

Appendix A

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

Product Name: PORTABLE MONITOR

Trade Mark: N/A

Test Model: PM1507

Environmental Conditions

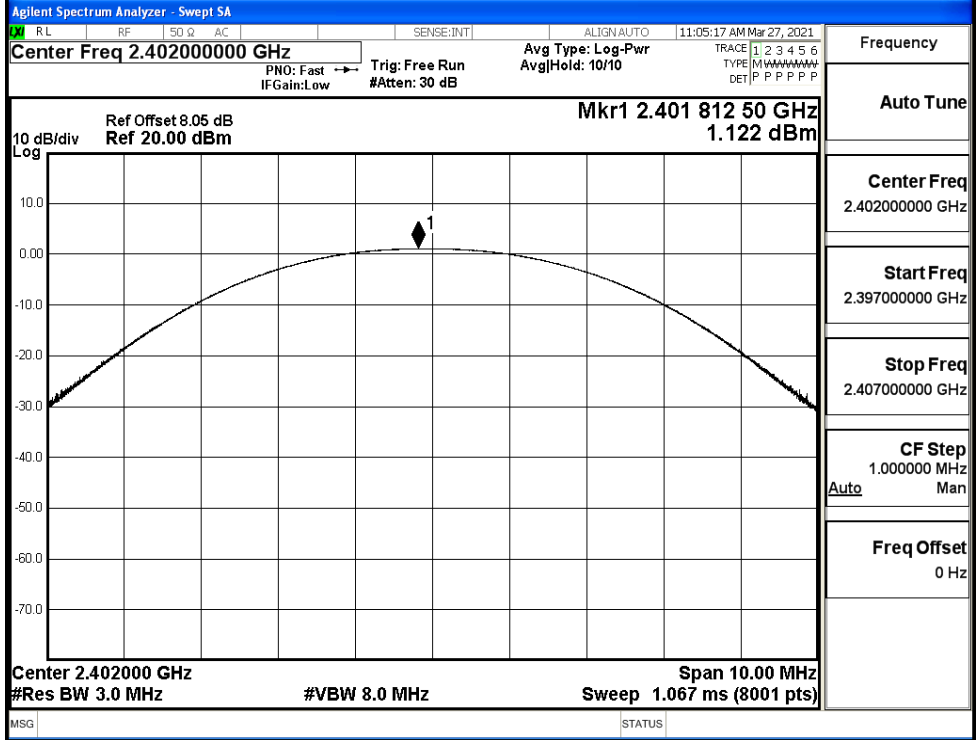
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

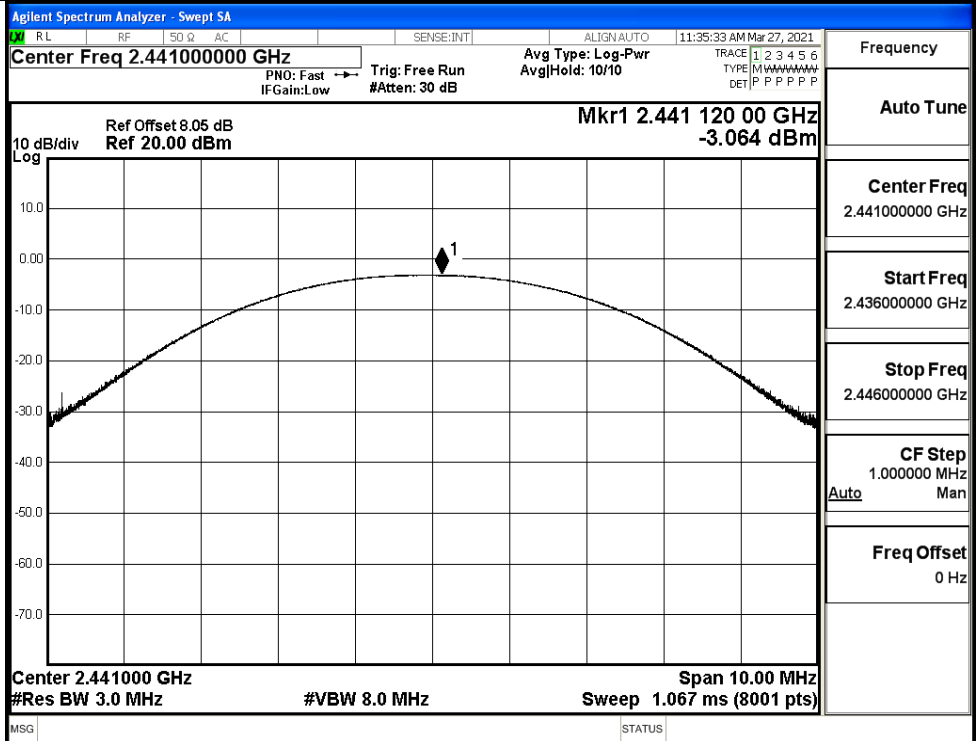
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.122	21	PASS
	MCH	-3.064	21	PASS
	HCH	-3.282	21	PASS
$\pi/4$ DQPSK	LCH	0.436	21	PASS
	MCH	-0.776	21	PASS
	HCH	-1.082	21	PASS
8DPSK	LCH	0.806	21	PASS
	MCH	-0.527	21	PASS
	HCH	-0.730	21	PASS

Test Graphs

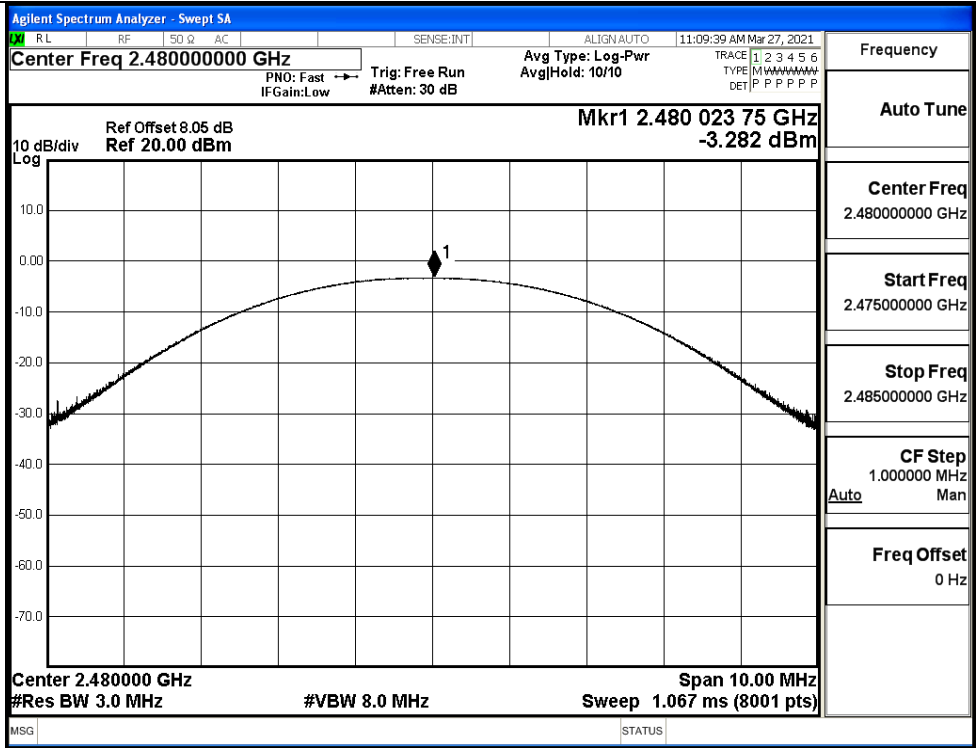
GFSK/LCH



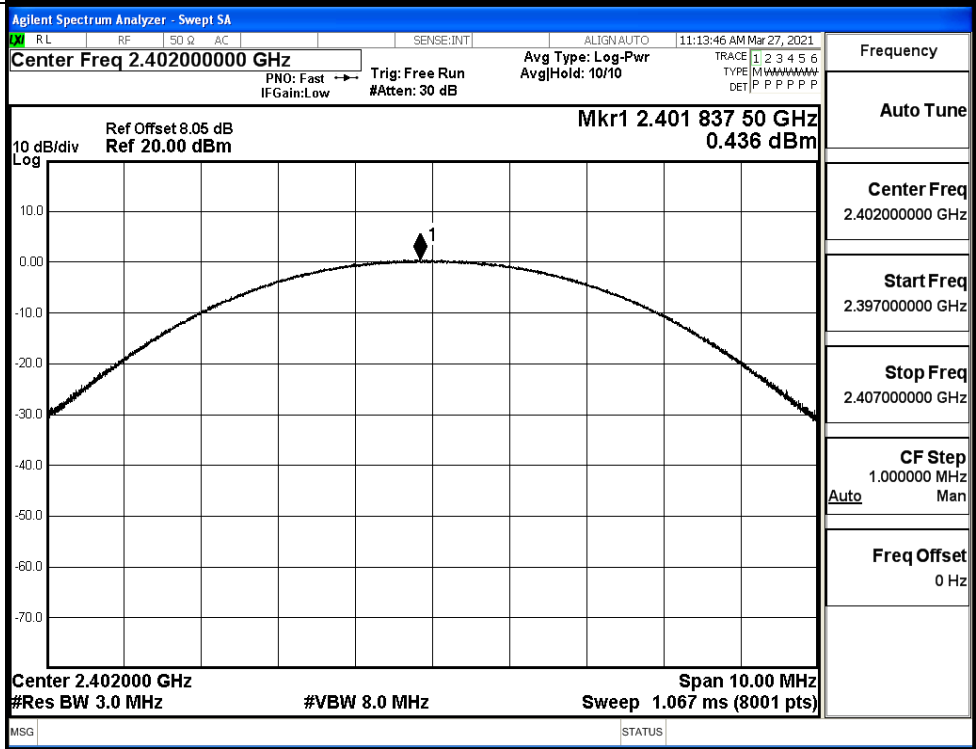
GFSK/MCH



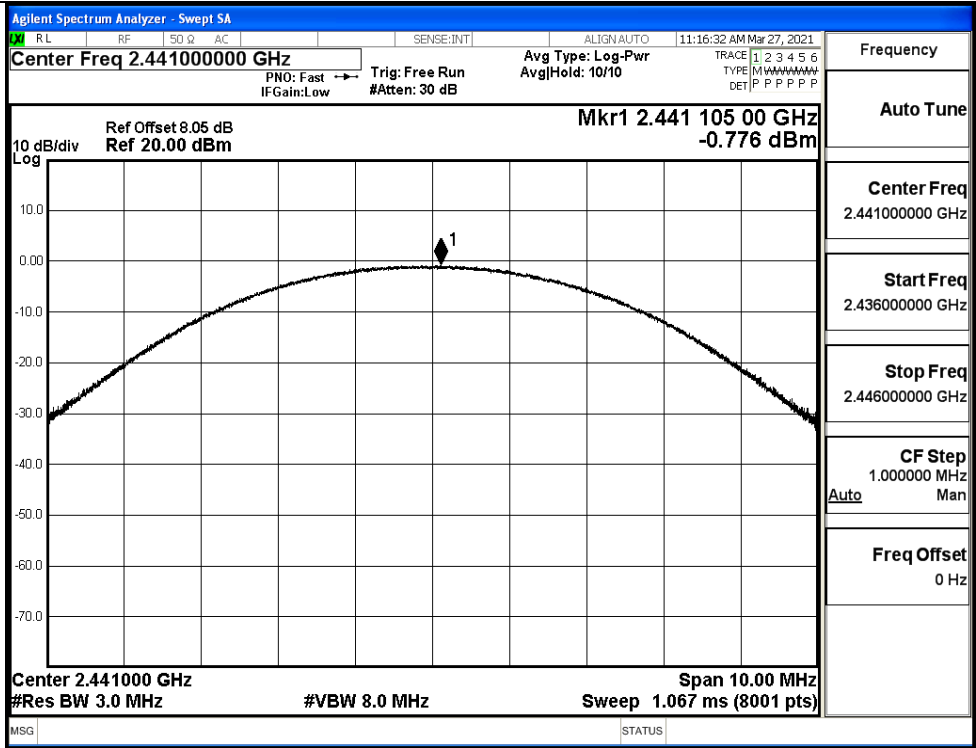
GFSK/HCH



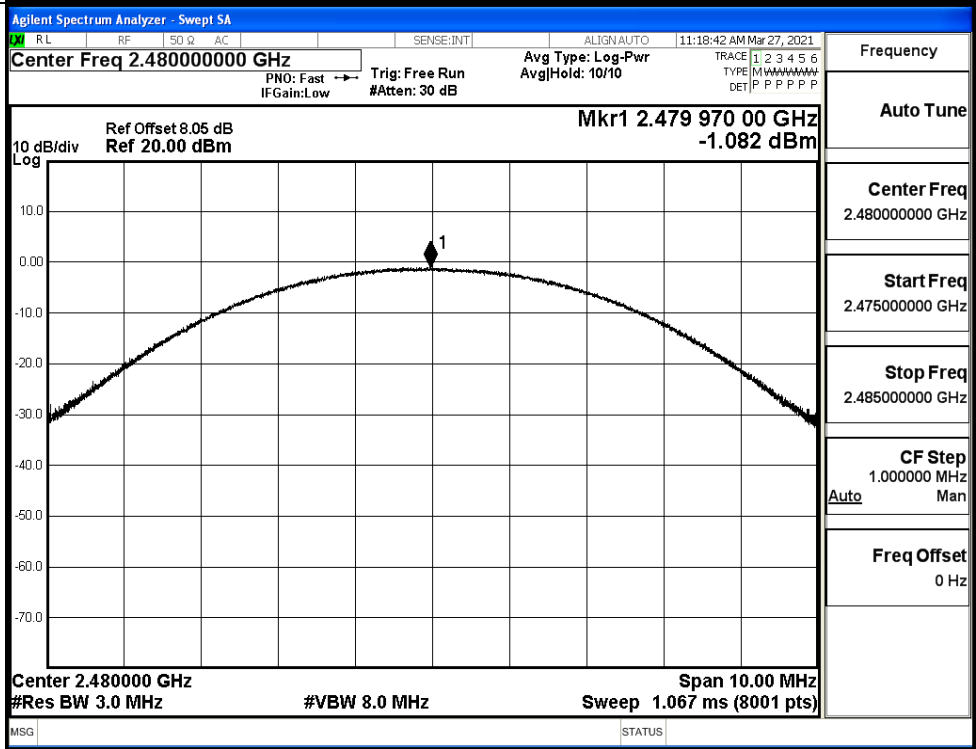
$\pi/4$ DQPSK/LCH



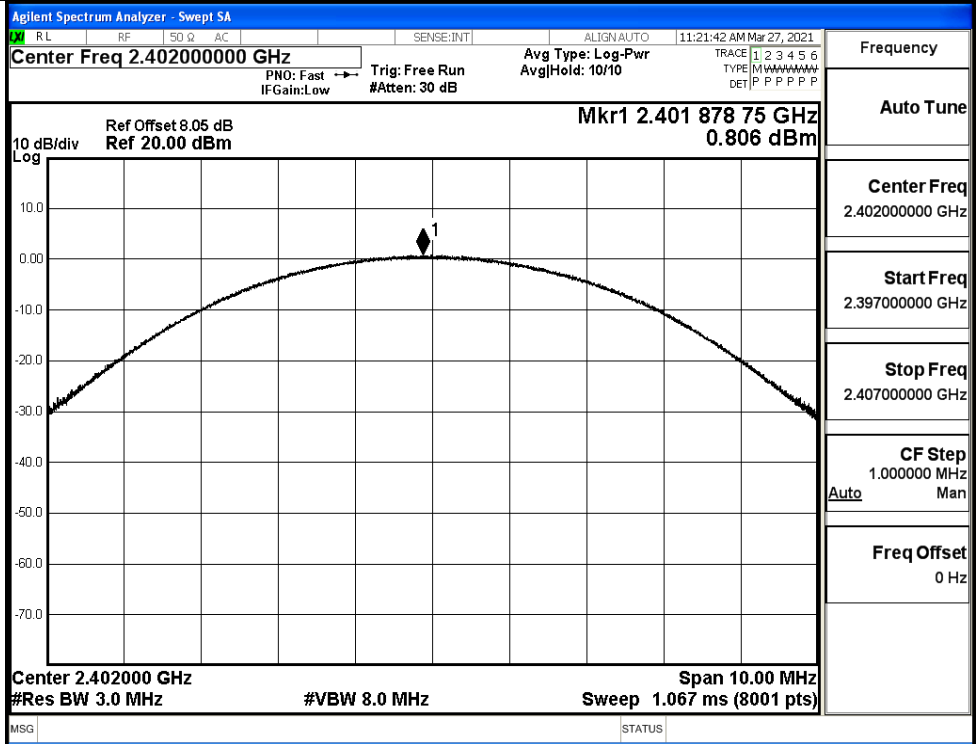
$\pi/4$ DQPSK/MCH



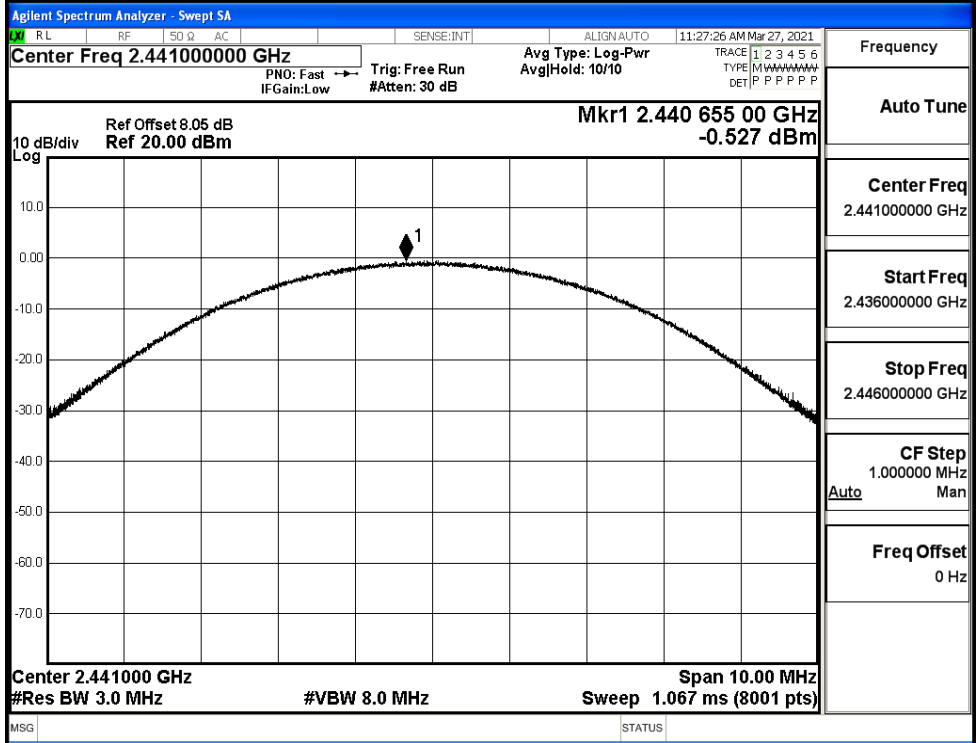
$\pi/4$ DQPSK/HCH



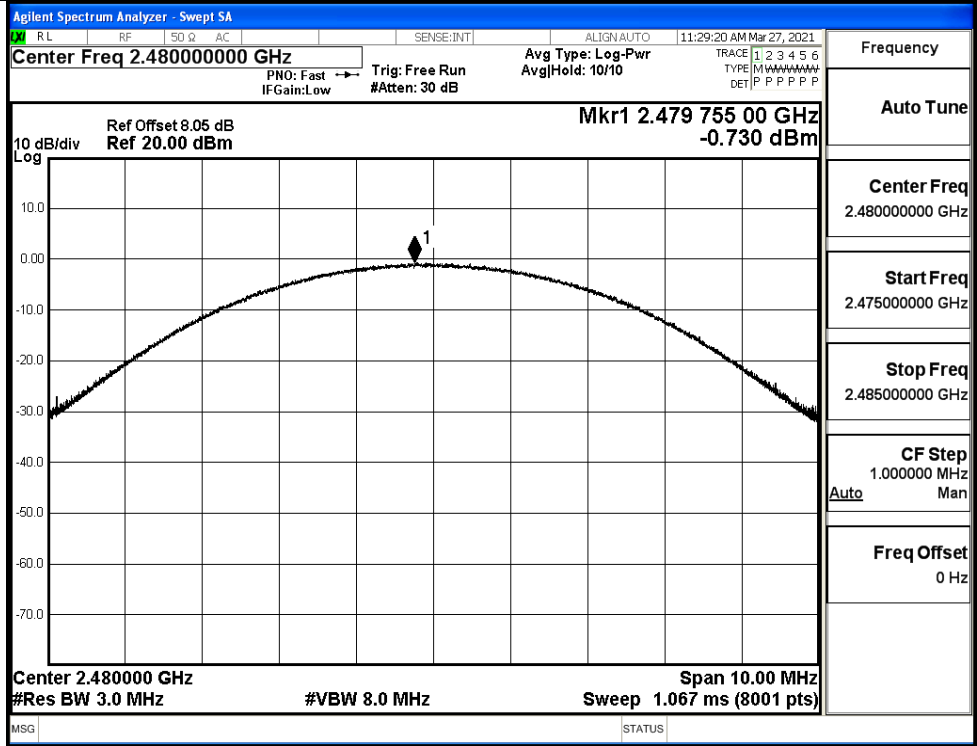
8DPSK/LCH



8DPSK/MCH

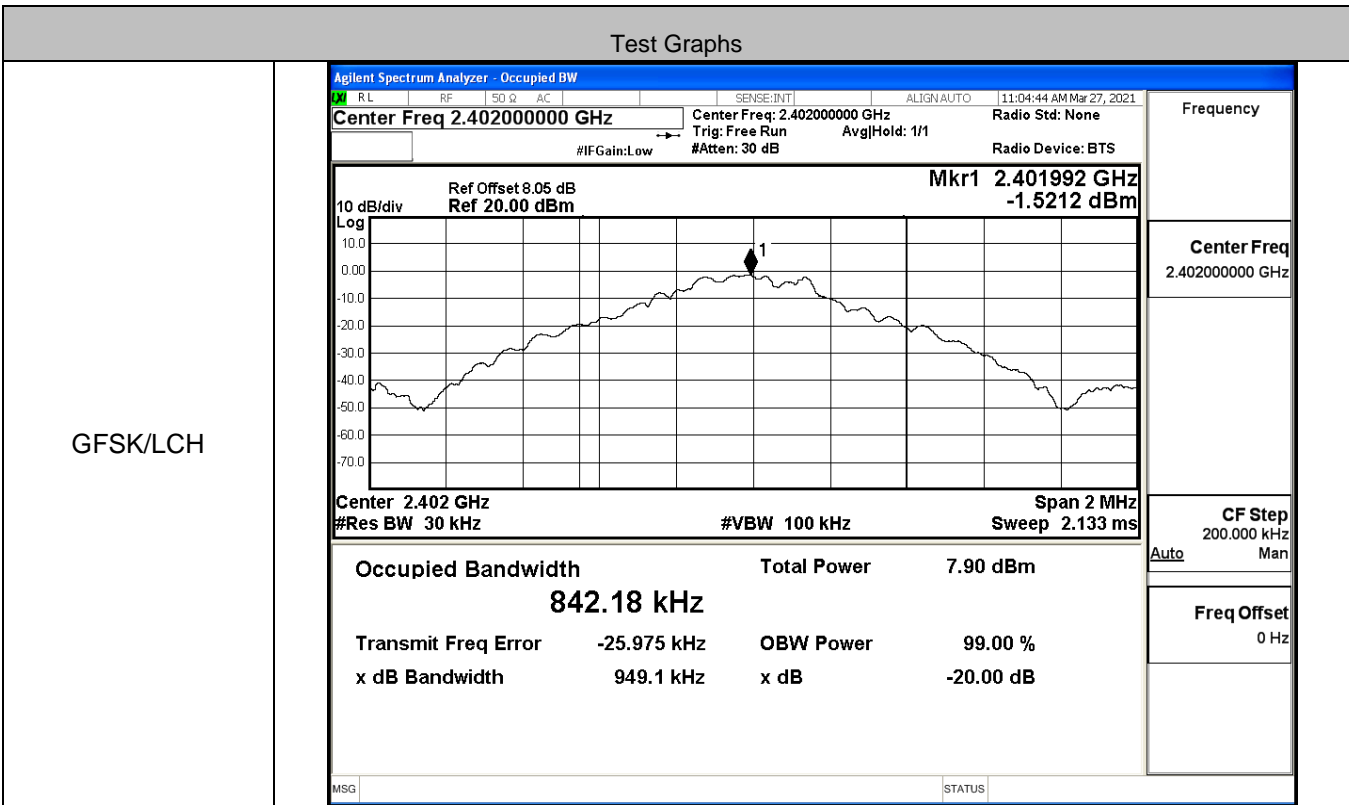


8DPSK/HCH

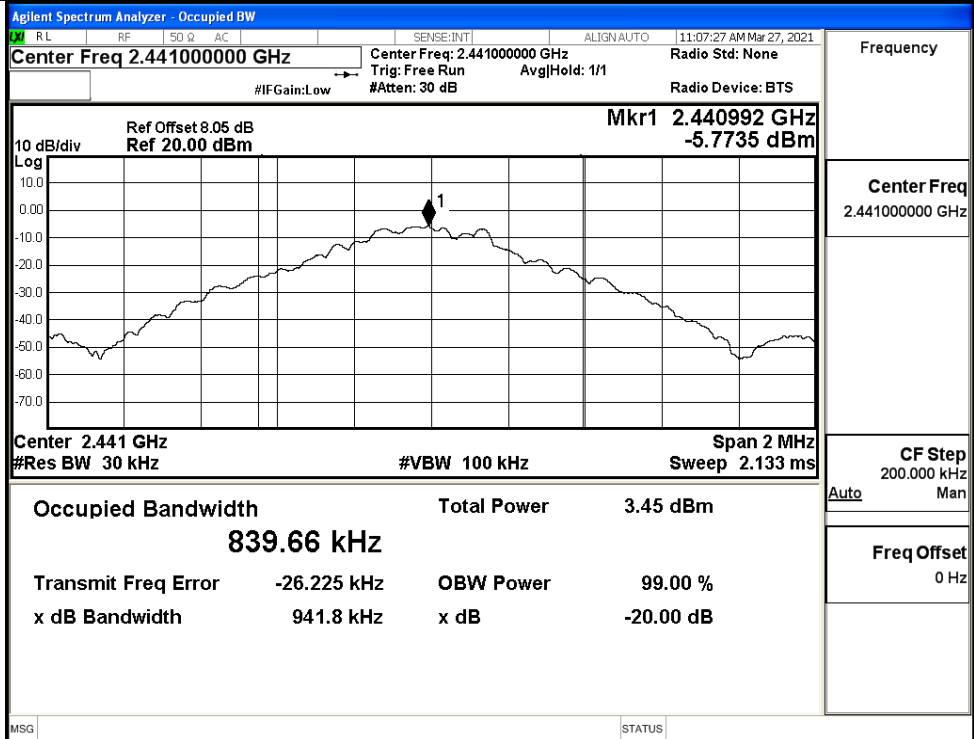


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9491	Not Specified	PASS
	MCH	0.9418	Not Specified	PASS
	HCH	0.9404	Not Specified	PASS
π/4DQPSK	LCH	1.319	Not Specified	PASS
	MCH	1.315	Not Specified	PASS
	HCH	1.320	Not Specified	PASS
8DPSK	LCH	1.313	Not Specified	PASS
	MCH	1.310	Not Specified	PASS
	HCH	1.310	Not Specified	PASS



GFSK/MCH



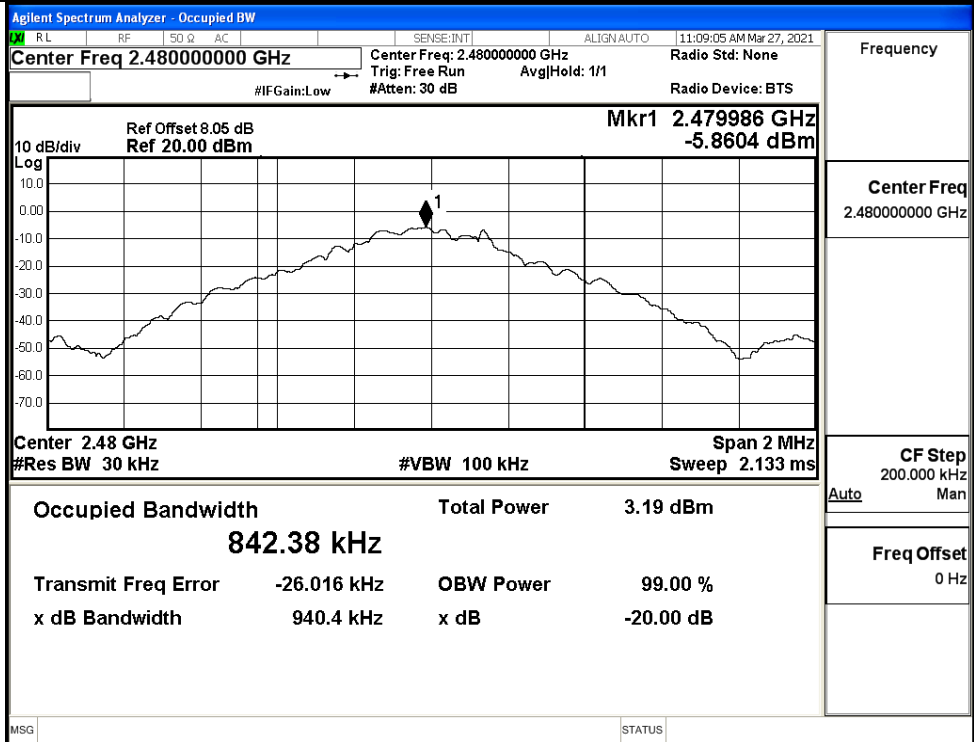
Frequency

Center Freq
2.441000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

GFSK/HCH



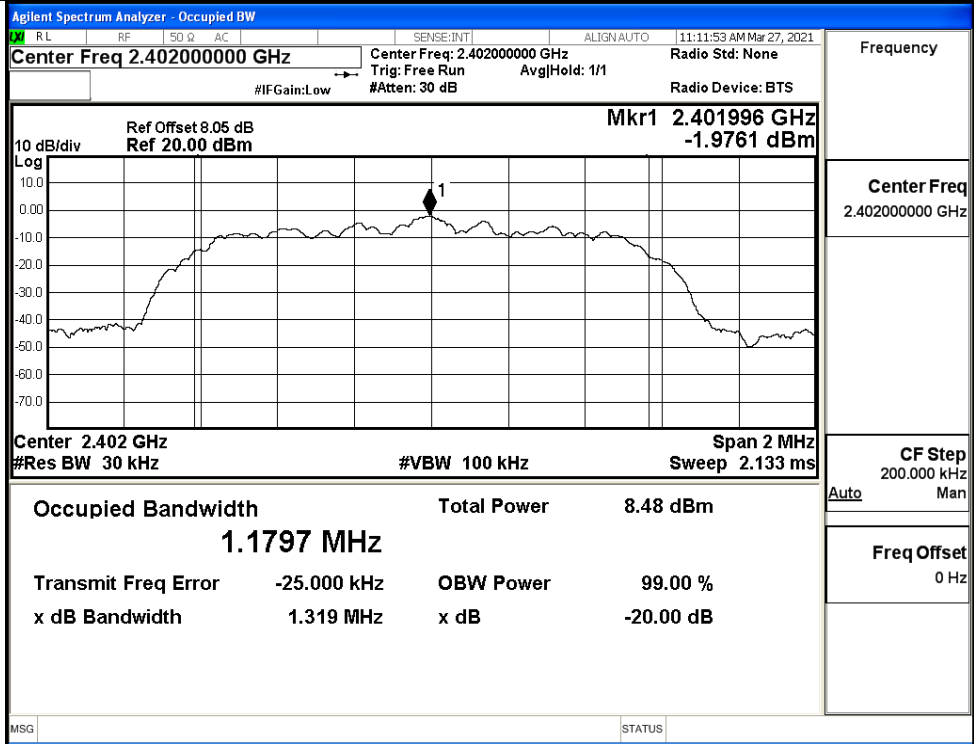
Frequency

Center Freq
2.480000000 GHz

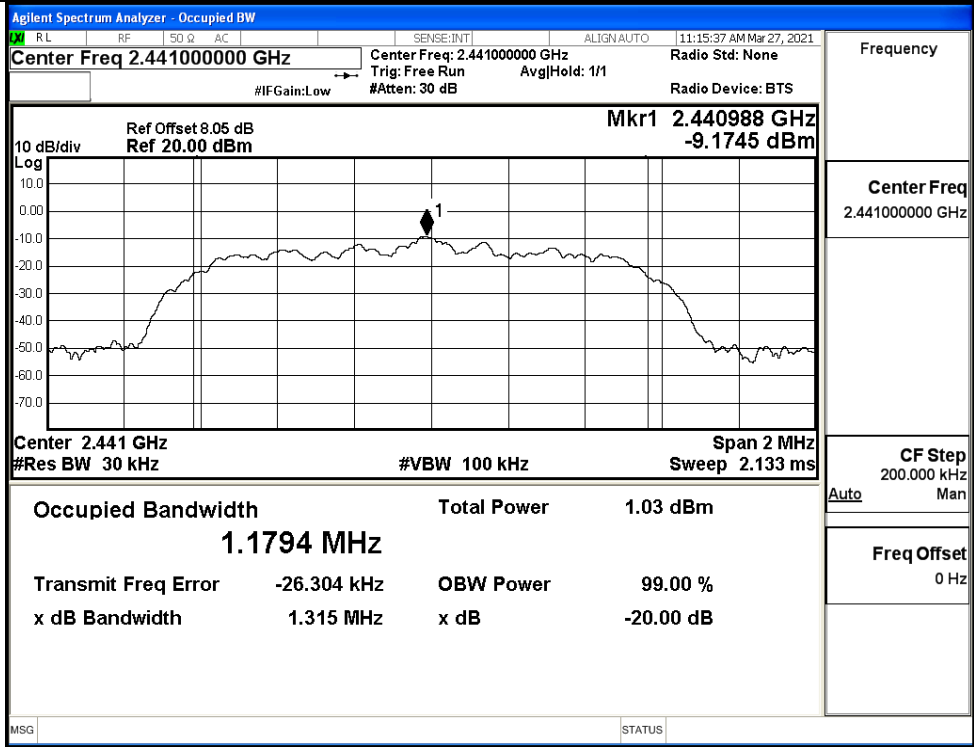
CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

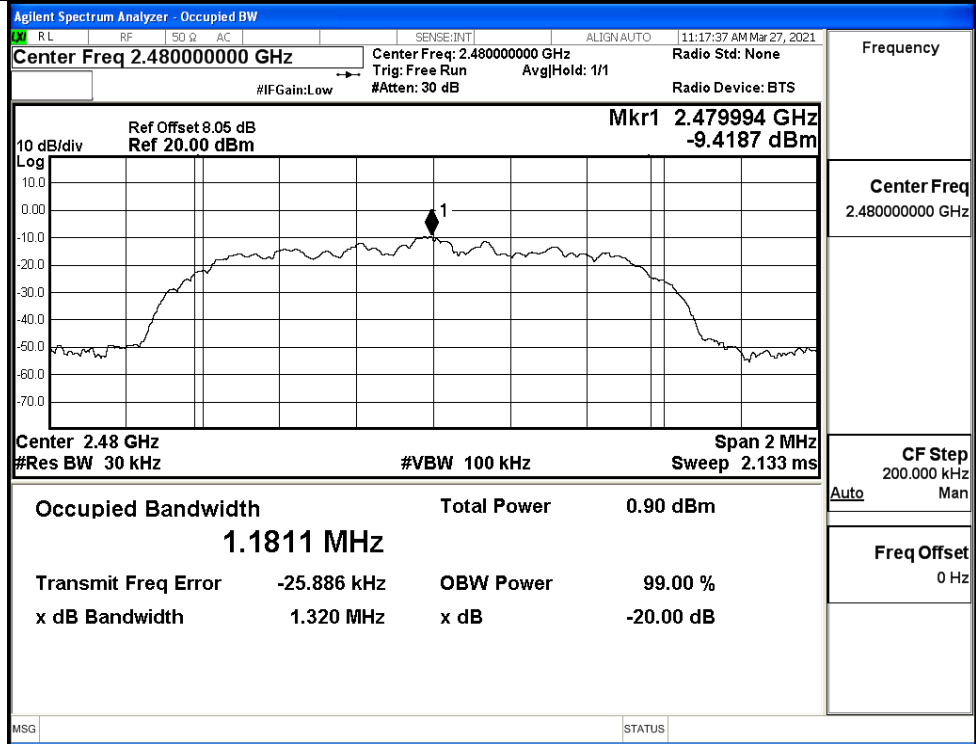
$\pi/4$ DQPSK/LCH



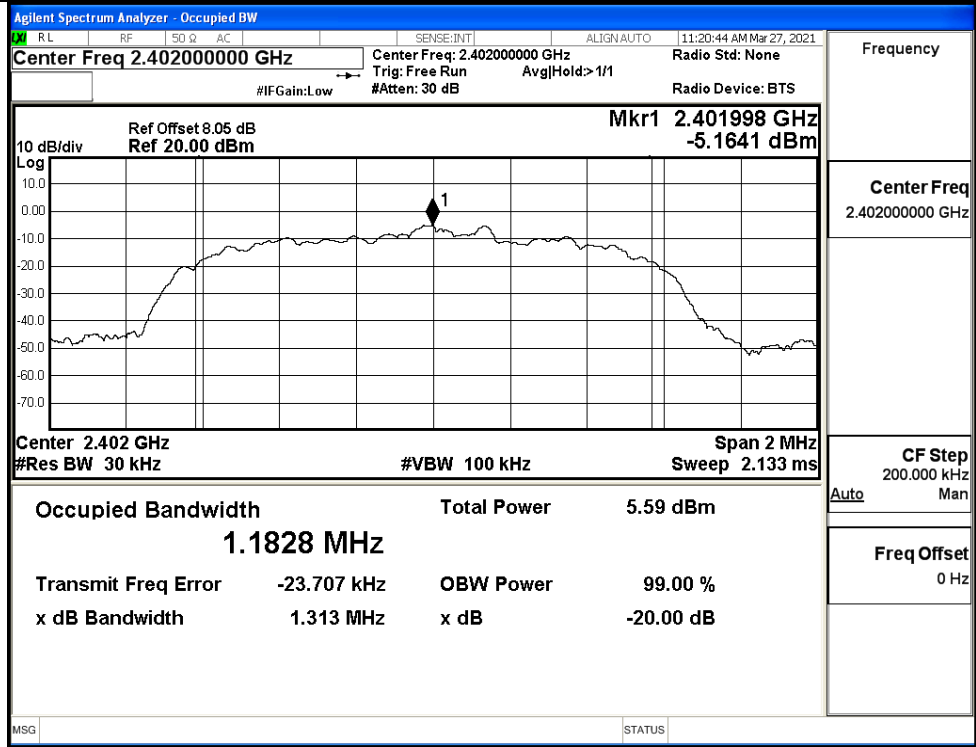
$\pi/4$ DQPSK/MCH



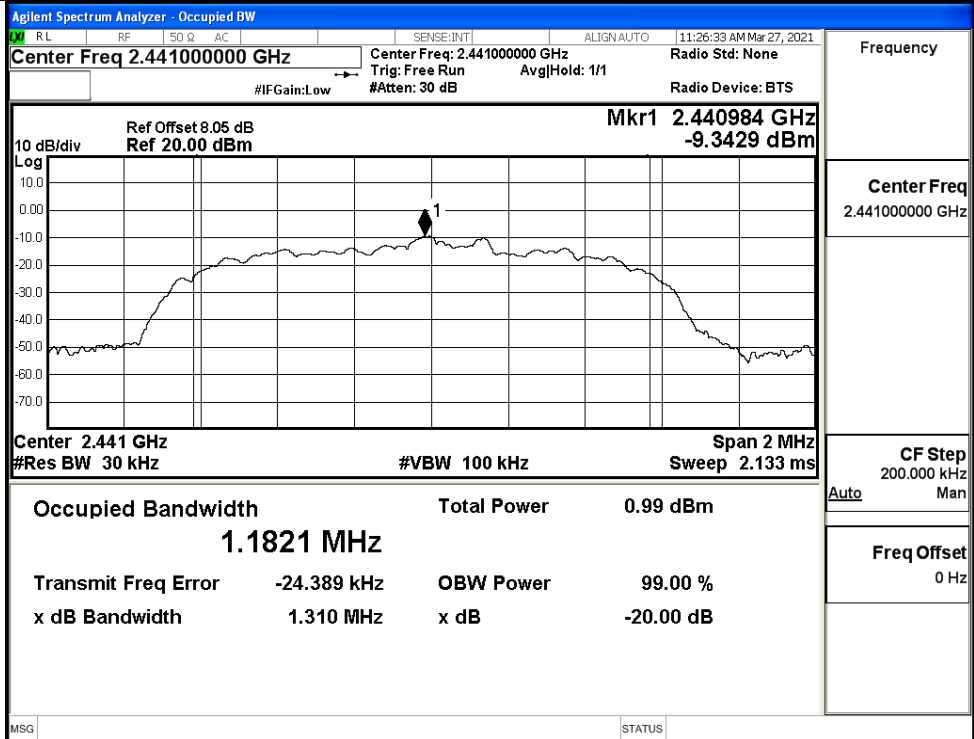
$\pi/4$ DQPSK/HCH



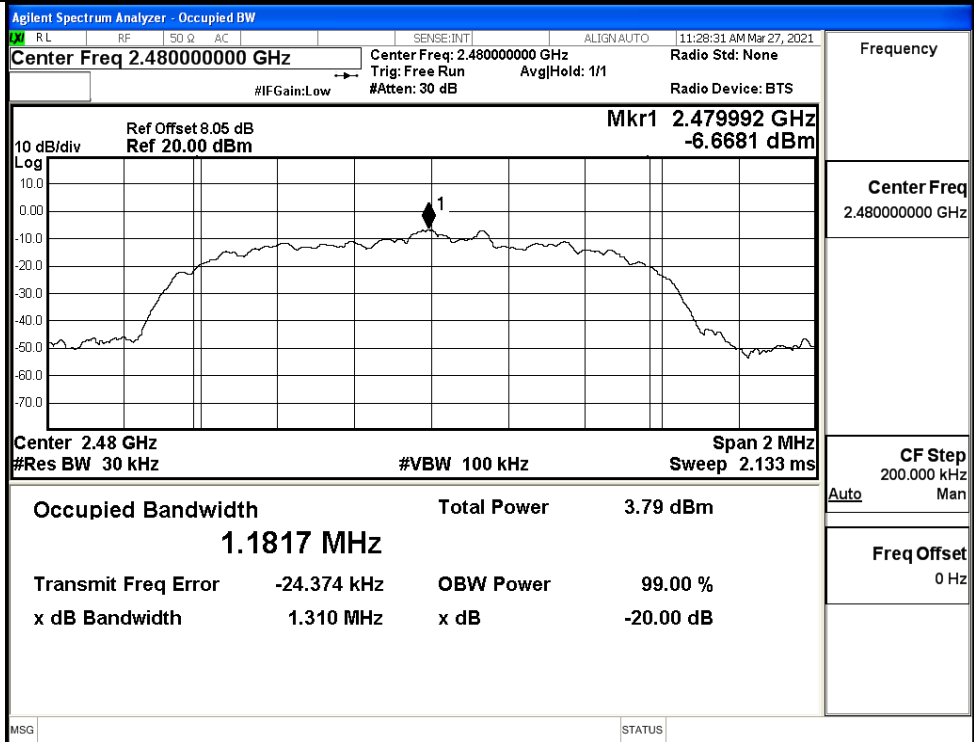
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



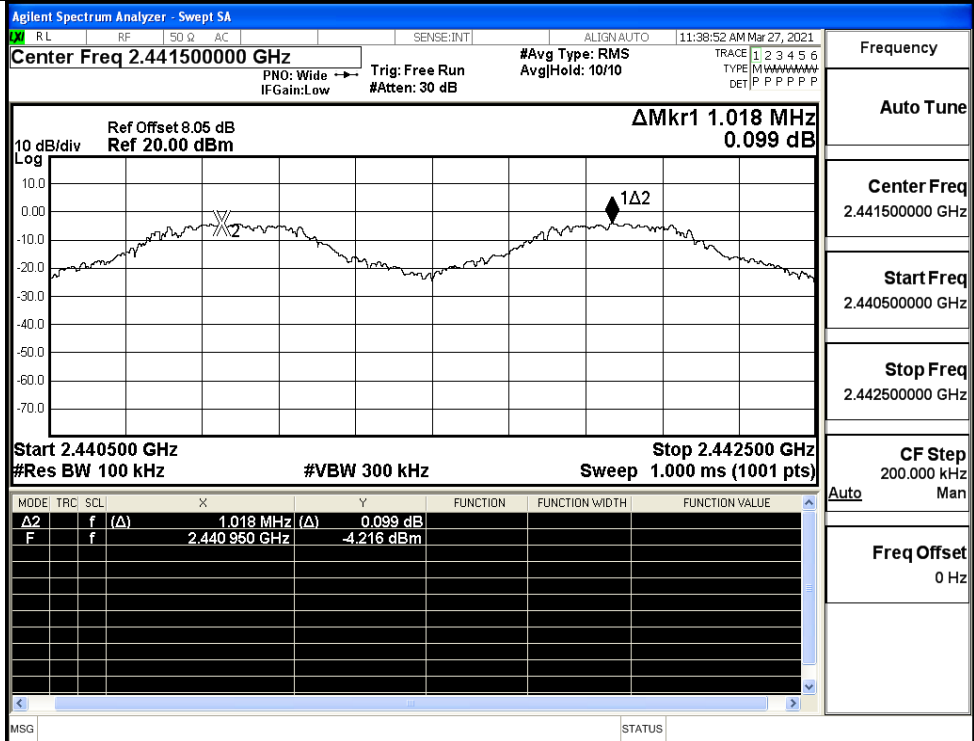
A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.031	0.633	PASS
	MCH	1.018	0.633	PASS
	HCH	1.078	0.633	PASS
π/4DQPSK	LCH	1.104	0.880	PASS
	MCH	1.106	0.880	PASS
	HCH	1.048	0.880	PASS
8DPSK	LCH	1.140	0.875	PASS
	MCH	0.942	0.875	PASS
	HCH	0.984	0.875	PASS

Test Graphs

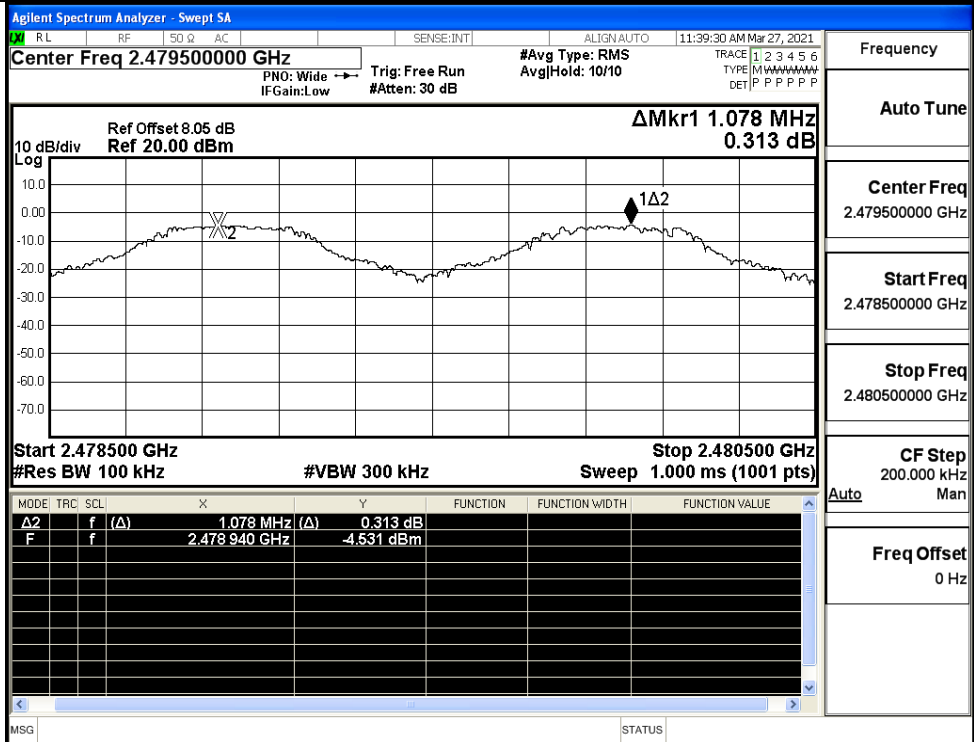
GFSK/LCH		Frequency Auto Tune Center Freq 2.402500000 GHz Start Freq 2.401500000 GHz Stop Freq 2.403500000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
	MODE: TRC: SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE Δ2 f (Δ) 1.030 75 MHz (Δ) 0.020 dB F f 2.401 952.50 GHz -0.140 dBm	
	Start 2.401500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.403500 GHz Sweep 1.067 ms (8001 pts)	
	Agilent Spectrum Analyzer - Swept SA Center Freq 2.402500000 GHz PNO: Wide → Trig: Free Run Avg Type: Log-Pwr IF Gain: Low #Atten: 30 dB Avg Hold: 10/10	

GFSK/MCH



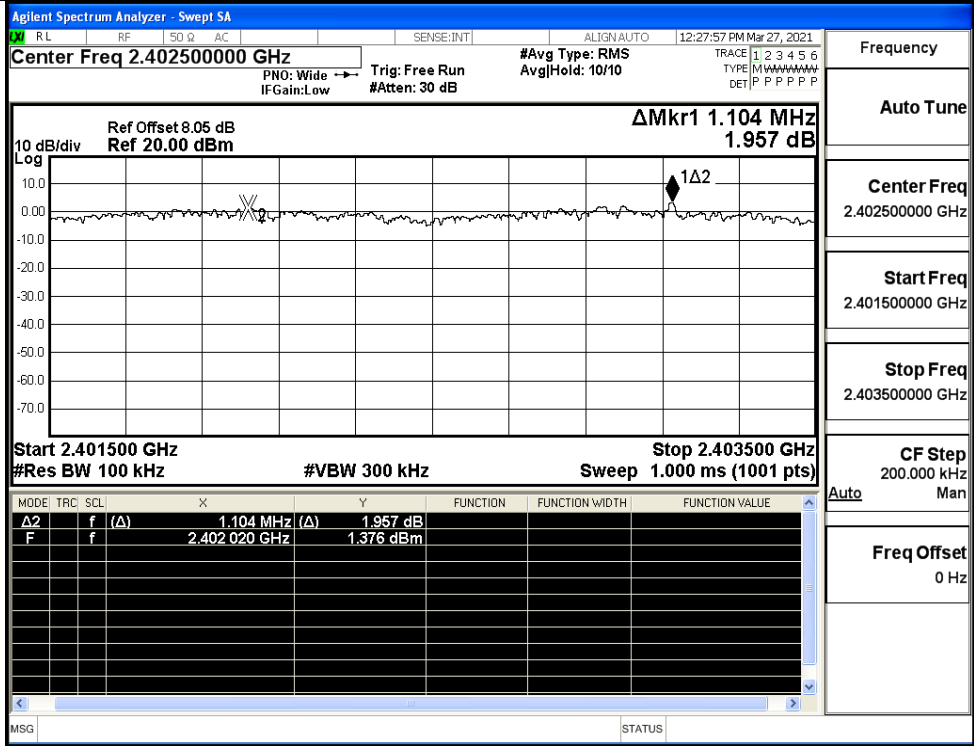
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

GFSK/HCH

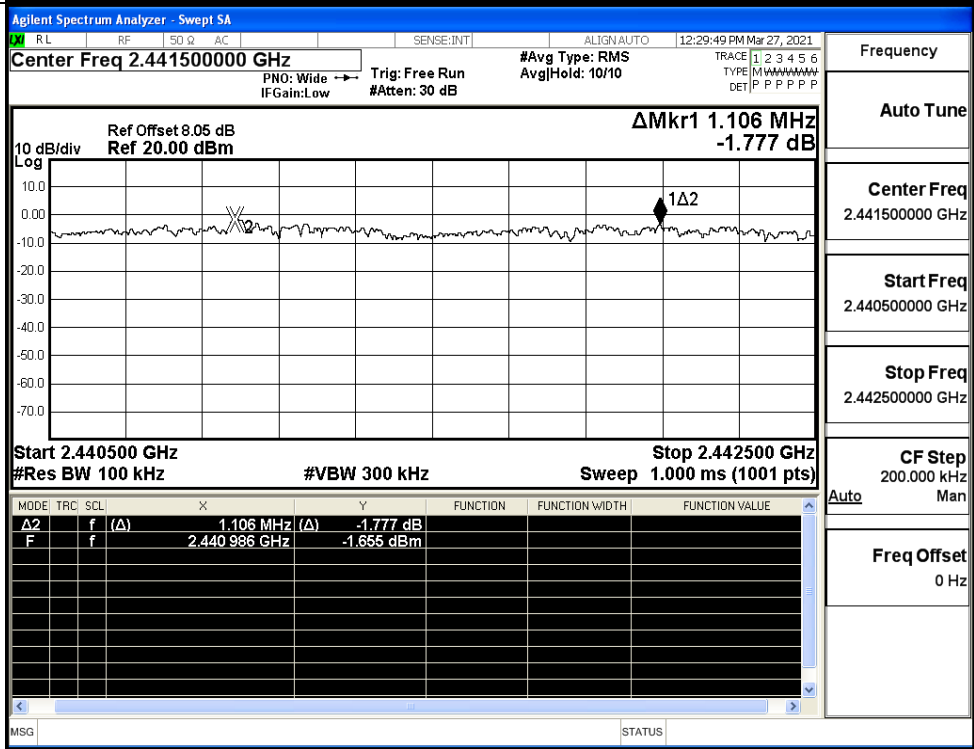


Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

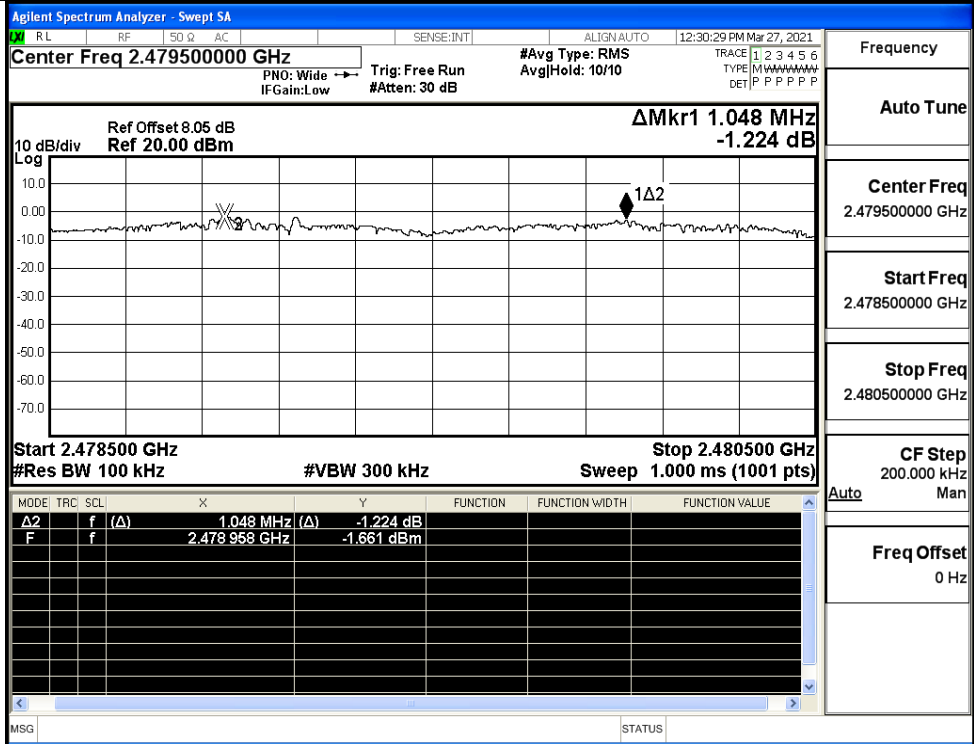
$\pi/4$ DQPSK/LCH



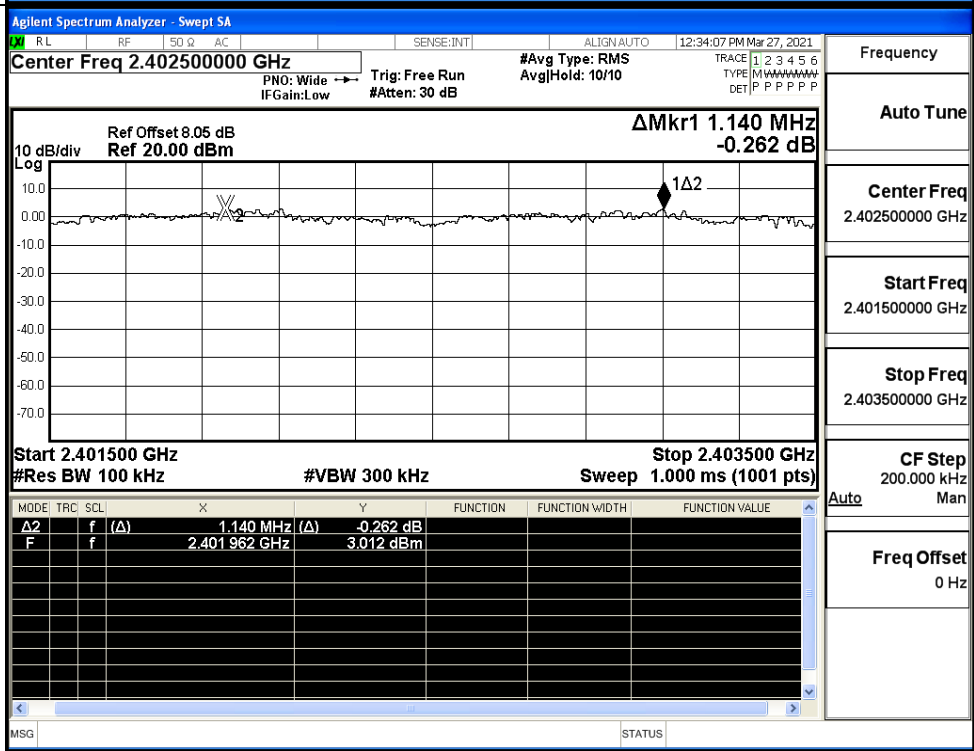
$\pi/4$ DQPSK/MCH



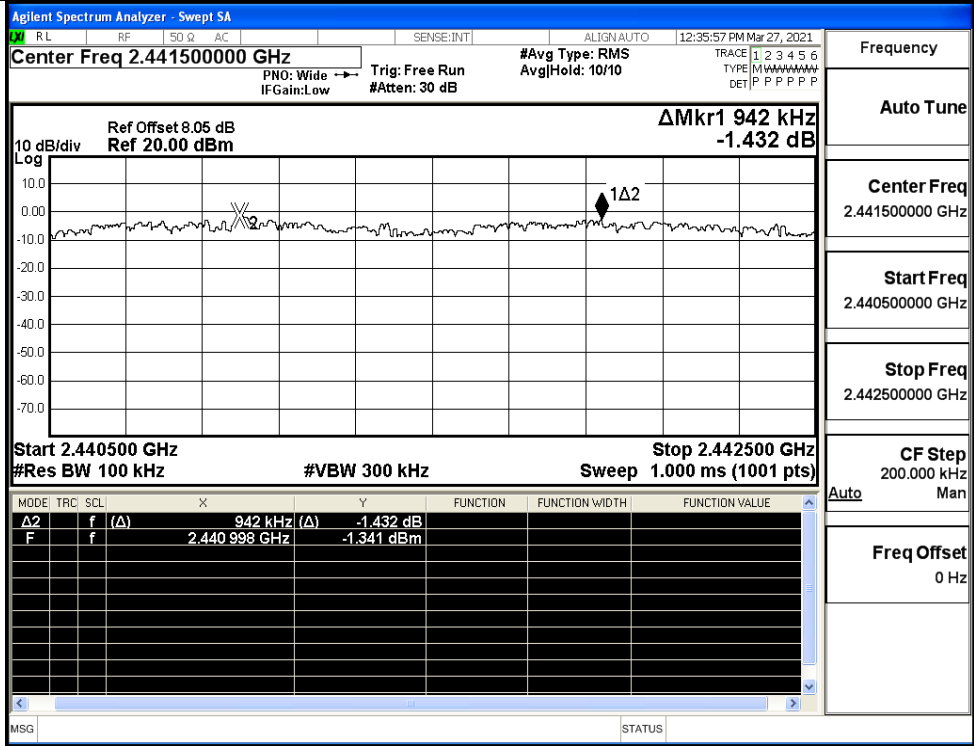
π/4DQPSK/HCH



8DPSK/LCH

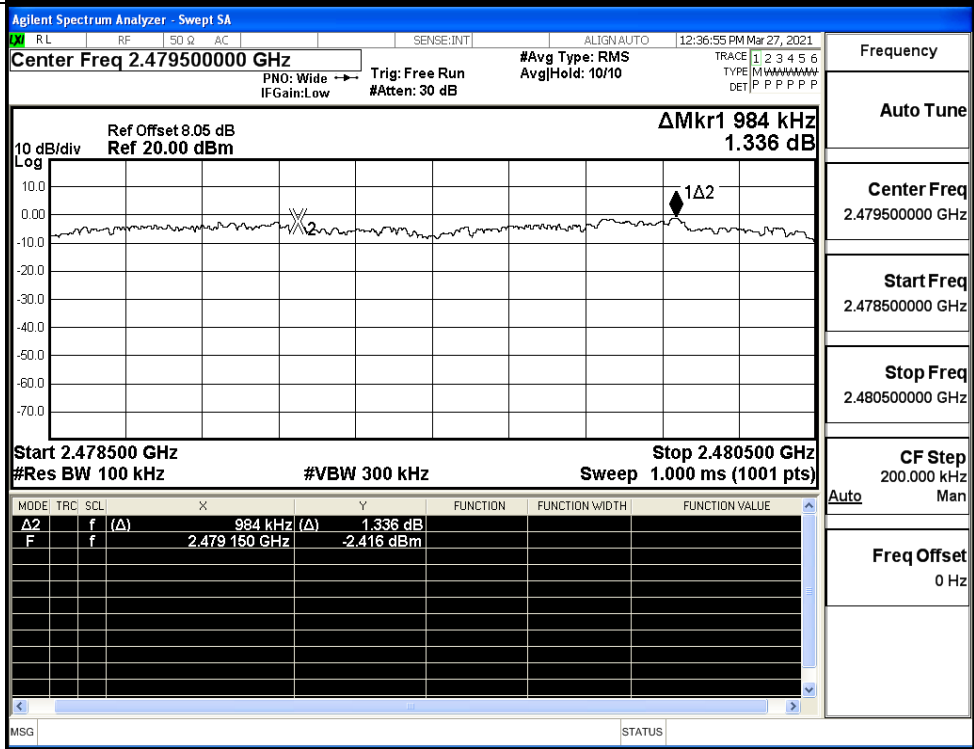


8DPSK/MCH



Frequency	2.441500000 GHz
Auto Tune	
Center Freq	2.441500000 GHz
Start Freq	2.440500000 GHz
Stop Freq	2.442500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/HCH



Frequency	2.479500000 GHz
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

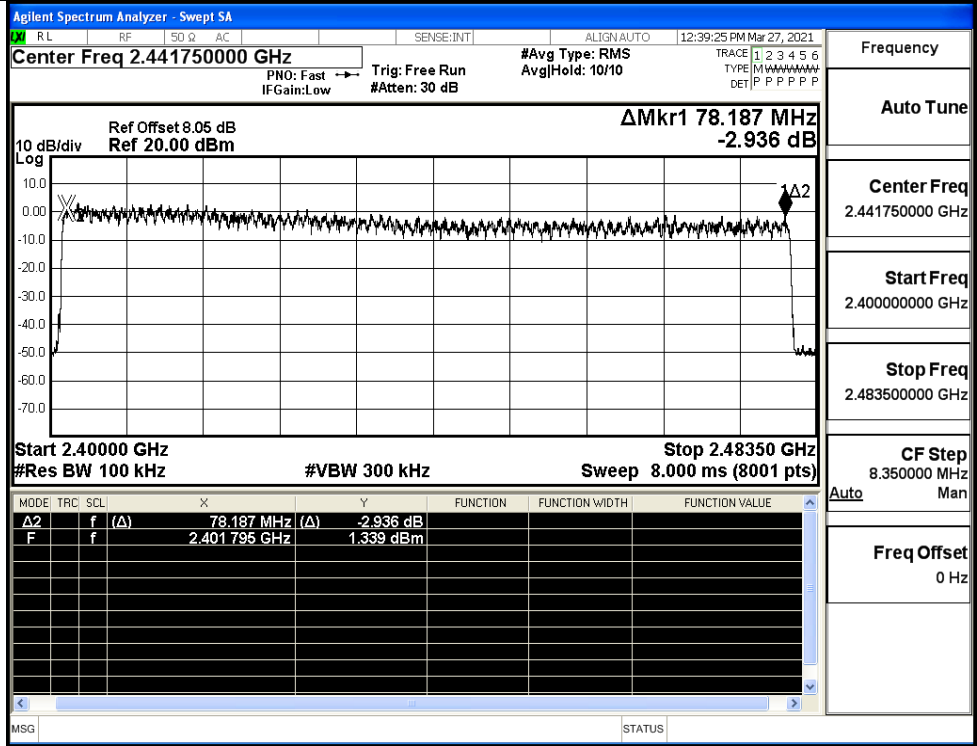
A.4 Hopping Channel Number

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

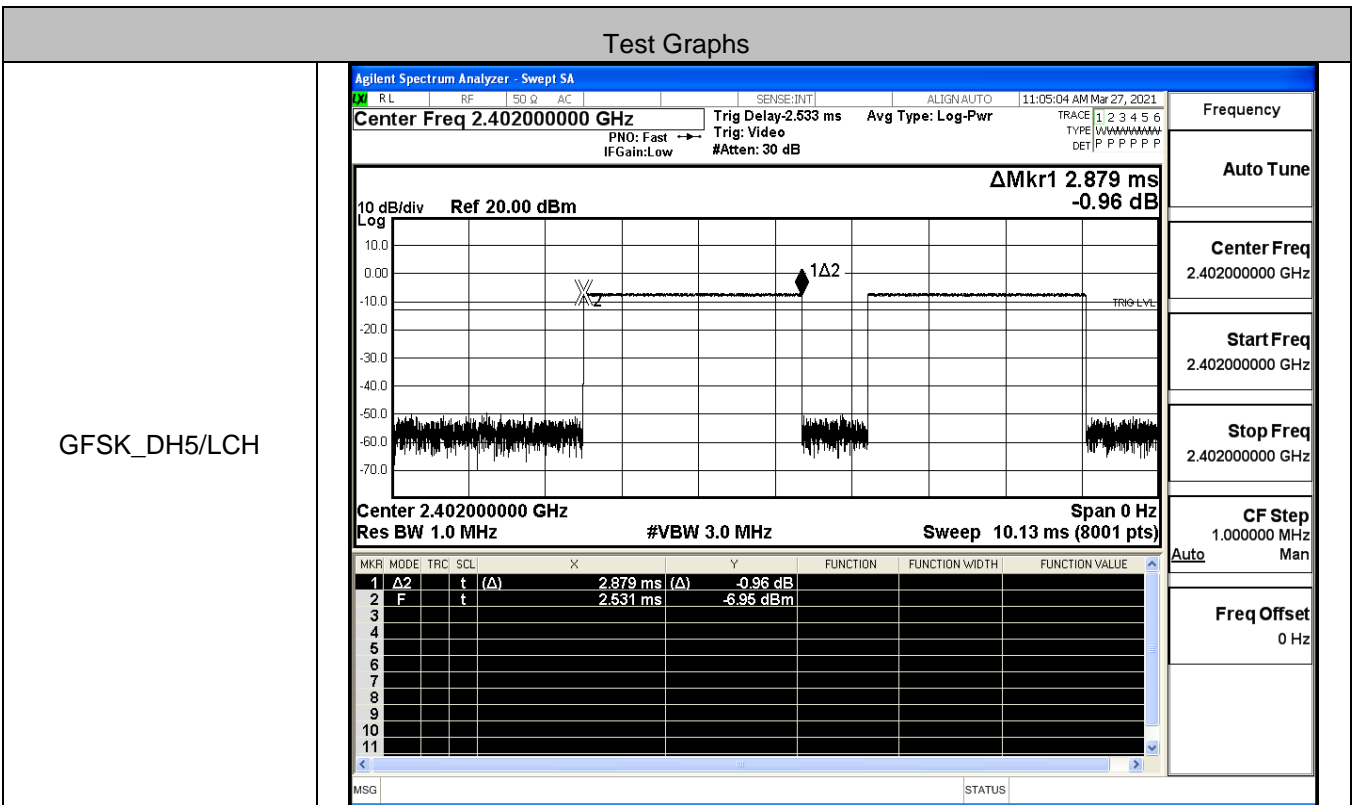
<p>GFSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 8.05 dB Ref 20.00 dBm ΔMkr1 77.926 MHz -4.900 dB Start 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.48350 GHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MODE</th> <th>TRC</th> <th>SCL</th> <th>X</th> <th>Y</th> <th>FUNCTION</th> <th>FUNCTION WIDTH</th> <th>FUNCTION VALUE</th> </tr> </thead> <tbody> <tr> <td>Δ2</td> <td>f</td> <td>(Δ)</td> <td>77.926 MHz</td> <td>(Δ)</td> <td>-4.900 dB</td> <td></td> <td></td> </tr> <tr> <td>F</td> <td>f</td> <td></td> <td>2.401983 GHz</td> <td></td> <td>-0.450 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Δ 2	f	(Δ)	77.926 MHz	(Δ)	-4.900 dB			F	f		2.401983 GHz		-0.450 dBm			<p>Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step 8.350000 MHz Man Freq Offset 0 Hz</p>
MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																			
Δ 2	f	(Δ)	77.926 MHz	(Δ)	-4.900 dB																					
F	f		2.401983 GHz		-0.450 dBm																					
<p>$\pi/4$DQPSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 8.05 dB Ref 20.00 dBm ΔMkr1 77.676 MHz -3.986 dB Start 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.48350 GHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <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>Δ2</td> <td>f</td> <td>(Δ)</td> <td>77.676 MHz</td> <td>(Δ)</td> <td>-3.986 dB</td> <td></td> <td></td> </tr> <tr> <td>F</td> <td>f</td> <td></td> <td>2.402223 GHz</td> <td></td> <td>0.918 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Δ 2	f	(Δ)	77.676 MHz	(Δ)	-3.986 dB			F	f		2.402223 GHz		0.918 dBm			<p>Frequency Auto Tune Center Freq 2.441750000 GHz Start Freq 2.400000000 GHz Stop Freq 2.483500000 GHz CF Step 8.350000 MHz Man Freq Offset 0 Hz</p>
MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																			
Δ 2	f	(Δ)	77.676 MHz	(Δ)	-3.986 dB																					
F	f		2.402223 GHz		0.918 dBm																					

8DPSK/Hop

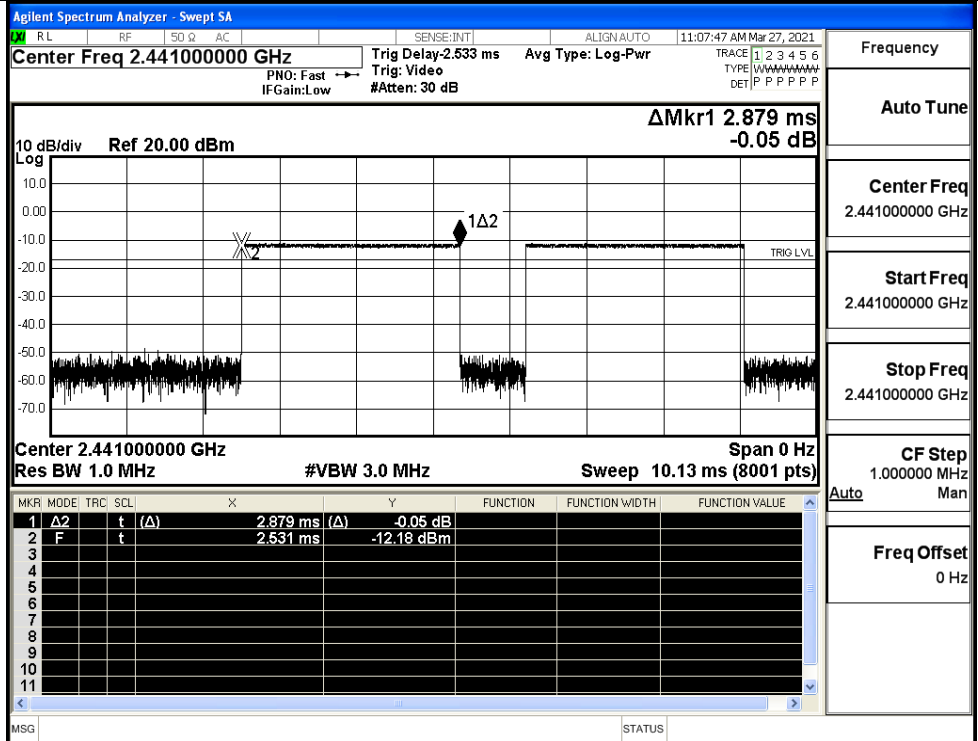


A.5 Dwell Time

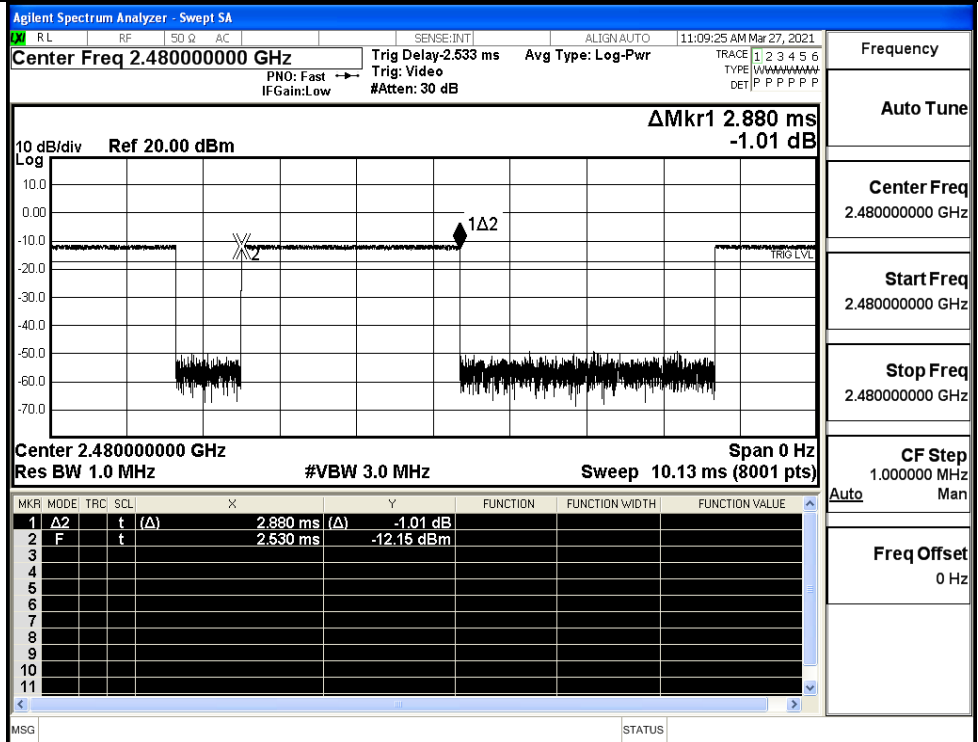
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.307	0.4	PASS
	3DH5	MCH	2.88	106.7	0.307	0.4	PASS
	3DH5	HCH	2.88	106.7	0.307	0.4	PASS



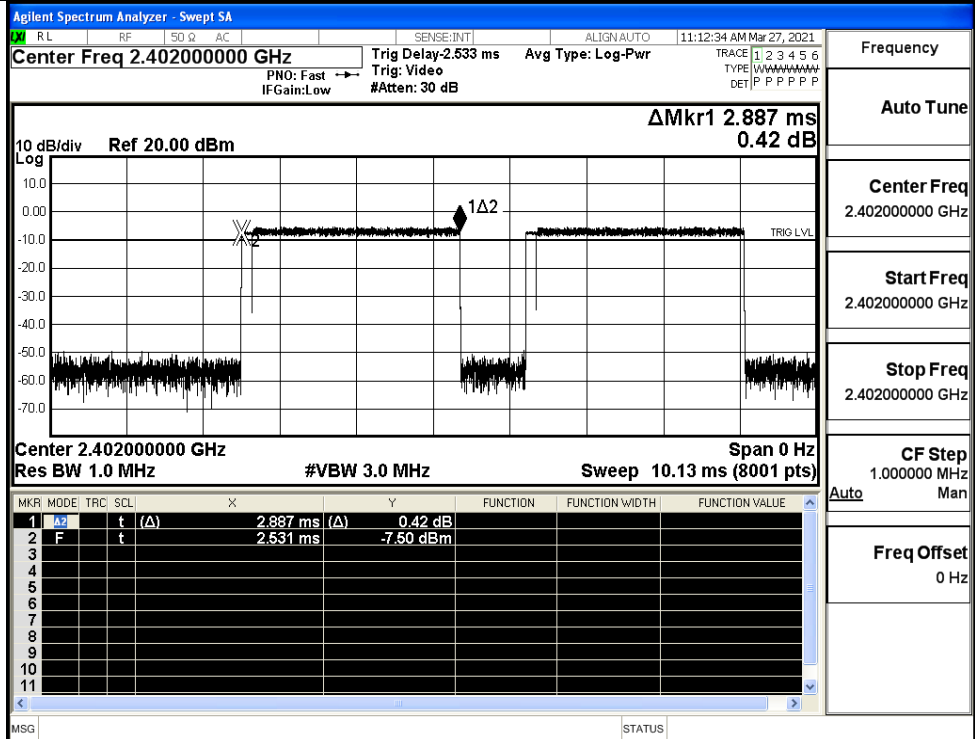
GFSK_DH5/MCH



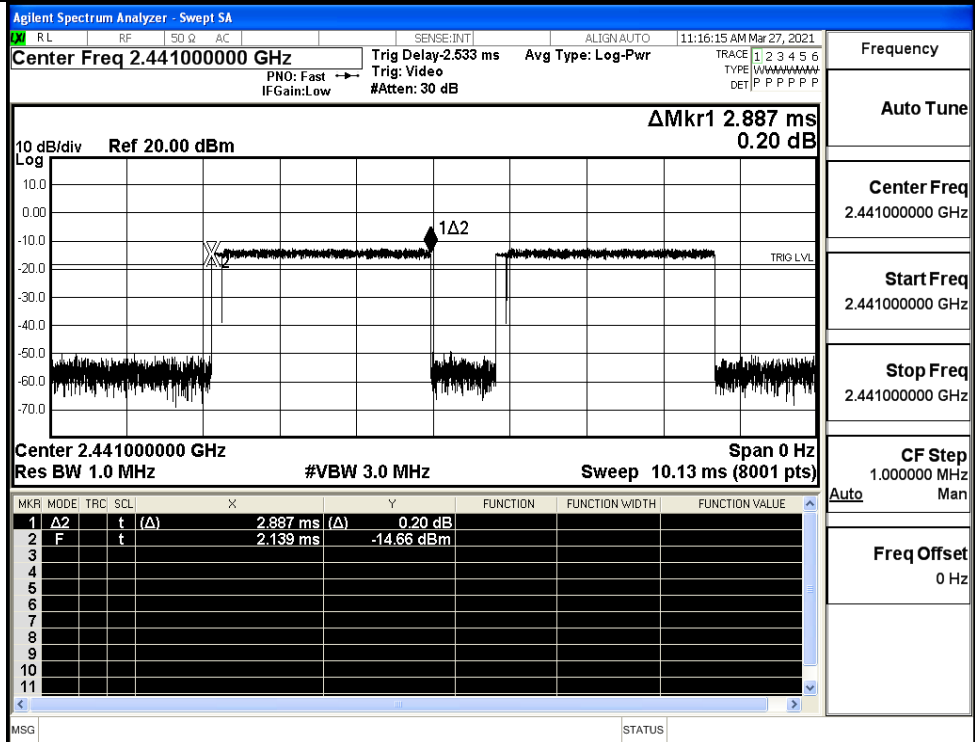
GFSK_DH5/HCH



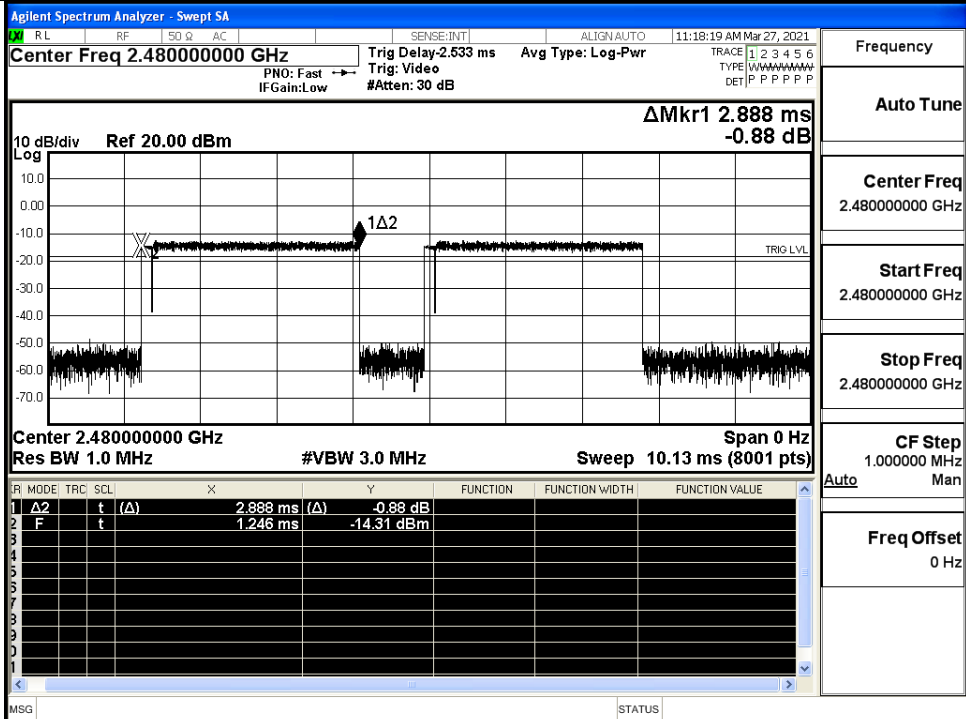
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

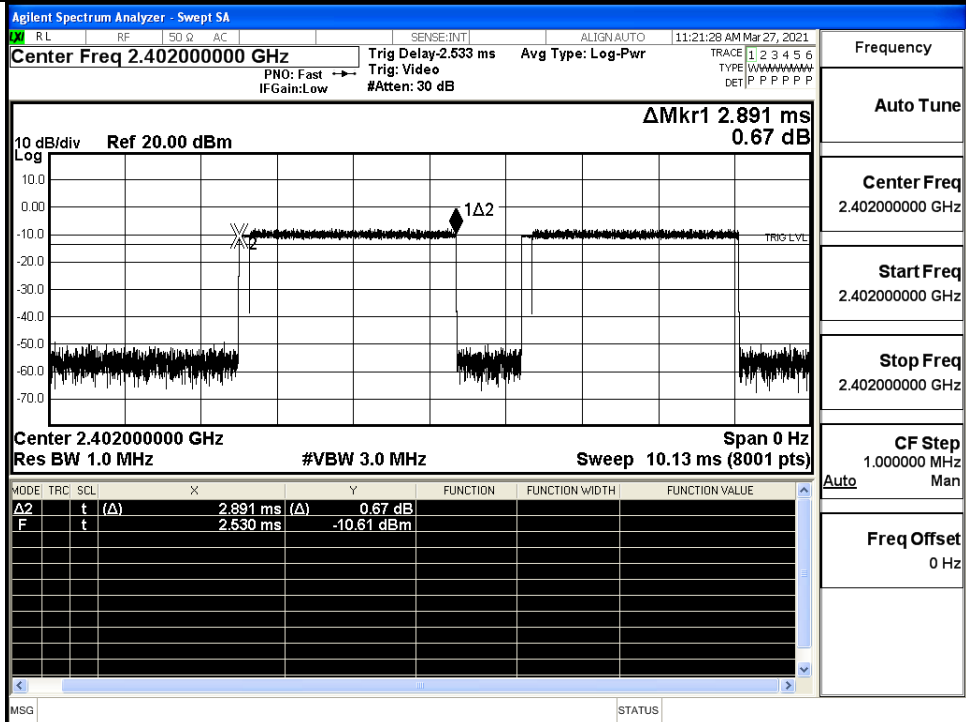


$\pi/4$ DQPSK
_2DH5/HCH



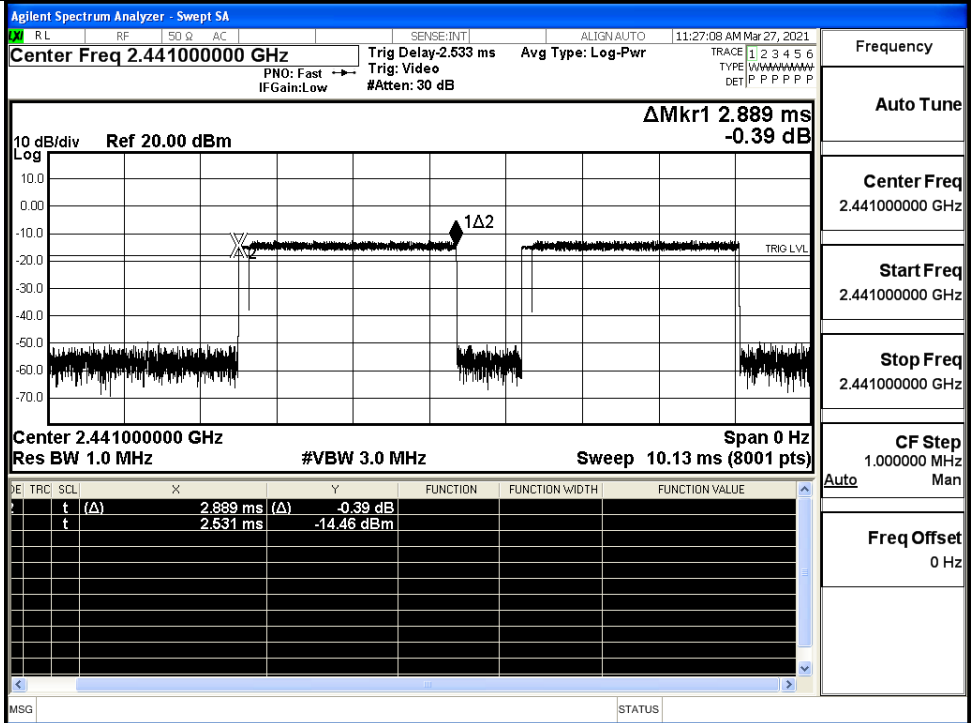
Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/LCH

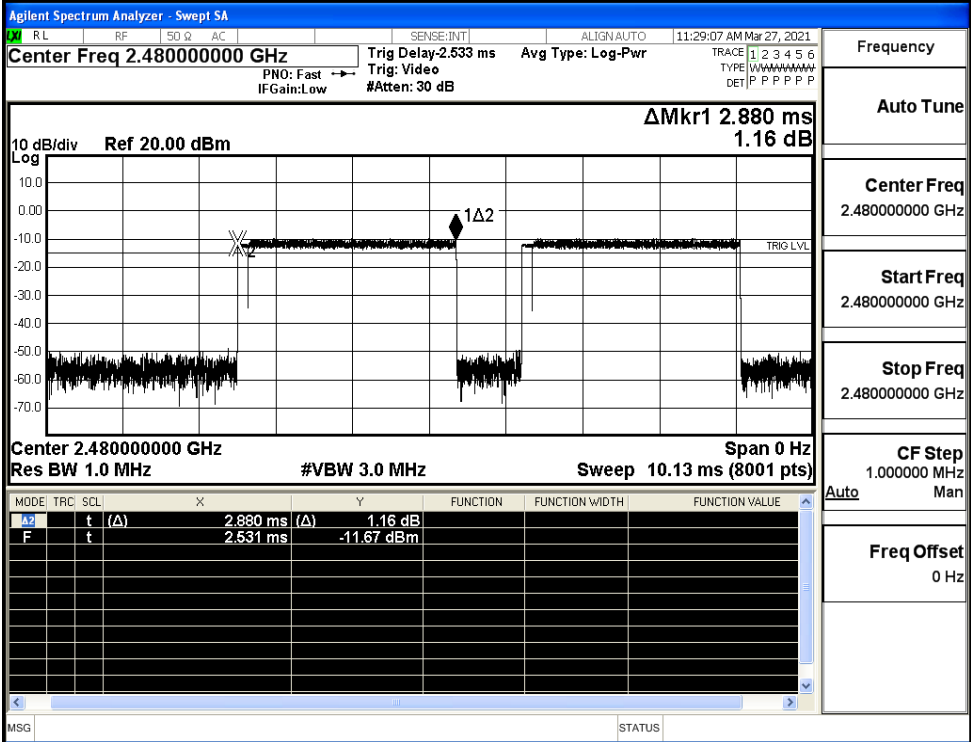


Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/MCH



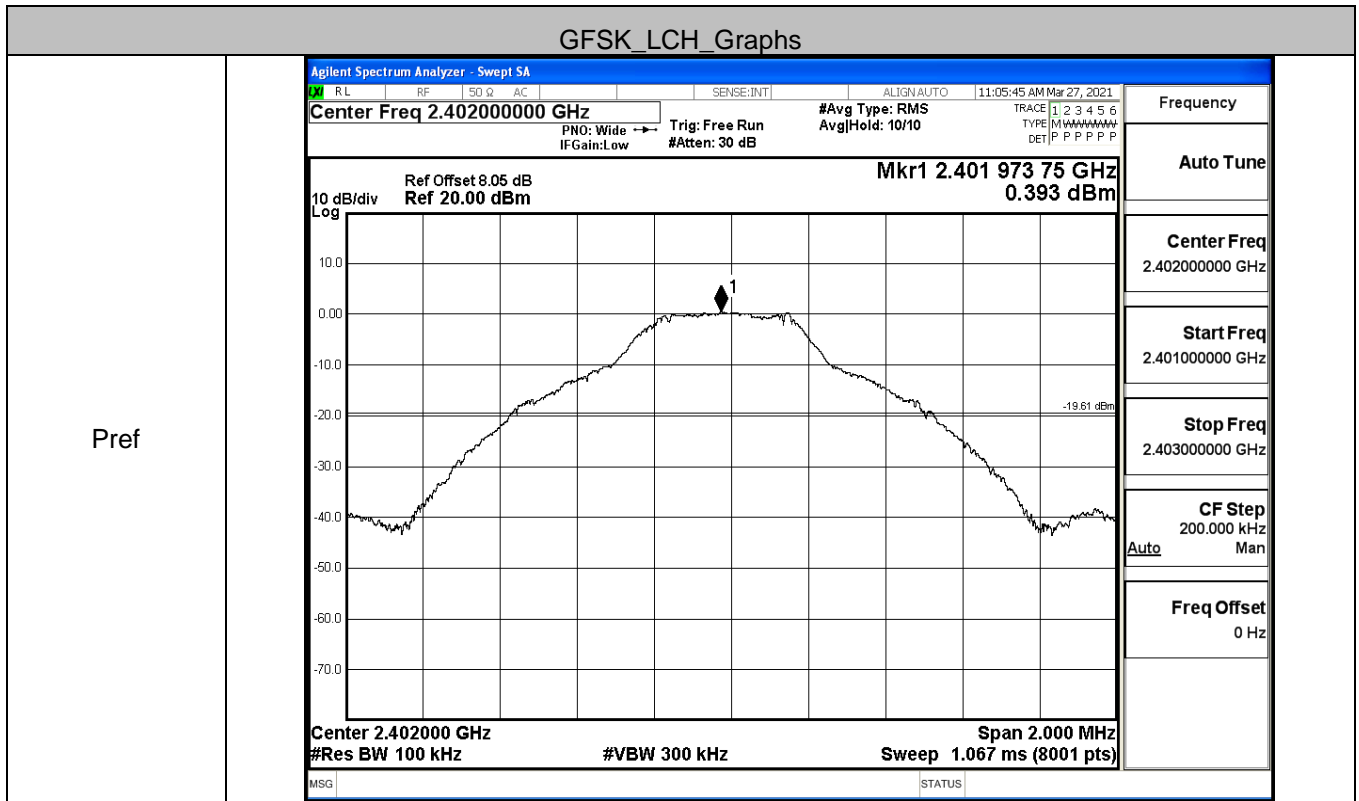
8DPSK_3DH5/HCH



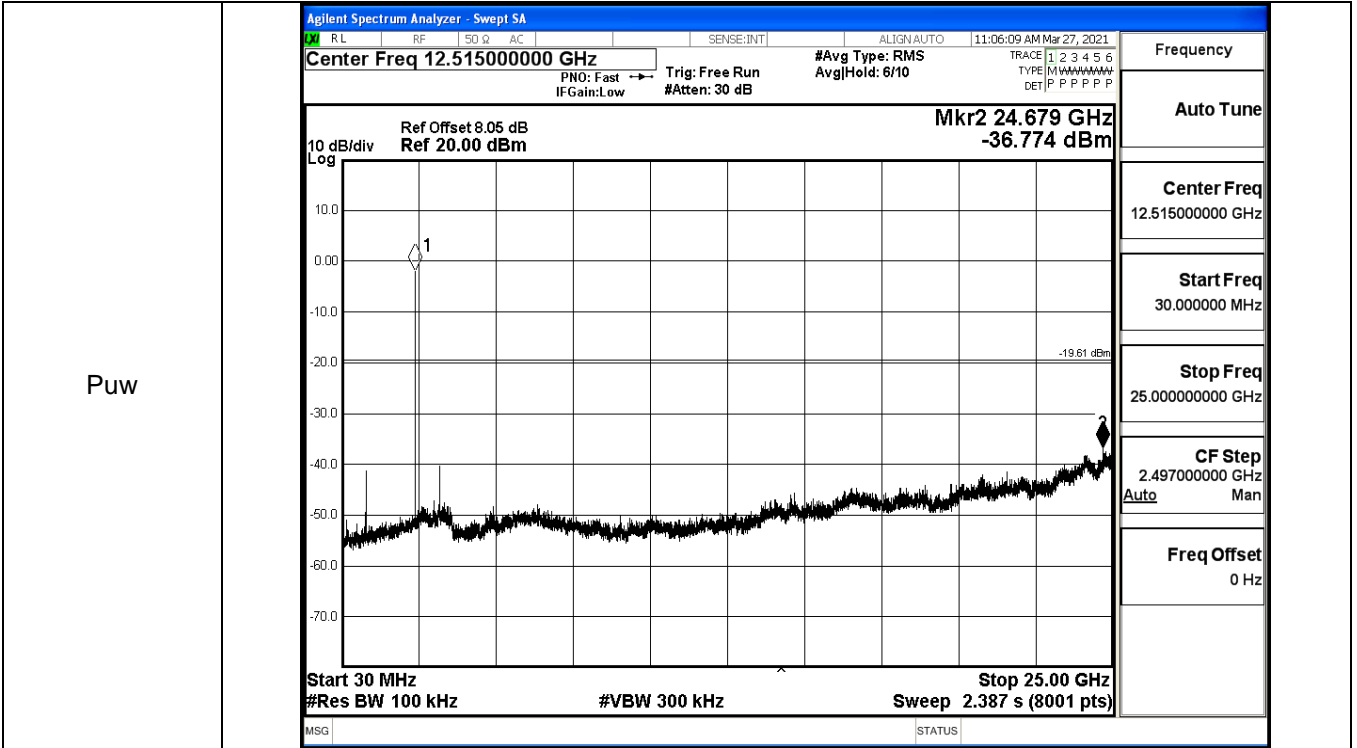
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.393	-36.774	-19.607	PASS
	MCH	-3.276	-36.762	-23.276	PASS
	HCH	-4.083	-38.514	-24.083	PASS
π/4DQPSK	LCH	-2.643	-37.428	-22.643	PASS
	MCH	-3.475	-38.326	-23.475	PASS
	HCH	-4.855	-37.212	-24.855	PASS
8DPSK	LCH	-2.346	-37.641	-22.346	PASS
	MCH	-3.858	-36.413	-23.858	PASS
	HCH	-4.429	-36.814	-24.429	PASS

GFSK_LCH_Graphs

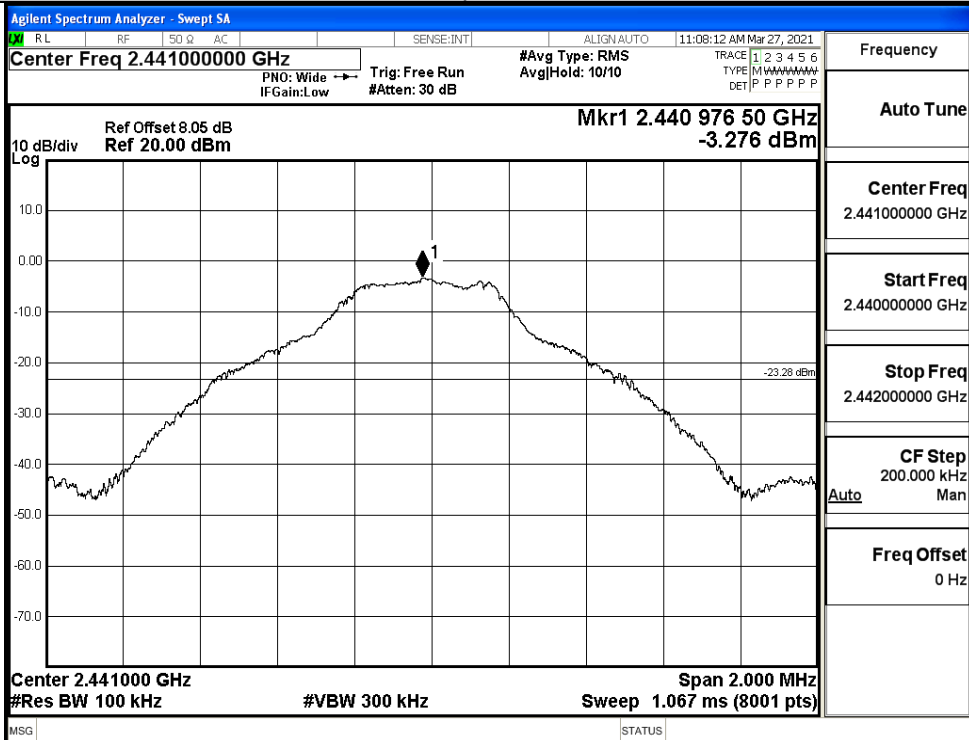


Pref

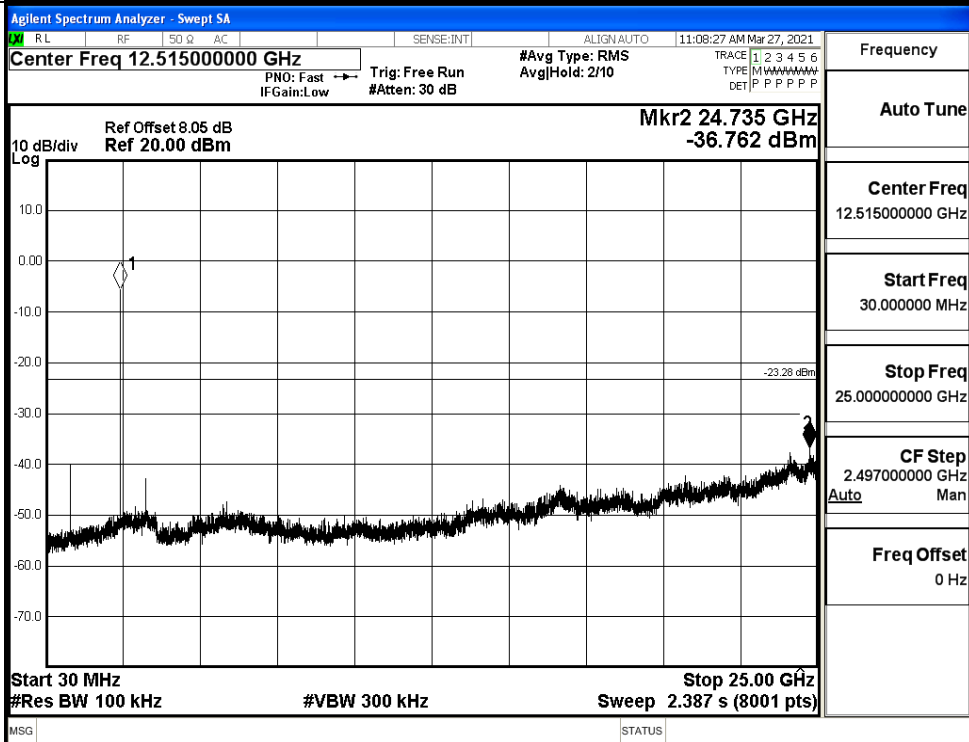


GFSK_MCH_Graphs

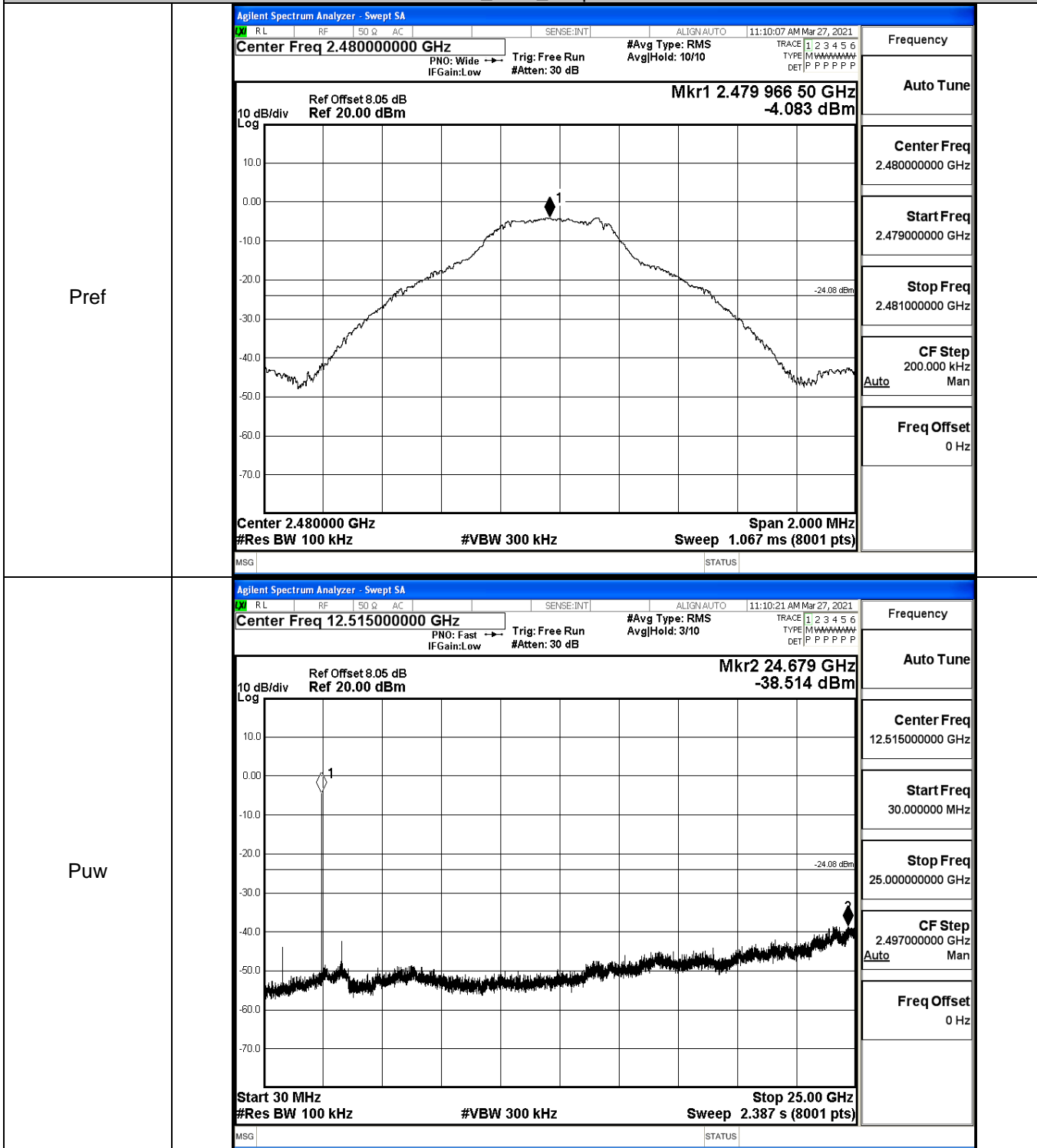
Pref



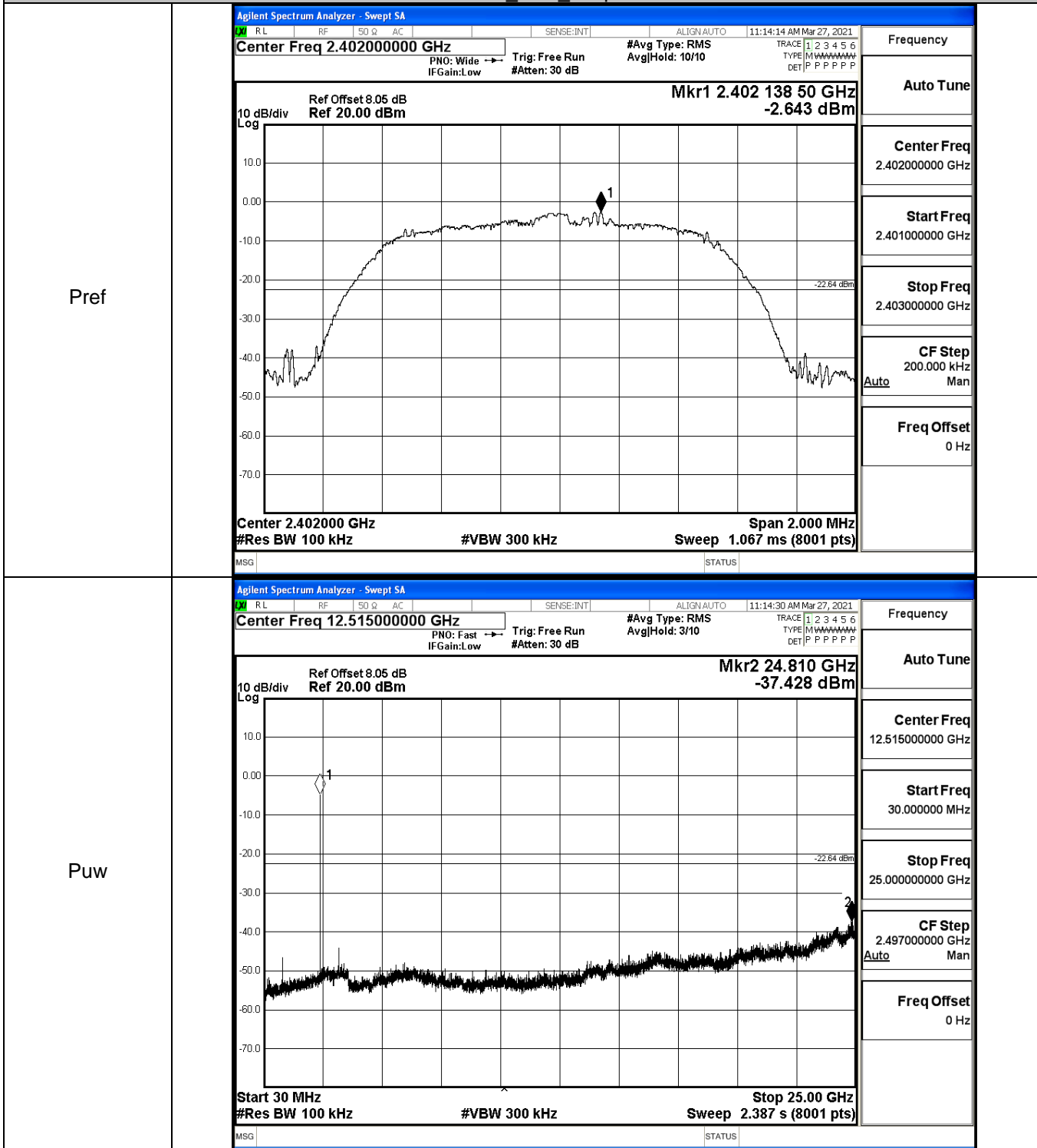
Puw



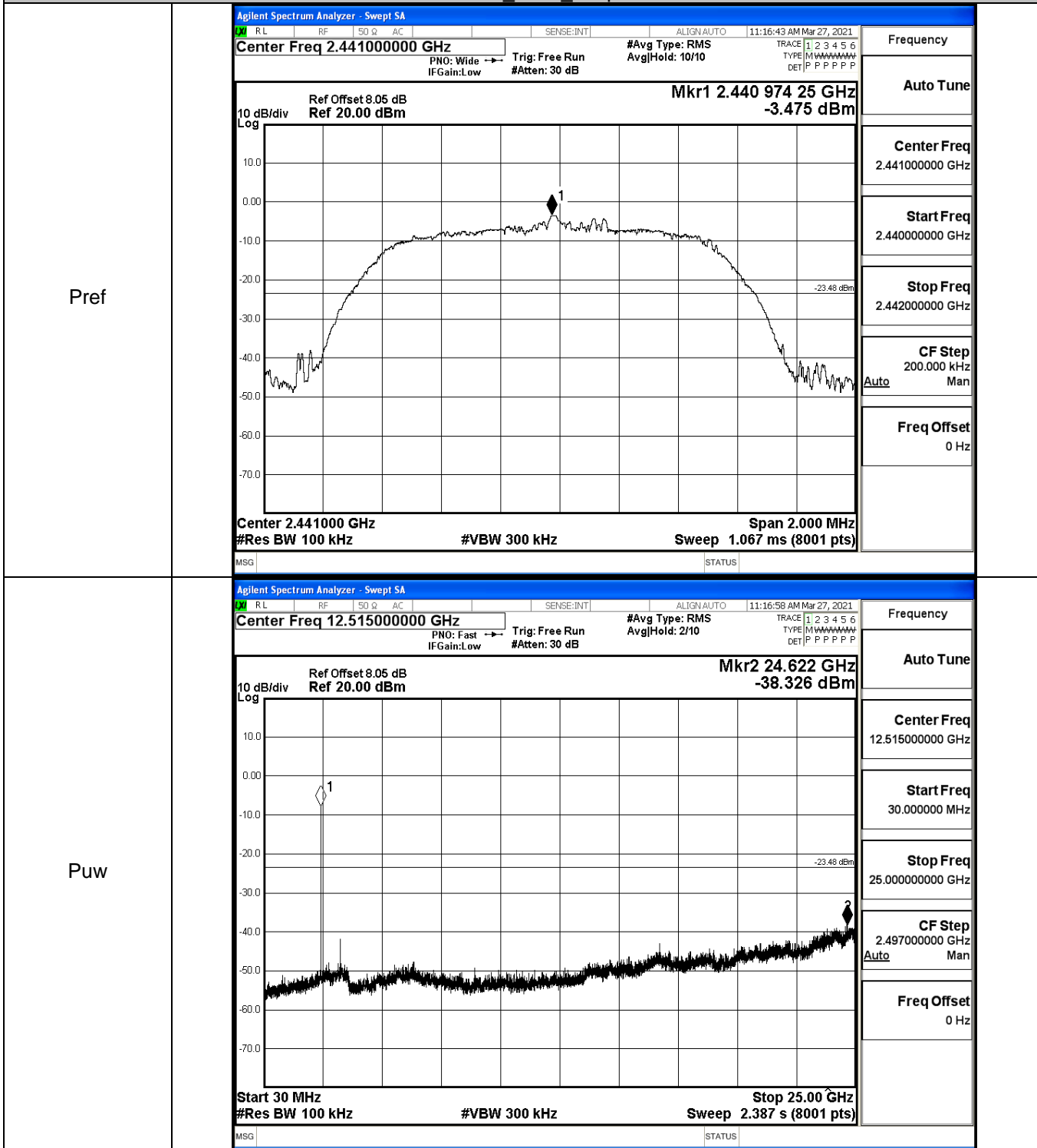
GFSK_HCH_Graphs



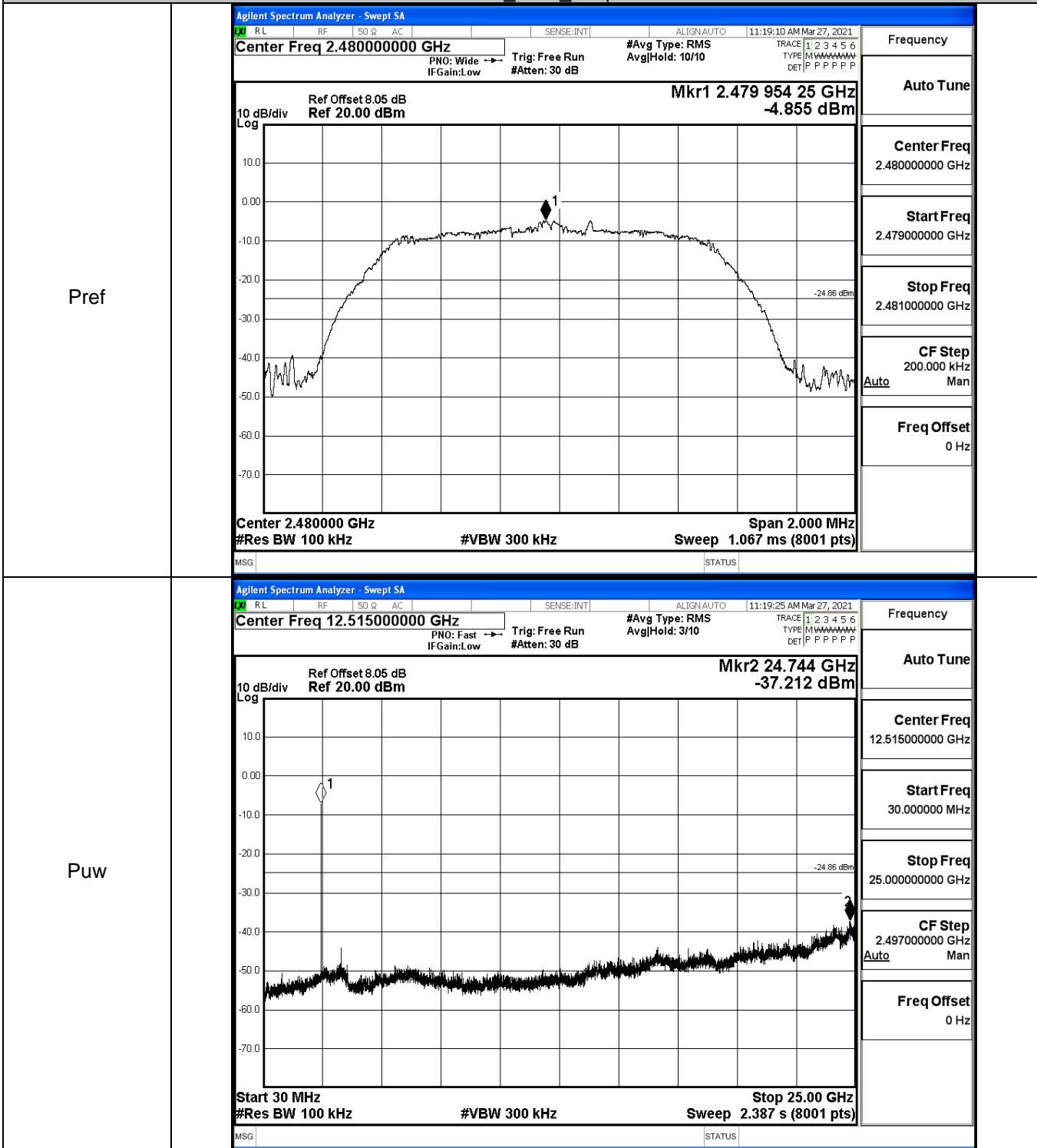
$\pi/4$ DQPSK_LCH_Graphs



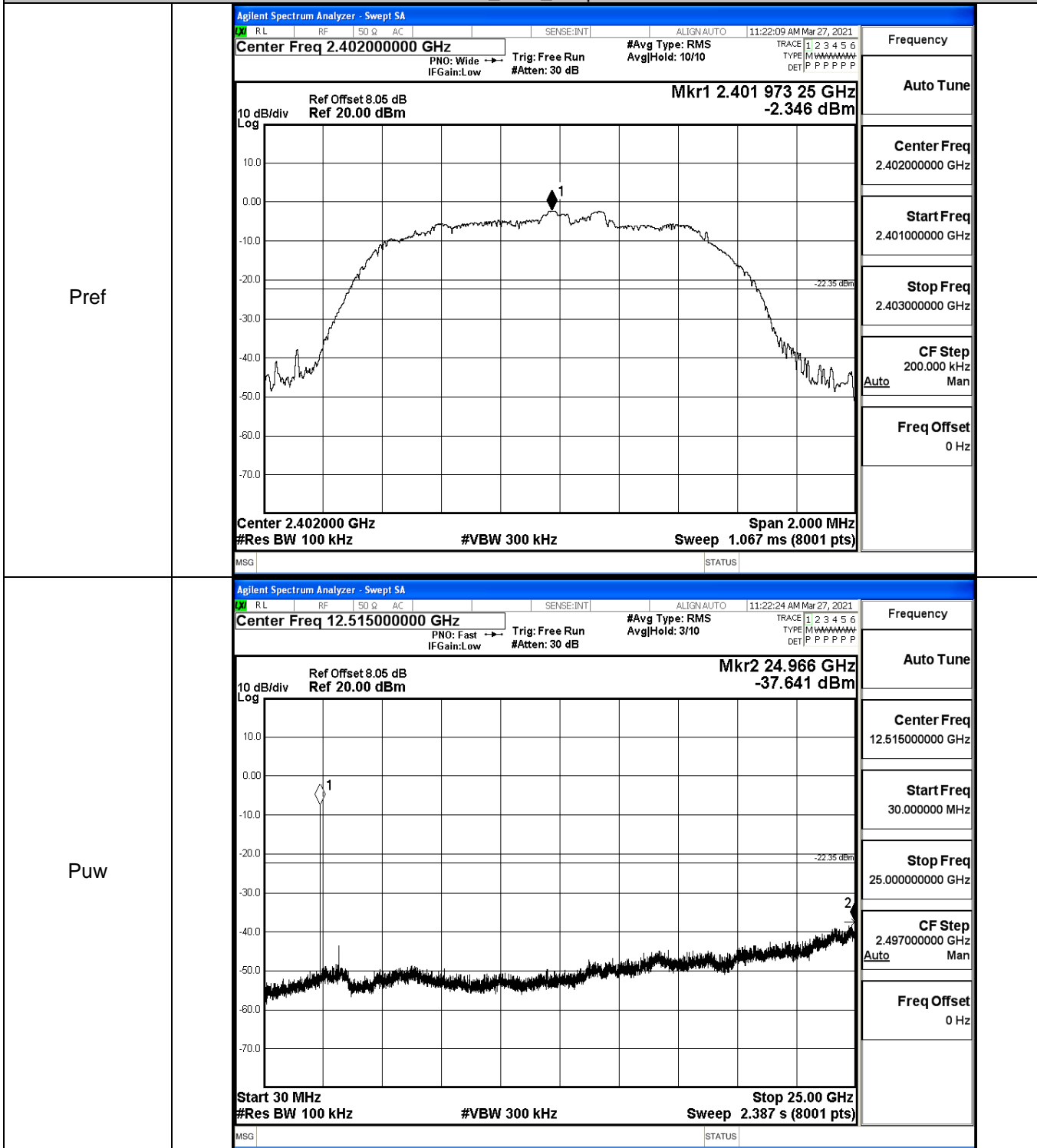
$\pi/4$ DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

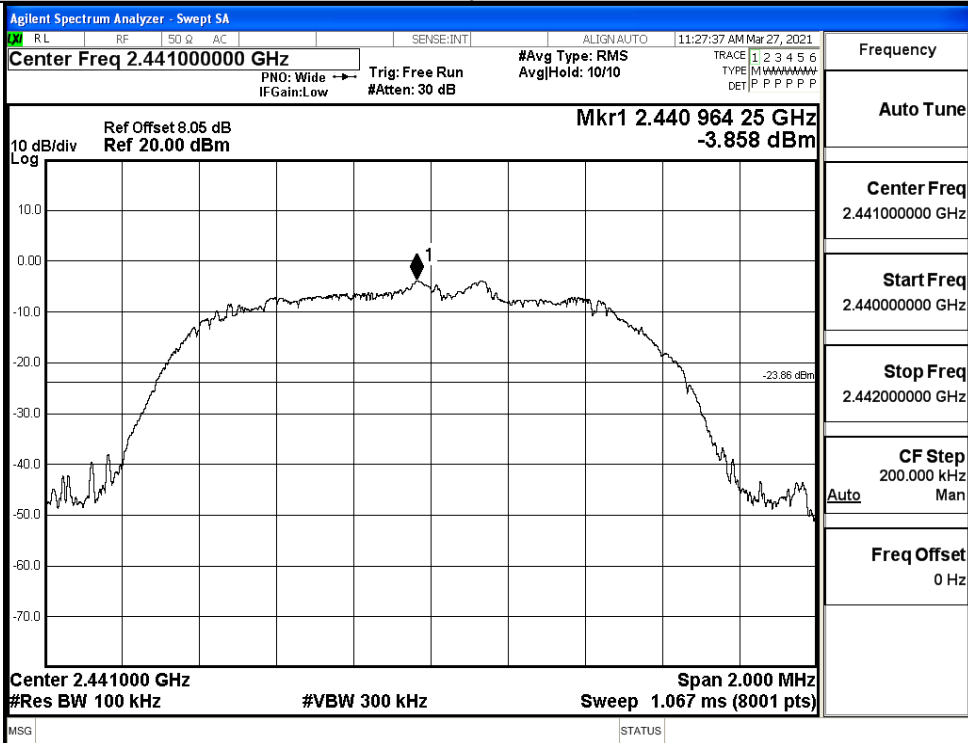


8DPSK_LCH_Graphs

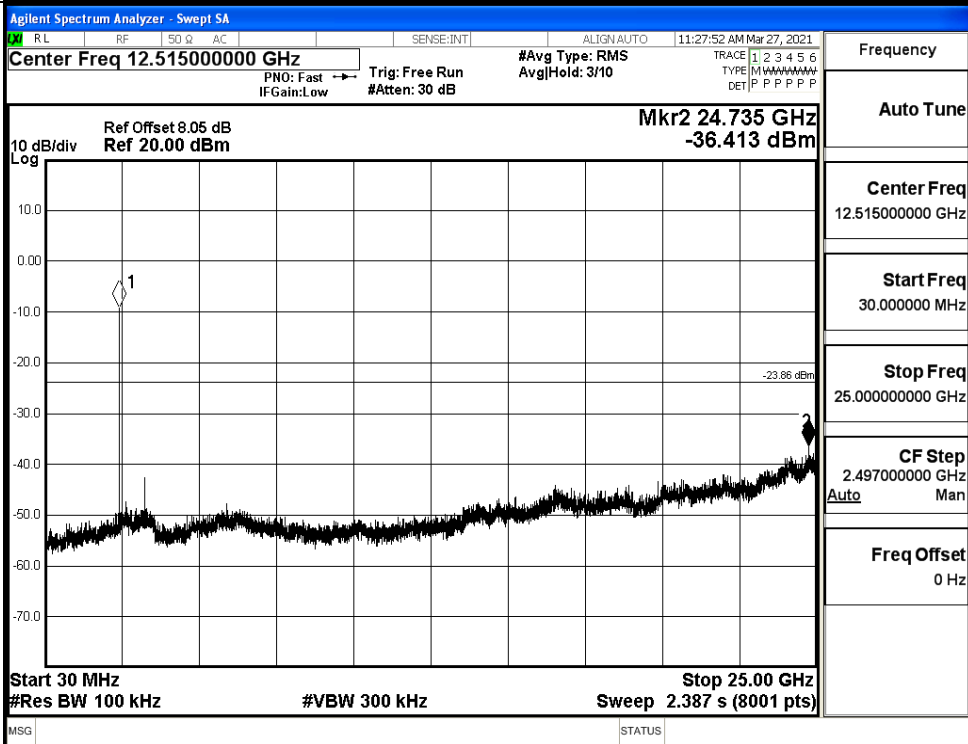


8DPSK_MCH_Graphs

Pref

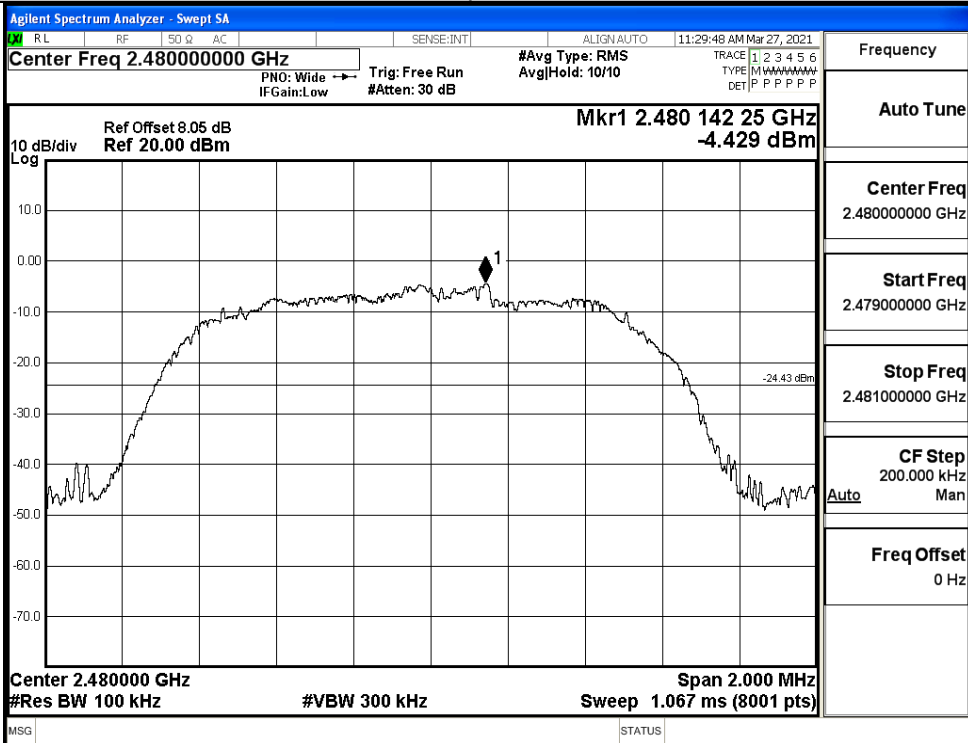


Puw

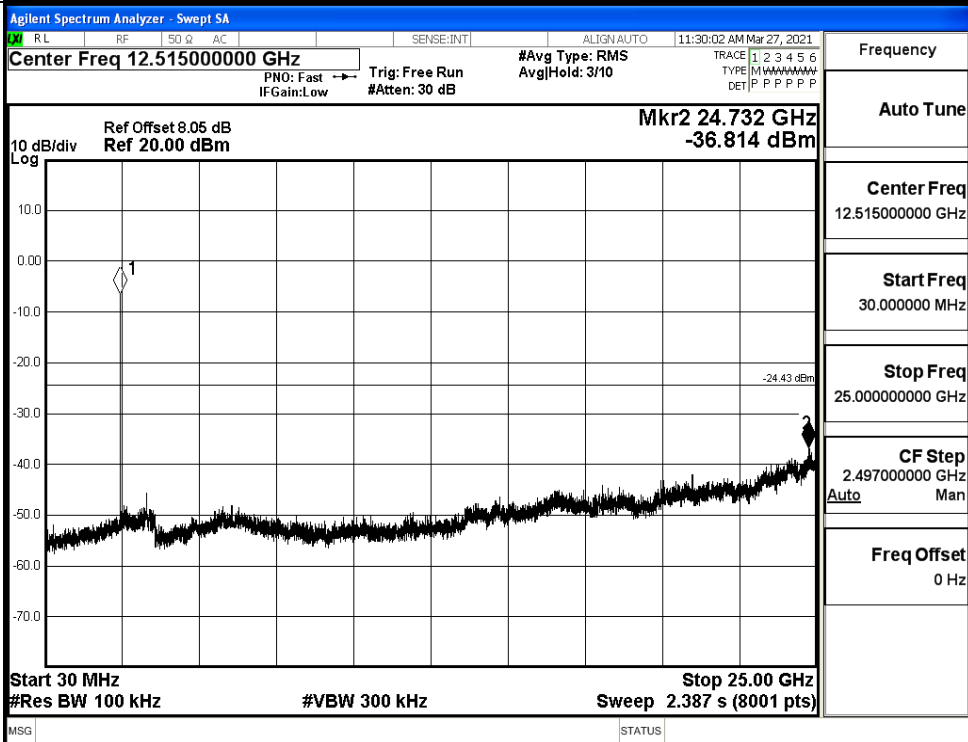


8DPSK_HCH_Graphs

Pref



Puw

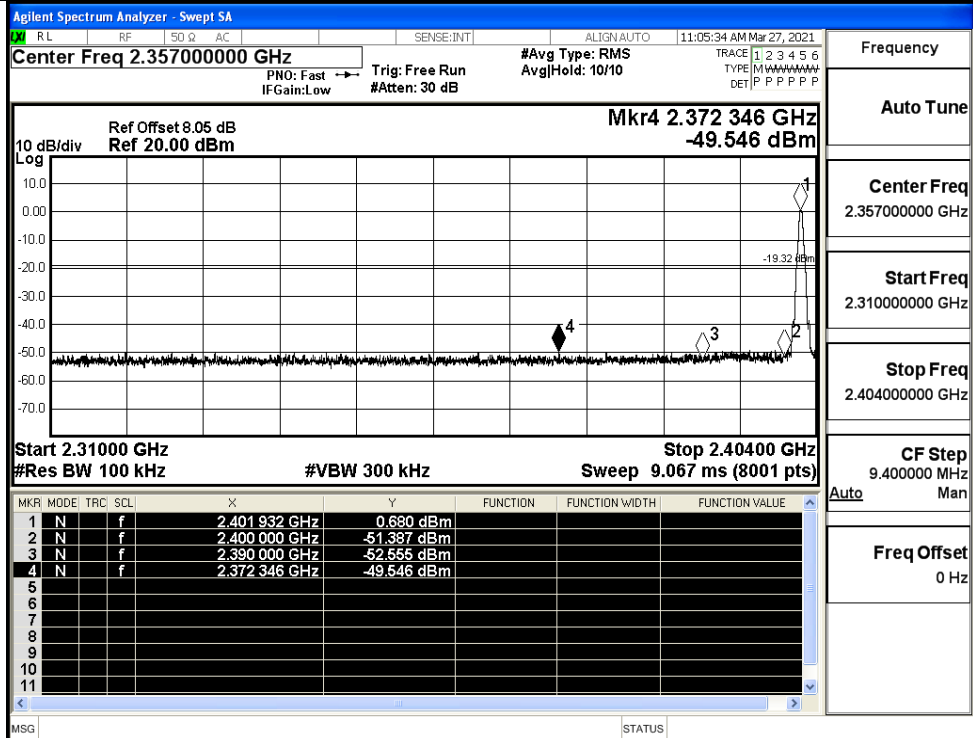


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.680	Off	-49.546	-19.32	PASS
			0.482	On	-49.600	-19.52	PASS
	HCH	2480	-3.764	Off	-47.873	-23.76	PASS
			-4.297	On	-48.540	-24.3	PASS
$\pi/4$ DQPSK	LCH	2402	-2.236	Off	-49.006	-22.24	PASS
			3.849	On	-49.309	-16.15	PASS
	HCH	2480	-4.566	Off	-47.673	-24.57	PASS
			-0.765	On	-47.025	-20.77	PASS
8DPSK	LCH	2402	-2.705	Off	-49.889	-22.71	PASS
			3.759	On	-48.518	-16.24	PASS
	HCH	2480	-3.742	Off	-47.711	-23.74	PASS
			-0.649	On	-46.641	-20.65	PASS

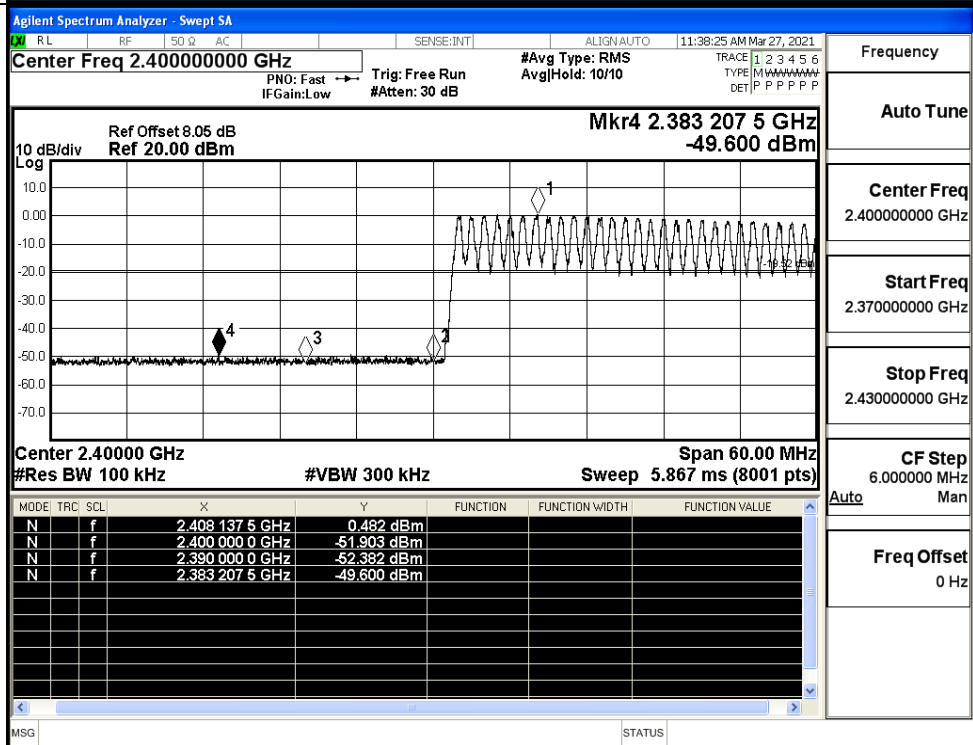
Test Graphs

GFSK/LCH/No Hop



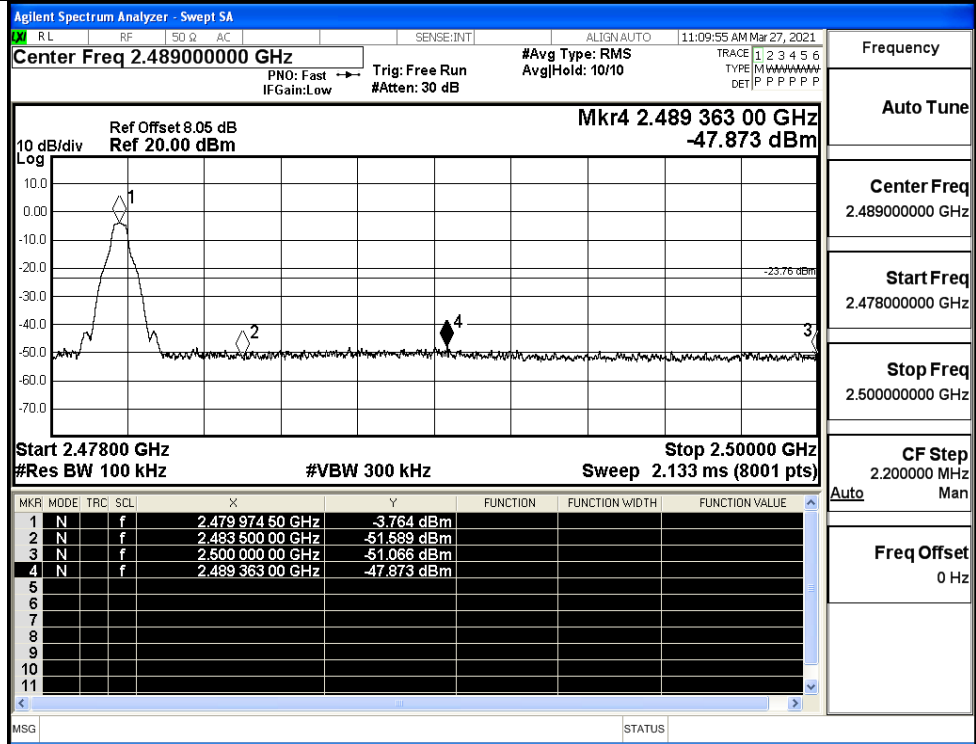
Frequency	Auto Tune
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

GFSK/LCH/Hop

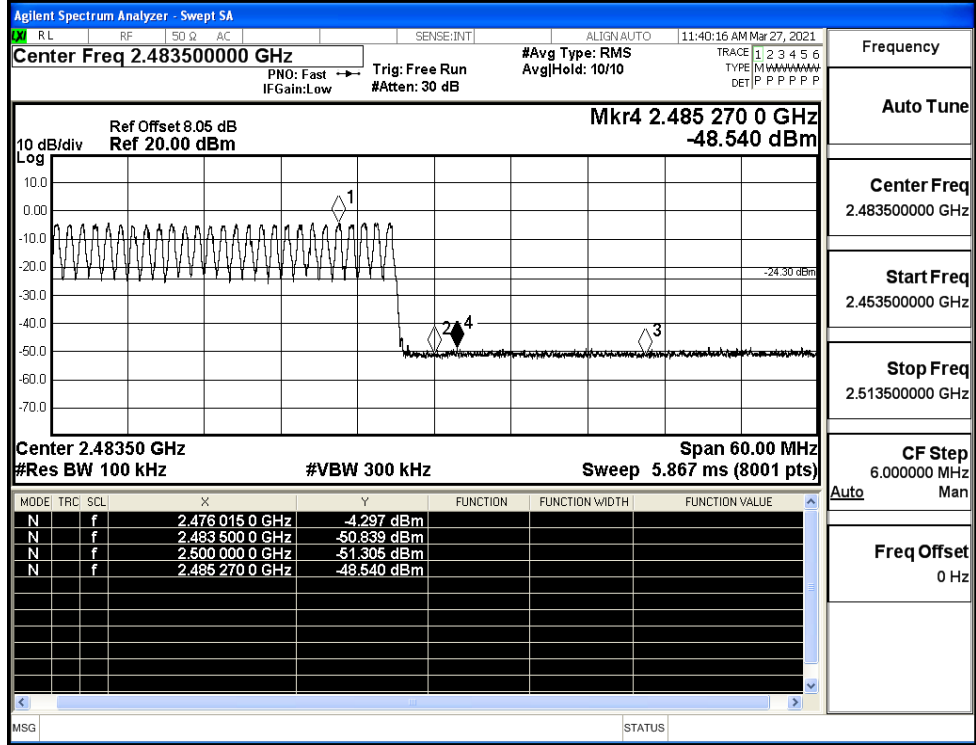


Frequency	Auto Tune
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

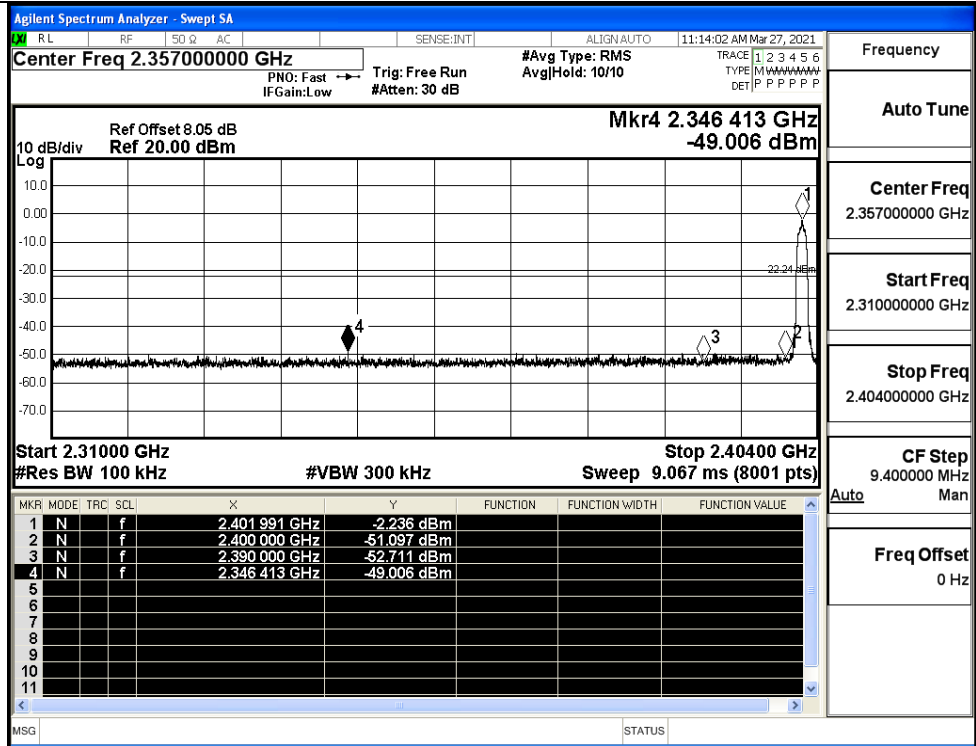
GFSK/HCH/No Hop



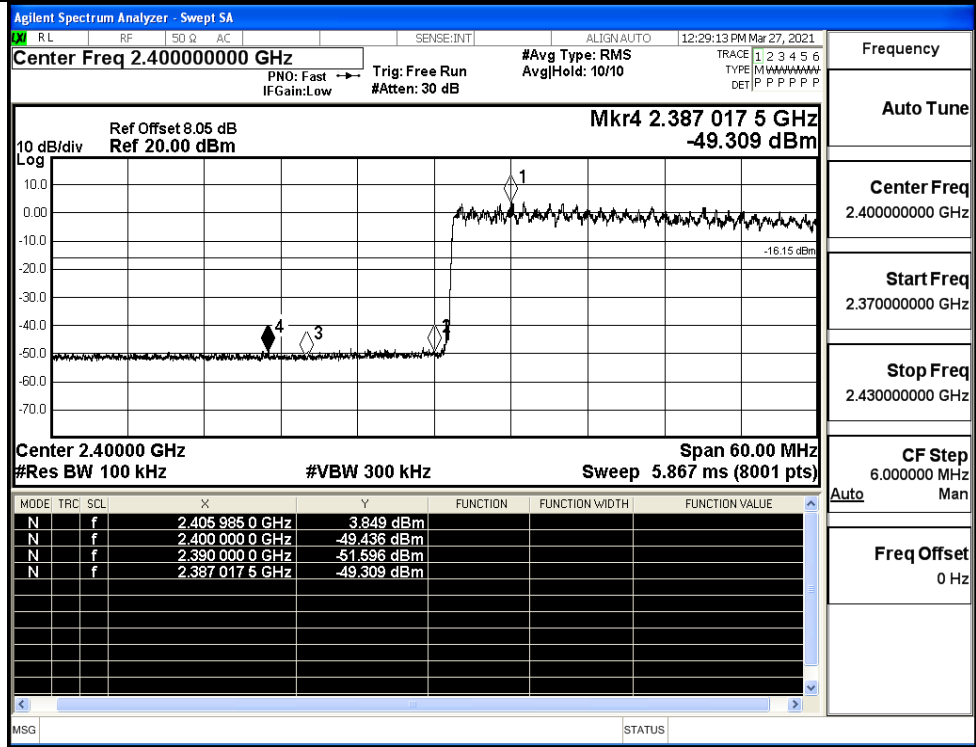
GFSK/HCH/Hop



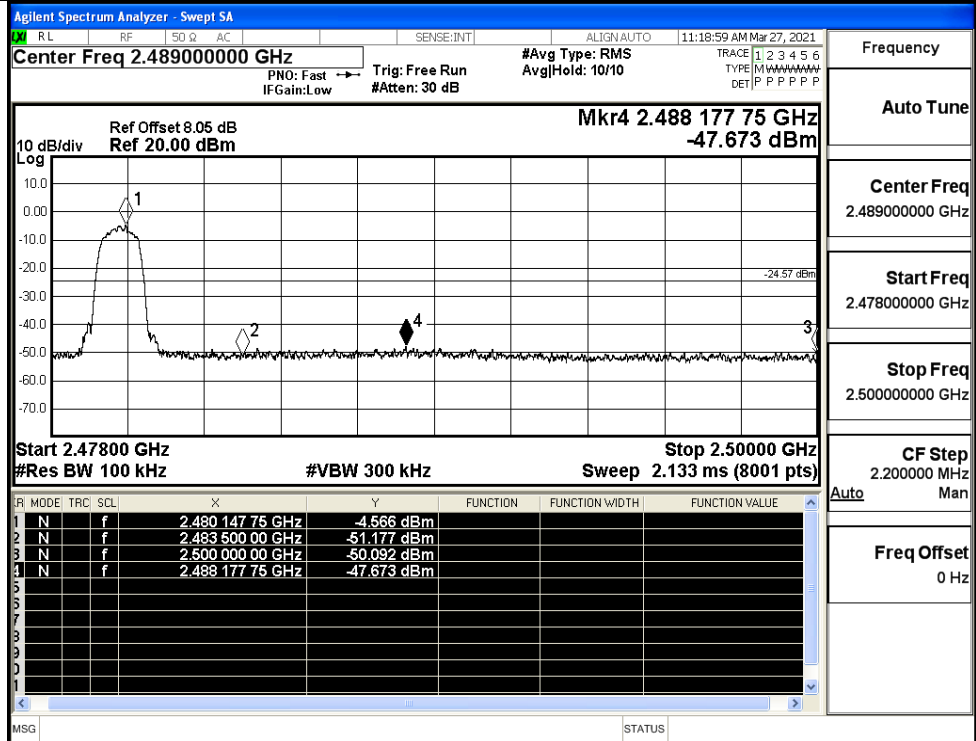
$\pi/4$ DQPSK/LCH/No Hop



$\pi/4$ DQPSK/LCH/Hop

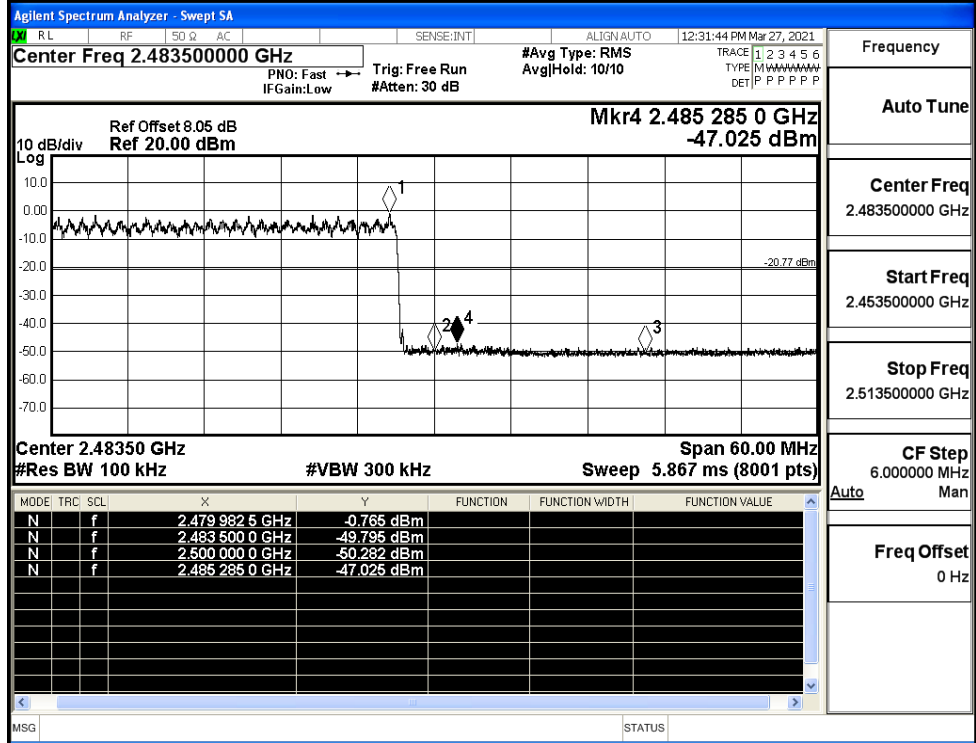


π /4DQPSK/HCH/No Hop



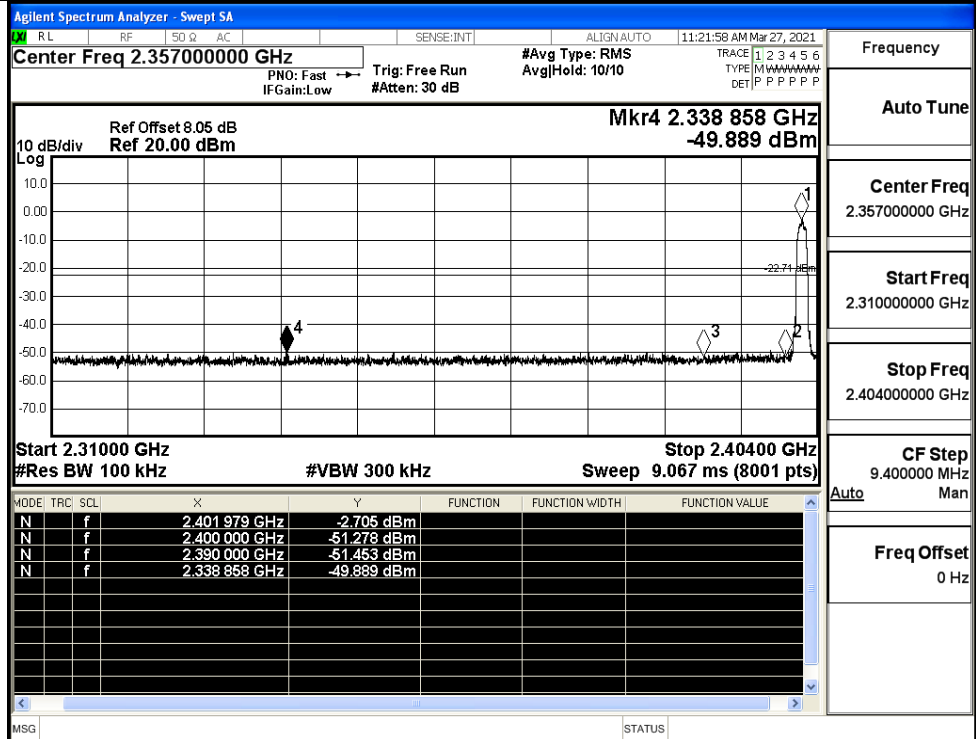
Frequency	2.489000000 GHz
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

π /4DQPSK/HCH/Hop



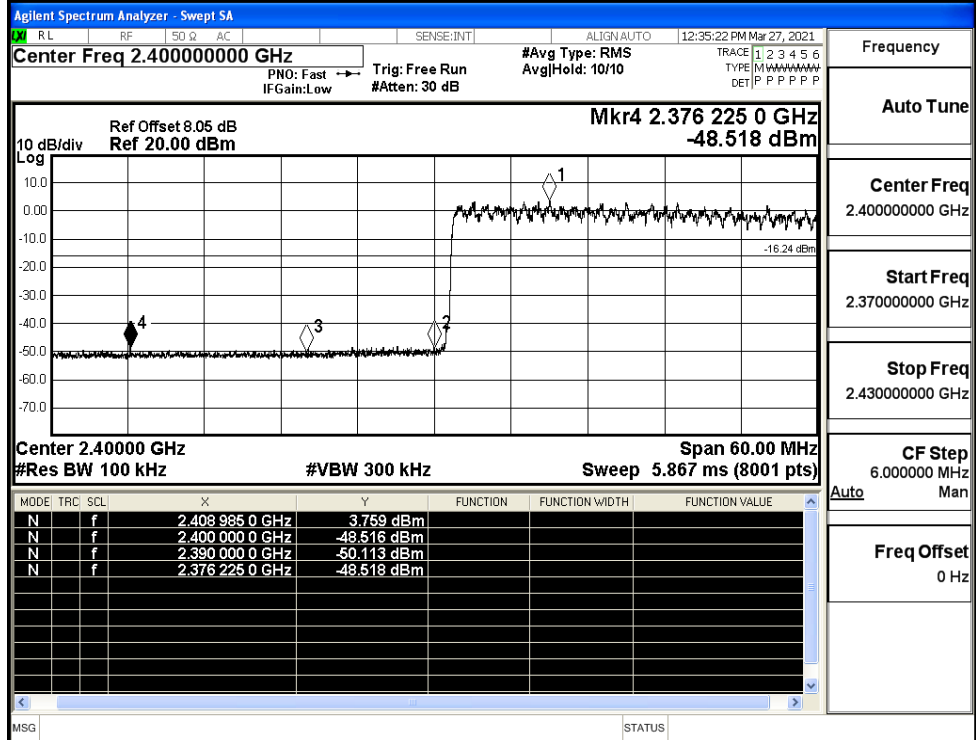
Frequency	2.483500000 GHz
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

8DPSK/LCH/No Hop



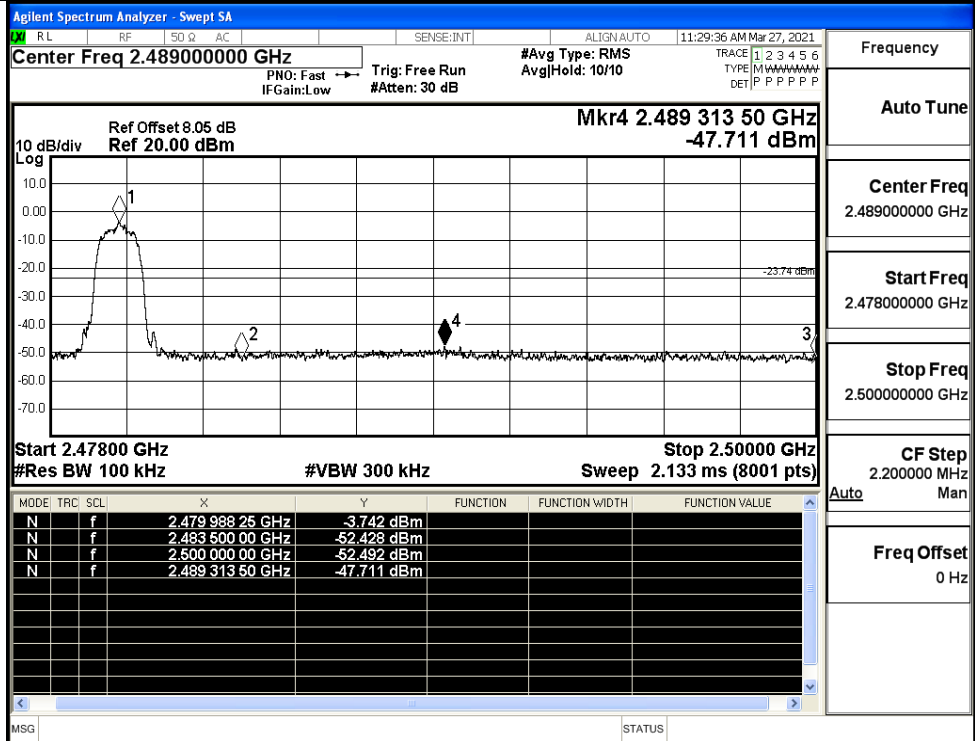
Frequency
Auto Tune
Center Freq
2.357000000 GHz
Start Freq
2.310000000 GHz
Stop Freq
2.404000000 GHz
CF Step
9.400000 MHz
Auto Man
Freq Offset
0 Hz

8DPSK/LCH/Hop



Frequency
Auto Tune
Center Freq
2.400000000 GHz
Start Freq
2.370000000 GHz
Stop Freq
2.430000000 GHz
CF Step
6.000000 MHz
Auto Man
Freq Offset
0 Hz

8DPSK/HCH/No Hop



Frequency

Auto Tune

Center Freq
2.489000000 GHz

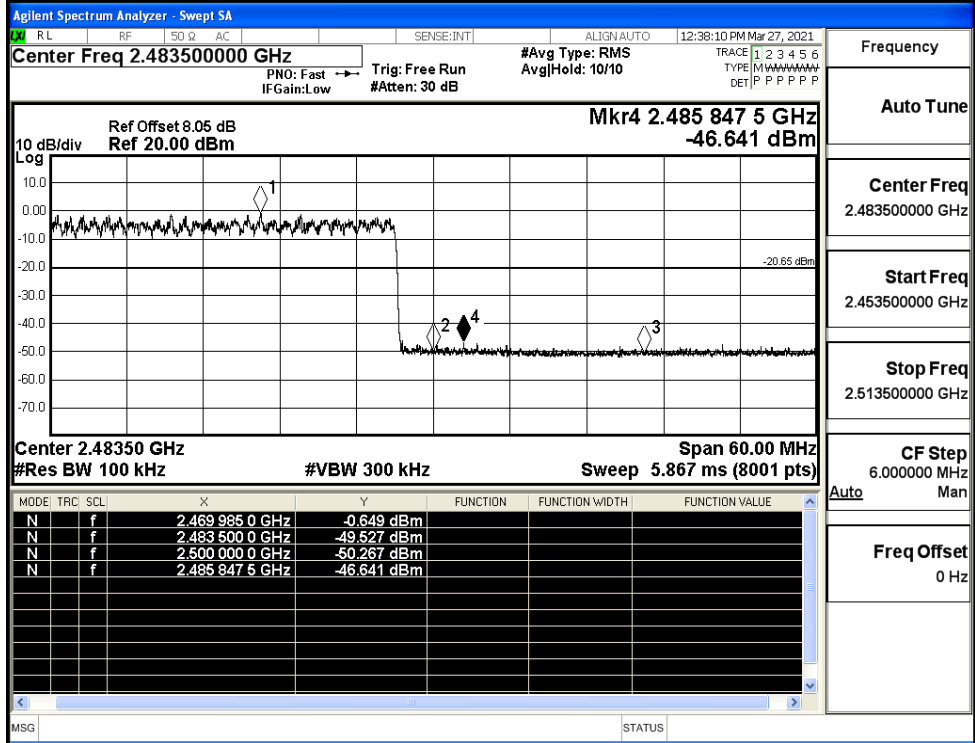
Start Freq
2.478000000 GHz

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
2.463500000 GHz

Stop Freq
2.513500000 GHz

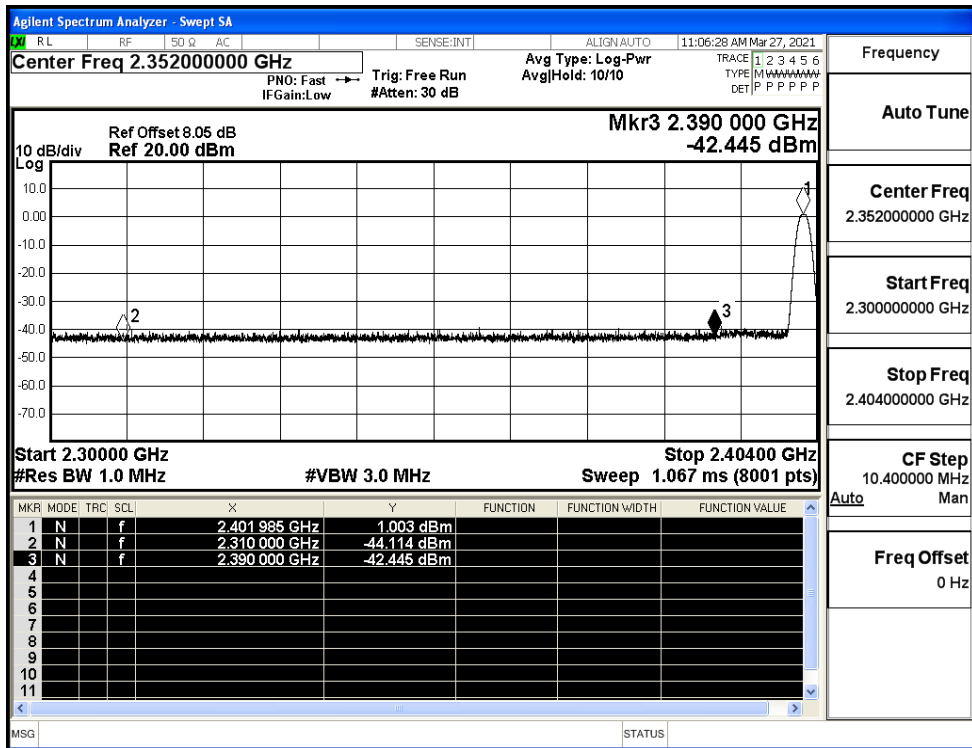
CF Step
6.000000 MHz

Freq Offset
0 Hz

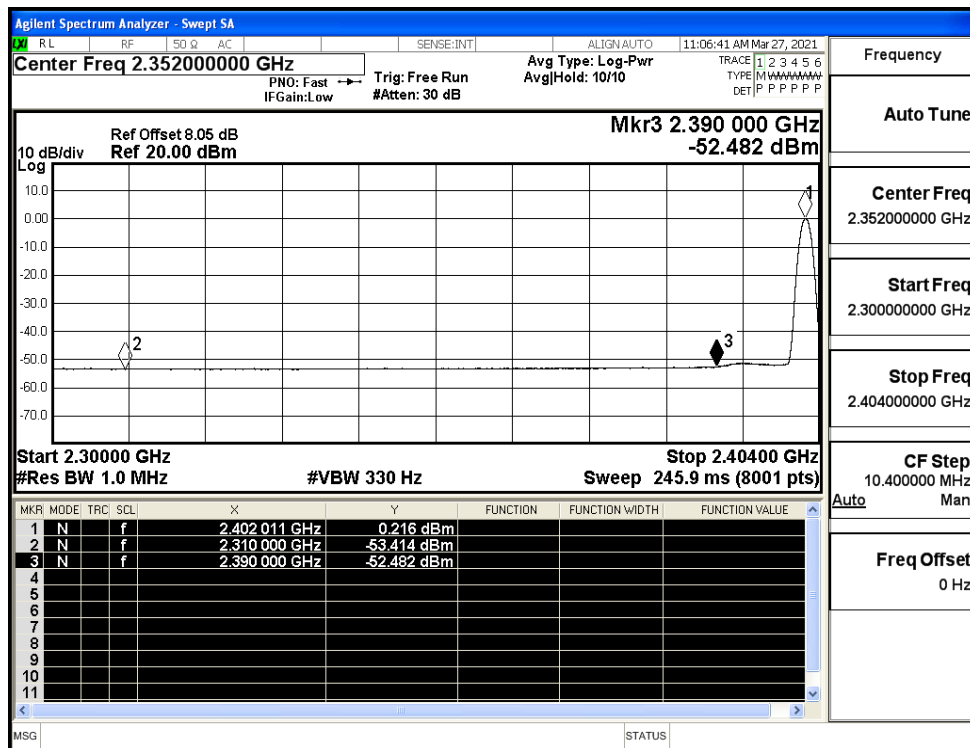
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.11	2.0	0	53.15	PEAK	74	PASS
	Off	2310.0	-53.41	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-42.45	2.0	0	54.81	PEAK	74	PASS
	Off	2390.0	-52.48	2.0	0	44.78	AV	54	PASS
	Off	2483.5	-41.28	2.0	0	55.98	PEAK	74	PASS
	Off	2483.5	-51.58	2.0	0	45.68	AV	54	PASS
	Off	2500.0	-42.40	2.0	0	54.86	PEAK	74	PASS
	Off	2500.0	-52.17	2.0	0	45.09	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.80	2.0	0	54.46	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	43.98	AV	54	PASS
	Off	2390.0	-42.49	2.0	0	54.77	PEAK	74	PASS
	Off	2390.0	-52.64	2.0	0	44.62	AV	54	PASS
	Off	2483.5	-41.51	2.0	0	55.75	PEAK	74	PASS
	Off	2483.5	-51.53	2.0	0	45.73	AV	54	PASS
	Off	2500.0	-41.53	2.0	0	55.73	PEAK	74	PASS
	Off	2500.0	-52.19	2.0	0	45.07	AV	54	PASS
8DPSK	Off	2310.0	-43.75	2.0	0	53.51	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2390.0	-42.82	2.0	0	54.44	PEAK	74	PASS
	Off	2390.0	-52.82	2.0	0	44.44	AV	54	PASS
	Off	2483.5	-40.42	2.0	0	56.84	PEAK	74	PASS
	Off	2483.5	-51.56	2.0	0	45.7	AV	54	PASS
	Off	2500.0	-42.73	2.0	0	54.53	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	44.92	AV	54	PASS

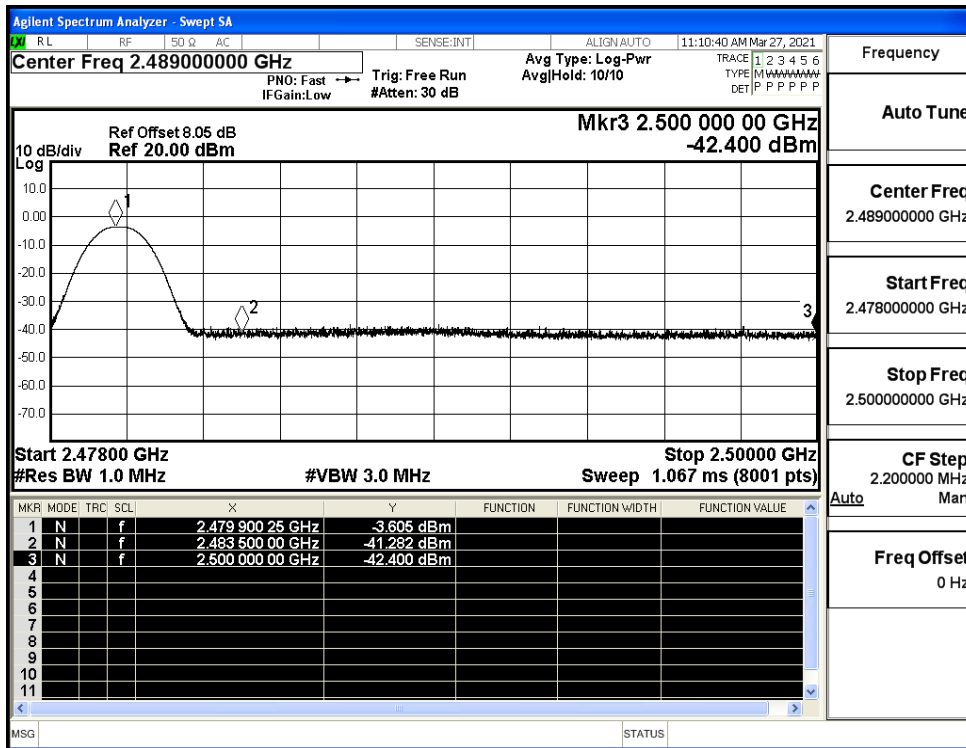
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



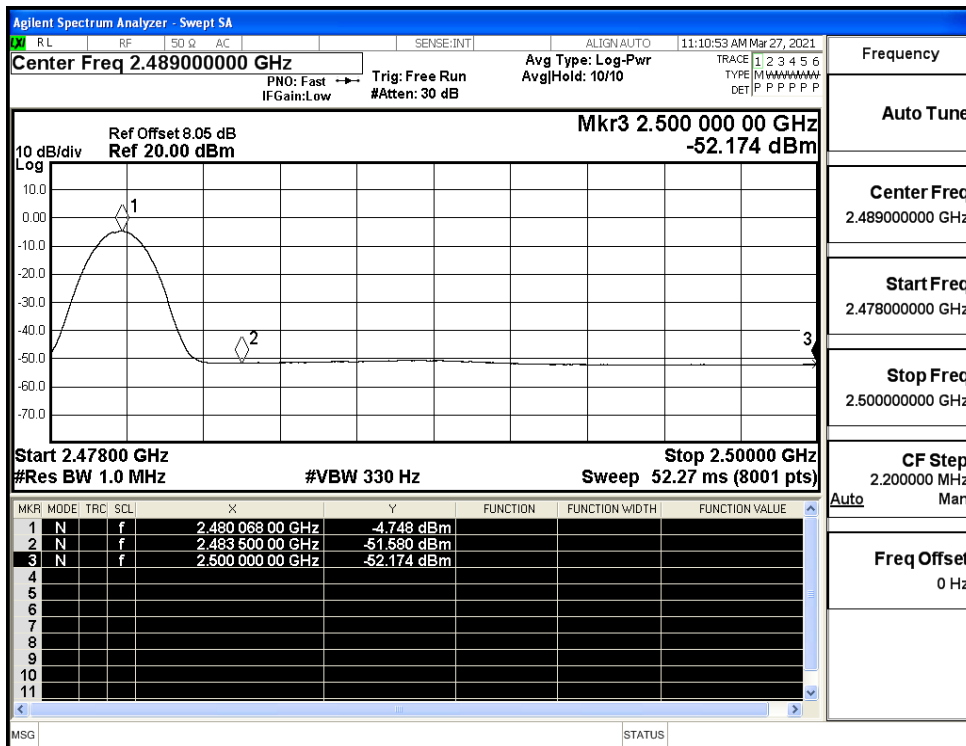
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



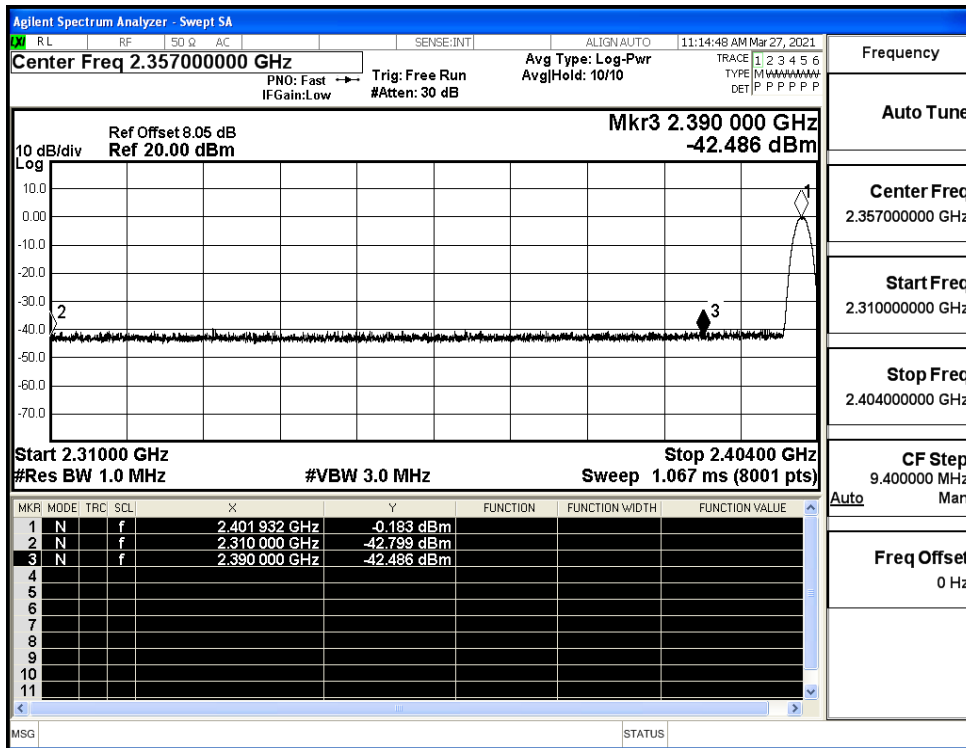
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



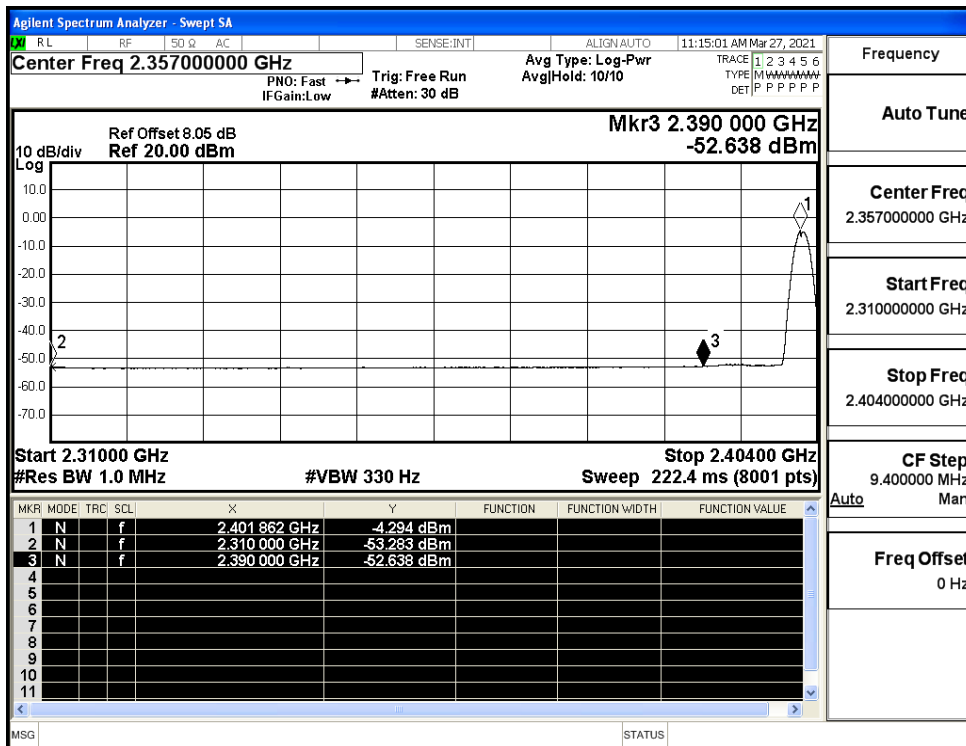
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



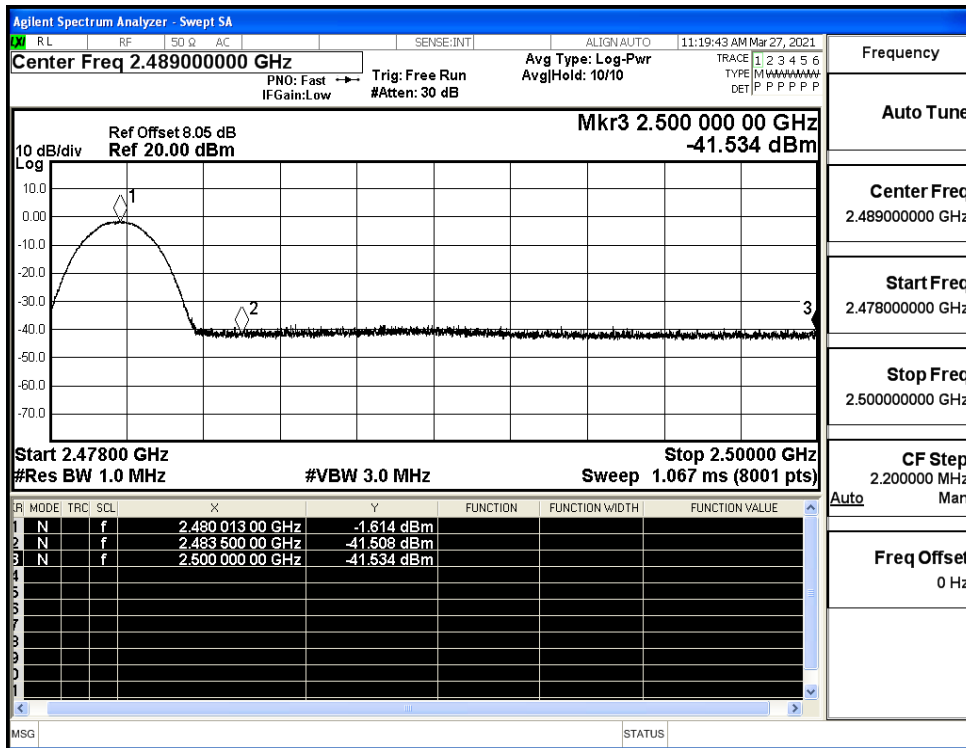
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



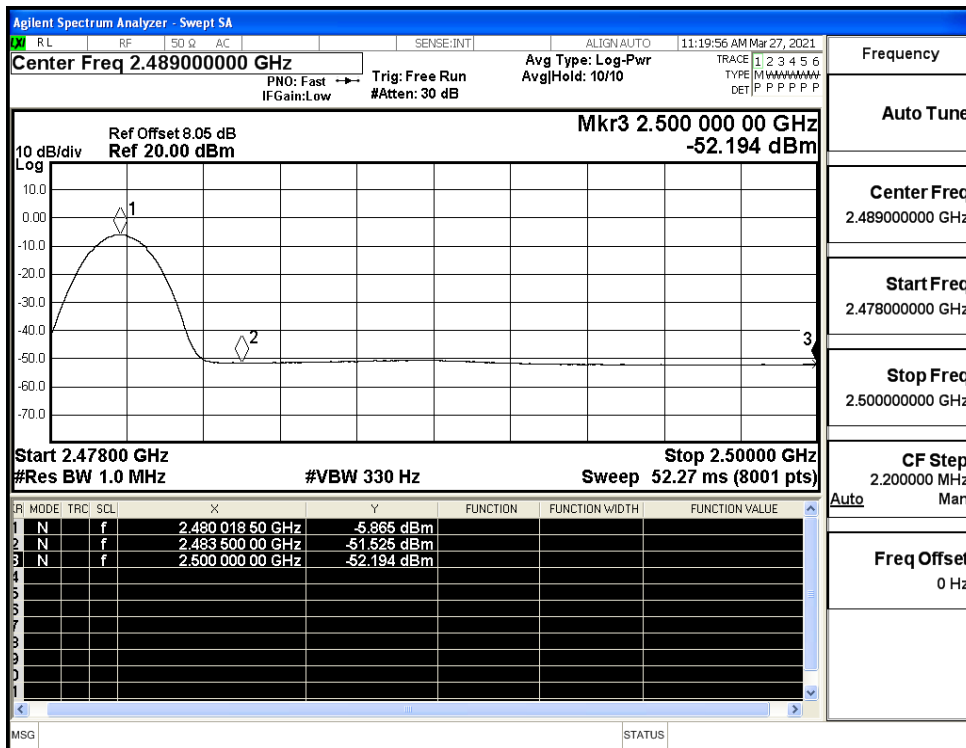
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



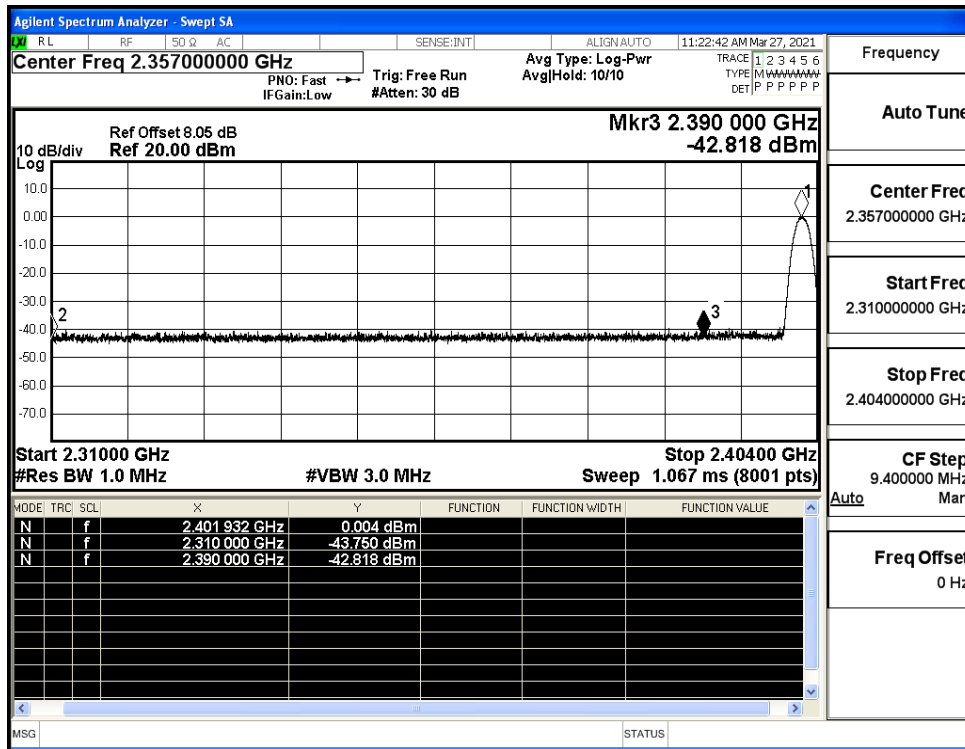
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



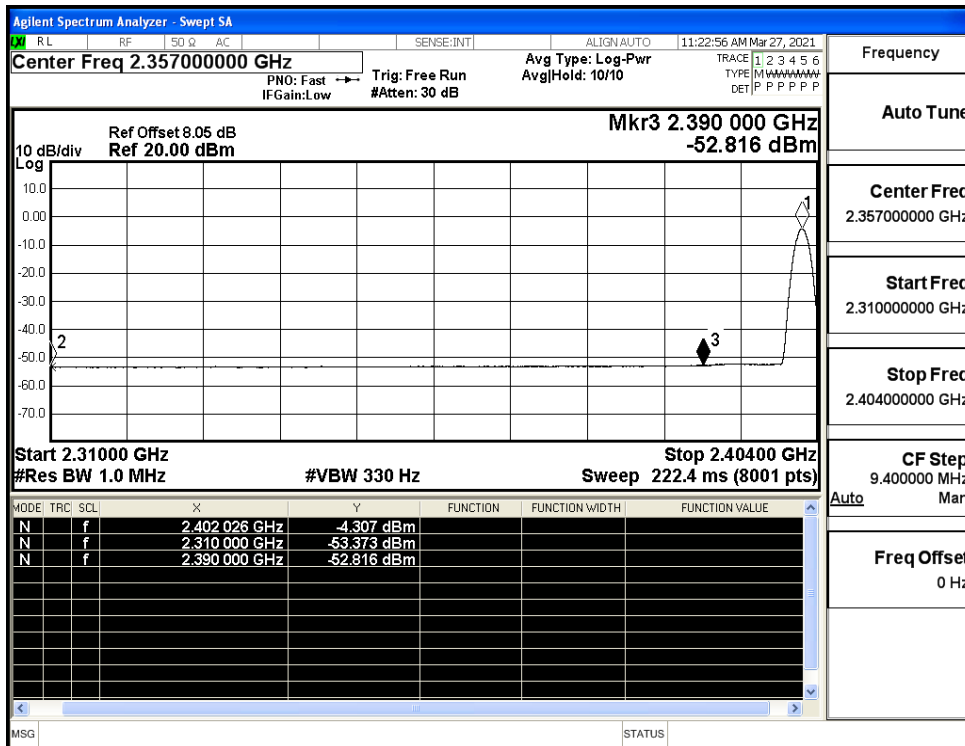
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



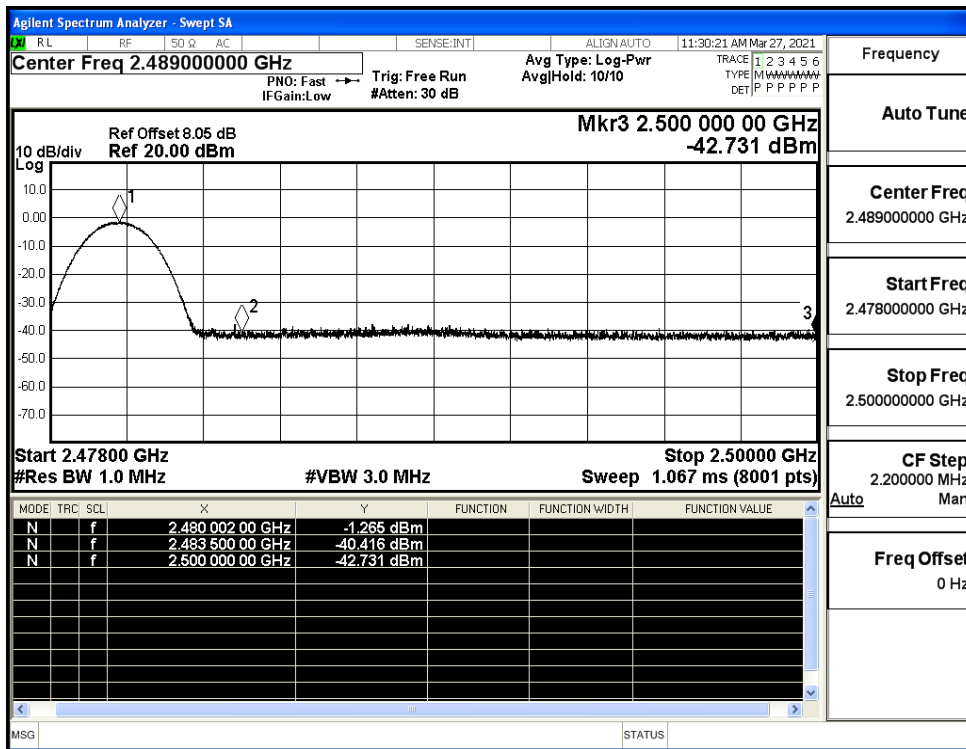
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

