

Appendix A

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

Product Name: MJ-80

Trade Mark: N/A

Test Model: MJ-80B

Environmental Conditions

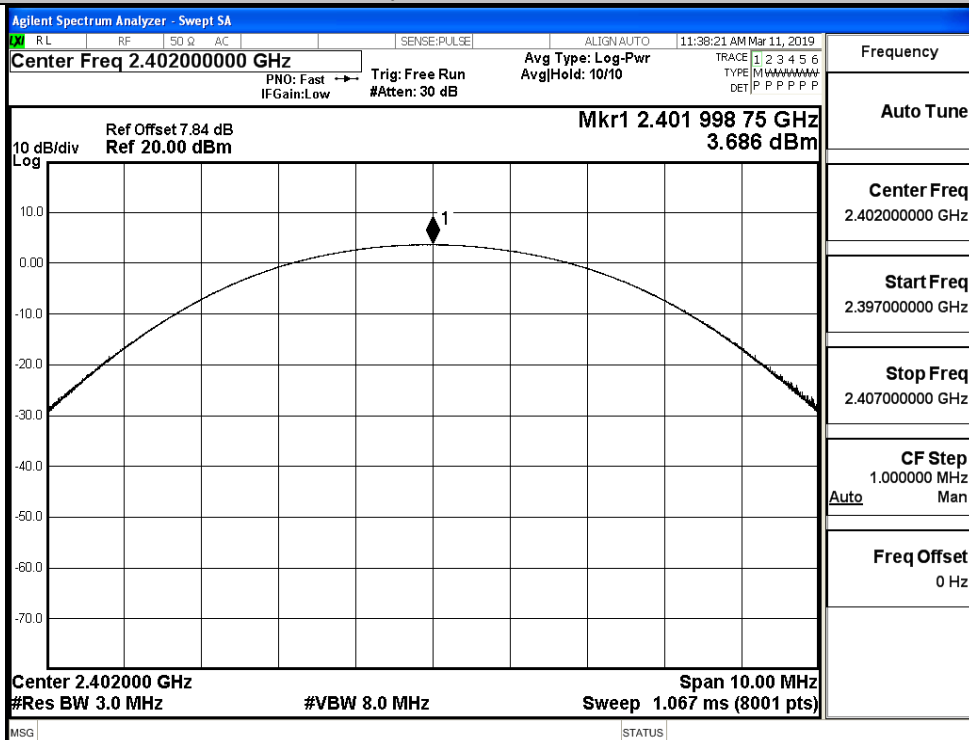
Temperature:	23.2 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Tom Liu

A.1 Maximum Conducted Peak Output Power

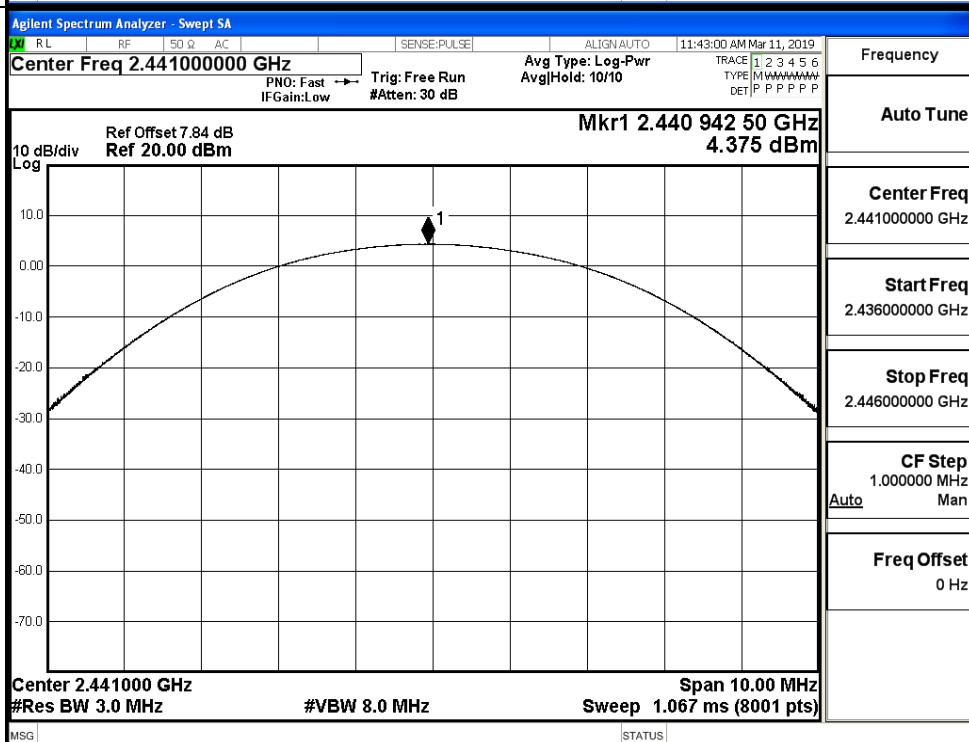
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.686	21	PASS
	MCH	4.375	21	PASS
	HCH	4.097	21	PASS
$\pi/4$ DQPSK	LCH	2.639	21	PASS
	MCH	3.615	21	PASS
	HCH	3.671	21	PASS
8DPSK	LCH	2.625	21	PASS
	MCH	3.998	21	PASS
	HCH	3.936	21	PASS

Test Graphs

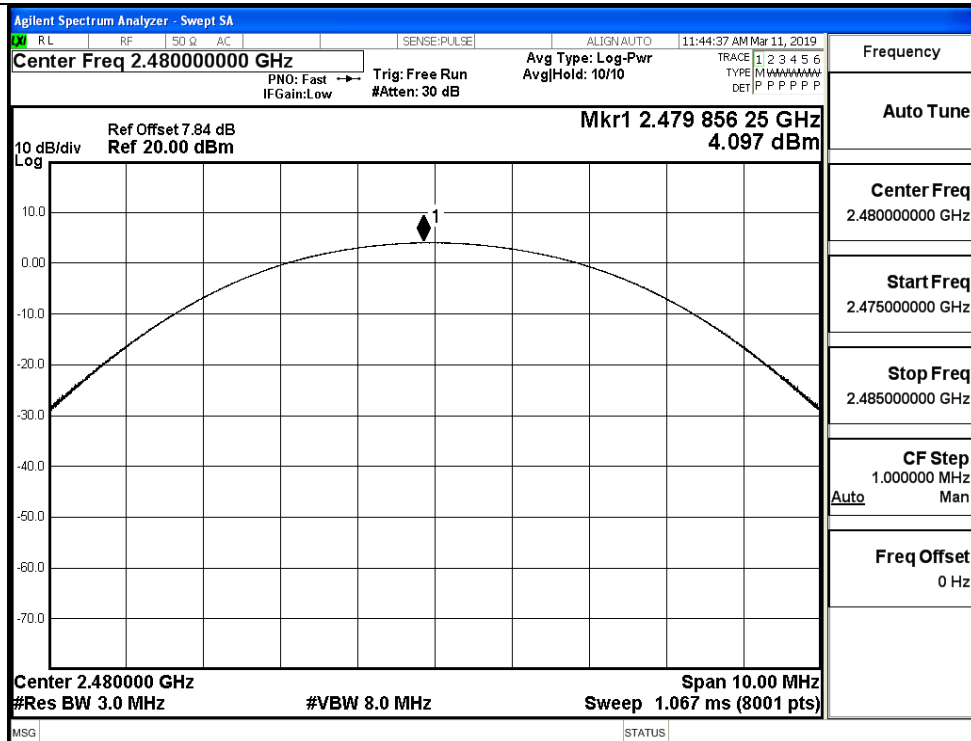
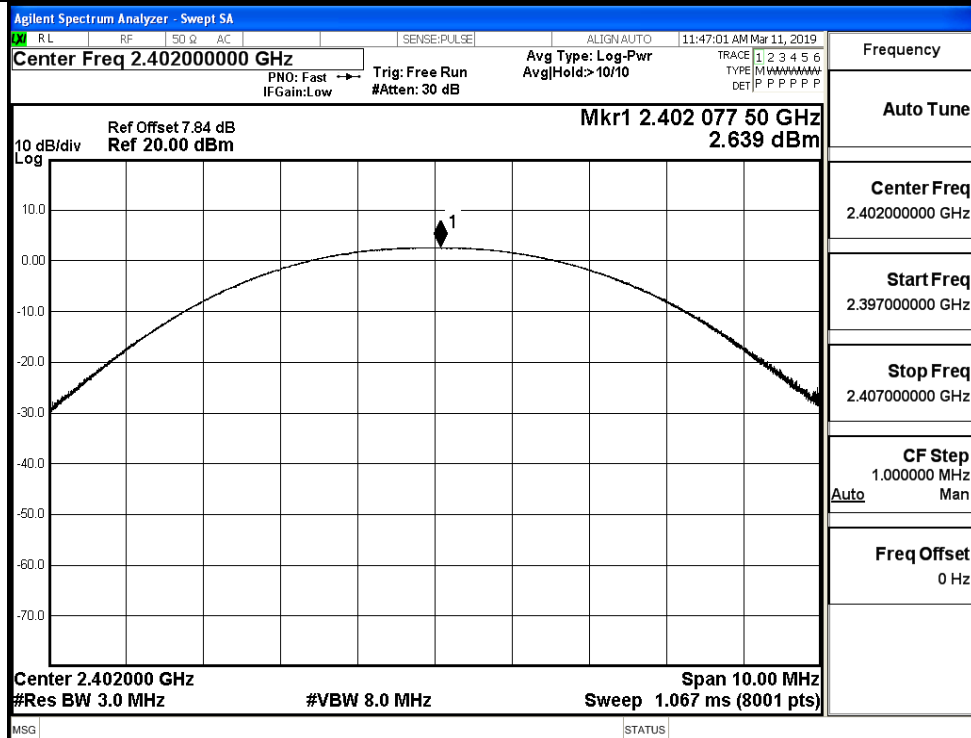
GFSK/LCH

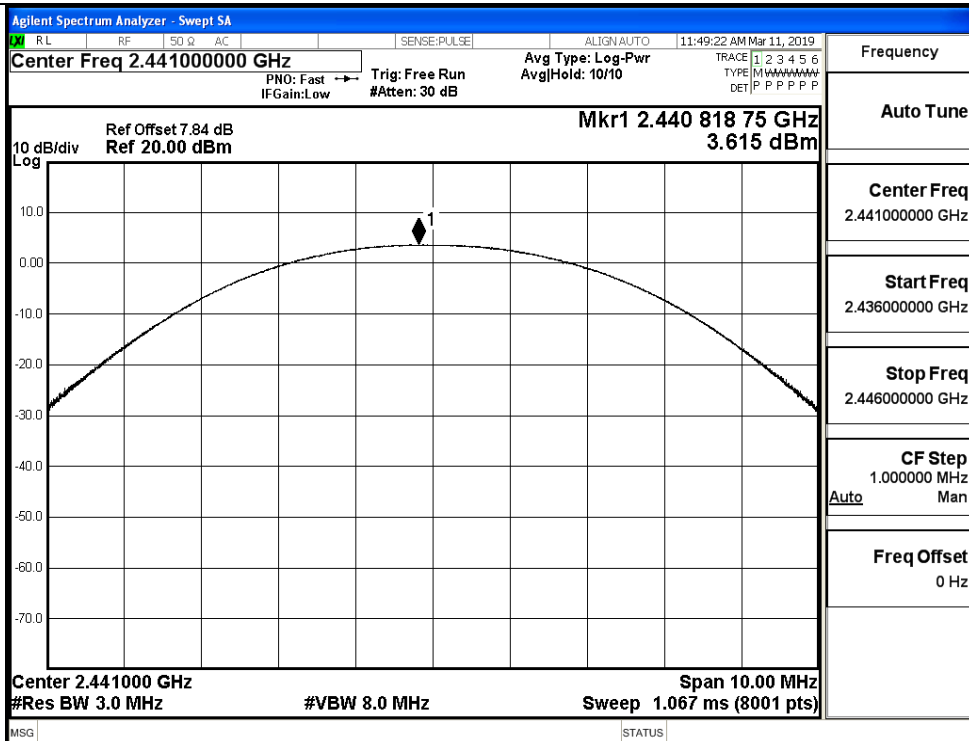
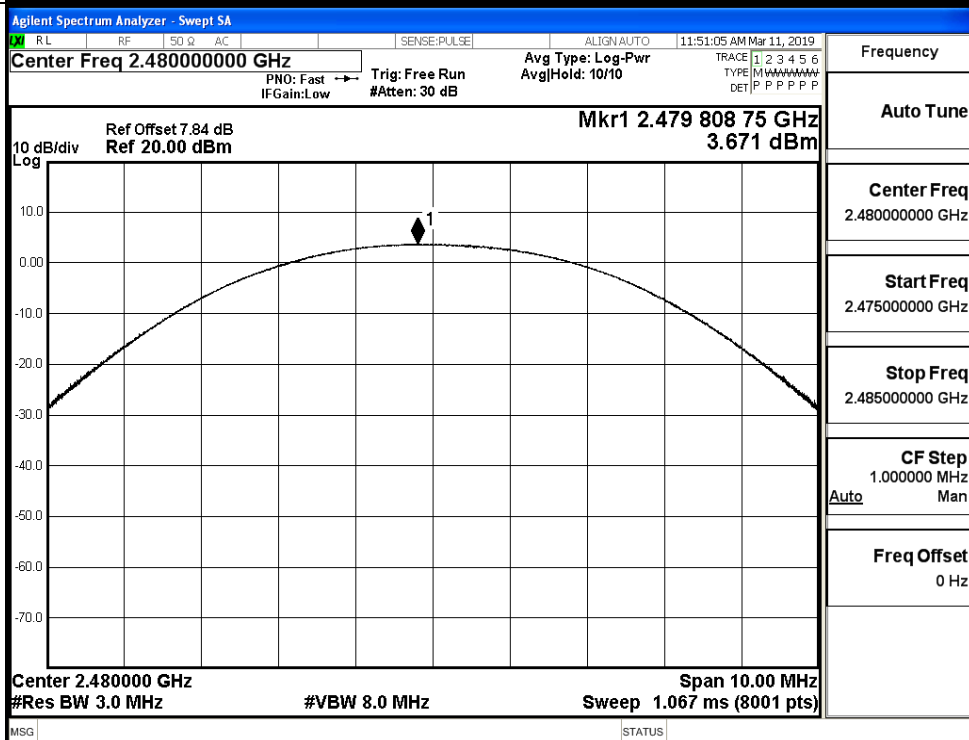


GFSK/MCH

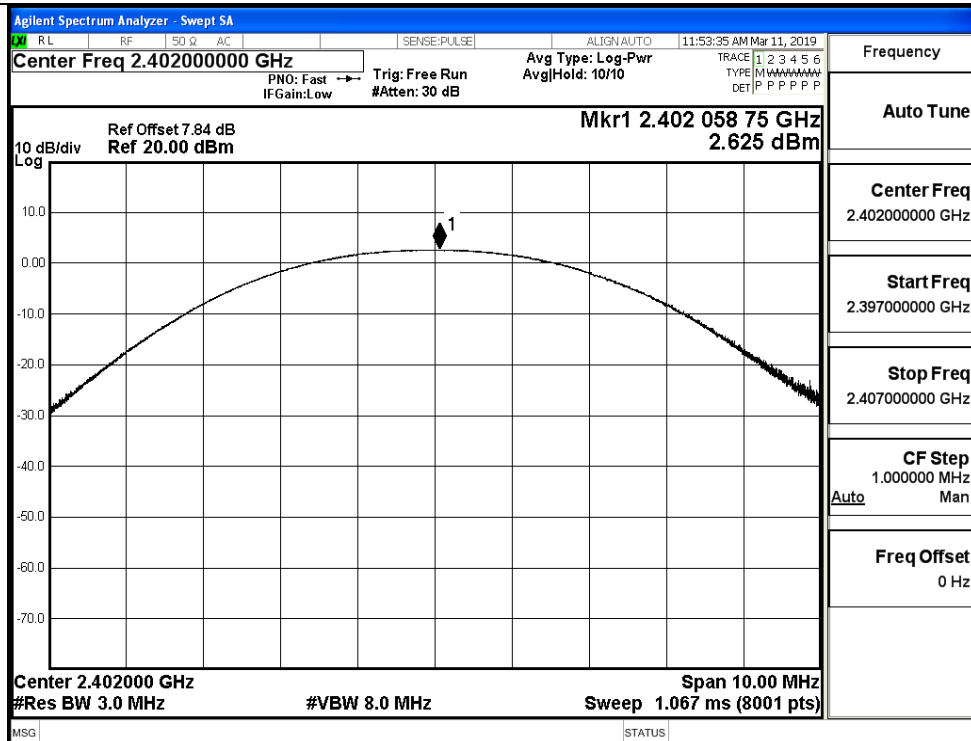


GFSK/HCH

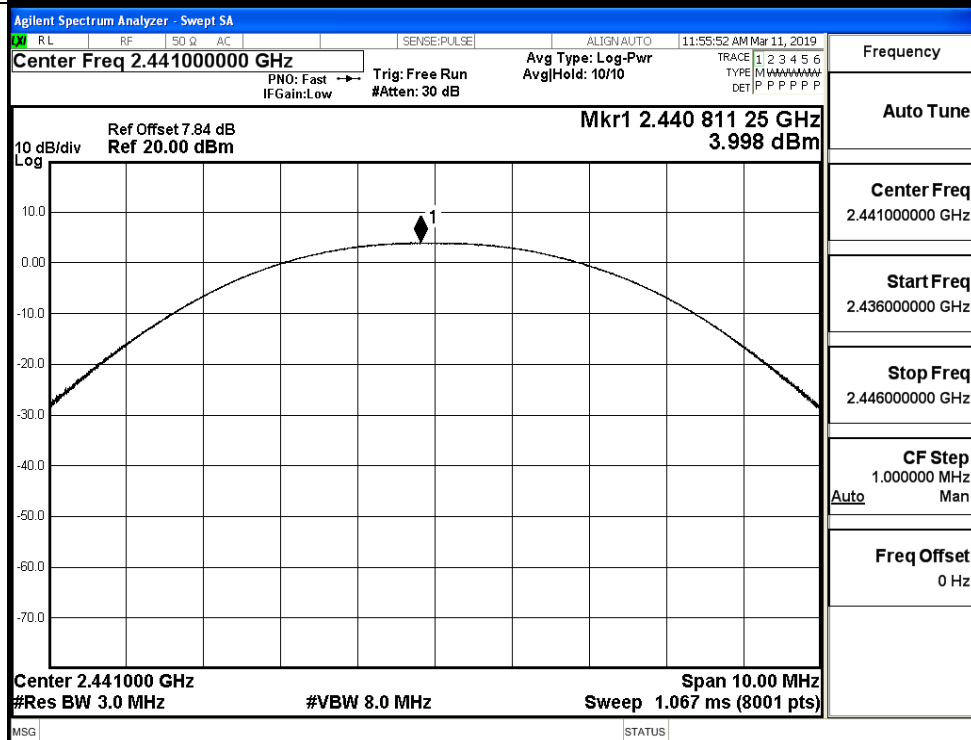
 π /4DQPSK/LCH

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

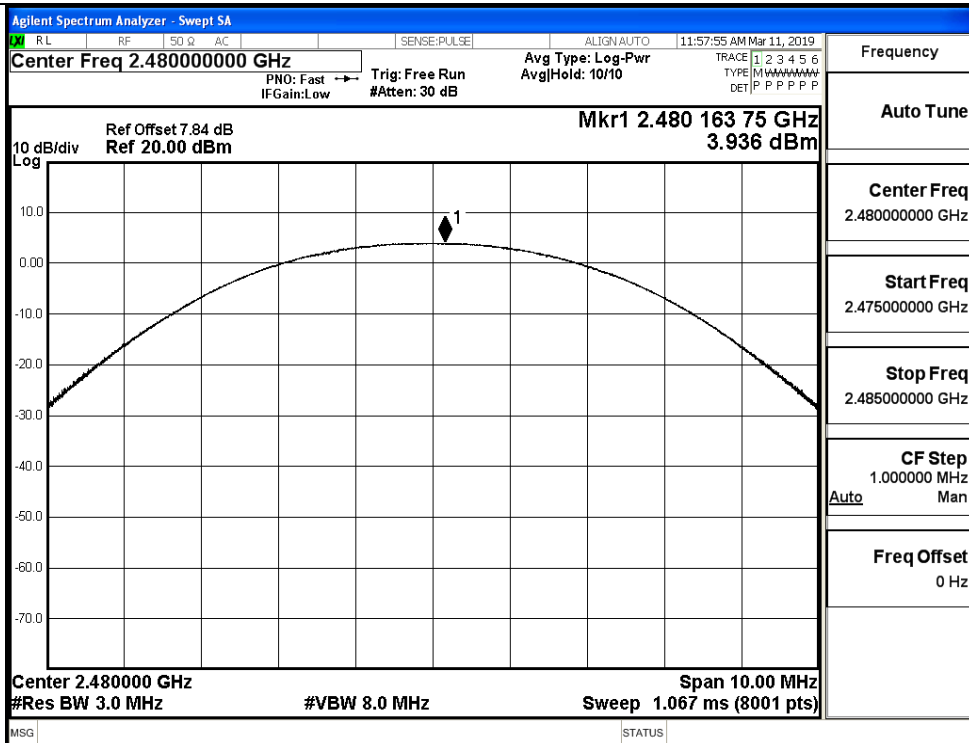
8DPSK/LCH



8DPSK/MCH



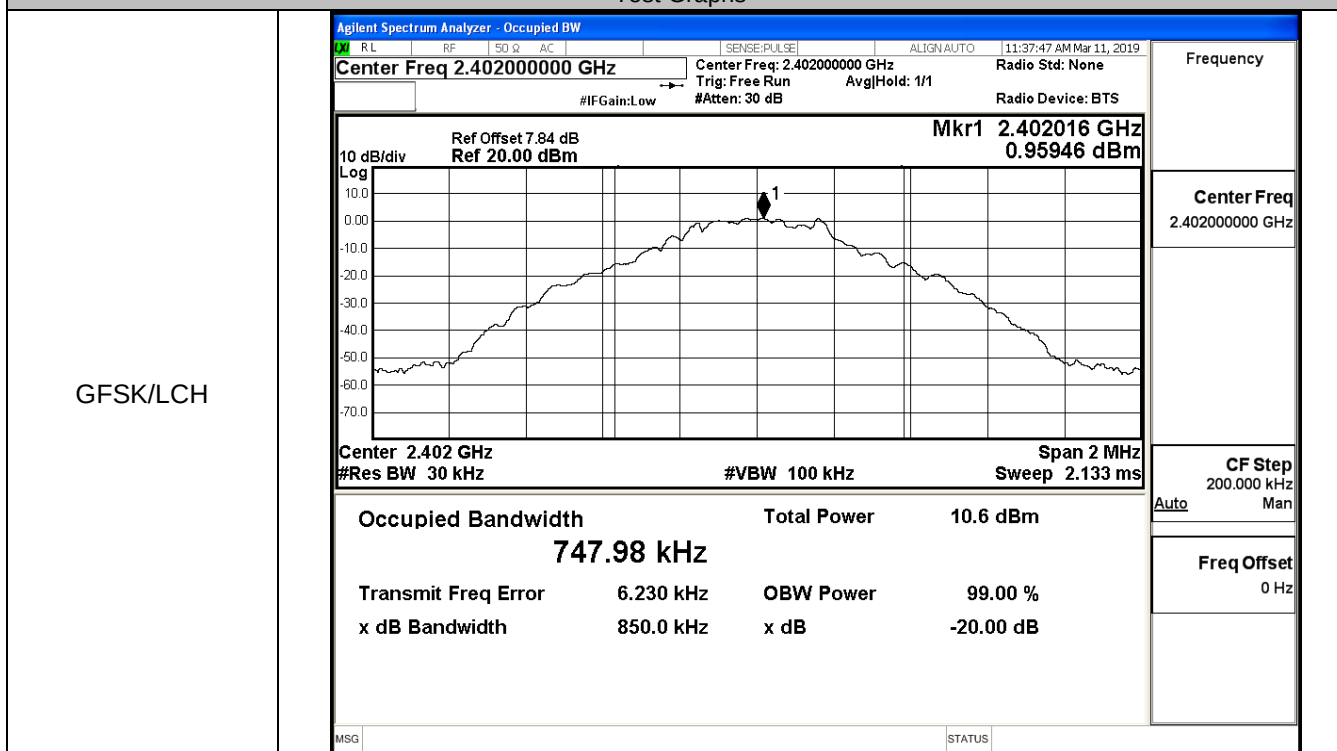
8DPSK/HCH



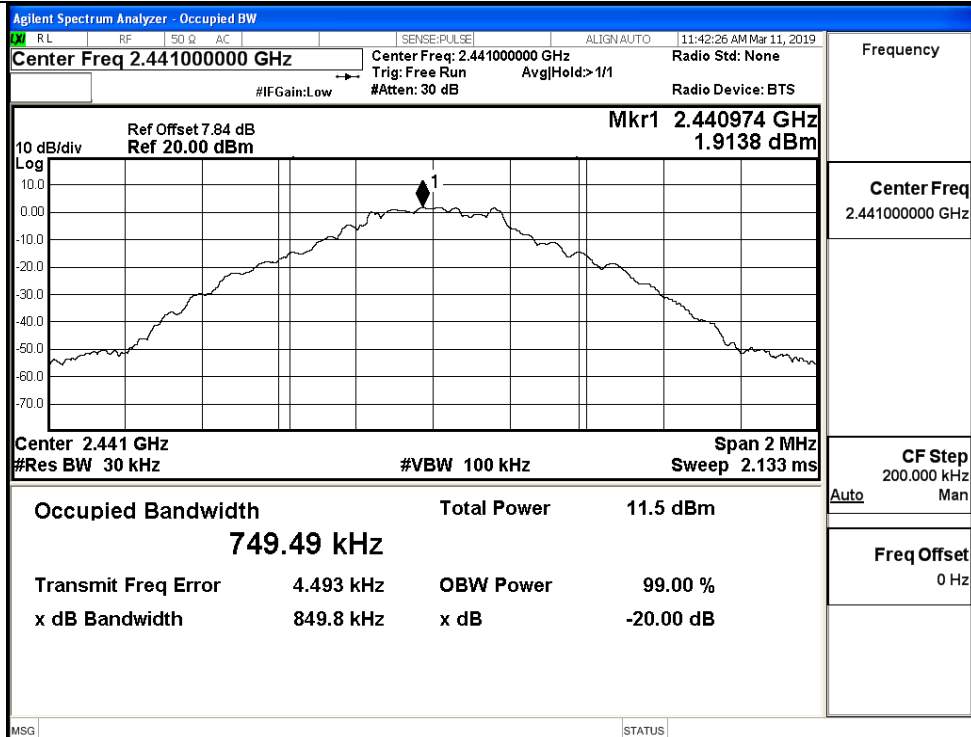
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.74798	0.8500	Not Specified	PASS
	MCH	0.74949	0.8498	Not Specified	PASS
	HCH	0.75335	0.8498	Not Specified	PASS
π /4DQPSK	LCH	1.1438	1.269	Not Specified	PASS
	MCH	1.1466	1.268	Not Specified	PASS
	HCH	1.483	1.271	Not Specified	PASS
8DPSK	LCH	1.1527	1.271	Not Specified	PASS
	MCH	1.1514	1.269	Not Specified	PASS
	HCH	1.1586	1.276	Not Specified	PASS

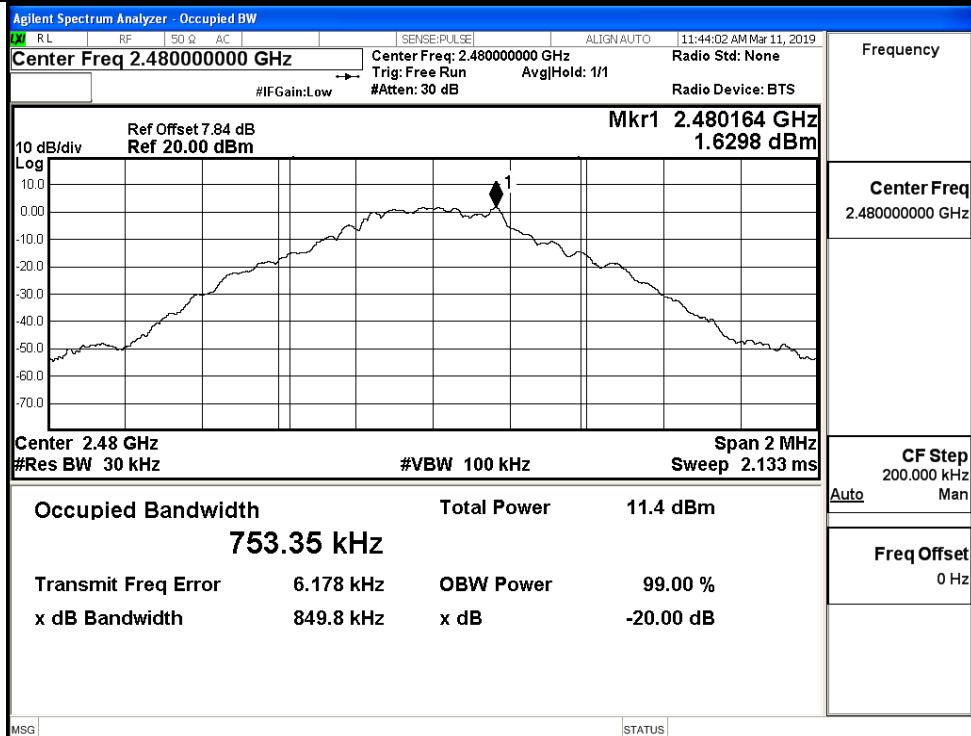
Test Graphs

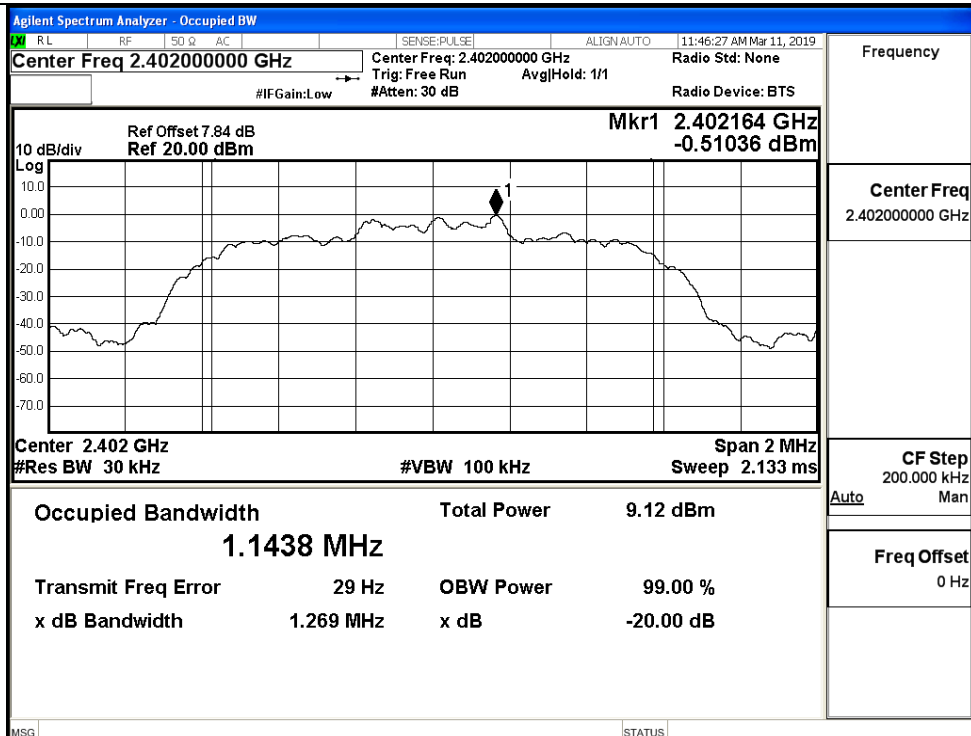
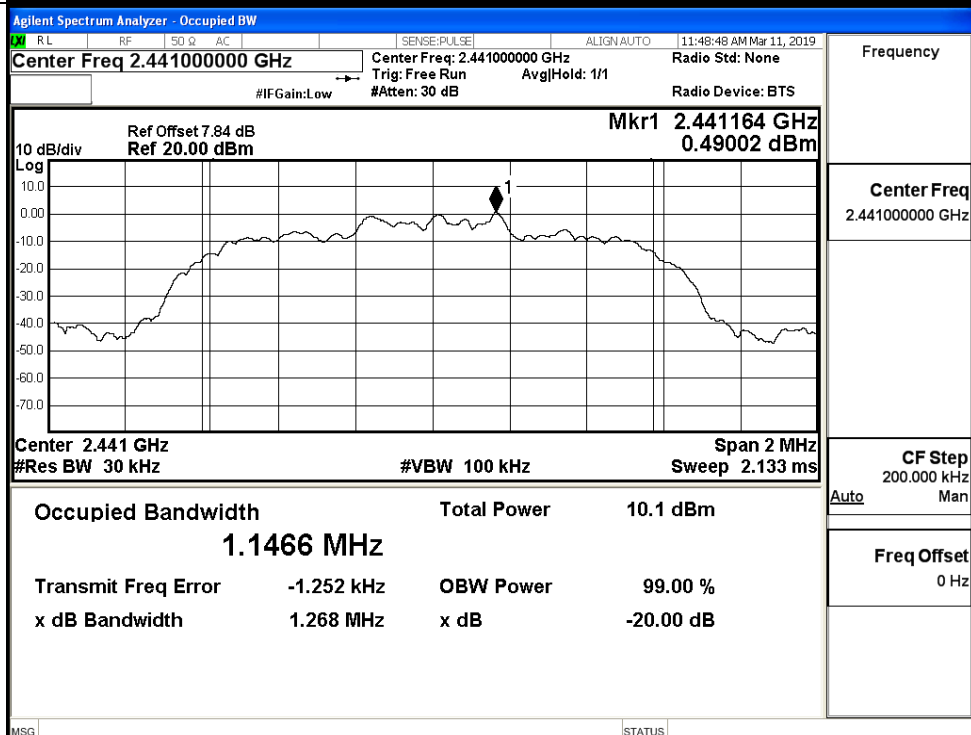


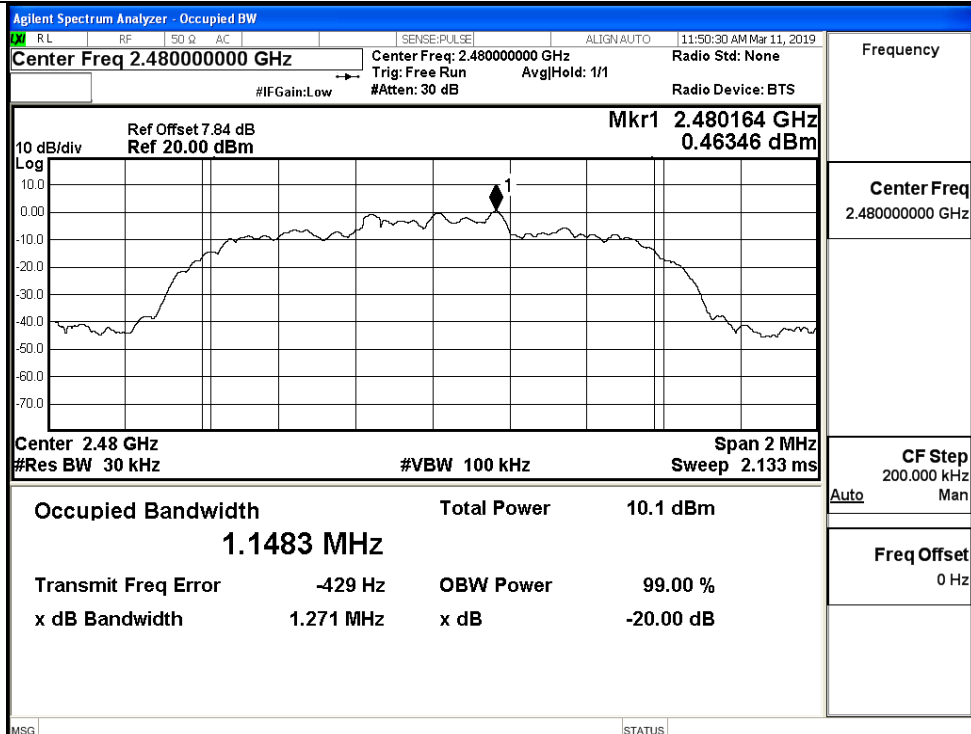
GFSK/MCH



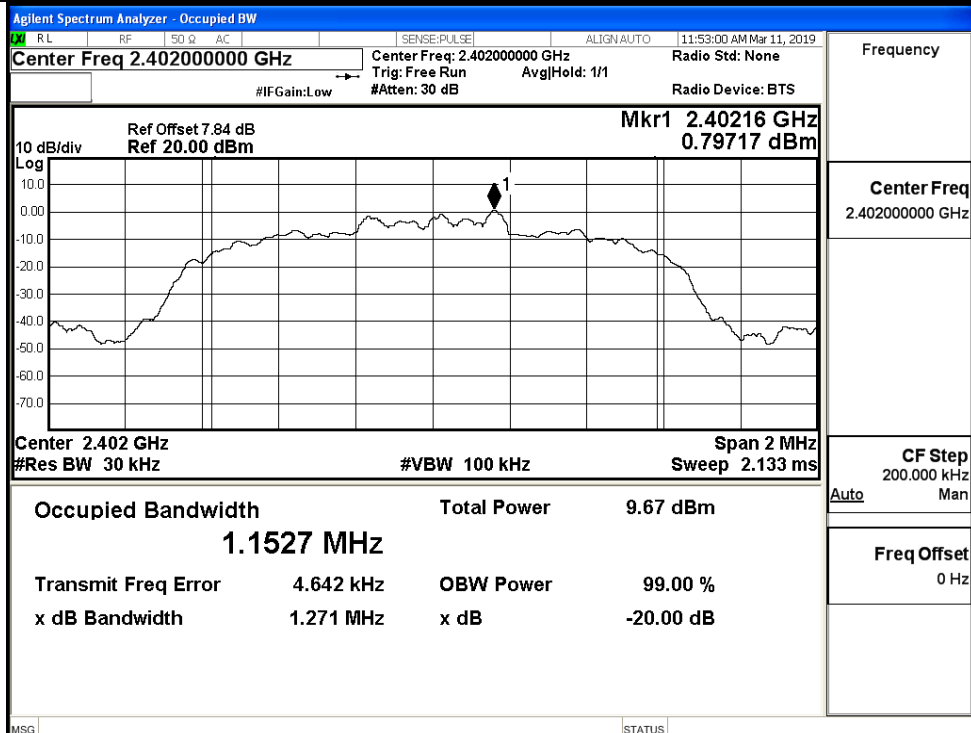
GFSK/HCH



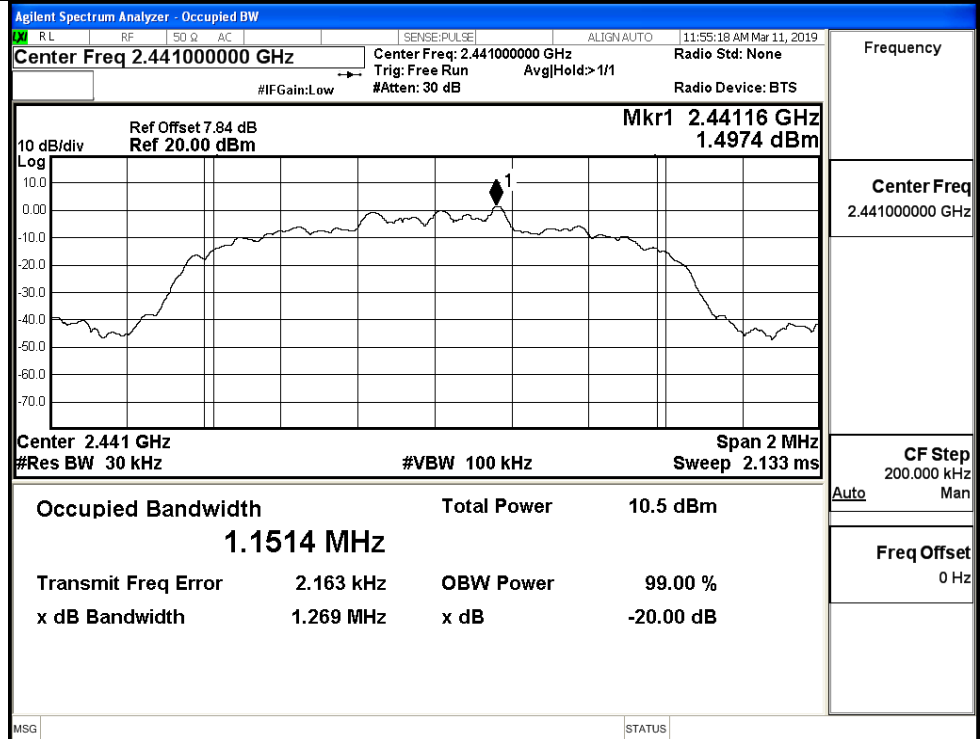
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

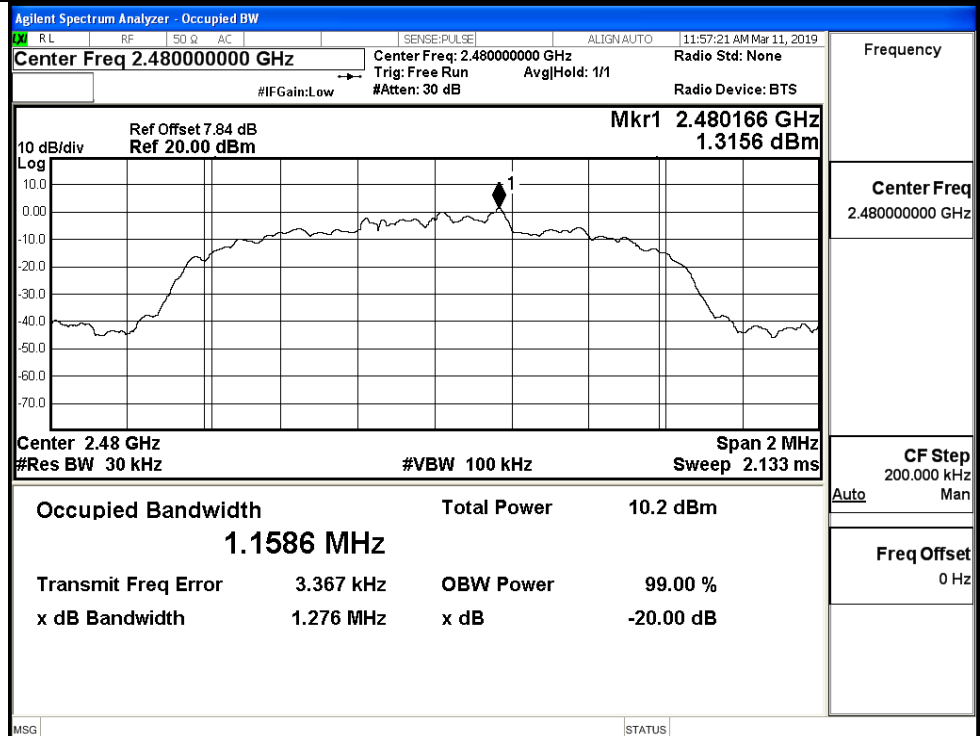
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

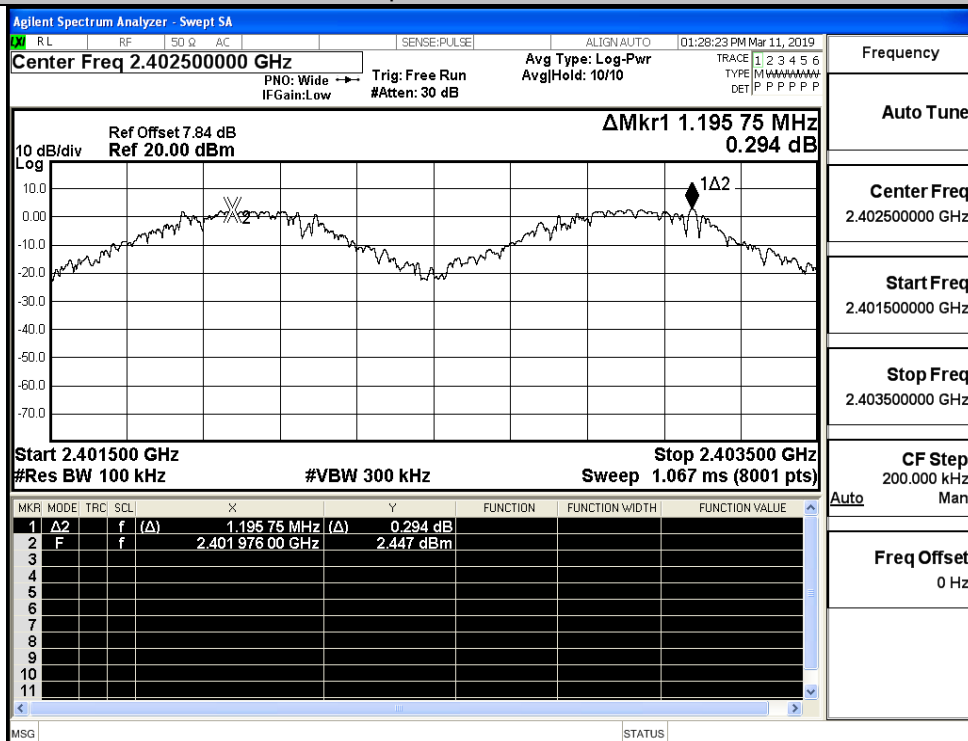


A.3 Carrier Frequency Separation

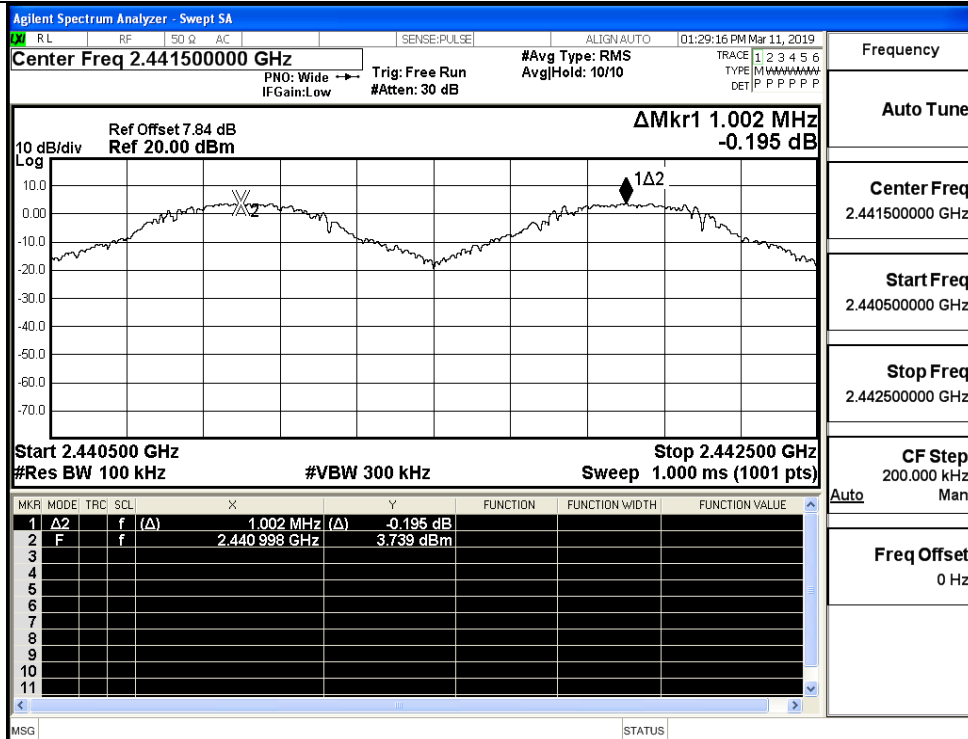
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.196	0.567	PASS
	MCH	1.002	0.567	PASS
	HCH	0.804	0.567	PASS
π /4DQPSK	LCH	1.220	0.847	PASS
	MCH	0.858	0.847	PASS
	HCH	1.012	0.847	PASS
8DPSK	LCH	0.984	0.851	PASS
	MCH	1.024	0.851	PASS
	HCH	0.872	0.851	PASS

Test Graphs

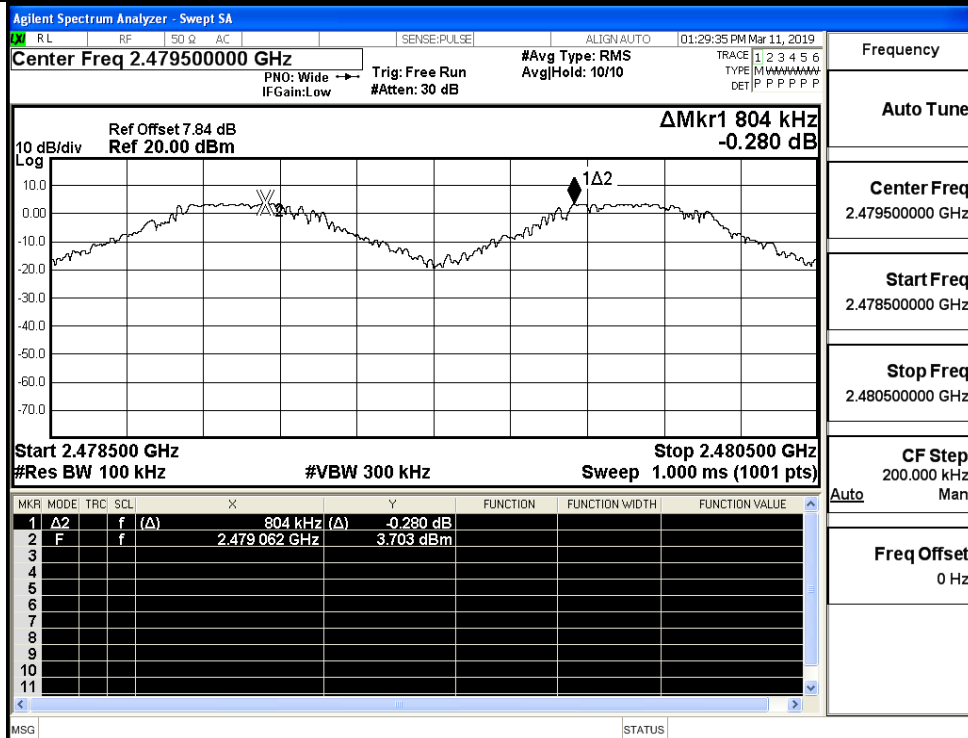
GFSK/LCH

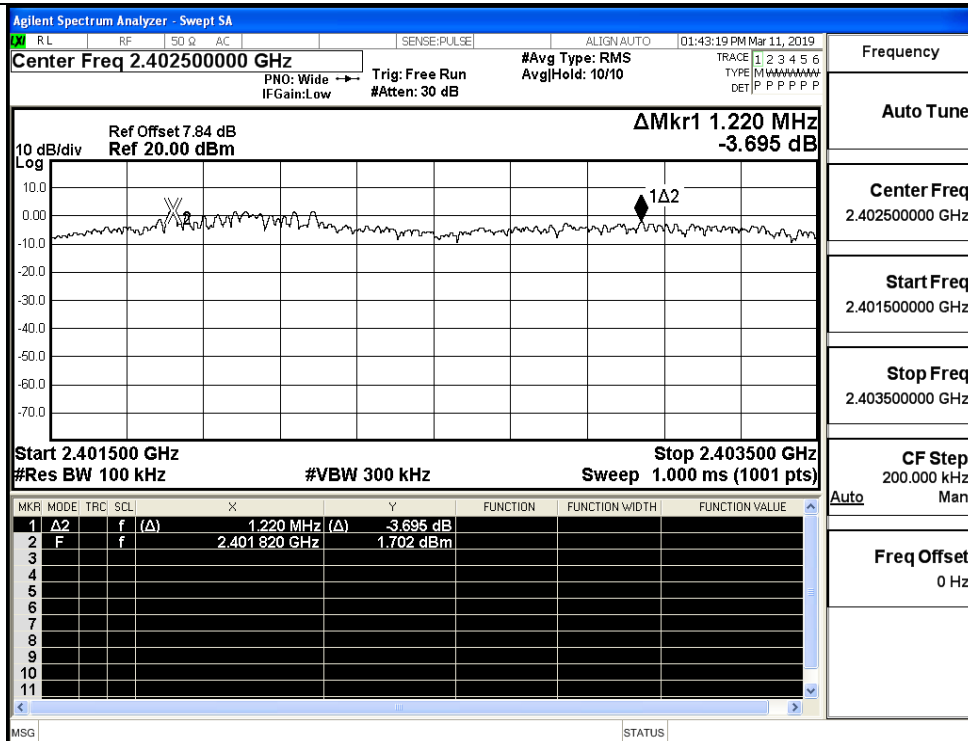


GFSK/MCH



GFSK/HCH



π /4DQPSK/LCH

Frequency

Auto Tune

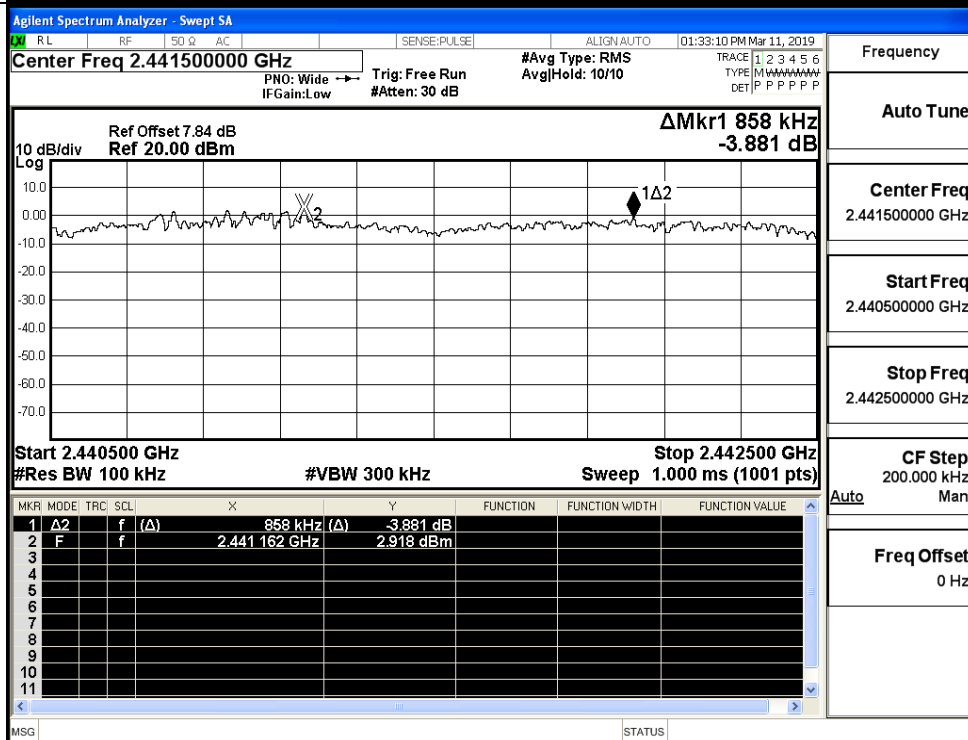
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

 π /4DQPSK/MCH

Frequency

Auto Tune

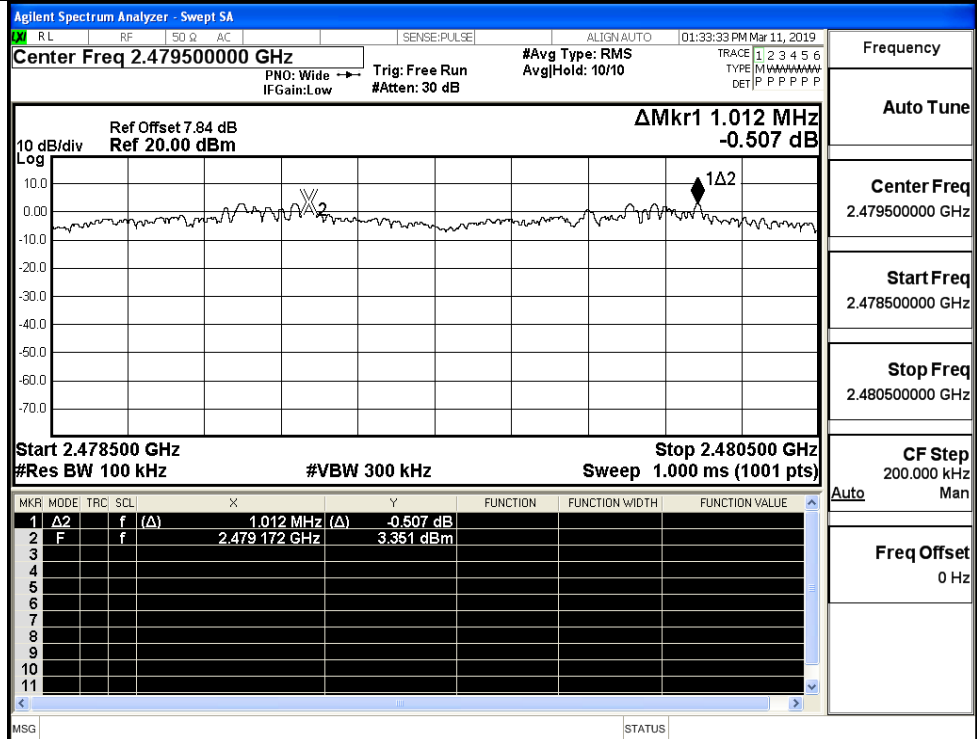
Center Freq
2.441500000 GHz

Start Freq
2.440500000 GHz

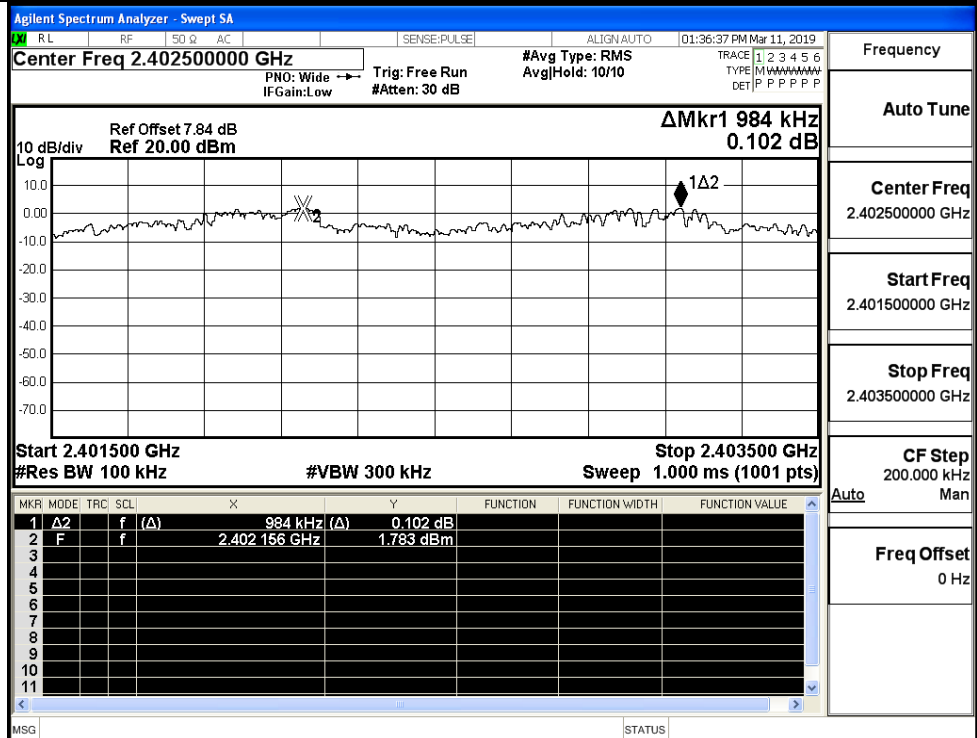
Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

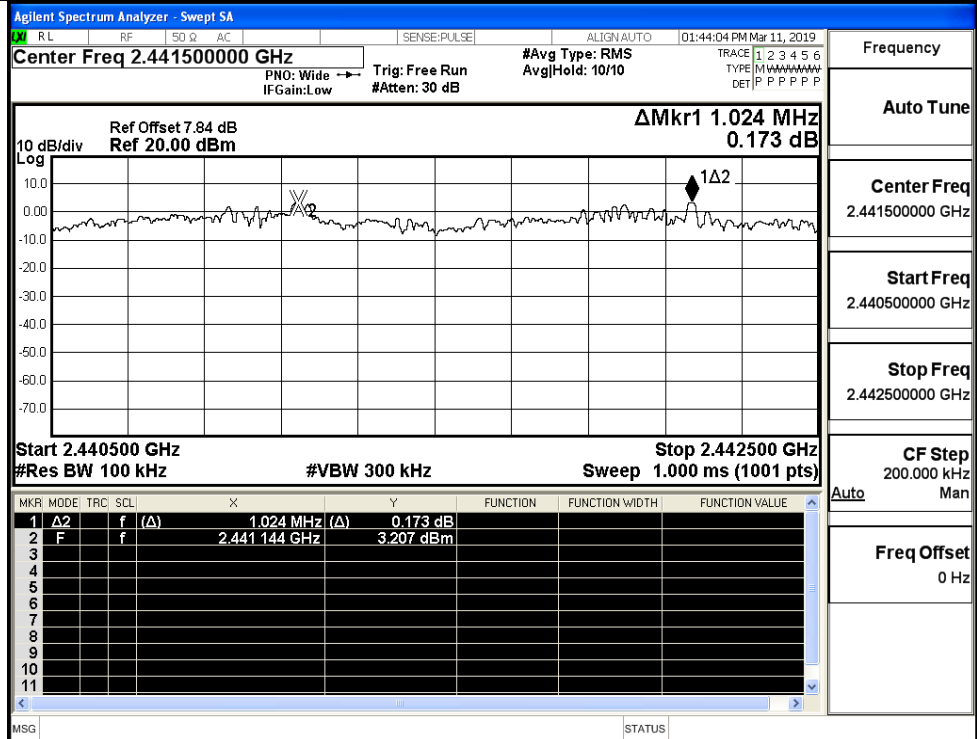
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

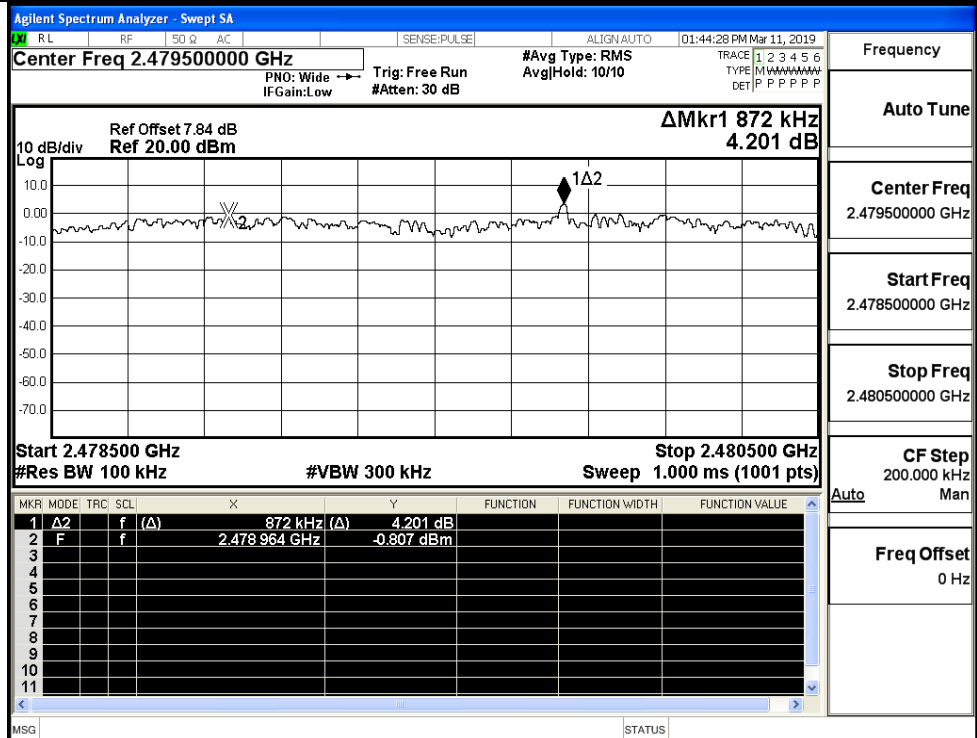
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

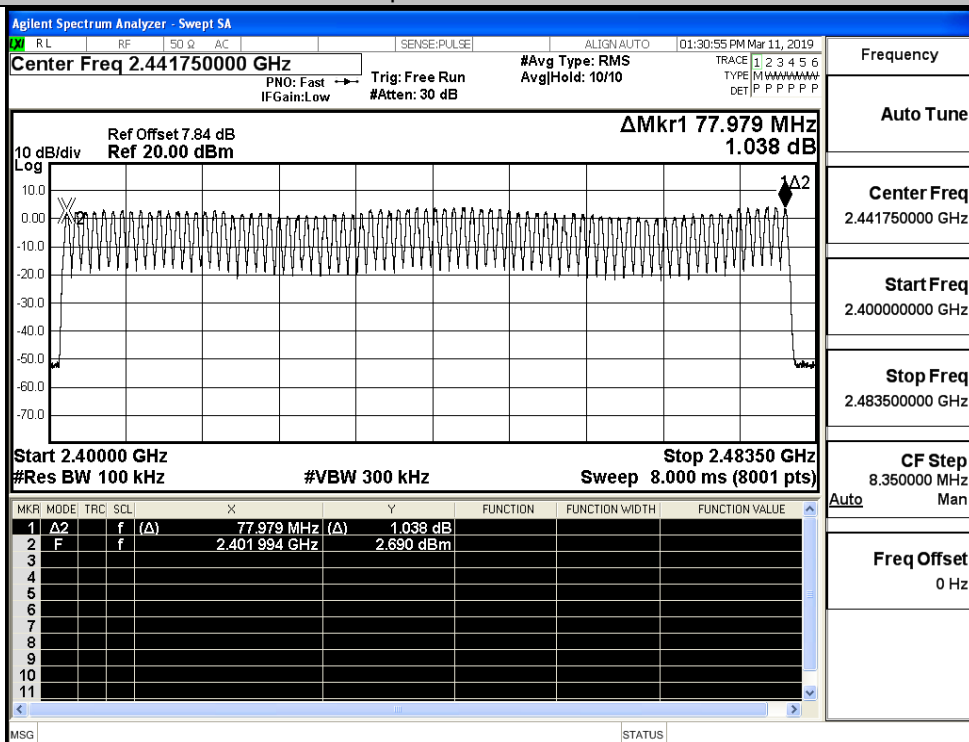
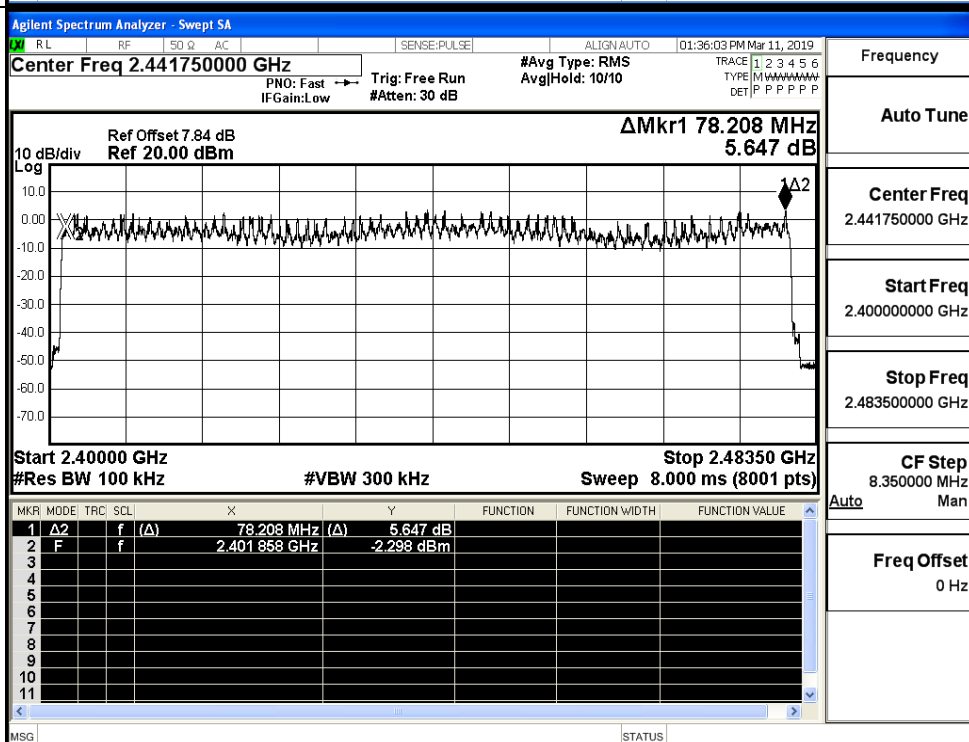


A.4 Hopping Channel Number

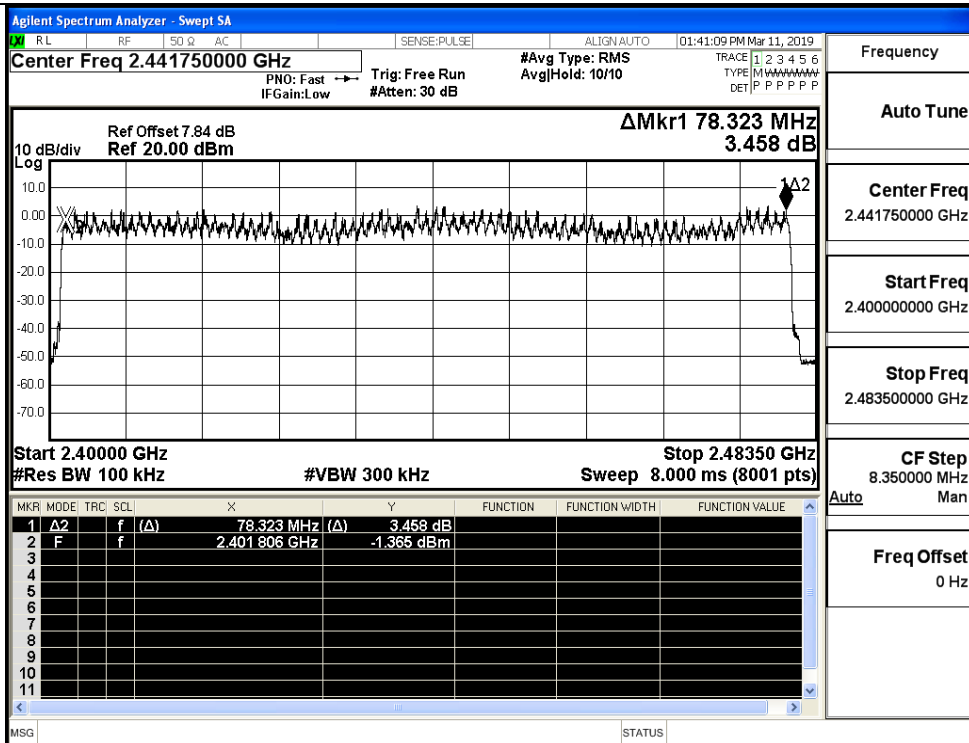
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

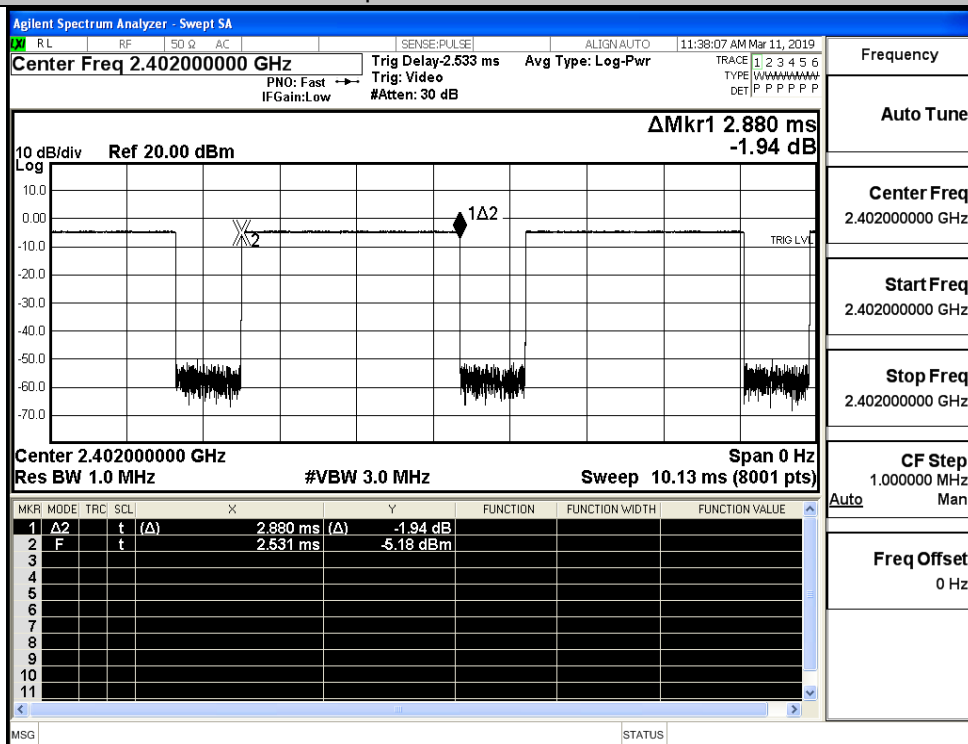


A.5 Dwell Time

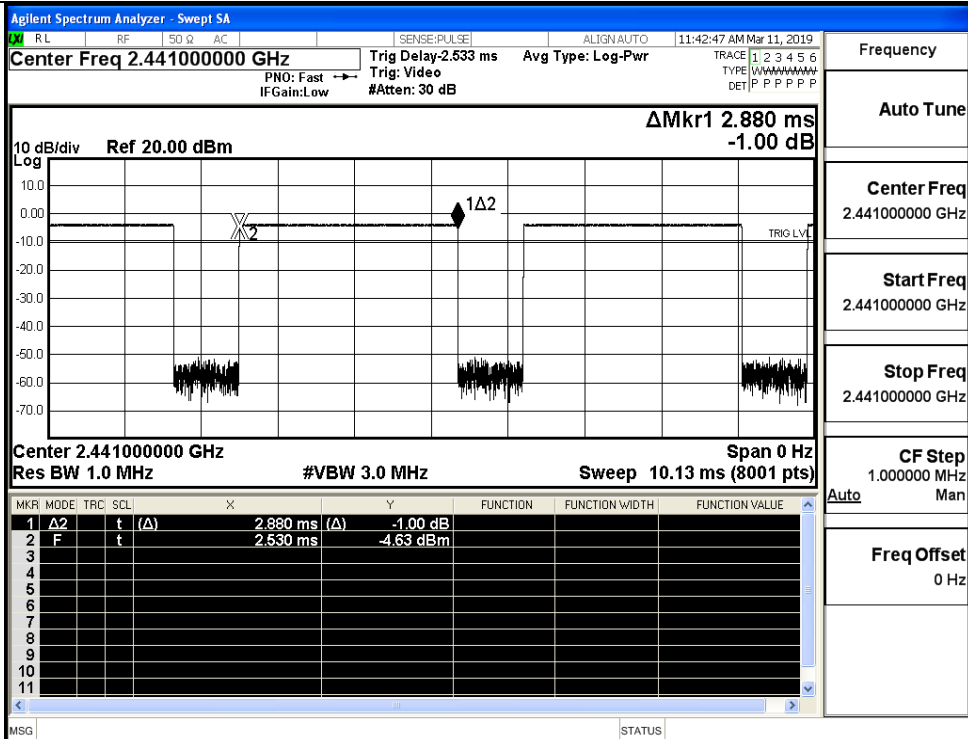
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS

Test Graphs

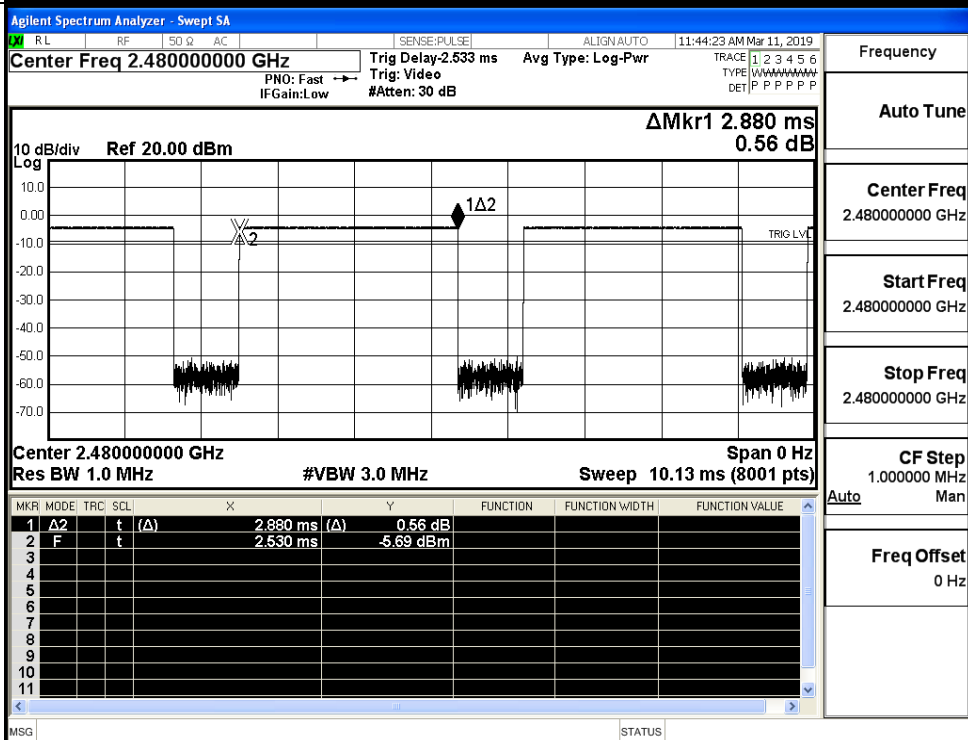
GFSK_DH5/LCH



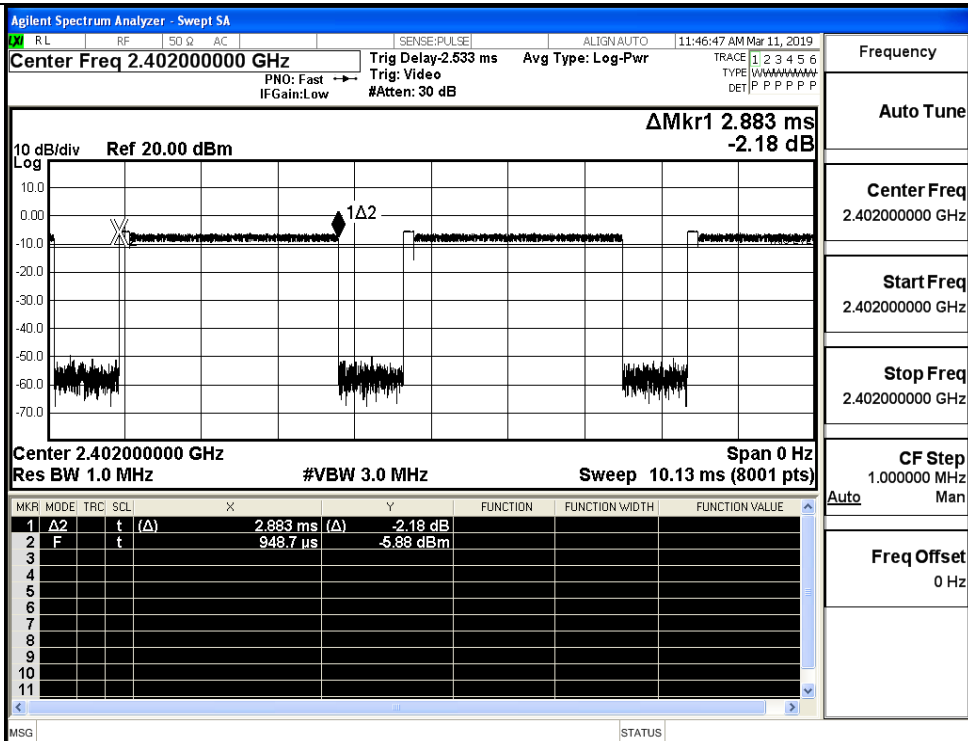
GFSK_DH5/MCH



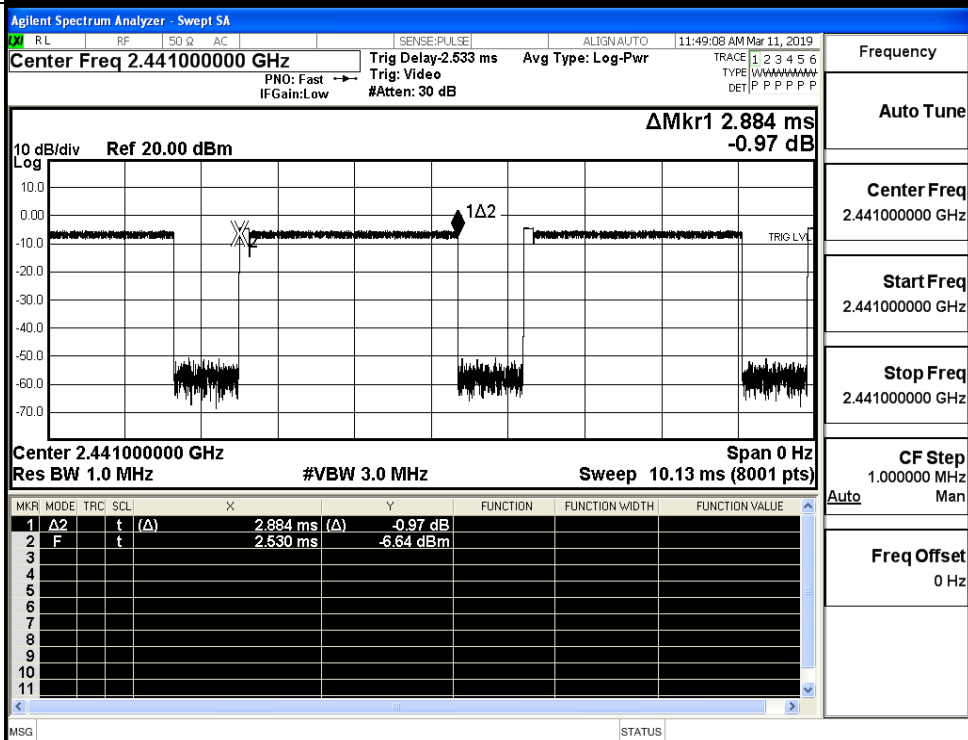
GFSK_DH5/HCH



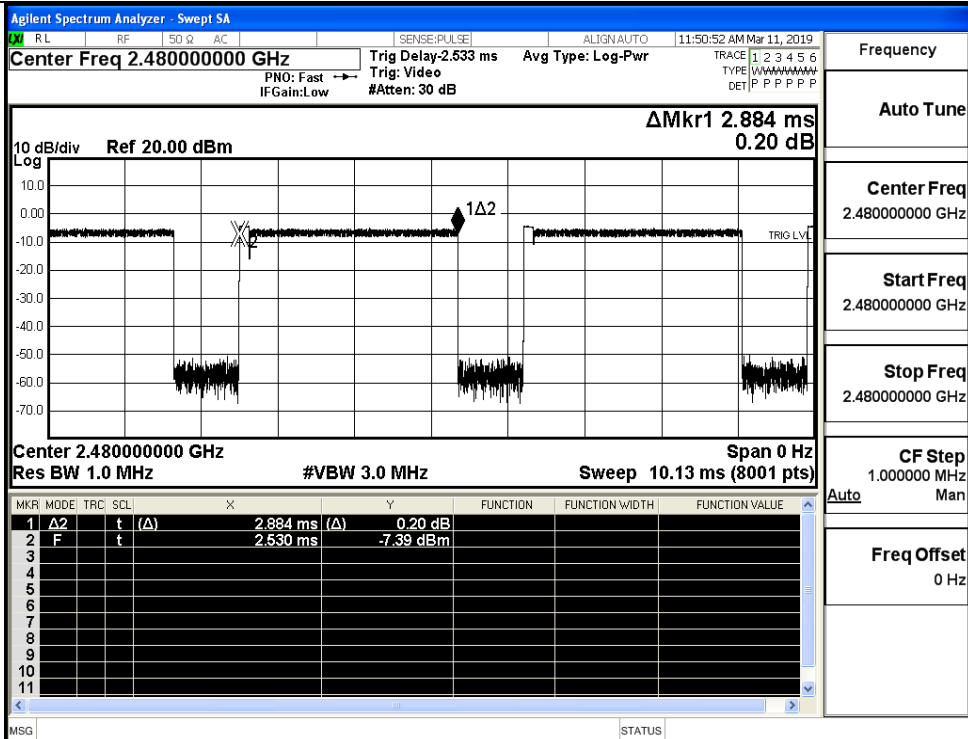
$\pi/4$ DQPSK
_2DH5/LCH



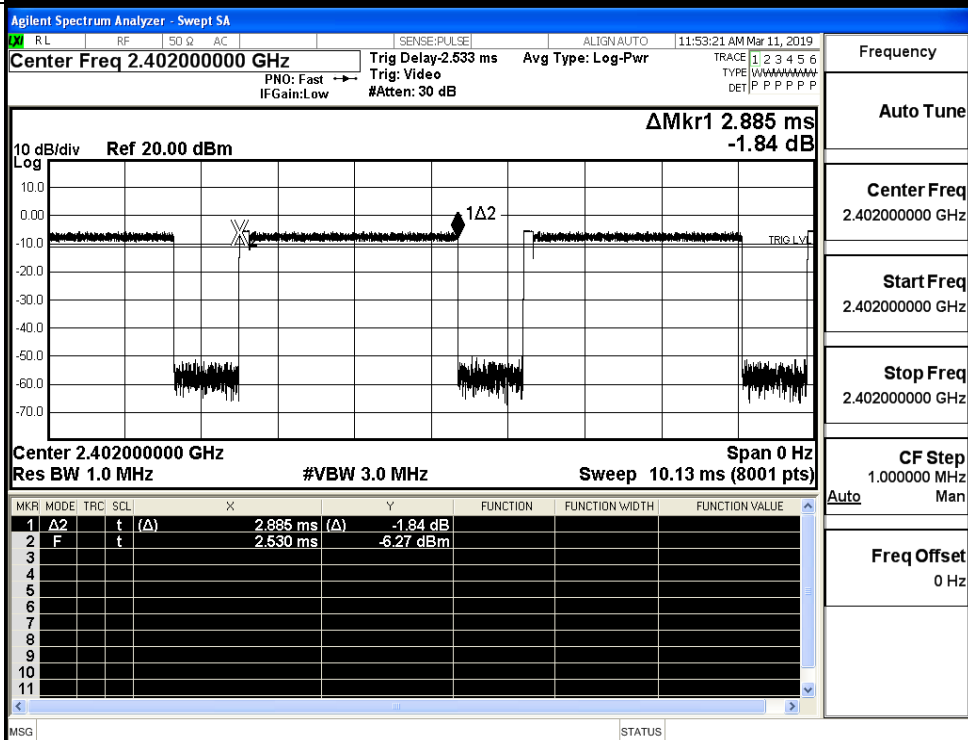
$\pi/4$ DQPSK
_2DH5/MCH



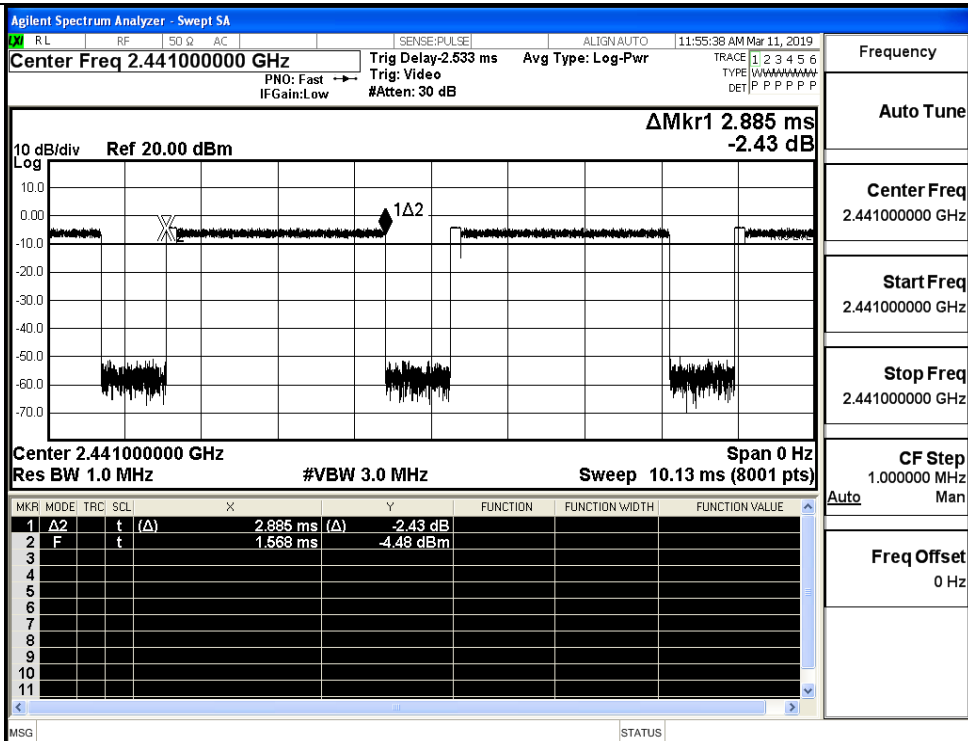
$\pi/4$ DQPSK
_2DH5/HCH



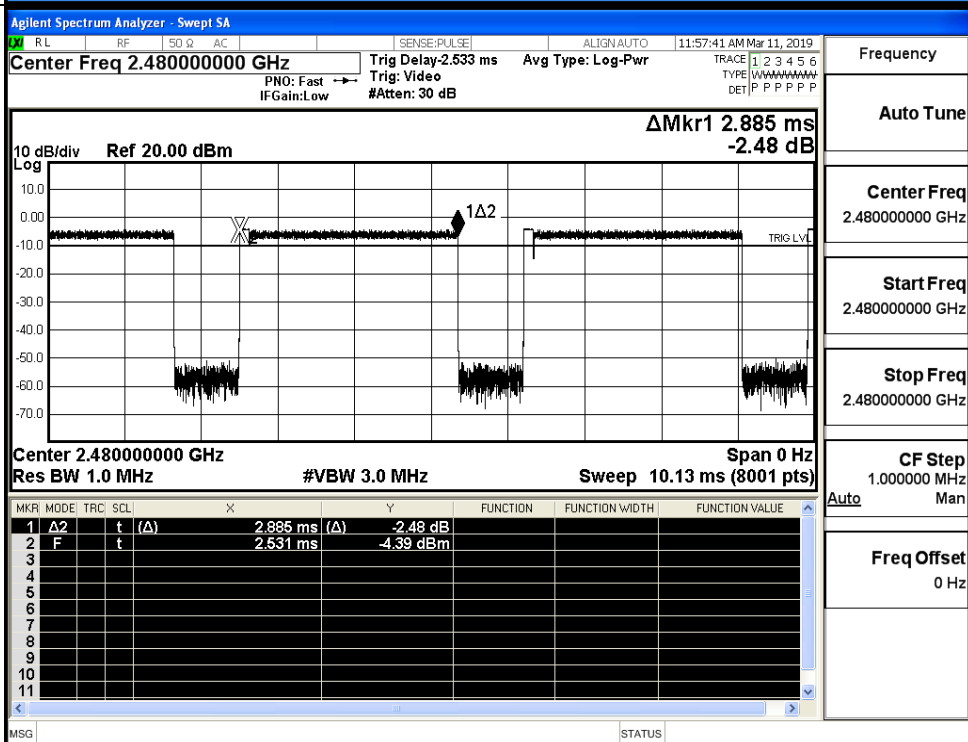
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

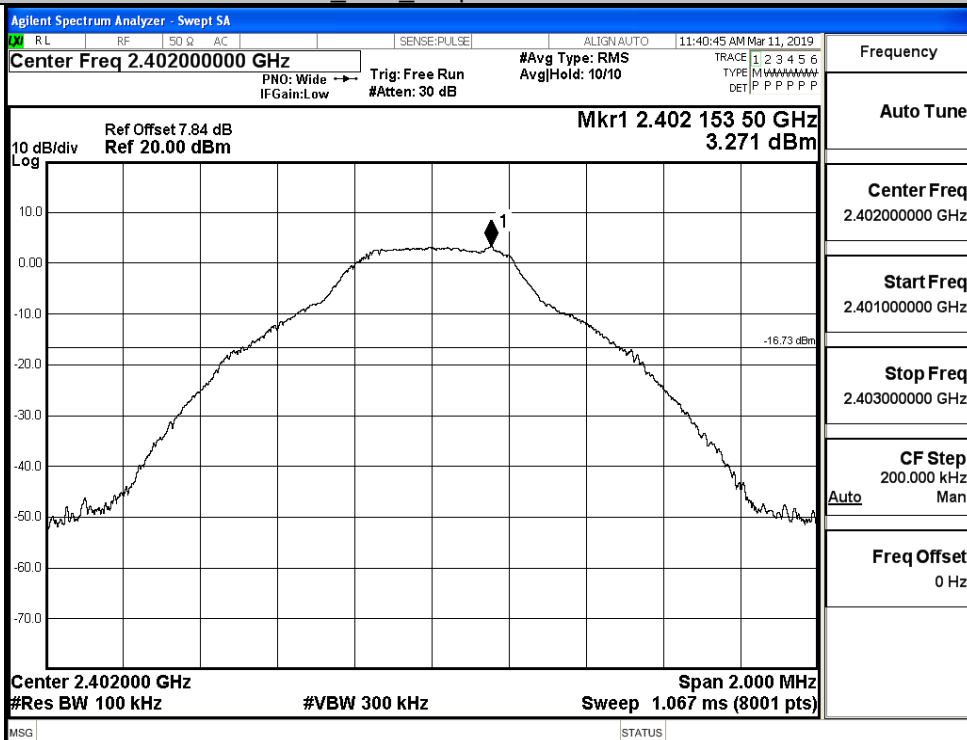


A.6 RF Conducted Spurious Emissions

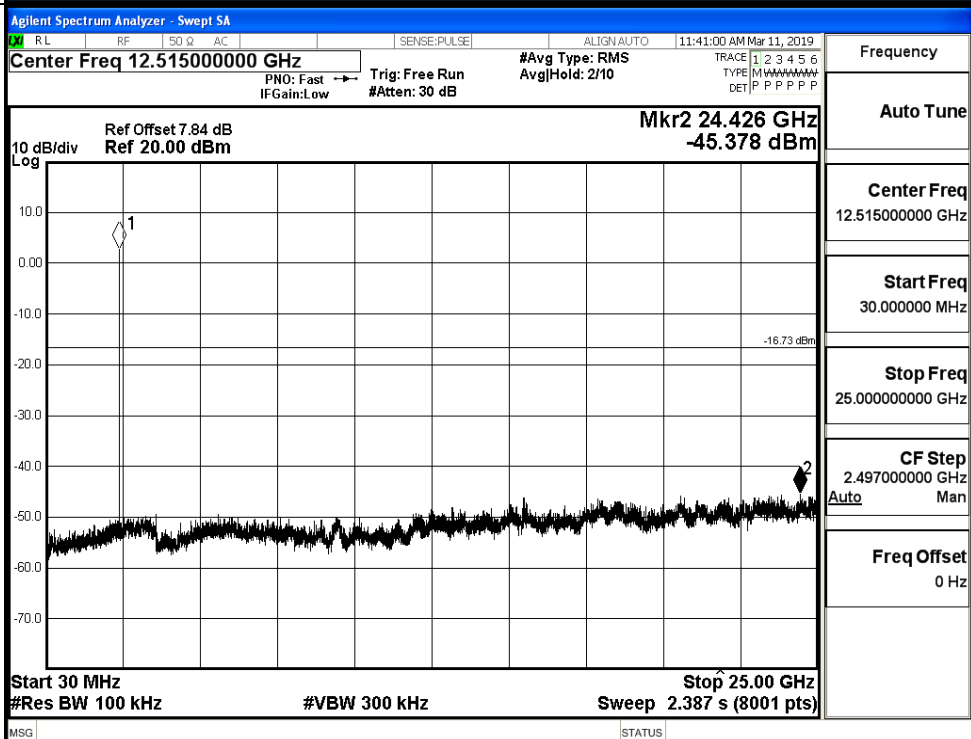
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.271	-45.378	-16.729	PASS
	MCH	4.639	-45.373	-15.361	PASS
	HCH	3.931	-45.271	-16.069	PASS
$\pi/4$ DQPSK	LCH	2.174	-43.769	-17.826	PASS
	MCH	2.67	-44.259	-17.330	PASS
	HCH	2.966	-44.822	-17.034	PASS
8DPSK	LCH	3.116	-44.783	-16.884	PASS
	MCH	3.643	-44.737	-16.357	PASS
	HCH	3.644	-44.838	-16.356	PASS

GFSK LCH Graphs

Pref

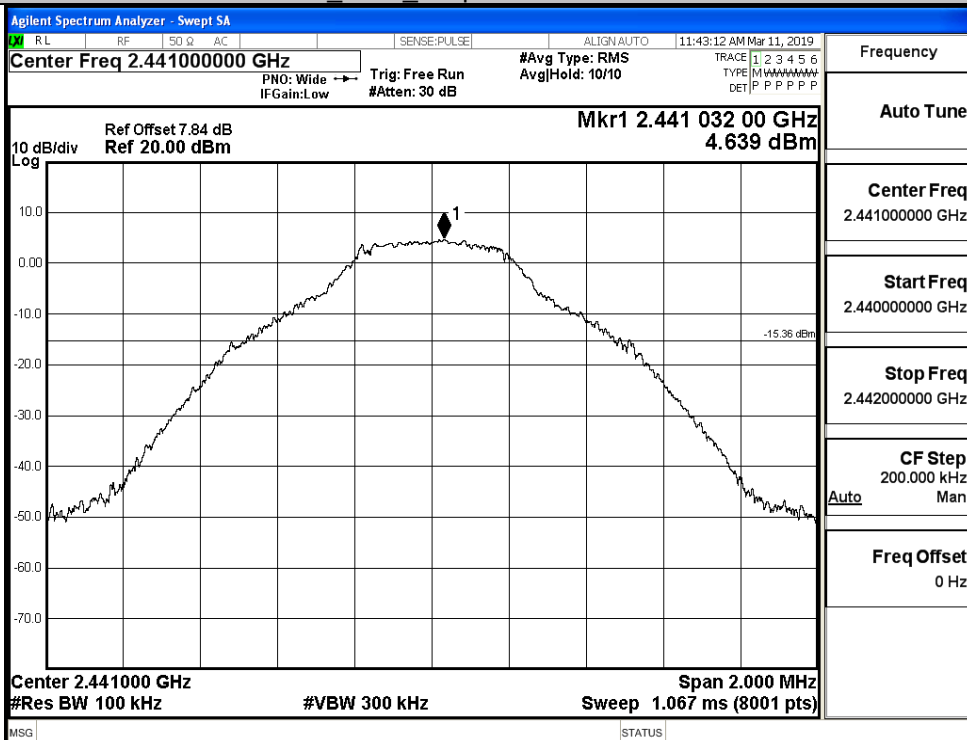


Puw

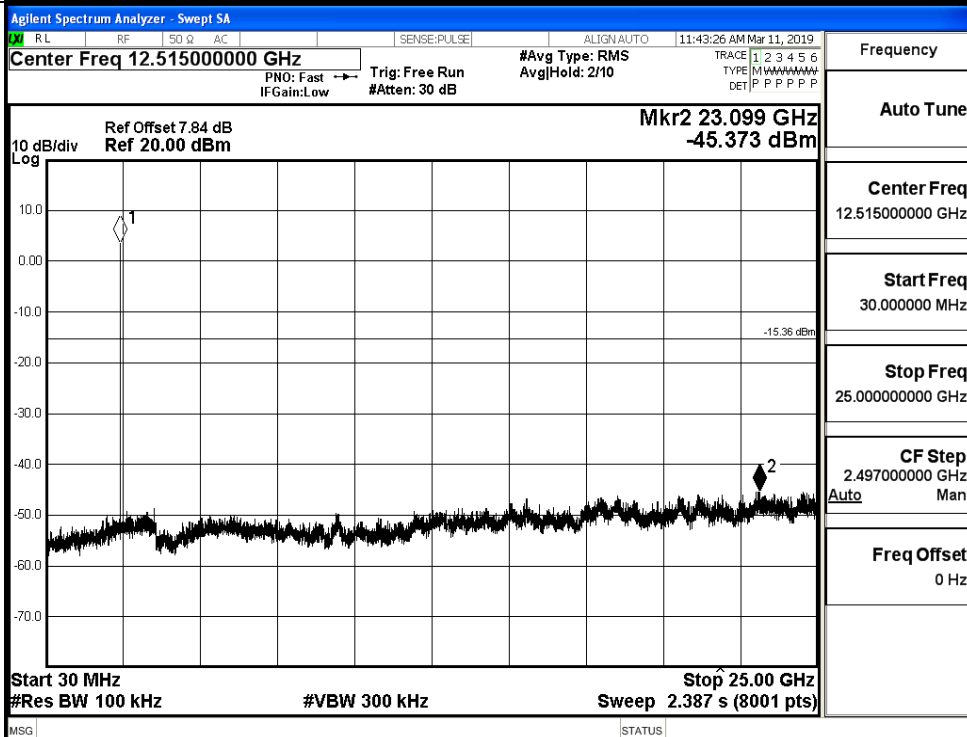


GFSK_MCH_Graphs

Pref

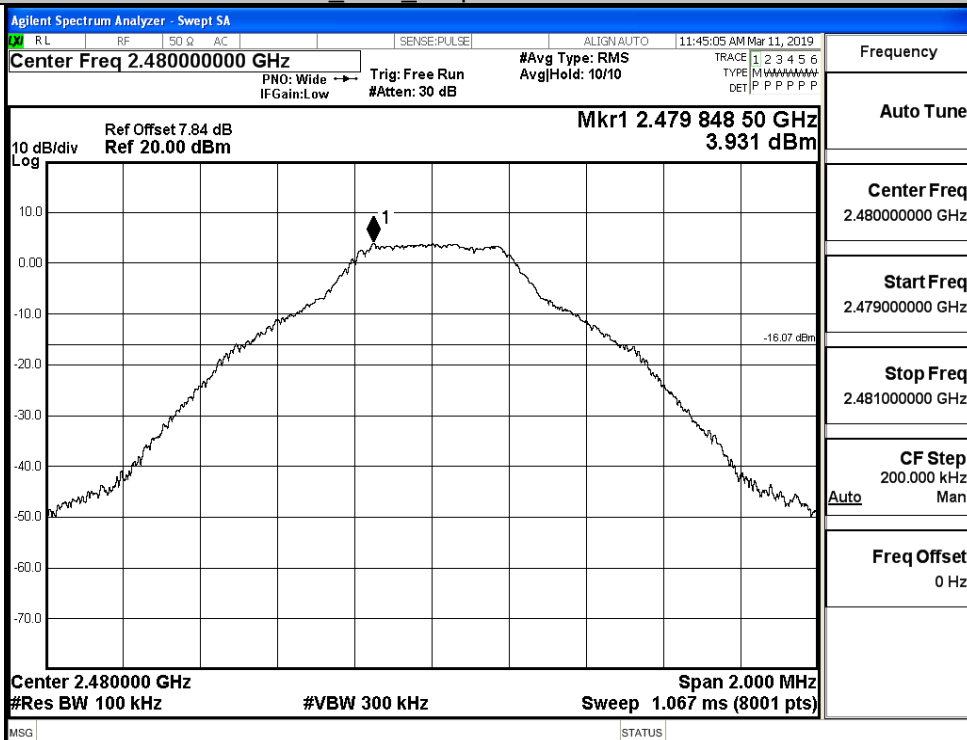


Puw

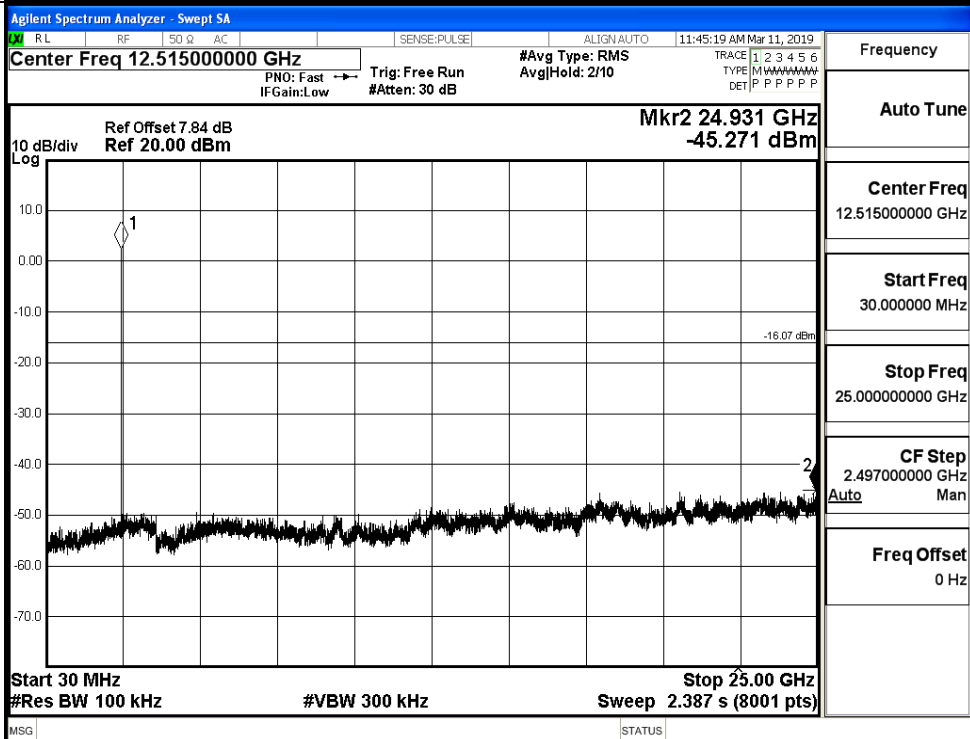


GFSK_HCH_Graphs

Pref

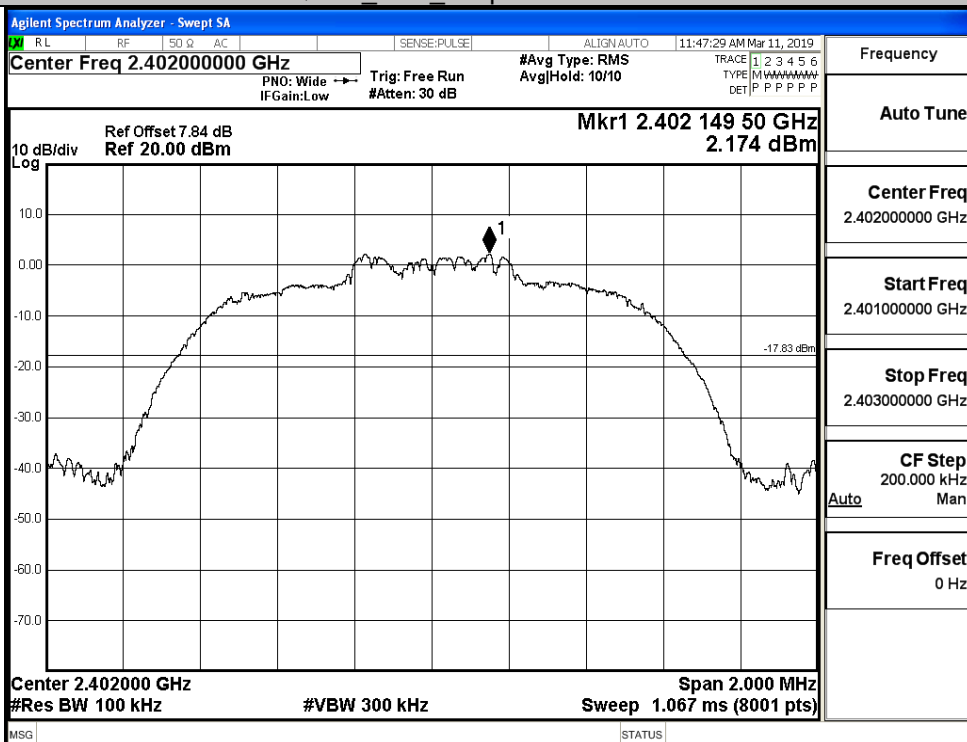


Puw

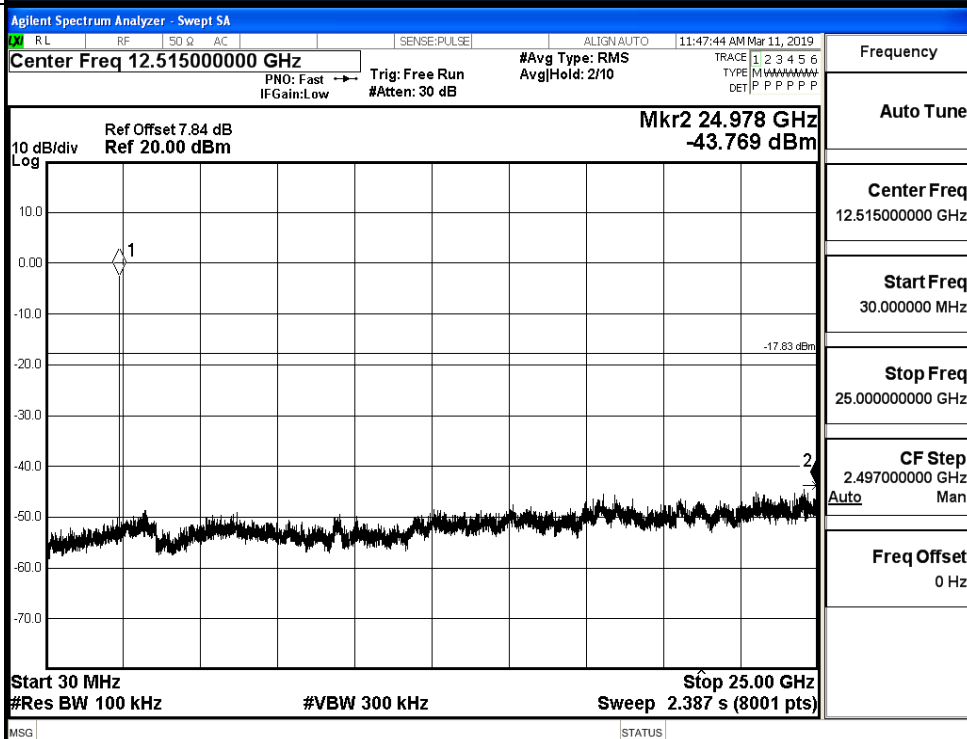


$\pi/4$ DQPSK LCH_Graphs

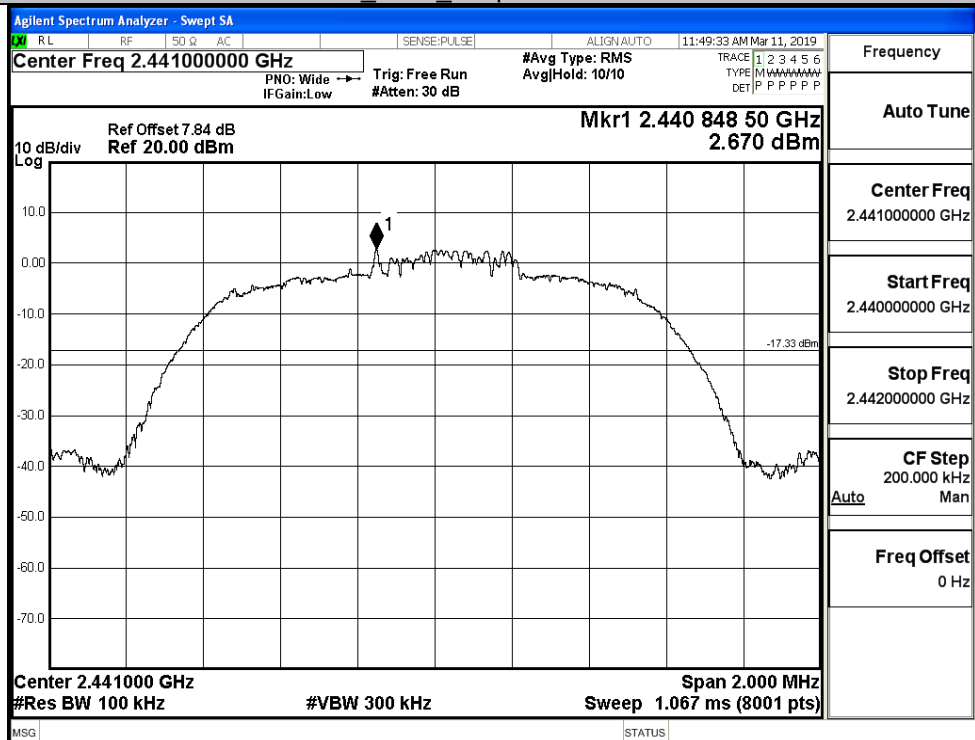
Pref



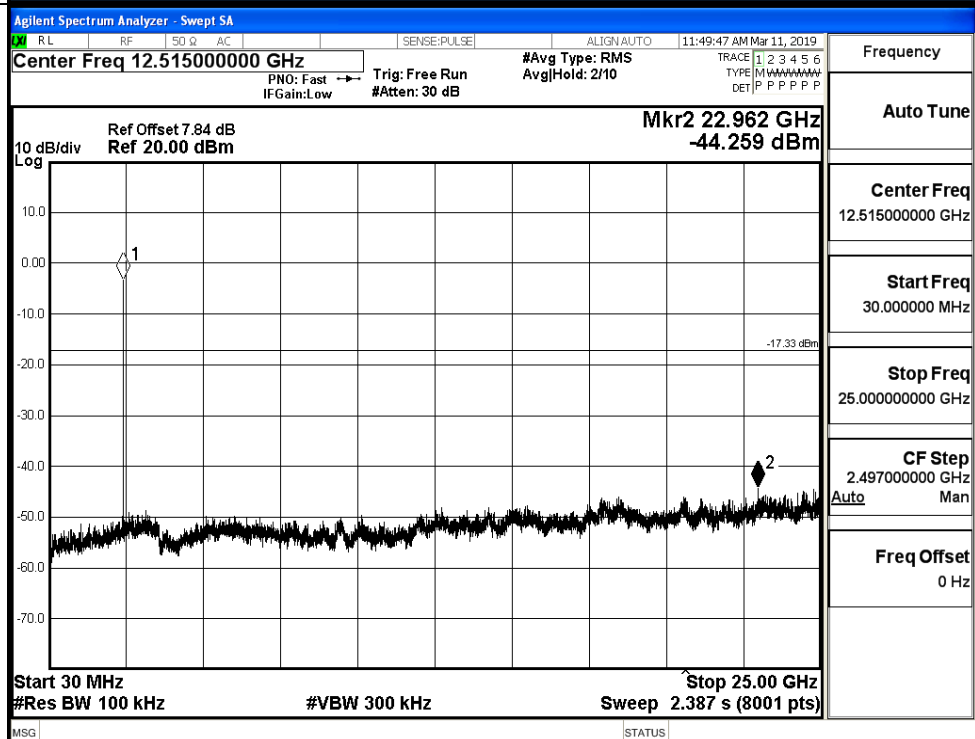
Puw



Pref

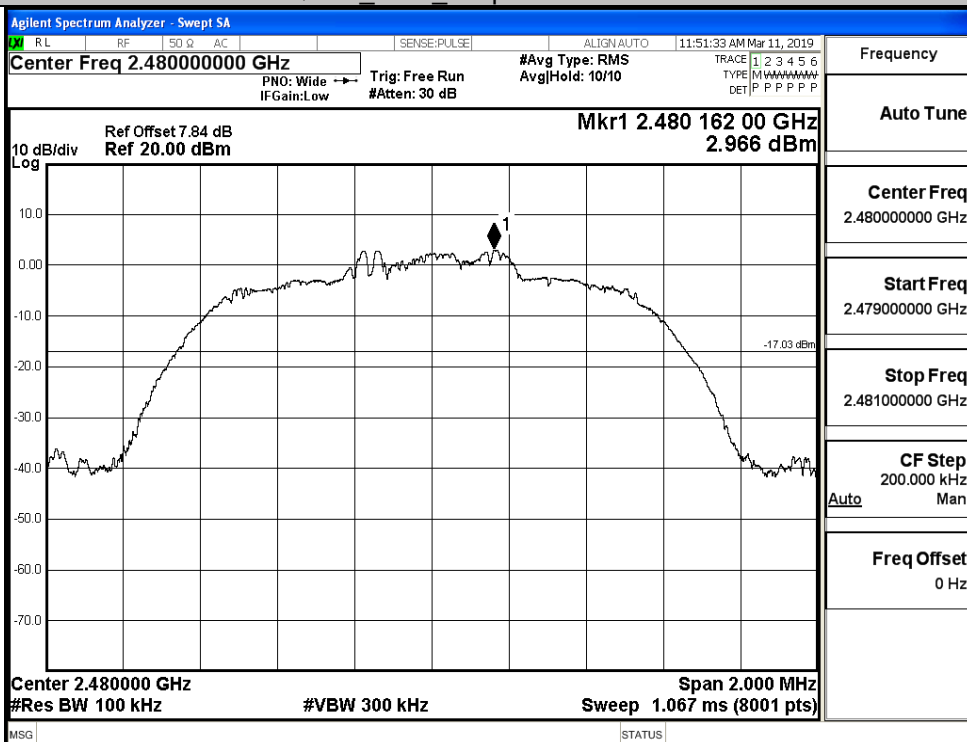


PuW

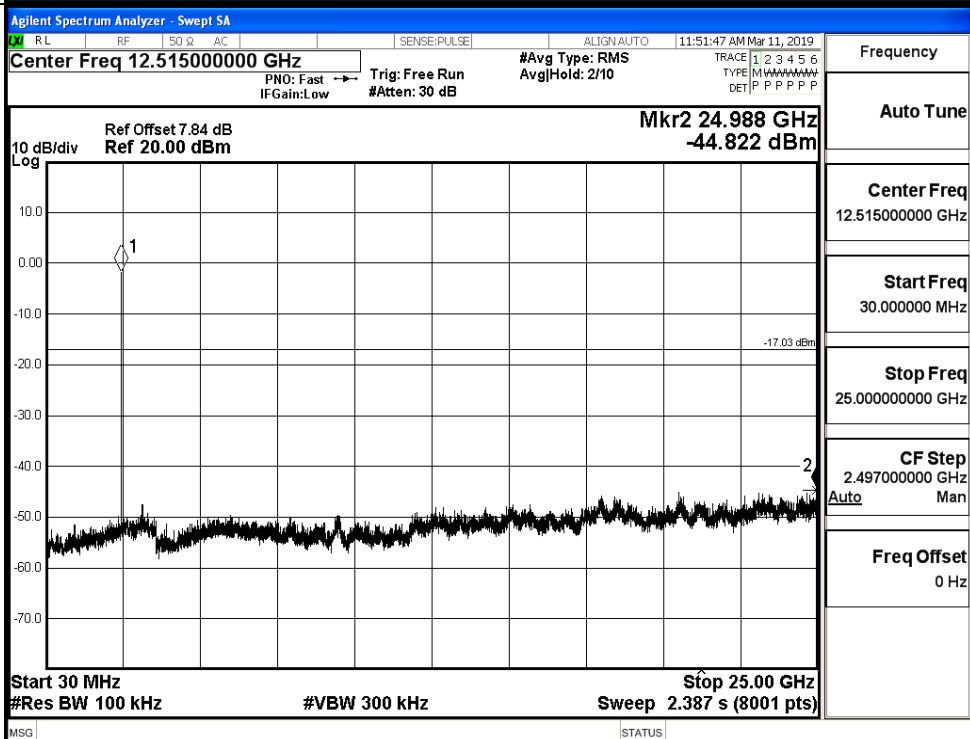


$\pi/4$ DQPSK_HCH_Graphs

Pref

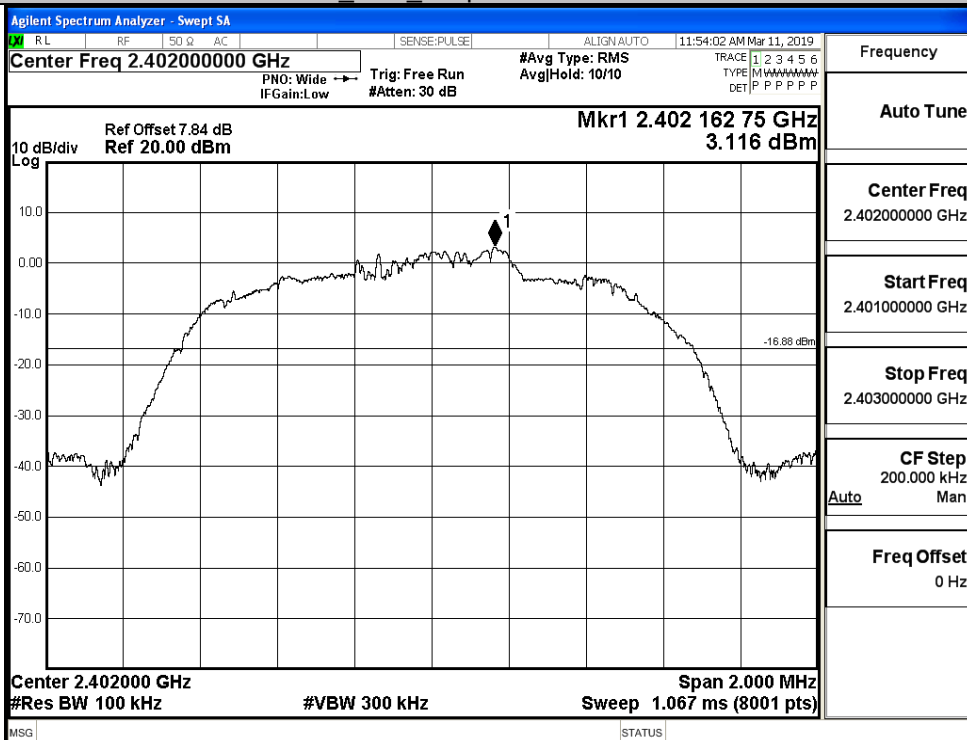


Puw

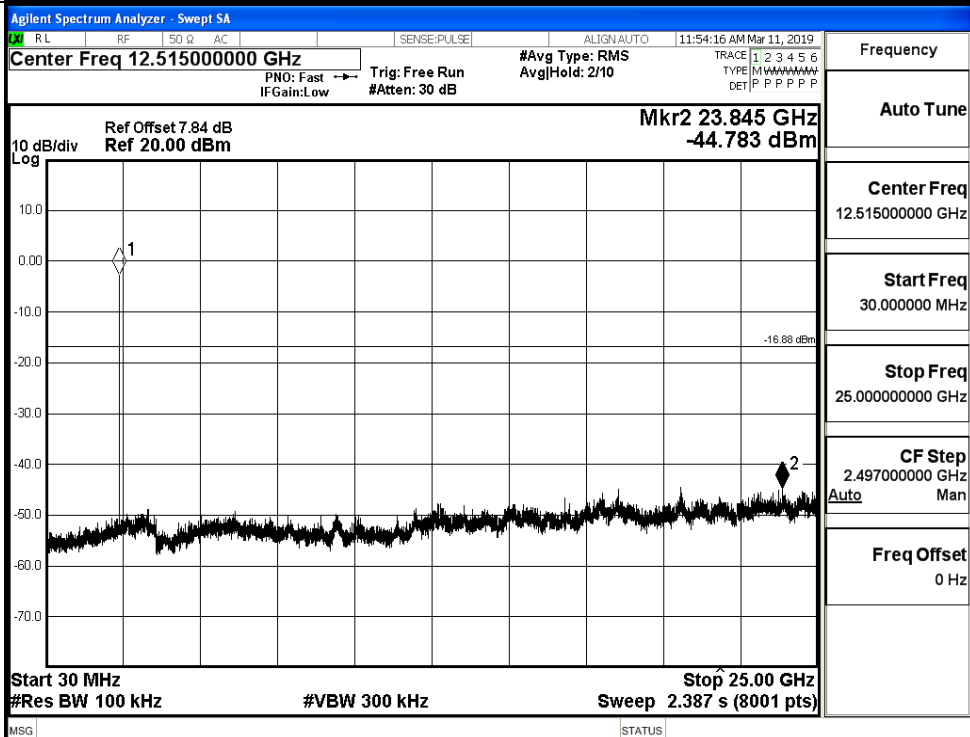


8DPSK_LCH_Graphs

Pref

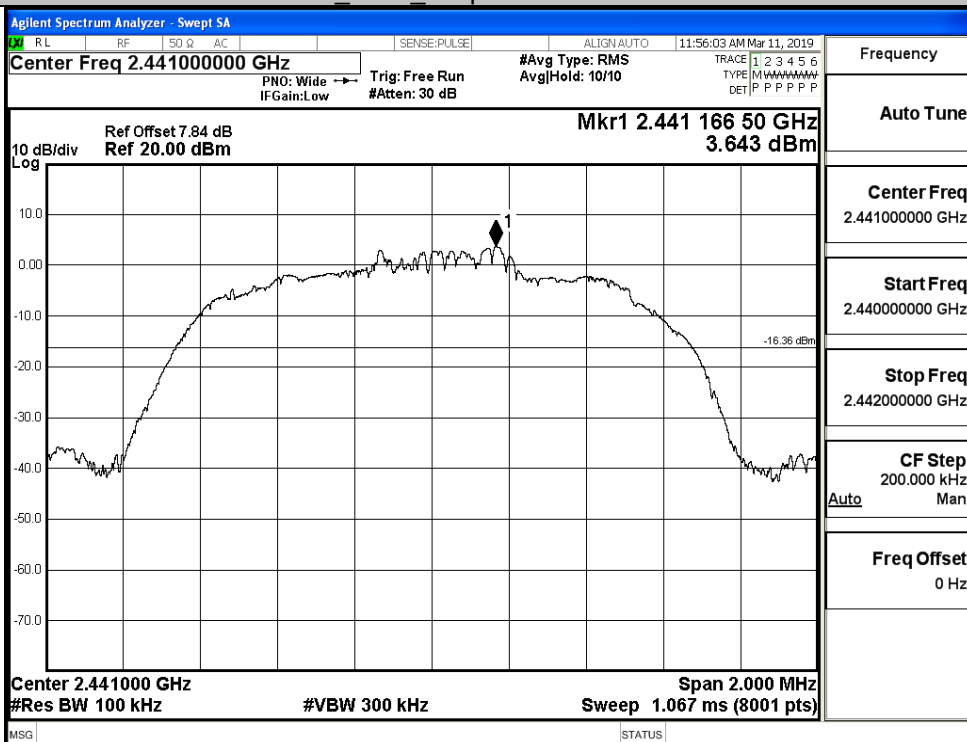


Puw

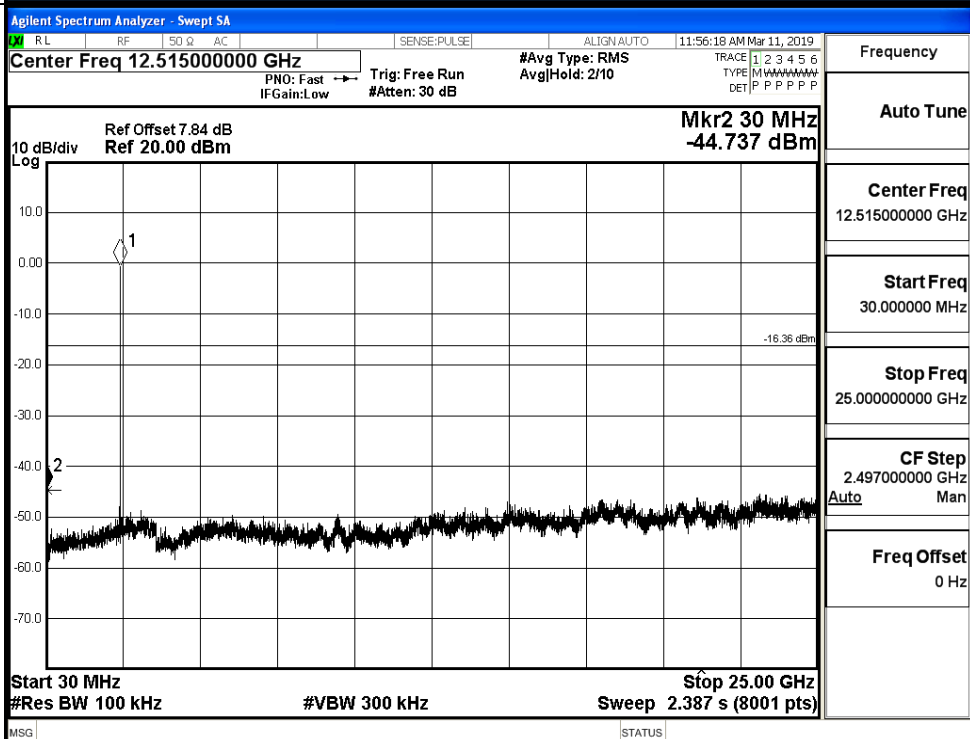


8DPSK_MCH_Graphs

Pref

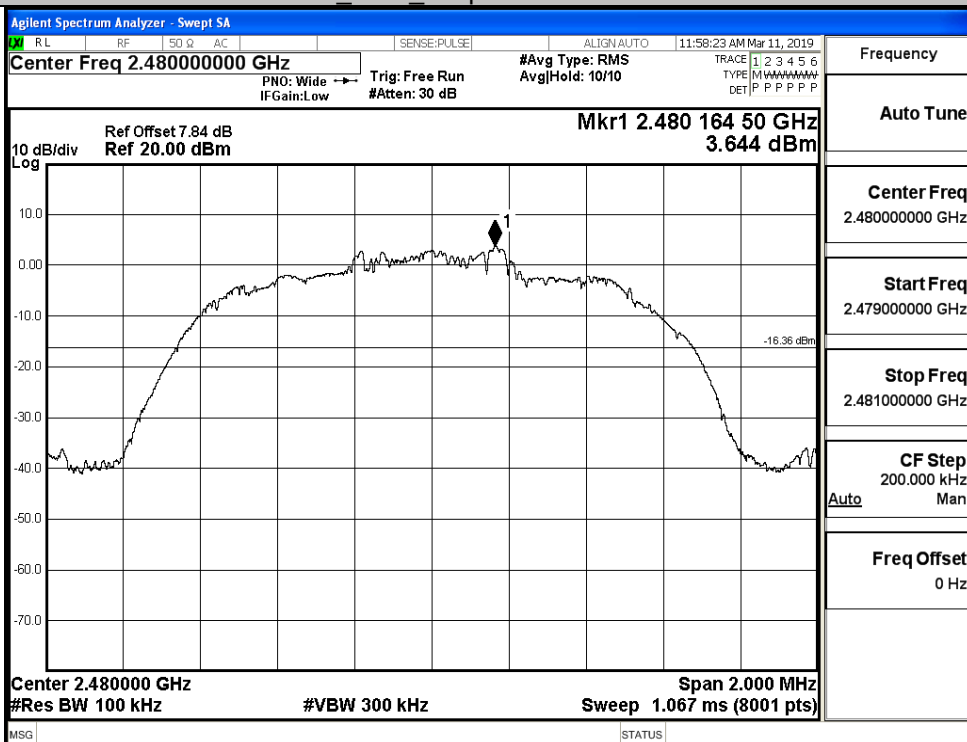


Puw

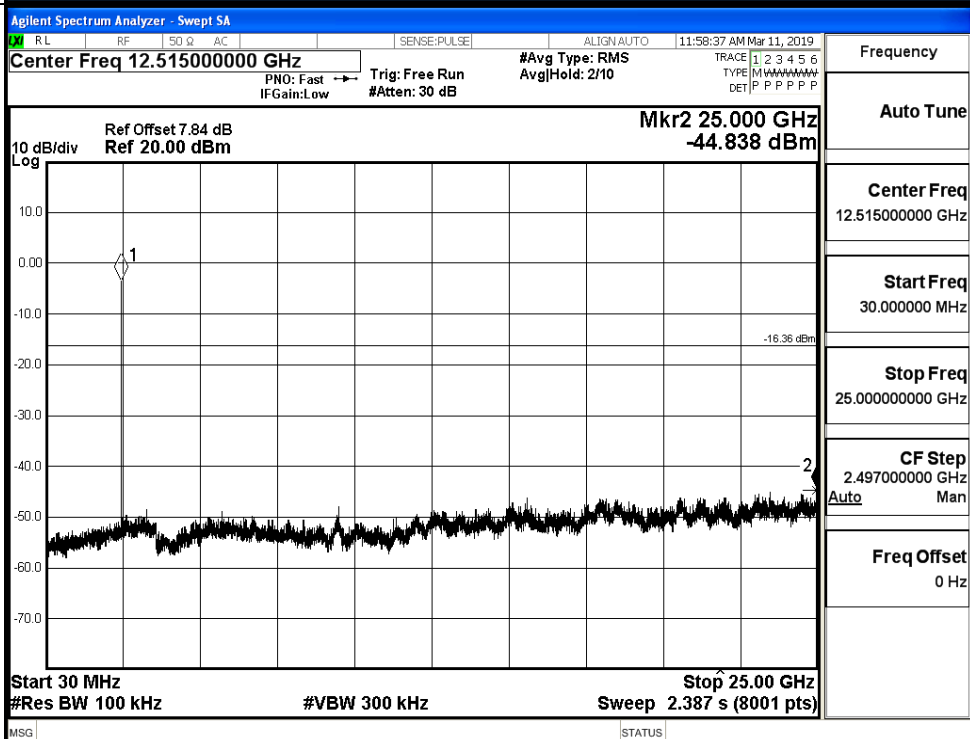


8DPSK_HCH_Graphs

Pref



Puw

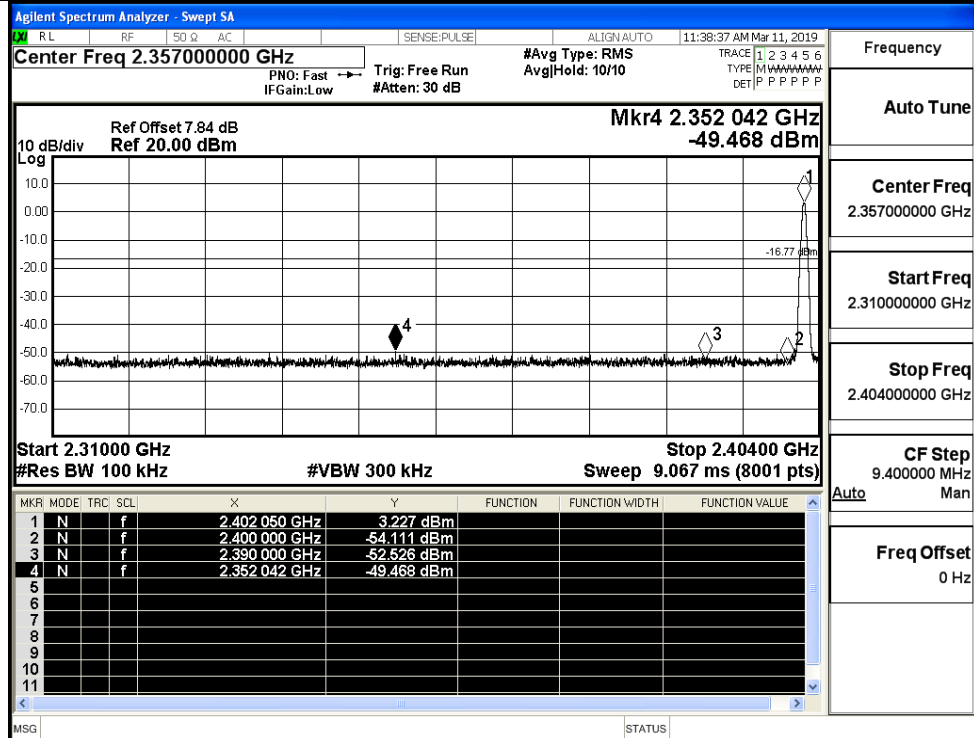


A.7 Band-edge for RF Conducted Emissions

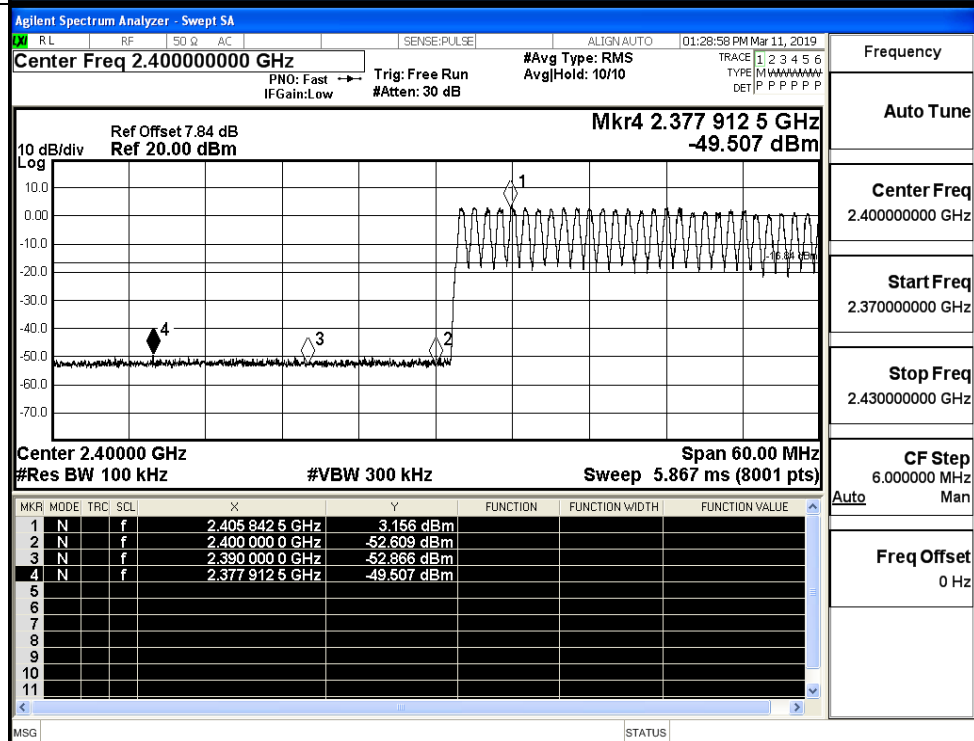
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.227	Off	-49.468	-16.77	PASS
			3.156	On	-49.507	-16.84	PASS
	HCH	2480	4.042	Off	-50.374	-15.96	PASS
			4.108	On	-48.469	-15.89	PASS
$\pi/4$ DQPSK	LCH	2402	2.366	Off	-49.772	-17.63	PASS
			2.591	On	-49.533	-17.41	PASS
	HCH	2480	3.941	Off	-49.975	-16.06	PASS
			3.689	On	-49.198	-16.31	PASS
8DPSK	LCH	2402	2.999	Off	-50.107	-17	PASS
			2.624	On	-49.753	-17.38	PASS
	HCH	2480	3.680	Off	-49.758	-16.32	PASS
			3.597	On	-49.409	-16.4	PASS

Test Graphs

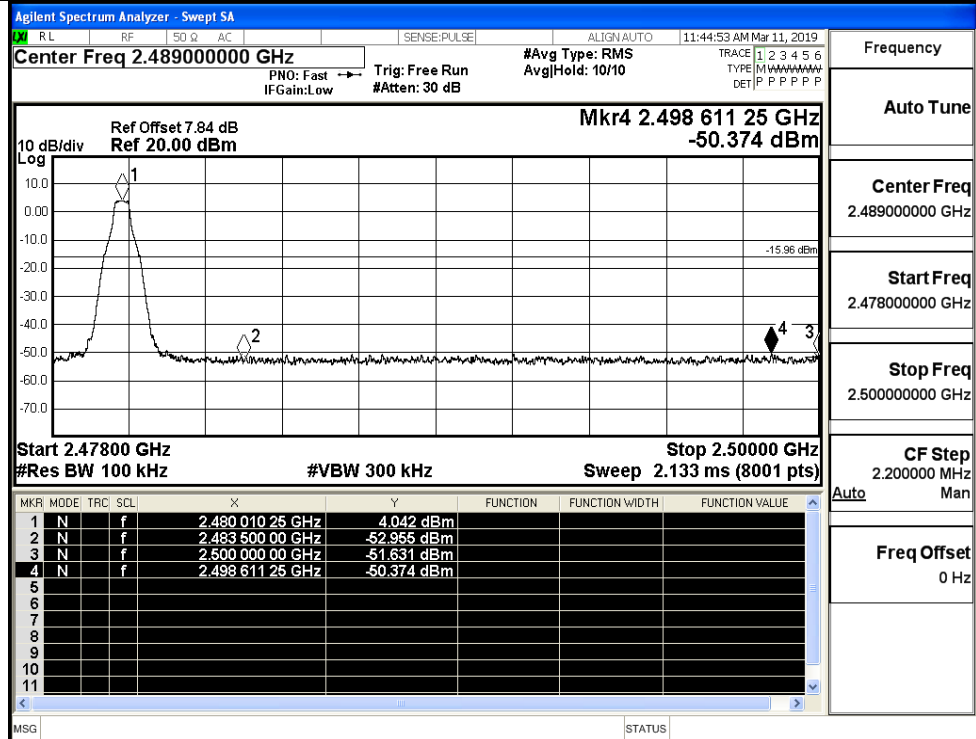
GFSK/LCH/No Hop



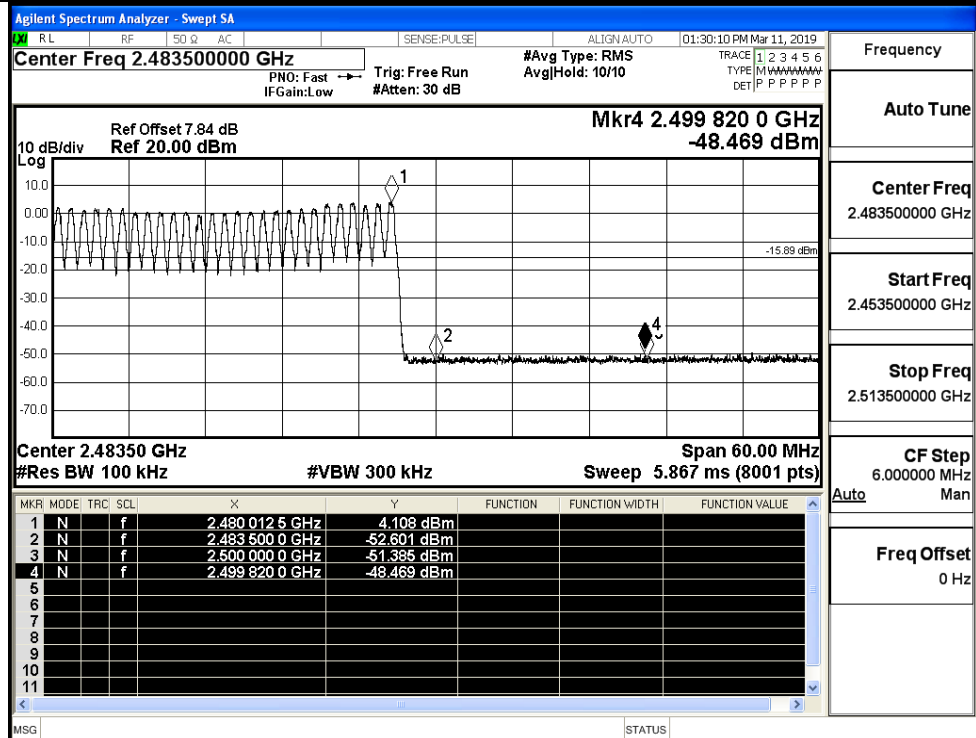
GFSK/LCH/Hop



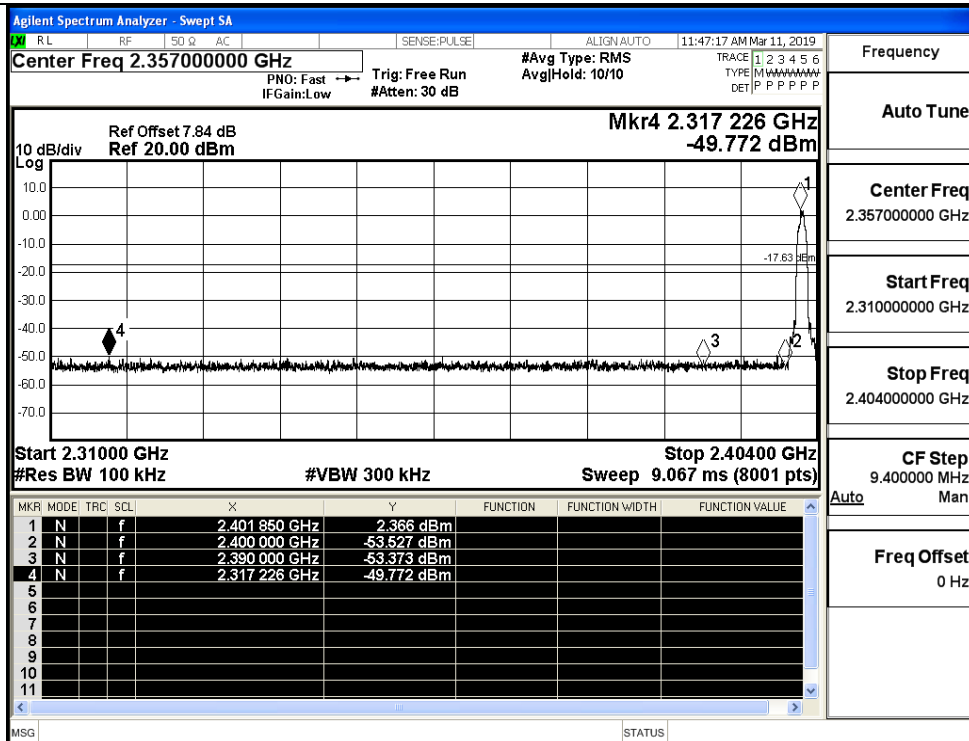
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

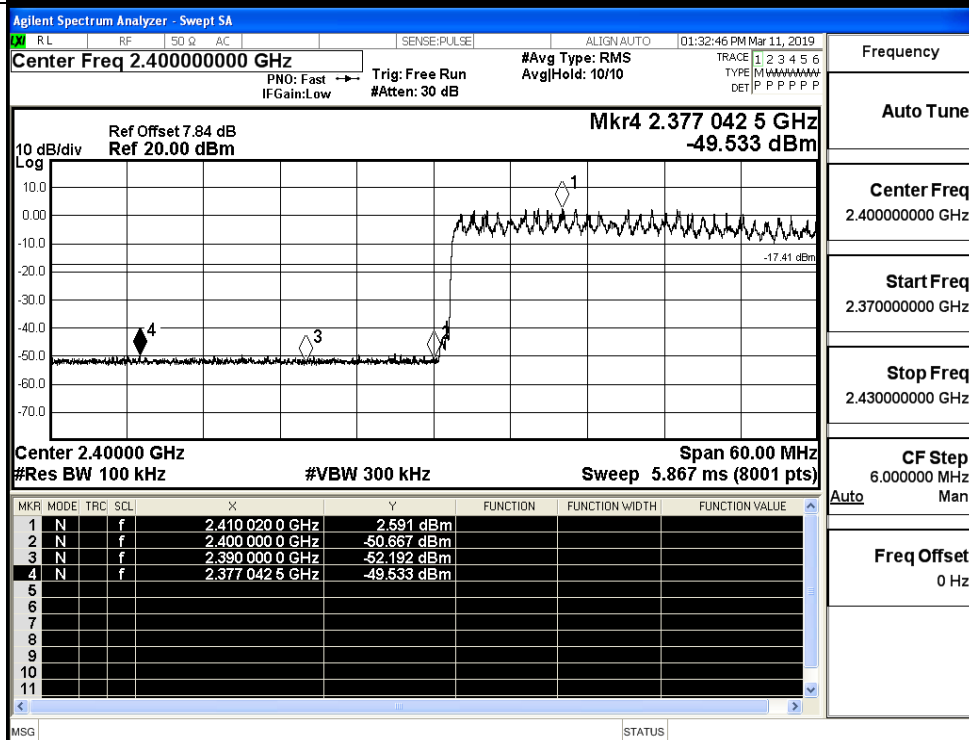


Frequency

Auto Tune

Center Freq
2.357000000 GHzStart Freq
2.310000000 GHzStop Freq
2.404000000 GHzCF Step
9.400000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop

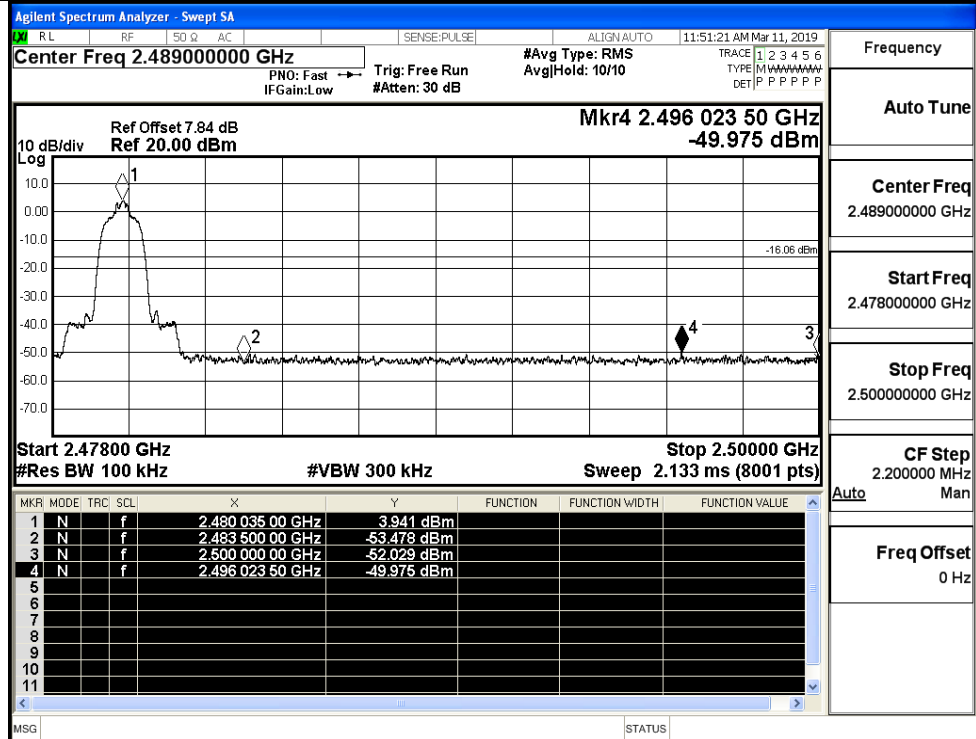


Frequency

Auto Tune

Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

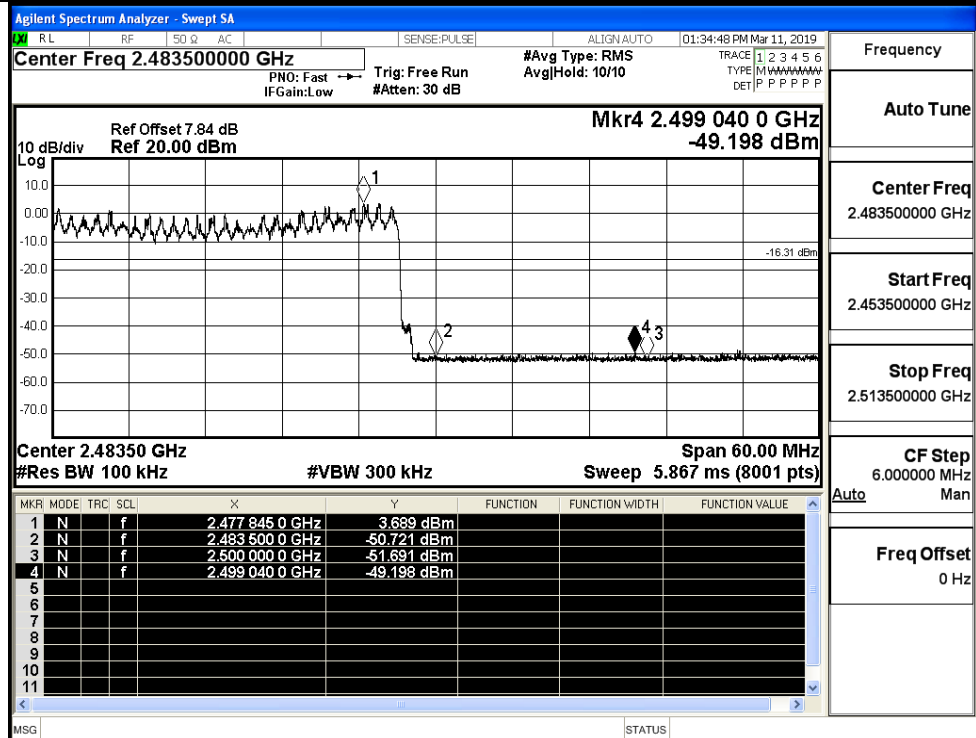
Start Freq
2.478000000 GHz

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

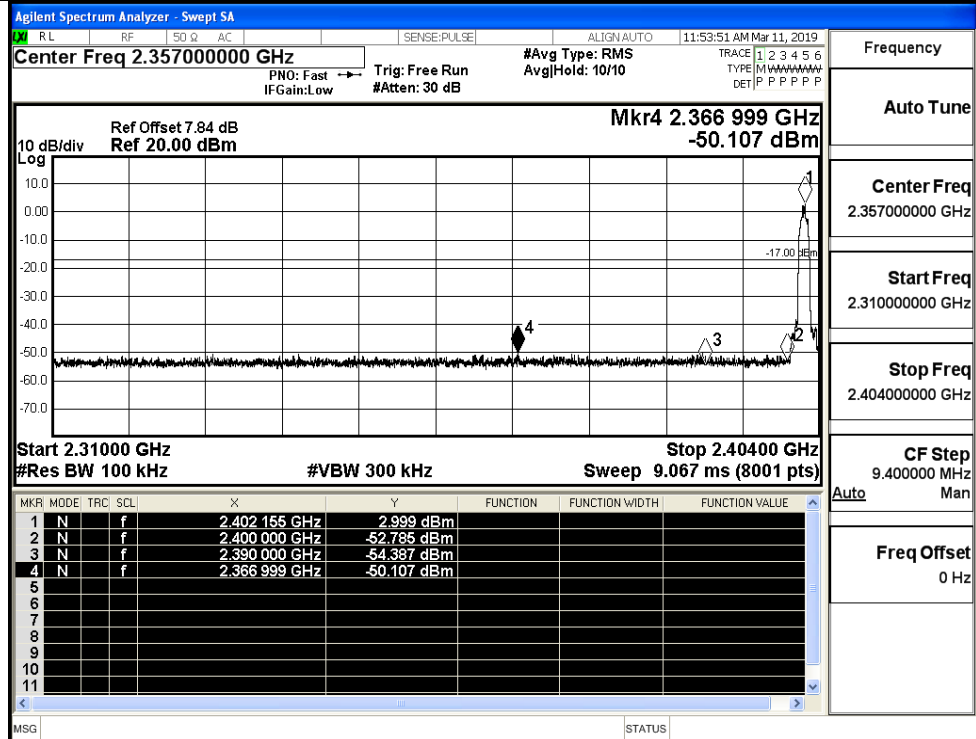
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

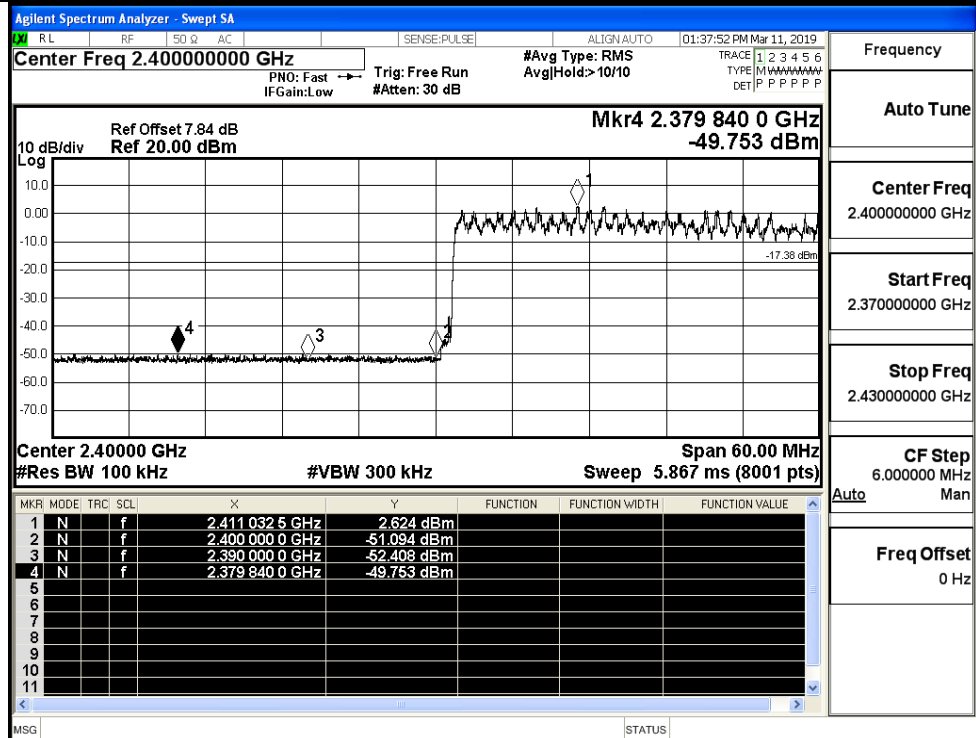
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

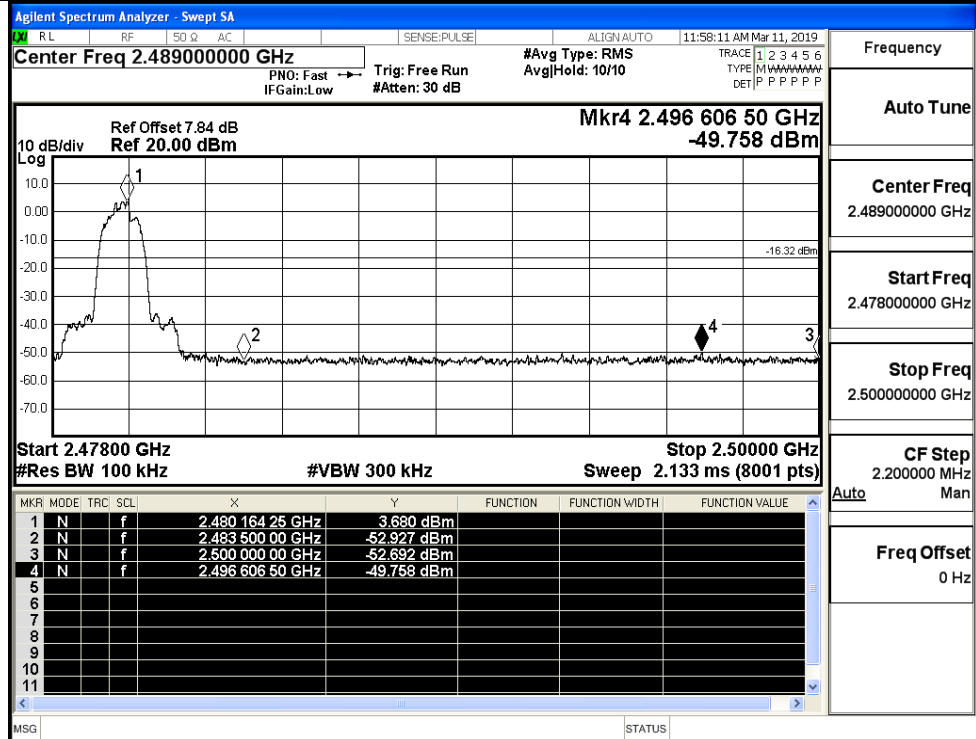
8DPSK/LCH/No Hop



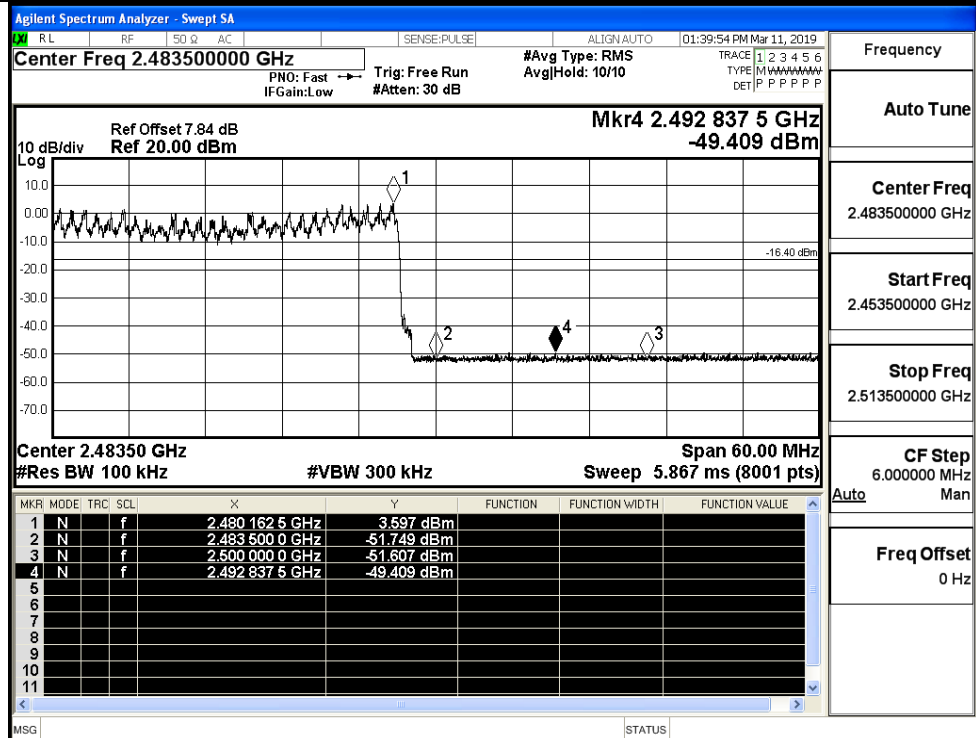
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



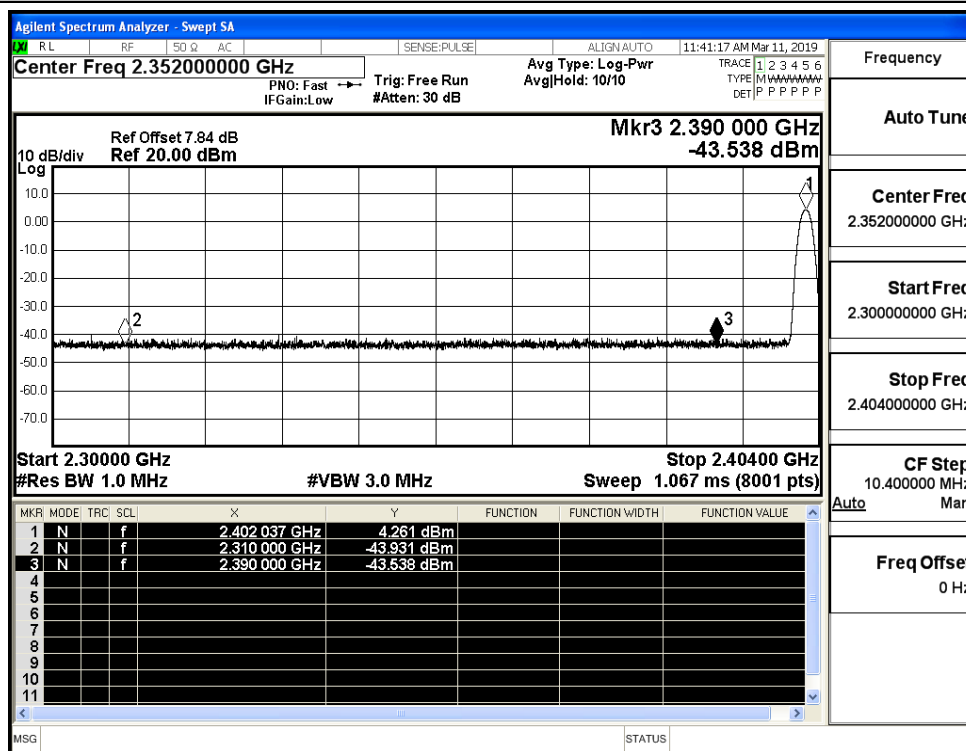
8DPSK/HCH/Hop



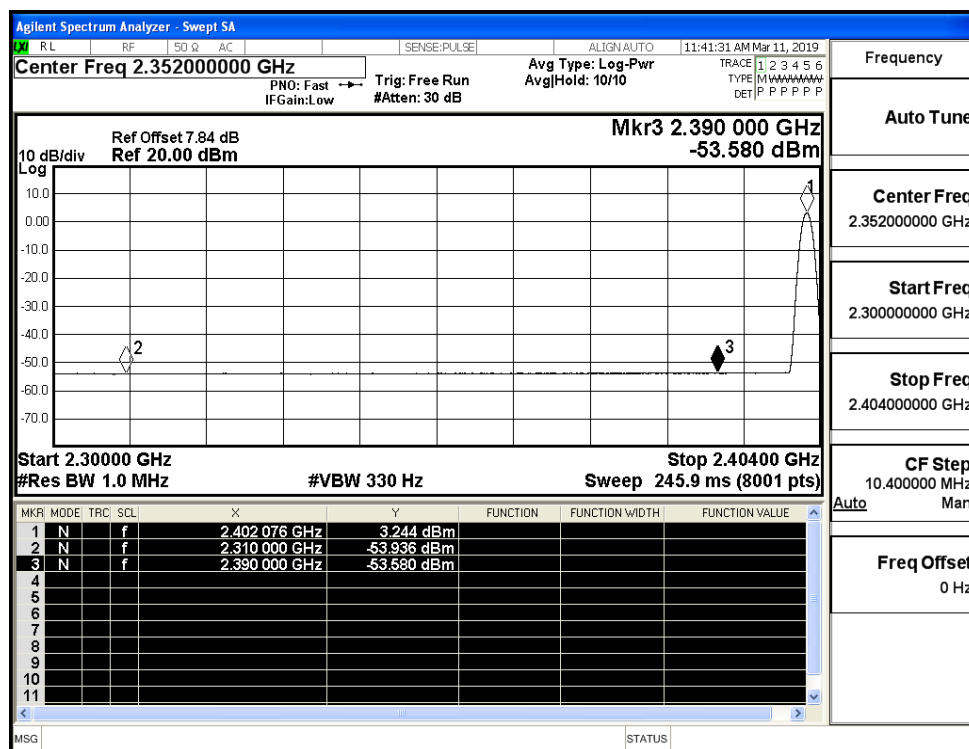
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.93	2.0	0	53.33	PEAK	74	PASS
	Off	2310.0	-53.94	2.0	0	43.32	AV	54	PASS
	Off	2390.0	-43.54	2.0	0	53.72	PEAK	74	PASS
	Off	2390.0	-53.58	2.0	0	43.68	AV	54	PASS
	Off	2483.5	-41.84	2.0	0	55.42	PEAK	74	PASS
	Off	2483.5	-53.41	2.0	0	43.84	AV	54	PASS
	Off	2500.0	-43.64	2.0	0	53.62	PEAK	74	PASS
	Off	2500.0	-53.36	2.0	0	43.89	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.87	2.0	0	53.39	PEAK	74	PASS
	Off	2310.0	-54.08	2.0	0	43.18	AV	54	PASS
	Off	2390.0	-43.28	2.0	0	53.98	PEAK	74	PASS
	Off	2390.0	-53.59	2.0	0	43.67	AV	54	PASS
	Off	2483.5	-43.07	2.0	0	54.19	PEAK	74	PASS
	Off	2483.5	-53.26	2.0	0	43.99	AV	54	PASS
	Off	2500.0	-43.12	2.0	0	54.14	PEAK	74	PASS
	Off	2500.0	-53.36	2.0	0	43.90	AV	54	PASS
8DPSK	Off	2310.0	-43.87	2.0	0	53.39	PEAK	74	PASS
	Off	2310.0	-53.95	2.0	0	43.31	AV	54	PASS
	Off	2390.0	-43.47	2.0	0	53.79	PEAK	74	PASS
	Off	2390.0	-53.67	2.0	0	43.59	AV	54	PASS
	Off	2483.5	-42.54	2.0	0	54.71	PEAK	74	PASS
	Off	2483.5	-53.36	2.0	0	43.90	AV	54	PASS
	Off	2500.0	-43.04	2.0	0	54.22	PEAK	74	PASS
	Off	2500.0	-53.24	2.0	0	44.02	AV	54	PASS

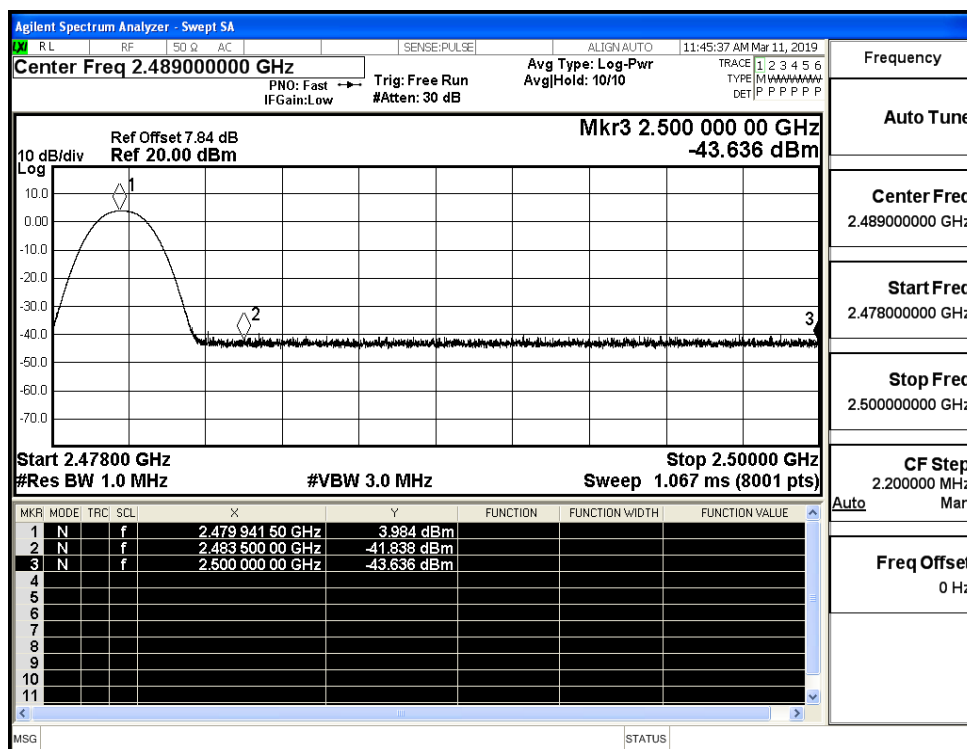
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



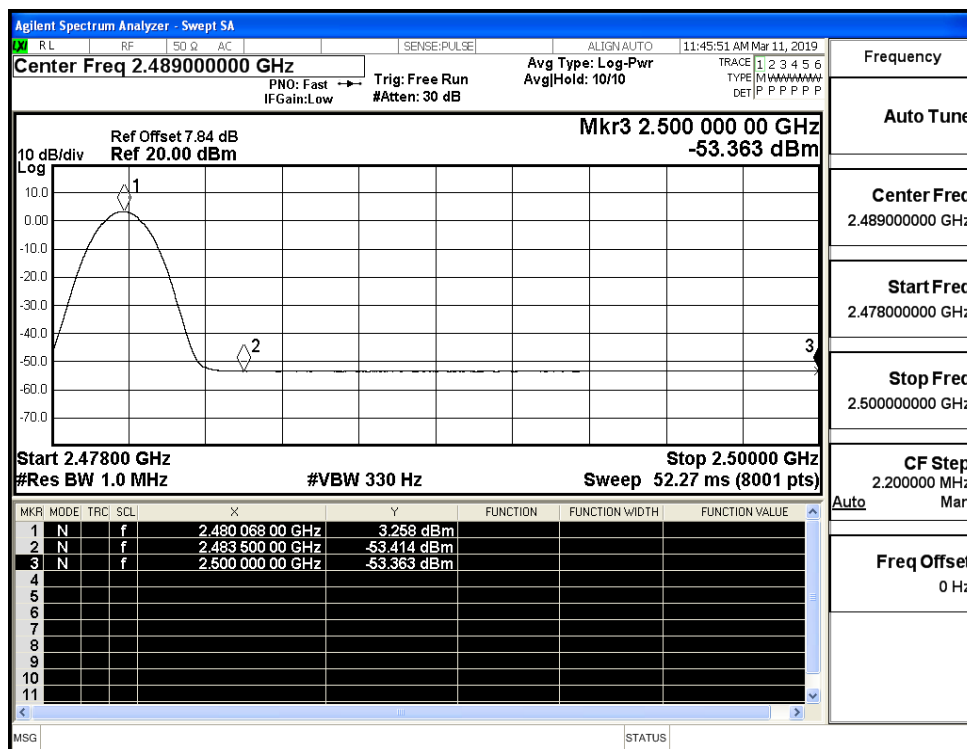
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

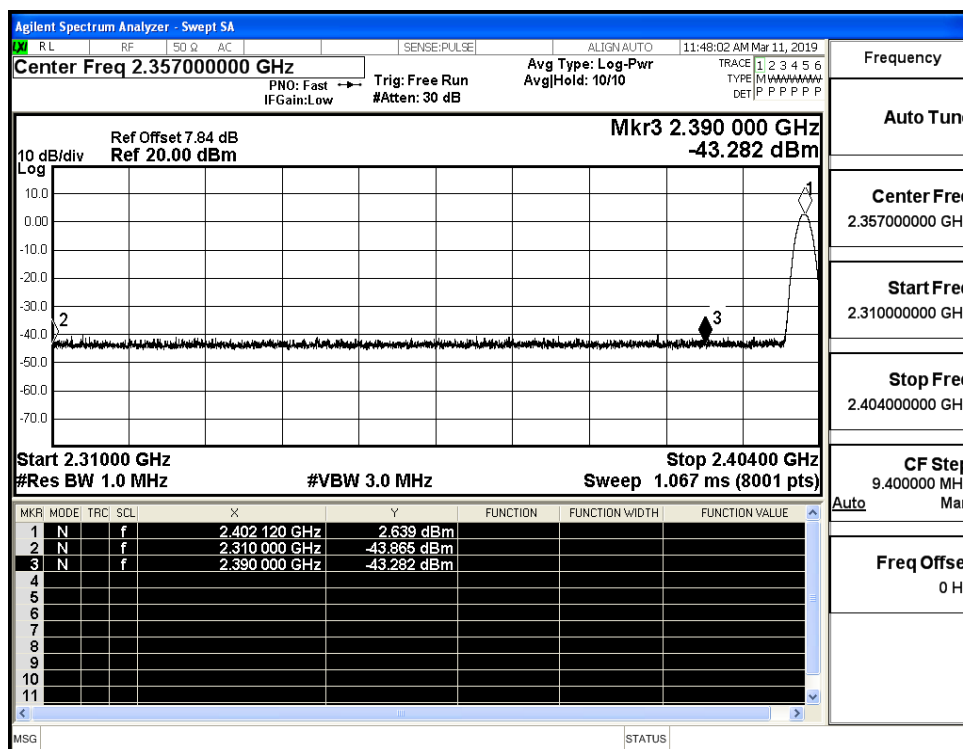
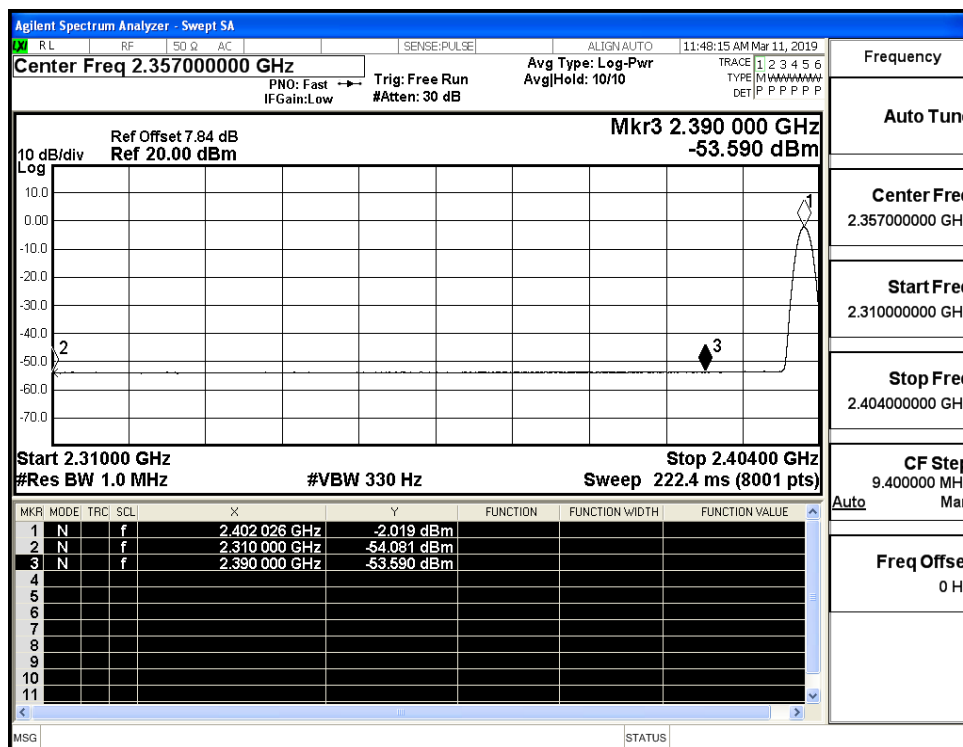


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

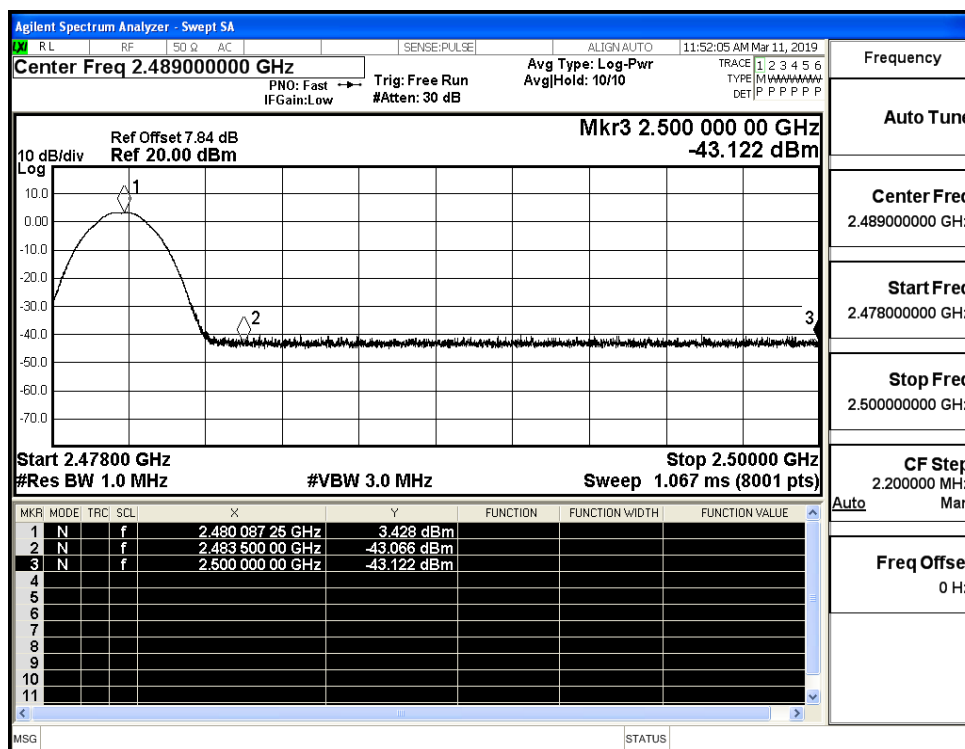


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

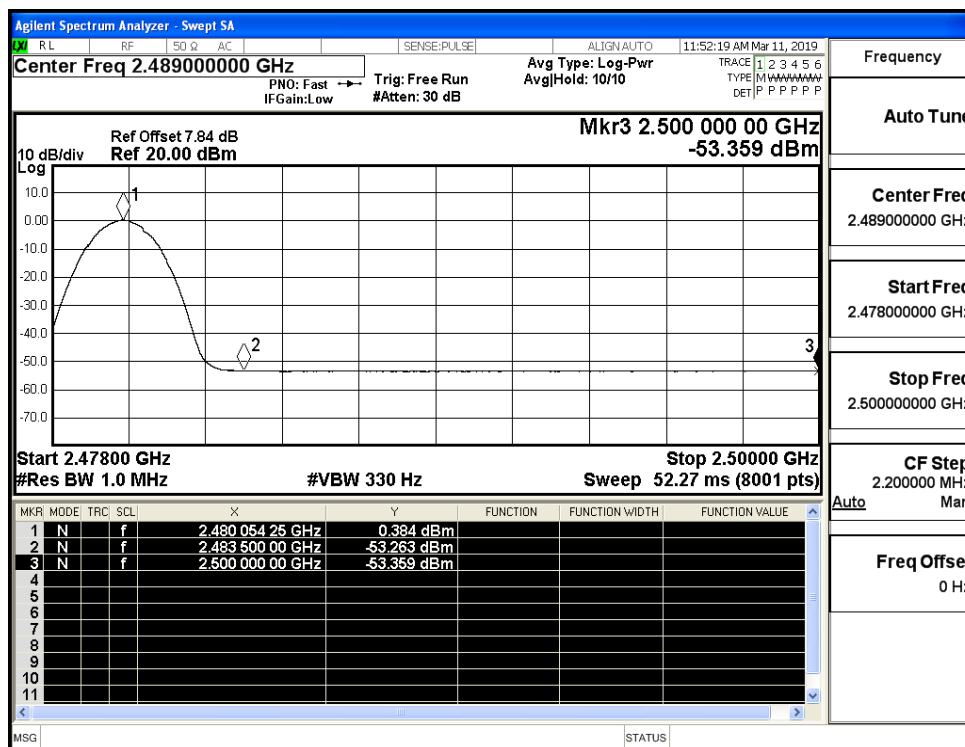


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

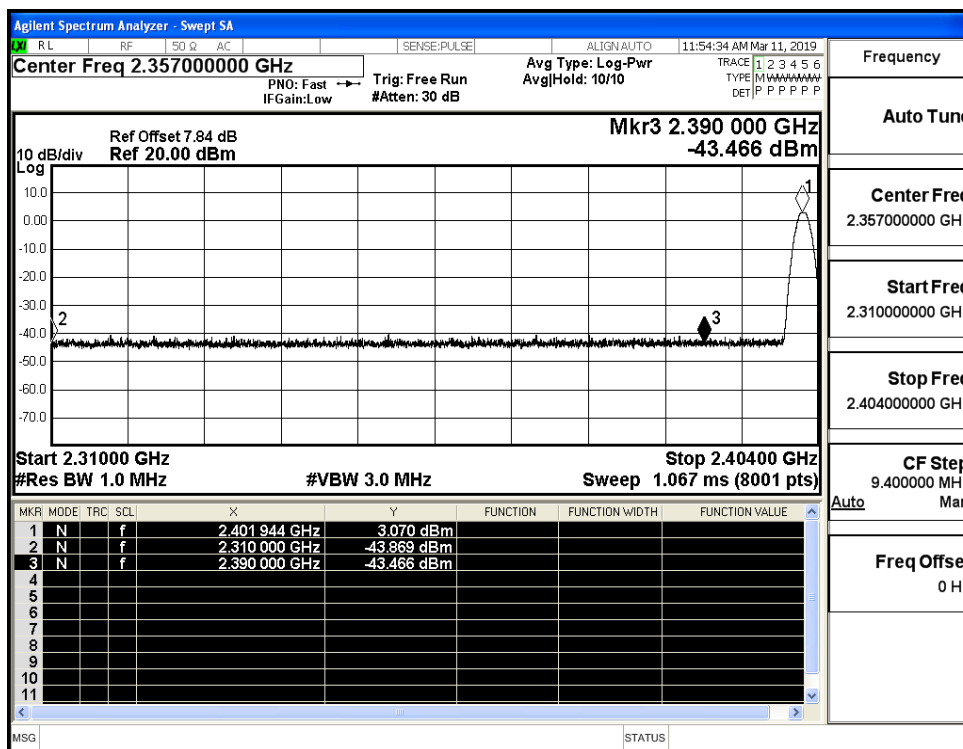
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



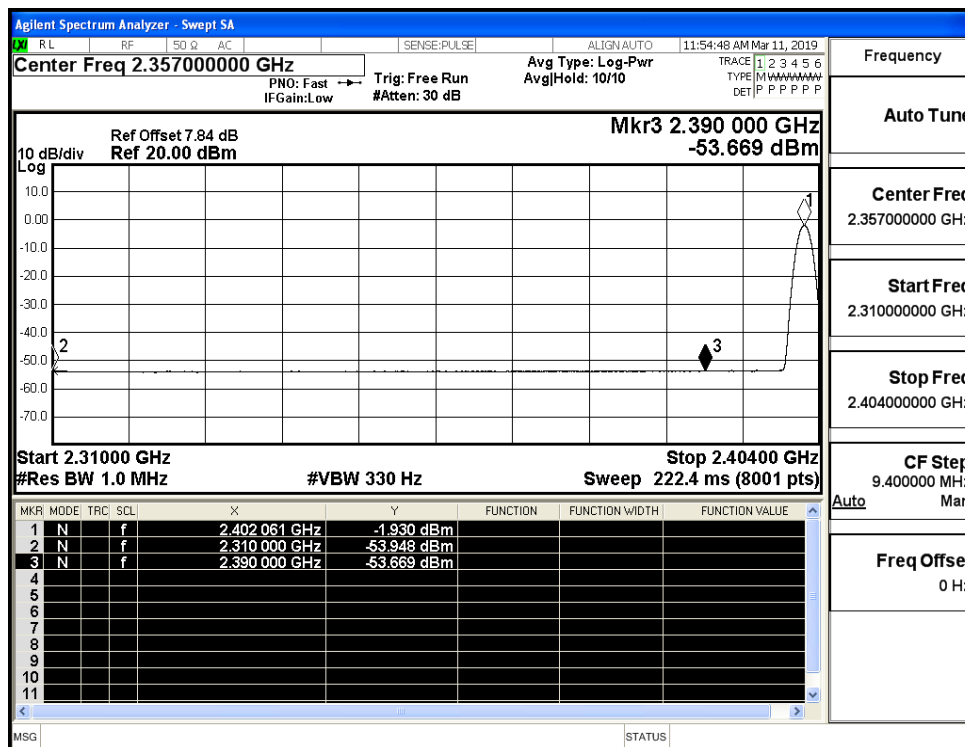
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



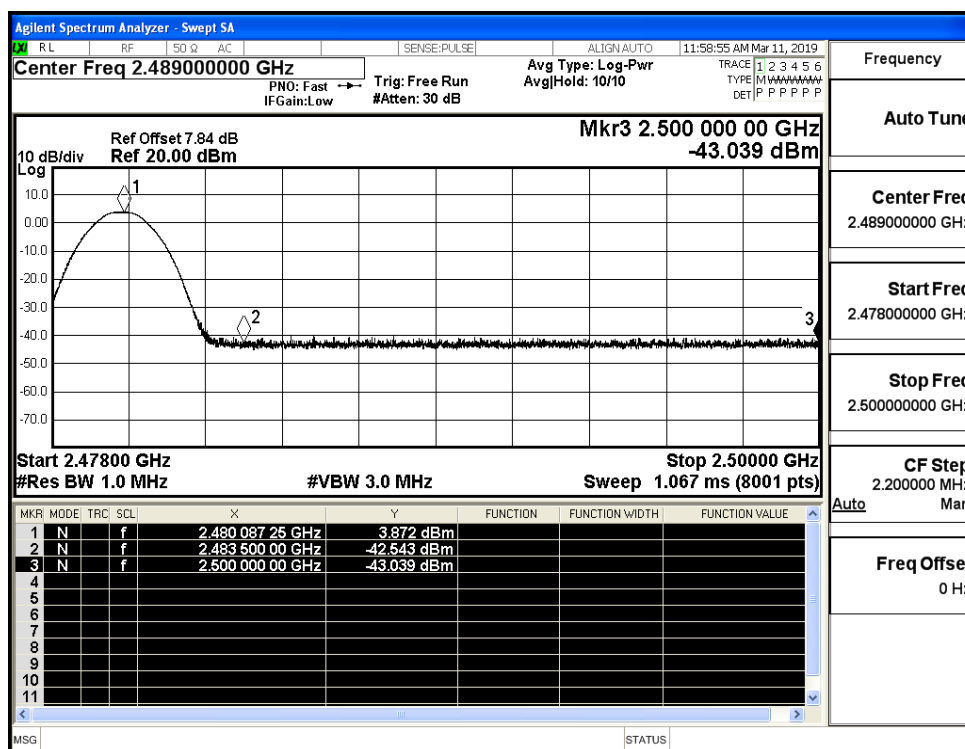
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

