

Appendix A

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

Product Name: Sirius A

Trade Mark: OCKEL

Test Model: OCSA-0812

Environmental Conditions

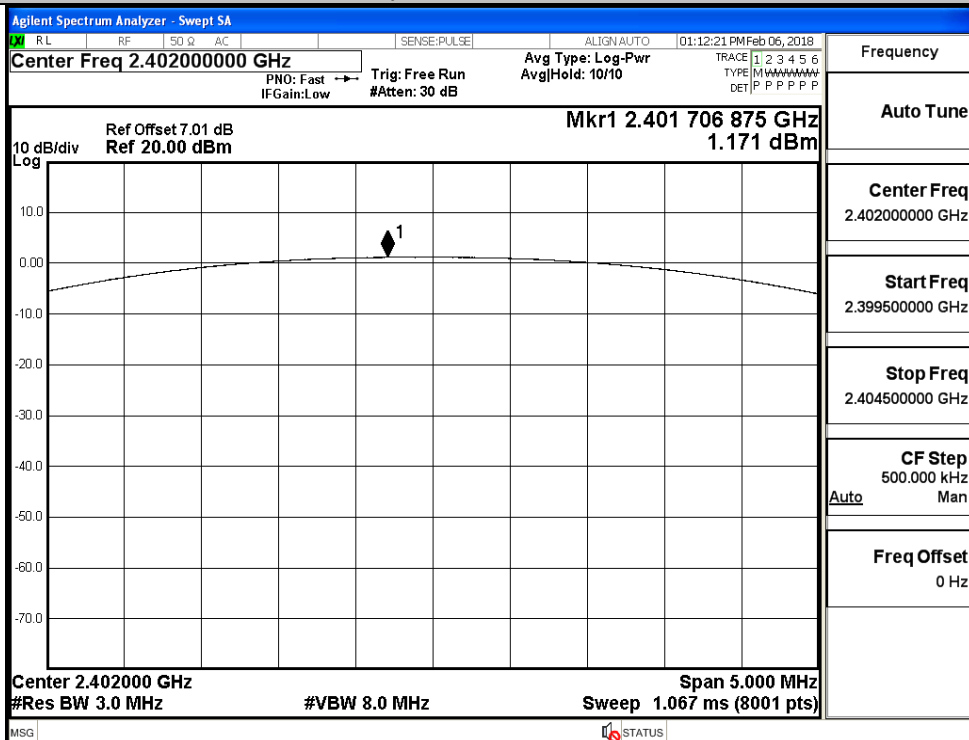
Temperature:	23.2 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Ryan.Hu
Supervised by:	Jayden Zhuo

A.1 Maximum Peak Conducted Output Power

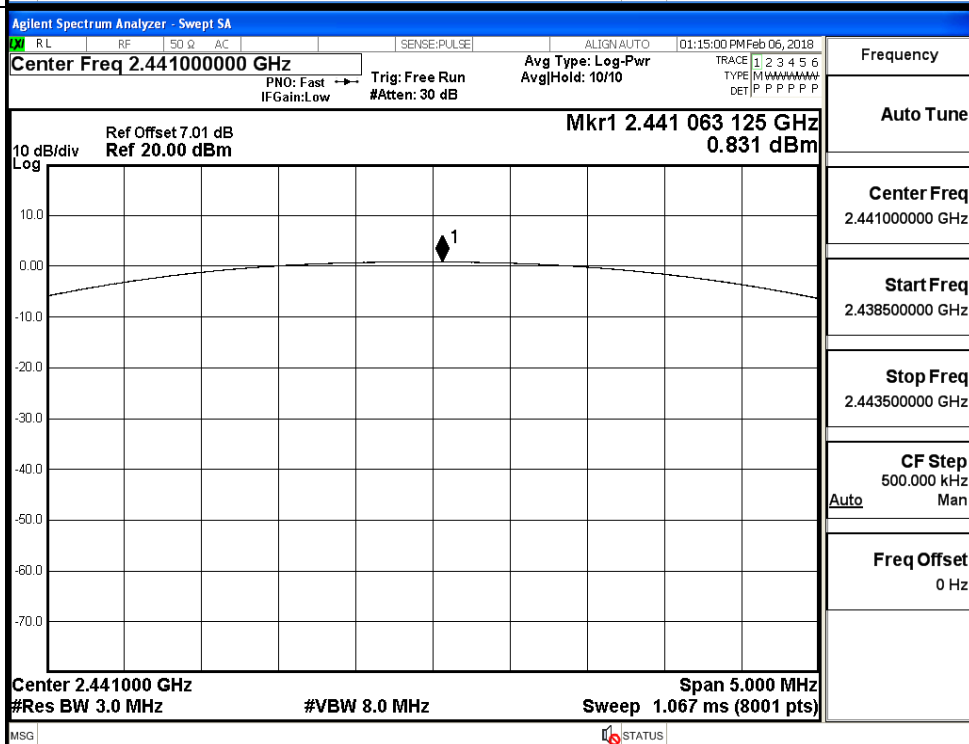
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.171	30	PASS
	MCH	0.831	30	PASS
	HCH	0.763	30	PASS
$\pi/4$ DQPSK	LCH	-1.180	21	PASS
	MCH	-1.326	21	PASS
	HCH	-1.613	21	PASS
8DPSK	LCH	-2.149	21	PASS
	MCH	-2.315	21	PASS
	HCH	-2.580	21	PASS

Test Graphs

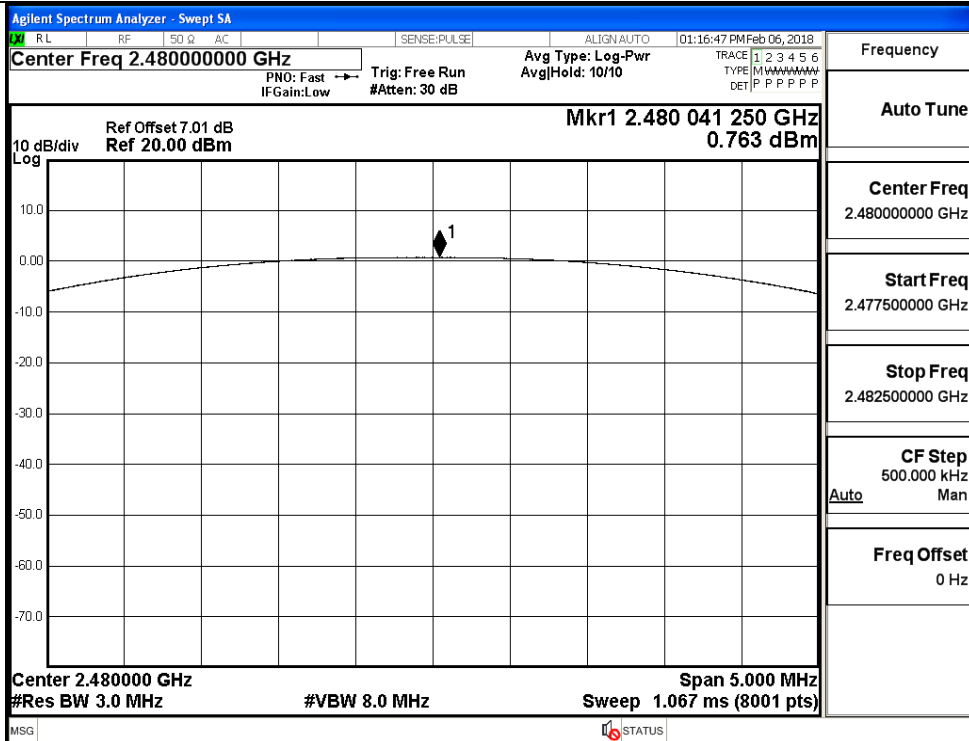
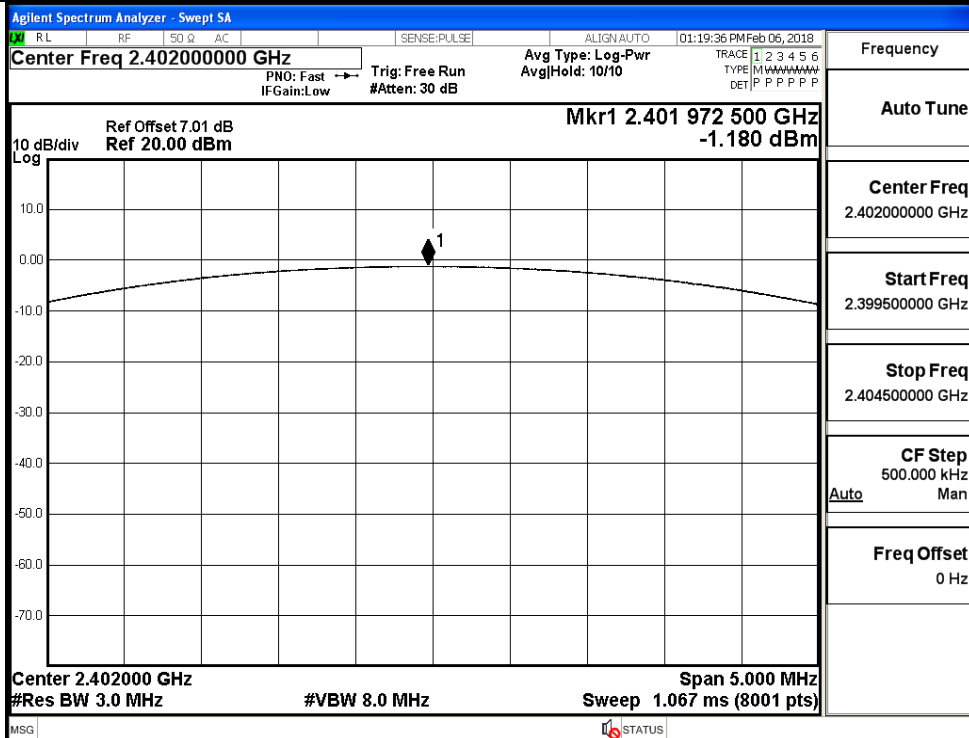
GFSK/LCH

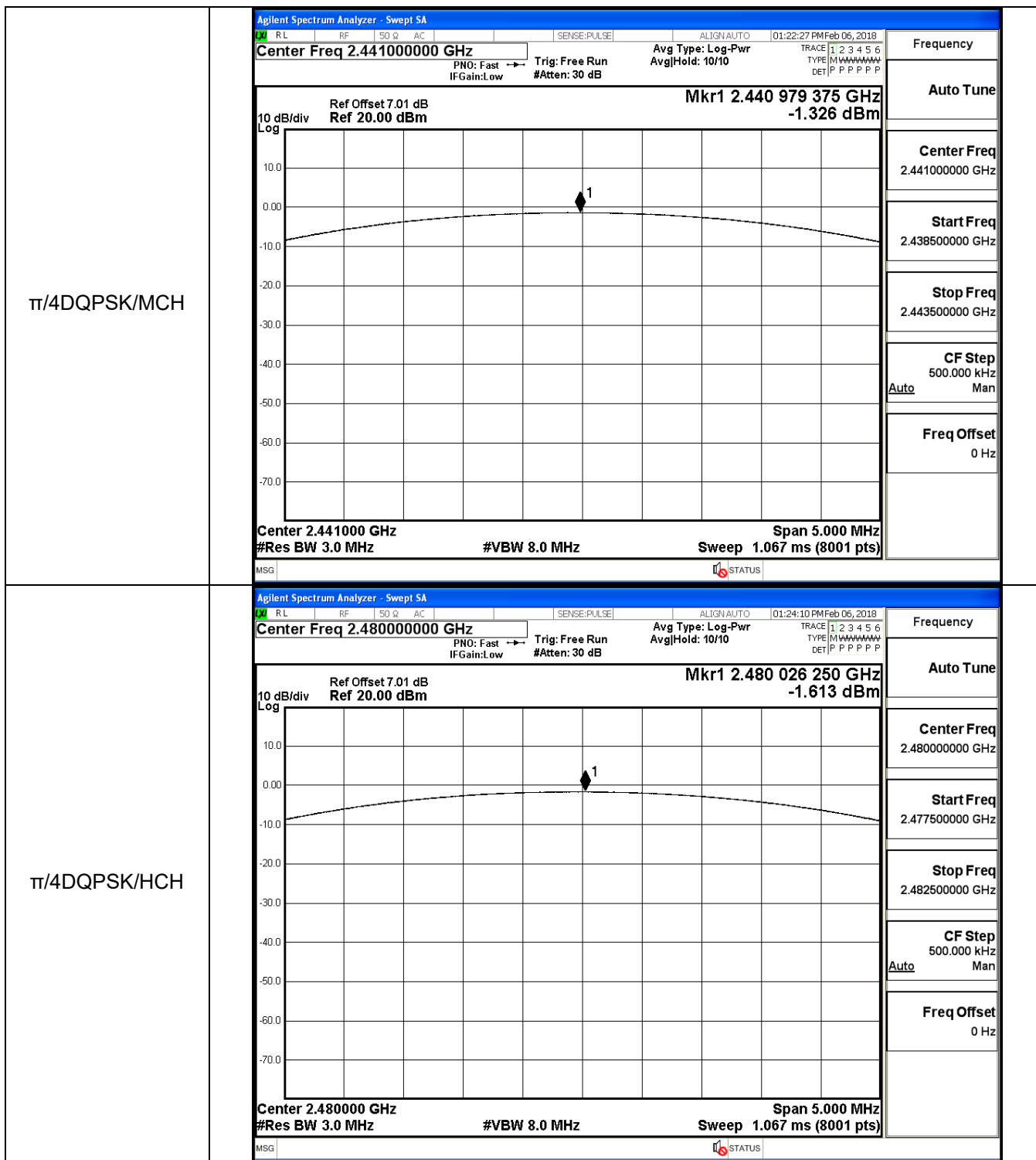


GFSK/MCH

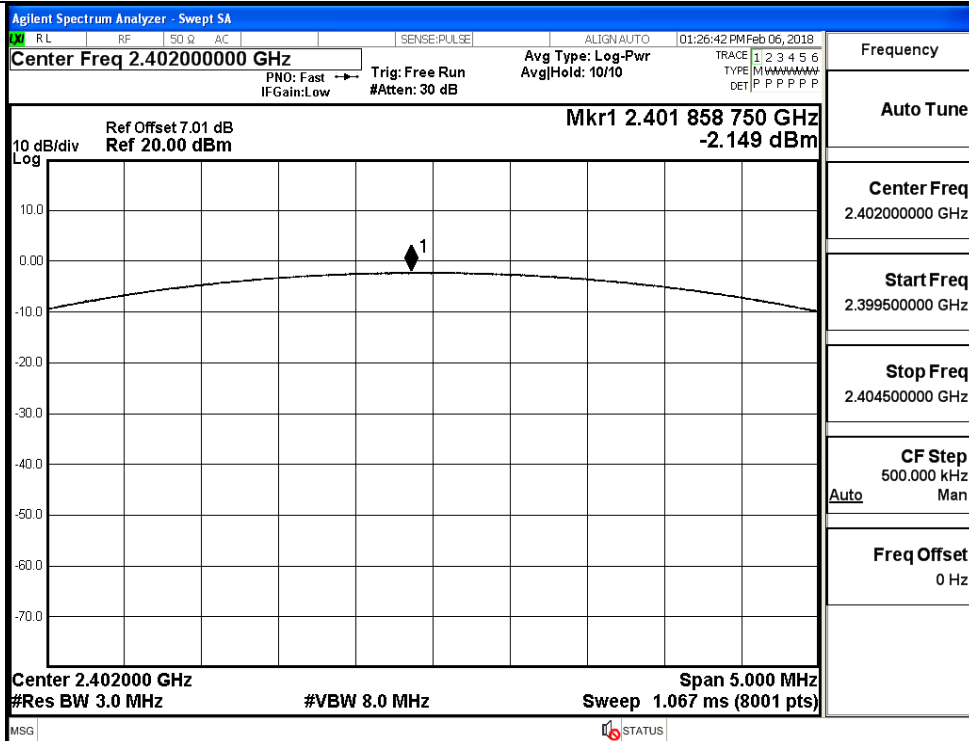


GFSK/HCH

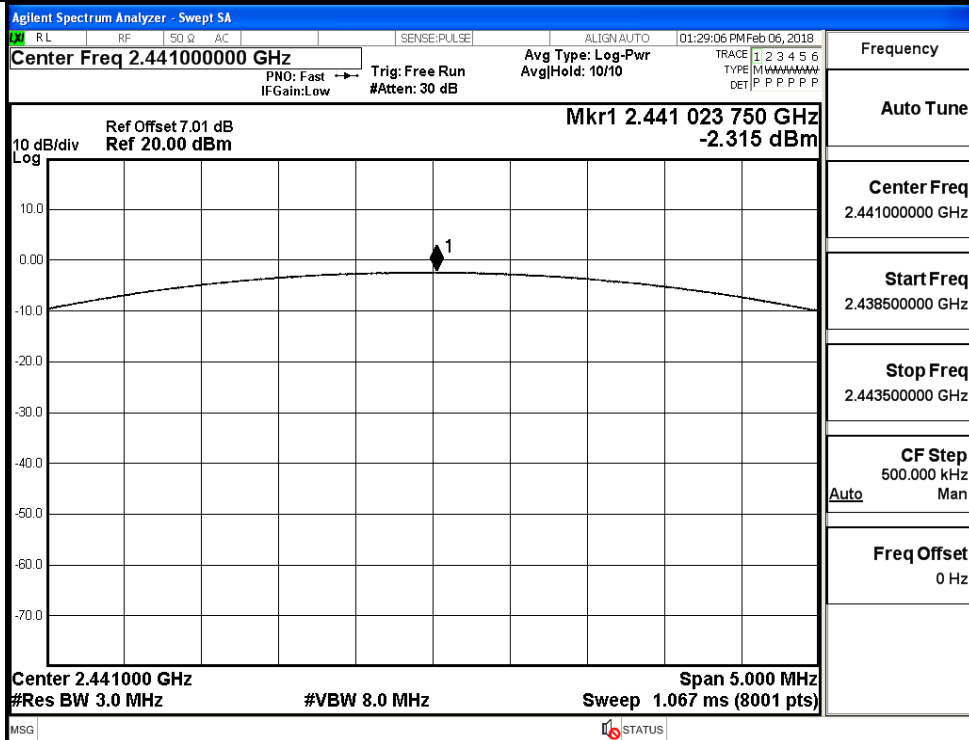
 $\pi/4$ DQPSK/LCH



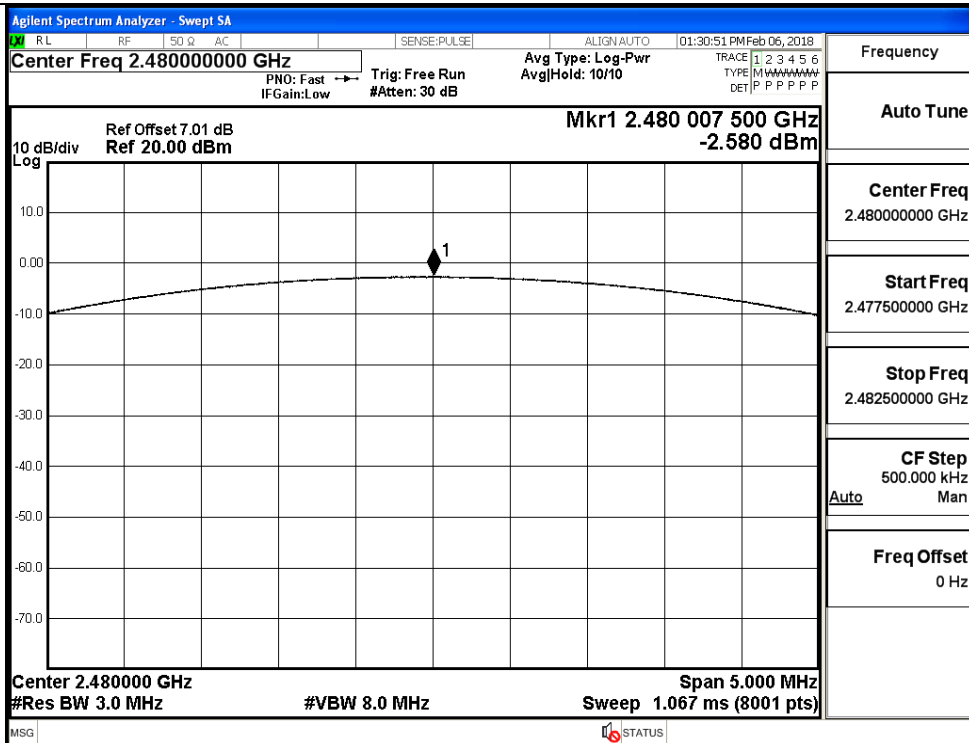
8DPSK/LCH



8DPSK/MCH



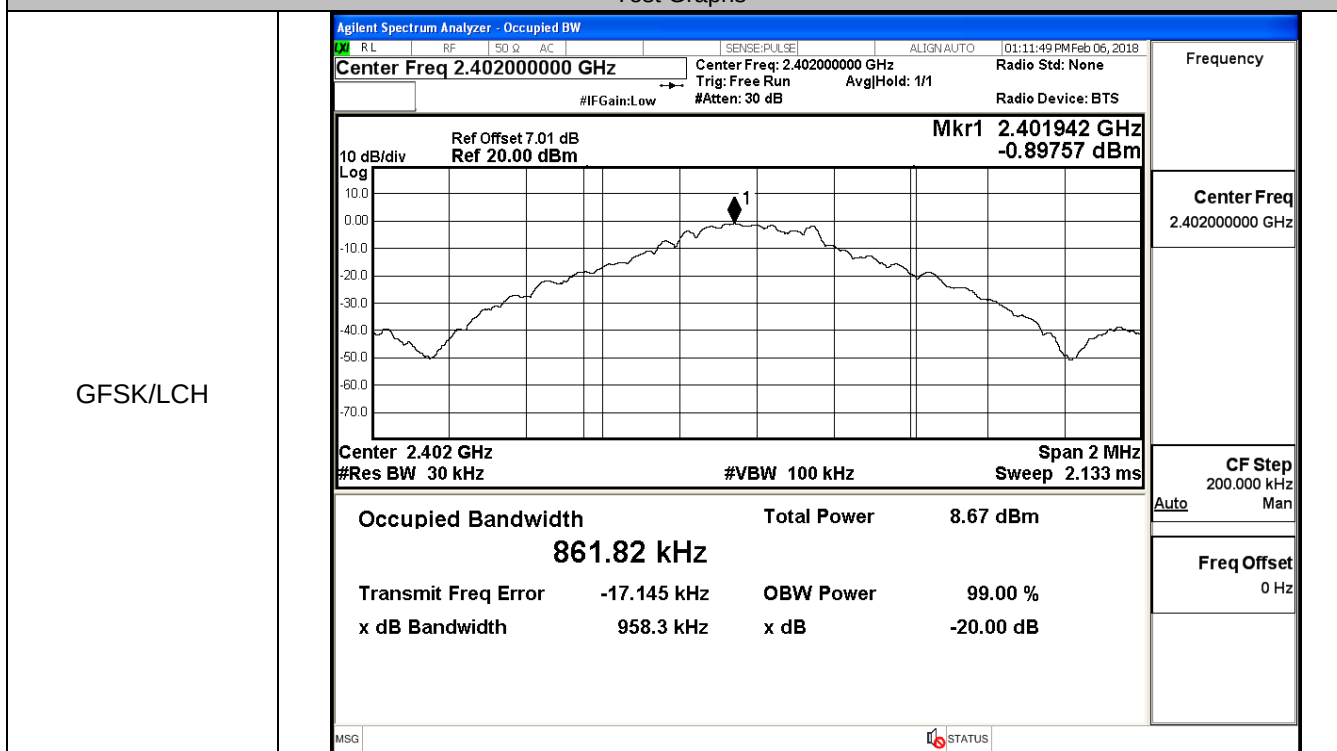
8DPSK/HCH



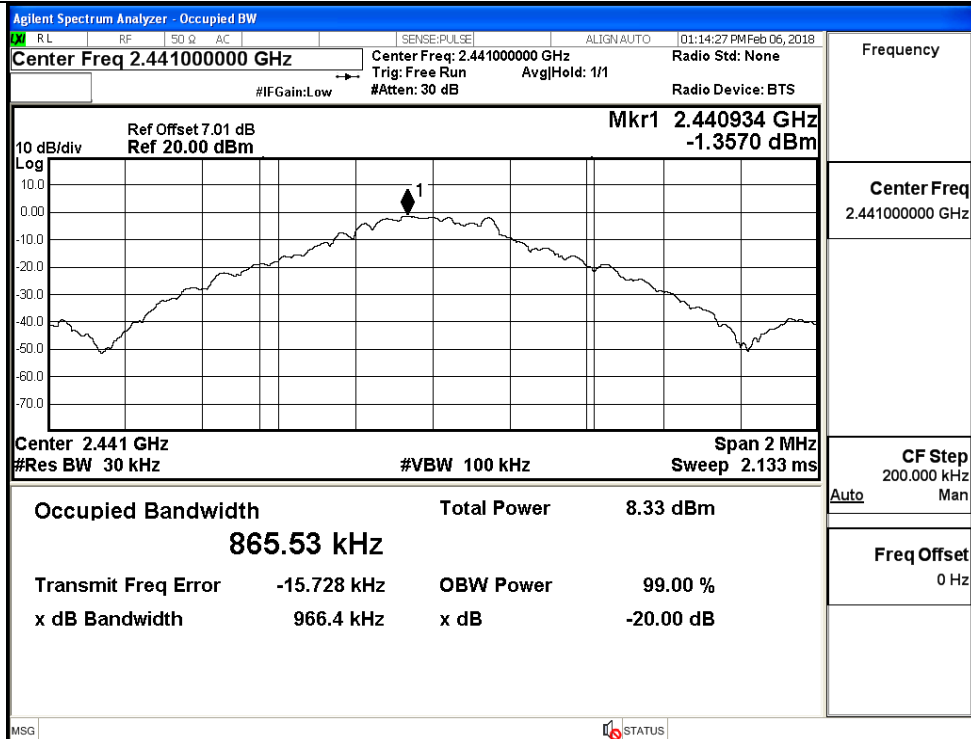
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9583	Not Specified	PASS
	MCH	0.9664	Not Specified	PASS
	HCH	0.9642	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.289	Not Specified	PASS
	MCH	1.440	Not Specified	PASS
	HCH	1.286	Not Specified	PASS
8DPSK	LCH	1.293	Not Specified	PASS
	MCH	1.292	Not Specified	PASS
	HCH	1.290	Not Specified	PASS

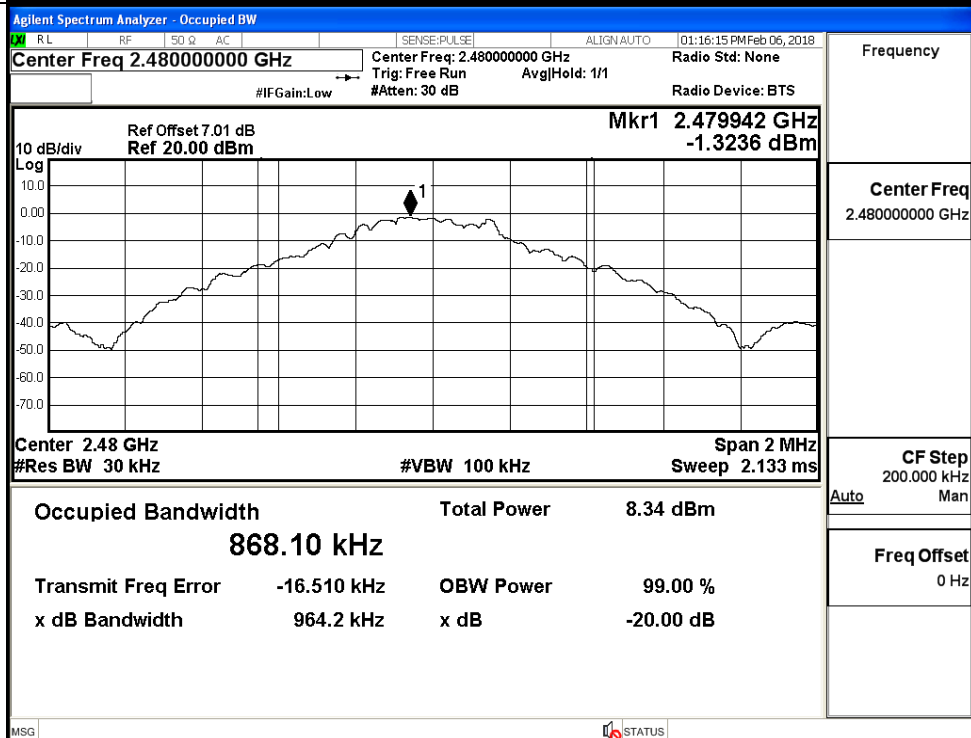
Test Graphs

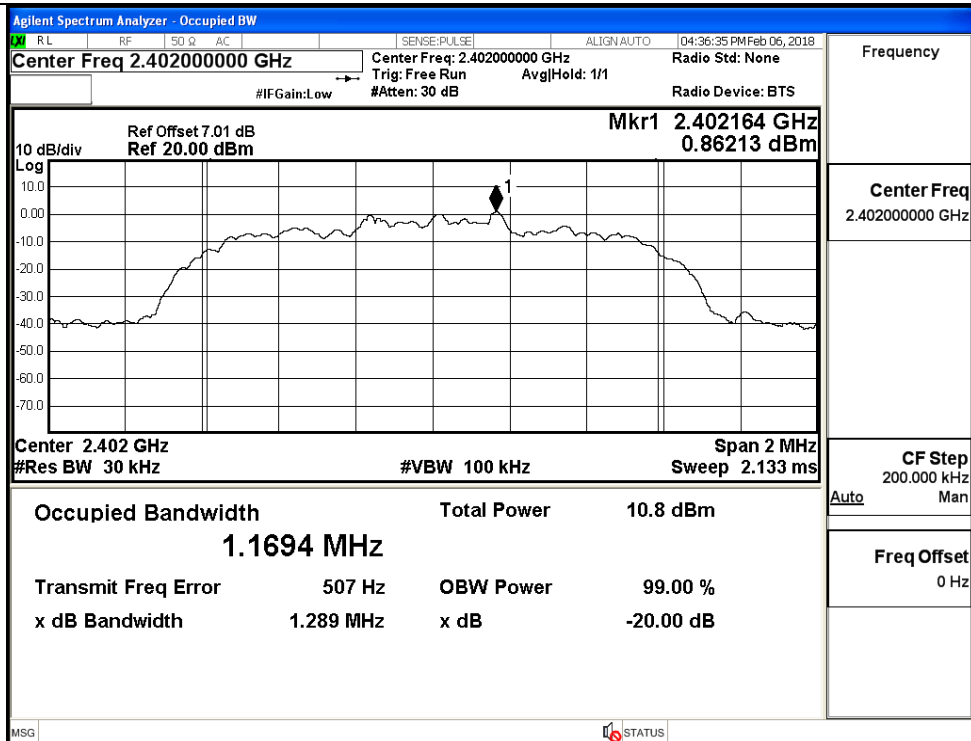
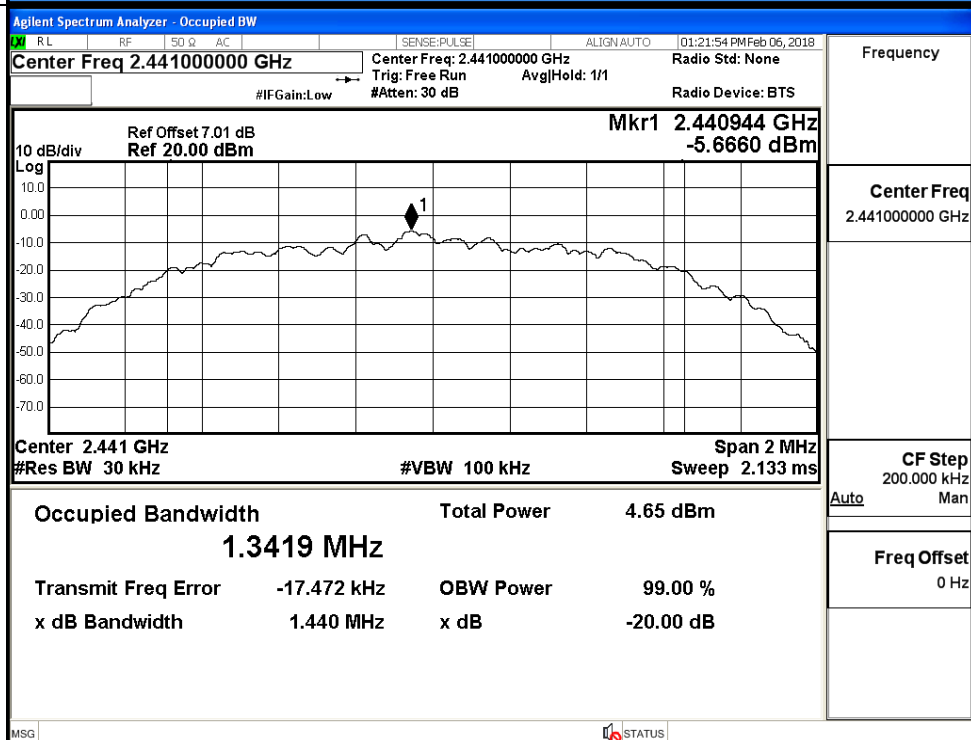


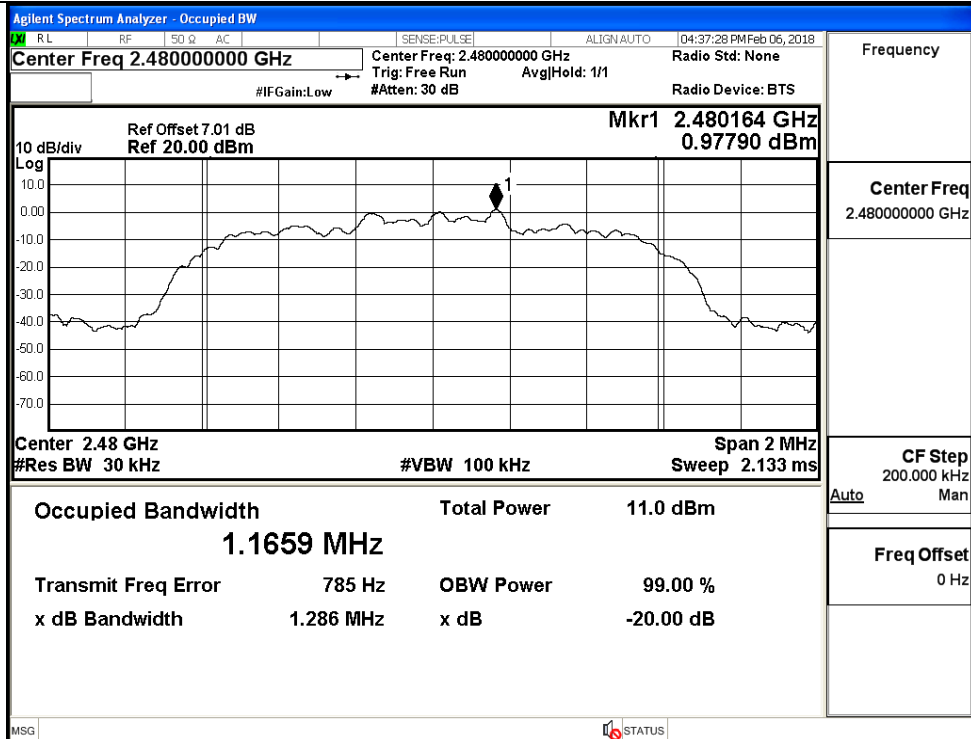
GFSK/MCH



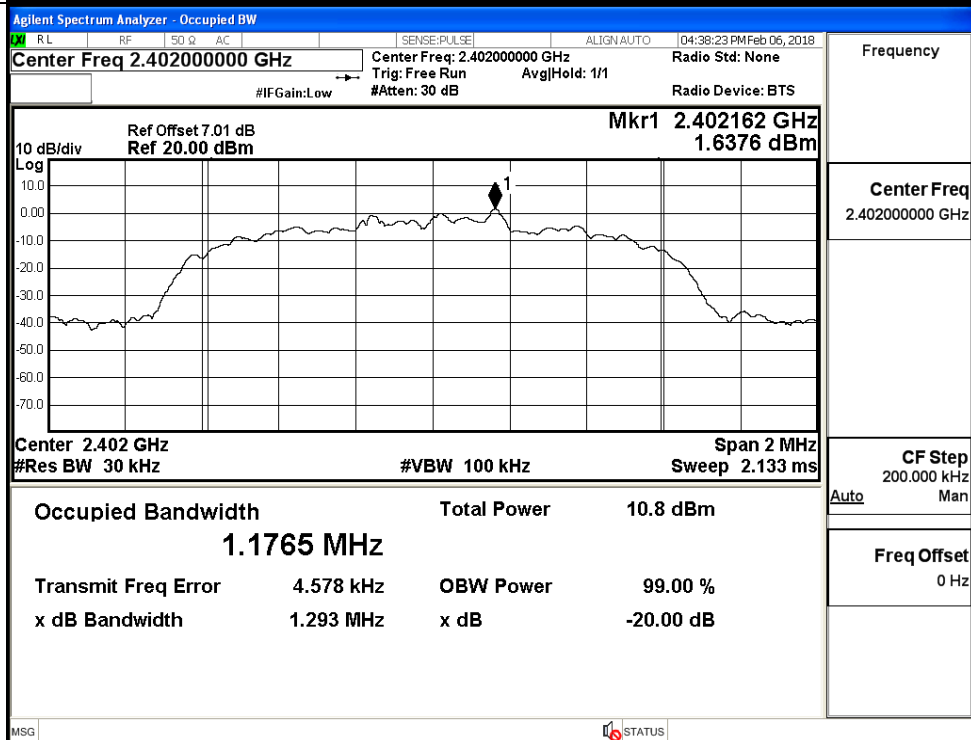
GFSK/HCH



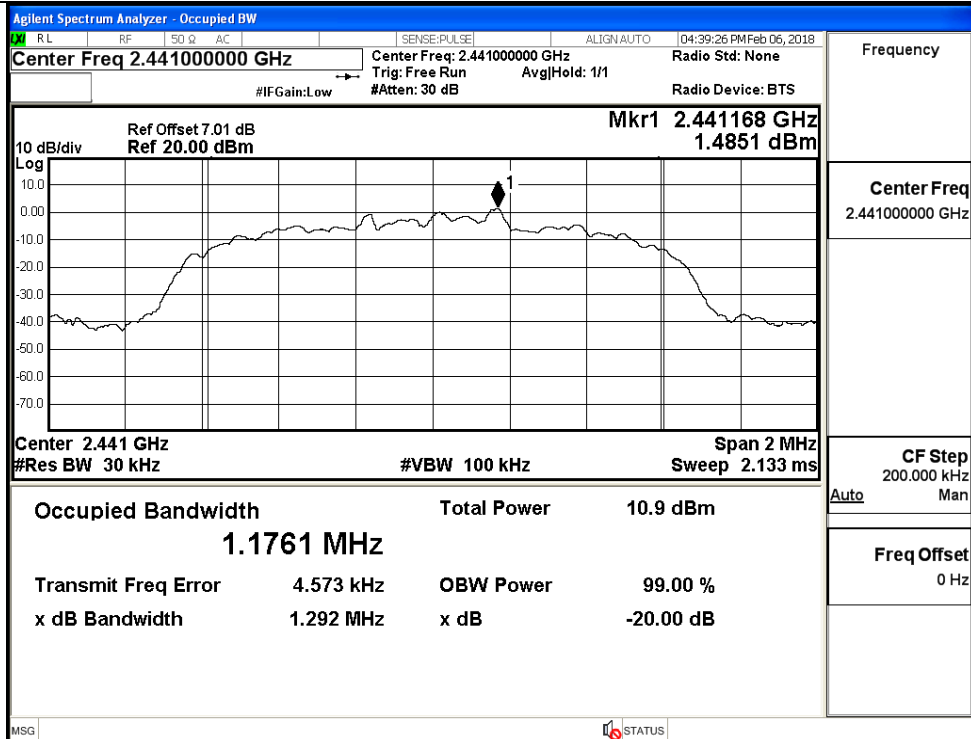
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

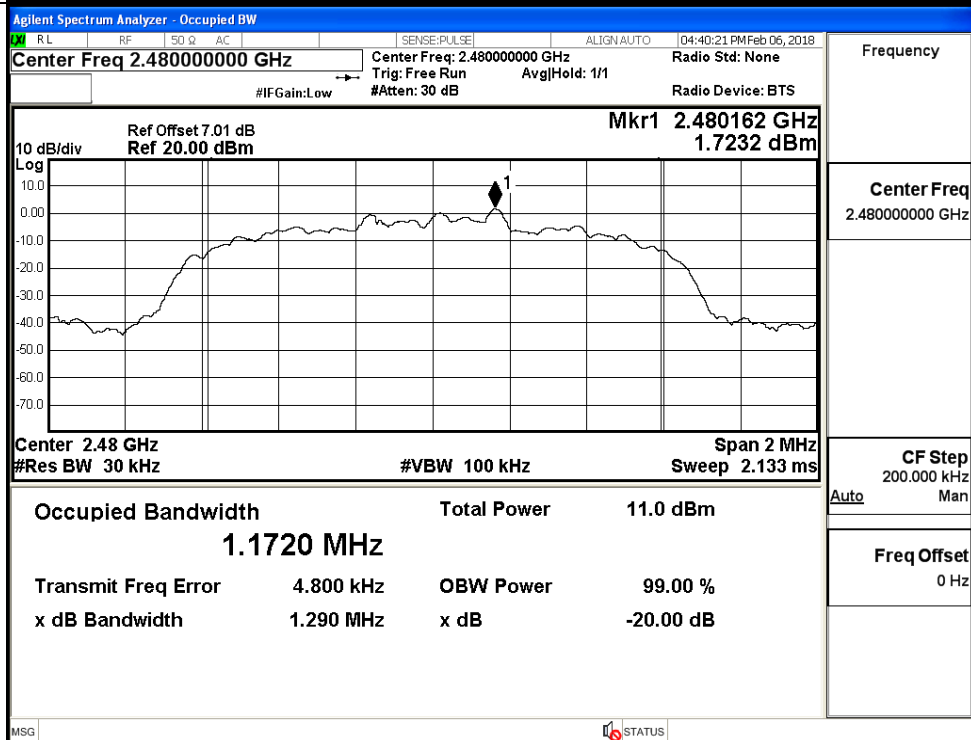
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

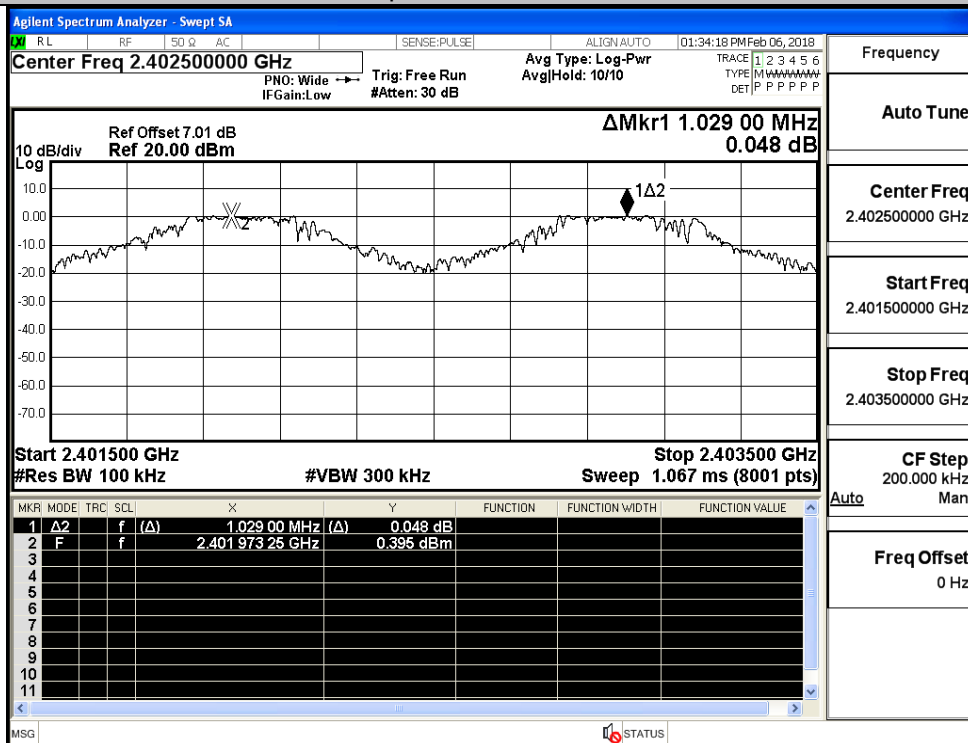


A.3 Carrier Frequency Separation

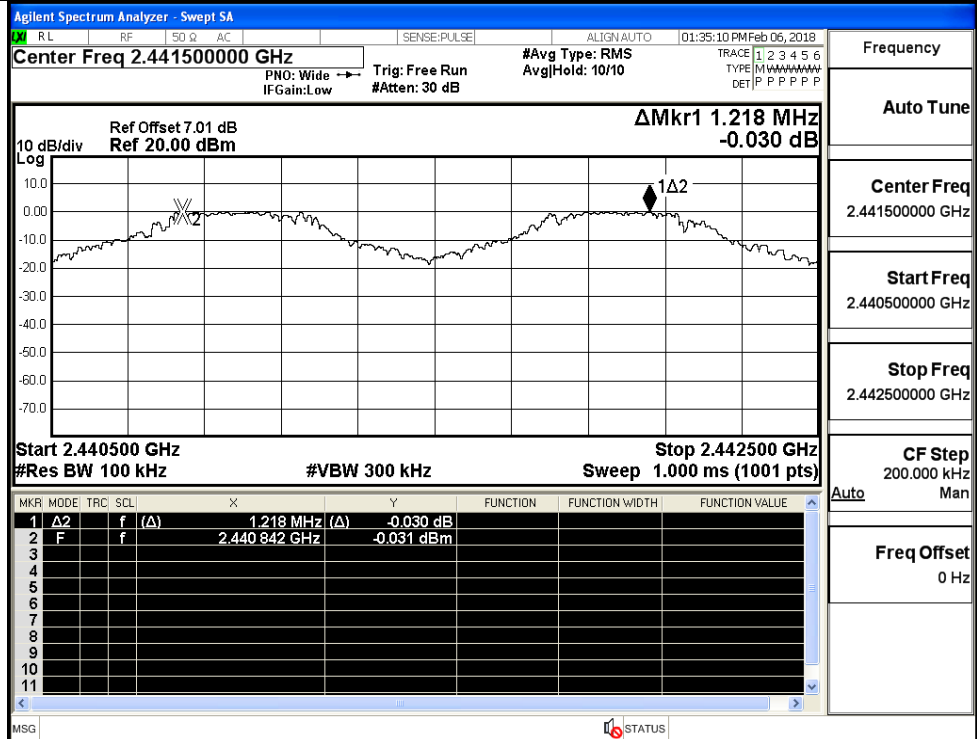
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.029	0.9583	PASS
	MCH	1.218	0.9664	PASS
	HCH	0.948	0.9642	PASS
$\pi/4$ DQPSK	LCH	1.126	0.859	PASS
	MCH	1.010	0.960	PASS
	HCH	1.190	0.857	PASS
8DPSK	LCH	1.300	0.862	PASS
	MCH	1.066	0.861	PASS
	HCH	0.998	0.860	PASS

Test Graphs

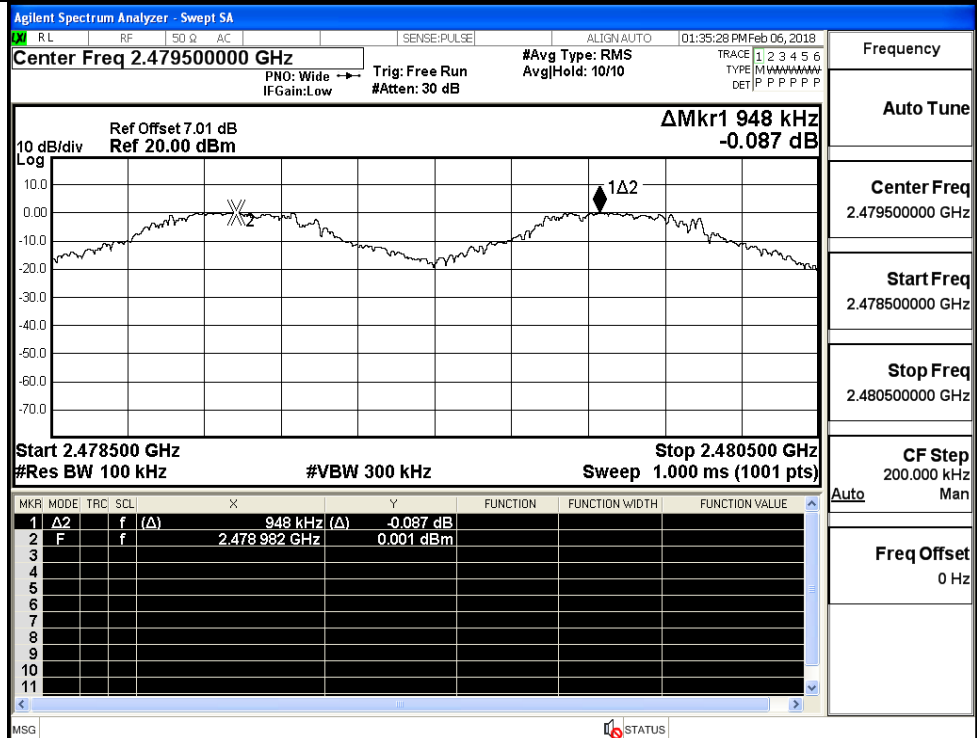
GFSK/LCH

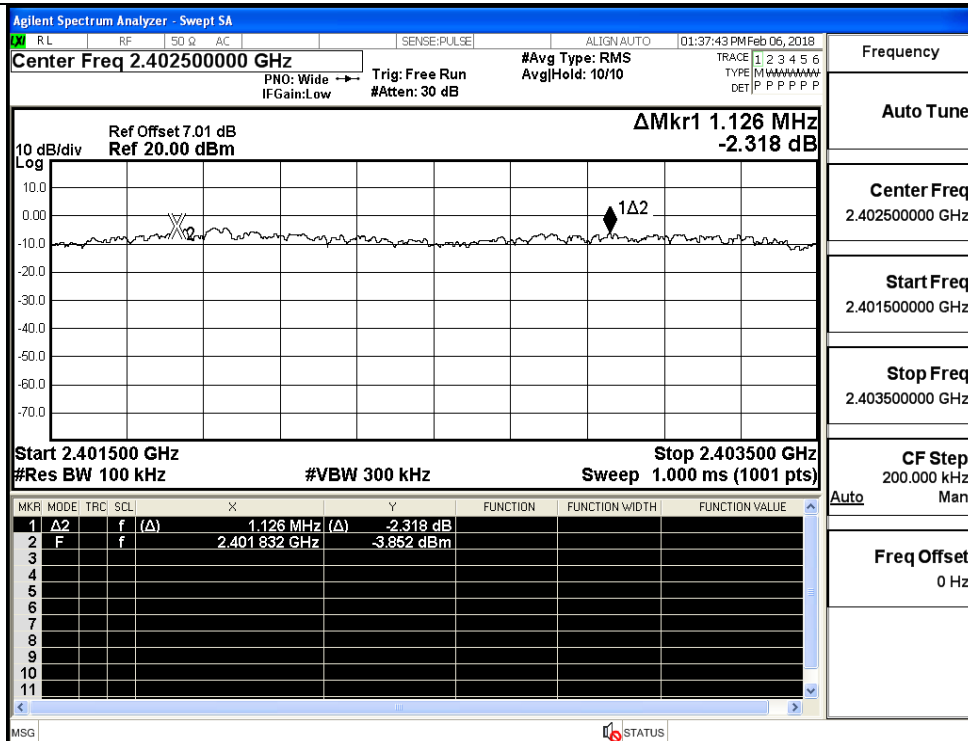


GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

Auto Tune

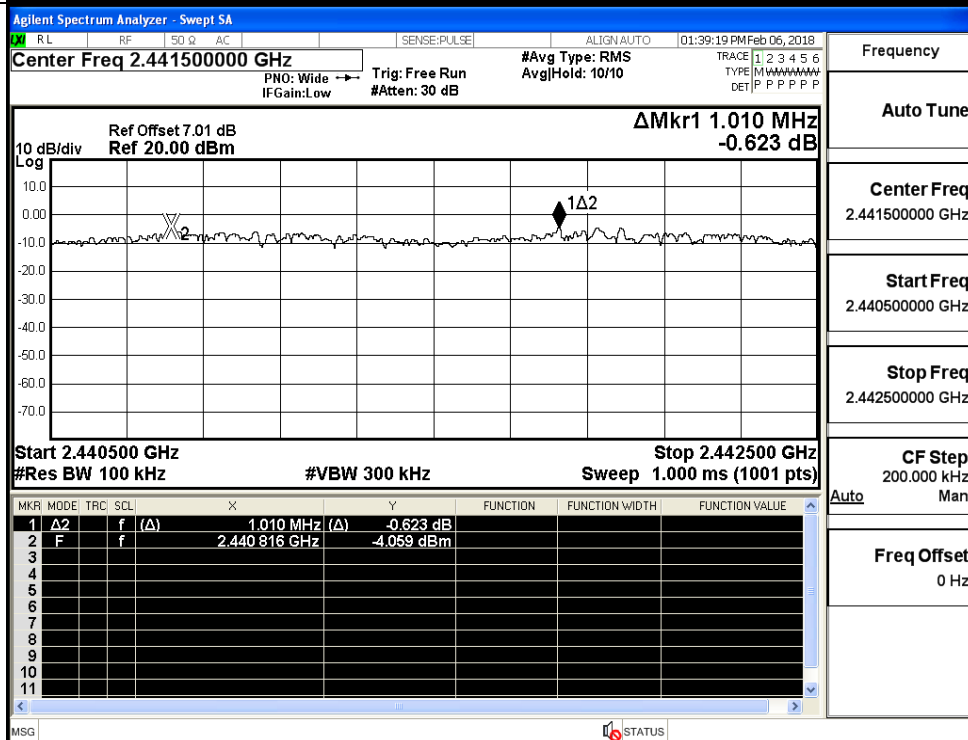
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

 $\pi/4$ DQPSK/MCH

Frequency

Auto Tune

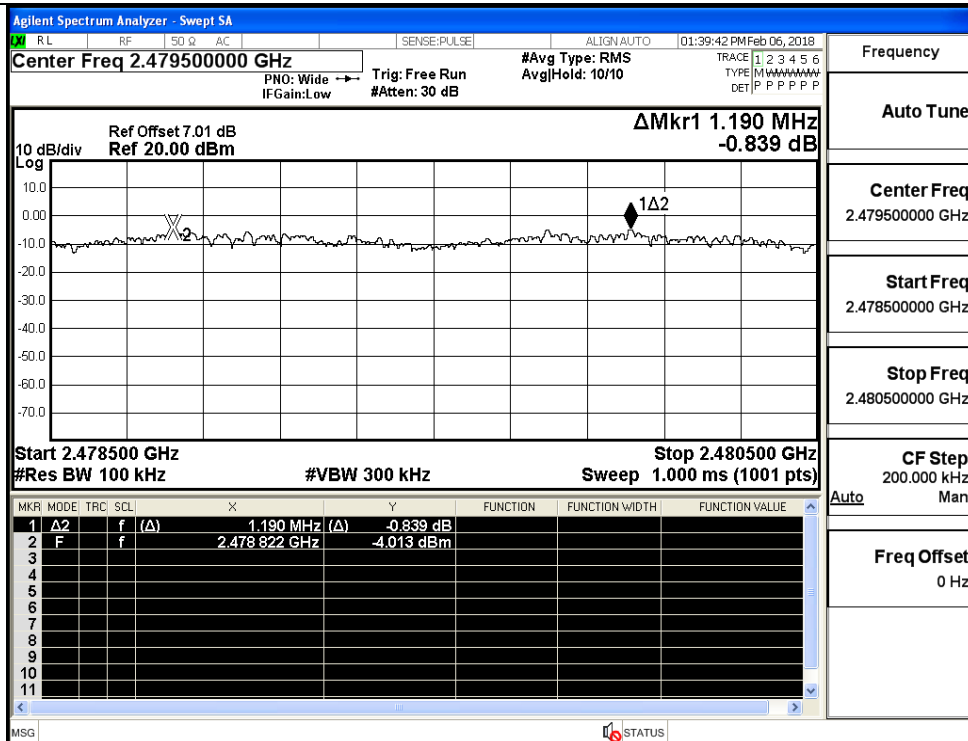
Center Freq
2.441500000 GHz

Start Freq
2.440500000 GHz

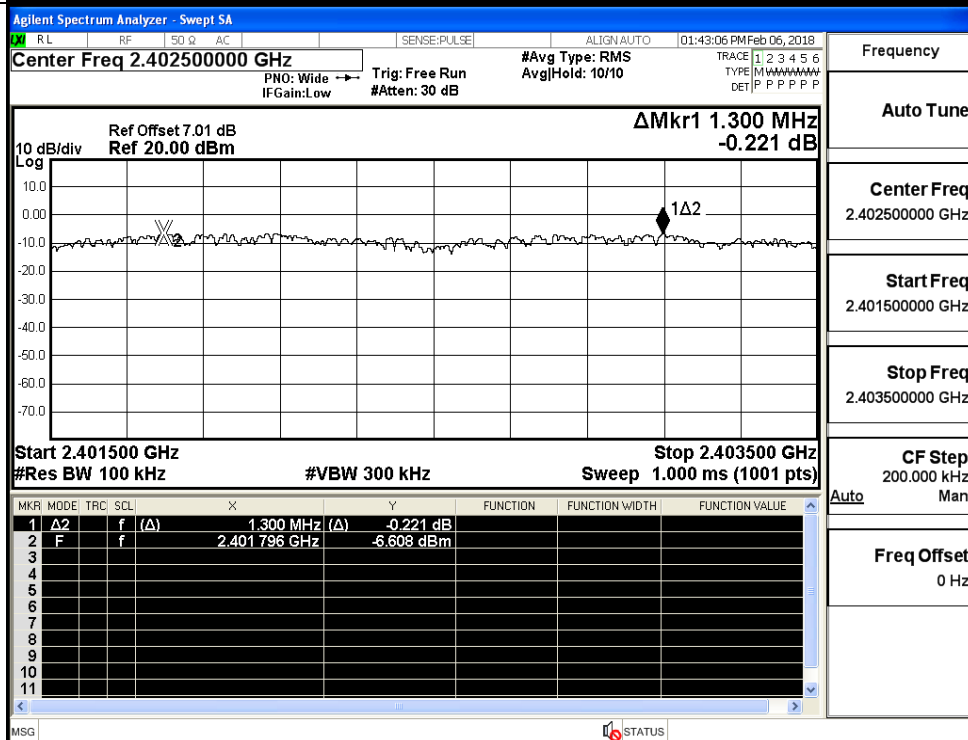
Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

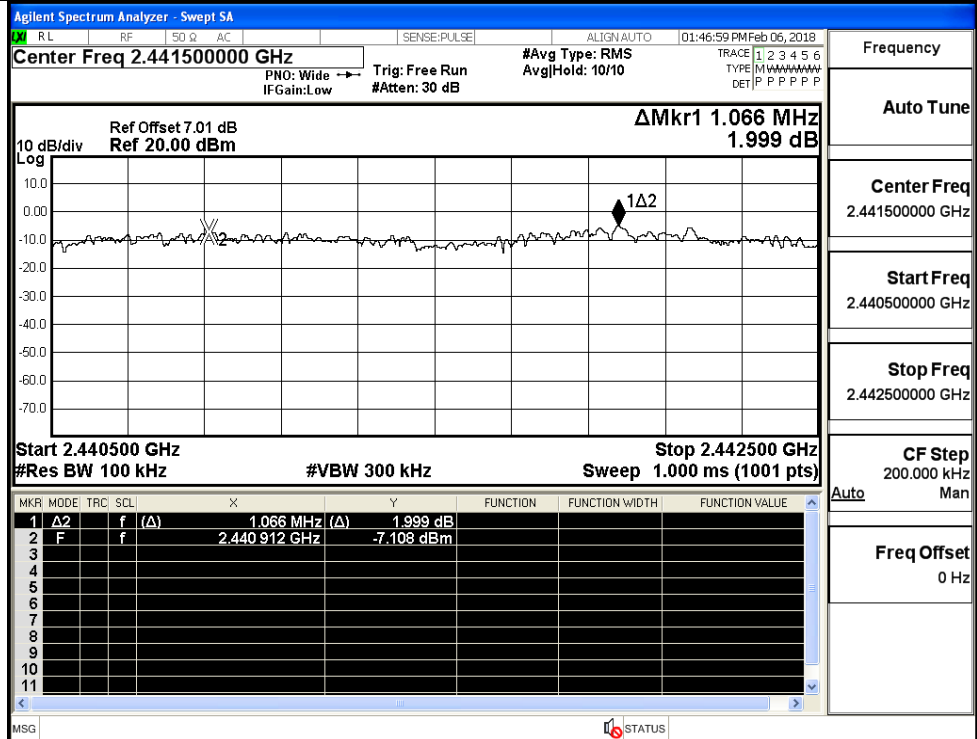
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

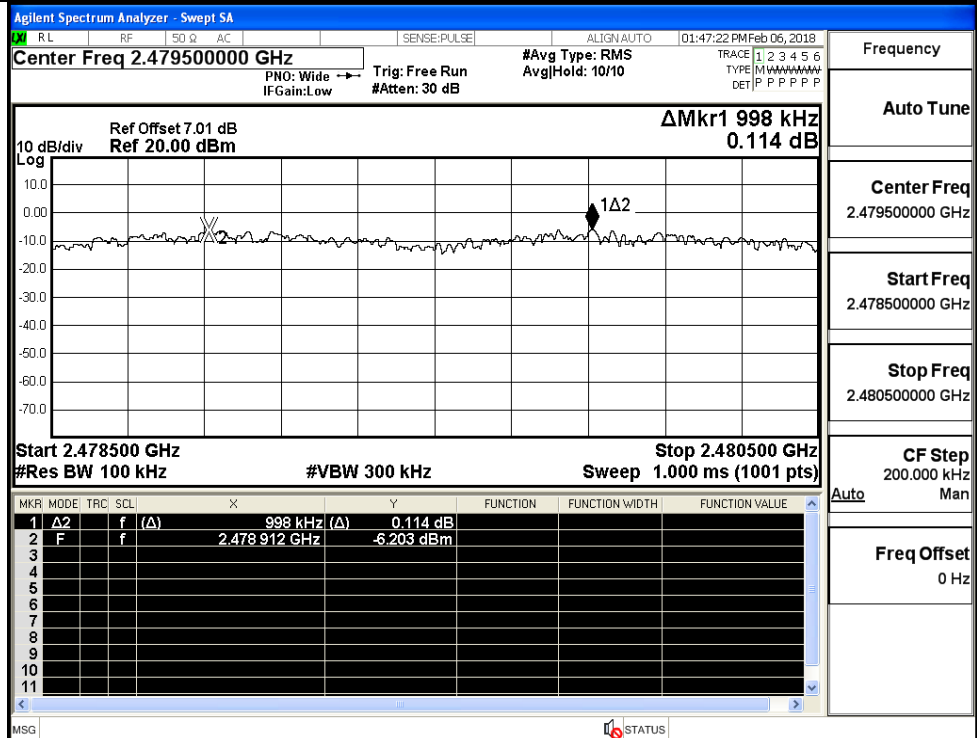
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

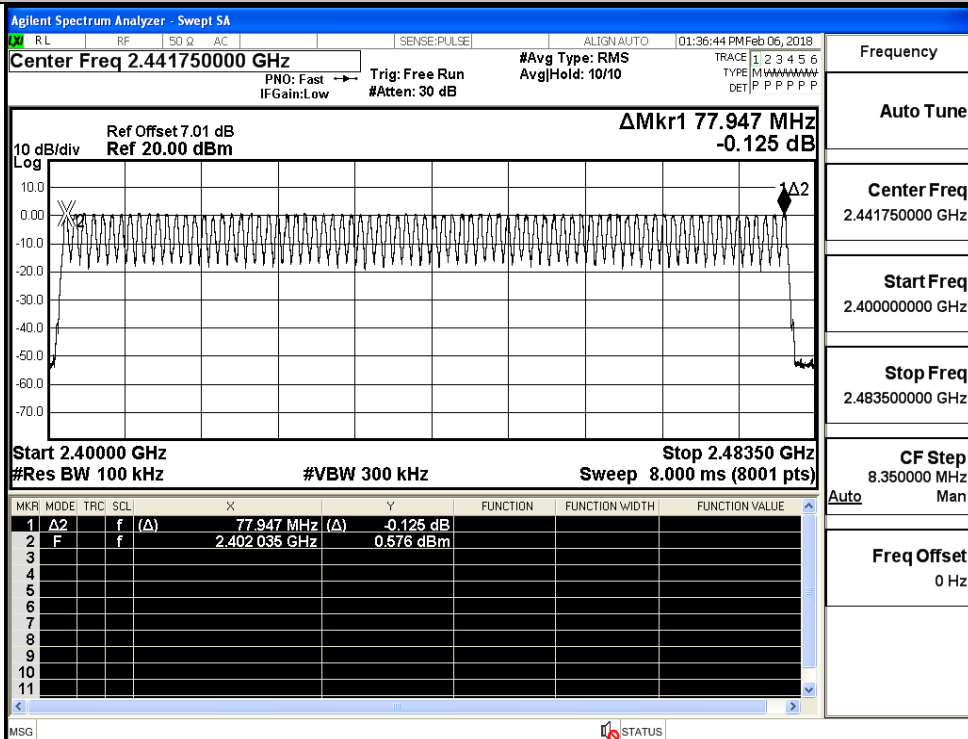
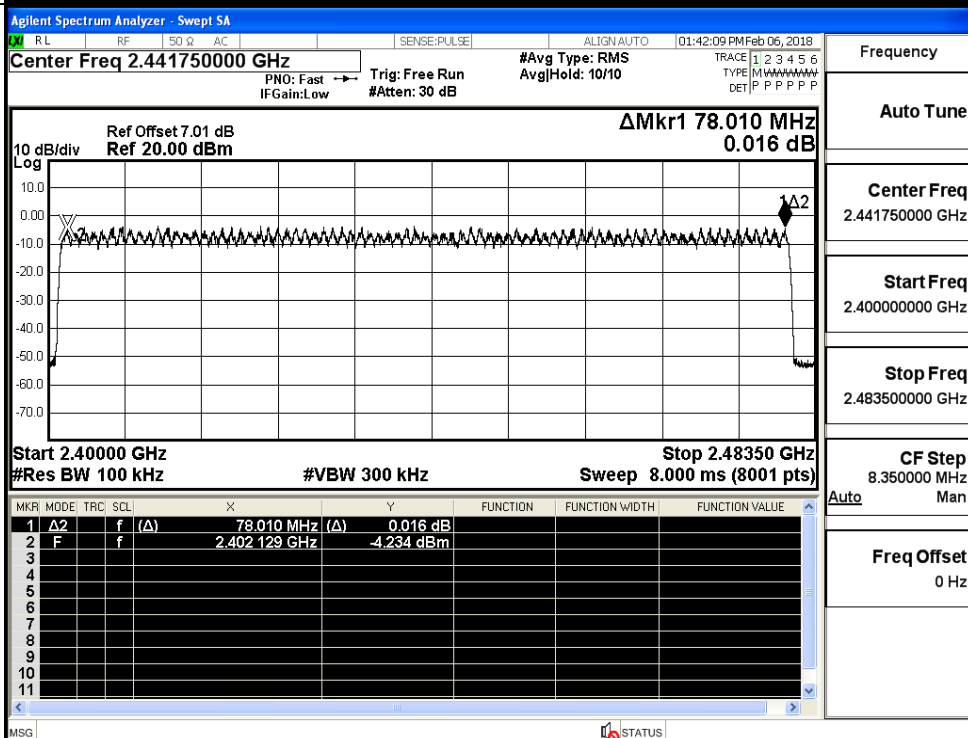


A.4 Hopping Channel Number

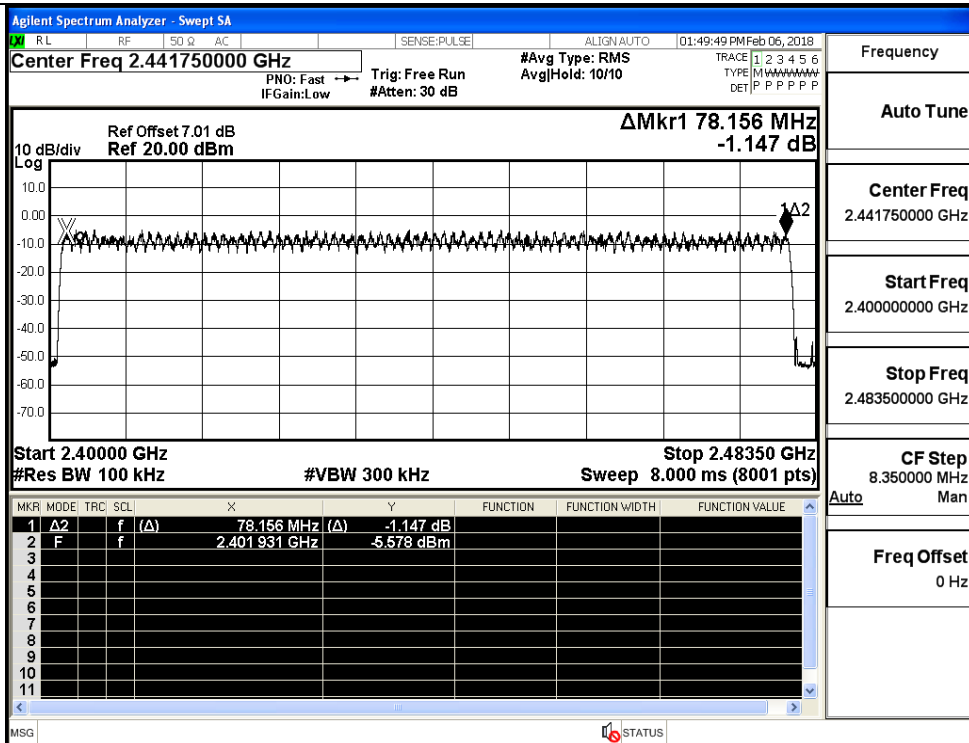
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

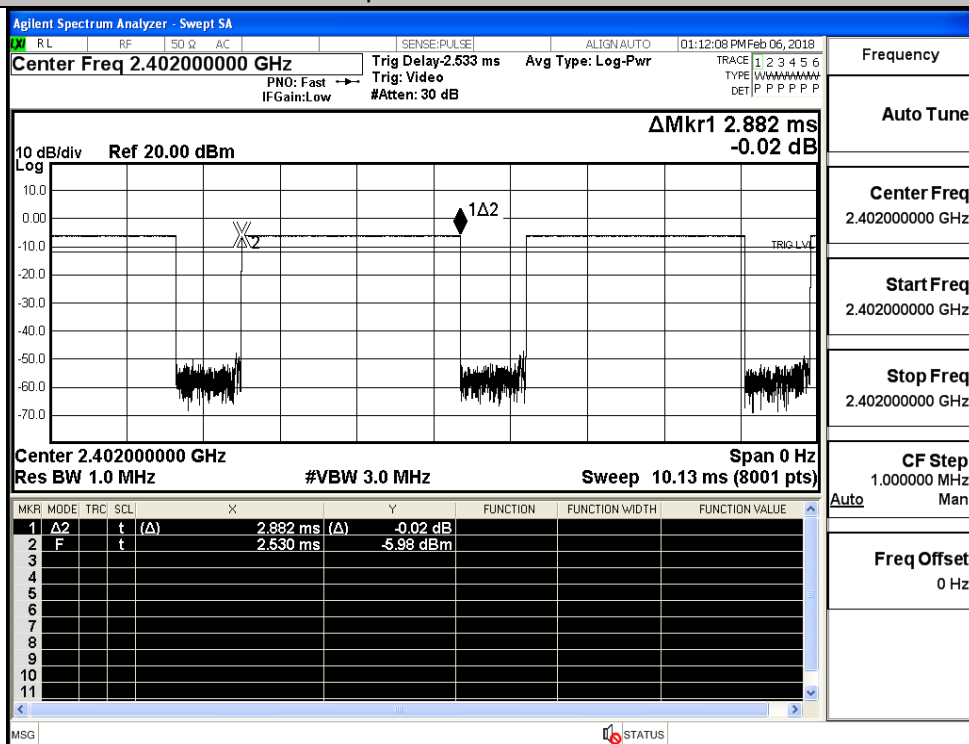


A.5 Dwell Time

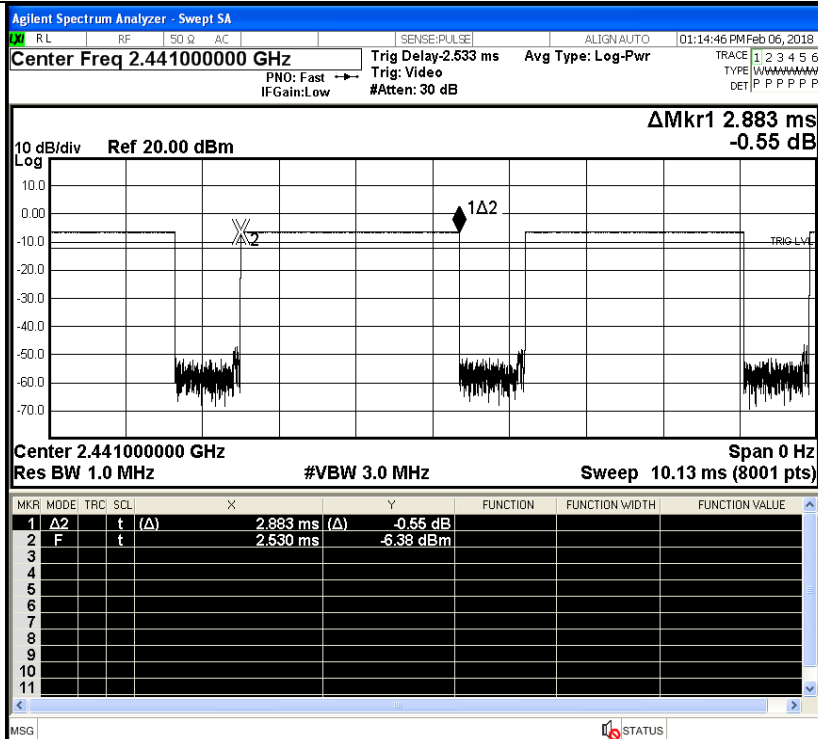
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.292	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.307	0.4	PASS
	3DH5	MCH	2.88	106.7	0.307	0.4	PASS
	3DH5	HCH	2.88	106.7	0.307	0.4	PASS

Test Graphs

GFSK_DH5/LCH



GFSK_DH5/MCH

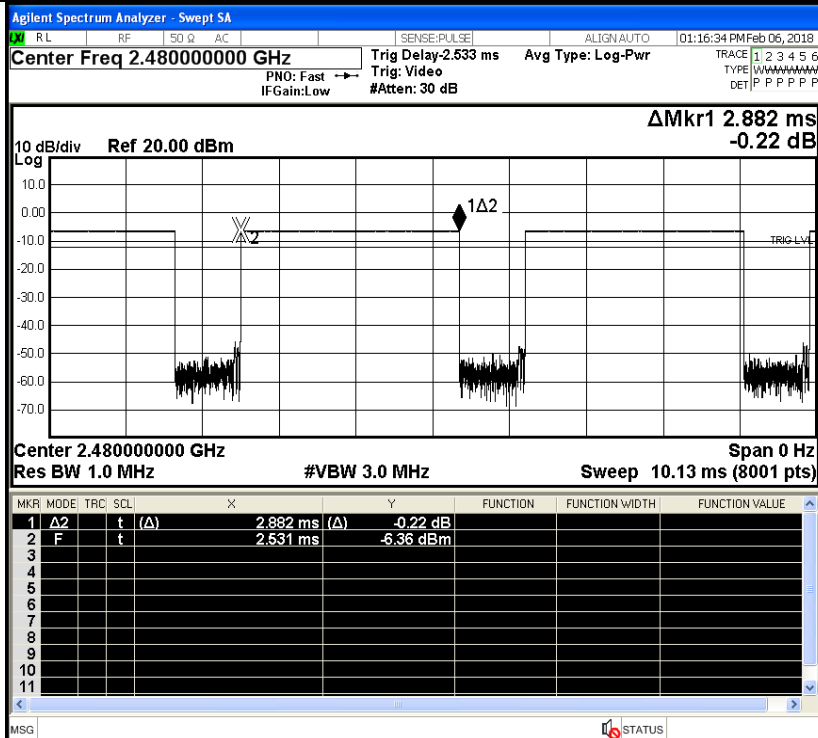


Frequency

Auto Tune

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

GFSK_DH5/HCH

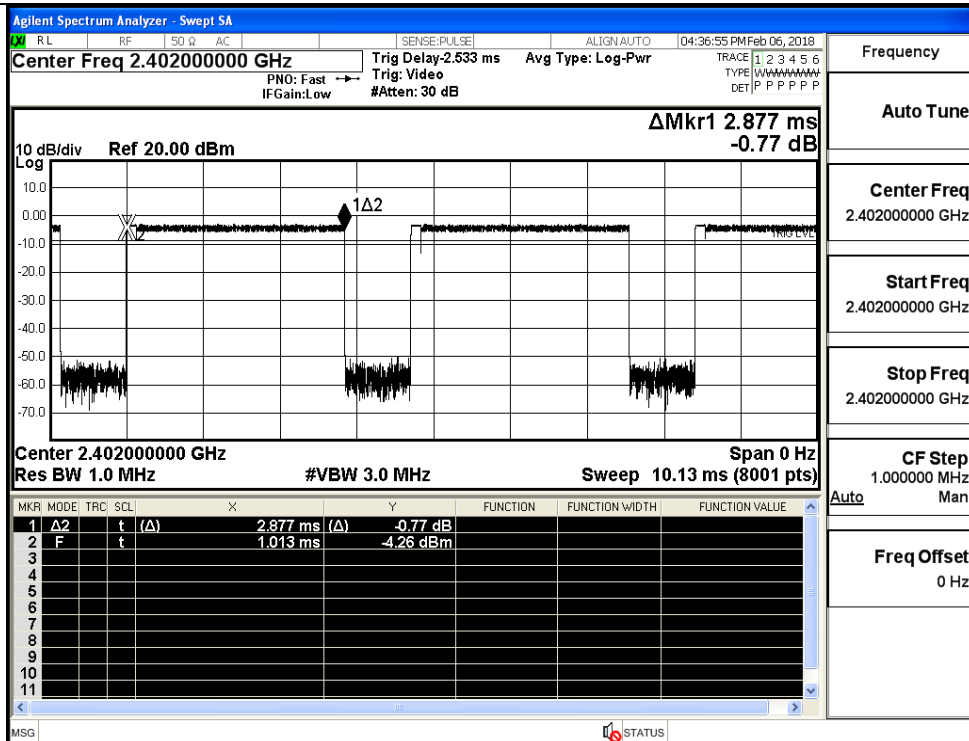


Frequency

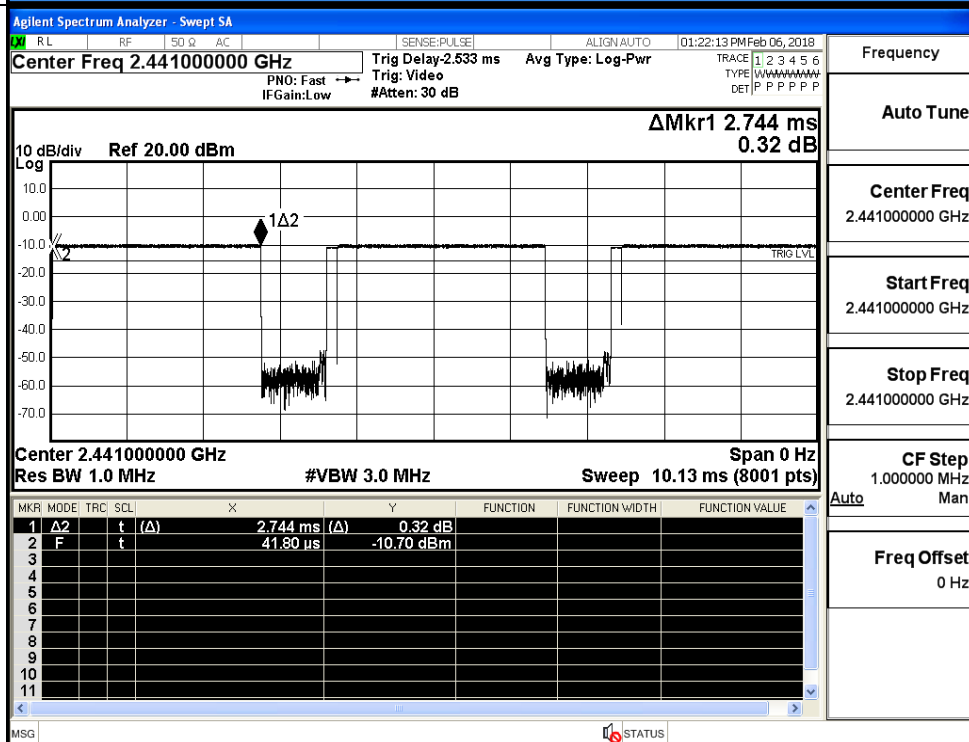
Auto Tune

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

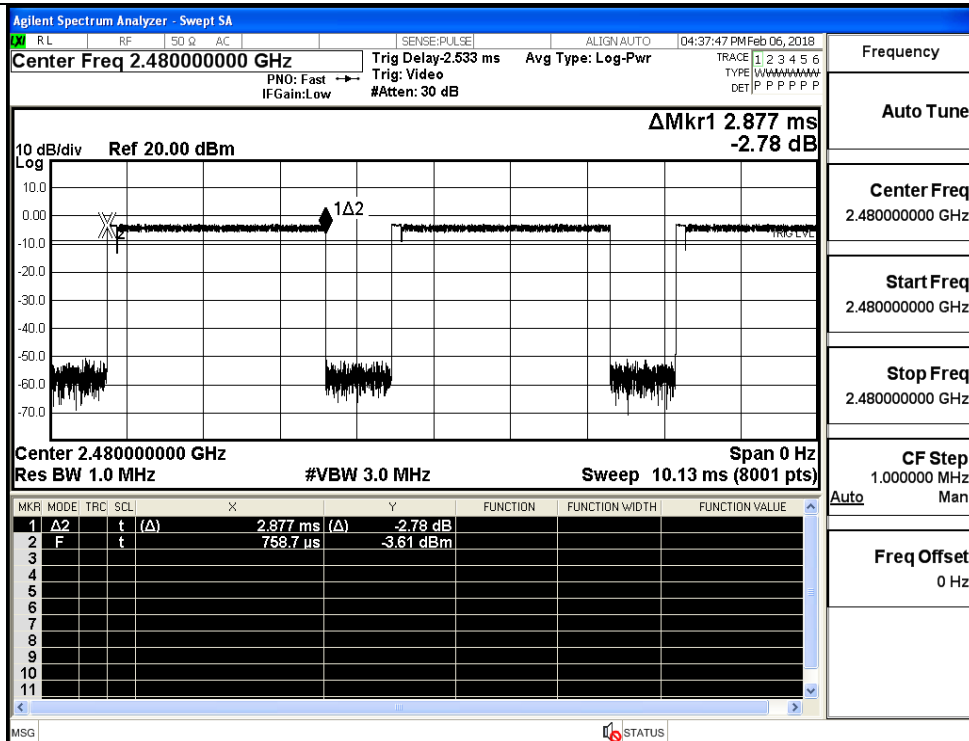
$\pi/4$ DQPSK
_2DH5/LCH



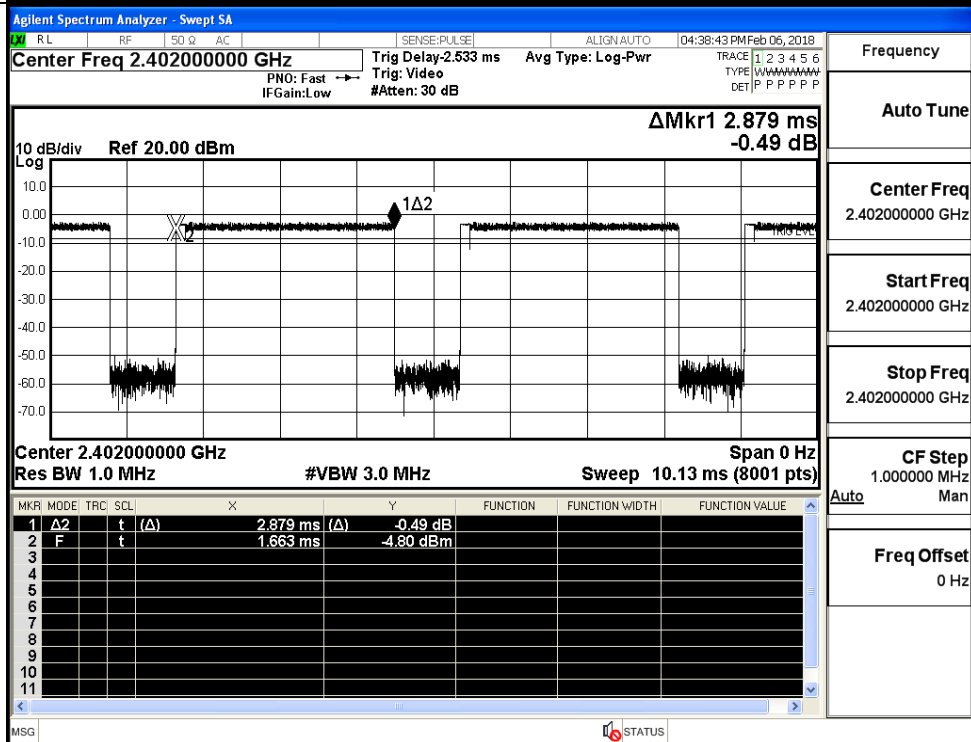
$\pi/4$ DQPSK
_2DH5/MCH



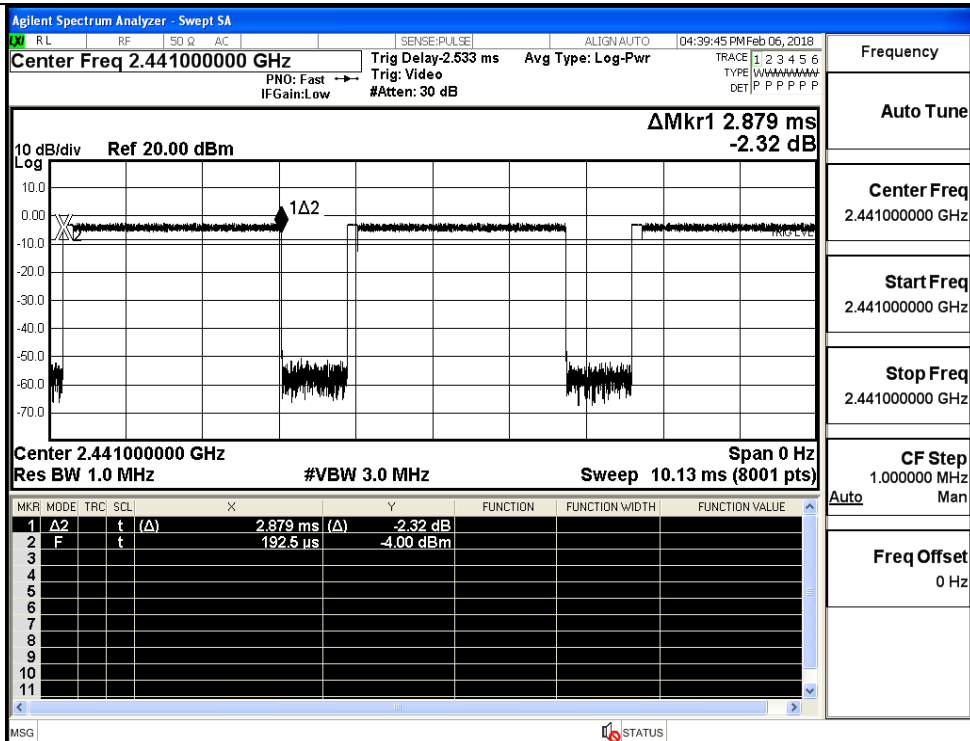
$\pi/4$ DQPSK
_2DH5/HCH



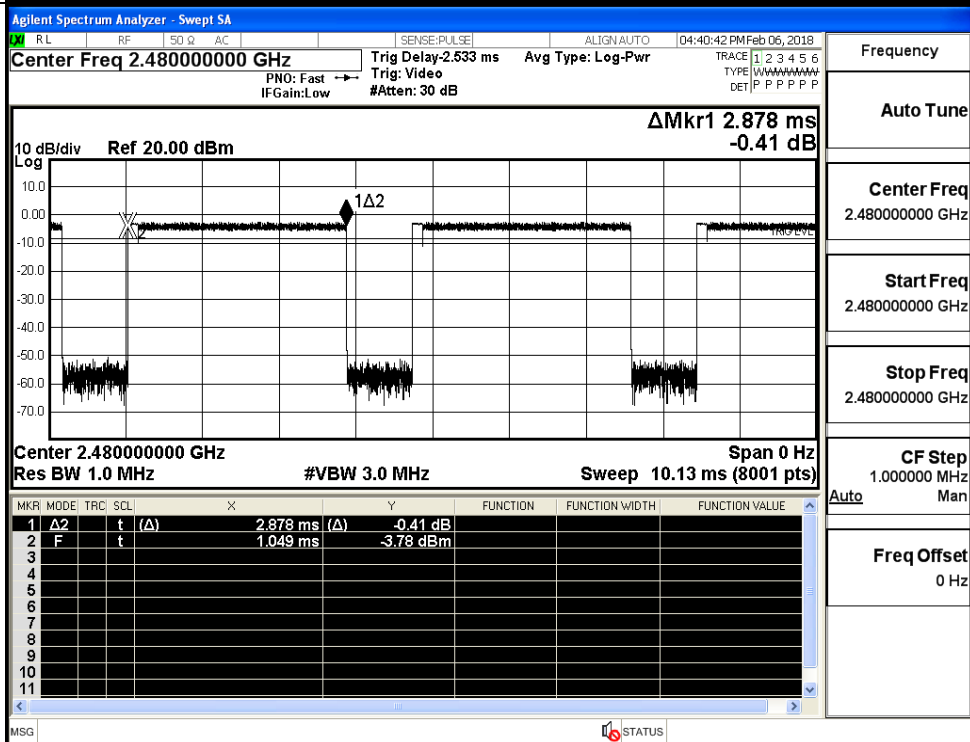
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



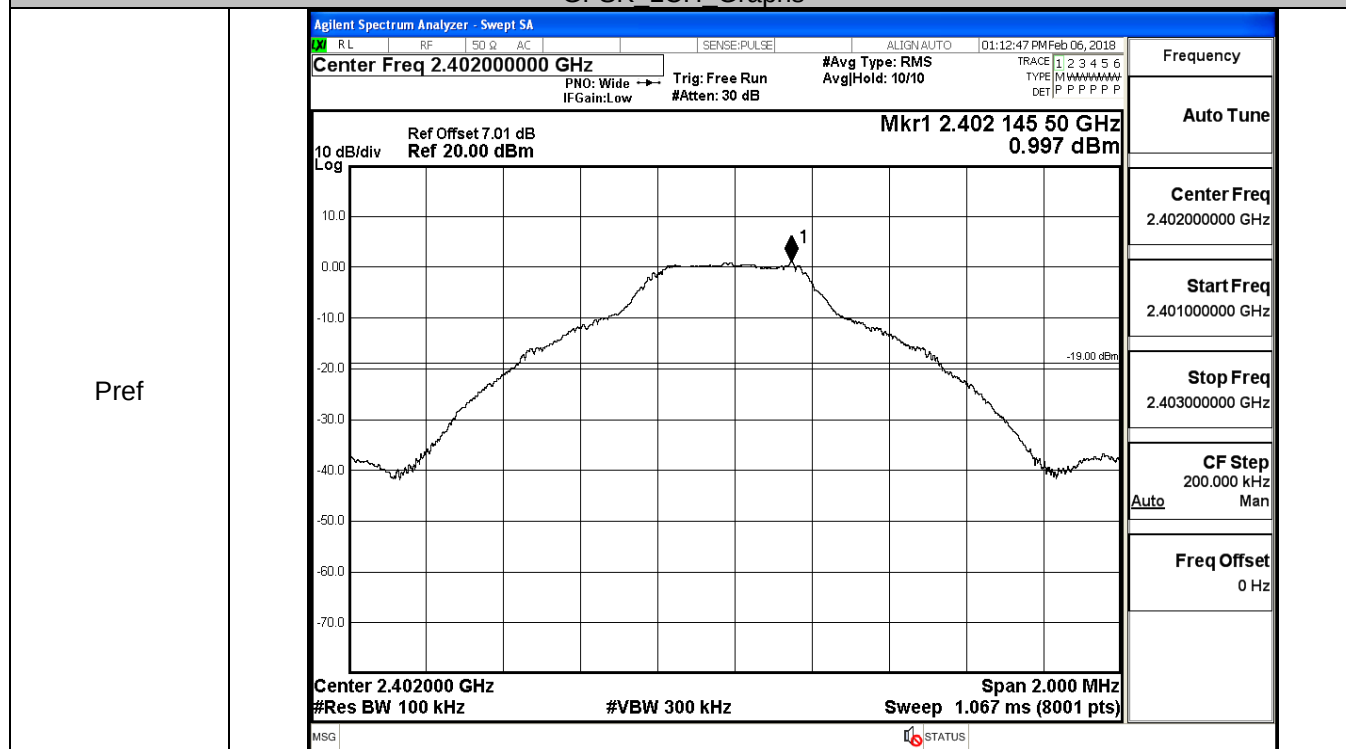
8DPSK_3DH5/HCH

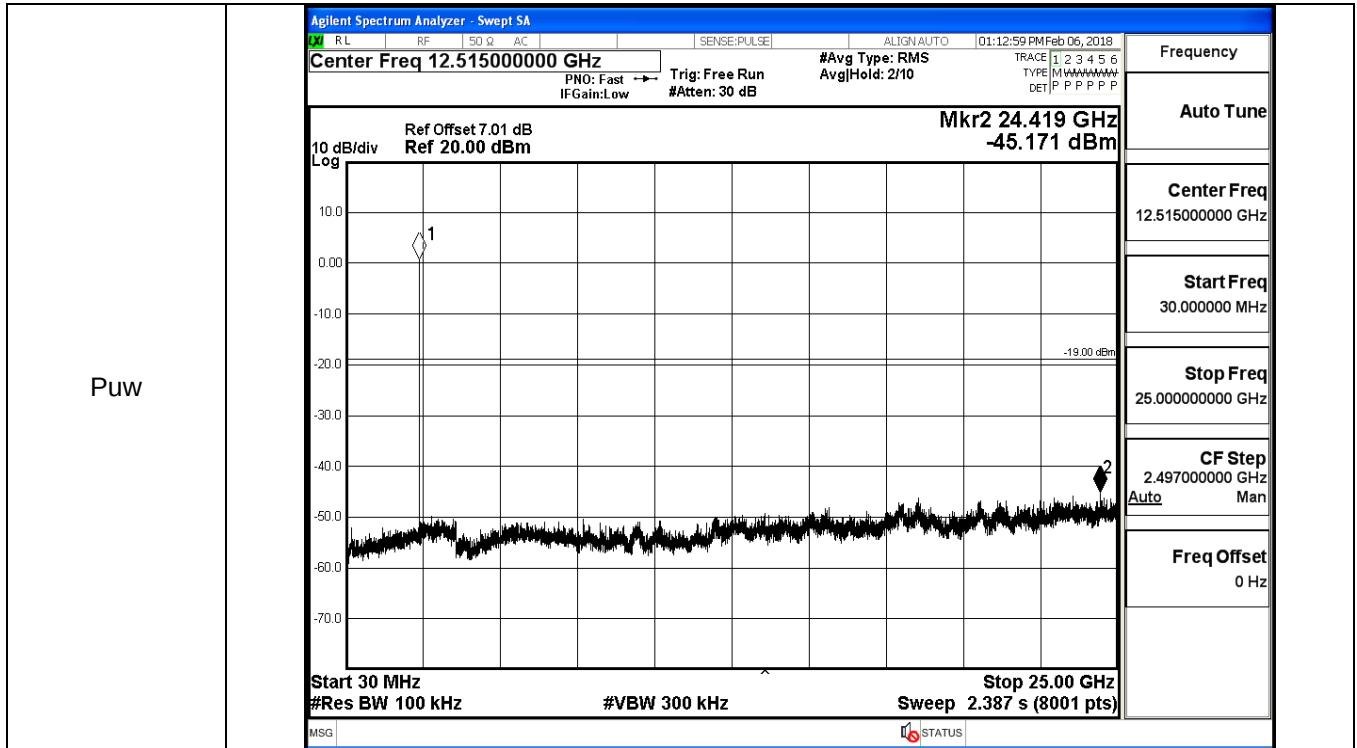


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.997	-45.171	-19.003	PASS
	MCH	0.605	-45.599	-19.395	PASS
	HCH	0.064	-46.114	-19.936	PASS
$\pi/4$ DQPSK	LCH	-3.728	-45.779	-23.728	PASS
	MCH	-3.941	-45.848	-23.941	PASS
	HCH	-4.094	-45.921	-24.094	PASS
8DPSK	LCH	-5.011	-45.476	-25.011	PASS
	MCH	-5.709	-45.498	-25.709	PASS
	HCH	-5.338	-46.214	-25.338	PASS

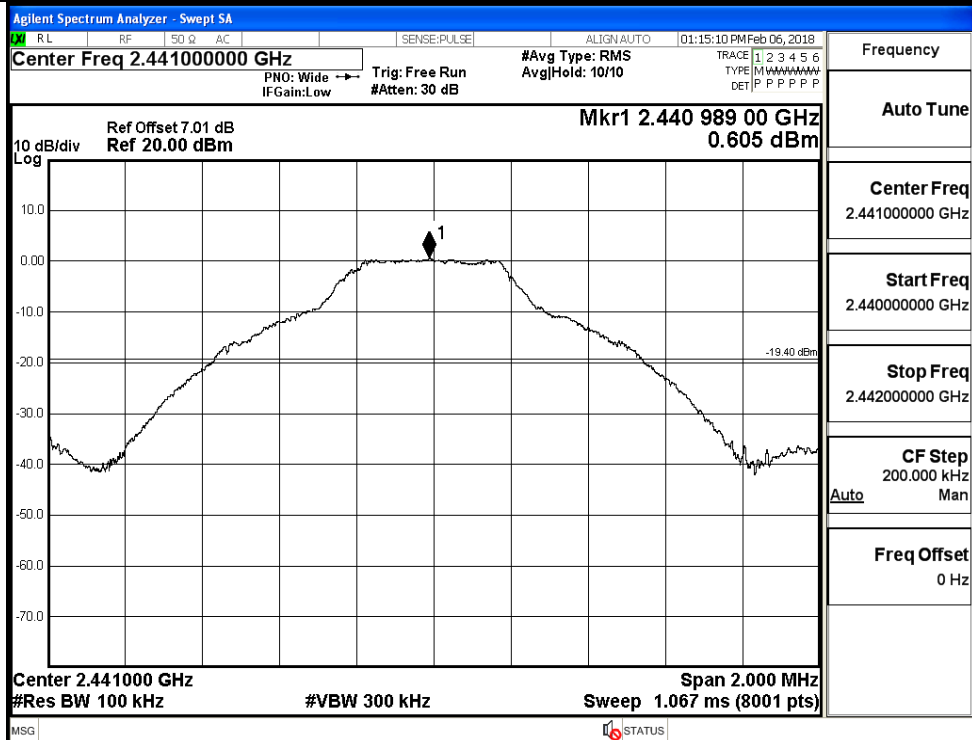
GFSK LCH Graphs



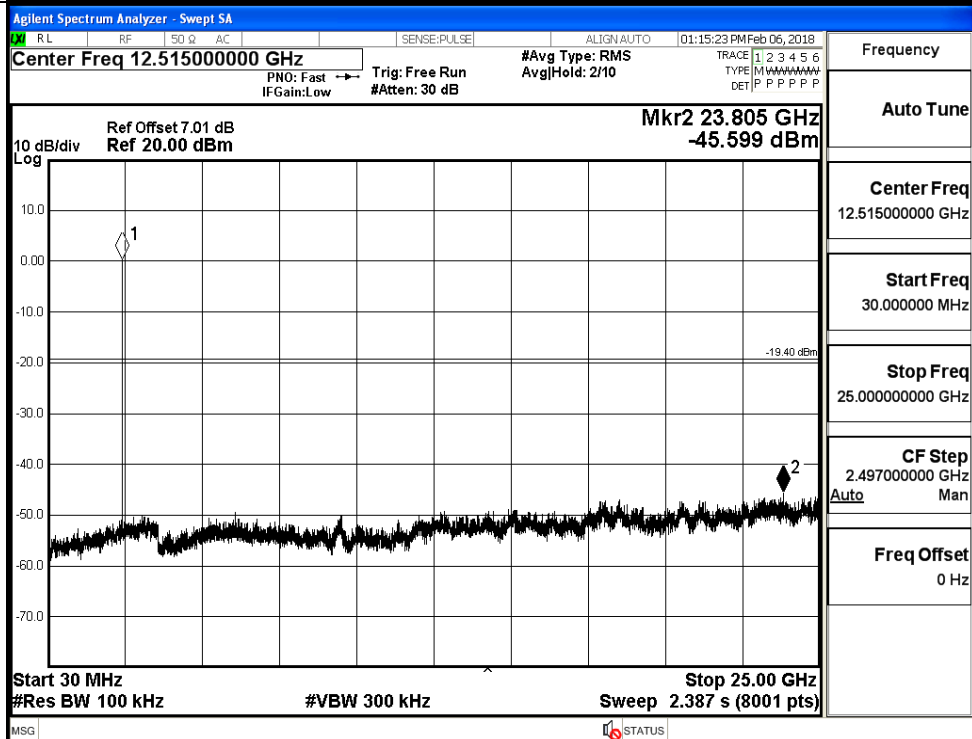


GFSK MCH Graphs

Pref

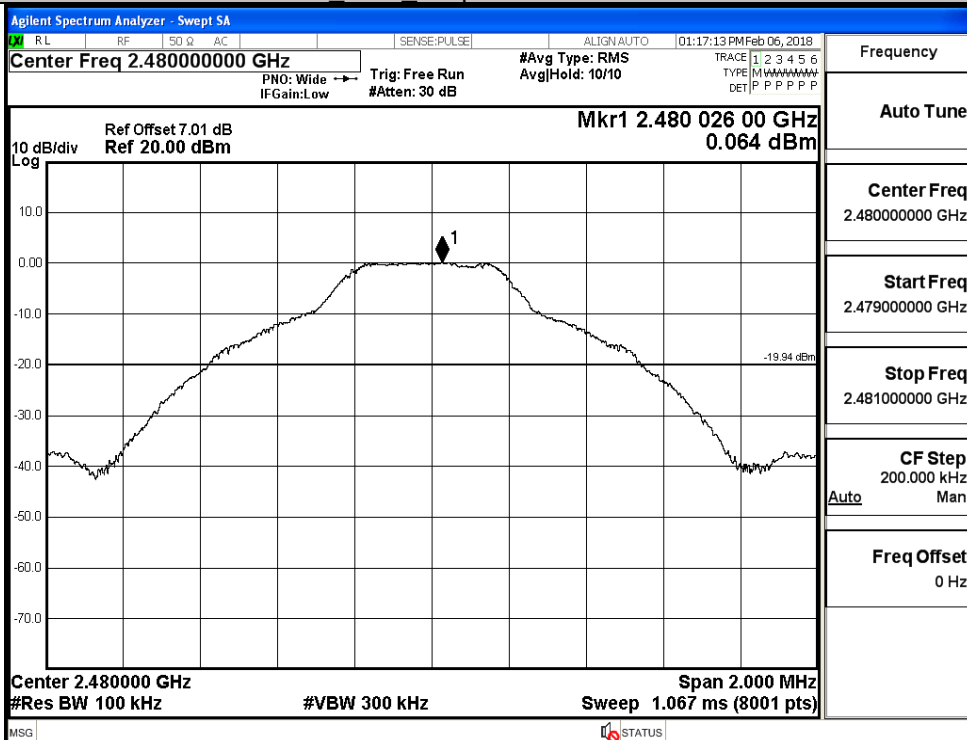


Puw

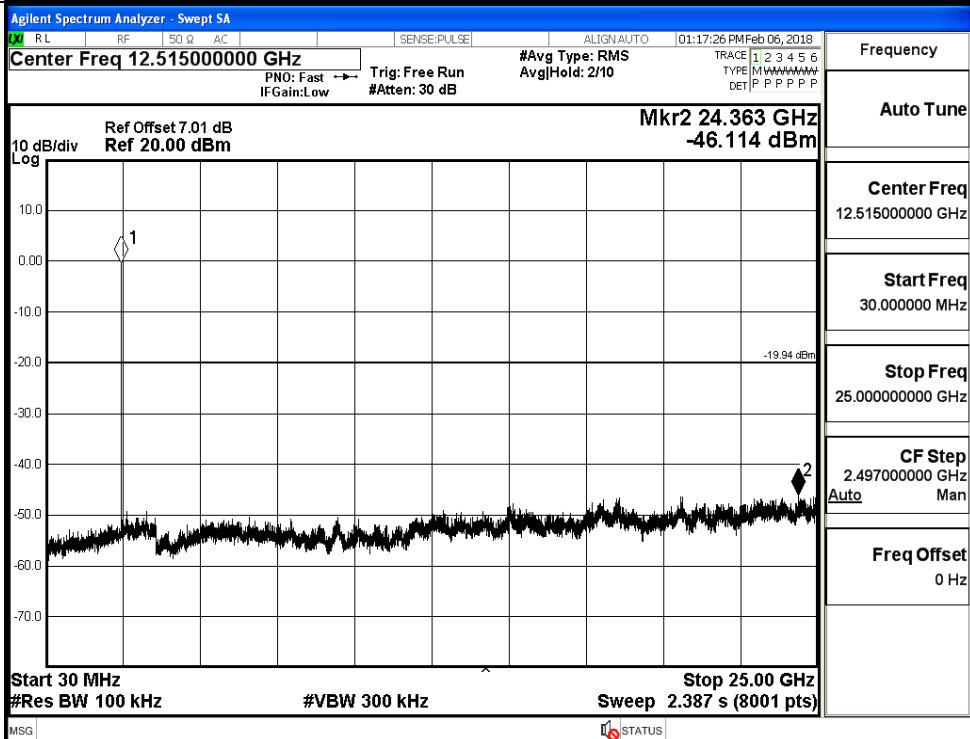


GFSK HCH Graphs

Pref

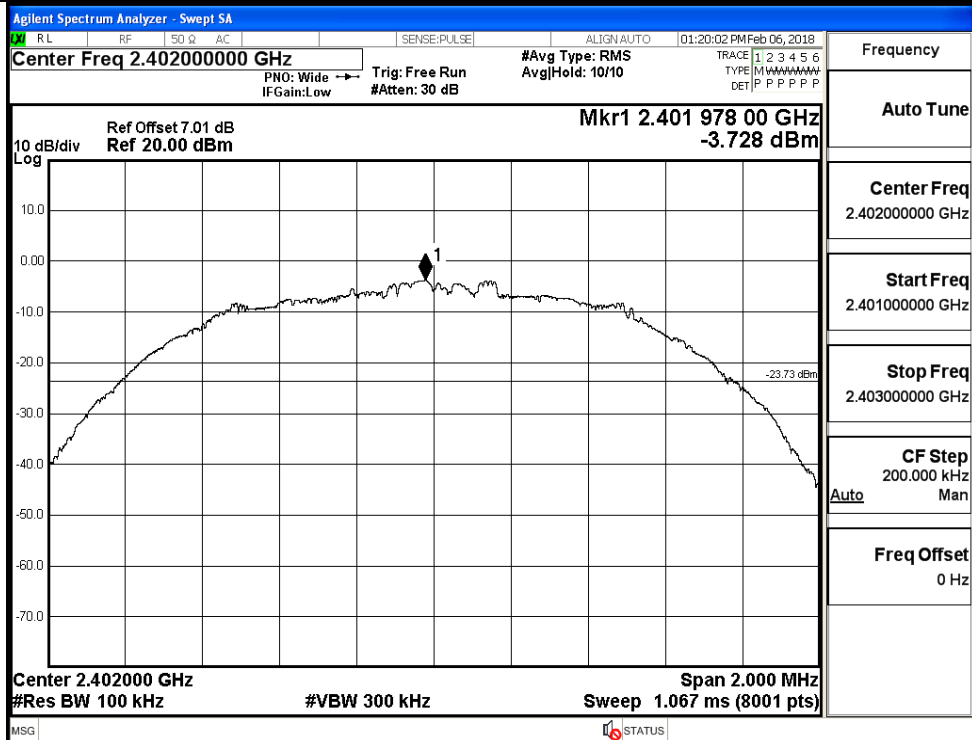


Puw

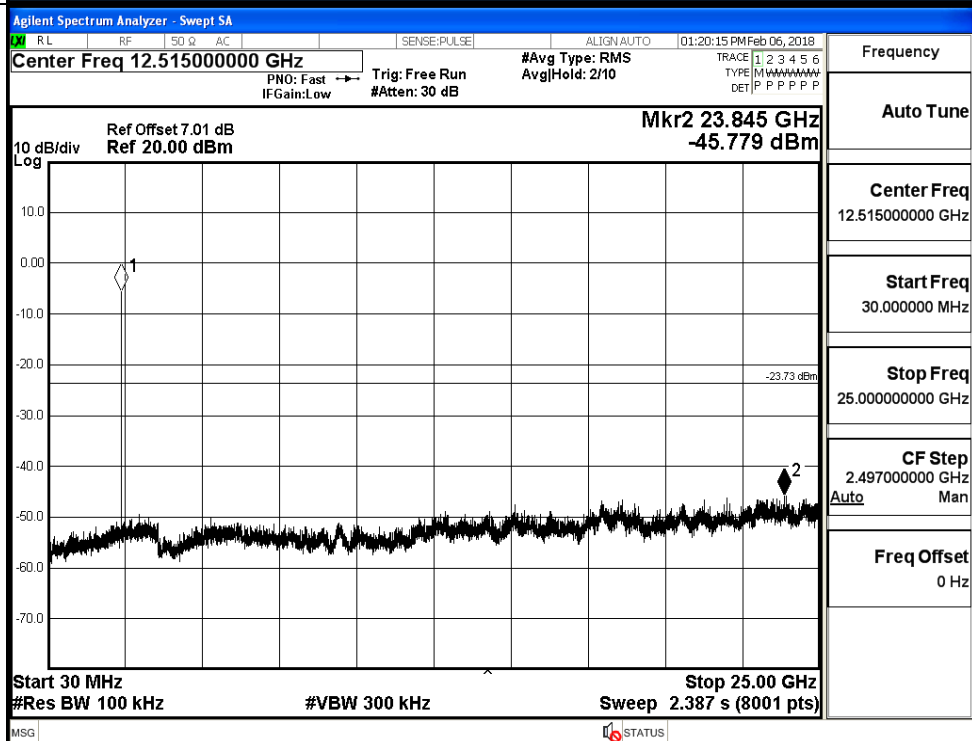


$\pi/4$ DQPSK LCH Graphs

Pref

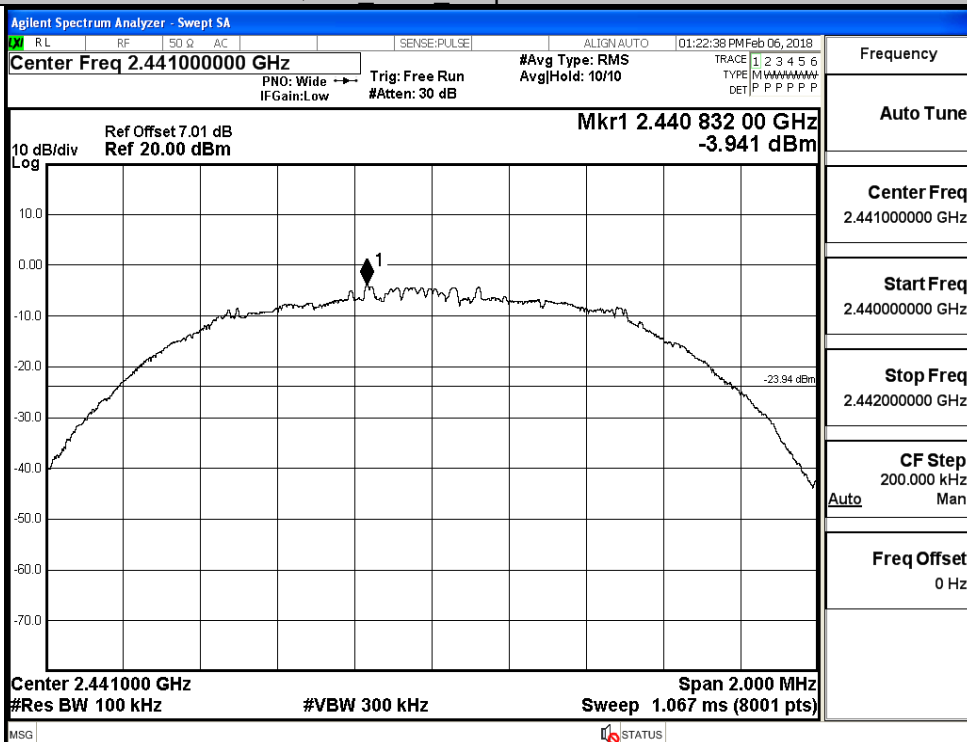


Puw

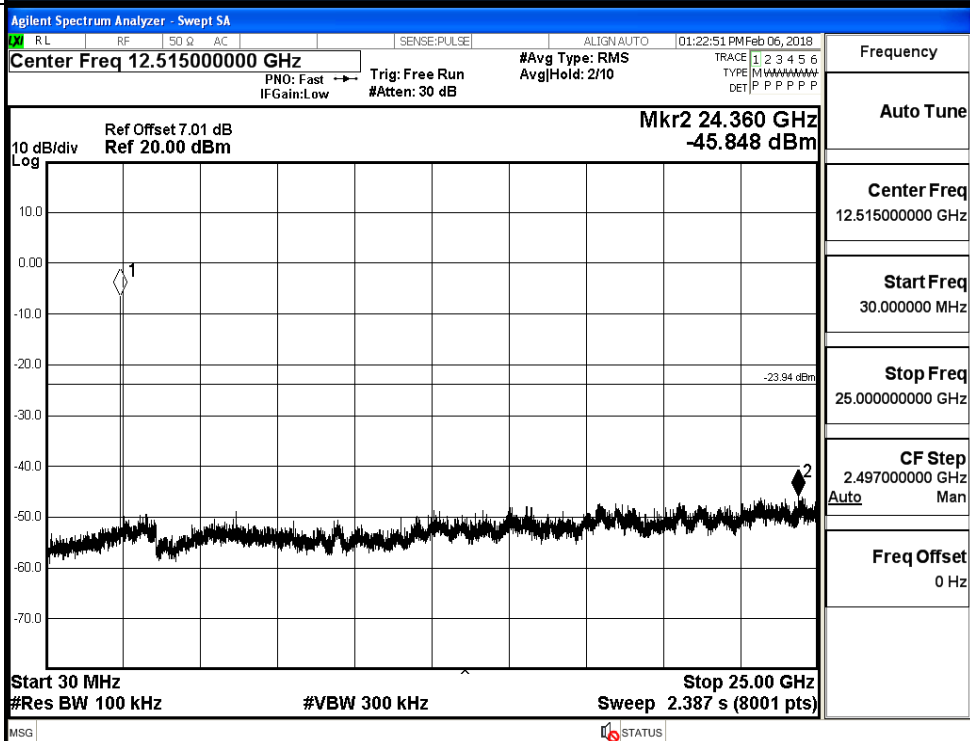


π /4DQPSK MCH Graphs

Pref

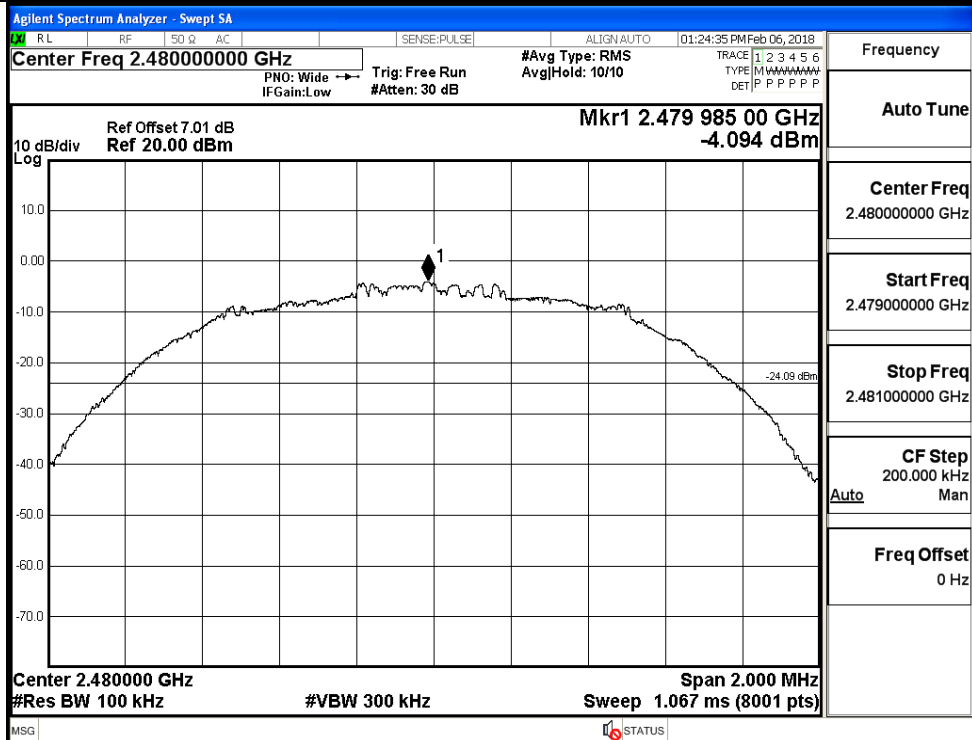


Puw

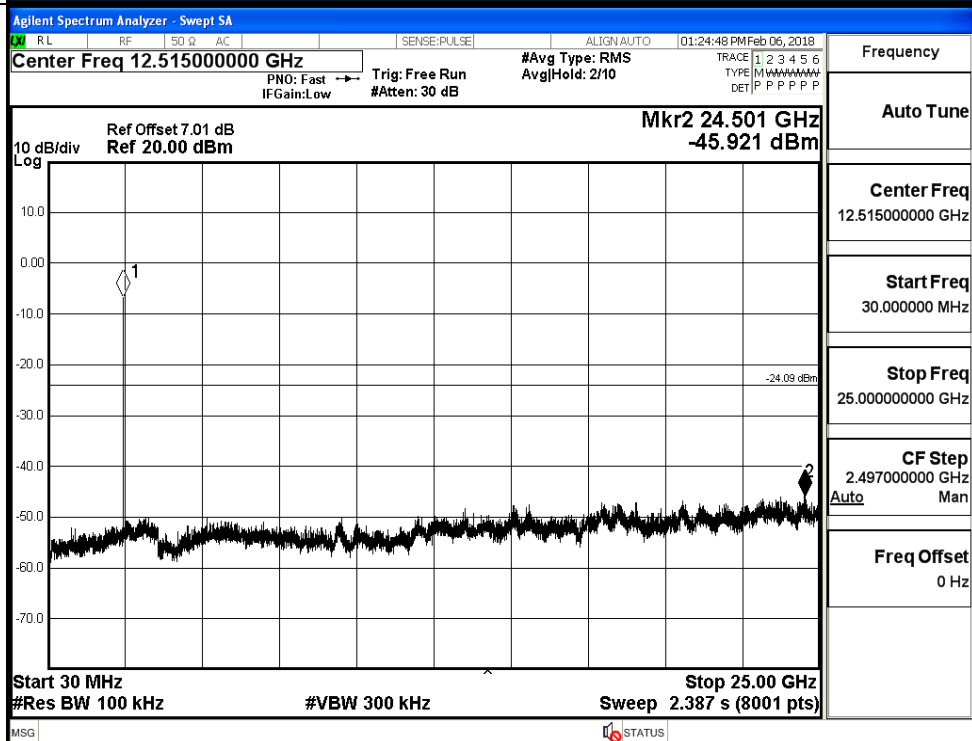


$\pi/4$ DQPSK HCH Graphs

Pref

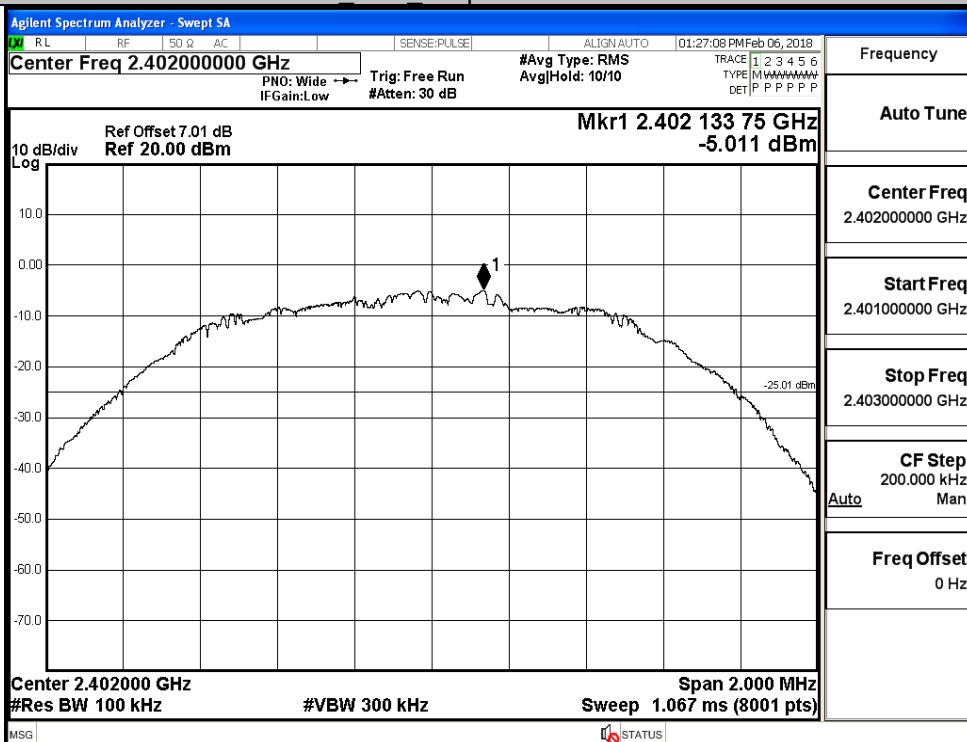


Puw

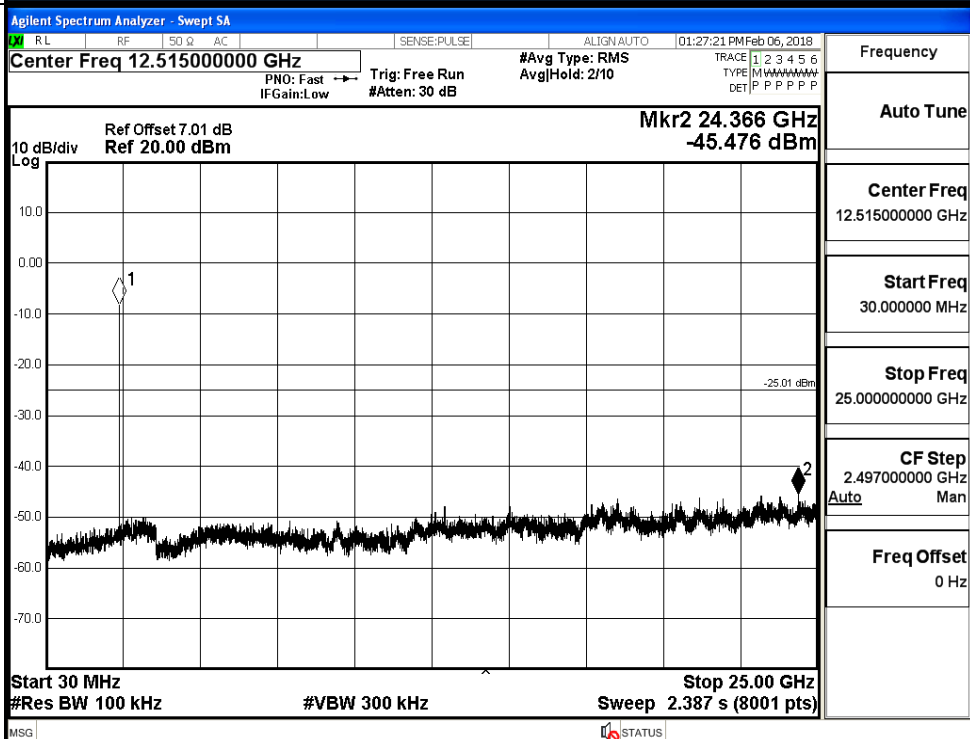


8DPSK LCH Graphs

Pref

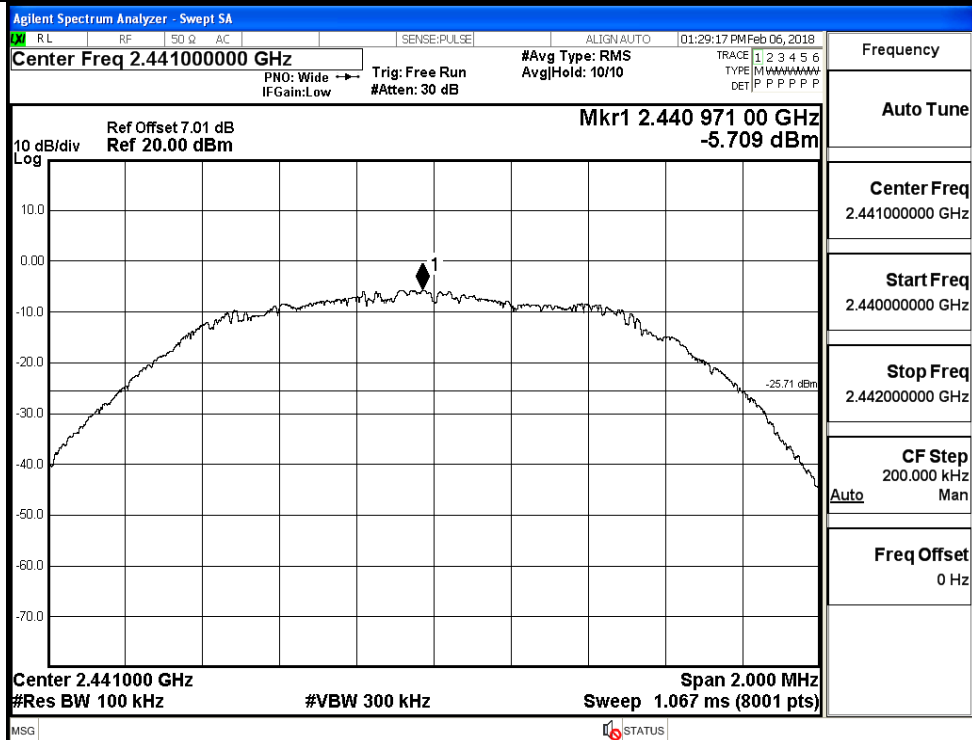


Puw

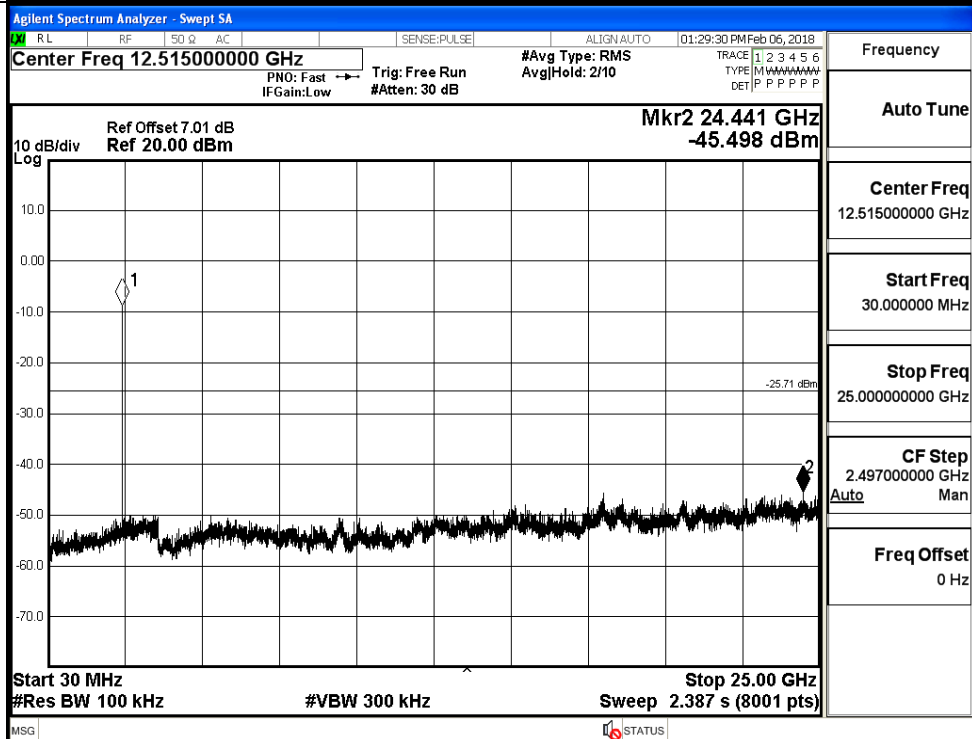


8DPSK MCH Graphs

Pref

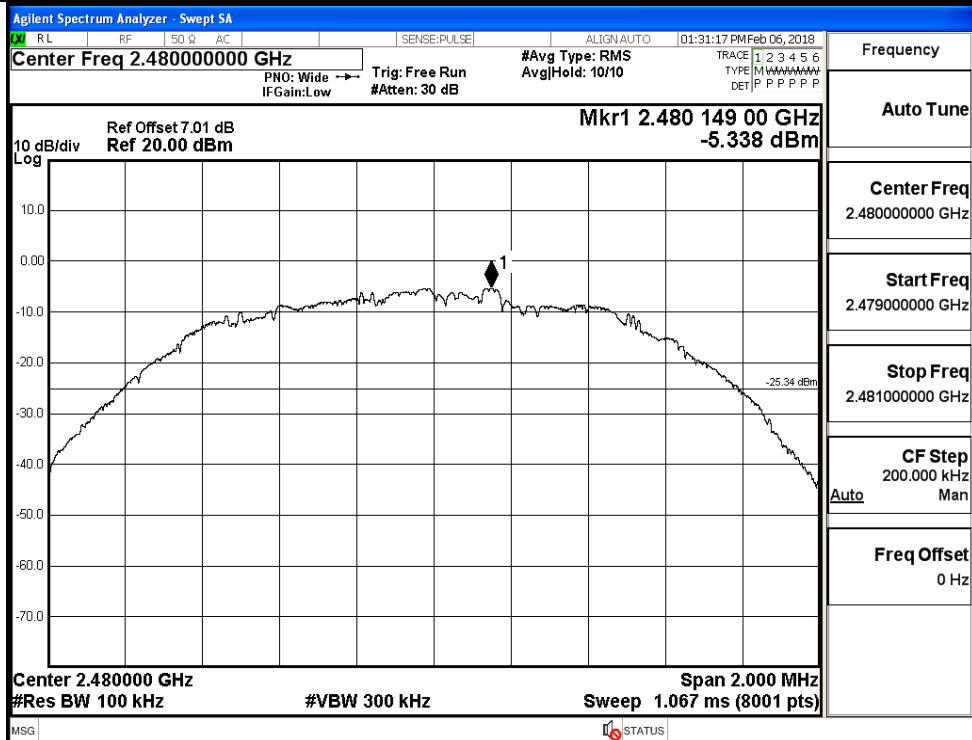


Puw

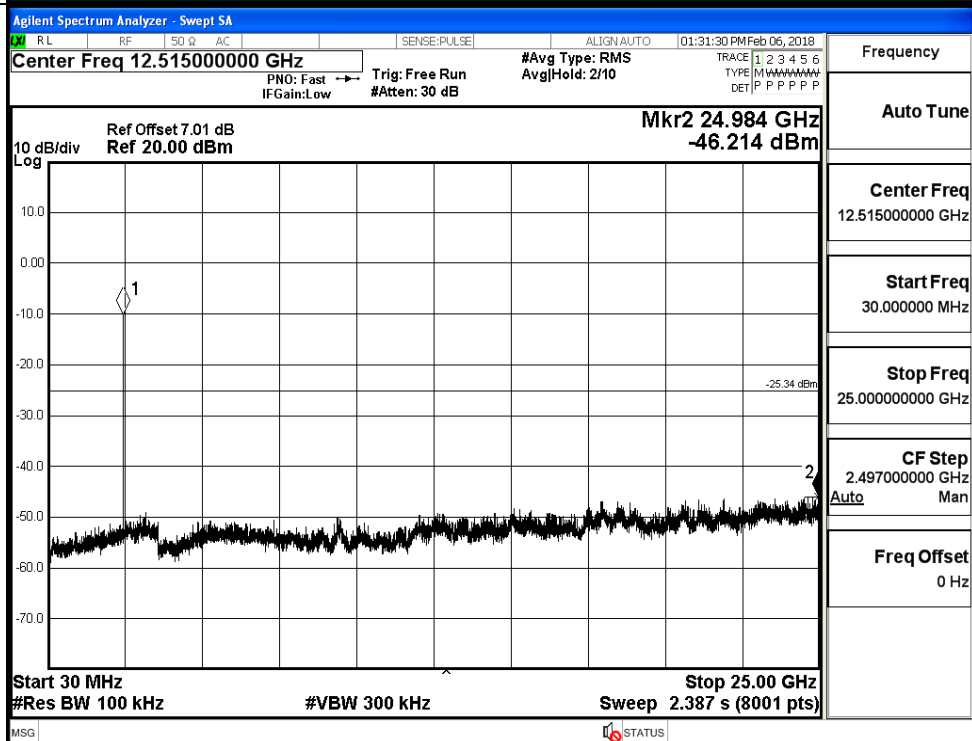


8DPSK_HCH Graphs

Pref



Puw

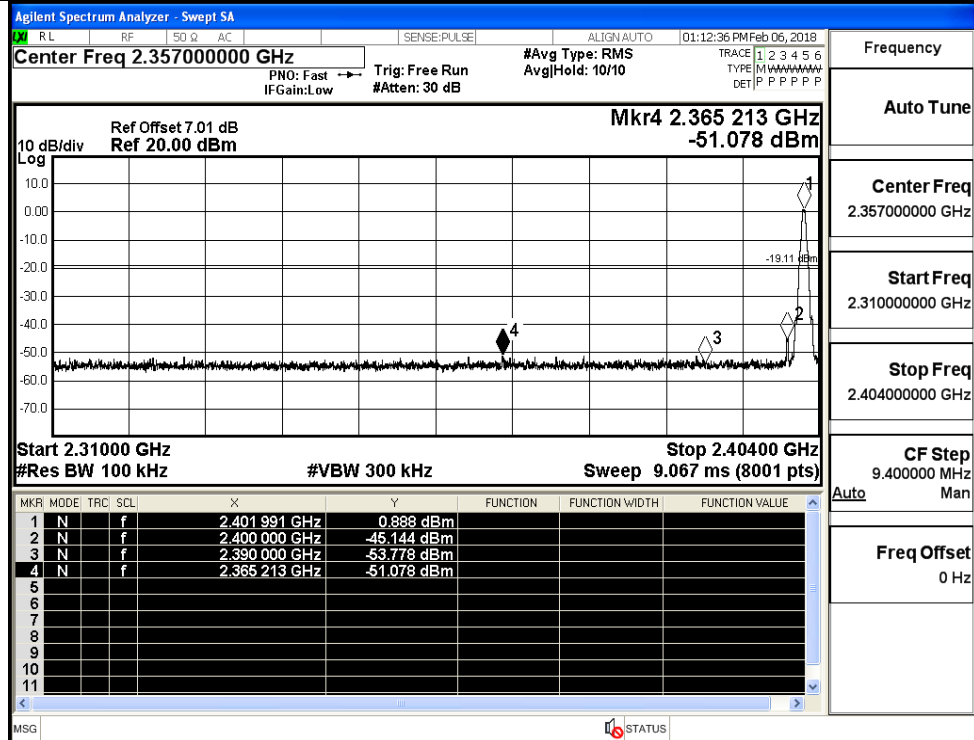


A.7 Band-edge for RF Conducted Emissions

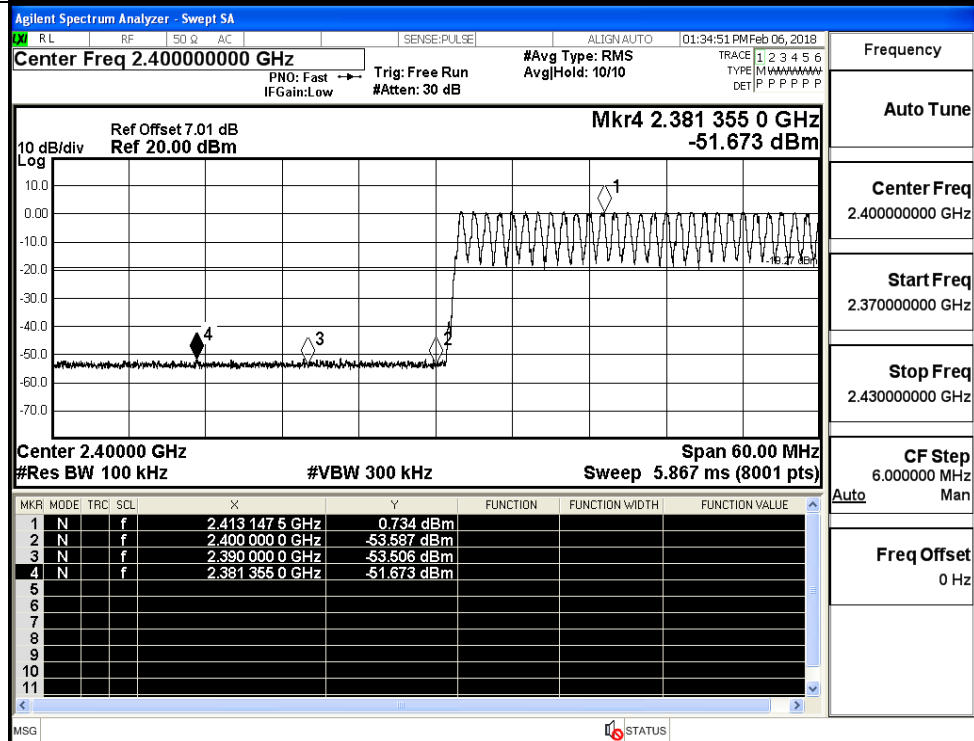
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.888	Off	-51.078	-19.112	PASS
			0.734	On	-51.673	-19.266	PASS
	HCH	2480	0.693	Off	-42.023	-19.307	PASS
			0.603	On	-46.772	-19.397	PASS
$\pi/4$ DQPSK	LCH	2402	-3.859	Off	-51.296	-23.859	PASS
			-3.815	On	-50.577	-23.815	PASS
	HCH	2480	-4.013	Off	-43.726	-24.013	PASS
			-3.923	On	-50.465	-23.923	PASS
8DPSK	LCH	2402	-5.783	Off	-51.033	-25.783	PASS
			-4.976	On	-50.437	-24.976	PASS
	HCH	2480	-5.356	Off	-42.584	-25.356	PASS
			-5.120	On	-50.286	-25.120	PASS

Test Graphs

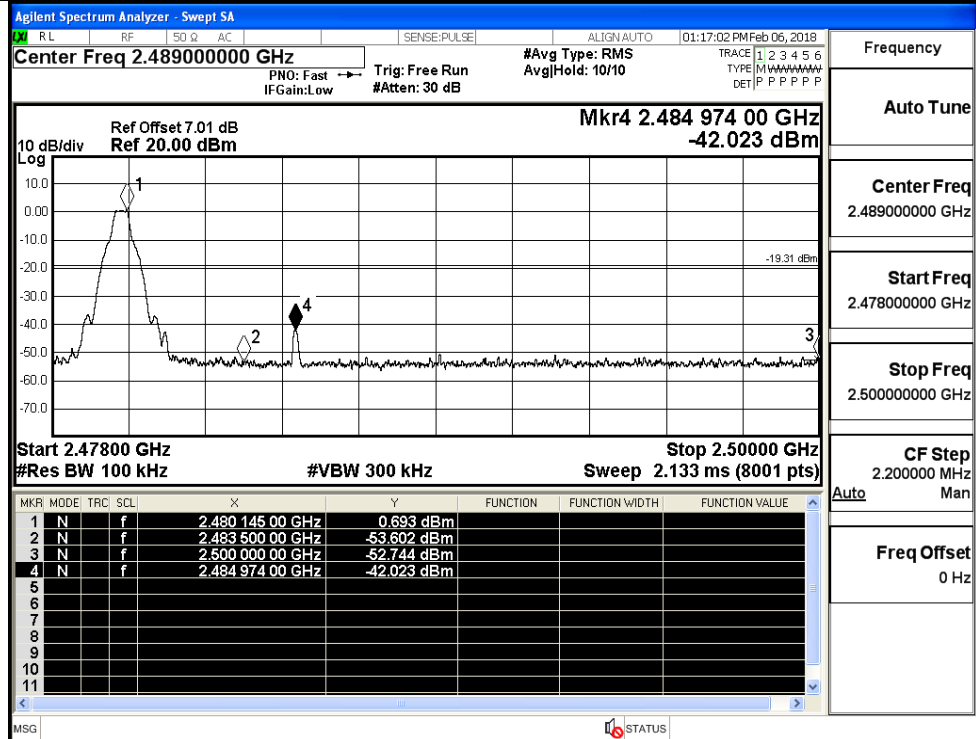
GFSK/LCH/No Hop



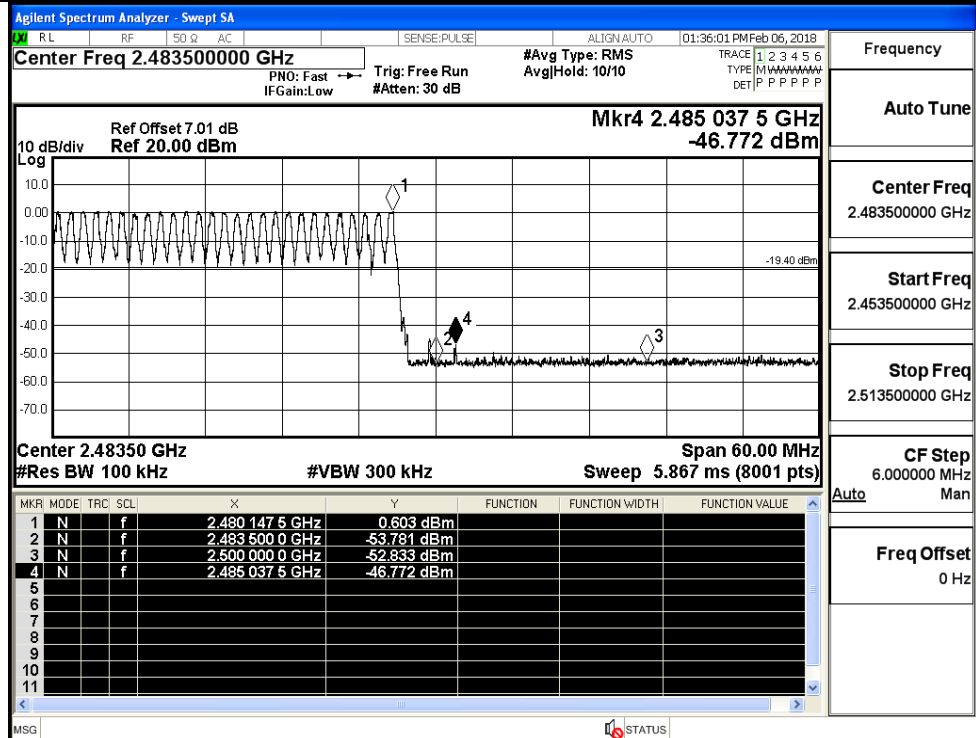
GFSK/LCH/Hop



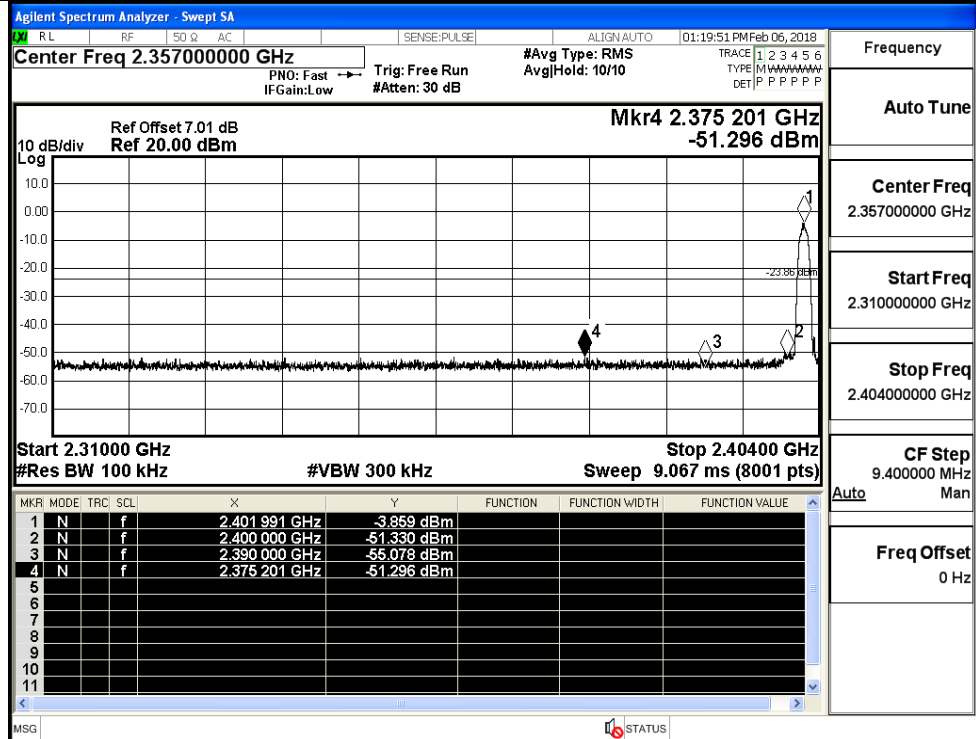
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

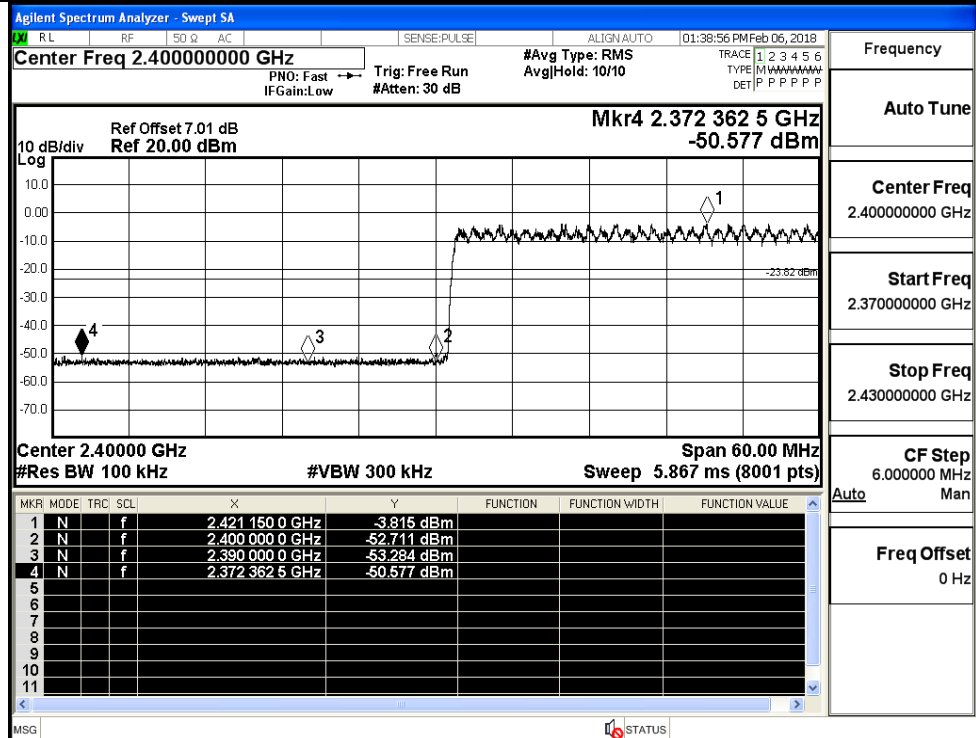
Start Freq
2.310000000 GHz

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

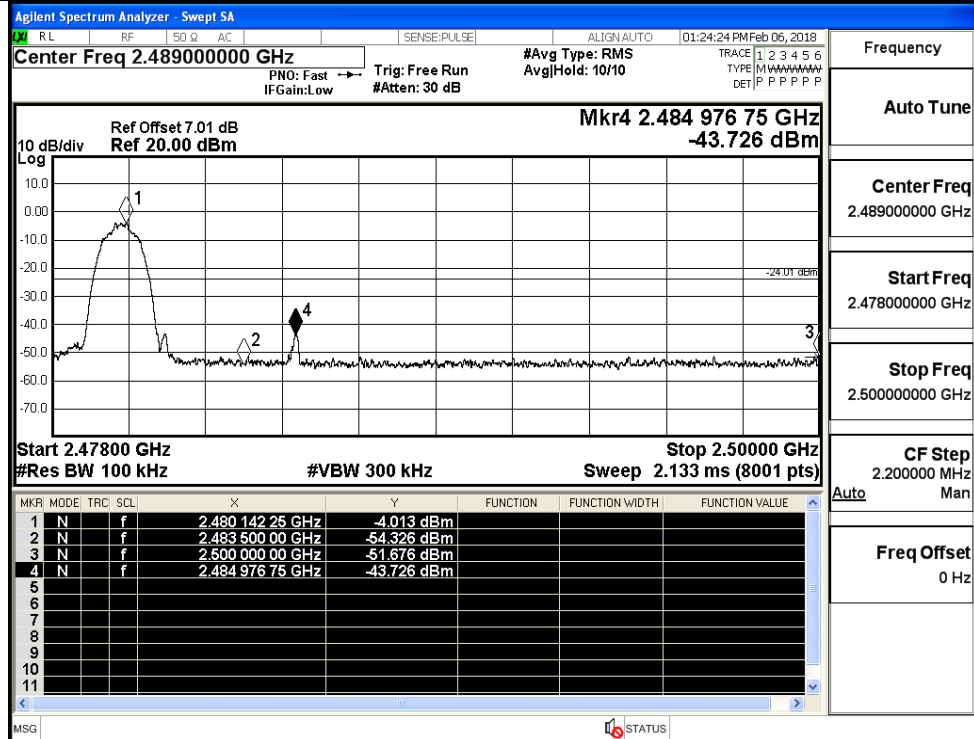
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

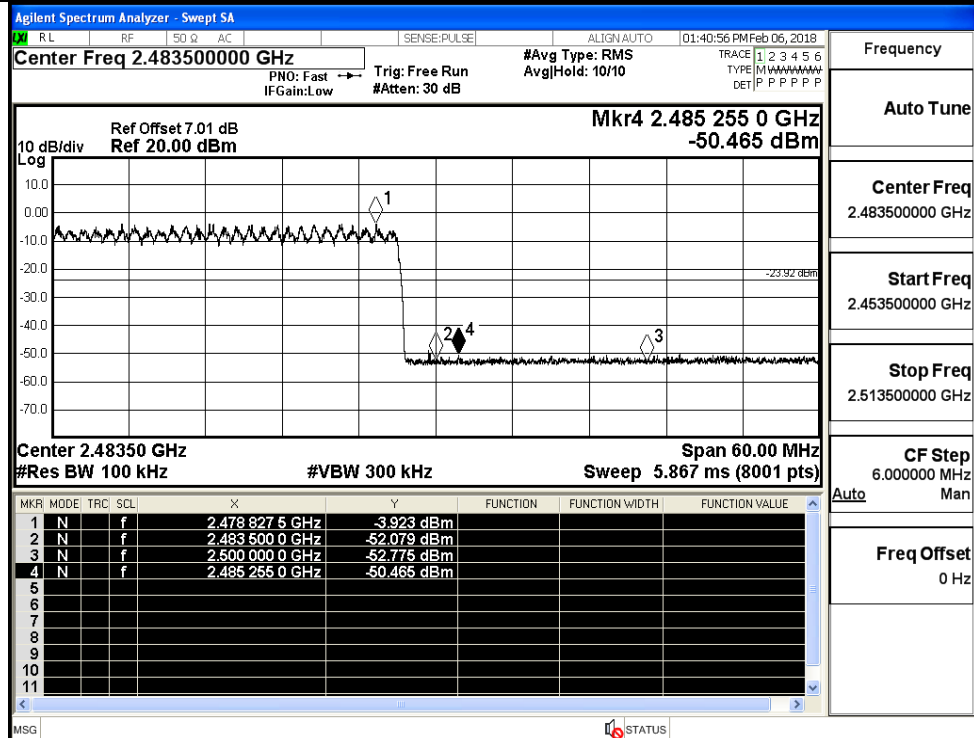


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHzFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

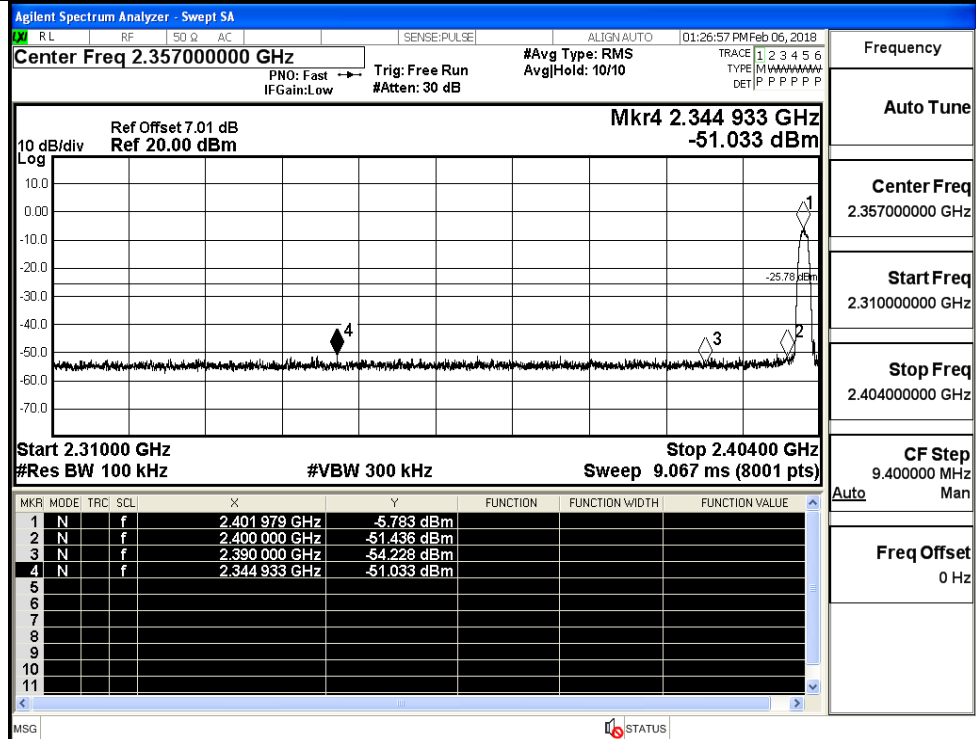


Frequency

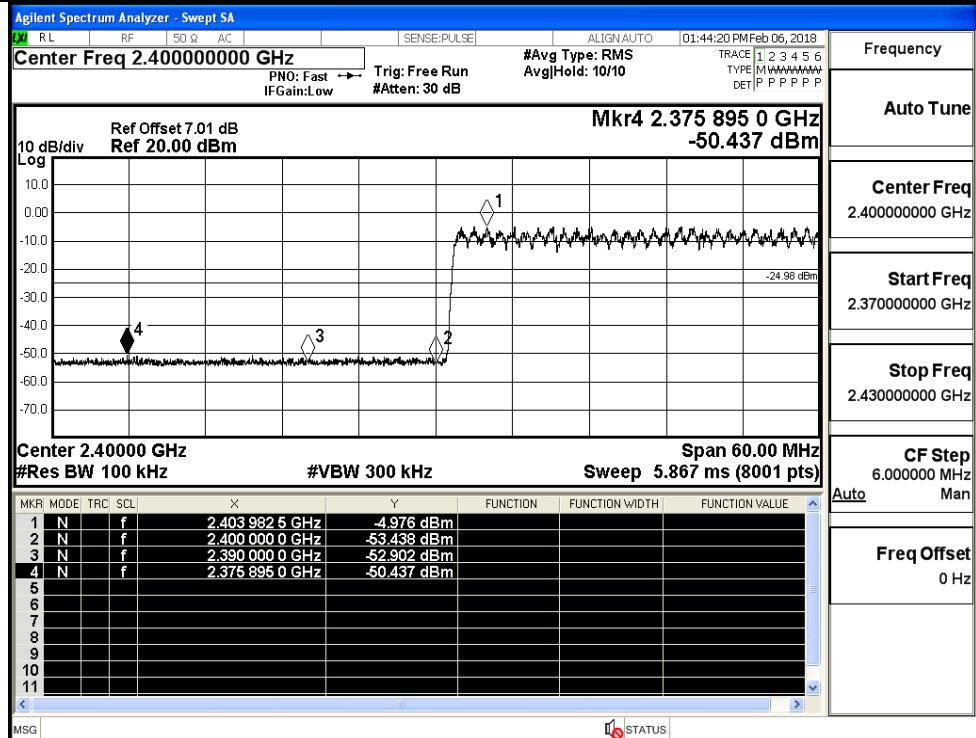
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHzFreq Offset
0 Hz

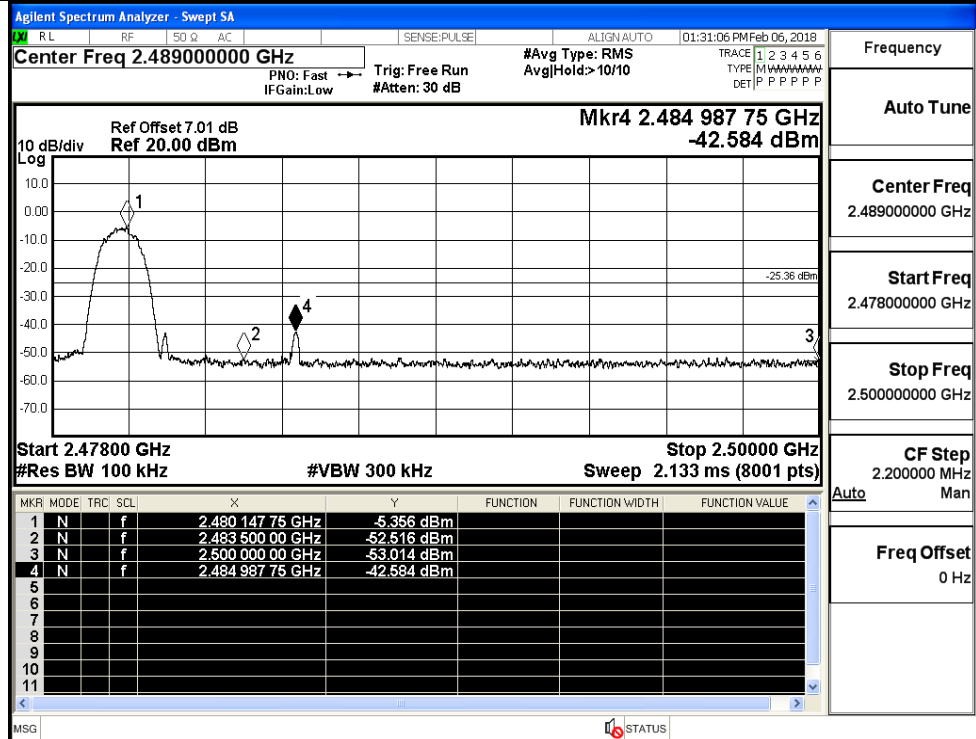
8DPSK/LCH/No Hop



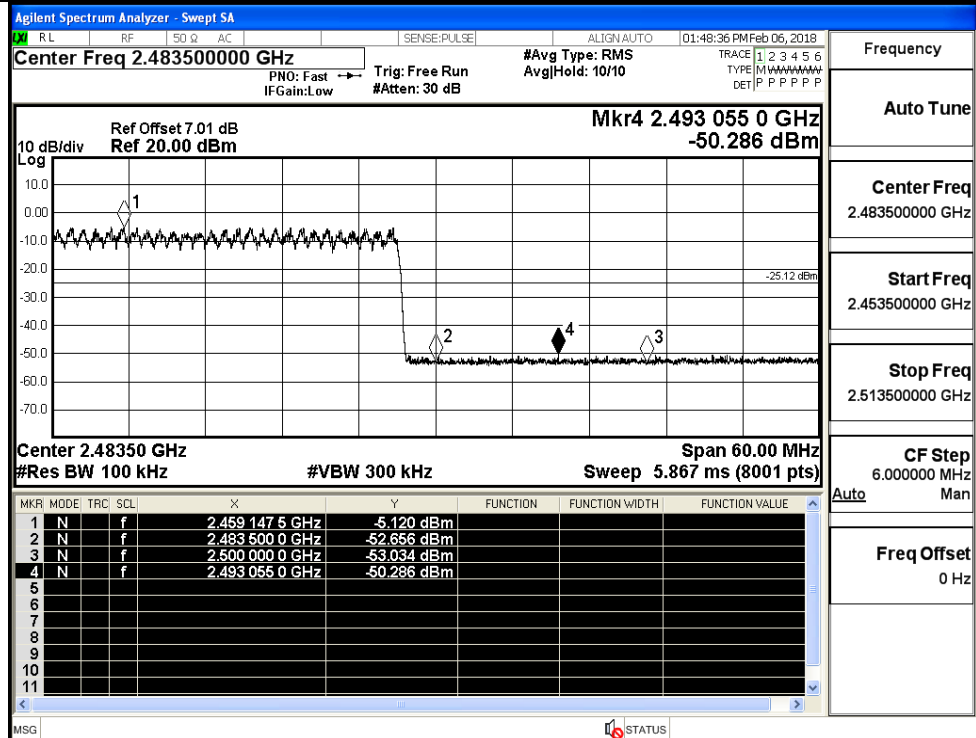
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



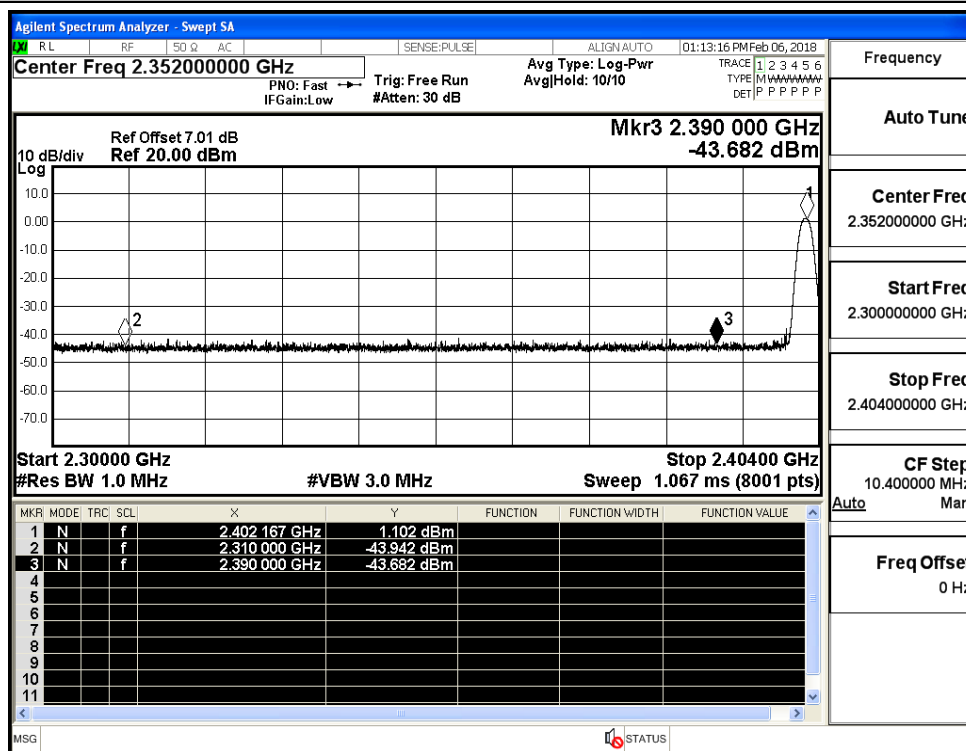
8DPSK/HCH/Hop



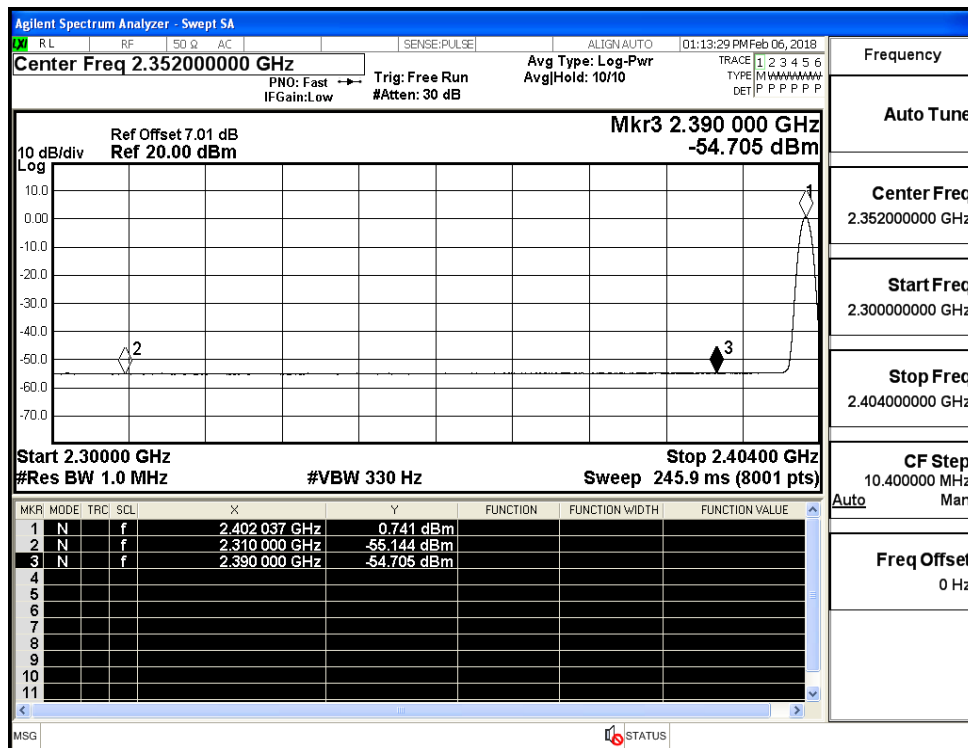
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.94	3.0	0	54.32	PEAK	74	PASS
	Off	2310.0	-55.14	3.0	0	43.12	AV	54	PASS
	Off	2390.0	-43.68	3.0	0	54.58	PEAK	74	PASS
	Off	2390.0	-54.71	3.0	0	43.55	AV	54	PASS
	Off	2483.5	-44.85	3.0	0	53.41	PEAK	74	PASS
	Off	2483.5	-54.39	3.0	0	43.87	AV	54	PASS
	Off	2500.0	-44.62	3.0	0	53.64	PEAK	74	PASS
	Off	2500.0	-54.29	3.0	0	43.97	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.38	3.0	0	53.88	PEAK	74	PASS
	Off	2310.0	-54.92	3.0	0	43.34	AV	54	PASS
	Off	2390.0	-45.09	3.0	0	53.17	PEAK	74	PASS
	Off	2390.0	-54.85	3.0	0	43.41	AV	54	PASS
	Off	2483.5	-43.60	3.0	0	54.66	PEAK	74	PASS
	Off	2483.5	-54.28	3.0	0	43.98	AV	54	PASS
	Off	2500.0	-43.16	3.0	0	55.10	PEAK	74	PASS
	Off	2500.0	-54.33	3.0	0	43.93	AV	54	PASS
8DPSK	Off	2310.0	-44.80	3.0	0	53.46	PEAK	74	PASS
	Off	2310.0	-55.02	3.0	0	43.24	AV	54	PASS
	Off	2390.0	-43.70	3.0	0	54.56	PEAK	74	PASS
	Off	2390.0	-54.70	3.0	0	43.56	AV	54	PASS
	Off	2483.5	-44.63	3.0	0	53.63	PEAK	74	PASS
	Off	2483.5	-54.23	3.0	0	44.03	AV	54	PASS
	Off	2500.0	-44.19	3.0	0	54.07	PEAK	74	PASS
	Off	2500.0	-54.32	3.0	0	43.94	AV	54	PASS

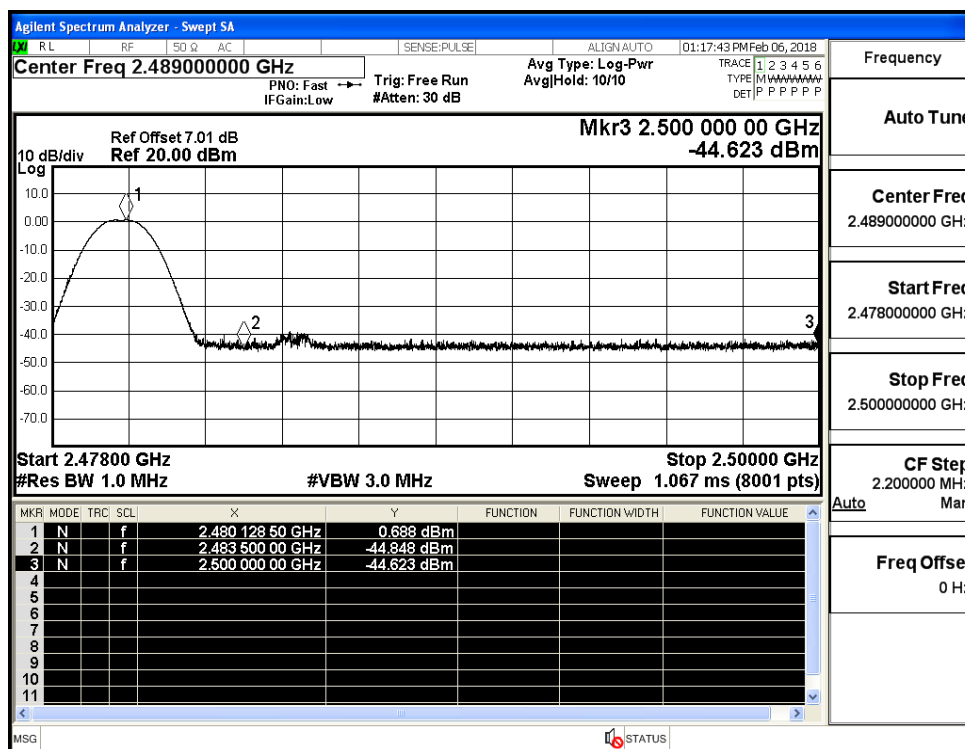
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



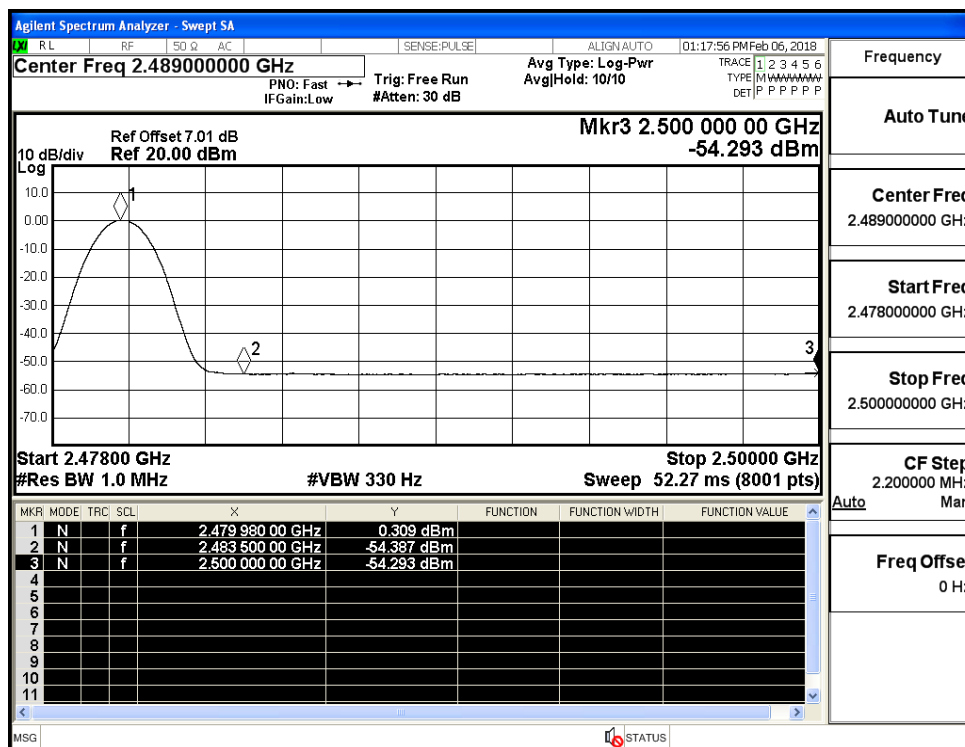
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

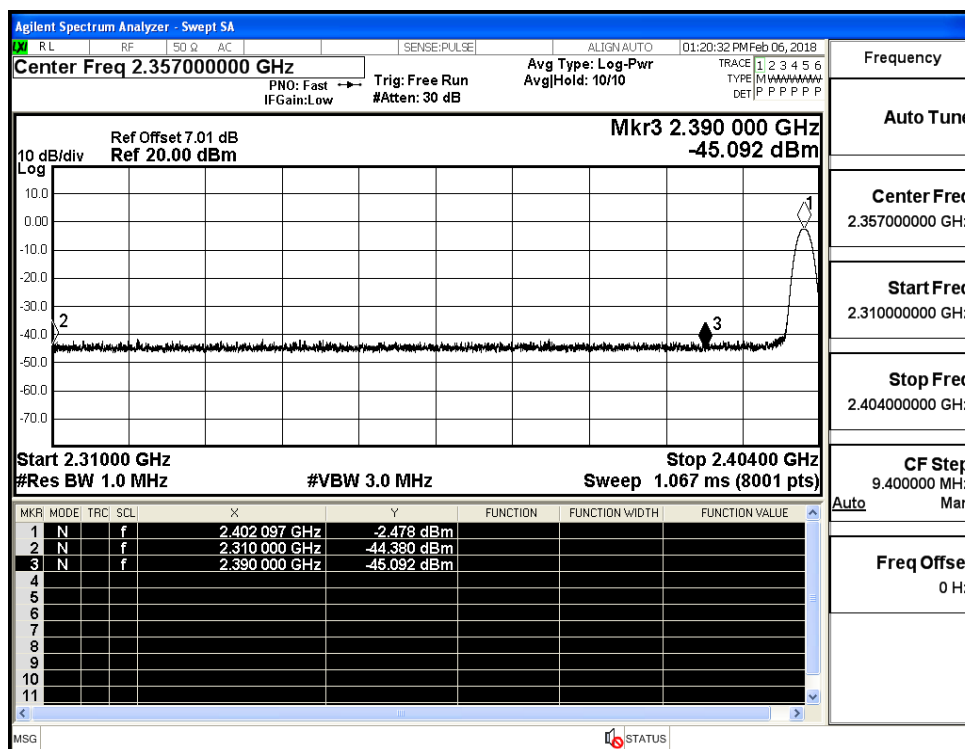
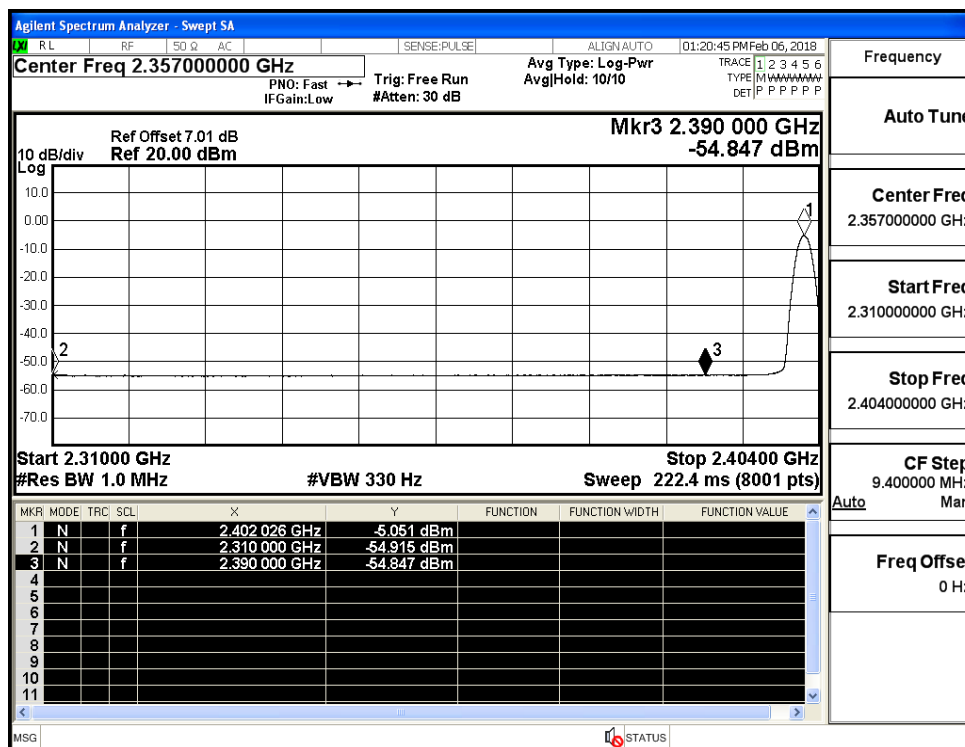


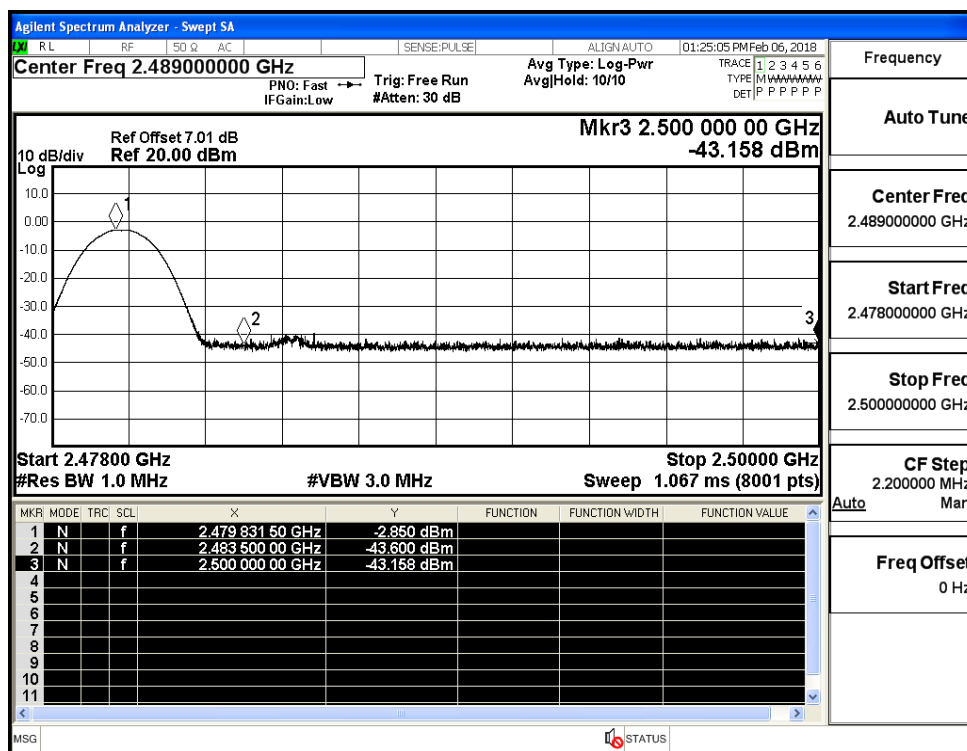
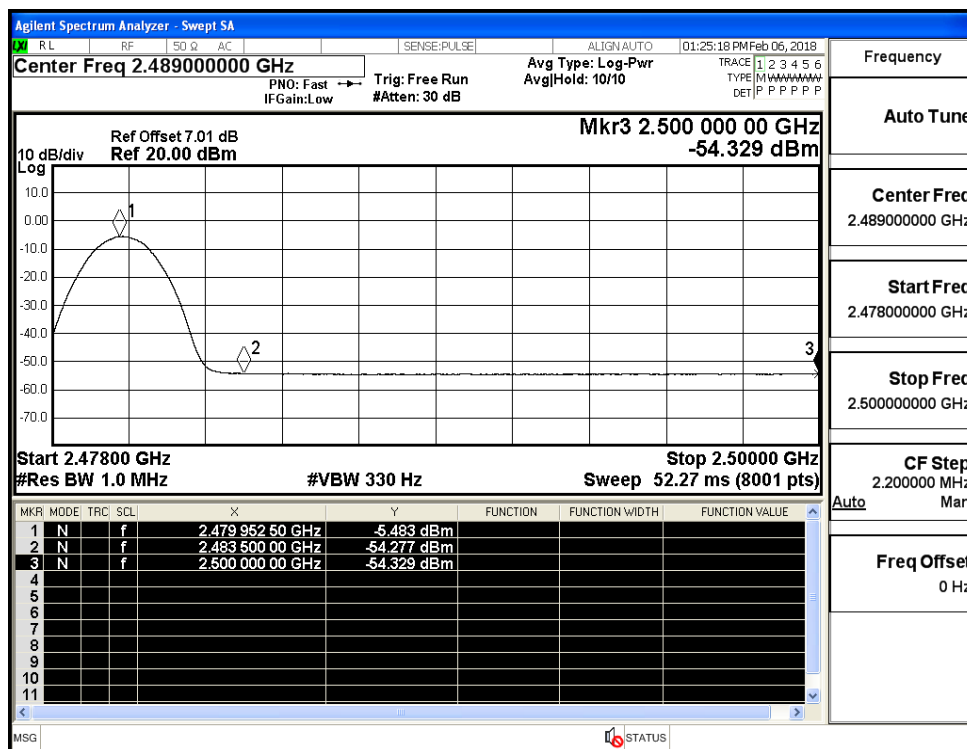
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



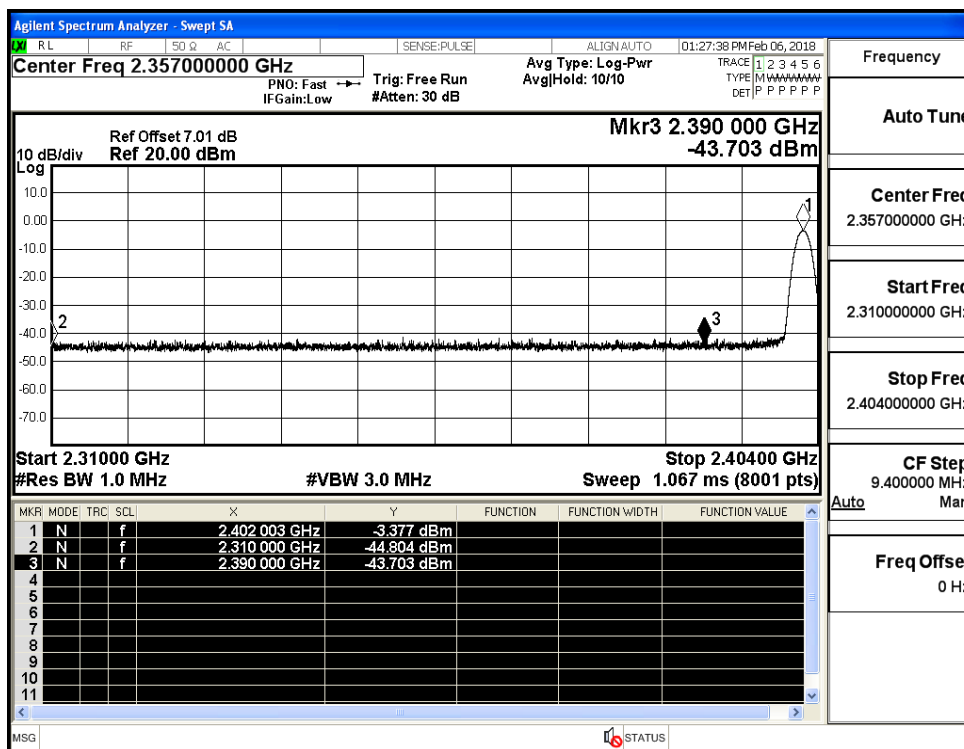
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



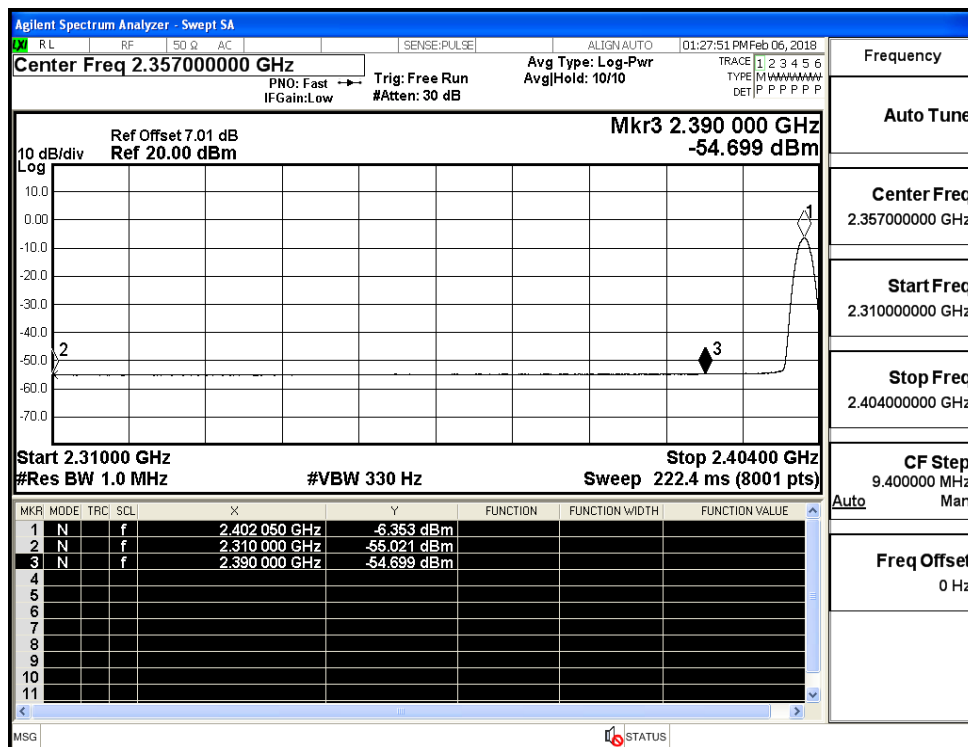
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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

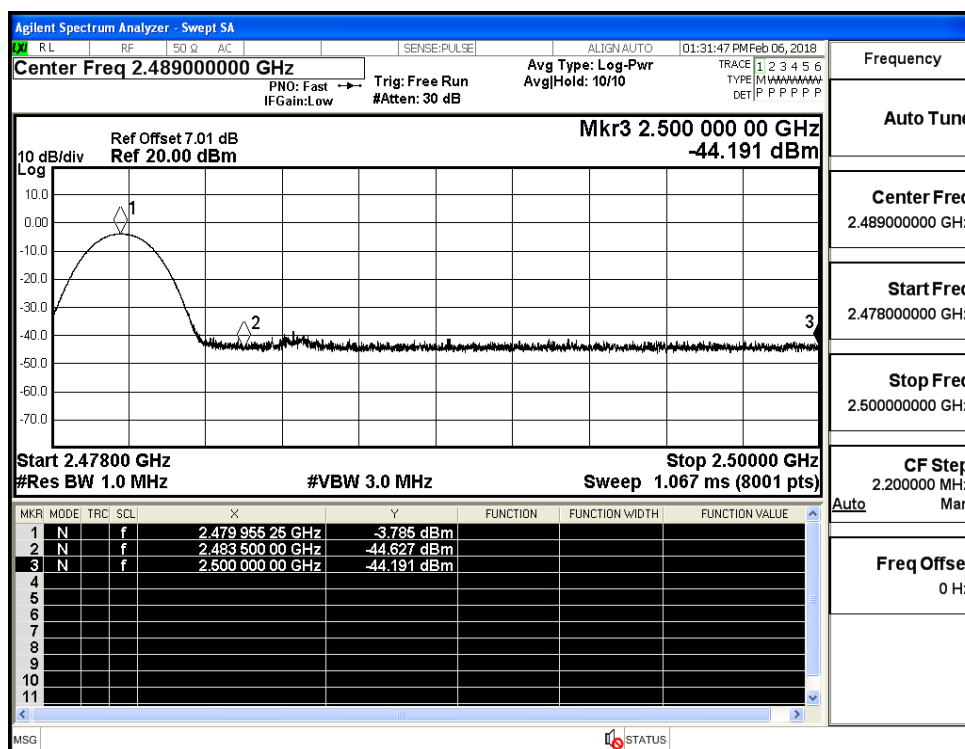
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

