4.FEB.2021 20:58:37

Test mode:	8DPSK	Test channel:	Highest	Hopping OFF	ANT2

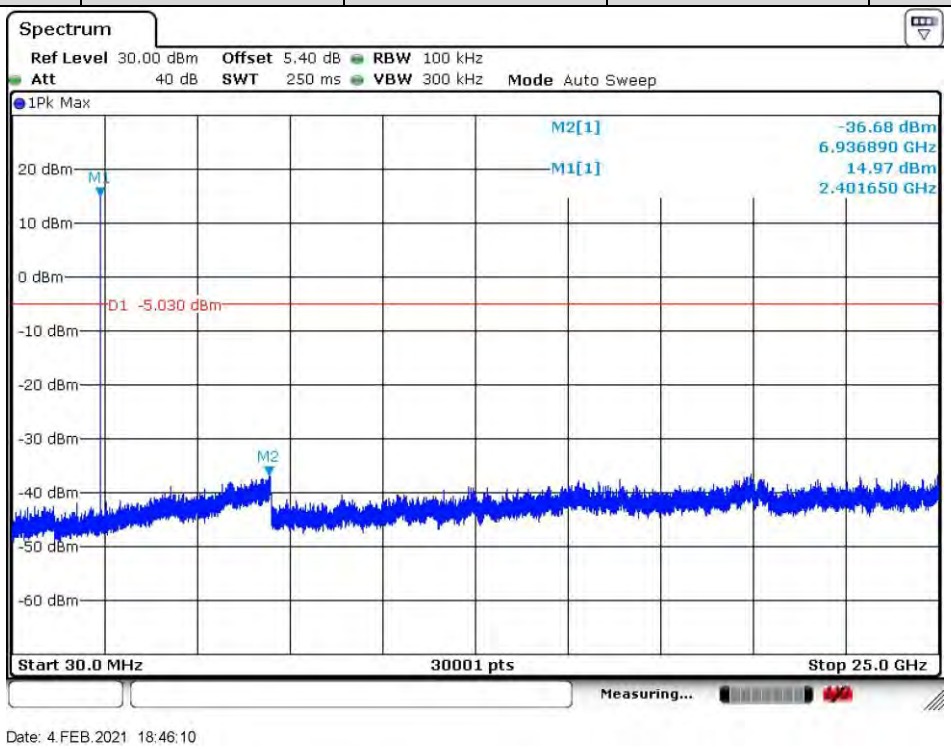


4.10 Spurious RF Conducted Emissions

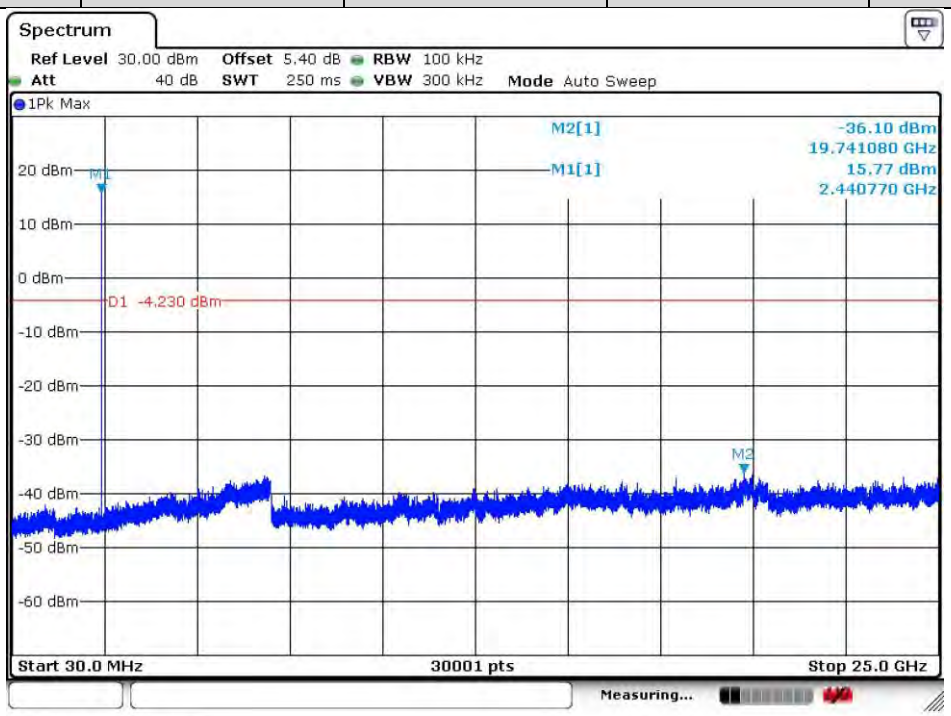
Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 Section 7.8.8
Test Setup:	
Instruments Used:	Refer to section 6 for details
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type.
Final Test Mode:	Through Pre-scan, find the DH5 of data type is the worst case of GFSK modulation type, 2-DH5 of data type is the worst case of π/4DQPSK modulation type, 3-DH5 of data type is the worst case of 8DPSK modulation type.
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

4.10.1 Test Plots

Test mode:	GFSK	Test channel:	Lowest	ANT1

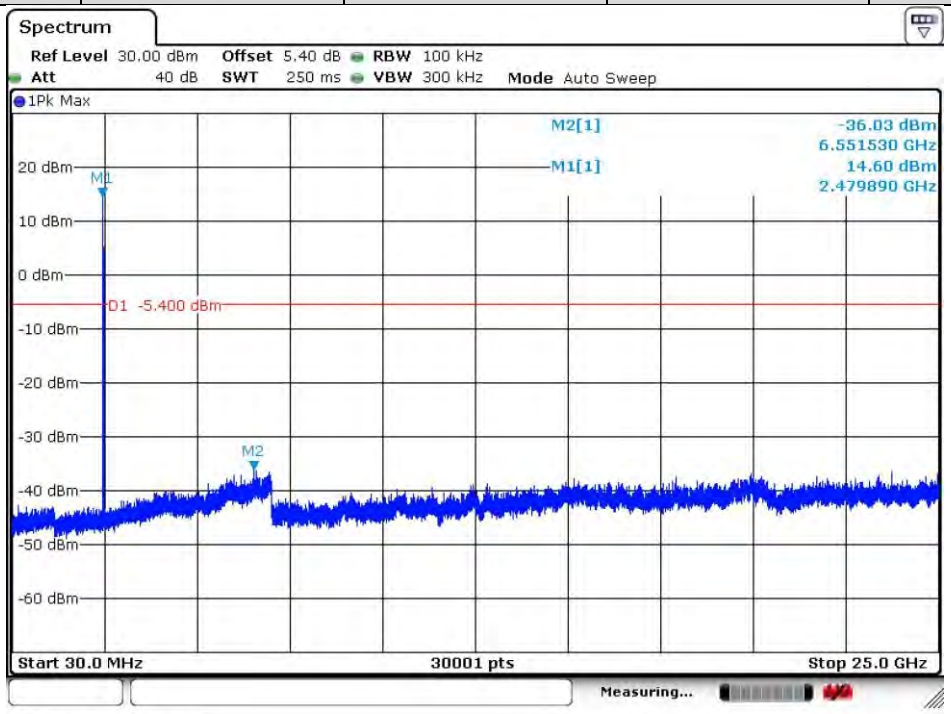


Test mode:	GFSK	Test channel:	Middle	ANT1



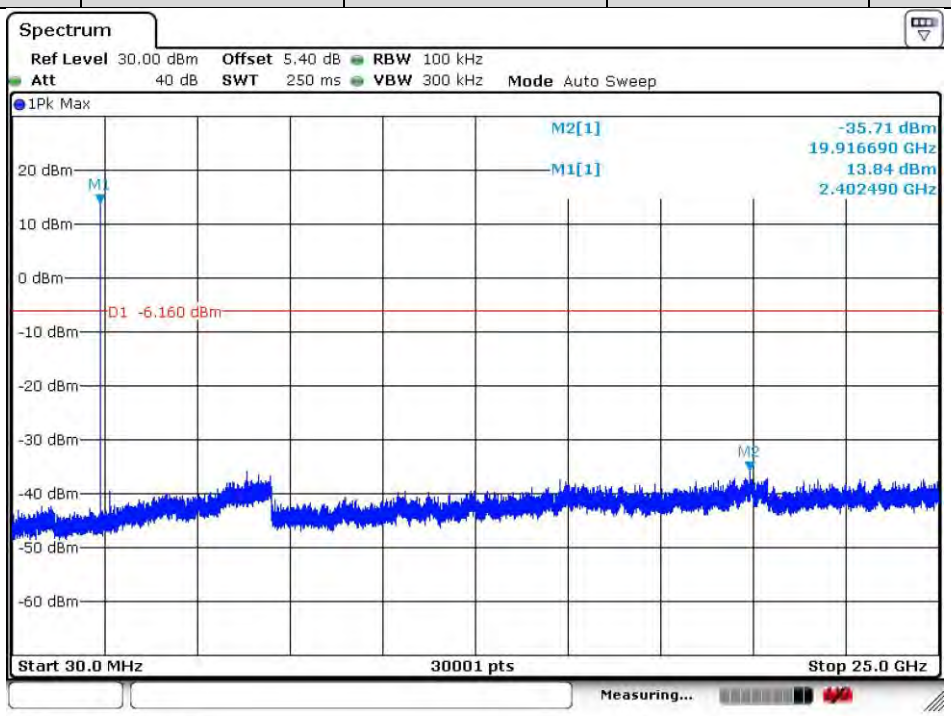
Date: 4.FEB.2021 18:47:06

Test mode:	GFSK	Test channel:	High	ANT1



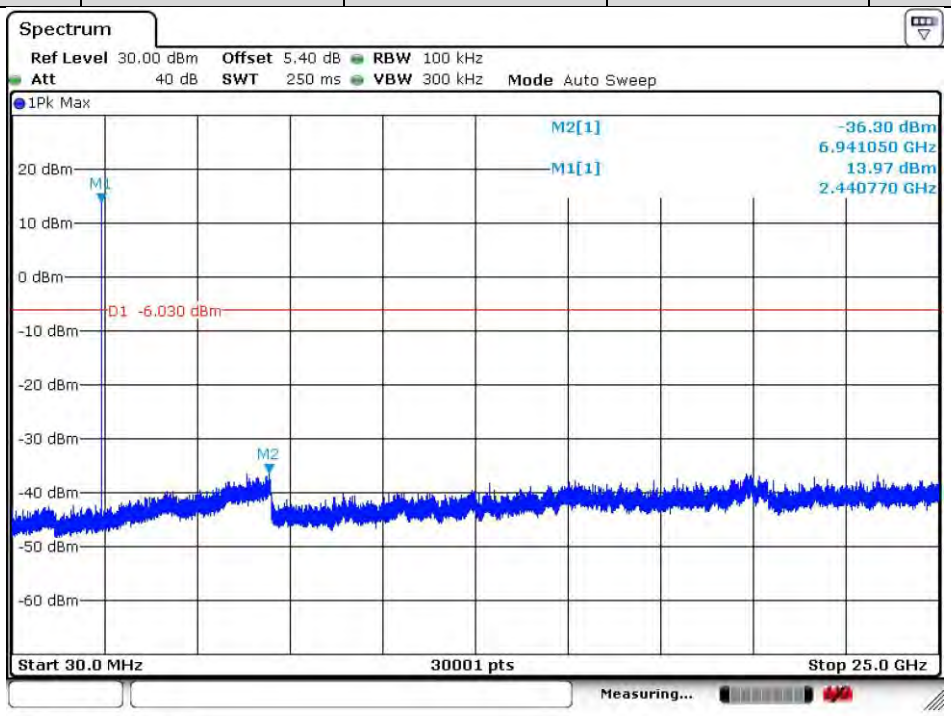
Date: 4.FEB.2021 18:47:43

Test mode:	π/4DQPSK	Test channel:	Lowest	ANT1



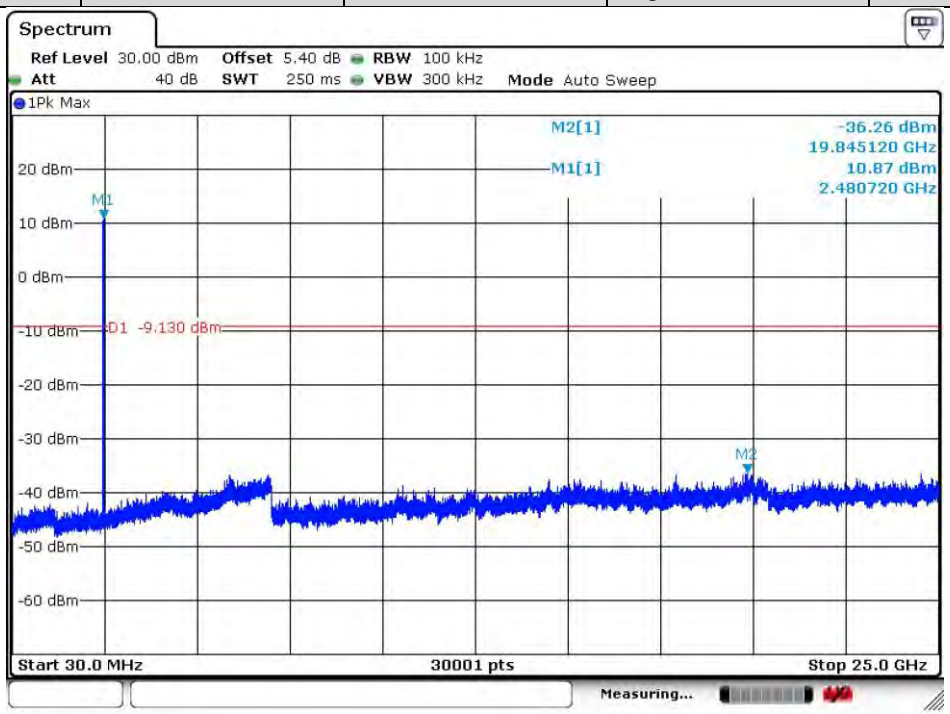
Date: 4.FEB.2021 18:50:23

Test mode:	π/4DQPSK	Test channel:	Middle	ANT1



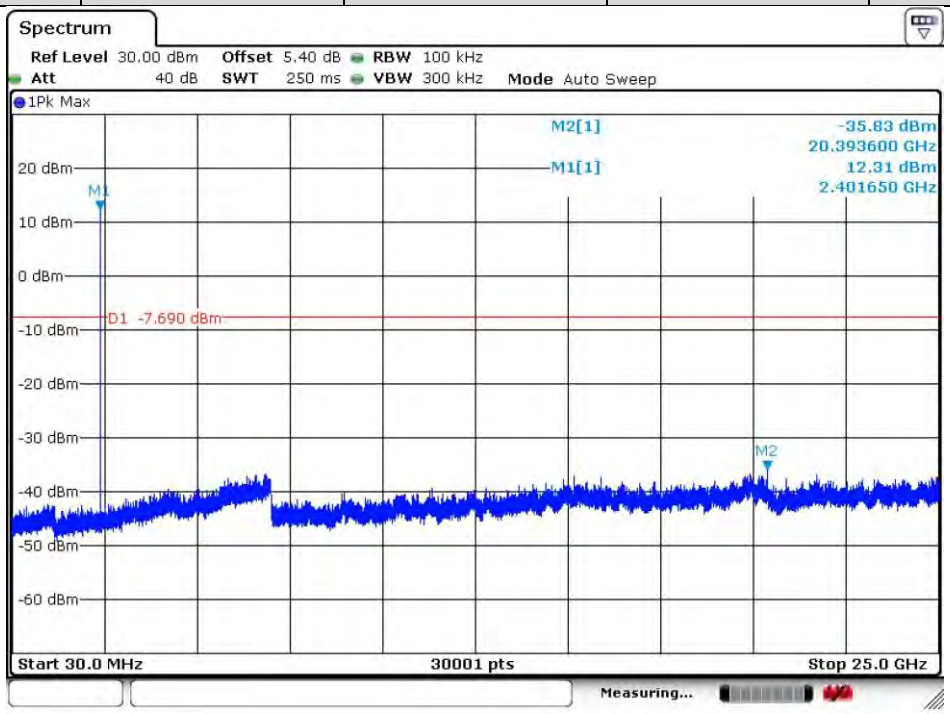
Date: 4.FEB.2021 18:49:39

Test mode:	π/4DQPSK	Test channel:	High	ANT1



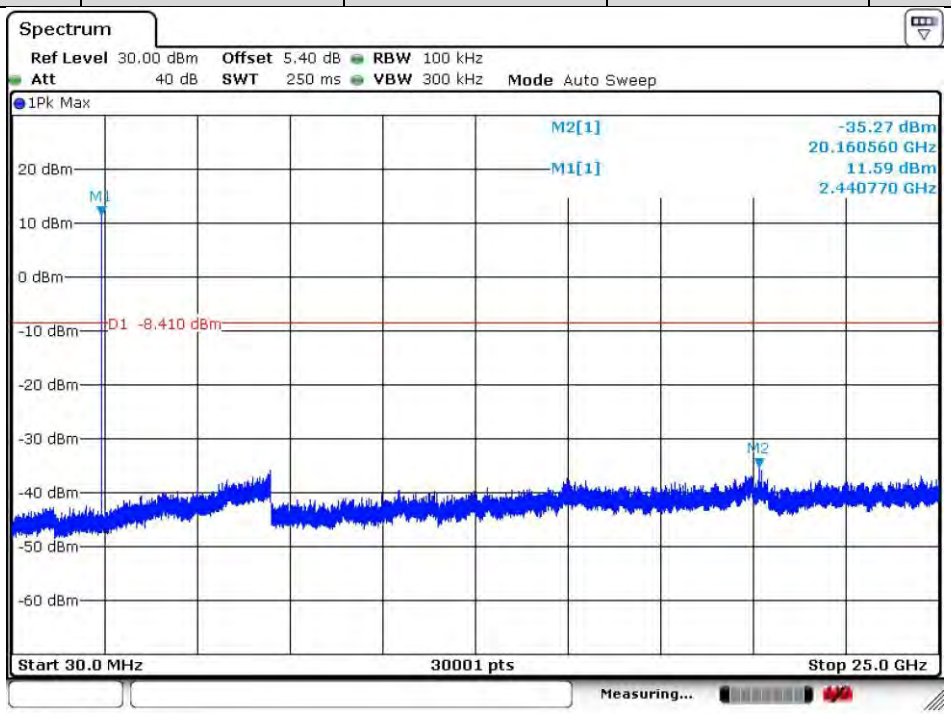
Date: 4.FEB.2021 18:48:44

Test mode:	8DPSK	Test channel:	Lowest	ANT1



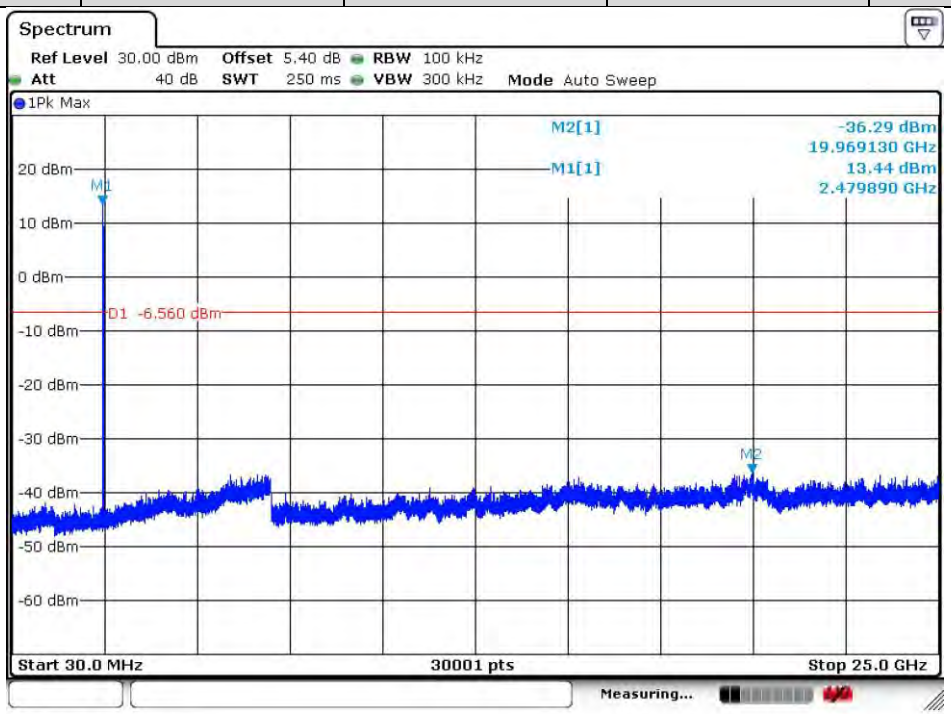
Date: 4.FEB.2021 18:51:03

Test mode:	8DPSK	Test channel:	Middle	ANT1



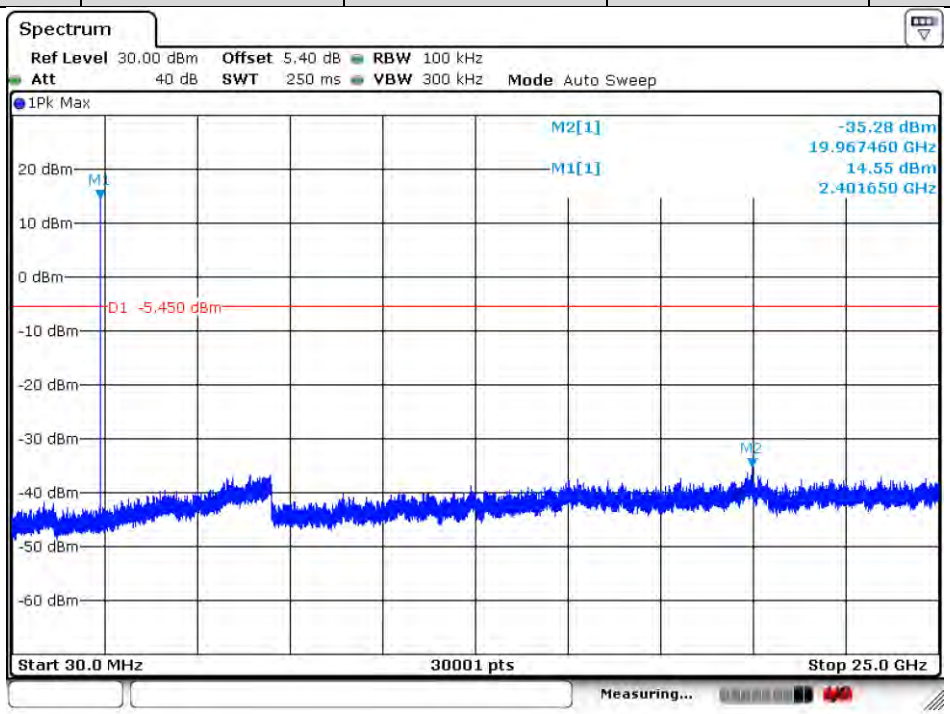
Date: 4.FEB.2021 18:51:45

Test mode:	8DPSK	Test channel:	High	ANT1



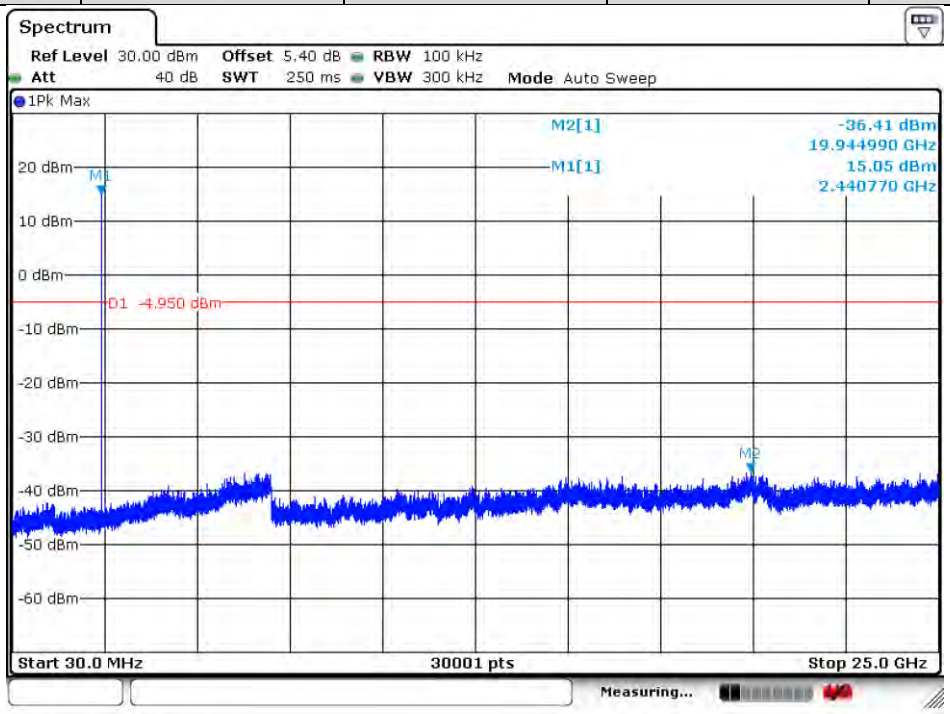
Date: 4.FEB.2021 18:53:36

Test mode:	GFSK	Test channel:	Lowest	ANT2



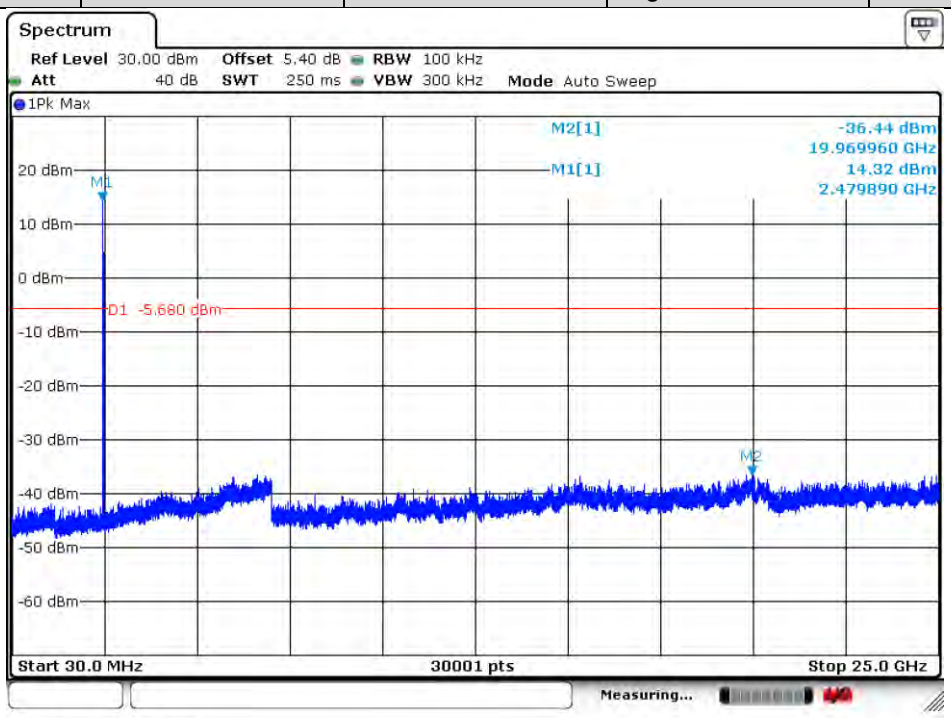
Date: 8.FEB.2021 16:47:16

Test mode:	GFSK	Test channel:	Middle	ANT2



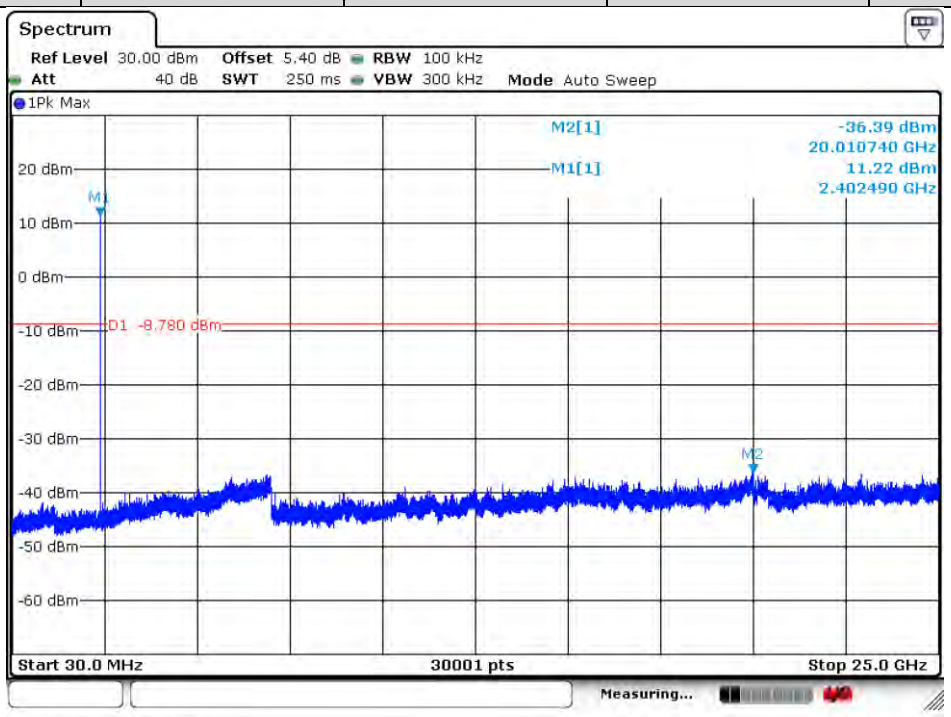
Date: 8.FEB.2021 16:46:34

Test mode:	GFSK	Test channel:	High	ANT2



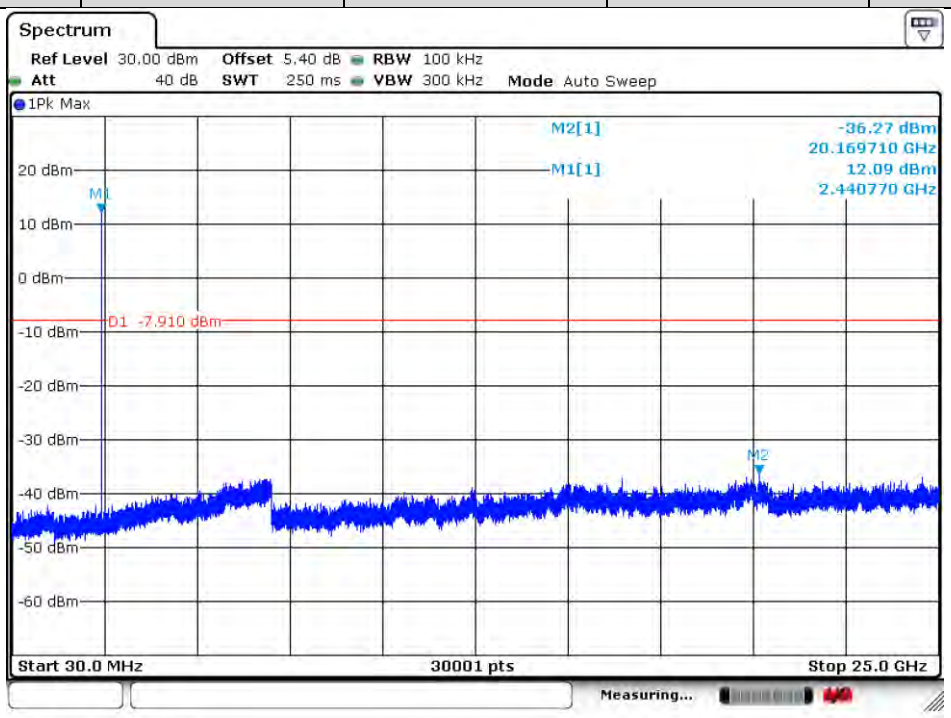
Date: 8.FEB.2021 16:45:53

Test mode:	π/4DQPSK	Test channel:	Lowest	ANT2



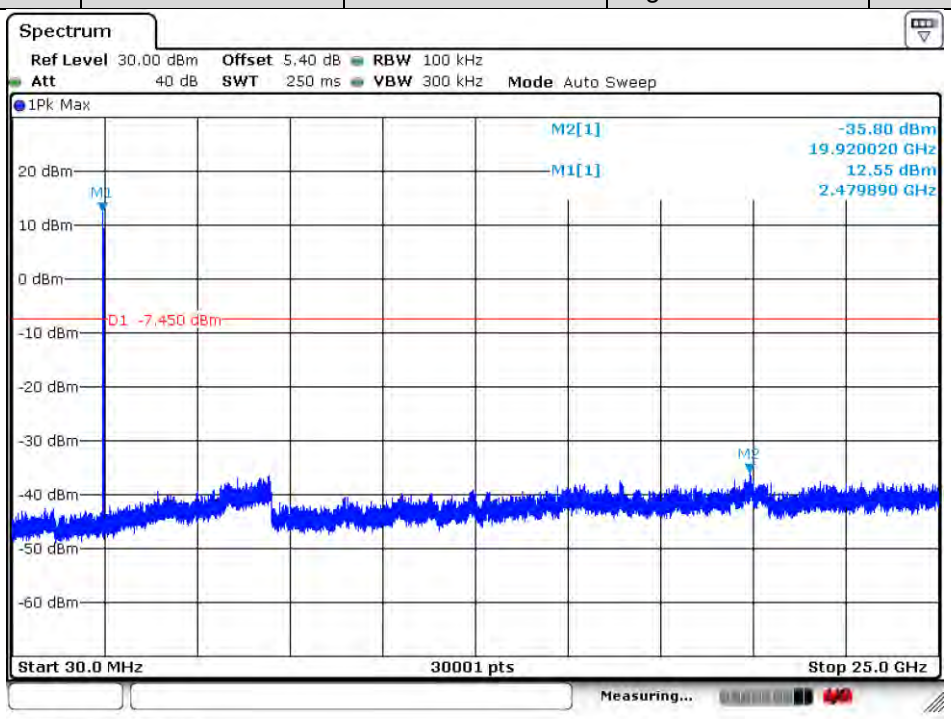
Date: 8.FEB.2021 16:43:55

Test mode:	π/4DQPSK	Test channel:	Middle	ANT2



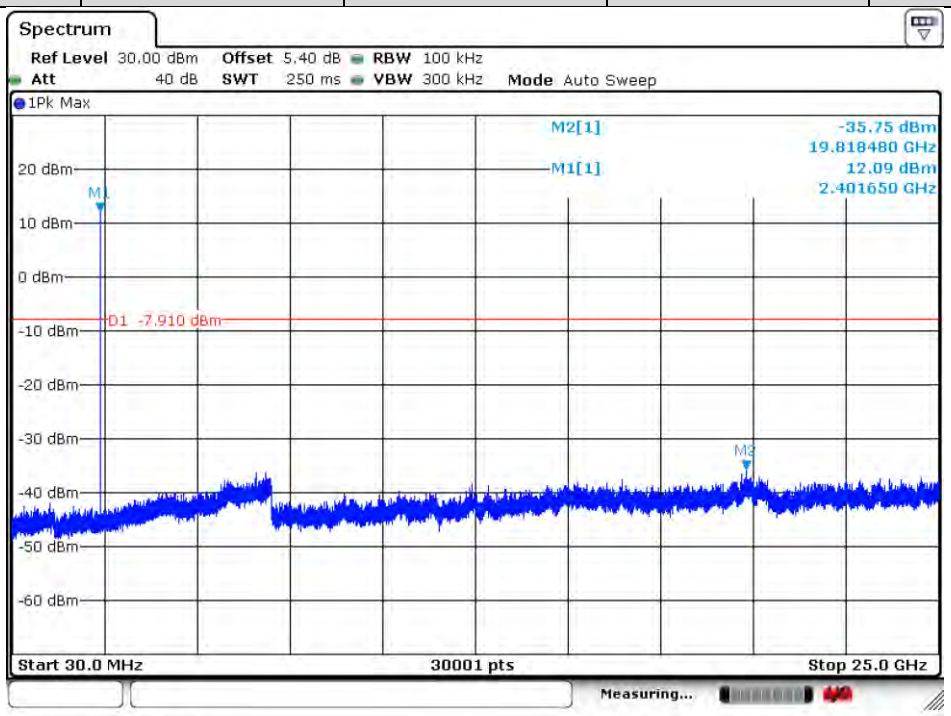
Date: 8.FEB.2021 16:44:29

Test mode:	π/4DQPSK	Test channel:	High	ANT2



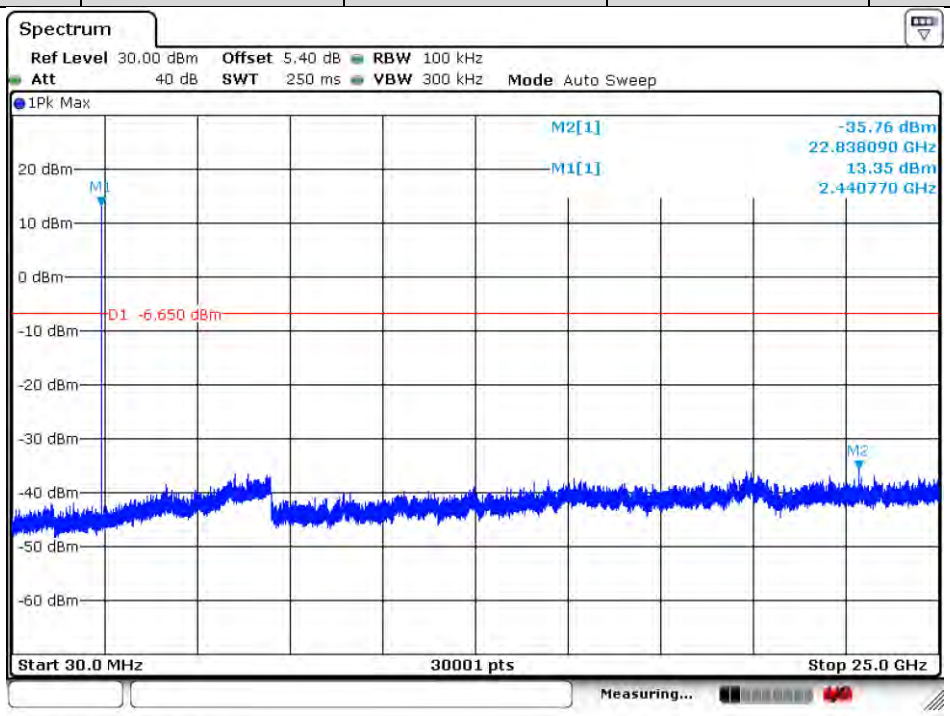
Date: 8.FEB.2021 16:45:00

Test mode:	8DPSK	Test channel:	Lowest	ANT2



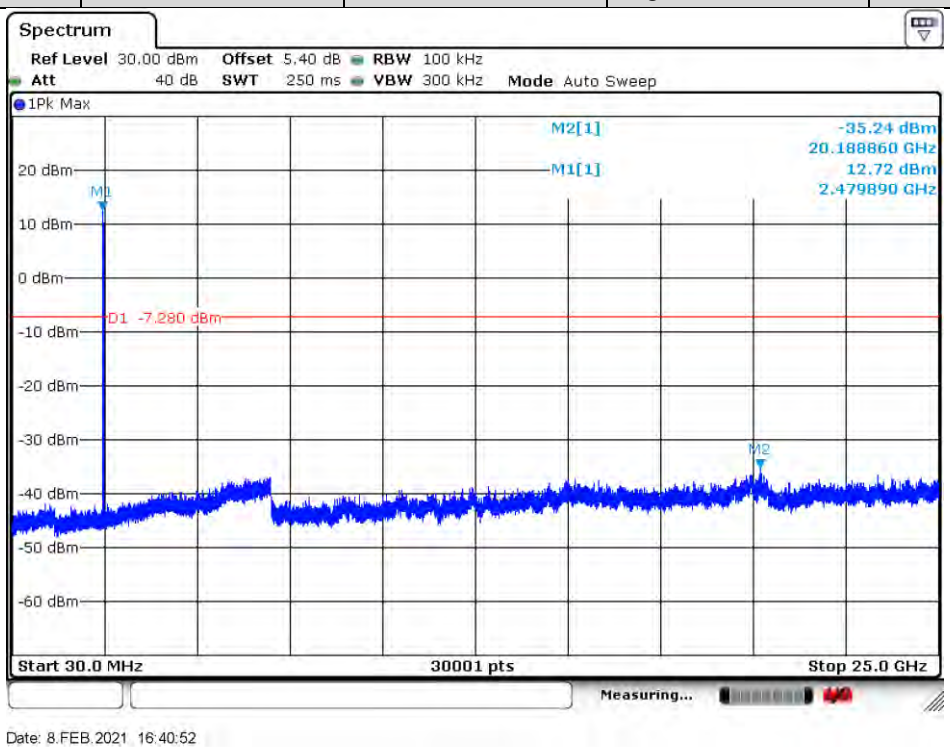
Date: 8.FEB.2021 16:42:30

Test mode:	8DPSK	Test channel:	Middle	ANT2



Date: 8.FEB.2021 16:41:46

Test mode:	8DPSK	Test channel:	High	ANT2



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.

4.11 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:	

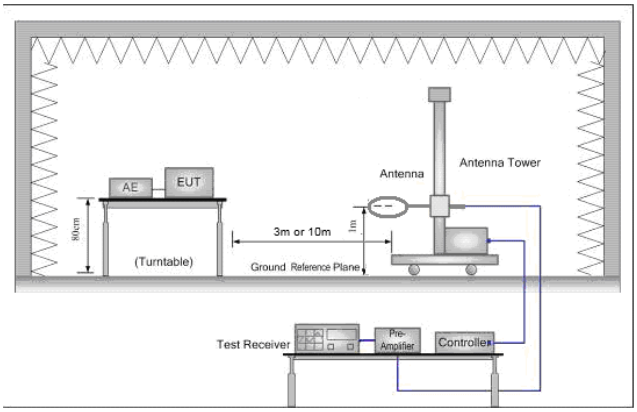


Figure 1. Below 30MHz

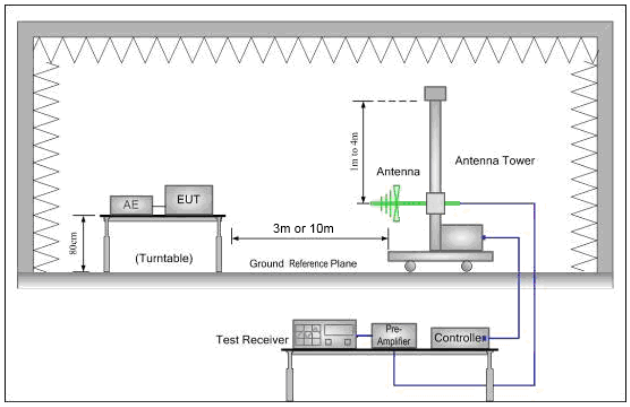


Figure 2. 30MHz to 1GHz

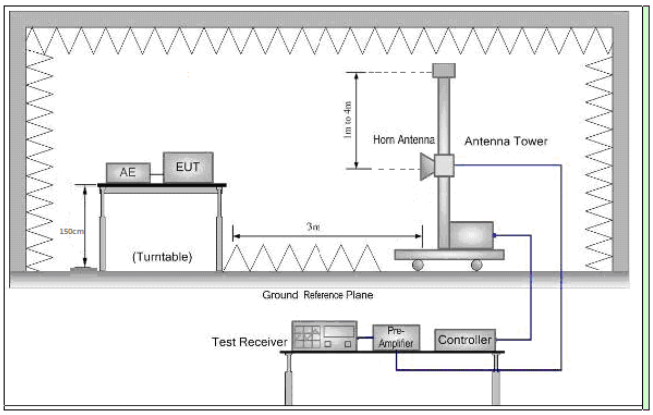


Figure 3. Above 1 GHz

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).

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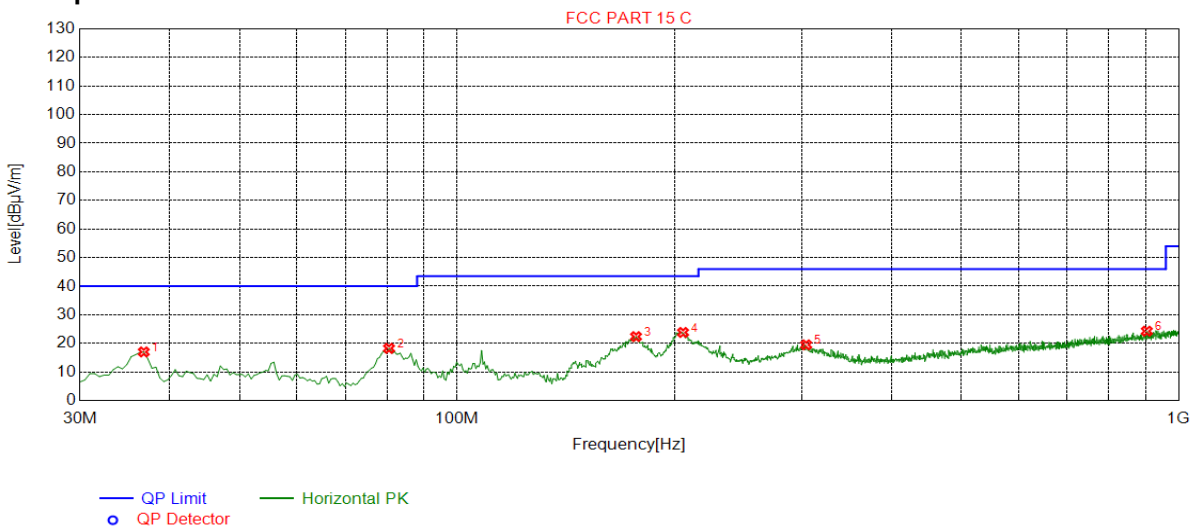
	Duty cycle = On time/100 milliseconds On time = N 1 *L 1 +N 2 *L 2 +...+N n-1 *LN n-1 +N n *L n Where N 1 is number of type 1 pulses, L 1 is length of type 1 pulses, etc. Average Emission Level = Peak Emission Level + 20*log(Duty cycle) f. For each suspected emission, the EUT was arranged to its worst 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:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Charge + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. 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:XAR/2020/C001002

1.1.1 Radiated Emission below 1GHz

1.1.1.1 Charge + Transmitting

Test Graph

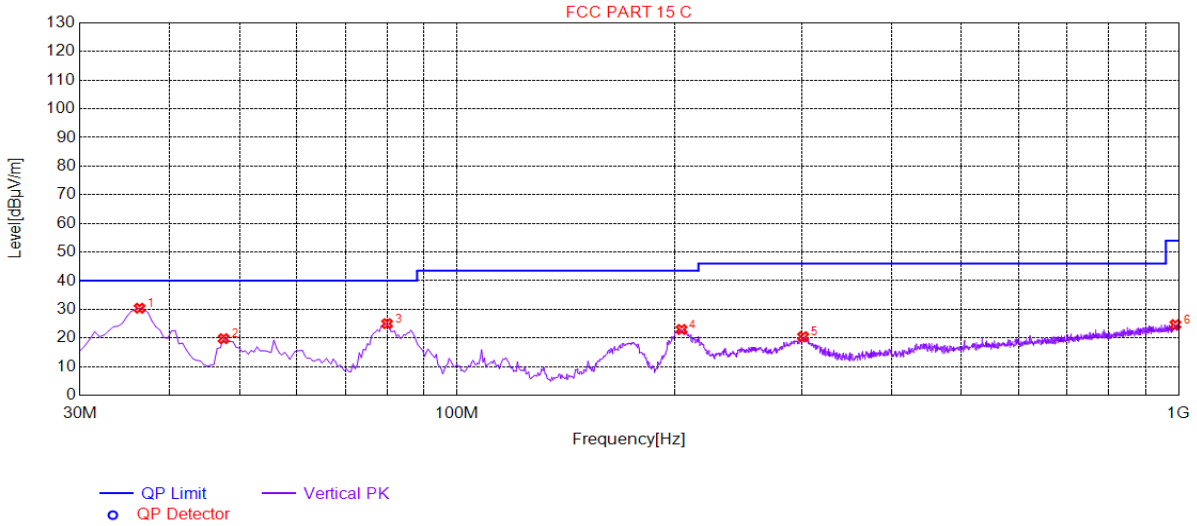


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.7934	17.03	-32.19	40.00	22.97	100	261	Horizontal
2	80.4652	18.28	-35.76	40.00	21.72	200	288	Horizontal
3	177.028	22.38	-33.12	43.50	21.12	200	208	Horizontal
4	205.657	23.84	-30.70	43.50	19.66	100	24	Horizontal
5	304.647	19.51	-27.72	46.00	26.49	200	86	Horizontal
6	903.436	24.30	-15.18	46.00	21.70	100	173	Horizontal

Final Data List

Test Graph



Suspected List

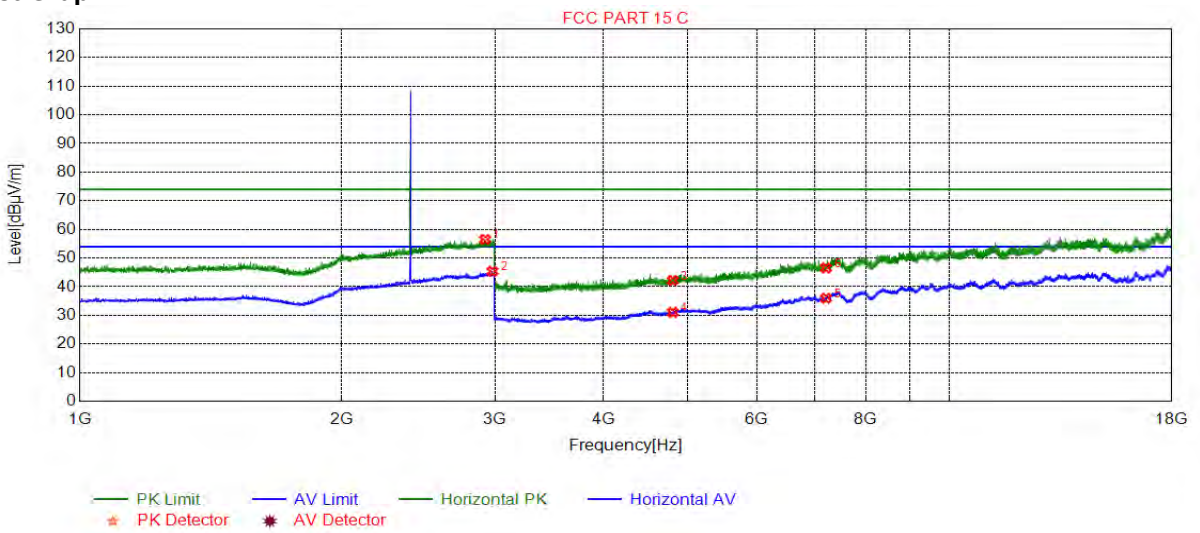
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.3082	30.41	-32.34	40.00	9.59	200	331	Vertical
2	47.4687	19.80	-30.20	40.00	20.20	100	310	Vertical
3	79.9800	25.03	-35.88	40.00	14.97	200	242	Vertical
4	204.687	22.99	-30.72	43.50	20.51	100	316	Vertical
5	301.735	20.48	-27.81	46.00	25.52	100	358	Vertical
6	989.809	24.69	-13.99	54.00	29.31	200	140	Vertical

Final Data List

1.1.2 Transmitter Emission above 1GHz

1.1.2.1 GFSK_Channel 0 ANT 1

Test Graph



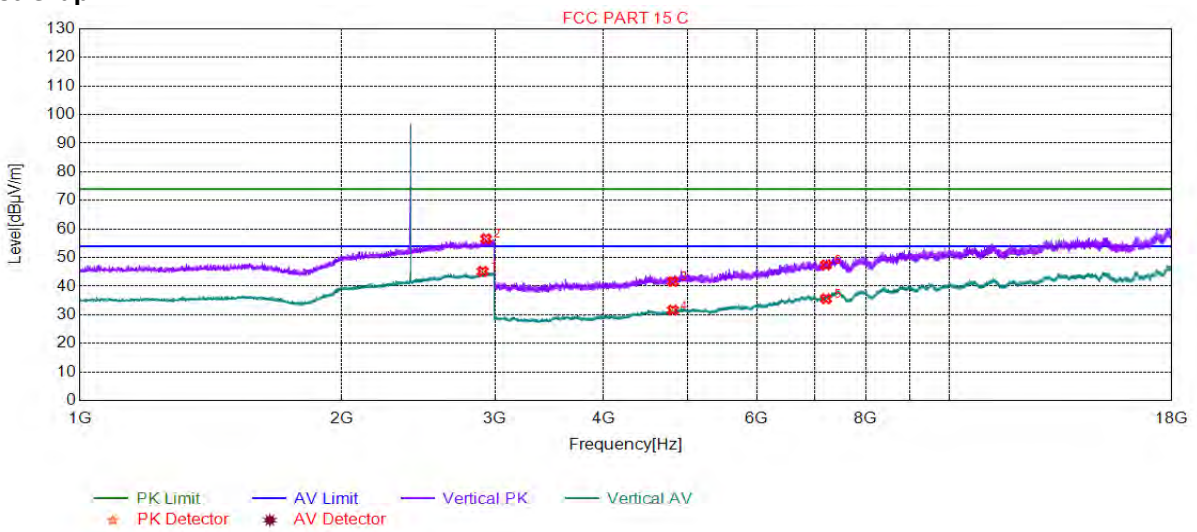
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2922.48	56.52	10.53	74.00	17.48	157	291	Horizontal
2	2981.49	45.37	10.62	54.00	8.63	159	112	Horizontal
3	4804.00	42.20	-17.18	74.00	31.80	162	132	Horizontal
4	4804.00	31.02	-17.18	54.00	22.98	148	47	Horizontal
5	7206.00	36.00	-9.48	54.00	18.00	143	98	Horizontal
6	7206.00	46.55	-9.48	74.00	27.45	152	166	Horizontal

Final Data List

1.1.2.2 GFSK_Channel 0 ANT 1

Test Graph



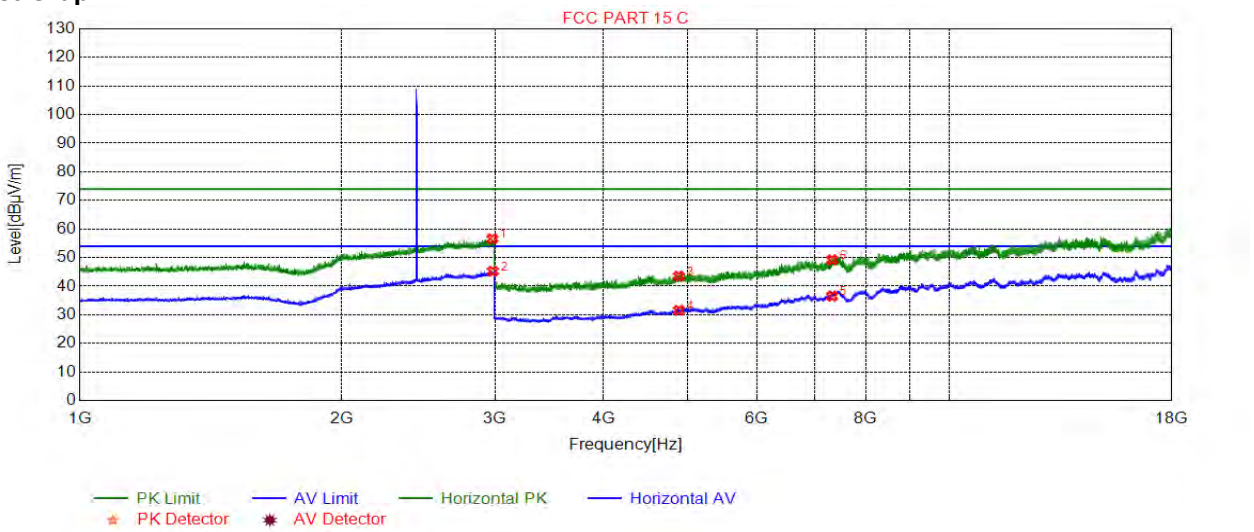
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2903.97	45.18	10.40	54.00	8.82	203	336	Vertical
2	2930.98	56.60	10.70	74.00	17.40	198	118	Vertical
3	4804.00	41.62	-17.18	74.00	32.38	193	110	Vertical
4	4804.00	31.64	-17.18	54.00	22.36	187	59	Vertical
5	7206.00	35.64	-9.48	54.00	18.36	214	143	Vertical
6	7206.00	47.40	-9.48	74.00	26.60	206	42	Vertical

Final Data List

1.1.2.3 GFSK_Channel 39 ANT 1

Test Graph



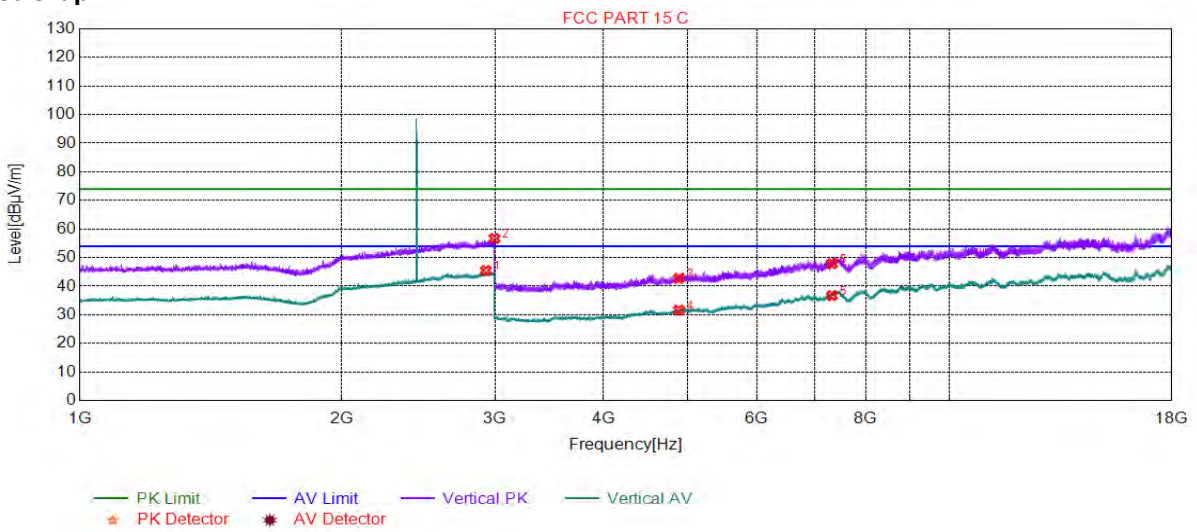
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2980.99	56.57	10.62	74.00	17.43	154	117	Horizontal
2	2984.49	45.26	10.61	54.00	8.74	167	117	Horizontal
3	4882.00	43.53	-16.80	74.00	30.47	152	234	Horizontal
4	4882.00	31.56	-16.80	54.00	22.44	149	200	Horizontal
5	7323.00	36.52	-9.27	54.00	17.48	147	183	Horizontal
6	7323.00	49.23	-9.27	74.00	24.77	156	302	Horizontal

Final Data List

1.1.2.4 GFSK_Channel 39 ANT 1

Test Graph



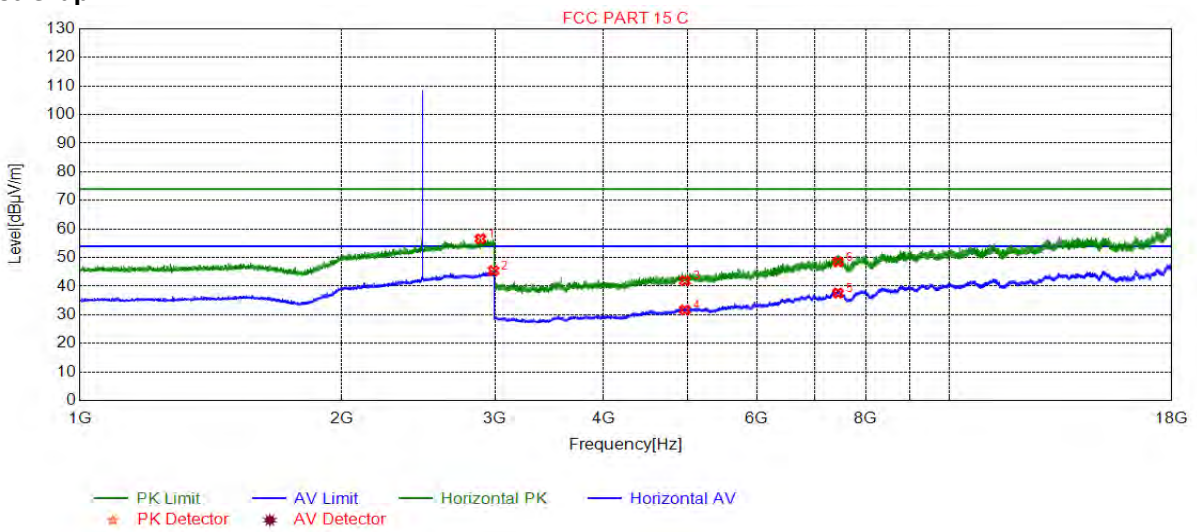
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2929.48	45.48	10.72	54.00	8.52	206	82	Vertical
2	2996.99	56.70	10.73	74.00	17.30	198	176	Vertical
3	4882.00	42.70	-16.80	74.00	31.30	213	58	Vertical
4	4882.00	31.66	-16.80	54.00	22.34	195	330	Vertical
5	7323.00	36.71	-9.27	54.00	17.29	187	194	Vertical
6	7323.00	47.87	-9.27	74.00	26.13	183	313	Vertical

Final Data List

1.1.2.5 GFSK_Channel 78 ANT 1

Test Graph



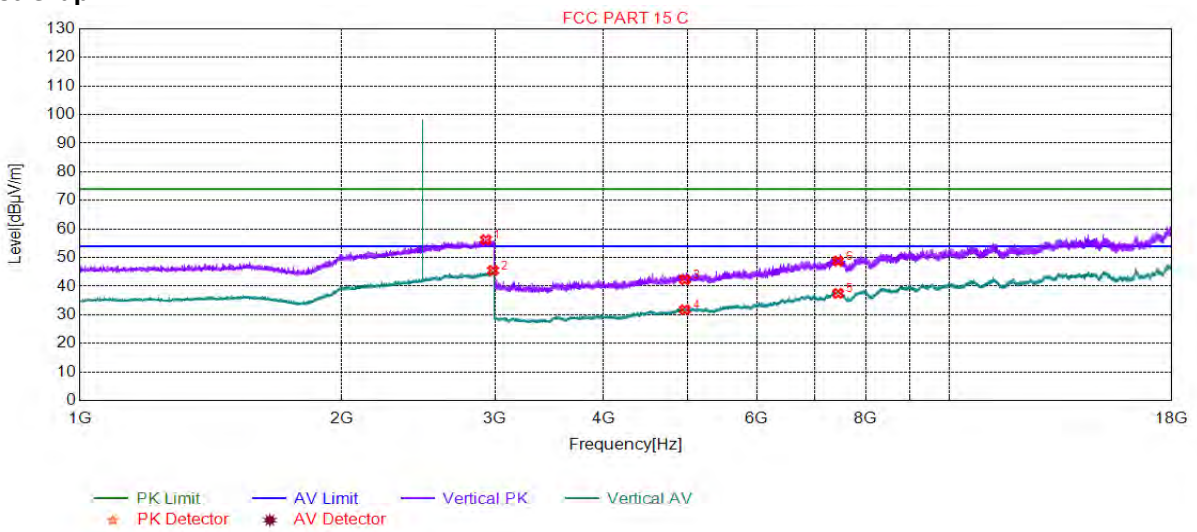
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2887.47	56.59	10.35	74.00	17.41	154	169	Horizontal
2	2989.49	45.43	10.57	54.00	8.57	162	122	Horizontal
3	4960.00	41.88	-16.28	74.00	32.12	159	336	Horizontal
4	4960.00	31.70	-16.28	54.00	22.30	148	318	Horizontal
5	7440.00	37.59	-8.83	54.00	16.41	142	336	Horizontal
6	7440.00	48.54	-8.83	74.00	25.46	151	30	Horizontal

Final Data List

1.1.2.6 GFSK_Channel 78 ANT 1

Test Graph



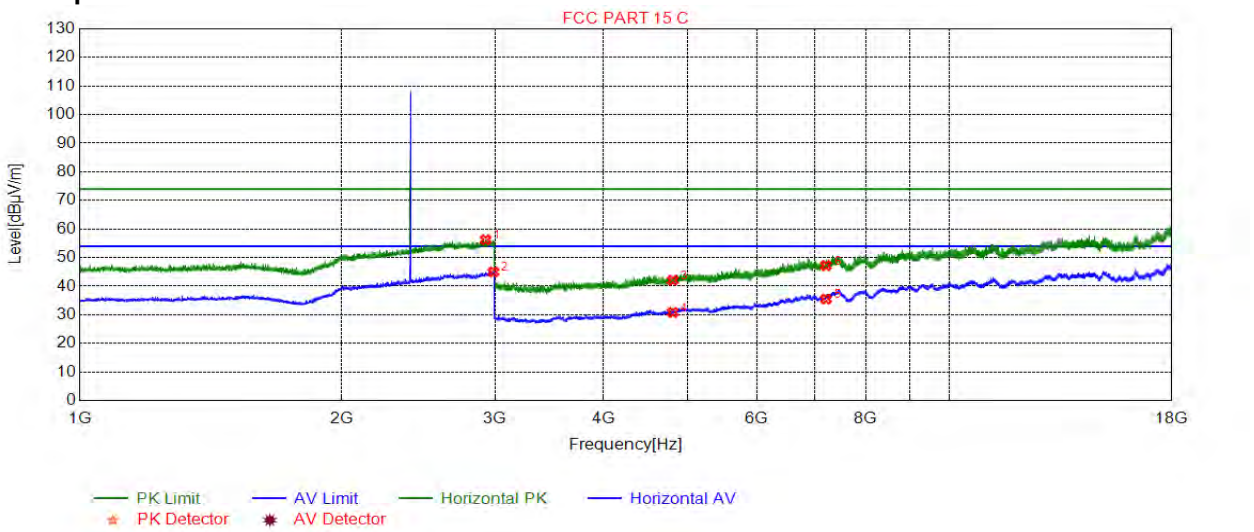
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2929.48	56.27	10.72	74.00	17.73	201	227	Vertical
2	2984.99	45.49	10.60	54.00	8.51	221	258	Vertical
3	4960.00	42.28	-16.28	74.00	31.72	198	24	Vertical
4	4960.00	31.76	-16.28	54.00	22.24	187	160	Vertical
5	7440.00	37.47	-8.83	54.00	16.53	192	92	Vertical
6	7440.00	48.80	-8.83	74.00	25.20	185	279	Vertical

Final Data List

1.1.2.7 GFSK_Channel 0 ANT 2

Test Graph



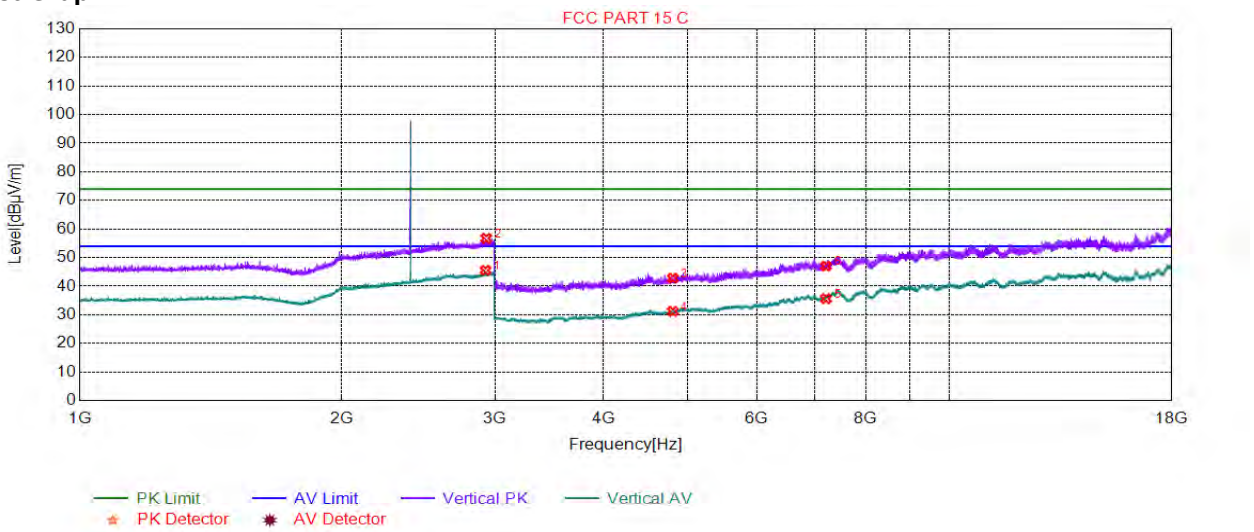
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2927.98	56.24	10.70	74.00	17.76	161	19	Horizontal
2	2988.49	45.00	10.58	54.00	9.00	159	329	Horizontal
3	4804.00	42.08	-17.18	74.00	31.92	163	132	Horizontal
4	4804.00	30.85	-17.18	54.00	23.15	168	30	Horizontal
5	7206.00	35.50	-9.48	54.00	18.50	149	183	Horizontal
6	7206.00	47.23	-9.48	74.00	26.77	142	318	Horizontal

Final Data List

1.1.2.8 GFSK_Channel 0 ANT 2

Test Graph



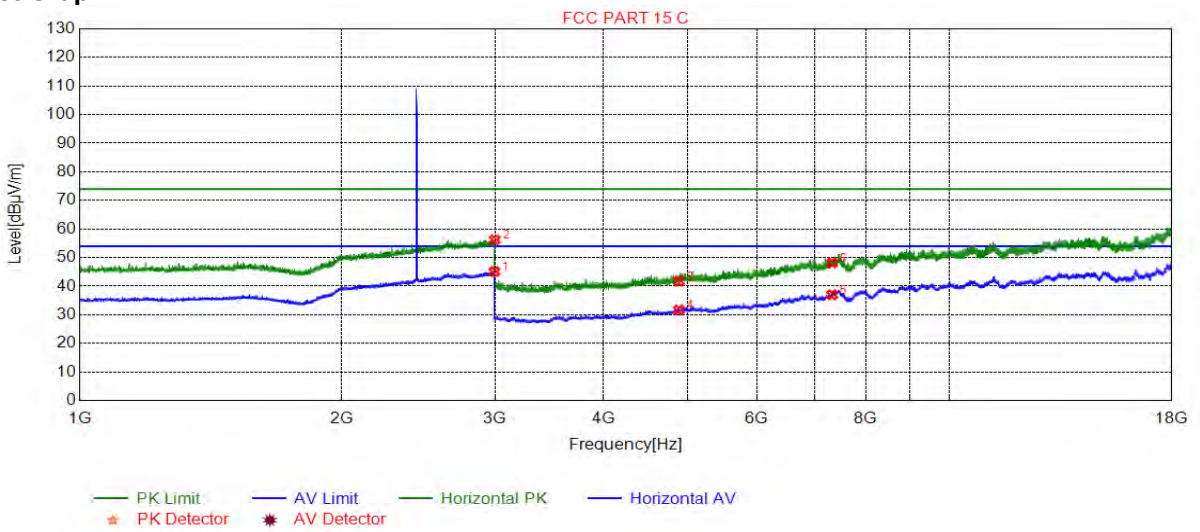
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2926.98	45.54	10.68	54.00	8.46	211	346	Vertical
2	2931.98	56.75	10.68	74.00	17.25	206	212	Vertical
3	4804.00	42.81	-17.18	74.00	31.19	198	245	Vertical
4	4804.00	31.21	-17.18	54.00	22.79	194	143	Vertical
5	7206.00	35.68	-9.48	54.00	18.32	187	346	Vertical
6	7206.00	47.04	-9.48	74.00	26.96	193	245	Vertical

Final Data List

1.1.2.9 GFSK_Channel 39 ANT 2

Test Graph



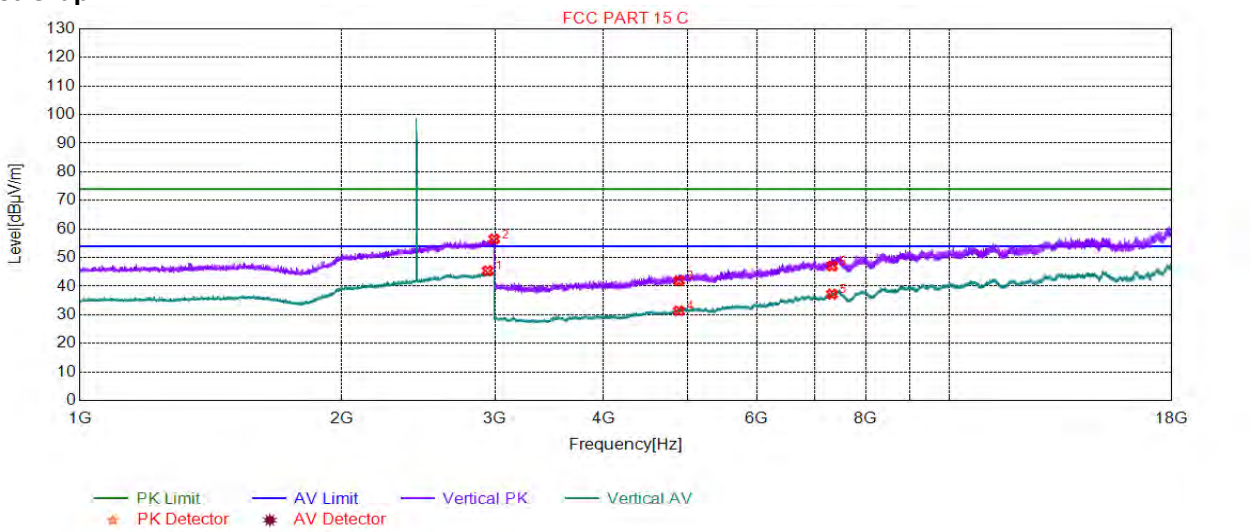
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2995.49	45.11	10.70	54.00	8.89	157	137	Horizontal
2	2998.99	56.23	10.76	74.00	17.77	159	336	Horizontal
3	4882.00	41.75	-16.80	74.00	32.25	151	98	Horizontal
4	4882.00	31.68	-16.80	54.00	22.32	149	301	Horizontal
5	7323.00	36.99	-9.27	54.00	17.01	147	318	Horizontal
6	7323.00	48.16	-9.27	74.00	25.84	162	352	Horizontal

Final Data List

1.1.2.10 GFSK_Channel 39 ANT 2

Test Graph



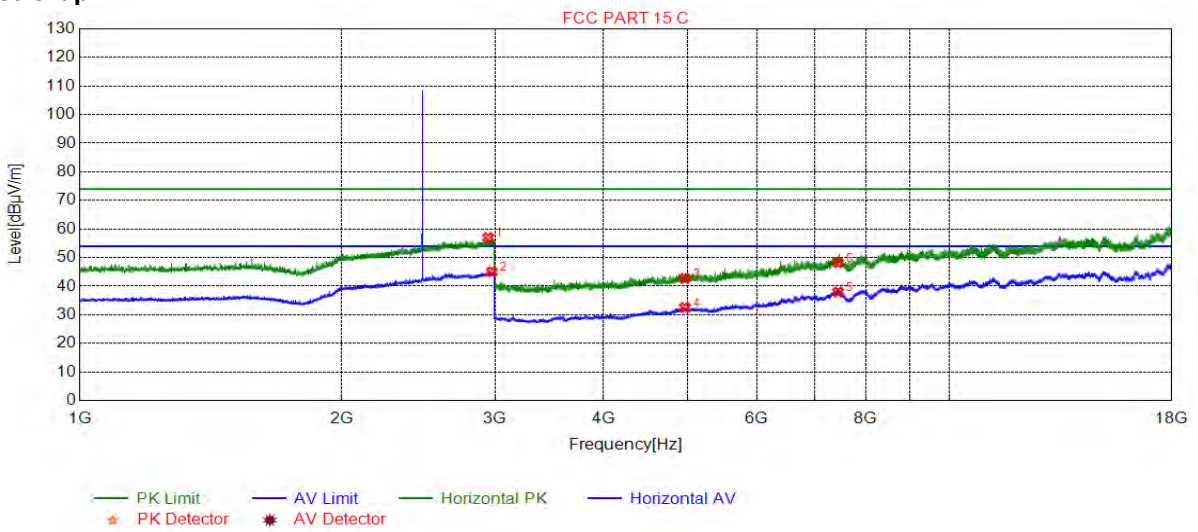
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2942.48	45.42	10.57	54.00	8.58	213	59	Vertical
2	2994.49	56.47	10.68	74.00	17.53	228	85	Vertical
3	4882.00	41.90	-16.80	74.00	32.10	195	194	Vertical
4	4882.00	31.39	-16.80	54.00	22.61	192	313	Vertical
5	7323.00	37.22	-9.27	54.00	16.78	185	296	Vertical
6	7323.00	47.00	-9.27	74.00	27.00	189	211	Vertical

Final Data List

1.1.2.11 GFSK_Channel 78 ANT 2

Test Graph



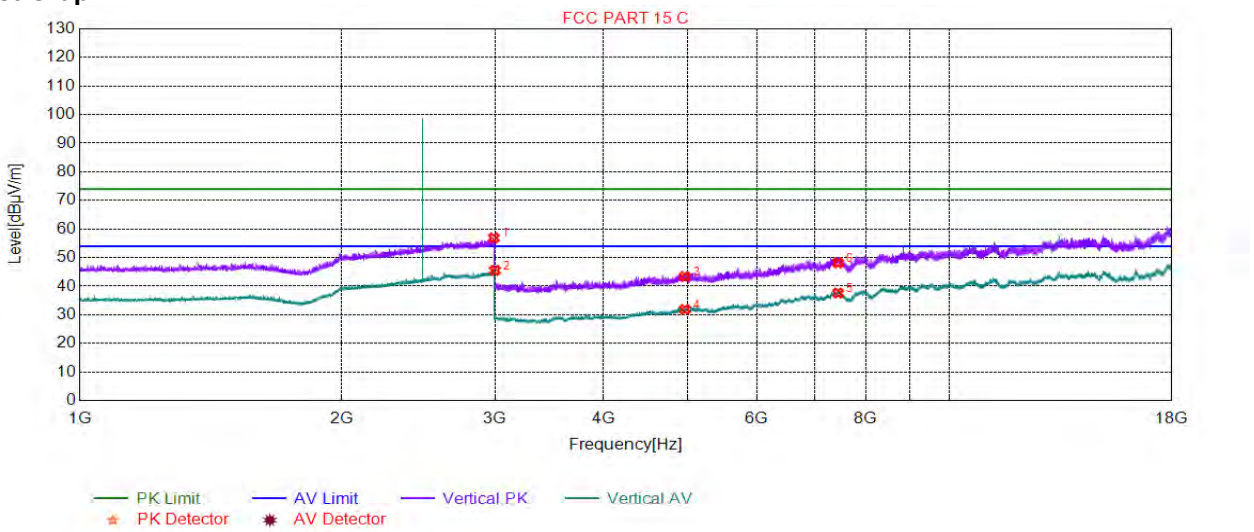
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2947.48	56.98	10.65	74.00	17.02	146	148	Horizontal
2	2975.49	45.06	10.56	54.00	8.94	142	350	Horizontal
3	4960.00	42.74	-16.28	74.00	31.26	162	285	Horizontal
4	4960.00	32.55	-16.28	54.00	21.45	157	30	Horizontal
5	7440.00	37.98	-8.83	54.00	16.02	152	285	Horizontal
6	7440.00	48.25	-8.83	74.00	25.75	159	98	Horizontal

Final Data List

1.1.2.12 GFSK_Channel 78 ANT 2

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2991.49	56.90	10.61	74.00	17.10	201	346	Vertical
2	3000.00	45.55	10.78	54.00	8.45	214	305	Vertical
3	4960.00	43.40	-16.28	74.00	30.60	206	76	Vertical
4	4960.00	31.86	-16.28	54.00	22.14	195	329	Vertical
5	7440.00	37.60	-8.83	54.00	16.40	187	313	Vertical
6	7440.00	48.15	-8.83	74.00	25.85	193	127	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 and 18GHz to 25GHz 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.

4.12Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205		
Test Method:	ANSI C63.10: 2013		
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:			

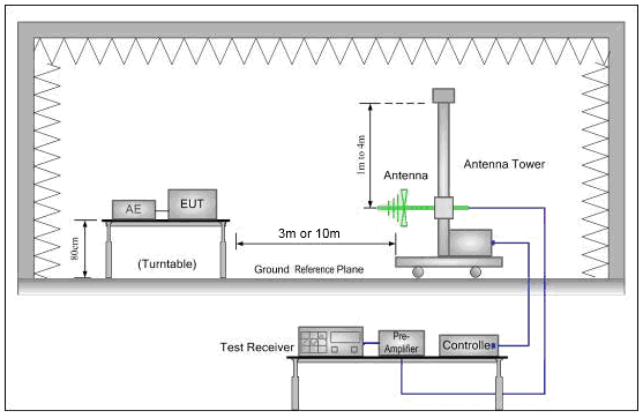


Figure 1. 30MHz to 1GHz

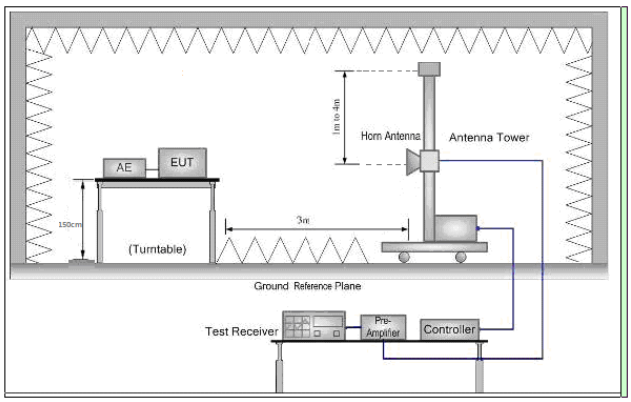


Figure 2. Above 1 GHz

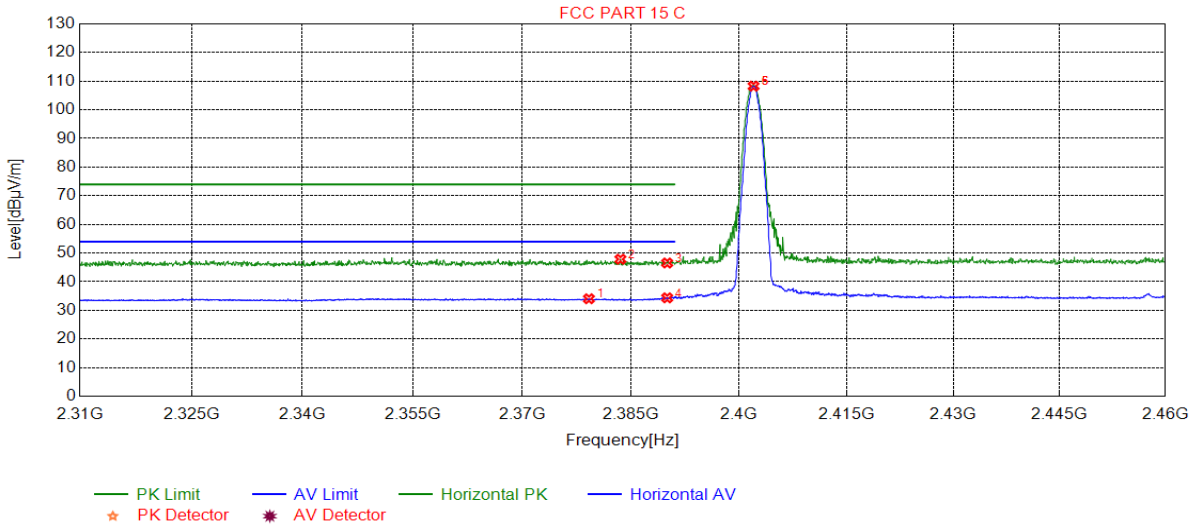
Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating 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:	Non-hopping transmitting mode with all kind of modulation and all kind of data type Charge + Transmitting mode.
Final Test Mode:	Through Pre-scan, find the DH5 of data type and GFSK modulation is the worst case. 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:XAR/2020/C001002

4.12.1 Test Plots

1.1.2.13 Worst Case Mode (GFSK(DH5))

1.1.2.14 GFSK_Channel 0 ANT 1

Test Graph



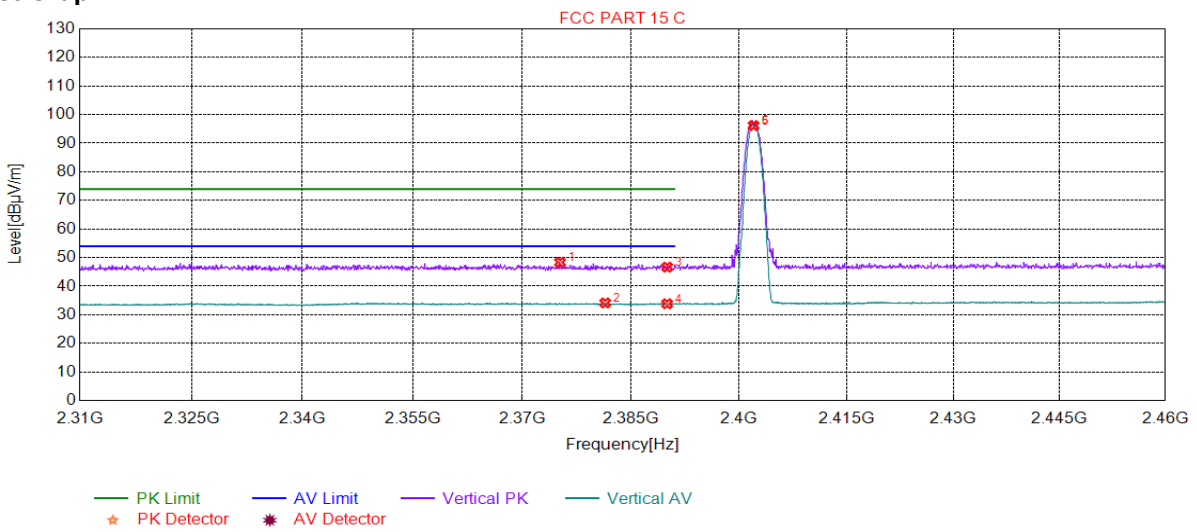
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2379.18	34.07	7.99	54.00	19.93	157	317	Horizontal
2	2383.53	47.86	7.88	74.00	26.14	165	173	Horizontal
3	2390.00	46.54	7.98	74.00	27.46	148	328	Horizontal
4	2390.00	34.38	7.98	54.00	19.62	156	260	Horizontal
5	2402.00	108.27	8.06	0.00	-108.27	159	211	Horizontal
6	2402.00	108.44	8.06	0.00	-108.44	161	211	Horizontal

Final Data List

1.1.2.15 GFSK_Channel 0 ANT 1

Test Graph



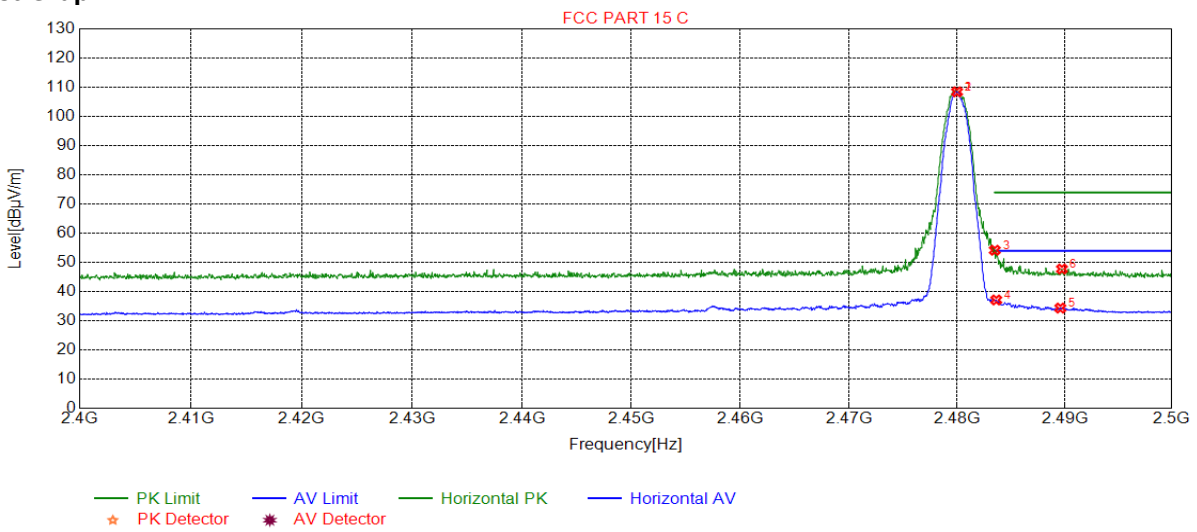
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2375.20	48.36	7.94	74.00	25.64	201	316	Vertical
2	2381.43	34.16	7.95	54.00	19.84	211	136	Vertical
3	2390.00	46.69	7.98	74.00	27.31	195	189	Vertical
4	2390.00	33.87	7.98	54.00	20.13	189	346	Vertical
5	2402.00	96.18	8.06	0.00	-96.18	206	147	Vertical
6	2402.00	96.30	8.06	0.00	-96.30	206	147	Vertical

Final Data List

1.1.2.16 GFSK_Channel 78 ANT 1

Test Graph



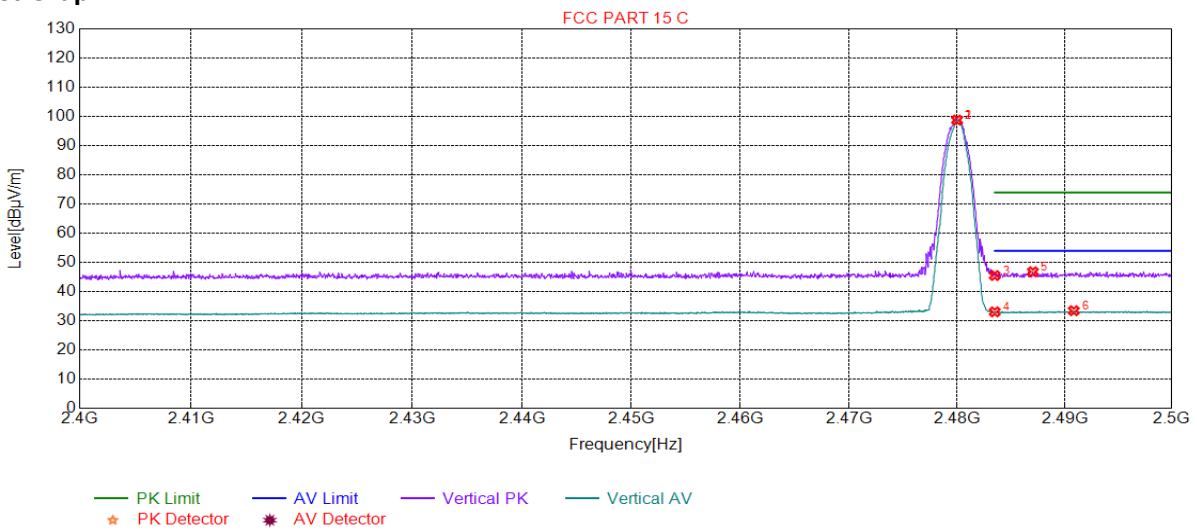
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	108.42	8.54	0.00	-108.42	143	214	Horizontal
2	2480.00	108.34	8.54	0.00	-108.34	149	210	Horizontal
3	2483.50	54.20	8.50	74.00	19.80	154	198	Horizontal
4	2483.64	37.18	8.50	54.00	16.82	159	210	Horizontal
5	2489.59	34.40	8.61	54.00	19.60	162	210	Horizontal
6	2489.74	47.77	8.62	74.00	26.23	169	210	Horizontal

Final Data List

1.1.2.17 GFSK_Channel 78 ANT 1

Test Graph



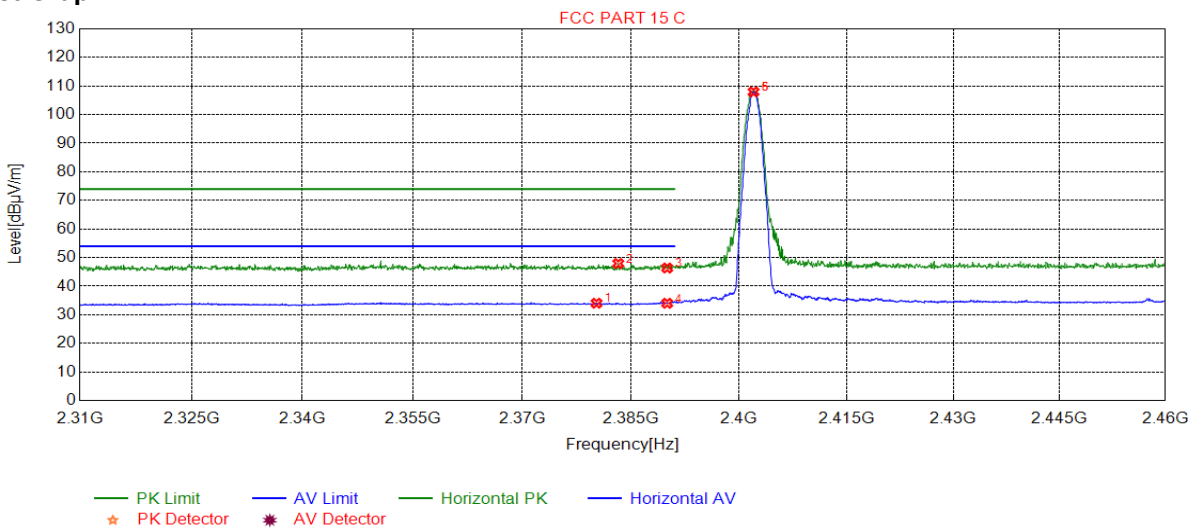
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	98.76	8.54	0.00	-98.76	198	168	Vertical
2	2480.00	98.70	8.54	0.00	-98.70	197	168	Vertical
3	2483.50	45.53	8.50	74.00	28.47	185	160	Vertical
4	2483.50	33.11	8.50	54.00	20.89	201	175	Vertical
5	2487.04	46.83	8.54	74.00	27.17	216	12	Vertical
6	2490.84	33.49	8.62	54.00	20.51	206	5	Vertical

Final Data List

1.1.2.18 GFSK_Channel 0 ANT 2

Test Graph



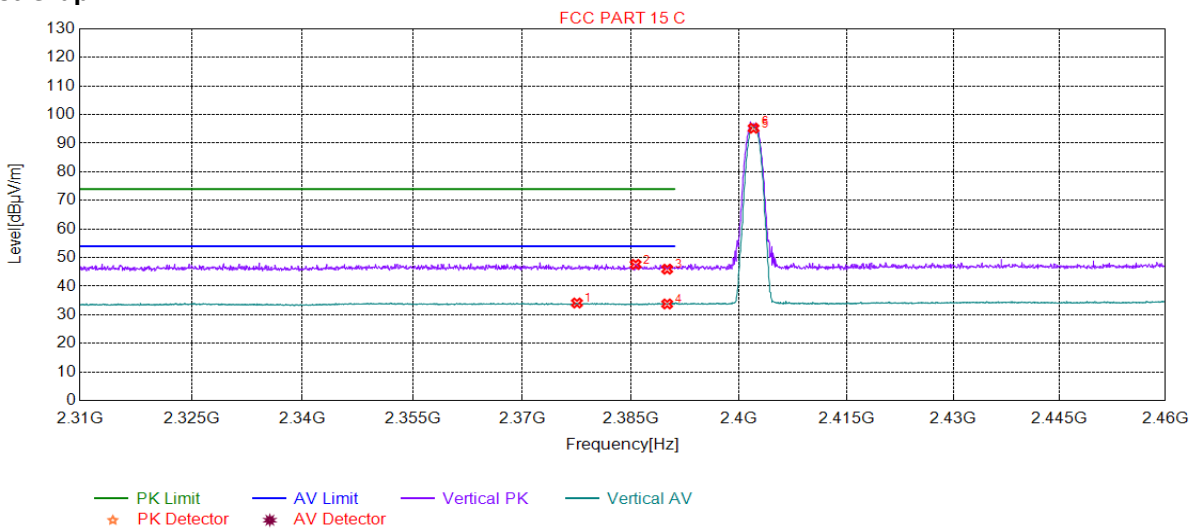
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2380.23	34.07	7.99	54.00	19.93	149	59	Horizontal
2	2383.23	47.94	7.89	74.00	26.06	157	356	Horizontal
3	2390.00	46.37	7.98	74.00	27.63	152	245	Horizontal
4	2390.00	34.04	7.98	54.00	19.96	142	310	Horizontal
5	2402.00	107.96	8.06	0.00	-107.96	162	211	Horizontal
6	2402.00	108.12	8.06	0.00	-108.12	168	211	Horizontal

Final Data List

1.1.2.19 GFSK_Channel 0 ANT 2

Test Graph



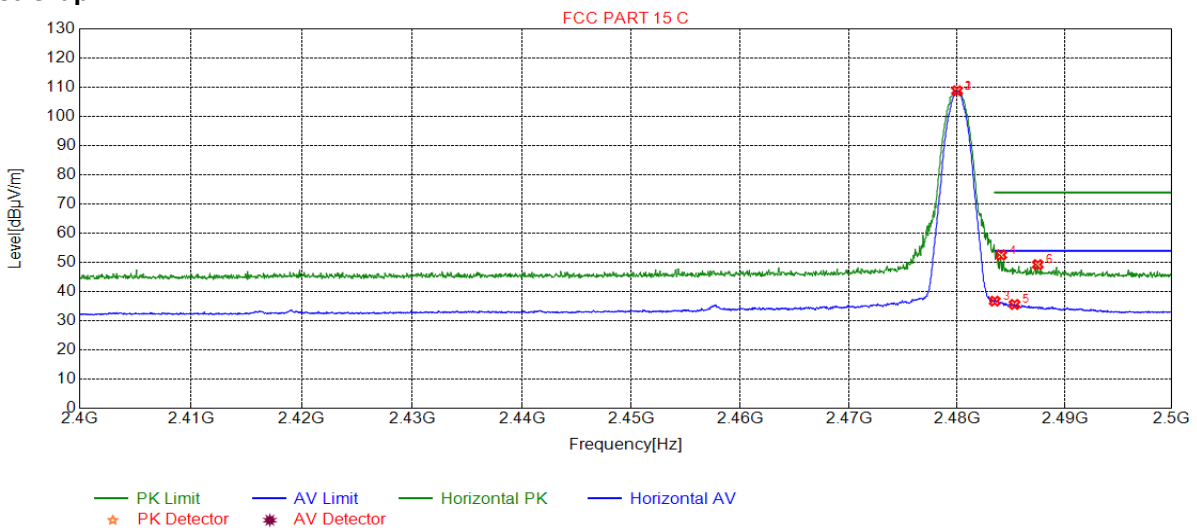
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2377.53	34.13	7.97	54.00	19.87	197	52	Vertical
2	2385.63	47.65	7.85	74.00	26.35	192	294	Vertical
3	2390.00	45.96	7.98	74.00	28.04	187	59	Vertical
4	2390.00	33.81	7.98	54.00	20.19	205	302	Vertical
5	2402.00	95.24	8.06	0.00	-95.24	206	290	Vertical
6	2402.00	95.99	8.06	0.00	-95.99	209	154	Vertical

Final Data List

1.1.2.20 GFSK_Channel 78 ANT 2

Test Graph



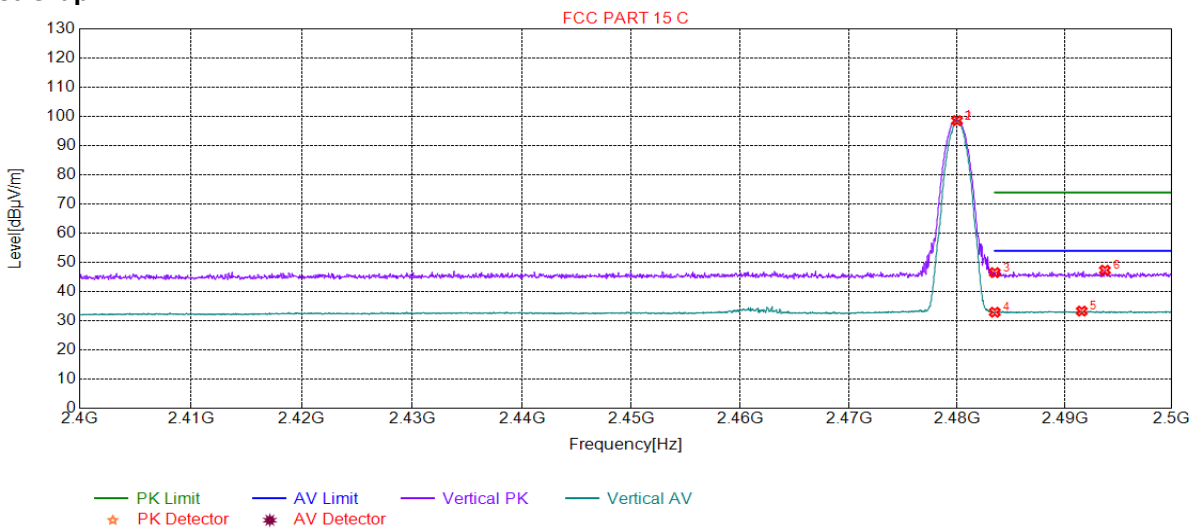
Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	108.80	8.54	0.00	-108.80	153	210	Horizontal
2	2480.00	108.67	8.54	0.00	-108.67	148	206	Horizontal
3	2483.50	36.78	8.50	54.00	17.22	159	213	Horizontal
4	2484.09	52.57	8.50	74.00	21.43	149	210	Horizontal
5	2485.34	35.65	8.50	54.00	18.35	142	206	Horizontal
6	2487.49	49.29	8.56	74.00	24.71	167	210	Horizontal

Final Data List

1.1.2.21 GFSK_Channel 78 ANT 2

Test Graph



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	98.58	8.54	0.00	-98.58	201	164	Vertical
2	2480.00	98.48	8.54	0.00	-98.48	216	168	Vertical
3	2483.50	46.54	8.50	74.00	27.46	198	164	Vertical
4	2483.50	32.98	8.50	54.00	21.02	186	138	Vertical
5	2491.59	33.37	8.61	54.00	20.63	192	335	Vertical
6	2493.74	47.37	8.60	74.00	26.63	208	13	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 Technologie 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

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
中国·深圳·科技园中区M-10栋一号厂房 邮编: 518057 t (86-755) 26012053 f (86-755) 26710594 sgs.china@sgs.com

7 Photographs - EUT Constructional Details

Refer to DSS Setup Photos.

The End