

## Appendix A

### RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: HOME THEATER BLUETOOTH SOUNDBAR

Trade Mark: 

Test Model:MSB3785

#### Environmental Conditions

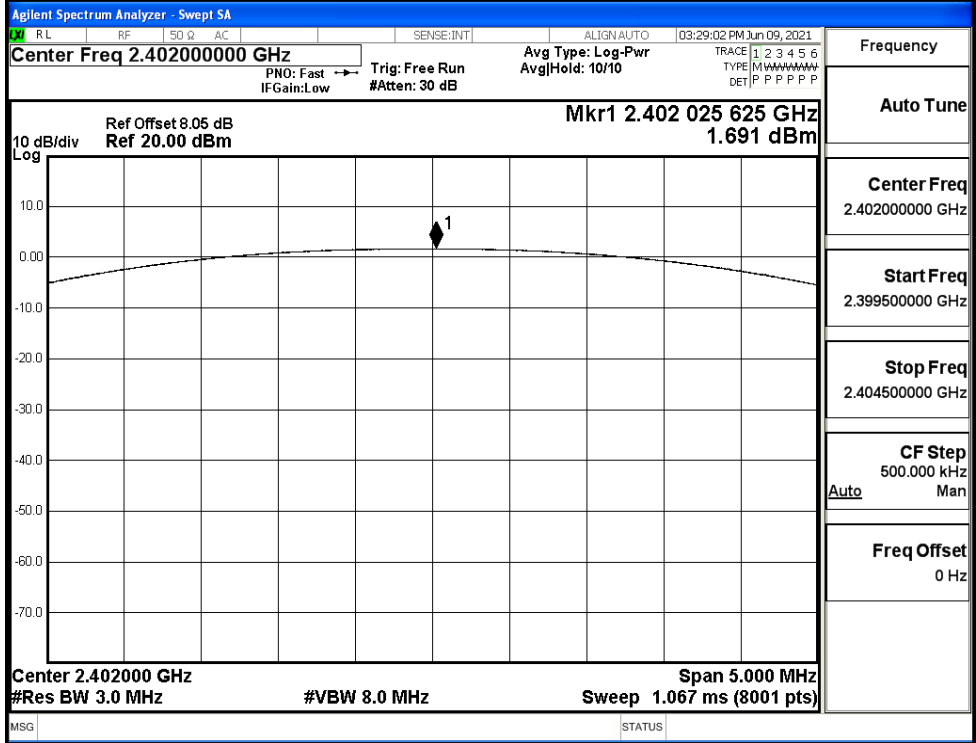
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

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

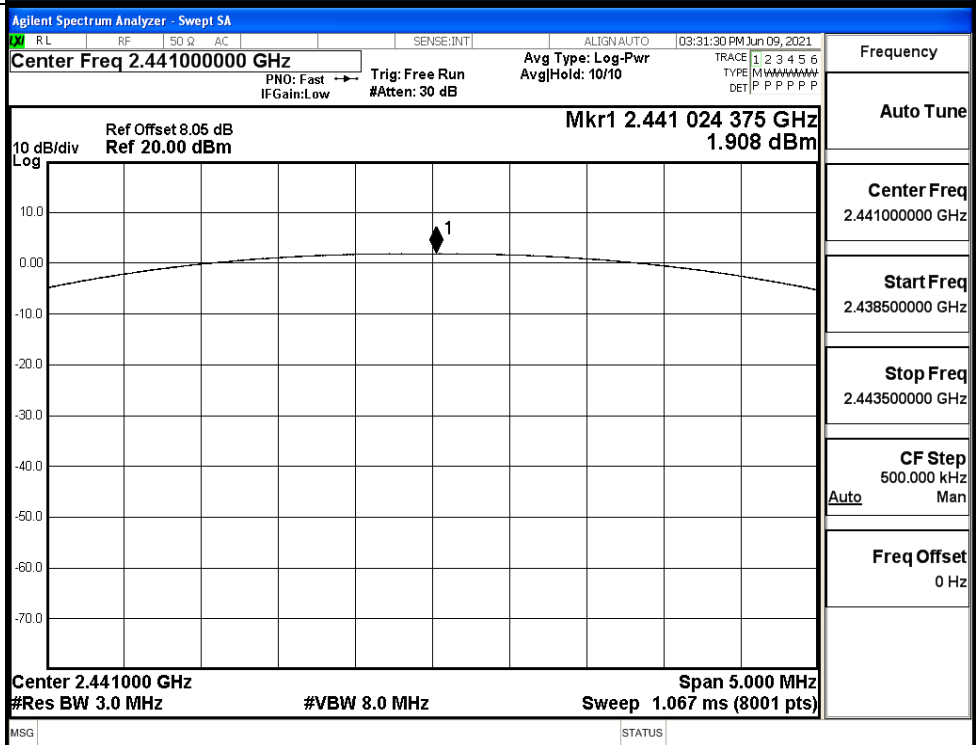
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.691	21	PASS
	MCH	1.908	21	PASS
	HCH	0.431	21	PASS
$\pi/4$ DQPSK	LCH	1.606	21	PASS
	MCH	1.902	21	PASS
	HCH	0.448	21	PASS
8DPSK	LCH	1.714	21	PASS
	MCH	1.977	21	PASS
	HCH	0.454	21	PASS

Test Graphs

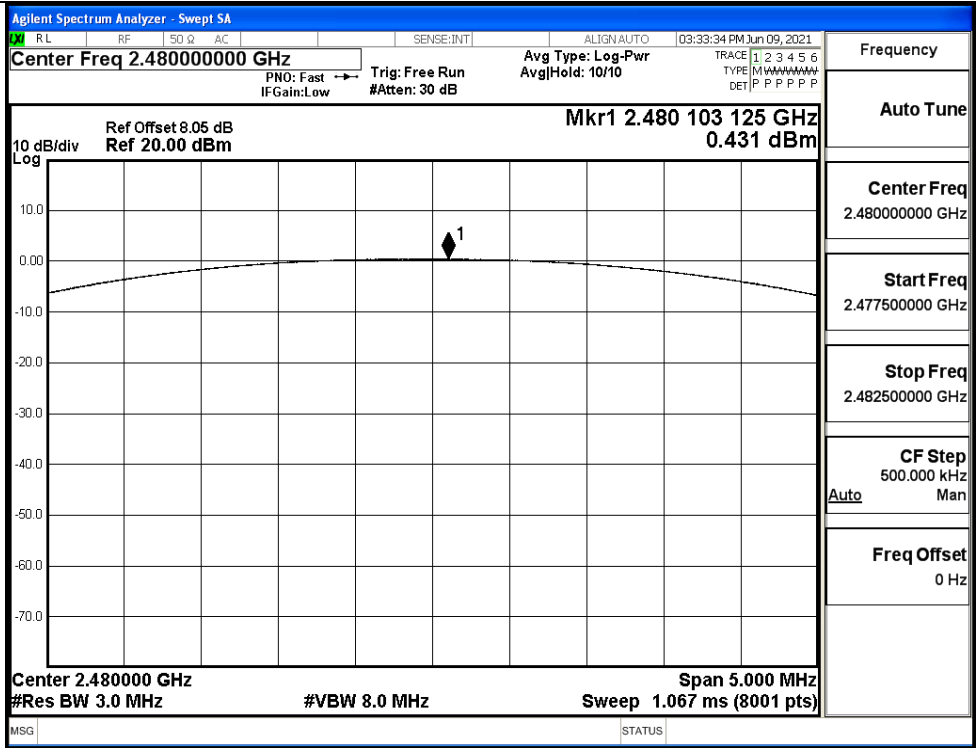
GFSK/LCH



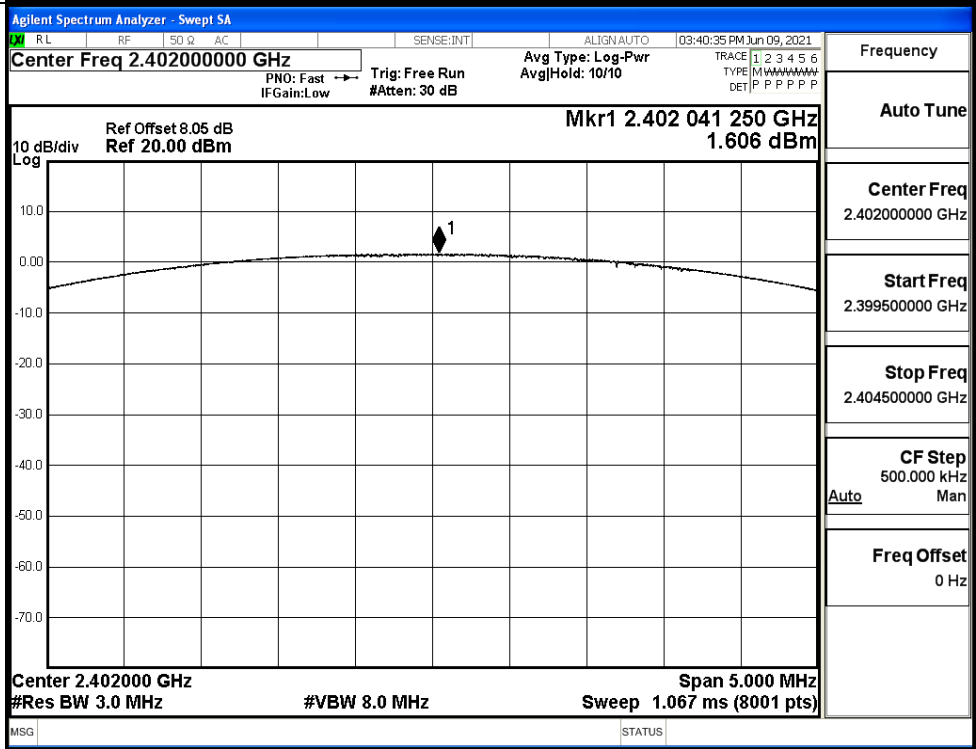
GFSK/MCH

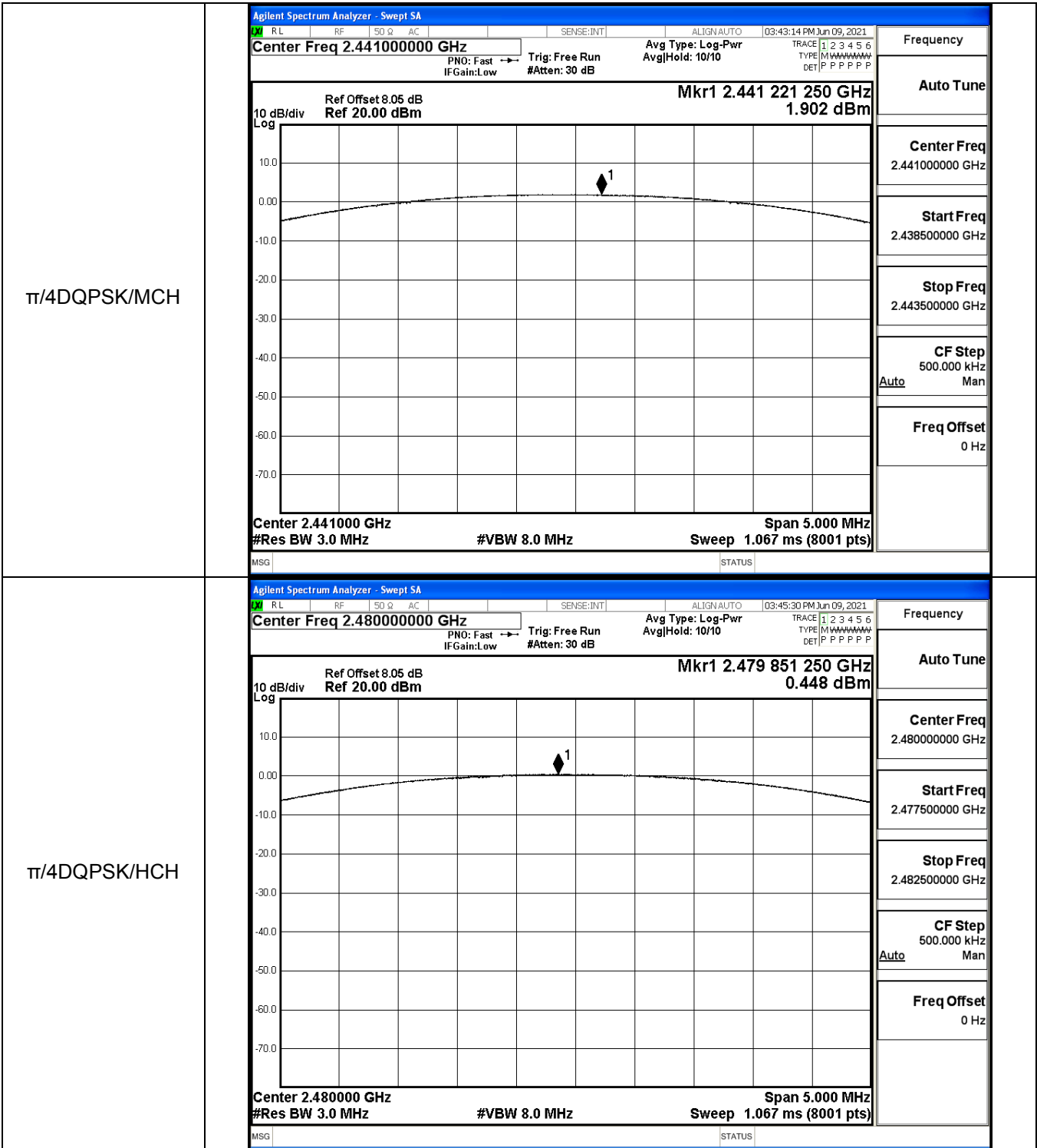


GFSK/HCH

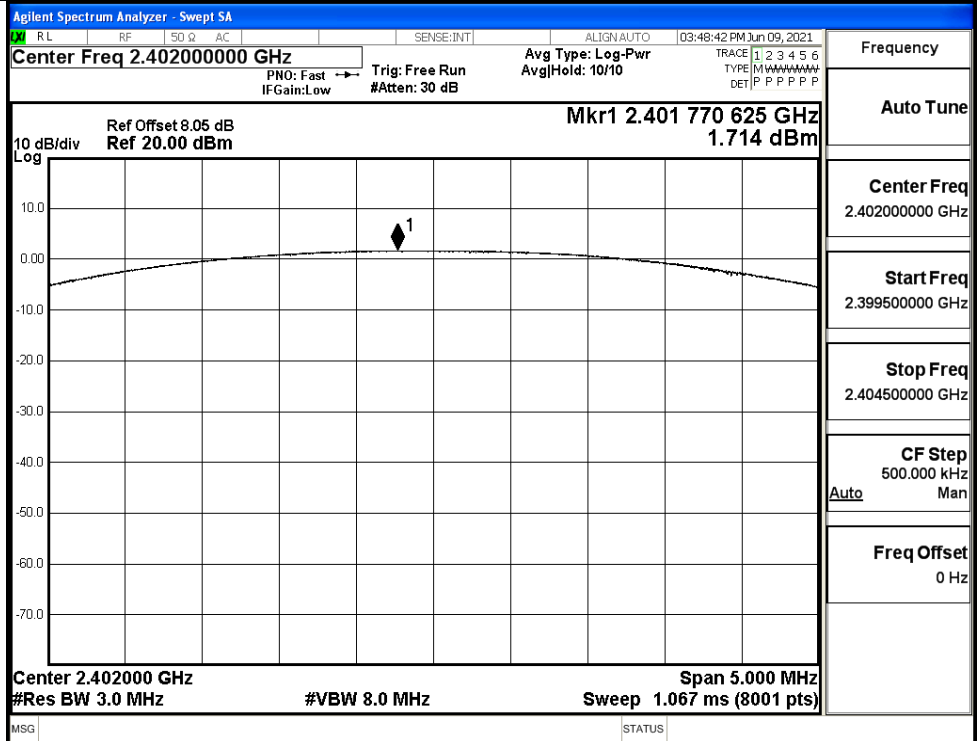


$\pi/4$ DQPSK/LCH

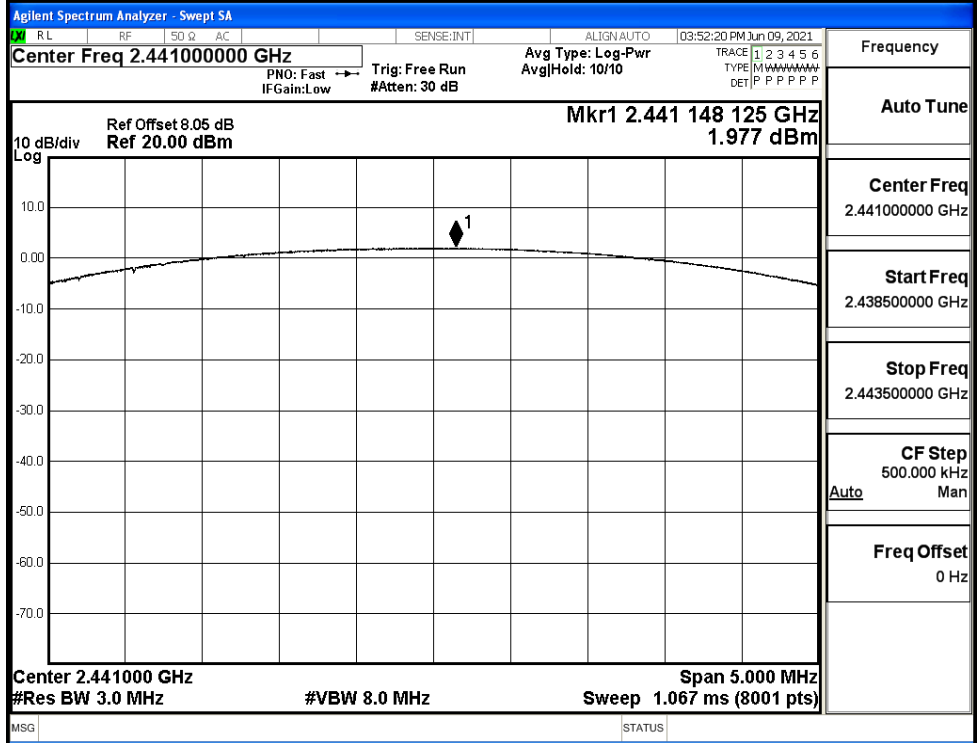




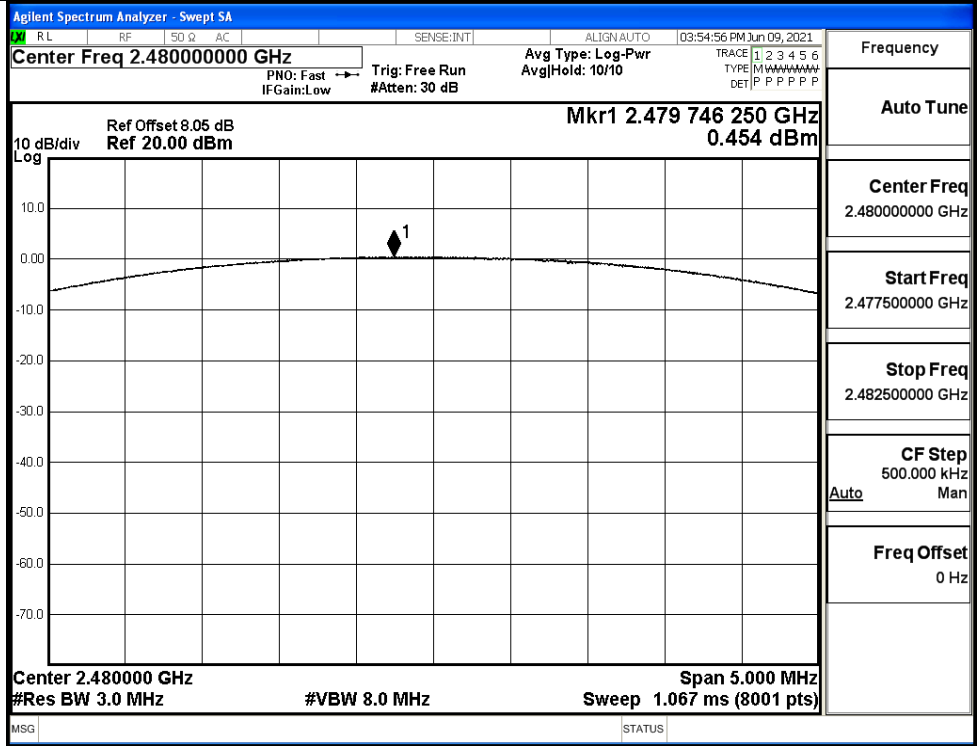
8DPSK/LCH



8DPSK/MCH

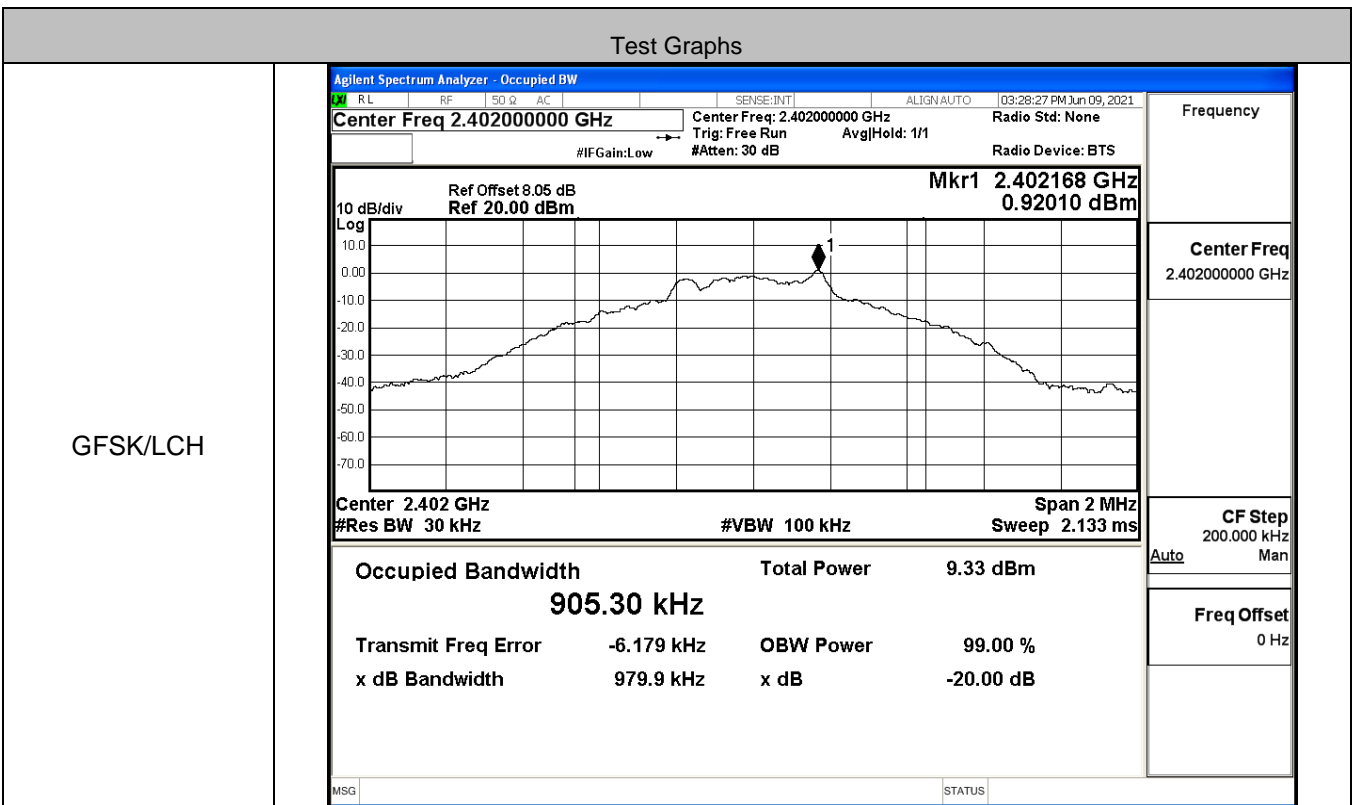


8DPSK/HCH

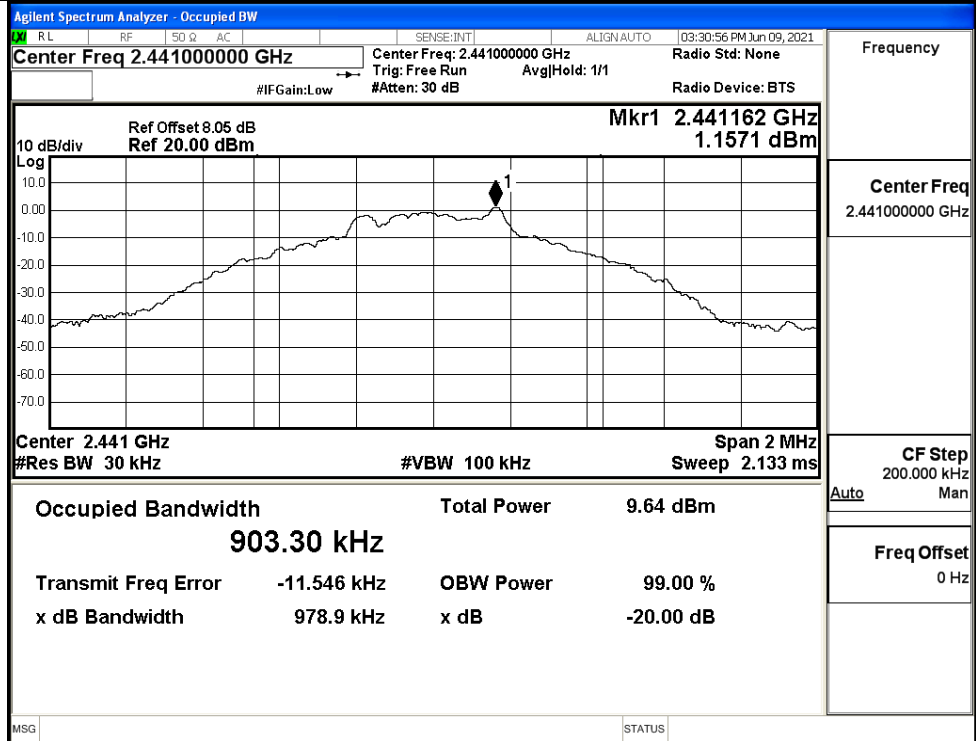


**A.2 20dB Bandwidth**

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9799	Not Specified	PASS
	MCH	0.9789	Not Specified	PASS
	HCH	0.9879	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.313	Not Specified	PASS
	MCH	1.316	Not Specified	PASS
	HCH	1.312	Not Specified	PASS
8DPSK	LCH	1.301	Not Specified	PASS
	MCH	1.300	Not Specified	PASS
	HCH	1.298	Not Specified	PASS



GFSK/MCH



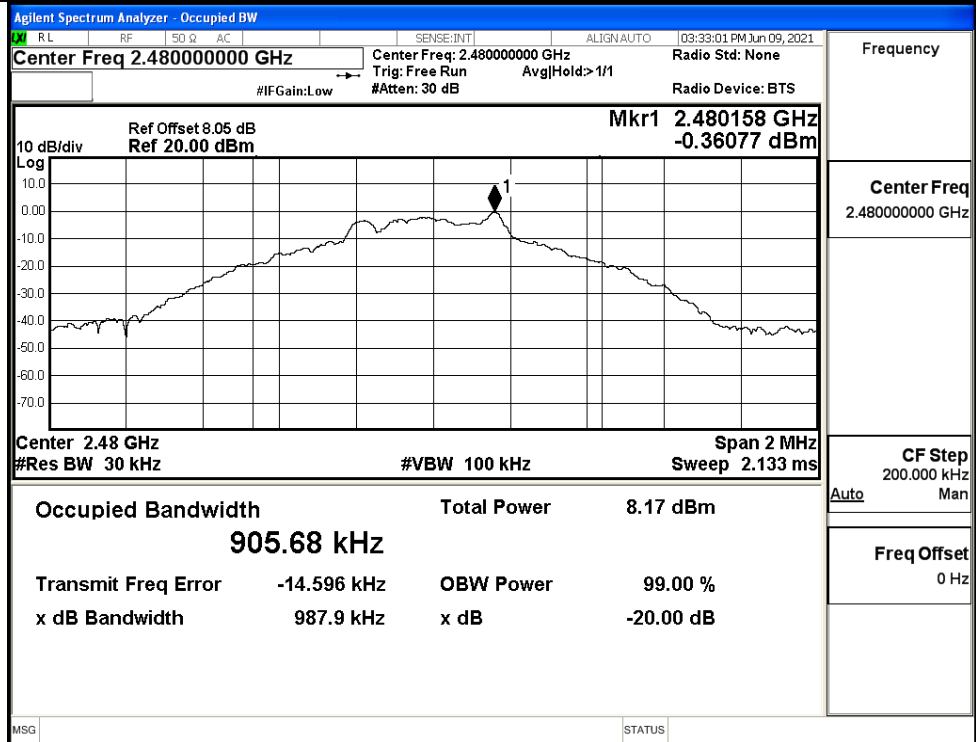
Frequency

Center Freq  
2.44100000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz

GFSK/HCH



Frequency

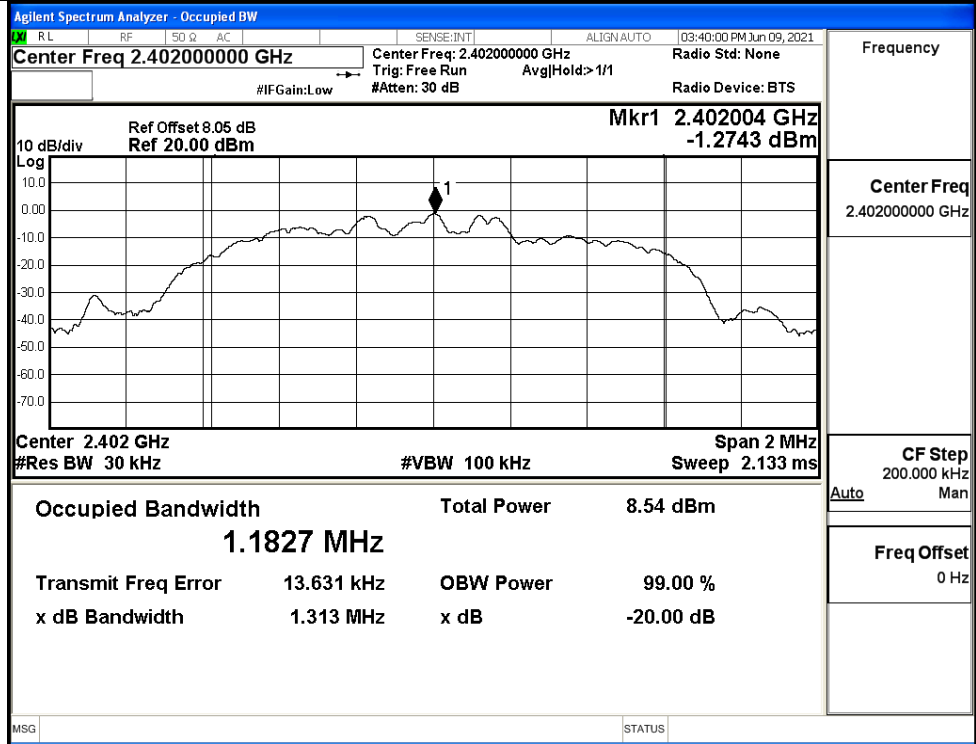
Center Freq  
2.48000000 GHz

CF Step  
200.000 kHz  
Auto Man

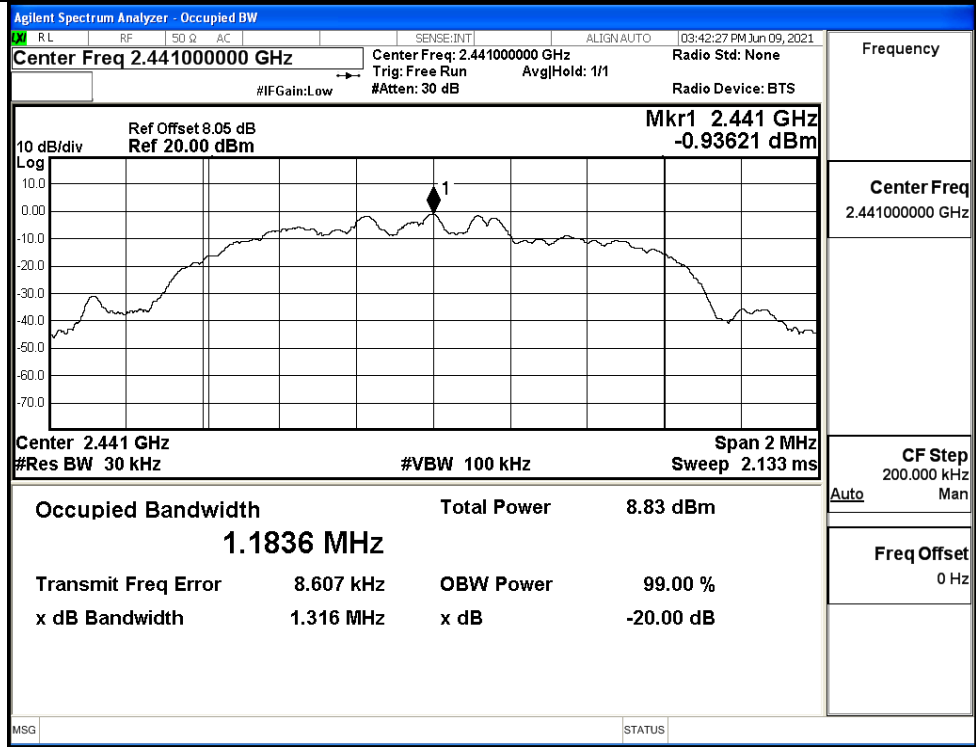
Freq Offset  
0 Hz



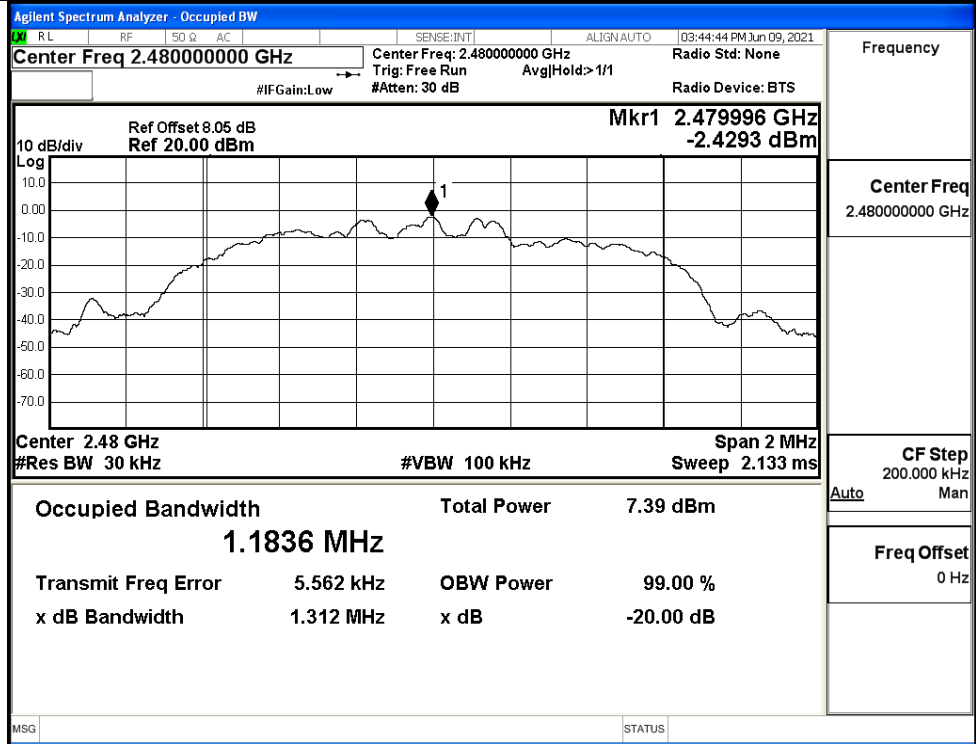
$\pi/4$ DQPSK/LCH



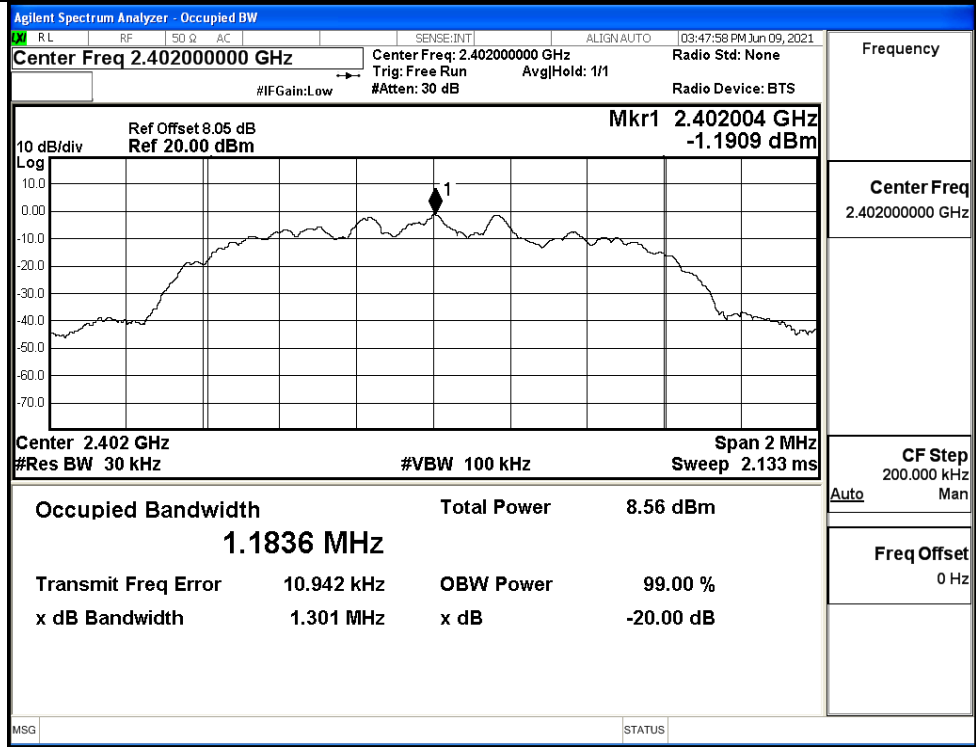
$\pi/4$ DQPSK/MCH



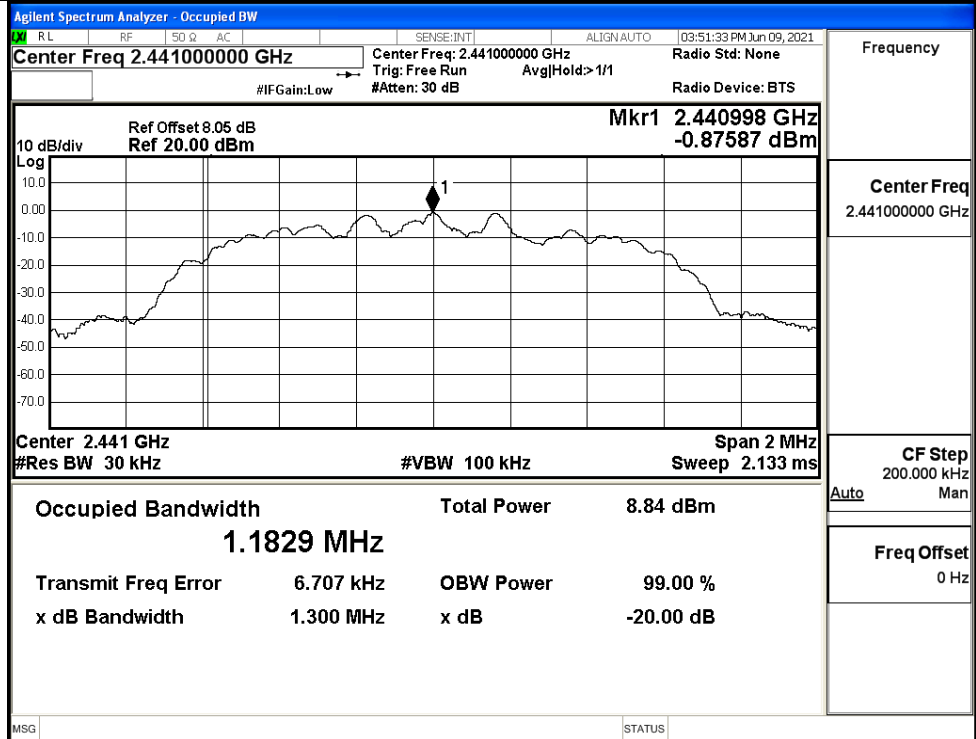
$\pi/4$ DQPSK/HCH



8DPSK/LCH

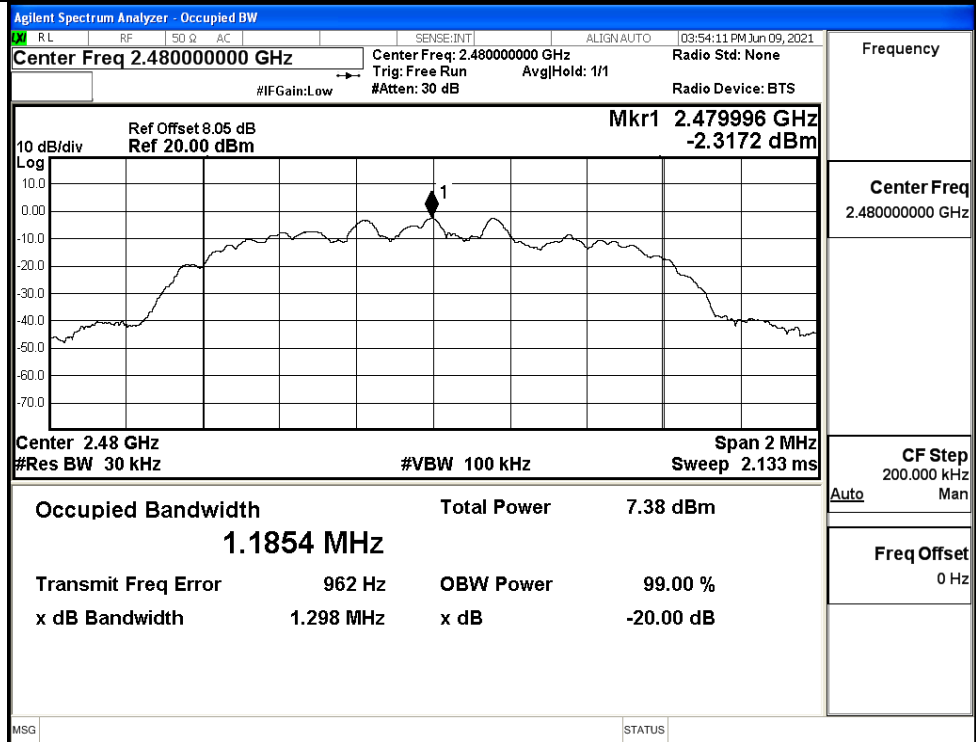


8DPSK/MCH



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

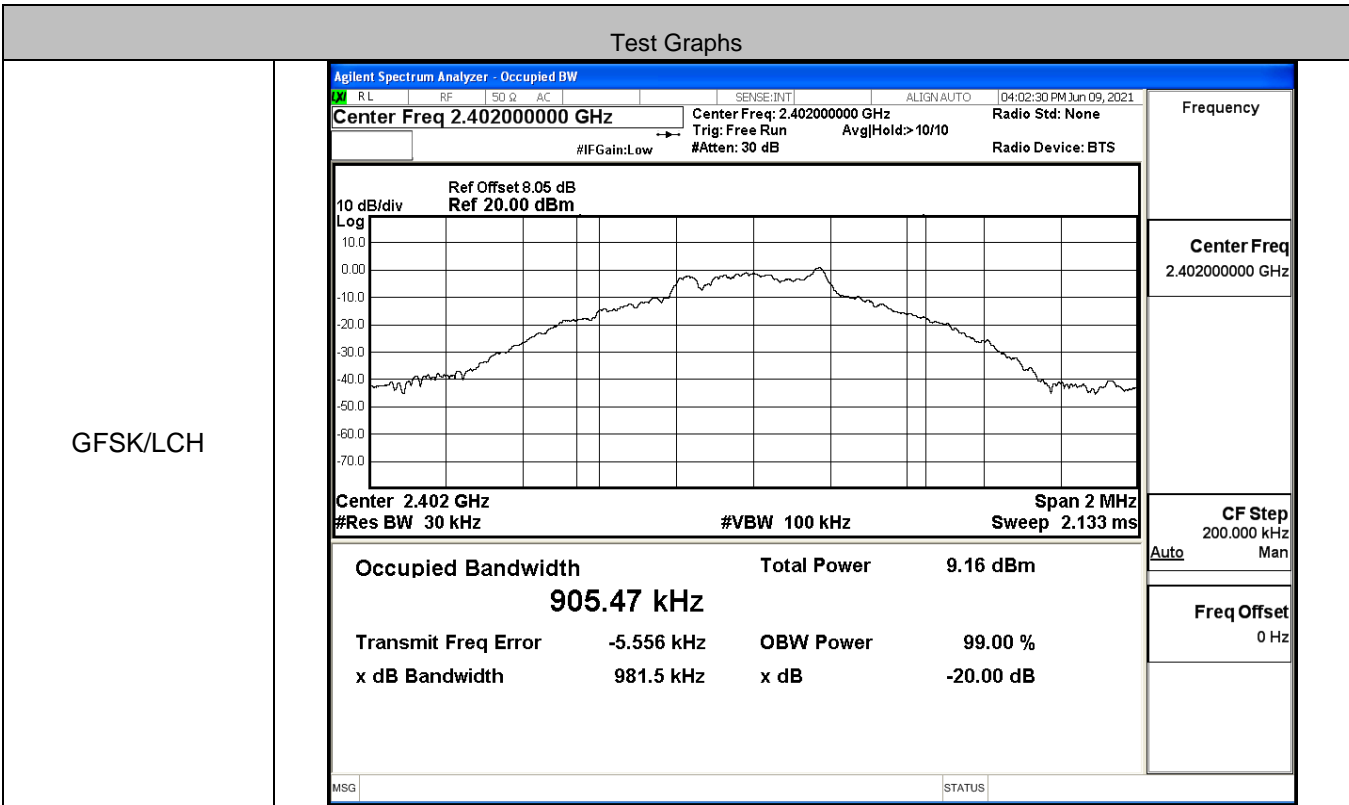
8DPSK/HCH



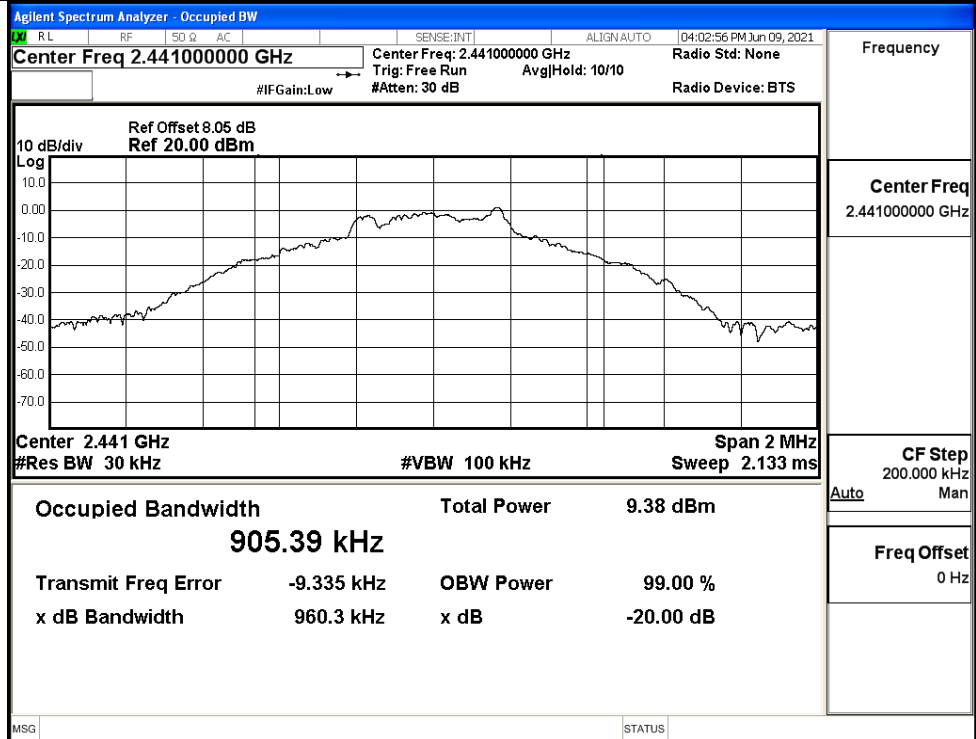
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

### A.3 Occupied Bandwidth

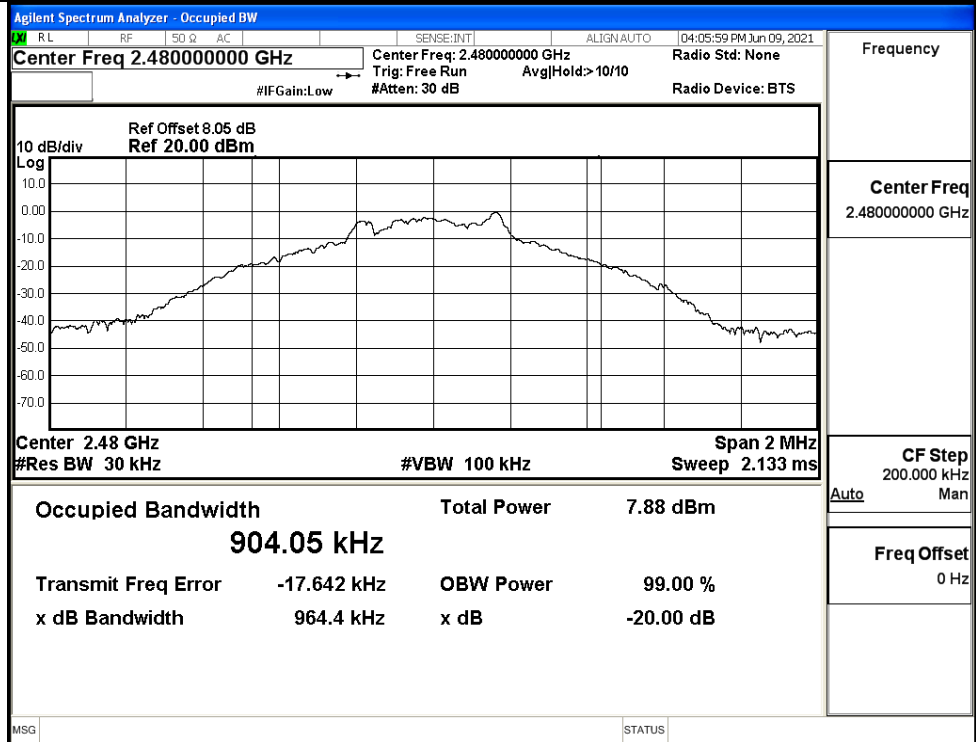
Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.90547	Not Specified	PASS
	MCH	0.90539	Not Specified	PASS
	HCH	0.90405	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1889	Not Specified	PASS
	MCH	1.1849	Not Specified	PASS
	HCH	1.1817	Not Specified	PASS
8DPSK	LCH	1.1890	Not Specified	PASS
	MCH	1.1849	Not Specified	PASS
	HCH	1.1813	Not Specified	PASS



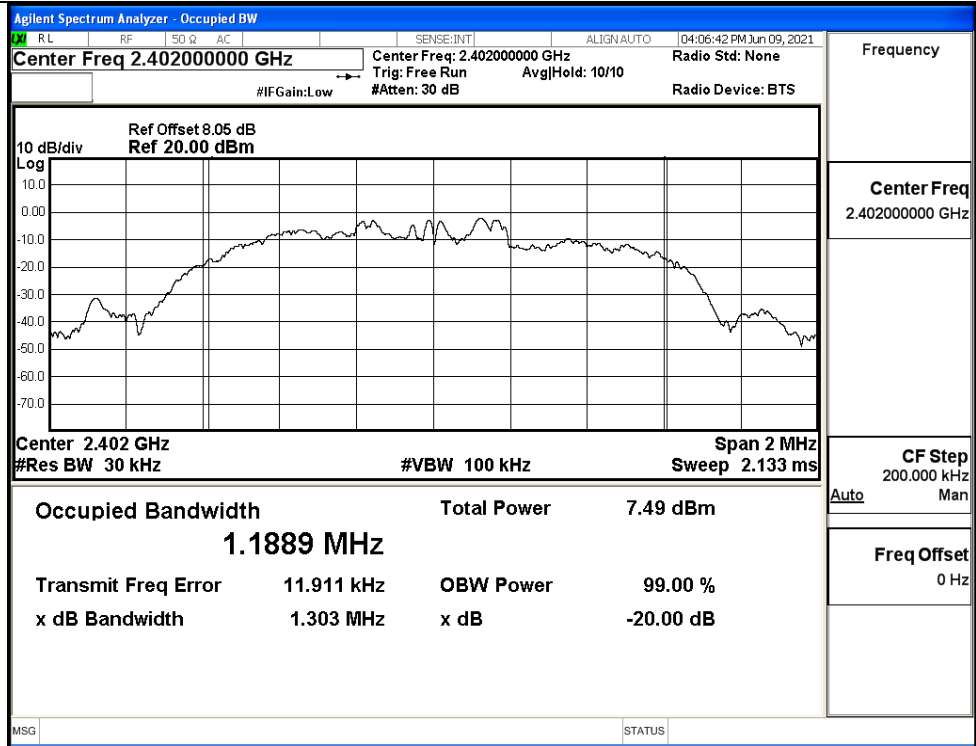
GFSK/MCH



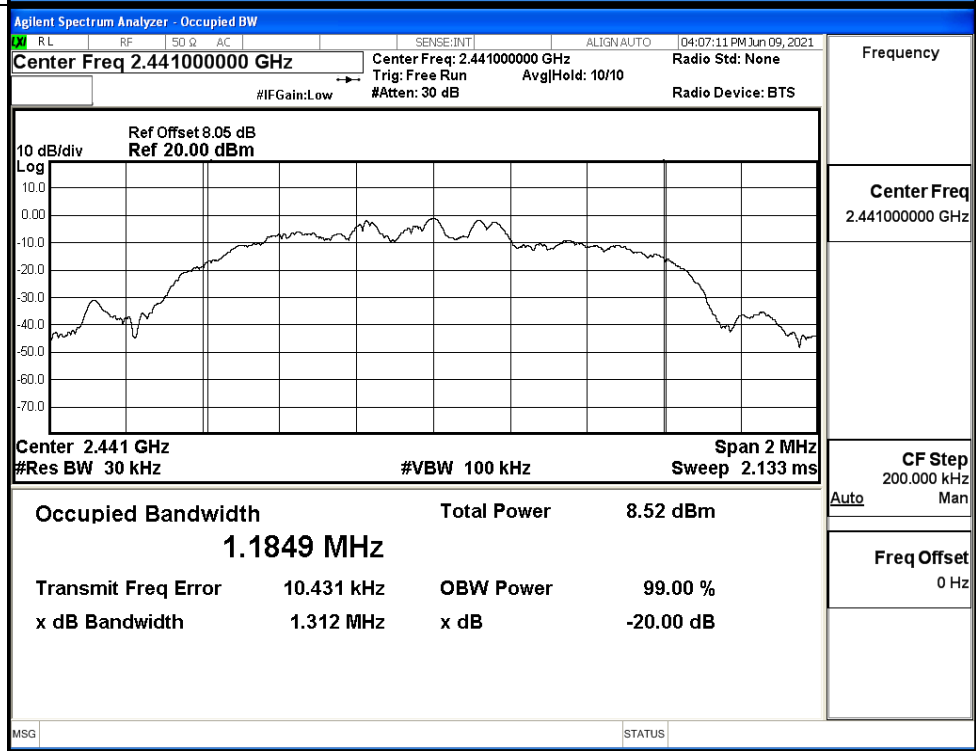
GFSK/HCH



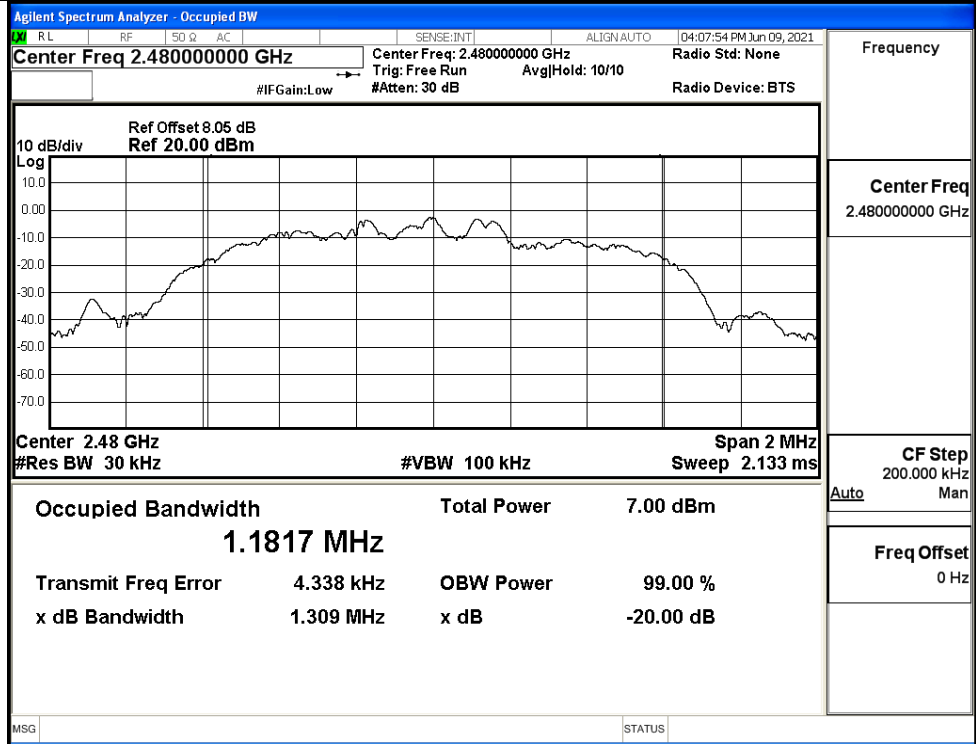
$\pi/4$ DQPSK/LCH



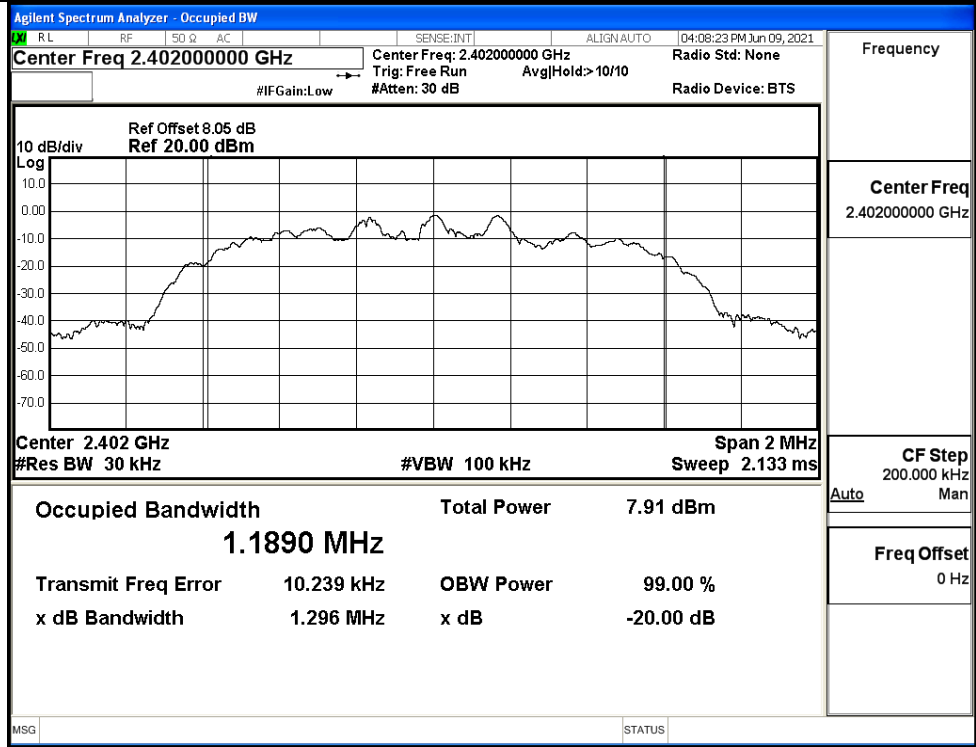
$\pi/4$ DQPSK/MCH



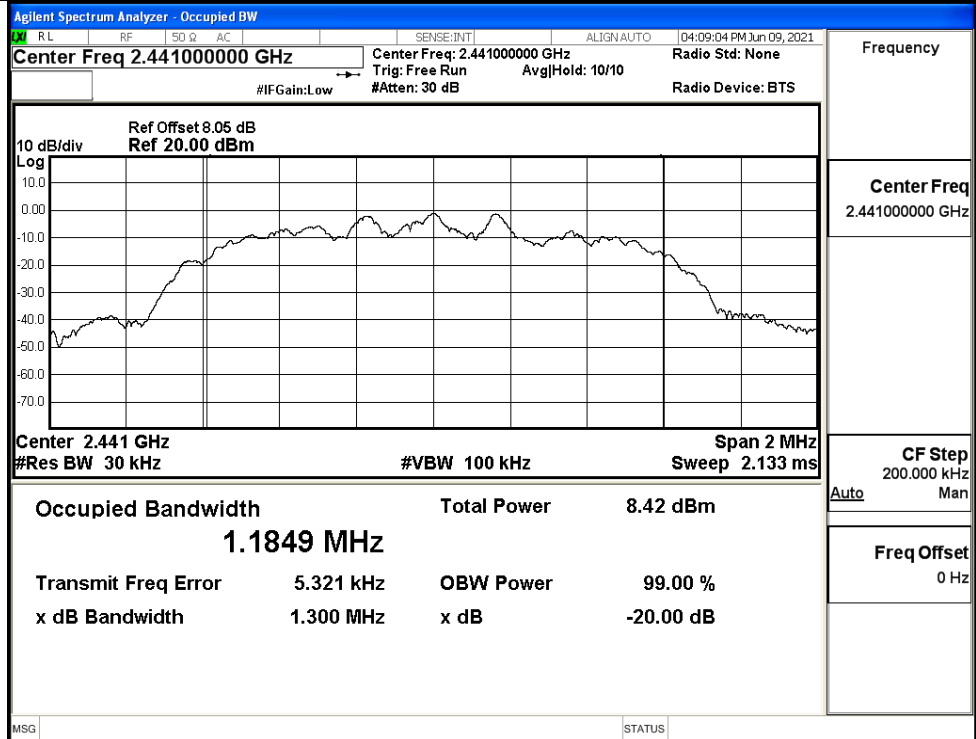
$\pi/4$ DQPSK/HCH



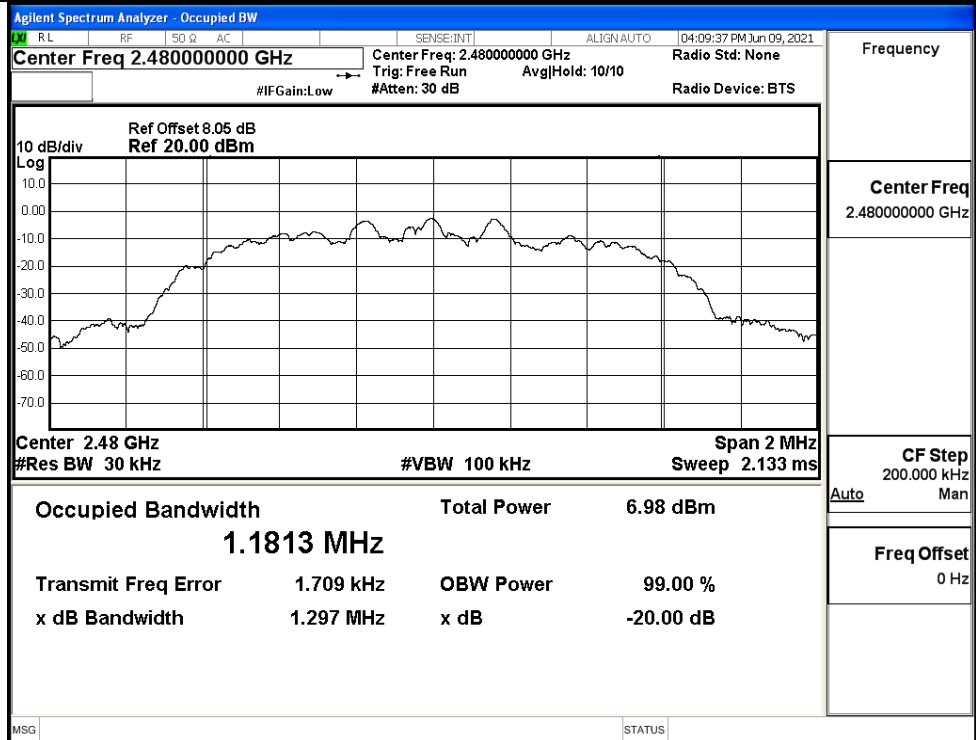
8DPSK/LCH



8DPSK/MCH



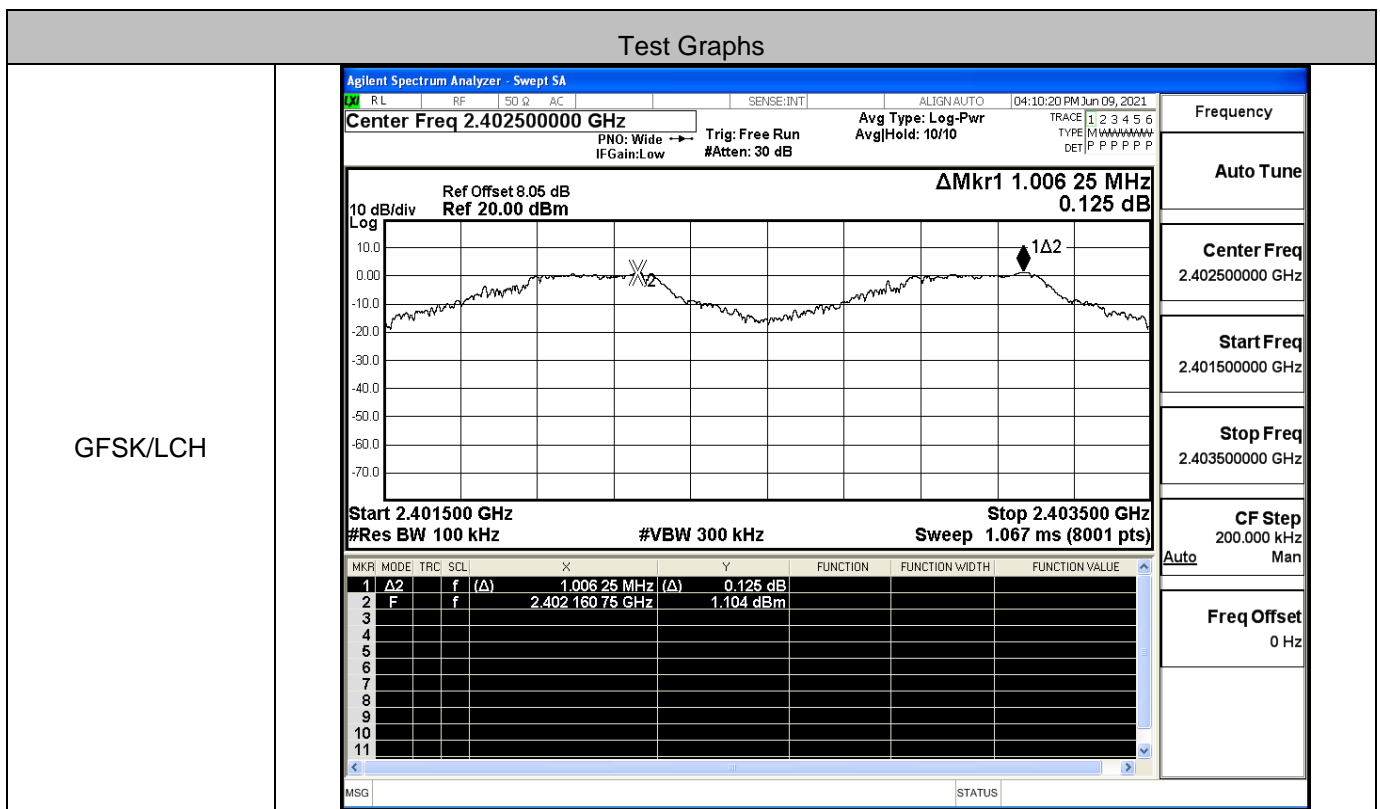
8DPSK/HCH



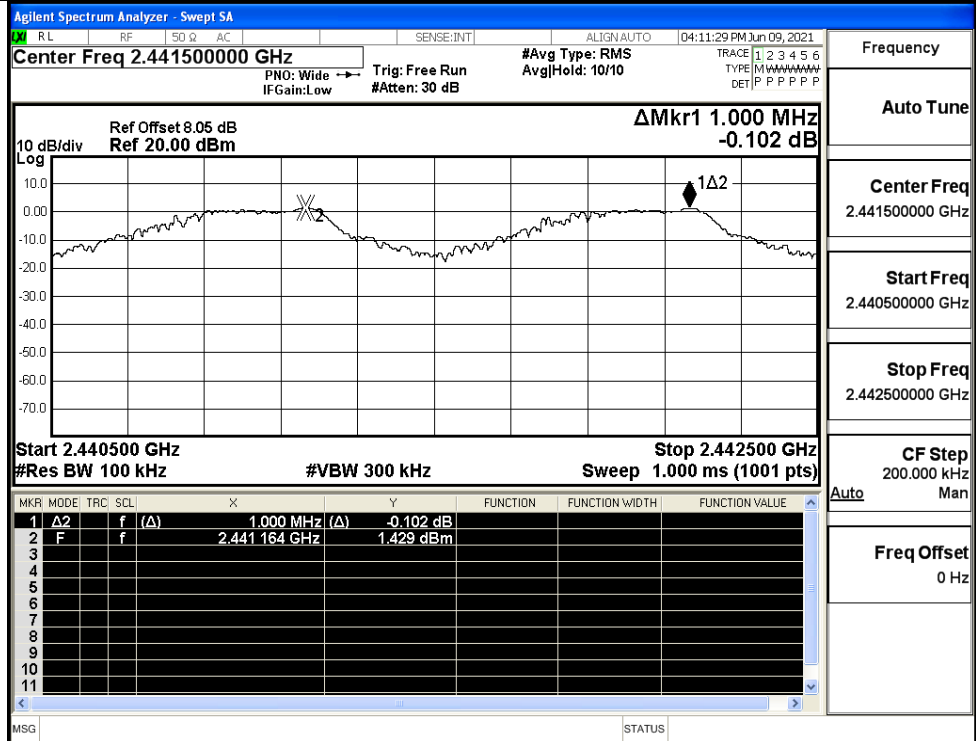


### A.4 Carrier Frequency Separation

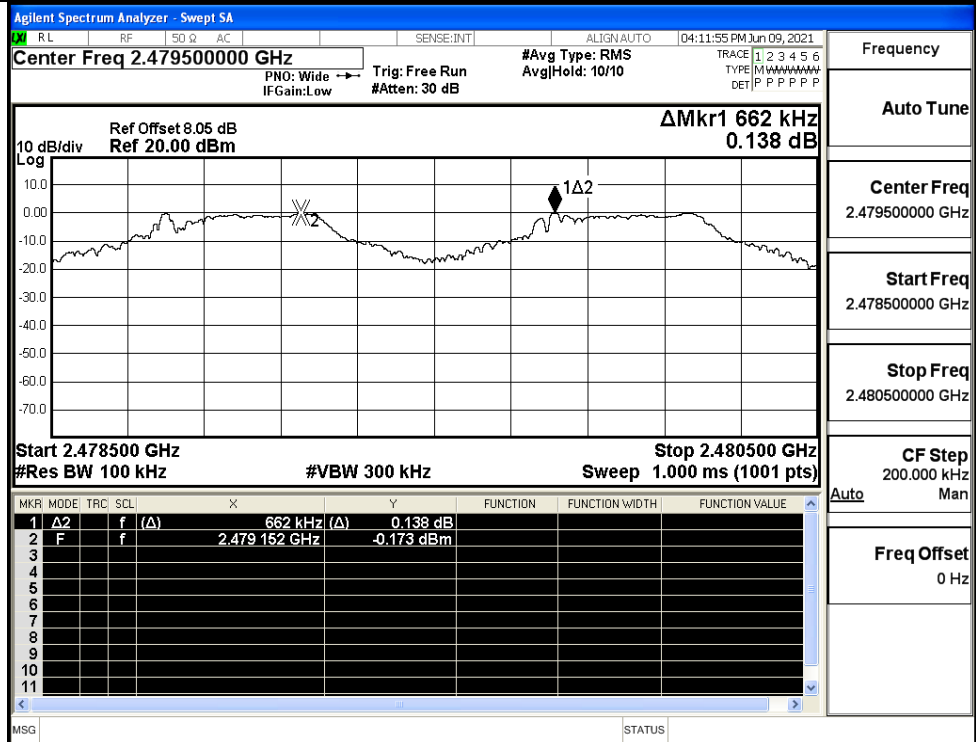
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.006	0.659	PASS
	MCH	1.000	0.659	PASS
	HCH	0.662	0.659	PASS
π/4DQPSK	LCH	1.330	0.877	PASS
	MCH	1.210	0.877	PASS
	HCH	0.966	0.877	PASS
8DPSK	LCH	1.246	0.867	PASS
	MCH	0.986	0.867	PASS
	HCH	0.998	0.867	PASS



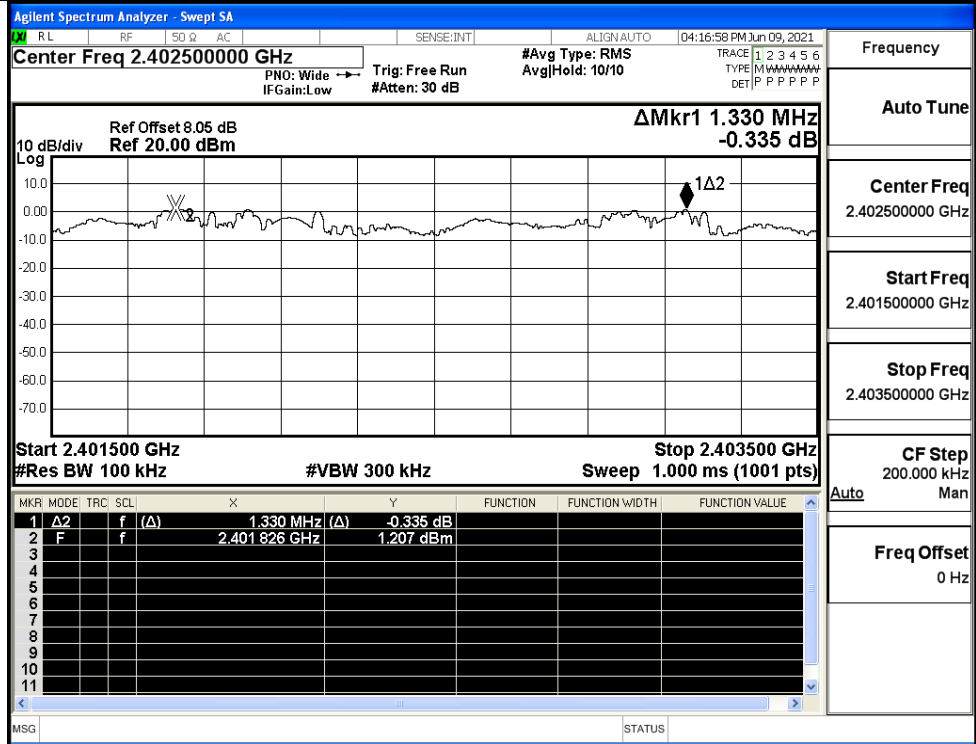
GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH



Frequency

Auto Tune

Center Freq  
2.402500000 GHz

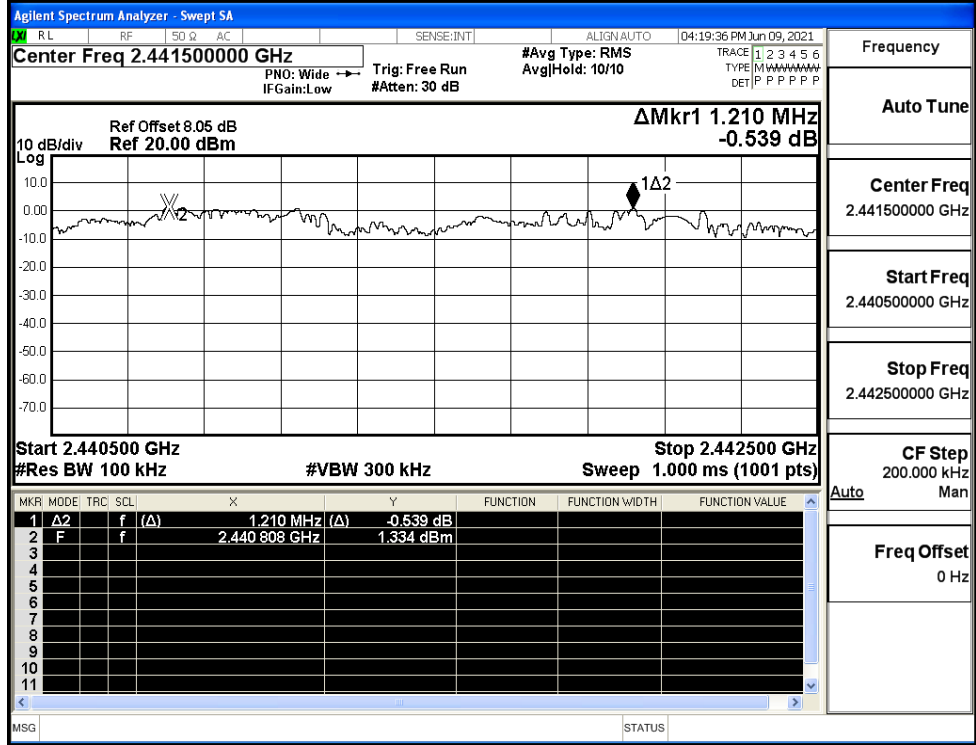
Start Freq  
2.401500000 GHz

Stop Freq  
2.403500000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/MCH



Frequency

Auto Tune

Center Freq  
2.441500000 GHz

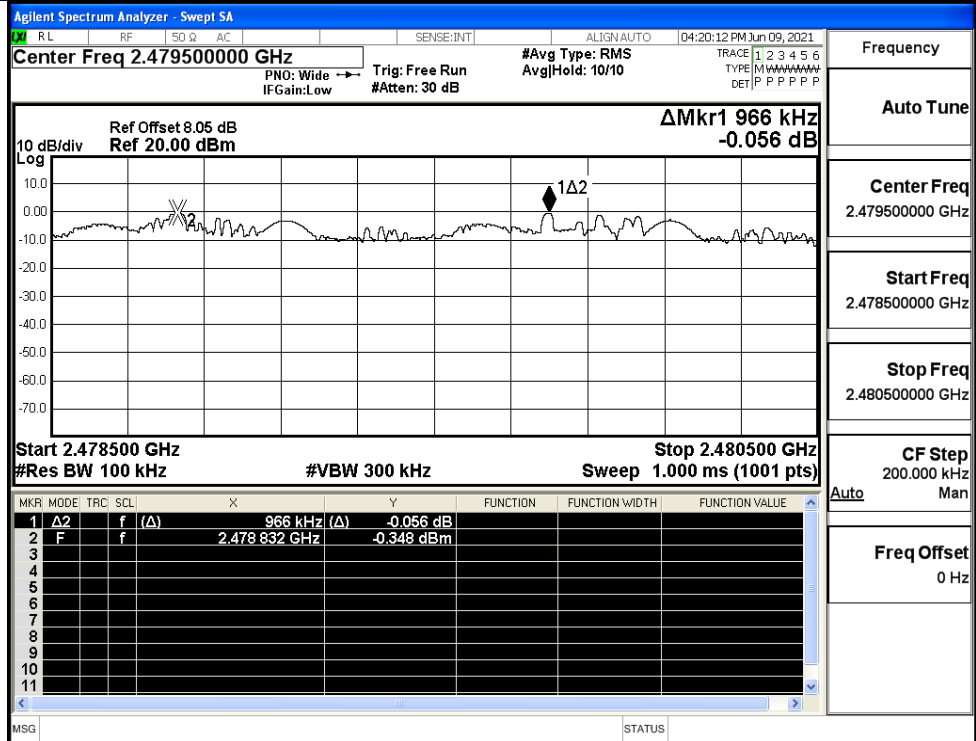
Start Freq  
2.440500000 GHz

Stop Freq  
2.442500000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz

π/4DQPSK/HCH



Frequency

Auto Tune

Center Freq  
2.479500000 GHz

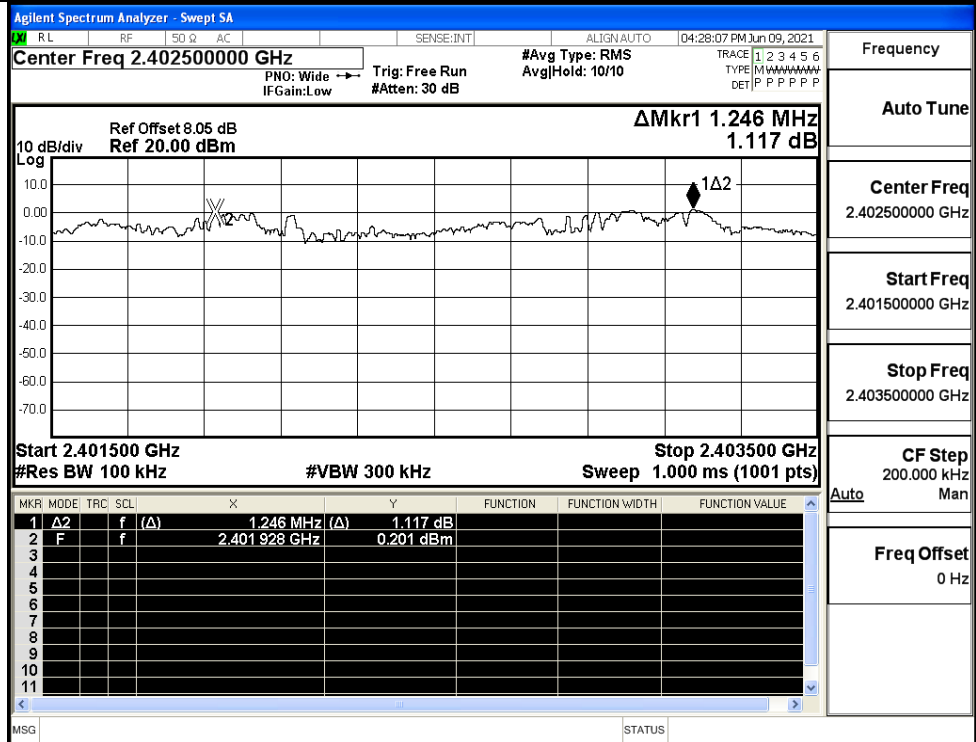
Start Freq  
2.478500000 GHz

Stop Freq  
2.480500000 GHz

CF Step  
200.000 kHz

Freq Offset  
0 Hz

8DPSK/LCH



Frequency

Auto Tune

Center Freq  
2.402500000 GHz

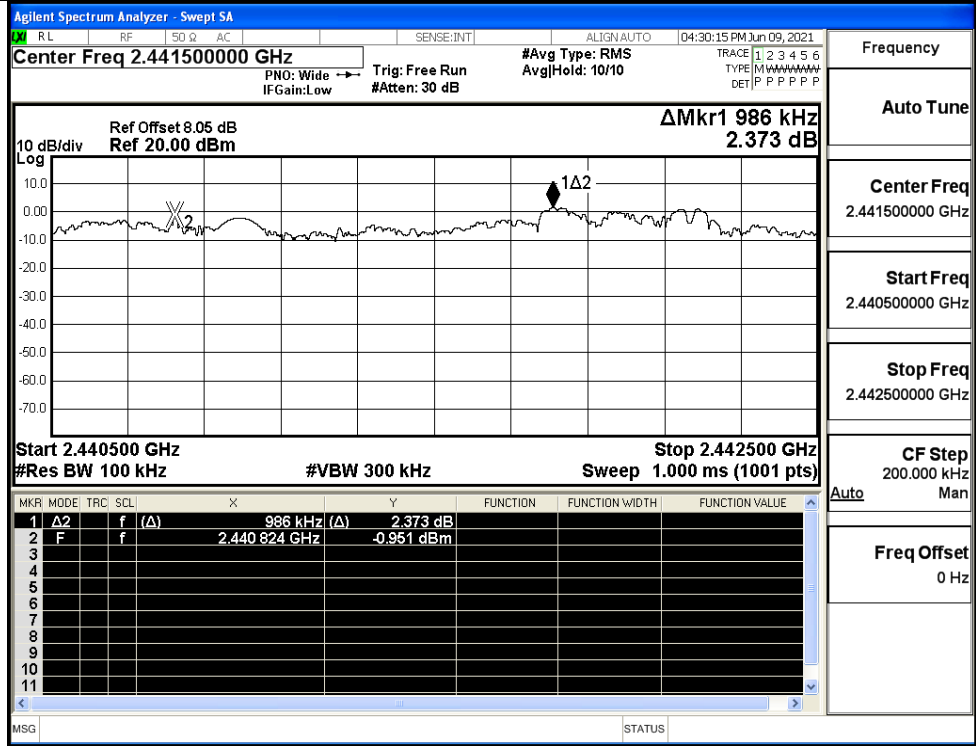
Start Freq  
2.401500000 GHz

Stop Freq  
2.403500000 GHz

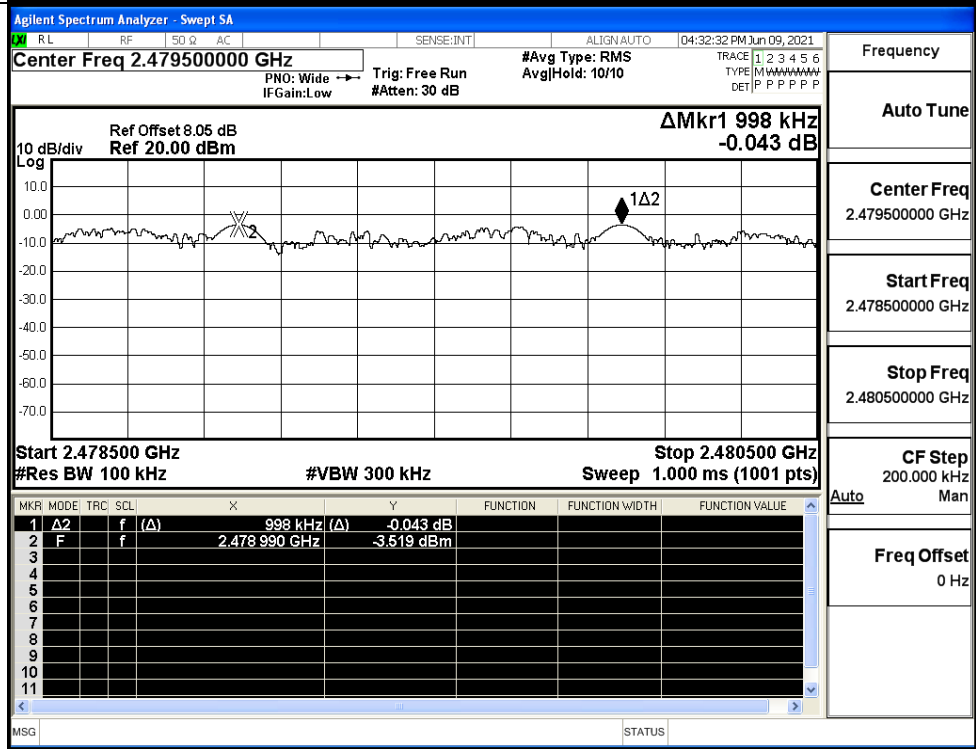
CF Step  
200.000 kHz

Freq Offset  
0 Hz

8DPSK/MCH



8DPSK/HCH



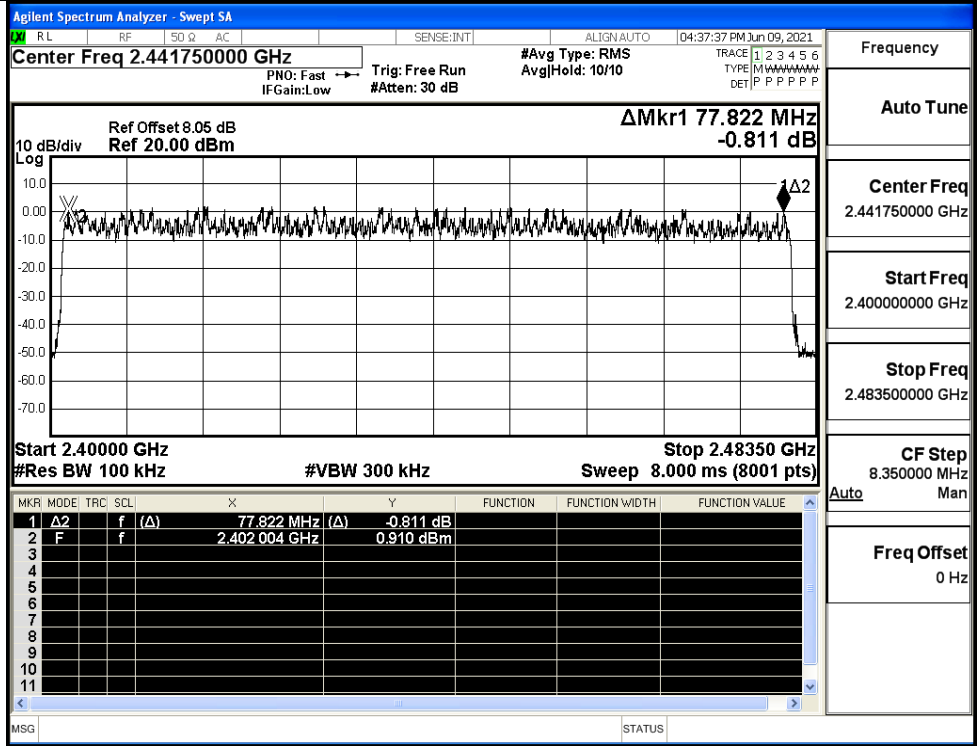
### A.5 Hopping Channel Number

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

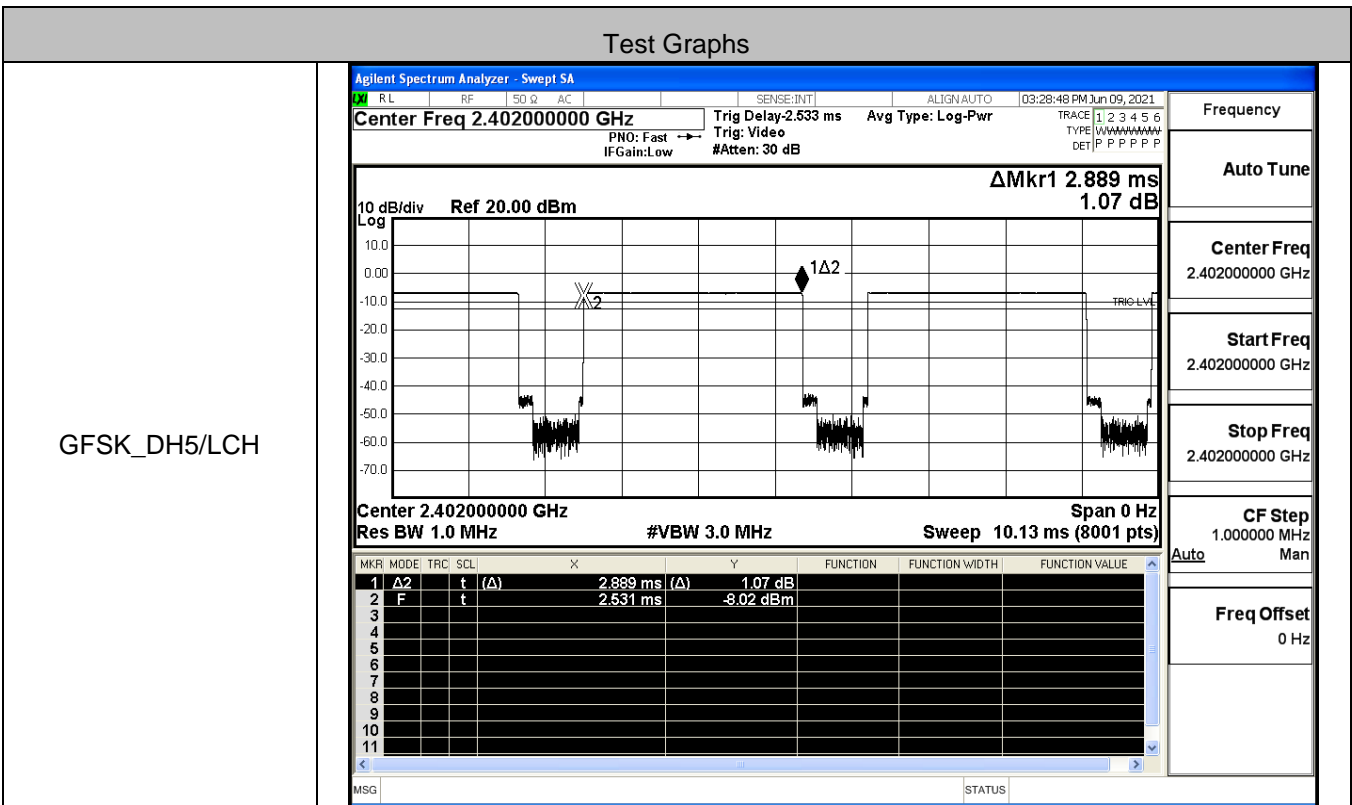
GFSK/Hop		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p><math>\Delta</math>Mkr1 77.989 MHz -1.133 dB</p> <p>Start 2.40000 GHz #Res BW 100 kHz</p> <p>Stop 2.48350 GHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)</p> <table border="1"> <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><math>\Delta</math>2</td> <td>f</td> <td>(<math>\Delta</math>)</td> <td>77.989 MHz</td> <td>(<math>\Delta</math>)</td> <td>-1.133 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.402171 GHz</td> <td></td> <td>1.187 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	$\Delta$ 2	f	( $\Delta$ )	77.989 MHz	( $\Delta$ )	-1.133 dB			2	F	f		2.402171 GHz		1.187 dBm		
	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	$\Delta$ 2	f	( $\Delta$ )	77.989 MHz	( $\Delta$ )	-1.133 dB																							
2	F	f		2.402171 GHz		1.187 dBm																							
$\pi/4$ DQPSK/Hop		<p>Agilent Spectrum Analyzer - Swept SA</p> <p>Center Freq 2.441750000 GHz</p> <p>Ref Offset 8.05 dB Ref 20.00 dBm</p> <p><math>\Delta</math>Mkr1 77.791 MHz -0.490 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><math>\Delta</math>2</td> <td>f</td> <td>(<math>\Delta</math>)</td> <td>77.791 MHz</td> <td>(<math>\Delta</math>)</td> <td>-0.490 dB</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>F</td> <td>f</td> <td></td> <td>2.402026 GHz</td> <td></td> <td>0.588 dBm</td> <td></td> <td></td> </tr> </tbody> </table>	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	$\Delta$ 2	f	( $\Delta$ )	77.791 MHz	( $\Delta$ )	-0.490 dB			2	F	f		2.402026 GHz		0.588 dBm		
	MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																				
1	$\Delta$ 2	f	( $\Delta$ )	77.791 MHz	( $\Delta$ )	-0.490 dB																							
2	F	f		2.402026 GHz		0.588 dBm																							

8DPSK/Hop



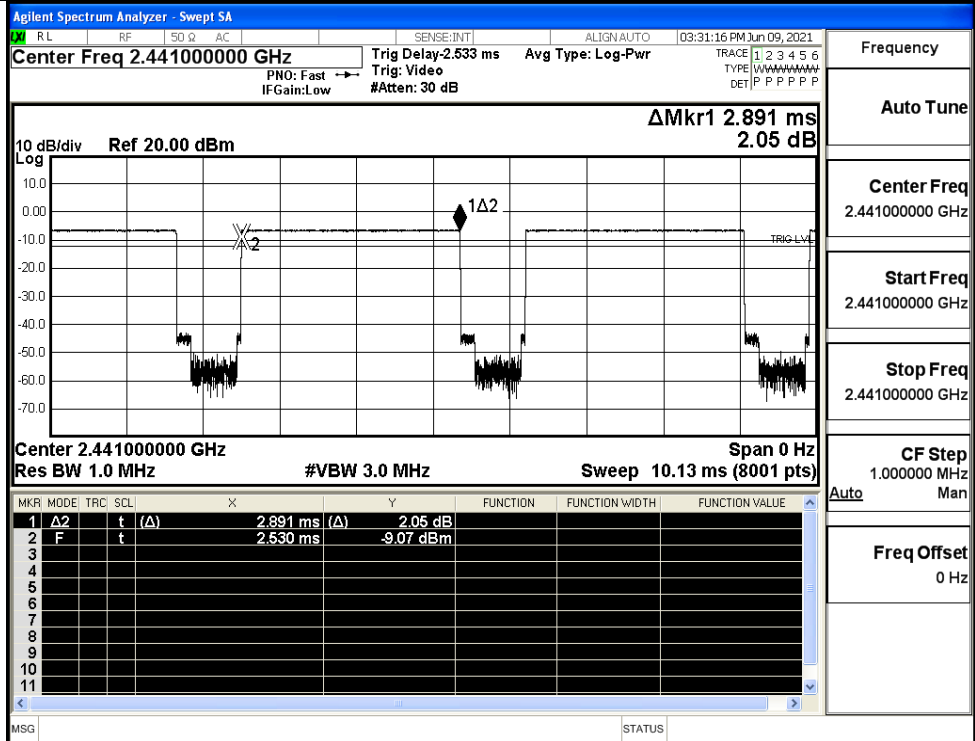
A.6 Dwell Time

Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
π/4DQPSK	2DH5	LCH	2.89	106.7	0.014	0.4	PASS
	2DH5	MCH	2.89	106.7	0.014	0.4	PASS
	2DH5	HCH	2.89	106.7	0.014	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.014	0.4	PASS
	3DH5	MCH	2.89	106.7	0.014	0.4	PASS
	3DH5	HCH	2.89	106.7	0.014	0.4	PASS

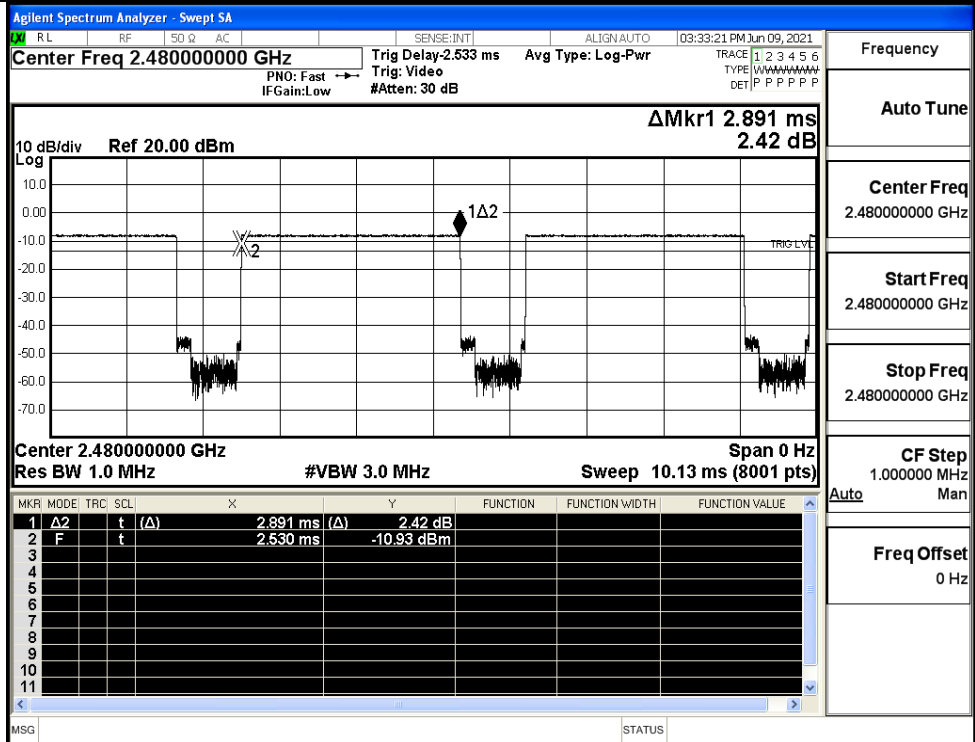




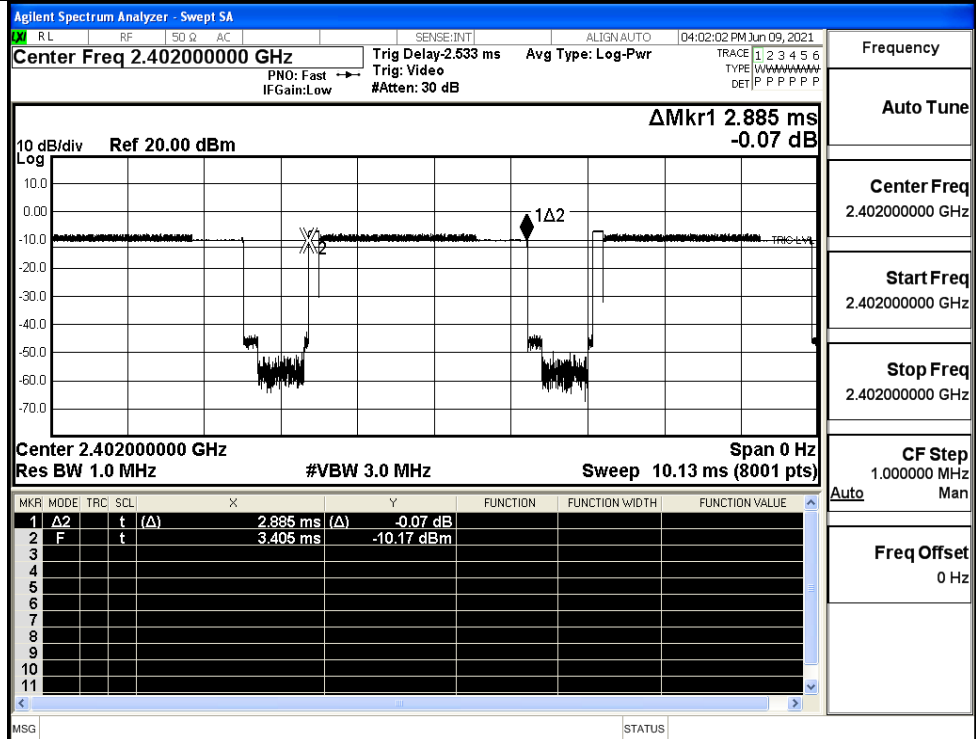
GFSK\_DH5/MCH



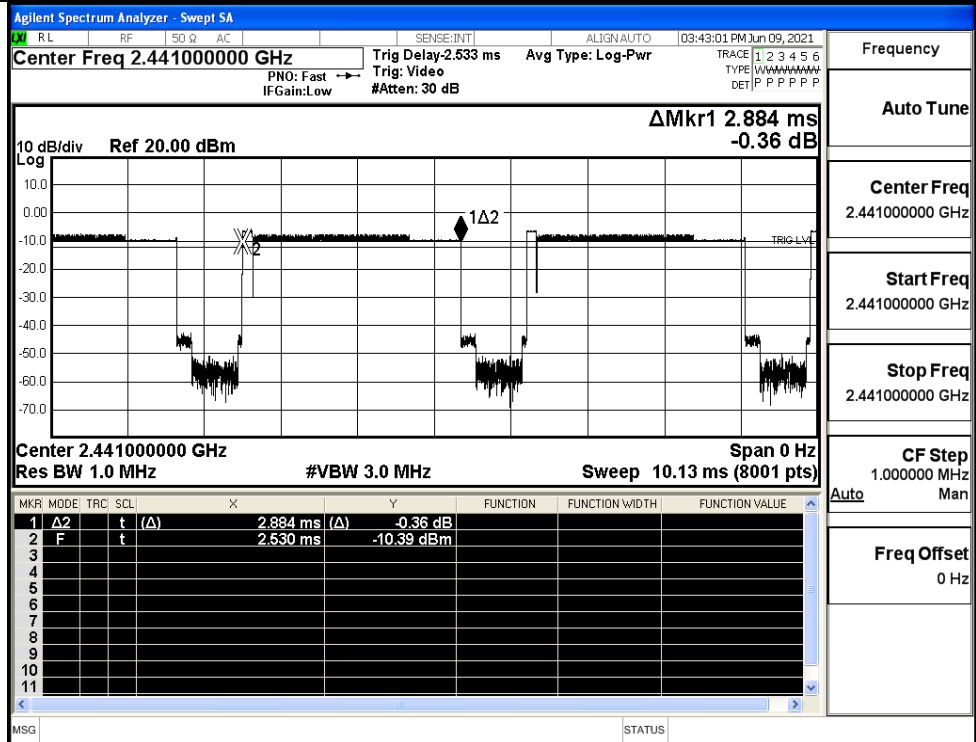
GFSK\_DH5/HCH



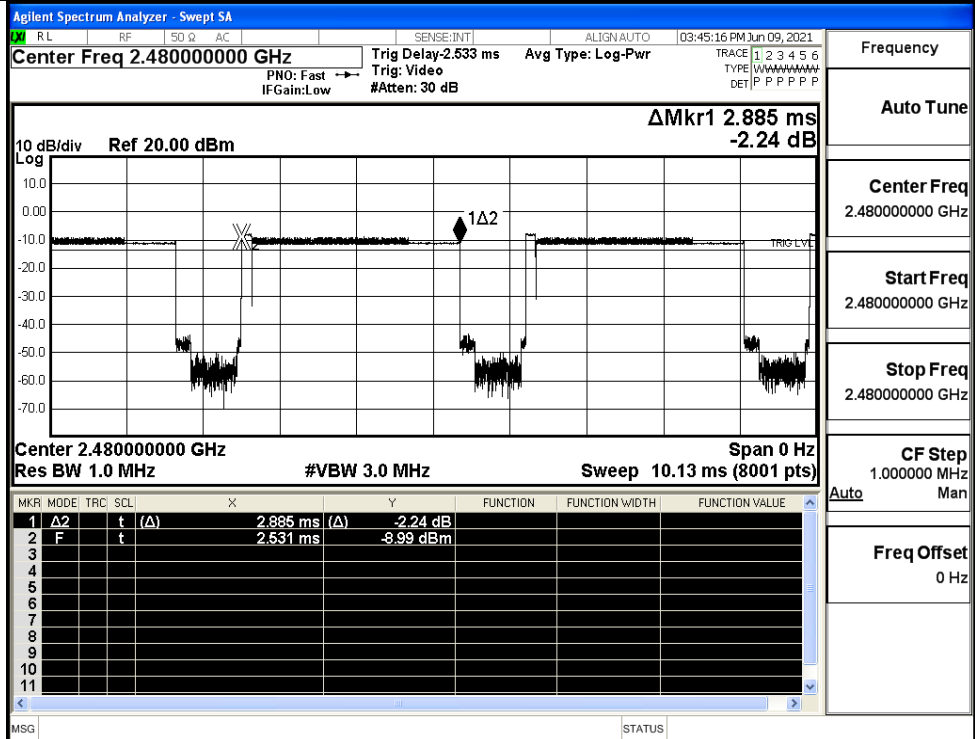
$\pi/4$ DQPSK  
\_2DH5/LCH



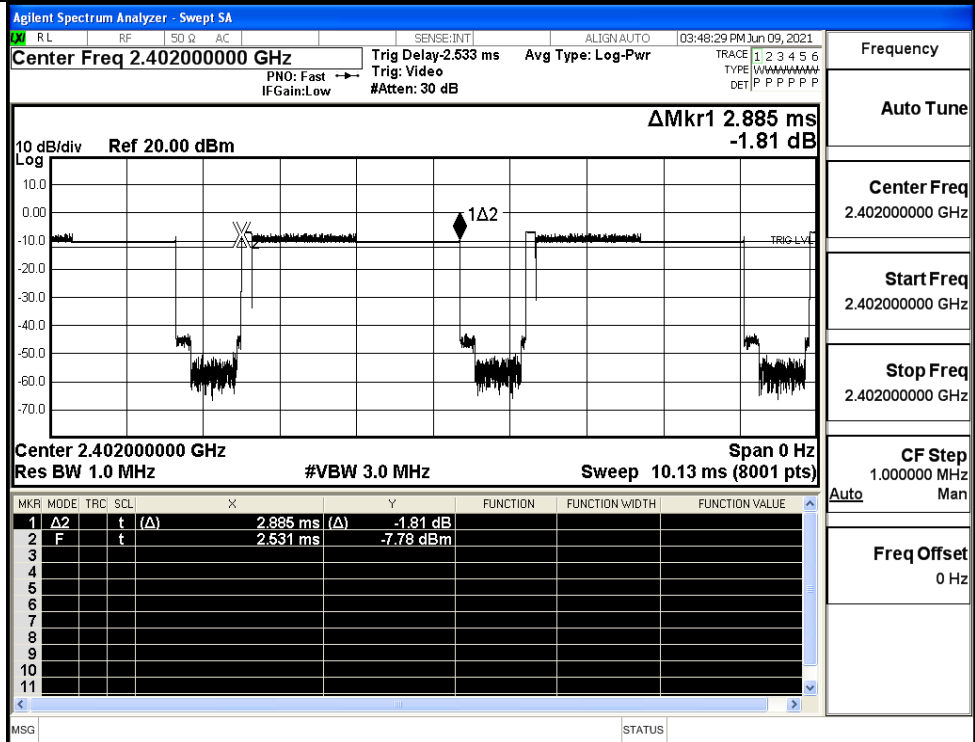
$\pi/4$ DQPSK  
\_2DH5/MCH



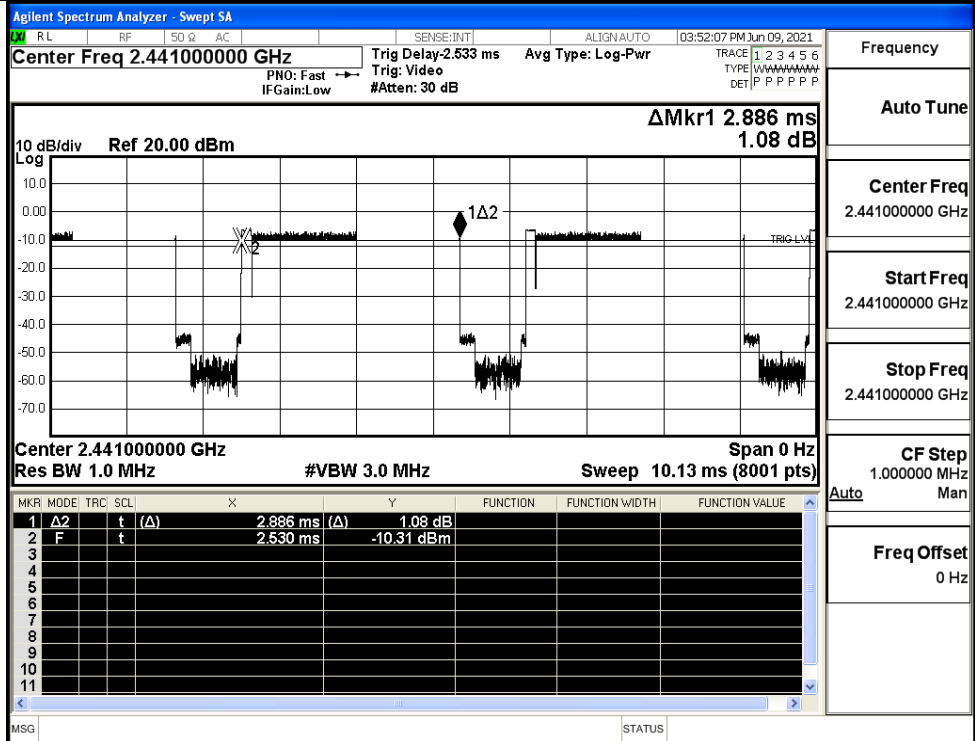
$\pi/4$ DQPSK  
\_2DH5/HCH



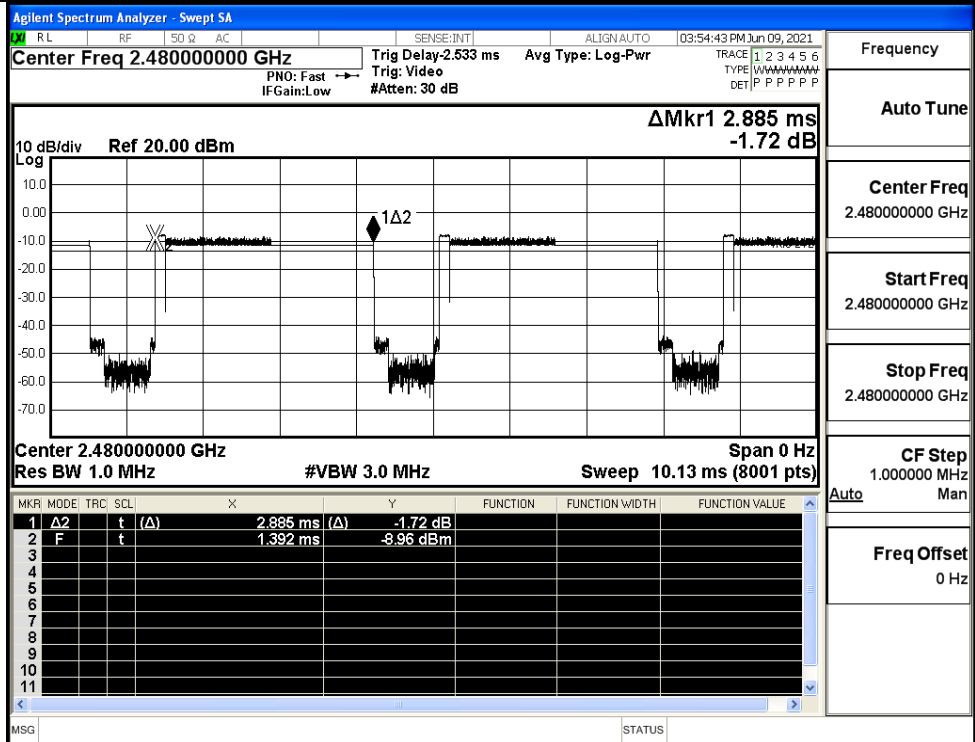
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



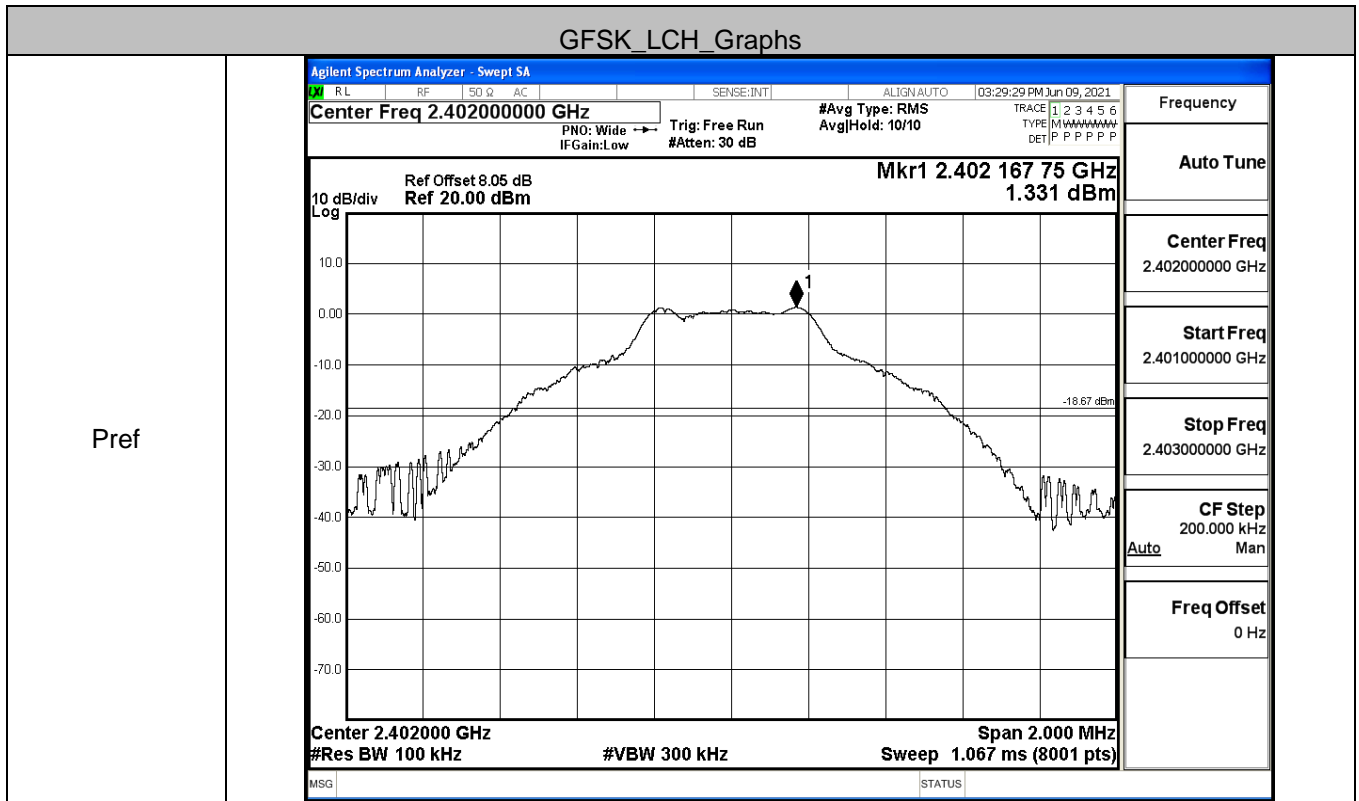
8DPSK\_3DH5/HCH

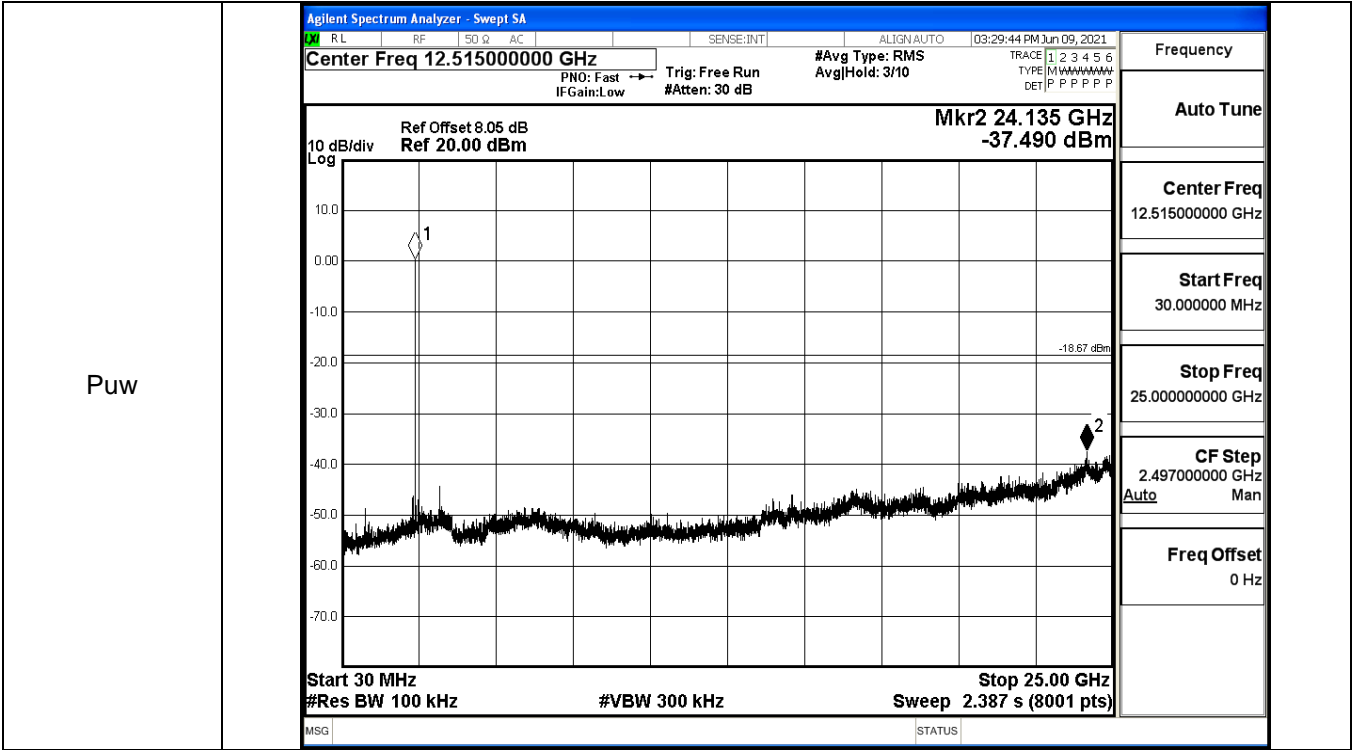


**A.7 RF Conducted Spurious Emissions**

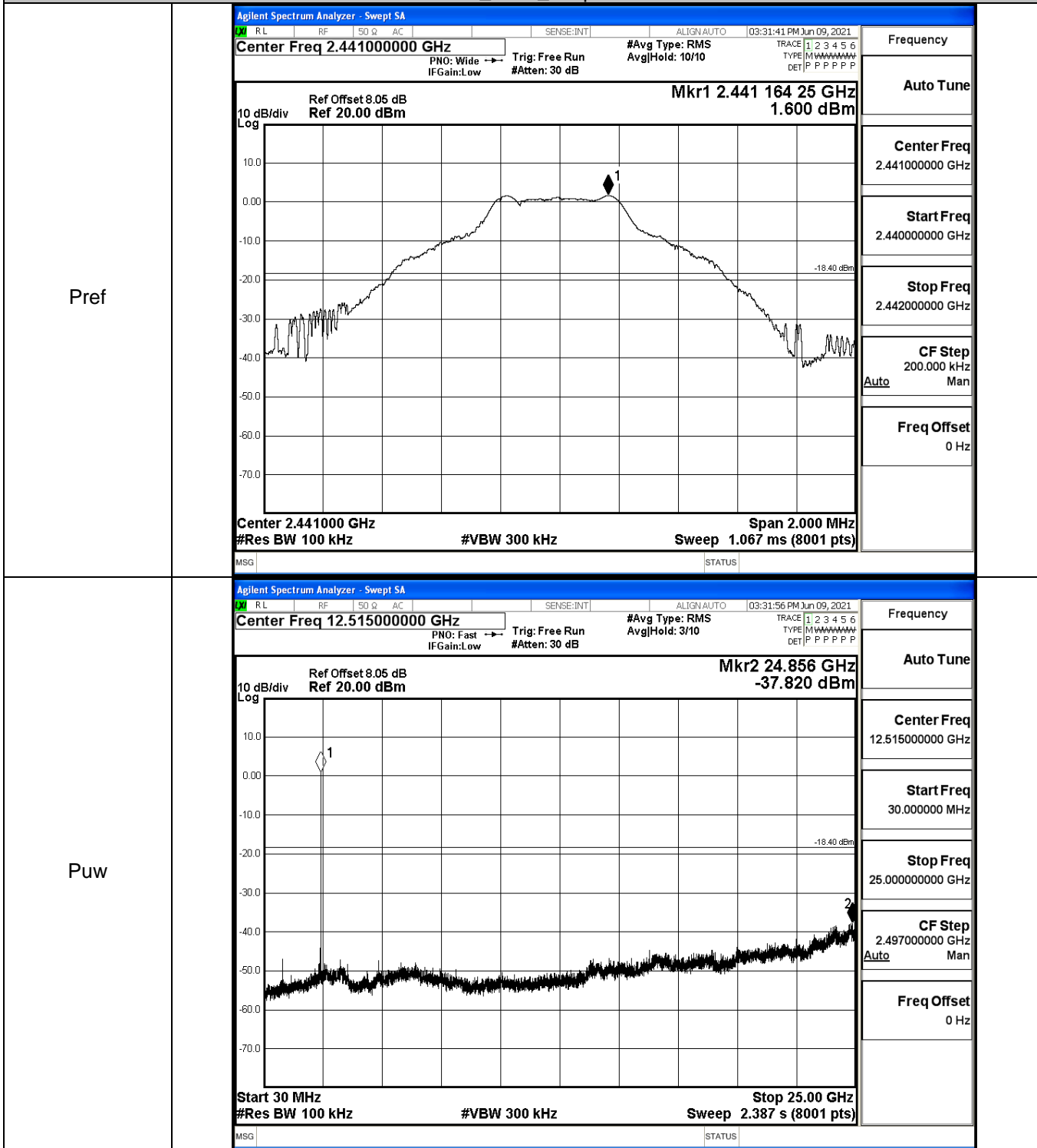
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.331	-37.490	-18.669	PASS
	MCH	1.6	-37.820	-18.400	PASS
	HCH	0.069	-37.648	-19.931	PASS
$\pi$ /4DQPSK	LCH	1.334	-37.833	-18.666	PASS
	MCH	1.374	-37.992	-18.626	PASS
	HCH	-0.098	-38.196	-20.098	PASS
8DPSK	LCH	1.378	-38.435	-18.622	PASS
	MCH	1.621	-37.739	-18.379	PASS
	HCH	0.09	-38.290	-19.910	PASS

GFSK\_LCH\_Graphs

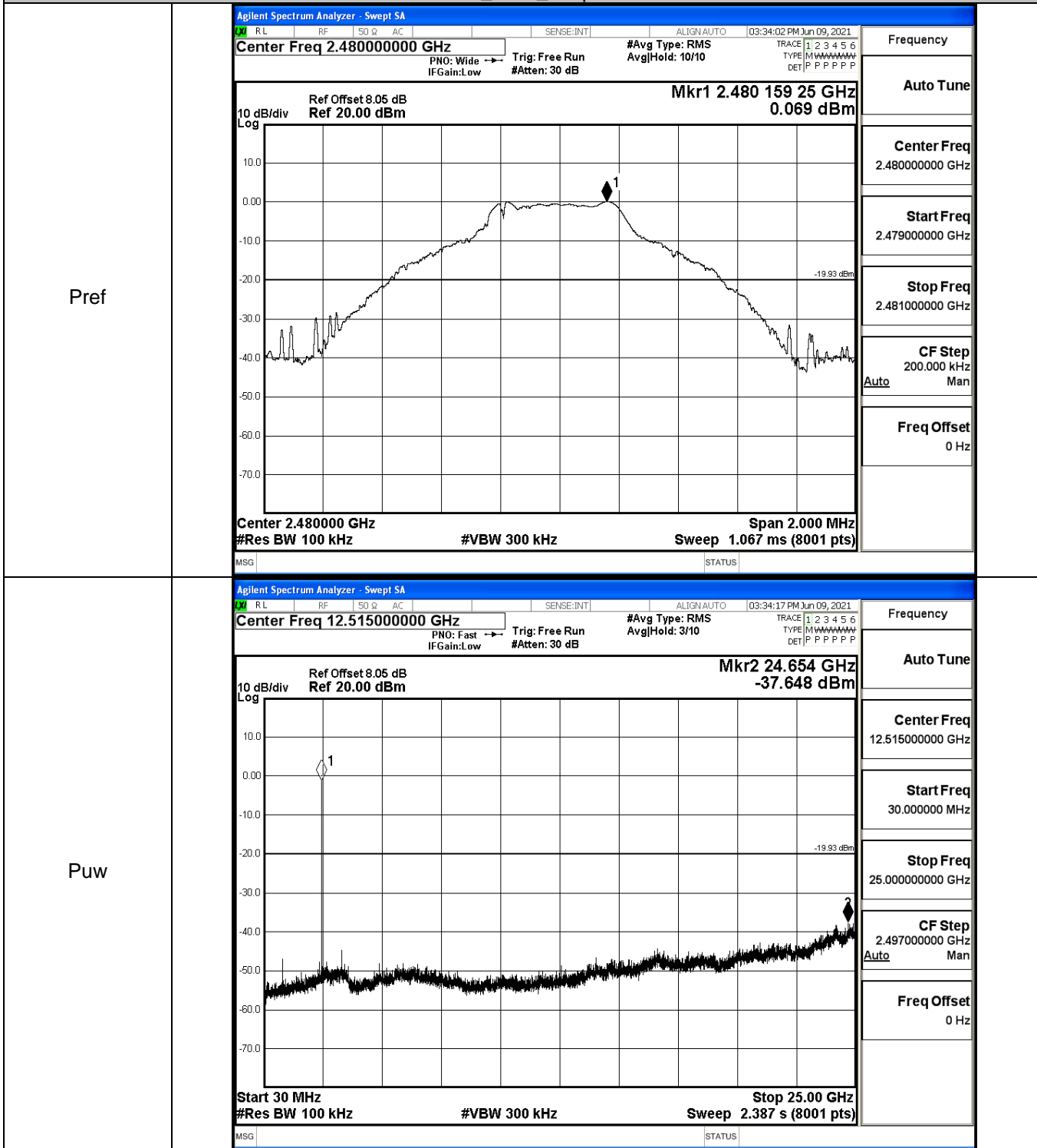




GFSK\_MCH\_Graphs

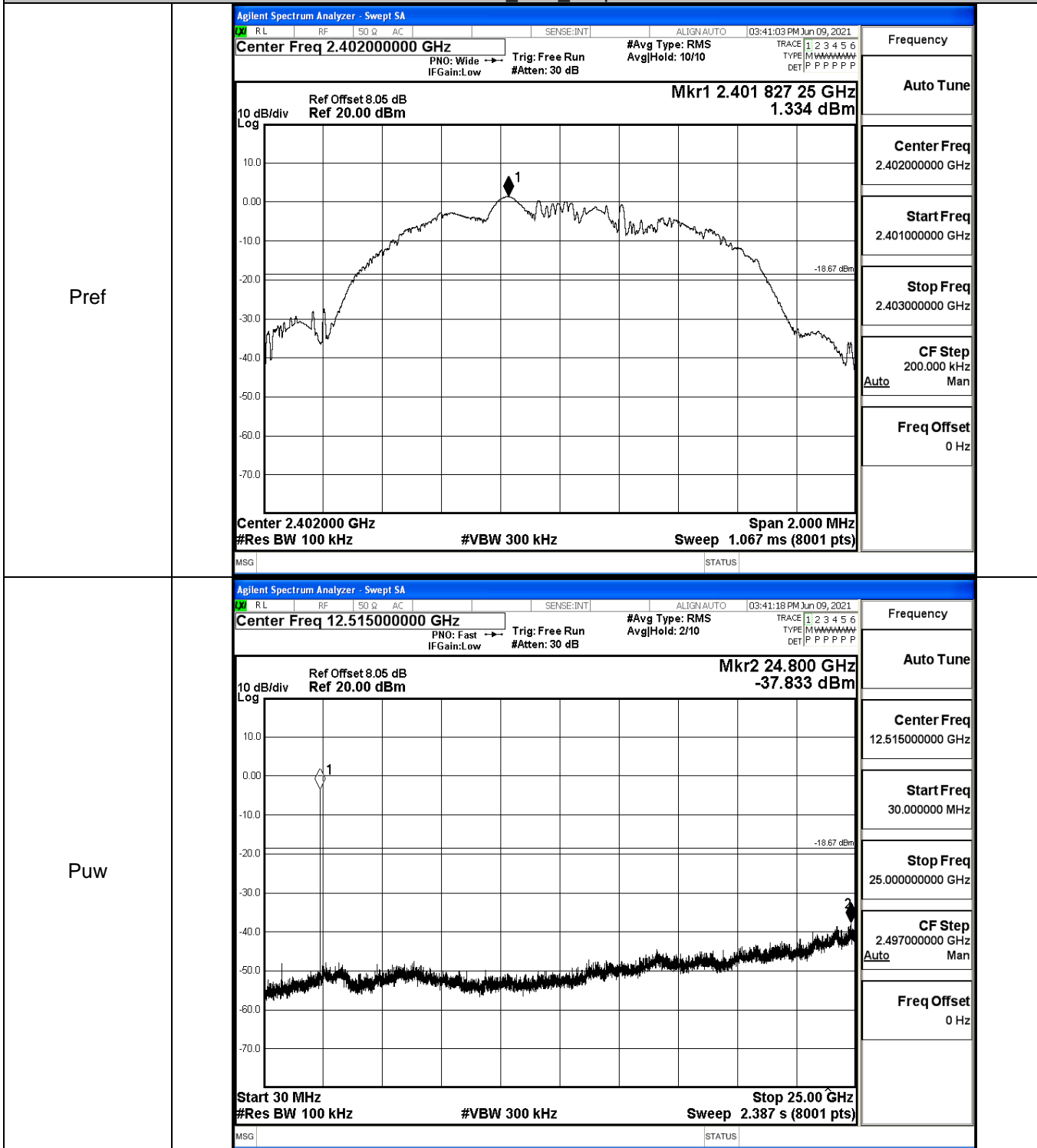


GFSK\_HCH\_Graphs

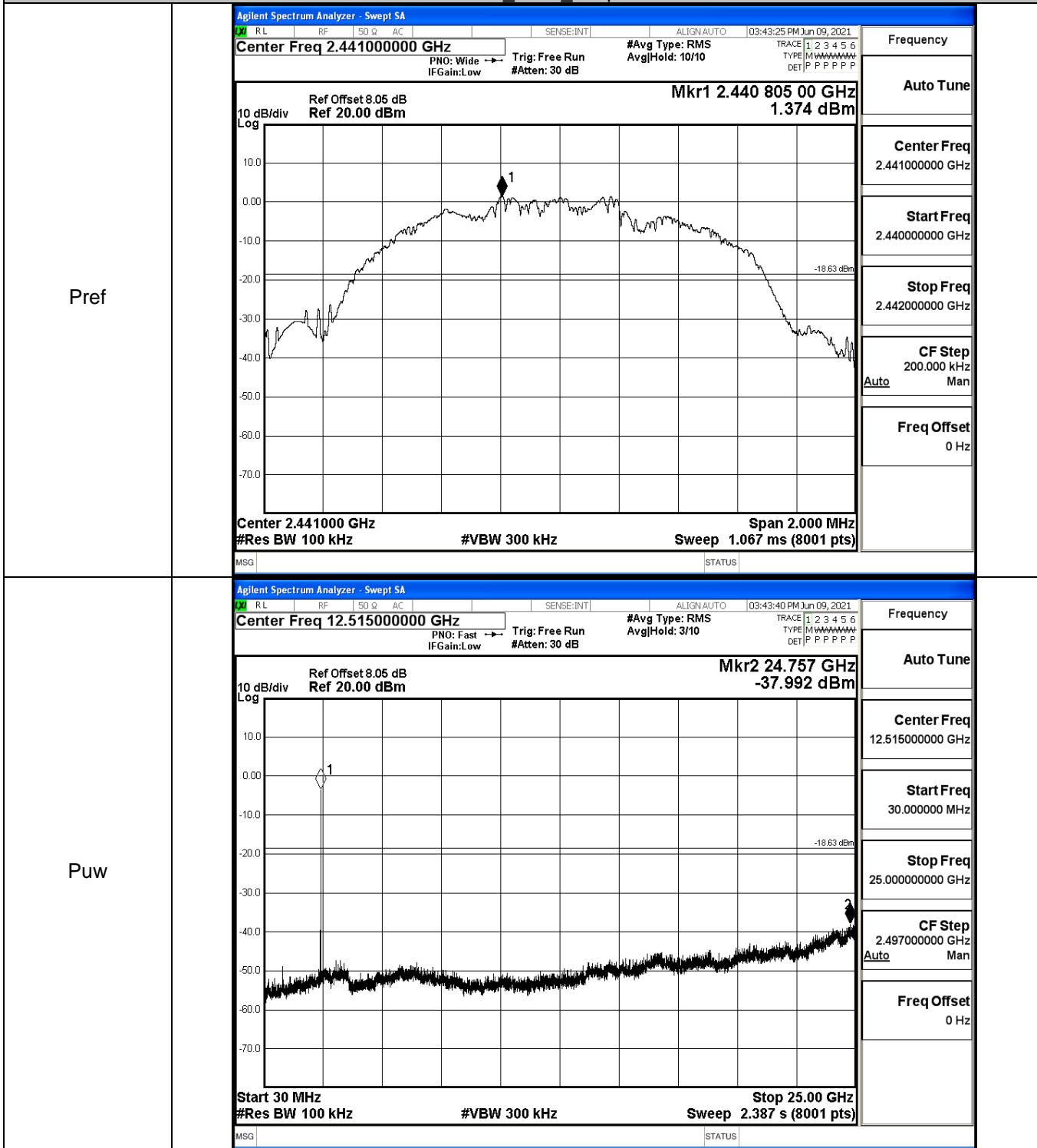




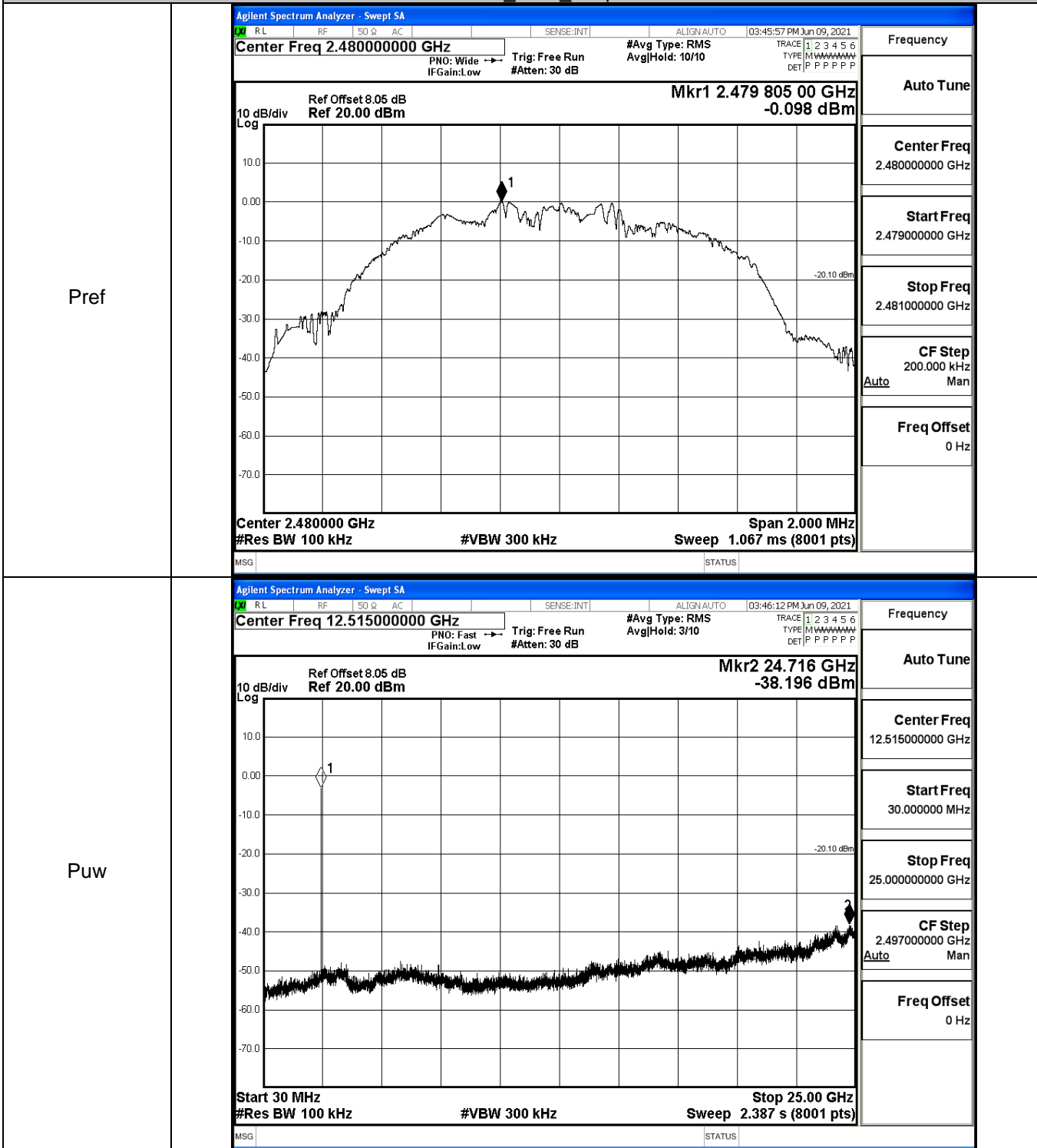
$\pi/4$ DQPSK\_LCH\_Graphs



$\pi/4$ DQPSK\_MCH\_Graphs

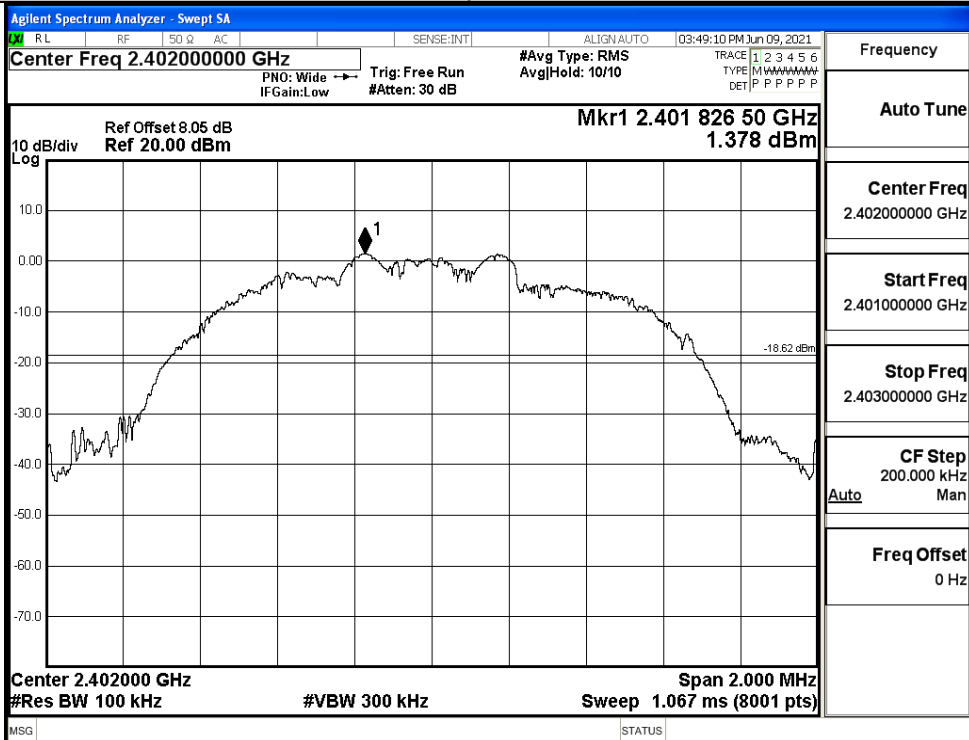


$\pi/4$ DQPSK\_HCH\_Graphs

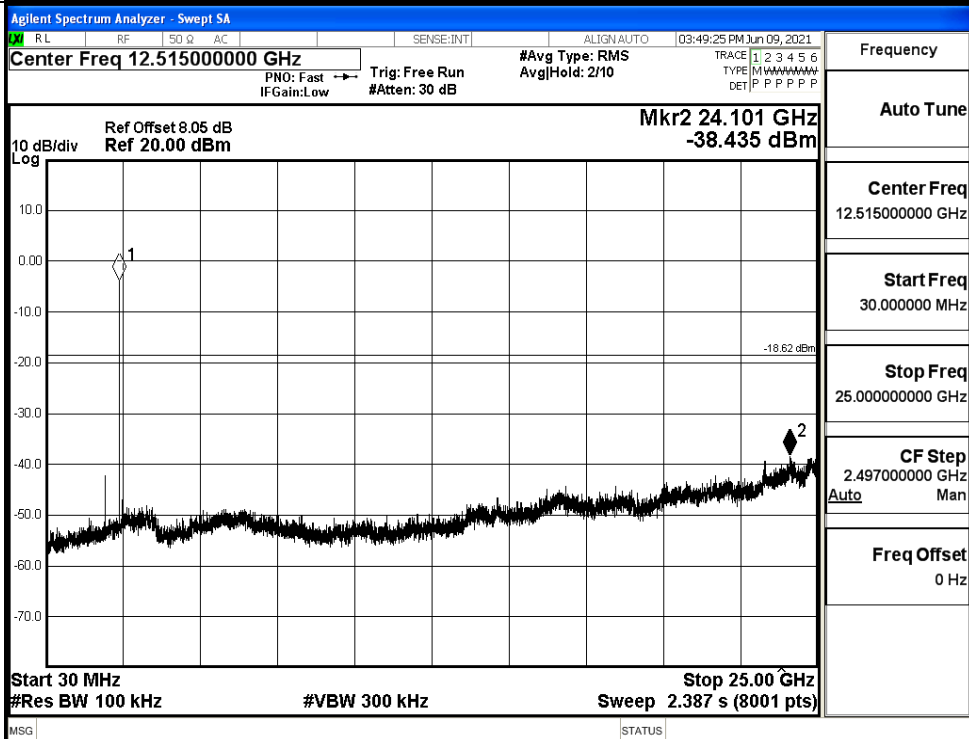


8DPSK\_LCH\_Graphs

Pref

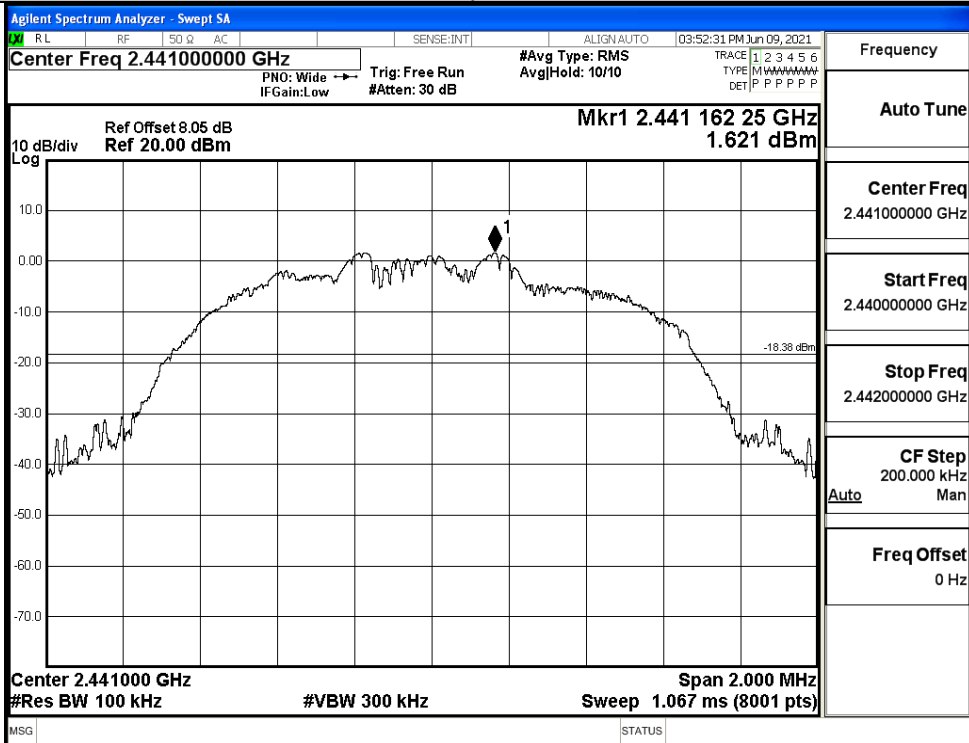


Puw

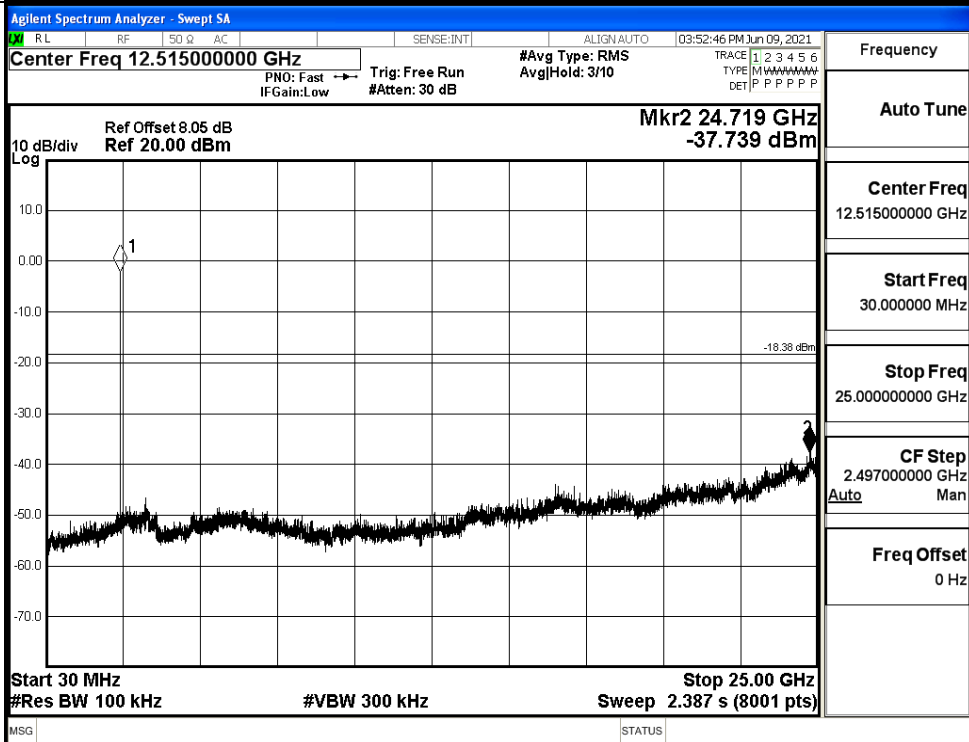


8DPSK\_MCH\_Graphs

Pref

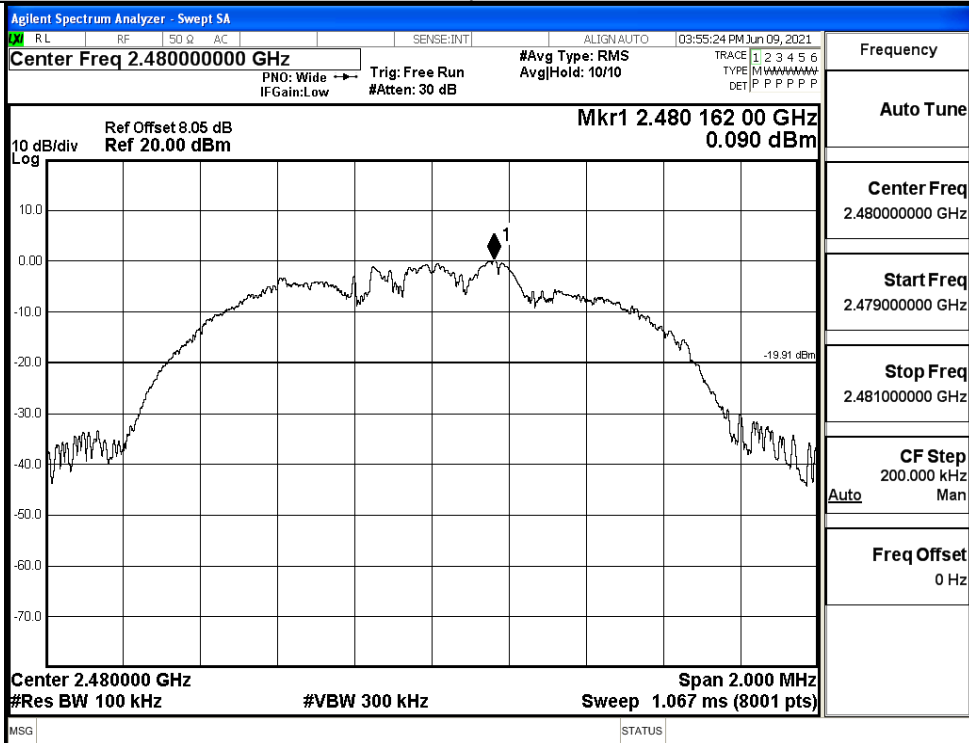


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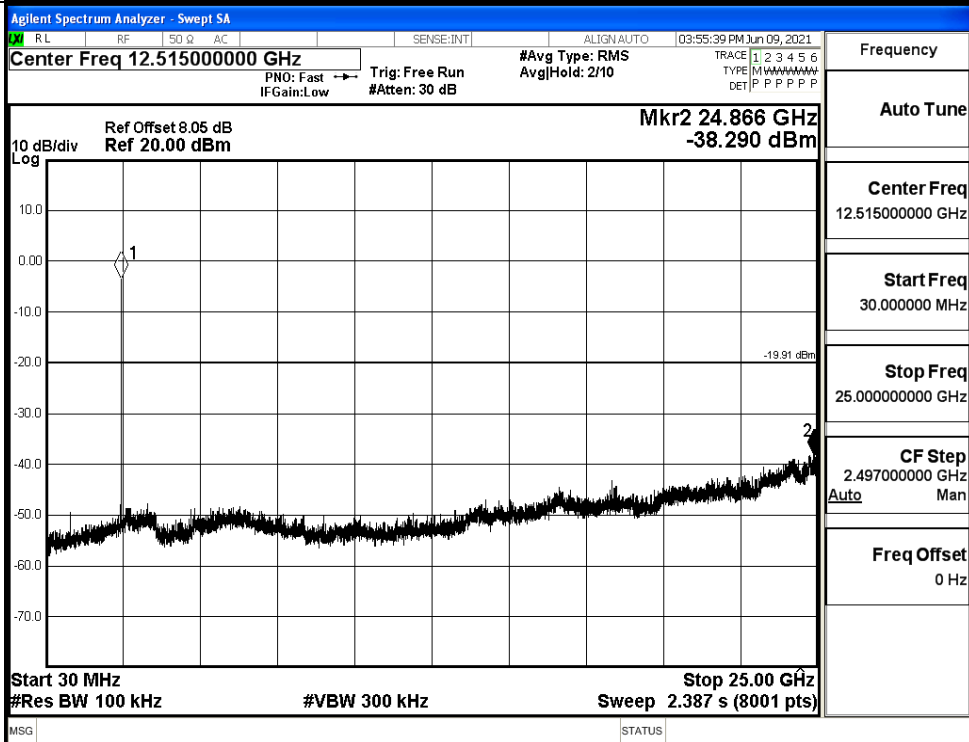


8DPSK\_HCH\_Graphs

Pref



Puw

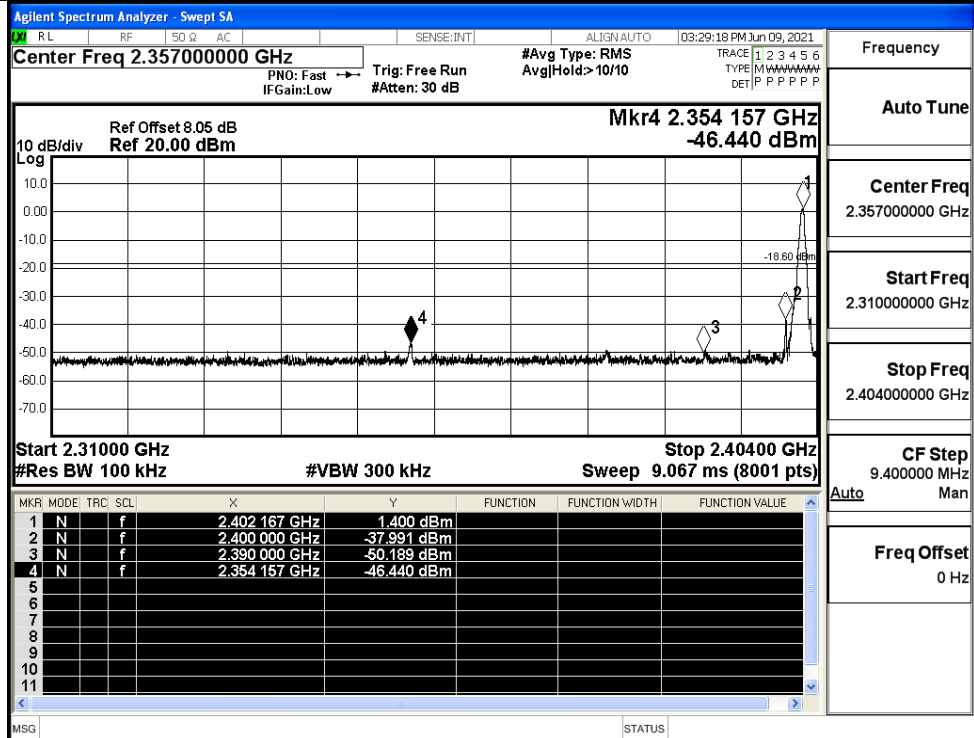


## A.8 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.400	Off	-46.440	-18.6	PASS
			1.688	On	-46.170	-18.31	PASS
	HCH	2480	0.198	Off	-49.001	-19.8	PASS
			1.185	On	-44.051	-18.82	PASS
$\pi/4$ DQPSK	LCH	2402	1.348	Off	-48.406	-18.65	PASS
			1.694	On	-46.449	-18.31	PASS
	HCH	2480	-0.197	Off	-49.022	-20.2	PASS
			1.109	On	-45.741	-18.89	PASS
8DPSK	LCH	2402	1.299	Off	-48.394	-18.7	PASS
			1.758	On	-45.225	-18.24	PASS
	HCH	2480	0.239	Off	-49.076	-19.76	PASS
			1.279	On	-44.757	-18.72	PASS

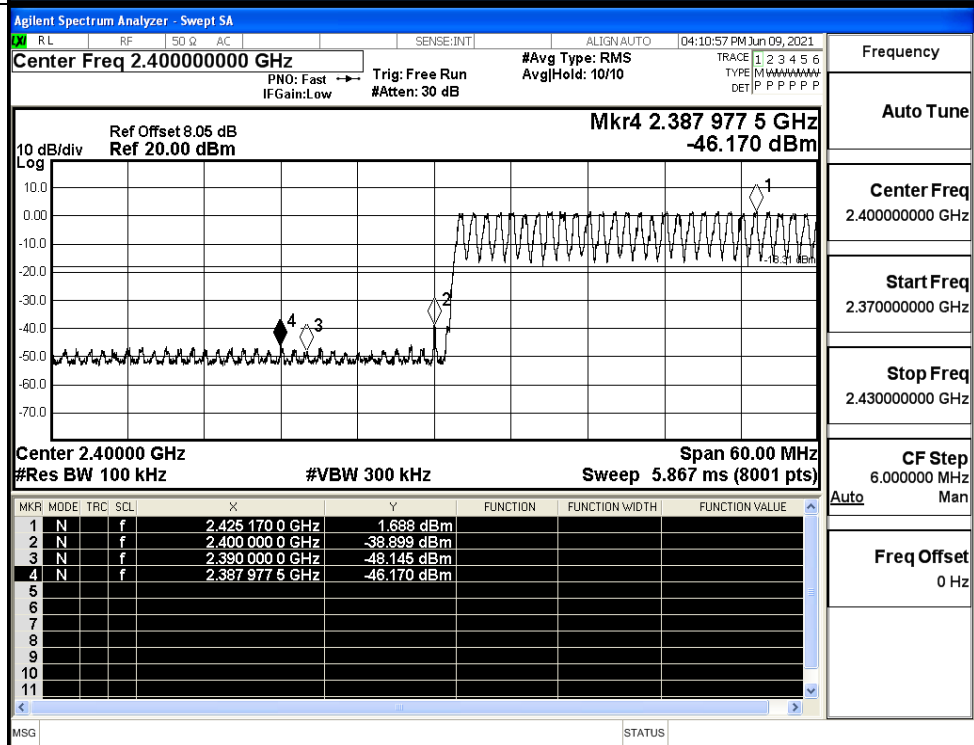
Test Graphs

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

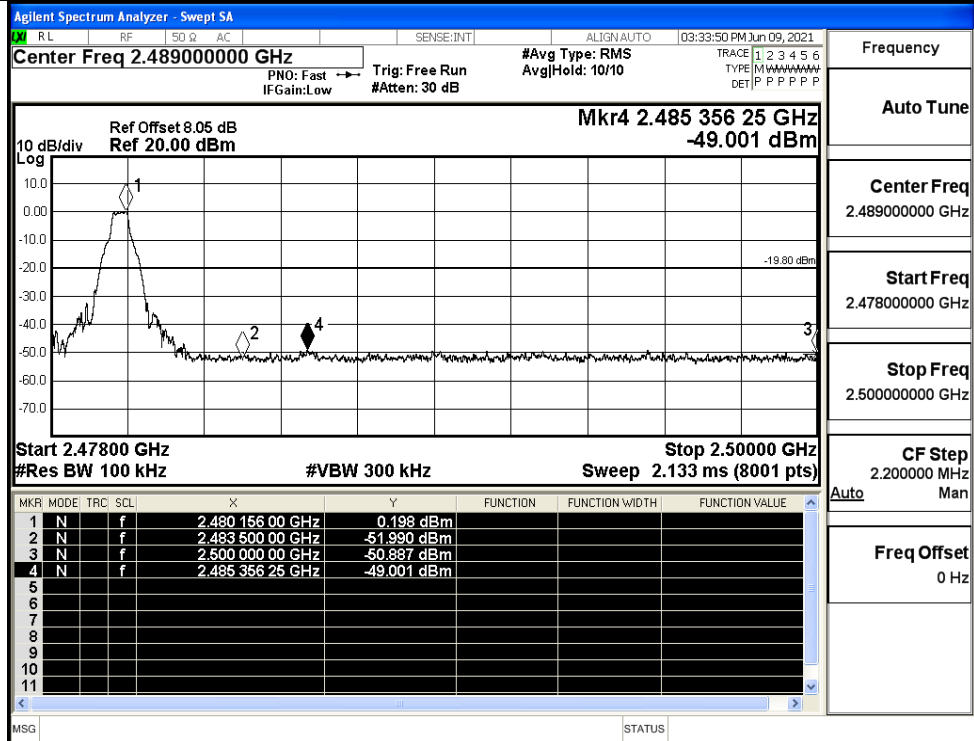
GFSK/LCH/Hop



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

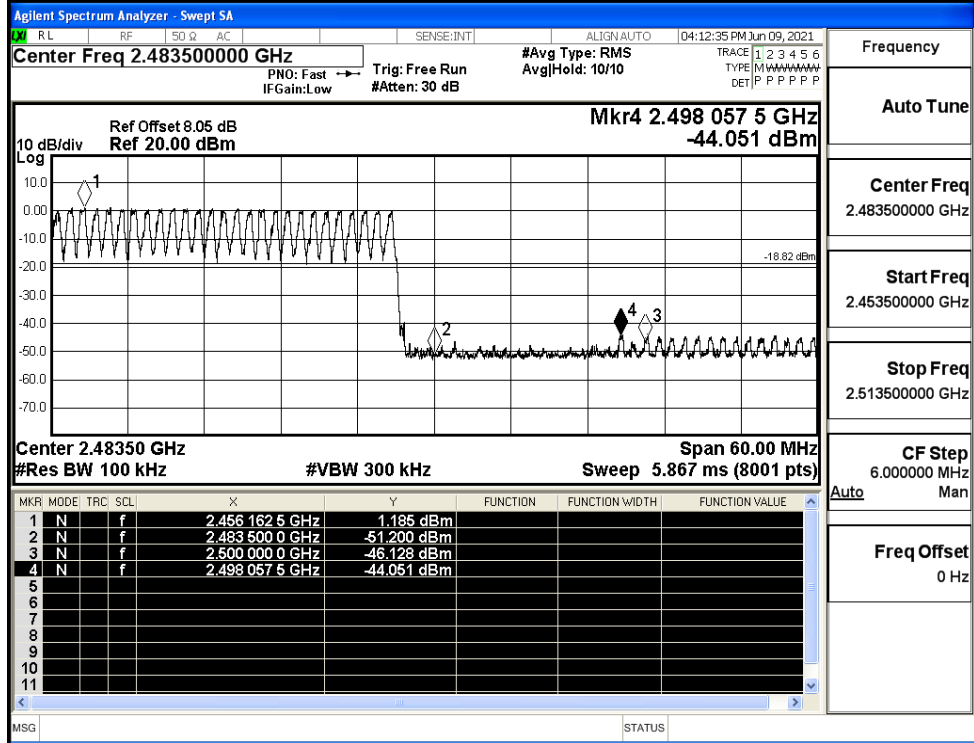


GFSK/HCH/No Hop



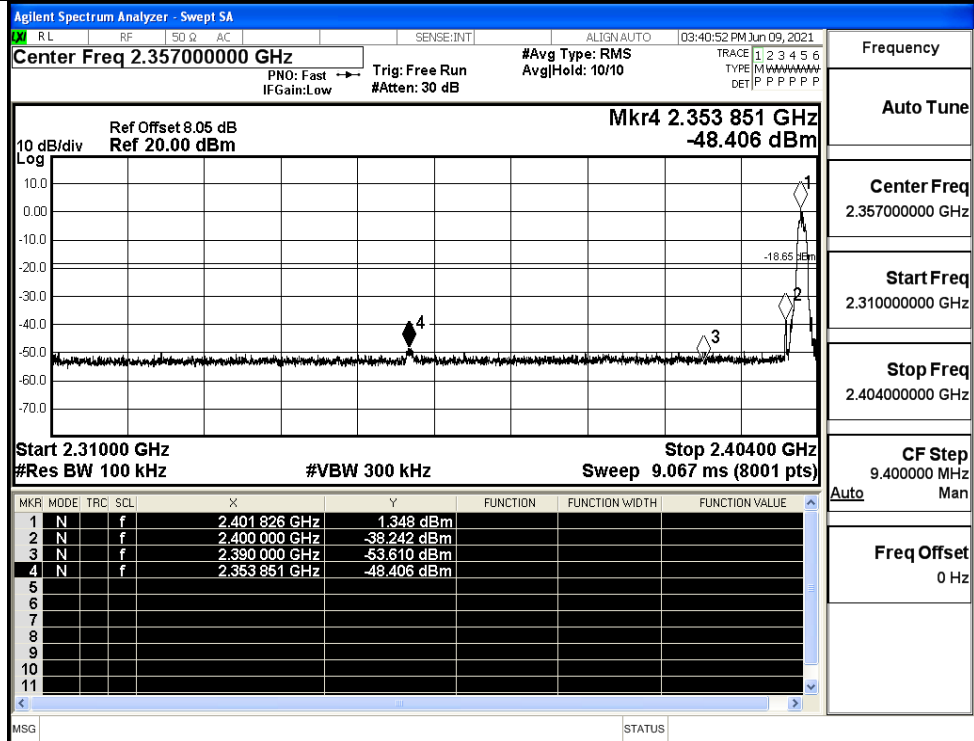
Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

GFSK/HCH/Hop



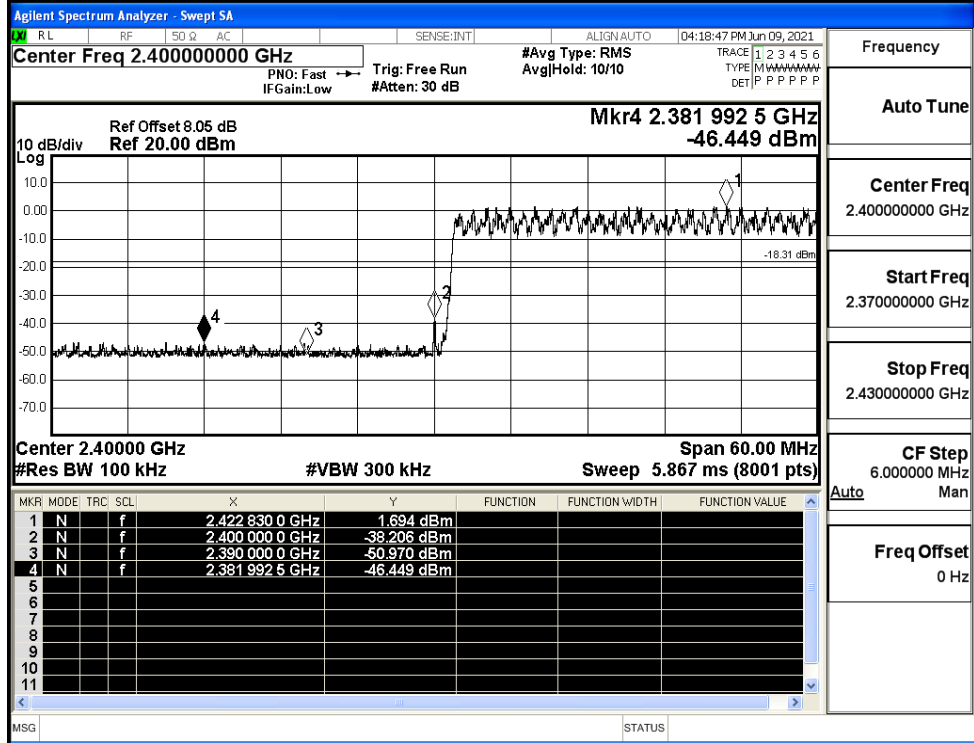
Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

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



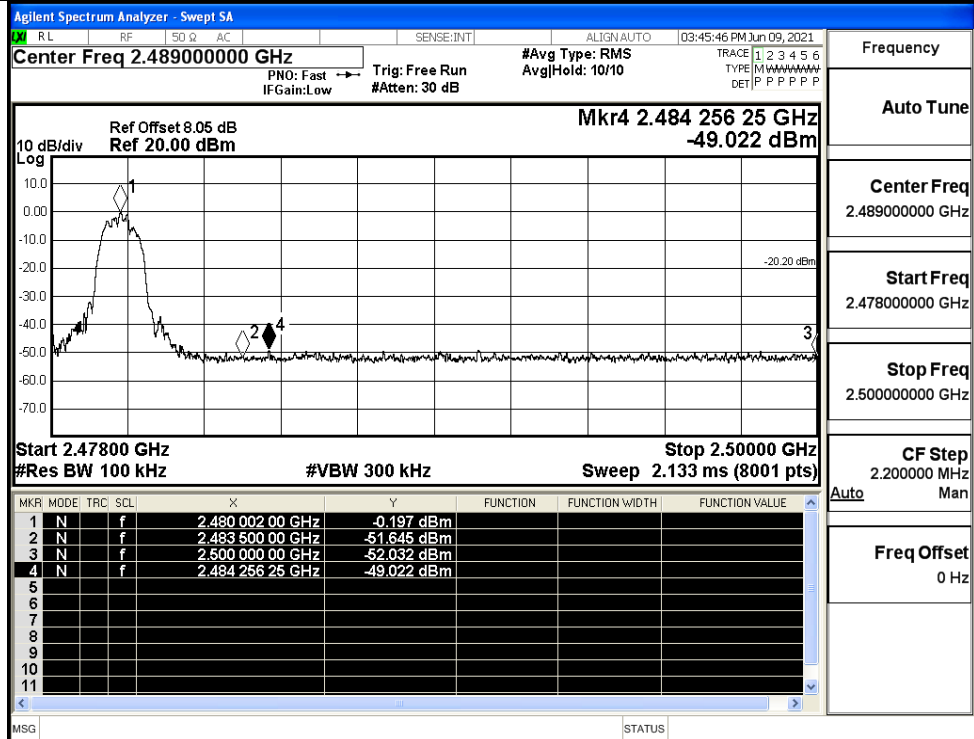
Frequency  
Auto Tune  
Center Freq  
2.357000000 GHz  
Start Freq  
2.310000000 GHz  
Stop Freq  
2.404000000 GHz  
CF Step  
9.400000 MHz  
Auto Man  
Freq Offset  
0 Hz

$\pi/4$ DQPSK/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

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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

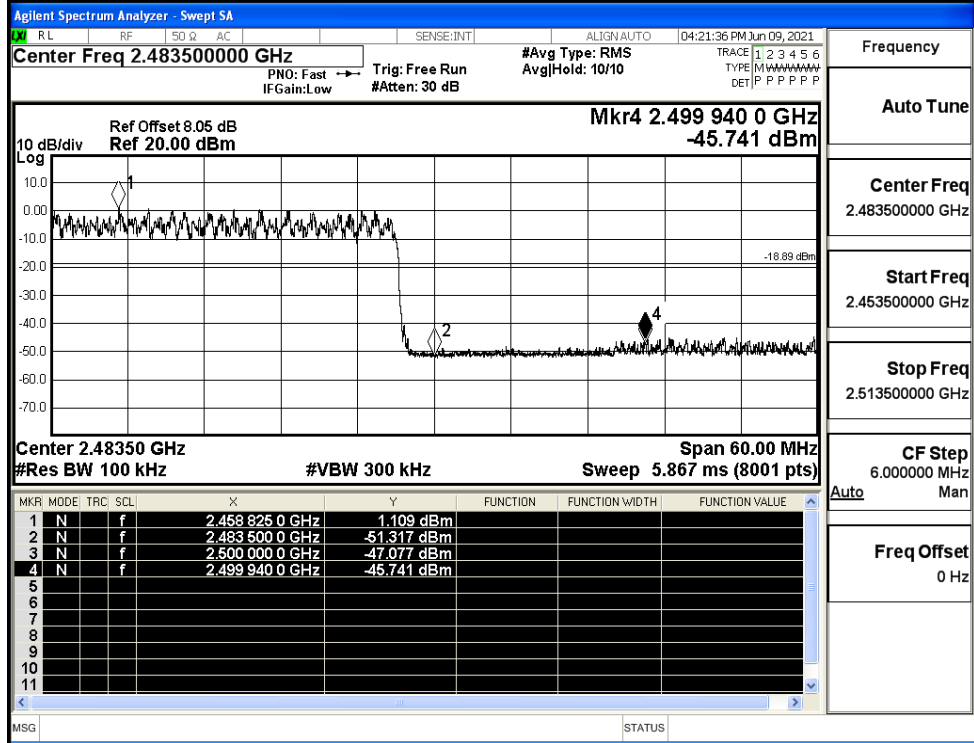
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz

Freq Offset  
0 Hz

$\pi$ /4DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq  
2.483500000 GHz

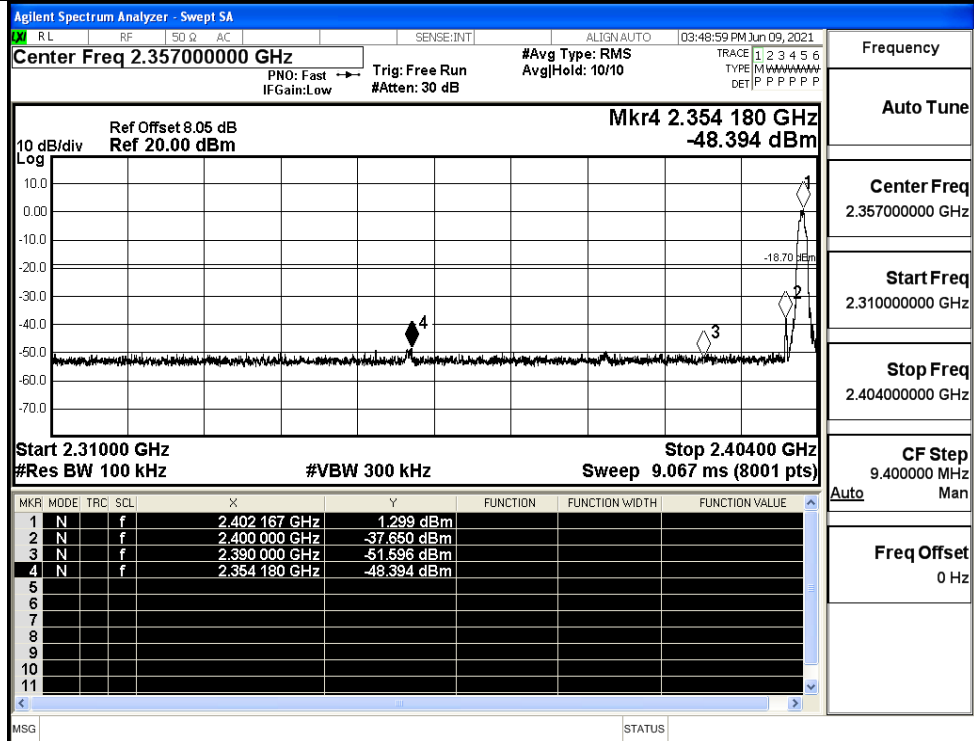
Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

CF Step  
6.000000 MHz

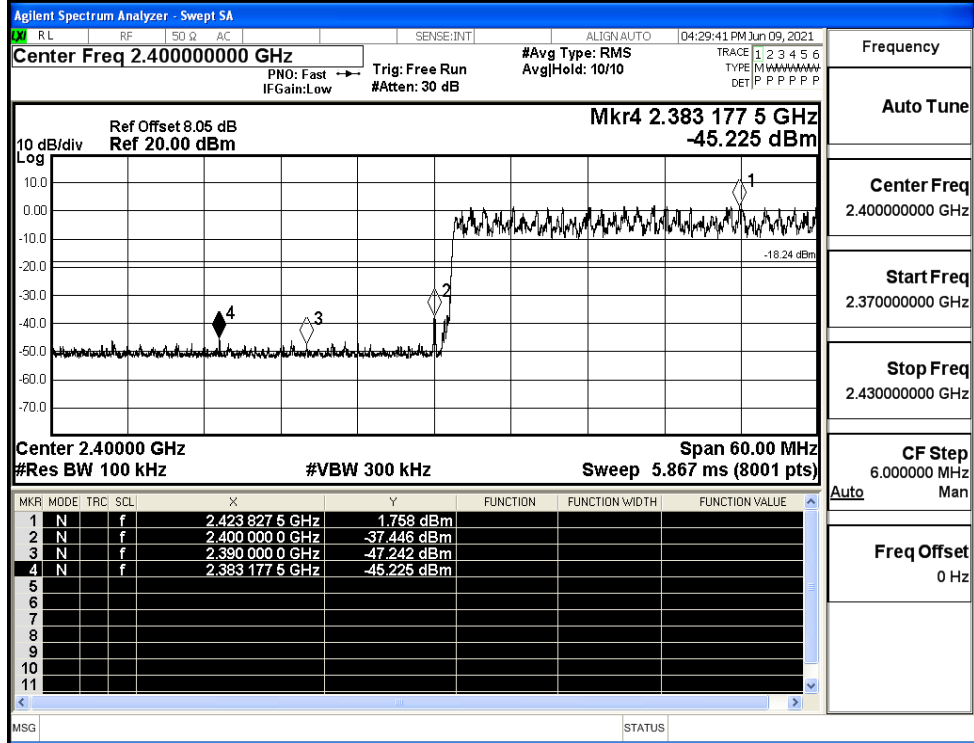
Freq Offset  
0 Hz

8DPSK/LCH/No Hop



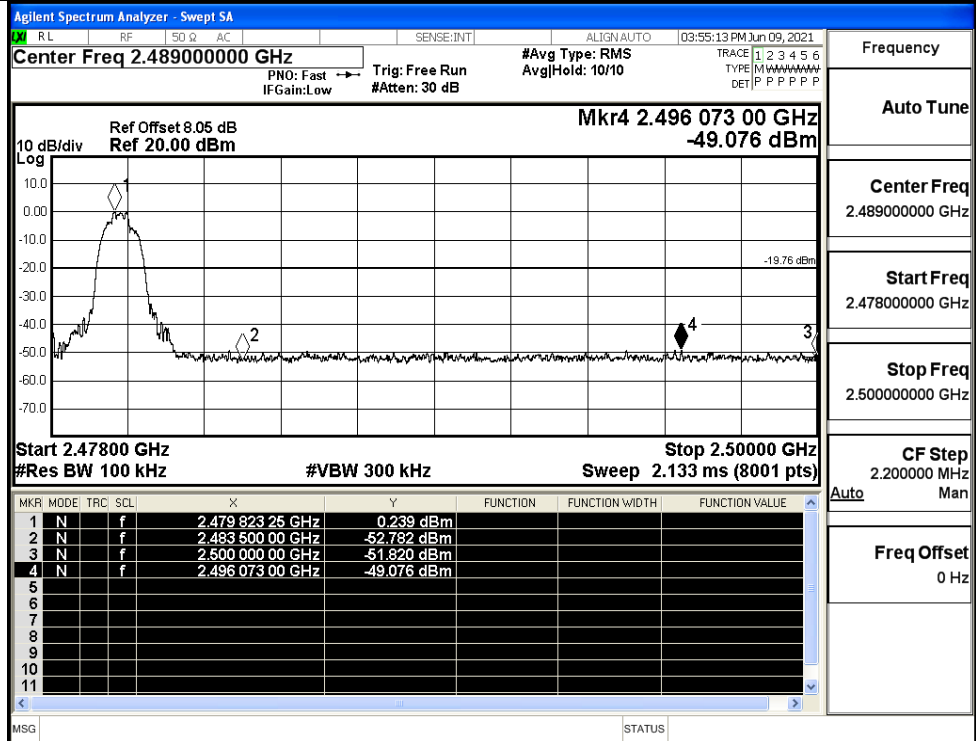
Frequency  
Auto Tune  
Center Freq  
2.357000000 GHz  
Start Freq  
2.310000000 GHz  
Stop Freq  
2.404000000 GHz  
CF Step  
9.400000 MHz  
Auto Man  
Freq Offset  
0 Hz

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

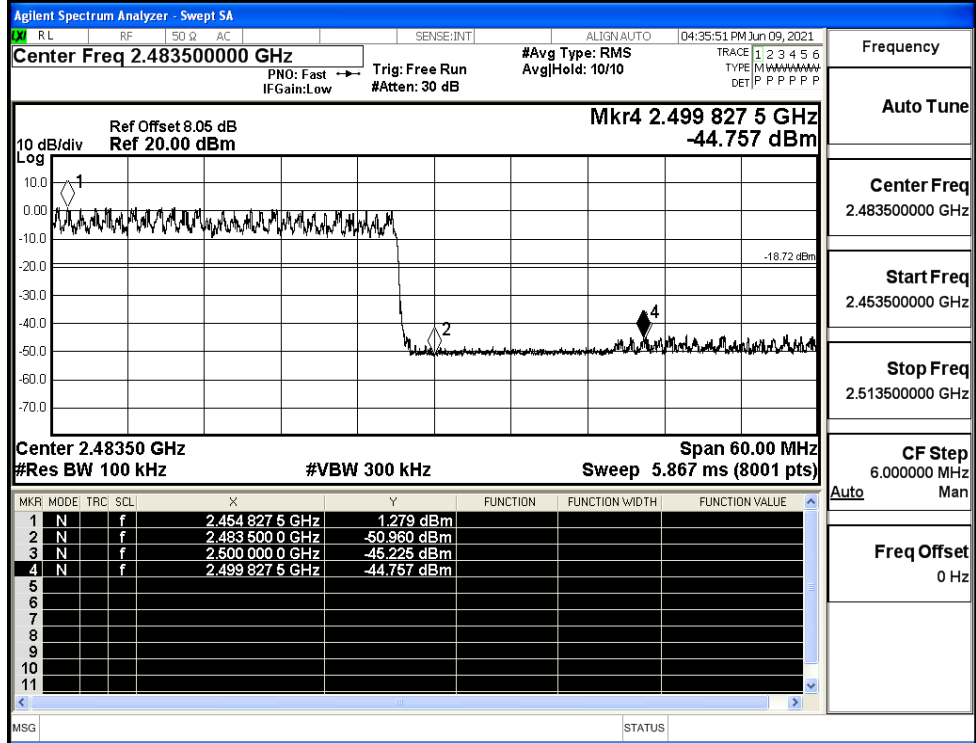
Start Freq  
2.478000000 GHz

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

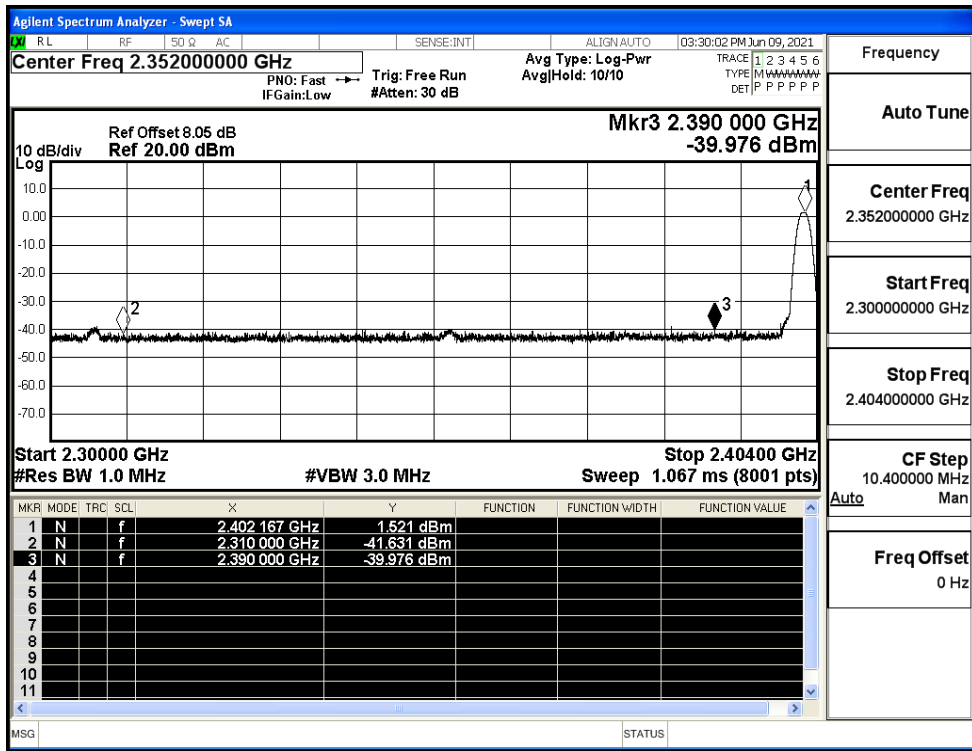
CF Step  
6.000000 MHz

Freq Offset  
0 Hz

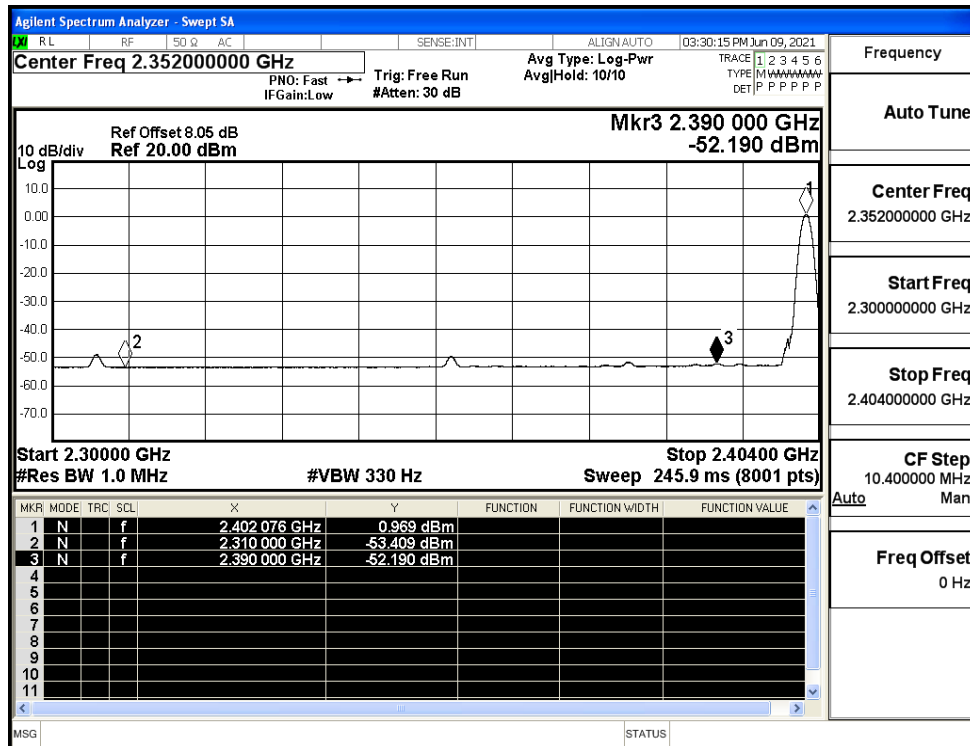
## A.9 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.63	2.0	0	53.63	PEAK	74	PASS
	Off	2310.0	-53.41	2.0	0	41.85	AV	54	PASS
	Off	2390.0	-39.98	2.0	0	55.28	PEAK	74	PASS
	Off	2390.0	-52.19	2.0	0	43.07	AV	54	PASS
	Off	2483.5	-41.53	2.0	0	53.73	PEAK	74	PASS
	Off	2483.5	-52.44	2.0	0	42.82	AV	54	PASS
	Off	2500.0	-42.49	2.0	0	52.77	PEAK	74	PASS
	Off	2500.0	-52.46	2.0	0	42.80	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-41.78	2.0	0	53.48	PEAK	74	PASS
	Off	2310.0	-53.43	2.0	0	41.83	AV	54	PASS
	Off	2390.0	-41.63	2.0	0	53.63	PEAK	74	PASS
	Off	2390.0	-52.58	2.0	0	42.68	AV	54	PASS
	Off	2483.5	-41.94	2.0	0	53.32	PEAK	74	PASS
	Off	2483.5	-52.52	2.0	0	42.74	AV	54	PASS
	Off	2500.0	-42.73	2.0	0	52.53	PEAK	74	PASS
	Off	2500.0	-52.48	2.0	0	42.78	AV	54	PASS
8DPSK	Off	2310.0	-44.16	2.0	0	51.10	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	41.88	AV	54	PASS
	Off	2390.0	-41.20	2.0	0	54.06	PEAK	74	PASS
	Off	2390.0	-52.61	2.0	0	42.65	AV	54	PASS
	Off	2483.5	-42.32	2.0	0	52.94	PEAK	74	PASS
	Off	2483.5	-52.52	2.0	0	42.74	AV	54	PASS
	Off	2500.0	-42.33	2.0	0	52.93	PEAK	74	PASS
	Off	2500.0	-52.41	2.0	0	42.85	AV	54	PASS

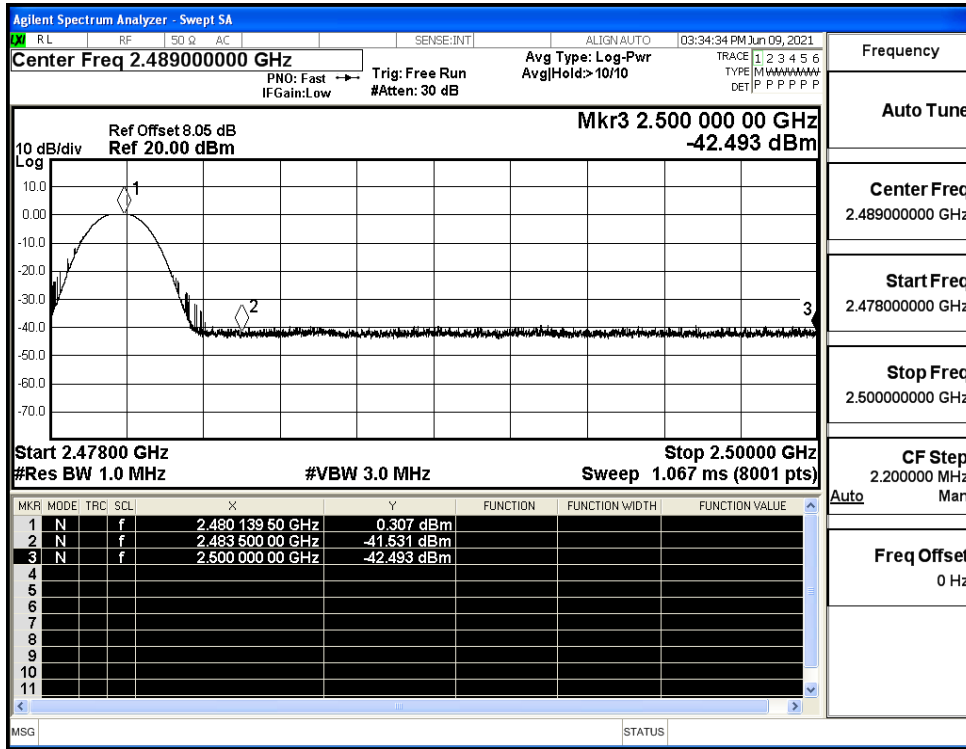
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



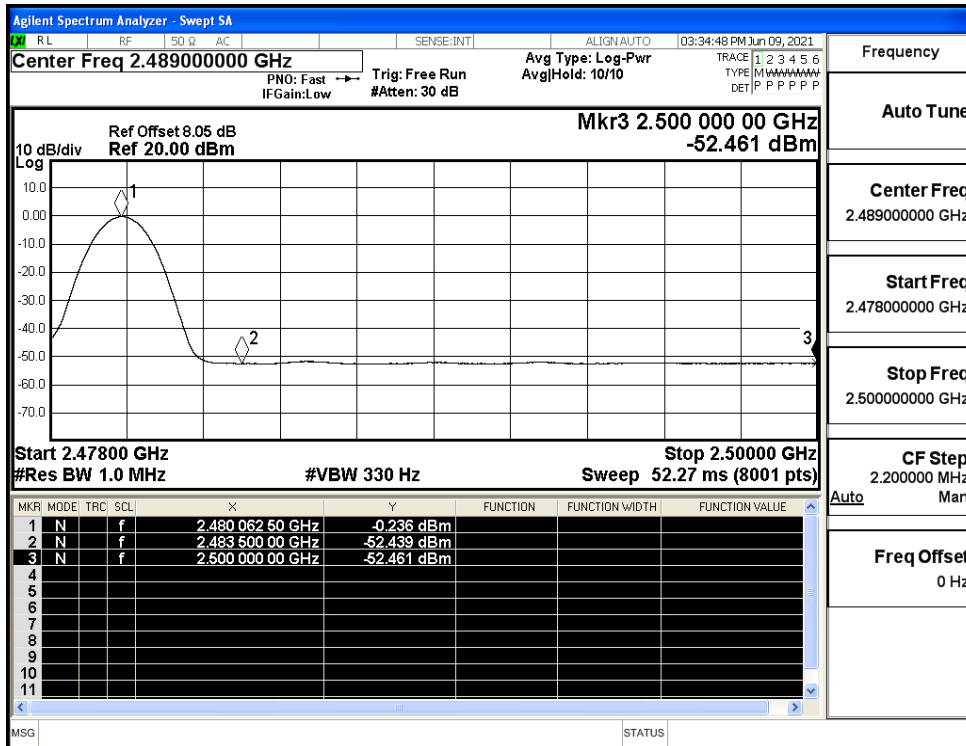
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



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

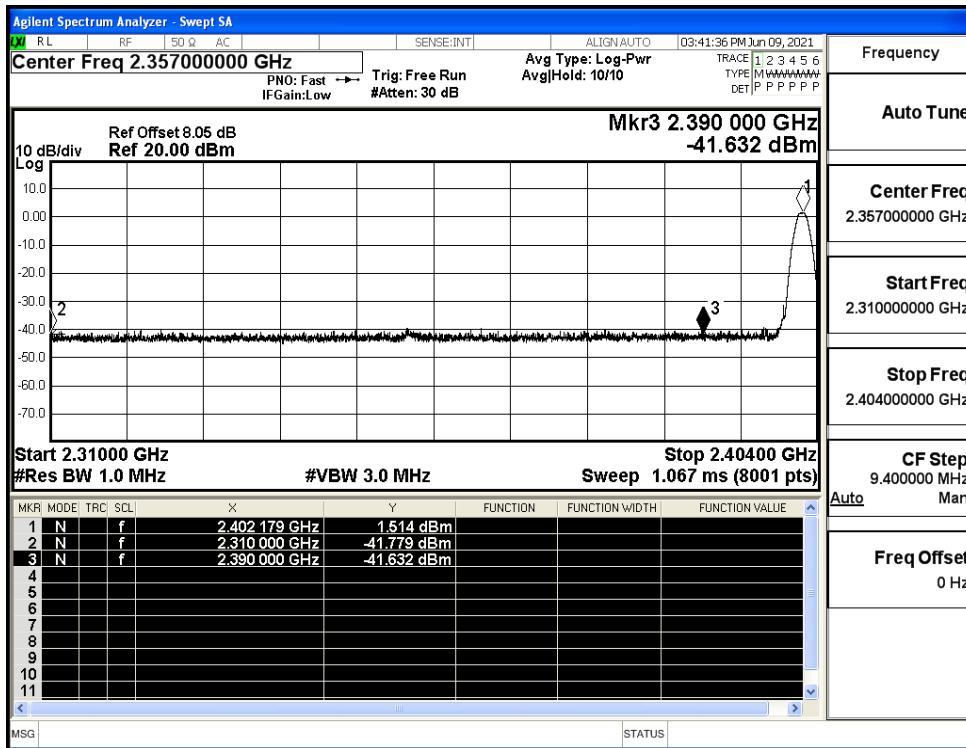


Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)

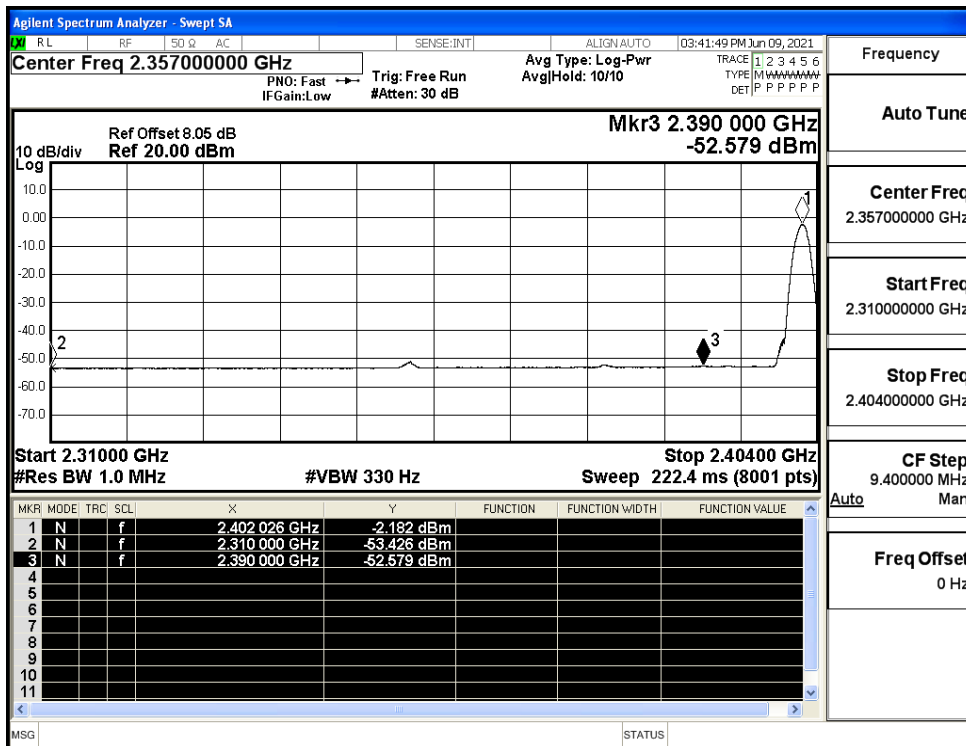




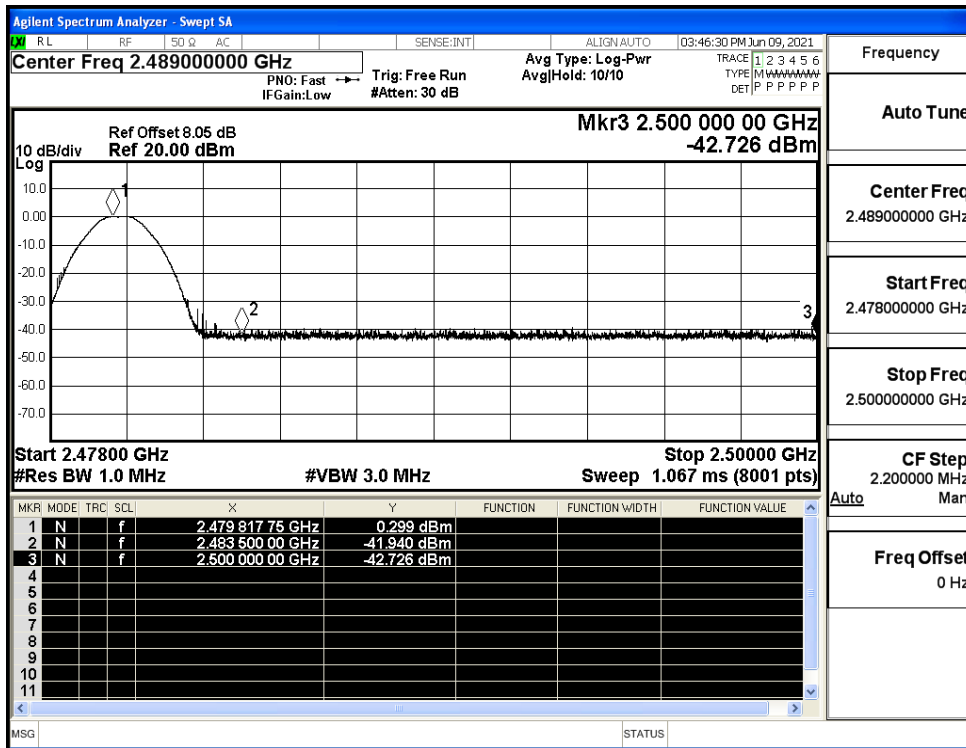
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



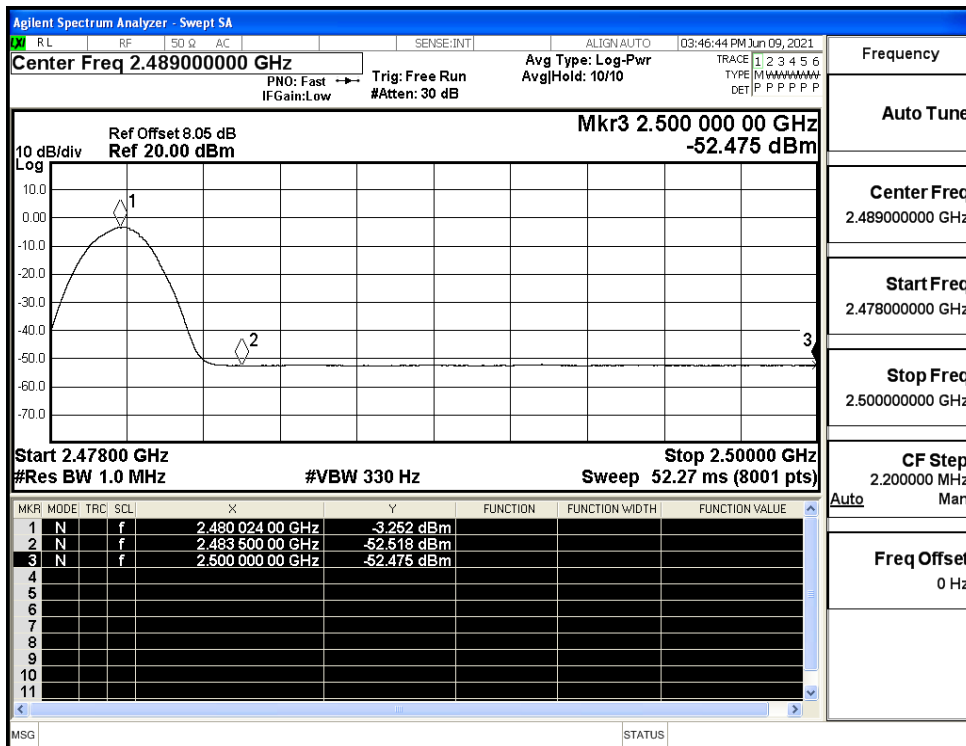
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



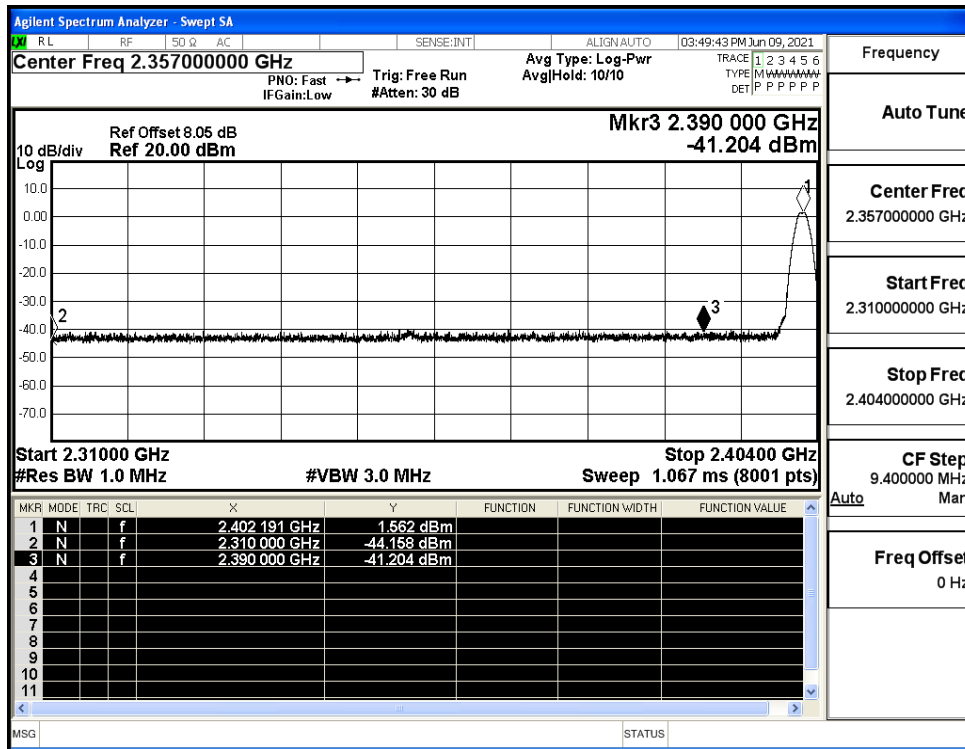
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



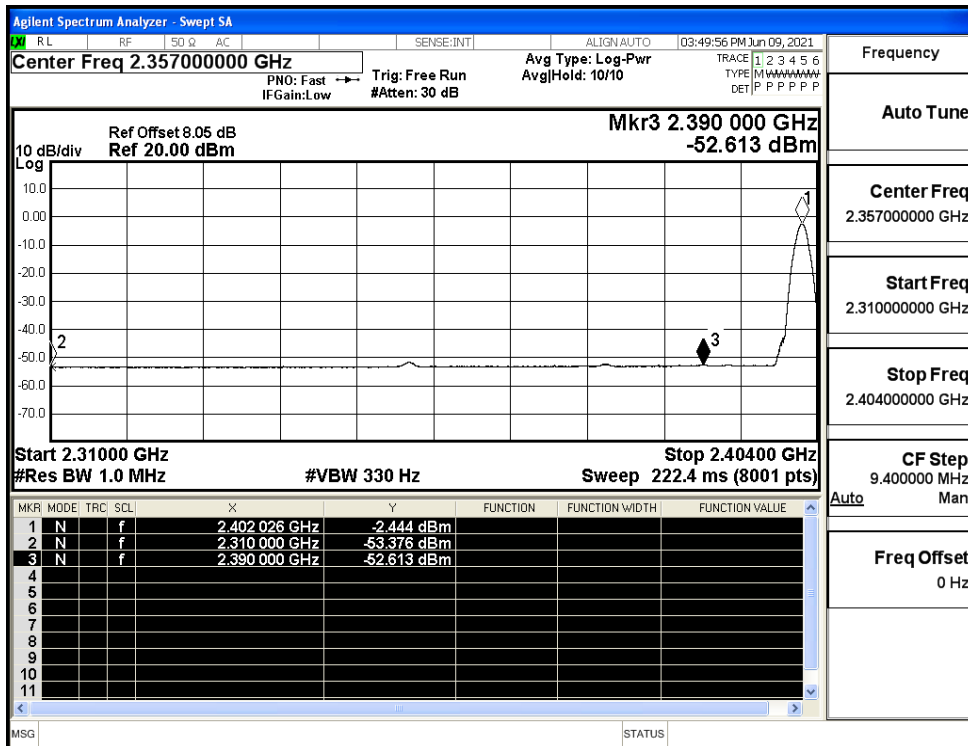
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



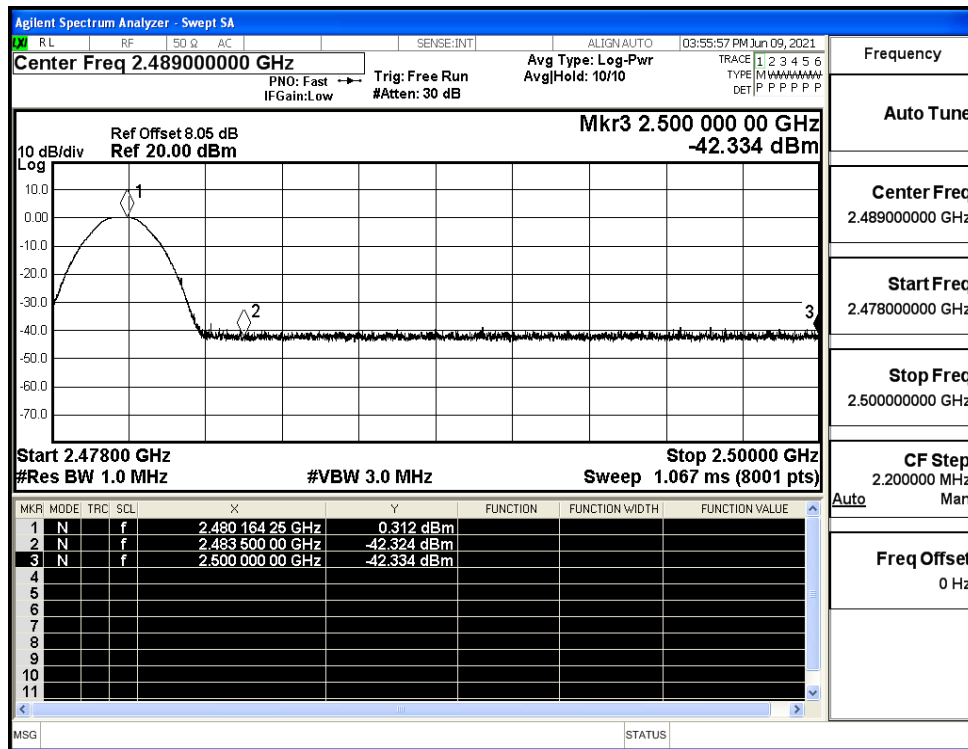
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

