

Appendix A

RF Test Data for BT V4.0 (BDR/EDR) (Conducted Measurement)

Product Name: USB Bluetooth Adapter

Trade Mark: XFANIC

Test Model: XF-B9001

Environmental Conditions

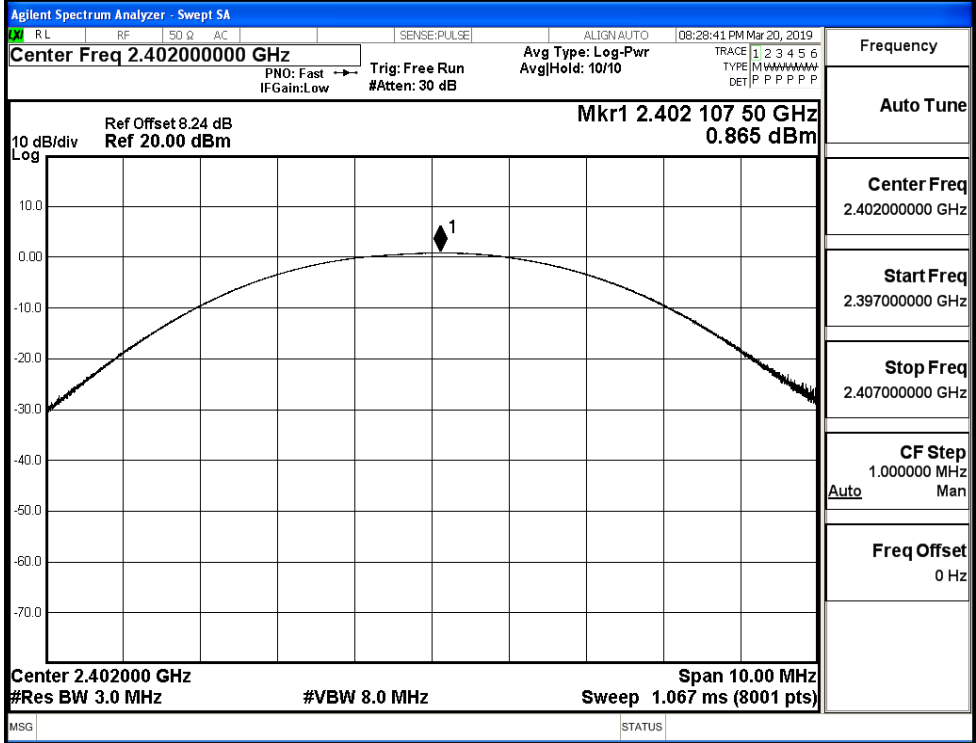
Temperature:	22.8 ° C
Relative Humidity:	53.9%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

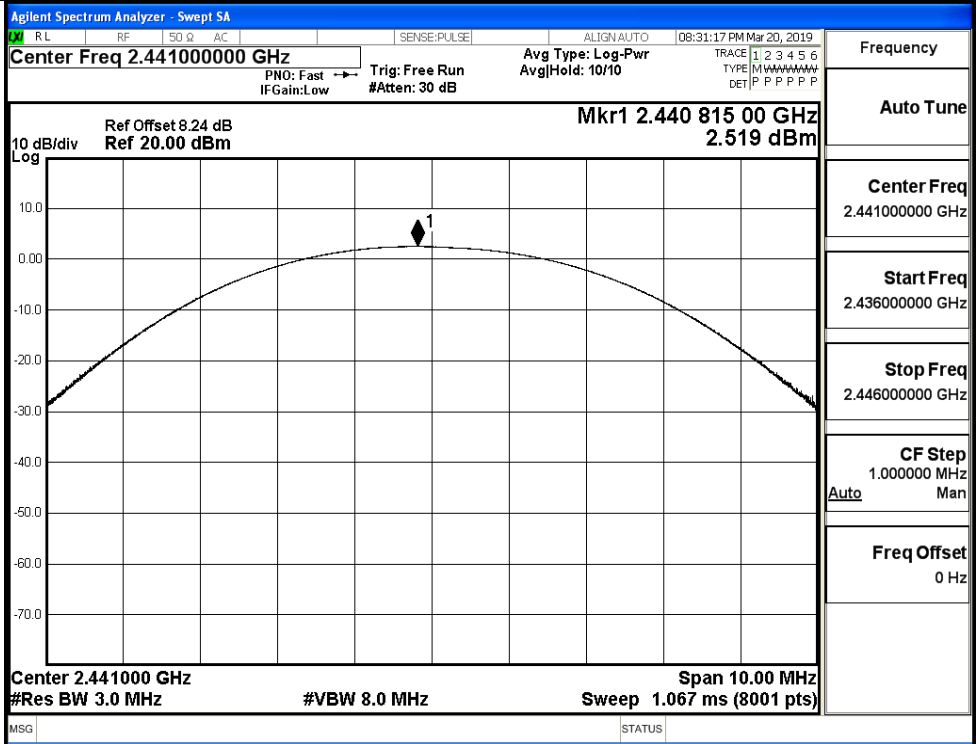
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.865	21	PASS
	MCH	2.519	21	PASS
	HCH	2.556	21	PASS
$\pi/4$ DQPSK	LCH	-1.349	21	PASS
	MCH	0.474	21	PASS
	HCH	0.664	21	PASS
8DPSK	LCH	-0.995	21	PASS
	MCH	0.888	21	PASS
	HCH	1.152	21	PASS

Test Graphs

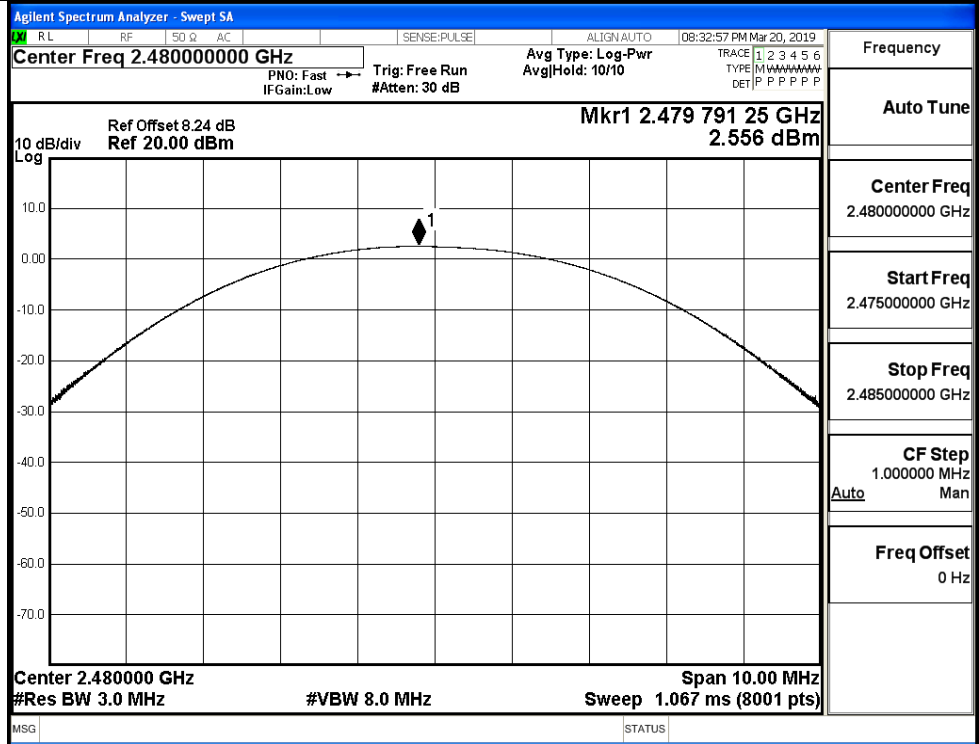
GFSK/LCH



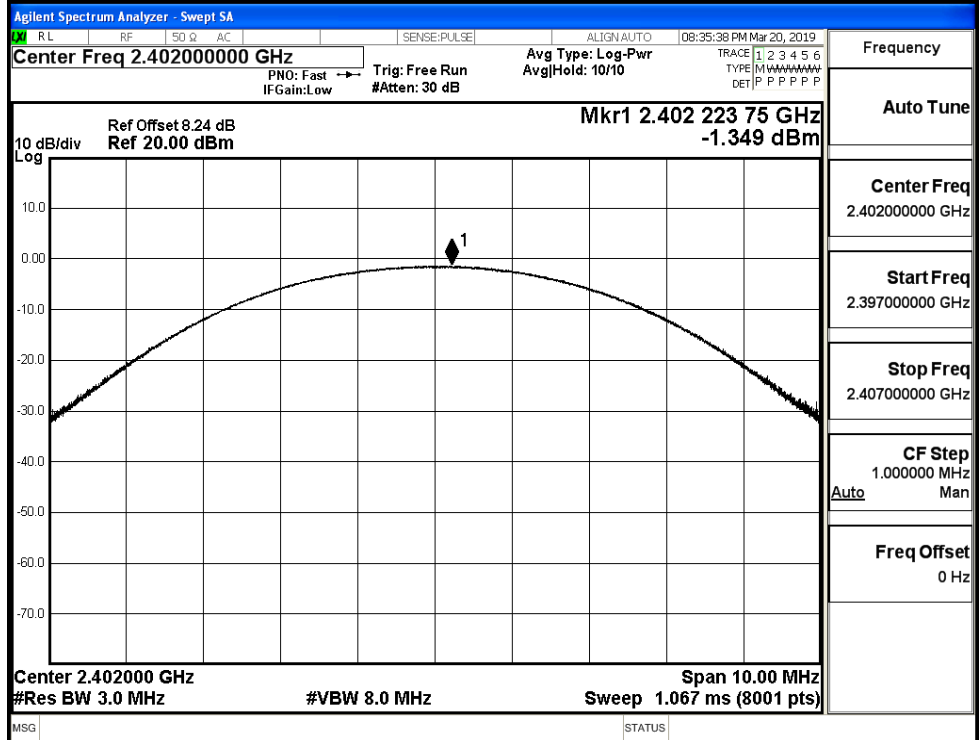
GFSK/MCH



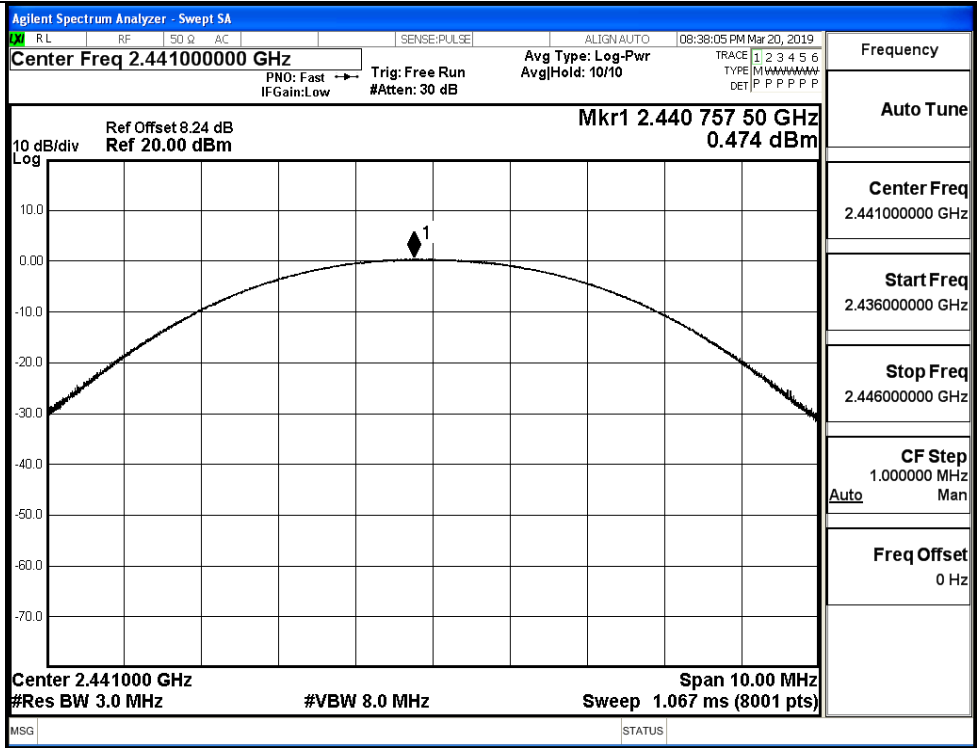
GFSK/HCH



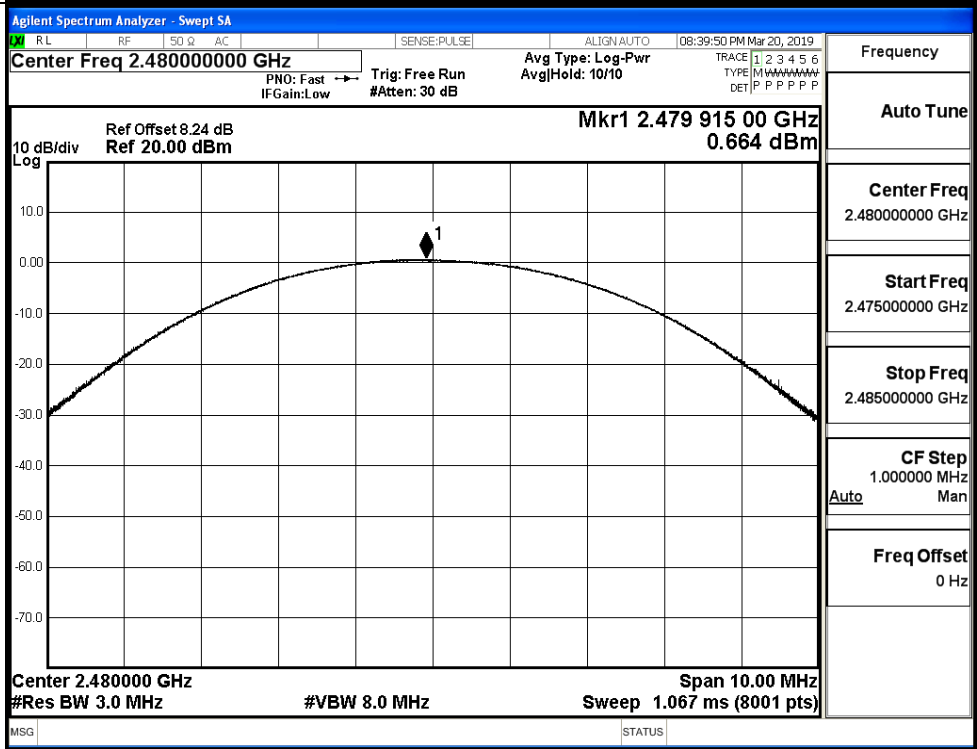
π /4DQPSK/LCH



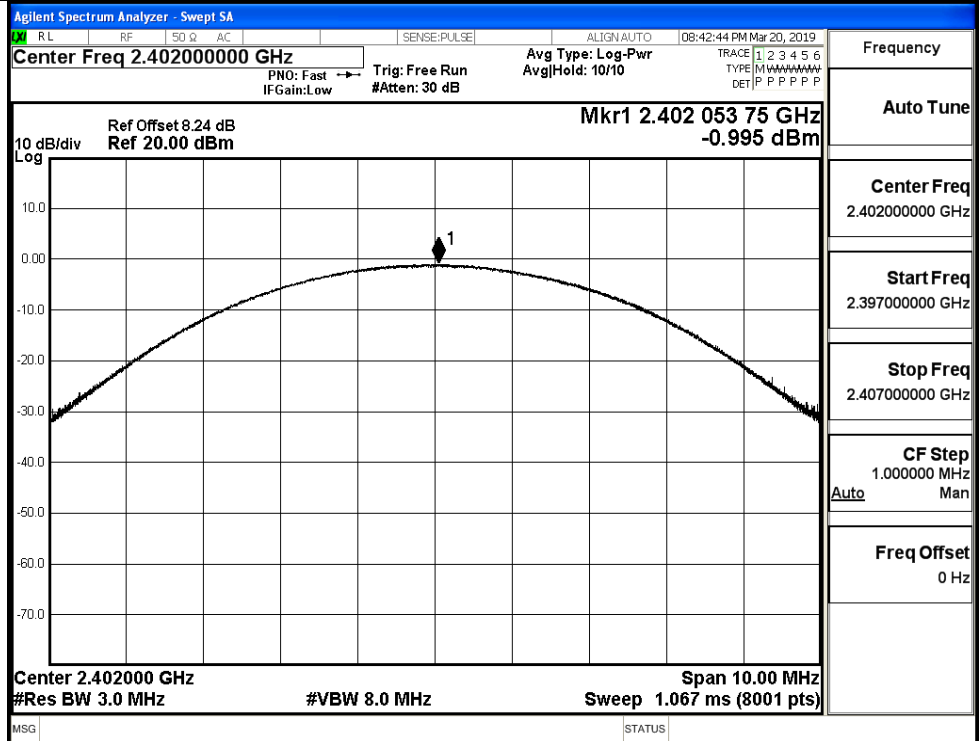
π /4DQPSK/MCH



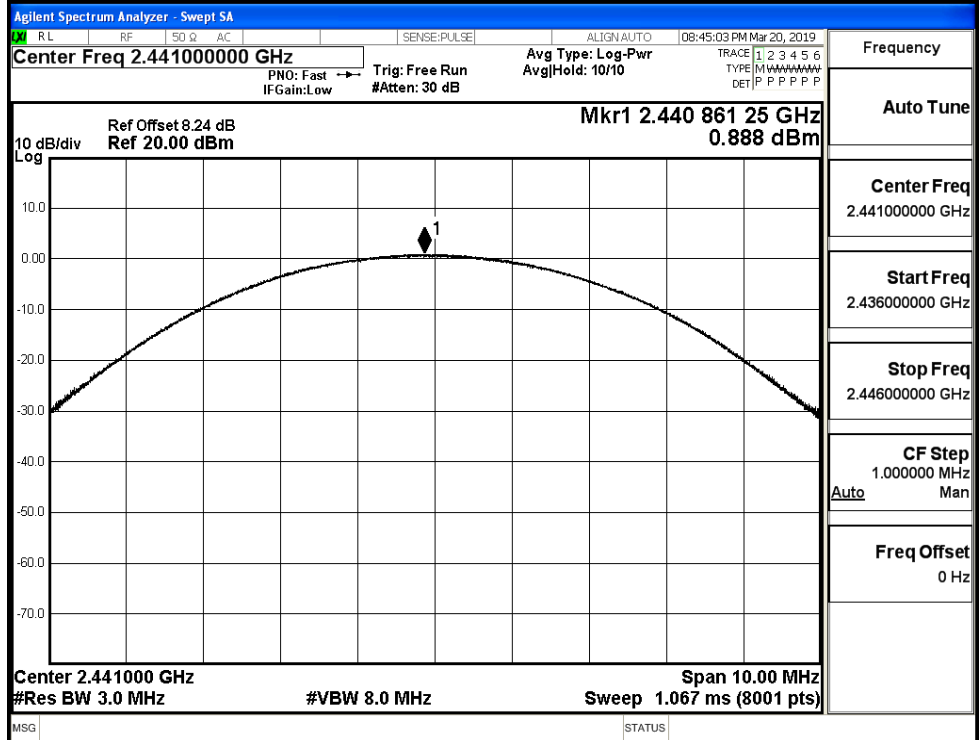
π /4DQPSK/HCH



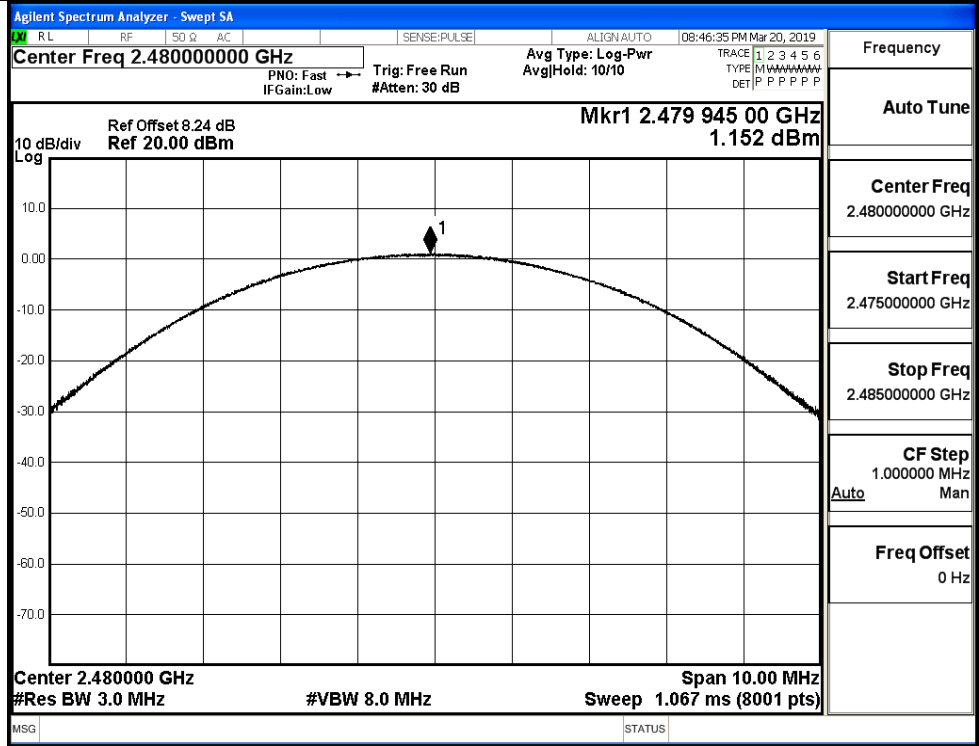
8DPSK/LCH



8DPSK/MCH

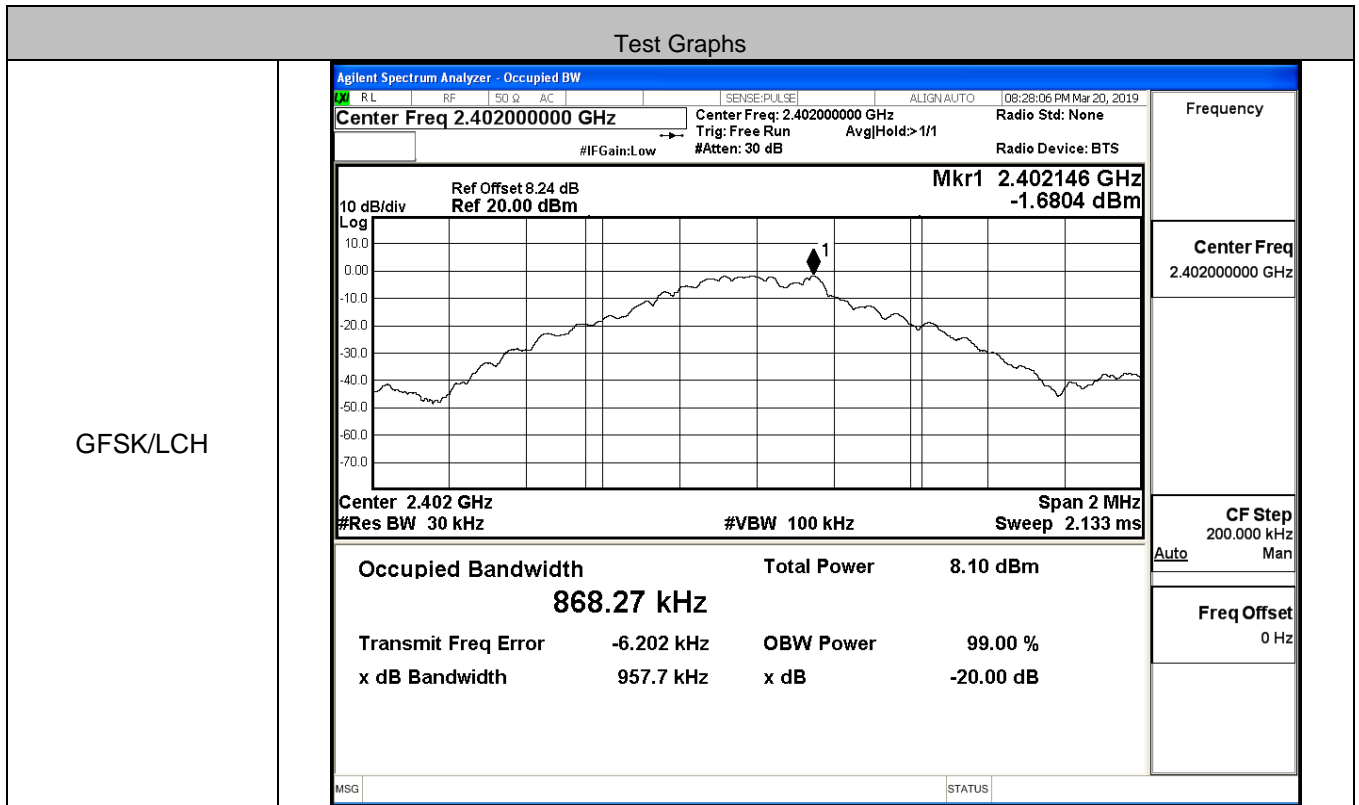


8DPSK/HCH

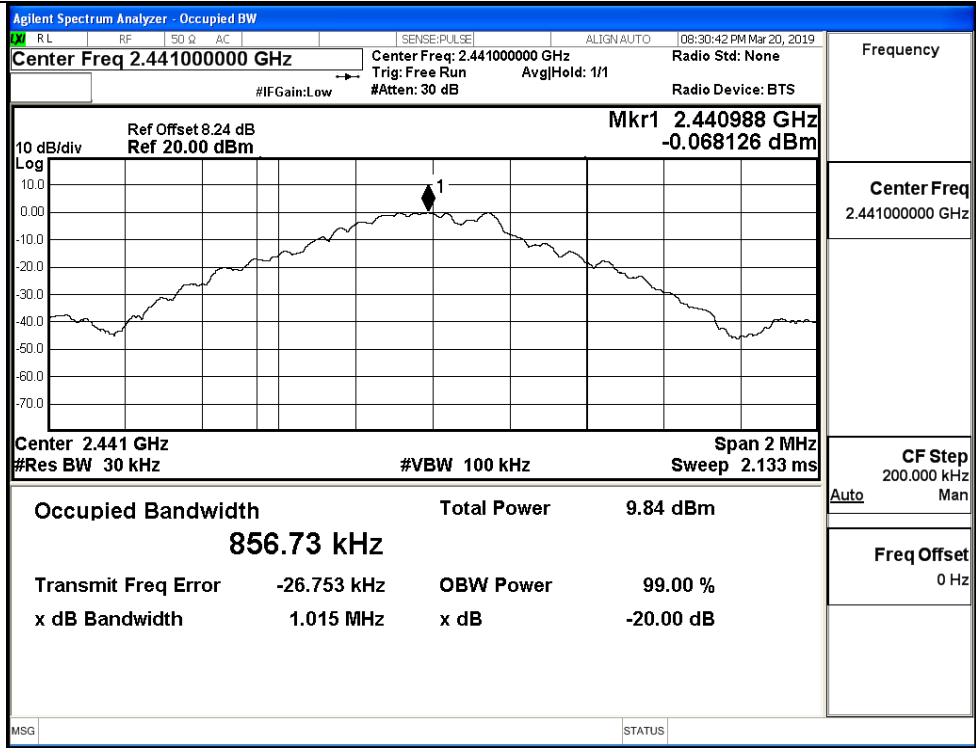


A.2 99% and 20dB Bandwidth

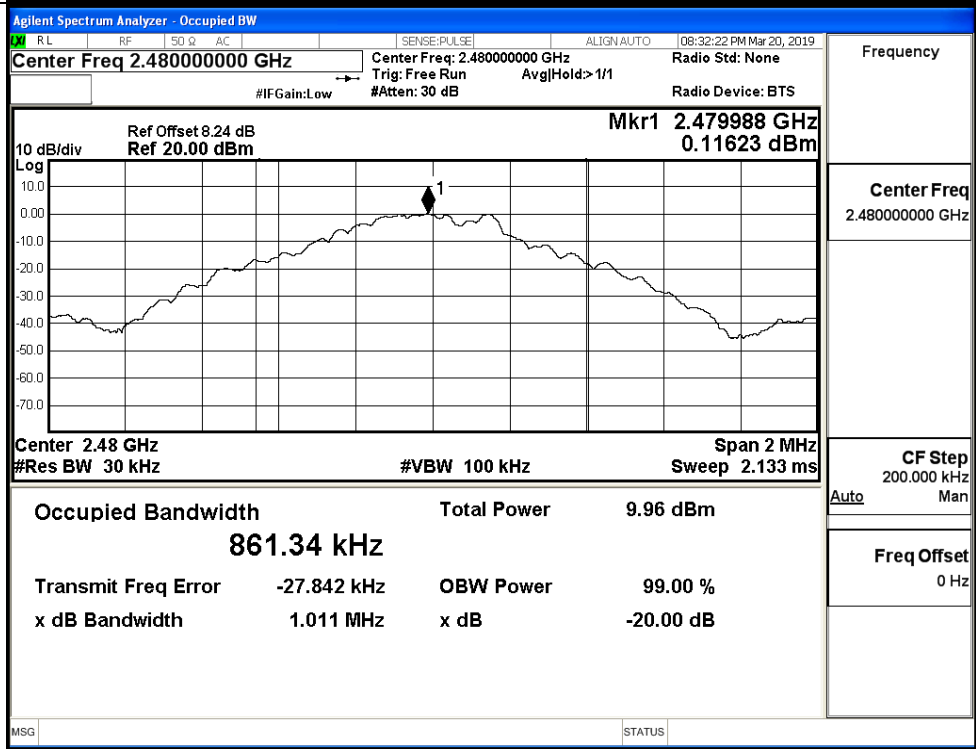
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.86827	0.9577	Not Specified	PASS
	MCH	0.85673	1.015	Not Specified	PASS
	HCH	0.86132	1.011	Not Specified	PASS
π/4DQPSK	LCH	1.1638	1.280	Not Specified	PASS
	MCH	1.1629	1.276	Not Specified	PASS
	HCH	1.1649	1.305	Not Specified	PASS
8DPSK	LCH	1.1566	1.291	Not Specified	PASS
	MCH	1.1553	1.285	Not Specified	PASS
	HCH	1.1569	1.285	Not Specified	PASS



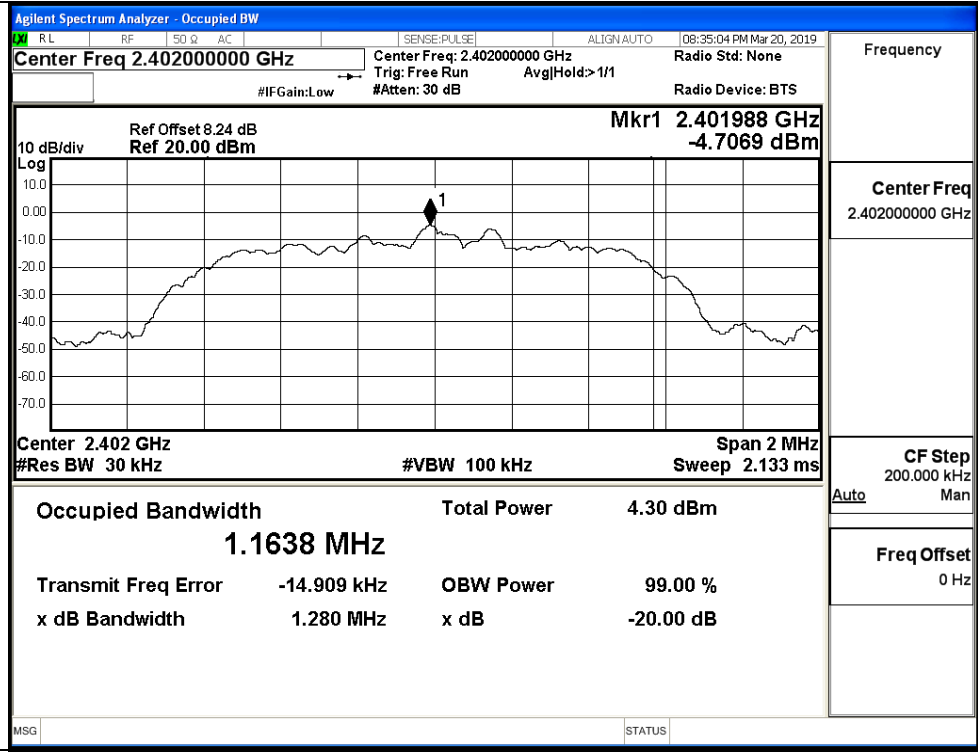
GFSK/MCH



GFSK/HCH

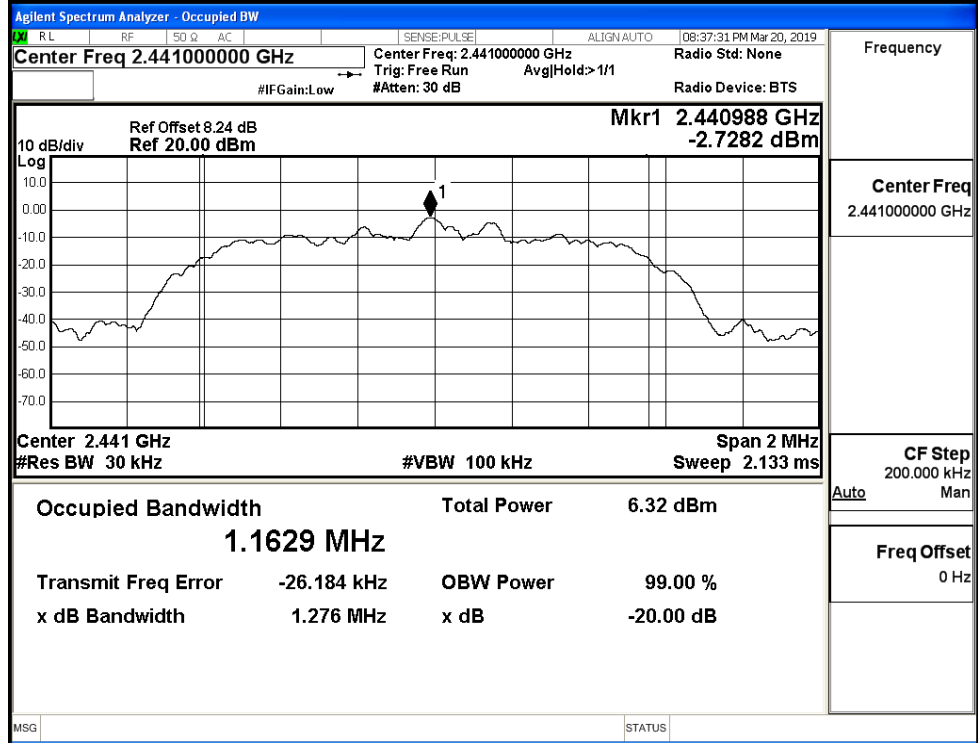


$\pi/4$ DQPSK/LCH



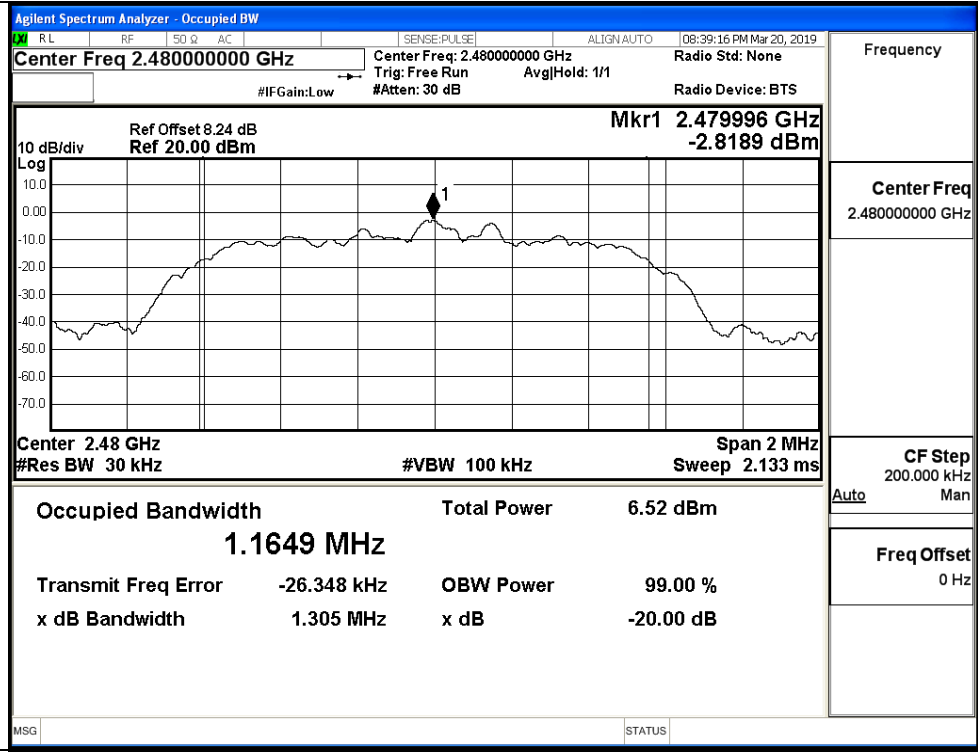
Frequency	2.40200000 GHz
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH



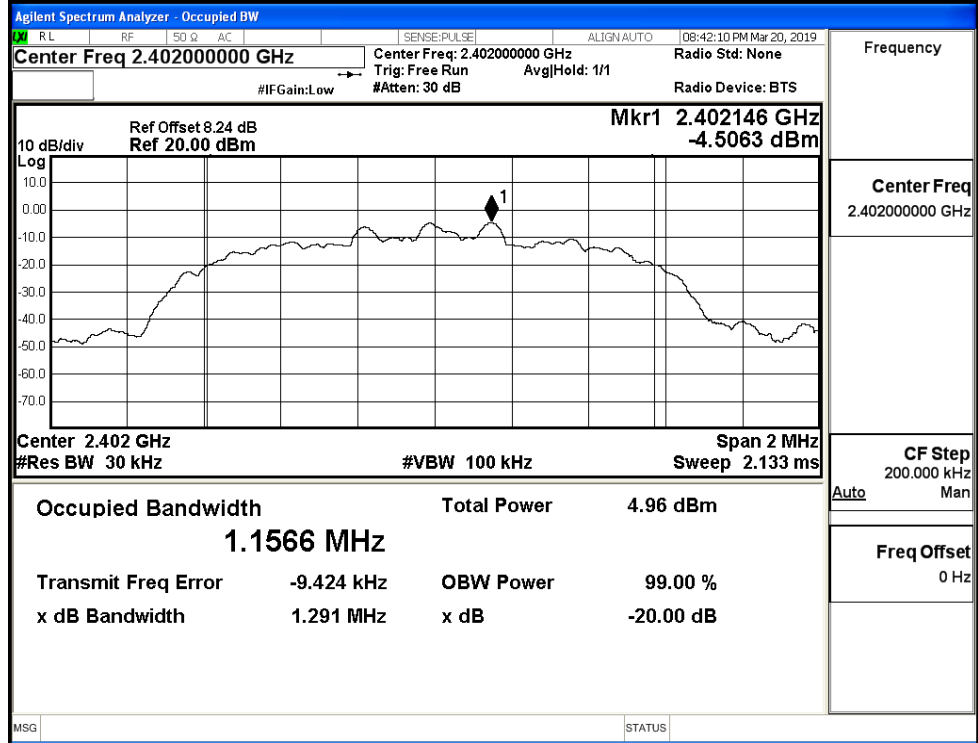
Frequency	2.44100000 GHz
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/HCH



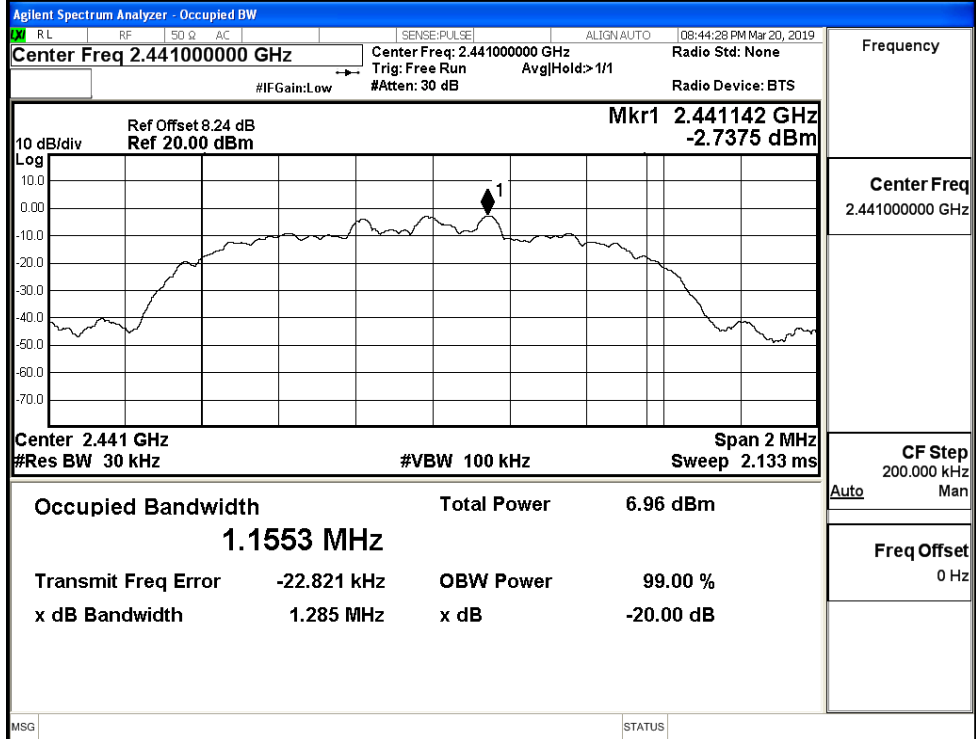
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH

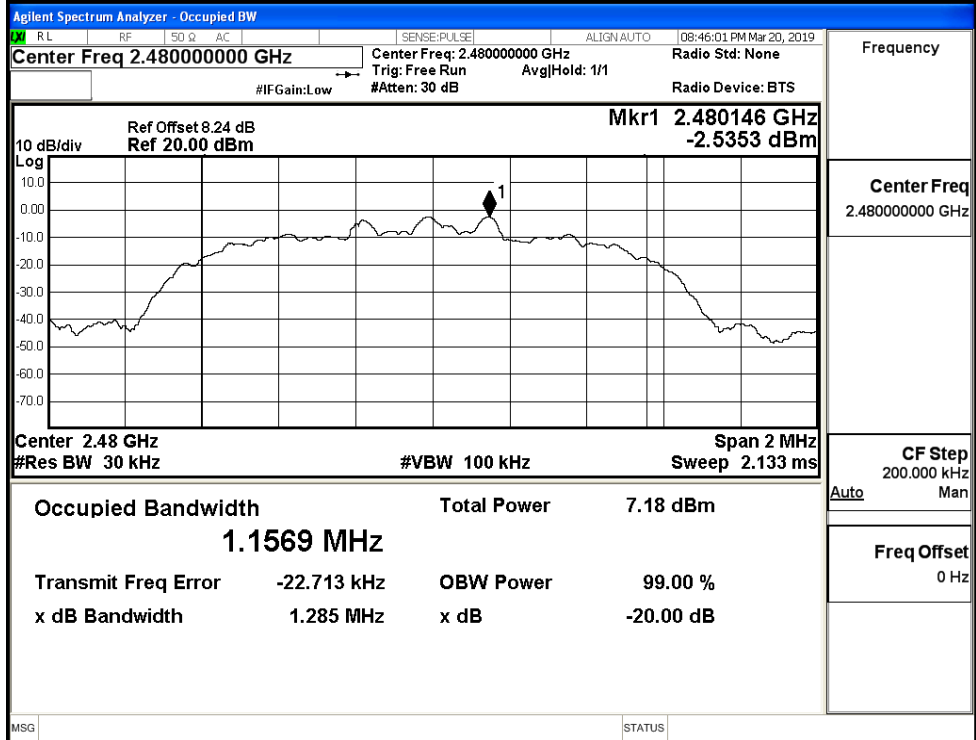


Frequency	2.40200000 GHz
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/MCH

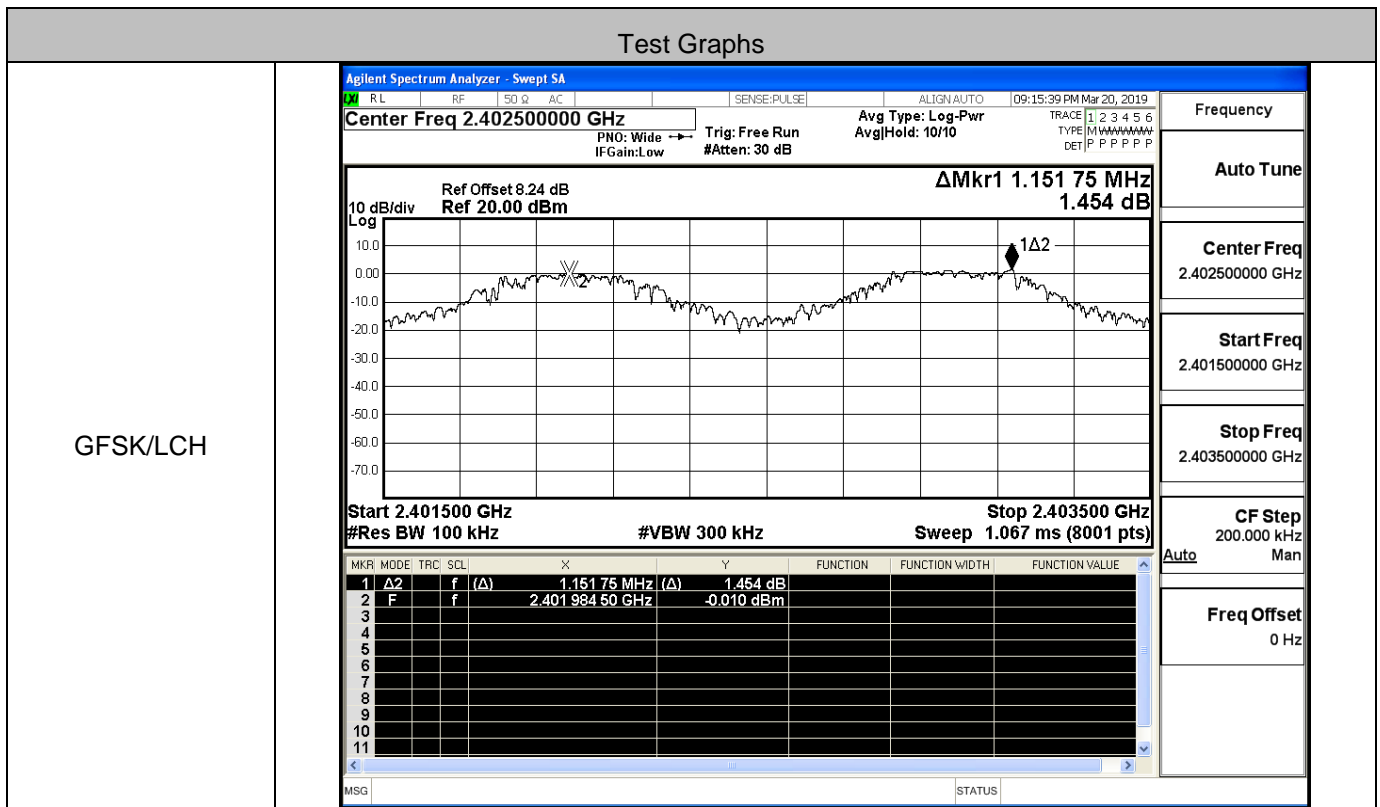


8DPSK/HCH

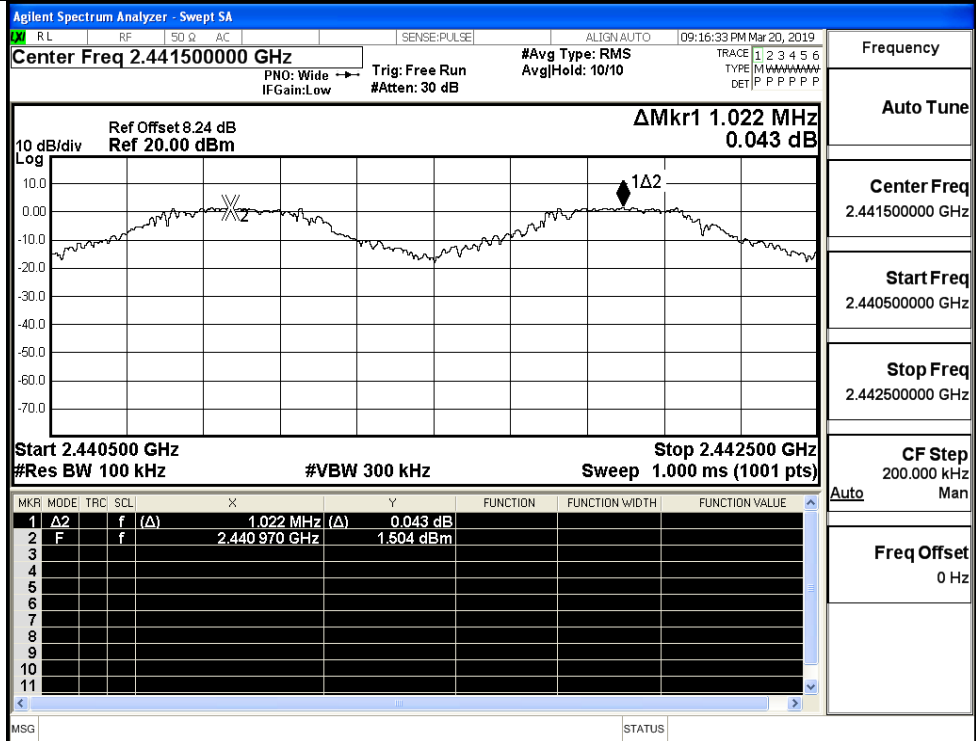


A.3 Carrier Frequency Separation

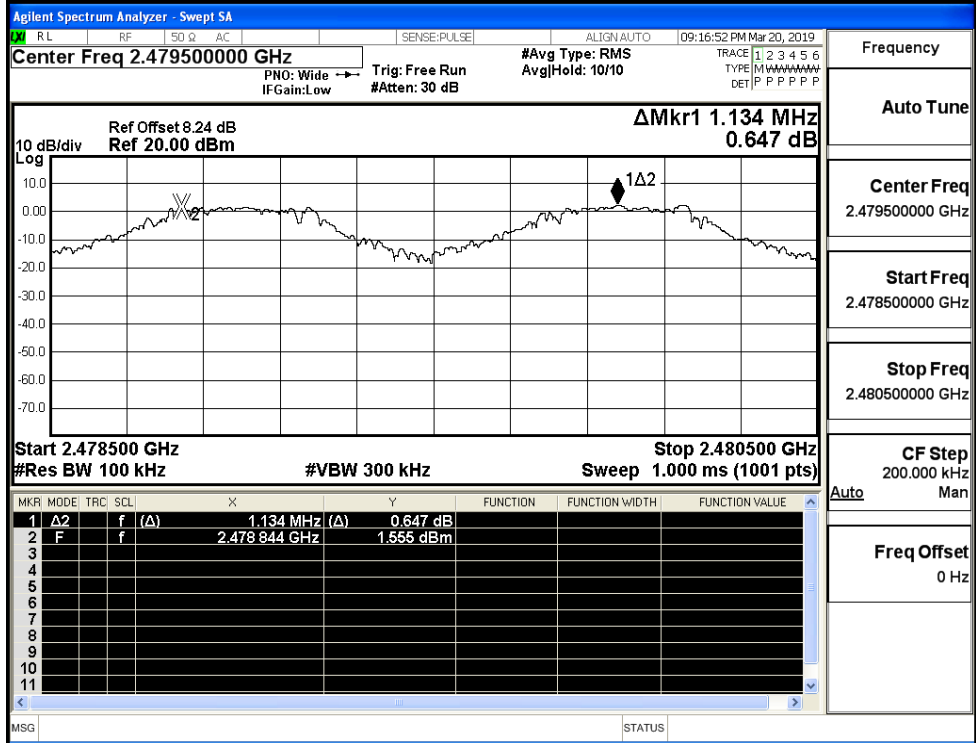
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.152	0.677	PASS
	MCH	1.022	0.677	PASS
	HCH	1.134	0.677	PASS
π/4DQPSK	LCH	1.180	0.870	PASS
	MCH	1.004	0.870	PASS
	HCH	1.268	0.870	PASS
8DPSK	LCH	1.108	0.861	PASS
	MCH	0.968	0.861	PASS
	HCH	0.998	0.861	PASS



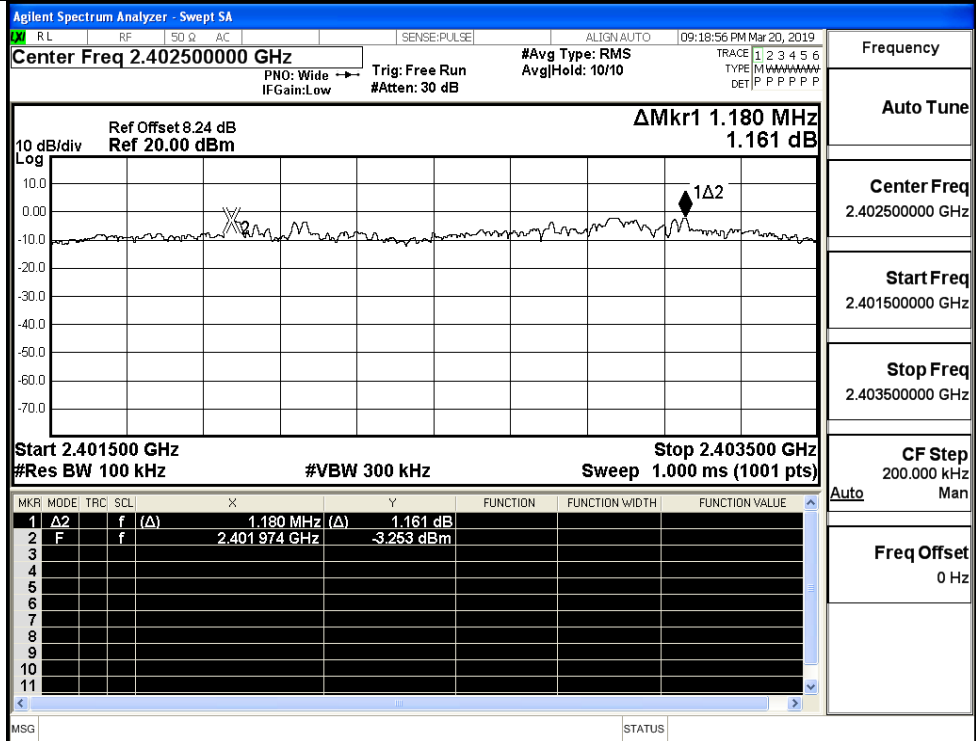
GFSK/MCH



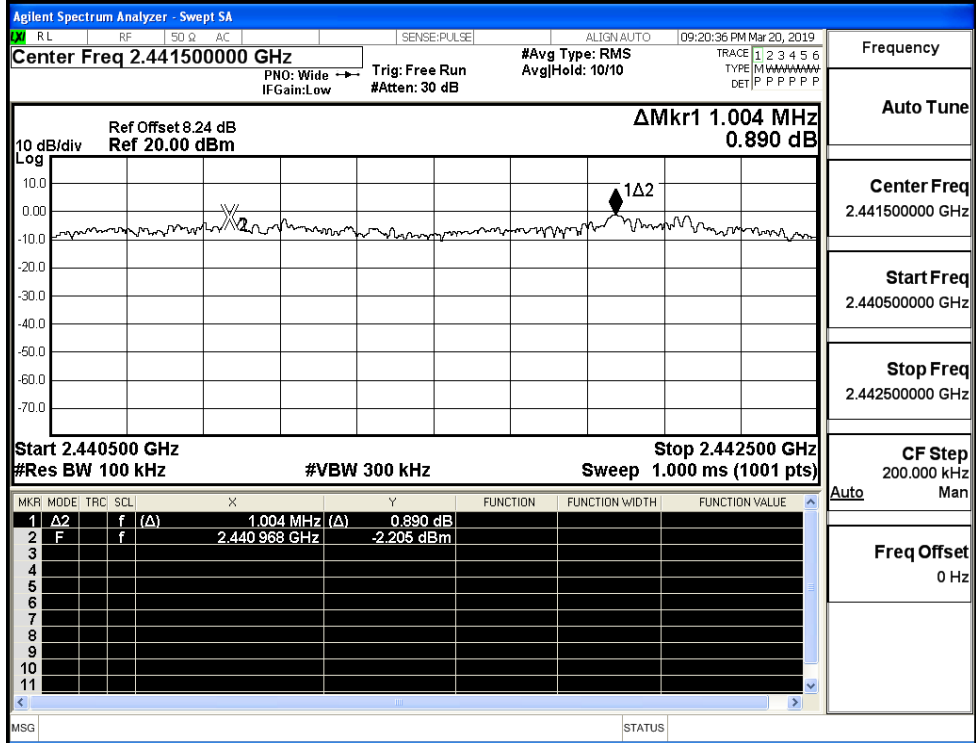
GFSK/HCH



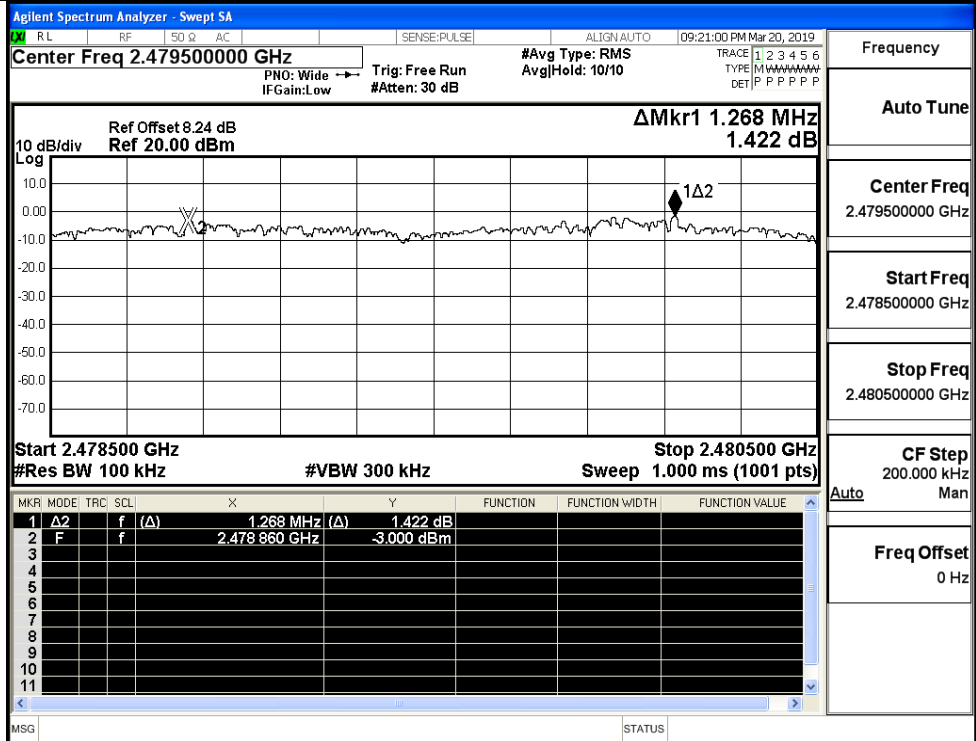
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

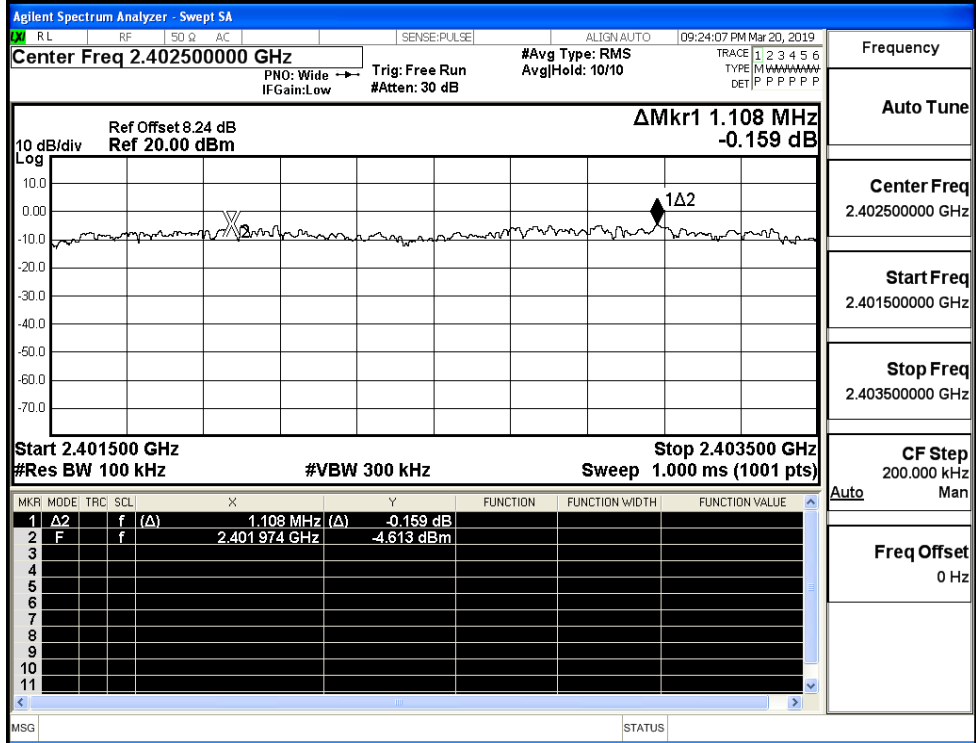


π/4DQPSK/HCH



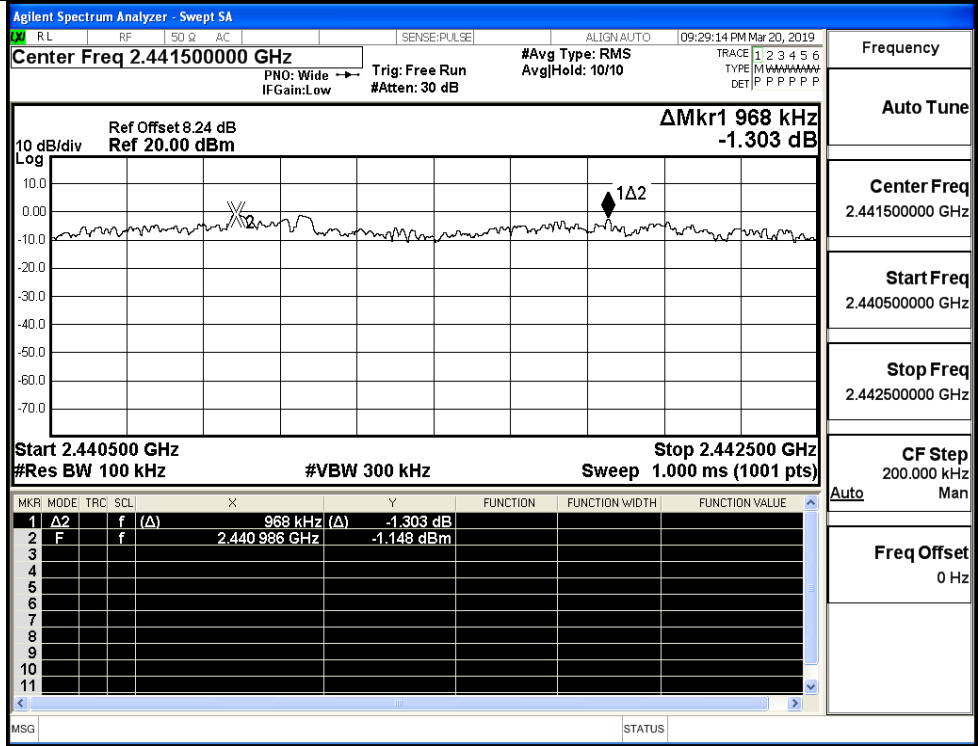
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

8DPSK/LCH

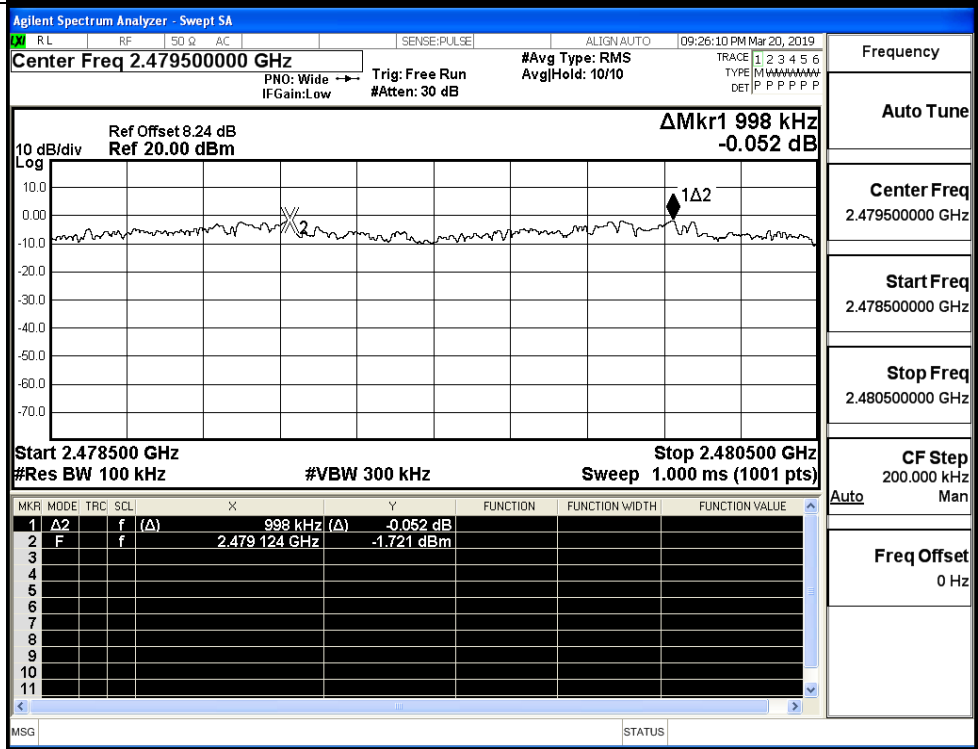


Frequency
Auto Tune
Center Freq
2.402500000 GHz
Start Freq
2.401500000 GHz
Stop Freq
2.403500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH



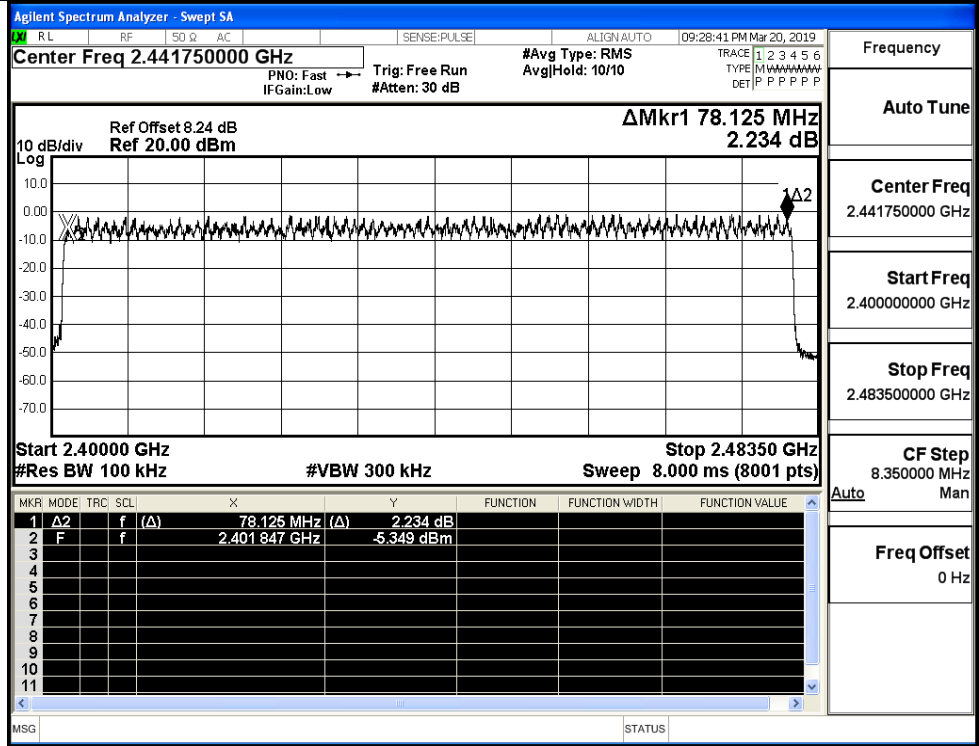
A.4 Hopping Channel Number

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 Graphs

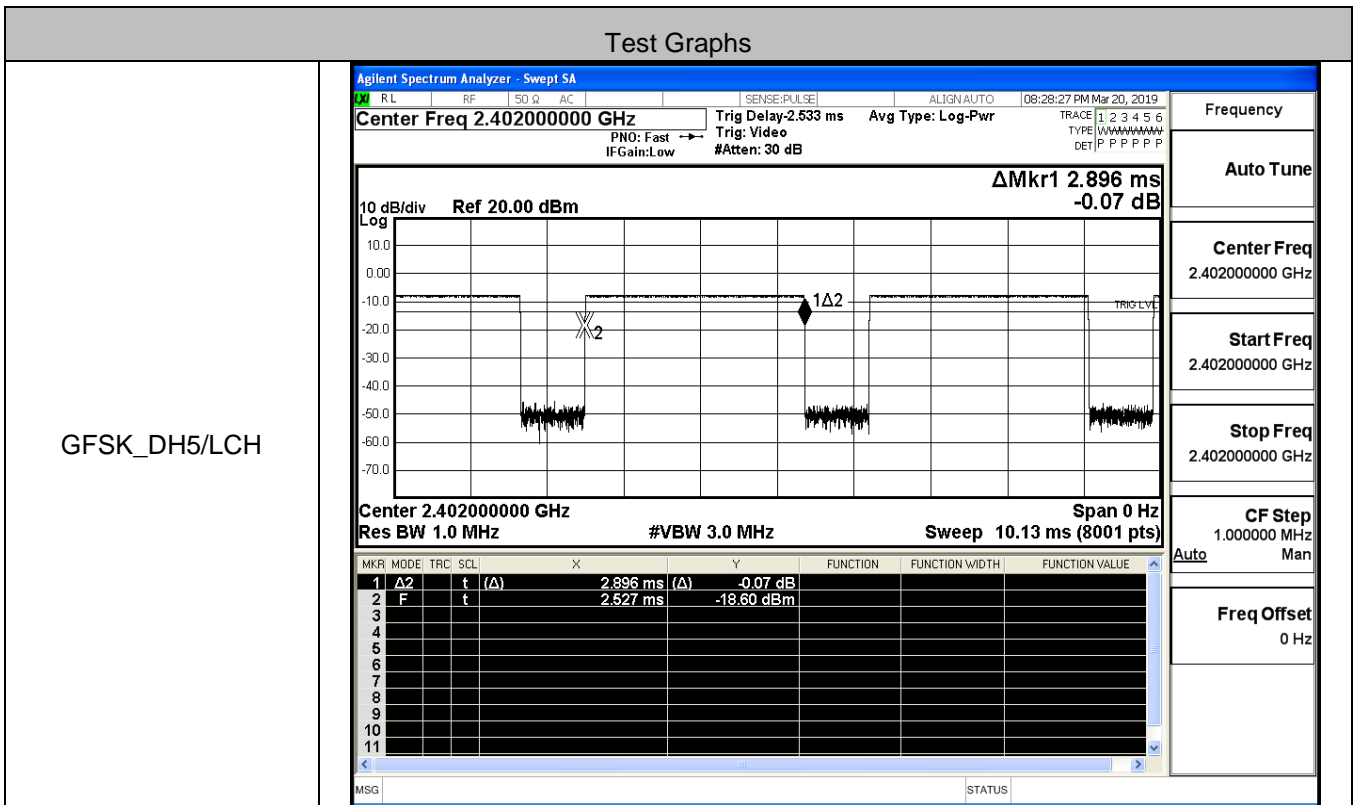
<p>GFSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>ΔMkr1 77.874 MHz 1.780 dB</p> <p>Start 2.40000 GHz #Res BW 100 kHz</p> <p>Stop 2.48350 GHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <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> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>77.874 MHz (Δ)</td> <td>1.780 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401983 GHz</td> <td>0.314 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ 2	f	(Δ)	77.874 MHz (Δ)	1.780 dB				2	F	f		2.401983 GHz	0.314 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ 2	f	(Δ)	77.874 MHz (Δ)	1.780 dB																							
2	F	f		2.401983 GHz	0.314 dBm																							
<p>$\pi/4$DQPSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.24 dB Ref 20.00 dBm</p> <p>ΔMkr1 78.135 MHz 4.399 dB</p> <p>Start 2.40000 GHz #Res BW 100 kHz</p> <p>Stop 2.48350 GHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>1</td> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>78.135 MHz (Δ)</td> <td>4.399 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401863 GHz</td> <td>-5.407 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	Δ 2	f	(Δ)	78.135 MHz (Δ)	4.399 dB				2	F	f		2.401863 GHz	-5.407 dBm			
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	Δ 2	f	(Δ)	78.135 MHz (Δ)	4.399 dB																							
2	F	f		2.401863 GHz	-5.407 dBm																							

8DPSK/Hop

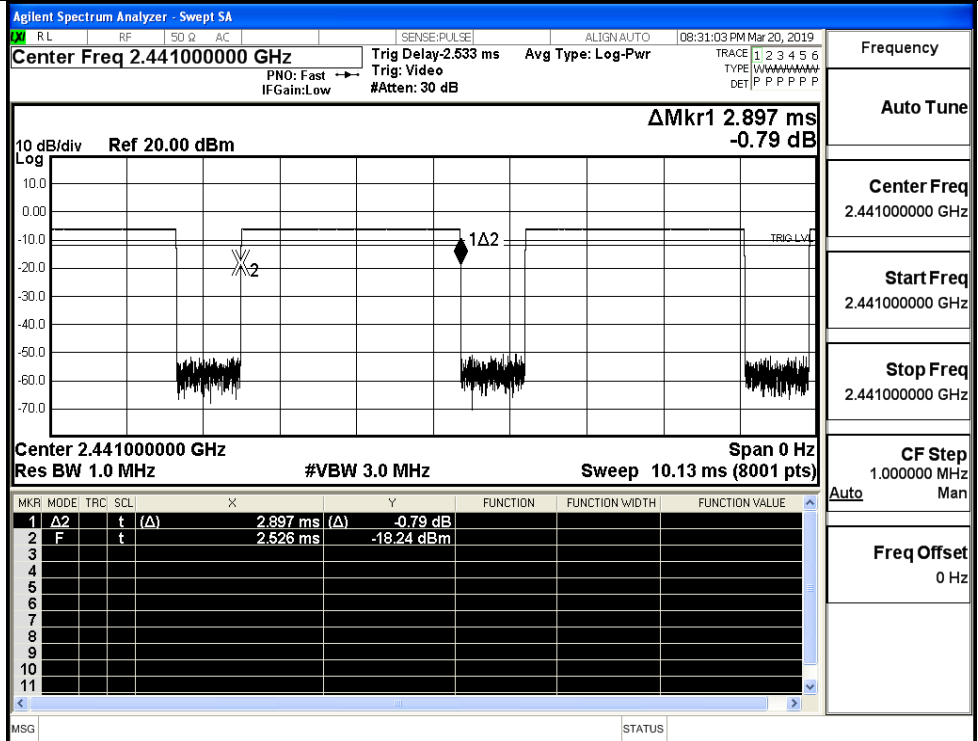


A.5 Dwell Time

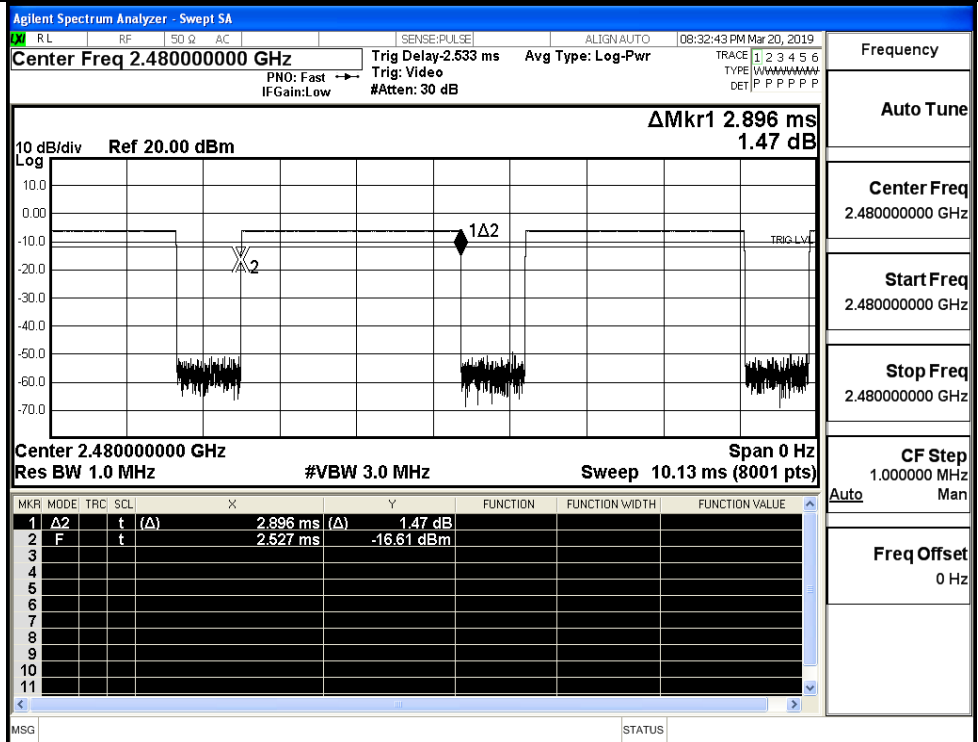
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.310	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS



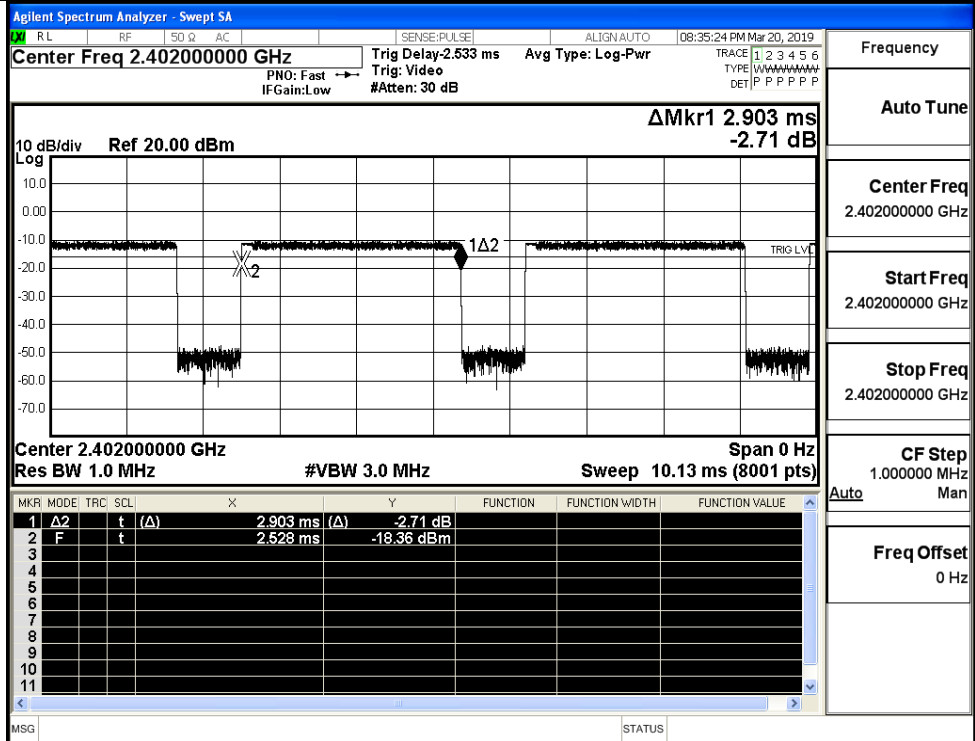
GFSK_DH5/MCH



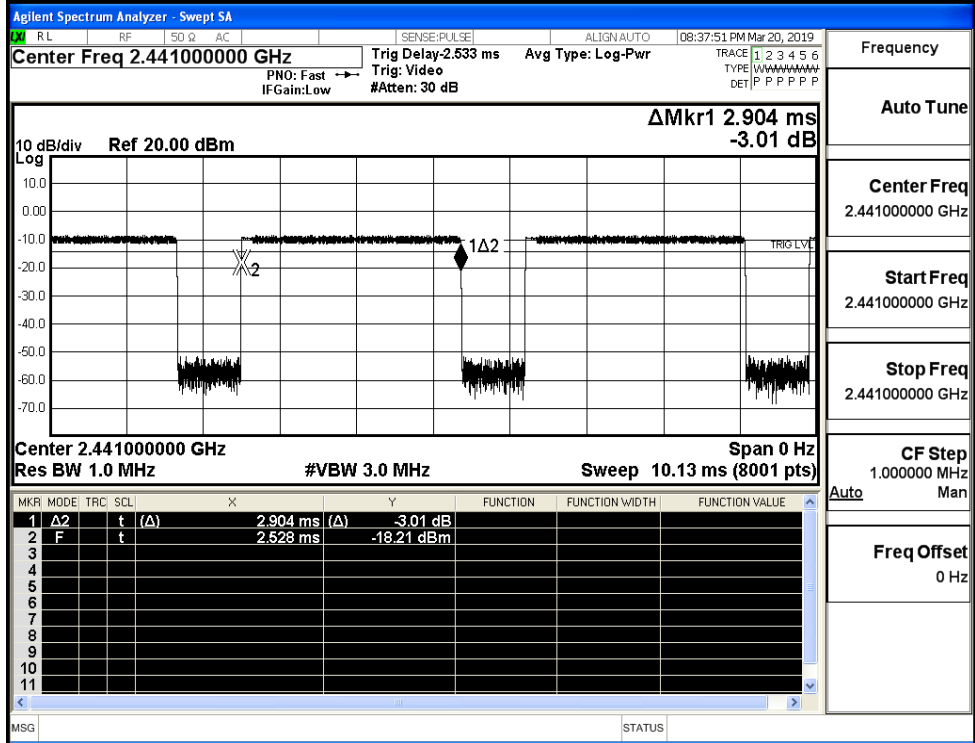
GFSK_DH5/HCH



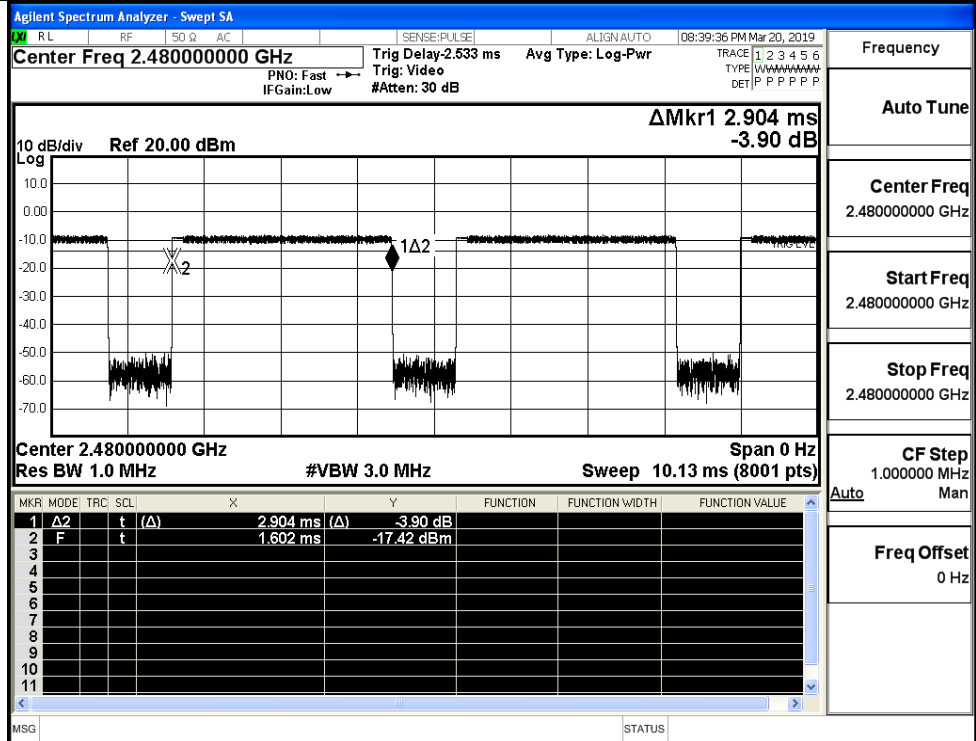
$\pi/4$ DQPSK
_2DH5/LCH



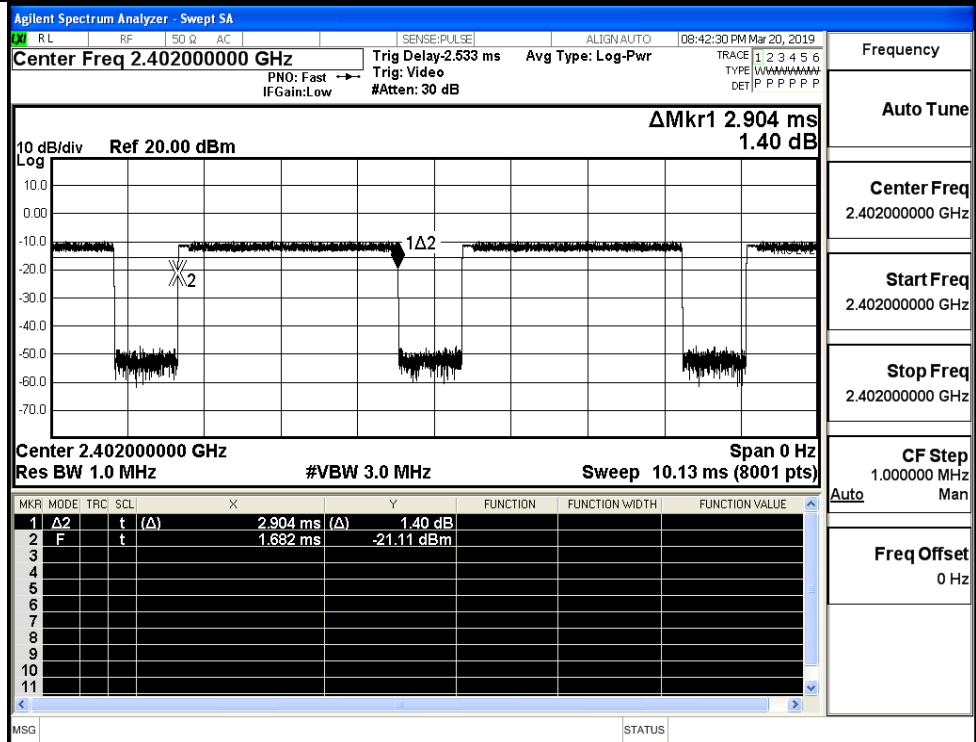
$\pi/4$ DQPSK
_2DH5/MCH



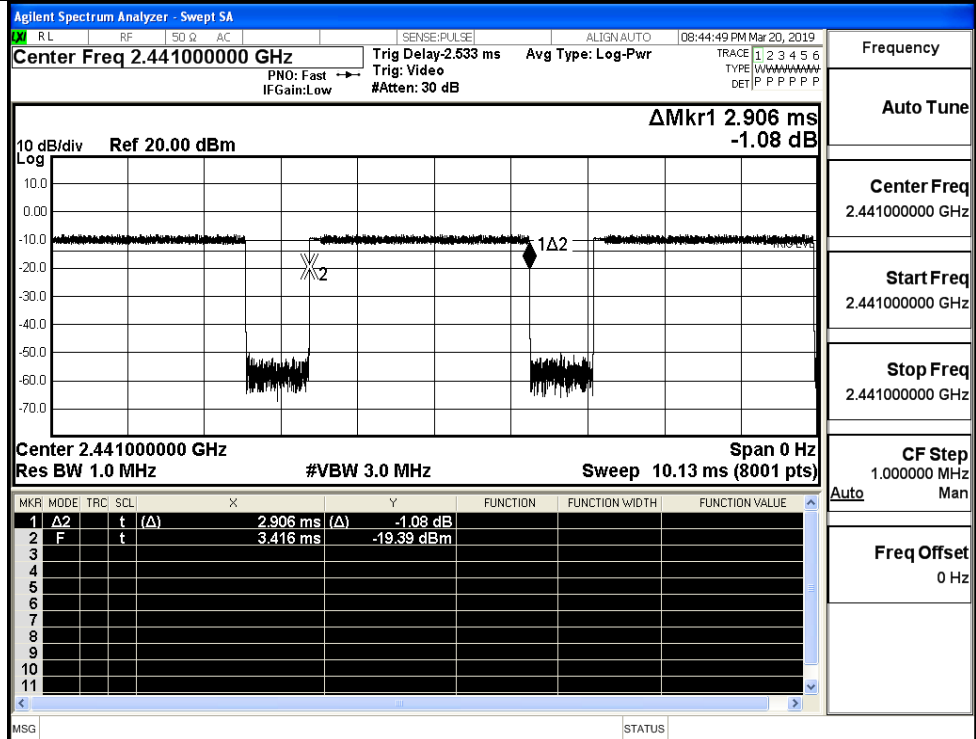
$\pi/4$ DQPSK
_2DH5/HCH



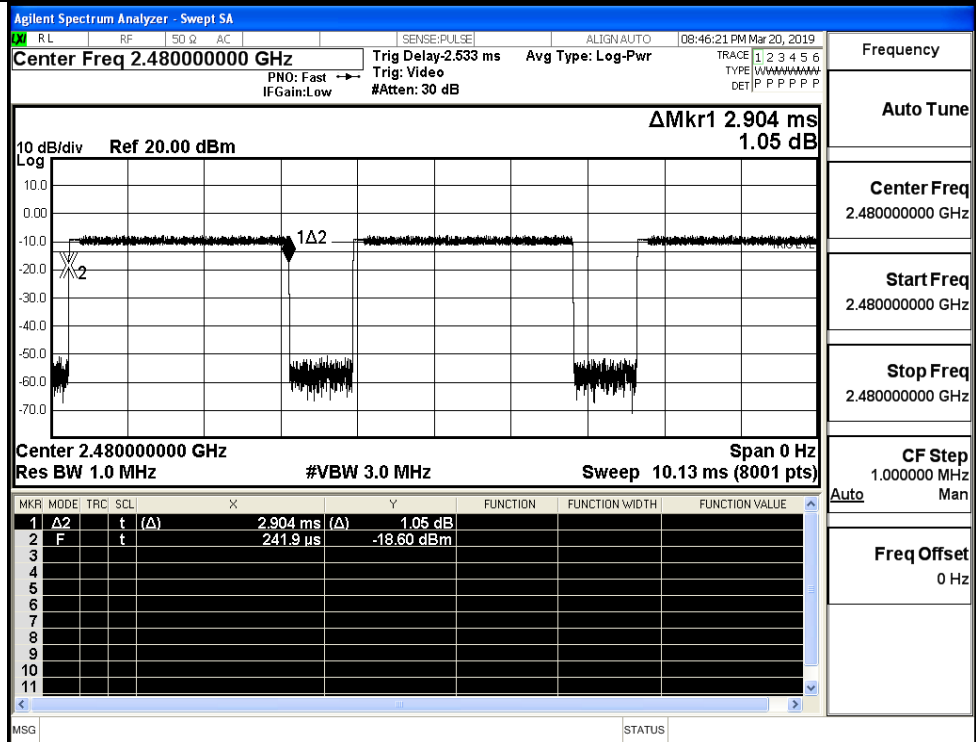
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



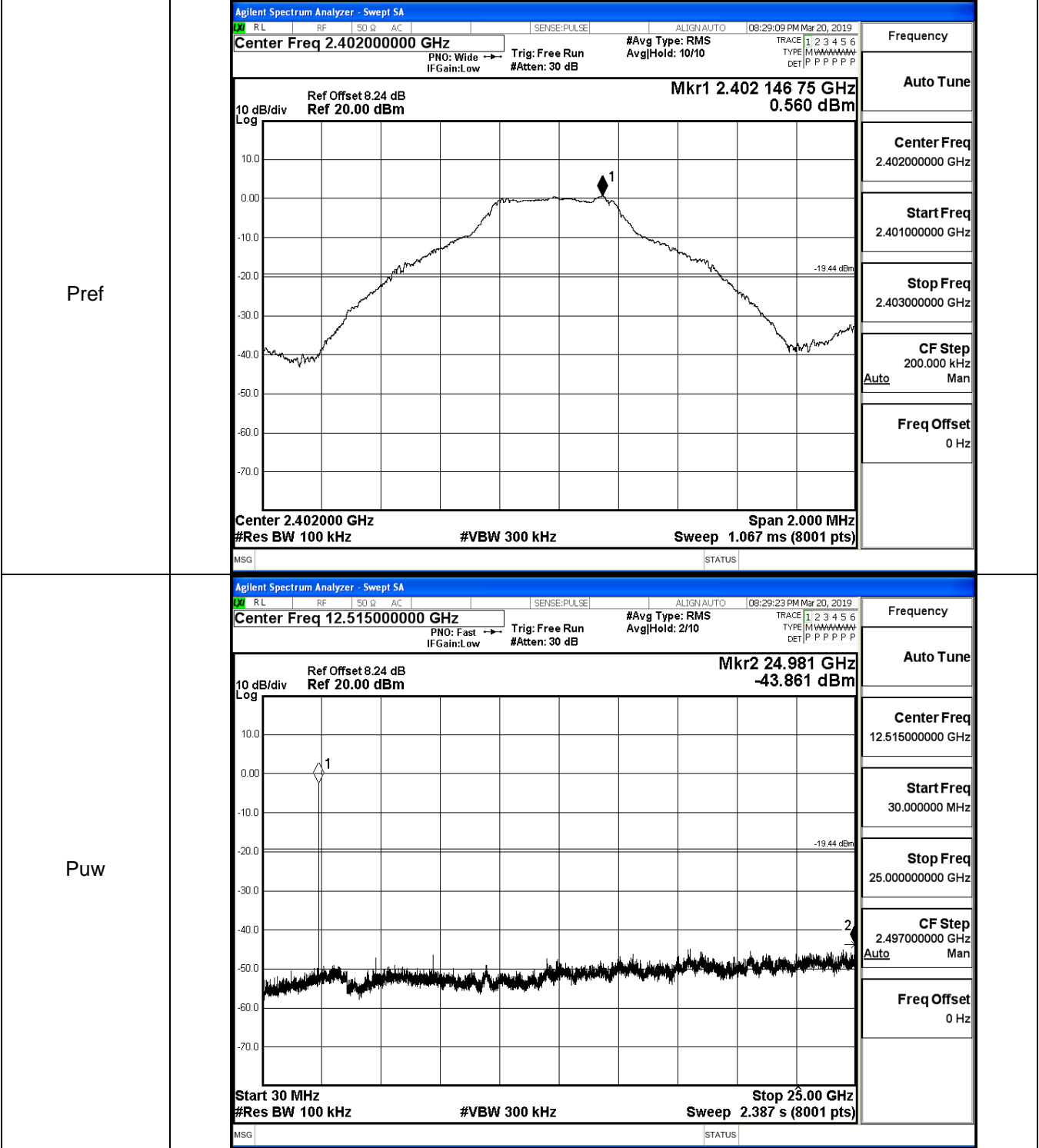
8DPSK_3DH5/HCH



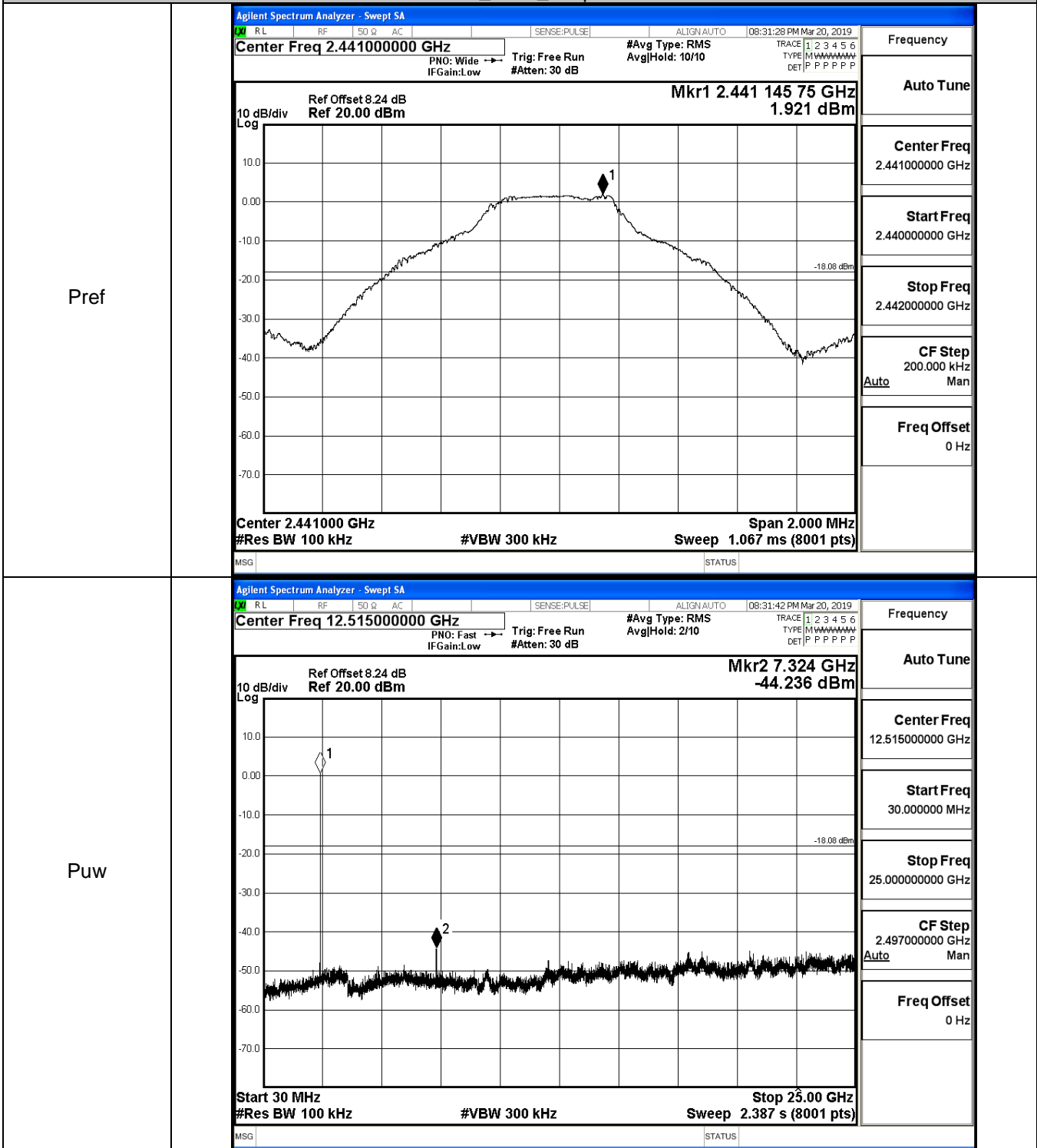
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.56	-43.861	-19.440	PASS
	MCH	1.921	-44.236	-18.079	PASS
	HCH	2.208	-40.429	-17.792	PASS
$\pi/4$ DQPSK	LCH	-3.112	-43.736	-23.112	PASS
	MCH	-1.165	-44.253	-21.165	PASS
	HCH	-0.891	-44.894	-20.891	PASS
8DPSK	LCH	-2.937	-44.404	-22.937	PASS
	MCH	-1.101	-45.030	-21.101	PASS
	HCH	-0.89	-44.441	-20.890	PASS

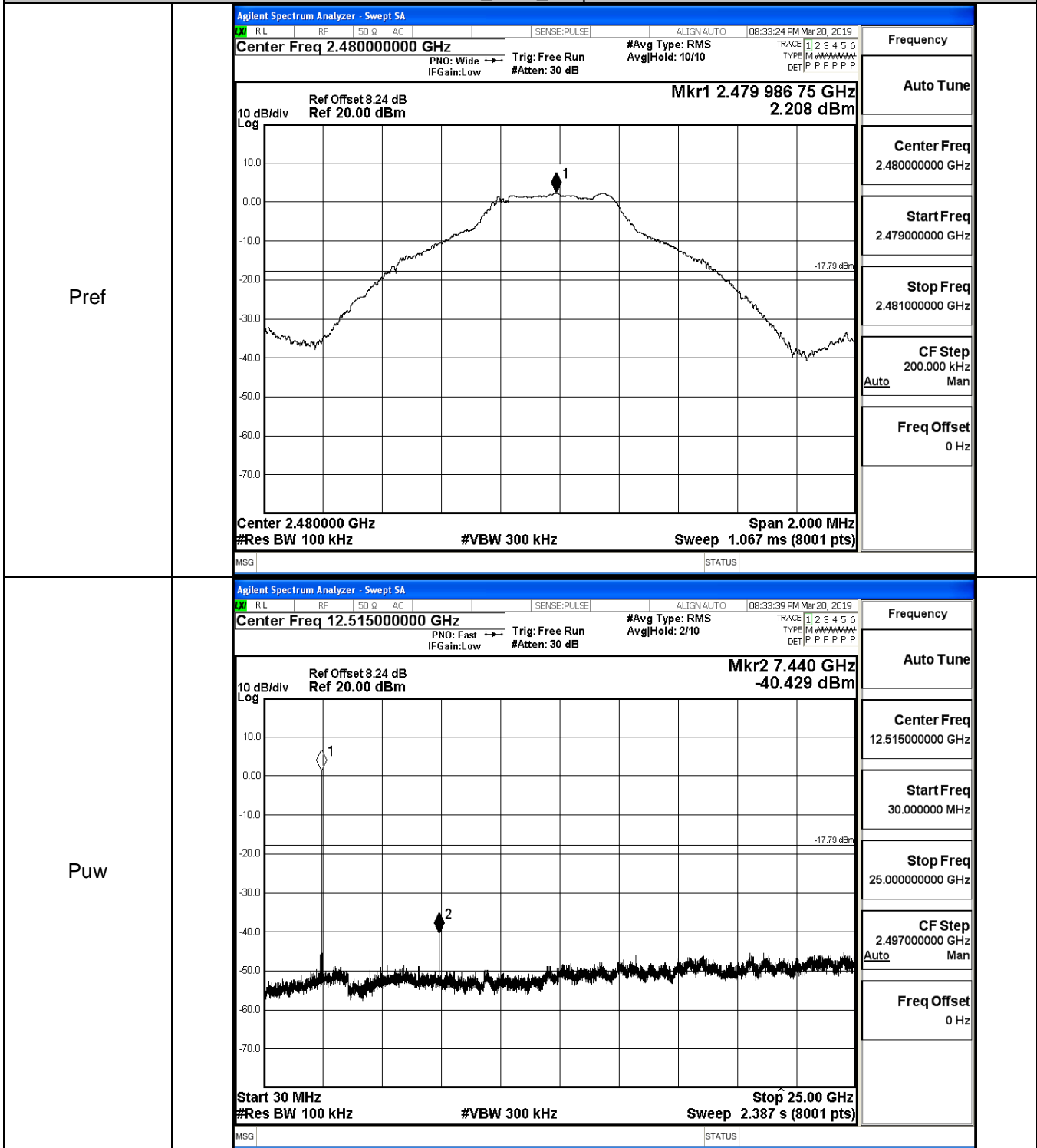
GFSK_LCH_Graphs



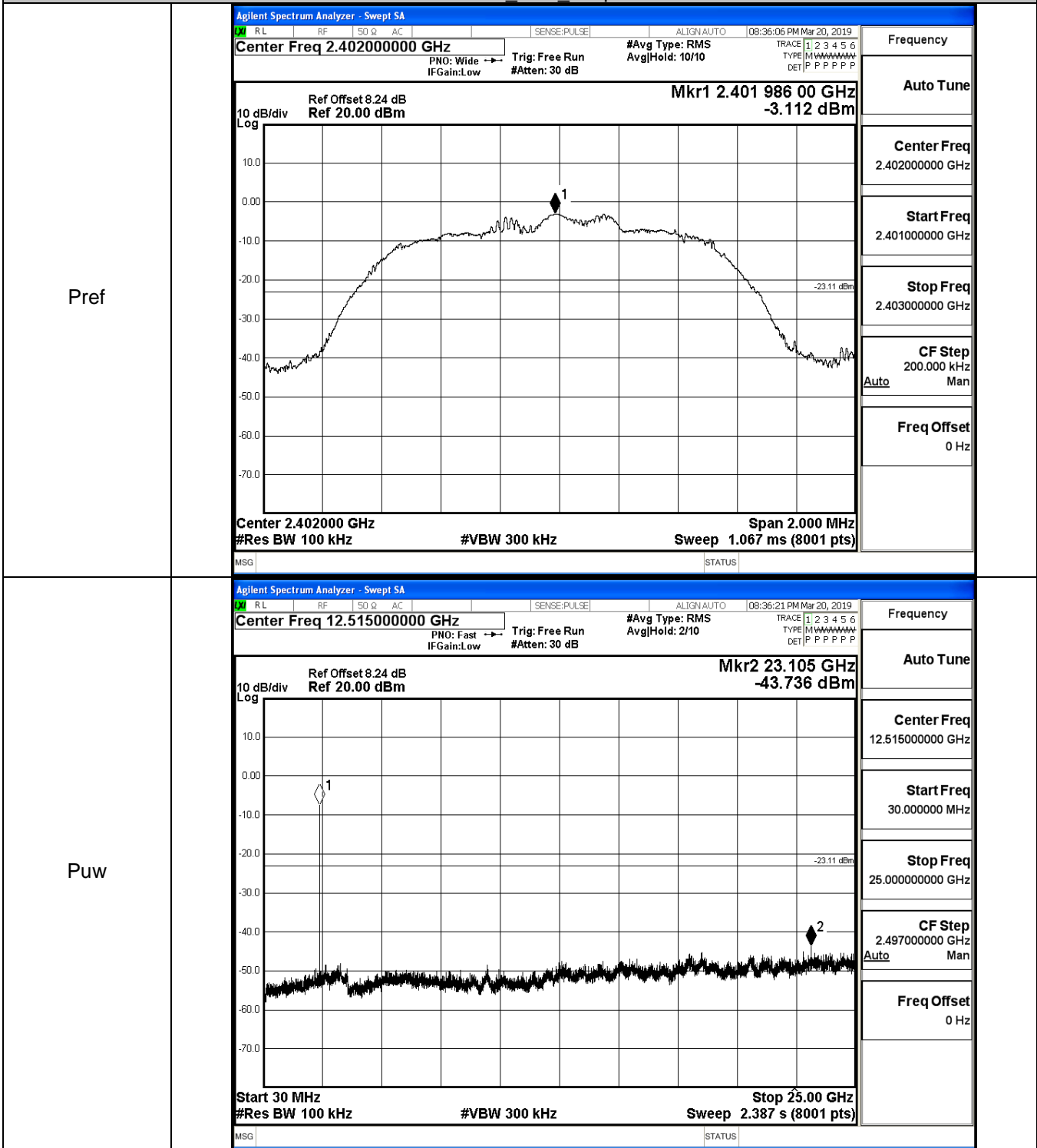
GFSK_MCH_Graphs



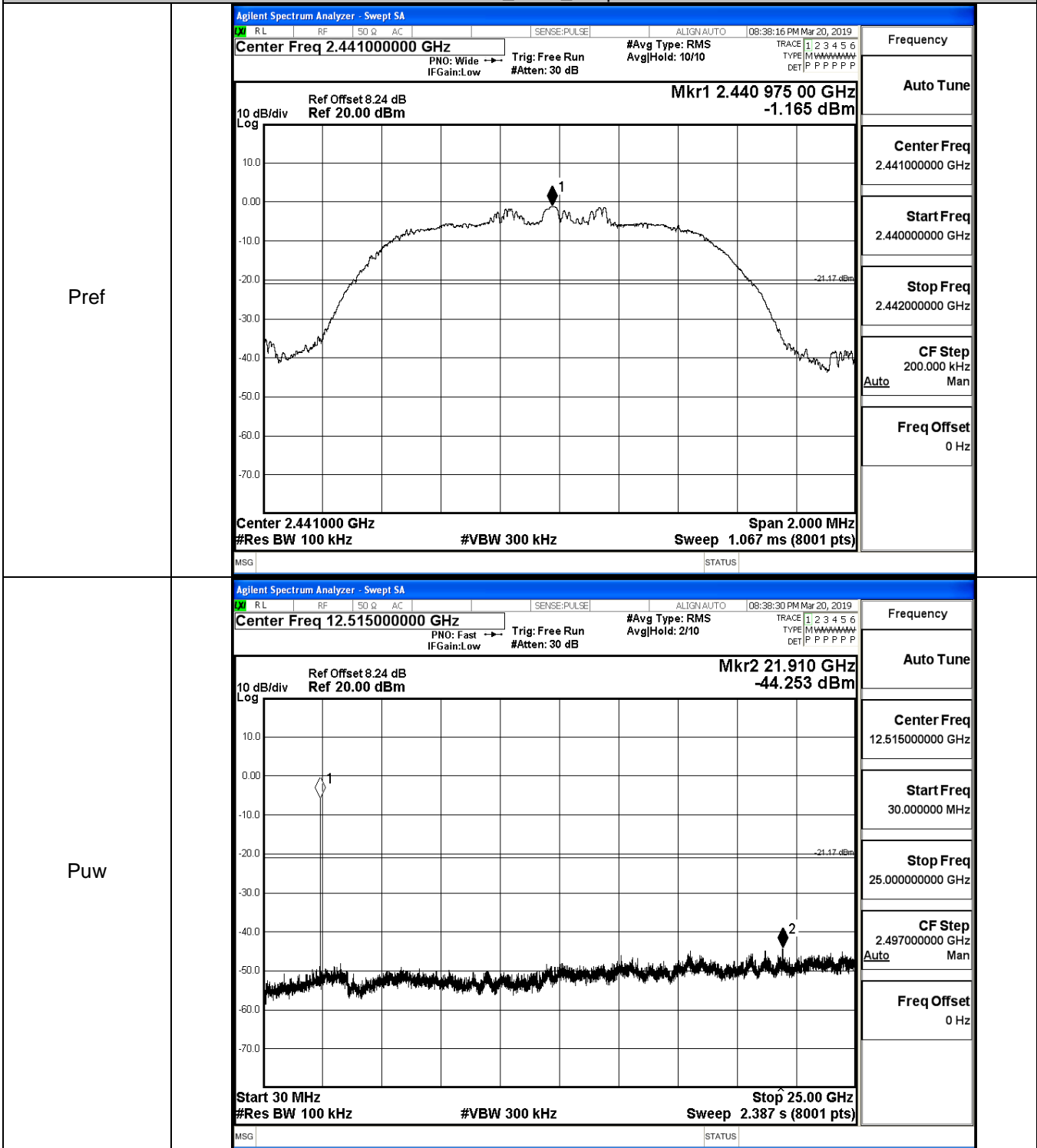
GFSK_HCH_Graphs



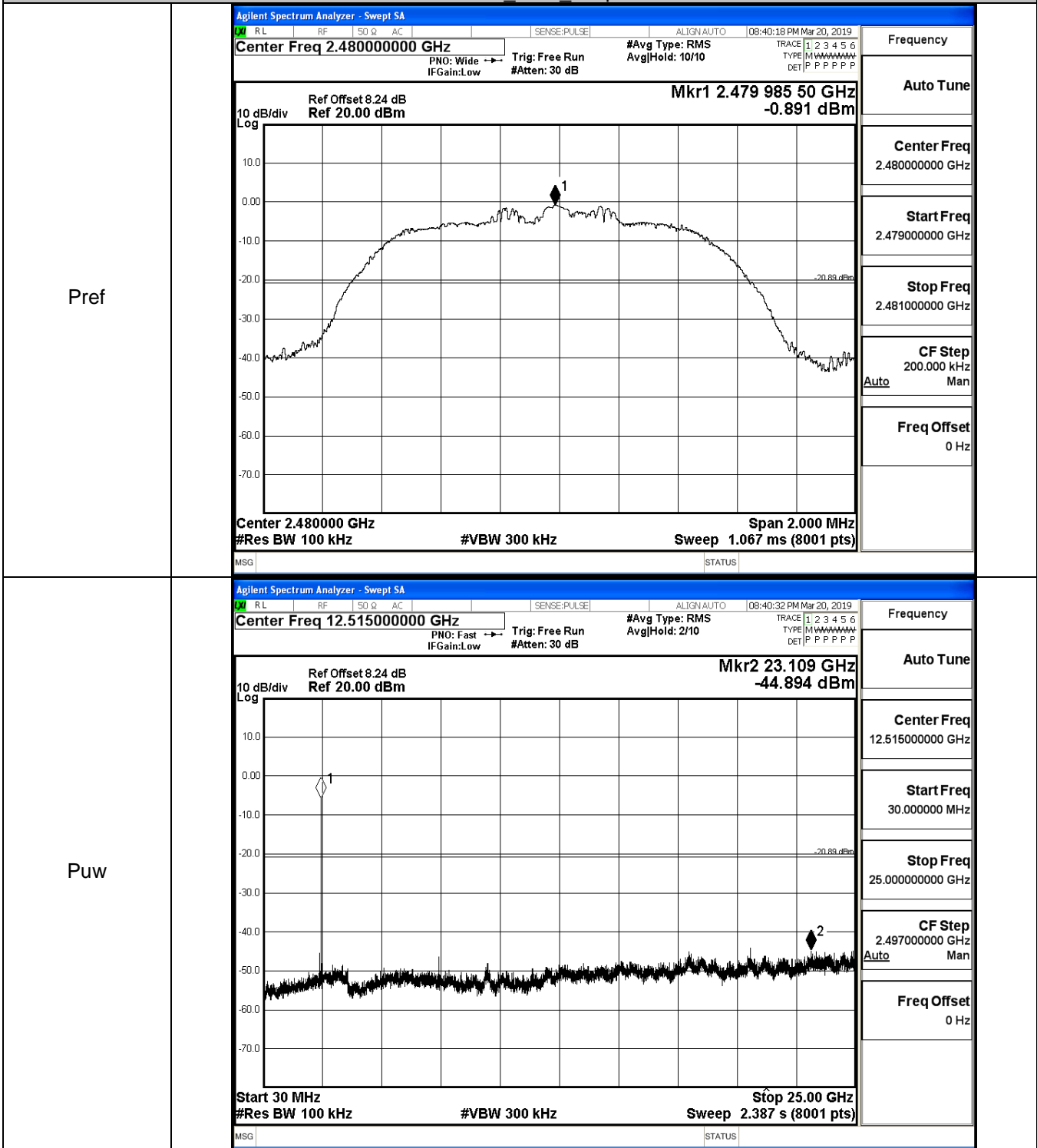
$\pi/4$ DQPSK LCH_Graphs



$\pi/4$ DQPSK_MCH_Graphs

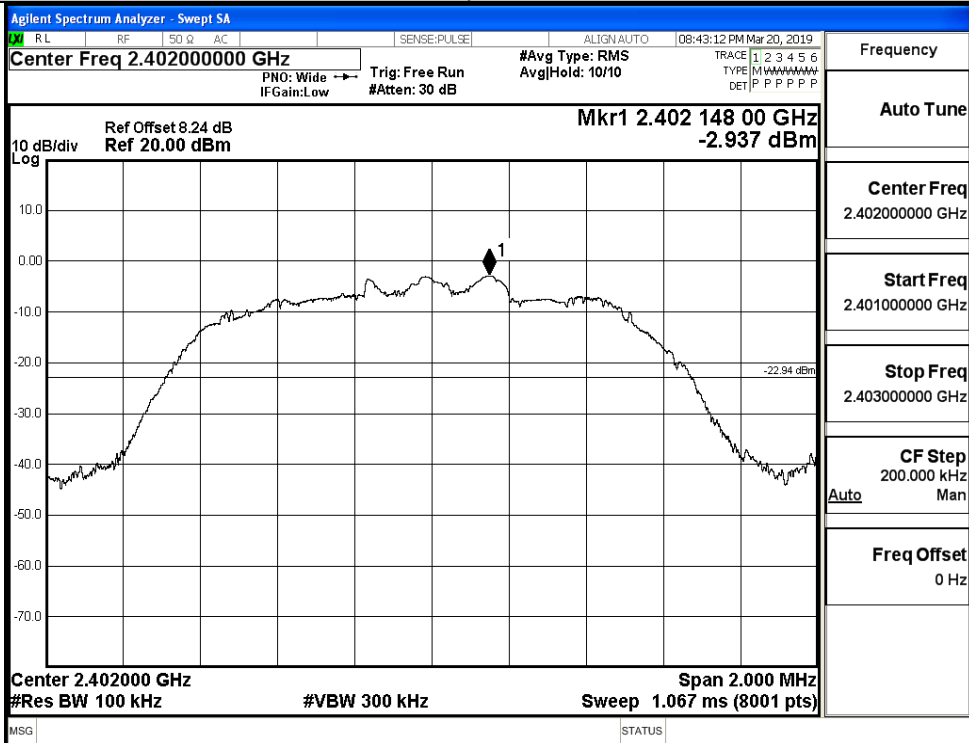


$\pi/4$ DQPSK_HCH_Graphs

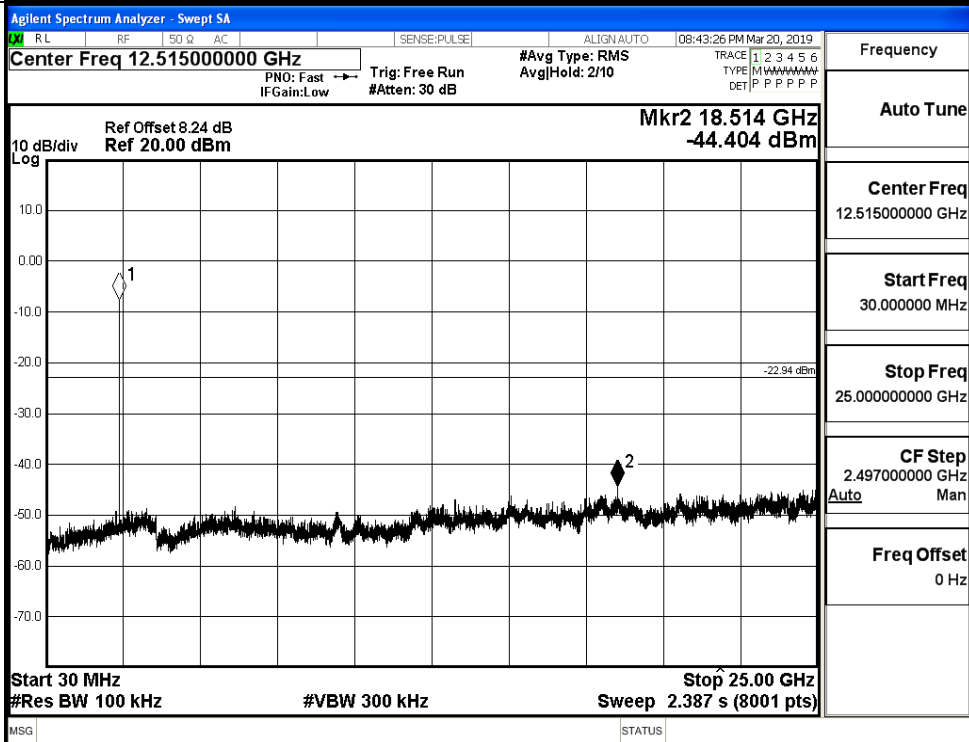


8DPSK_LCH_Graphs

Pref

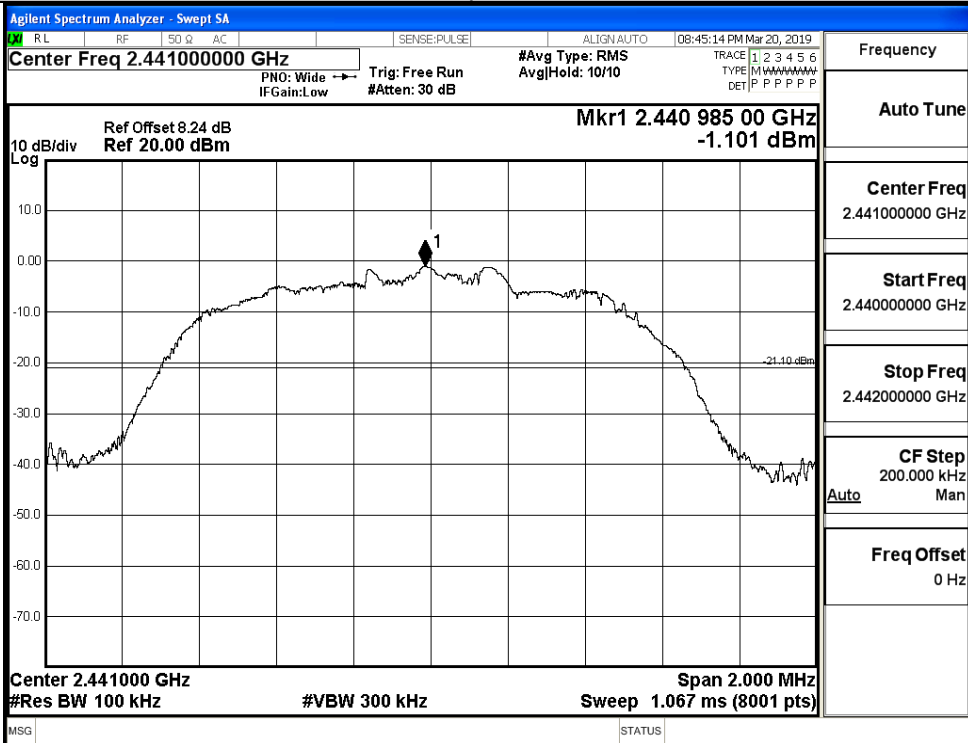


Puw

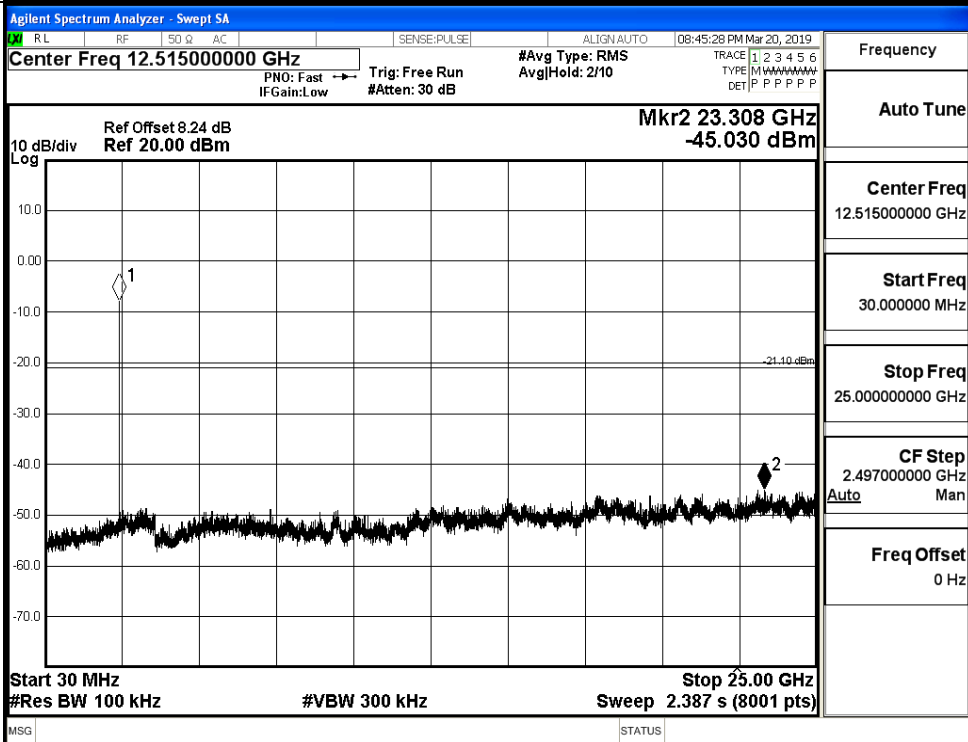


8DPSK_MCH_Graphs

Pref

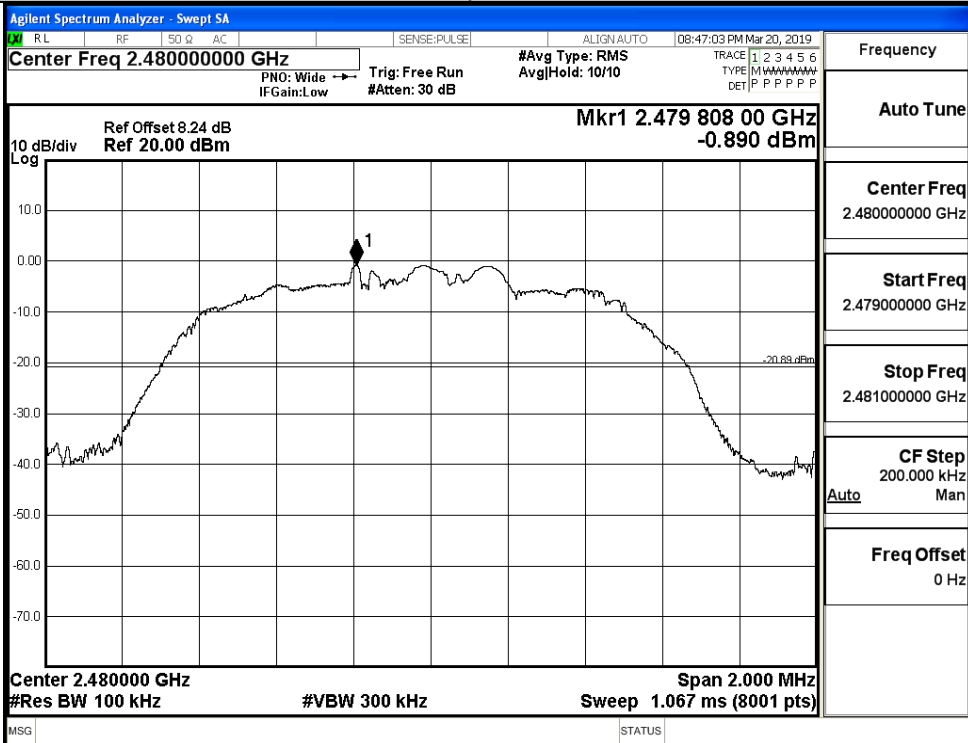


Puw

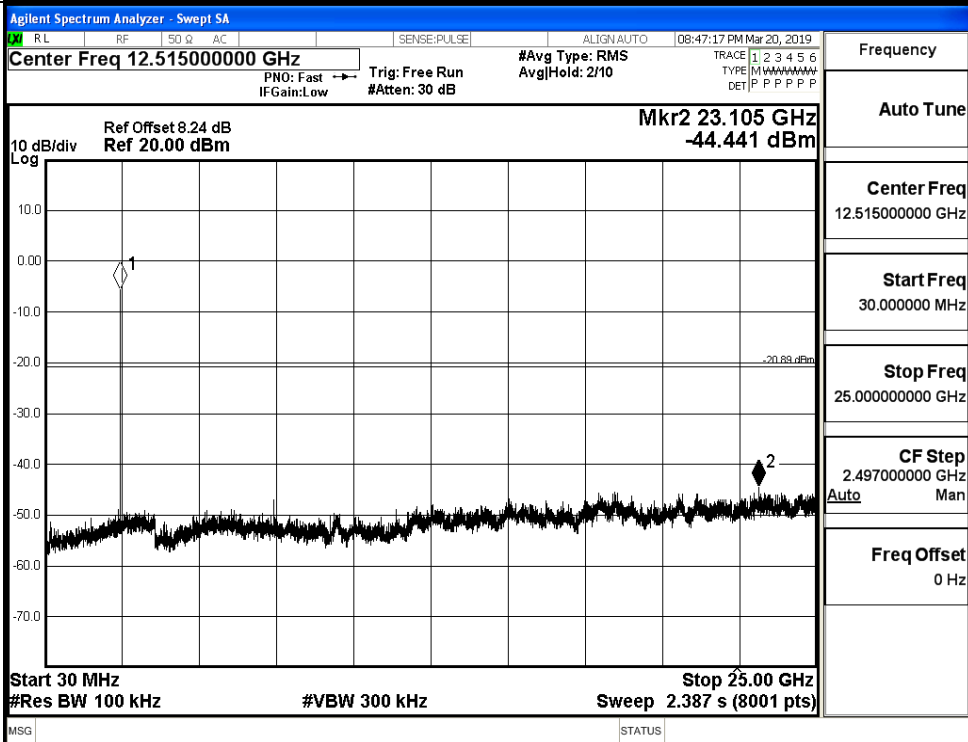


8DPSK_HCH_Graphs

Pref



Puw



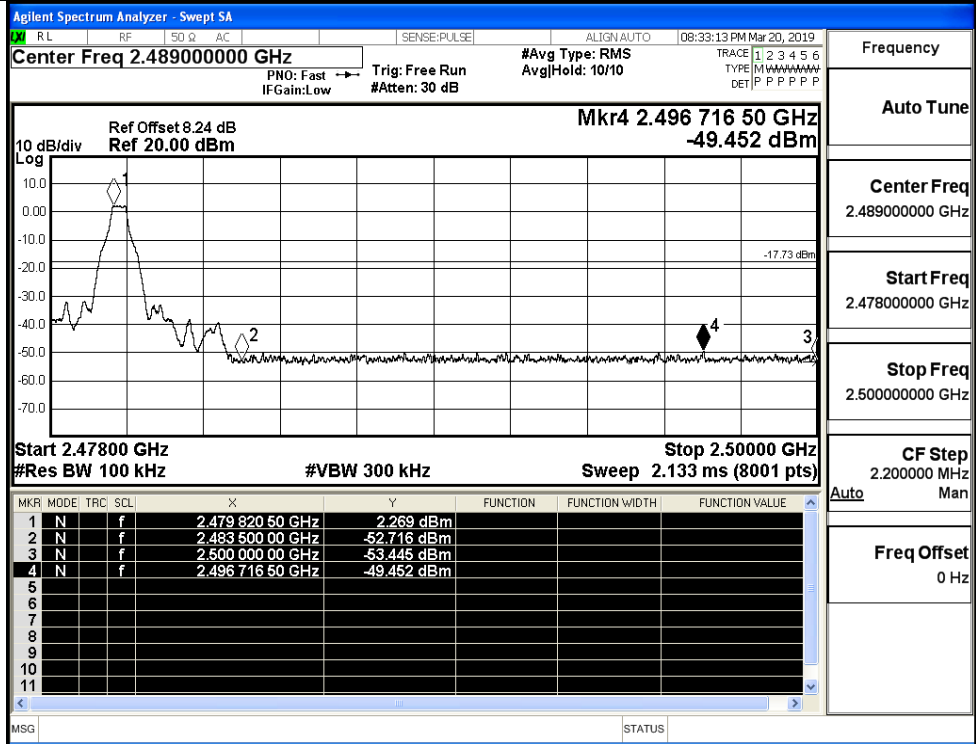
A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.563	Off	-49.979	-19.44	PASS
			2.081	On	-49.765	-17.92	PASS
	HCH	2480	2.269	Off	-49.452	-17.73	PASS
			2.190	On	-49.104	-17.81	PASS
$\pi/4$ DQPSK	LCH	2402	-4.669	Off	-49.916	-24.67	PASS
			-1.335	On	-49.351	-21.34	PASS
	HCH	2480	-0.804	Off	-49.534	-20.8	PASS
			-0.857	On	-48.958	-20.86	PASS
8DPSK	LCH	2402	-3.007	Off	-49.505	-23.01	PASS
			-1.268	On	-49.026	-21.27	PASS
	HCH	2480	-0.731	Off	-49.199	-20.73	PASS
			-0.922	On	-49.313	-20.92	PASS

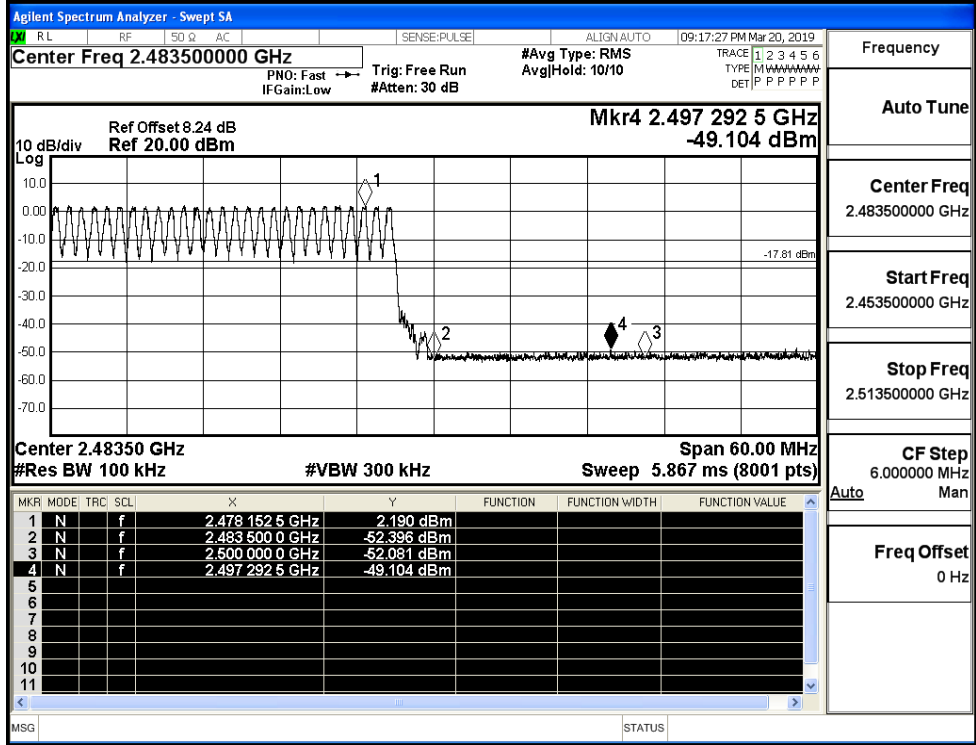
Test Graphs

<p>GFSK/LCH/No Hop</p>		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.357000000 GHz</p> <p>Trig: Free Run #Atten: 30 dB</p> <p>#Avg Type: RMS AvgHold: 10/10</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.357000000 GHz</p> <p>Start Freq 2.310000000 GHz</p> <p>Stop Freq 2.404000000 GHz</p> <p>CF Step 9.400000 MHz</p> <p>Freq Offset 0 Hz</p>
		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.400000000 GHz</p> <p>Trig: Free Run #Atten: 30 dB</p> <p>#Avg Type: RMS AvgHold: 10/10</p> <p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.400000000 GHz</p> <p>Start Freq 2.370000000 GHz</p> <p>Stop Freq 2.430000000 GHz</p> <p>CF Step 6.000000 MHz</p> <p>Freq Offset 0 Hz</p>

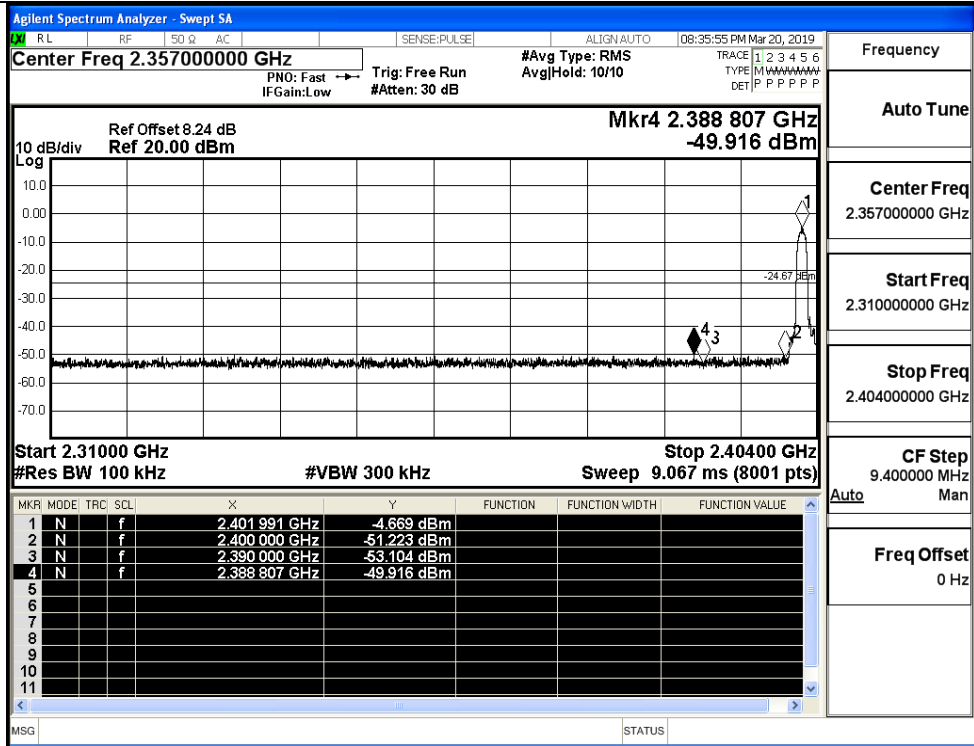
GFSK/HCH/No Hop



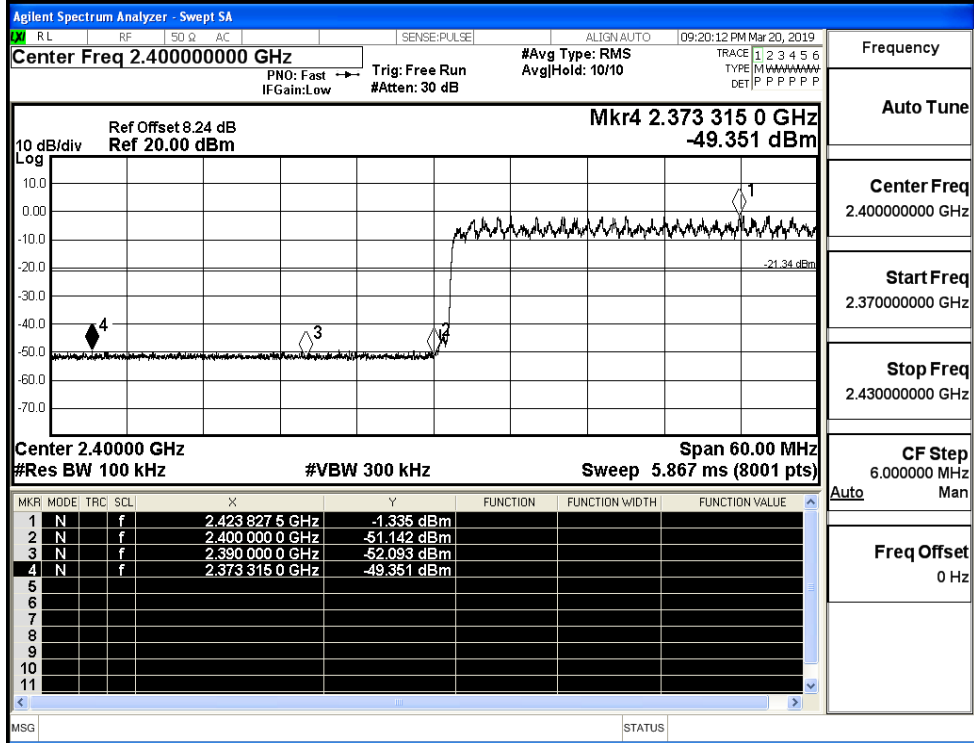
GFSK/HCH/Hop



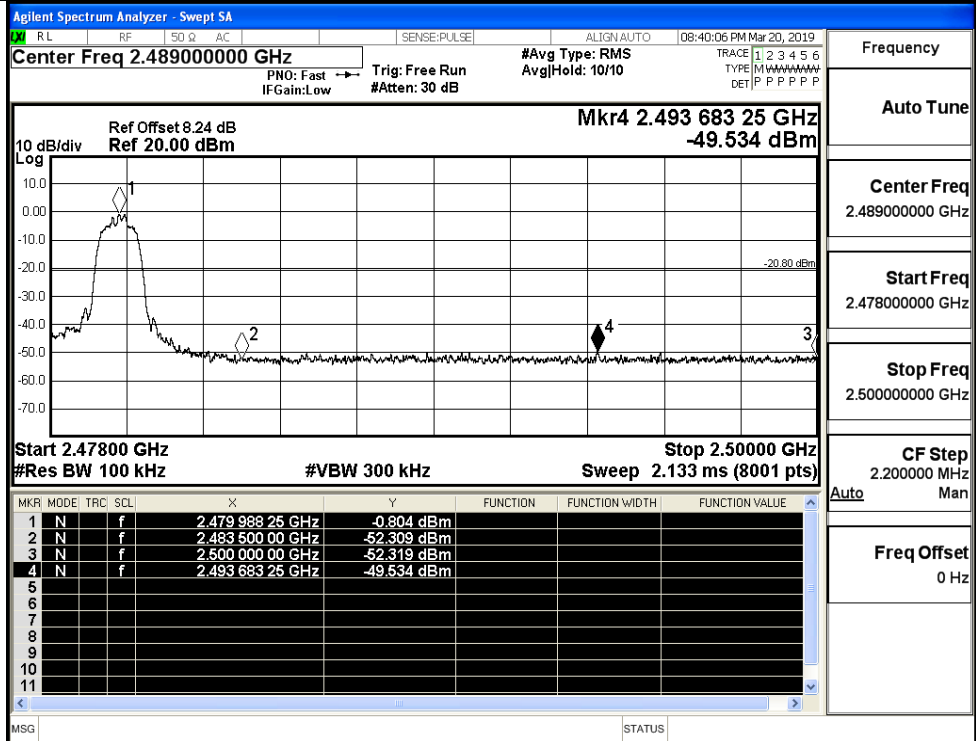
π /4DQPSK/LCH/No
Hop



π /4DQPSK/LCH/Hop

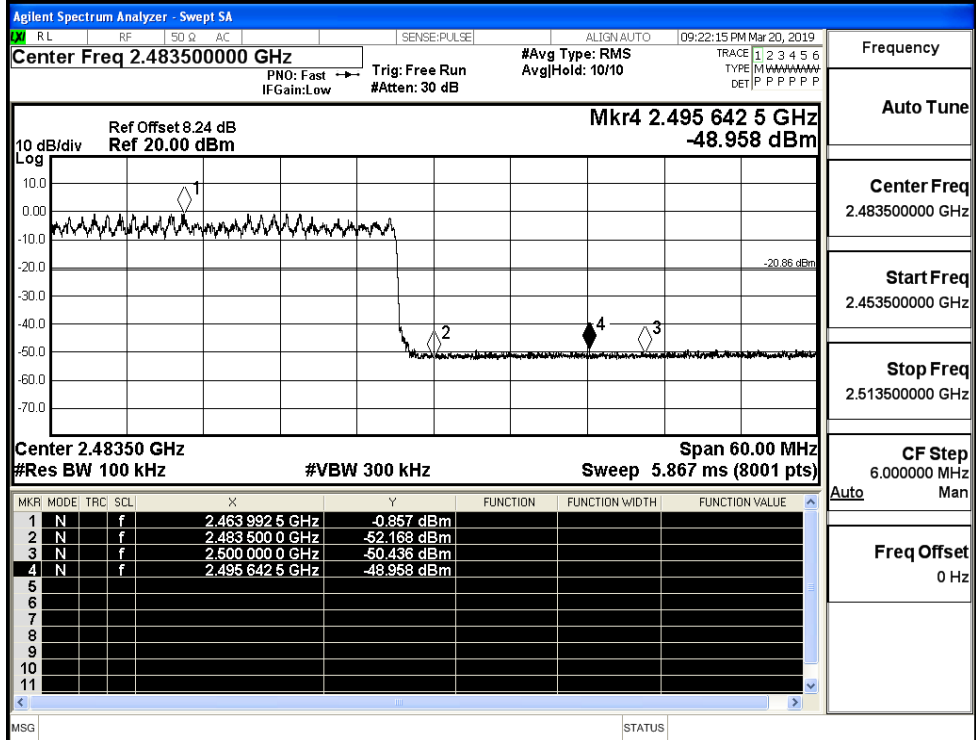


$\pi/4$ DQPSK/HCH/No
Hop



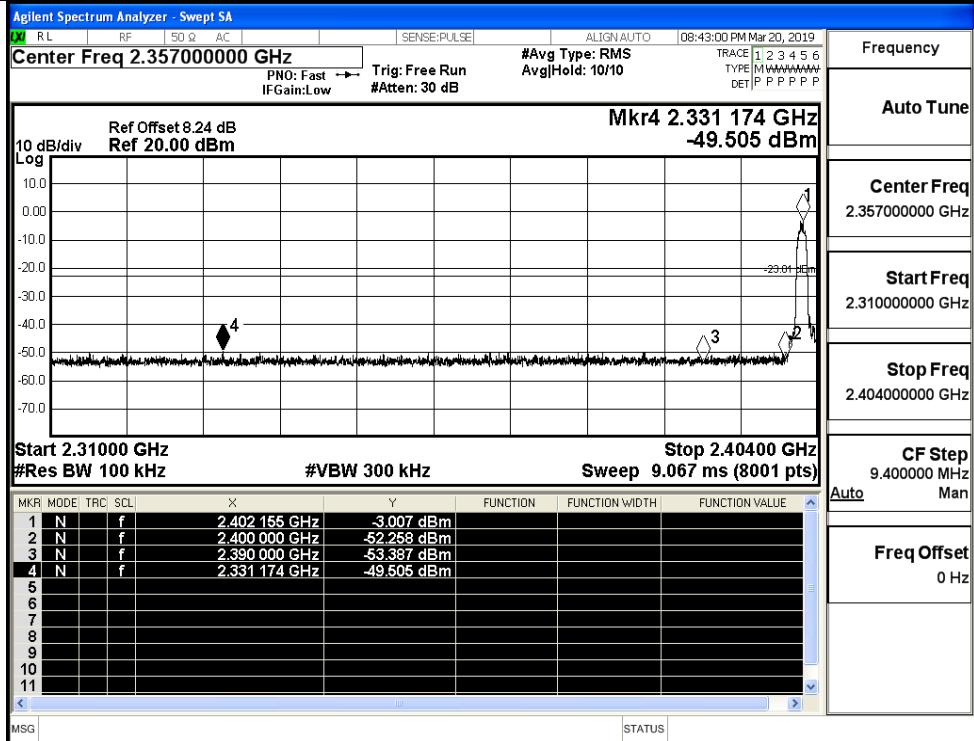
Frequency	2.489000000 GHz
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

$\pi/4$ DQPSK/HCH/Hop

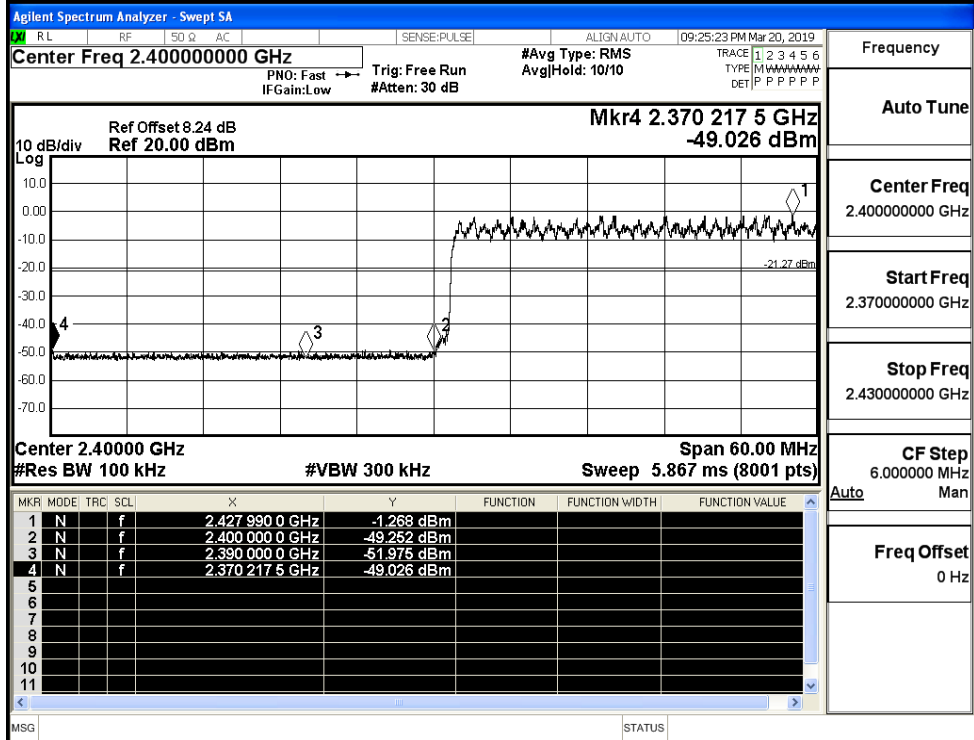


Frequency	2.483500000 GHz
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

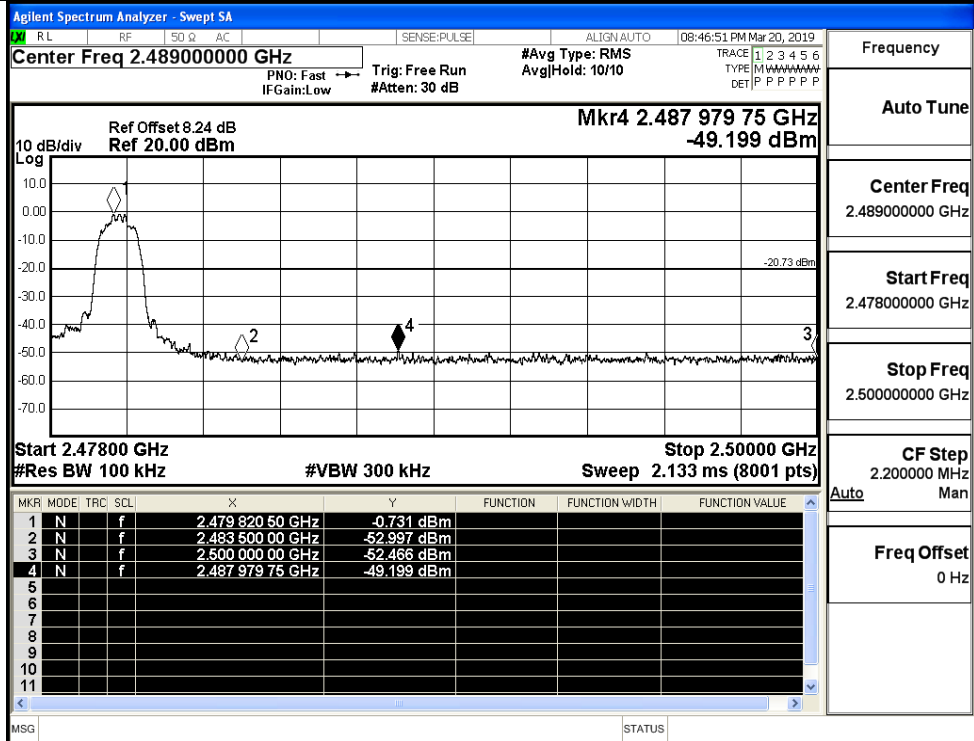
8DPSK/LCH/No Hop



8DPSK/LCH/Hop

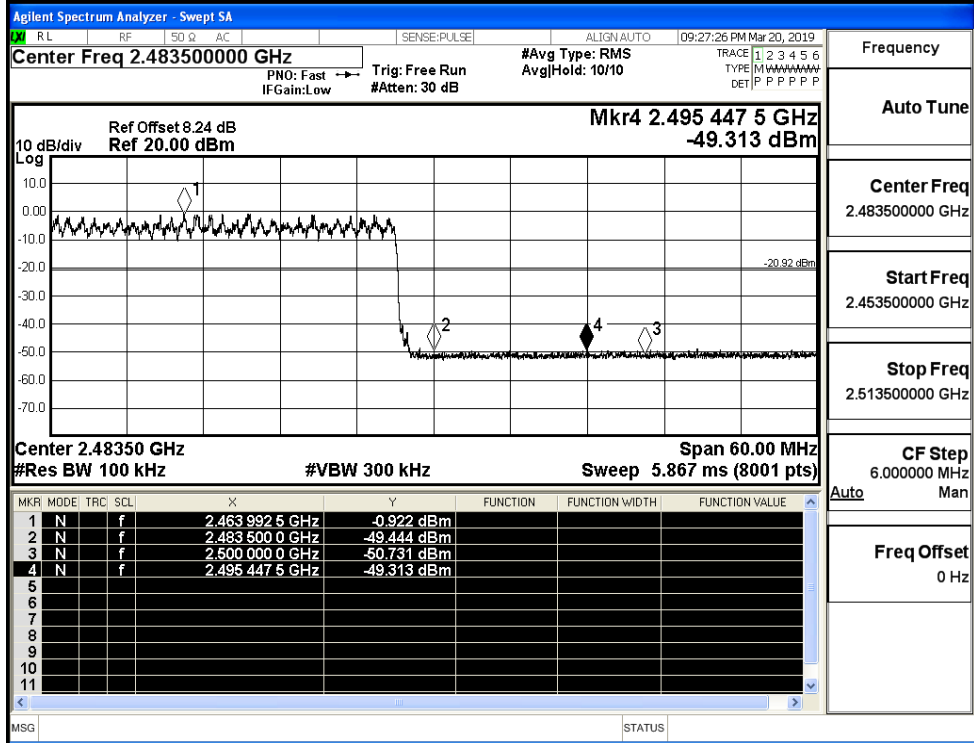


8DPSK/HCH/No Hop



Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

8DPSK/HCH/Hop

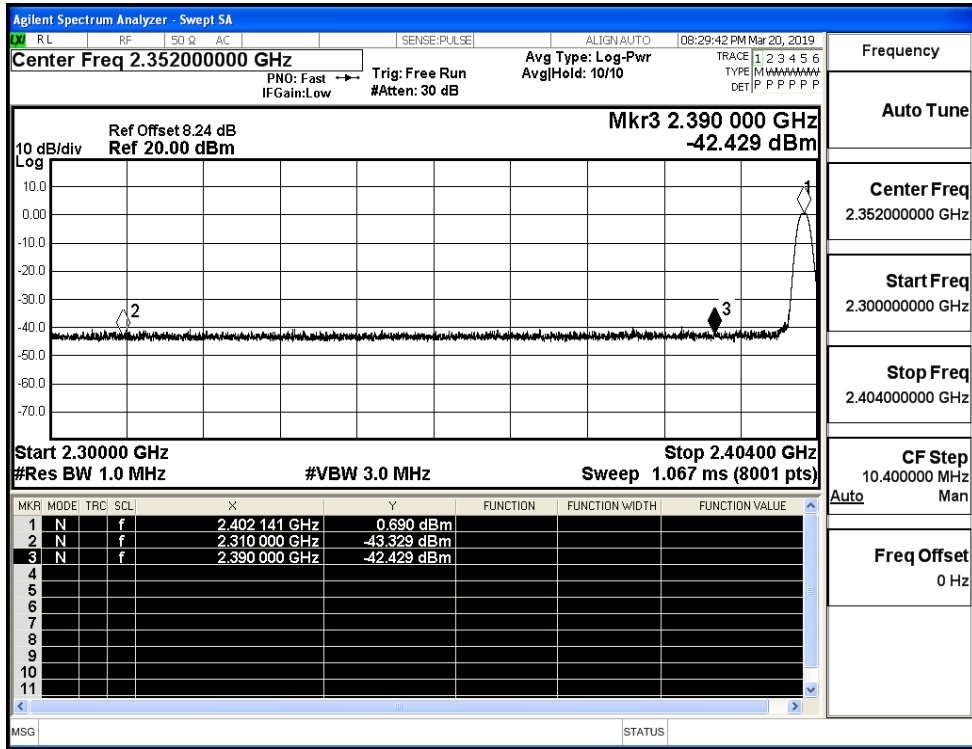


Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

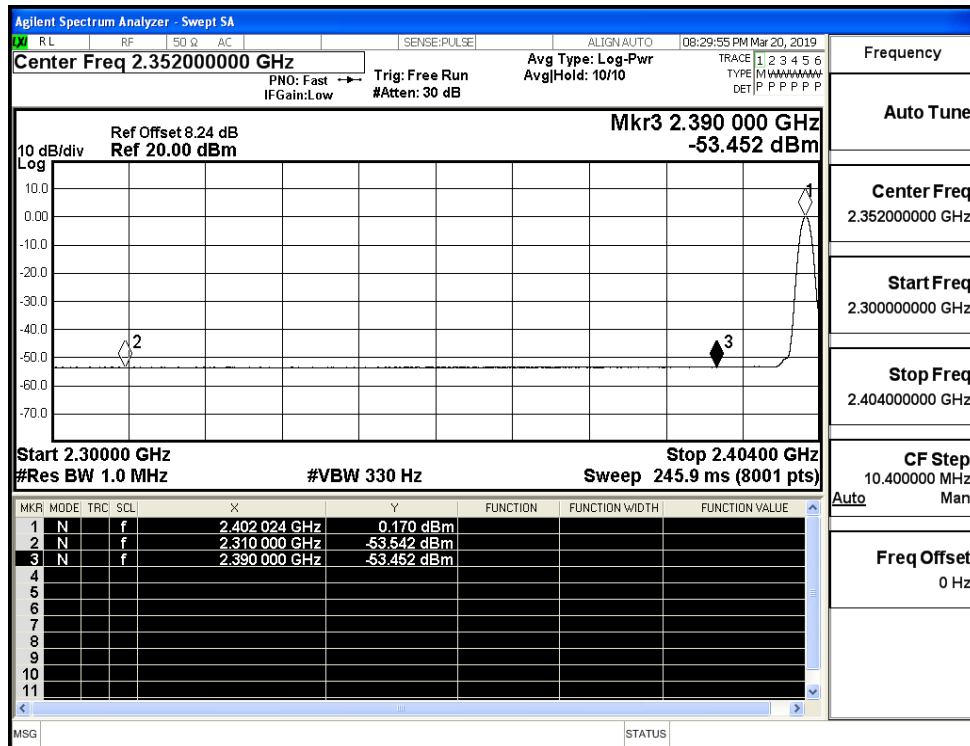
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.33	2.0	0	51.93	PEAK	74	PASS
	Off	2310.0	-53.54	2.0	0	41.72	AV	54	PASS
	Off	2390.0	-42.43	2.0	0	52.83	PEAK	74	PASS
	Off	2390.0	-53.45	2.0	0	41.81	AV	54	PASS
	Off	2483.5	-39.75	2.0	0	55.51	PEAK	74	PASS
	Off	2483.5	-49.64	2.0	0	45.61	AV	54	PASS
	Off	2500.0	-41.12	2.0	0	54.14	PEAK	74	PASS
	Off	2500.0	-52.85	2.0	0	42.41	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.06	2.0	0	52.20	PEAK	74	PASS
	Off	2310.0	-53.59	2.0	0	41.66	AV	54	PASS
	Off	2390.0	-41.09	2.0	0	54.17	PEAK	74	PASS
	Off	2390.0	-53.33	2.0	0	41.93	AV	54	PASS
	Off	2483.5	-42.90	2.0	0	52.36	PEAK	74	PASS
	Off	2483.5	-52.71	2.0	0	42.54	AV	54	PASS
	Off	2500.0	-43.46	2.0	0	51.80	PEAK	74	PASS
	Off	2500.0	-52.90	2.0	0	42.36	AV	54	PASS
8DPSK	Off	2310.0	-43.32	2.0	0	51.94	PEAK	74	PASS
	Off	2310.0	-53.53	2.0	0	41.73	AV	54	PASS
	Off	2390.0	-42.95	2.0	0	52.31	PEAK	74	PASS
	Off	2390.0	-53.30	2.0	0	41.96	AV	54	PASS
	Off	2483.5	-42.44	2.0	0	52.81	PEAK	74	PASS
	Off	2483.5	-52.65	2.0	0	42.61	AV	54	PASS
	Off	2500.0	-42.67	2.0	0	52.59	PEAK	74	PASS
	Off	2500.0	-52.87	2.0	0	42.39	AV	54	PASS

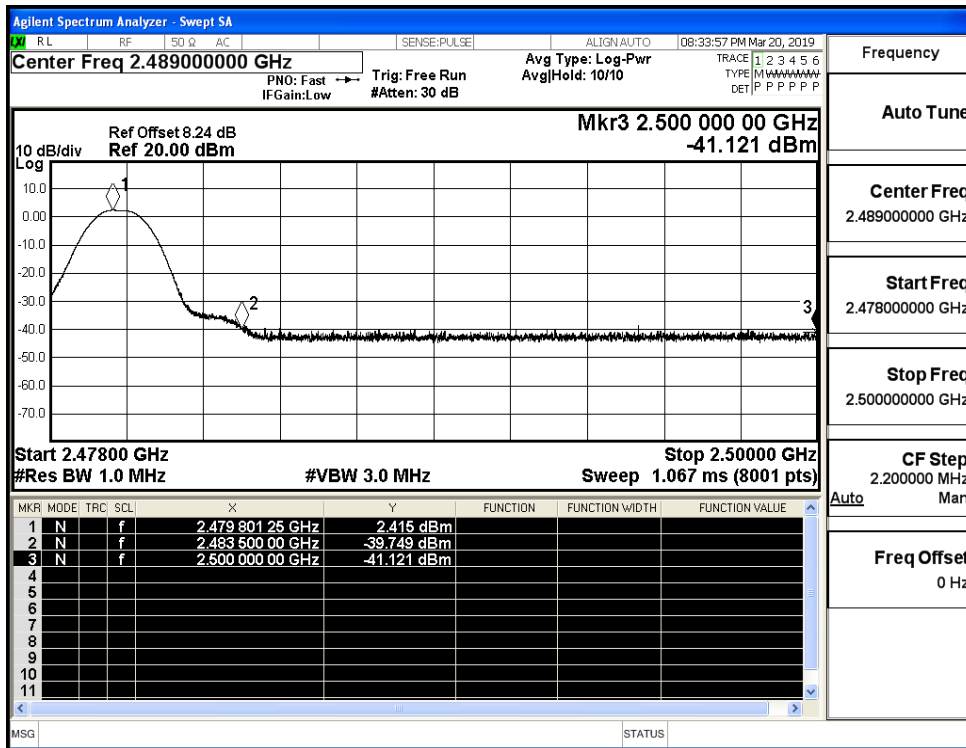
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



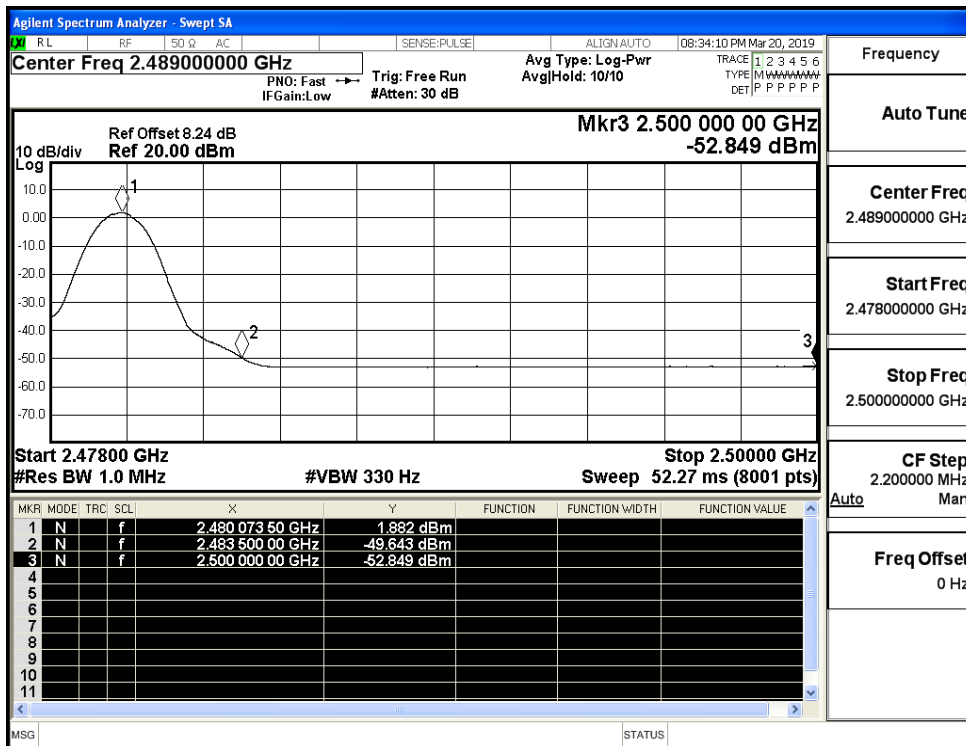
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



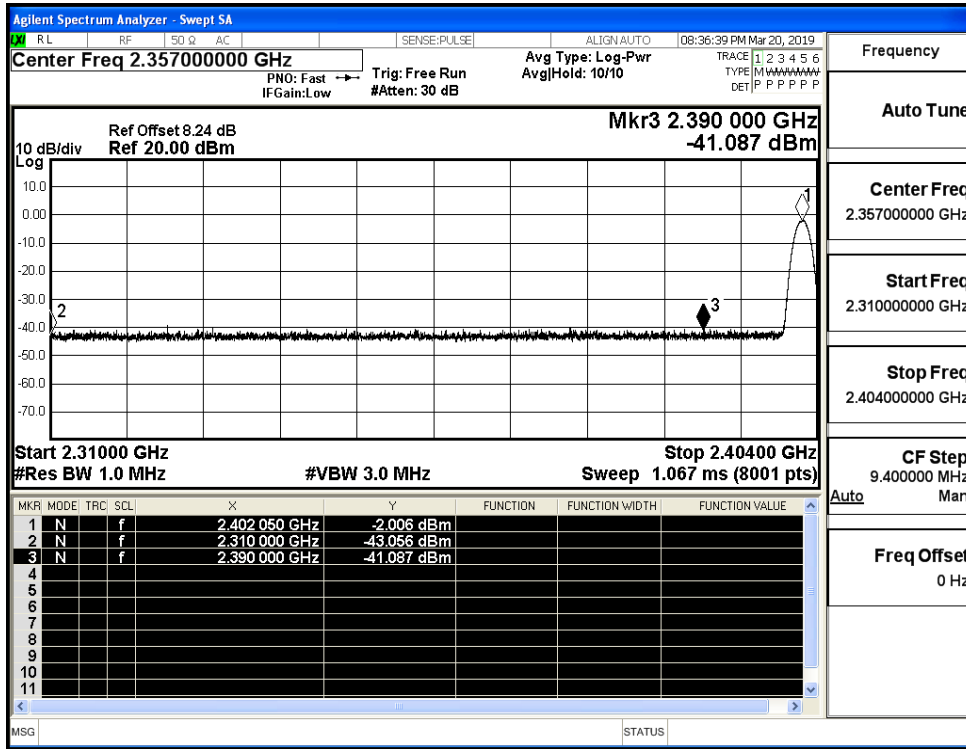
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



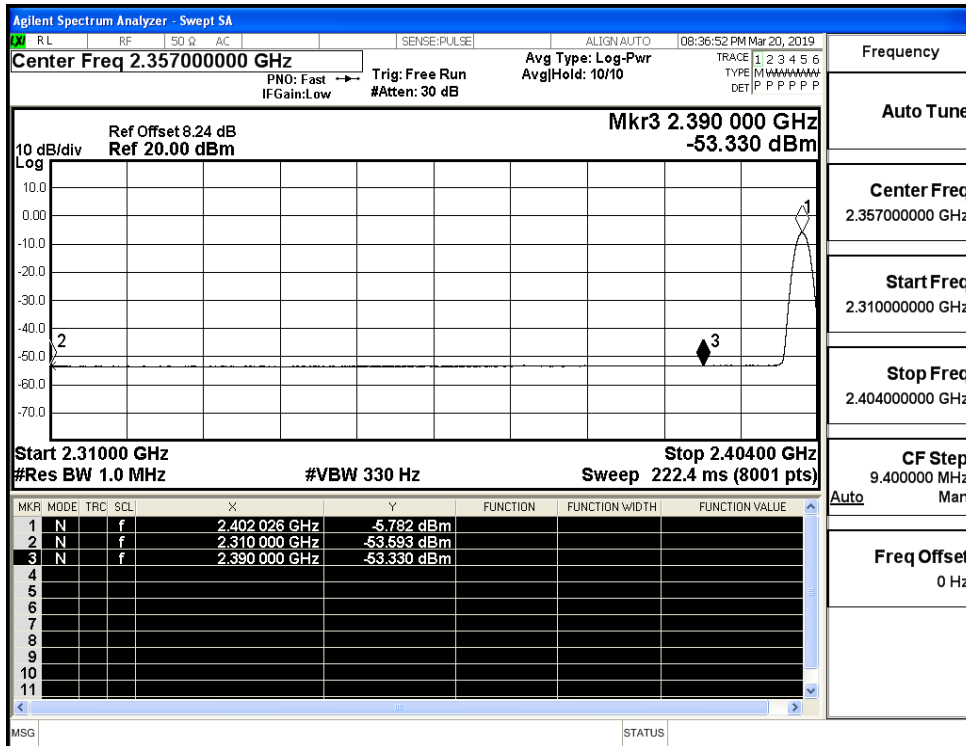
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



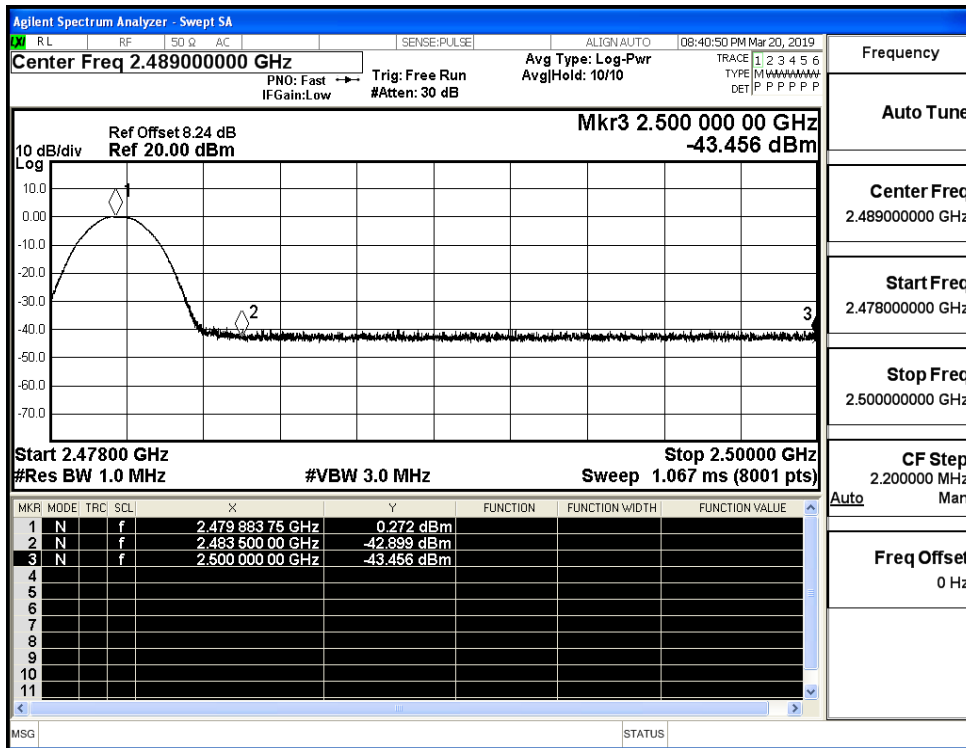
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



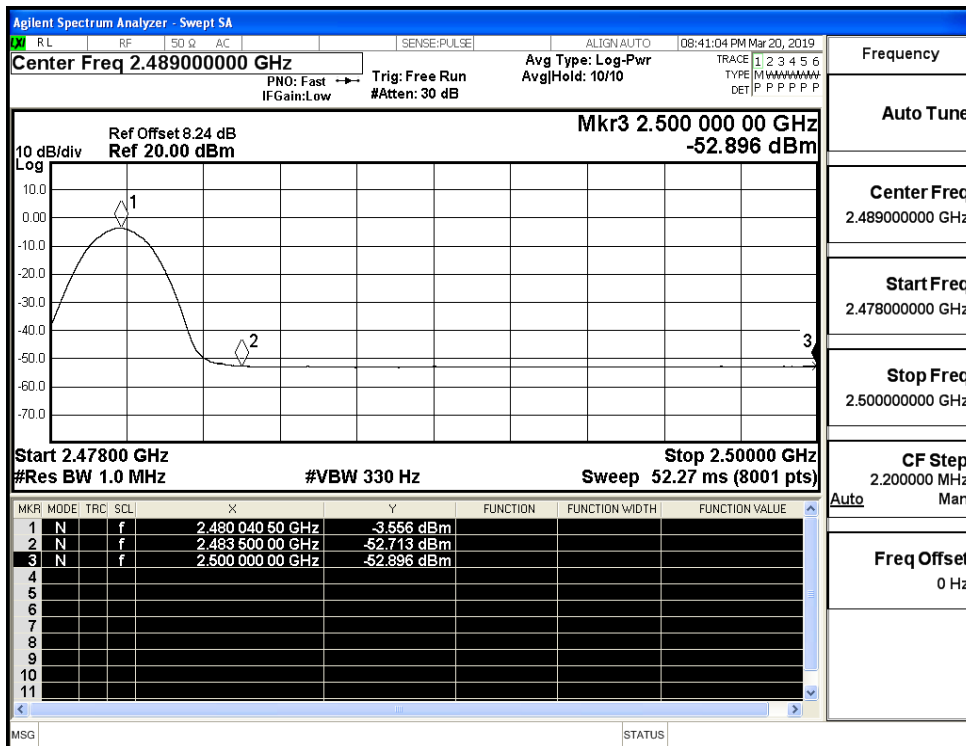
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



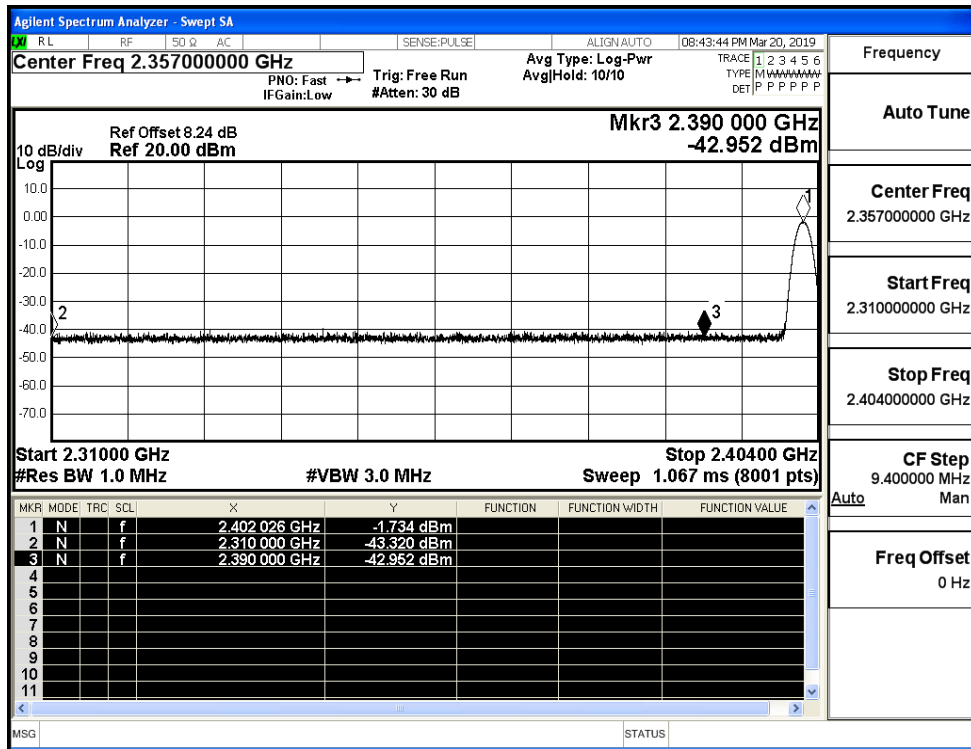
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)



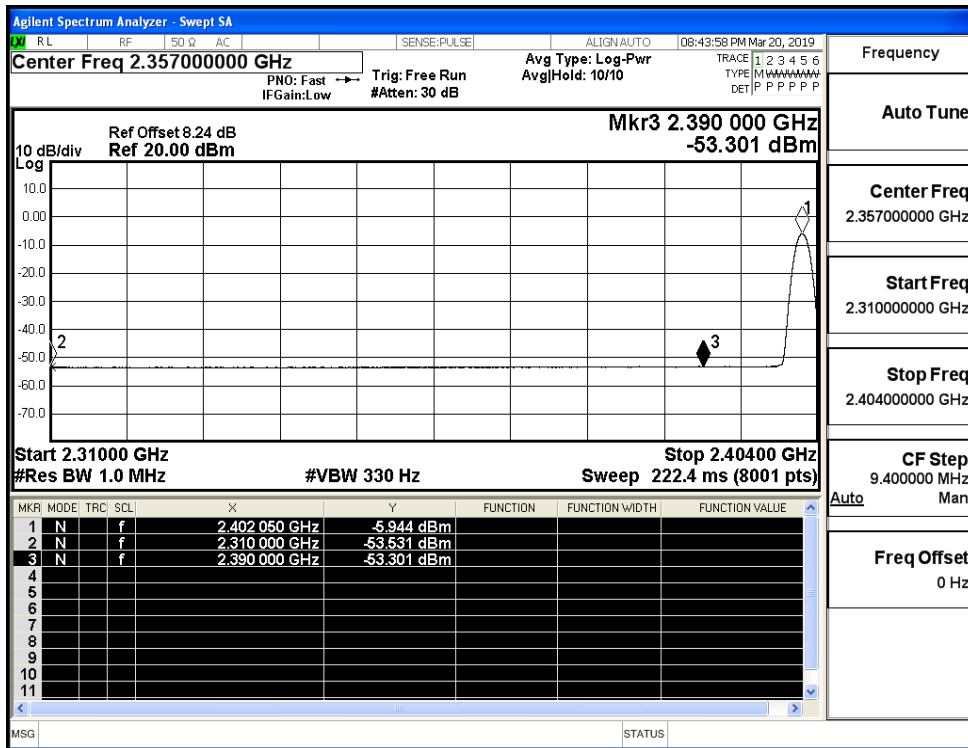
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)



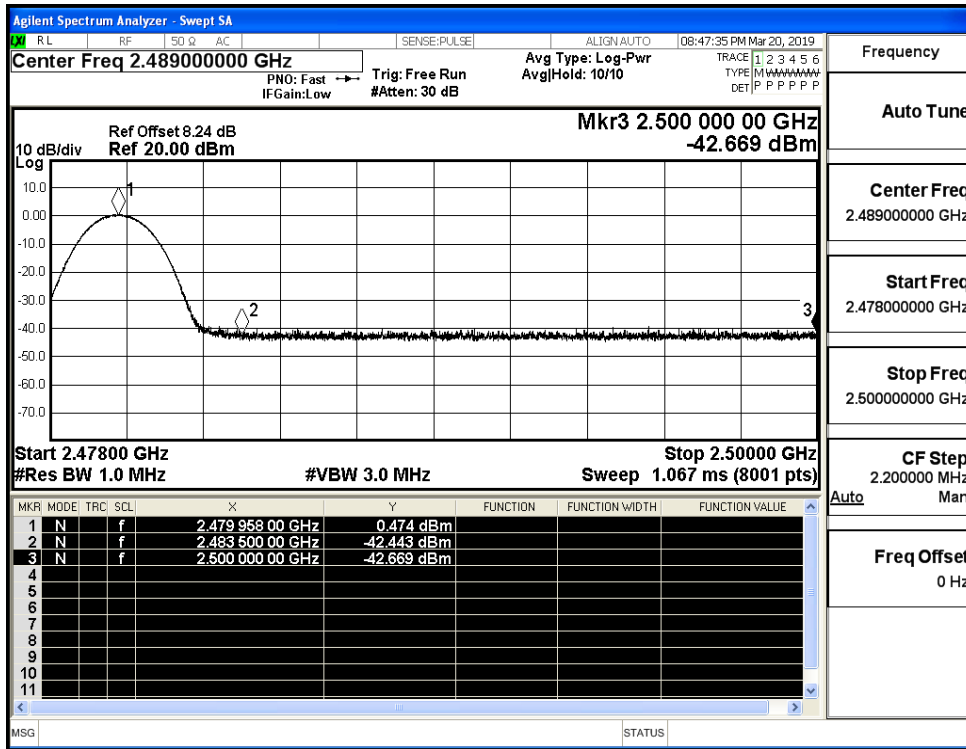
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)

