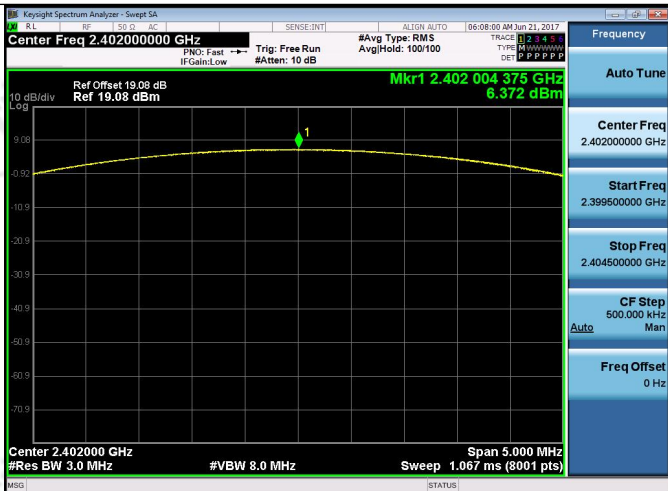
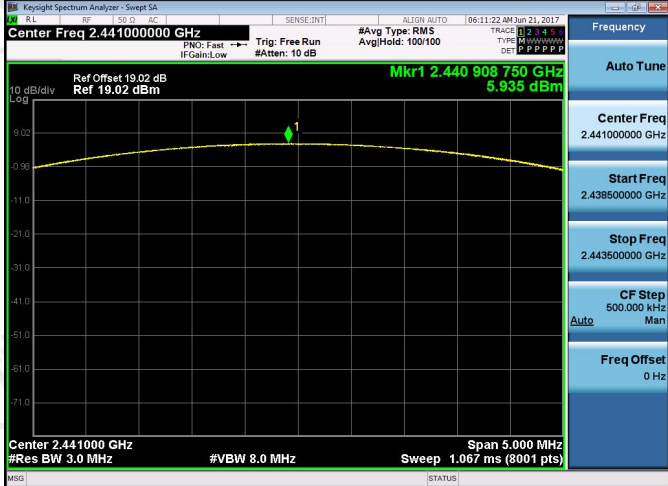



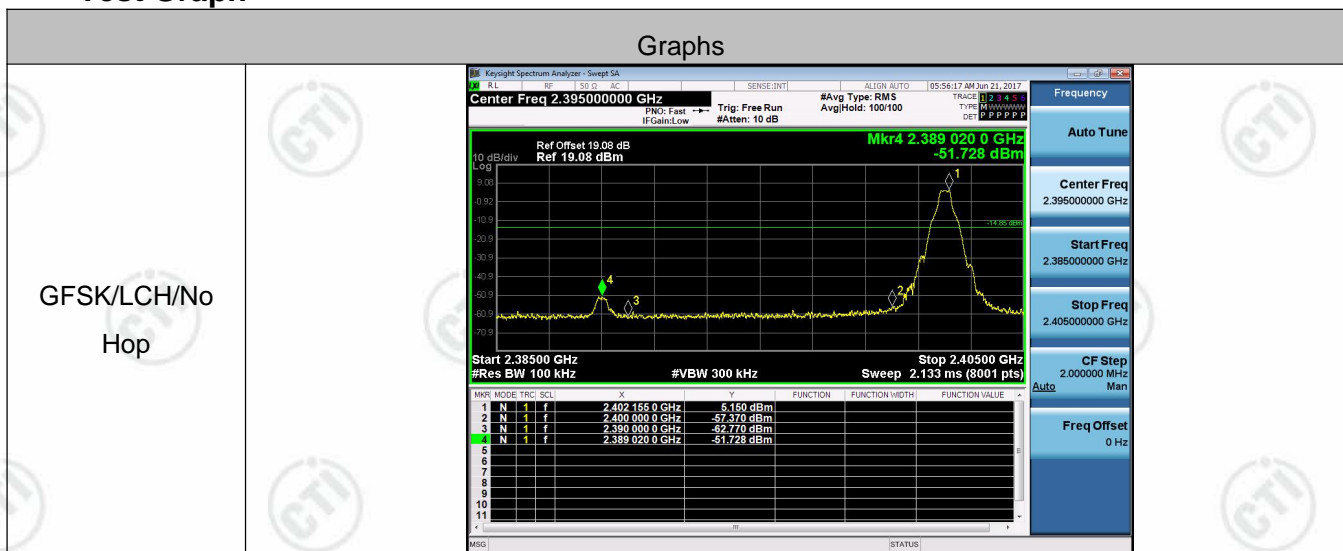
8DPSK/LCH	
8DPSK/MCH	
8DPSK/HCH	

Appendix F): Band-edge for RF Conducted Emissions

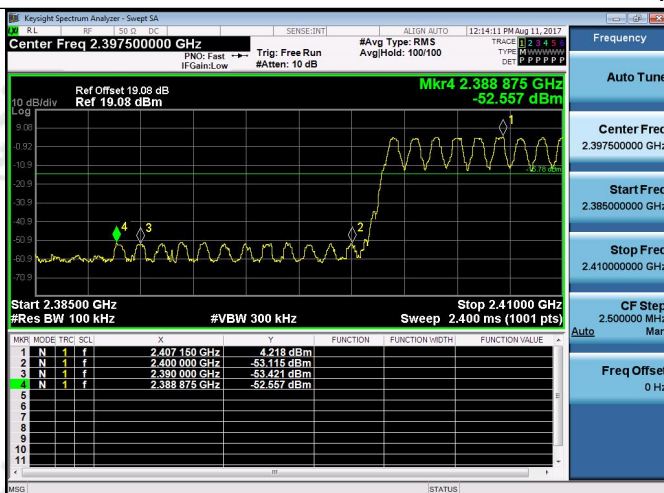
Result Table

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	5.150	Off	-51.728	-14.85	PASS
			4.218	On	-52.557	-15.78	PASS
GFSK	HCH	2480	5.098	Off	-52.674	-14.90	PASS
			4.191	On	-51.857	-15.81	PASS
$\pi/4$ DQPSK	LCH	2402	5.137	Off	-52.303	-14.86	PASS
			3.578	On	-56.301	-16.42	PASS
$\pi/4$ DQPSK	HCH	2480	4.810	Off	-53.801	-15.19	PASS
			4.054	On	-53.018	-15.95	PASS
8DPSK	LCH	2402	5.197	Off	-52.823	-14.80	PASS
			3.723	On	-57.731	-16.28	PASS
8DPSK	HCH	2480	5.127	Off	-52.922	-14.87	PASS
			1.250	On	-53.622	-18.75	PASS

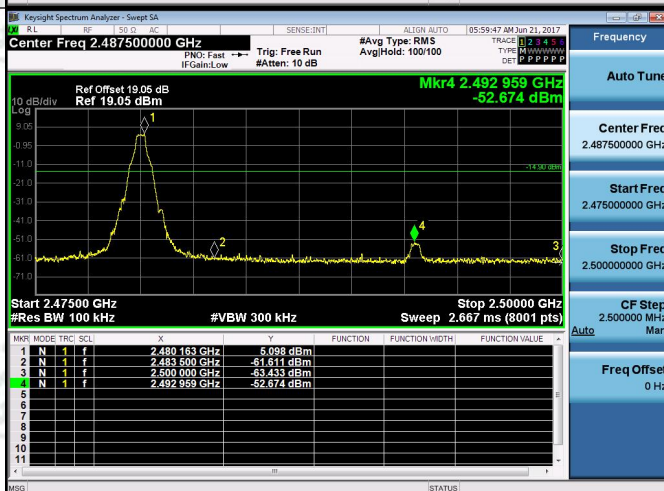
Test Graph



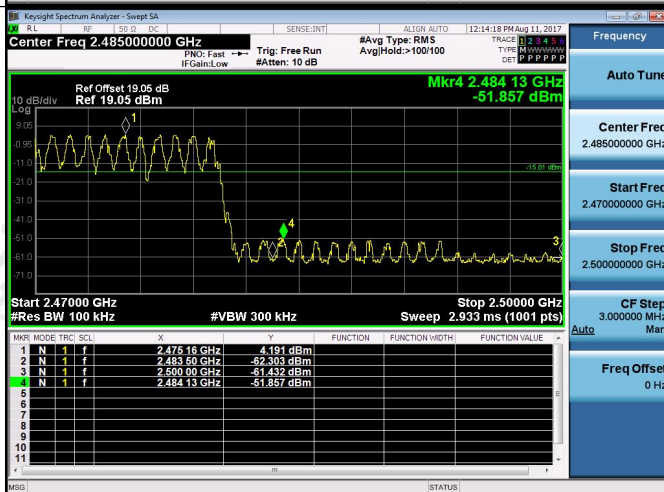
GFSK/LCH/Hop

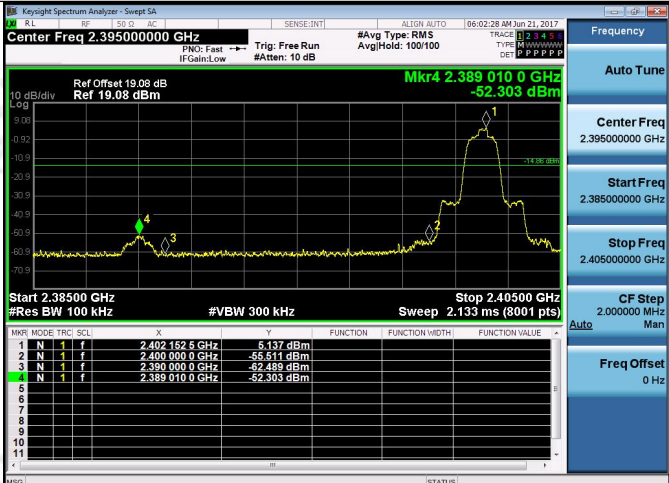
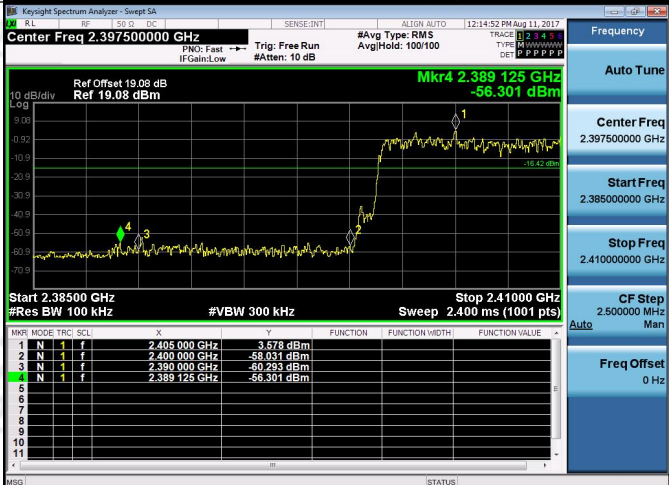
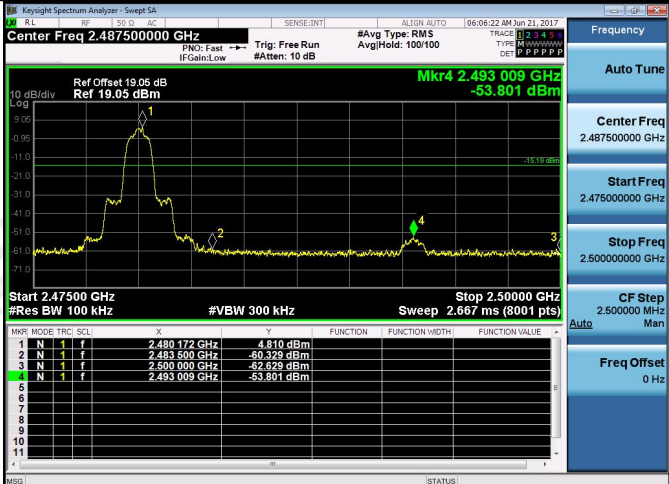


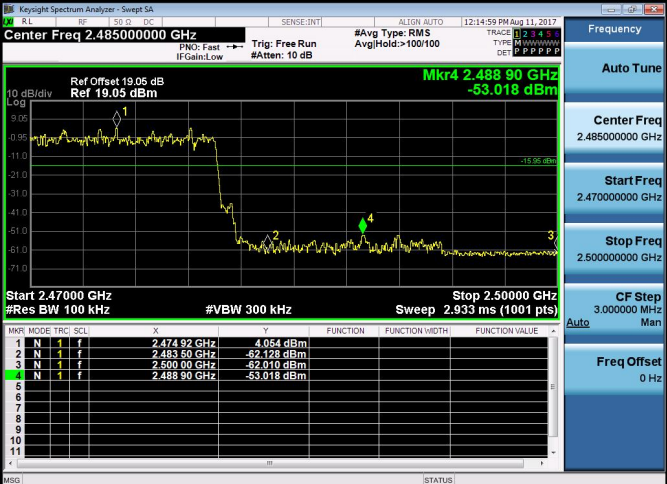
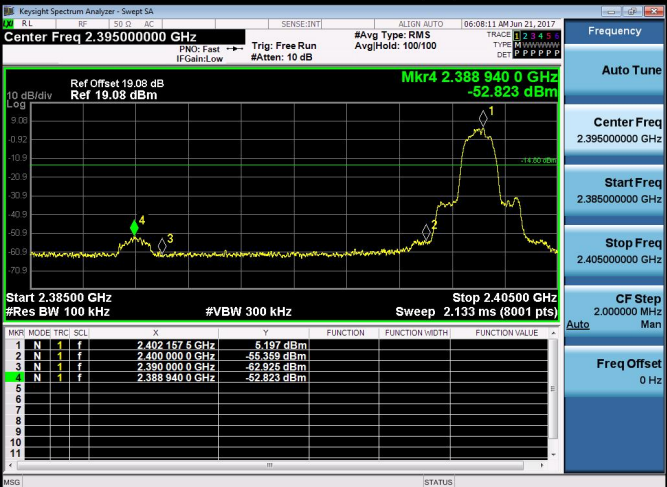
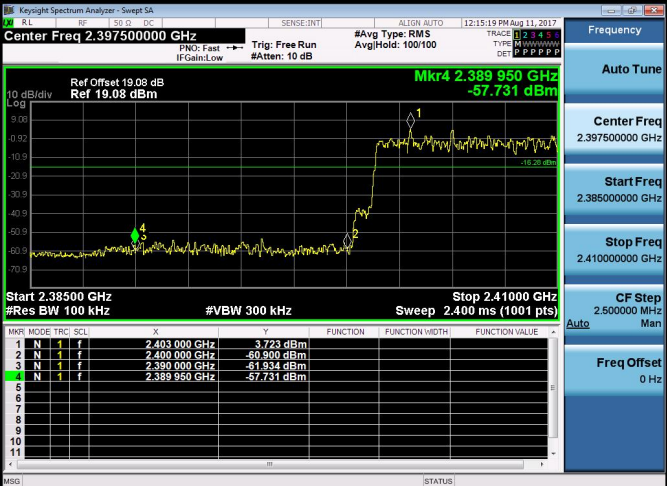
GFSK/HCH/No Hop



GFSK/HCH/Hop



$\pi/4$ DQPSK/LCH/ No Hop	 <p>Key: Keysight Spectrum Analyzer - Sweep SA Center Freq 2.39500000 GHz Ref Offset 19.08 dB Ref 19.08 dBm Mkr4 2.389 010 0 GHz -62.303 dBm Start 2.38500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.40500 GHz Sweep 2.133 ms (8001 pts) #Avg Type: RMS Avg/Hold: 100/100 Trig: Free Run #Atten: 10 dB PNO: Fast IFGain: Low Align: AUTO 06:02:28 AM Jun 21, 2017 TRACE 1 2 3 4 5 TYPE M W W W W W W W DET P P P P P P P P Frequency Auto Tune Center Freq 2.39500000 GHz Start Freq 2.38500000 GHz Stop Freq 2.40500000 GHz CF Step 2.000000 MHz Man Freq Offset 0 Hz</p> <table><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCN</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.402 152 5 GHz</td><td>-61.37 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 0 GHz</td><td>-65.511 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390 000 0 GHz</td><td>-62.489 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.389 010 0 GHz</td><td>-62.303 dBm</td><td></td><td></td><td></td></tr></table>	MNR	MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.402 152 5 GHz	-61.37 dBm				2	N	1	f	2.400 000 0 GHz	-65.511 dBm				3	N	1	f	2.390 000 0 GHz	-62.489 dBm				4	N	1	f	2.389 010 0 GHz	-62.303 dBm			
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$\pi/4$ DQPSK/HCH/ No Hop	 <p>Key: Keysight Spectrum Analyzer - Sweep SA Center Freq 2.48750000 GHz Ref Offset 19.05 dB Ref 19.05 dBm Mkr4 2.493 009 GHz -53.801 dBm Start 2.47500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.50000 GHz Sweep 2.667 ms (8001 pts) #Avg Type: RMS Avg/Hold: 100/100 Trig: Free Run #Atten: 10 dB PNO: Fast IFGain: Low Align: AUTO 06:06:22 AM Jun 21, 2017 TRACE 1 2 3 4 5 TYPE M W W W W W W W DET P P P P P P P P Frequency Auto Tune Center Freq 2.48750000 GHz Start Freq 2.47500000 GHz Stop Freq 2.50000000 GHz CF Step 2.500000 MHz Man Freq Offset 0 Hz</p> <table><tr><th>MNR</th><th>MODE</th><th>TRC</th><th>SCN</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.480 172 GHz</td><td>-4.810 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 500 GHz</td><td>-60.329 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 000 GHz</td><td>-62.629 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.493 009 GHz</td><td>-53.801 dBm</td><td></td><td></td><td></td></tr></table>	MNR	MODE	TRC	SCN	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.480 172 GHz	-4.810 dBm				2	N	1	f	2.483 500 GHz	-60.329 dBm				3	N	1	f	2.500 000 GHz	-62.629 dBm				4	N	1	f	2.493 009 GHz	-53.801 dBm			
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<p>$\pi/4$DQPSK/HCH/ Hop</p>	
<p>8DPSK/LCH/No Hop</p>	
<p>8DPSK/LCH/Hop</p>	

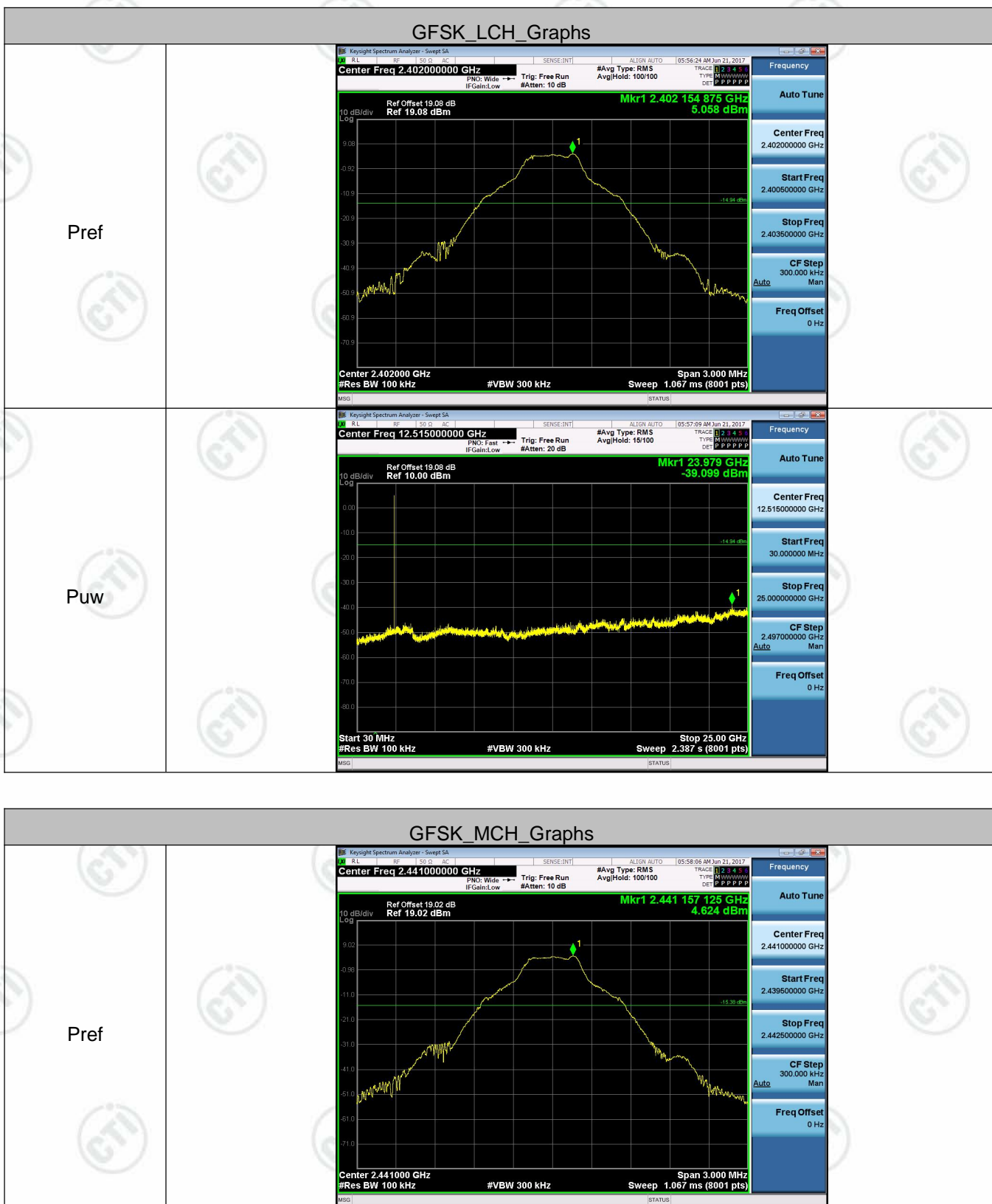
8DPSK/HCH/No Hop	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div><div>RF 2.487500000 GHz</div><div>IF 50.0 kHz</div><div>DC</div><div>SENSE:INT</div><div>ALIGN AUTO</div><div>06:14:26 AM Jun 21, 2017</div></div><div><div>Center Freq 2.487500000 GHz</div><div>PNO: Fast → Trig: Free Run</div><div>Avg Type: RMS</div><div>IF Gain: Low #Atten: 10 dB</div><div>Avg/Hold: 100/100</div><div>TRACE 1 2 3 4 5</div><div>TYPE 1000000000</div><div>SET P P P P P</div></div><div><div>Ref Offset 19.05 dB</div><div>Ref 19.05 dBm</div><div>Mkr4 2.492 819 GHz</div><div>-52.922 dBm</div></div><div><div>10 dB/div</div><div>0.95</div><div>0.05</div><div>-0.95</div><div>-1.9</div><div>-2.9</div><div>-3.9</div><div>-4.9</div><div>-5.9</div><div>-6.9</div><div>-7.9</div></div><div><div>Start 2.47500 GHz</div><div>#Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.50000 GHz</div><div>Sweep 2.667 ms (8001 pts)</div></div><div><table><thead><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCF</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr></thead><tbody><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.480163 GHz</td><td>5.127 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483500 GHz</td><td>-60.826 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500000 GHz</td><td>-63.338 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.492819 GHz</td><td>-52.922 dBm</td><td></td><td></td><td></td></tr><tr><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>6</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>7</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>9</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>11</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table></div><div>MSG [STATUS]</div></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.487500000 GHz</div><div>Start Freq 2.475000000 GHz</div><div>Stop Freq 2.500000000 GHz</div><div>CF Step 2.500000 MHz</div><div>Auto</div><div>Freq Offset 0 Hz</div></div></div>	MKR	MODE	TRC	SCF	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.480163 GHz	5.127 dBm				2	N	1	f	2.483500 GHz	-60.826 dBm				3	N	1	f	2.500000 GHz	-63.338 dBm				4	N	1	f	2.492819 GHz	-52.922 dBm				5									6									7									8									9									10									11								
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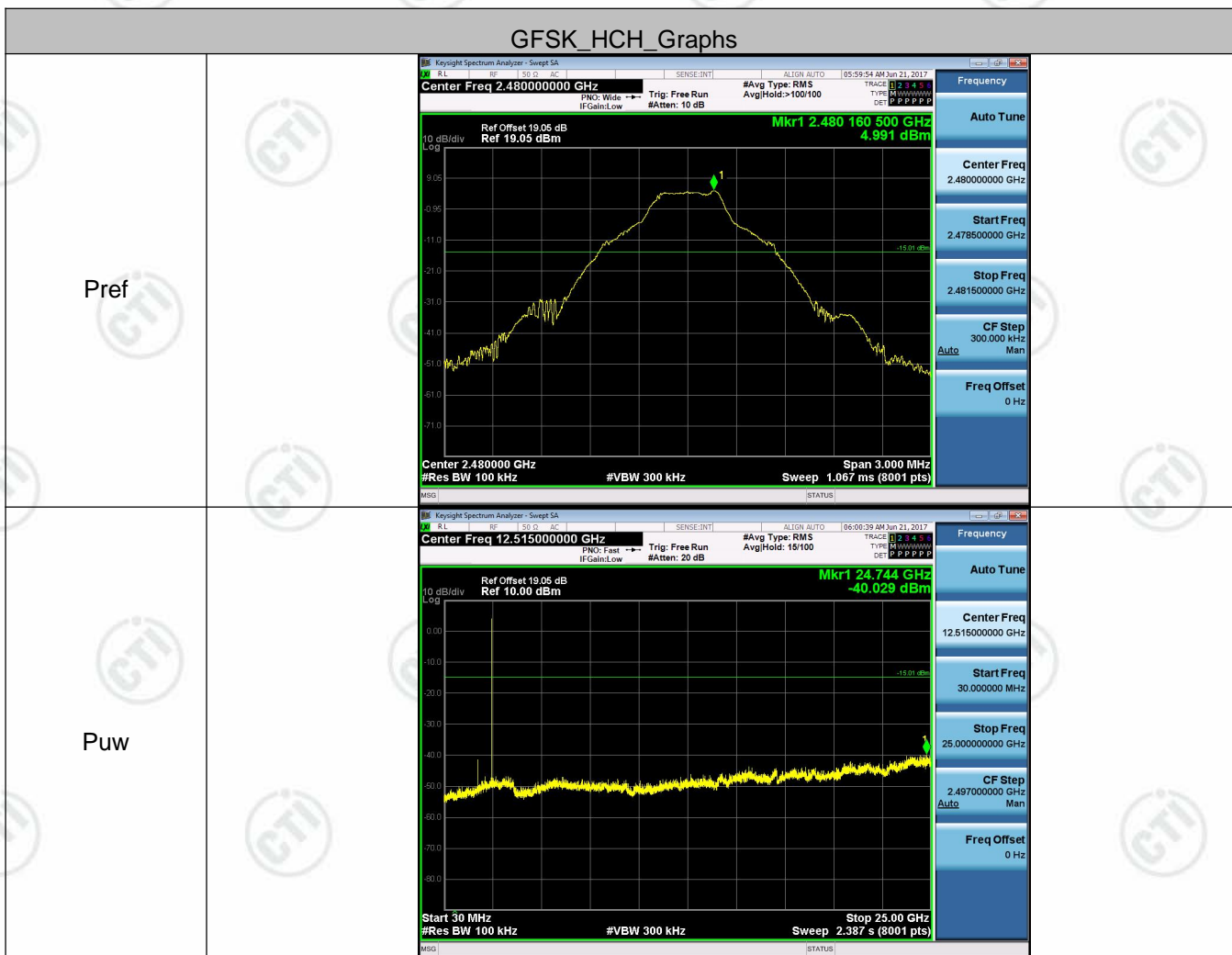
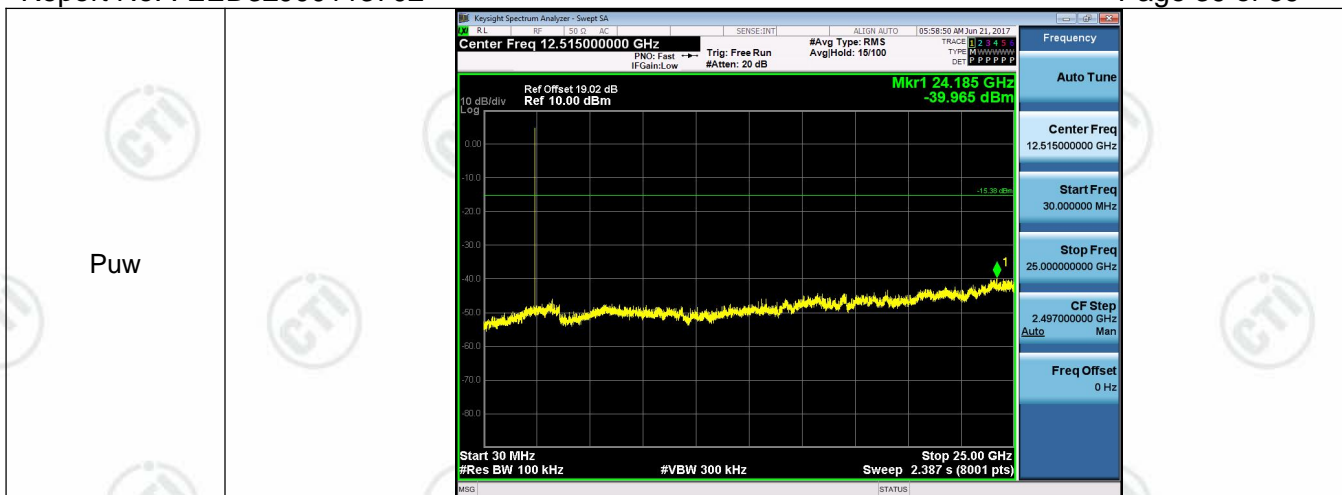
Appendix G): RF Conducted Spurious Emissions

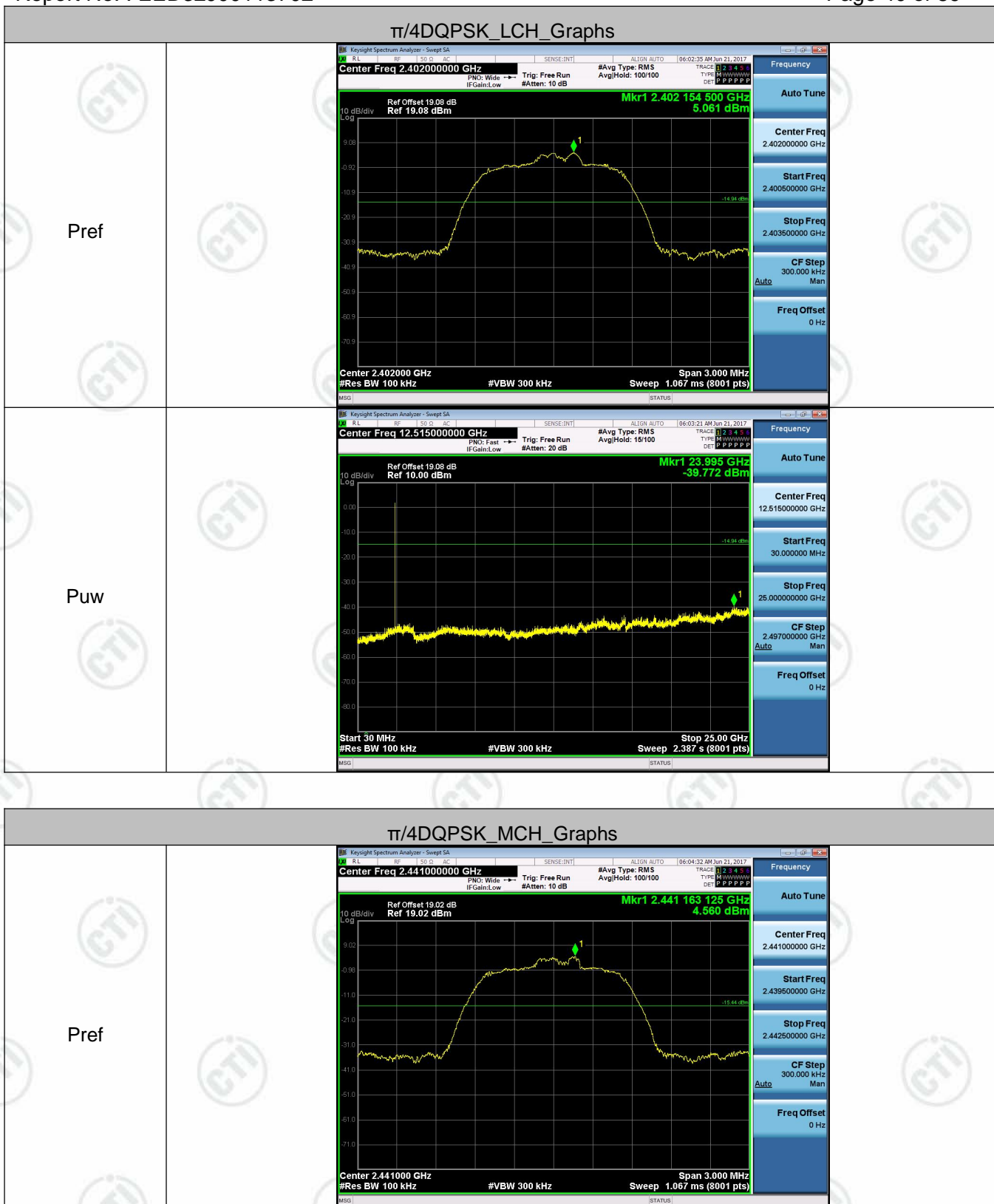
Result Table

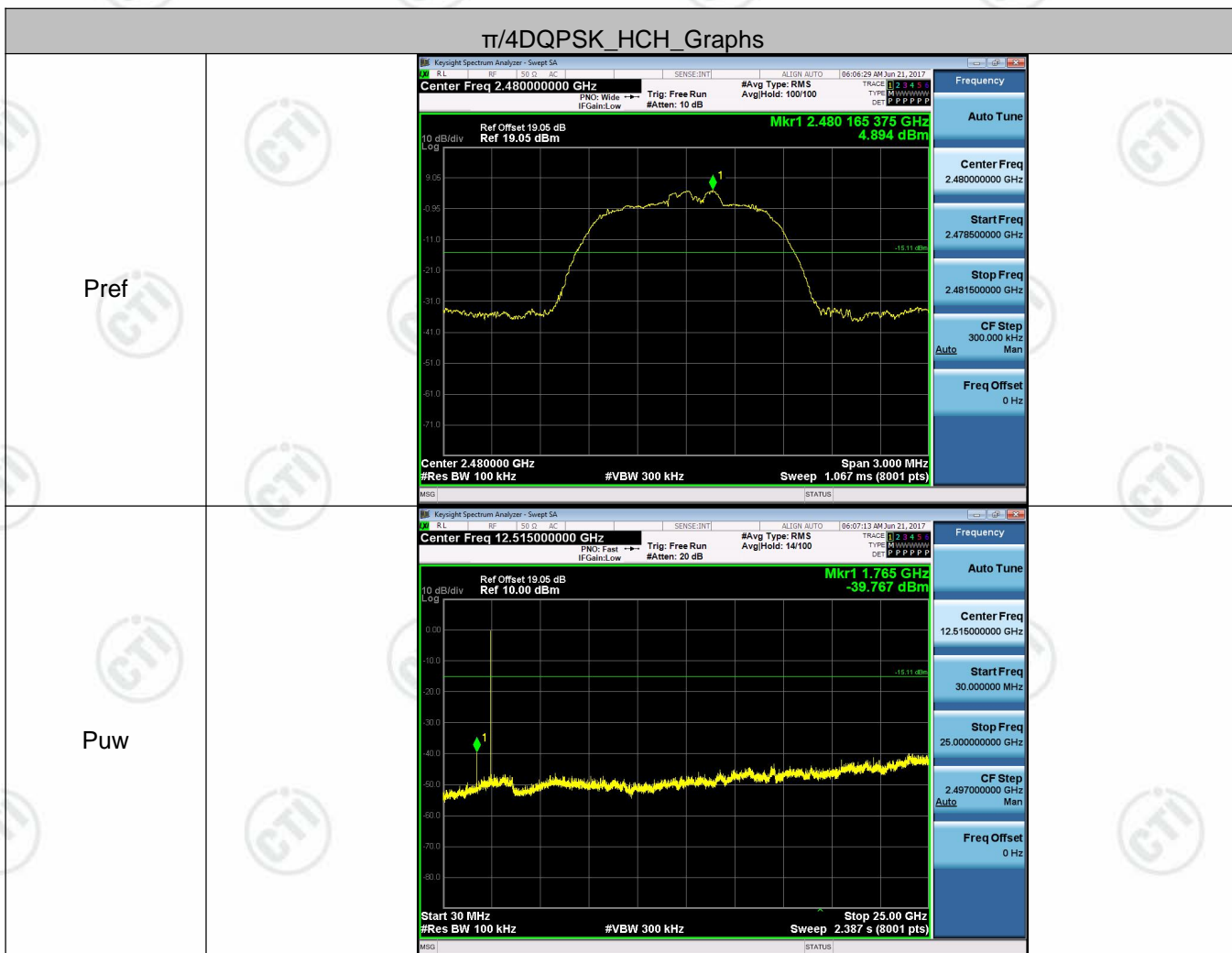
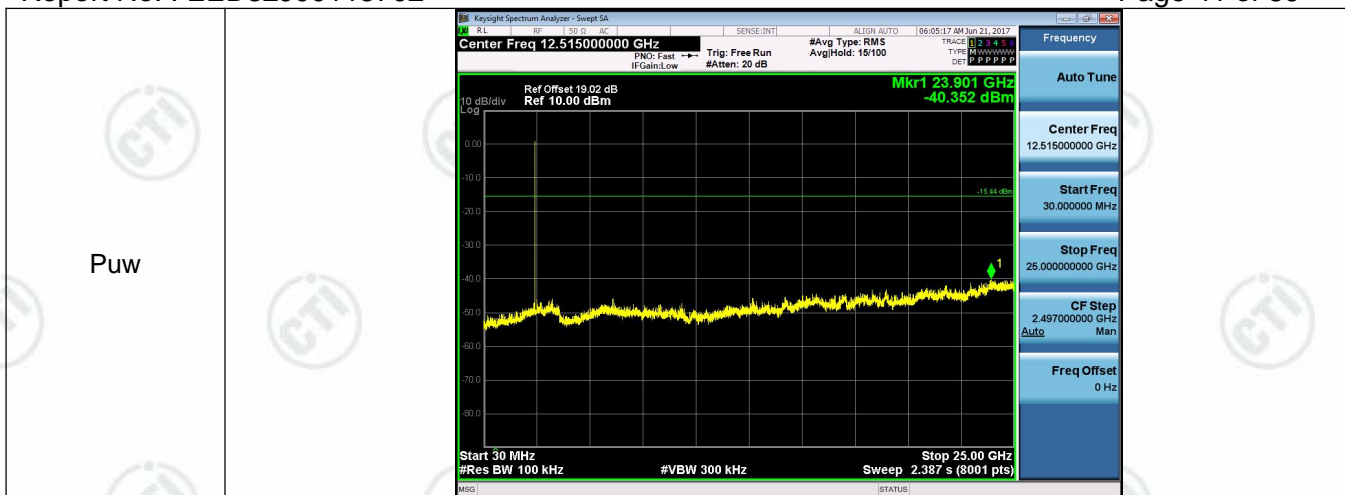
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	5.058	<Limit	PASS
GFSK	MCH	4.624	<Limit	PASS
GFSK	HCH	4.991	<Limit	PASS
$\pi/4$ DQPSK	LCH	5.061	<Limit	PASS
$\pi/4$ DQPSK	MCH	4.560	<Limit	PASS
$\pi/4$ DQPSK	HCH	4.894	<Limit	PASS
8DPSK	LCH	5.173	<Limit	PASS
8DPSK	MCH	4.750	<Limit	PASS
8DPSK	HCH	5.079	<Limit	PASS

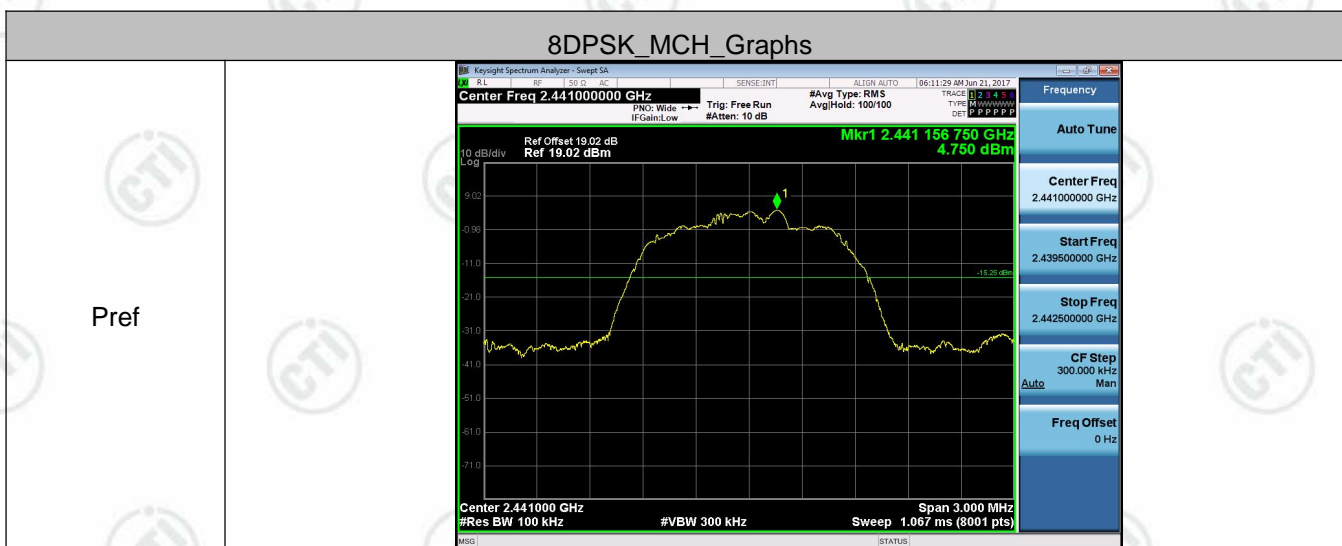
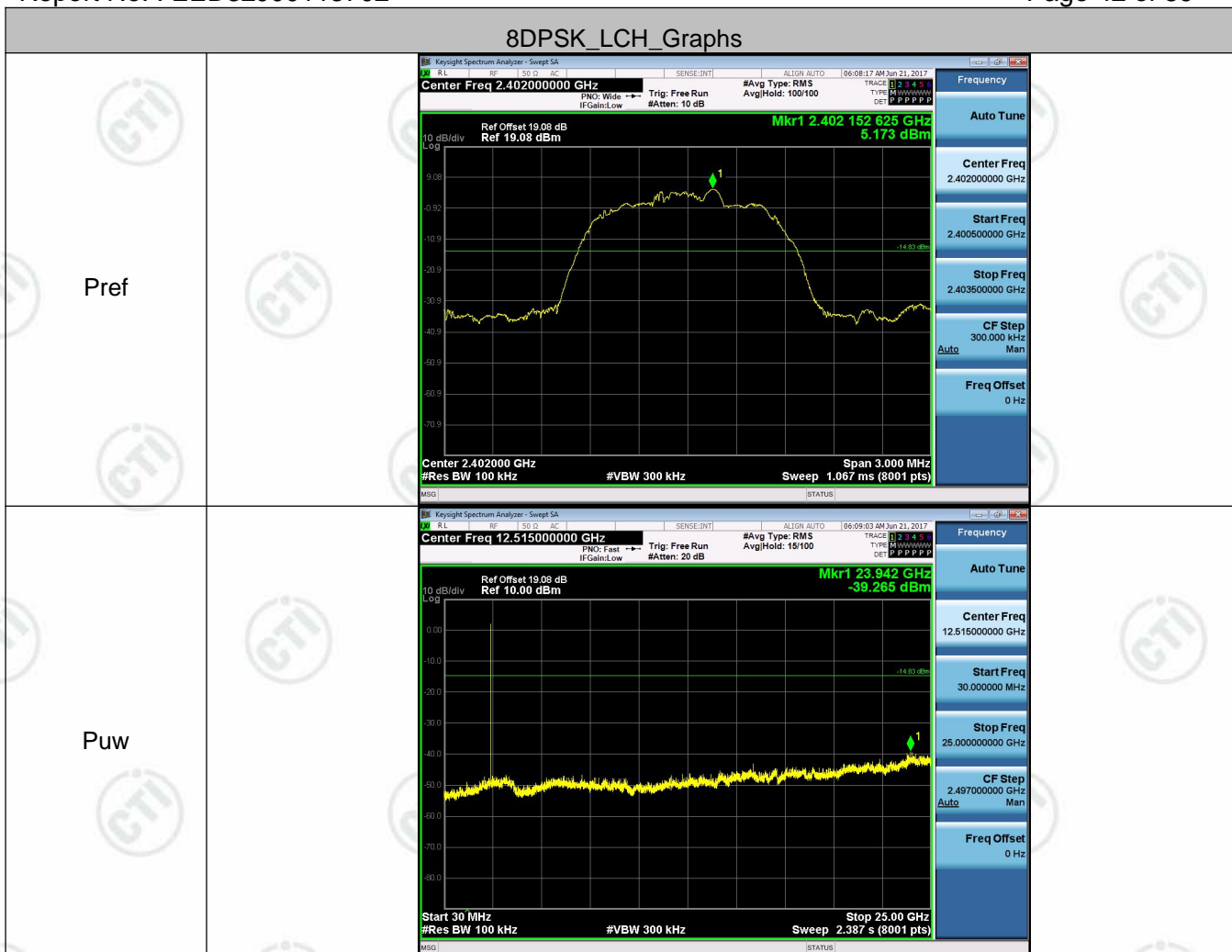
Test Graph

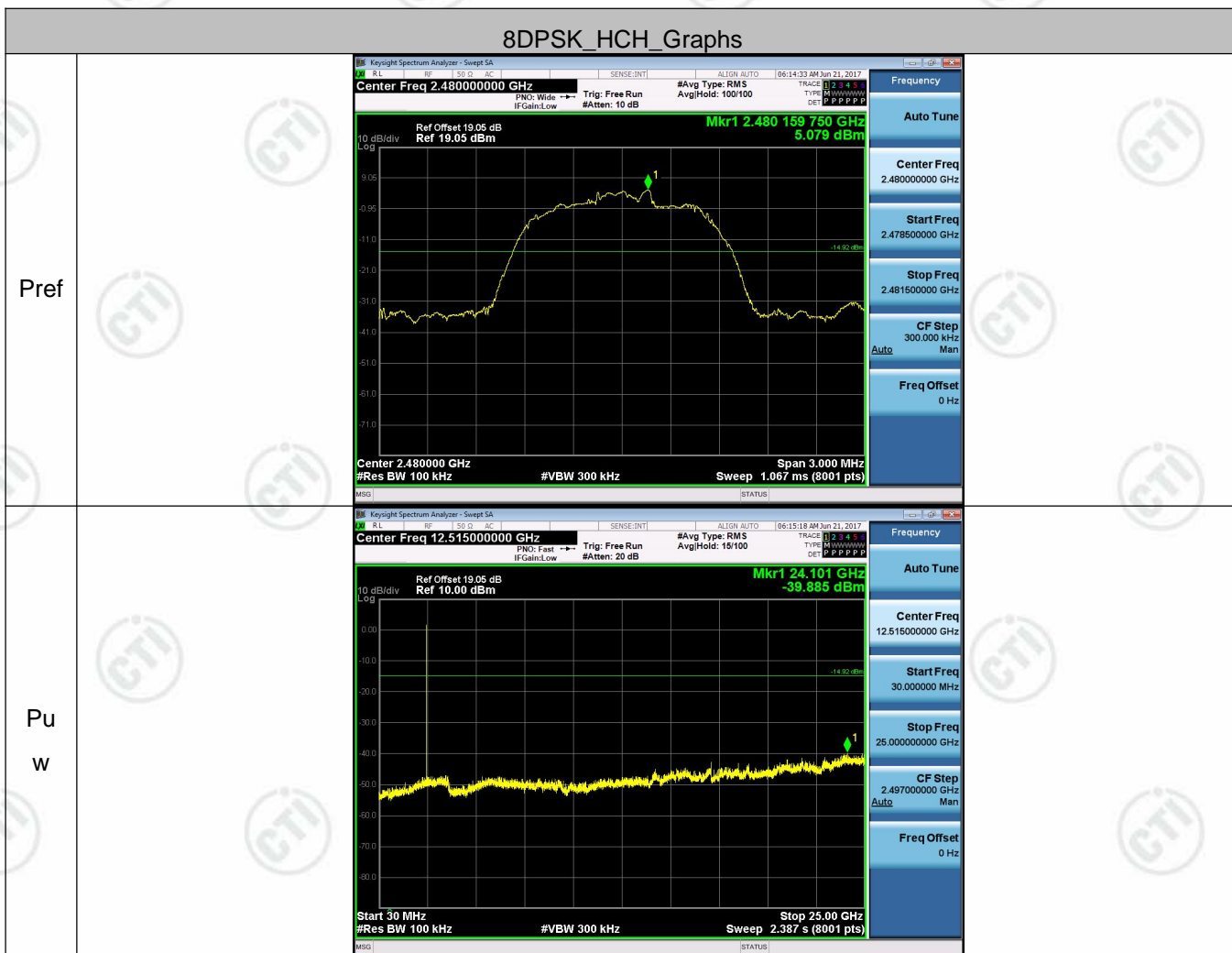
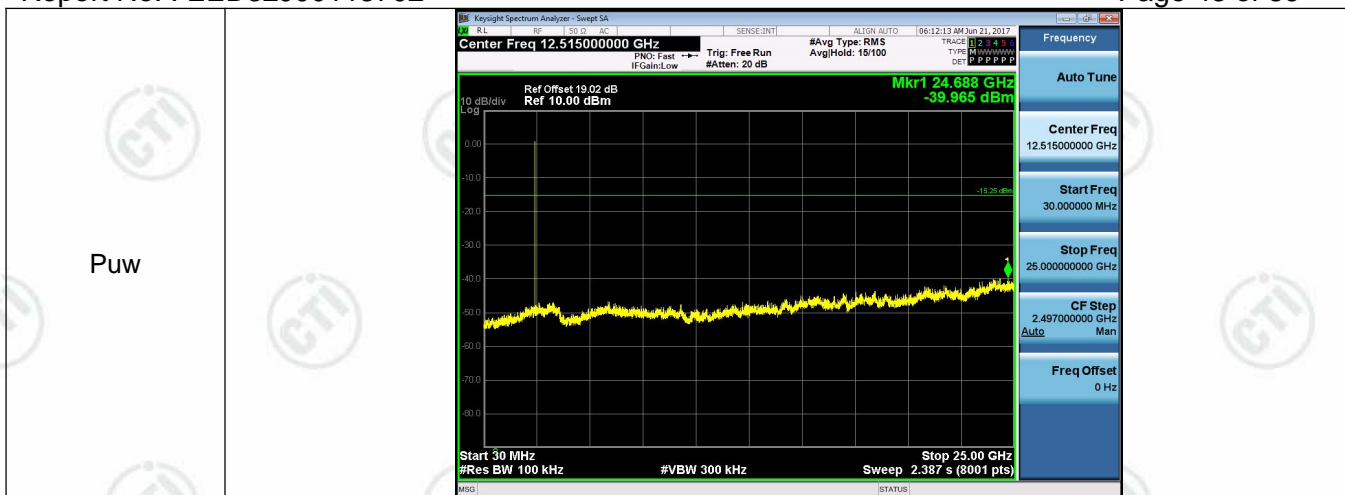












Appendix H): Pseudorandom Frequency Hopping Sequence

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1) requirement:
<p>Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.</p> <p>Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.</p> <p>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.</p>	
<p>EUT Pseudorandom Frequency Hopping Sequence</p> <p>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.</p> <ul style="list-style-type: none"> • Number of shift register stages: 9 • Length of pseudo-random sequence: $2^9 - 1 = 511$ bits • Longest sequence of zeros: 8 (non-inverted signal) <div data-bbox="316 981 1369 1131" data-label="Diagram"> </div> <p><i>Linear Feedback Shift Register for Generation of the PRBS sequence</i></p> <p>An example of Pseudorandom Frequency Hopping Sequence as follow:</p> <div data-bbox="288 1227 1273 1375" data-label="Figure"> </div> <p>Each frequency used equally on the average by each transmitter.</p> <p>The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.</p> <p>The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.</p>	

Appendix I): Antenna Requirement

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.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1dBi.

Appendix J): AC Power Line Conducted Emission

Test Procedure:	<p>Test frequency range :150KHz-30MHz</p> <p>1)The mains terminal disturbance voltage test was conducted in a shielded room.</p> <p>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.</p> <p>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,</p> <p>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.</p> <p>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 on conducted measurement.</p>														
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> <p>* The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.</p> <p>NOTE : The lower limit is applicable at the transition frequency</p>	Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBμV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													

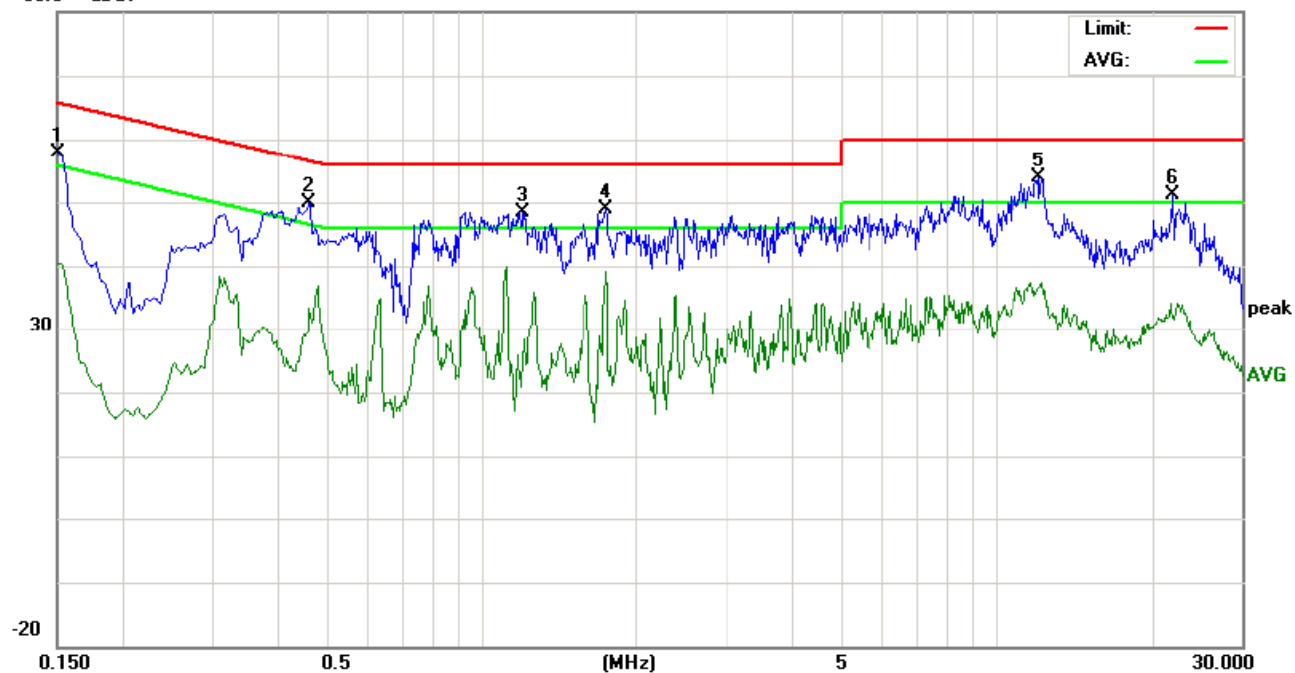
Measurement Data

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.

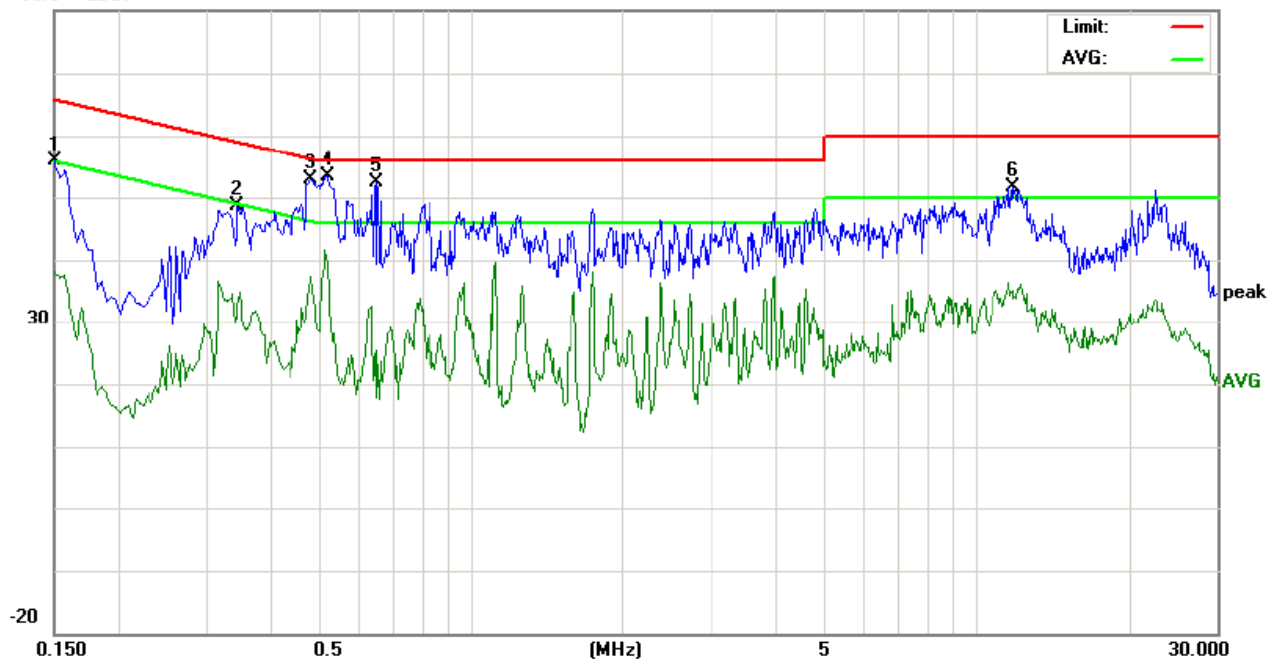
Live line:

80.0 dBuV



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1500	48.06	44.32	30.60	9.77	57.83	54.09	40.37	65.99	55.99	-11.90	-15.62	P	
2	0.4660	40.06	35.12	23.66	9.72	49.78	44.84	33.38	56.58	46.58	-11.74	-13.20	P	
3	1.1980	38.76	34.14	15.63	9.64	48.40	43.78	25.27	56.00	46.00	-12.22	-20.73	P	
4	1.7500	39.08	32.71	29.37	9.69	48.77	42.40	39.06	56.00	46.00	-13.60	-6.94	P	
5	12.1140	44.00	40.25	26.77	9.94	53.94	50.19	36.71	60.00	50.00	-9.81	-13.29	P	
6	22.1780	40.91	36.14	21.84	10.17	51.08	46.31	32.01	60.00	50.00	-13.69	-17.99	P	

Neutral line:
80.0 dBuV



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1500	45.99	41.32	28.30	9.77	55.76	51.09	38.07	65.99	55.99	-14.90	-17.92	P	
2	0.3460	38.87	35.61	22.84	9.77	48.64	45.38	32.61	59.06	49.06	-13.68	-16.45	P	
3	0.4860	43.24	41.62	27.29	9.72	52.96	51.34	37.01	56.24	46.24	-4.90	-9.23	P	
4	0.5220	43.57	42.40	30.50	9.72	53.29	52.12	40.22	56.00	46.00	-3.88	-5.78	P	
5	0.6465	42.61	34.24	17.17	9.75	52.36	43.99	26.92	56.00	46.00	-12.01	-19.08	P	
6	11.8460	41.81	36.52	25.24	9.93	51.74	46.45	35.17	60.00	50.00	-13.55	-14.83	P	

Notes:

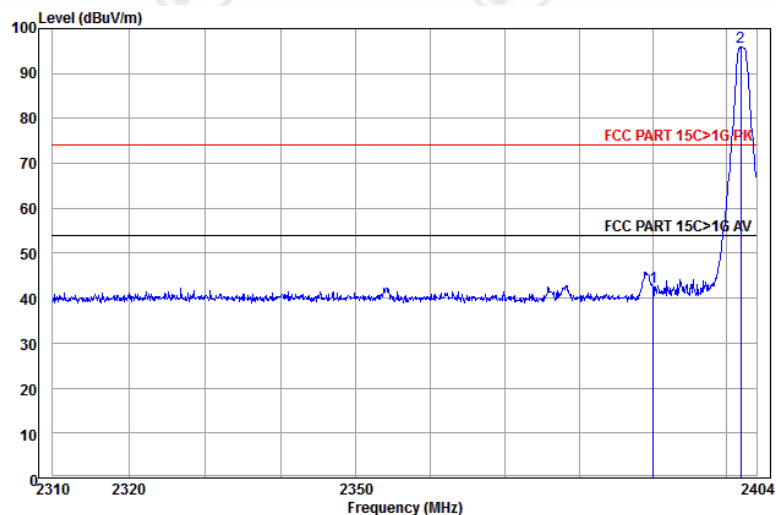
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.
3. AC120V and 240V are tested and found the worst case is 120V, So only the 120V data were shown in the above.

Appendix K): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:	<table><tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Remark</td></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr></table>	Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	Peak	1MHz	10Hz	Average	
Frequency	Detector	RBW	VBW	Remark																	
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
	Peak	1MHz	10Hz	Average																	
Test Procedure:	<p>Below 1GHz test procedure as below:</p> <p>a. The EUT was placed on the top of a rotating table 0.8 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.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.</p> <p>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel</p> <p>Above 1GHz test procedure as below:</p> <p>g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).</p> <p>h. b. Test the EUT in the lowest channel , the Highest channel</p> <p>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>																				
Limit:	<table><tr><td>Frequency</td><td>Limit (dBuV/m @3m)</td><td>Remark</td></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>74.0</td><td>Peak Value</td></tr></table>	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
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																			

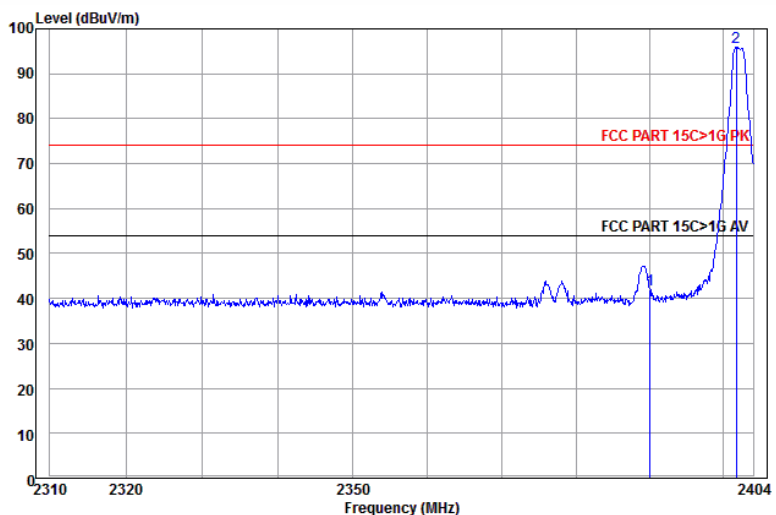
Test plot as follows:

Worse case mode:	GFSK(1-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



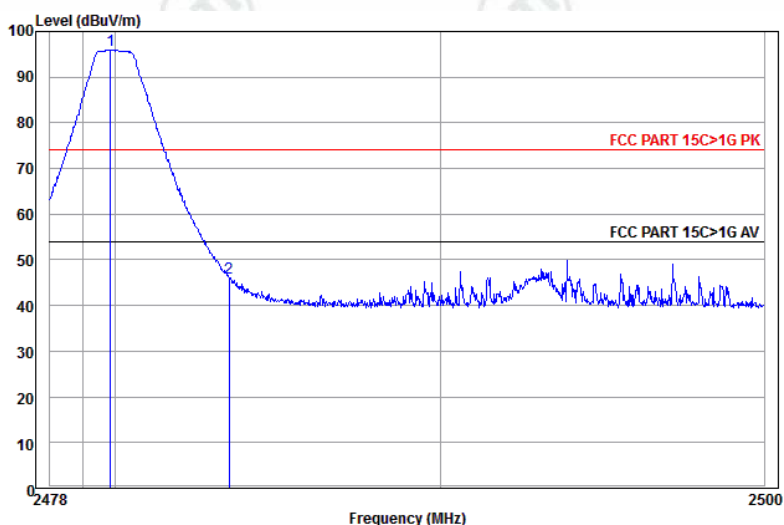
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	3.07	44.03	51.00	42.57	74.00	-31.43	Horizontal	
2 pp	2401.891	32.56	3.07	44.04	104.34	95.93	74.00	21.93	Horizontal	

Worse case mode:	GFSK(1-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



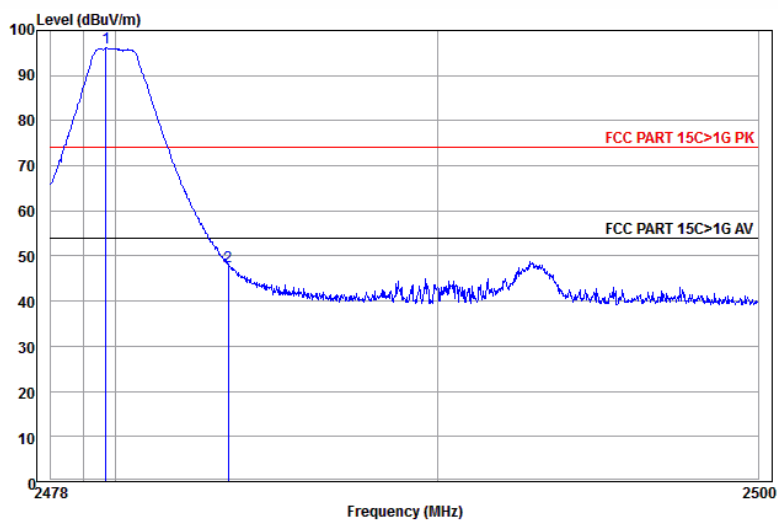
	Freq	Ant Factor	Cable Loss	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	3.07	44.03	50.38	41.95	74.00	-32.05	Vertical	
2 pp	2401.700	32.56	3.07	44.04	104.31	95.90	74.00	21.90	Vertical	

Worse case mode:	GFSK(1-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



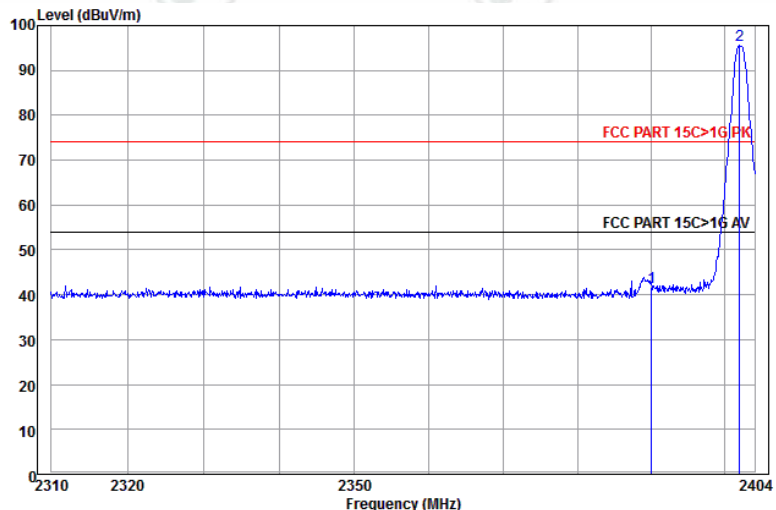
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2479.863	32.71	3.12	44.14	104.35	96.04	74.00	22.04	Horizontal
2	2483.500	32.71	3.12	44.14	54.42	46.11	74.00	-27.89	Horizontal

Worse case mode:	GFSK(1-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



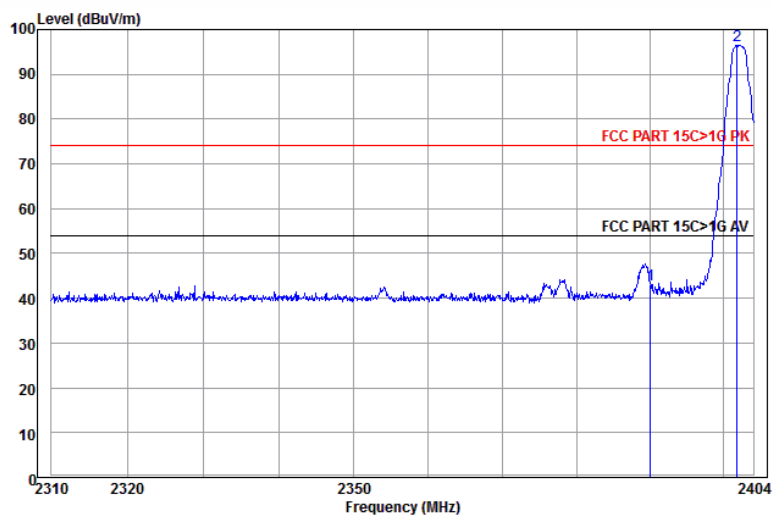
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2479.709	32.71	3.12	44.14	104.41	96.10	74.00	22.10	Vertical
2	2483.500	32.71	3.12	44.14	55.98	47.67	74.00	-26.33	Vertical

Worse case mode:	$\pi/4$ DQPSK(2-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



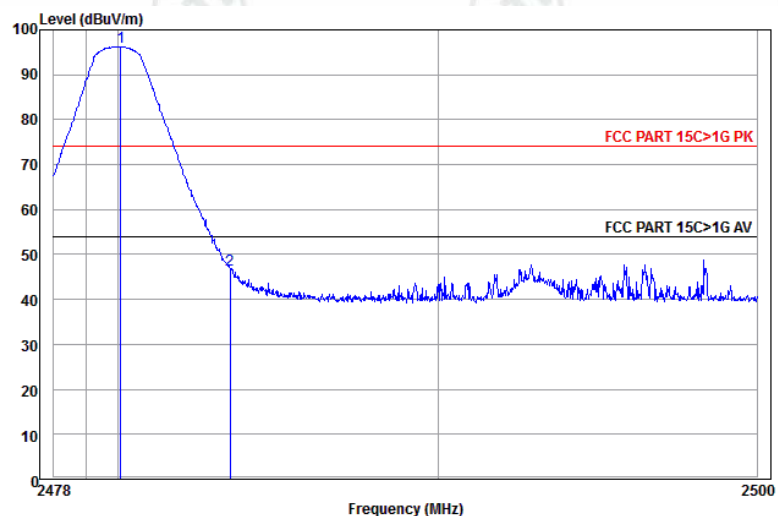
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	3.07	44.03	50.02	41.59	74.00	-32.41	Horizontal
2 pp	2401.987	32.56	3.07	44.04	103.99	95.58	74.00	21.58	Horizontal

Worse case mode:	$\pi/4$ DQPSK(2-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



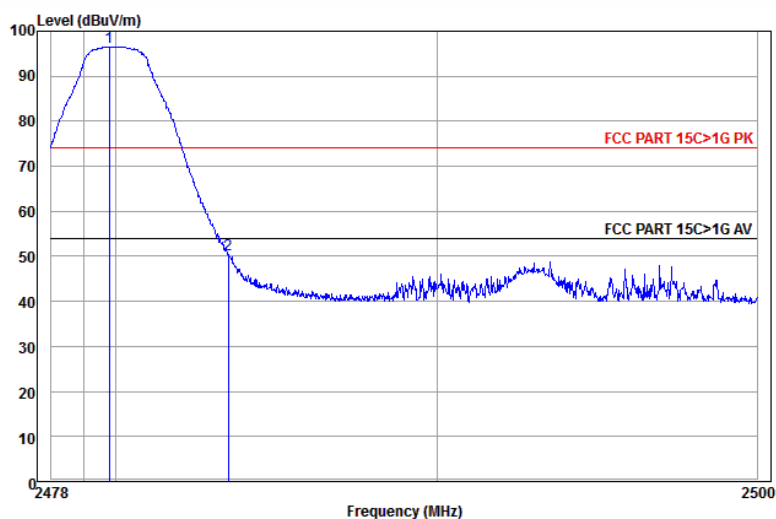
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	3.07	44.03	51.42	42.99	74.00	-31.01	Vertical
2 pp	2401.796	32.56	3.07	44.04	104.89	96.48	74.00	22.48	Vertical

Worse case mode:	$\pi/4$ DQPSK(2-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



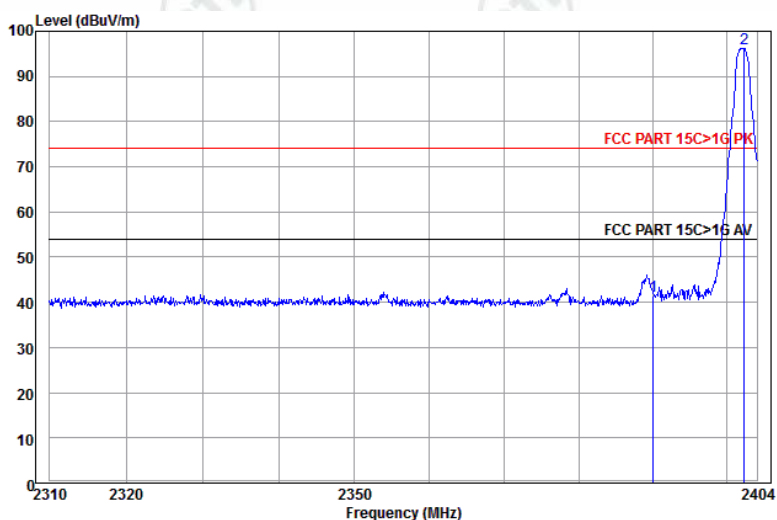
	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2480.082	32.71	3.12	44.14	104.52	96.21	74.00	22.21	Horizontal	
2	2483.500	32.71	3.12	44.14	54.89	46.58	74.00	-27.42	Horizontal	

Worse case mode:	$\pi/4$ DQPSK(2-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



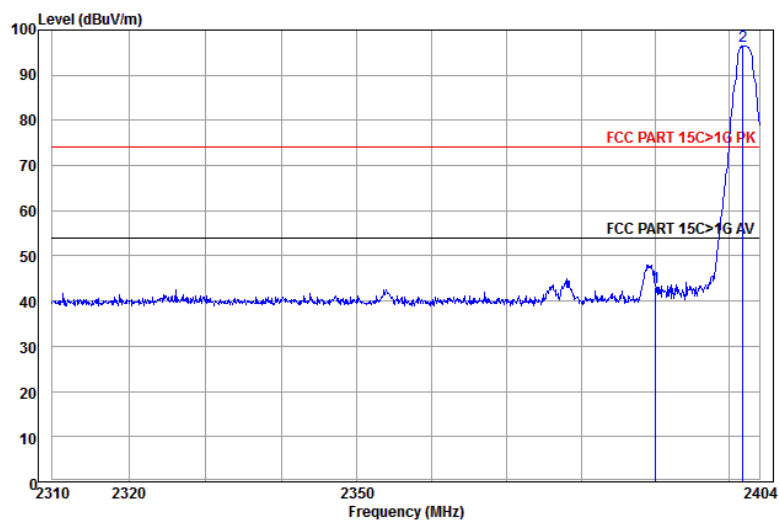
	Ant Freq	Cable Factor	Preamp Loss	Preamp Factor	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	2479.797	32.71	3.12	44.14	104.87	96.56	74.00	22.56	Vertical	
2	2483.500	32.71	3.12	44.14	58.81	50.50	74.00	-23.50	Vertical	

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



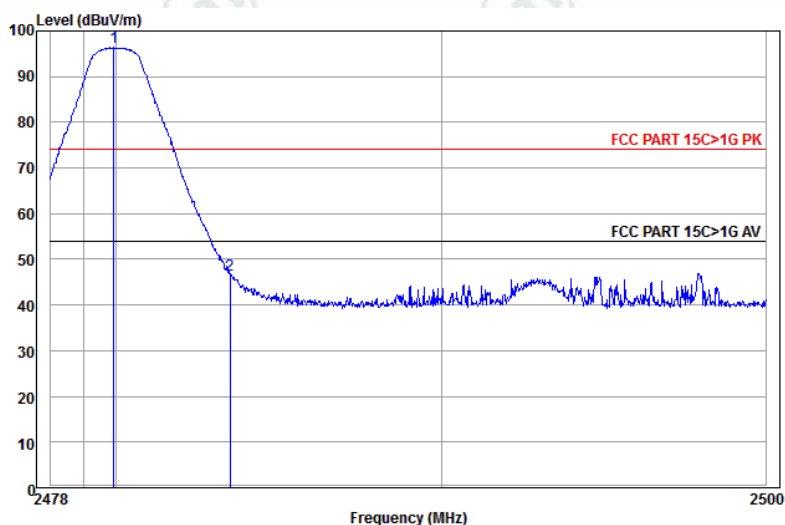
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	3.07	44.03	49.86	41.43	74.00	-32.57	Horizontal
2 pp	2402.275	32.56	3.08	44.04	104.65	96.25	74.00	22.25	Horizontal

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



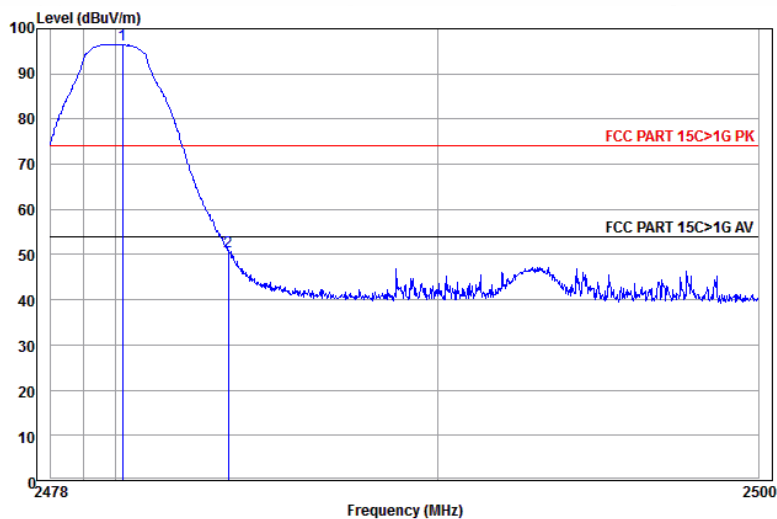
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	3.07	44.03	51.49	43.06	74.00	-30.94	Vertical
2 pp	2401.796	32.56	3.07	44.04	104.85	96.44	74.00	22.44	Vertical

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2479.928	32.71	3.12	44.14	104.67	96.36	74.00	22.36	Horizontal
2	2483.500	32.71	3.12	44.14	54.99	46.68	74.00	-27.32	Horizontal

Worse case mode:	8DPSK(3-DH5)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2480.213	32.71	3.12	44.14	104.84	96.53	74.00	22.53	Vertical
2	2483.500	32.71	3.12	44.14	59.09	50.78	74.00	-23.22	Vertical

Note:

1) Through Pre-scan Non-hopping transmitting mode and charge+transmitter mode with all kind of modulation and all kind of data type, find the 1-DH5 of data type is the worse case of GFSK modulation type, the 2-DH5 of data type is the worse case of $\pi/4$ DQPSK modulation type, the 3-DH5 of data type is the worse case of 8DPSK modulation type in charge + transmitter mode.

2) 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 - Correct Factor

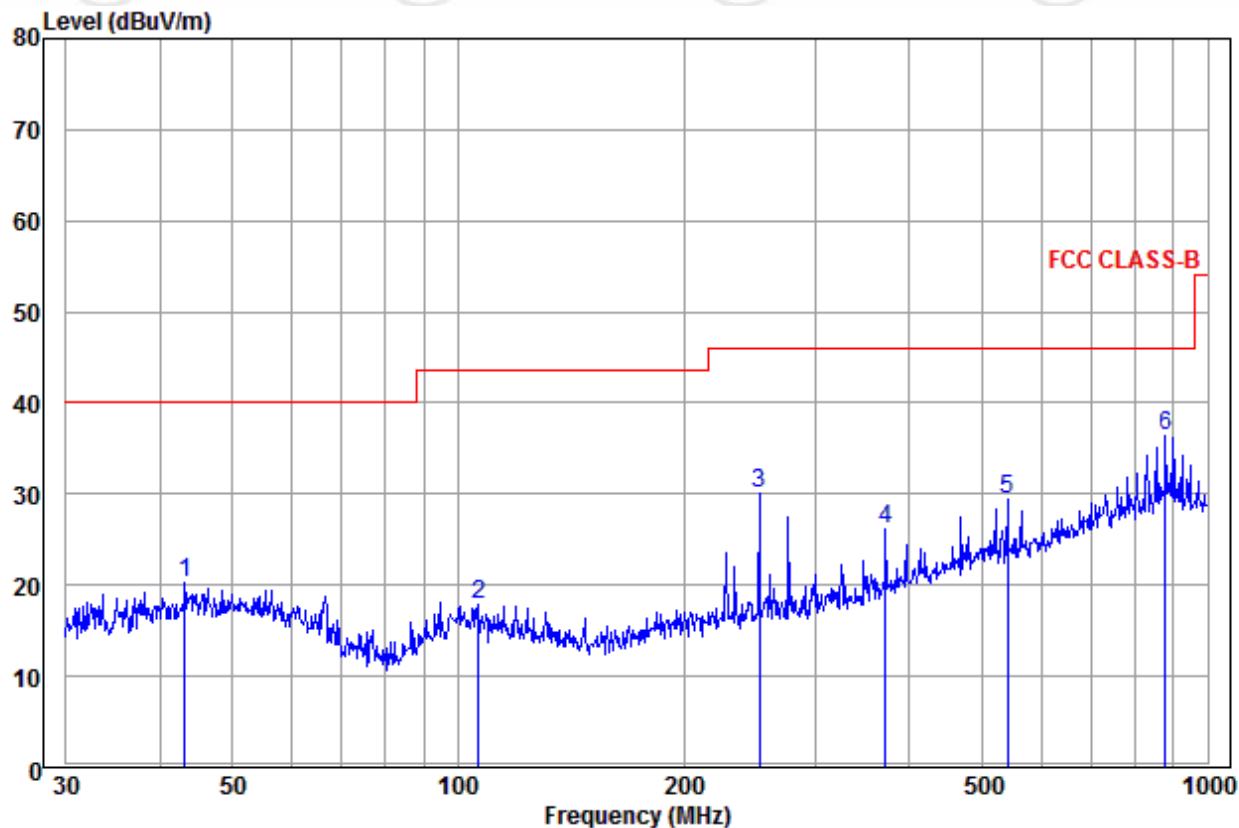
Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

Appendix L): Radiated Spurious Emissions

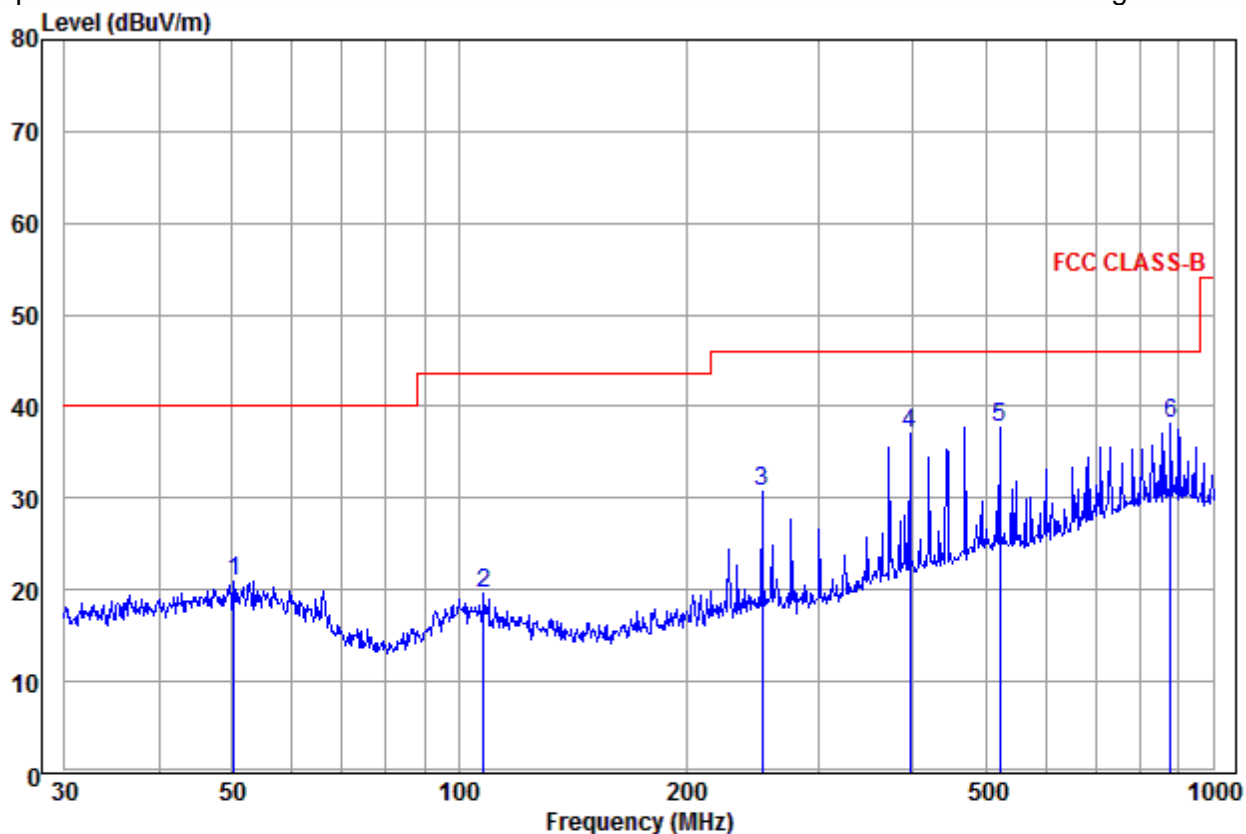
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:					
Below 1GHz test procedure as below:					
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.					
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.					
c. 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.					
d. 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.					
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.					
f. 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.					
Above 1GHz test procedure as below:					
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).					
h. Test the EUT in the lowest channel ,the middle 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.					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBμV/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
	Note: 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.				

Radiated Spurious Emissions test Data:
Radiated Emission below 1GHz

30MHz~1GHz (QP)



	Ant Freq	Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	43.202	14.51	0.07	5.67	20.25	40.00	-19.75	Horizontal	
2	106.385	12.67	0.59	4.63	17.89	43.50	-25.61	Horizontal	
3	252.063	12.45	1.33	16.23	30.01	46.00	-15.99	Horizontal	
4	372.005	15.48	1.32	9.47	26.27	46.00	-19.73	Horizontal	
5	541.373	18.57	1.54	9.31	29.42	46.00	-16.58	Horizontal	
6 pp	878.322	22.19	2.47	11.84	36.50	46.00	-9.50	Horizontal	



	Ant Freq	Cable Factor	Read Level	Limit Level	Over Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dB		
1	50.232	15.07	0.11	5.80	20.98	40.00	-19.02	Vertical
2	107.888	12.54	0.59	6.55	19.68	43.50	-23.82	Vertical
3	252.063	12.45	1.33	16.87	30.65	46.00	-15.35	Vertical
4	396.242	16.19	1.32	19.60	37.11	46.00	-8.89	Vertical
5	520.888	18.49	1.53	17.71	37.73	46.00	-8.27	Vertical
6 pp	878.322	22.19	2.47	13.45	38.11	46.00	-7.89	Vertical

Transmitter Emission above 1GHz

Worse case mode:		GFSK(1-DH5)		Test channel:		Lowest			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
2861.381	33.38	5.34	44.56	42.72	36.88	74.00	-37.12	Pass	Horizontal
3359.099	33.29	5.55	44.66	43.27	37.45	74.00	-36.55	Pass	Horizontal
3766.785	32.97	5.48	44.62	44.94	38.77	74.00	-35.23	Pass	Horizontal
4804.000	34.69	5.11	44.60	40.48	35.68	74.00	-38.32	Pass	Horizontal
7206.000	36.42	6.66	44.77	41.46	39.77	74.00	-34.23	Pass	Horizontal
9608.000	37.88	7.73	45.58	40.10	40.13	74.00	-33.87	Pass	Horizontal
2691.804	33.09	4.98	44.38	43.54	37.23	74.00	-36.77	Pass	Vertical
3291.385	33.34	5.56	44.67	43.17	37.40	74.00	-36.60	Pass	Vertical
3719.146	33.00	5.49	44.63	43.55	37.41	74.00	-36.59	Pass	Vertical
4804.000	34.69	5.11	44.60	43.37	38.57	74.00	-35.43	Pass	Vertical
7206.000	36.42	6.66	44.77	42.29	40.60	74.00	-33.40	Pass	Vertical
9608.000	37.88	7.73	45.58	41.03	41.06	74.00	-32.94	Pass	Vertical

Worse case mode:		GFSK(1-DH5)		Test channel:		Middle			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
3072.770	33.53	5.61	44.69	42.90	37.35	74.00	-36.65	Pass	Horizontal
3747.656	32.98	5.48	44.62	43.52	37.36	74.00	-36.64	Pass	Horizontal
4202.500	33.31	5.35	44.60	42.82	36.88	74.00	-37.12	Pass	Horizontal
4882.000	34.85	5.08	44.60	42.69	38.02	74.00	-35.98	Pass	Horizontal
7323.000	36.43	6.77	44.87	41.13	39.46	74.00	-34.54	Pass	Horizontal
9764.000	38.05	7.60	45.55	41.68	41.78	74.00	-32.22	Pass	Horizontal
2861.381	33.38	5.34	44.56	44.62	38.78	74.00	-35.22	Pass	Vertical
3342.042	33.30	5.55	44.66	43.16	37.35	74.00	-36.65	Pass	Vertical
3776.385	32.96	5.48	44.62	44.24	38.06	74.00	-35.94	Pass	Vertical
4882.000	34.85	5.08	44.60	42.04	37.37	74.00	-36.63	Pass	Vertical
7323.000	36.43	6.77	44.87	40.36	38.69	74.00	-35.31	Pass	Vertical
9764.000	38.05	7.60	45.55	42.30	42.40	74.00	-31.60	Pass	Vertical