

Appendix A

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

Product Name: CALF Speaker Microphone

Trade Mark: CALF

Test Model: Q5

Environmental Conditions

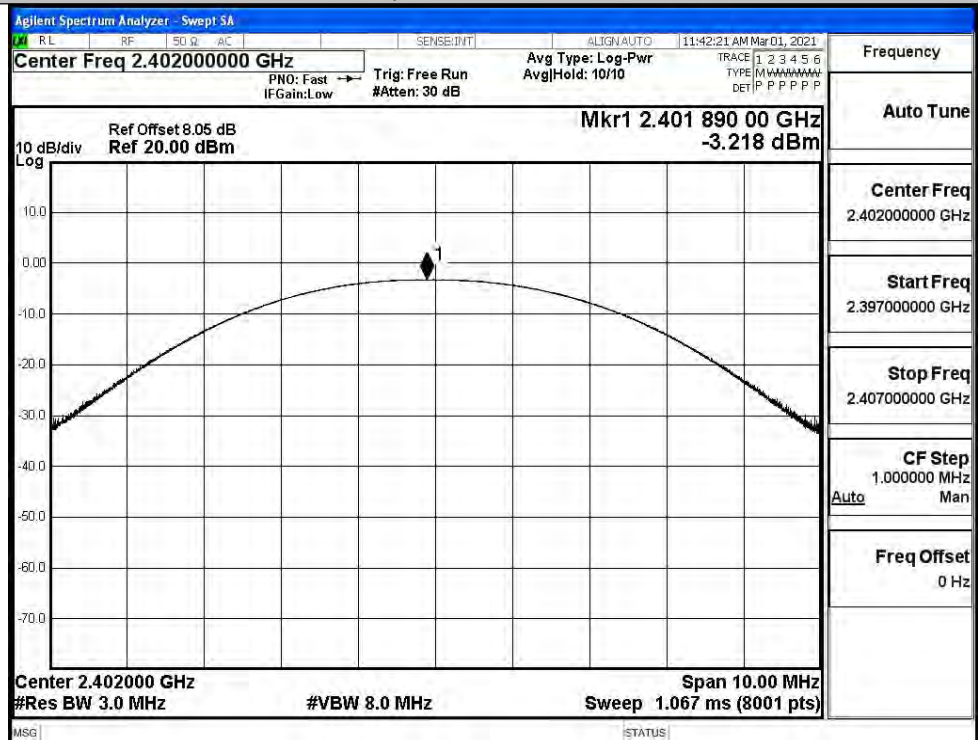
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Kay Hu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

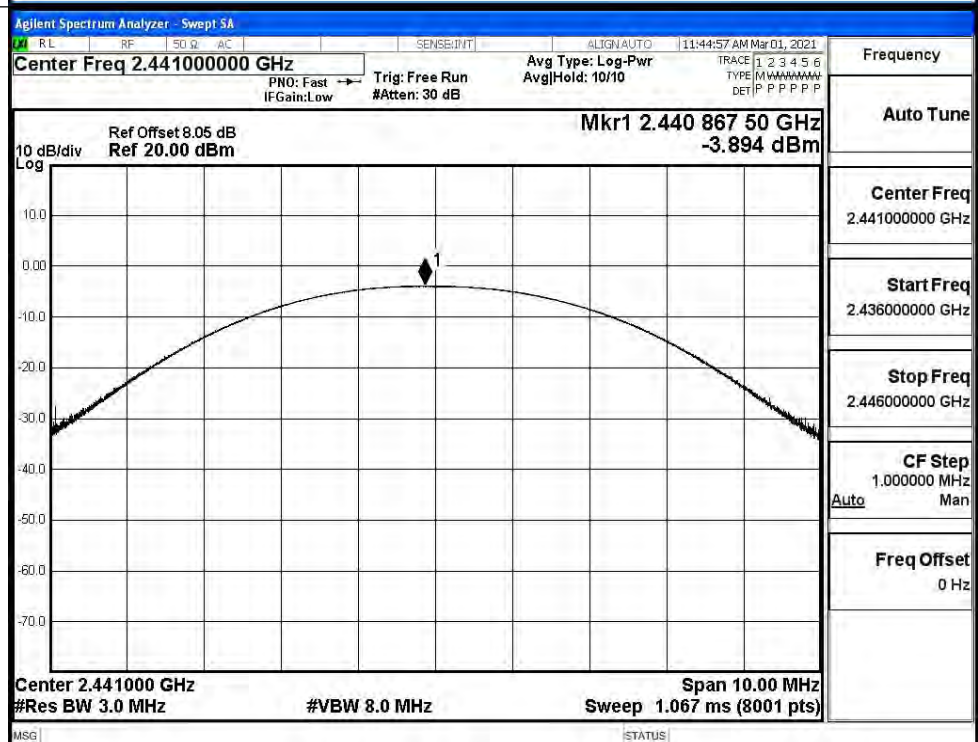
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.218	21	PASS
	MCH	-3.894	21	PASS
	HCH	-4.919	21	PASS
$\pi/4$ DQPSK	LCH	-0.999	21	PASS
	MCH	-1.627	21	PASS
	HCH	-2.613	21	PASS
8DPSK	LCH	-0.230	21	PASS
	MCH	-0.668	21	PASS
	HCH	-1.850	21	PASS

Test Graphs

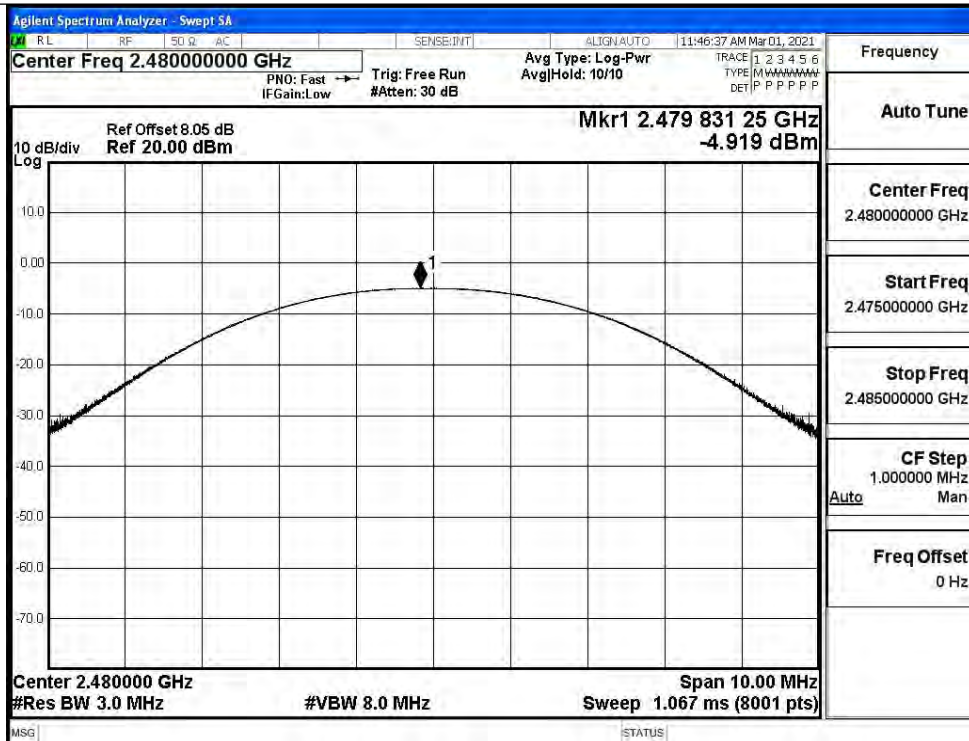
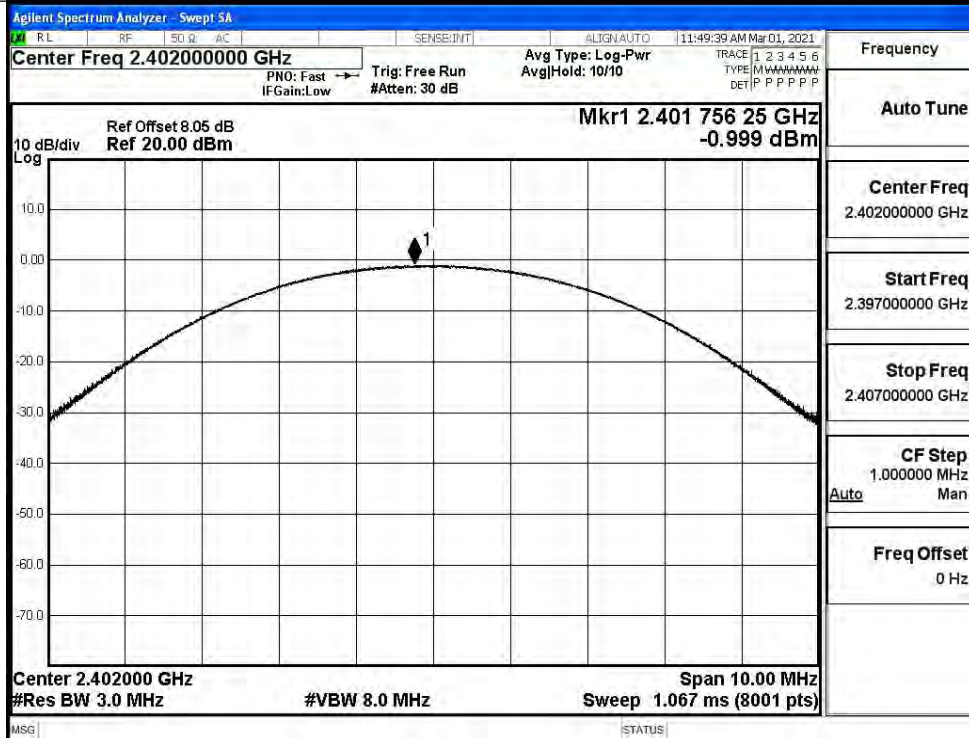
GFSK/LCH

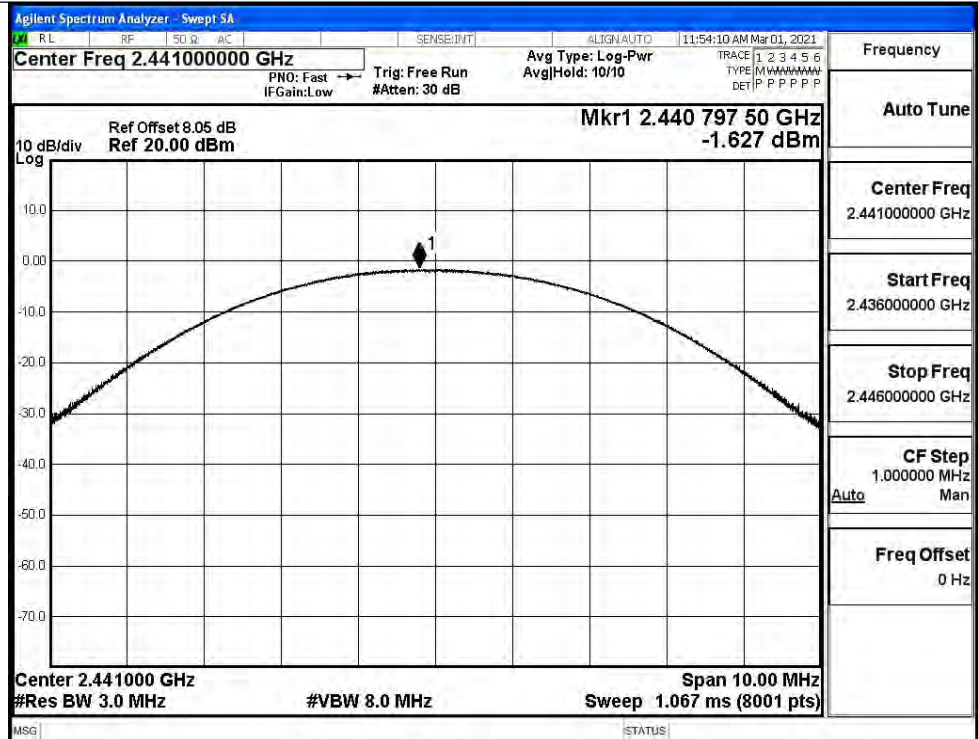
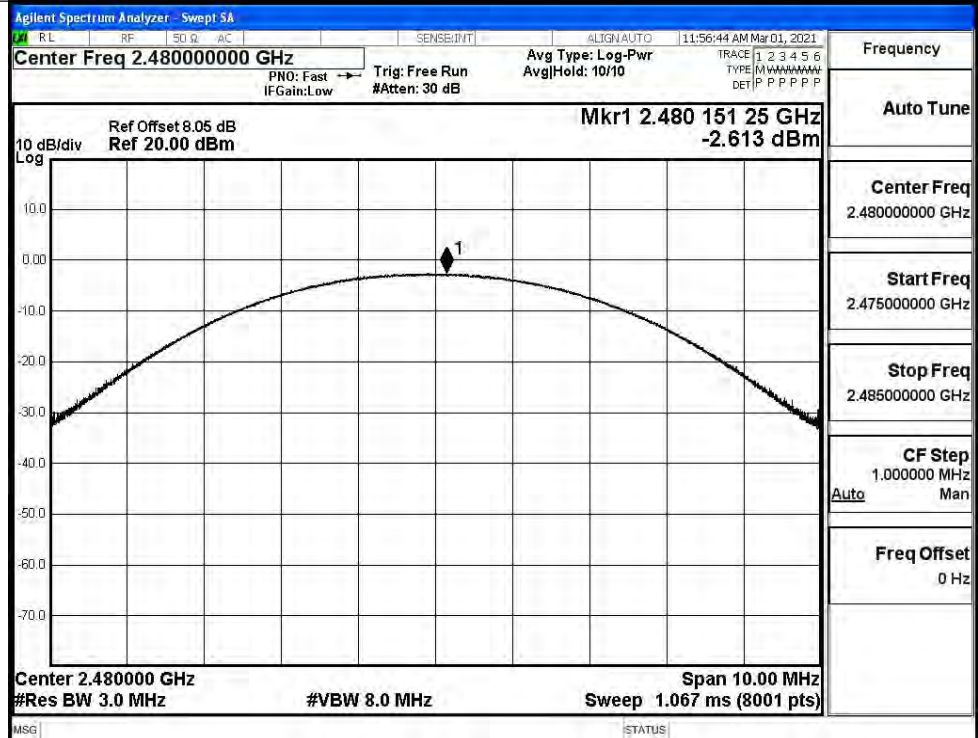


GFSK/MCH

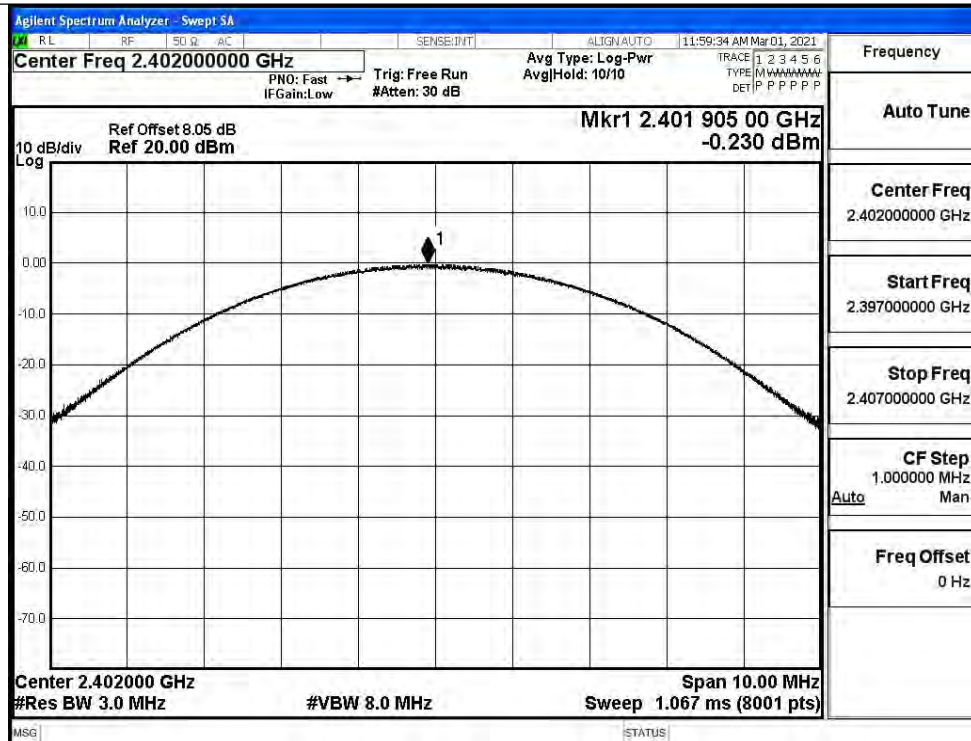


GFSK/HCH

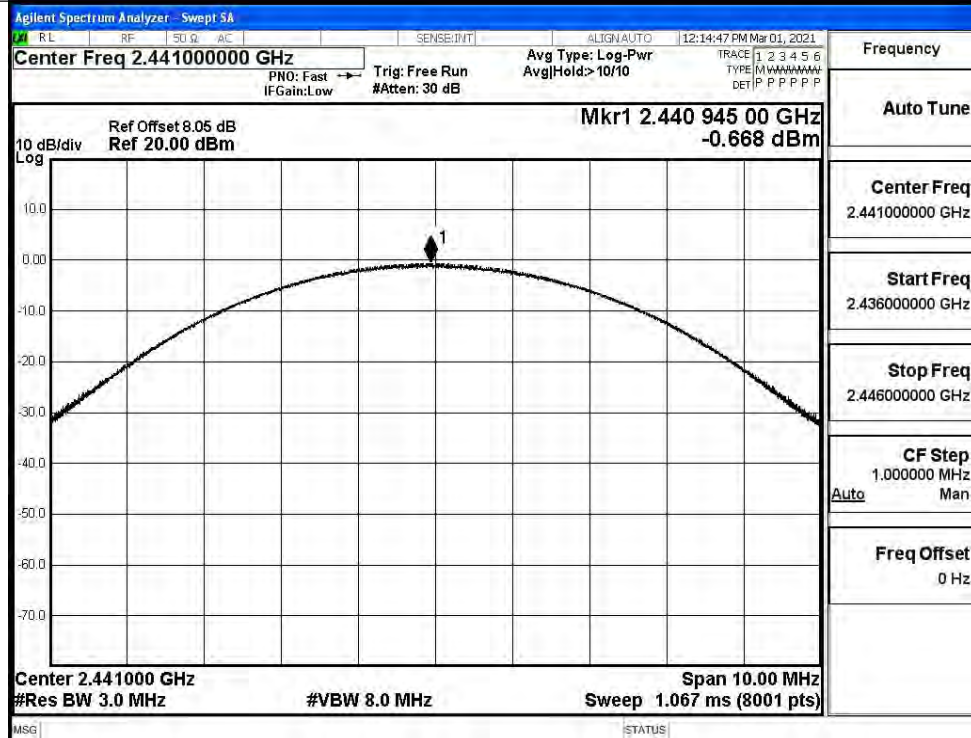
 π /4DQPSK/LCH

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

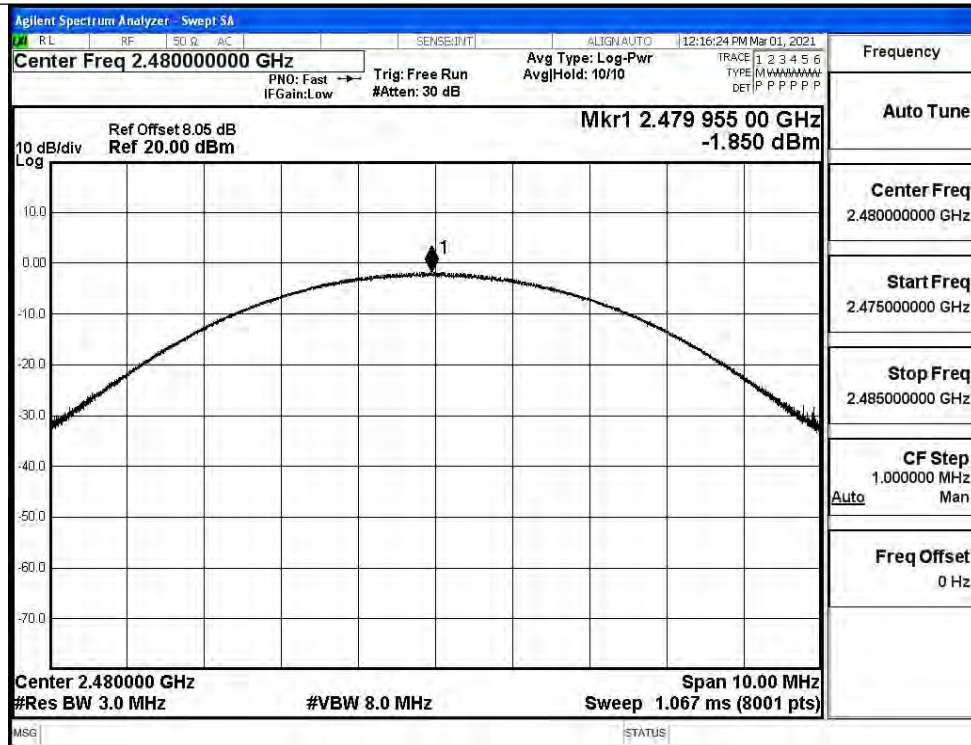
8DPSK/LCH



8DPSK/MCH



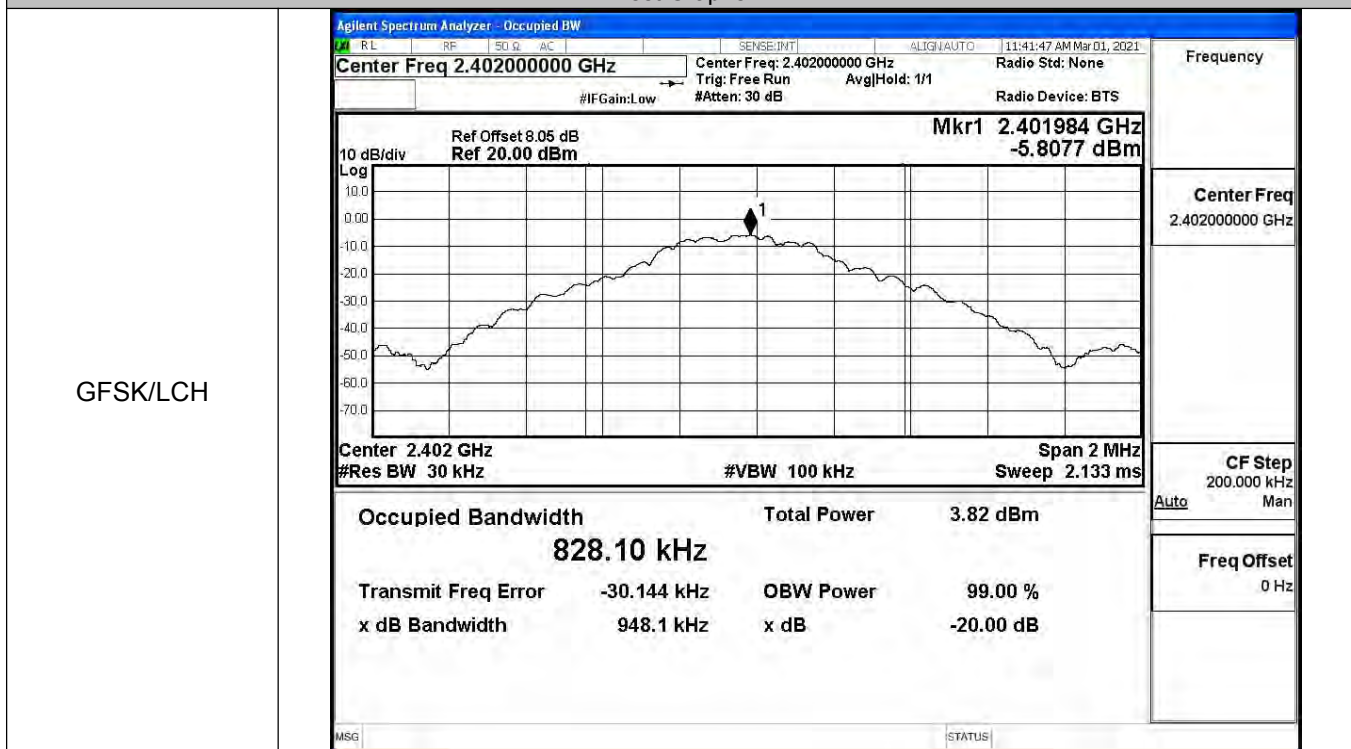
8DPSK/HCH



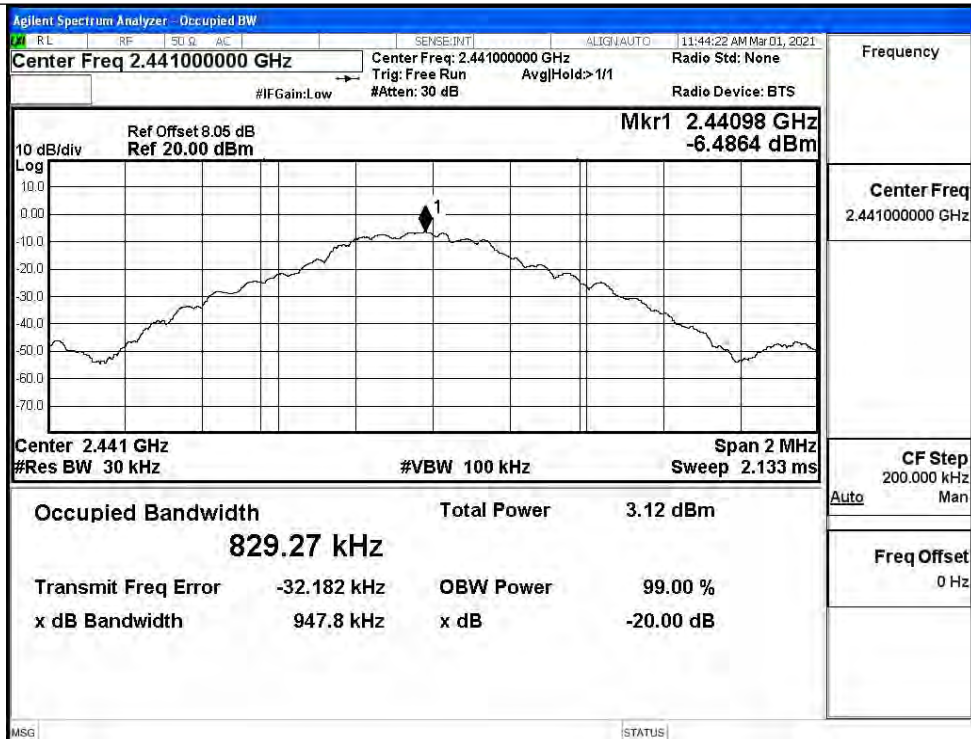
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9481	Not Specified	PASS
	MCH	0.9478	Not Specified	PASS
	HCH	0.9489	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.308	Not Specified	PASS
	MCH	1.310	Not Specified	PASS
	HCH	1.313	Not Specified	PASS
8DPSK	LCH	1.307	Not Specified	PASS
	MCH	1.305	Not Specified	PASS
	HCH	1.307	Not Specified	PASS

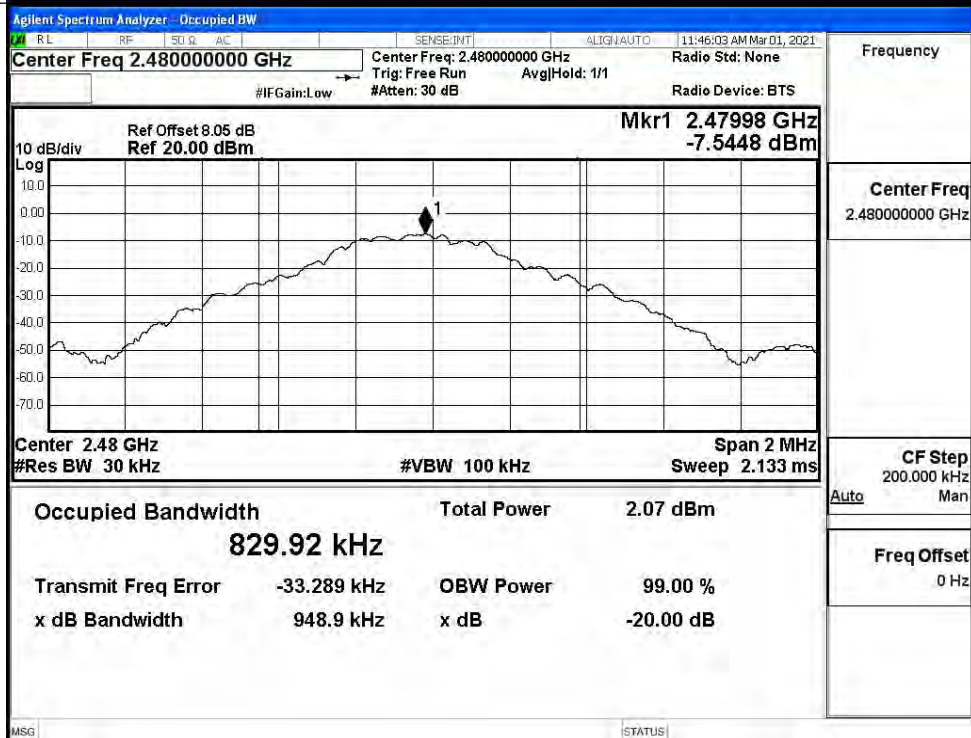
Test Graphs

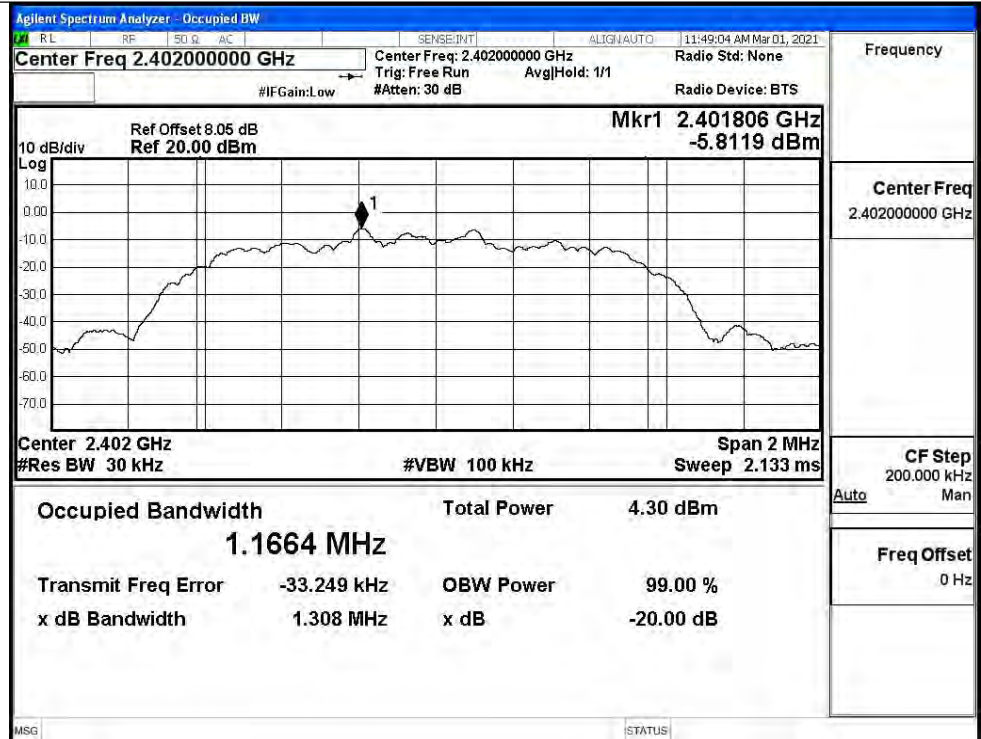
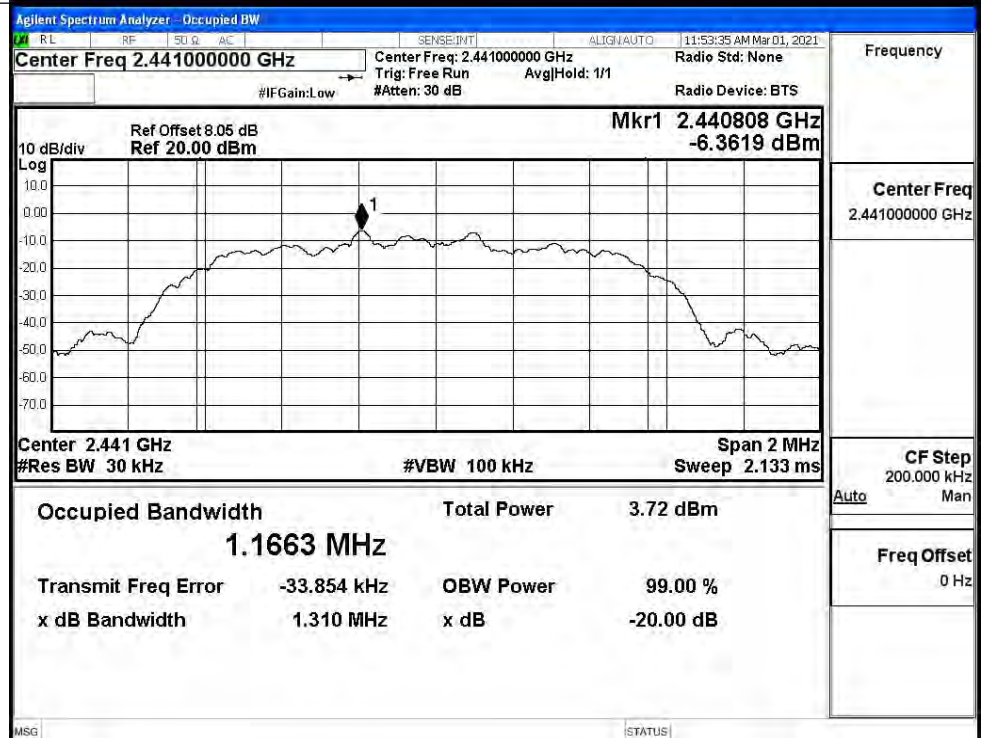


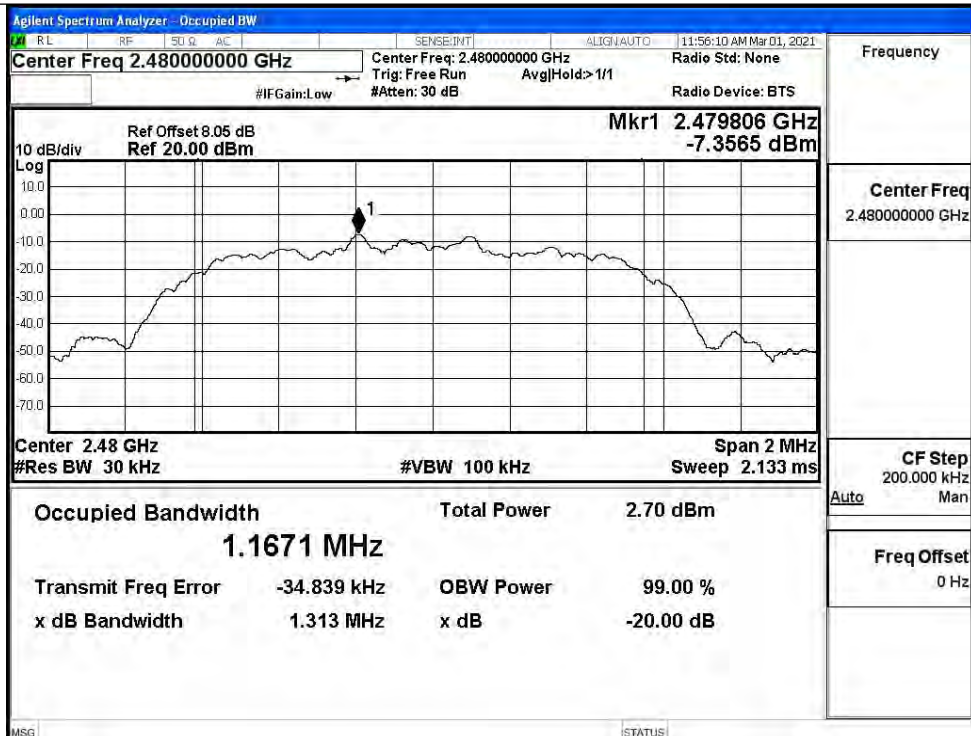
GFSK/MCH



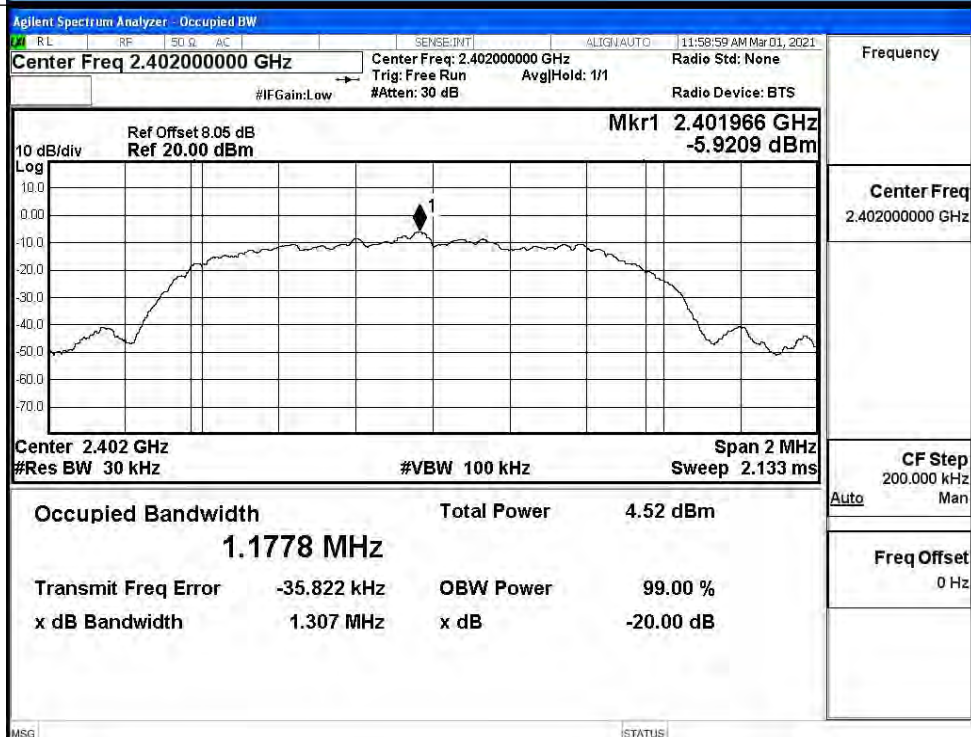
GFSK/HCH



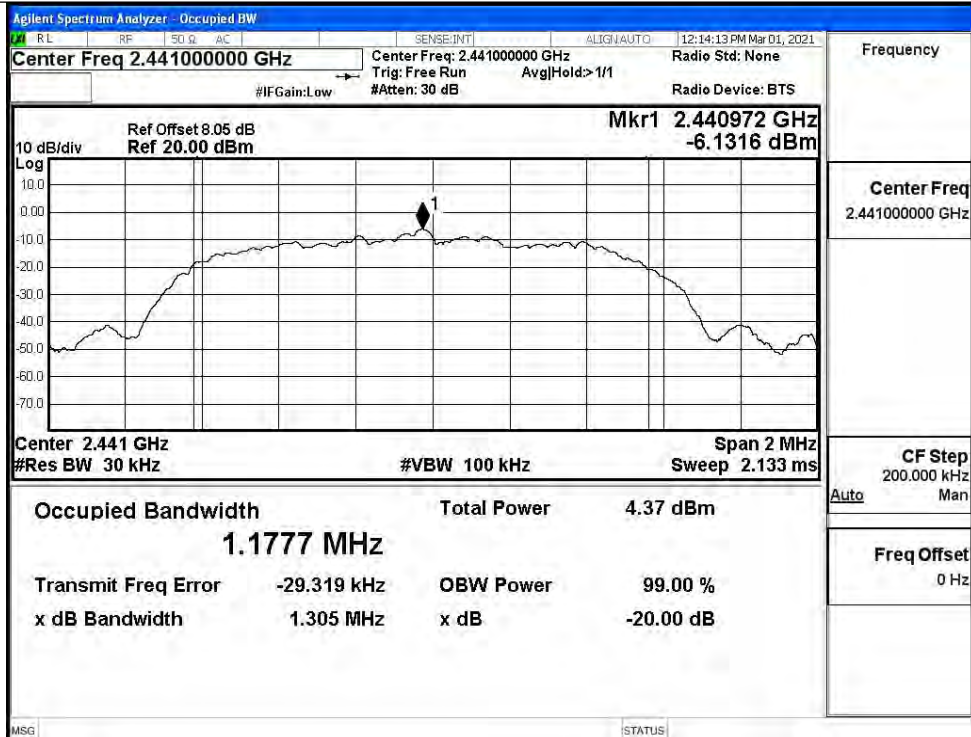
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

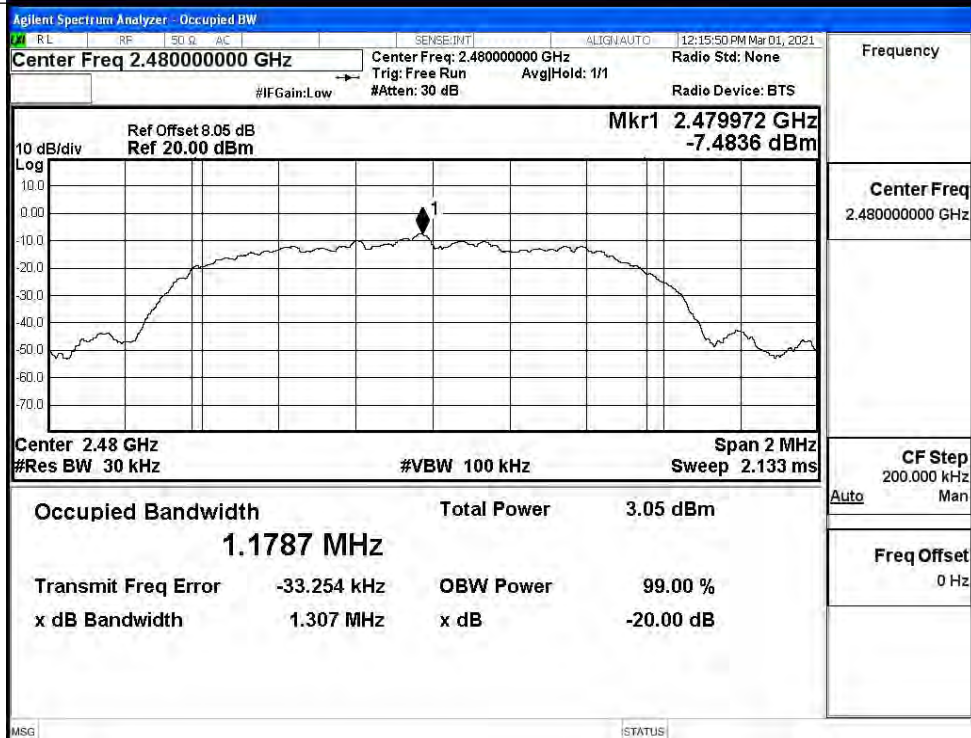
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

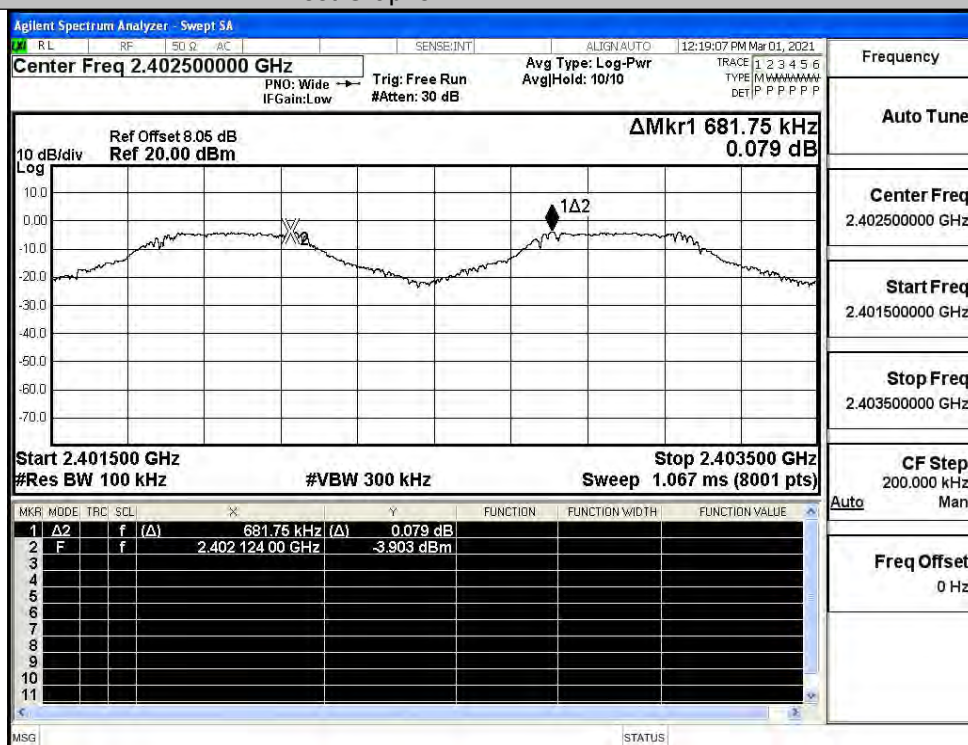


A.3 Carrier Frequency Separation

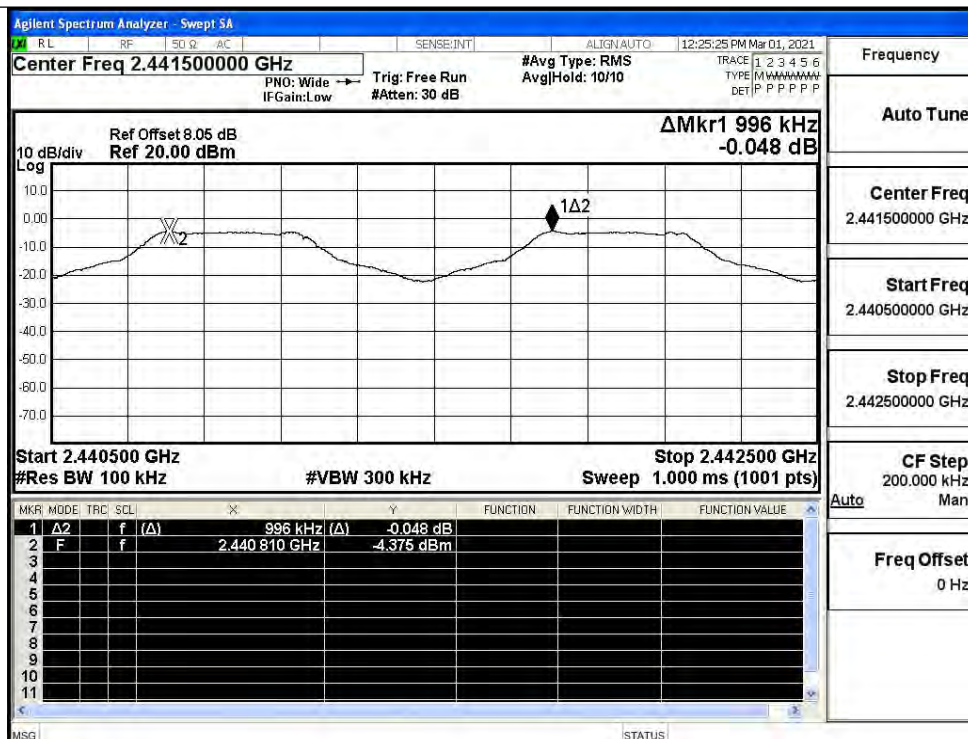
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.682	0.632	PASS
	MCH	0.996	0.632	PASS
	HCH	1.302	0.633	PASS
$\pi/4$ DQPSK	LCH	1.008	0.872	PASS
	MCH	1.000	0.873	PASS
	HCH	1.208	0.875	PASS
8DPSK	LCH	0.996	0.871	PASS
	MCH	0.948	0.870	PASS
	HCH	1.018	0.871	PASS

Test Graphs

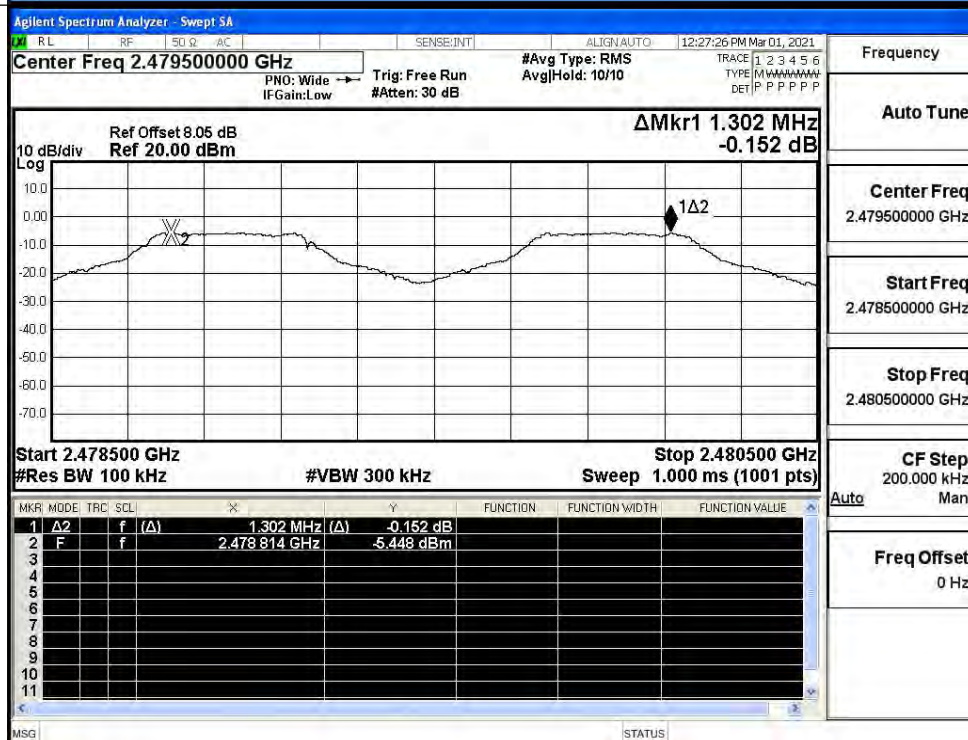
GFSK/LCH

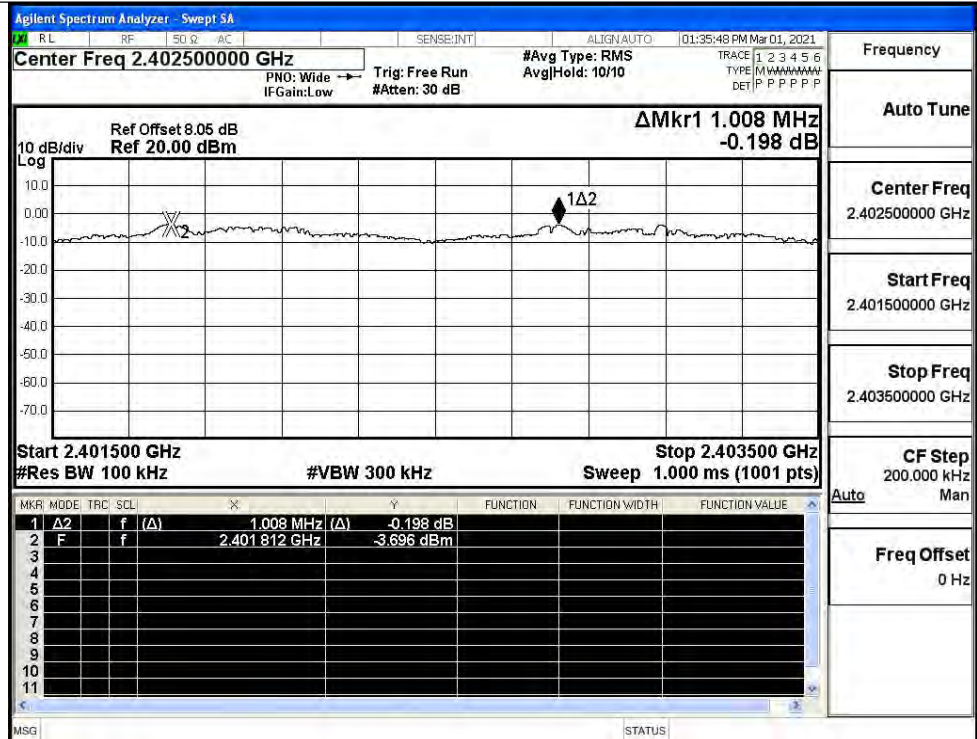
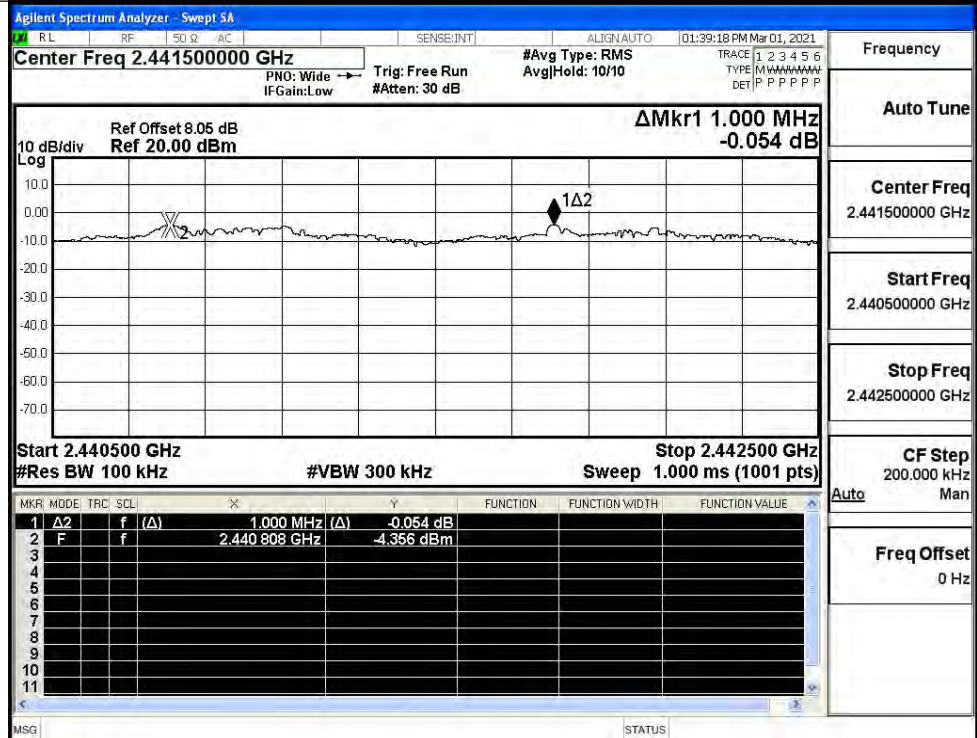


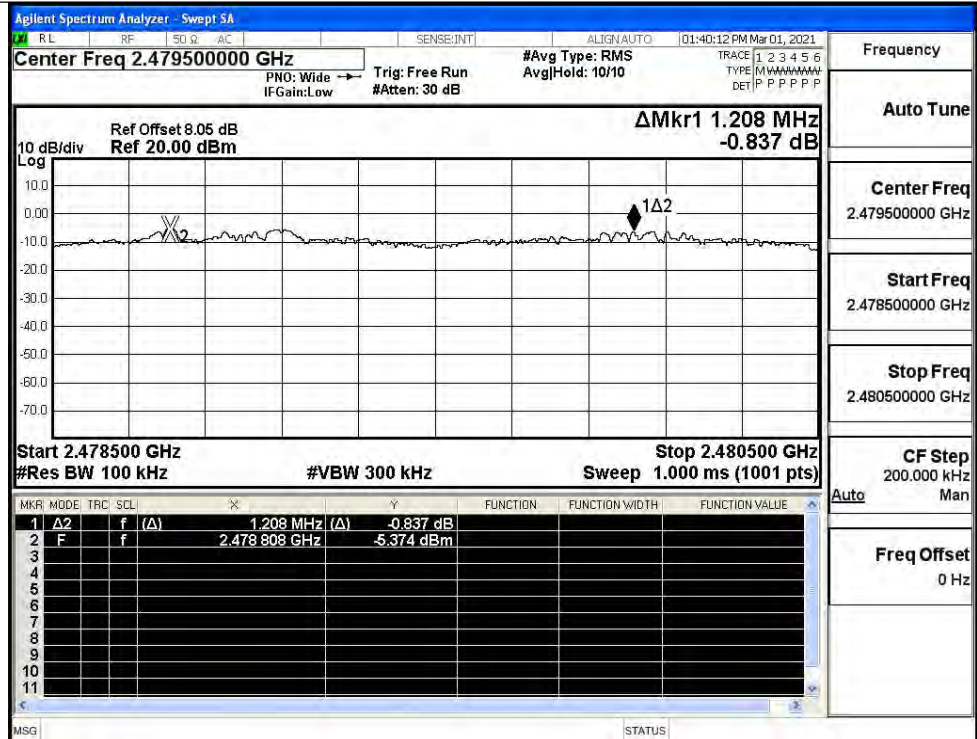
GFSK/MCH



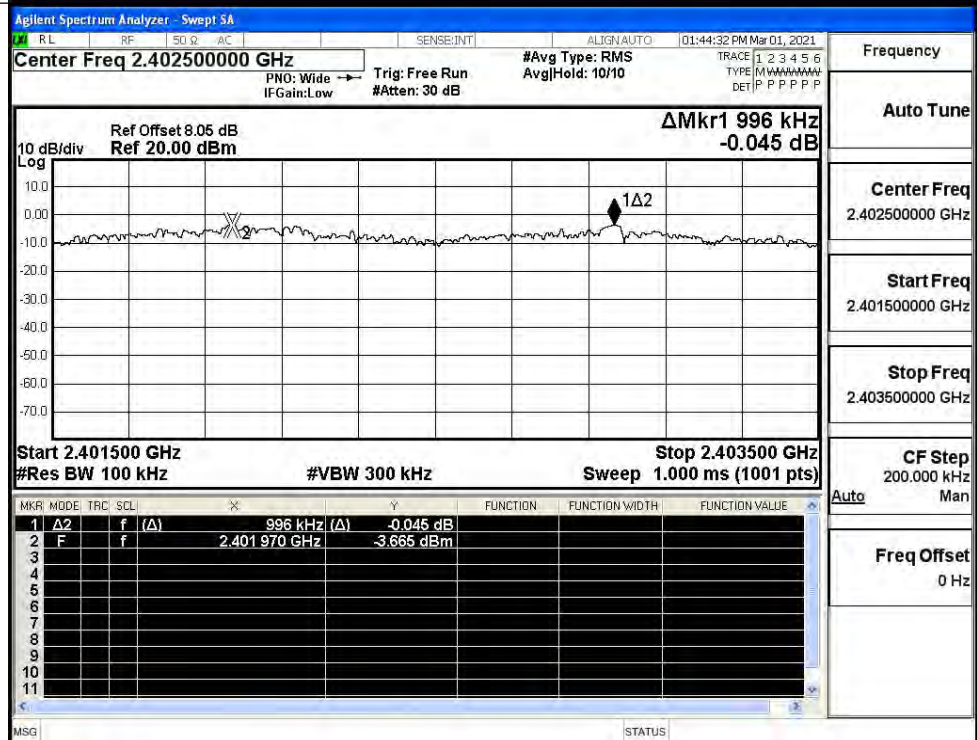
GFSK/HCH



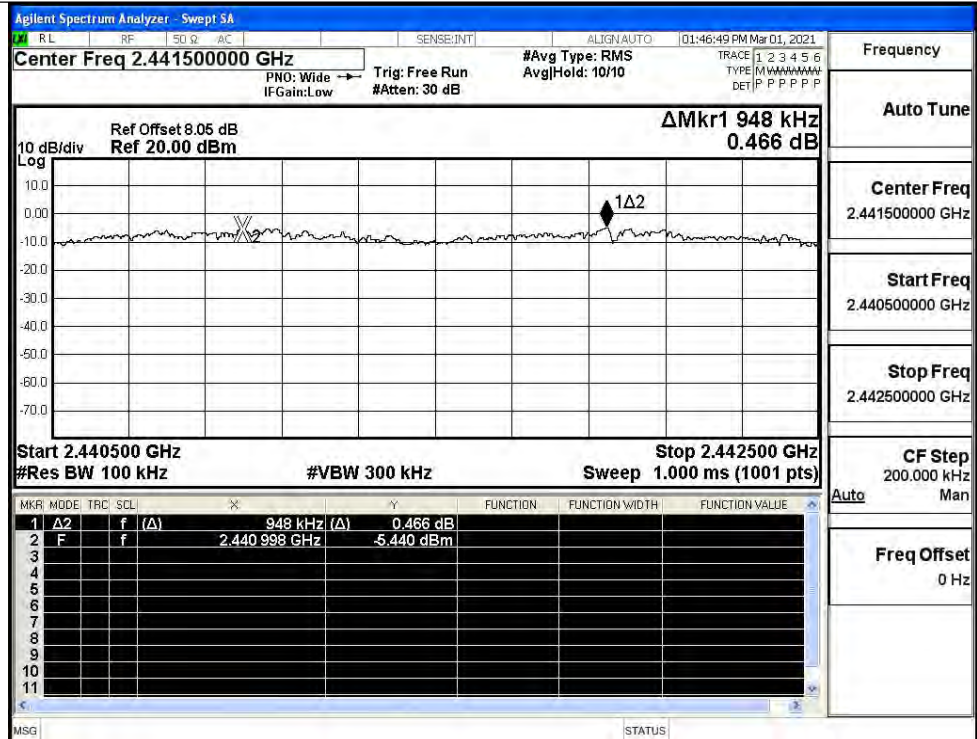
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

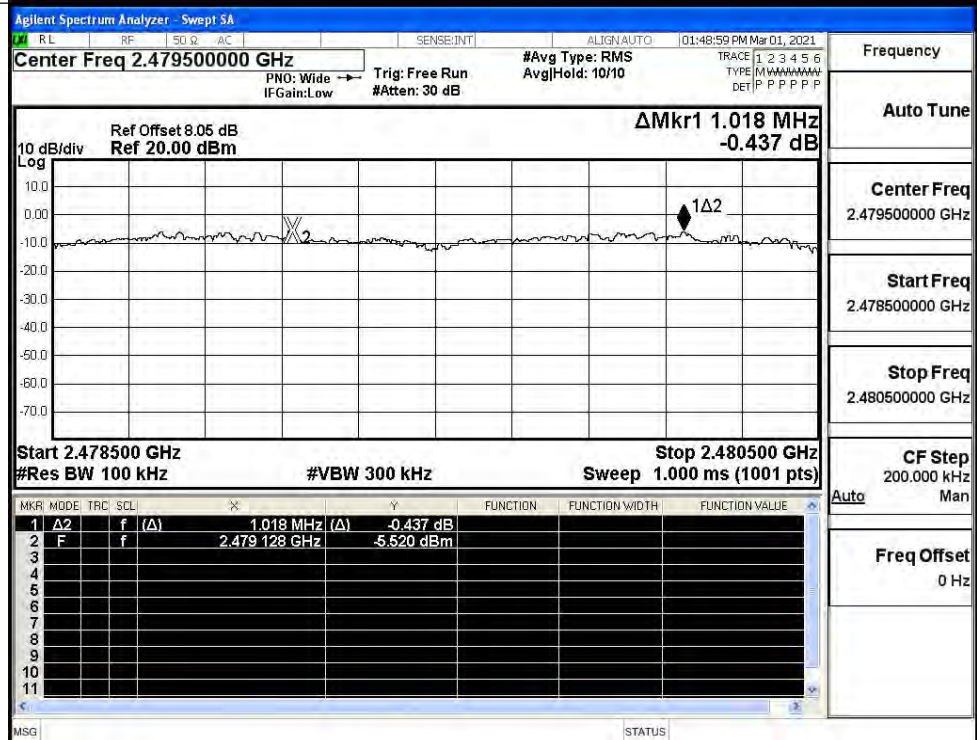
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

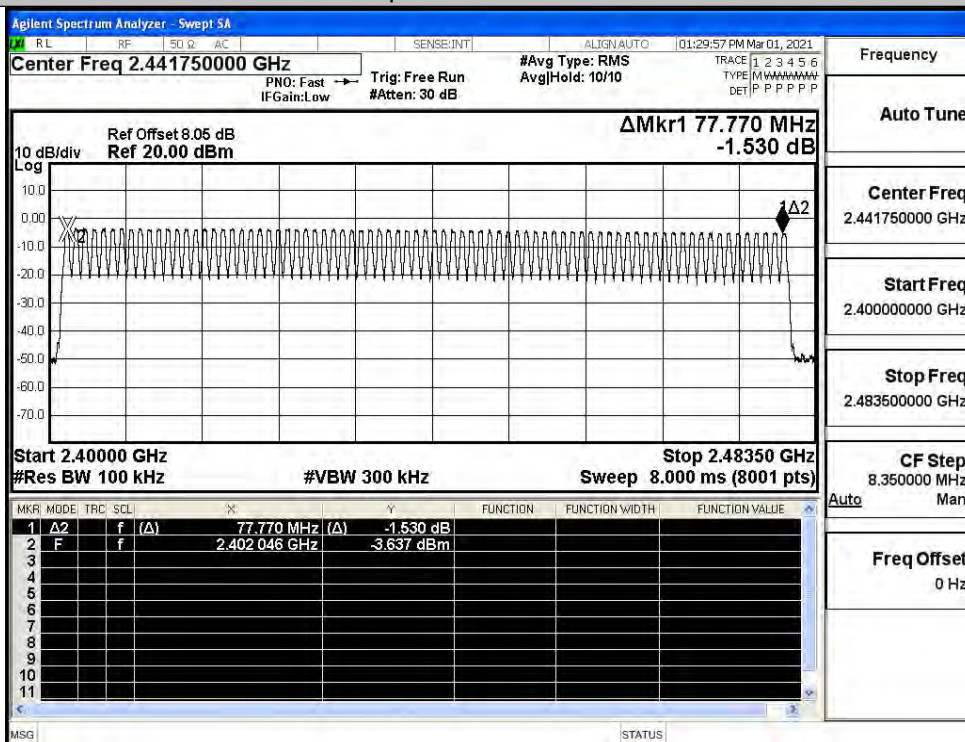
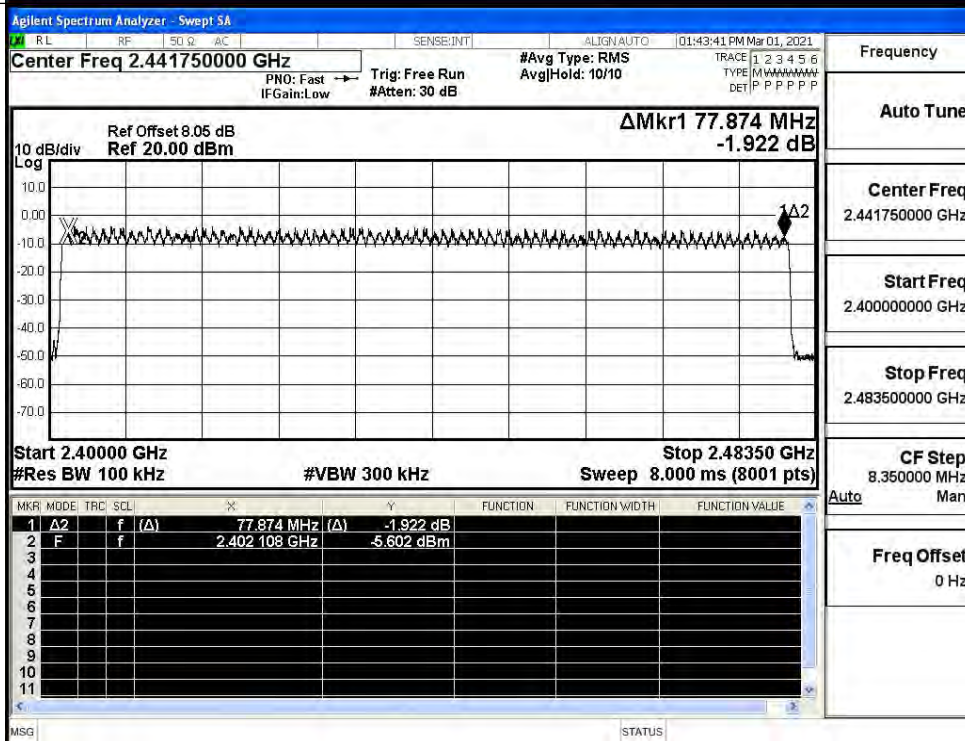


A.4 Hopping Channel Number

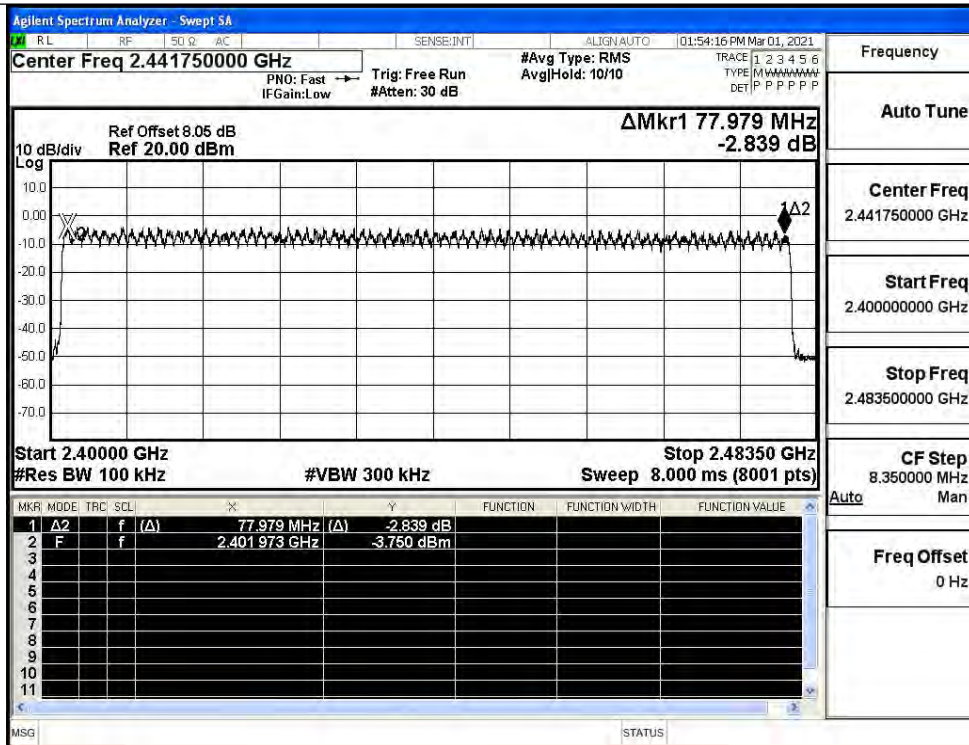
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

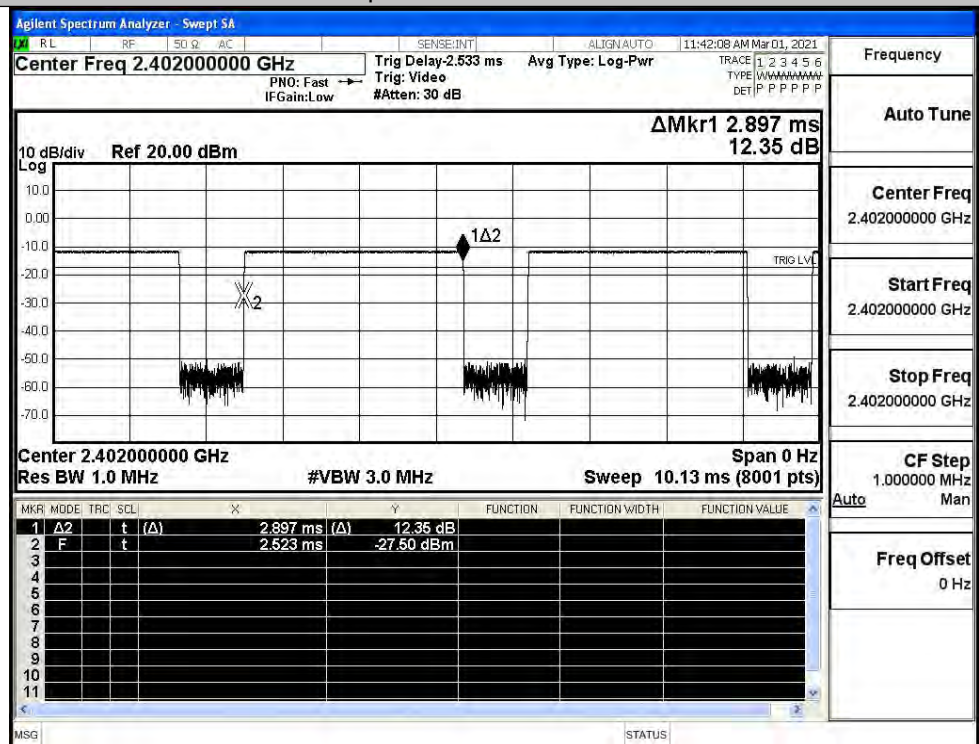


A.5 Dwell Time

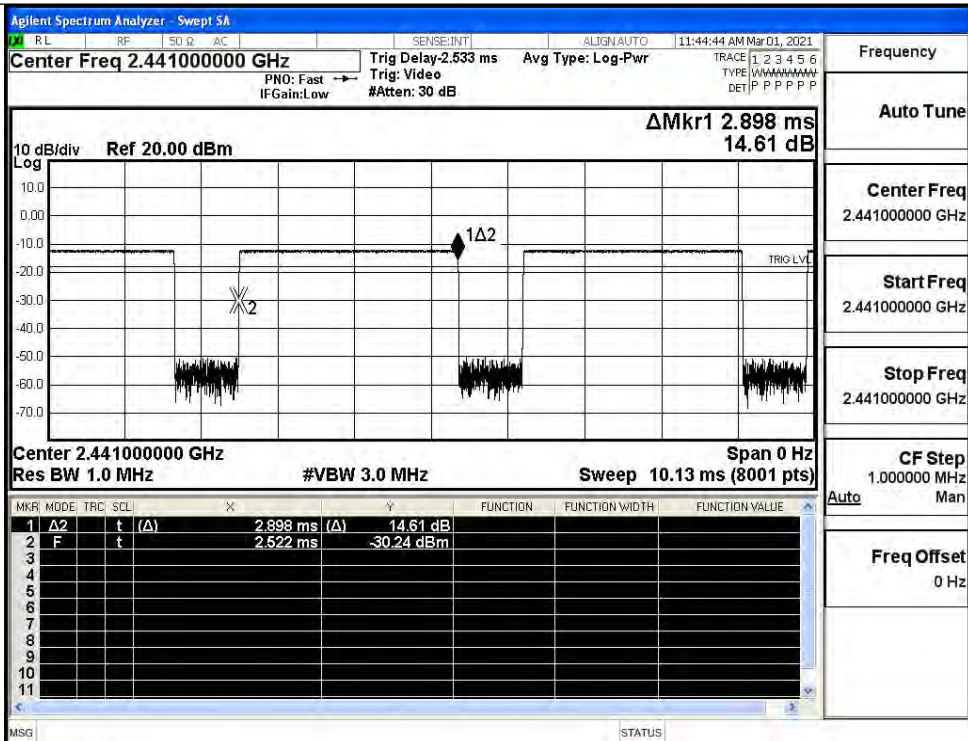
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.31	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.31	0.4	PASS

Test Graphs

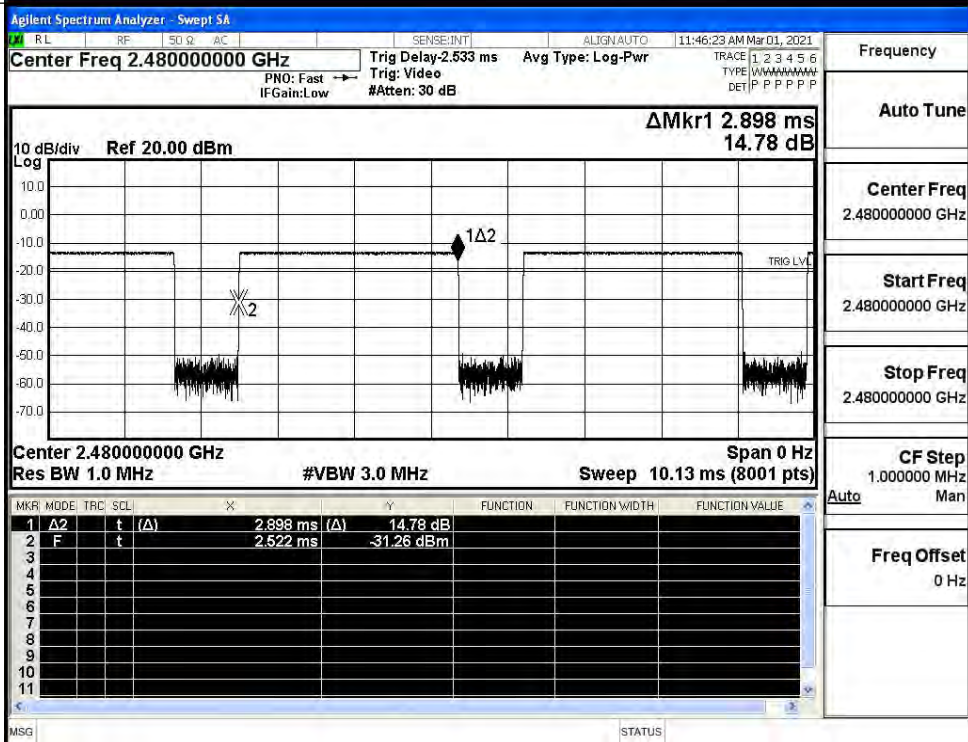
GFSK_DH5/LCH



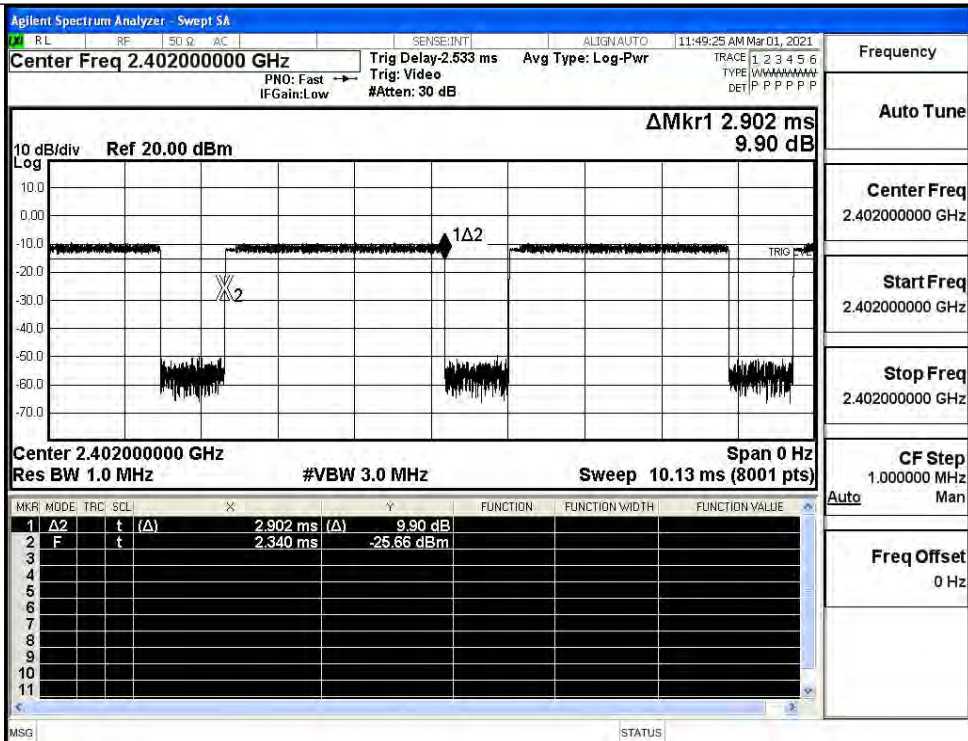
GFSK_DH5/MCH



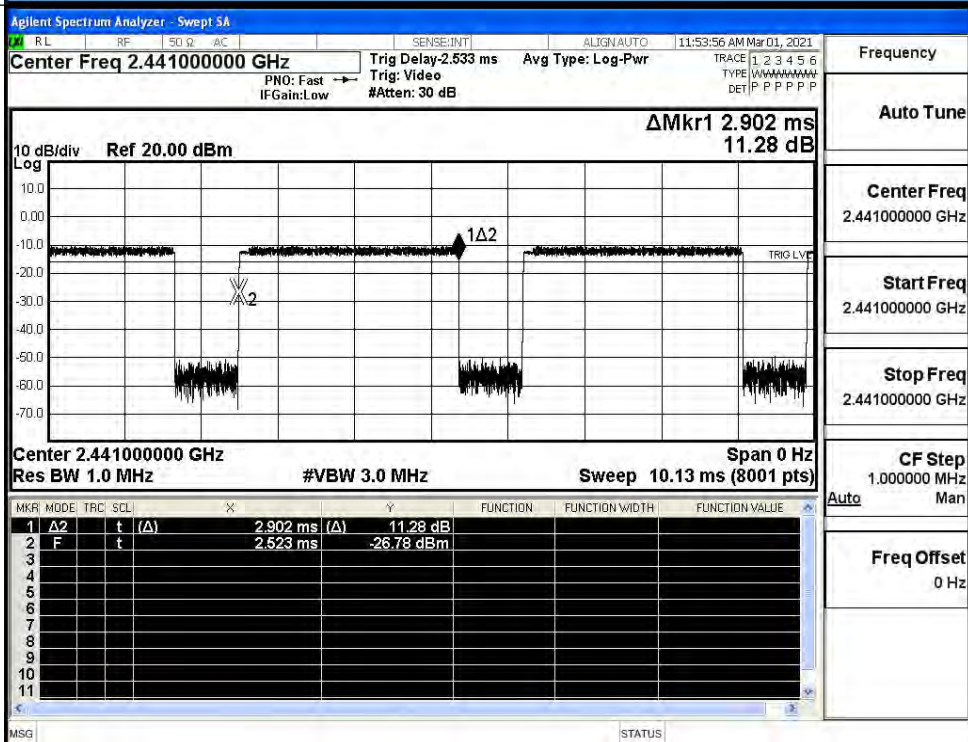
GFSK_DH5/HCH



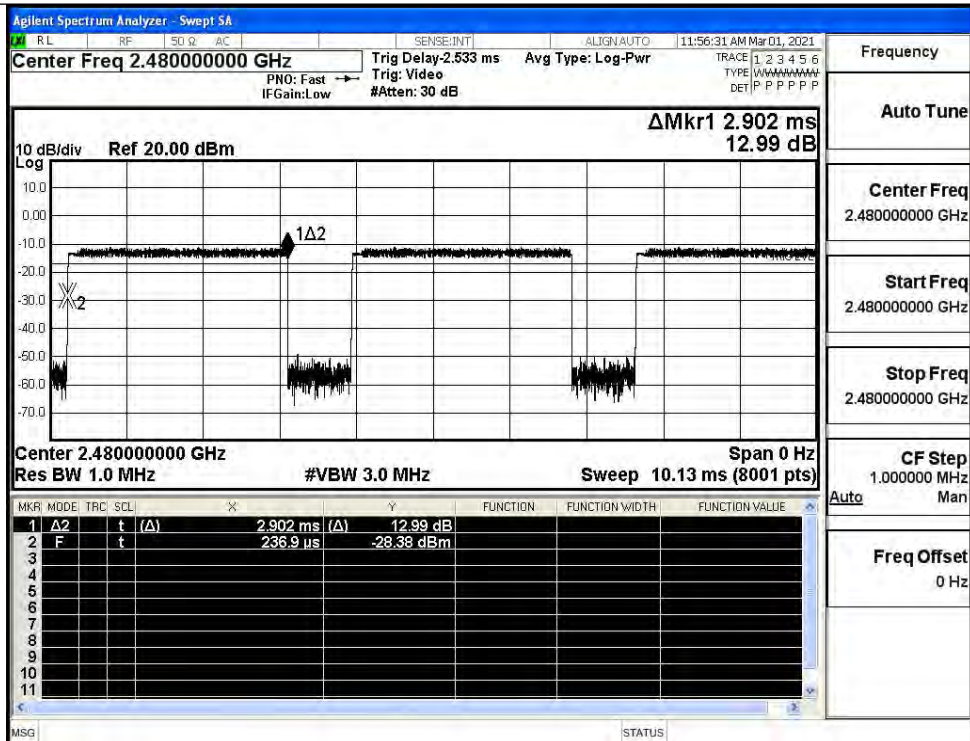
$\pi/4$ DQPSK
_2DH5/LCH



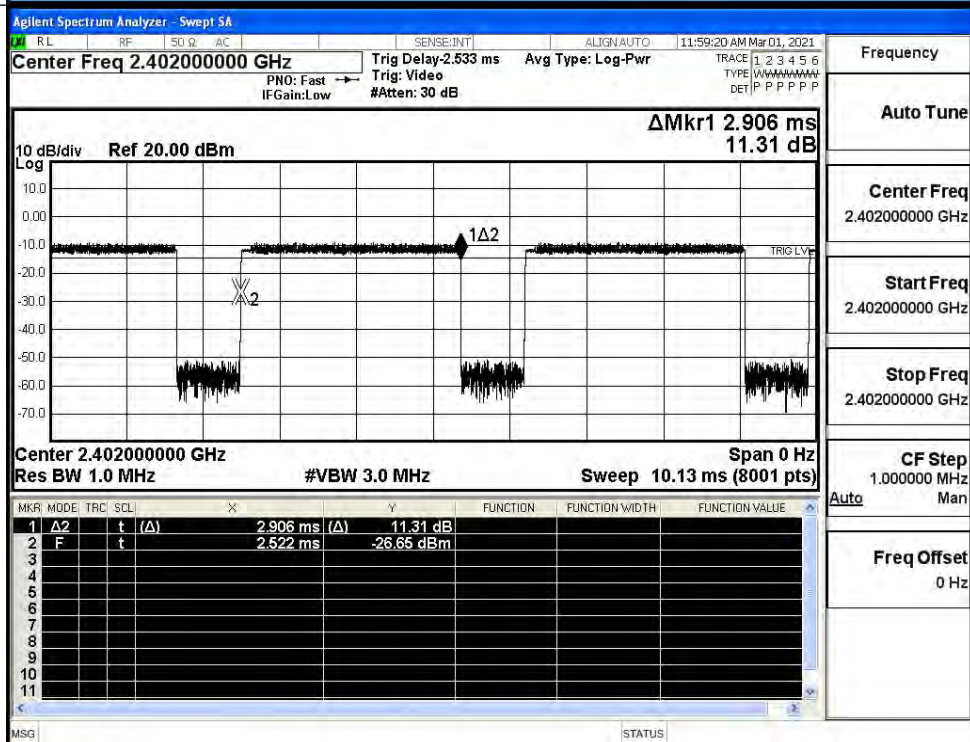
$\pi/4$ DQPSK
_2DH5/MCH



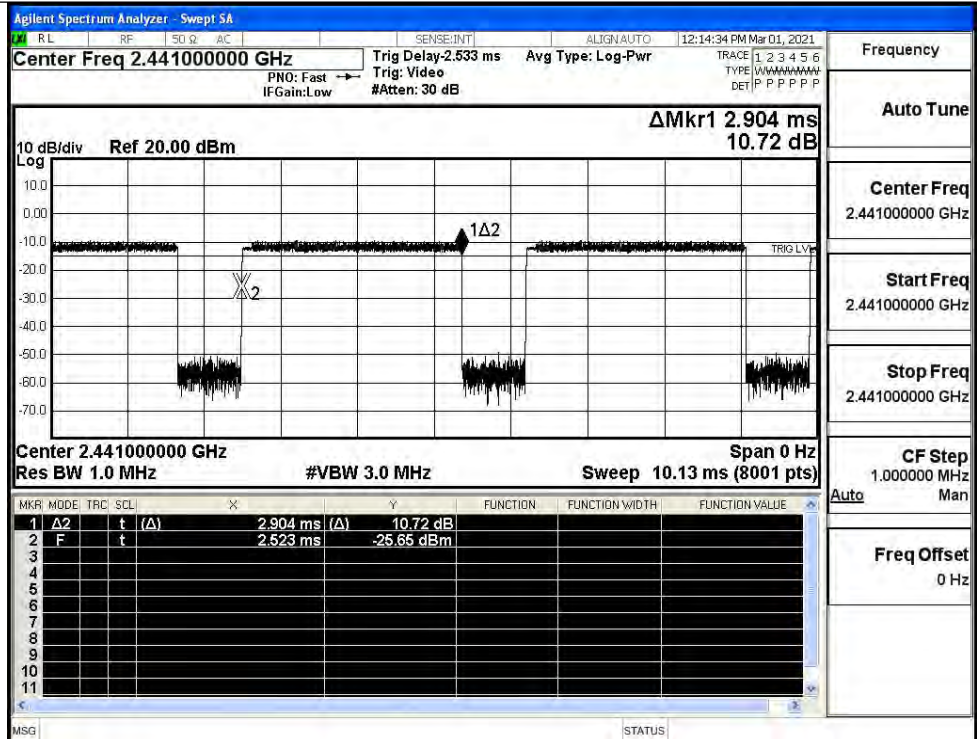
$\pi/4$ DQPSK
_2DH5/HCH



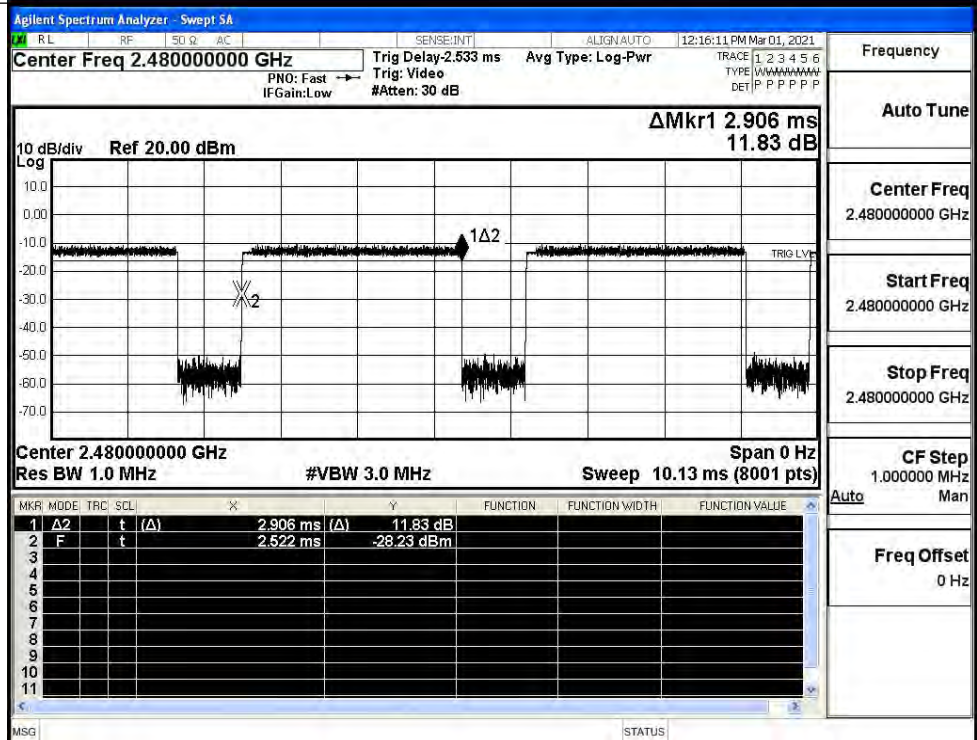
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

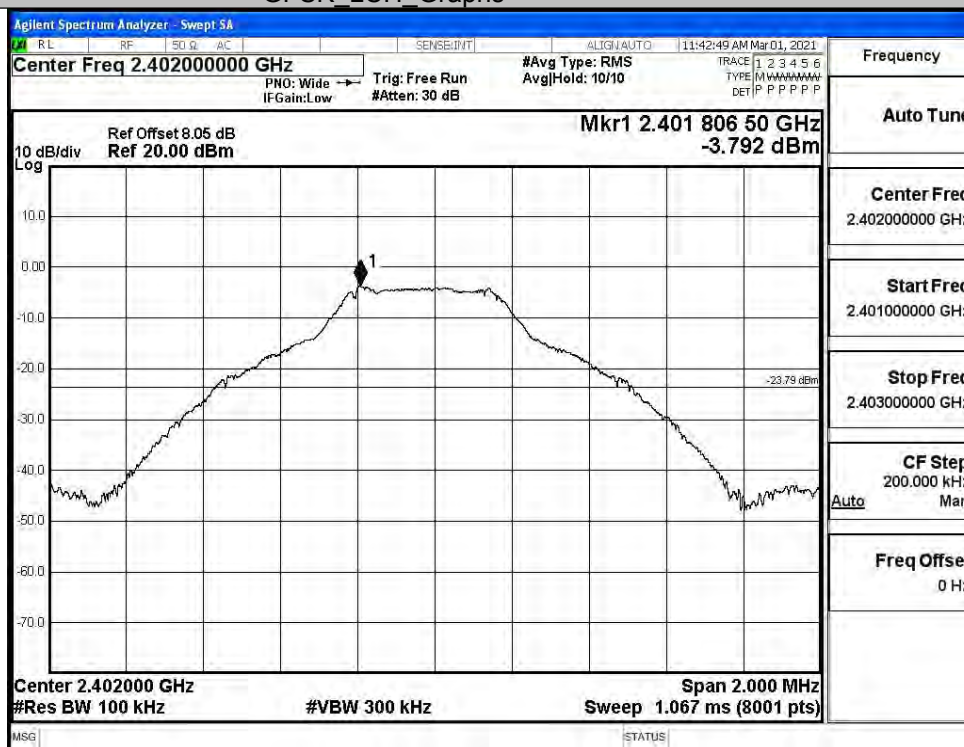


A.6 RF Conducted Spurious Emissions

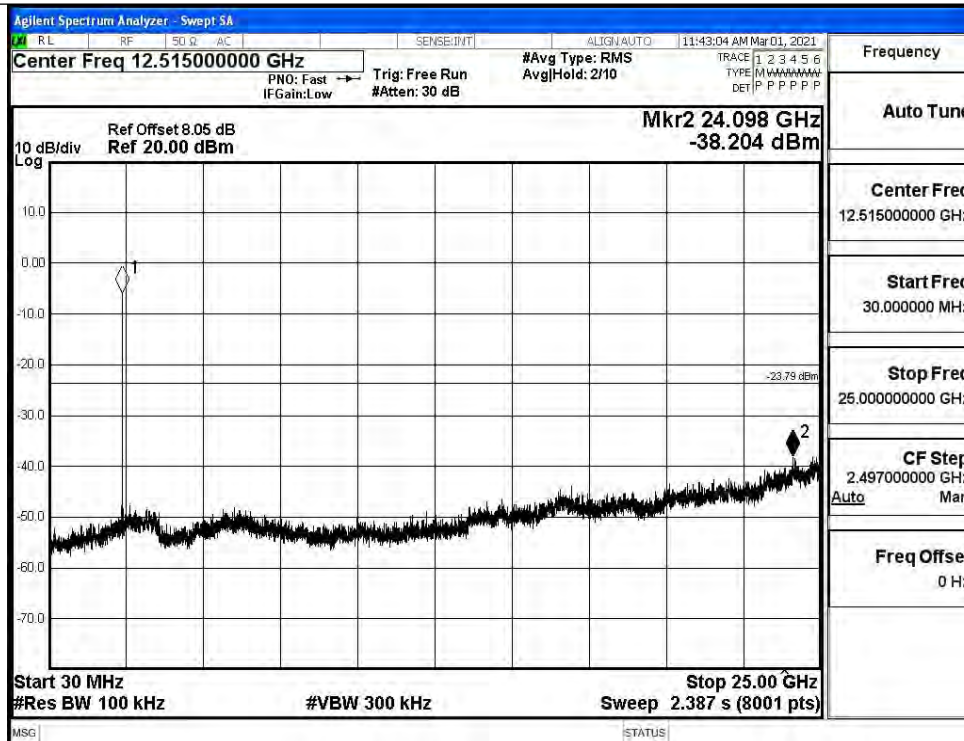
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.792	-38.204	-23.792	PASS
	MCH	-4.419	-37.911	-24.419	PASS
	HCH	-5.458	-38.199	-25.458	PASS
$\pi/4$ DQPSK	LCH	-3.84	-37.591	-23.840	PASS
	MCH	-4.595	-37.632	-24.595	PASS
	HCH	-5.393	-37.966	-25.393	PASS
8DPSK	LCH	-3.694	-37.138	-23.694	PASS
	MCH	-4.369	-37.511	-24.369	PASS
	HCH	-5.411	-38.040	-25.411	PASS

GFSK LCH Graphs

Pref

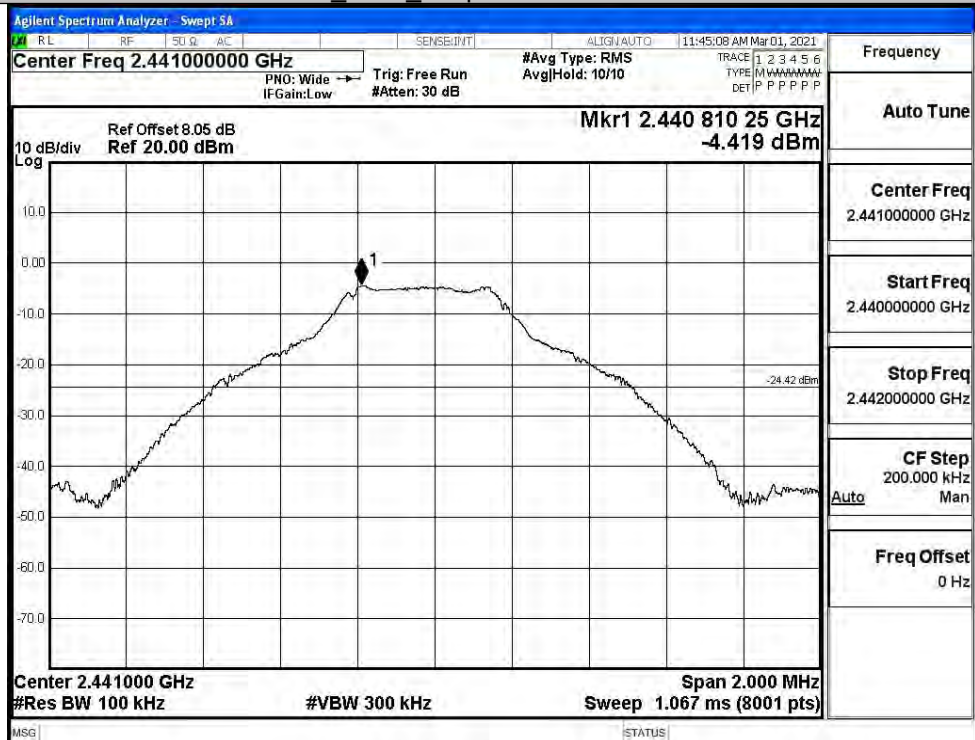


Puw

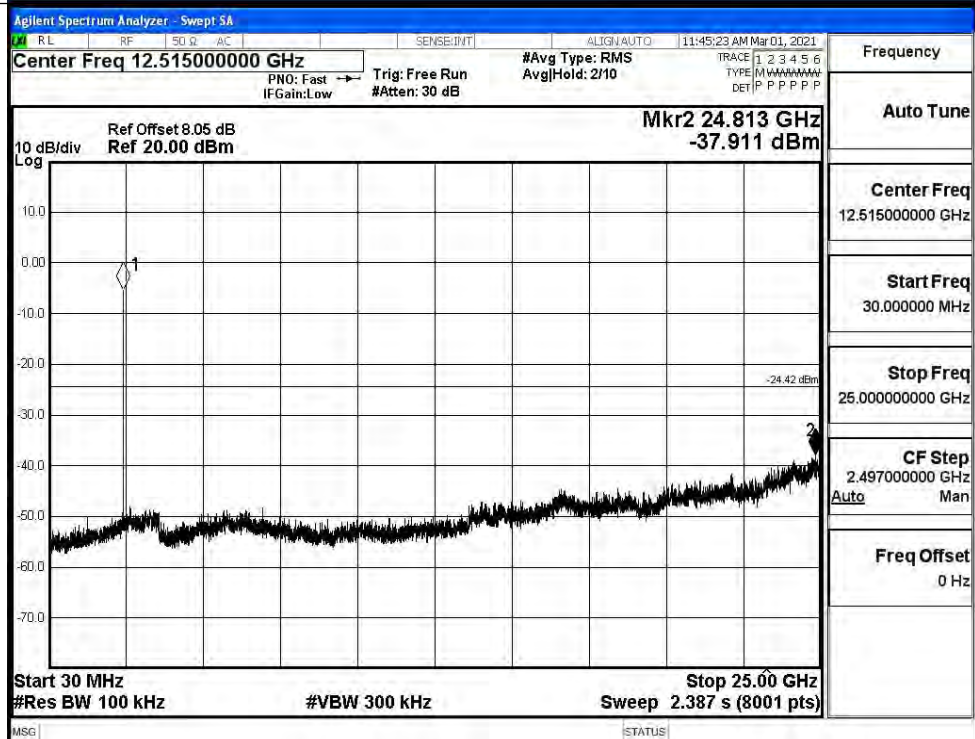


GFSK_MCH_Graphs

Pref

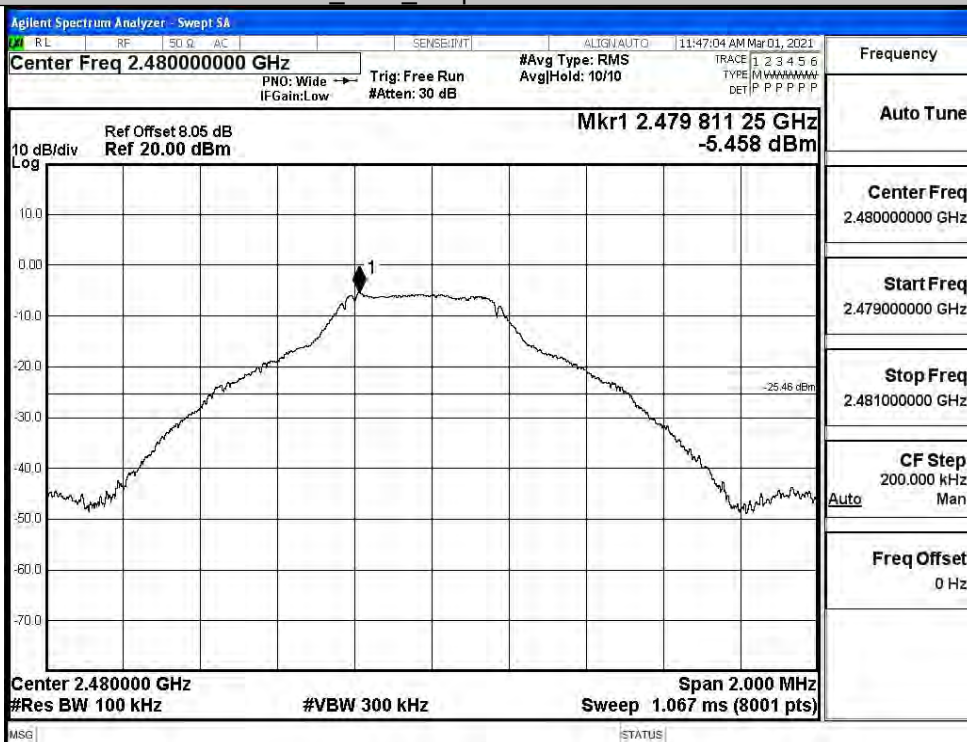


Puw

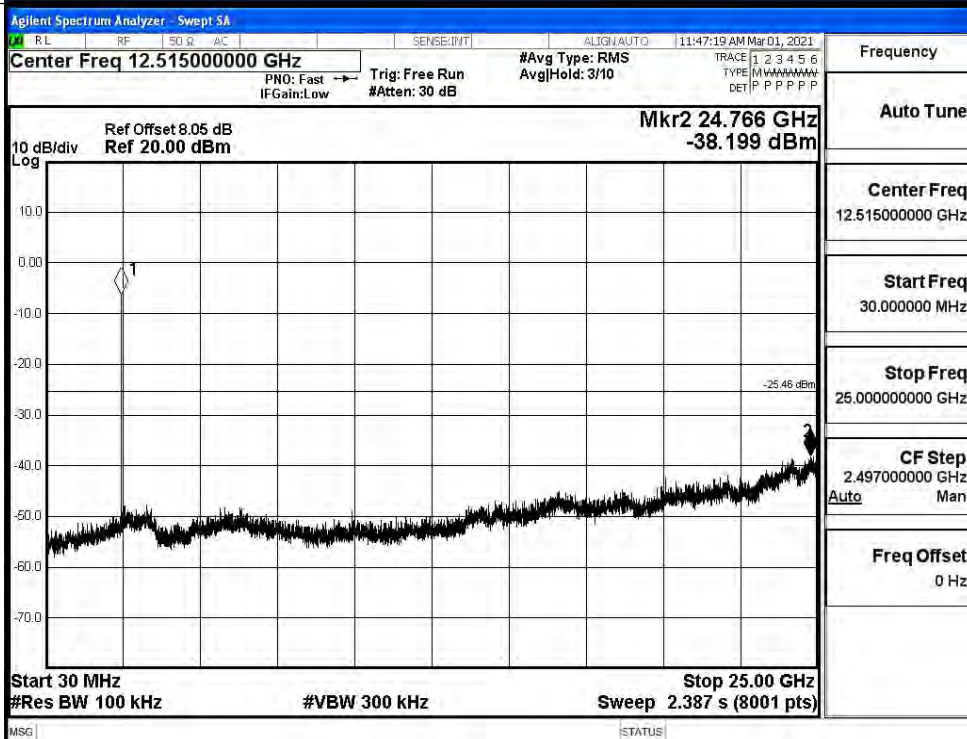


GFSK_HCH_Graphs

Pref

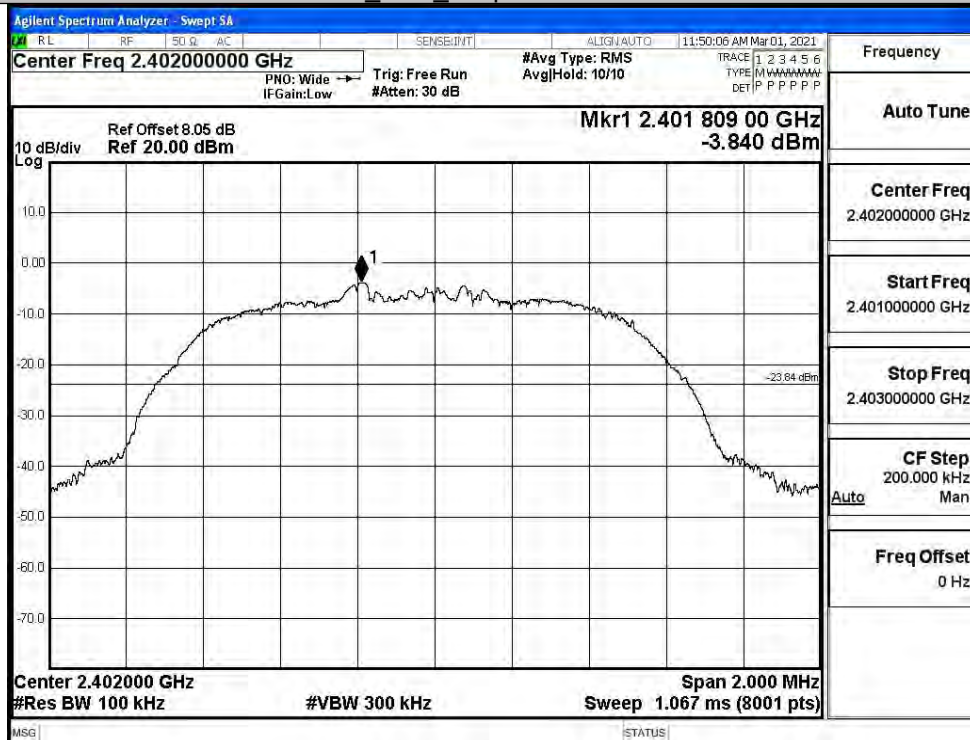


Puw

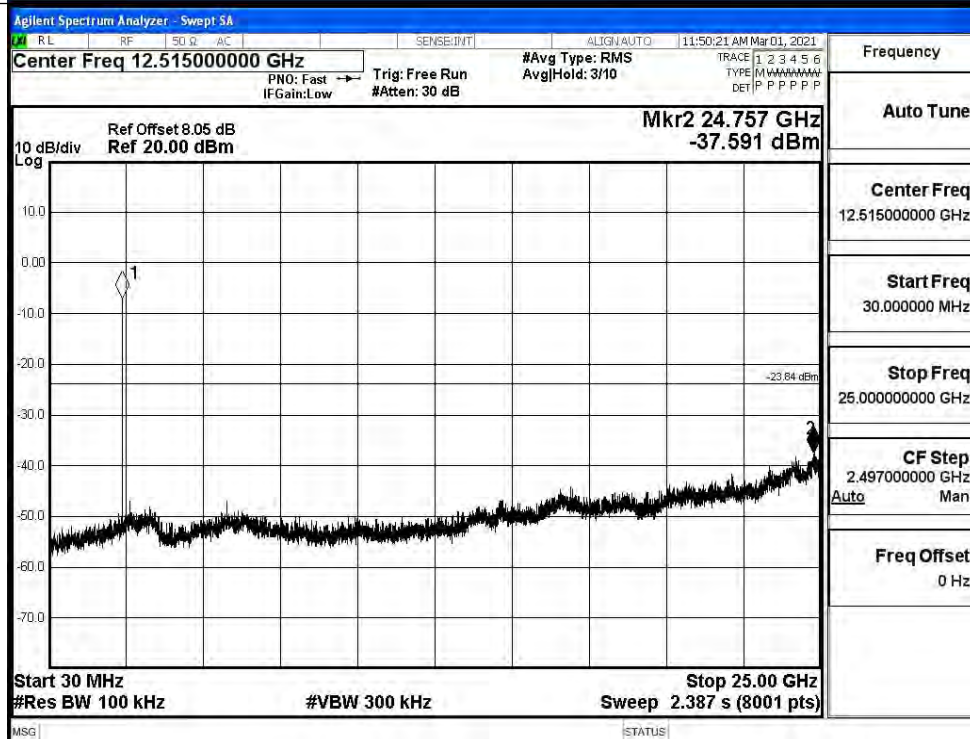


π /4DQPSK_LCH_Graphs

Pref

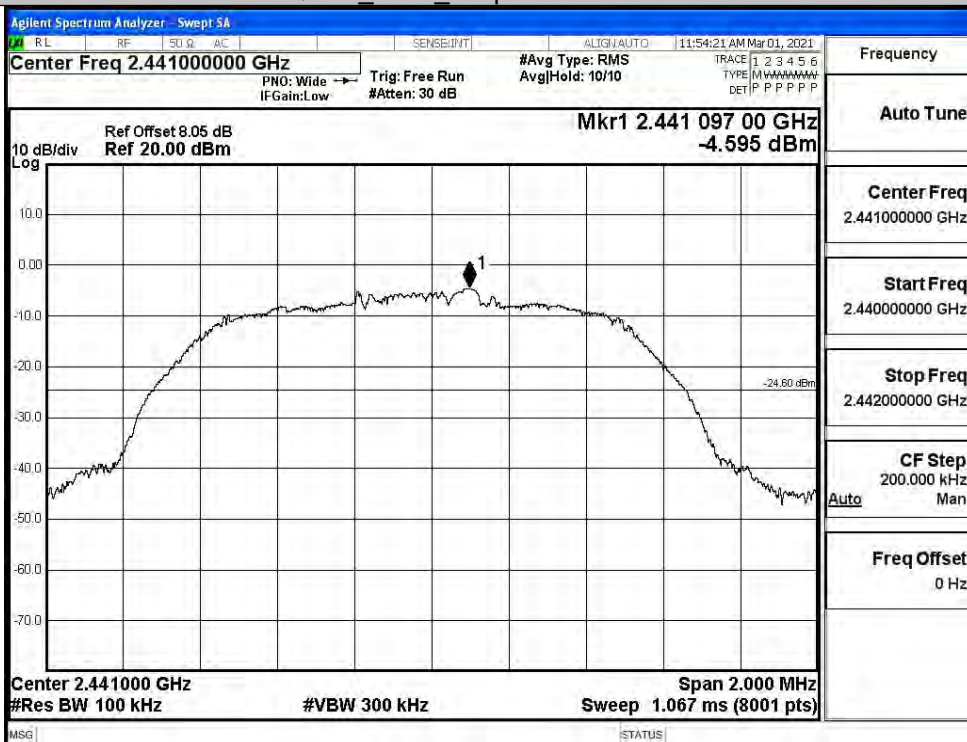


Puw

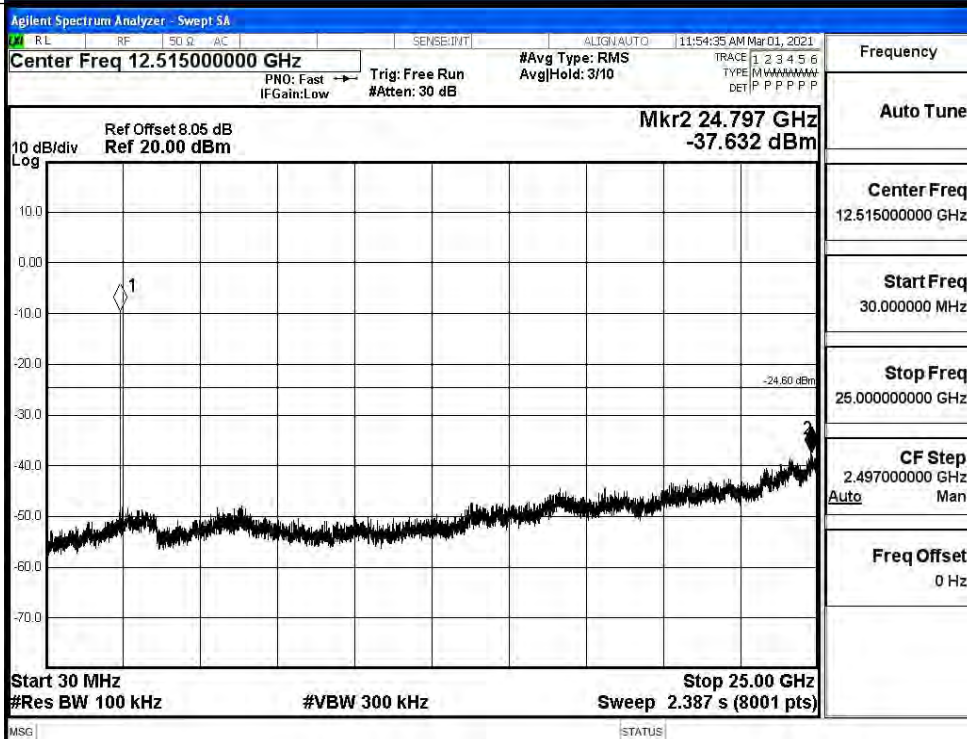


π /4DQPSK_MCH_Graphs

Pref

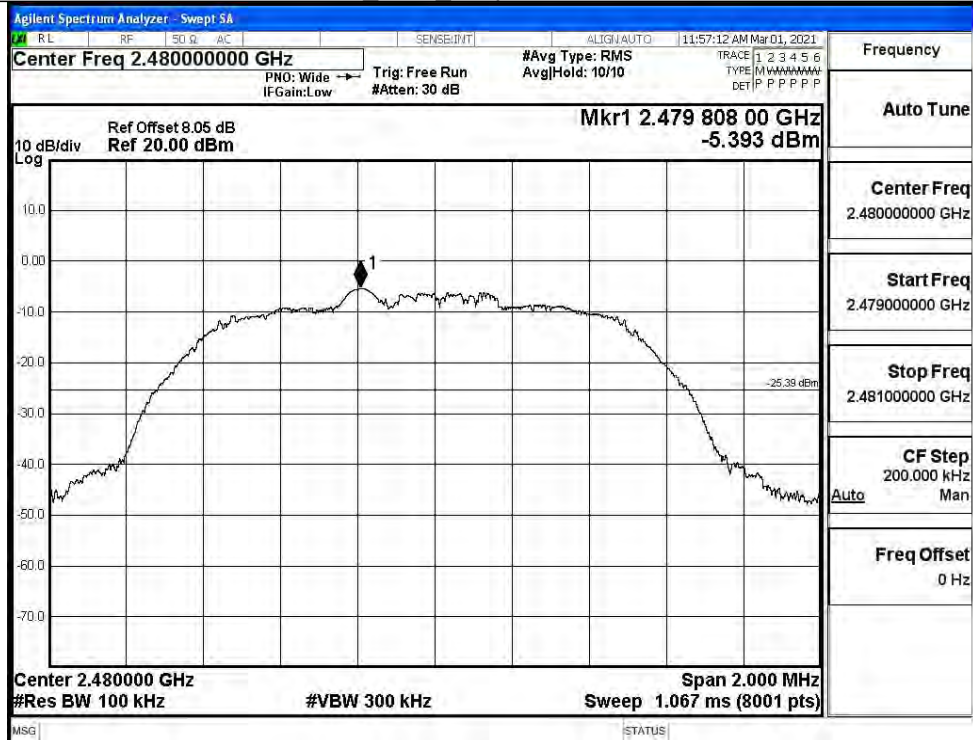


Puw

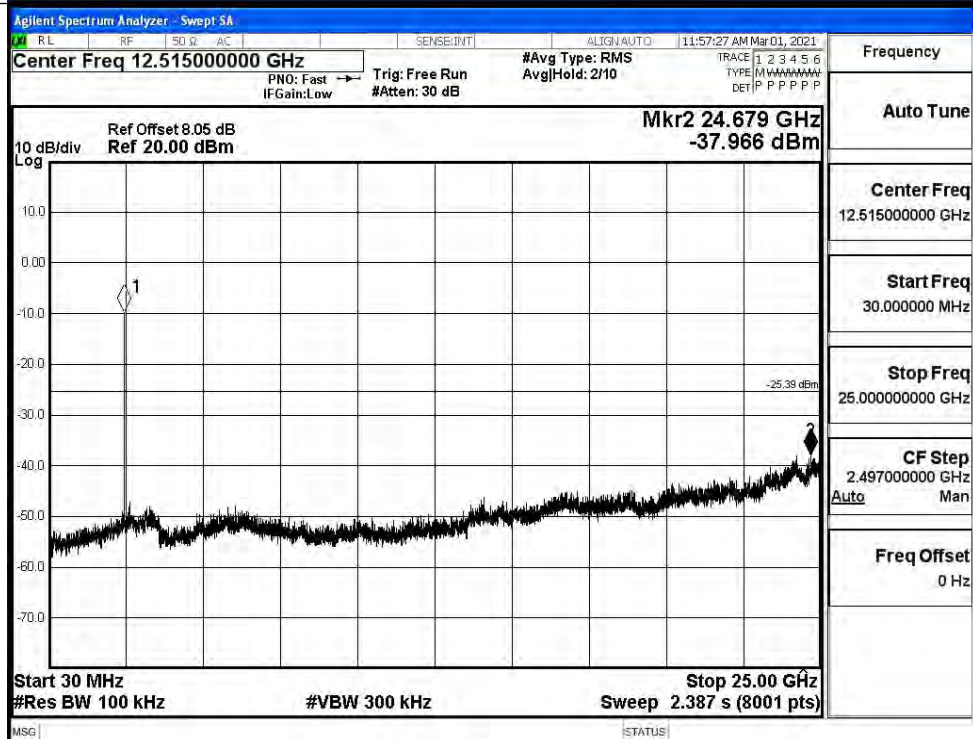


$\pi/4$ DQPSK_HCH_Graphs

Pref

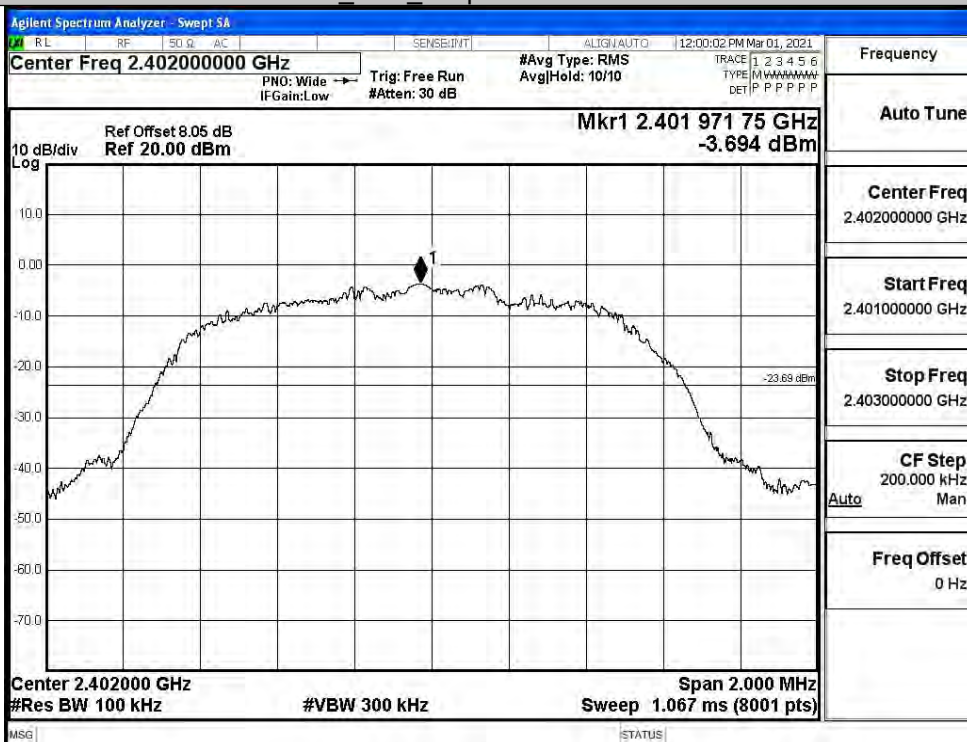


Puw

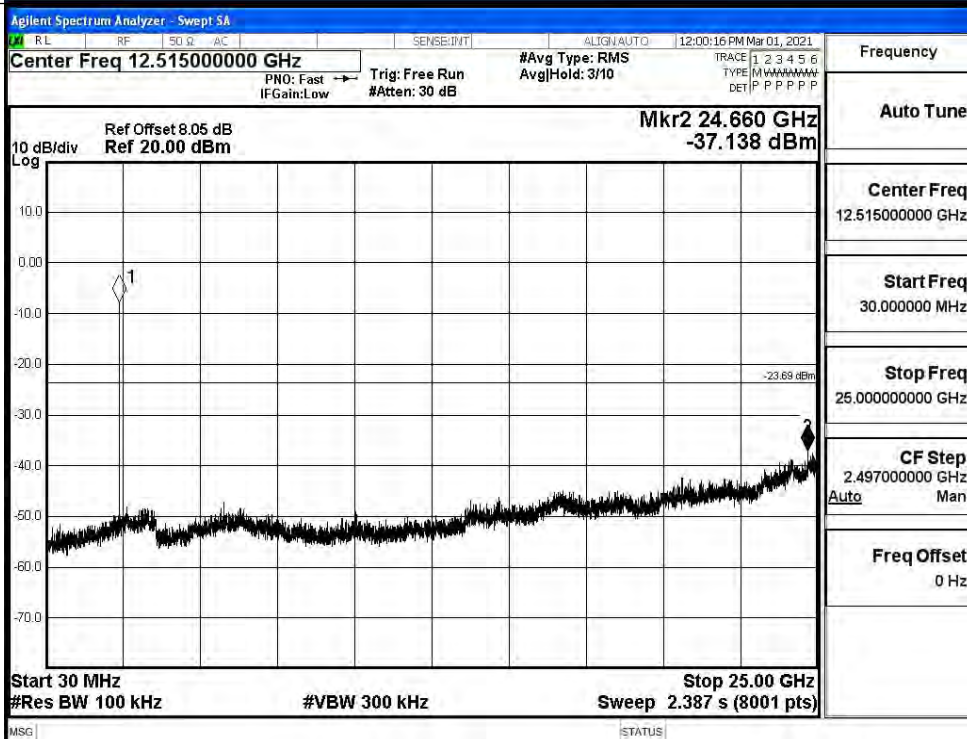


8DPSK_LCH_Graphs

Pref

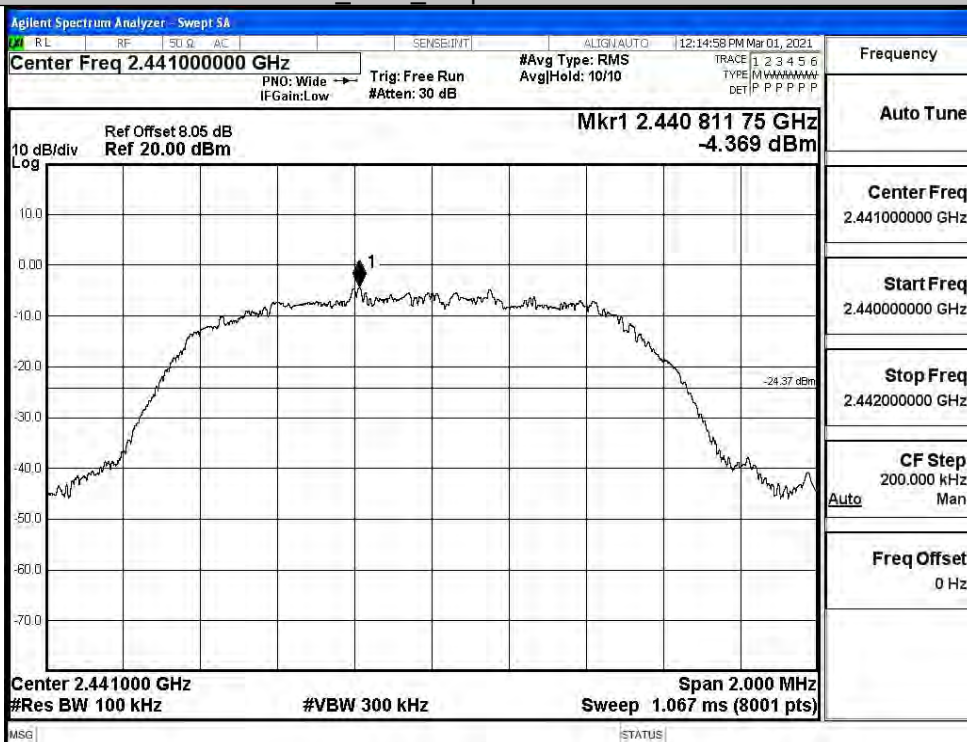


Puw

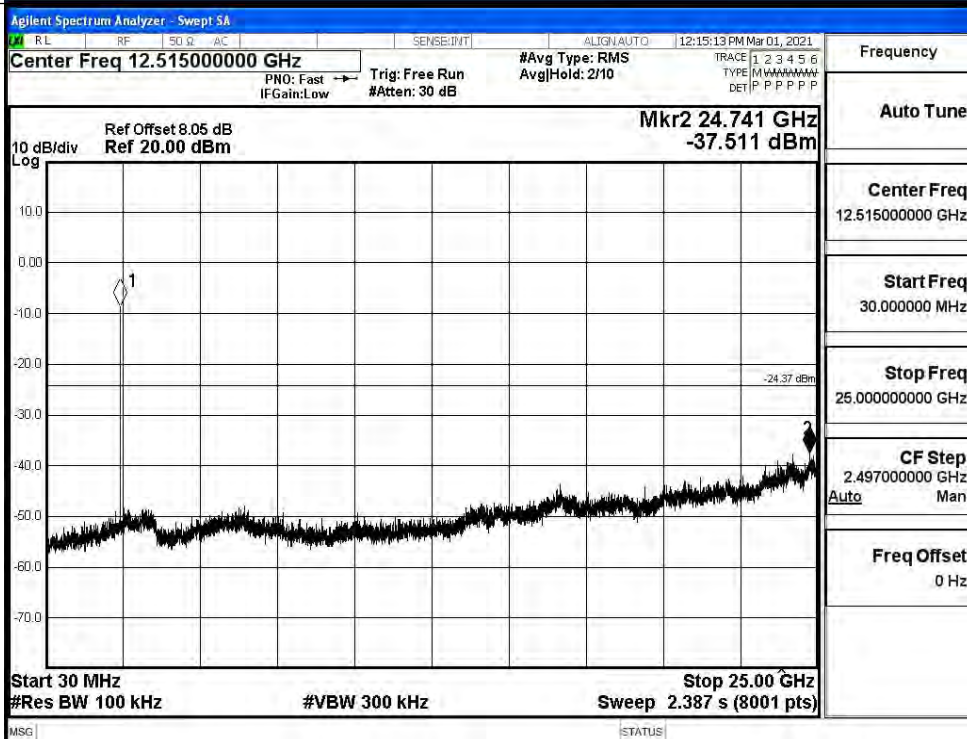


8DPSK_MCH_Graphs

Pref

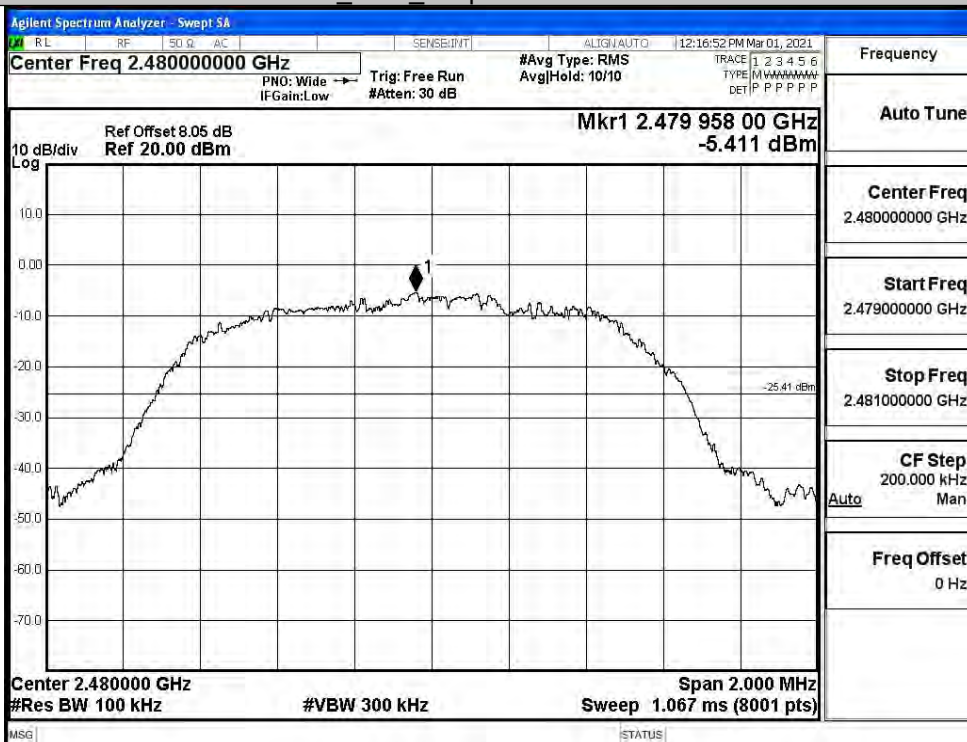


Puw

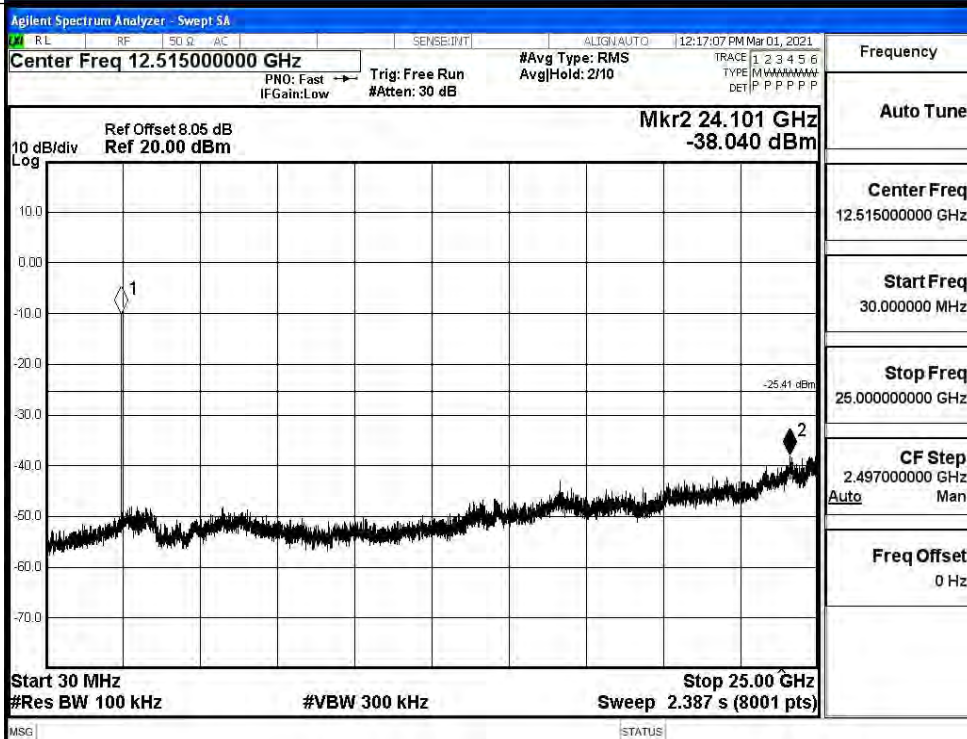


8DPSK_HCH_Graphs

Pref



Puw

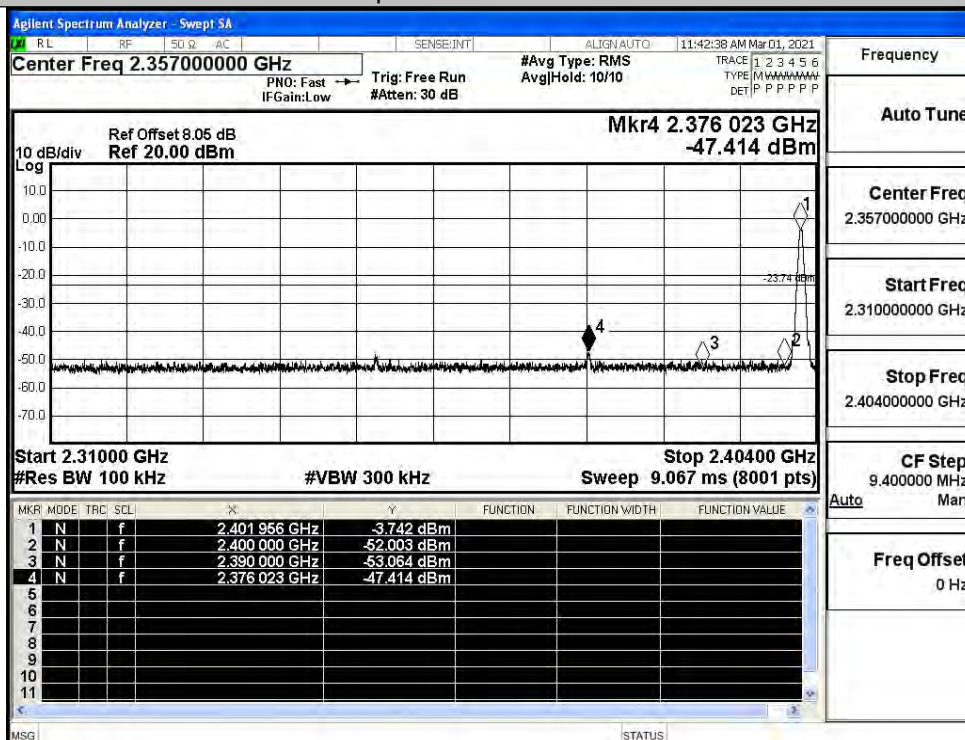


A.7 Band-edge for RF Conducted Emissions

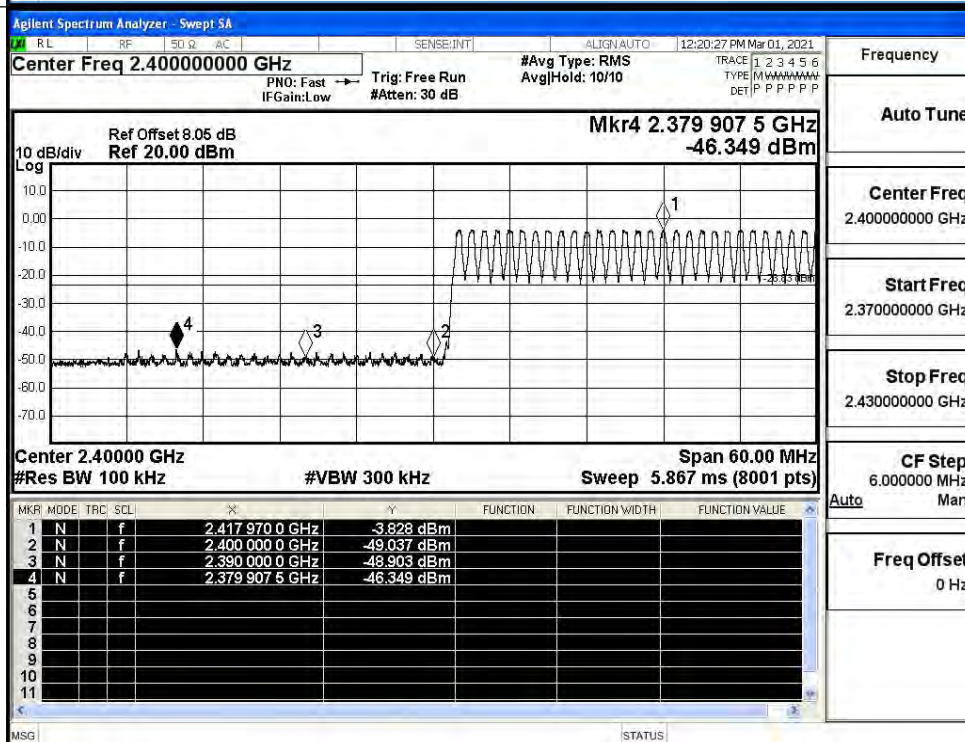
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-3.742	Off	-47.414	-23.74	PASS
			-3.828	On	-46.349	-23.83	PASS
	HCH	2480	-5.411	Off	-49.069	-25.41	PASS
			-4.729	On	-47.082	-24.73	PASS
$\pi/4$ DQPSK	LCH	2402	-4.008	Off	-47.941	-24.01	PASS
			-3.774	On	-46.248	-23.77	PASS
	HCH	2480	-5.995	Off	-49.105	-26	PASS
			-5.252	On	-48.049	-25.25	PASS
8DPSK	LCH	2402	-3.688	Off	-48.342	-23.69	PASS
			-3.809	On	-47.920	-23.81	PASS
	HCH	2480	-5.133	Off	-49.142	-25.13	PASS
			-4.741	On	-48.131	-24.74	PASS

Test Graphs

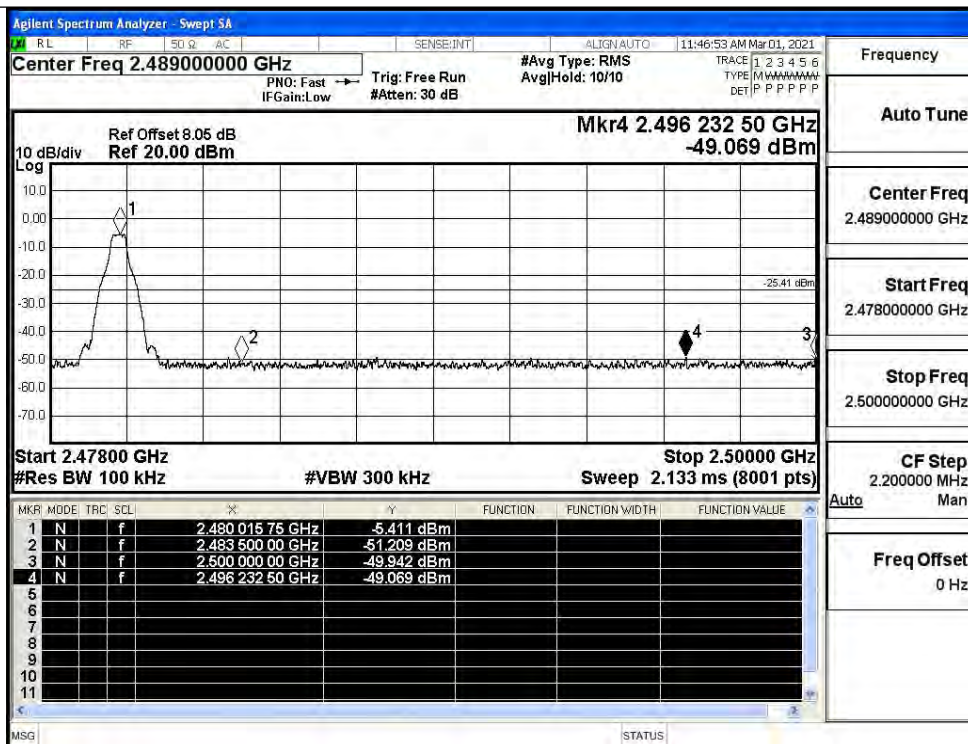
GFSK/LCH/No Hop



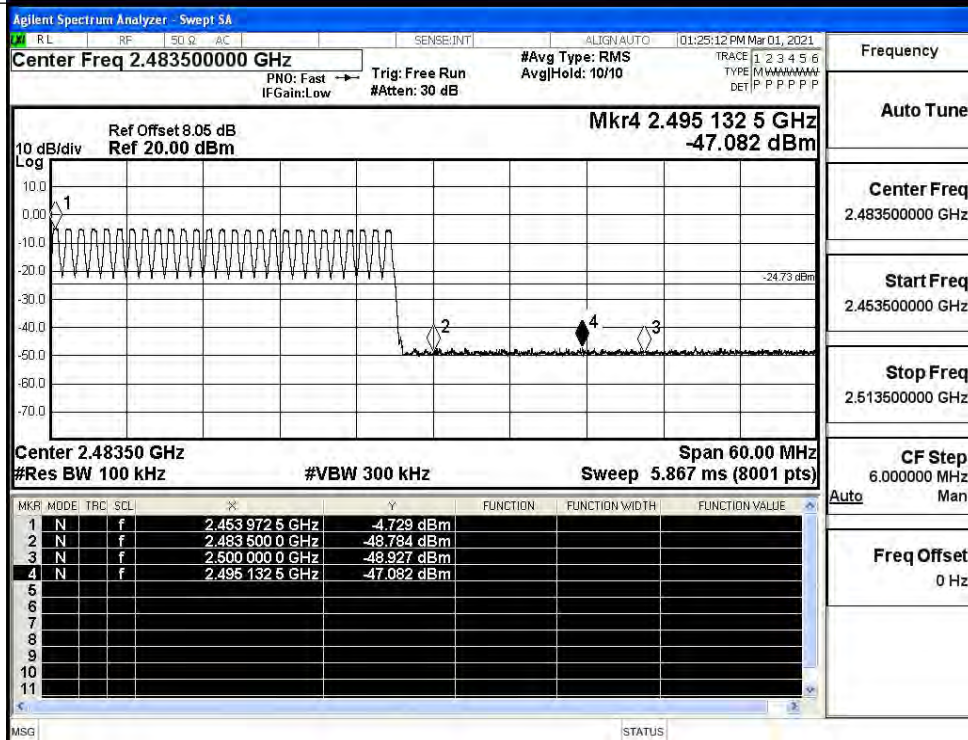
GFSK/LCH/Hop



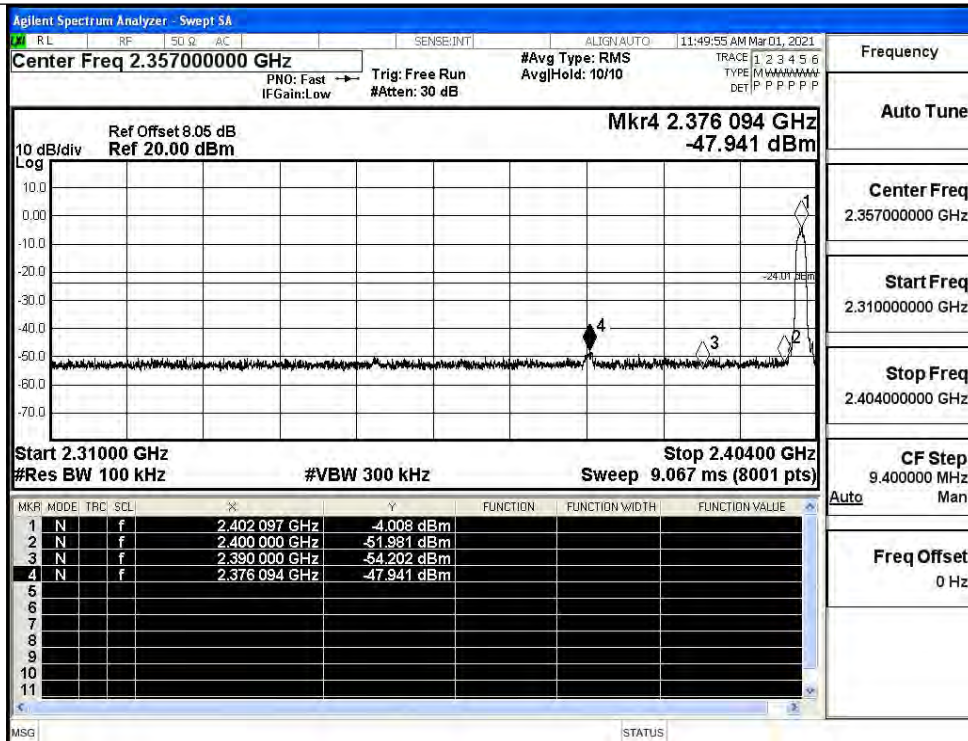
GFSK/HCH/No Hop



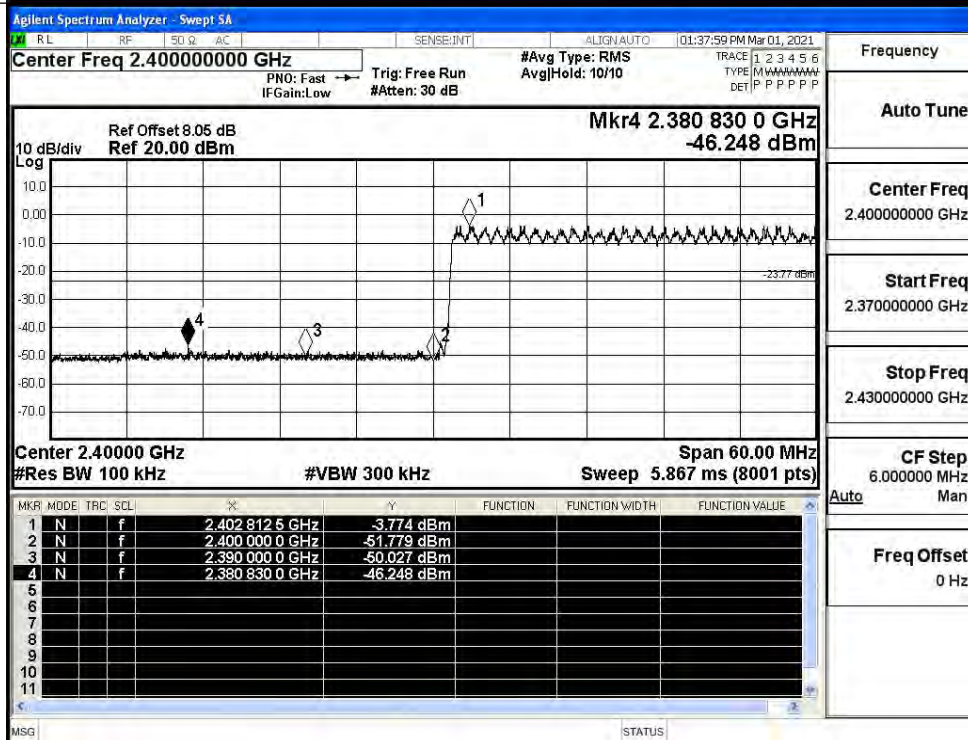
GFSK/HCH/Hop



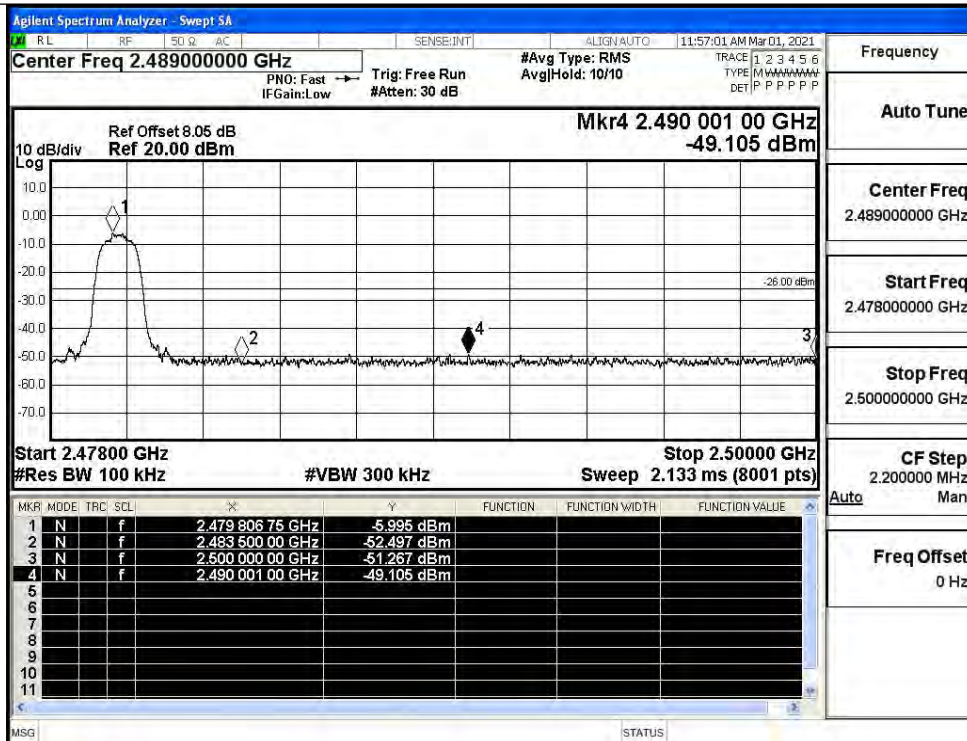
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

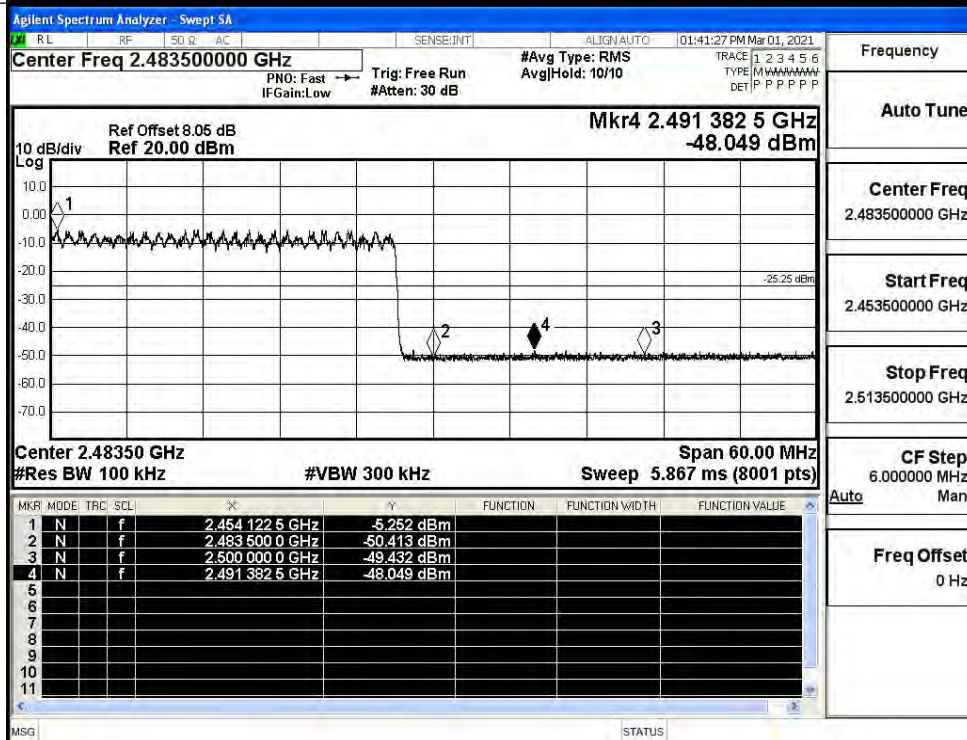


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

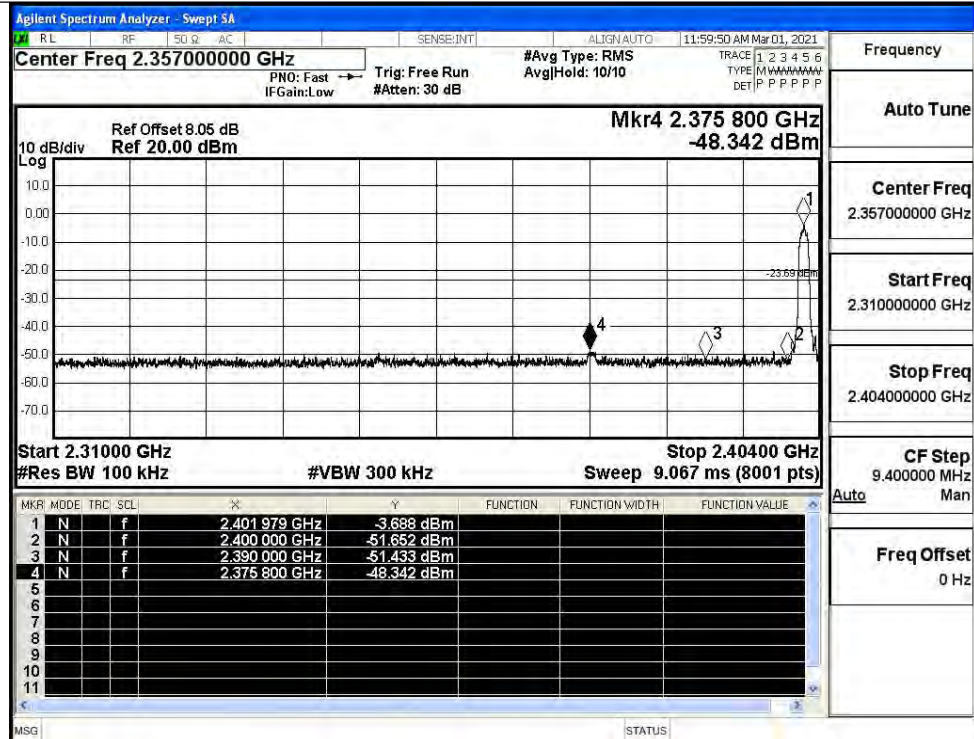


Frequency

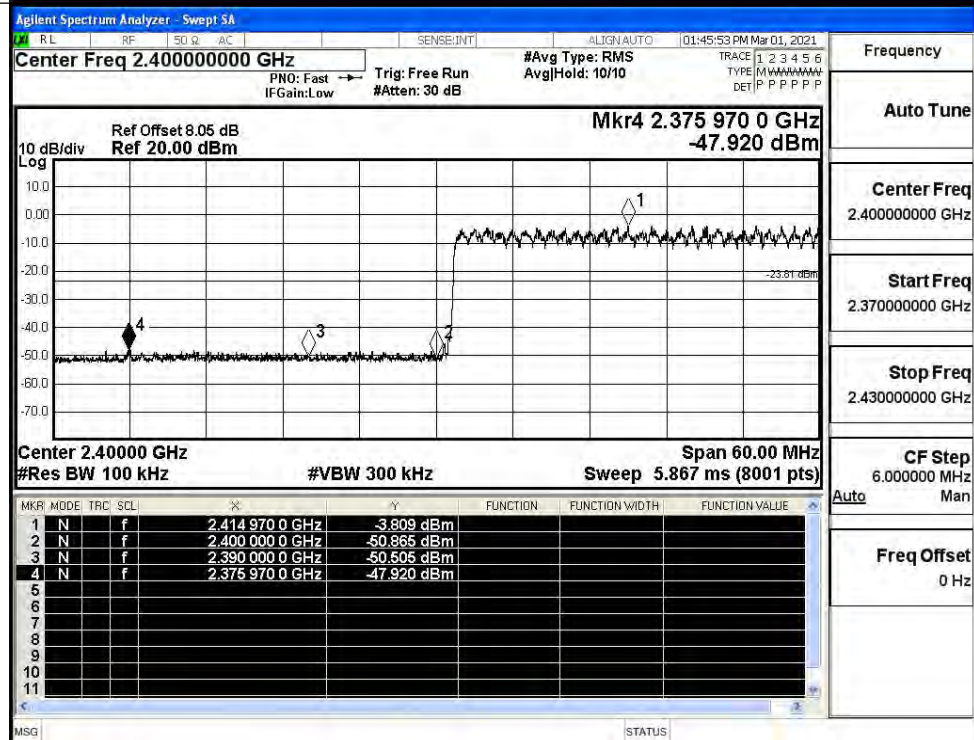
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

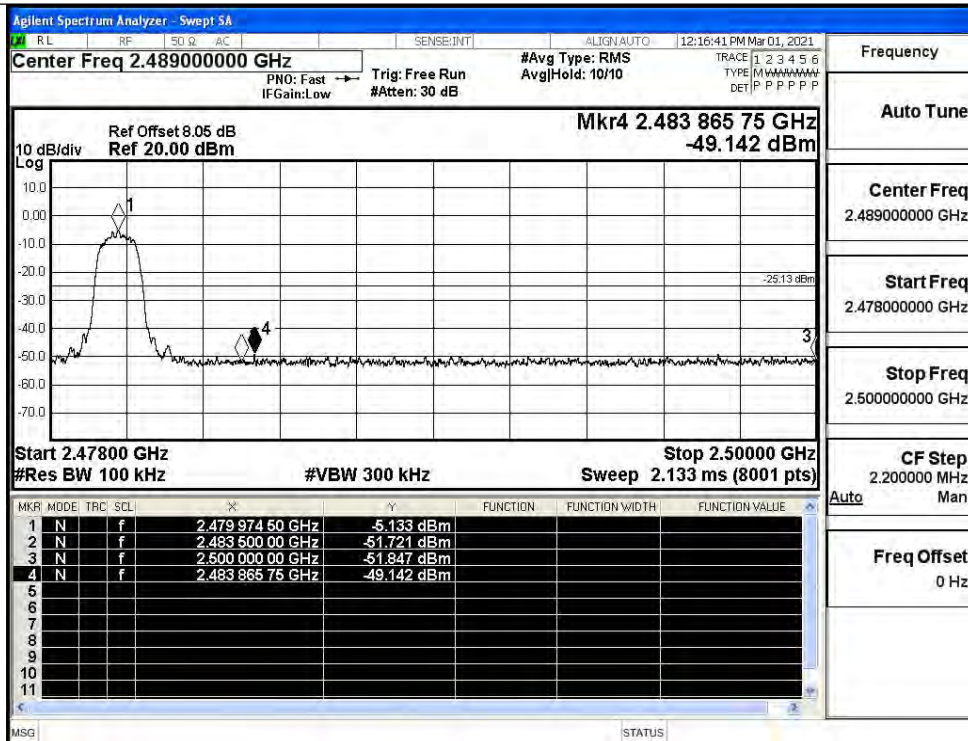
8DPSK/LCH/No Hop



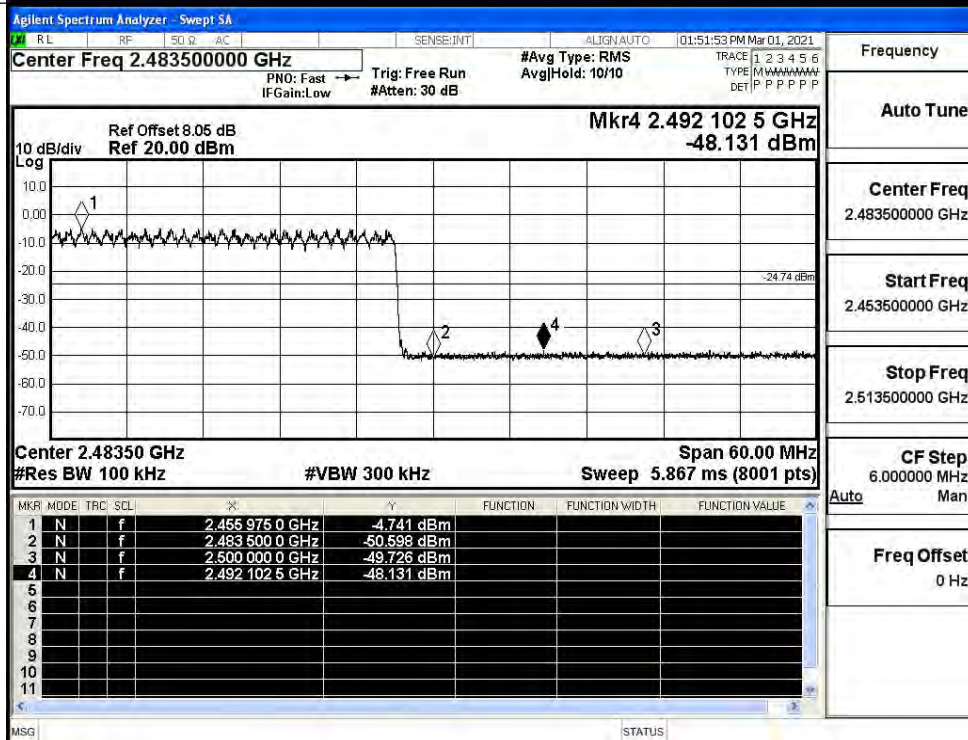
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



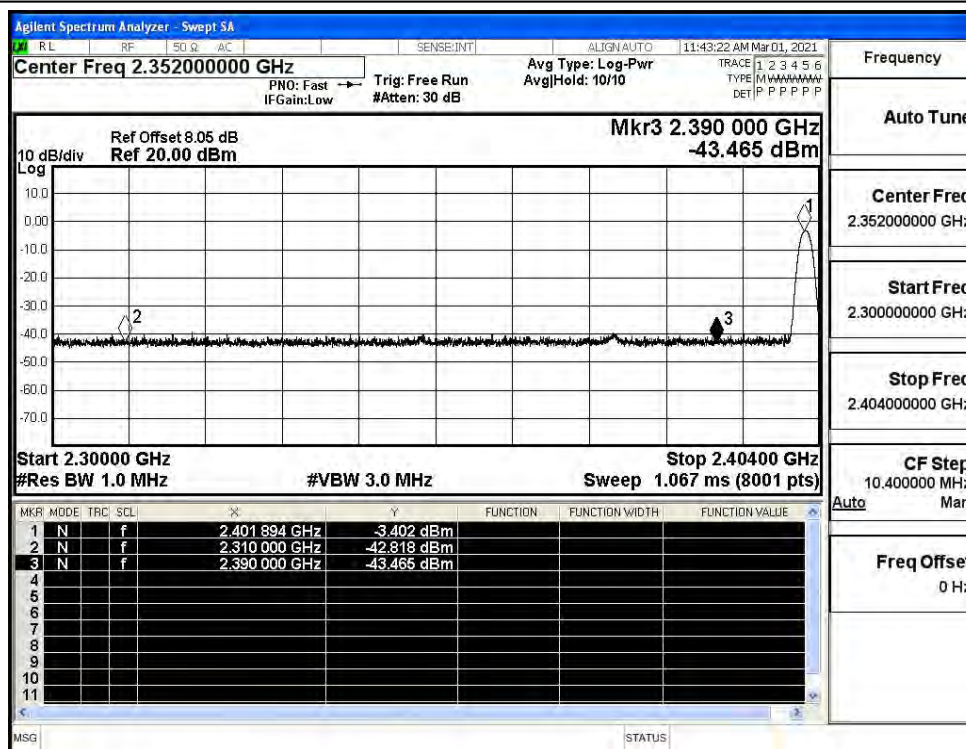
8DPSK/HCH/Hop



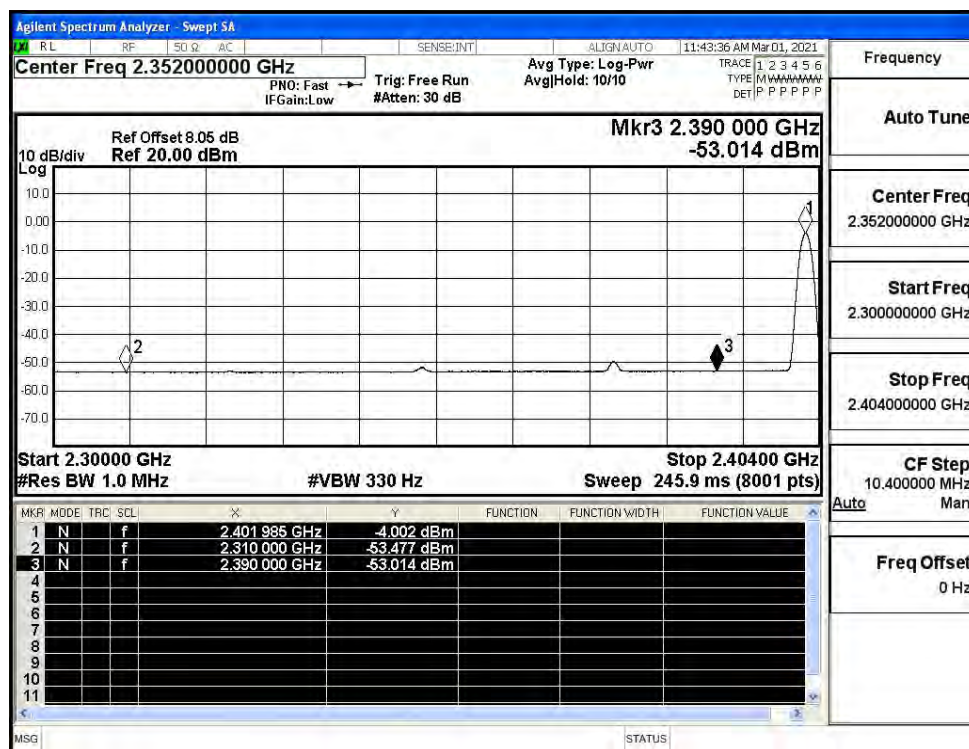
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.82	2.0	0	54.41	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	43.75	AV	54	PASS
	Off	2390.0	-43.47	2.0	0	53.76	PEAK	74	PASS
	Off	2390.0	-53.01	2.0	0	44.22	AV	54	PASS
	Off	2483.5	-42.64	2.0	0	54.59	PEAK	74	PASS
	Off	2483.5	-52.58	2.0	0	44.65	AV	54	PASS
	Off	2500.0	-42.40	2.0	0	54.83	PEAK	74	PASS
	Off	2500.0	-52.41	2.0	0	44.82	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.54	2.0	0	53.69	PEAK	74	PASS
	Off	2310.0	-53.39	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-43.80	2.0	0	53.43	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	44.27	AV	54	PASS
	Off	2483.5	-42.84	2.0	0	54.39	PEAK	74	PASS
	Off	2483.5	-52.49	2.0	0	44.74	AV	54	PASS
	Off	2500.0	-42.34	2.0	0	54.89	PEAK	74	PASS
	Off	2500.0	-52.30	2.0	0	44.93	AV	54	PASS
8DPSK	Off	2310.0	-42.61	2.0	0	54.62	PEAK	74	PASS
	Off	2310.0	-53.36	2.0	0	43.87	AV	54	PASS
	Off	2390.0	-42.93	2.0	0	54.30	PEAK	74	PASS
	Off	2390.0	-53.02	2.0	0	44.21	AV	54	PASS
	Off	2483.5	-41.72	2.0	0	55.51	PEAK	74	PASS
	Off	2483.5	-52.54	2.0	0	44.69	AV	54	PASS
	Off	2500.0	-42.38	2.0	0	54.85	PEAK	74	PASS
	Off	2500.0	-52.38	2.0	0	44.85	AV	54	PASS

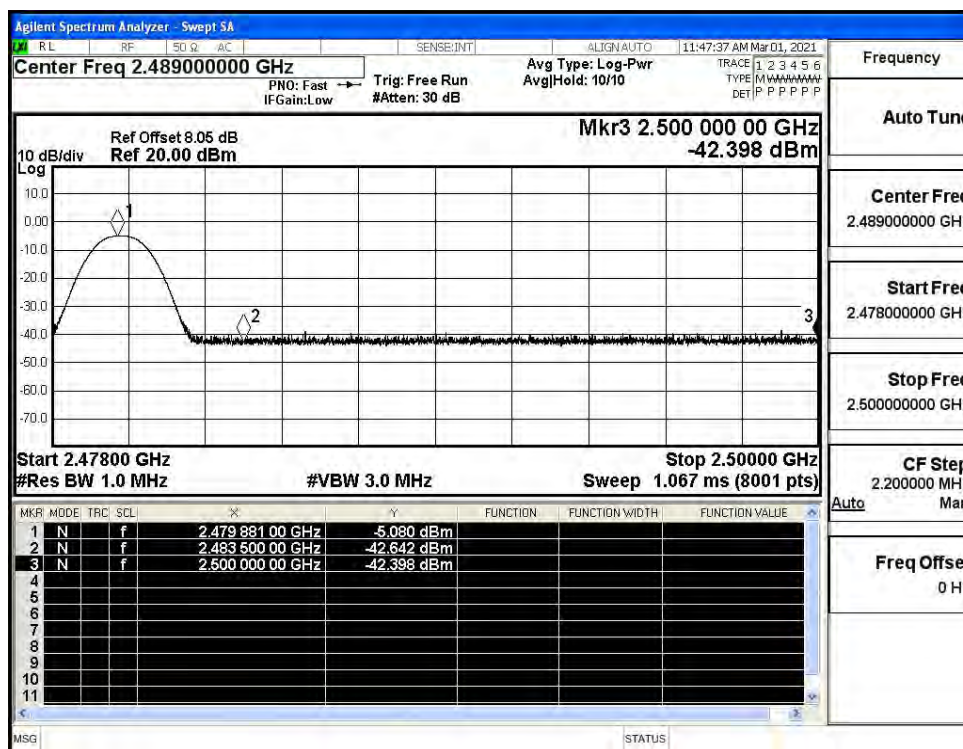
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



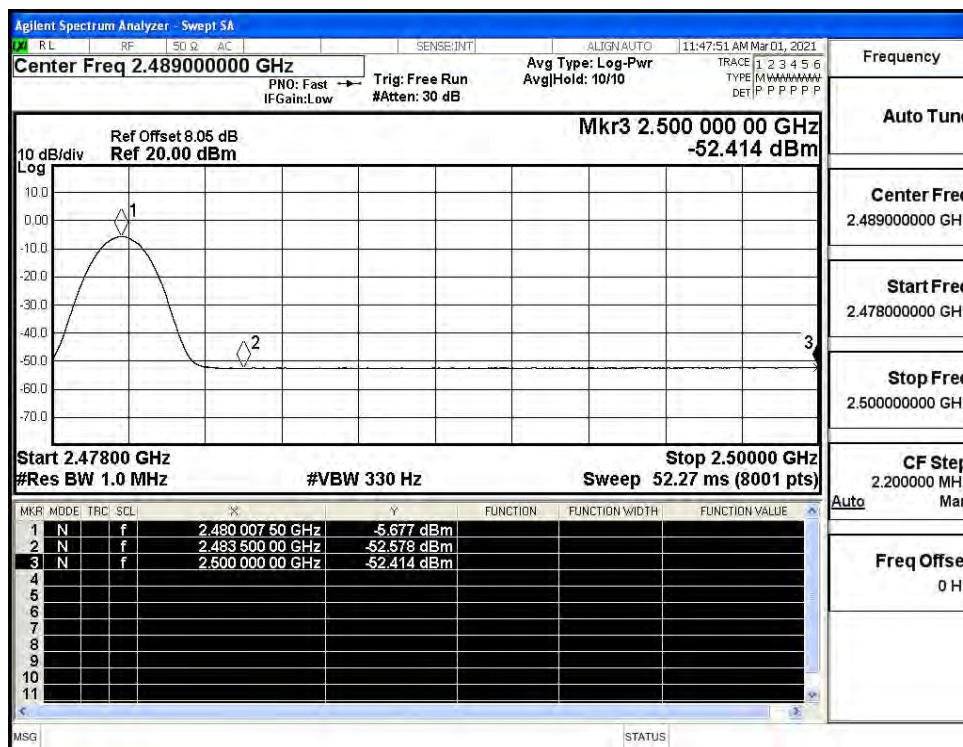
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

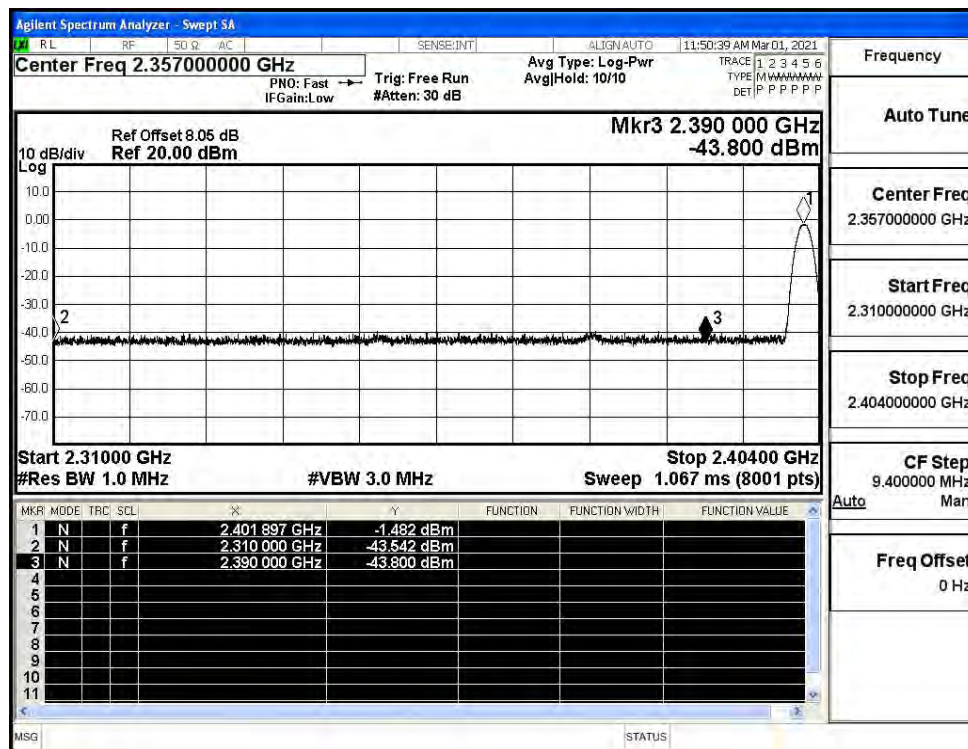
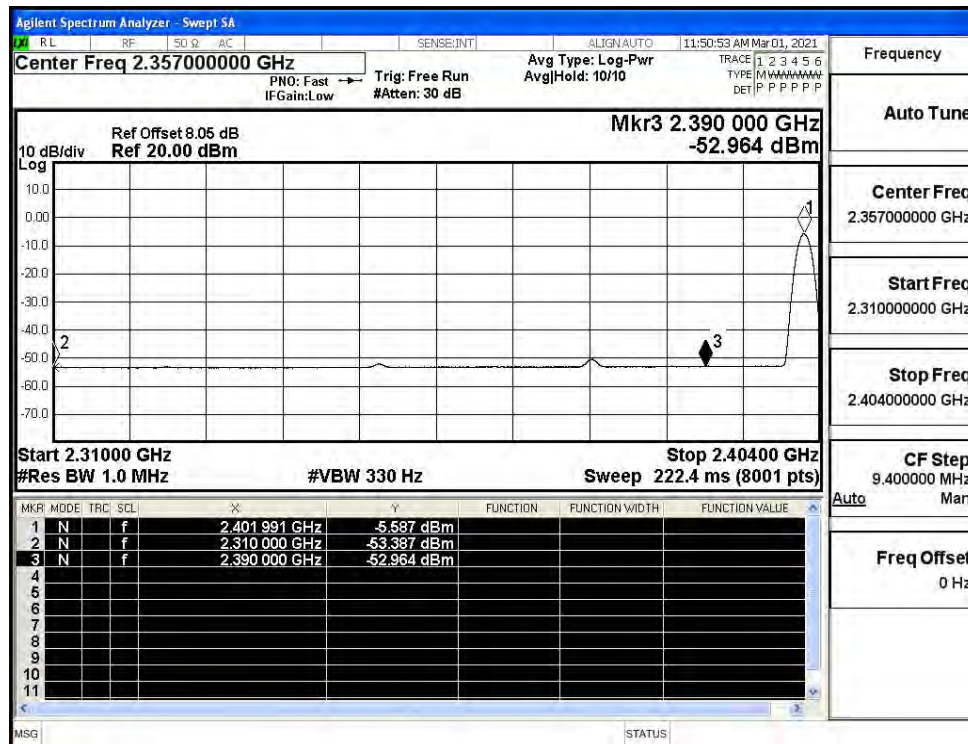


Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)

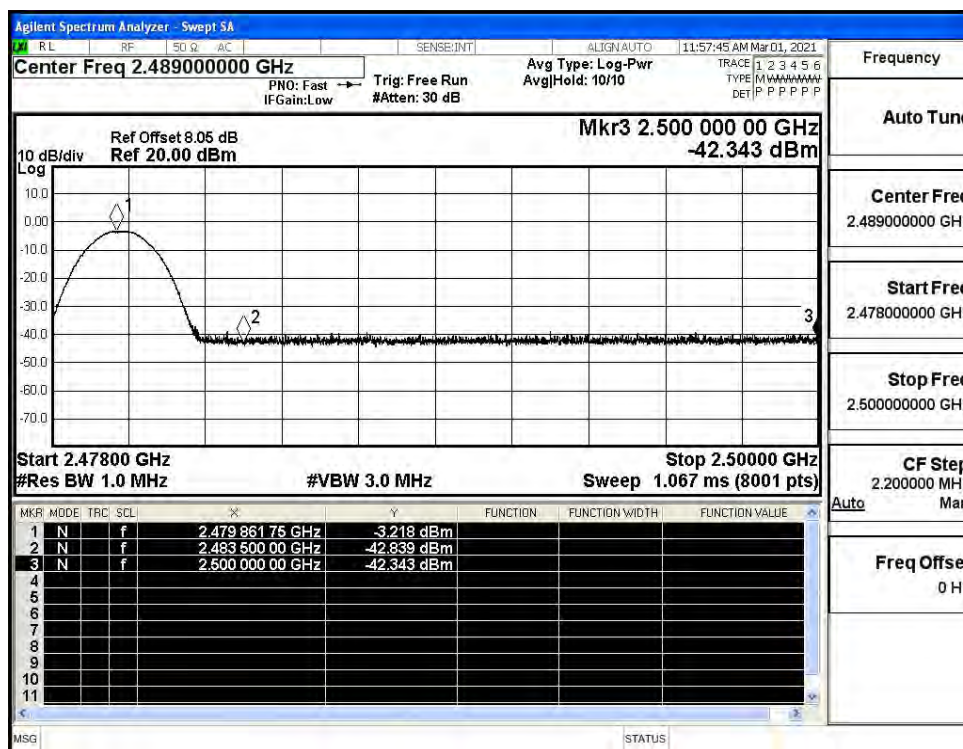


Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)

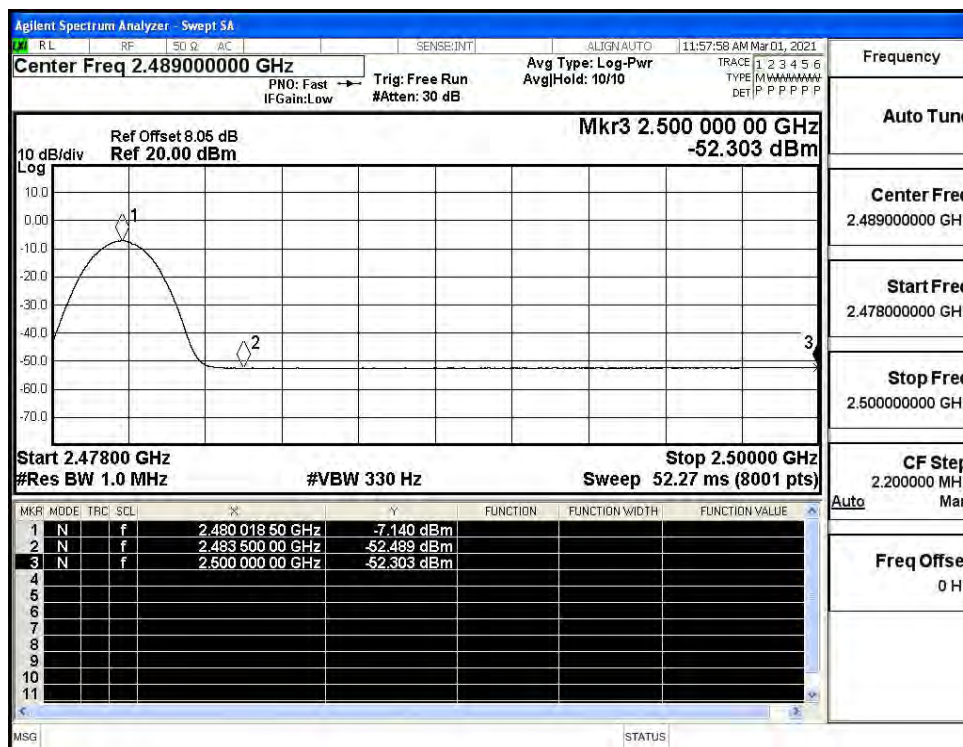


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

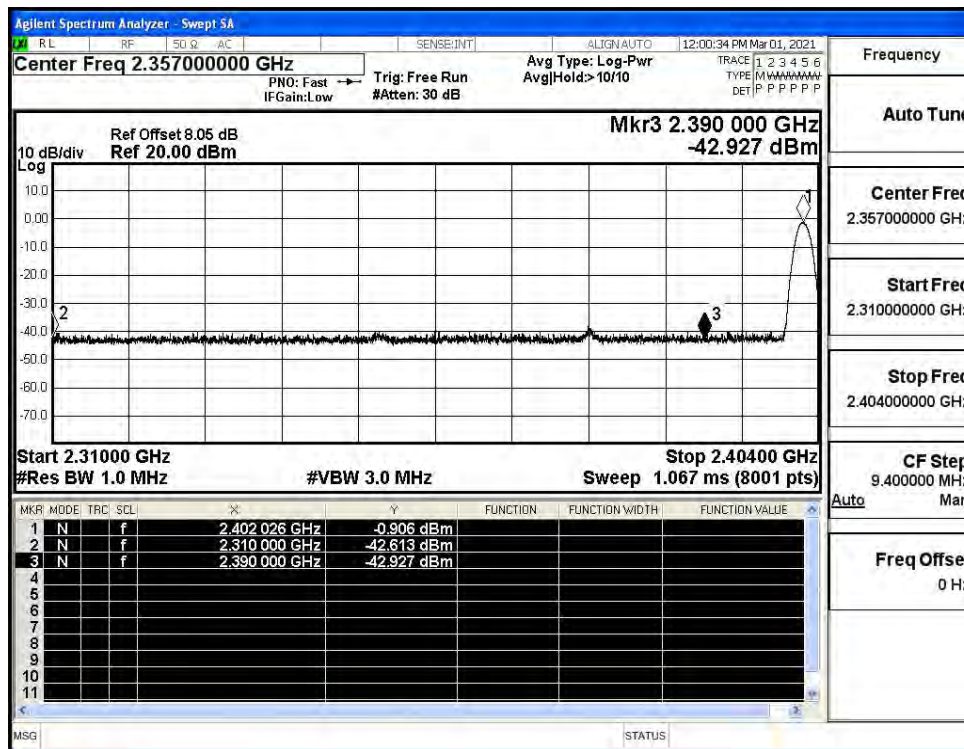
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



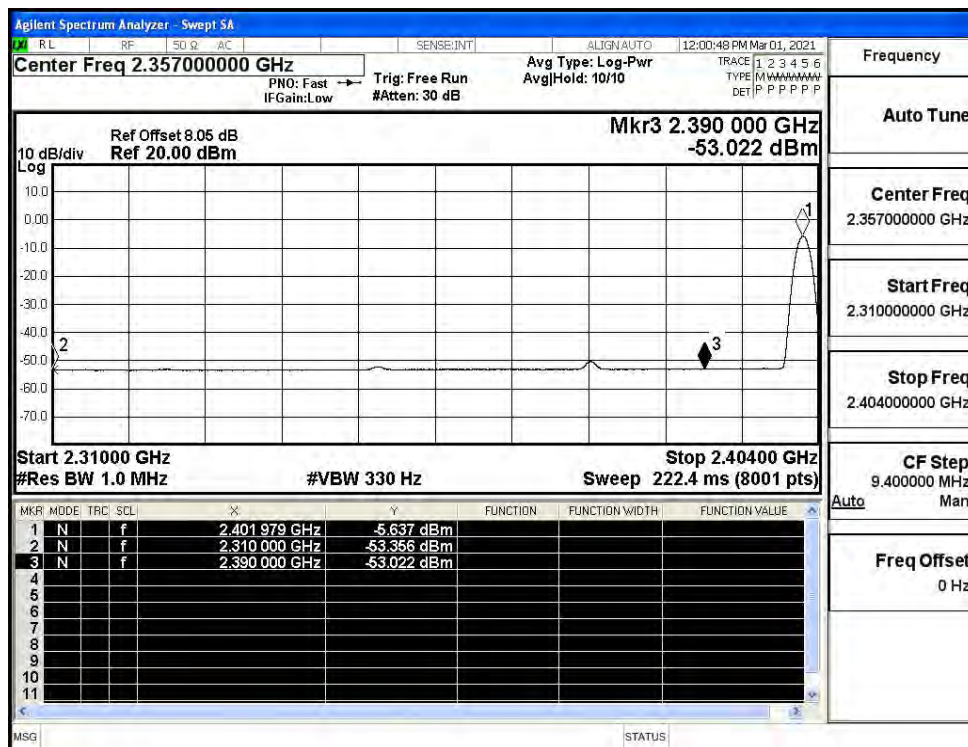
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



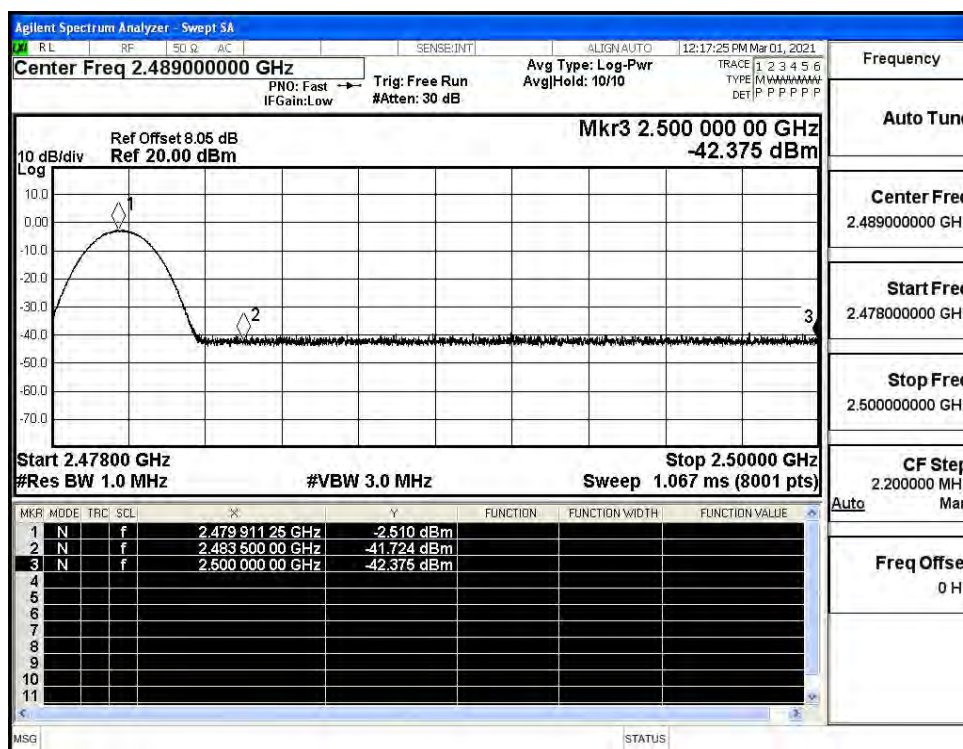
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

