

Appendix A
RF Test Data for BT(BDR/EDR) (Conducted Measurement)

Product Name: WIRELESS EARPHONES

Trade Mark: ONN

Test Model: 18LY09

FCC ID: 2AKI8-ONDBTINEAR

Environmental Conditions

Temperature:	22.9 ° C
Relative Humidity:	52%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

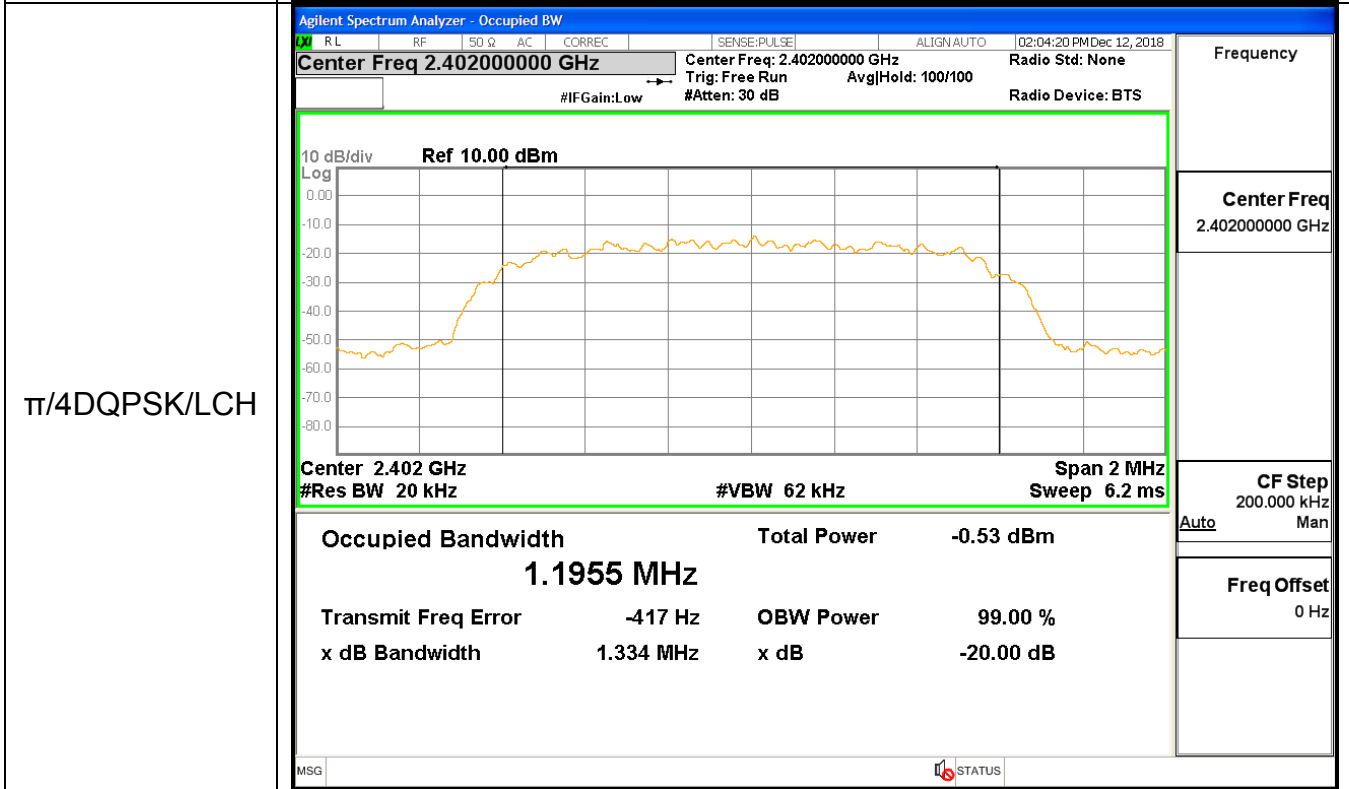
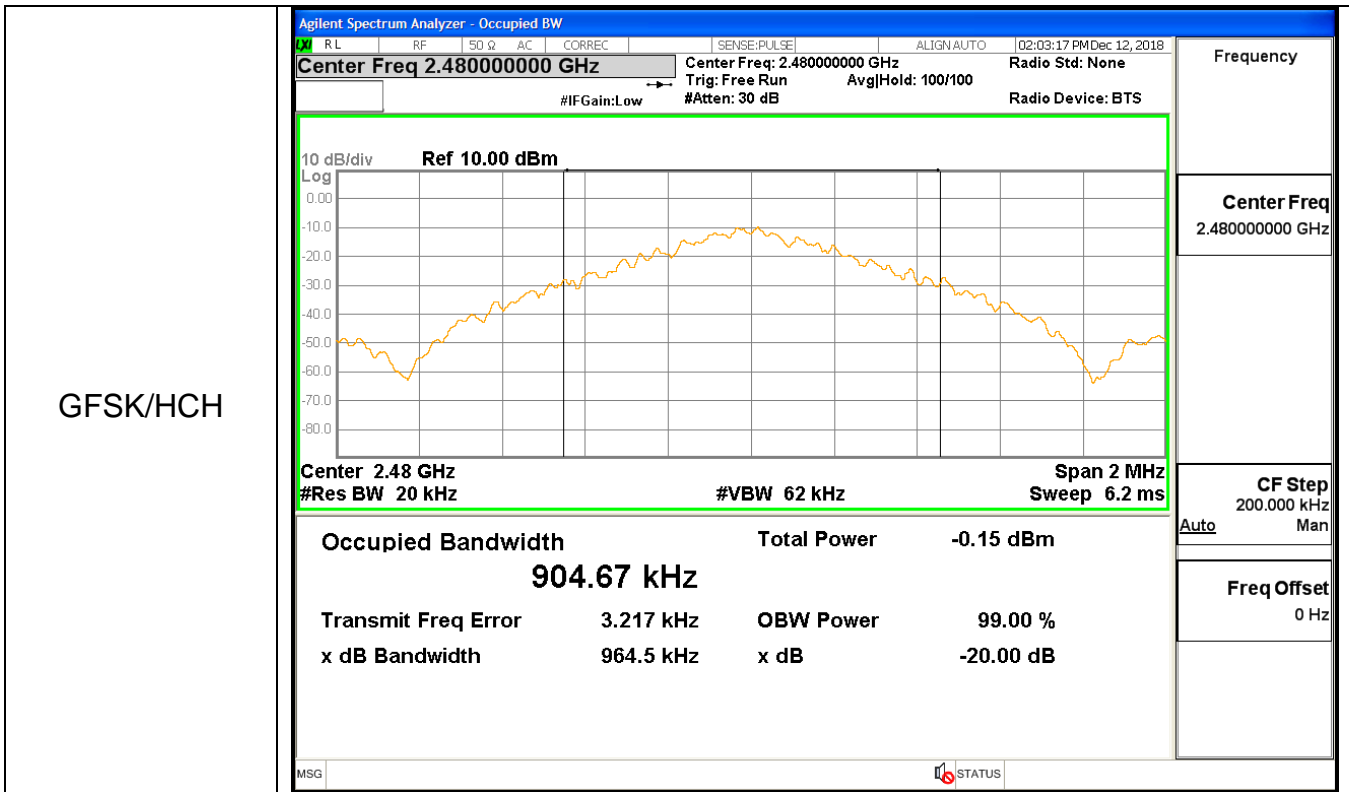
A.1 20 dB Bandwidth

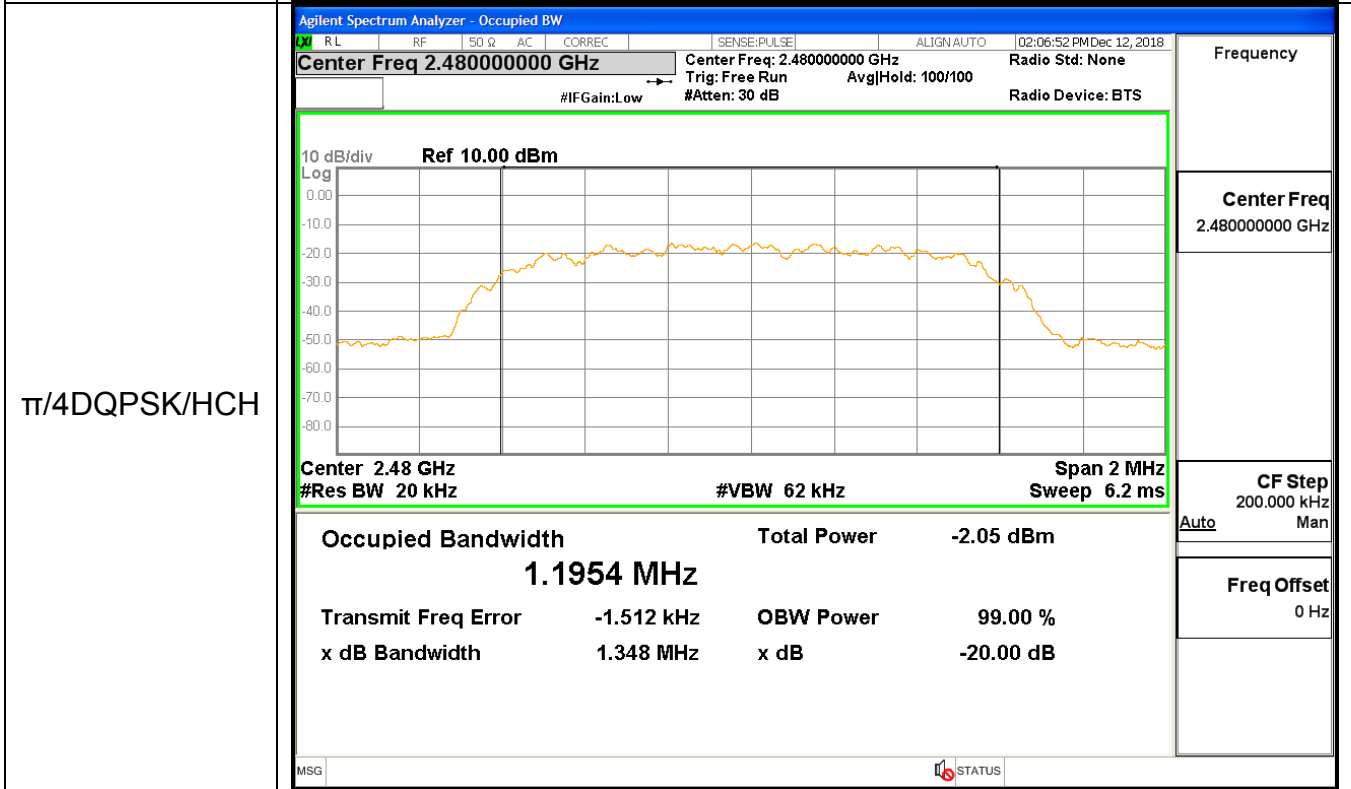
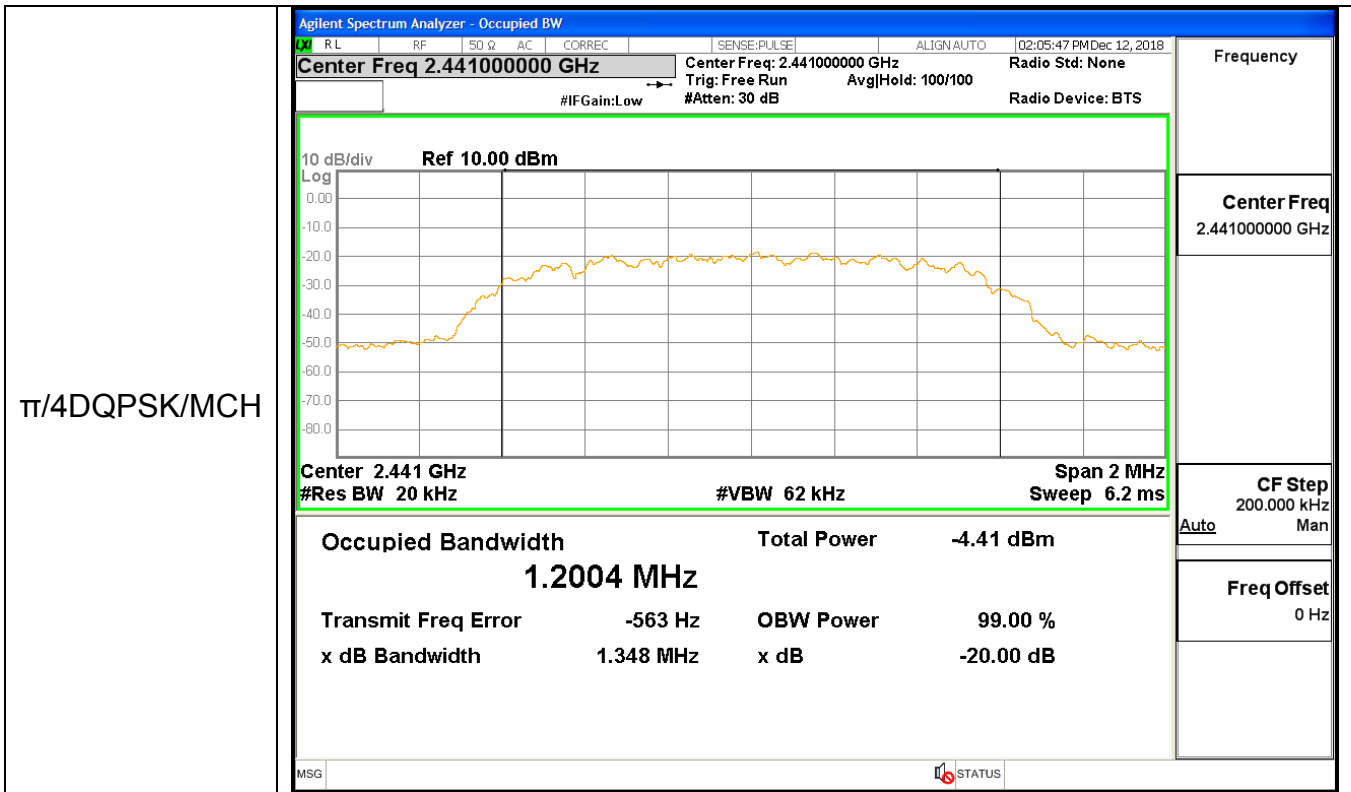
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.966	Not Specified	PASS
GFSK	MCH	0.938	Not Specified	PASS
GFSK	HCH	0.965	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.334	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.348	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.348	Not Specified	PASS
8DPSK	LCH	1.328	Not Specified	PASS
8DPSK	MCH	1.344	Not Specified	PASS
8DPSK	HCH	1.341	Not Specified	PASS

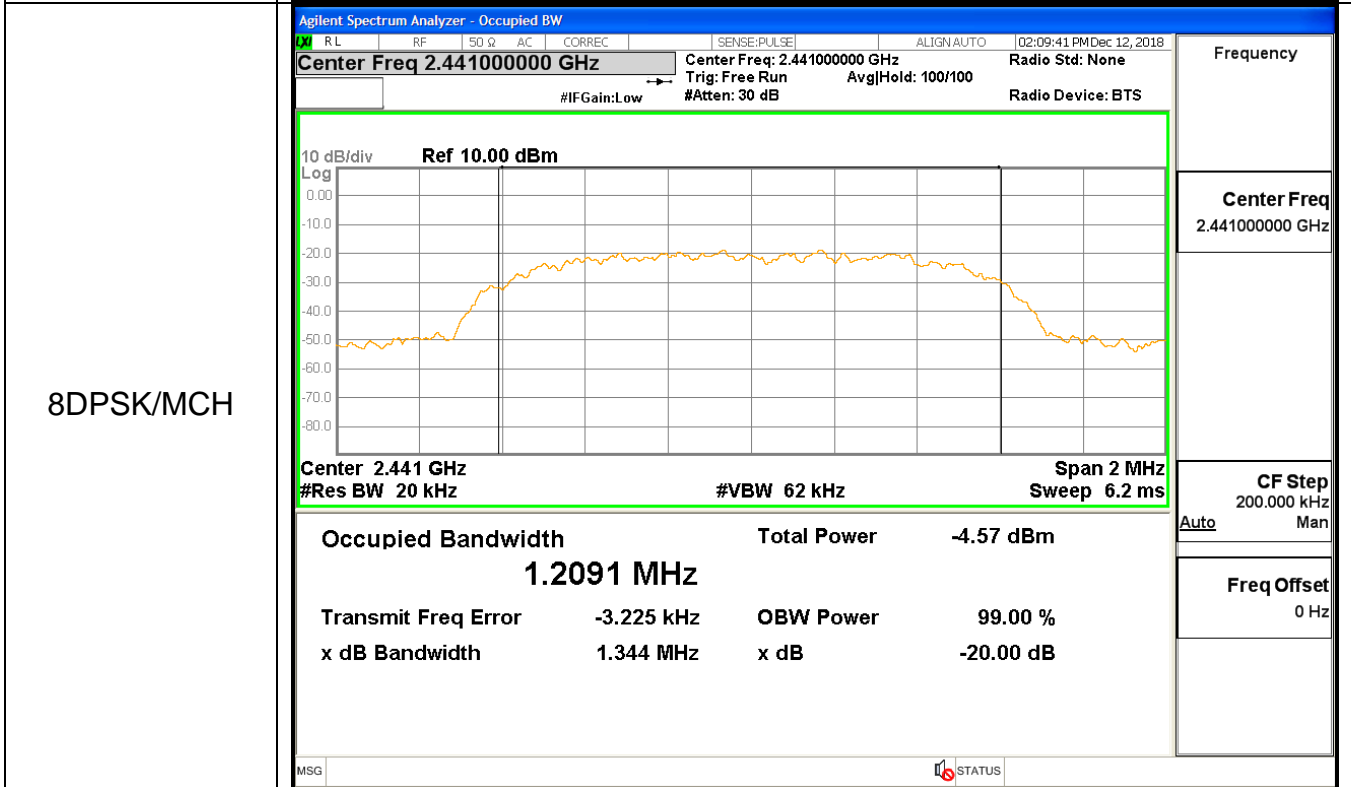
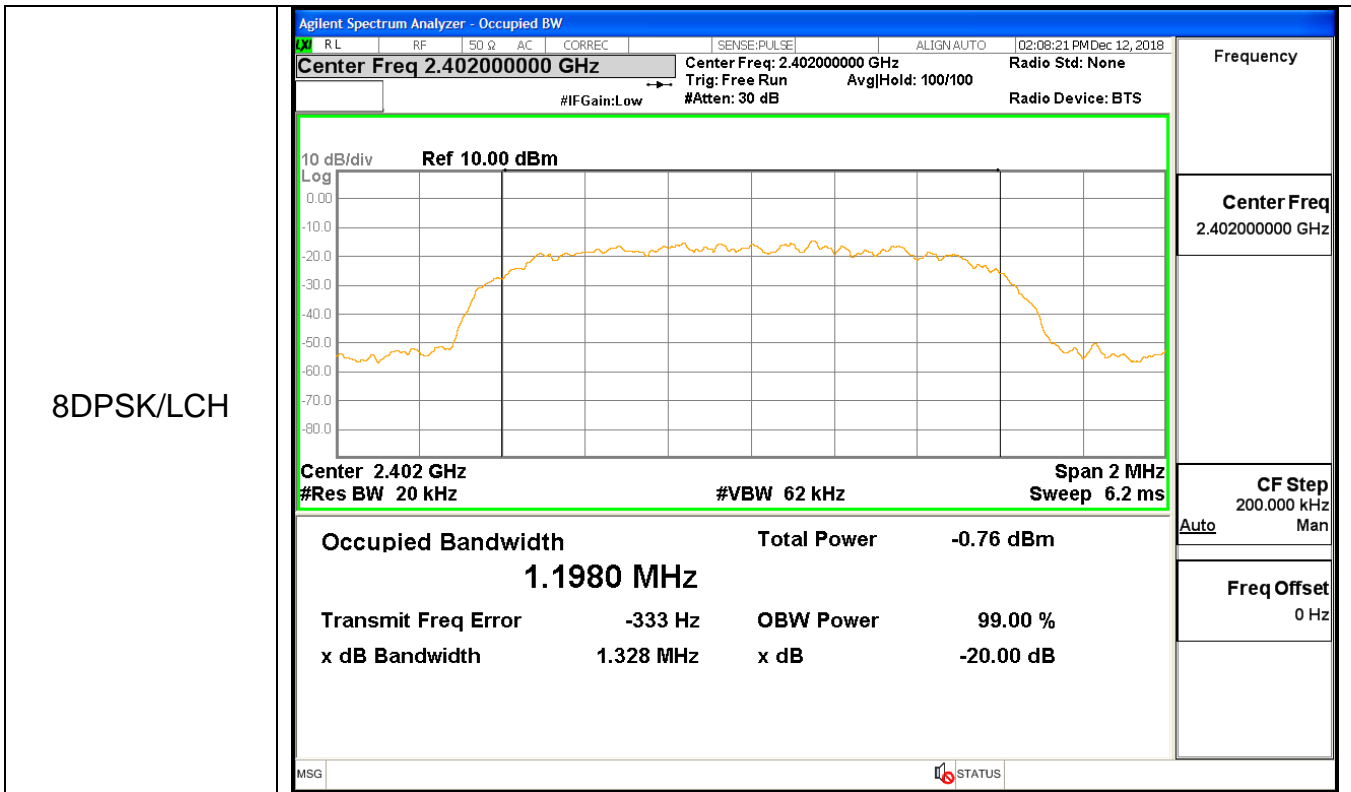
Test Graph

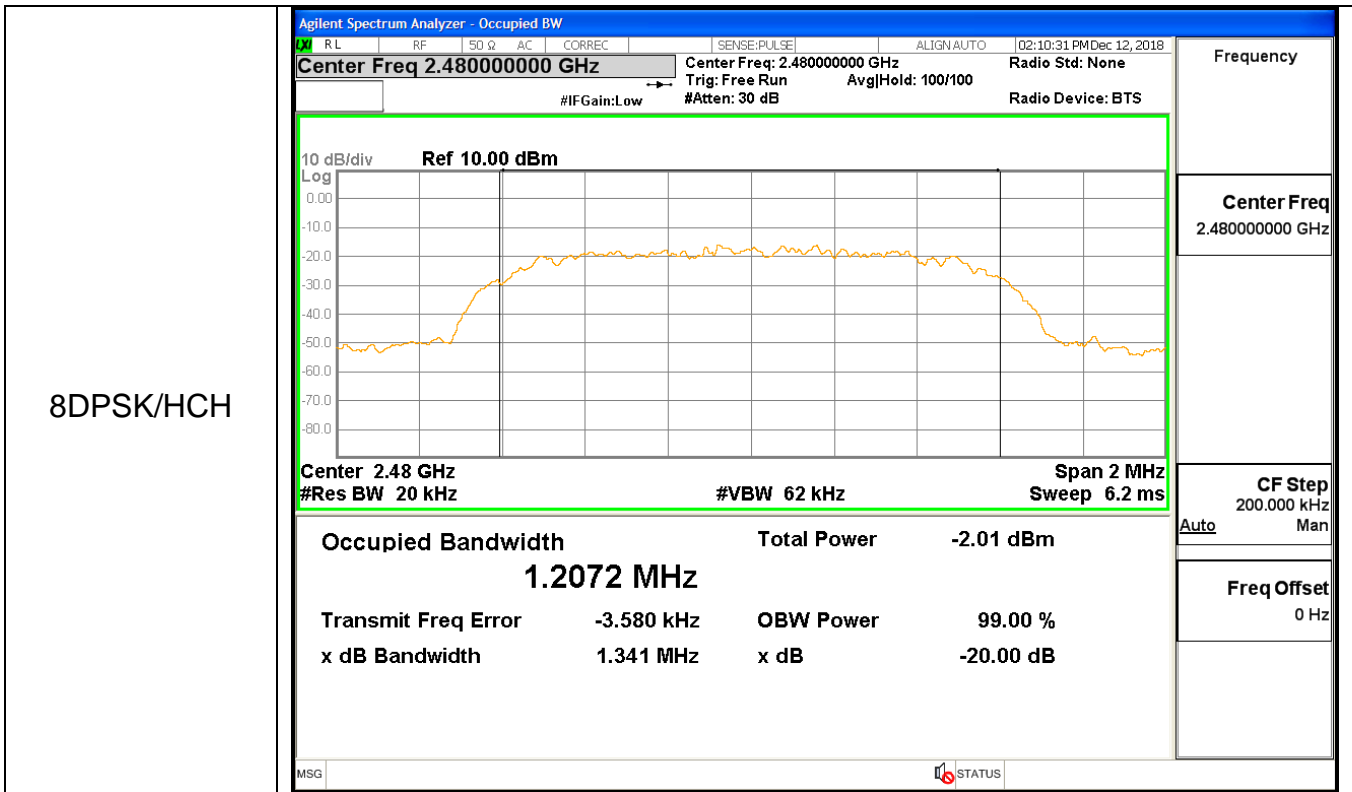
Graphs

GFSK/LCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.40200000 GHz Center Freq: 2.40200000 GHz Radio Std: None Trig: Free Run Avg Hold: 100/100 #IFGain:Low #Atten: 30 dB Radio Device: BTS			Frequency																	
				Center Freq 2.40200000 GHz																	
Center 2.402 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 6.2 ms			CF Step 200.000 kHz Auto Man																		
<table border="0"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>1.76 dBm</td> </tr> <tr> <td>891.40 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>-3.691 kHz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>966.2 kHz</td> <td></td> <td></td> </tr> </table>			Occupied Bandwidth	Total Power	1.76 dBm	891.40 kHz			Transmit Freq Error	OBW Power	99.00 %	-3.691 kHz			x dB Bandwidth	x dB	-20.00 dB	966.2 kHz			Freq Offset 0 Hz
Occupied Bandwidth	Total Power	1.76 dBm																			
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x dB Bandwidth	x dB	-20.00 dB																			
966.2 kHz																					
MSG STATUS																					
GFSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Radio Std: None Trig: Free Run Avg Hold: 100/100 #IFGain:Low #Atten: 30 dB Radio Device: BTS			Frequency																	
				Center Freq 2.441000000 GHz																	
Center 2.441 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 6.2 ms			CF Step 200.000 kHz Auto Man																		
<table border="0"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>-2.39 dBm</td> </tr> <tr> <td>901.50 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>1.806 kHz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td>938.1 kHz</td> <td></td> <td></td> </tr> </table>			Occupied Bandwidth	Total Power	-2.39 dBm	901.50 kHz			Transmit Freq Error	OBW Power	99.00 %	1.806 kHz			x dB Bandwidth	x dB	-20.00 dB	938.1 kHz			Freq Offset 0 Hz
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MSG STATUS																					





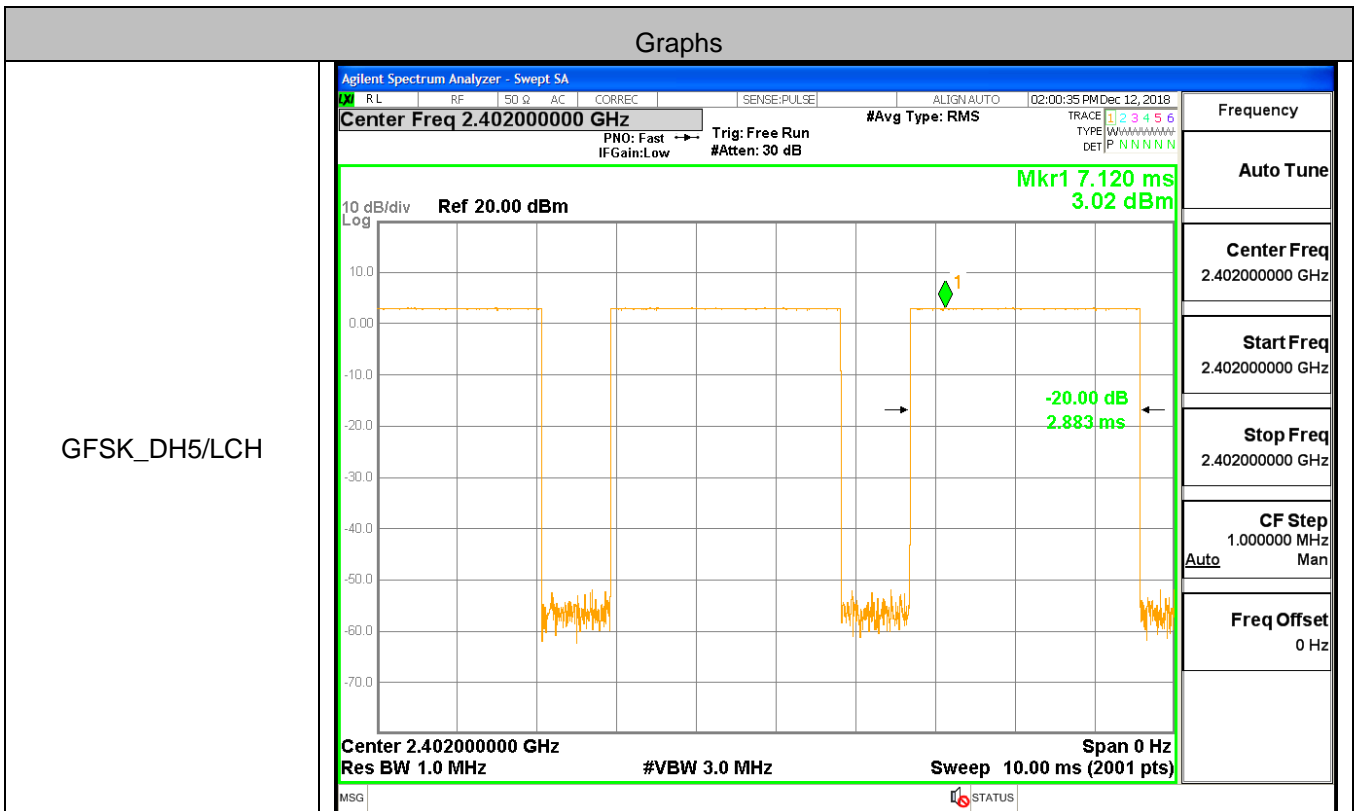


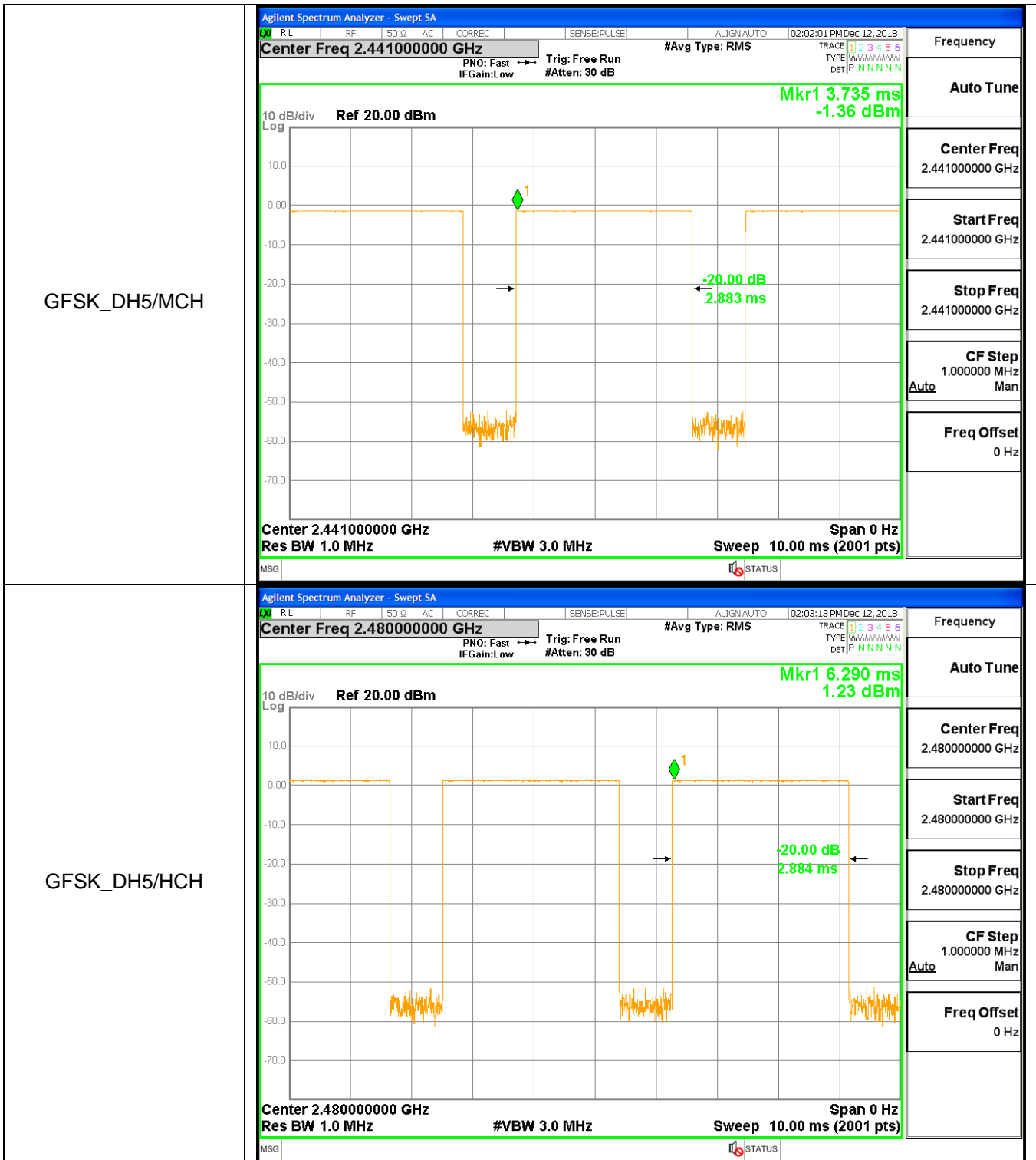


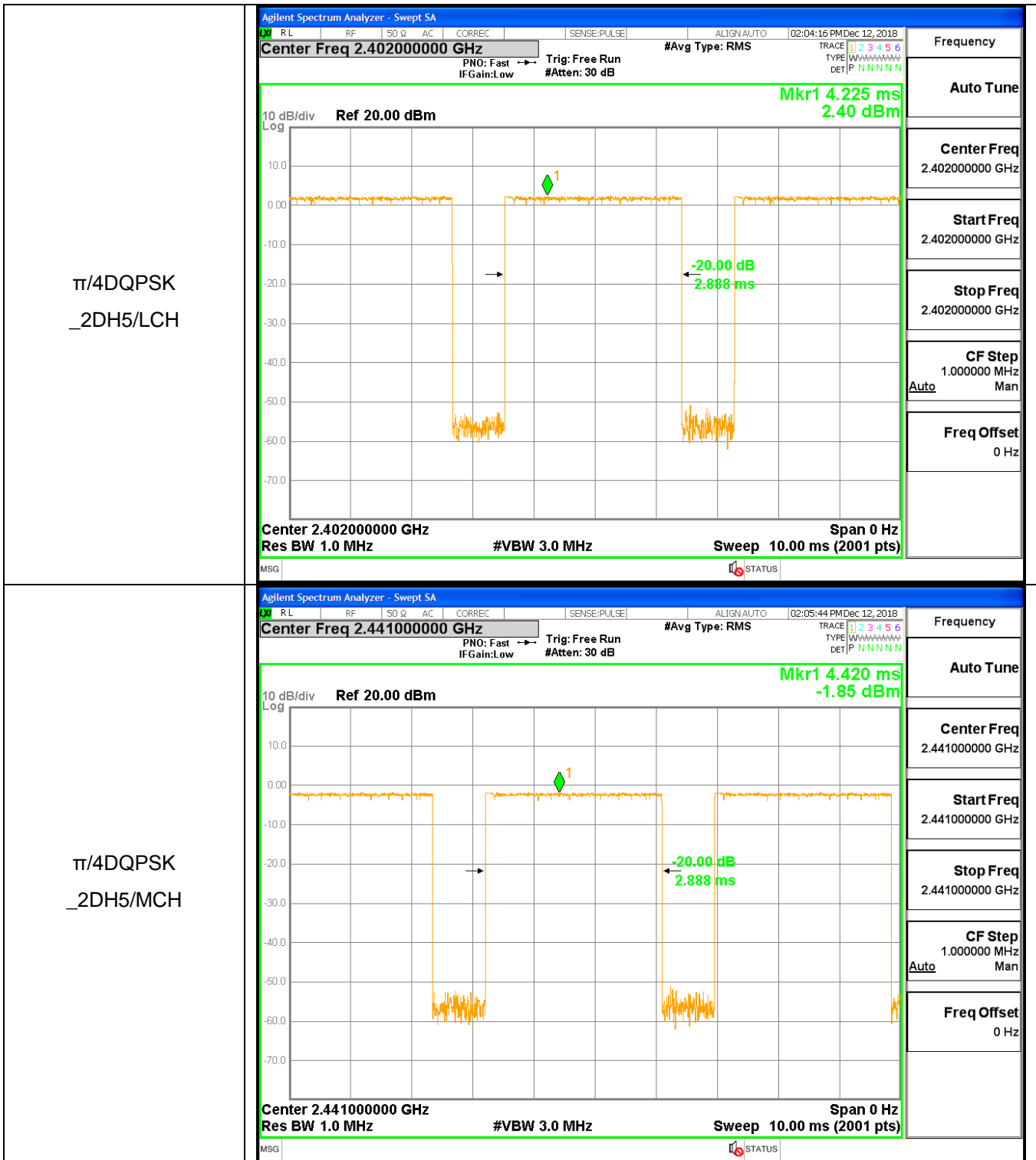
A.2 Dwell Time

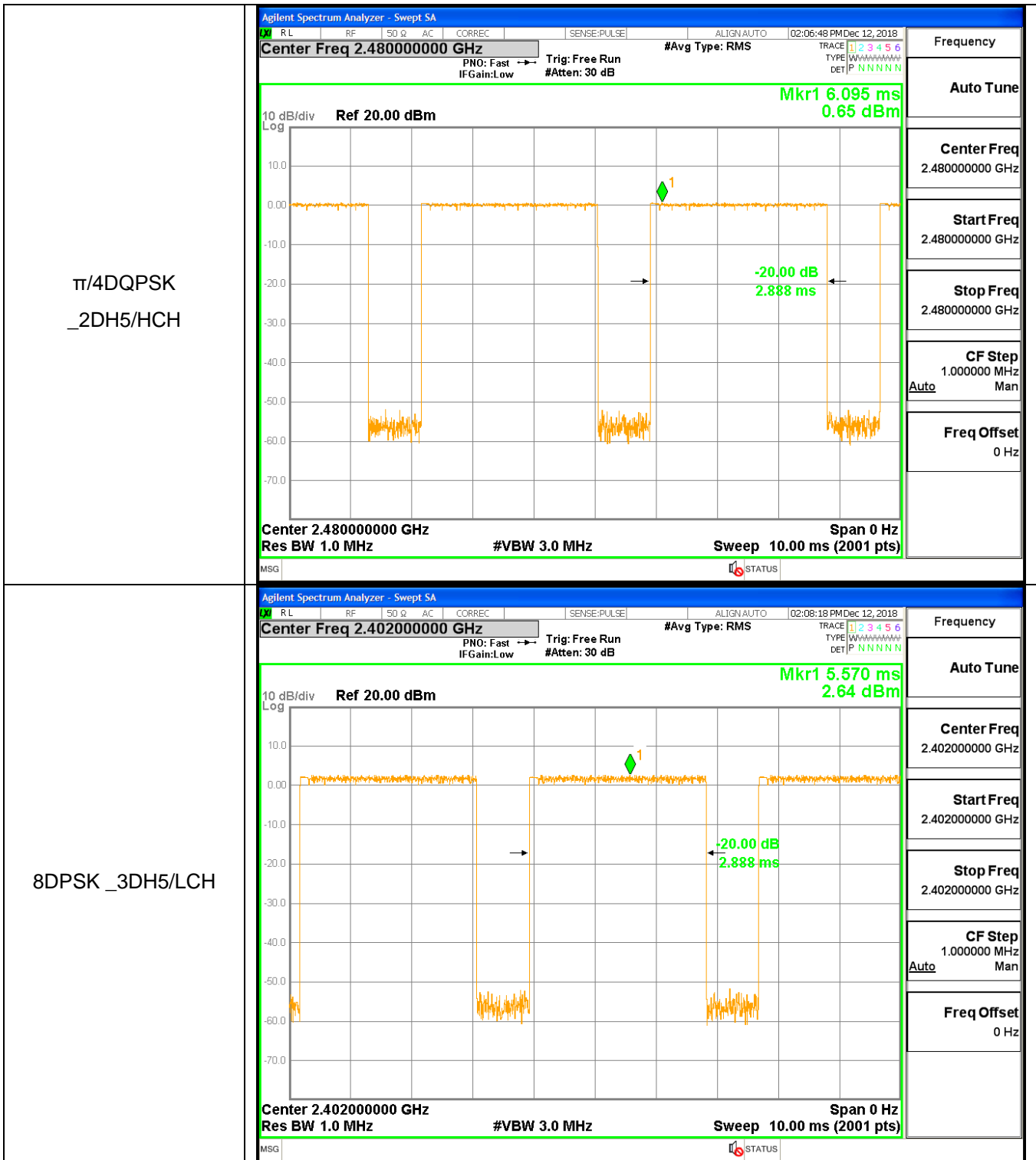
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002883002	106.7	0.307616322	0.4	PASS
GFSK	DH5	MCH	0.002883383	106.7	0.307656915	0.4	PASS
GFSK	DH5	HCH	0.002883542	106.7	0.307673883	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002887506	106.7	0.308096932	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002888409	106.7	0.308193196	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002887713	106.7	0.308119004	0.4	PASS
8DPSK	3DH5	LCH	0.00288814	106.7	0.308164519	0.4	PASS
8DPSK	3DH5	MCH	0.002888504	106.7	0.308203414	0.4	PASS
8DPSK	3DH5	HCH	0.002888471	106.7	0.308199856	0.4	PASS

Test Graph







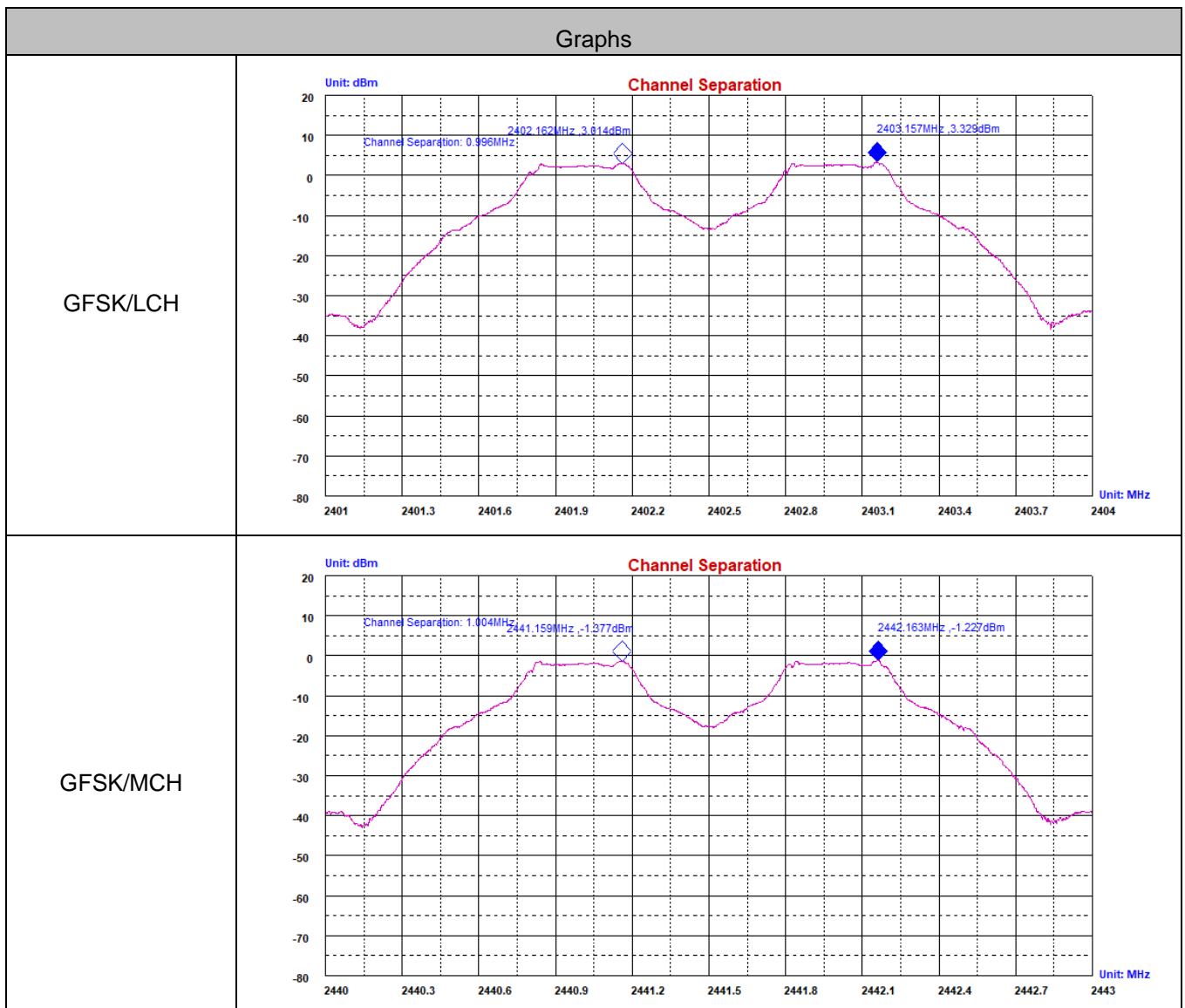


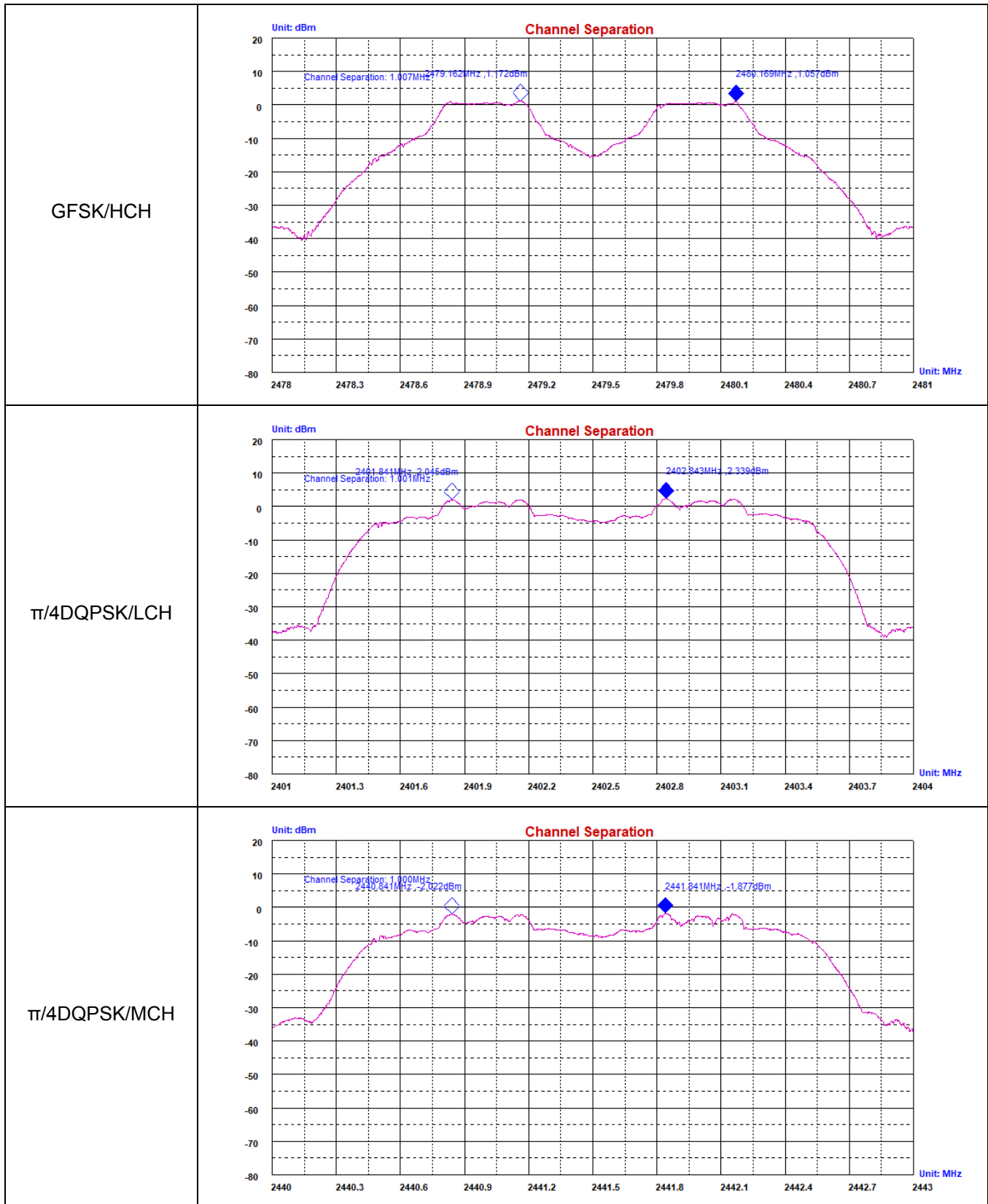


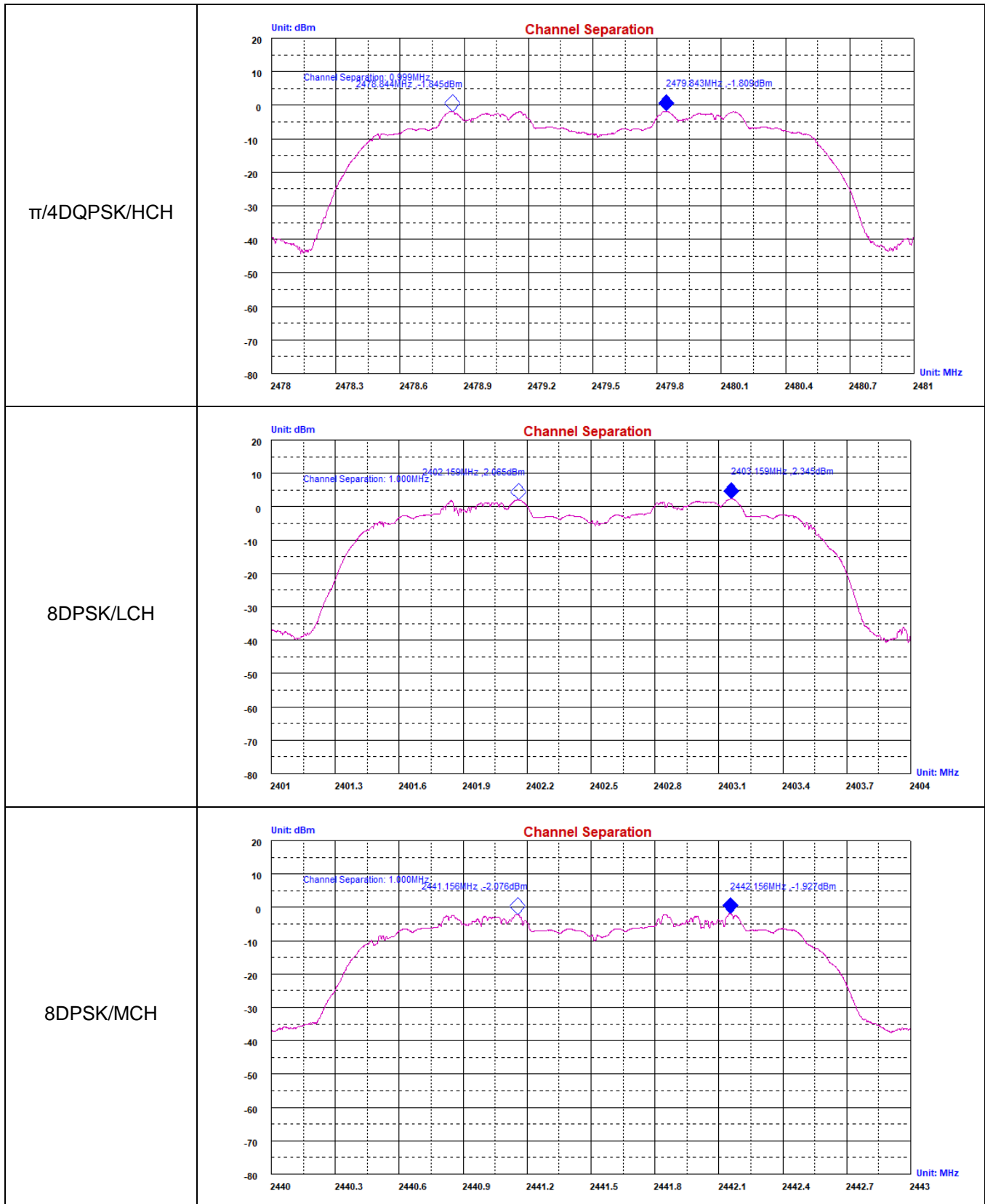
A.3 Carrier Frequency Separation

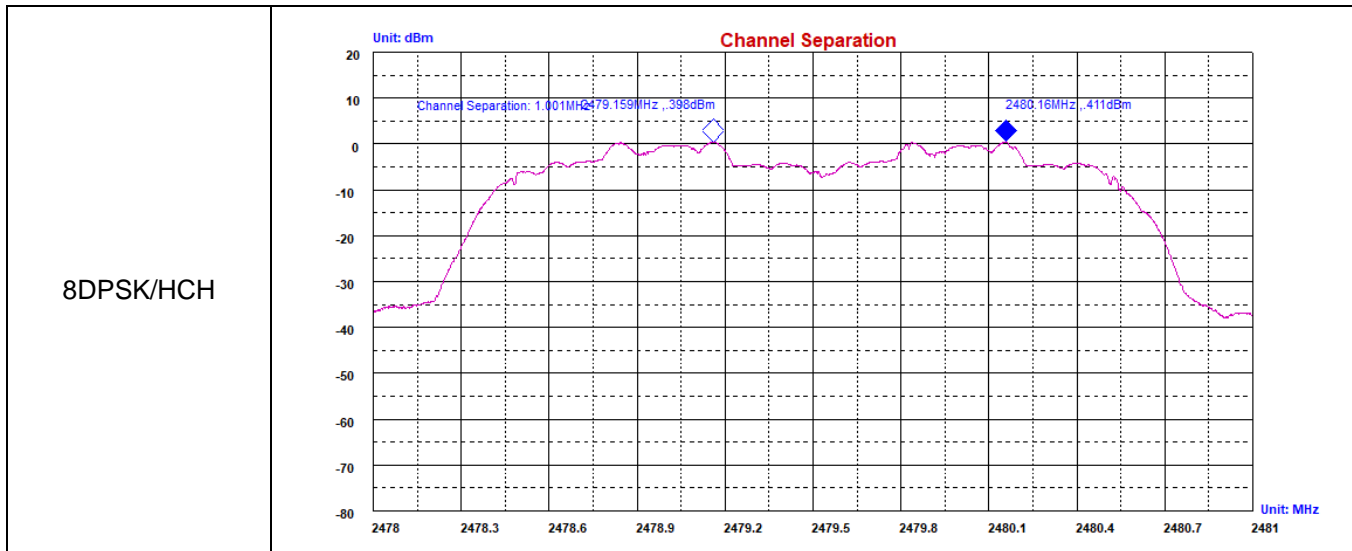
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.996	0.642	PASS
GFSK	MCH	1.004	0.625	PASS
GFSK	HCH	1.007	0.643	PASS
$\pi/4$ DQPSK	LCH	1.001	0.889	PASS
$\pi/4$ DQPSK	MCH	1.000	0.899	PASS
$\pi/4$ DQPSK	HCH	0.999	0.899	PASS
8DPSK	LCH	1.000	0.885	PASS
8DPSK	MCH	1.000	0.896	PASS
8DPSK	HCH	1.001	0.895	PASS

Test Graph





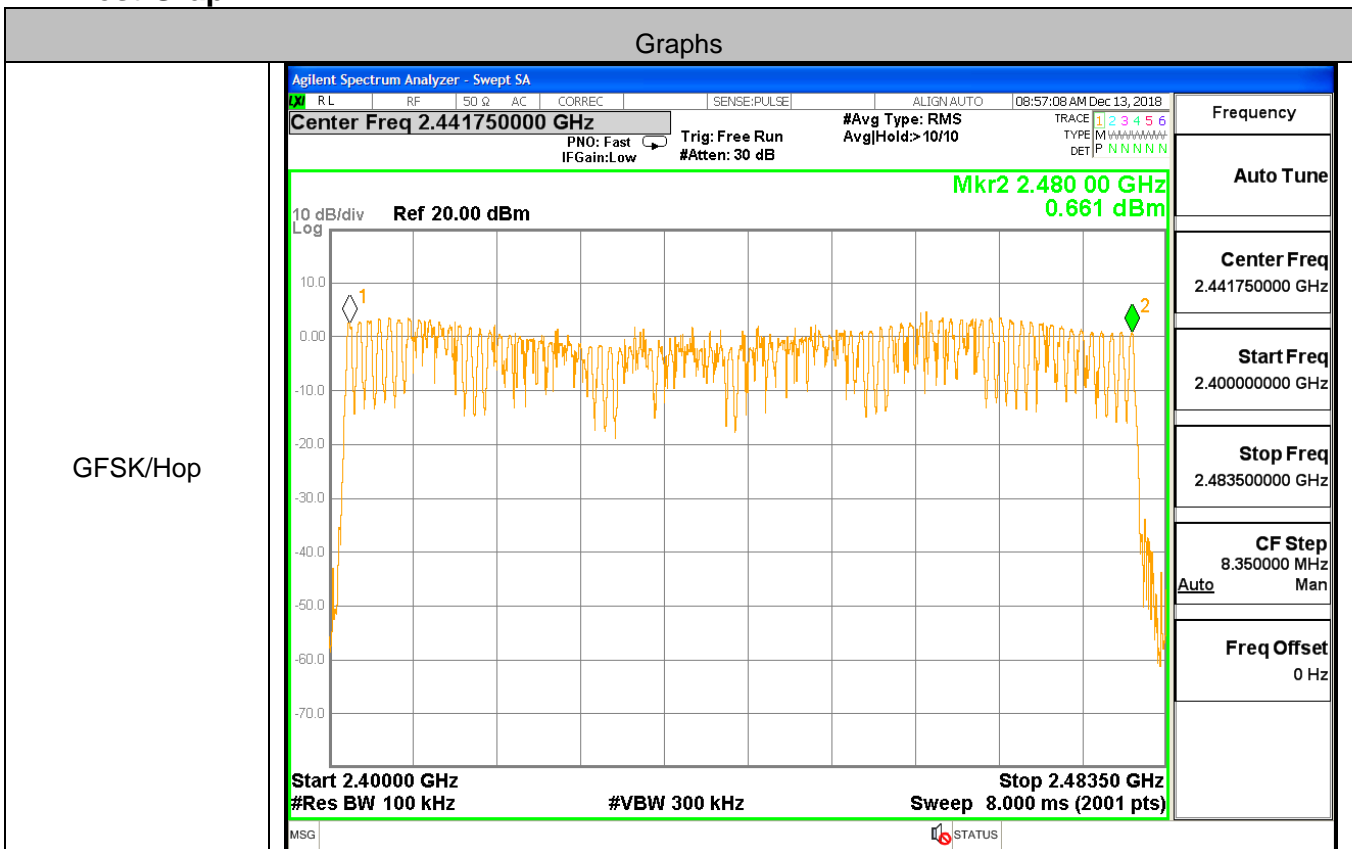


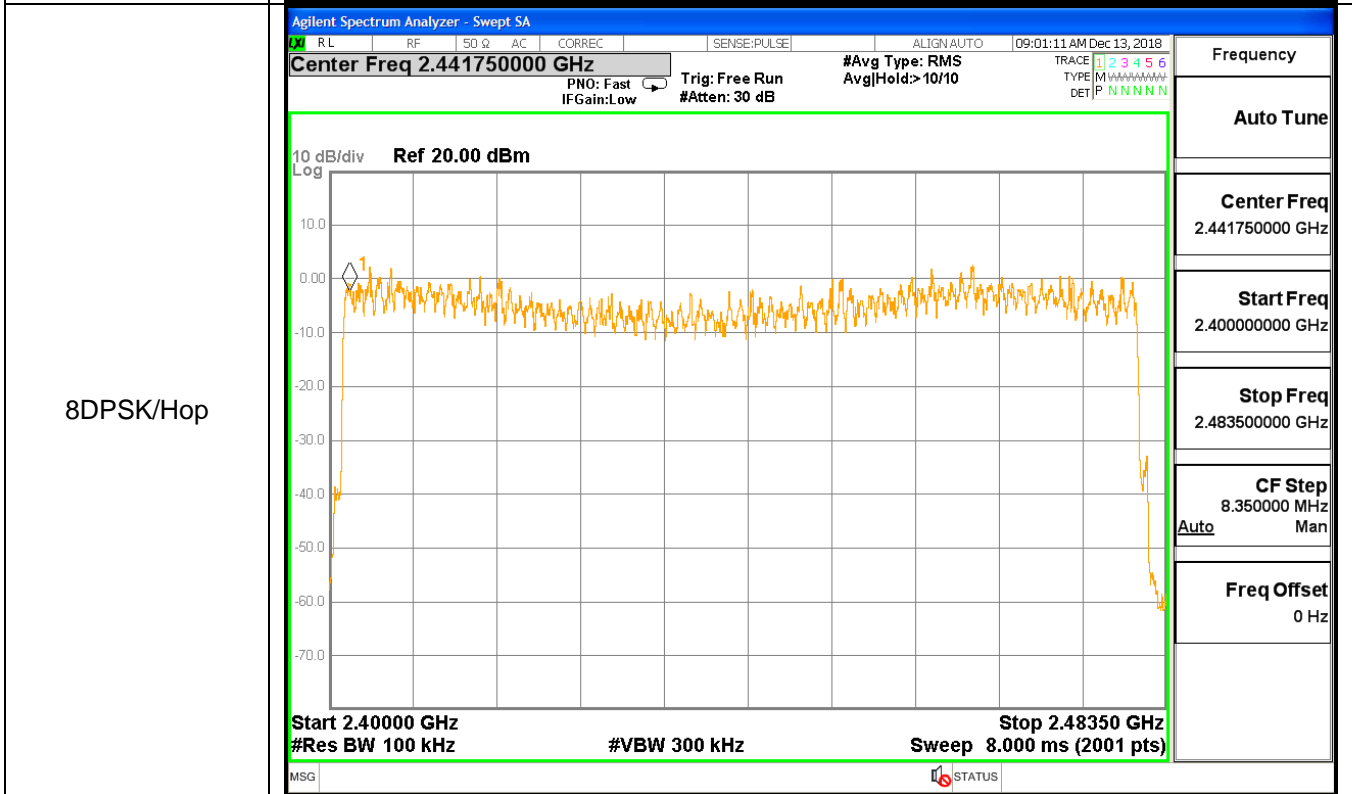
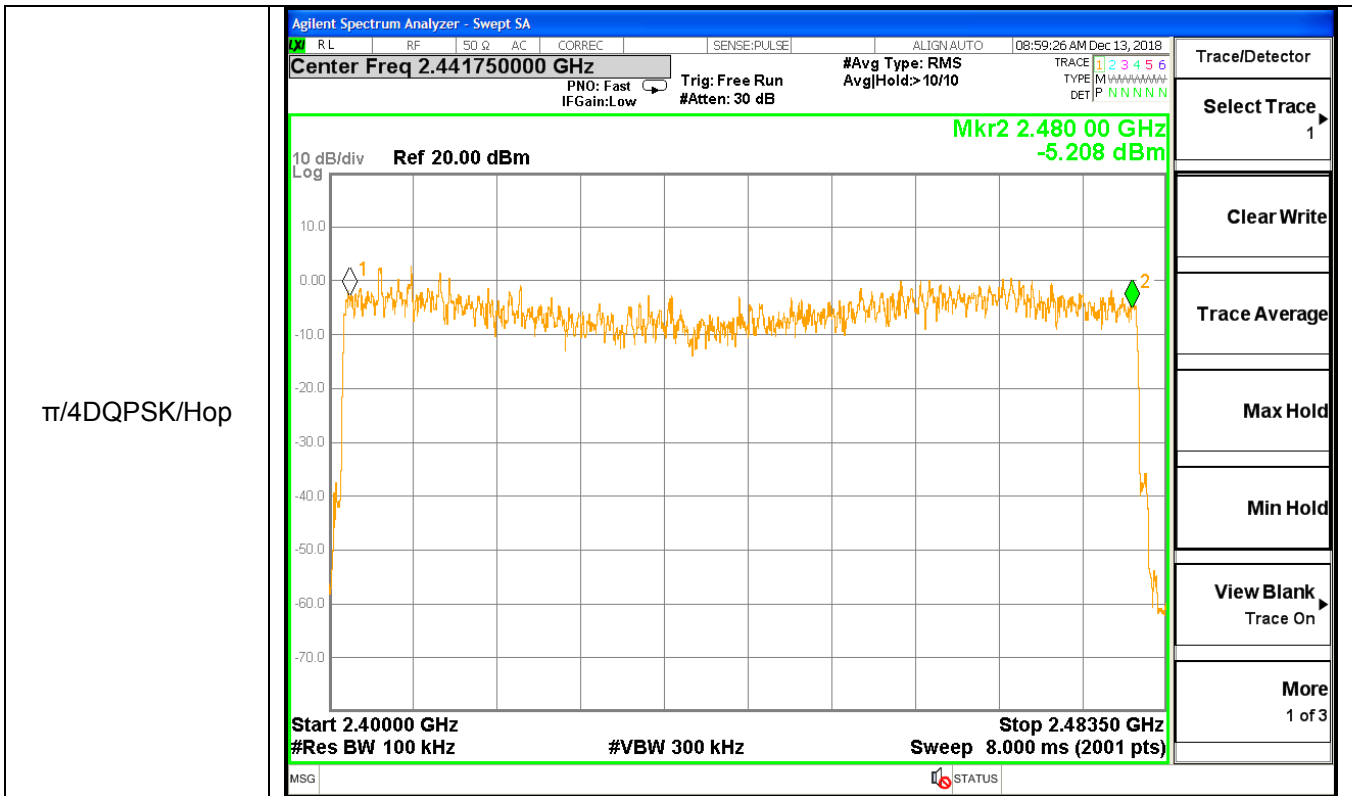


A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel[N]	Limit[N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graph

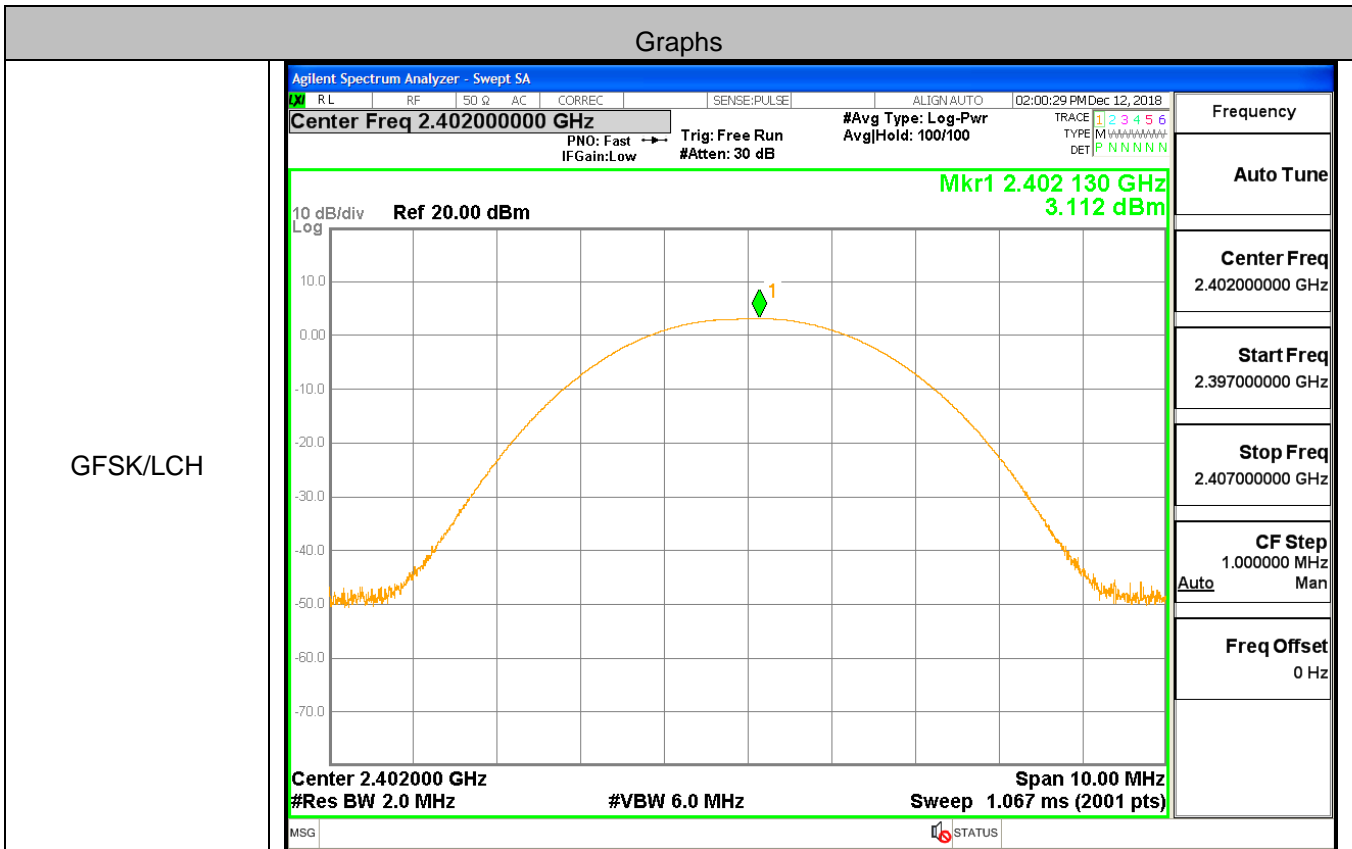


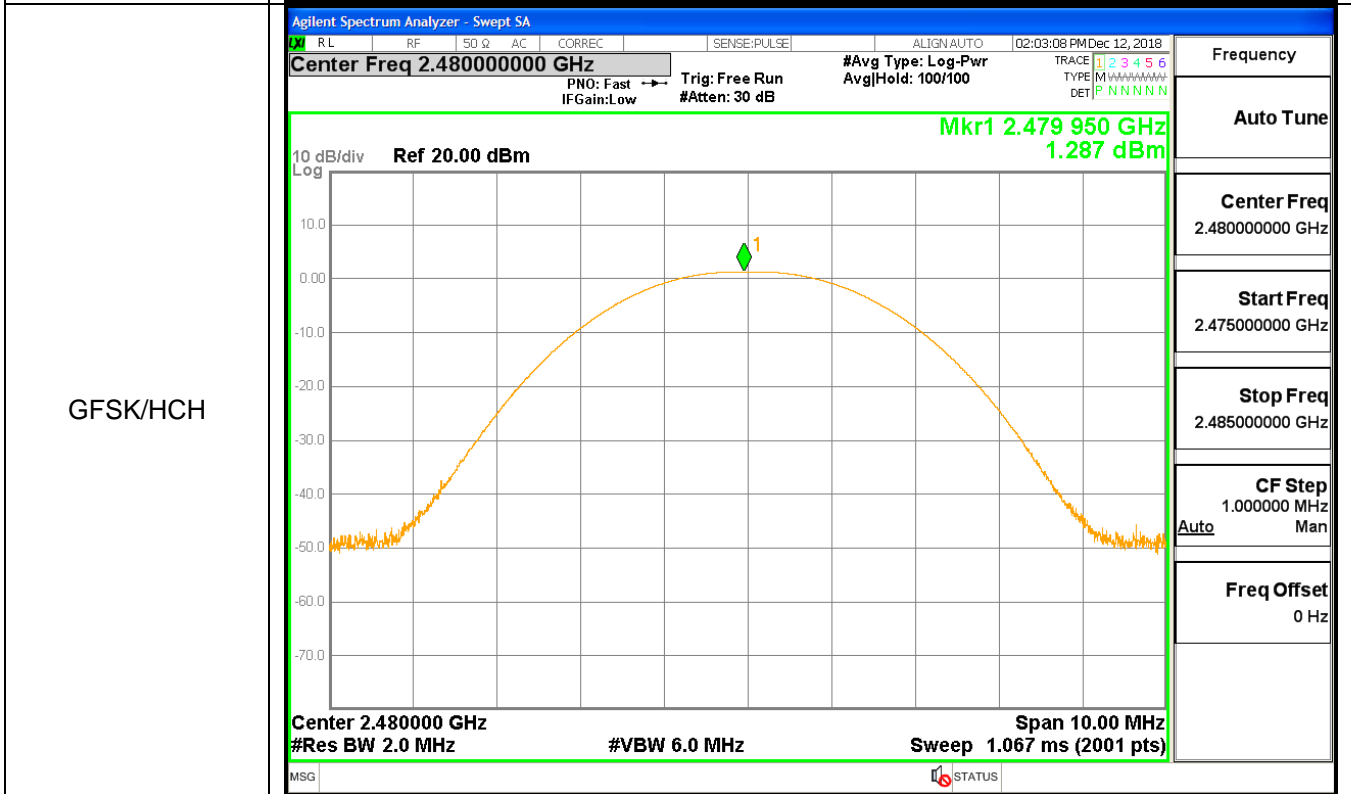
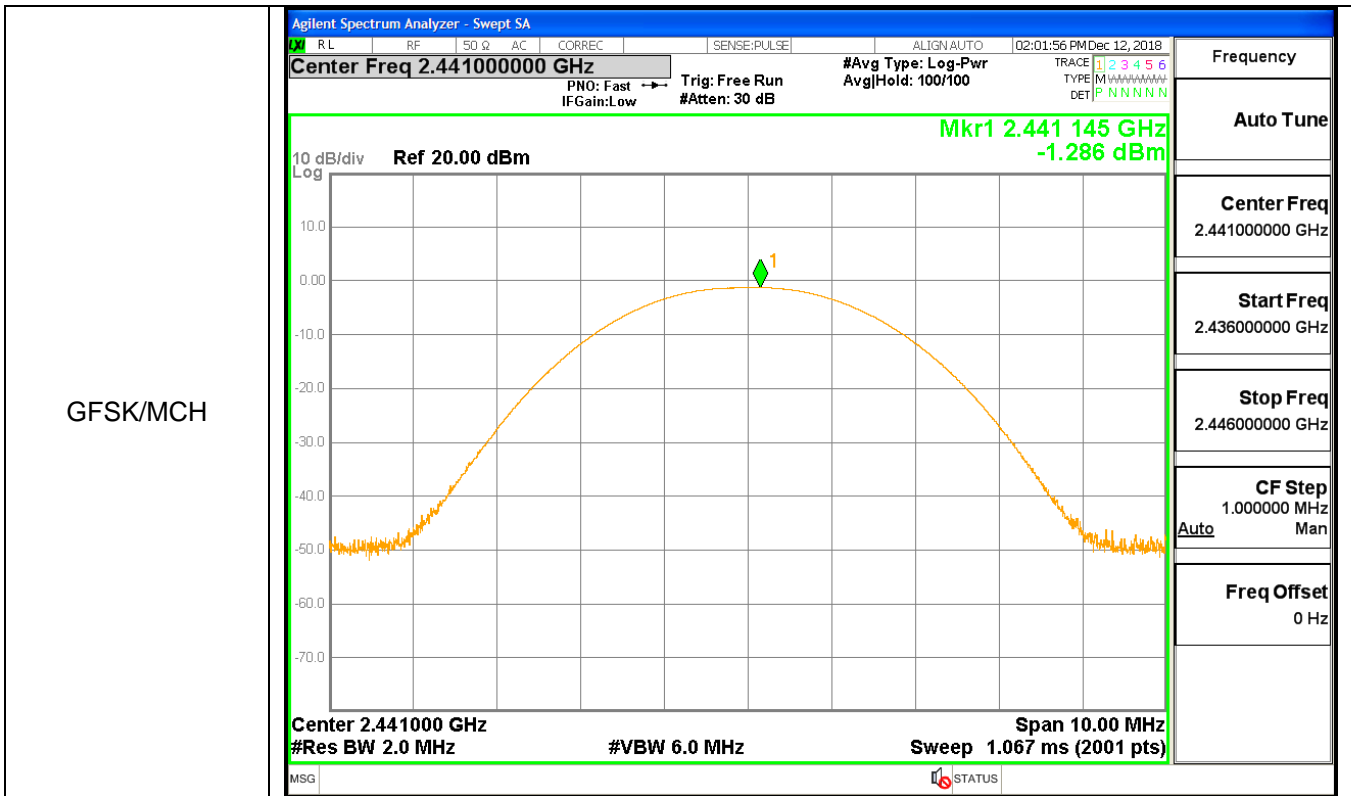


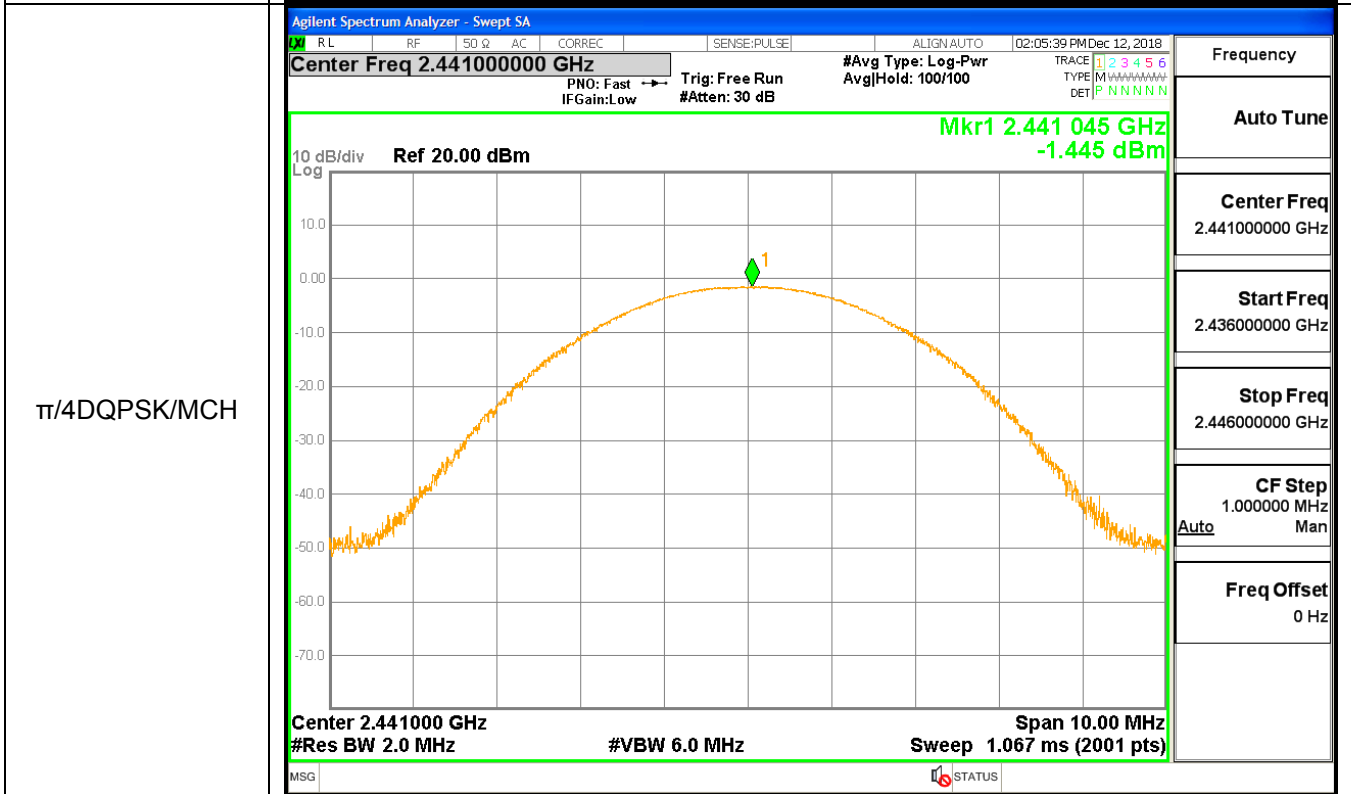
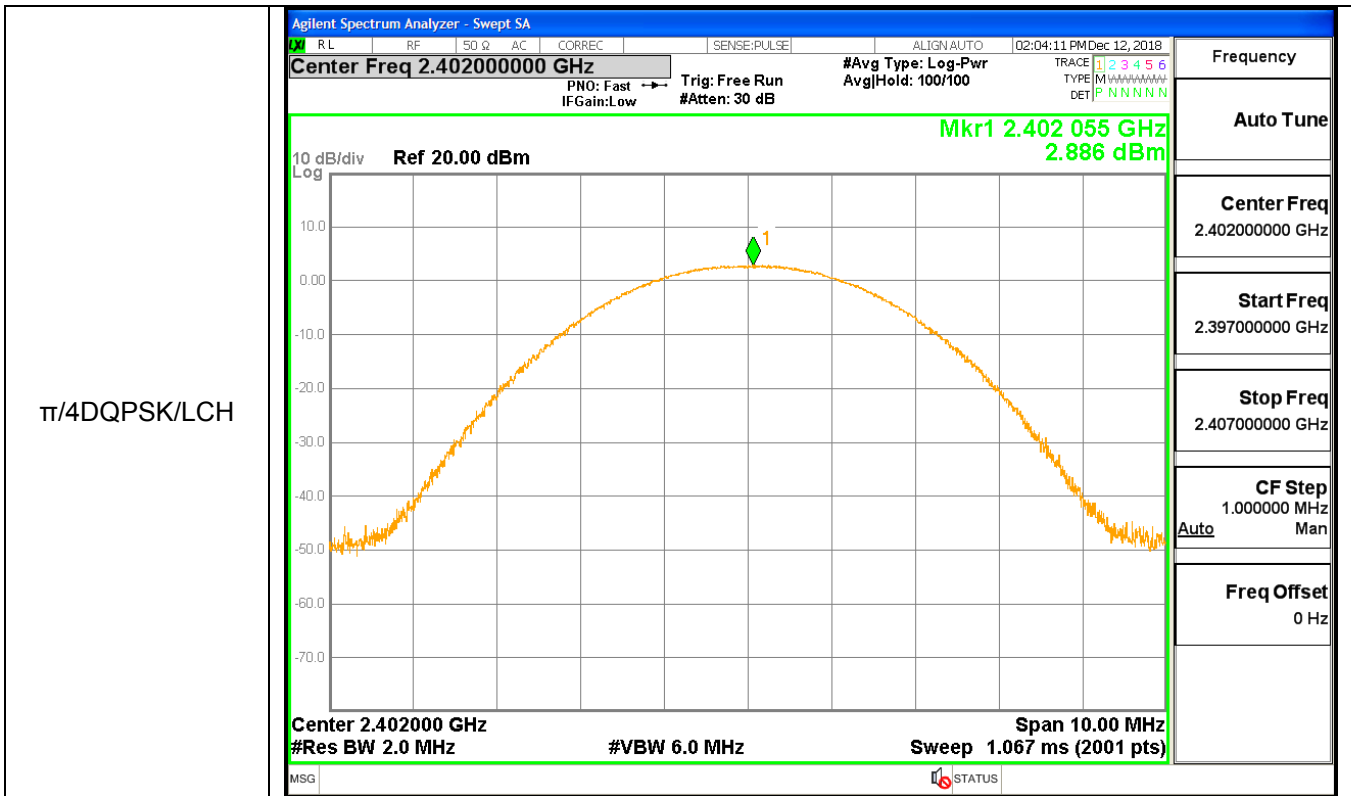
A.5 Conducted Peak Output Power

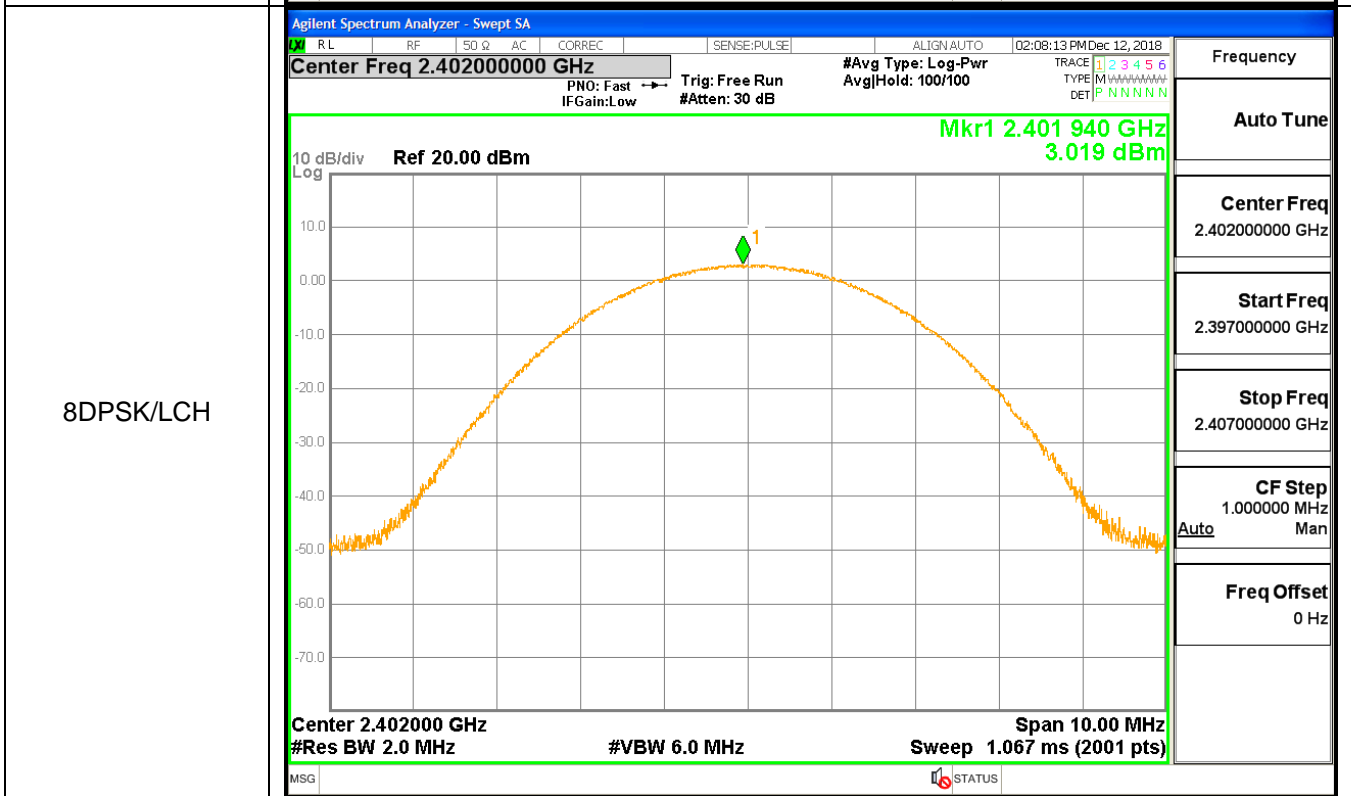
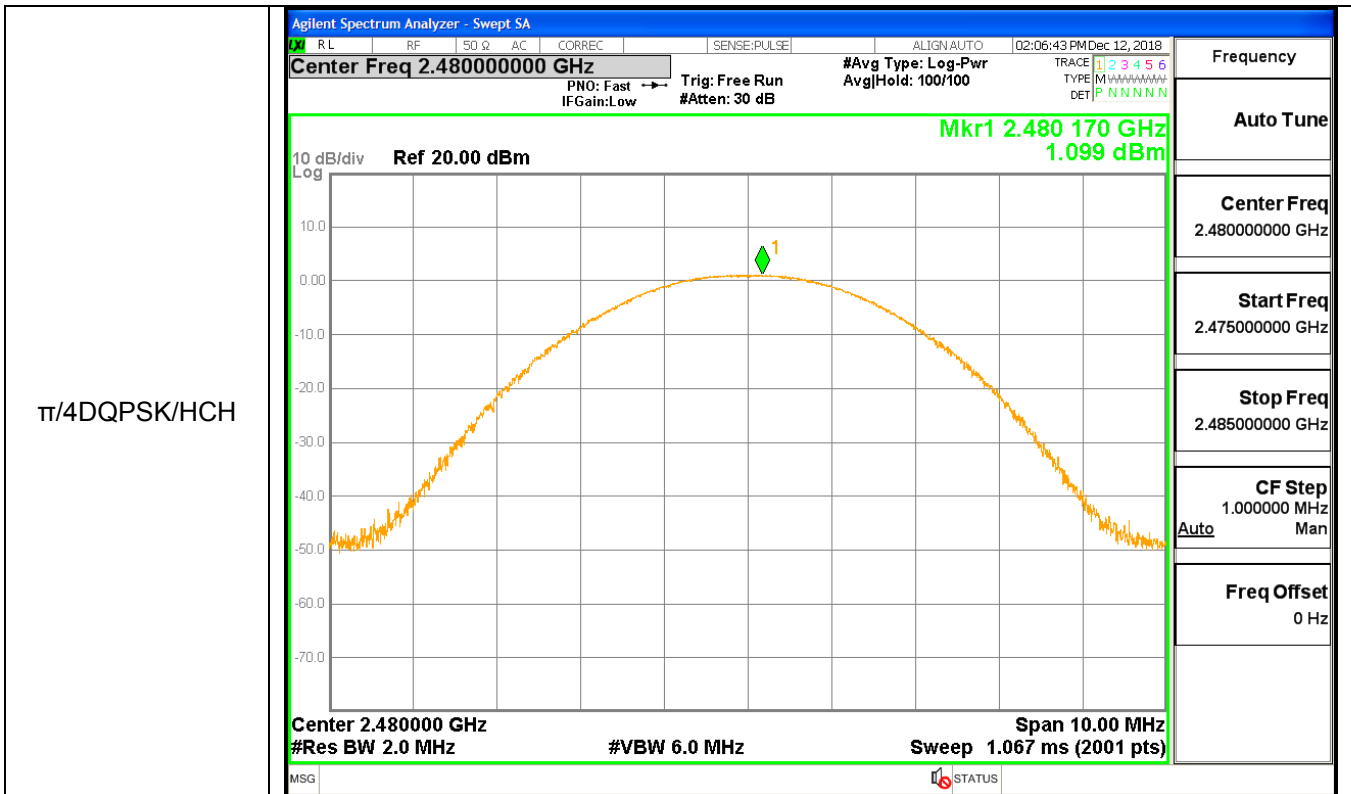
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.112	21	PASS
GFSK	MCH	-1.286	21	PASS
GFSK	HCH	1.287	21	PASS
$\pi/4$ DQPSK	LCH	2.886	21	PASS
$\pi/4$ DQPSK	MCH	-1.445	21	PASS
$\pi/4$ DQPSK	HCH	1.099	21	PASS
8DPSK	LCH	3.019	21	PASS
8DPSK	MCH	-1.354	21	PASS
8DPSK	HCH	1.223	21	PASS

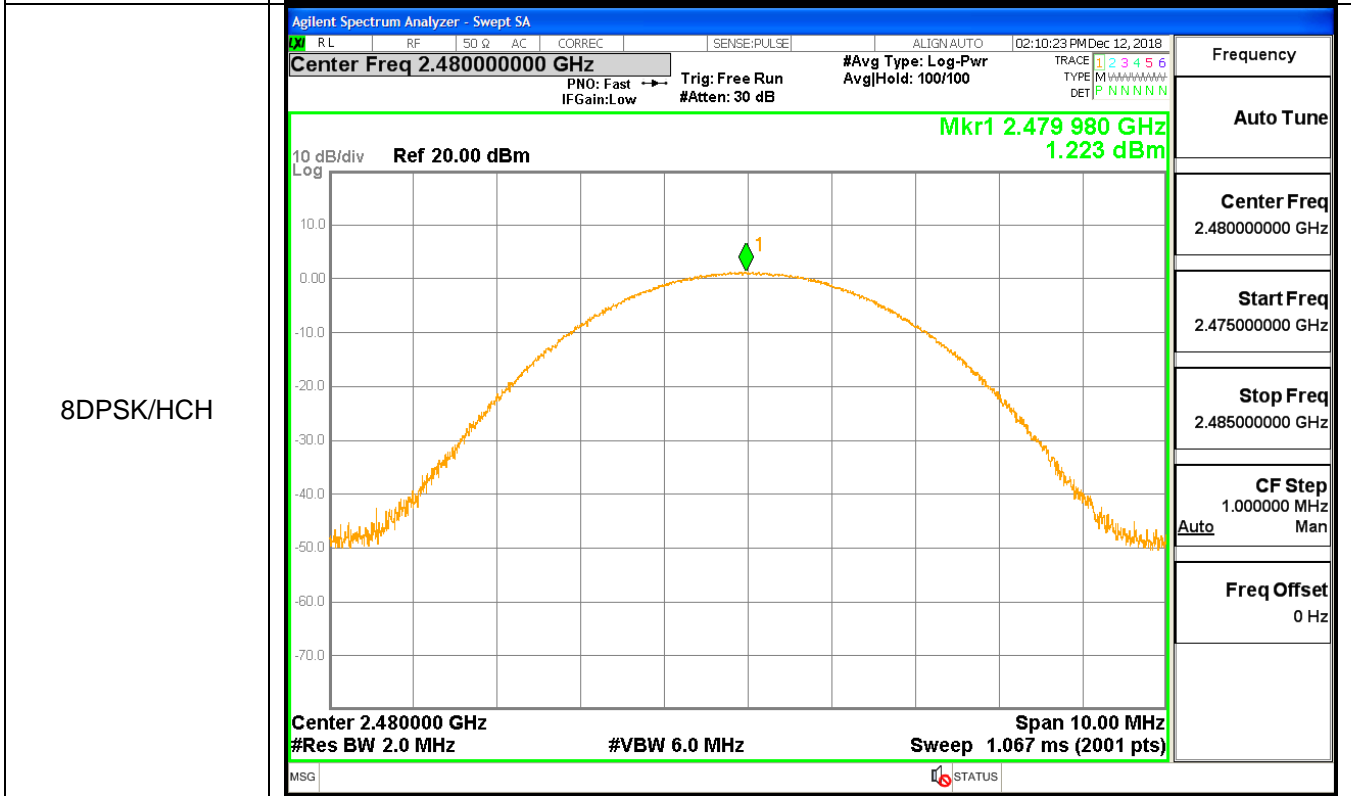
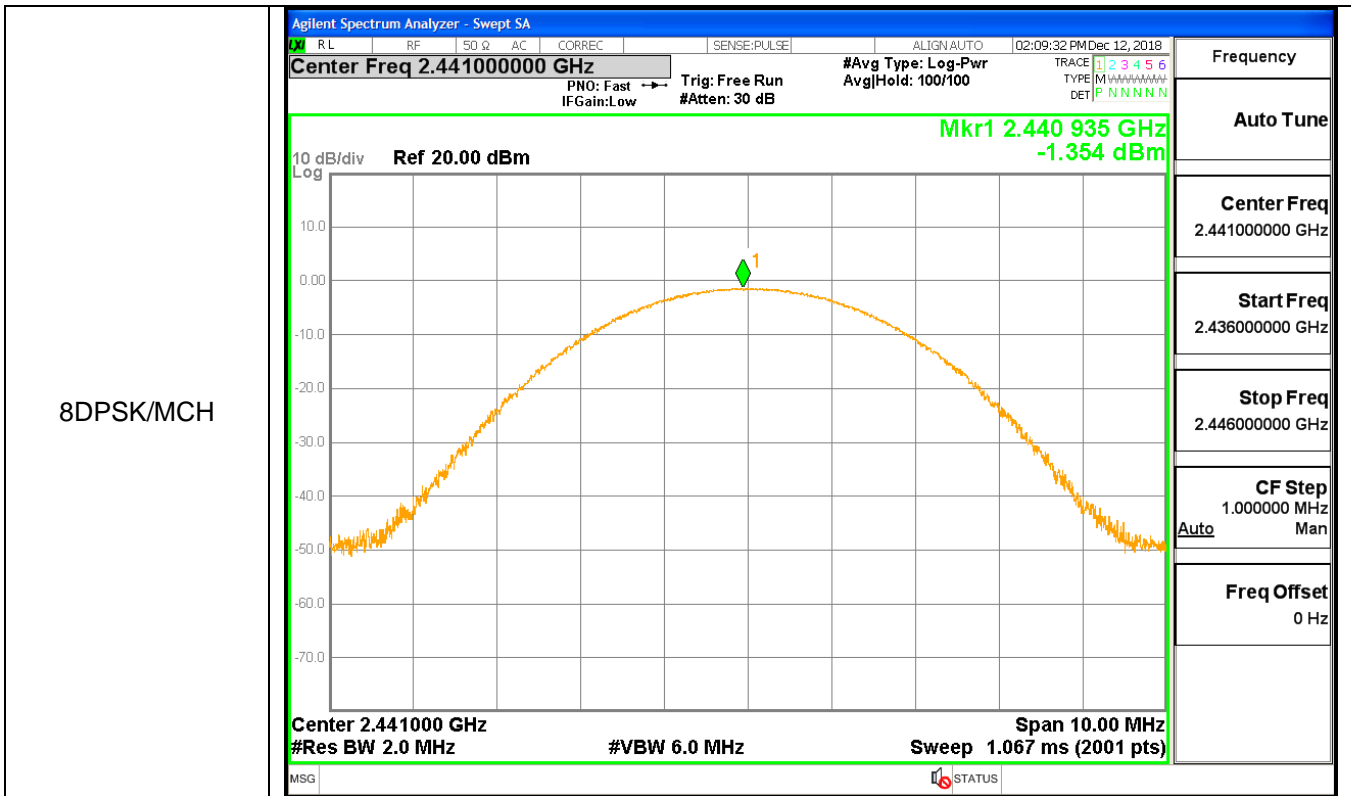
Test Graph











A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	2.63	-63.00	-17.37	Pass
1DH5	2402	2400	2.63	-55.67	-17.37	Pass
1DH5-Hopping	2402	2390	3.173	-61.71	-16.827	Pass
1DH5-Hopping	2402	2400	3.173	-58.72	-16.827	Pass
1DH5	2480	2483.5	1.239	-60.95	-18.761	Pass
1DH5	2480	2500	1.239	-63.88	-18.761	Pass
1DH5-Hopping	2480	2483.5	3.43	-62.01	-16.57	Pass
1DH5-Hopping	2480	2500	3.43	-61.95	-16.57	Pass
2DH5	2402	2390	-0.032	-63.03	-20.032	Pass
2DH5	2402	2400	-0.032	-55.49	-20.032	Pass
2DH5-Hopping	2480	2483.5	2.077	-61.43	-17.923	Pass
2DH5-Hopping	2480	2500	2.077	-61.48	-17.923	Pass
2DH5	2480	2483.5	-2.011	-62.36	-22.011	Pass
2DH5	2480	2500	-2.011	-62.83	-22.011	Pass
2DH5-Hopping	2402	2390	1.788	-61.96	-18.212	Pass
2DH5-Hopping	2402	2400	1.788	-58.64	-18.212	Pass
3DH5	2402	2390	1.009	-64.42	-18.991	Pass
3DH5	2402	2400	1.009	-56.28	-18.991	Pass
3DH5-Hopping	2402	2390	0.44	-62.27	-19.56	Pass
3DH5-Hopping	2402	2400	0.44	-56.72	-19.56	Pass
3DH5	2480	2483.5	-1.804	-58.14	-21.804	Pass
3DH5	2480	2500	-1.804	-62.36	-21.804	Pass
3DH5-Hopping	2480	2483.5	0.745	-61.55	-19.255	Pass
3DH5-Hopping	2480	2500	0.745	-61.34	-19.255	Pass

Test Graph

Graphs

GFSK/LCH/No Hop

Agilent Spectrum Analyzer - Swept SA
 Center Freq **2.356750000 GHz**
 #Avg Type: RMS AvgHold: 100/100
 PNO: Fast IFGain: Low Trig: Free Run #Atten: 30 dB

10 dB/div Ref 20.00 dBm
 Mkr2 2.400 00 GHz -55.674 dBm
 Start 2.310000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.403500 GHz Sweep 9.067 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-52.997 dBm			
2	N	1	f	2.400 00 GHz	-55.674 dBm			
3	N	1	f	2.401 91 GHz	2.630 dBm			

Frequency

Auto Tune

Center Freq
2.356750000 GHz

Start Freq
2.310000000 GHz

Stop Freq
2.403500000 GHz

CF Step
9.350000 MHz
Auto Man

Freq Offset
0 Hz

GFSK/LCH/Hop

Agilent Spectrum Analyzer - Swept SA
 Center Freq **2.400000000 GHz**
 #Avg Type: RMS AvgHold: 100/100
 PNO: Fast IFGain: Low Trig: Free Run #Atten: 30 dB

10 dB/div Ref 20.00 dBm
 Mkr2 2.400 00 GHz -58.720 dBm
 Start 2.370000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.430000 GHz Sweep 5.867 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-61.711 dBm			
2	N	1	f	2.400 00 GHz	-58.720 dBm			
3	N	1	f	2.406 93 GHz	3.173 dBm			

Frequency

Auto Tune

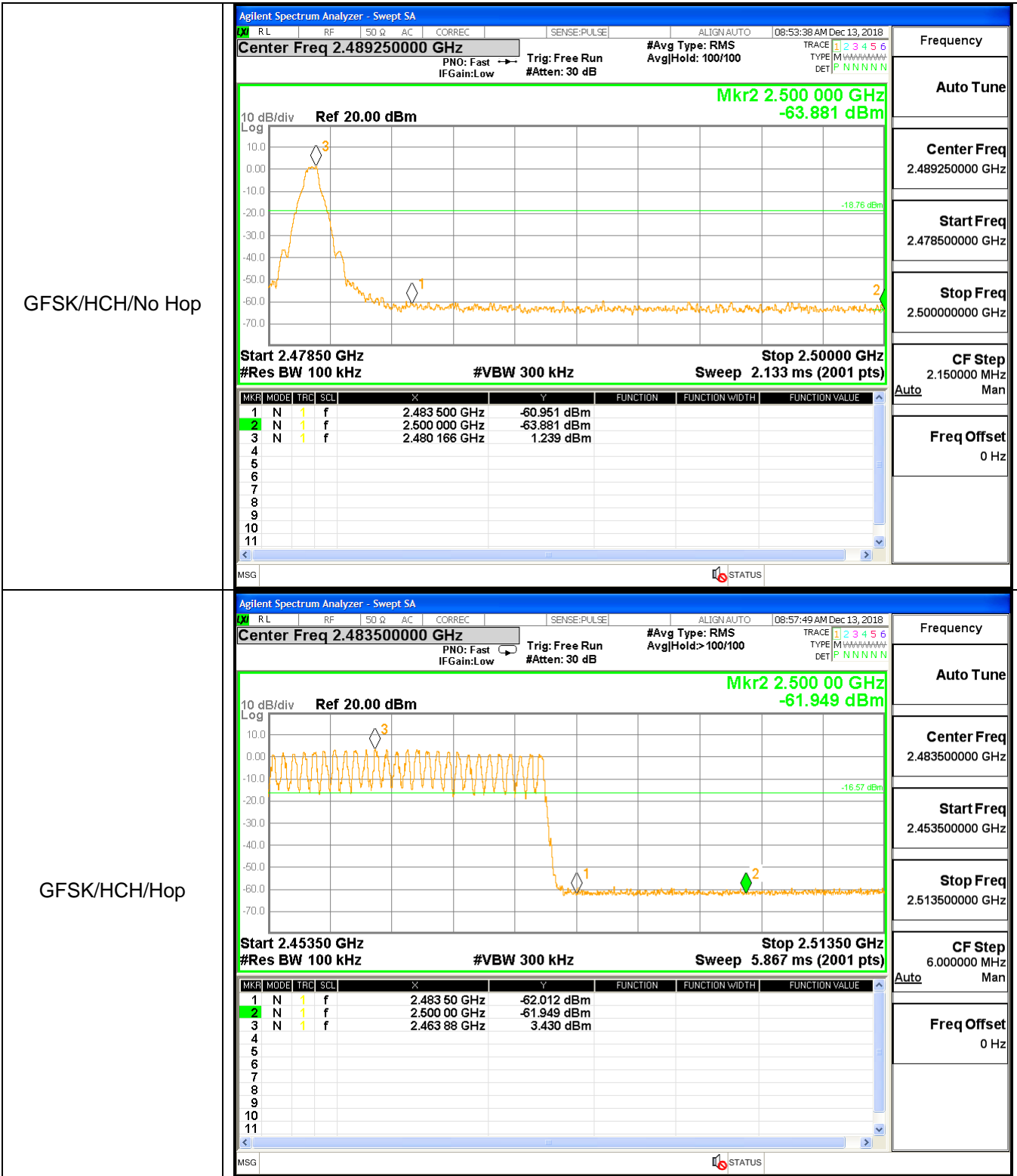
Center Freq
2.400000000 GHz

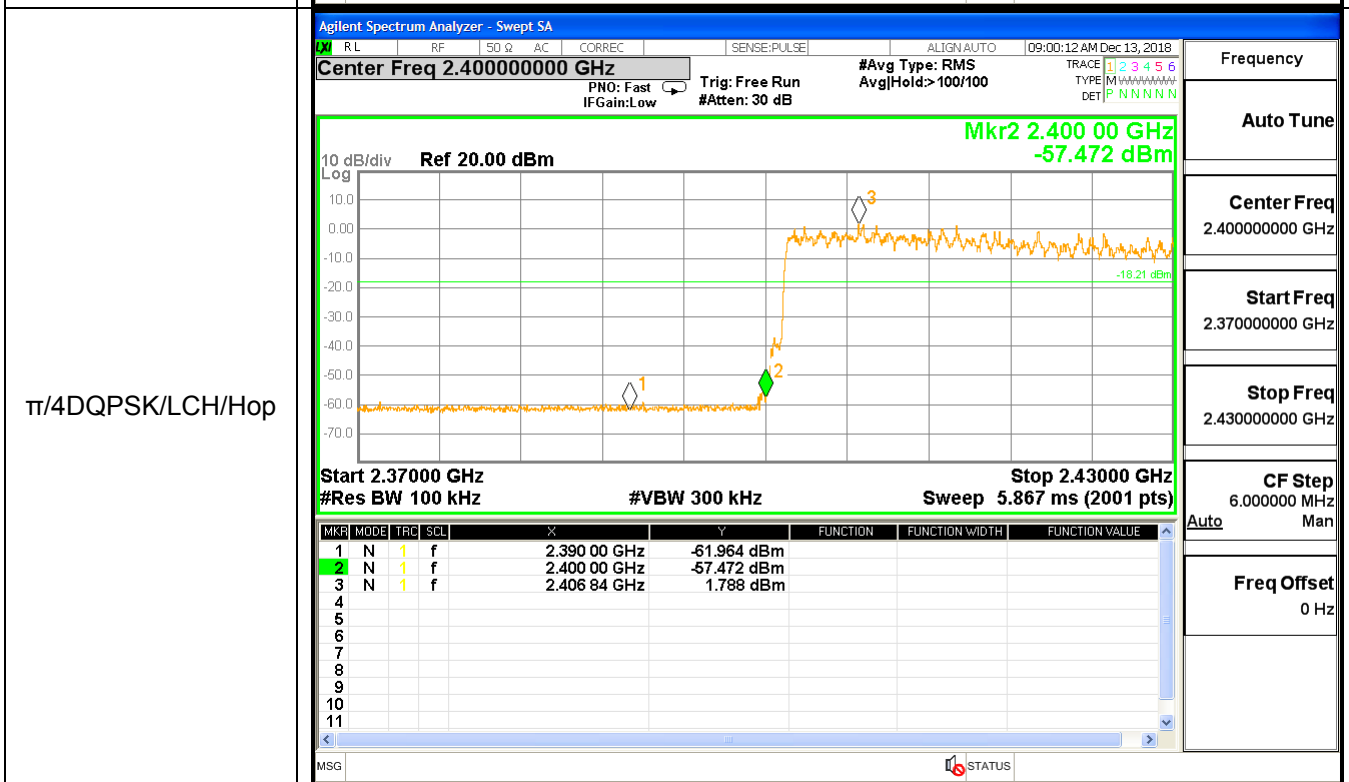
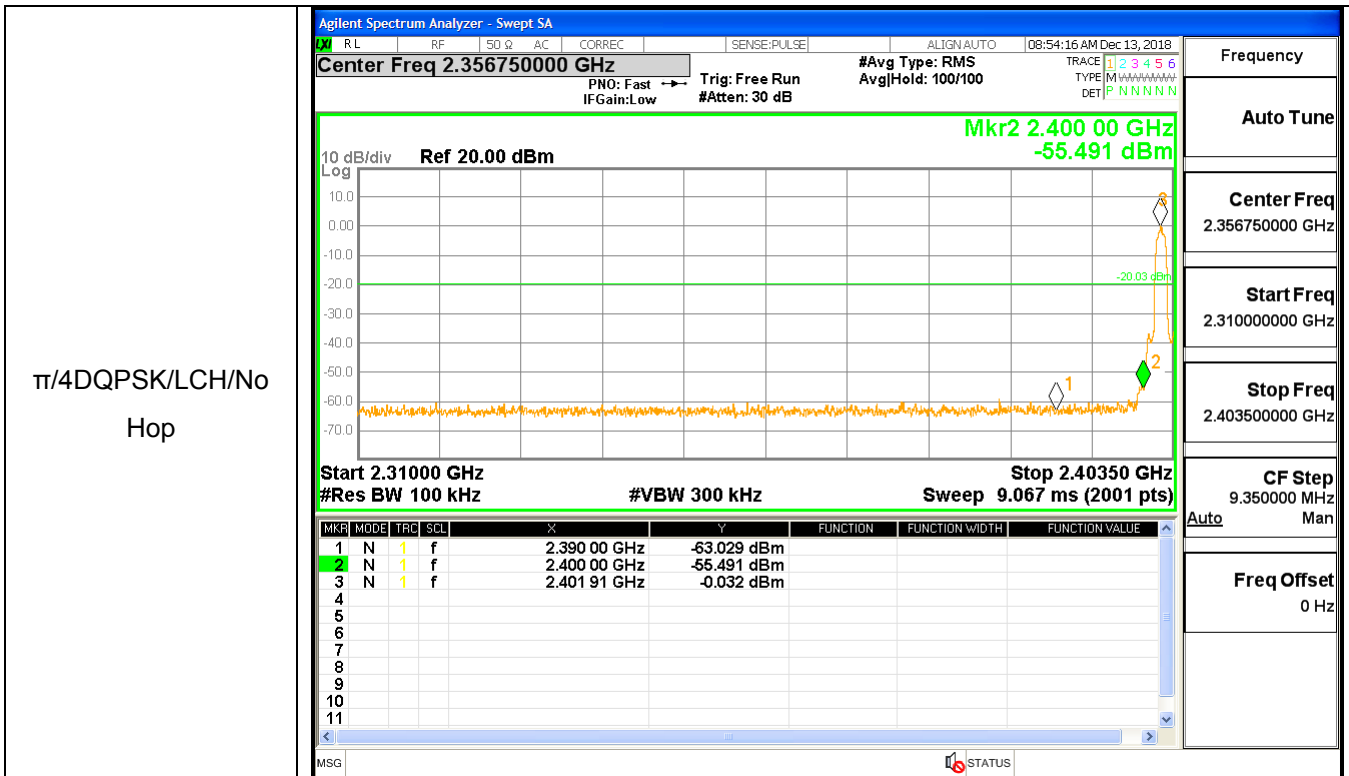
Start Freq
2.370000000 GHz

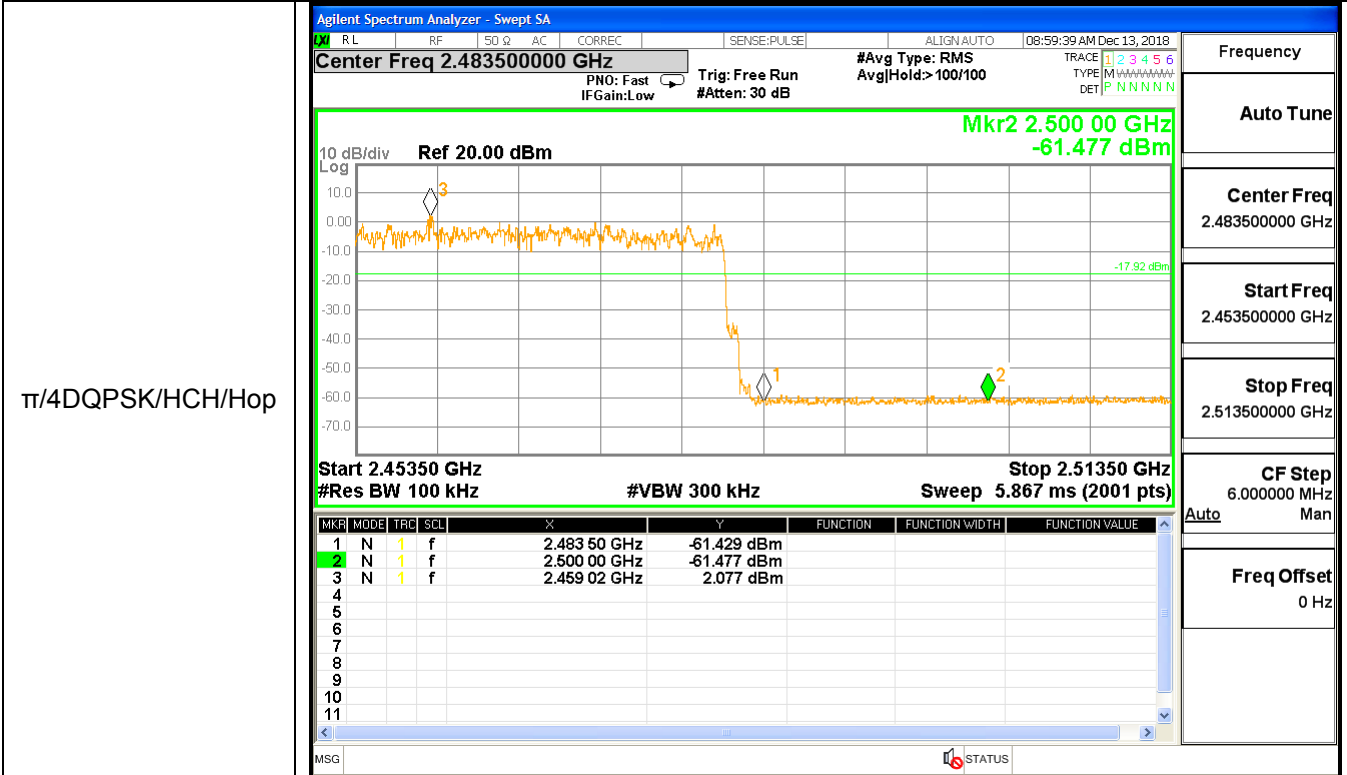
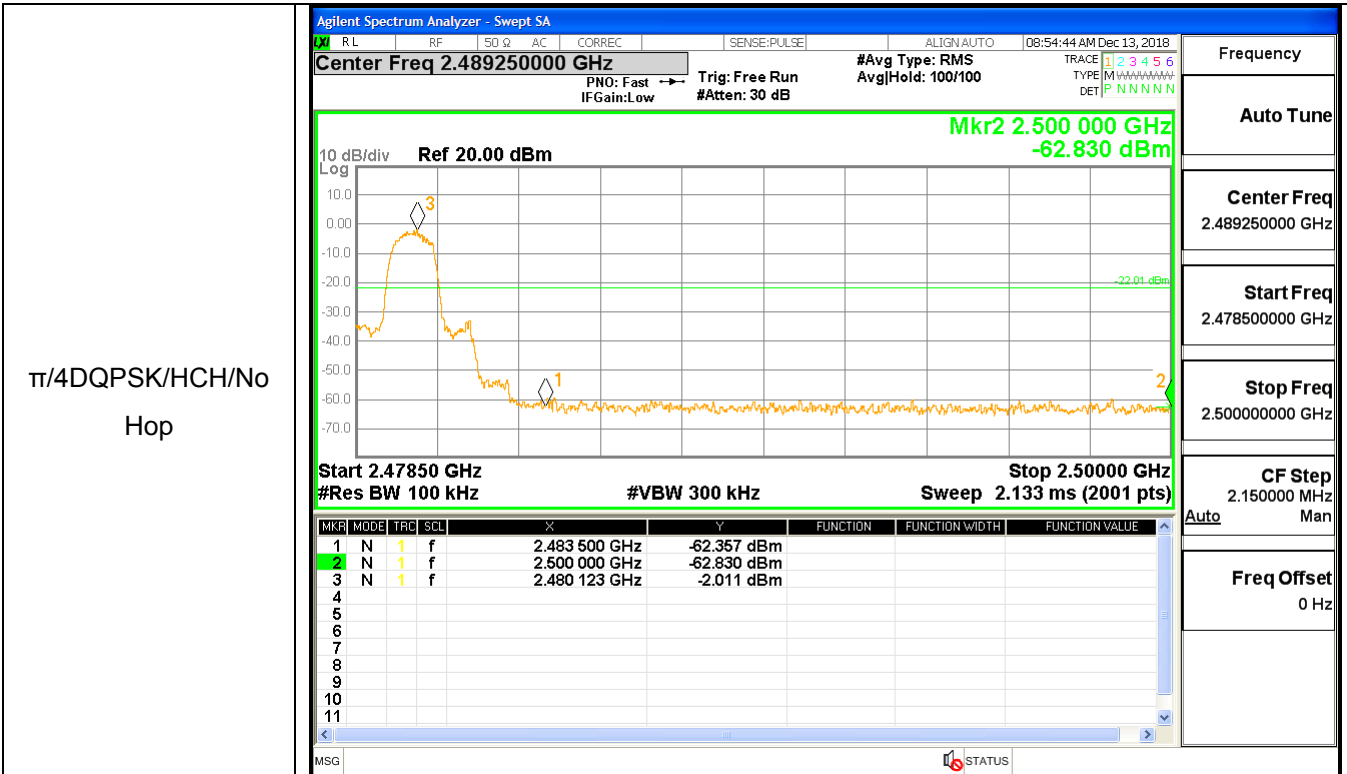
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

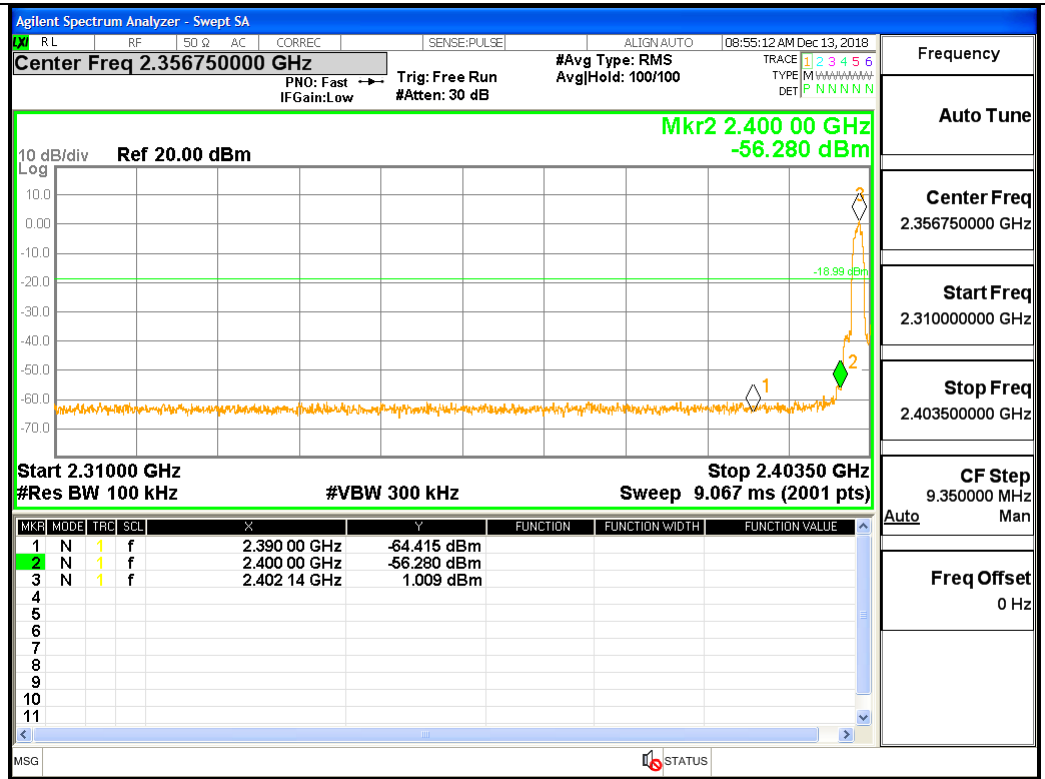
Freq Offset
0 Hz



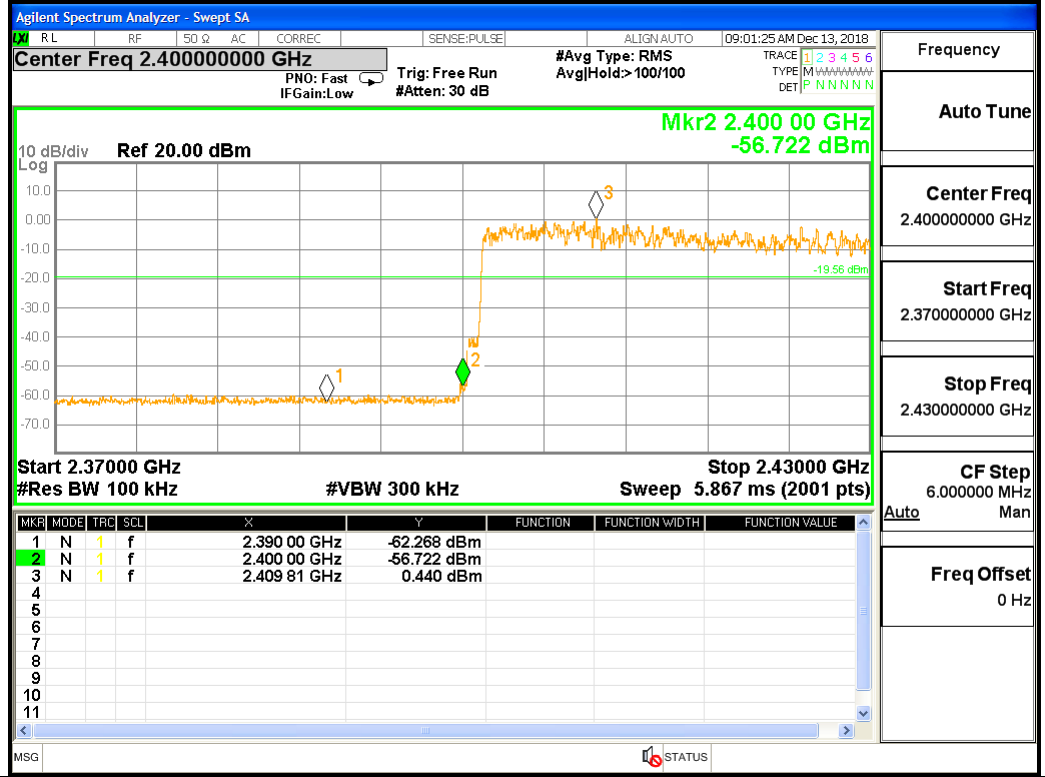


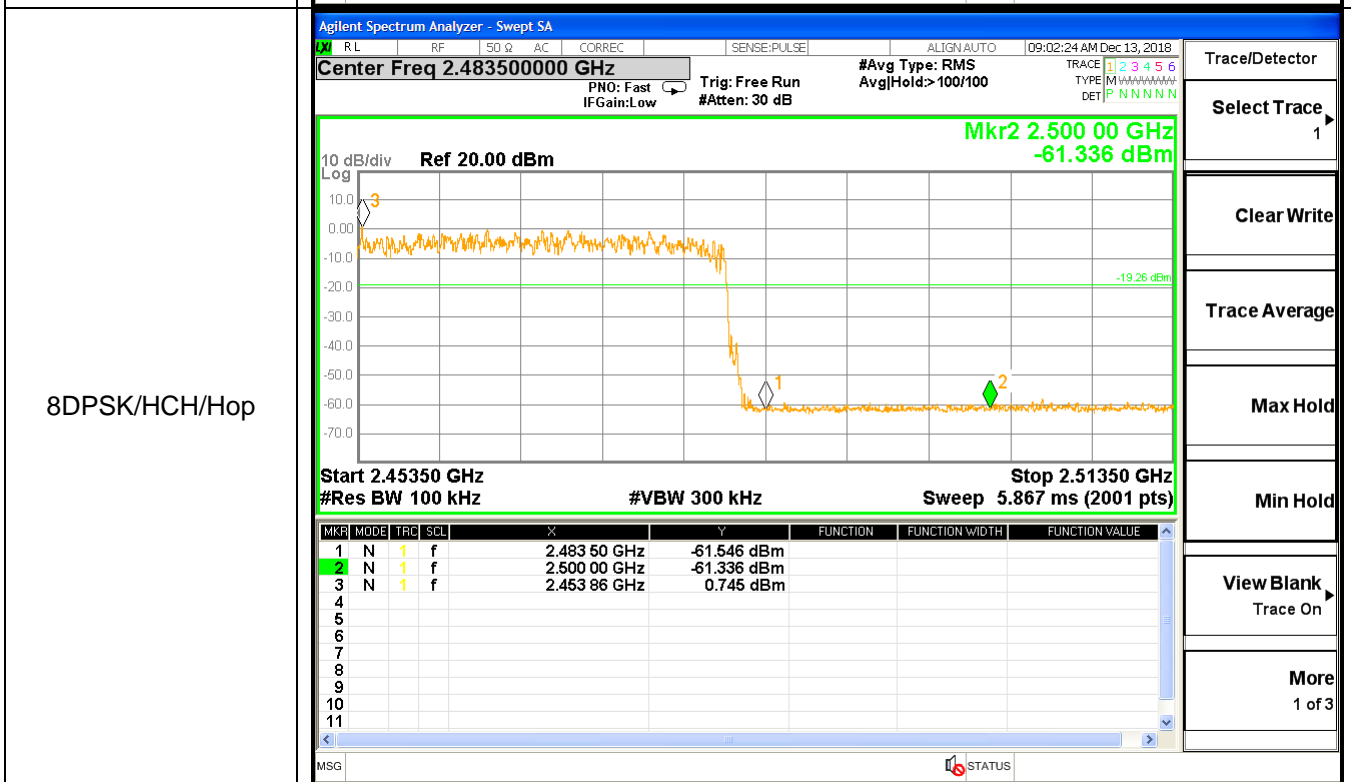
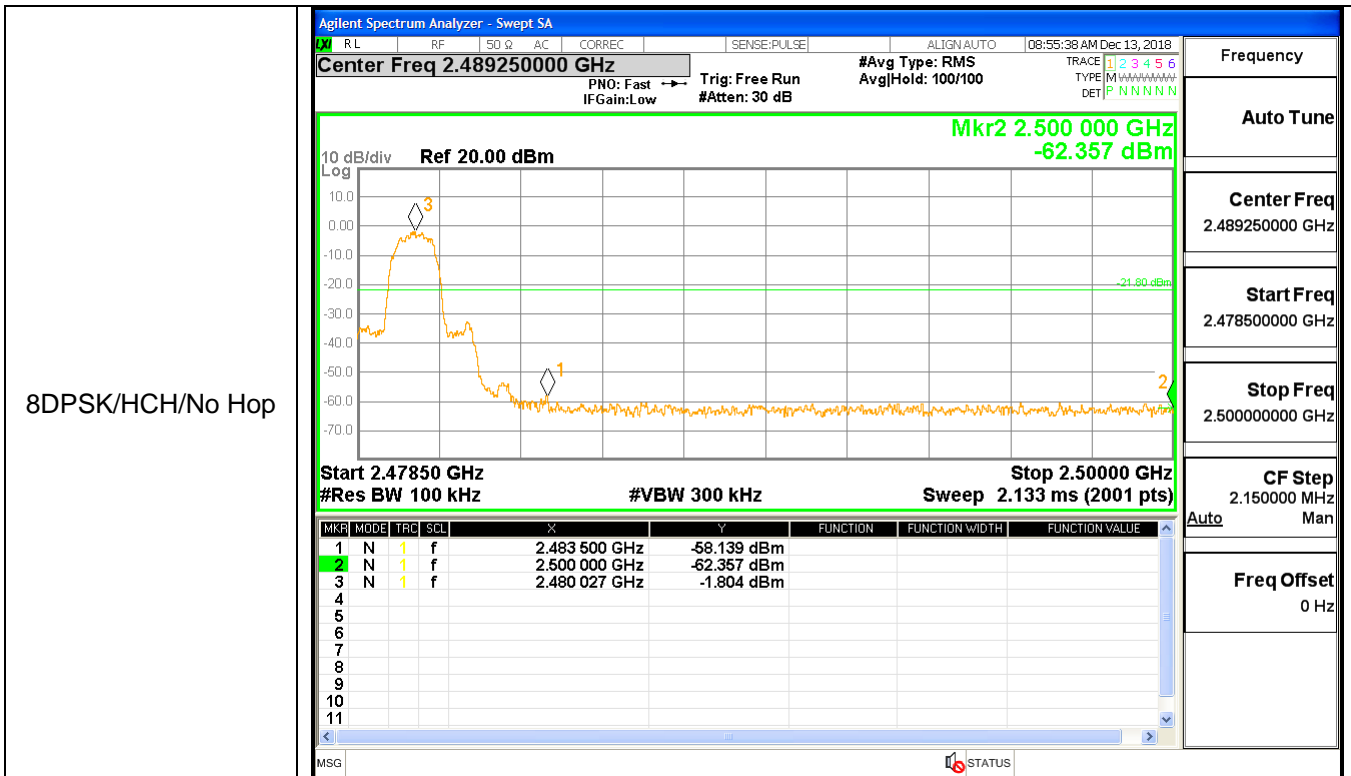


8DPSK/LCH/No Hop

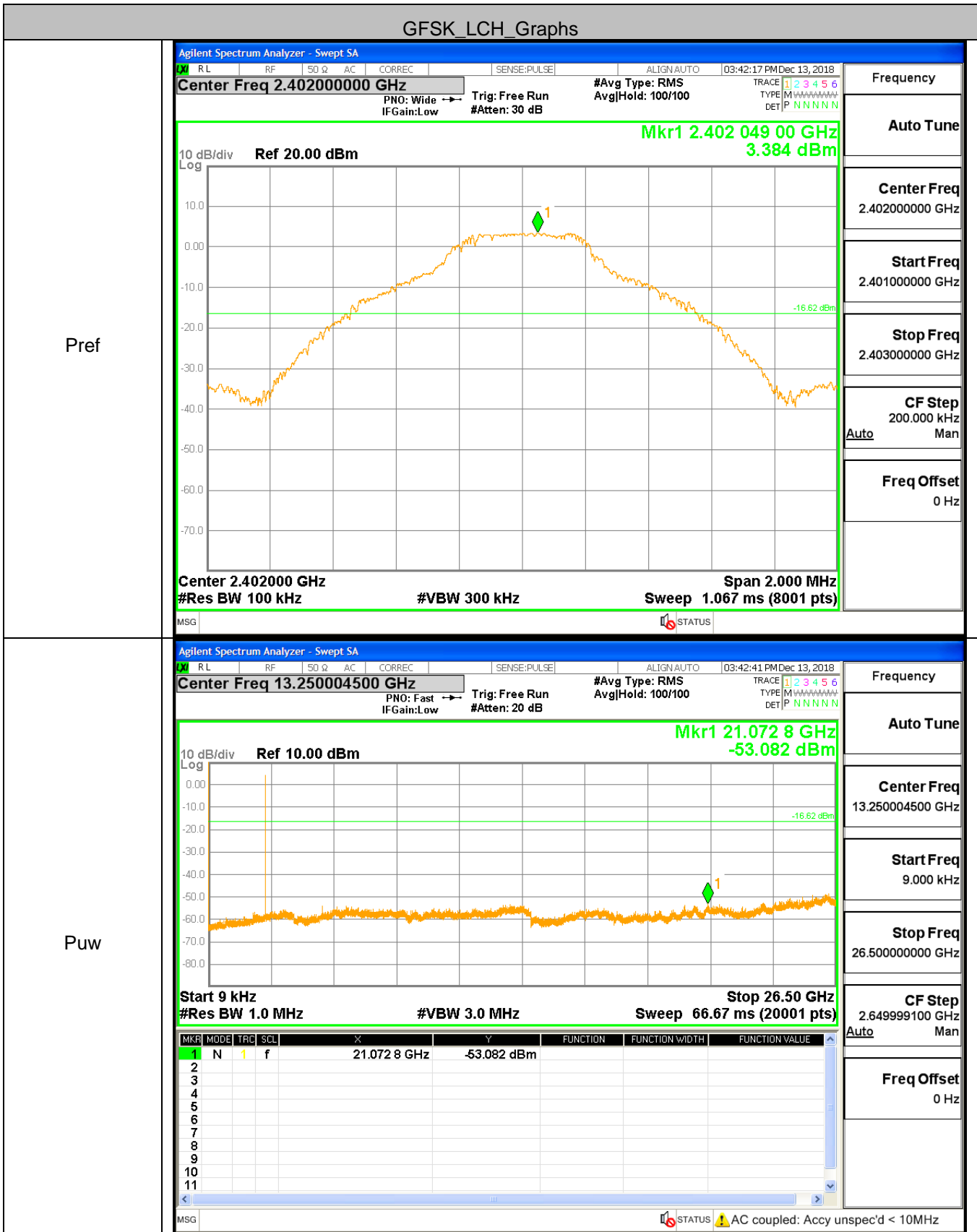


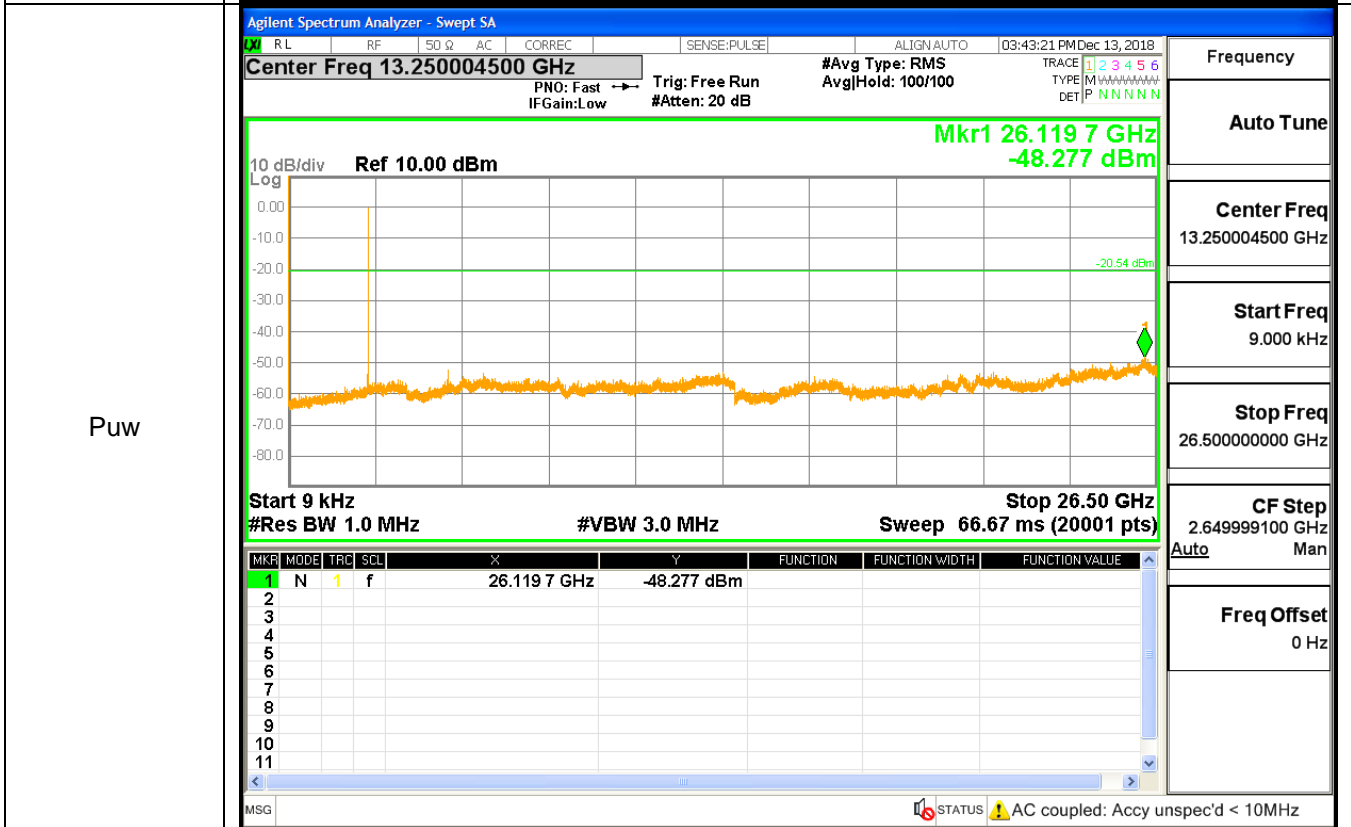
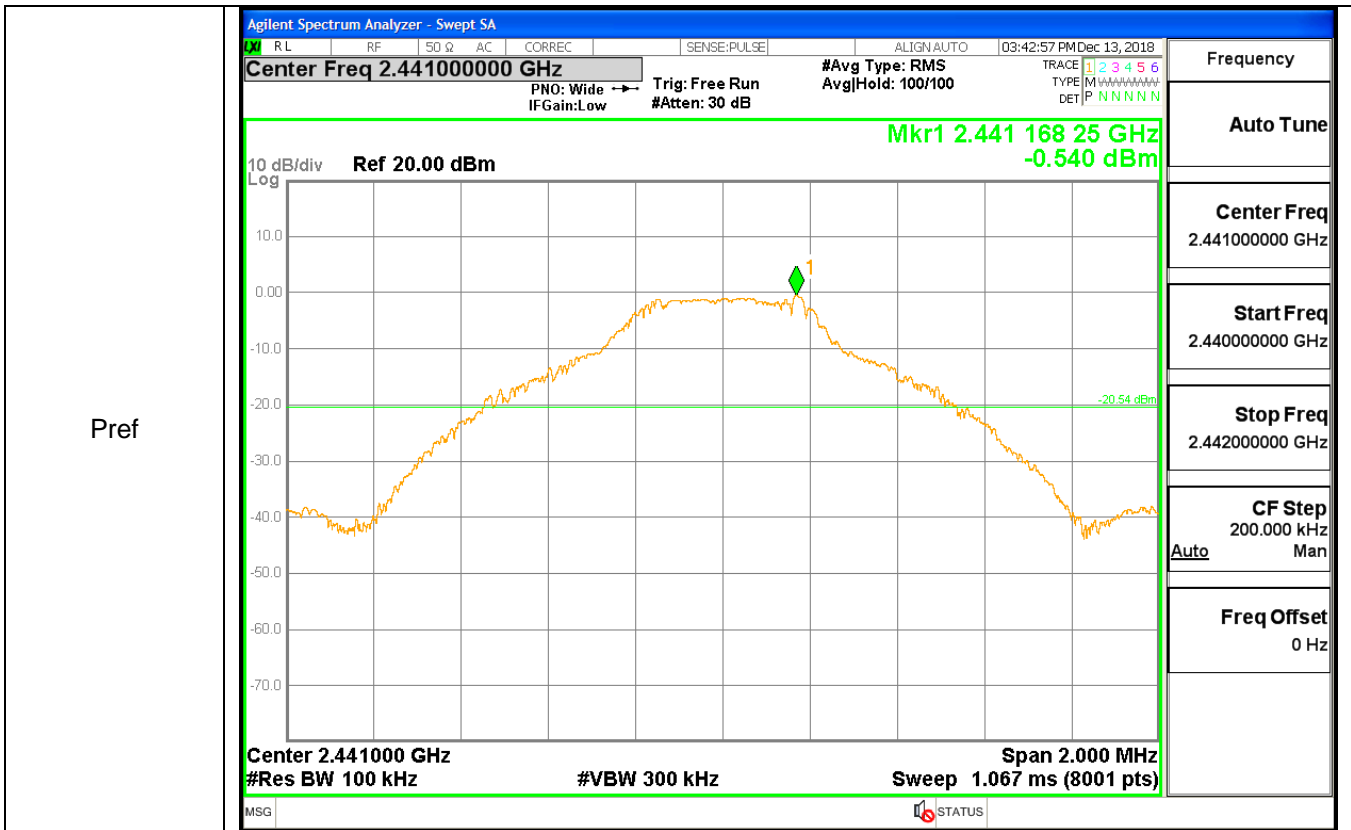
8DPSK/LCH/Hop



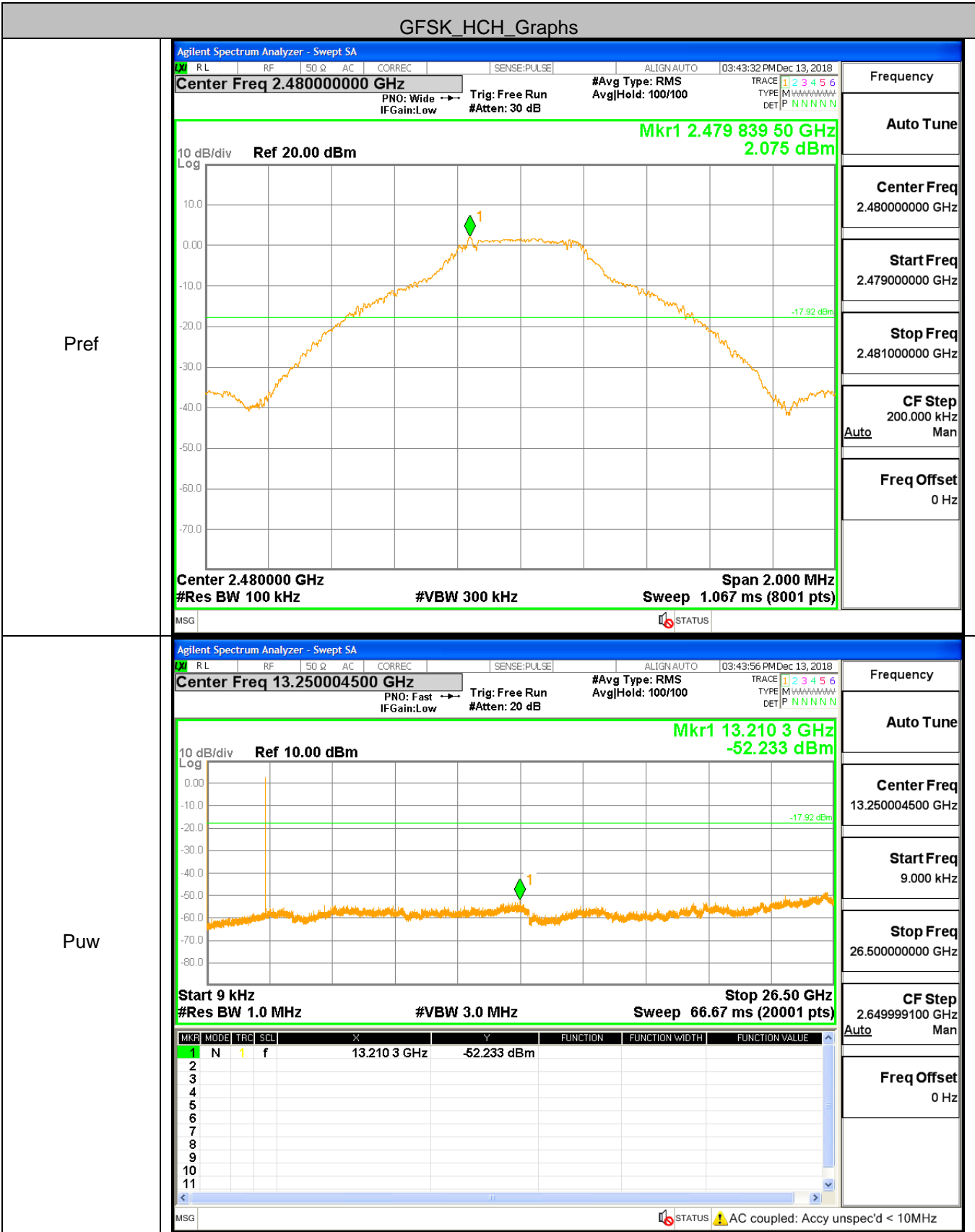


A.7 RF Conducted Spurious Emissions Test Graph

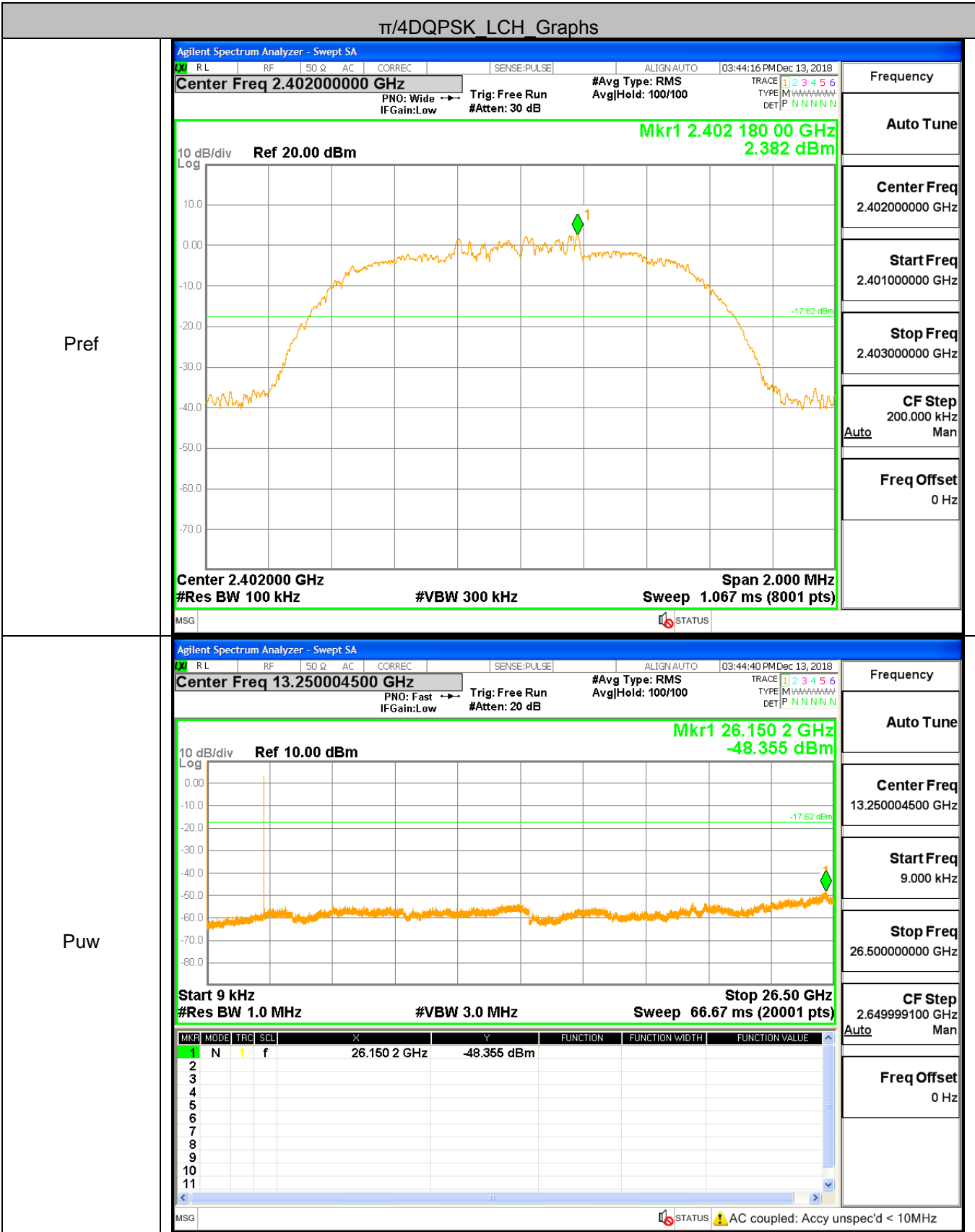




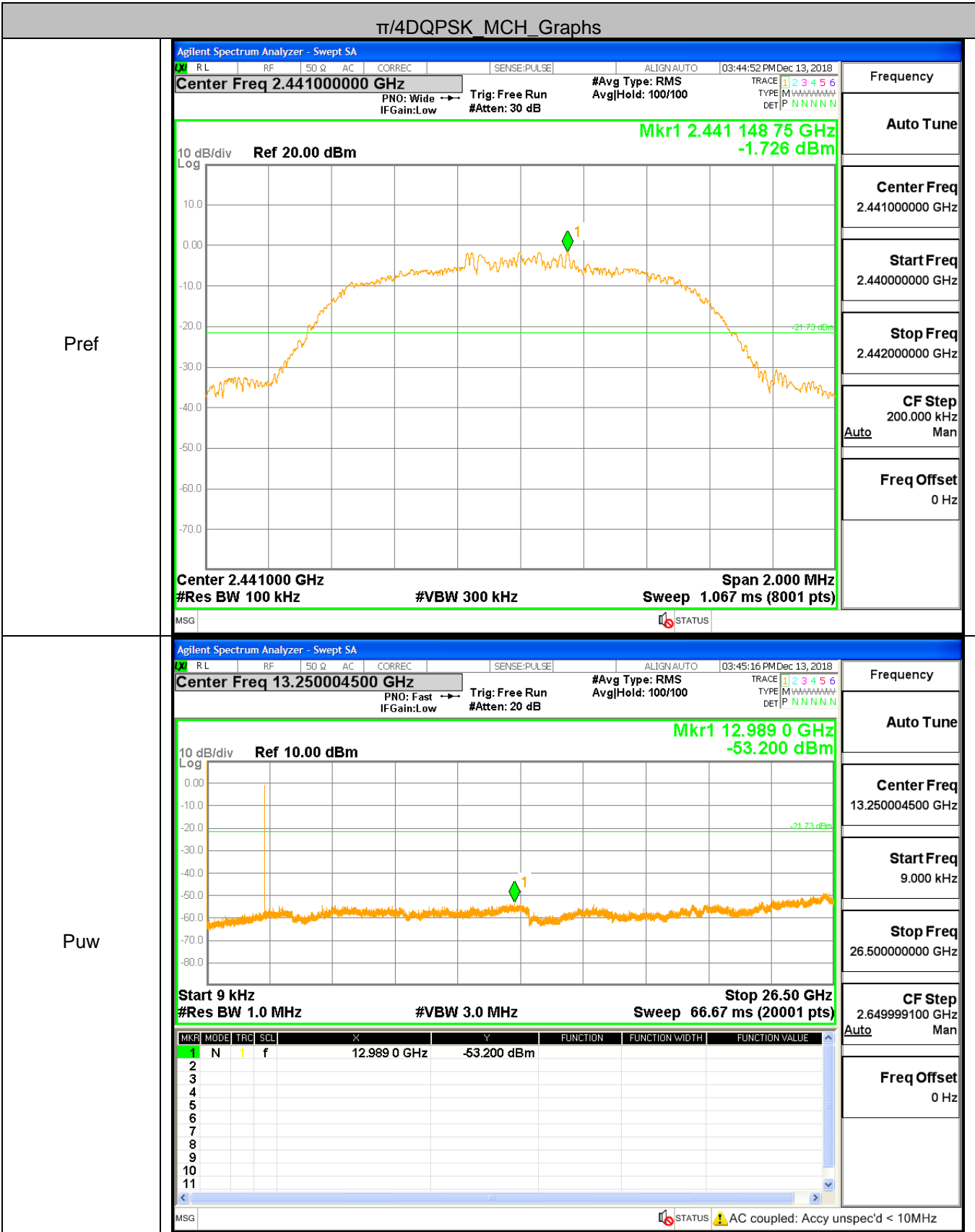
GFSK_HCH_Graphs



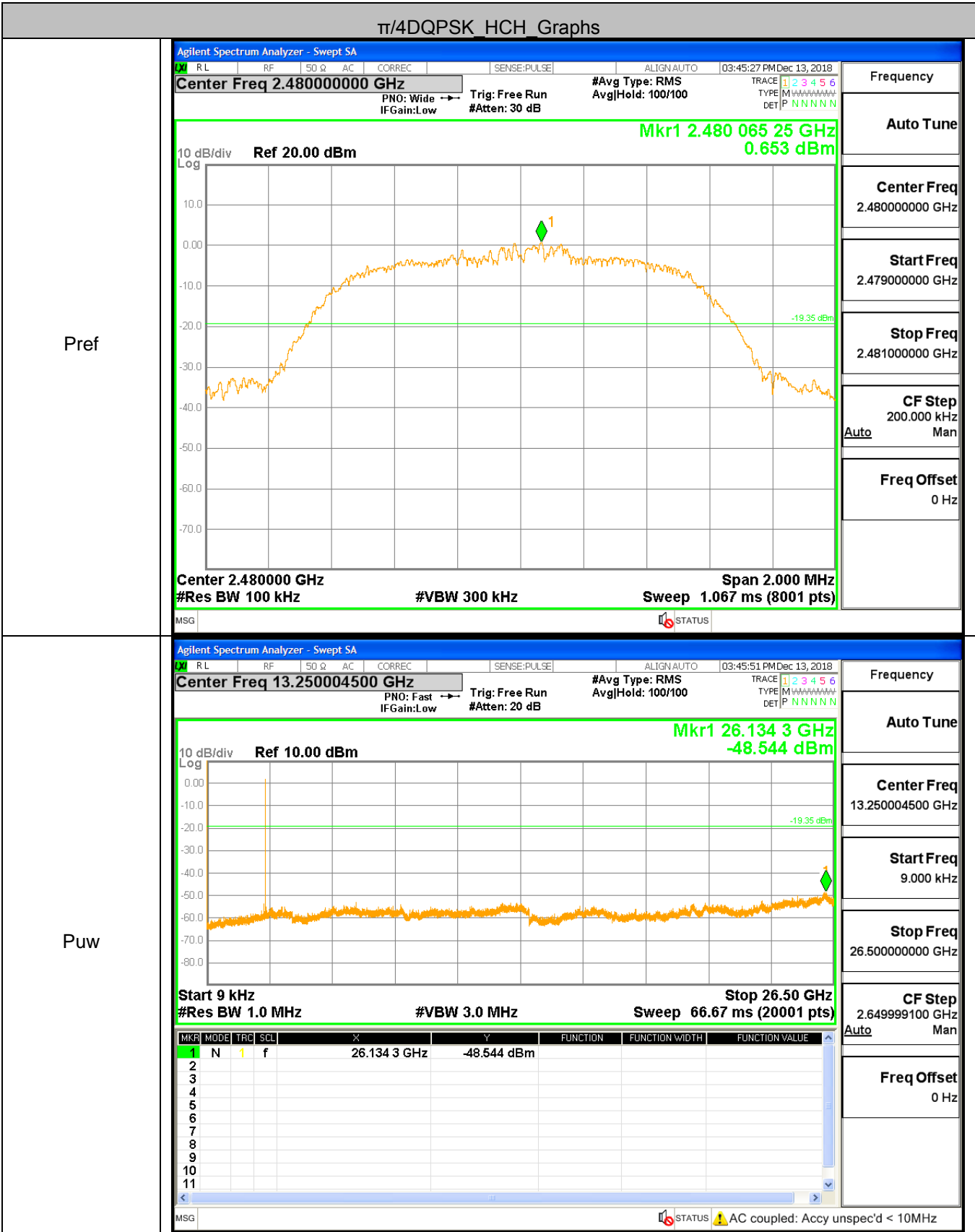
$\pi/4$ DQPSK LCH Graphs



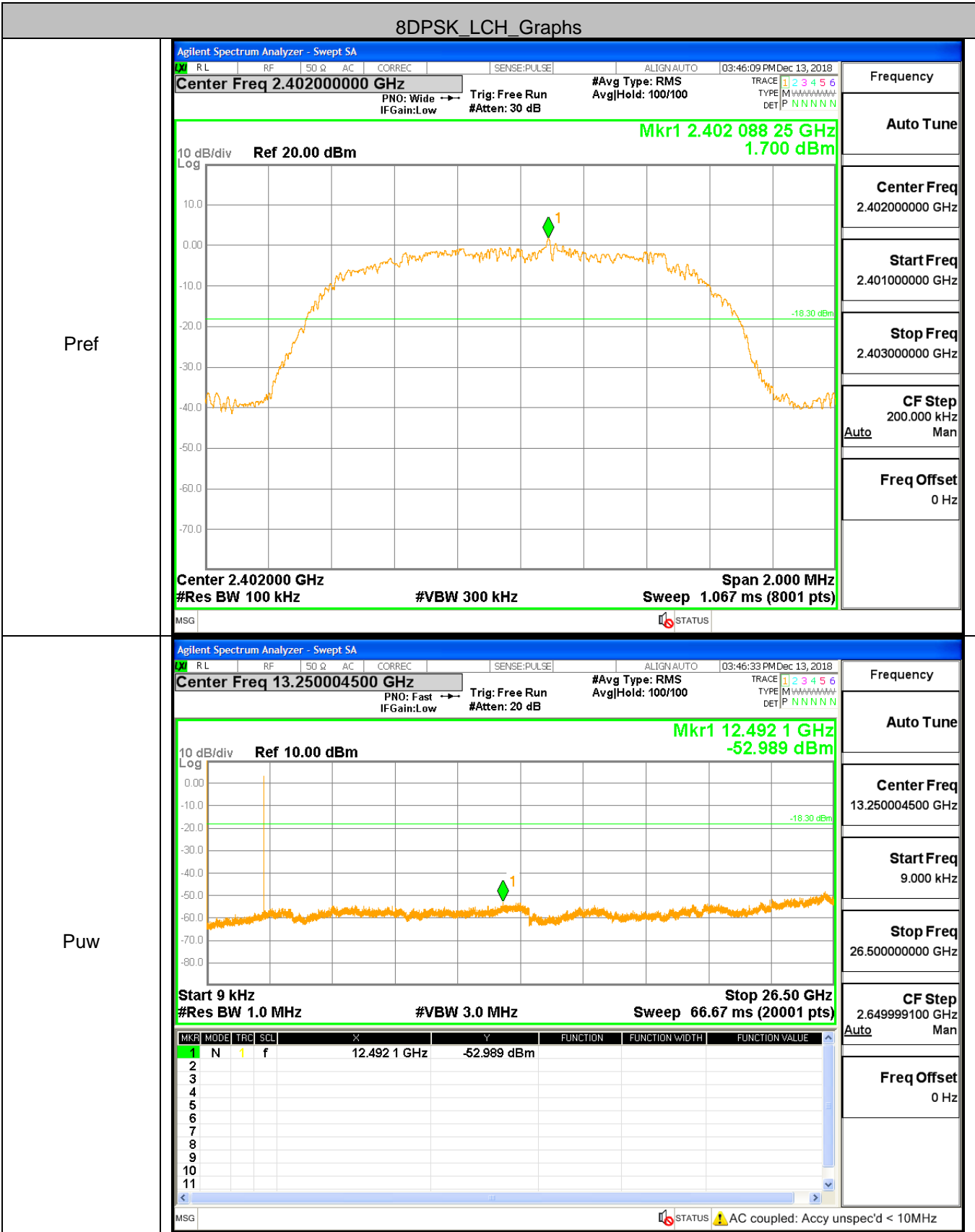
$\pi/4$ DQPSK MCH_Graphs



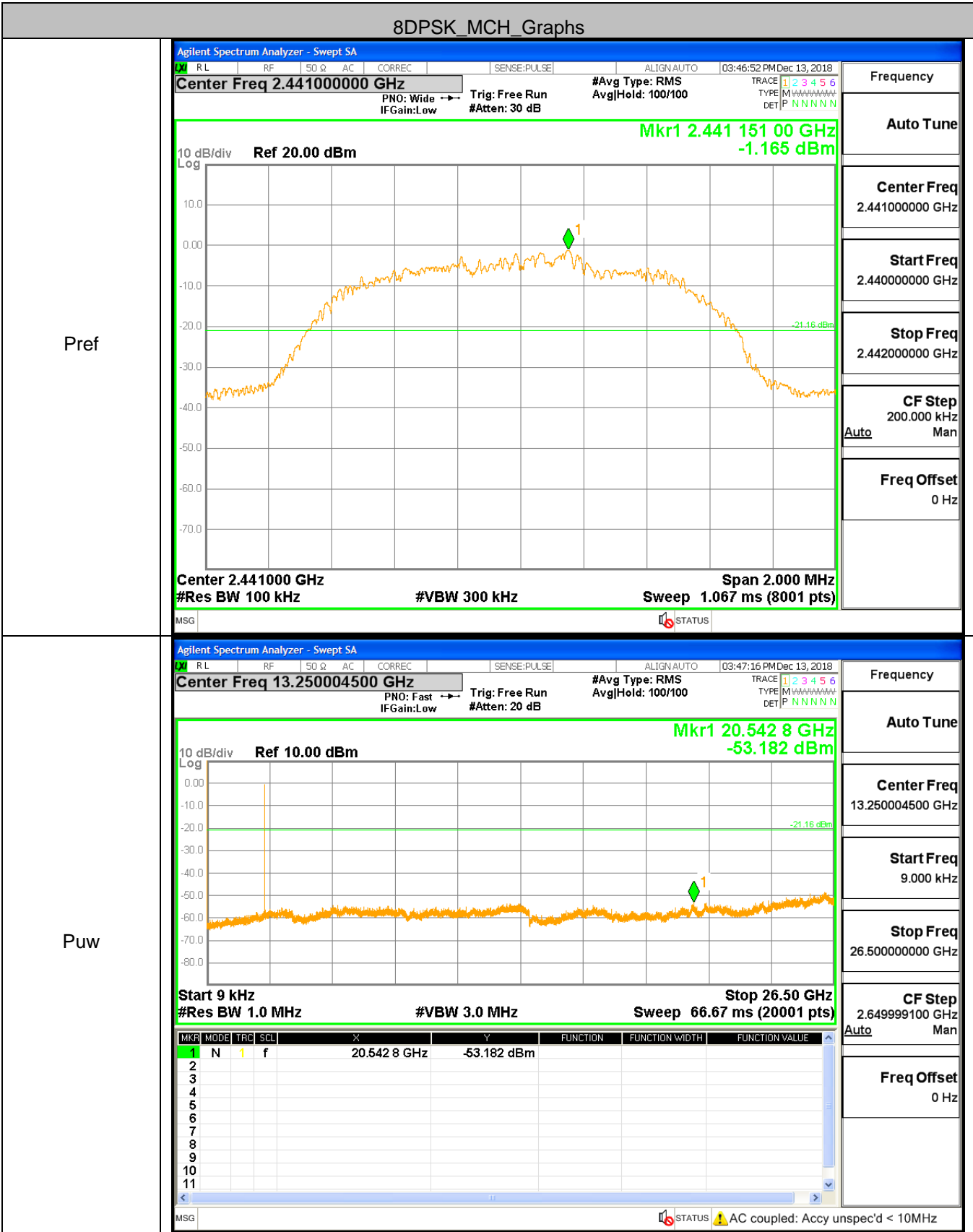
$\pi/4$ DQPSK HCH Graphs



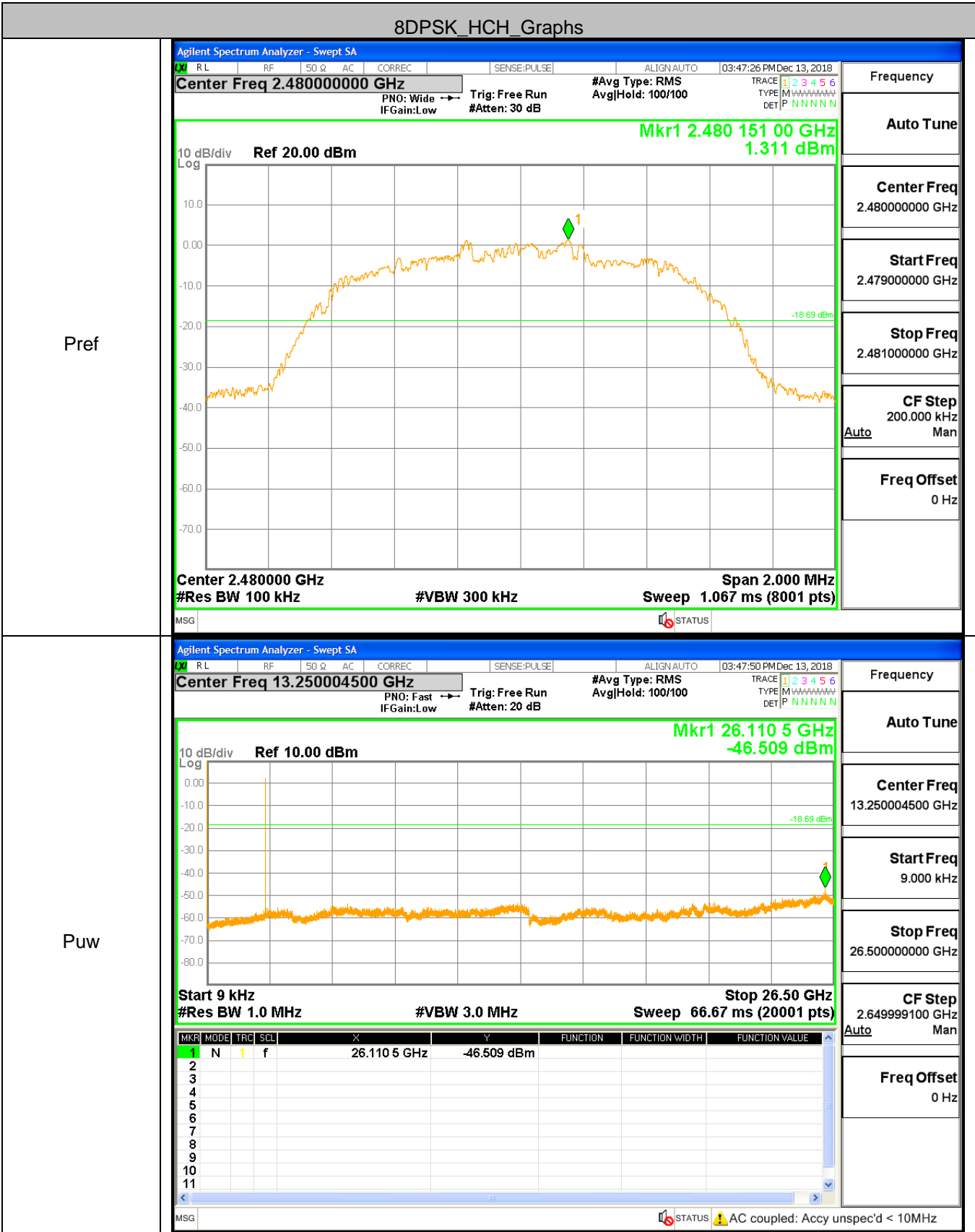
8DPSK_LCH_Graphs



8DPSK_MCH_Graphs



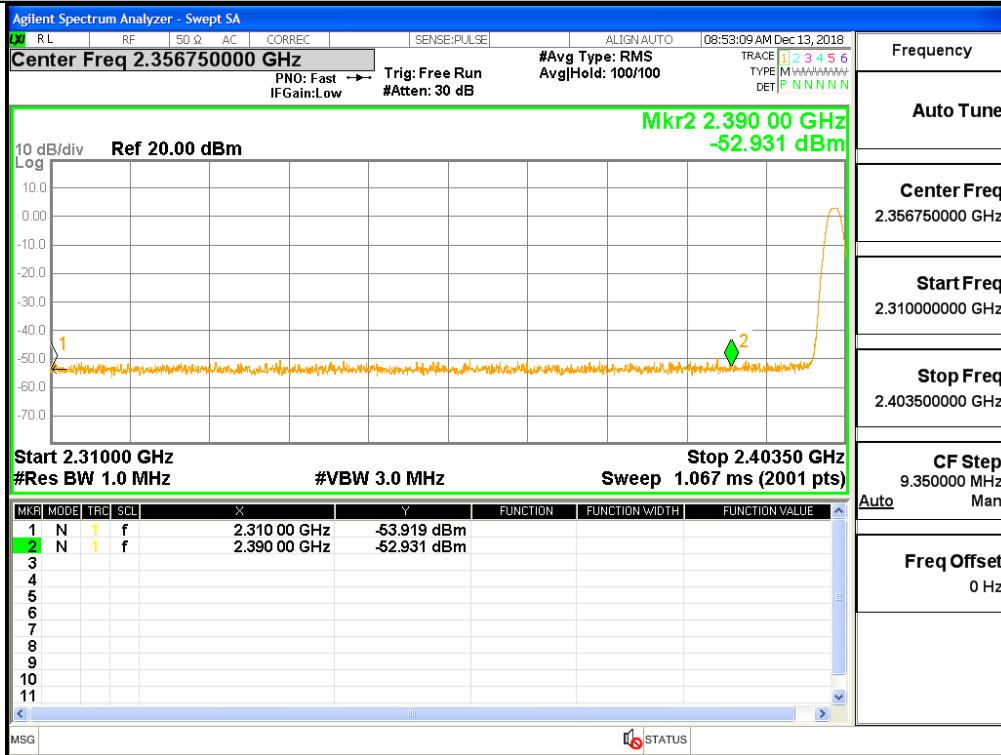
8DPSK_HCH_Graphs



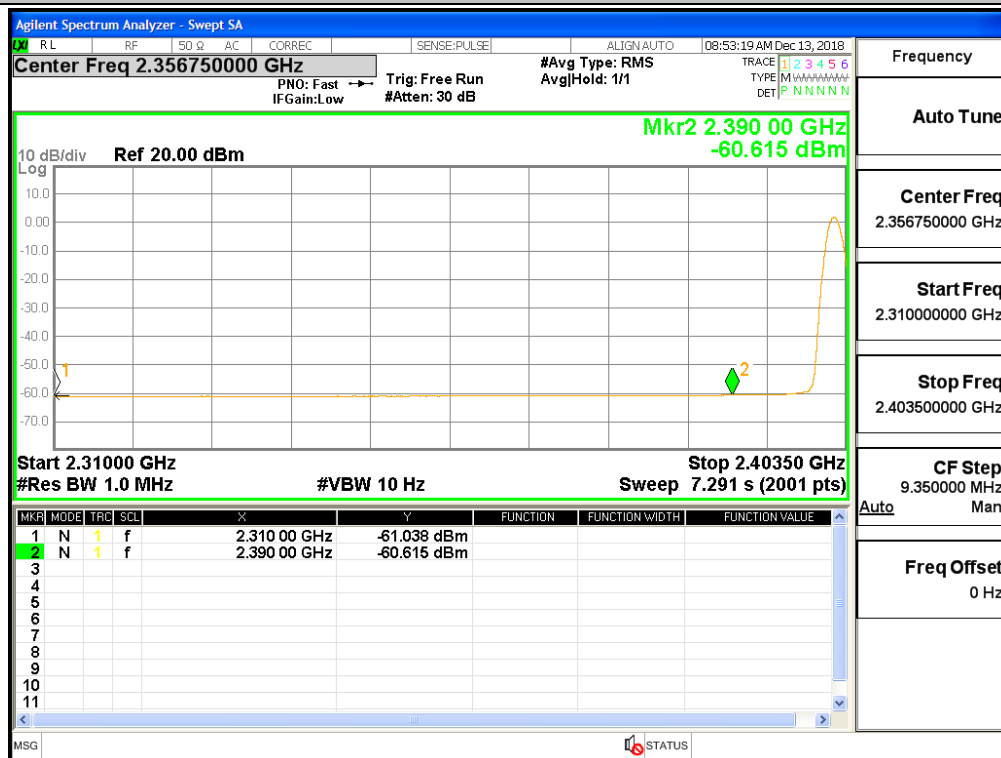
A.8 Restrict-band band-edge measurements

Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310	2.00	0.00	-53.92	43.28	74	-61.04	36.16	54	Pass
1DH5	2402	2390	2.00	0.00	-52.93	44.27	74	-60.62	36.58	54	Pass
1DH5	2480	2483.5	2.00	0.00	-50.26	46.94	74	-57.4	39.8	54	Pass
1DH5	2480	2500	2.00	0.00	-53.35	43.85	74	-60.23	36.97	54	Pass
2DH5	2402	2310	2.00	0.00	-53.94	43.26	74	-61.02	36.18	54	Pass
2DH5	2402	2390	2.00	0.00	-54.9	42.3	74	-60.59	36.61	54	Pass
2DH5	2480	2483.5	2.00	0.00	-51.62	45.58	74	-56.47	40.73	54	Pass
2DH5	2480	2500	2.00	0.00	-53.1	44.1	74	-60.22	36.98	54	Pass
3DH5	2402	2310	2.00	0.00	-53.35	43.85	74	-61.03	36.17	54	Pass
3DH5	2402	2390	2.00	0.00	-54.2	43	74	-60.6	36.6	54	Pass
3DH5	2480	2483.5	2.00	0.00	-47.49	49.71	74	-56.57	40.63	54	Pass
3DH5	2480	2500	2.00	0.00	-53.68	43.52	74	-60.22	36.98	54	Pass

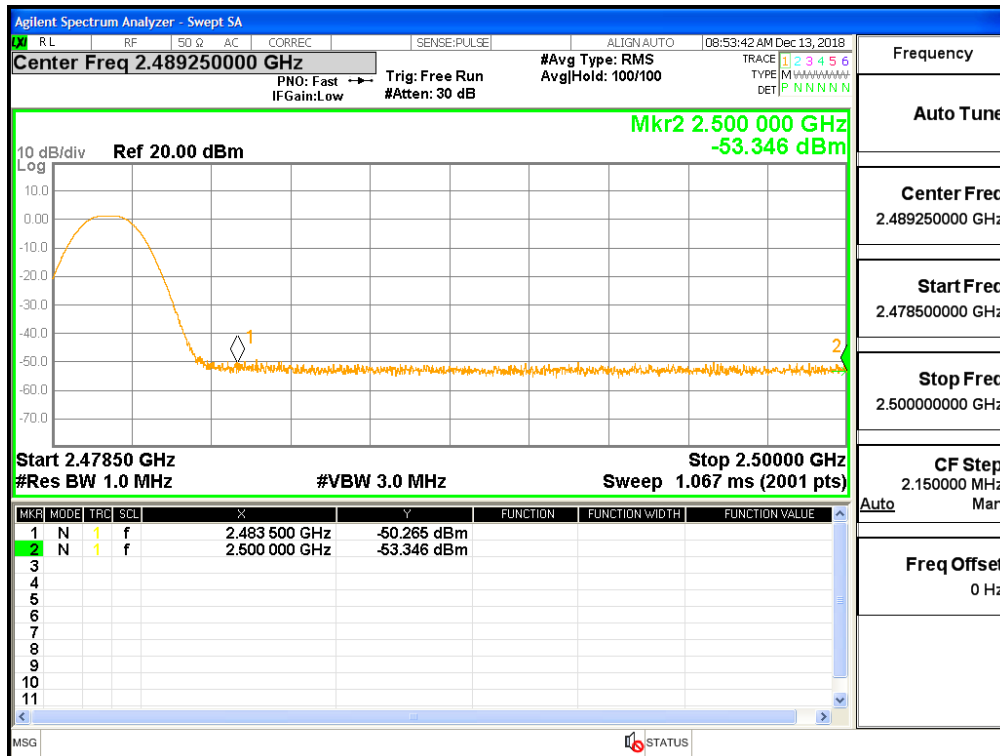
Restrict-band band-edge measurements_2402_PEAK_DH5



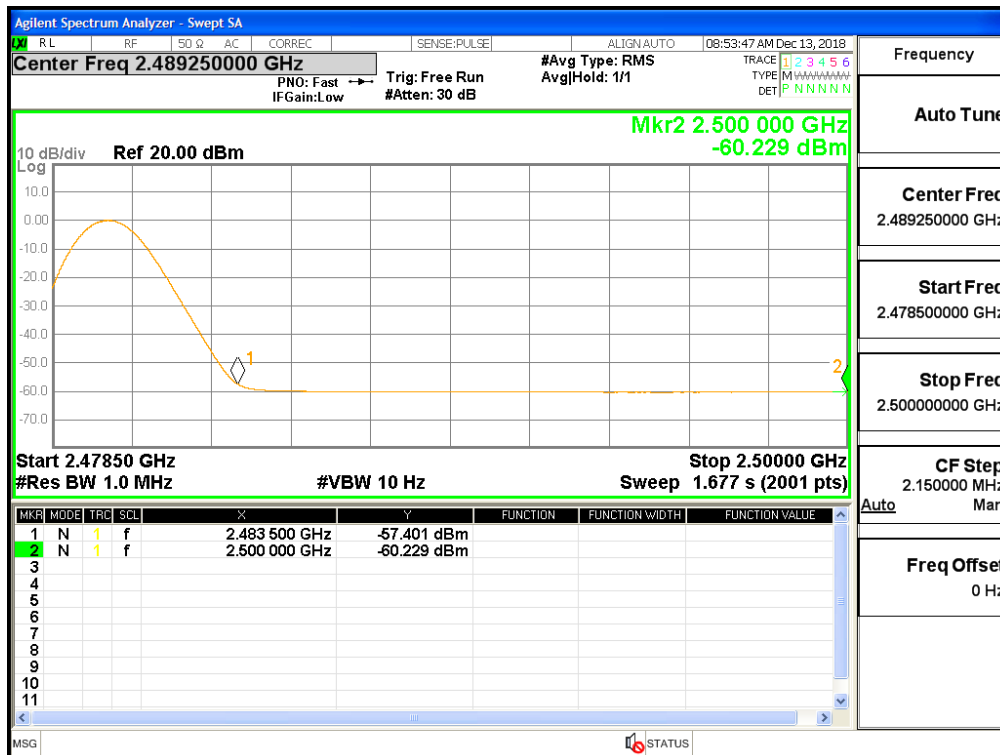
Restrict-band band-edge measurements_2402_AV_DH5



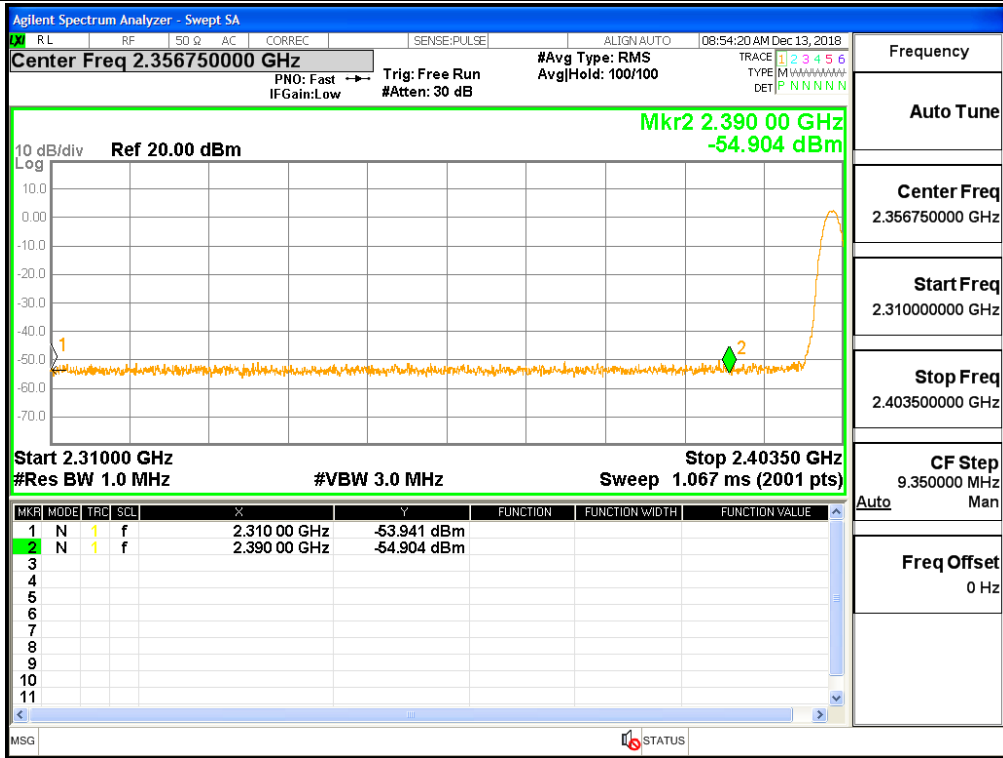
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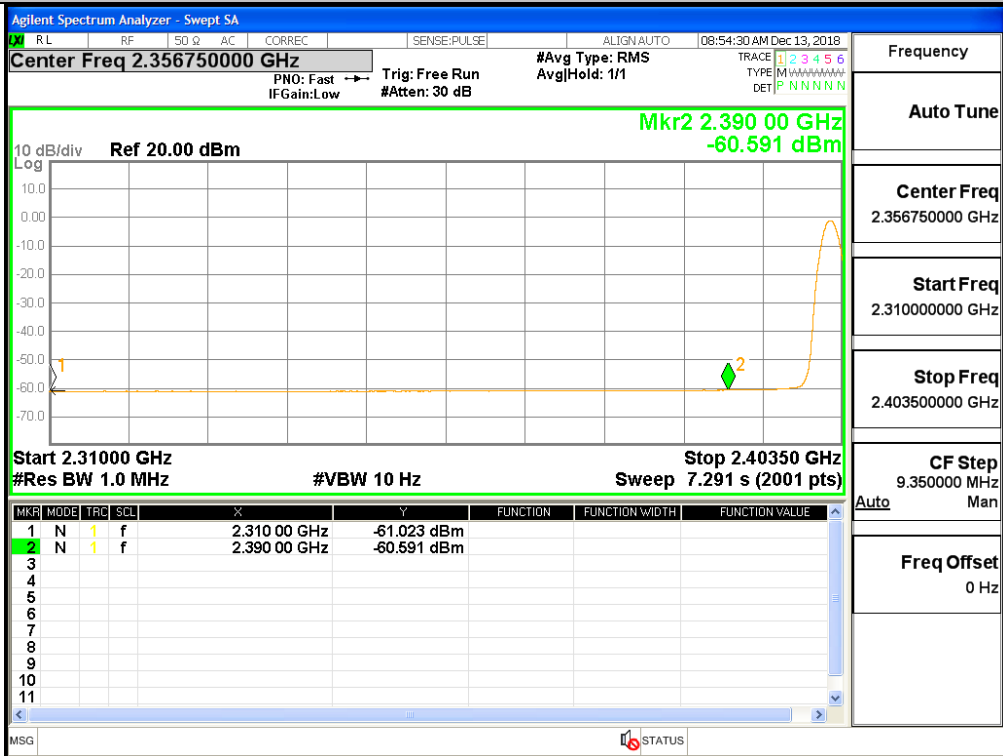
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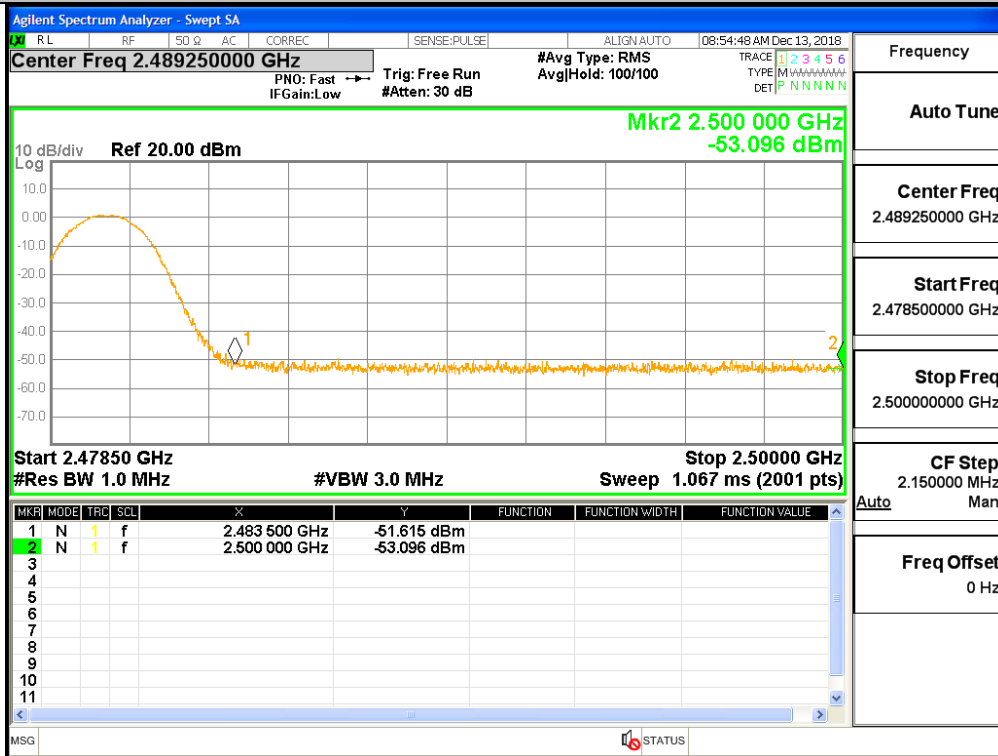
Restrict-band band-edge measurements_2402_PEAK_2DH5



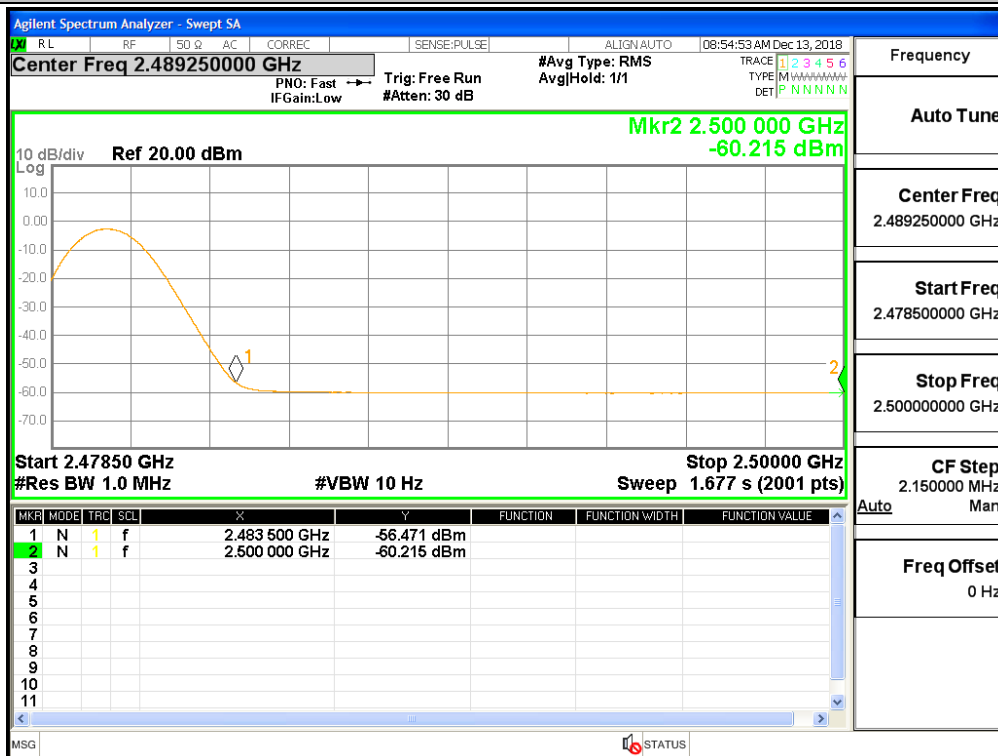
Restrict-band band-edge measurements_2402_AV_2DH5



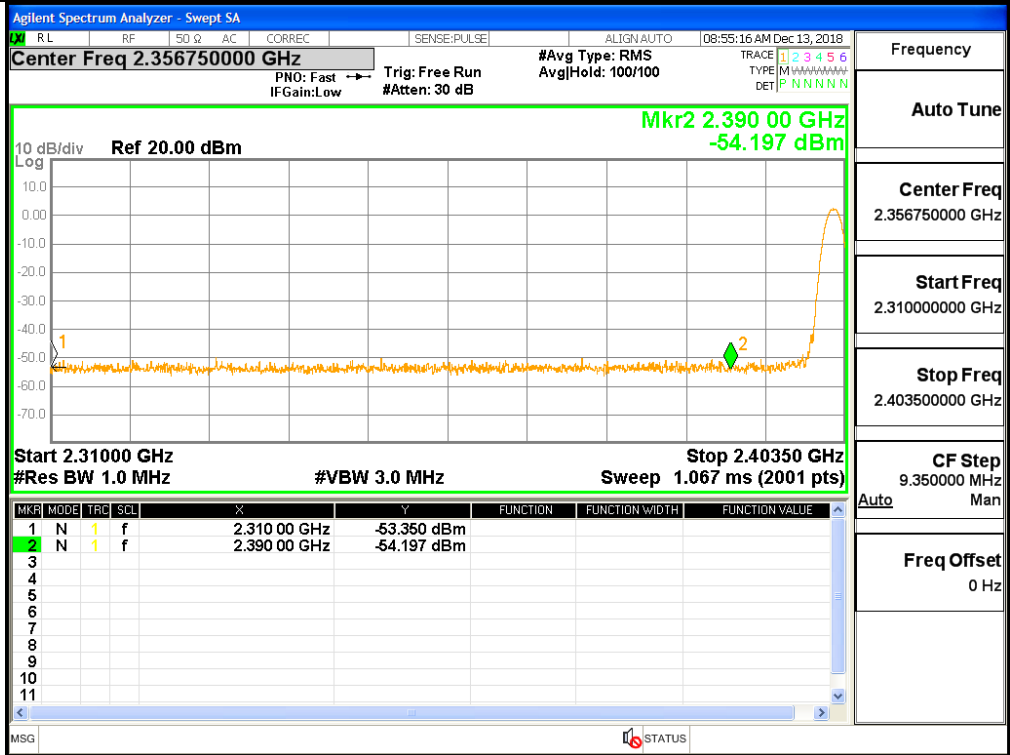
Restrict-band band-edge measurements_2480_PEAK_2DH5



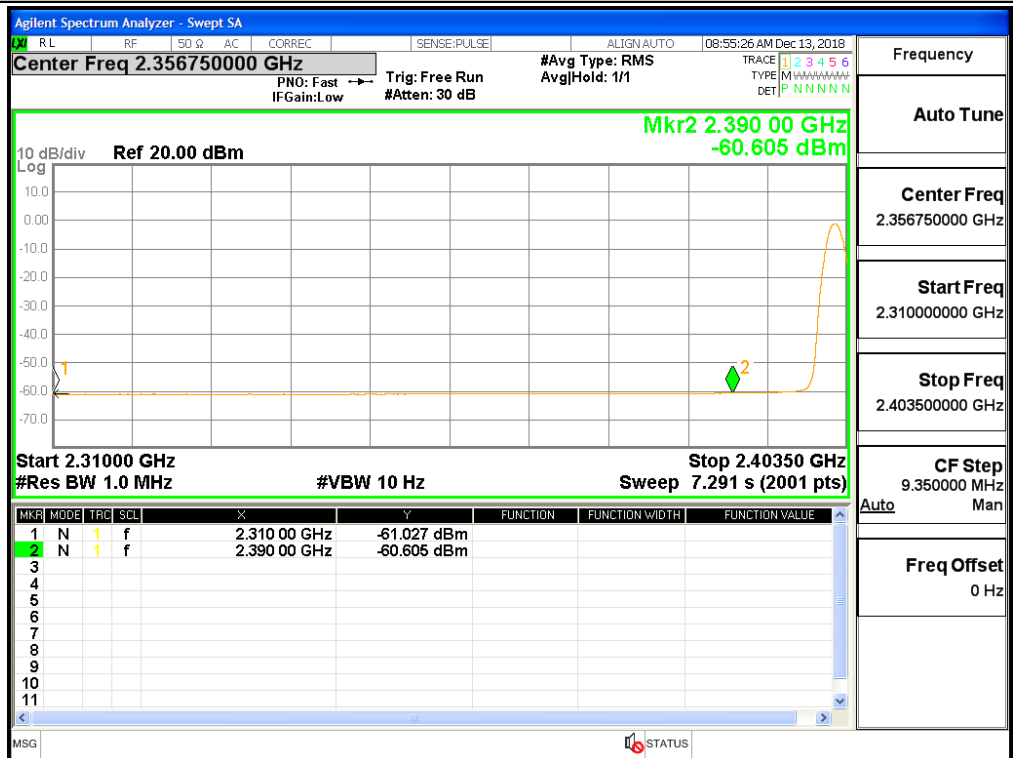
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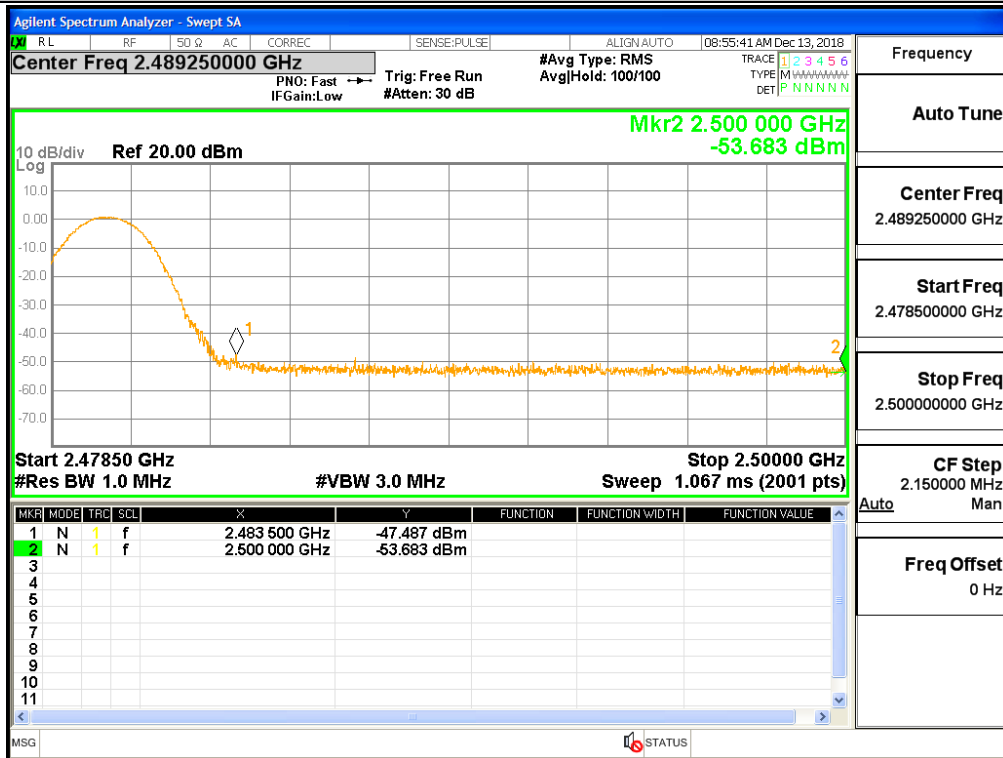
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

