

## Appendix A

### RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Speaker

Trade Mark: GSOU

Test Model: U3

#### Environmental Conditions

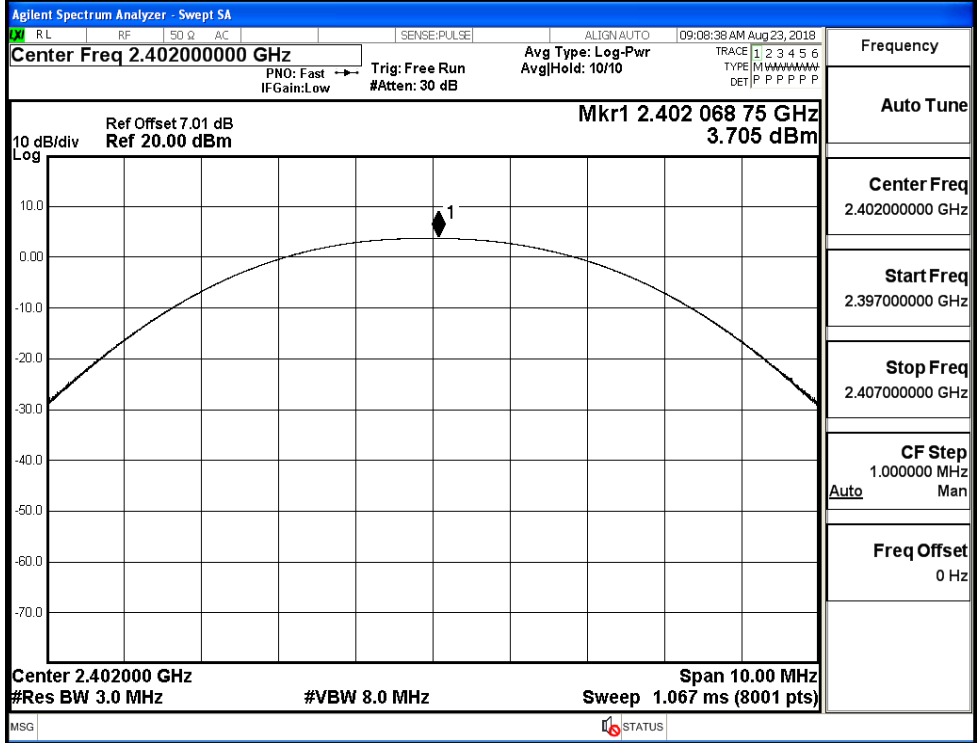
Temperature:	22.6 °C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Wang Chuang
Supervised by:	Jayden.Zhuo

#### A.1 Maximum Conducted Peak Output Power

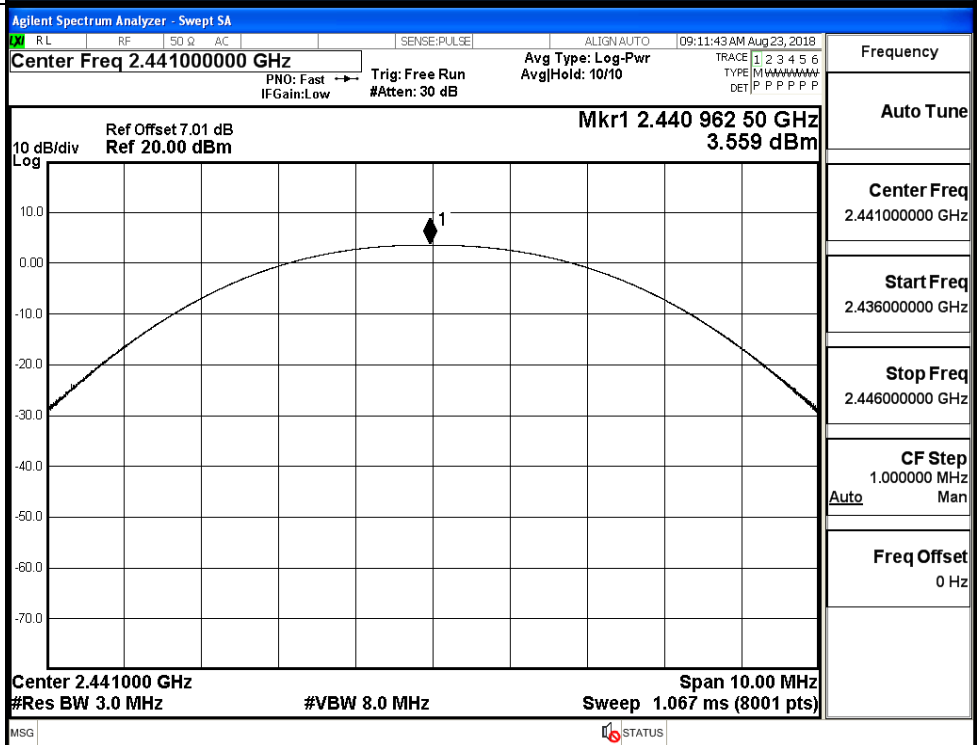
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.705	21	PASS
	MCH	3.559	21	PASS
	HCH	3.347	21	PASS
$\pi/4$ DQPSK	LCH	3.399	21	PASS
	MCH	3.305	21	PASS
	HCH	3.129	21	PASS
8DPSK	LCH	3.542	21	PASS
	MCH	3.480	21	PASS
	HCH	3.306	21	PASS

Test Graphs

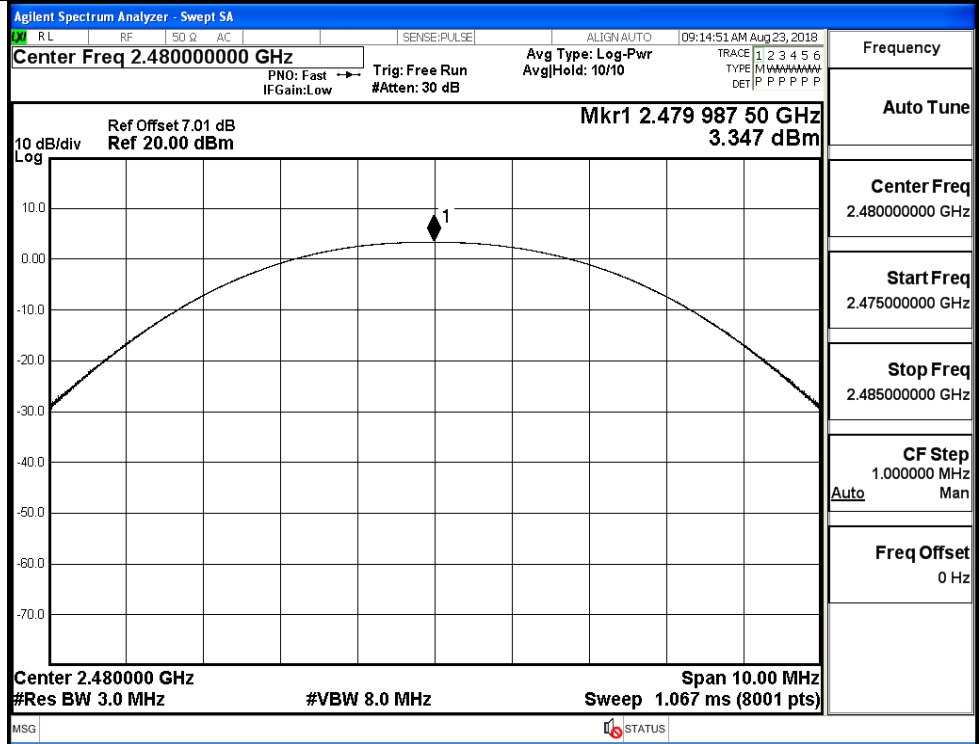
GFSK/LCH



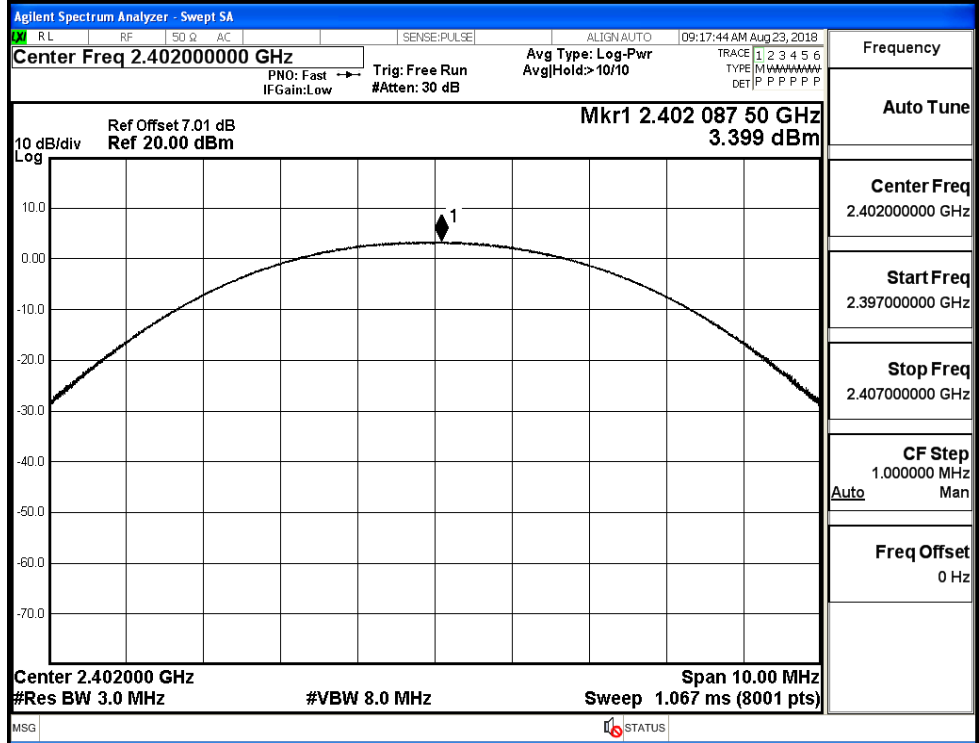
GFSK/MCH



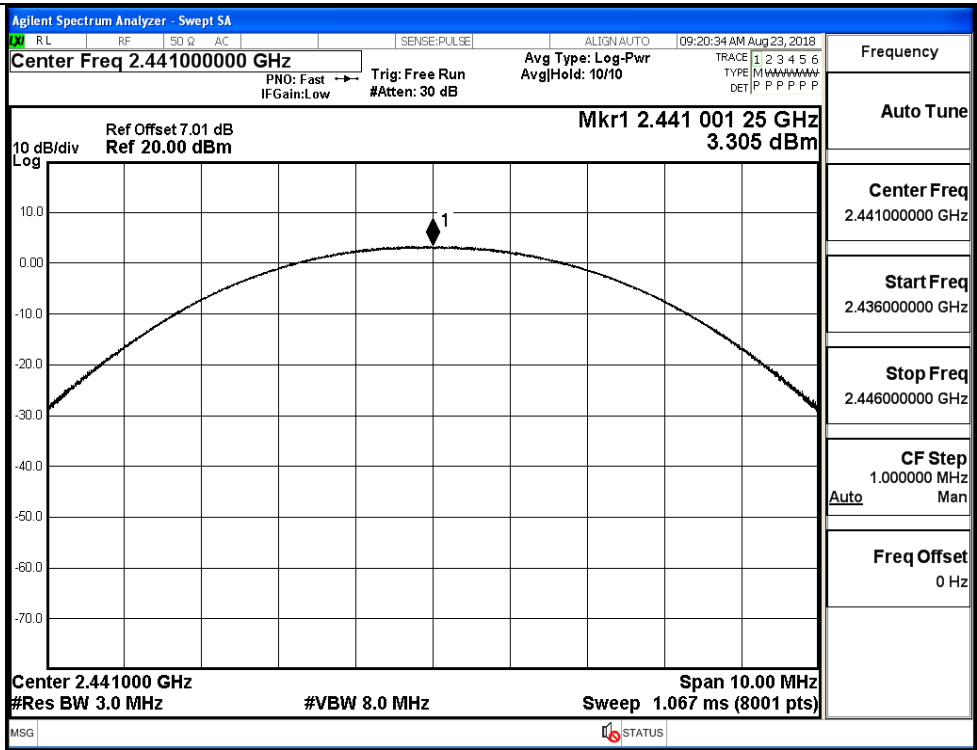
GFSK/HCH



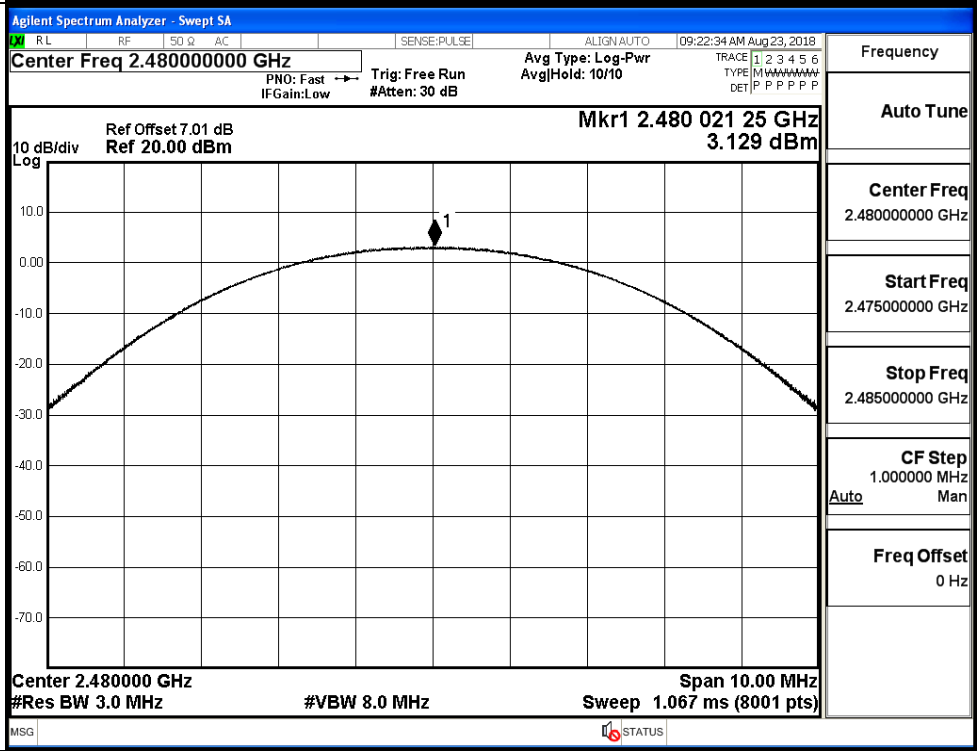
$\pi$ /4DQPSK/LCH



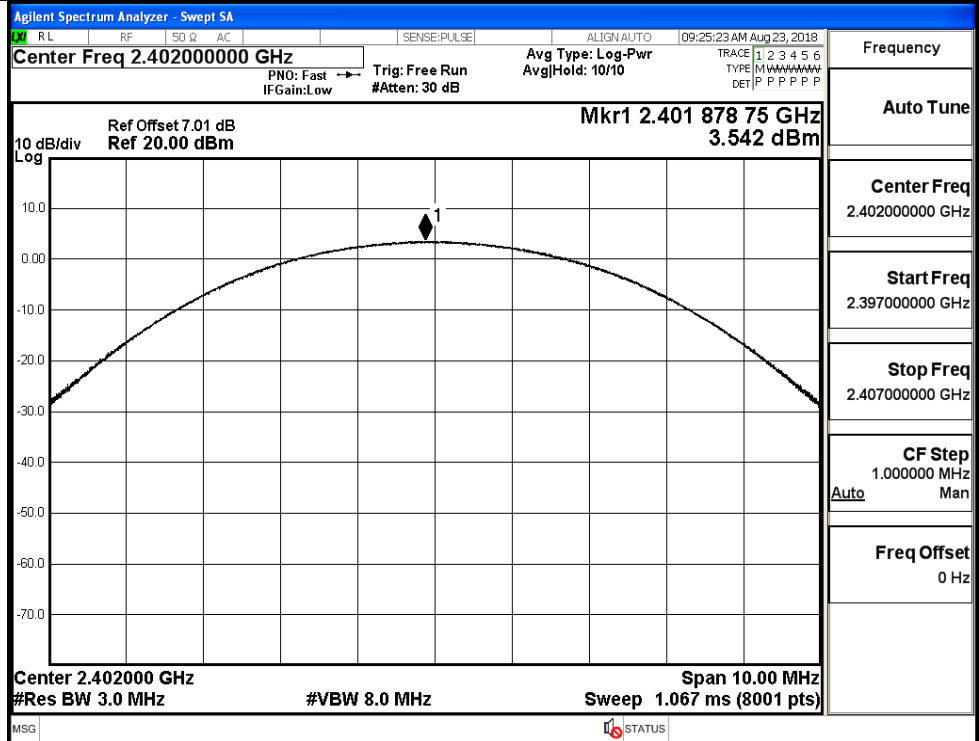
$\pi$ /4DQPSK/MCH



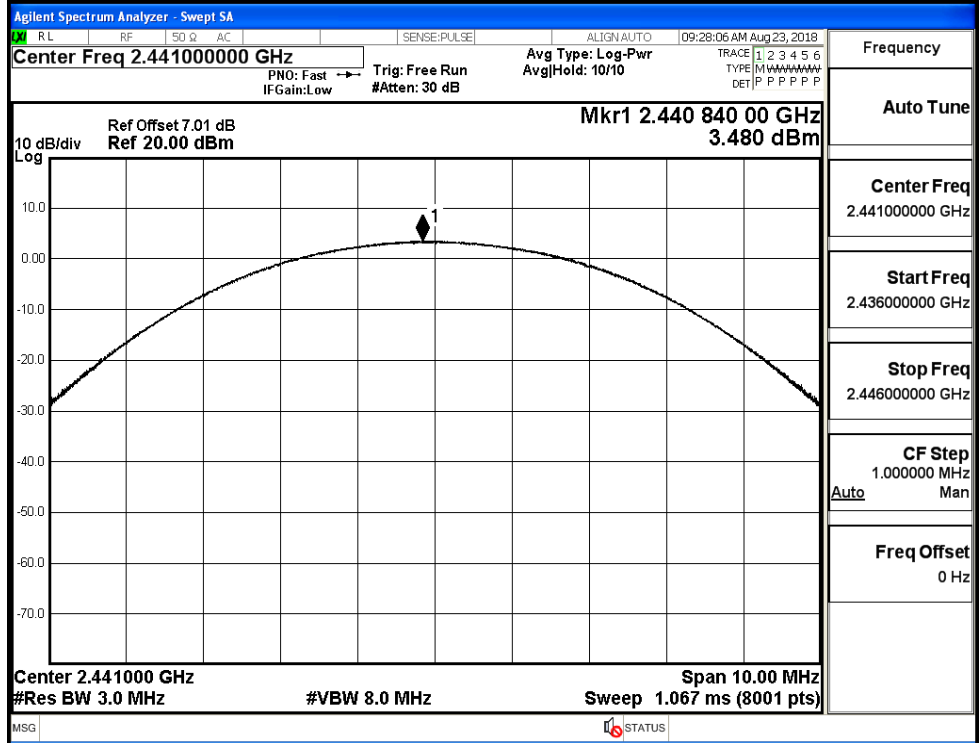
$\pi$ /4DQPSK/HCH



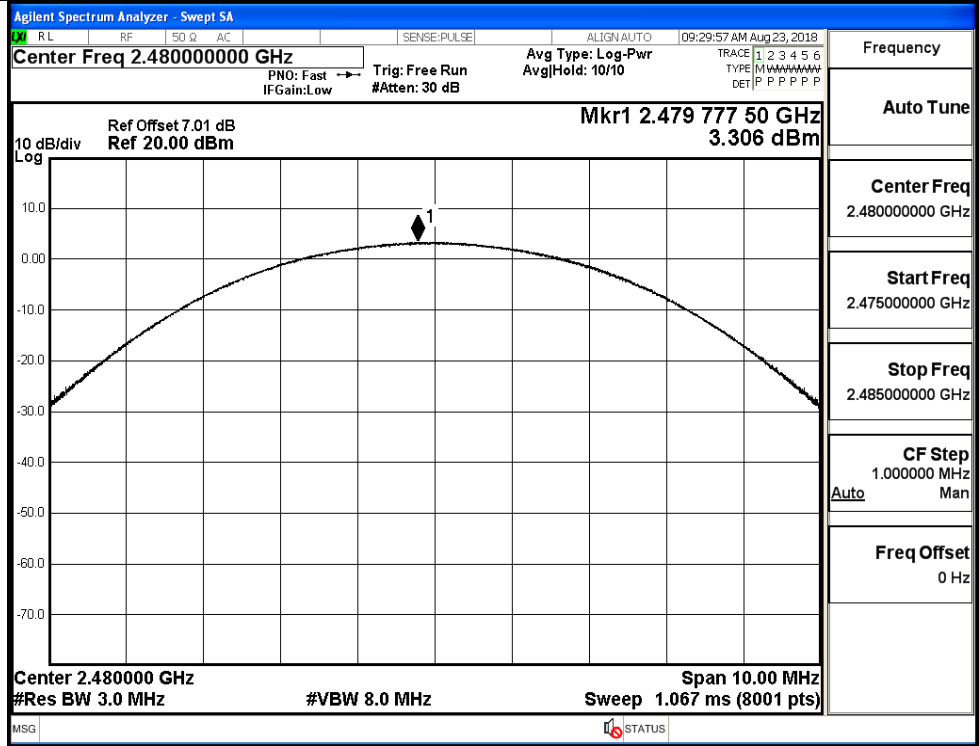
8DPSK/LCH



8DPSK/MCH

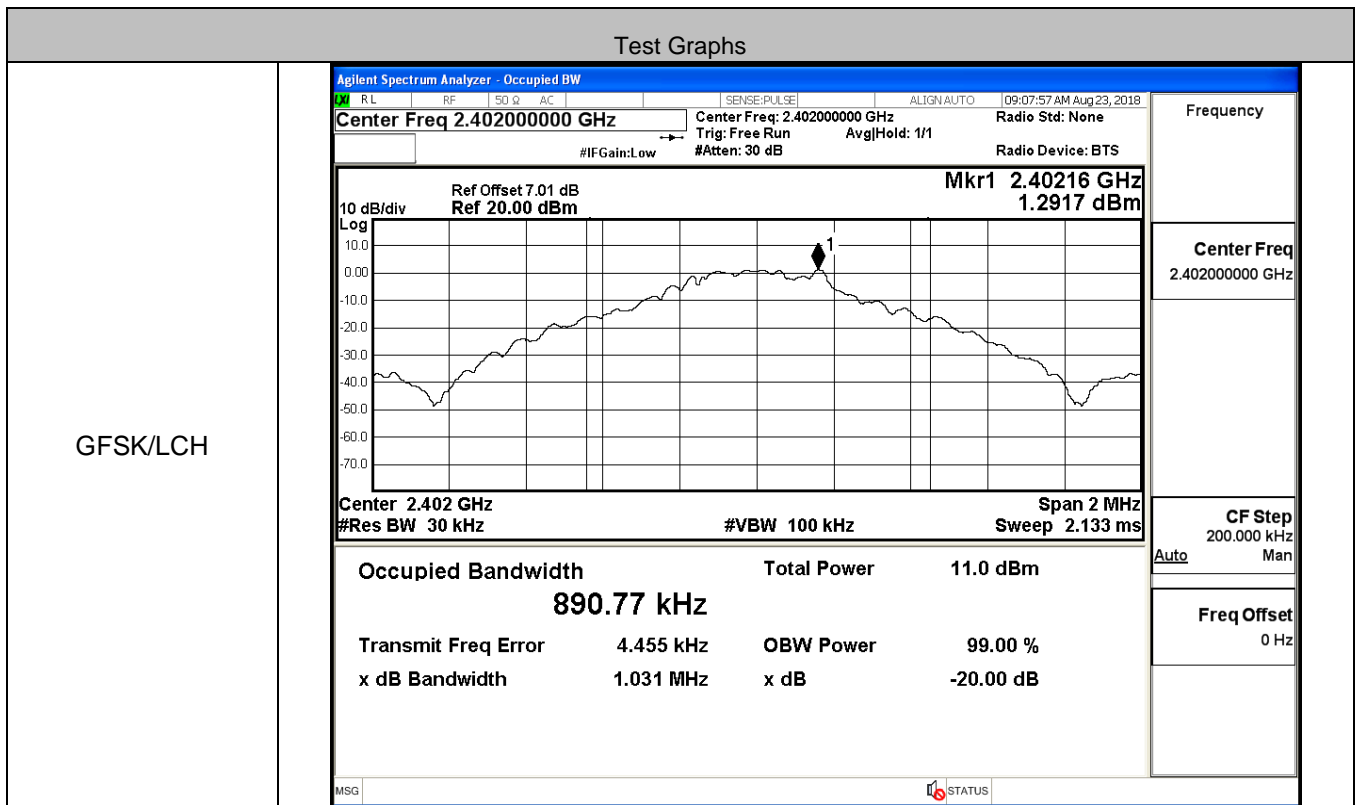


8DPSK/HCH

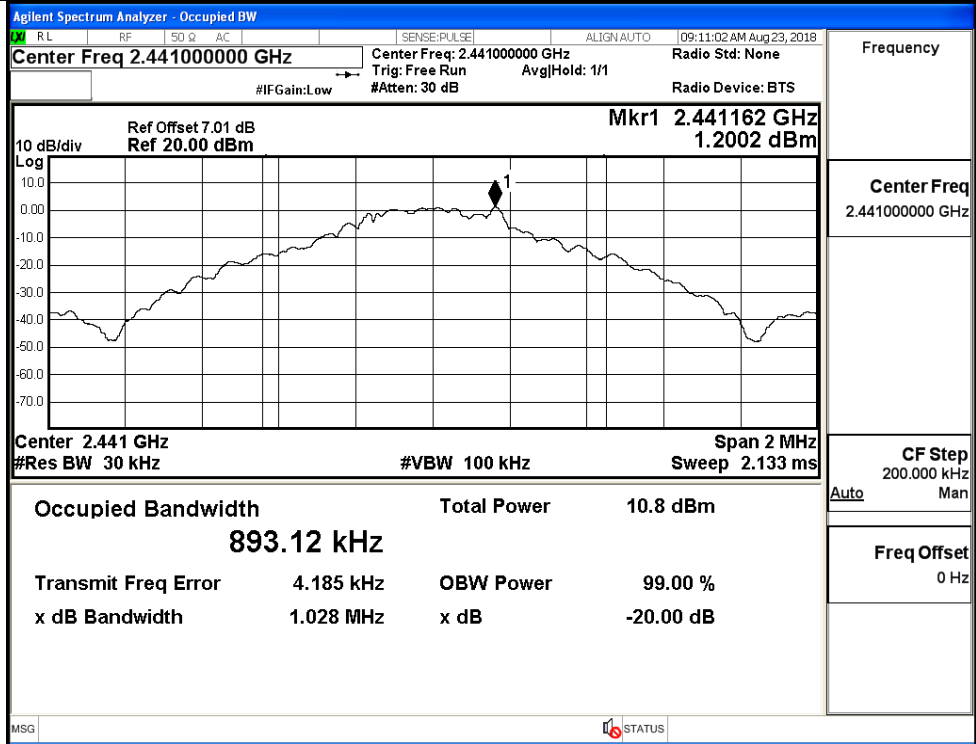


**A.2 99% and 20dB Bandwidth**

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89077	1.031	Not Specified	PASS
	MCH	0.89312	1.028	Not Specified	PASS
	HCH	0.89238	1.037	Not Specified	PASS
π/4DQPSK	LCH	1.1680	1.287	Not Specified	PASS
	MCH	1.1663	1.286	Not Specified	PASS
	HCH	1.1677	1.286	Not Specified	PASS
8DPSK	LCH	1.1752	1.291	Not Specified	PASS
	MCH	1.1710	1.285	Not Specified	PASS
	HCH	1.1710	1.284	Not Specified	PASS

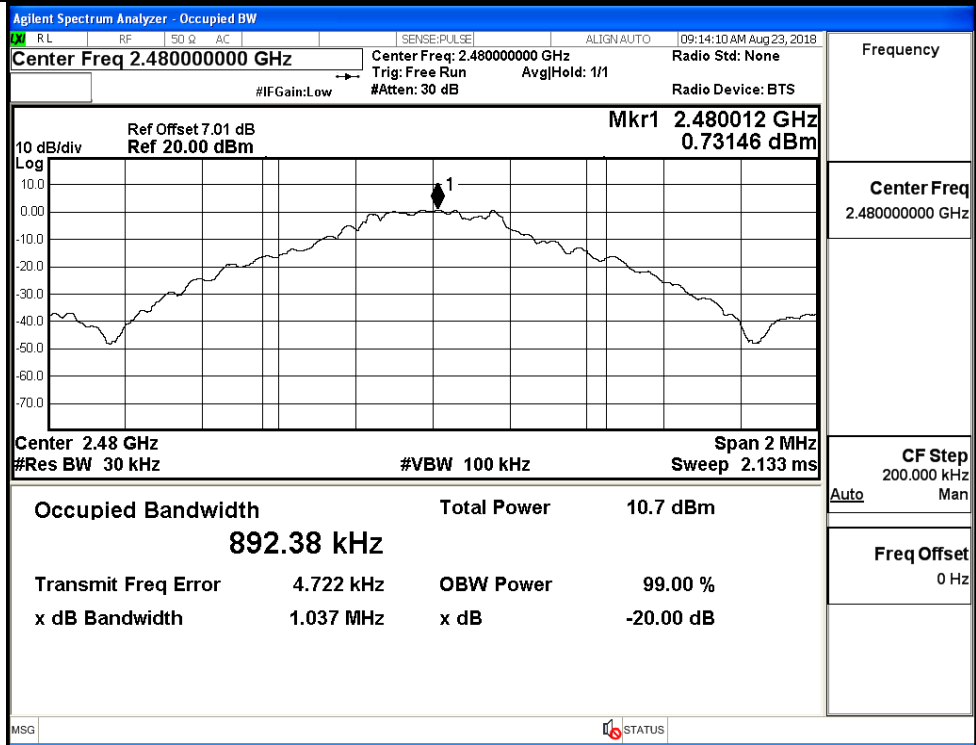


GFSK/MCH



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

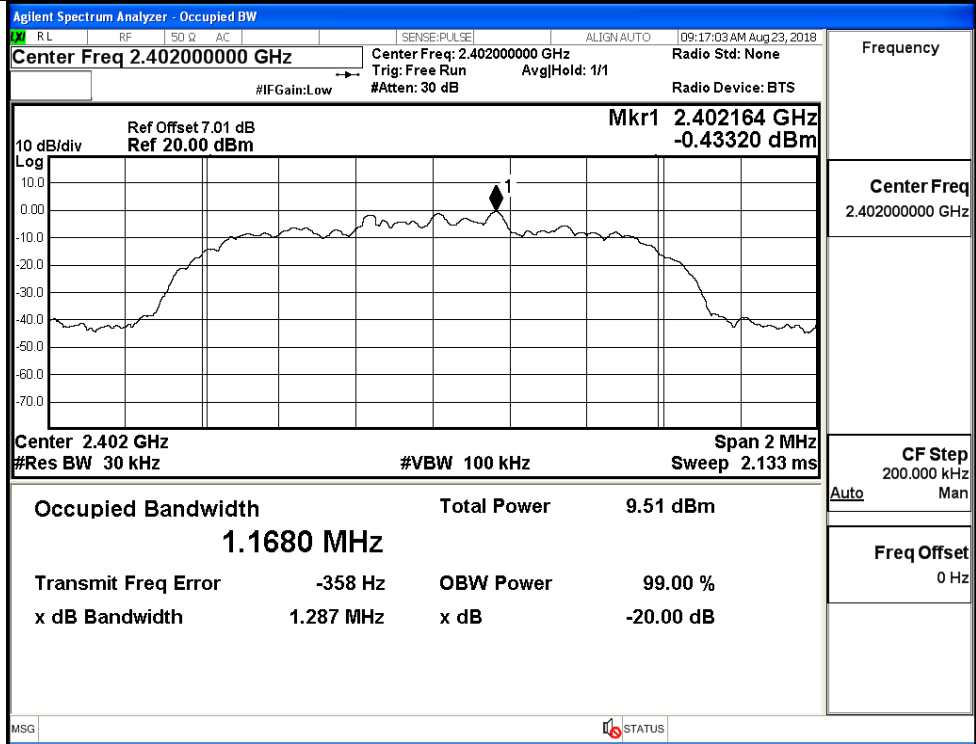
GFSK/HCH



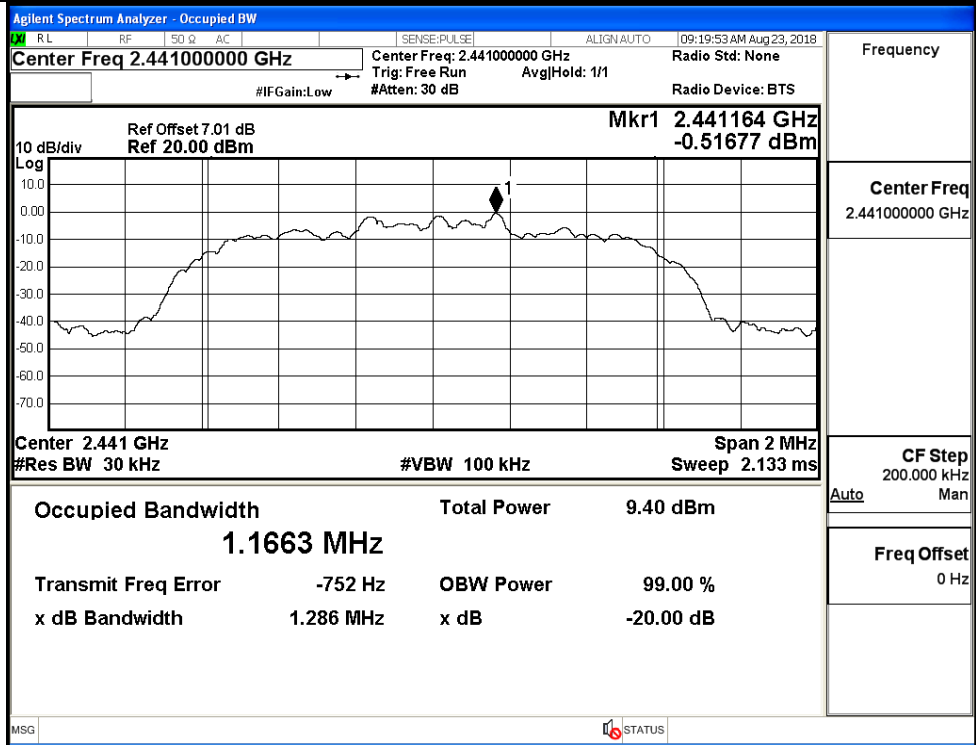
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz



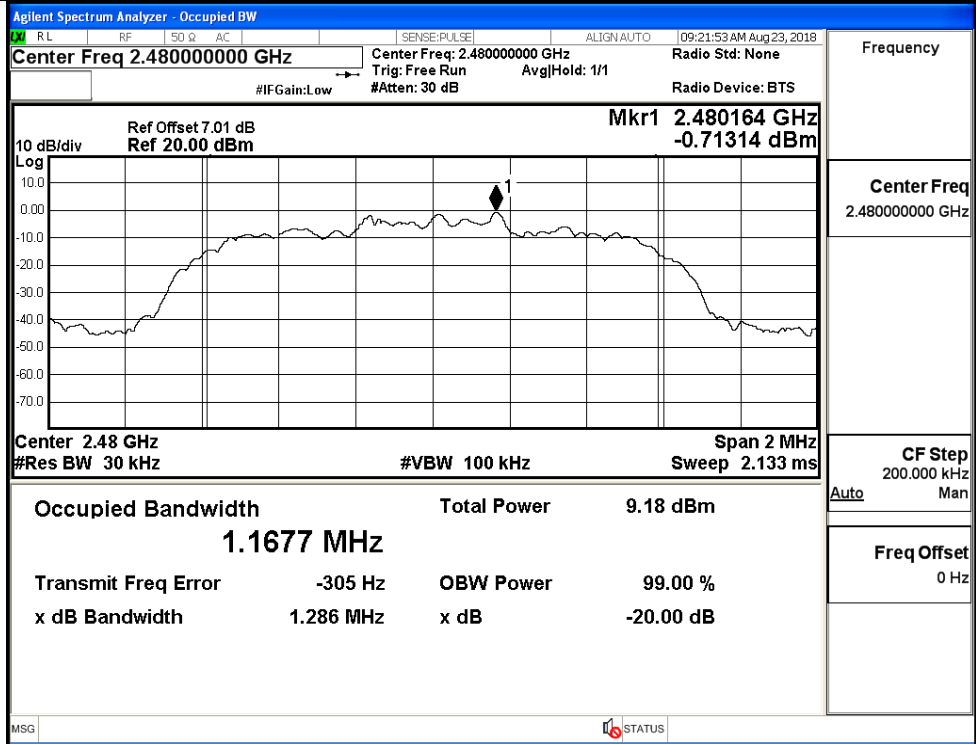
$\pi/4$ DQPSK/LCH



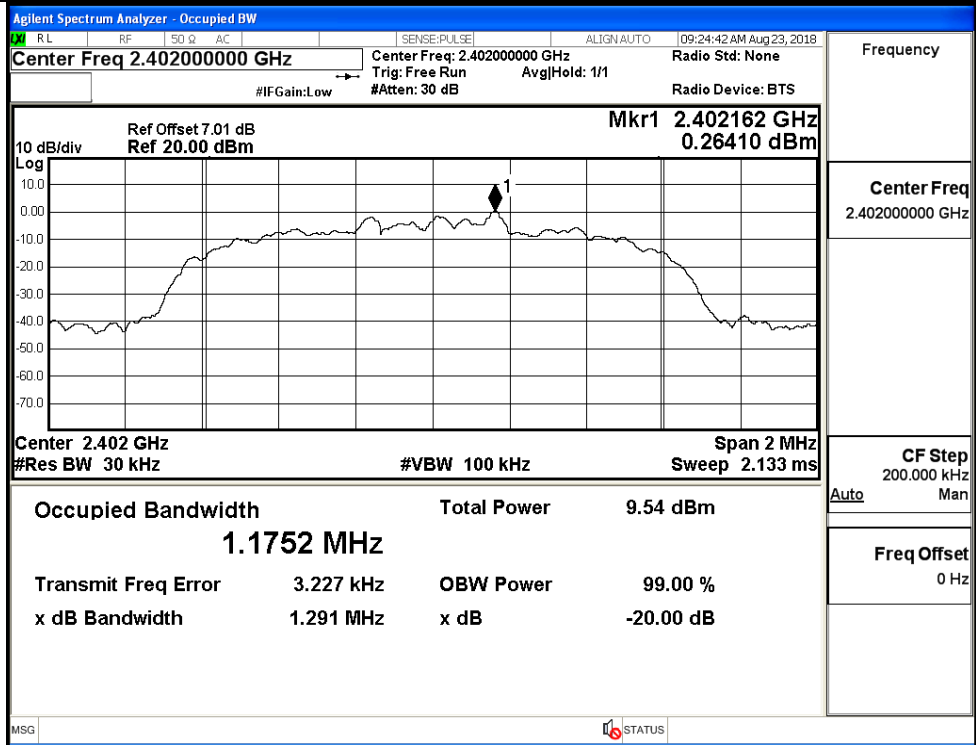
$\pi/4$ DQPSK/MCH



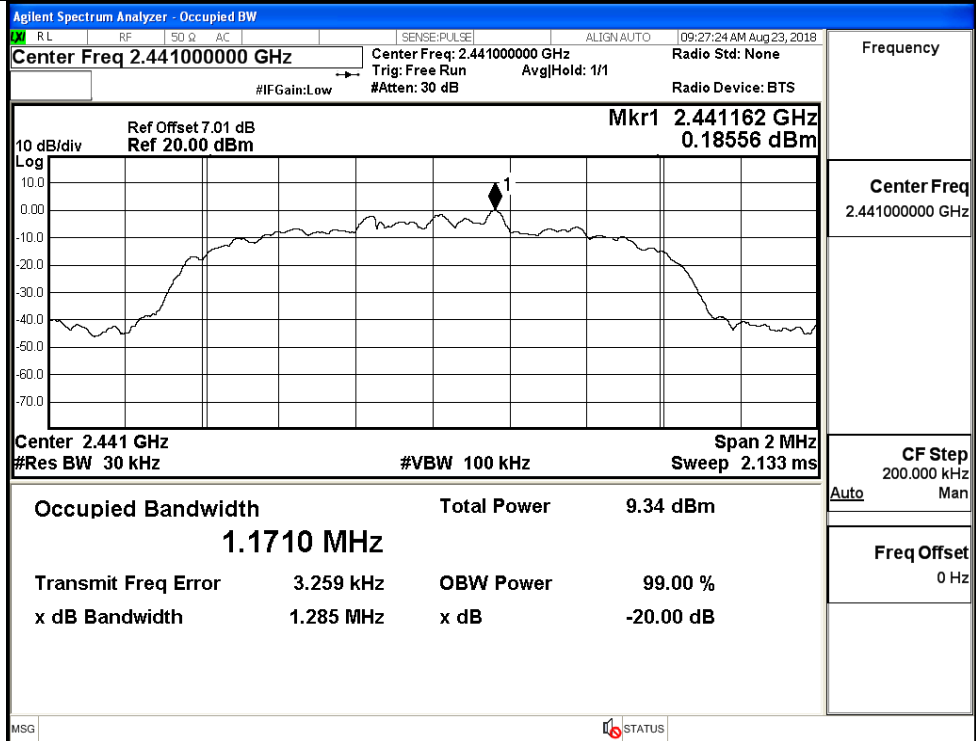
$\pi/4$ DQPSK/HCH



8DPSK/LCH

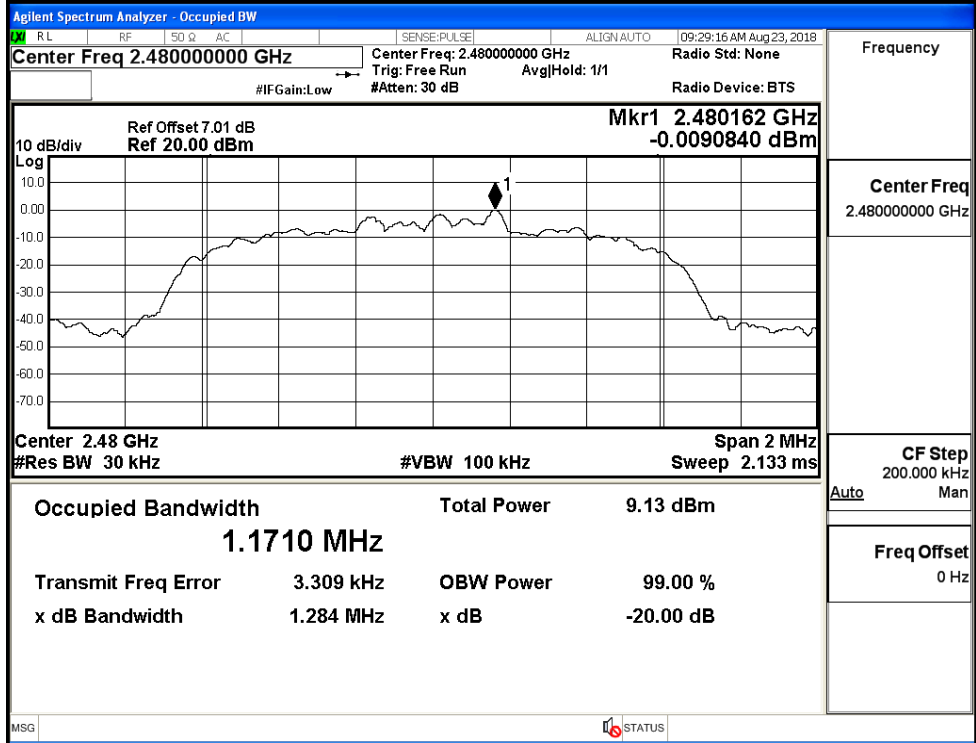


8DPSK/MCH



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

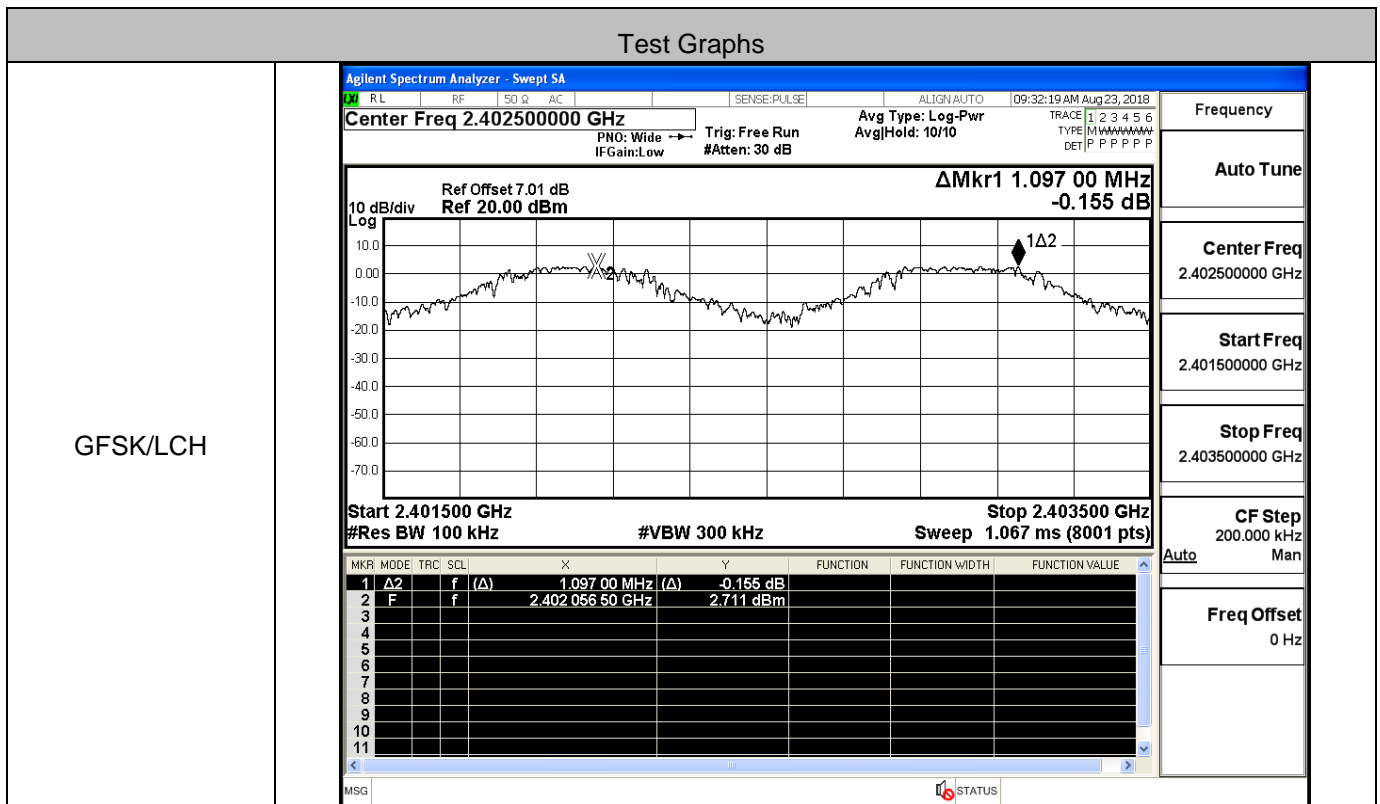
8DPSK/HCH



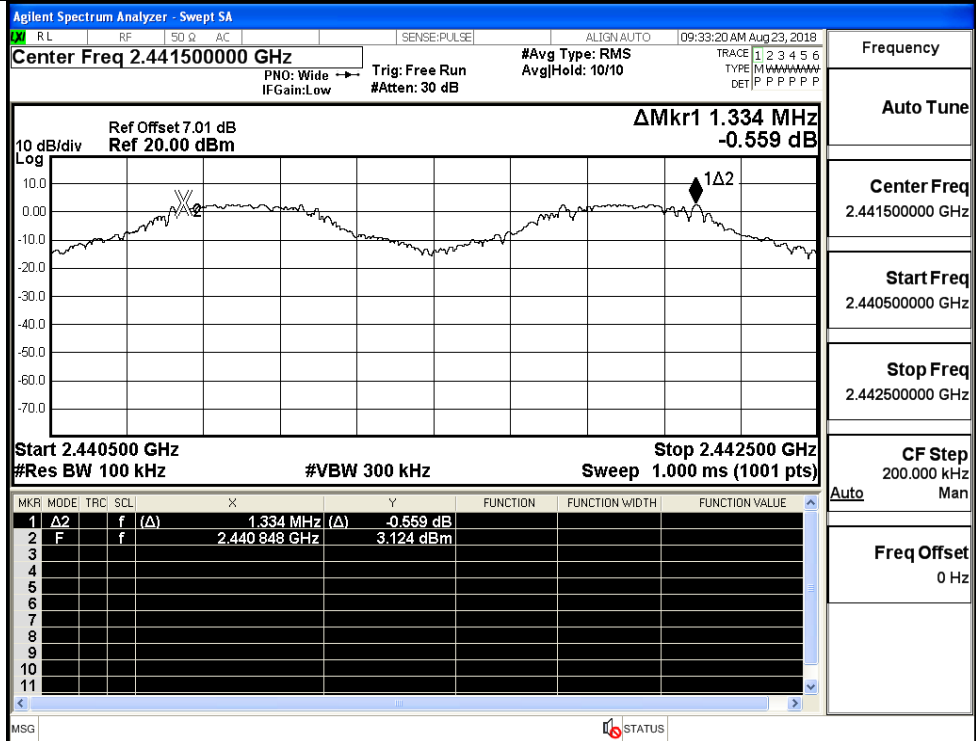
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

### A.3 Carrier Frequency Separation

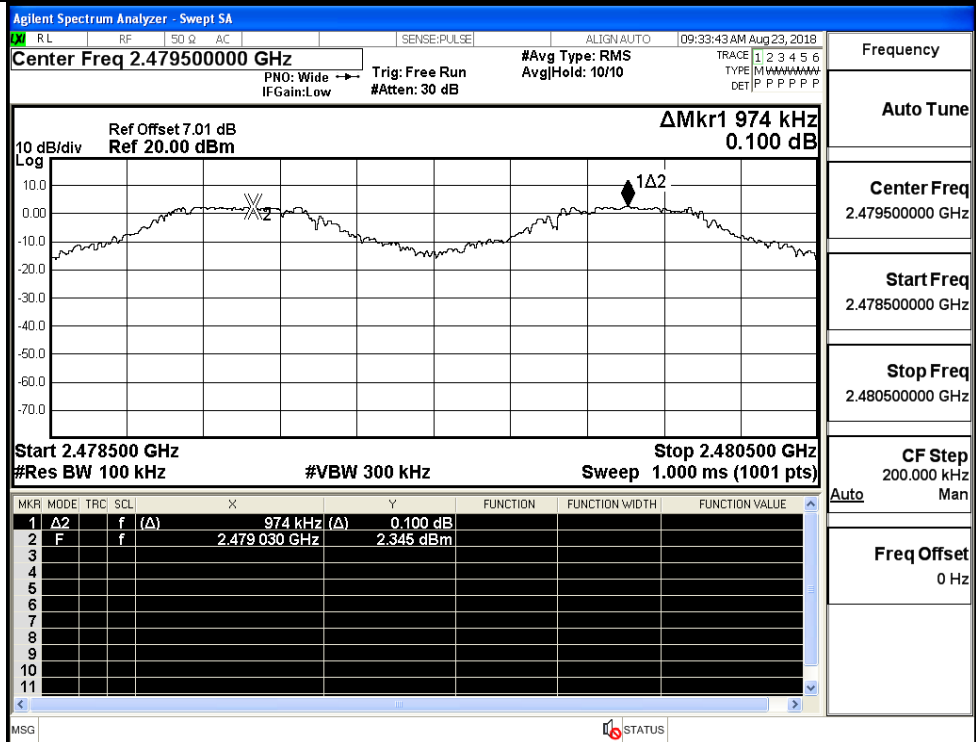
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.097	0.691	PASS
	MCH	1.334	0.691	PASS
	HCH	0.974	0.691	PASS
π/4DQPSK	LCH	1.178	0.858	PASS
	MCH	0.934	0.858	PASS
	HCH	1.152	0.858	PASS
8DPSK	LCH	0.966	0.861	PASS
	MCH	1.100	0.861	PASS
	HCH	0.904	0.861	PASS



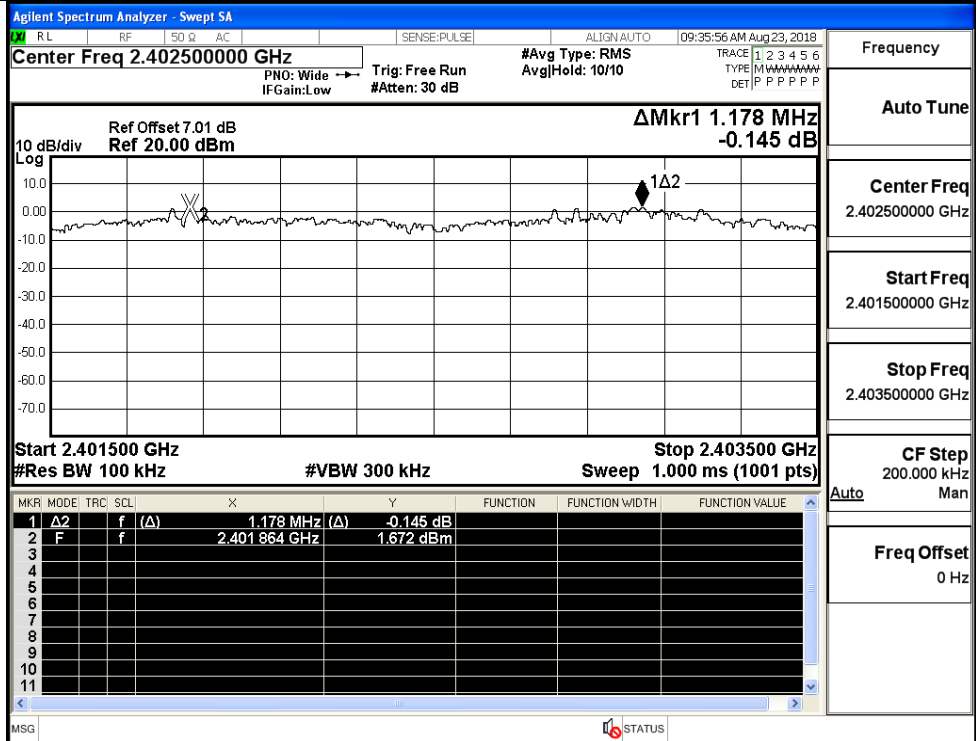
GFSK/MCH



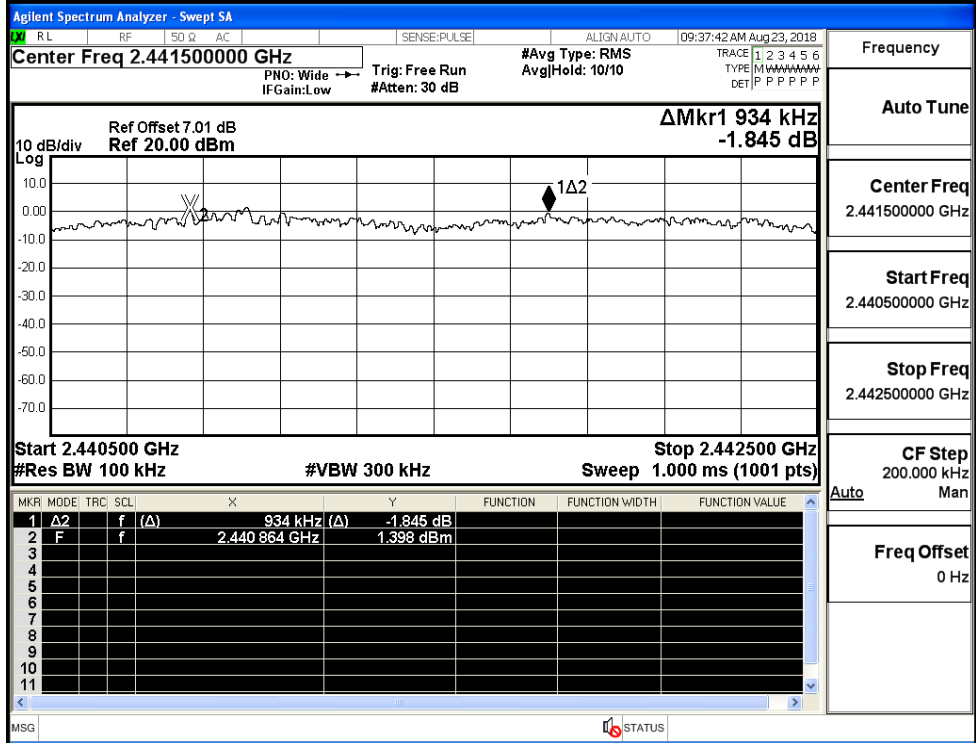
GFSK/HCH



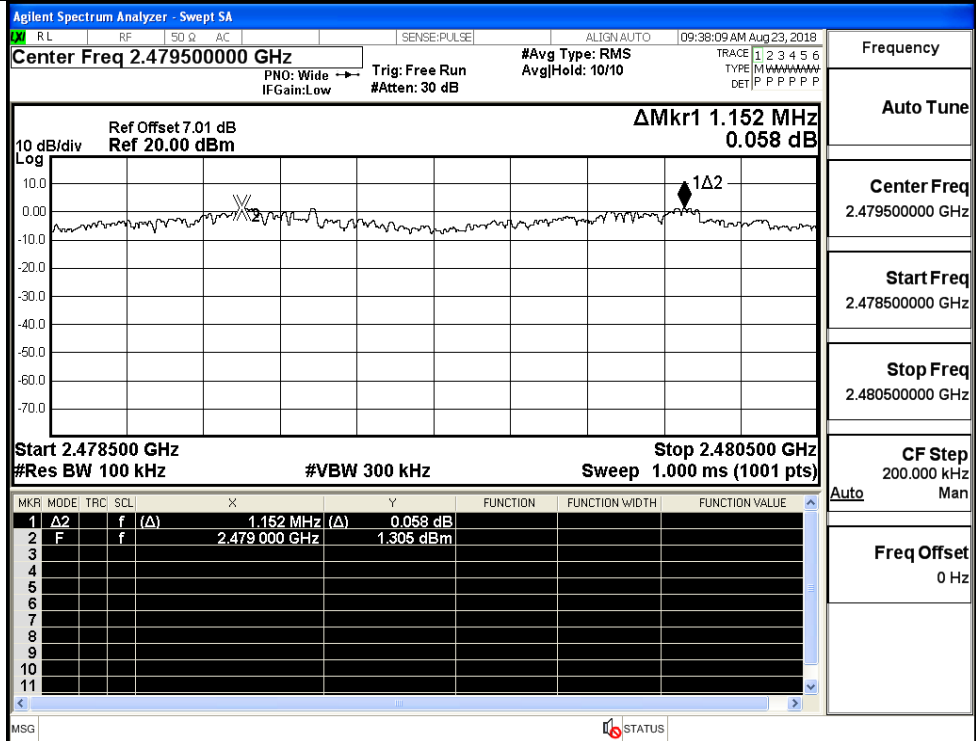
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

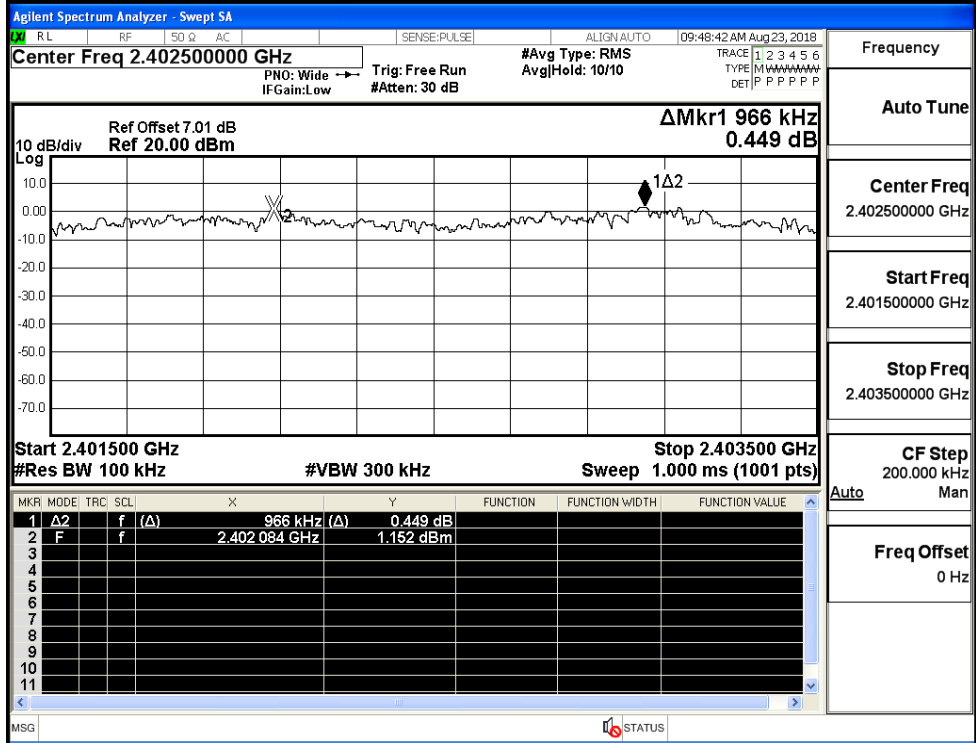


π/4DQPSK/HCH



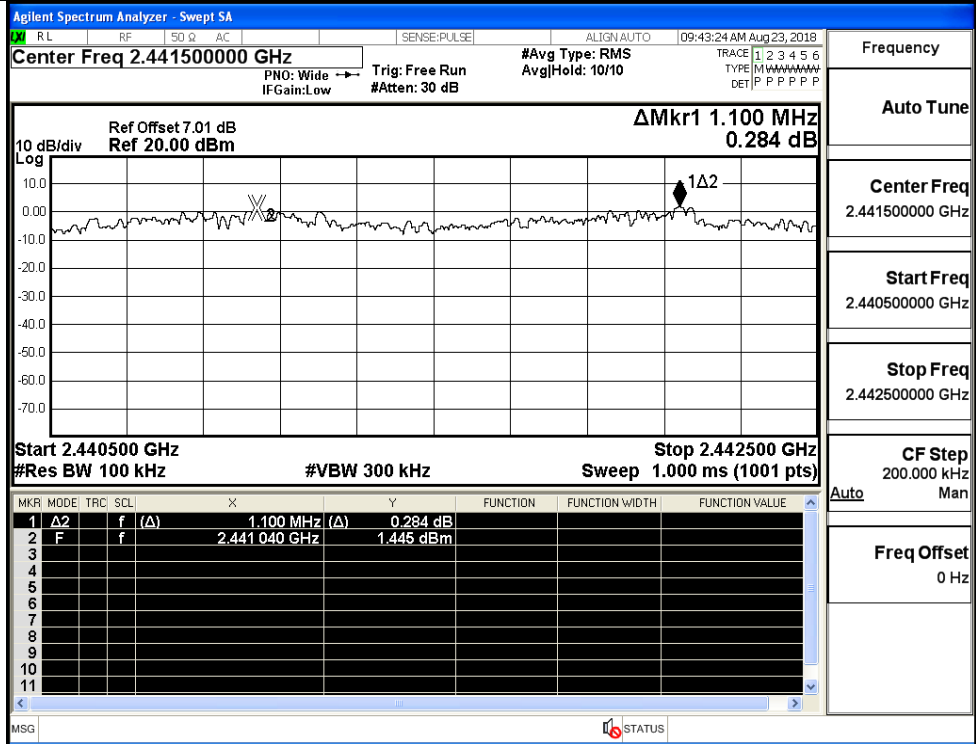
Frequency  
Auto Tune  
Center Freq  
2.479500000 GHz  
Start Freq  
2.478500000 GHz  
Stop Freq  
2.480500000 GHz  
CF Step  
200.000 kHz  
Man  
Freq Offset  
0 Hz

8DPSK/LCH

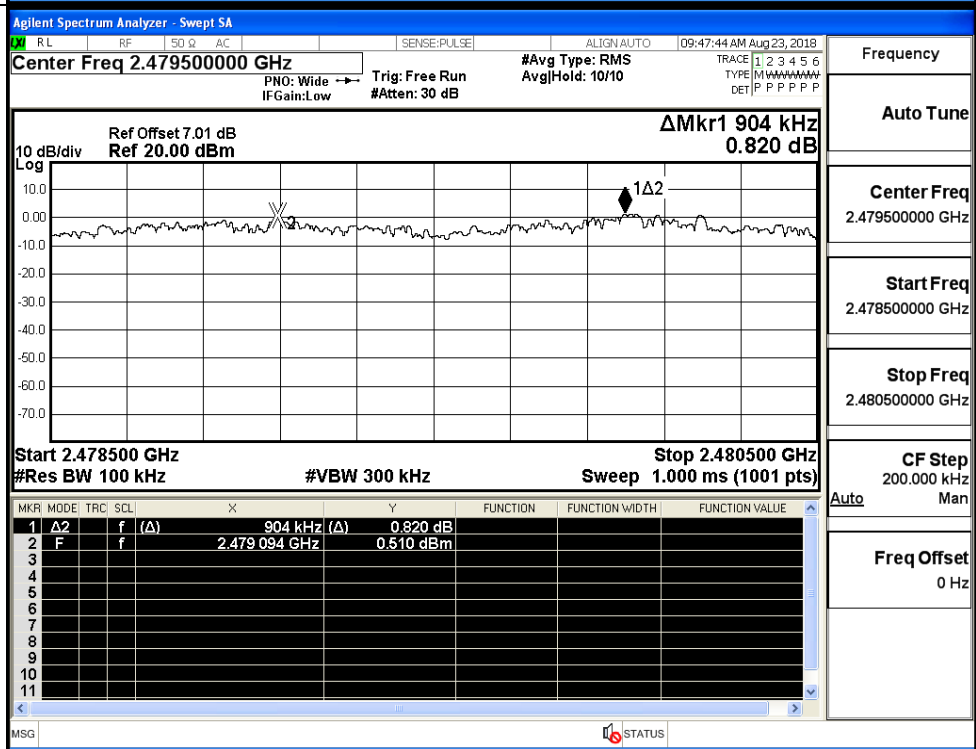


Frequency  
Auto Tune  
Center Freq  
2.402500000 GHz  
Start Freq  
2.401500000 GHz  
Stop Freq  
2.403500000 GHz  
CF Step  
200.000 kHz  
Man  
Freq Offset  
0 Hz

8DPSK/MCH



8DPSK/HCH





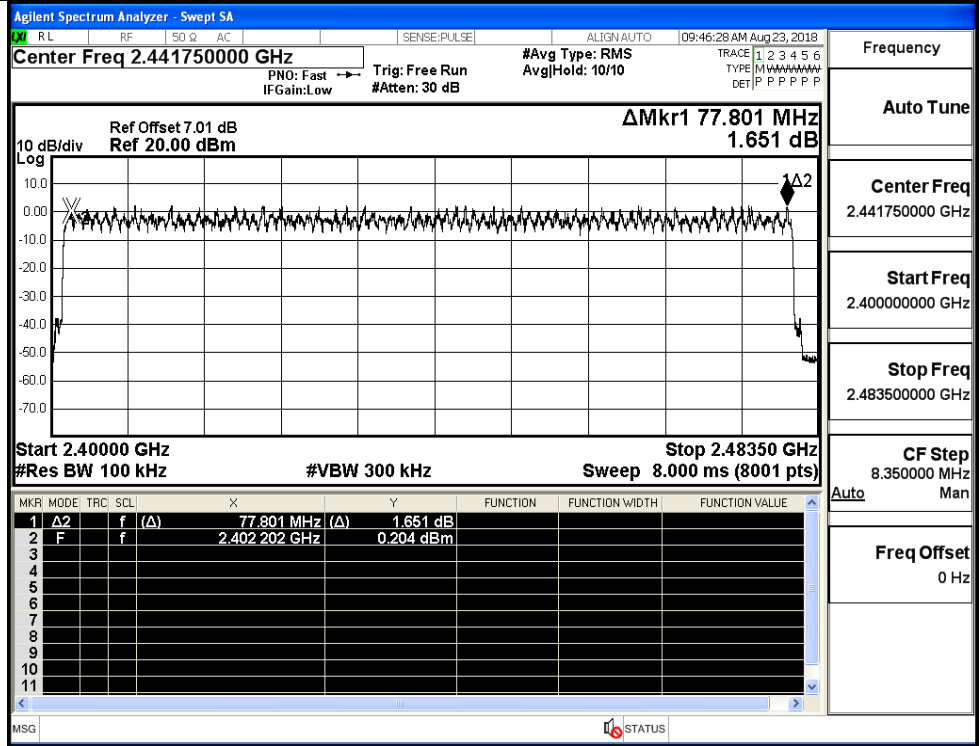
### A.4 Hopping Channel Number

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

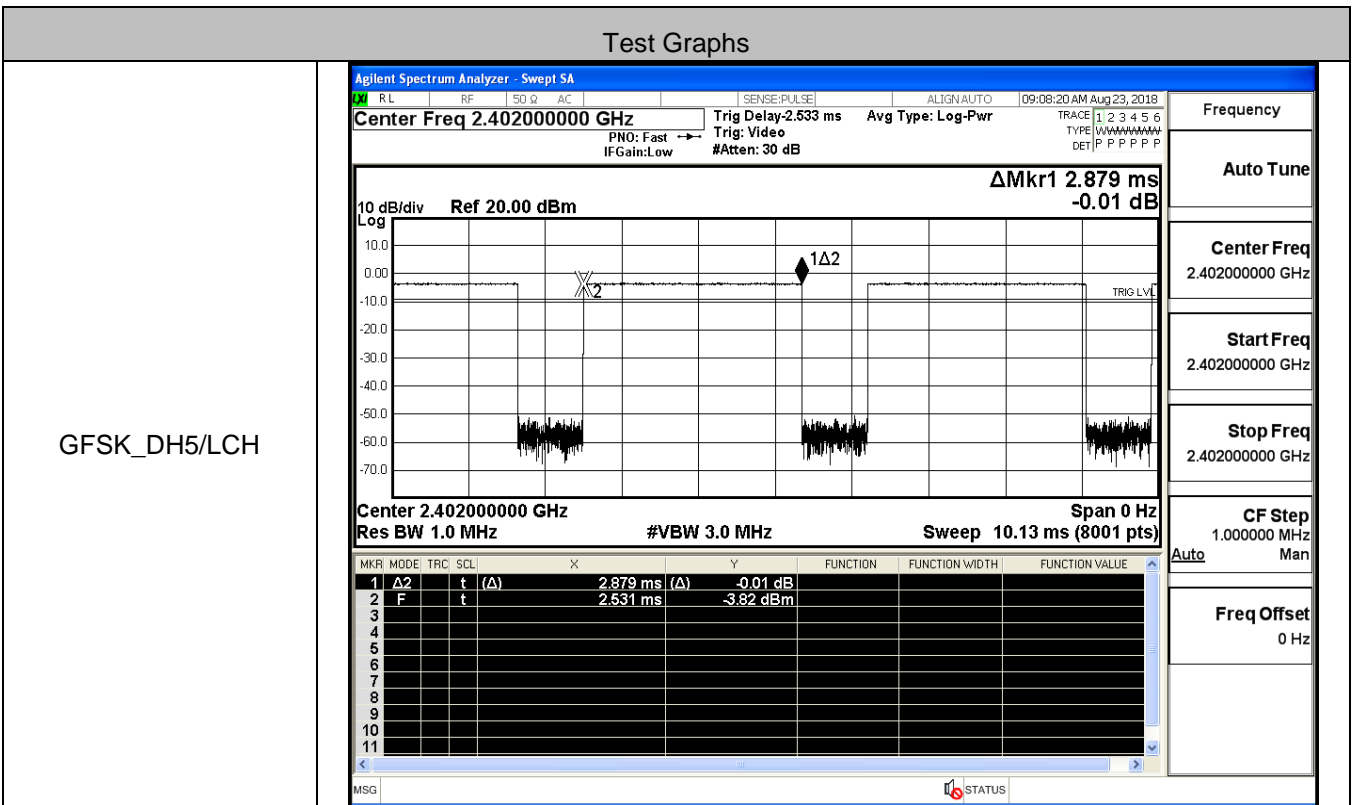
<p>GFSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA          Center Freq 2.441750000 GHz          Ref Offset 7.01 dB          Ref 20.00 dBm  <math>\Delta</math>Mkr1 78.020 MHz          -0.182 dB          Start 2.40000 GHz          #Res BW 100 kHz          #VBW 300 kHz          Stop 2.48350 GHz          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><math>\Delta</math>2</td> <td>f</td> <td>(<math>\Delta</math>)</td> <td>78.020 MHz (<math>\Delta</math>)</td> <td>-0.182 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401962 GHz</td> <td>2.967 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	$\Delta$ 2	f	( $\Delta$ )	78.020 MHz ( $\Delta$ )	-0.182 dB				2	F	f		2.401962 GHz	2.967 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>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	$\Delta$ 2	f	( $\Delta$ )	78.020 MHz ( $\Delta$ )	-0.182 dB																								
2	F	f		2.401962 GHz	2.967 dBm																								
<p><math>\pi/4</math>DQPSK/Hop</p>	<p>Agilent Spectrum Analyzer - Swept SA          Center Freq 2.441750000 GHz          Ref Offset 7.01 dB          Ref 20.00 dBm  <math>\Delta</math>Mkr1 78.041 MHz          -0.080 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><math>\Delta</math>2</td> <td>f</td> <td>(<math>\Delta</math>)</td> <td>78.041 MHz (<math>\Delta</math>)</td> <td>-0.080 dB</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.401889 GHz</td> <td>0.001 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	$\Delta$ 2	f	( $\Delta$ )	78.041 MHz ( $\Delta$ )	-0.080 dB				2	F	f		2.401889 GHz	0.001 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>
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																					
1	$\Delta$ 2	f	( $\Delta$ )	78.041 MHz ( $\Delta$ )	-0.080 dB																								
2	F	f		2.401889 GHz	0.001 dBm																								

8DPSK/Hop

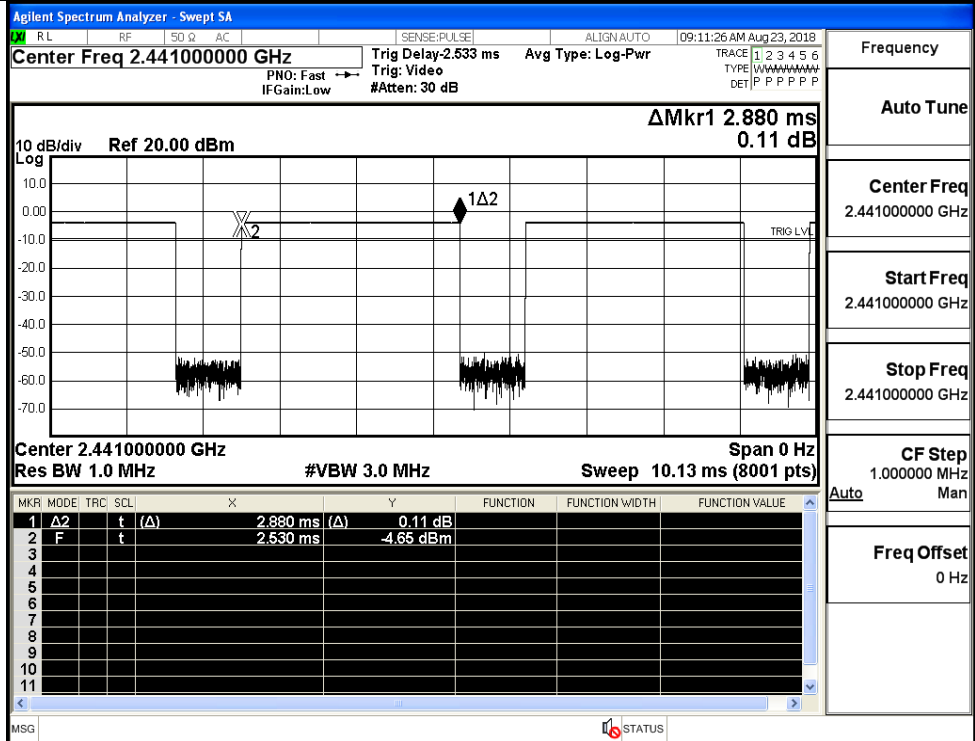


### A.5 Dwell Time

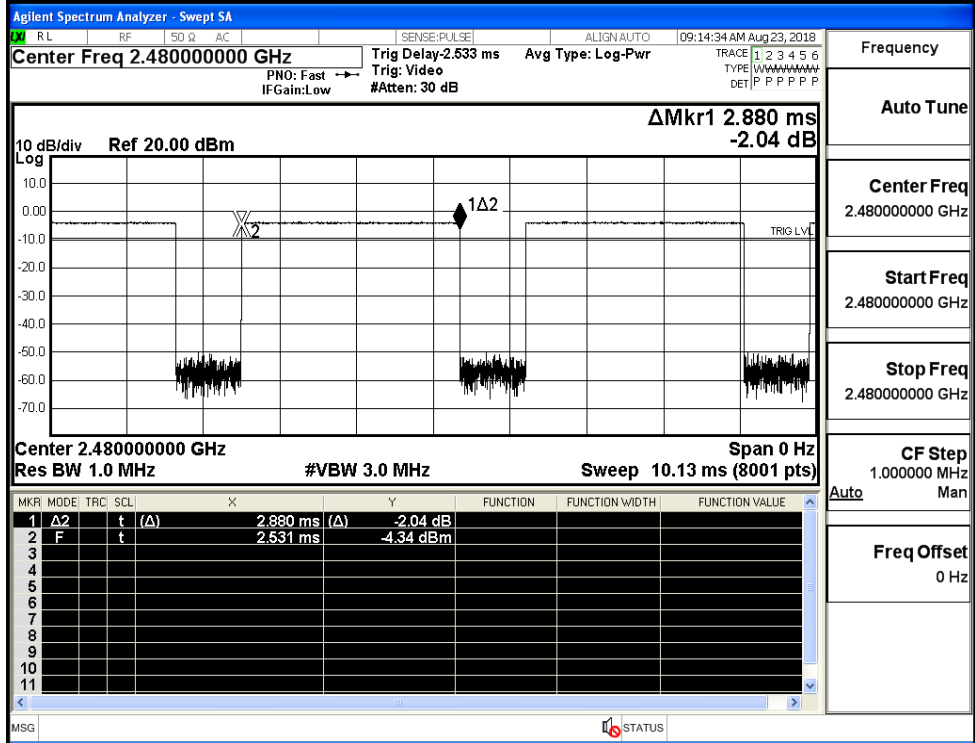
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



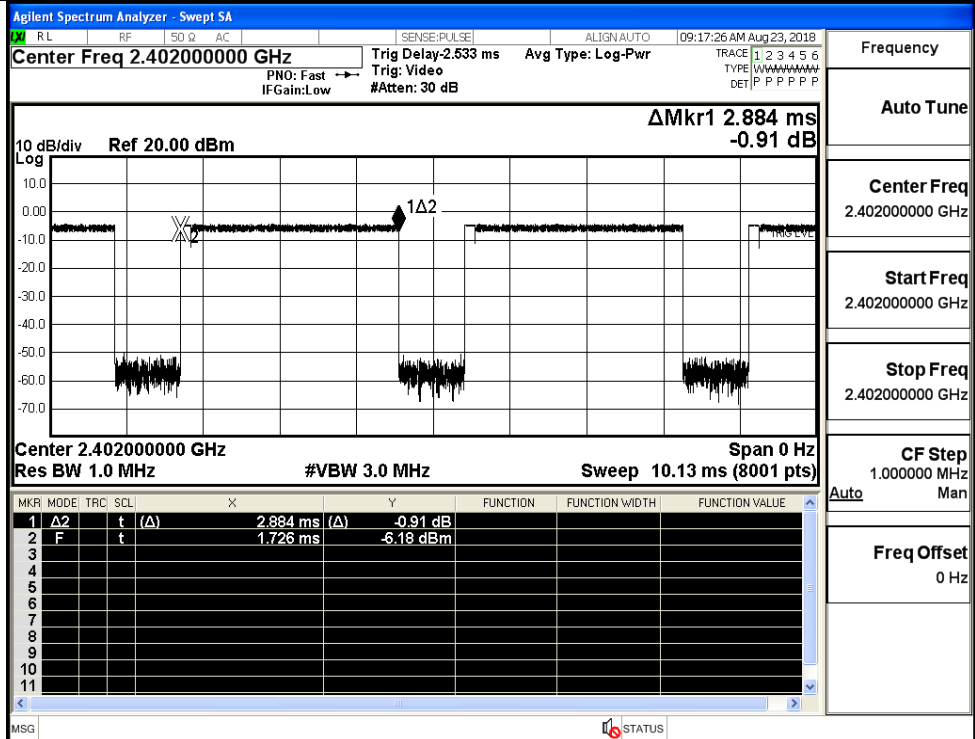
GFSK\_DH5/MCH



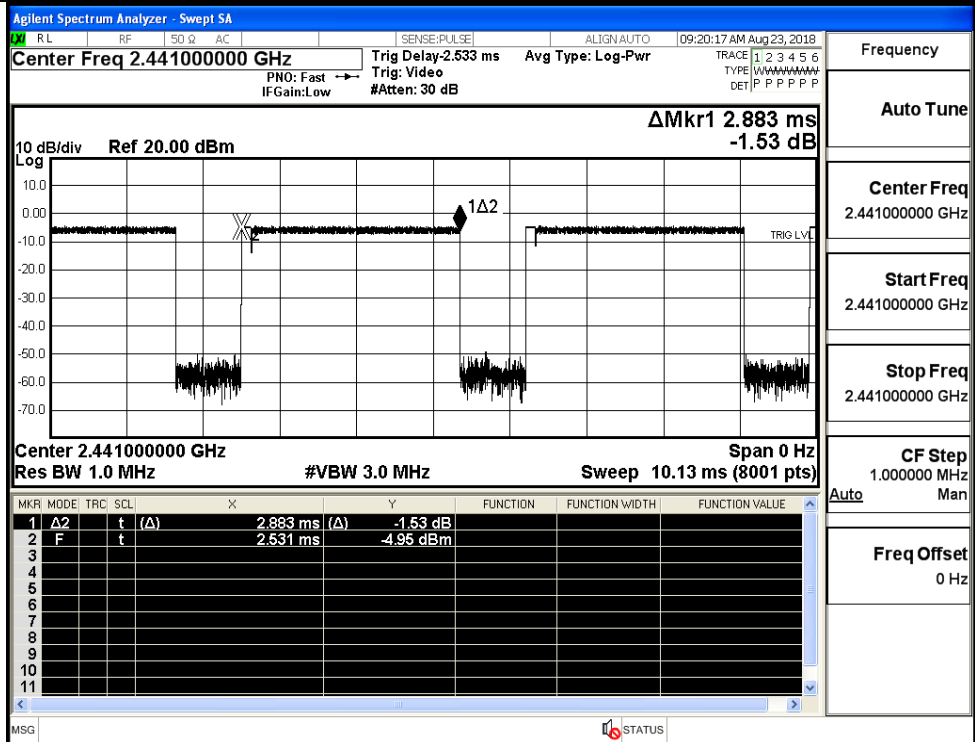
GFSK\_DH5/HCH



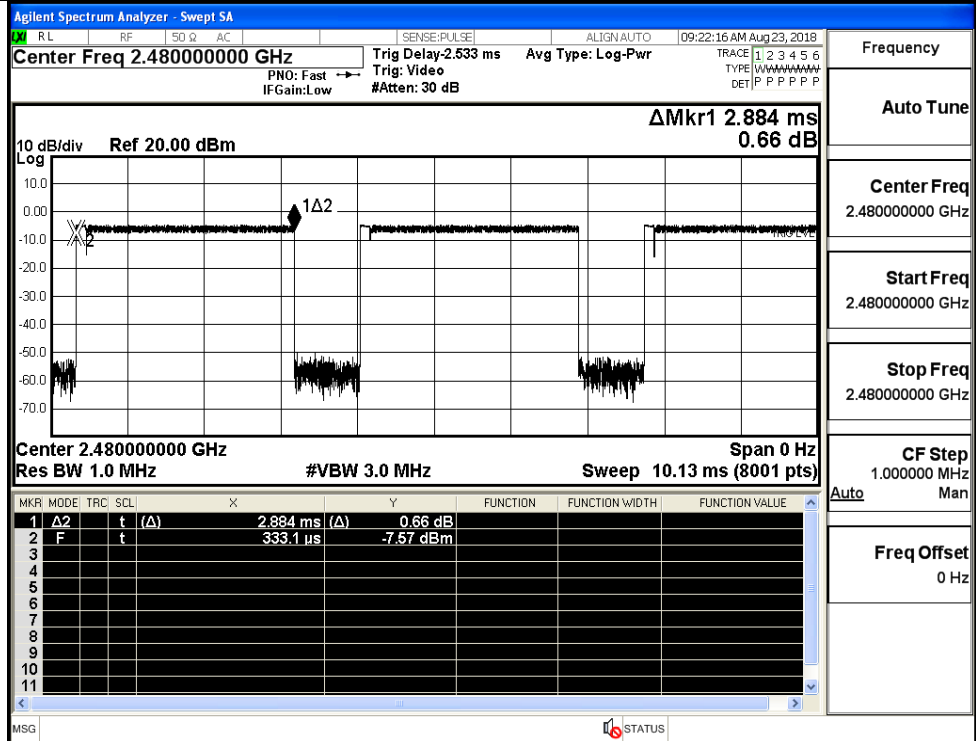
$\pi/4$ DQPSK  
\_2DH5/LCH



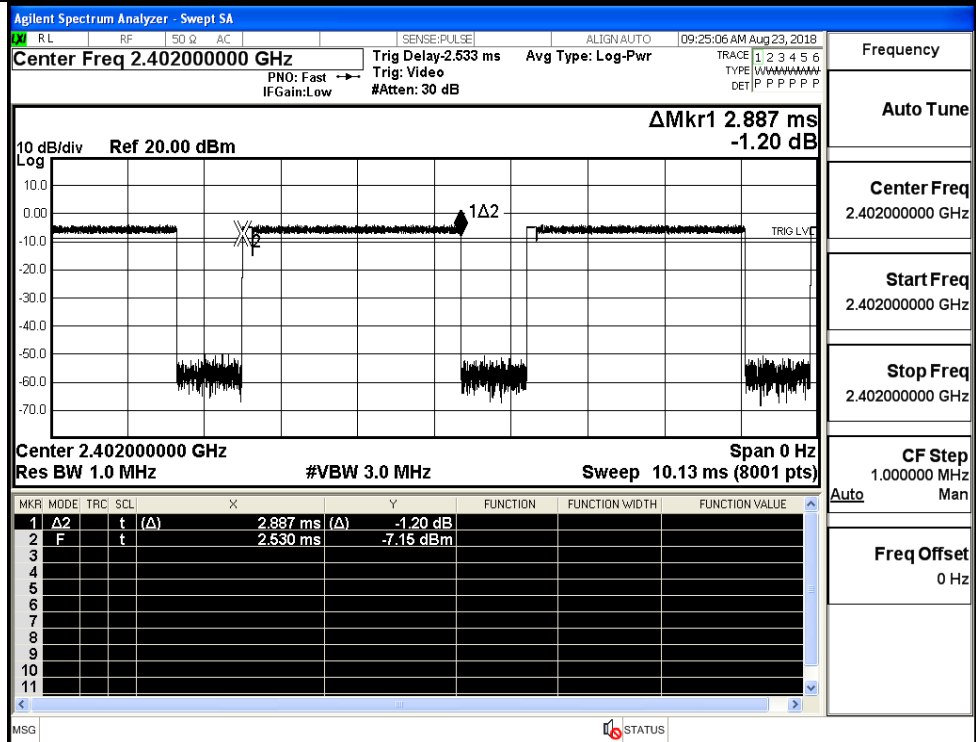
$\pi/4$ DQPSK  
\_2DH5/MCH



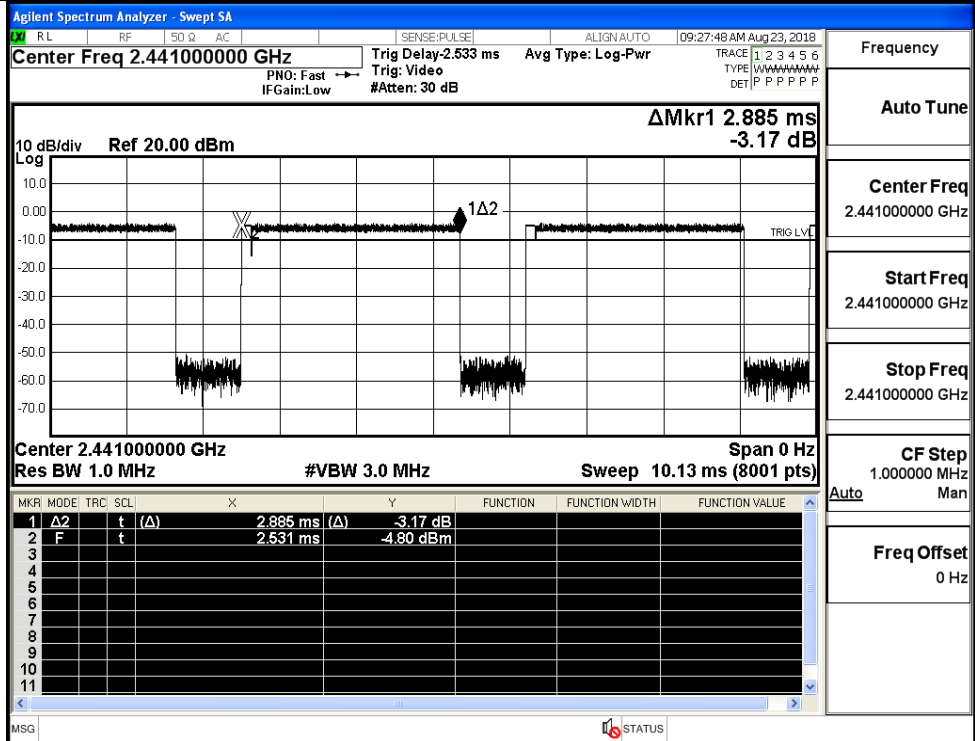
$\pi/4$ DQPSK  
\_2DH5/HCH



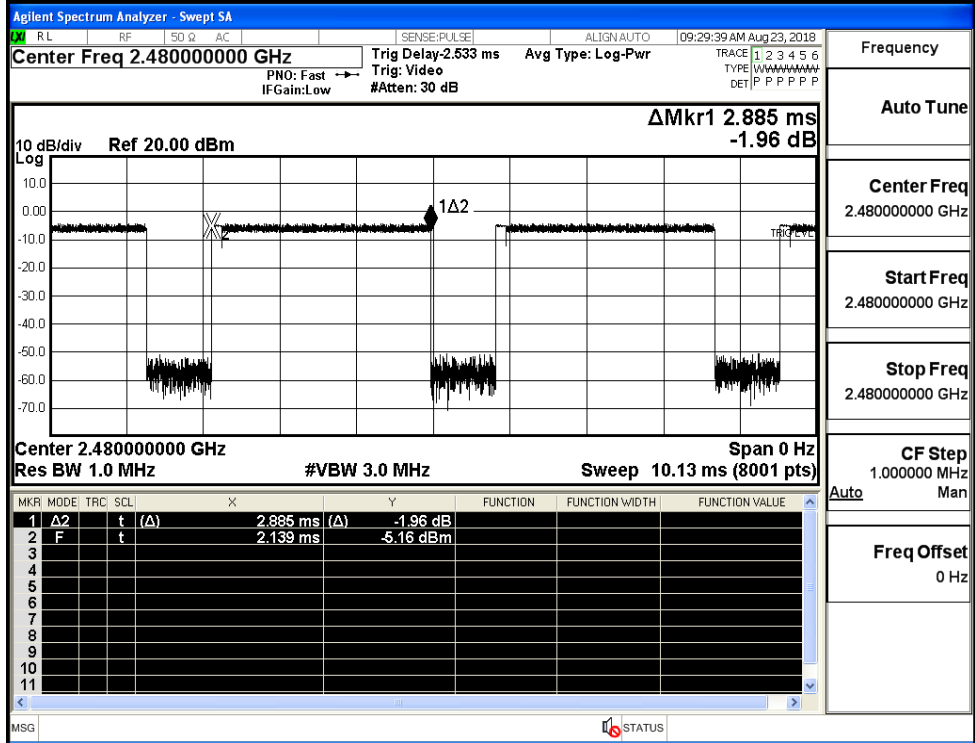
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



8DPSK\_3DH5/HCH



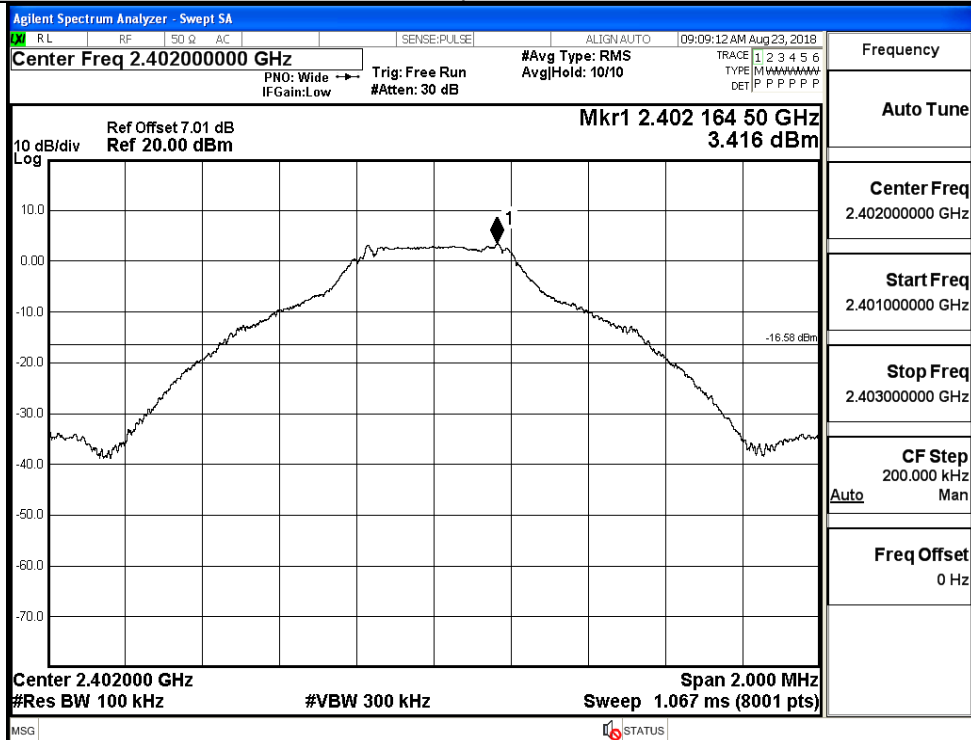
## A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.416	-45.731	-16.584	PASS
	MCH	3.255	-45.970	-16.745	PASS
	HCH	2.52	-45.247	-17.480	PASS
$\pi/4$ DQPSK	LCH	2.234	-46.016	-17.766	PASS
	MCH	2.268	-45.688	-17.732	PASS
	HCH	2.003	-45.296	-17.997	PASS
8DPSK	LCH	2.349	-45.116	-17.651	PASS
	MCH	2.269	-46.302	-17.731	PASS
	HCH	2	-45.370	-18.000	PASS

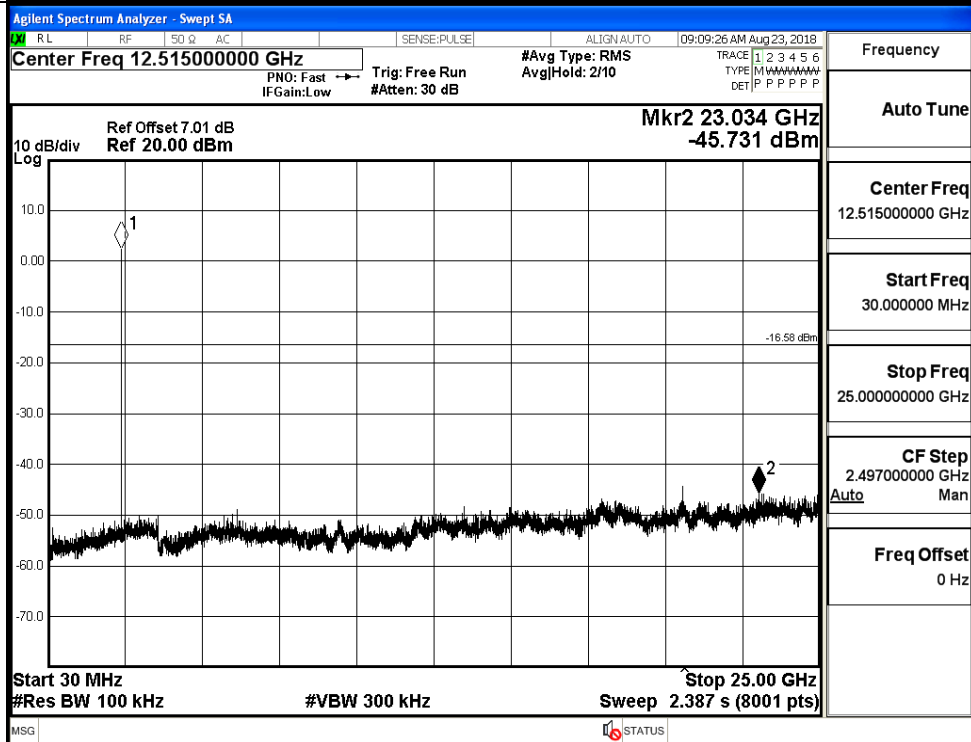


GFSK\_LCH\_Graphs

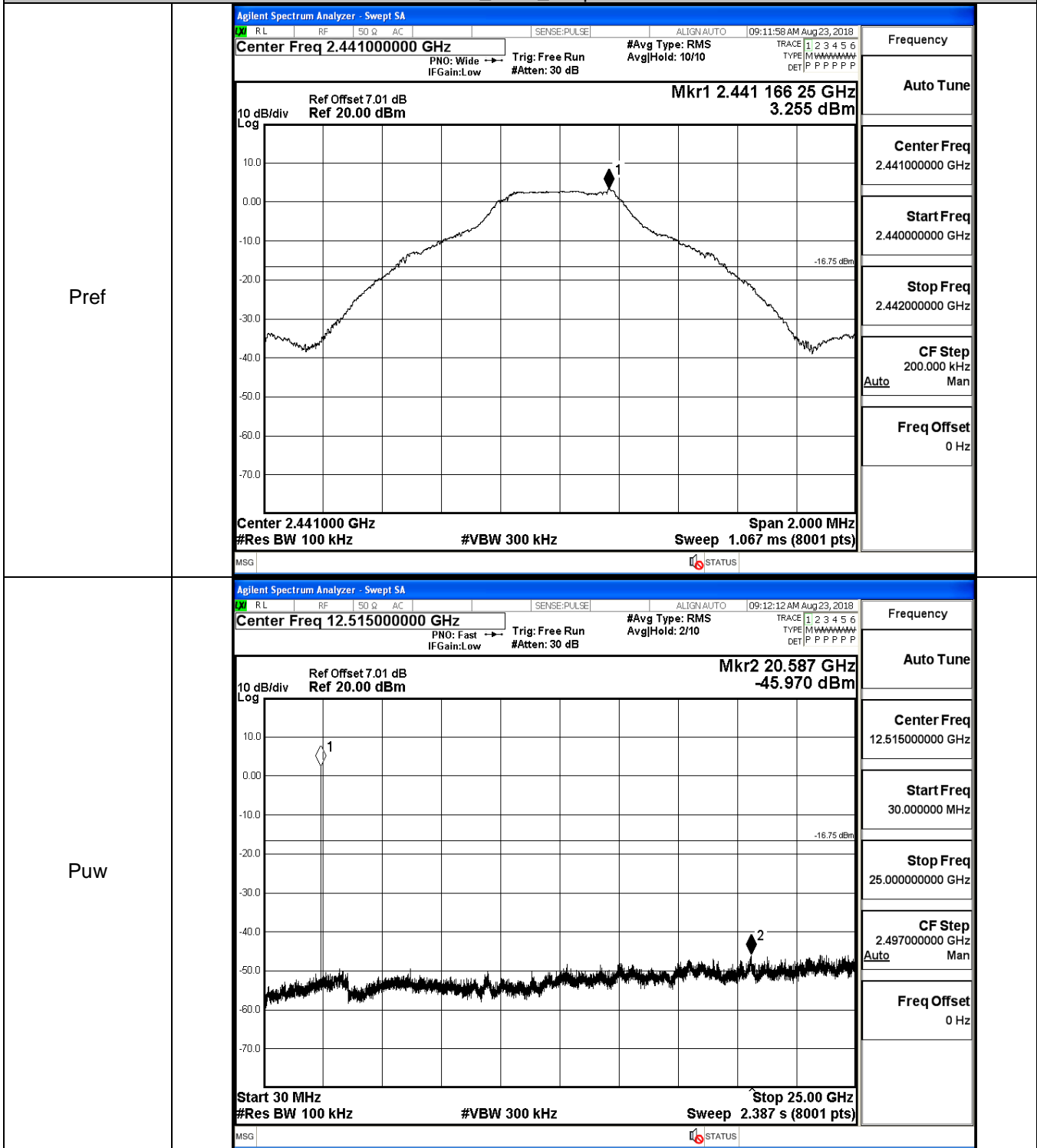
Pref



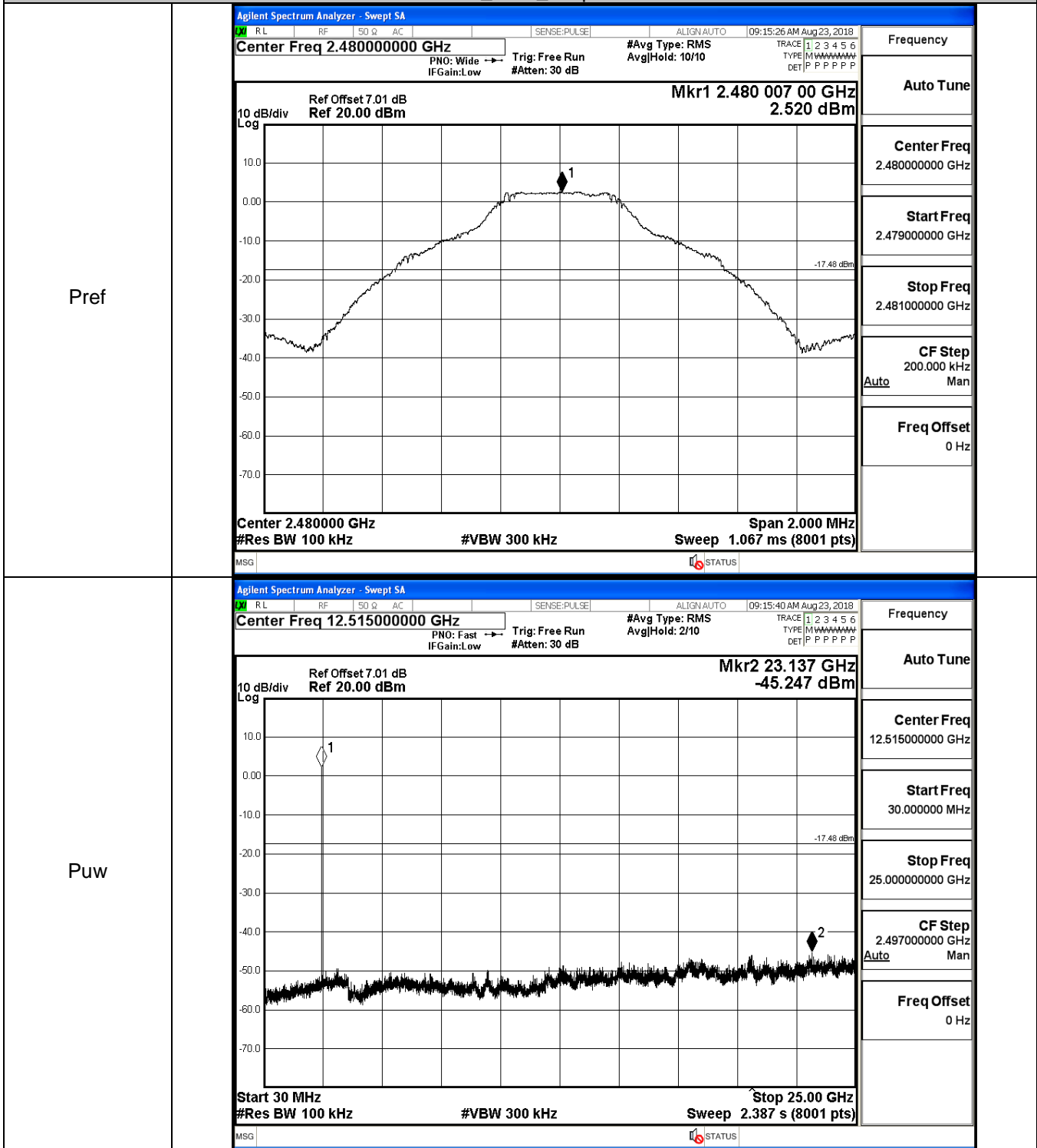
Puw



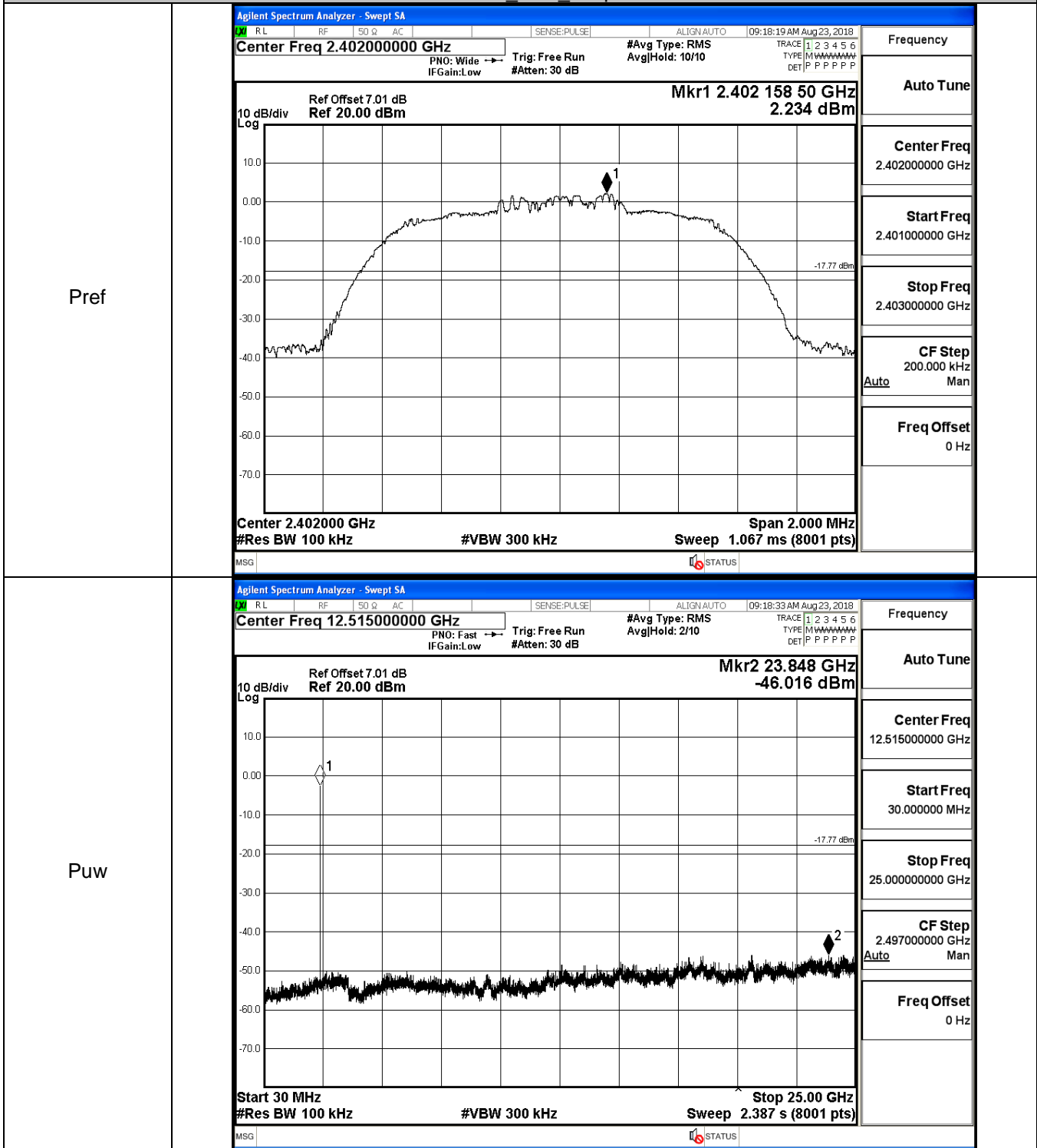
GFSK\_MCH\_Graphs



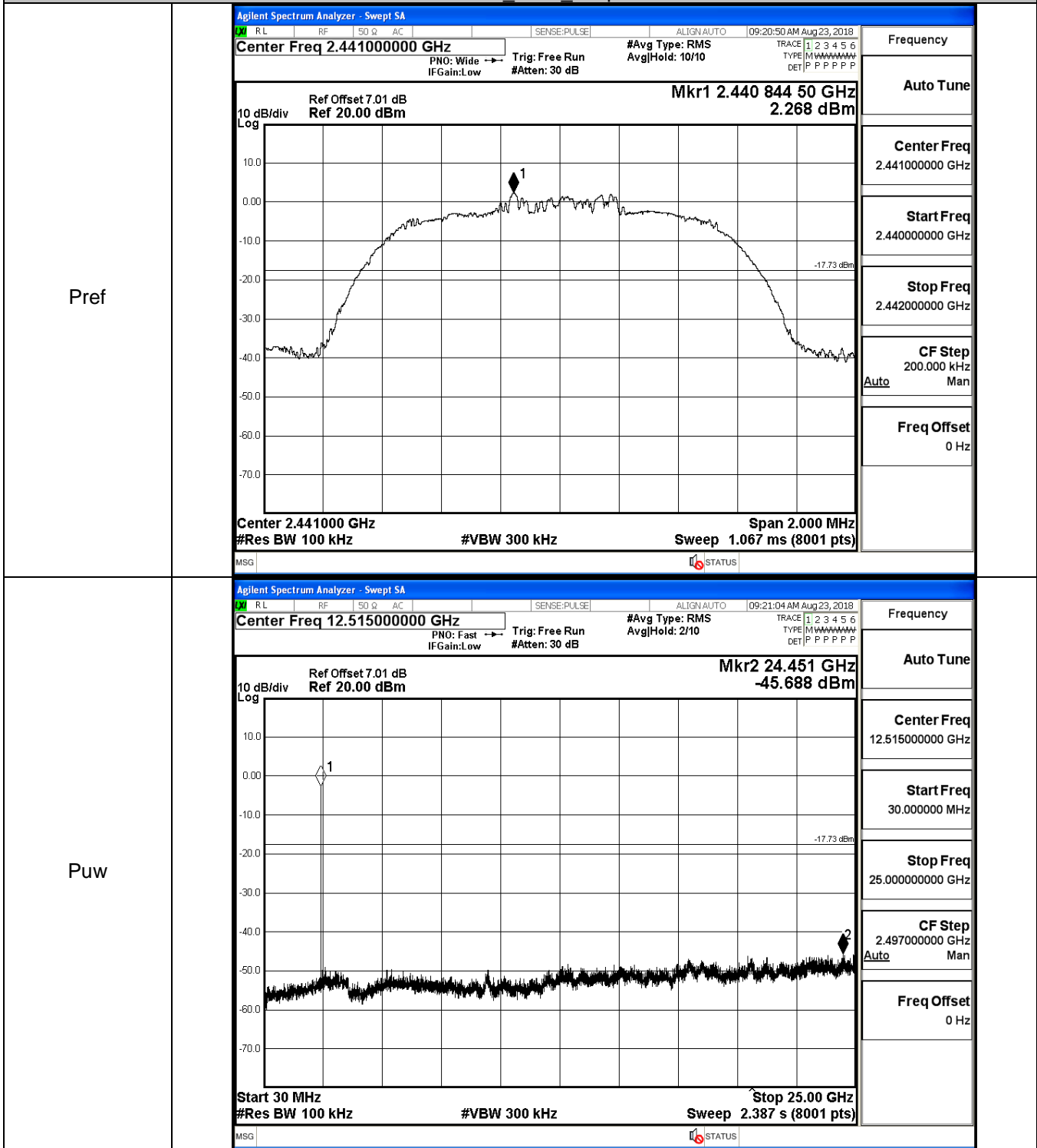
GFSK\_HCH\_Graphs



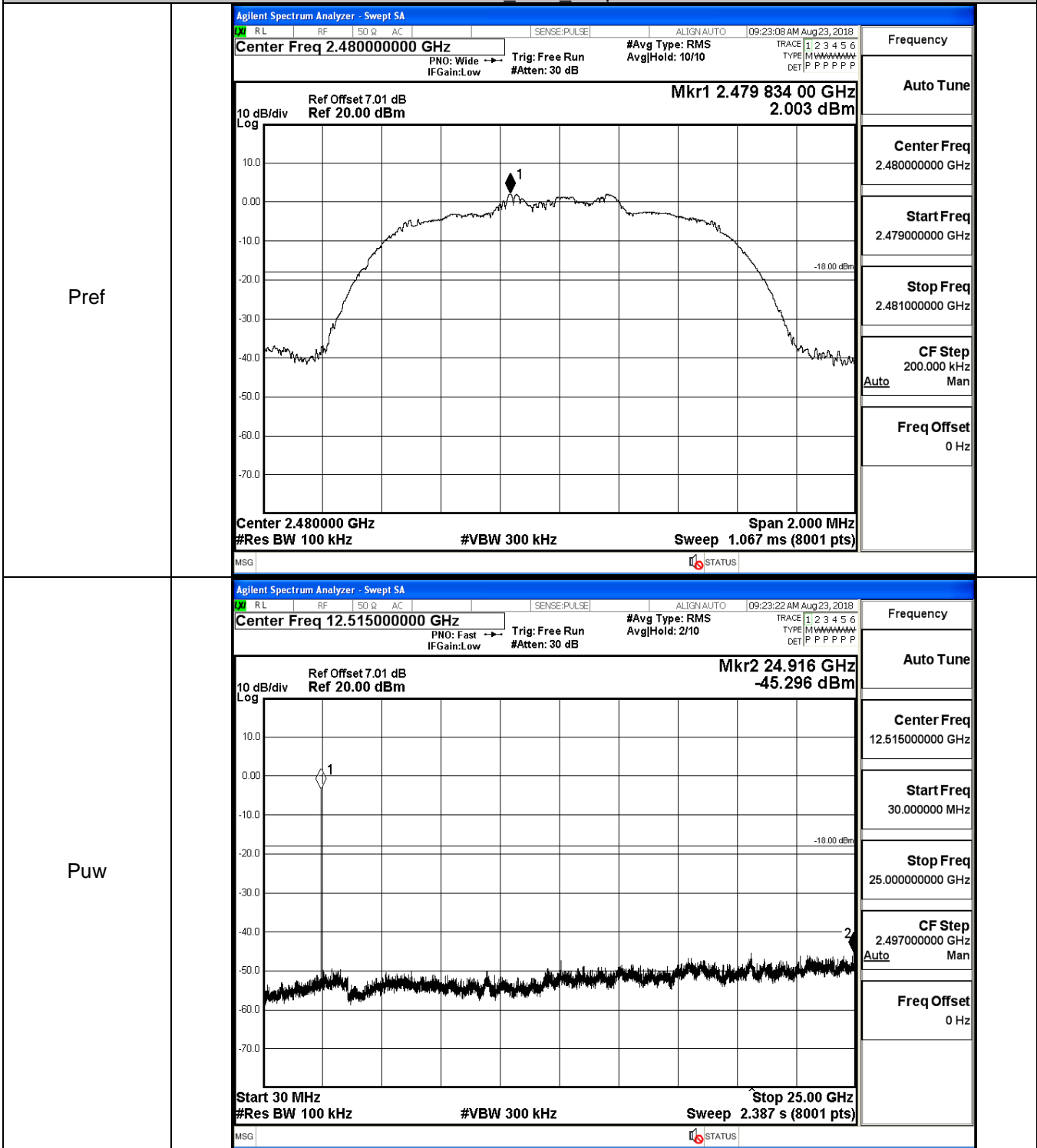
$\pi/4$ DQPSK LCH\_Graphs



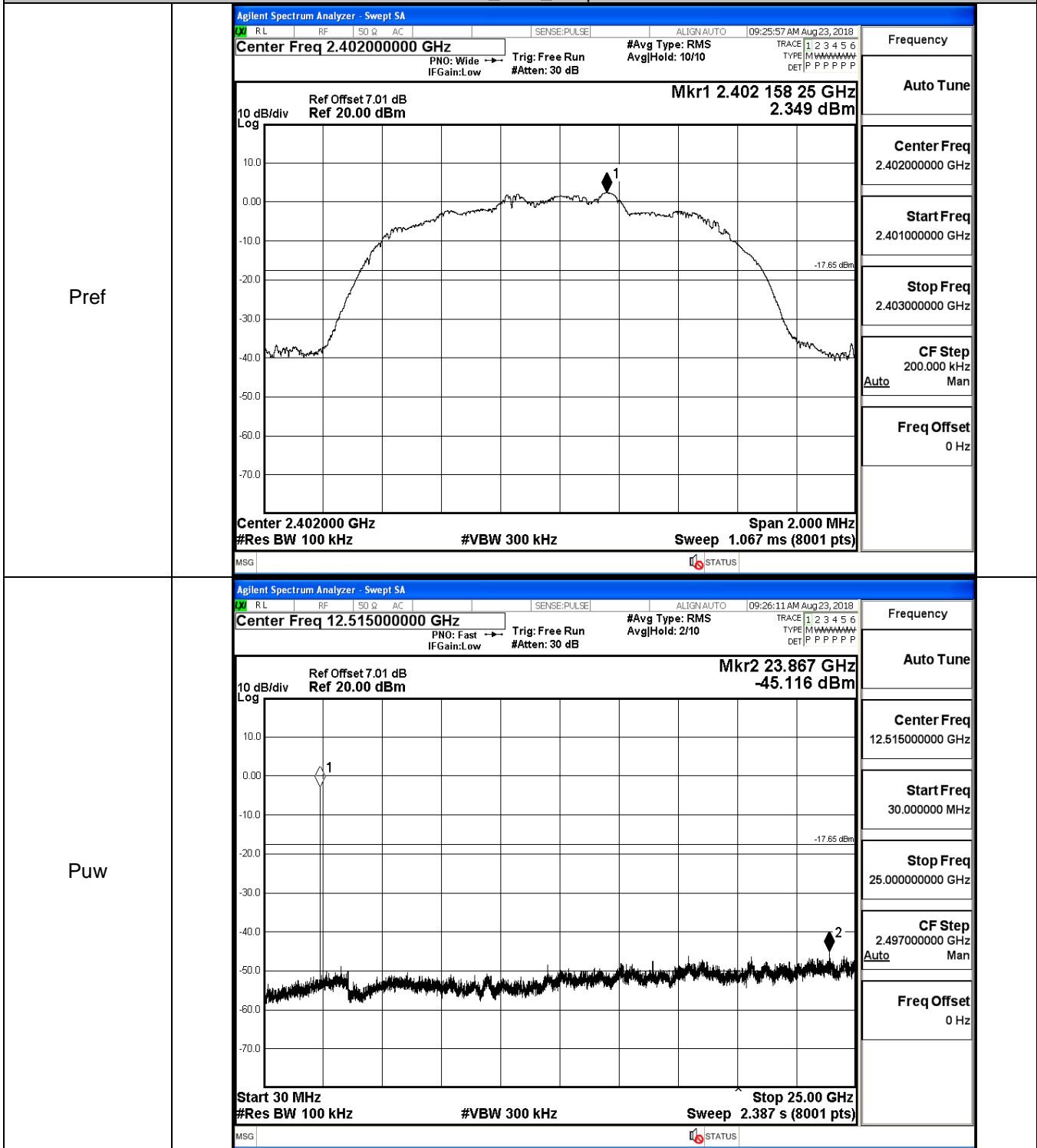
$\pi/4$ DQPSK\_MCH\_Graphs



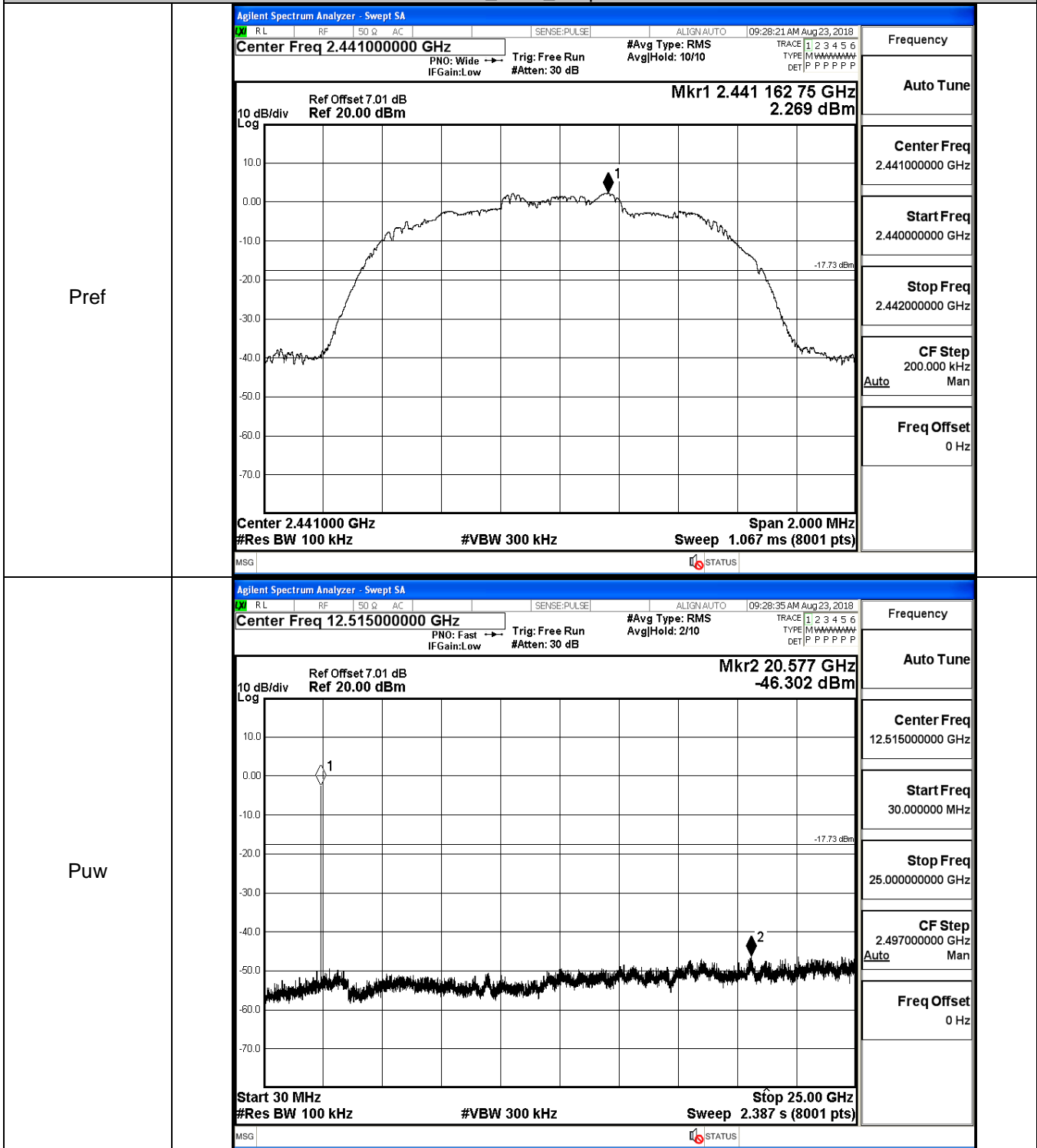
$\pi/4$ DQPSK\_HCH\_Graphs



8DPSK\_LCH\_Graphs

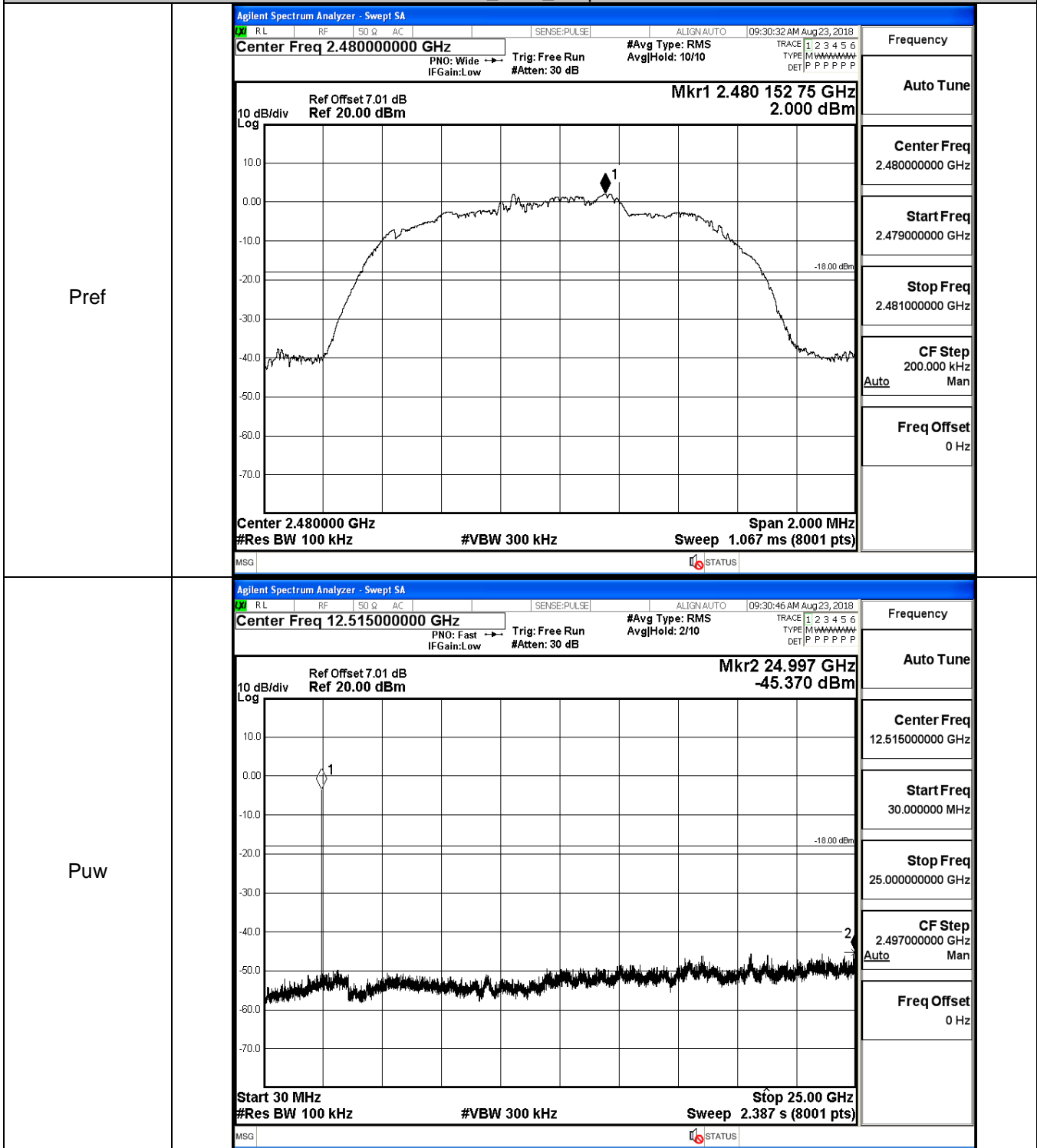


8DPSK\_MCH\_Graphs





8DPSK\_HCH\_Graphs

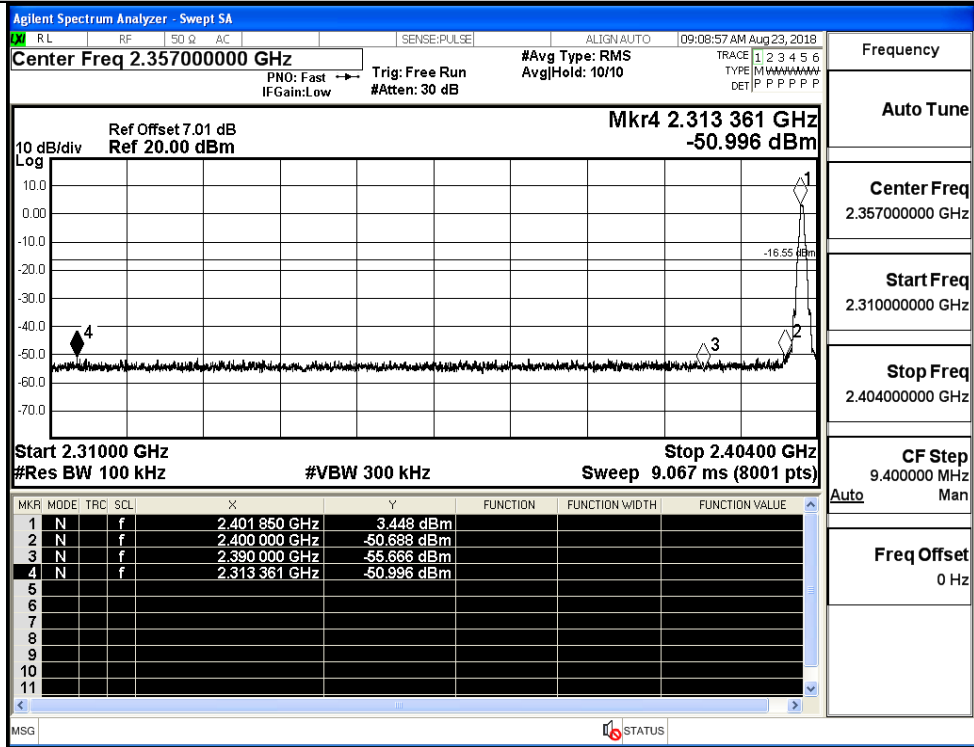


## A.7 Band-edge for RF Conducted Emissions

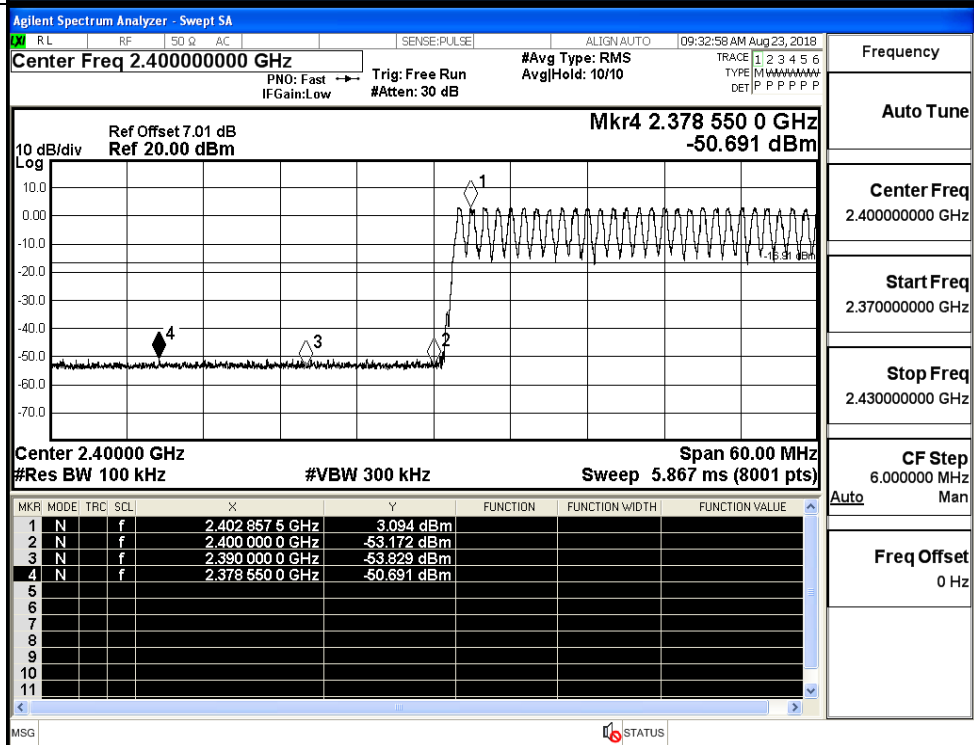
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.448	Off	-50.996	-16.55	PASS
			3.094	On	-50.691	-16.91	PASS
	HCH	2480	2.993	Off	-50.536	-17.01	PASS
			3.104	On	-50.692	-16.9	PASS
$\pi/4$ DQPSK	LCH	2402	1.782	Off	-50.838	-18.22	PASS
			2.309	On	-49.818	-17.69	PASS
	HCH	2480	2.084	Off	-50.770	-17.92	PASS
			2.181	On	-49.476	-17.82	PASS
8DPSK	LCH	2402	2.275	Off	-51.237	-17.73	PASS
			2.384	On	-50.132	-17.62	PASS
	HCH	2480	2.082	Off	-49.705	-17.92	PASS
			2.103	On	-49.827	-17.9	PASS

Test Graphs

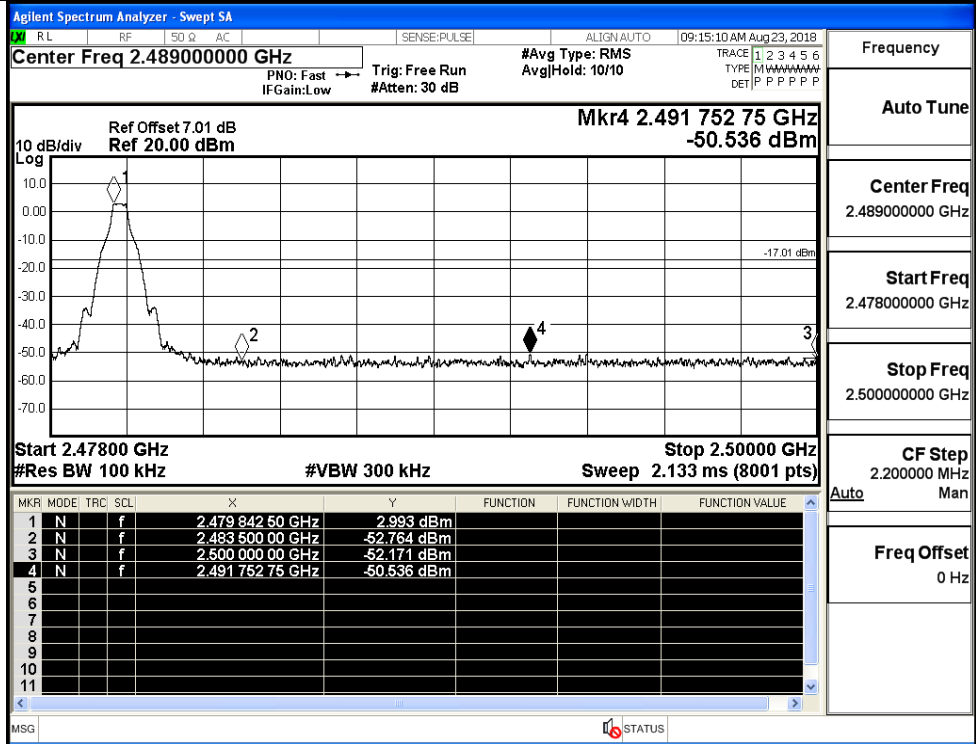
GFSK/LCH/No Hop



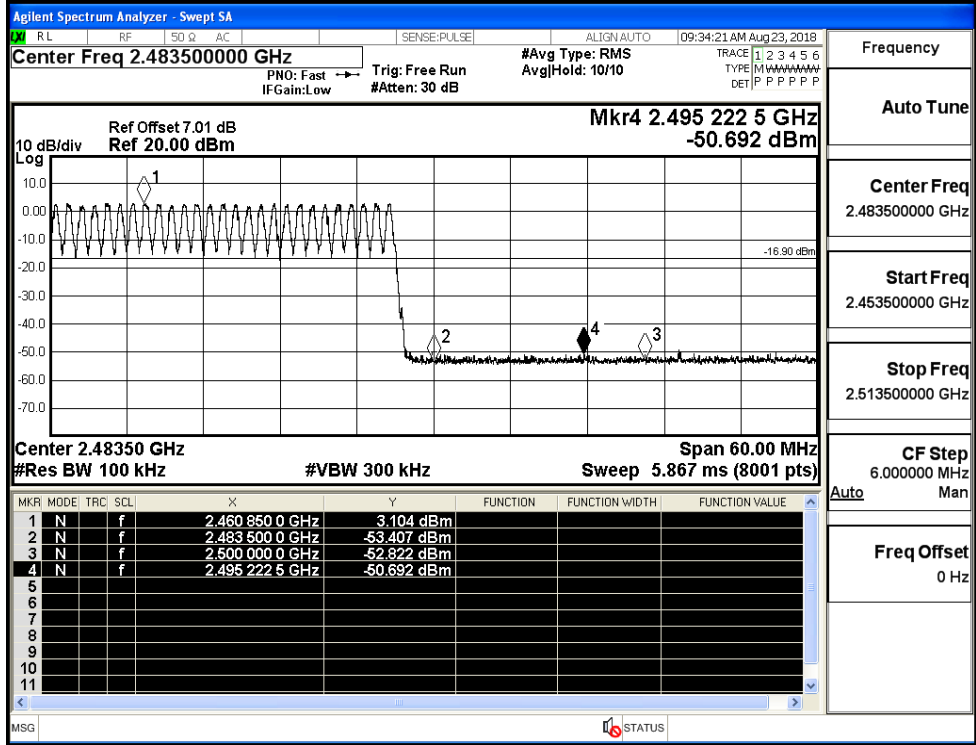
GFSK/LCH/Hop



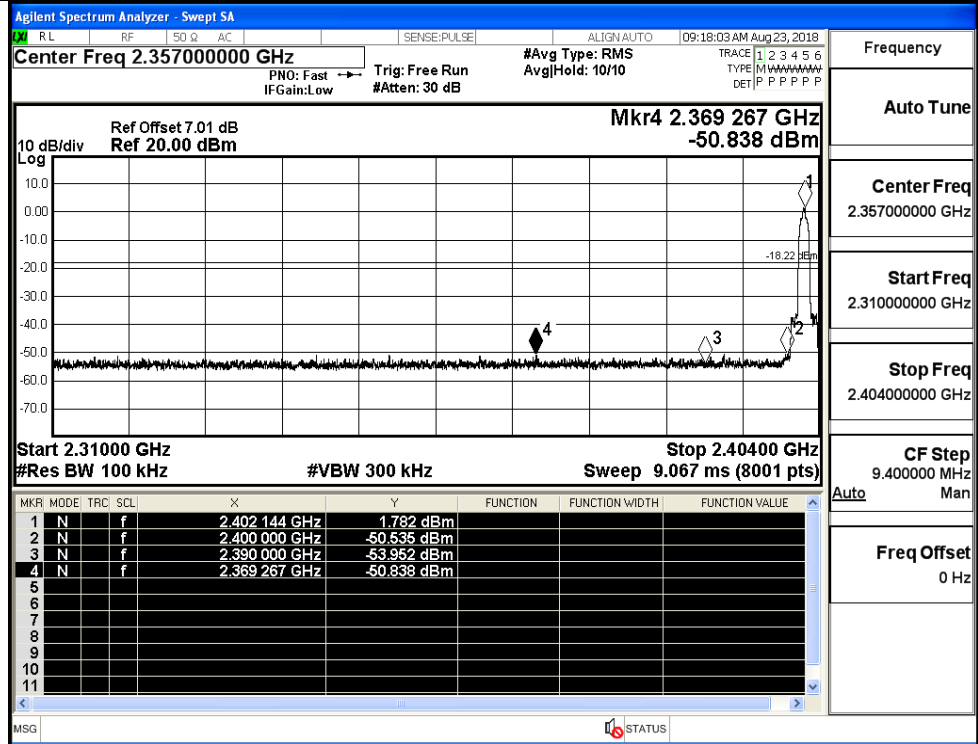
GFSK/HCH/No Hop



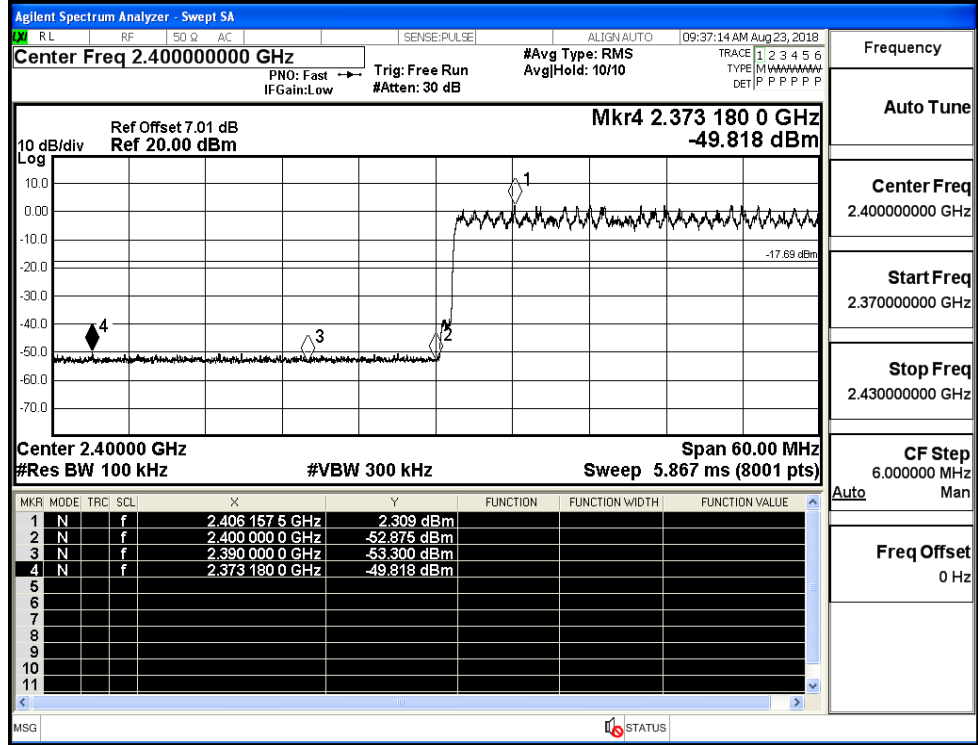
GFSK/HCH/Hop



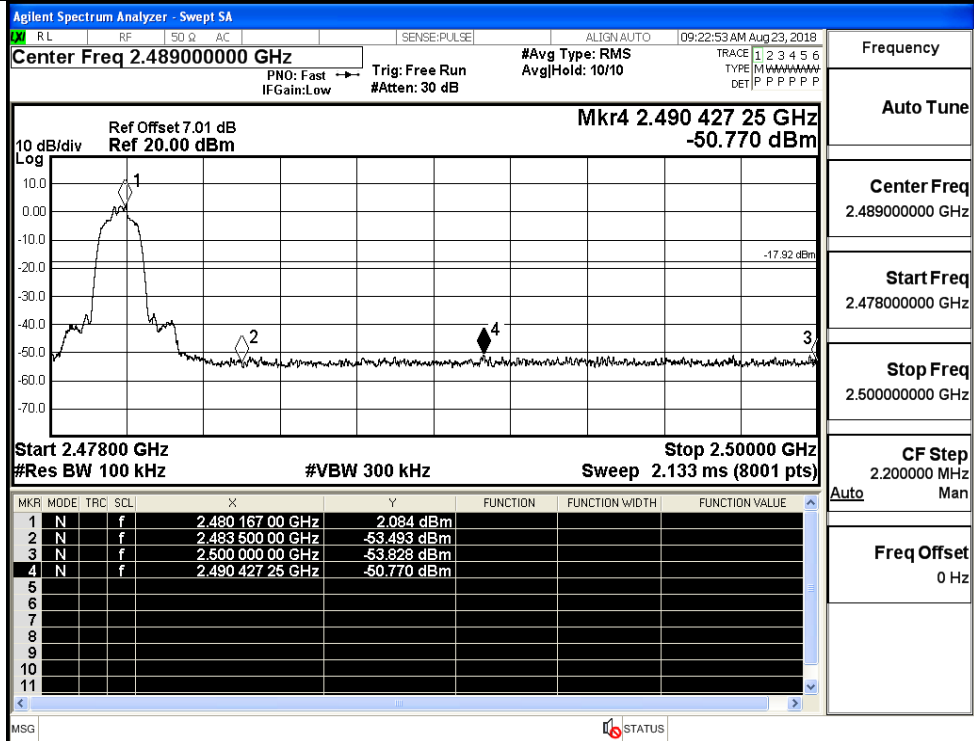
$\pi/4$ DQPSK/LCH/No  
Hop



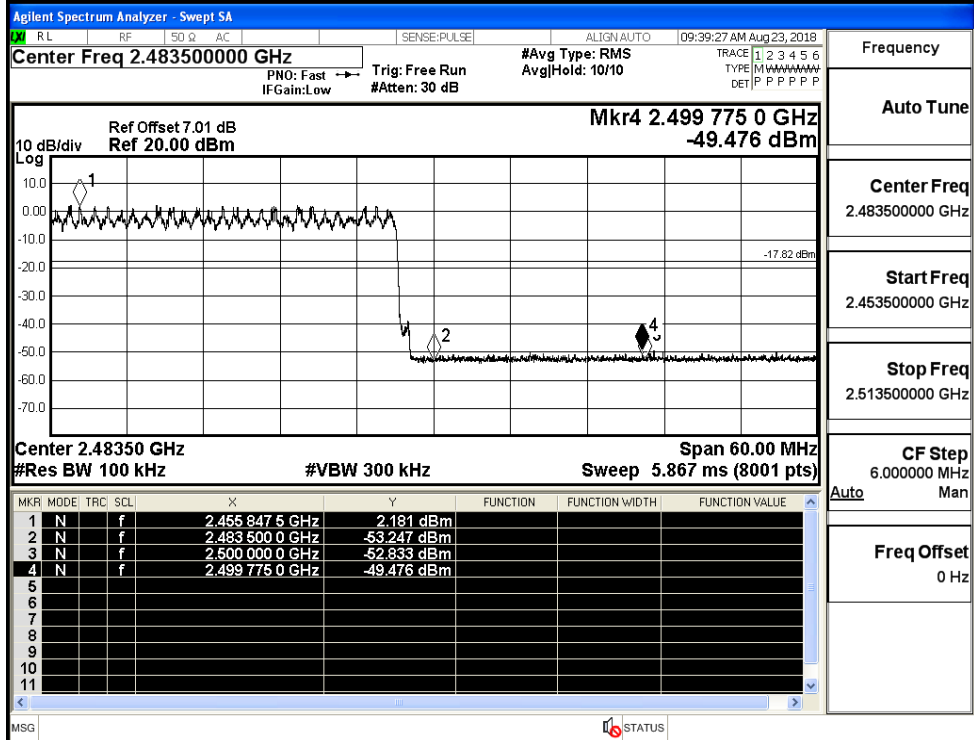
$\pi/4$ DQPSK/LCH/Hop



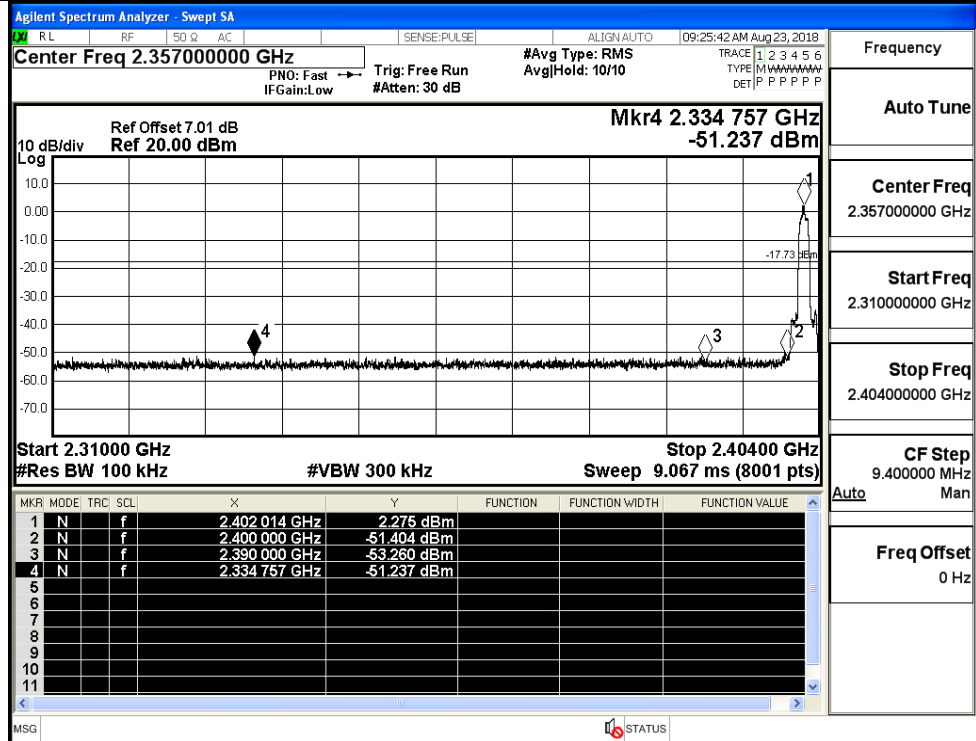
$\pi/4$ DQPSK/HCH/No  
Hop



$\pi/4$ DQPSK/HCH/Hop

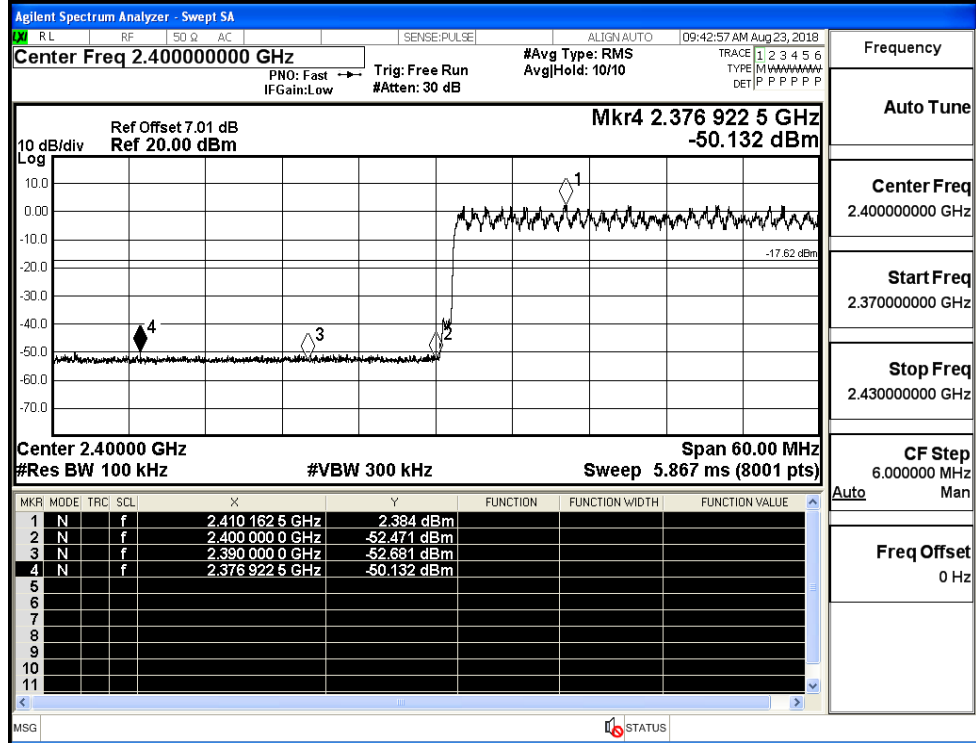


8DPSK/LCH/No Hop



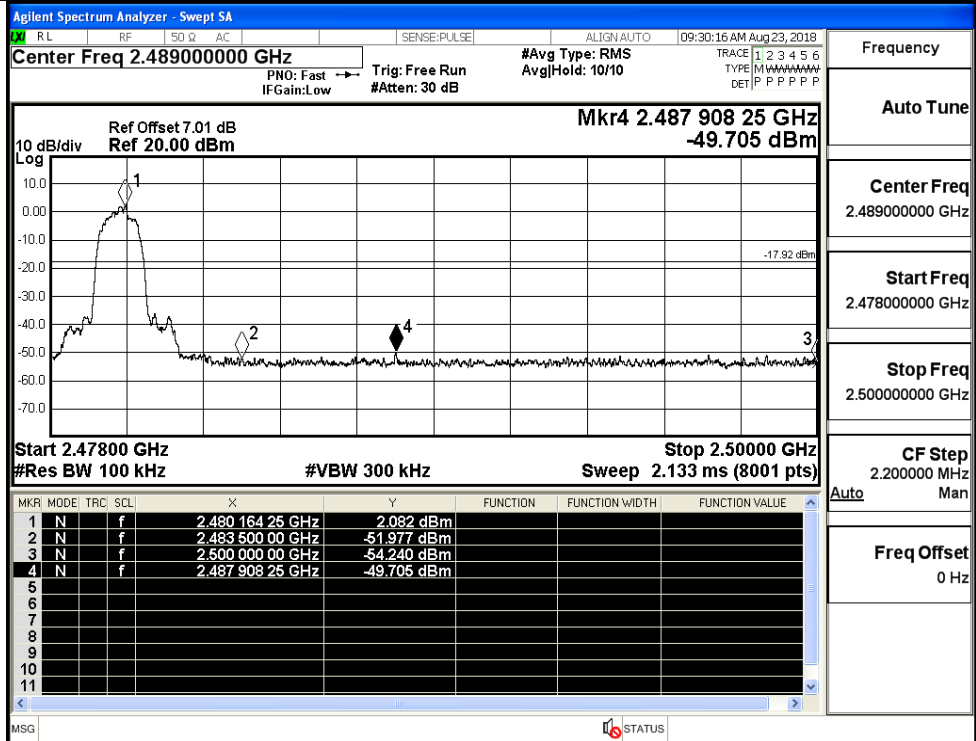
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH/Hop

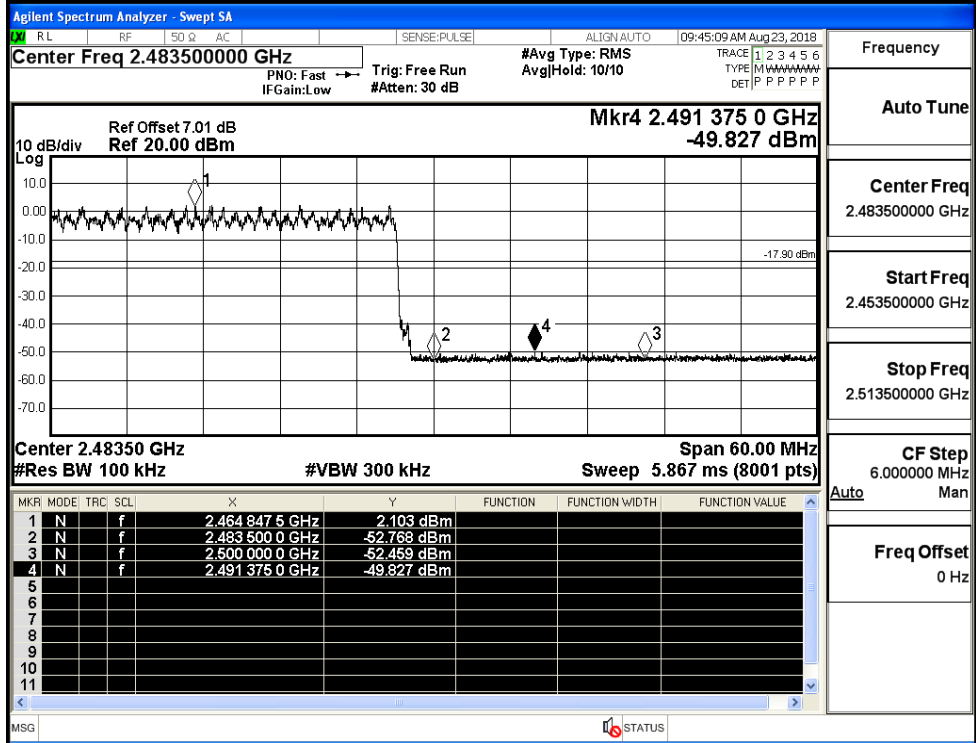


Frequency	
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/HCH/No Hop



8DPSK/HCH/Hop

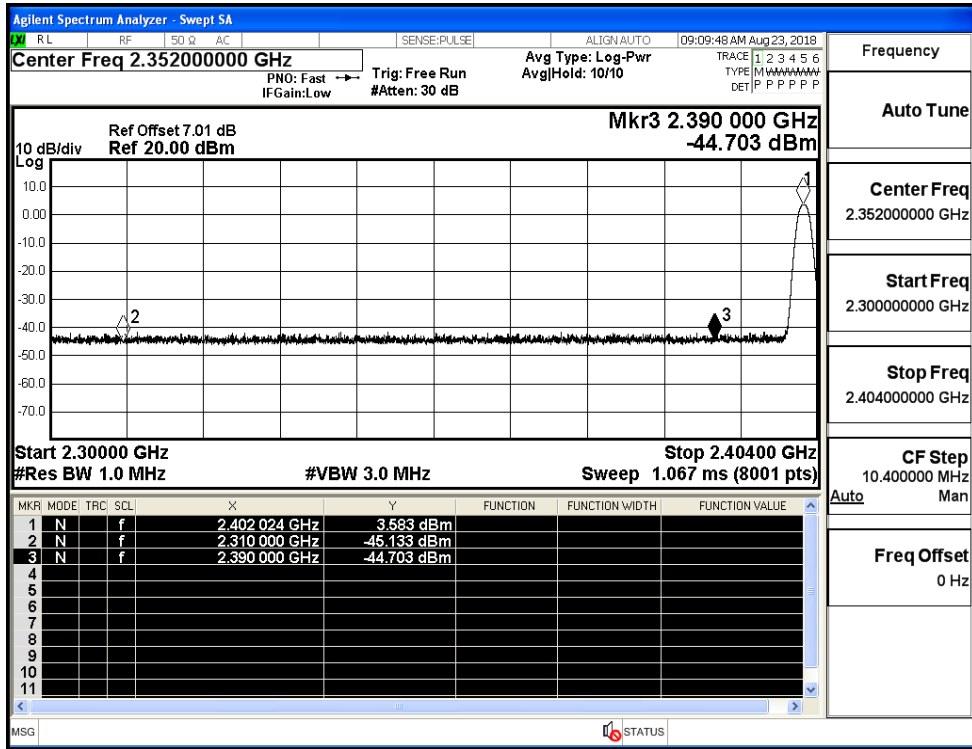




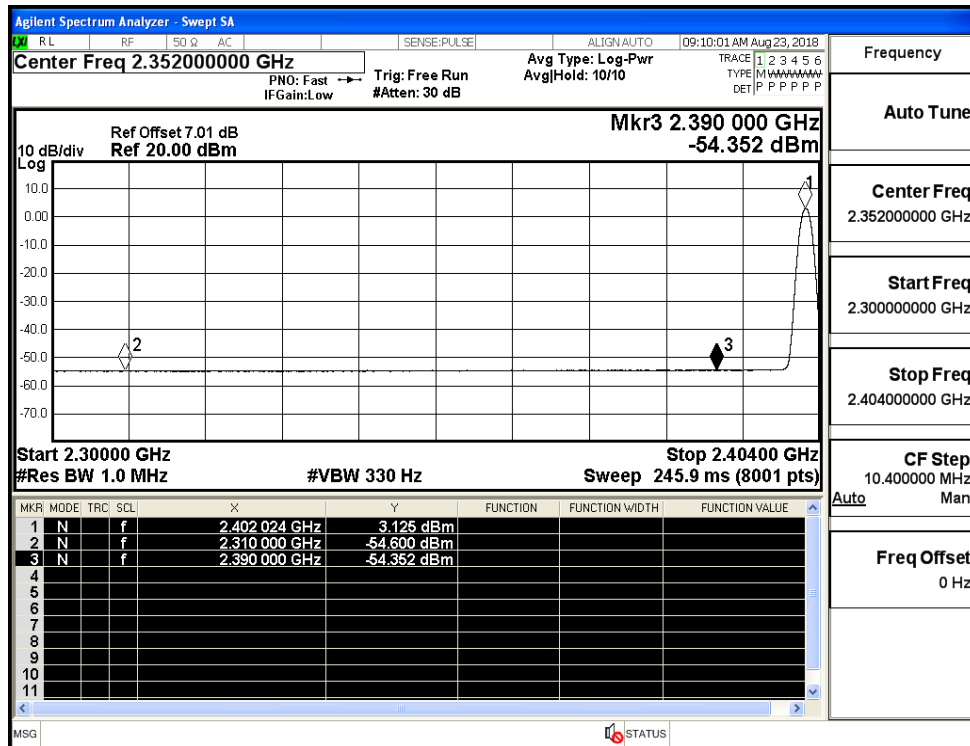
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.13	2.0	0	52.12	PEAK	74	PASS
	Off	2310.0	-54.60	2.0	0	42.66	AV	54	PASS
	Off	2390.0	-44.70	2.0	0	52.55	PEAK	74	PASS
	Off	2390.0	-54.35	2.0	0	42.91	AV	54	PASS
	Off	2483.5	-43.56	2.0	0	53.69	PEAK	74	PASS
	Off	2483.5	-54.11	2.0	0	43.15	AV	54	PASS
	Off	2500.0	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2500.0	-54.11	2.0	0	43.15	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.37	2.0	0	52.89	PEAK	74	PASS
	Off	2310.0	-54.77	2.0	0	42.49	AV	54	PASS
	Off	2390.0	-44.92	2.0	0	52.34	PEAK	74	PASS
	Off	2390.0	-54.27	2.0	0	42.99	AV	54	PASS
	Off	2483.5	-44.27	2.0	0	52.99	PEAK	74	PASS
	Off	2483.5	-54.07	2.0	0	43.18	AV	54	PASS
	Off	2500.0	-42.50	2.0	0	54.76	PEAK	74	PASS
	Off	2500.0	-54.03	2.0	0	43.23	AV	54	PASS
8DPSK	Off	2310.0	-44.10	2.0	0	53.16	PEAK	74	PASS
	Off	2310.0	-54.80	2.0	0	42.46	AV	54	PASS
	Off	2390.0	-43.98	2.0	0	53.27	PEAK	74	PASS
	Off	2390.0	-54.47	2.0	0	42.79	AV	54	PASS
	Off	2483.5	-44.39	2.0	0	52.87	PEAK	74	PASS
	Off	2483.5	-53.98	2.0	0	43.28	AV	54	PASS
	Off	2500.0	-44.24	2.0	0	53.01	PEAK	74	PASS
	Off	2500.0	-54.07	2.0	0	43.19	AV	54	PASS

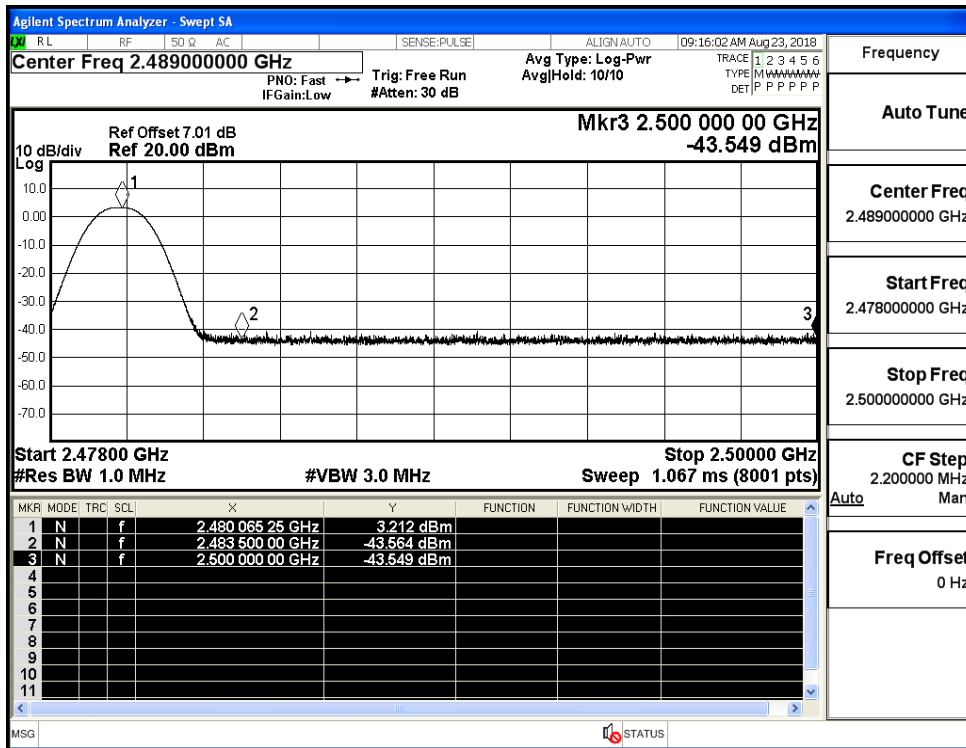
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



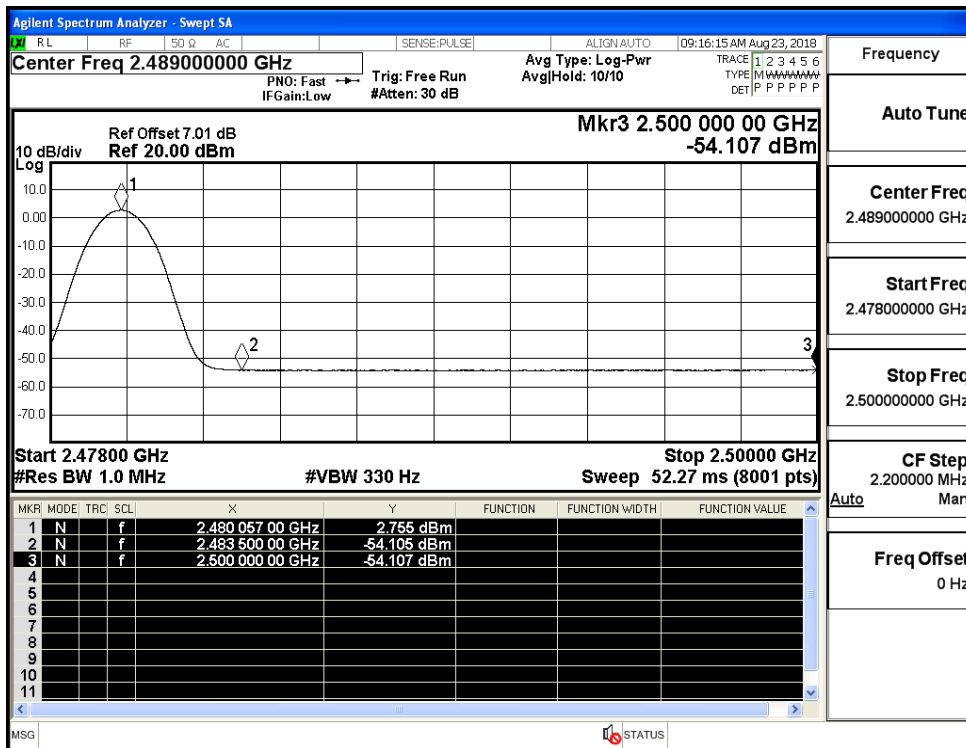
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



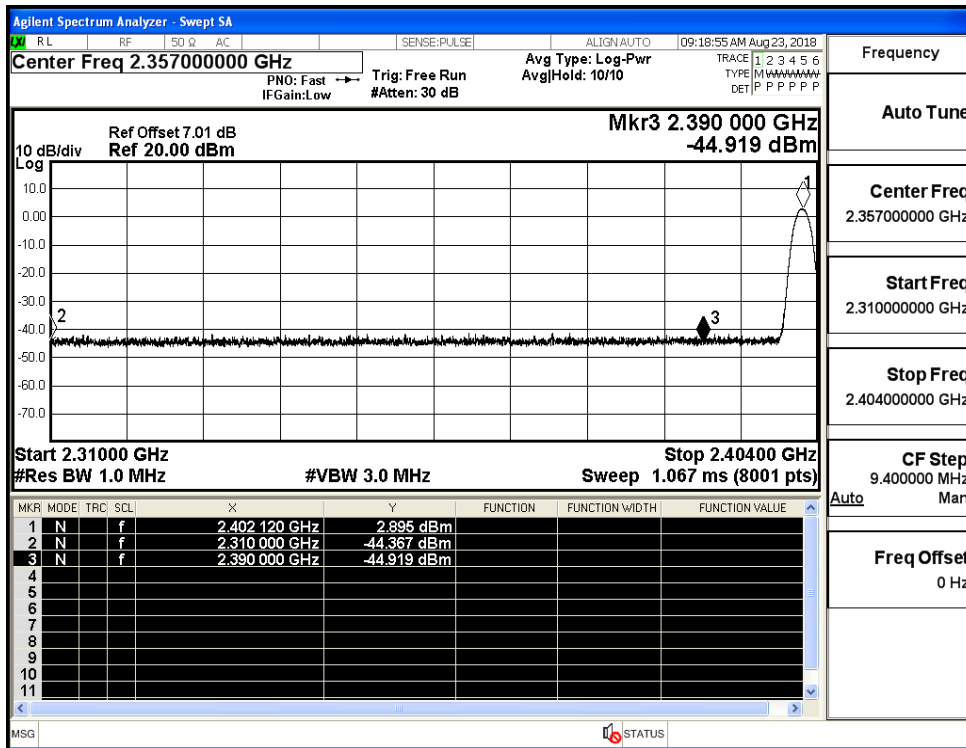
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



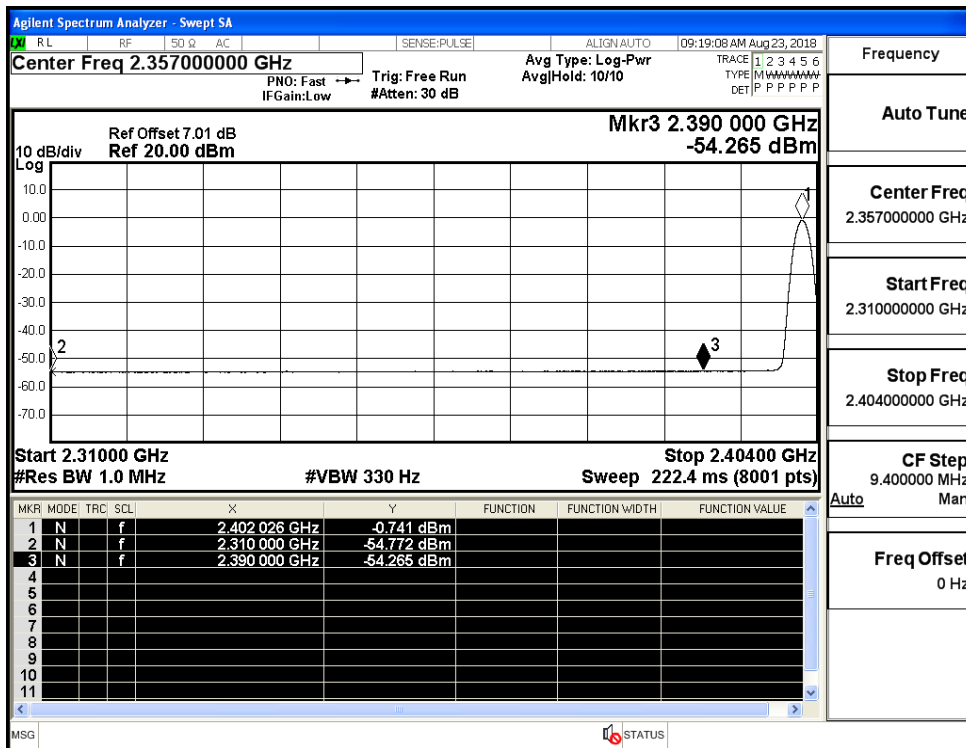
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



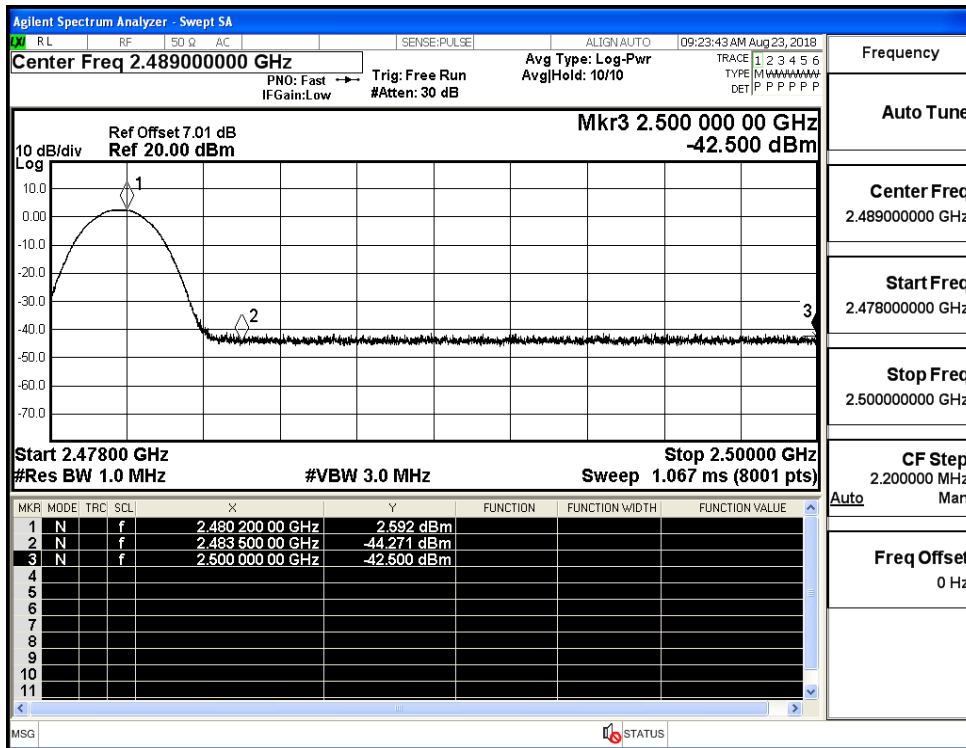
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



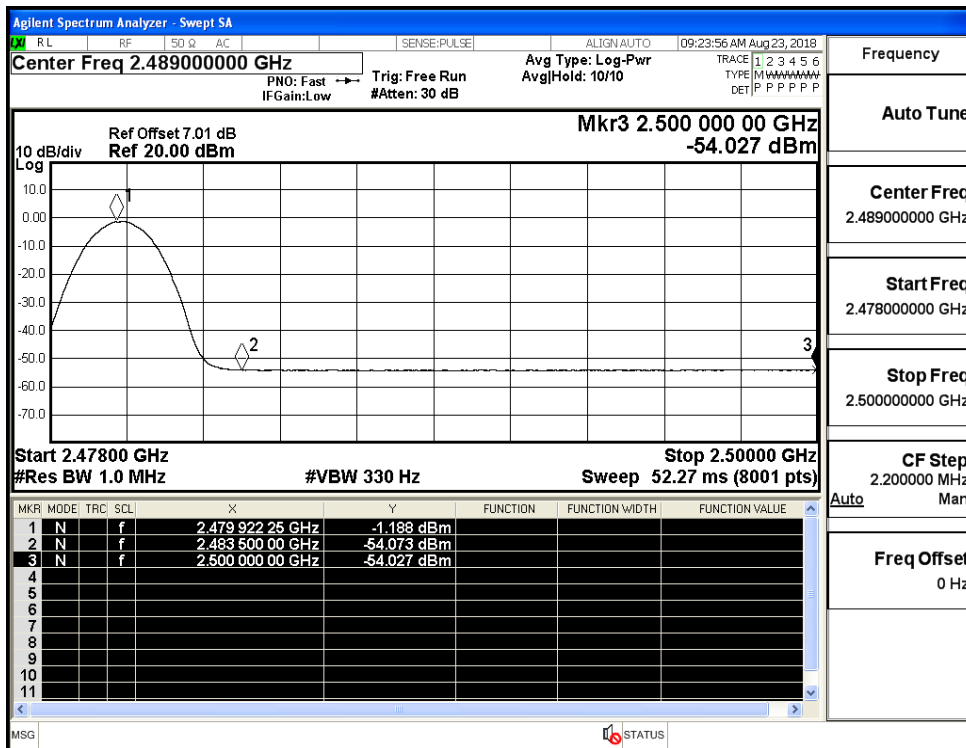
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



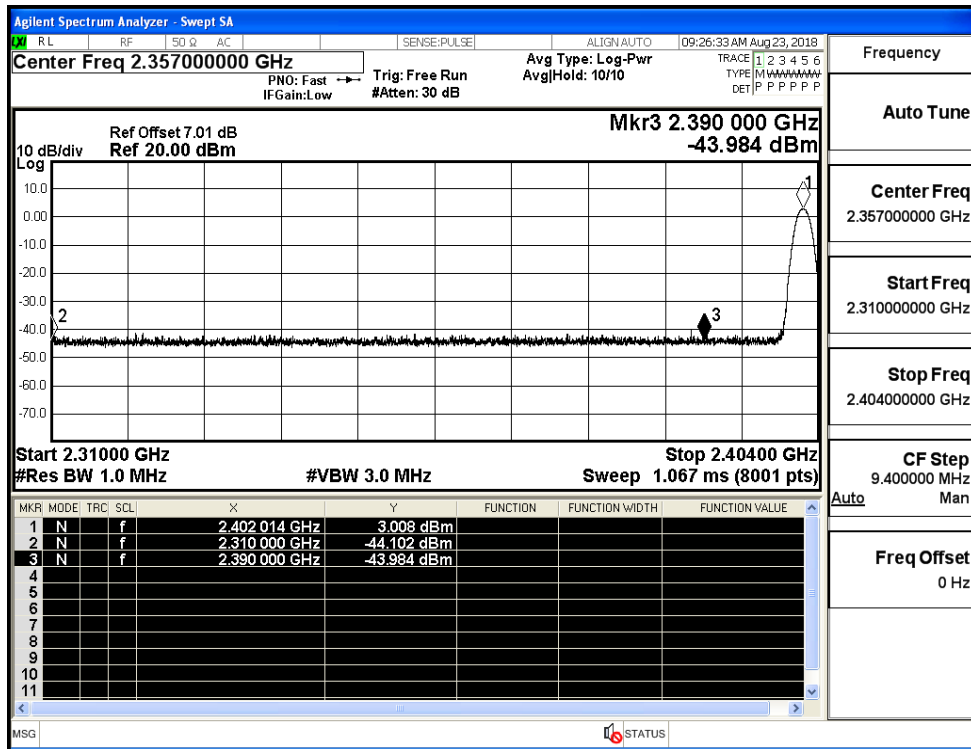
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (High Channel)



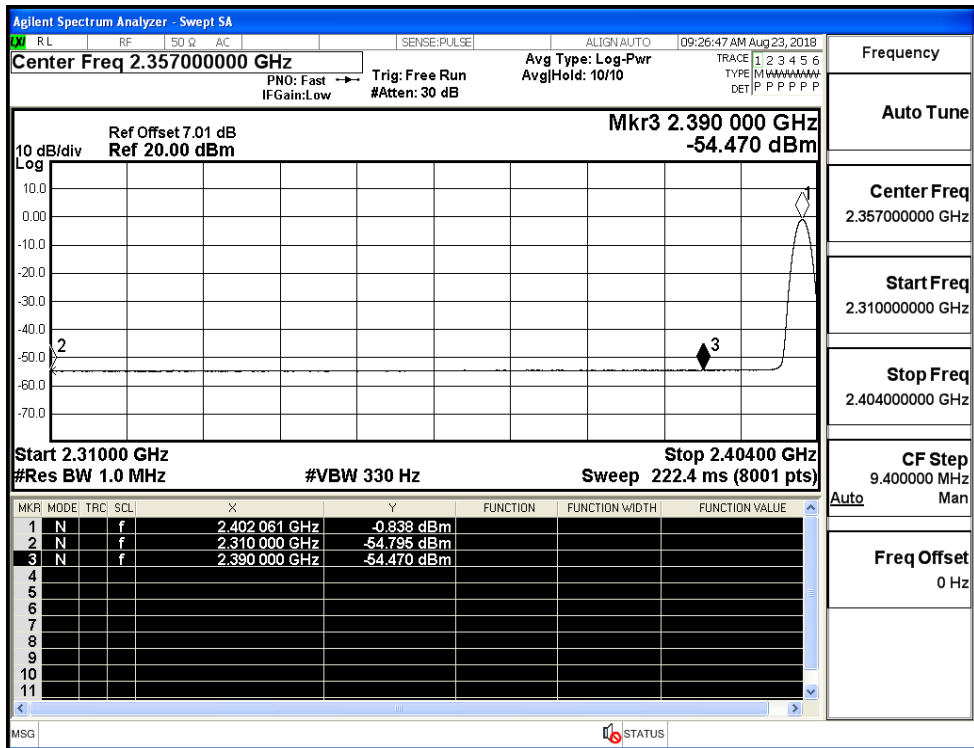
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (High Channel)



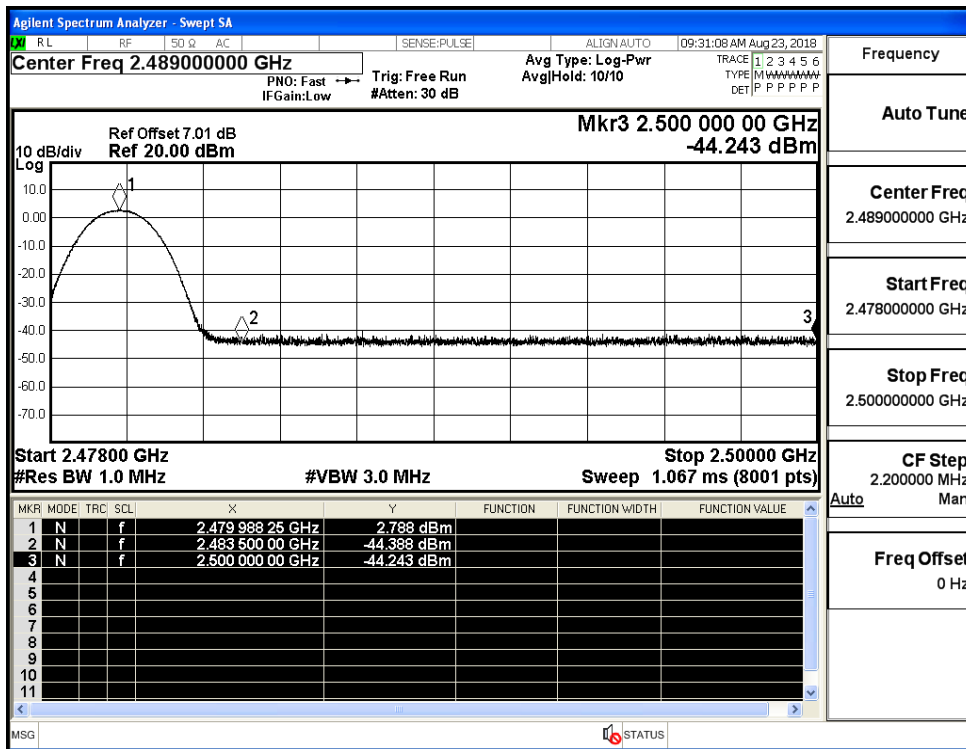
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

