

Appendix A

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

Product Name: Smart Phone

Test Model: W55s

Environmental Conditions

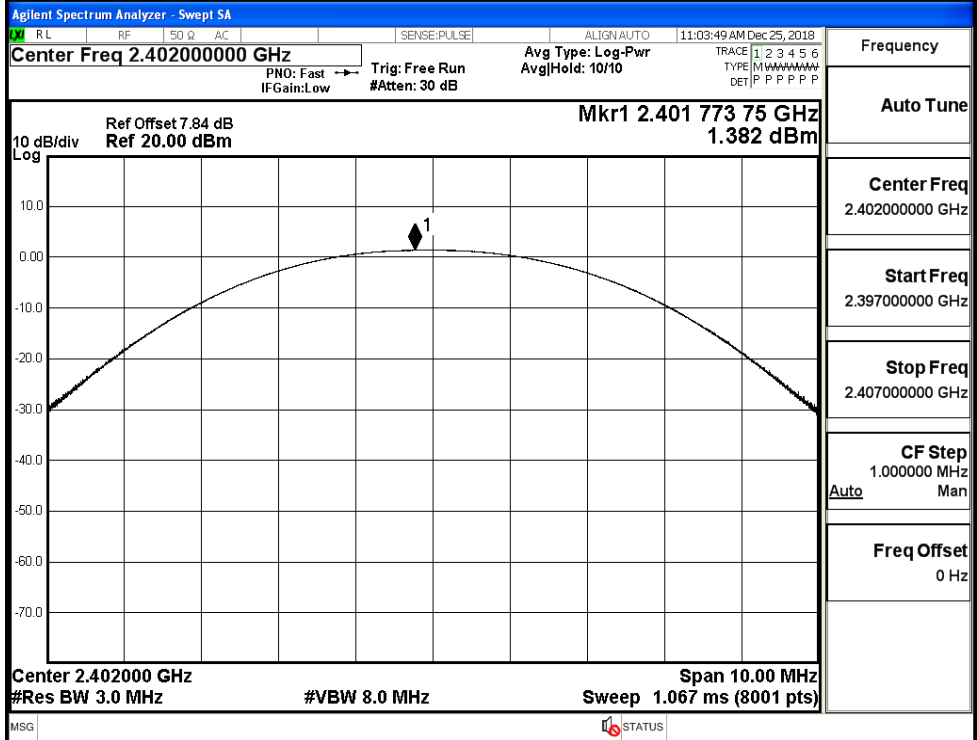
Temperature:	23.5 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina Xu
Supervised by:	Jayden Zhuo

A.1 Maxmum Conducted Peak Output Power

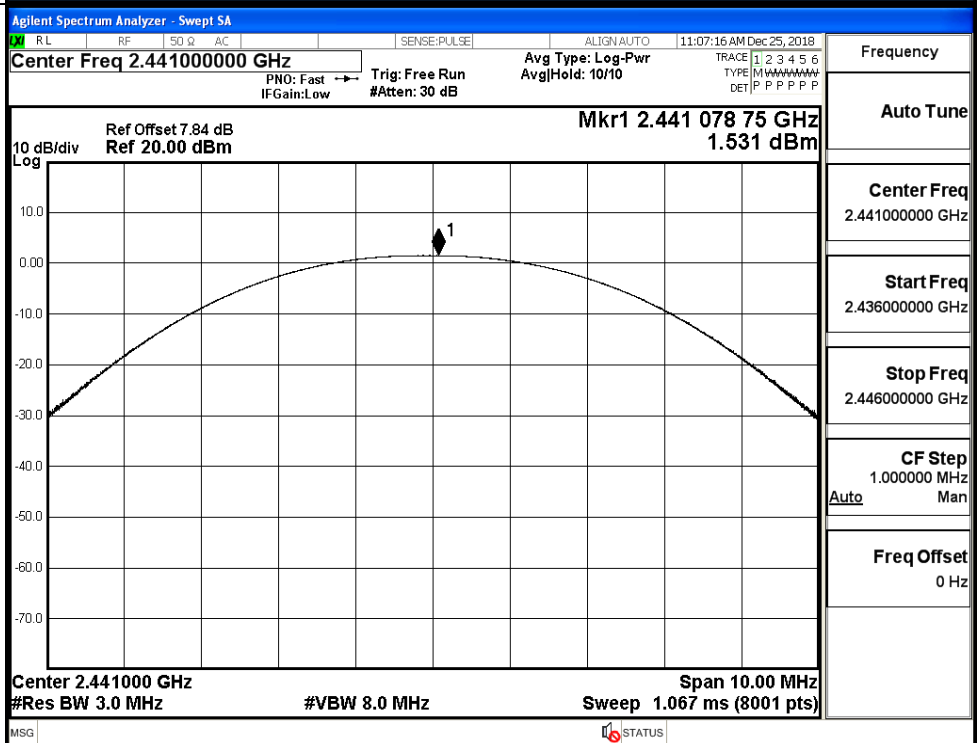
Mode	Channel.	Maximum Peak Output Power [dBm]	Maximum Average Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.382	1.173	21	PASS
	MCH	1.531	1.358	21	PASS
	HCH	1.460	1.322	21	PASS
$\pi/4$ DQPSK	LCH	0.583	0.399	21	PASS
	MCH	0.715	0.510	21	PASS
	HCH	0.624	0.430	21	PASS
8DPSK	LCH	0.736	0.547	21	PASS
	MCH	0.835	0.644	21	PASS
	HCH	0.754	0.539	21	PASS

Test Graphs

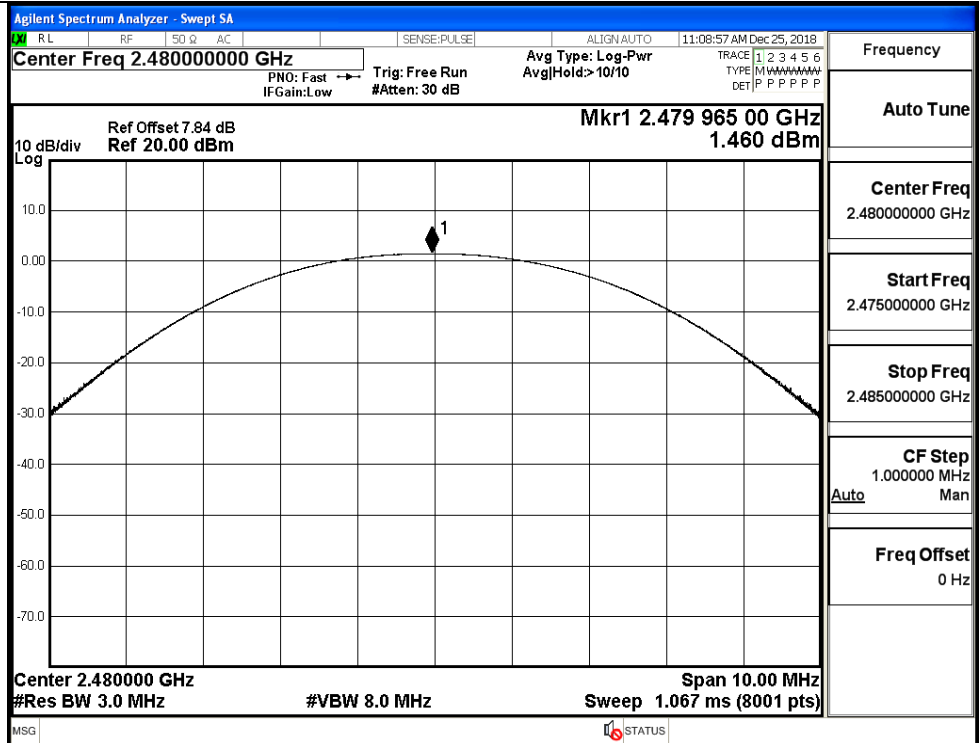
GFSK/LCH



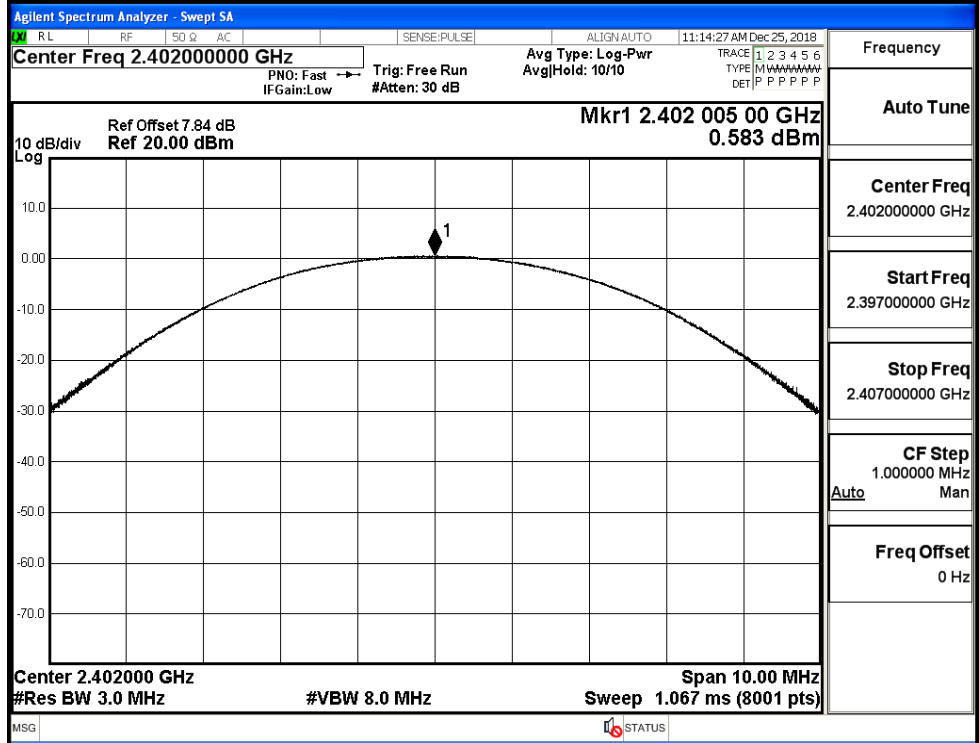
GFSK/MCH



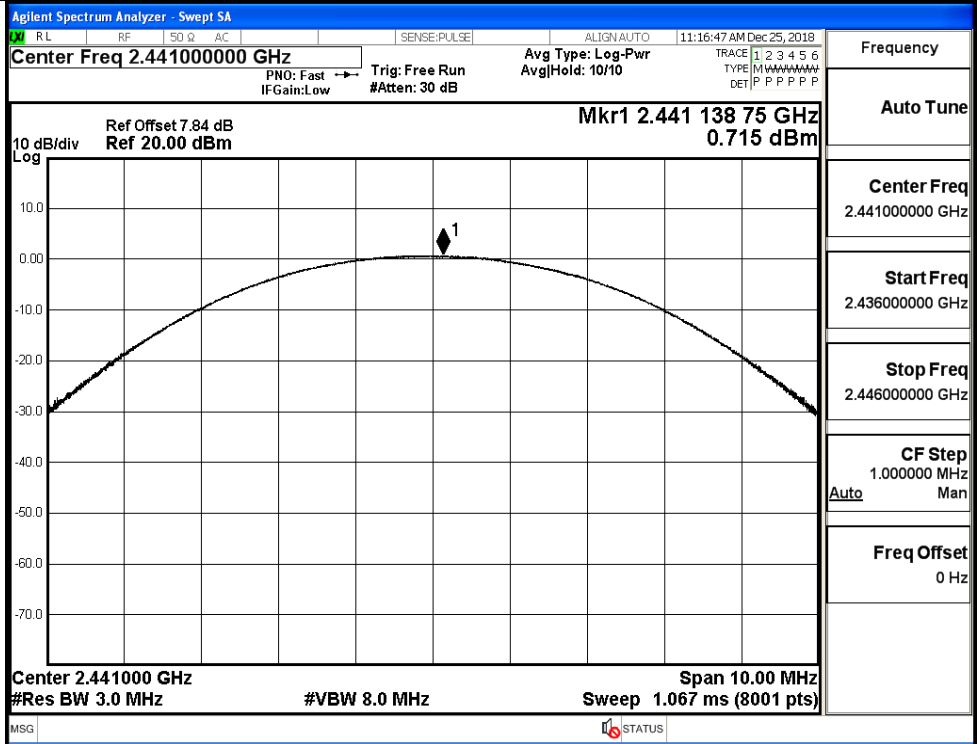
GFSK/HCH



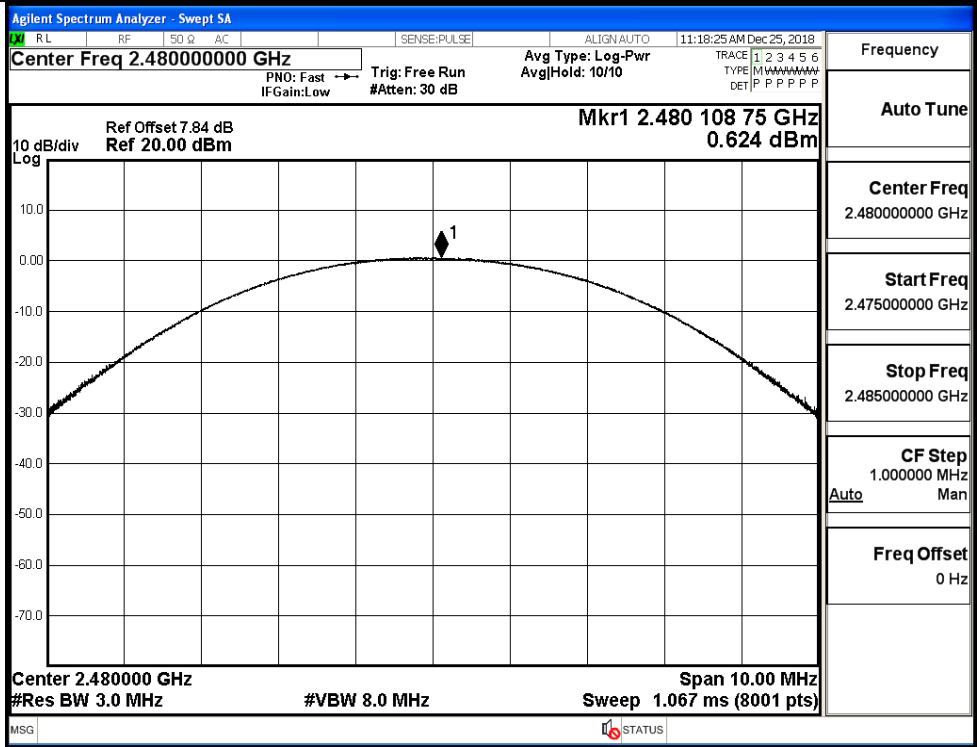
$\pi/4$ DQPSK/LCH



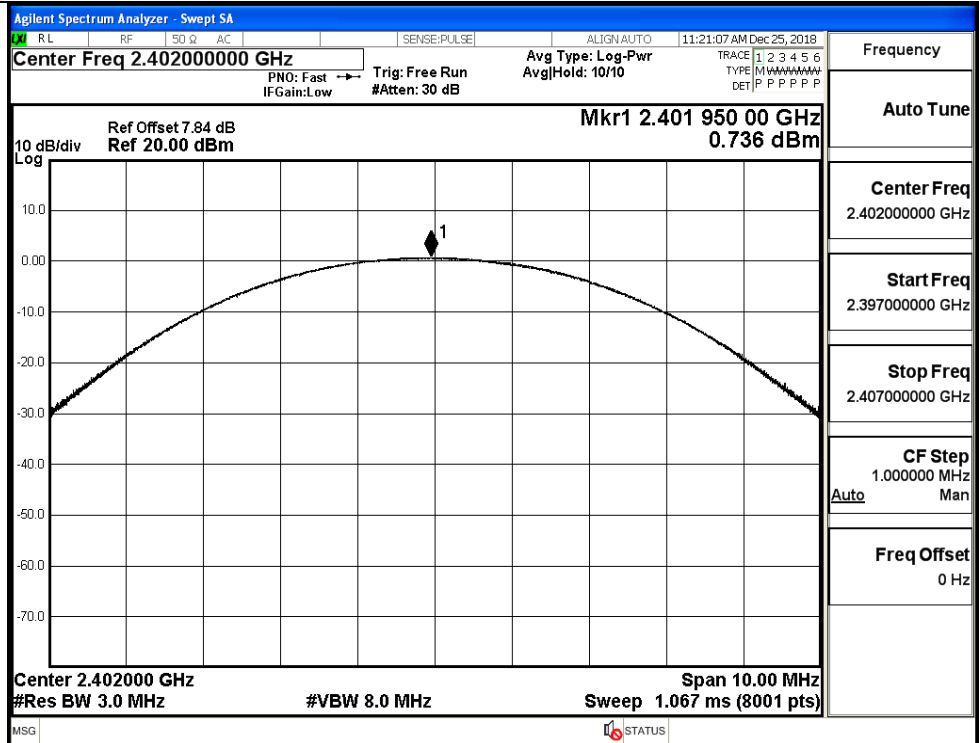
π /4DQPSK/MCH



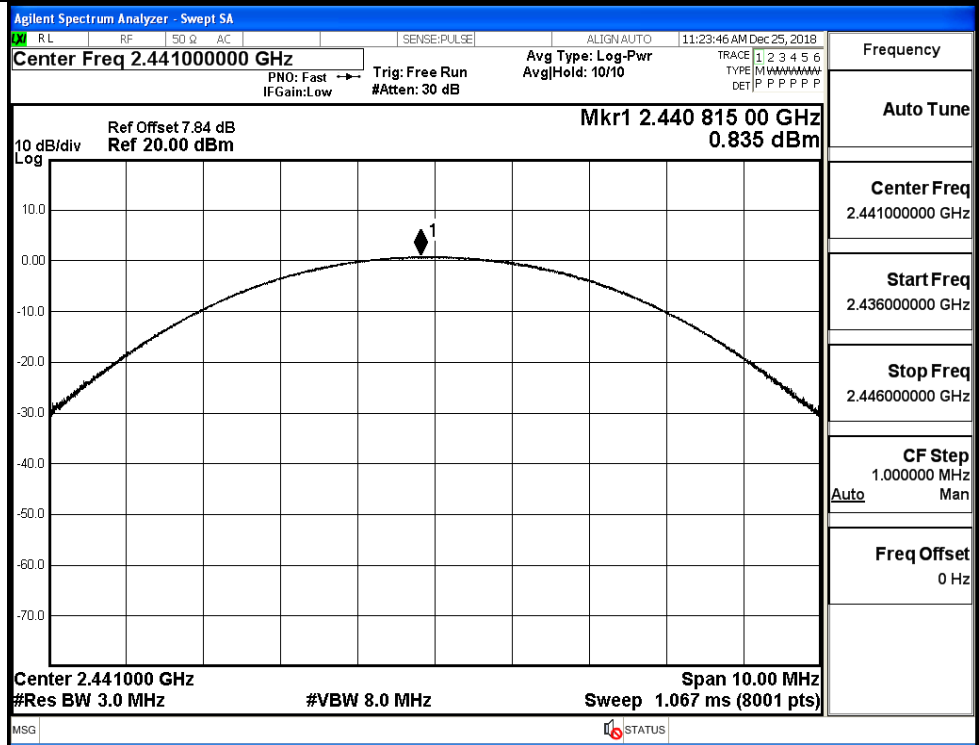
π /4DQPSK/HCH



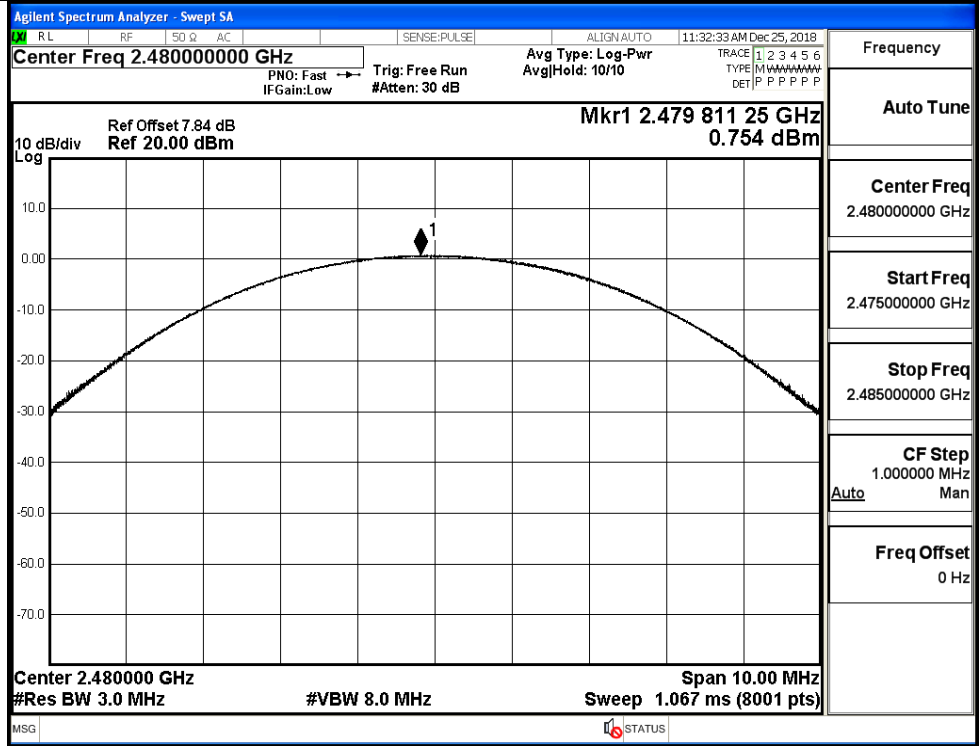
8DPSK/LCH



8DPSK/MCH

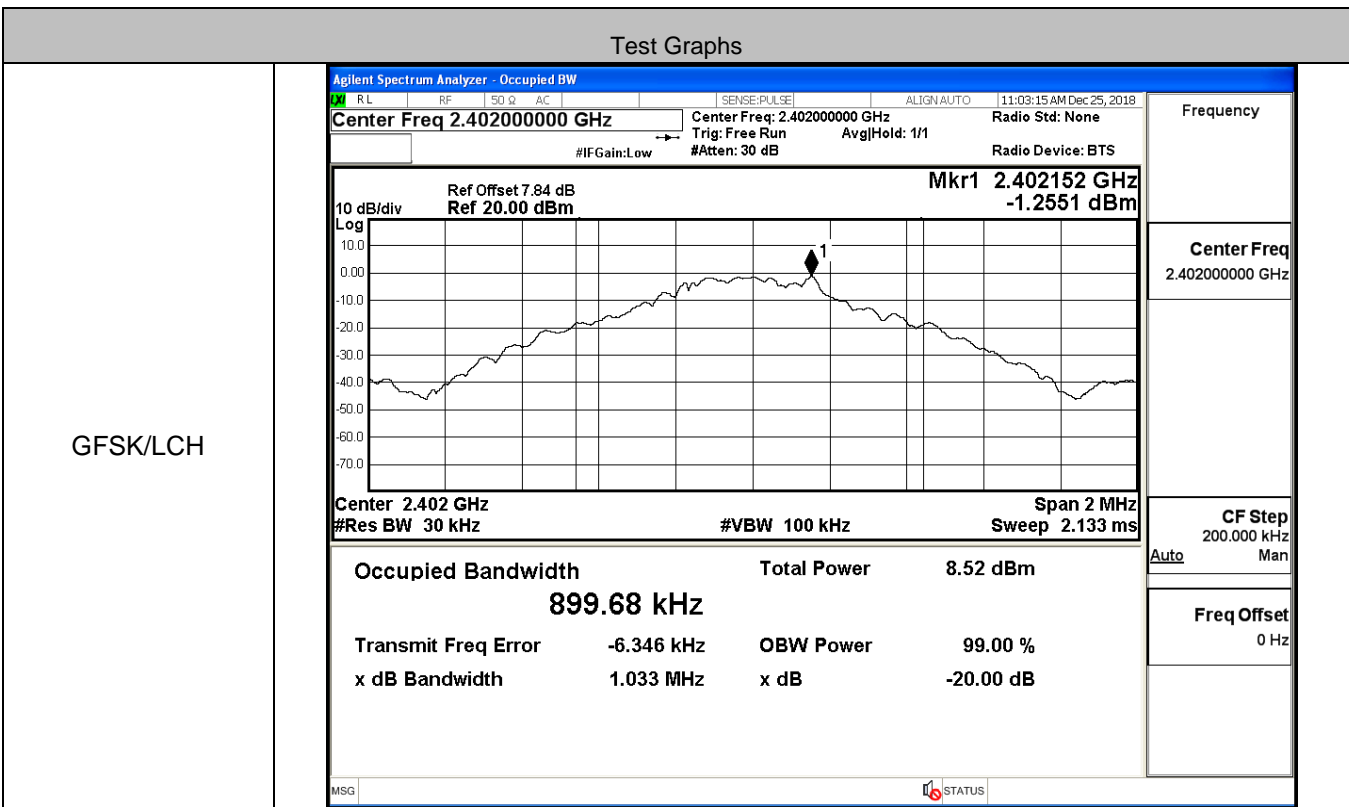


8DPSK/HCH

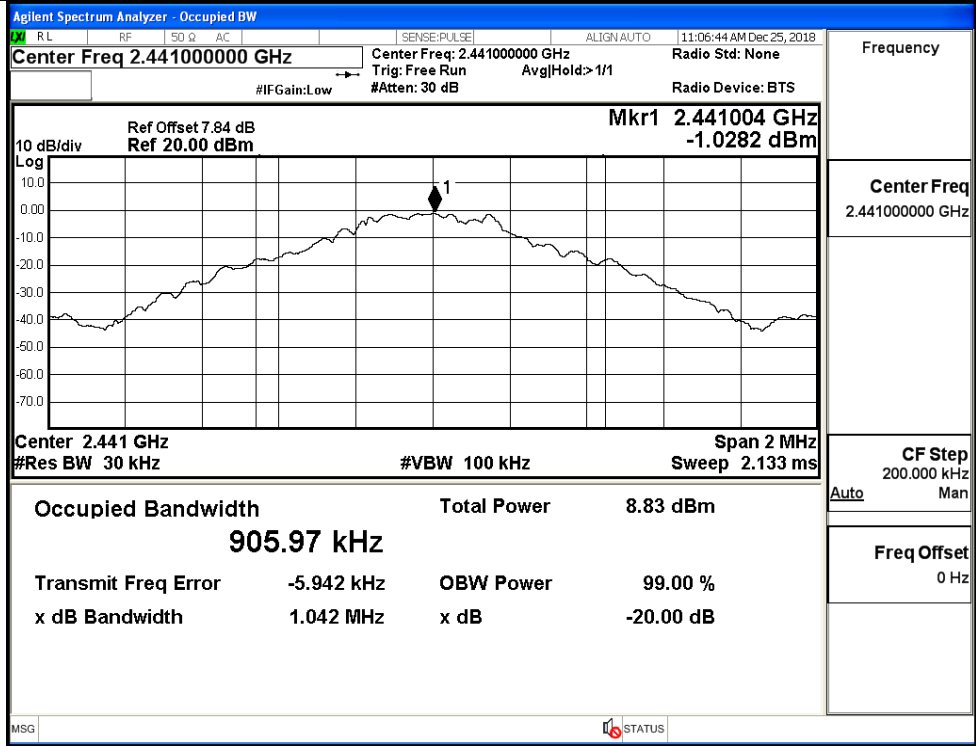


A.2 20dB Bandwidth

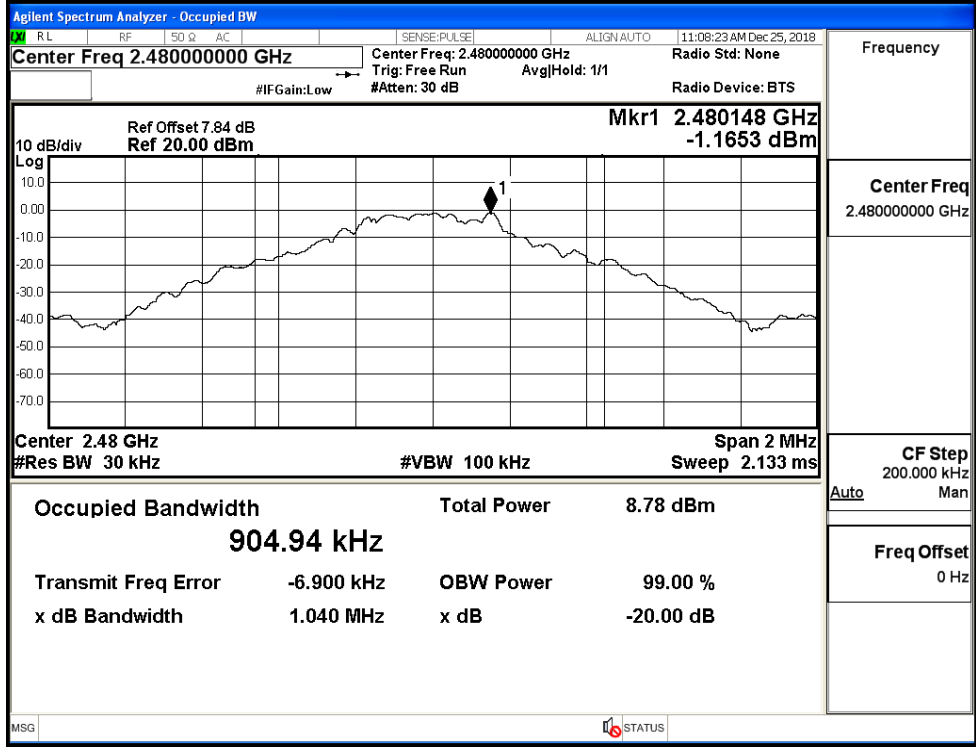
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.033	Not Specified	PASS
	MCH	1.042	Not Specified	PASS
	HCH	1.040	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.309	Not Specified	PASS
	MCH	1.310	Not Specified	PASS
	HCH	1.290	Not Specified	PASS
8DPSK	LCH	1.296	Not Specified	PASS
	MCH	1.294	Not Specified	PASS
	HCH	1.296	Not Specified	PASS



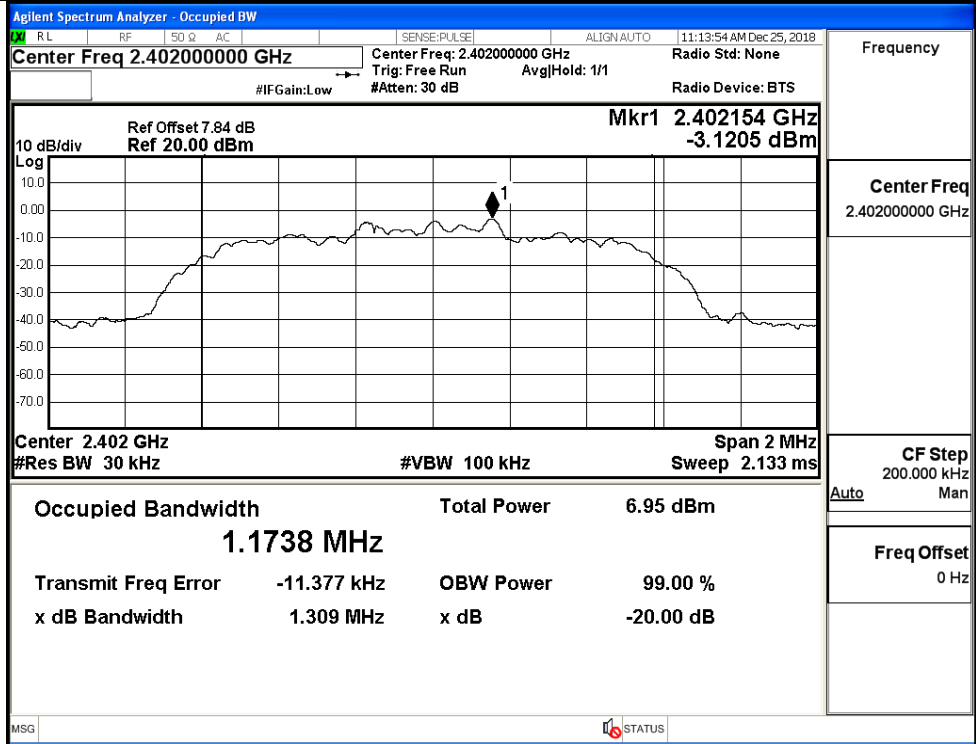
GFSK/MCH



GFSK/HCH

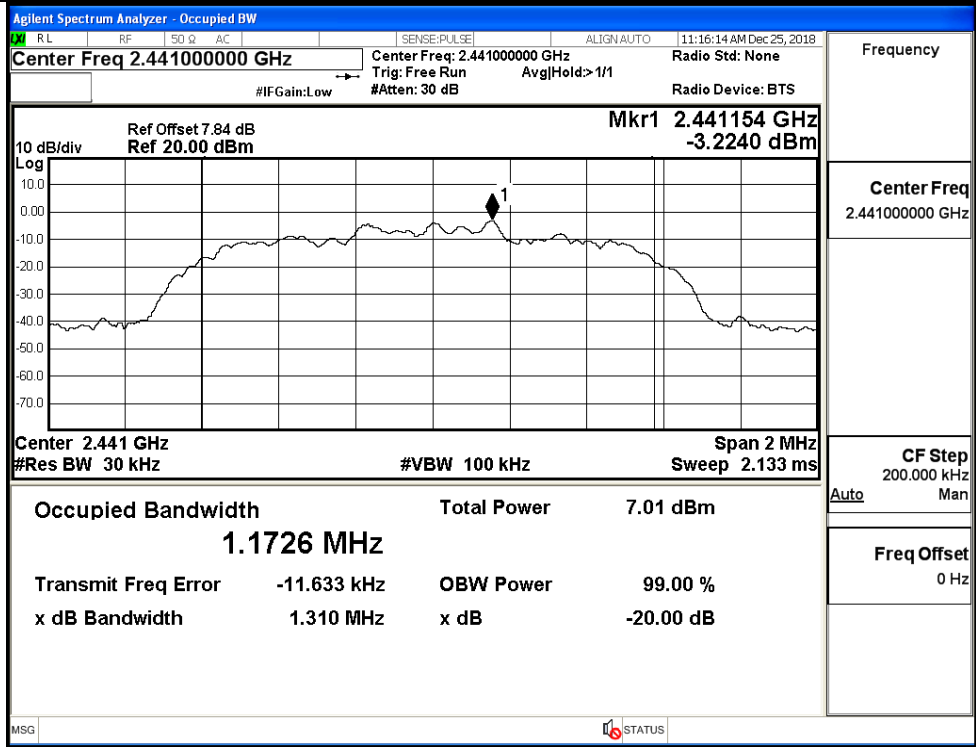


$\pi/4$ DQPSK/LCH



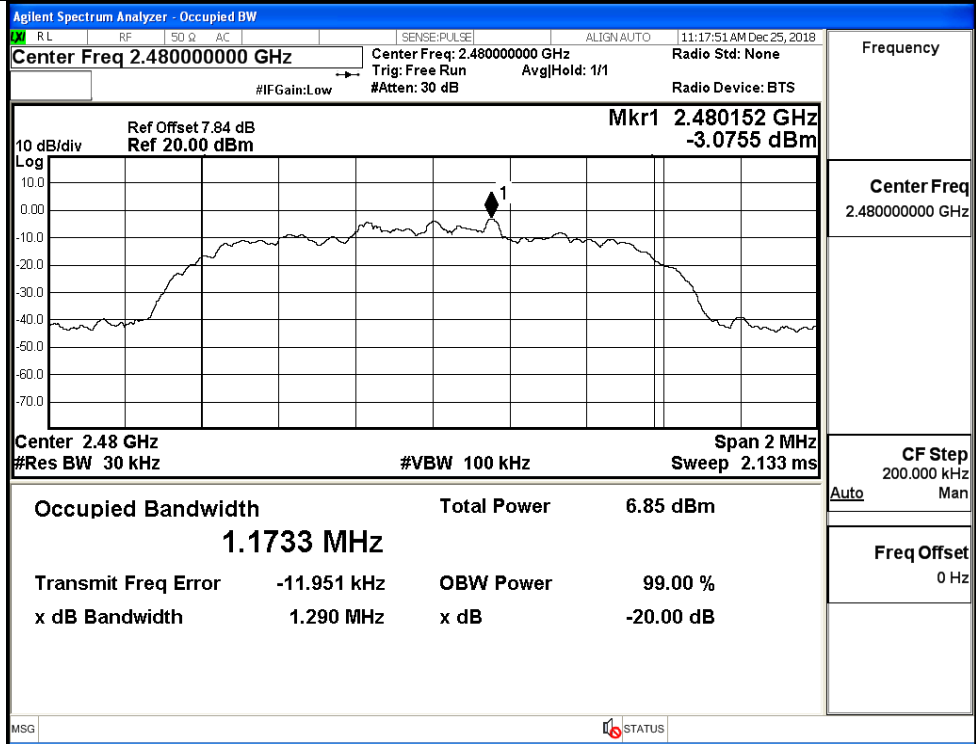
Frequency	
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH

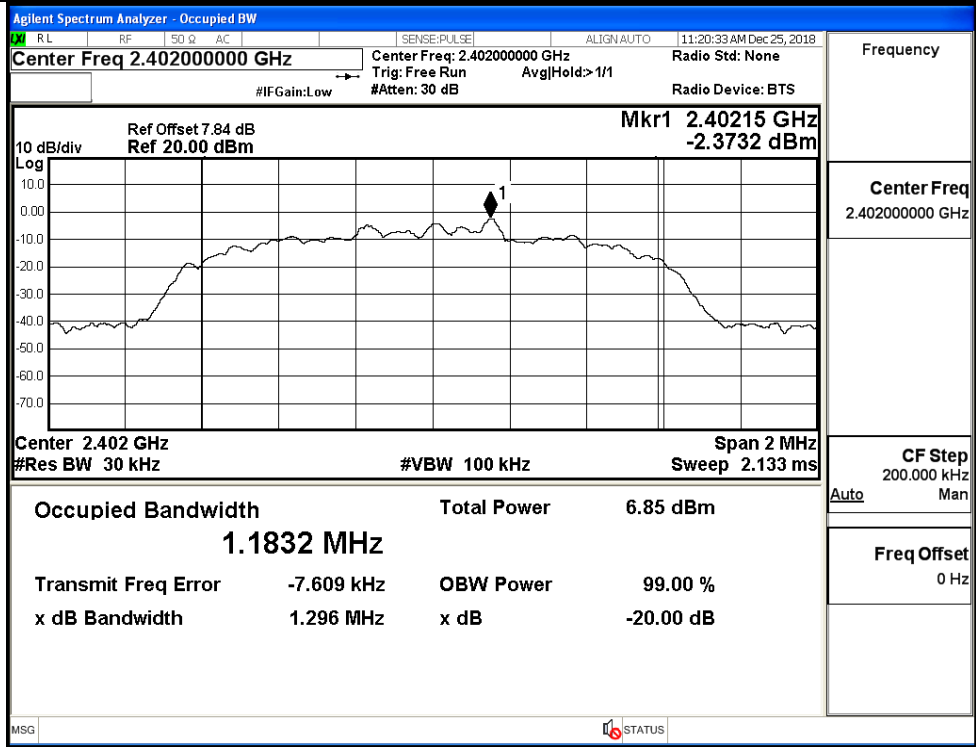


Frequency	
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

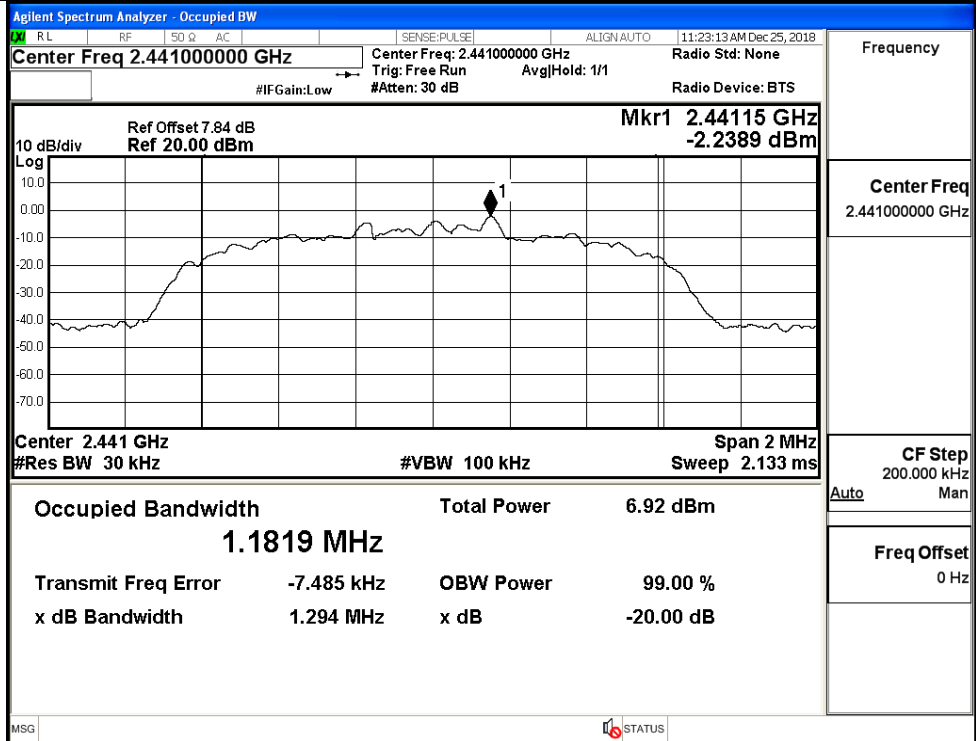
$\pi/4$ DQPSK/HCH



8DPSK/LCH

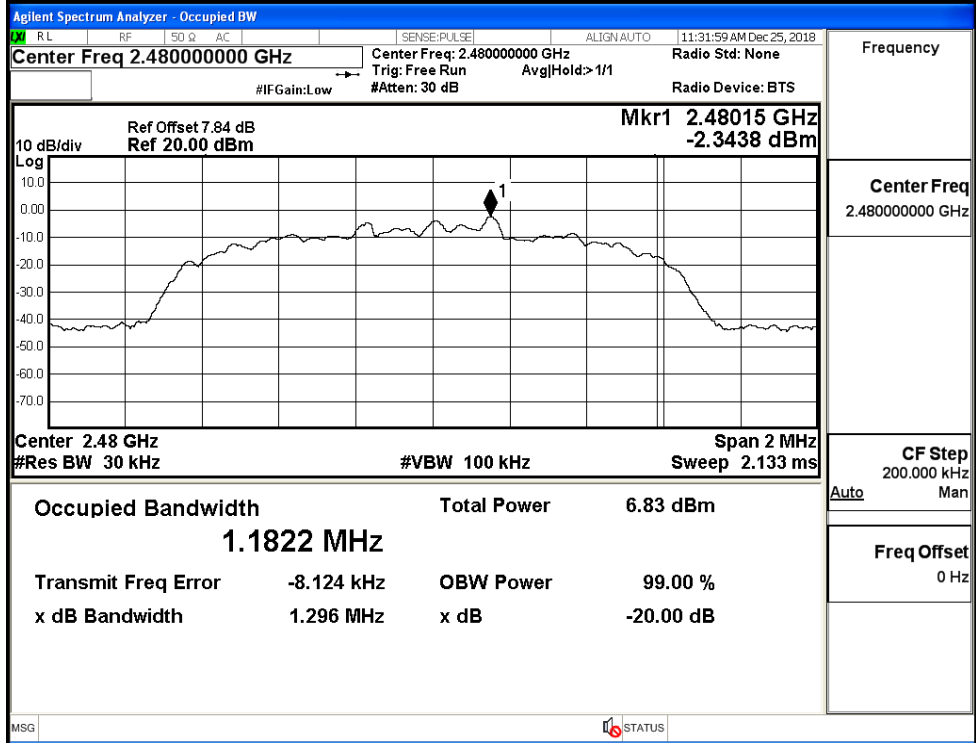


8DPSK/MCH



Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

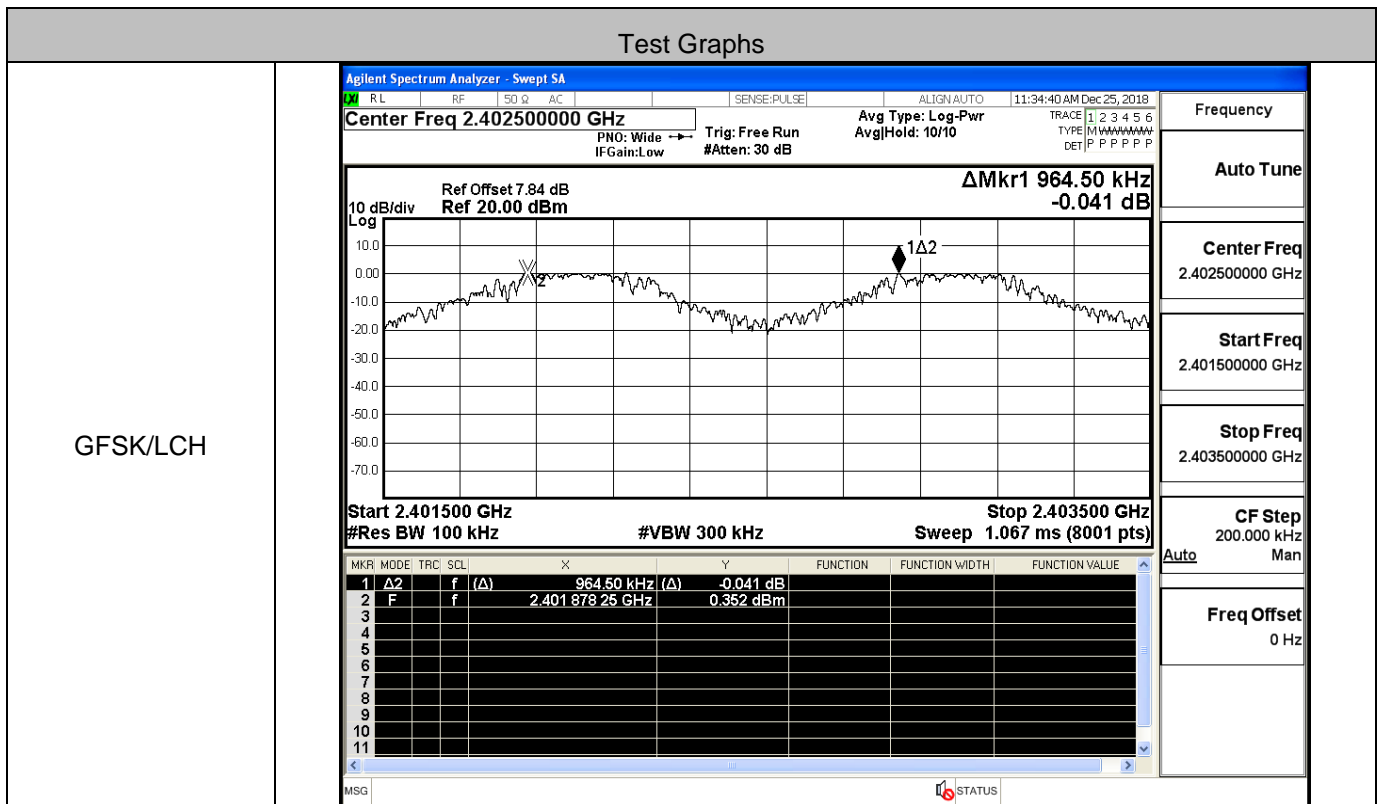
8DPSK/HCH



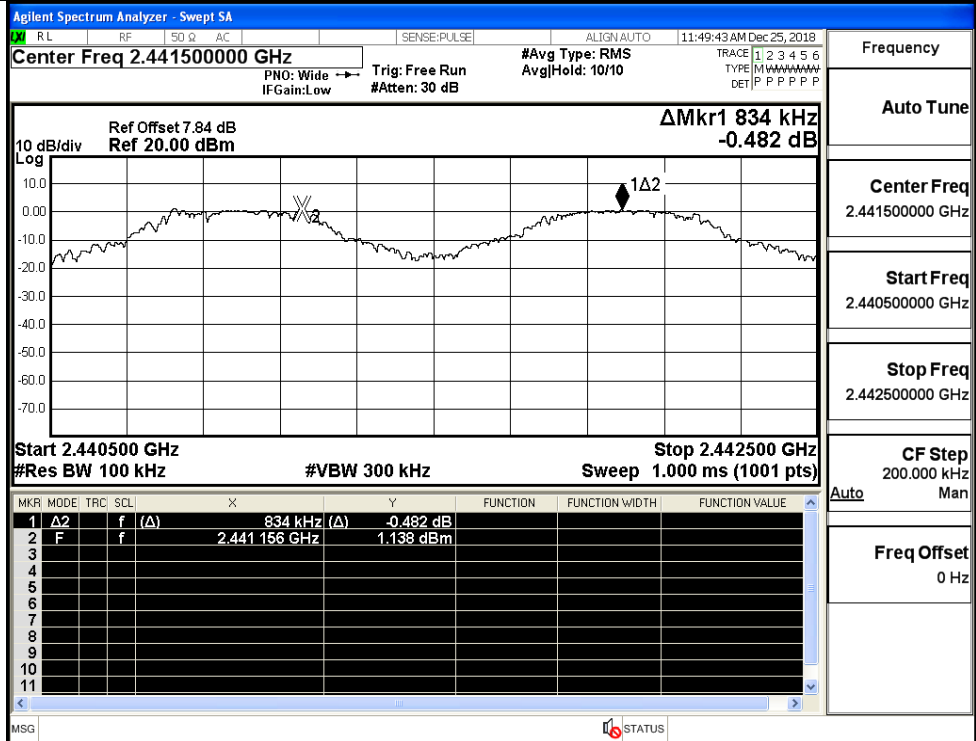
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.964	0.695	PASS
	MCH	0.834	0.695	PASS
	HCH	0.894	0.695	PASS
π/4DQPSK	LCH	0.976	0.873	PASS
	MCH	1.096	0.873	PASS
	HCH	0.970	0.873	PASS
8DPSK	LCH	1.326	0.864	PASS
	MCH	1.094	0.864	PASS
	HCH	1.180	0.864	PASS

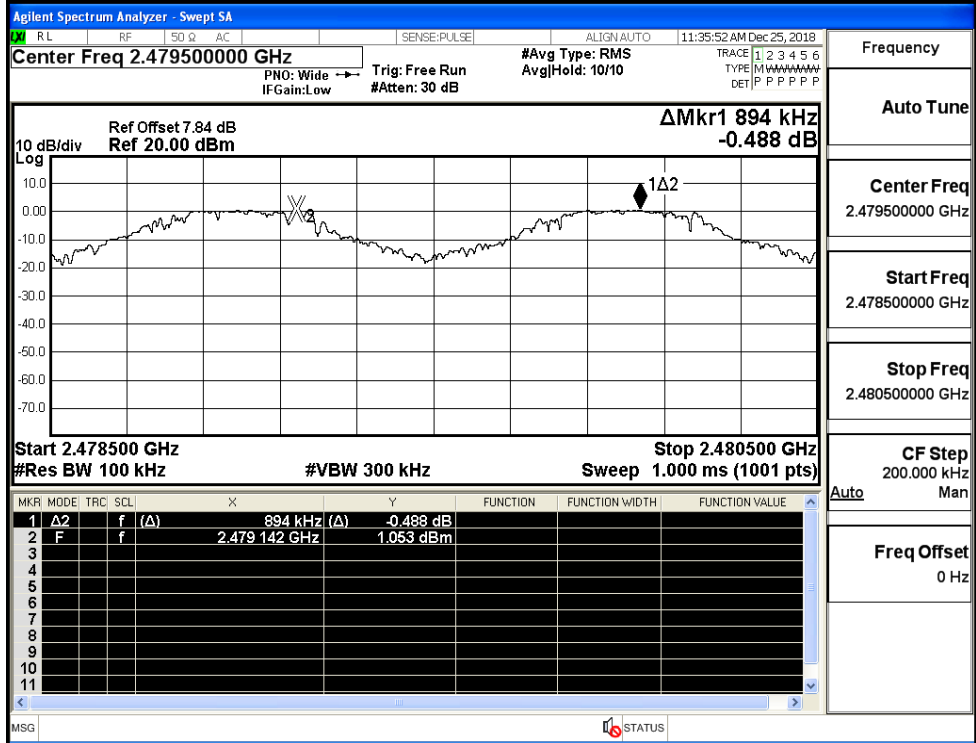


GFSK/MCH



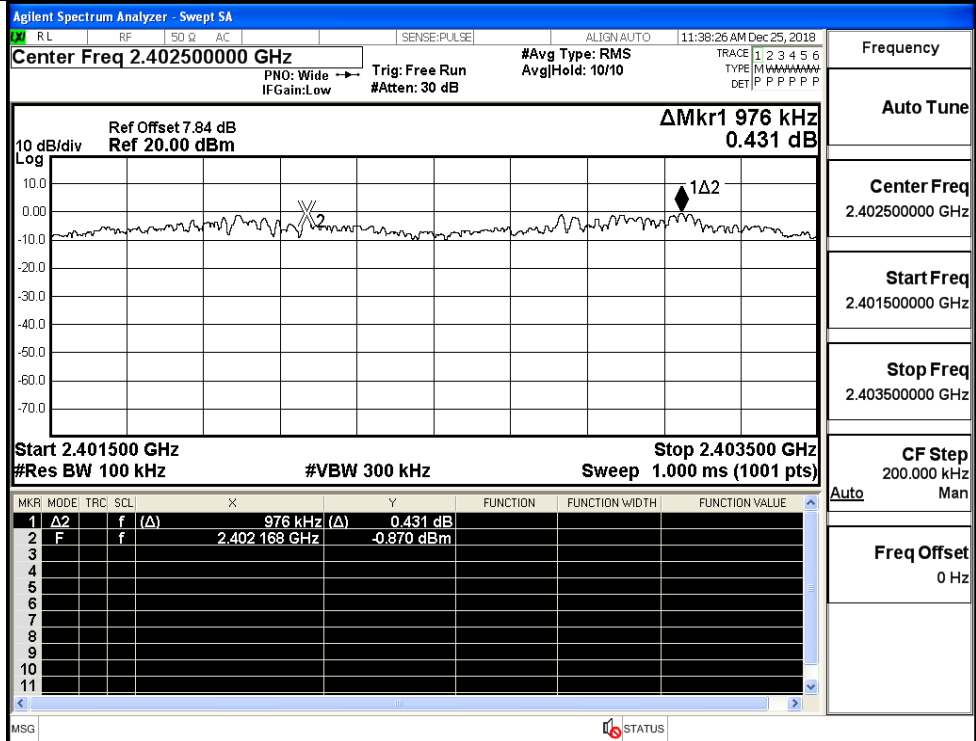
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

GFSK/HCH

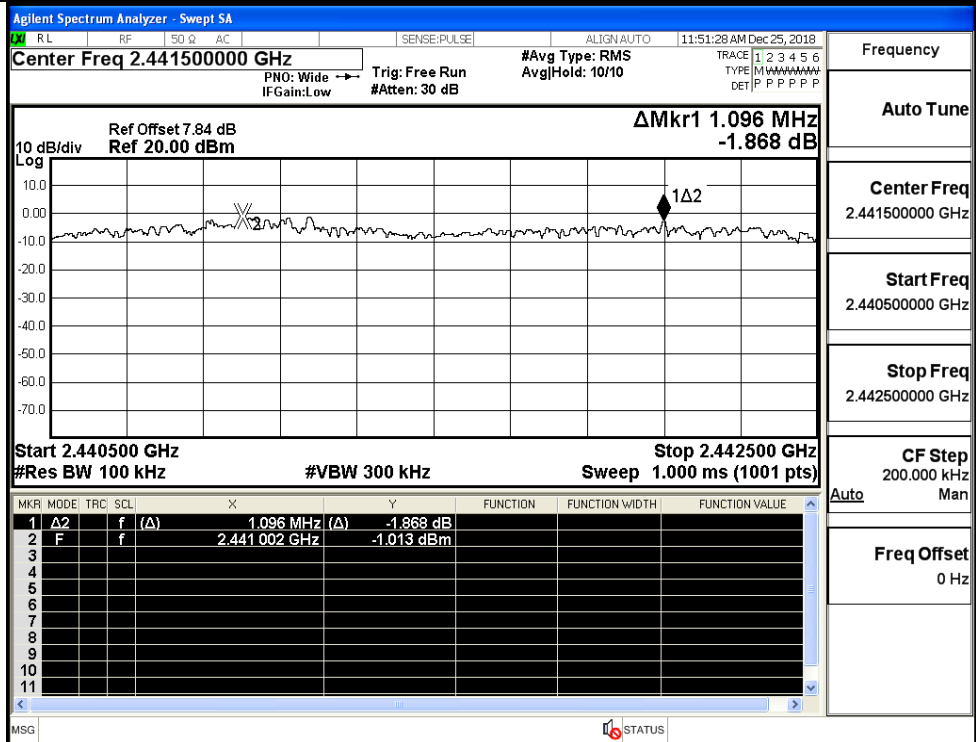


Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

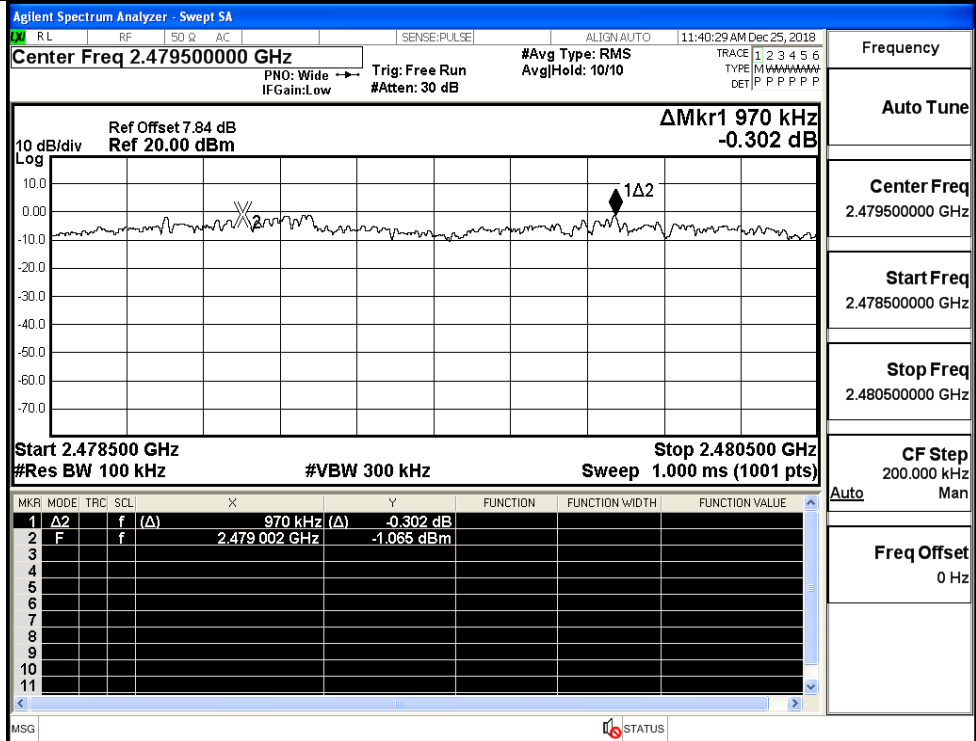
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



π/4DQPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

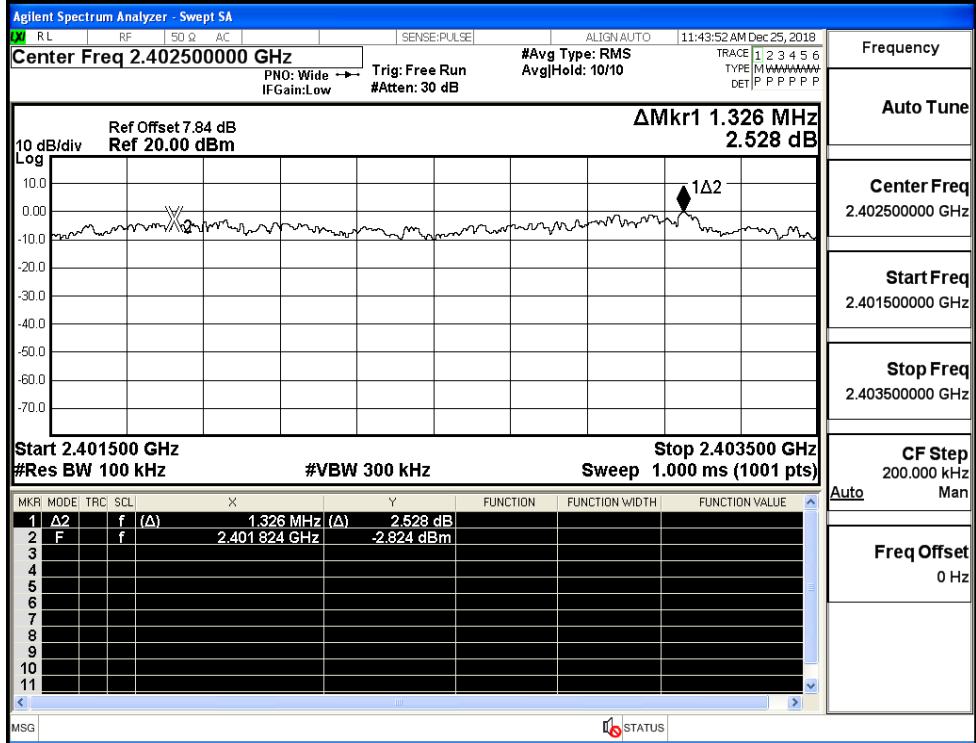
Start Freq
2.478500000 GHz

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

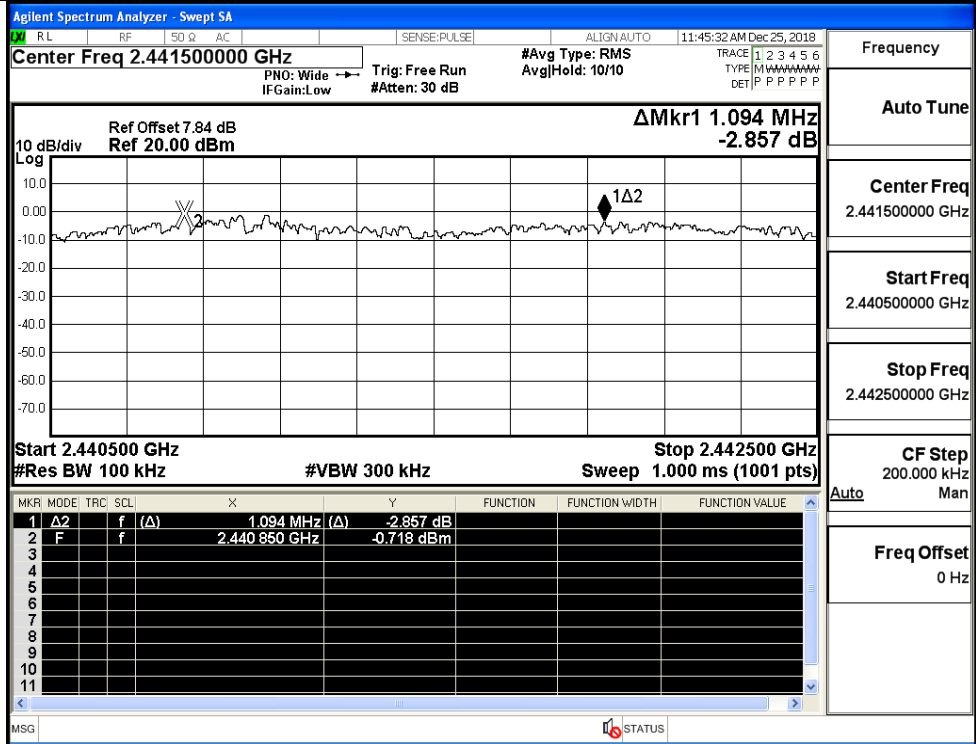
Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

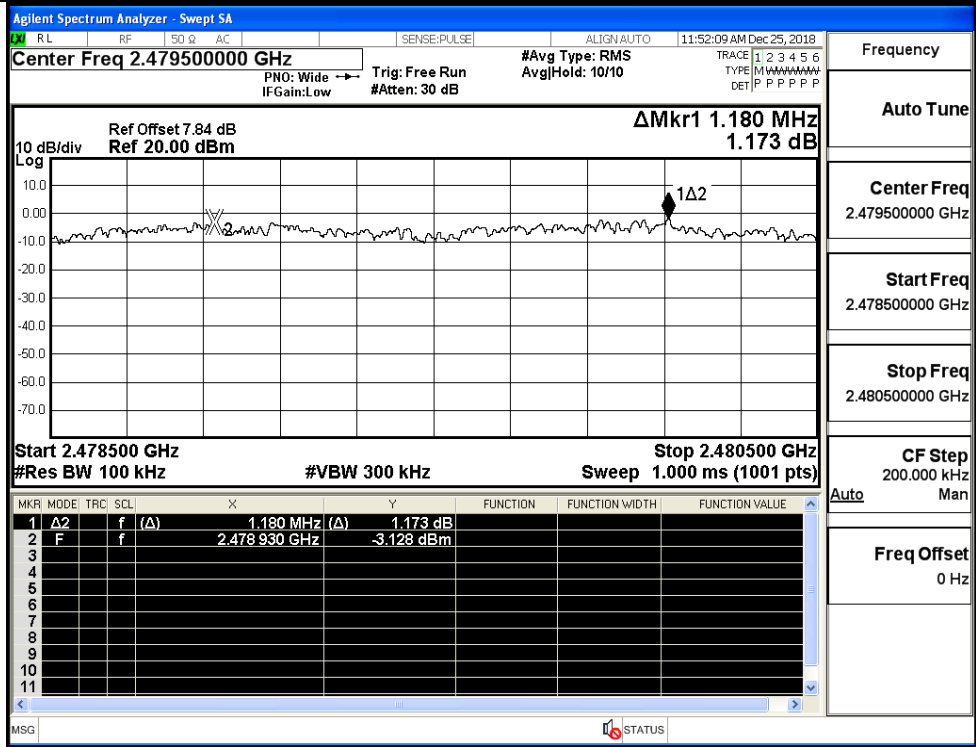
CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH



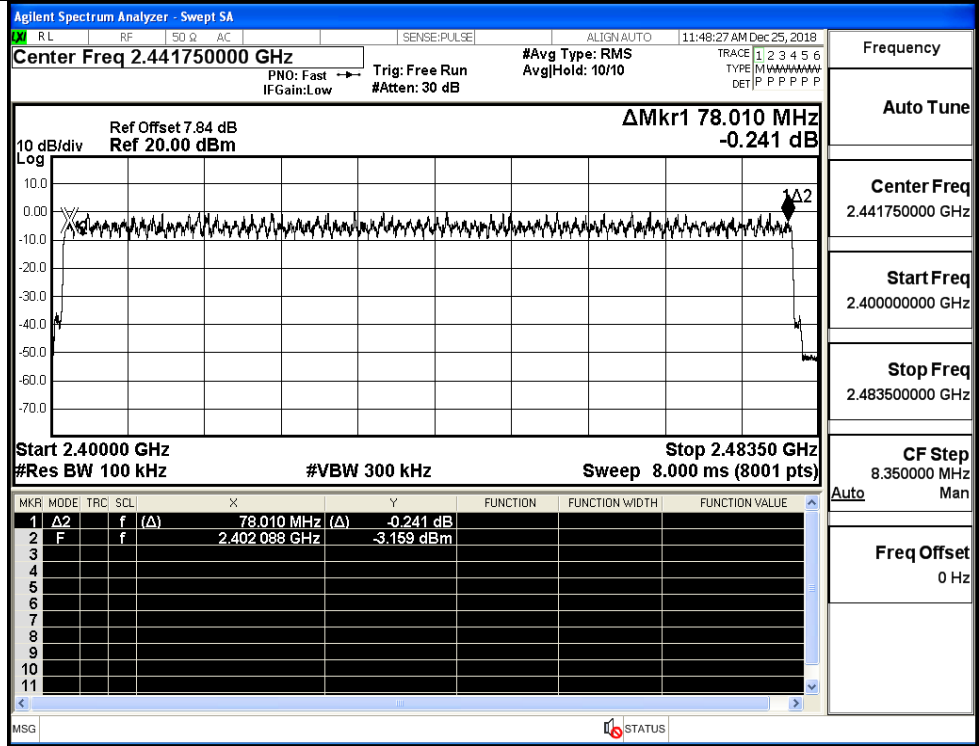
A.4 Hopping Channel Number

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

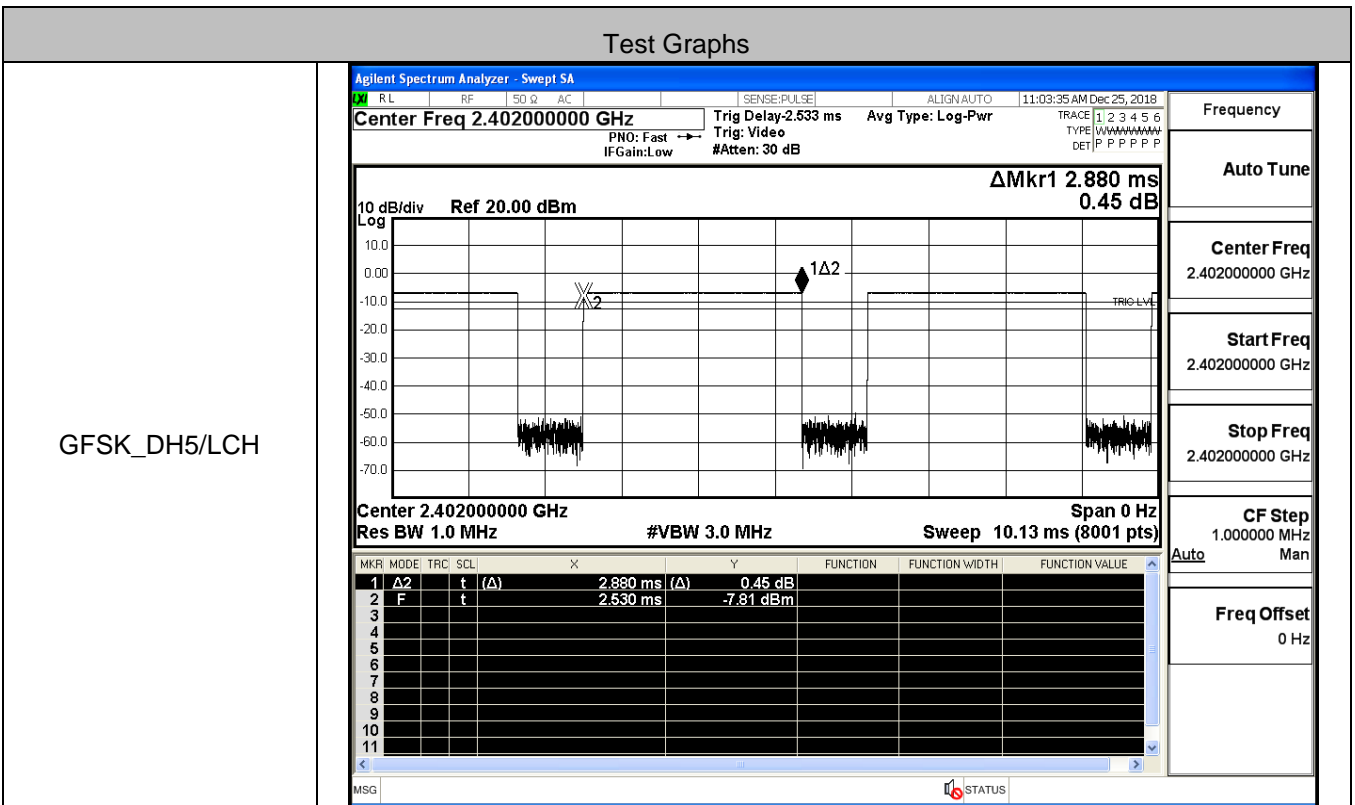
GFSK/Hop	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 7.84 dB Ref 20.00 dBm ΔMkr1 78.146 MHz -0.301 dB Start 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.48350 GHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <thead> <tr> <th>MKR</th> <th>MODE</th> <th>TRC</th> <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>78.146 MHz (Δ)</td> <td>-0.301 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>0.795 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)	78.146 MHz (Δ)	-0.301 dB				2	F	f		2.401983 GHz	0.795 dBm				<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.441750000 GHz</p> <p>Start Freq 2.400000000 GHz</p> <p>Stop Freq 2.483500000 GHz</p> <p>CF Step 8.350000 MHz Man</p> <p>Freq Offset 0 Hz</p>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	Δ 2	f	(Δ)	78.146 MHz (Δ)	-0.301 dB																								
2	F	f		2.401983 GHz	0.795 dBm																								
$\pi/4$ DQPSK/Hop	<p>Agilent Spectrum Analyzer - Swept SA Center Freq 2.441750000 GHz Ref Offset 7.84 dB Ref 20.00 dBm ΔMkr1 77.968 MHz -2.445 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>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>77.968 MHz (Δ)</td> <td>-2.445 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>-1.436 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)	77.968 MHz (Δ)	-2.445 dB				2	F	f		2.401863 GHz	-1.436 dBm				<p>Frequency</p> <p>Auto Tune</p> <p>Center Freq 2.441750000 GHz</p> <p>Start Freq 2.400000000 GHz</p> <p>Stop Freq 2.483500000 GHz</p> <p>CF Step 8.350000 MHz Man</p> <p>Freq Offset 0 Hz</p>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	Δ 2	f	(Δ)	77.968 MHz (Δ)	-2.445 dB																								
2	F	f		2.401863 GHz	-1.436 dBm																								

8DPSK/Hop

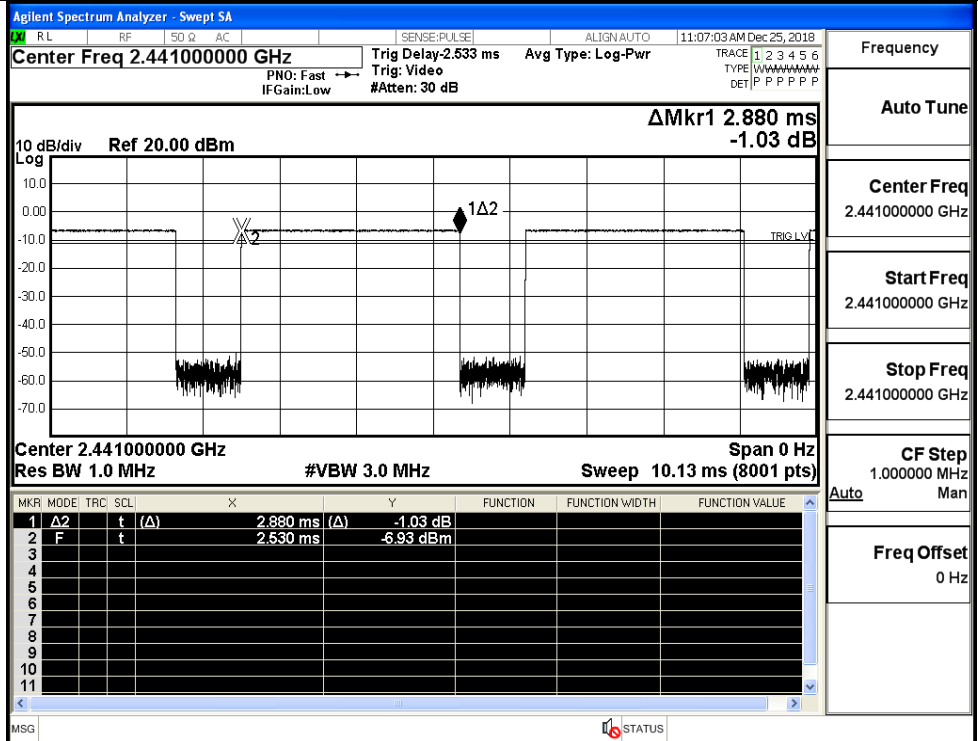


A.5 Dwell Time

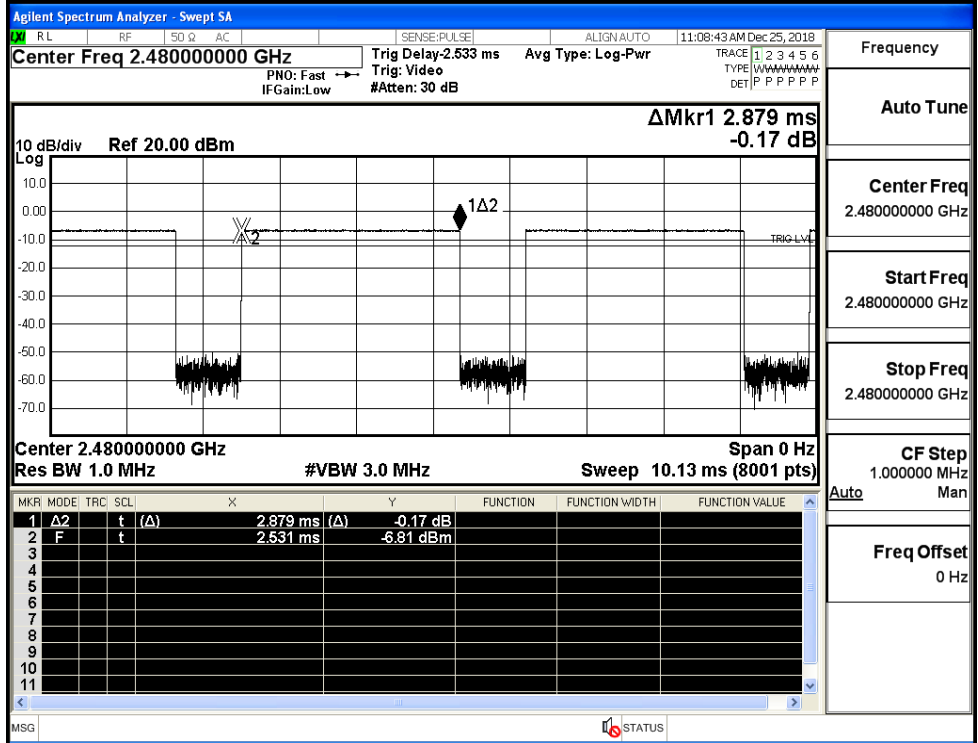
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS



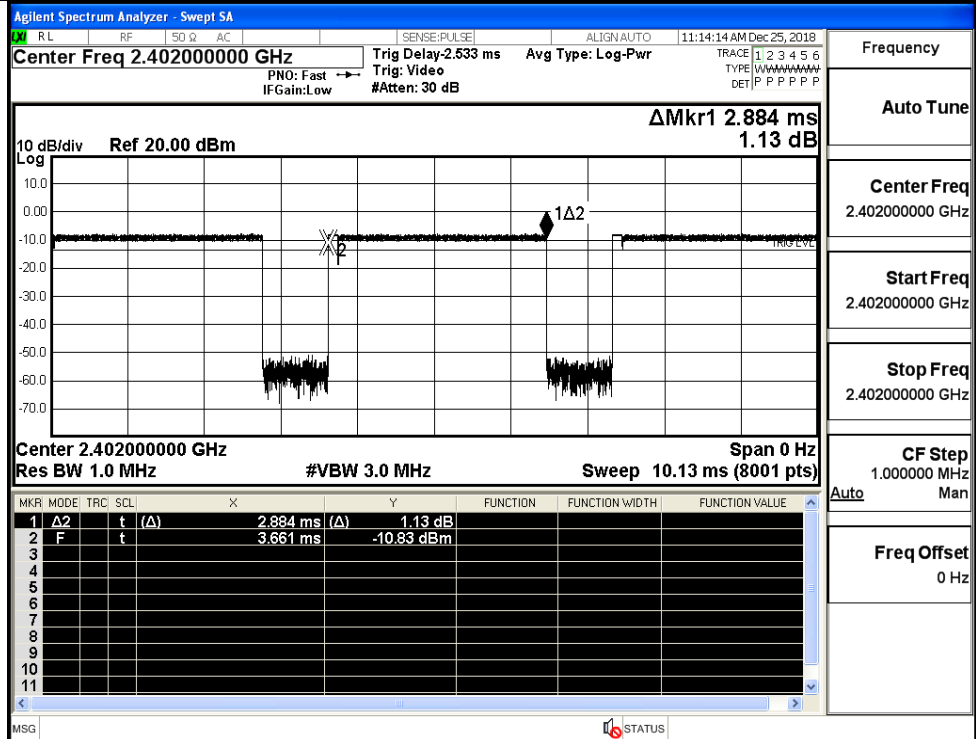
GFSK_DH5/MCH



GFSK_DH5/HCH

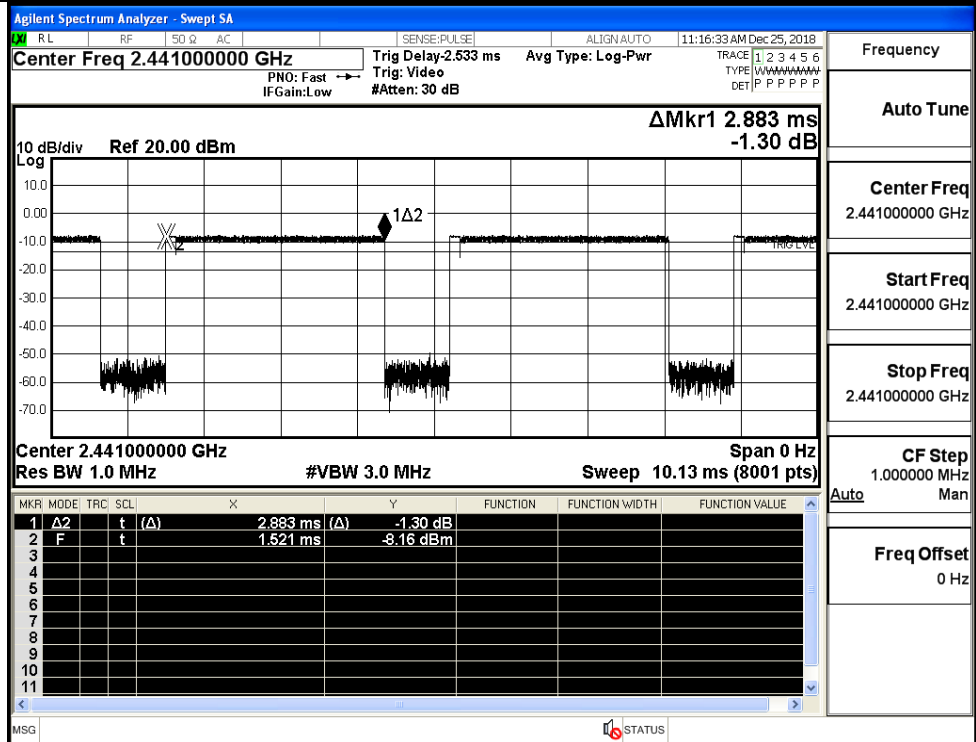


$\pi/4$ DQPSK
_2DH5/LCH



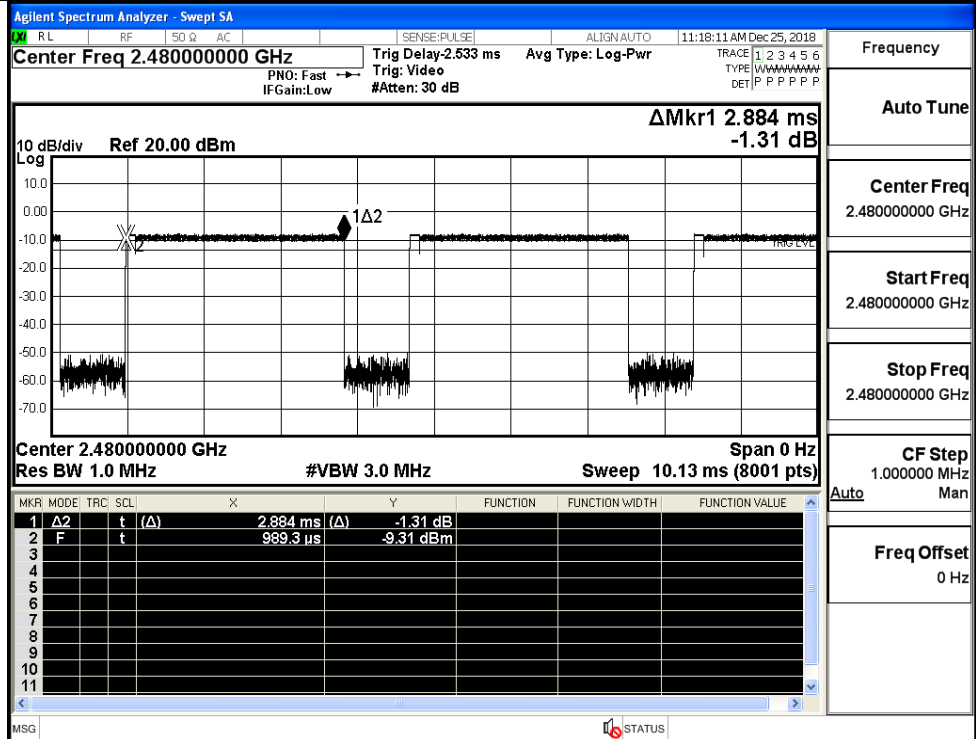
Frequency	2.40200000 GHz
Auto Tune	
Center Freq	2.40200000 GHz
Start Freq	2.40200000 GHz
Stop Freq	2.40200000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/MCH

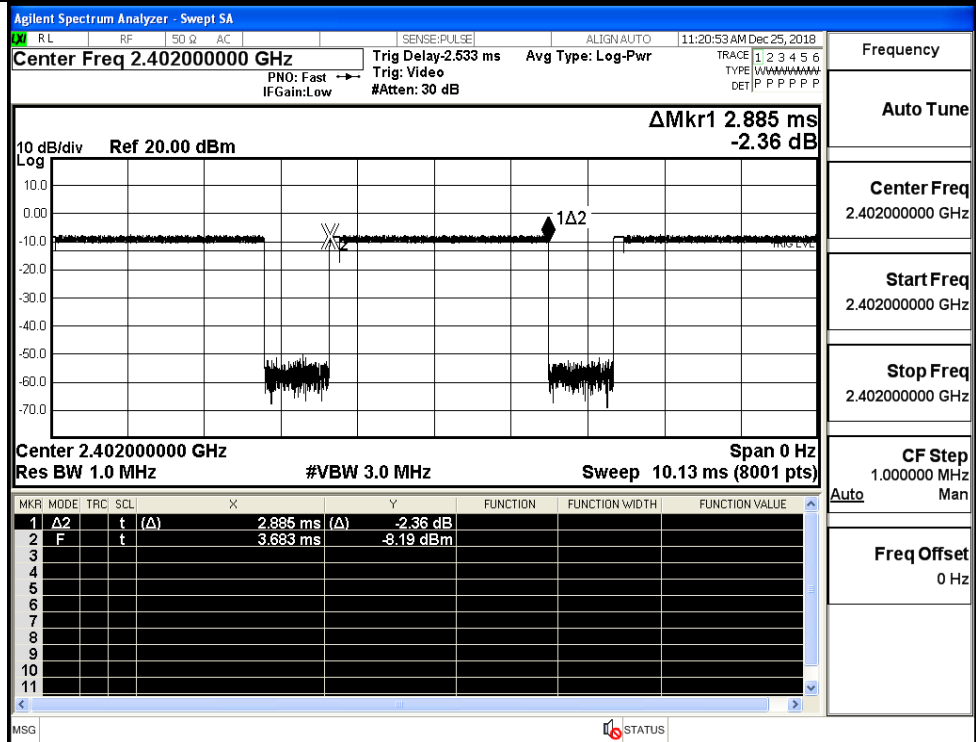


Frequency	2.44100000 GHz
Auto Tune	
Center Freq	2.44100000 GHz
Start Freq	2.44100000 GHz
Stop Freq	2.44100000 GHz
CF Step	1.000000 MHz
Freq Offset	0 Hz

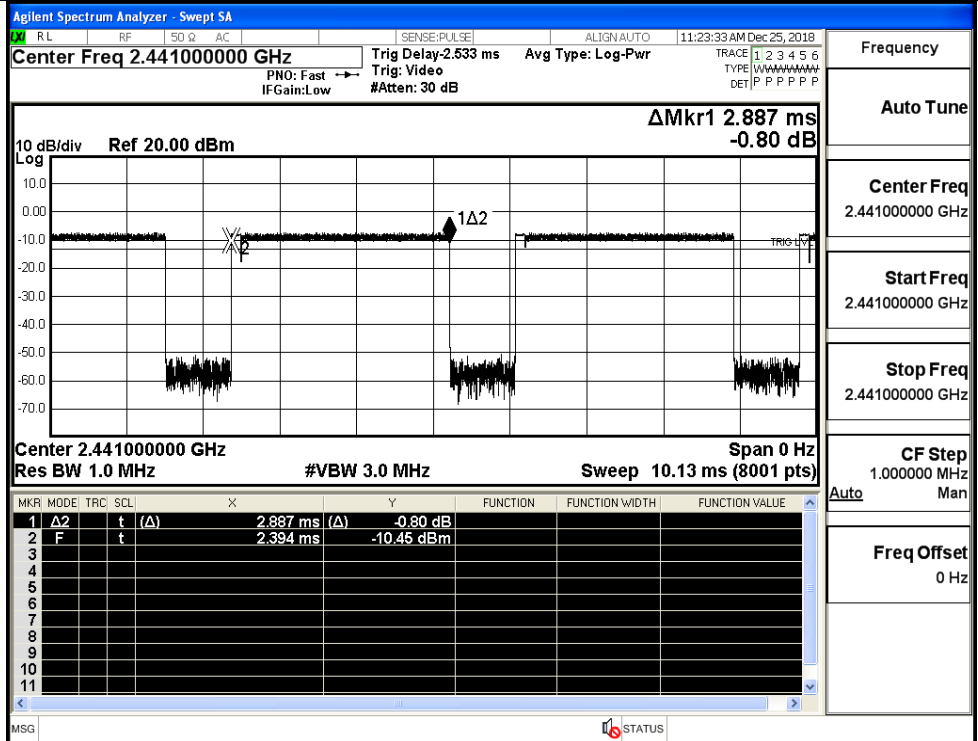
$\pi/4$ DQPSK
_2DH5/HCH



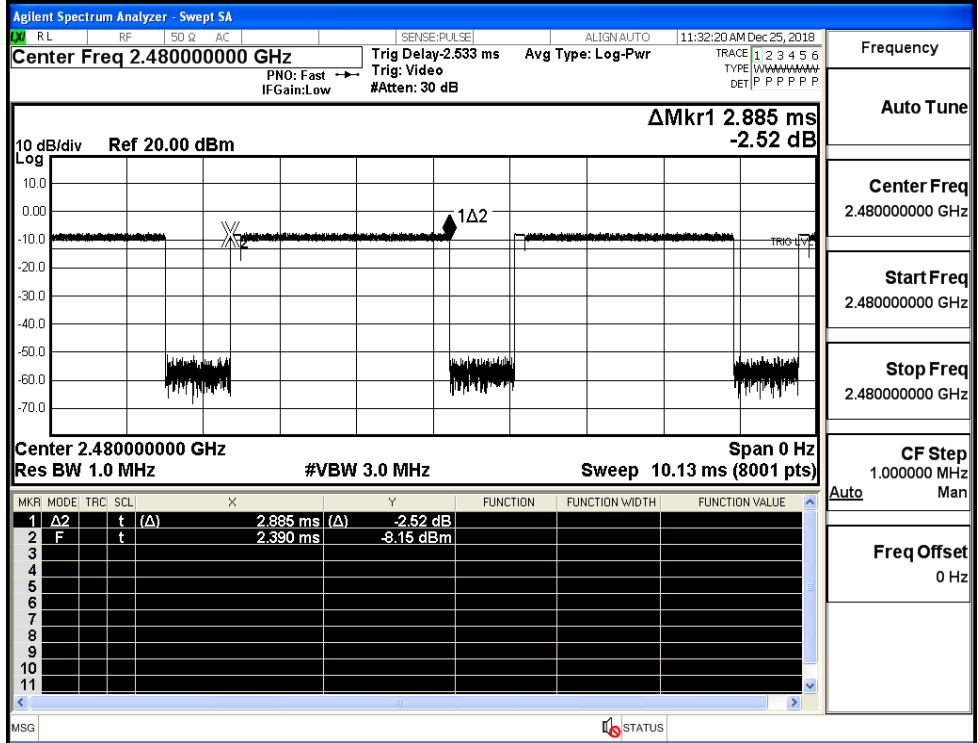
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



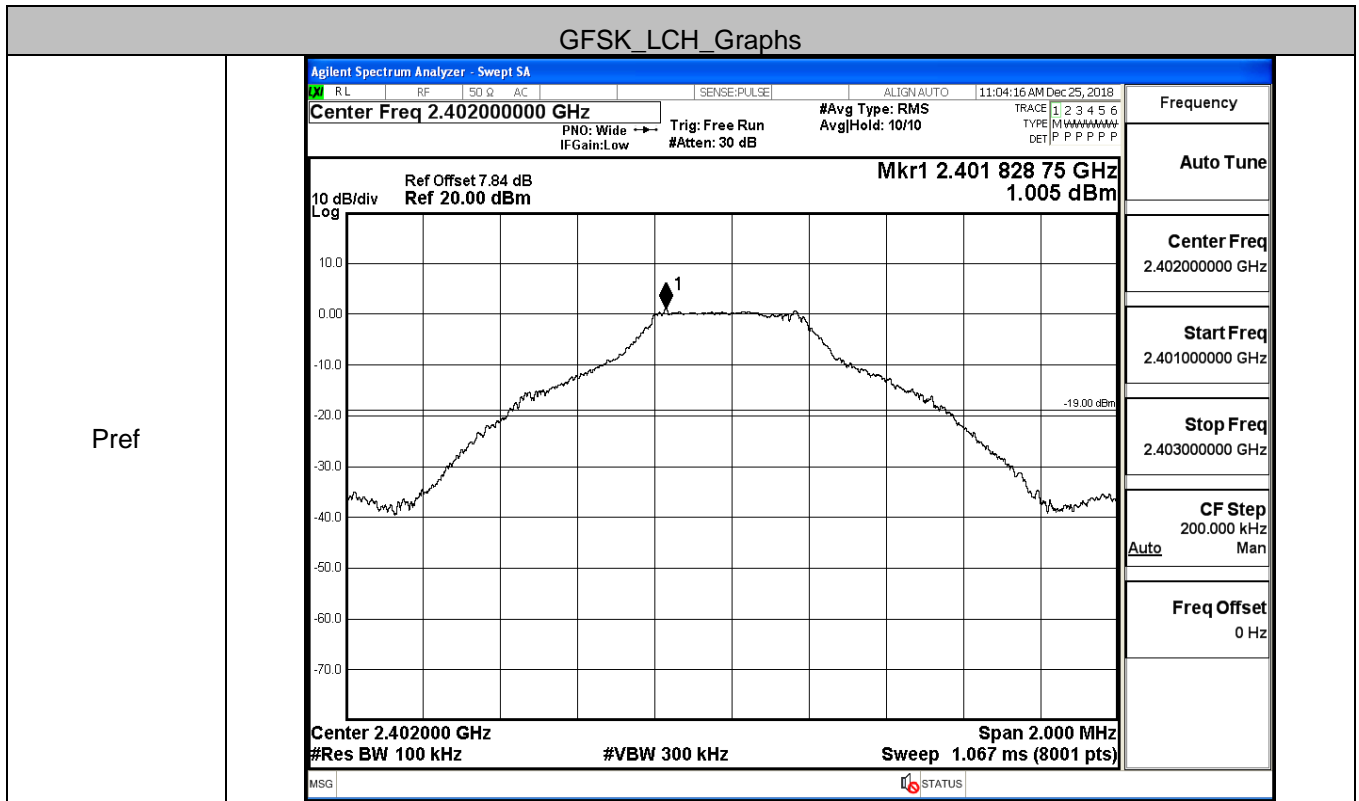
8DPSK_3DH5/HCH

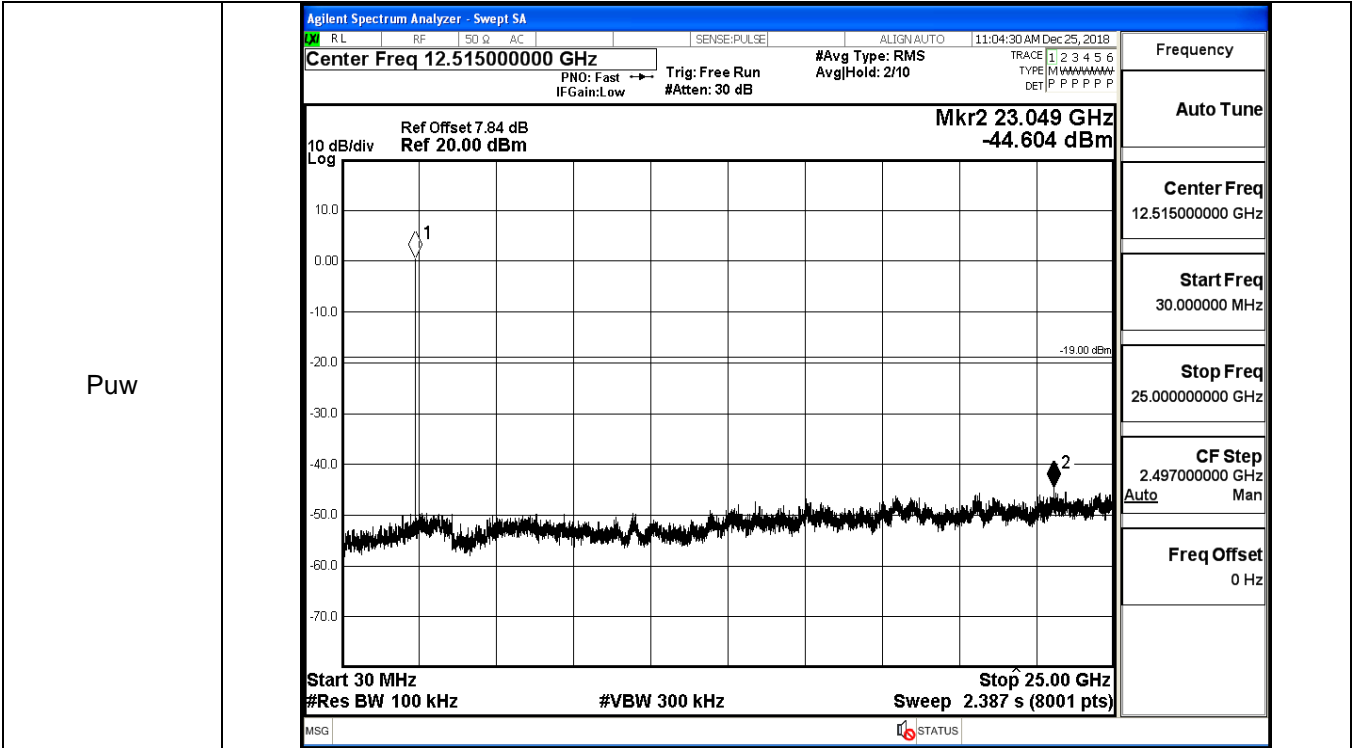


A.6 RF Conducted Spurious Emissions

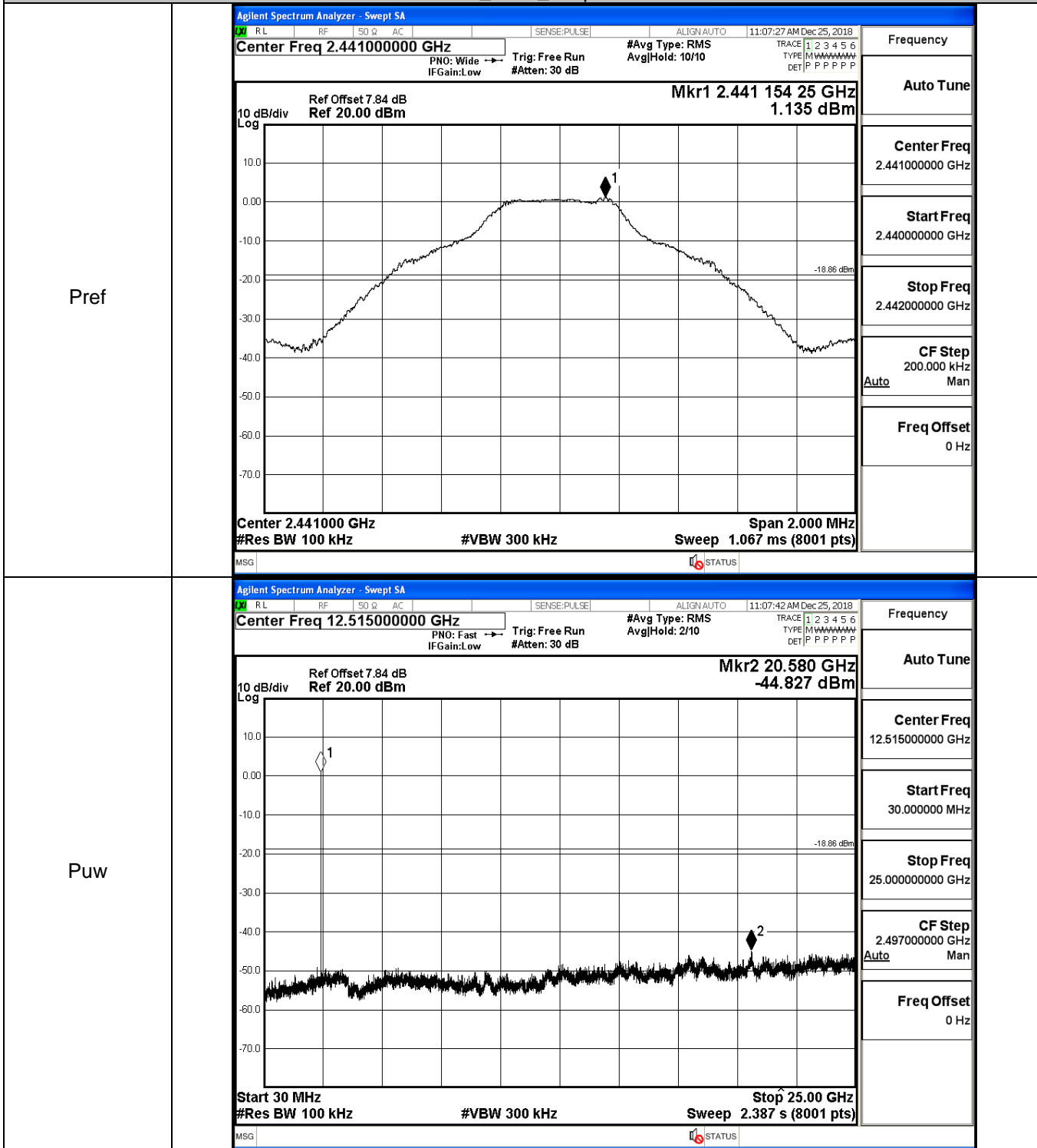
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.005	-44.604	-18.995	PASS
	MCH	1.135	-44.827	-18.865	PASS
	HCH	1.088	-45.020	-18.912	PASS
π /4DQPSK	LCH	-0.41	-44.602	-20.410	PASS
	MCH	-0.204	-45.306	-20.204	PASS
	HCH	-0.274	-45.092	-20.274	PASS
8DPSK	LCH	-0.914	-44.815	-20.914	PASS
	MCH	-0.194	-45.033	-20.194	PASS
	HCH	-0.825	-44.067	-20.825	PASS

GFSK_LCH_Graphs

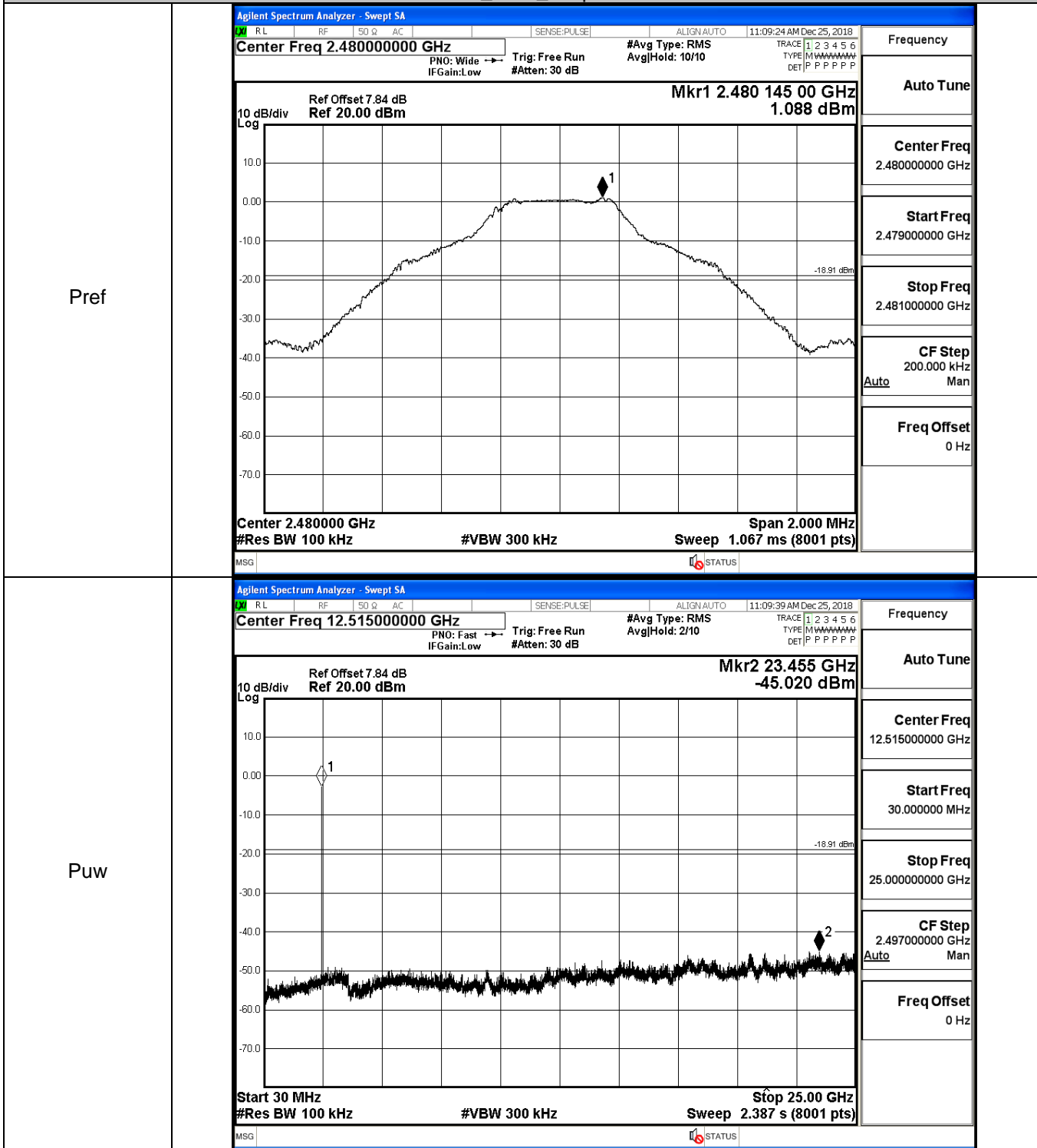




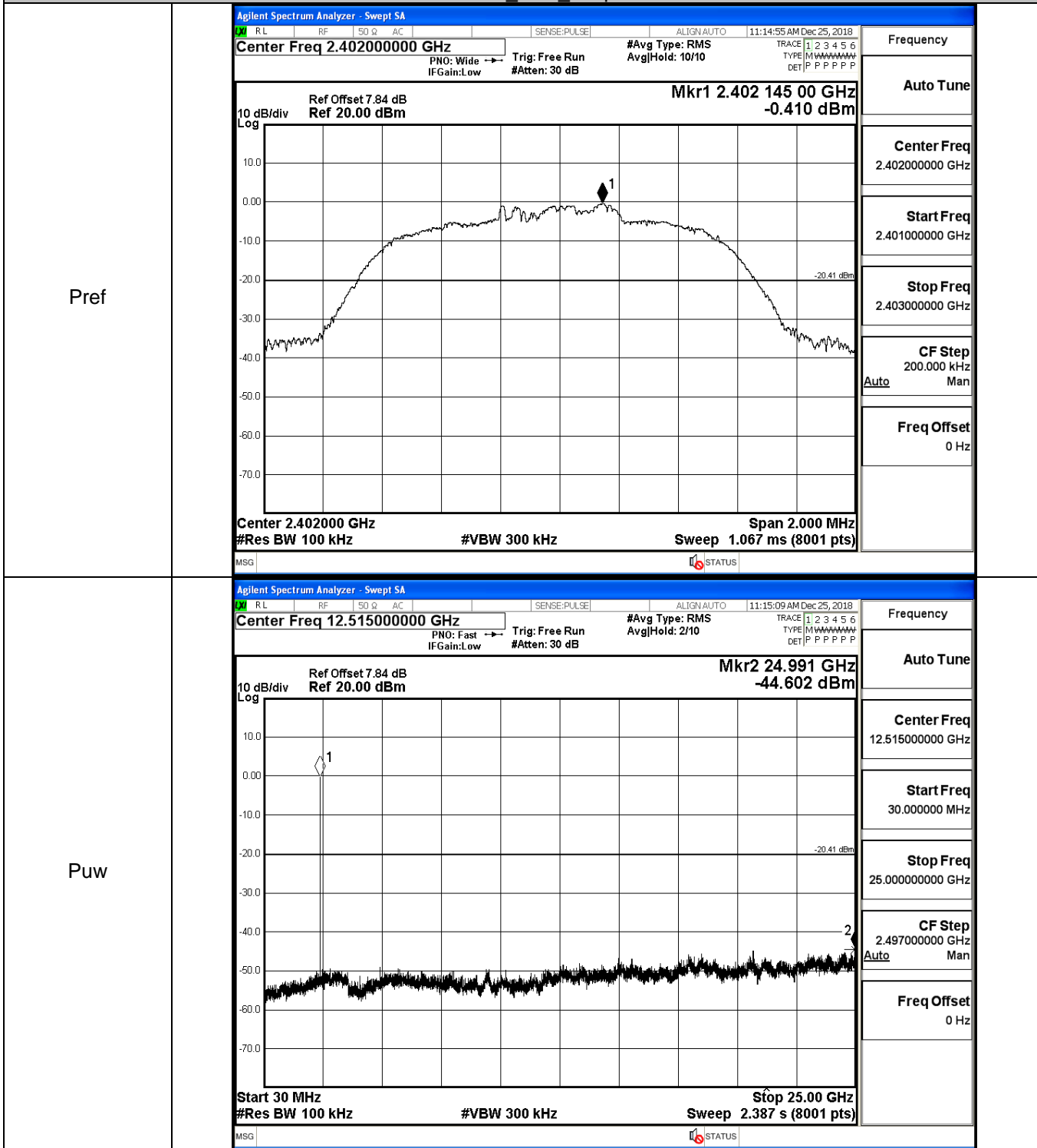
GFSK_MCH_Graphs



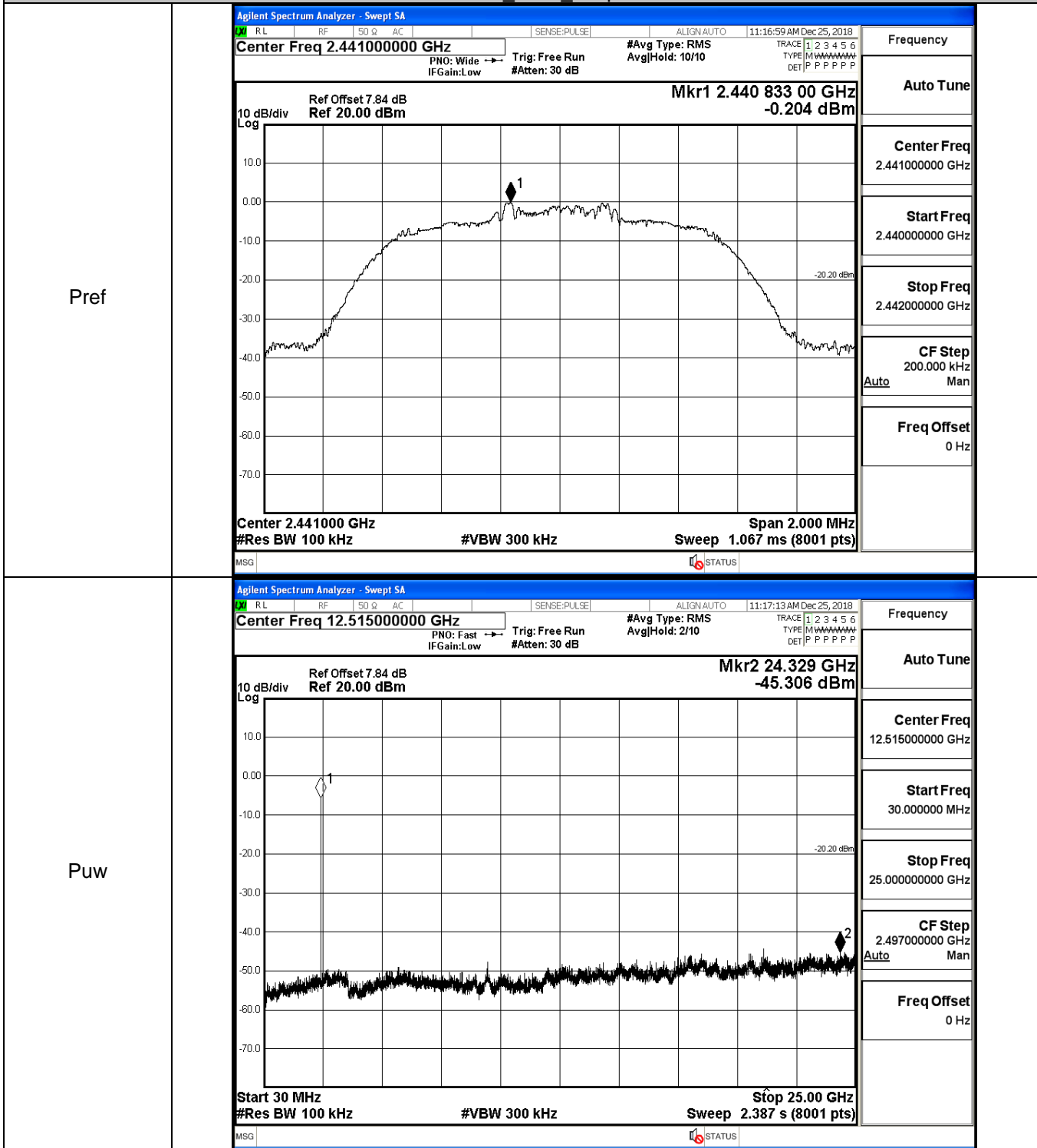
GFSK_HCH_Graphs



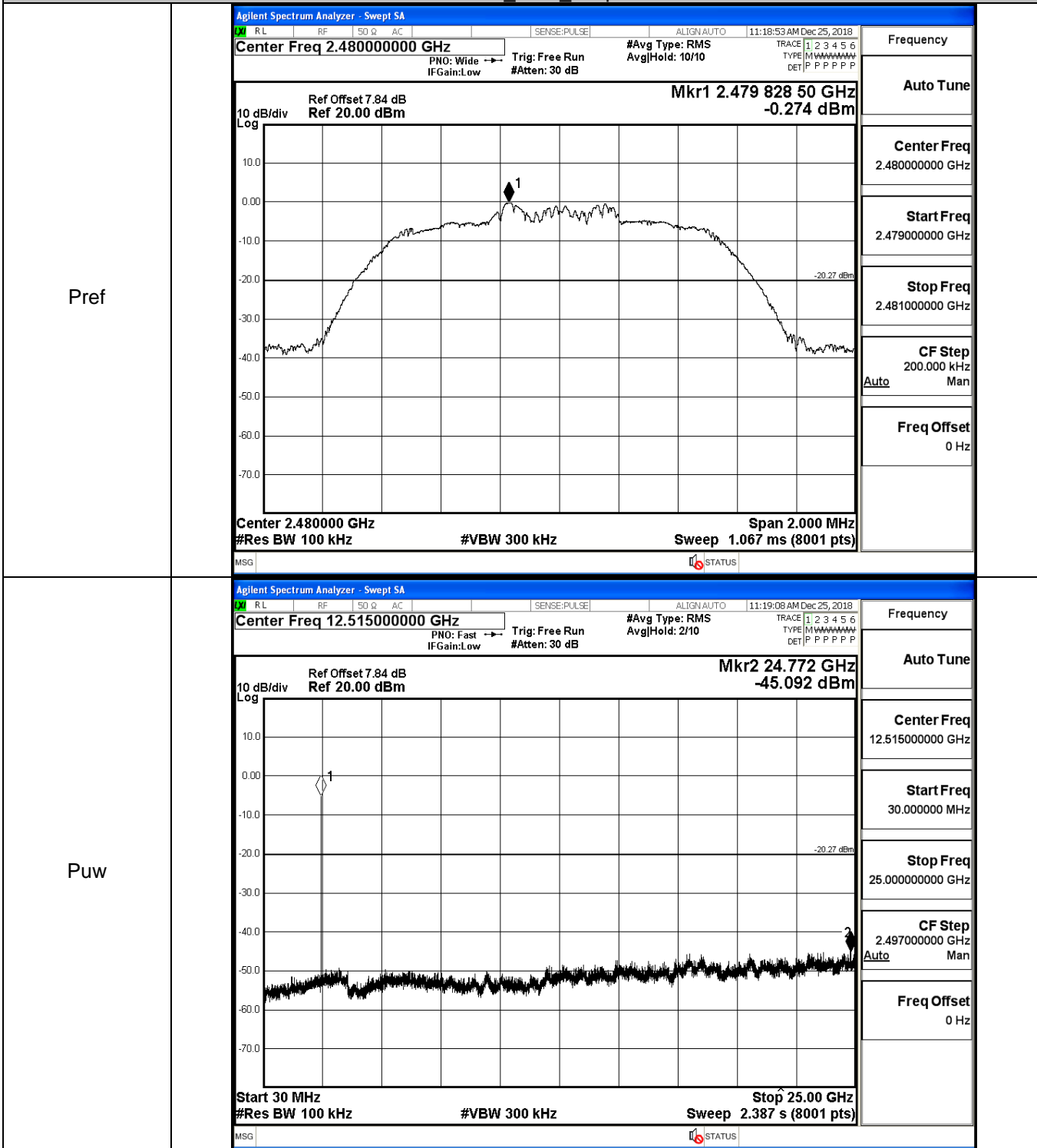
$\pi/4$ DQPSK_LCH_Graphs



π /4DQPSK_MCH_Graphs

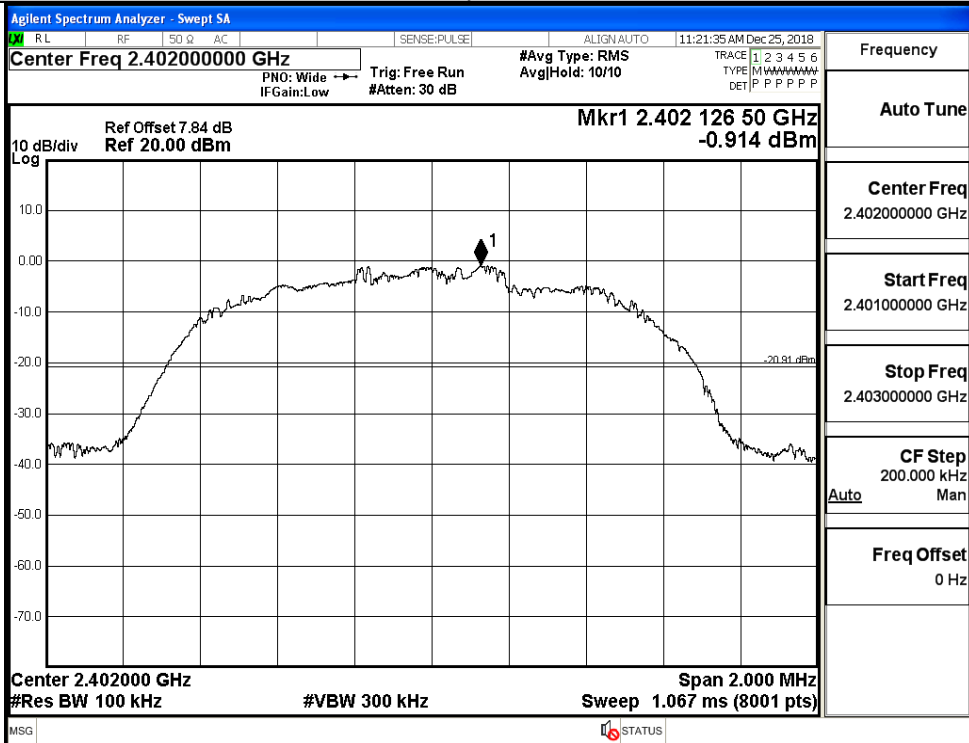


$\pi/4$ DQPSK_HCH_Graphs

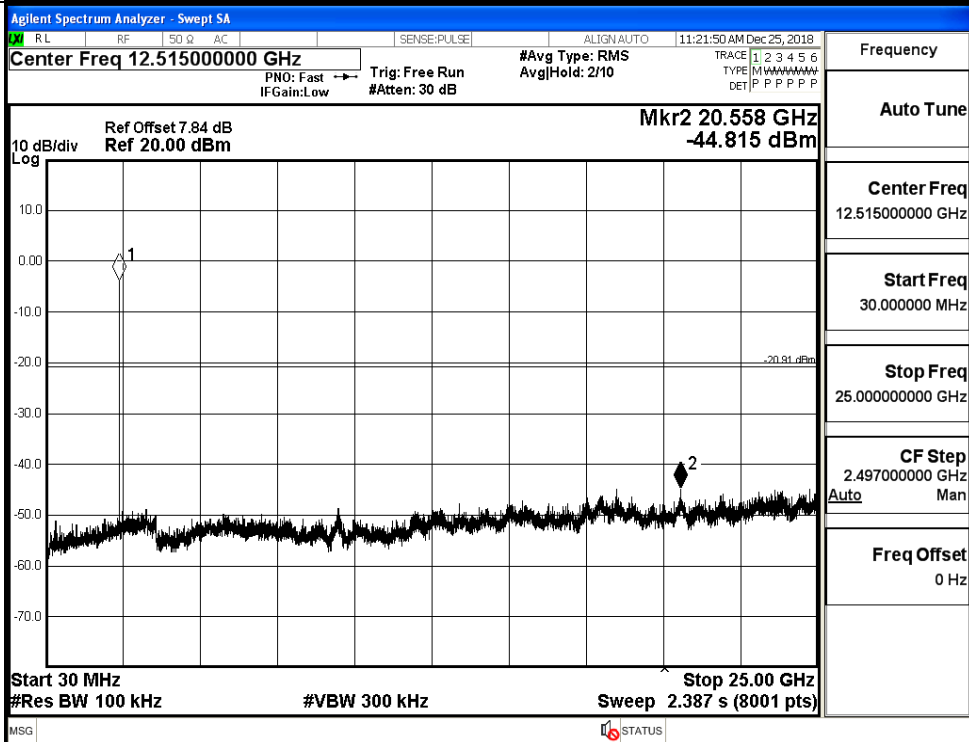


8DPSK_LCH_Graphs

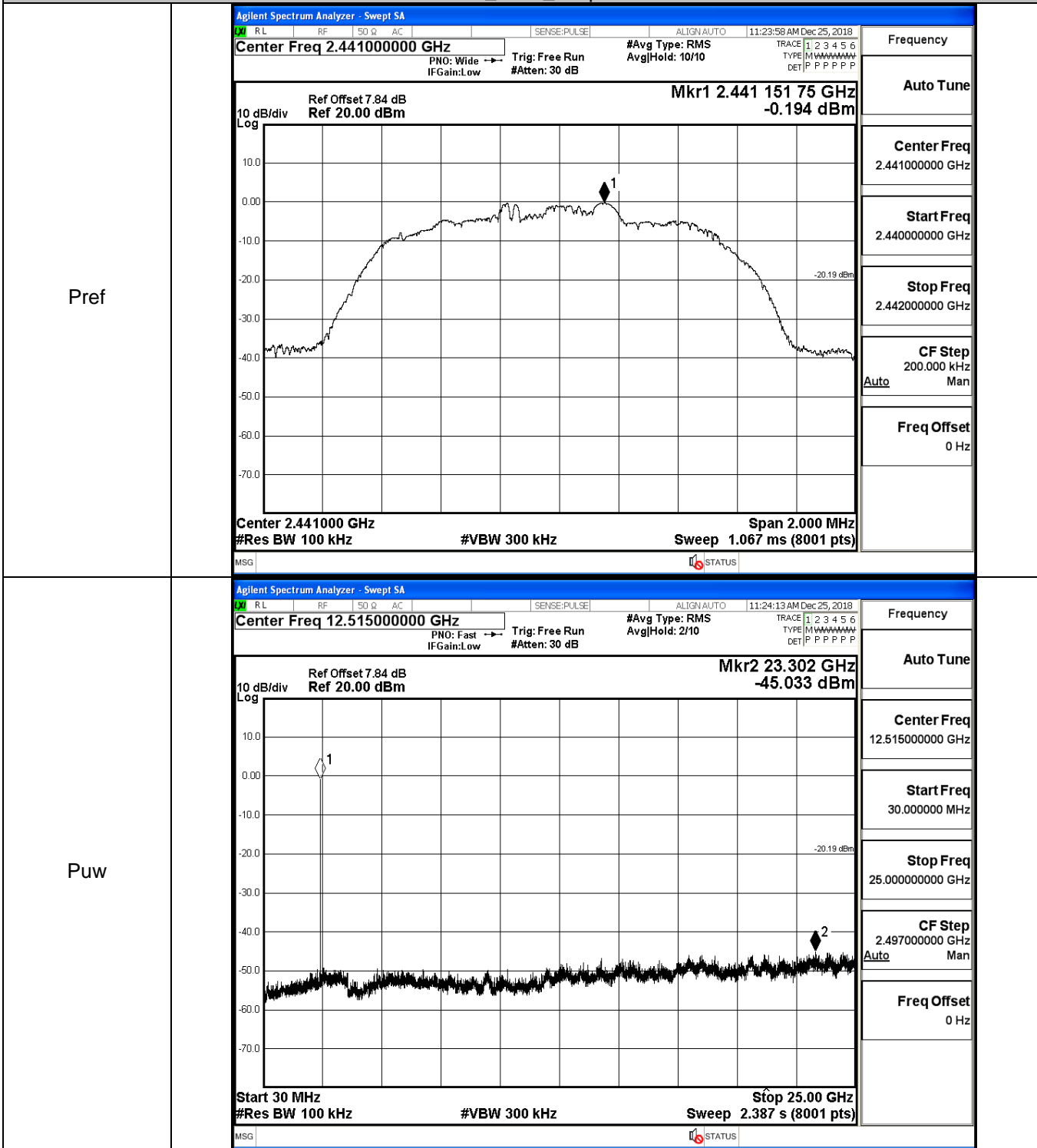
Pref



Puw

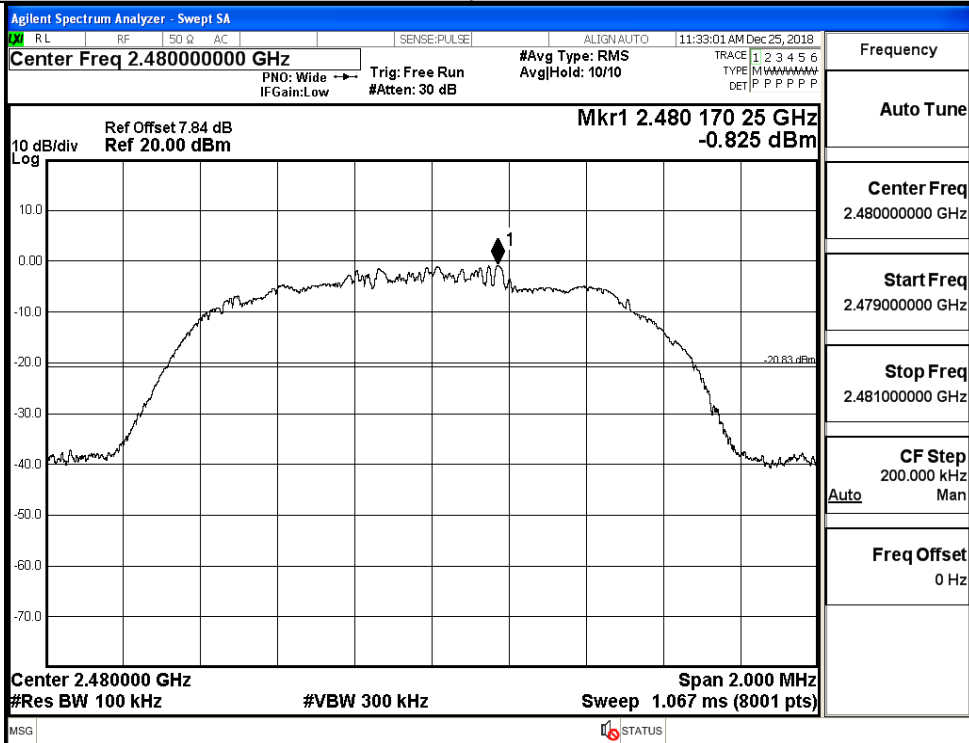


8DPSK_MCH_Graphs

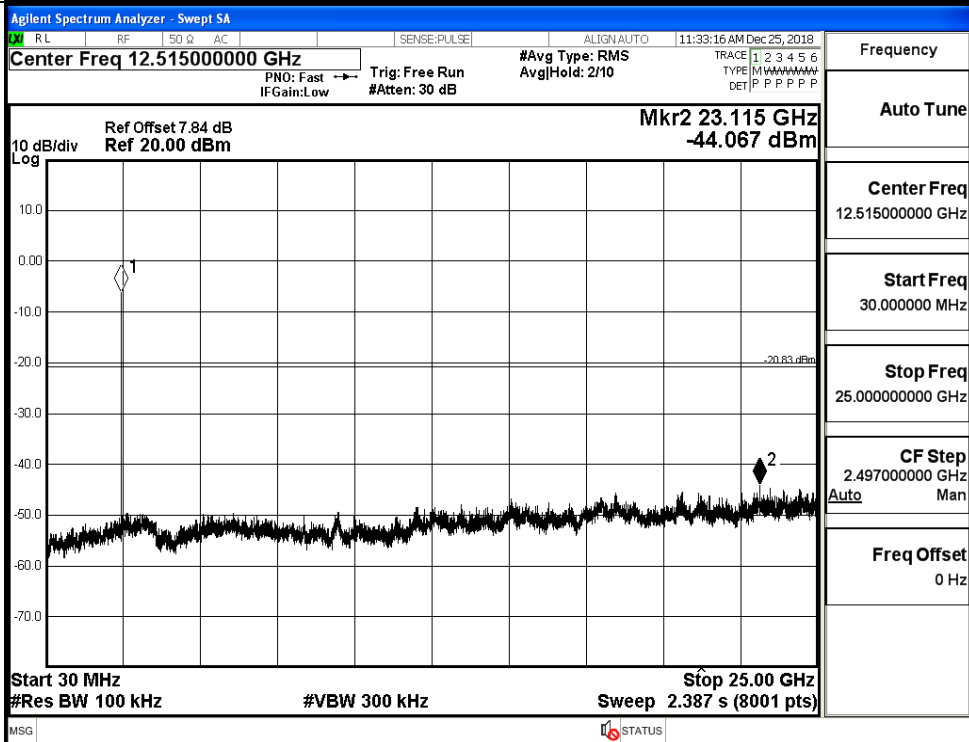


8DPSK_HCH_Graphs

Pref



Puw

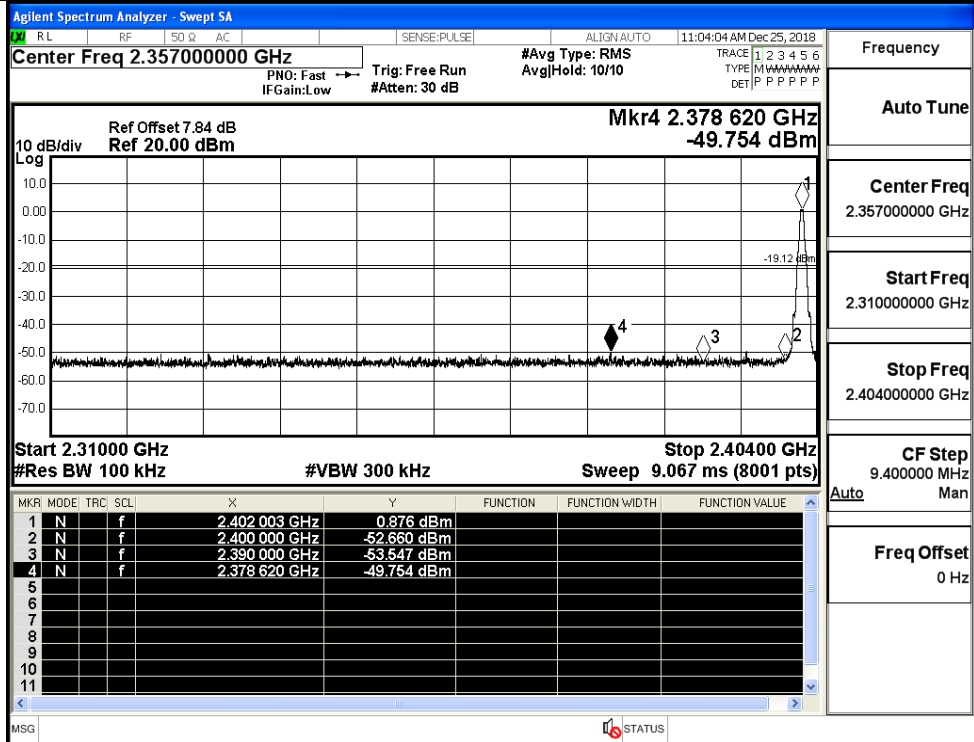


A.7 Band-edge for RF Conducted Emissions

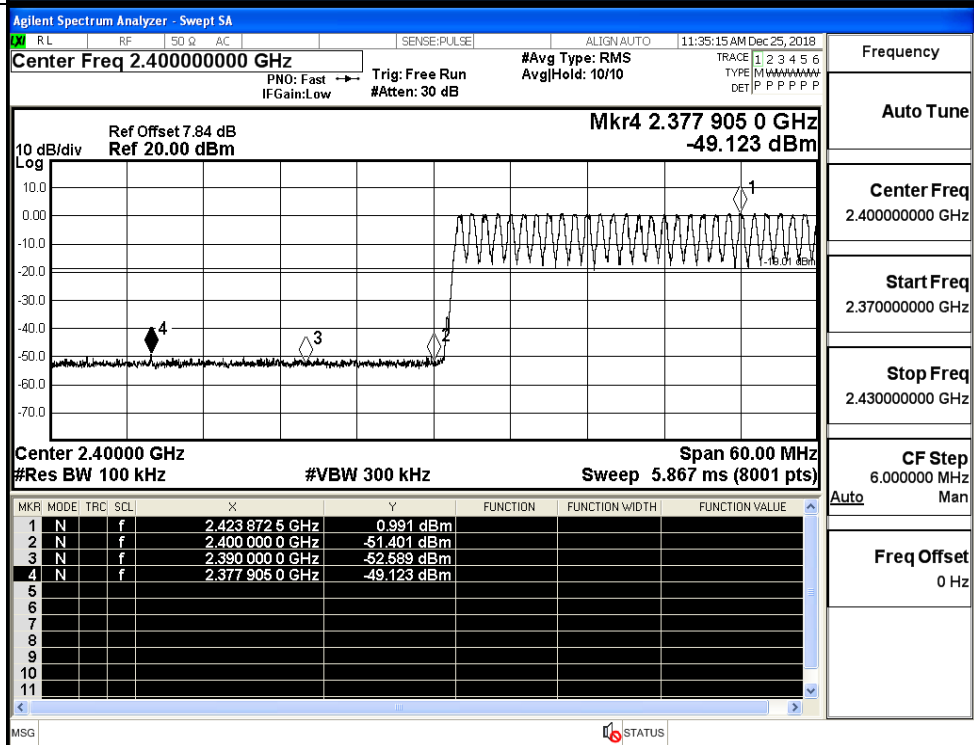
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.876	Off	-49.754	-19.12	PASS
			0.991	On	-49.123	-19.01	PASS
	HCH	2480	1.088	Off	-49.808	-18.91	PASS
			1.122	On	-49.445	-18.88	PASS
$\pi/4$ DQPSK	LCH	2402	-2.014	Off	-49.556	-22.01	PASS
			-0.266	On	-49.385	-20.27	PASS
	HCH	2480	-0.159	Off	-50.223	-20.16	PASS
			-0.216	On	-49.282	-20.22	PASS
8DPSK	LCH	2402	-0.680	Off	-50.574	-20.68	PASS
			-0.232	On	-49.840	-20.23	PASS
	HCH	2480	-0.291	Off	-49.925	-20.29	PASS
			-0.200	On	-49.446	-20.2	PASS

Test Graphs

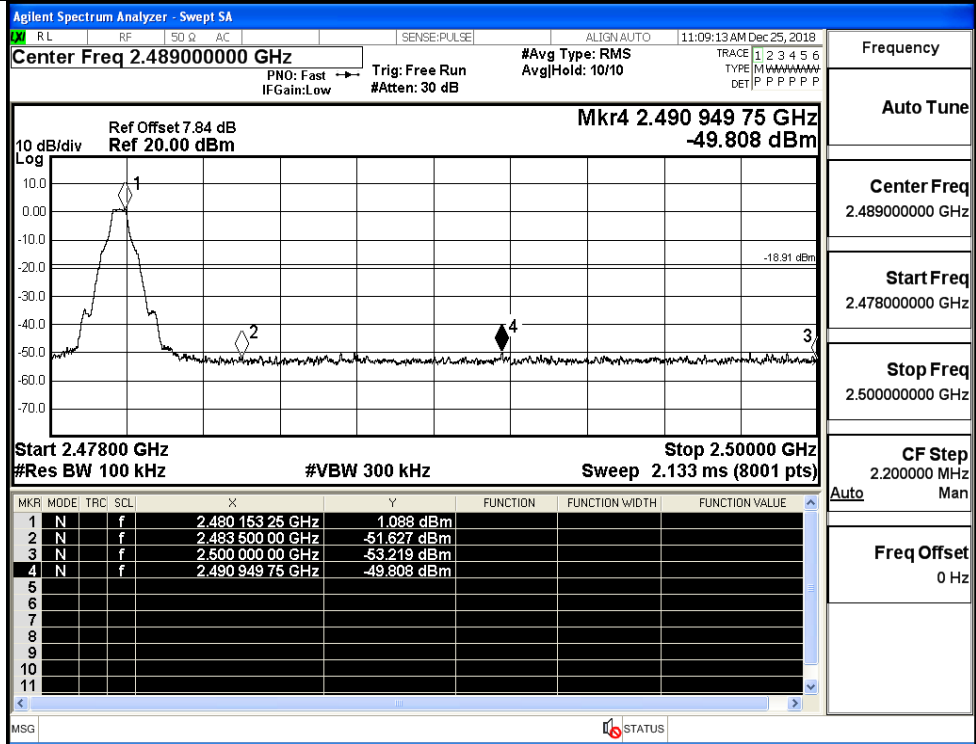
GFSK/LCH/No Hop



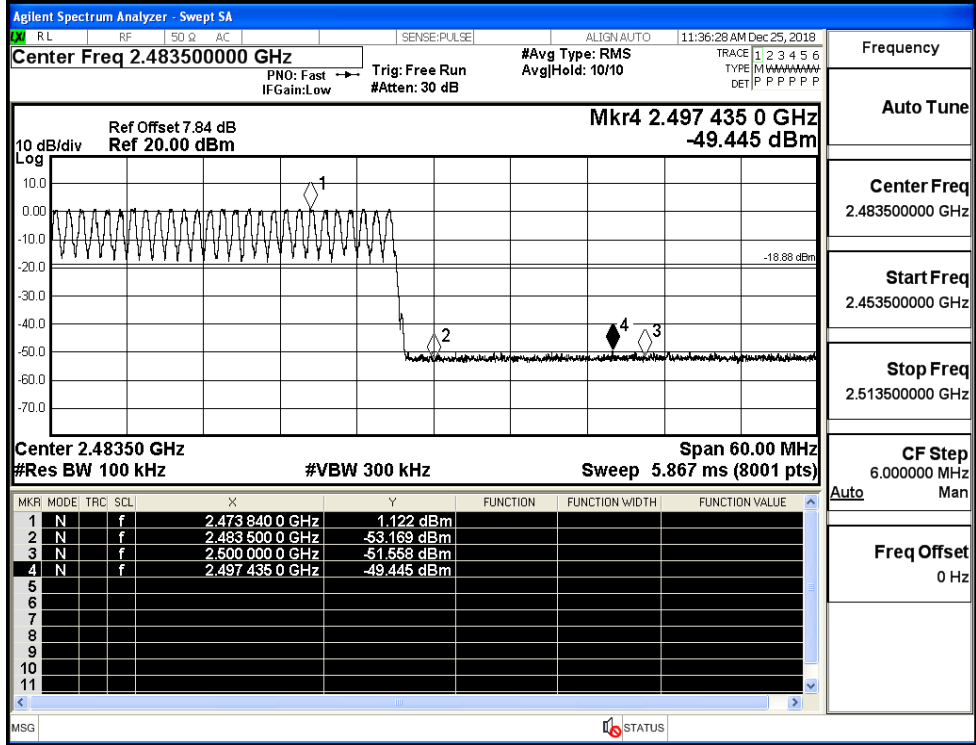
GFSK/LCH/Hop



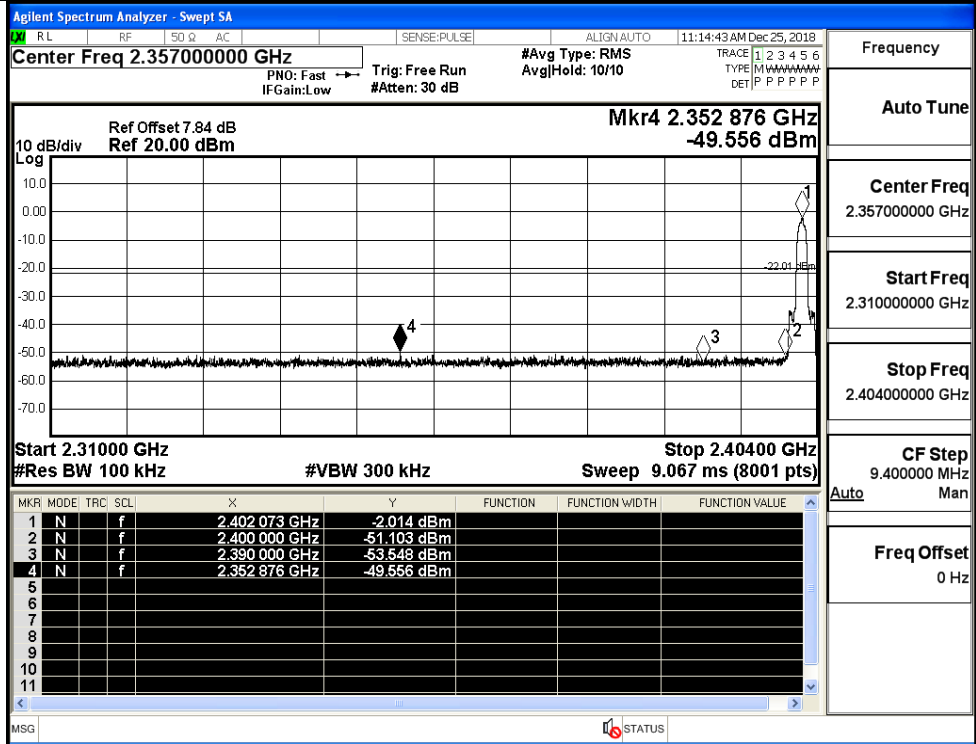
GFSK/HCH/No Hop



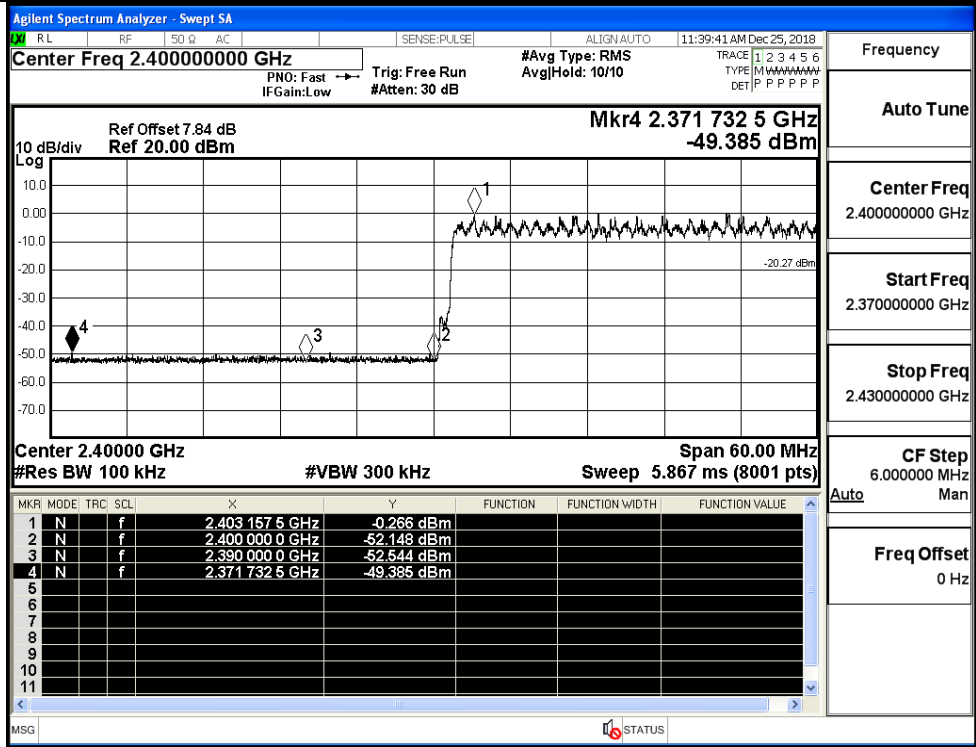
GFSK/HCH/Hop



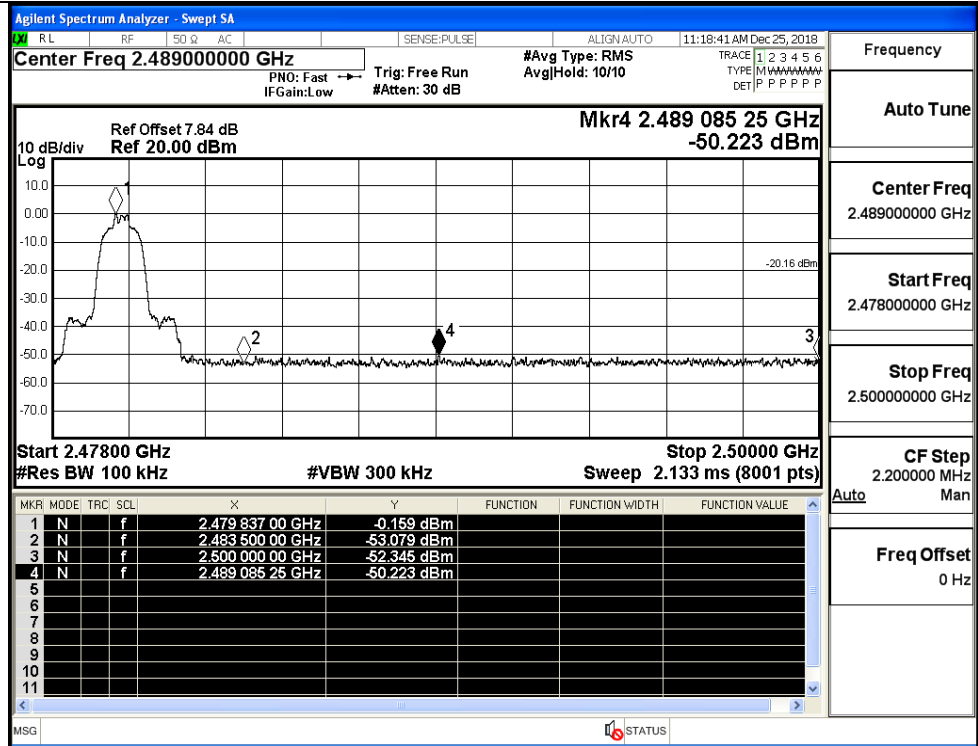
$\pi/4$ DQPSK/LCH/No
Hop



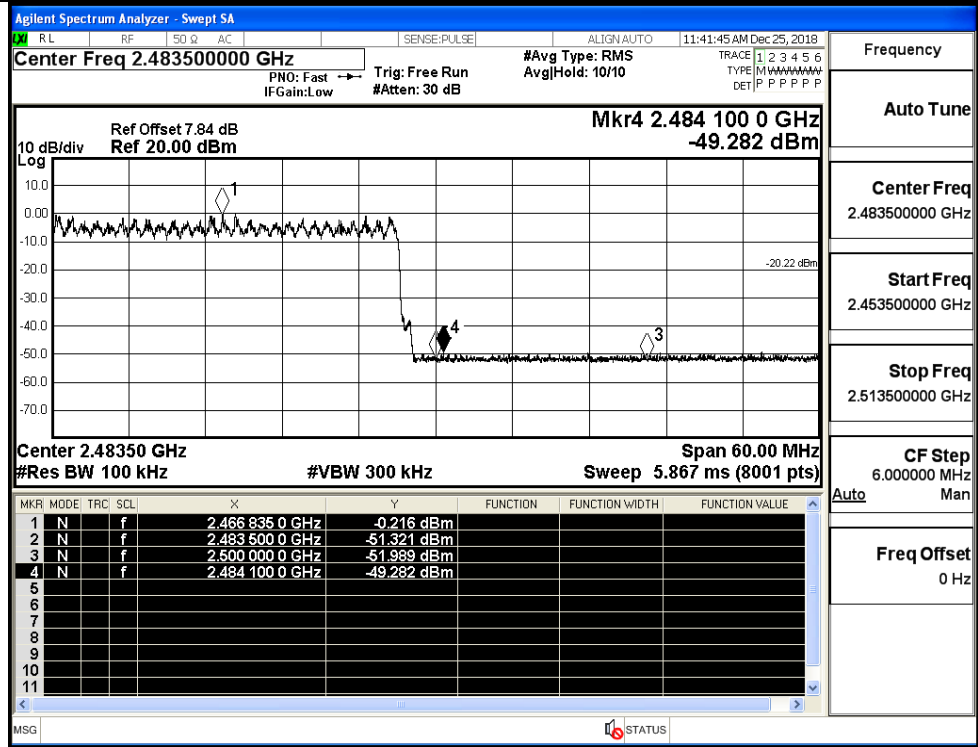
$\pi/4$ DQPSK/LCH/Hop



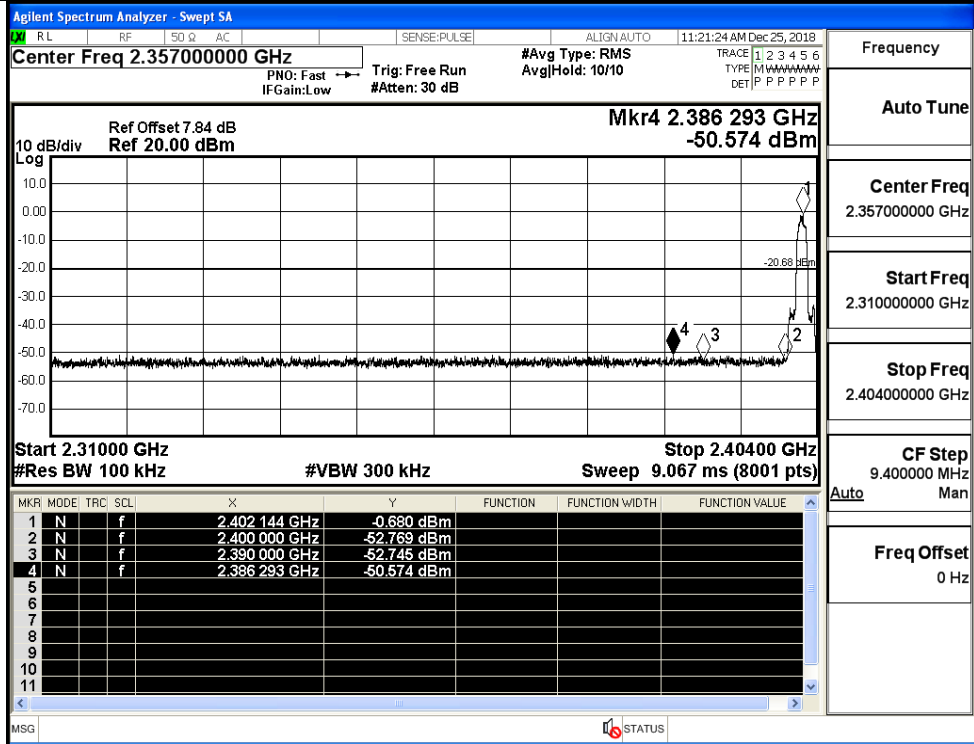
$\pi/4$ DQPSK/HCH/No Hop



$\pi/4$ DQPSK/HCH/Hop

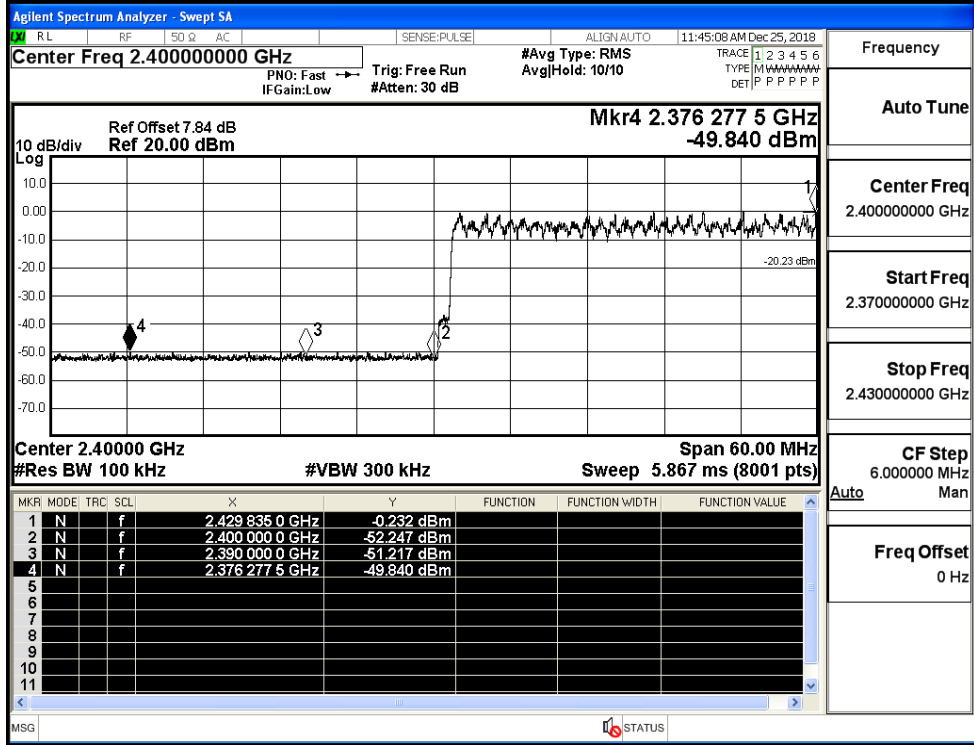


8DPSK/LCH/No Hop



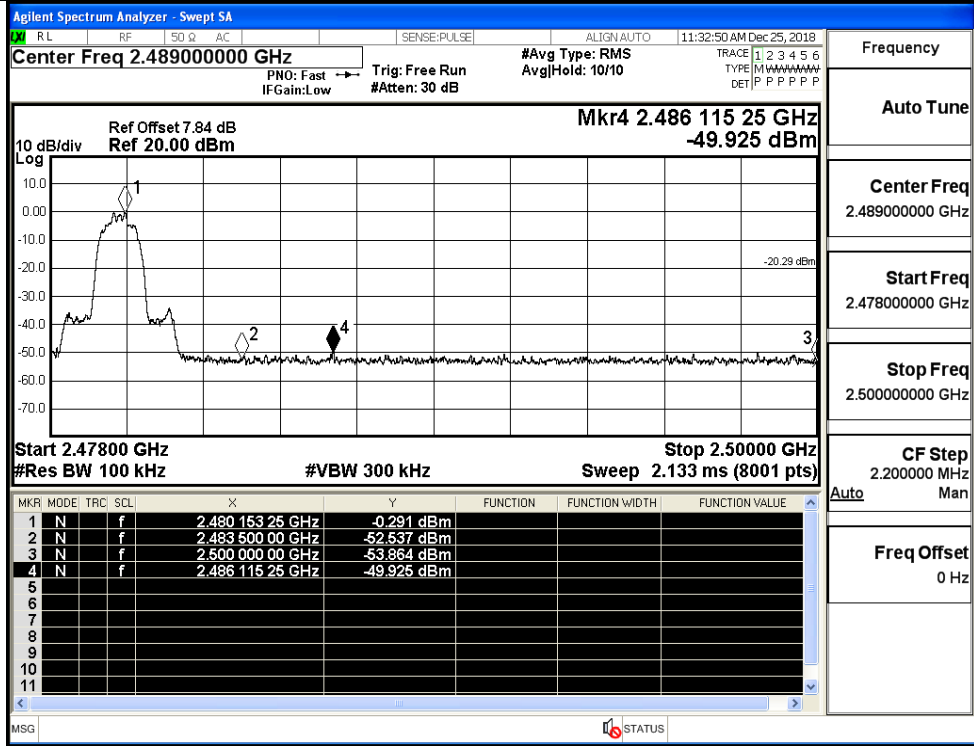
Frequency
Auto Tune
Center Freq
2.357000000 GHz
Start Freq
2.310000000 GHz
Stop Freq
2.404000000 GHz
CF Step
9.400000 MHz
Auto Man
Freq Offset
0 Hz

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

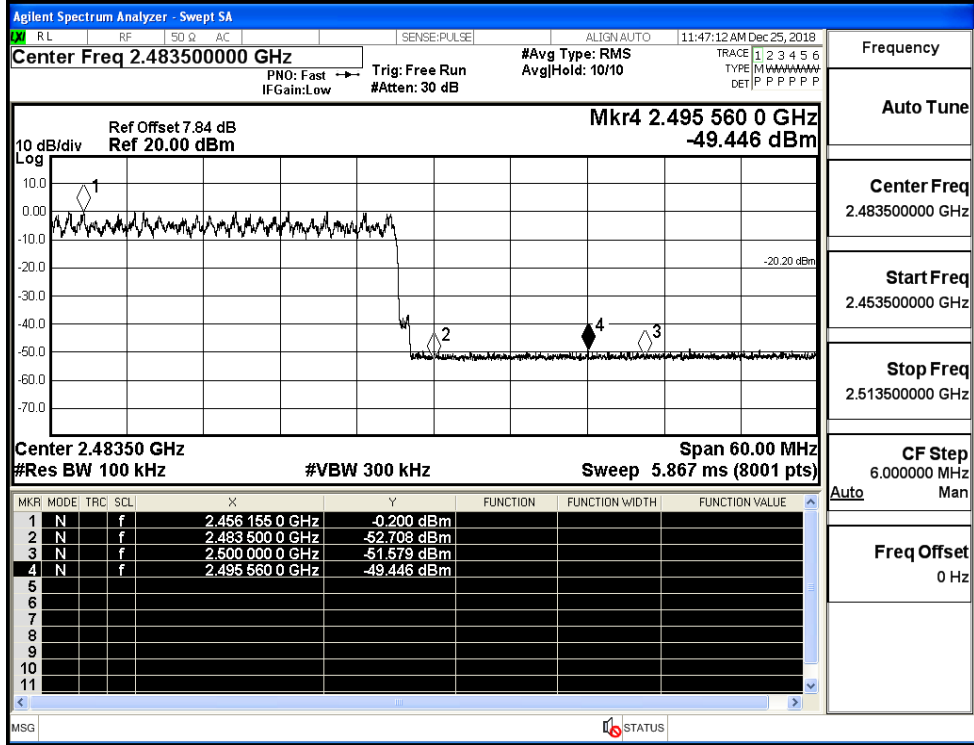
Start Freq
2.478000000 GHz

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
2.453500000 GHz

Stop Freq
2.513500000 GHz

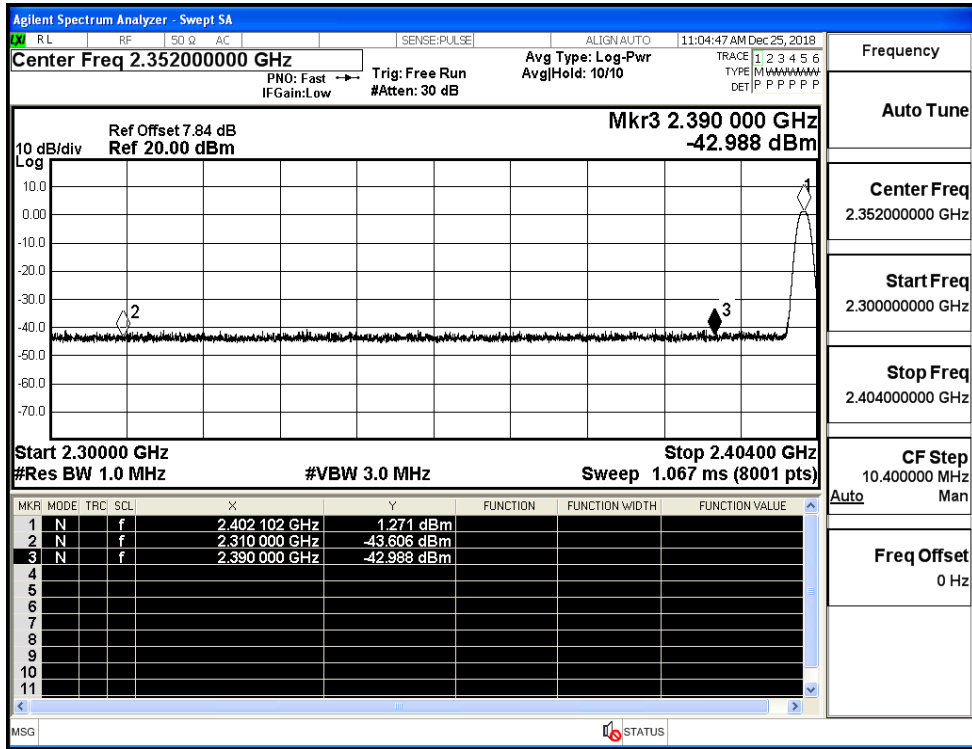
CF Step
6.000000 MHz

Freq Offset
0 Hz

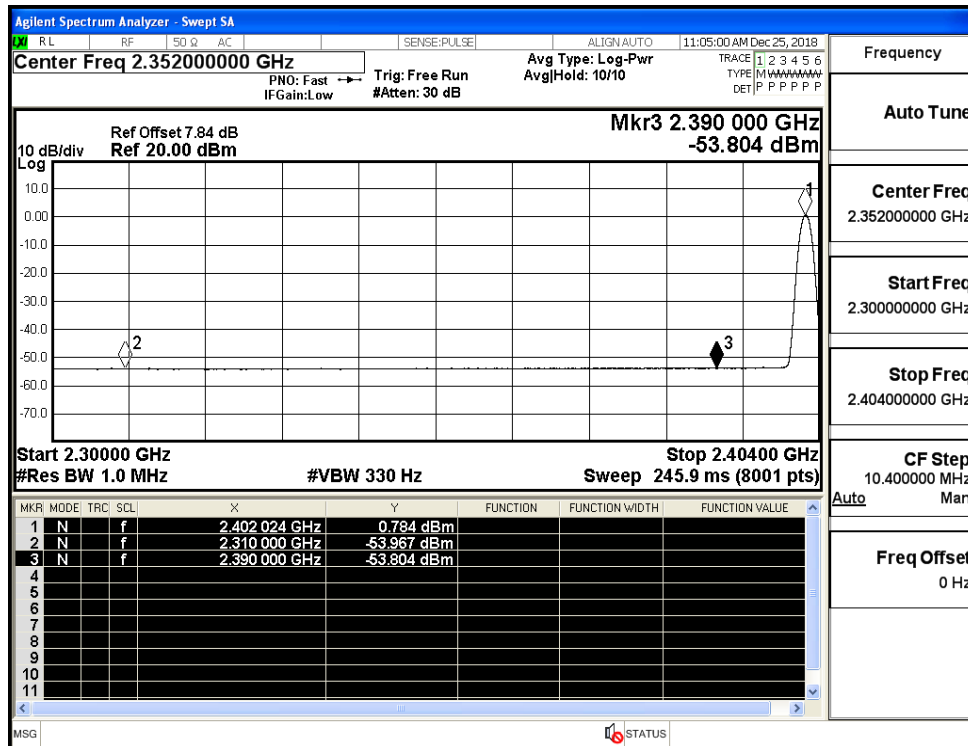
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.61	2.0	0	53.65	PEAK	74	PASS
	Off	2310.0	-53.97	2.0	0	43.29	AV	54	PASS
	Off	2390.0	-42.99	2.0	0	54.27	PEAK	74	PASS
	Off	2390.0	-53.80	2.0	0	43.45	AV	54	PASS
	Off	2483.5	-43.98	2.0	0	53.28	PEAK	74	PASS
	Off	2483.5	-53.48	2.0	0	43.78	AV	54	PASS
	Off	2500.0	-43.23	2.0	0	54.02	PEAK	74	PASS
	Off	2500.0	-53.31	2.0	0	43.95	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.60	2.0	0	53.66	PEAK	74	PASS
	Off	2310.0	-54.09	2.0	0	43.17	AV	54	PASS
	Off	2390.0	-43.08	2.0	0	54.18	PEAK	74	PASS
	Off	2390.0	-53.67	2.0	0	43.59	AV	54	PASS
	Off	2483.5	-44.56	2.0	0	52.69	PEAK	74	PASS
	Off	2483.5	-53.40	2.0	0	43.86	AV	54	PASS
	Off	2500.0	-43.63	2.0	0	53.62	PEAK	74	PASS
	Off	2500.0	-53.33	2.0	0	43.93	AV	54	PASS
8DPSK	Off	2310.0	-44.20	2.0	0	53.06	PEAK	74	PASS
	Off	2310.0	-53.99	2.0	0	43.27	AV	54	PASS
	Off	2390.0	-43.53	2.0	0	53.72	PEAK	74	PASS
	Off	2390.0	-53.60	2.0	0	43.65	AV	54	PASS
	Off	2483.5	-43.44	2.0	0	53.82	PEAK	74	PASS
	Off	2483.5	-53.42	2.0	0	43.84	AV	54	PASS
	Off	2500.0	-43.00	2.0	0	54.26	PEAK	74	PASS
	Off	2500.0	-53.34	2.0	0	43.92	AV	54	PASS

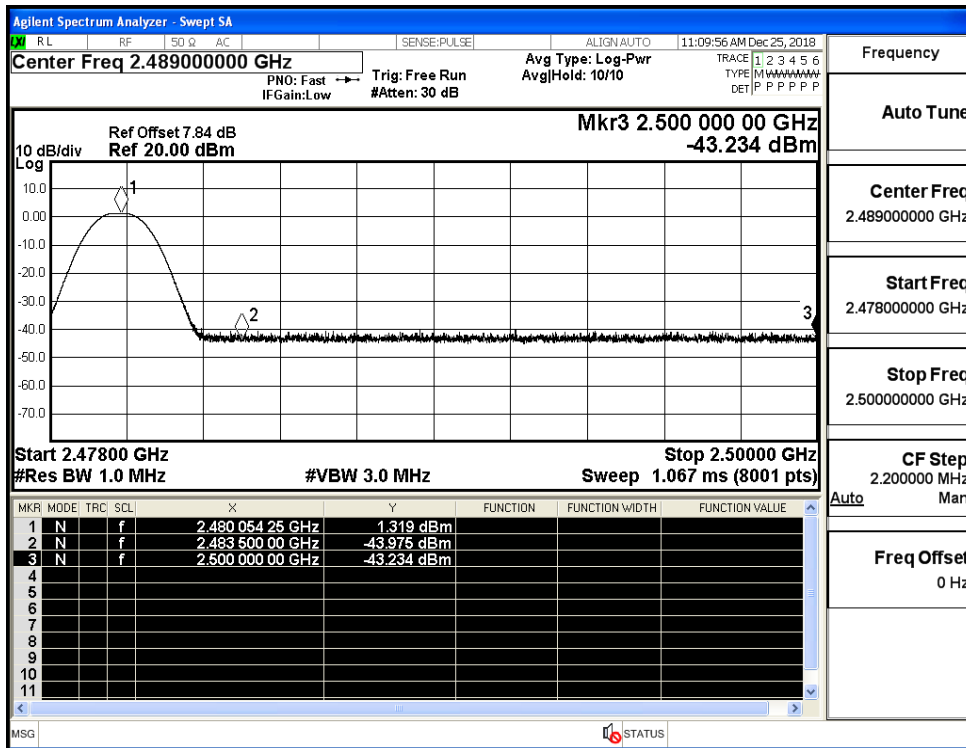
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



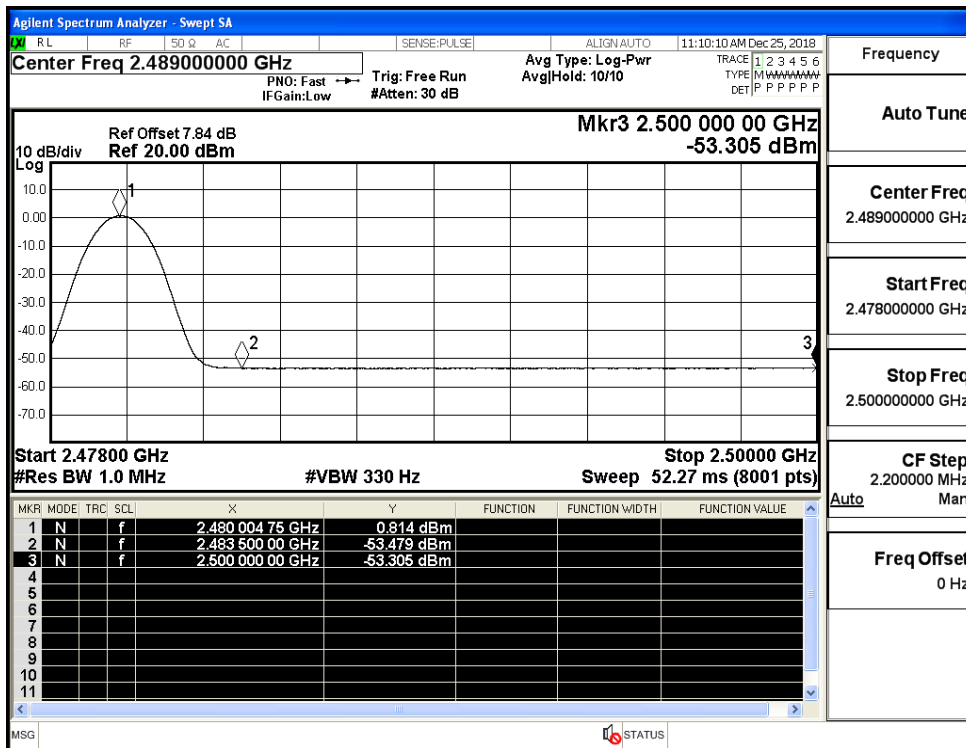
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



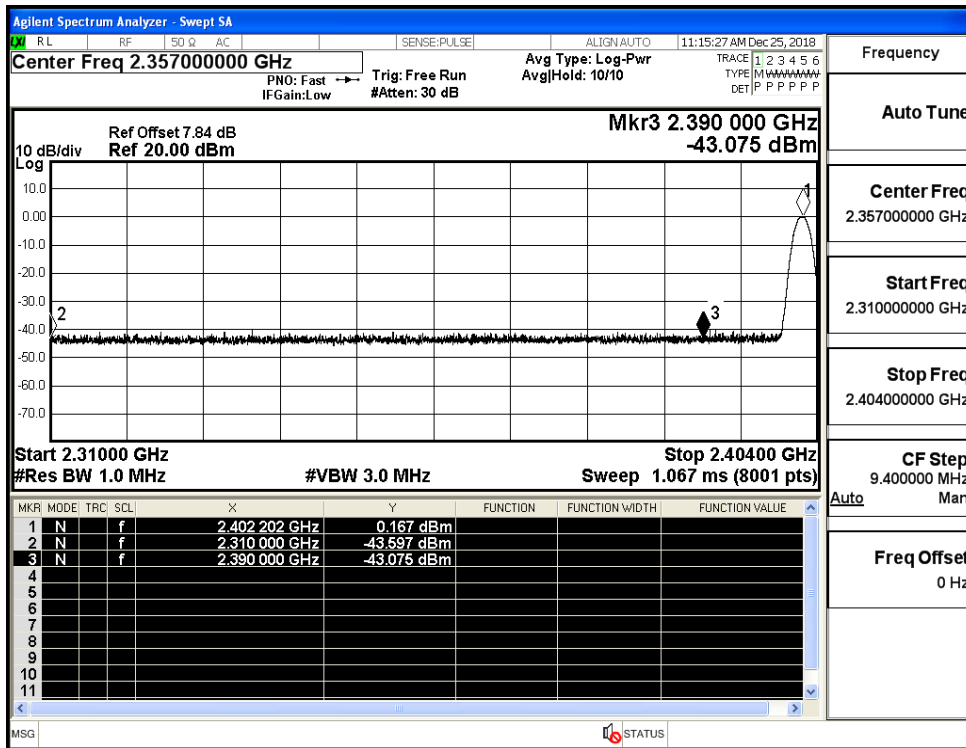
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



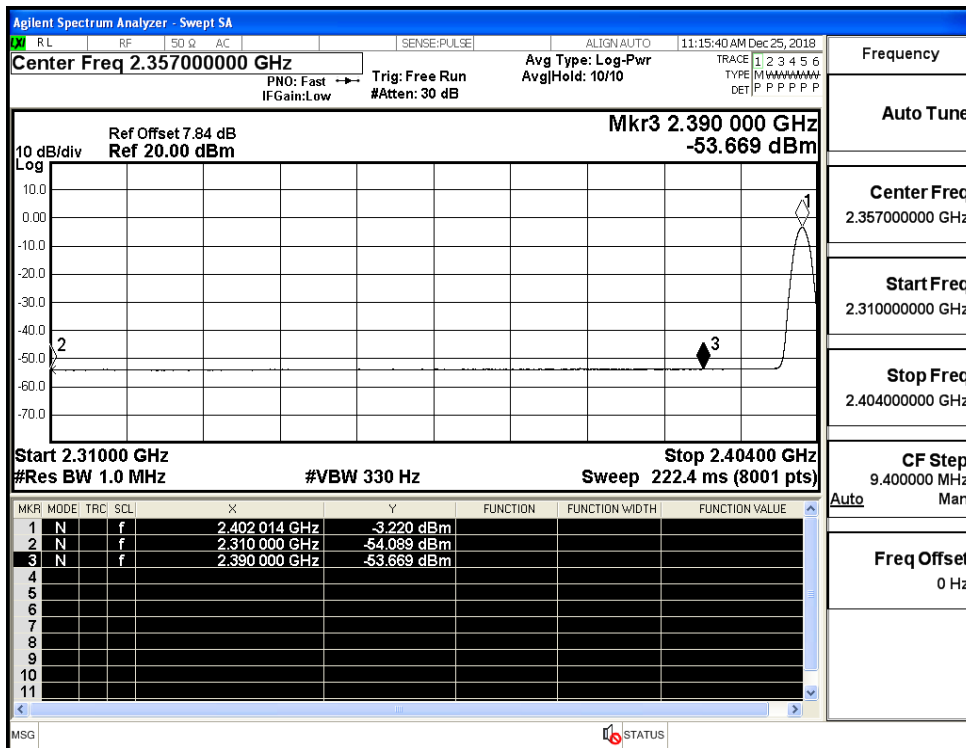
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



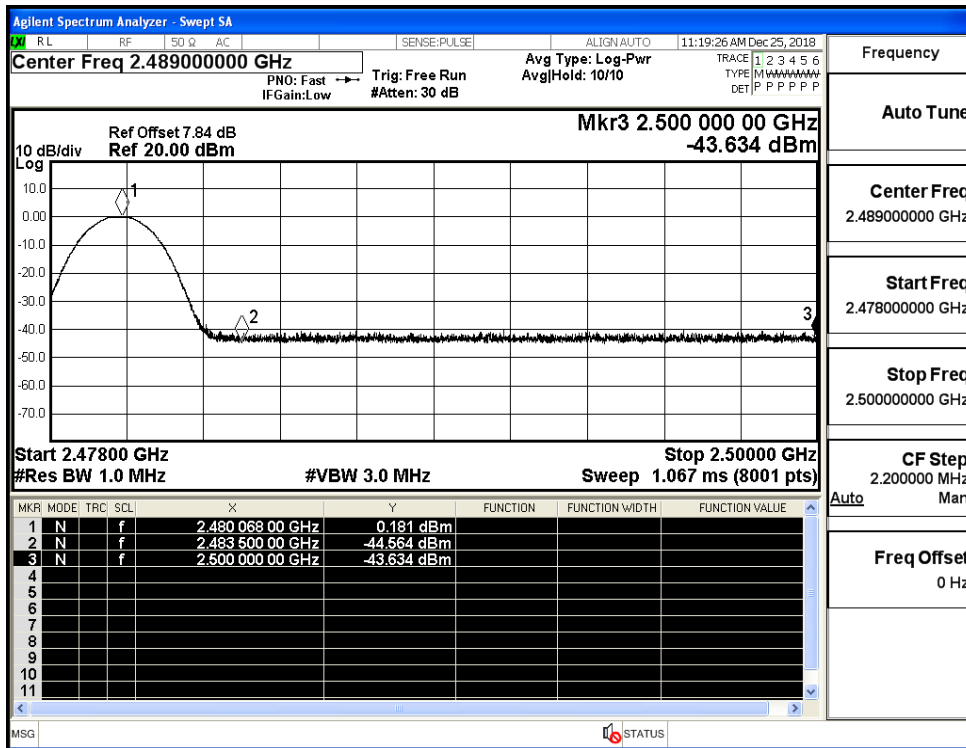
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



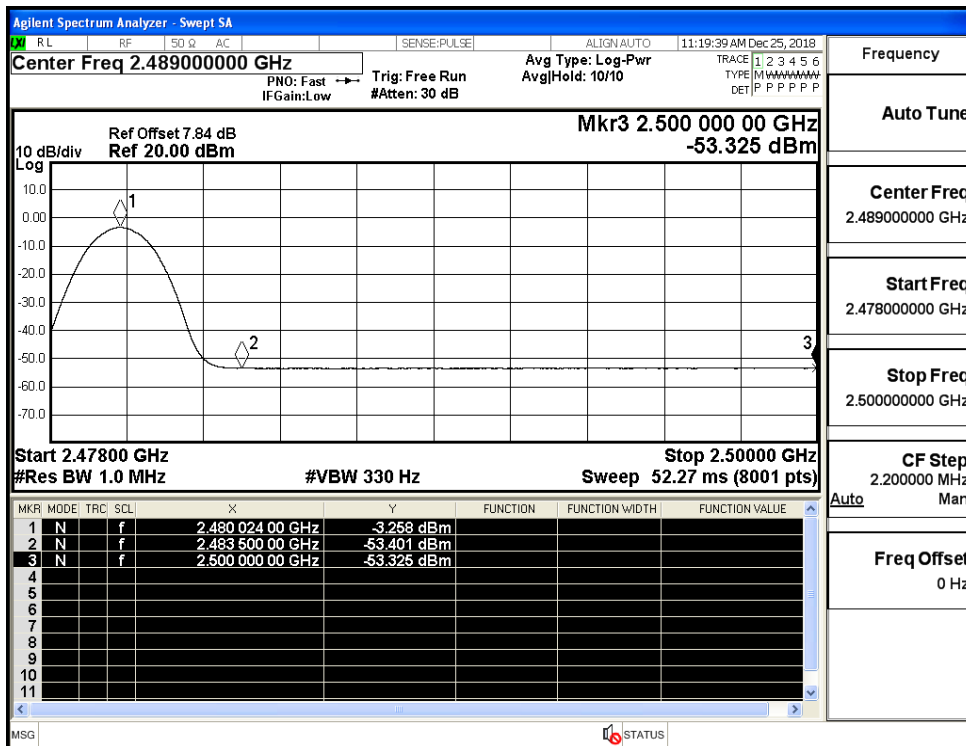
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



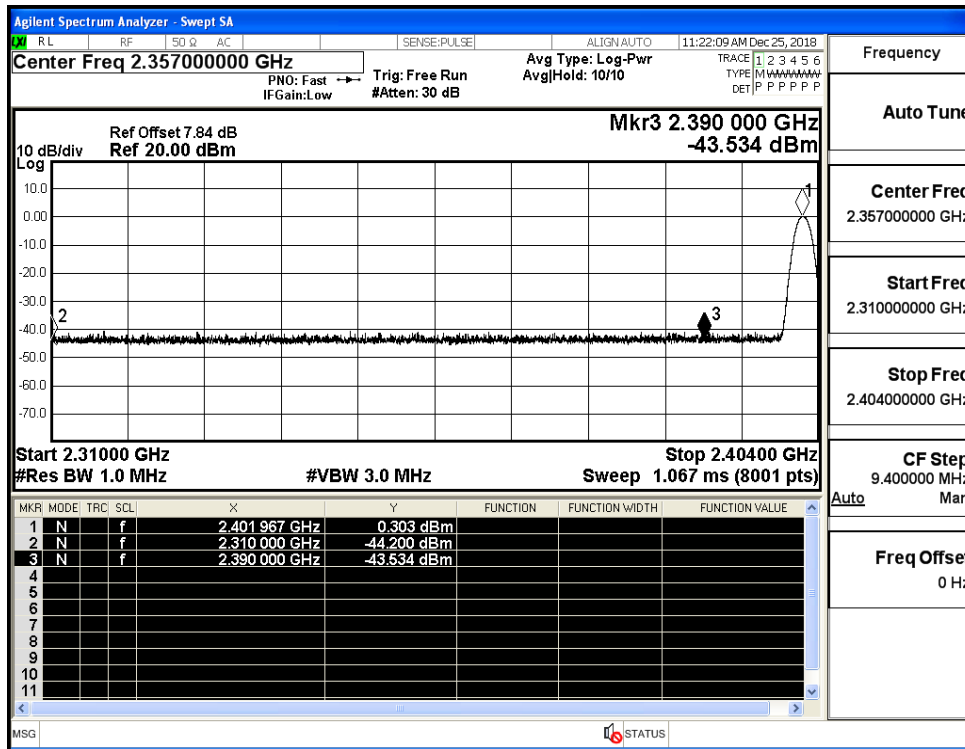
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



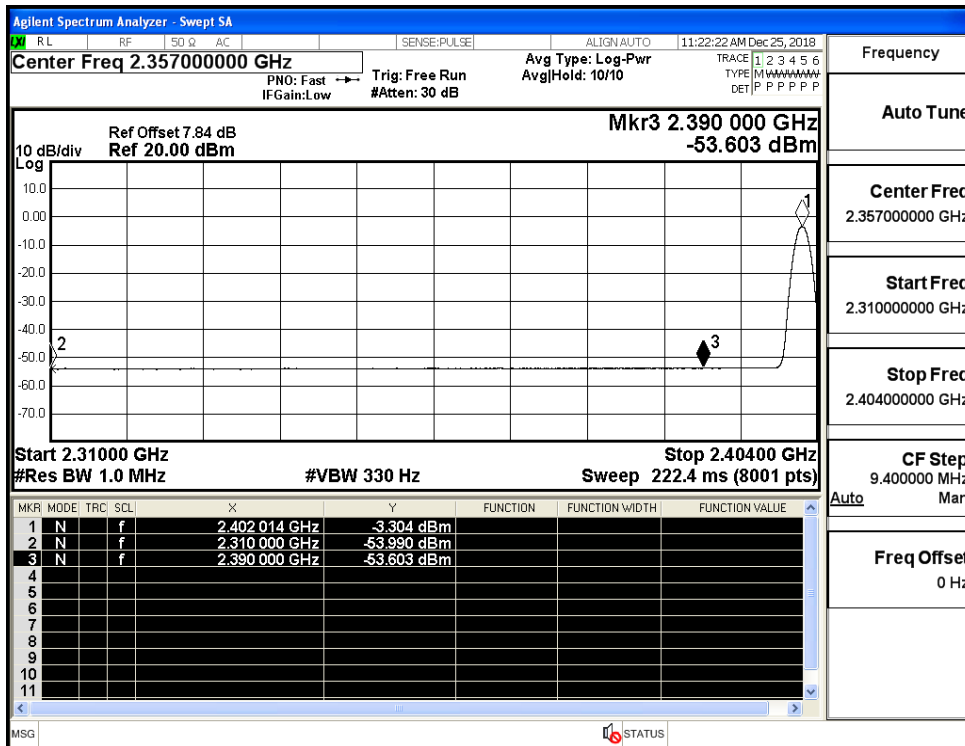
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



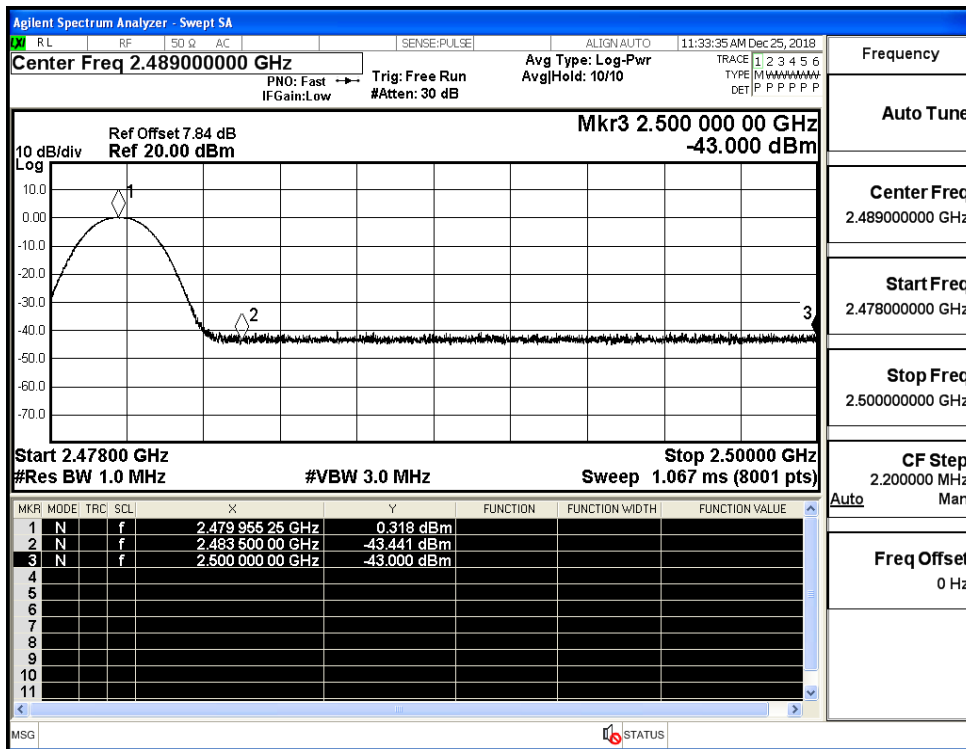
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

