

Appendix A
RF Test Data for BT V5.0(DSS) (Conducted Measurement)
Product Name: Bluetooth Speaker
Trade Mark: Origaudio
Test Model: AMPZER

Environmental Conditions

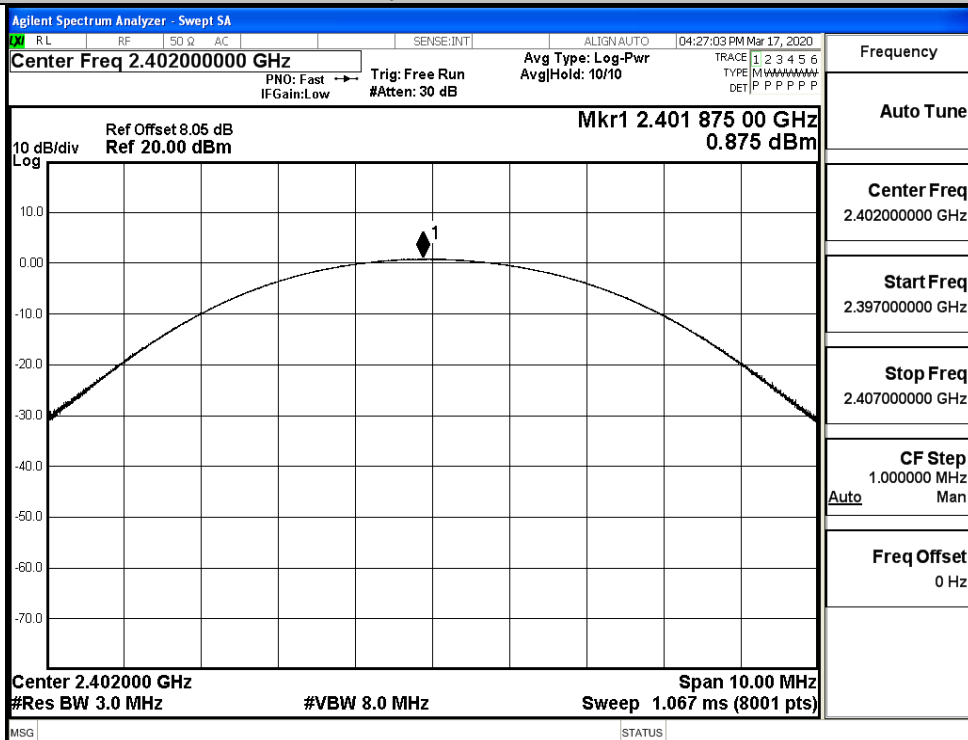
Temperature:	22.3 ° C
Relative Humidity:	53.0%
ATM Pressure:	100.0 kPa
Test Engineer:	Qu Xin
Supervised by:	Wang Chuang

A.1 Maxmum Conducted Peak Output Power

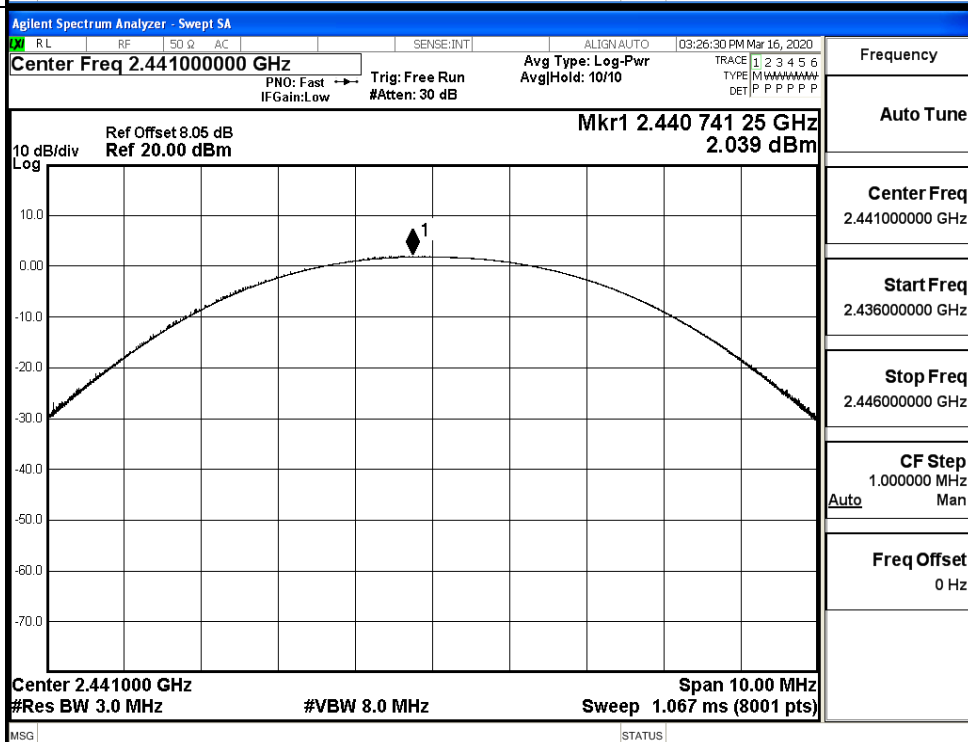
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.875	30	PASS
	MCH	2.039	30	PASS
	HCH	0.872	30	PASS
$\pi/4$ DQPSK	LCH	2.148	21	PASS
	MCH	2.385	21	PASS
	HCH	1.084	21	PASS
8DPSK	LCH	2.560	21	PASS
	MCH	2.818	21	PASS
	HCH	1.595	21	PASS

Test Graphs

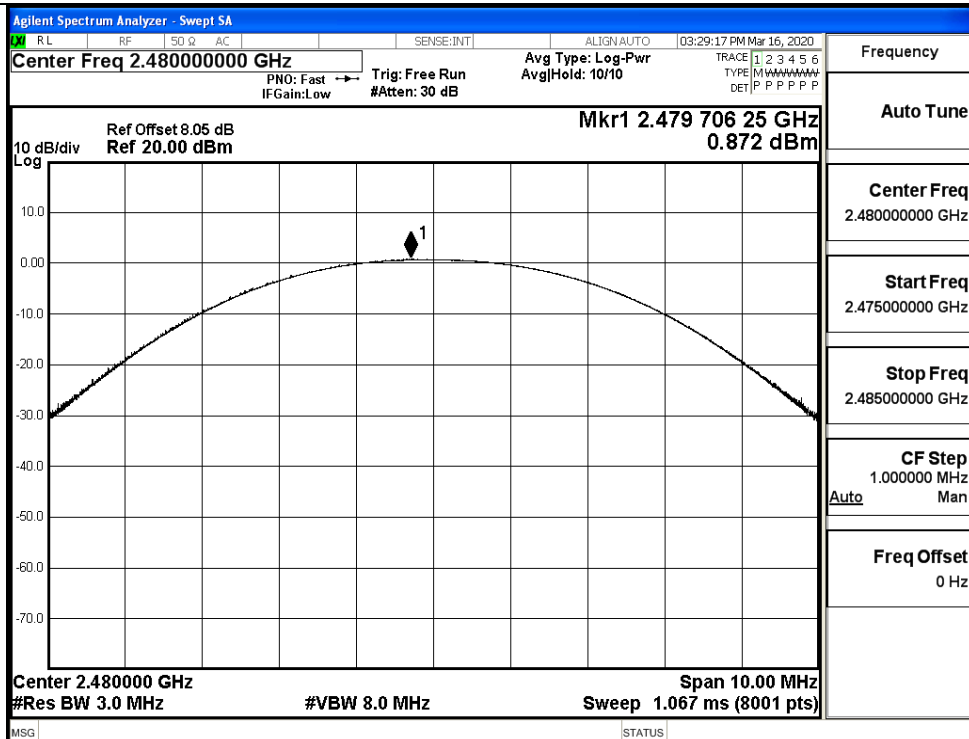
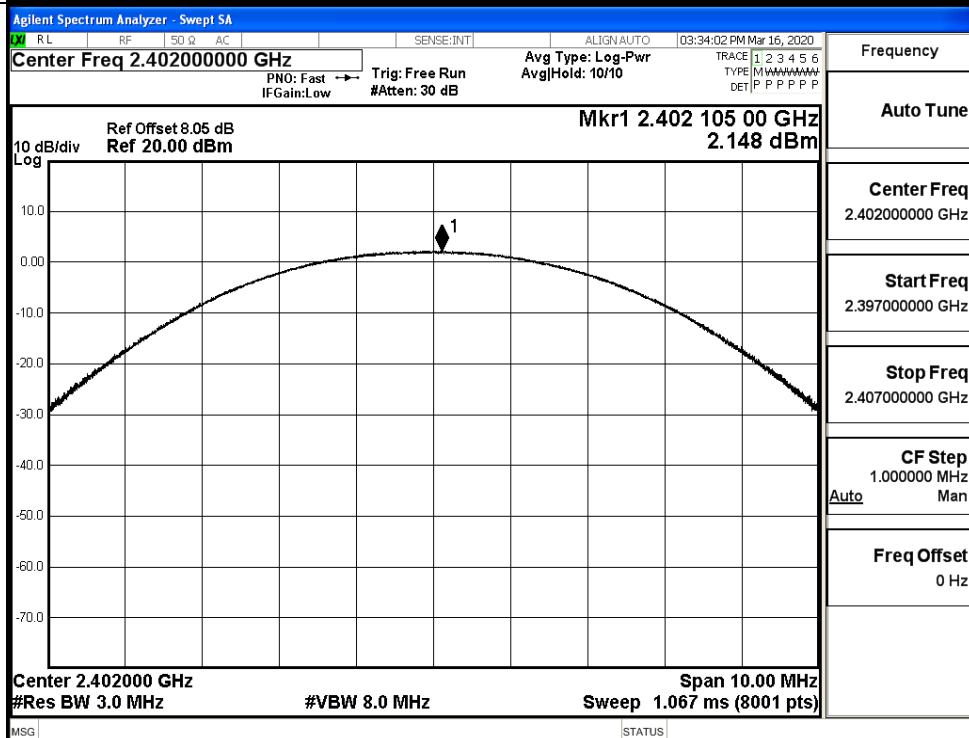
GFSK/LCH

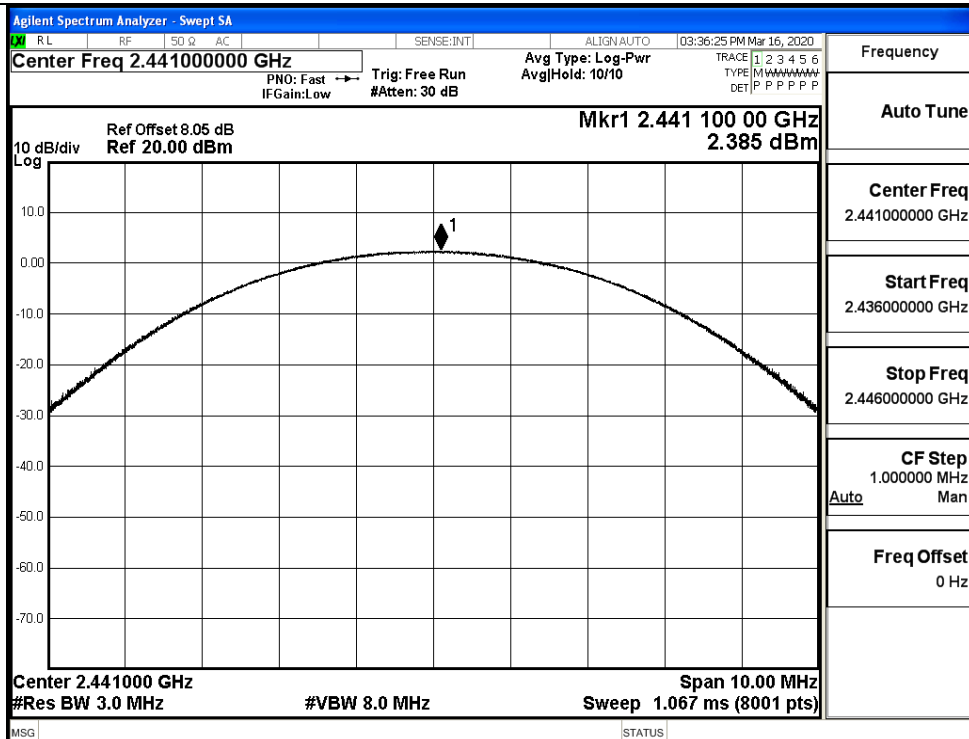
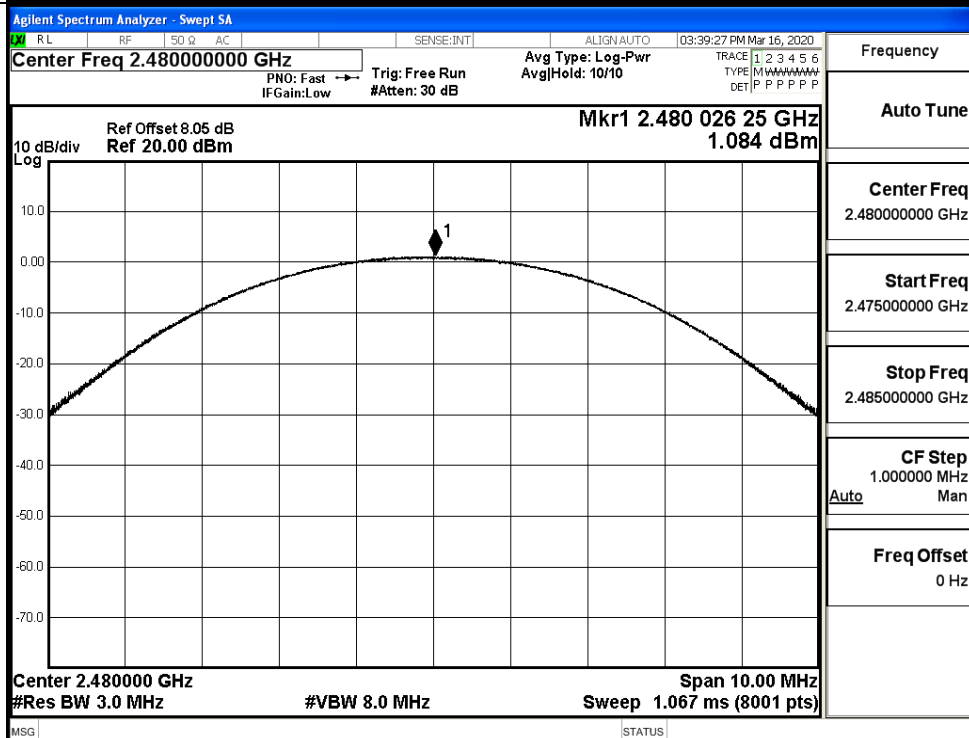


GFSK/MCH

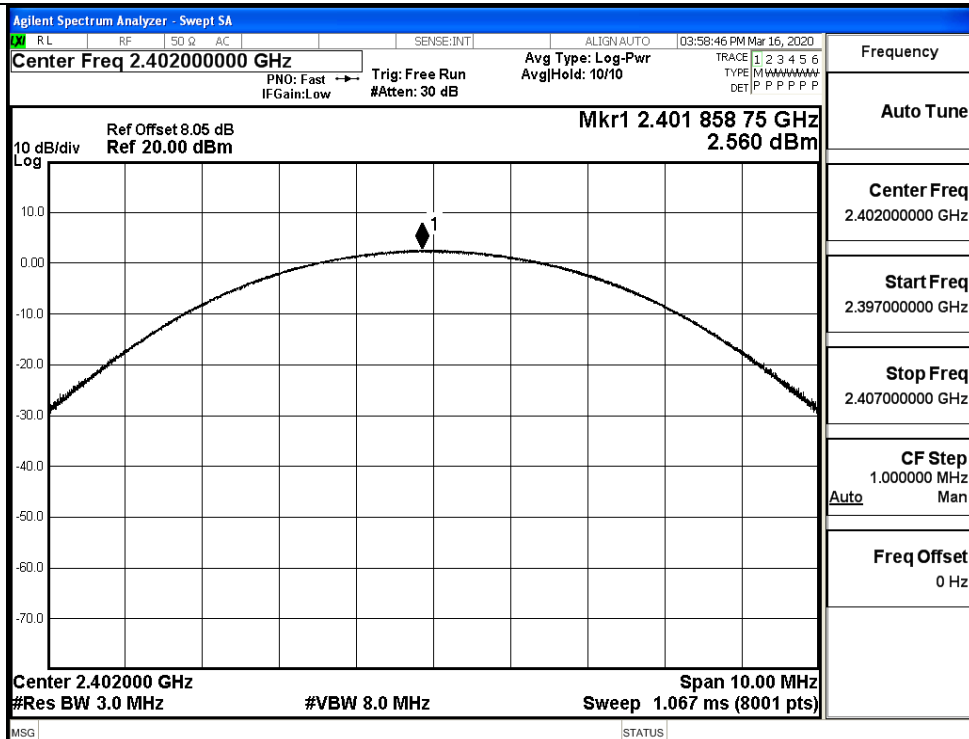


GFSK/HCH

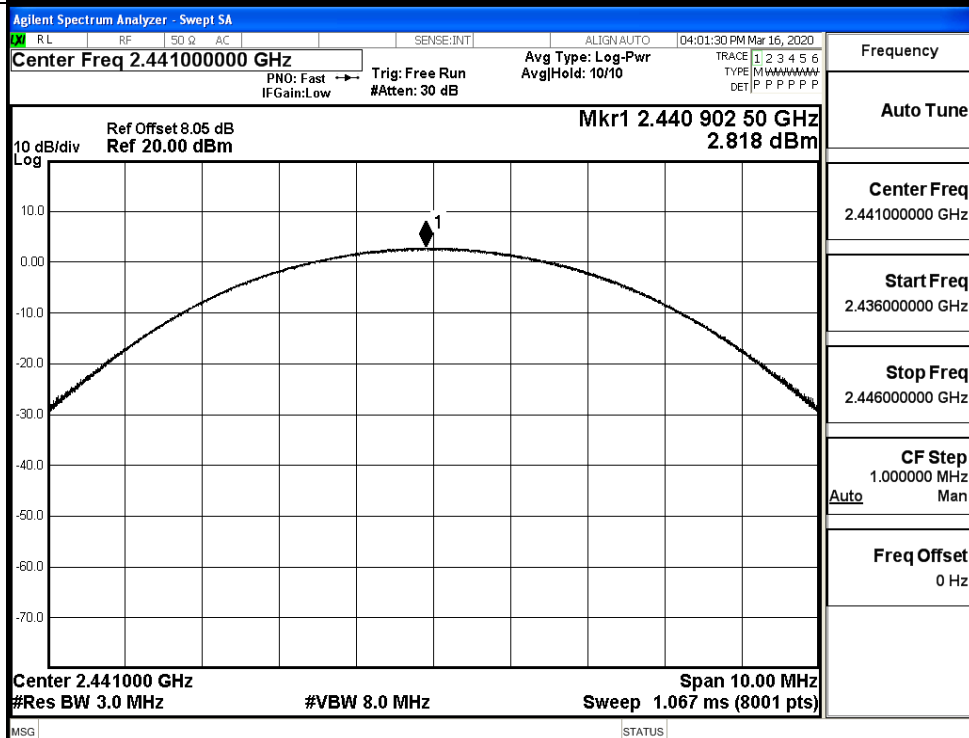
 $\pi/4$ DQPSK/LCH

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

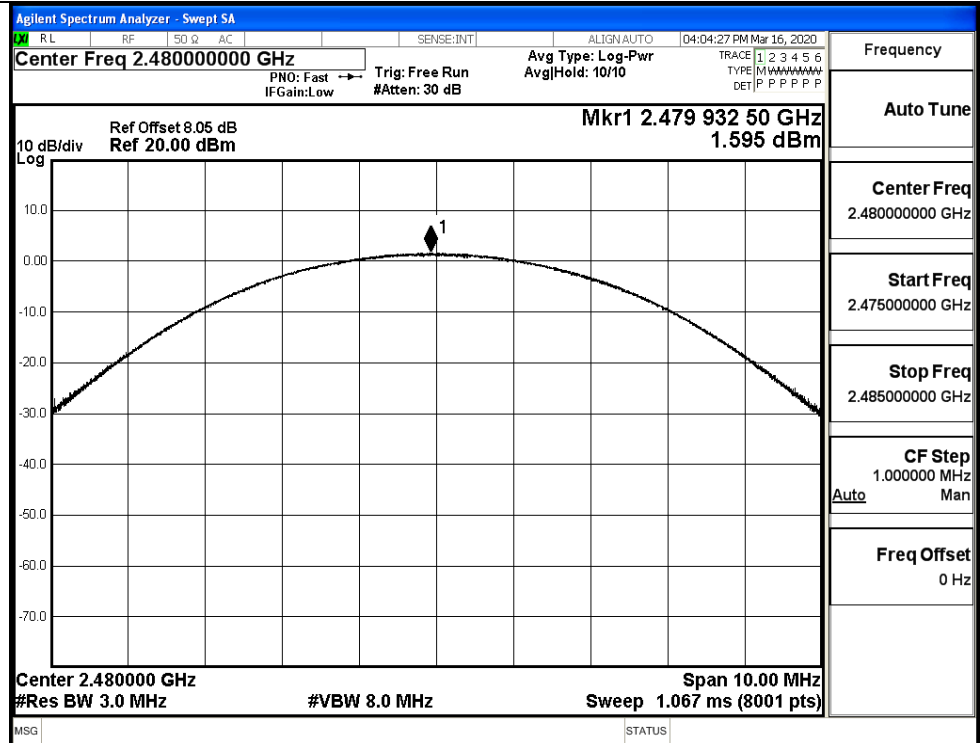
8DPSK/LCH



8DPSK/MCH



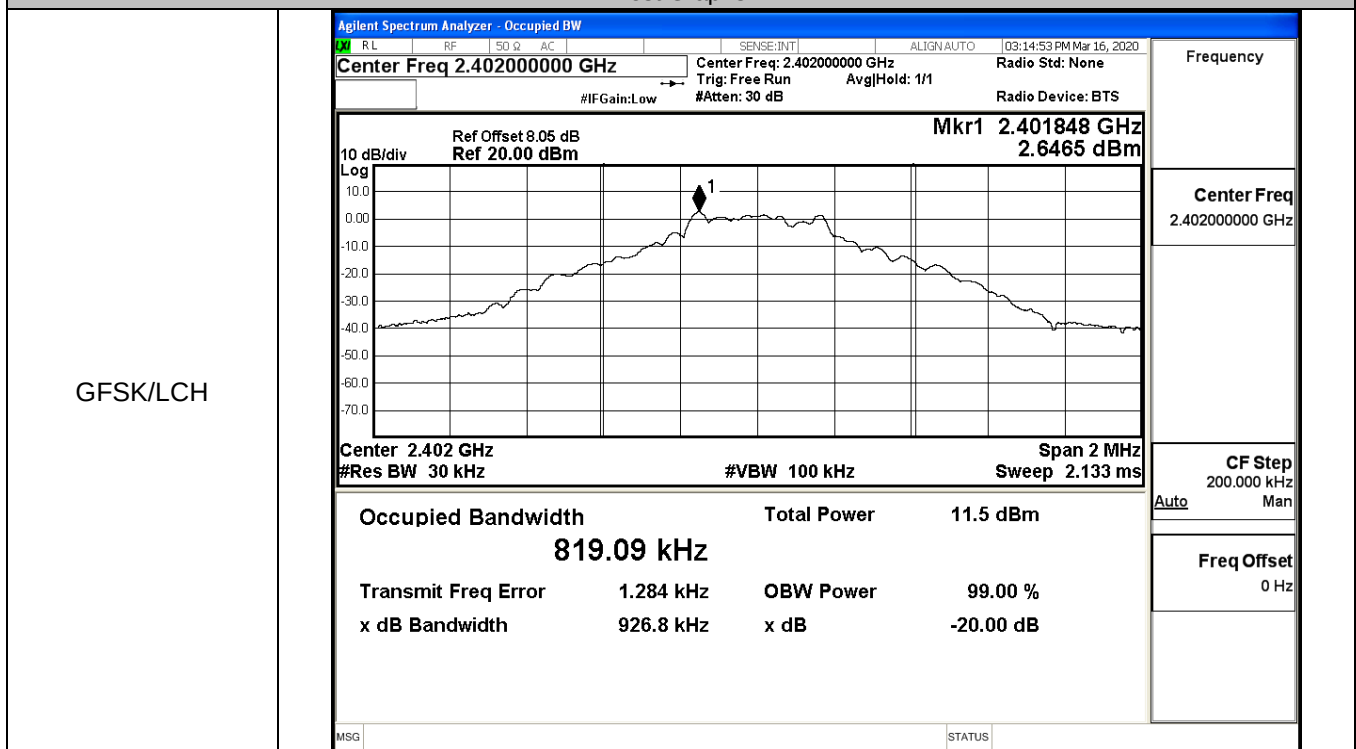
8DPSK/HCH



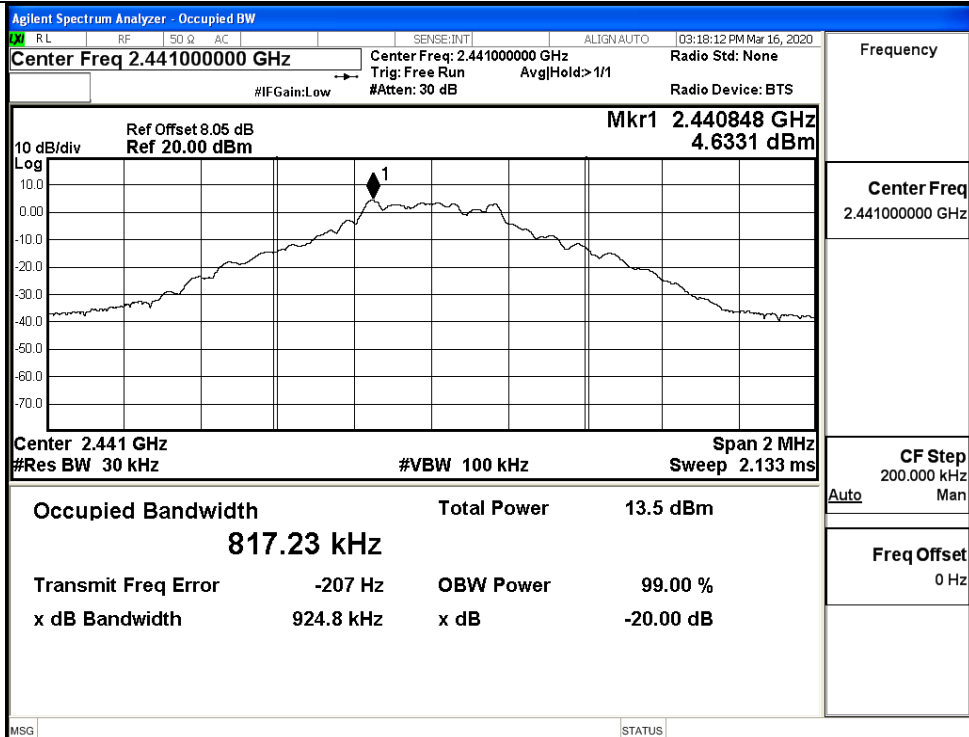
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9268	Not Specified	PASS
	MCH	0.9248	Not Specified	PASS
	HCH	0.9245	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.281	Not Specified	PASS
	MCH	1.281	Not Specified	PASS
	HCH	1.279	Not Specified	PASS
8DPSK	LCH	1.289	Not Specified	PASS
	MCH	1.290	Not Specified	PASS
	HCH	1.291	Not Specified	PASS

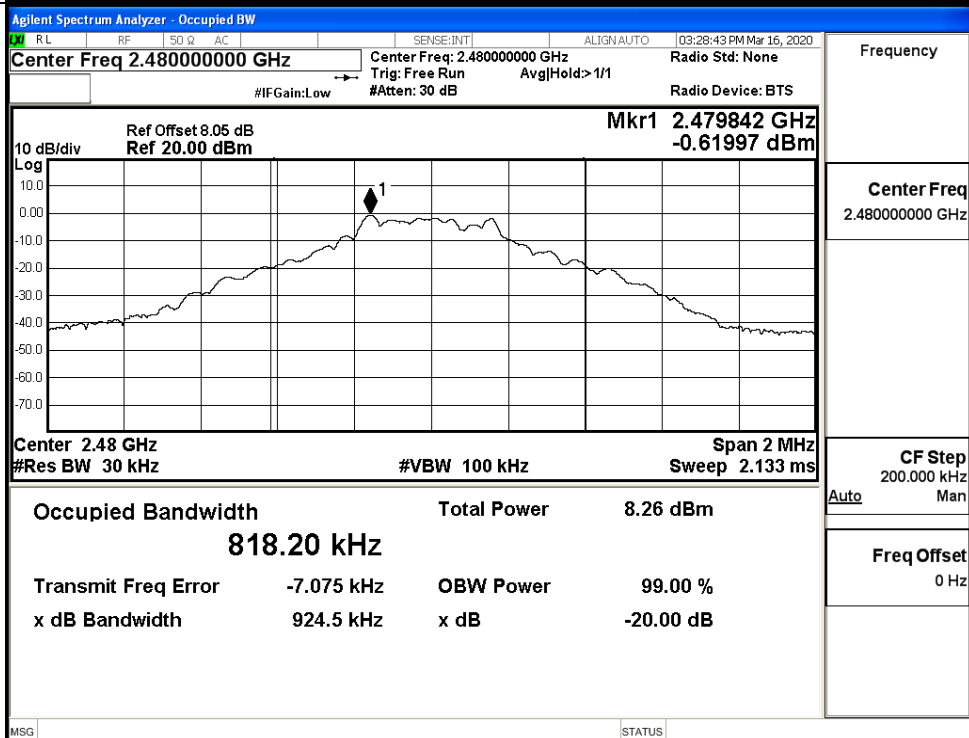
Test Graphs

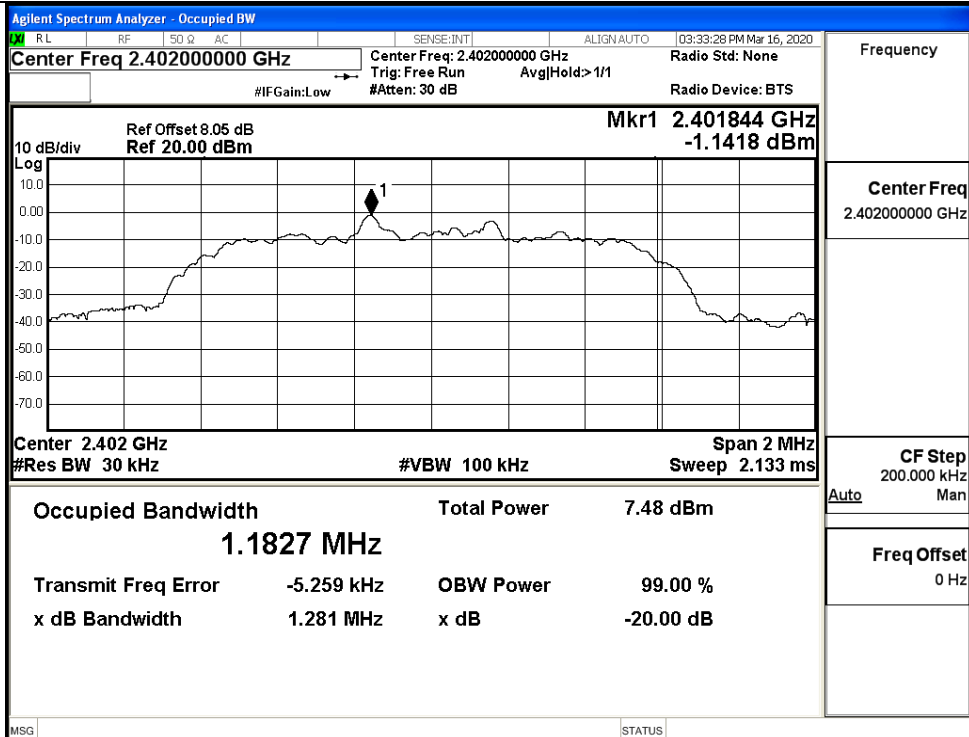


GFSK/MCH



GFSK/HCH

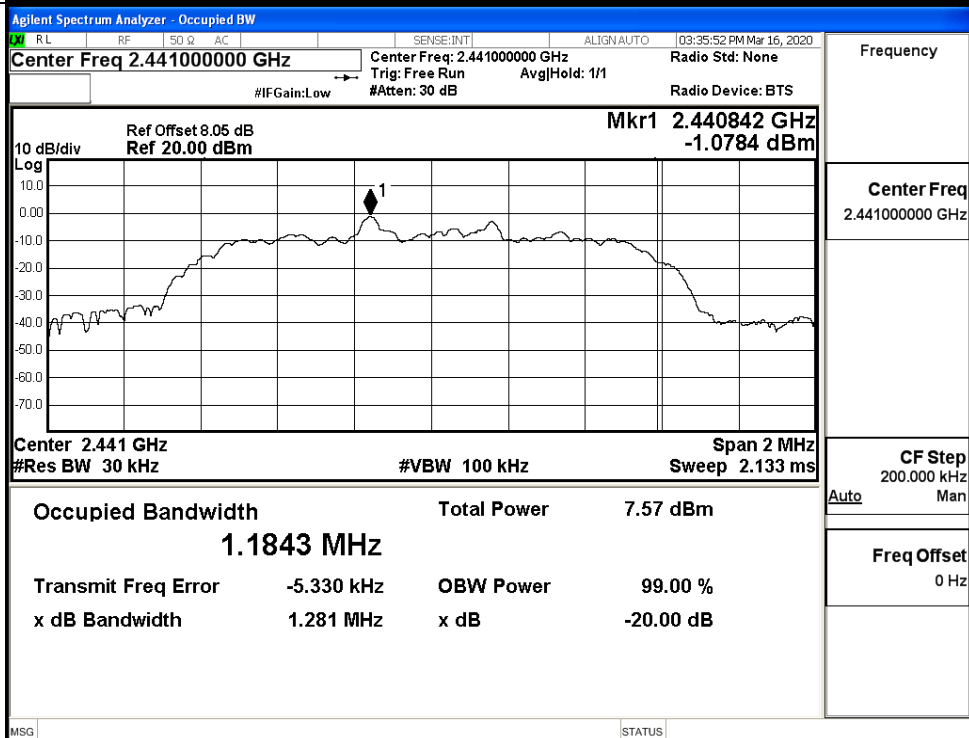


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.40200000 GHzCF Step
200.000 kHz
Man

Auto

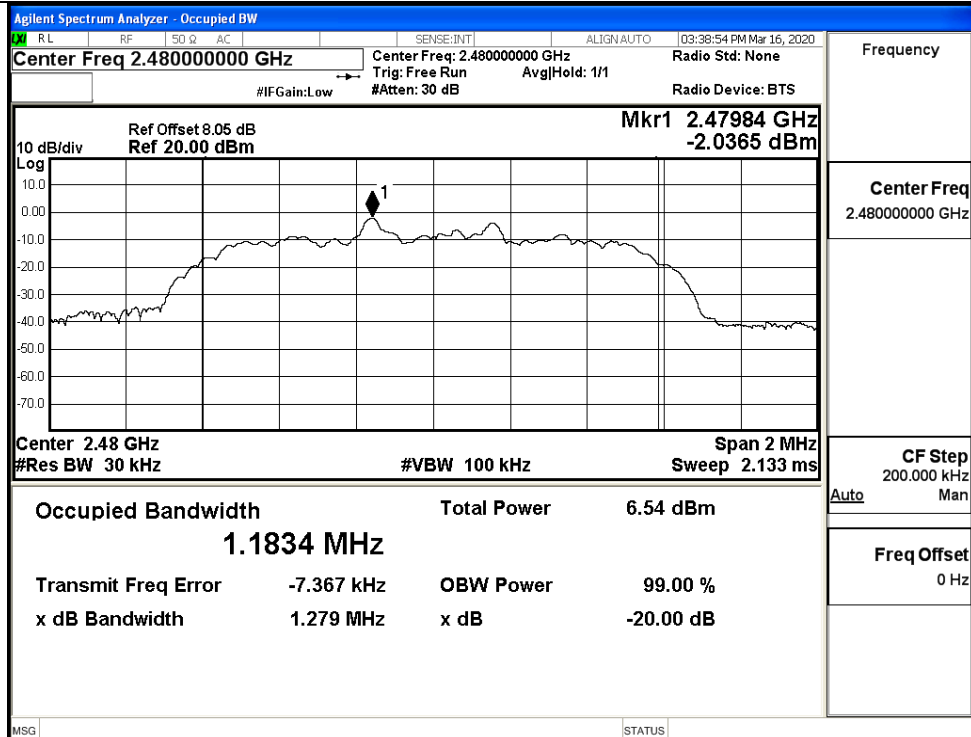
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

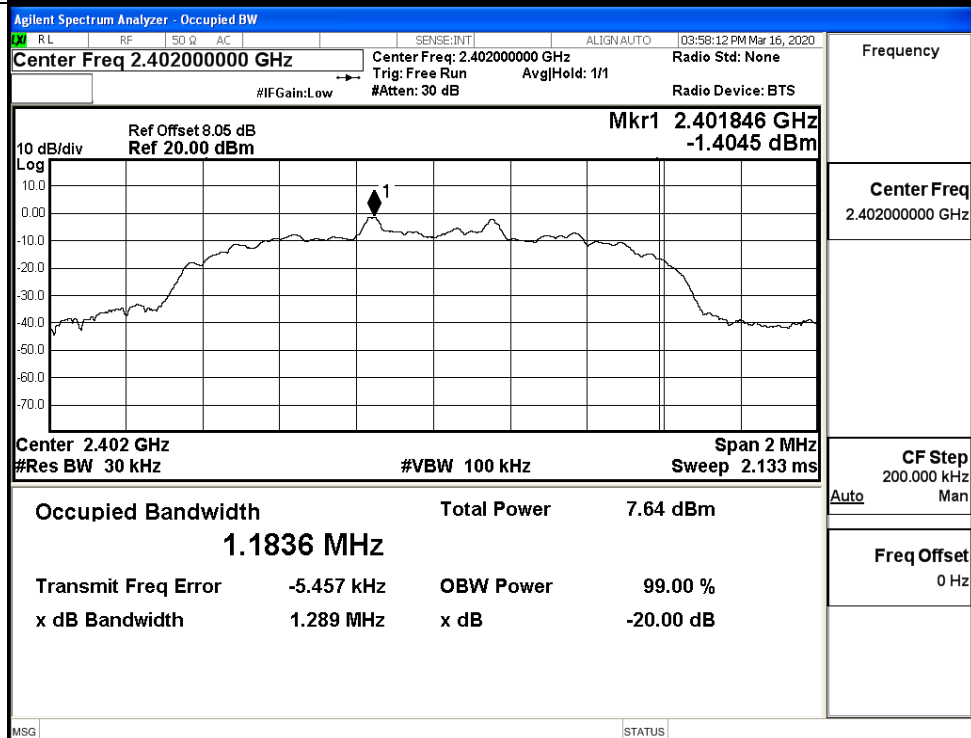
Center Freq
2.44100000 GHzCF Step
200.000 kHz
Man

Auto

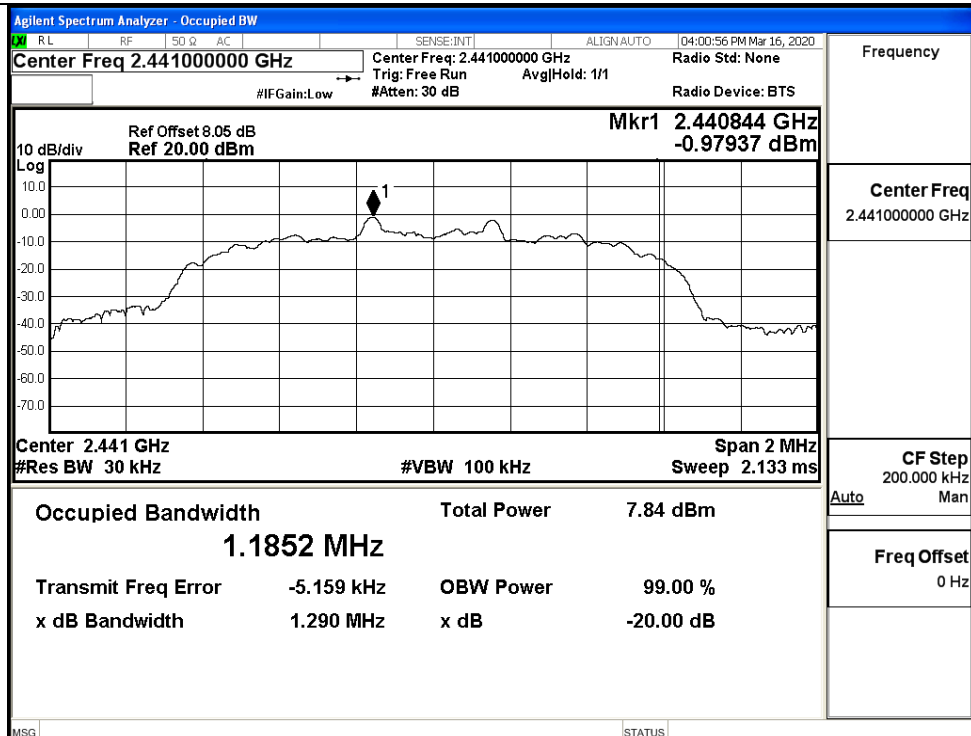
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

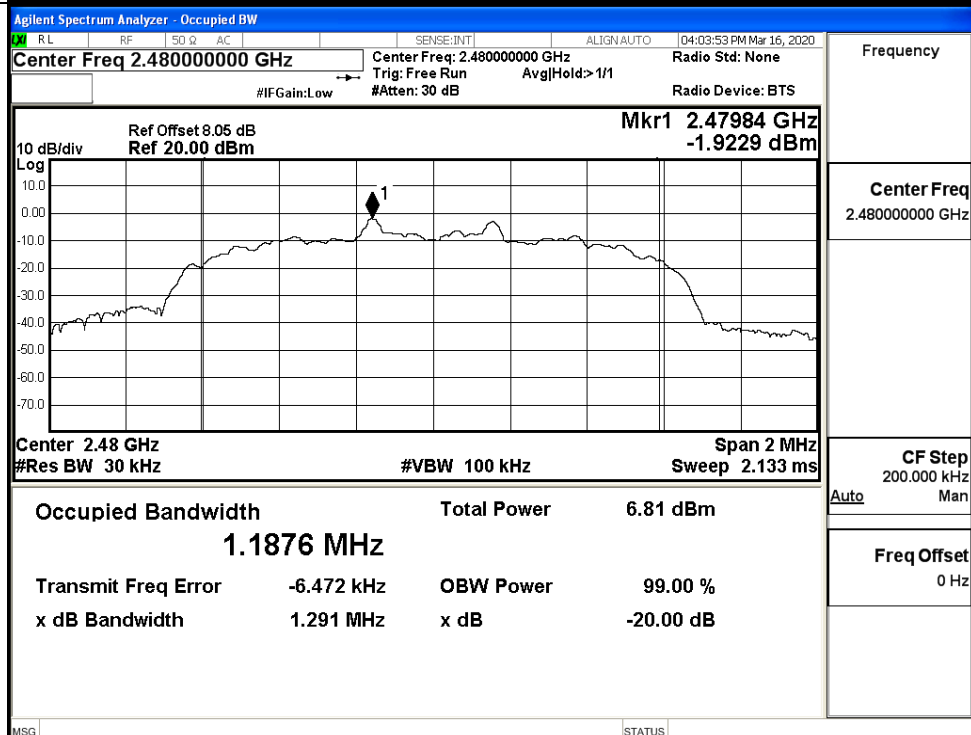
8DPSK/LCH



8DPSK/MCH



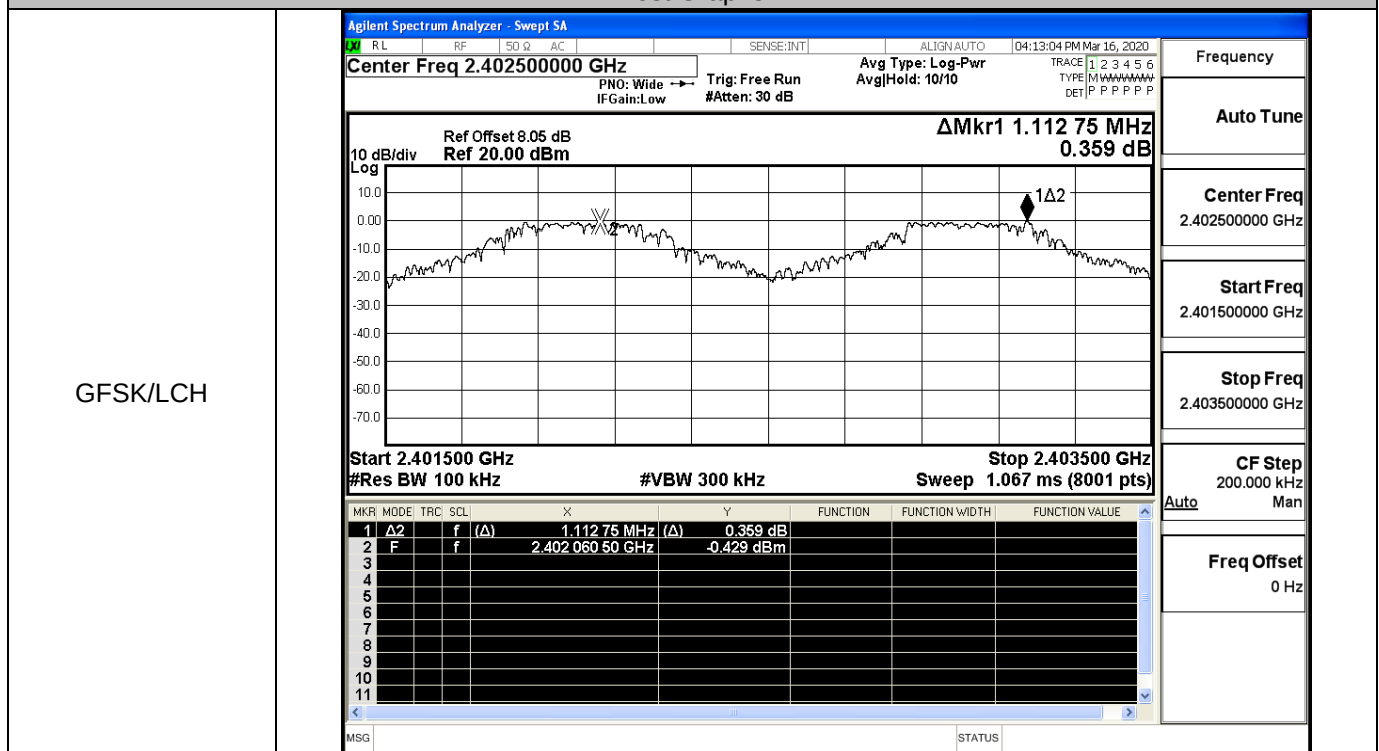
8DPSK/HCH



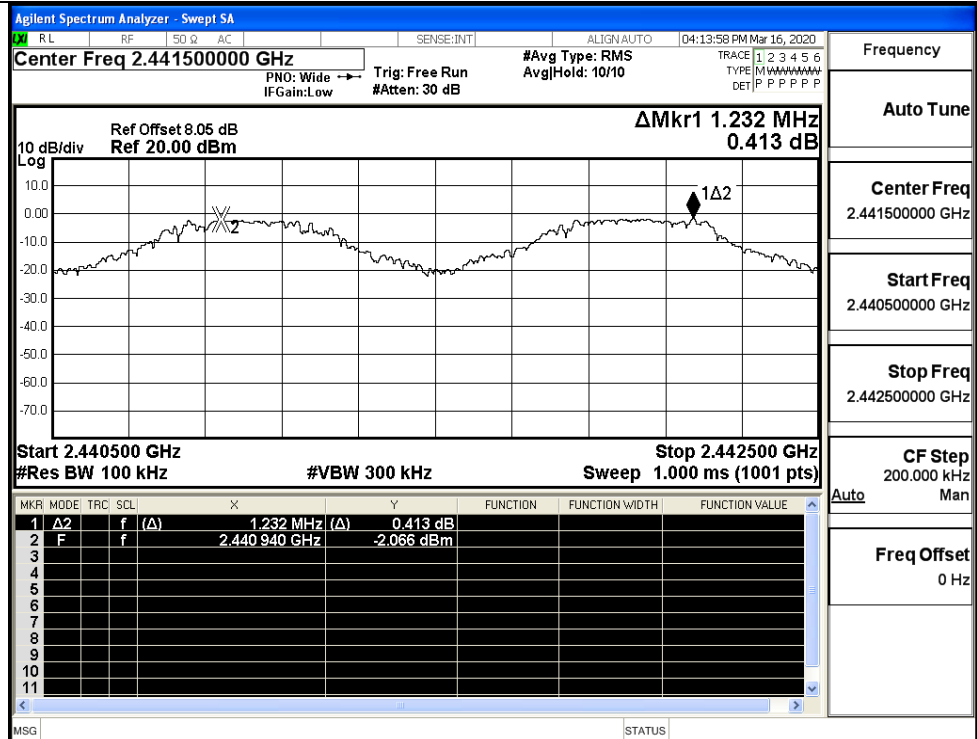
A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.113	0.618	PASS
	MCH	1.232	0.618	PASS
	HCH	1.206	0.618	PASS
$\pi/4$ DQPSK	LCH	0.950	0.854	PASS
	MCH	0.994	0.854	PASS
	HCH	1.010	0.854	PASS
8DPSK	LCH	1.014	0.861	PASS
	MCH	0.968	0.861	PASS
	HCH	1.096	0.861	PASS

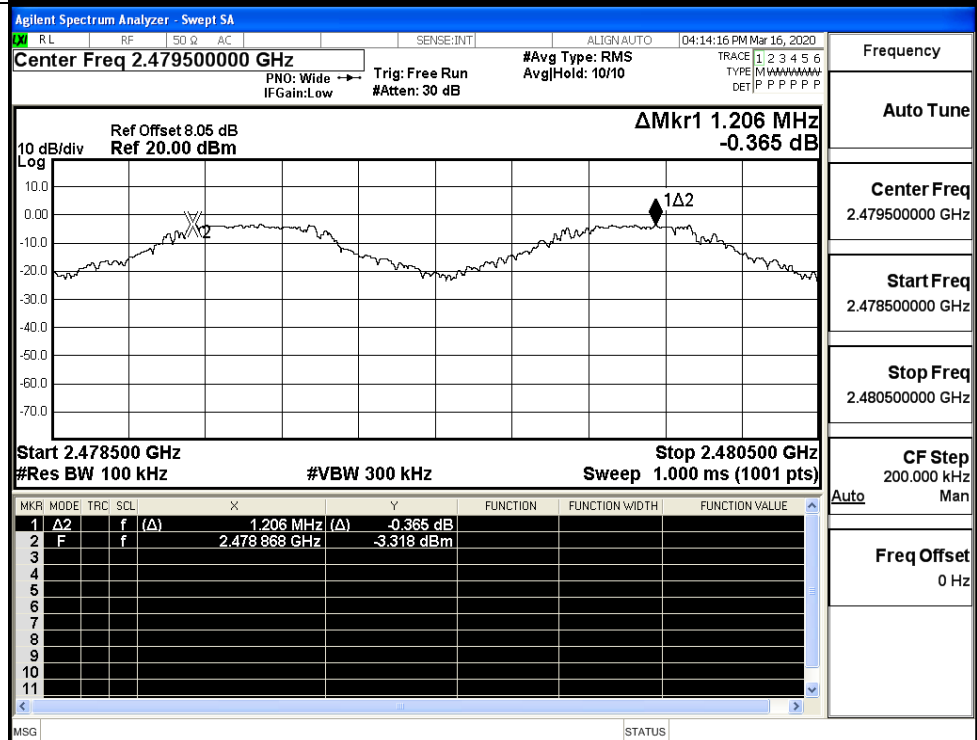
Test Graphs

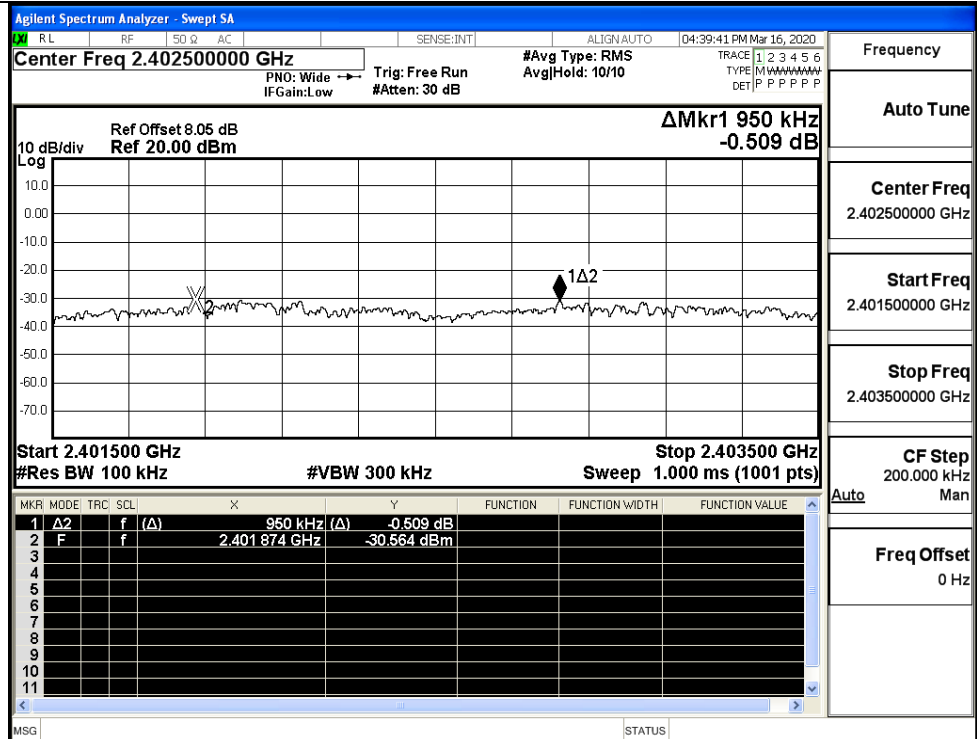


GFSK/MCH



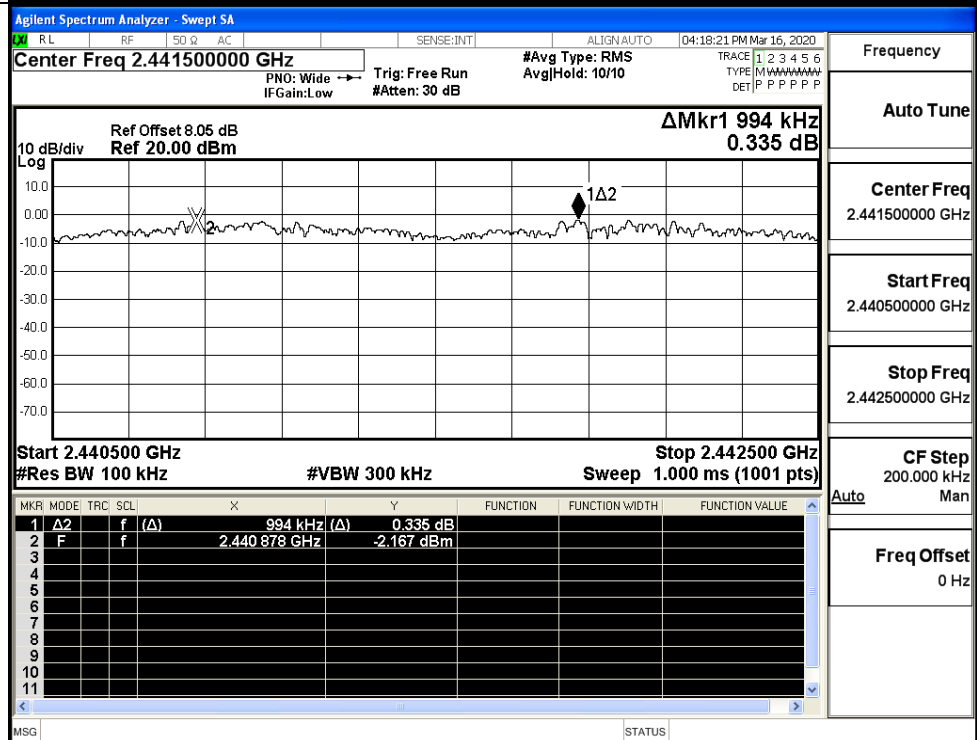
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

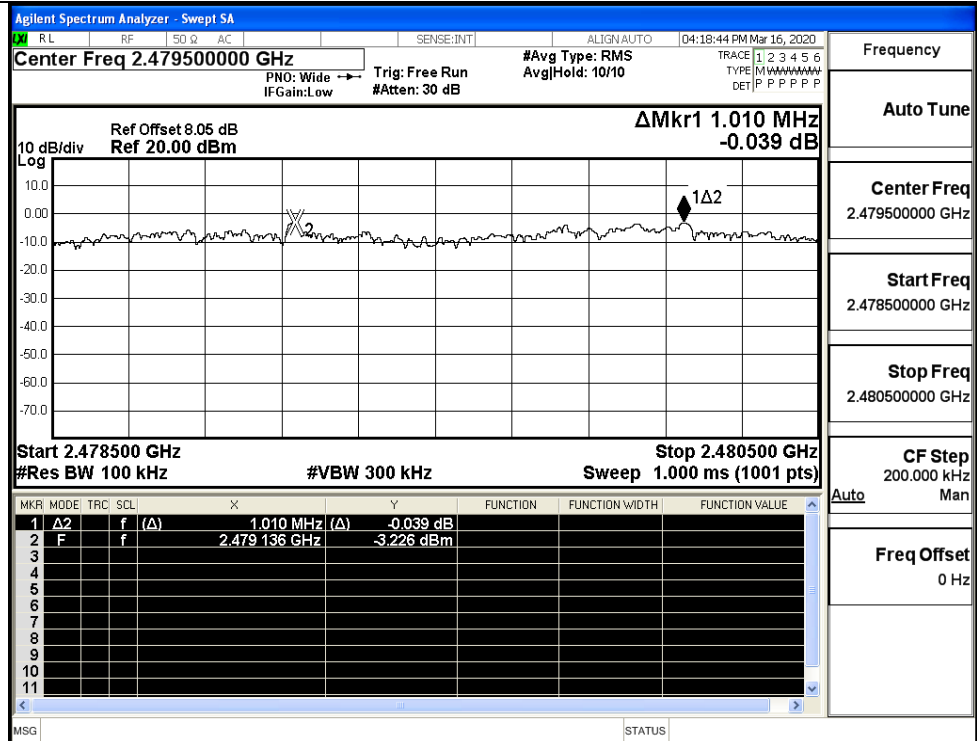
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

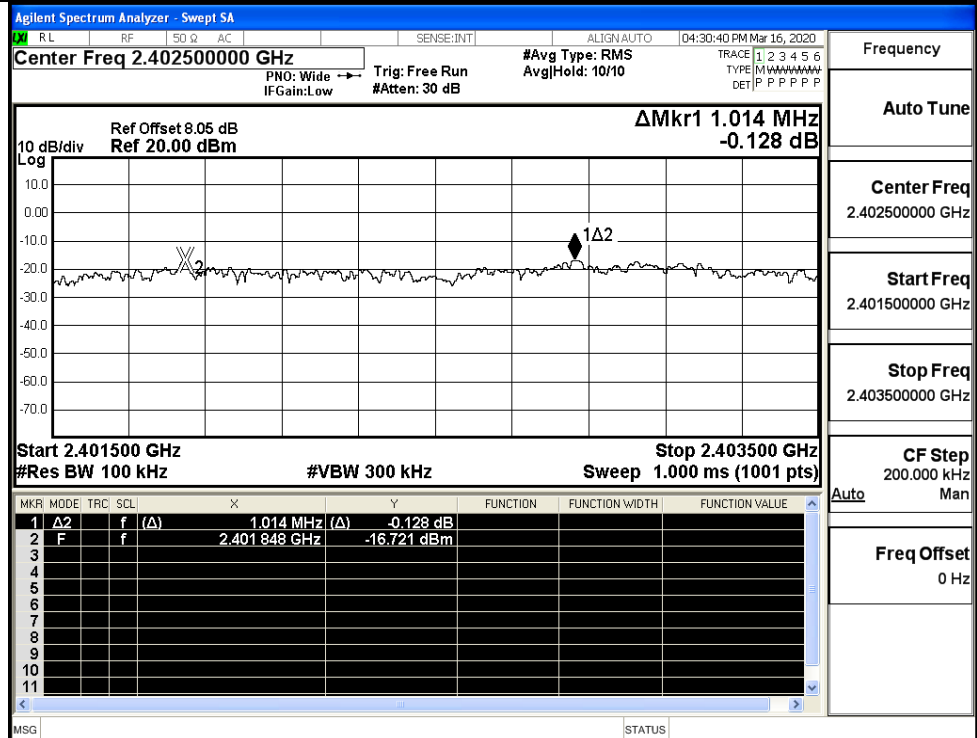
Frequency

Auto Tune

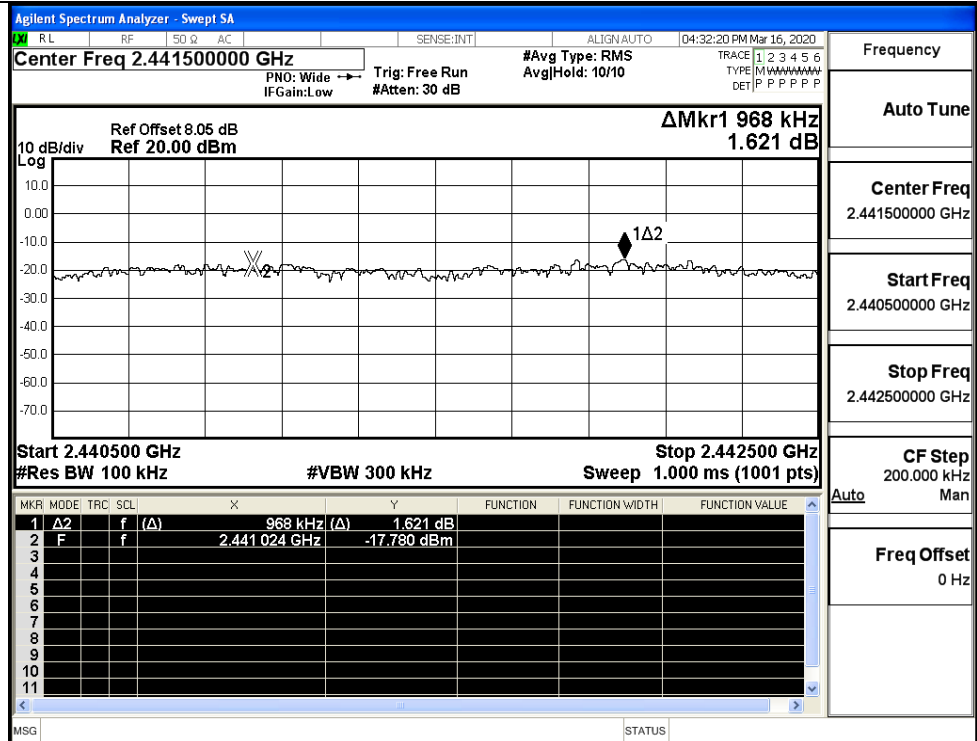
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

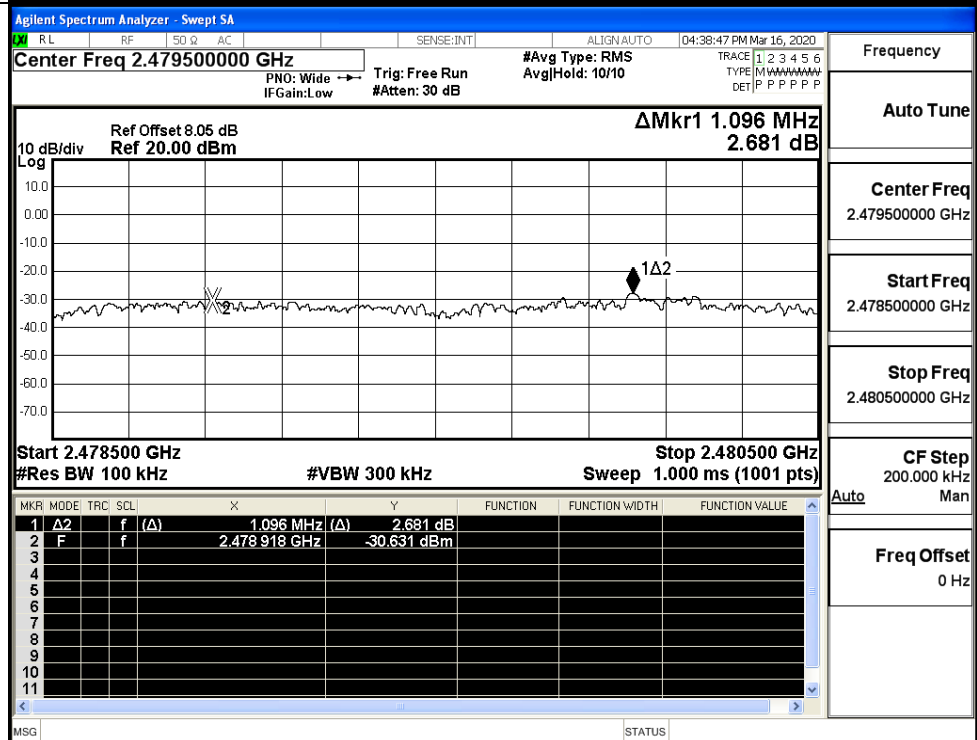
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

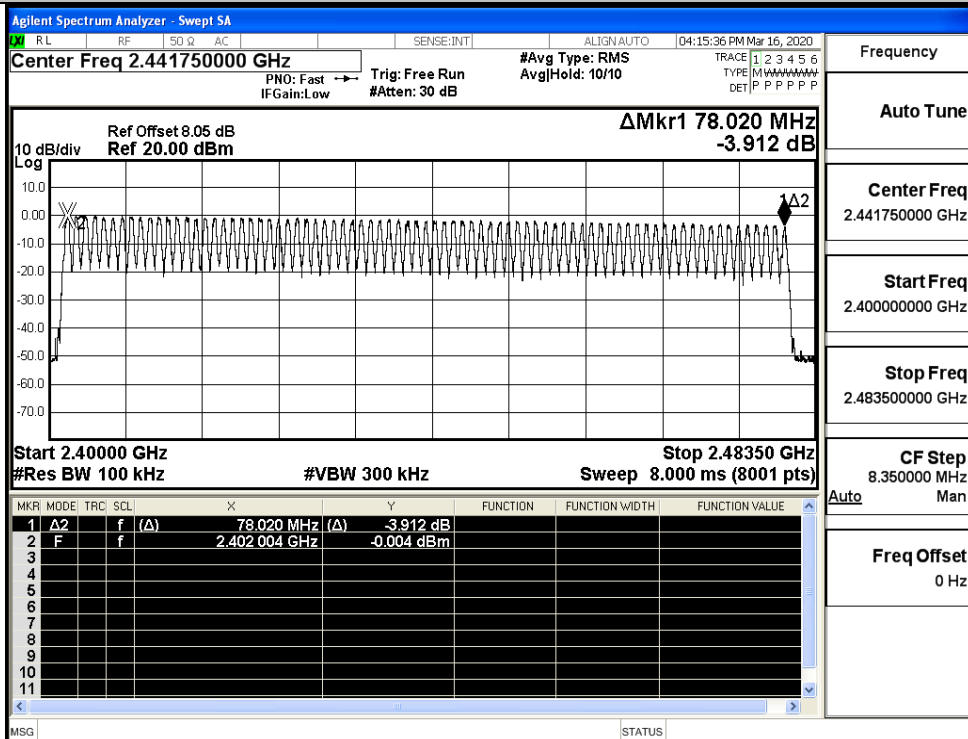
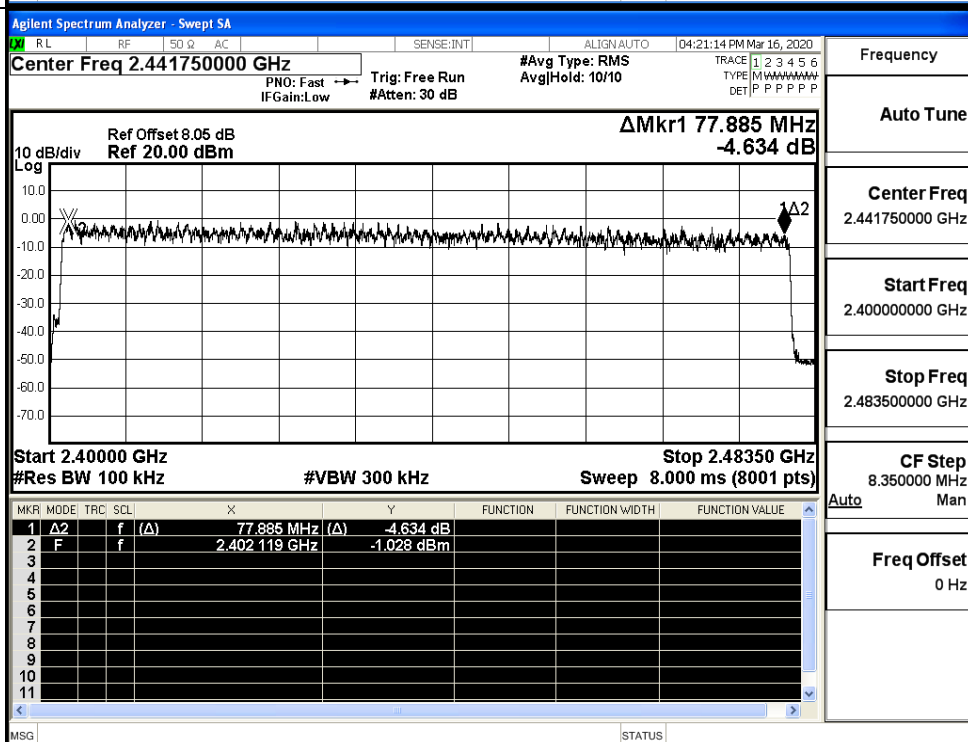


A.4 Hopping Channel Number

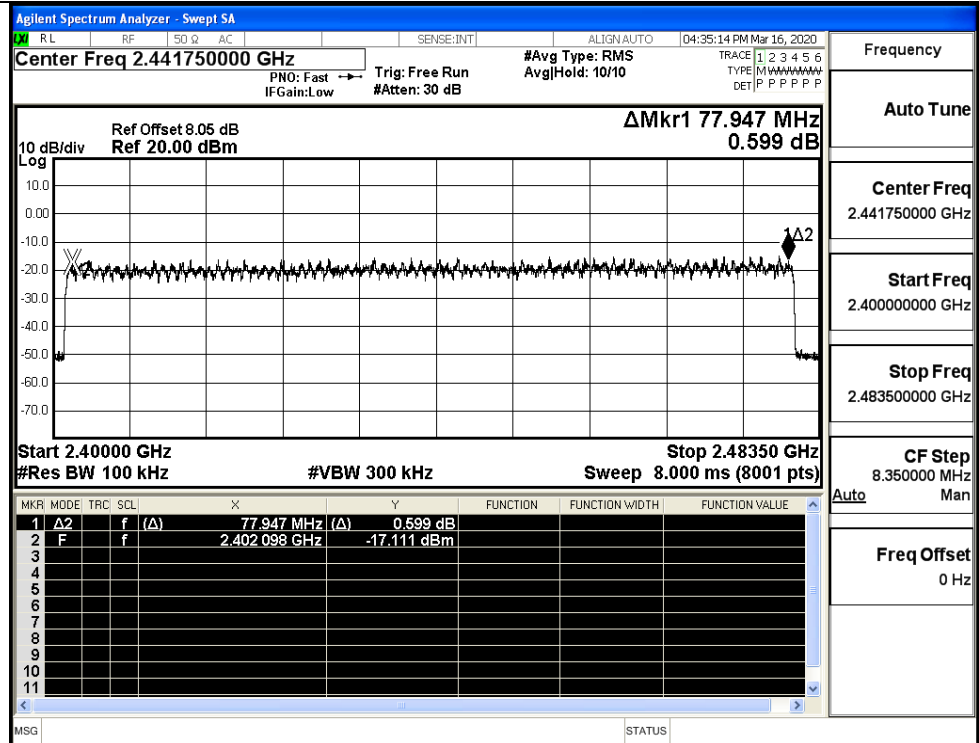
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

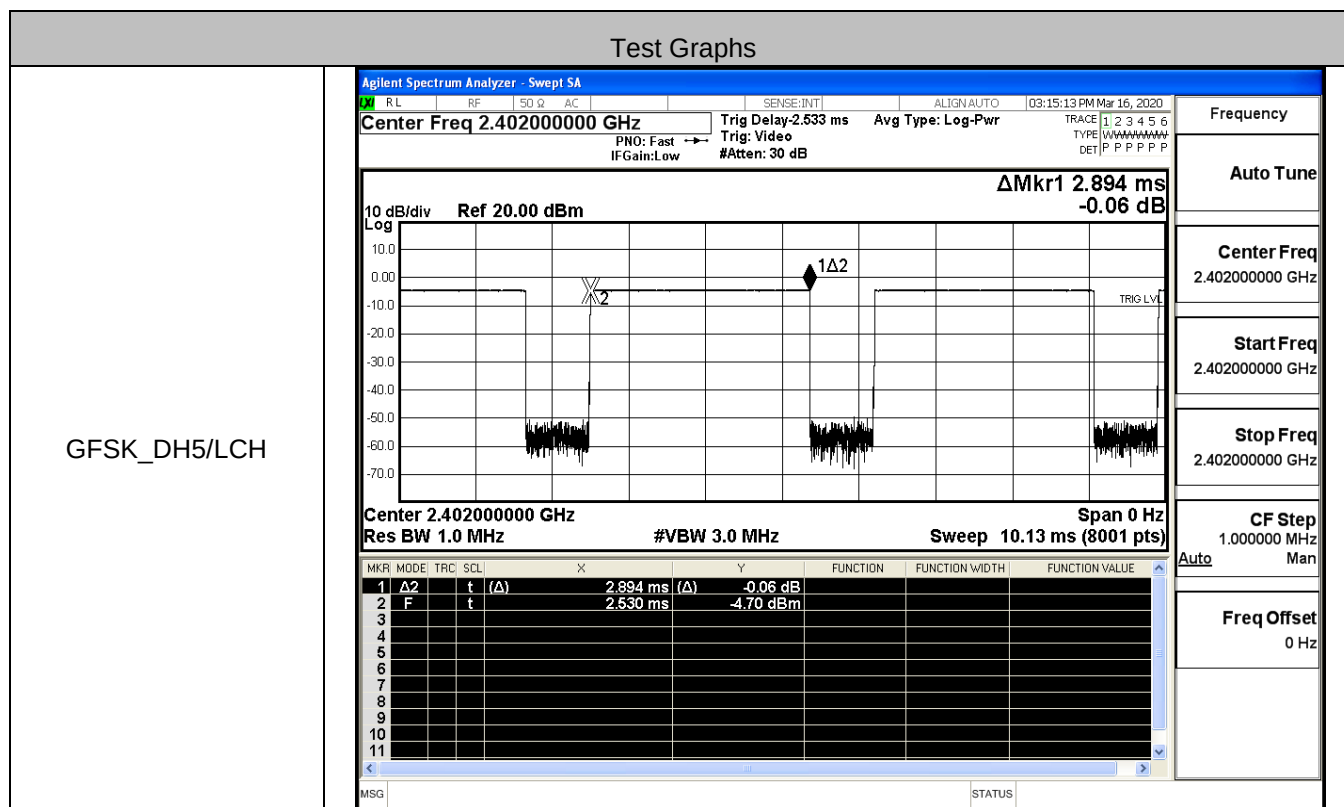
GFSK/Hop

 $\pi/4$ DQPSK/Hop

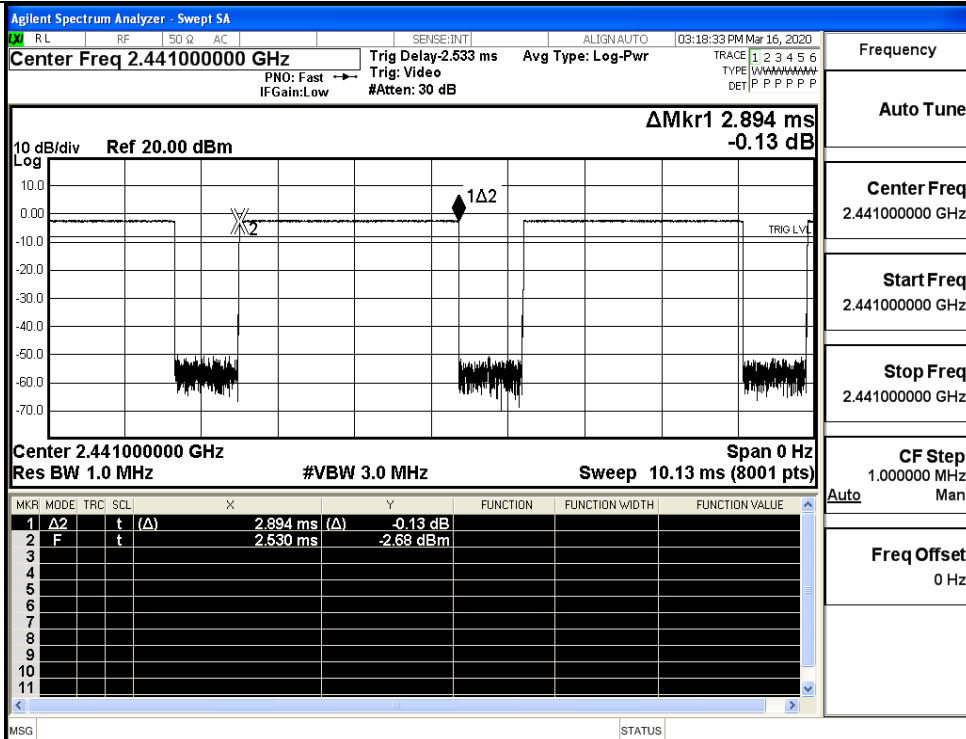
8DPSK/Hop



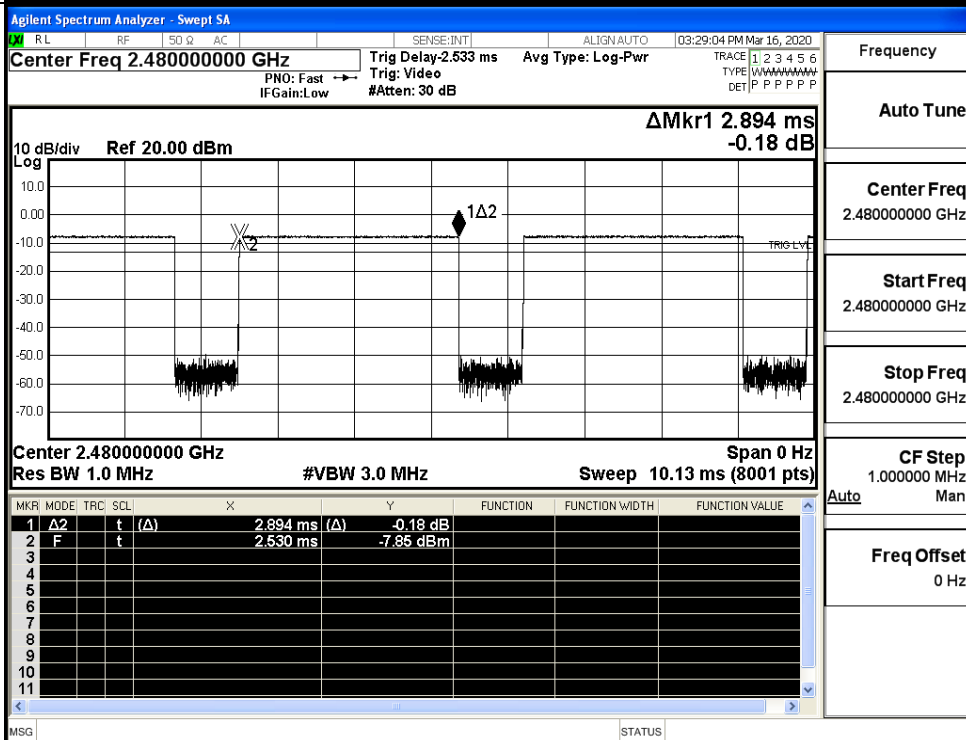
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.307	0.4	PASS
	2DH5	MCH	2.89	106.7	0.307	0.4	PASS
	2DH5	HCH	2.89	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.307	0.4	PASS
	3DH5	MCH	2.89	106.7	0.307	0.4	PASS
	3DH5	HCH	2.89	106.7	0.307	0.4	PASS



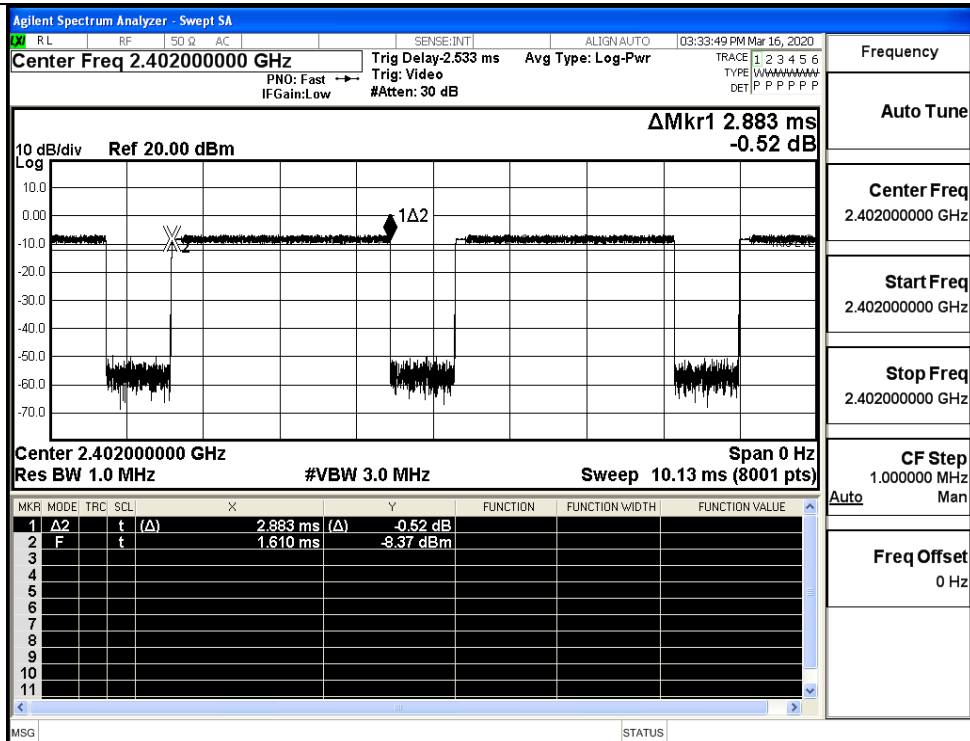
GFSK_DH5/MCH



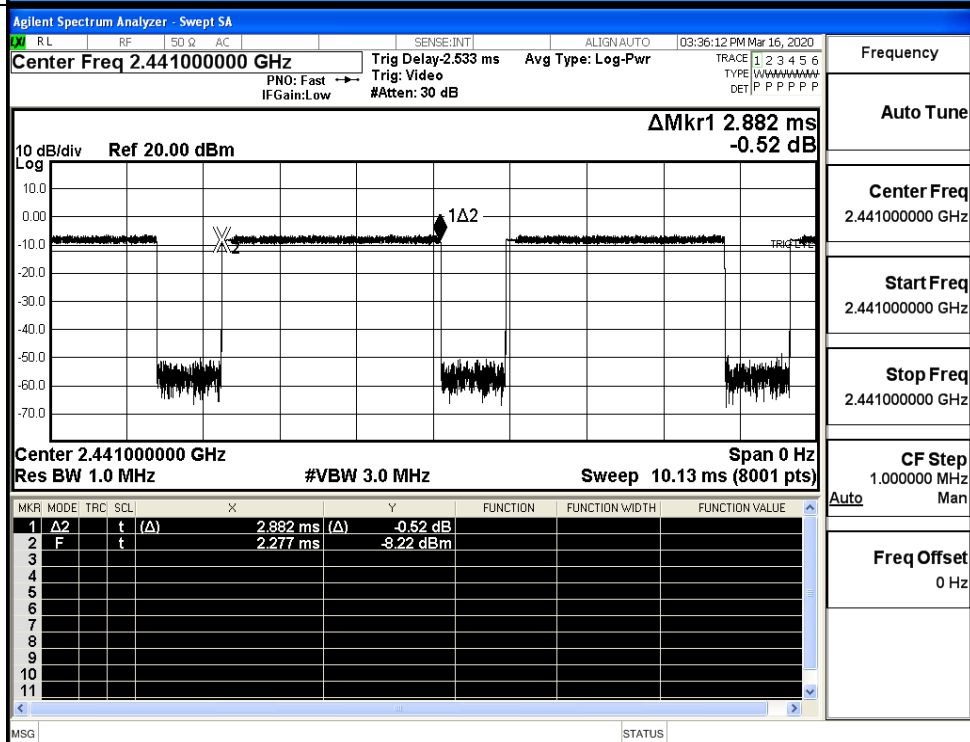
GFSK_DH5/HCH



$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



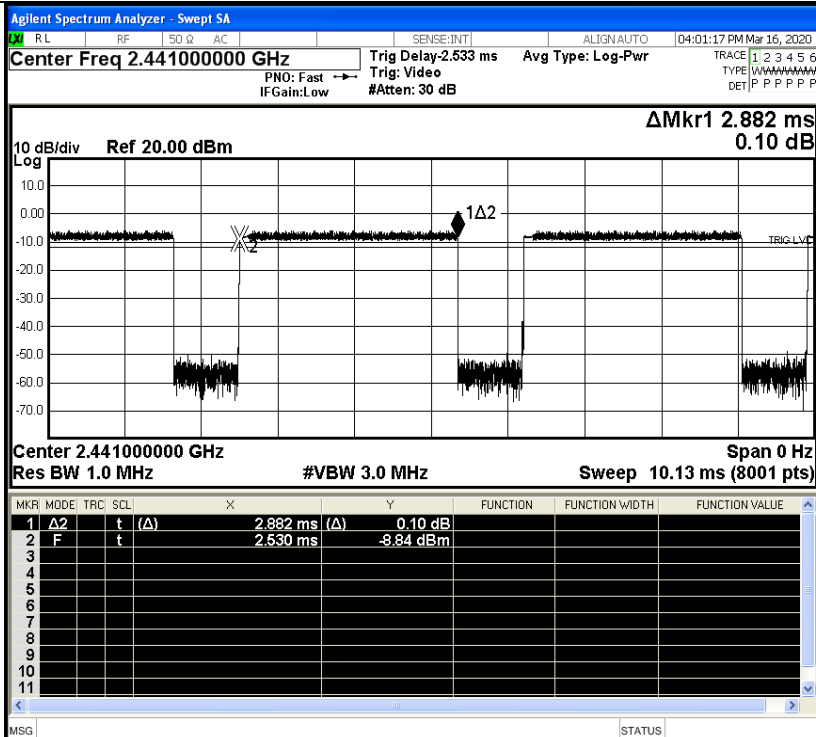
[illegible]

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

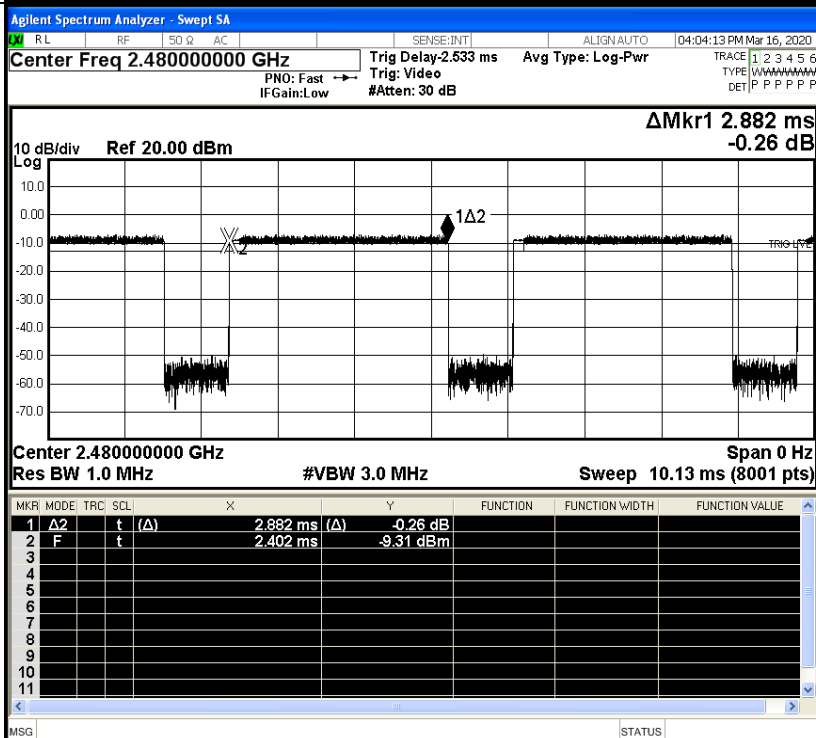


Frequency

Auto Tune

Center Freq
2.441000000 GHzStart Freq
2.441000000 GHzStop Freq
2.441000000 GHzCF Step
1.000000 MHz
Auto ManFreq Offset
0 Hz

8DPSK_3DH5/HCH



Frequency

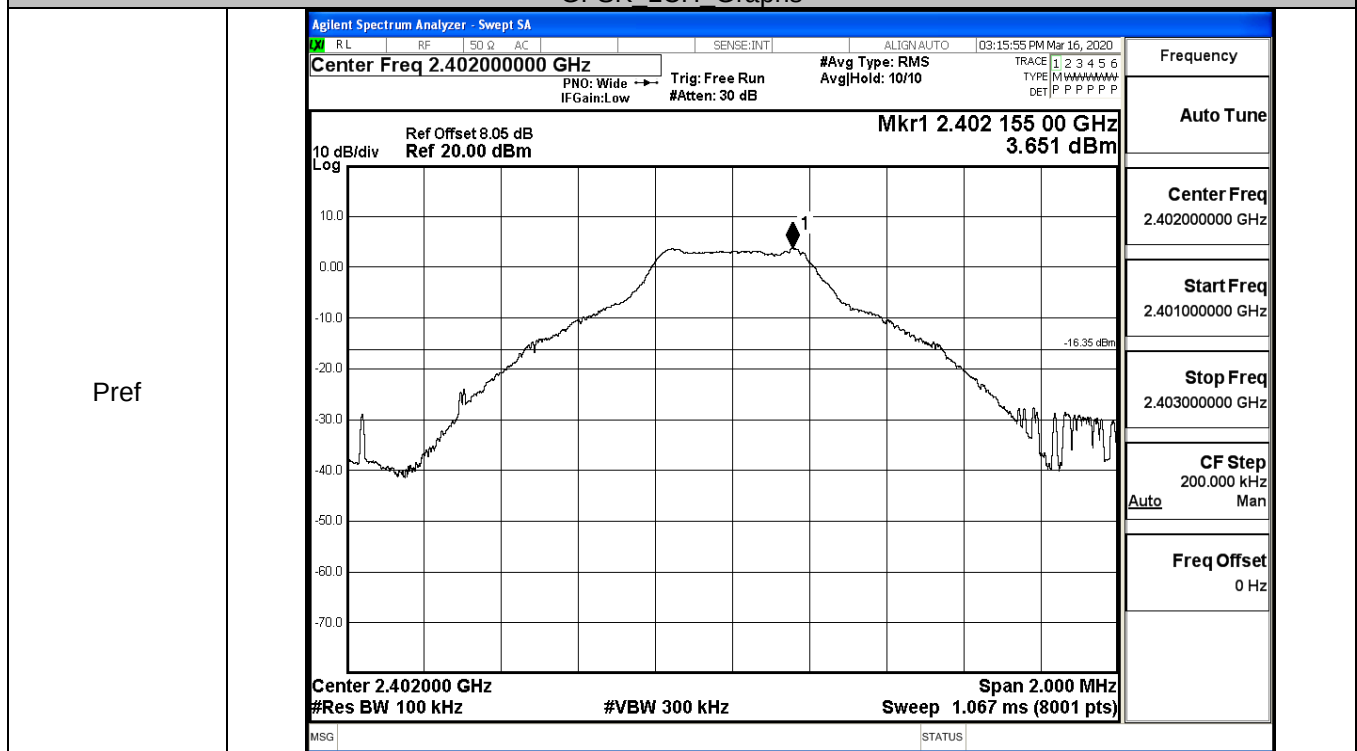
Auto Tune

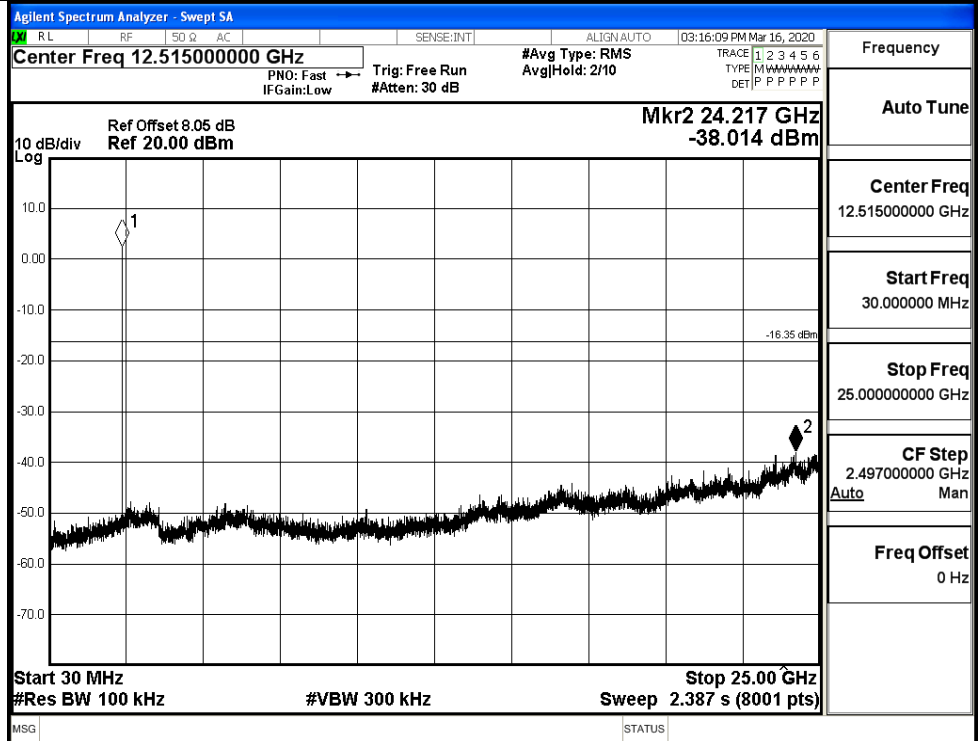
Center Freq
2.480000000 GHzStart Freq
2.480000000 GHzStop Freq
2.480000000 GHzCF Step
1.000000 MHz
Auto ManFreq Offset
0 Hz

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.651	-38.014	-16.349	PASS
	MCH	1.43	-37.240	-18.570	PASS
	HCH	0.408	-38.133	-19.592	PASS
$\pi/4$ DQPSK	LCH	-0.21	-37.976	-20.210	PASS
	MCH	-0.058	-37.347	-20.058	PASS
	HCH	-1.04	-37.709	-21.040	PASS
8DPSK	LCH	-0.076	-37.766	-20.076	PASS
	MCH	0.09	-37.807	-19.910	PASS
	HCH	-1.554	-38.012	-21.554	PASS

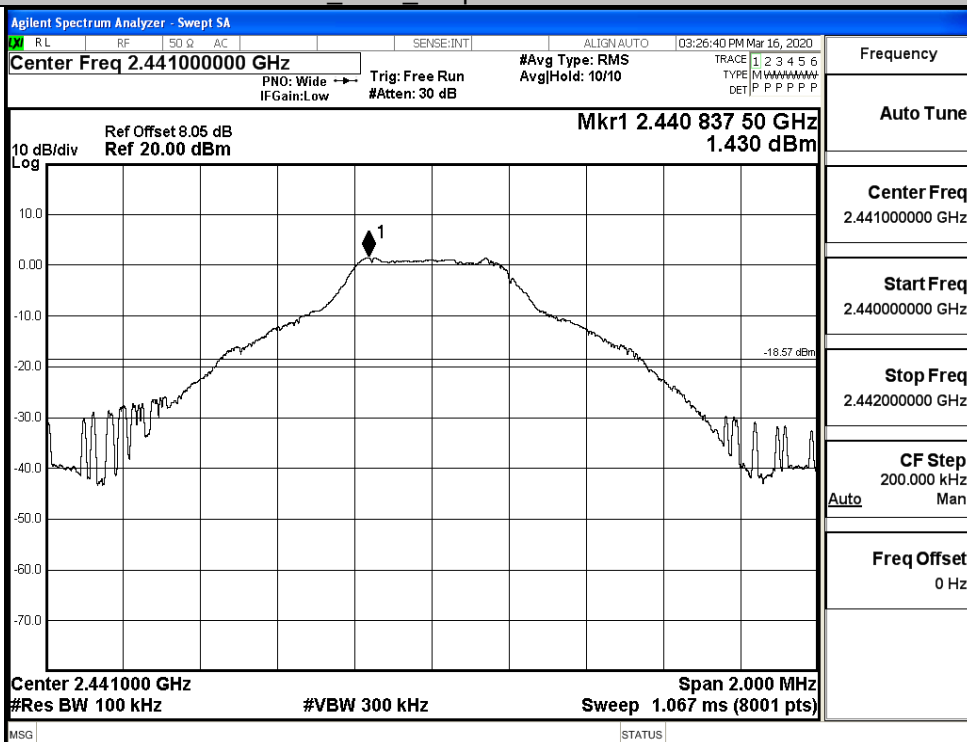
GFSK LCH Graphs



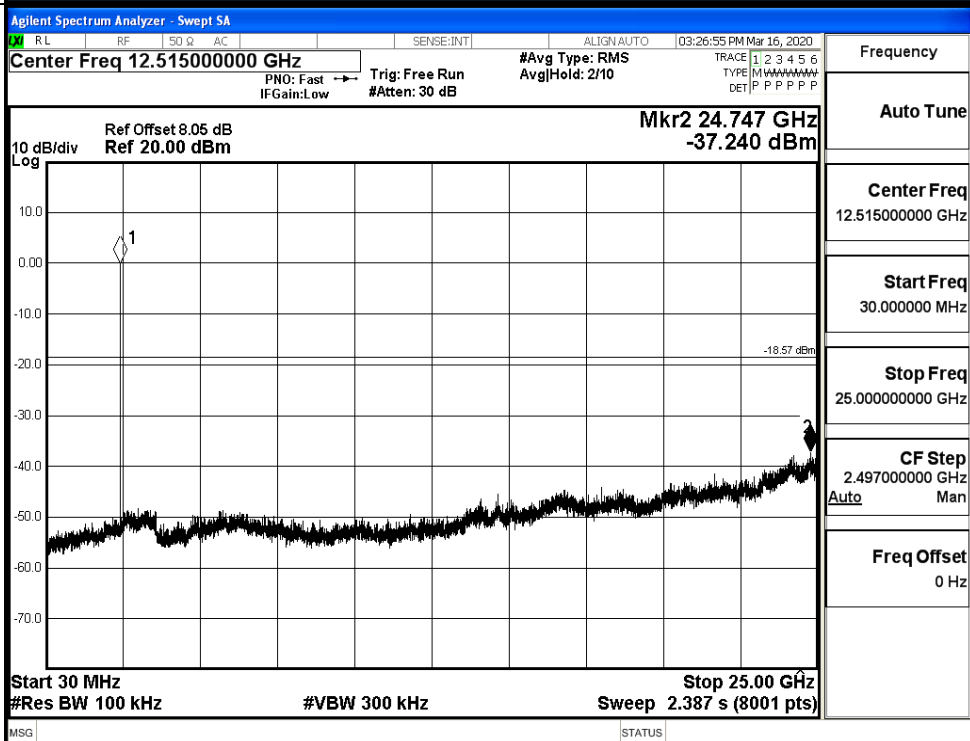
P_{uw}

GFSK_MCH_Graphs

Pref

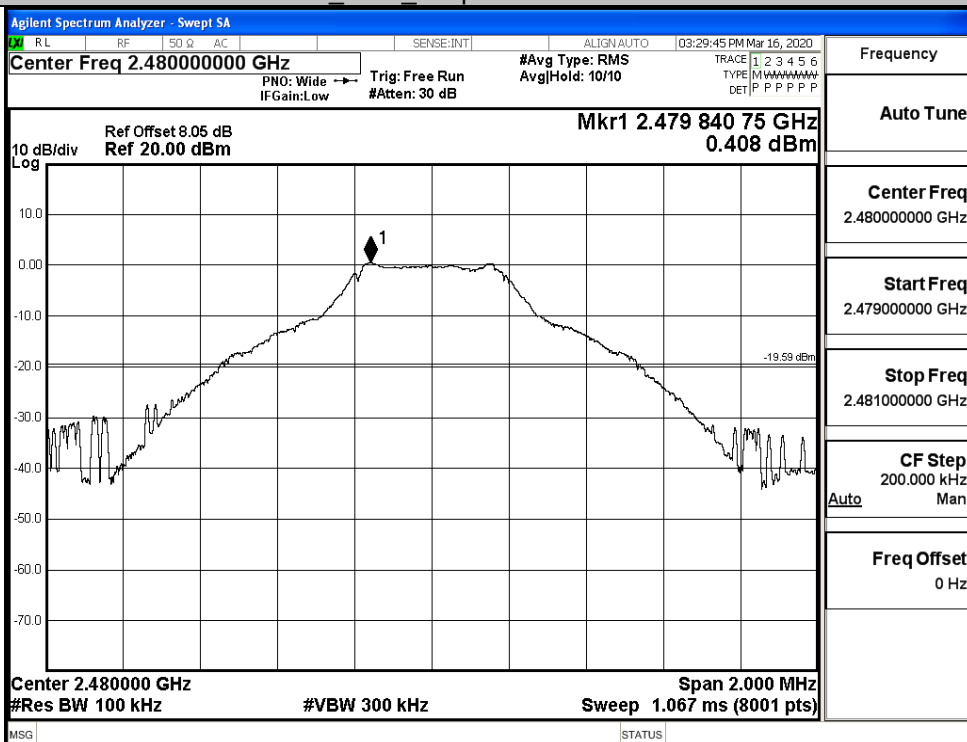


Puw

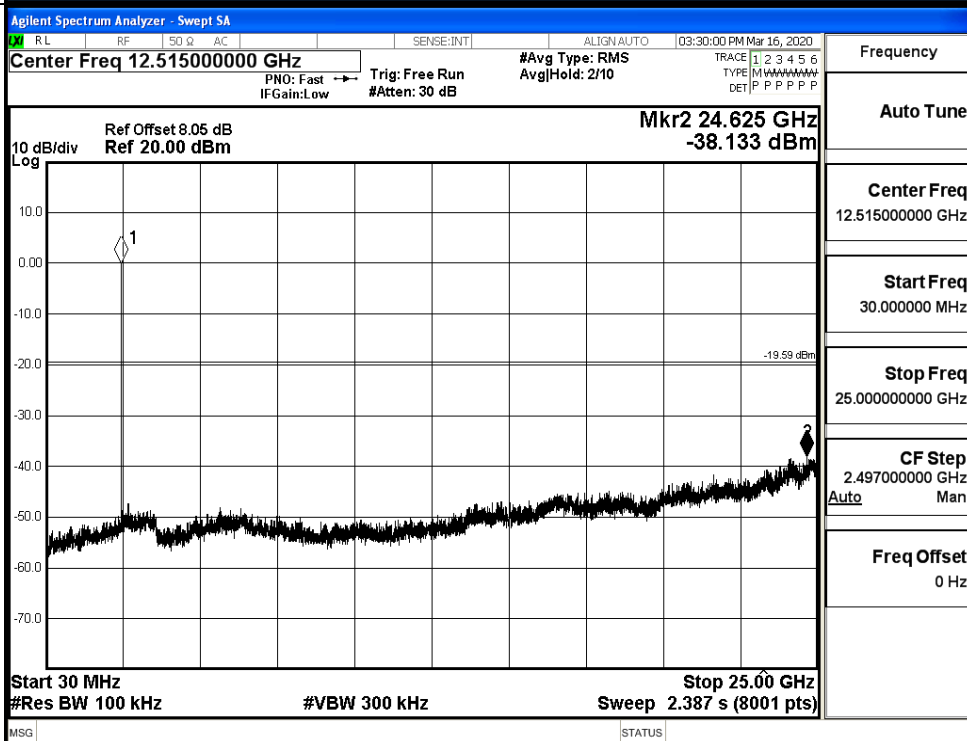


GFSK_HCH_Graphs

Pref

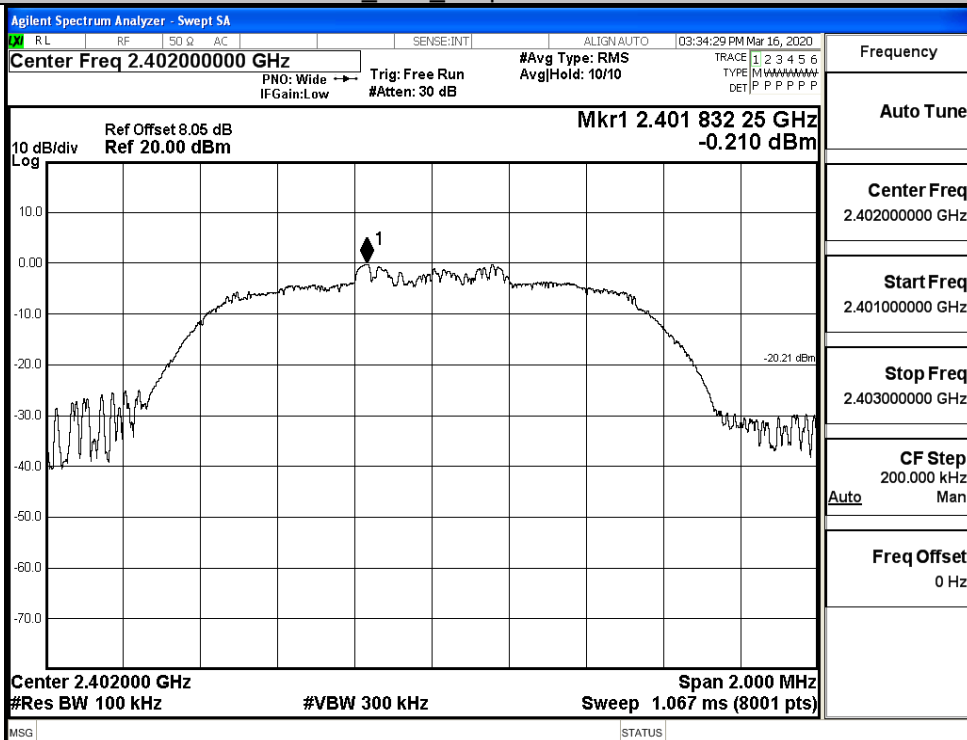


Puw

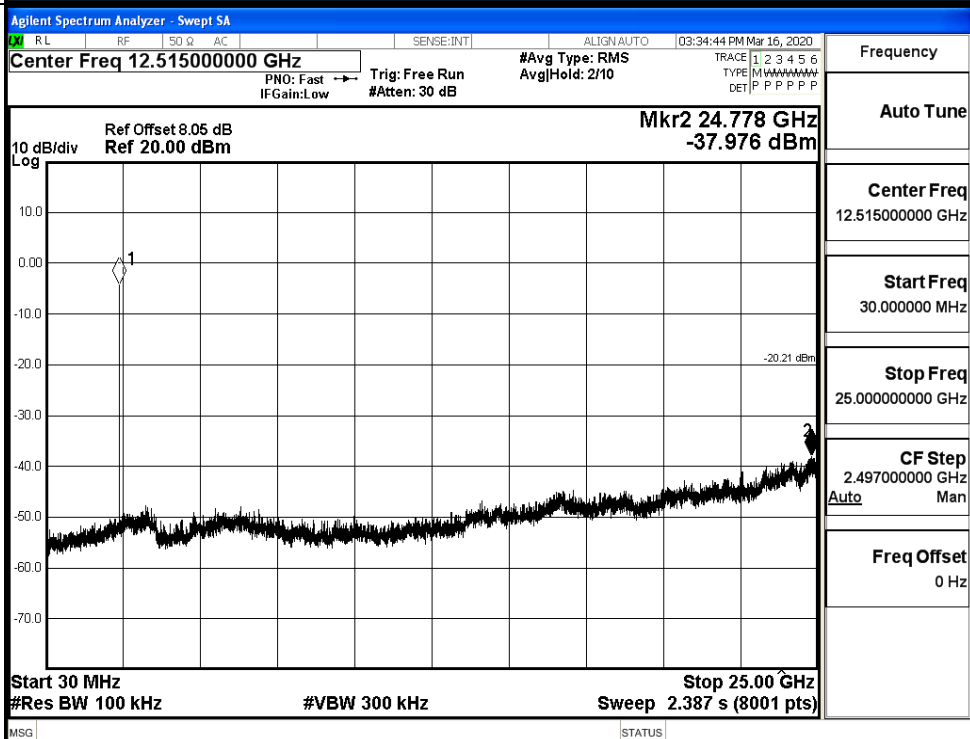


$\pi/4$ DQPSK_LCH_Graphs

Pref

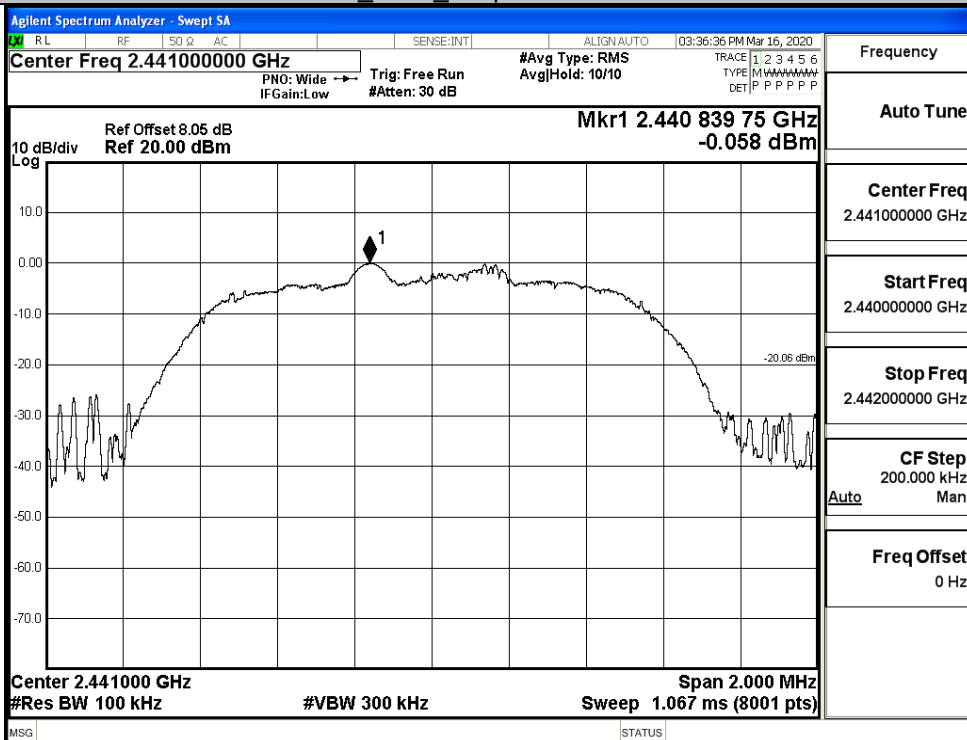


Puw

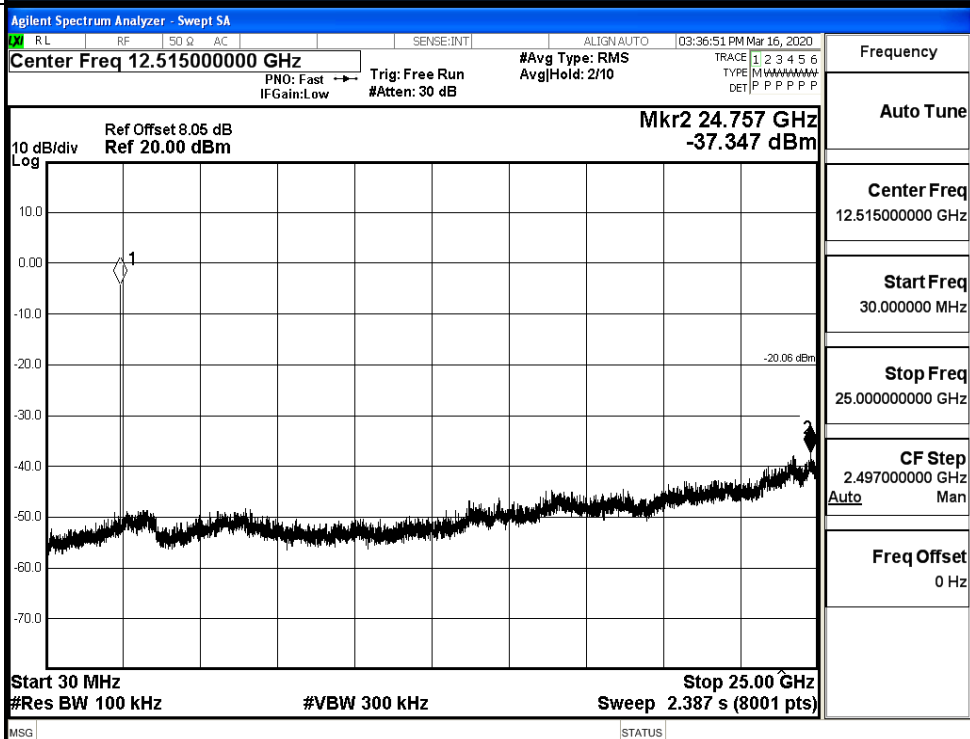


π /4DQPSK_MCH_Graphs

Pref

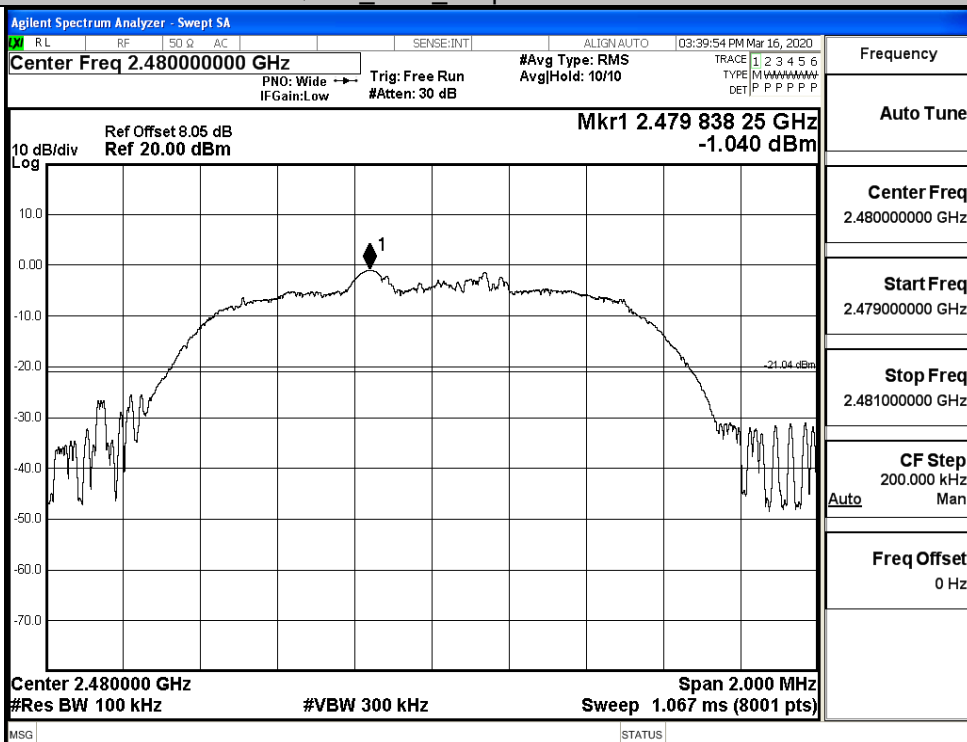


Puw

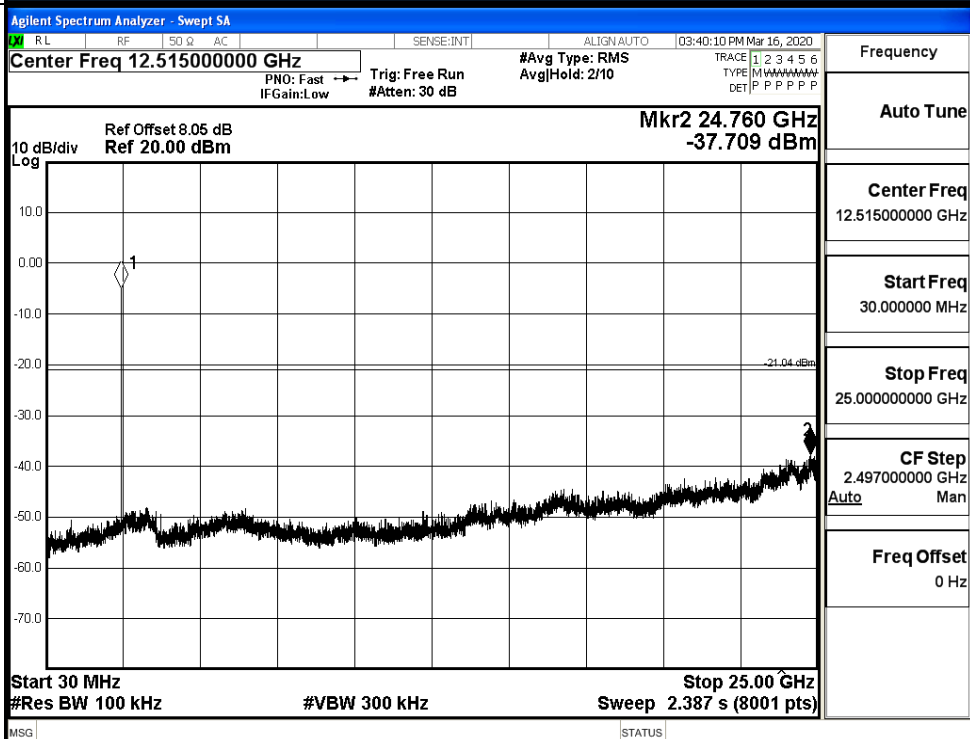


$\pi/4$ DQPSK_HCH_Graphs

Pref

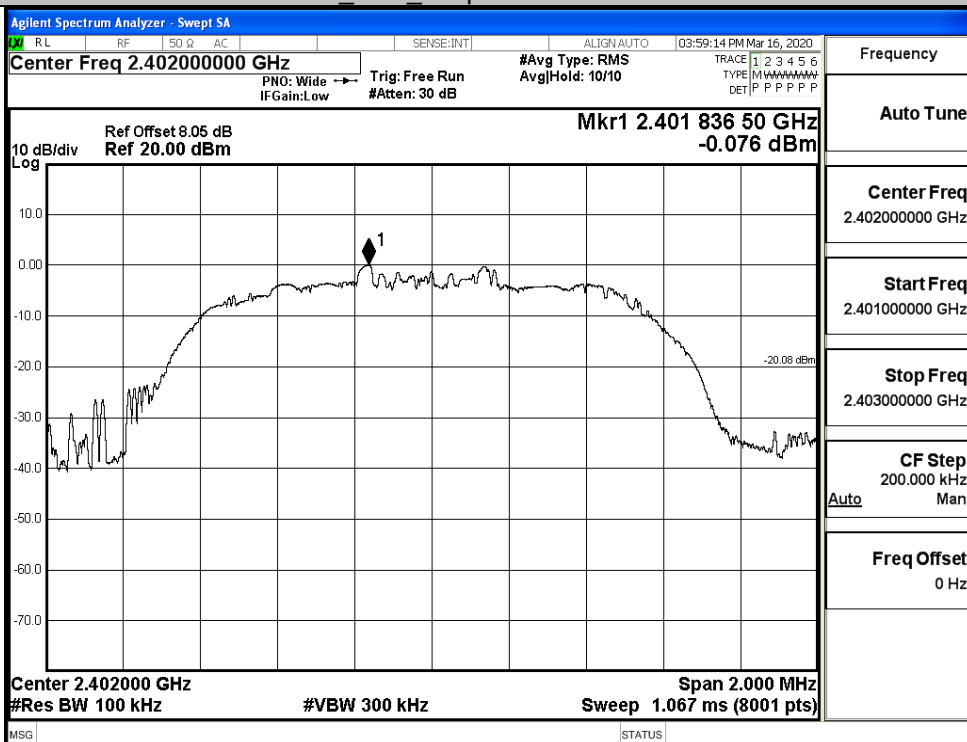


Puw

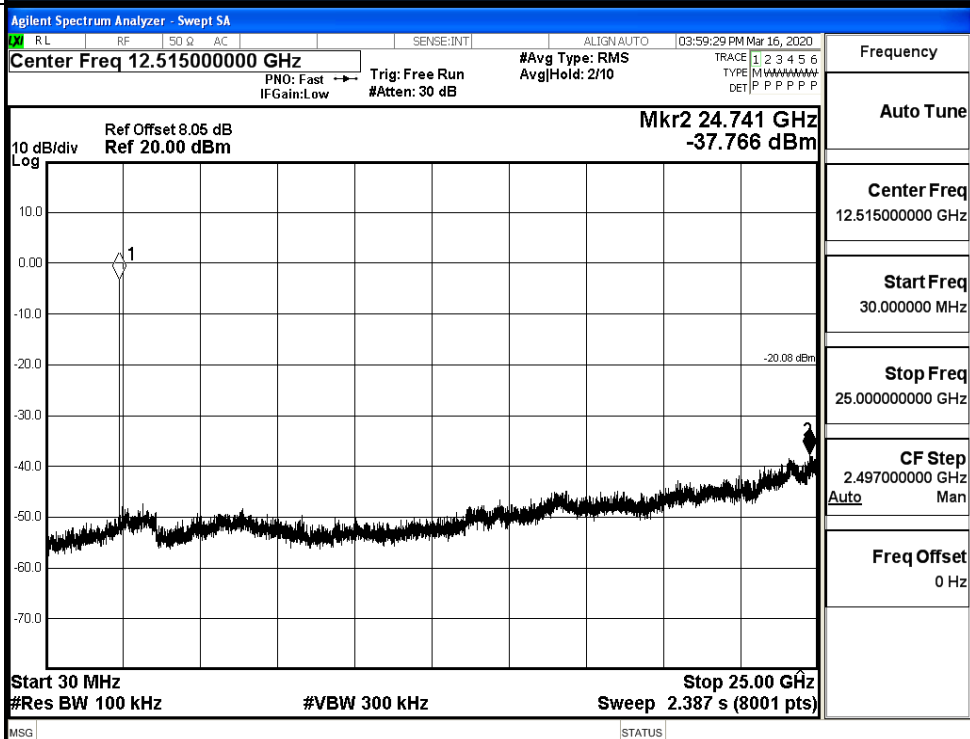


8DPSK_LCH_Graphs

Pref

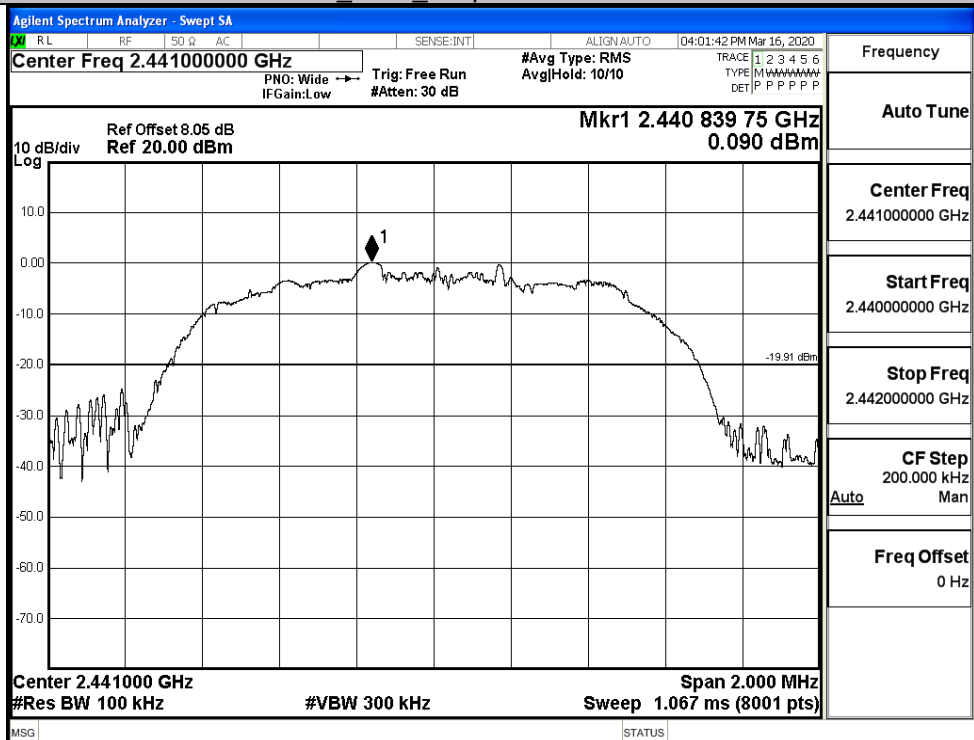


Puw

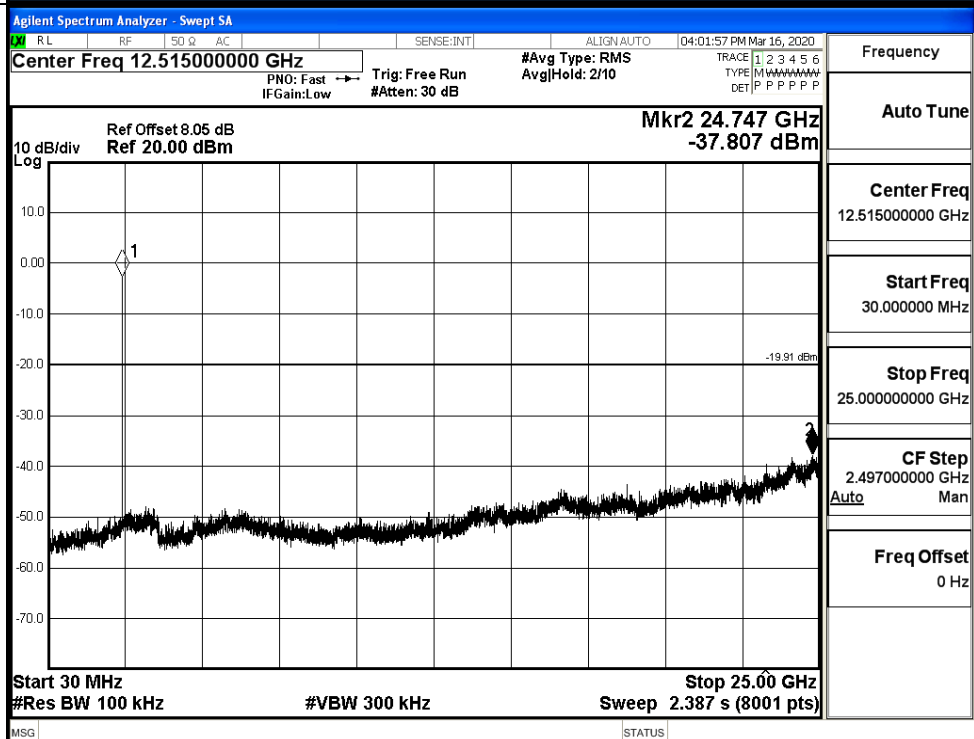


8DPSK_MCH_Graphs

Pref

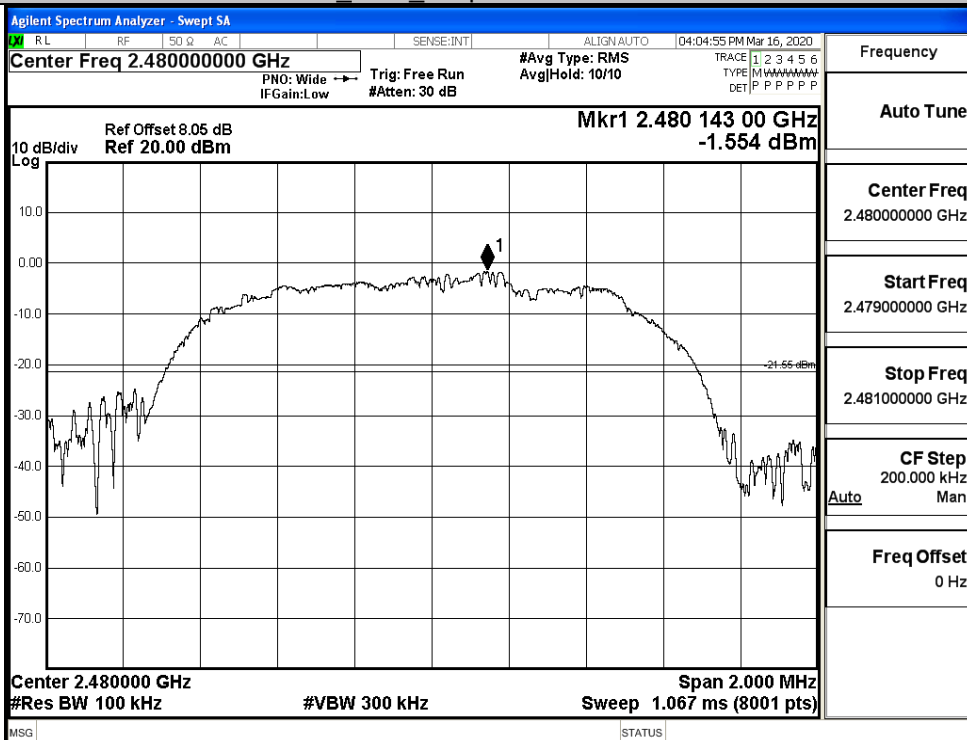


Puw

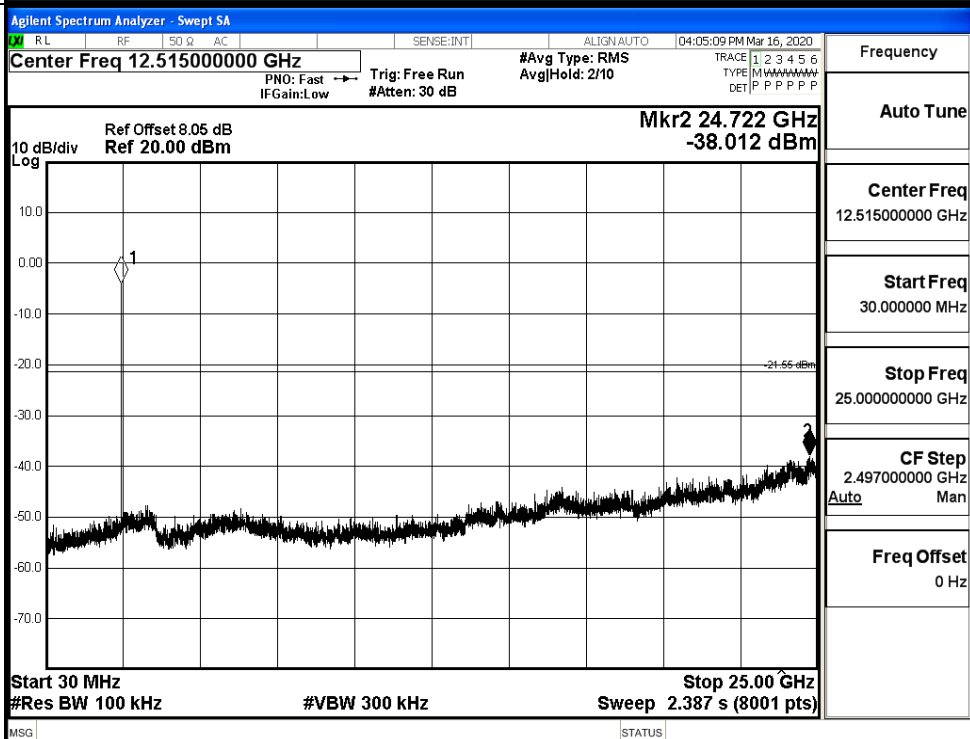


8DPSK_HCH_Graphs

Pref



Puw

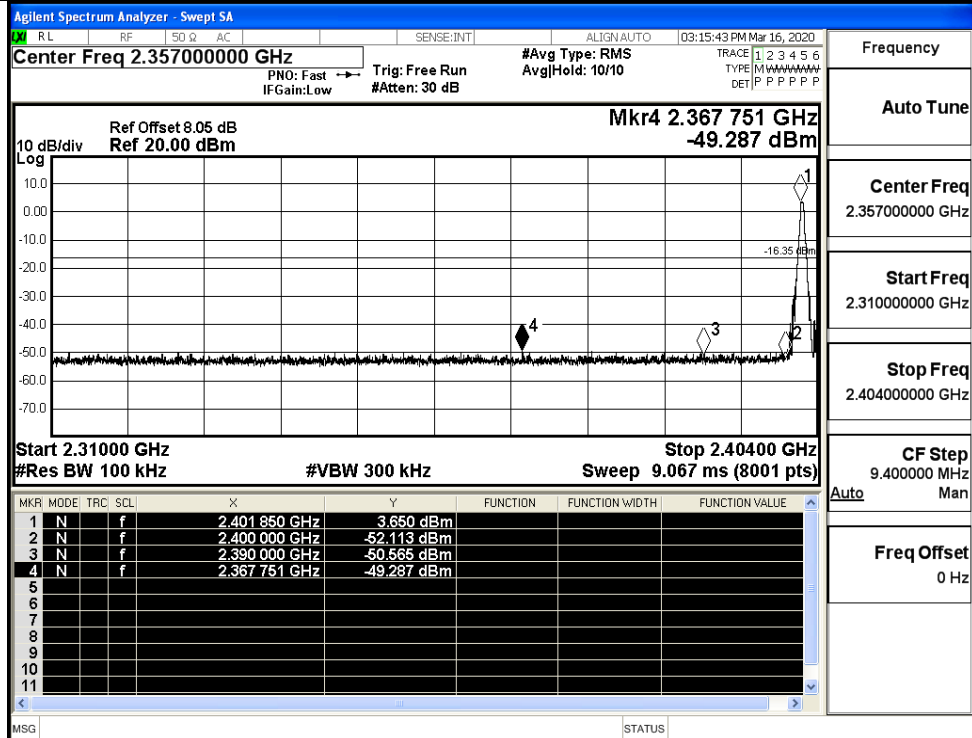


A.7 Band-edge for RF Conducted Emissions

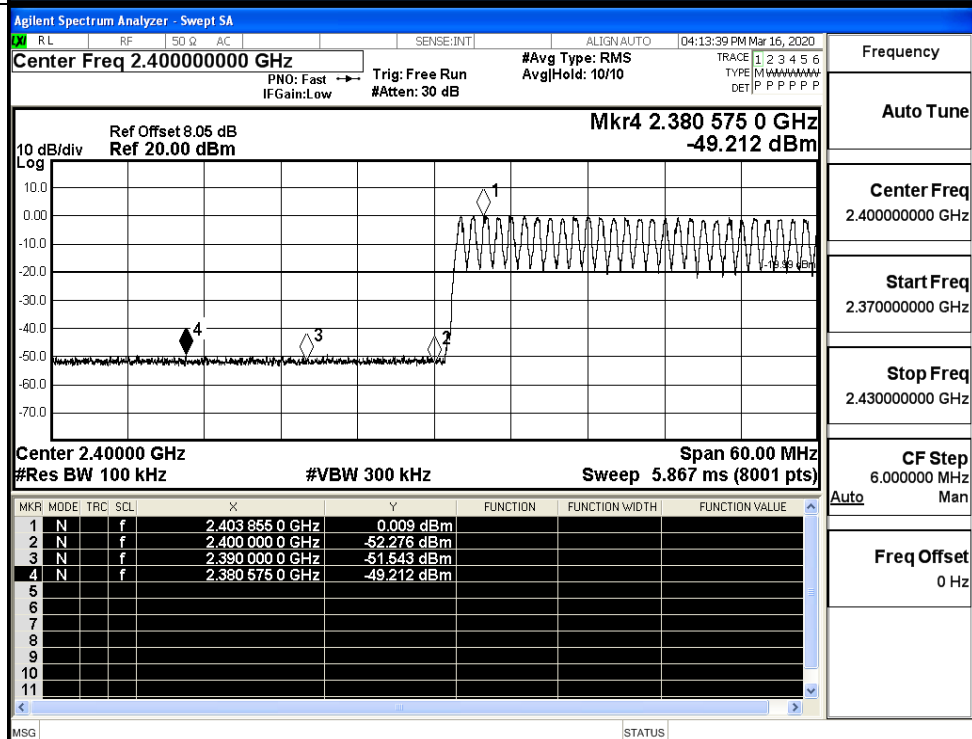
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.650	Off	-49.287	-16.35	PASS
			0.009	On	-49.212	-19.99	PASS
	HCH	2480	0.430	Off	-48.749	-19.57	PASS
			-2.129	On	-48.342	-22.13	PASS
$\pi/4$ DQPSK	LCH	2402	-0.070	Off	-49.242	-20.07	PASS
			0.136	On	-48.628	-19.86	PASS
	HCH	2480	-1.033	Off	-49.190	-21.03	PASS
			-2.396	On	-48.557	-22.4	PASS
8DPSK	LCH	2402	-0.869	Off	-49.074	-20.87	PASS
			-16.026	On	-48.464	-36.03	PASS
	HCH	2480	-0.804	Off	-48.649	-20.8	PASS
			-15.010	On	-48.247	-35.01	PASS

Test Graphs

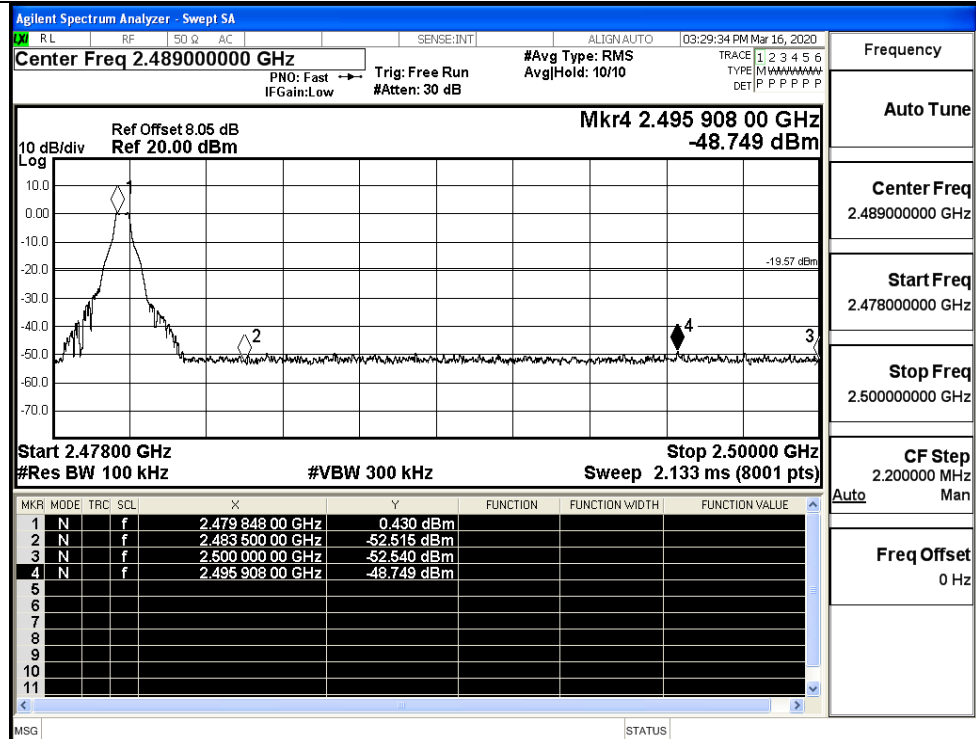
GFSK/LCH/No Hop



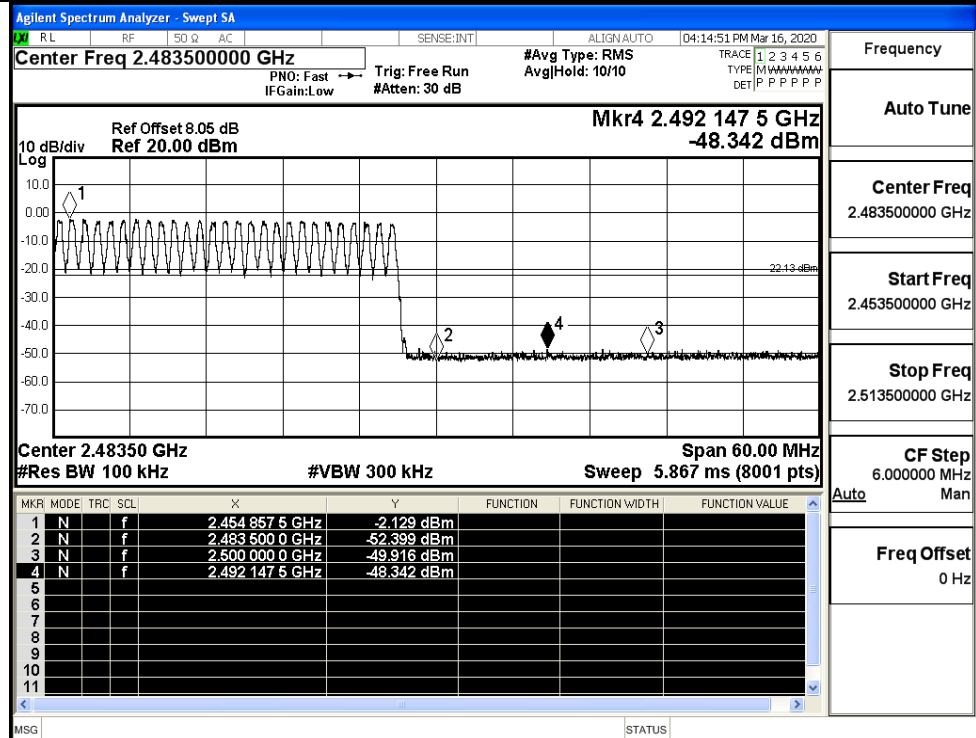
GFSK/LCH/Hop



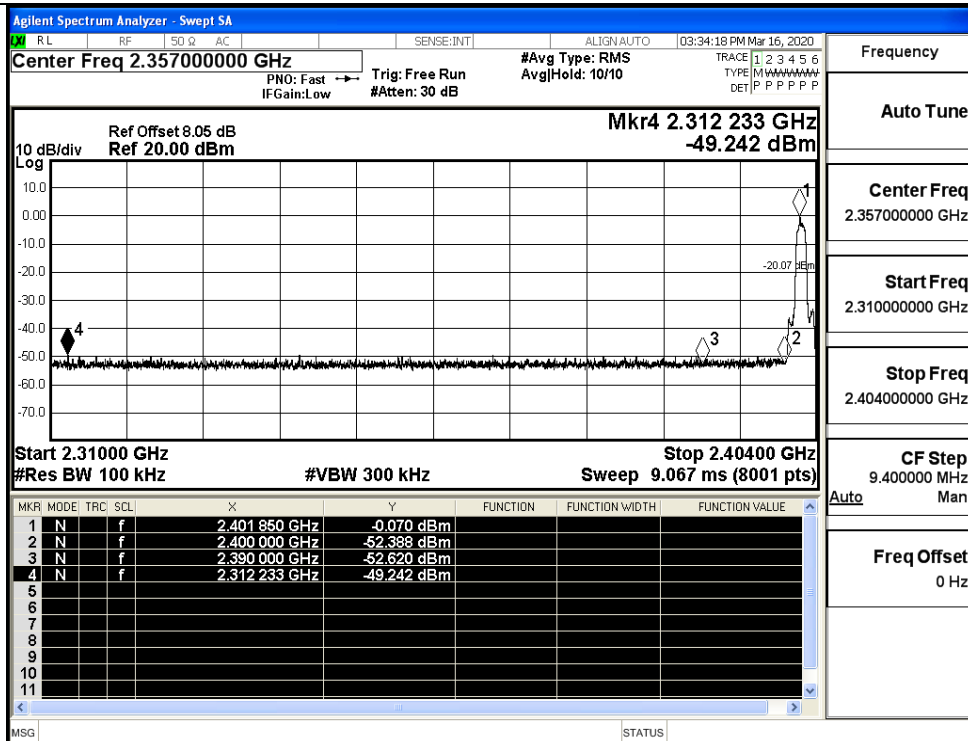
GFSK/HCH/No Hop



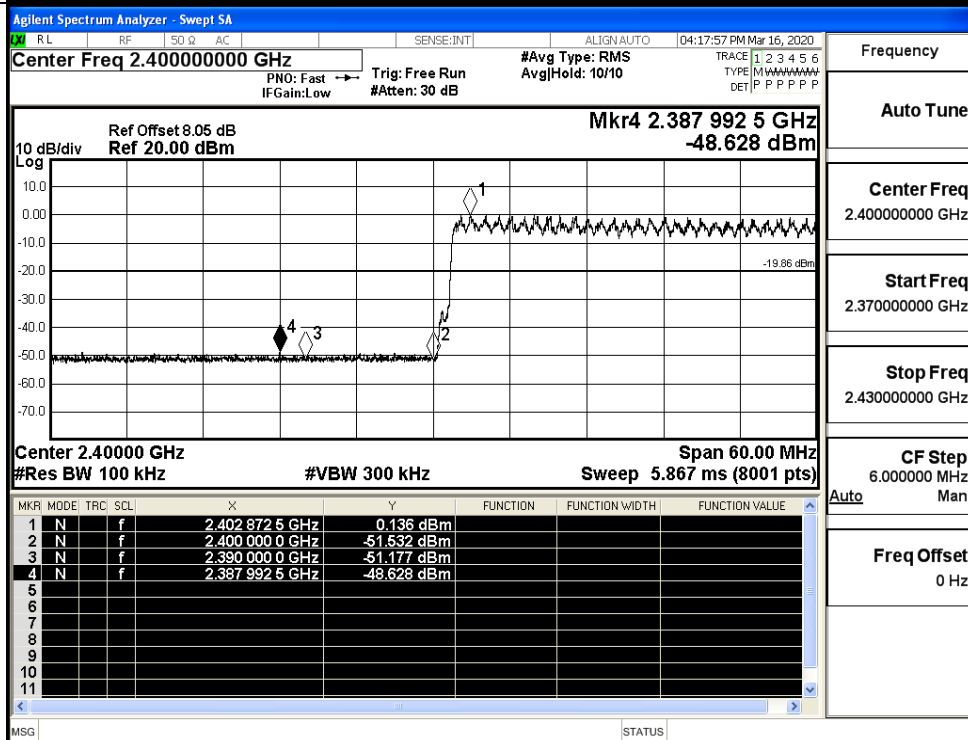
GFSK/HCH/Hop



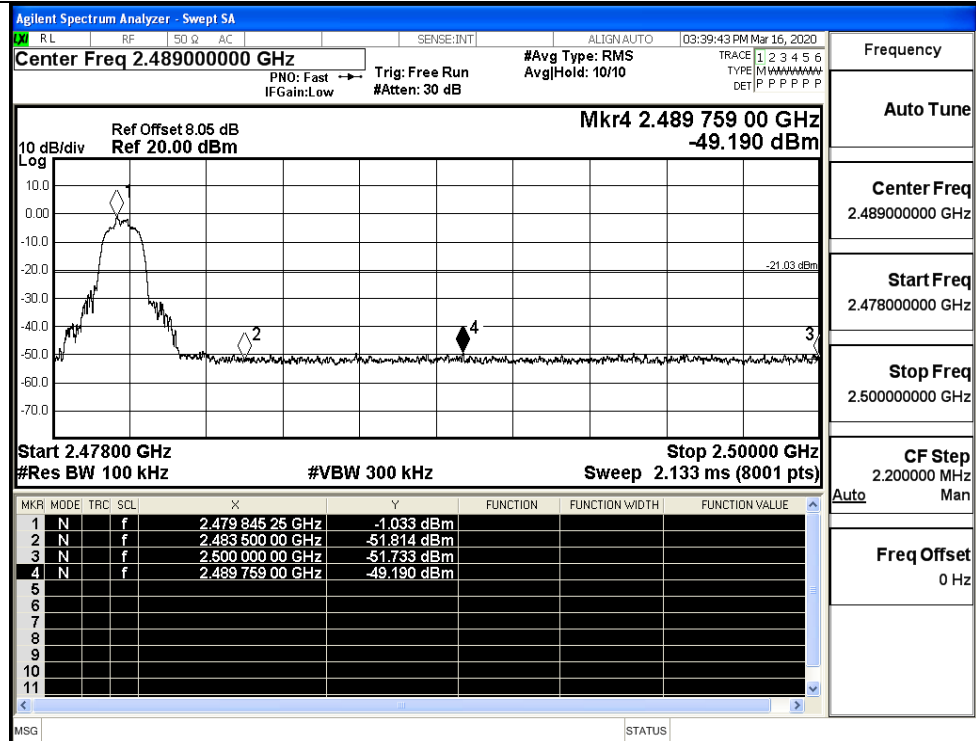
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

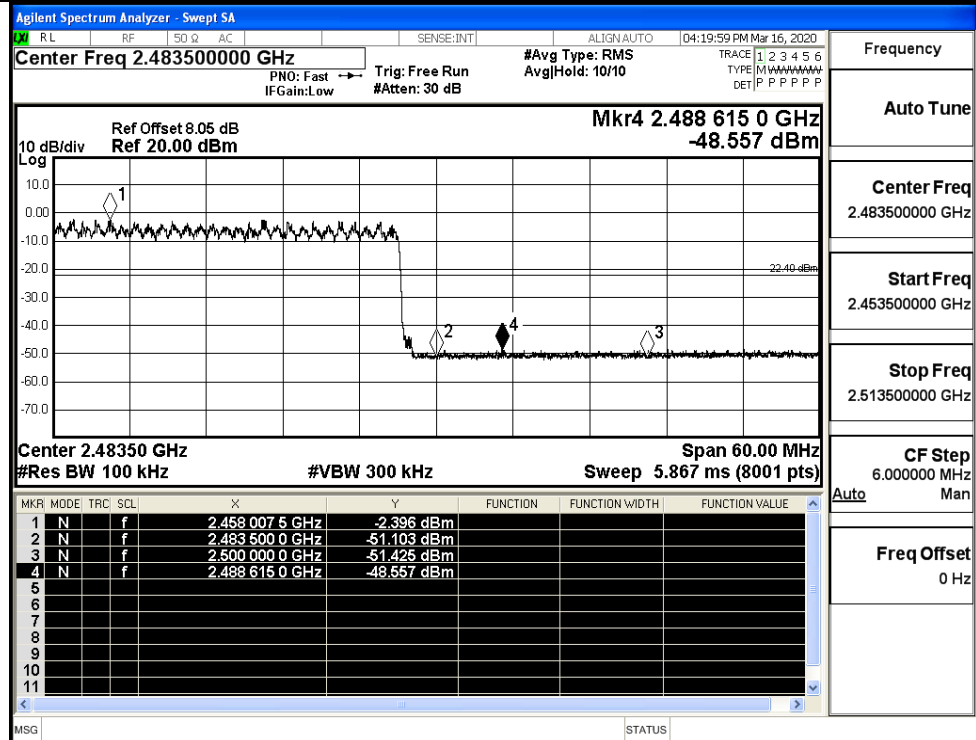
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

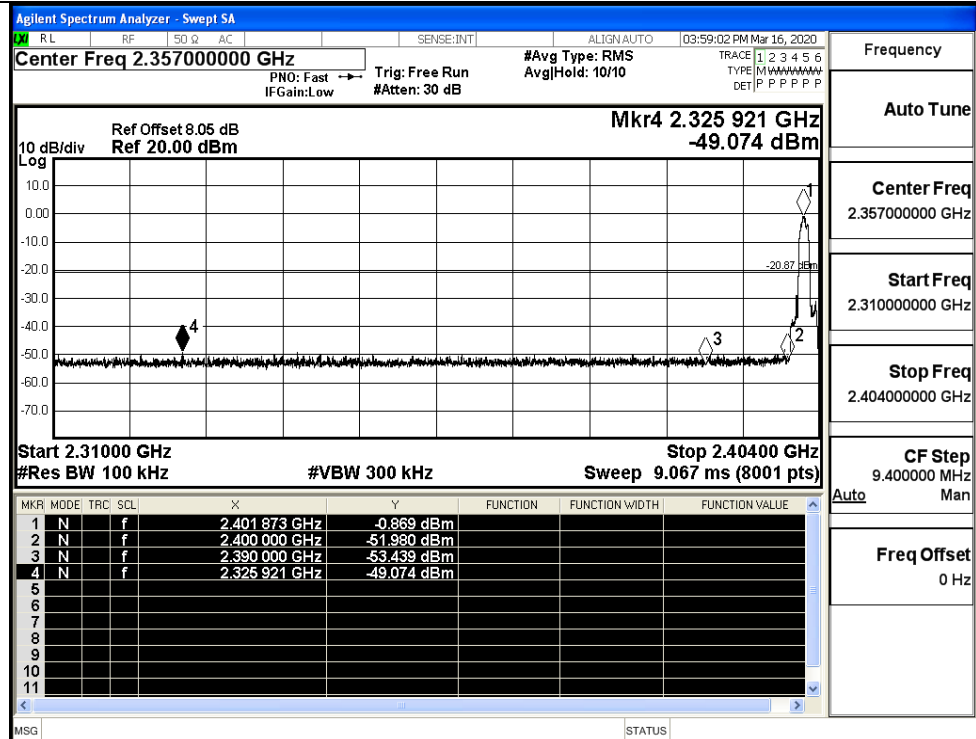
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

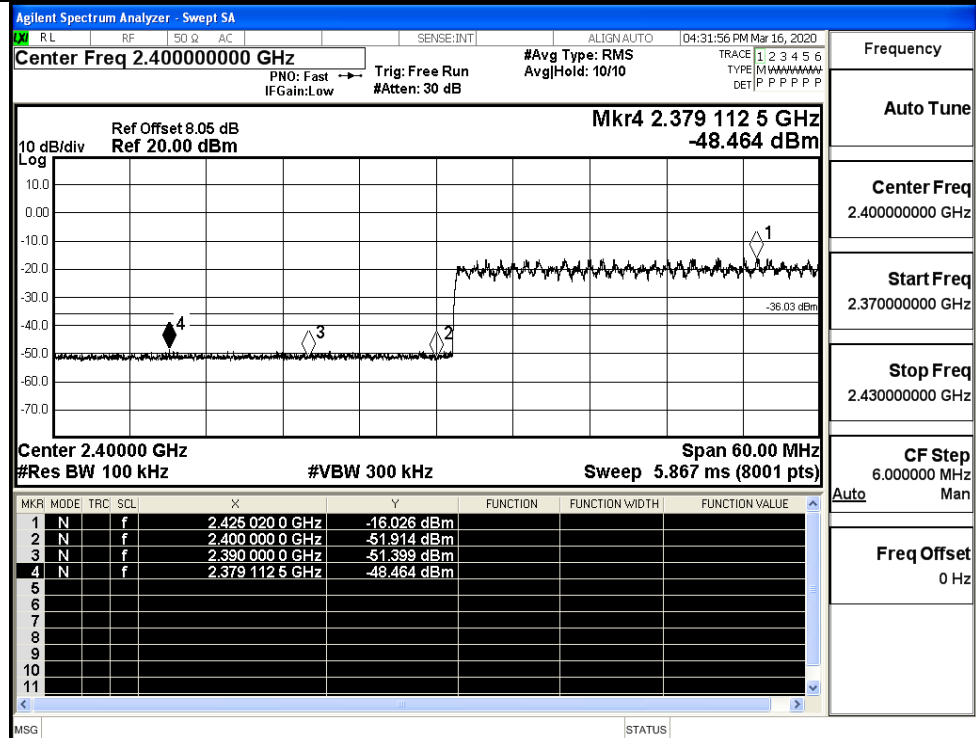
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

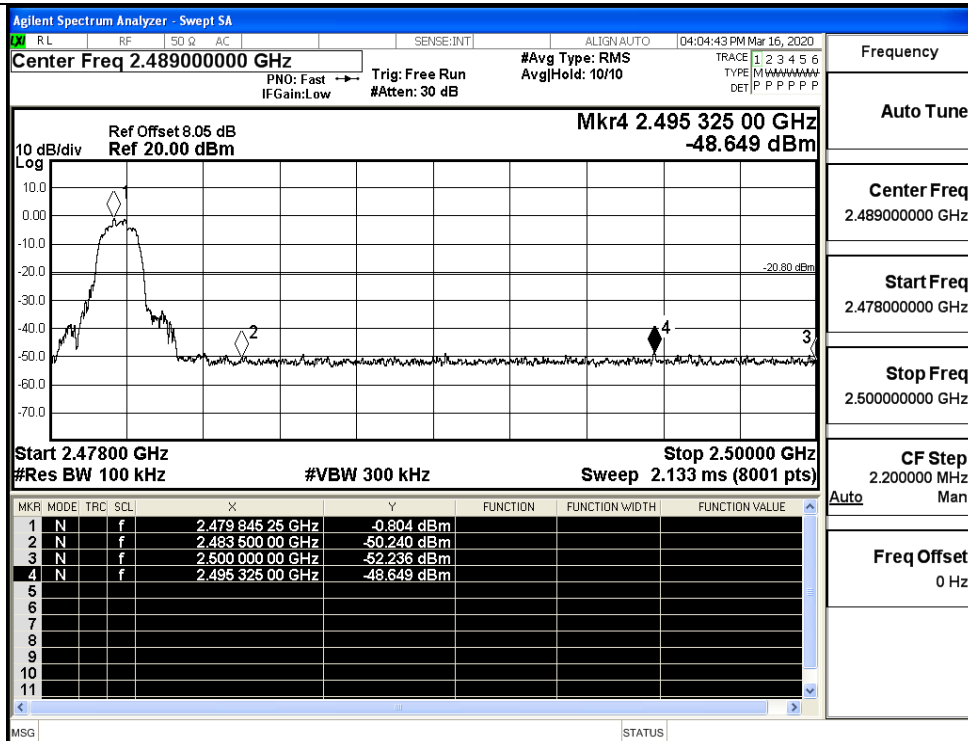
8DPSK/LCH/No Hop



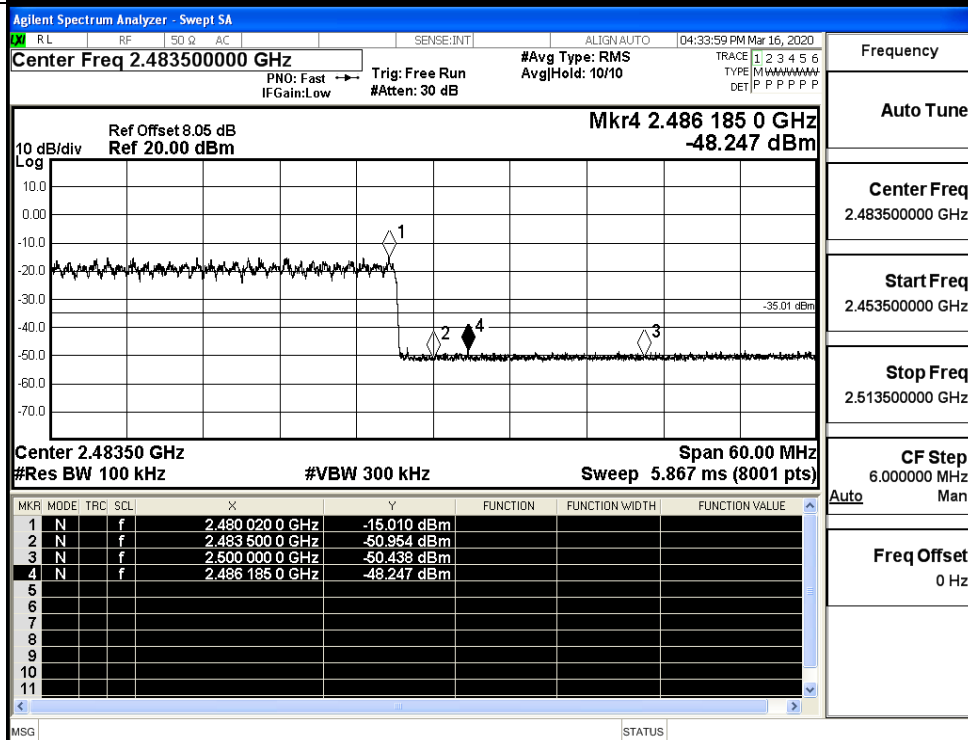
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



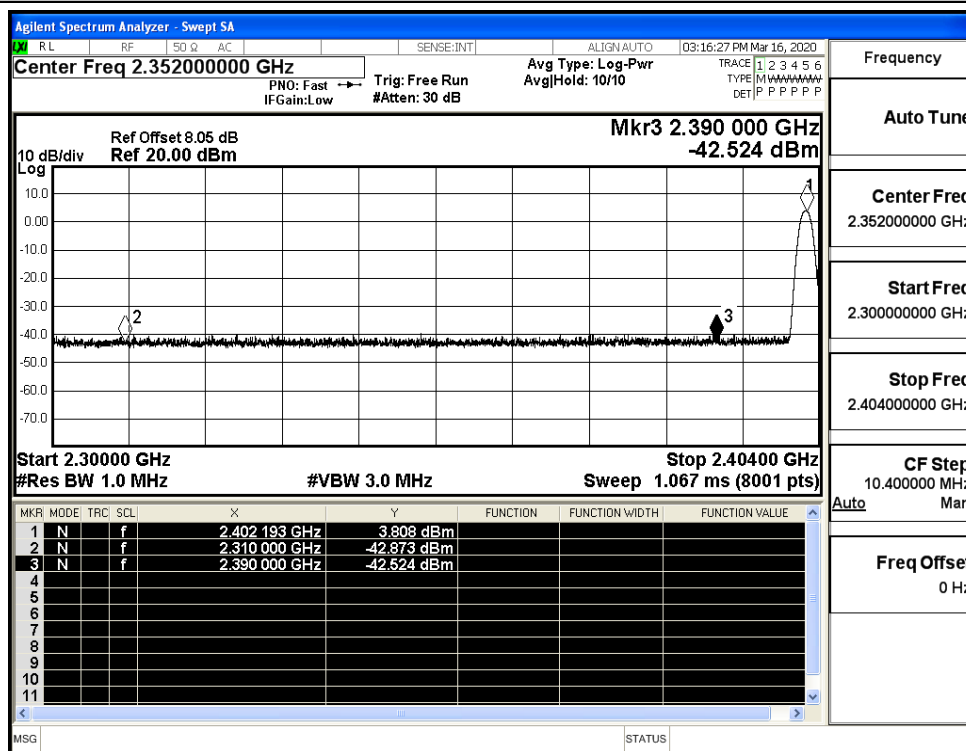
8DPSK/HCH/Hop



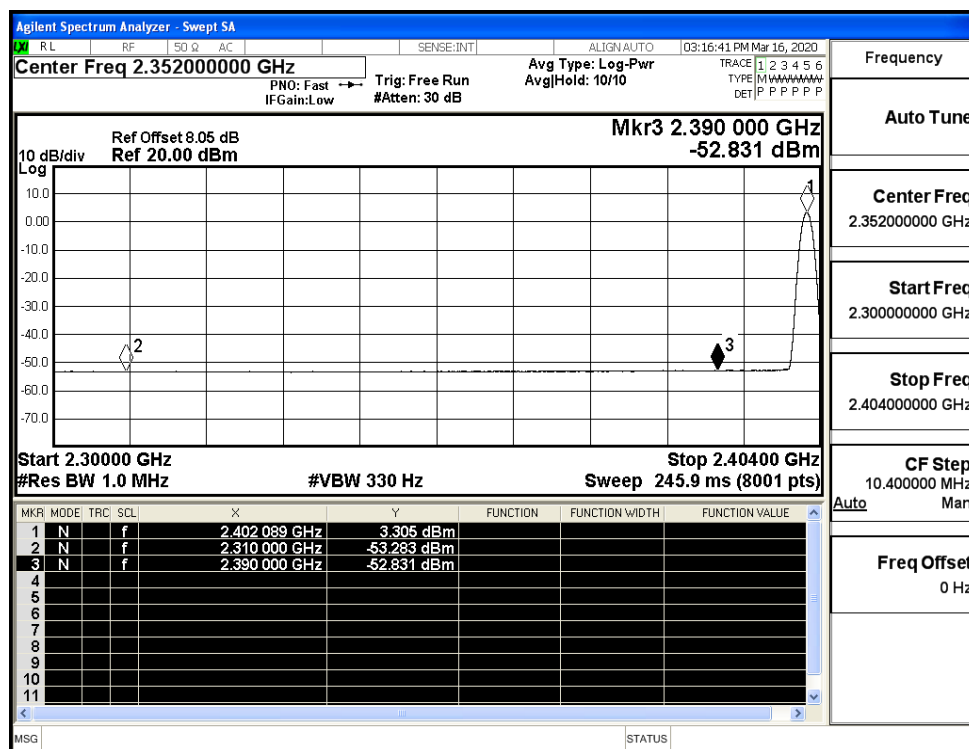
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.87	2.0	0	54.36	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	43.95	AV	54	PASS
	Off	2390.0	-42.52	2.0	0	54.71	PEAK	74	PASS
	Off	2390.0	-52.83	2.0	0	44.40	AV	54	PASS
	Off	2483.5	-42.39	2.0	0	54.84	PEAK	74	PASS
	Off	2483.5	-52.30	2.0	0	44.93	AV	54	PASS
	Off	2500.0	-41.83	2.0	0	55.40	PEAK	74	PASS
	Off	2500.0	-52.28	2.0	0	44.95	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-41.62	2.0	0	55.61	PEAK	74	PASS
	Off	2310.0	-53.30	2.0	0	43.93	AV	54	PASS
	Off	2390.0	-42.77	2.0	0	54.46	PEAK	74	PASS
	Off	2390.0	-52.89	2.0	0	44.34	AV	54	PASS
	Off	2483.5	-41.69	2.0	0	55.54	PEAK	74	PASS
	Off	2483.5	-52.33	2.0	0	44.90	AV	54	PASS
	Off	2500.0	-41.78	2.0	0	55.45	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	44.89	AV	54	PASS
8DPSK	Off	2310.0	-43.12	2.0	0	54.11	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-43.16	2.0	0	54.07	PEAK	74	PASS
	Off	2390.0	-52.94	2.0	0	44.29	AV	54	PASS
	Off	2483.5	-43.01	2.0	0	54.22	PEAK	74	PASS
	Off	2483.5	-52.16	2.0	0	45.07	AV	54	PASS
	Off	2500.0	-40.96	2.0	0	56.27	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	44.89	AV	54	PASS

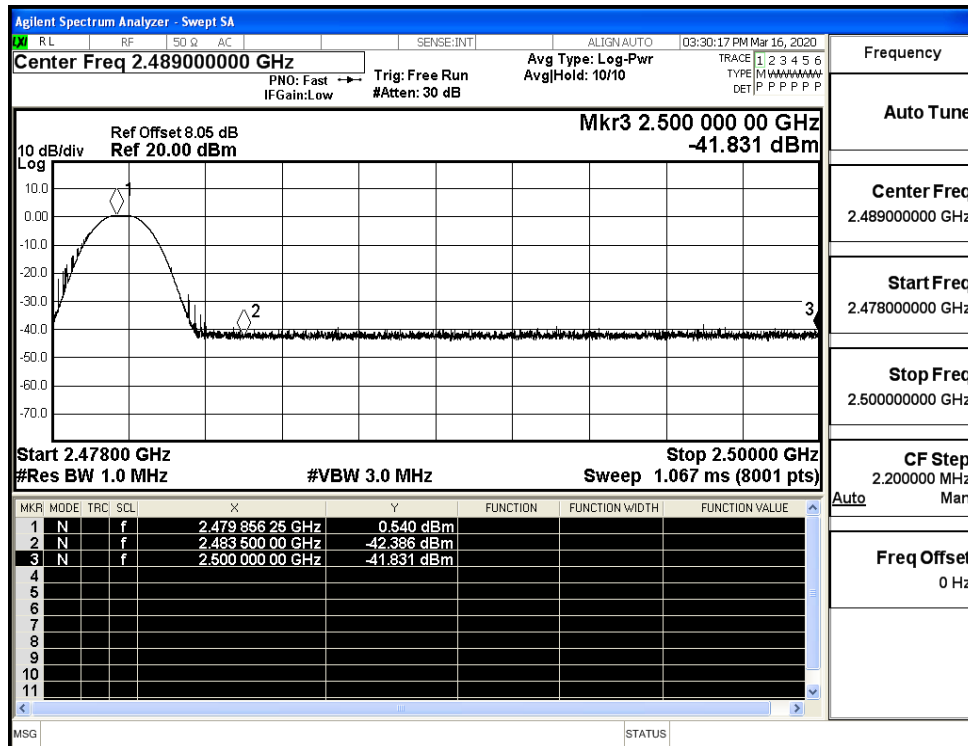
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



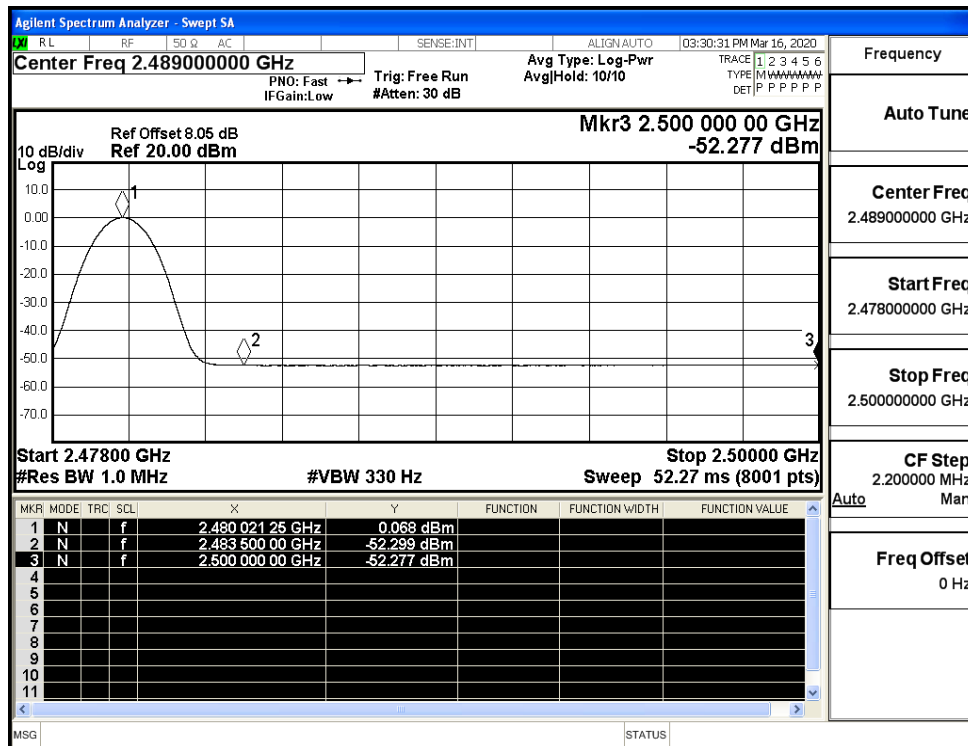
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

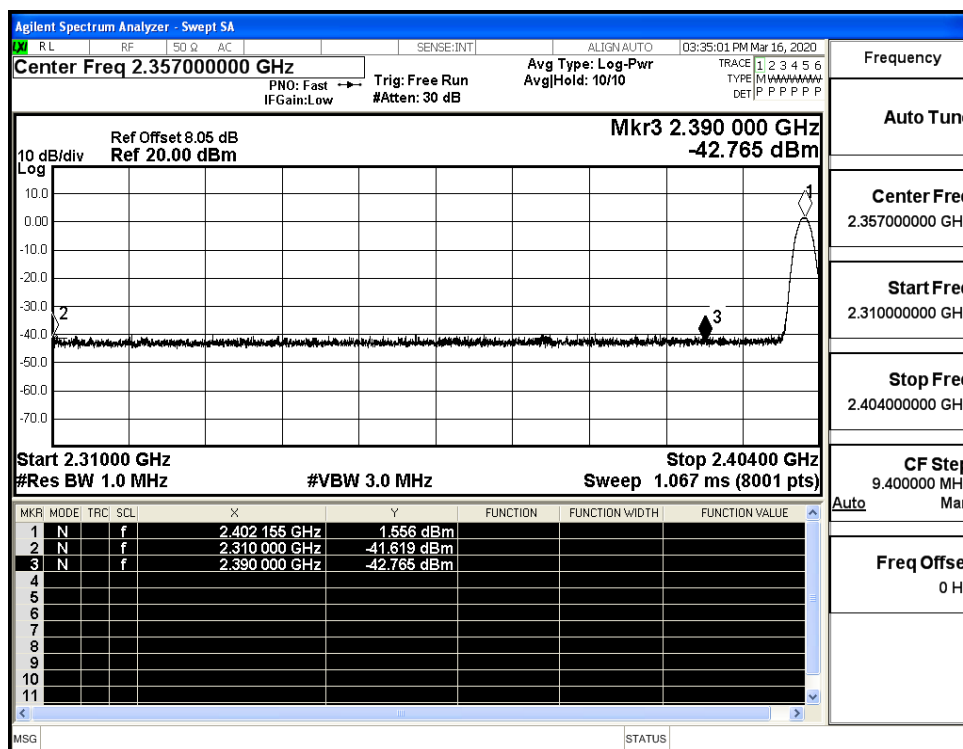
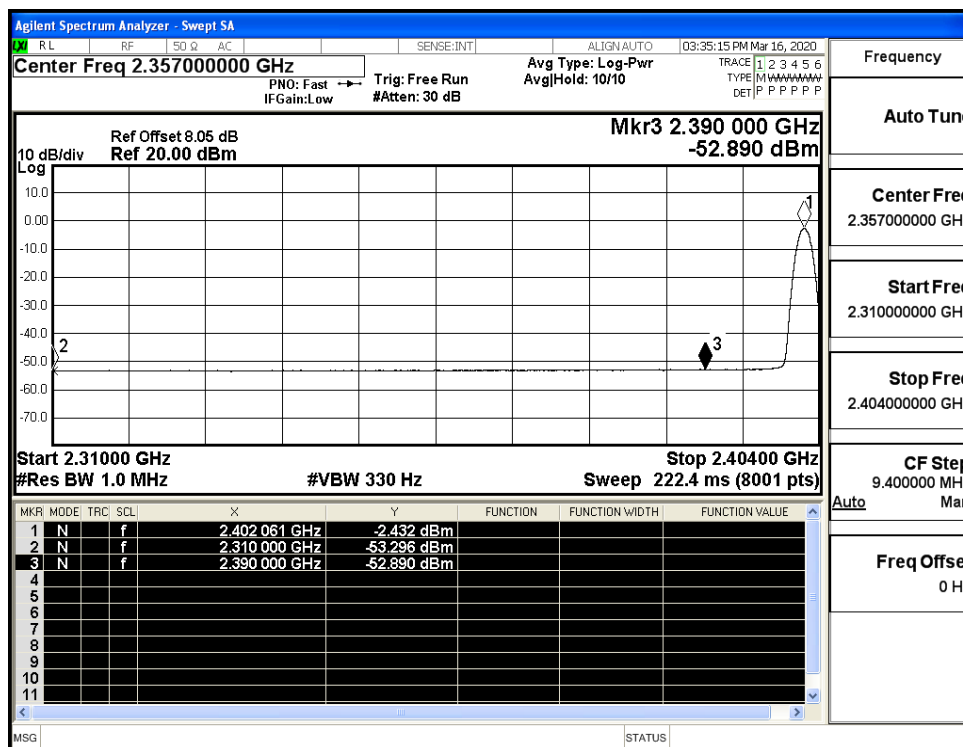


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

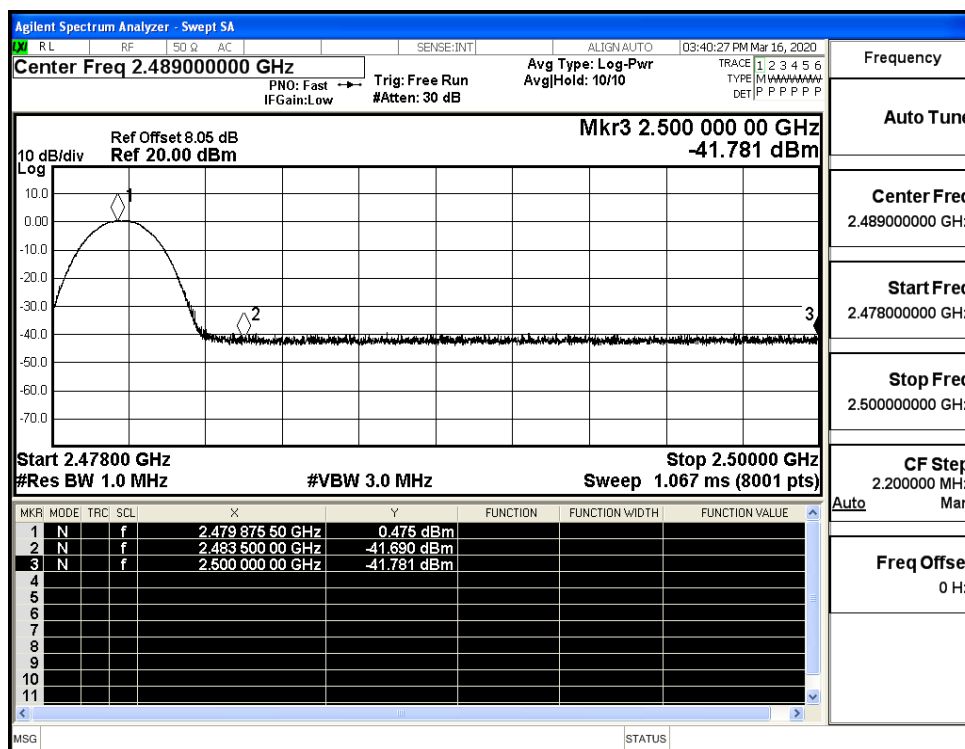


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

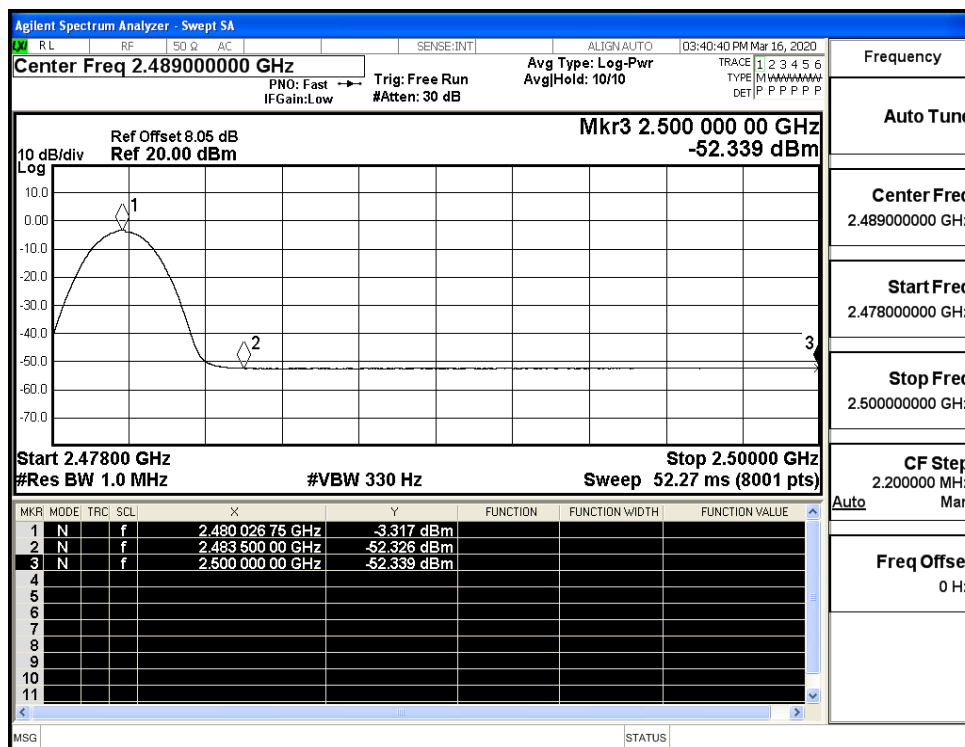


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

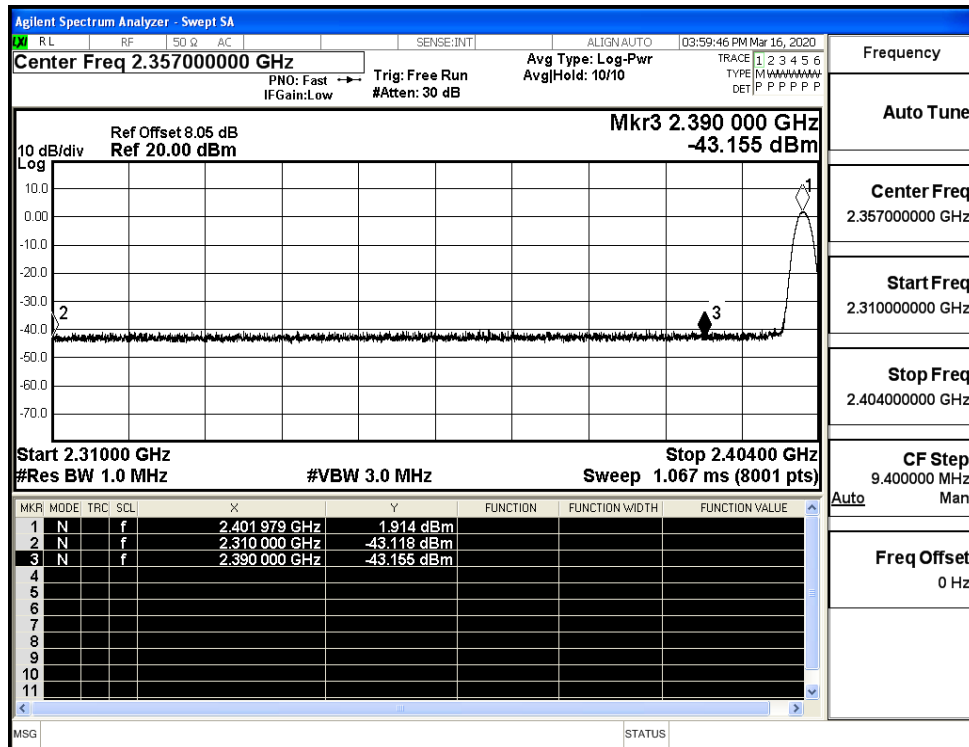
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



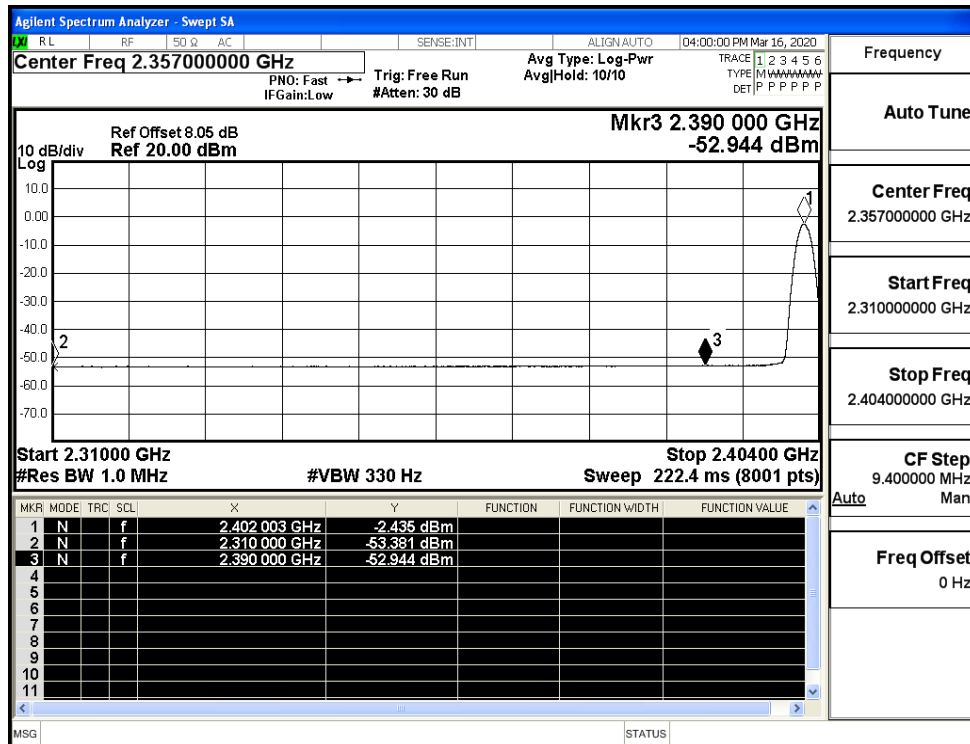
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



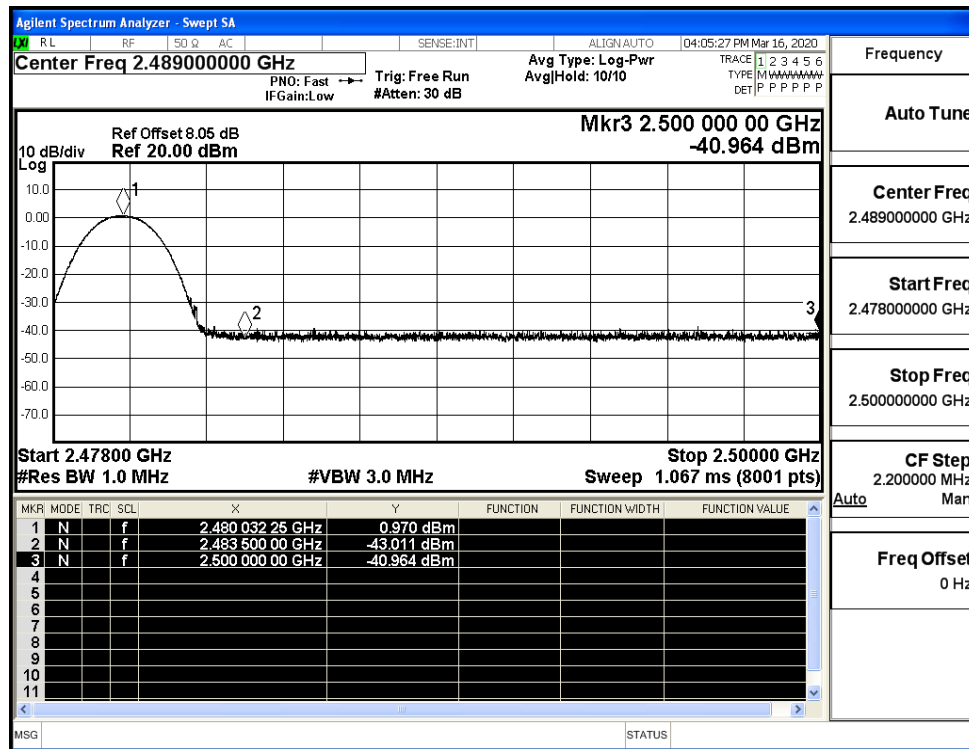
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

