

Environmental Conditions

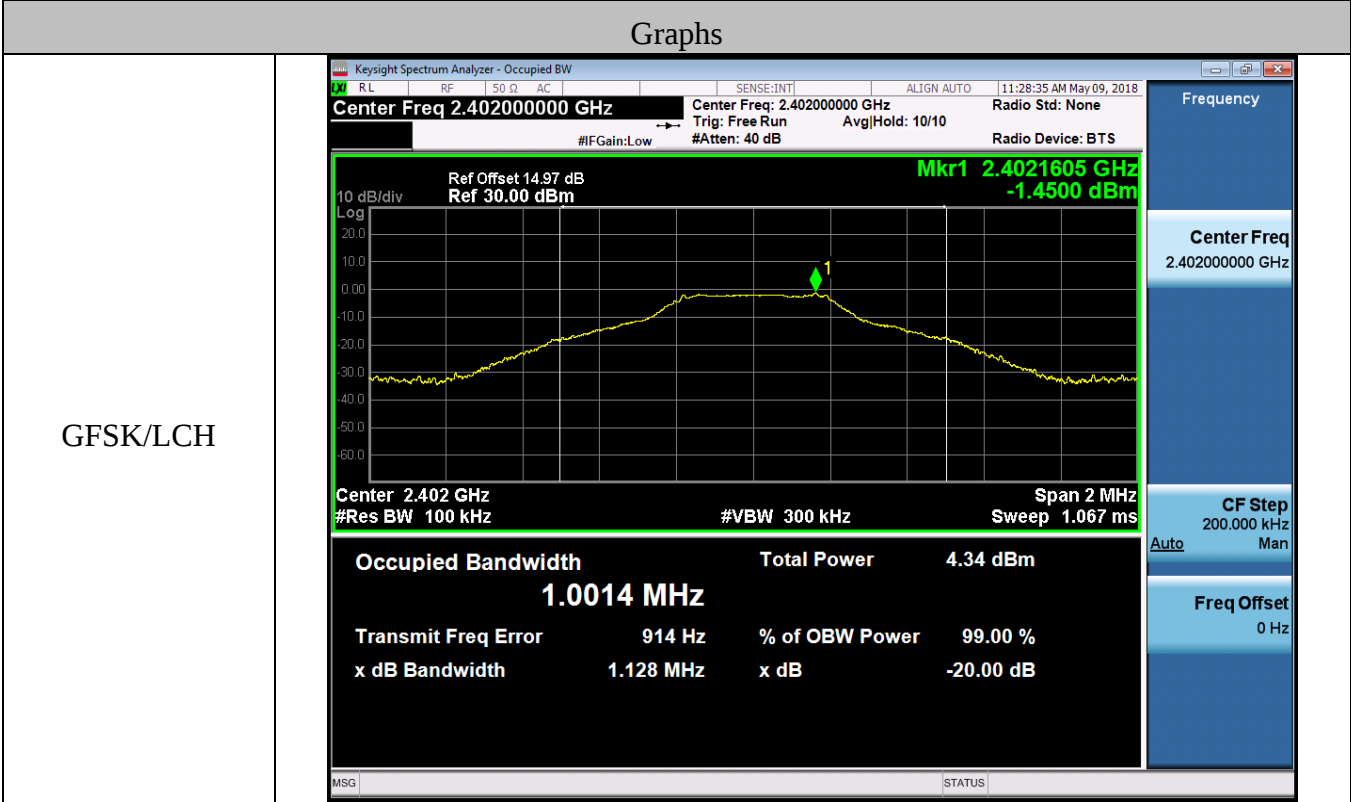
Temperature:	23.5 °C
Relative Humidity:	55.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

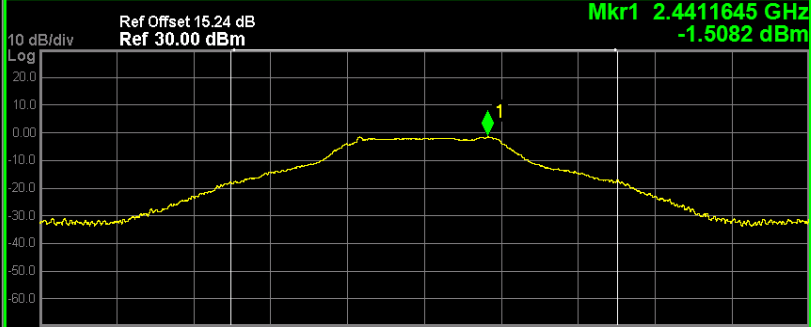
Appendix A): 20dB Bandwidth

Test Result

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.128	Not Specified	PASS
	MCH	1.137	Not Specified	PASS
	HCH	1.147	Not Specified	PASS

Test Graph



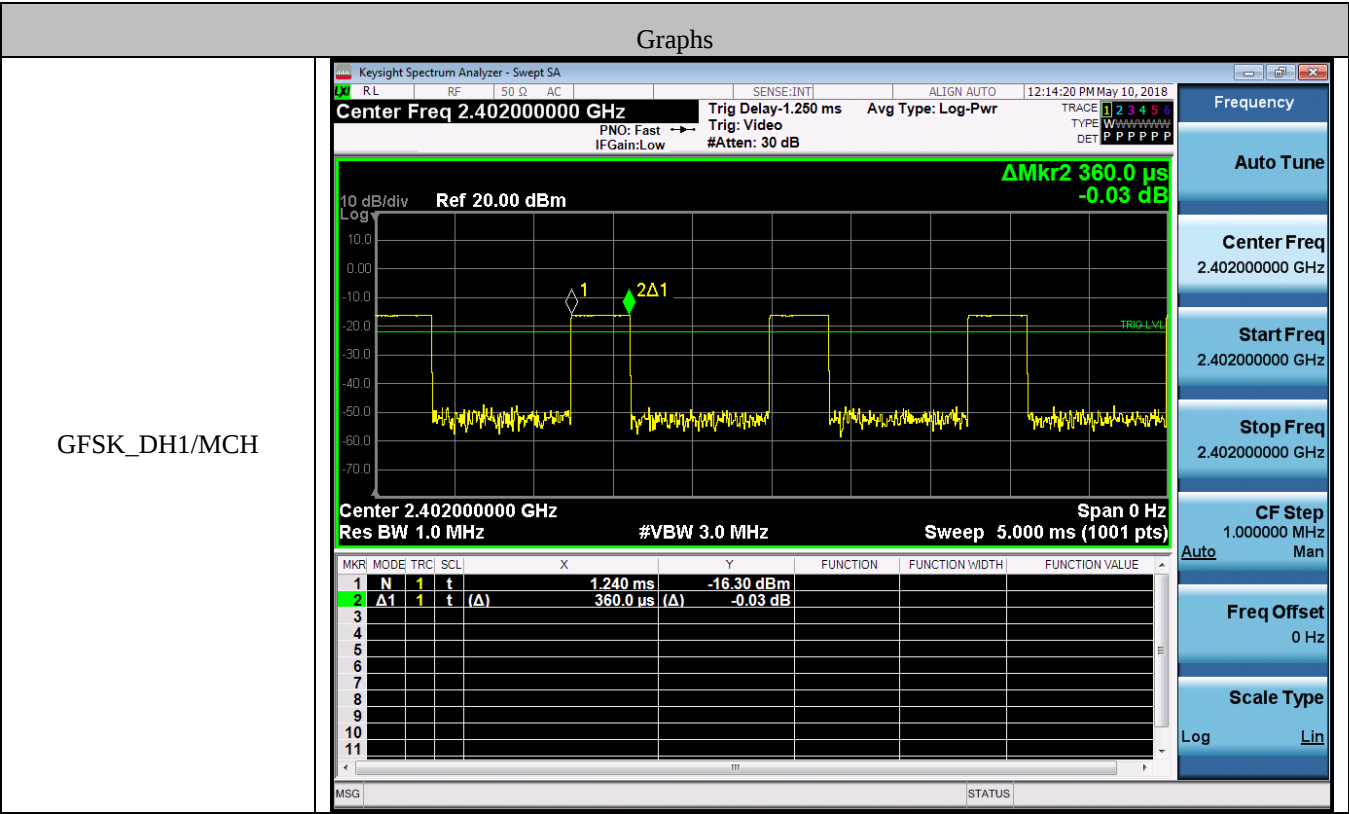
GFSK/MCH	Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:38:32 AM May 09, 2018 Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None #IFGain:Low #Atten: 40 dB Radio Device: BTS 10 dB/div Ref Offset 15.24 dB Ref 30.00 dBm Mkr1 2.4411645 GHz -1.5082 dBm  Center 2.441 GHz #Res BW 100 kHz #VBW 300 kHz Span 2 MHz Sweep 1.067 ms Occupied Bandwidth 1.0008 MHz Total Power 4.37 dBm Transmit Freq Error 1.198 kHz % of OBW Power 99.00 % x dB Bandwidth 1.137 MHz x dB -20.00 dB MSG STATUS Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
GFSK/HCH	Keysight Spectrum Analyzer - Occupied BW RL RF 50 Ω AC SENSE:INT ALIGN AUTO 11:41:19 AM May 09, 2018 Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None #IFGain:Low #Atten: 40 dB Radio Device: BTS 10 dB/div Ref Offset 15.24 dB Ref 30.00 dBm Mkr1 2.4801625 GHz -1.7341 dBm  Center 2.48 GHz #Res BW 100 kHz #VBW 300 kHz Span 2 MHz Sweep 1.067 ms Occupied Bandwidth 1.0050 MHz Total Power 4.10 dBm Transmit Freq Error 1.766 kHz % of OBW Power 99.00 % x dB Bandwidth 1.147 MHz x dB -20.00 dB MSG STATUS Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

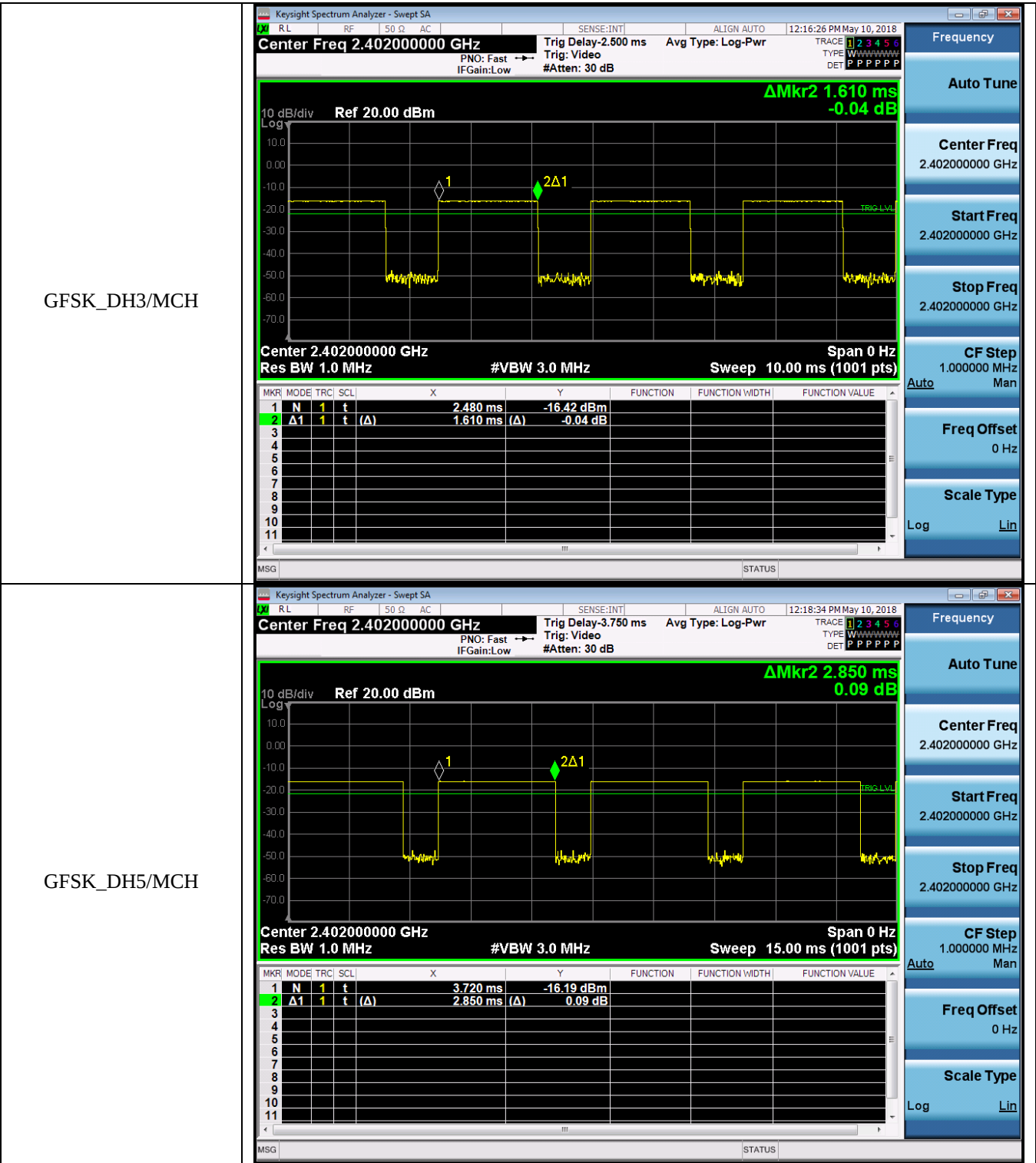
Appendix B): Dwell Time

Result Table

Mode	Packet	Chann el	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH1	MCH	0.36	320	0.115	0.4	PASS
GFSK	DH3	MCH	1.61	160	0.258	0.4	PASS
GFSK	DH5	MCH	2.85	106.7	0.304	0.4	PASS

Test Graph



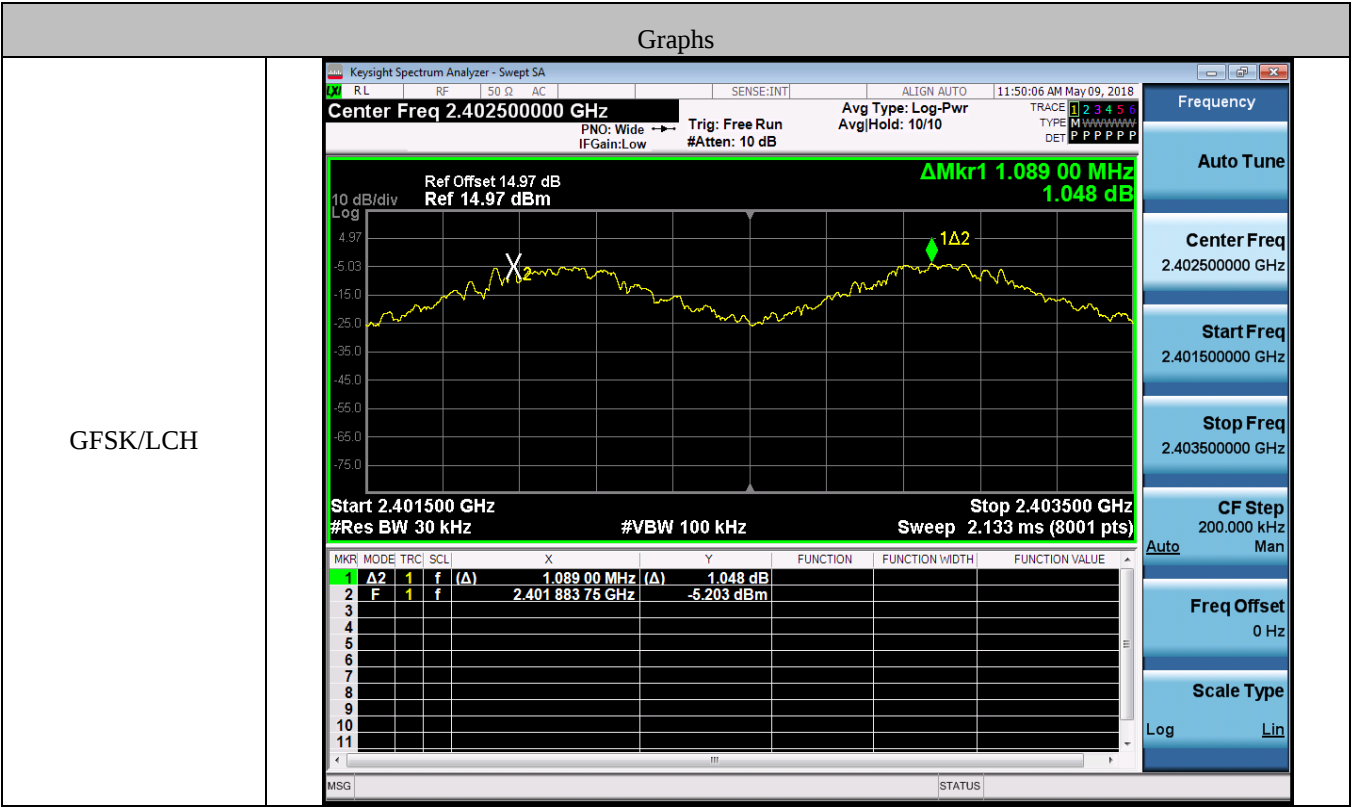


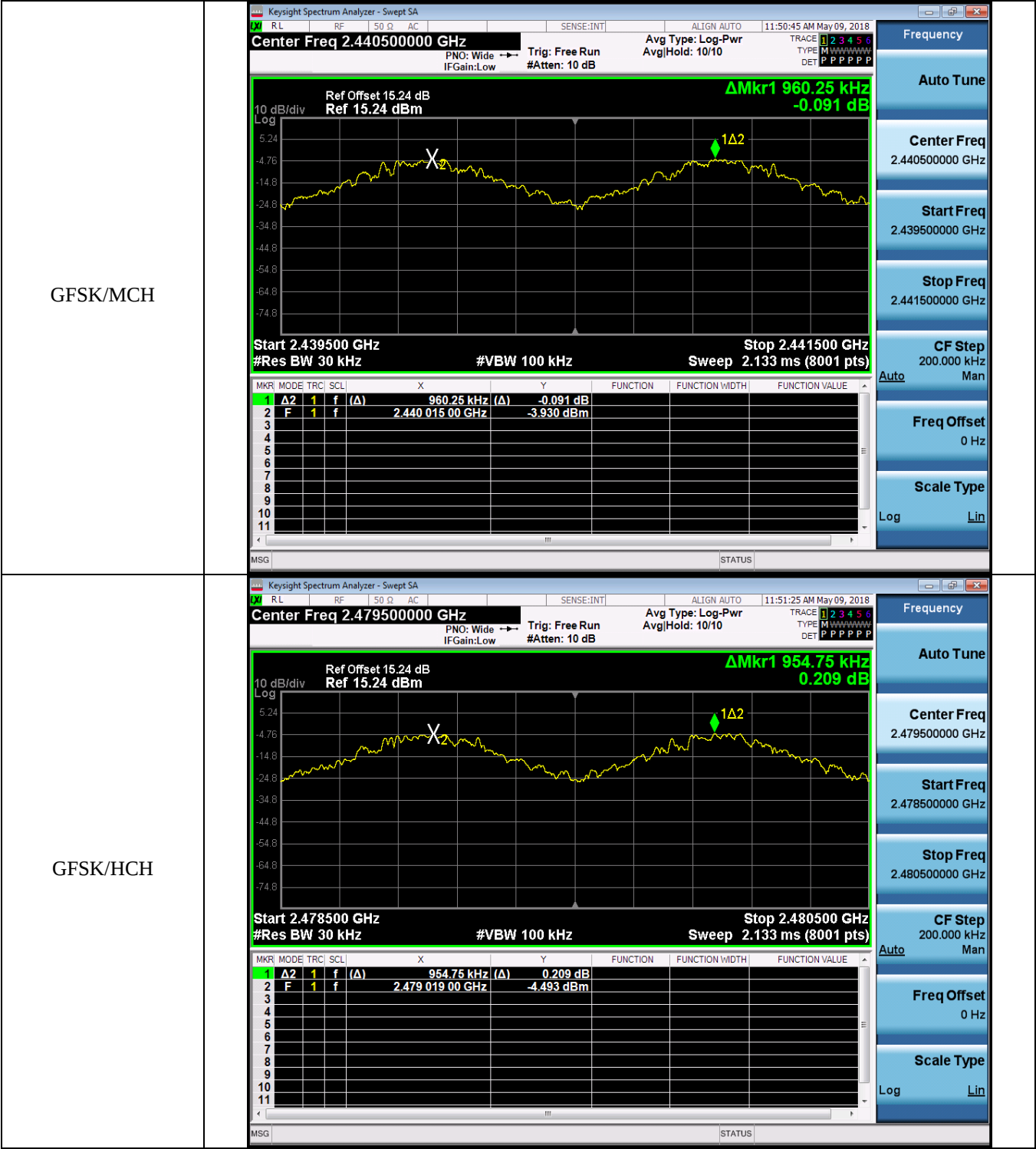
Appendix C): Carrier Frequency Separation

Result Table

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	1.089	0.648	PASS
	MCH	0.960	0.678	PASS
	HCH	0.955	0.687	PASS

Test Graph



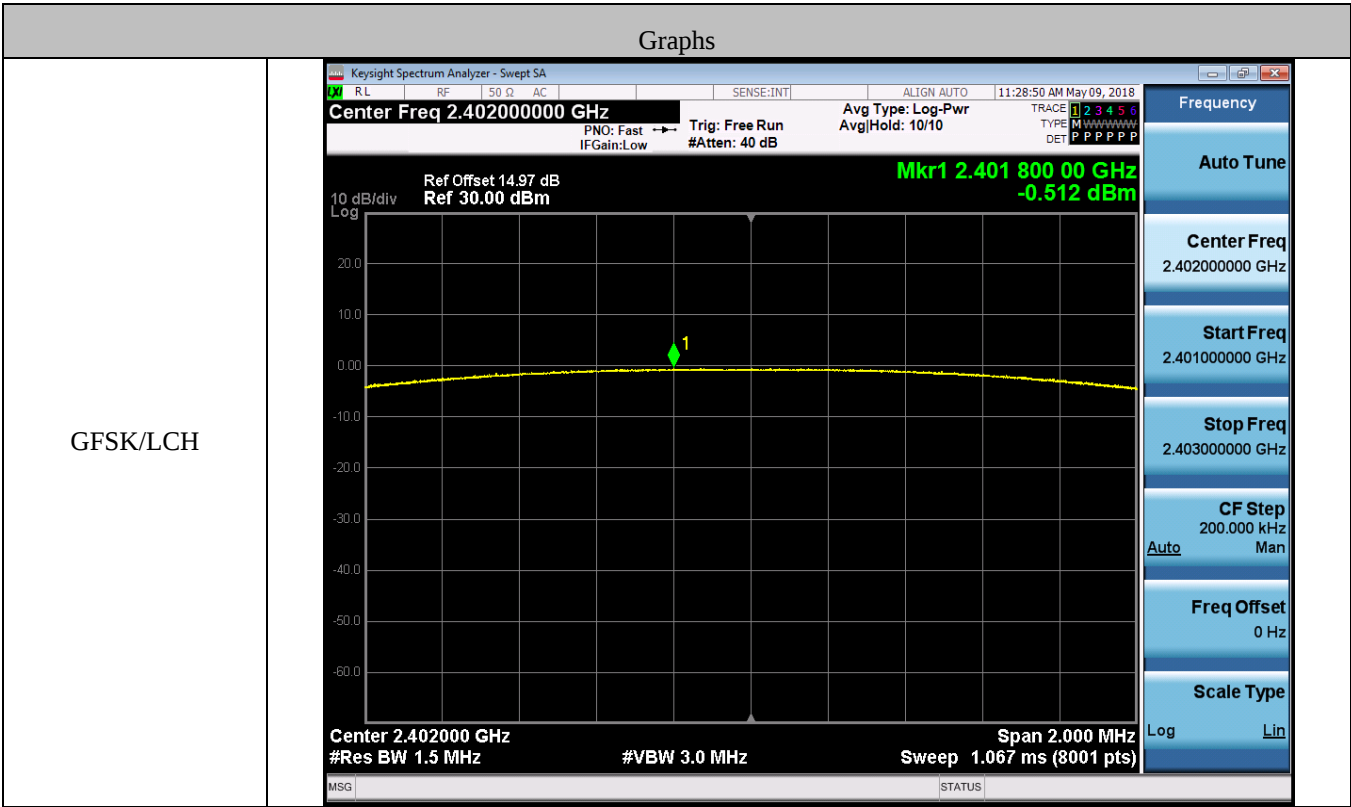


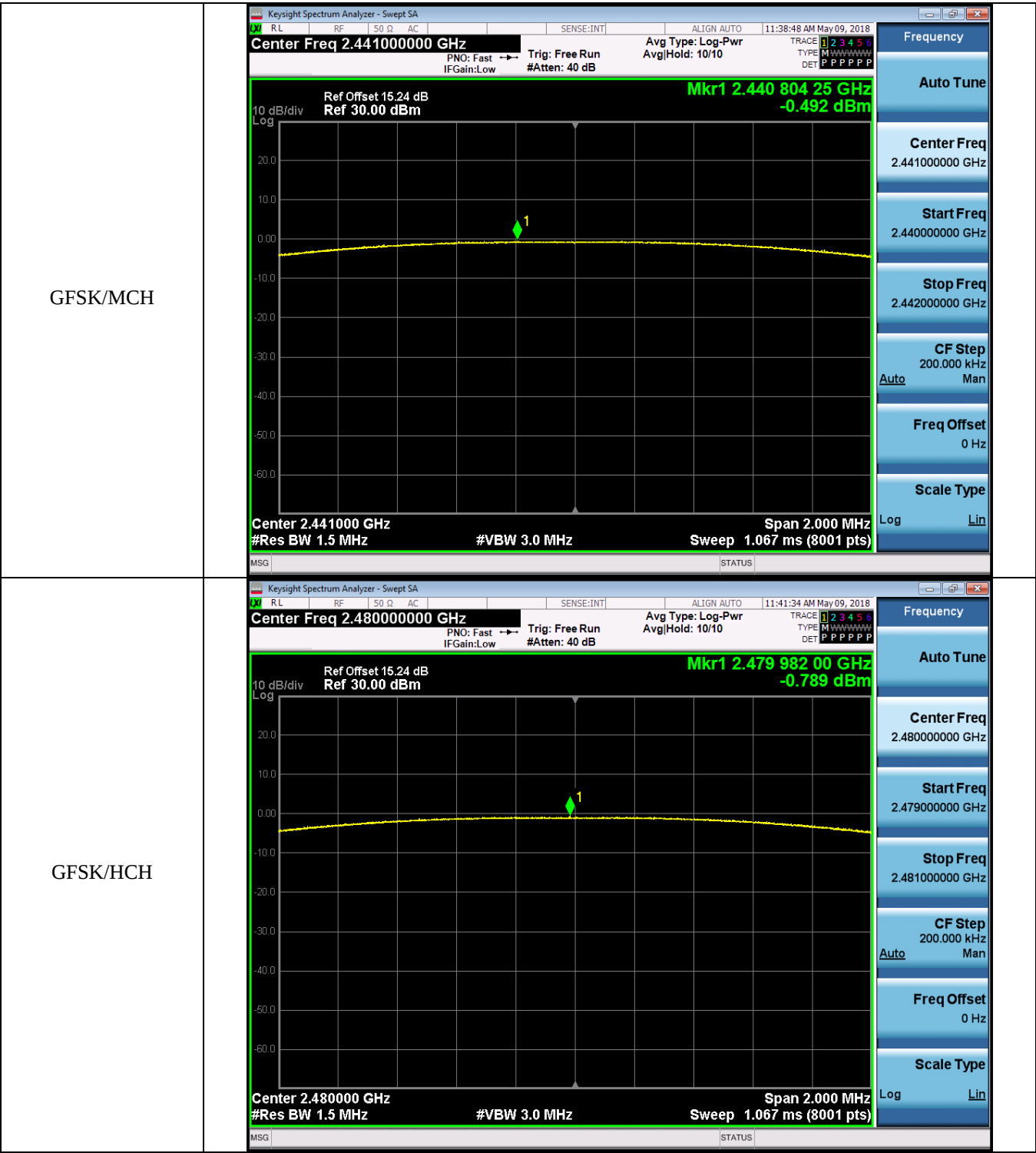
Appendix E): Conducted Peak Output Power

Result Table

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.512	21	PASS
	MCH	-0.492	21	PASS
	HCH	-0.789	21	PASS

Test Graph



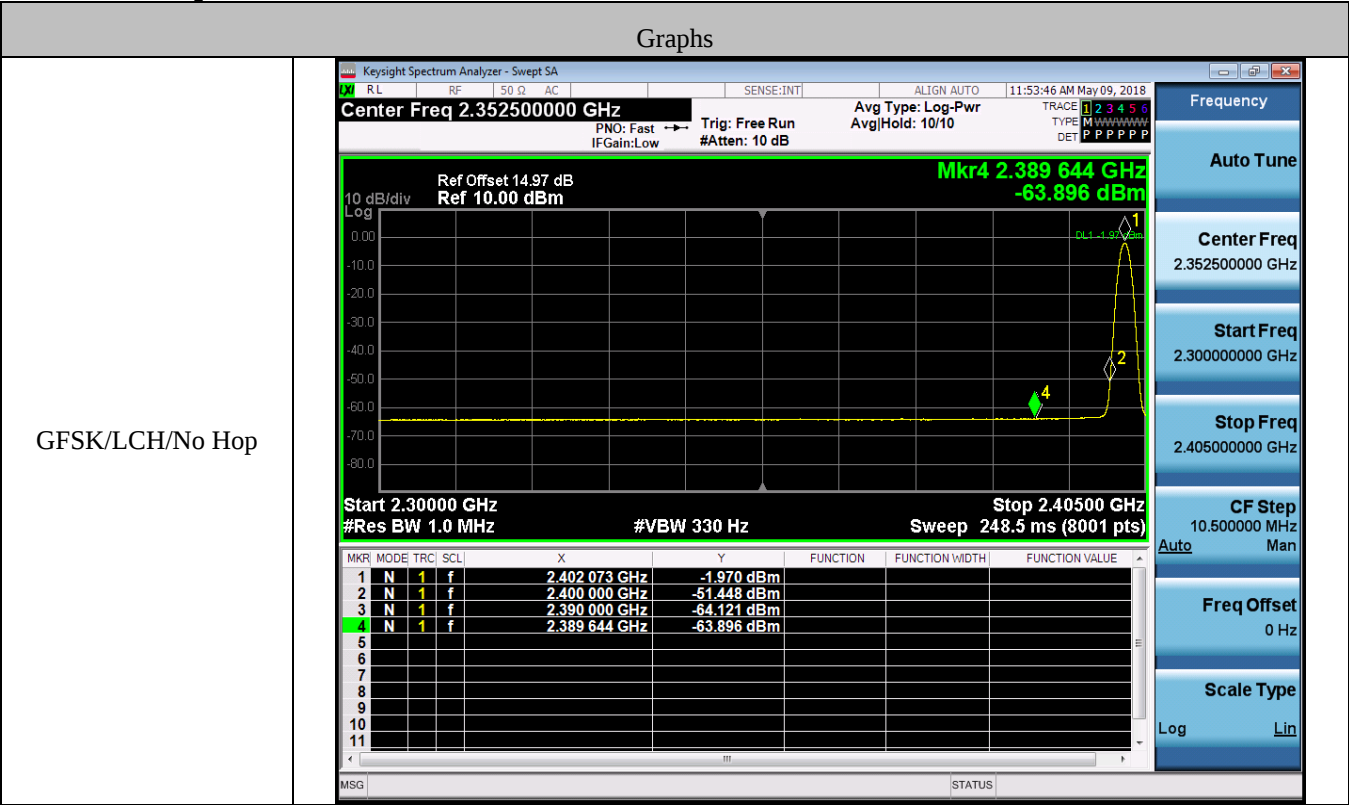


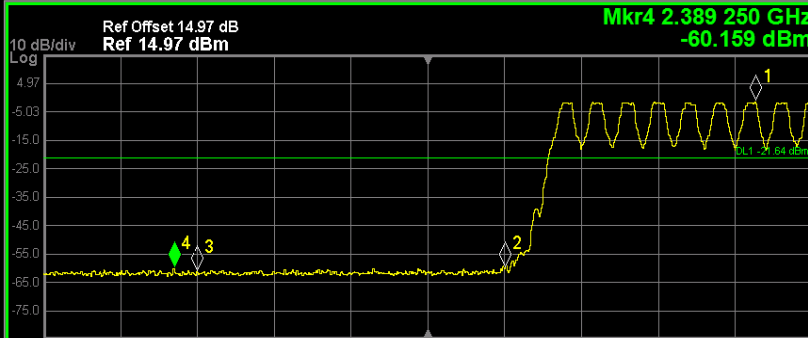
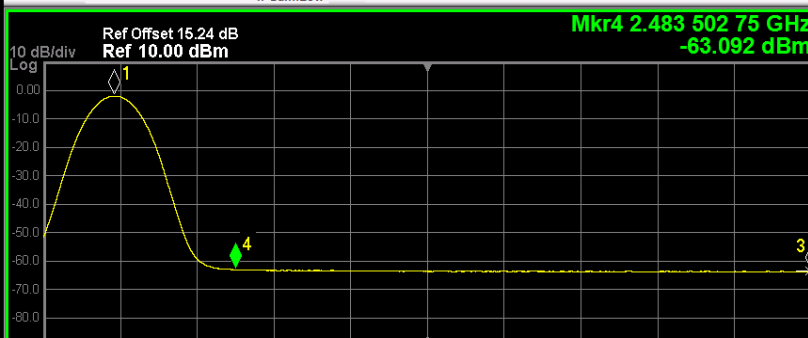
Appendix F): Band-edge for RF Conducted Emissions

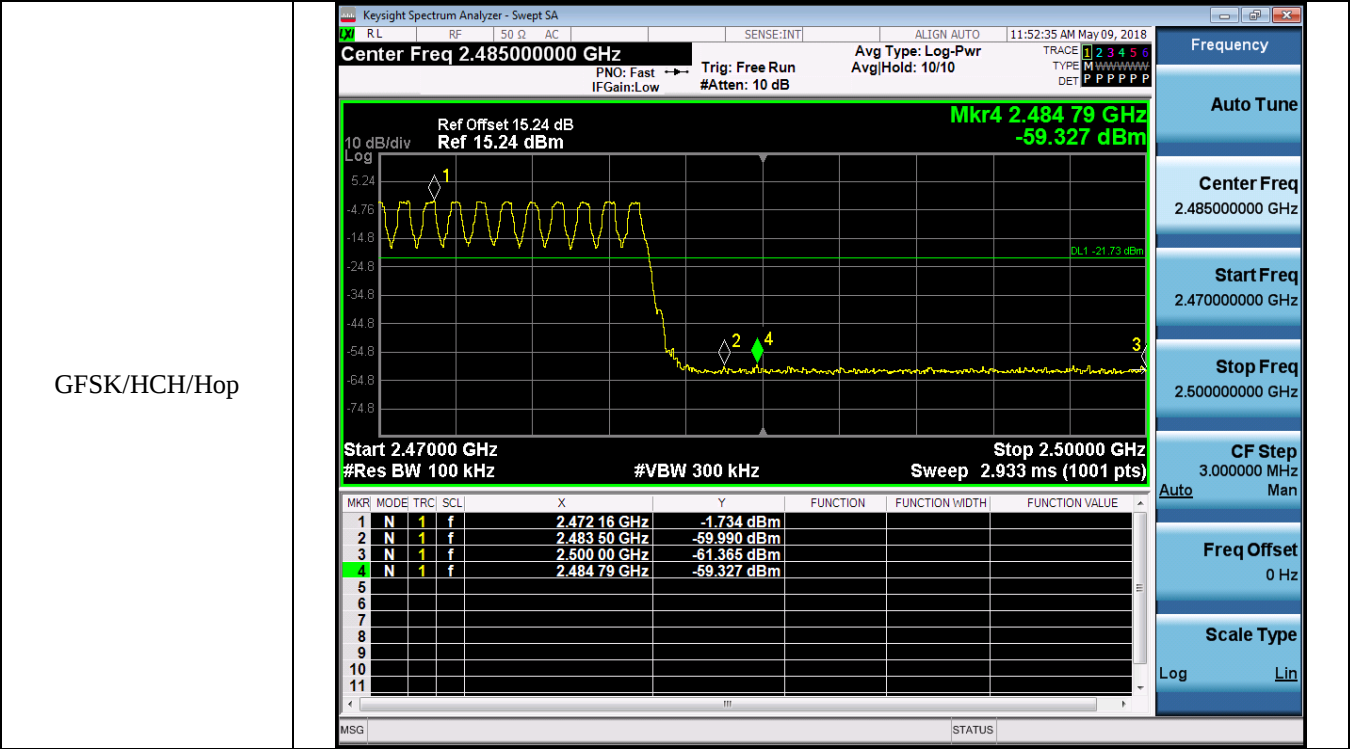
Result Table

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.970	Off	-51.448	-1.97	PASS
			-1.636	On	-60.159	-21.64	PASS
GFSK	HCH	2480	-2.035	Off	-63.092	-2.04	PASS
			-1.734	On	-59.327	-21.73	PASS

Test Graph



GFSK/LCH/Hop	Keysight Spectrum Analyzer - Swept SA Center Freq 2.397500000 GHz Ref Offset 14.97 dB Ref 14.97 dBm 10 dB/div Log  Start 2.38500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.41000 GHz Sweep 2.400 ms (1001 pts) <table><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</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>2.408150 GHz</td><td>-1.636 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400000 GHz</td><td>-60.251 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390000 GHz</td><td>-61.450 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.389250 GHz</td><td>-60.159 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></table> MSGSTATUS Frequency Auto Tune Center Freq 2.397500000 GHz Start Freq 2.385000000 GHz Stop Freq 2.410000000 GHz CF Step 2.500000 MHz AutoMan Freq Offset 0 Hz Scale Type LogLin	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.408150 GHz	-1.636 dBm				2	N	1	f	2.400000 GHz	-60.251 dBm				3	N	1	f	2.390000 GHz	-61.450 dBm				4	N	1	f	2.389250 GHz	-60.159 dBm				5									6									7									8									9									10									11								
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GFSK/HCH/No Hop	Keysight Spectrum Analyzer - Swept SA Center Freq 2.489000000 GHz Ref Offset 15.24 dB Ref 10.00 dBm 10 dB/div Log  Start 2.47800 GHz #Res BW 1.0 MHz #VBW 330 Hz Stop 2.50000 GHz Sweep 52.27 ms (8001 pts) <table><tr><th>MKR</th><th>MODE</th><th>TRC</th><th>SCL</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>2.48003500 GHz</td><td>-2.035 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.48350000 GHz</td><td>-63.096 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.50000000 GHz</td><td>-63.792 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.48350275 GHz</td><td>-63.092 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></table> MSGSTATUS Frequency Auto Tune Center Freq 2.489000000 GHz Start Freq 2.478000000 GHz Stop Freq 2.500000000 GHz CF Step 2.200000 MHz AutoMan Freq Offset 0 Hz Scale Type LogLin	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.48003500 GHz	-2.035 dBm				2	N	1	f	2.48350000 GHz	-63.096 dBm				3	N	1	f	2.50000000 GHz	-63.792 dBm				4	N	1	f	2.48350275 GHz	-63.092 dBm				5									6									7									8									9									10									11								
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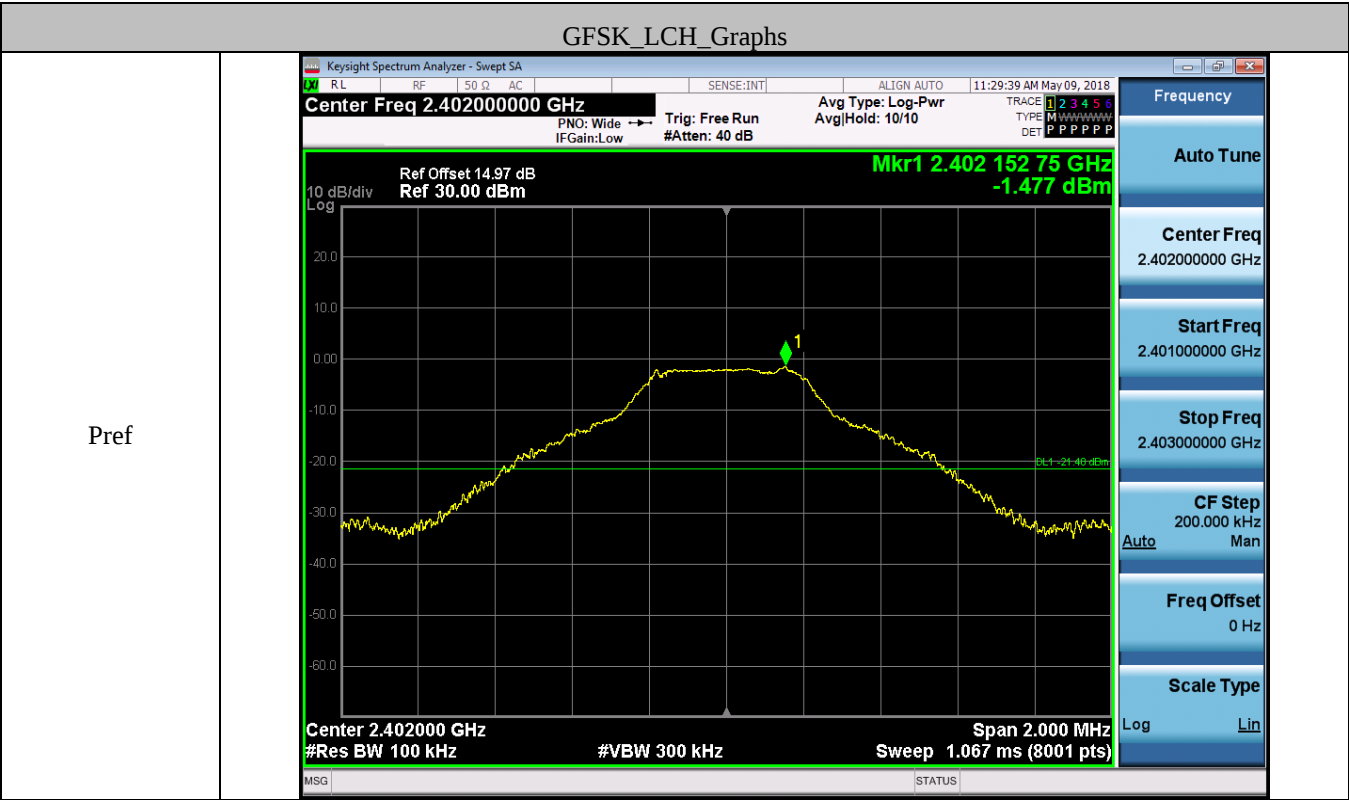


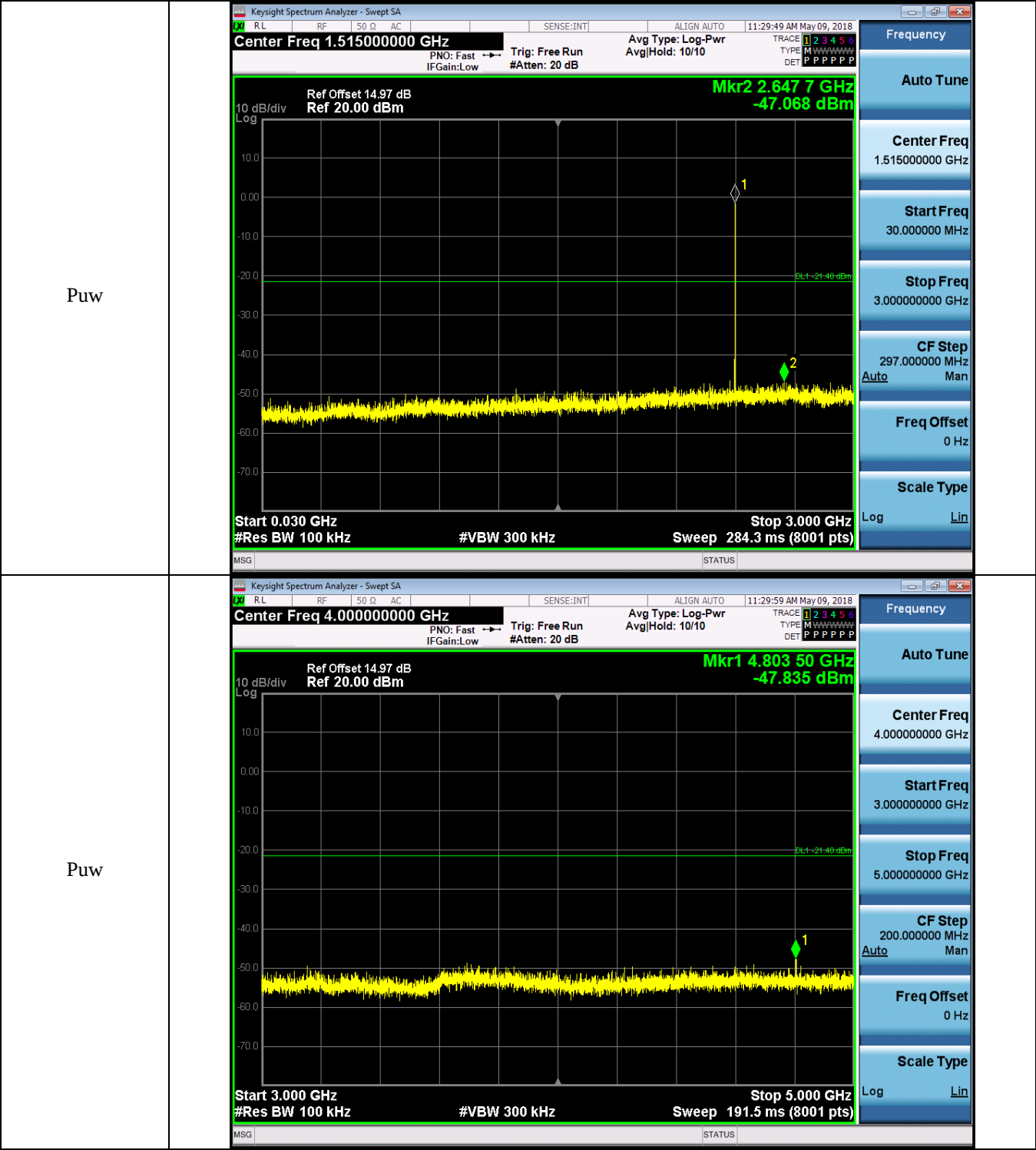
Appendix G): RF Conducted Spurious Emissions

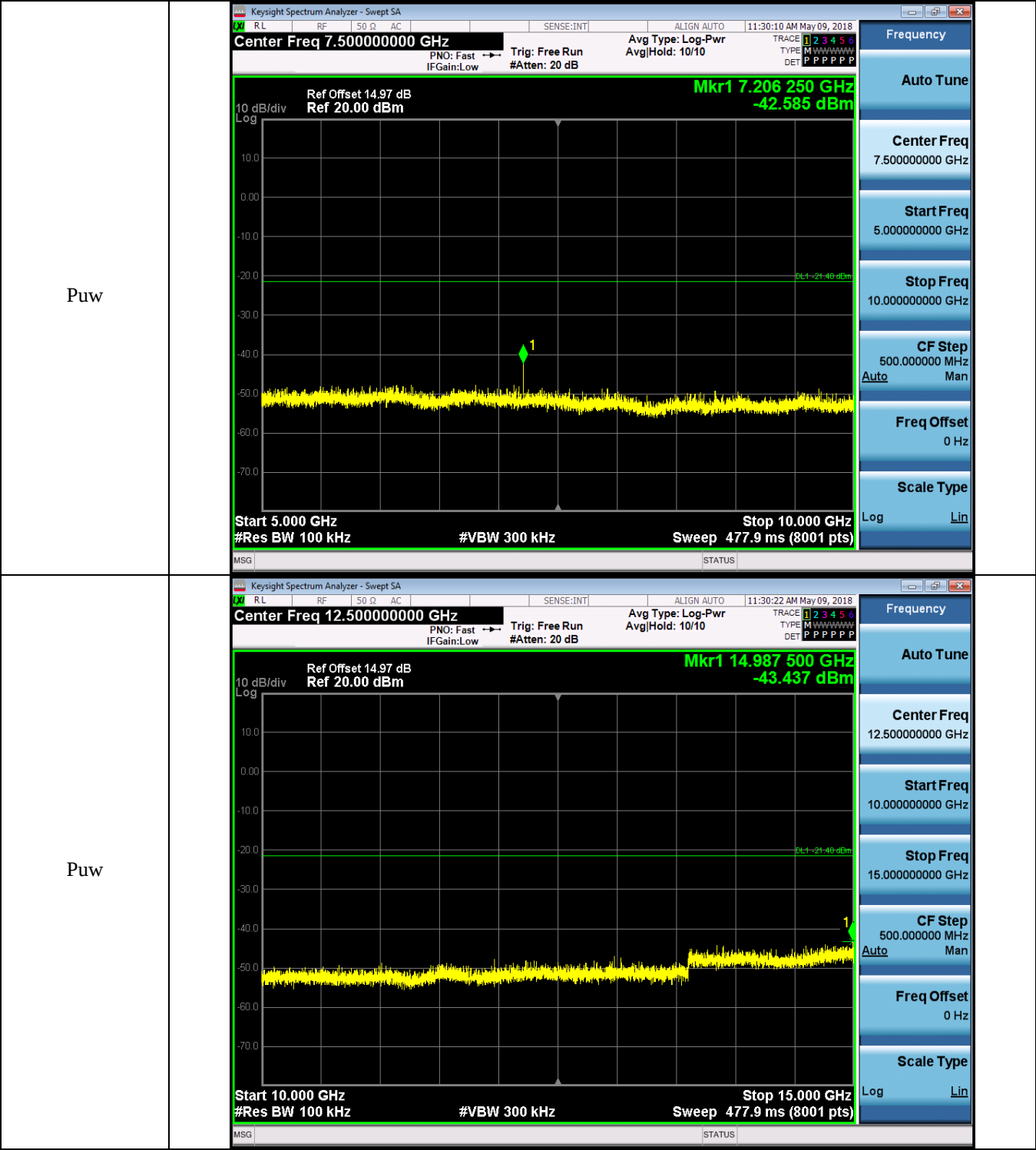
Result Table

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	-1.477	<Limit	PASS
GFSK	MCH	-1.481	<Limit	PASS
GFSK	HCH	-1.621	<Limit	PASS

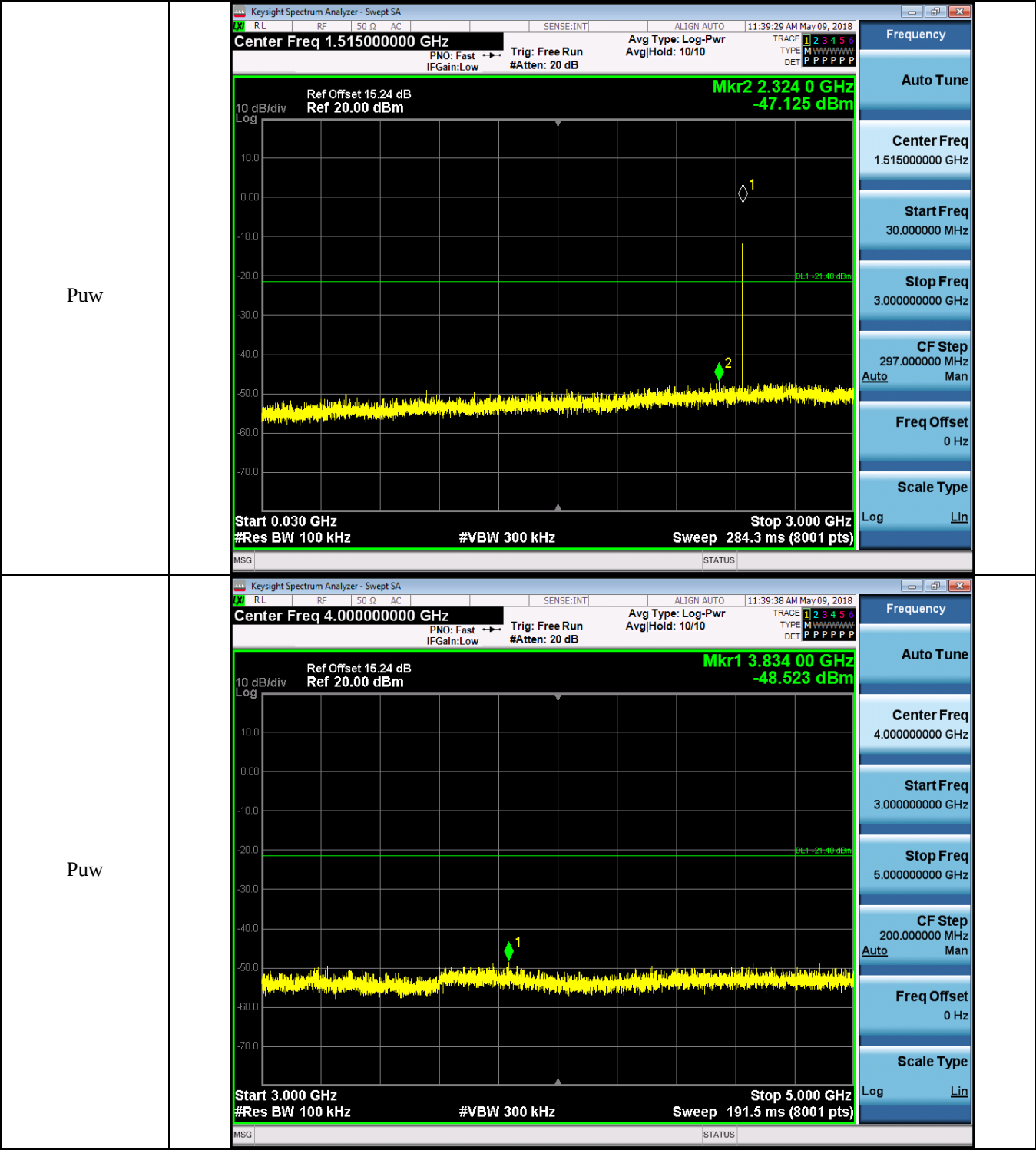
Test Graph

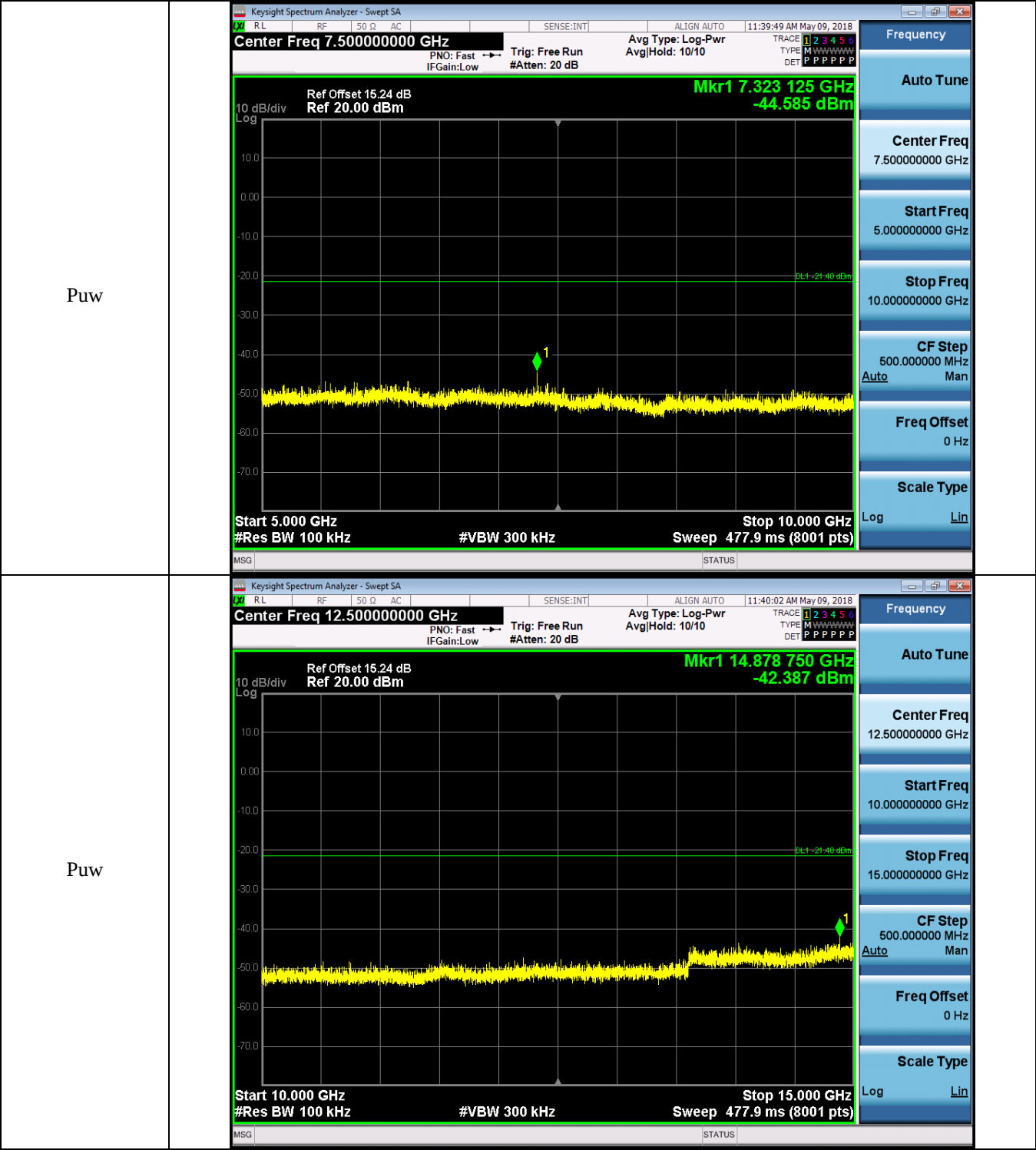






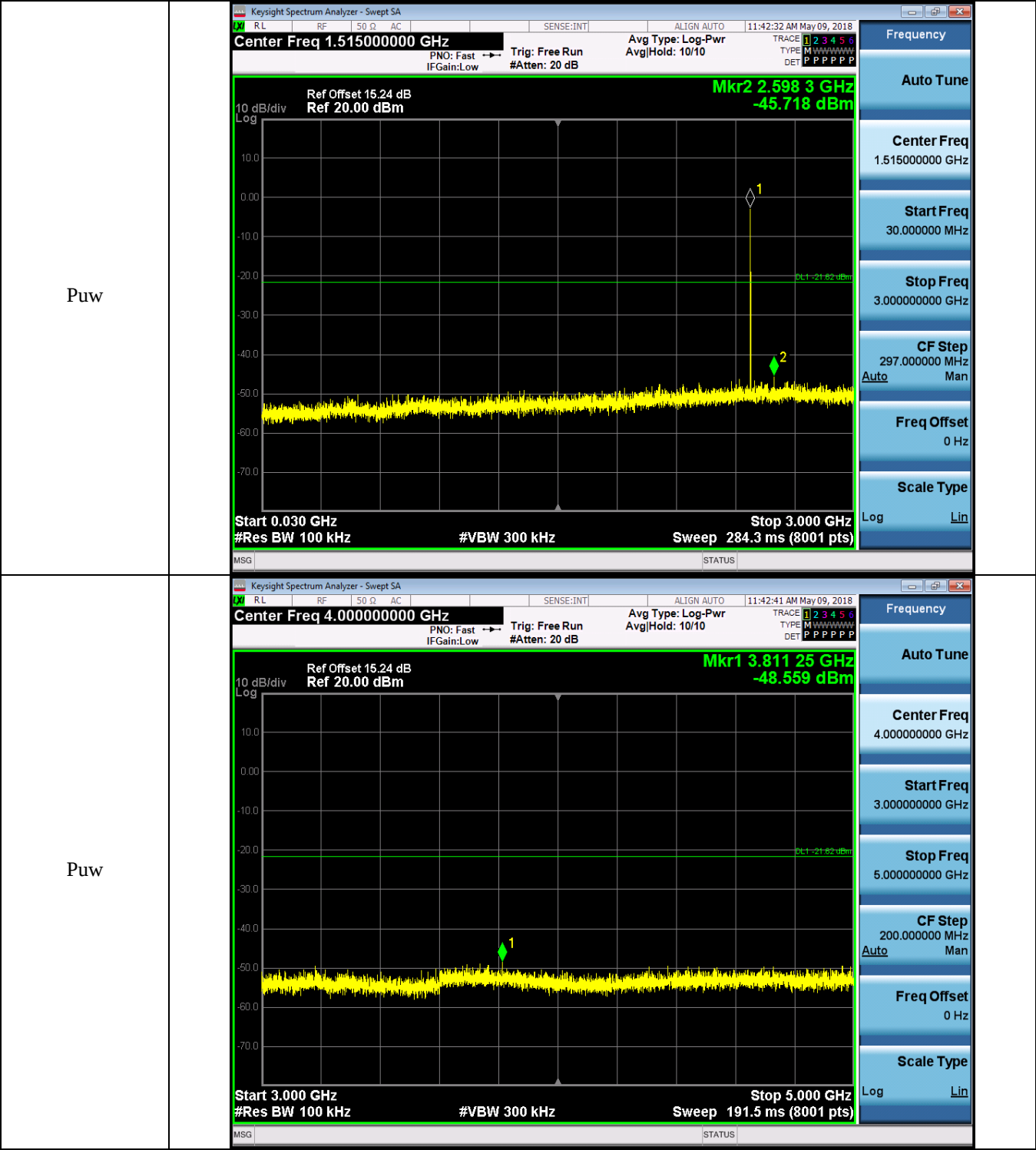


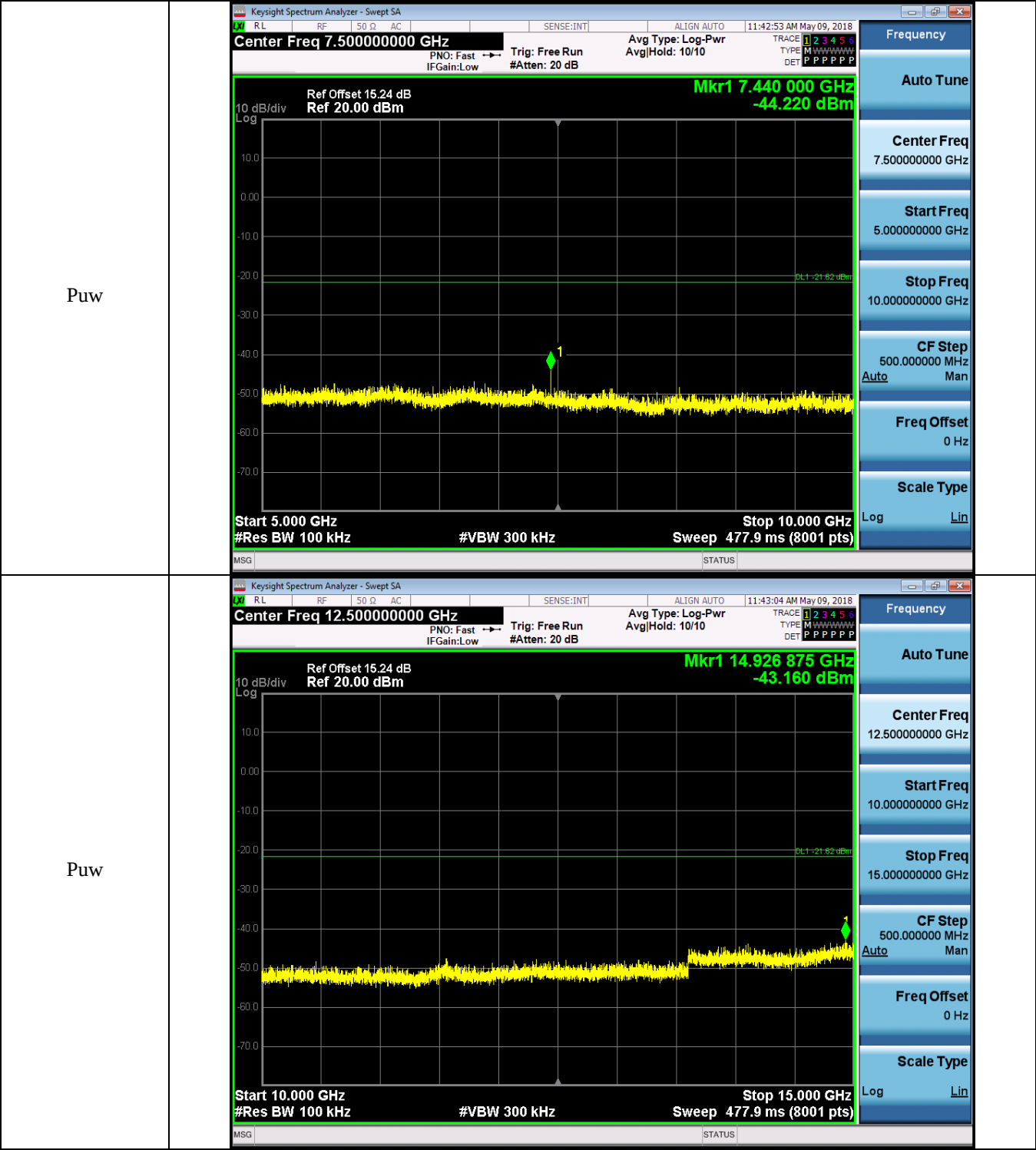


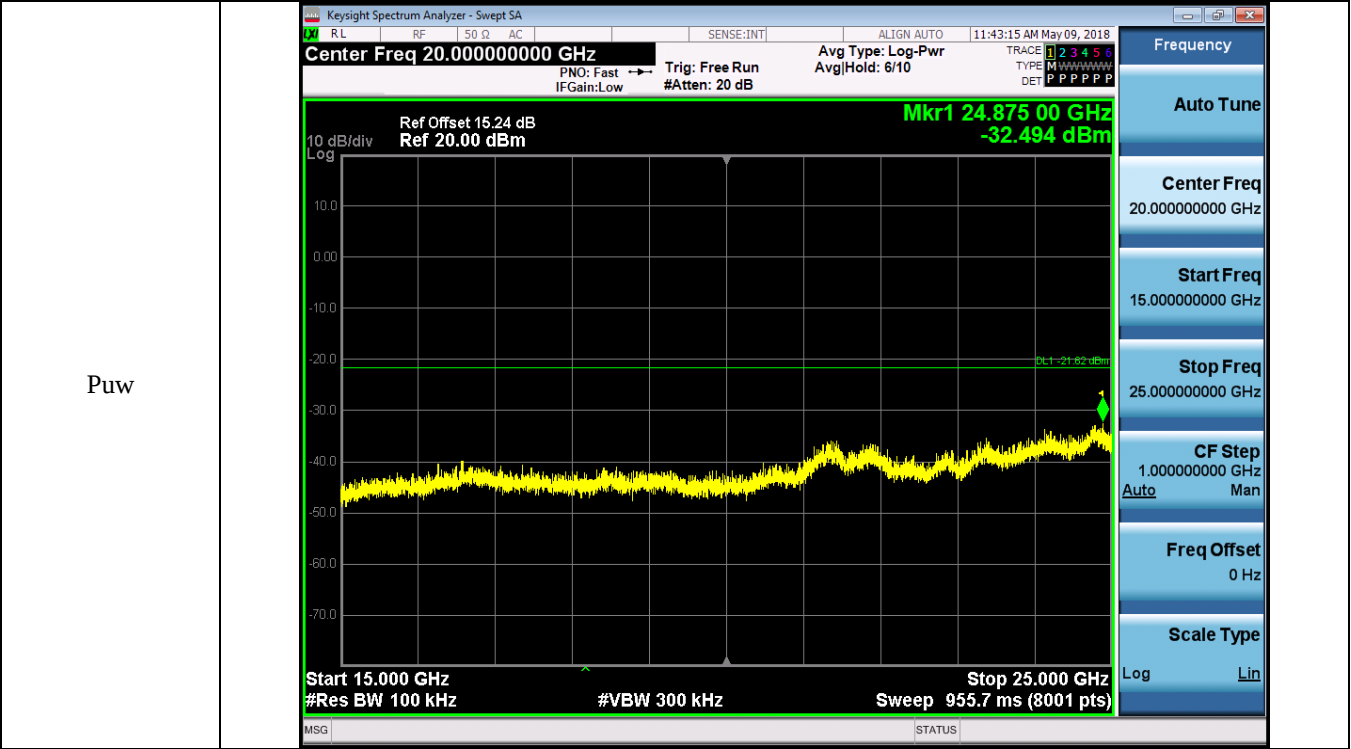




GFSK_HCH_Graphs





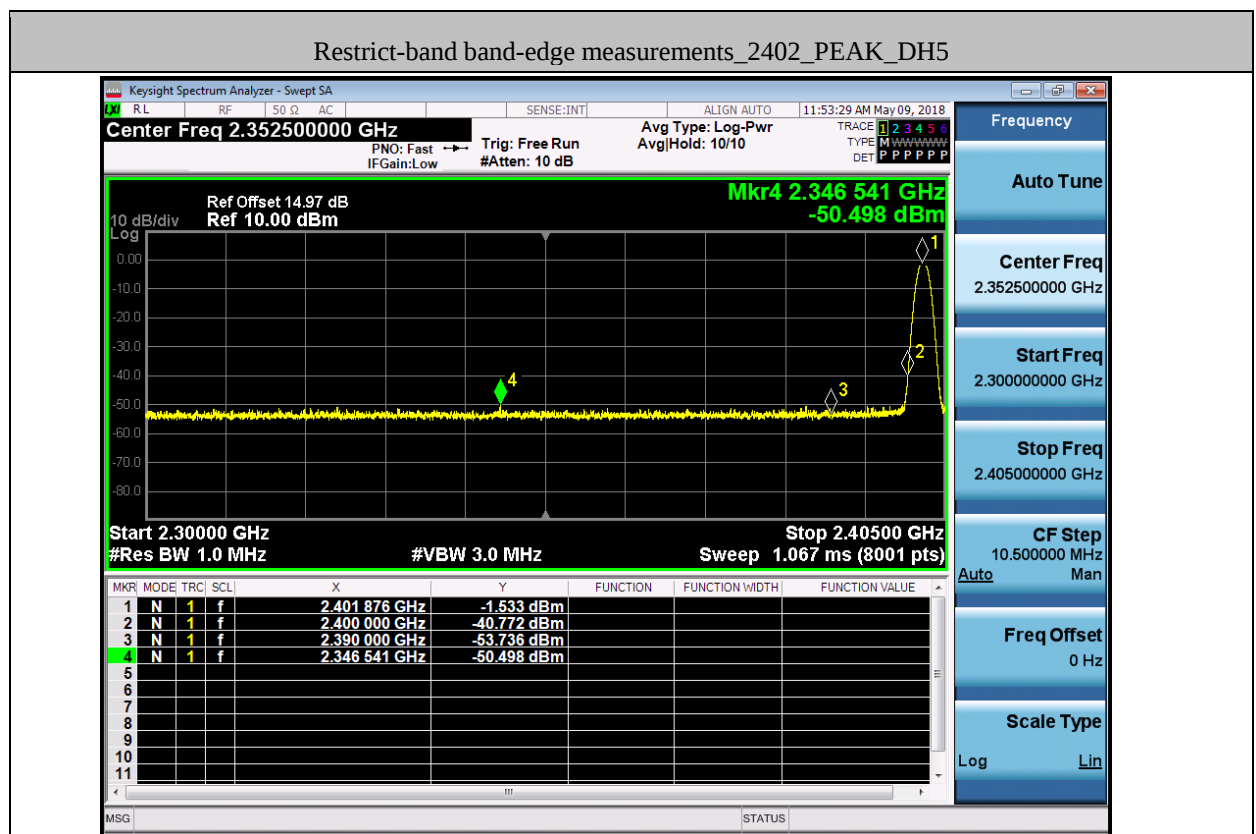


. Appendix H):Restrict-band band-edge measurements

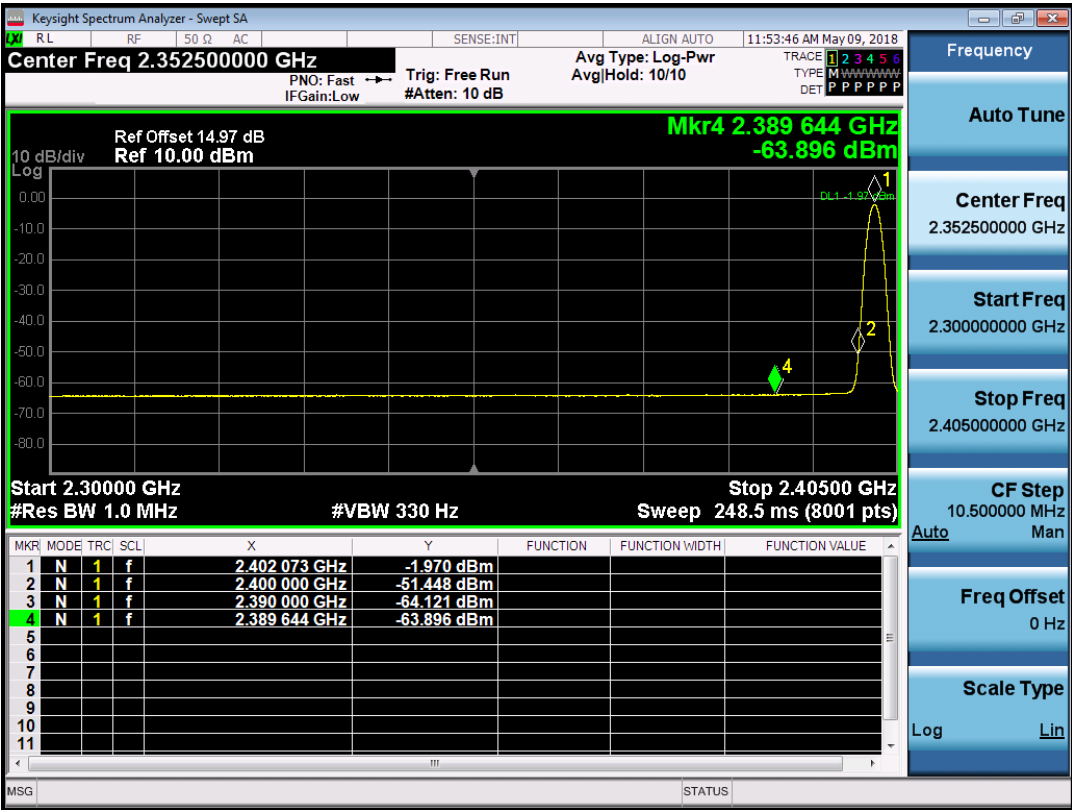
Result Table

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK_DH5	On	2346.5	-50.498	2.00	0	46.572	PEAK	74	PASS
GFSK_DH5	On	2389.6	-63.896	2.00	0	33.174	AV	54	PASS
GFSK_DH5	On	2390.0	-53.736	2.00	0	43.334	PEAK	74	PASS
GFSK_DH5	On	2390.0	-64.121	2.00	0	32.949	AV	54	PASS
GFSK_DH5	On	2483.5	-53.541	2.00	0	43.529	PEAK	74	PASS
GFSK_DH5	On	2483.5	-63.096	2.00	0	33.974	AV	54	PASS
GFSK_DH5	On	2500.0	-53.837	2.00	0	43.233	PEAK	74	PASS
GFSK_DH5	On	2500.0	-63.792	2.00	0	33.278	AV	54	PASS

Test Graph



Restrict-band band-edge measurements_2402_AV_DH5



Restrict-band band-edge measurements_2480_PEAK_DH5



