

## Appendix A

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

Product Name: POLAROID BT HEADPHONES

Trade Mark: Polaroid

Test Model: PBT669BK-FDI

#### Environmental Conditions

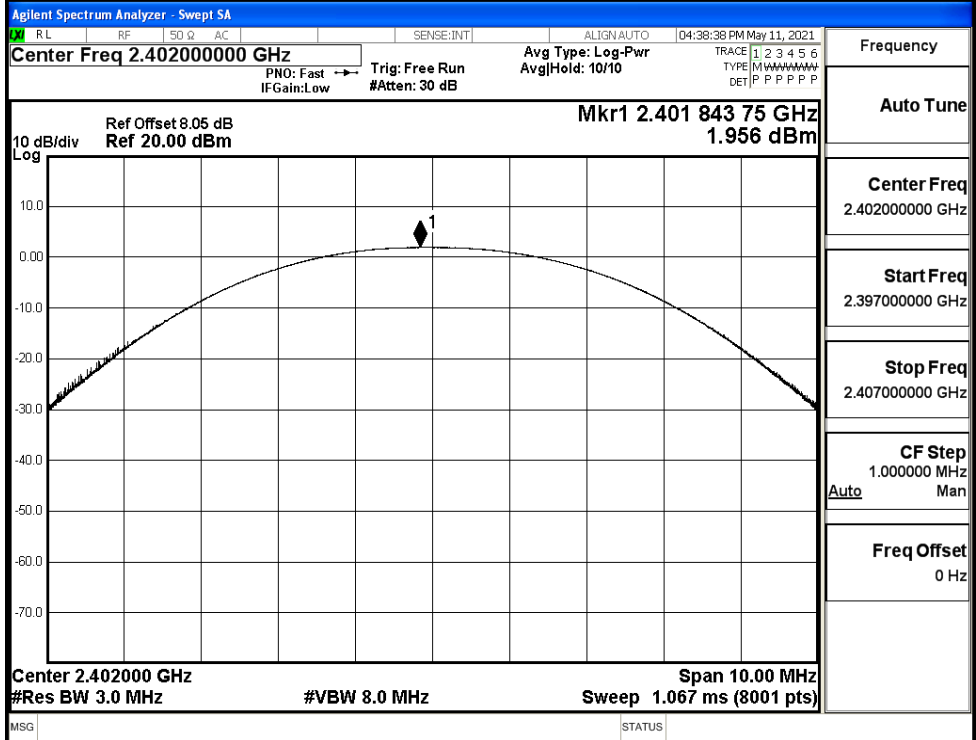
Temperature:	25.1 °C
Relative Humidity:	50.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

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

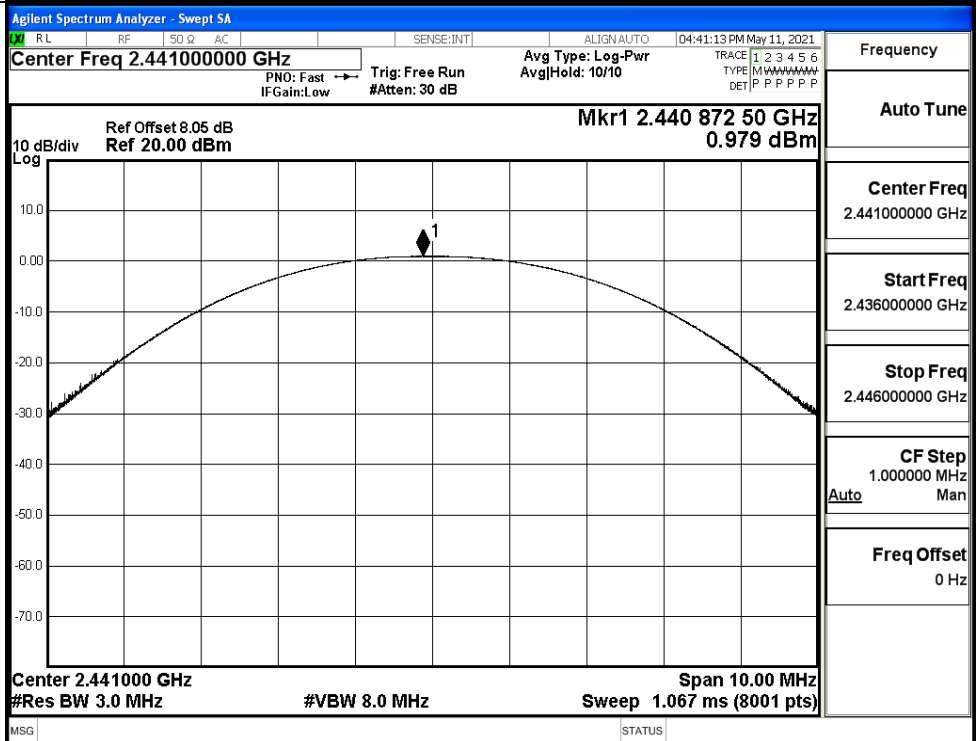
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.956	21	PASS
	MCH	0.979	21	PASS
	HCH	-0.218	21	PASS
$\pi/4$ DQPSK	LCH	4.156	21	PASS
	MCH	3.296	21	PASS
	HCH	2.051	21	PASS
8DPSK	LCH	4.690	21	PASS
	MCH	3.834	21	PASS
	HCH	2.589	21	PASS

Test Graphs

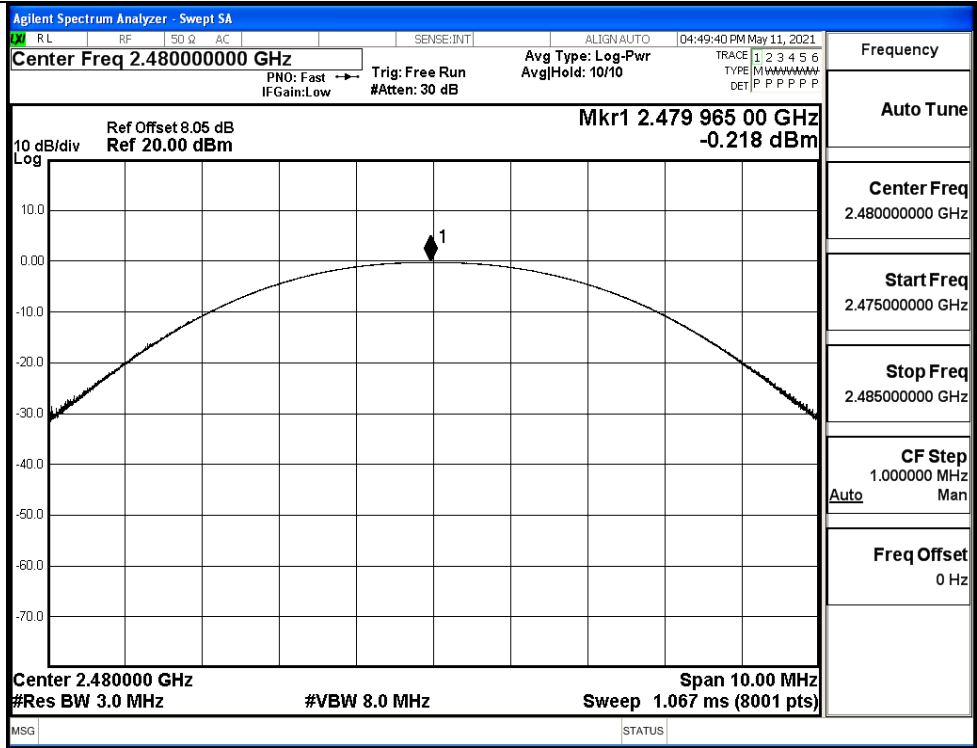
GFSK/LCH



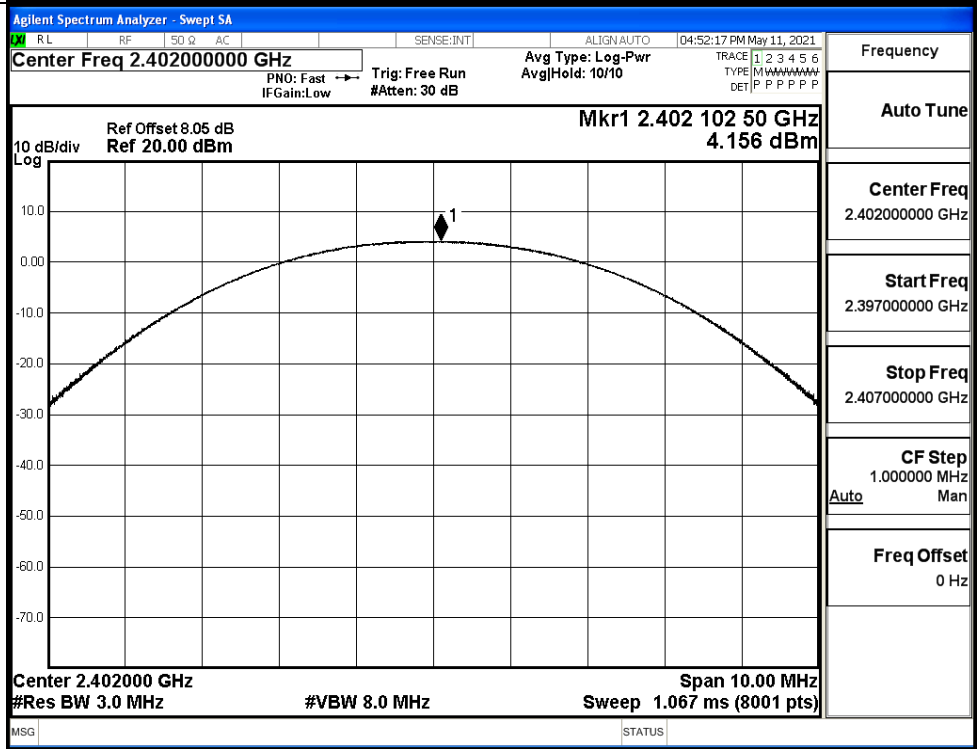
GFSK/MCH



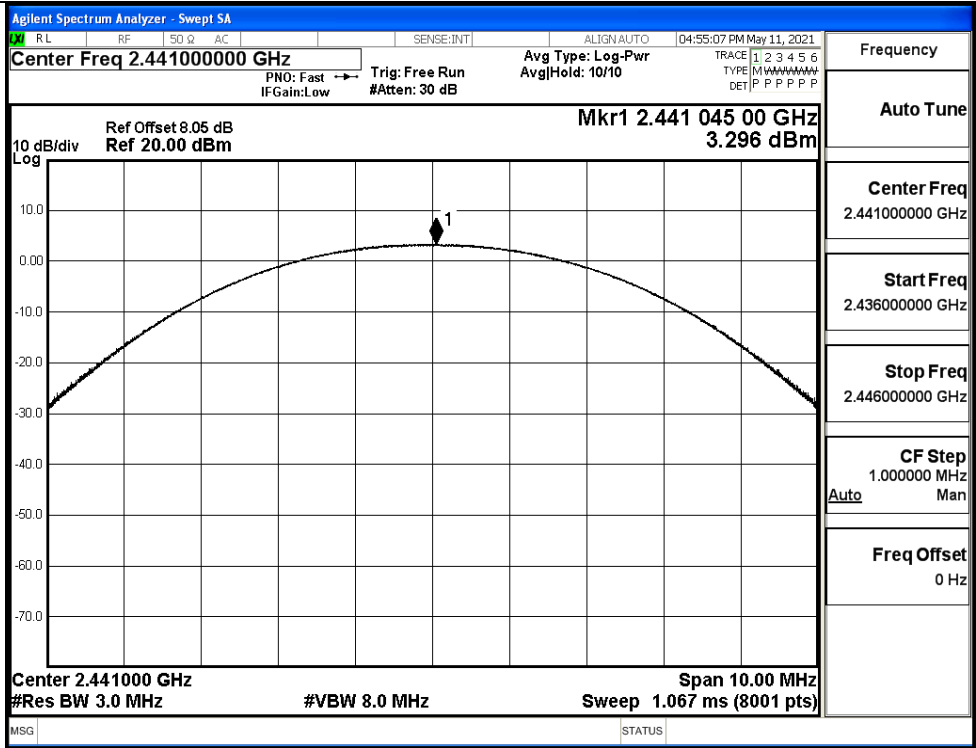
GFSK/HCH



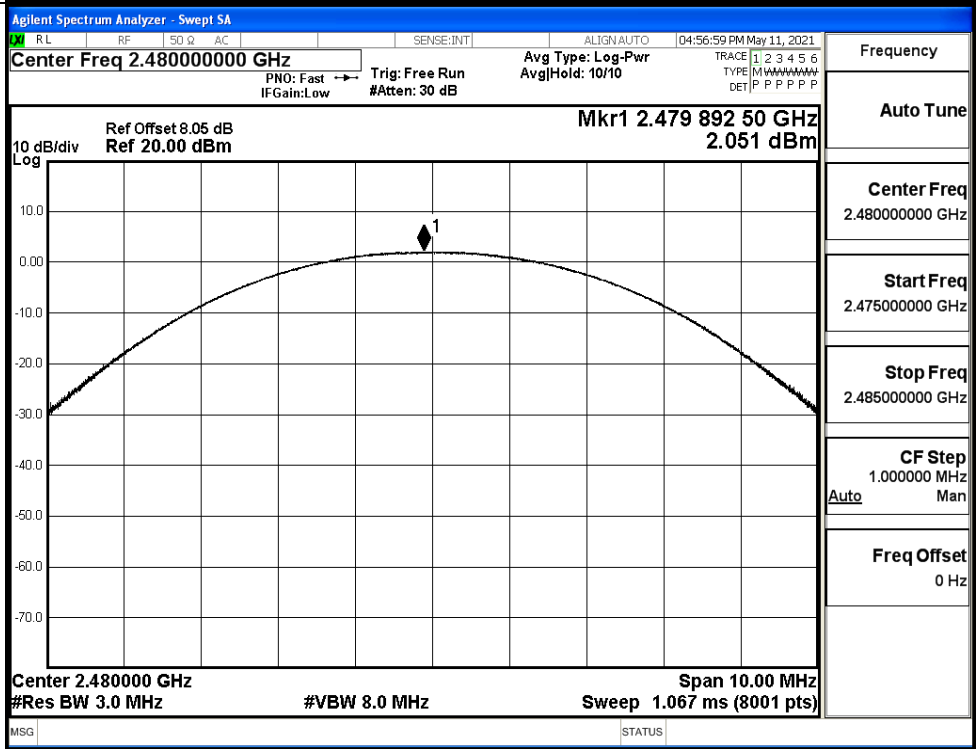
$\pi/4$ DQPSK/LCH



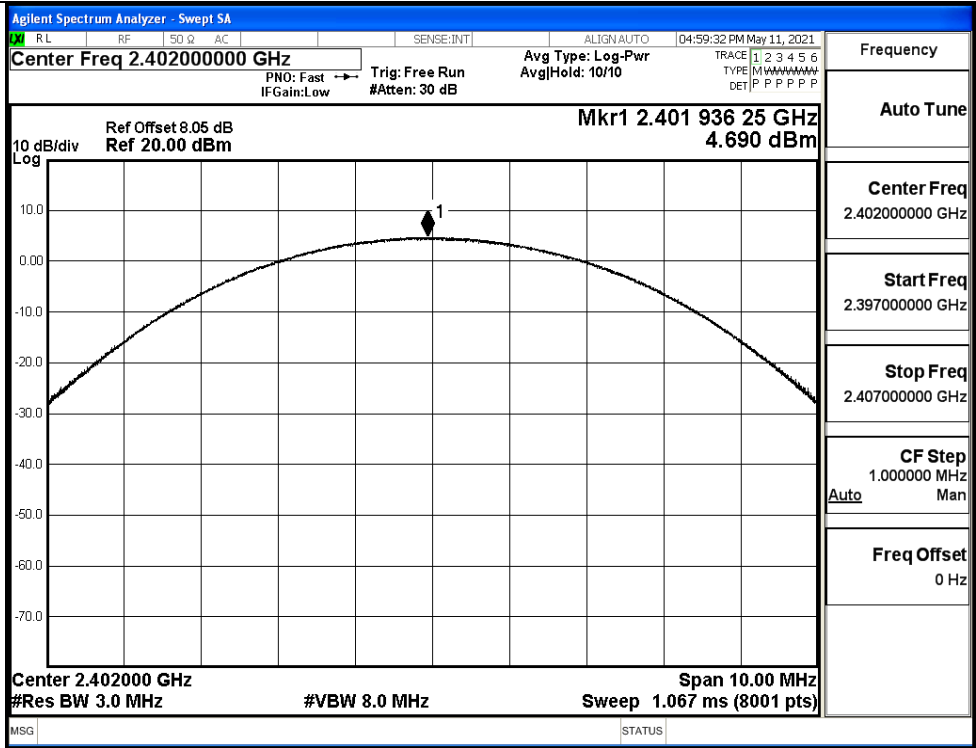
$\pi/4$ DQPSK/MCH



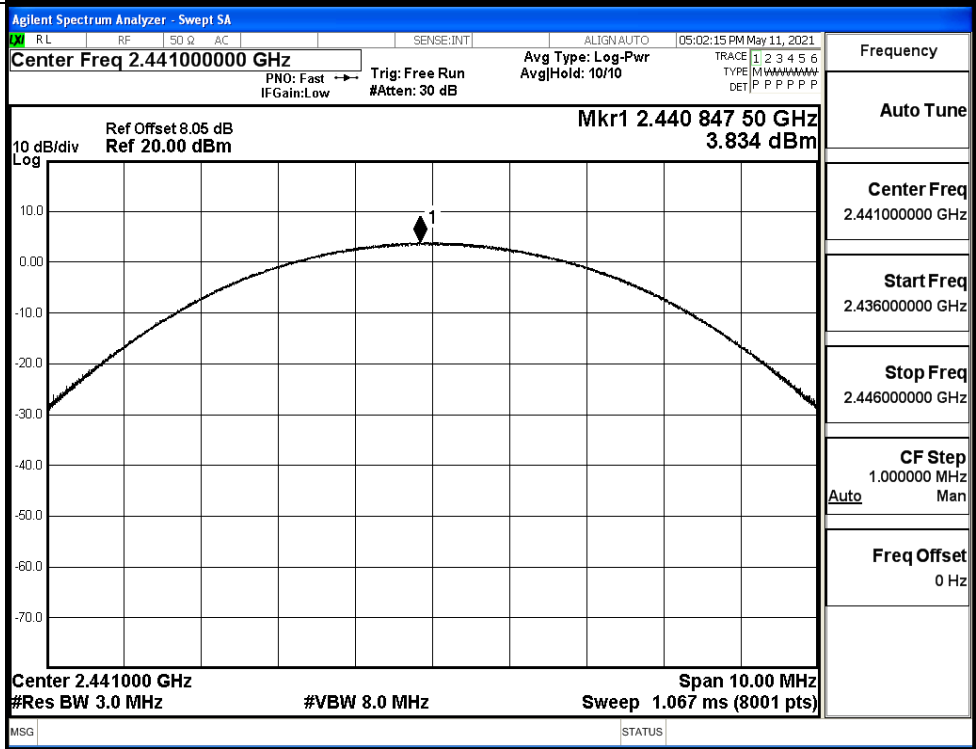
$\pi/4$ DQPSK/HCH



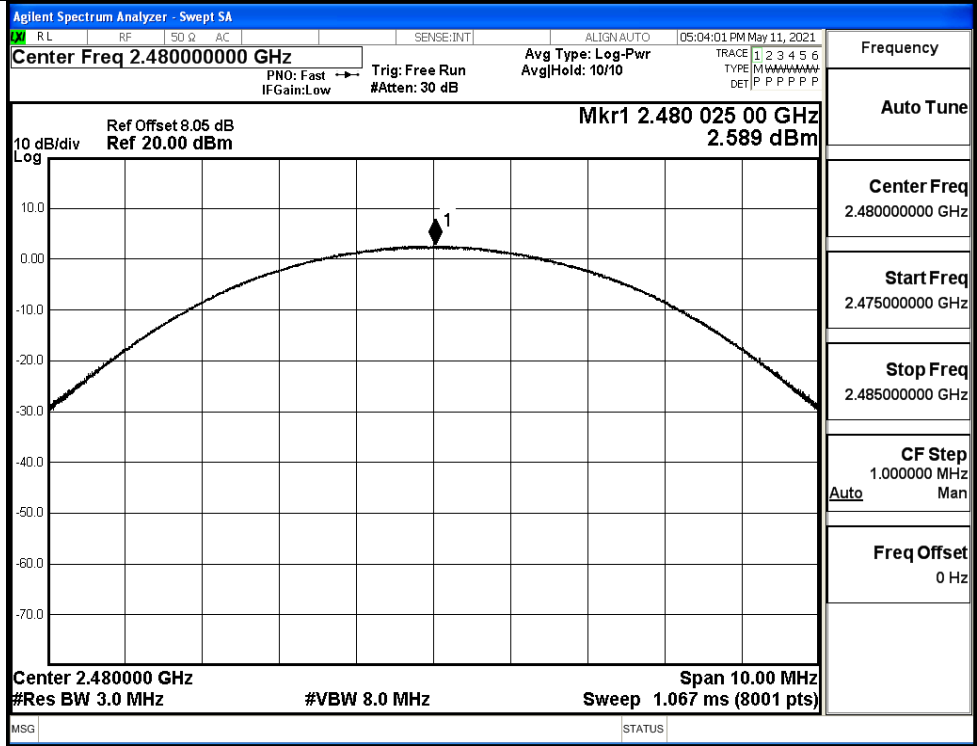
8DPSK/LCH



8DPSK/MCH

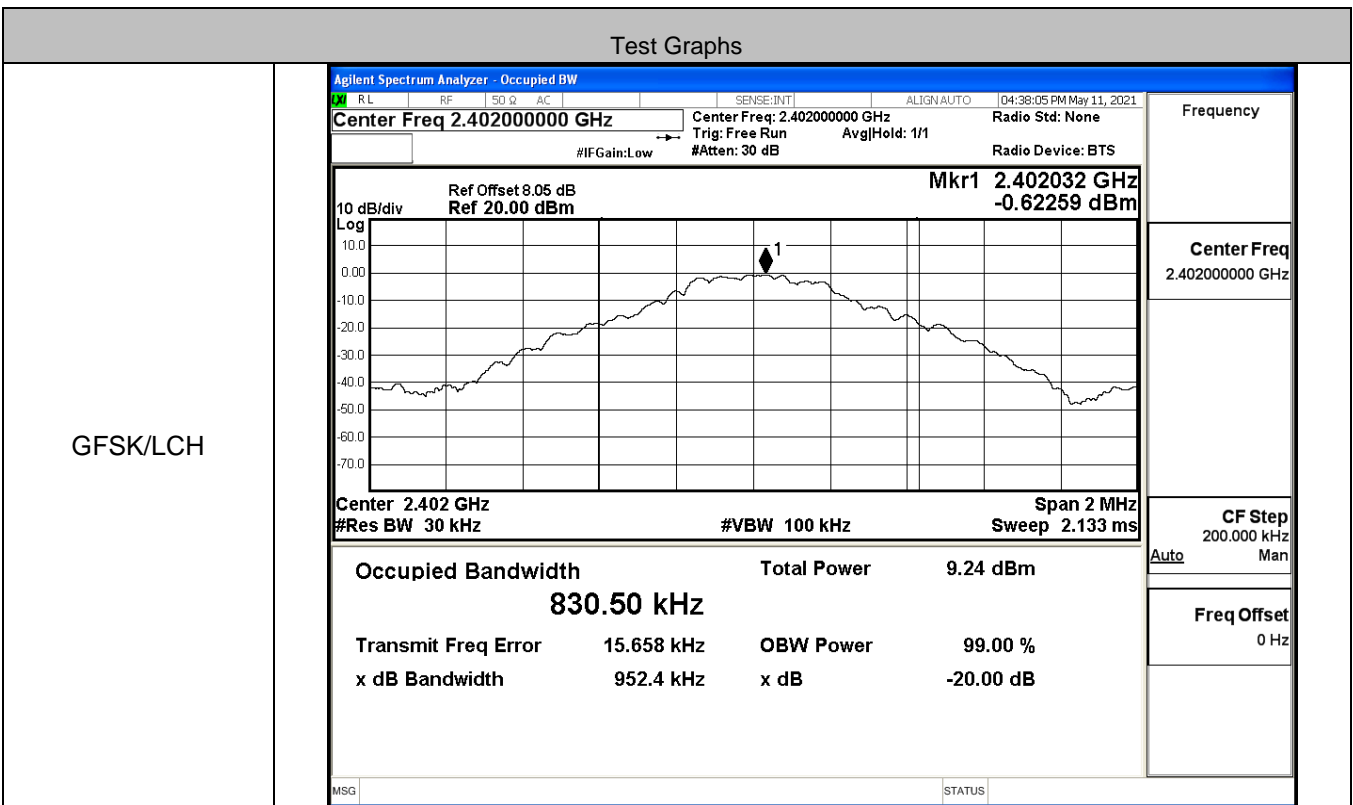


8DPSK/HCH

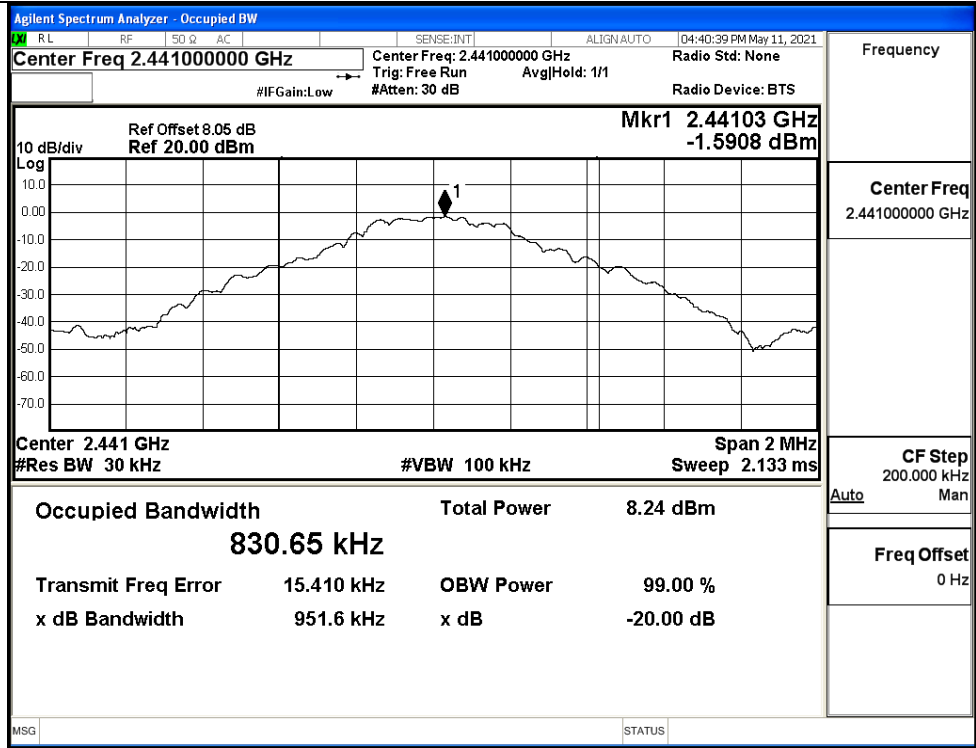


**A.2 20dB Bandwidth**

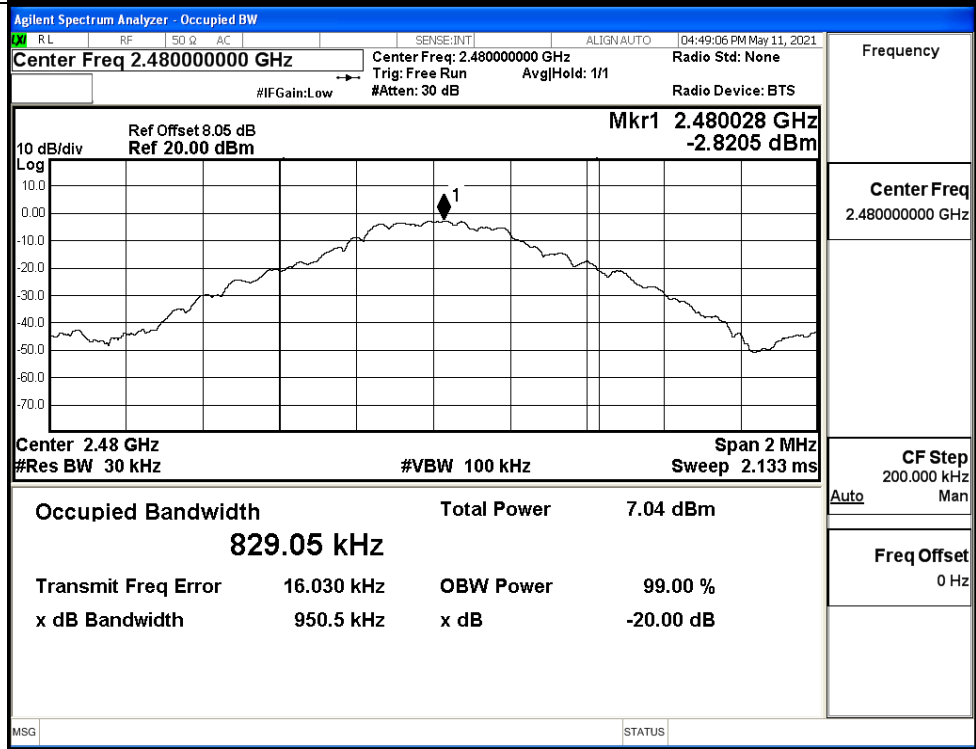
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9524	Not Specified	PASS
	MCH	0.9516	Not Specified	PASS
	HCH	0.9505	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.332	Not Specified	PASS
	MCH	1.332	Not Specified	PASS
	HCH	1.334	Not Specified	PASS
8DPSK	LCH	1.309	Not Specified	PASS
	MCH	1.308	Not Specified	PASS
	HCH	1.308	Not Specified	PASS



GFSK/MCH

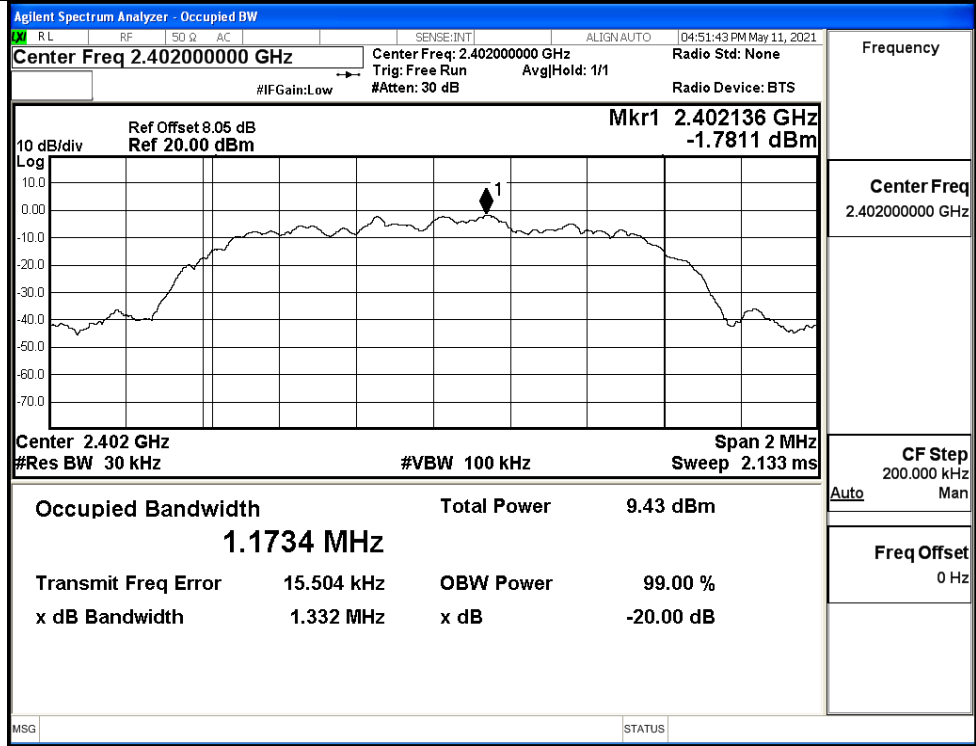


GFSK/HCH

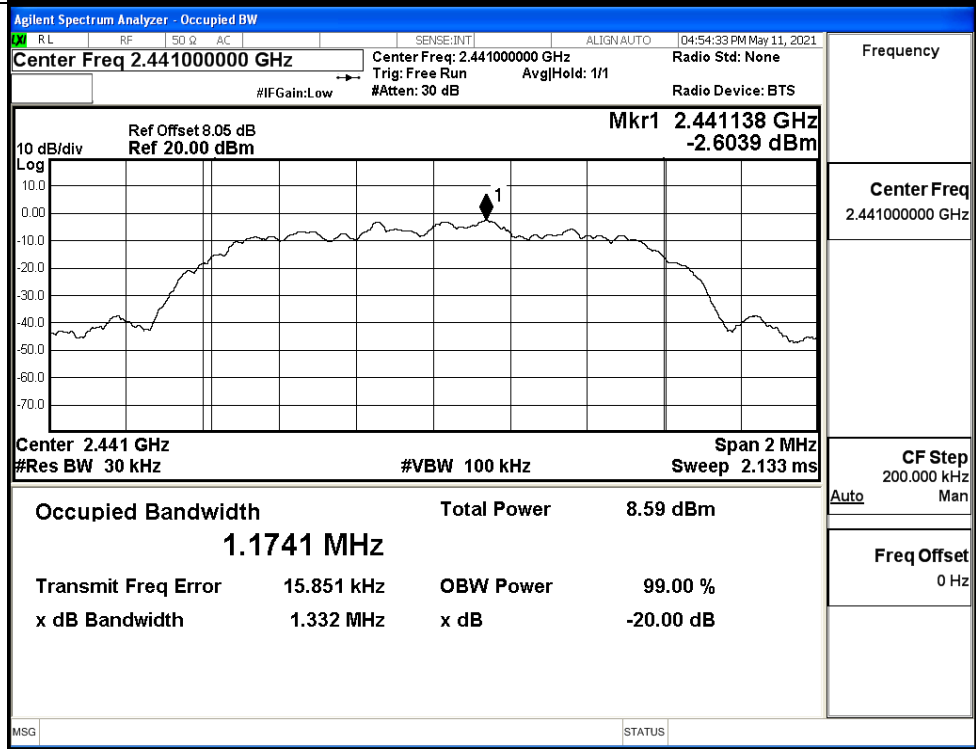




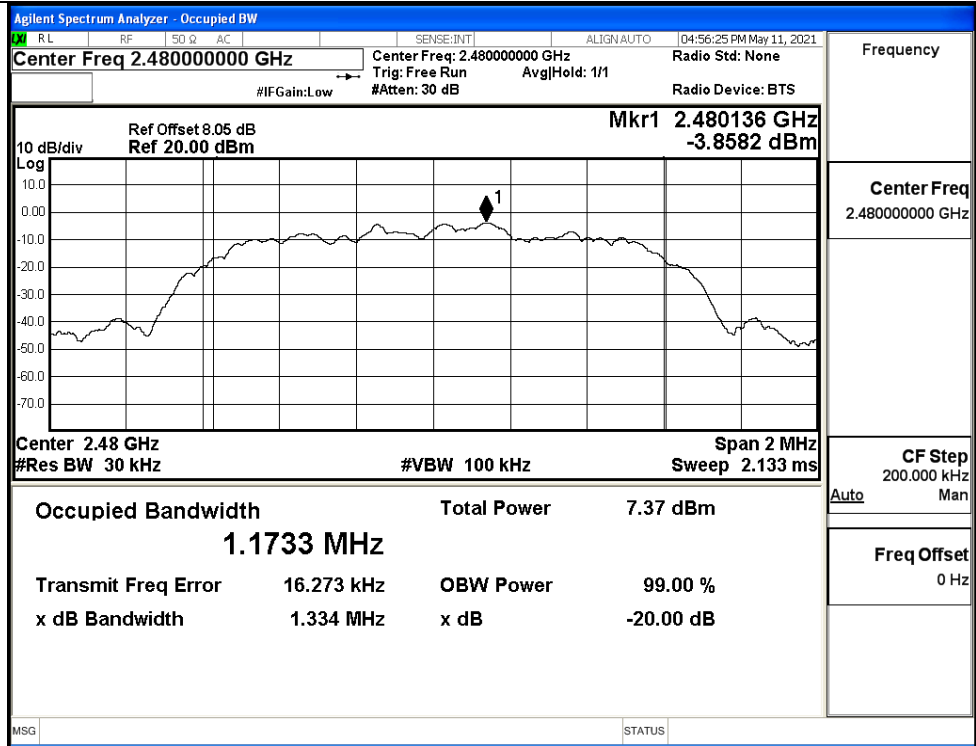
$\pi/4$ DQPSK/LCH



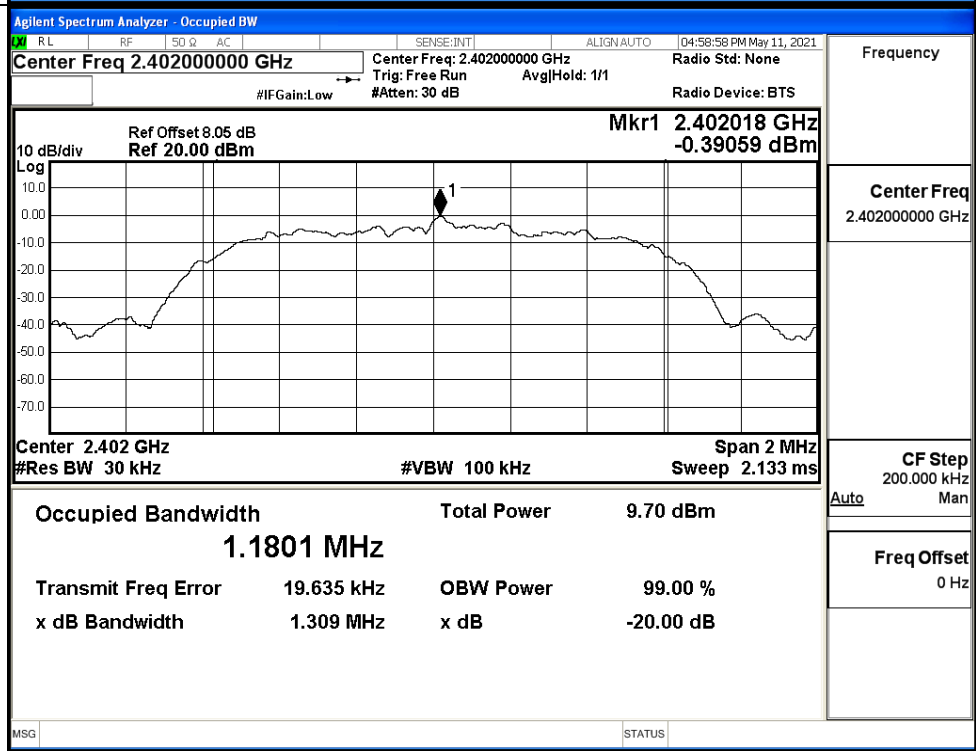
$\pi/4$ DQPSK/MCH



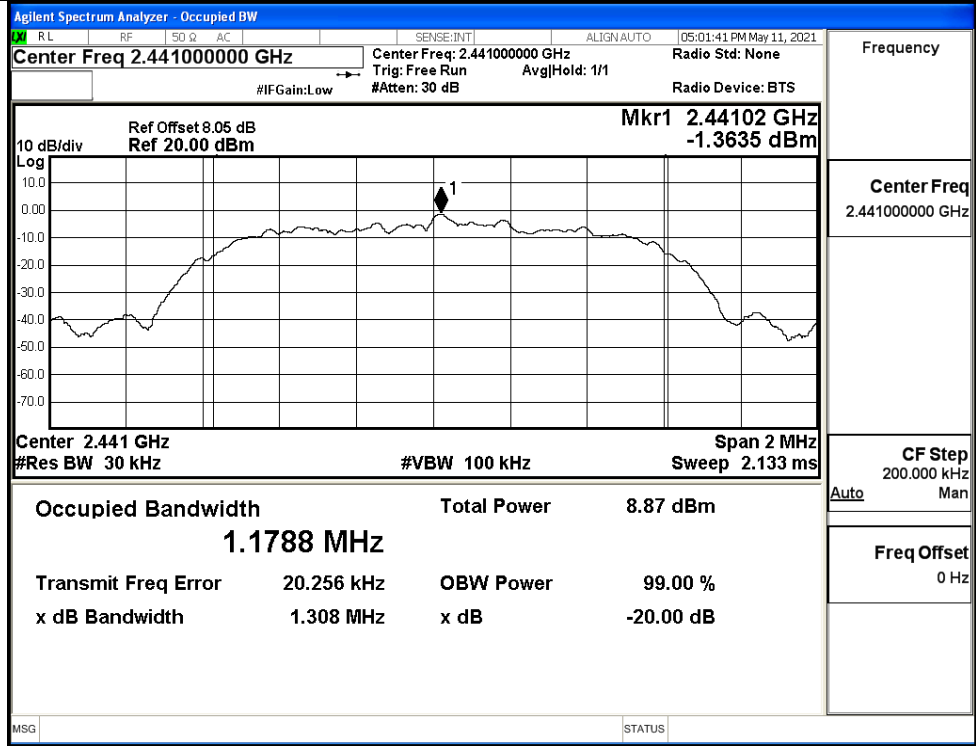
$\pi/4$ DQPSK/HCH



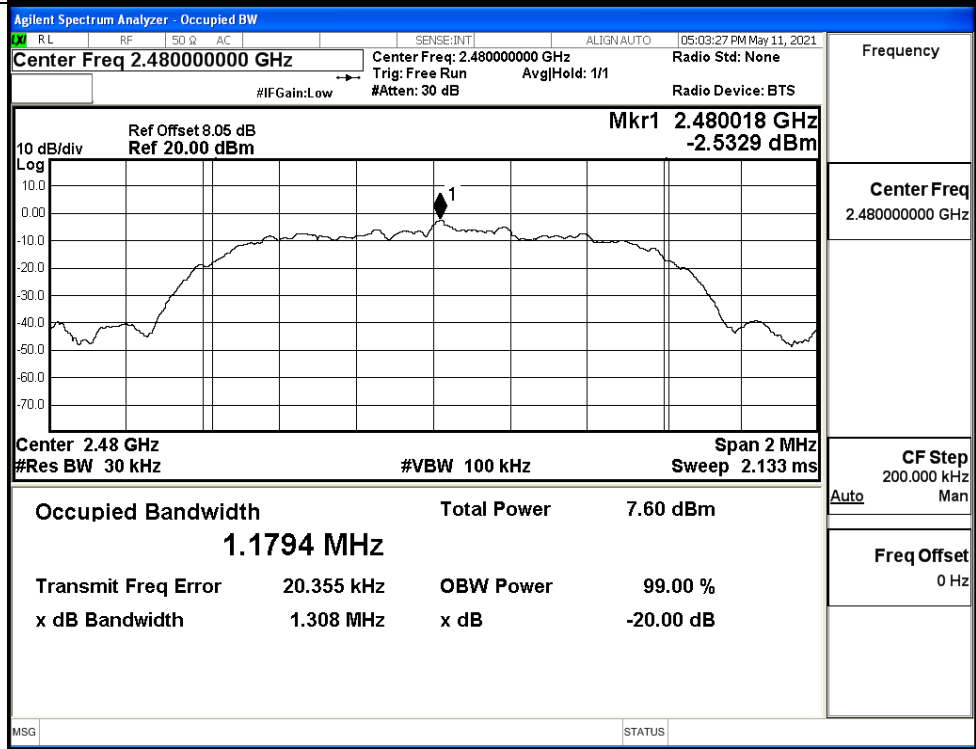
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH



### A.3 Carrier Frequency Separation

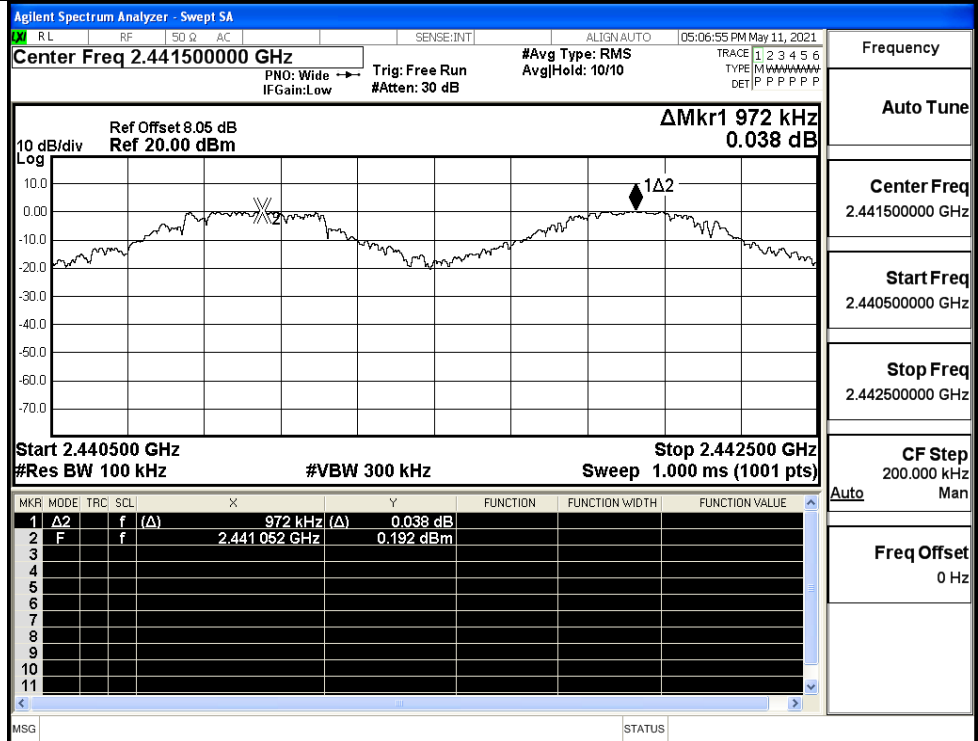
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.131	0.635	PASS
	MCH	0.972	0.635	PASS
	HCH	0.672	0.635	PASS
π/4DQPSK	LCH	1.096	0.889	PASS
	MCH	1.294	0.889	PASS
	HCH	1.106	0.889	PASS
8DPSK	LCH	1.082	0.873	PASS
	MCH	0.910	0.873	PASS
	HCH	1.008	0.873	PASS

Test Graphs

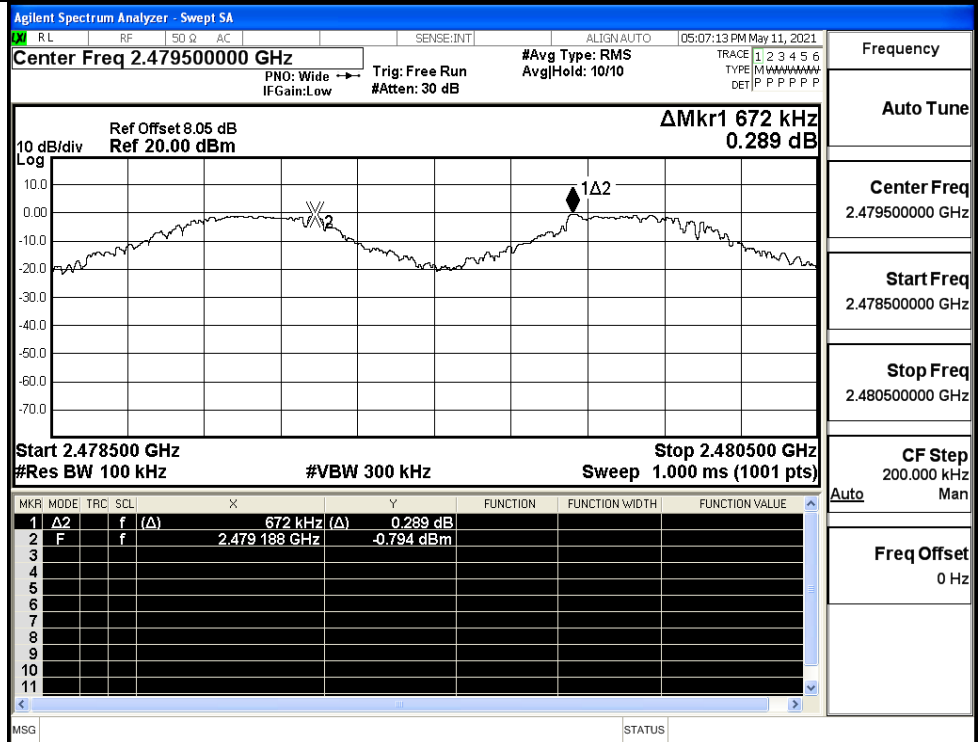
GFSK/LCH

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	1.130 50 MHz (Δ)	0.210 dB			
2	F	f		2.402 055 75 GHz	1.056 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

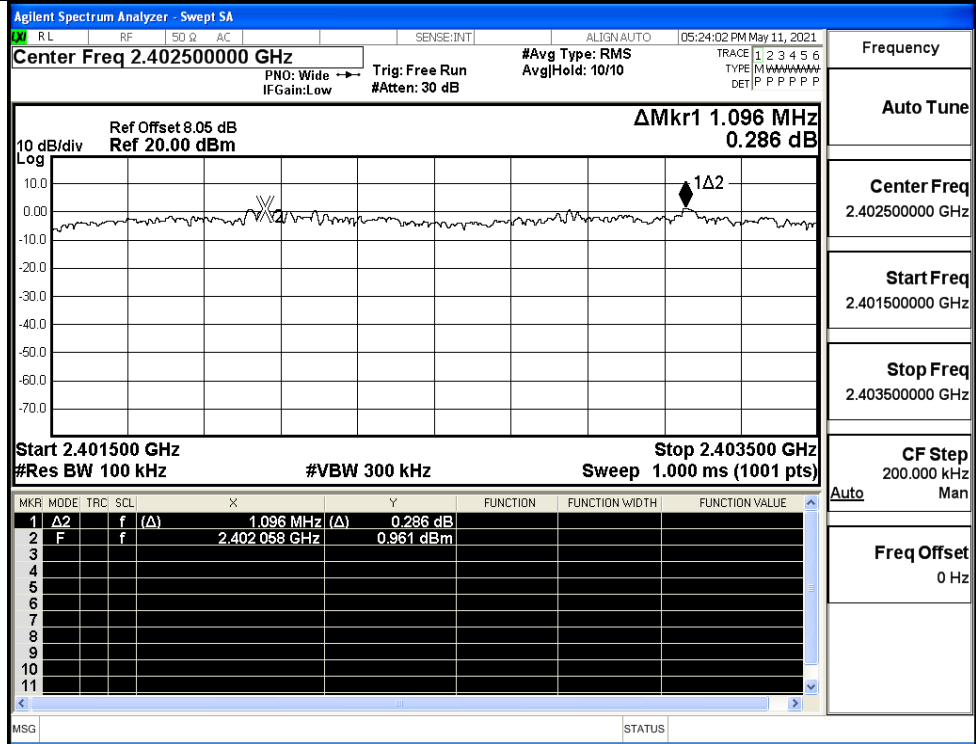
GFSK/MCH



GFSK/HCH

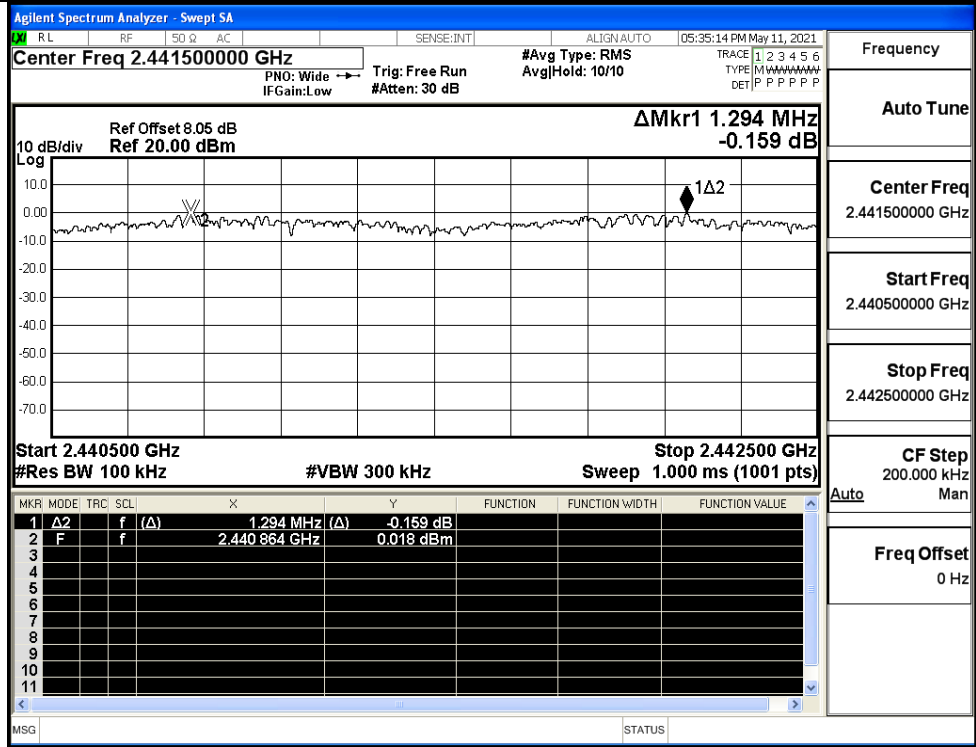


$\pi/4$ DQPSK/LCH



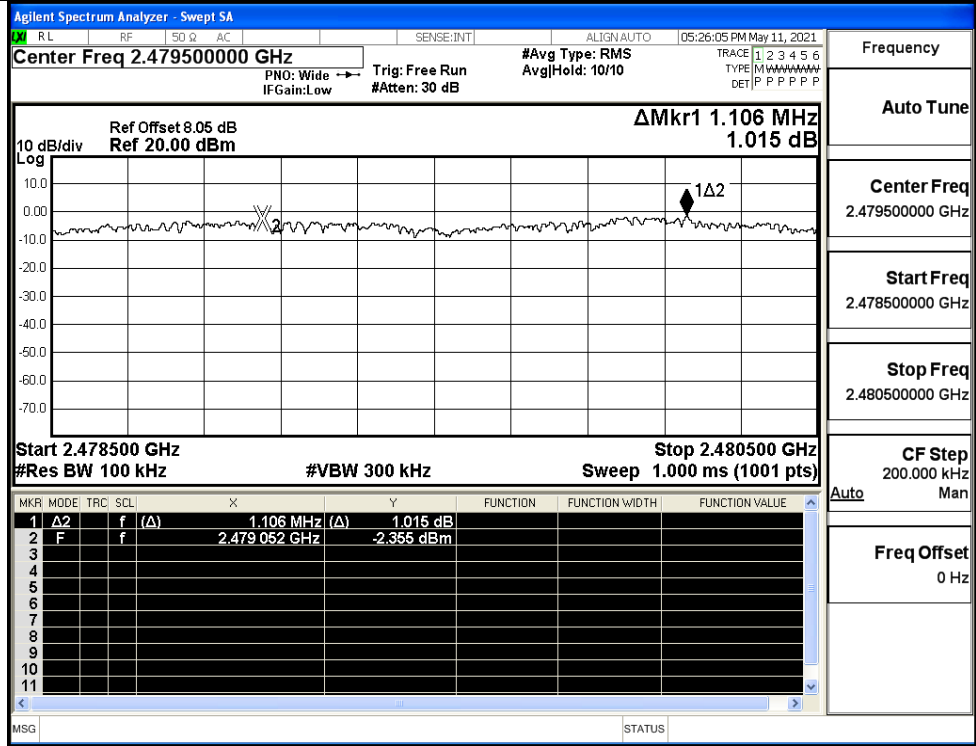
Frequency	2.402500000 GHz
Auto Tune	
Center Freq	2.402500000 GHz
Start Freq	2.401500000 GHz
Stop Freq	2.403500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH



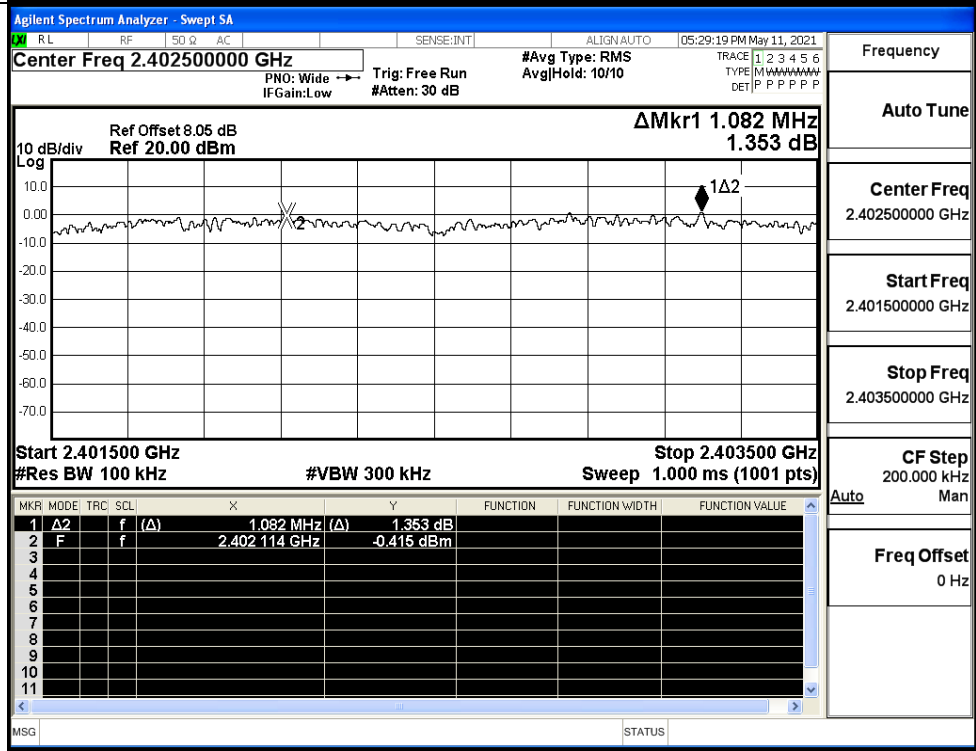
Frequency	2.441500000 GHz
Auto Tune	
Center Freq	2.441500000 GHz
Start Freq	2.440500000 GHz
Stop Freq	2.442500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

π/4DQPSK/HCH



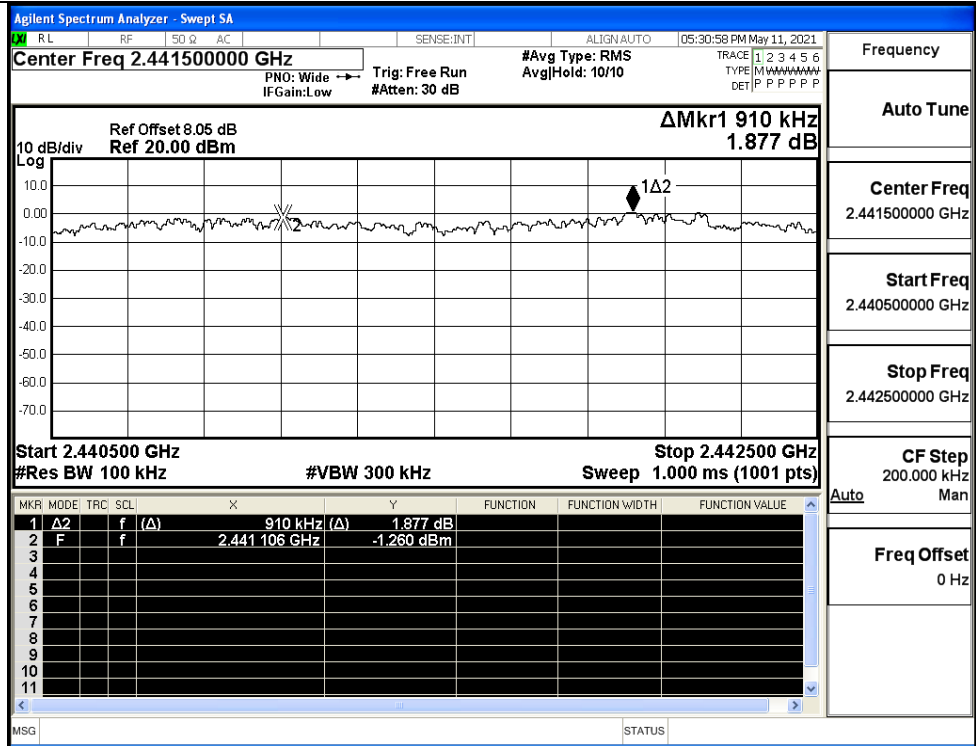
Frequency	2.479500000 GHz
Auto Tune	
Center Freq	2.479500000 GHz
Start Freq	2.478500000 GHz
Stop Freq	2.480500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH

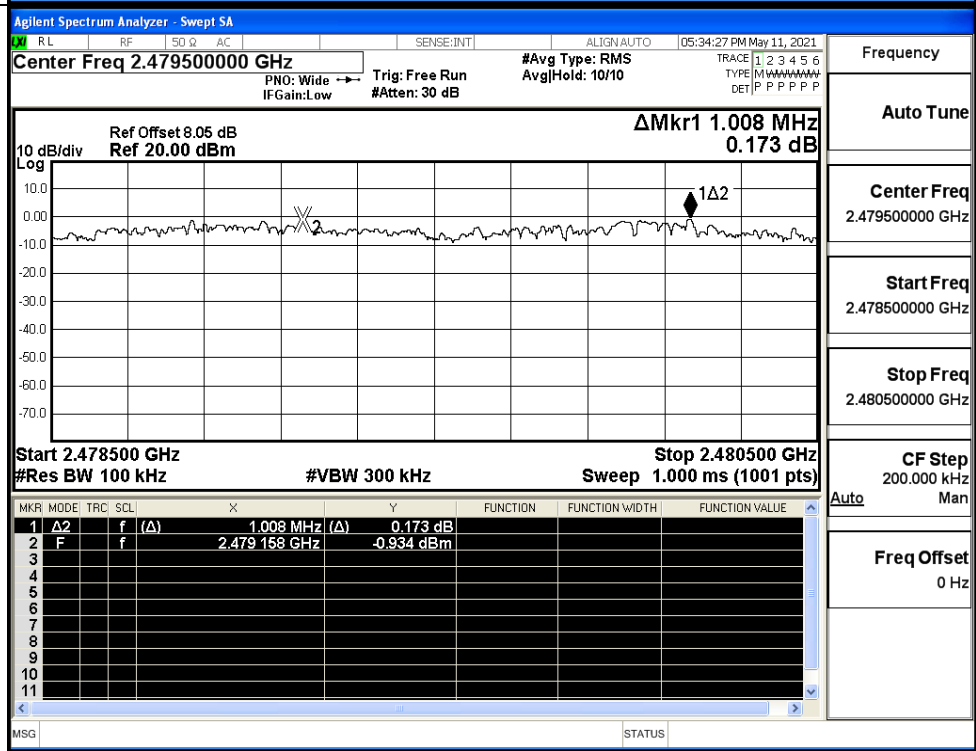


Frequency	2.402500000 GHz
Auto Tune	
Center Freq	2.402500000 GHz
Start Freq	2.401500000 GHz
Stop Freq	2.403500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

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

Agilent Spectrum Analyzer - Swept SA  
 Center Freq 2.441750000 GHz  
 Ref Offset 8.05 dB Ref 20.00 dBm  
 ΔMkr1 78.031 MHz -1.455 dB  
 Start 2.40000 GHz Stop 2.48350 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	78.031 MHz (Δ)	-1.455 dB			
2	F	f		2.401994 GHz	0.917 dBm			

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

$\pi/4$ DQPSK/Hop

Agilent Spectrum Analyzer - Swept SA  
 Center Freq 2.441750000 GHz  
 Ref Offset 8.05 dB Ref 20.00 dBm  
 ΔMkr1 78.260 MHz -2.326 dB  
 Start 2.40000 GHz Stop 2.48350 GHz  
 #Res BW 100 kHz #VBW 300 kHz Sweep 8.000 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	78.260 MHz (Δ)	-2.326 dB			
2	F	f		2.401879 GHz	1.152 dBm			

Frequency

Auto Tune

Center Freq  
2.441750000 GHz

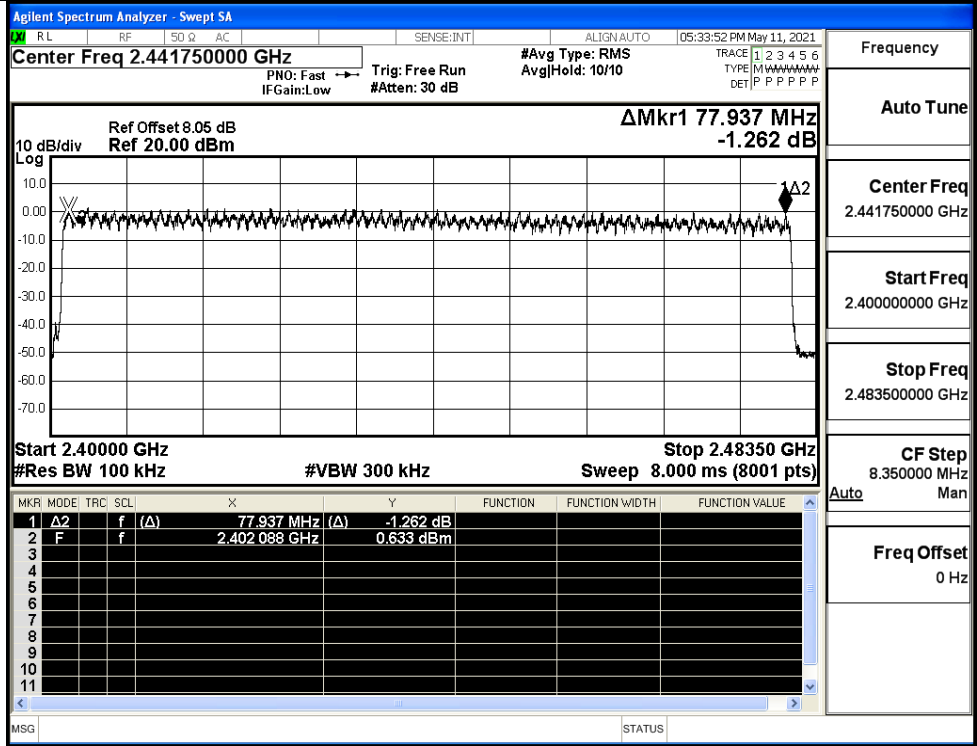
Start Freq  
2.400000000 GHz

Stop Freq  
2.483500000 GHz

CF Step  
8.350000 MHz  
Man

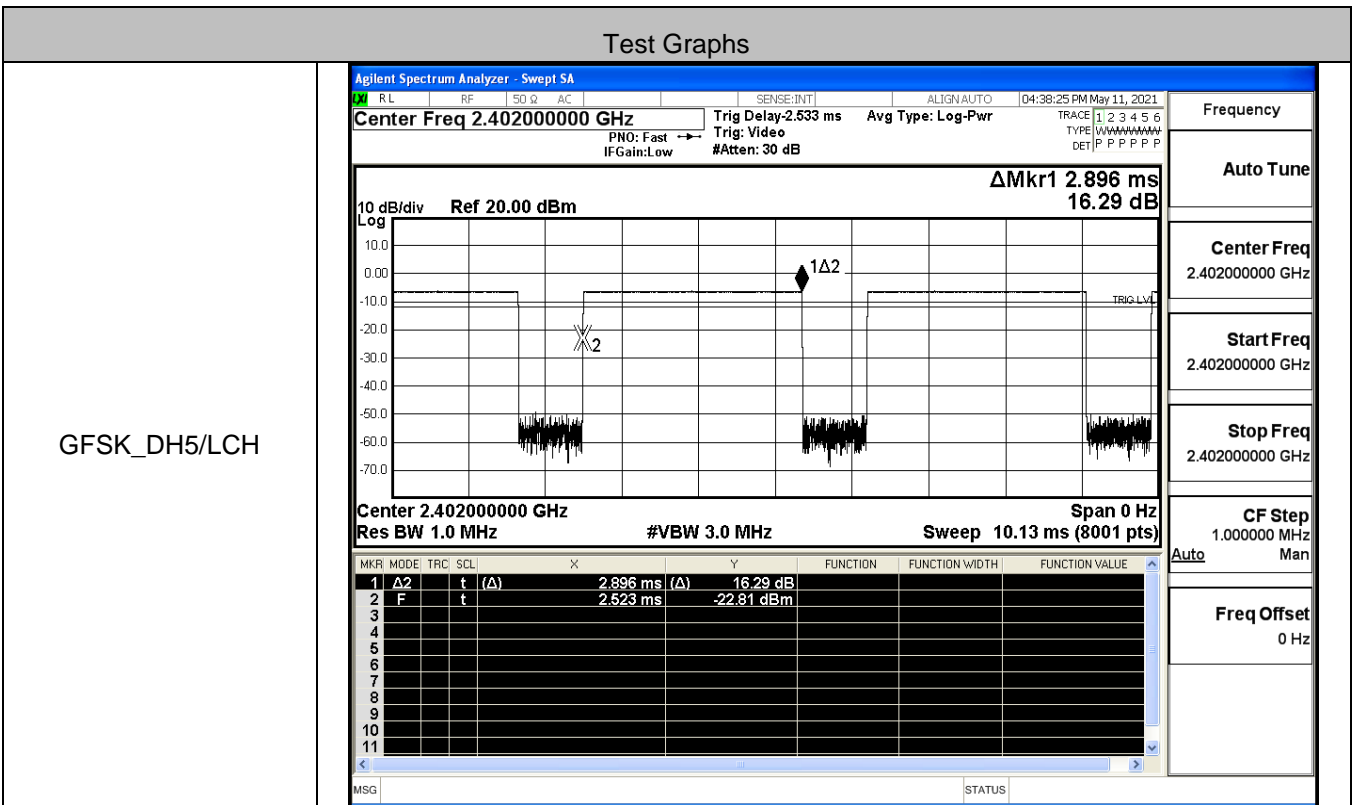
Freq Offset  
0 Hz

8DPSK/Hop

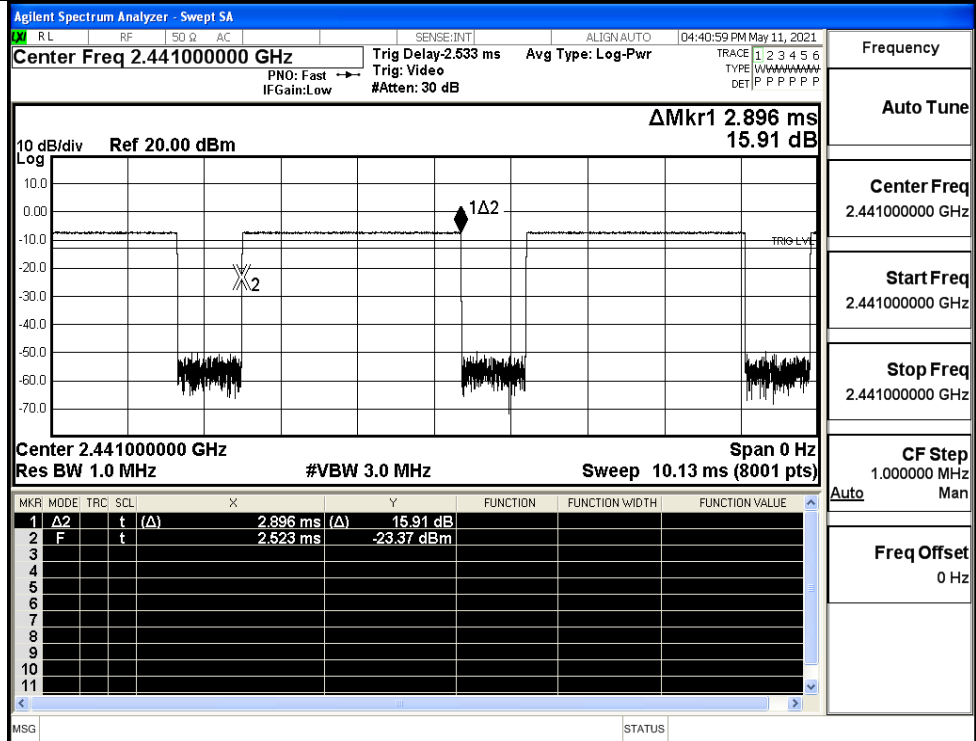


### A.5 Dwell Time

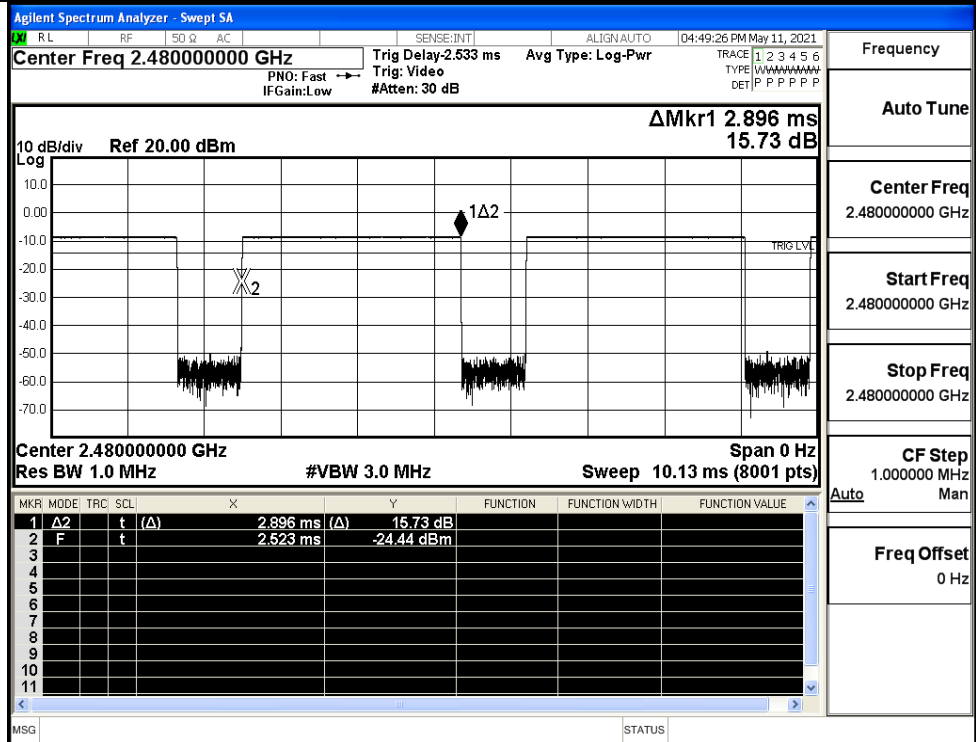
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
π/4DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS



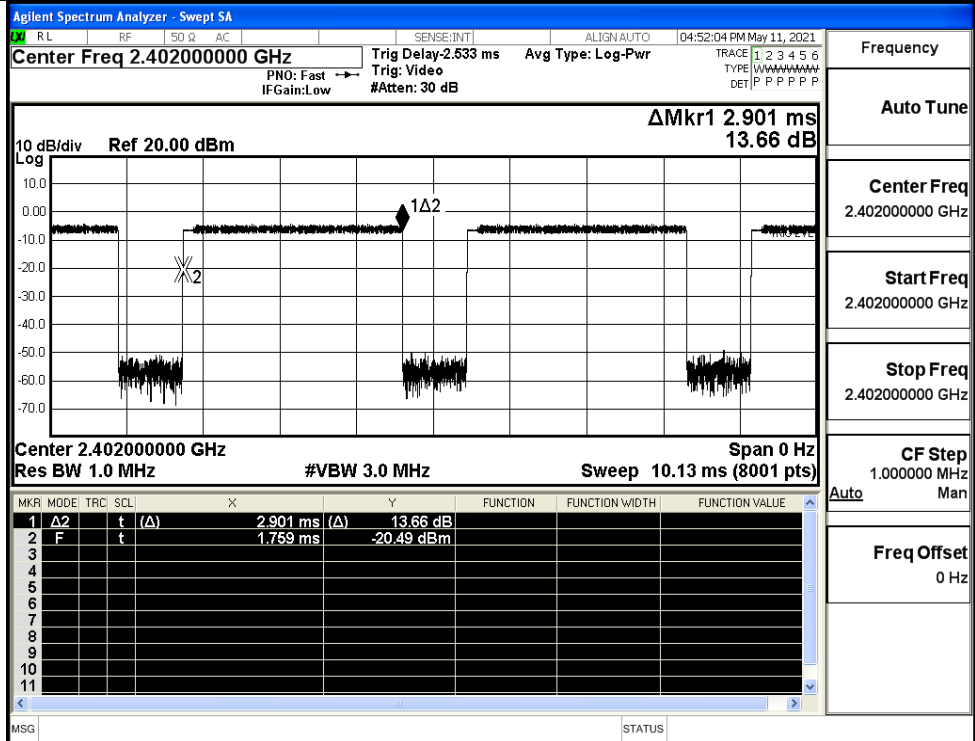
GFSK\_DH5/MCH



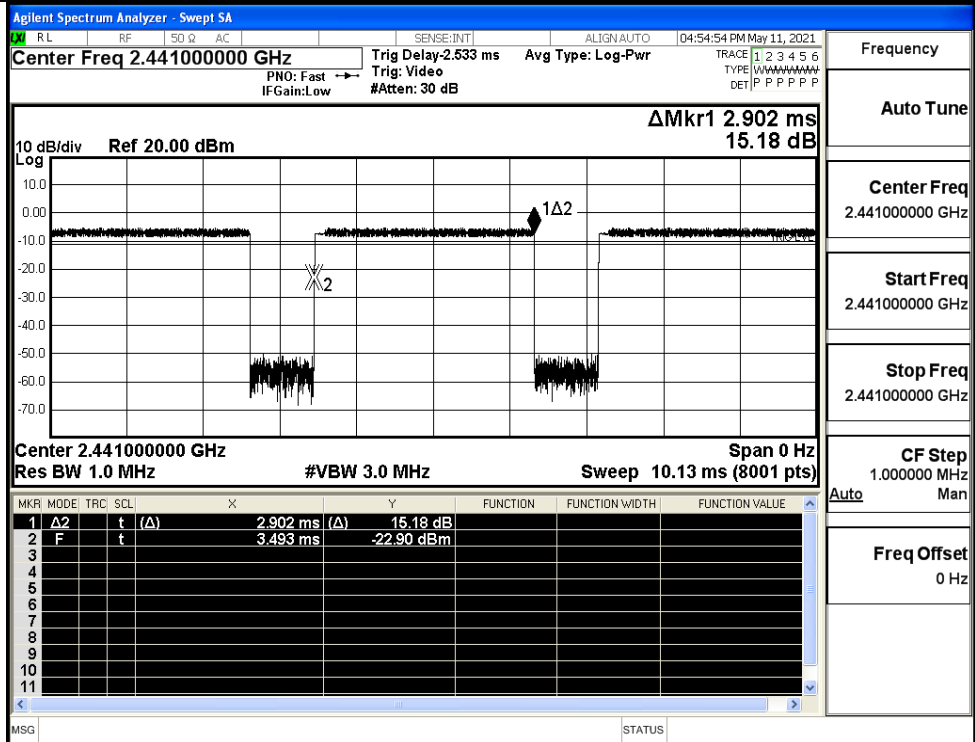
GFSK\_DH5/HCH



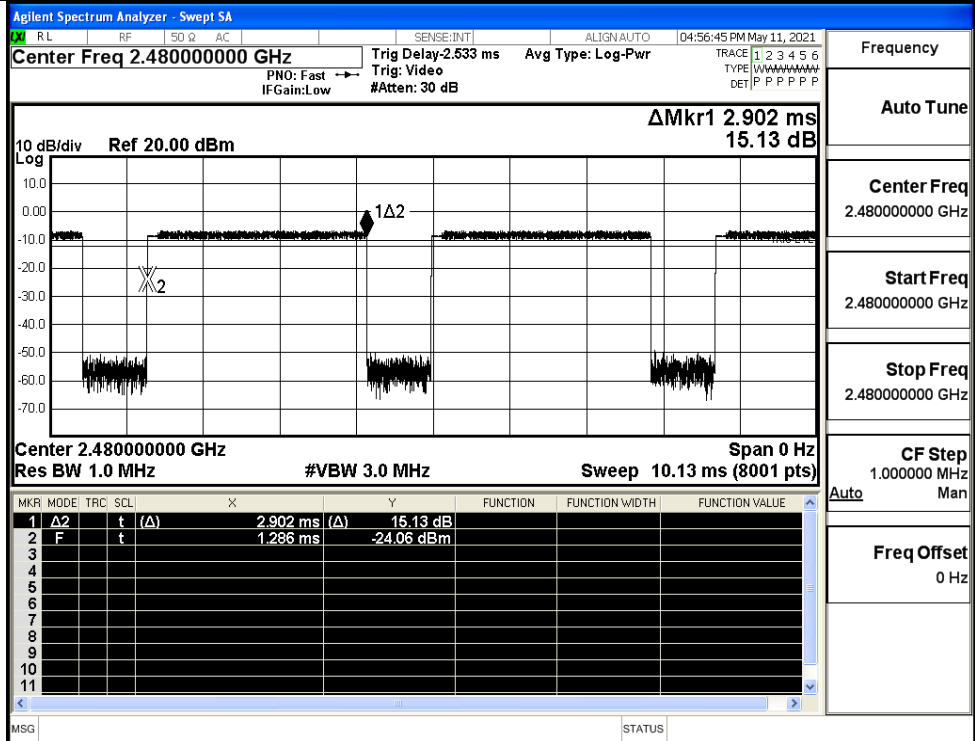
$\pi/4$ DQPSK  
\_2DH5/LCH



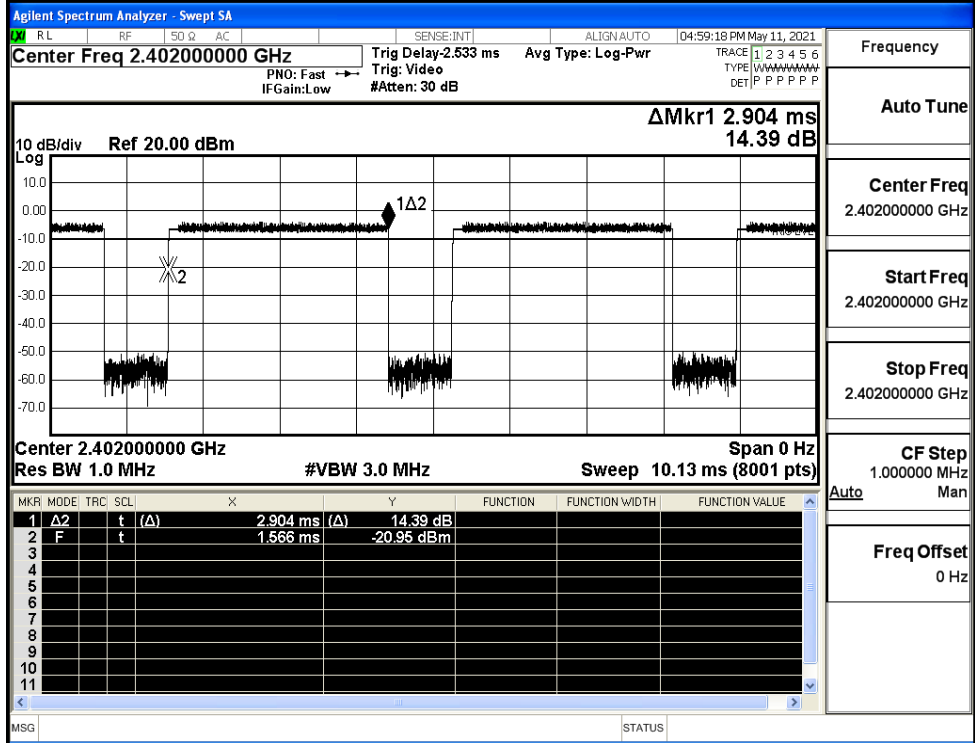
$\pi/4$ DQPSK  
\_2DH5/MCH



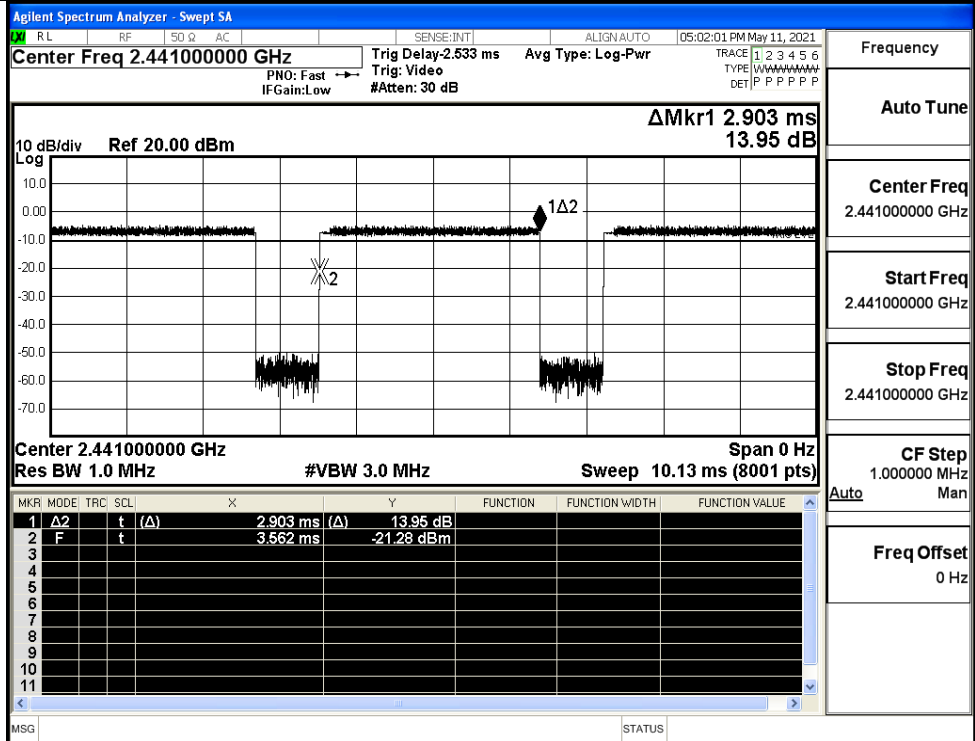
$\pi/4$ DQPSK  
\_2DH5/HCH



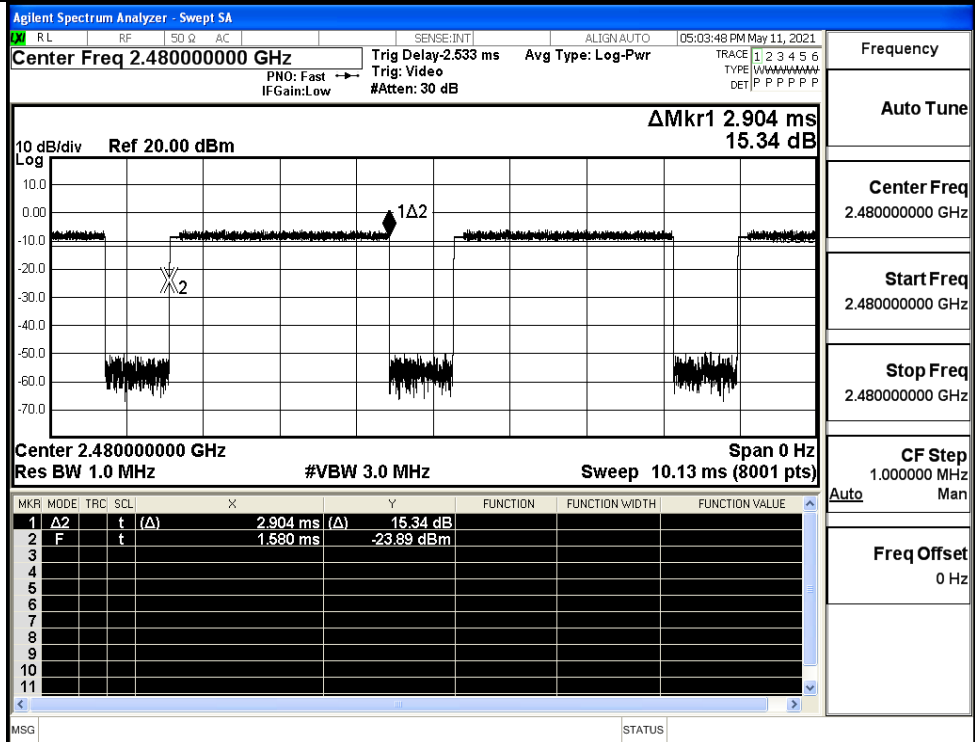
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



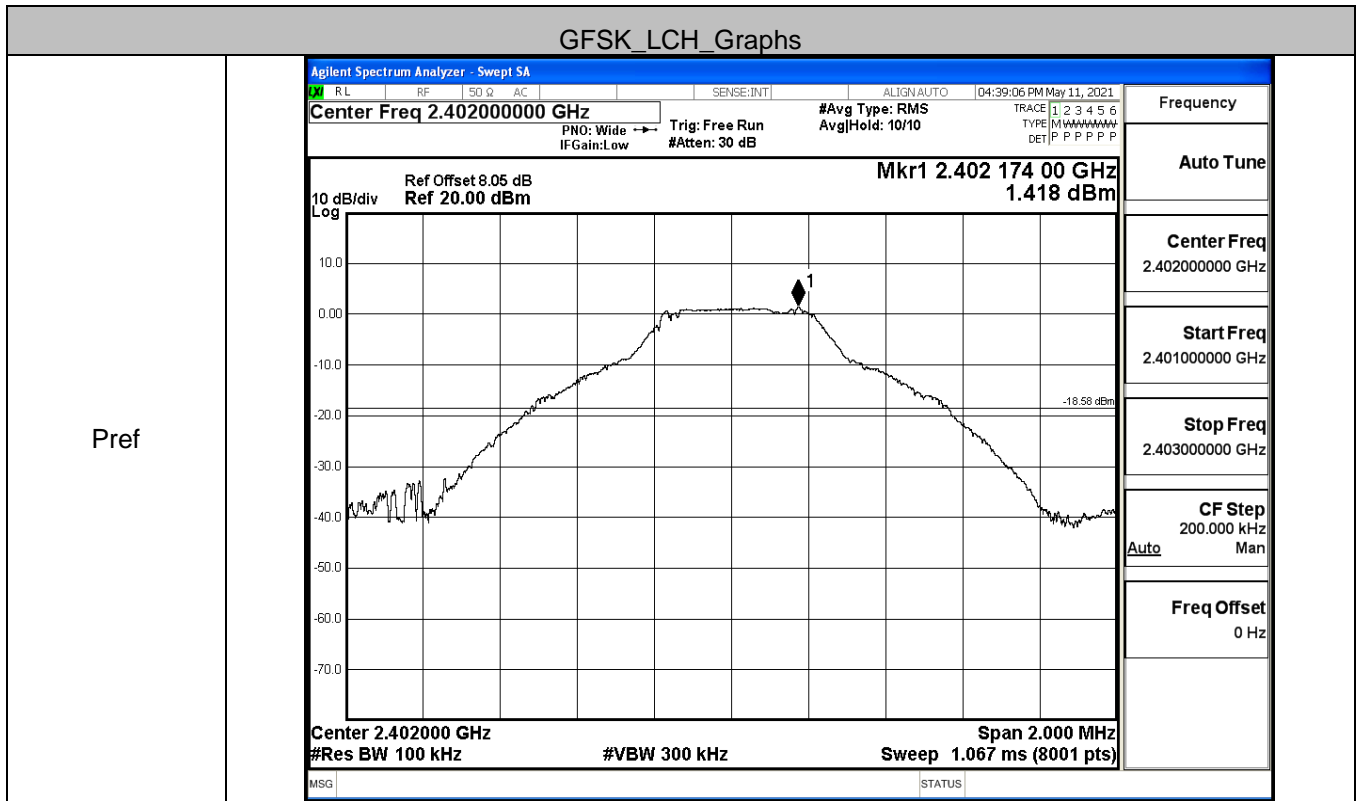
8DPSK\_3DH5/HCH



### A.6 RF Conducted Spurious Emissions

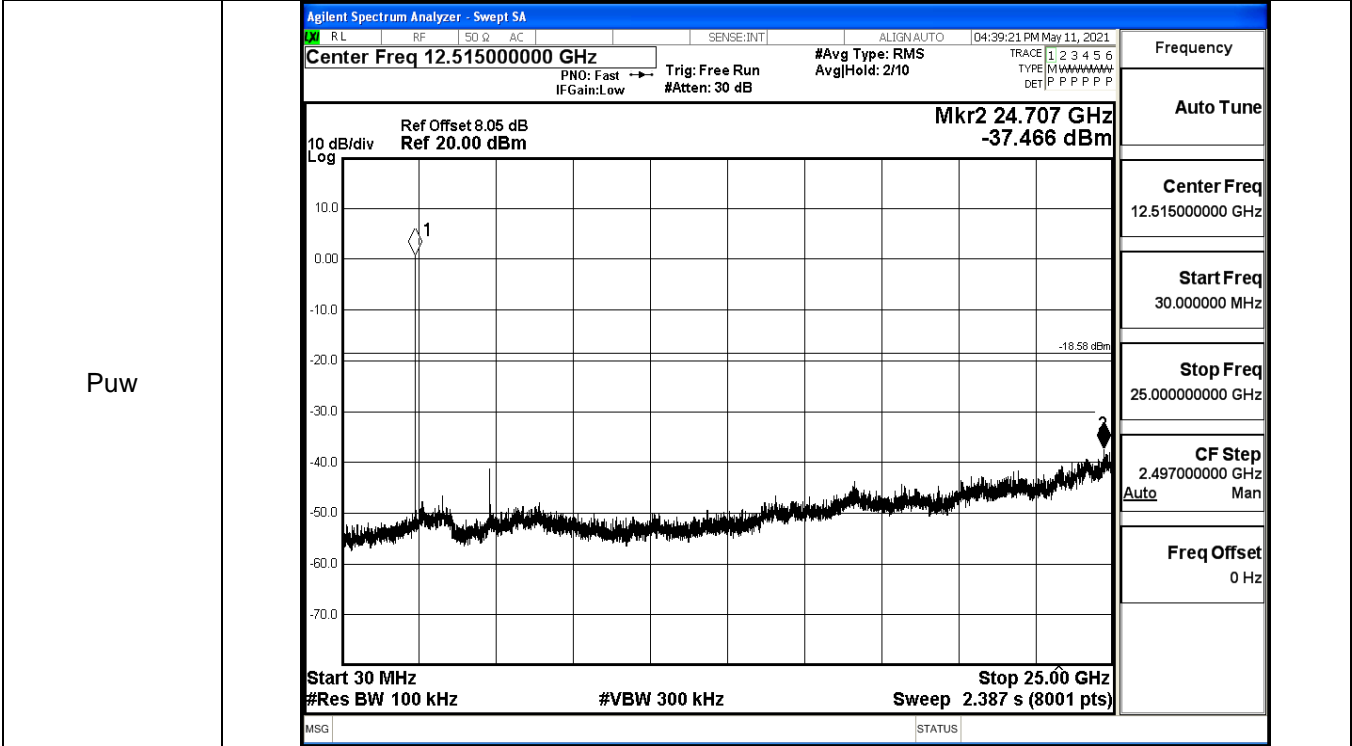
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.418	-37.466	-18.582	PASS
	MCH	0.727	-37.964	-19.273	PASS
	HCH	-0.57	-38.242	-20.570	PASS
$\pi/4$ DQPSK	LCH	0.864	-36.348	-19.136	PASS
	MCH	0.001	-37.772	-19.999	PASS
	HCH	-0.661	-38.199	-20.661	PASS
8DPSK	LCH	1.45	-37.175	-18.550	PASS
	MCH	0.663	-30.495	-19.337	PASS
	HCH	-0.561	-38.187	-20.561	PASS

GFSK\_LCH\_Graphs

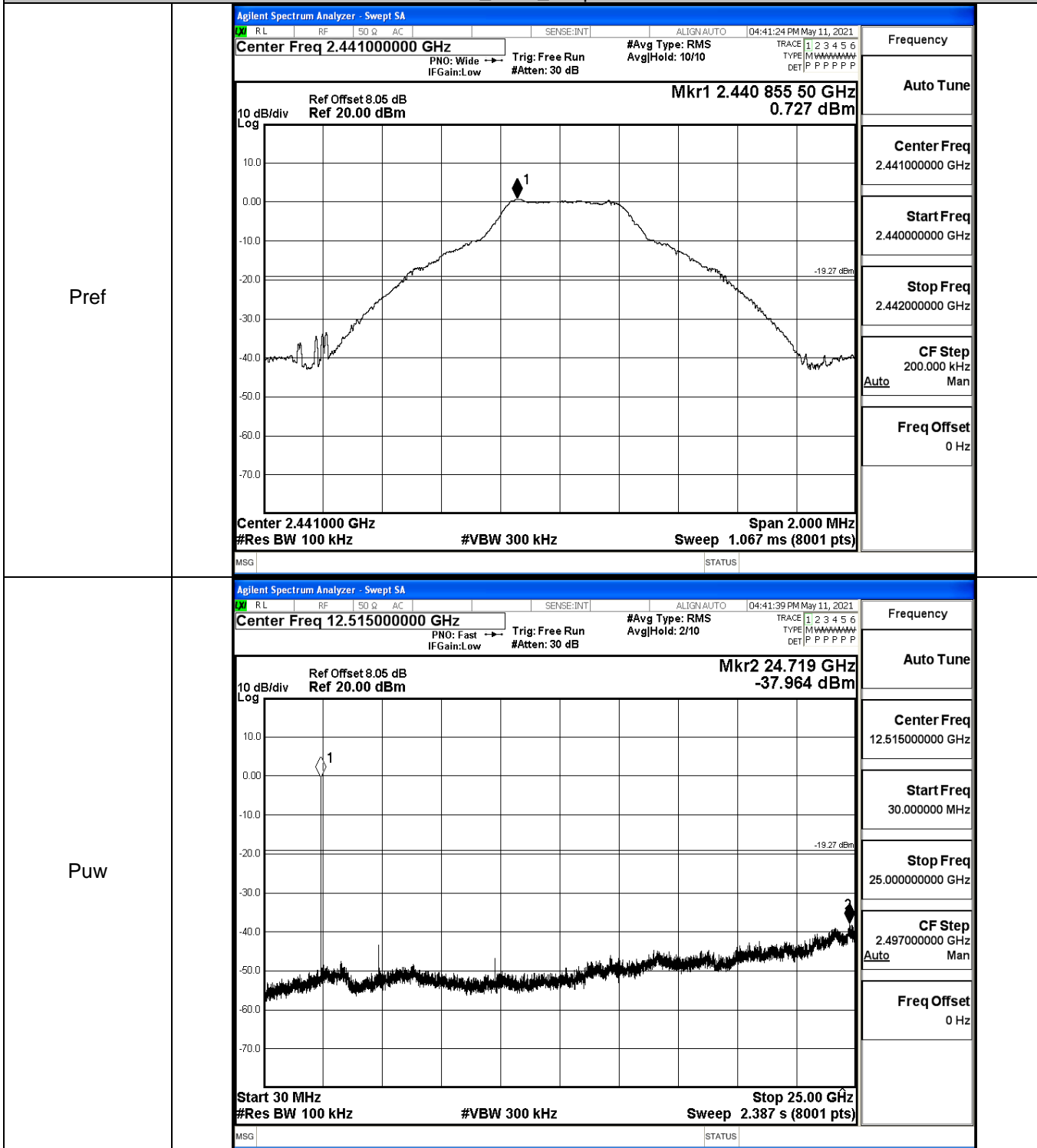


Pref



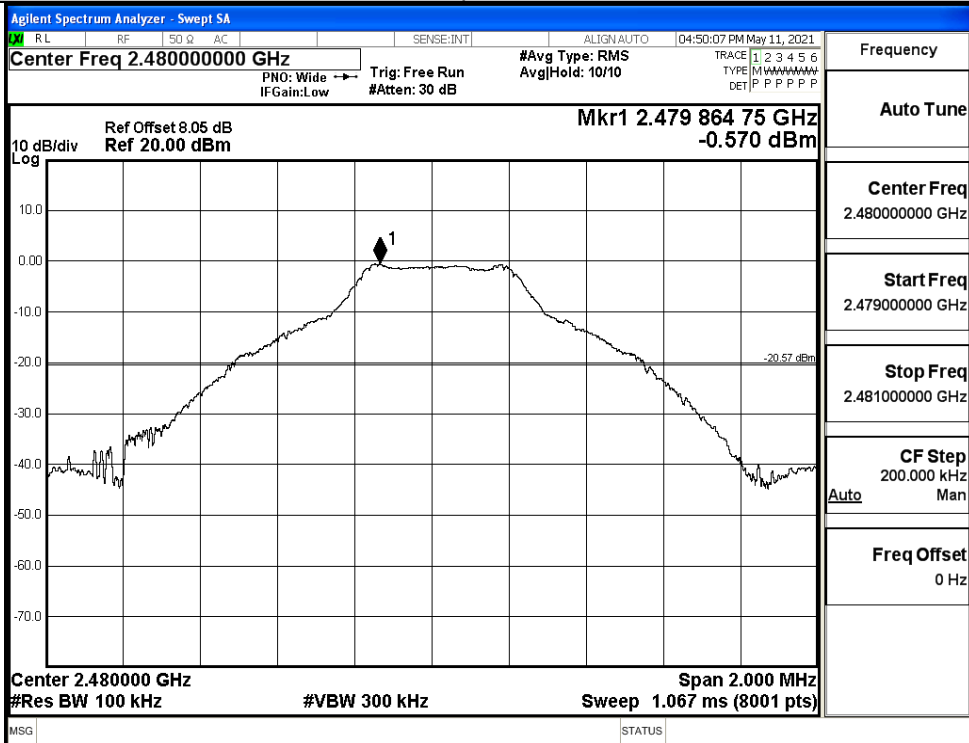


GFSK\_MCH\_Graphs

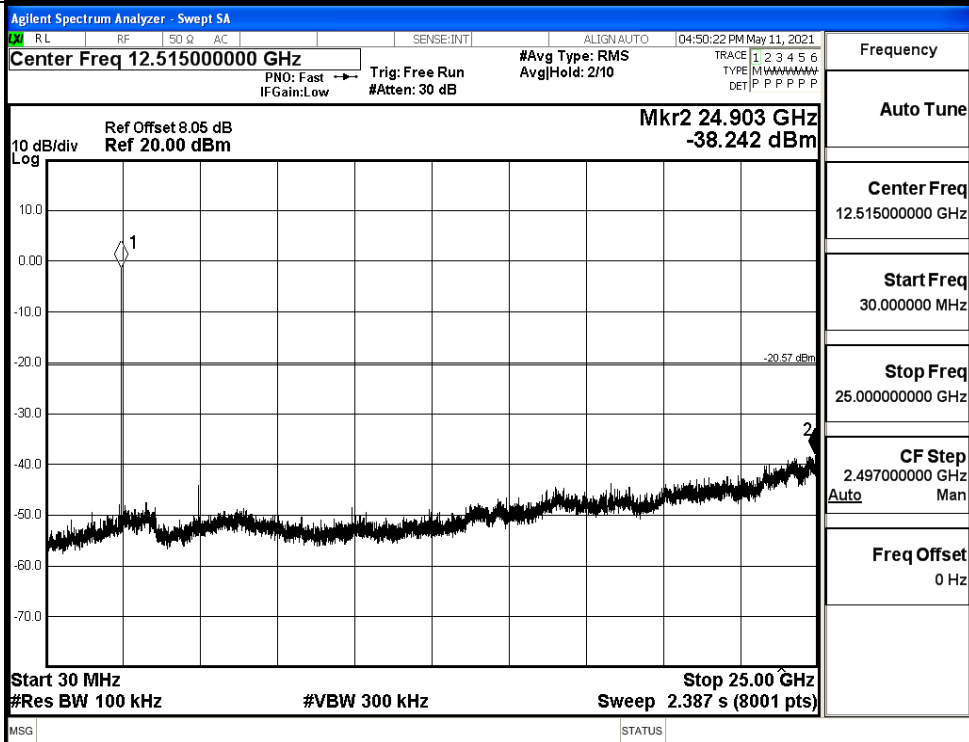


GFSK\_HCH\_Graphs

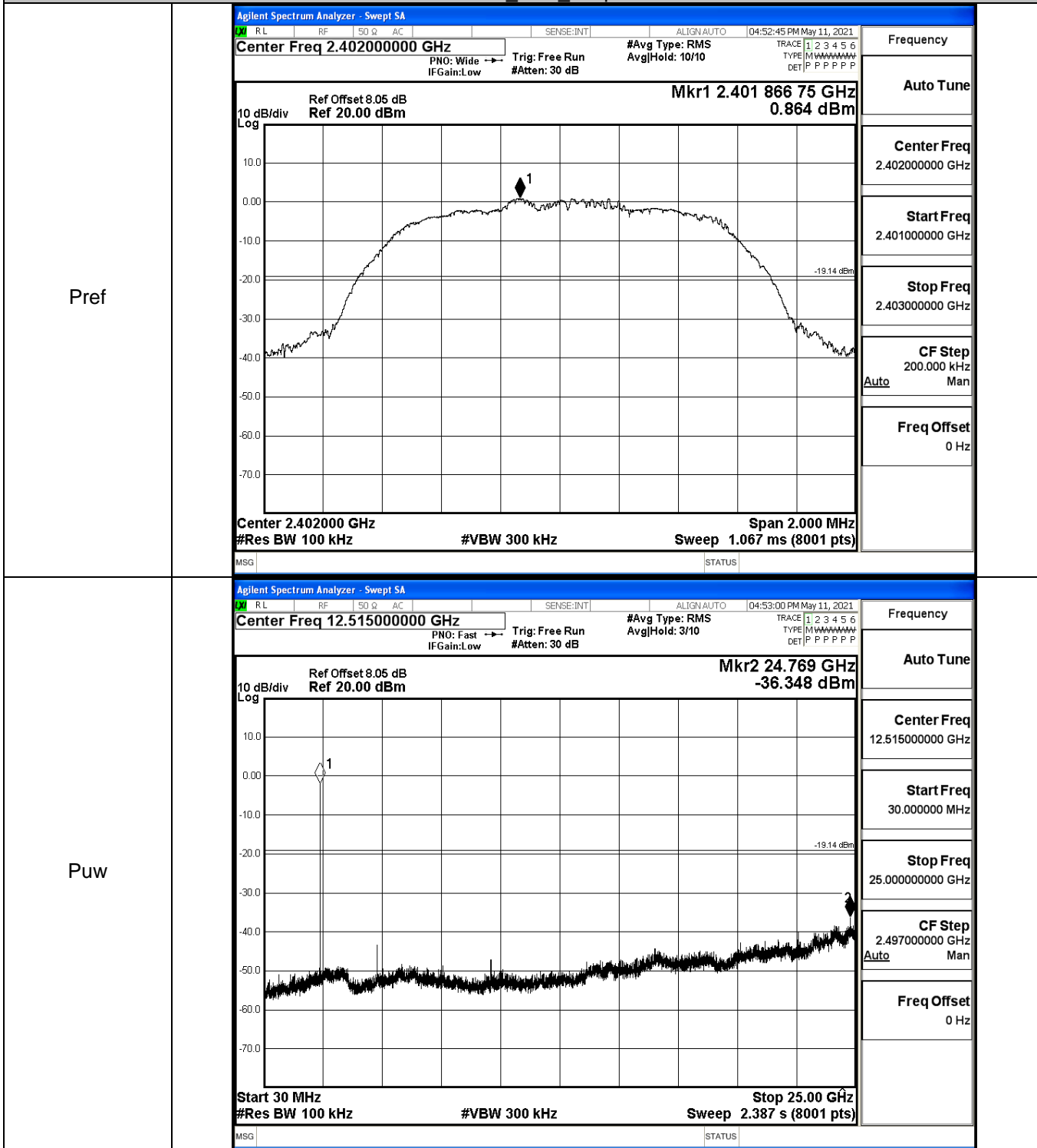
Pref



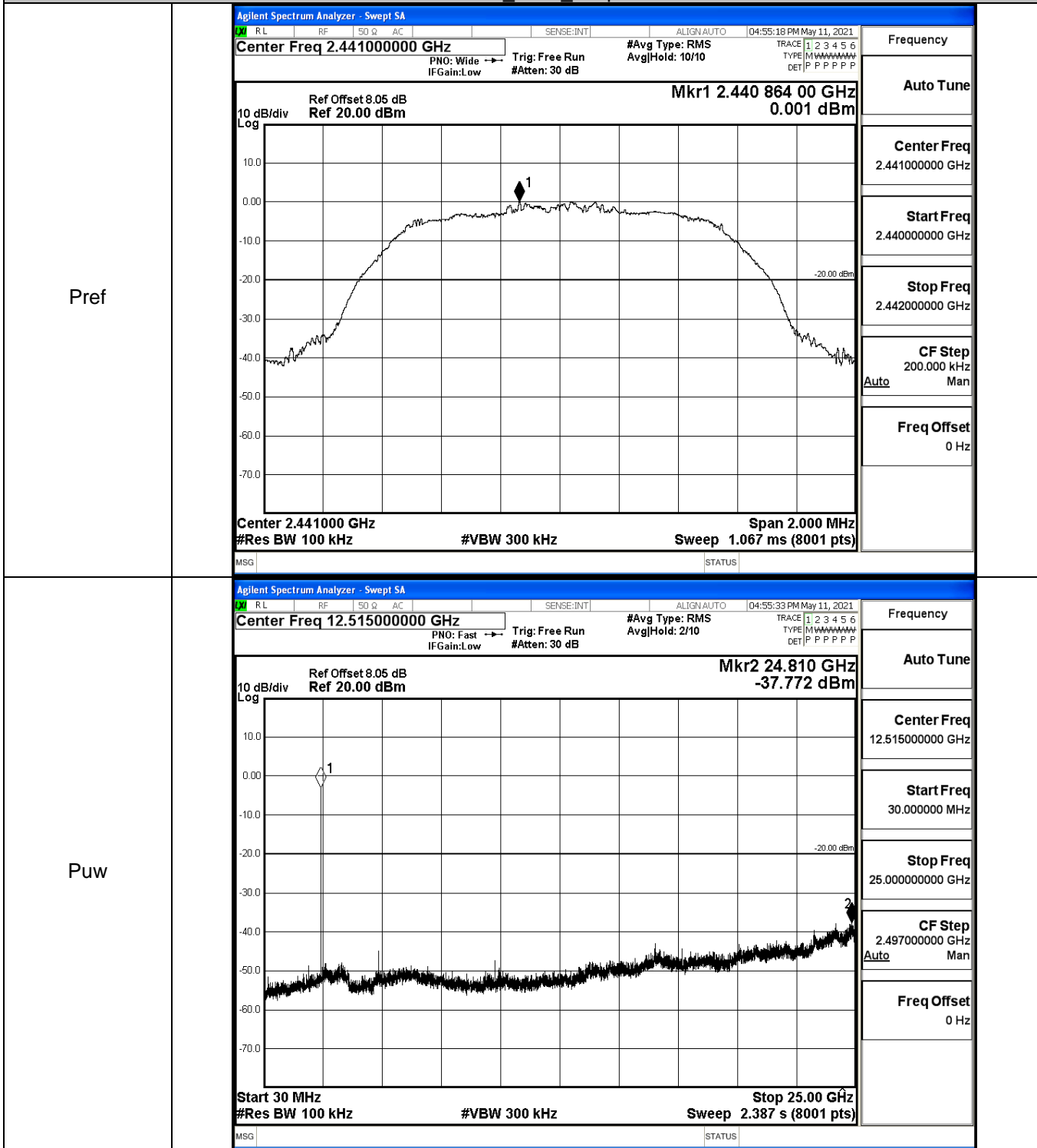
Puw



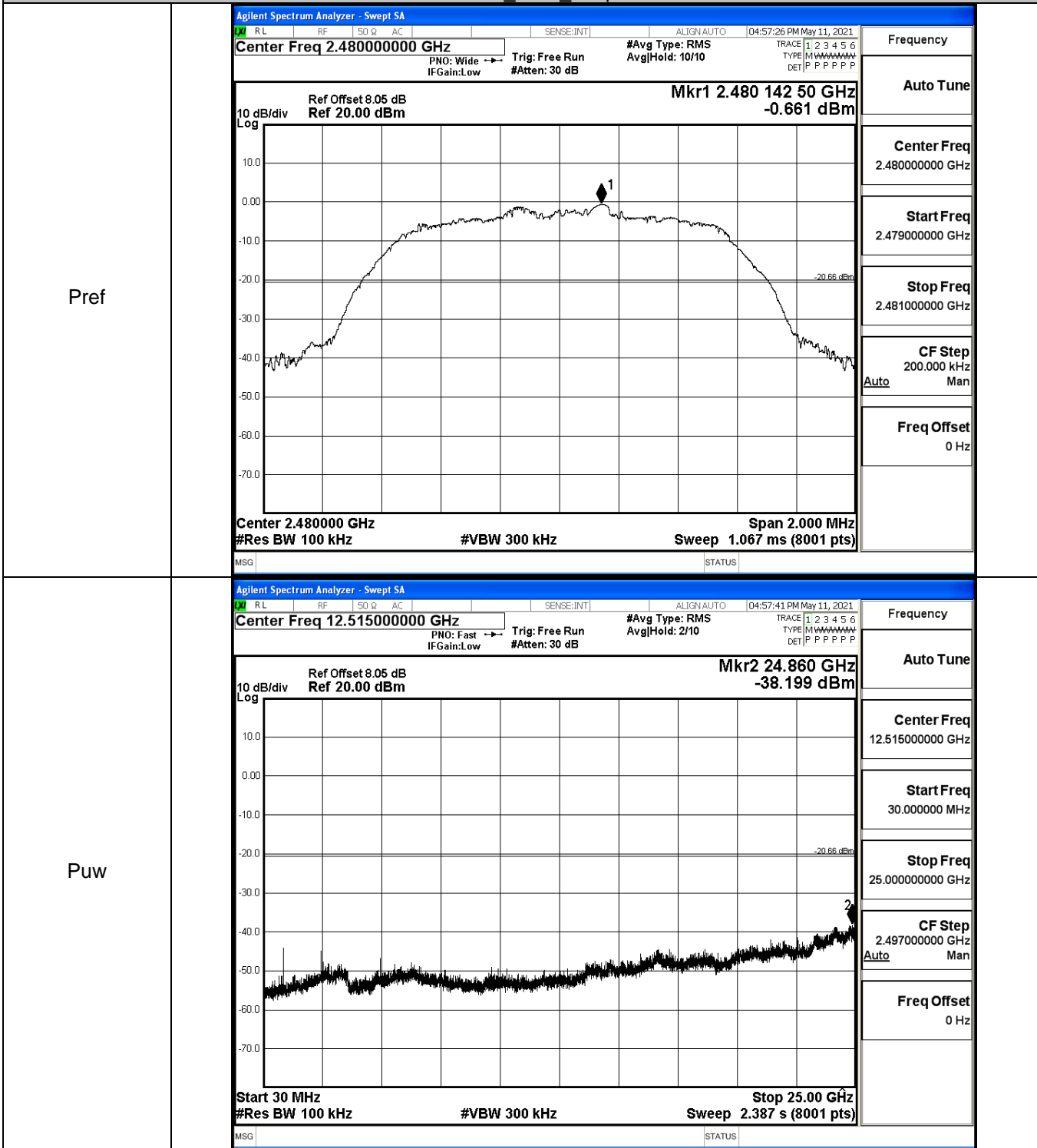
$\pi/4$ DQPSK\_LCH\_Graphs



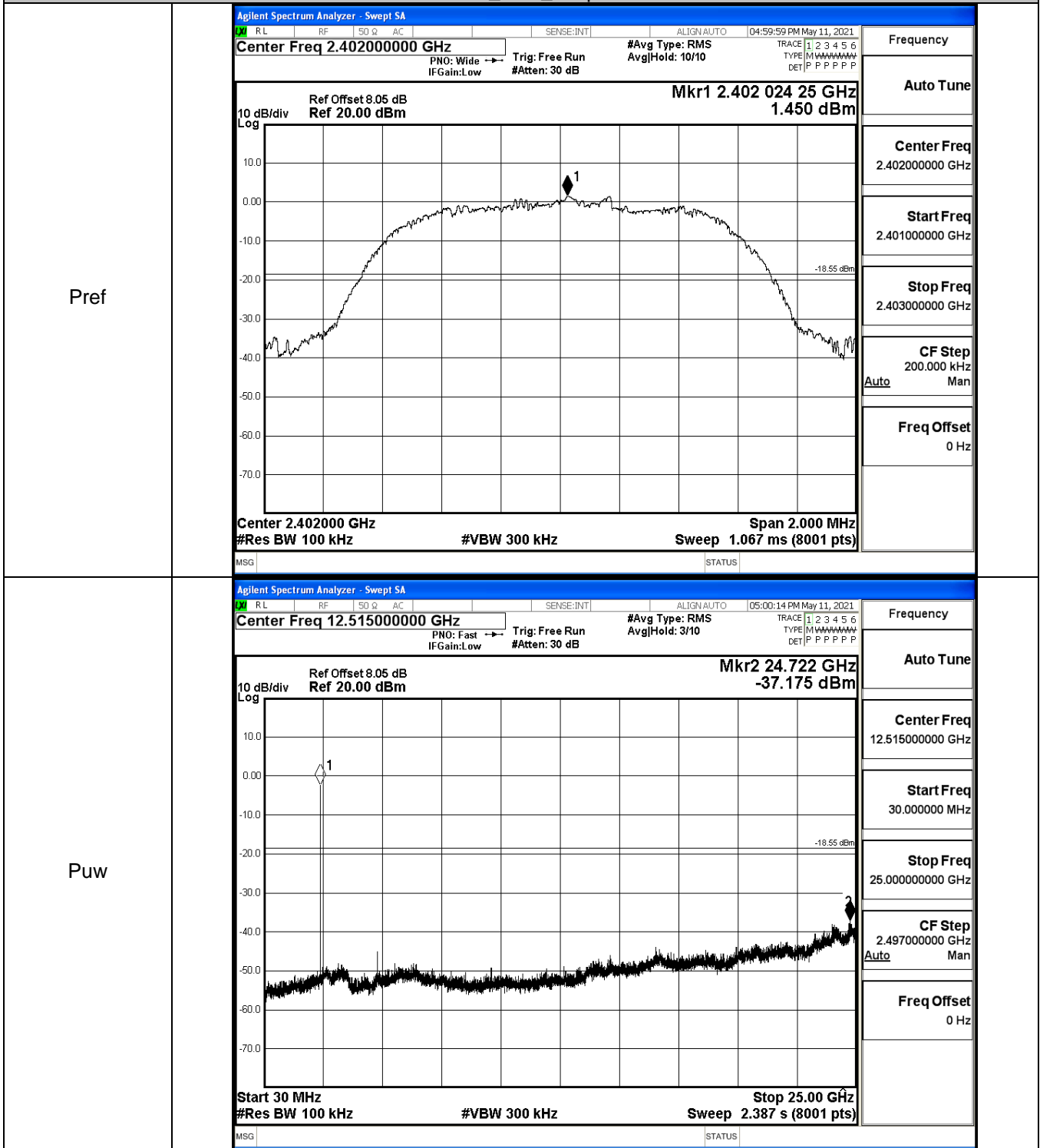
$\pi$ /4DQPSK\_MCH\_Graphs



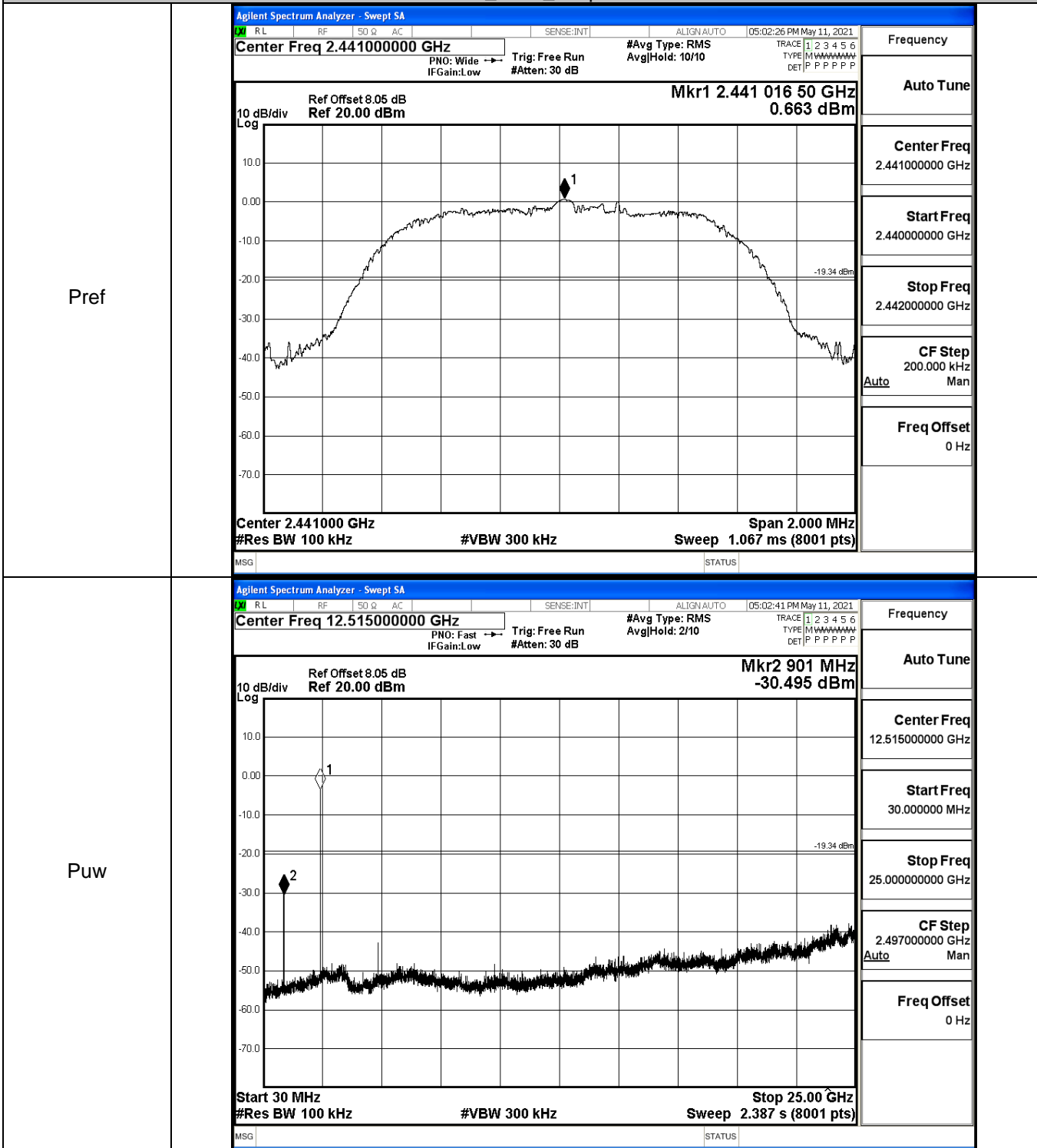
$\pi/4$ DQPSK\_HCH\_Graphs



8DPSK\_LCH\_Graphs



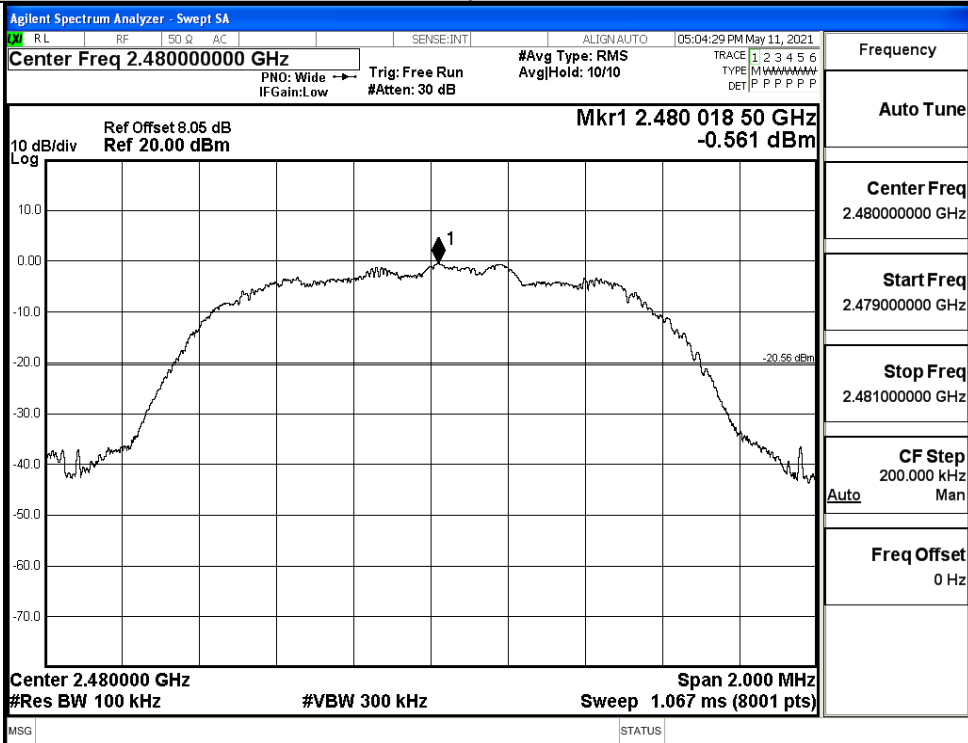
8DPSK\_MCH\_Graphs



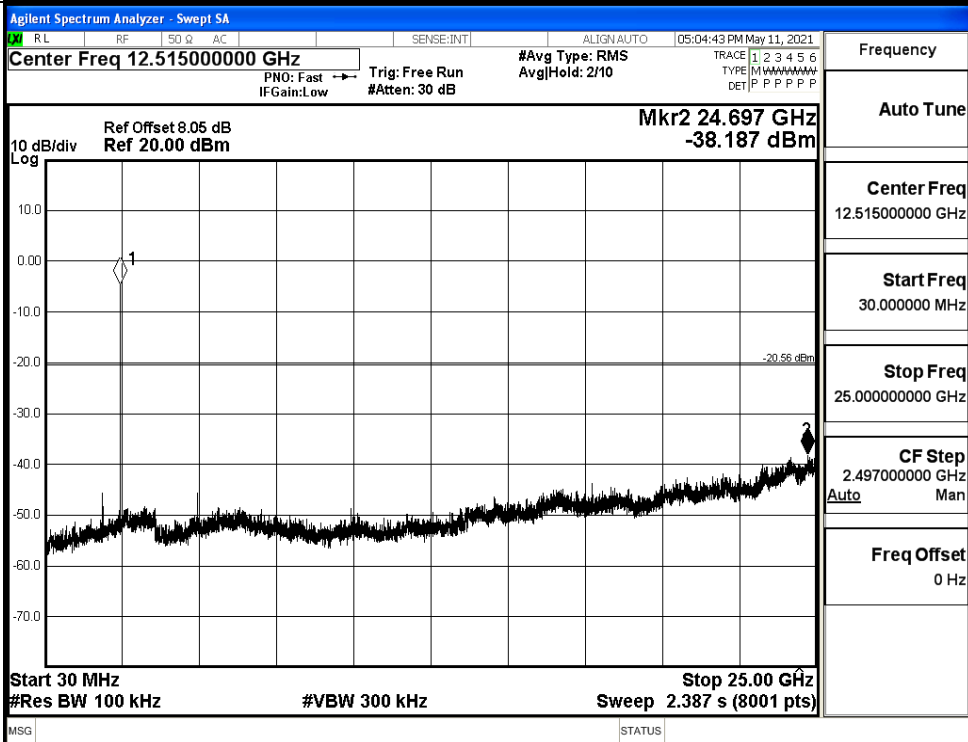


8DPSK\_HCH\_Graphs

Pref



Puw

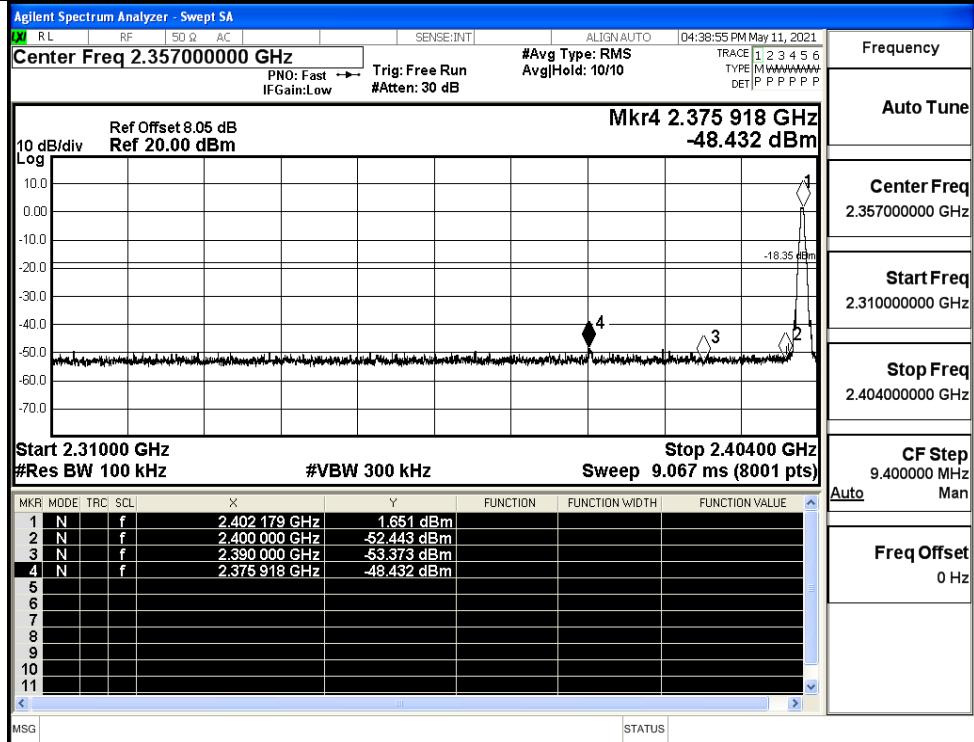


## A.7 Band-edge for RF Conducted Emissions

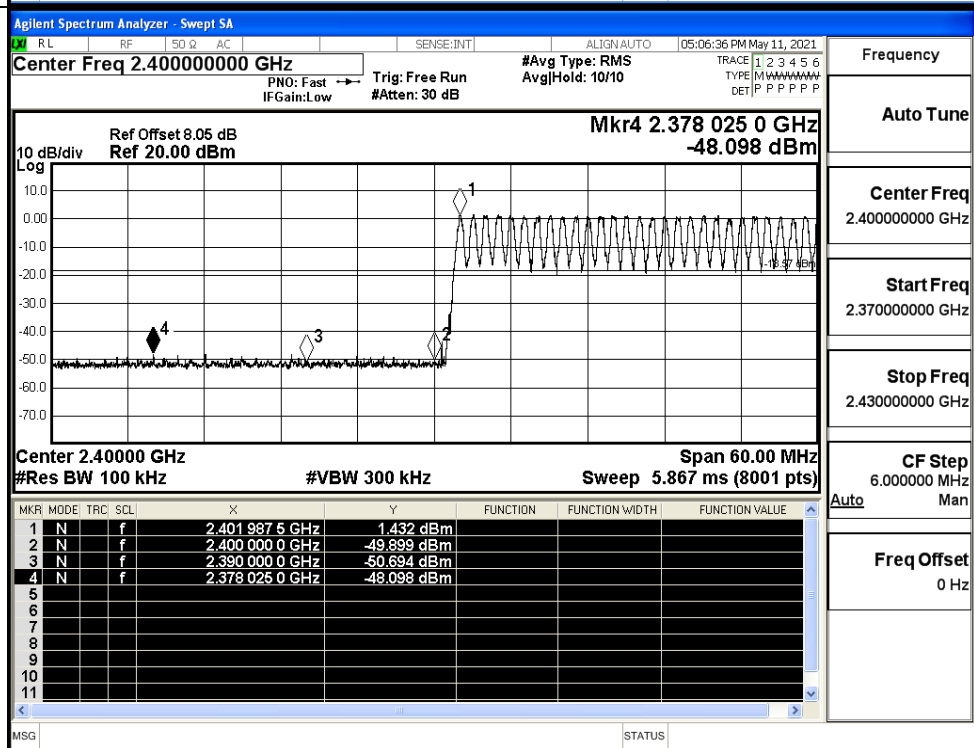
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.651	Off	-48.432	-18.35	PASS
			1.432	On	-48.098	-18.57	PASS
	HCH	2480	-0.487	Off	-49.202	-20.49	PASS
			0.104	On	-48.192	-19.9	PASS
$\pi/4$ DQPSK	LCH	2402	1.166	Off	-48.812	-18.83	PASS
			1.117	On	-48.795	-18.88	PASS
	HCH	2480	-0.639	Off	-49.174	-20.64	PASS
			0.090	On	-48.572	-19.91	PASS
8DPSK	LCH	2402	1.553	Off	-45.546	-18.45	PASS
			1.469	On	-48.567	-18.53	PASS
	HCH	2480	-0.585	Off	-49.243	-20.59	PASS
			0.207	On	-48.448	-19.79	PASS

Test Graphs

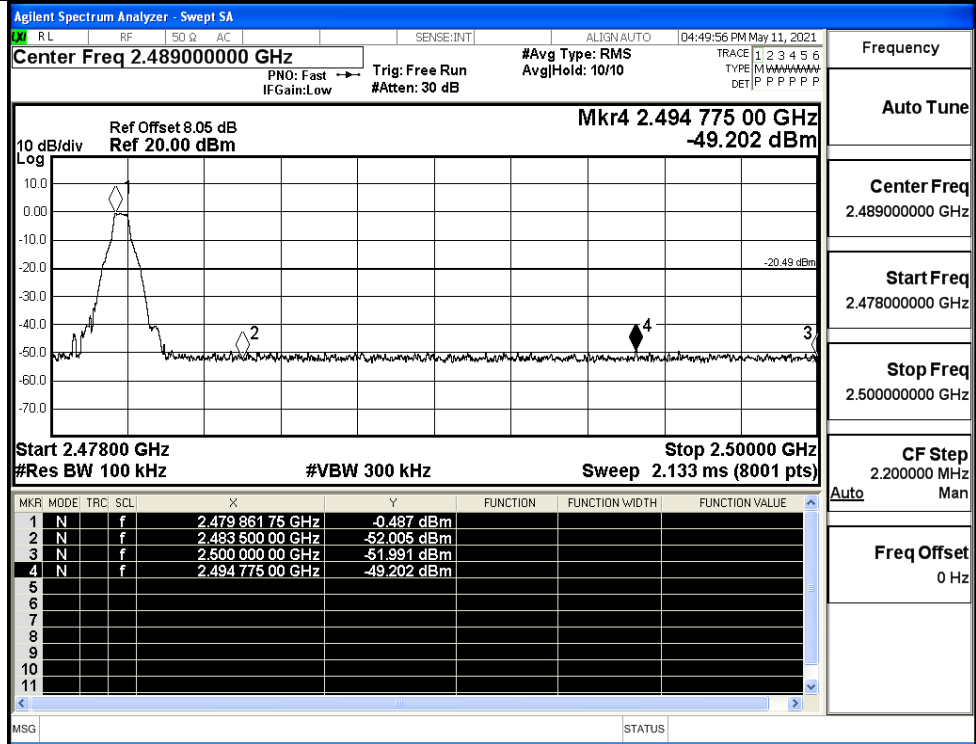
GFSK/LCH/No Hop



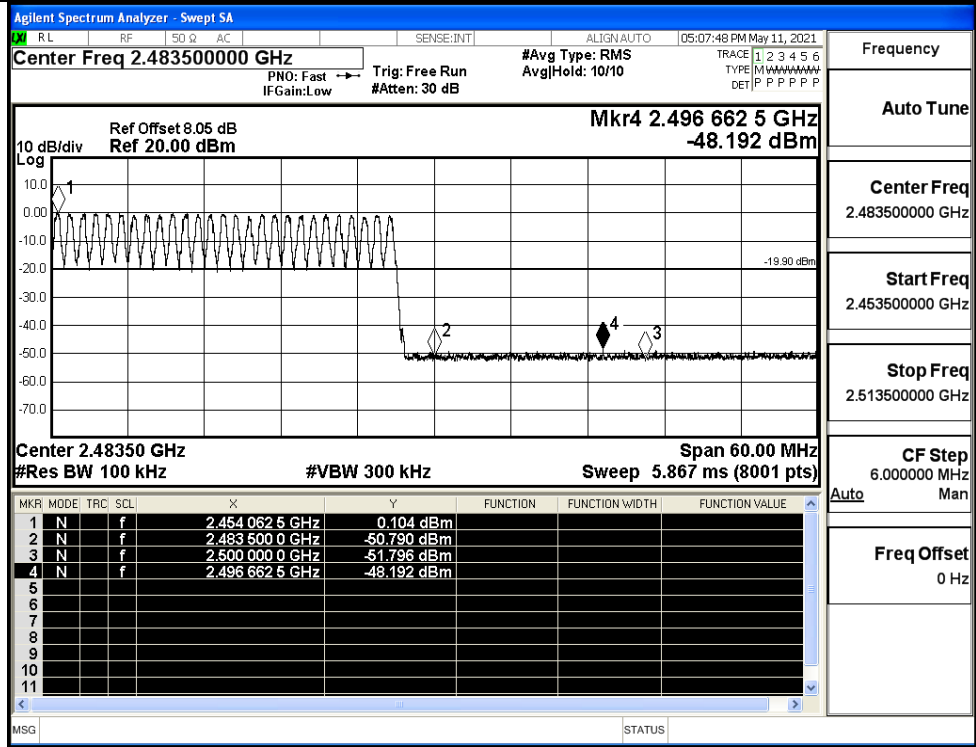
GFSK/LCH/Hop



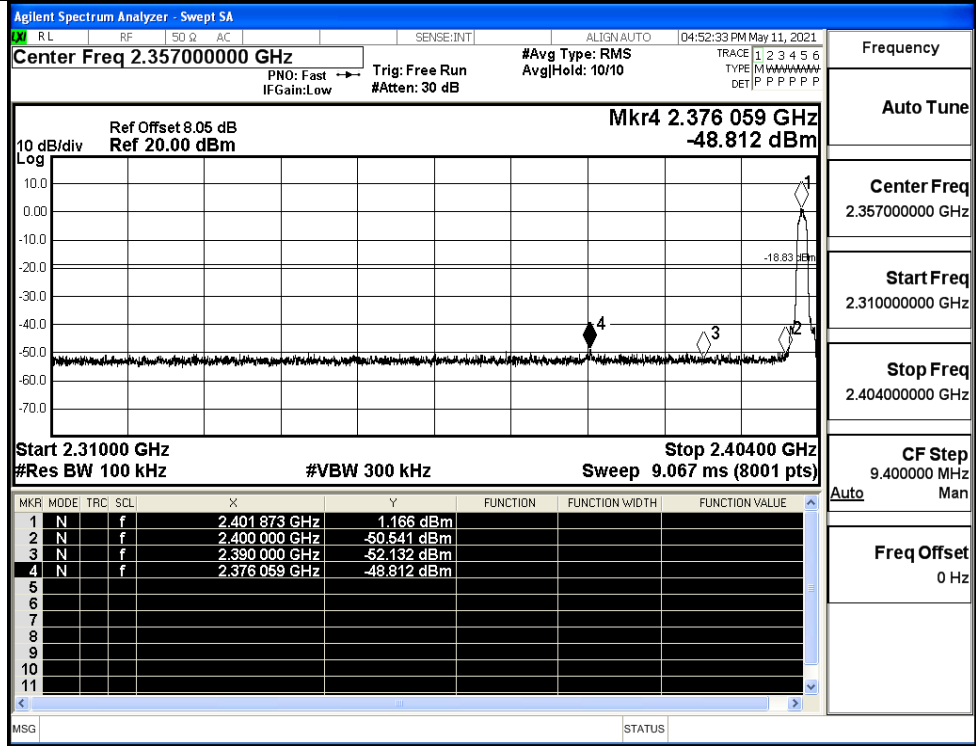
GFSK/HCH/No Hop



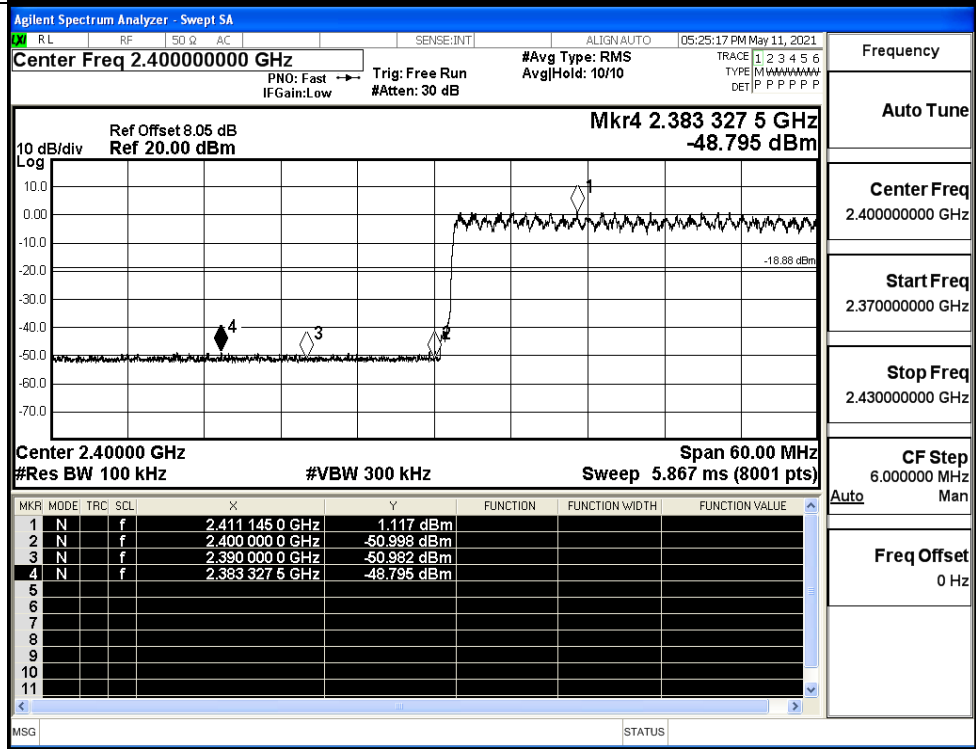
GFSK/HCH/Hop



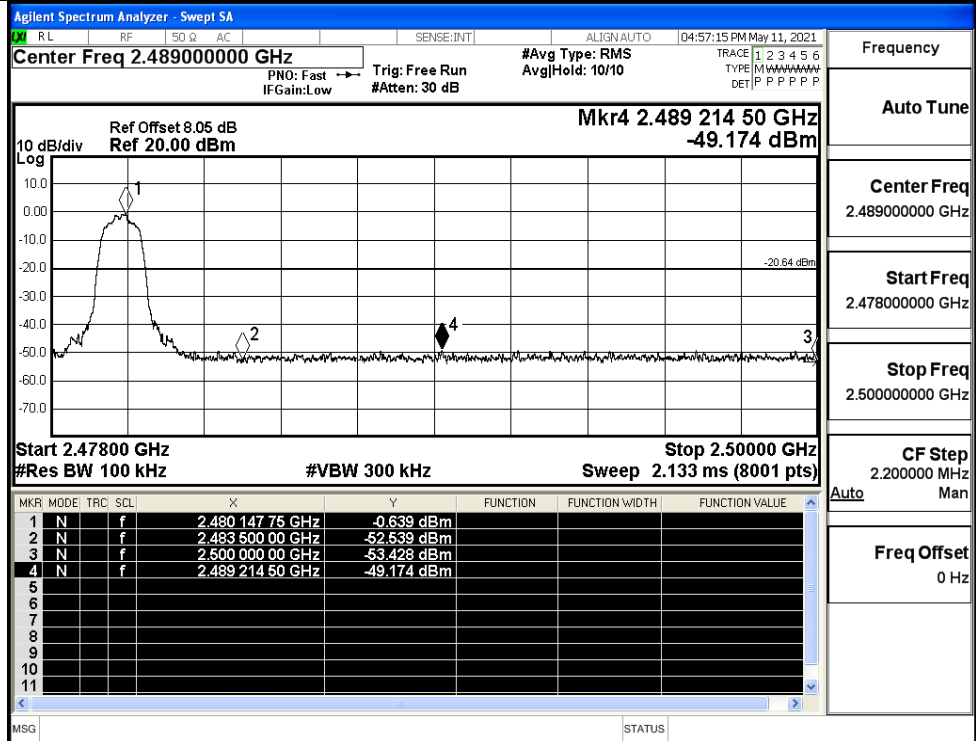
$\pi/4$ DQPSK/LCH/No  
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

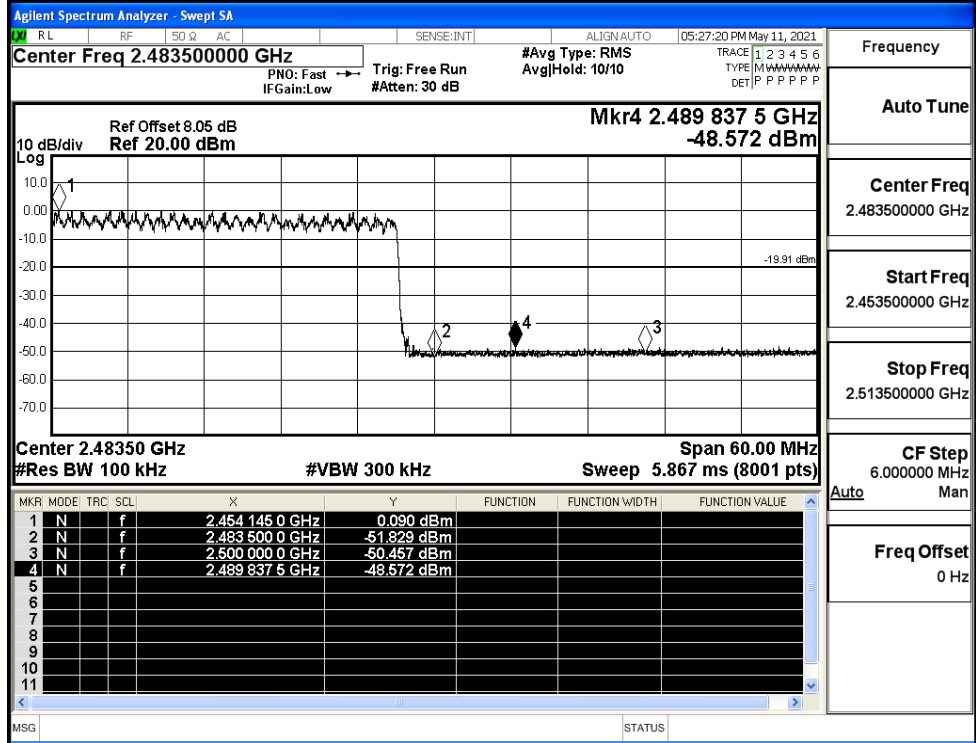
Start Freq  
2.478000000 GHz

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

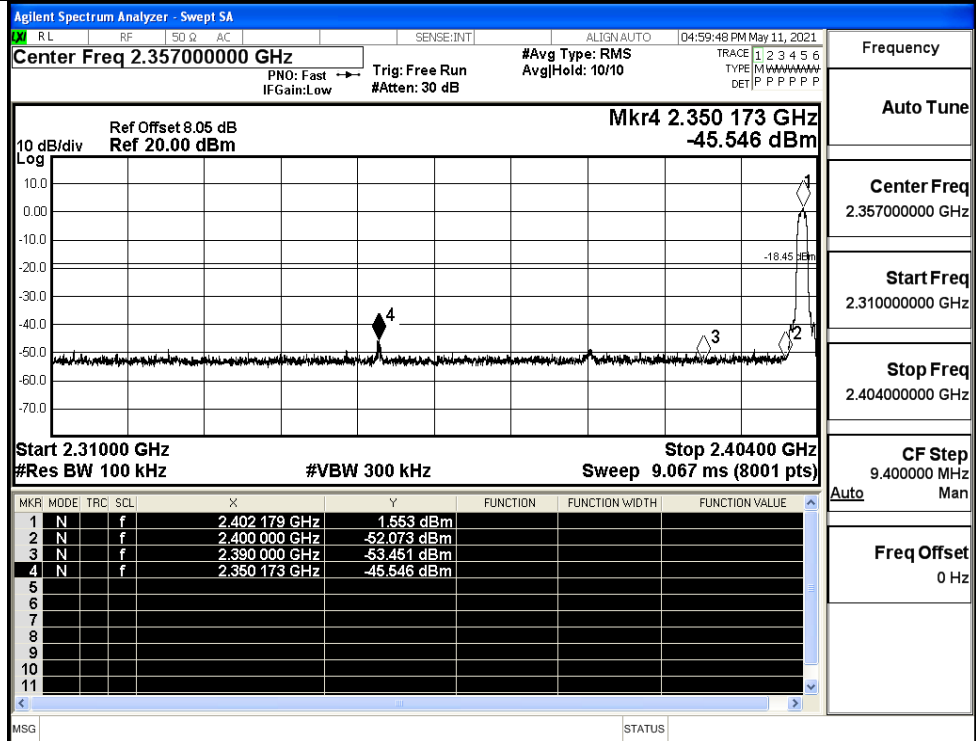
Start Freq  
2.453500000 GHz

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

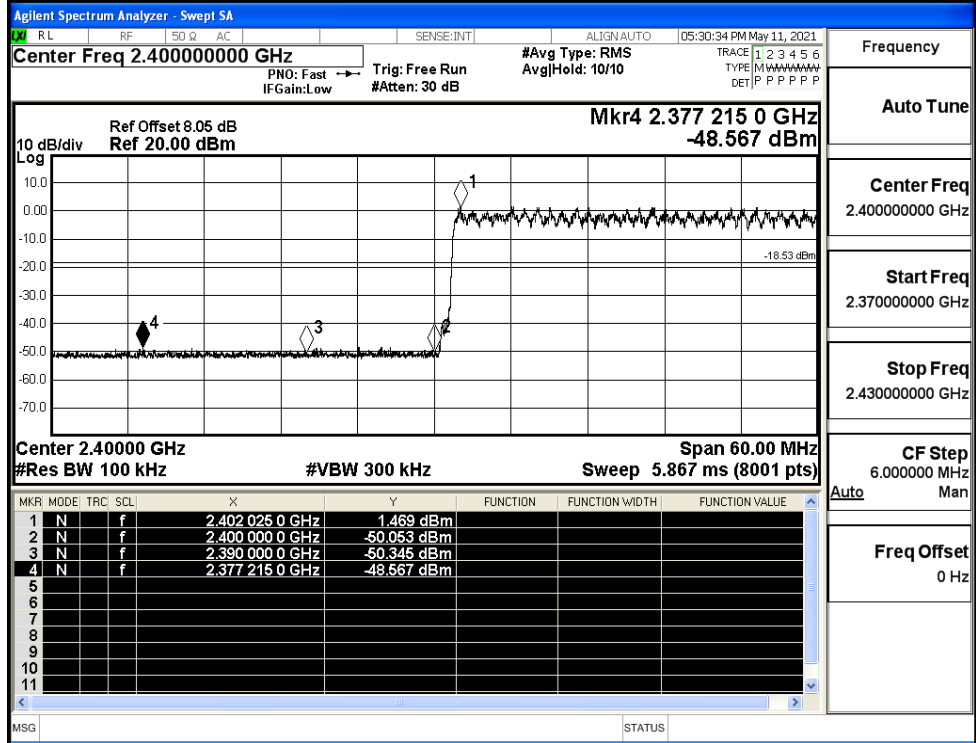
Start Freq  
2.310000000 GHz

Stop Freq  
2.404000000 GHz

CF Step  
9.400000 MHz

Freq Offset  
0 Hz

8DPSK/LCH/Hop



Frequency

Auto Tune

Center Freq  
2.400000000 GHz

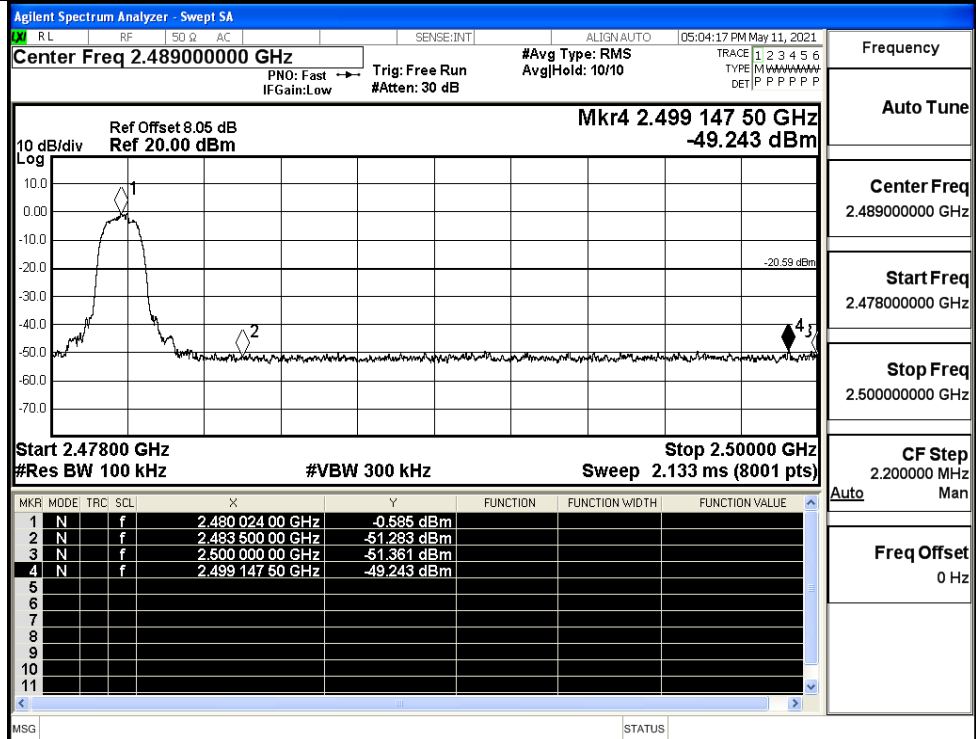
Start Freq  
2.370000000 GHz

Stop Freq  
2.430000000 GHz

CF Step  
6.000000 MHz

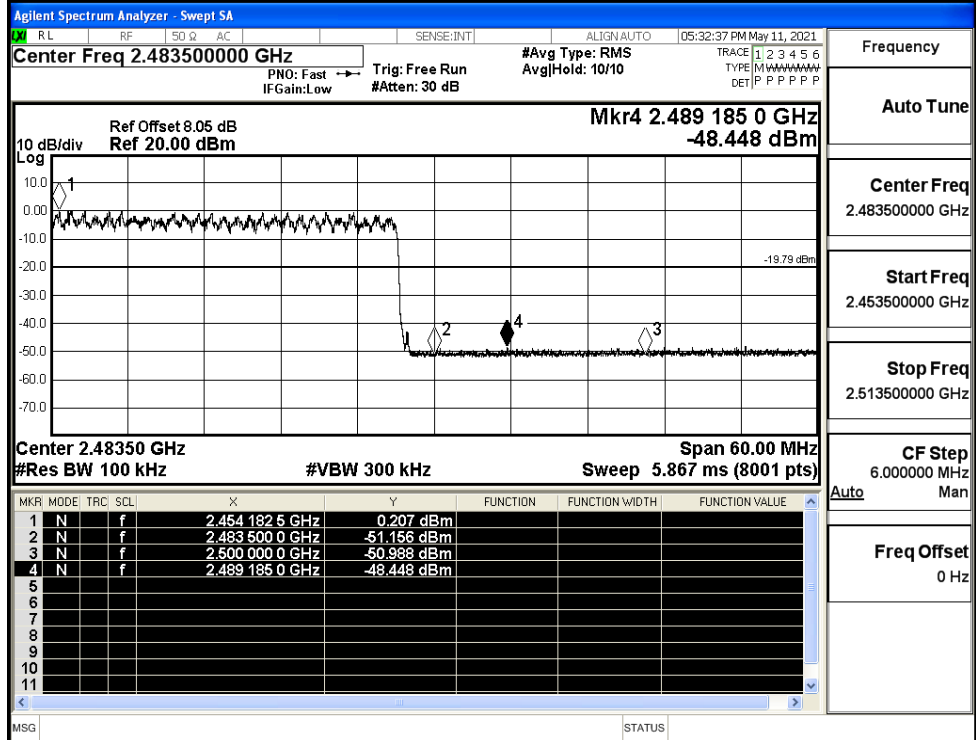
Freq Offset  
0 Hz

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



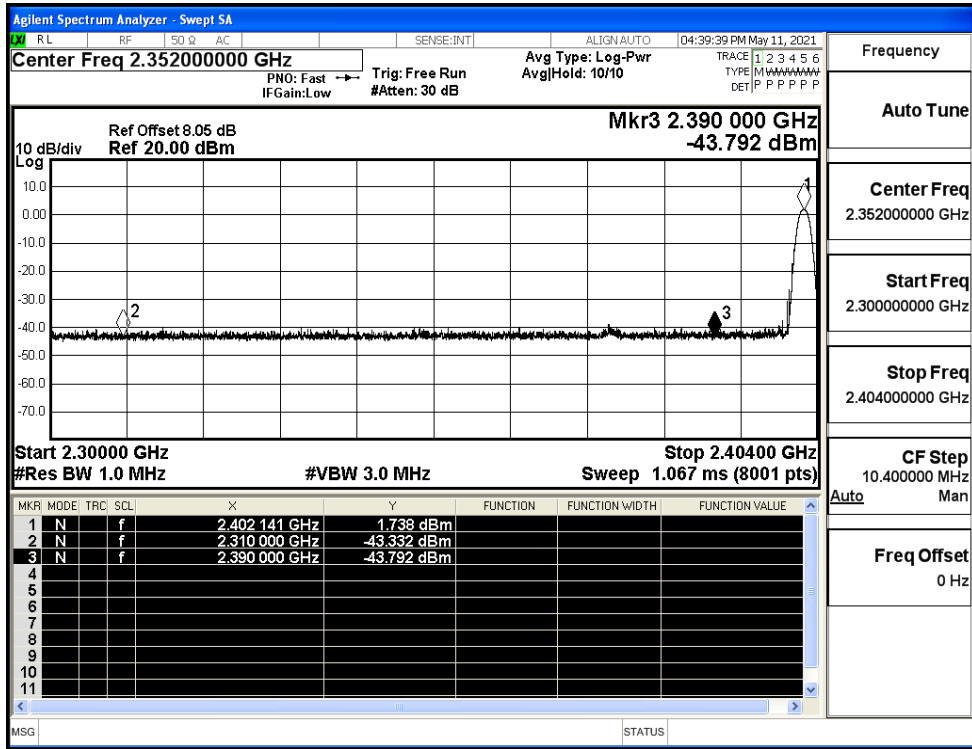
Frequency  
Auto Tune  
Center Freq  
2.483500000 GHz  
Start Freq  
2.453500000 GHz  
Stop Freq  
2.513500000 GHz  
CF Step  
6.000000 MHz  
Auto Man  
Freq Offset  
0 Hz



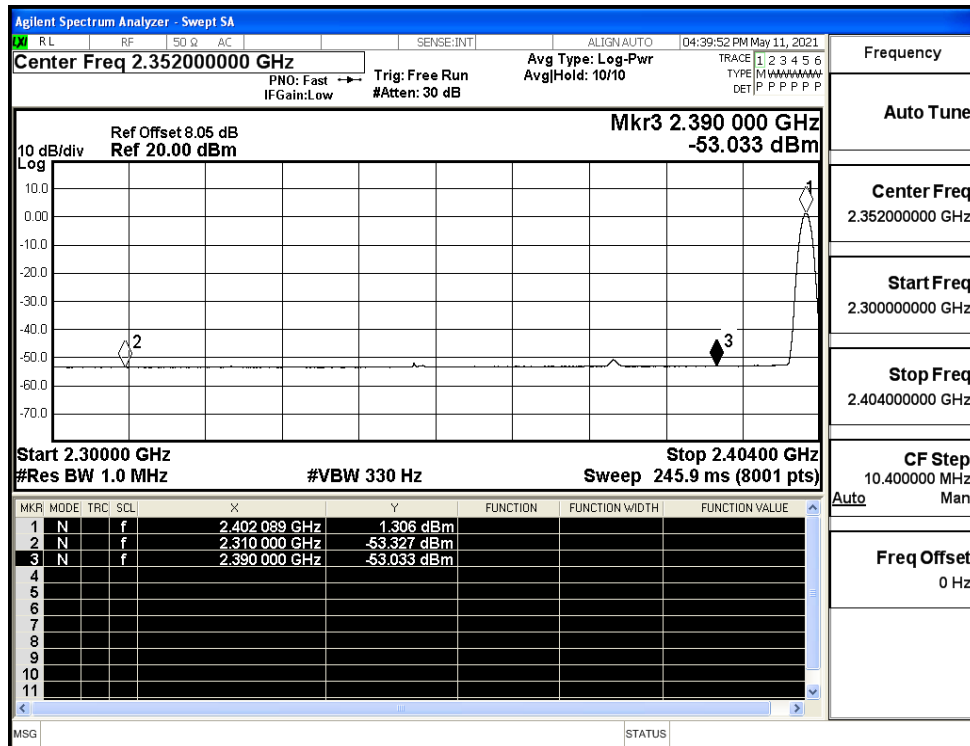
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.33	2.0	0	51.93	PEAK	74	PASS
	Off	2310.0	-53.33	2.0	0	41.93	AV	54	PASS
	Off	2390.0	-43.79	2.0	0	51.47	PEAK	74	PASS
	Off	2390.0	-53.03	2.0	0	42.22	AV	54	PASS
	Off	2483.5	-42.99	2.0	0	52.27	PEAK	74	PASS
	Off	2483.5	-52.48	2.0	0	42.77	AV	54	PASS
	Off	2500.0	-42.08	2.0	0	53.18	PEAK	74	PASS
	Off	2500.0	-52.35	2.0	0	42.91	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.16	2.0	0	52.10	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	41.94	AV	54	PASS
	Off	2390.0	-42.09	2.0	0	53.17	PEAK	74	PASS
	Off	2390.0	-53.03	2.0	0	42.23	AV	54	PASS
	Off	2483.5	-41.22	2.0	0	54.03	PEAK	74	PASS
	Off	2483.5	-52.39	2.0	0	42.87	AV	54	PASS
	Off	2500.0	-42.00	2.0	0	53.26	PEAK	74	PASS
	Off	2500.0	-52.33	2.0	0	42.93	AV	54	PASS
8DPSK	Off	2310.0	-42.92	2.0	0	52.34	PEAK	74	PASS
	Off	2310.0	-53.36	2.0	0	41.90	AV	54	PASS
	Off	2390.0	-43.24	2.0	0	52.02	PEAK	74	PASS
	Off	2390.0	-52.99	2.0	0	42.26	AV	54	PASS
	Off	2483.5	-42.42	2.0	0	52.83	PEAK	74	PASS
	Off	2483.5	-52.44	2.0	0	42.82	AV	54	PASS
	Off	2500.0	-42.41	2.0	0	52.85	PEAK	74	PASS
	Off	2500.0	-52.41	2.0	0	42.85	AV	54	PASS

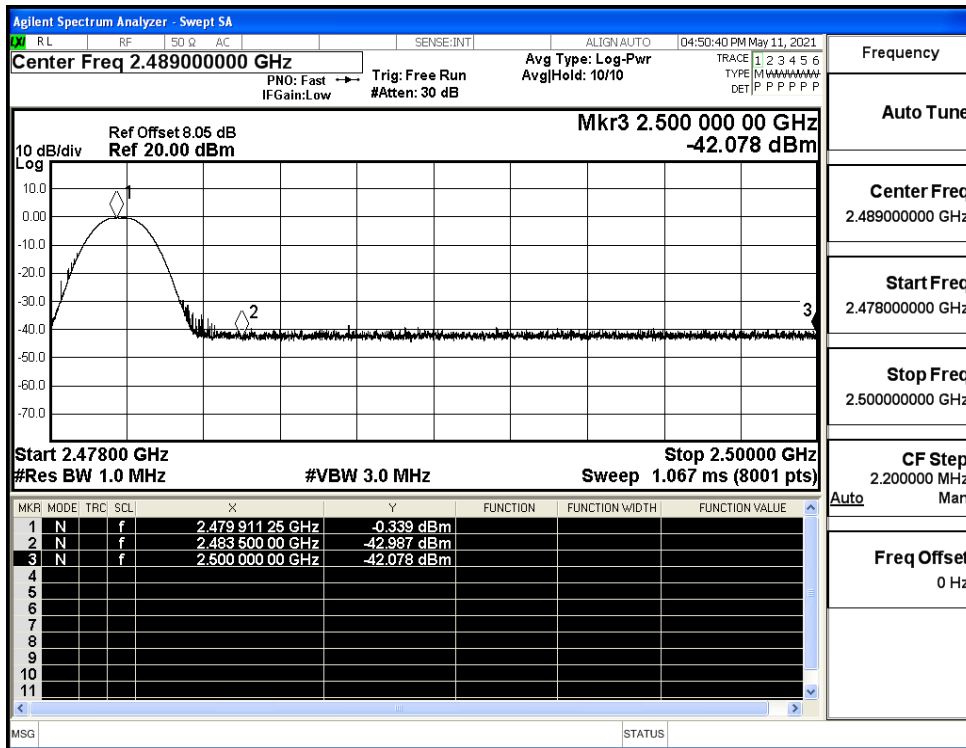
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



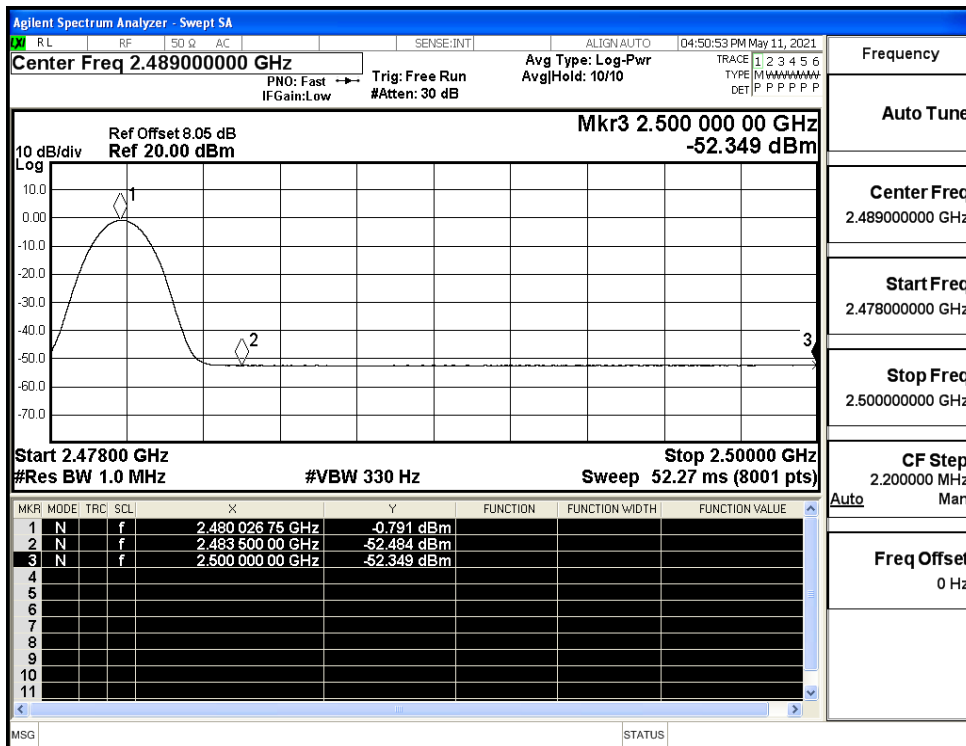
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



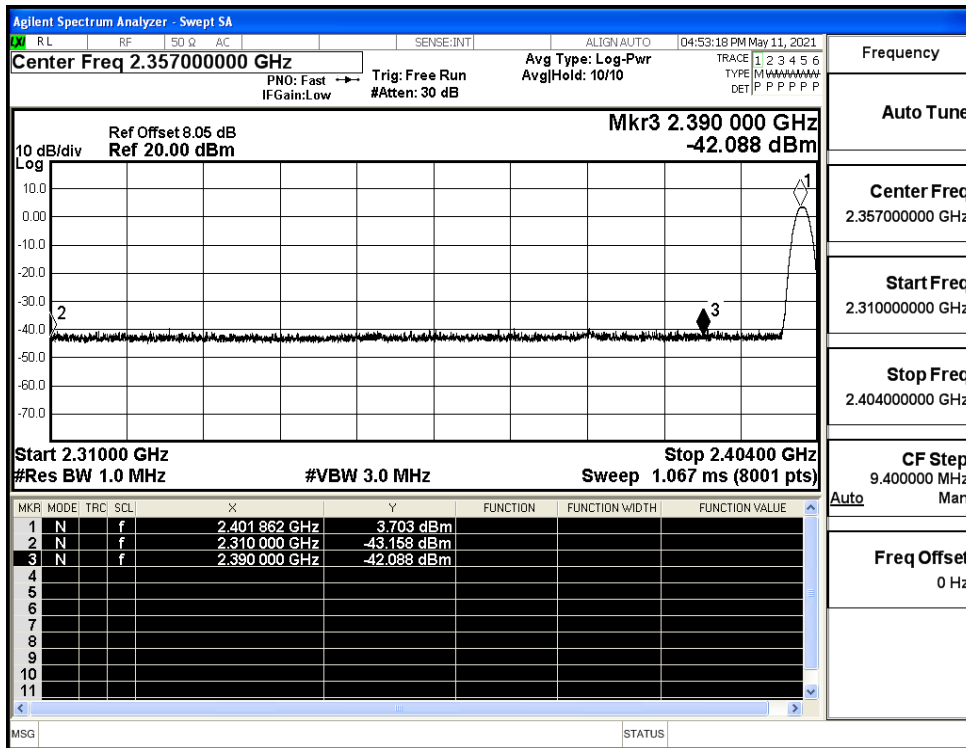
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



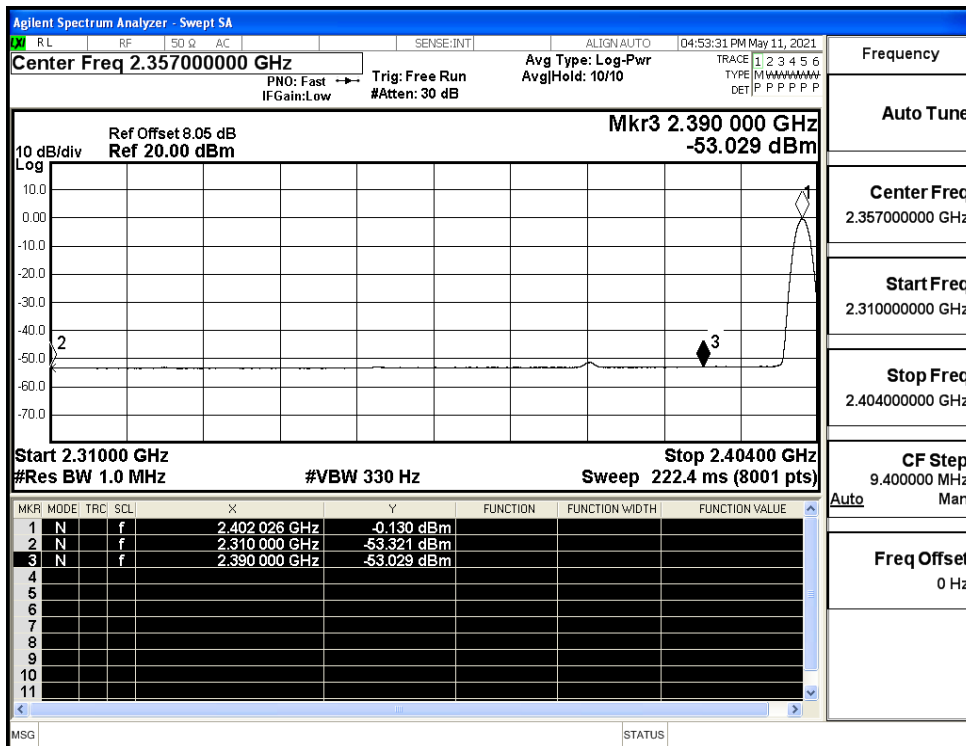
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



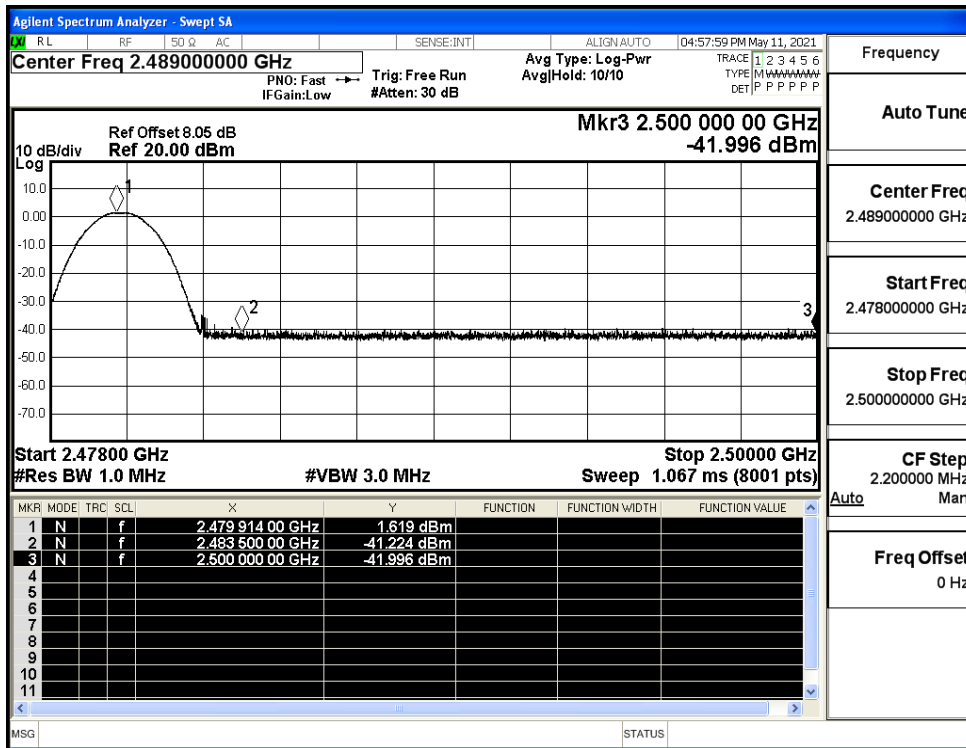
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



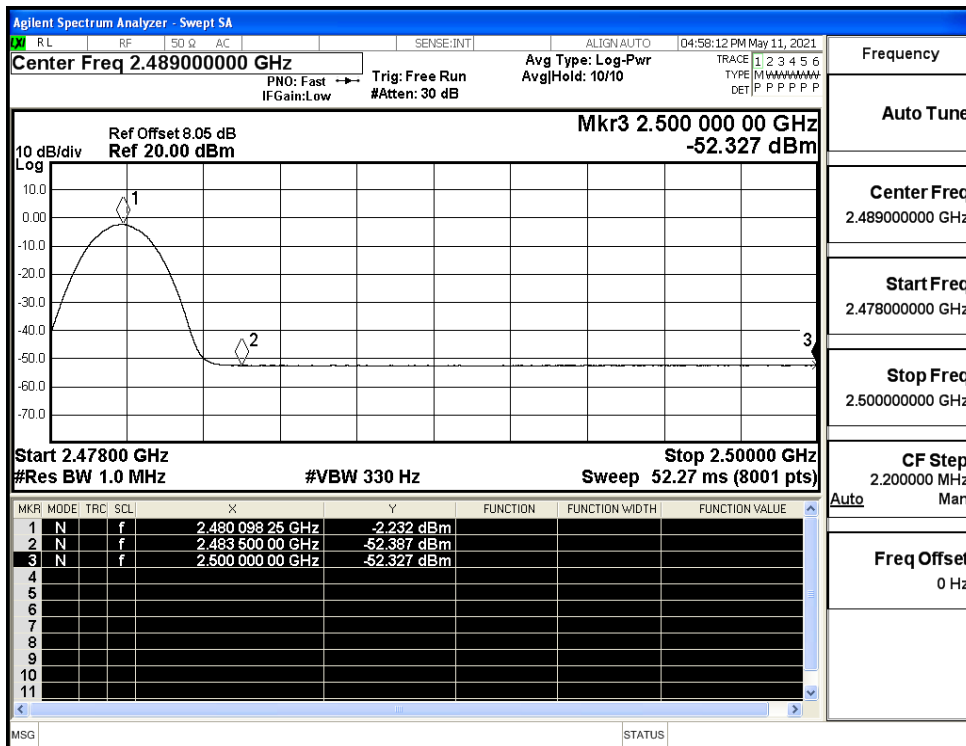
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



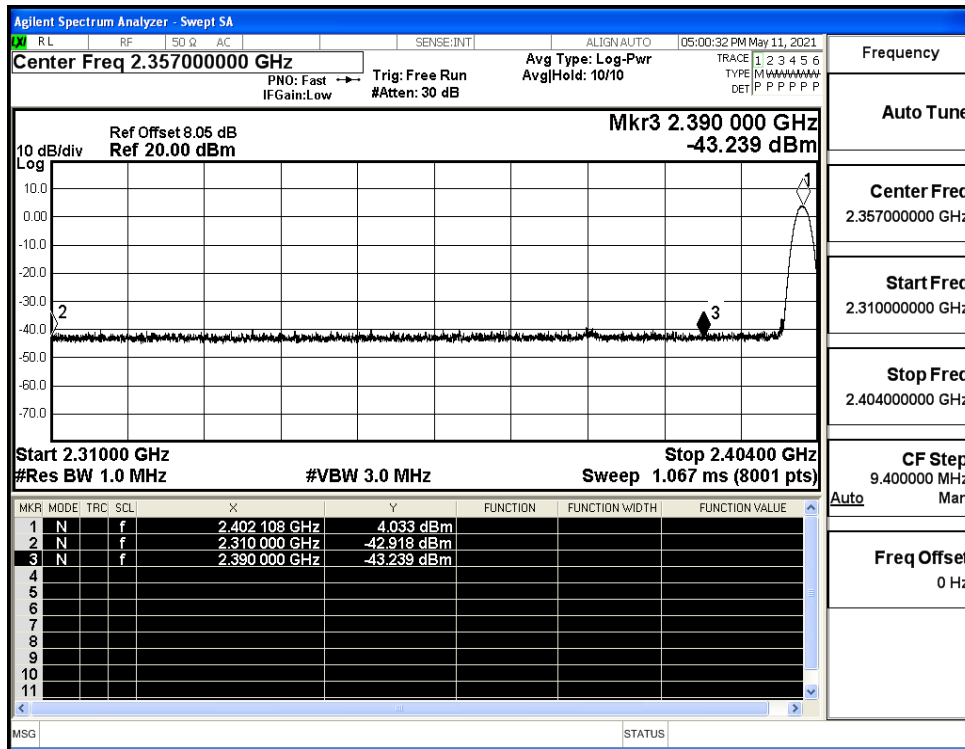
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



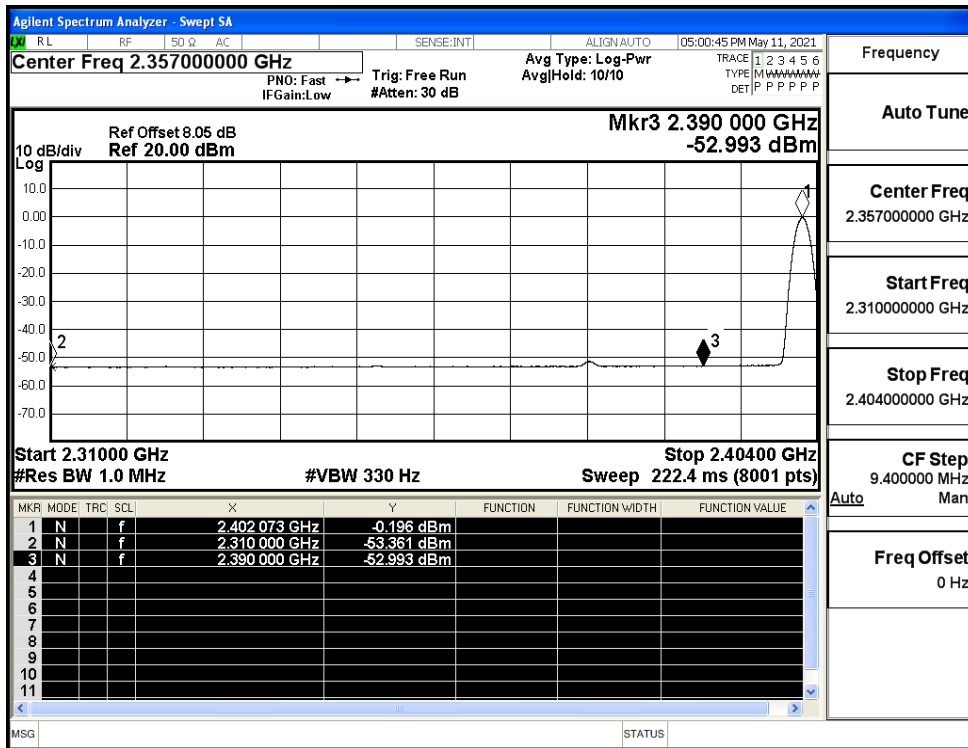
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



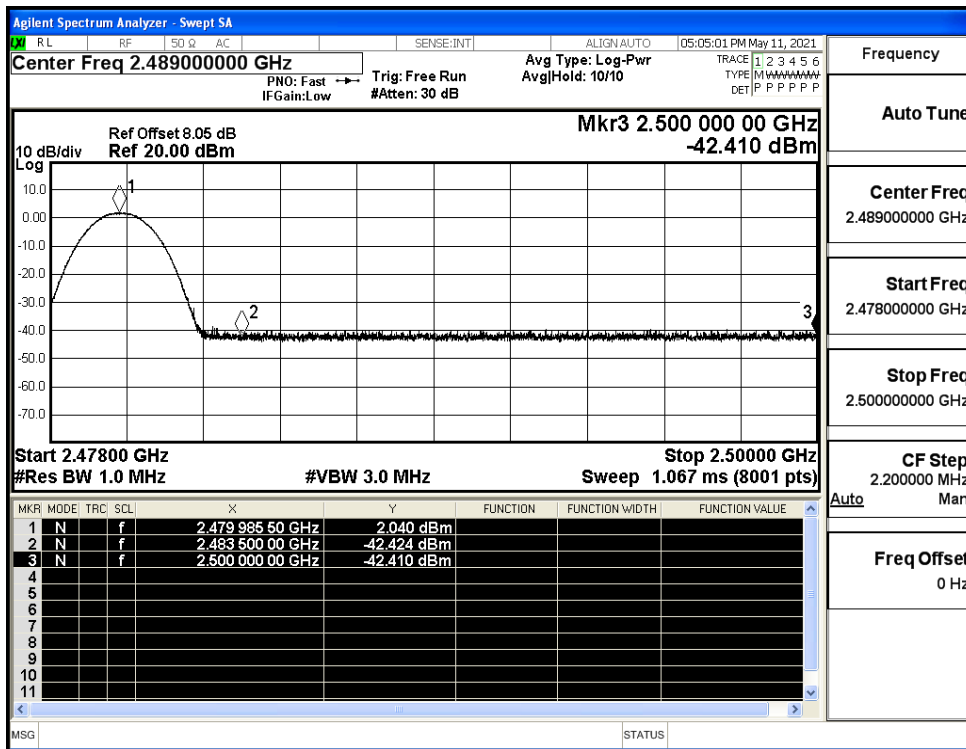
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

