

Appendix A

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

Product Name: Bluetooth Headset

Trade Mark: KuLark

Test Model: GT101

FCC ID: 2ASKNGT101

Environmental Conditions

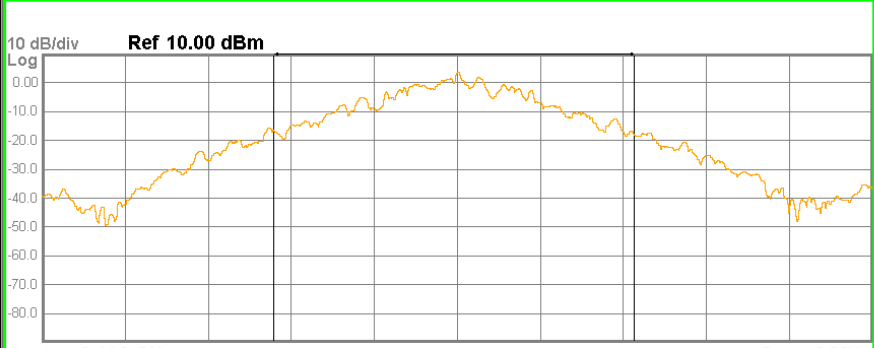
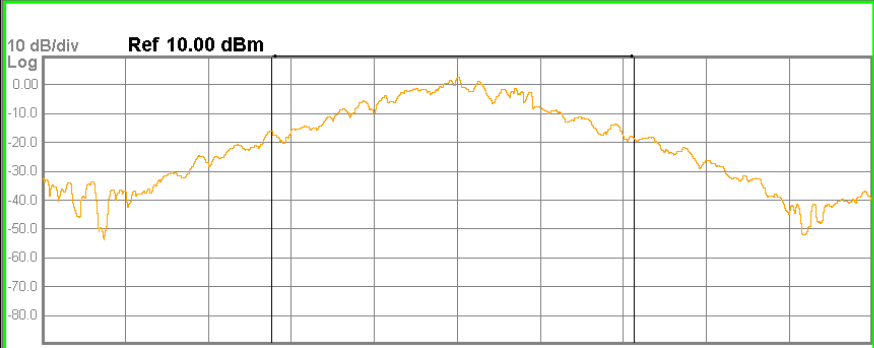
Temperature:	22.7° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

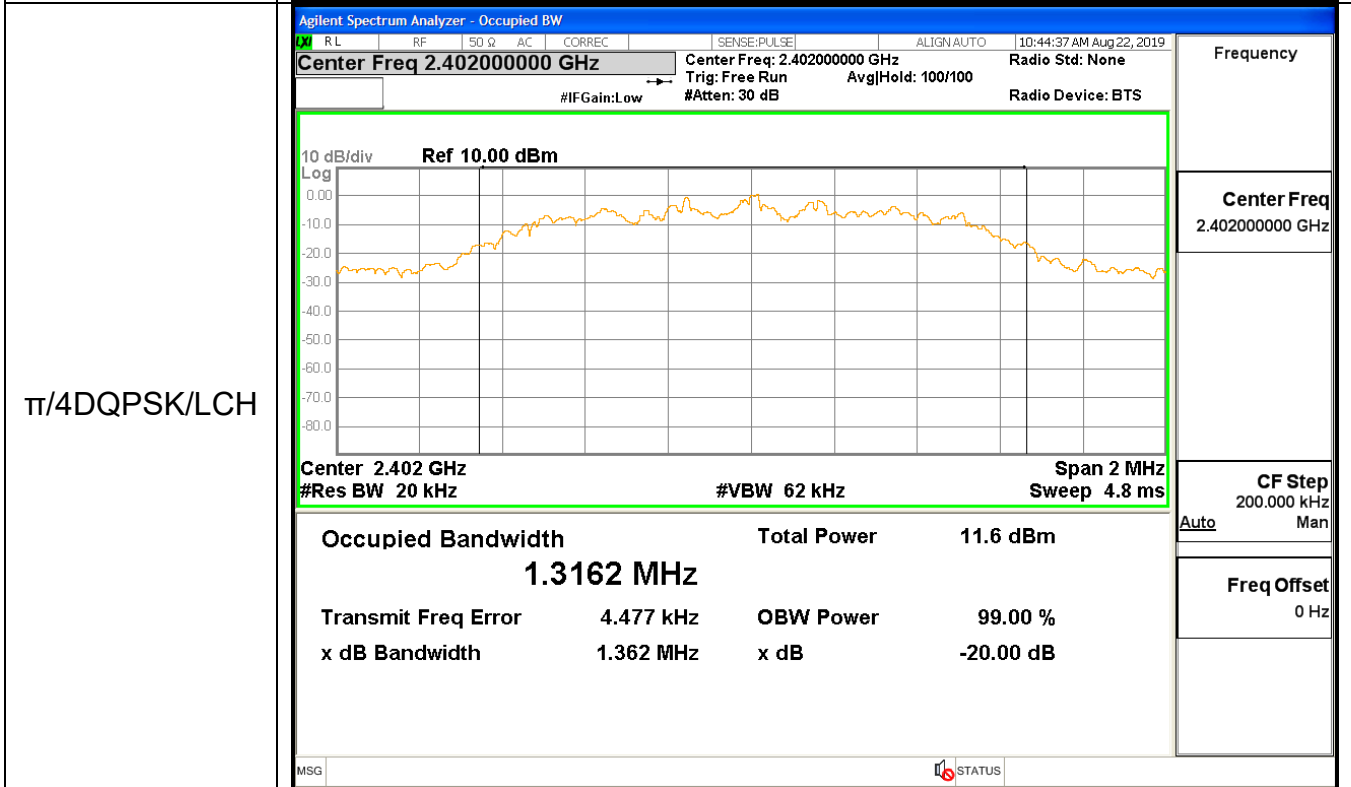
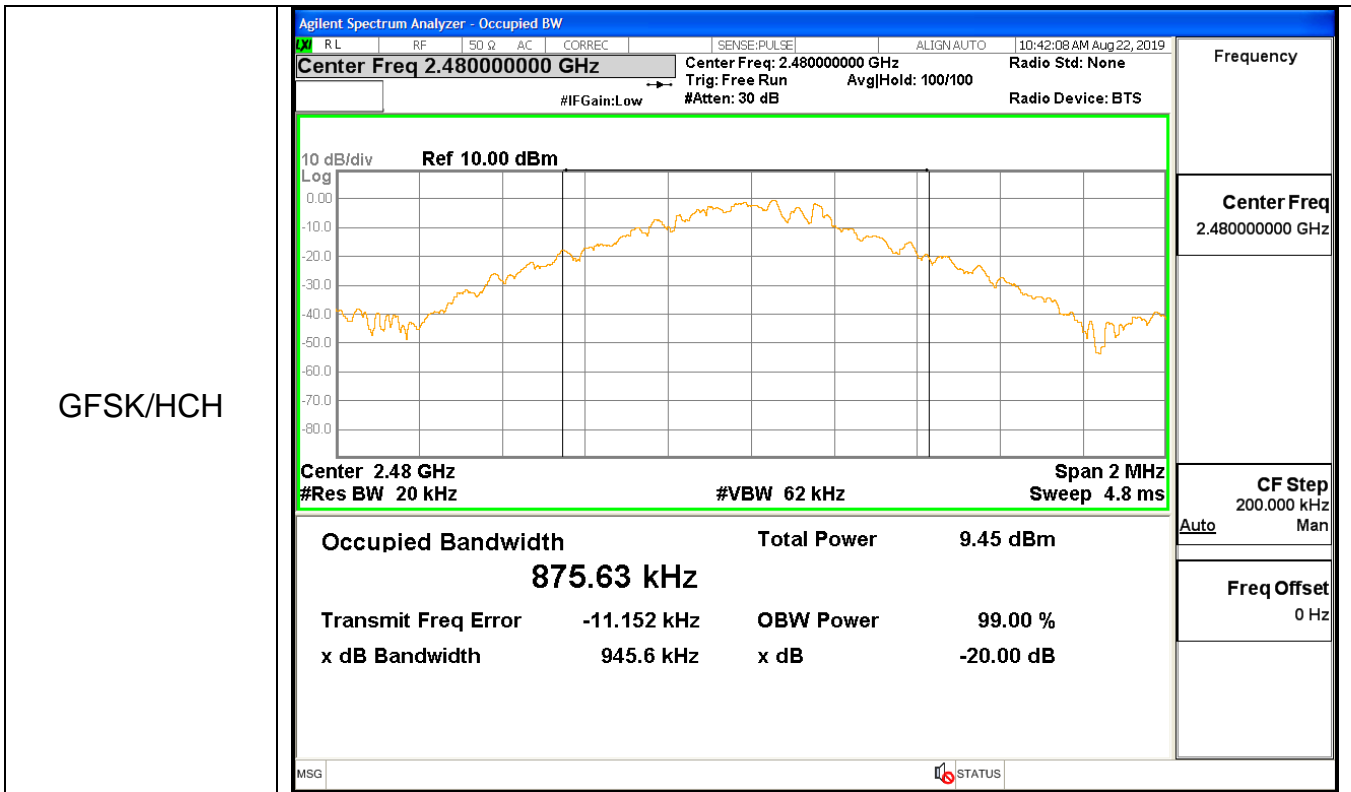
A.1 20 dB Bandwidth

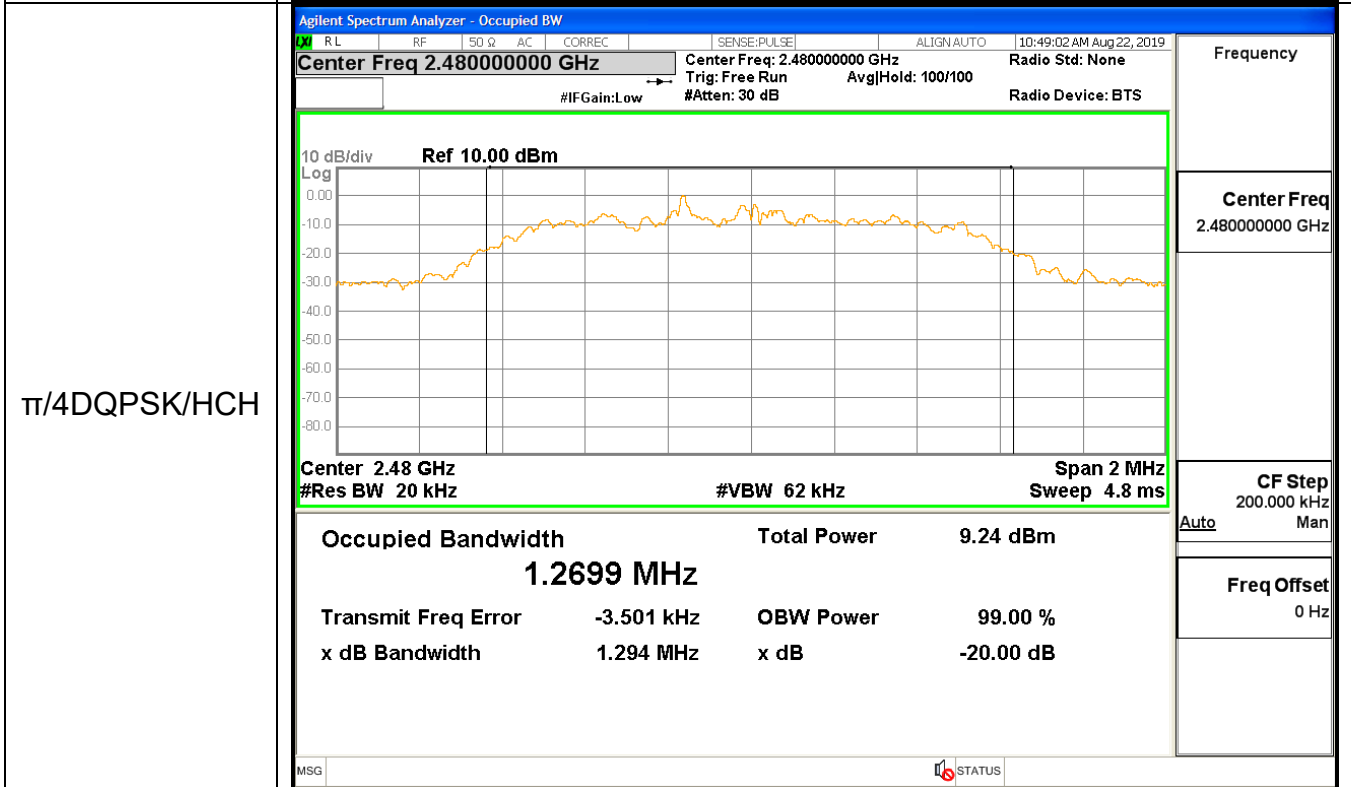
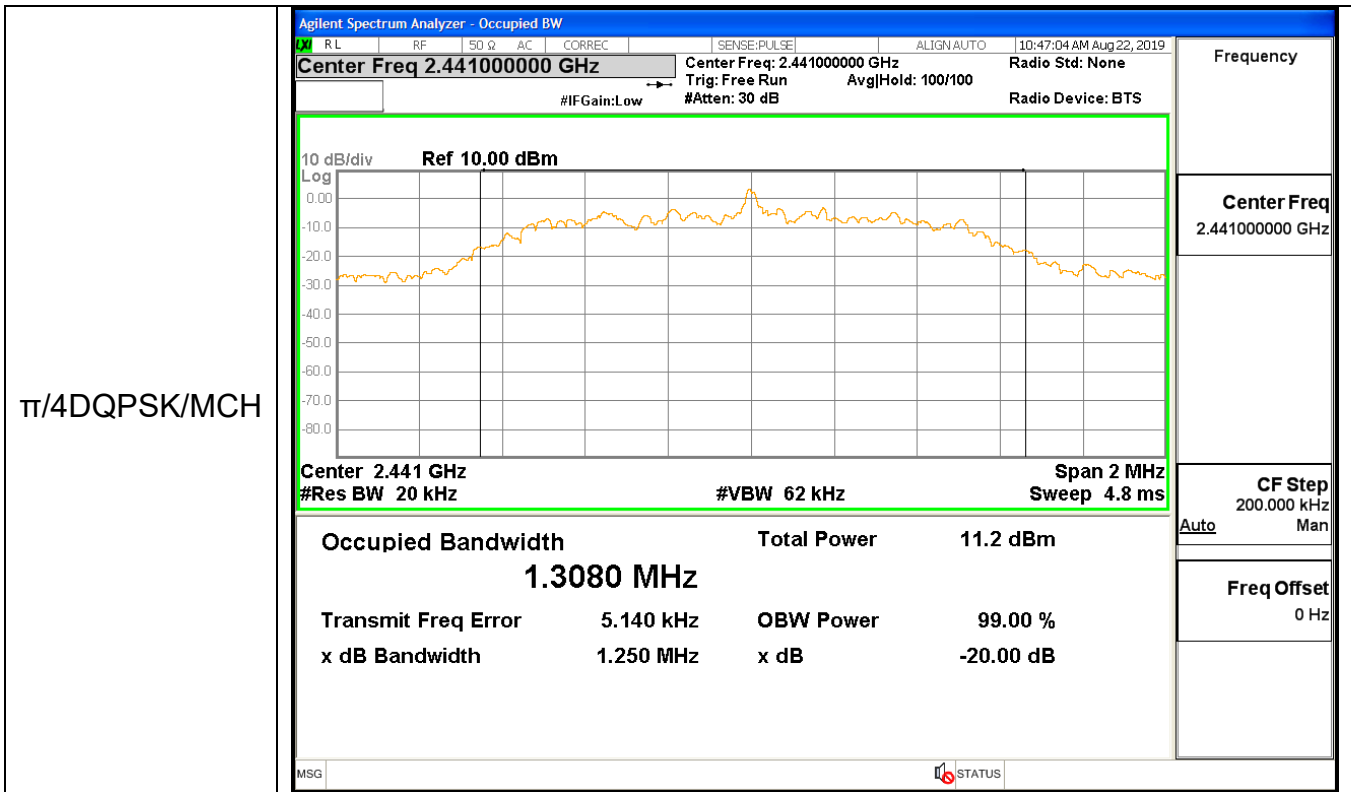
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.854	Not Specified	PASS
GFSK	MCH	0.858	Not Specified	PASS
GFSK	HCH	0.946	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.362	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.250	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.294	Not Specified	PASS
8DPSK	LCH	1.309	Not Specified	PASS
8DPSK	MCH	1.278	Not Specified	PASS
8DPSK	HCH	1.252	Not Specified	PASS

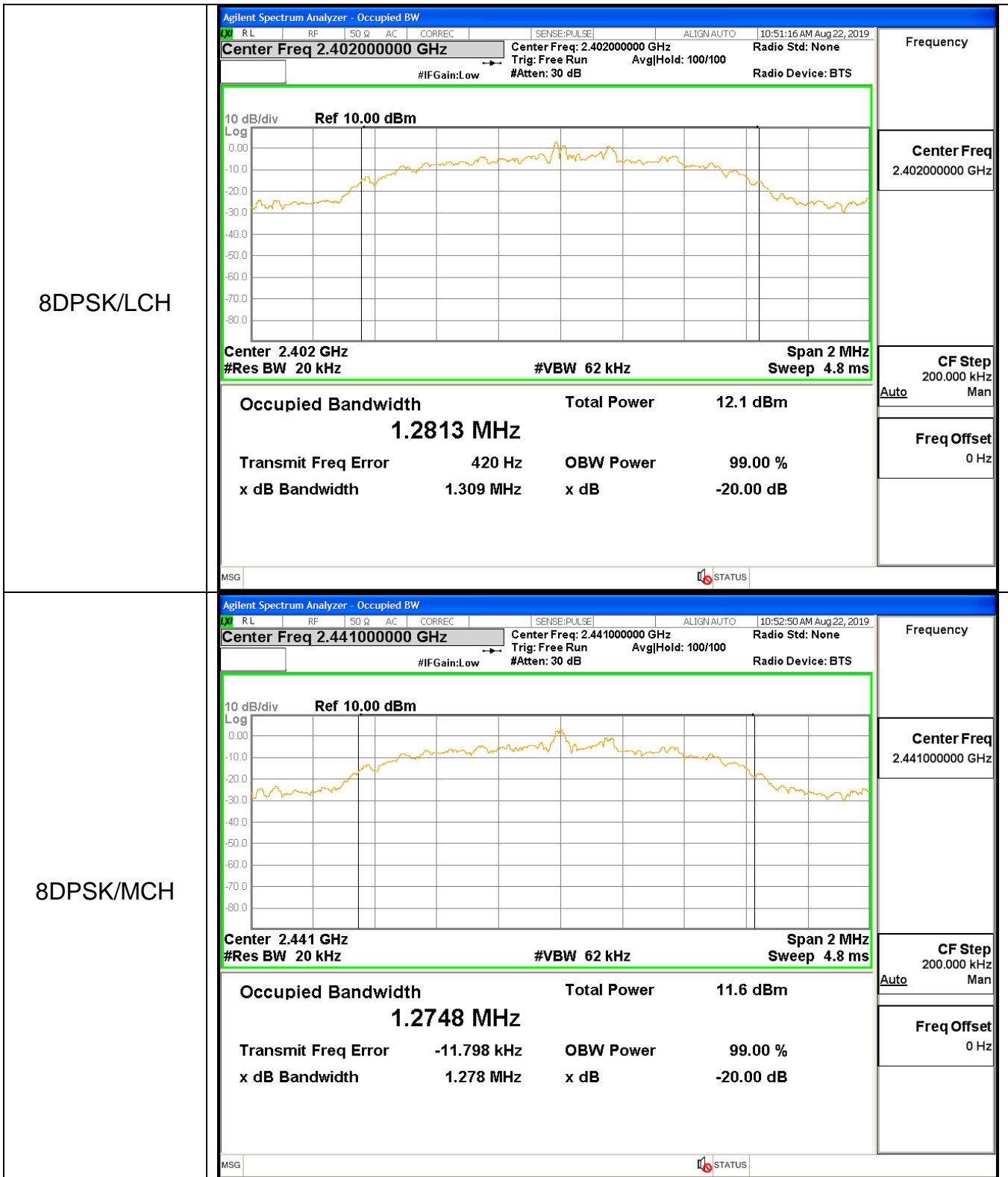
Test Graph

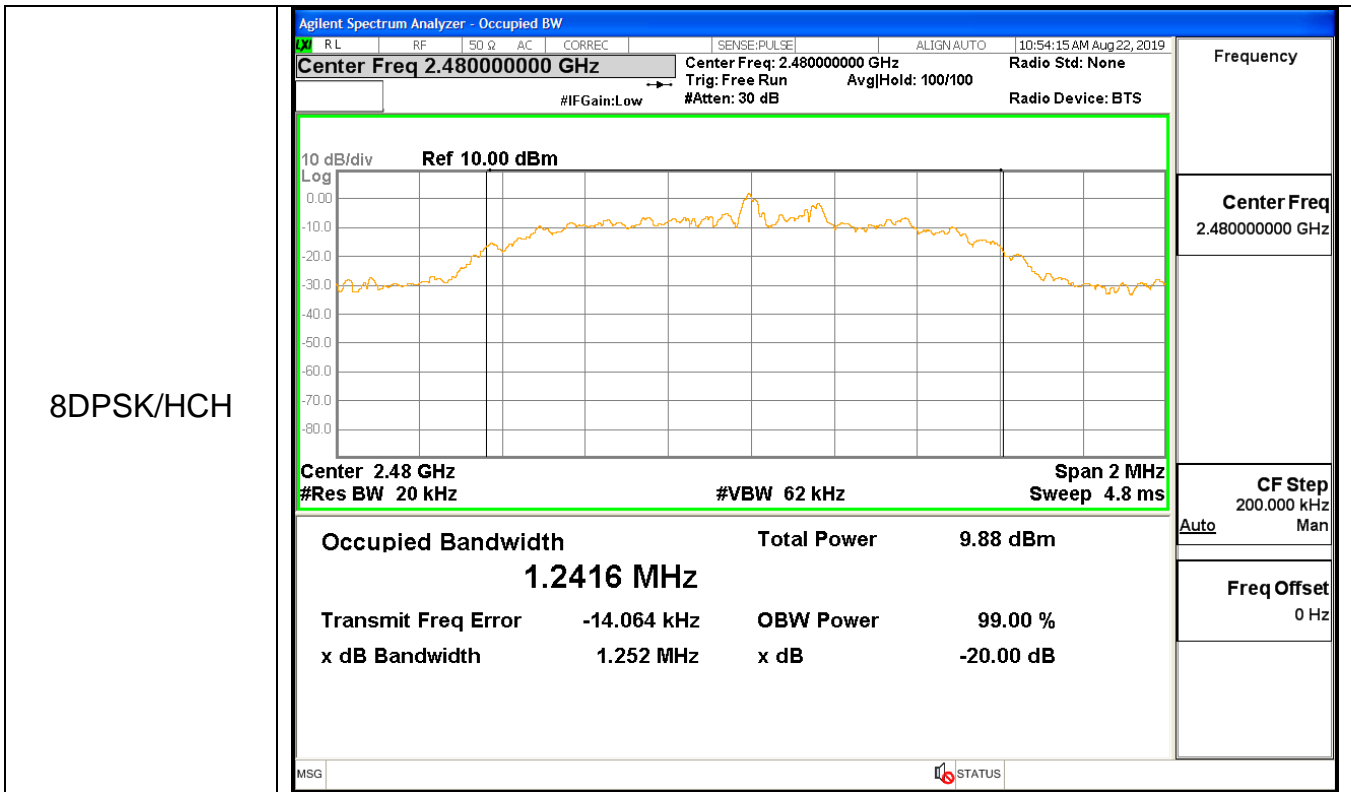
Graphs

GFSK/LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: 0.8em; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <table style="width: 100%; font-size: 0.7em; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input checked="" type="checkbox"/> RL</td> <td style="width: 15%;"><input type="checkbox"/> RF</td> <td style="width: 15%;"><input type="checkbox"/> 50 Ω</td> <td style="width: 15%;"><input type="checkbox"/> AC</td> <td style="width: 15%;"><input type="checkbox"/> CORREC</td> <td style="width: 15%;"><input type="checkbox"/> SENSE:PULSE</td> <td style="width: 15%;"><input type="checkbox"/> ALIGN:AUTO</td> <td style="width: 15%;">10:38:03 AM Aug 22, 2019</td> </tr> </table> <p style="margin: 0;">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</p> <div style="border: 1px solid green; padding: 5px; margin: 5px 0;"> <p style="font-size: 0.8em; margin: 0;">10 dB/div Ref 10.00 dBm</p>  <p style="font-size: 0.8em; margin: 0;">Center 2.402 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms</p> <table style="width: 100%; font-size: 0.9em; border-collapse: collapse;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">11.8 dBm</td> </tr> <tr> <td style="text-align: center;">869.67 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td></td> <td></td> <td>854.3 kHz</td> </tr> </table> </div> <p style="font-size: 0.7em; margin: 0;">MSG <input type="checkbox"/> STATUS</p> </div>	<input checked="" type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> CORREC	<input type="checkbox"/> SENSE:PULSE	<input type="checkbox"/> ALIGN:AUTO	10:38:03 AM Aug 22, 2019	Occupied Bandwidth	Total Power	11.8 dBm	869.67 kHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-20.00 dB			854.3 kHz	<p style="font-size: 0.8em; margin: 0;">Frequency</p> <p style="font-size: 0.8em; margin: 0;">Center Freq 2.40200000 GHz</p> <p style="font-size: 0.8em; margin: 0;">CF Step 200.000 kHz Auto Man</p> <p style="font-size: 0.8em; margin: 0;">Freq Offset 0 Hz</p>
	<input checked="" type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> CORREC	<input type="checkbox"/> SENSE:PULSE	<input type="checkbox"/> ALIGN:AUTO	10:38:03 AM Aug 22, 2019																	
Occupied Bandwidth	Total Power	11.8 dBm																							
869.67 kHz																									
Transmit Freq Error	OBW Power	99.00 %																							
x dB Bandwidth	x dB	-20.00 dB																							
		854.3 kHz																							
GFSK/MCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: 0.8em; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <table style="width: 100%; font-size: 0.7em; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input checked="" type="checkbox"/> RL</td> <td style="width: 15%;"><input type="checkbox"/> RF</td> <td style="width: 15%;"><input type="checkbox"/> 50 Ω</td> <td style="width: 15%;"><input type="checkbox"/> AC</td> <td style="width: 15%;"><input type="checkbox"/> CORREC</td> <td style="width: 15%;"><input type="checkbox"/> SENSE:PULSE</td> <td style="width: 15%;"><input type="checkbox"/> ALIGN:AUTO</td> <td style="width: 15%;">10:40:30 AM Aug 22, 2019</td> </tr> </table> <p style="margin: 0;">Center Freq 2.44100000 GHz Center Freq: 2.44100000 GHz Radio Std: None Trig: Free Run Avg Hold: 100/100 #IFGain:Low #Atten: 30 dB Radio Device: BTS</p> <div style="border: 1px solid green; padding: 5px; margin: 5px 0;"> <p style="font-size: 0.8em; margin: 0;">10 dB/div Ref 10.00 dBm</p>  <p style="font-size: 0.8em; margin: 0;">Center 2.441 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms</p> <table style="width: 100%; font-size: 0.9em; border-collapse: collapse;"> <tr> <td style="width: 33%;">Occupied Bandwidth</td> <td style="width: 33%;">Total Power</td> <td style="width: 33%;">11.2 dBm</td> </tr> <tr> <td style="text-align: center;">869.24 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>x dB</td> <td>-20.00 dB</td> </tr> <tr> <td></td> <td></td> <td>858.1 kHz</td> </tr> </table> </div> <p style="font-size: 0.7em; margin: 0;">MSG <input type="checkbox"/> STATUS</p> </div>	<input checked="" type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> CORREC	<input type="checkbox"/> SENSE:PULSE	<input type="checkbox"/> ALIGN:AUTO	10:40:30 AM Aug 22, 2019	Occupied Bandwidth	Total Power	11.2 dBm	869.24 kHz			Transmit Freq Error	OBW Power	99.00 %	x dB Bandwidth	x dB	-20.00 dB			858.1 kHz	<p style="font-size: 0.8em; margin: 0;">Frequency</p> <p style="font-size: 0.8em; margin: 0;">Center Freq 2.44100000 GHz</p> <p style="font-size: 0.8em; margin: 0;">CF Step 200.000 kHz Auto Man</p> <p style="font-size: 0.8em; margin: 0;">Freq Offset 0 Hz</p>
	<input checked="" type="checkbox"/> RL	<input type="checkbox"/> RF	<input type="checkbox"/> 50 Ω	<input type="checkbox"/> AC	<input type="checkbox"/> CORREC	<input type="checkbox"/> SENSE:PULSE	<input type="checkbox"/> ALIGN:AUTO	10:40:30 AM Aug 22, 2019																	
Occupied Bandwidth	Total Power	11.2 dBm																							
869.24 kHz																									
Transmit Freq Error	OBW Power	99.00 %																							
x dB Bandwidth	x dB	-20.00 dB																							
		858.1 kHz																							





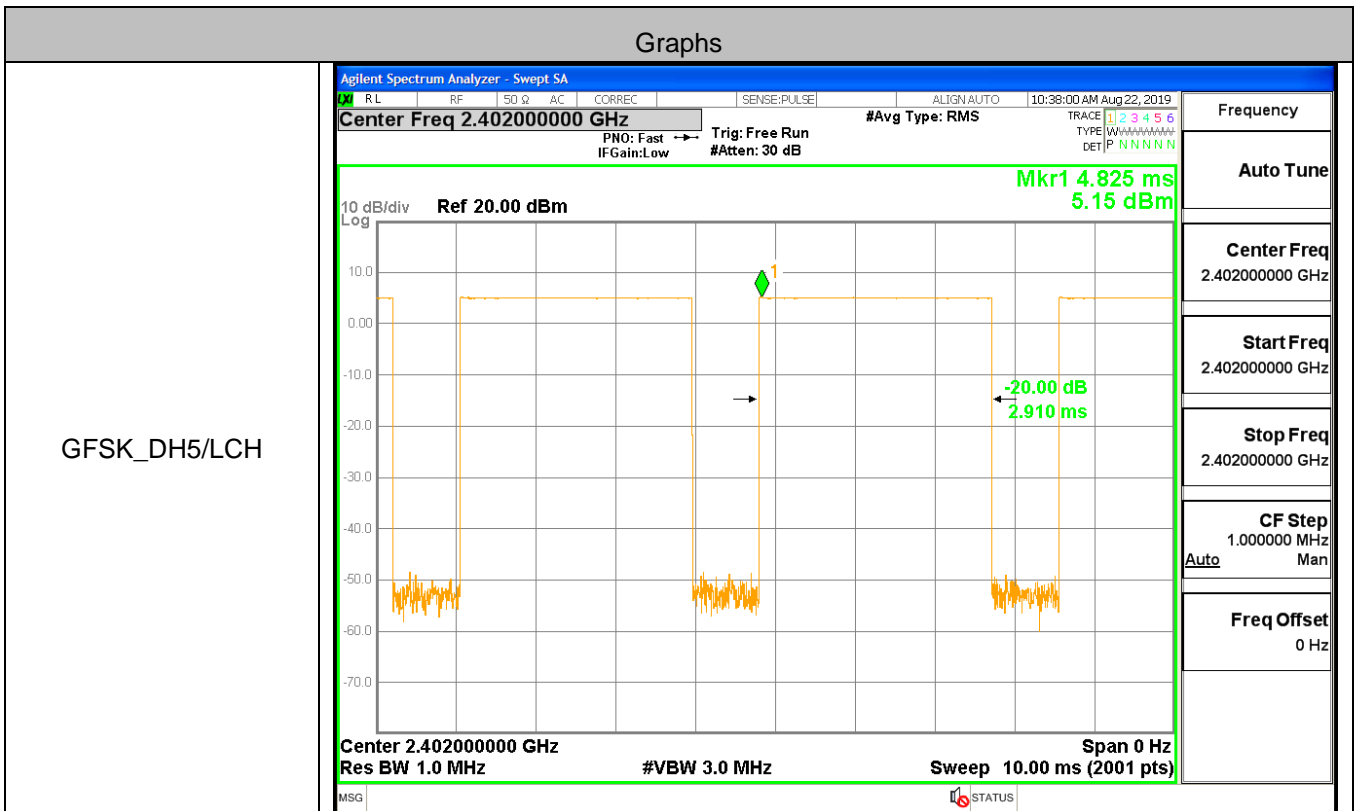


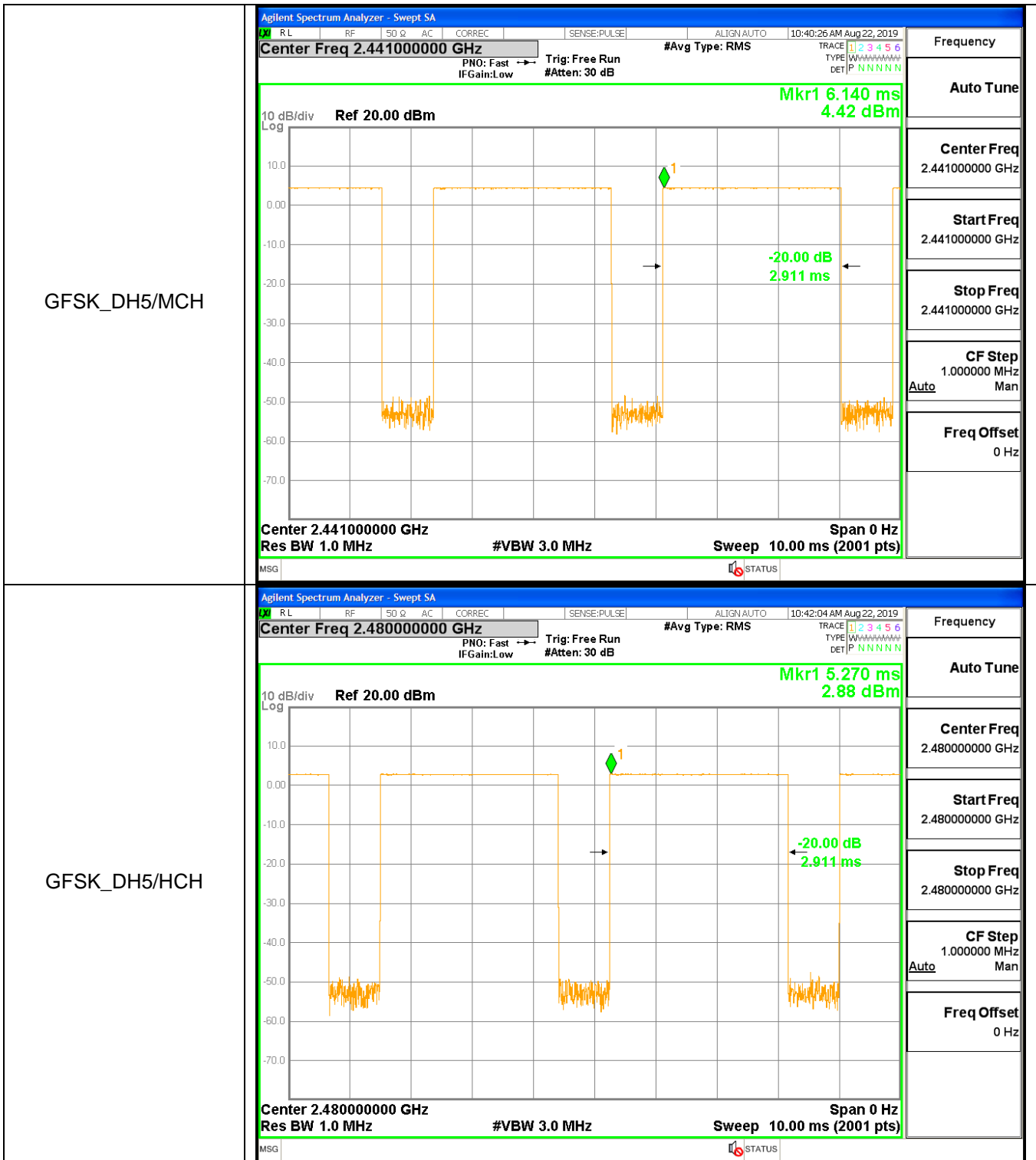


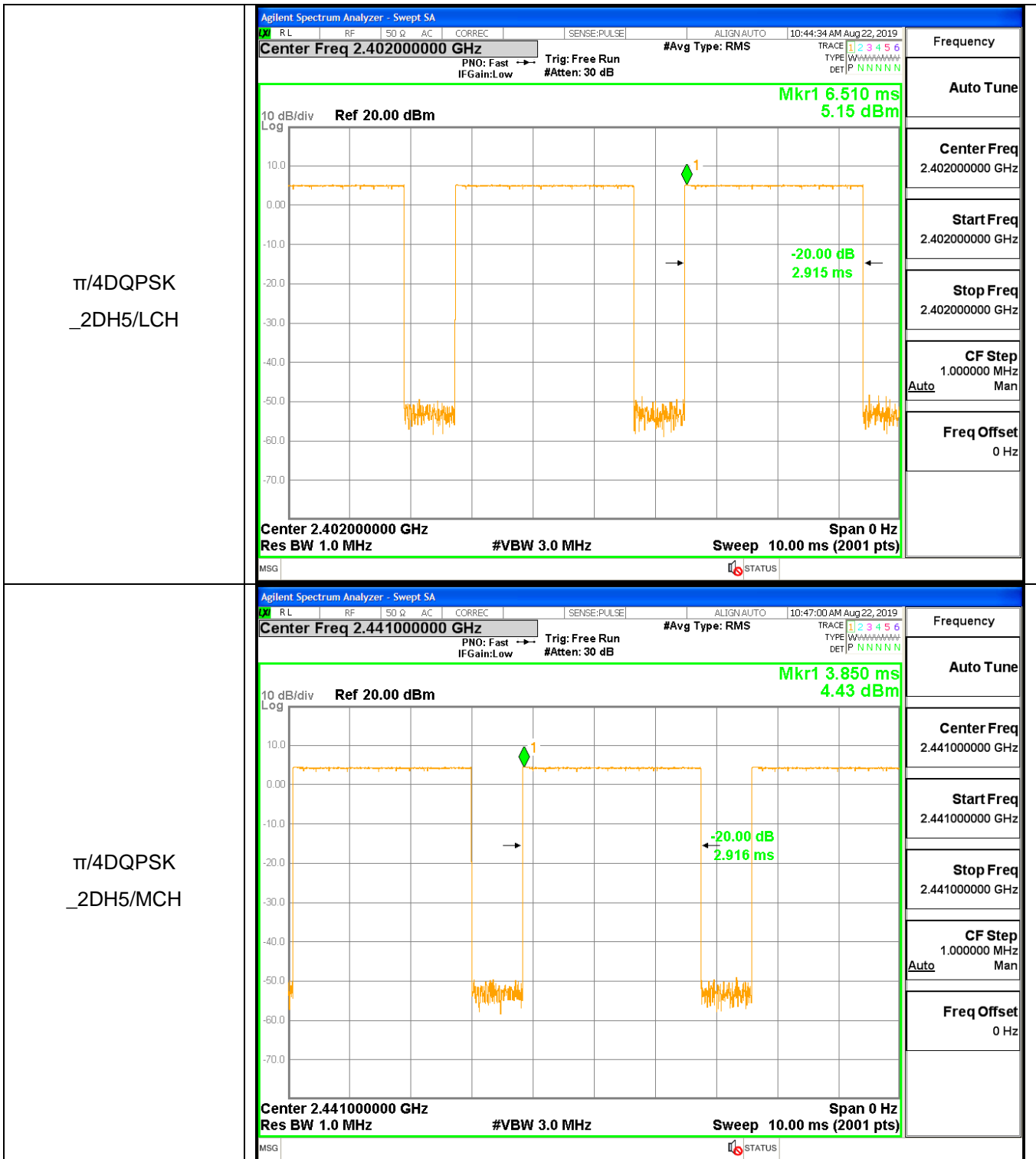
A.2 Dwell Time

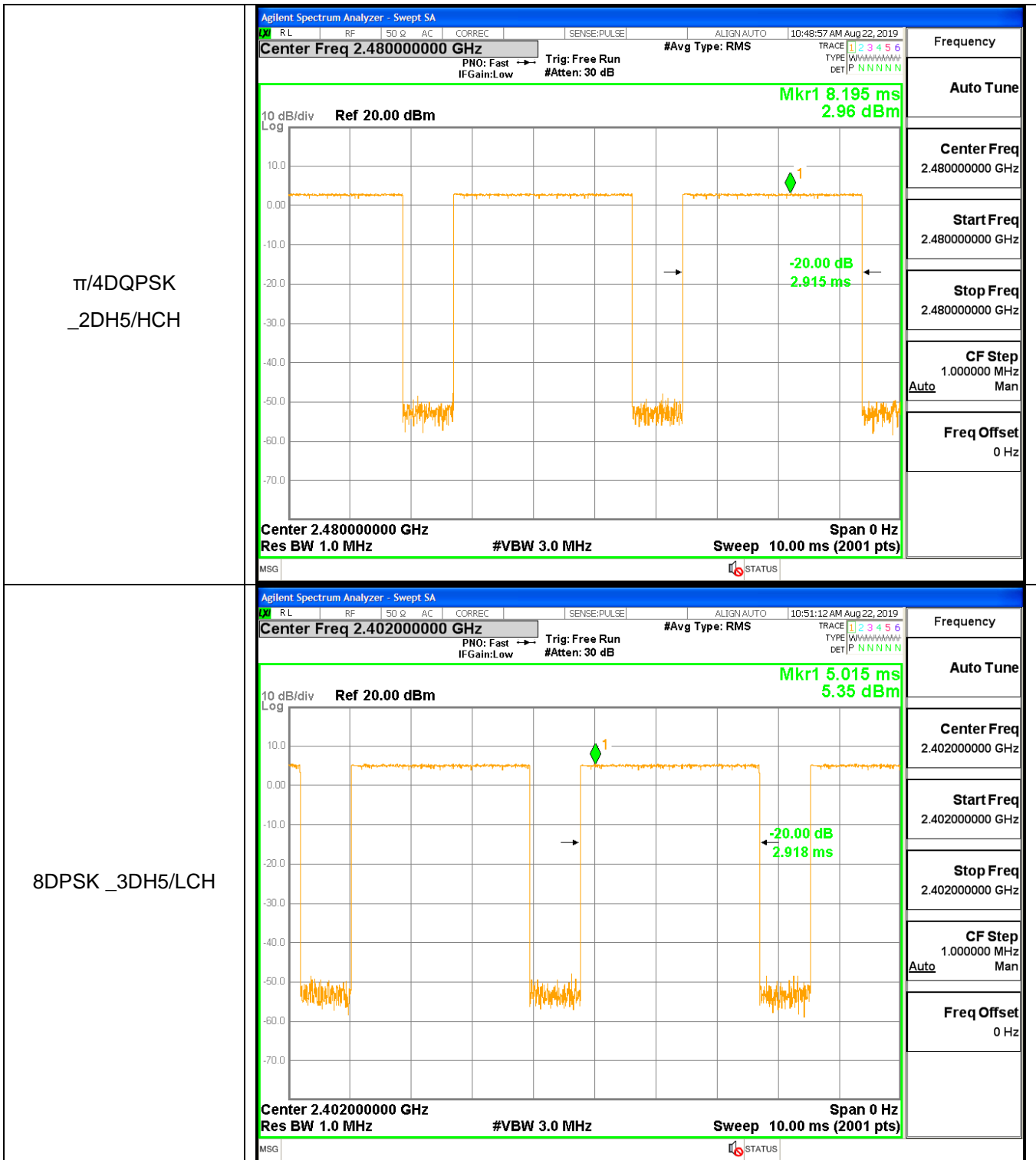
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002910	106.7	0.310497	0.4	PASS
GFSK	DH5	MCH	0.002911	106.7	0.310604	0.4	PASS
GFSK	DH5	HCH	0.002911	106.7	0.310604	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002915	106.7	0.311031	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002916	106.7	0.311137	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002915	106.7	0.311031	0.4	PASS
8DPSK	3DH5	LCH	0.002918	106.7	0.311351	0.4	PASS
8DPSK	3DH5	MCH	0.002918	106.7	0.311351	0.4	PASS
8DPSK	3DH5	HCH	0.002919	106.7	0.311457	0.4	PASS

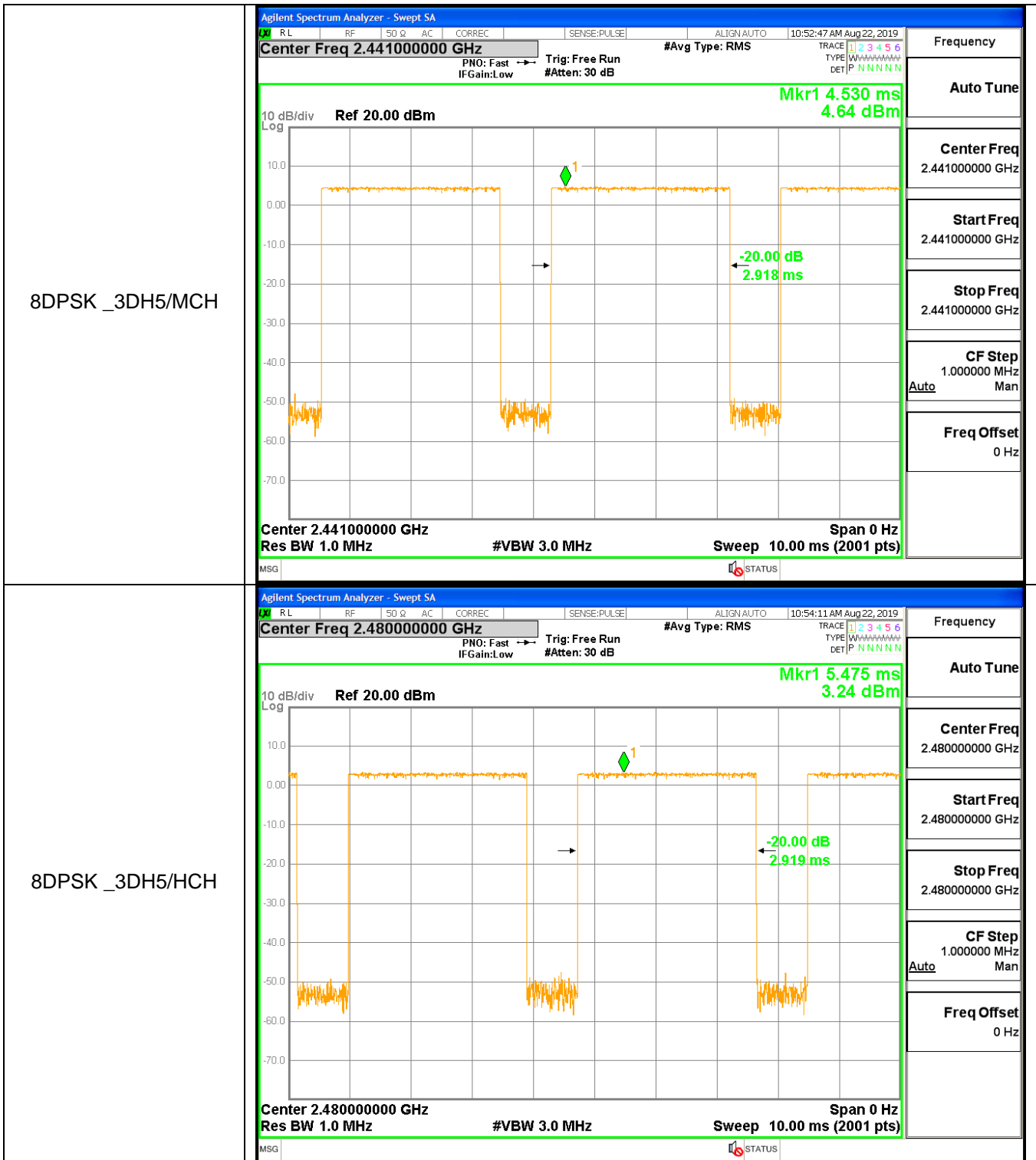
Test Graph







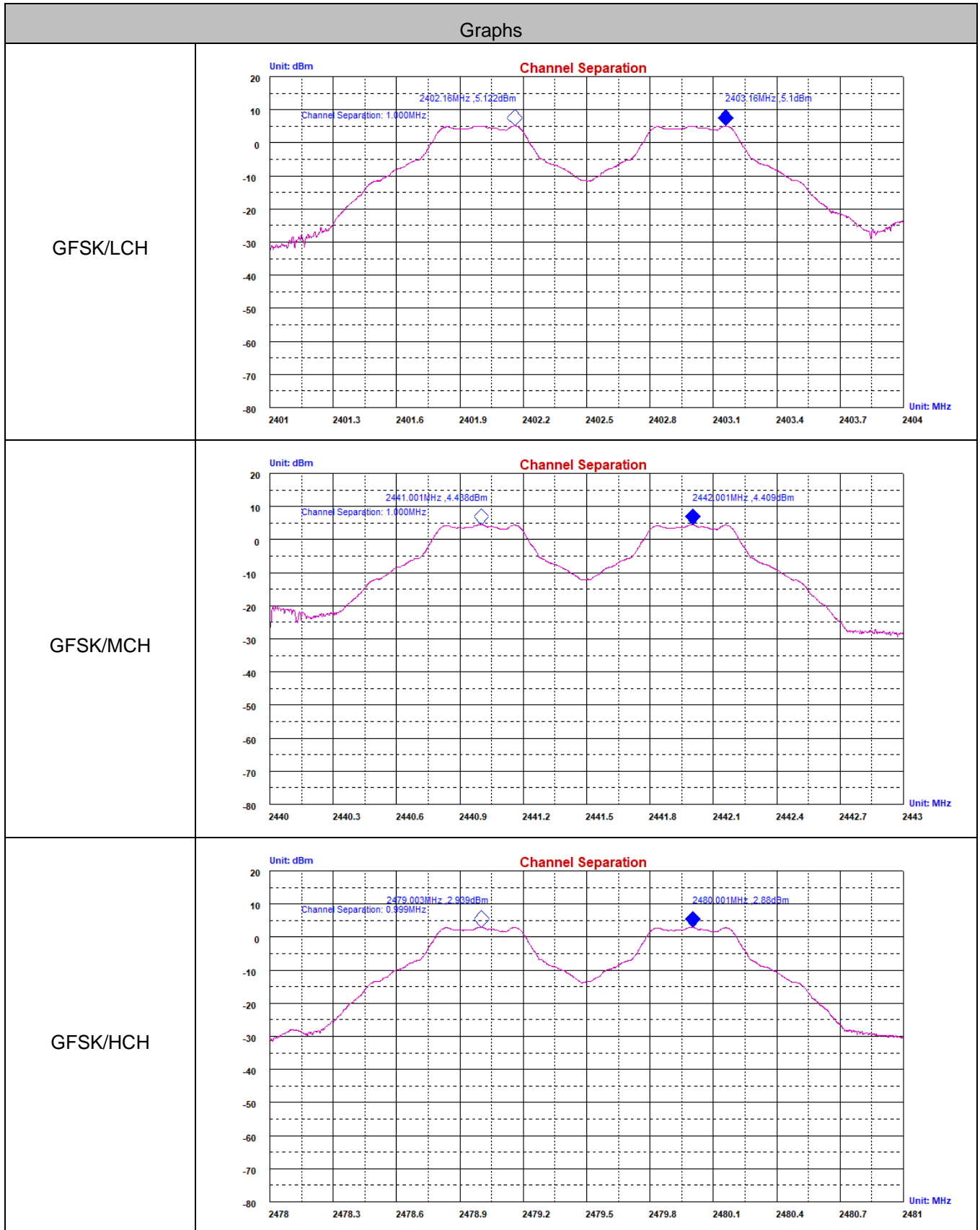


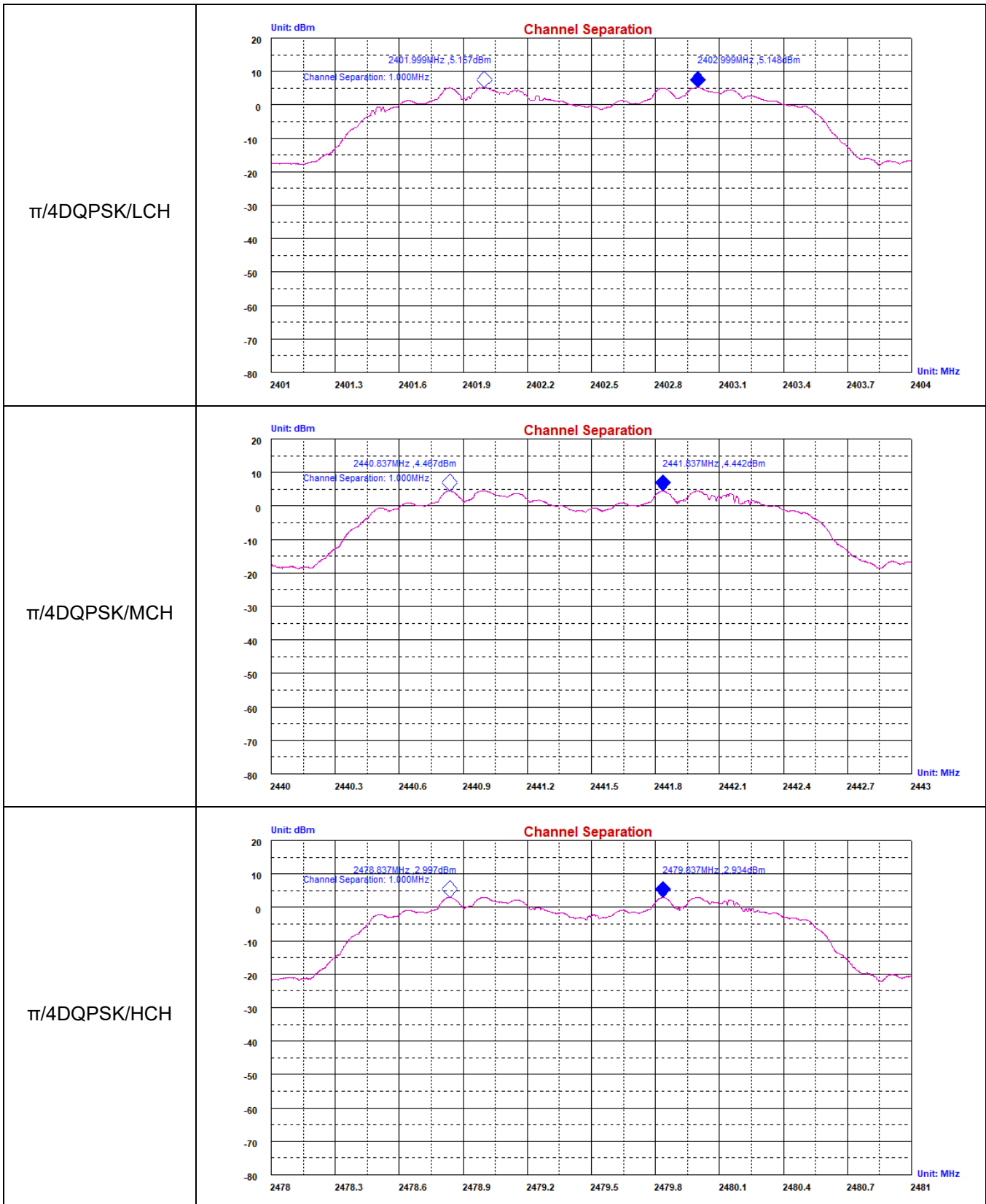


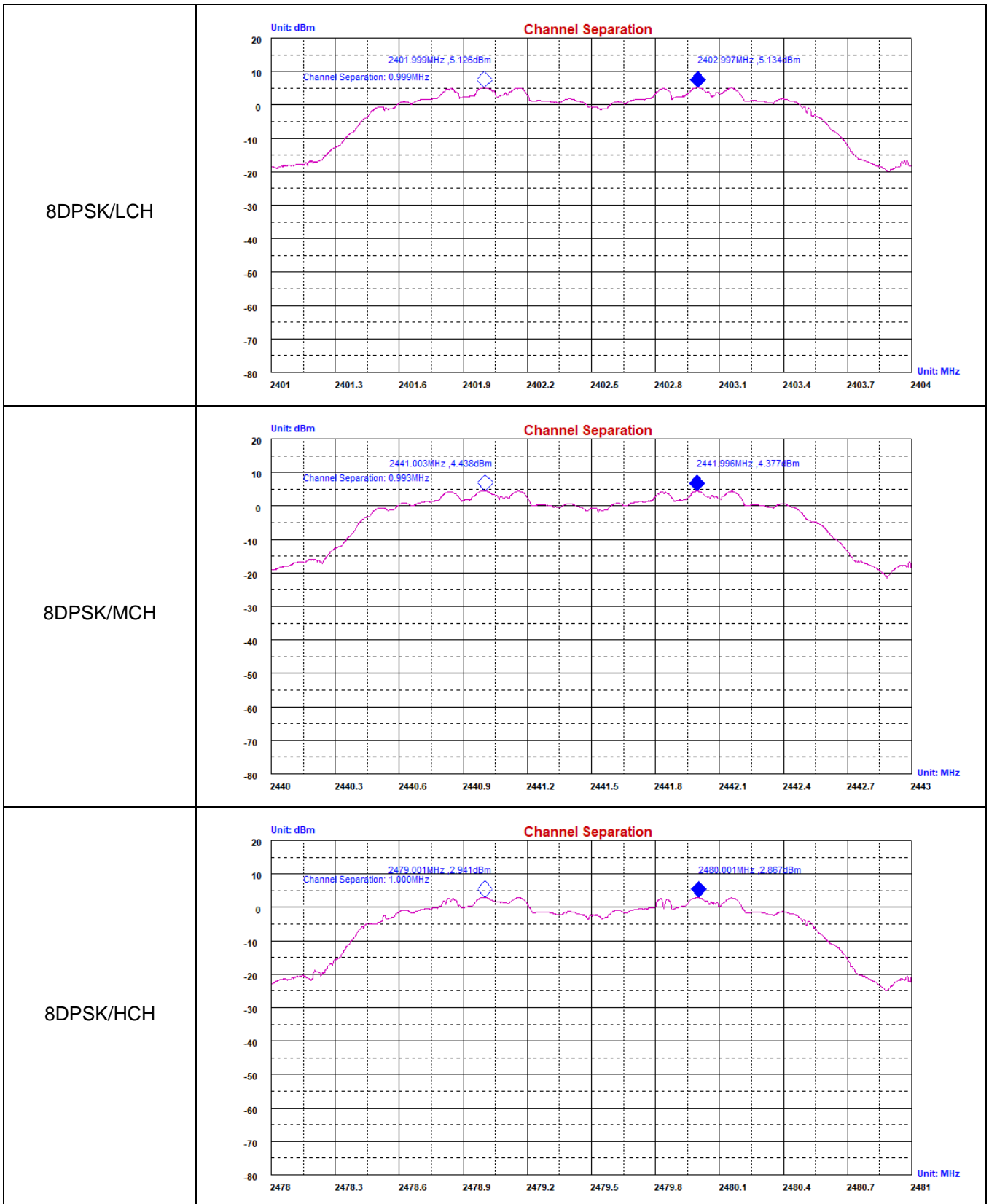
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.569	PASS
GFSK	MCH	1.000	0.572	PASS
GFSK	HCH	0.999	0.631	PASS
$\pi/4$ DQPSK	LCH	1.000	0.908	PASS
$\pi/4$ DQPSK	MCH	1.000	0.833	PASS
$\pi/4$ DQPSK	HCH	1.000	0.863	PASS
8DPSK	LCH	0.999	0.873	PASS
8DPSK	MCH	0.993	0.852	PASS
8DPSK	HCH	1.000	0.835	PASS

Test Graph



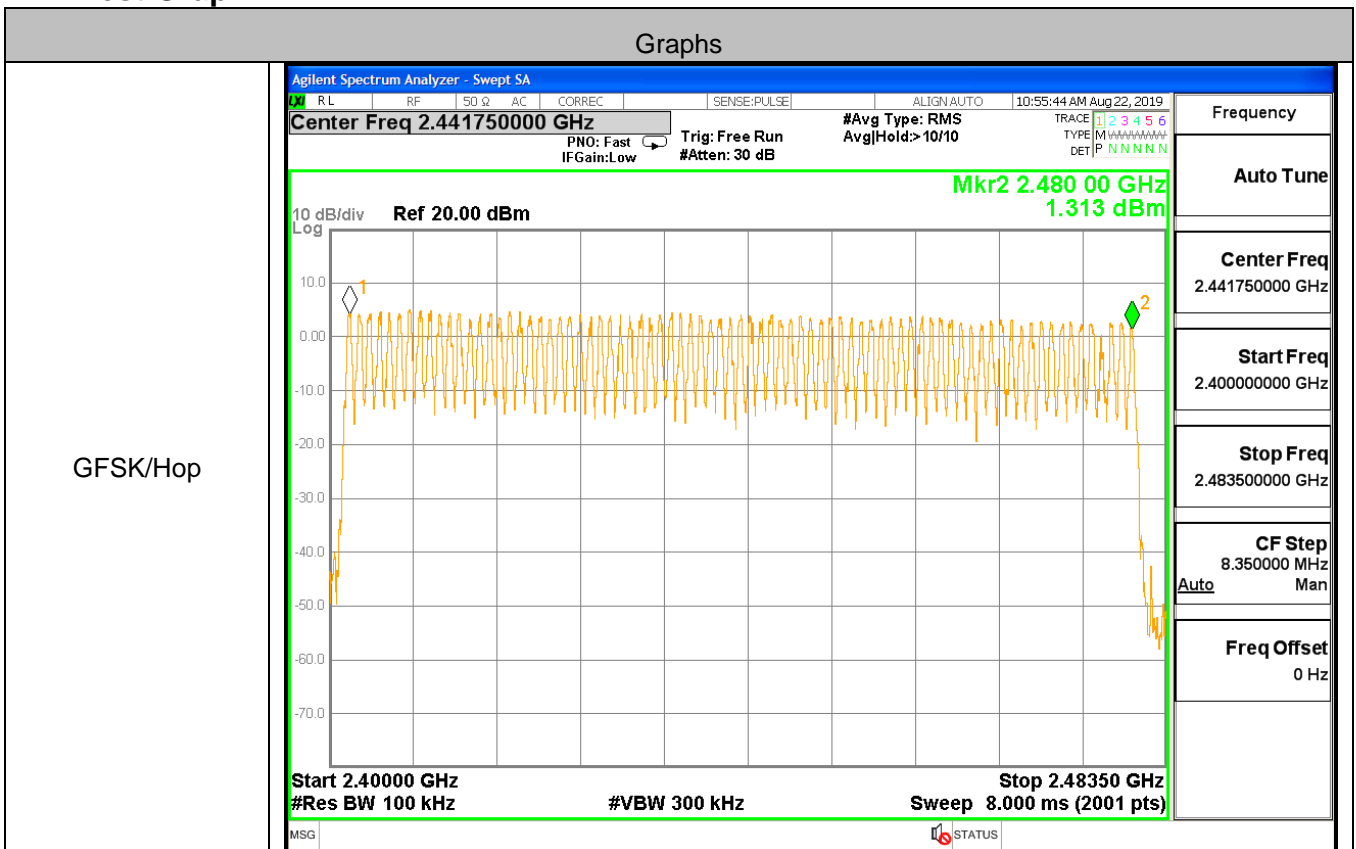


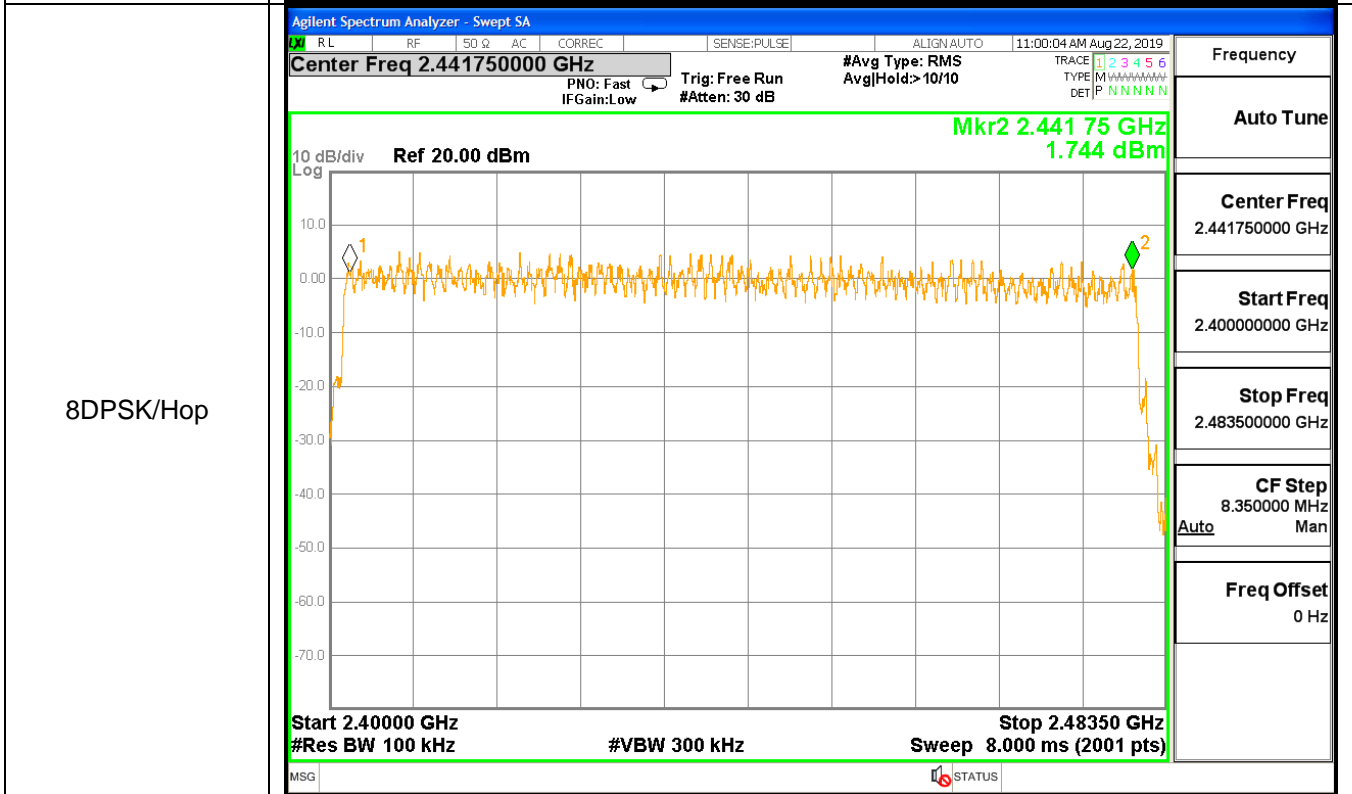
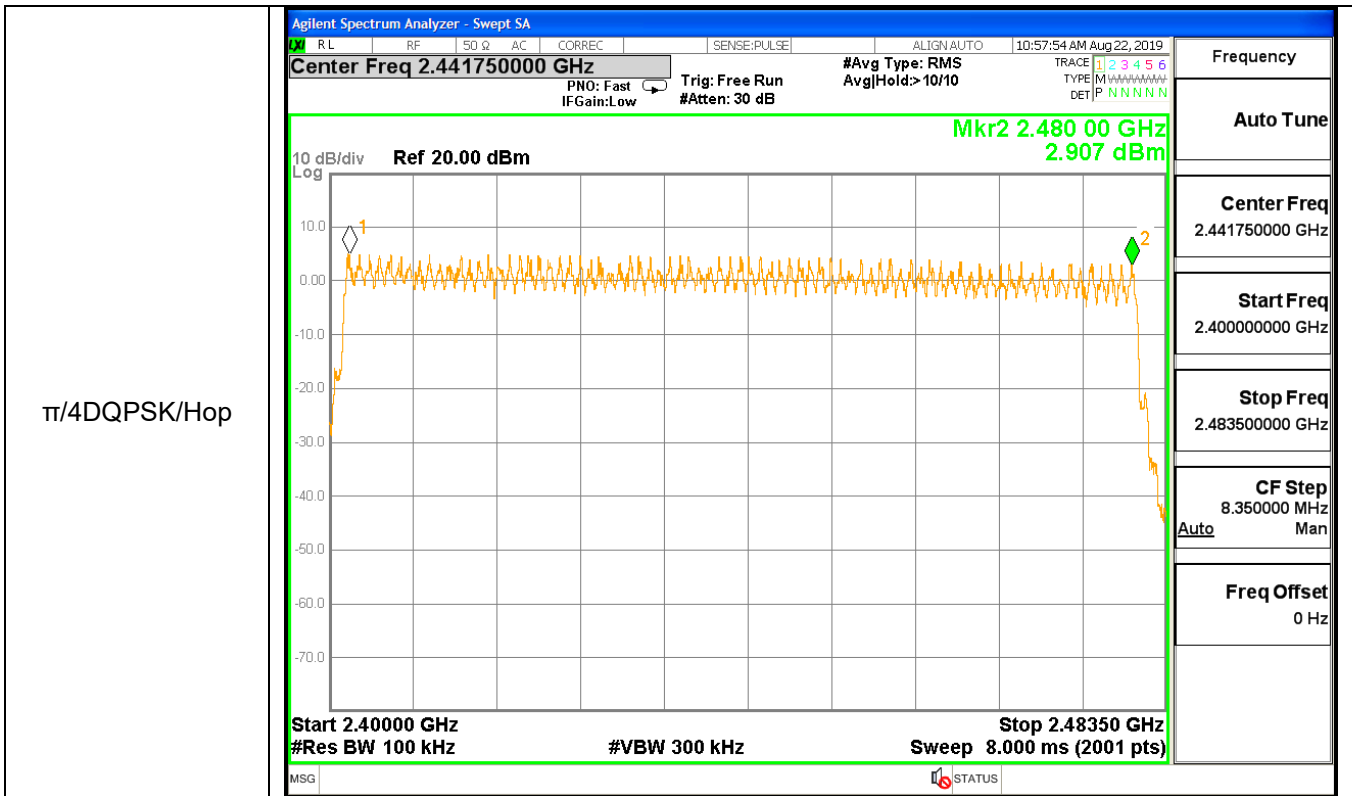


A.4 Hopping Channel Number

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

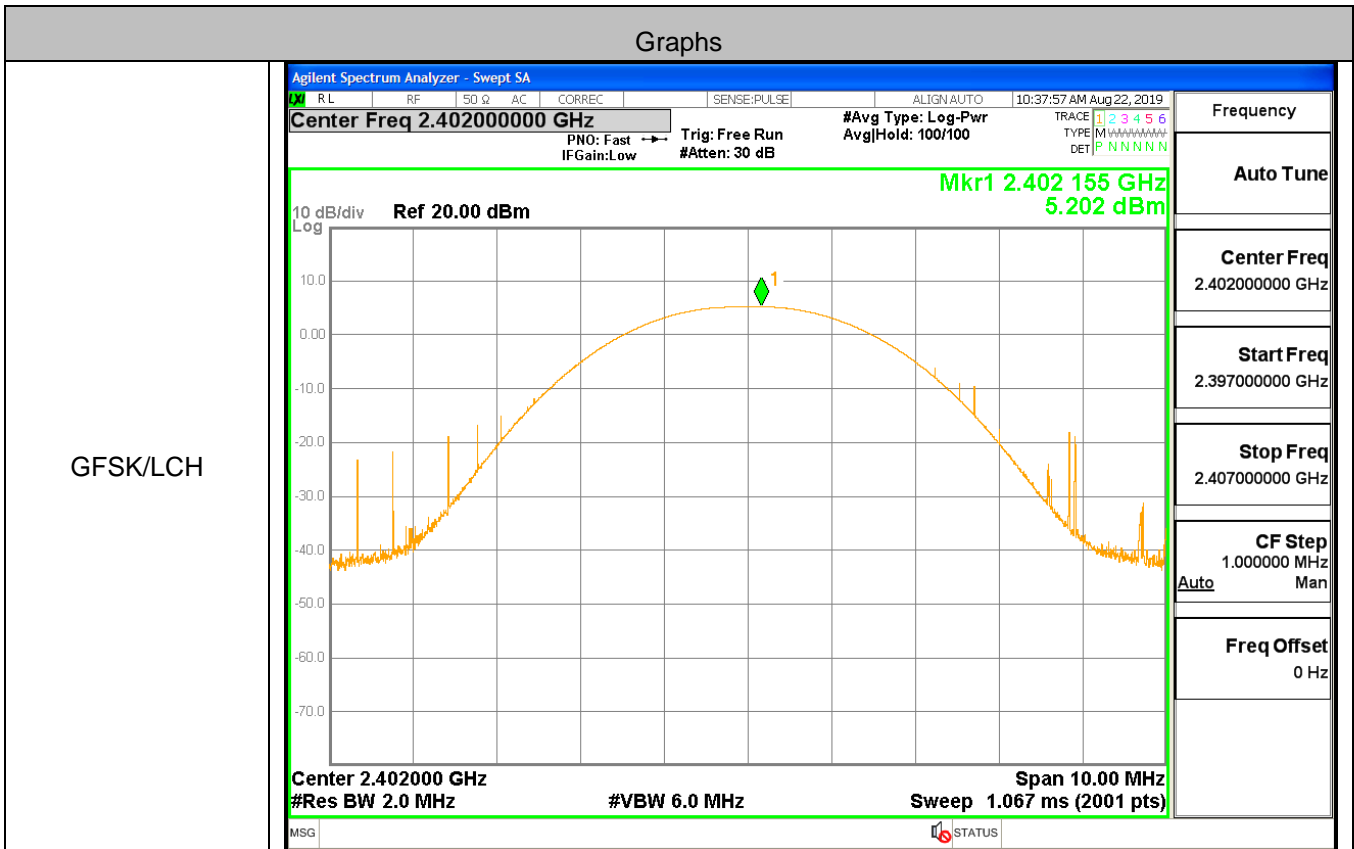


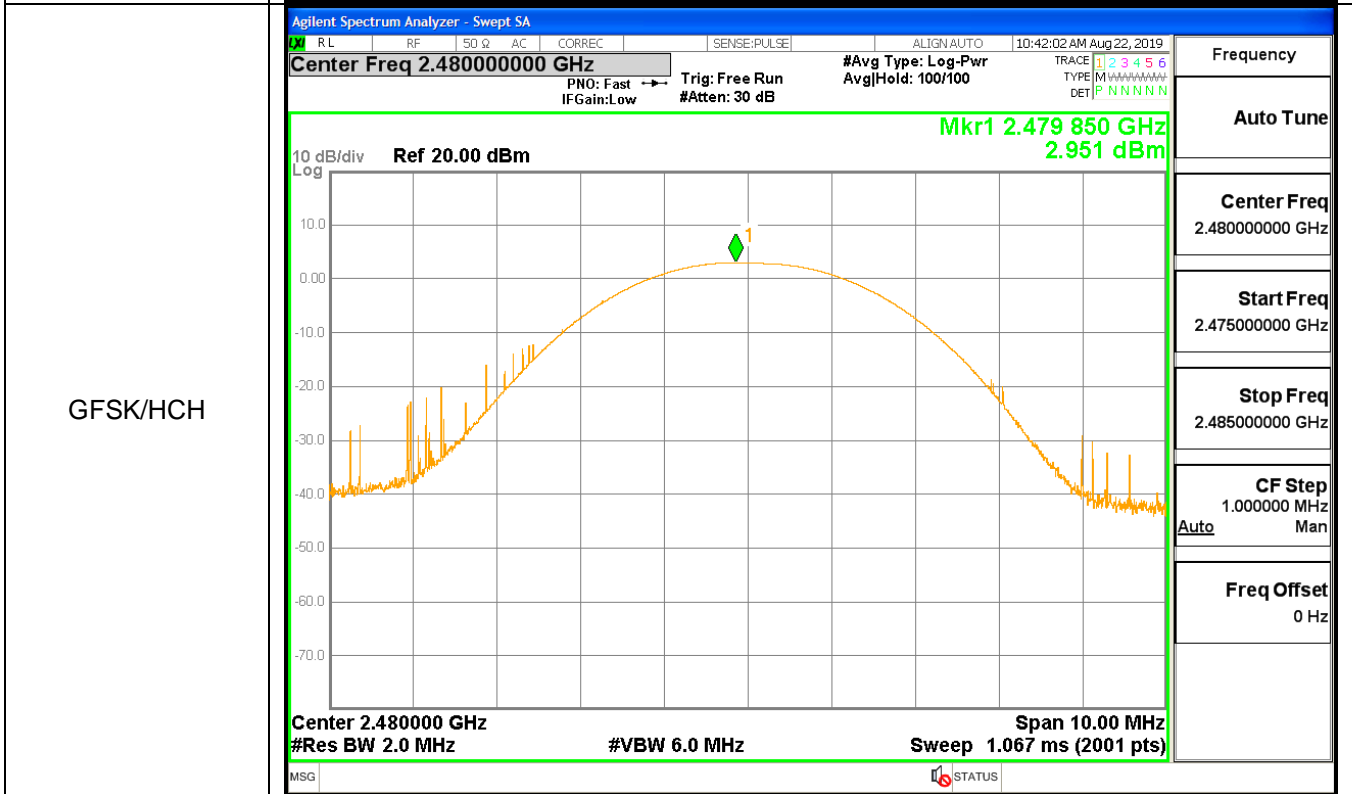
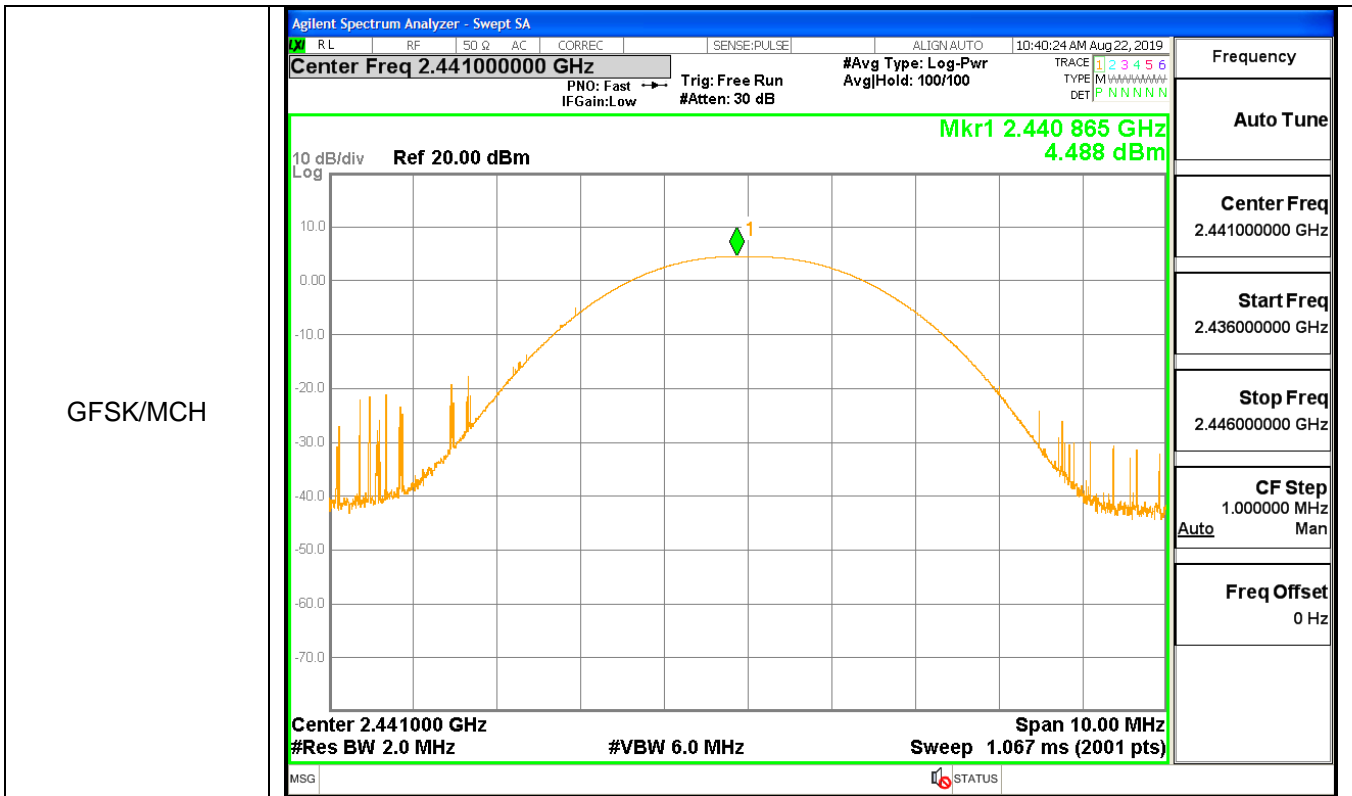


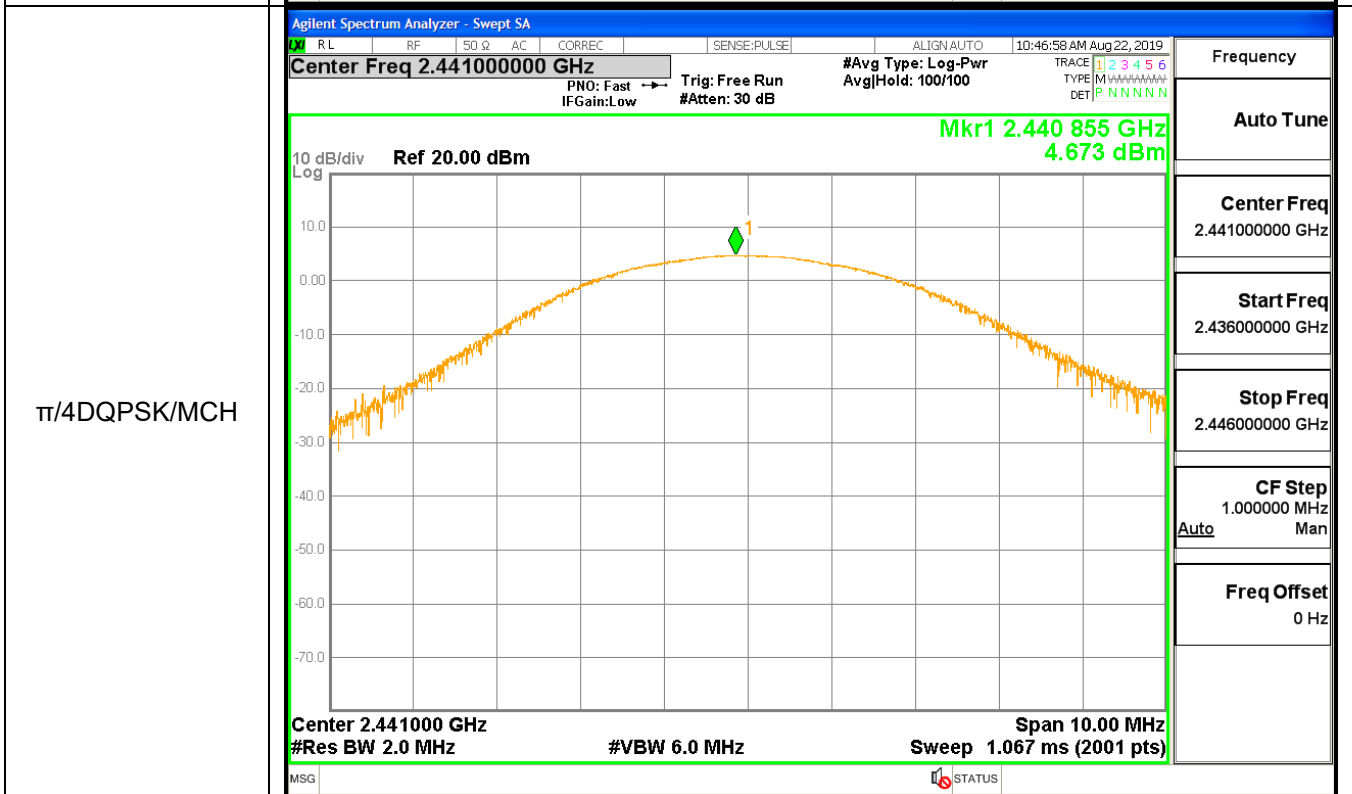
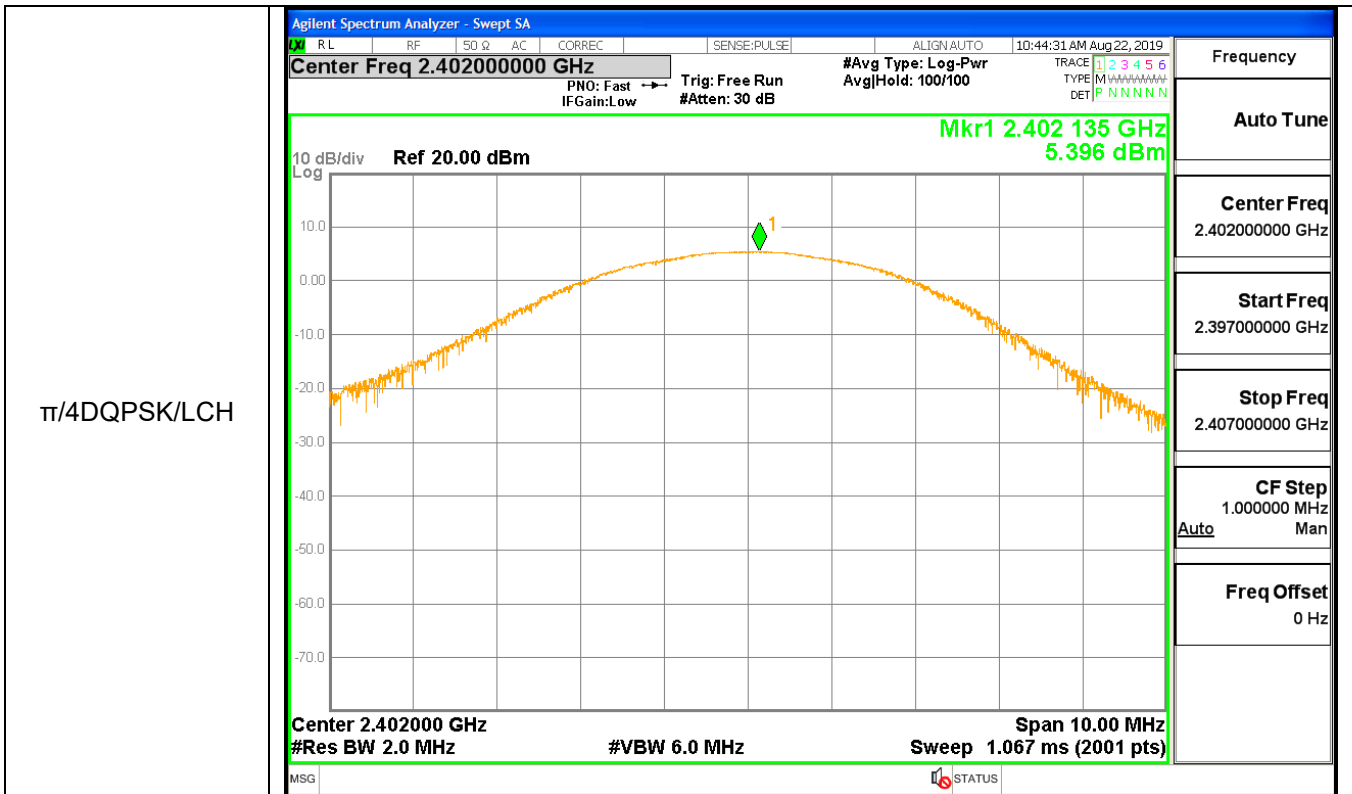
A.5 Conducted Peak Output Power

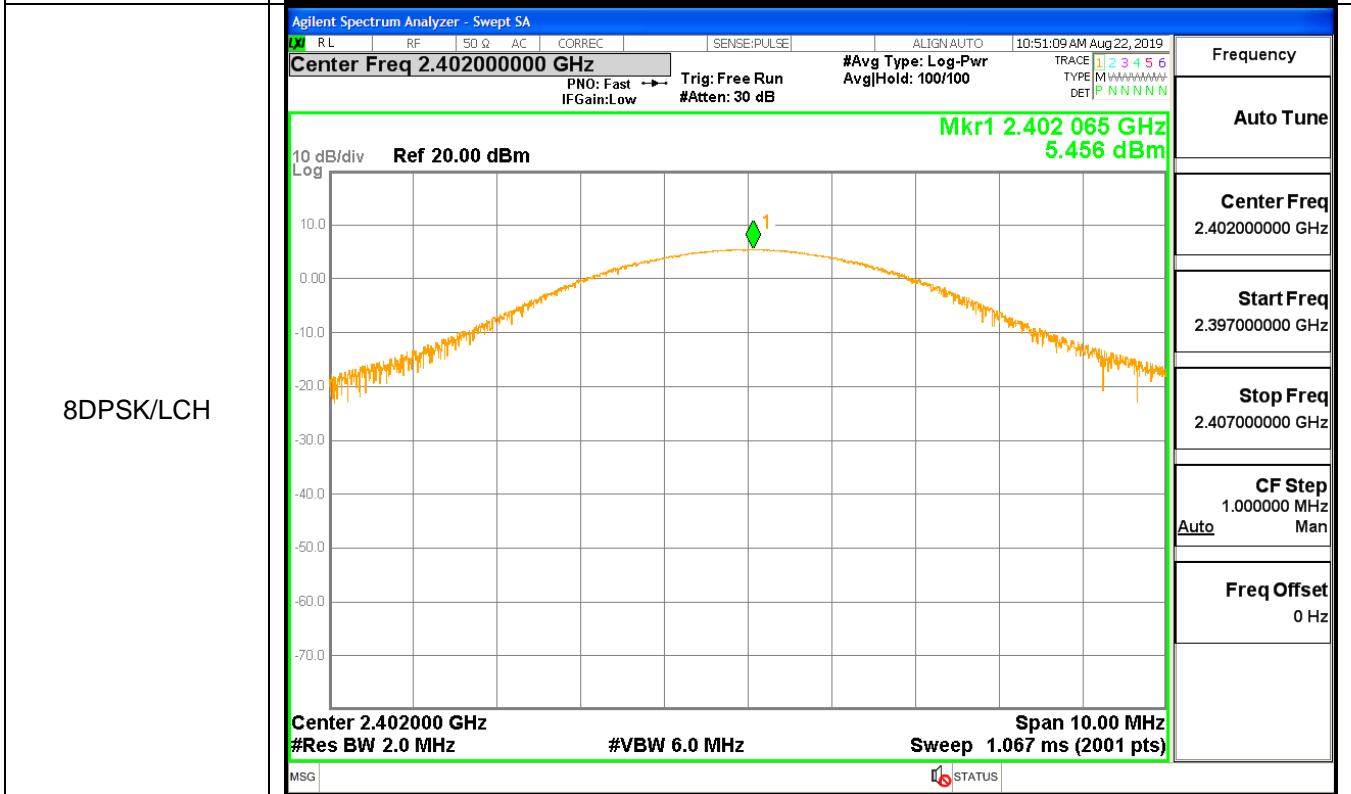
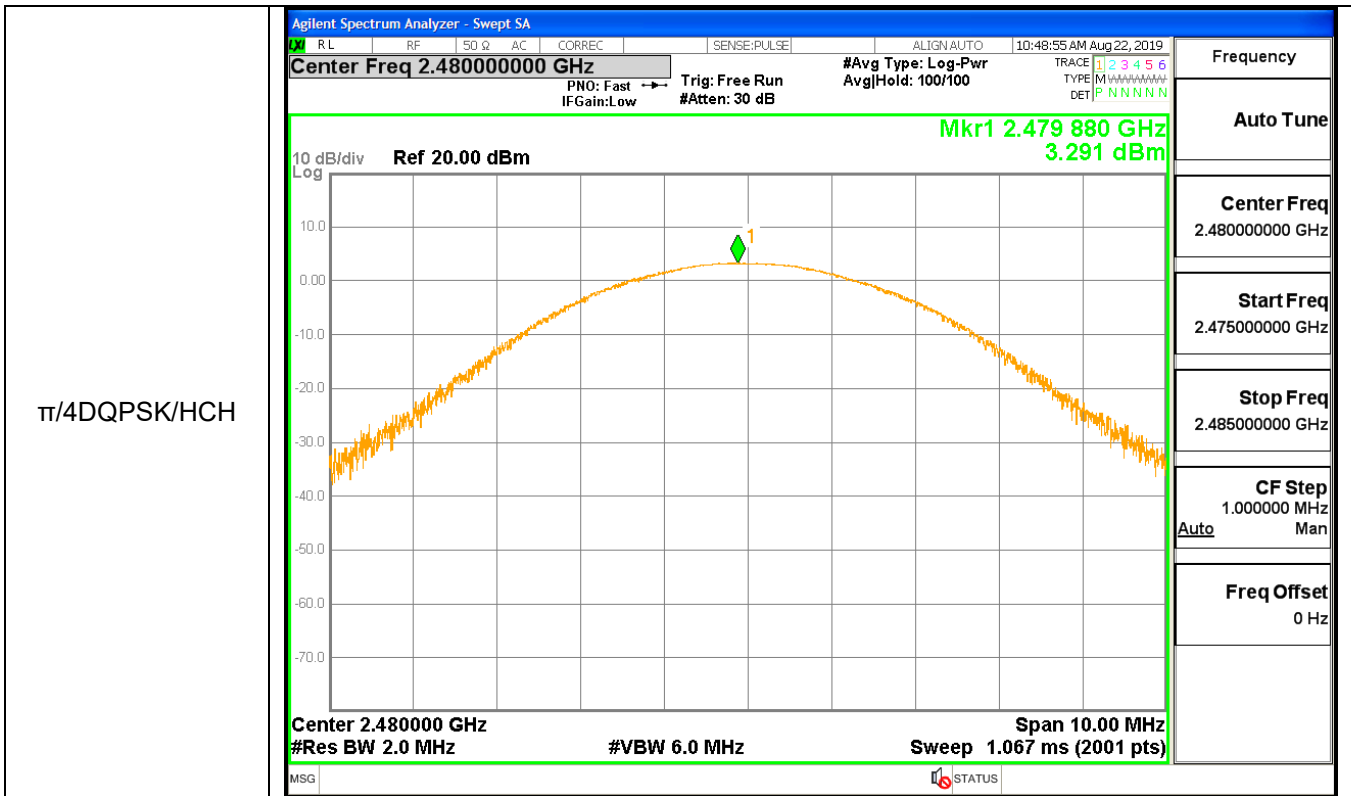
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.202	21	PASS
GFSK	MCH	4.488	21	PASS
GFSK	HCH	2.951	21	PASS
$\pi/4$ DQPSK	LCH	5.396	21	PASS
$\pi/4$ DQPSK	MCH	4.673	21	PASS
$\pi/4$ DQPSK	HCH	3.291	21	PASS
8DPSK	LCH	5.456	21	PASS
8DPSK	MCH	4.756	21	PASS
8DPSK	HCH	3.421	21	PASS

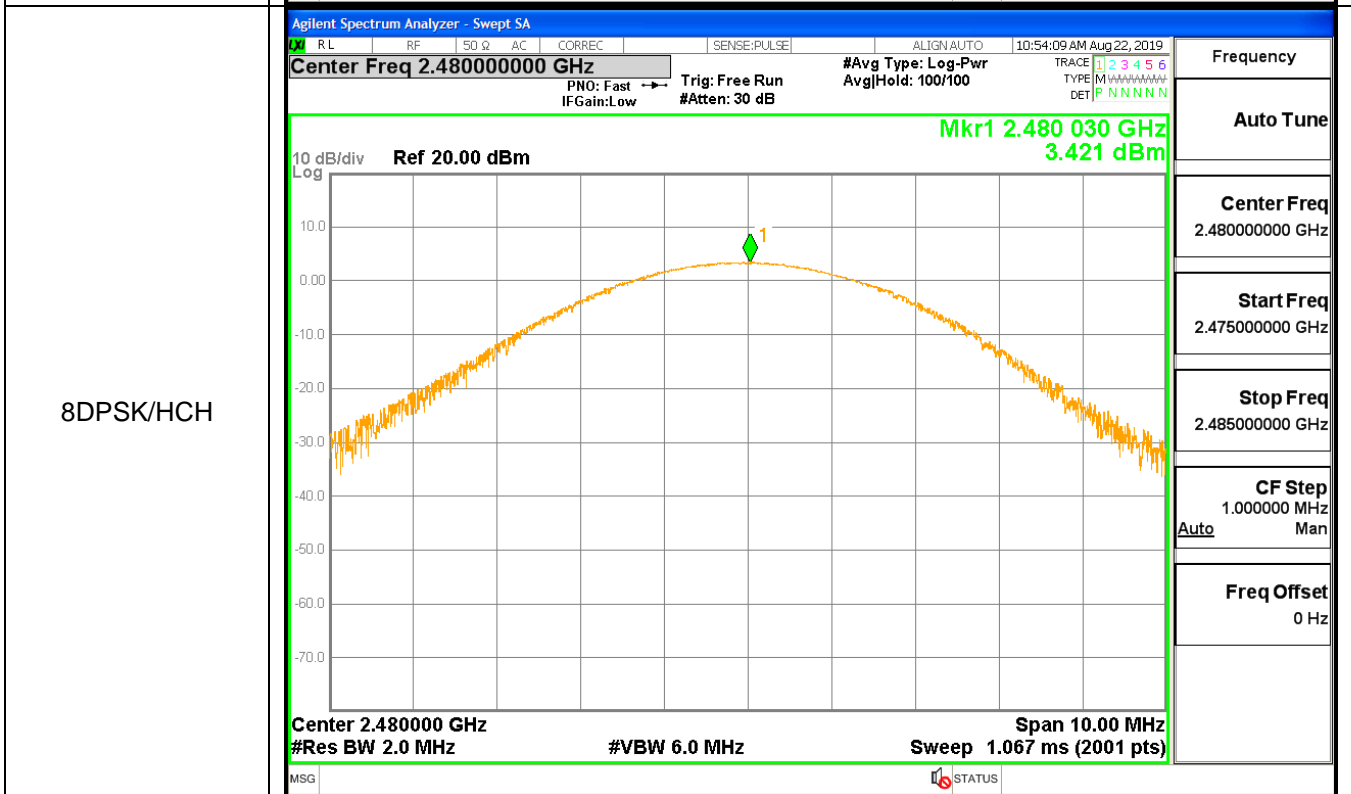
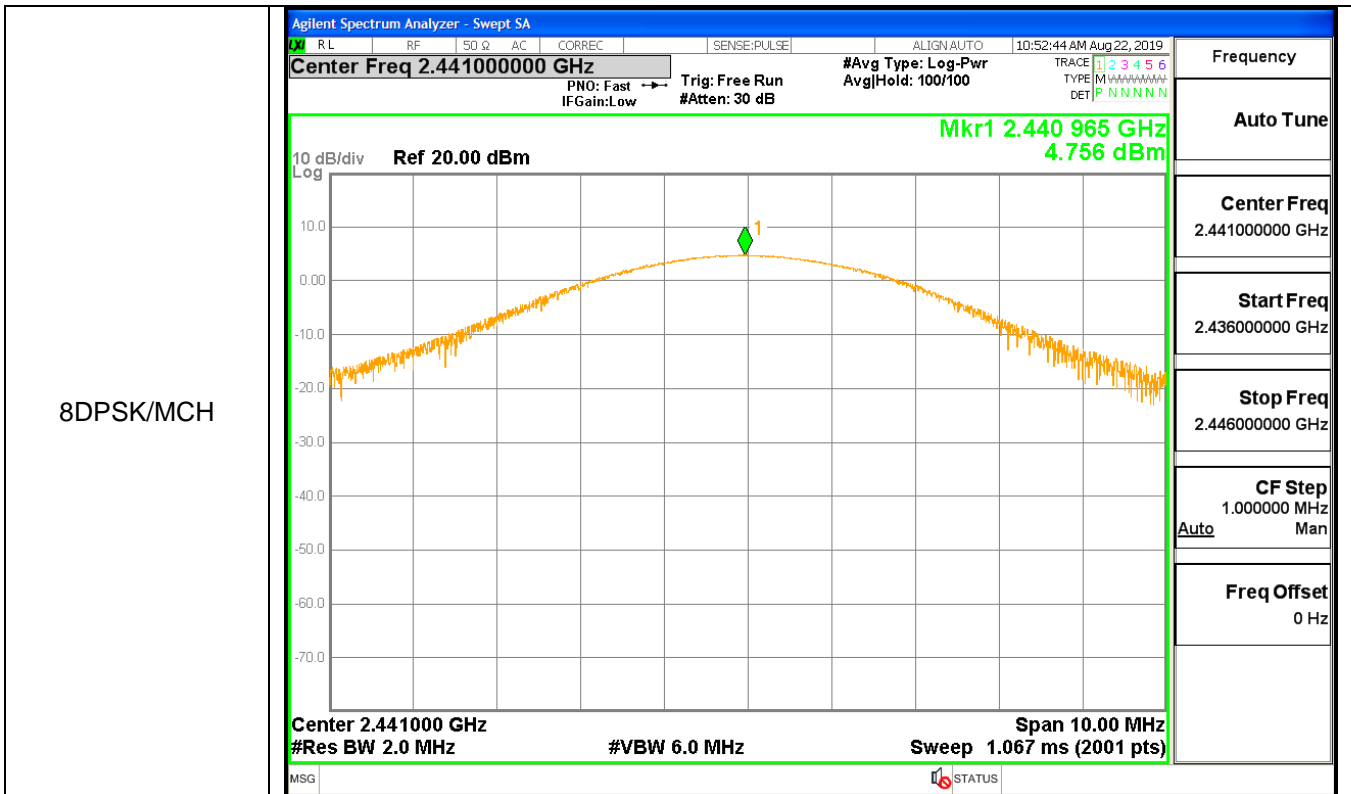
Test Graph









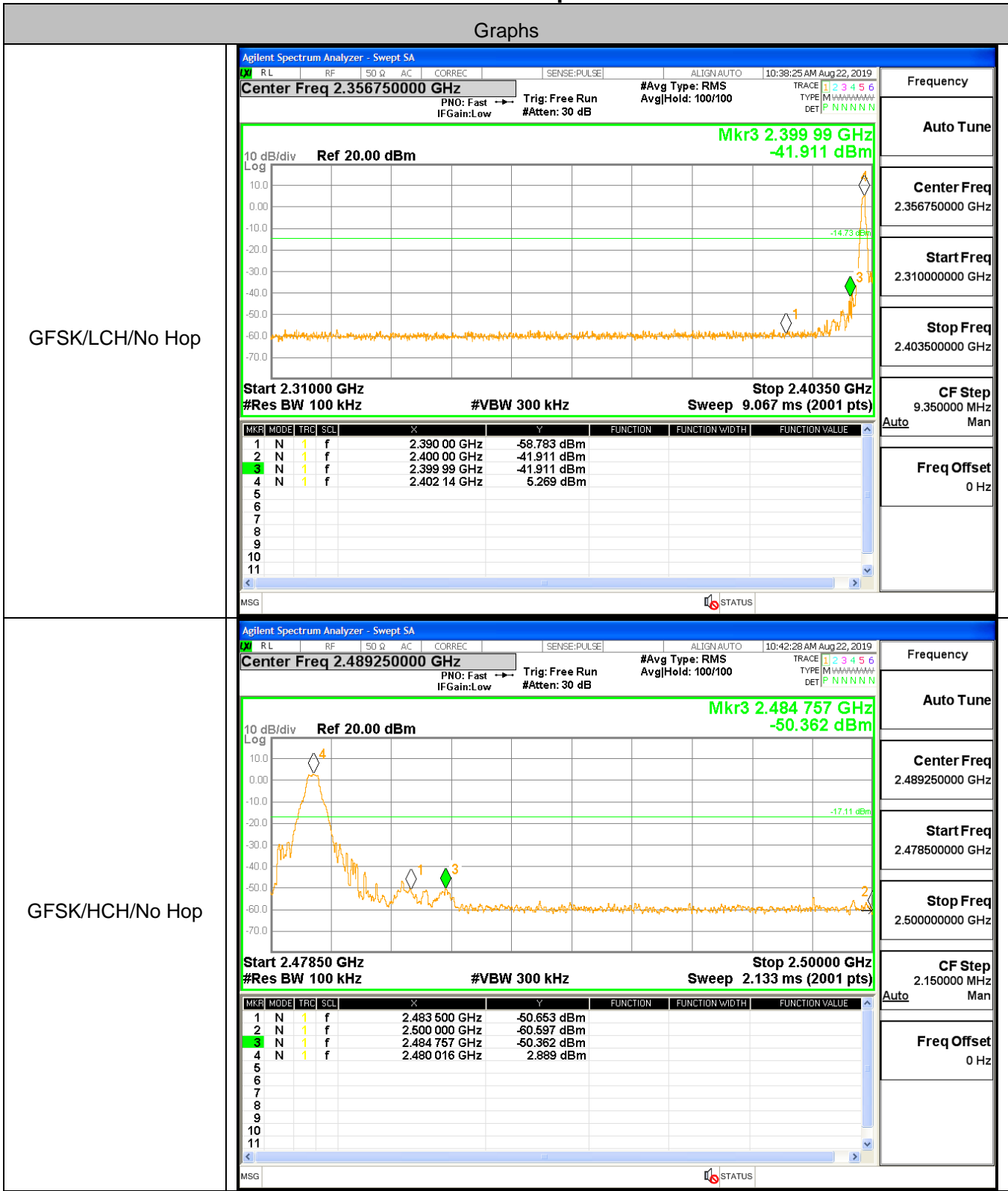


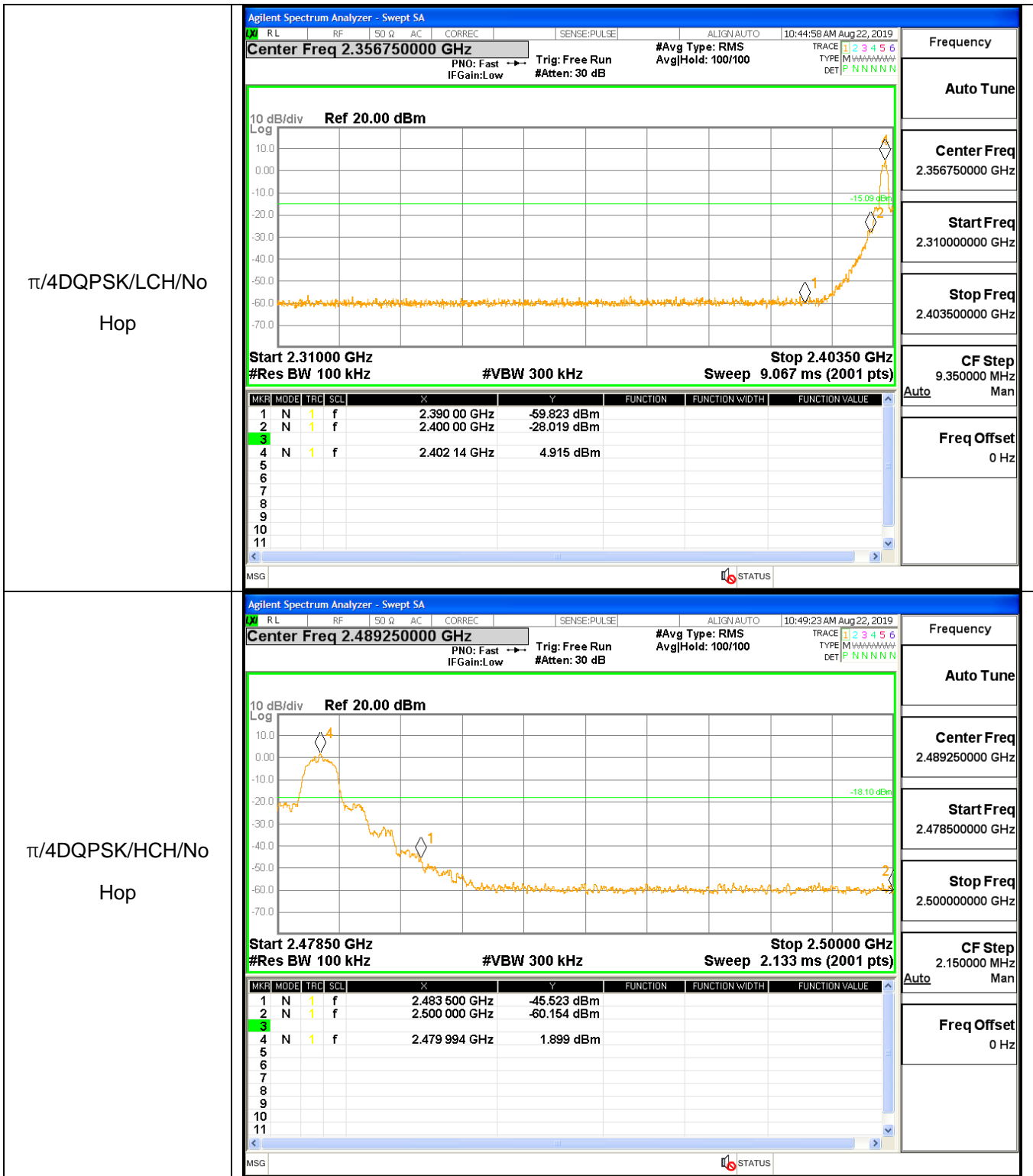
A.6 Band-edge for RF Conducted Emissions

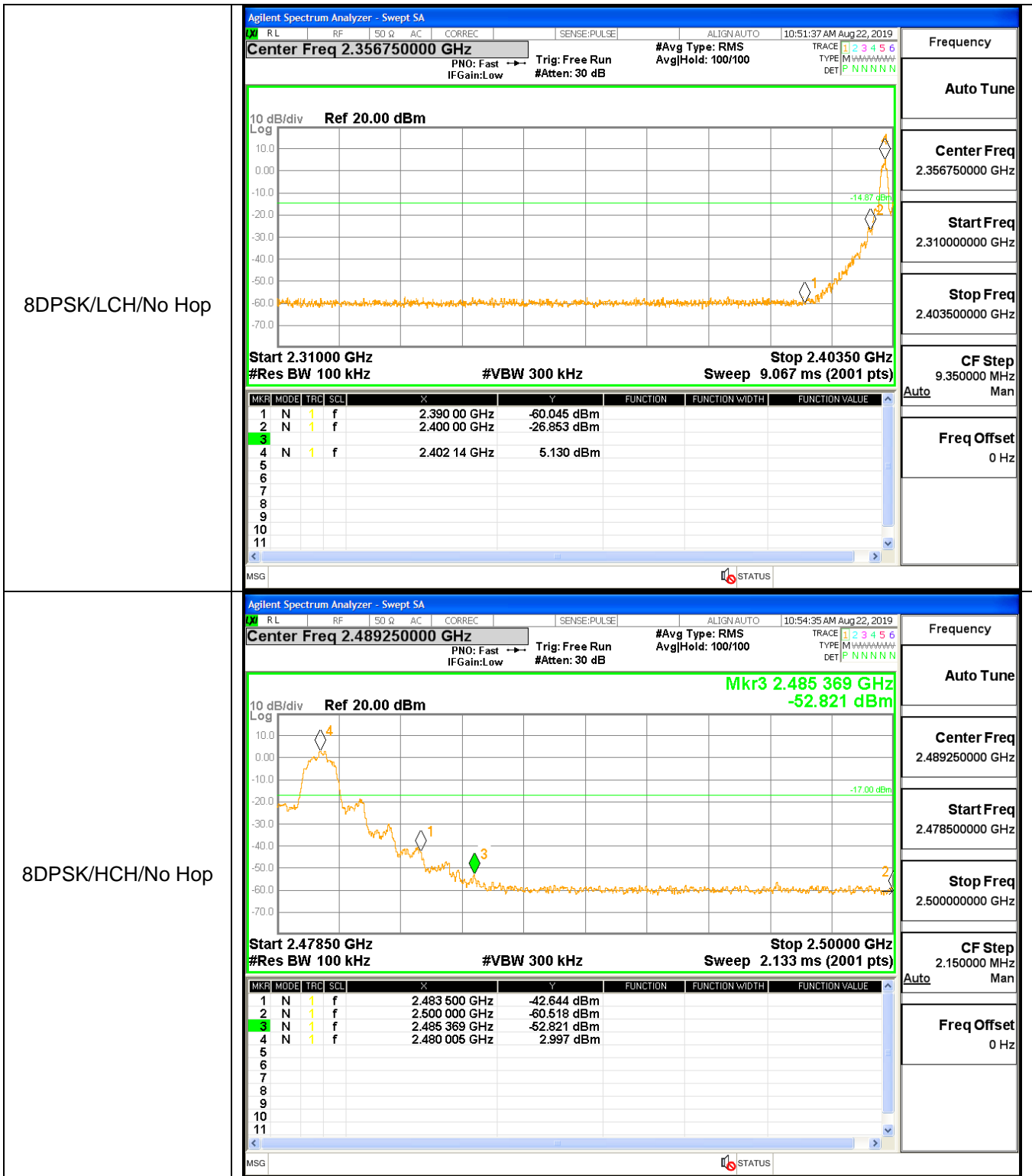
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	5.269	-41.91	-14.731	Pass
1DH5	2480	2484.757	2.889	-50.362	-17.111	Pass
2DH5	2402	2400	4.915	-28.02	-15.085	Pass
2DH5	2480	2483.5	1.899	-45.52	-18.101	Pass
3DH5	2402	2400	5.13	-26.85	-14.870	Pass
3DH5	2480	2483.5	2.997	-42.64	-17.003	Pass
1DH5-Hopping	2402	2400	5.181	-43.22	-14.819	Pass
1DH5-Hopping	2480	2484.01	4.099	-48.198	-15.901	Pass
2DH5-Hopping	2402	2400	5.059	-30.6	-14.941	Pass
2DH5-Hopping	2480	2483.5	4.084	-46.2	-15.916	Pass
3DH5-Hopping	2402	2399.73	4.967	-26.268	-15.033	Pass
3DH5-Hopping	2480	2483.5	4.13	-41.65	-15.870	Pass

Test Graph

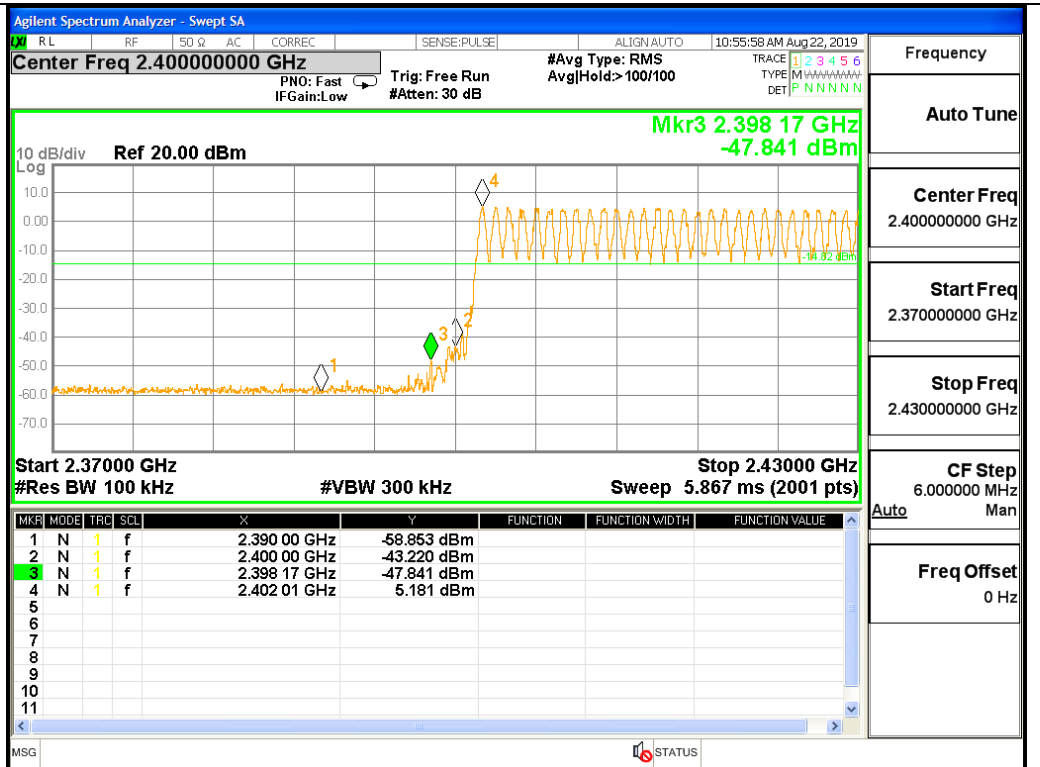
Graphs







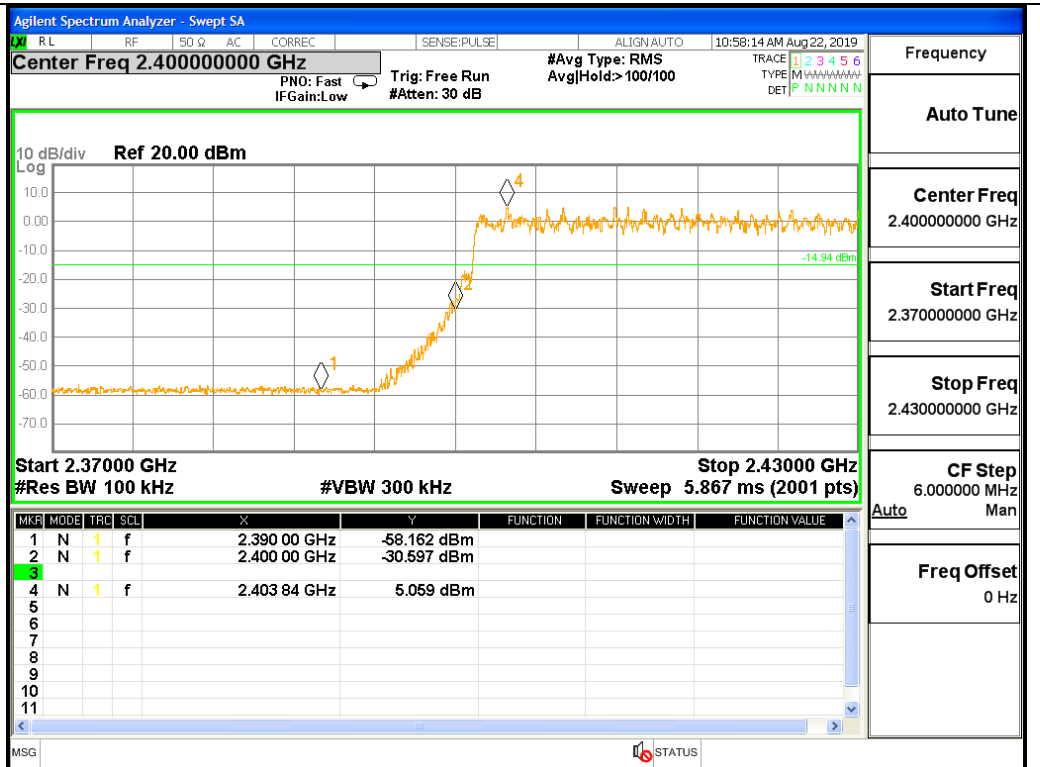
GFSK/LCH/Hop



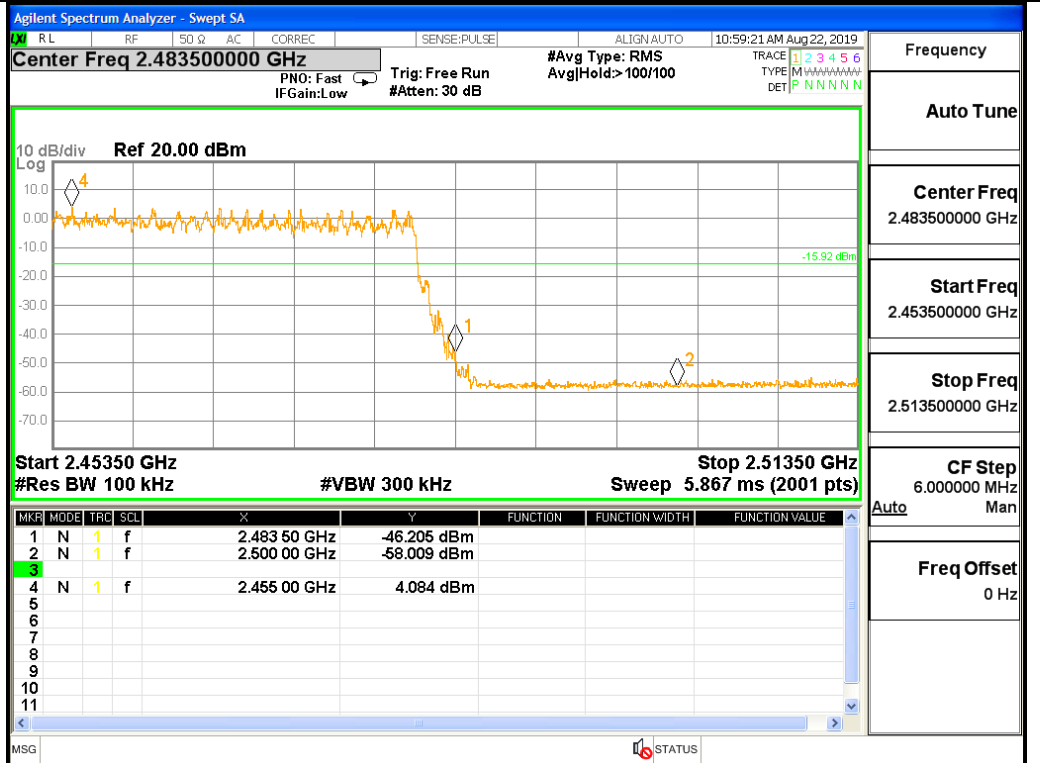
GFSK/HCH/Hop



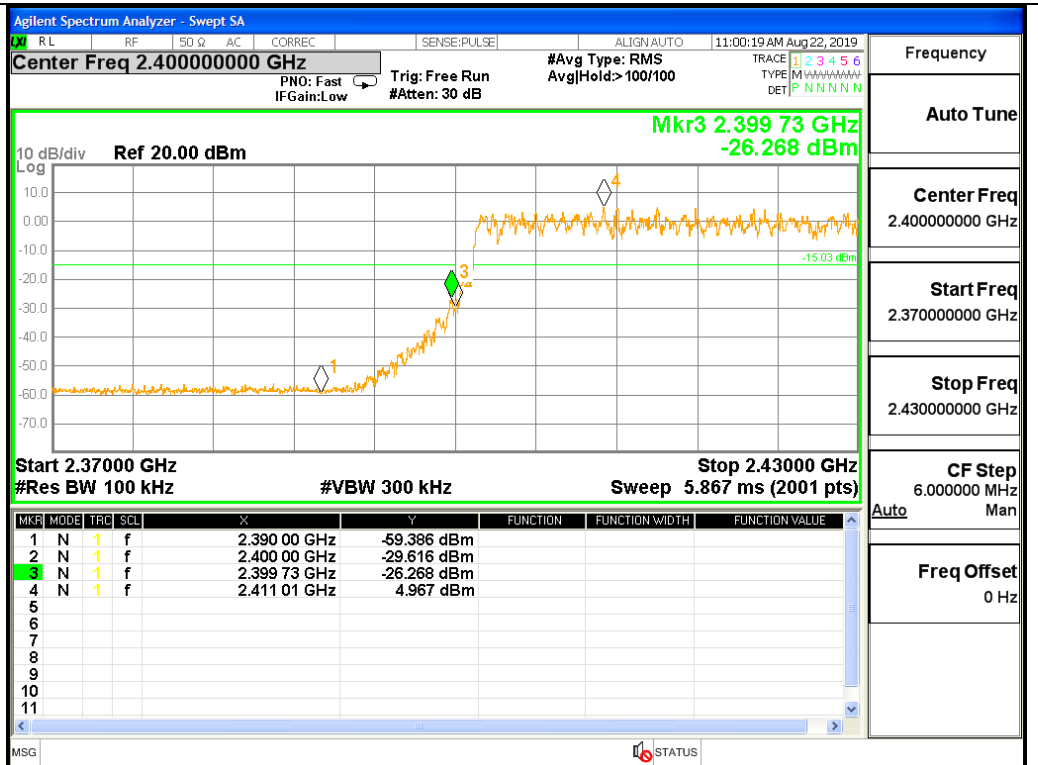
$\pi/4$ DQPSK/LCH/Hop



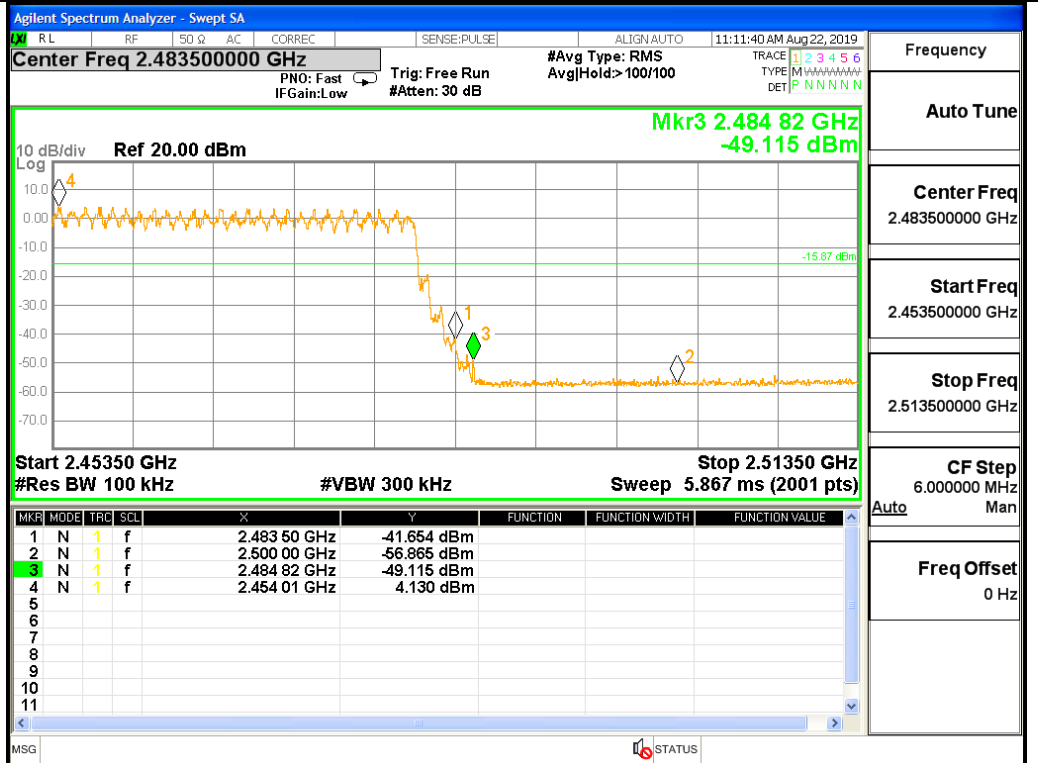
$\pi/4$ DQPSK/HCH/Hop



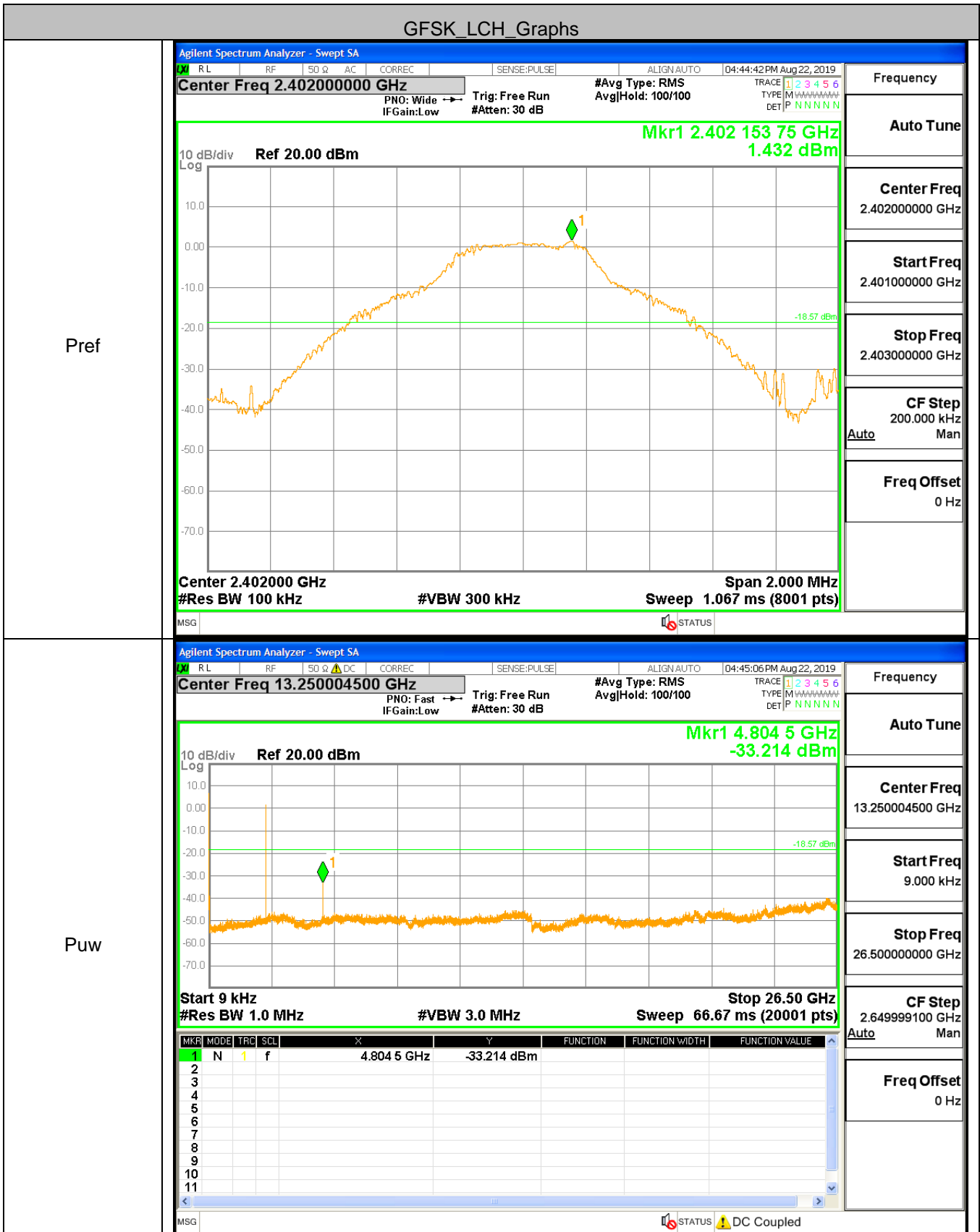
8DPSK/LCH/Hop



8DPSK/HCH/Hop

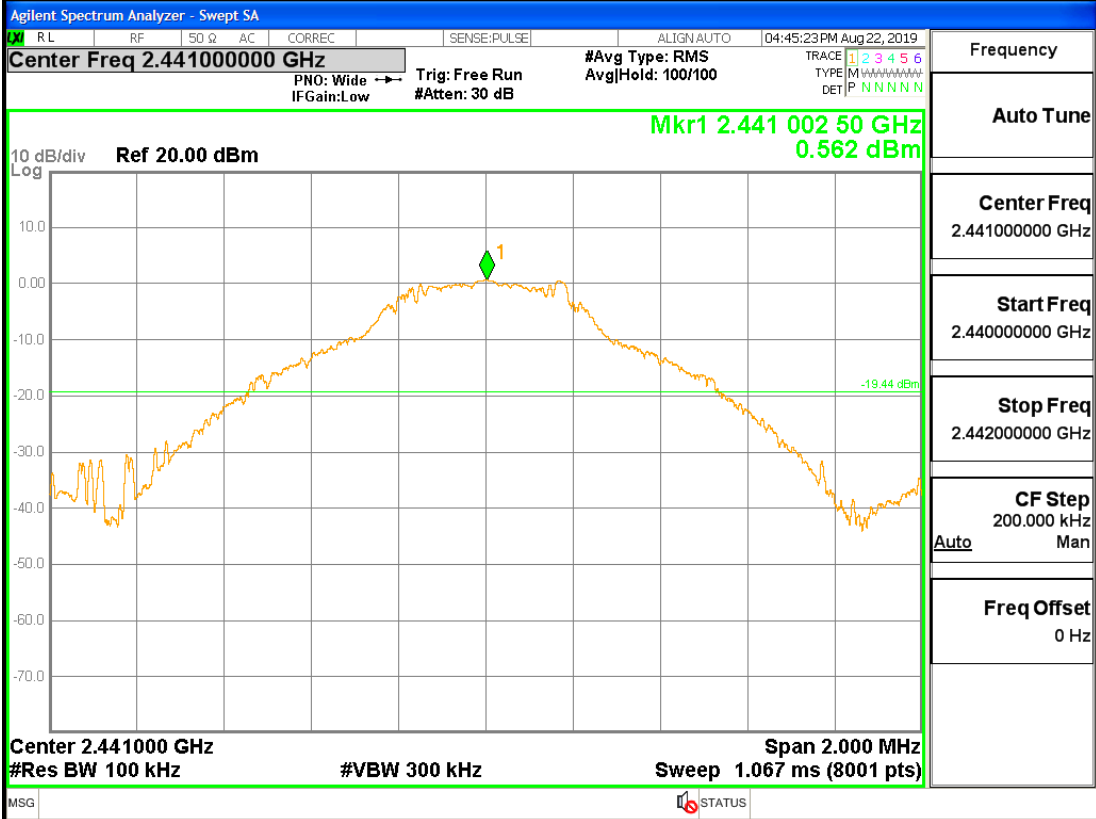


A.7 RF Conducted Spurious Emissions Test Graph

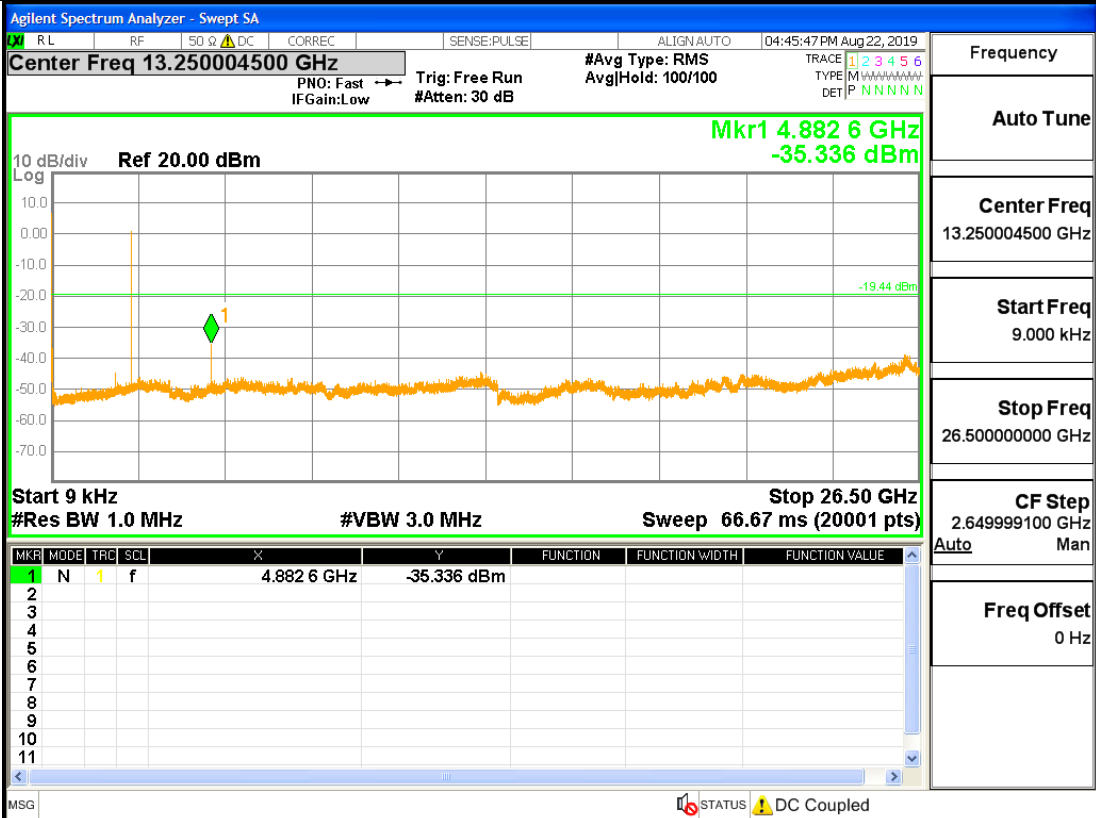


GFSK_MCH_Graphs

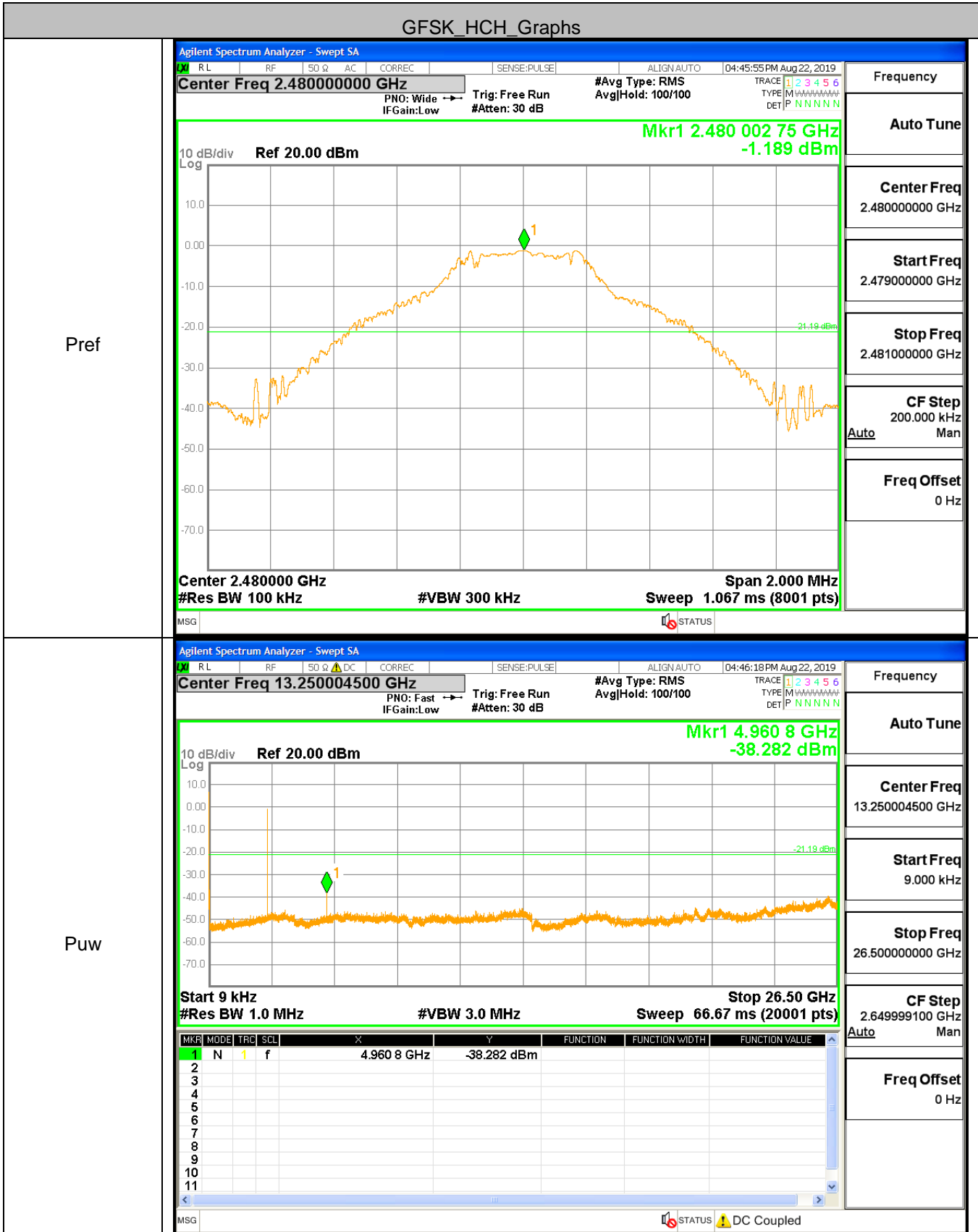
Pref



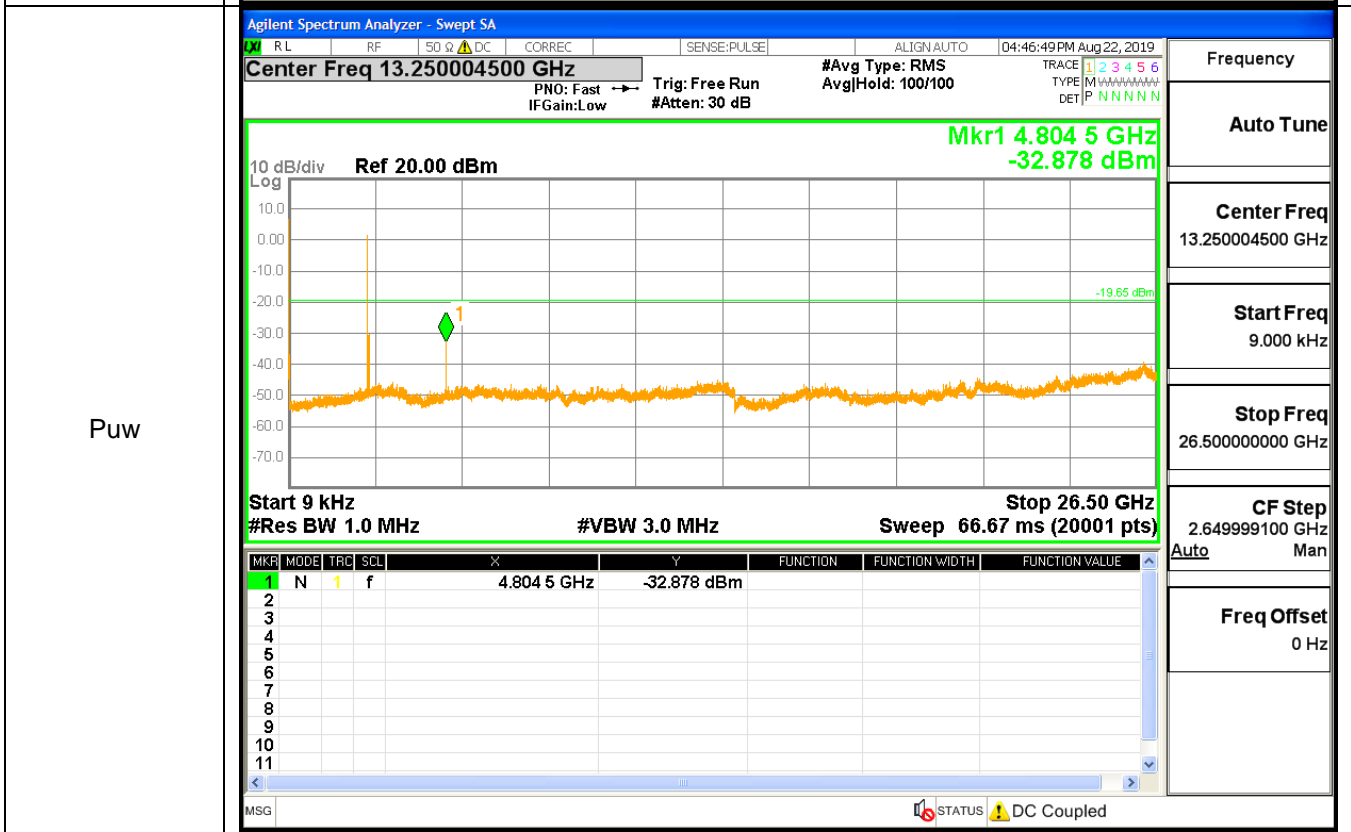
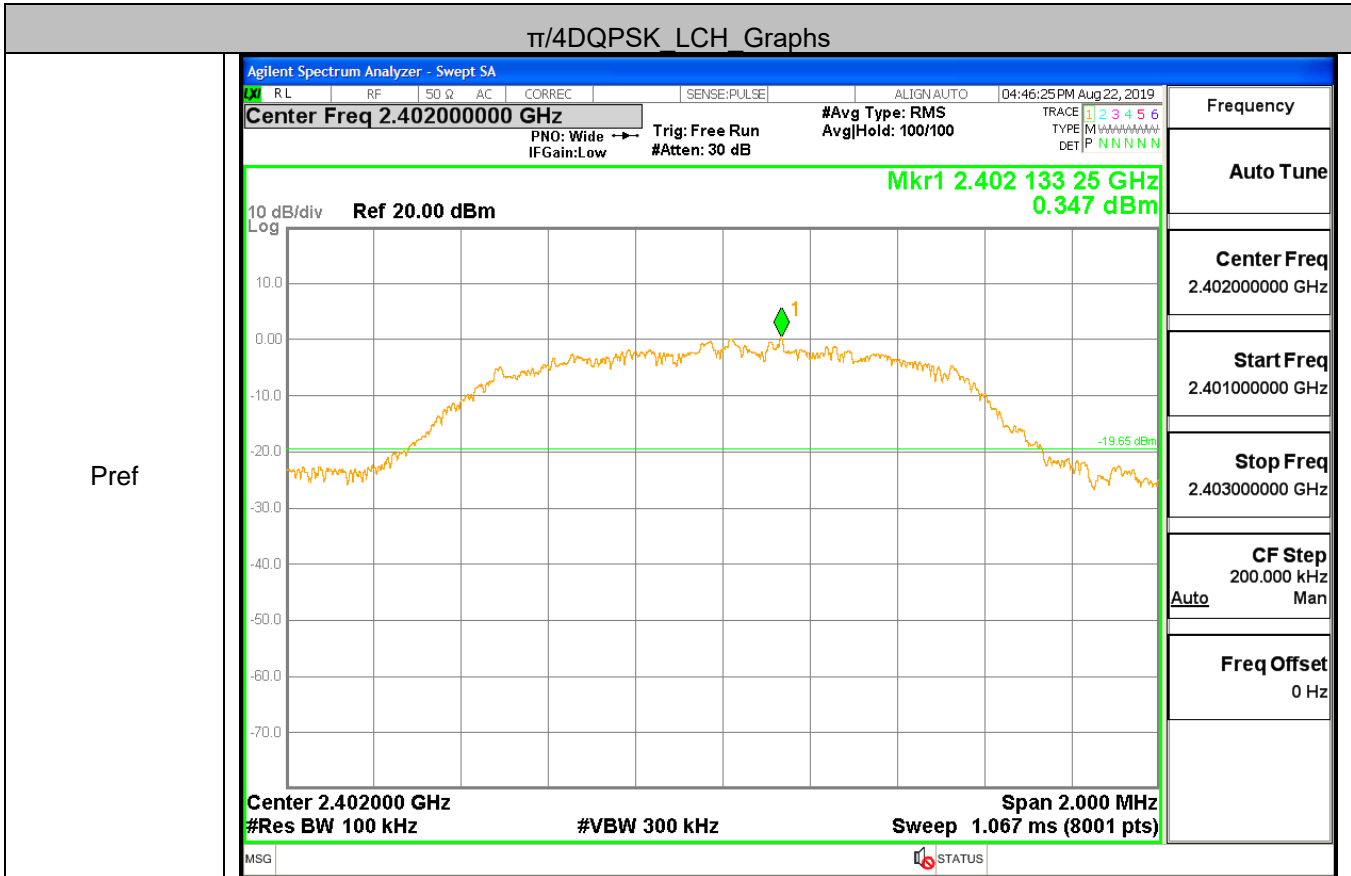
Puw



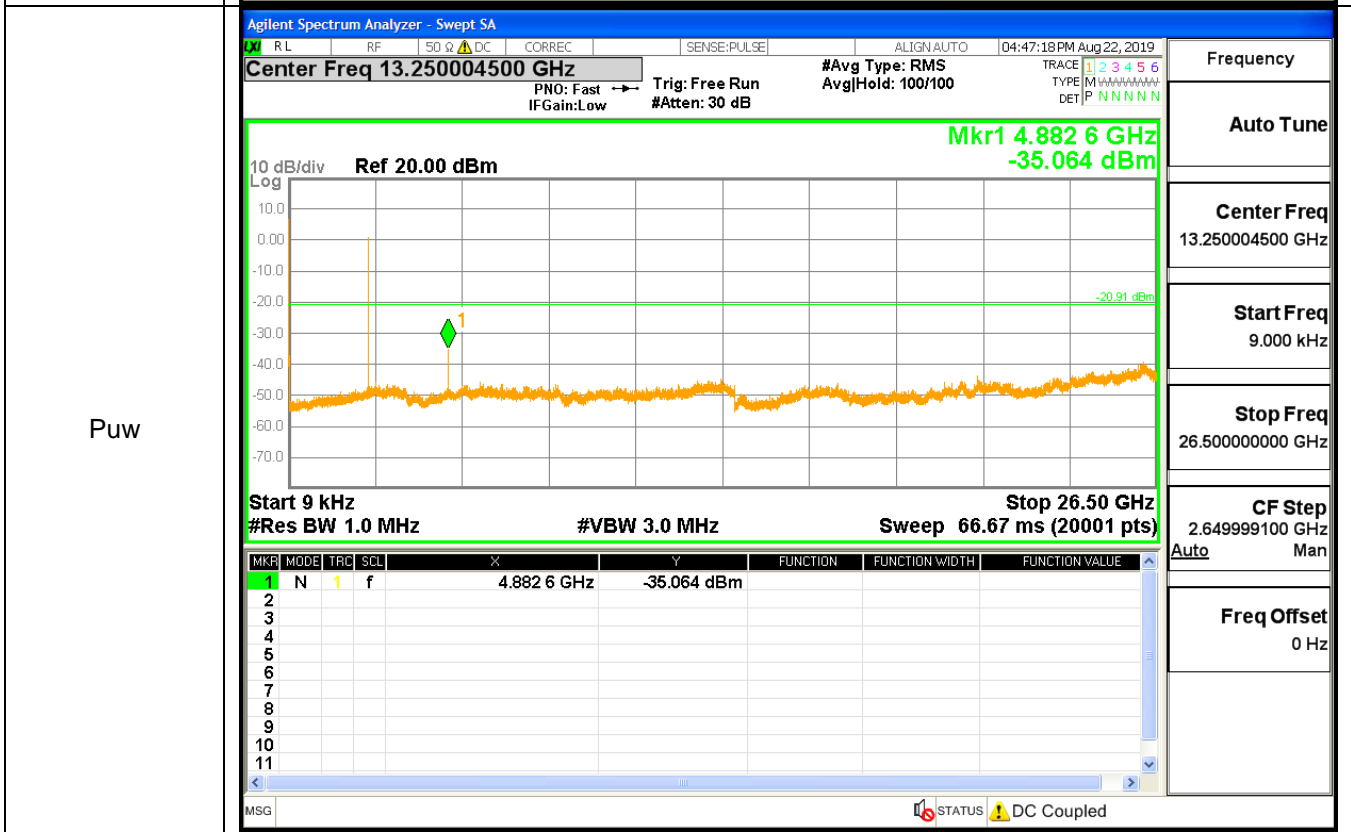
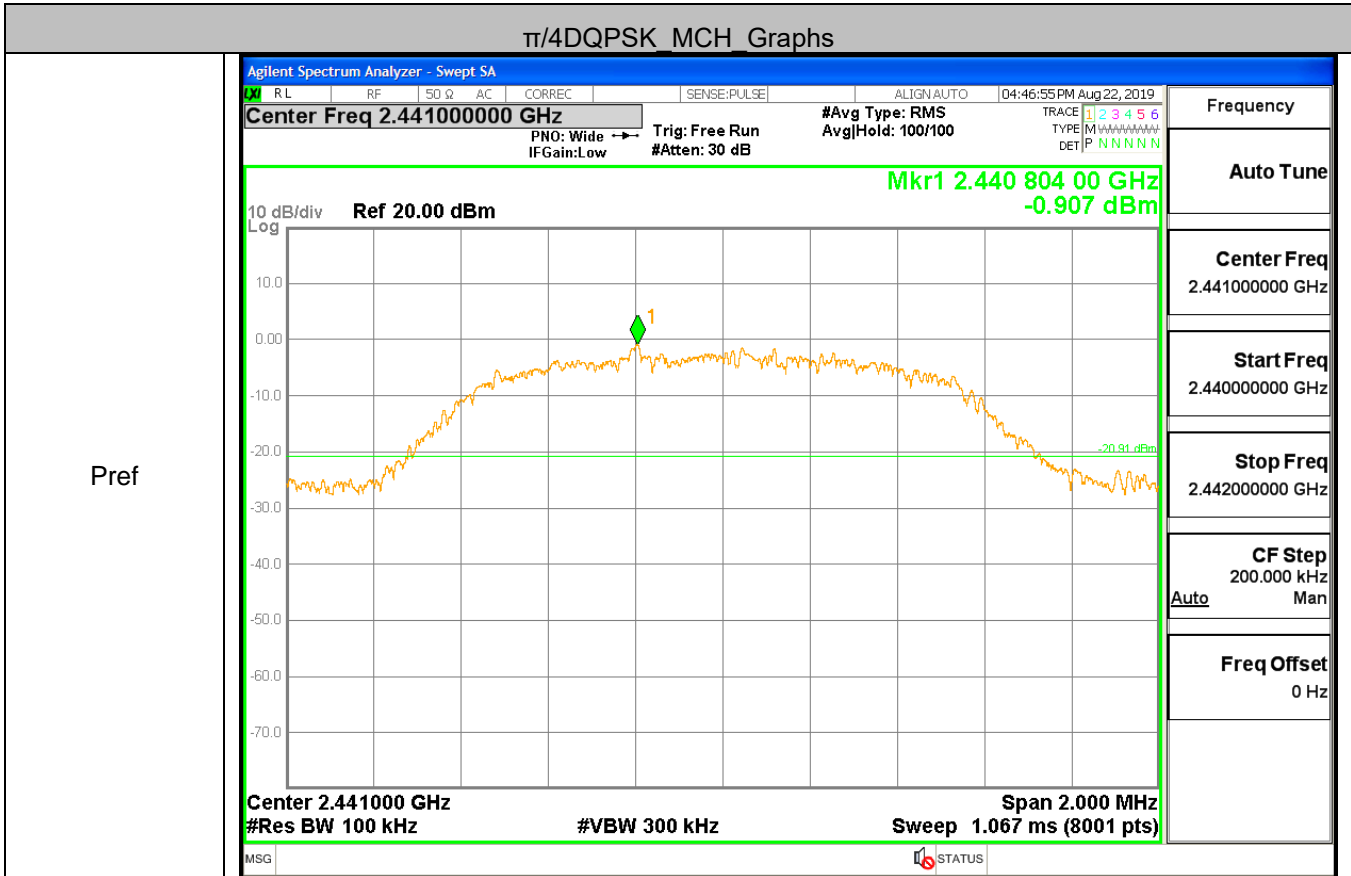
GFSK_HCH_Graphs



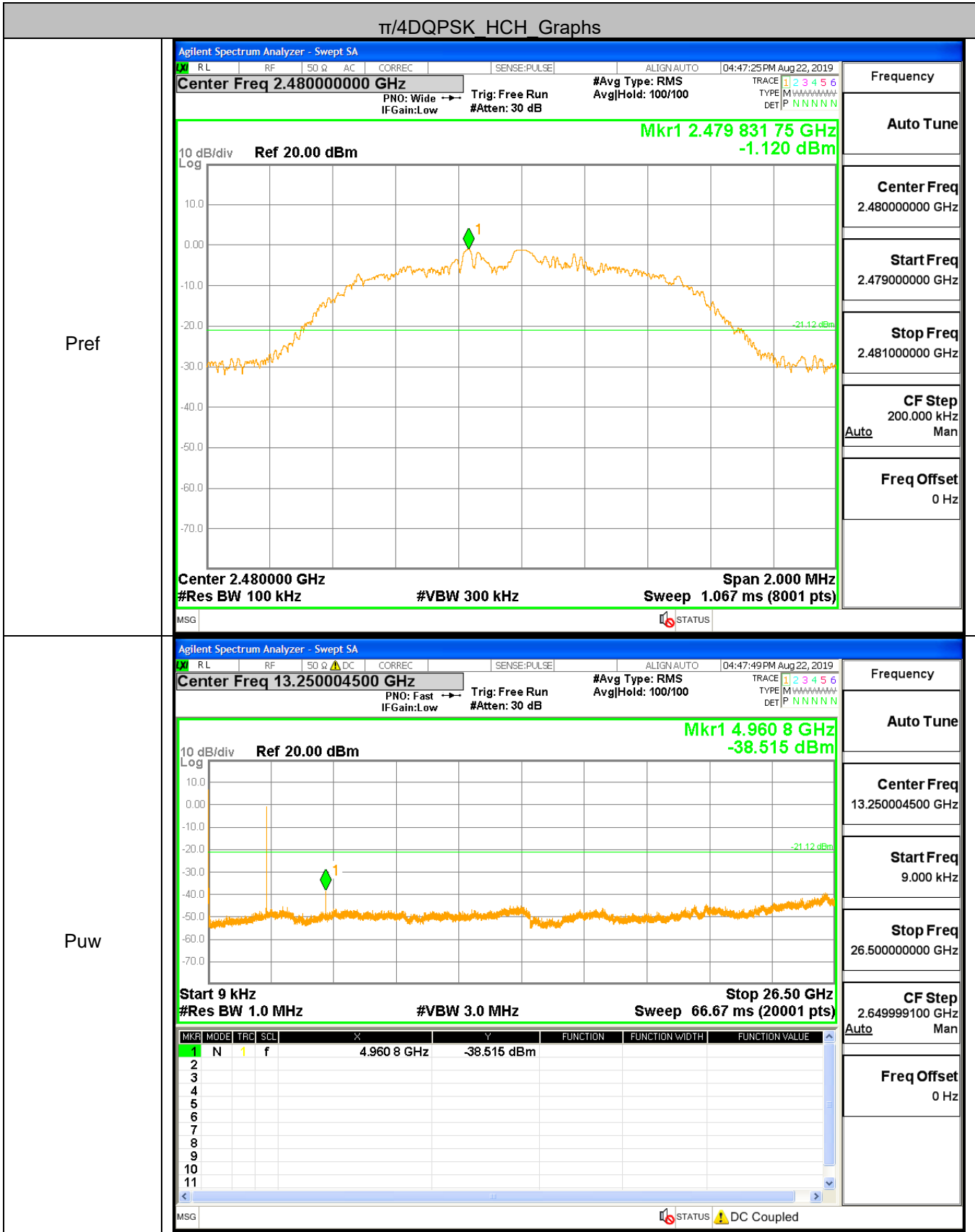
$\pi/4$ DQPSK LCH Graphs



$\pi/4$ DQPSK MCH Graphs



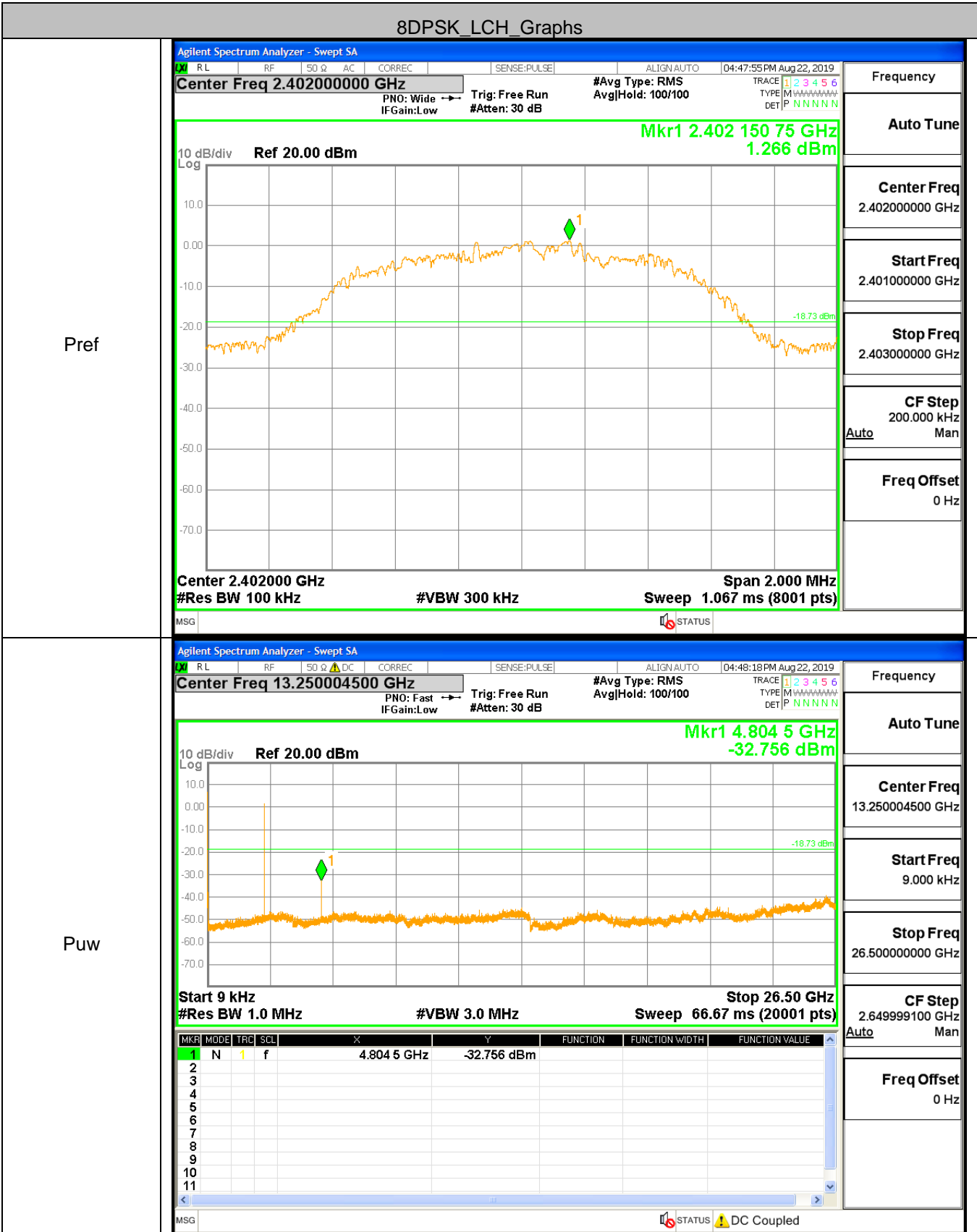
$\pi/4$ DQPSK HCH Graphs



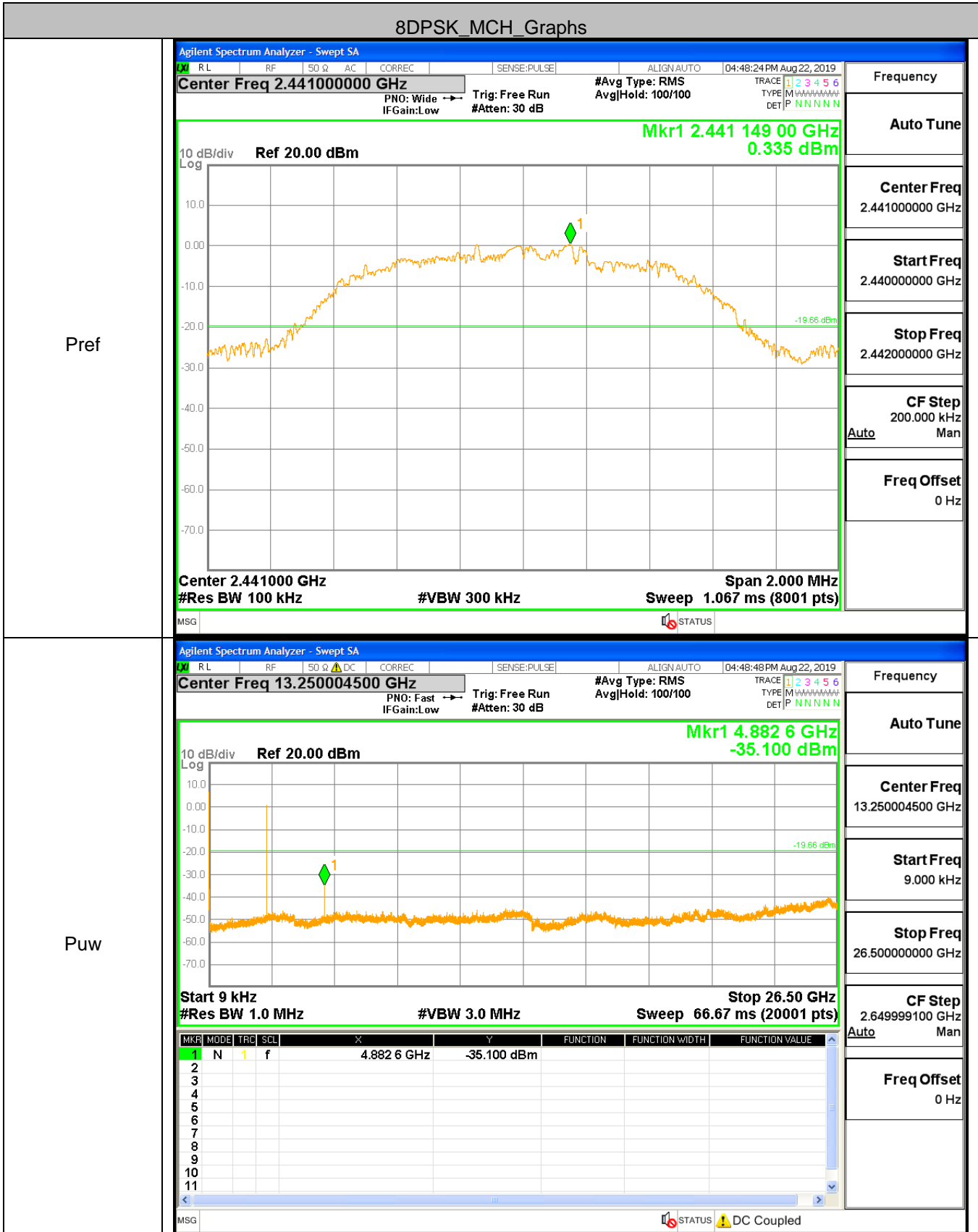
Pref

Puw

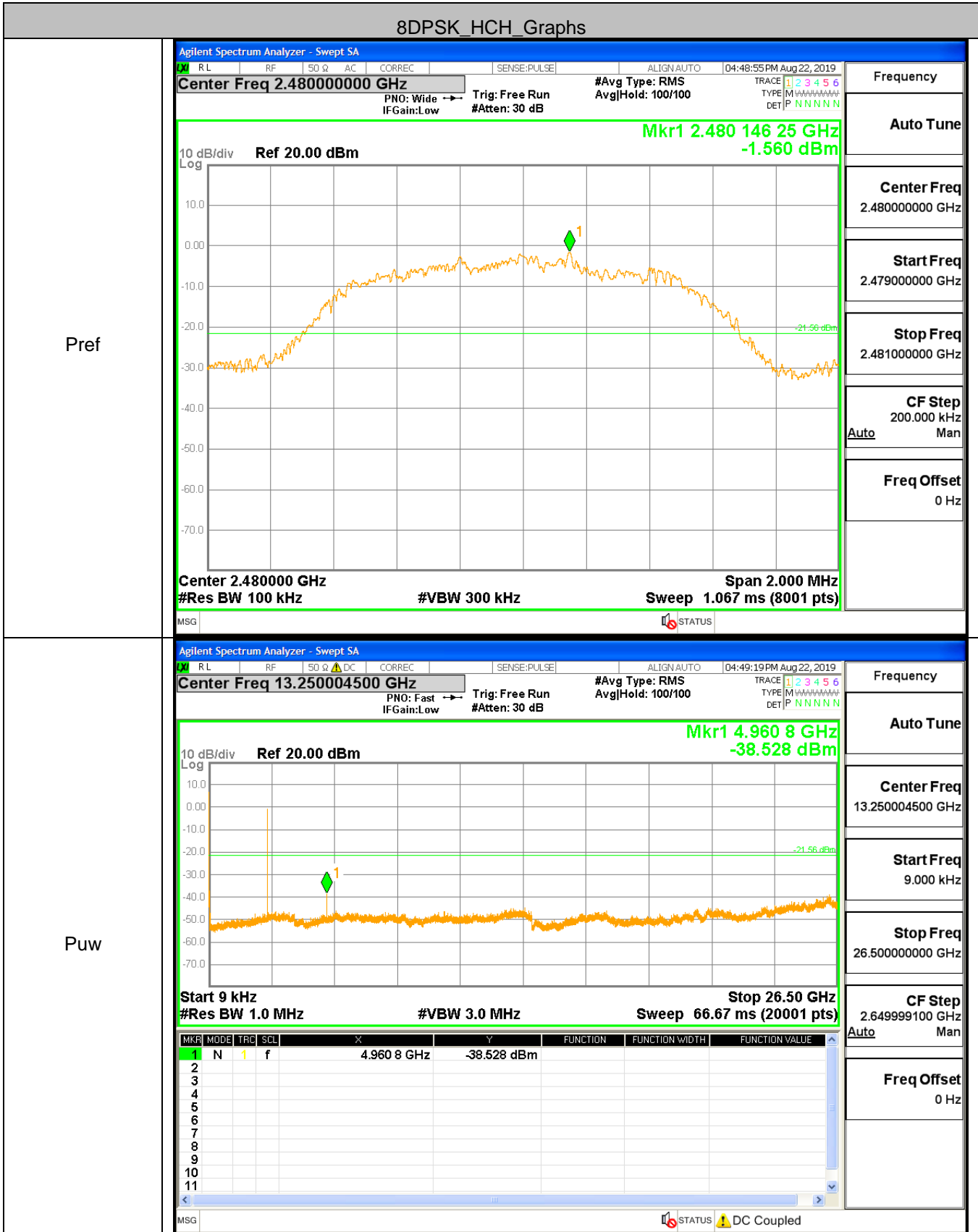
8DPSK_LCH_Graphs



8DPSK_MCH_Graphs



8DPSK_HCH_Graphs

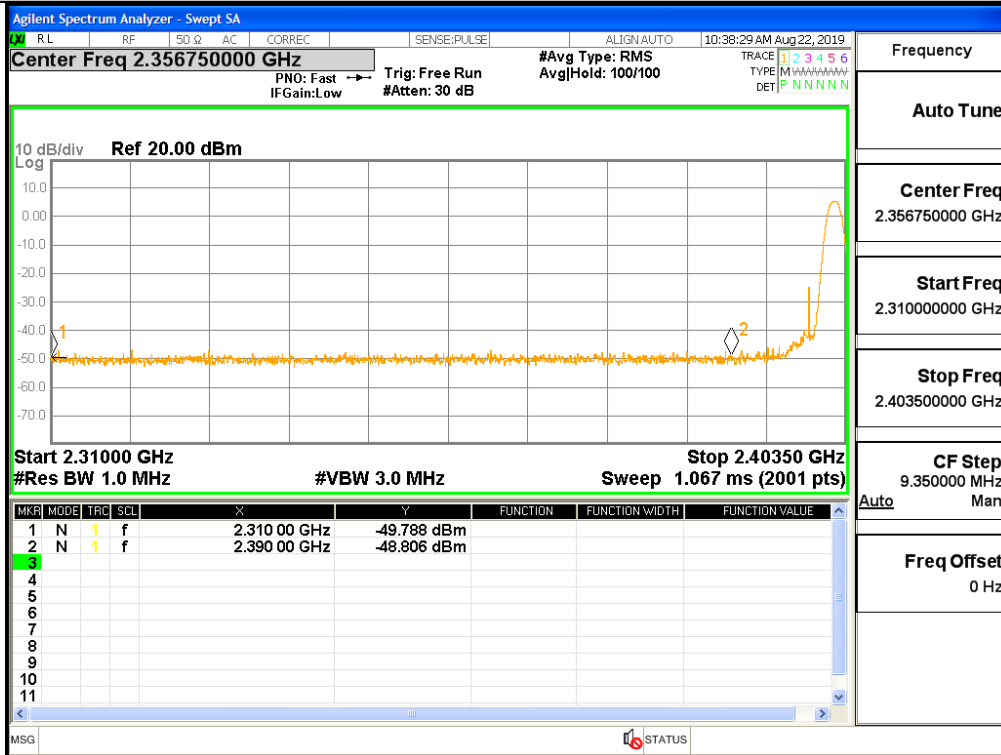


A.8 Restrict-band band-edge measurements

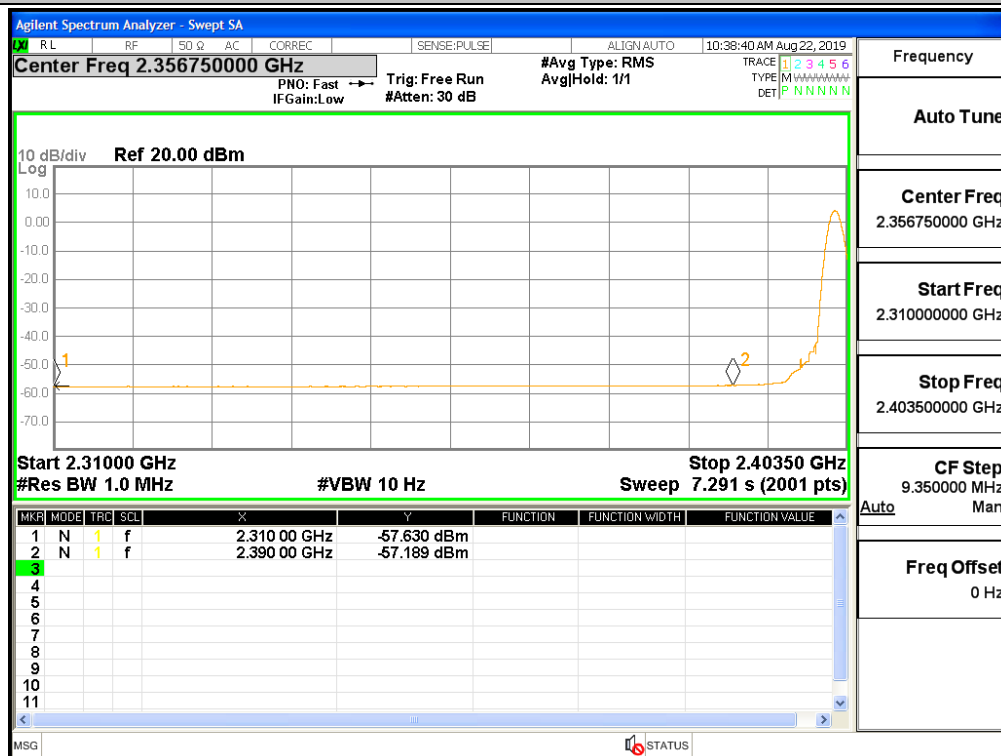
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390.00	2.00	0.00	-48.81	48.39	74	Pass
1DH5	2480	2483.53	2.00	0.00	-35.39	61.81	74	Pass
2DH5	2402	2320.80	2.00	0.00	-46.18	51.02	74	Pass
2DH5	2480	2483.58	2.00	0.00	-39.60	57.60	74	Pass
3DH5	2402	2389.94	2.00	0.00	-43.97	53.23	74	Pass
3DH5	2480	2483.50	2.00	0.00	-37.87	59.33	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390.00	2.00	0.00	-57.19	40.01	54	Pass
1DH5	2480	2483.53	2.00	0.00	-50.28	46.92	54	Pass
2DH5	2402	2320.80	2.00	0.00	-57.15	40.05	54	Pass
2DH5	2480	2483.58	2.00	0.00	-50.03	47.17	54	Pass
3DH5	2402	2389.94	2.00	0.00	-56.78	40.42	54	Pass
3DH5	2480	2483.50	2.00	0.00	-49.73	47.47	54	Pass

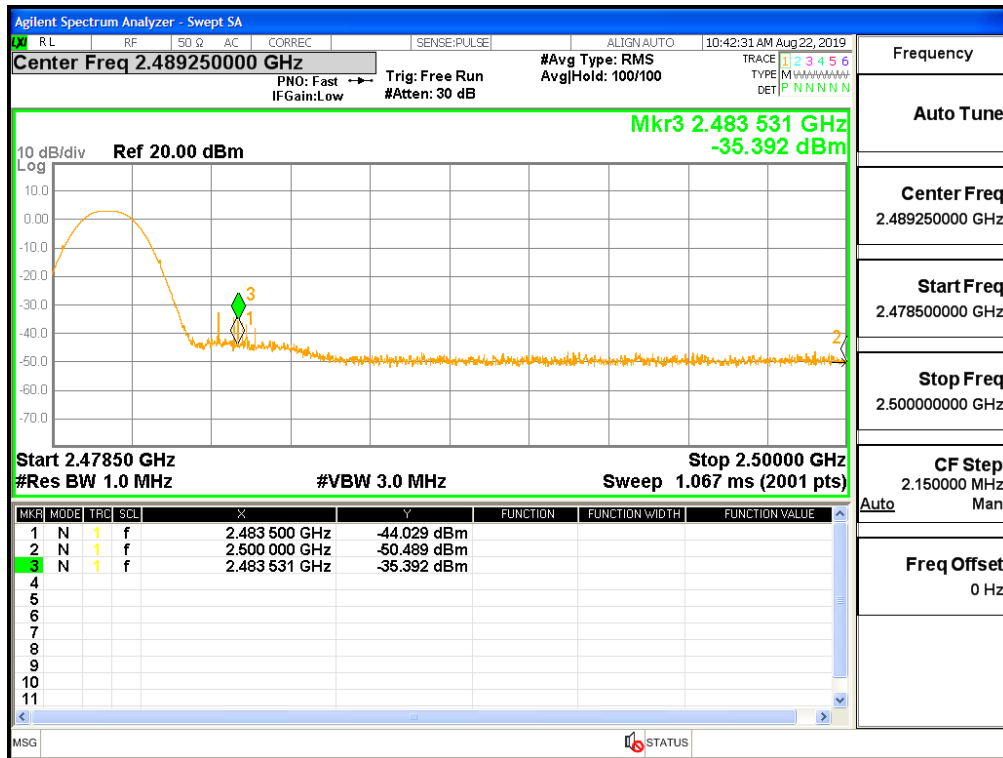
Restrict-band band-edge measurements_2402_PEAK_DH5



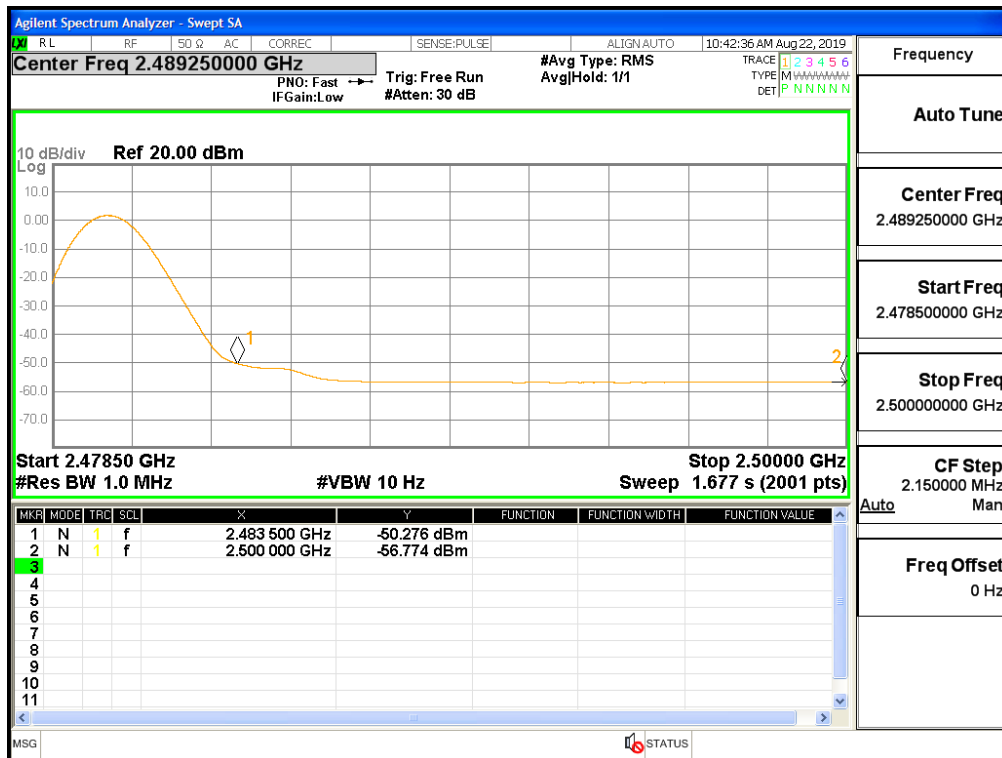
Restrict-band band-edge measurements_2402_AV_DH5



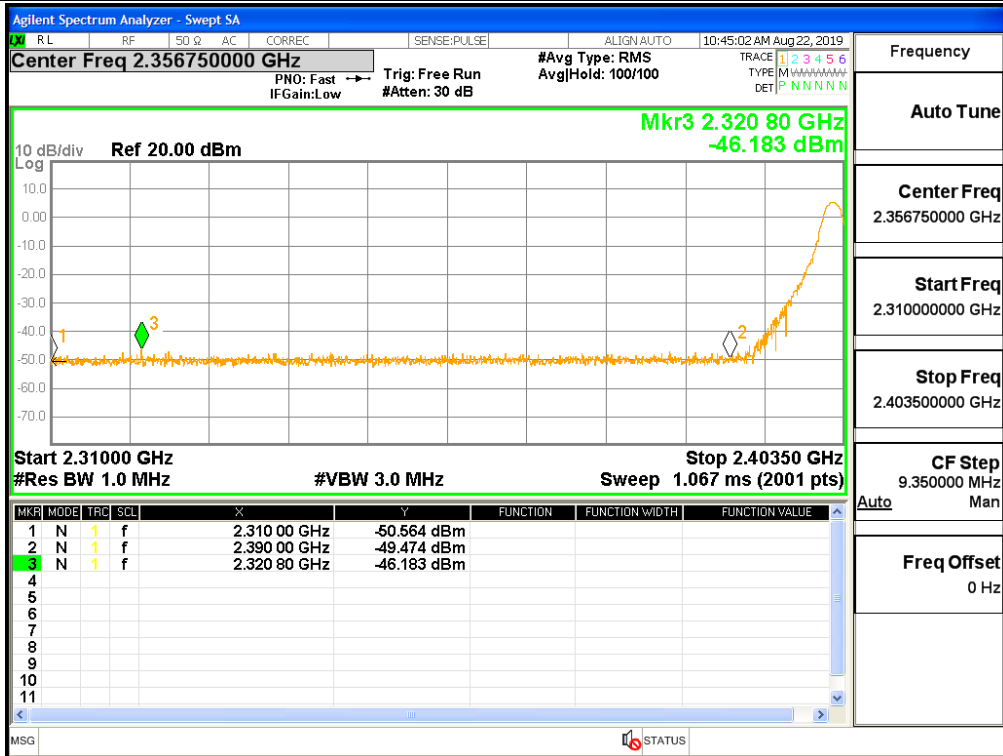
Restrict-band band-edge measurements_2480_PEAK_DH5



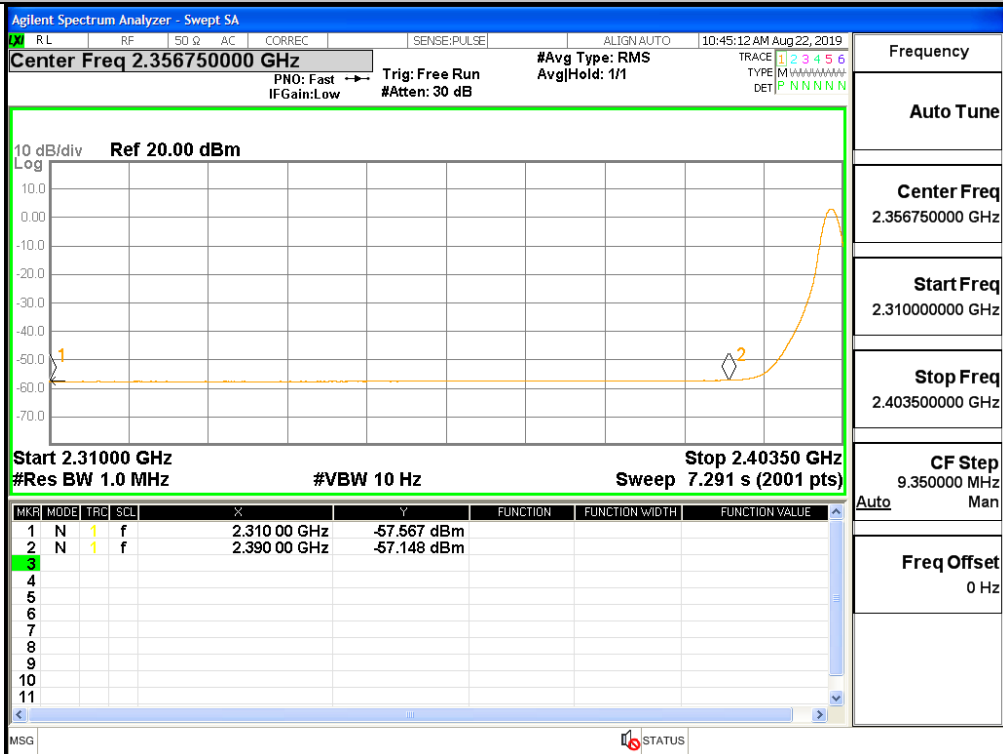
Restrict-band band-edge measurements_2480_AV_DH5



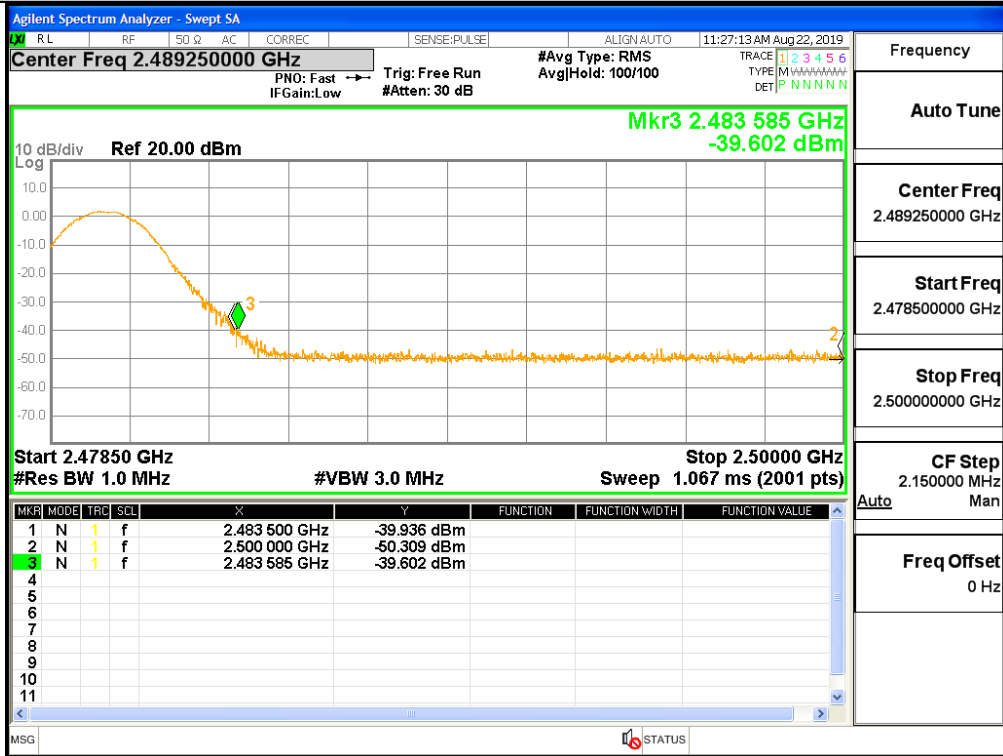
Restrict-band band-edge measurements_2402_PEAK_2DH5



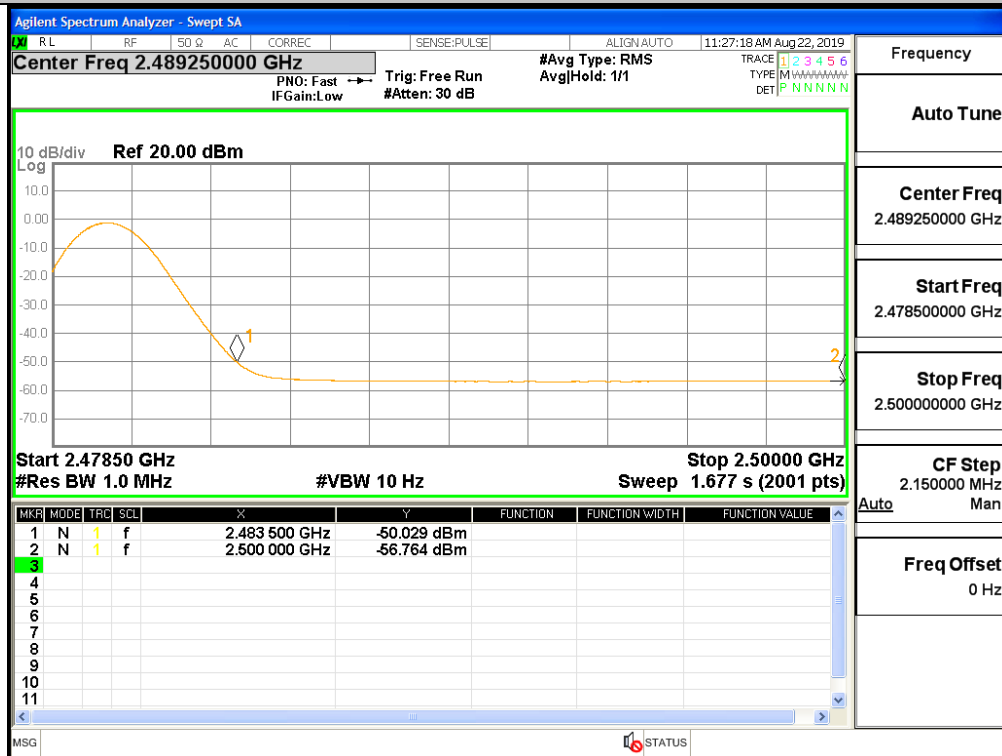
Restrict-band band-edge measurements_2402_AV_2DH5



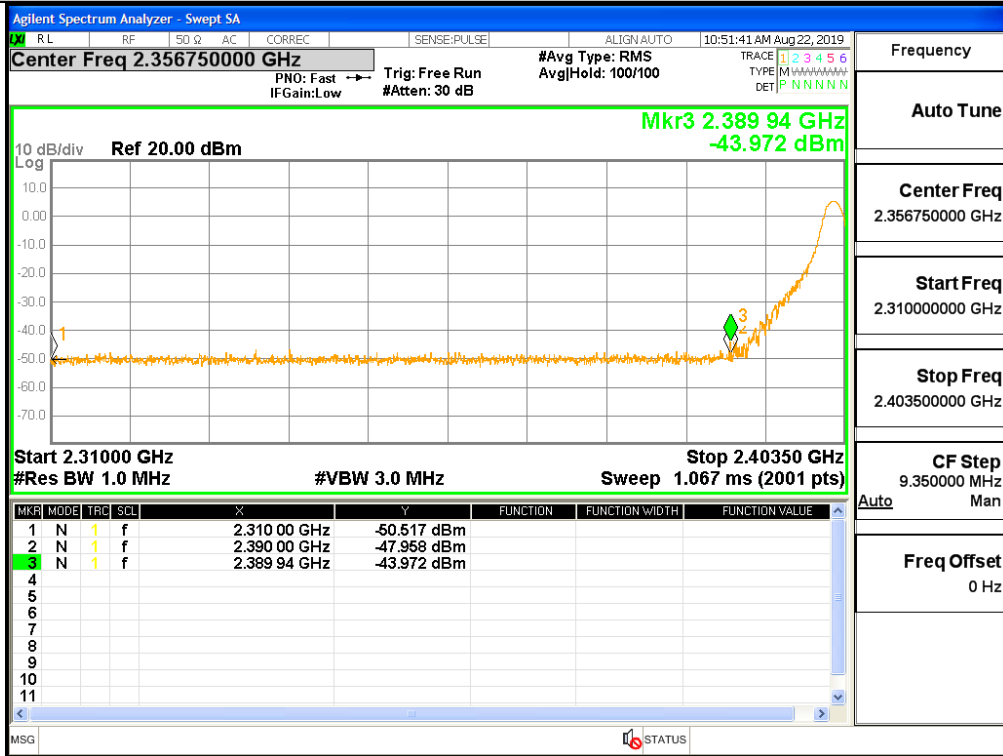
Restrict-band band-edge measurements_2480_PEAK_2DH5



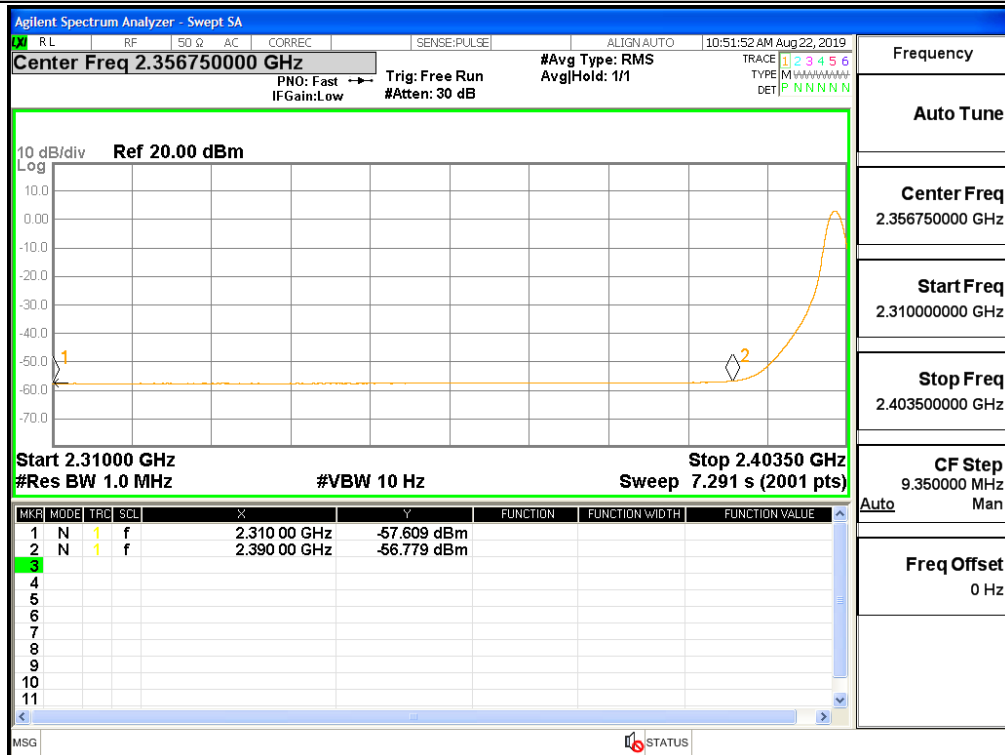
Restrict-band band-edge measurements_2480_AV_2DH5



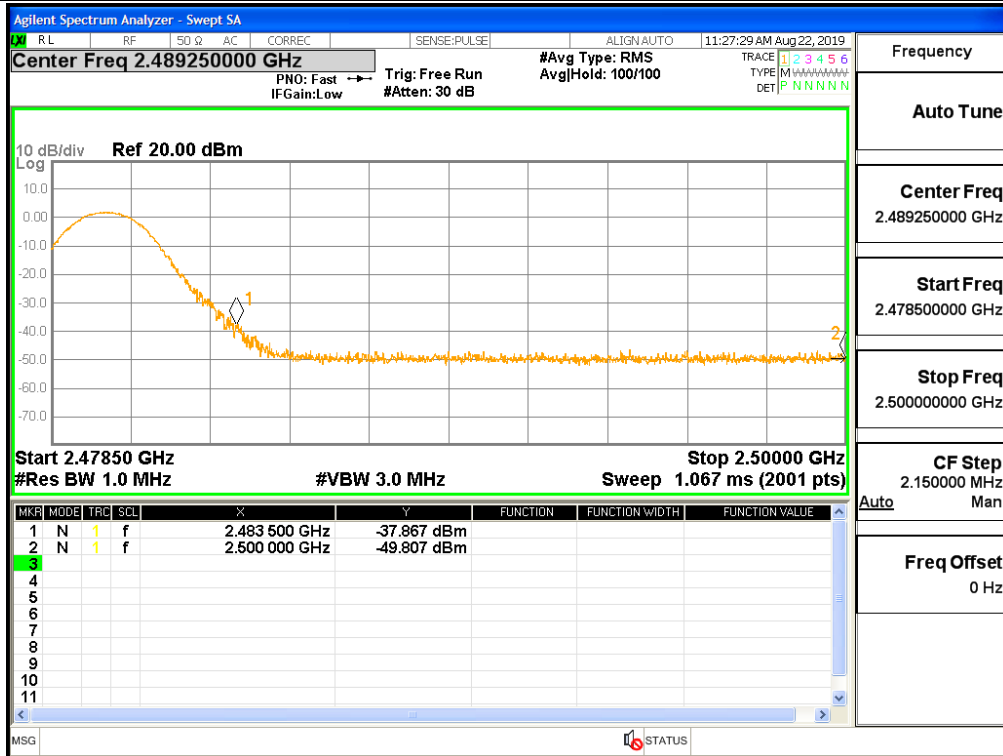
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

