

Appendix A RF Test Data for BT(BLE) (Conducted Measurement)

Product Name: 4K HDMI dongle

Trade Mark: /

Test Model: SN8BADE

FCC ID: 2AOVU-SN8BADX

Environmental Conditions

Temperature:	24.4° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

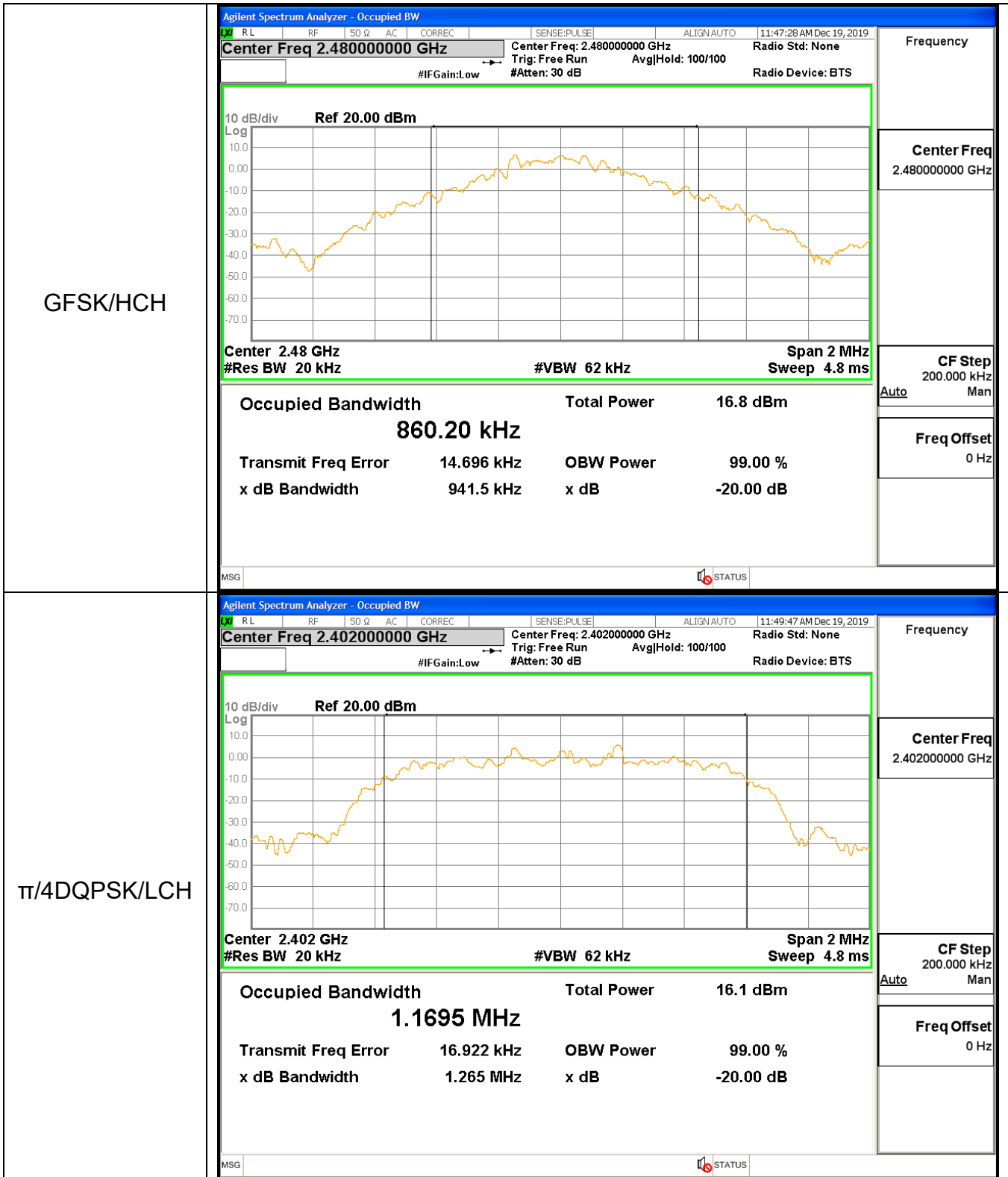
A.1 20 dB Bandwidth

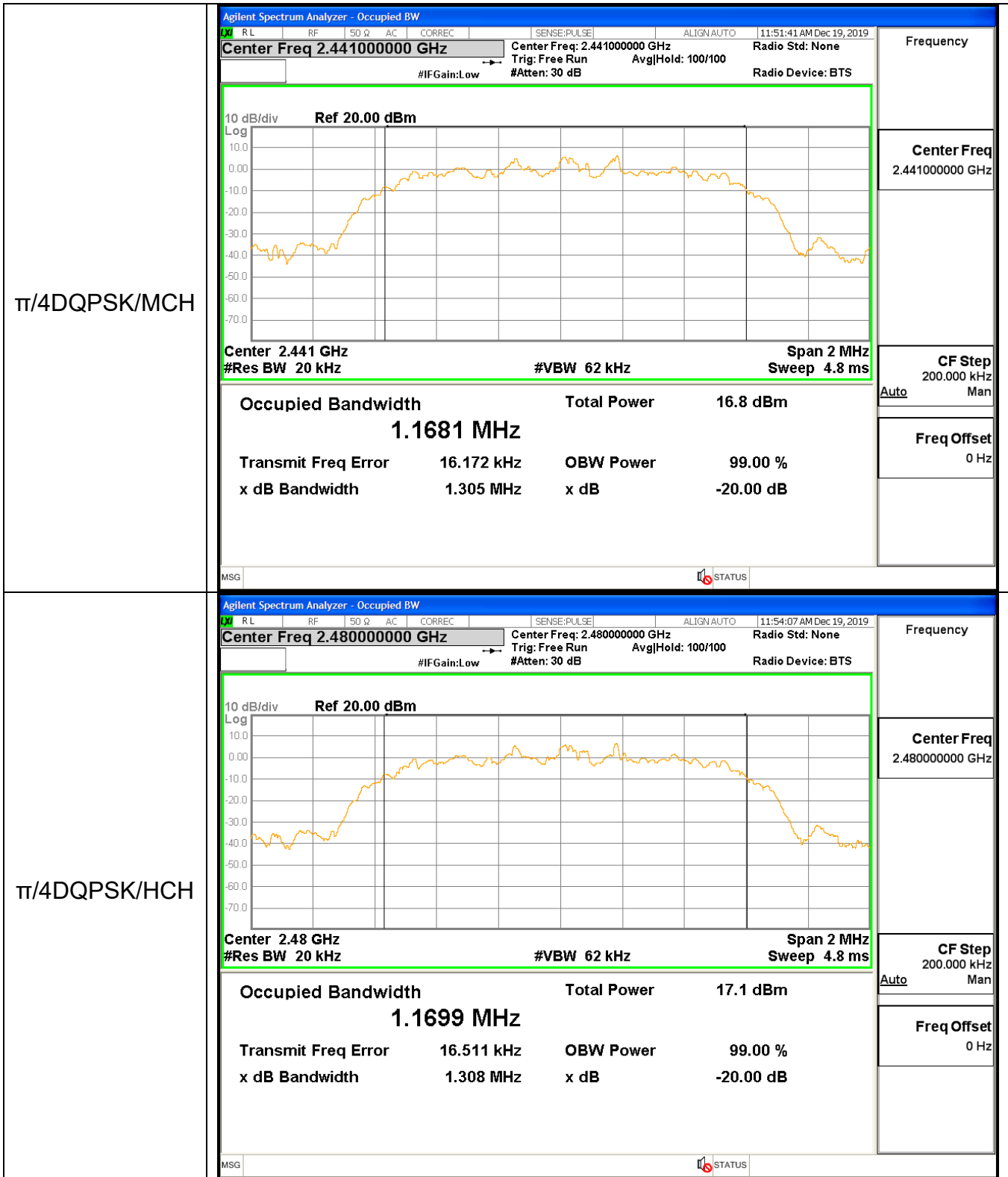
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.943	Not Specified	PASS
GFSK	MCH	0.939	Not Specified	PASS
GFSK	HCH	0.942	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.265	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.305	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.308	Not Specified	PASS
8DPSK	LCH	1.255	Not Specified	PASS
8DPSK	MCH	1.259	Not Specified	PASS
8DPSK	HCH	1.289	Not Specified	PASS

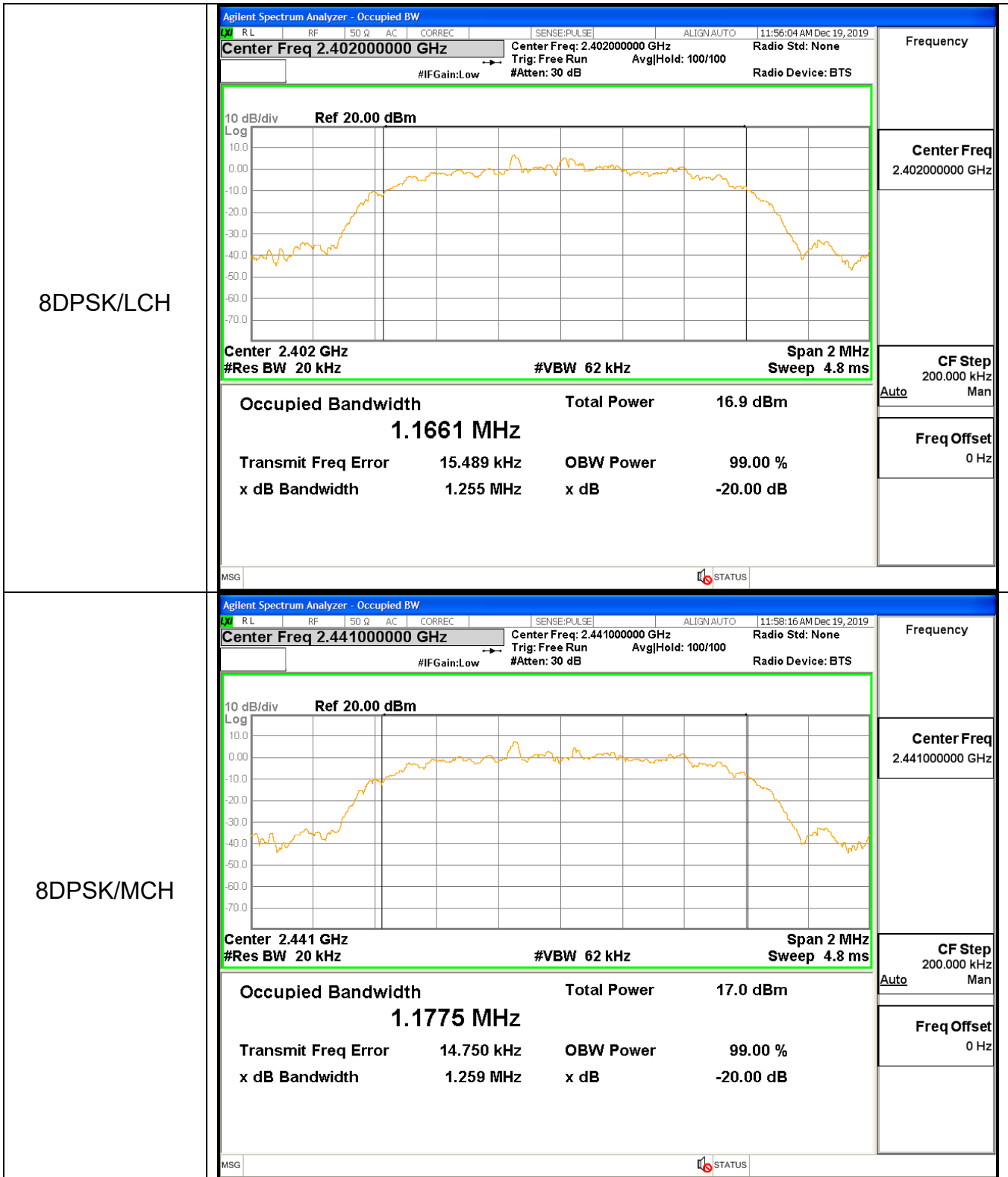
Test Graph

Graphs

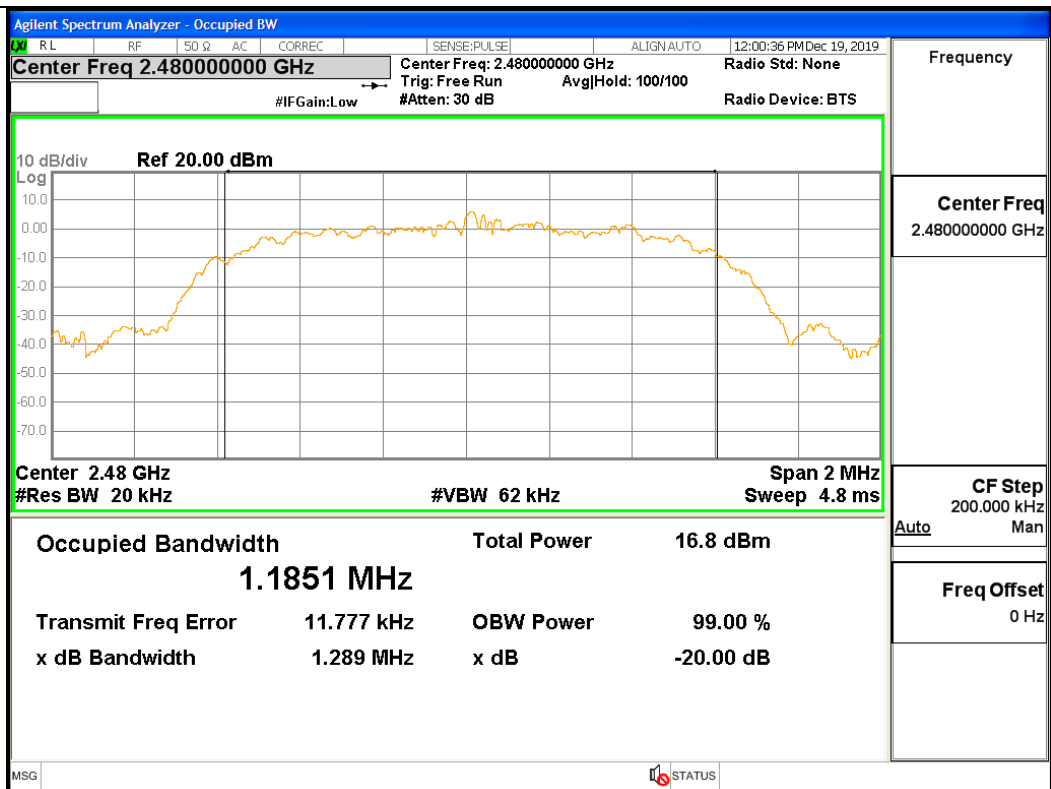
GFSK/LCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None #IFGain:Low Trig: Free Run AvgHold: 100/100 Radio Device: BTS #Atten: 30 dB		Frequency											
			Center Freq 2.402000000 GHz											
Center 2.402 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms		CF Step 200.000 kHz Man												
<table border="0" style="width: 100%;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>17.0 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">861.57 kHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>14.130 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>942.7 kHz</td> <td>x dB -20.00 dB</td> </tr> </table>		Occupied Bandwidth	Total Power	17.0 dBm	861.57 kHz			Transmit Freq Error	14.130 kHz	OBW Power 99.00 %	x dB Bandwidth	942.7 kHz	x dB -20.00 dB	Freq Offset 0 Hz
Occupied Bandwidth	Total Power	17.0 dBm												
861.57 kHz														
Transmit Freq Error	14.130 kHz	OBW Power 99.00 %												
x dB Bandwidth	942.7 kHz	x dB -20.00 dB												
MSG STATUS														
GFSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Radio Std: None #IFGain:Low Trig: Free Run AvgHold: 100/100 Radio Device: BTS #Atten: 30 dB		Frequency											
			Center Freq 2.441000000 GHz											
Center 2.441 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms		CF Step 200.000 kHz Man												
<table border="0" style="width: 100%;"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>17.0 dBm</td> </tr> <tr> <td colspan="3" style="text-align: center;">862.26 kHz</td> </tr> <tr> <td>Transmit Freq Error</td> <td>15.772 kHz</td> <td>OBW Power 99.00 %</td> </tr> <tr> <td>x dB Bandwidth</td> <td>939.1 kHz</td> <td>x dB -20.00 dB</td> </tr> </table>		Occupied Bandwidth	Total Power	17.0 dBm	862.26 kHz			Transmit Freq Error	15.772 kHz	OBW Power 99.00 %	x dB Bandwidth	939.1 kHz	x dB -20.00 dB	Freq Offset 0 Hz
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Transmit Freq Error	15.772 kHz	OBW Power 99.00 %												
x dB Bandwidth	939.1 kHz	x dB -20.00 dB												
MSG STATUS														







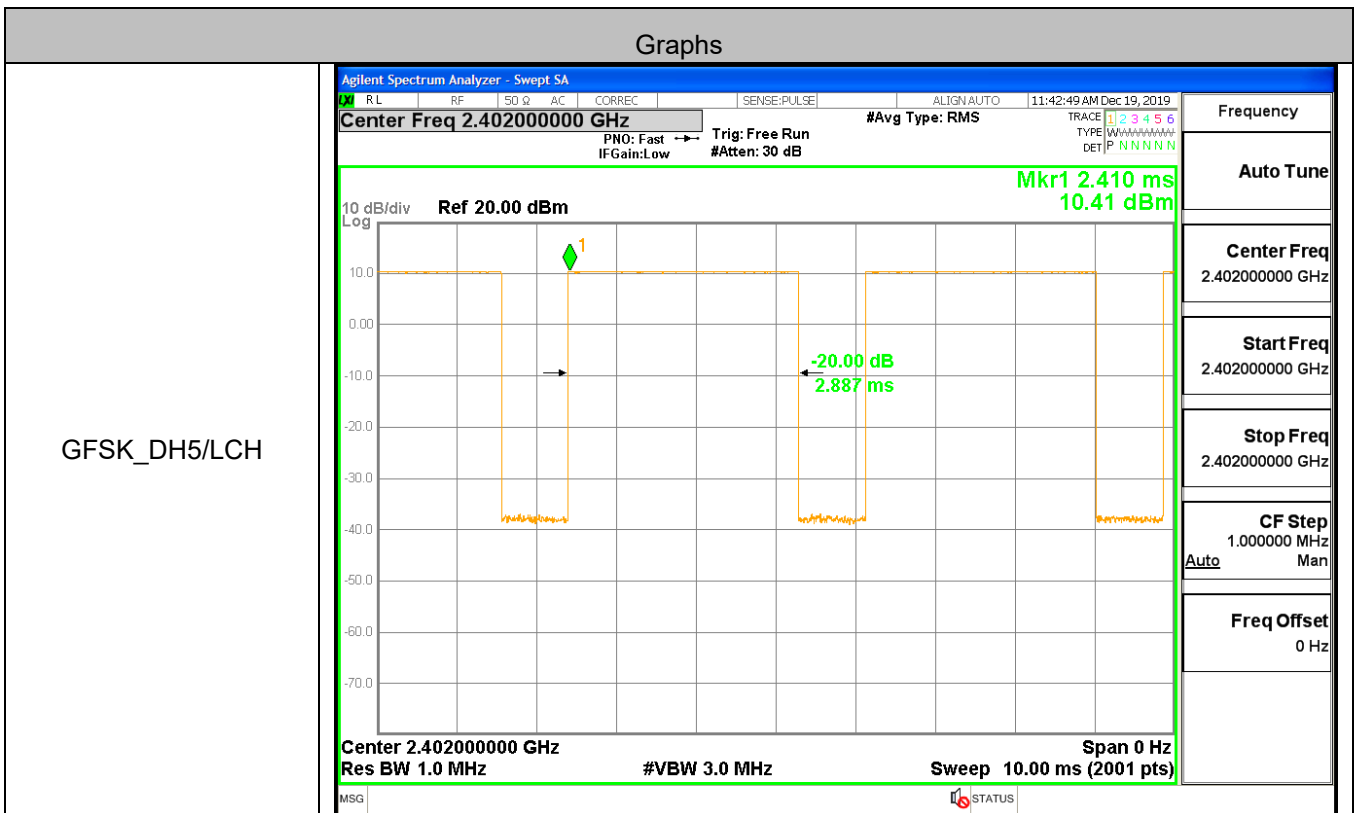
8DPSK/HCH

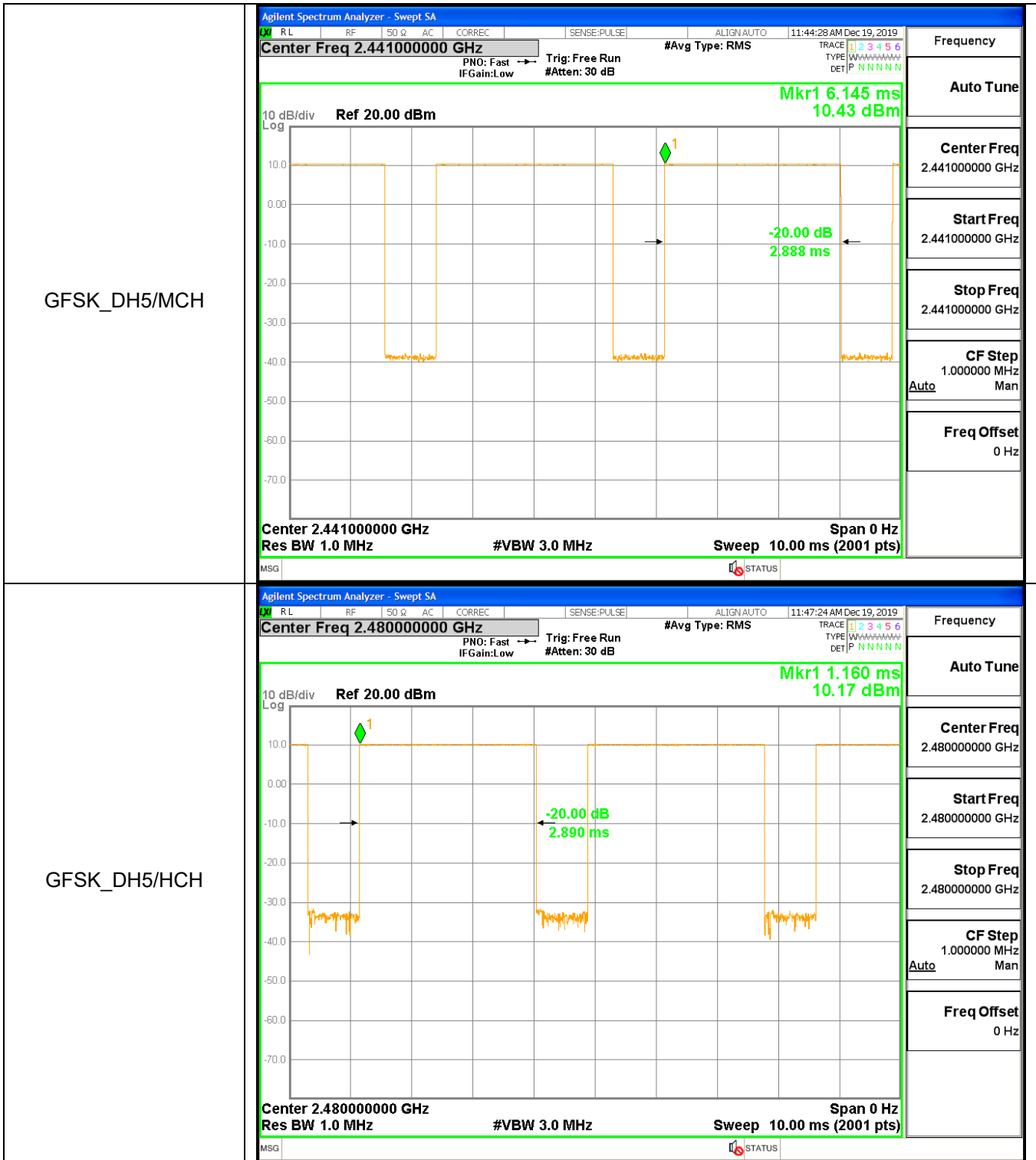


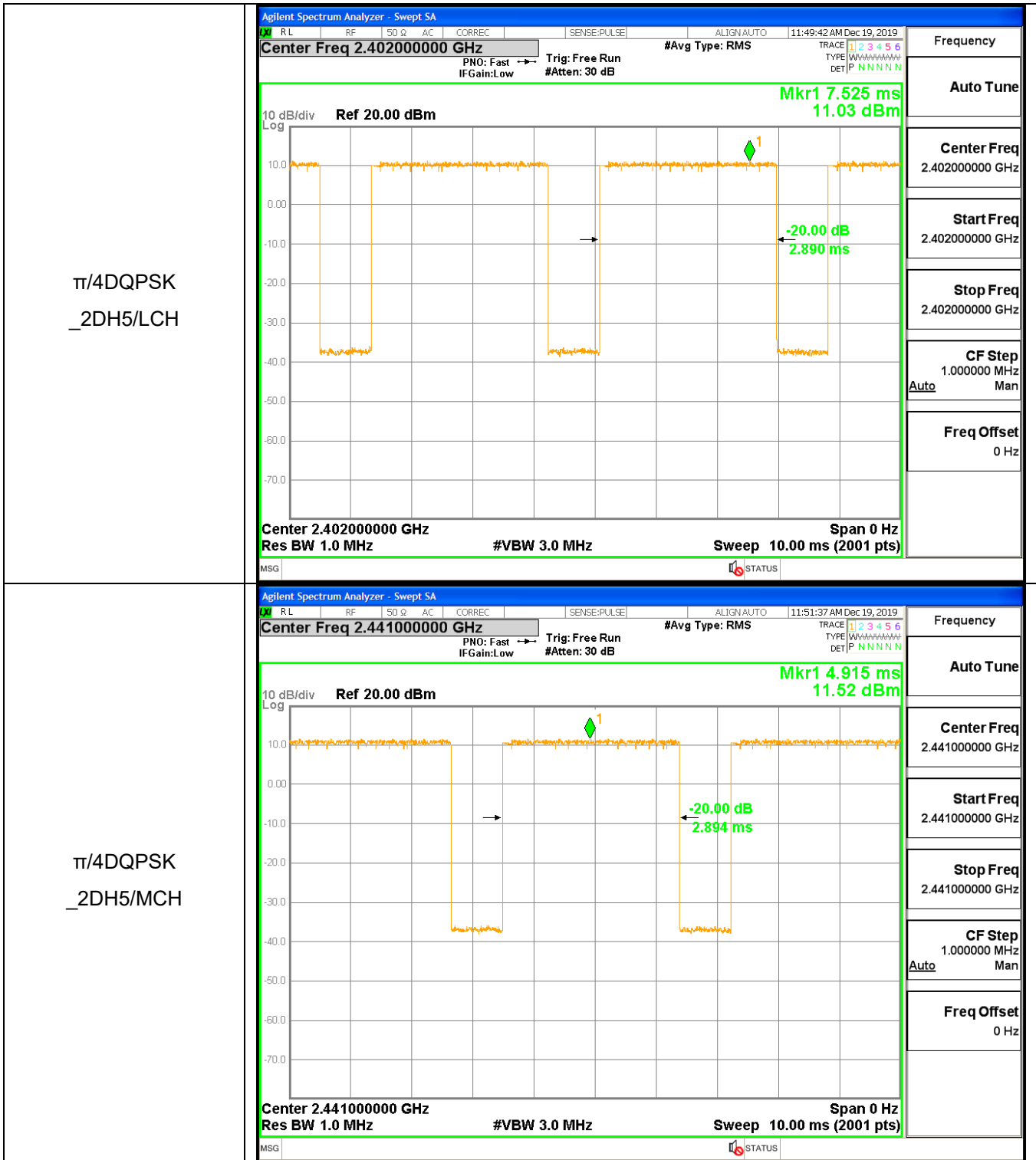
A.2 Dwell Time

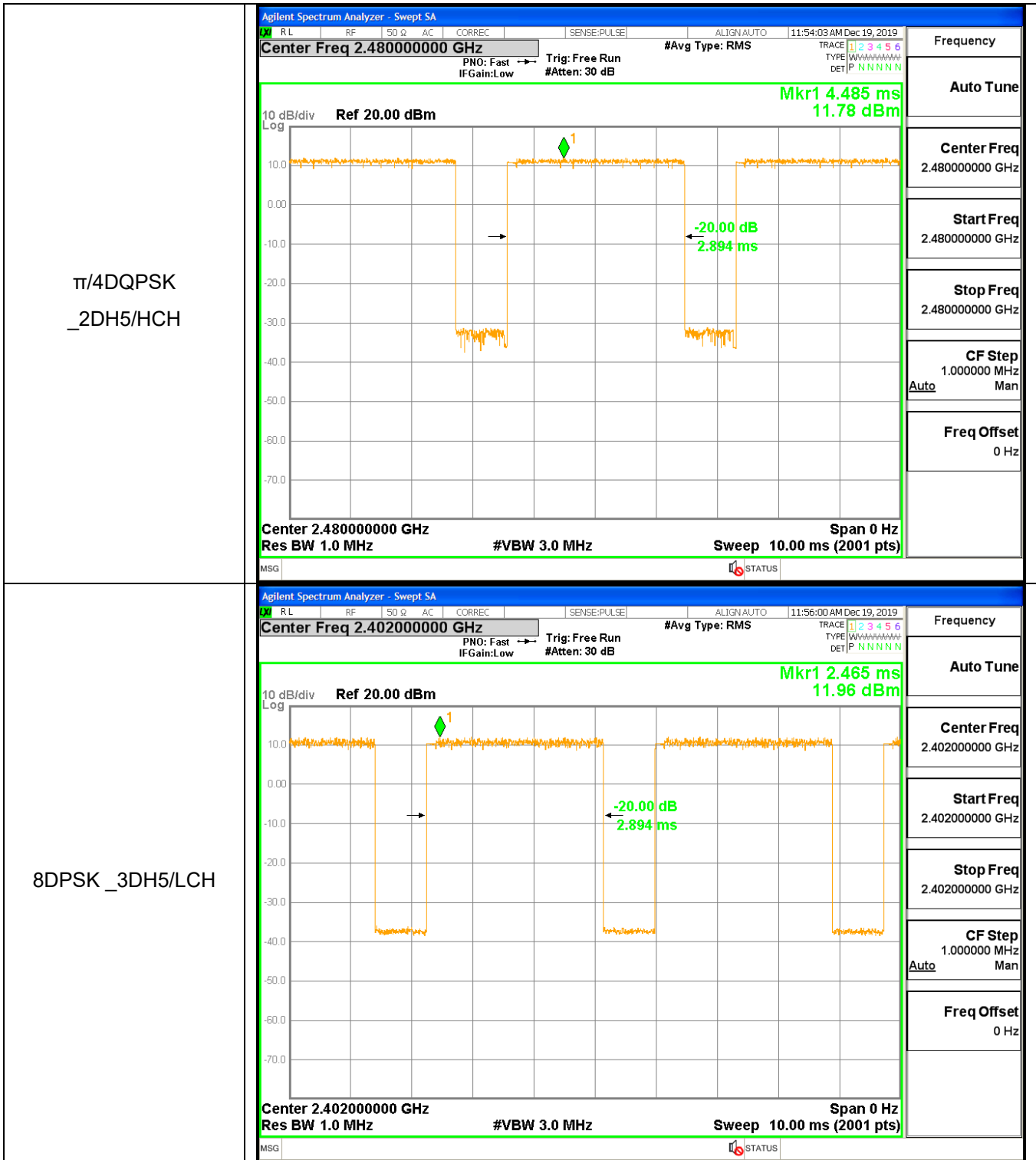
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002887	106.7	0.308094	0.4	PASS
GFSK	DH5	MCH	0.002888	106.7	0.308201	0.4	PASS
GFSK	DH5	HCH	0.002889	106.7	0.308287	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.00289	106.7	0.308322	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.00289	106.7	0.308358	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002894	106.7	0.308785	0.4	PASS
8DPSK	3DH5	LCH	0.002894	106.7	0.308813	0.4	PASS
8DPSK	3DH5	MCH	0.002894	106.7	0.308771	0.4	PASS
8DPSK	3DH5	HCH	0.002894	106.7	0.30877	0.4	PASS

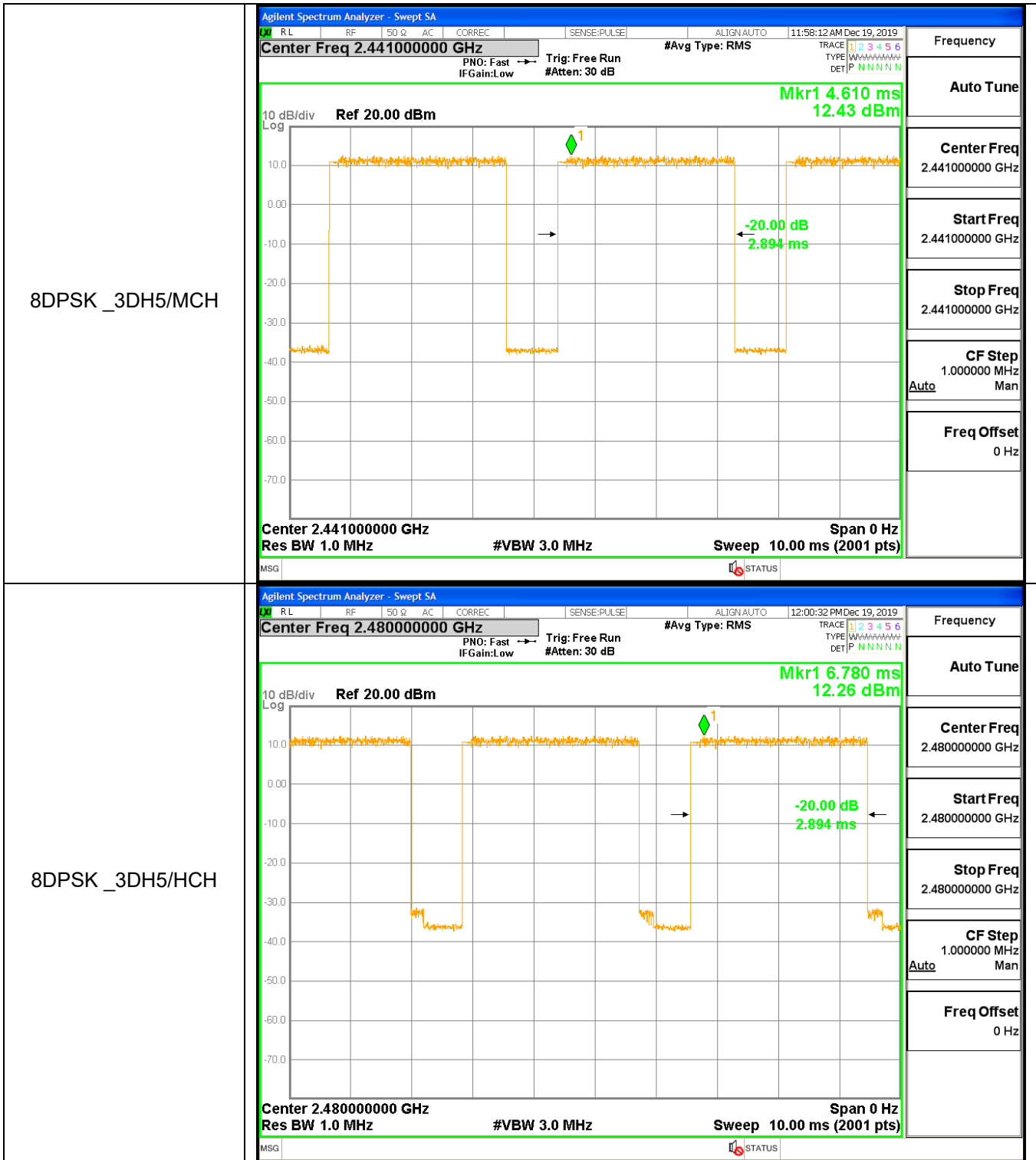
Test Graph







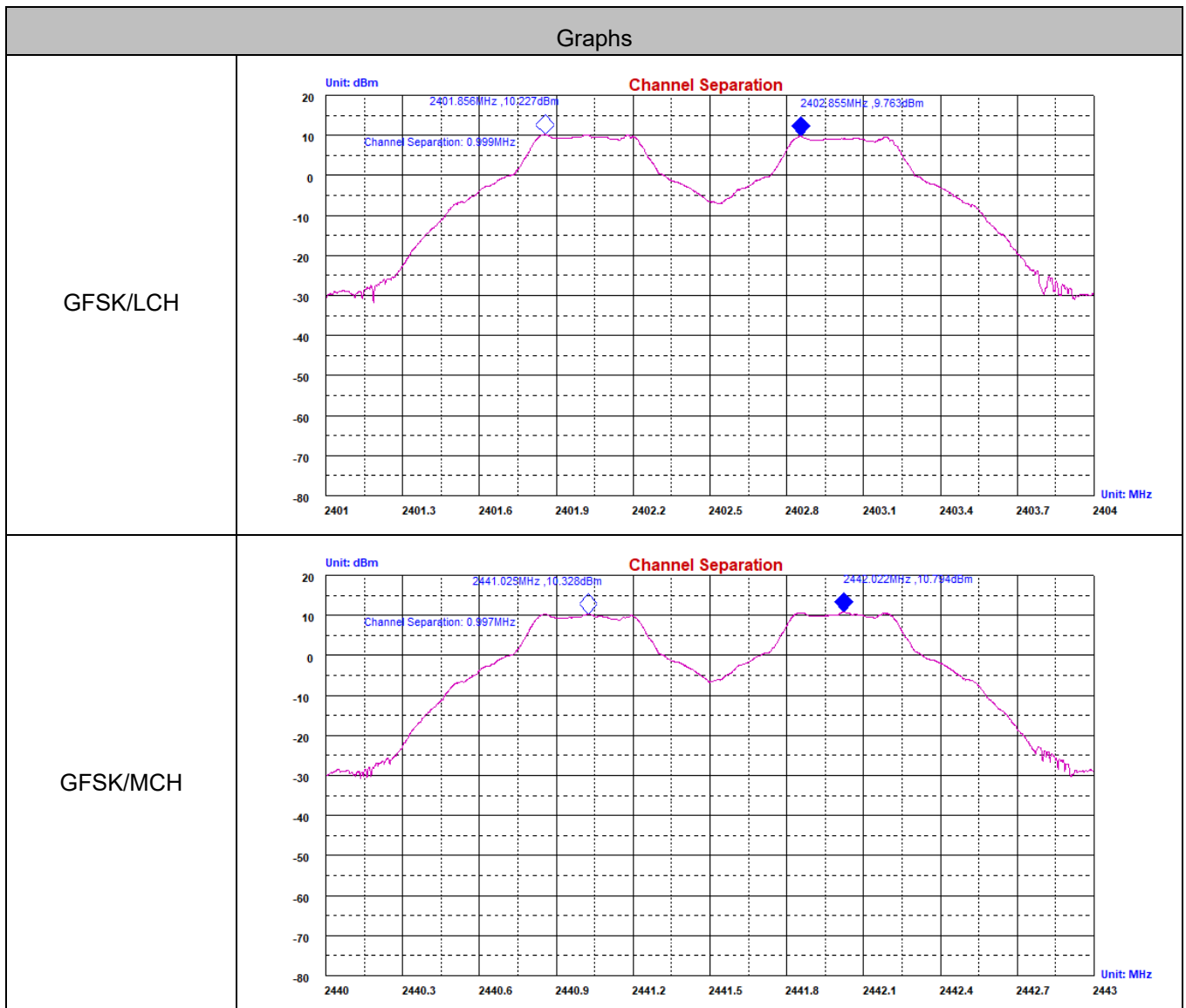


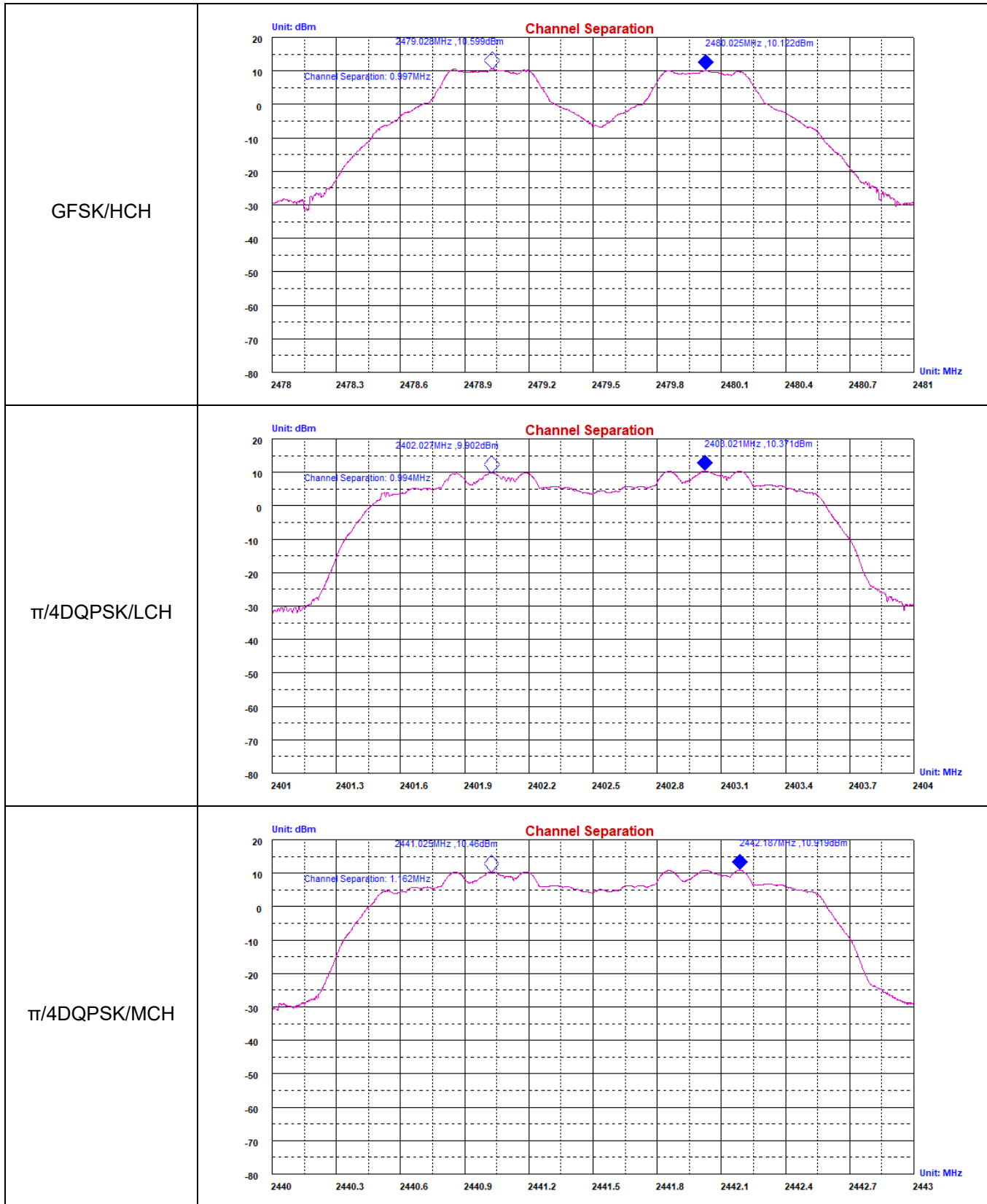


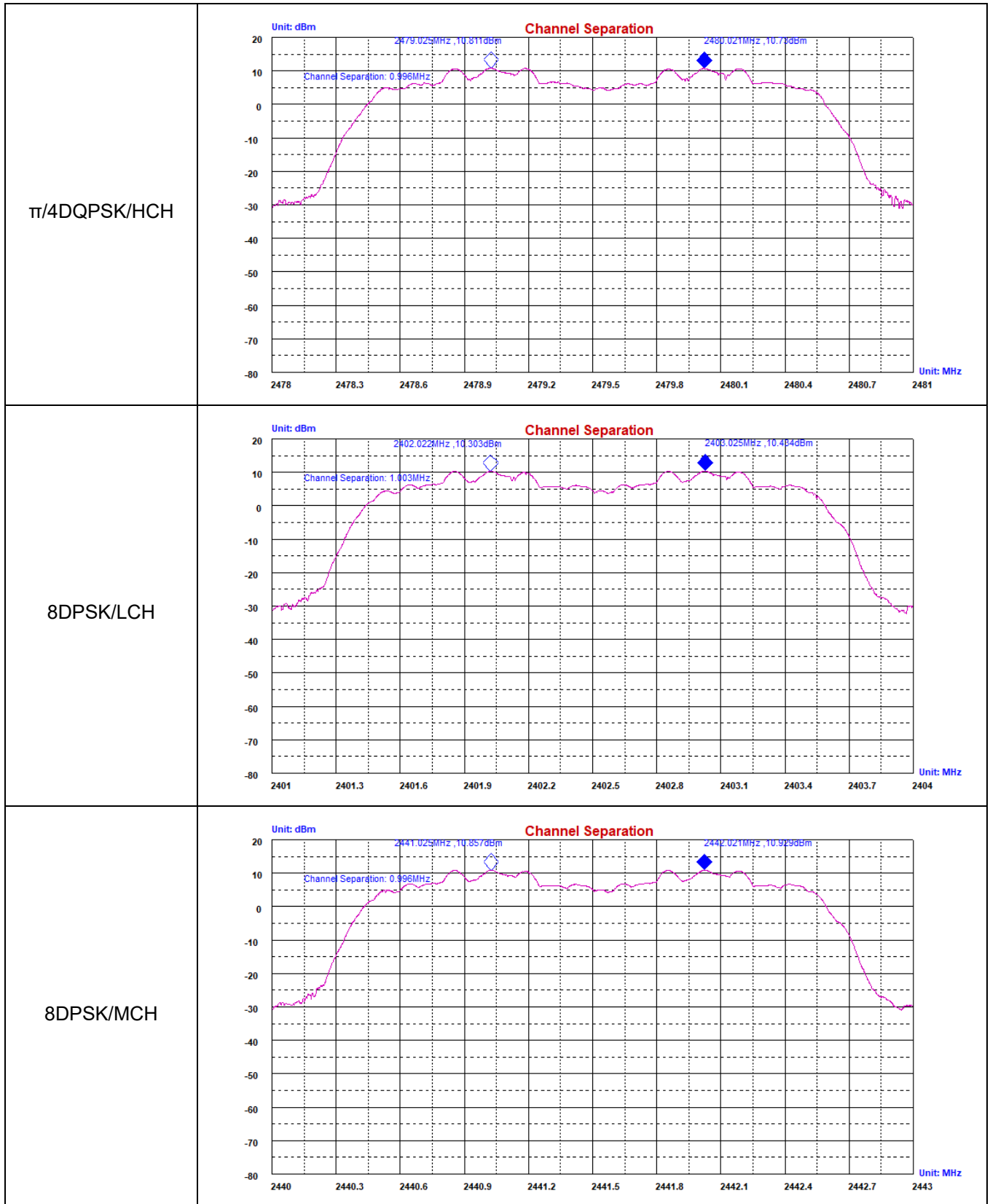
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.629	PASS
GFSK	MCH	0.997	0.626	PASS
GFSK	HCH	0.997	0.628	PASS
$\pi/4$ DQPSK	LCH	0.994	0.843	PASS
$\pi/4$ DQPSK	MCH	1.162	0.870	PASS
$\pi/4$ DQPSK	HCH	0.996	0.872	PASS
8DPSK	LCH	1.003	0.837	PASS
8DPSK	MCH	0.996	0.839	PASS
8DPSK	HCH	1.004	0.859	PASS

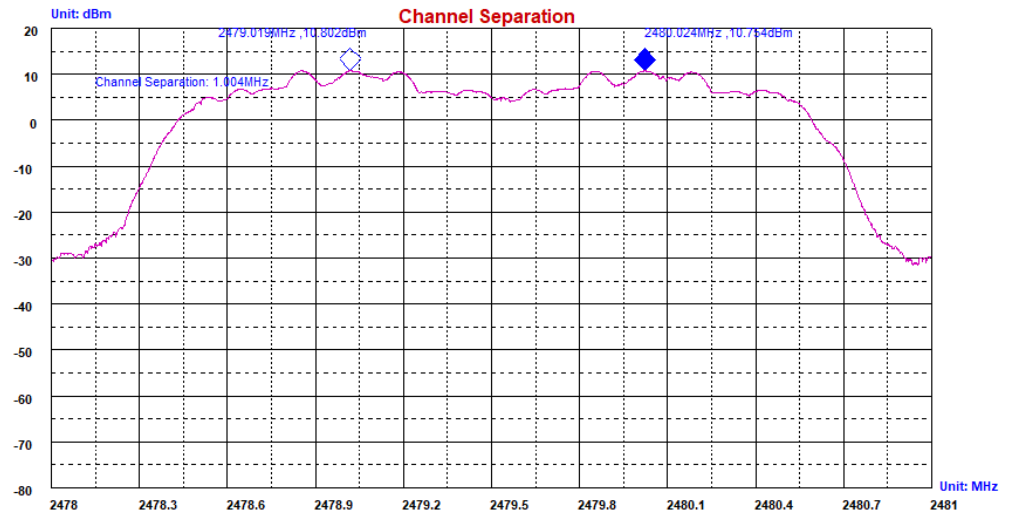
Test Graph







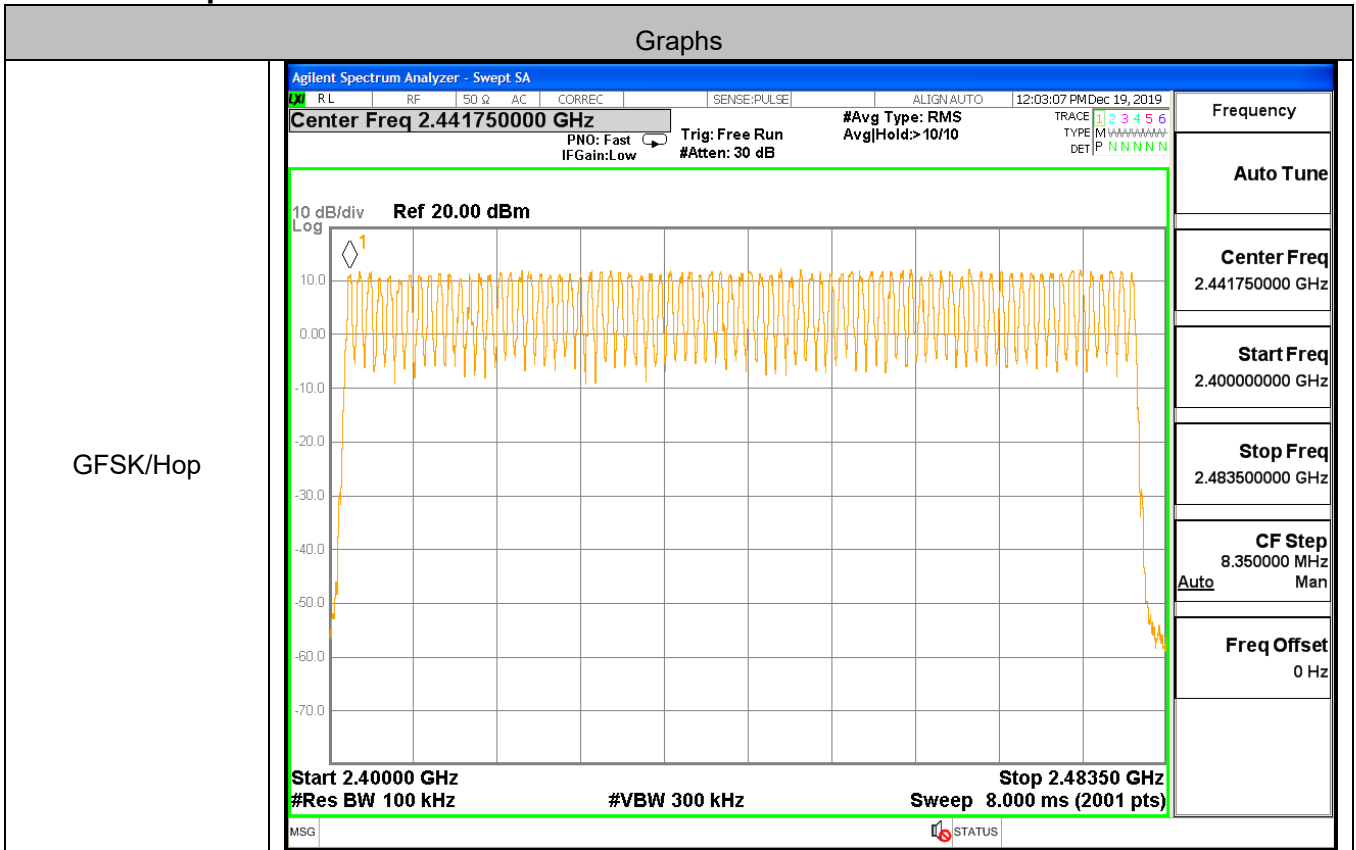
8DPSK/HCH

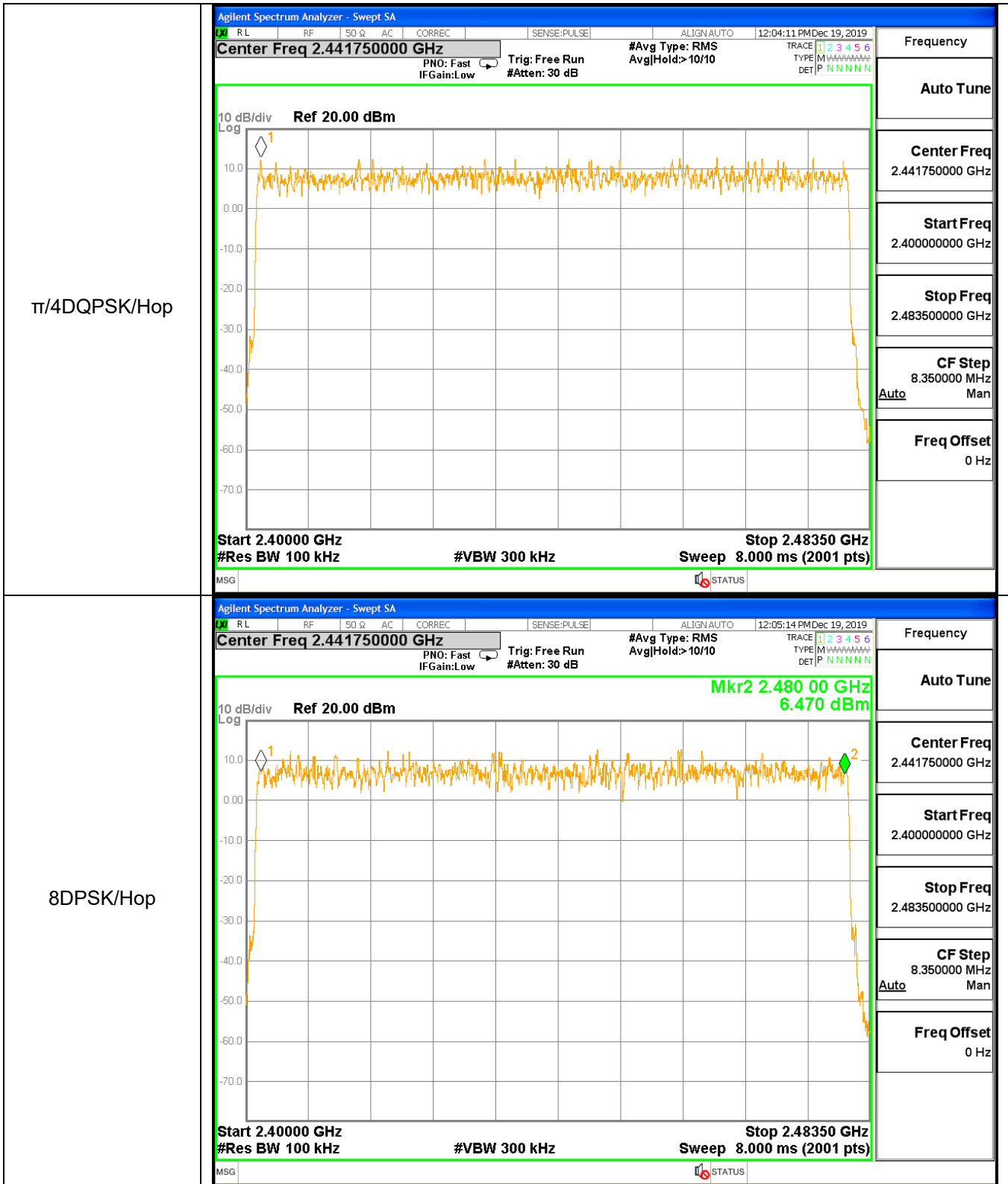


A.4 Hopping Channel Number

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

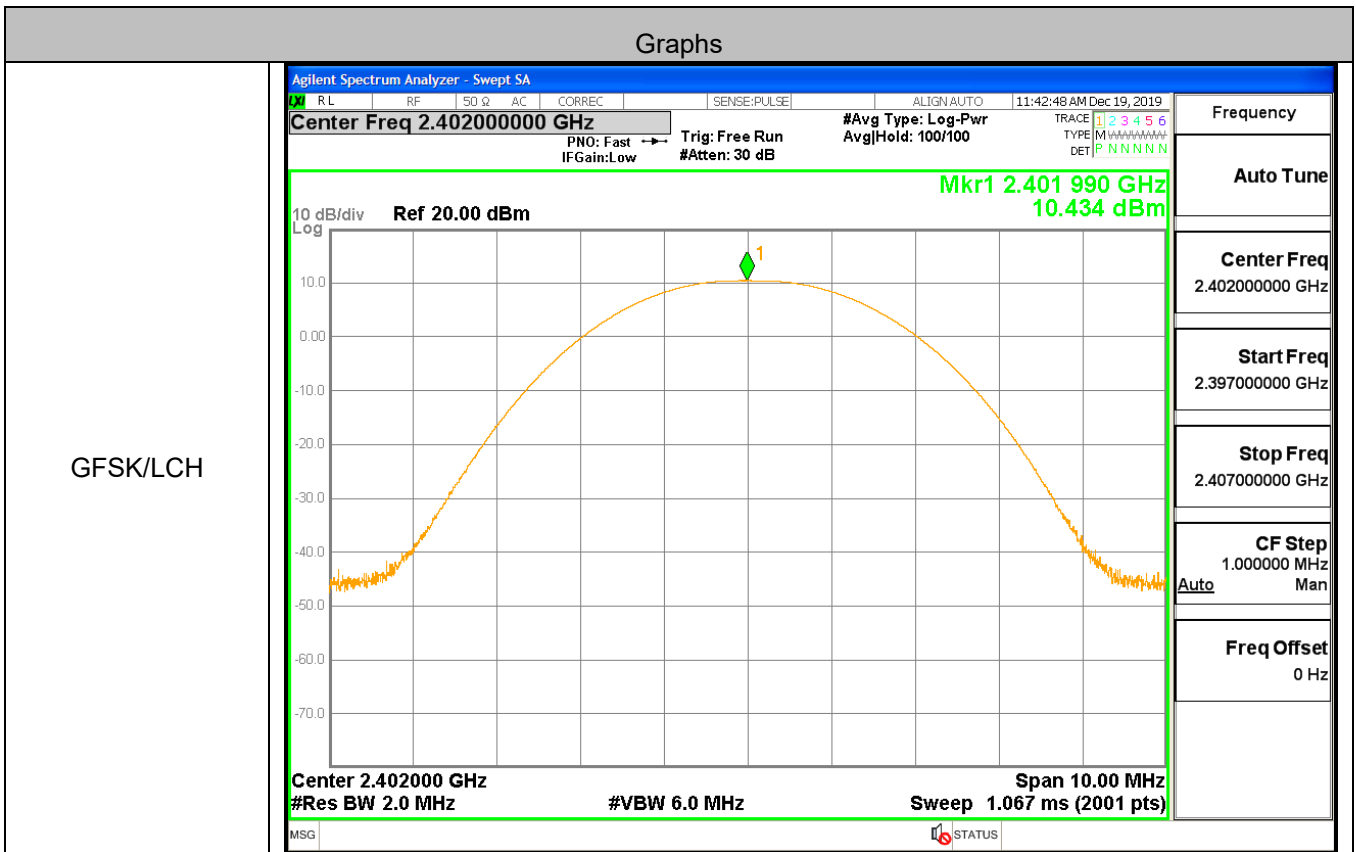


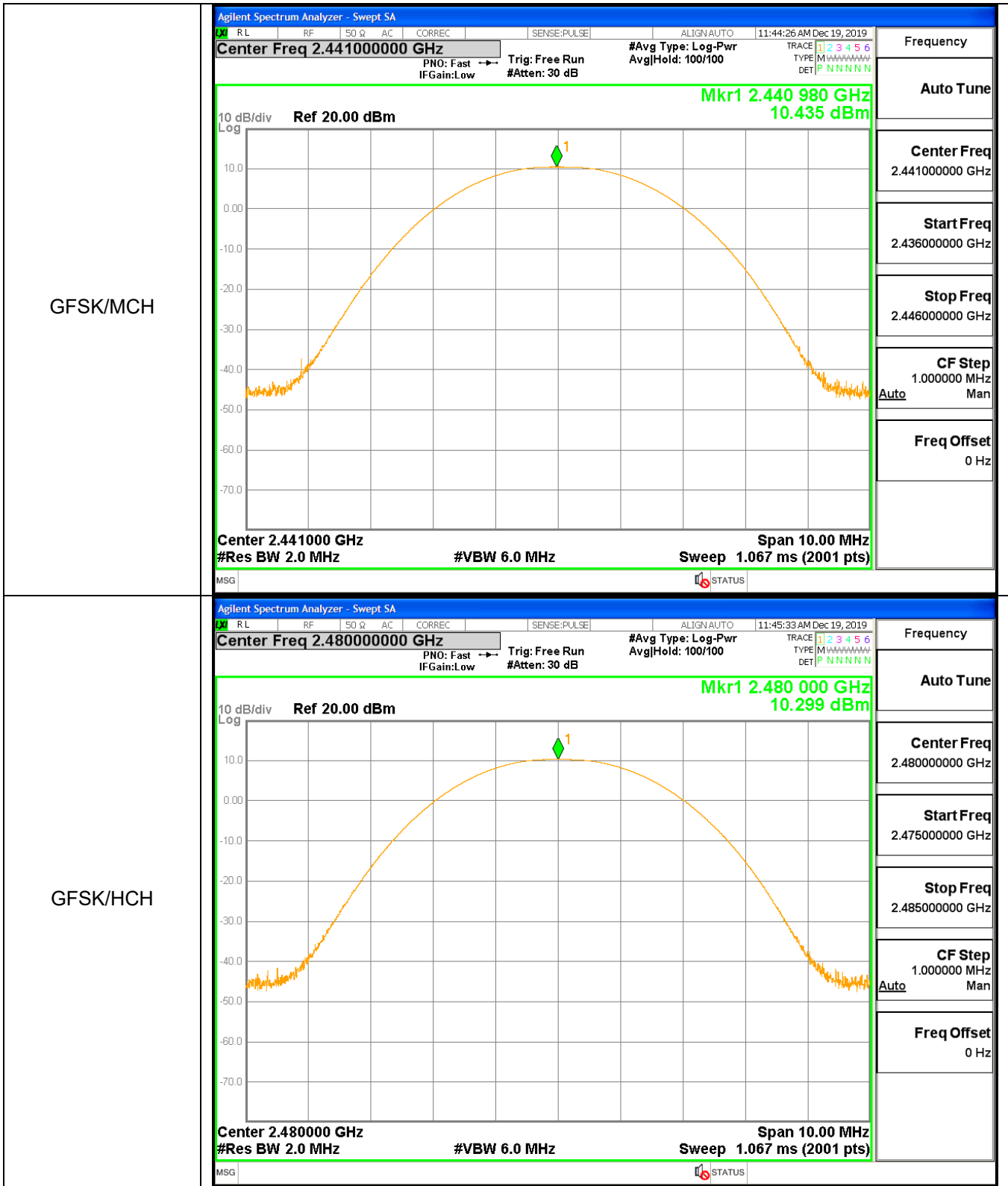


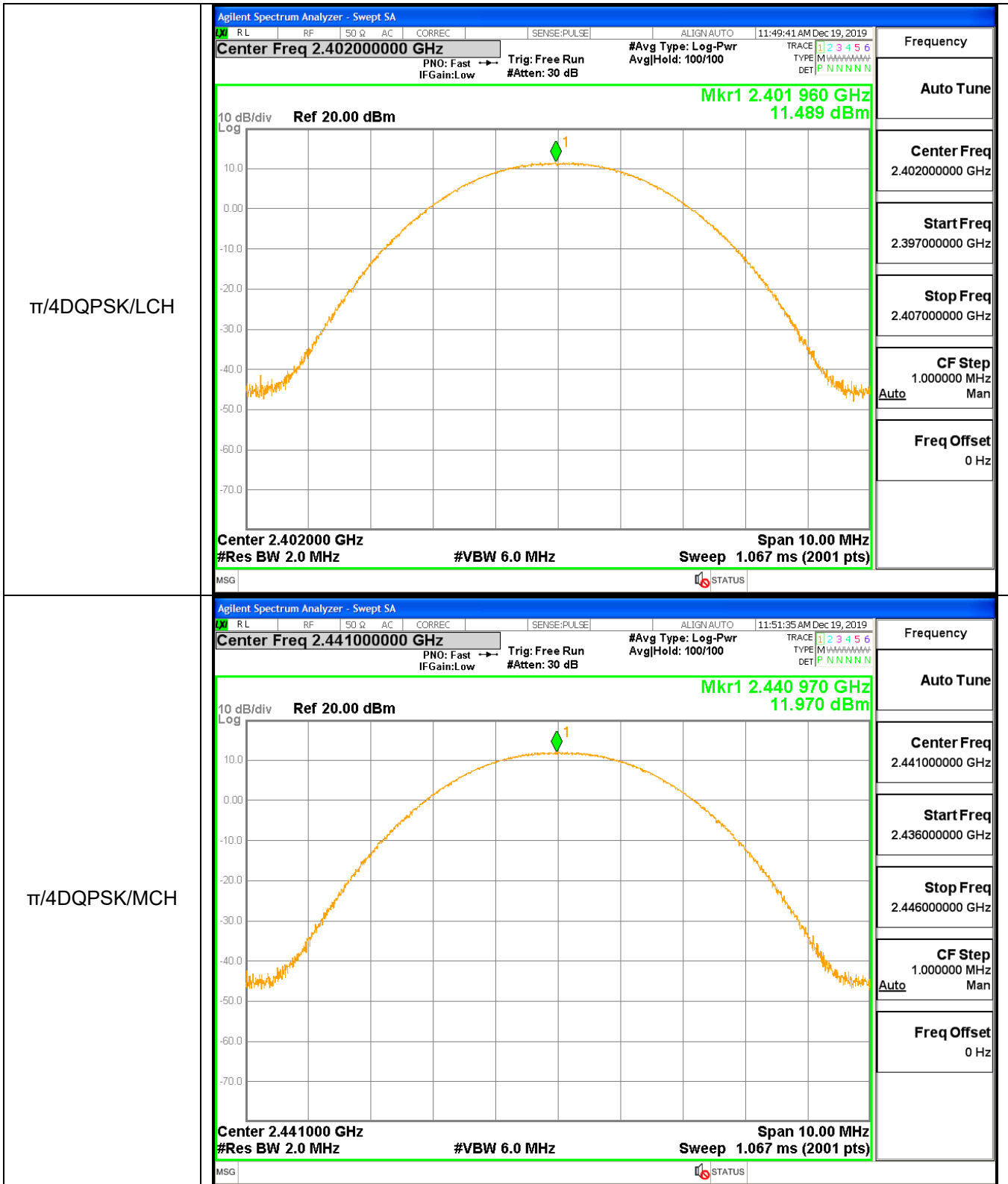
A.5 Conducted Peak Output Power

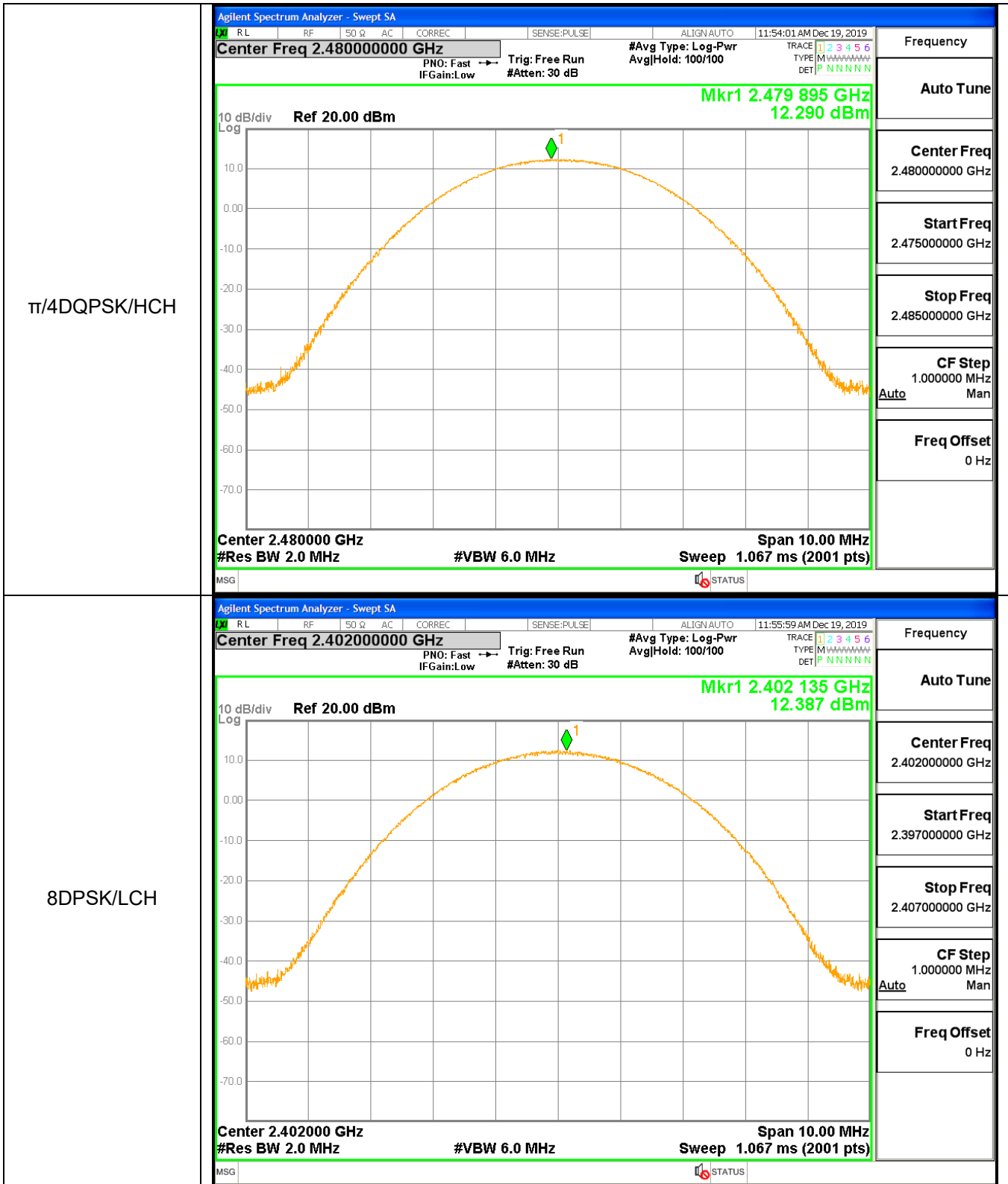
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	10.434	21	PASS
GFSK	MCH	10.435	21	PASS
GFSK	HCH	10.299	21	PASS
$\pi/4$ DQPSK	LCH	11.489	21	PASS
$\pi/4$ DQPSK	MCH	11.970	21	PASS
$\pi/4$ DQPSK	HCH	12.290	21	PASS
8DPSK	LCH	12.387	21	PASS
8DPSK	MCH	12.914	21	PASS
8DPSK	HCH	12.733	21	PASS

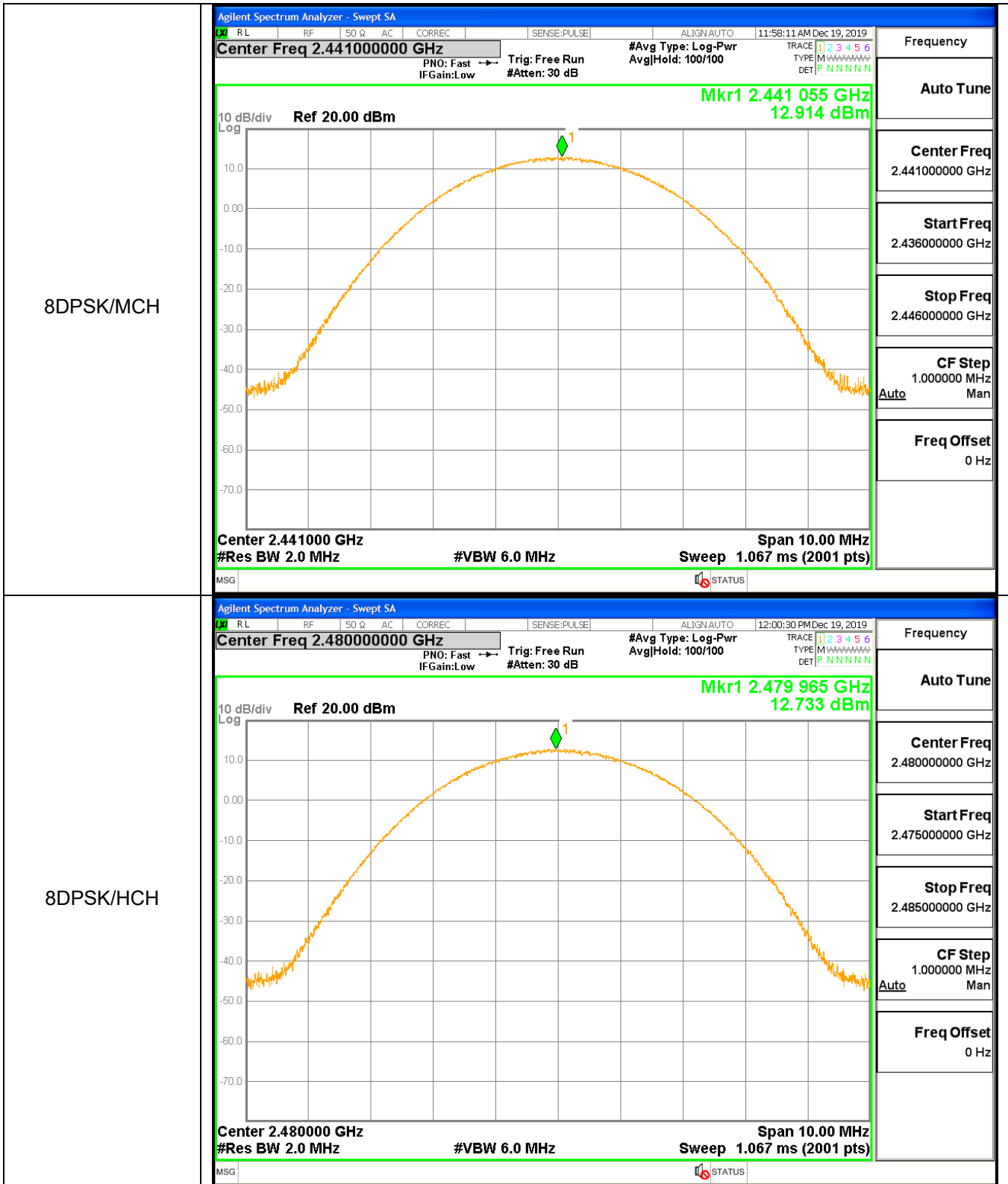
Test Graph











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	10.012	-53.7	-9.988	Pass
1DH5	2480	2483.5	9.915	-57.84	-10.085	Pass
2DH5	2402	2483.5	9.909	-60.01	-10.091	Pass
2DH5	2480	2400	9.536	-50.79	-10.464	Pass
3DH5	2402	2497.958	9.351	-57.567	-10.649	Pass
3DH5	2480	2400	10.388	-48.78	-9.612	Pass
1DH5-Hopping	2402	2483.5	10.684	-56.36	-9.316	Pass
1DH5-Hopping	2480	2400	11.859	-56.94	-8.141	Pass
2DH5-Hopping	2402	2483.5	12.216	-59.38	-7.784	Pass
2DH5-Hopping	2480	2400	12.325	-49.74	-7.675	Pass
3DH5-Hopping	2402	2483.5	12.547	-58.68	-7.453	Pass
3DH5-Hopping	2480	2399.7	12.294	-45.511	-7.706	Pass

Test Graph

Graphs

GFSK/LCH/No Hop

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

10 dB/div Ref 20.00 dBm
 Log
 -9.99 dBm
 Start 2.31000 GHz Stop 2.40350 GHz
 #Res BW 100 kHz #VBW 300 kHz 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	-60.975 dBm			
2	N	1	f	2.400 00 GHz	-53.695 dBm			
3	N	1	f	2.35675 GHz	-9.99 dBm			
4	N	1	f	2.402 10 GHz	10.012 dBm			

Frequency

Auto Tune

Center Freq
2.356750000 GHz

Start Freq
2.310000000 GHz

Stop Freq
2.403500000 GHz

CF Step
9.350000 MHz

Freq Offset
0 Hz

GFSK/HCH/ No Hop

Agilent Spectrum Analyzer - Swept SA
 Center Freq **2.489250000 GHz**
 #Avg Type: RMS
 Avg|Hold: 100/100
 PNO: Fast Trig: Free Run
 IFGain:Low #Atten: 30 dB

10 dB/div Ref 20.00 dBm
 Log
 -10.09 dBm
 Start 2.47850 GHz Stop 2.50000 GHz
 #Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 500 GHz	-60.009 dBm			
2	N	1	f	2.500 000 GHz	-61.618 dBm			
3	N	1	f	2.48925 GHz	-10.09 dBm			
4	N	1	f	2.480 027 GHz	9.909 dBm			

Frequency

Auto Tune

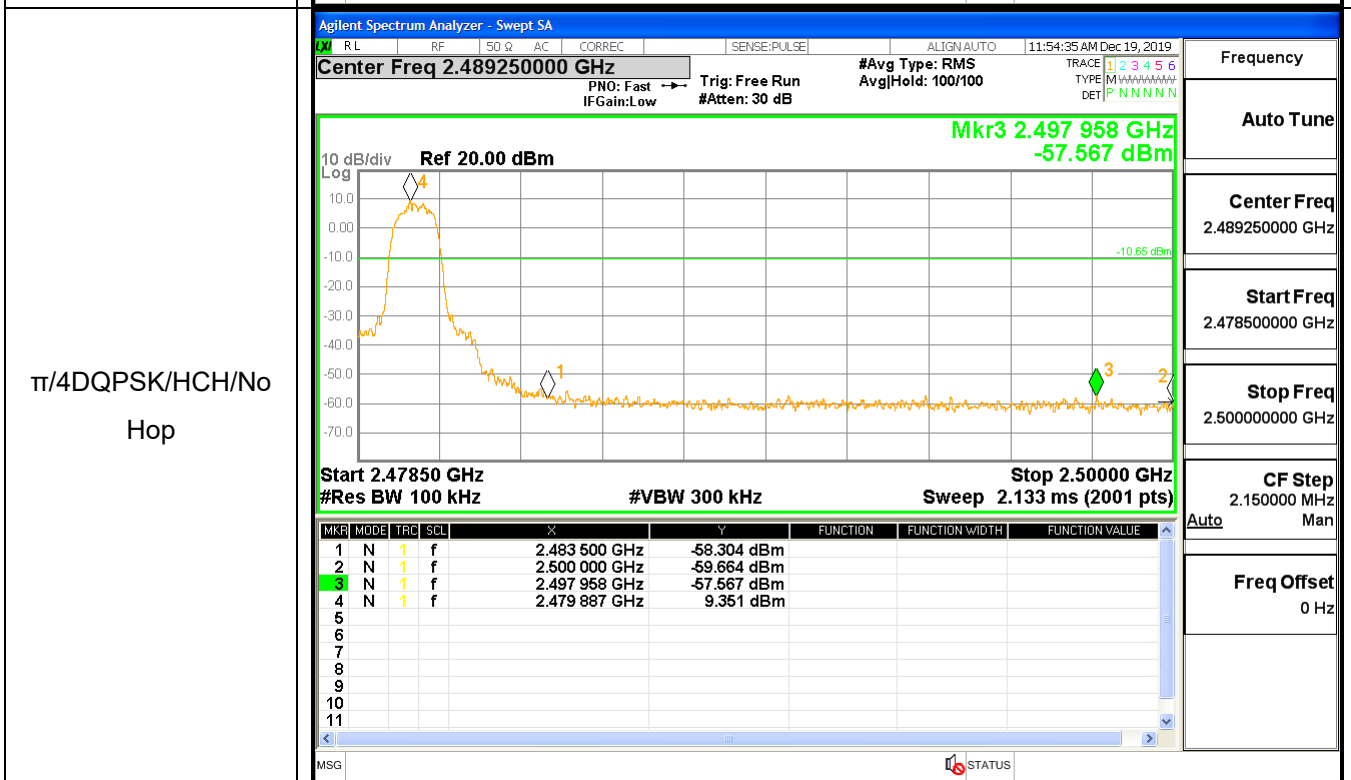
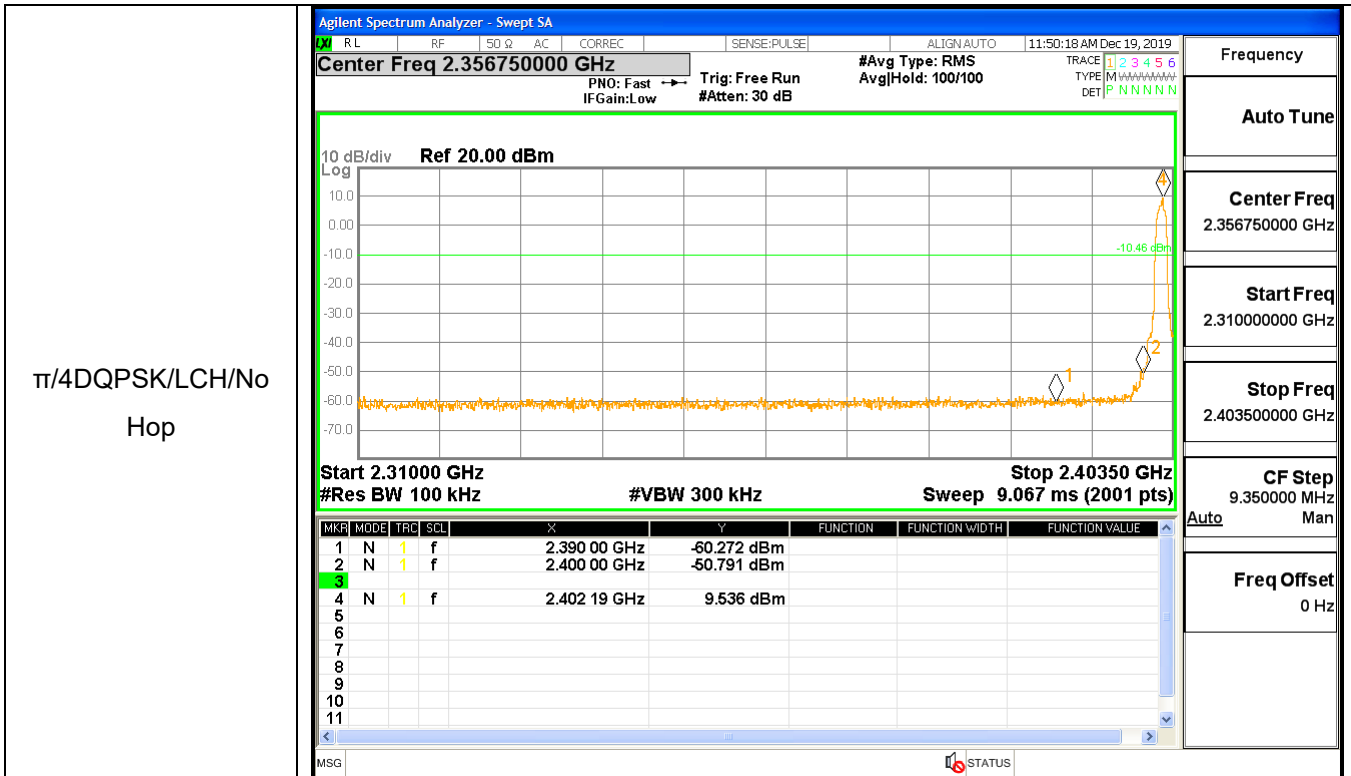
Center Freq
2.489250000 GHz

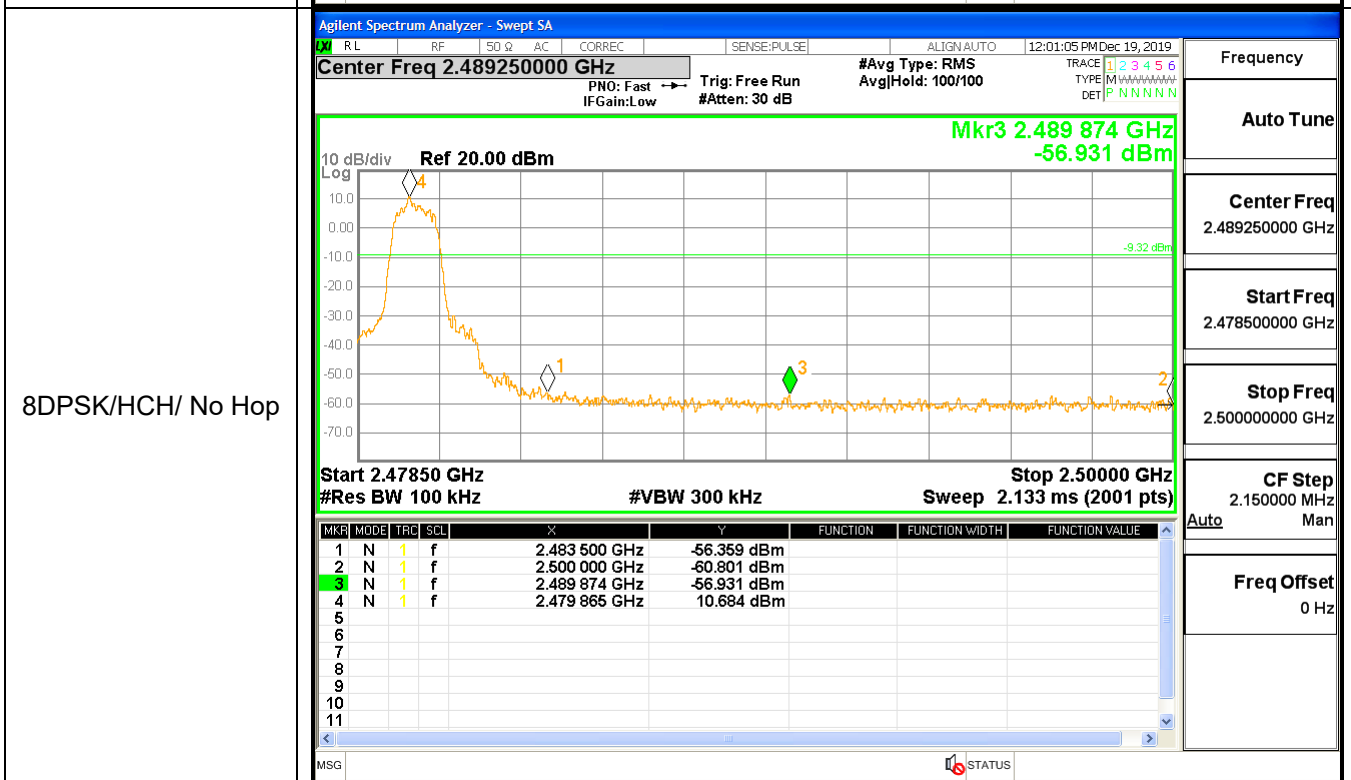
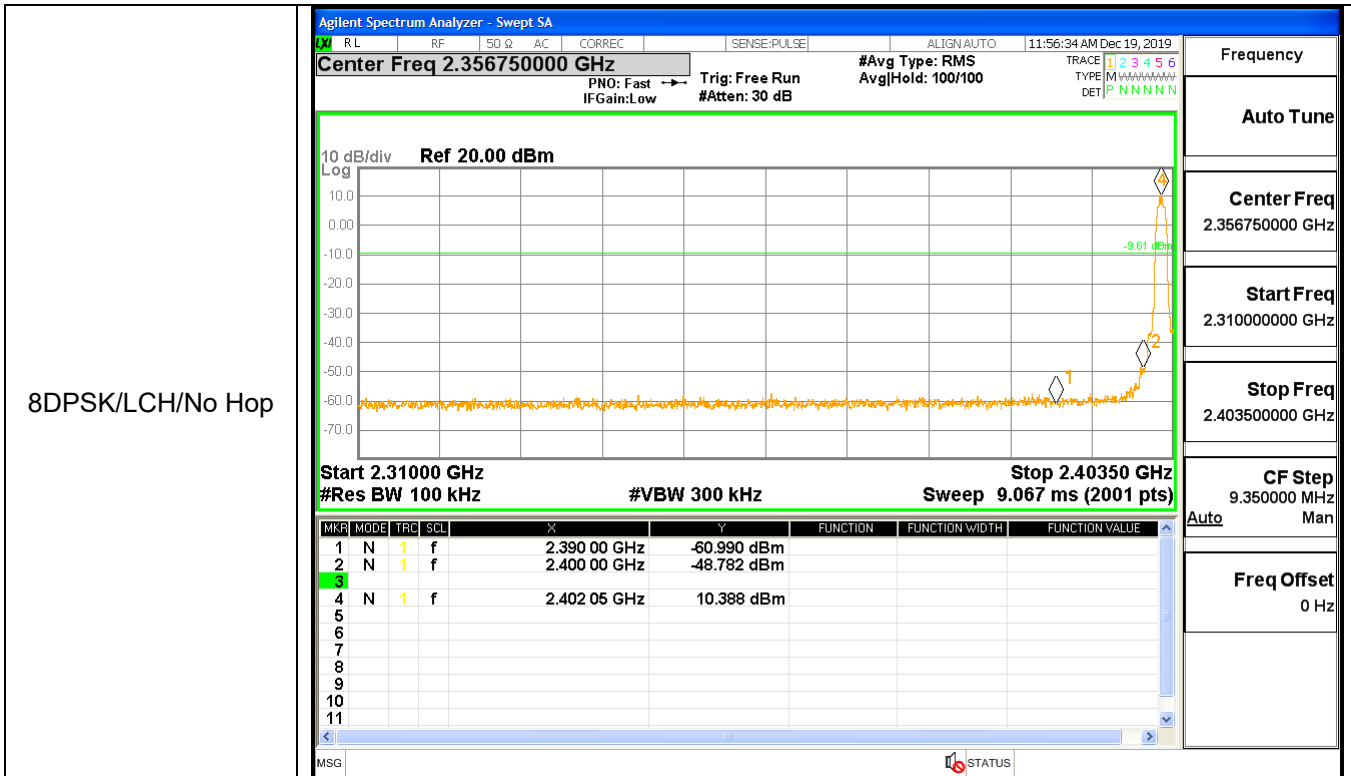
Start Freq
2.478500000 GHz

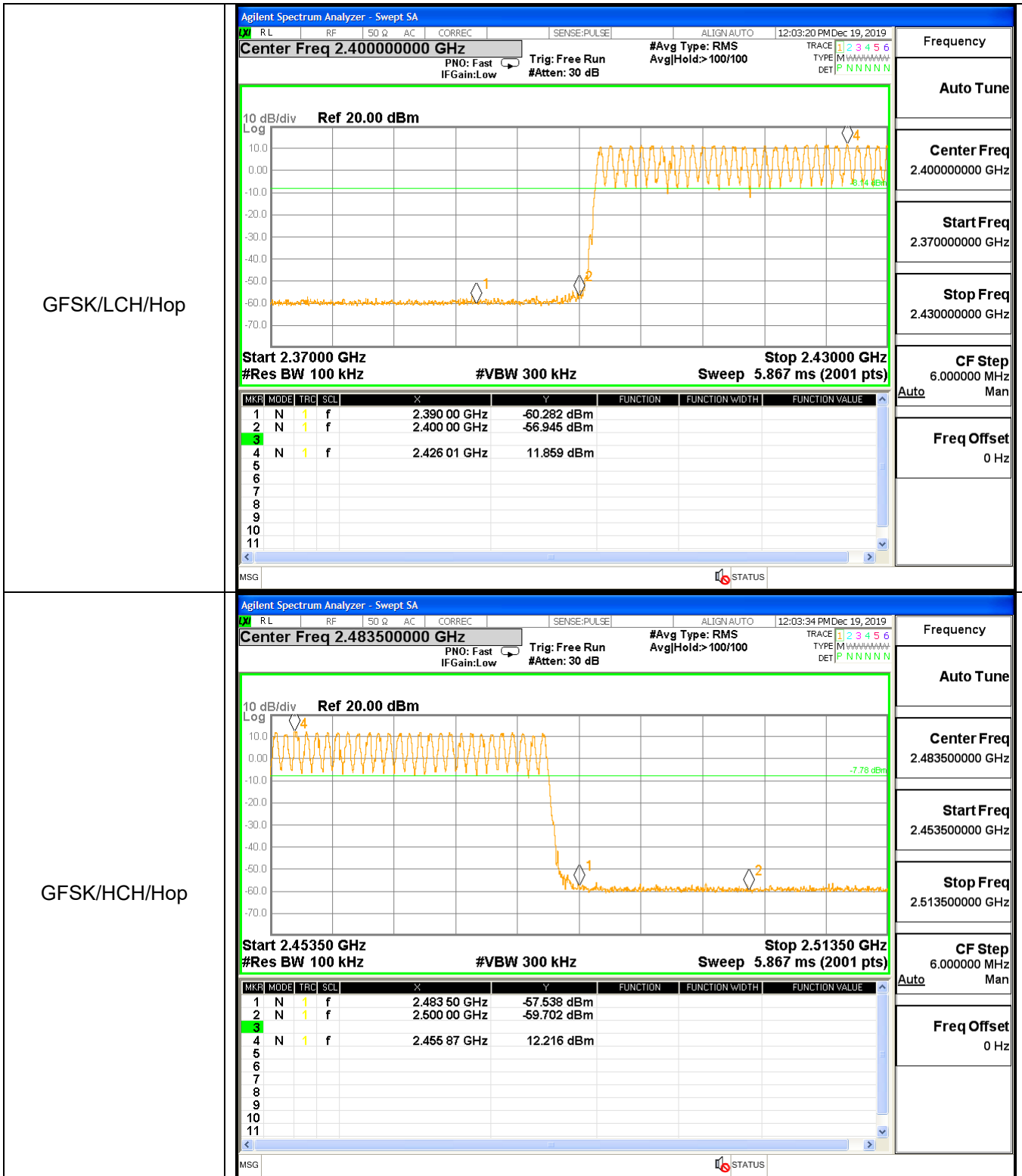
Stop Freq
2.500000000 GHz

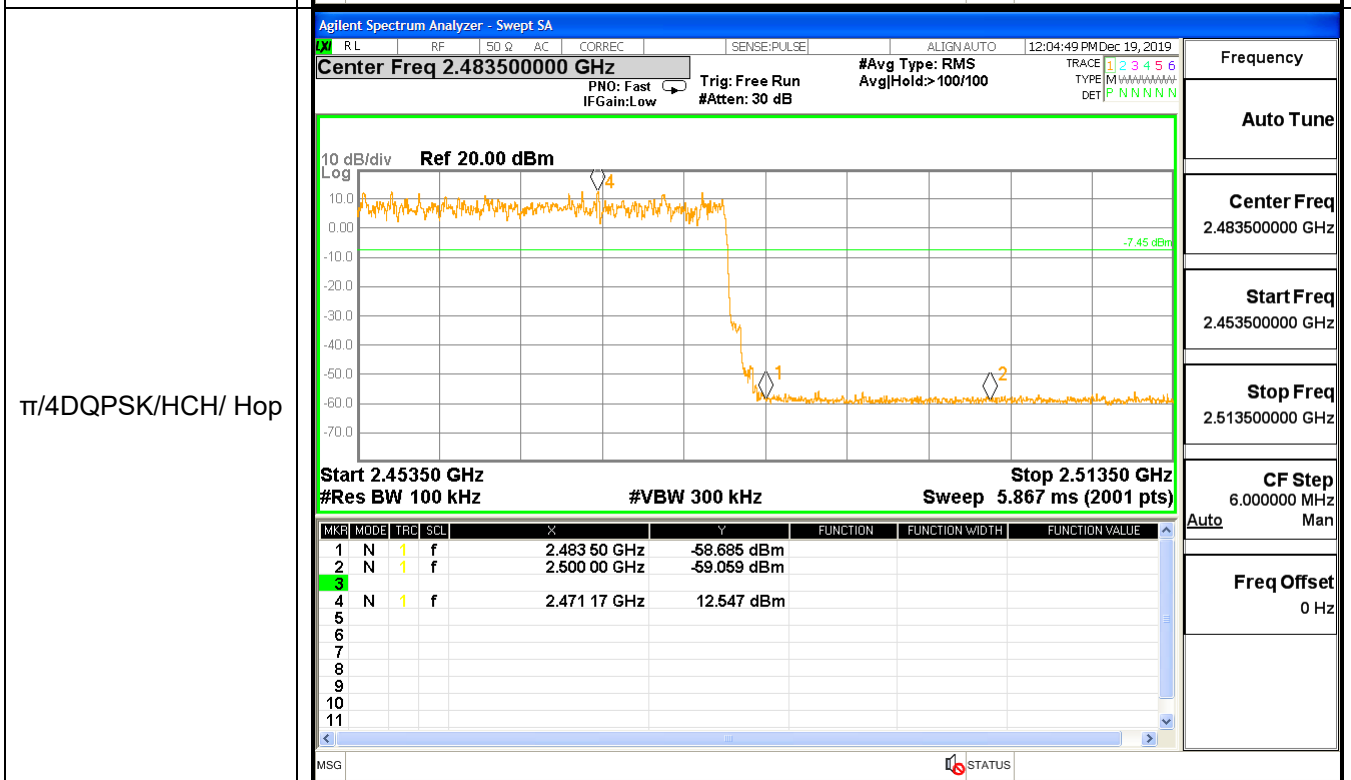
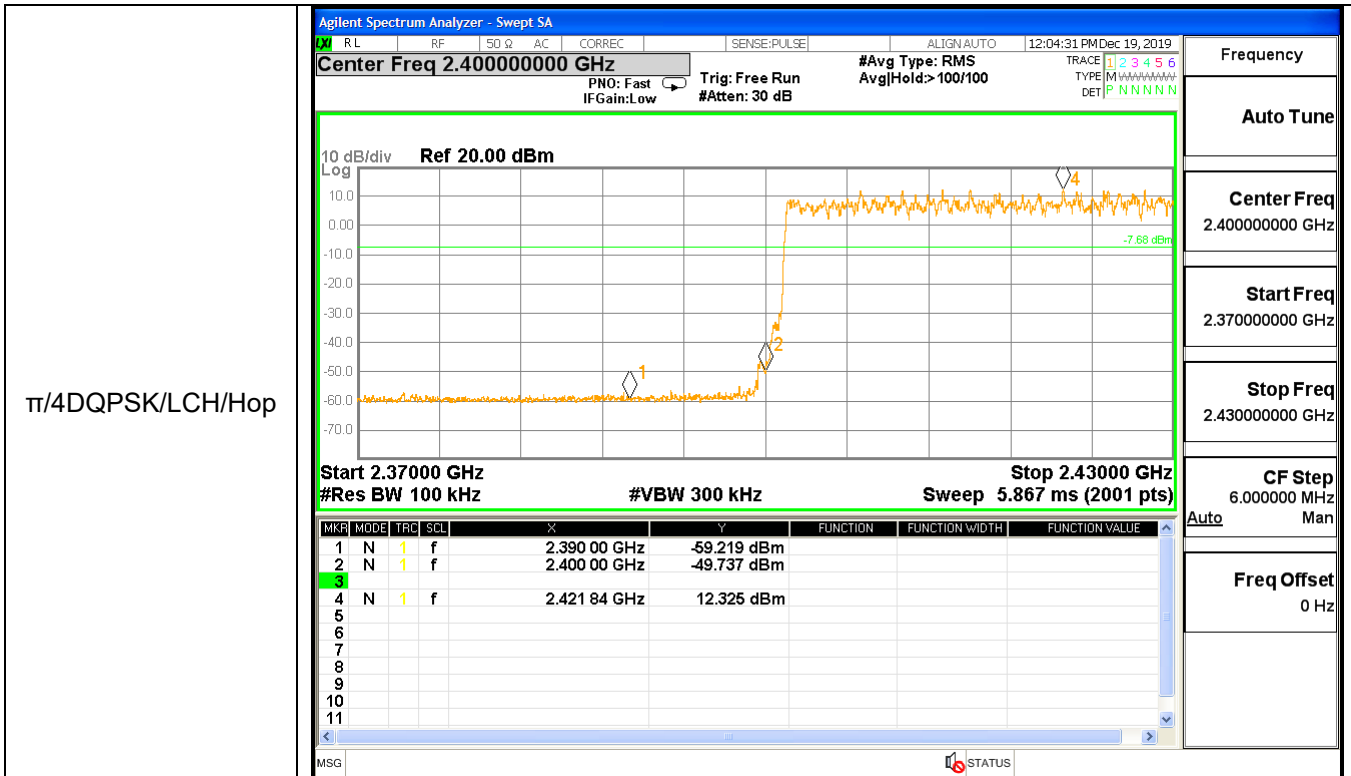
CF Step
2.150000 MHz

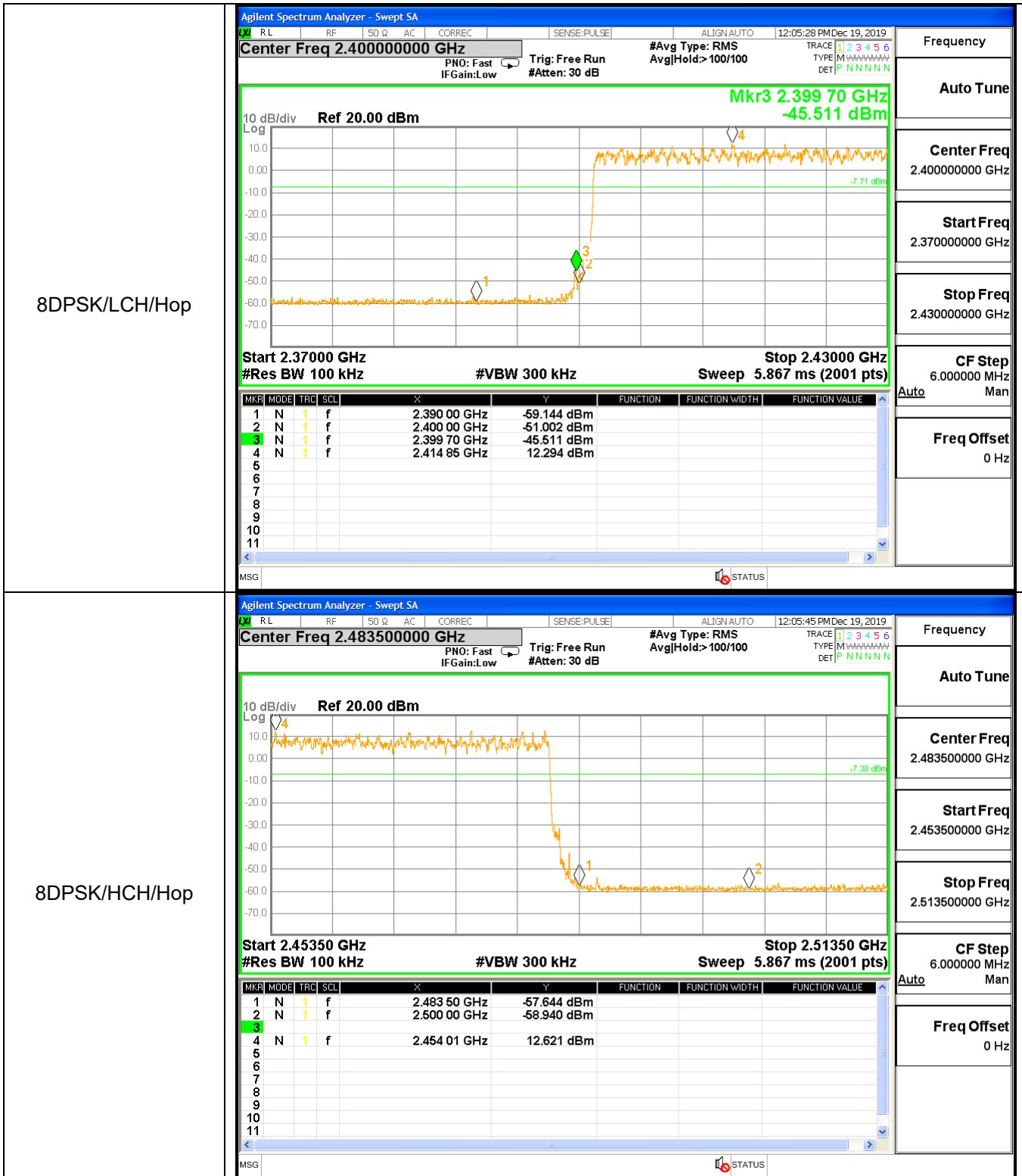
Freq Offset
0 Hz



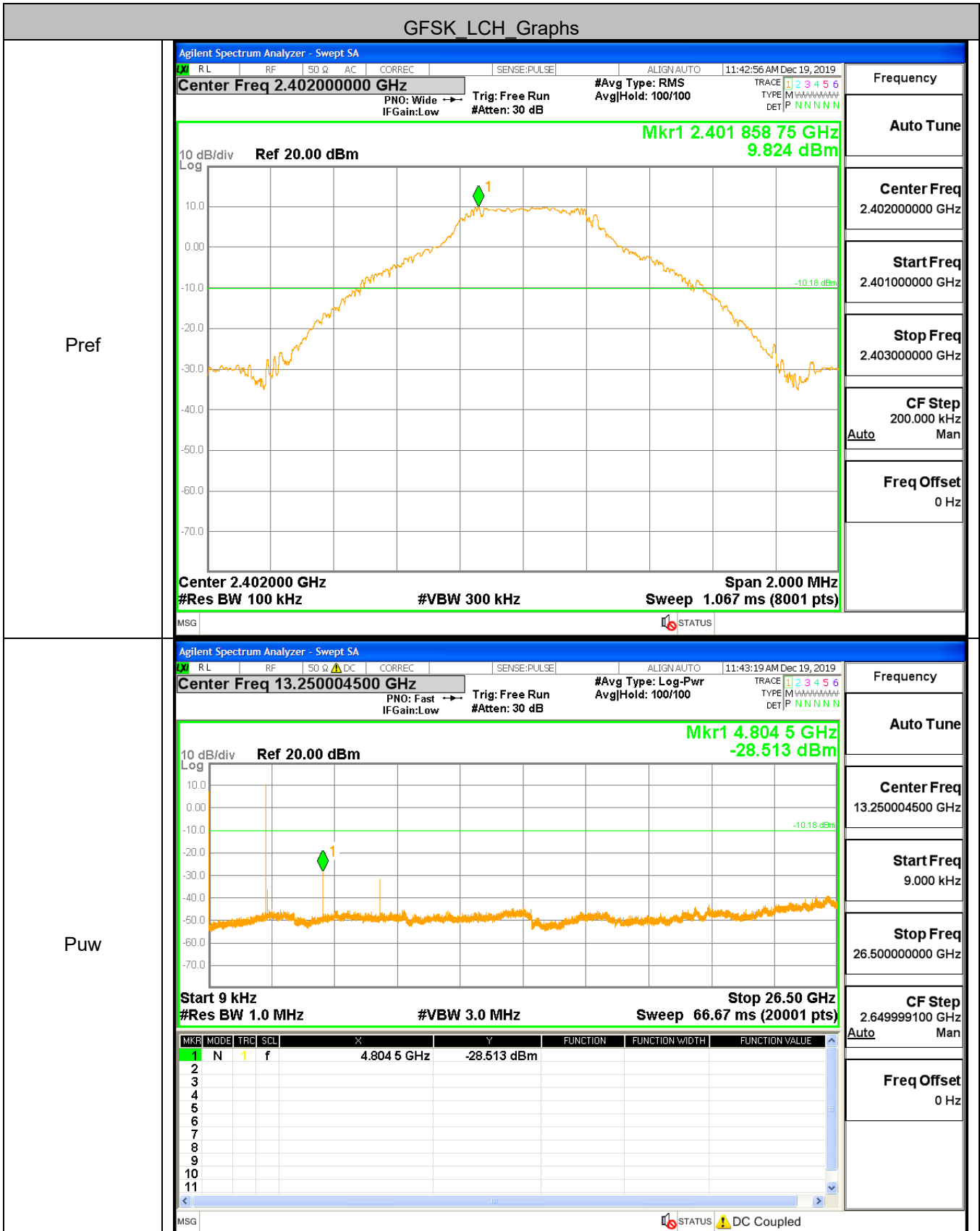




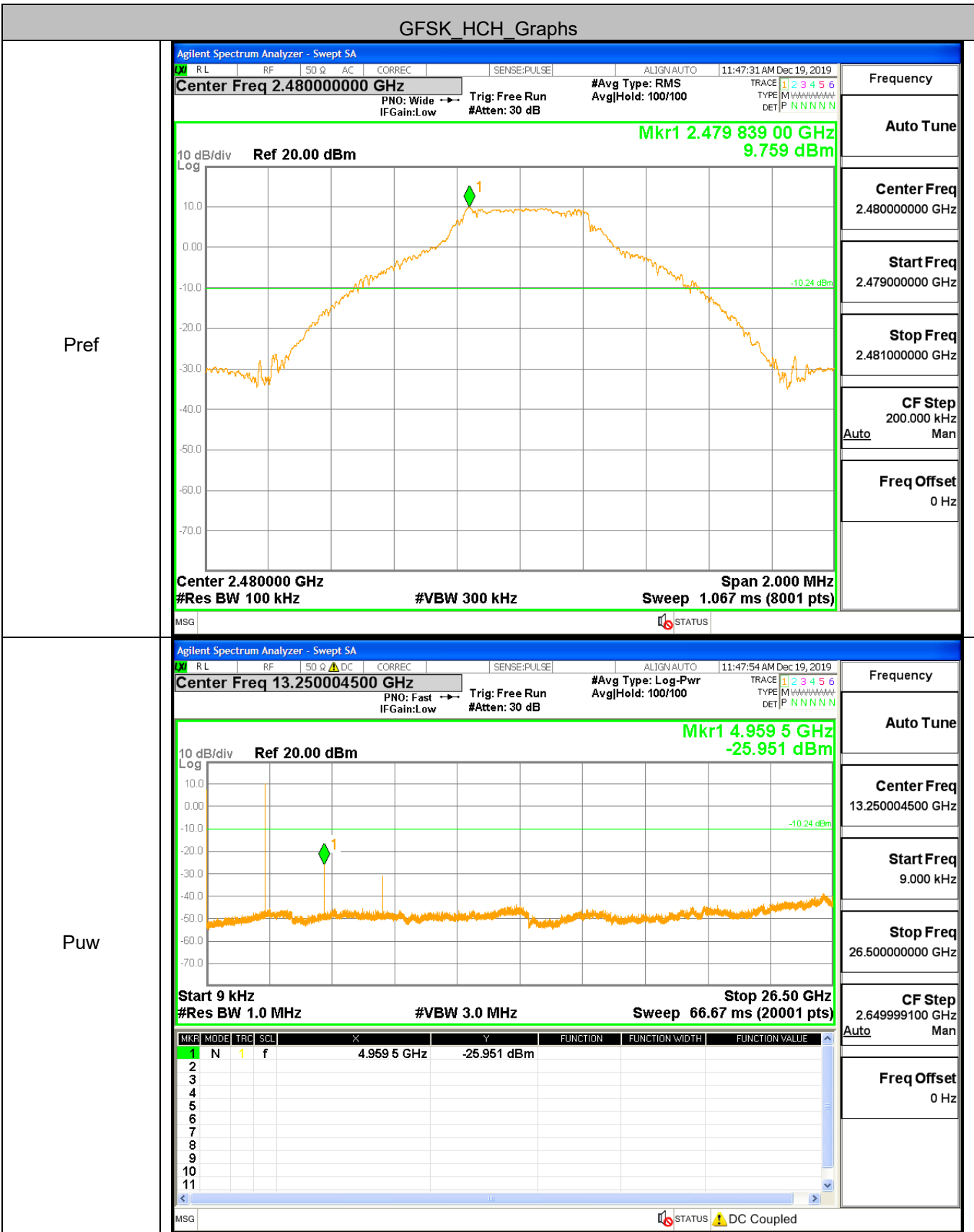




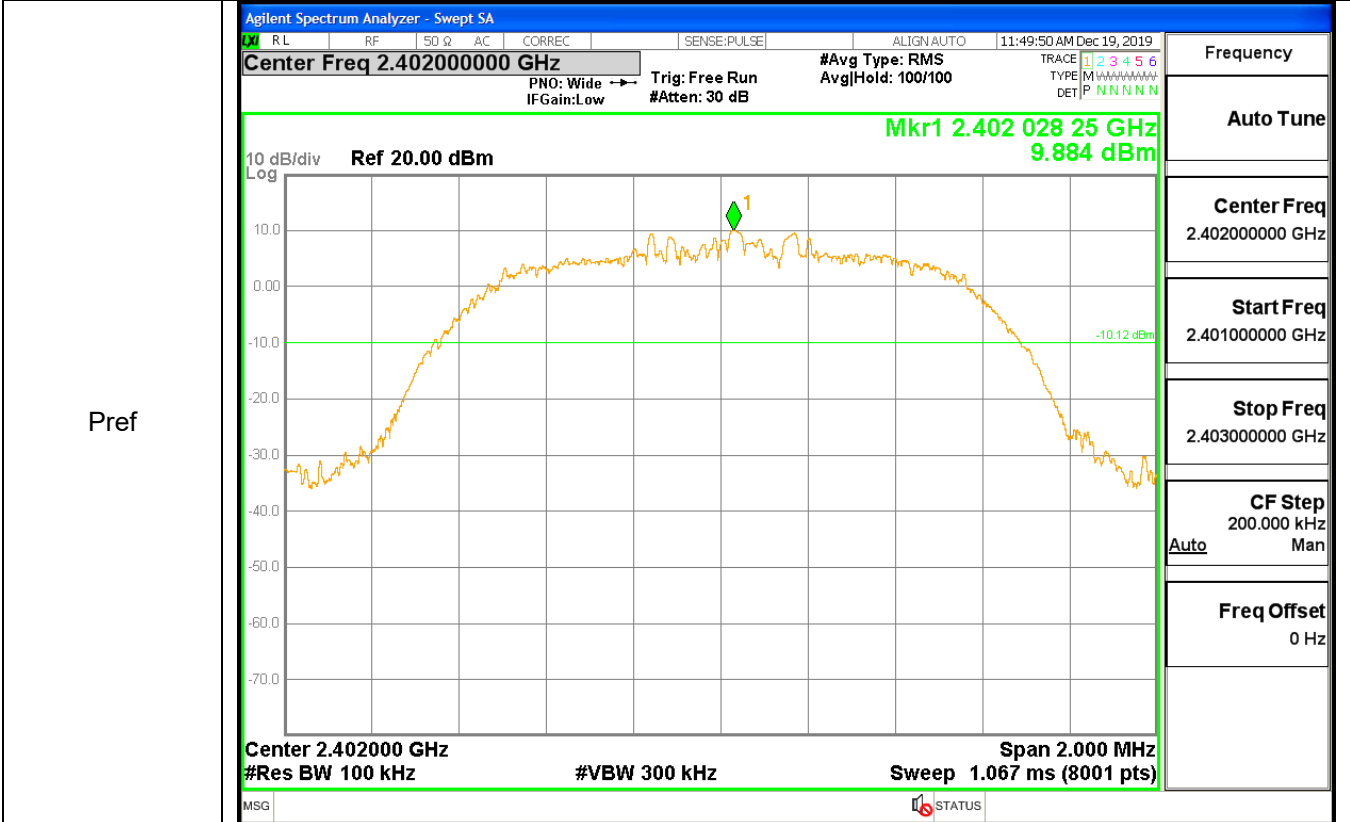
A.7 RF Conducted Spurious Emissions Test Graph



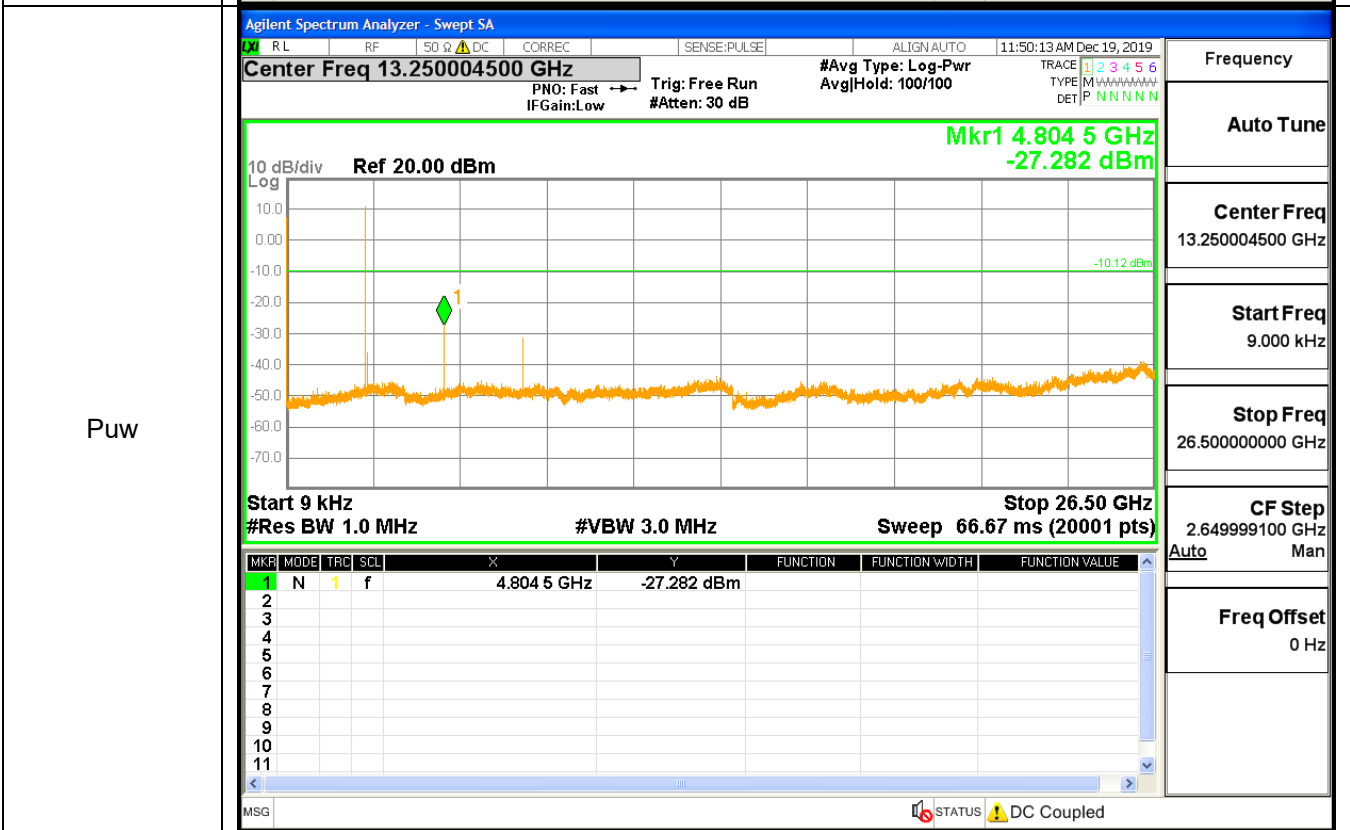
GFSK_HCH Graphs



π /4DQPSK_LCH_Graphs

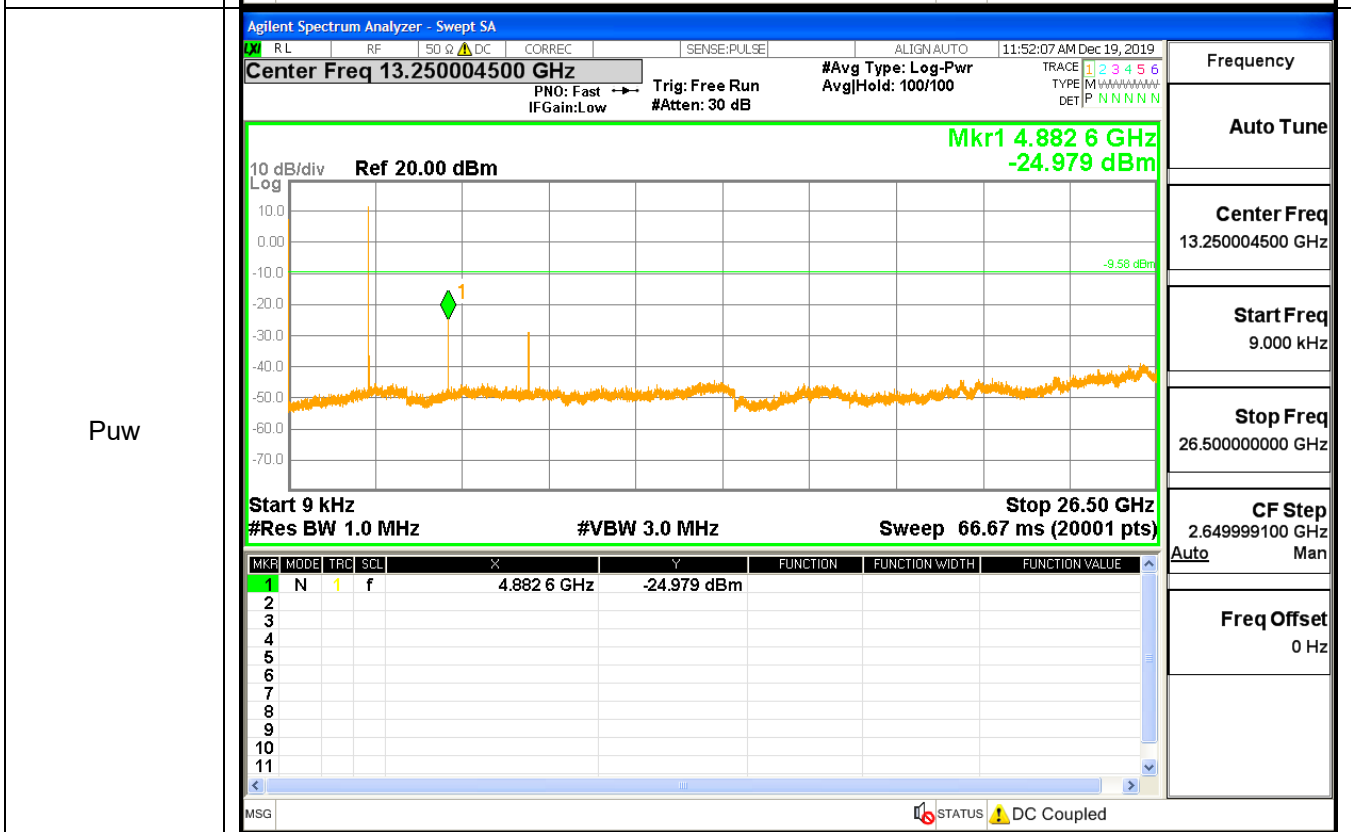
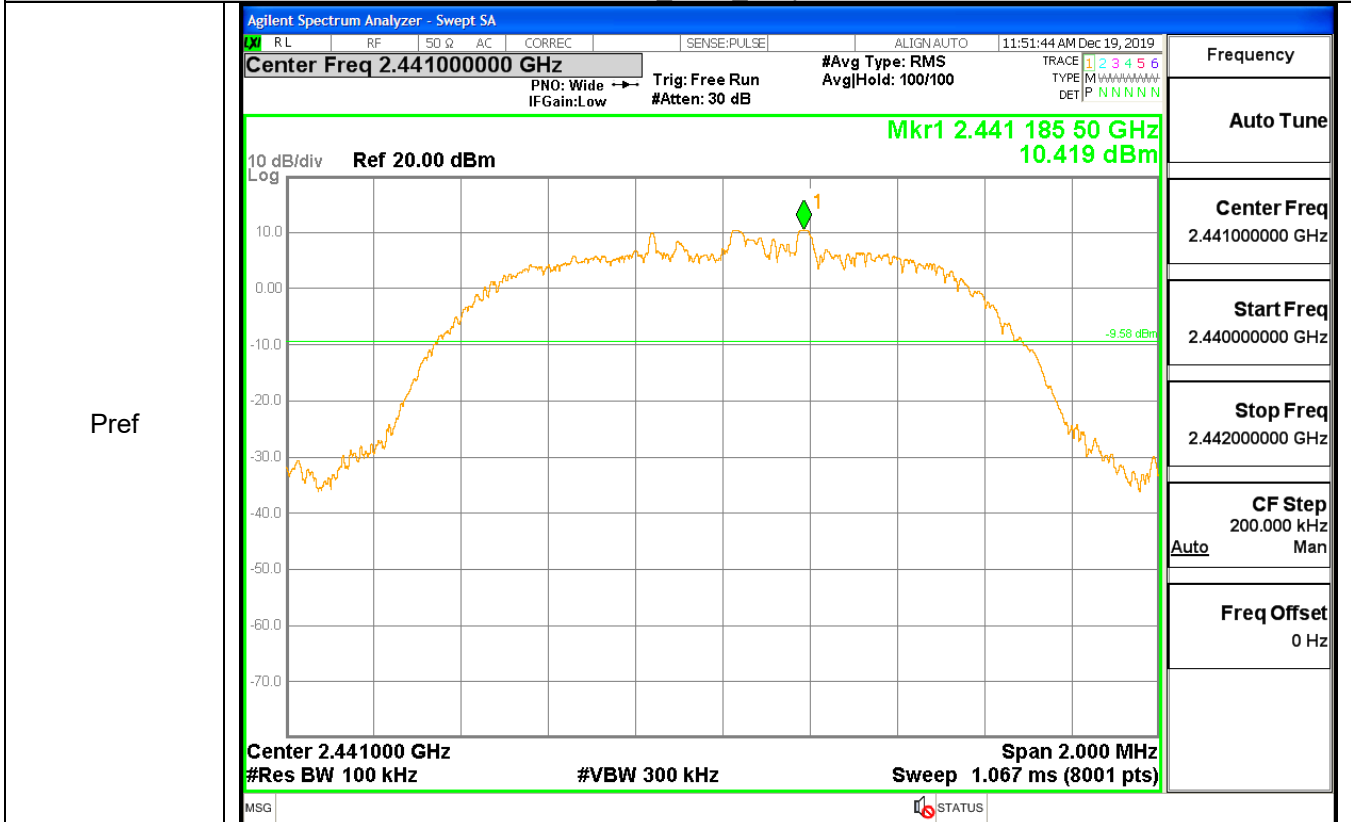


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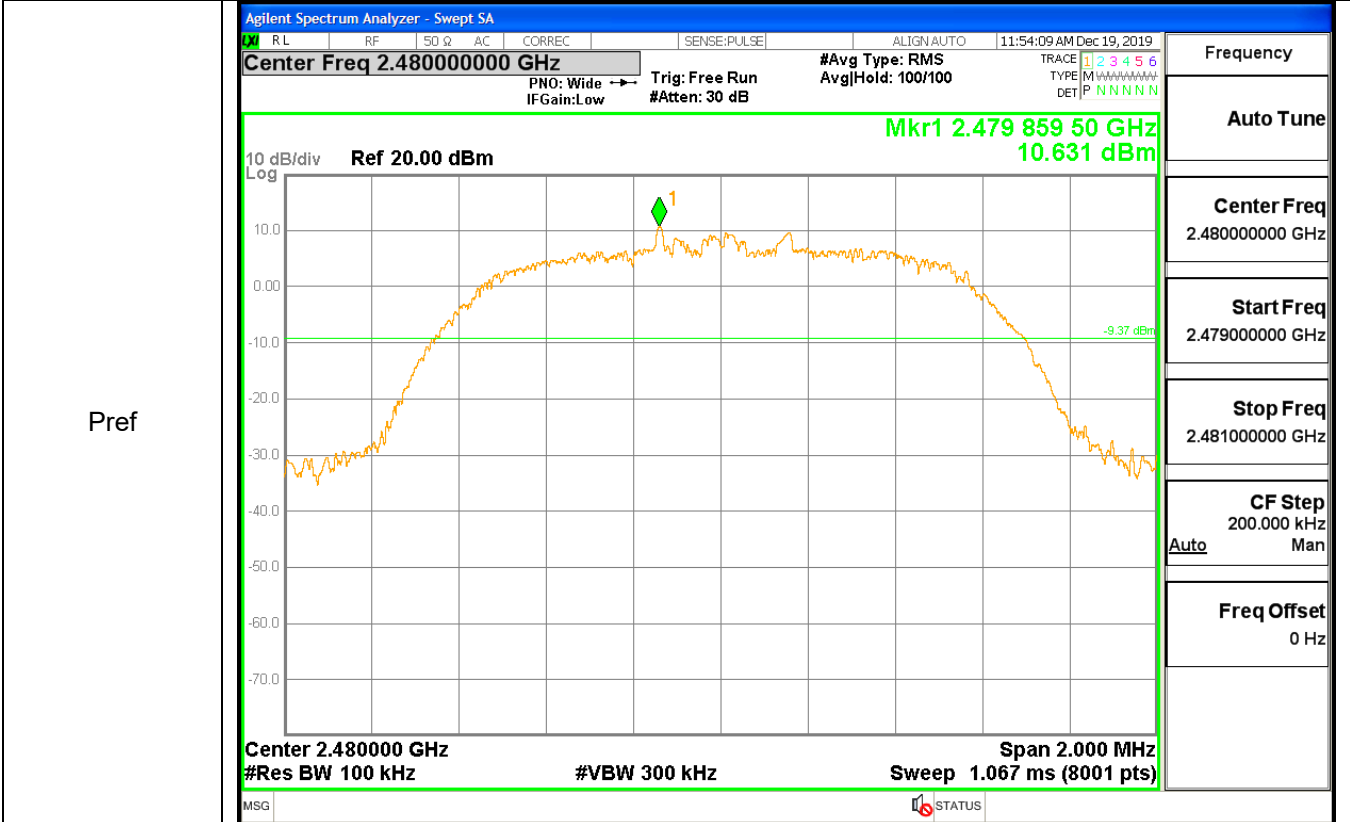


Puw

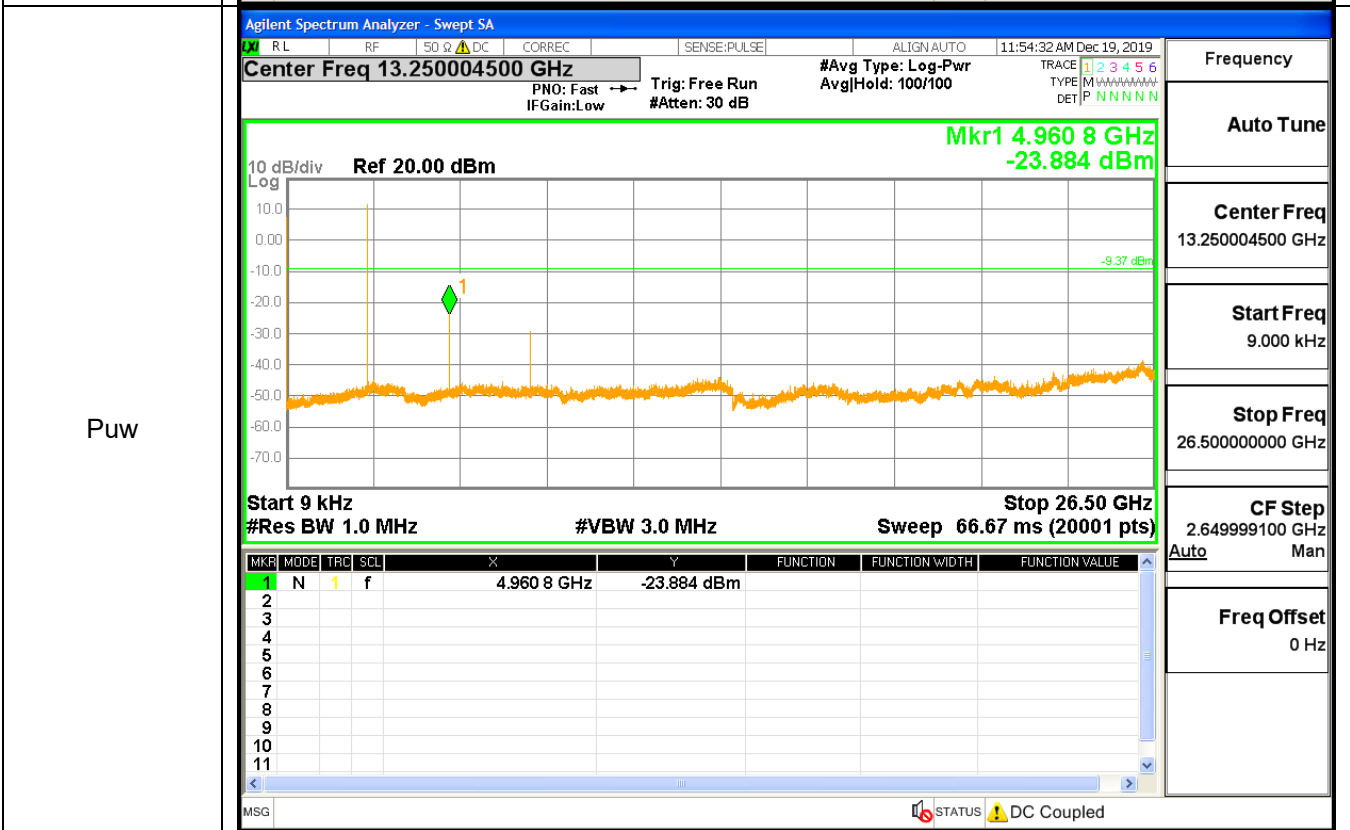
$\pi/4$ DQPSK_MCH Graphs



$\pi/4$ DQPSK_HCH_Graphs

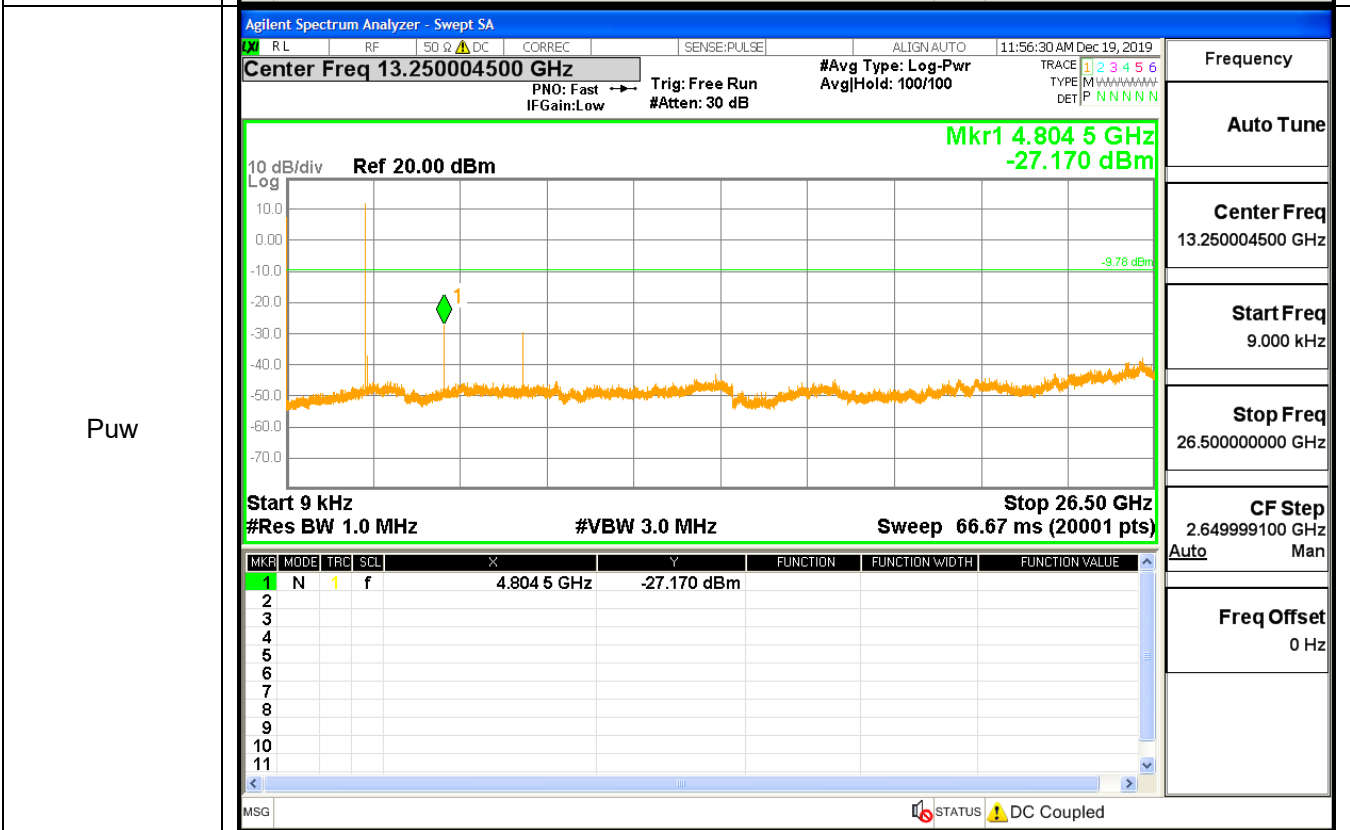
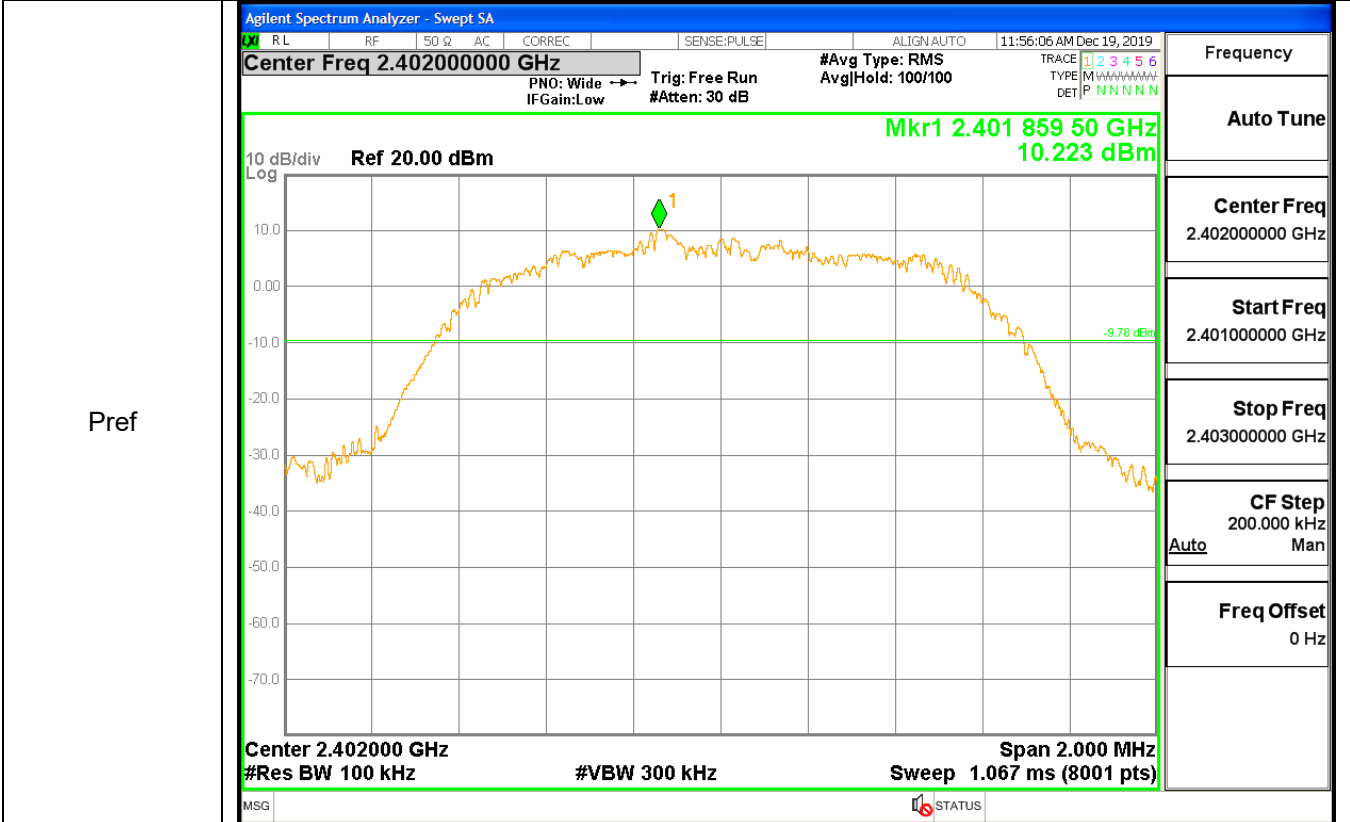


Pref

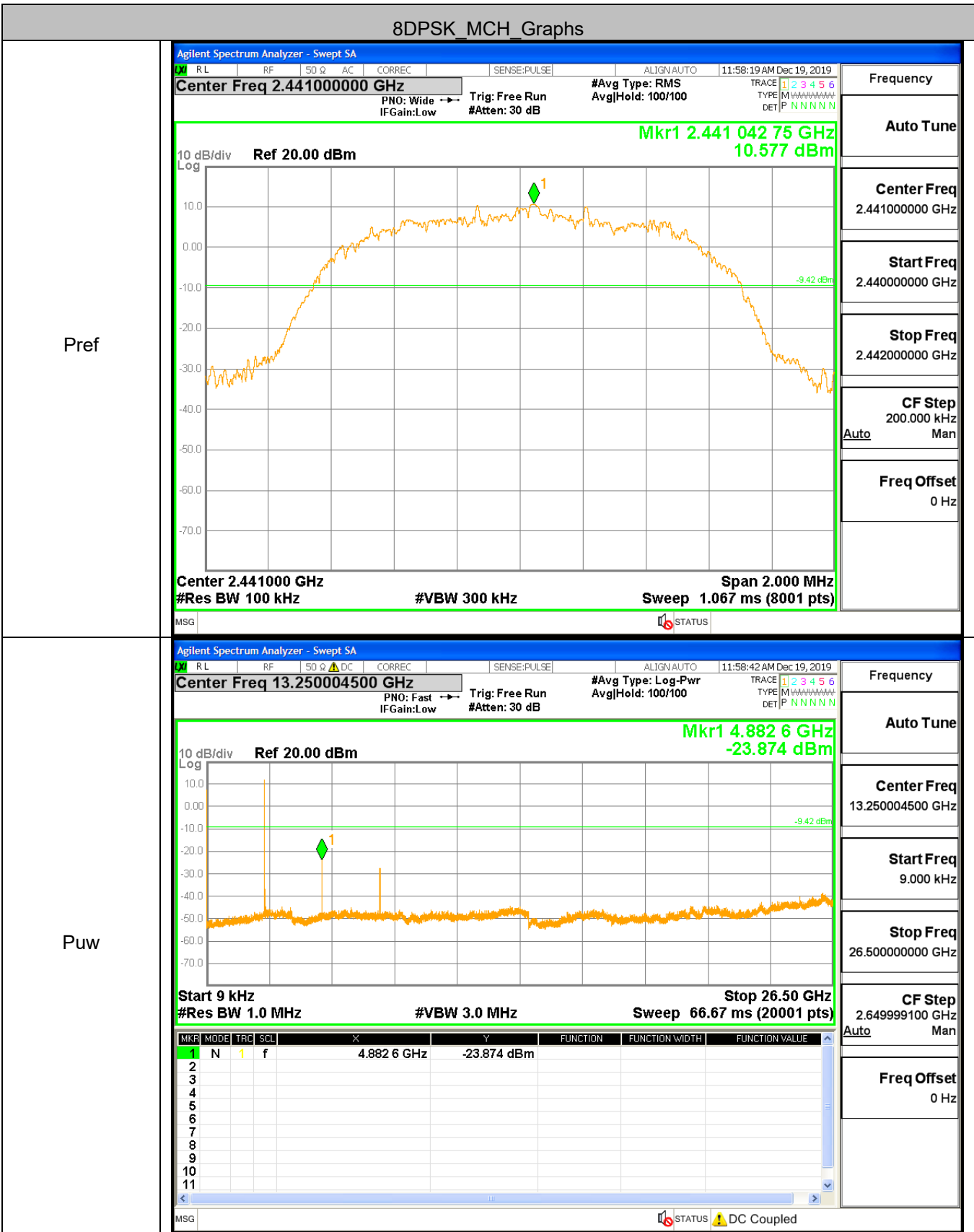


Puw

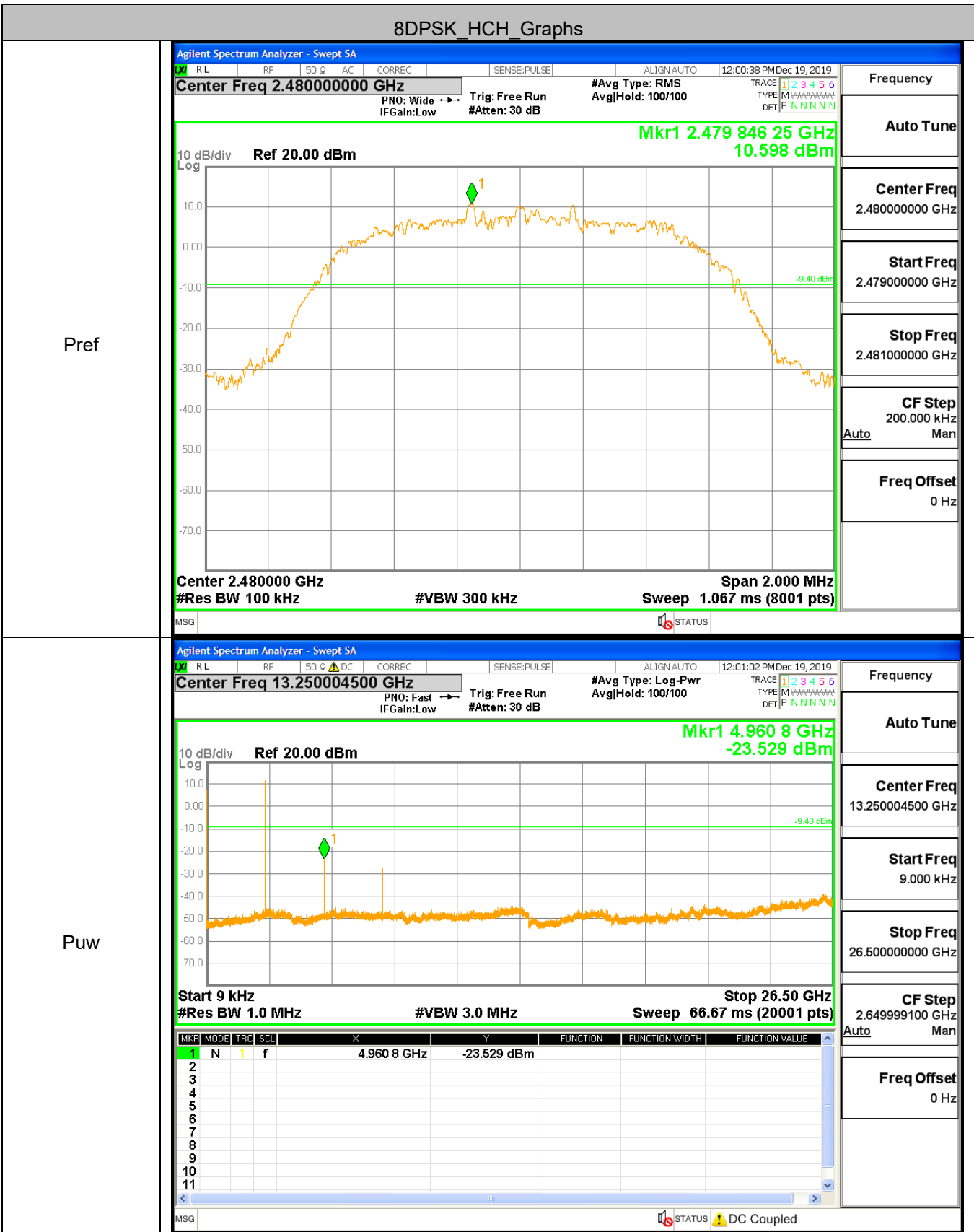
8DPSK LCH_Graphs



8DPSK_MCH_Graphs



8DPSK_HCH_Graphs

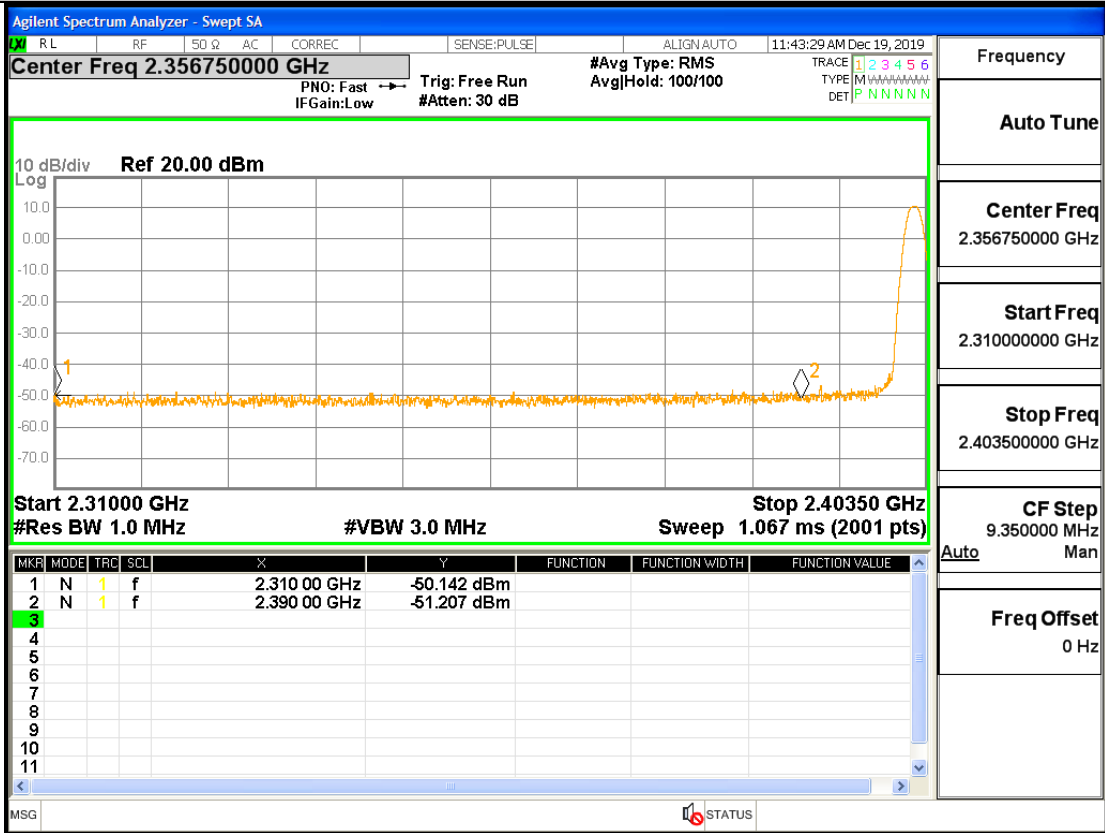


A.8 Restrict-band band-edge measurements

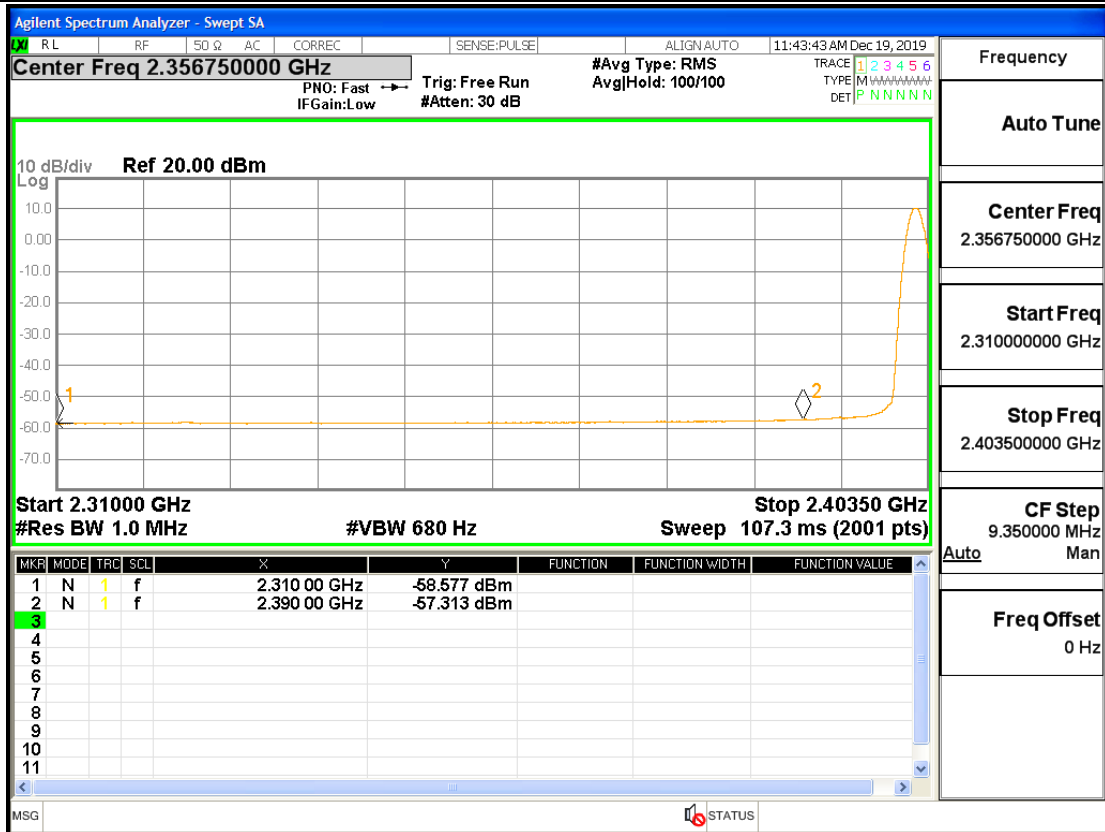
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310	3.09	0.00	-50.142	48.148	74	Pass
1DH5	2480	2483.5	3.09	0.00	-45.541	52.749	74	Pass
2DH5	2402	2483.5	3.09	0.00	-47.787	50.503	74	Pass
2DH5	2480	2390	3.09	0.00	-50.834	47.456	74	Pass
3DH5	2402	2483.5	3.09	0.00	-47.273	51.017	74	Pass
3DH5	2480	2390	3.09	0.00	-52.04	46.25	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310	3.09	0.00	-57.313	40.977	54	Pass
1DH5	2480	2483.5	3.09	0.00	-47.028	51.262	54	Pass
2DH5	2402	2483.5	3.09	0.00	-47.072	51.218	54	Pass
2DH5	2480	2390	3.09	0.00	-57.283	41.007	54	Pass
3DH5	2402	2483.5	3.09	0.00	-45	53.29	54	Pass
3DH5	2480	2390	3.09	0.00	-57.38	40.91	54	Pass

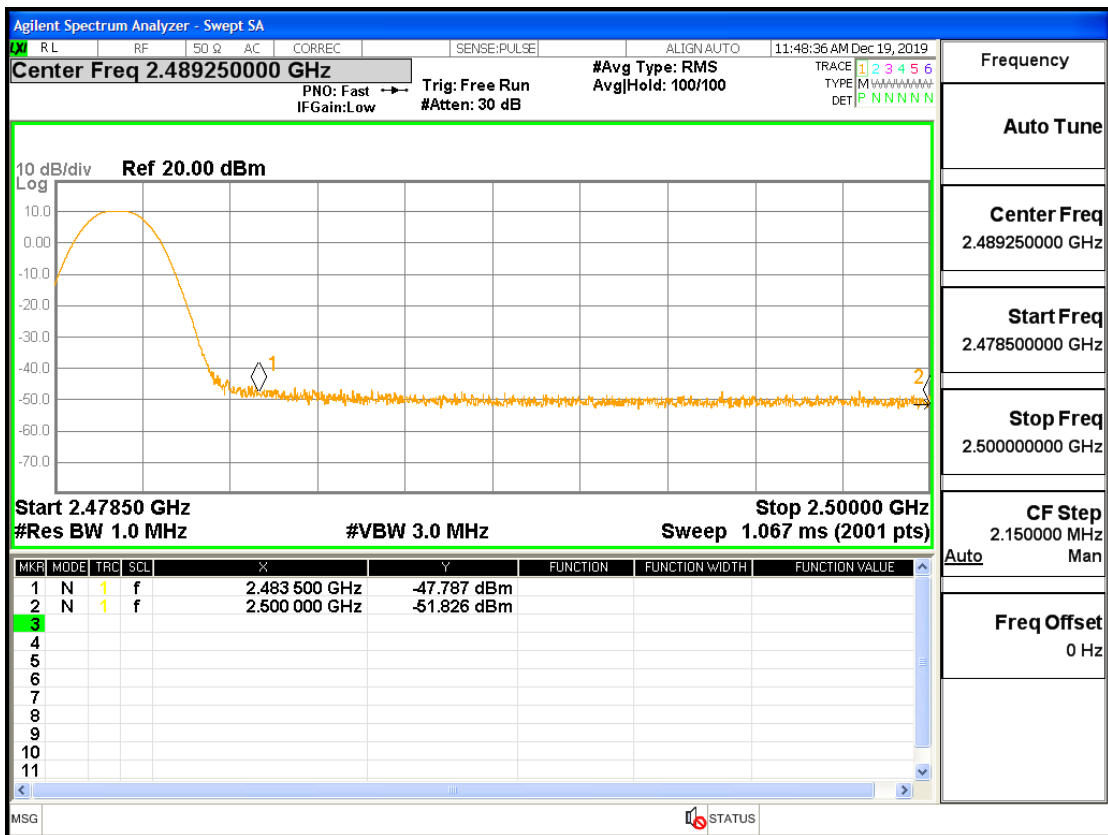
Restrict-band band-edge measurements_2402_PEAK_DH5



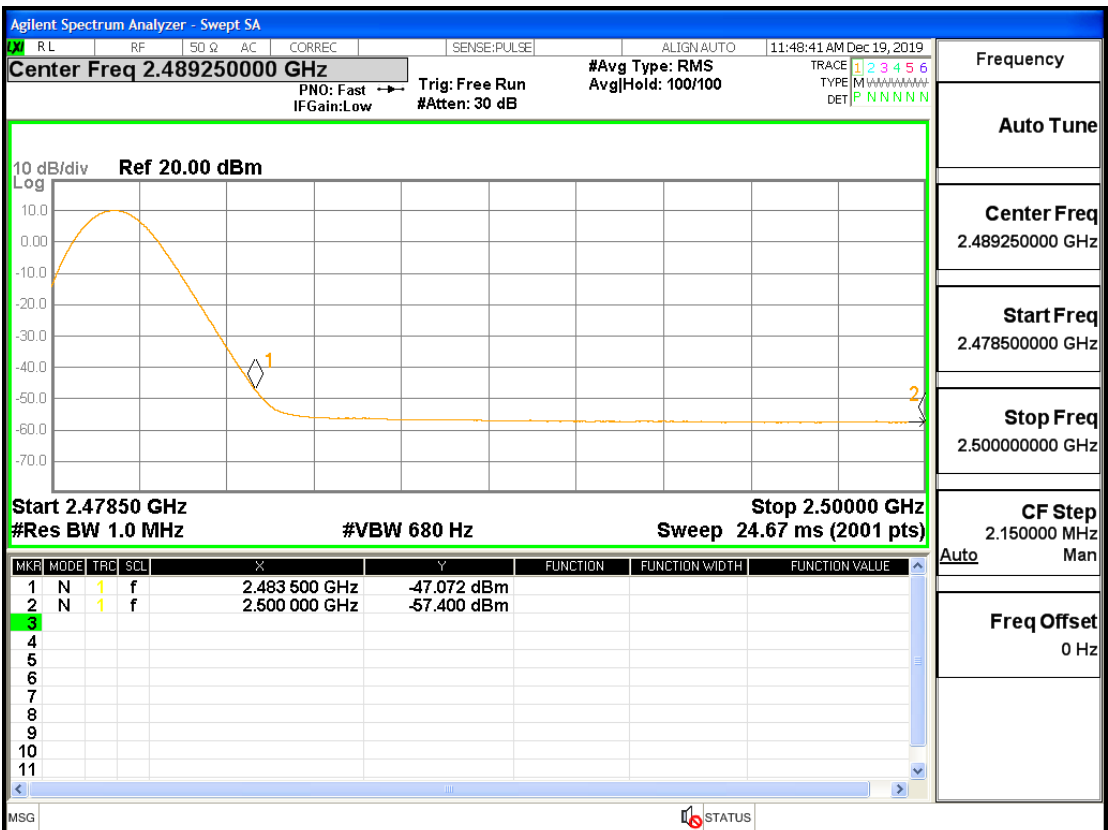
Restrict-band band-edge measurements_2402_AV_DH5



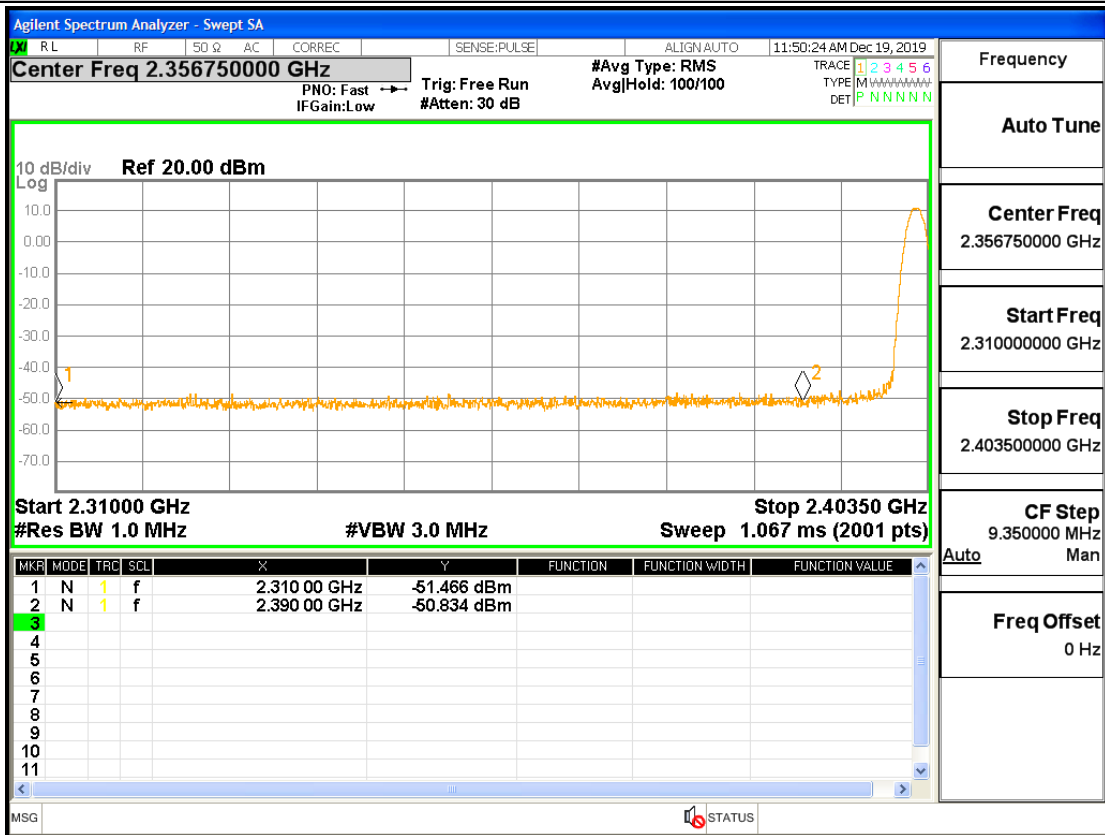
Restrict-band band-edge measurements_2480_PEAK_DH5



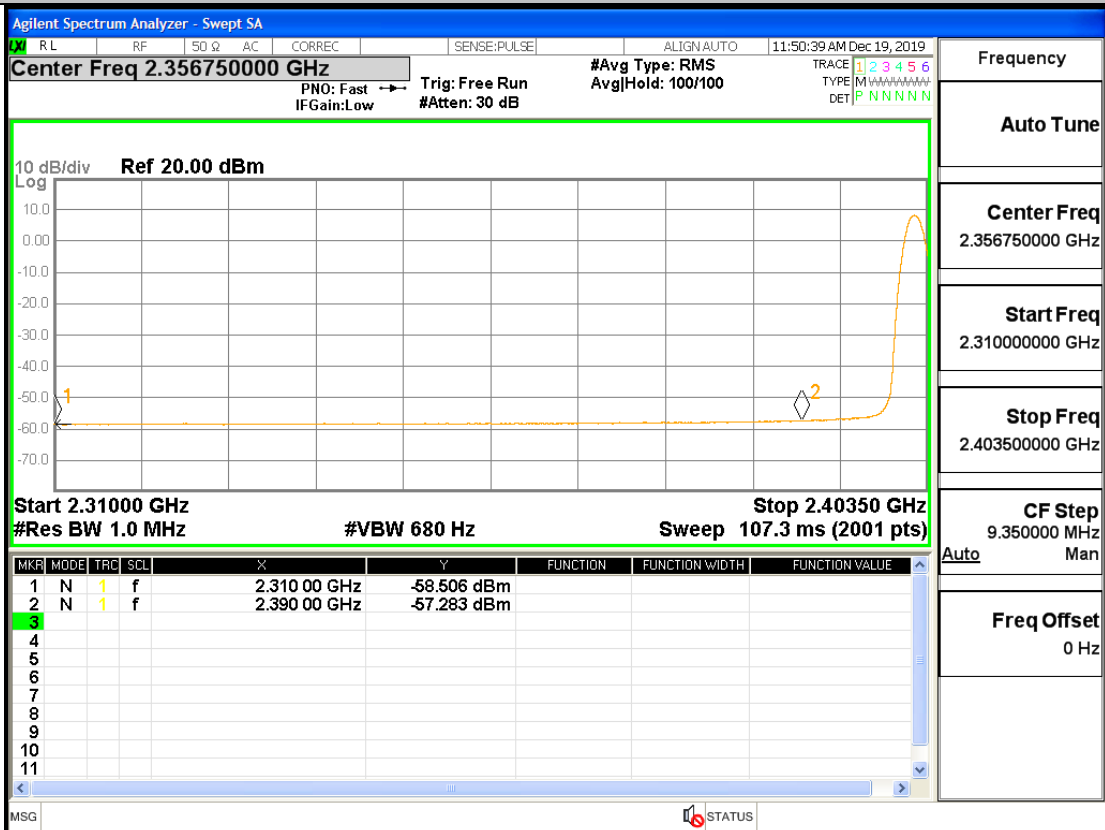
Restrict-band band-edge measurements_2480_AV_DH5



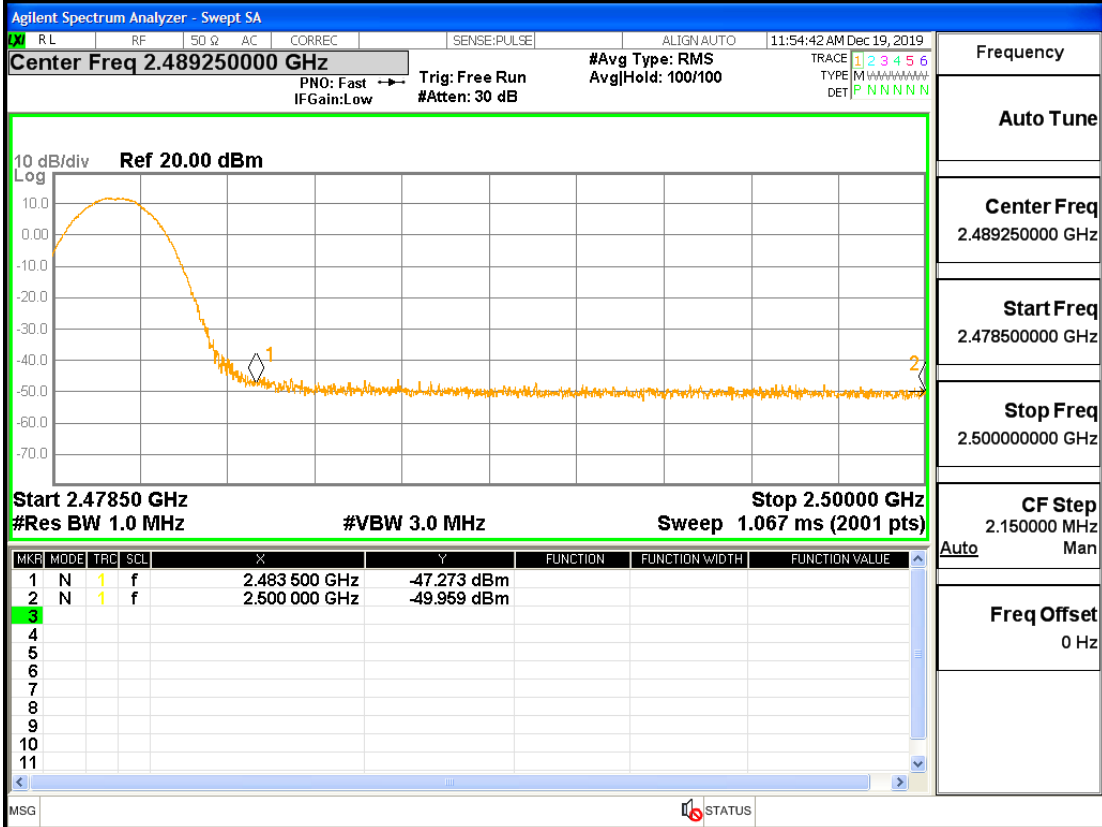
Restrict-band band-edge measurements_2402_PEAK_2DH5



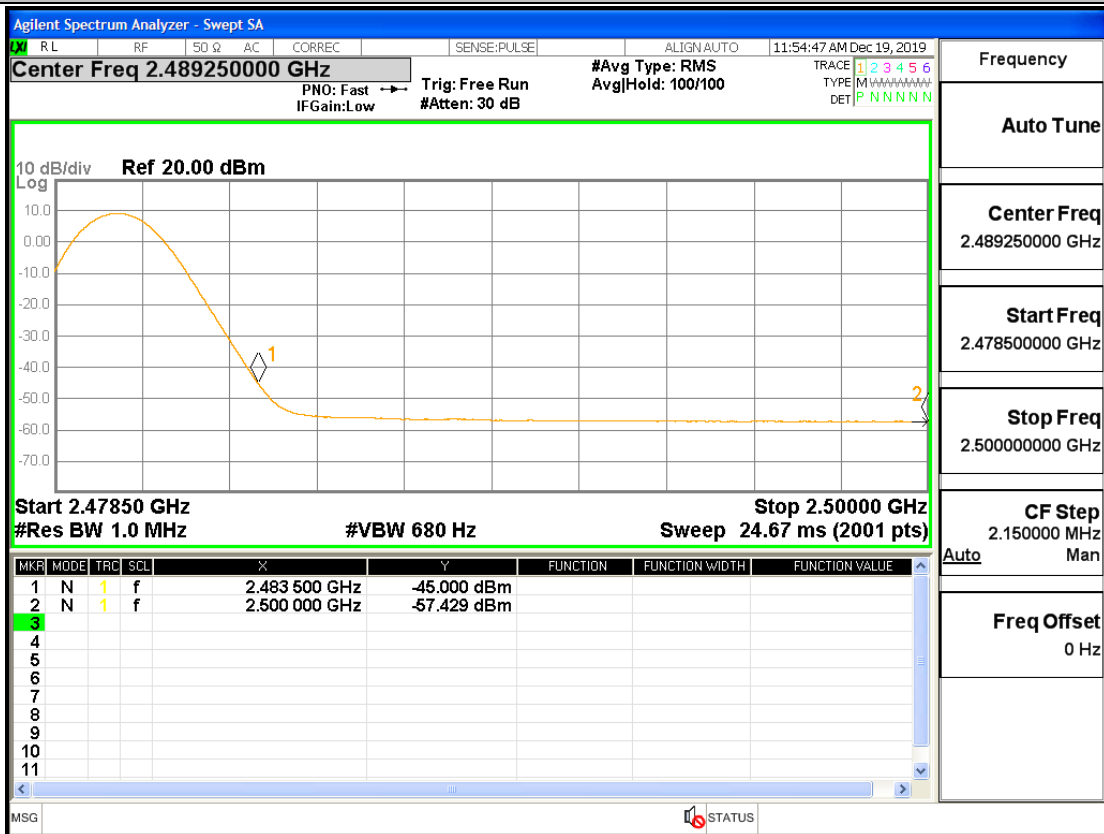
Restrict-band band-edge measurements_2402_AV_2DH5



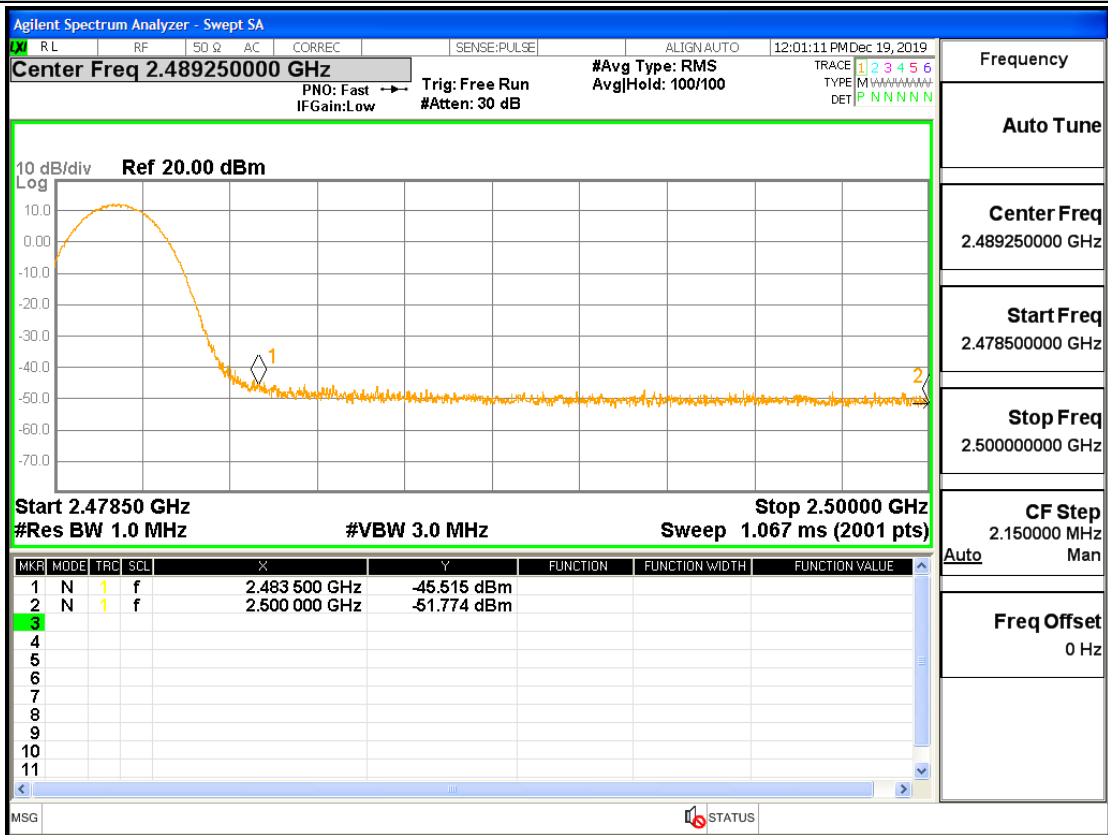
Restrict-band band-edge measurements_2480_PEAK_2DH5



Restrict-band band-edge measurements_2480_AV_2DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

