

Appendix A

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

Product Name: PORTABLE SOUND CHANGER KARAOKE PLAYER WITH BLUETOOTH

Trade Mark: singing machine

Test Model: SMK1010

Environmental Conditions

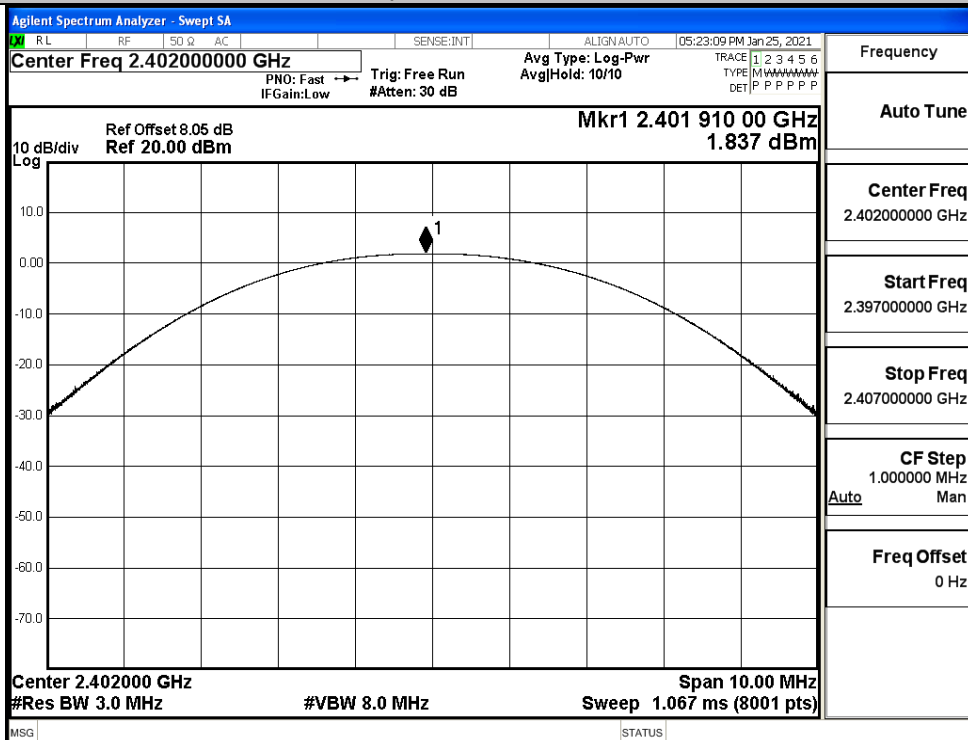
Temperature:	22.0° C
Relative Humidity:	53.0%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

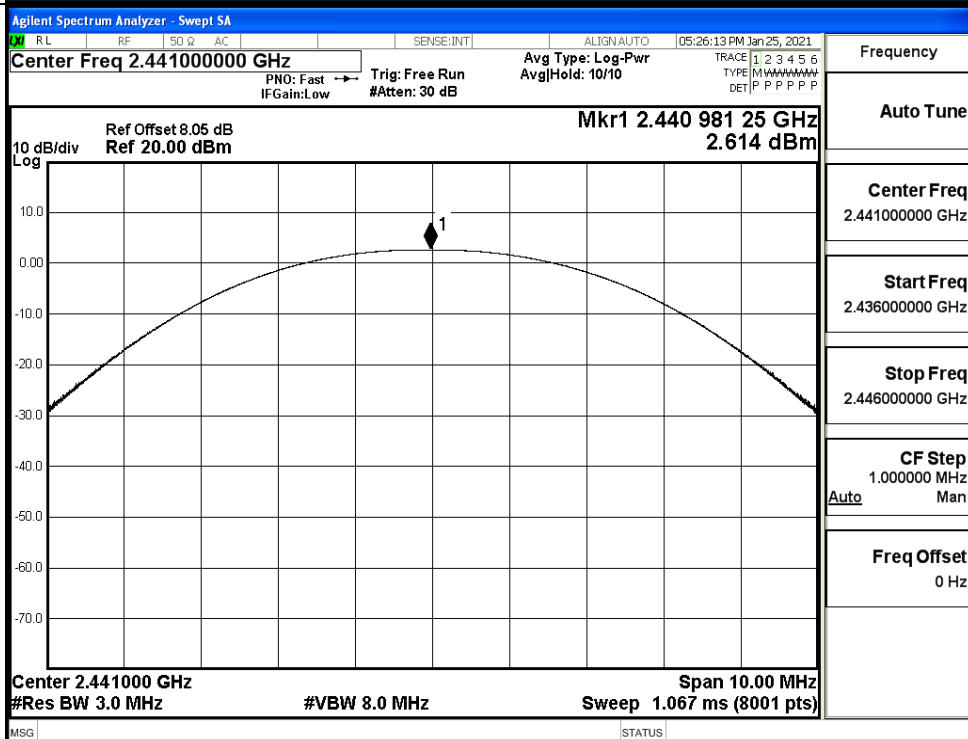
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.837	21	PASS
	MCH	2.614	21	PASS
	HCH	2.992	21	PASS
$\pi/4$ DQPSK	LCH	2.578	21	PASS
	MCH	3.155	21	PASS
	HCH	3.049	21	PASS
8DPSK	LCH	3.365	21	PASS
	MCH	4.023	21	PASS
	HCH	3.928	21	PASS

Test Graphs

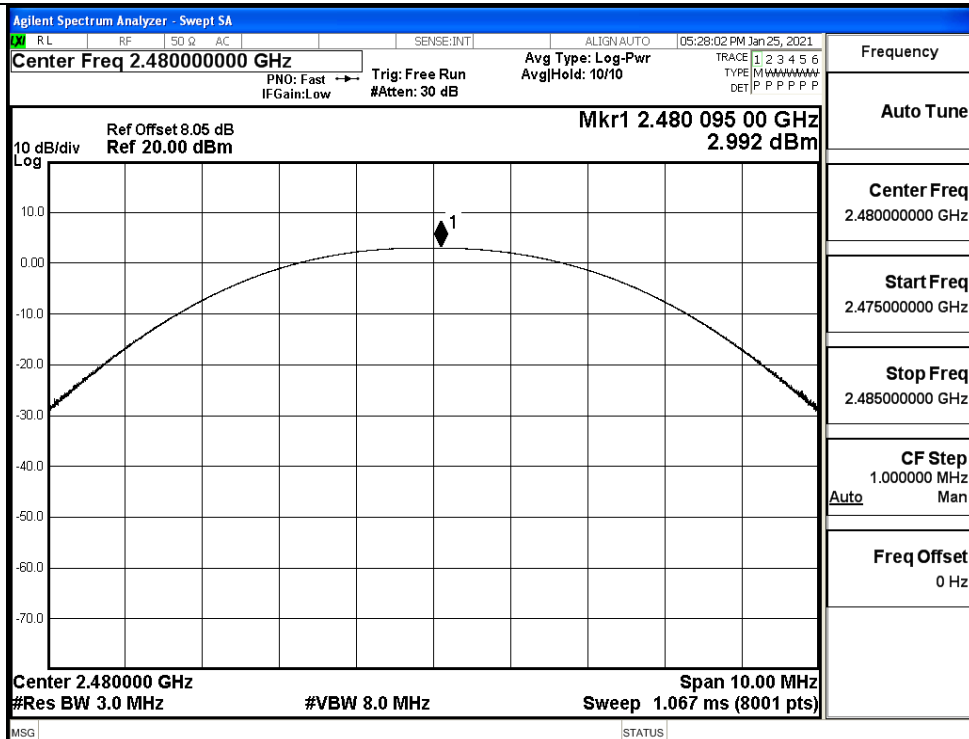
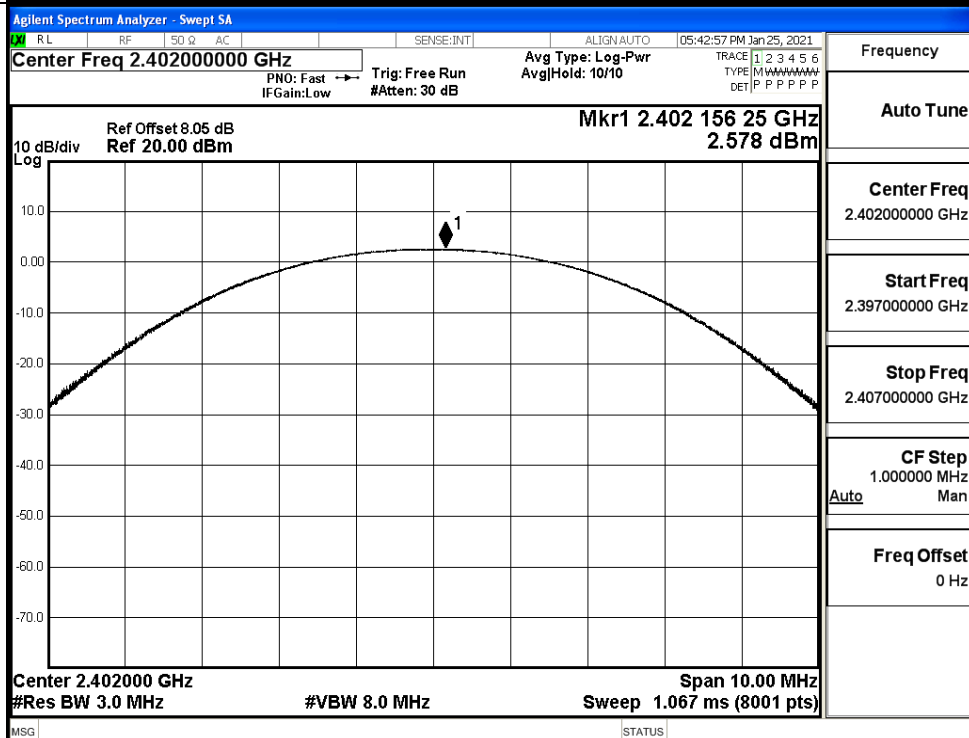
GFSK/LCH

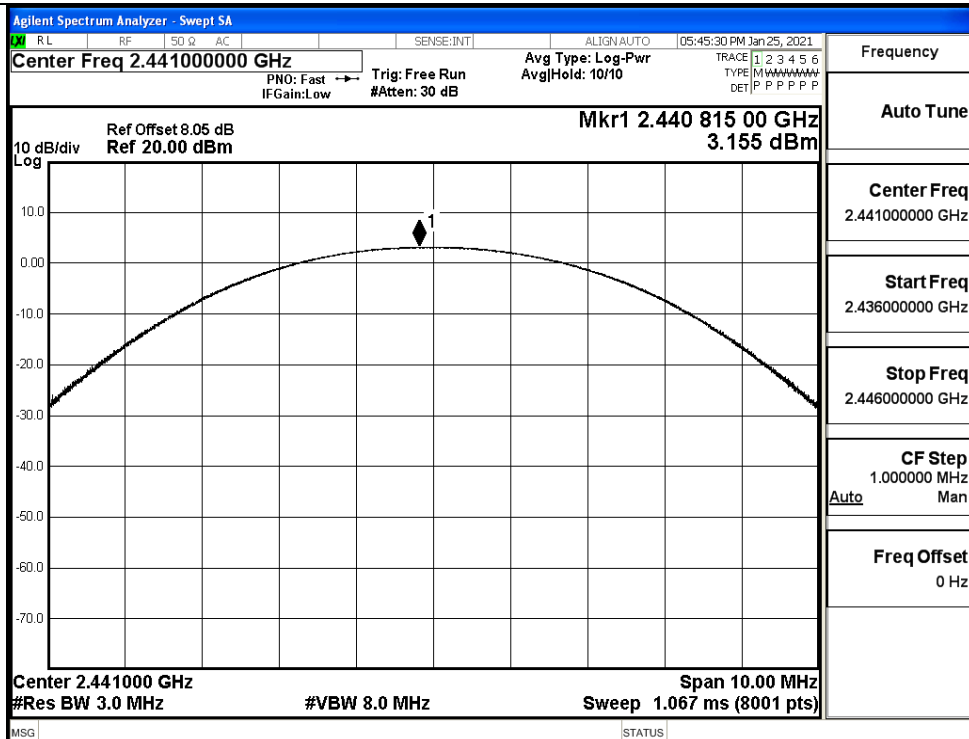
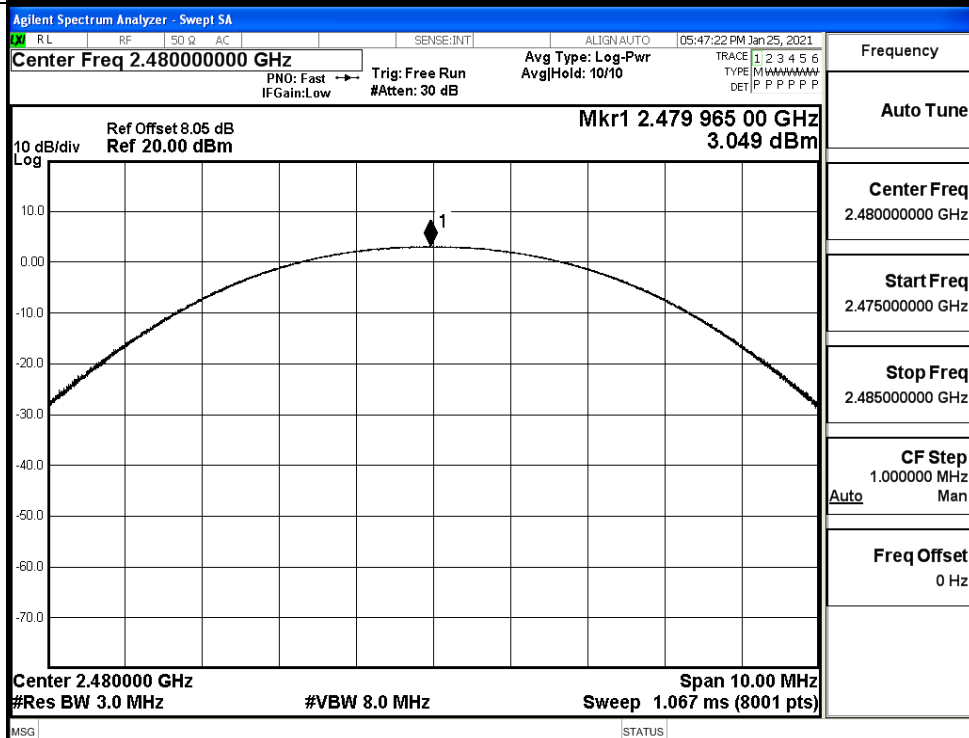


GFSK/MCH

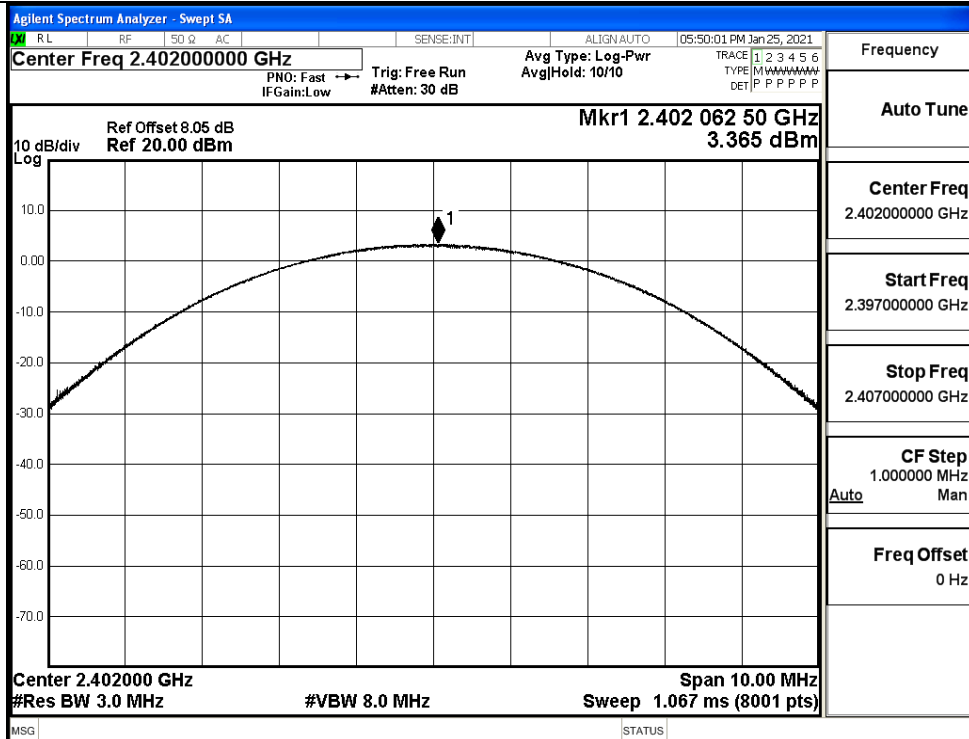


GFSK/HCH

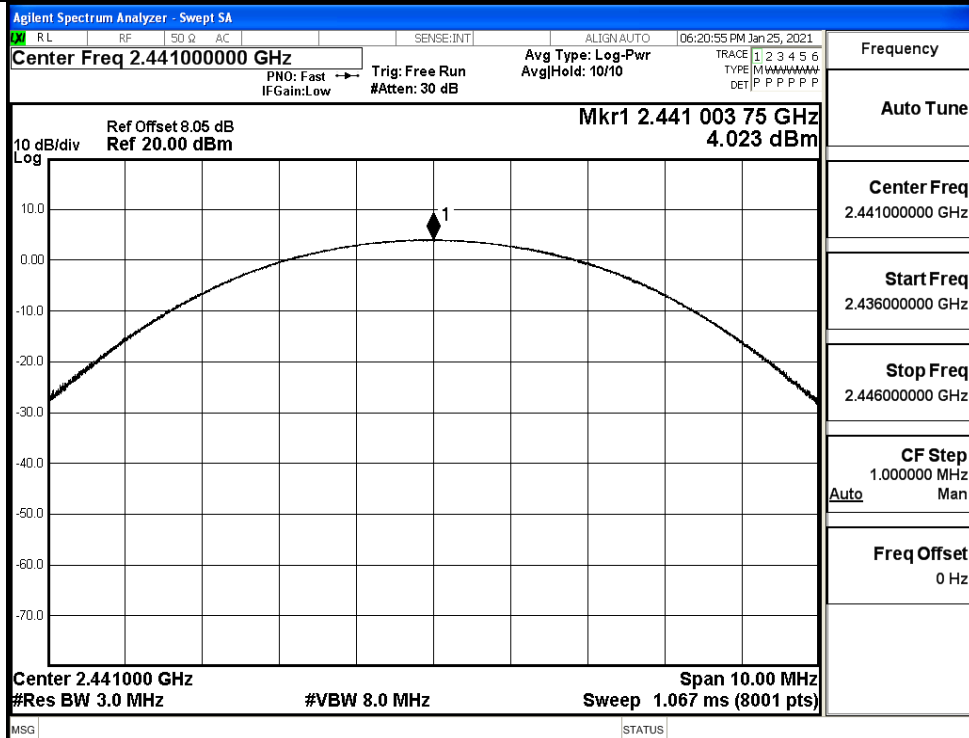
 π /4DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

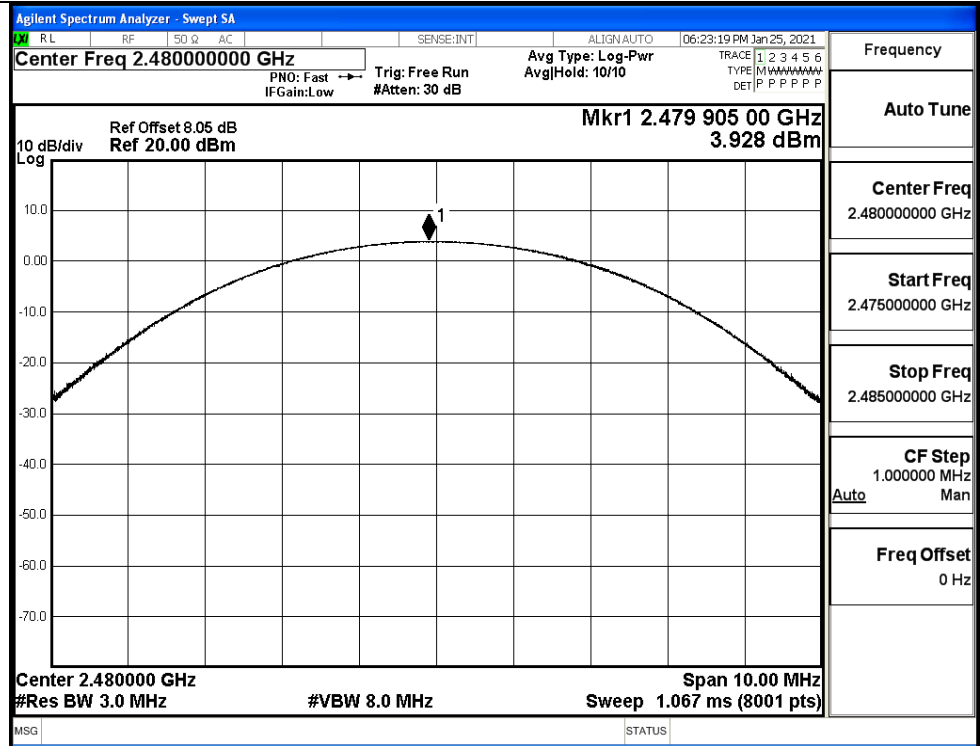
8DPSK/LCH



8DPSK/MCH



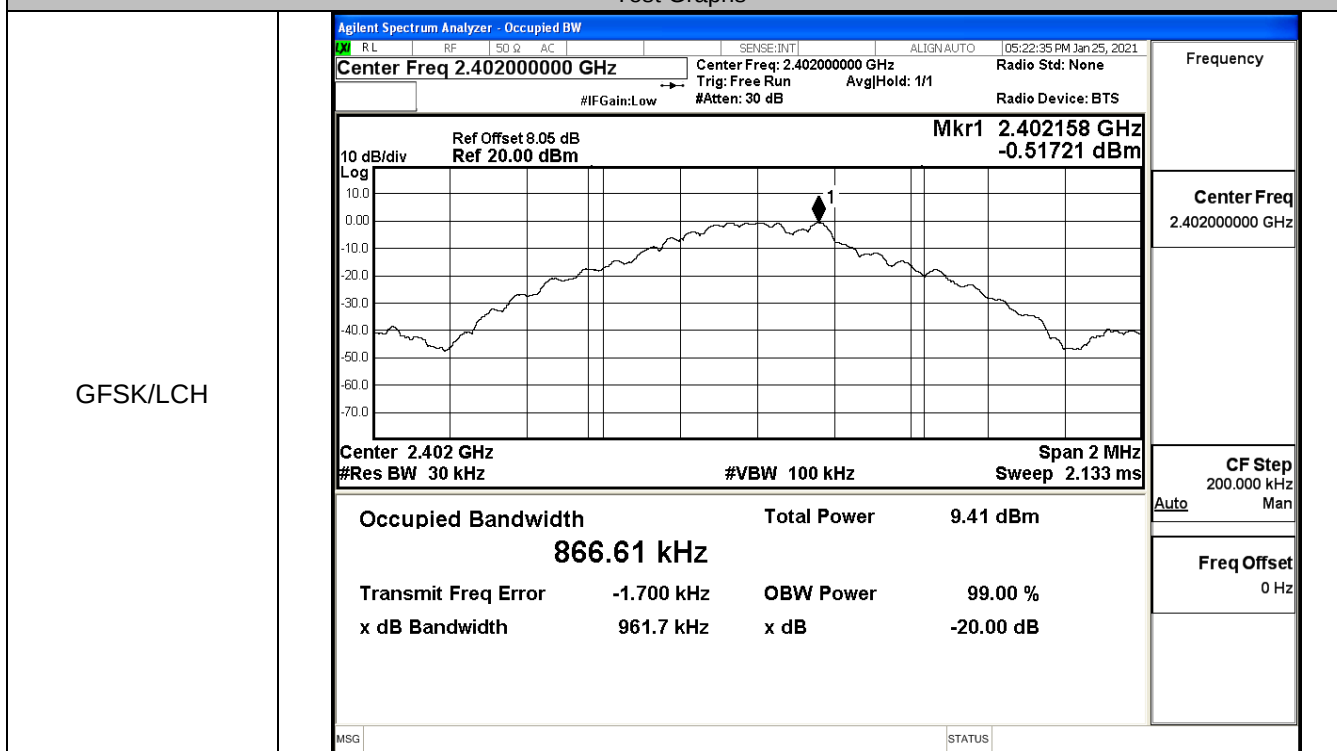
8DPSK/HCH



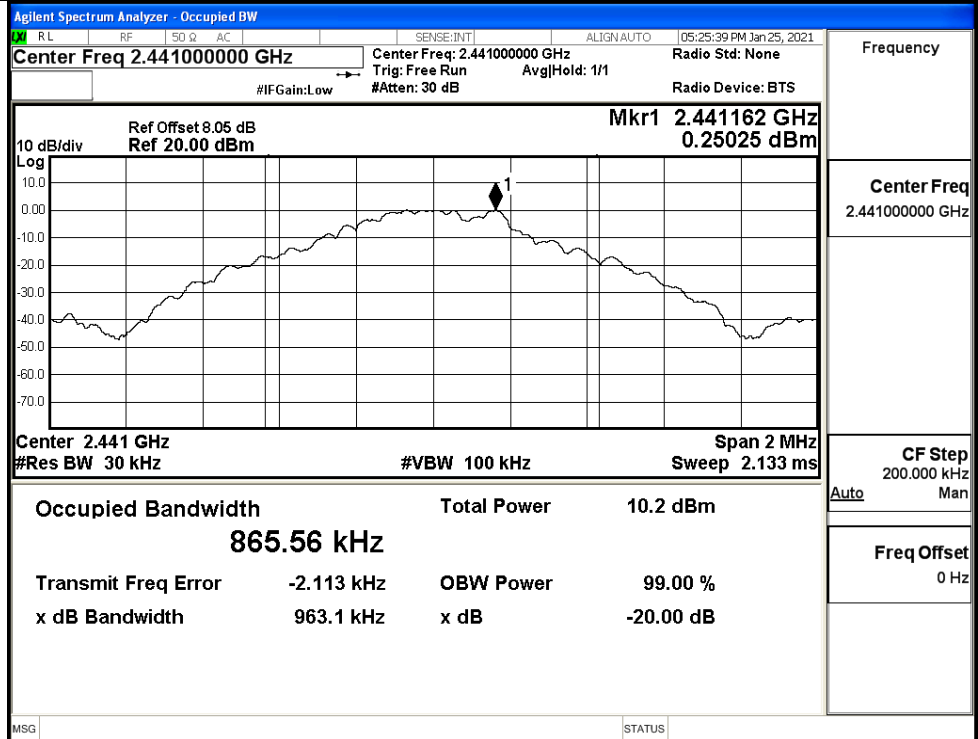
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9617	Not Specified	PASS
	MCH	0.9631	Not Specified	PASS
	HCH	0.9609	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.335	Not Specified	PASS
	MCH	1.335	Not Specified	PASS
	HCH	1.338	Not Specified	PASS
8DPSK	LCH	1.310	Not Specified	PASS
	MCH	1.311	Not Specified	PASS
	HCH	1.311	Not Specified	PASS

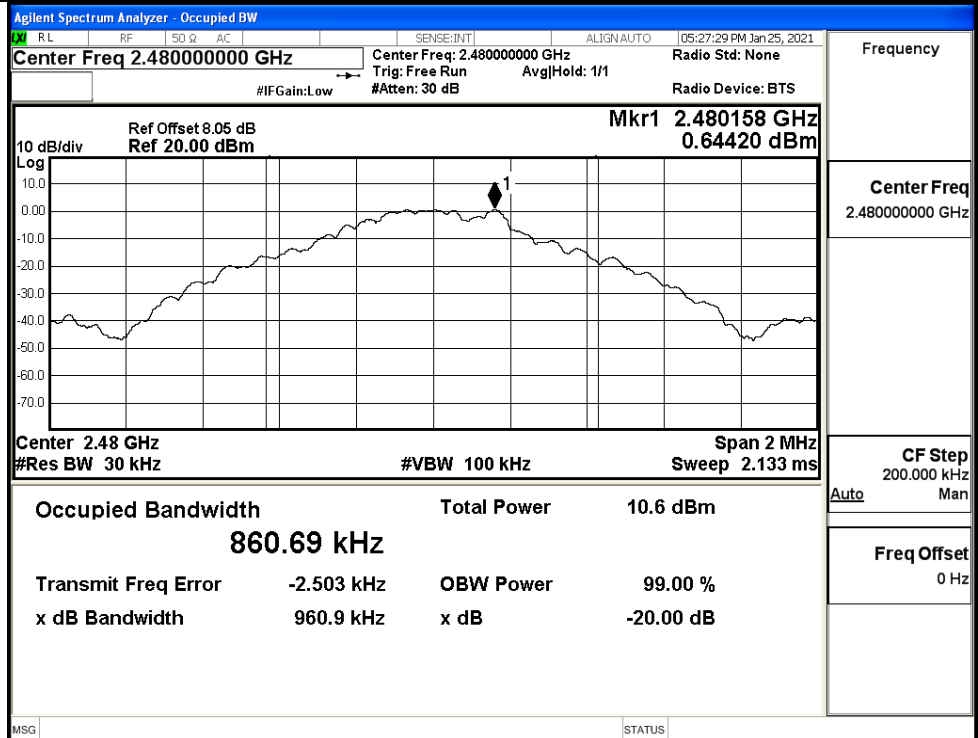
Test Graphs

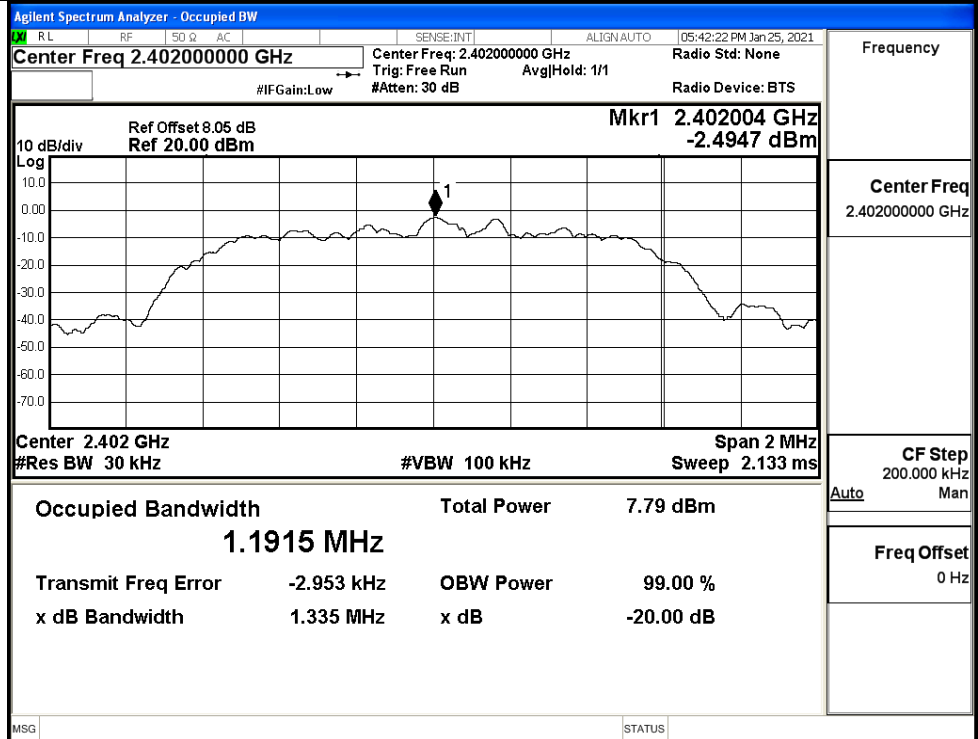
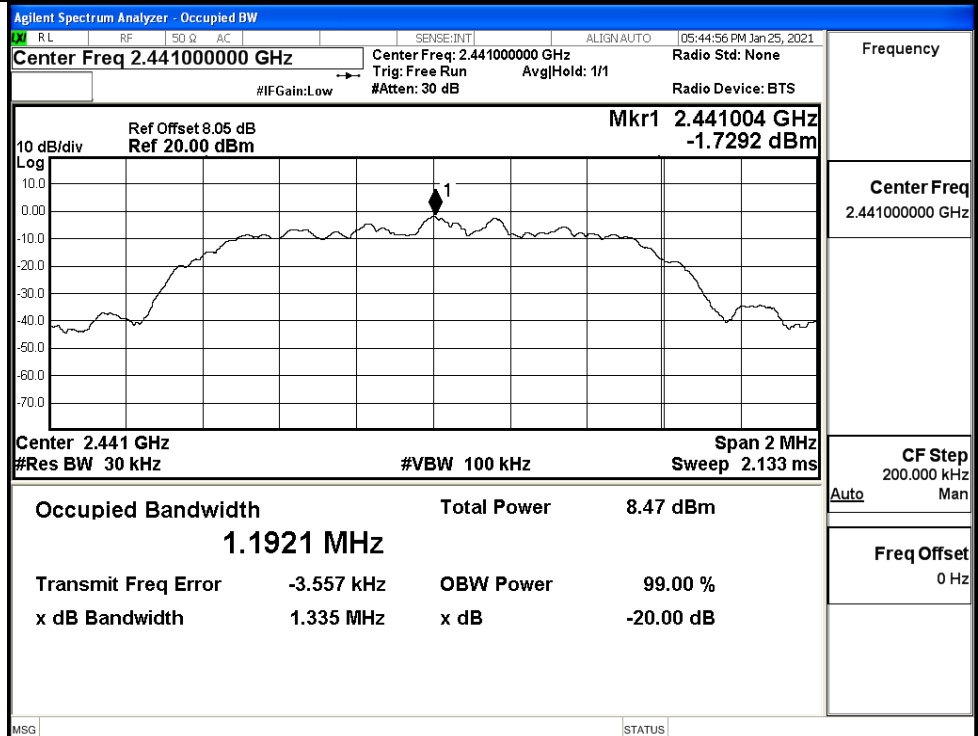


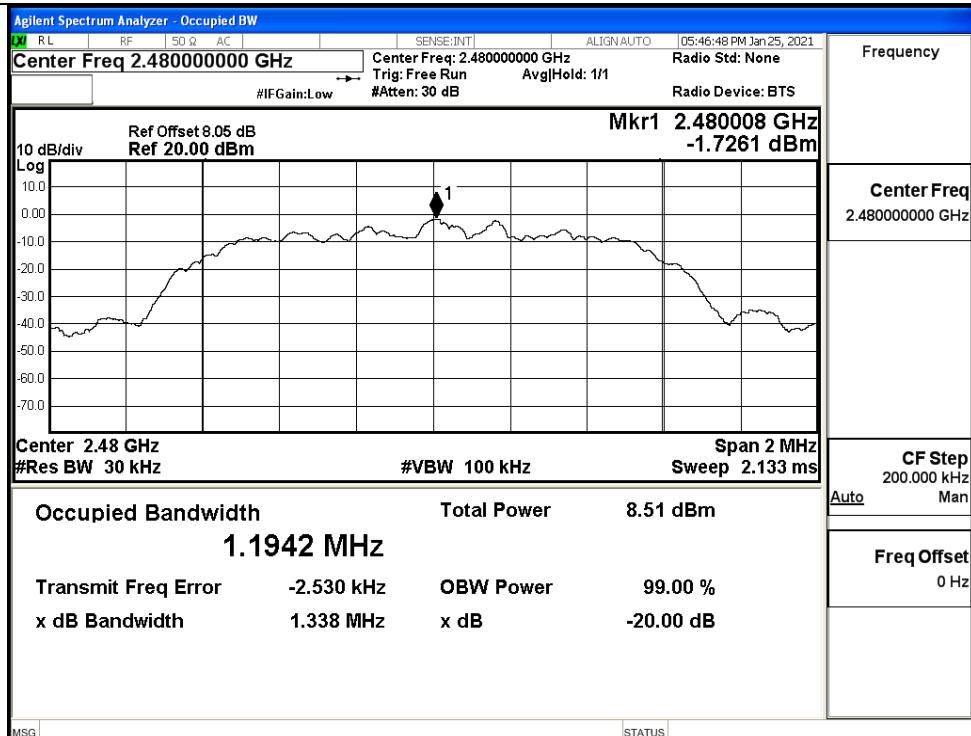
GFSK/MCH



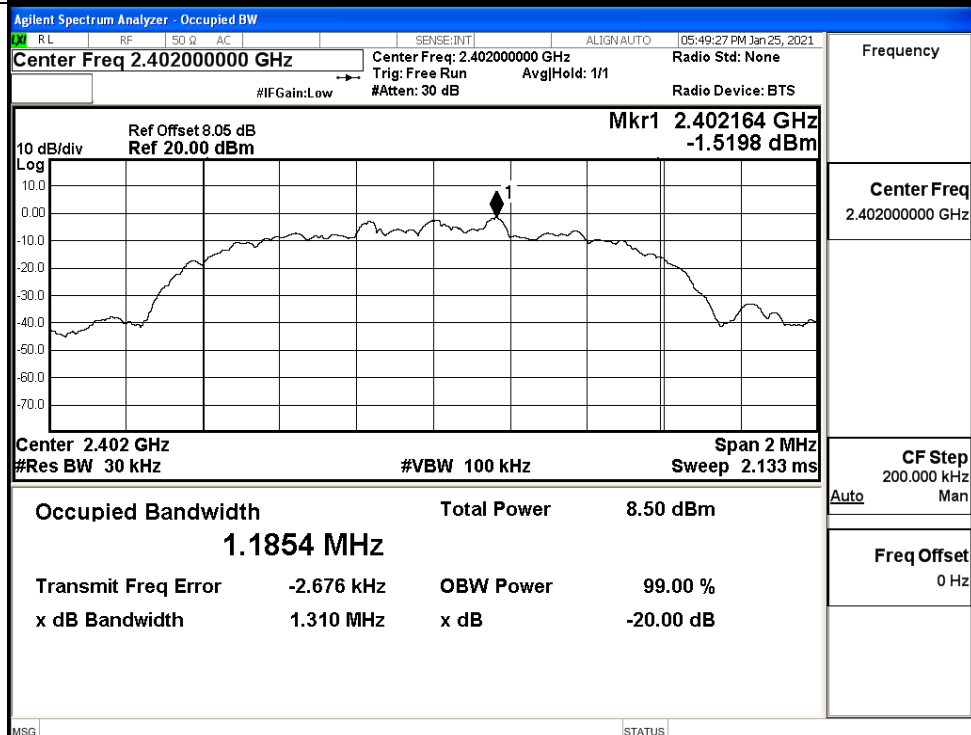
GFSK/HCH



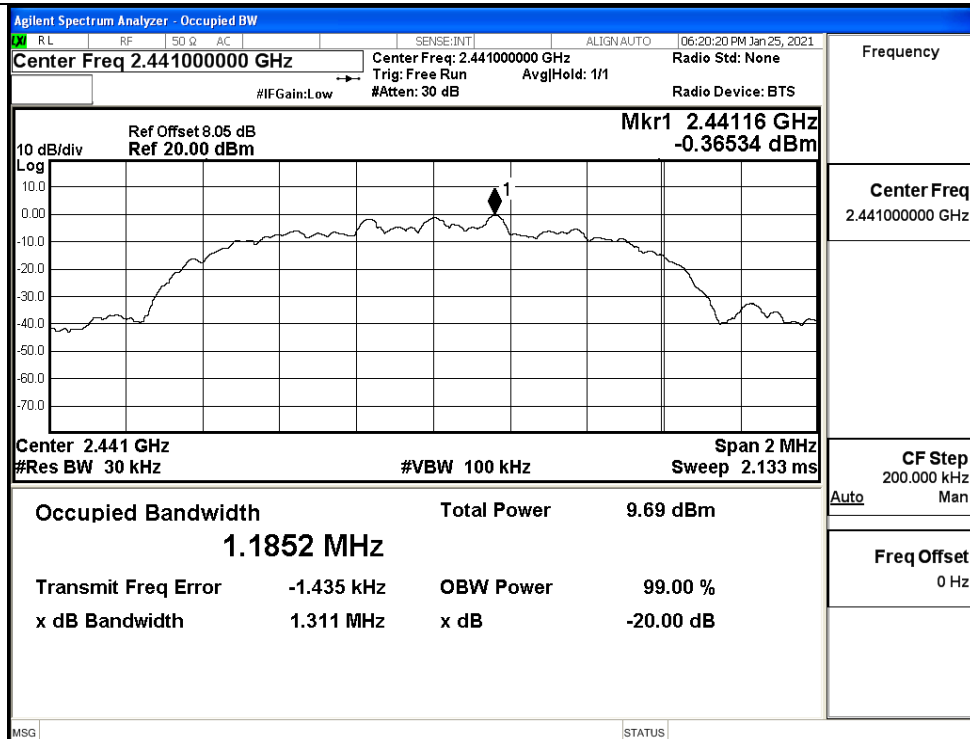
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

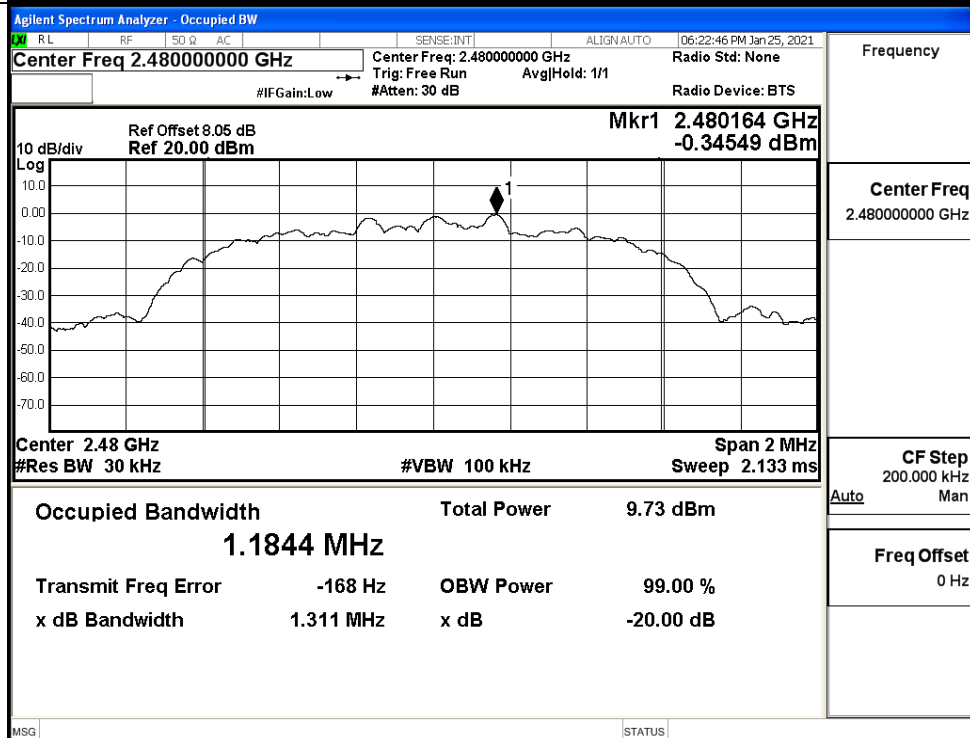
8DPSK/LCH



8DPSK/MCH



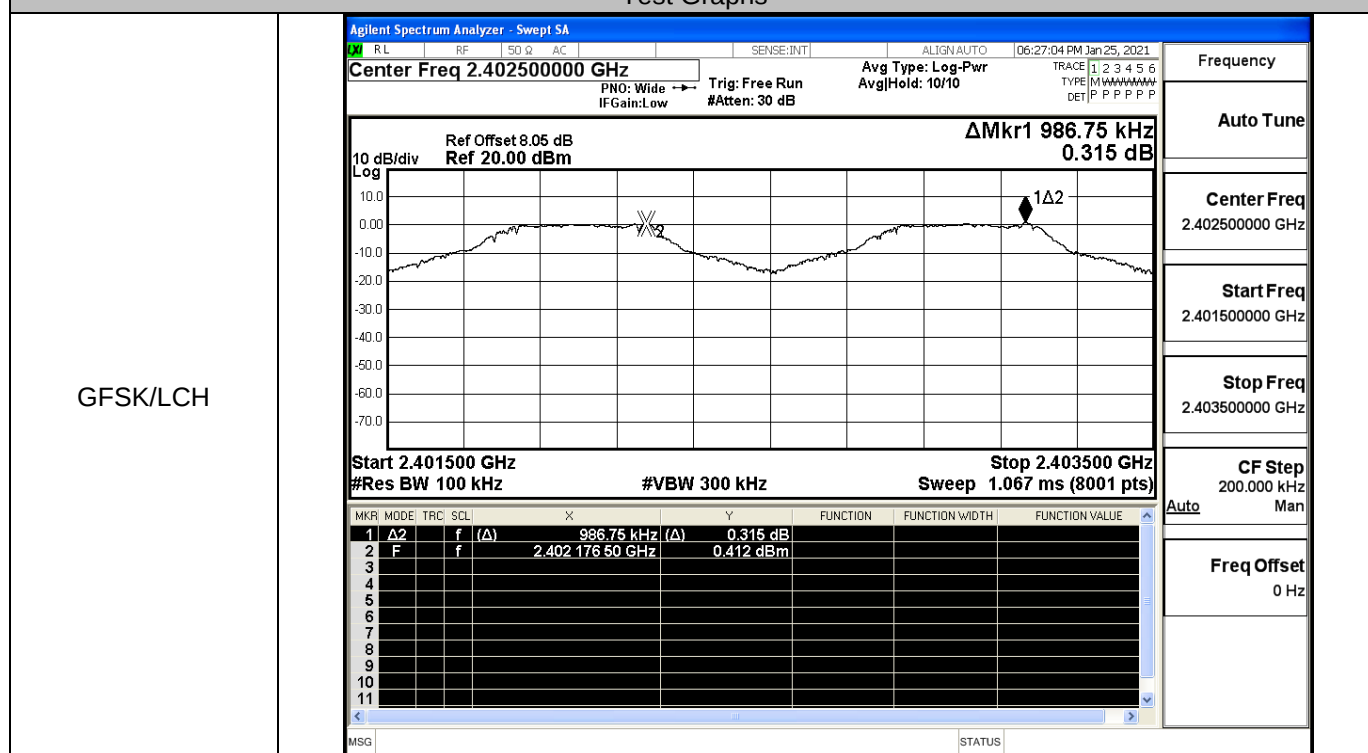
8DPSK/HCH



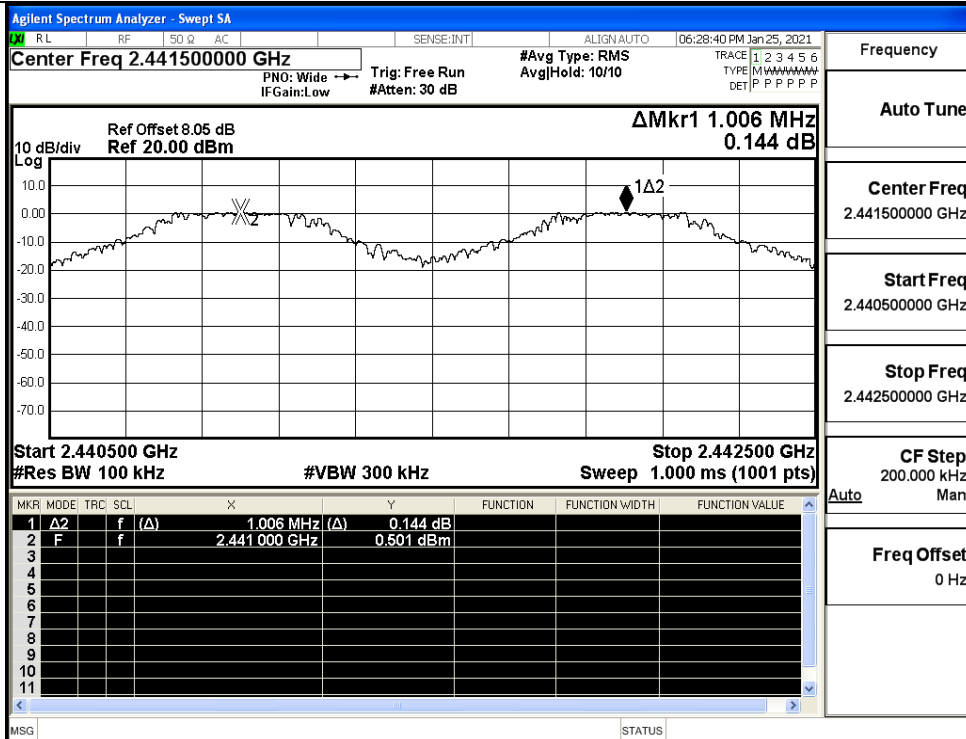
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.987	0.642	PASS
	MCH	1.006	0.642	PASS
	HCH	1.206	0.642	PASS
$\pi/4$ DQPSK	LCH	1.340	0.892	PASS
	MCH	1.132	0.892	PASS
	HCH	0.996	0.892	PASS
8DPSK	LCH	0.998	0.874	PASS
	MCH	1.328	0.874	PASS
	HCH	1.324	0.874	PASS

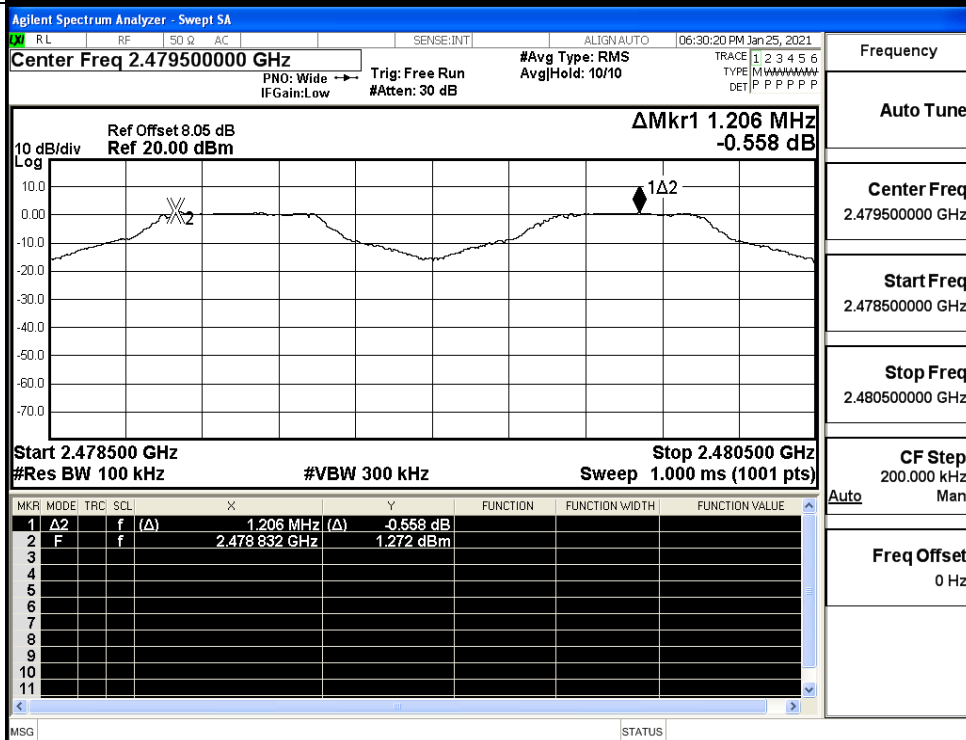
Test Graphs

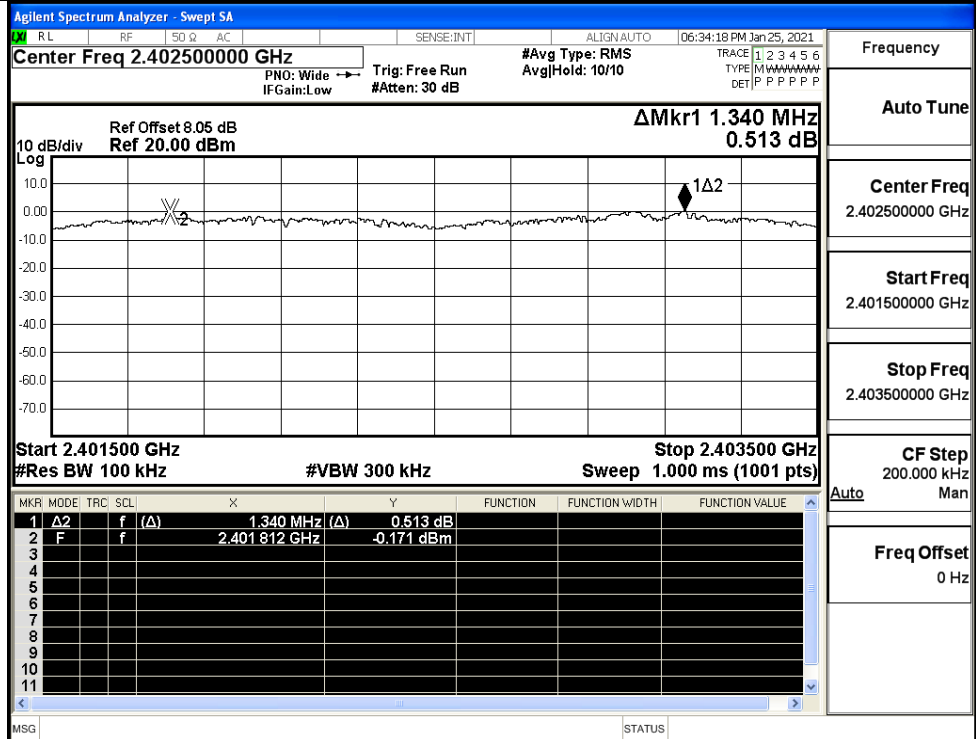
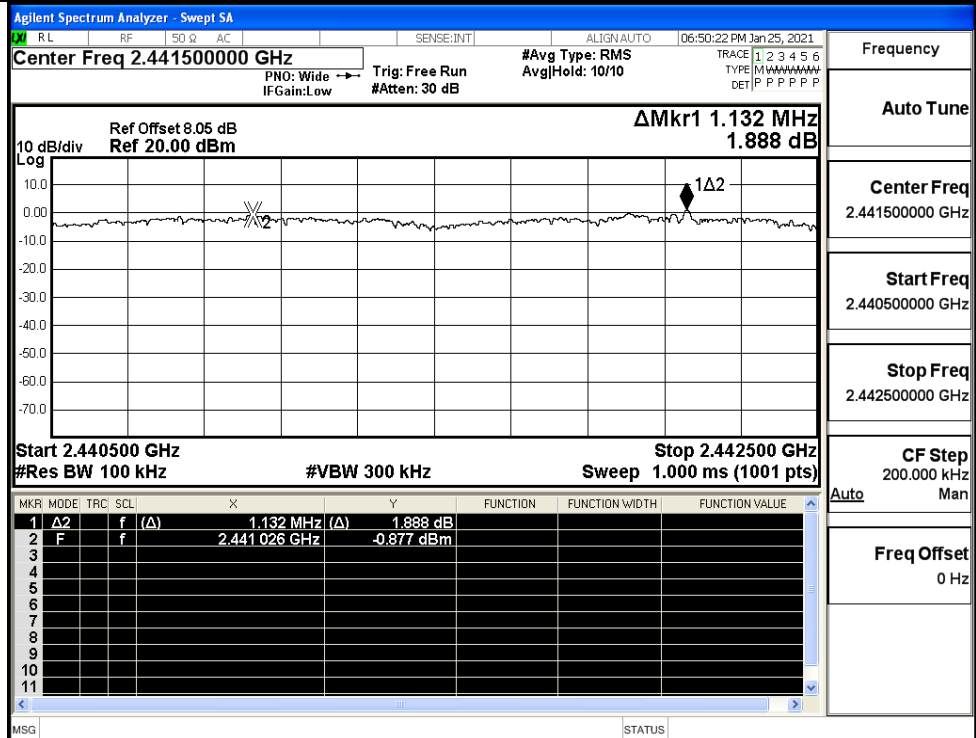


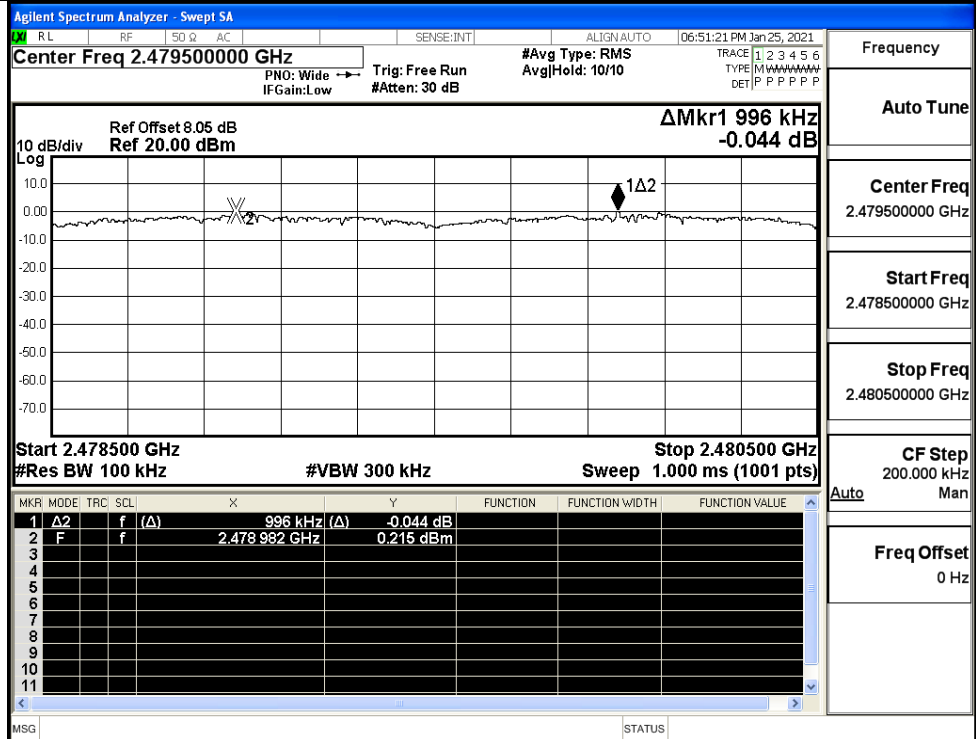
GFSK/MCH



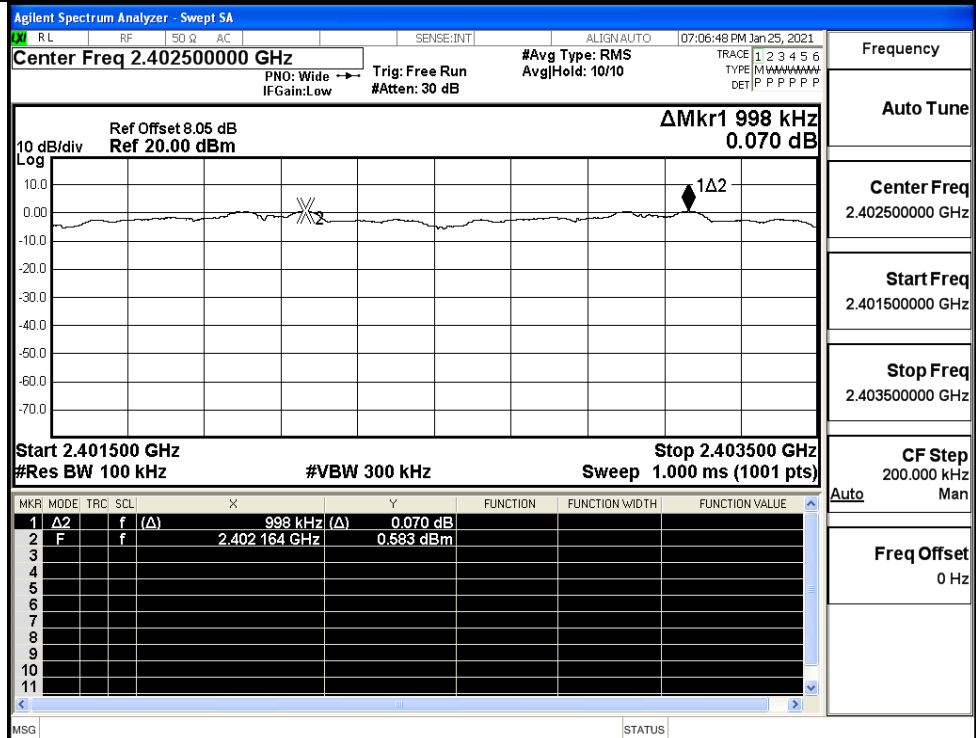
GFSK/HCH



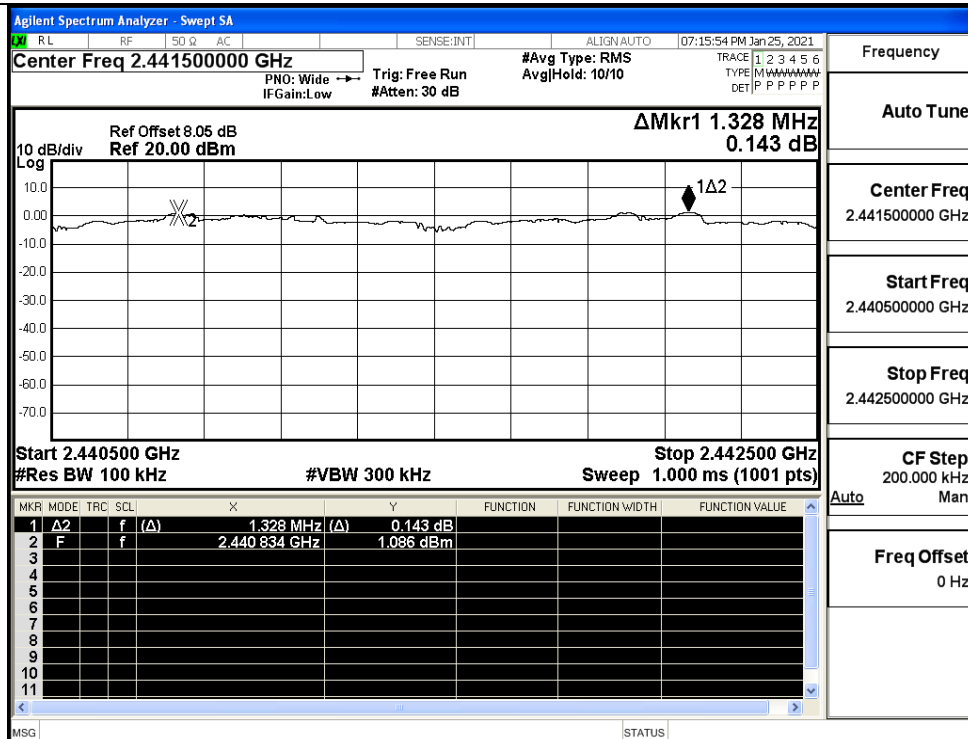
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

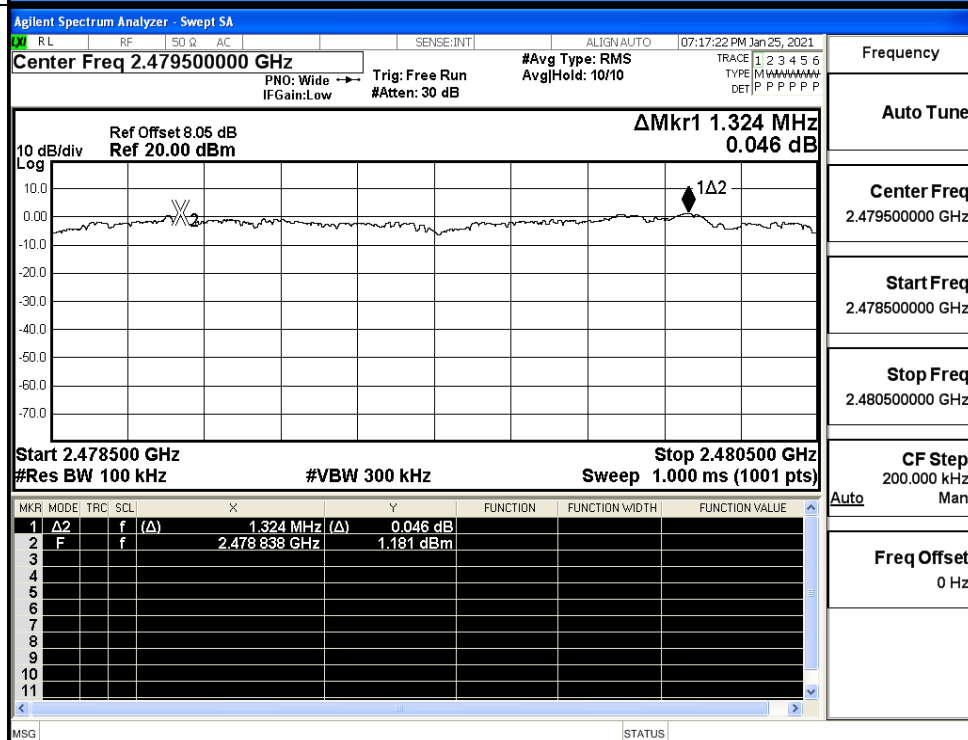
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

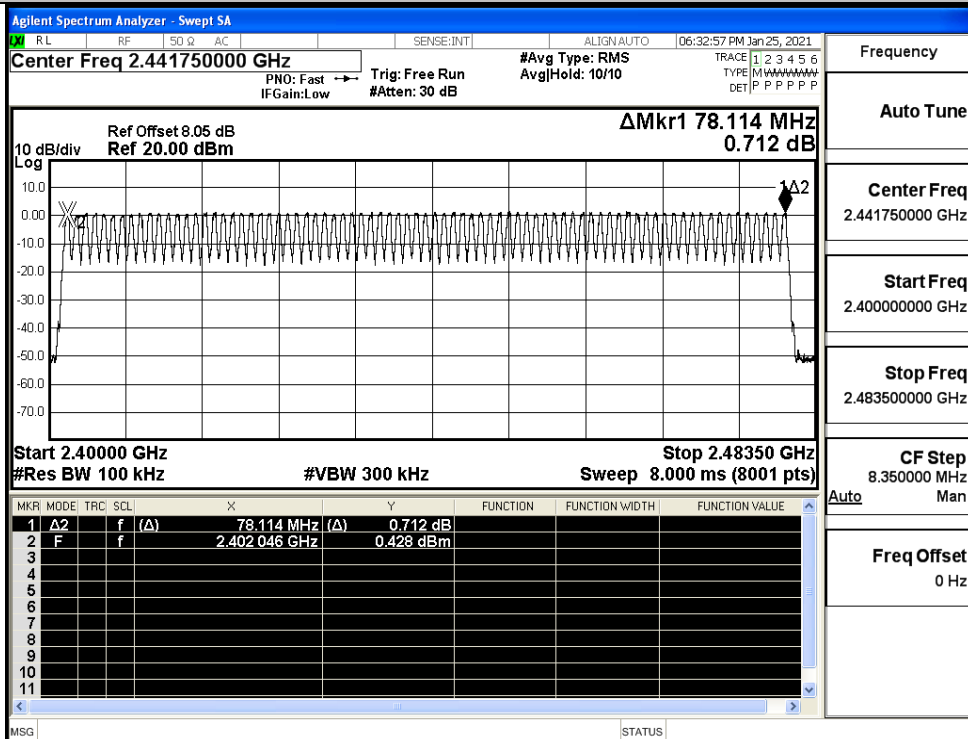
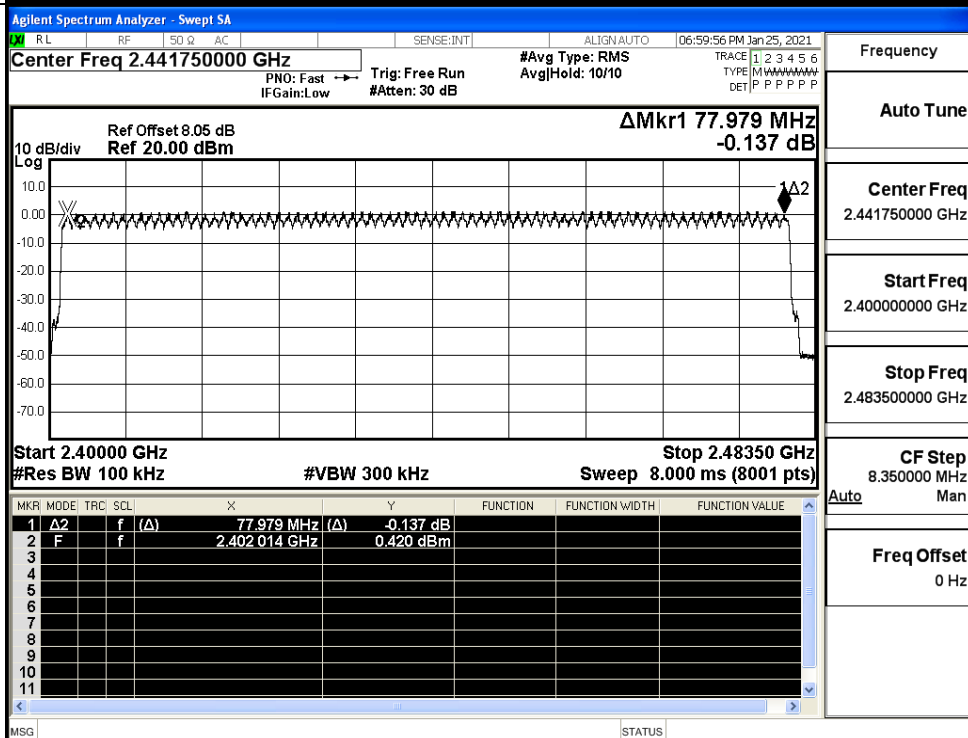


A.4 Hopping Channel Number

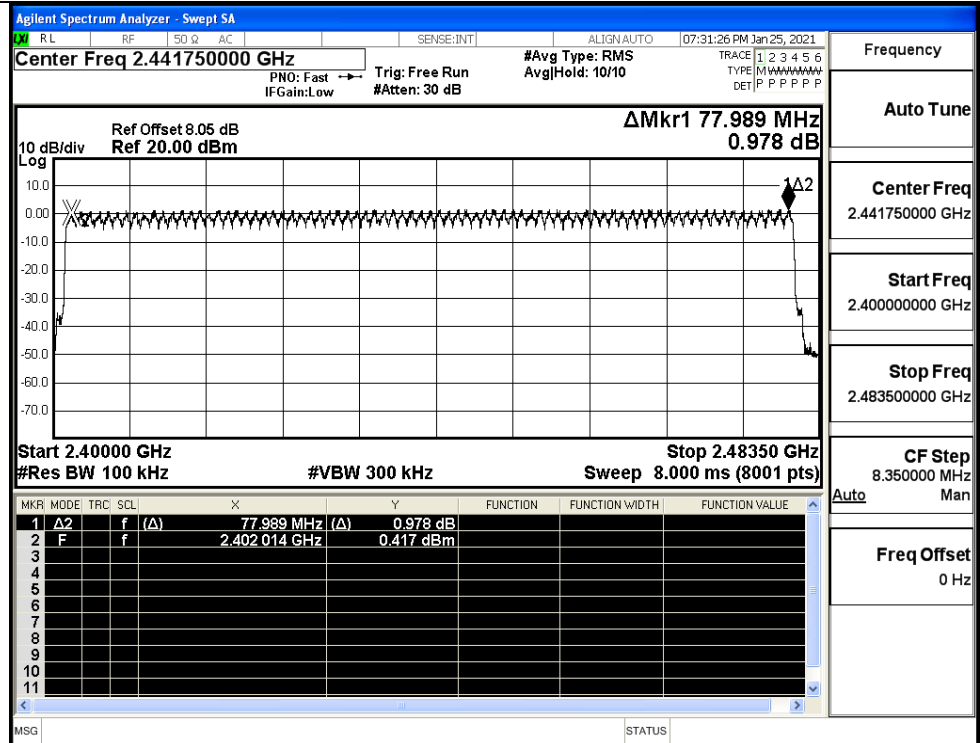
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

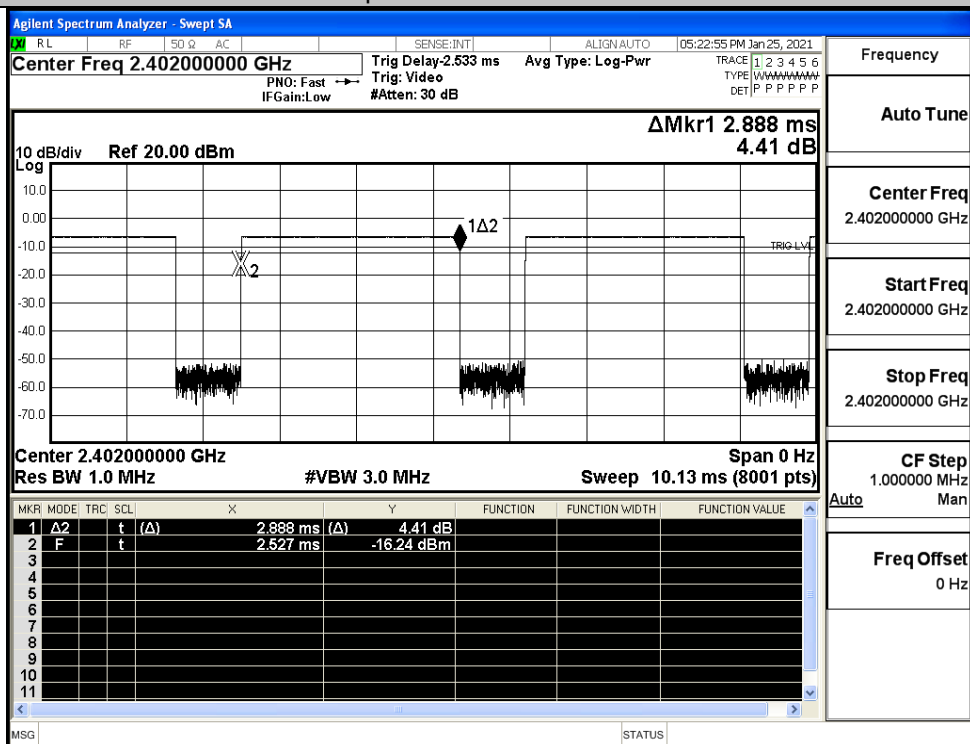


A.5 Dwell Time

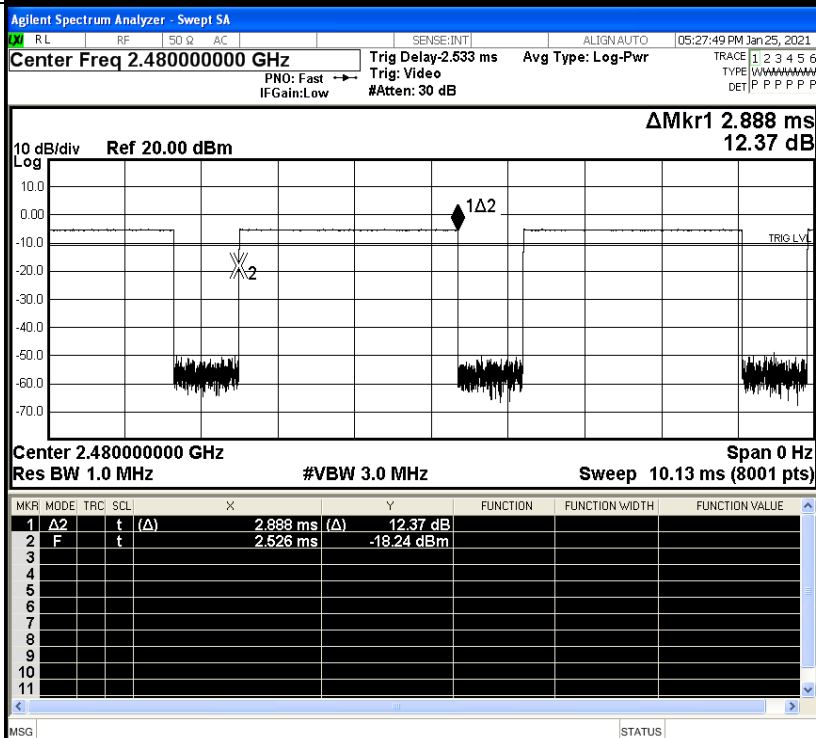
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.308	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.309	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

Test Graphs

GFSK_DH5/LCH

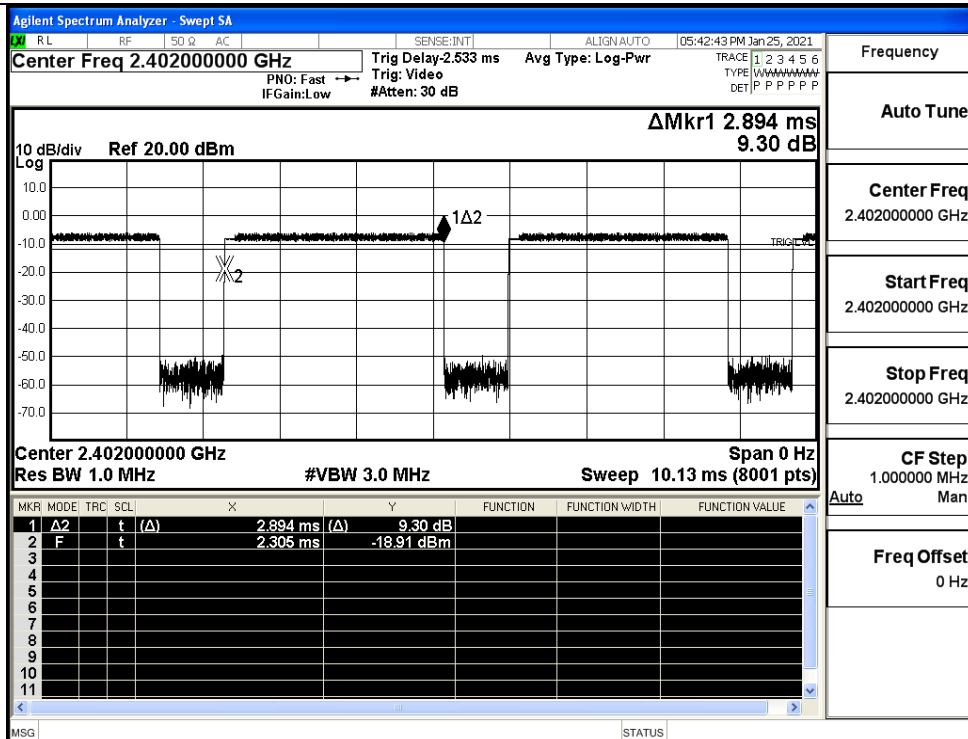


GFSK_DH5/HCH

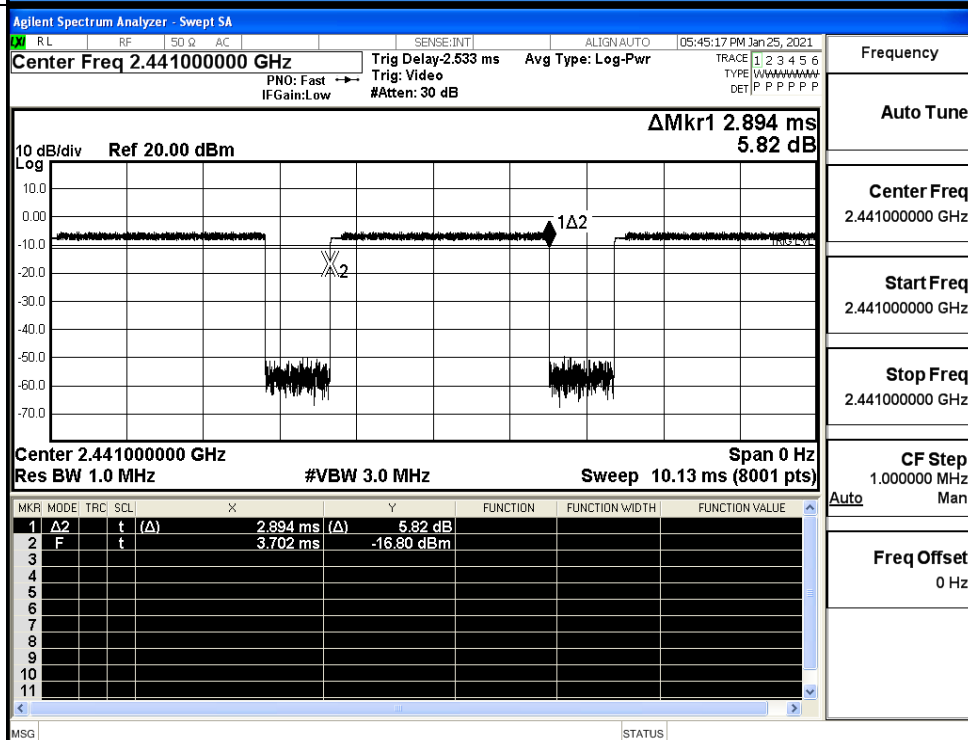


Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



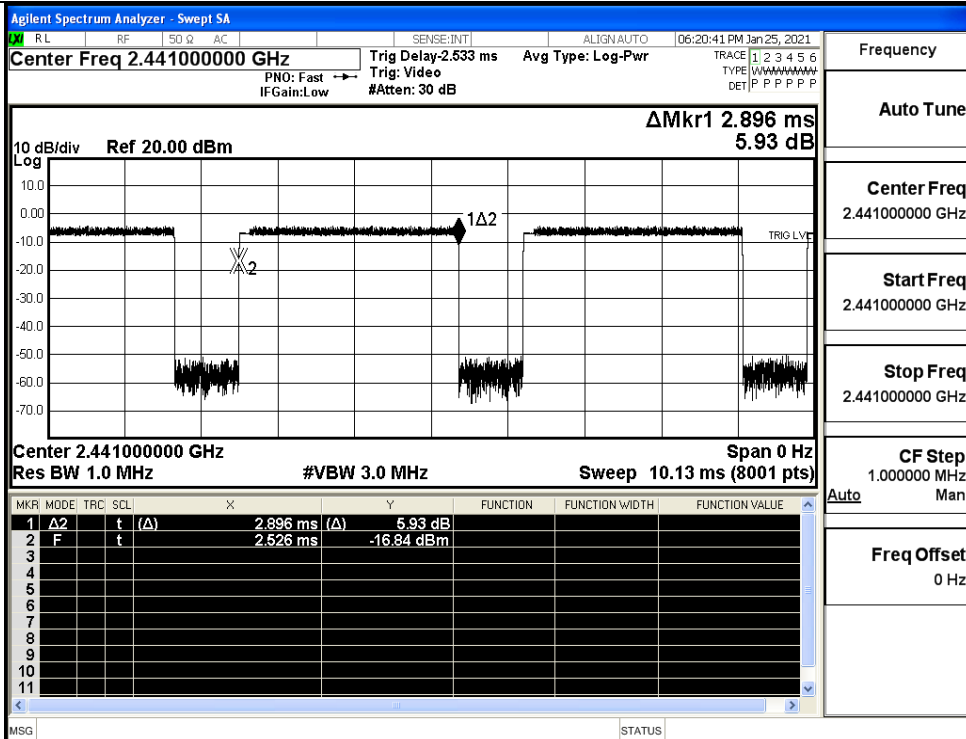
[illegible]

Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

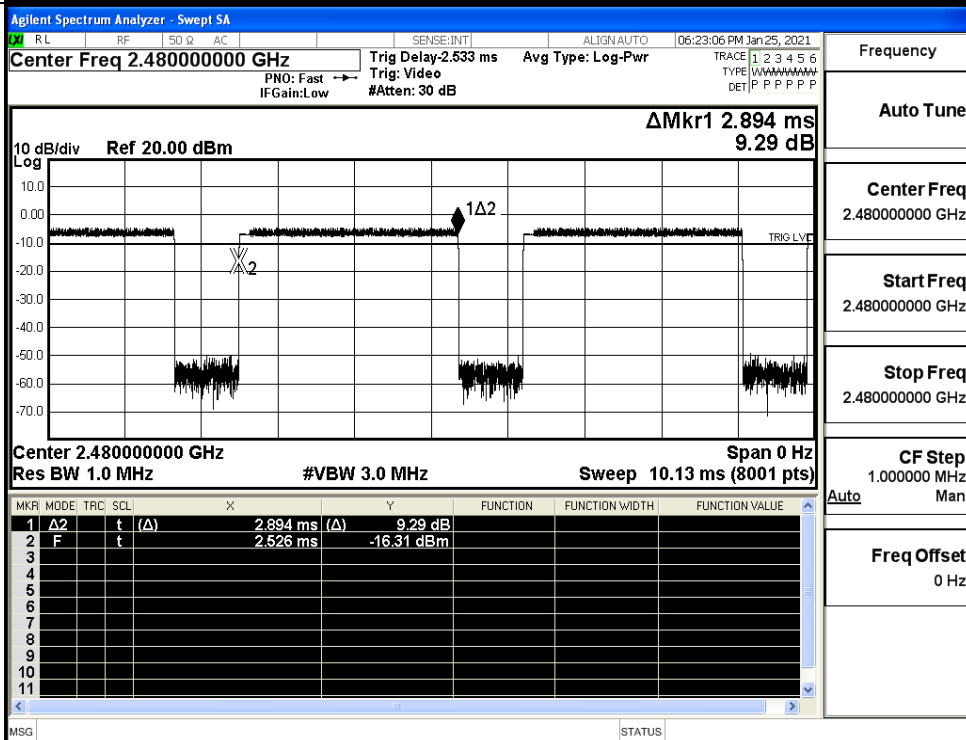
[illegible]

Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/MCH

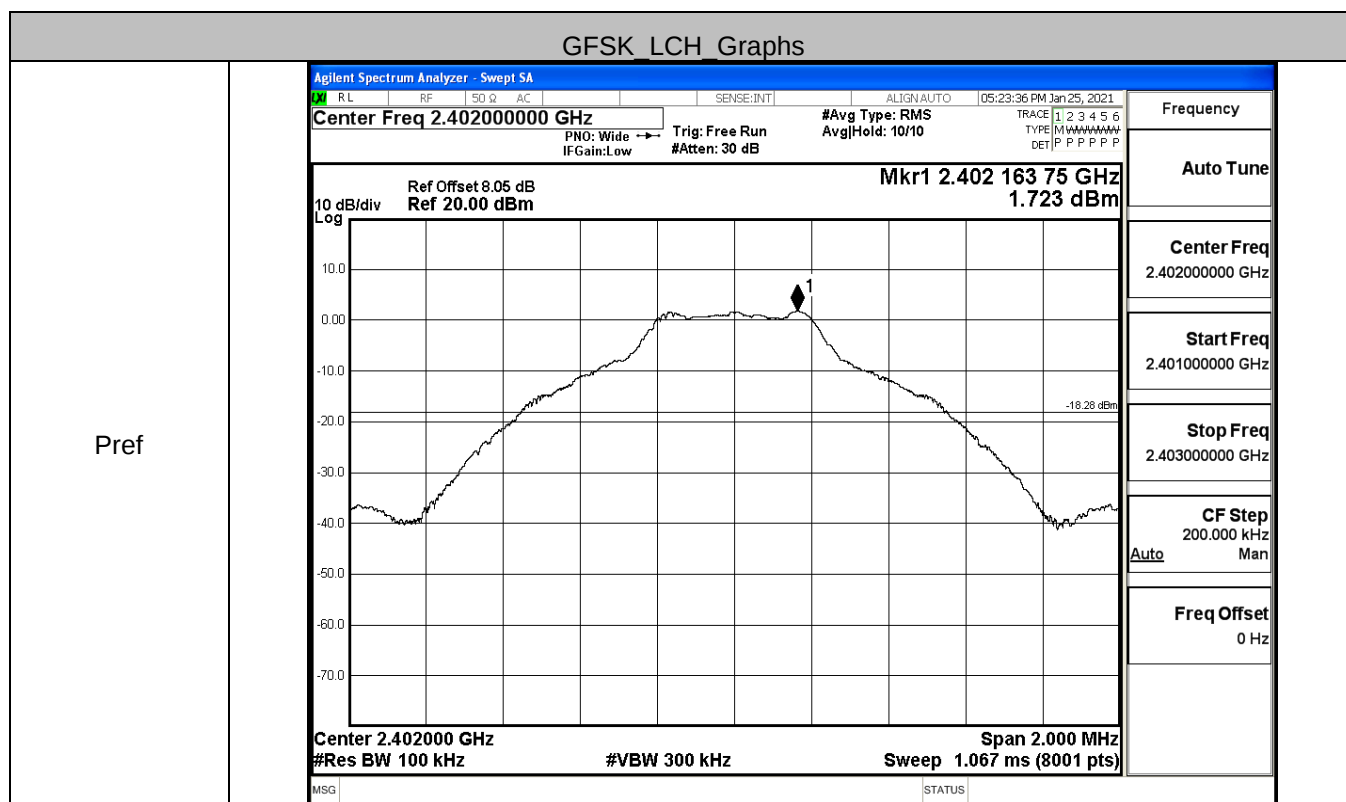


8DPSK_3DH5/HCH

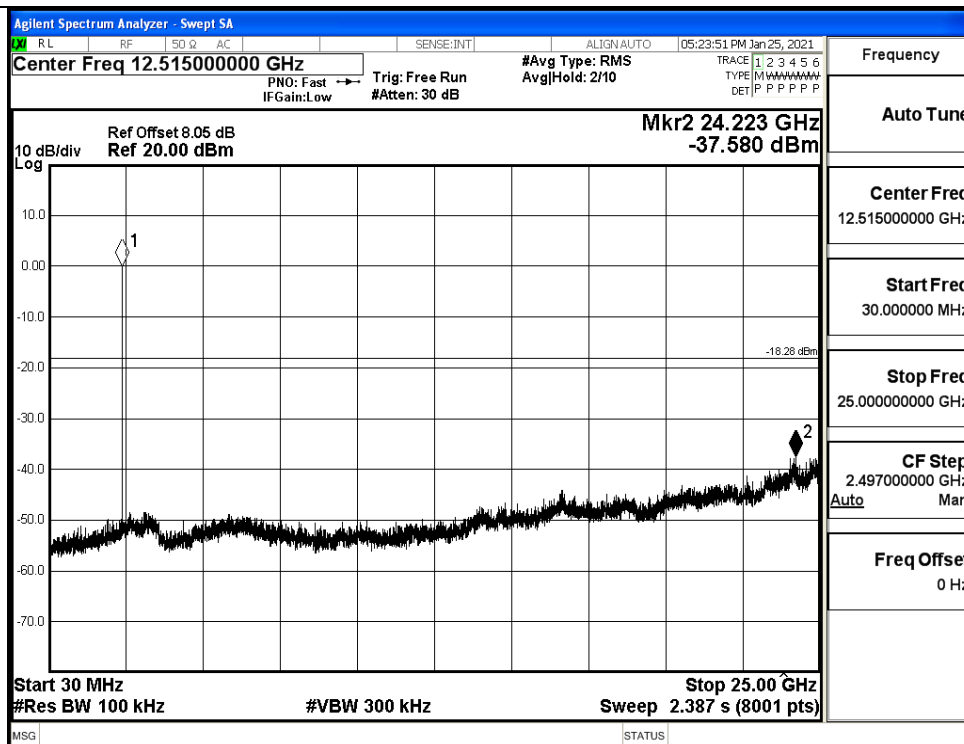


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.723	-37.580	-18.277	PASS
	MCH	2.501	-38.050	-17.499	PASS
	HCH	2.677	-36.609	-17.323	PASS
$\pi/4$ DQPSK	LCH	-0.767	-37.158	-20.767	PASS
	MCH	0.611	-36.960	-19.389	PASS
	HCH	-0.076	-37.611	-20.076	PASS
8DPSK	LCH	0.048	-38.026	-19.952	PASS
	MCH	1.233	-37.623	-18.767	PASS
	HCH	1.252	-36.312	-18.748	PASS

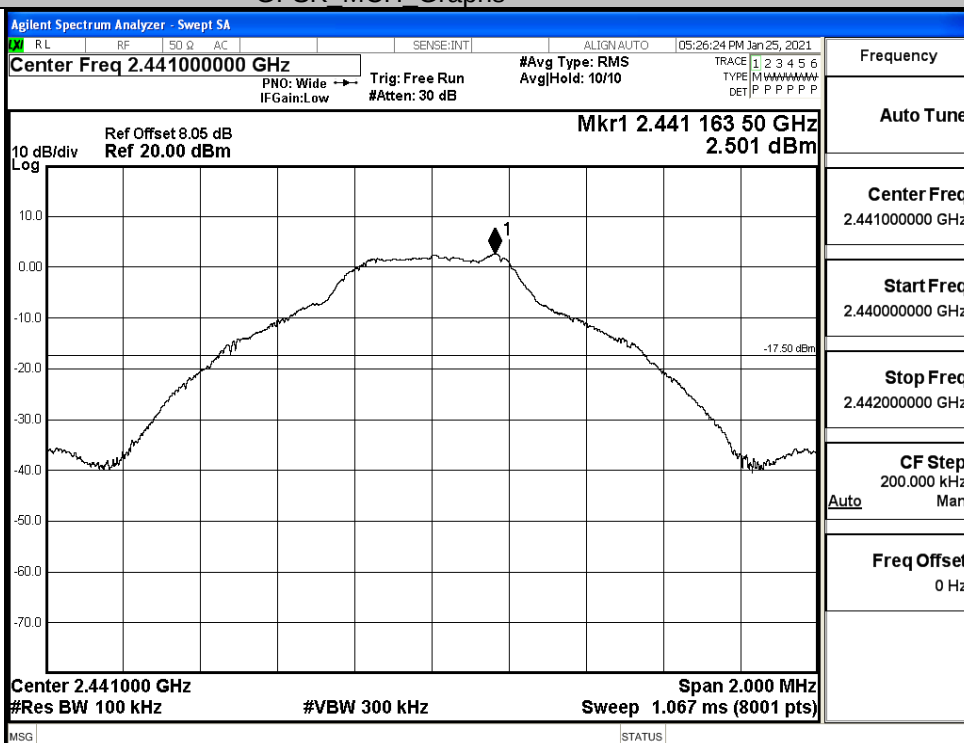


Puw

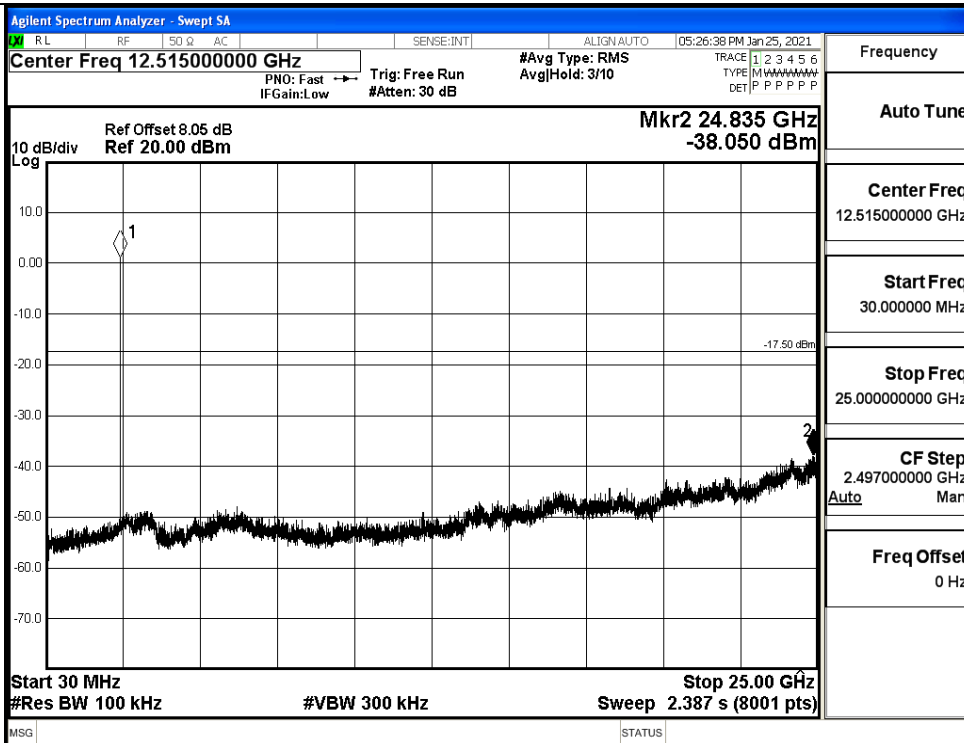


GFSK MCH Graphs

Pref

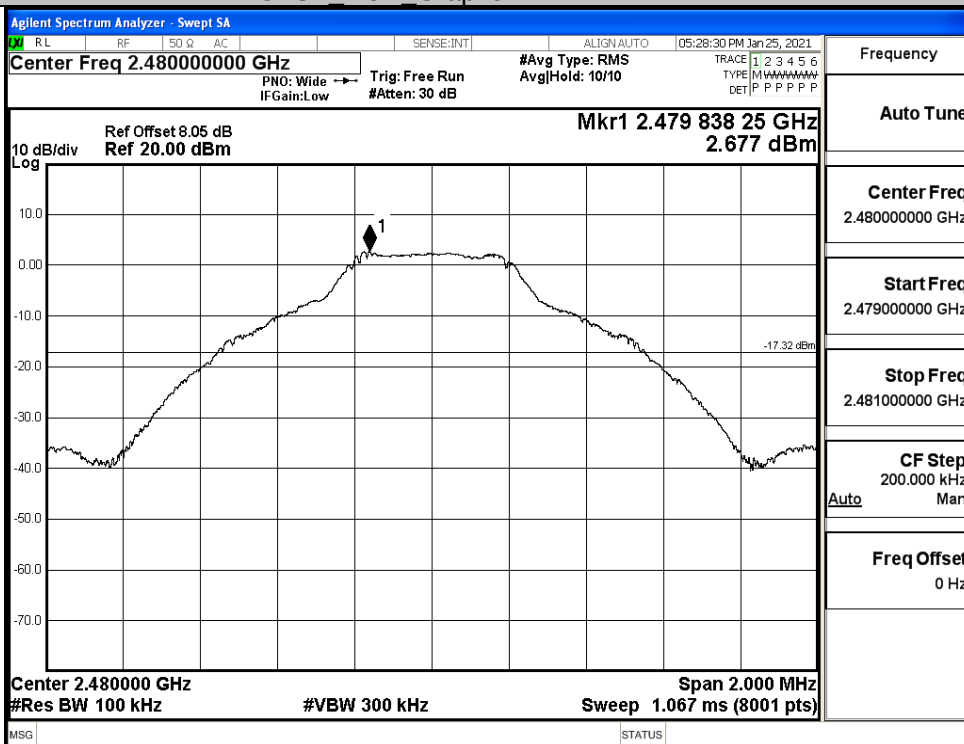


Puw

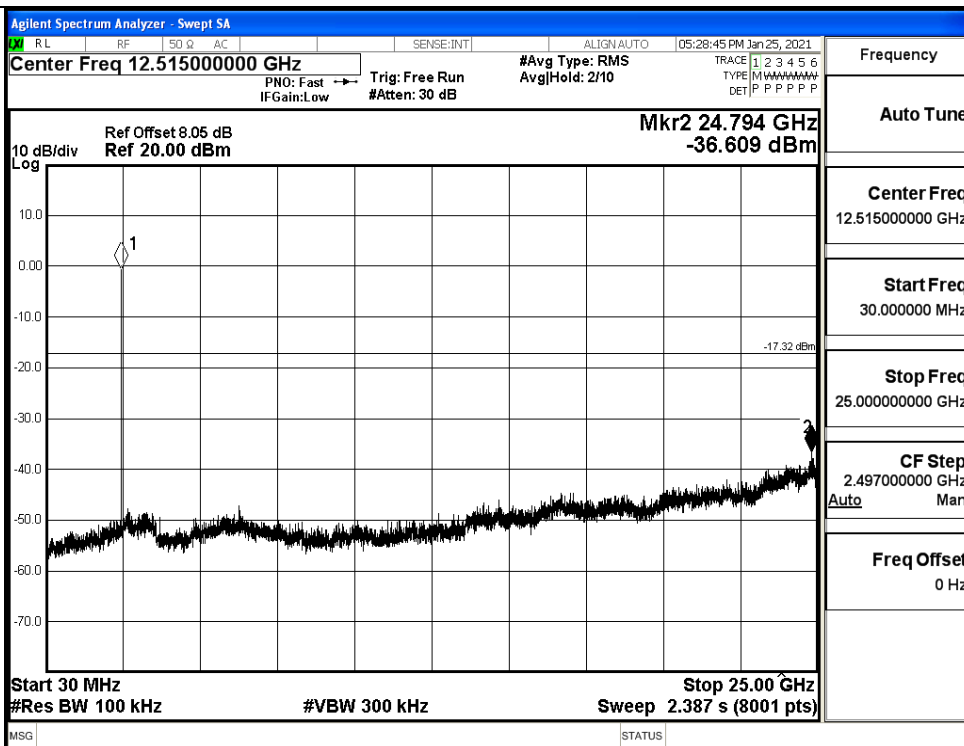


GFSK HCH Graphs

Pref

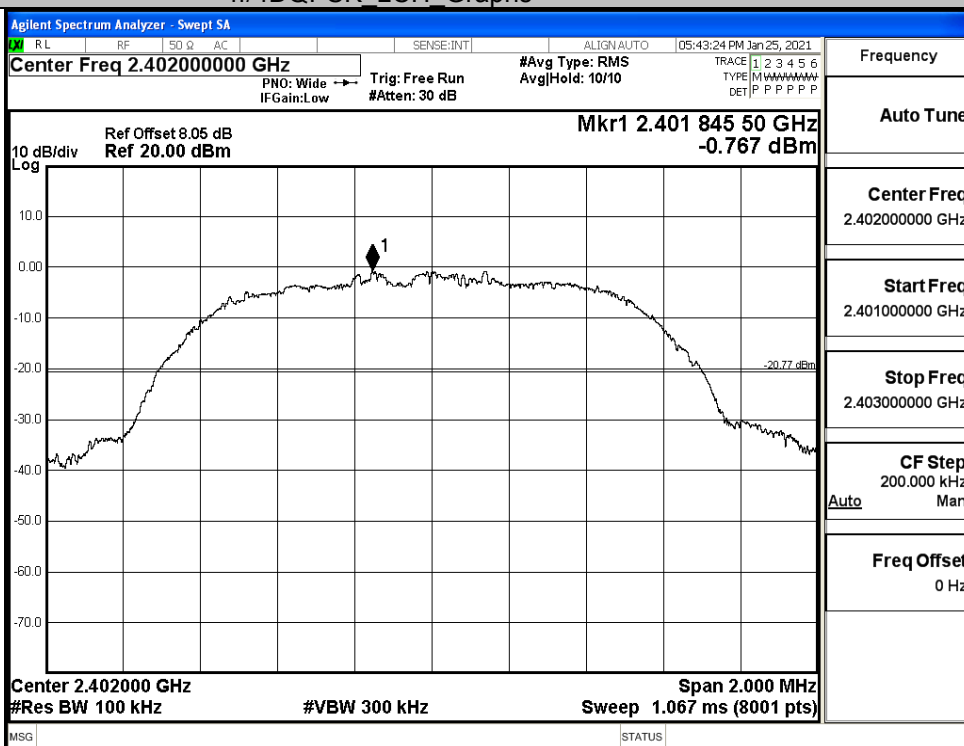


Puw

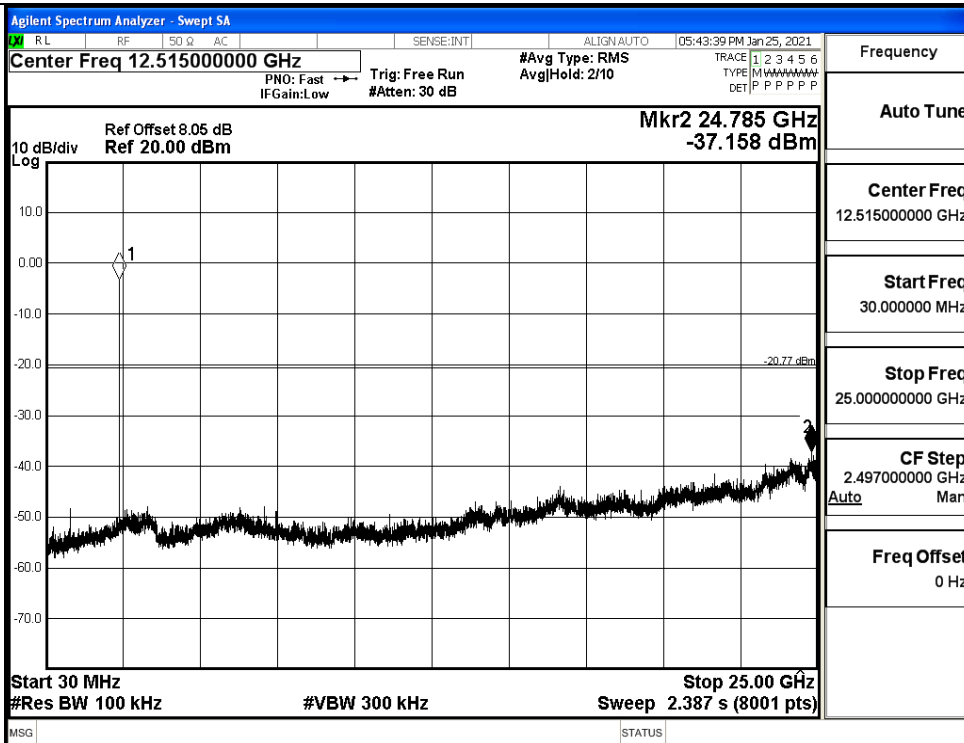


$\pi/4$ DQPSK LCH Graphs

Pref

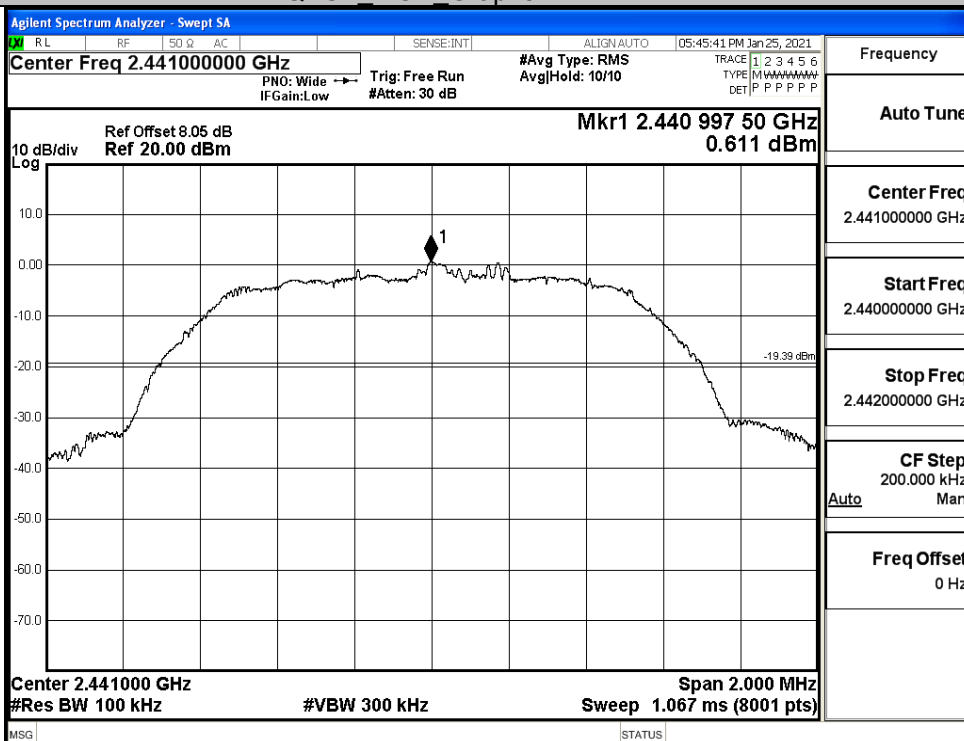


Puw

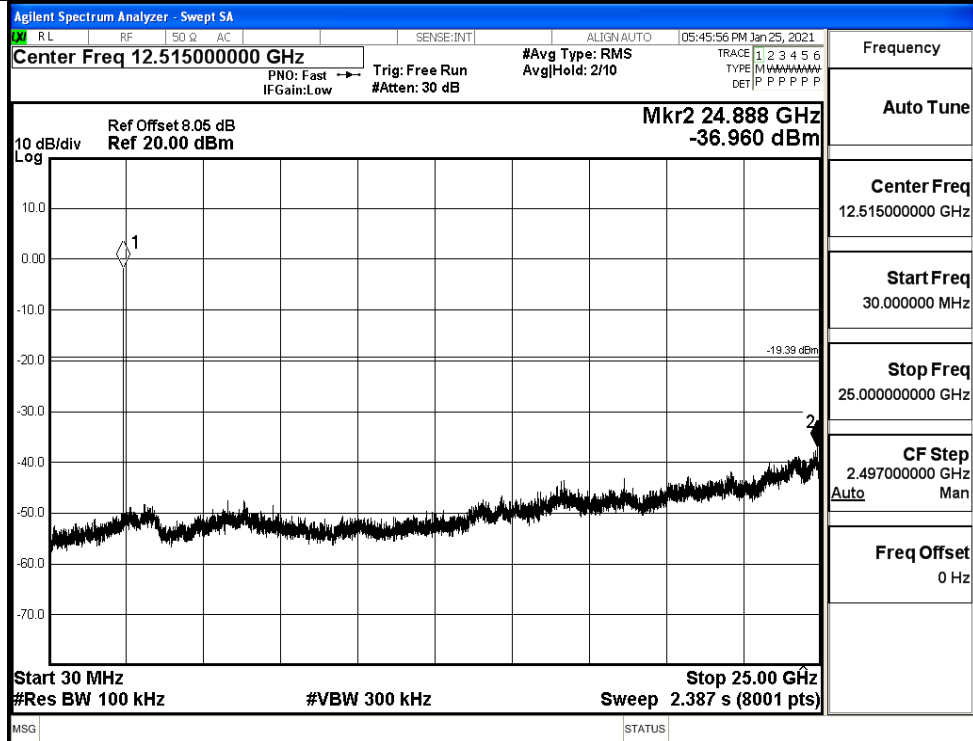


$\pi/4$ DQPSK MCH Graphs

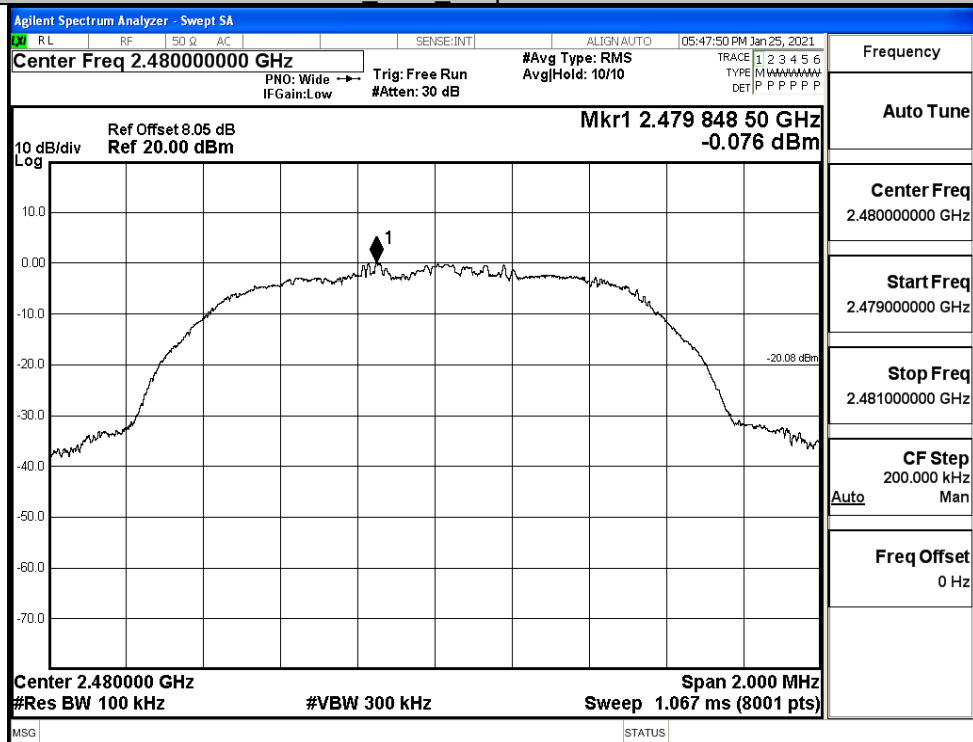
Pref



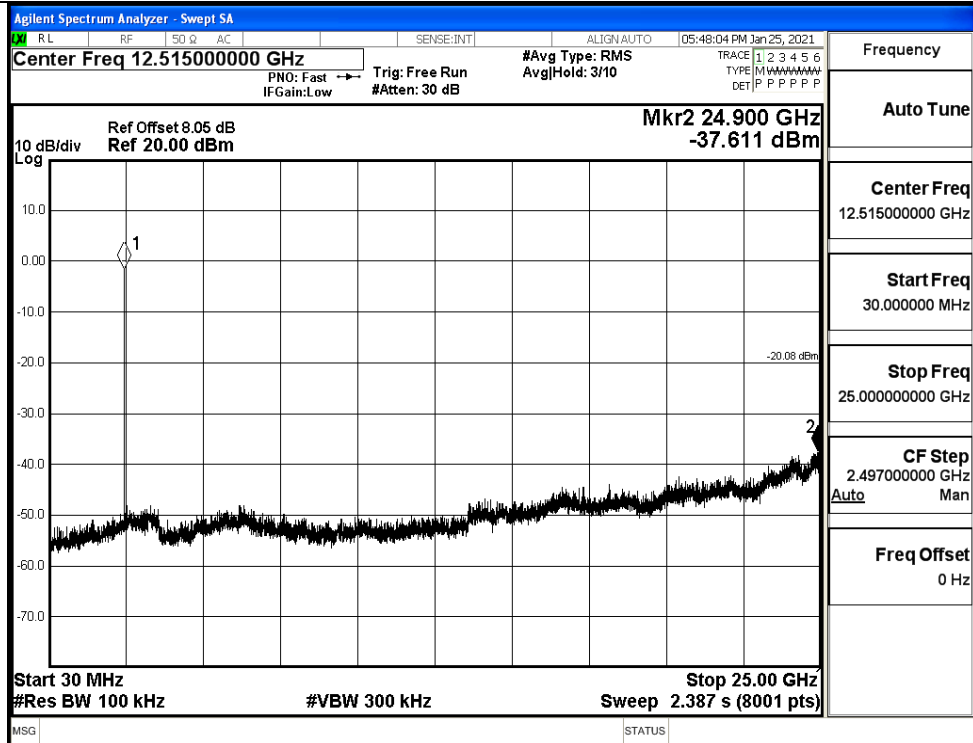
Puw

 $\pi/4$ DQPSK HCH Graphs

Pref

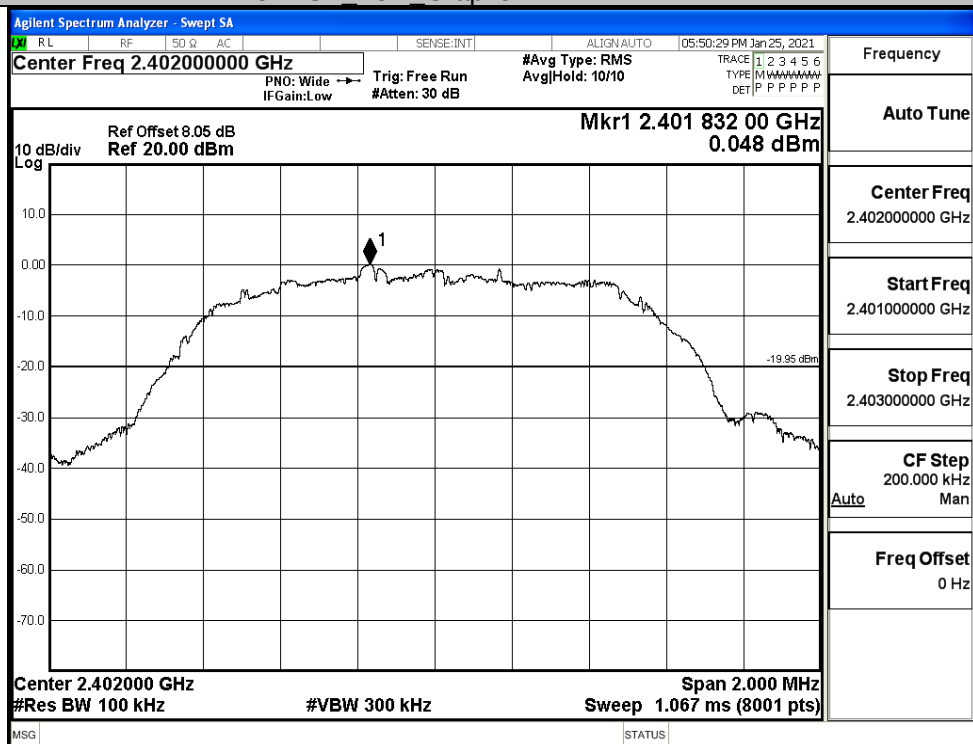


Puw

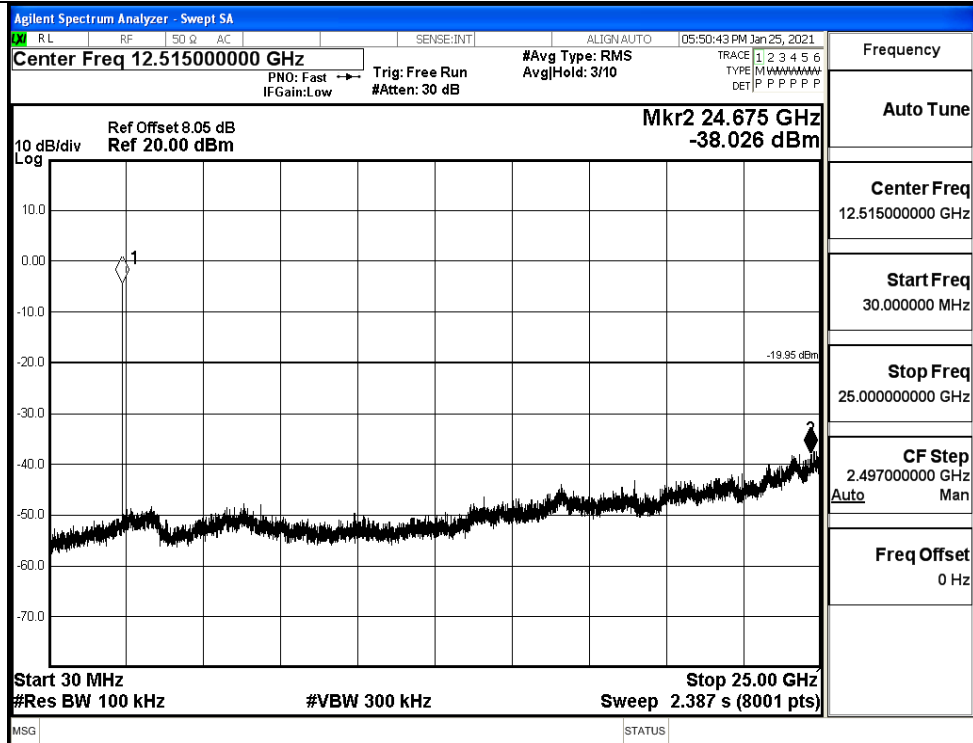


8DPSK LCH Graphs

Pref

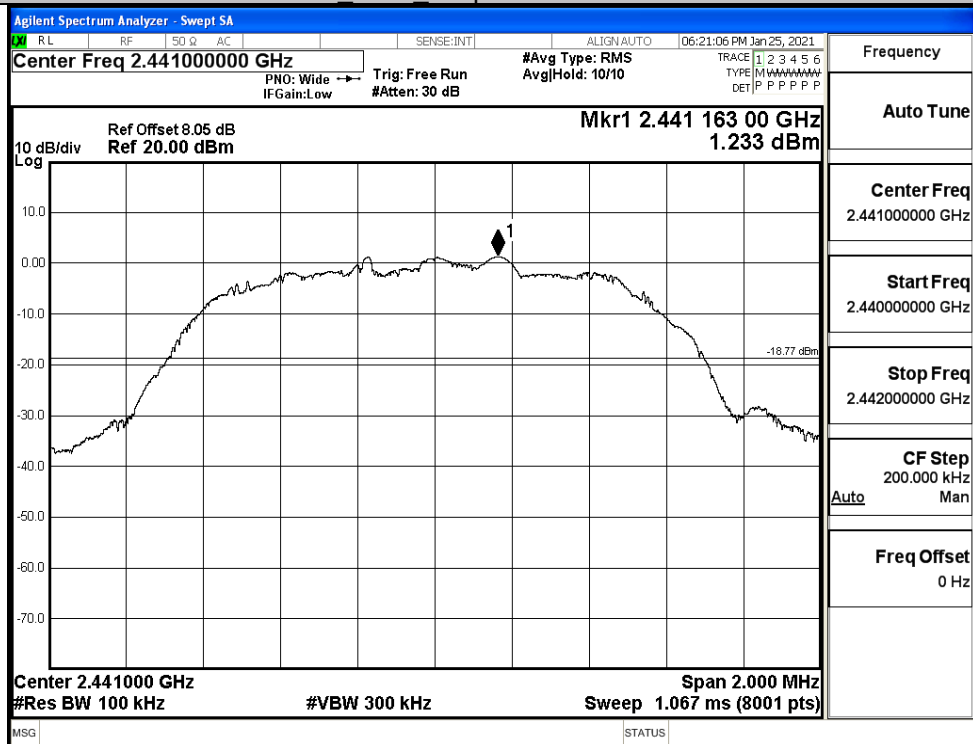


Puw

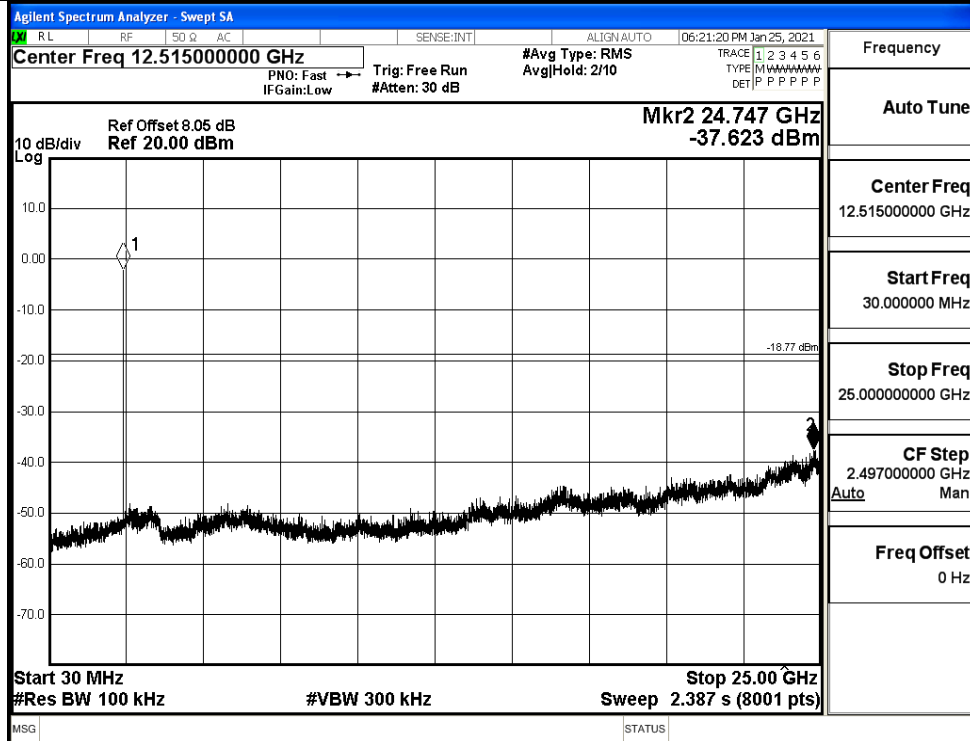


8DPSK MCH Graphs

Pref

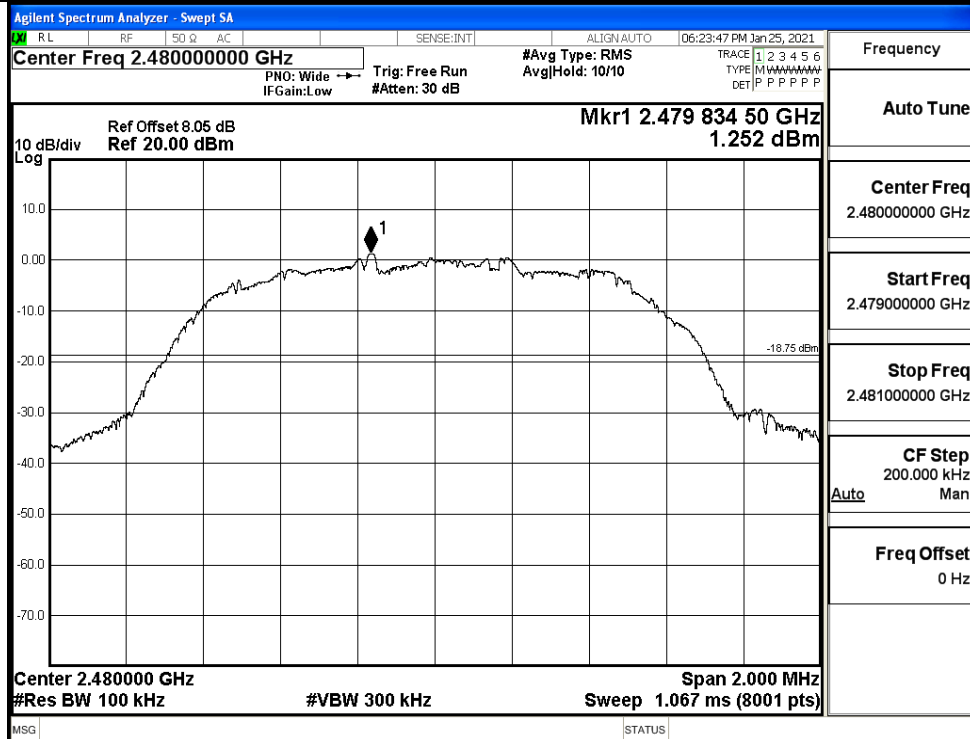


Puw

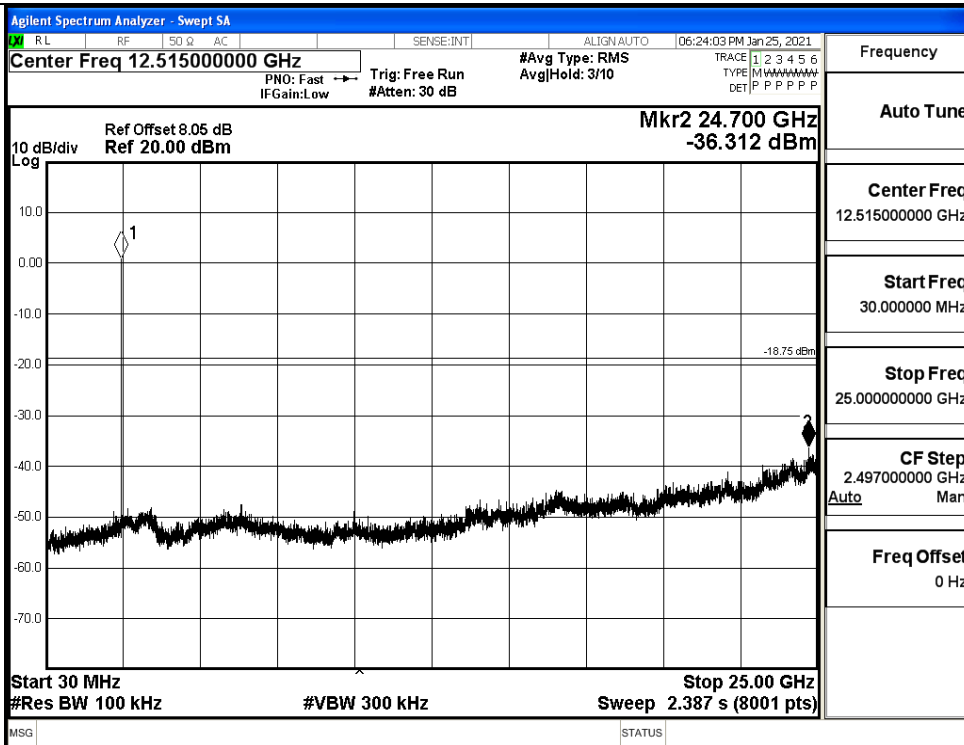


8DPSK HCH Graphs

Pref



Puw

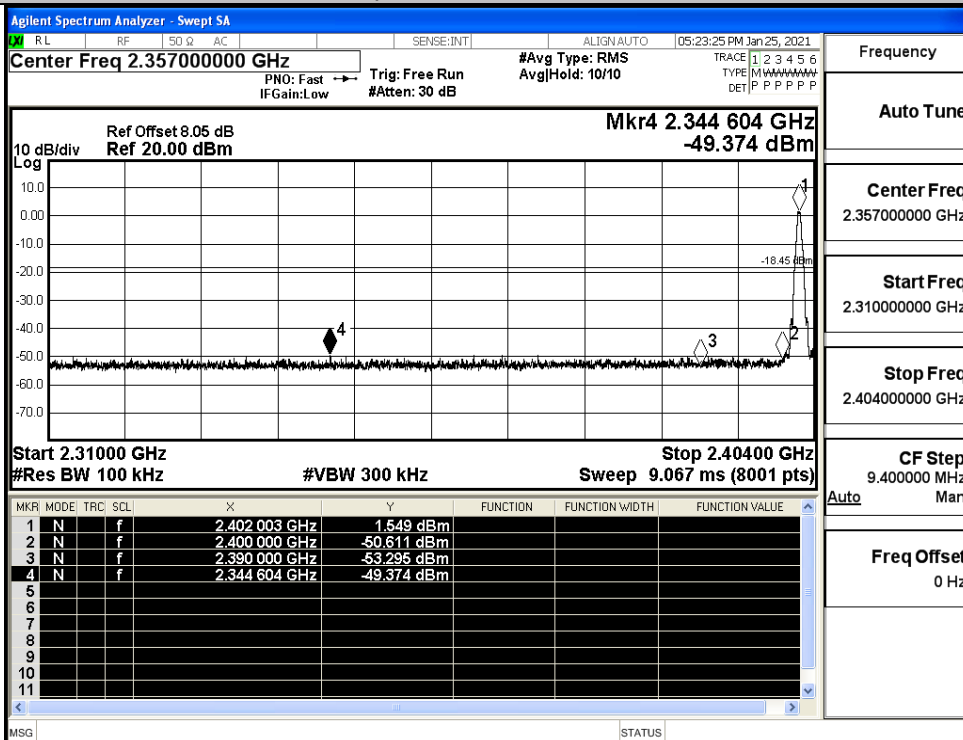


A.7 Band-edge for RF Conducted Emissions

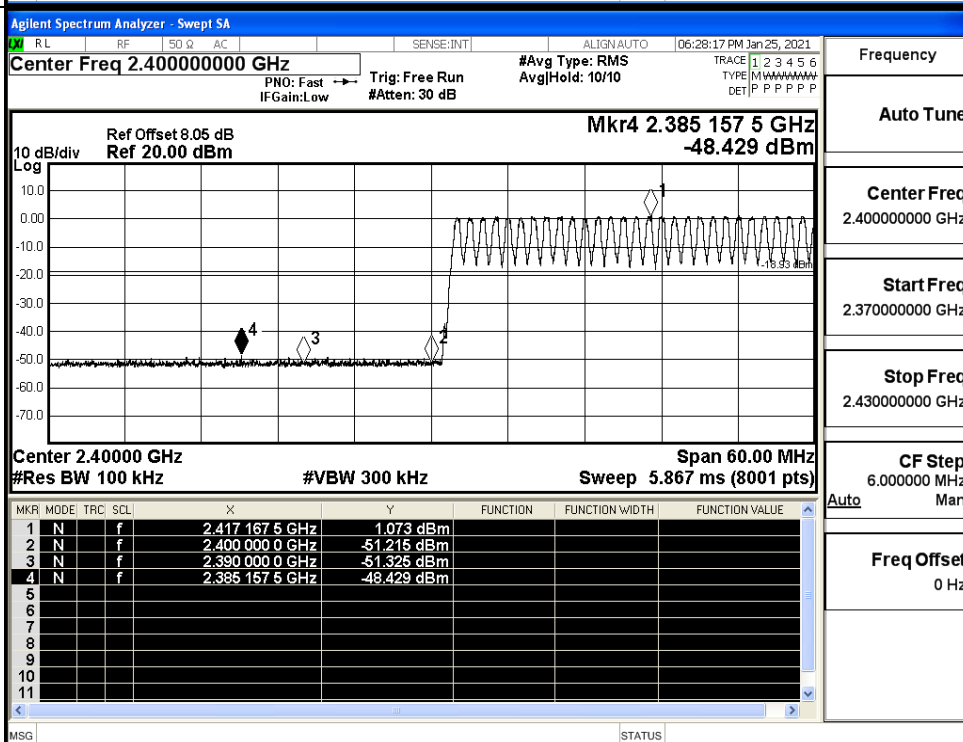
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.549	Off	-49.374	-18.45	PASS
			1.073	On	-48.429	-18.93	PASS
	HCH	2480	2.882	Off	-49.037	-17.12	PASS
			1.372	On	-48.681	-18.63	PASS
$\pi/4$ DQPSK	LCH	2402	-0.276	Off	-49.048	-20.28	PASS
			1.026	On	-49.133	-18.97	PASS
	HCH	2480	0.844	Off	-49.184	-19.16	PASS
			1.326	On	-48.315	-18.67	PASS
8DPSK	LCH	2402	0.120	Off	-49.578	-19.88	PASS
			1.231	On	-48.594	-18.77	PASS
	HCH	2480	1.340	Off	-49.070	-18.66	PASS
			1.368	On	-47.741	-18.63	PASS

Test Graphs

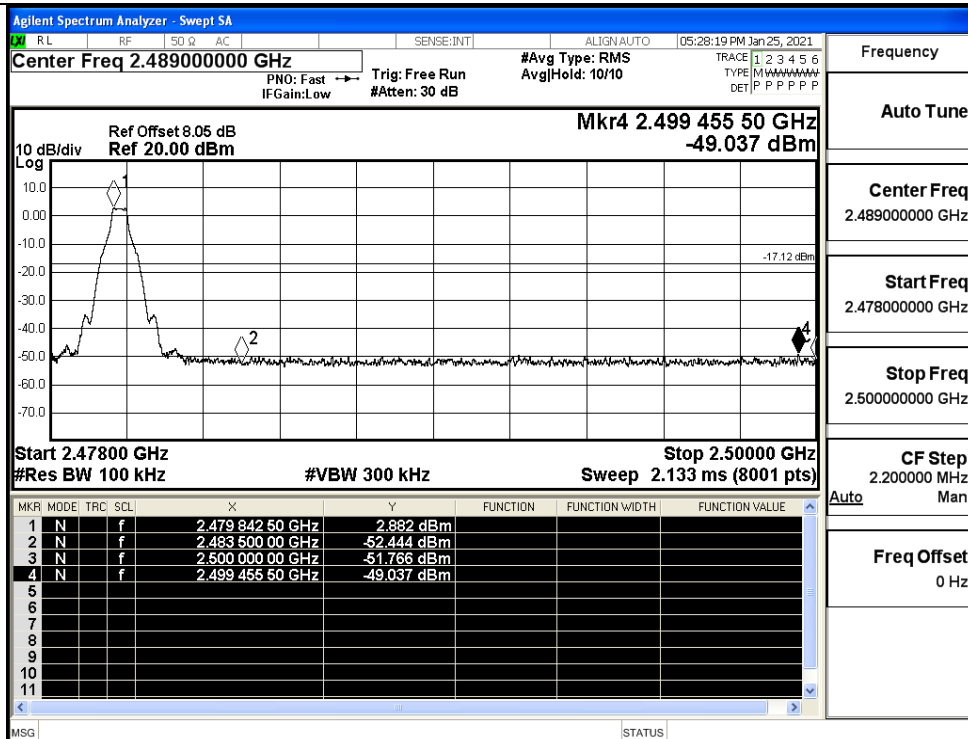
GFSK/LCH/No Hop



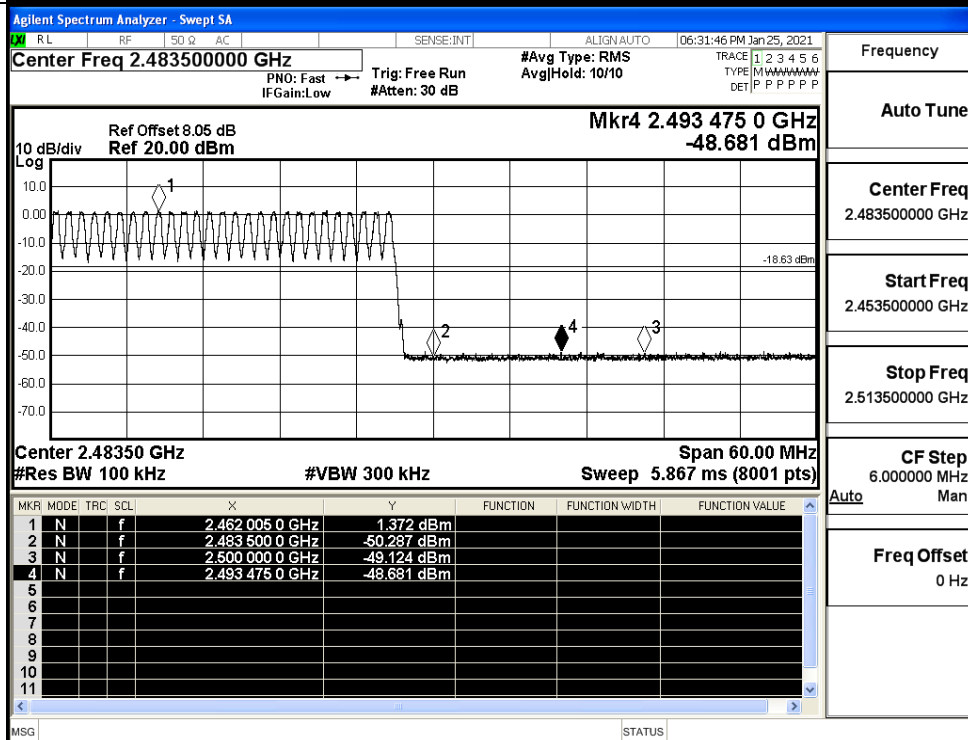
GFSK/LCH/Hop



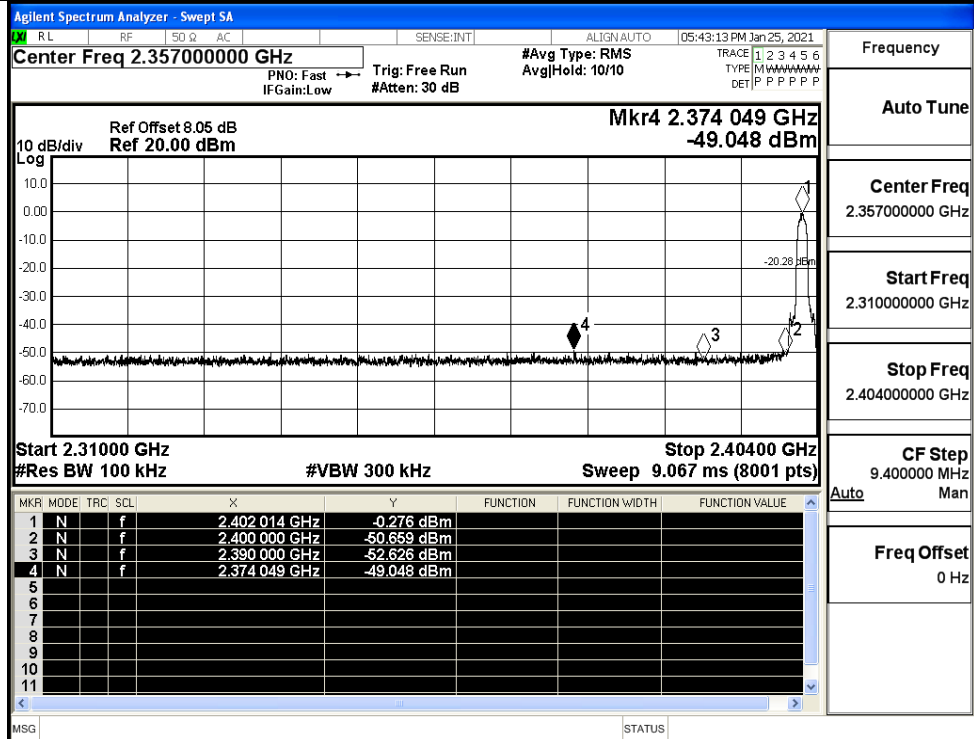
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

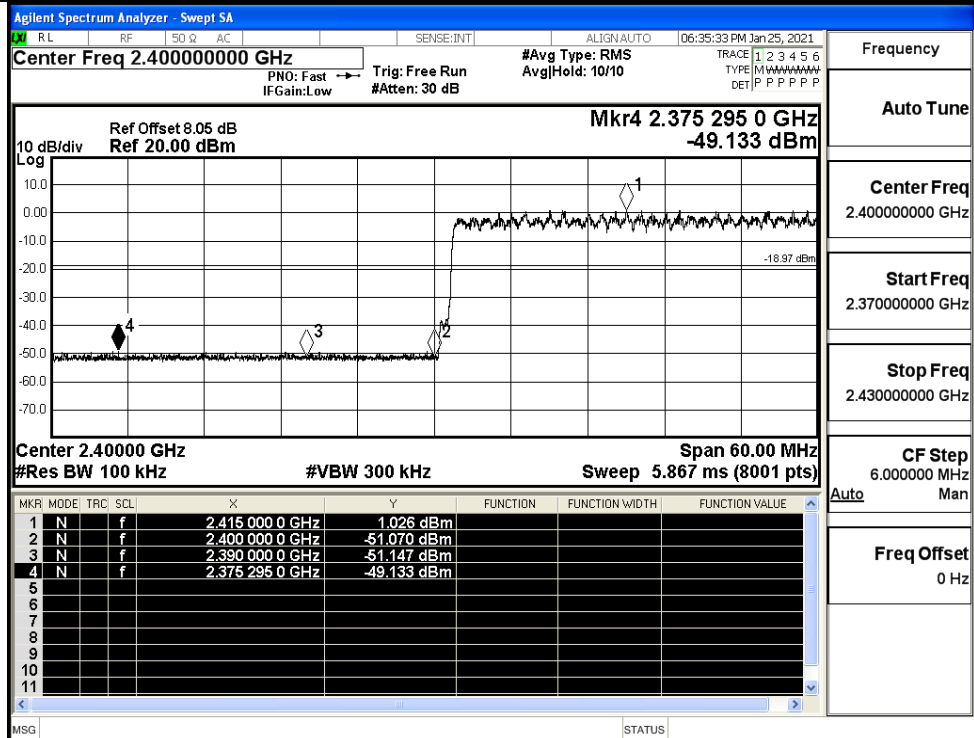
Stop Freq
2.404000000 GHz

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

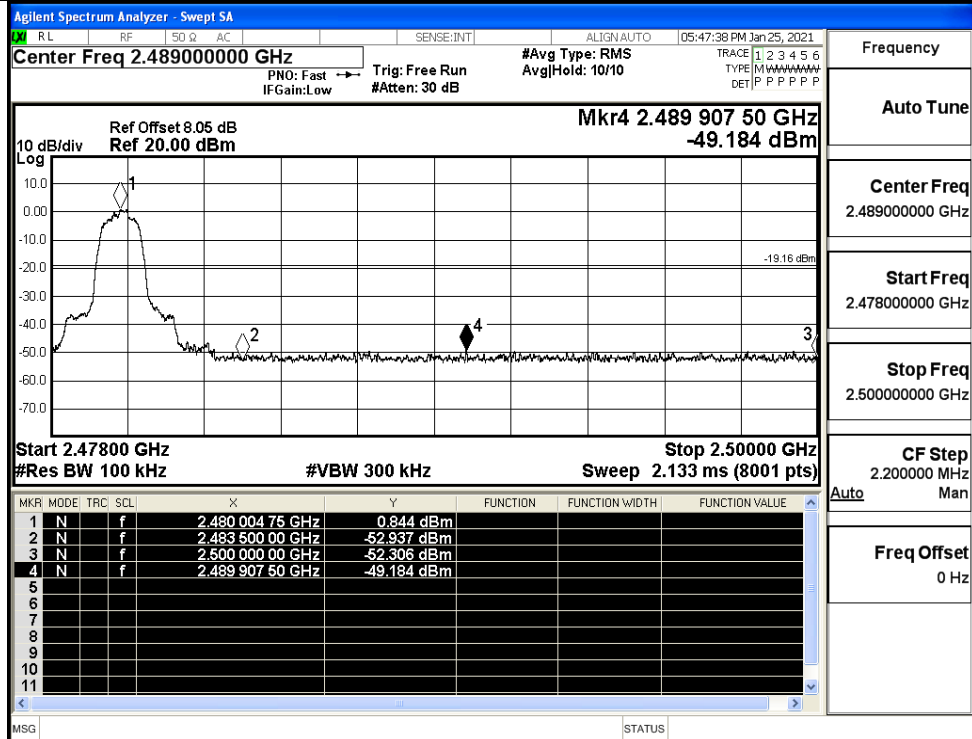
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

Start Freq
2.478000000 GHz

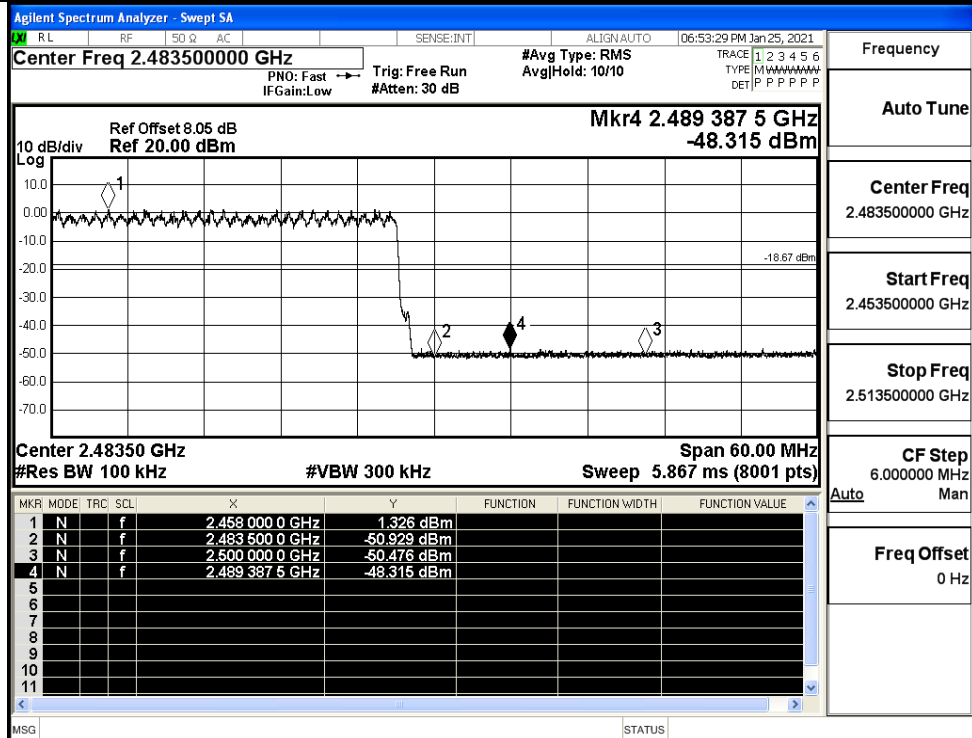
Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

Start Freq
2.453500000 GHz

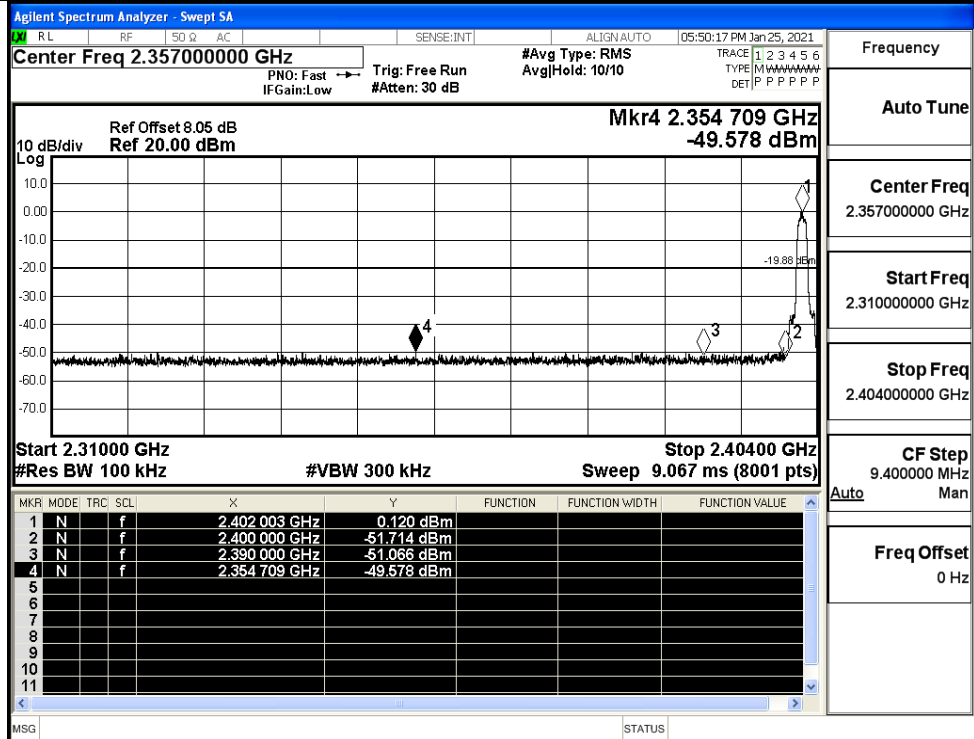
Stop Freq
2.513500000 GHz

CF Step
6.000000 MHz

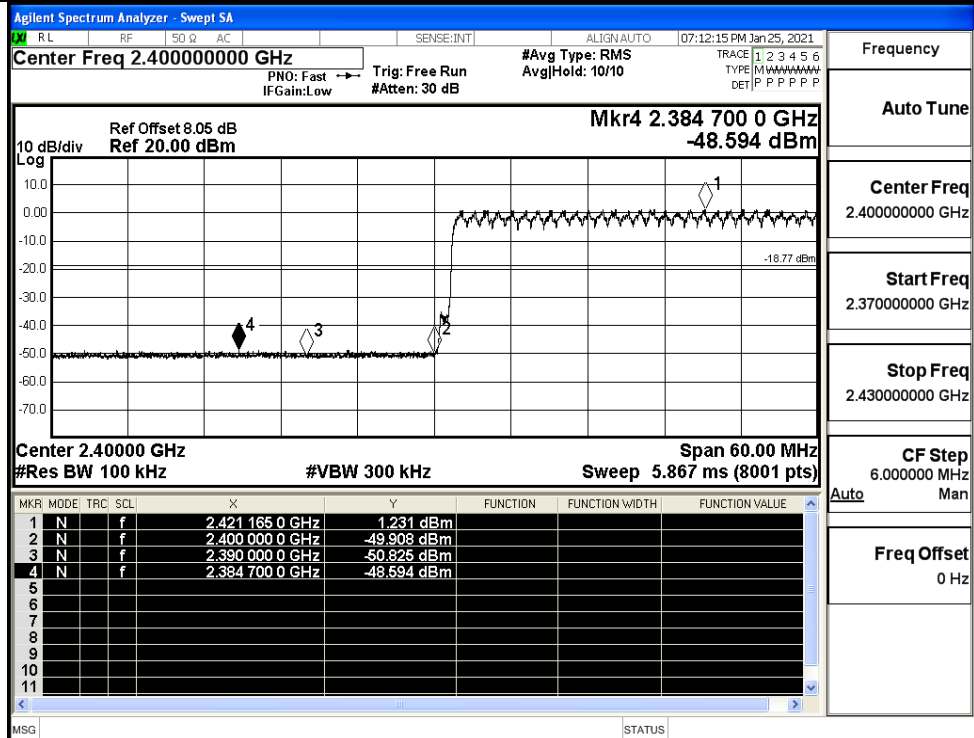
Auto Man

Freq Offset
0 Hz

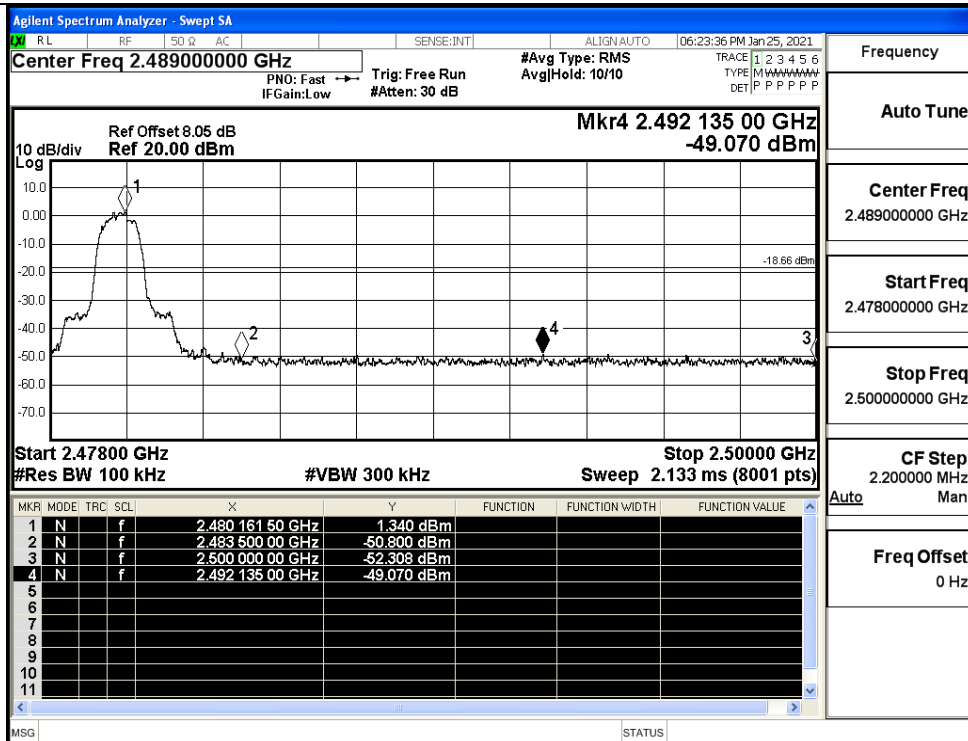
8DPSK/LCH/No Hop



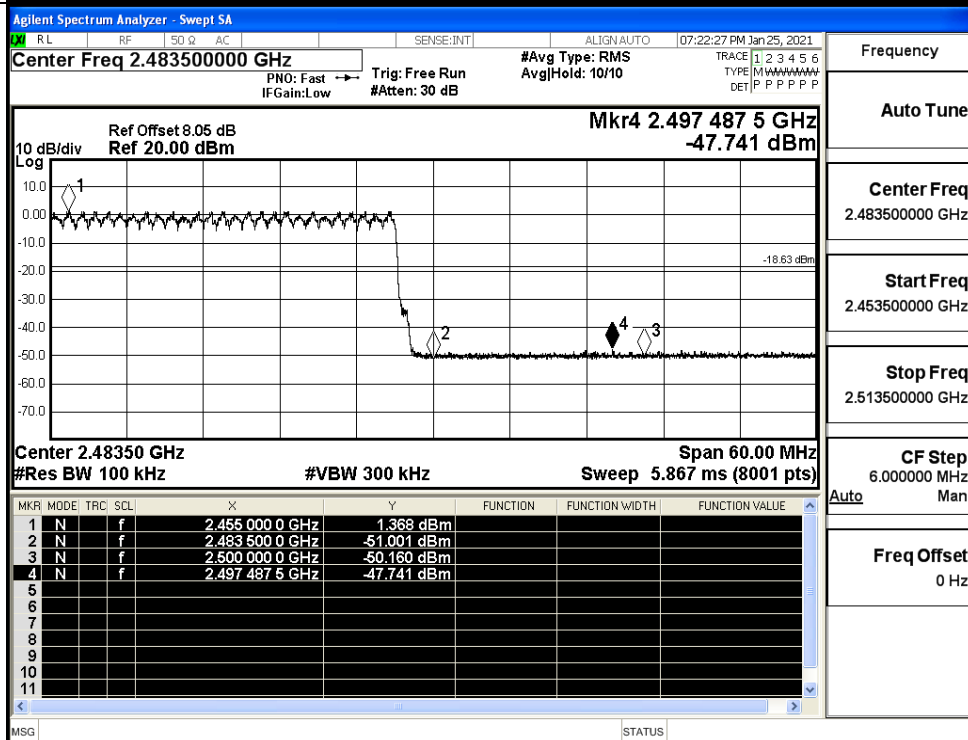
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



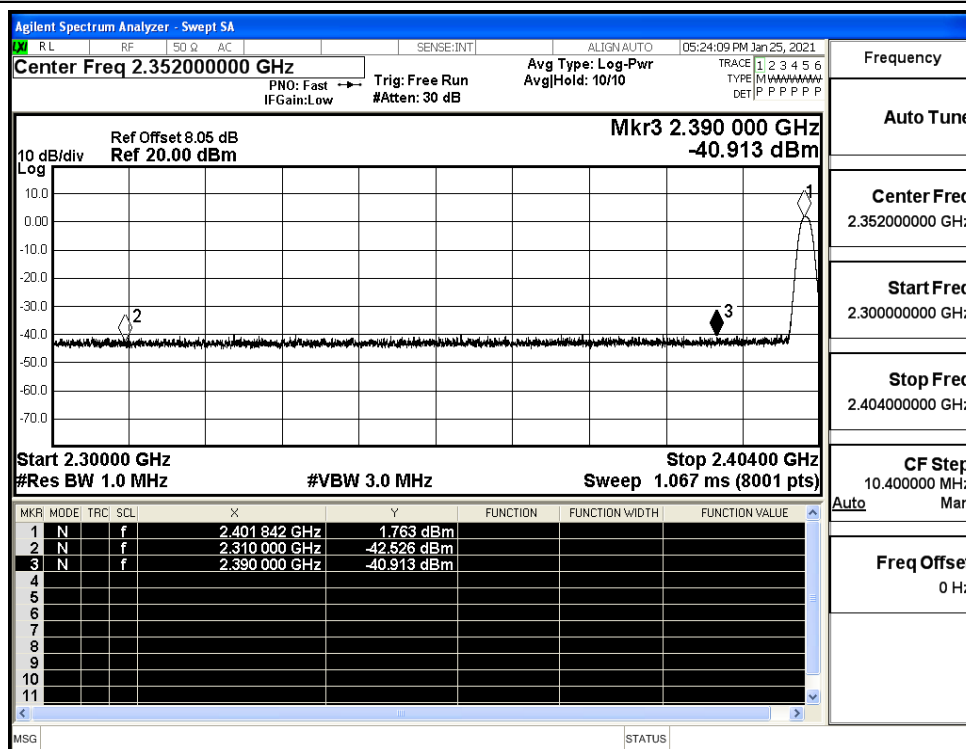
8DPSK/HCH/Hop



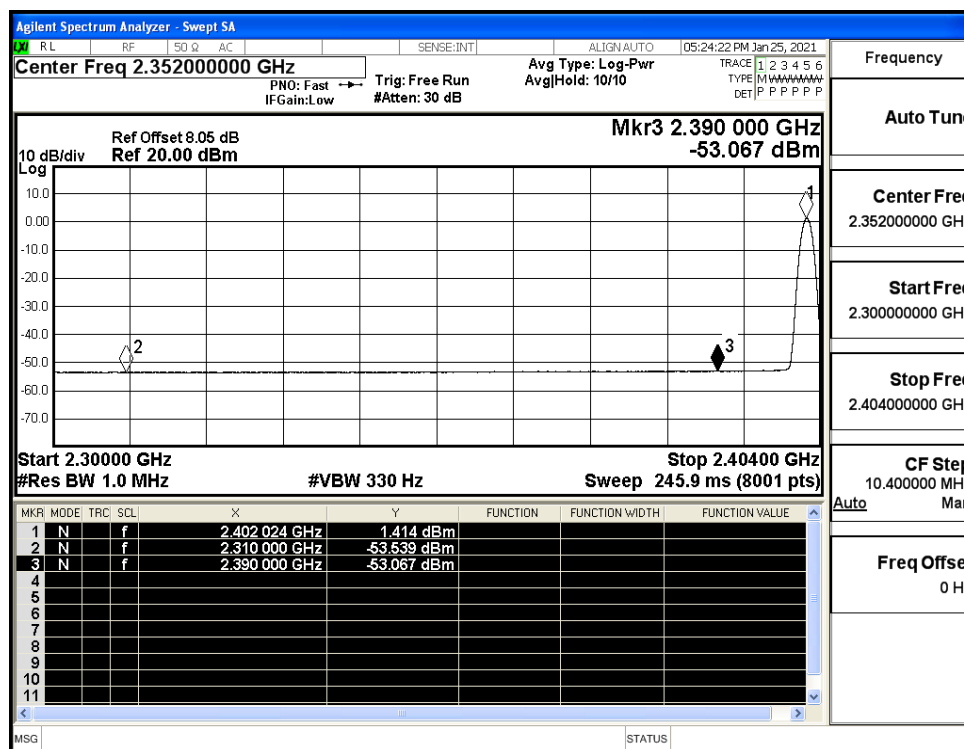
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.53	2.0	0	54.73	PEAK	74	PASS
	Off	2310.0	-53.54	2.0	0	43.72	AV	54	PASS
	Off	2390.0	-40.91	2.0	0	56.35	PEAK	74	PASS
	Off	2390.0	-53.07	2.0	0	44.19	AV	54	PASS
	Off	2483.5	-41.40	2.0	0	55.86	PEAK	74	PASS
	Off	2483.5	-52.38	2.0	0	44.88	AV	54	PASS
	Off	2500.0	-41.78	2.0	0	55.48	PEAK	74	PASS
	Off	2500.0	-52.46	2.0	0	44.8	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.92	2.0	0	53.34	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.78	AV	54	PASS
	Off	2390.0	-43.47	2.0	0	53.79	PEAK	74	PASS
	Off	2390.0	-53.01	2.0	0	44.25	AV	54	PASS
	Off	2483.5	-41.47	2.0	0	55.79	PEAK	74	PASS
	Off	2483.5	-52.18	2.0	0	45.08	AV	54	PASS
	Off	2500.0	-42.13	2.0	0	55.13	PEAK	74	PASS
	Off	2500.0	-52.39	2.0	0	44.87	AV	54	PASS
8DPSK	Off	2310.0	-42.26	2.0	0	55	PEAK	74	PASS
	Off	2310.0	-53.45	2.0	0	43.81	AV	54	PASS
	Off	2390.0	-42.68	2.0	0	54.58	PEAK	74	PASS
	Off	2390.0	-53.04	2.0	0	44.22	AV	54	PASS
	Off	2483.5	-40.18	2.0	0	57.08	PEAK	74	PASS
	Off	2483.5	-51.86	2.0	0	45.4	AV	54	PASS
	Off	2500.0	-42.54	2.0	0	54.72	PEAK	74	PASS
	Off	2500.0	-52.42	2.0	0	44.84	AV	54	PASS

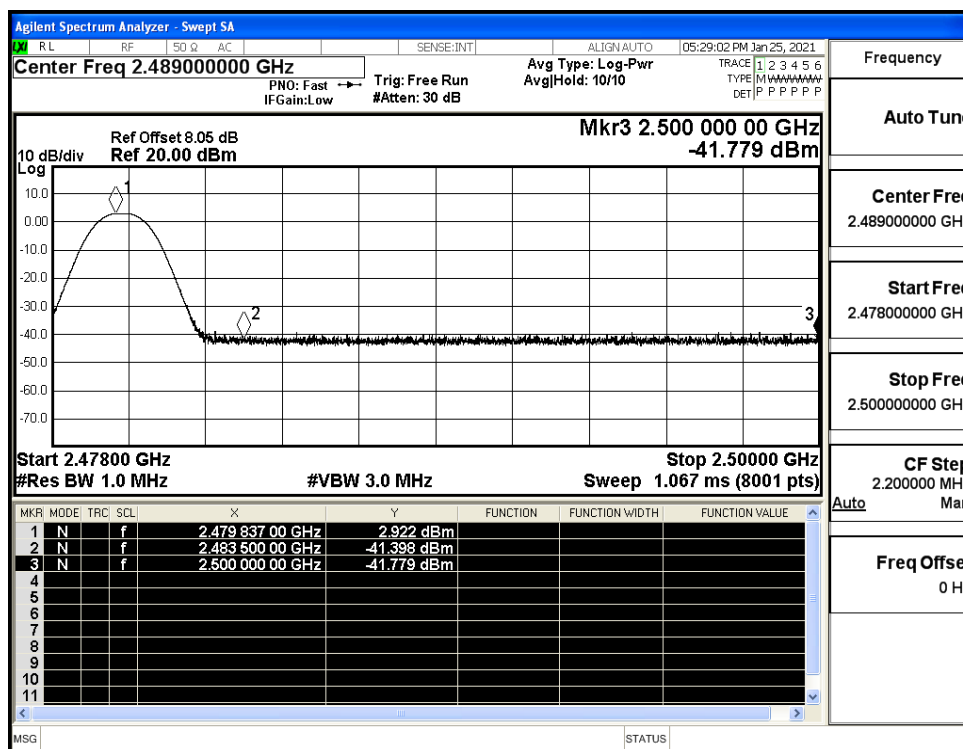
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



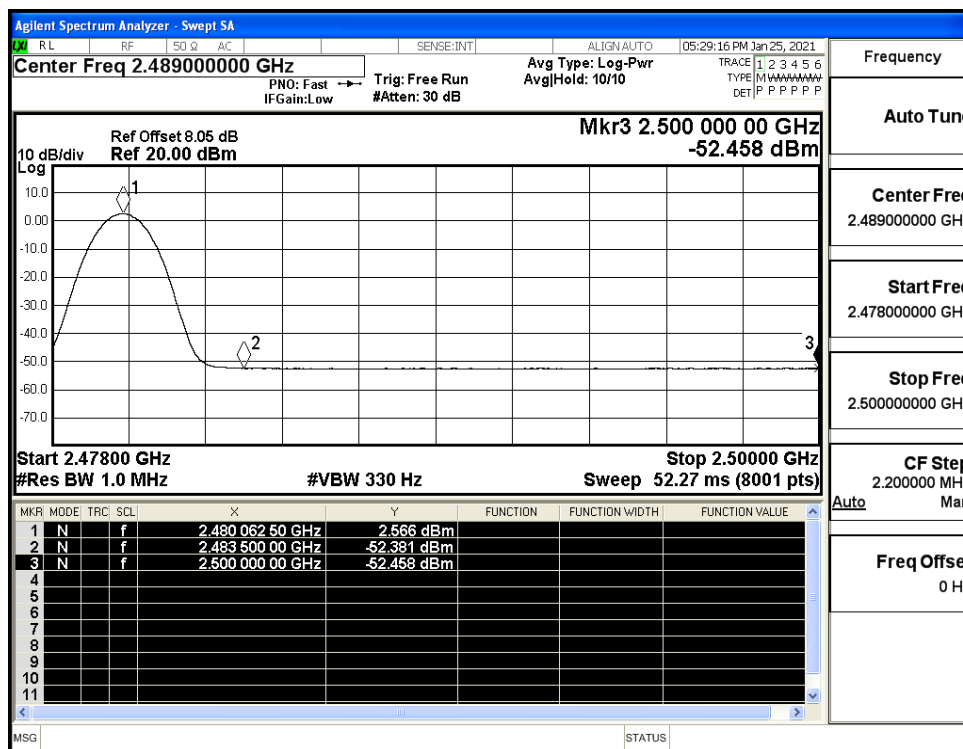
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



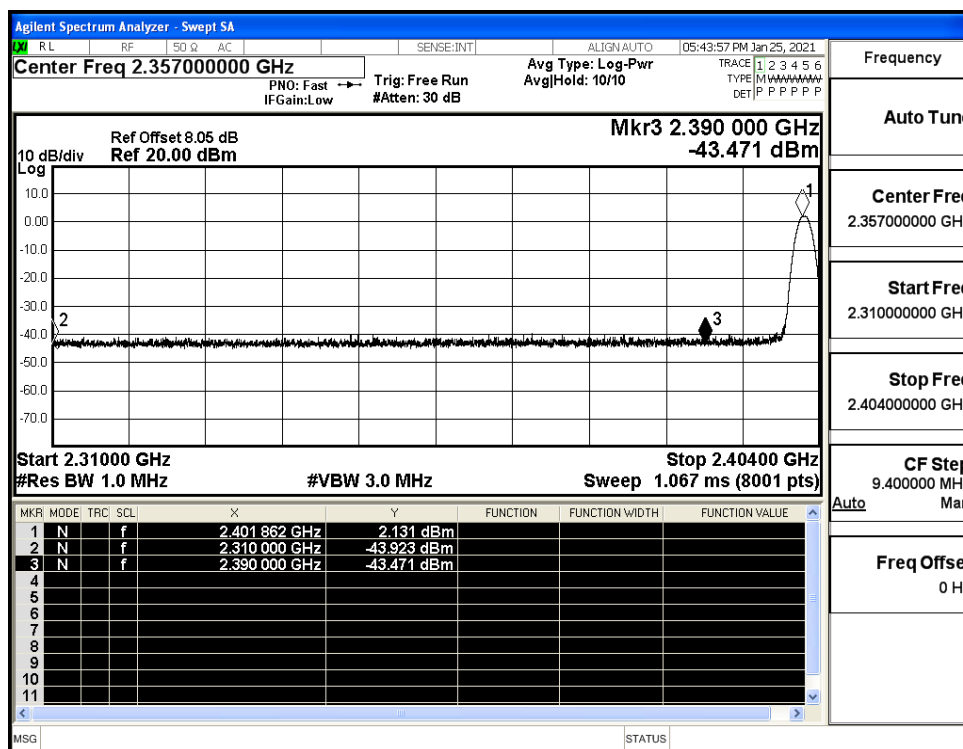
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



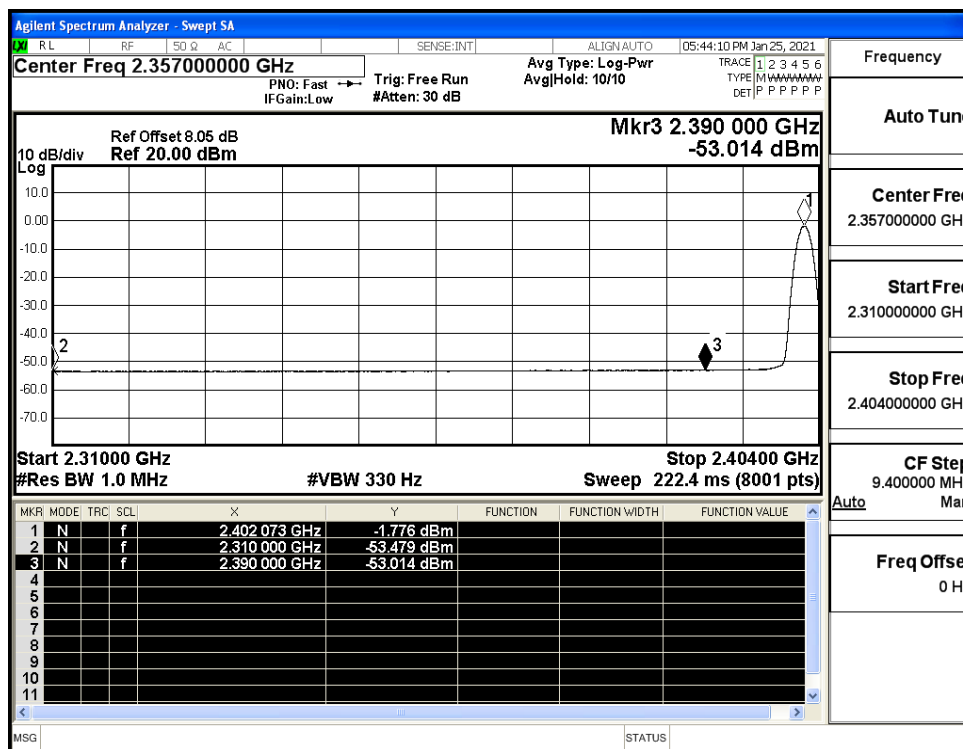
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



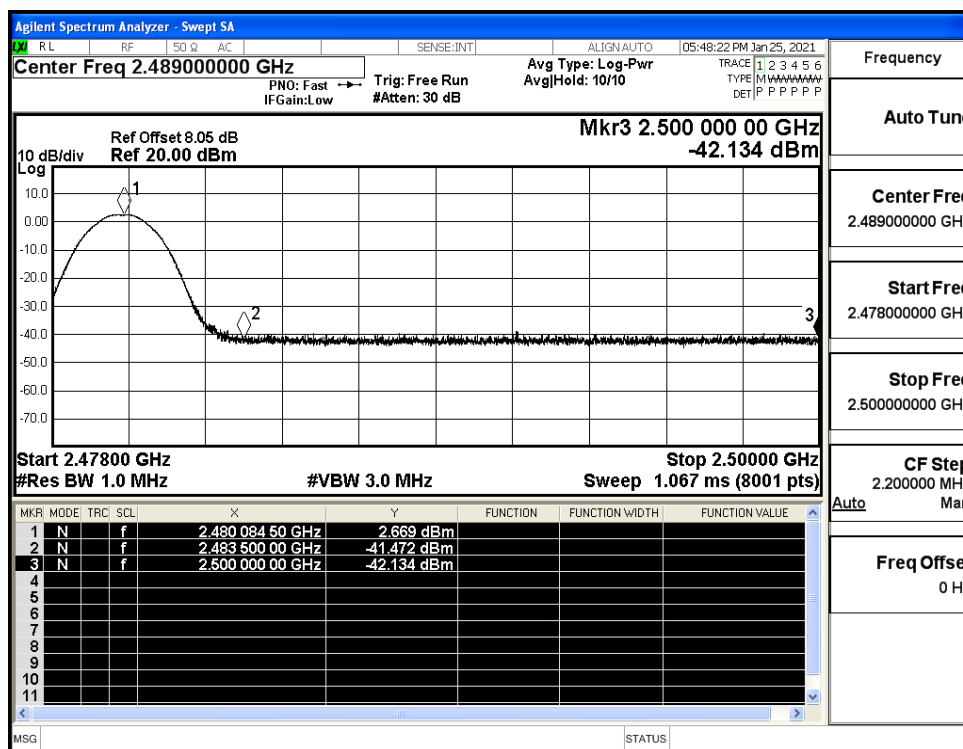
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



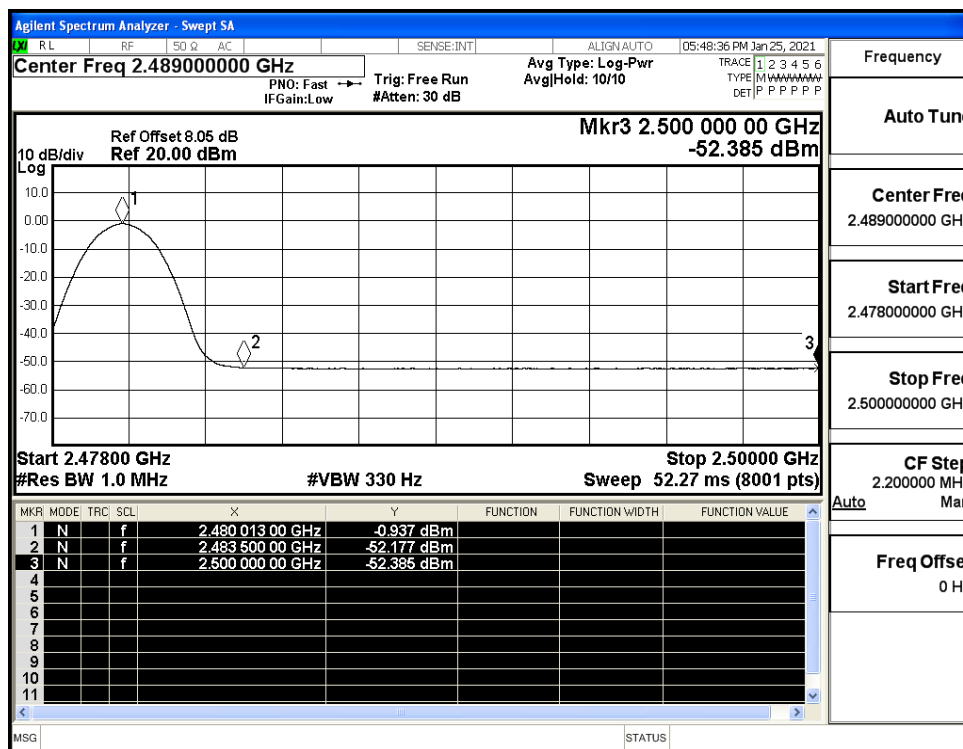
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



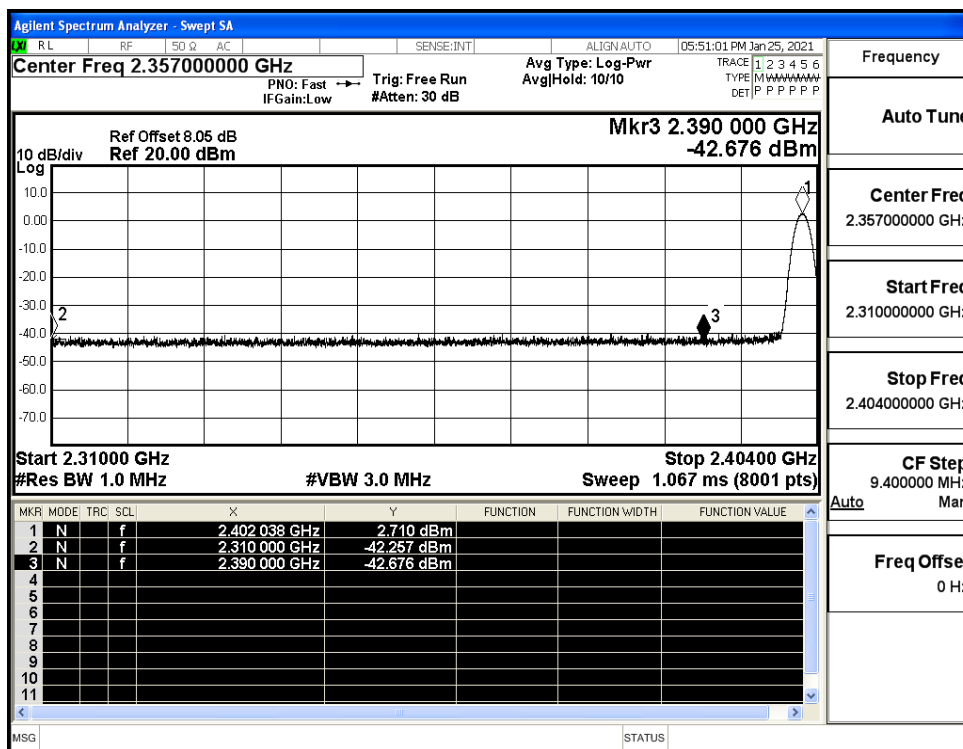
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



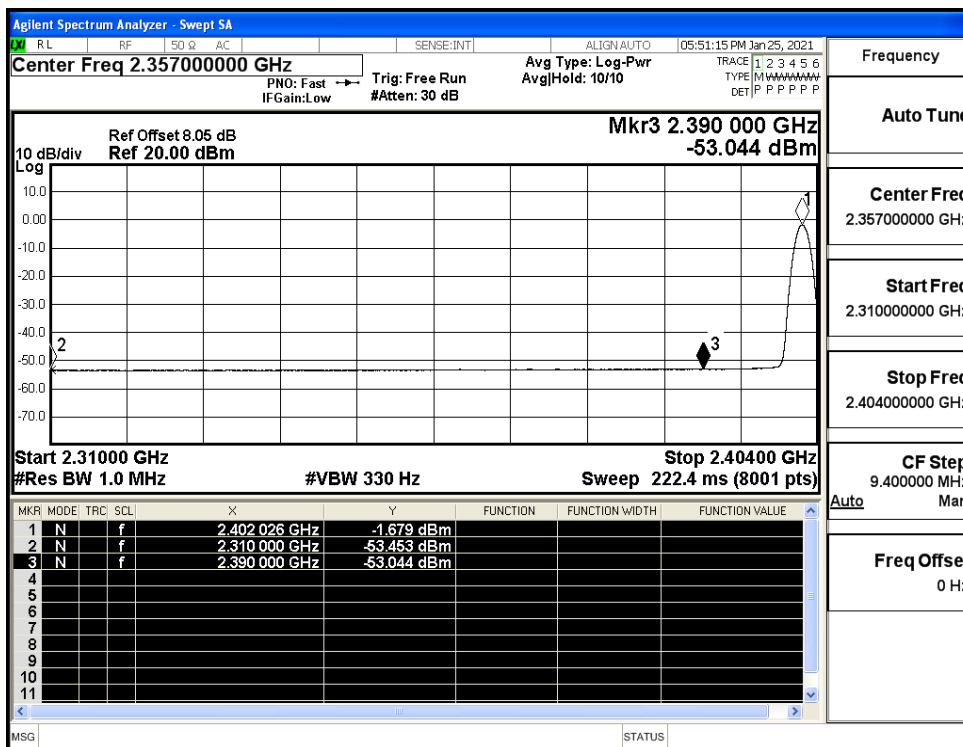
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



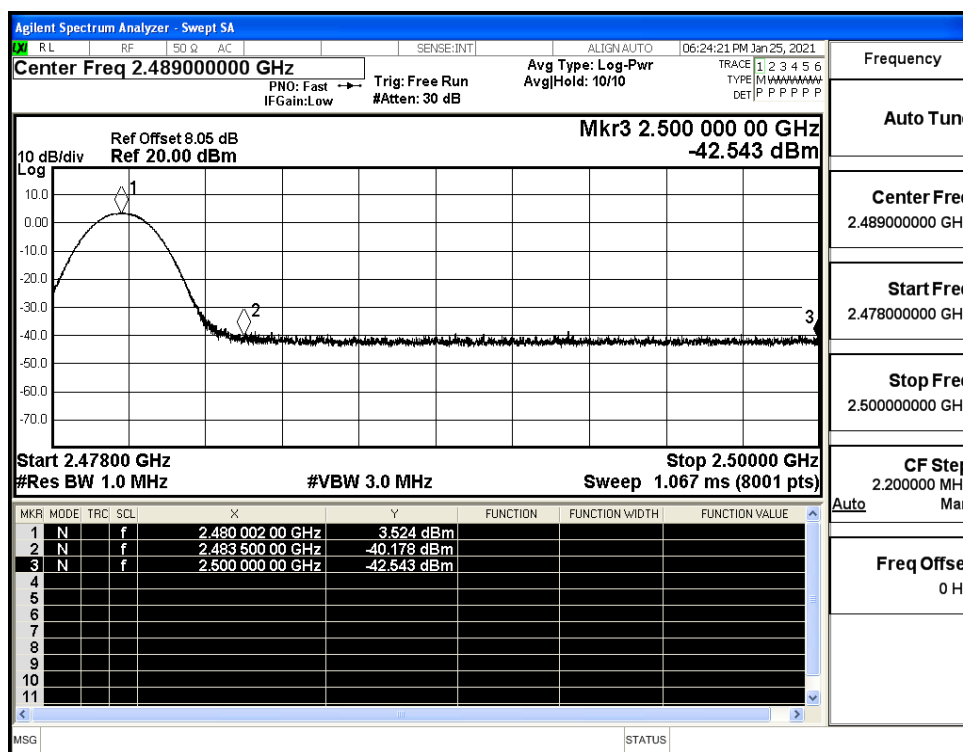
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

