

## Appendix A

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

Product Name: 4G Smart Phone

Trade Mark: Smooth

Test Model: Smooth 6.26

#### Environmental Conditions

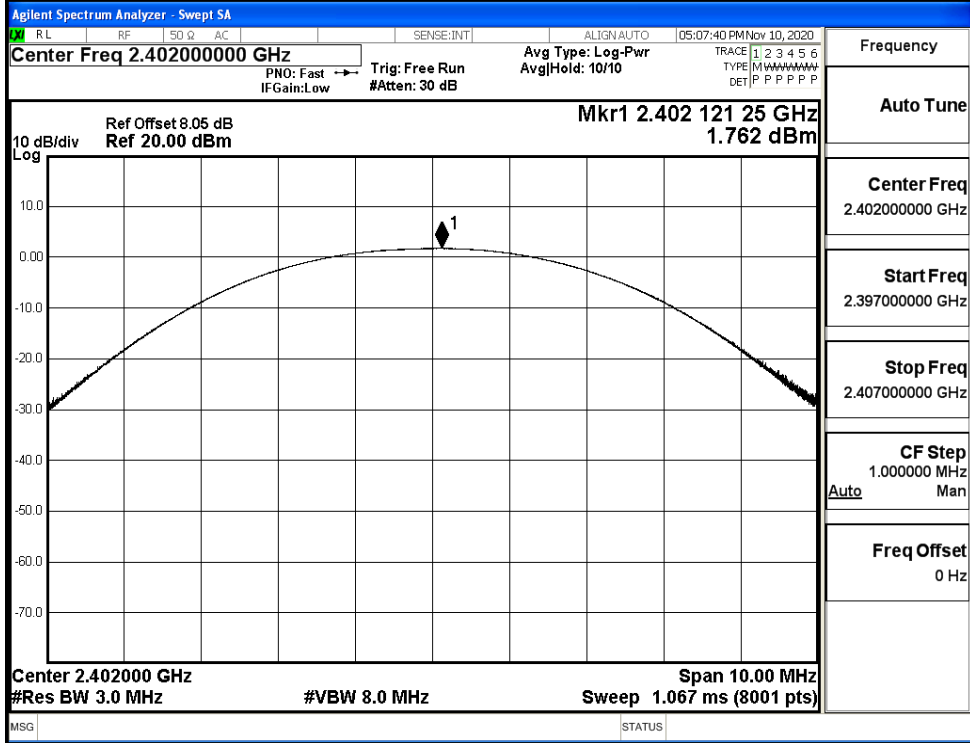
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

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

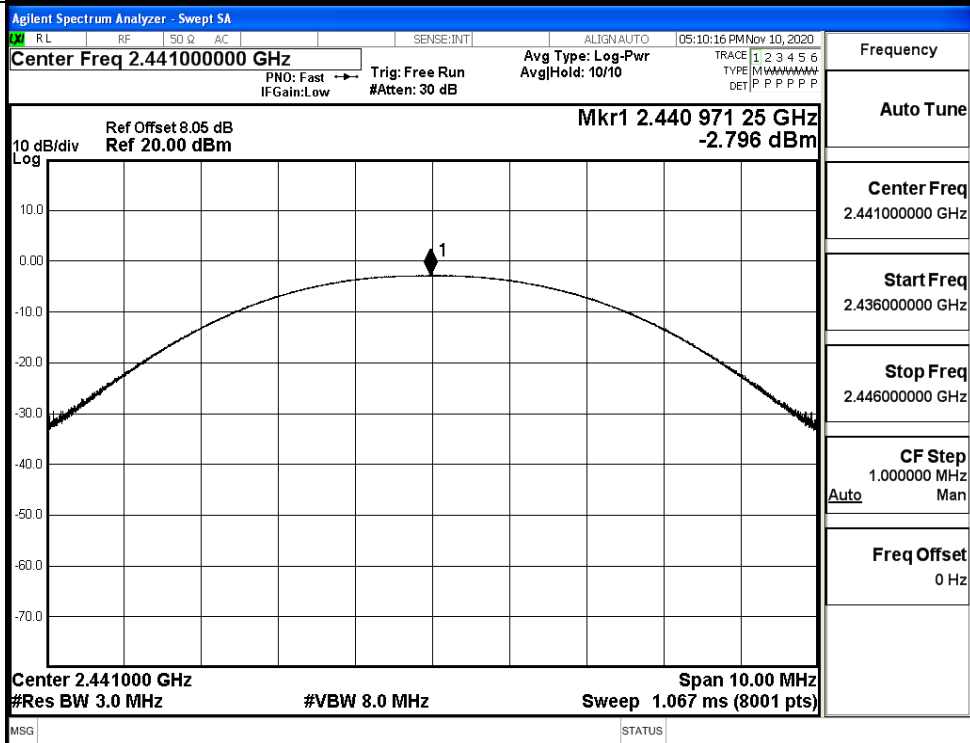
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.762	21	PASS
	MCH	-2.796	21	PASS
	HCH	-2.589	21	PASS
$\pi/4$ DQPSK	LCH	0.154	21	PASS
	MCH	-3.528	21	PASS
	HCH	-3.538	21	PASS
8DPSK	LCH	0.265	21	PASS
	MCH	-4.780	21	PASS
	HCH	-3.311	21	PASS

Test Graphs

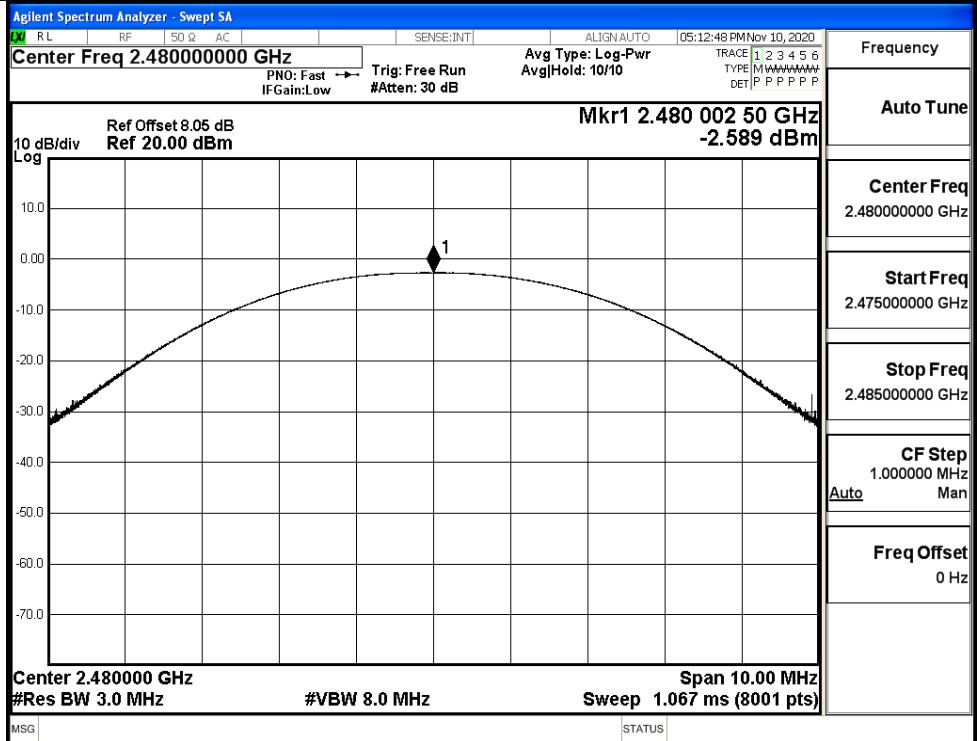
GFSK/LCH



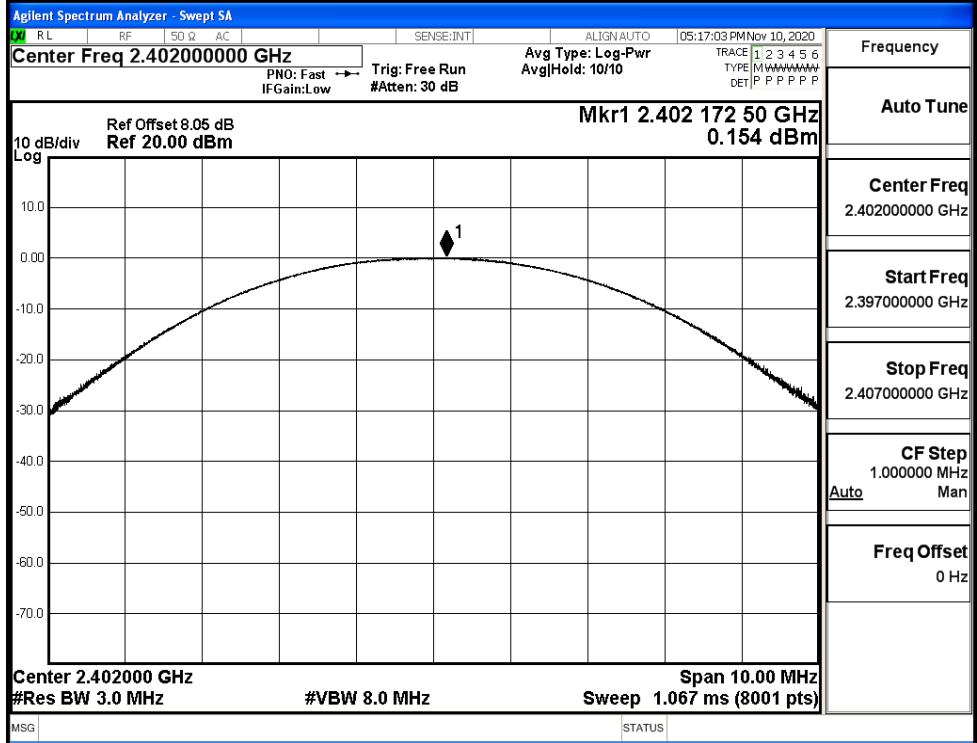
GFSK/MCH



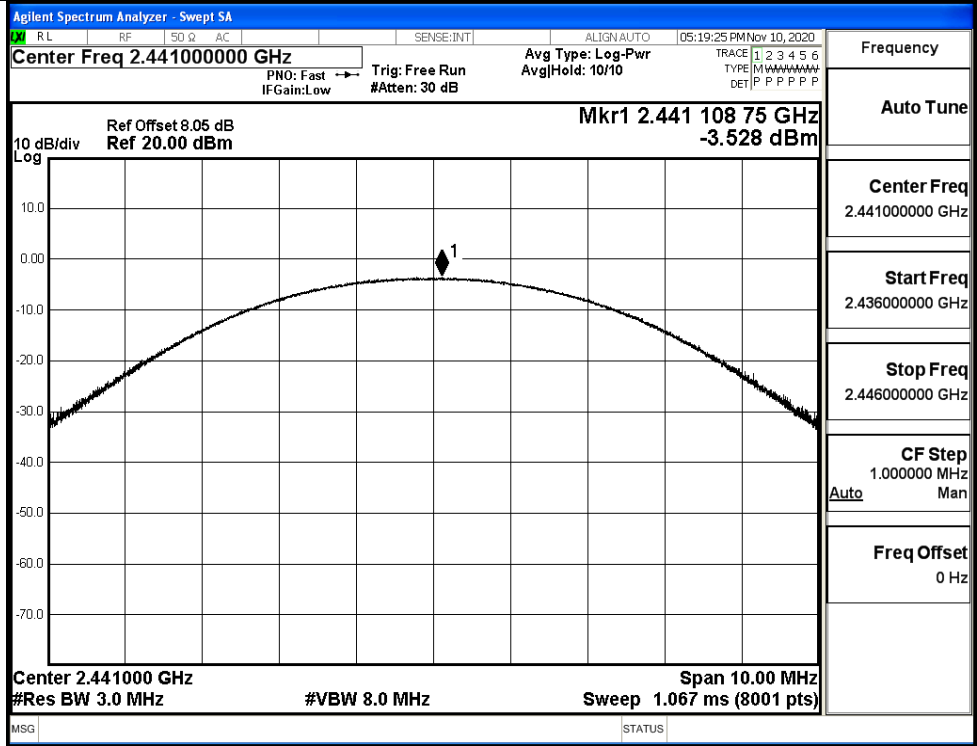
GFSK/HCH



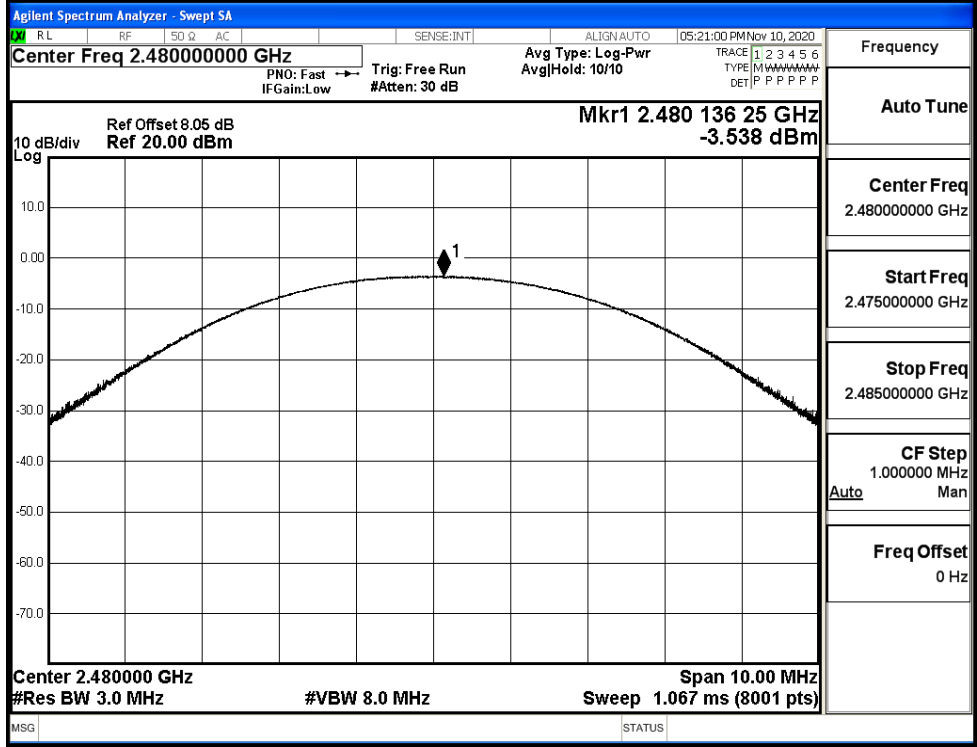
$\pi/4$ DQPSK/LCH



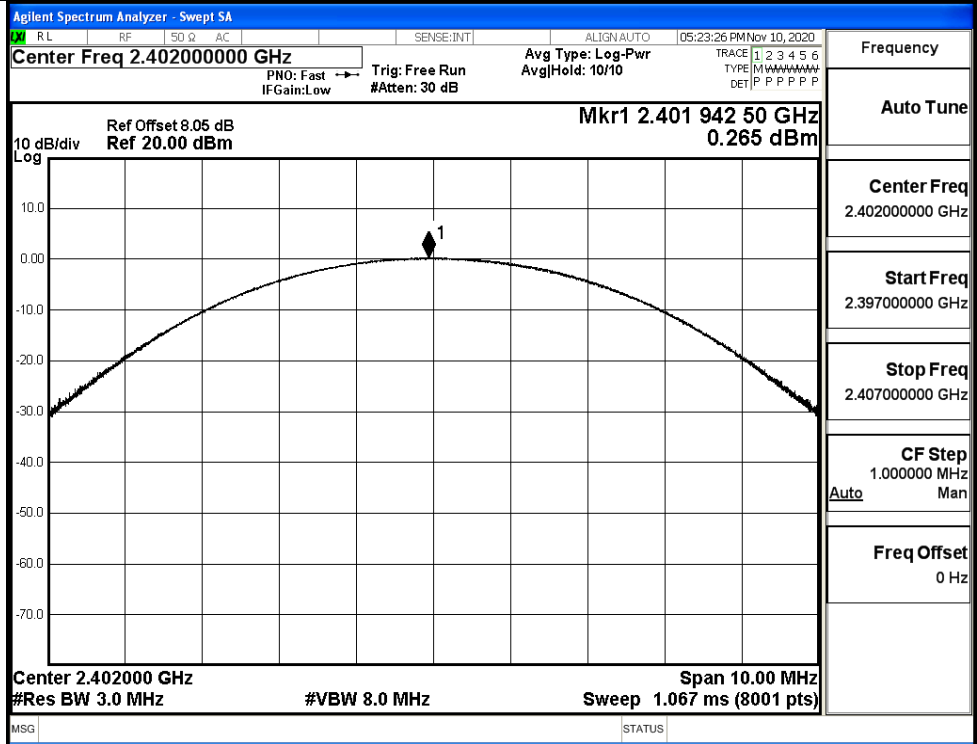
$\pi/4$ DQPSK/MCH



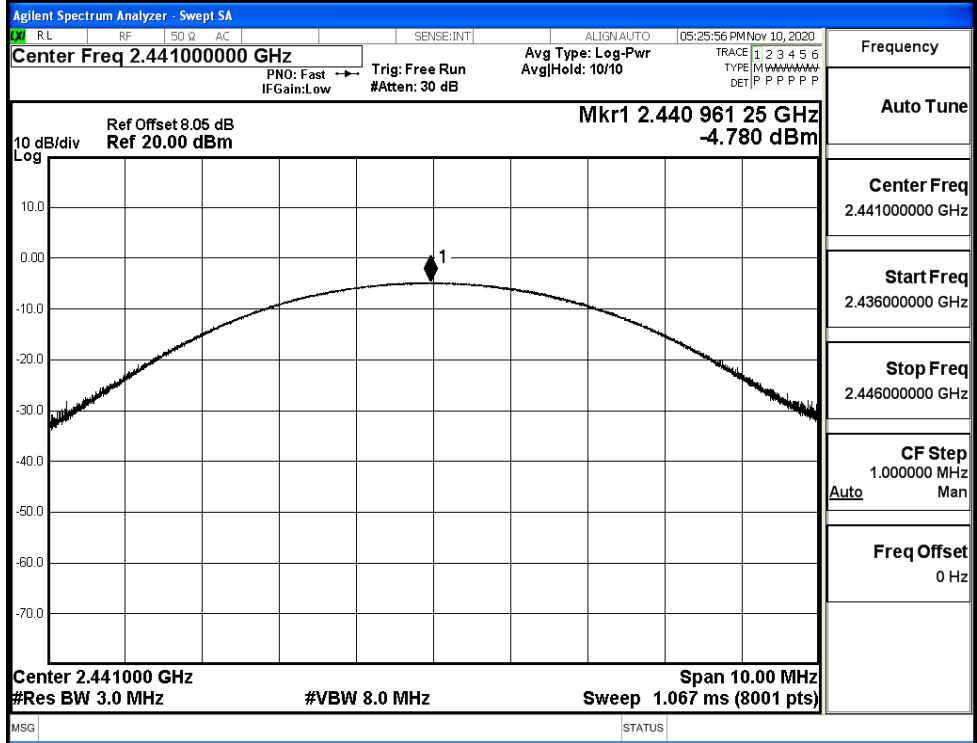
$\pi/4$ DQPSK/HCH



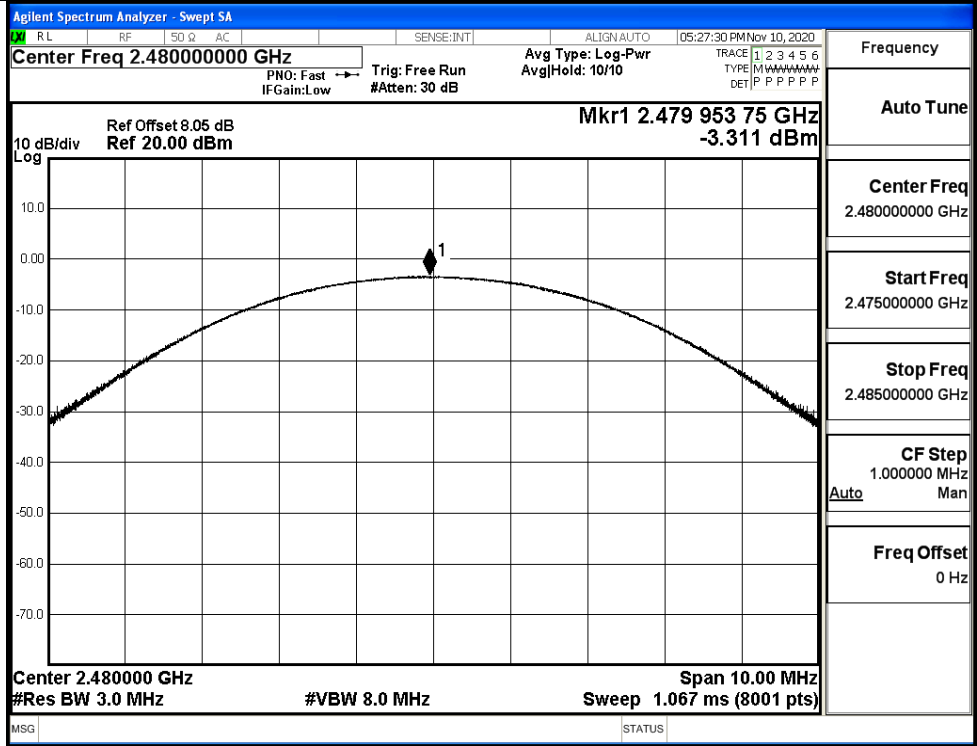
8DPSK/LCH



8DPSK/MCH

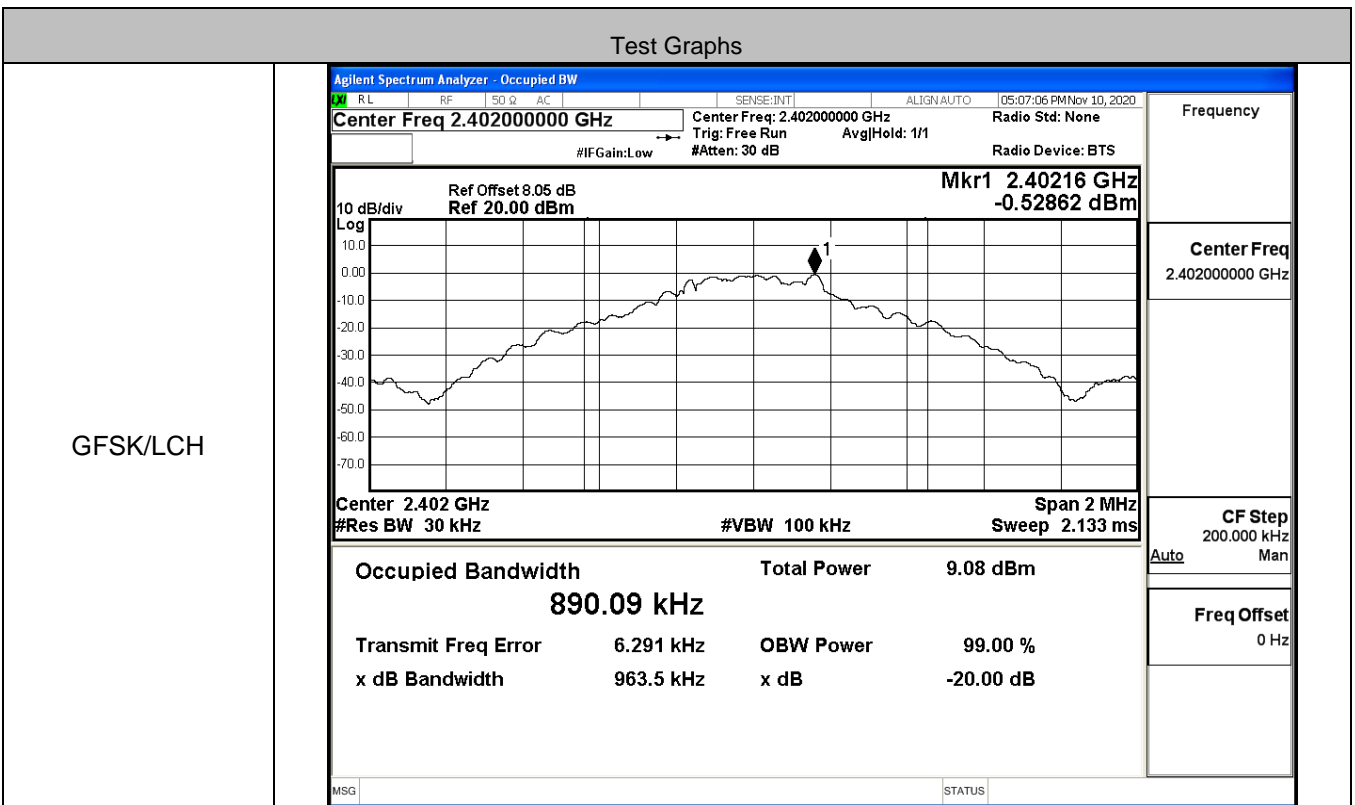


8DPSK/HCH

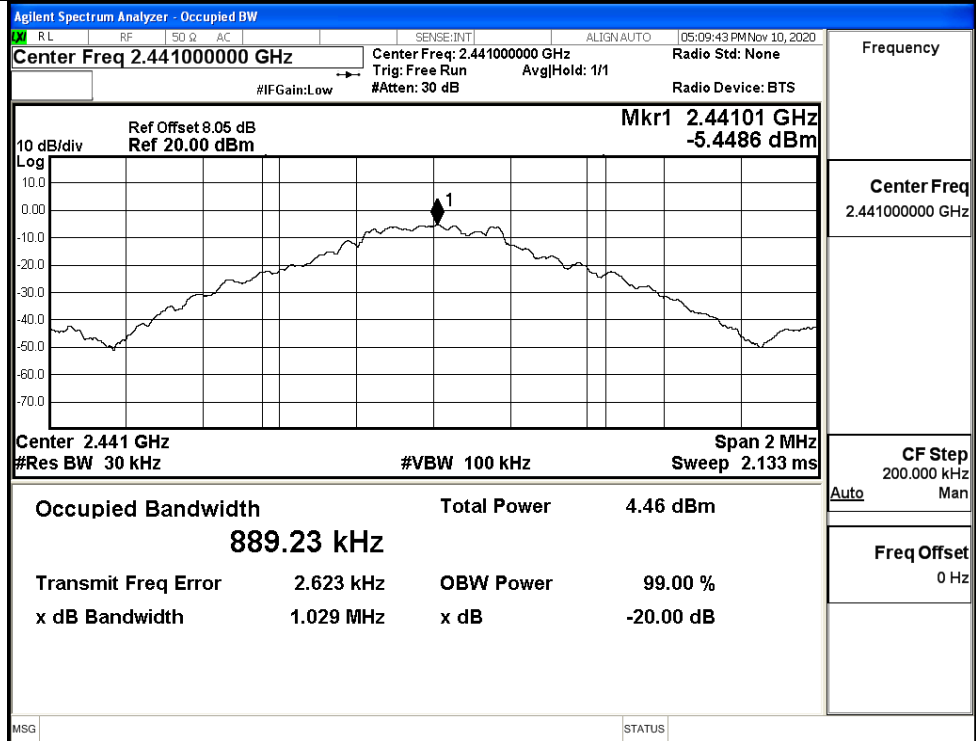


**A.2 20dB Bandwidth**

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9635	Not Specified	PASS
	MCH	1.029	Not Specified	PASS
	HCH	0.9670	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.290	Not Specified	PASS
	MCH	1.294	Not Specified	PASS
	HCH	1.307	Not Specified	PASS
8DPSK	LCH	1.293	Not Specified	PASS
	MCH	1.299	Not Specified	PASS
	HCH	1.298	Not Specified	PASS



GFSK/MCH



Frequency

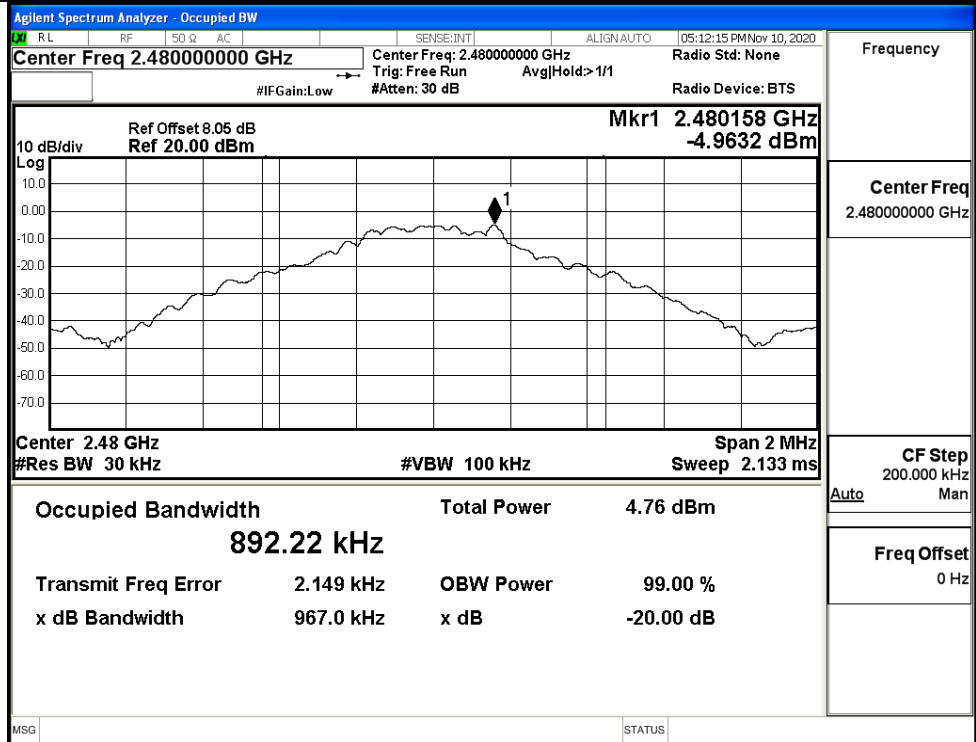
Center Freq  
2.441000000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset

0 Hz

GFSK/HCH



Frequency

Center Freq  
2.480000000 GHz

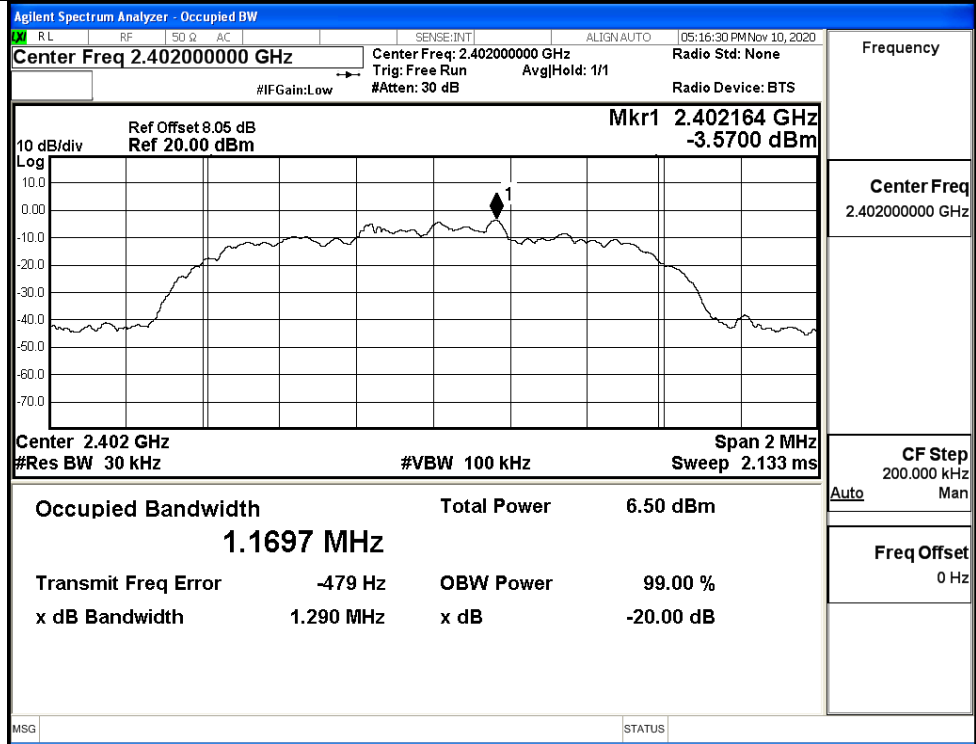
CF Step  
200.000 kHz  
Auto Man

Freq Offset

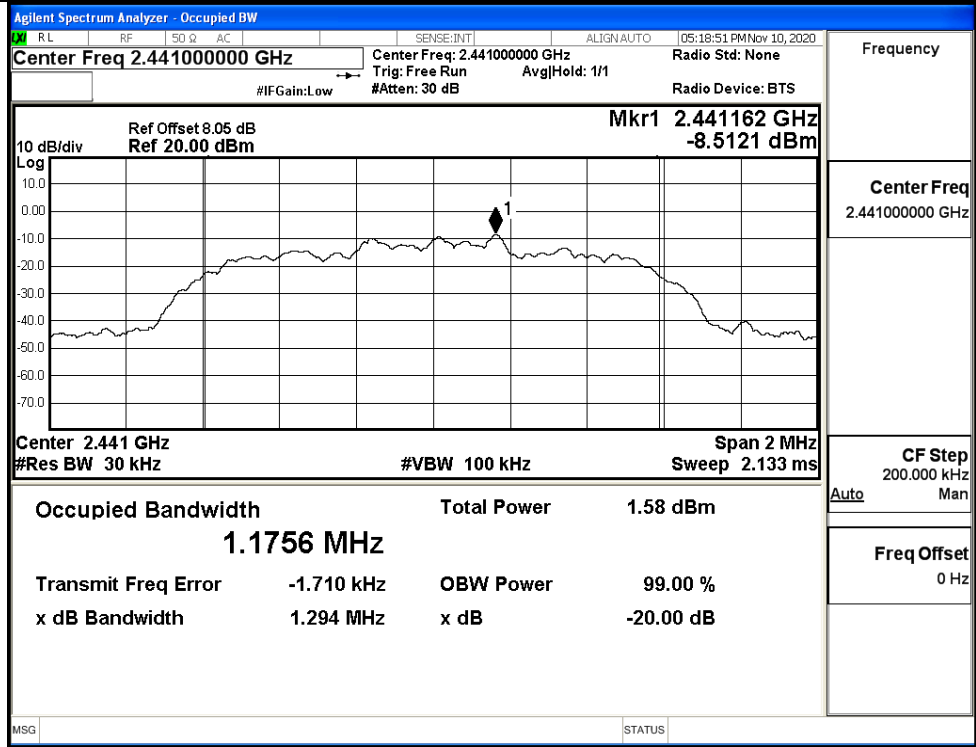
0 Hz



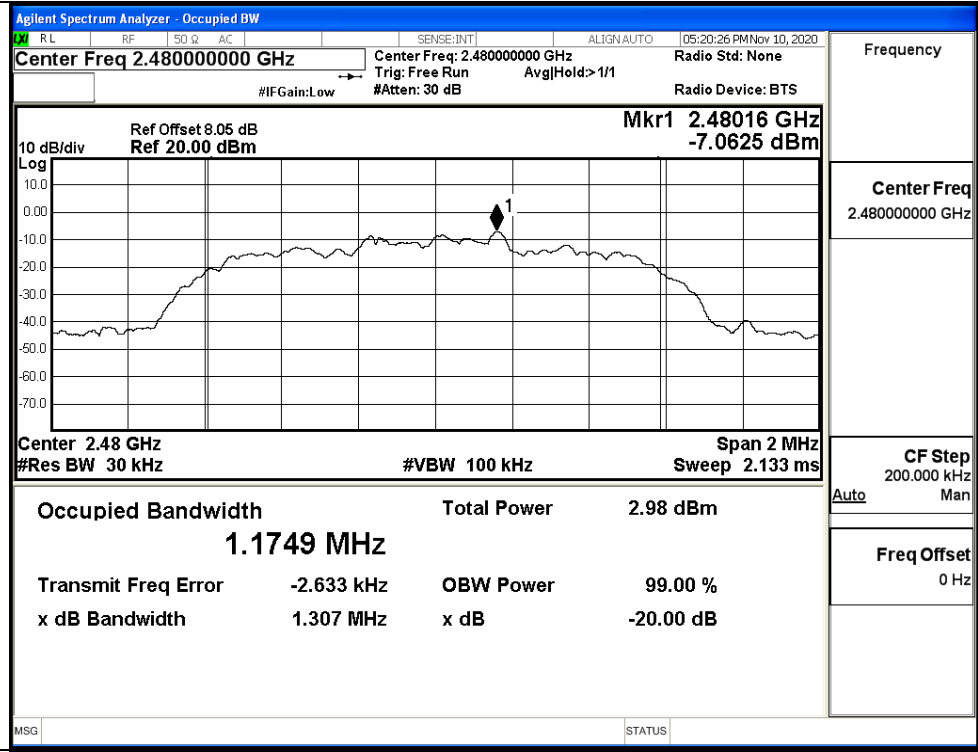
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

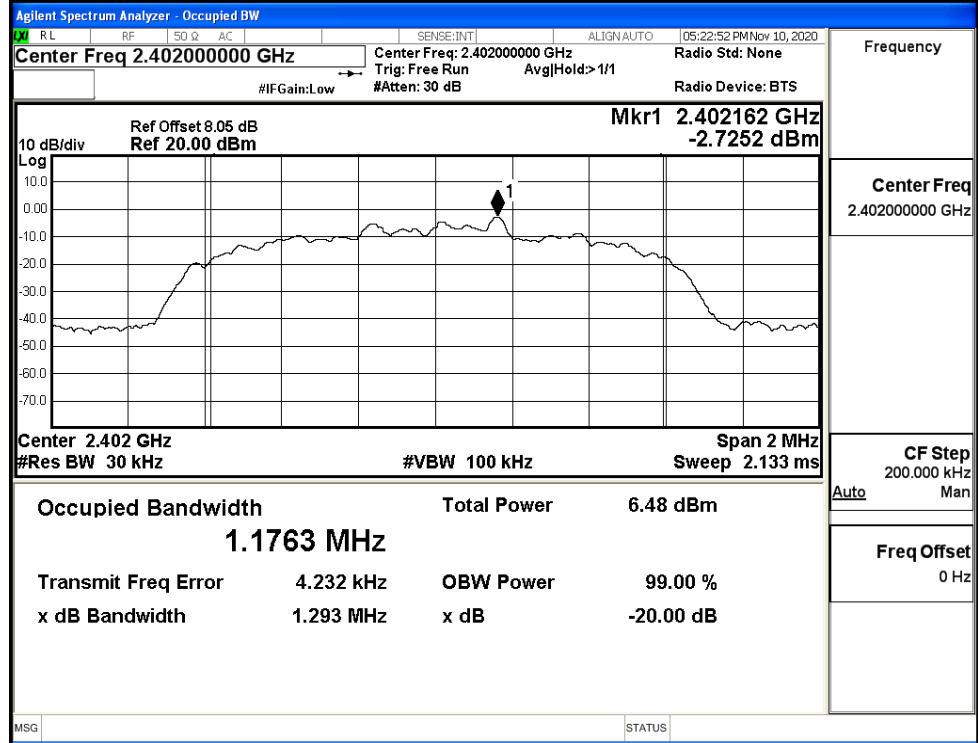


$\pi/4$ DQPSK/HCH



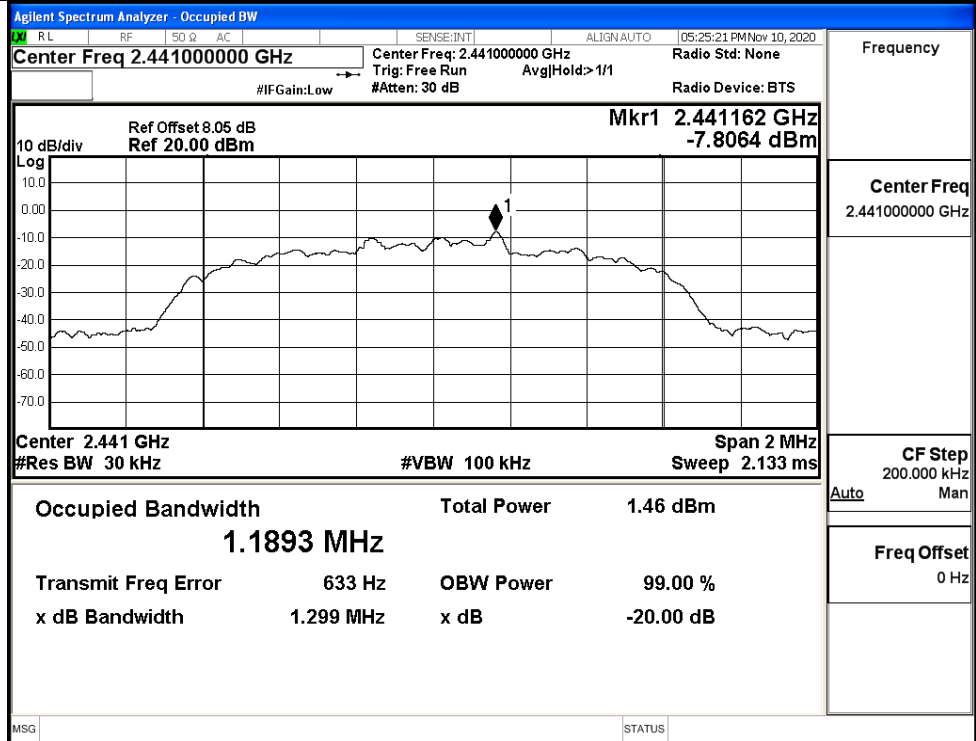
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH



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

8DPSK/MCH



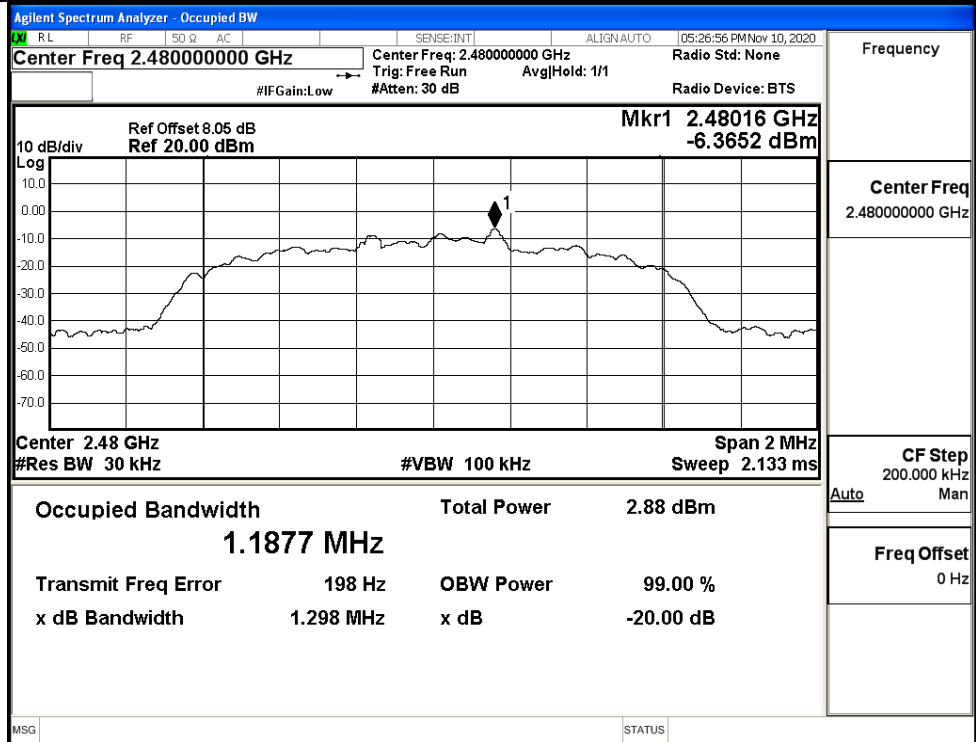
Frequency

Center Freq  
2.441000000 GHz

CF Step  
200.000 kHz

Freq Offset  
0 Hz

8DPSK/HCH



Frequency

Center Freq  
2.480000000 GHz

CF Step  
200.000 kHz

Freq Offset  
0 Hz

### A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.727	0.686	PASS
	MCH	0.976	0.686	PASS
	HCH	1.196	0.686	PASS
π/4DQPSK	LCH	0.908	0.871	PASS
	MCH	1.144	0.871	PASS
	HCH	0.980	0.871	PASS
8DPSK	LCH	1.192	0.866	PASS
	MCH	1.080	0.866	PASS
	HCH	1.150	0.866	PASS

**Test Graphs**

GFSK/LCH

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.402500000 GHz

ΔMkr1 727.00 kHz  
0.586 dB

Start 2.401500 GHz #Res BW 100 kHz #VBW 300 kHz Stop 2.403500 GHz Sweep 1.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	727.00 kHz (Δ)	0.586 dB			
2	F	f		2.40214425 GHz	-0.056 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

Frequency

Auto Tune

Center Freq  
2.402500000 GHz

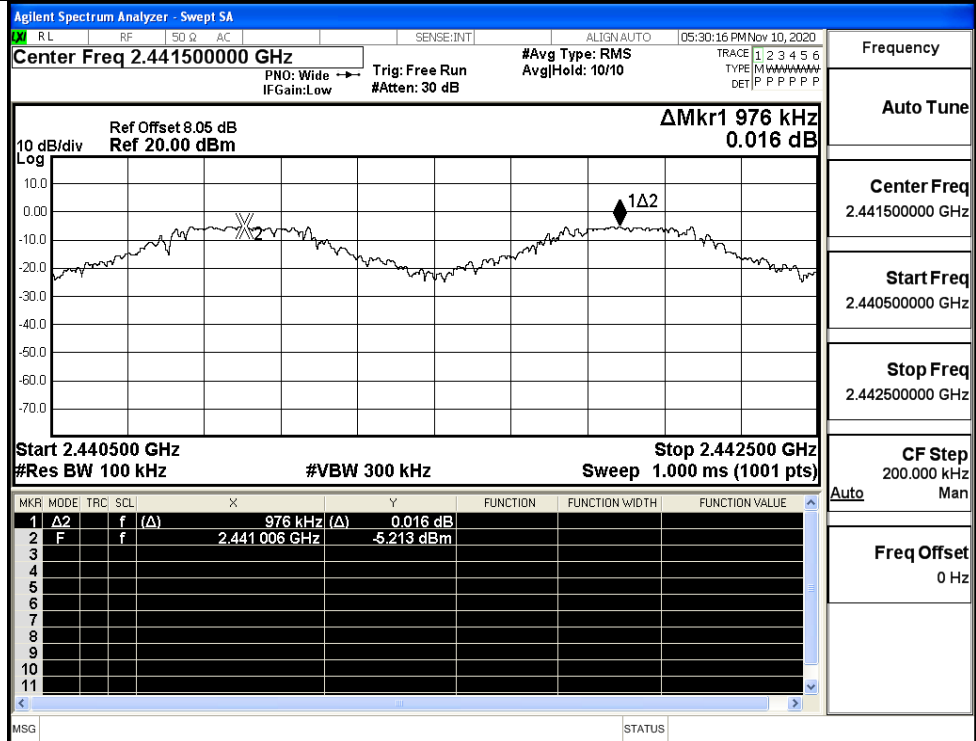
Start Freq  
2.401500000 GHz

Stop Freq  
2.403500000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz

GFSK/MCH



Frequency

Auto Tune

Center Freq  
2.441500000 GHz

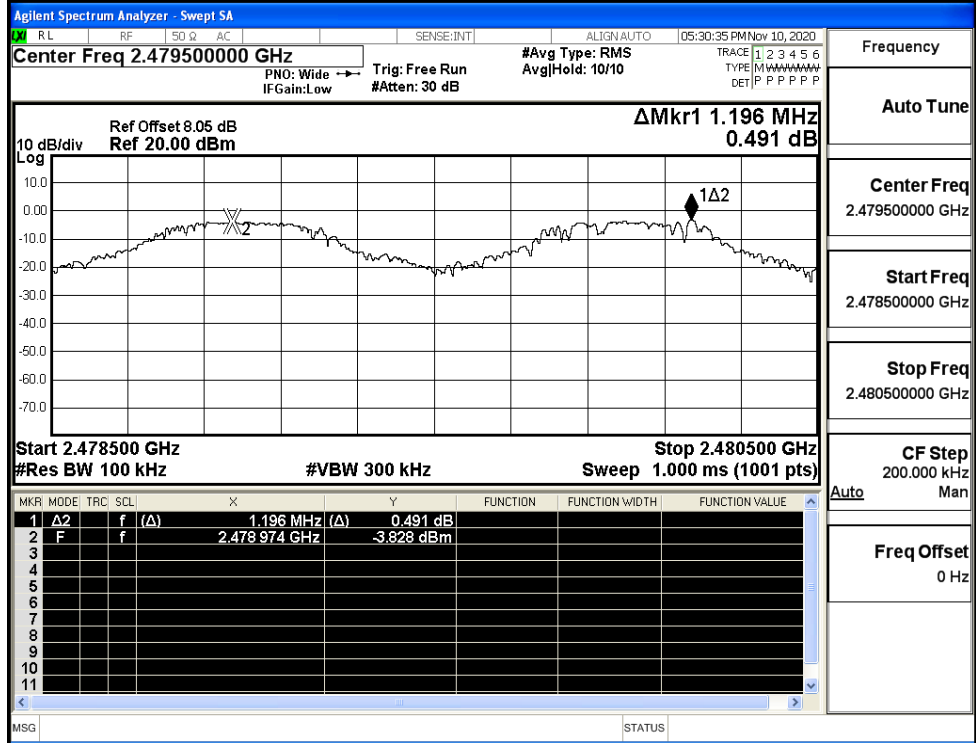
Start Freq  
2.440500000 GHz

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

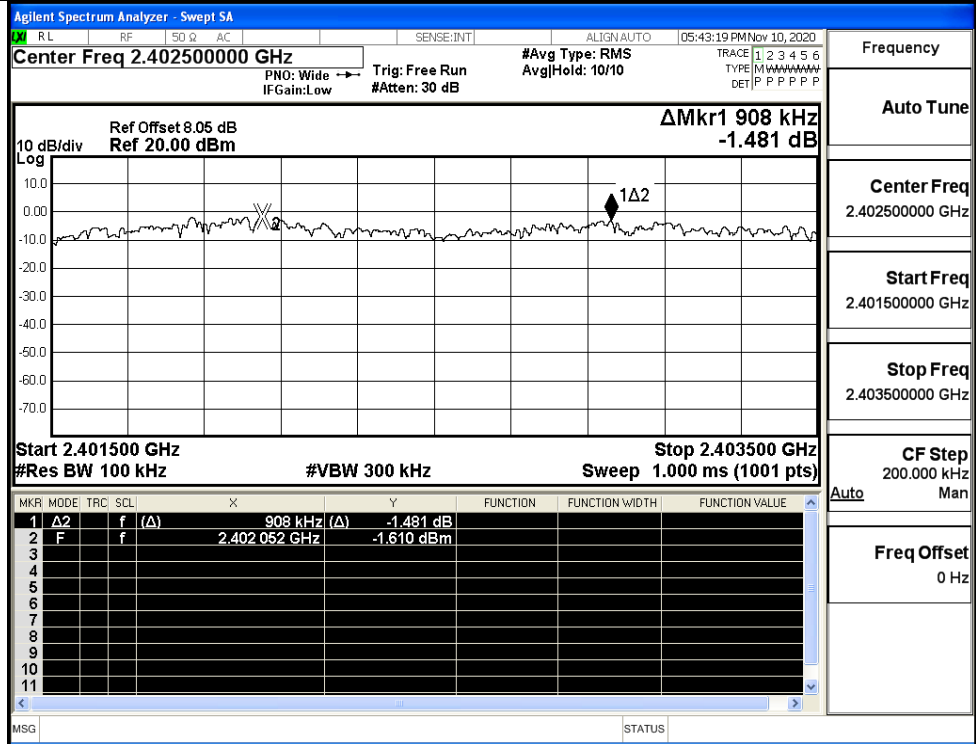
Start Freq  
2.478500000 GHz

Stop Freq  
2.480500000 GHz

CF Step  
200.000 kHz  
Auto Man

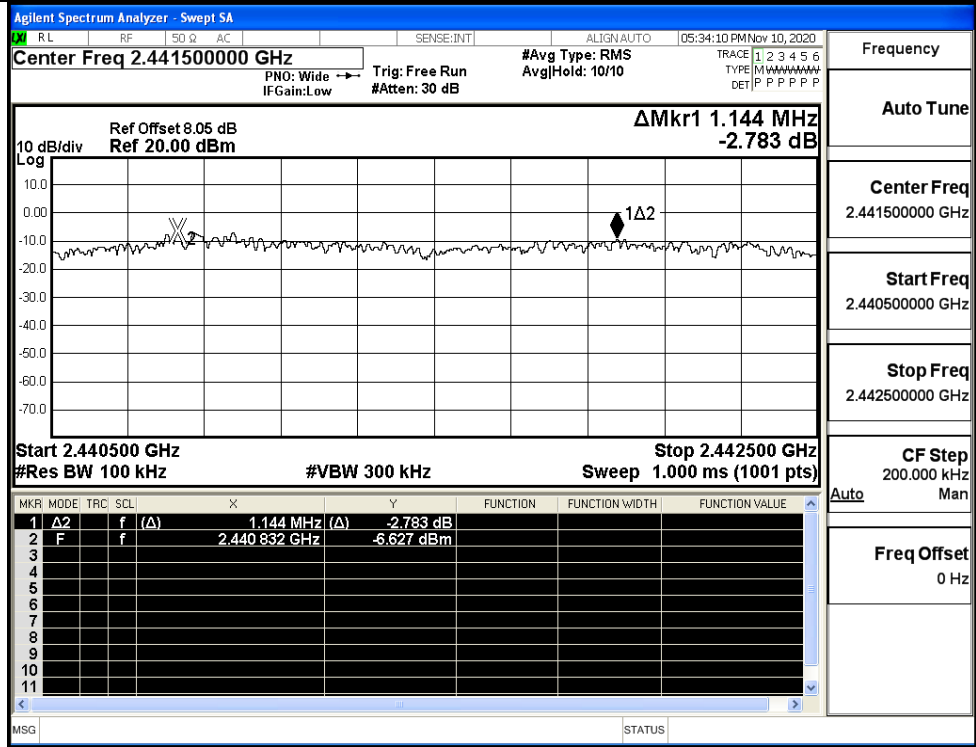
Freq Offset  
0 Hz

$\pi/4$ DQPSK/LCH



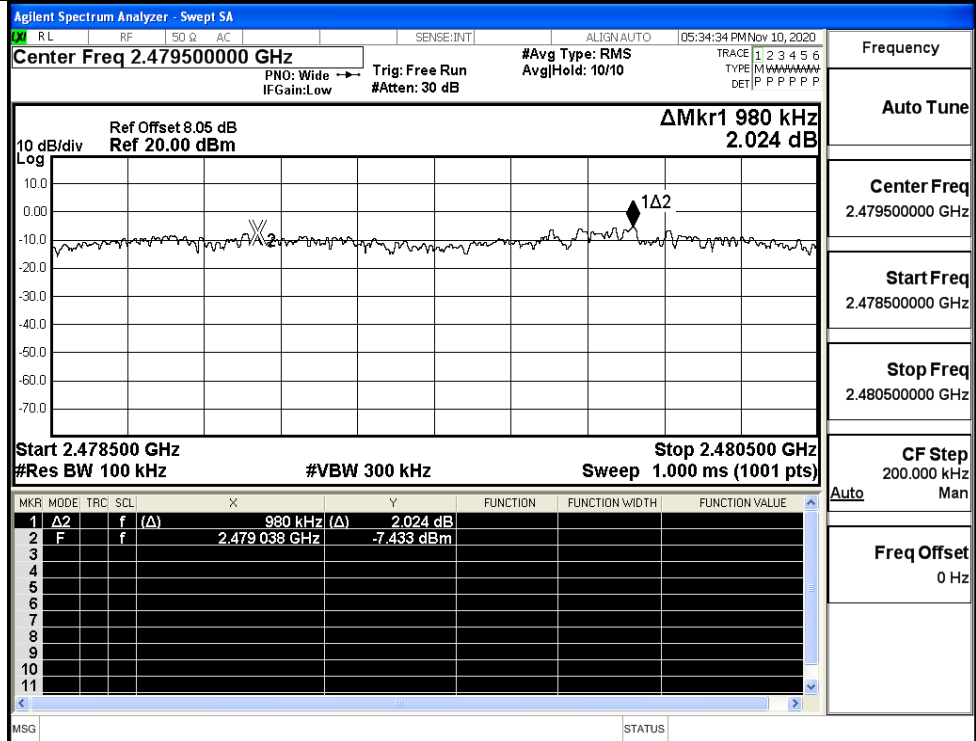
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/MCH



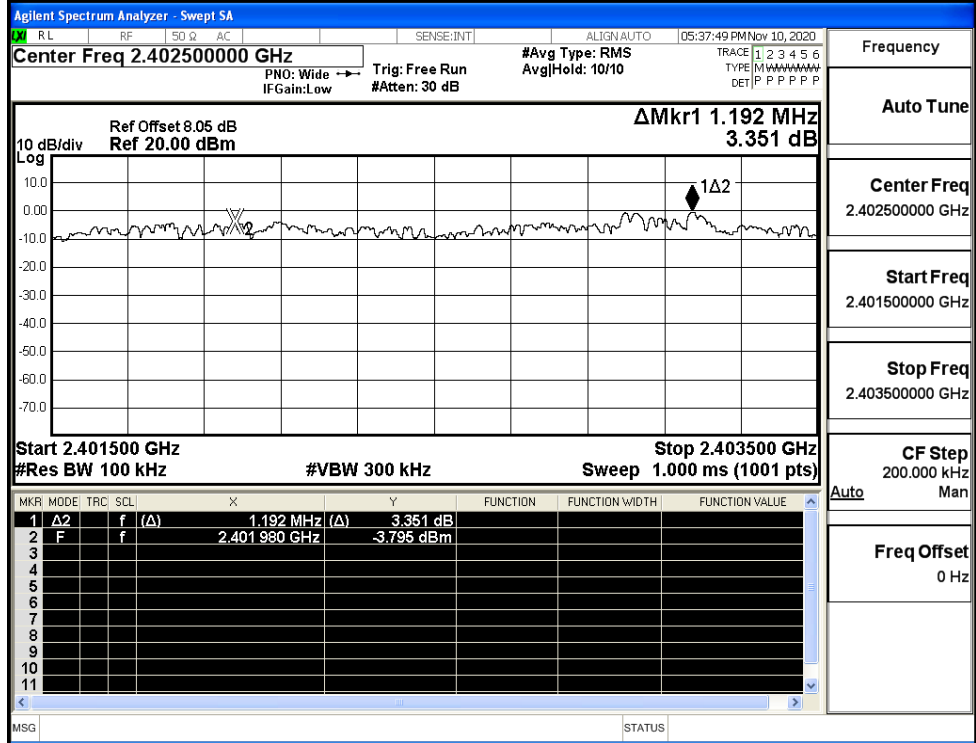
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

π/4DQPSK/HCH

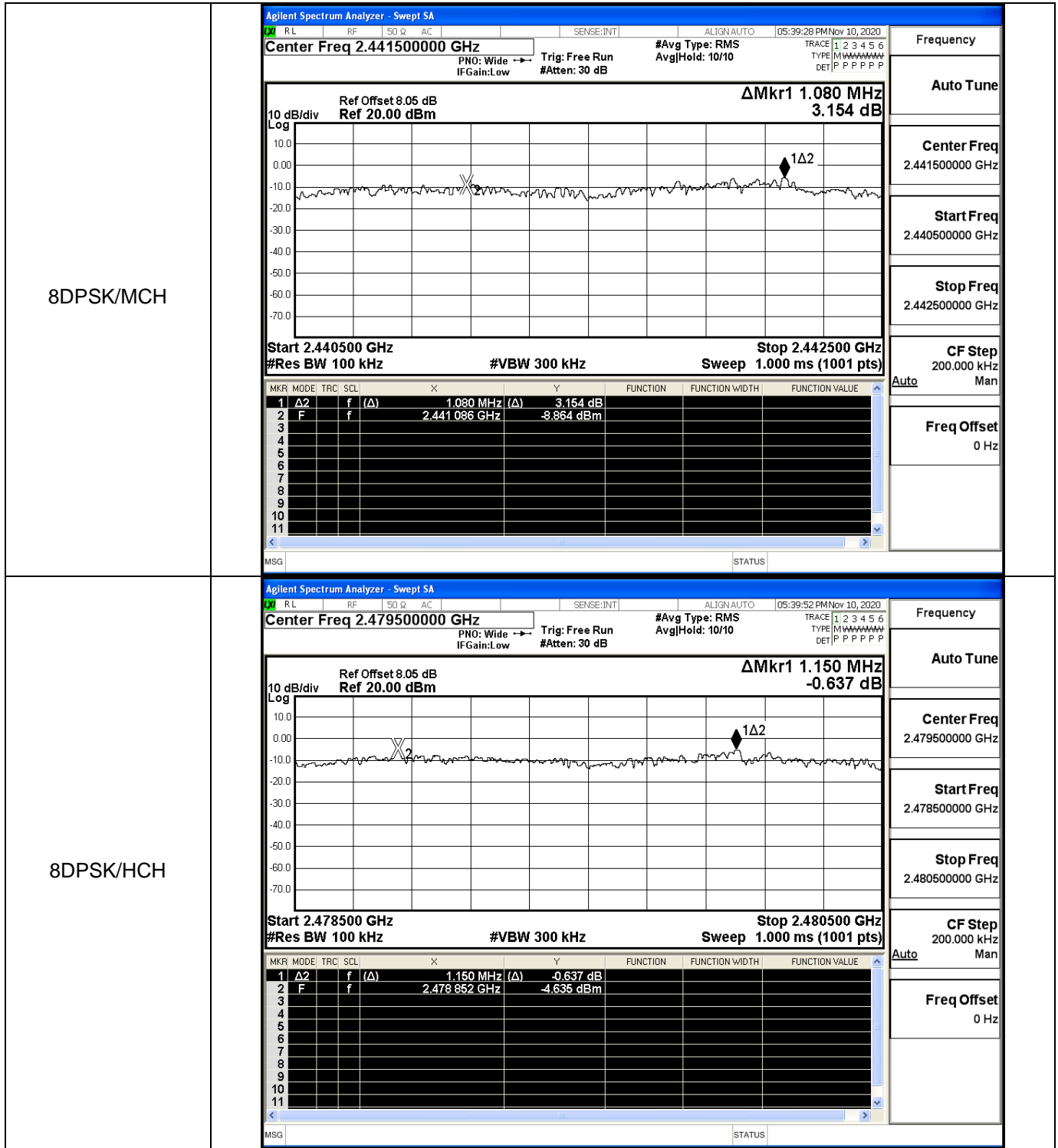


Frequency
Auto Tune
Center Freq 2.479500000 GHz
Start Freq 2.478500000 GHz
Stop Freq 2.480500000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

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



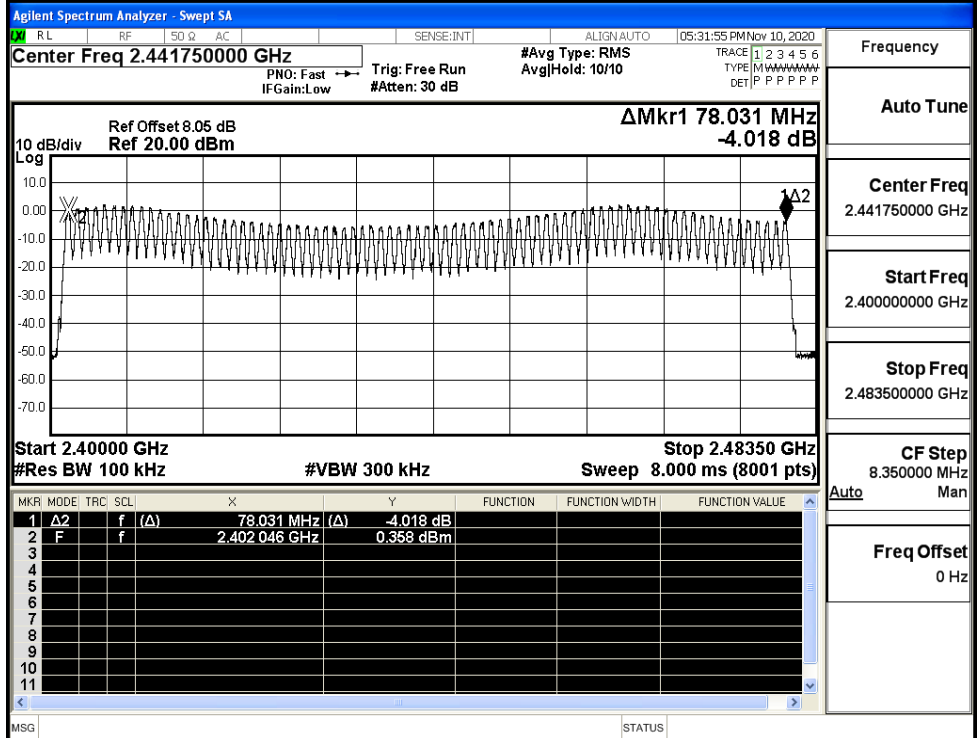
A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS



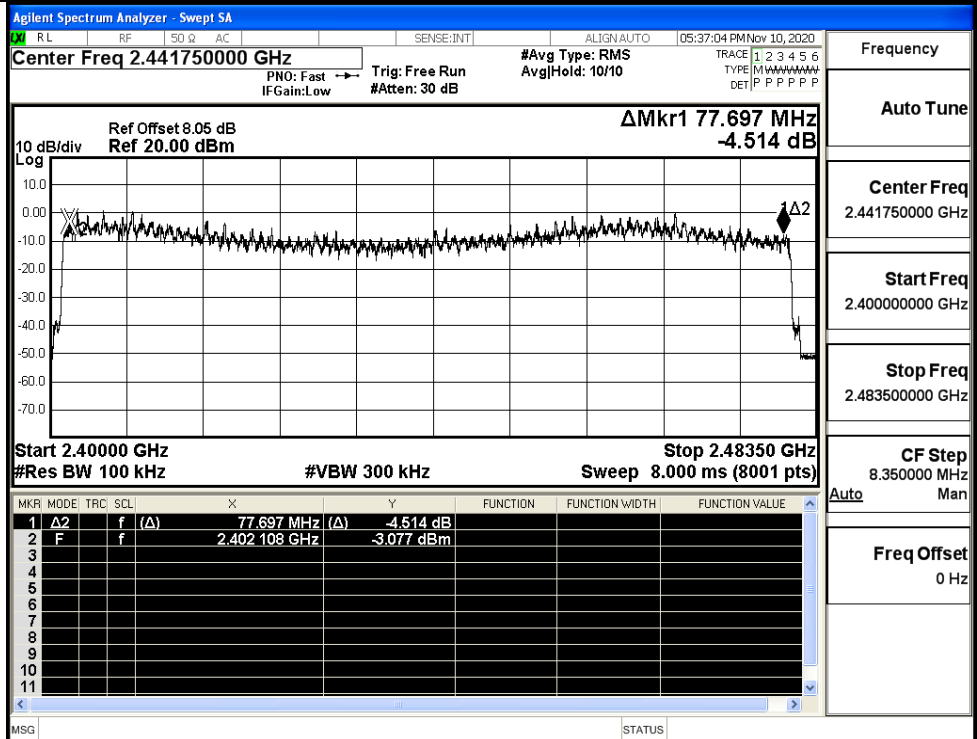
Test Graphs

GFSK/Hop



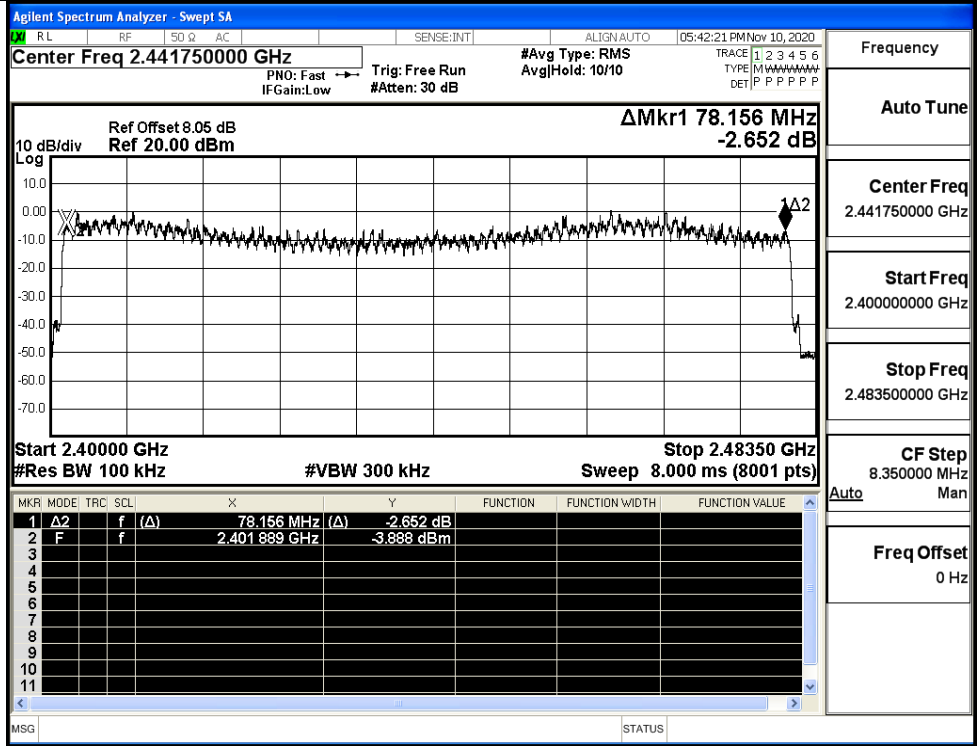
Frequency
Auto Tune
Center Freq 2.441750000 GHz
Start Freq 2.400000000 GHz
Stop Freq 2.483500000 GHz
CF Step 8.350000 MHz
Auto Man
Freq Offset 0 Hz

π/4DQPSK/Hop



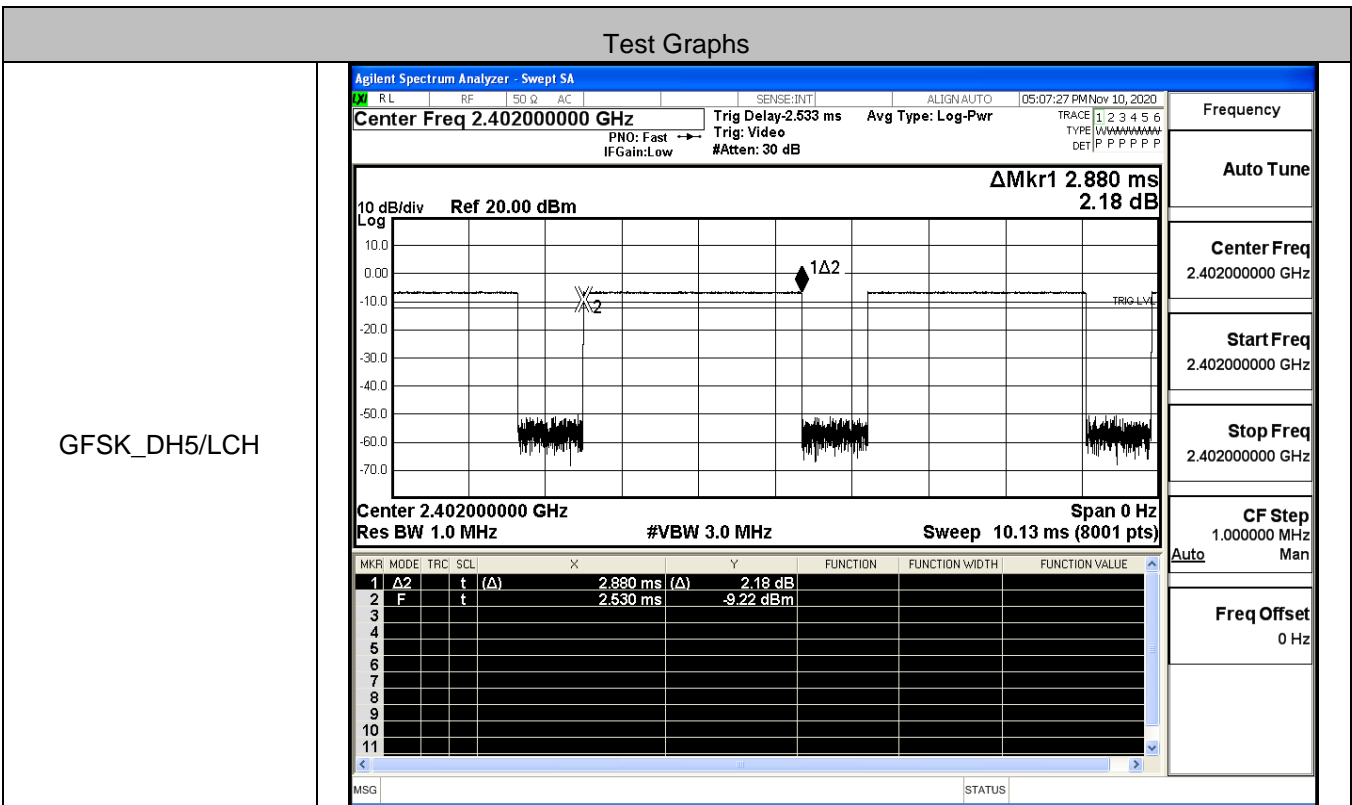
Frequency
Auto Tune
Center Freq 2.441750000 GHz
Start Freq 2.400000000 GHz
Stop Freq 2.483500000 GHz
CF Step 8.350000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/Hop

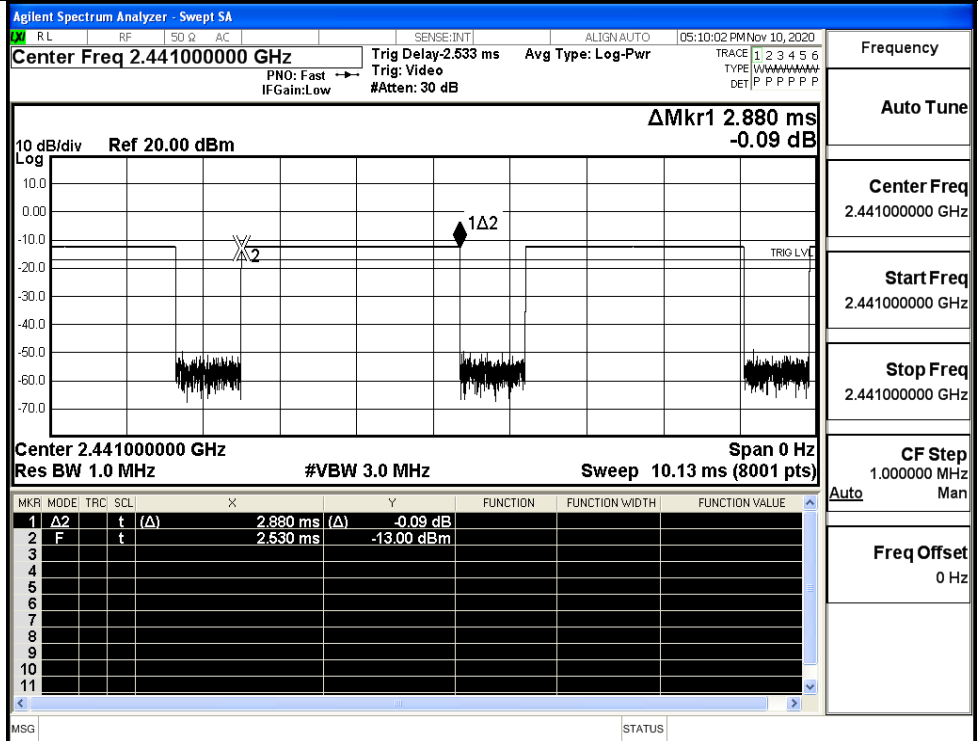


### A.5 Dwell Time

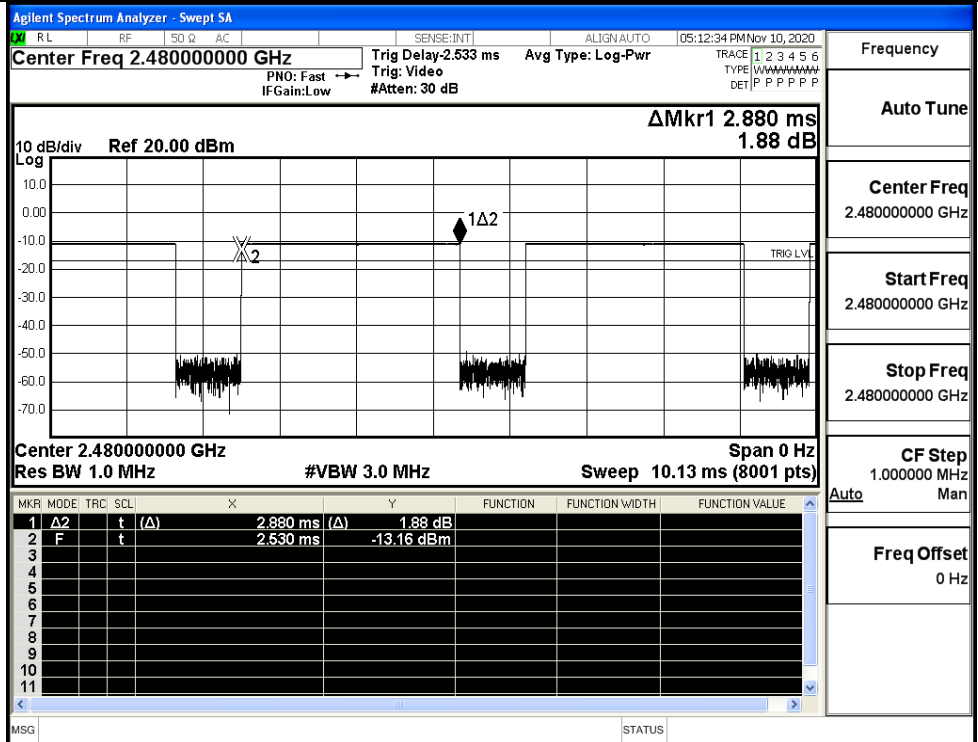
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



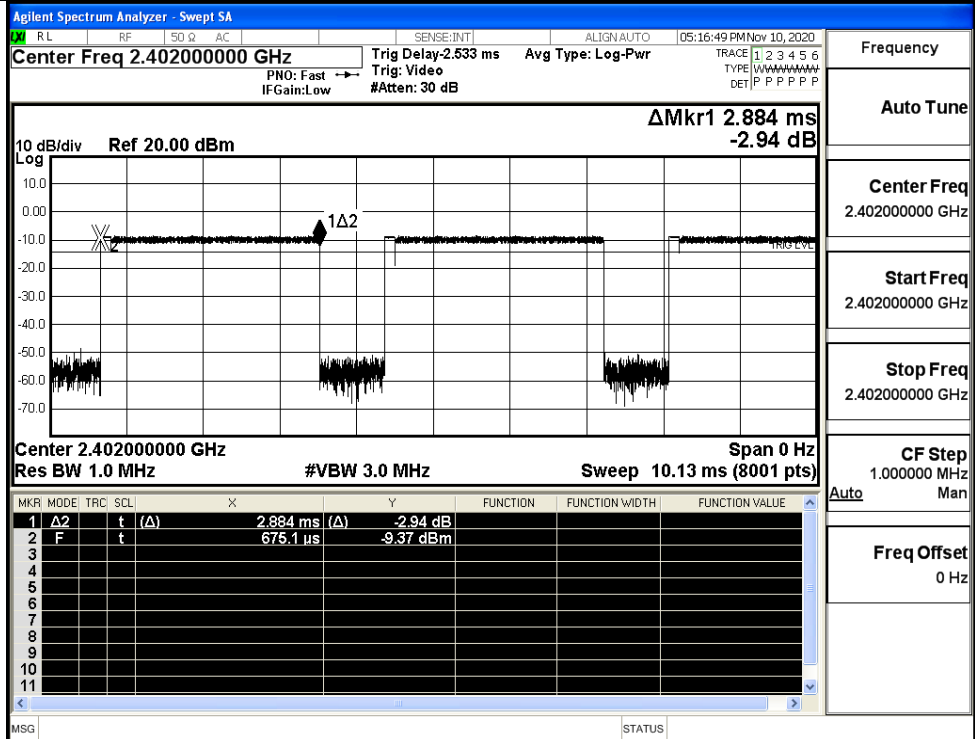
GFSK\_DH5/MCH



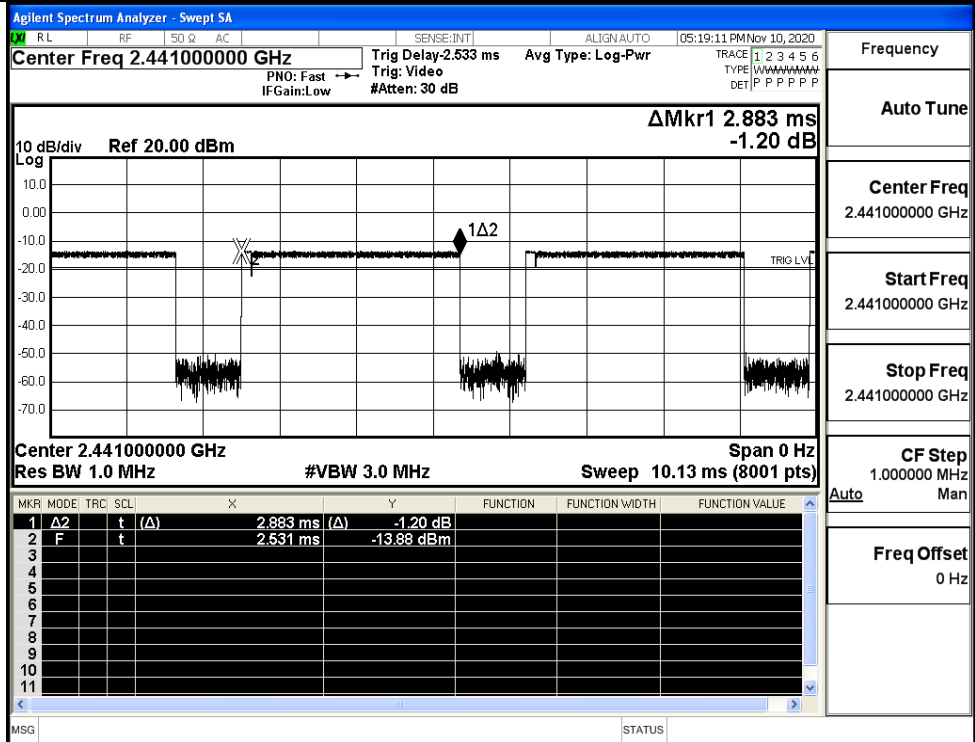
GFSK\_DH5/HCH



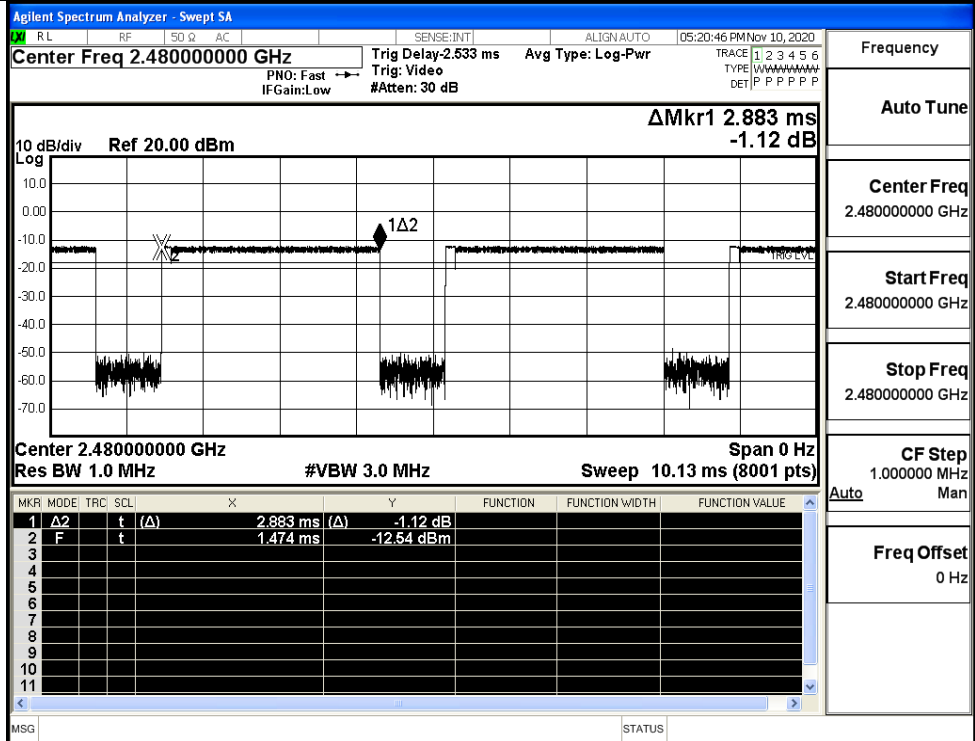
$\pi/4$ DQPSK  
\_2DH5/LCH



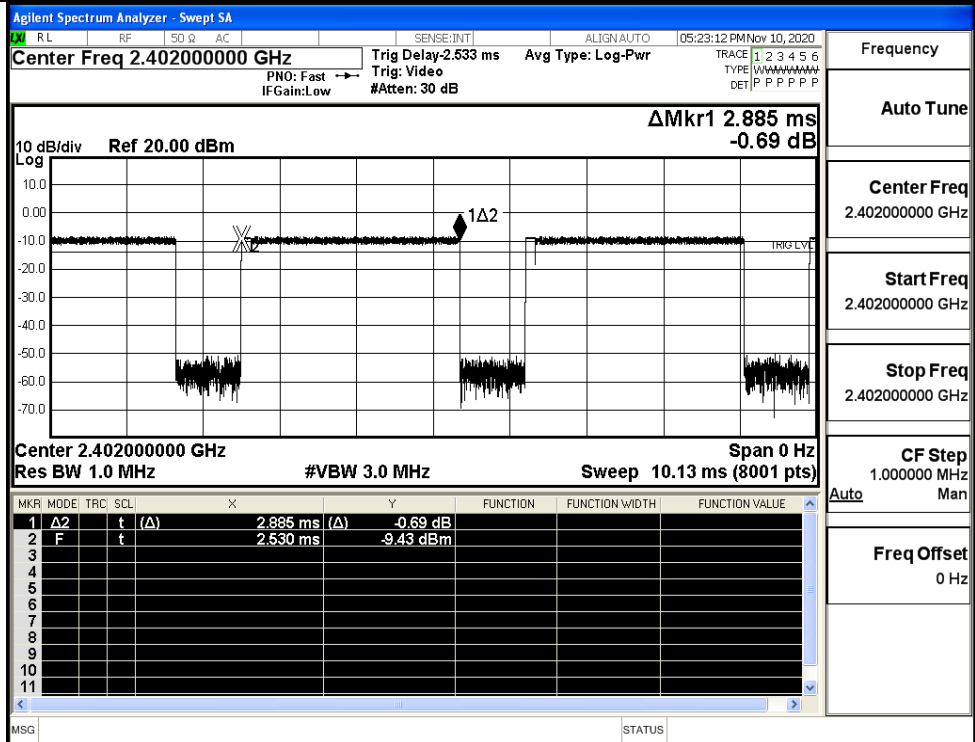
$\pi/4$ DQPSK  
\_2DH5/MCH



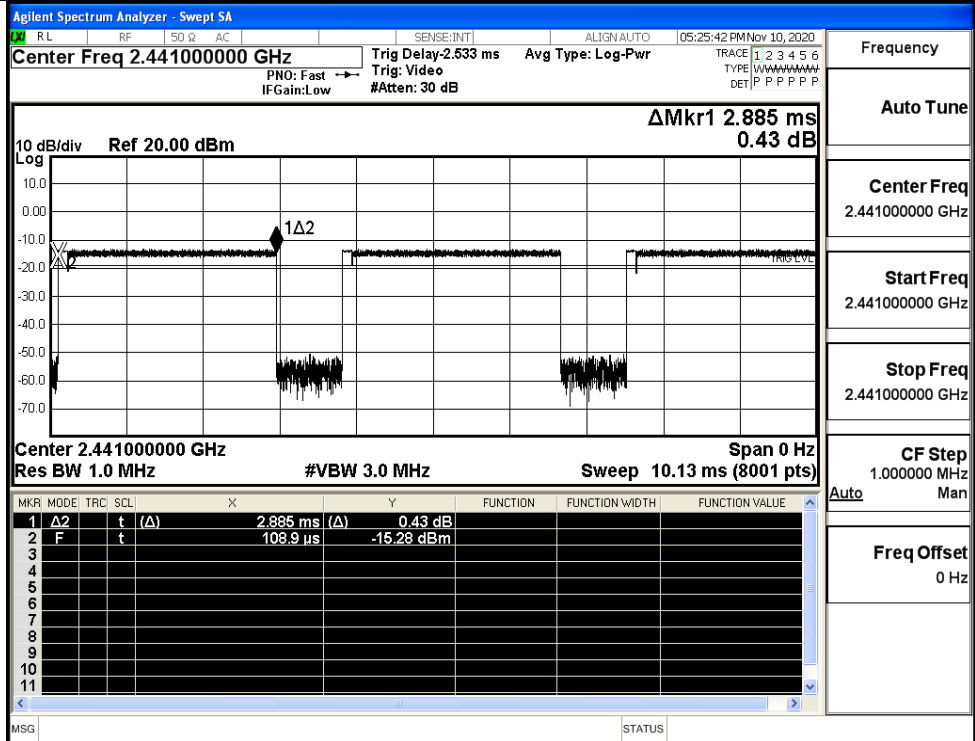
$\pi/4$ DQPSK  
\_2DH5/HCH



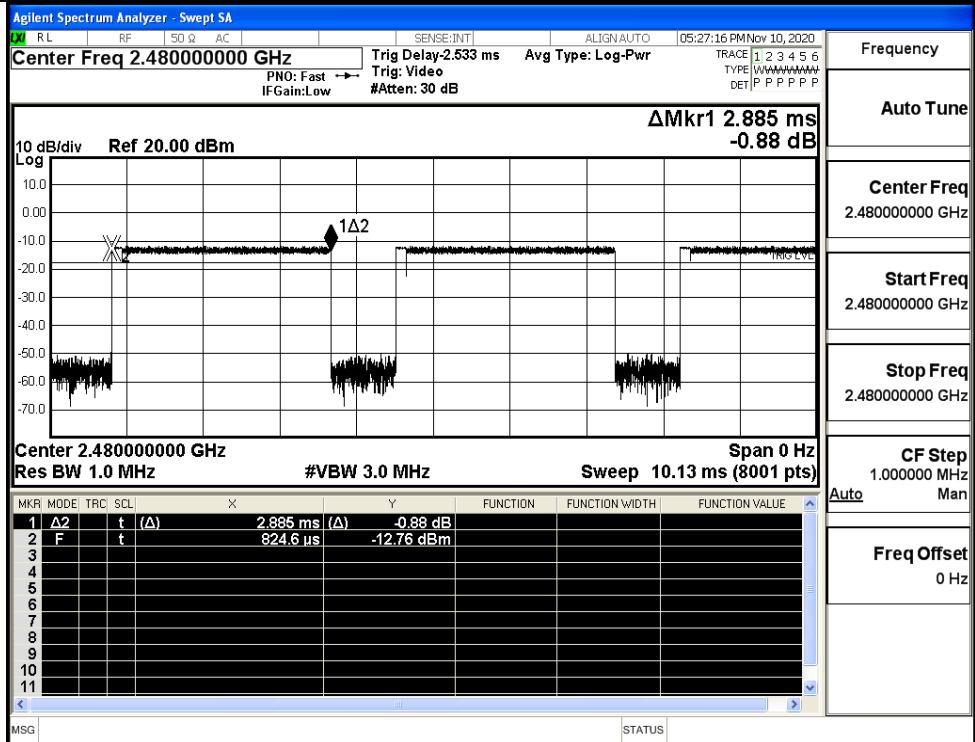
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



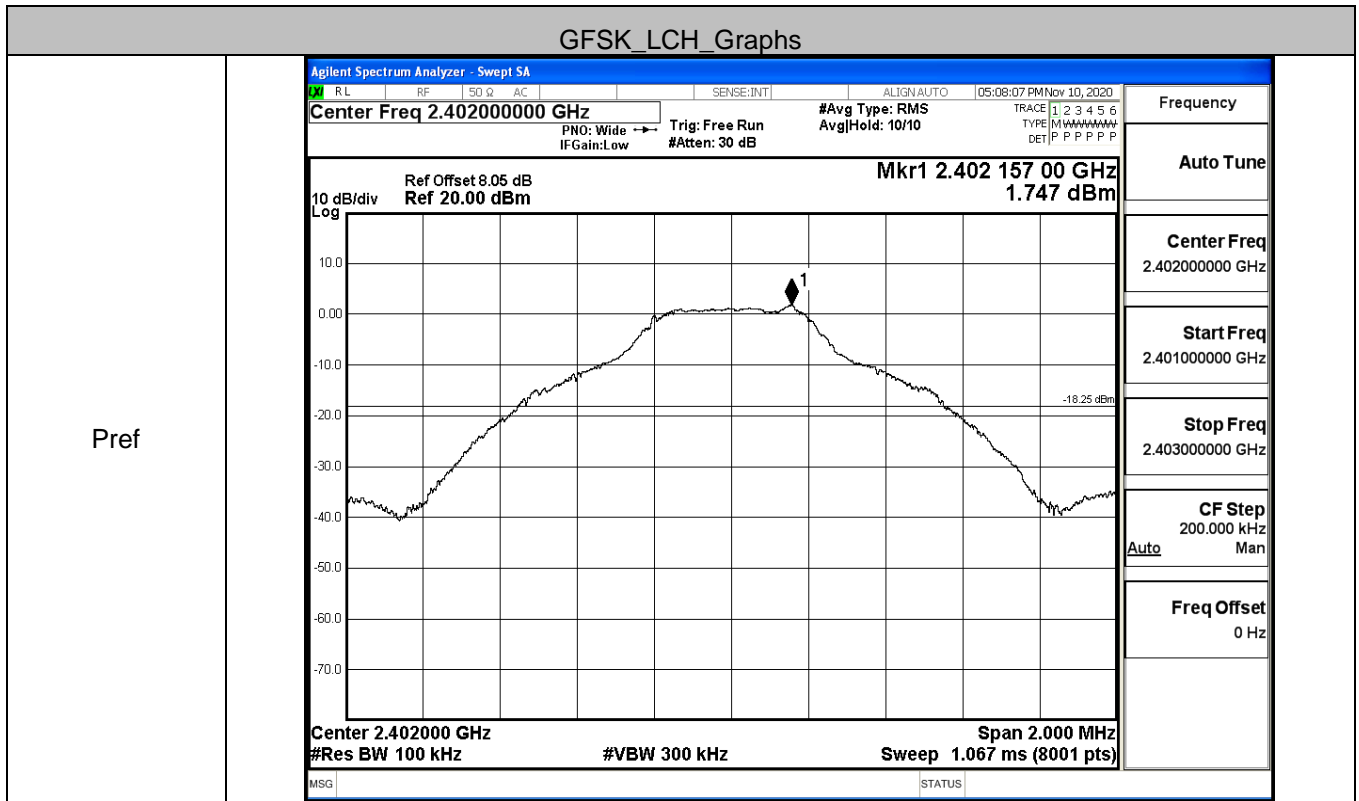
8DPSK\_3DH5/HCH



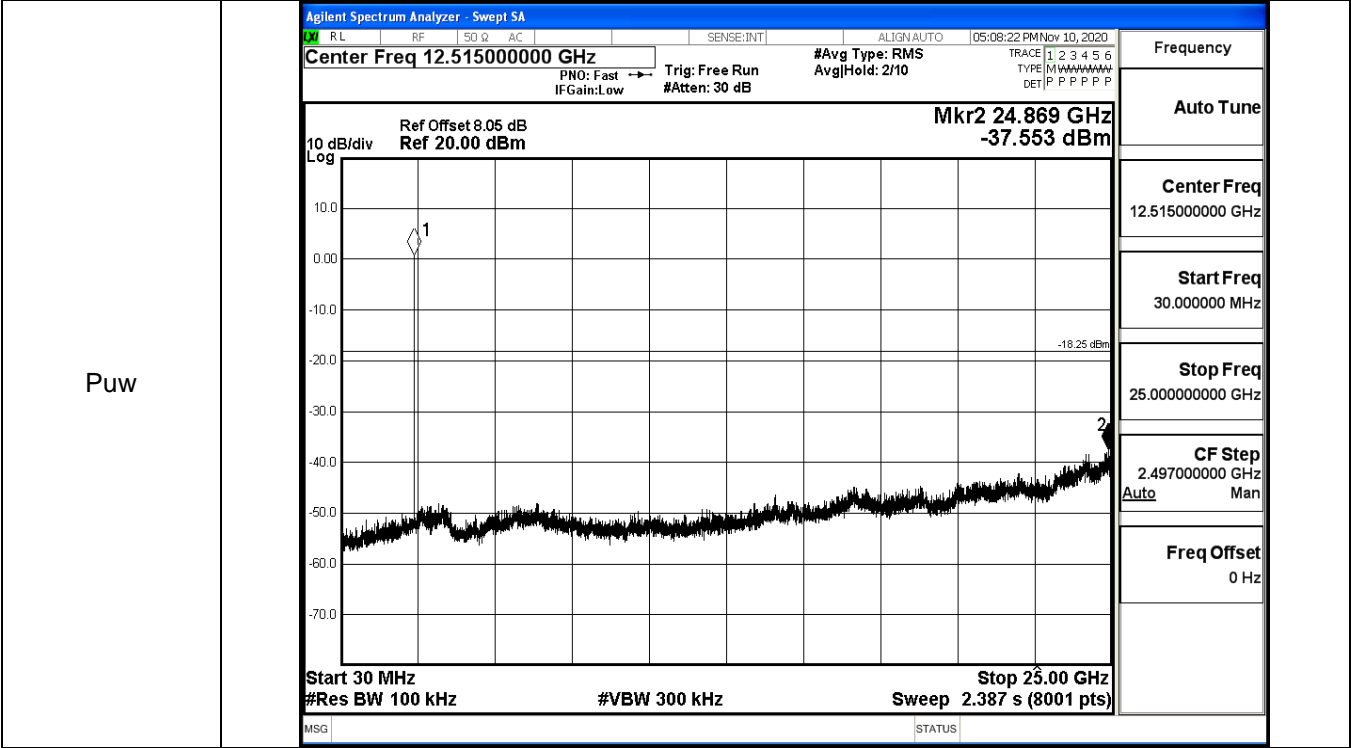
**A.6 RF Conducted Spurious Emissions**

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.747	-37.553	-18.253	PASS
	MCH	-3.313	-37.942	-23.313	PASS
	HCH	-3.373	-38.216	-23.373	PASS
$\pi$ /4DQPSK	LCH	-0.772	-38.042	-20.772	PASS
	MCH	-5.838	-38.360	-25.838	PASS
	HCH	-4.434	-36.839	-24.434	PASS
8DPSK	LCH	-0.693	-38.260	-20.693	PASS
	MCH	-5.705	-38.492	-25.705	PASS
	HCH	-4.316	-38.186	-24.316	PASS

GFSK\_LCH\_Graphs



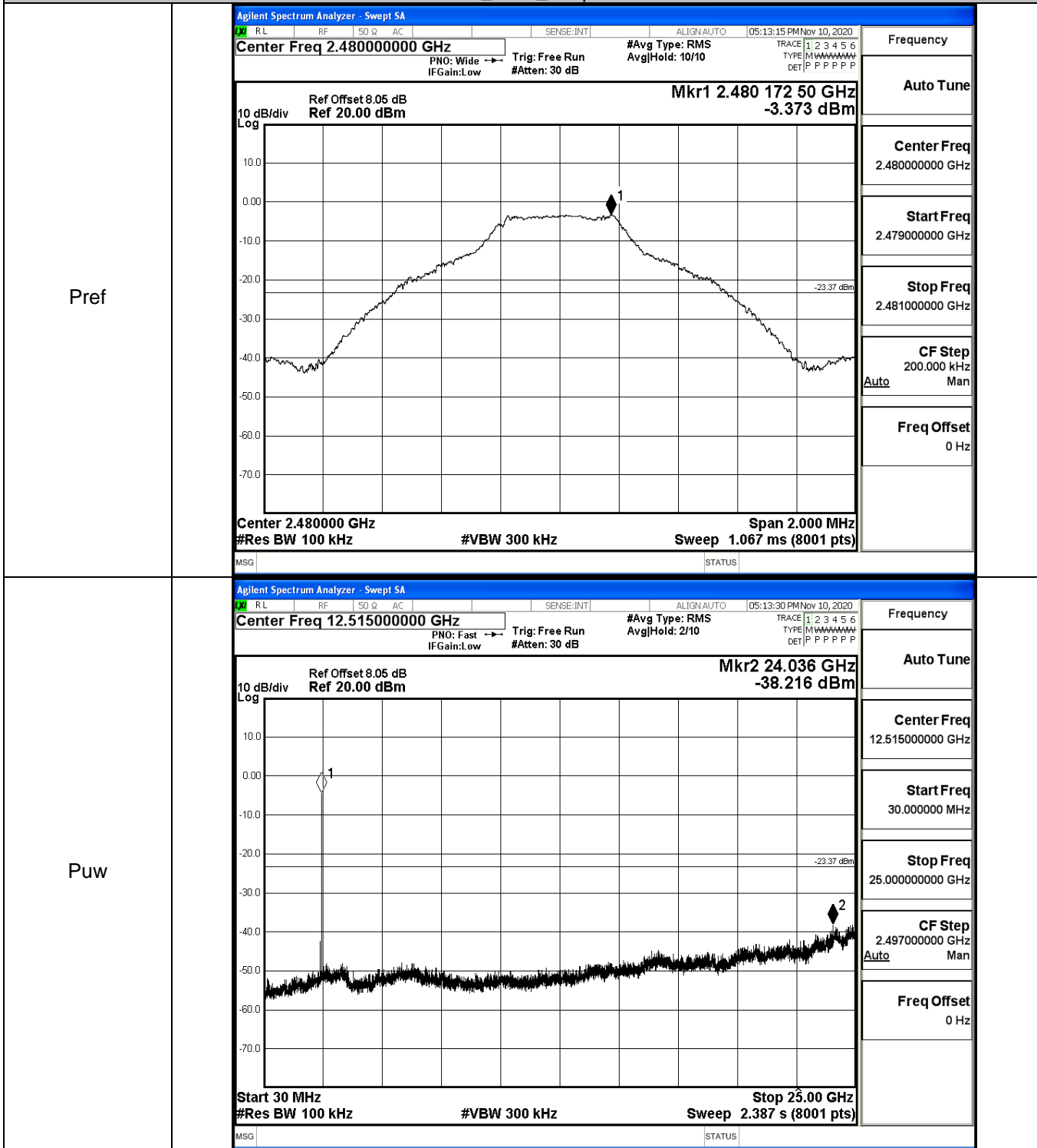




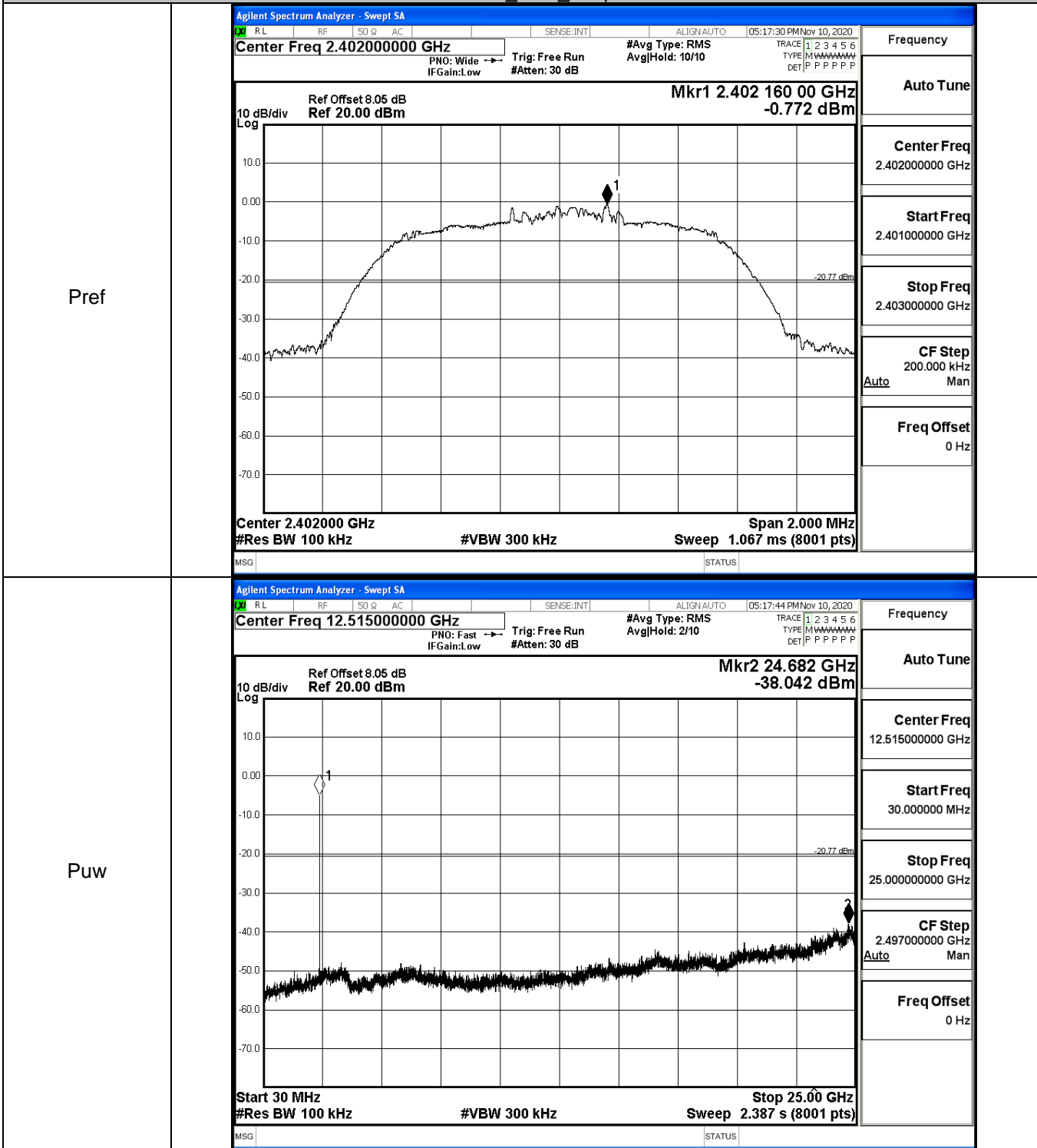
GFSK\_MCH\_Graphs

<p>Pref</p>		<table border="1"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.441000000 GHz</td></tr> <tr><td>Start Freq 2.440000000 GHz</td></tr> <tr><td>Stop Freq 2.442000000 GHz</td></tr> <tr><td>CF Step 200.000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.441000000 GHz	Start Freq 2.440000000 GHz	Stop Freq 2.442000000 GHz	CF Step 200.000 kHz Auto Man	Freq Offset 0 Hz
	Frequency								
Auto Tune									
Center Freq 2.441000000 GHz									
Start Freq 2.440000000 GHz									
Stop Freq 2.442000000 GHz									
CF Step 200.000 kHz Auto Man									
Freq Offset 0 Hz									
<p>Puw</p>		<table border="1"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 12.515000000 GHz</td></tr> <tr><td>Start Freq 30.000000 MHz</td></tr> <tr><td>Stop Freq 25.000000000 GHz</td></tr> <tr><td>CF Step 2.497000000 GHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 12.515000000 GHz	Start Freq 30.000000 MHz	Stop Freq 25.000000000 GHz	CF Step 2.497000000 GHz Auto Man	Freq Offset 0 Hz
Frequency									
Auto Tune									
Center Freq 12.515000000 GHz									
Start Freq 30.000000 MHz									
Stop Freq 25.000000000 GHz									
CF Step 2.497000000 GHz Auto Man									
Freq Offset 0 Hz									

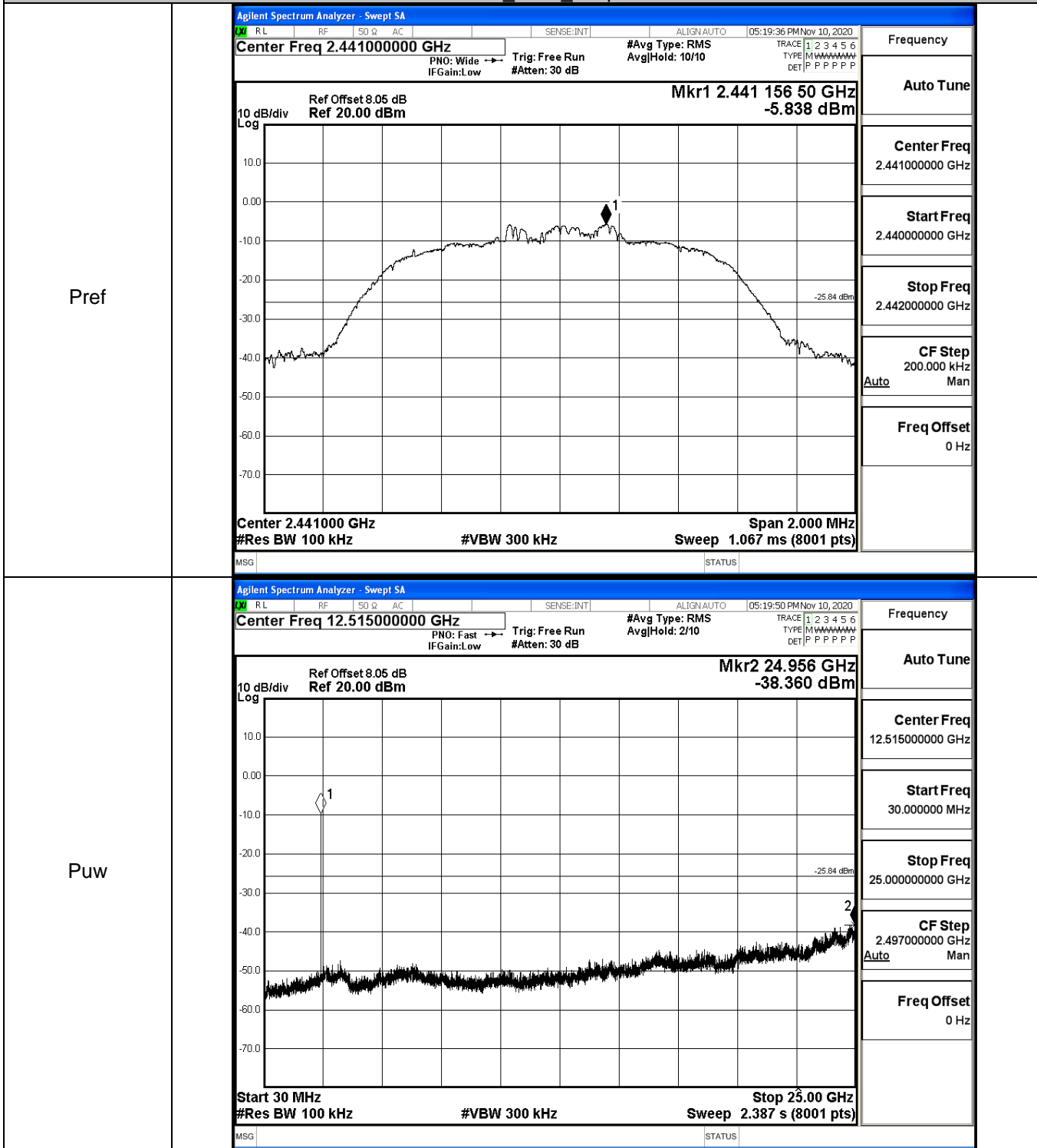
GFSK\_HCH\_Graphs



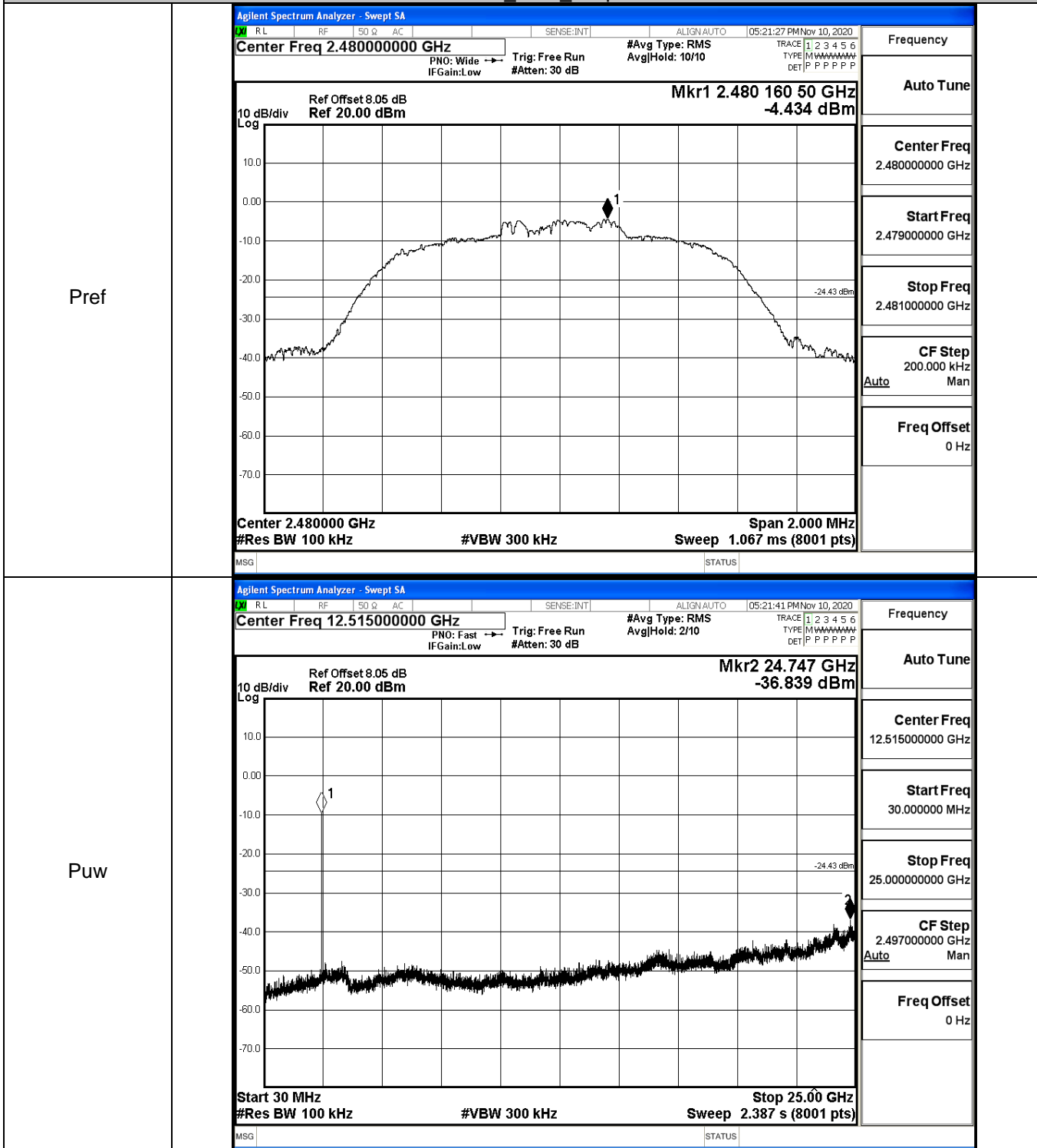
$\pi/4$ DQPSK\_LCH\_Graphs



$\pi/4$ DQPSK\_MCH\_Graphs

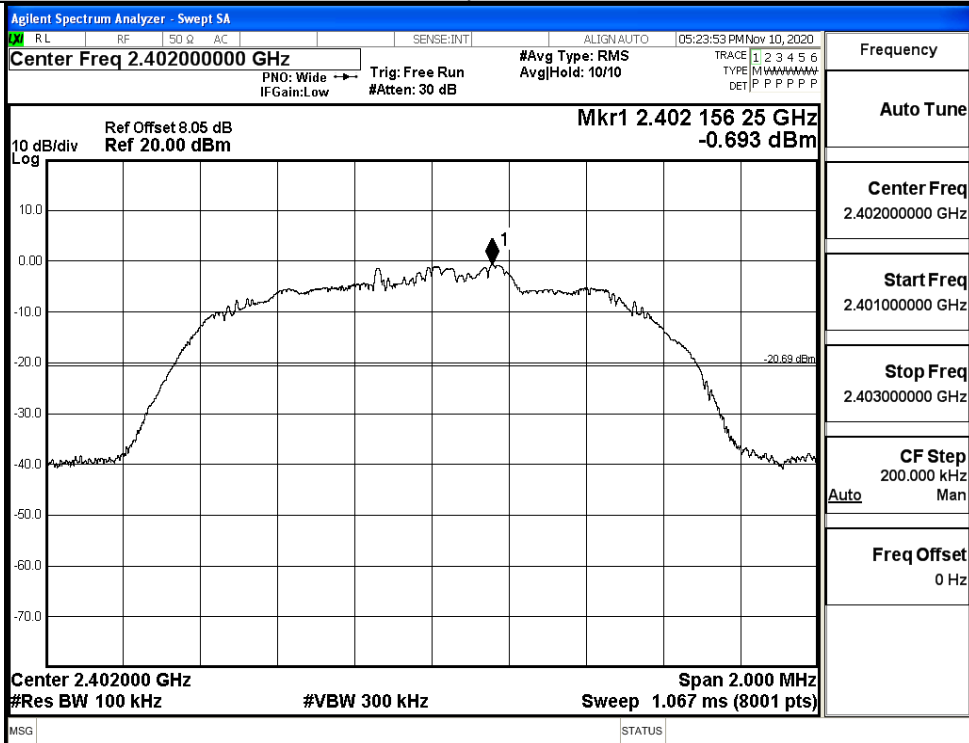


$\pi/4$ DQPSK\_HCH\_Graphs

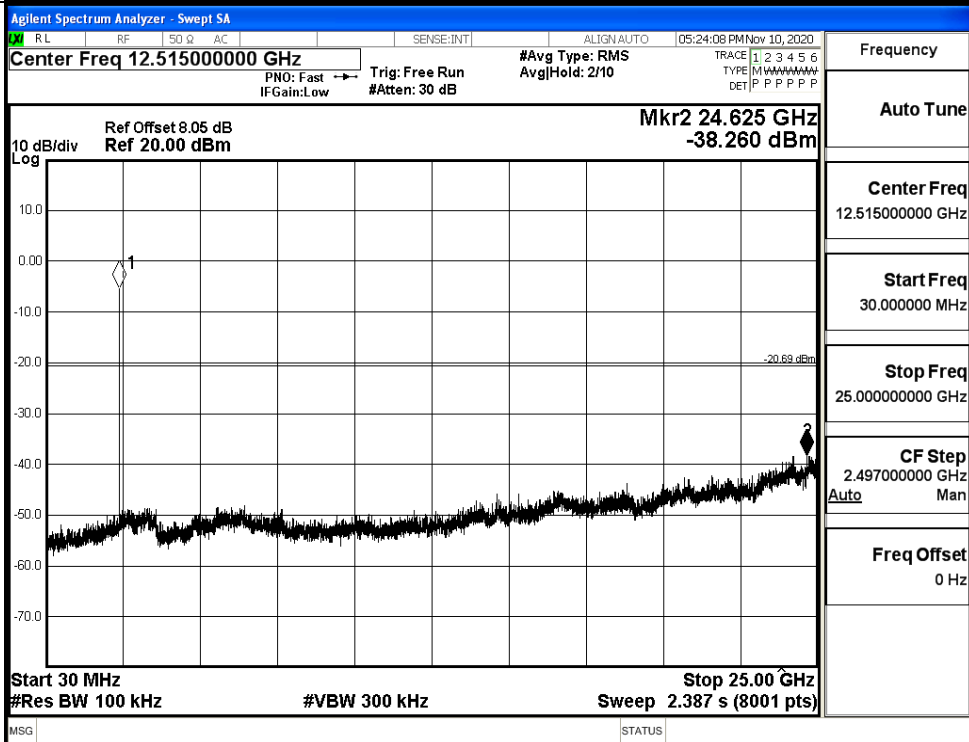


8DPSK\_LCH\_Graphs

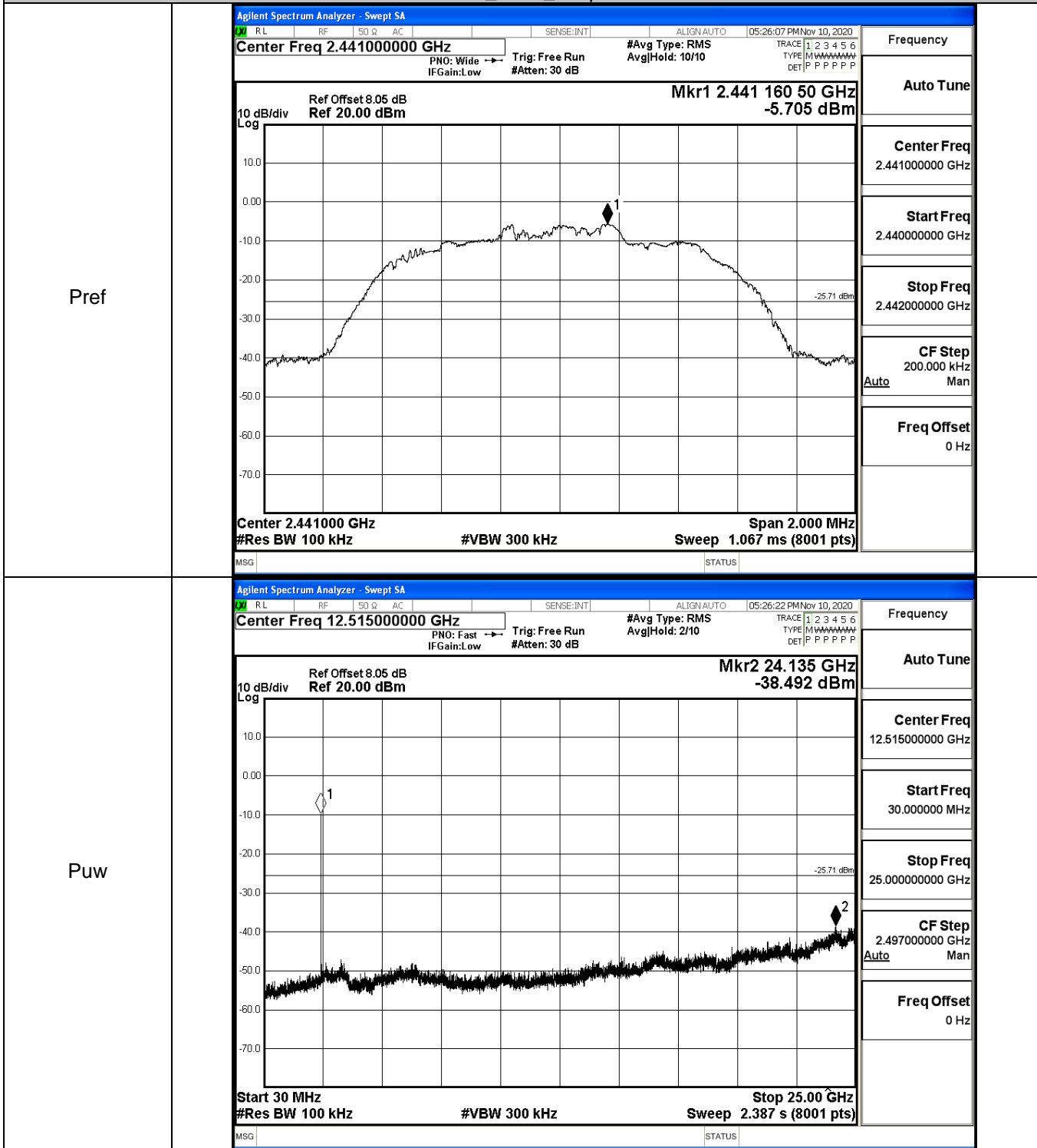
Pref



Puw

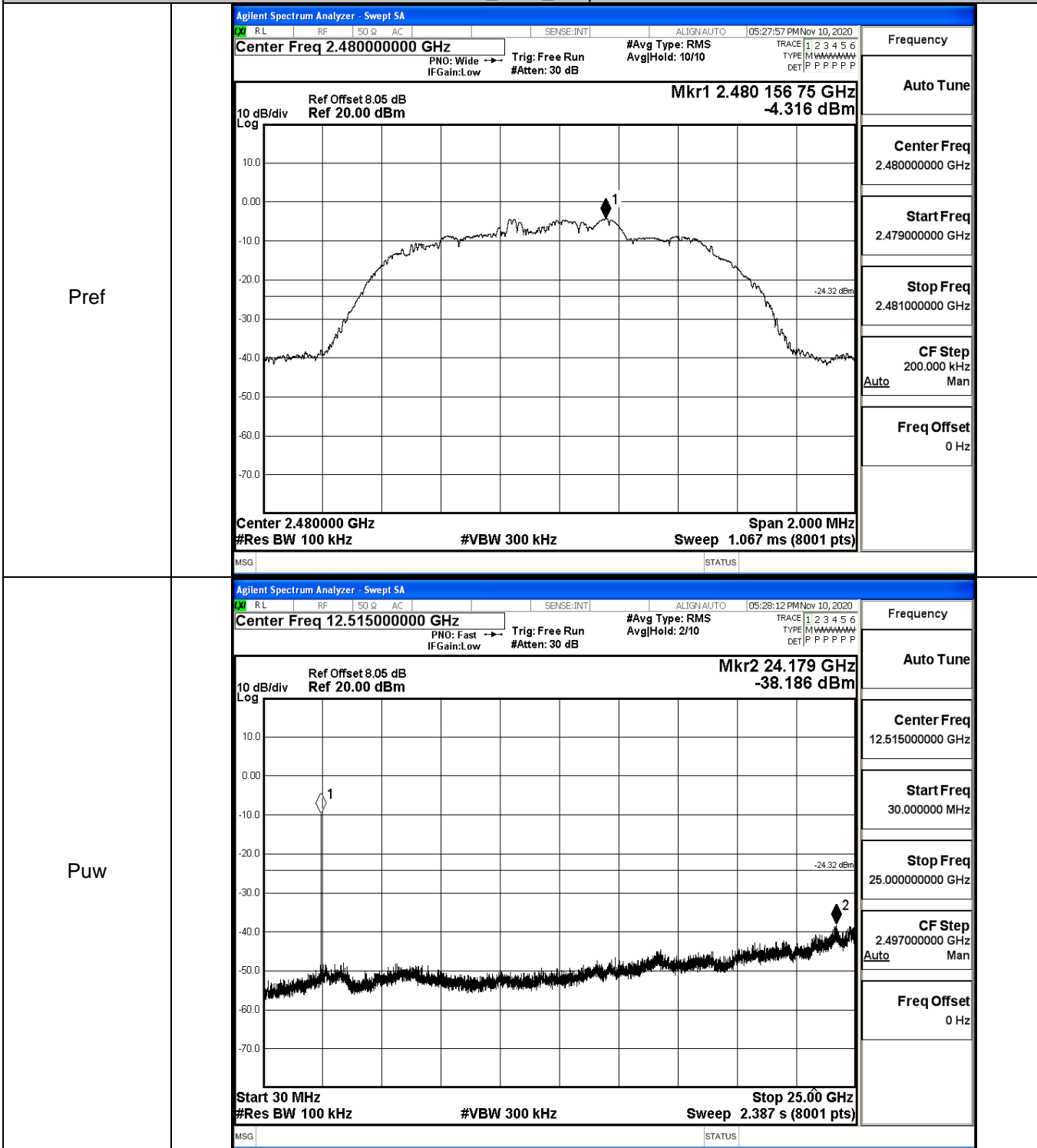


8DPSK\_MCH\_Graphs





8DPSK\_HCH\_Graphs

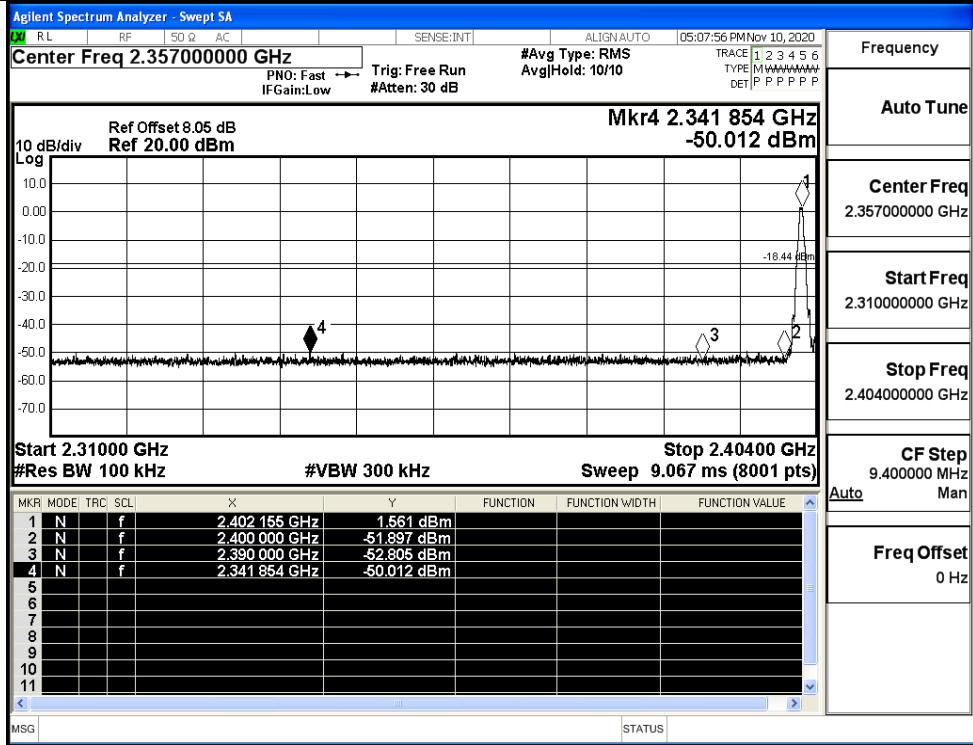


**A.7 Band-edge for RF Conducted Emissions**

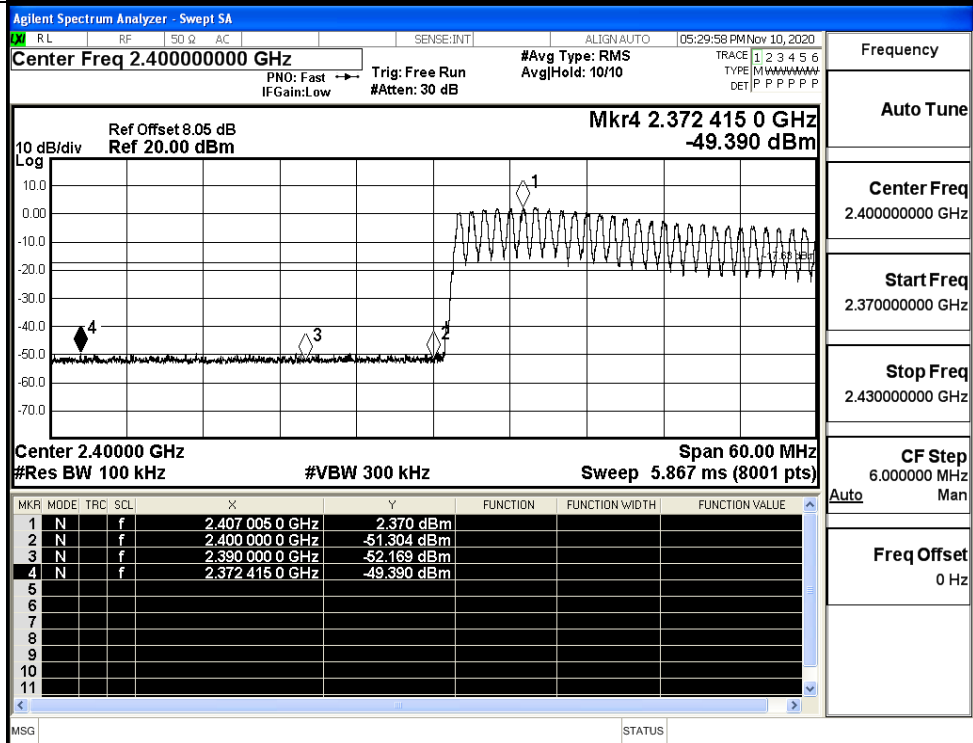
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.561	Off	-50.012	-18.44	PASS
			2.370	On	-49.390	-17.63	PASS
	HCH	2480	-2.794	Off	-49.108	-22.79	PASS
			2.339	On	-48.677	-17.66	PASS
π/4DQPSK	LCH	2402	-0.771	Off	-48.701	-20.77	PASS
			0.760	On	-49.034	-19.24	PASS
	HCH	2480	-4.365	Off	-48.530	-24.37	PASS
			-0.332	On	-48.847	-20.33	PASS
8DPSK	LCH	2402	-0.649	Off	-49.688	-20.65	PASS
			0.851	On	-48.878	-19.15	PASS
	HCH	2480	-4.320	Off	-49.291	-24.32	PASS
			0.789	On	-47.848	-19.21	PASS

Test Graphs

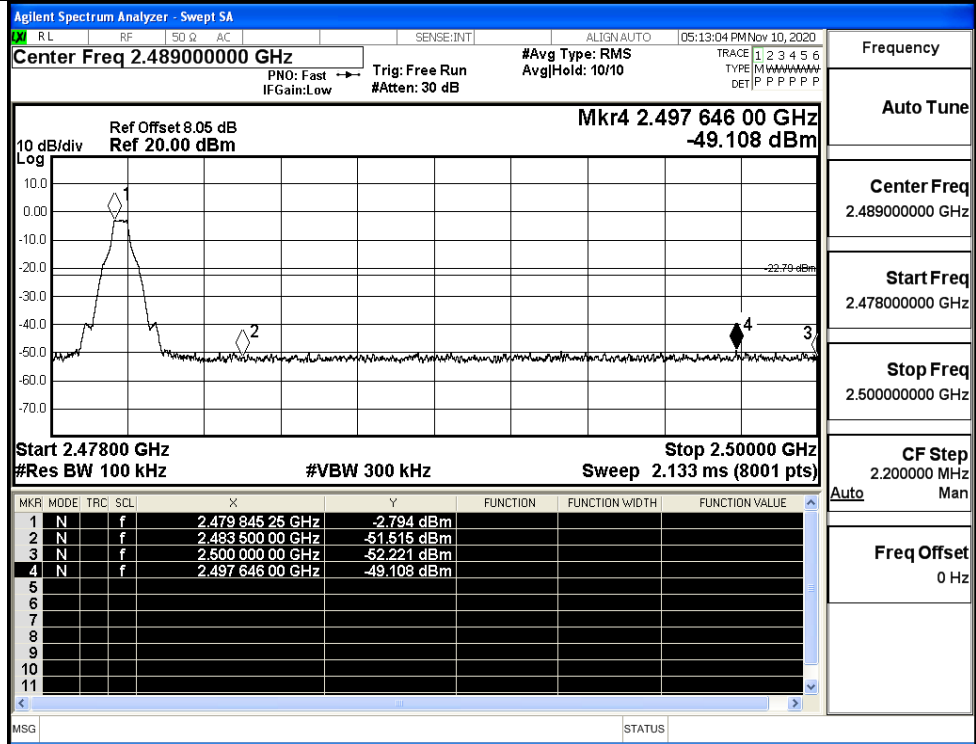
GFSK/LCH/No Hop



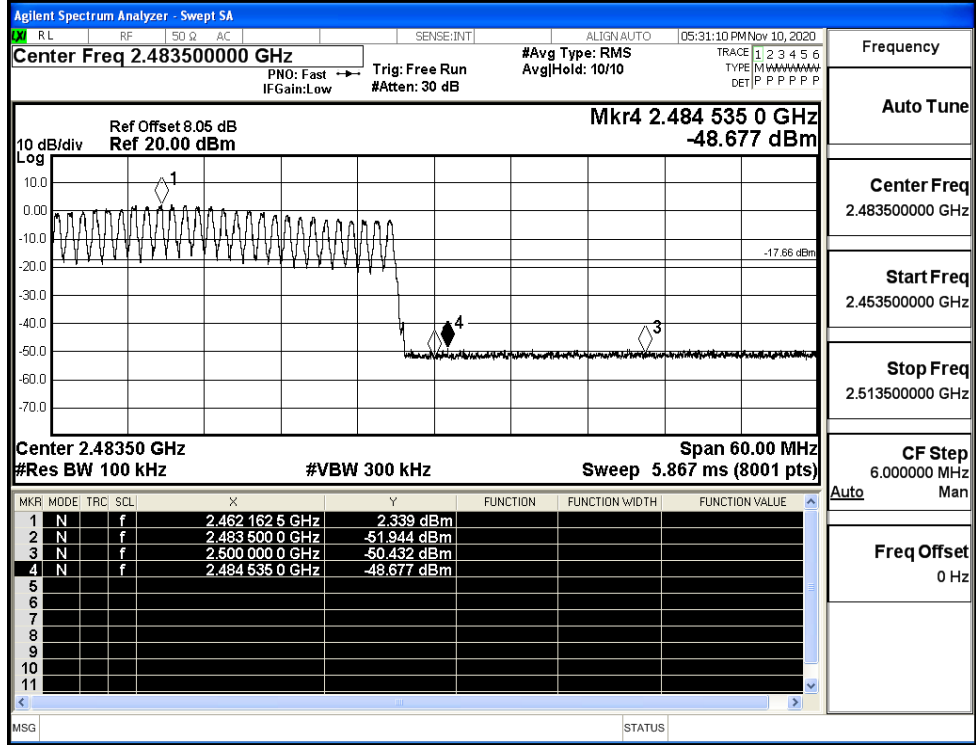
GFSK/LCH/Hop



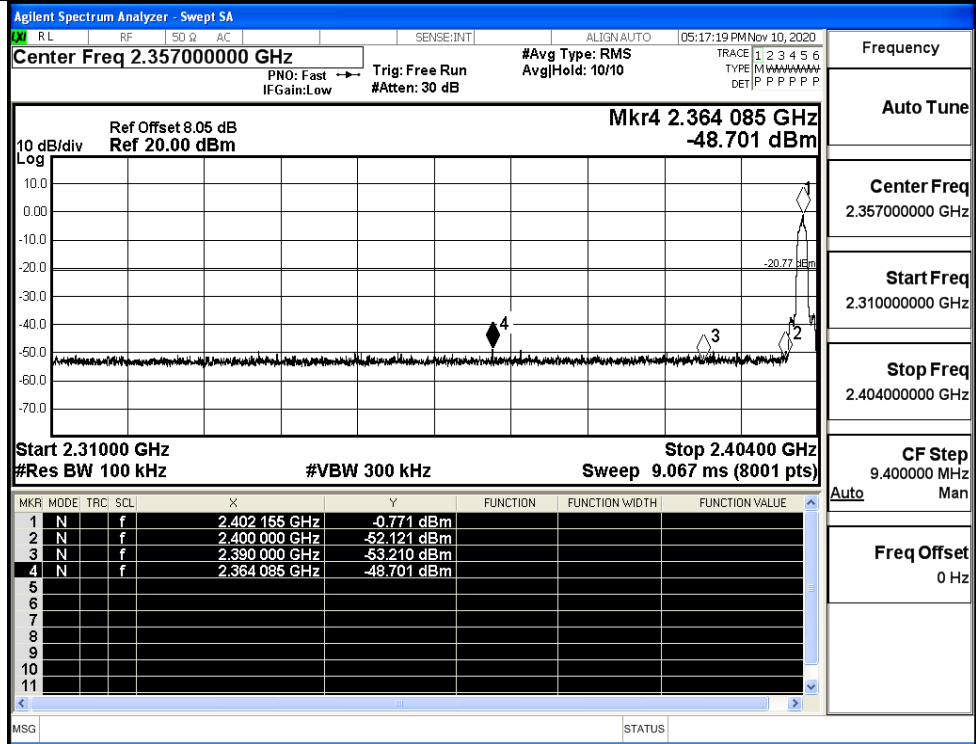
GFSK/HCH/No Hop



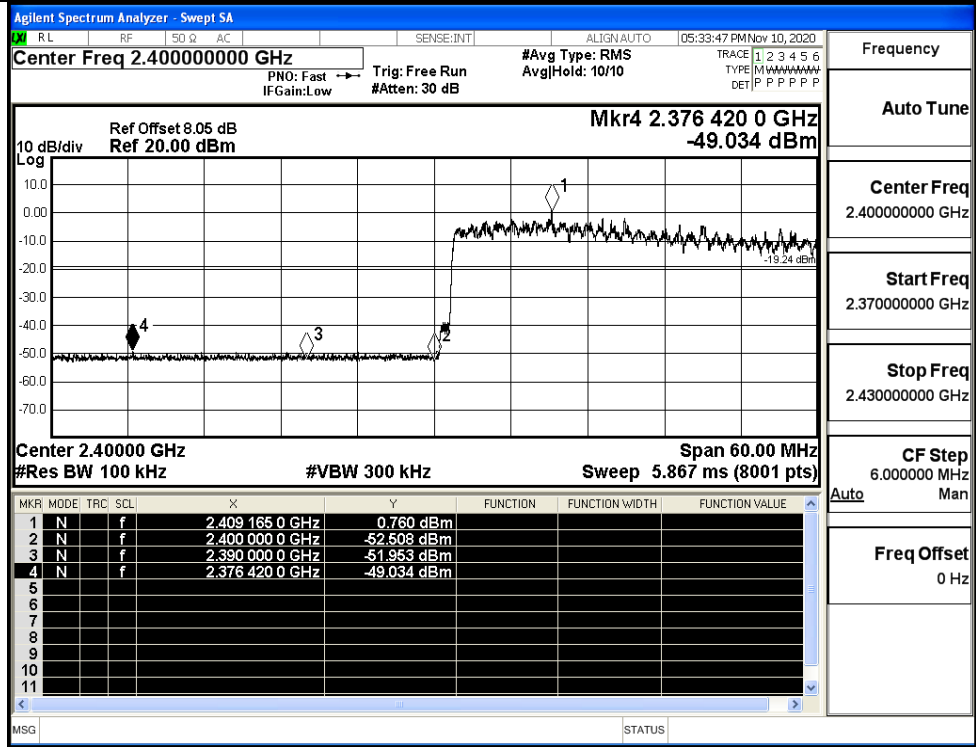
GFSK/HCH/Hop



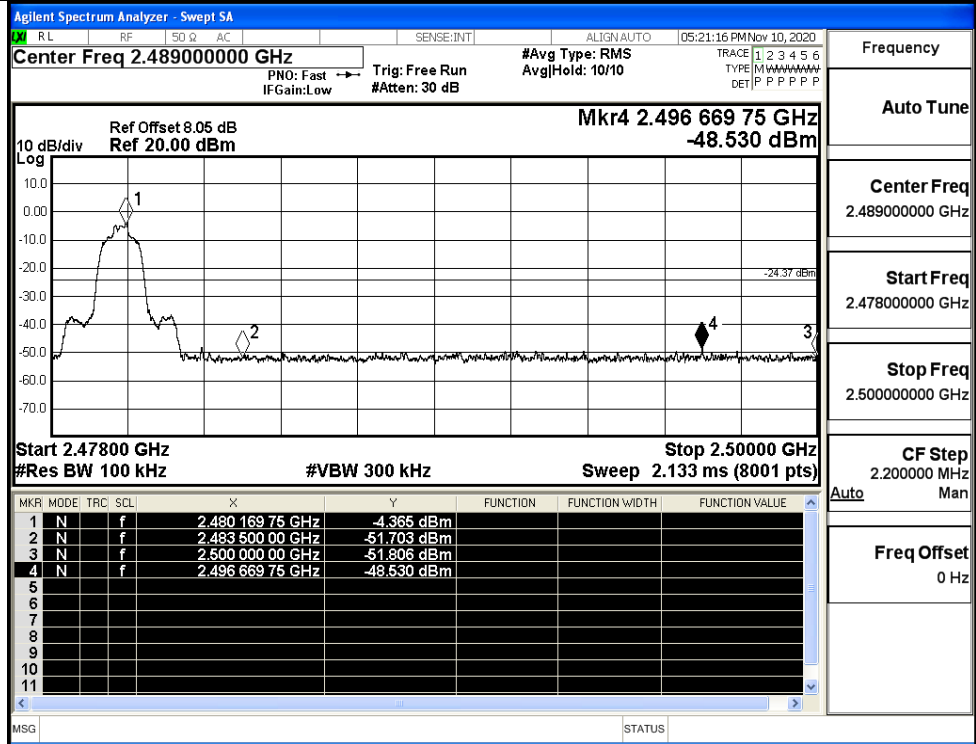
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ DQPSK/LCH/Hop

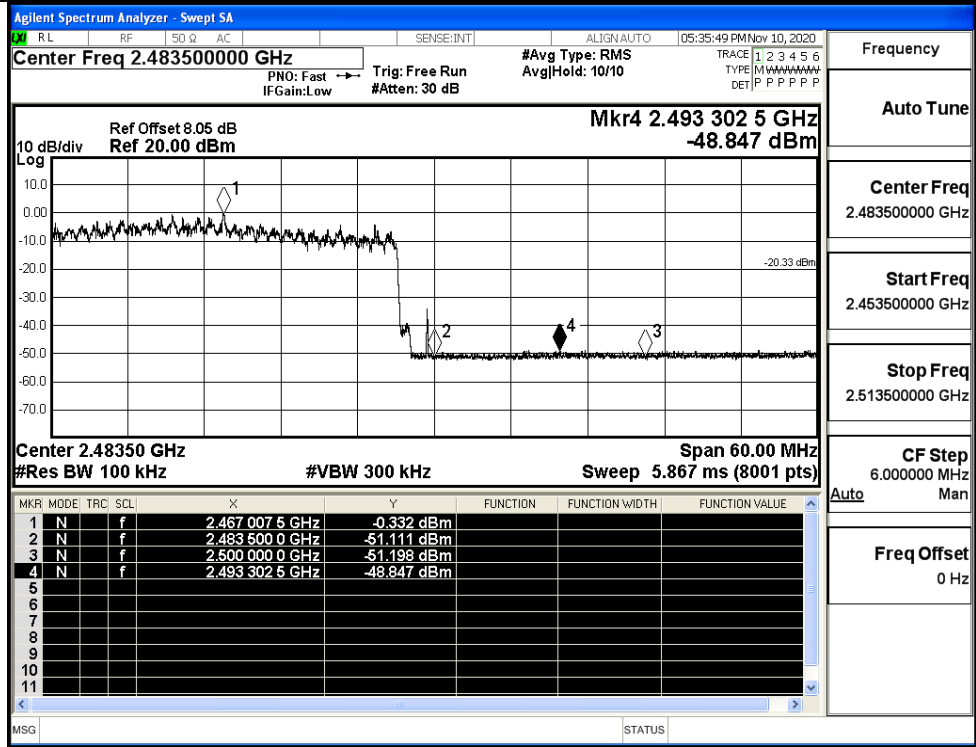


$\pi/4$ DQPSK/HCH/No Hop



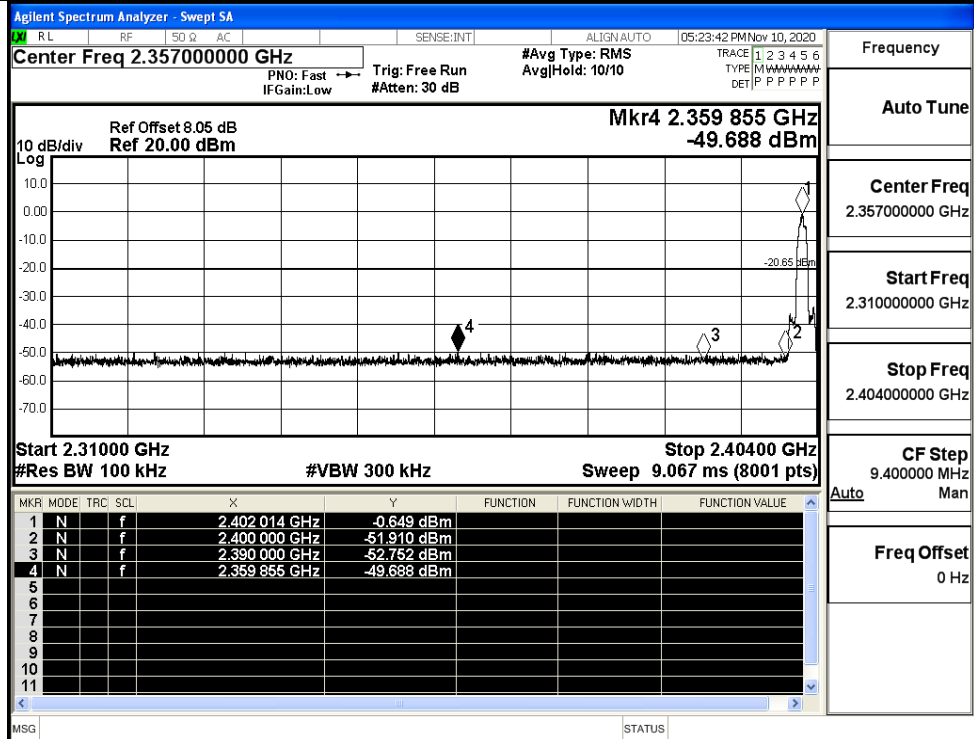
Frequency  
Auto Tune  
Center Freq  
2.489000000 GHz  
Start Freq  
2.478000000 GHz  
Stop Freq  
2.500000000 GHz  
CF Step  
2.200000 MHz  
Freq Offset  
0 Hz

$\pi/4$ DQPSK/HCH/Hop



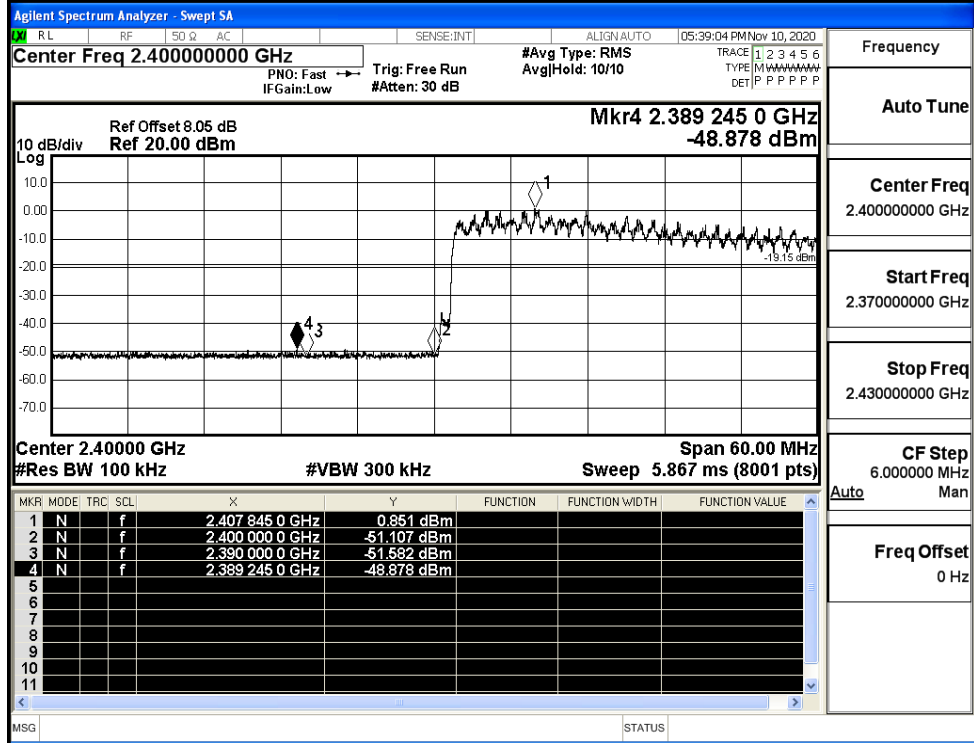
Frequency  
Auto Tune  
Center Freq  
2.483500000 GHz  
Start Freq  
2.463500000 GHz  
Stop Freq  
2.513500000 GHz  
CF Step  
6.000000 MHz  
Freq Offset  
0 Hz

8DPSK/LCH/No Hop



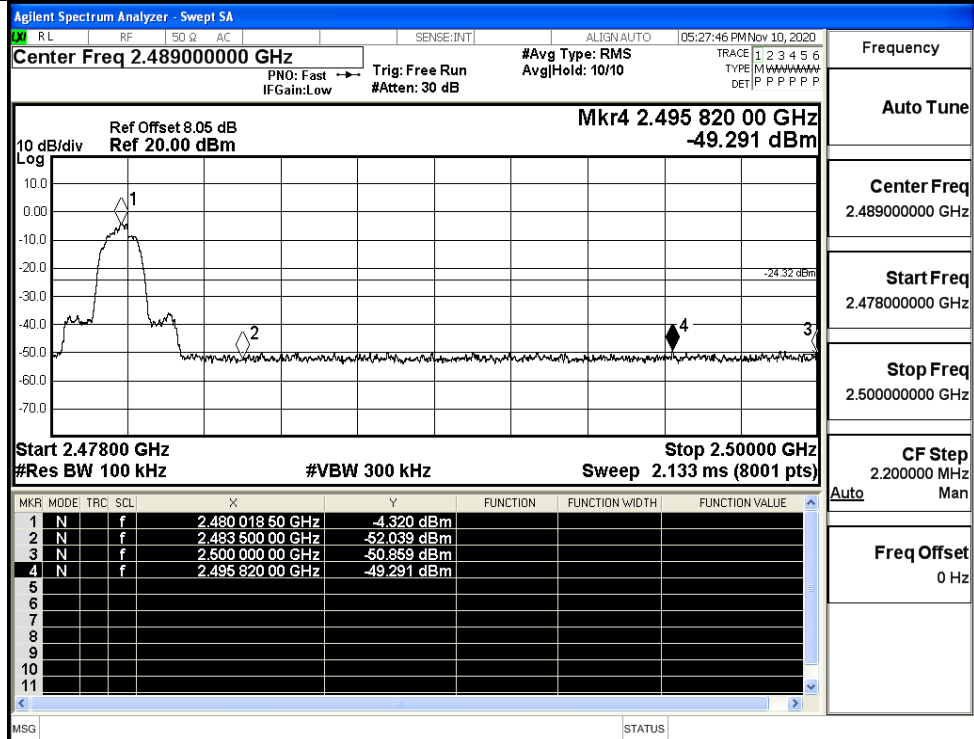
Frequency  
Auto Tune  
Center Freq  
2.357000000 GHz  
Start Freq  
2.310000000 GHz  
Stop Freq  
2.404000000 GHz  
CF Step  
9.400000 MHz  
Freq Offset  
0 Hz

8DPSK/LCH/Hop



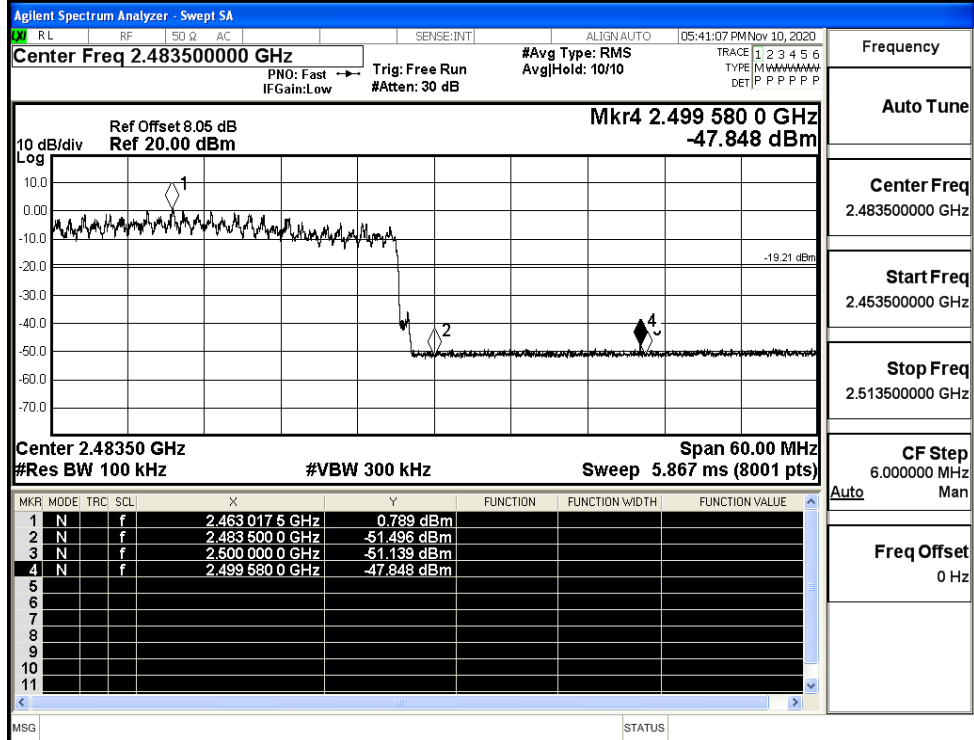
Frequency  
Auto Tune  
Center Freq  
2.400000000 GHz  
Start Freq  
2.370000000 GHz  
Stop Freq  
2.430000000 GHz  
CF Step  
6.000000 MHz  
Freq Offset  
0 Hz

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  
Auto Man  
Freq Offset  
0 Hz

8DPSK/HCH/Hop



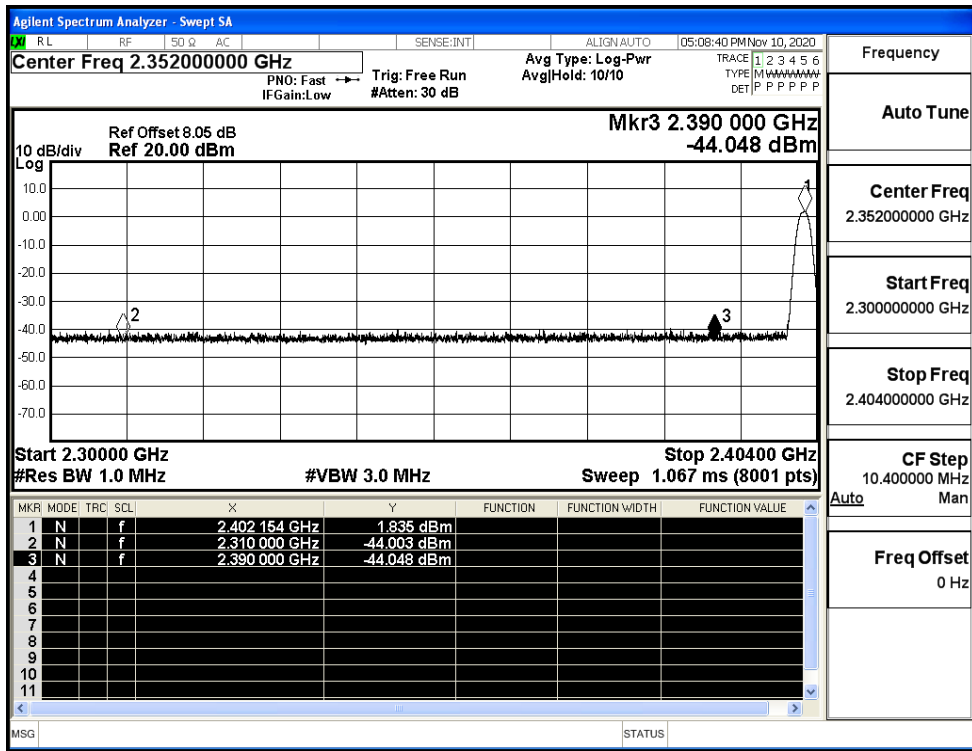
Frequency  
Auto Tune  
Center Freq  
2.483500000 GHz  
Start Freq  
2.453500000 GHz  
Stop Freq  
2.513500000 GHz  
CF Step  
6.000000 MHz  
Auto Man  
Freq Offset  
0 Hz



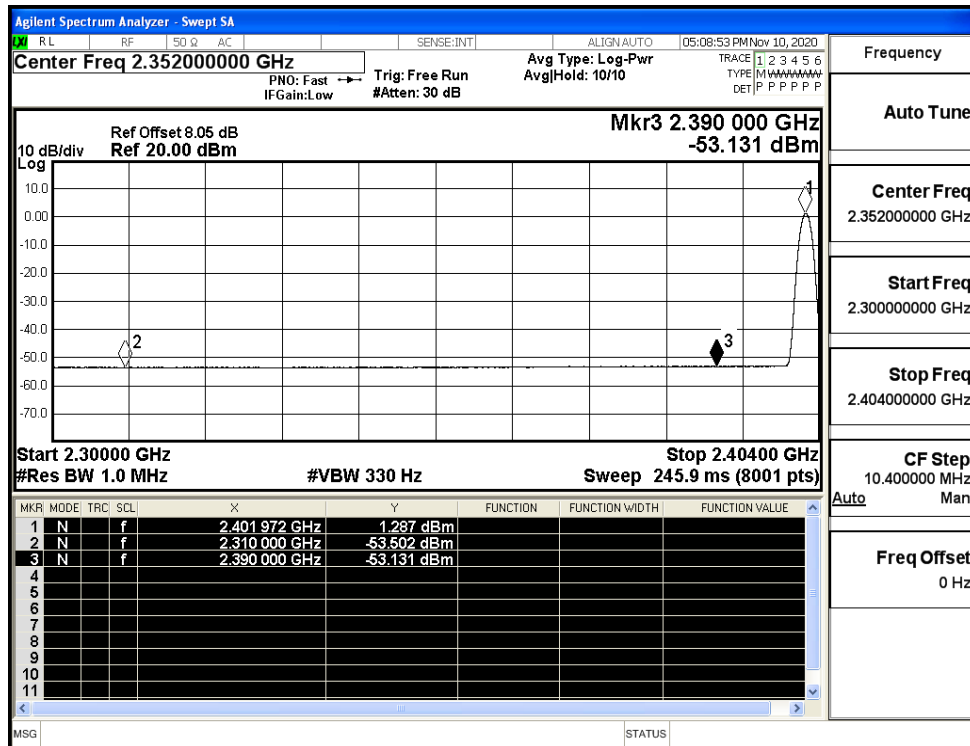
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.00	2.0	0	51.25	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-44.05	2.0	0	51.21	PEAK	74	PASS
	Off	2390.0	-53.13	2.0	0	42.13	AV	54	PASS
	Off	2483.5	-42.43	2.0	0	52.82	PEAK	74	PASS
	Off	2483.5	-52.65	2.0	0	42.61	AV	54	PASS
	Off	2500.0	-42.47	2.0	0	52.79	PEAK	74	PASS
	Off	2500.0	-52.48	2.0	0	42.78	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.97	2.0	0	52.29	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-42.88	2.0	0	52.37	PEAK	74	PASS
	Off	2390.0	-53.01	2.0	0	42.25	AV	54	PASS
	Off	2483.5	-42.54	2.0	0	52.72	PEAK	74	PASS
	Off	2483.5	-52.62	2.0	0	42.64	AV	54	PASS
	Off	2500.0	-43.11	2.0	0	52.15	PEAK	74	PASS
	Off	2500.0	-52.53	2.0	0	42.73	AV	54	PASS
8DPSK	Off	2310.0	-43.09	2.0	0	52.16	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-43.27	2.0	0	51.98	PEAK	74	PASS
	Off	2390.0	-53.21	2.0	0	42.05	AV	54	PASS
	Off	2483.5	-42.34	2.0	0	52.92	PEAK	74	PASS
	Off	2483.5	-52.46	2.0	0	42.80	AV	54	PASS
	Off	2500.0	-43.56	2.0	0	51.70	PEAK	74	PASS
	Off	2500.0	-52.54	2.0	0	42.72	AV	54	PASS

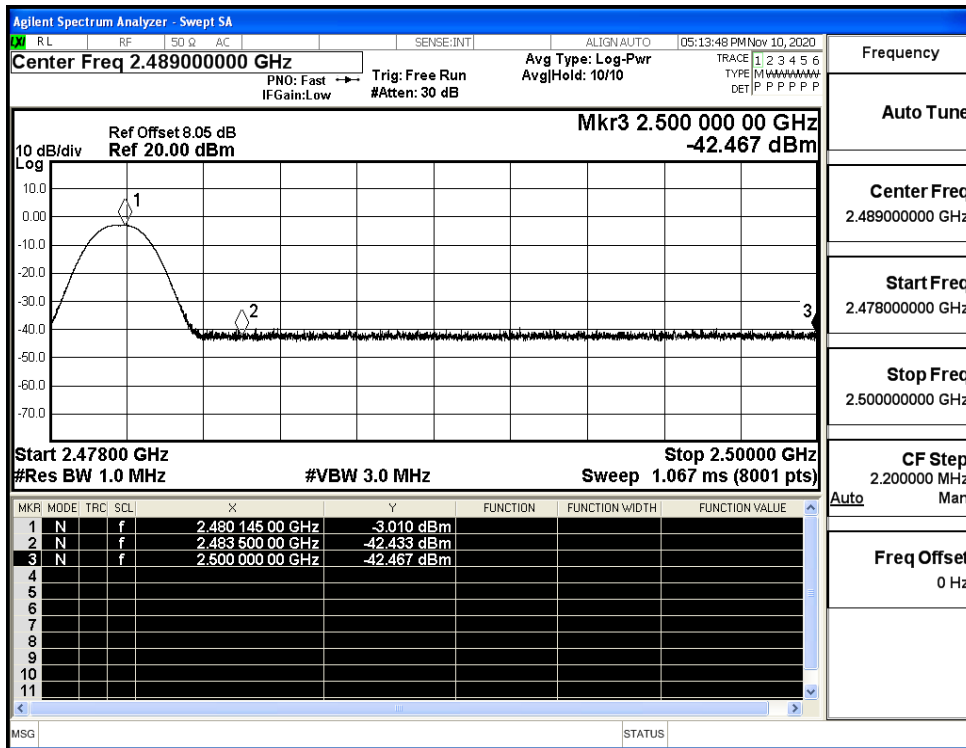
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



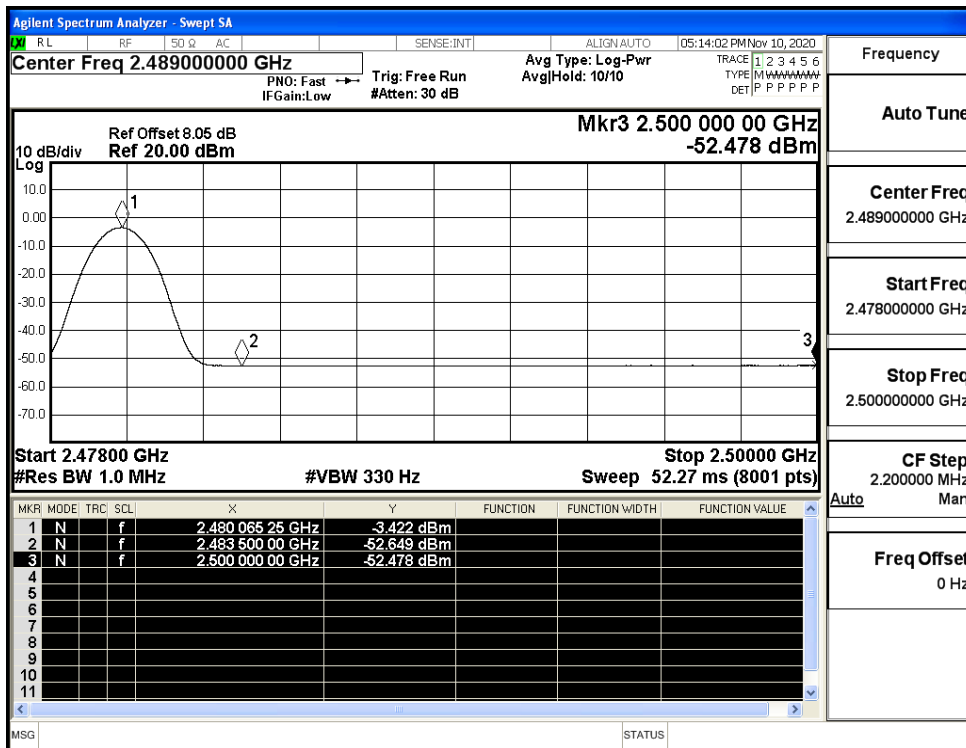
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



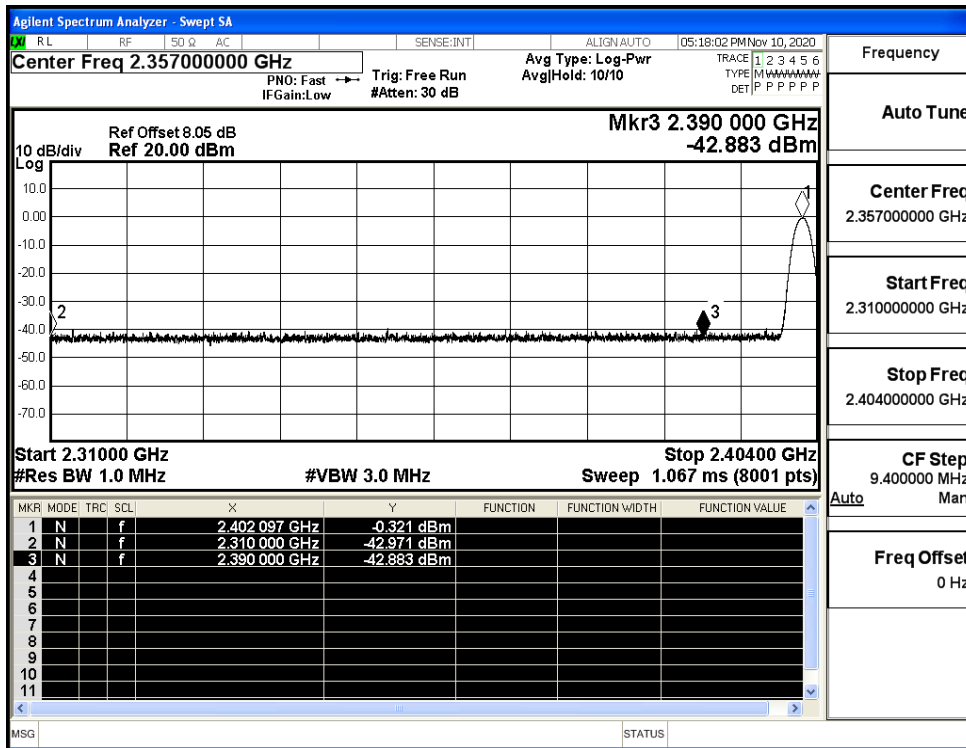
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



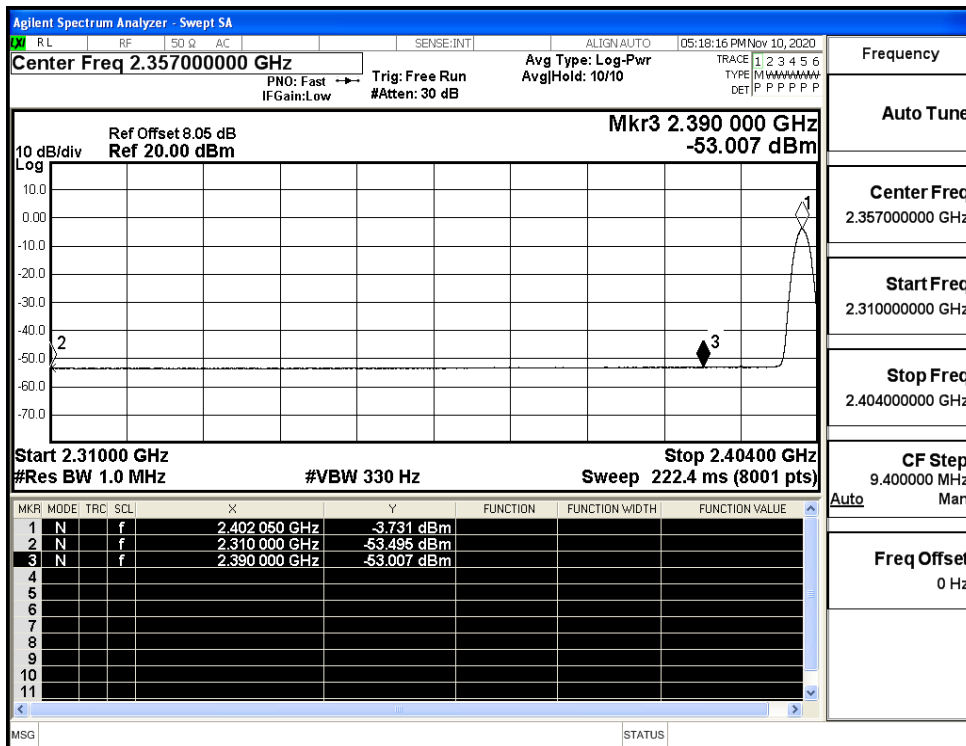
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



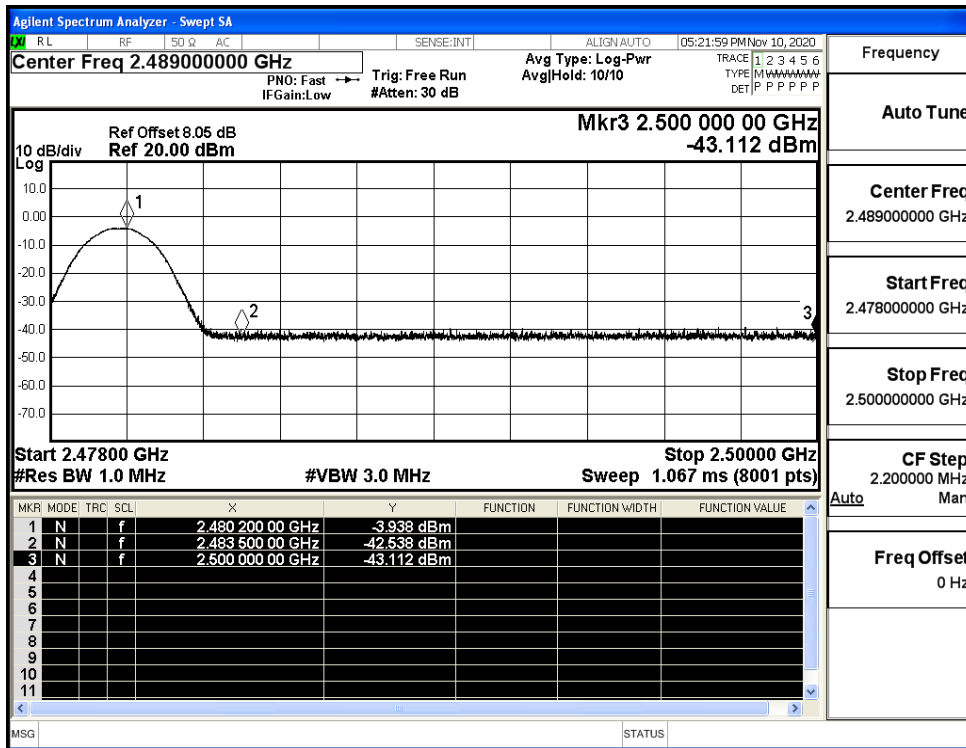
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



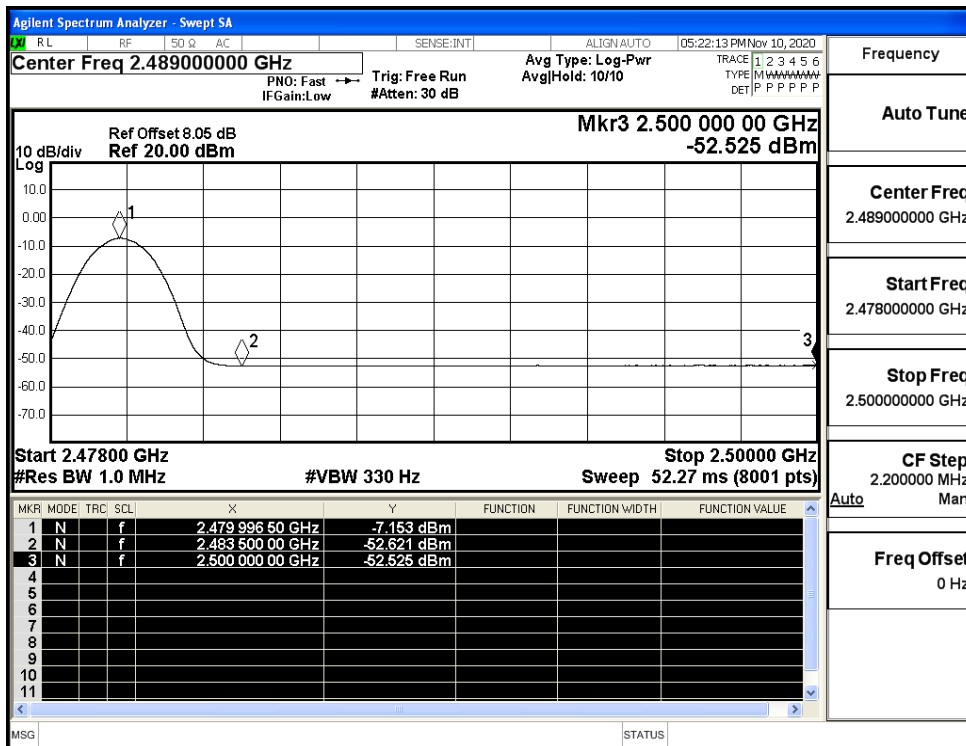
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



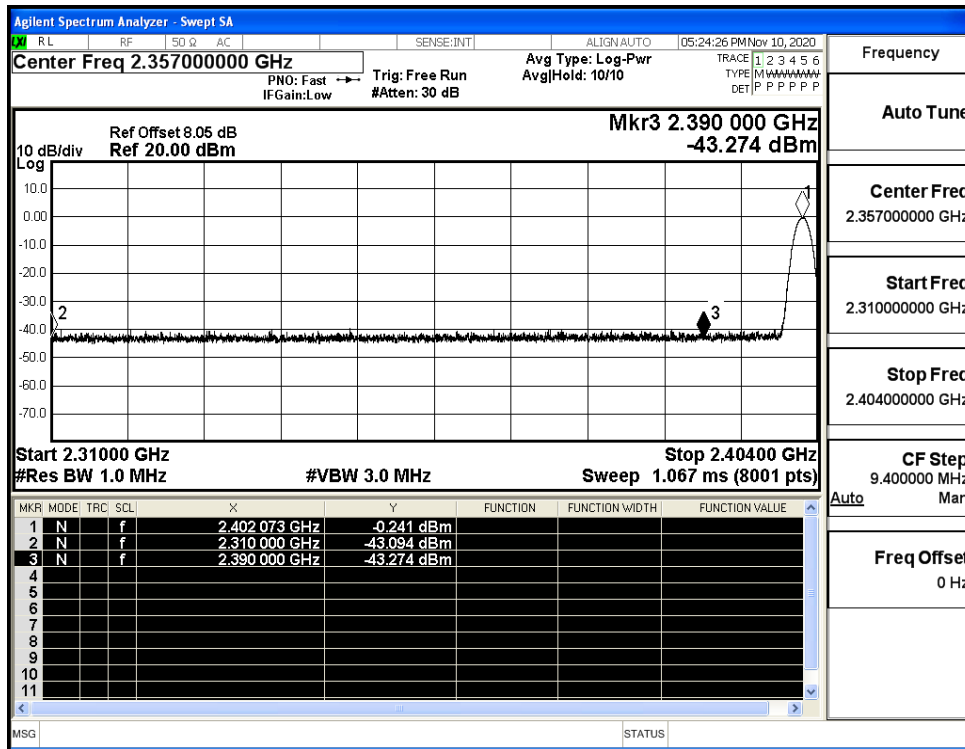
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (High Channel)



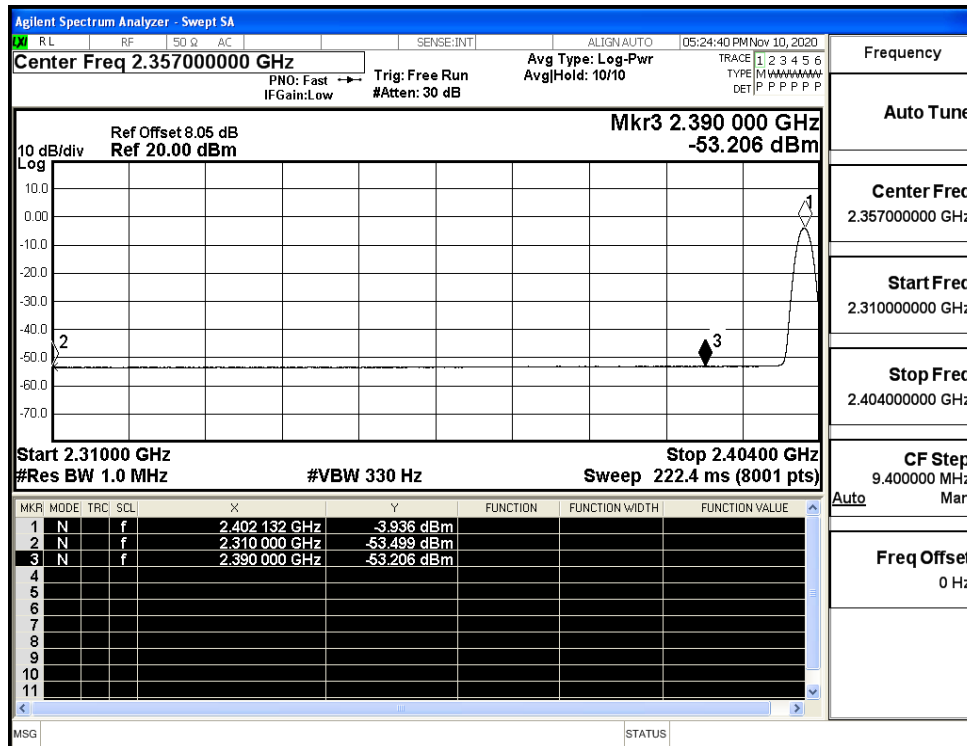
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (High Channel)



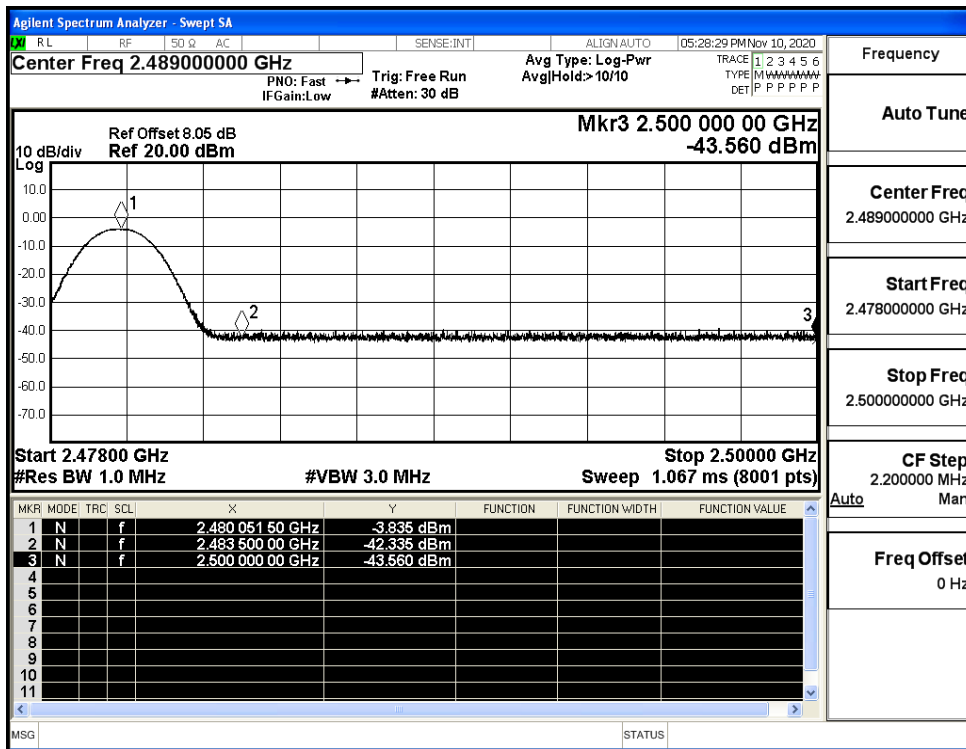
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

