

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

Product Name: TWS EARPHONE

Trade Mark: SOAIY

Test Model: T2

FCC ID: 2A085-T2

Environmental Conditions

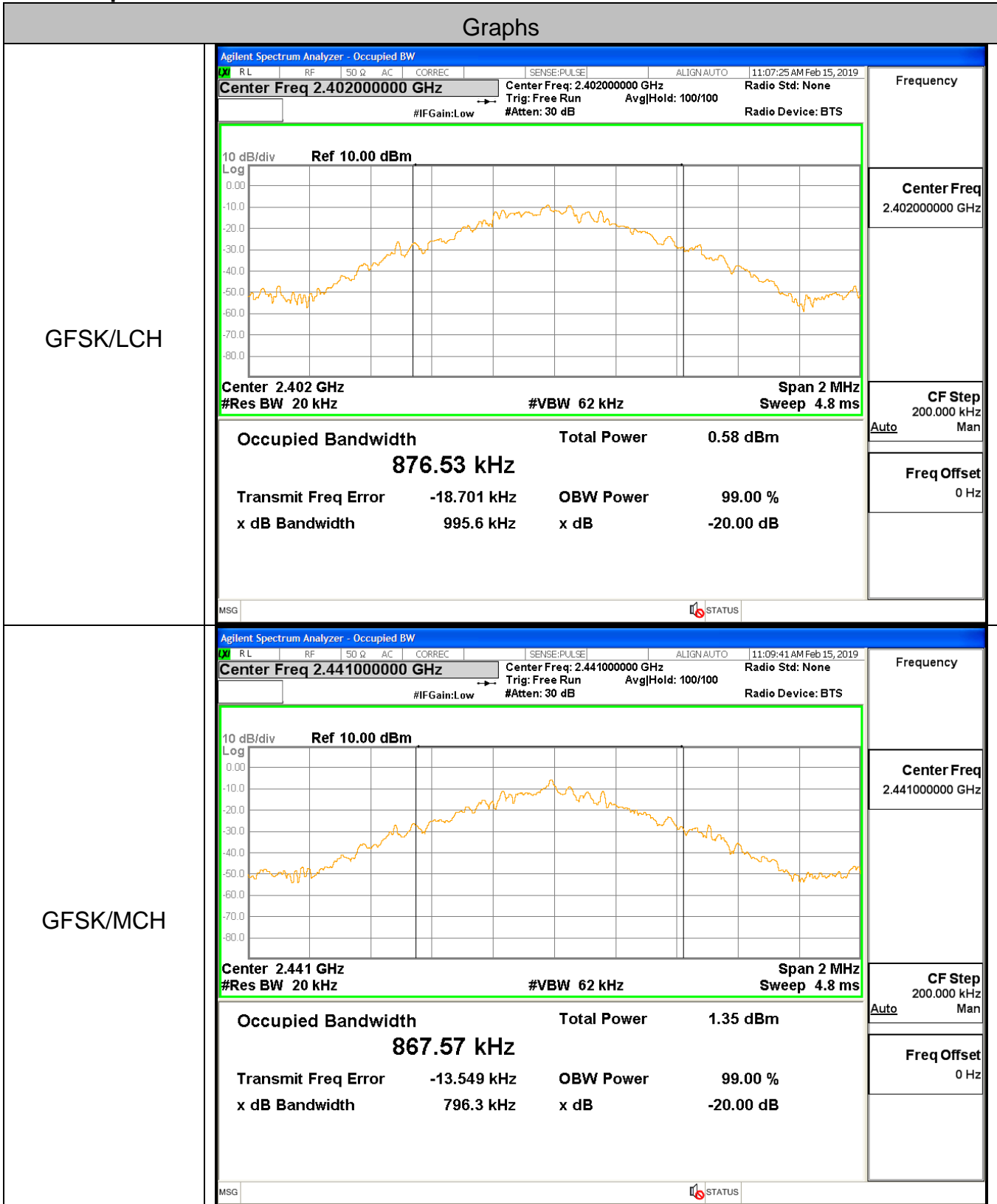
Temperature:	22.5 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

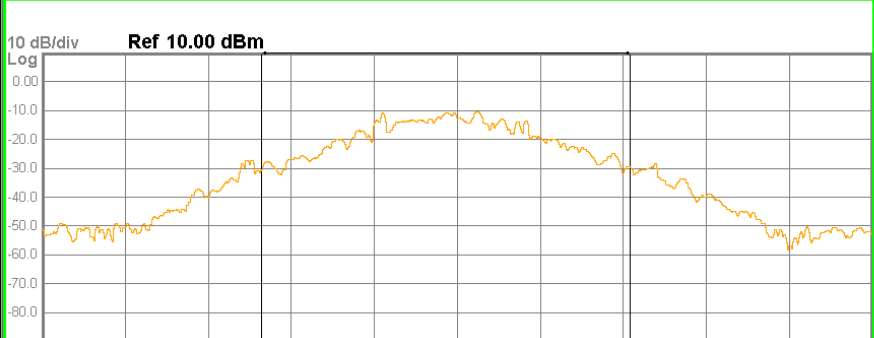
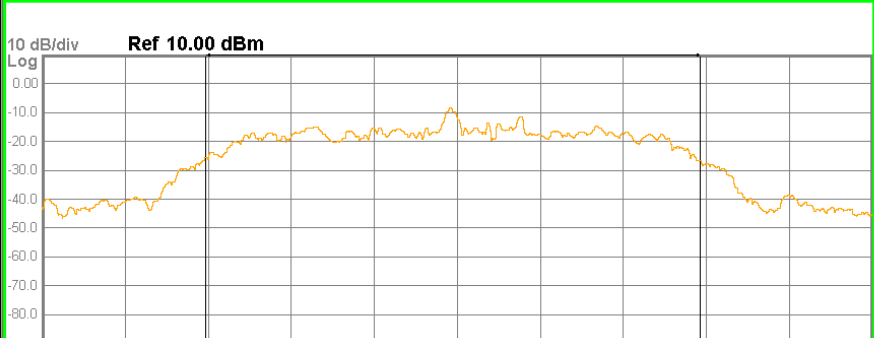
A.1 20 dB Bandwidth

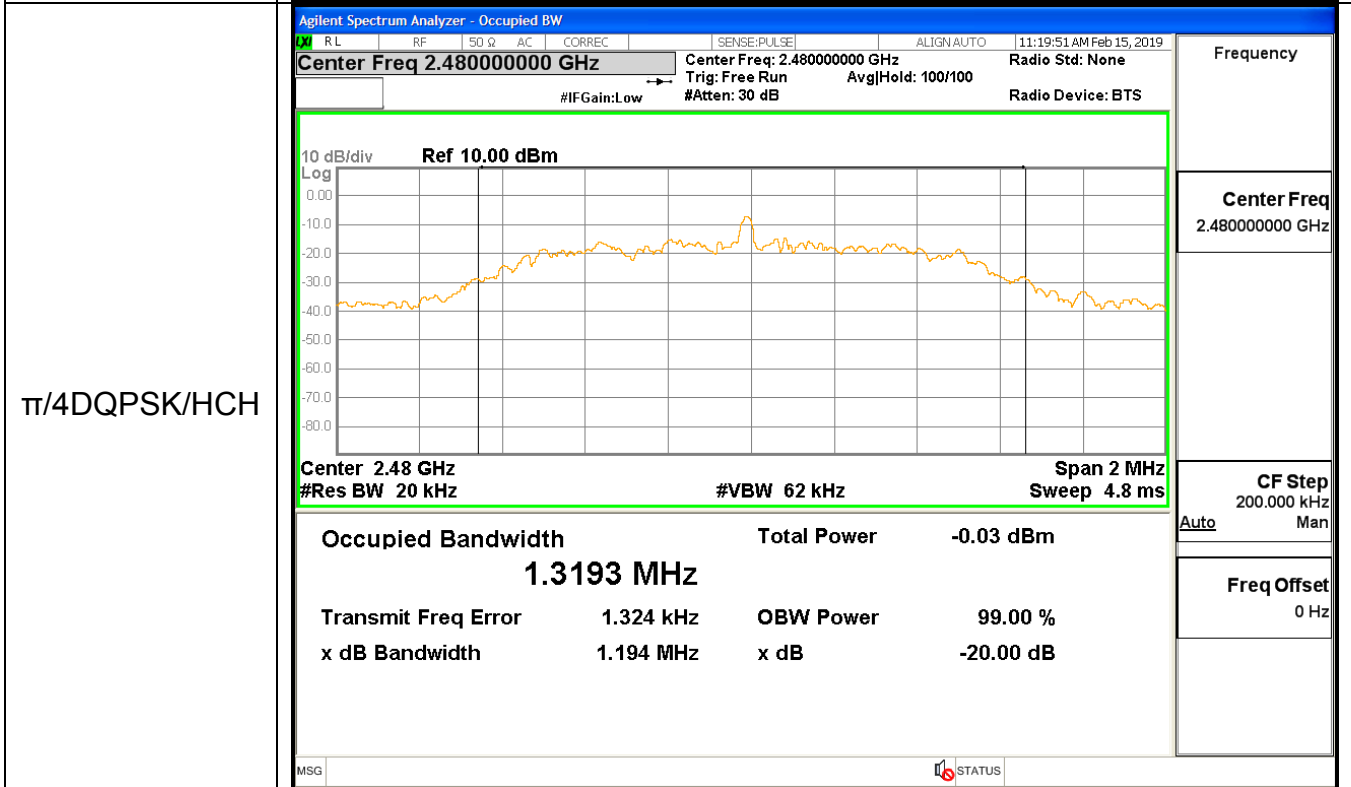
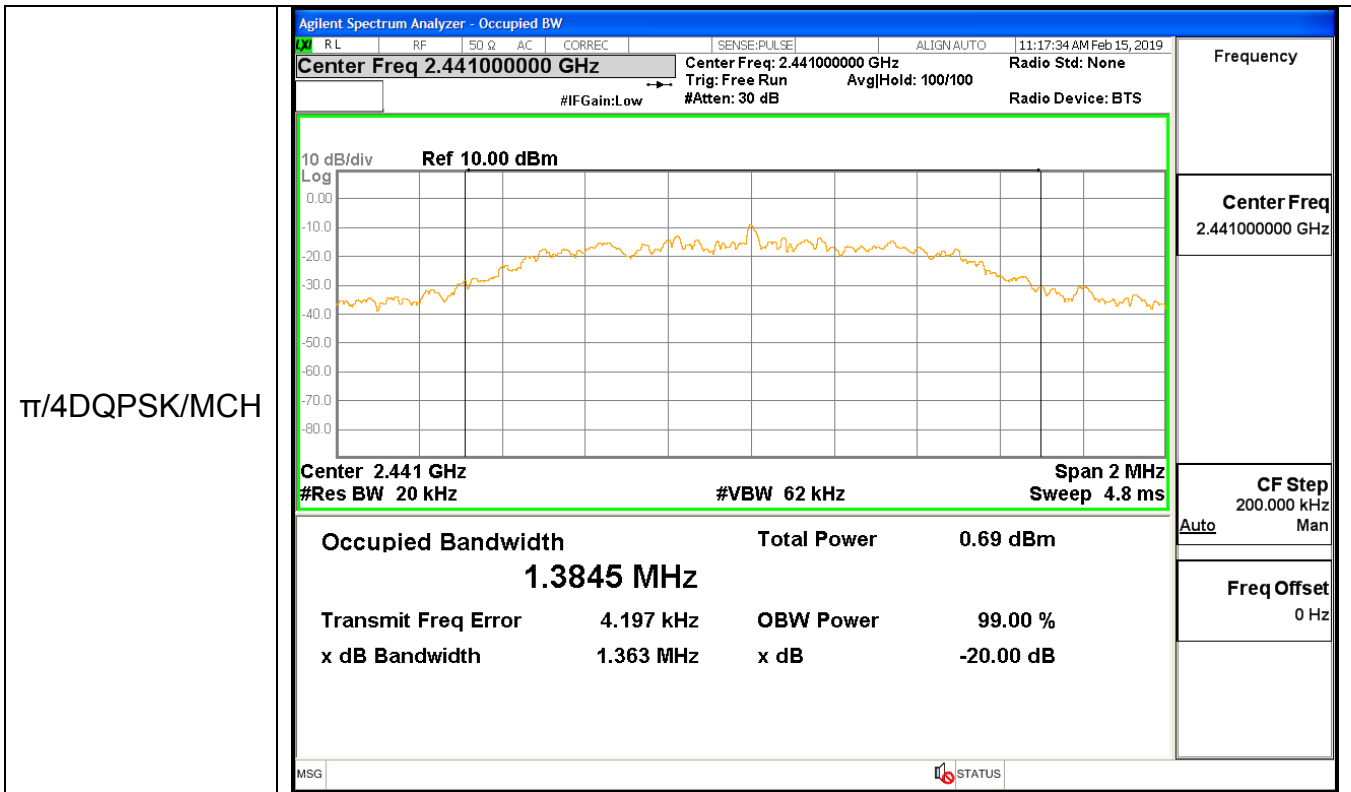
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.996	Not Specified	PASS
GFSK	MCH	0.796	Not Specified	PASS
GFSK	HCH	1.005	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.246	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.363	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.194	Not Specified	PASS
8DPSK	LCH	1.294	Not Specified	PASS
8DPSK	MCH	1.300	Not Specified	PASS
8DPSK	HCH	1.259	Not Specified	PASS

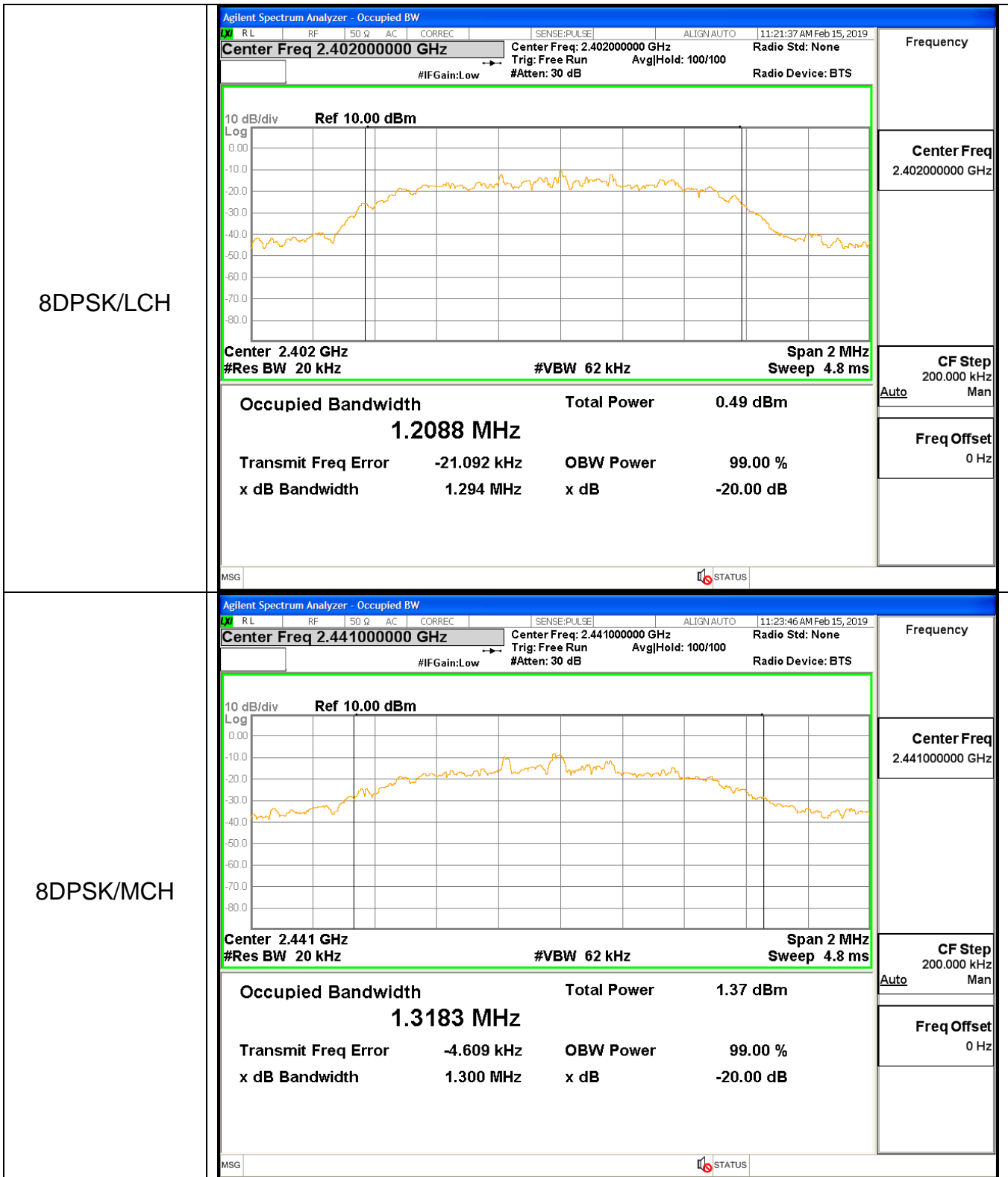
Test Graph

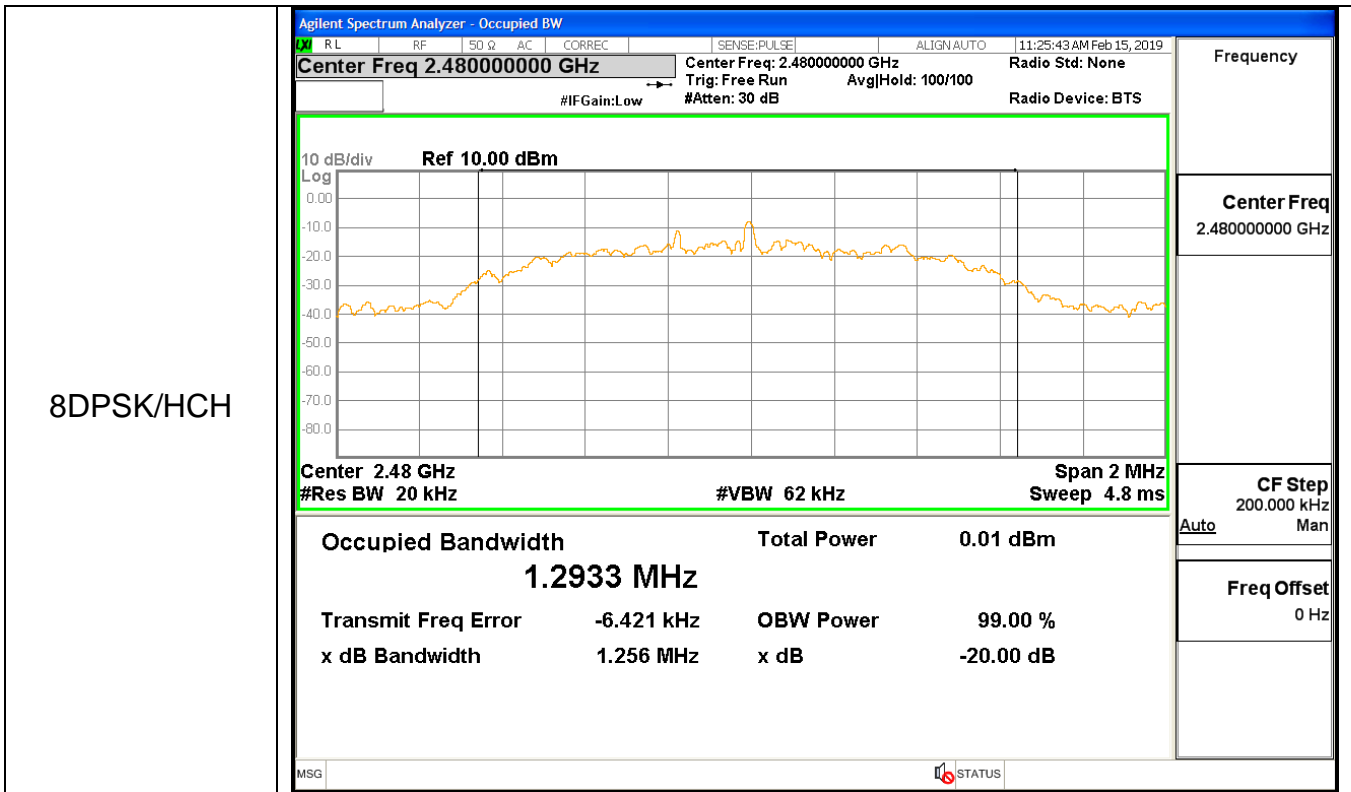
Graphs



GFSK/HCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: 0.8em; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: 0.7em; margin: 0;">RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN AUTO 11:11:52 AM Feb 15, 2019</p> <p style="font-size: 0.8em; margin: 0;">Center Freq 2.48000000 GHz Center Freq: 2.480000000 GHz Radio Std: None</p> <p style="font-size: 0.7em; margin: 0;">Trig: Free Run AvgHold: 100/100</p> <p style="font-size: 0.7em; margin: 0;">#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: 0.7em; margin: 0;">Center 2.48 GHz Span 2 MHz</p> <p style="font-size: 0.7em; margin: 0;">#Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms</p> <table style="width: 100%; font-size: 0.8em; margin: 5px 0;"> <tr> <td>Occupied Bandwidth</td> <td style="text-align: center;">886.88 kHz</td> <td>Total Power</td> <td style="text-align: center;">-0.23 dBm</td> </tr> <tr> <td>Transmit Freq Error</td> <td style="text-align: center;">-26.882 kHz</td> <td>OBW Power</td> <td style="text-align: center;">99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td style="text-align: center;">1.005 MHz</td> <td>x dB</td> <td style="text-align: center;">-20.00 dB</td> </tr> </table> </div> </div>	Occupied Bandwidth	886.88 kHz	Total Power	-0.23 dBm	Transmit Freq Error	-26.882 kHz	OBW Power	99.00 %	x dB Bandwidth	1.005 MHz	x dB	-20.00 dB	<p style="font-size: 0.8em; margin: 0;">Frequency</p> <p style="font-size: 0.8em; margin: 0;">Center Freq 2.48000000 GHz</p> <p style="font-size: 0.8em; margin: 0;">CF Step 200.000 kHz</p> <p style="font-size: 0.8em; margin: 0;">Auto Man</p> <p style="font-size: 0.8em; margin: 0;">Freq Offset 0 Hz</p>
	Occupied Bandwidth	886.88 kHz	Total Power	-0.23 dBm										
Transmit Freq Error	-26.882 kHz	OBW Power	99.00 %											
x dB Bandwidth	1.005 MHz	x dB	-20.00 dB											
MSG	STATUS													
π/4DQPSK/LCH	<div style="border: 1px solid black; padding: 5px;"> <p style="font-size: 0.8em; margin: 0;">Agilent Spectrum Analyzer - Occupied BW</p> <p style="font-size: 0.7em; margin: 0;">RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN AUTO 11:13:56 AM Feb 15, 2019</p> <p style="font-size: 0.8em; margin: 0;">Center Freq 2.40200000 GHz Center Freq: 2.402000000 GHz Radio Std: None</p> <p style="font-size: 0.7em; margin: 0;">Trig: Free Run AvgHold: 100/100</p> <p style="font-size: 0.7em; margin: 0;">#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: 0.7em; margin: 0;">Center 2.402 GHz Span 2 MHz</p> <p style="font-size: 0.7em; margin: 0;">#Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms</p> <table style="width: 100%; font-size: 0.8em; margin: 5px 0;"> <tr> <td>Occupied Bandwidth</td> <td style="text-align: center;">1.1928 MHz</td> <td>Total Power</td> <td style="text-align: center;">0.65 dBm</td> </tr> <tr> <td>Transmit Freq Error</td> <td style="text-align: center;">-10.943 kHz</td> <td>OBW Power</td> <td style="text-align: center;">99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td style="text-align: center;">1.246 MHz</td> <td>x dB</td> <td style="text-align: center;">-20.00 dB</td> </tr> </table> </div> </div>	Occupied Bandwidth	1.1928 MHz	Total Power	0.65 dBm	Transmit Freq Error	-10.943 kHz	OBW Power	99.00 %	x dB Bandwidth	1.246 MHz	x dB	-20.00 dB	<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</p> <p style="font-size: 0.8em; margin: 0;">Auto Man</p> <p style="font-size: 0.8em; margin: 0;">Freq Offset 0 Hz</p>
	Occupied Bandwidth	1.1928 MHz	Total Power	0.65 dBm										
Transmit Freq Error	-10.943 kHz	OBW Power	99.00 %											
x dB Bandwidth	1.246 MHz	x dB	-20.00 dB											
MSG	STATUS													



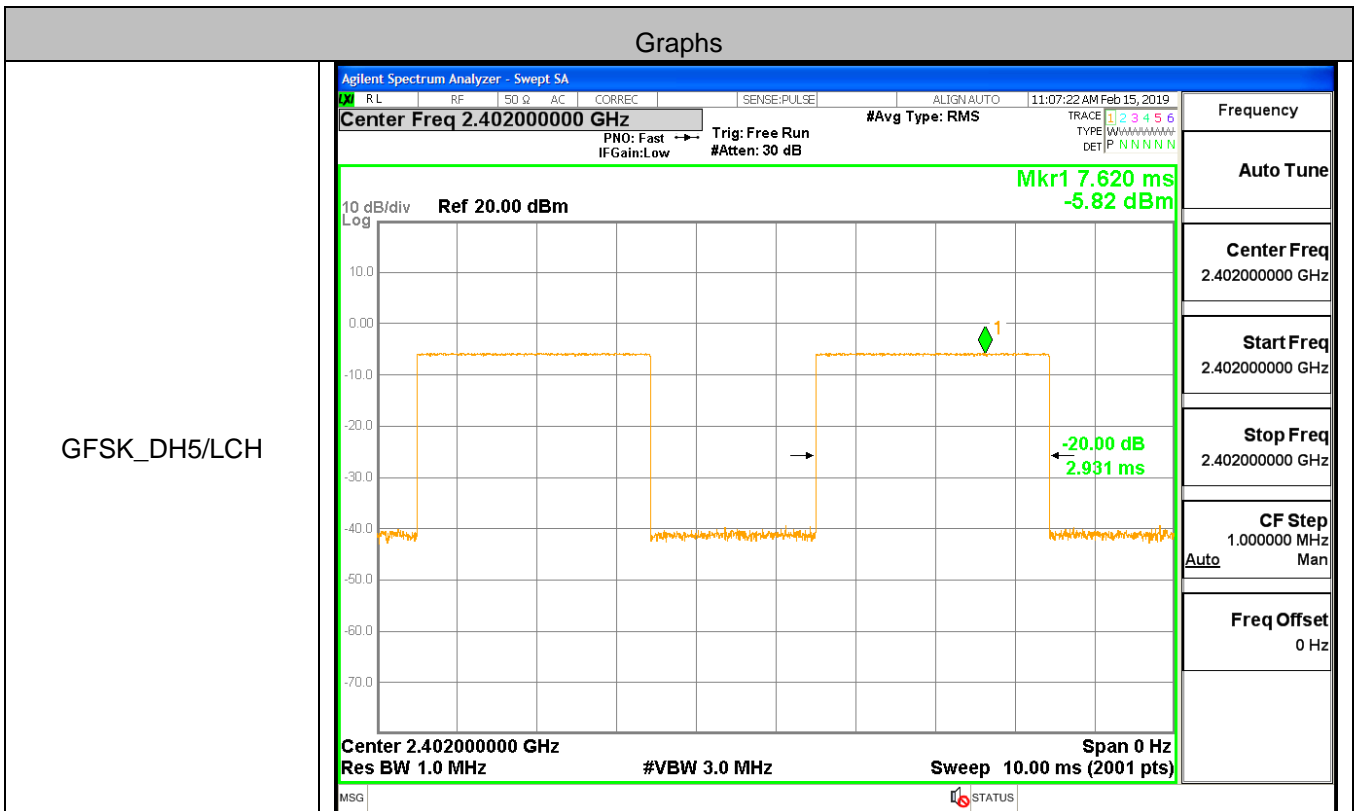




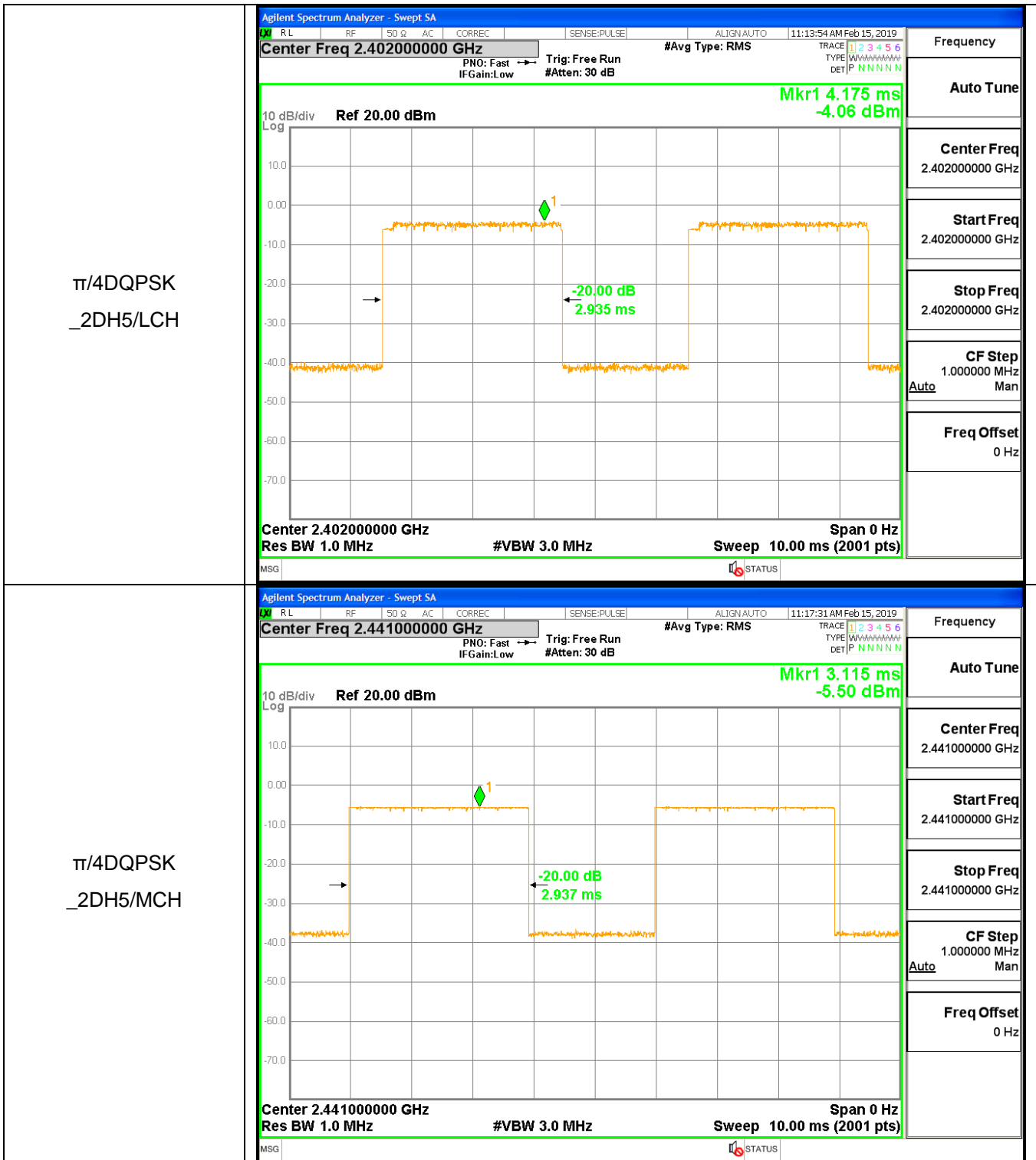
A.2 Dwell Time

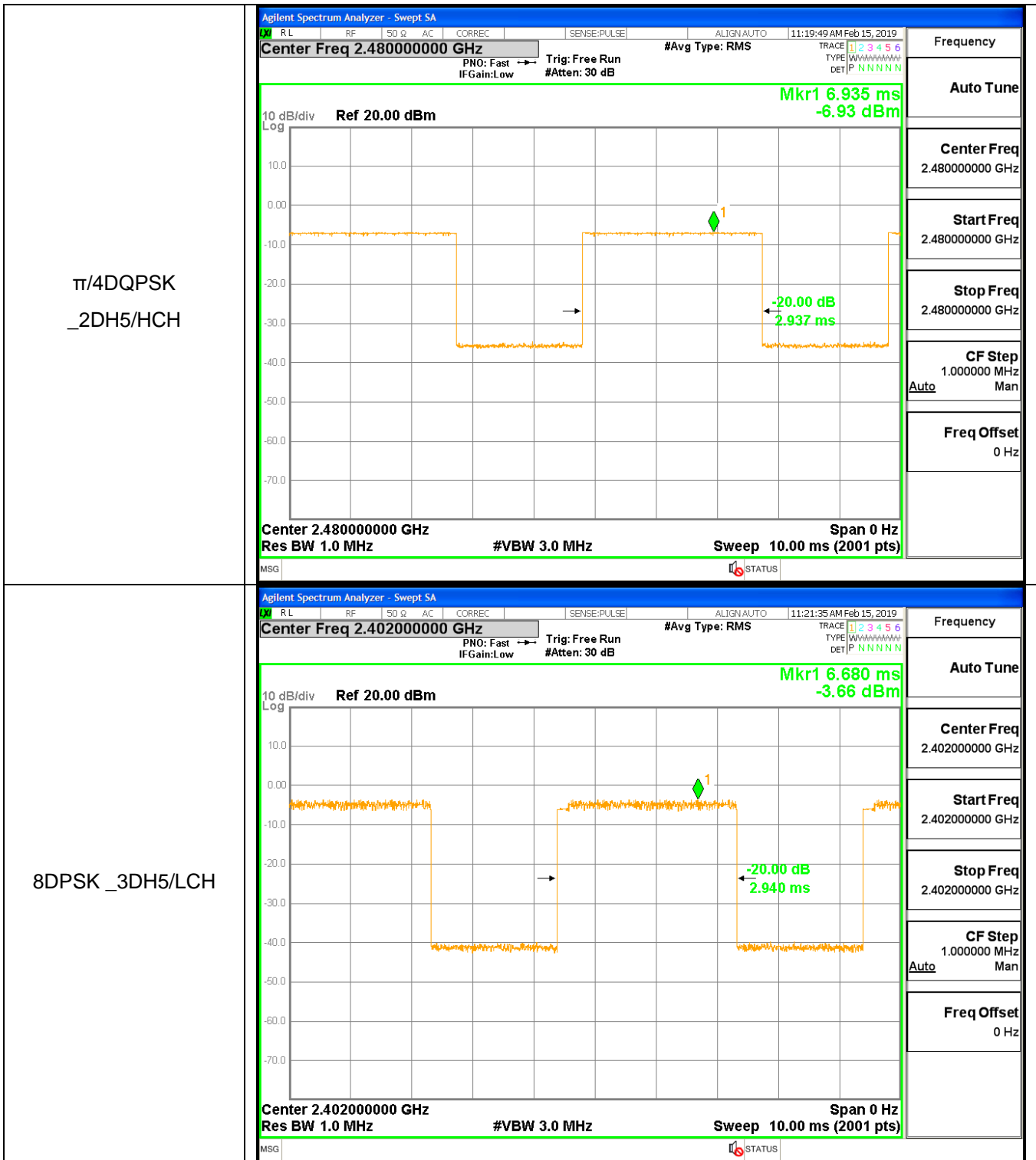
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002918966	106.7	0.31145362	0.4	PASS
GFSK	DH5	MCH	0.00291875	106.7	0.311430619	0.4	PASS
GFSK	DH5	HCH	0.002918624	106.7	0.311417151	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002925892	106.7	0.312192632	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002925701	106.7	0.312172303	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002926827	106.7	0.312292486	0.4	PASS
8DPSK	3DH5	LCH	0.002927299	106.7	0.312342761	0.4	PASS
8DPSK	3DH5	MCH	0.002927584	106.7	0.312373177	0.4	PASS
8DPSK	3DH5	HCH	0.00292662	106.7	0.312270315	0.4	PASS

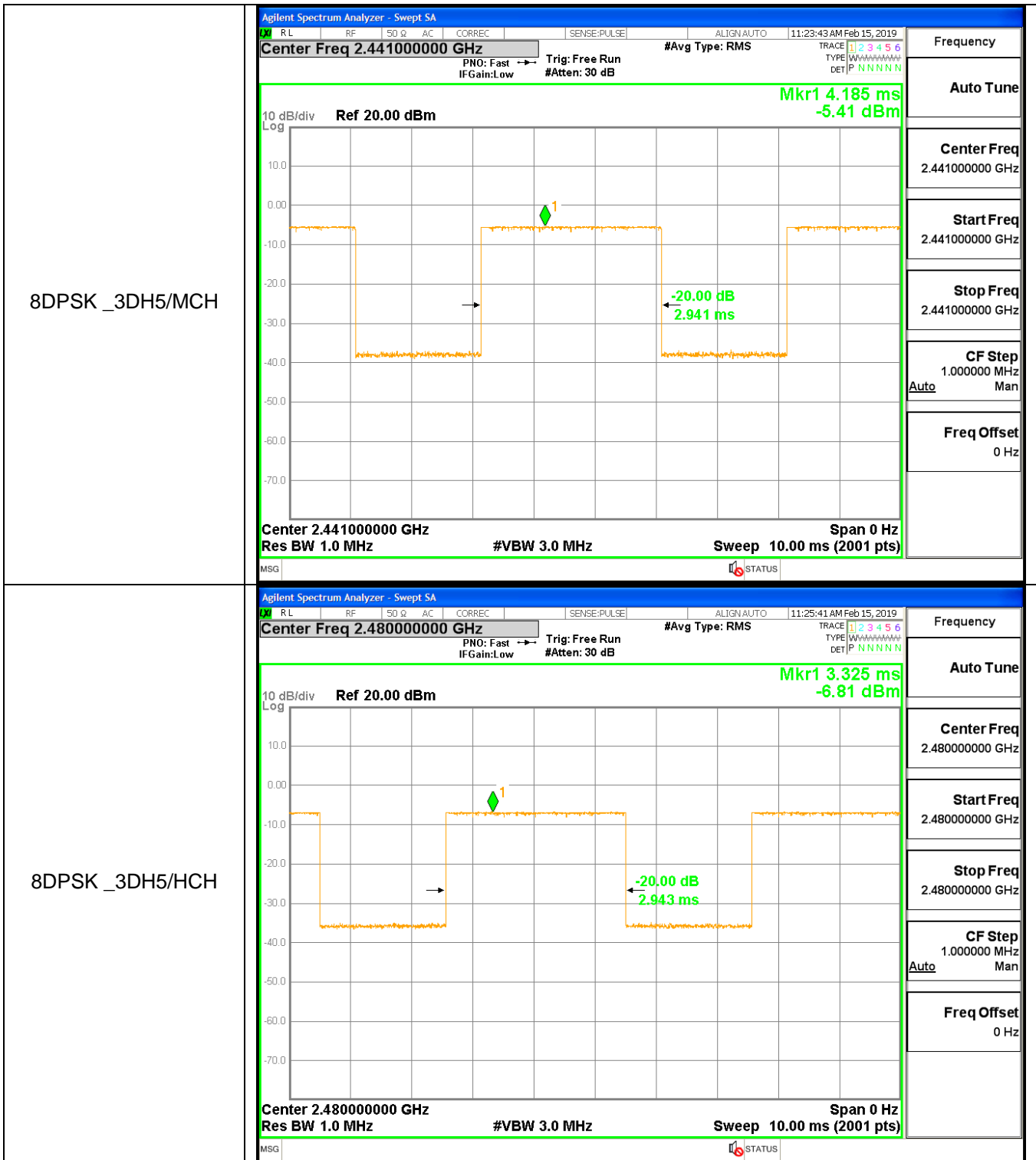
Test Graph







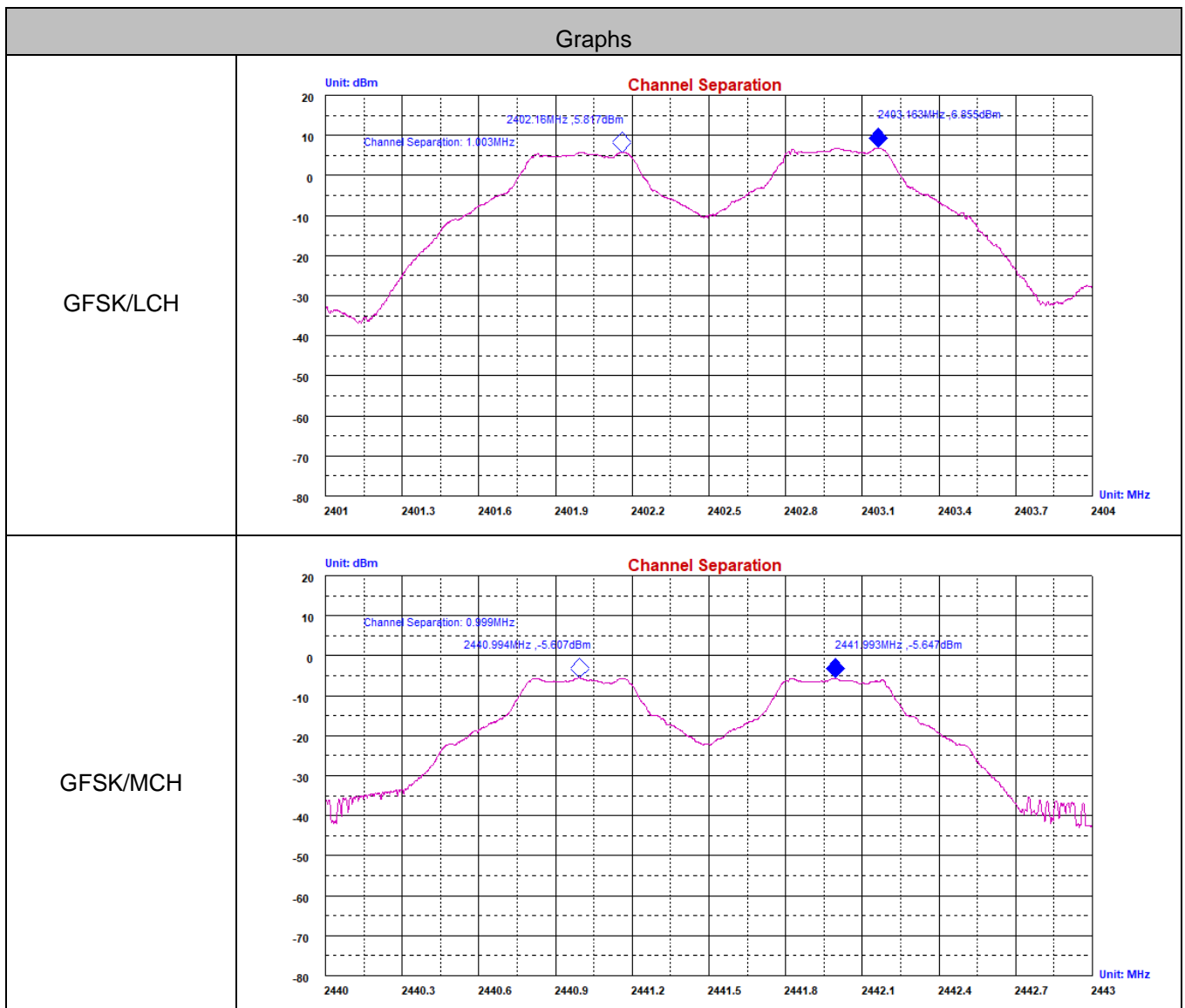


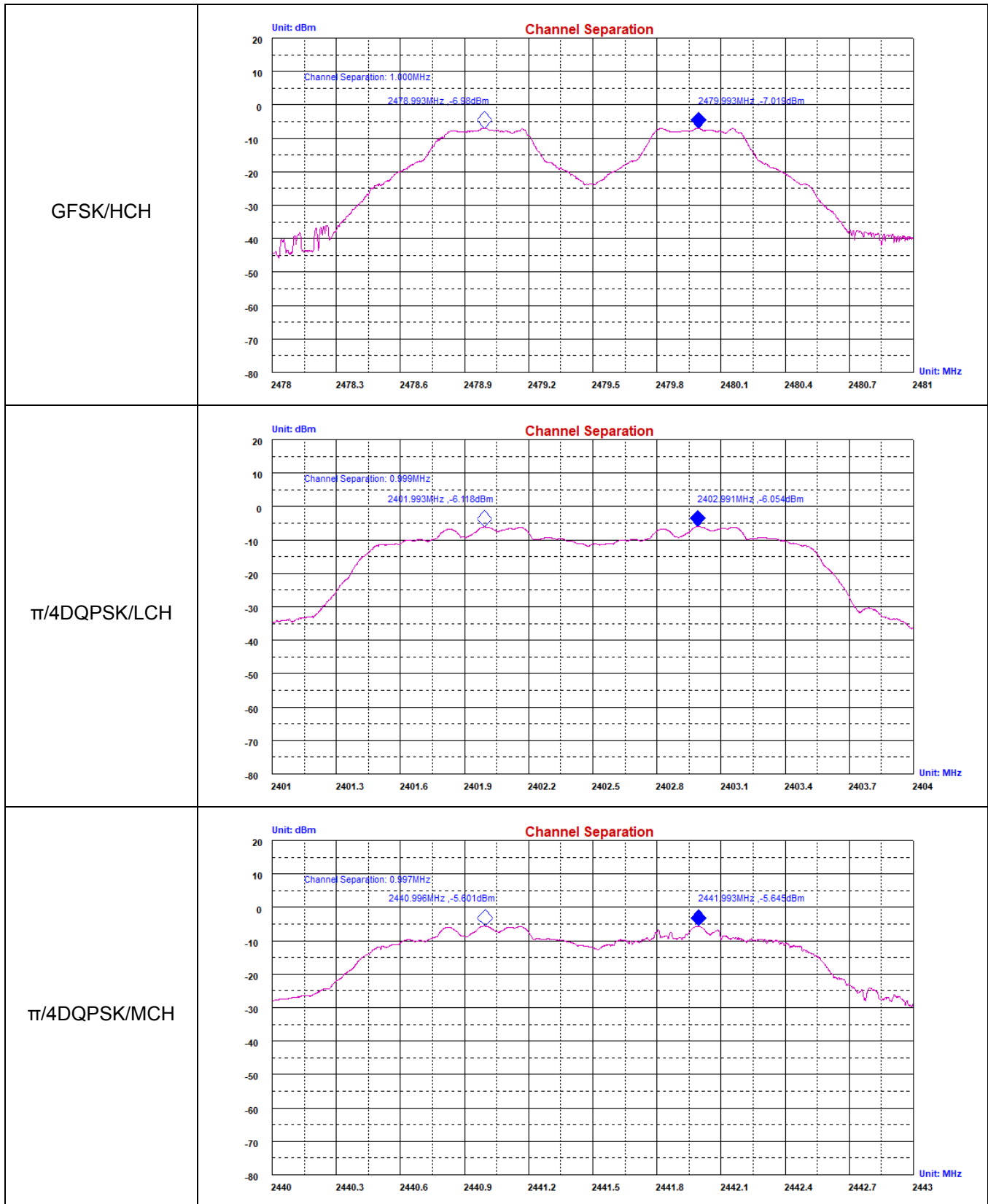


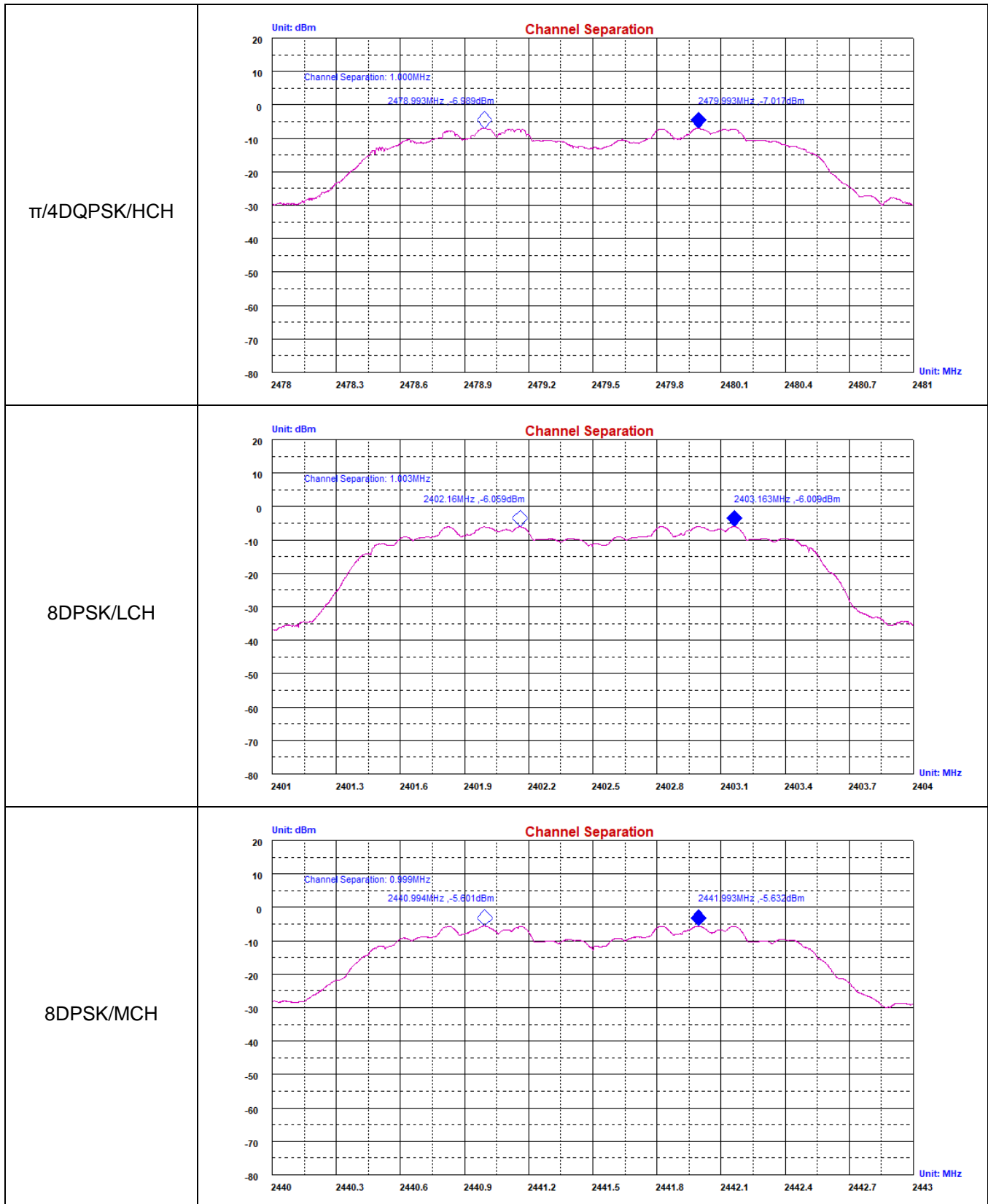
A.3 Carrier Frequency Separation

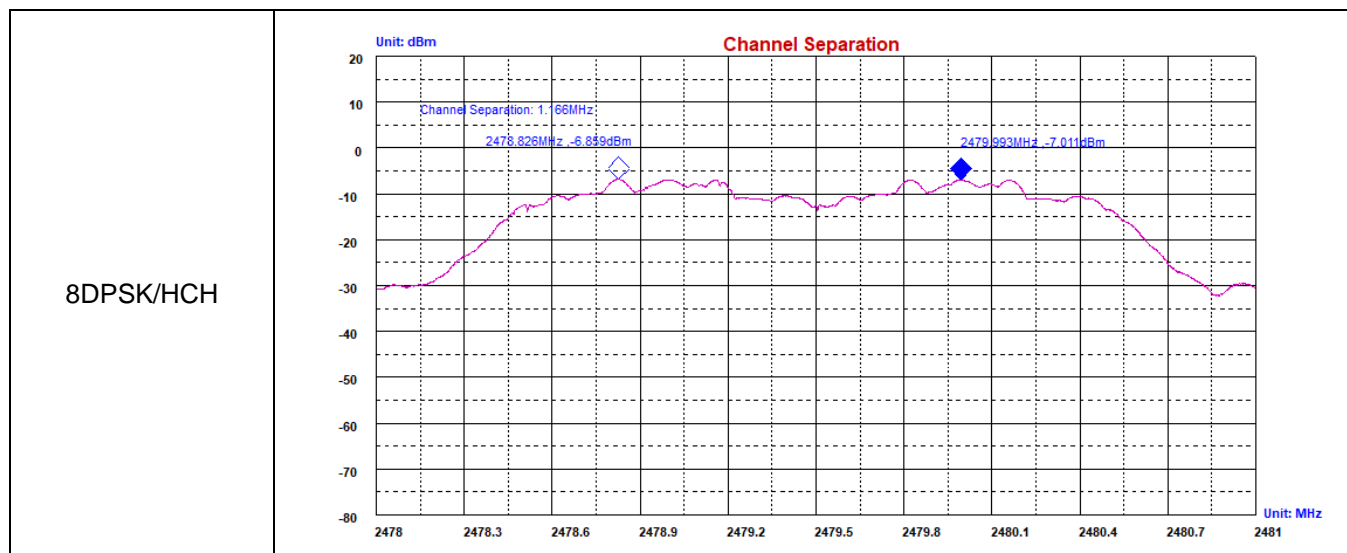
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.003	0.664	PASS
GFSK	MCH	0.999	0.531	PASS
GFSK	HCH	1.000	0.673	PASS
$\pi/4$ DQPSK	LCH	0.999	0.831	PASS
$\pi/4$ DQPSK	MCH	0.997	0.909	PASS
$\pi/4$ DQPSK	HCH	1.000	0.796	PASS
8DPSK	LCH	1.003	0.863	PASS
8DPSK	MCH	0.999	0.867	PASS
8DPSK	HCH	1.166	0.839	PASS

Test Graph





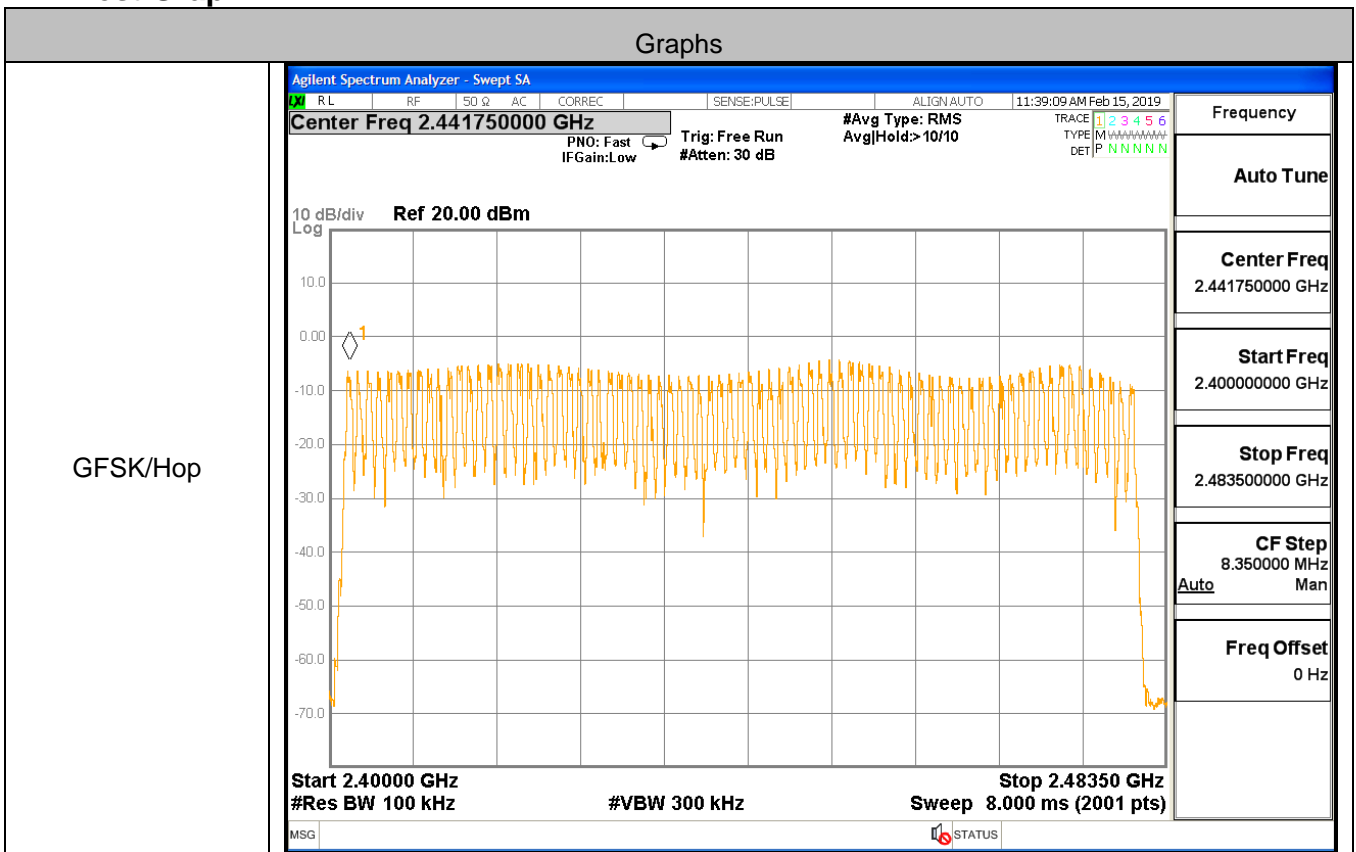


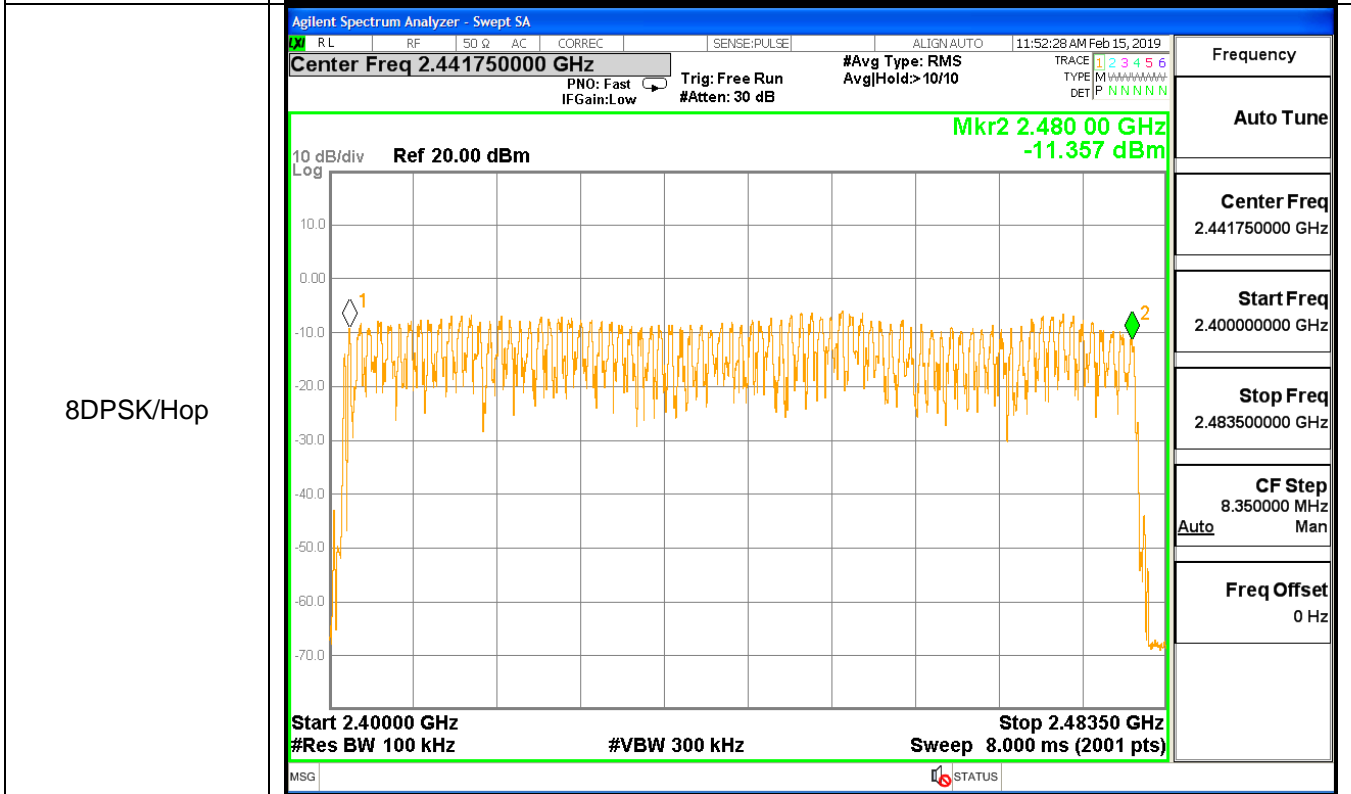
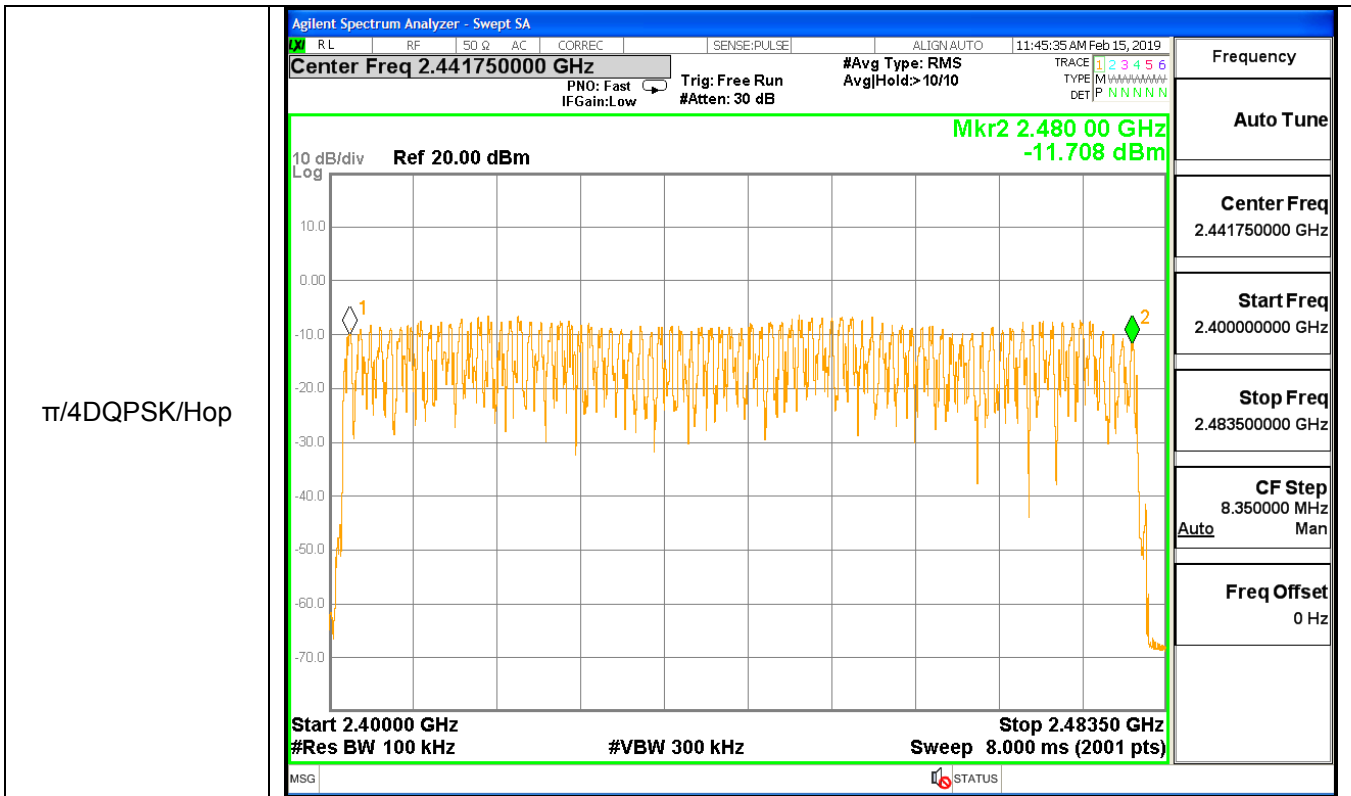


A.4 Hopping Channel Number

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

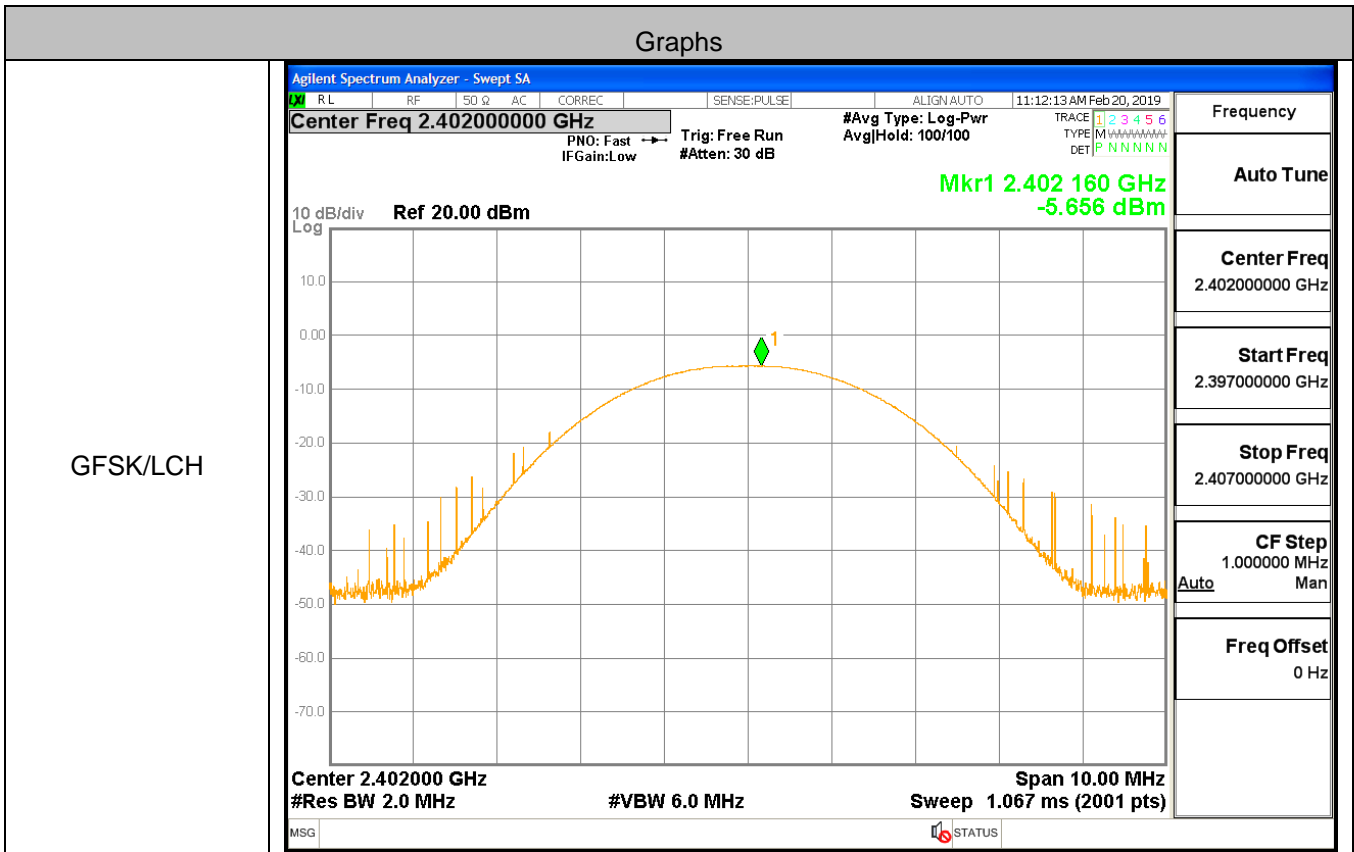




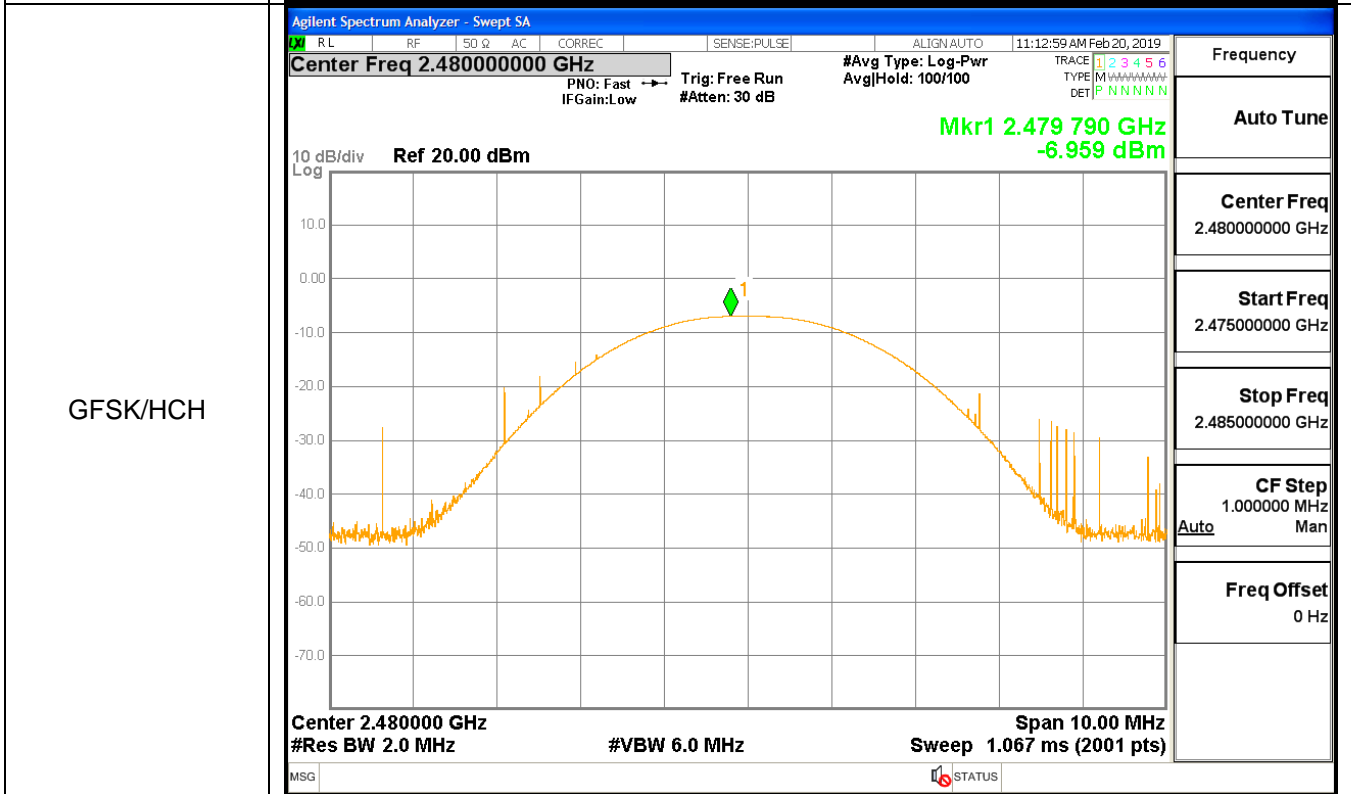
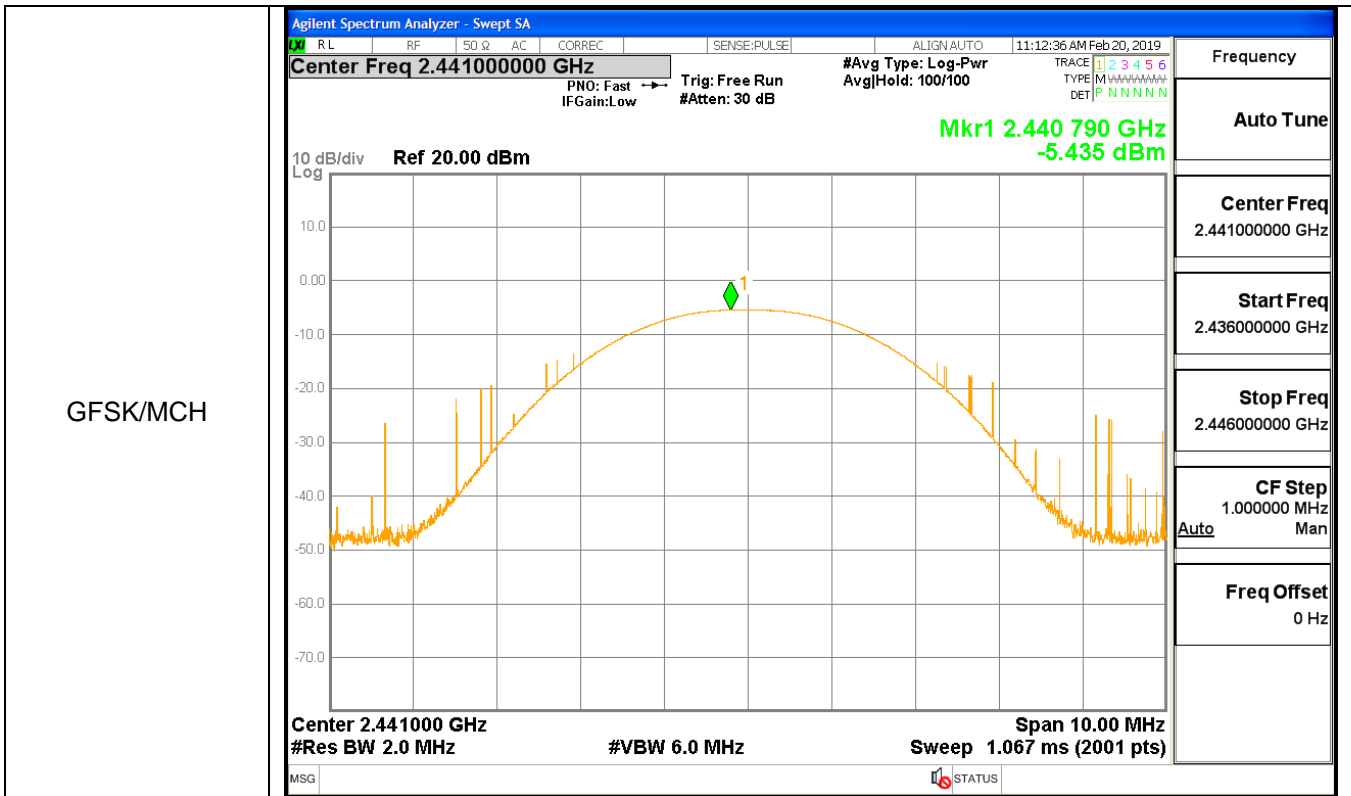
A.5 Conducted Peak Output Power

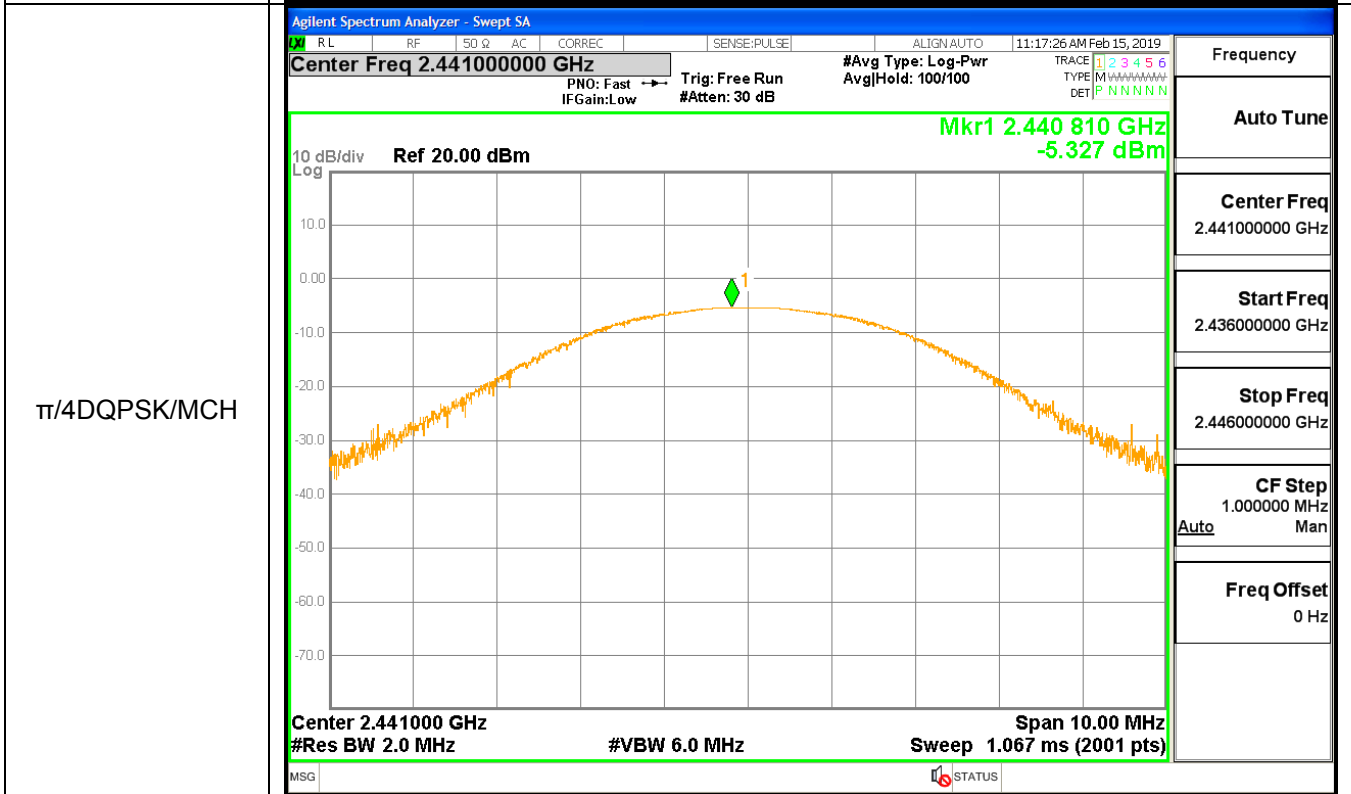
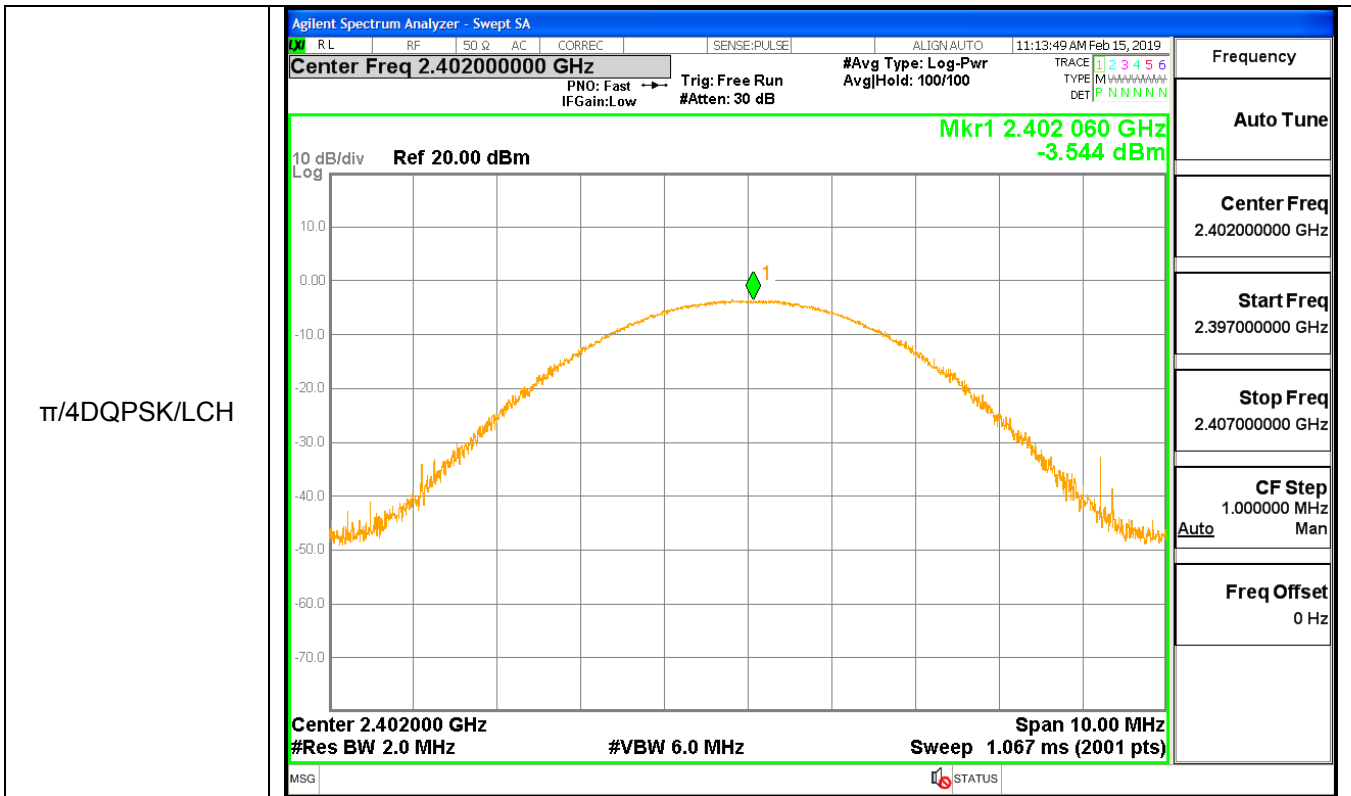
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.656	21	PASS
GFSK	MCH	-5.435	21	PASS
GFSK	HCH	-6.959	21	PASS
$\pi/4$ DQPSK	LCH	-3.544	21	PASS
$\pi/4$ DQPSK	MCH	-5.327	21	PASS
$\pi/4$ DQPSK	HCH	-6.781	21	PASS
8DPSK	LCH	-3.160	21	PASS
8DPSK	MCH	-5.296	21	PASS
8DPSK	HCH	-6.761	21	PASS

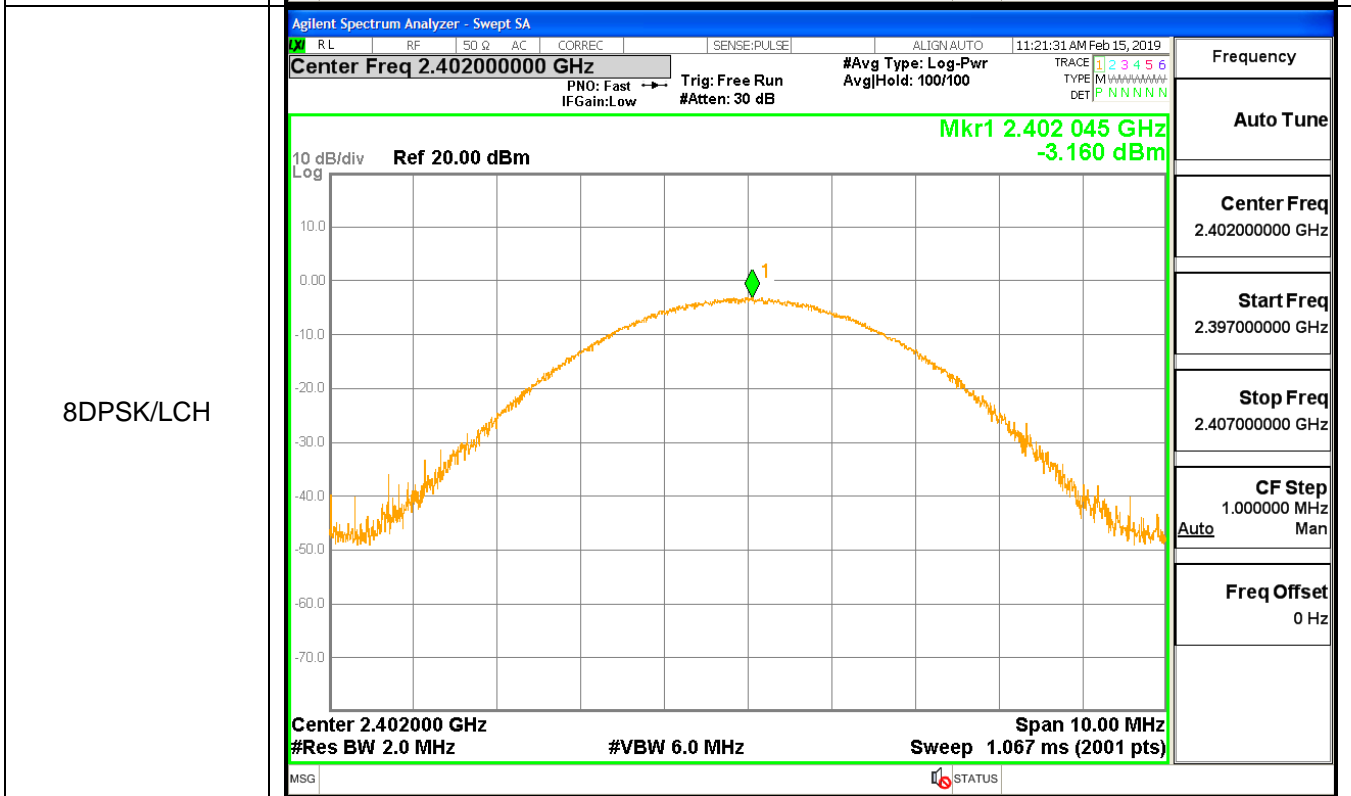
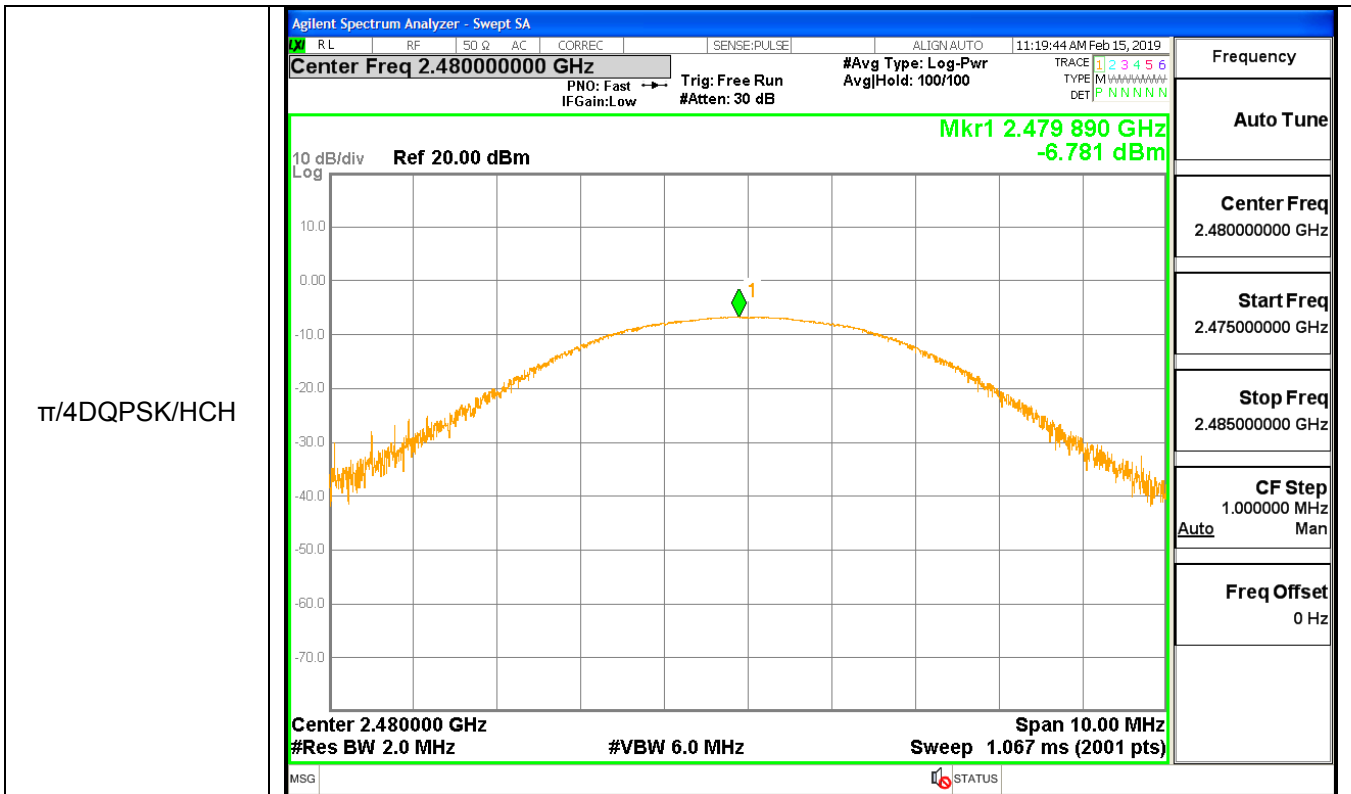
Test Graph

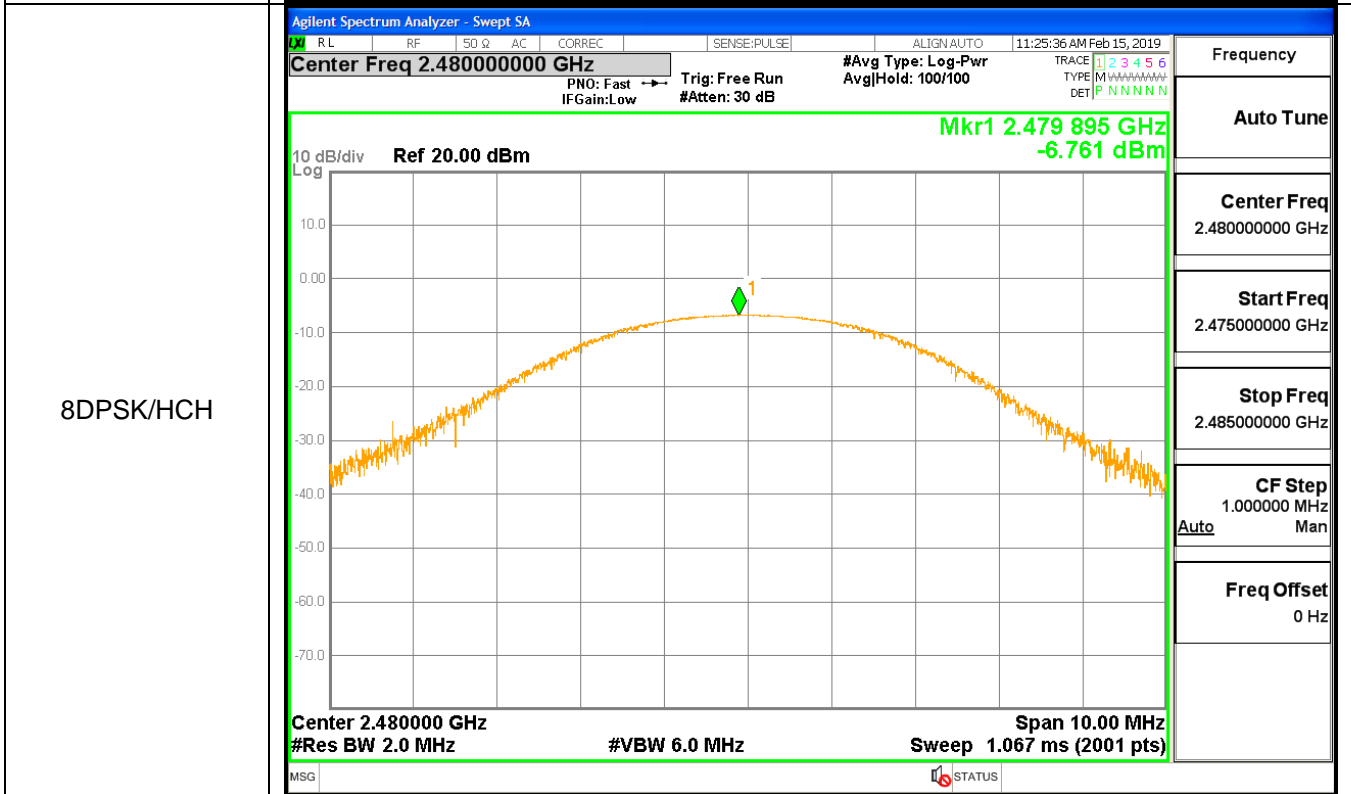
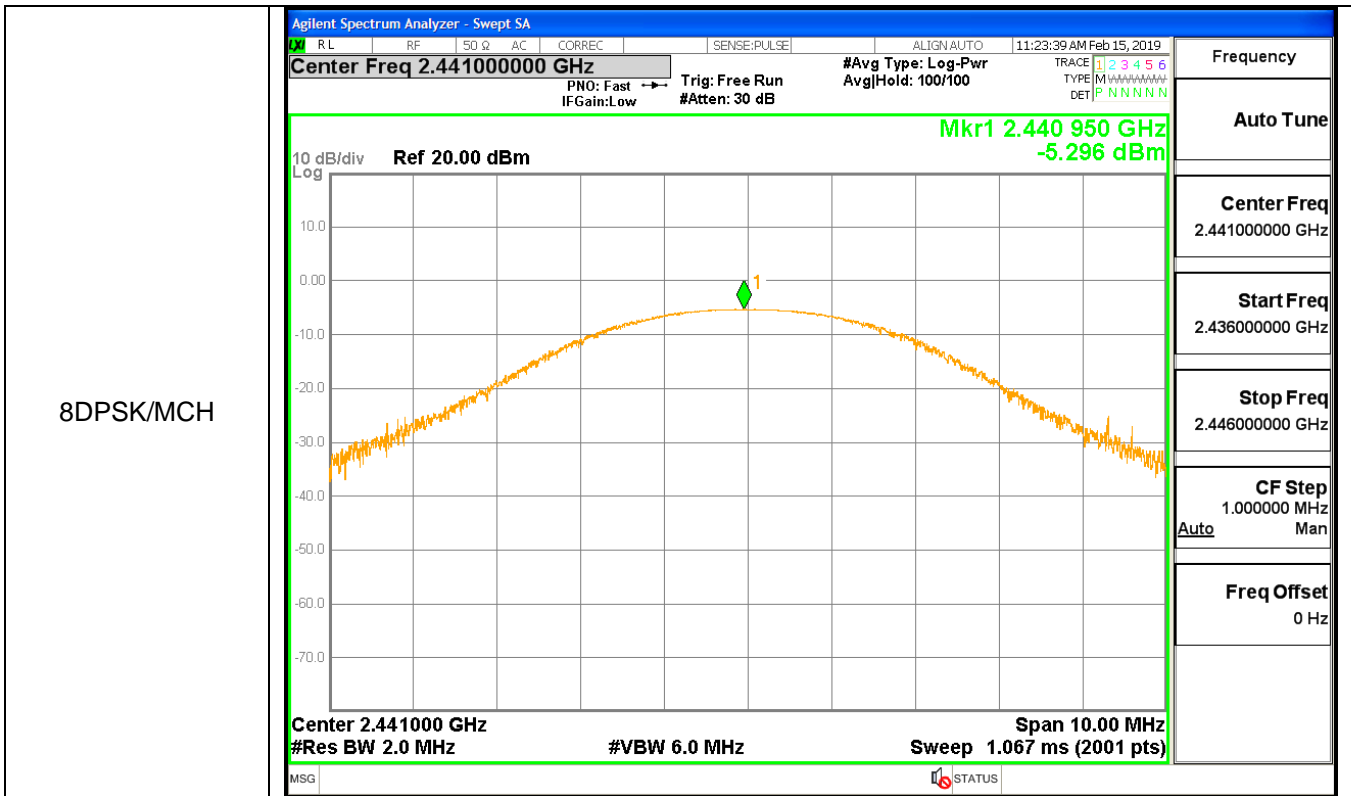


GFSK/LCH







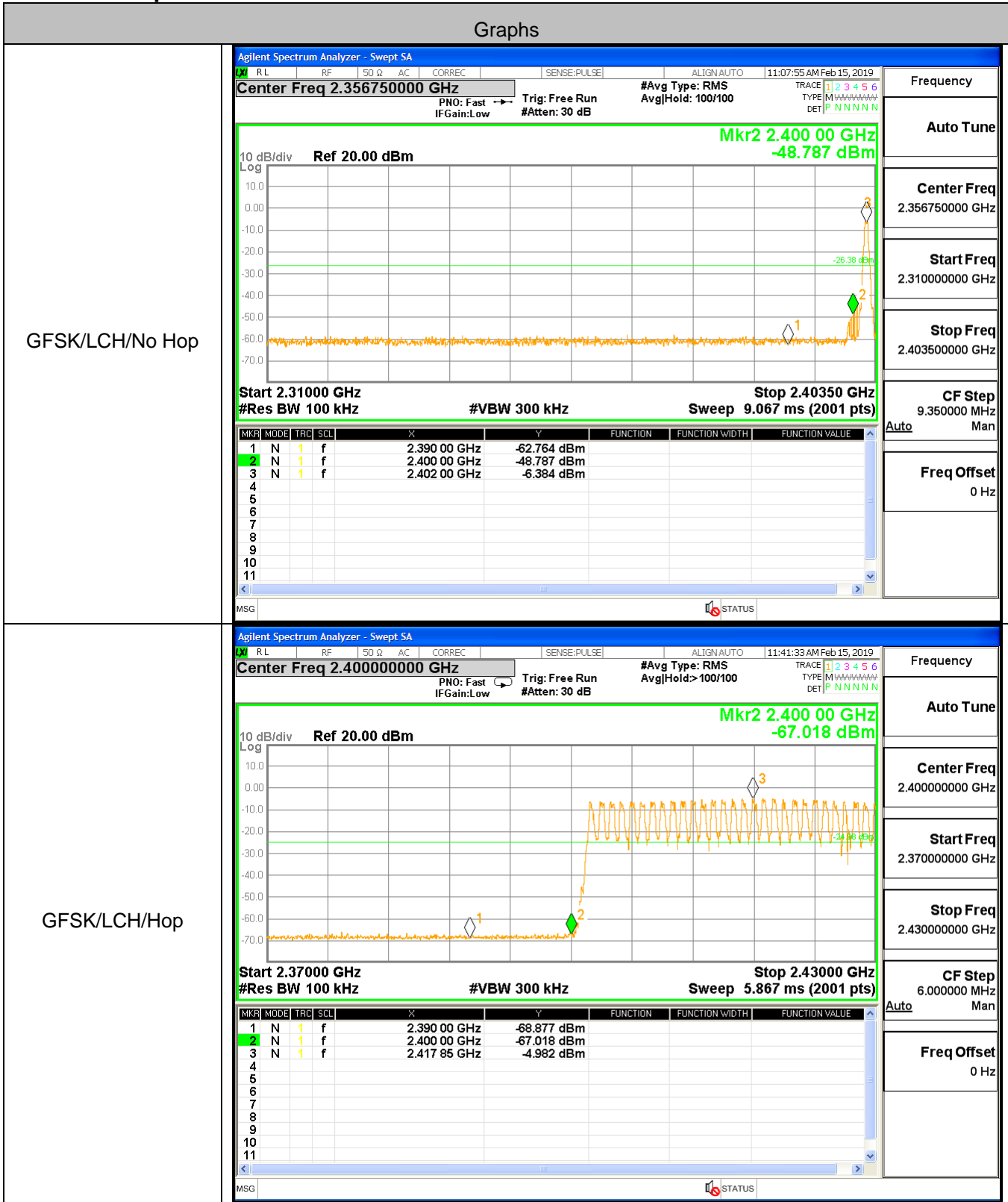


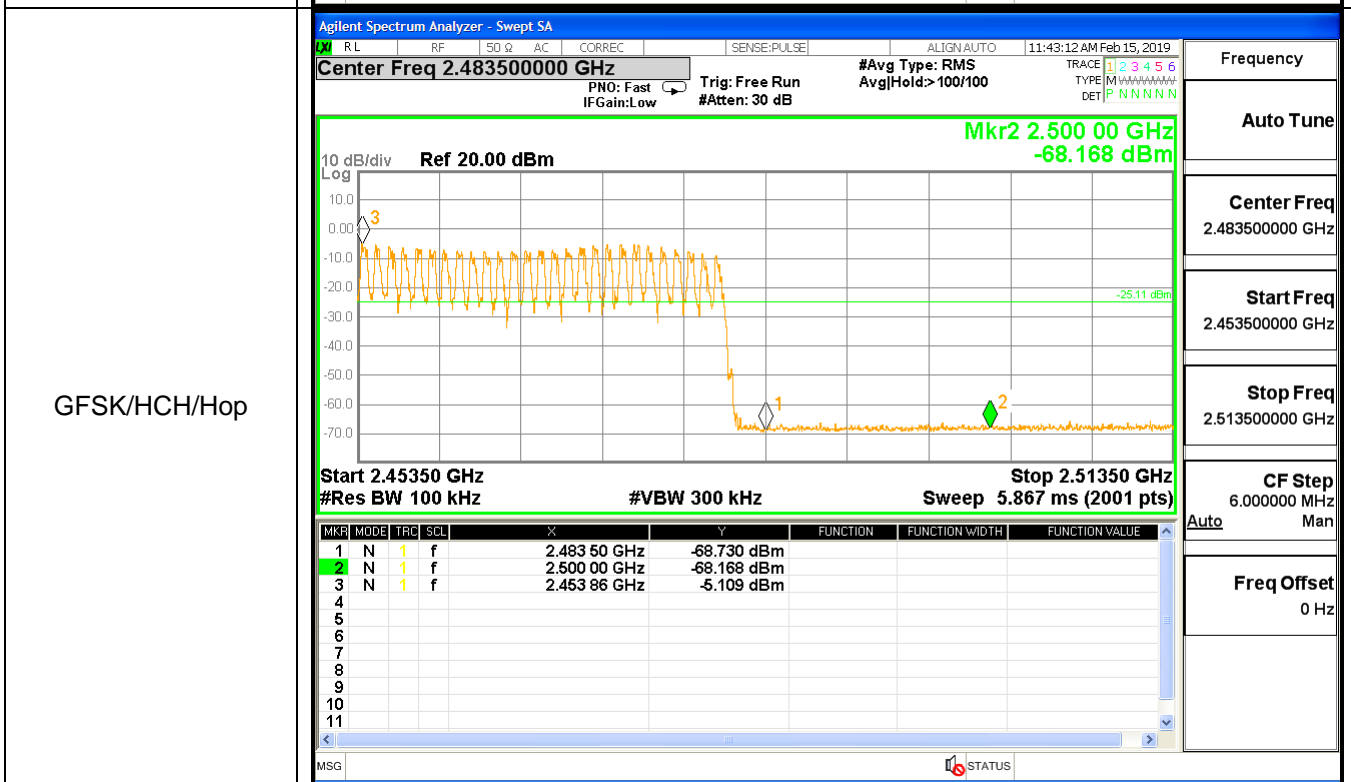
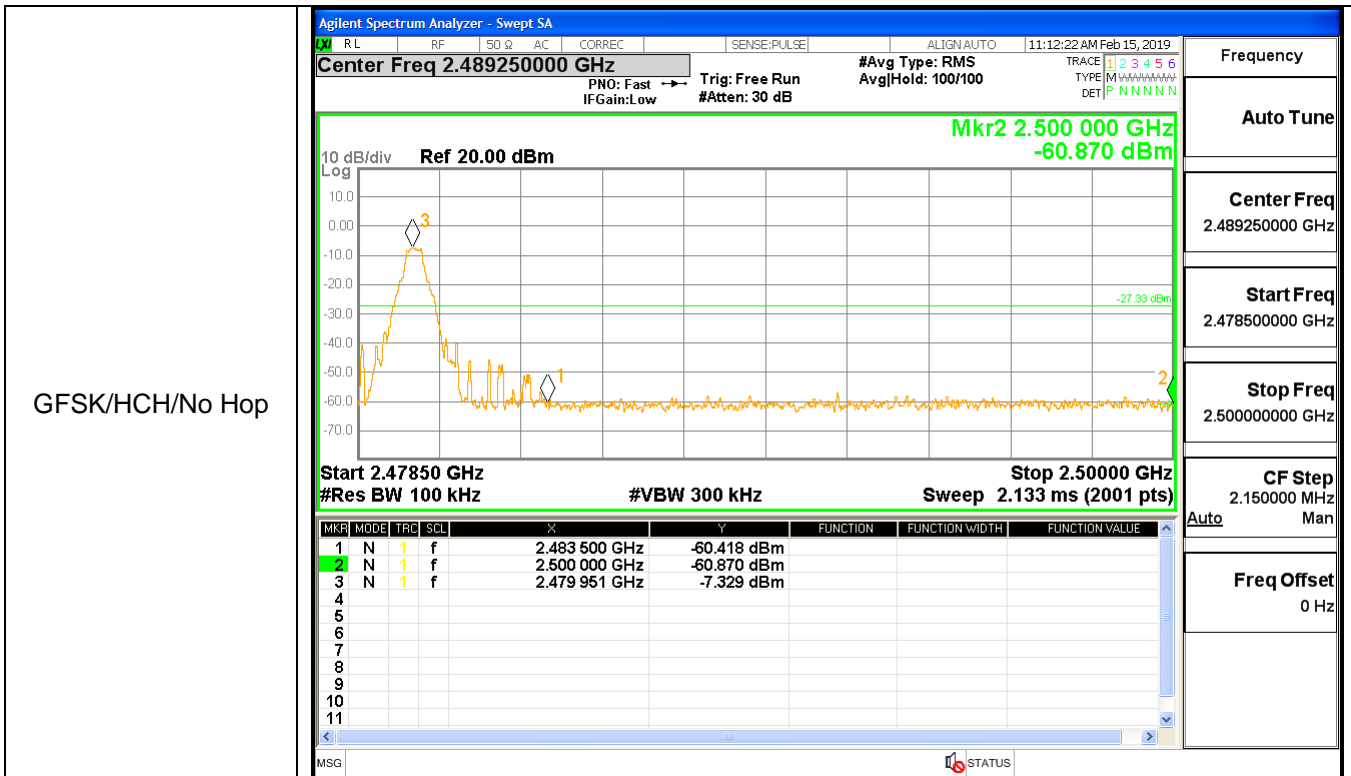
A.6 Band-edge for RF Conducted Emissions

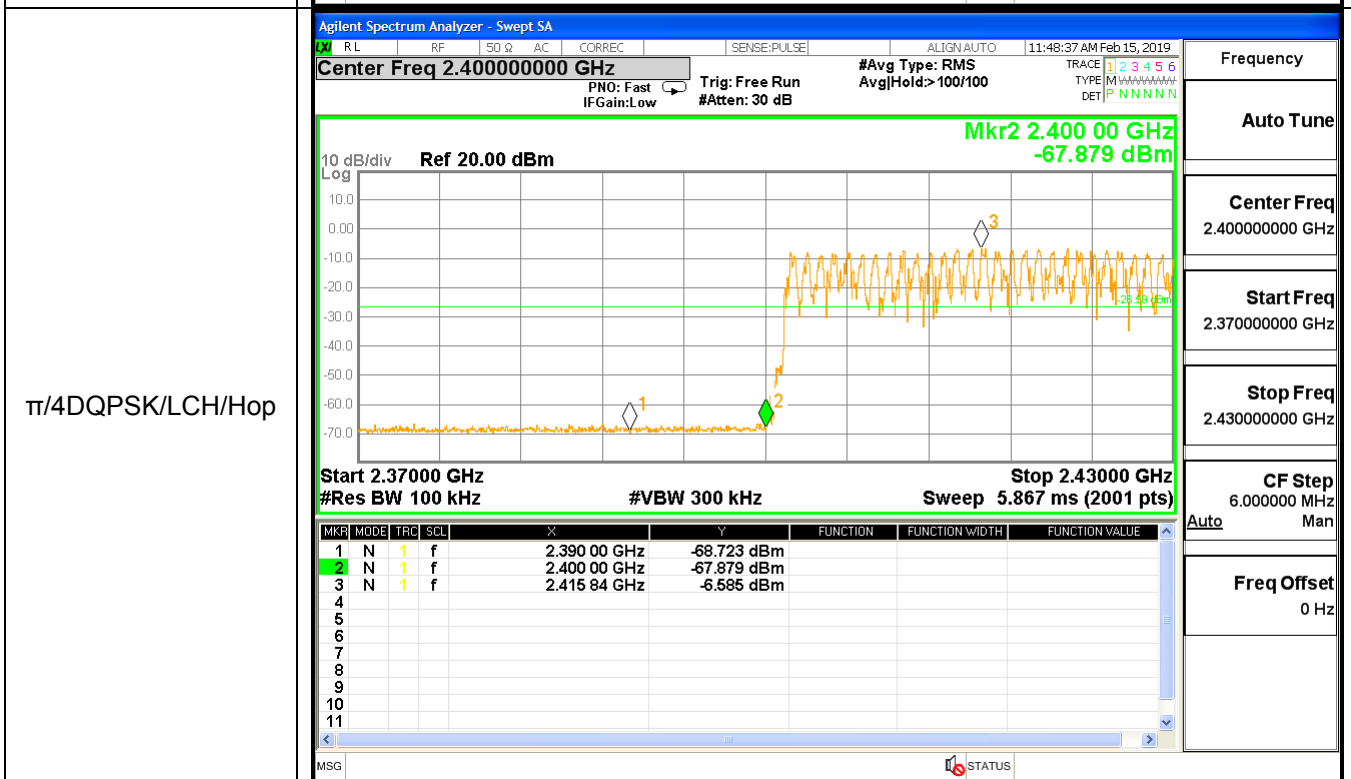
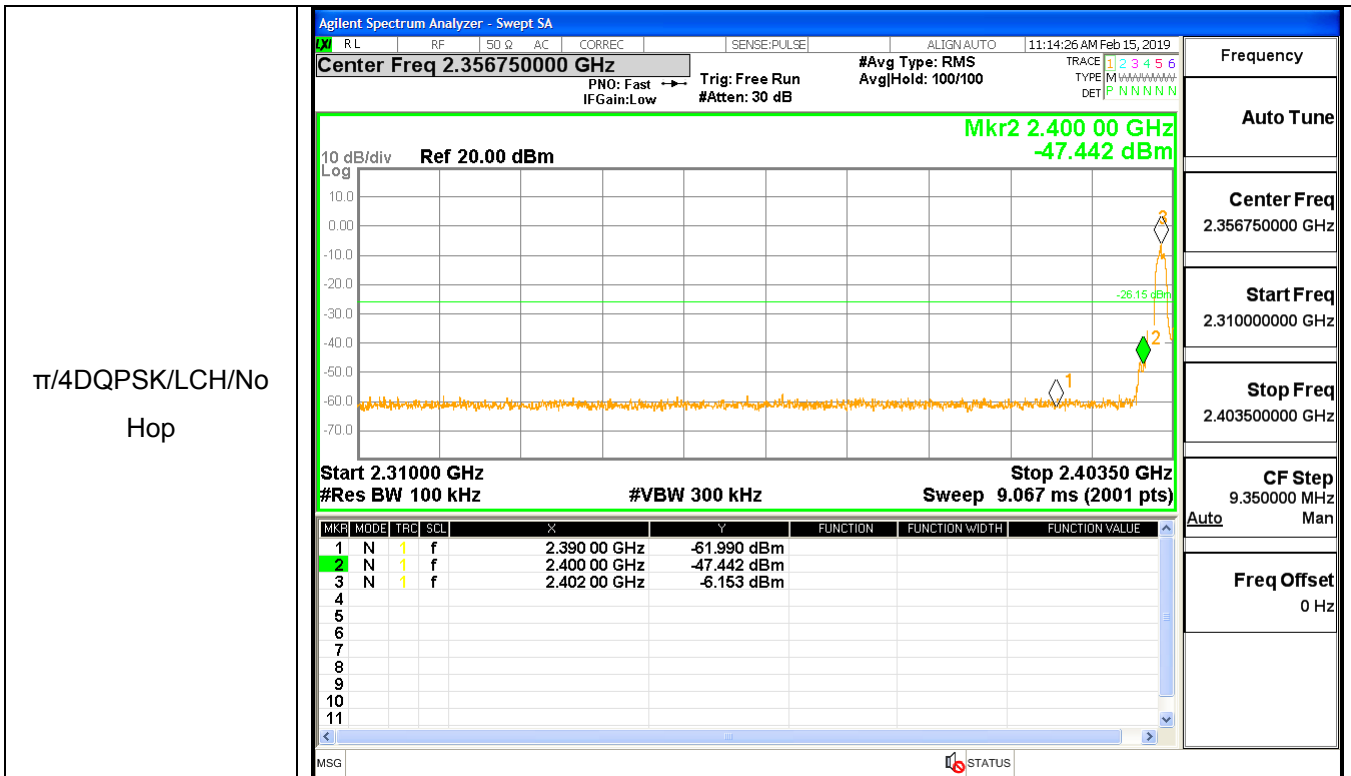
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	-6.384	-62.76	-26.384	Pass
1DH5	2402	2400	-6.384	-48.79	-26.384	Pass
1DH5-Hopping	2402	2390	-4.982	-68.88	-24.982	Pass
1DH5-Hopping	2402	2400	-4.982	-67.02	-24.982	Pass
1DH5	2480	2483.5	-7.329	-60.42	-27.329	Pass
1DH5	2480	2500	-7.329	-60.87	-27.329	Pass
1DH5-Hopping	2480	2483.5	-5.109	-68.73	-25.109	Pass
1DH5-Hopping	2480	2500	-5.109	-68.17	-25.109	Pass
2DH5	2402	2390	-6.153	-61.99	-26.153	Pass
2DH5	2402	2400	-6.153	-47.44	-26.153	Pass
2DH5-Hopping	2480	2483.5	-6.63	-68.25	-26.63	Pass
2DH5-Hopping	2480	2500	-6.63	-68.78	-26.63	Pass
2DH5	2480	2483.5	-7.066	-52.76	-27.066	Pass
2DH5	2480	2500	-7.066	-59.47	-27.066	Pass
2DH5-Hopping	2402	2390	-6.585	-68.72	-26.585	Pass
2DH5-Hopping	2402	2400	-6.585	-67.88	-26.585	Pass
3DH5	2402	2390	-7.903	-60.22	-27.903	Pass
3DH5	2402	2400	-7.903	-51.01	-27.903	Pass
3DH5-Hopping	2402	2390	-6.447	-68.49	-26.447	Pass
3DH5-Hopping	2402	2400	-6.447	-68.81	-26.447	Pass
3DH5	2480	2483.5	-6.896	-48.74	-26.896	Pass
3DH5	2480	2500	-6.896	-62.37	-26.896	Pass
3DH5-Hopping	2480	2483.5	-6.661	-67.82	-26.661	Pass
3DH5-Hopping	2480	2500	-6.661	-67.58	-26.661	Pass

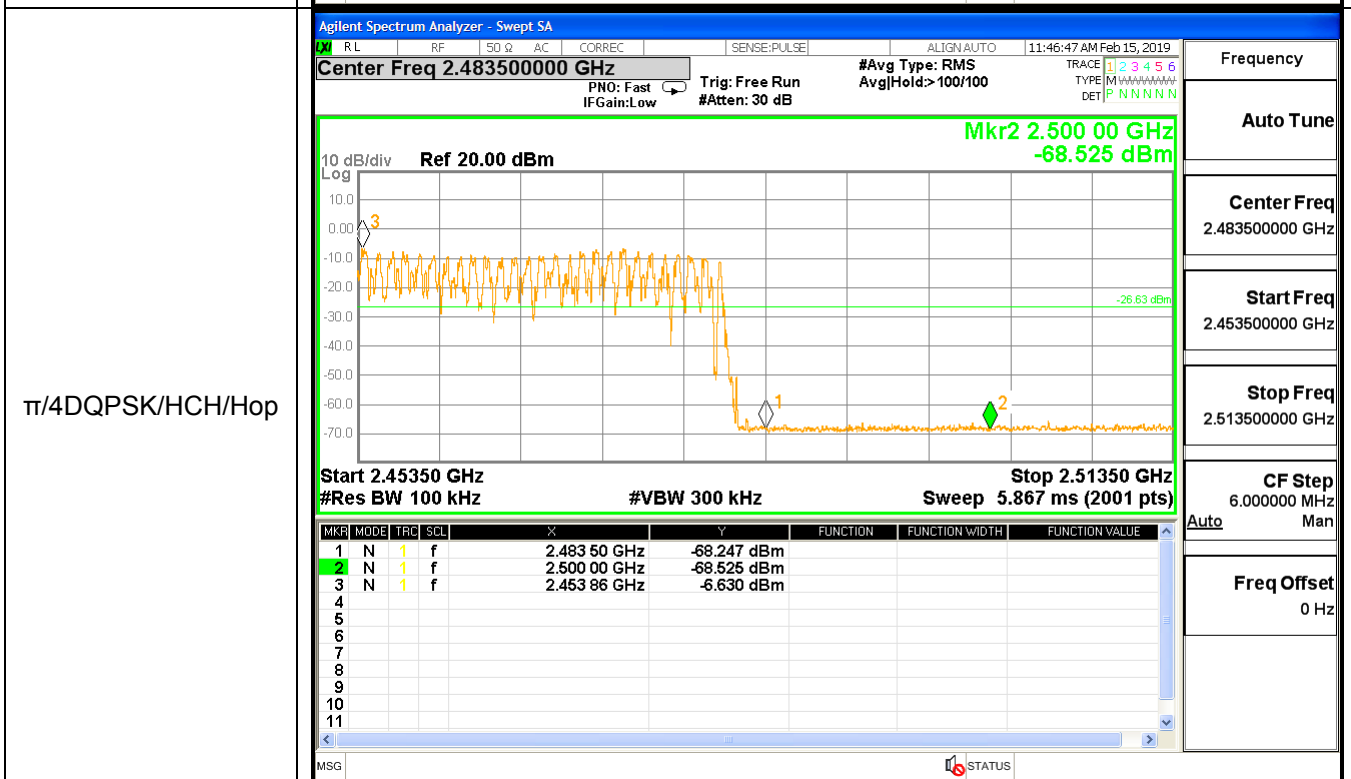
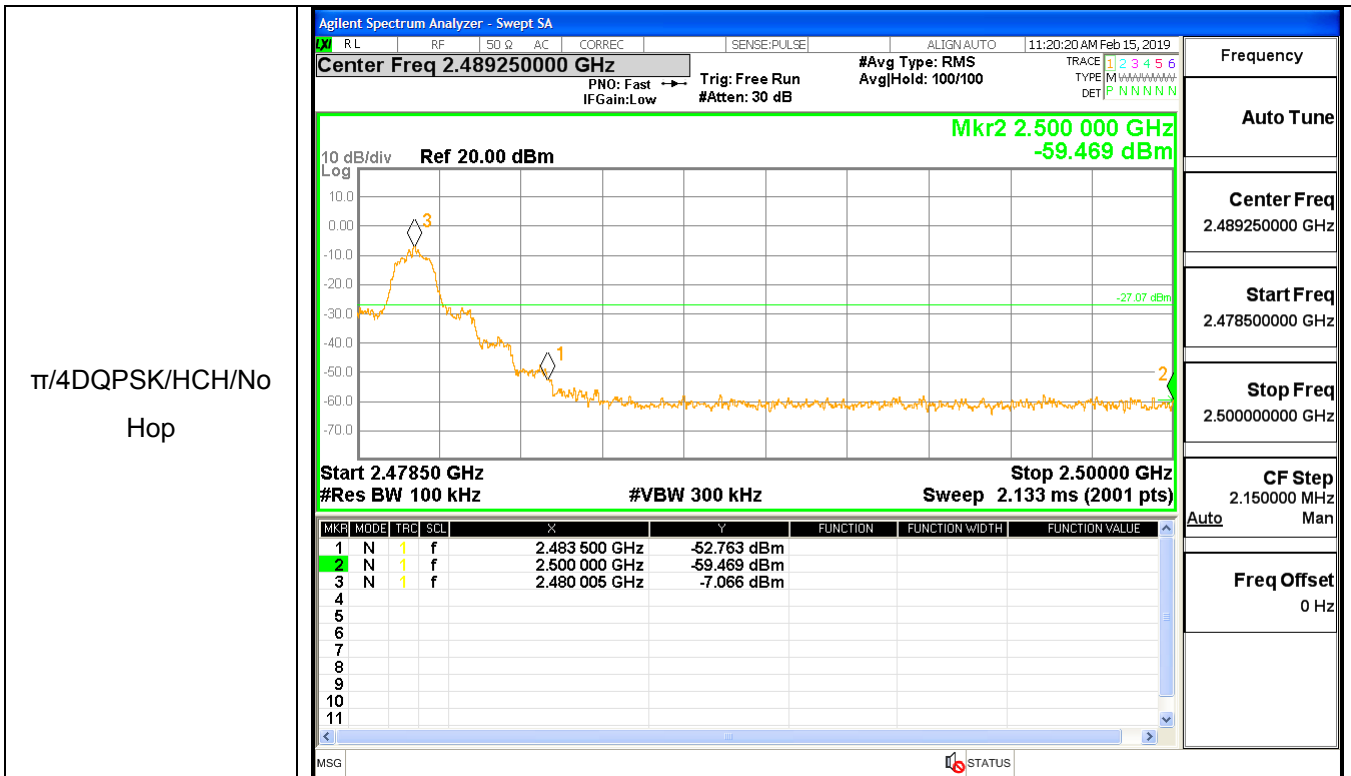
Test Graph

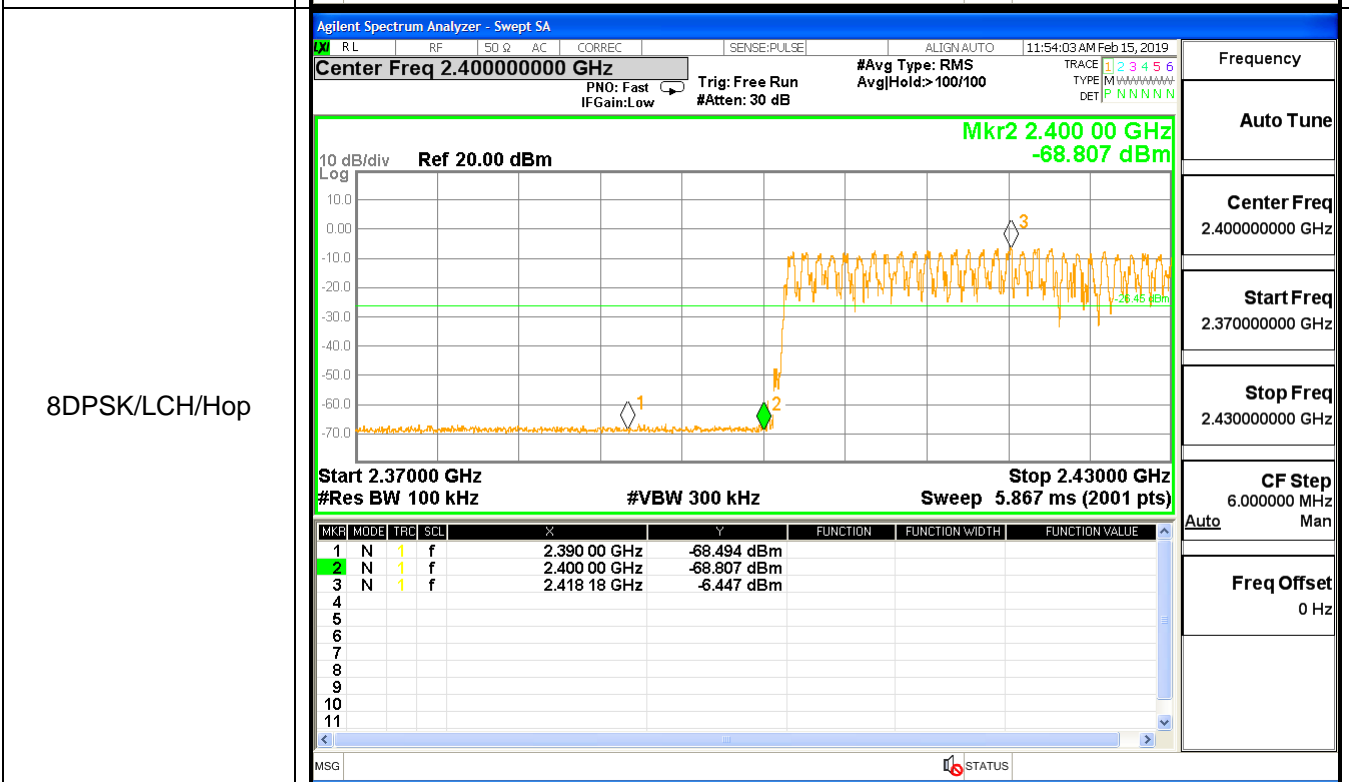
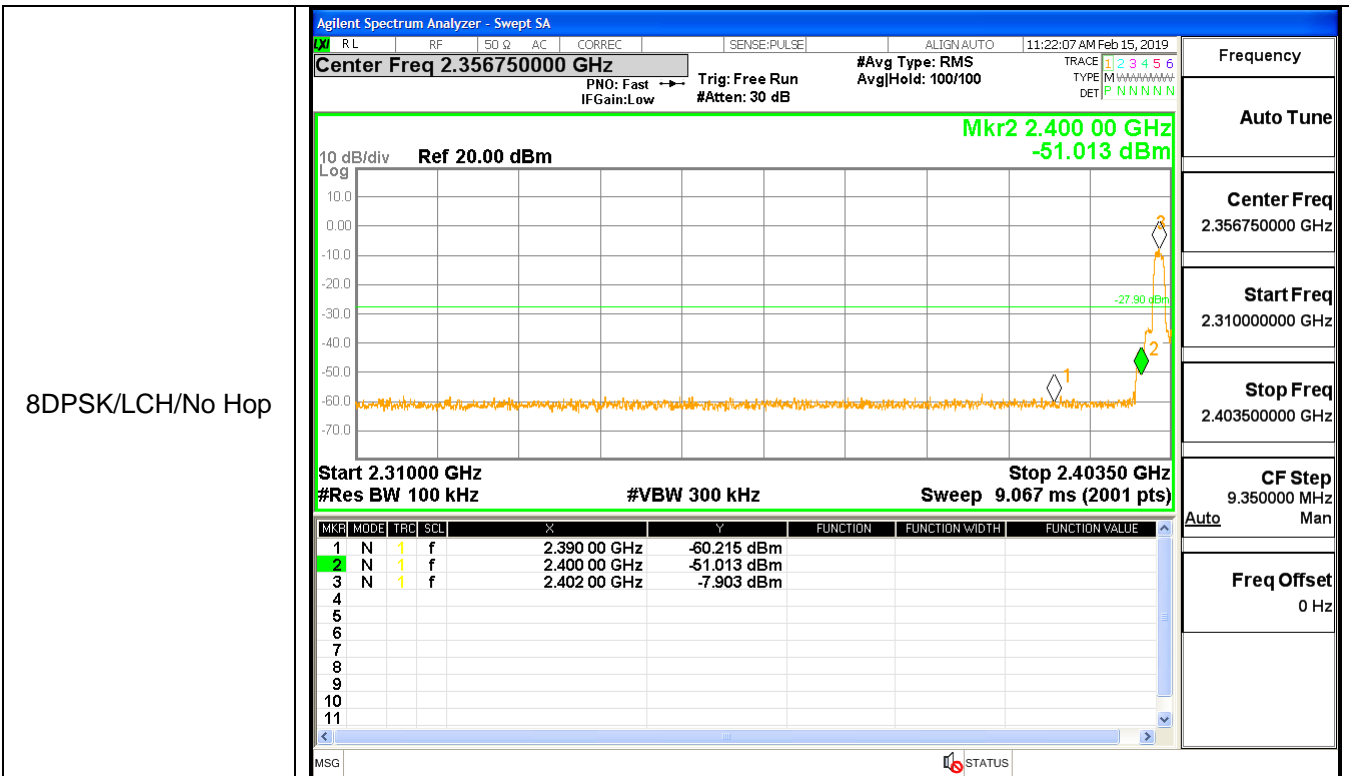
Graphs

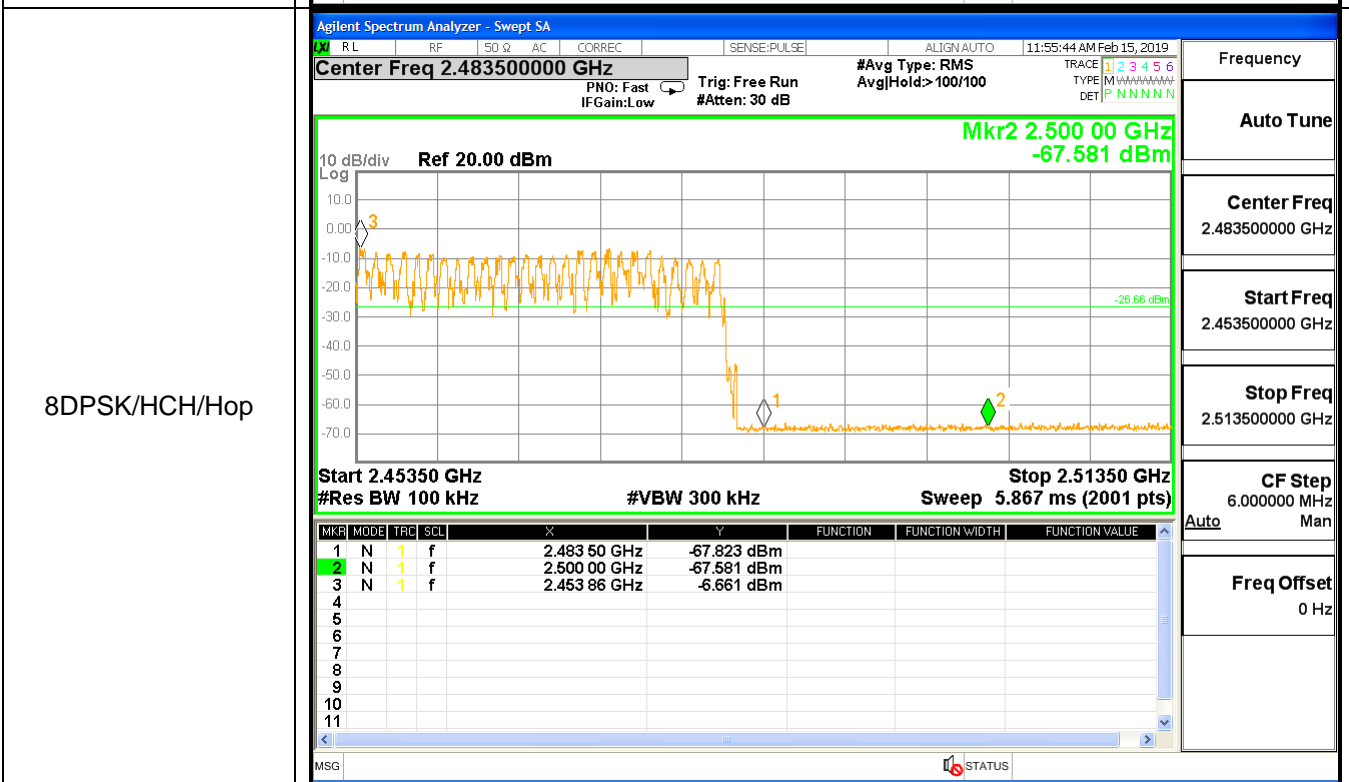
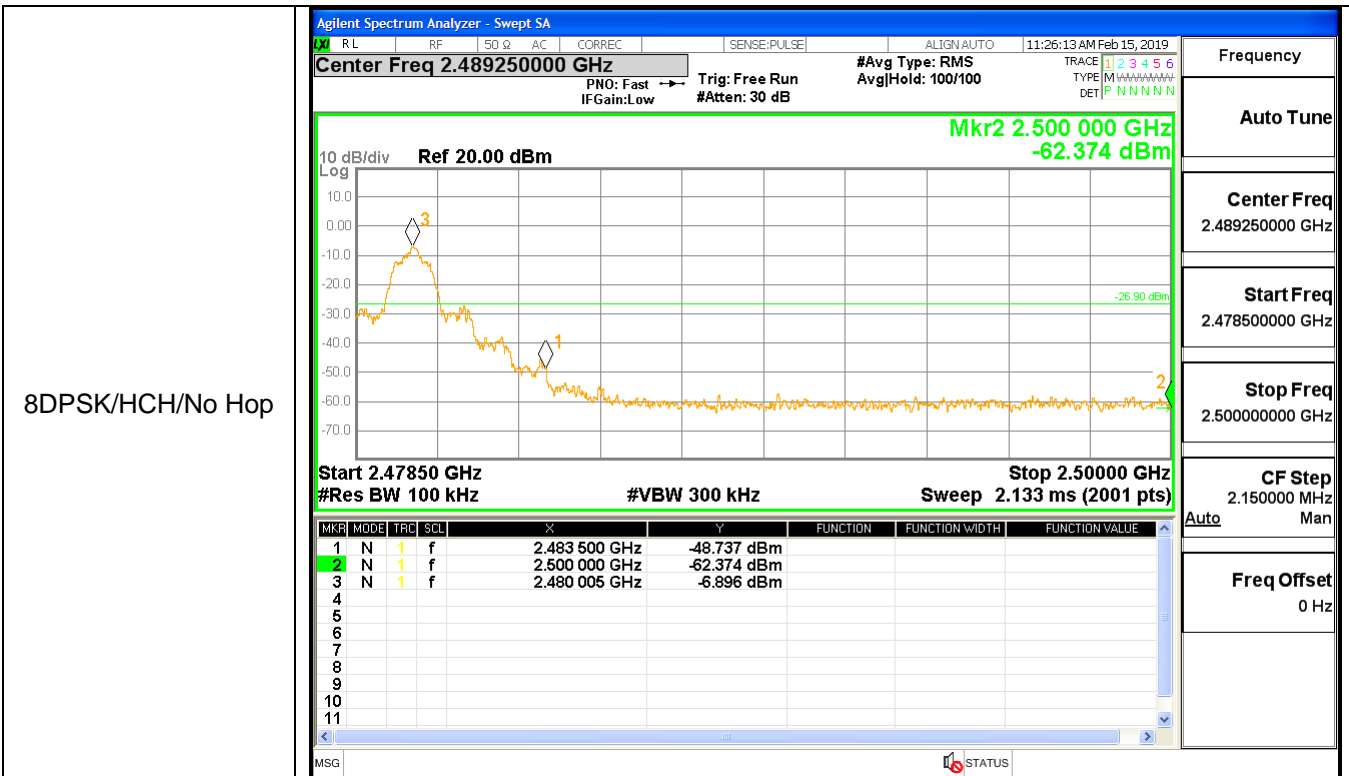




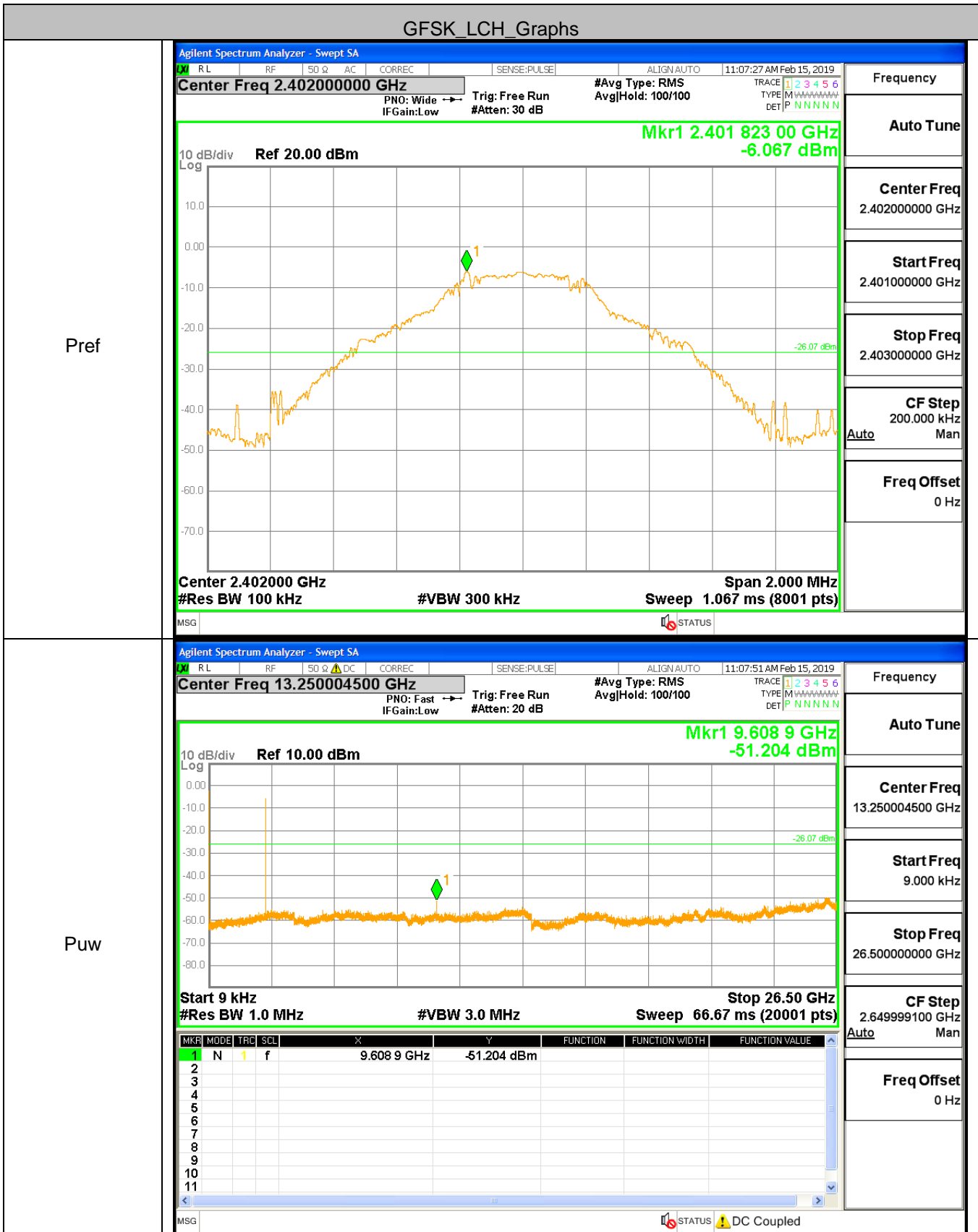


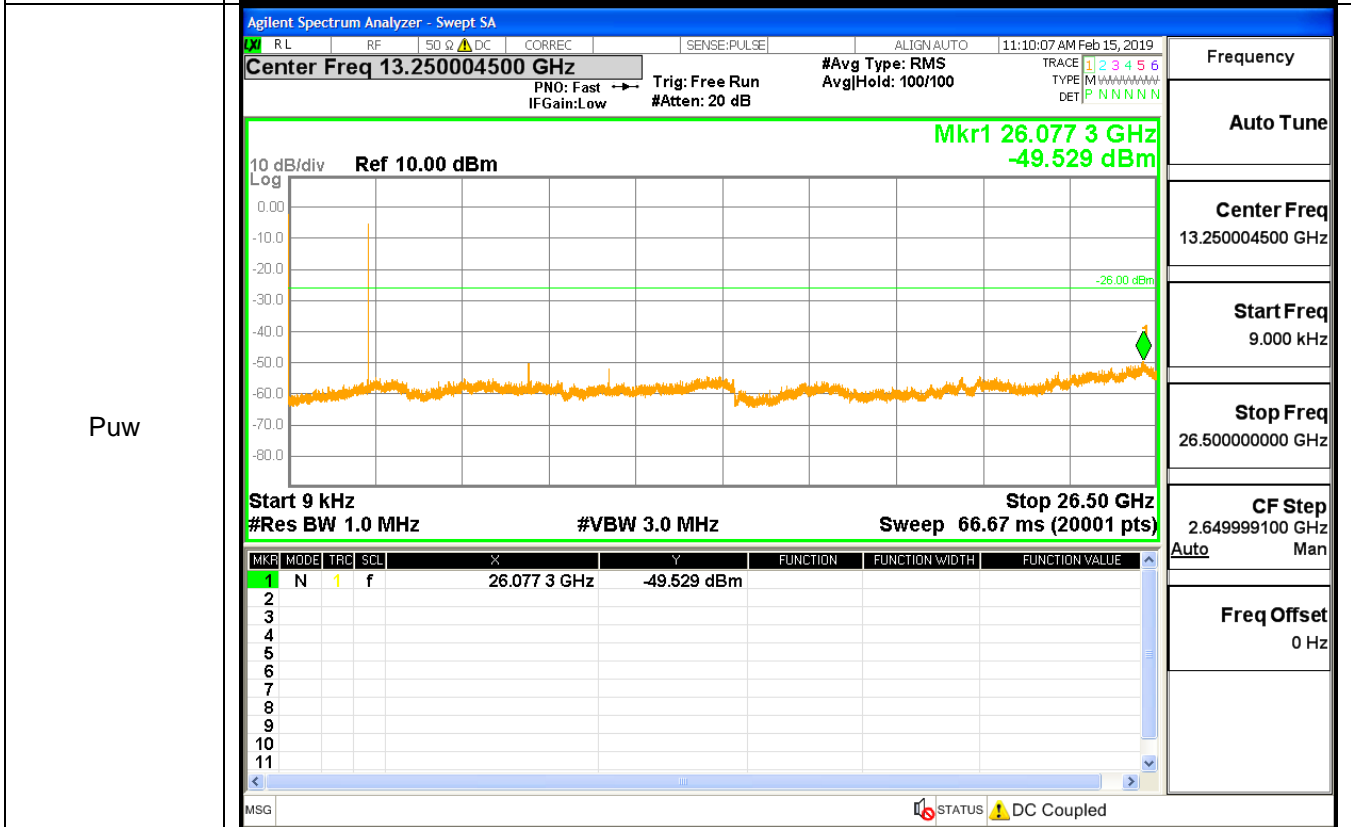
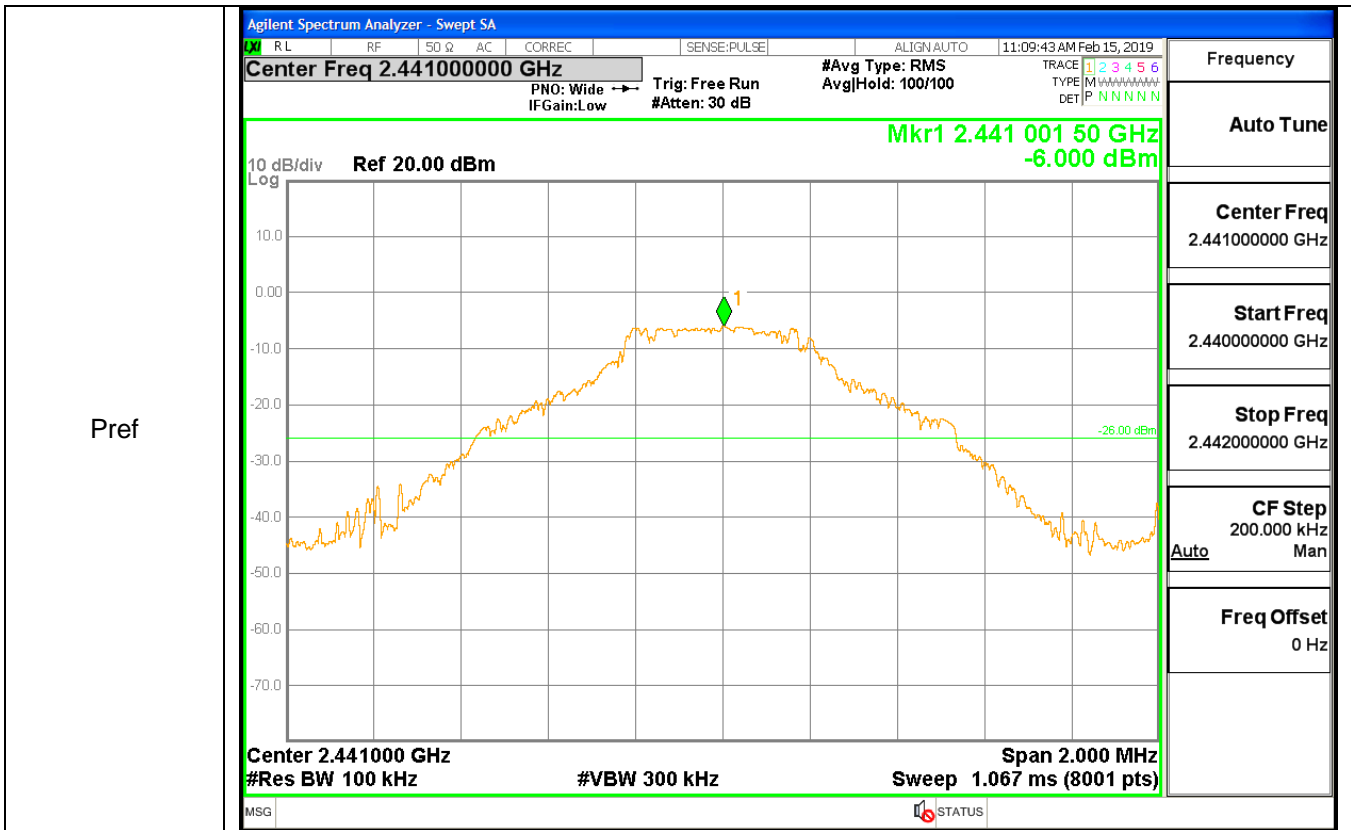




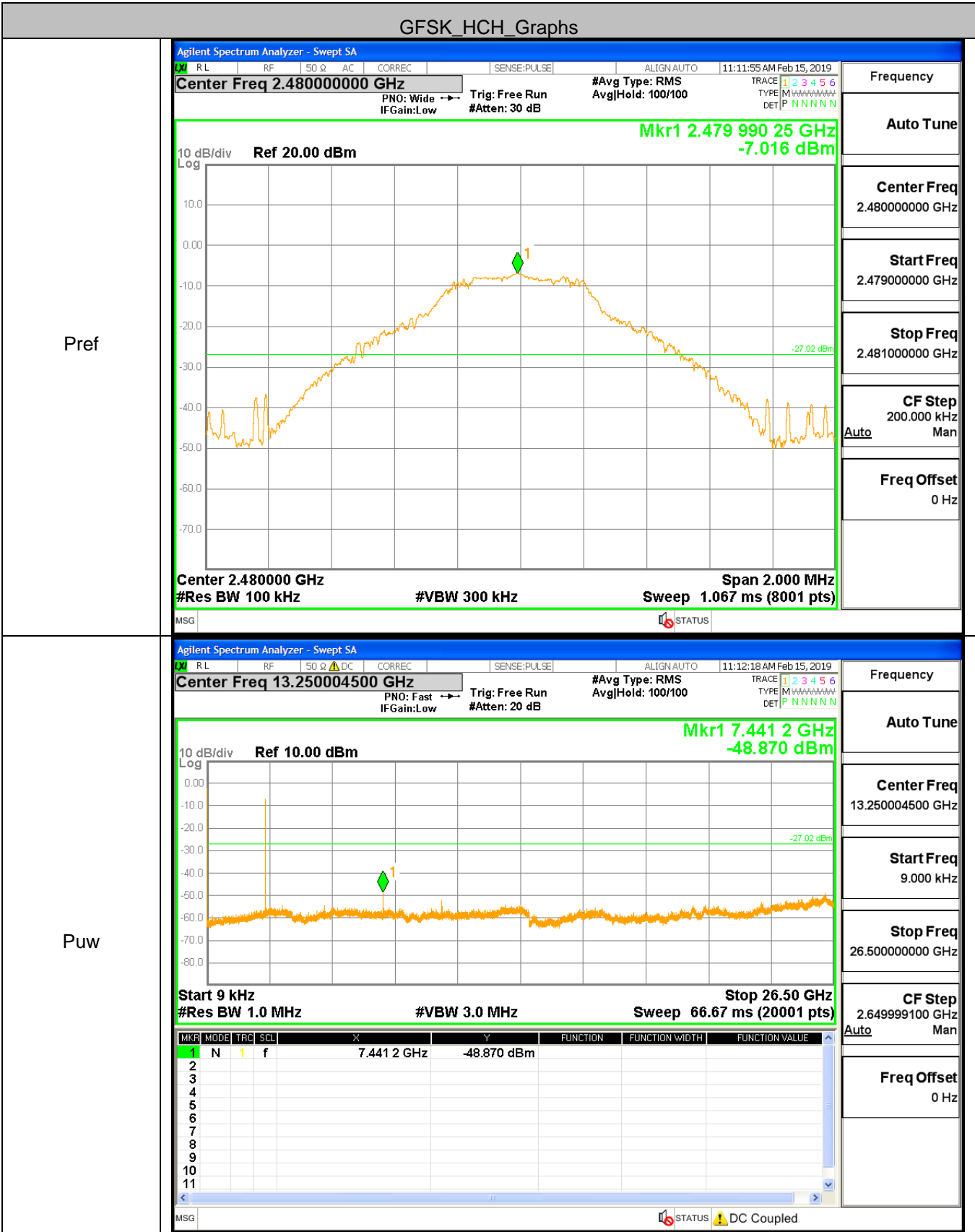


A.7 RF Conducted Spurious Emissions Test Graph

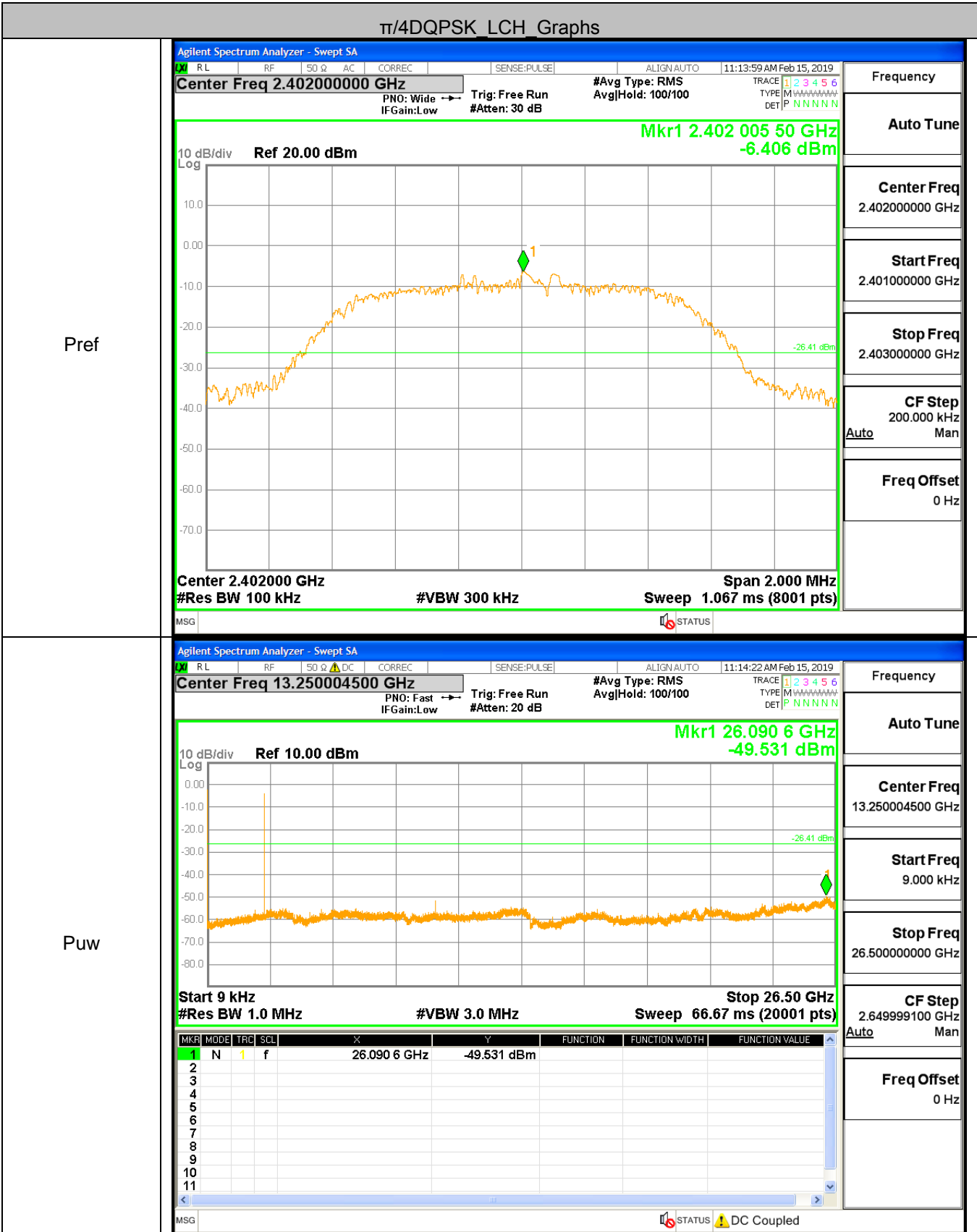




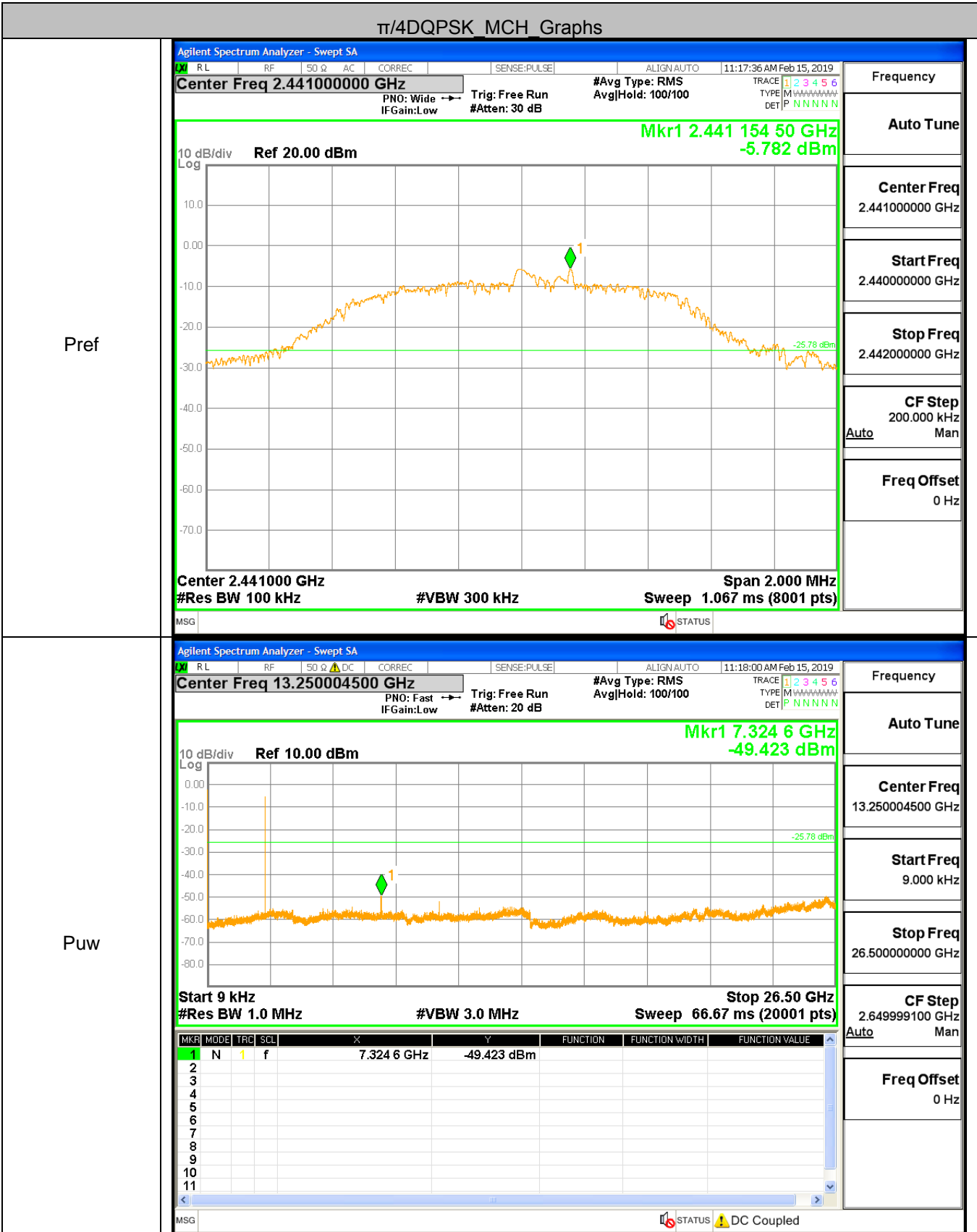
GFSK_HCH_Graphs



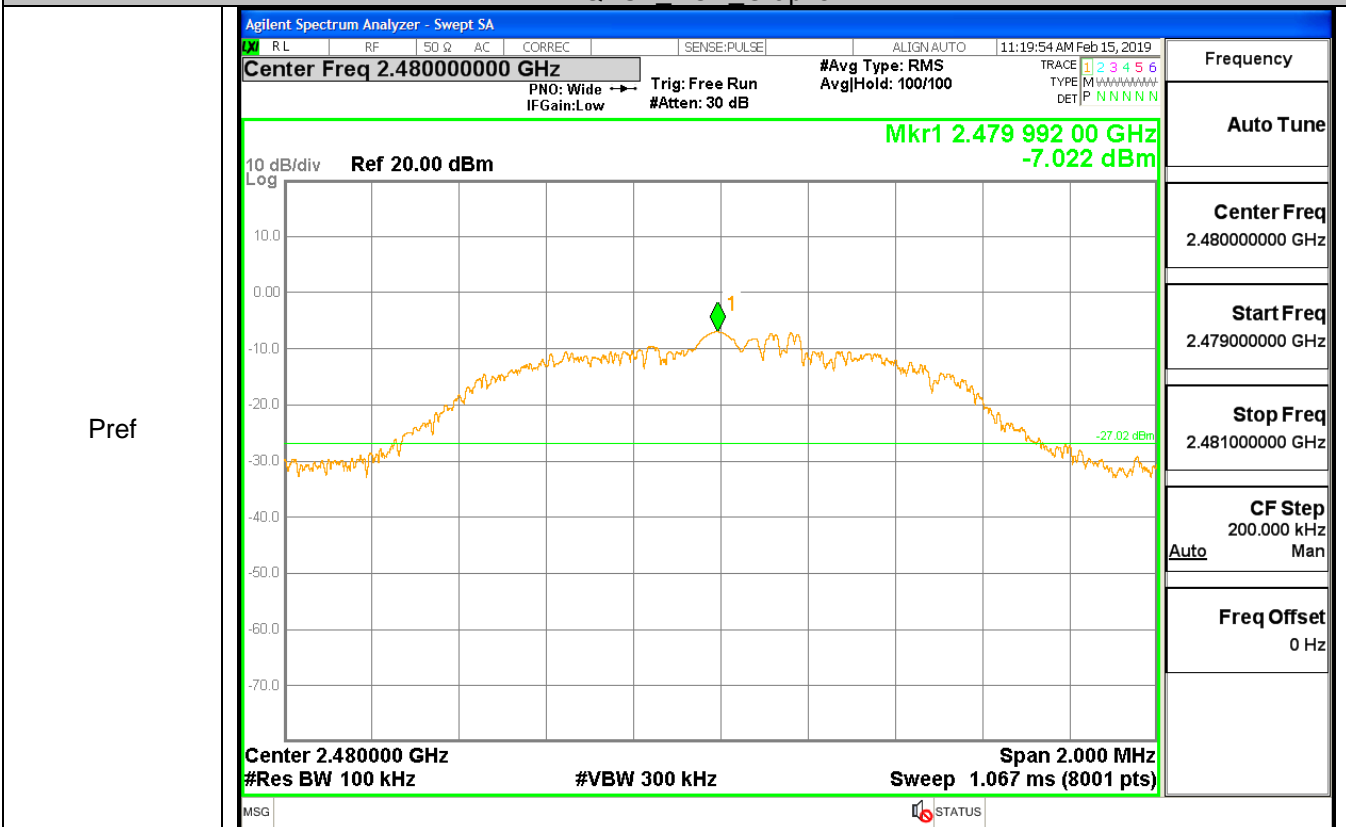
$\pi/4$ DQPSK LCH Graphs



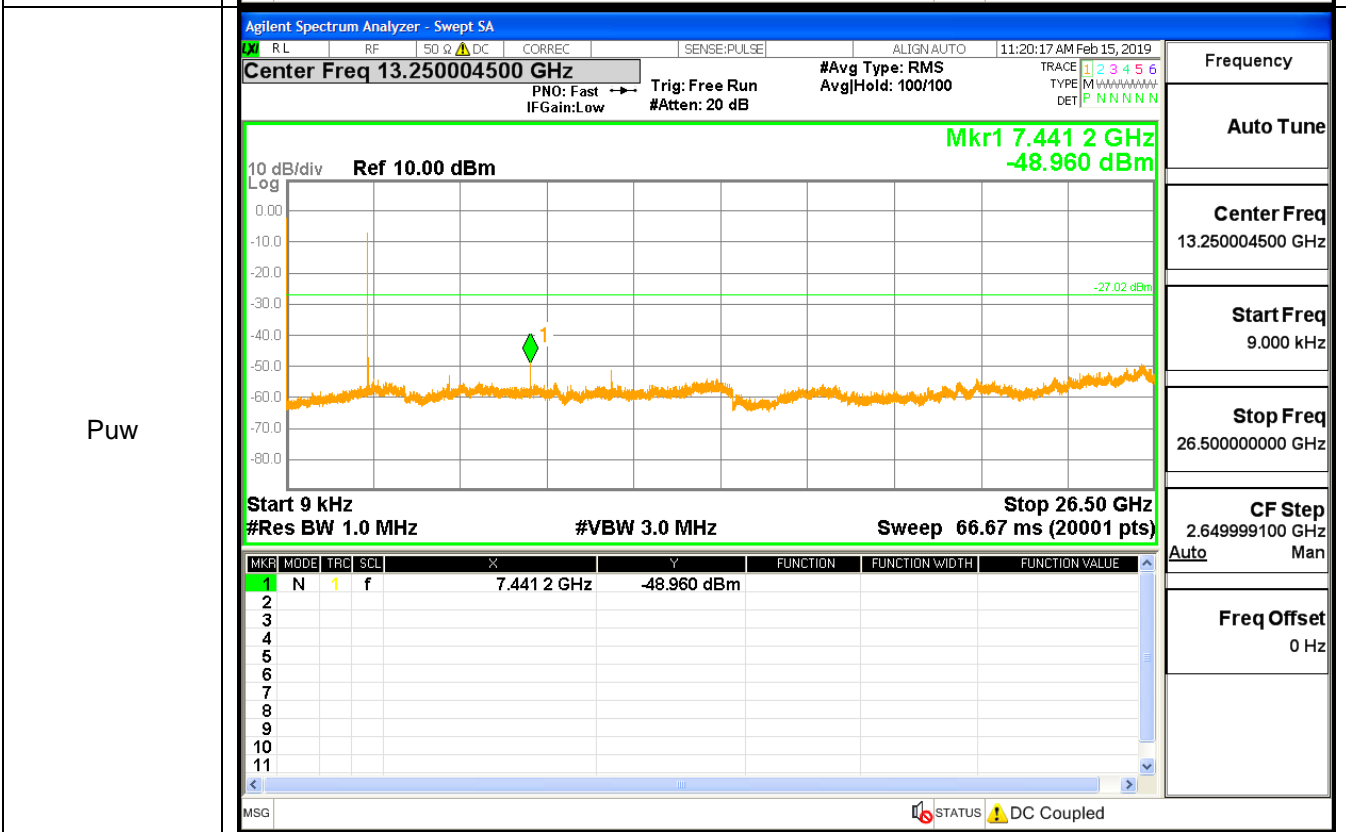
$\pi/4$ DQPSK MCH Graphs



$\pi/4$ DQPSK HCH Graphs

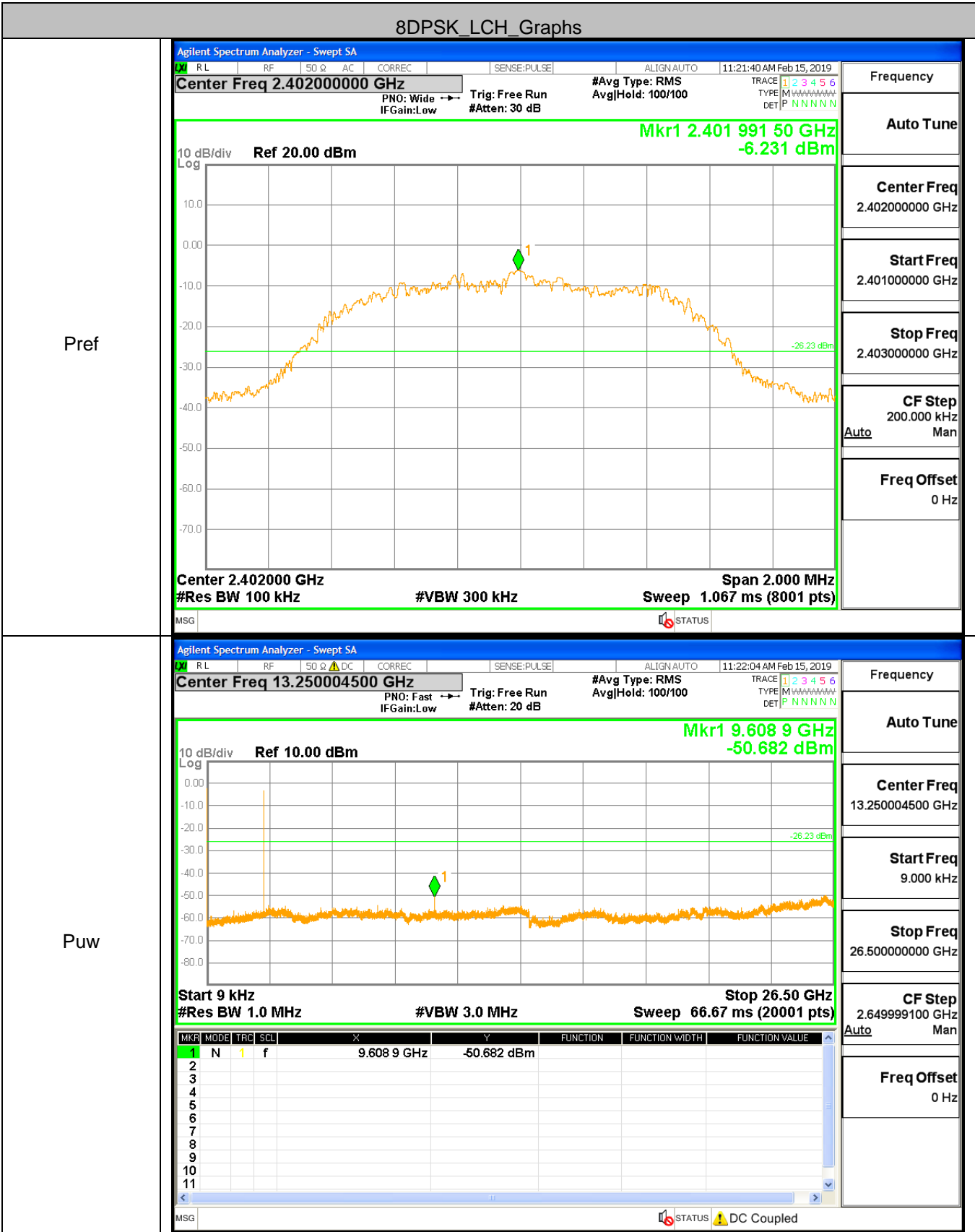


Pref

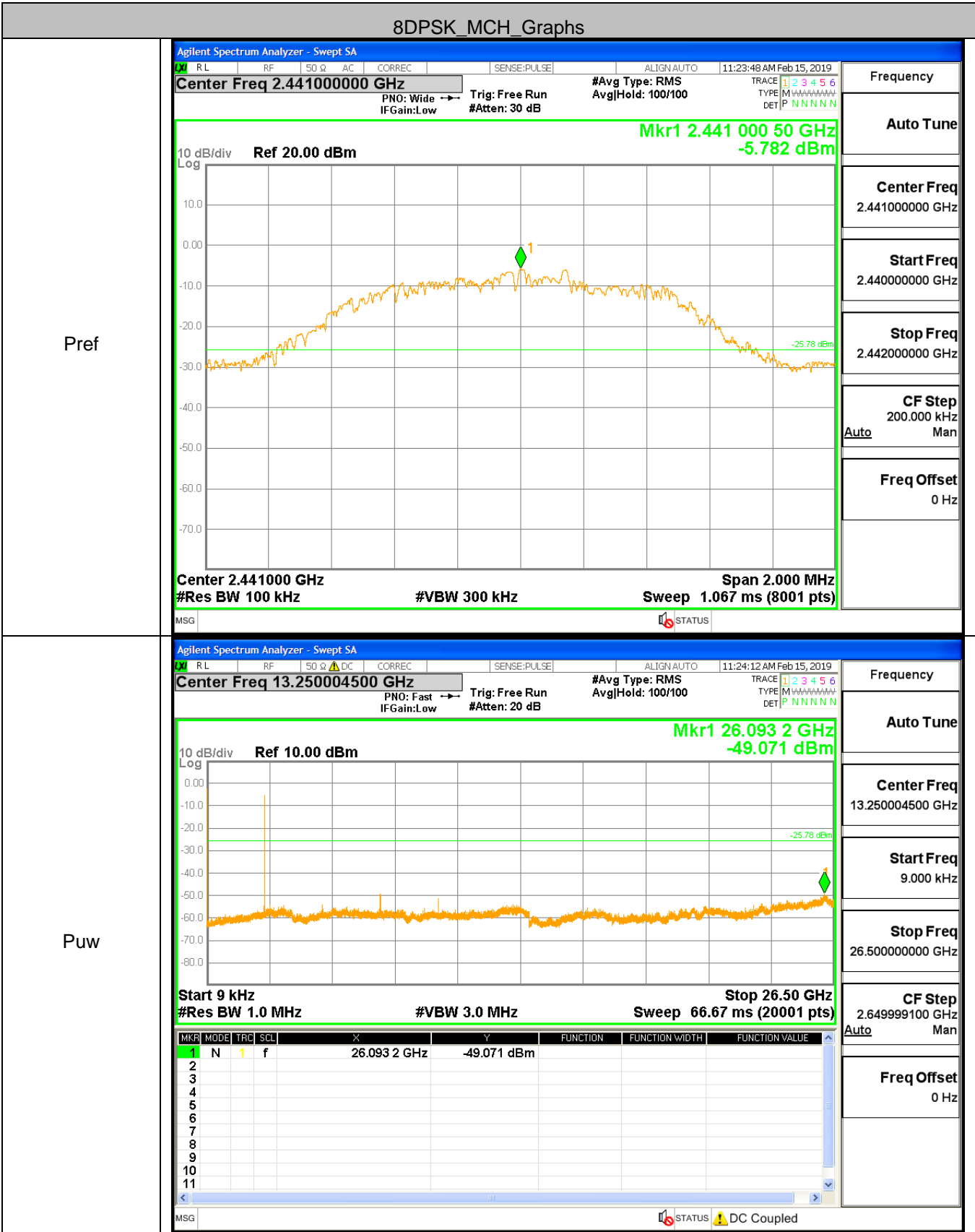


Puw

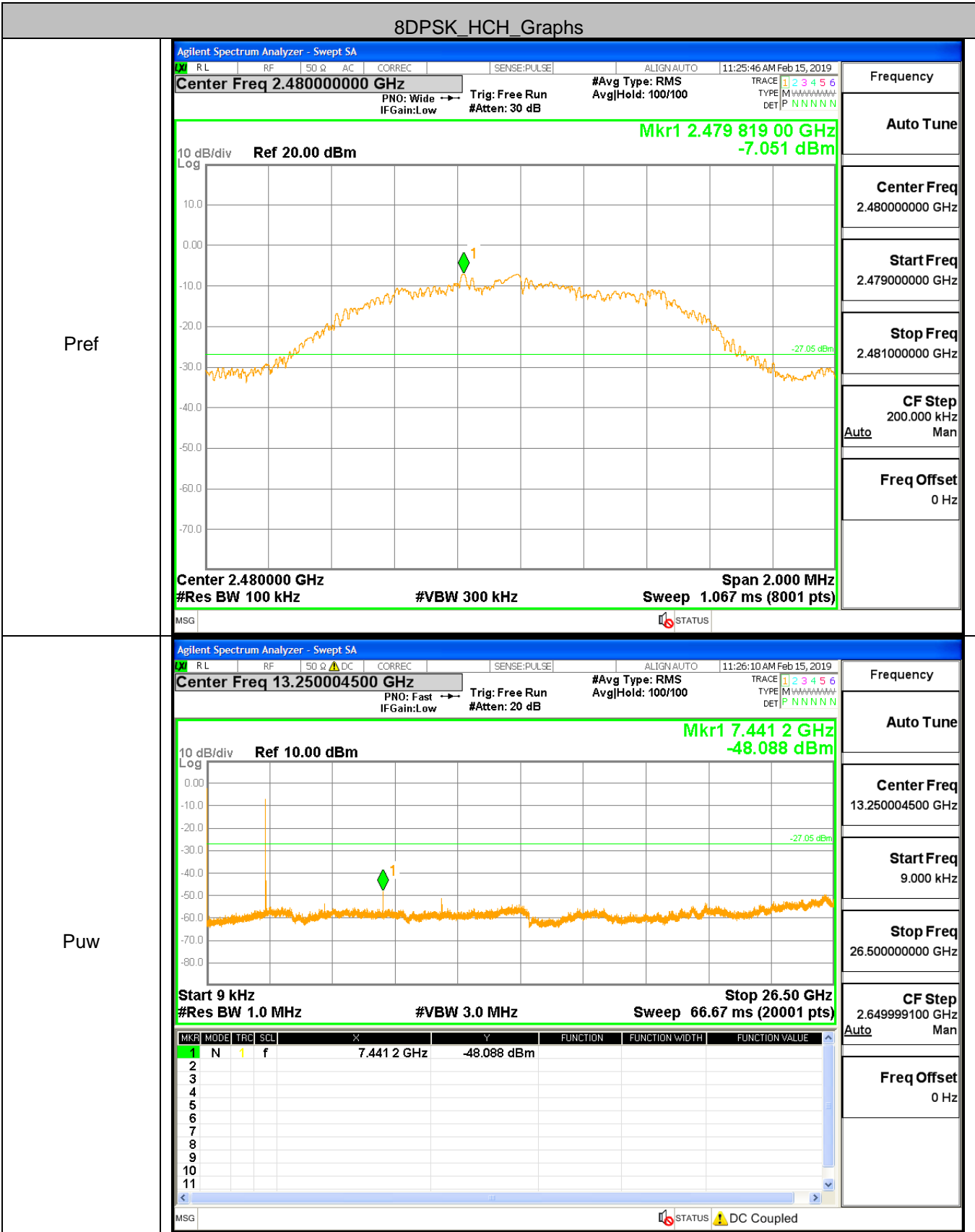
8DPSK_LCH_Graphs



8DPSK_MCH_Graphs



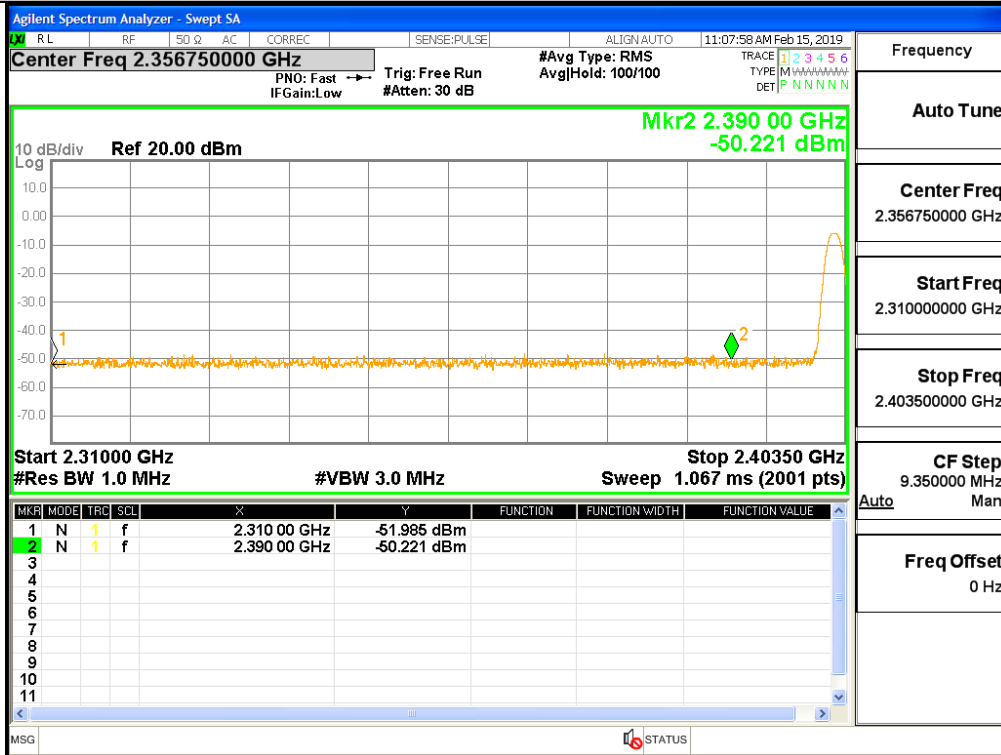
8DPSK_HCH_Graphs



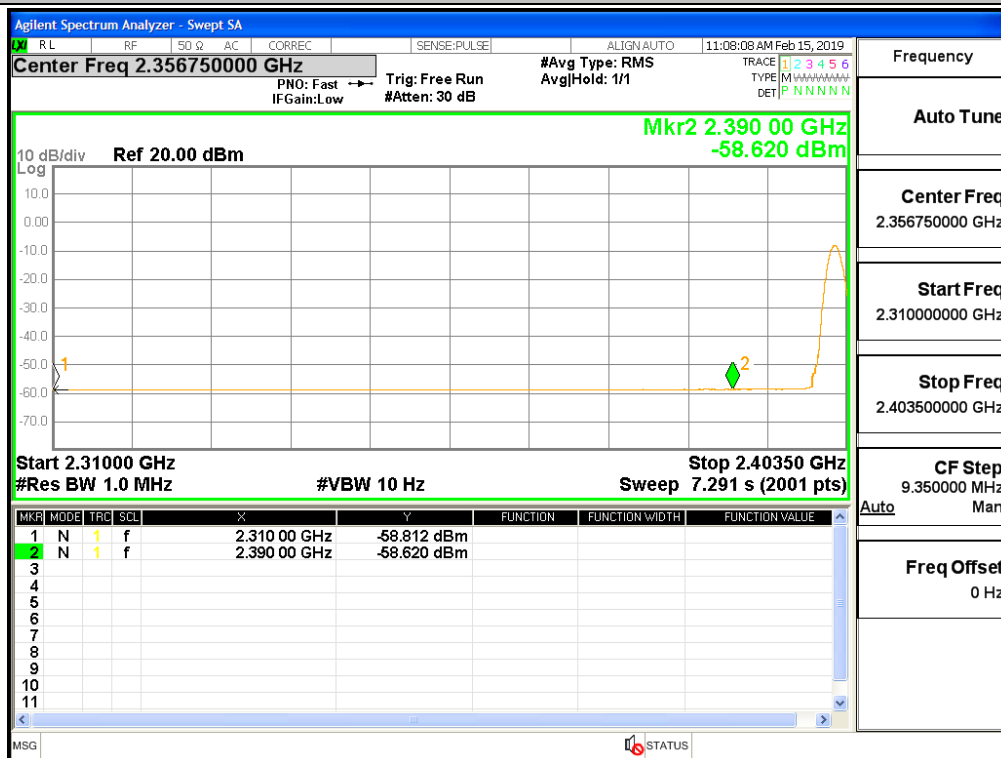
A.8 Restrict-band band-edge measurements

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	-51.98	45.22	74.00	-58.81	38.39	54.00	Pass
1DH5	2402	2390	2.00	0.00	-50.22	46.98	74.00	-58.62	38.58	54.00	Pass
1DH5	2480	2483.5	2.00	0.00	-47.75	49.45	74.00	-57.82	39.38	54.00	Pass
1DH5	2480	2500	2.00	0.00	-50.44	46.76	74.00	-58.06	39.14	54.00	Pass
2DH5	2402	2310	2.00	0.00	-52.10	45.10	74.00	-58.86	38.34	54.00	Pass
2DH5	2402	2390	2.00	0.00	-49.41	47.79	74.00	-58.56	38.64	54.00	Pass
2DH5	2480	2483.5	2.00	0.00	-37.83	59.37	74.00	-49.88	47.32	54.00	Pass
2DH5	2480	2500	2.00	0.00	-50.21	46.99	74.00	-58.05	39.15	54.00	Pass
3DH5	2402	2310	2.00	0.00	-51.95	45.25	74.00	-58.85	38.35	54.00	Pass
3DH5	2402	2390	2.00	0.00	-52.02	45.18	74.00	-58.58	38.62	54.00	Pass
3DH5	2480	2483.5	2.00	0.00	-37.24	59.96	74.00	-49.30	47.90	54.00	Pass
3DH5	2480	2500	2.00	0.00	-51.46	45.74	74.00	-58.04	39.16	54.00	Pass

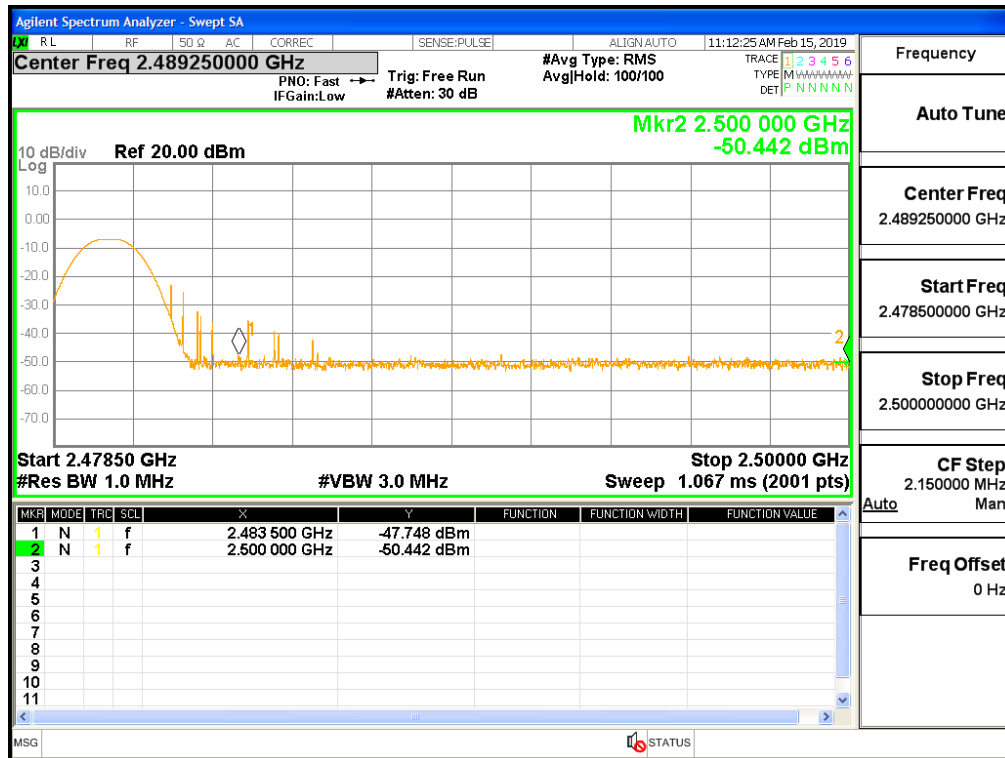
Restrict-band band-edge measurements_2402_PEAK_DH5



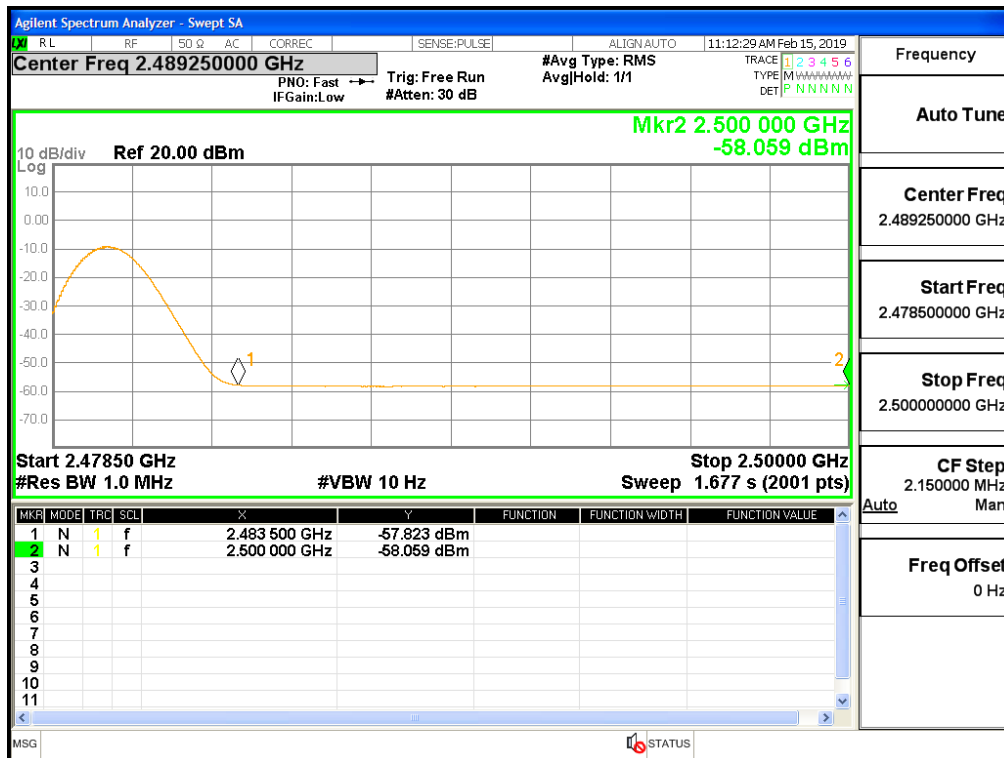
Restrict-band band-edge measurements_2402_AV_DH5



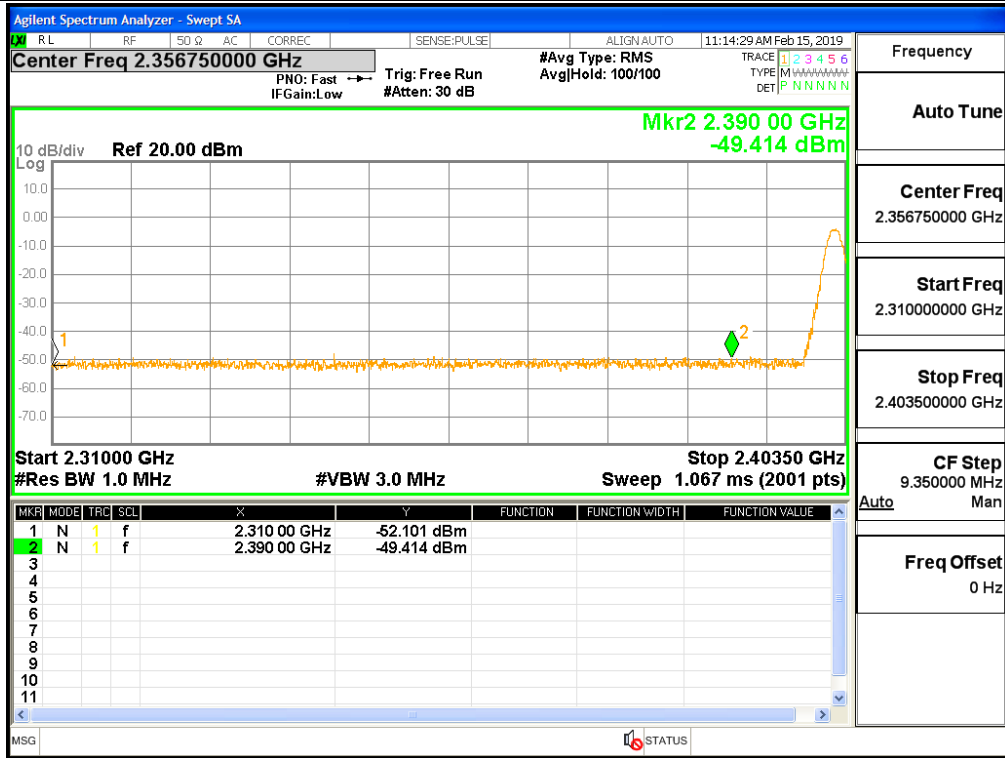
Restrict-band band-edge measurements_2480_PEAK_DH5



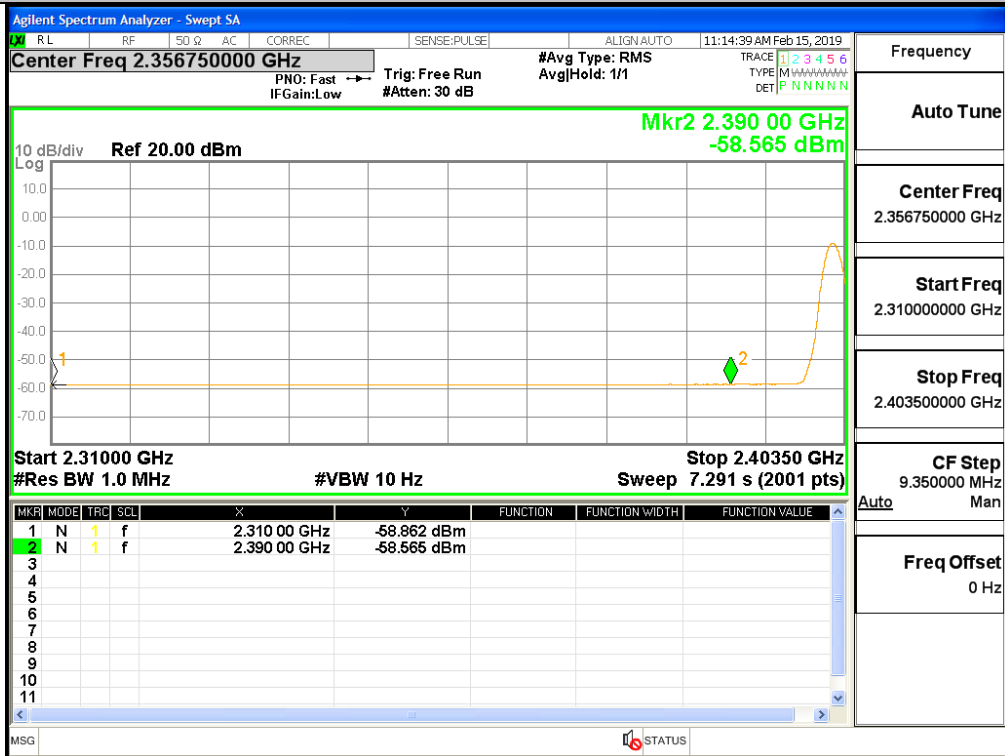
Restrict-band band-edge measurements_2480_AV_DH5



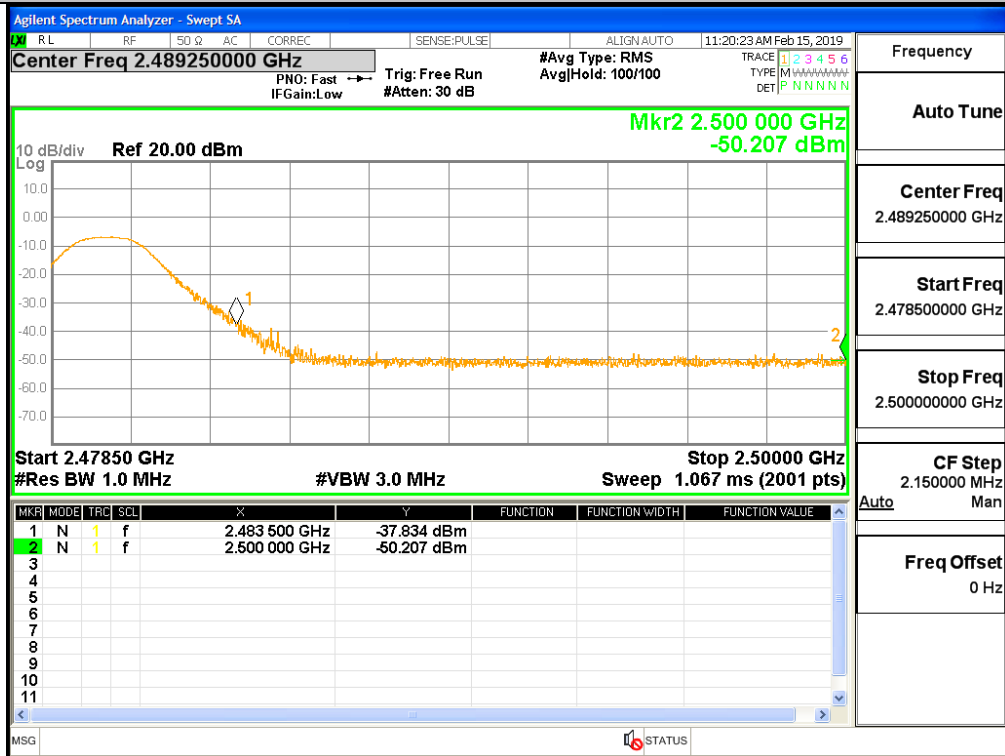
Restrict-band band-edge measurements_2402_PEAK_2DH5



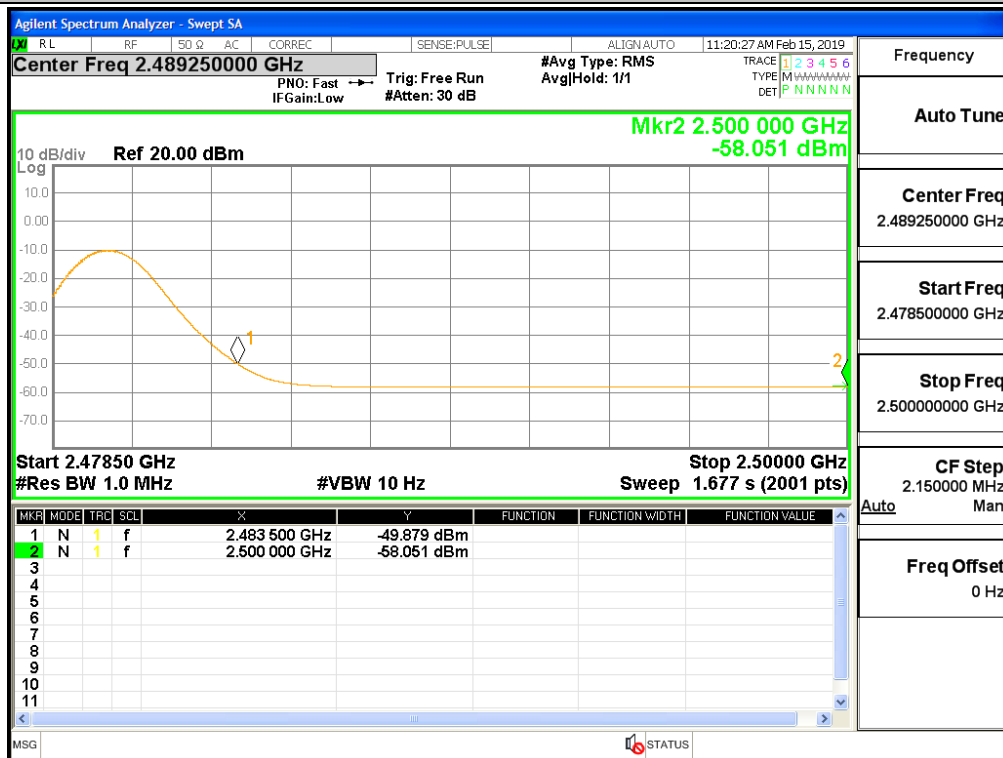
Restrict-band band-edge measurements_2402_AV_2DH5



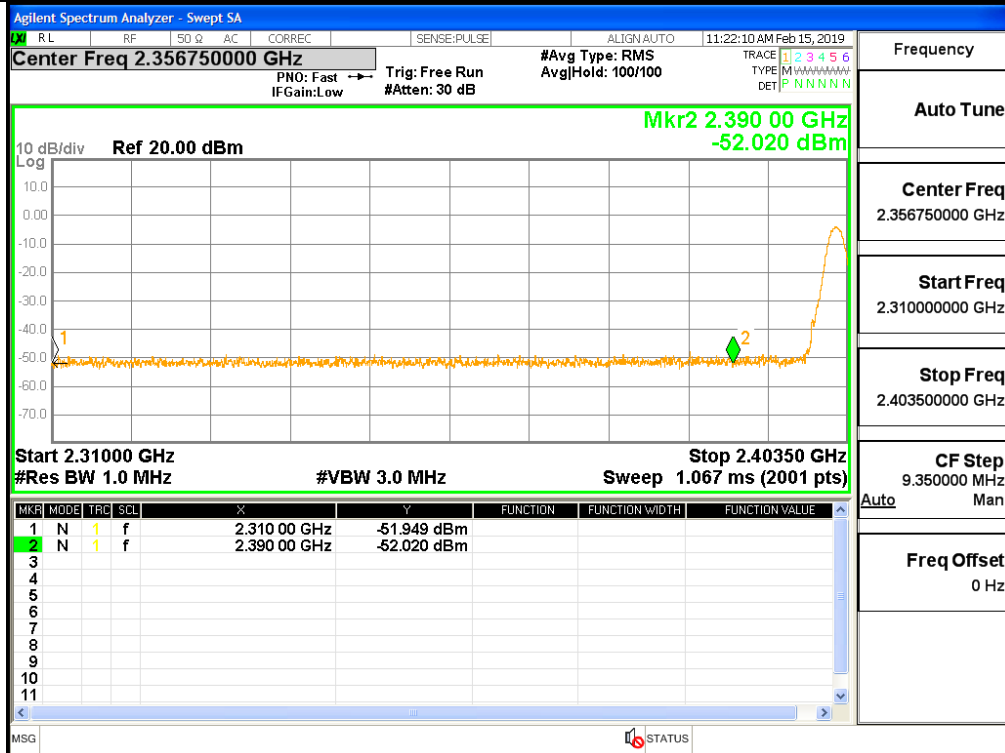
Restrict-band band-edge measurements_2480_PEAK_2DH5



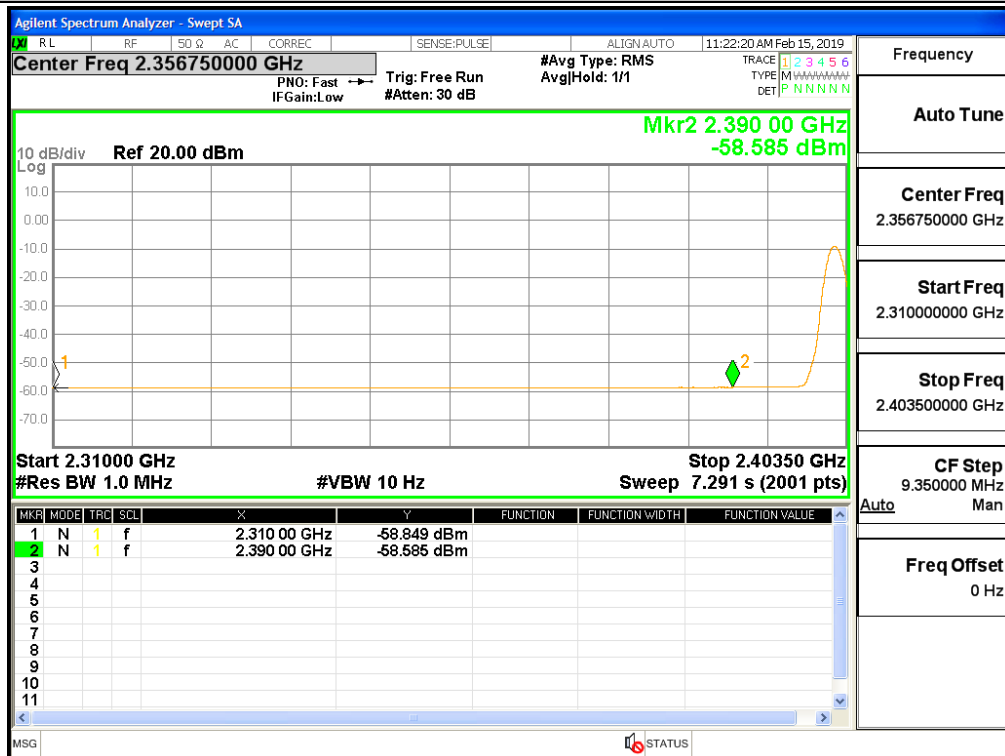
Restrict-band band-edge measurements_2480_AV_2DH5



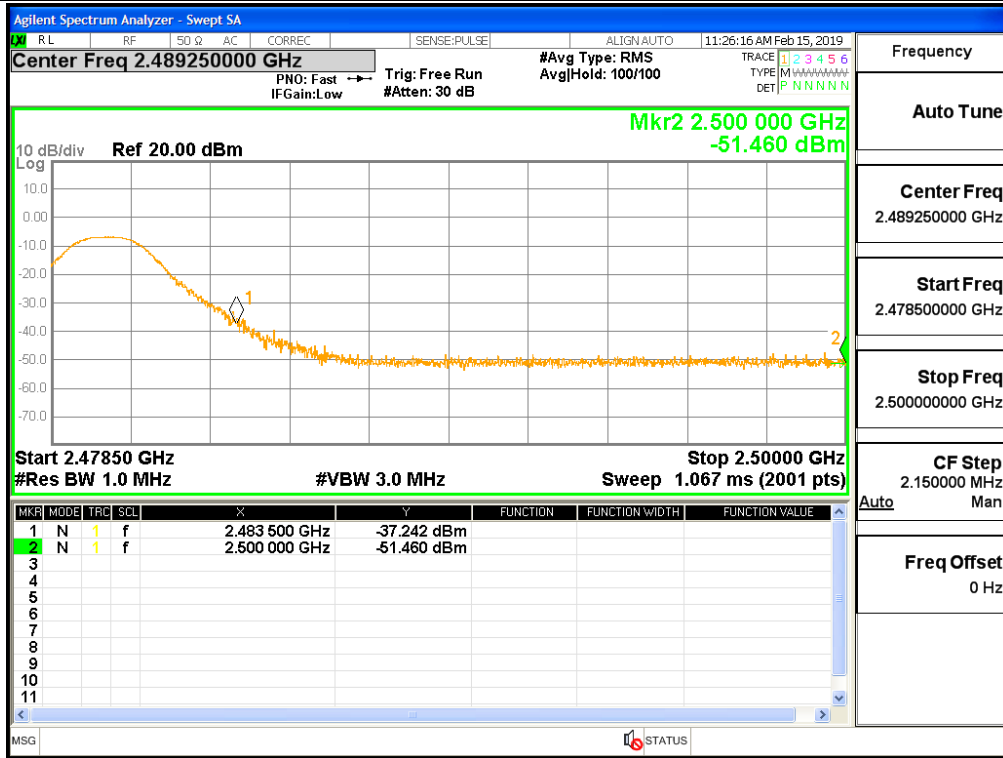
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

