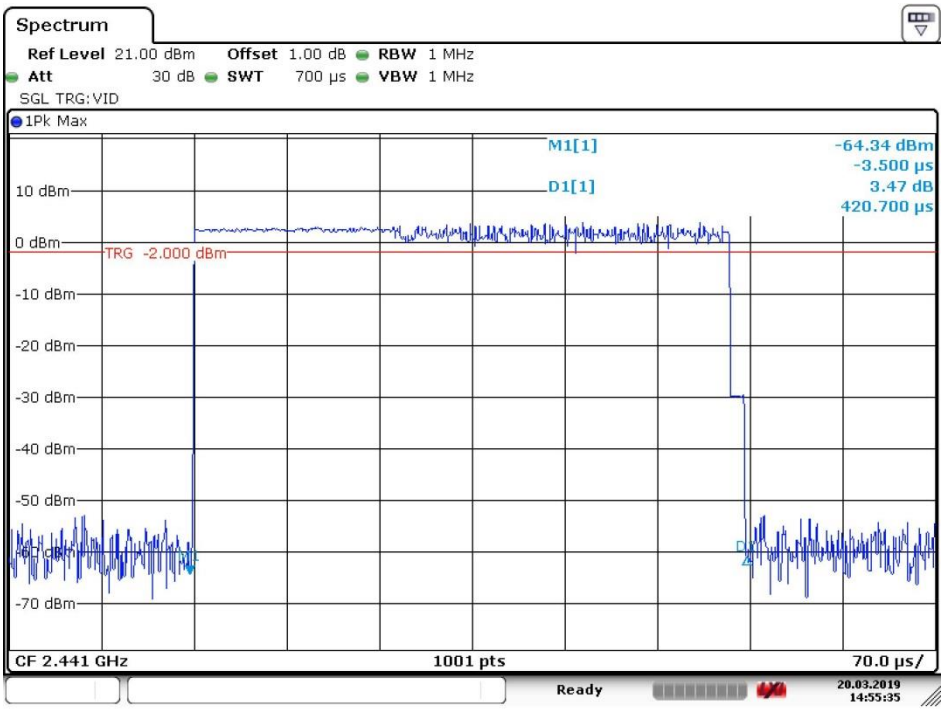
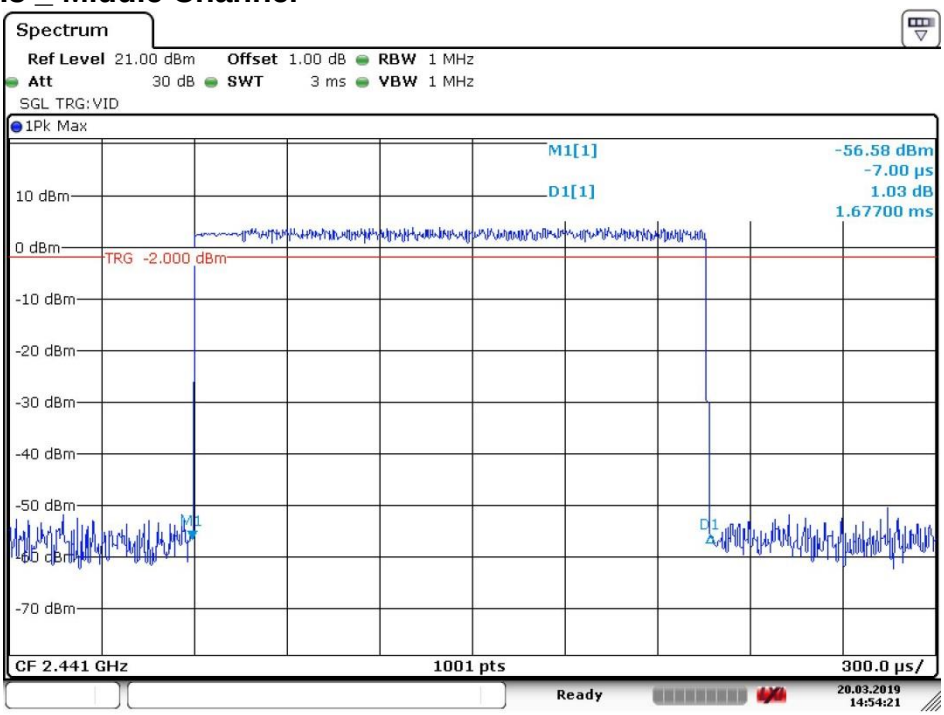
4.8.2.7 3DH1 _Middle Channel



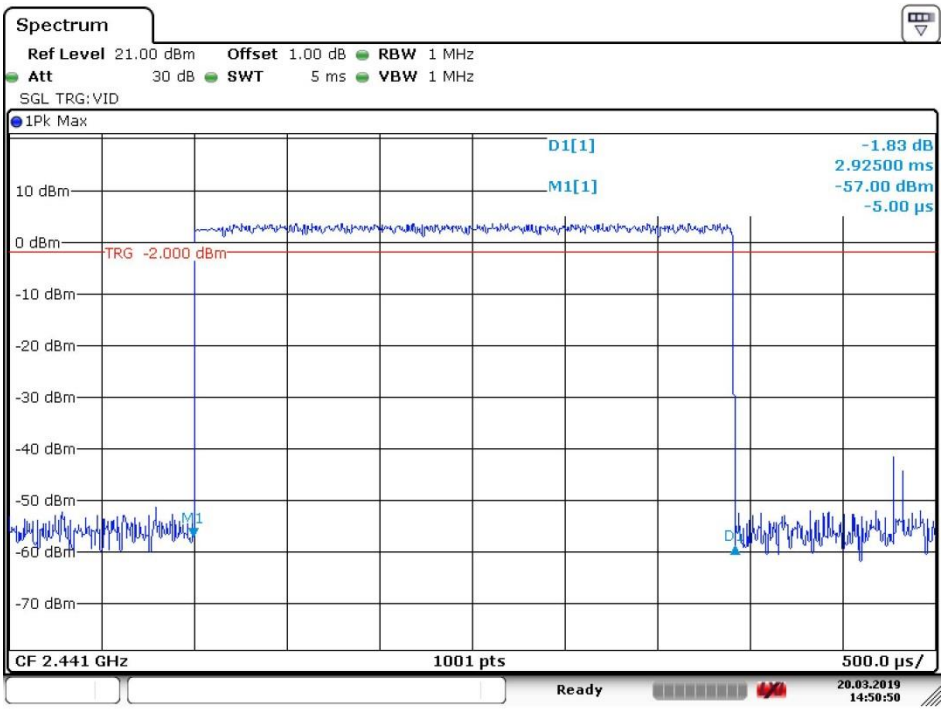
Date: 20.MAR.2019 14:55:35

4.8.2.8 3DH3 _ Middle Channel



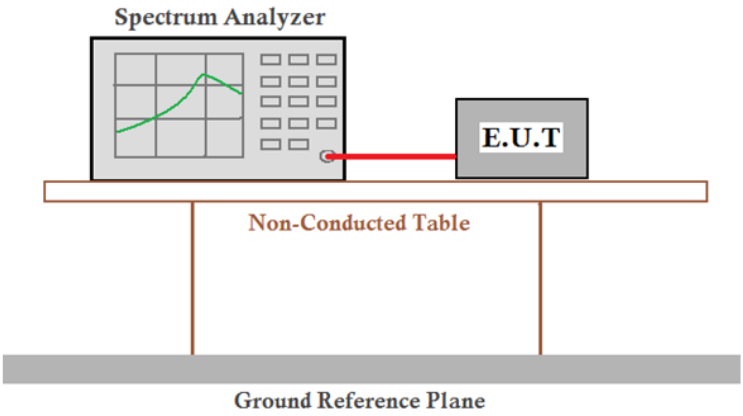
Date: 20.MAR.2019 14:54:22

4.8.2.9 3DH5 _ Middle Channel



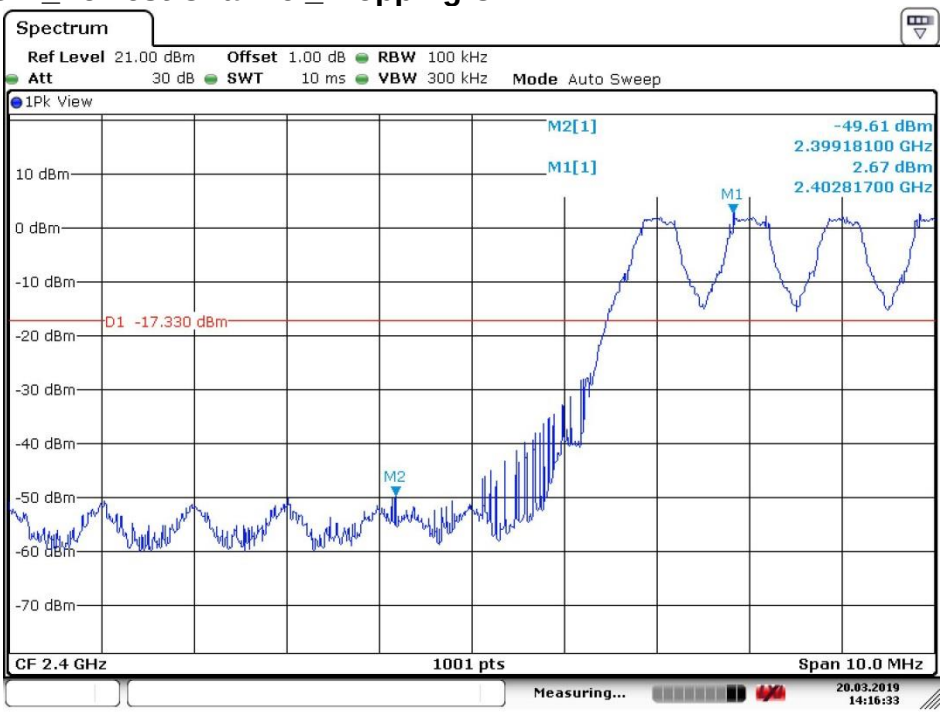
Date: 20.MAR.2019 14:50:50

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:	
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.
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.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

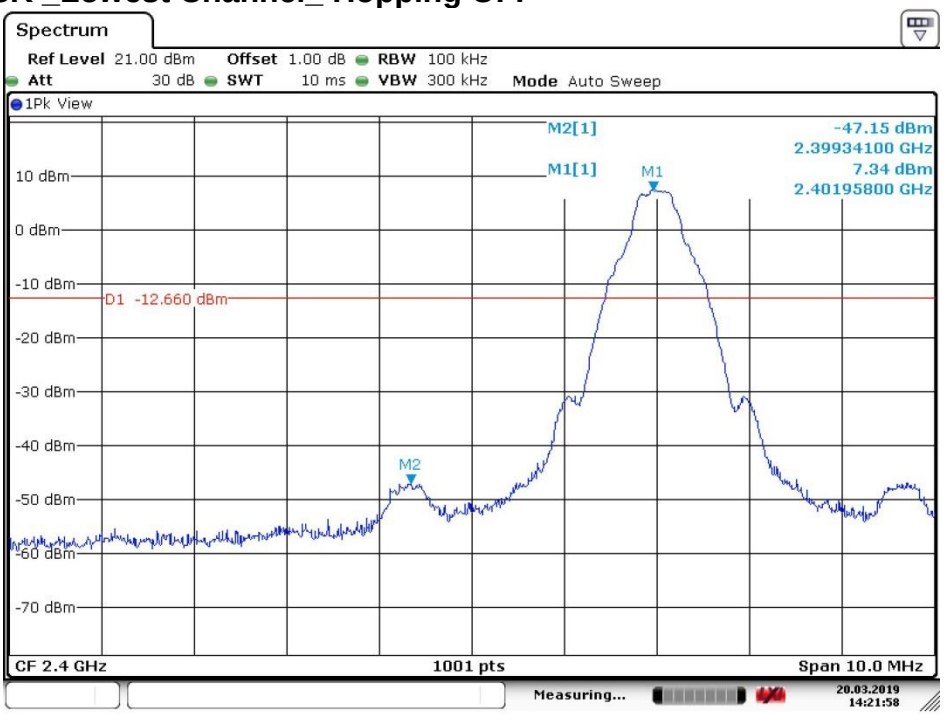
4.9.1 Test plots

4.9.1.1 GFSK _Lowest Channel_ Hopping ON



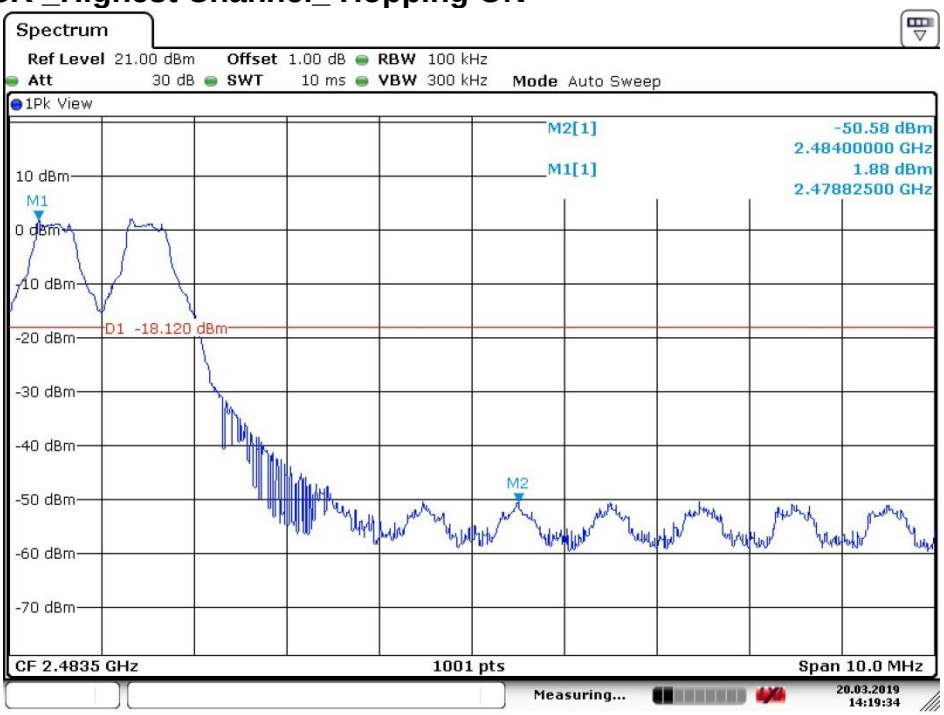
Date: 20.MAR.2019 14:16:33

4.9.1.2 GFSK _Lowest Channel_ Hopping OFF



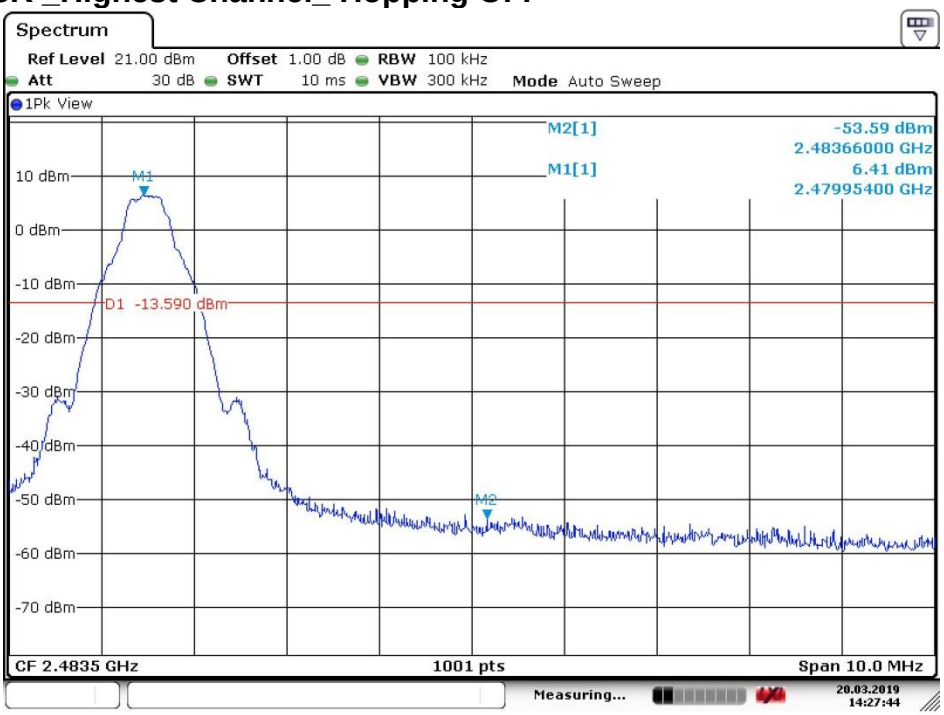
Date: 20.MAR.2019 14:21:59

4.9.1.3 GFSK _Highest Channel_ Hopping ON



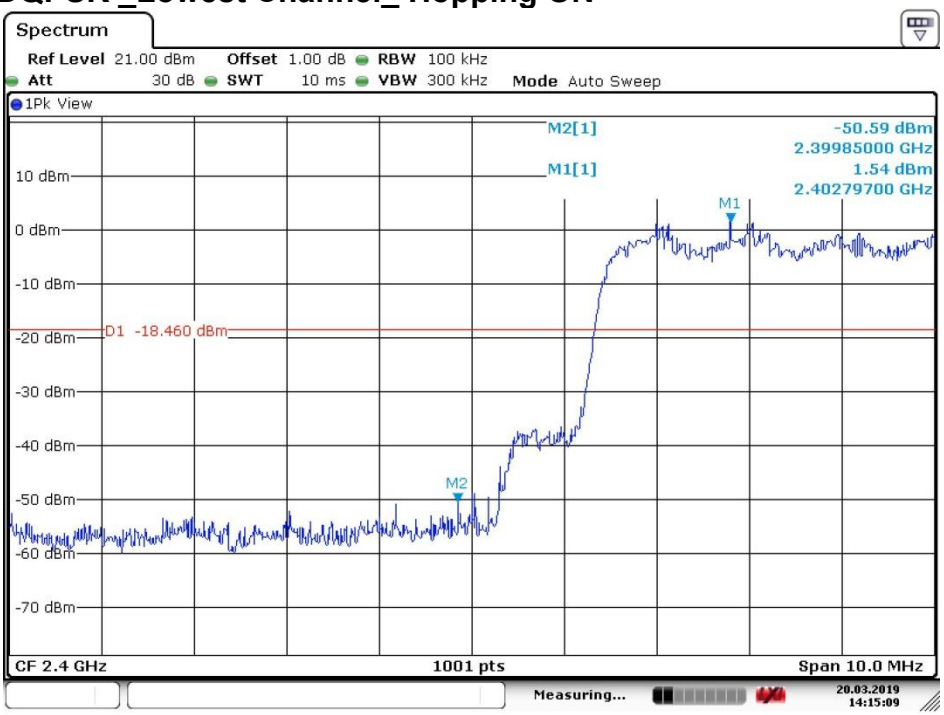
Date: 20.MAR.2019 14:19:34

4.9.1.4 GFSK _Highest Channel_ Hopping OFF



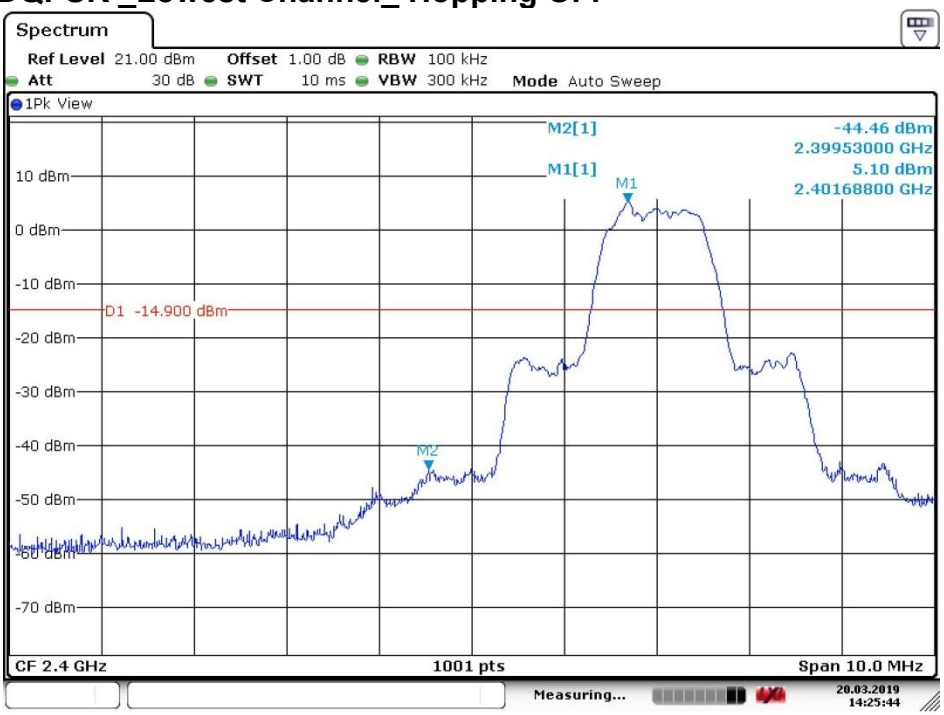
Date: 20.MAR.2019 14:27:44

4.9.1.5 π/4DQPSK _Lowest Channel_ Hopping ON



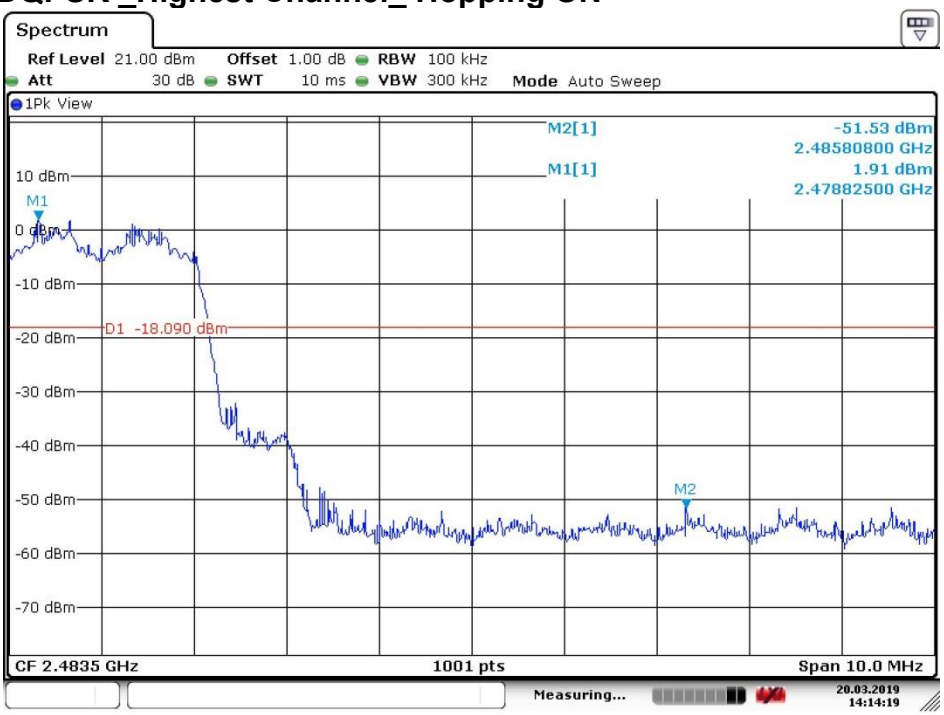
Date: 20.MAR.2019 14:15:10

4.9.1.6 π/4DQPSK _Lowest Channel_ Hopping OFF



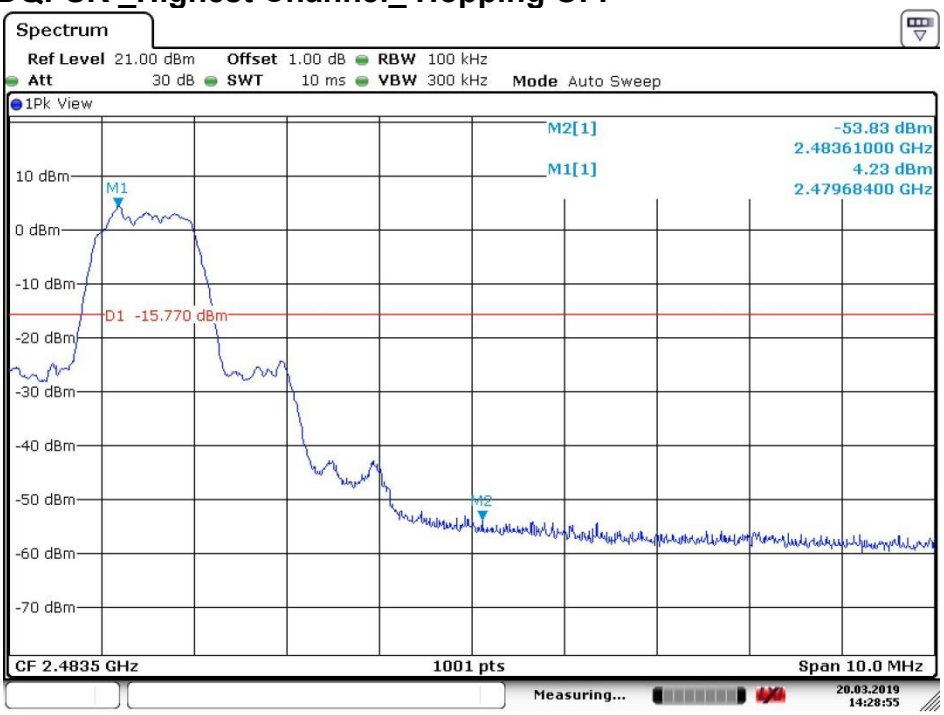
Date: 20.MAR.2019 14:25:44

4.9.1.7 π/4DQPSK _Highest Channel_ Hopping ON



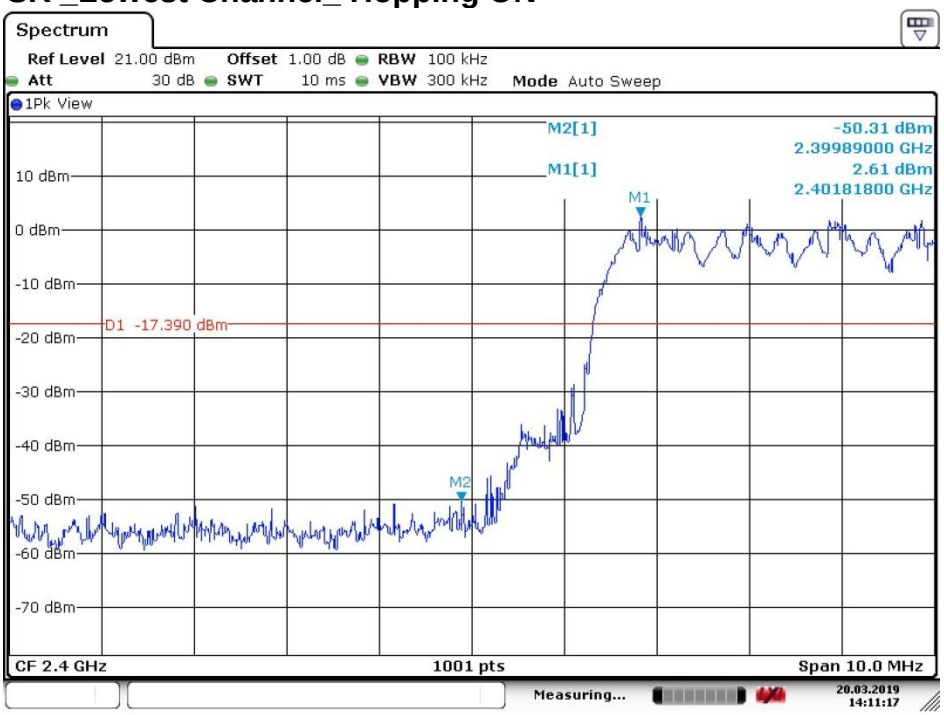
Date: 20.MAR.2019 14:14:19

4.9.1.8 π/4DQPSK _Highest Channel_ Hopping OFF



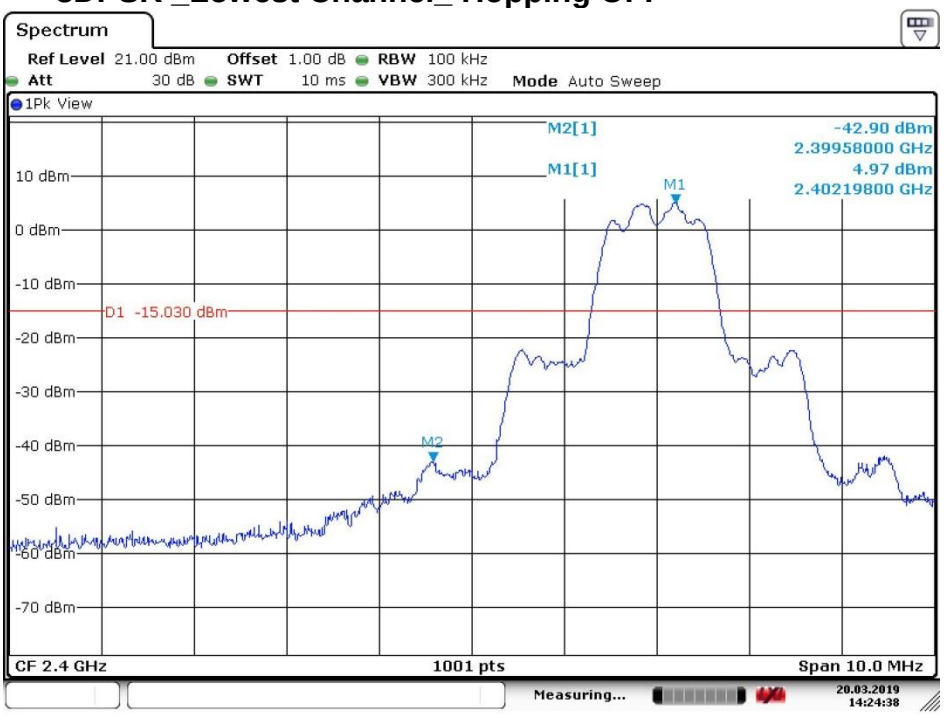
Date: 20.MAR.2019 14:28:55

4.9.1.9 8DPSK _Lowest Channel_ Hopping ON



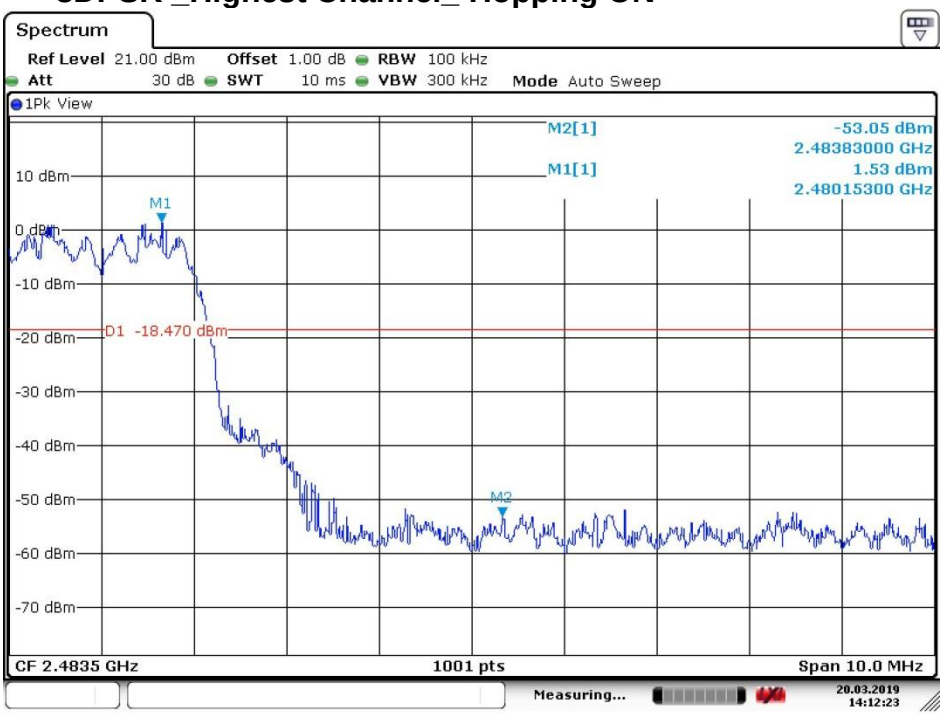
Date: 20.MAR.2019 14:11:18

4.9.1.10 8DPSK _Lowest Channel_ Hopping OFF



Date: 20.MAR.2019 14:24:38

4.9.1.11 8DPSK _Highest Channel_ Hopping ON



Date: 20.MAR.2019 14:12:24

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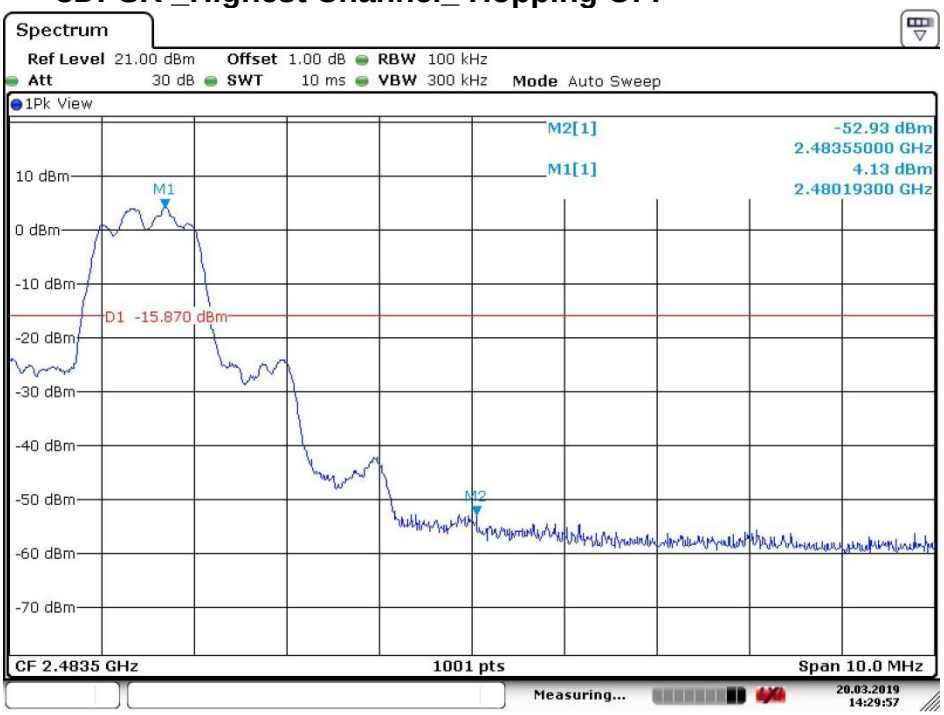
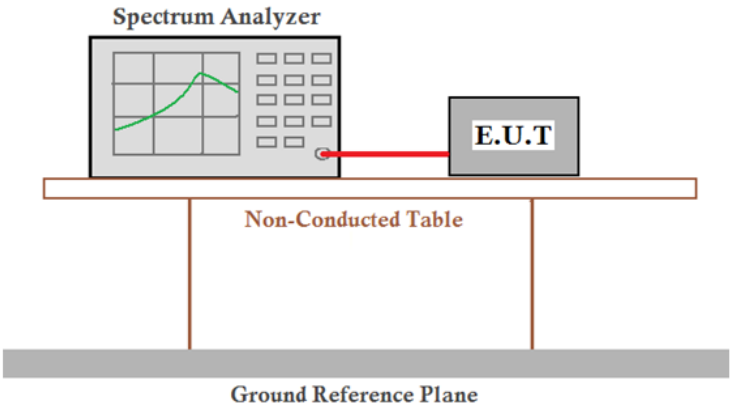
4.9.1.12 8DPSK _Highest Channel_ Hopping OFF



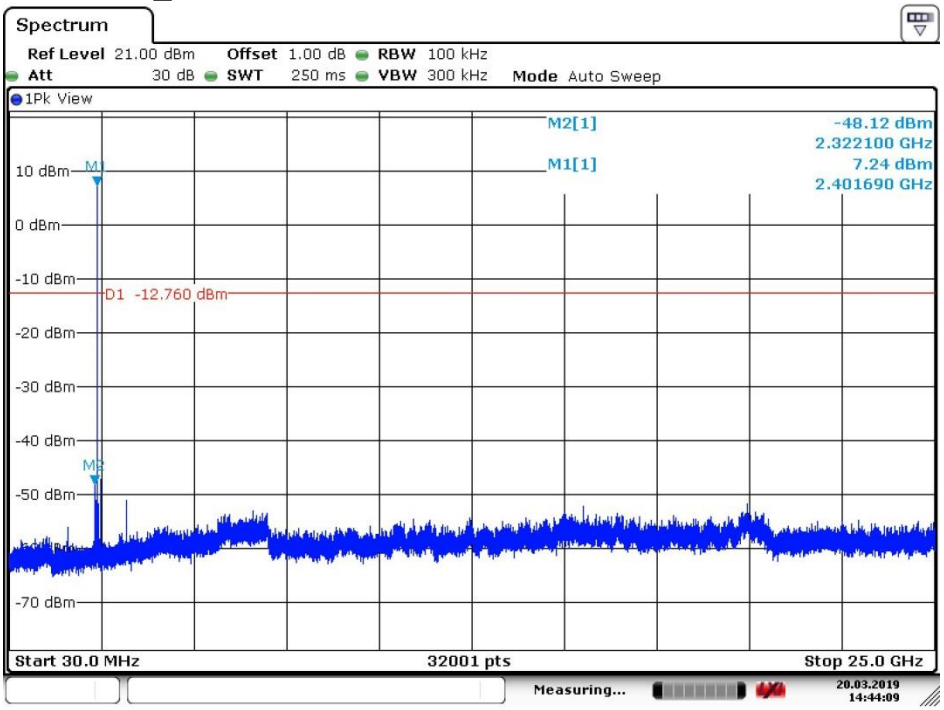
Date: 20.MAR.2019 14:29:57

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:	
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.
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.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

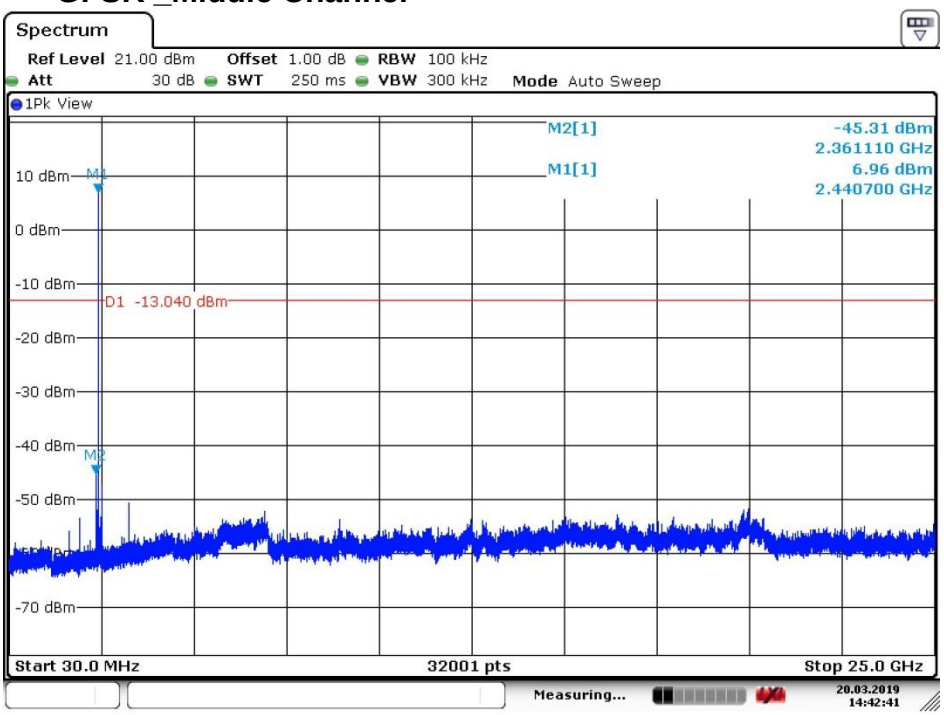
4.10.1 Test plots

4.10.1.1 GFSK _Lowest Channel



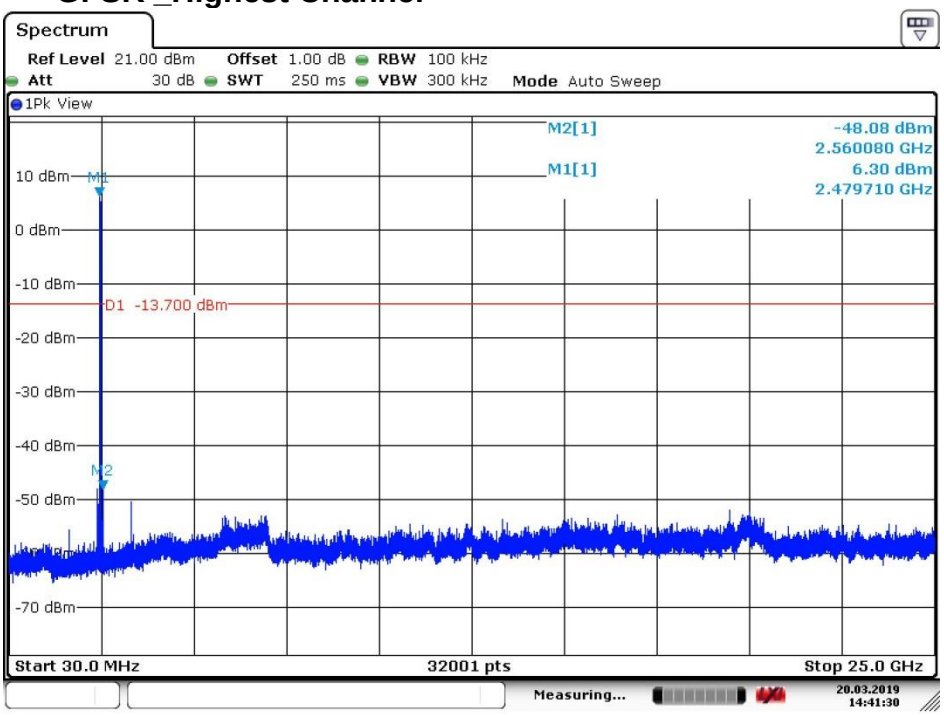
Date: 20.MAR.2019 14:44:09

4.10.1.2 GFSK _Middle Channel



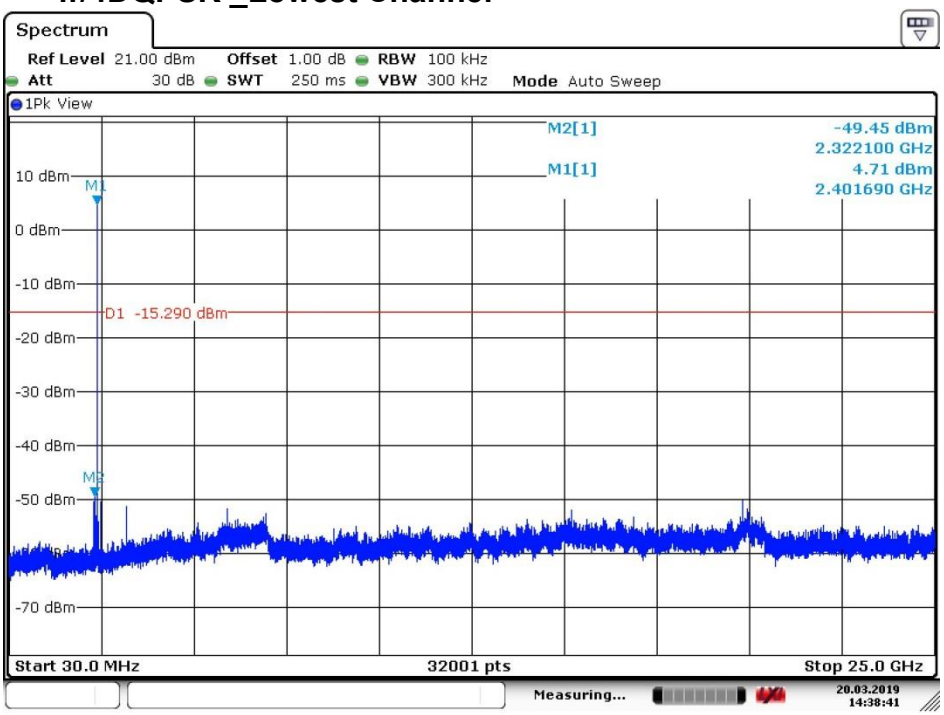
Date: 20.MAR.2019 14:42:42

4.10.1.3 GFSK _Highest Channel



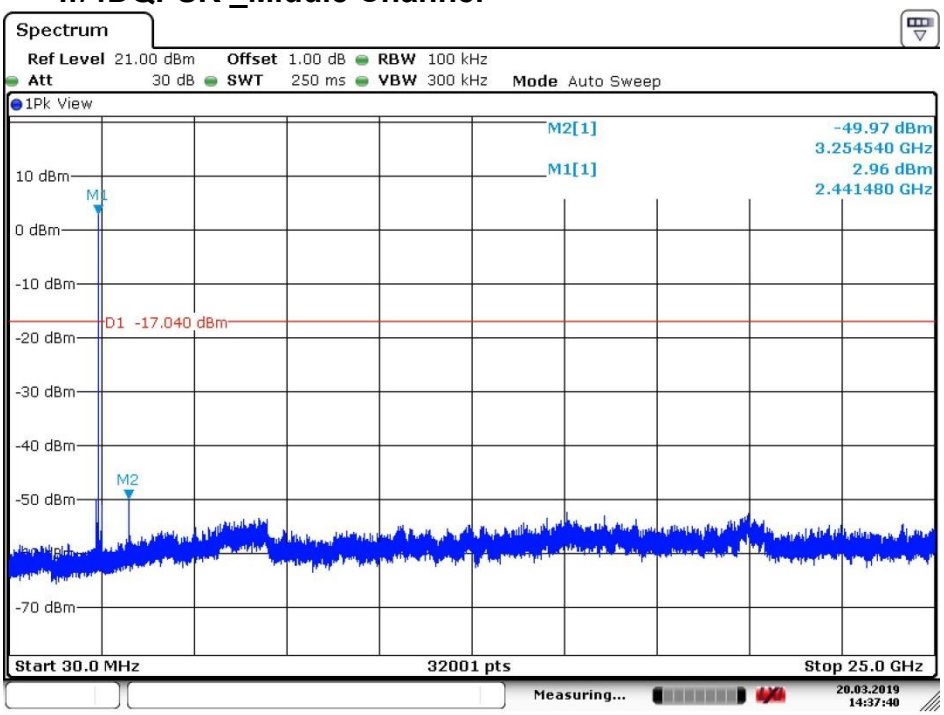
Date: 20.MAR.2019 14:41:31

4.10.1.4 π/4DQPSK _Lowest Channel



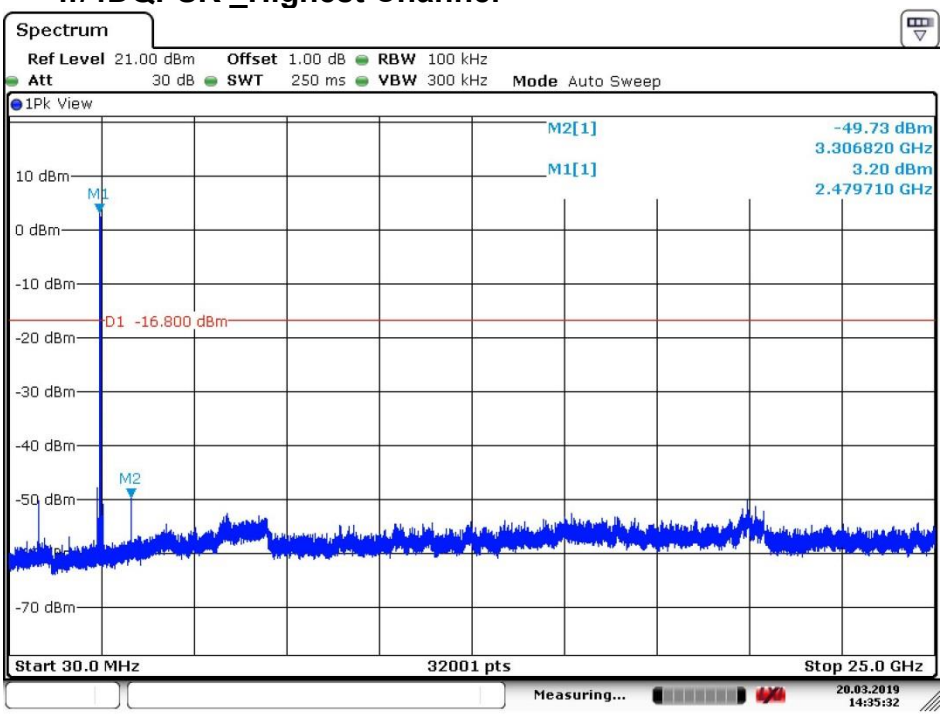
Date: 20.MAR.2019 14:38:41

4.10.1.5 π/4DQPSK _Middle Channel



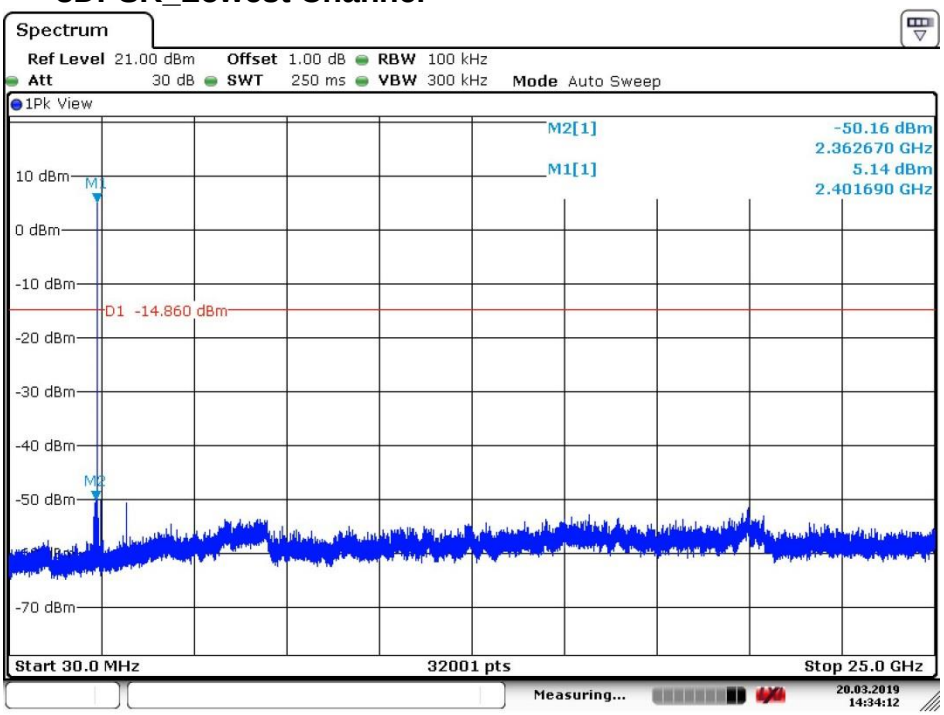
Date: 20.MAR.2019 14:37:40

4.10.1.6 π/4DQPSK _Highest Channel



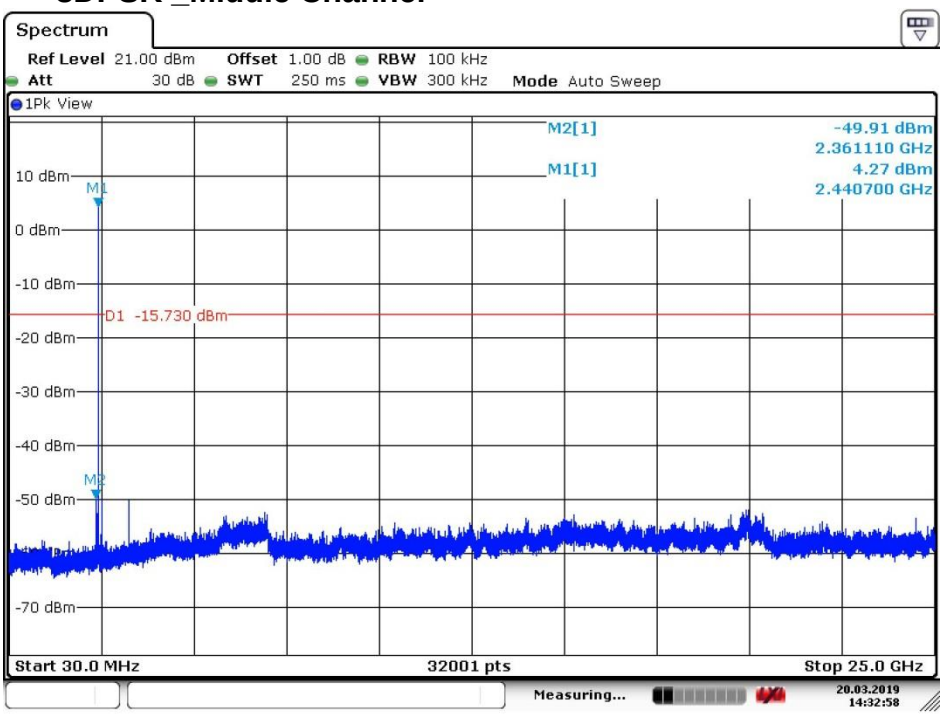
Date: 20.MAR.2019 14:35:33

4.10.1.7 8DPSK_Lowest Channel



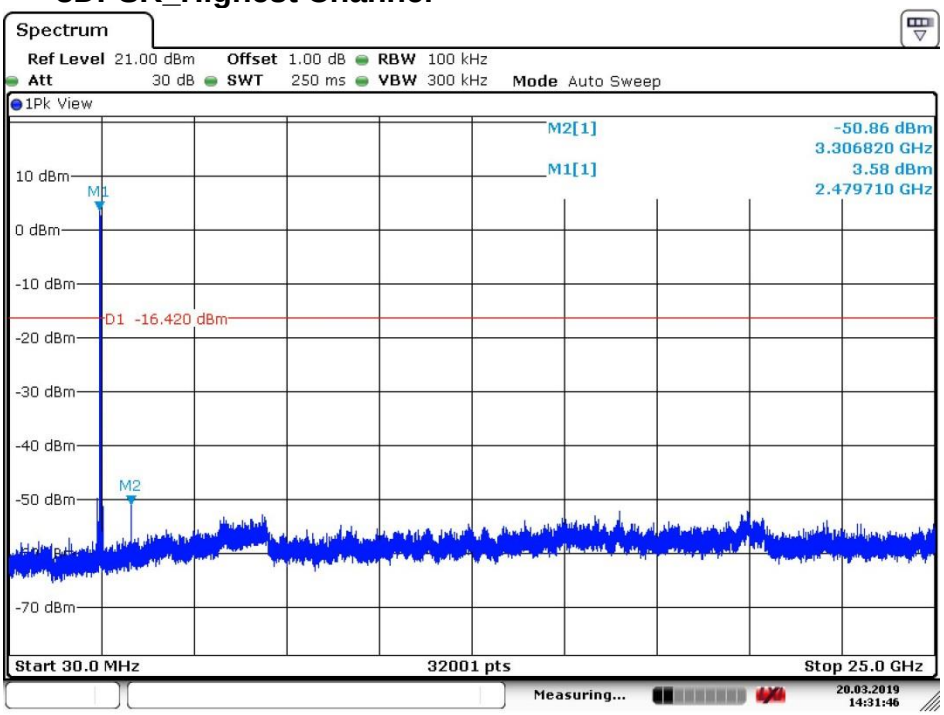
Date: 20.MAR.2019 14:34:12

4.10.1.8 8DPSK _Middle Channel



Date: 20.MAR.2019 14:32:58

4.10.1.9 8DPSK_Highest Channel



Date: 20.MAR.2019 14:31:46

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 Emission

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m				
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	100 kHz	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:	

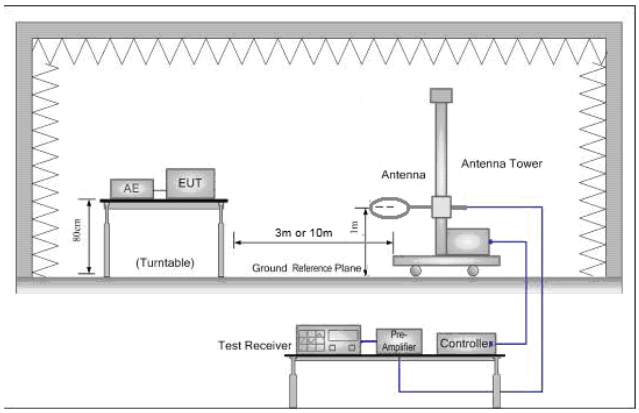


Figure 1. Below 30MHz

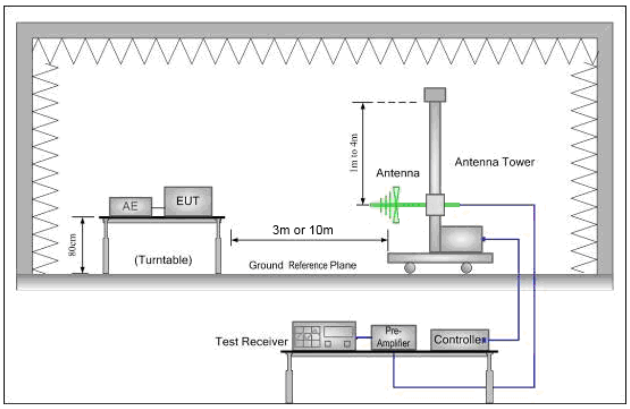


Figure 2. 30MHz to 1GHz

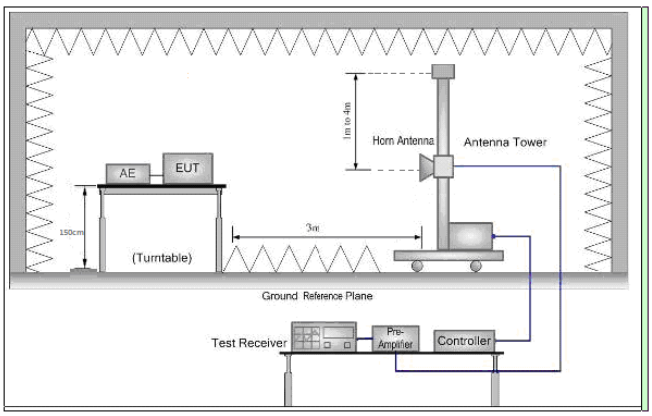


Figure 3. Above 1 GHz

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. 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. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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. h. Test the EUT in the lowest channel (2402MHz),the middle channel (2441MHz),the Highest channel (2480MHz) i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst 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 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 5.10 for details
Test Results:	Pass

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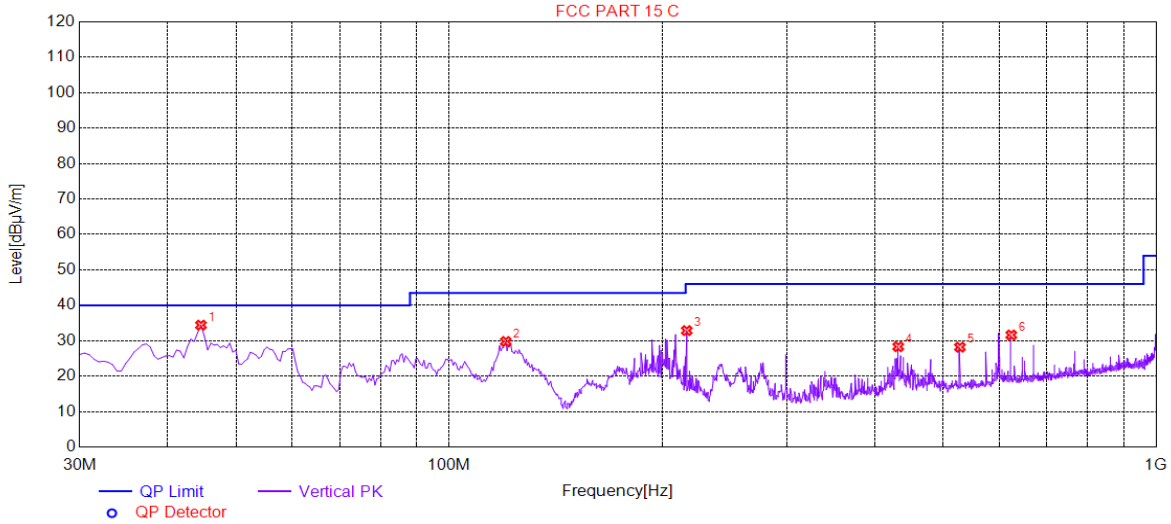
4.11.1 Radiated Emission below 1GHz

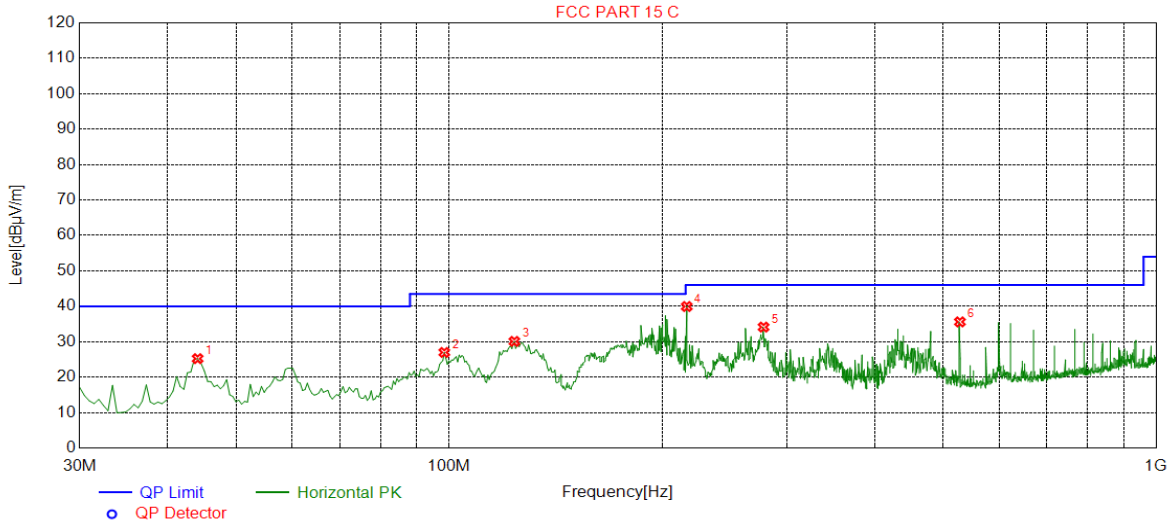
4.11.1.1 Charge + Transmitting, Vertical



Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.5573	34.41	-30.29	40.00	5.59	100	14	Vertical
2	120.255	29.78	-33.30	43.50	13.72	100	352	Vertical
3	216.818	32.86	-30.42	46.00	13.14	200	0	Vertical
4	431.780	28.32	-24.22	46.00	17.68	200	346	Vertical
5	527.858	28.19	-21.99	46.00	17.81	200	346	Vertical
6	623.937	31.62	-19.74	46.00	14.38	300	134	Vertical

4.11.1.2 Charge + Transmitting, Horizontal

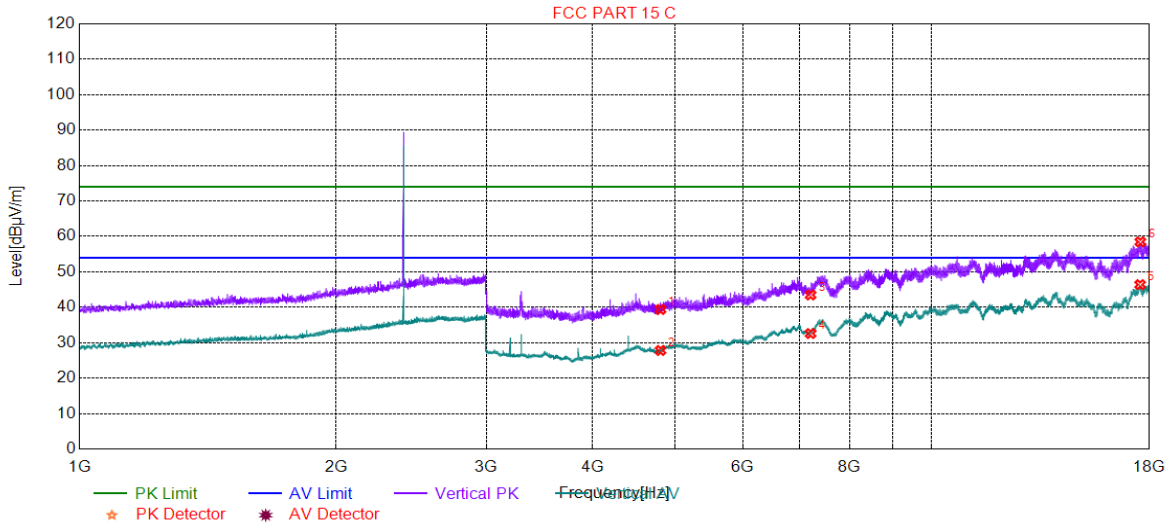


Suspected List

Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.0720	25.23	-30.39	40.00	14.77	200	251	Horizontal
2	98.4192	26.98	-31.96	43.50	16.52	200	236	Horizontal
3	123.651	30.09	-33.82	43.50	13.41	200	76	Horizontal
4	216.818	39.94	-30.42	46.00	6.06	100	78	Horizontal
5	278.444	34.13	-28.44	46.00	11.87	100	336	Horizontal
6	527.858	35.60	-21.99	46.00	10.40	200	68	Horizontal

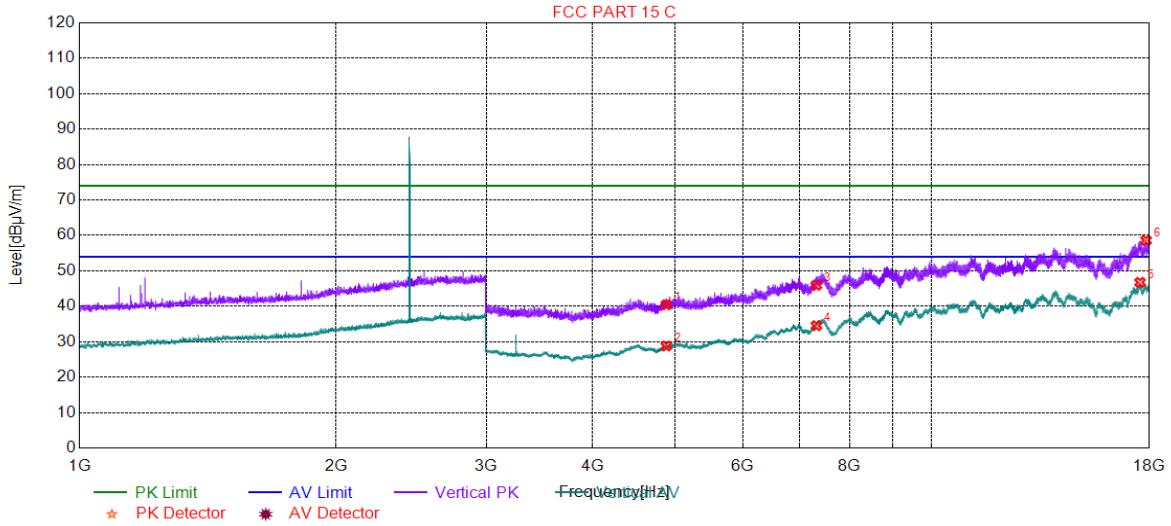
4.11.2 Transmitter Emission above 1GHz

4.11.2.1 GFSK(DH5) _Lowest Channel _Vertical



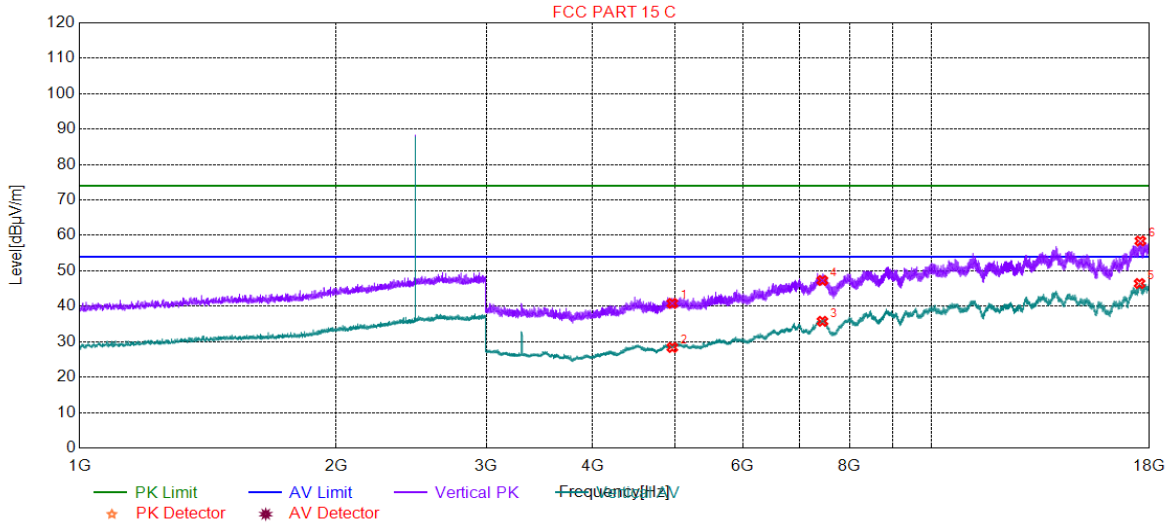
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4804.00	39.39	-20.38	74.00	34.61	150	332	Vertical
2	4804.00	27.82	-20.38	54.00	26.18	150	63	Vertical
3	7206.00	43.48	-12.76	74.00	30.52	150	210	Vertical
4	7206.00	32.60	-12.76	54.00	21.40	150	332	Vertical
5	17549.4	46.39	0.98	54.00	7.61	150	297	Vertical
6	17557.9	58.46	1.09	74.00	15.54	150	102	Vertical

4.11.2.2 GFSK(DH5) _Middle Channel _Vertical



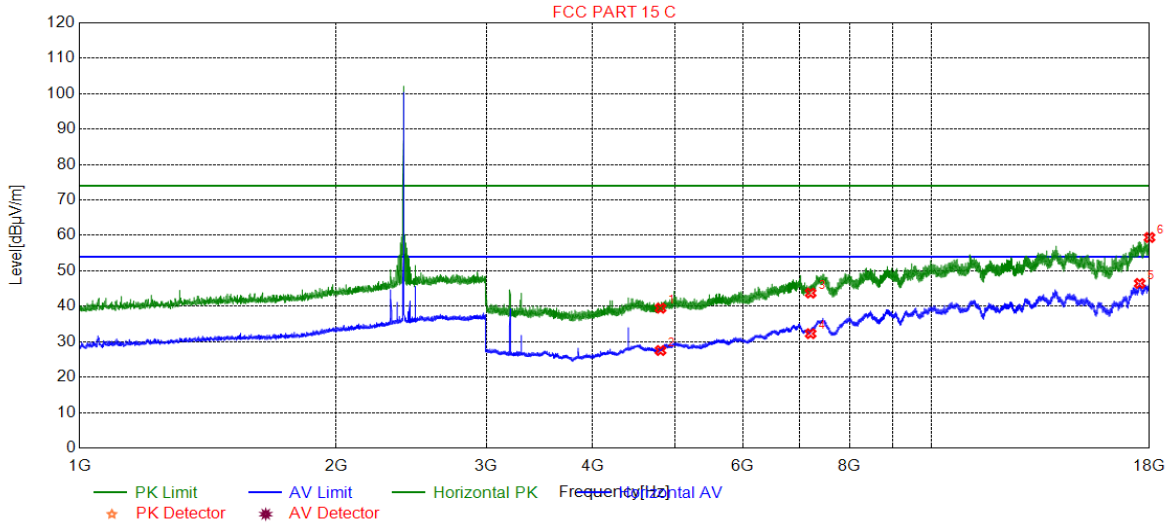
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4880.00	40.42	-19.29	74.00	33.58	150	161	Vertical
2	4880.00	28.80	-19.29	54.00	25.20	150	63	Vertical
3	7320.00	45.96	-11.41	74.00	28.04	150	27	Vertical
4	7320.00	34.53	-11.41	54.00	19.47	150	271	Vertical
5	17545.9	46.75	0.94	54.00	7.25	150	81	Vertical
6	17836.9	58.60	-0.90	74.00	15.40	150	319	Vertical

4.11.2.3 GFSK(DH5) _Highest Channel _Vertical



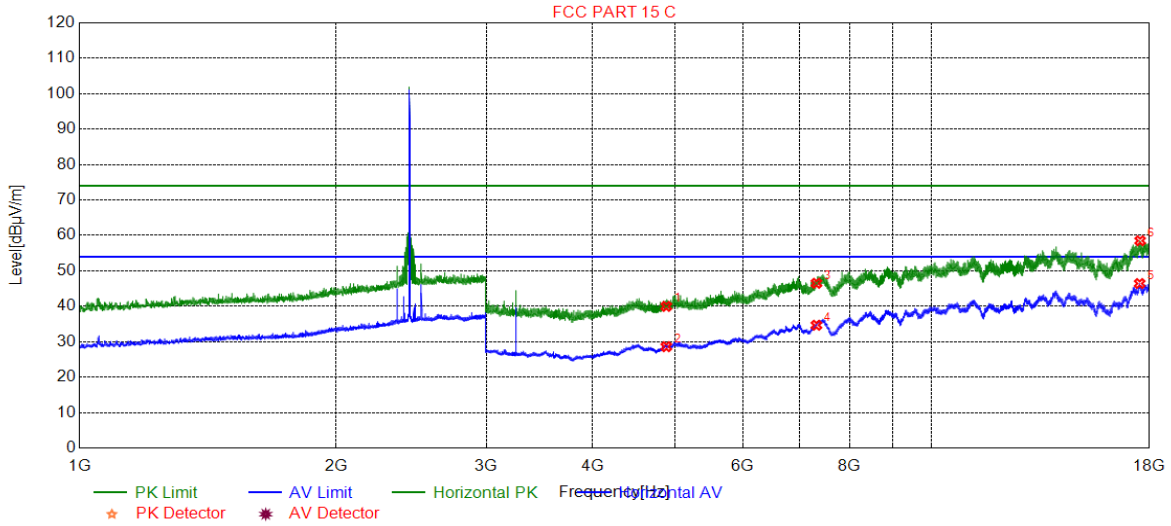
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4960.00	40.83	-18.67	74.00	33.17	150	63	Vertical
2	4960.00	28.38	-18.67	54.00	25.62	150	124	Vertical
3	7440.00	35.76	-10.72	54.00	18.24	150	14	Vertical
4	7440.00	47.28	-10.72	74.00	26.72	150	271	Vertical
5	17523.4	46.43	0.65	54.00	7.57	150	232	Vertical
6	17558.4	58.44	1.10	74.00	15.56	150	210	Vertical

4.11.2.4 GFSK(DH5) _Lowest Channel _Horizontal



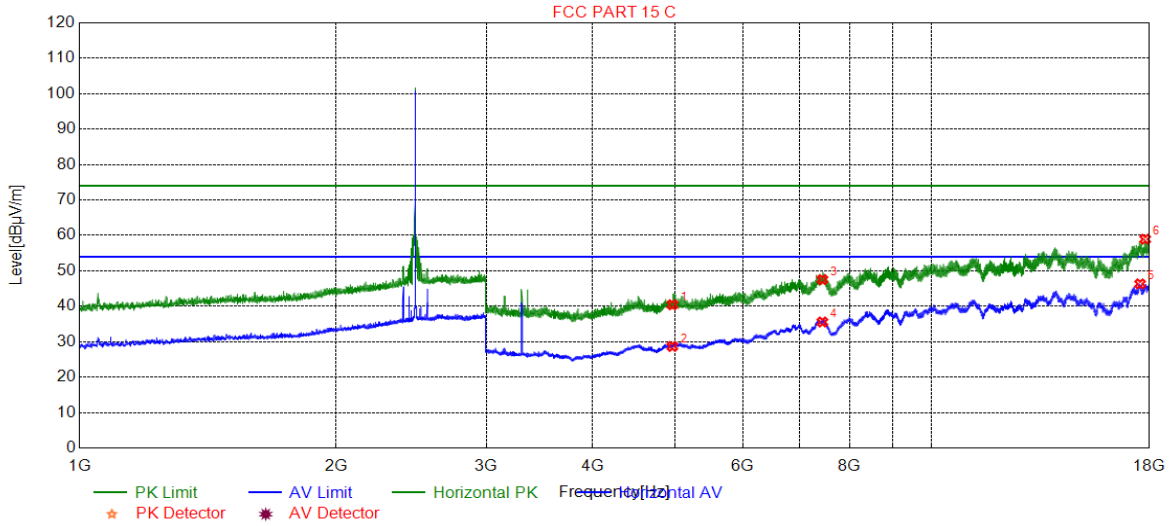
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4804.00	39.48	-20.38	74.00	34.52	150	194	Horizontal
2	4804.00	27.53	-20.38	54.00	26.47	150	304	Horizontal
3	7206.00	43.73	-12.76	74.00	30.27	150	255	Horizontal
4	7206.00	32.28	-12.76	54.00	21.72	150	12	Horizontal
5	17530.9	46.45	0.75	54.00	7.55	150	276	Horizontal
6	17999.5	59.42	-0.35	74.00	14.58	150	37	Horizontal

4.11.2.5 GFSK(DH5) _Middle Channel _ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4880.00	39.97	-19.29	74.00	34.03	150	122	Horizontal
2	4880.00	28.60	-19.29	54.00	25.40	150	2	Horizontal
3	7320.00	46.50	-11.41	74.00	27.50	150	2	Horizontal
4	7320.00	34.66	-11.41	54.00	19.34	150	344	Horizontal
5	17527.4	46.43	0.70	54.00	7.57	150	37	Horizontal
6	17550.4	58.50	1.00	74.00	15.50	150	188	Horizontal

4.11.2.6 GFSK(DH5) _Highest Channel _ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	4960.00	40.44	-18.67	74.00	33.56	150	290	Horizontal
2	4960.00	28.67	-18.67	54.00	25.33	150	303	Horizontal
3	7440.00	47.54	-10.72	74.00	26.46	150	331	Horizontal
4	7440.00	35.57	-10.72	54.00	18.43	150	12	Horizontal
5	17548.4	46.32	0.97	54.00	7.68	150	102	Horizontal
6	17792.9	58.94	-0.78	74.00	15.06	150	297	Horizontal

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.

4.12 Restricted 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 or 10m (Semi-Anechoic Chamber)		
Limit:	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
	Above 1GHz	54.0	Average Value
		74.0	Peak Value
Test Setup:			

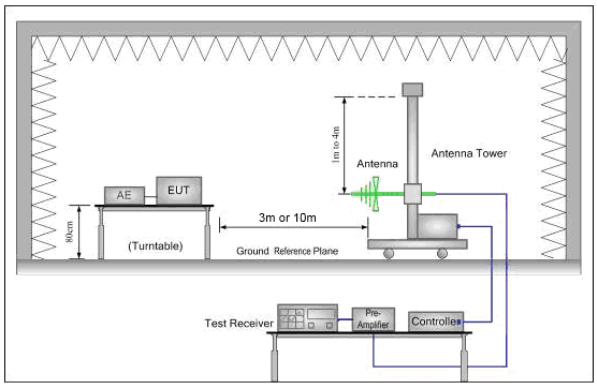


Figure 1. 30MHz to 1GHz

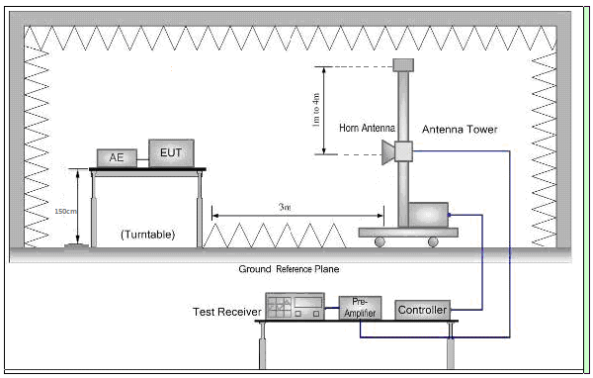
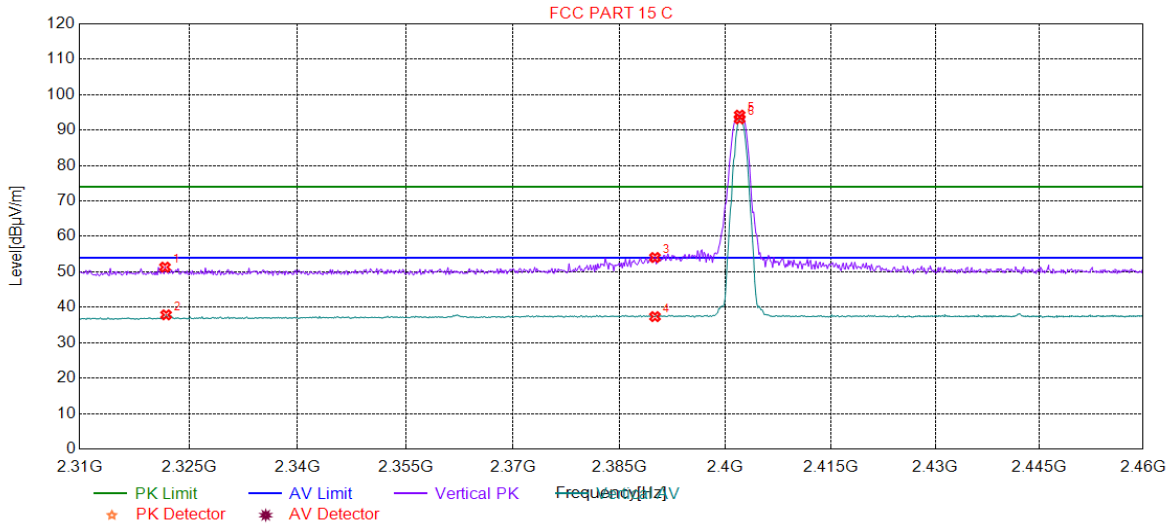


Figure 2. Above 1 GHz

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 the worst 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 5.10 for details
Test Results:	Pass

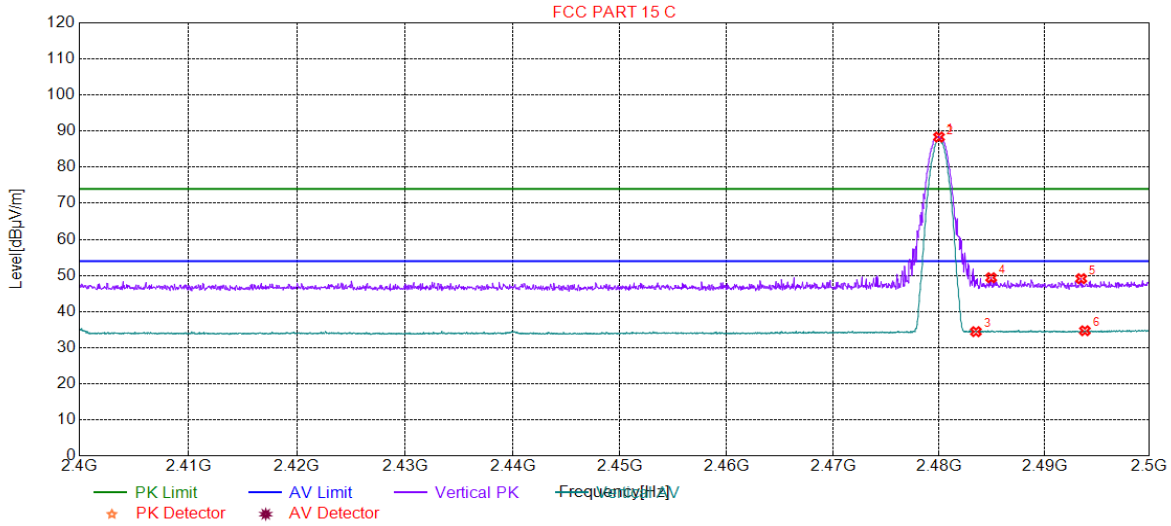
4.12.1 Test plots

4.12.1.1 Worst Case Mode (GFSK(DH5)) _Lowest Channel _Vertical



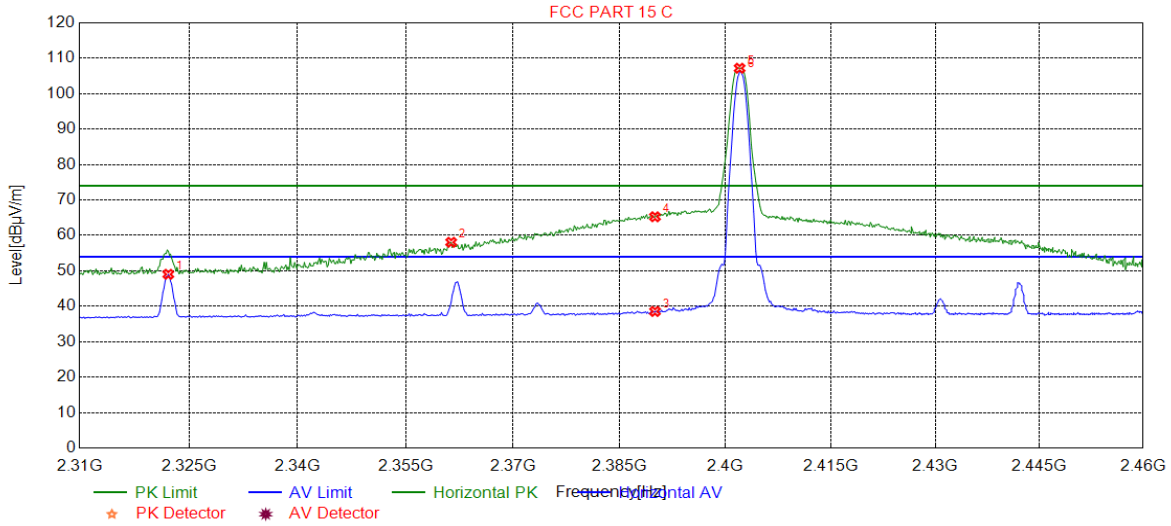
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2321.71	51.33	0.95	74.00	22.67	150	156	Vertical
2	2321.86	37.87	0.95	54.00	16.13	150	358	Vertical
3	2390.00	54.06	1.25	74.00	19.94	150	38	Vertical
4	2390.00	37.37	1.25	54.00	16.63	150	189	Vertical
5	2402.00	94.25	1.30	74.00	-20.25	150	62	Vertical
6	2402.00	93.18	1.30	54.00	-39.18	150	65	Vertical

4.12.1.2 Worst Case Mode (GFSK(DH5)) _Highest Channel _Vertical



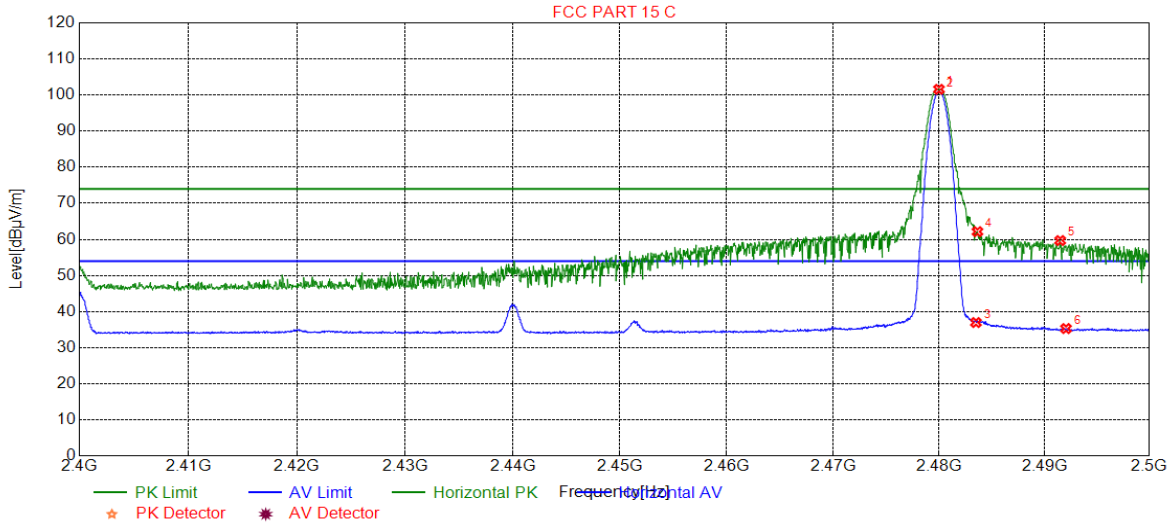
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	88.35	1.51	74.00	-14.35	150	276	Vertical
2	2480.00	87.81	1.51	54.00	-33.81	150	276	Vertical
3	2483.50	34.43	1.52	54.00	19.57	150	284	Vertical
4	2484.94	49.37	1.53	74.00	24.63	150	303	Vertical
5	2493.49	49.12	1.55	74.00	24.88	150	264	Vertical
6	2493.84	34.69	1.55	54.00	19.31	150	322	Vertical

4.12.1.3 Worst Case Mode (GFSK(DH5)) _Lowest Channel _Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2322.16	49.03	0.95	54.00	4.97	150	304	Horizontal
2	2361.35	58.07	1.12	74.00	15.93	150	304	Horizontal
3	2390.00	38.55	1.25	54.00	15.45	150	304	Horizontal
4	2390.00	65.26	1.25	74.00	8.74	150	301	Horizontal
5	2402.00	107.19	1.30	74.00	-33.19	150	298	Horizontal
6	2402.00	106.34	1.30	54.00	-52.34	150	301	Horizontal

4.12.1.4 Worst Case Mode (GFSK(DH5)) _Highest Channel _ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2480.00	101.58	1.51	74.00	-27.58	150	312	Horizontal
2	2480.00	101.02	1.51	54.00	-47.02	150	316	Horizontal
3	2483.50	36.97	1.52	54.00	17.03	150	300	Horizontal
4	2483.64	62.14	1.52	74.00	11.86	150	312	Horizontal
5	2491.49	59.68	1.55	74.00	14.32	150	312	Horizontal
6	2492.04	35.30	1.55	54.00	18.70	150	316	Horizontal

Remark:
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
All Modes have been tested, but only the worst case data displayed in this report.

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

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	Radiated Spurious emission test	±4.5dB (30MHz-1GHz)
		±4.8dB (1GHz-25GHz)
5	Conduct emission test	±3.12 dB(9KHz- 30MHz)
6	Temperature test	±1°C
7	Humidity test	±3%
8	DC and low frequency voltages	±0.5%

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6 Equipment List

Conducted Emission					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2017/5/10	2020/5/9
LISN	Rohde & Schwarz	ENV216	SEM007-01	2018/9/2	2019/9/2
LISN	ETS-LINDGREN	Feb-16	SEM007-02	2018/4/2	2019/4/1
				2019/4/1	2020/3/31
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2018/7/12	2019/7/11
2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2019/2/11	2020/2/10
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2019/3/2	2020/3/1

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	2018/9/15	2019/9/15
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2019/1/13	2020/1/12
Coaxial Cable	SGS	N/A	SEM031-01	2018/7/13	2019/7/12
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Signal Generator	KEYSIGHT	N5173B	SEM006-05	2018/9/2	2019/9/2
Temperature Chamber	GIANT FORCE	ICT-150-40-CP-AR	W027-03	2018/11/27	2019/11/27
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2018/9/2	2019/9/2

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017/8/5	2020/8/4
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2018/7/12	2019/7/11
MXE EMI Receiver (20Hz-8.4GHz)	Agilent Technologies	N9038A	SEM004-05	2018/9/2	2019/9/2
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017/6/27	2020/6/26
Pre-amplifier (0.1-1.3GHz)	Agilent Technologies	8447D	SEM005-01	2019/3/2	2020/3/1

RE in Chamber					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018/3/13	2021/3/12
Measurement Software	AUDIX	e3V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2018/7/12	2019/7/11
EXA Signal Analyzer (10Hz-26.5GHz)	Agilent Technologies Inc	N9010A	SEM004-09	2019/3/12	2020/3/11
BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017/6/27	2020/6/26
Horn Antenna (0.8-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018/4/13	2021/4/12
Pre-amplifier(0.1-1.3GHz)	HP	8447D	SEM005-02	2018/9/2	2019/9/2
Low Noise Amplifier(100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2018/9/27	2019/9/27
Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2017/10/17	2020/10/16
Pre-amplifier(18-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2019/3/2	2020/3/1
Band filter	N/A	N/A	SEM023-01	N/A	N/A

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RE in Chamber					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (yyyy-mm-dd)**	**Cal. Due date (yyyy-mm-dd)**
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2018/3/31	2021/3/30
EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2019/3/2	2020/3/1
Trilog-Broadband Antenna(25M-2GHz)	Schwarzbeck	VULB9168	SEM003-18	2016/6/29	2019/6/28
Pre-amplifier (9k-1GHz)	Sonoma	310N	SEM005-03	2019/3/12	2020/3/11
Loop Antenna (9kHz-30MHz)	ETS-Lindgren	6502	SEM003-08	2017/8/22	2020/8/21
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2018/7/12	2019/7/11

7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for ZR/2019/30015.

The End

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