

Appendix A

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

Product Name: Wireless headphone

Trade Mark: N/A

Test Model: boAt Rockerz 440

Environmental Conditions

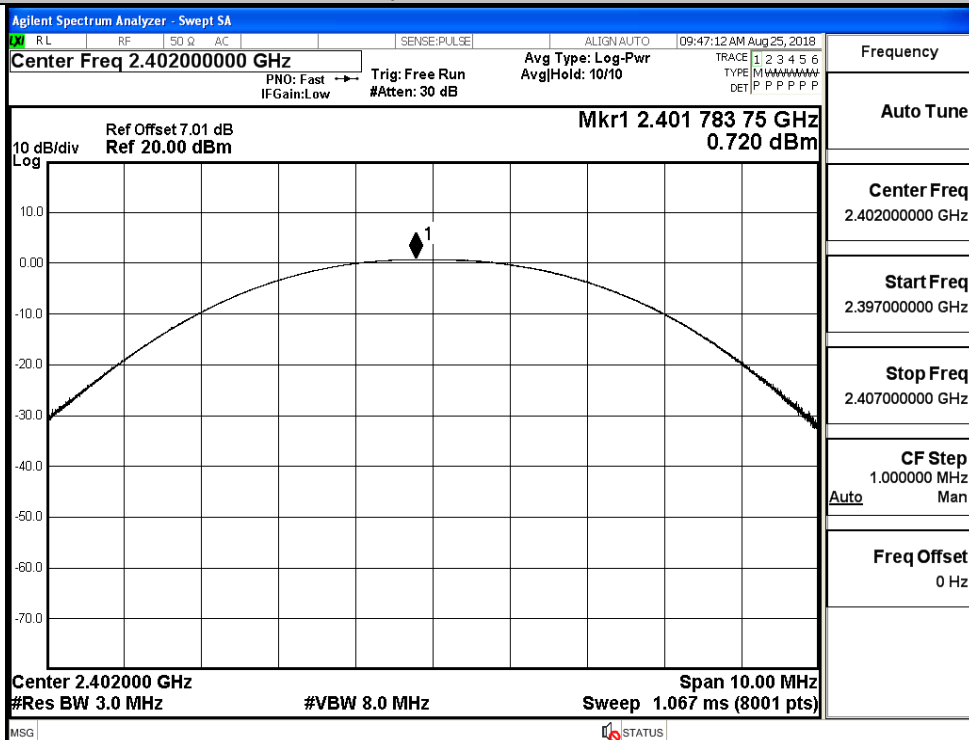
Temperature:	23.5 ° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	WangChuang
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

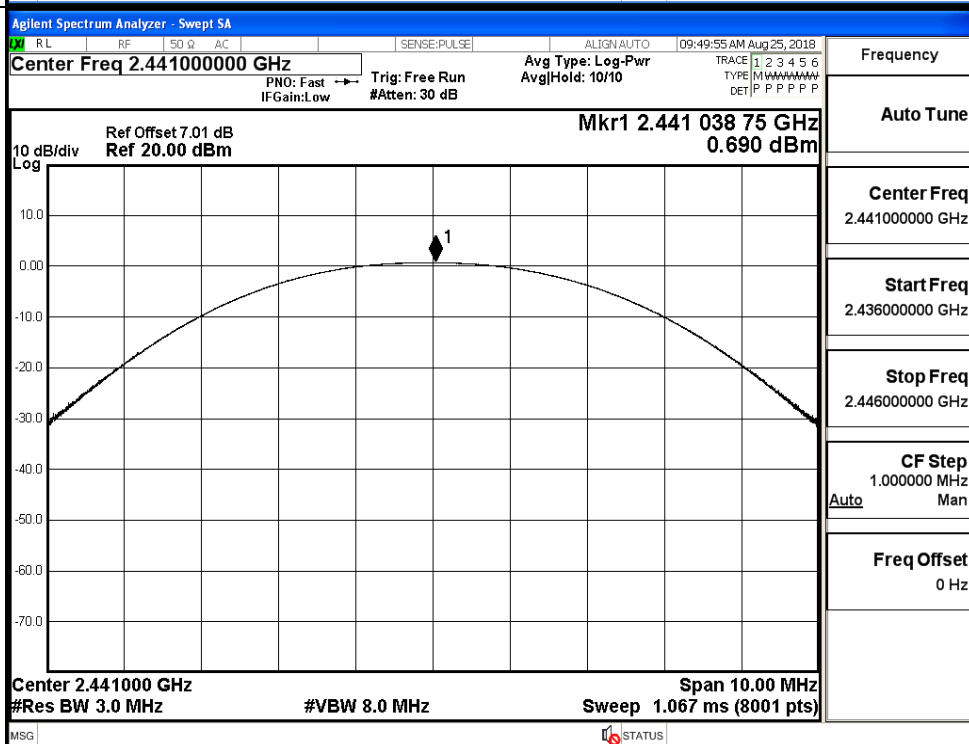
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.720	21	PASS
	MCH	0.690	21	PASS
	HCH	0.507	21	PASS
$\pi/4$ DQPSK	LCH	0.561	21	PASS
	MCH	0.106	21	PASS
	HCH	-0.111	21	PASS
8DPSK	LCH	0.117	21	PASS
	MCH	-0.002	21	PASS
	HCH	-0.100	21	PASS

Test Graphs

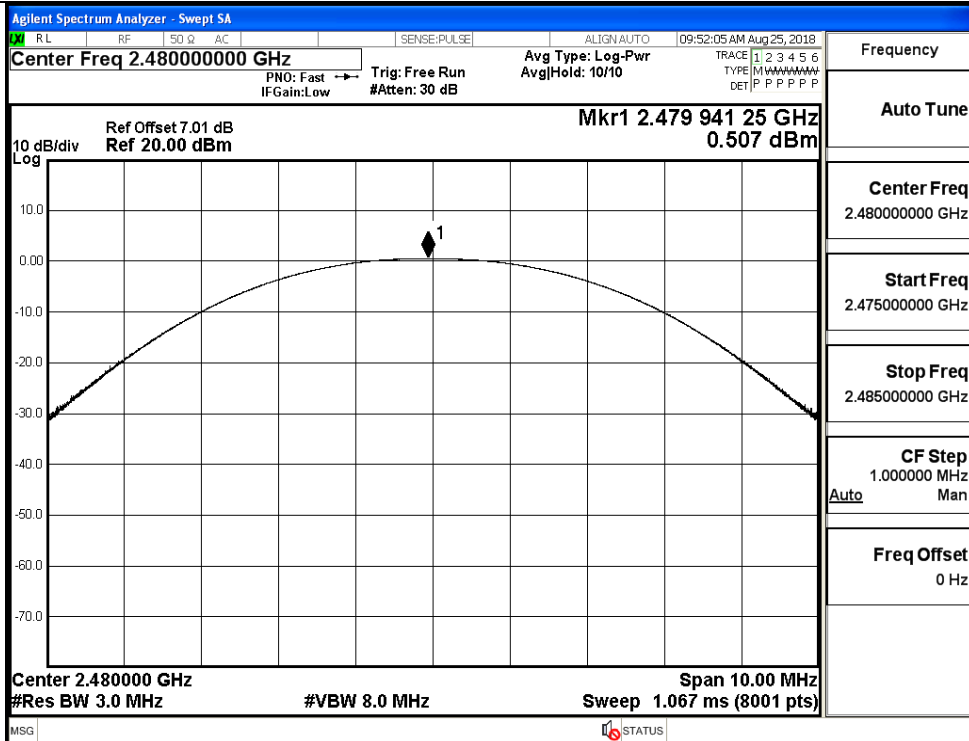
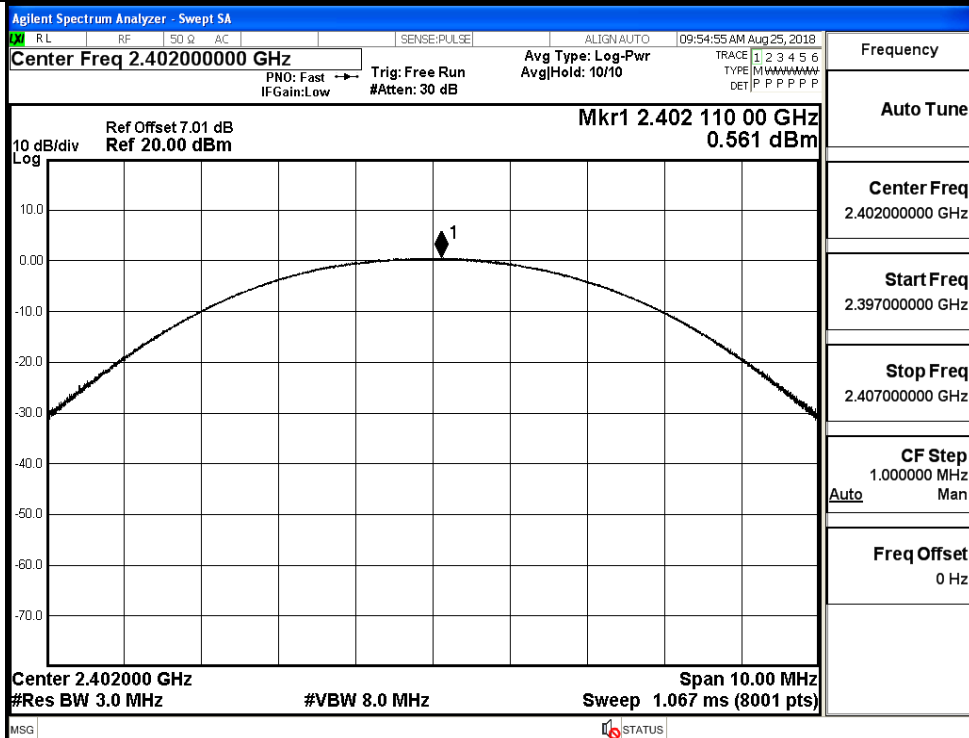
GFSK/LCH

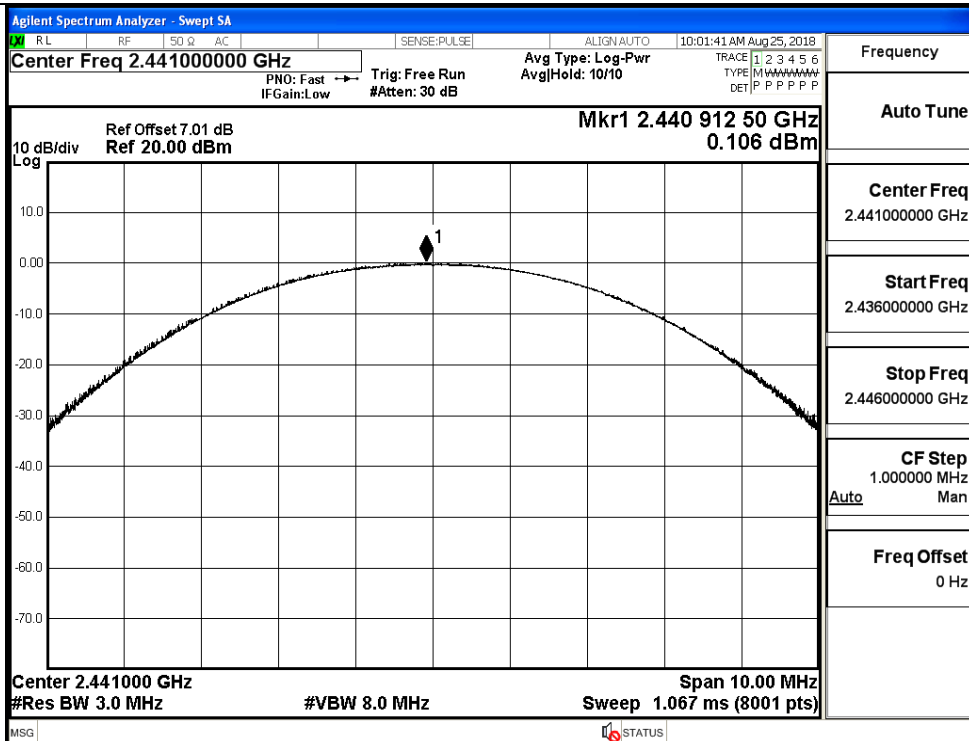
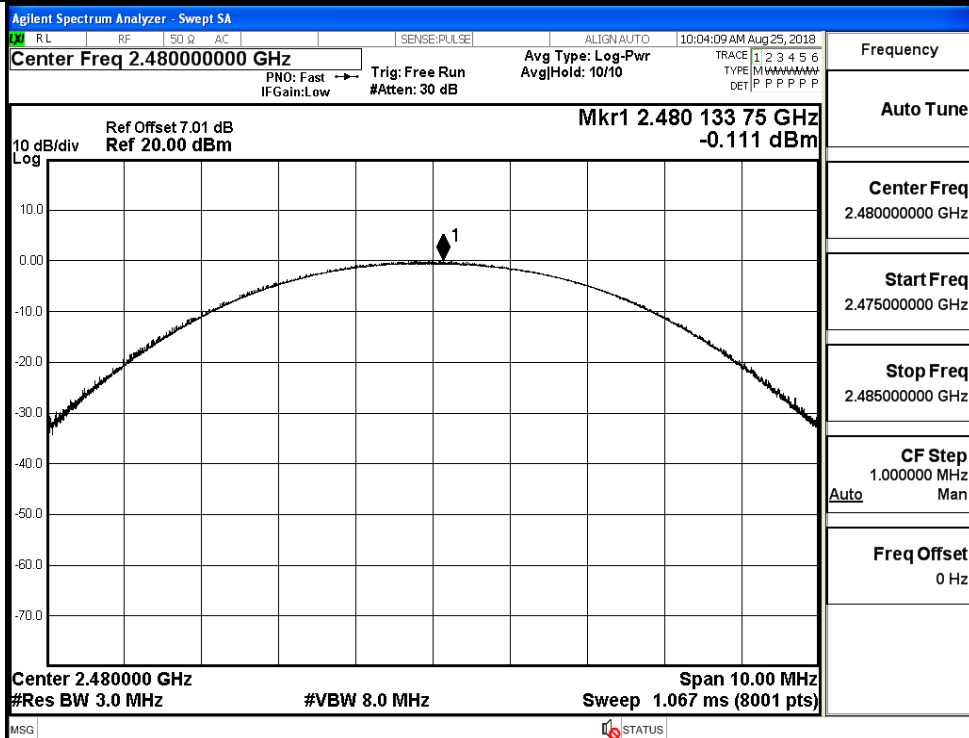


GFSK/MCH

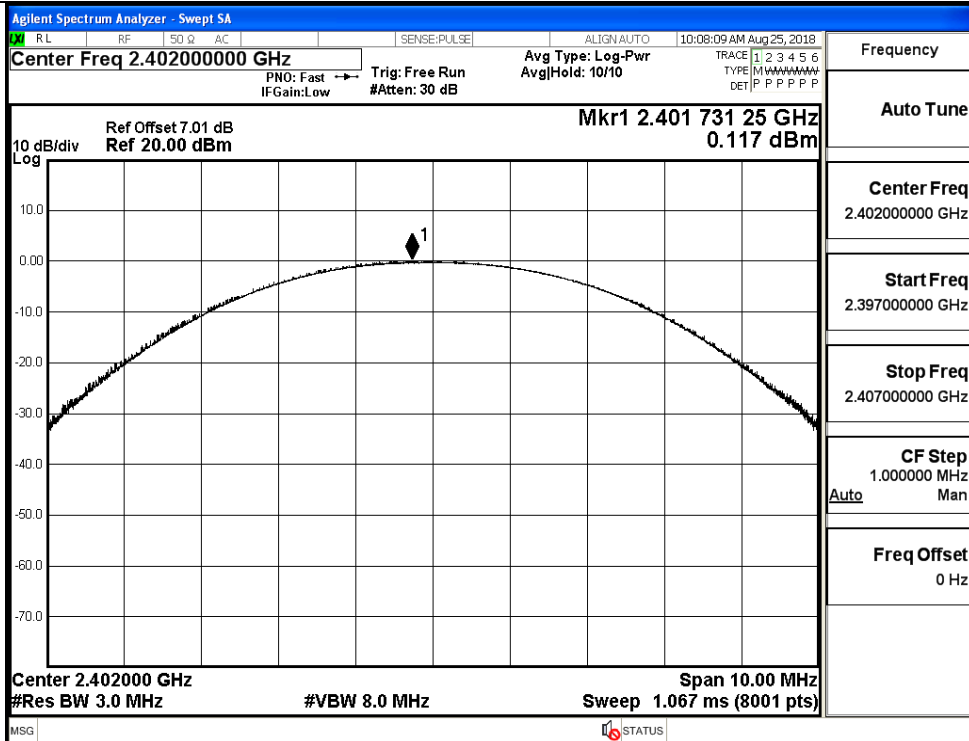


GFSK/HCH

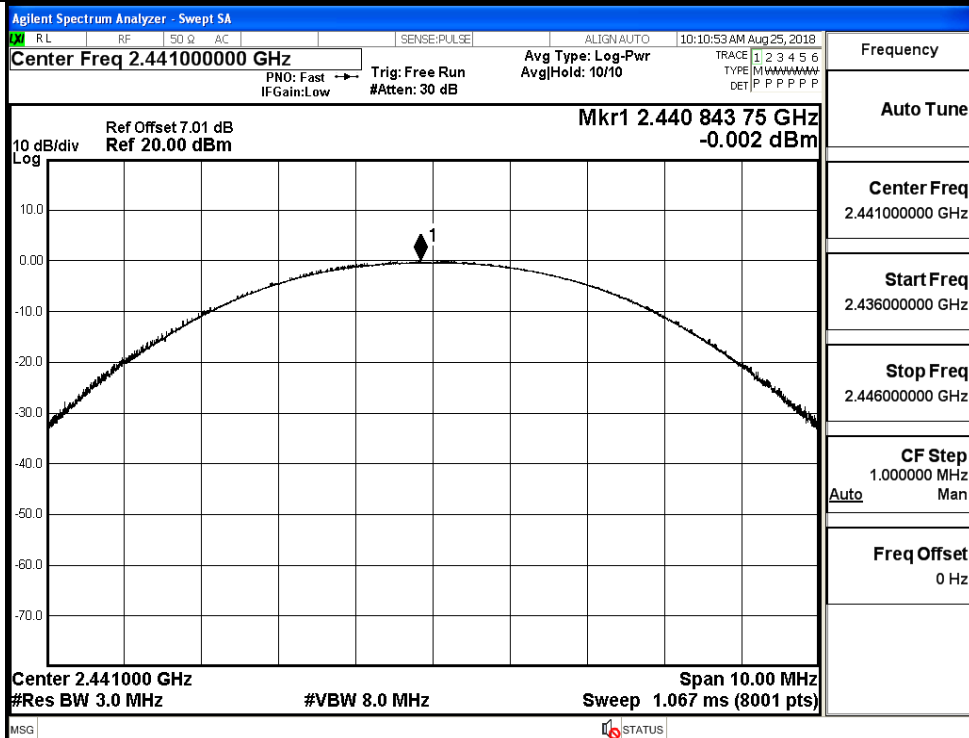
 π /4DQPSK/LCH

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

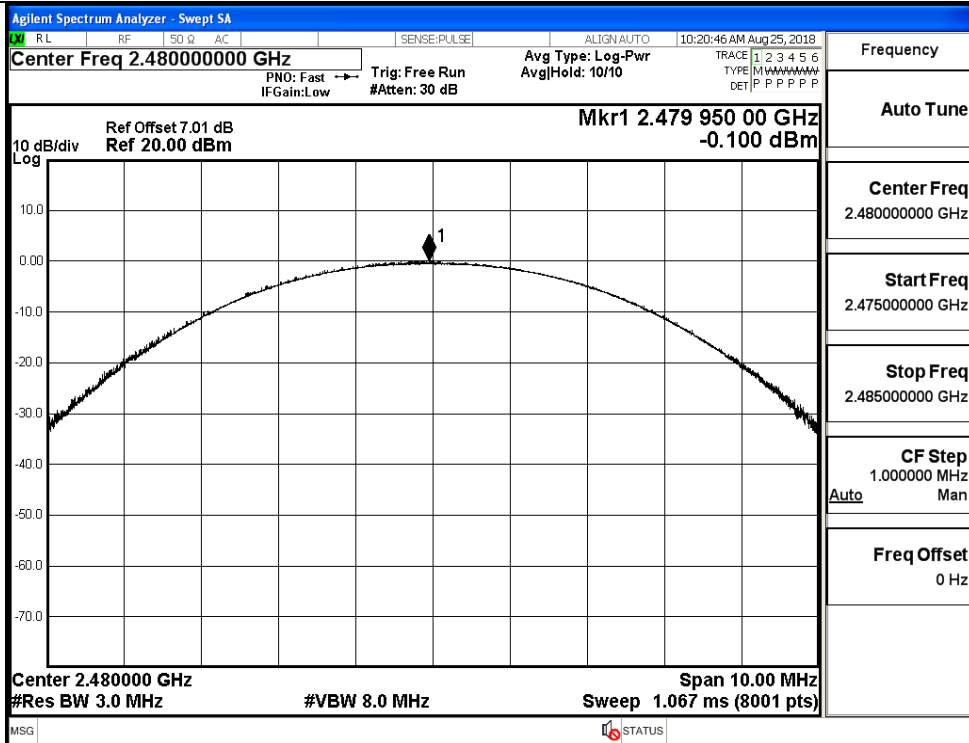
8DPSK/LCH



8DPSK/MCH



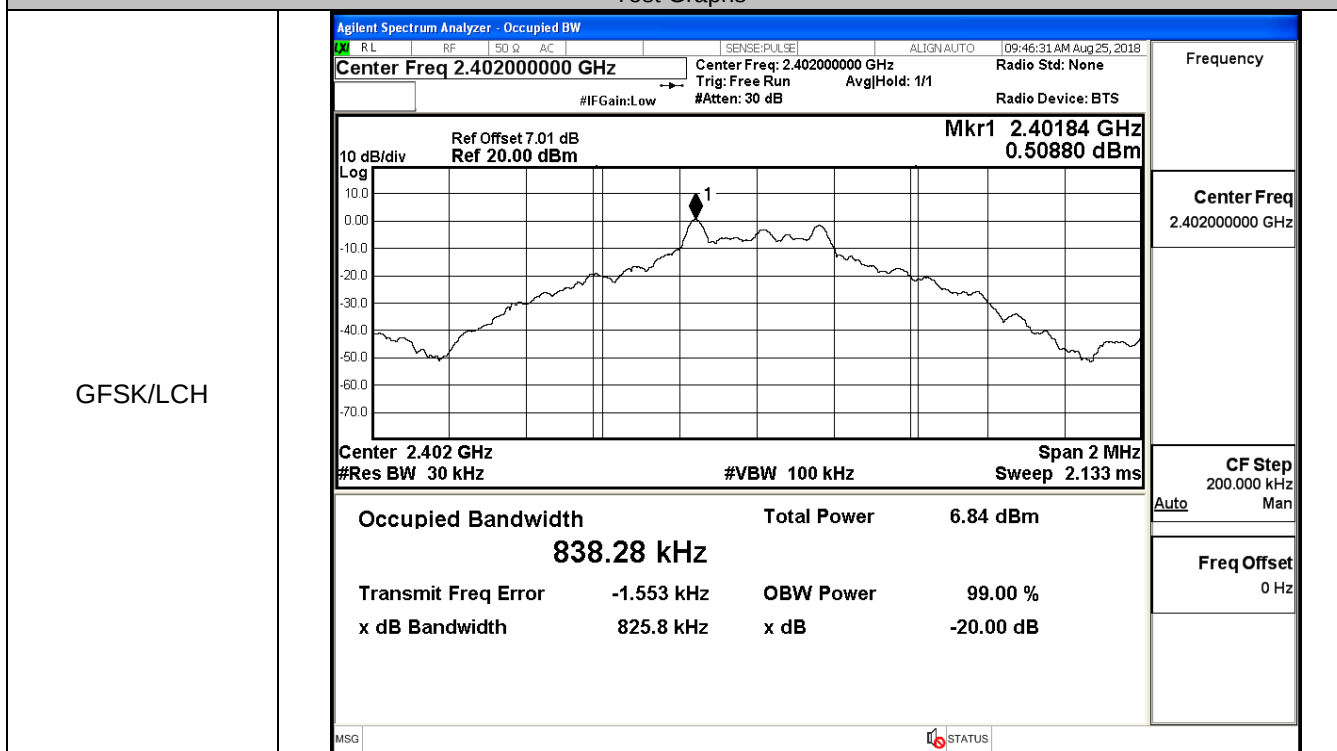
8DPSK/HCH



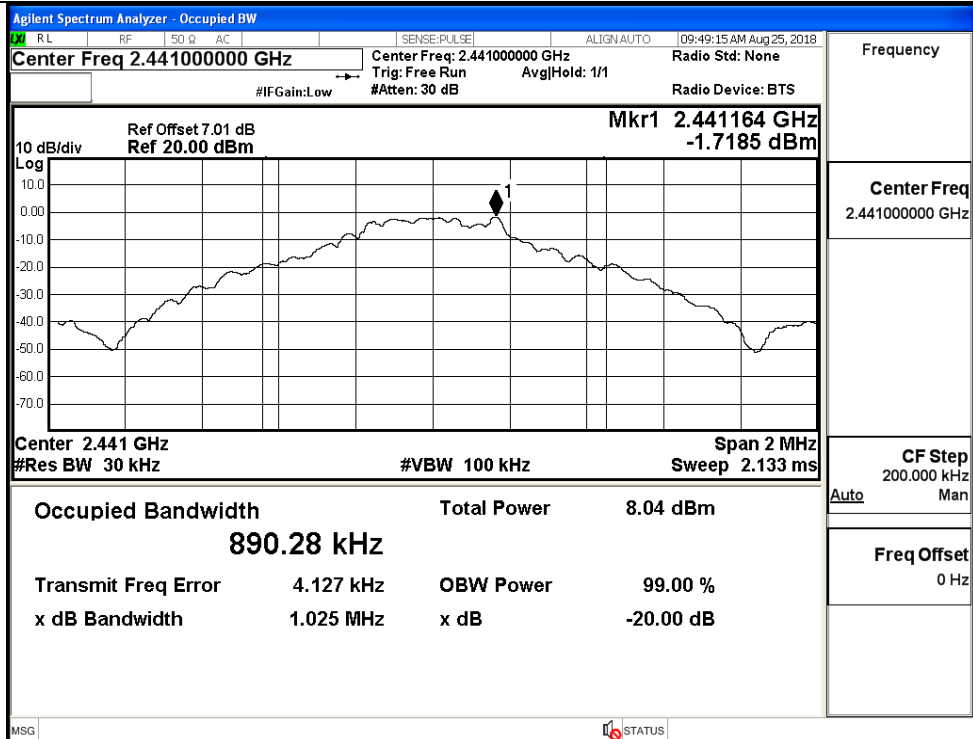
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83828	0.826	Not Specified	PASS
	MCH	0.89028	1.025	Not Specified	PASS
	HCH	0.89011	1.024	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1652	1.288	Not Specified	PASS
	MCH	1.1671	1.287	Not Specified	PASS
	HCH	1.0707	1.131	Not Specified	PASS
8DPSK	LCH	1.0707	1.143	Not Specified	PASS
	MCH	1.0719	1.140	Not Specified	PASS
	HCH	1.0690	1.150	Not Specified	PASS

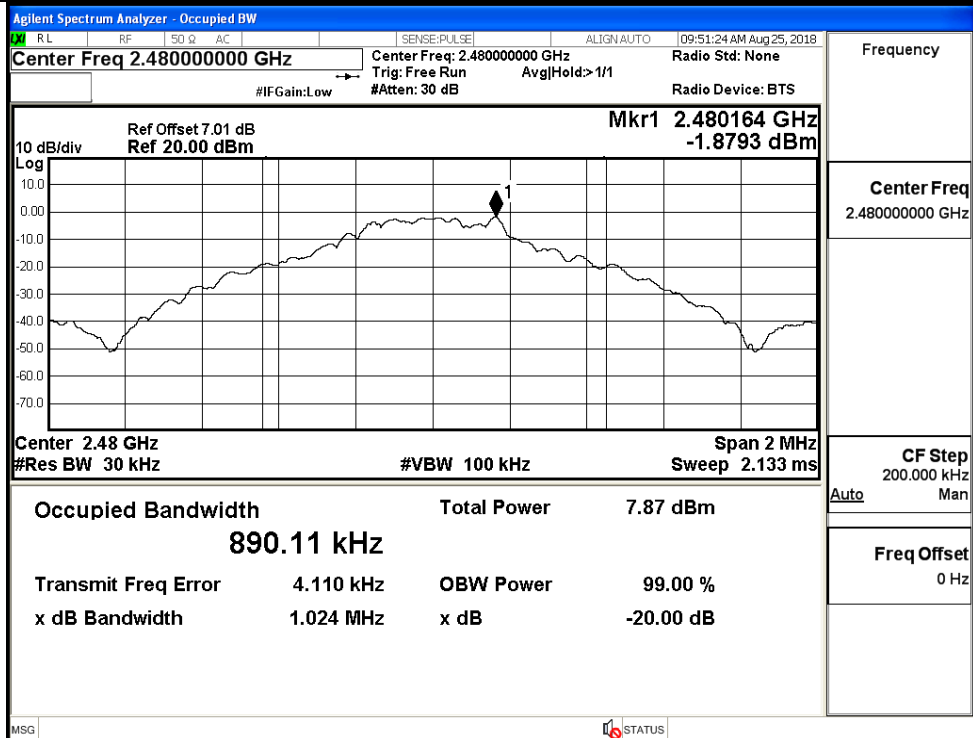
Test Graphs

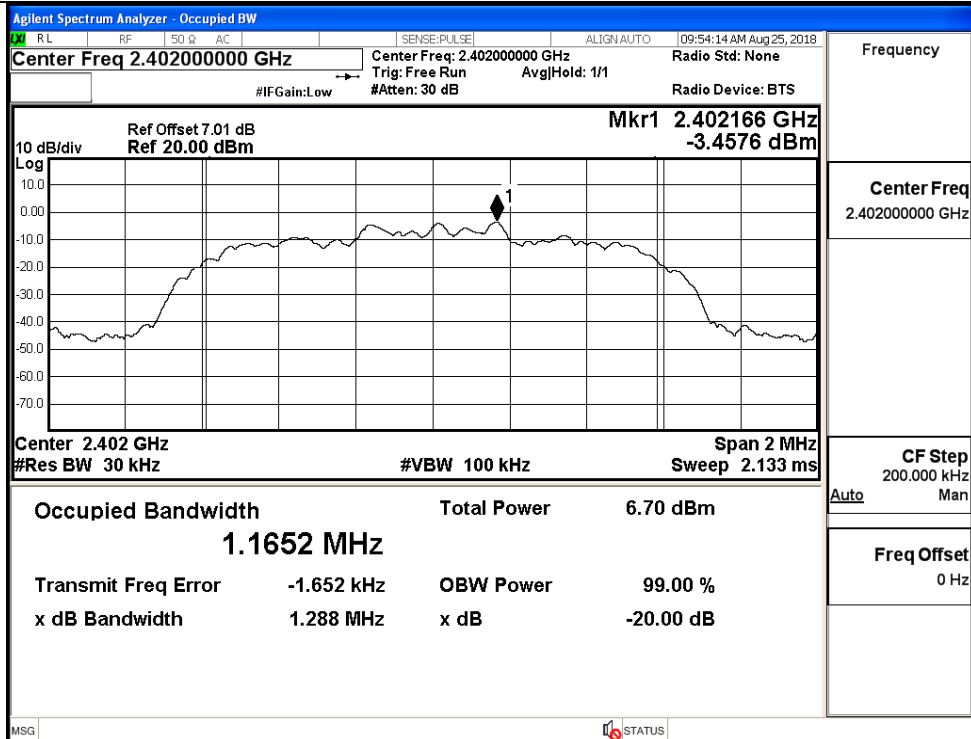
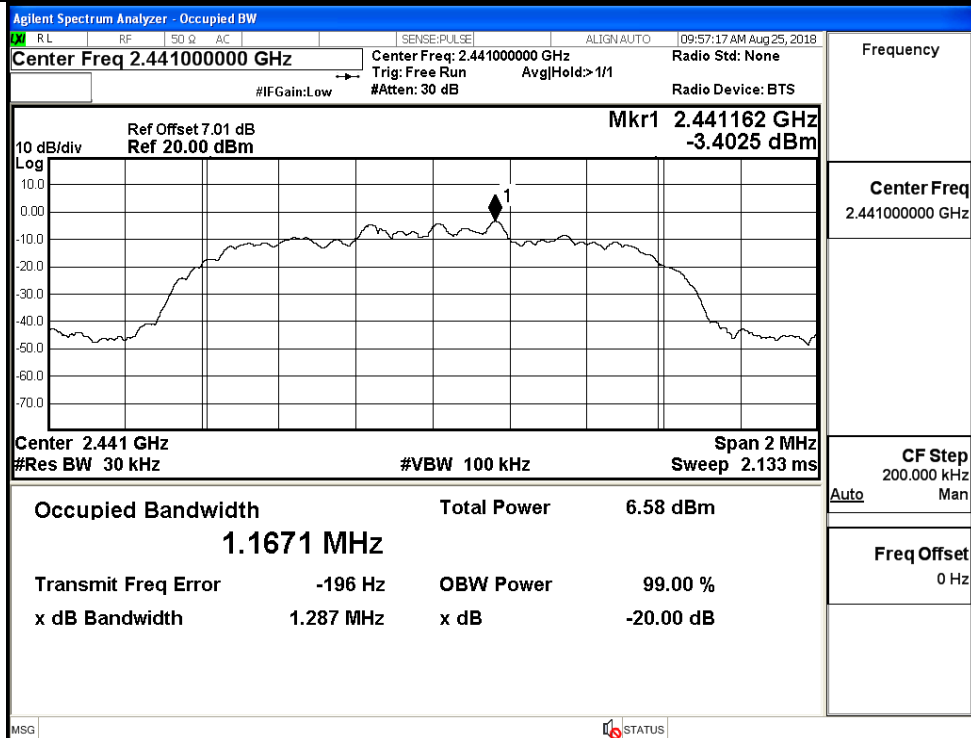


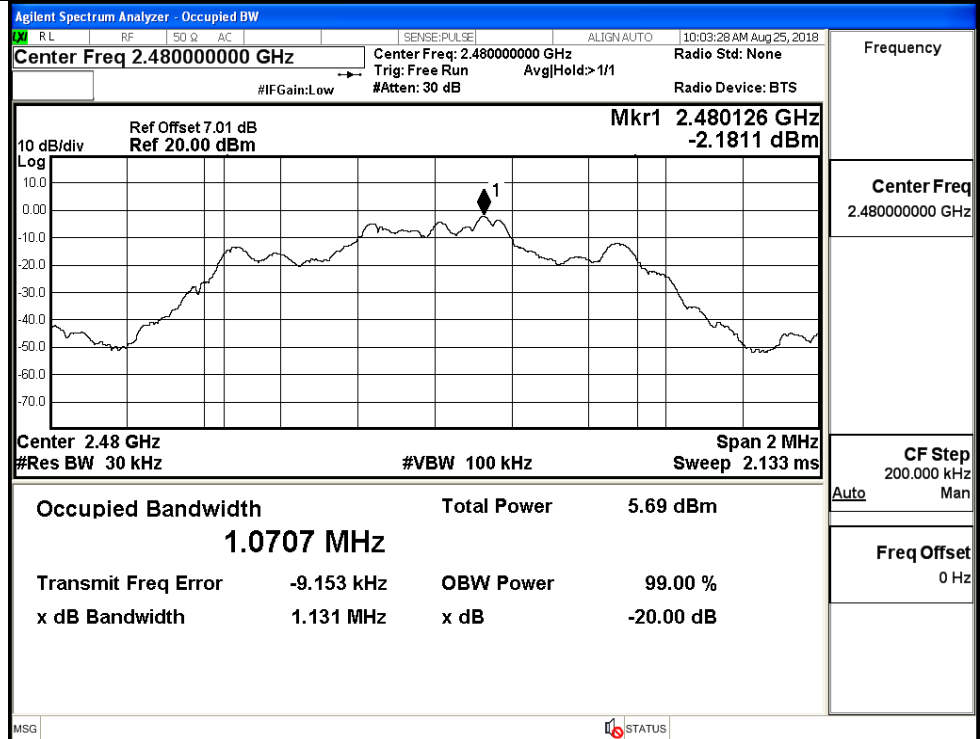
GFSK/MCH



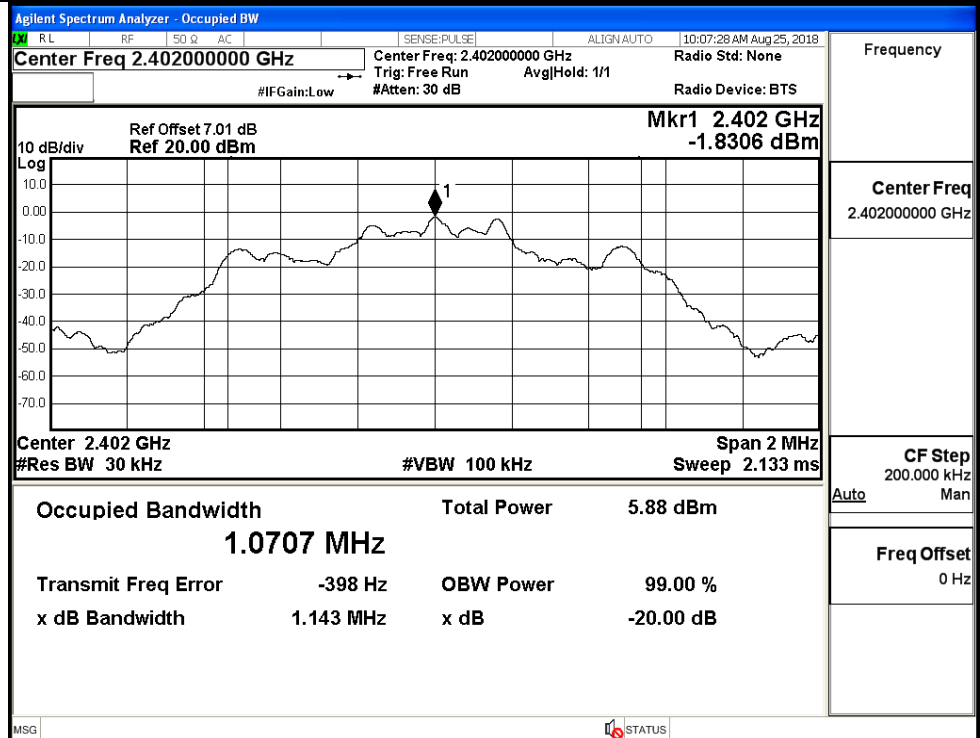
GFSK/HCH



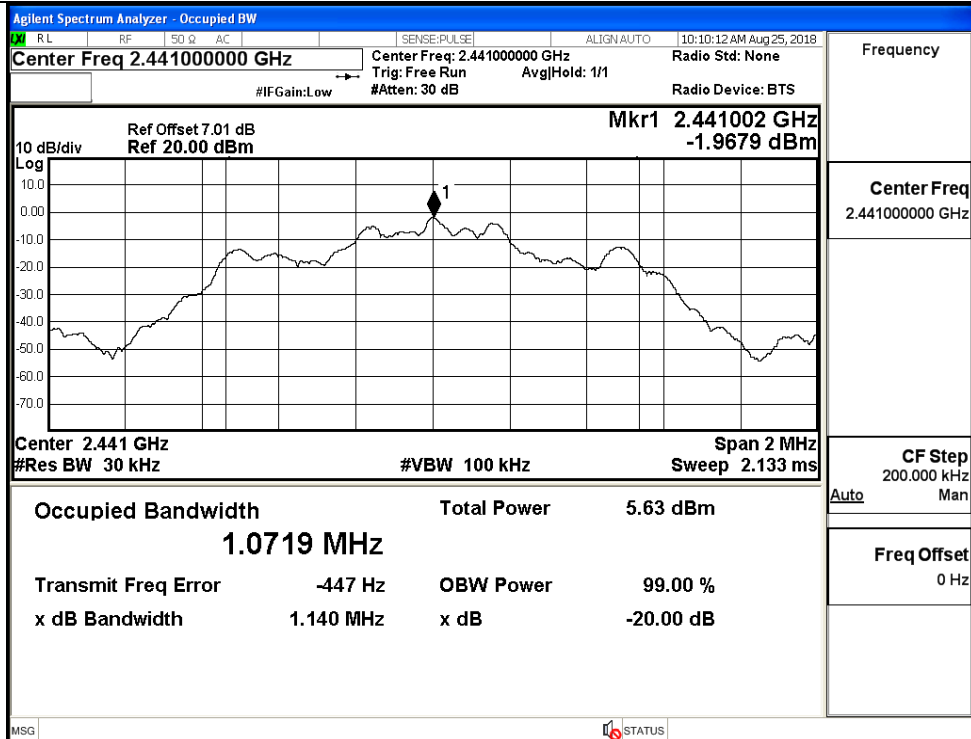
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

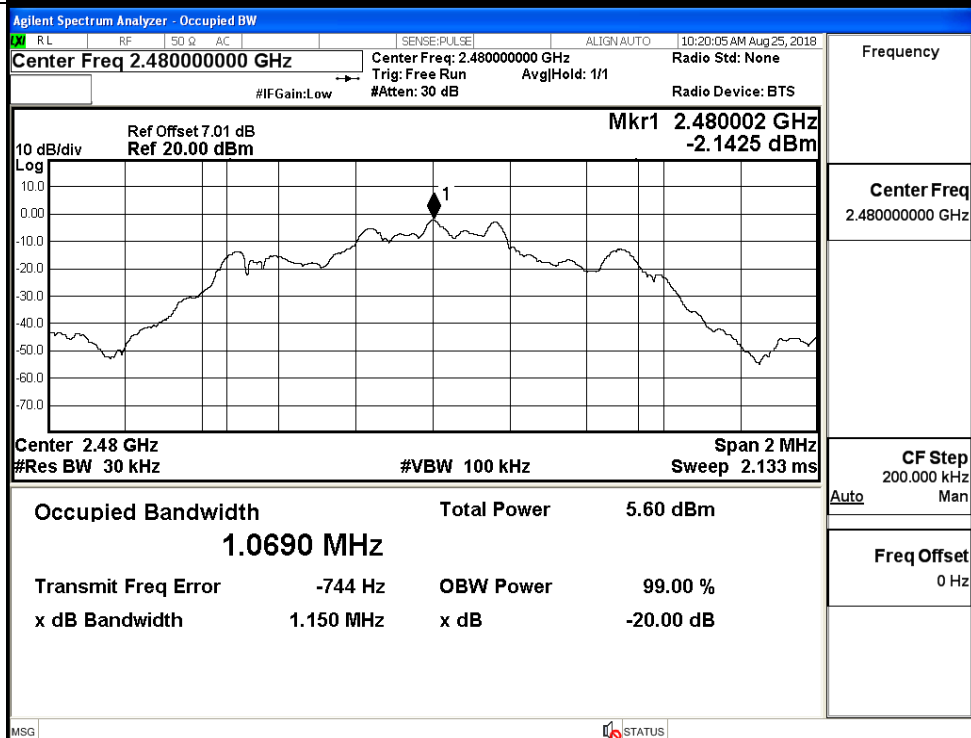
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

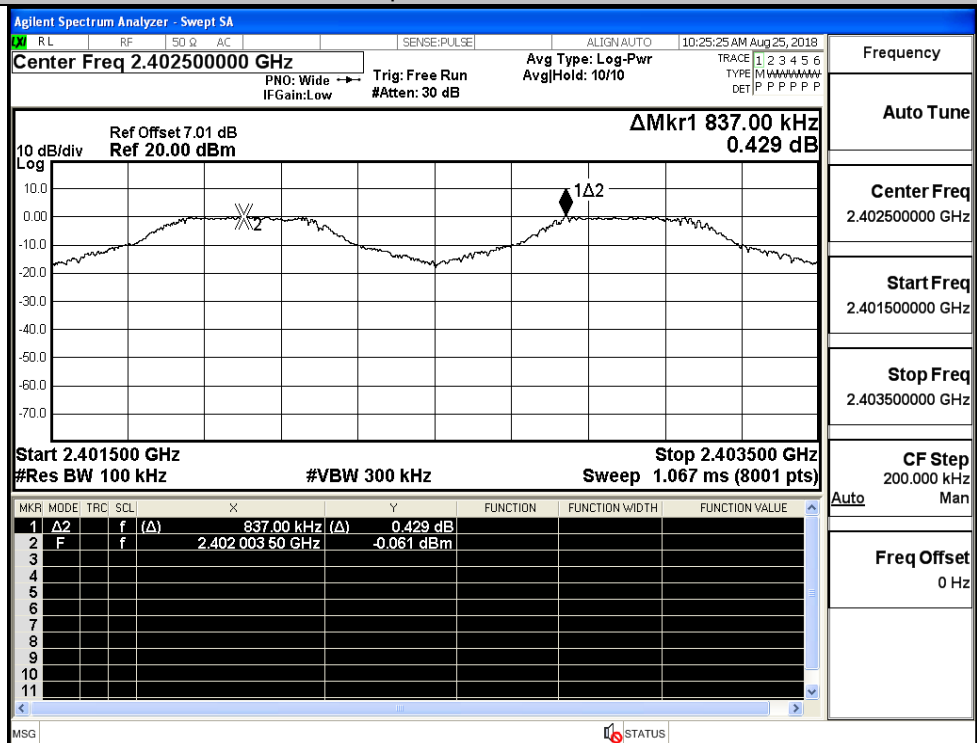


A.3 Carrier Frequency Separation

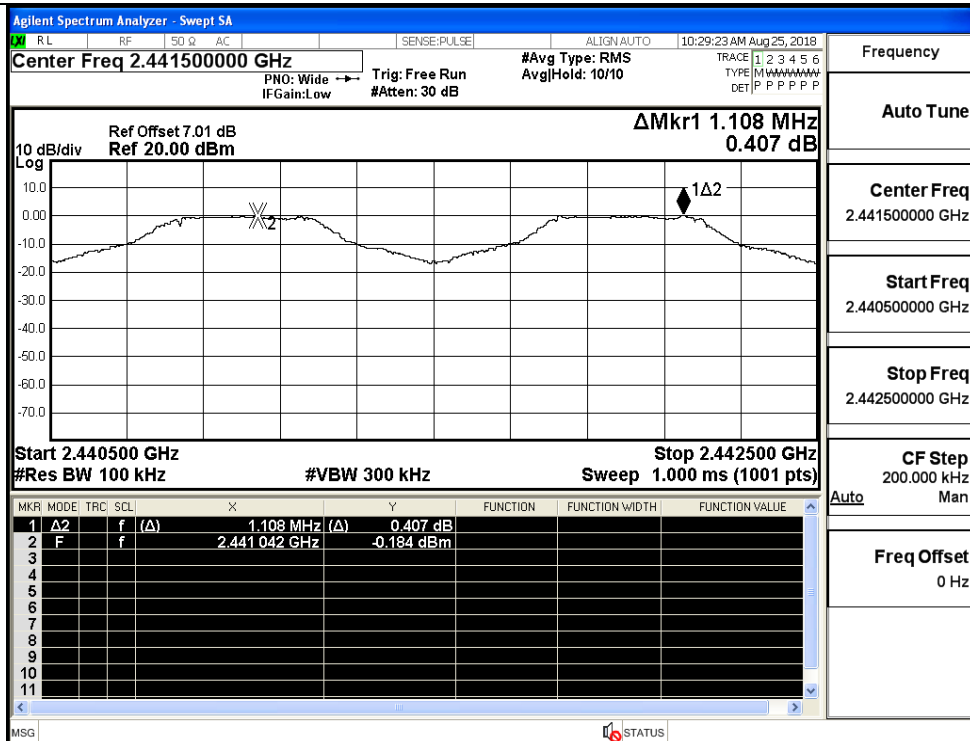
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.837	0.683	PASS
	MCH	1.108	0.683	PASS
	HCH	0.980	0.683	PASS
π /4DQPSK	LCH	1.350	0.859	PASS
	MCH	1.036	0.859	PASS
	HCH	1.272	0.859	PASS
8DPSK	LCH	1.012	0.767	PASS
	MCH	1.172	0.767	PASS
	HCH	1.096	0.767	PASS

Test Graphs

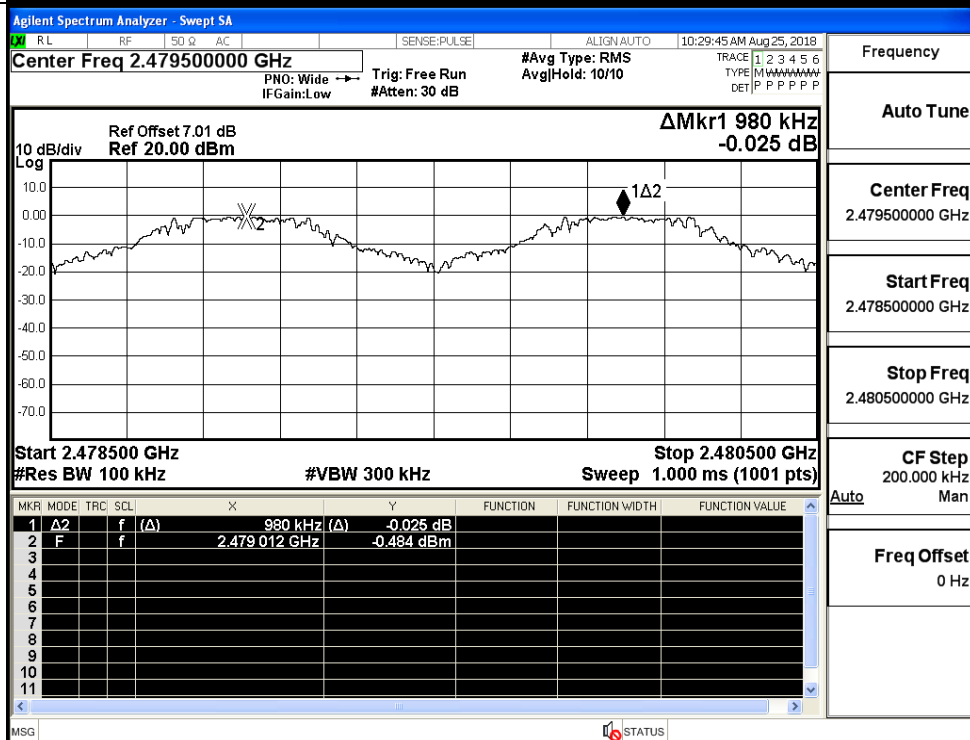
GFSK/LCH

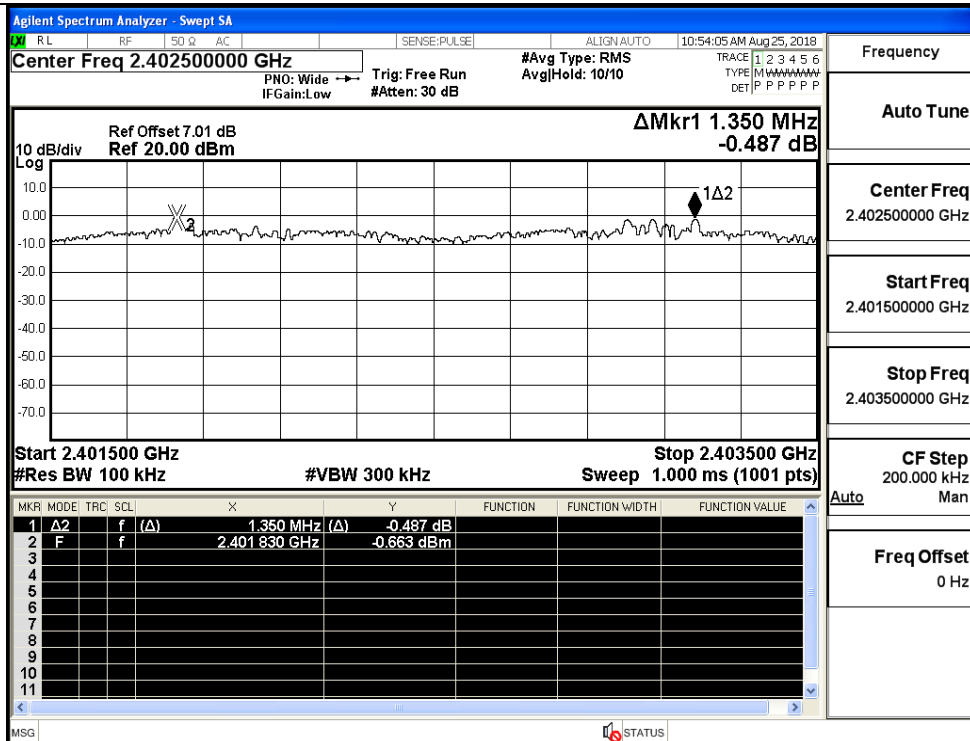
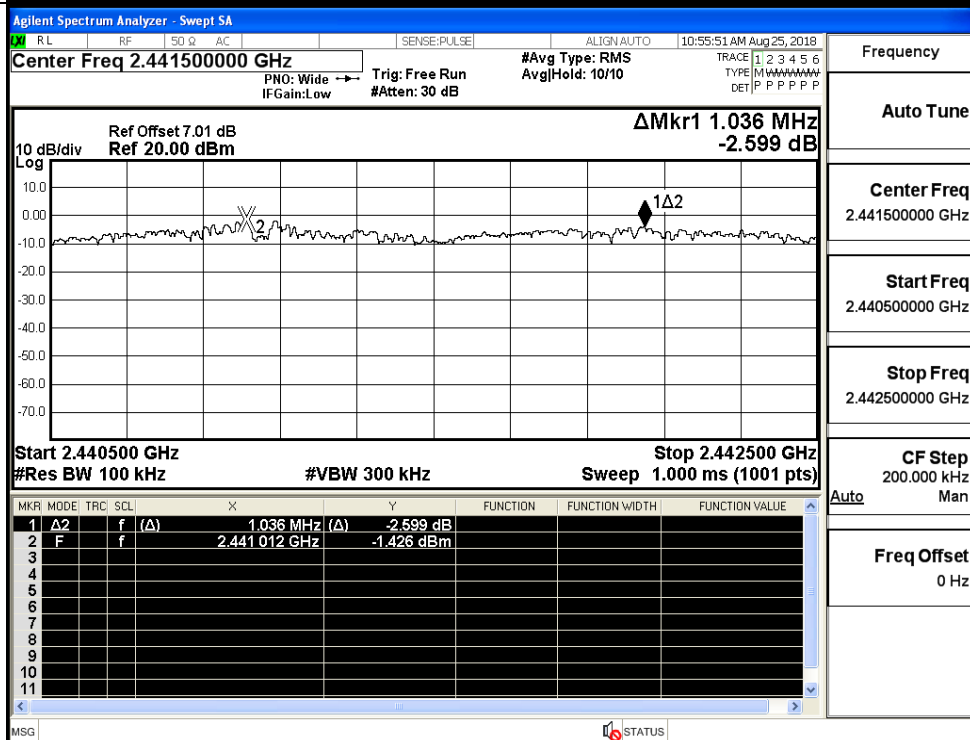


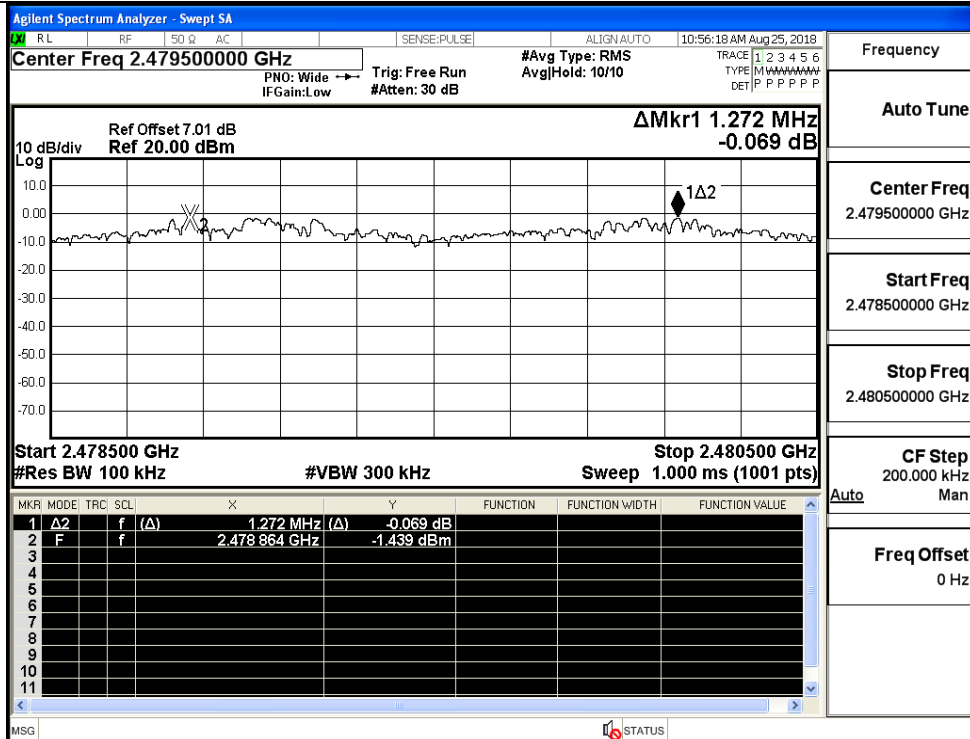
GFSK/MCH



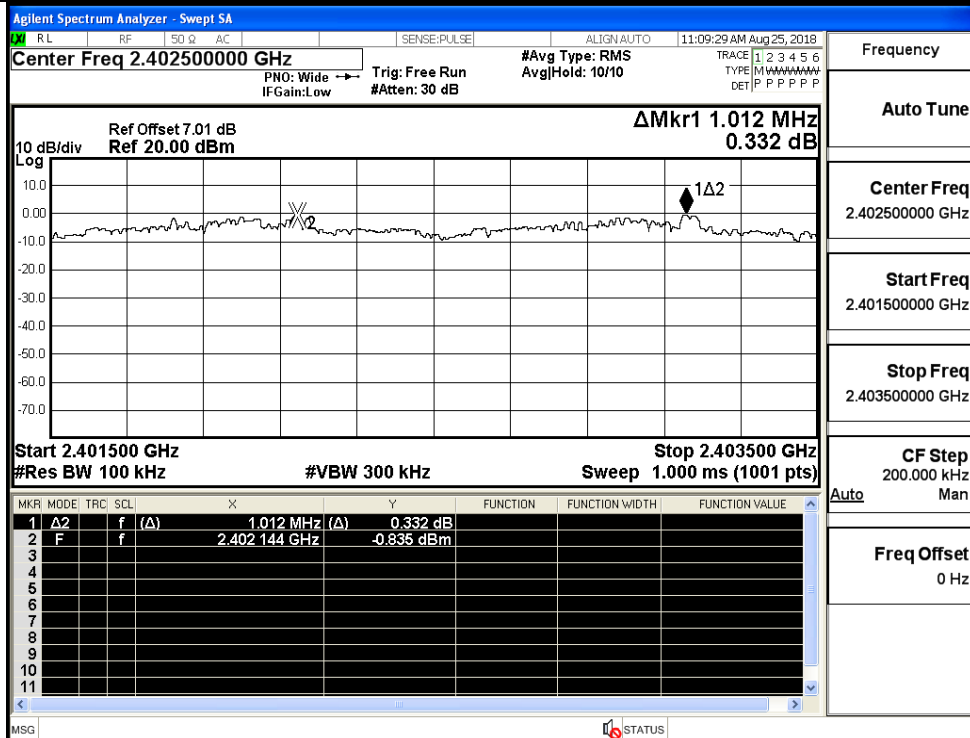
GFSK/HCH



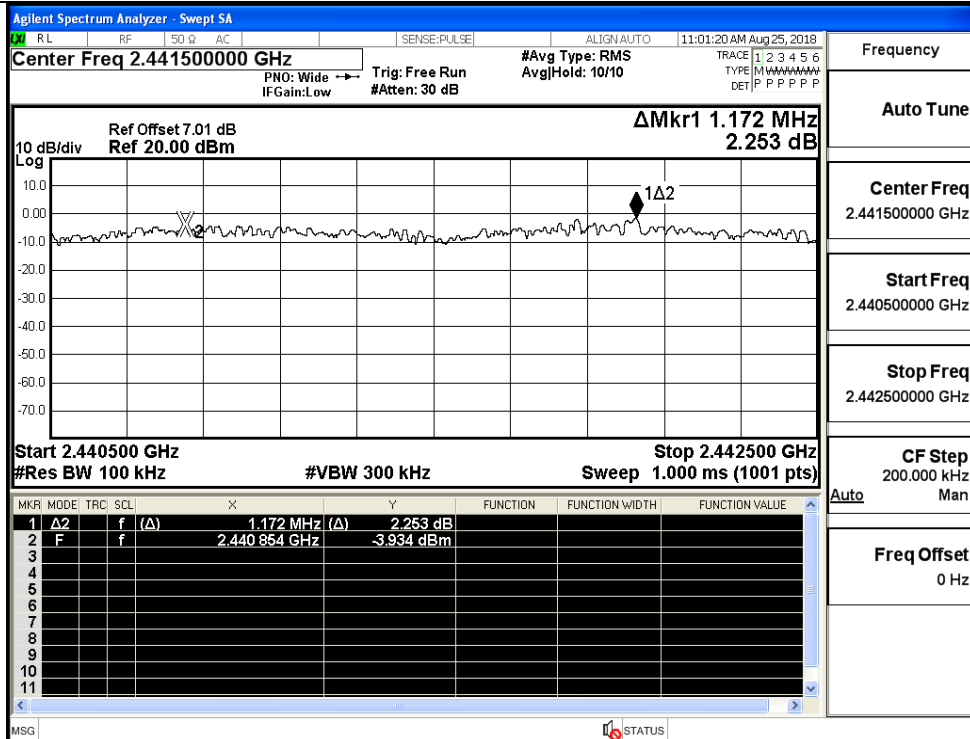
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

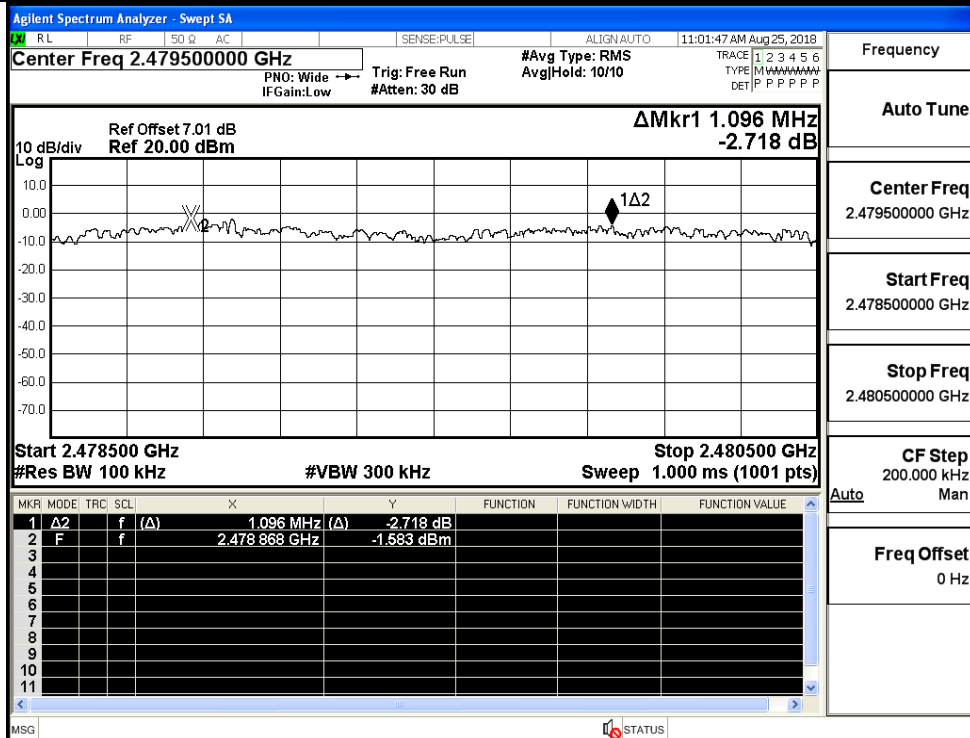
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

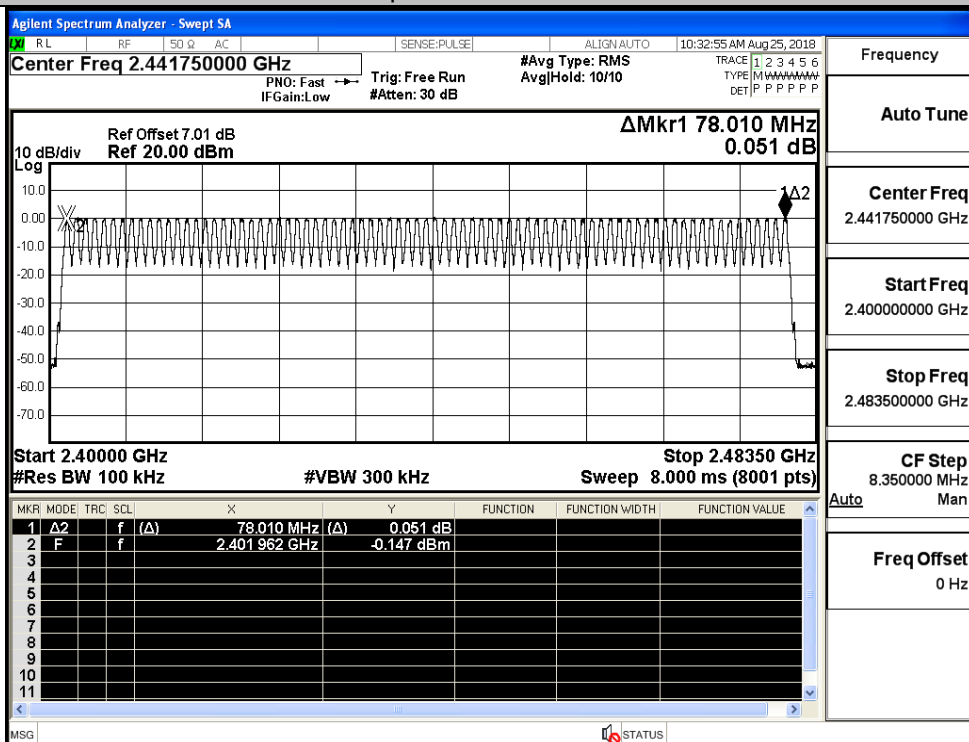
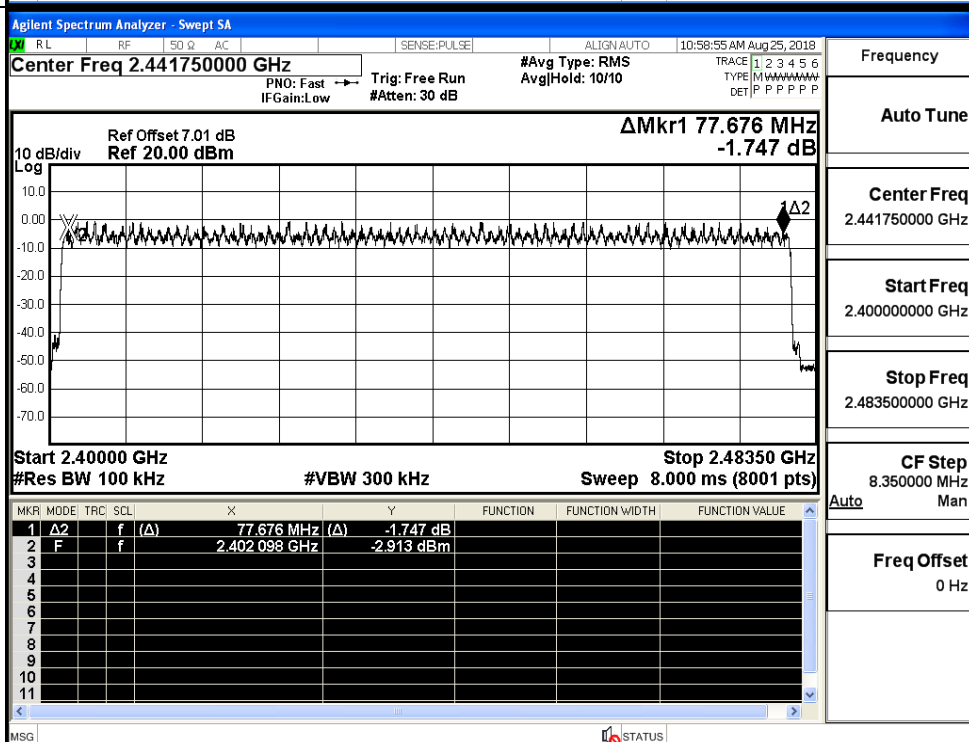


A.4 Hopping Channel Number

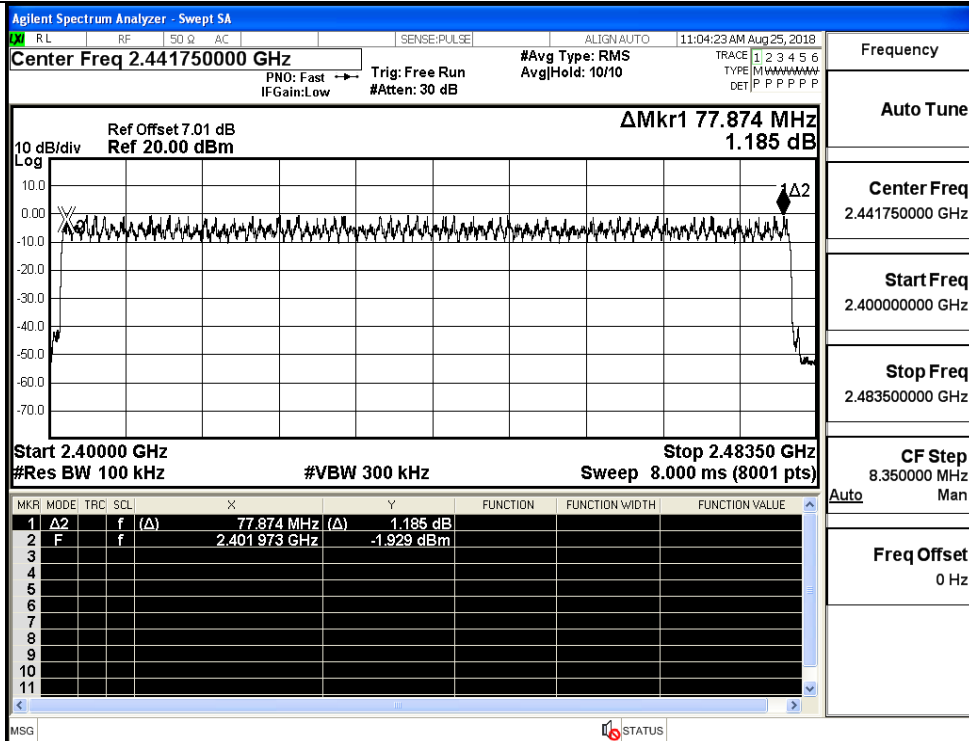
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

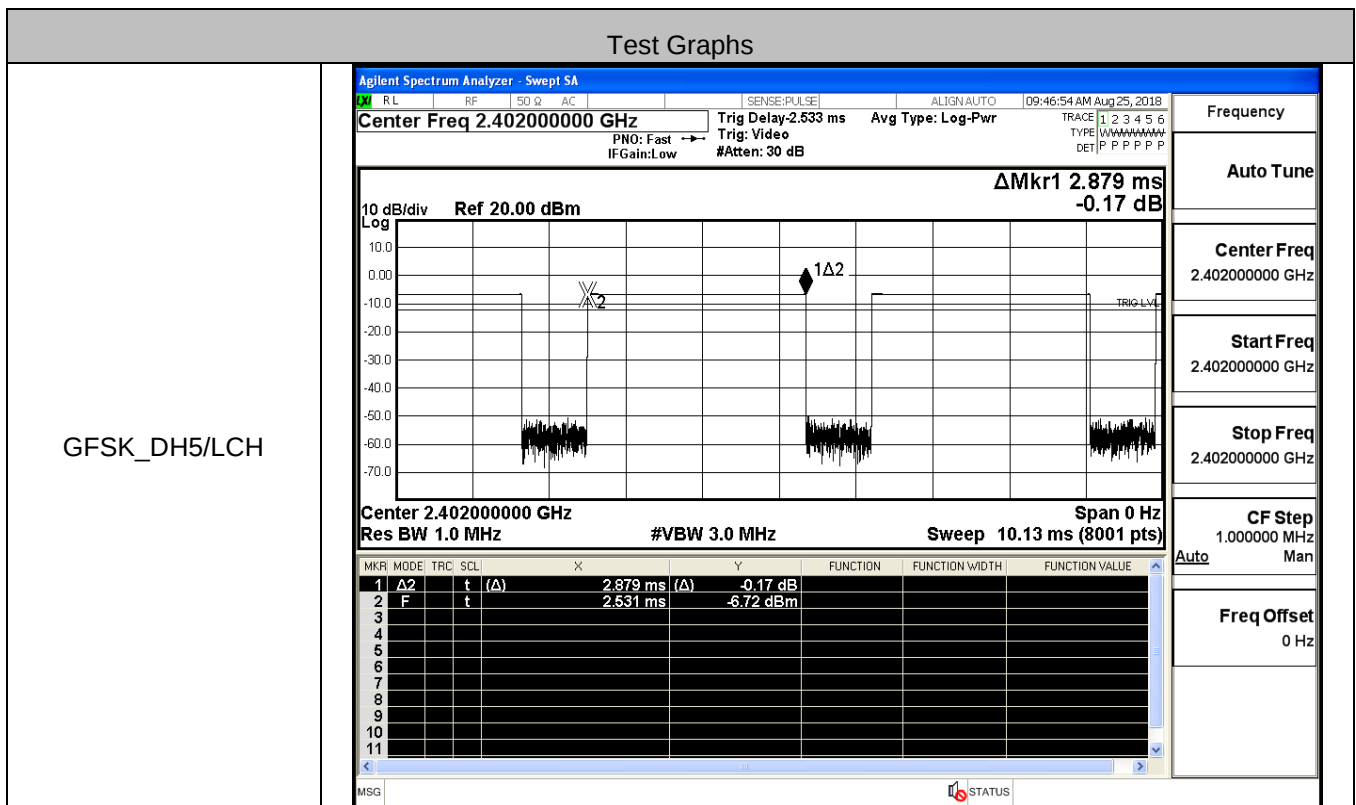
 $\pi/4$ DQPSK/Hop

8DPSK/Hop

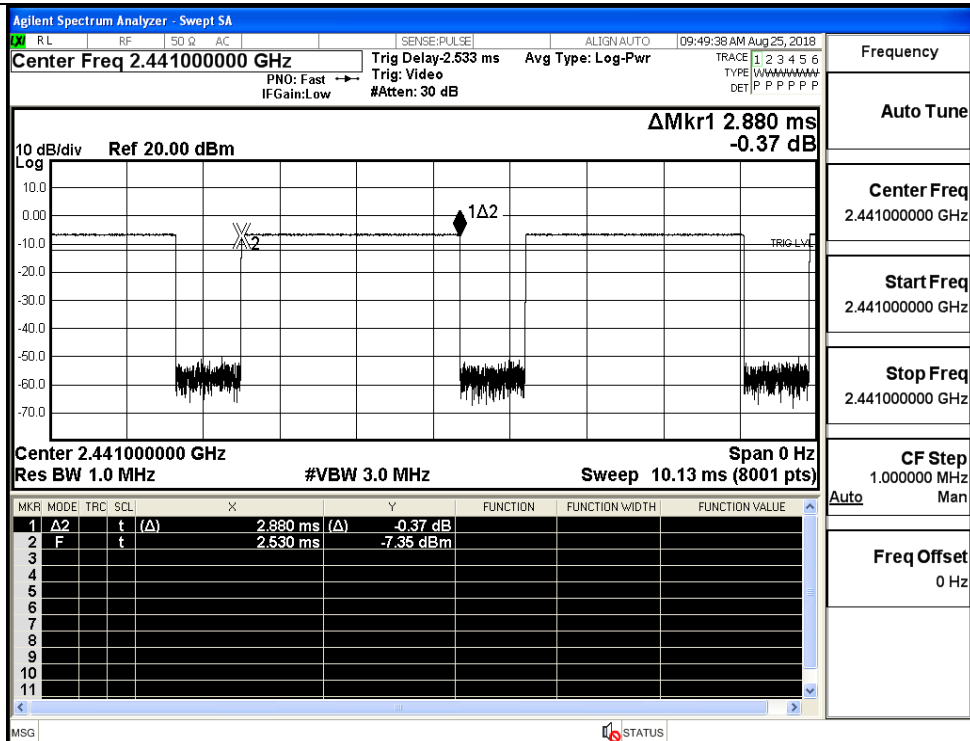


A.5 Dwell Time

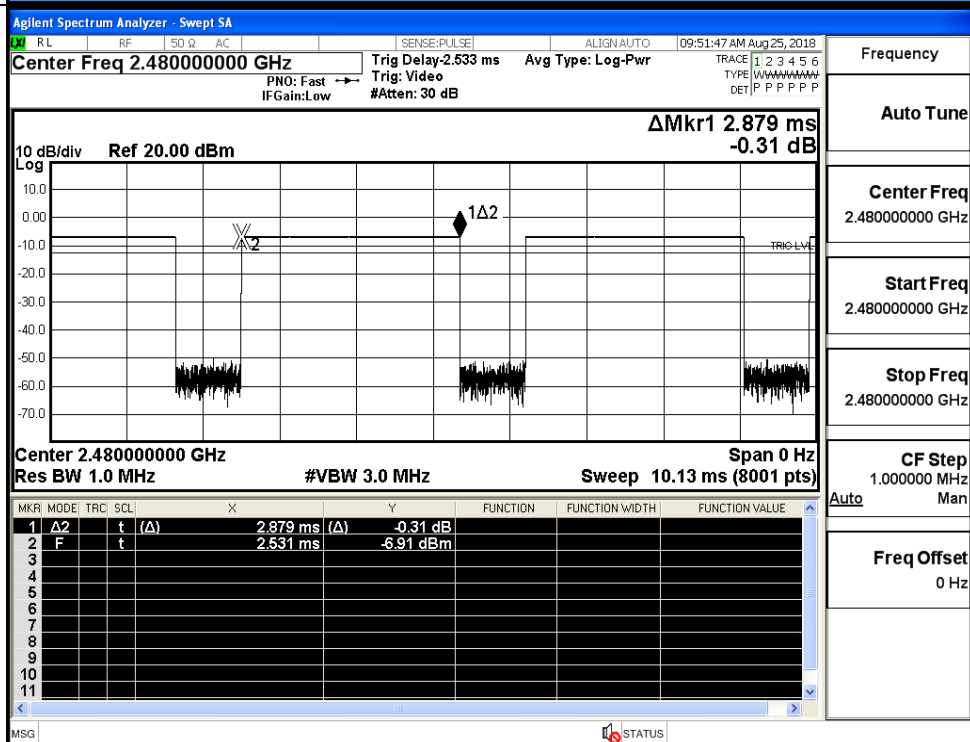
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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



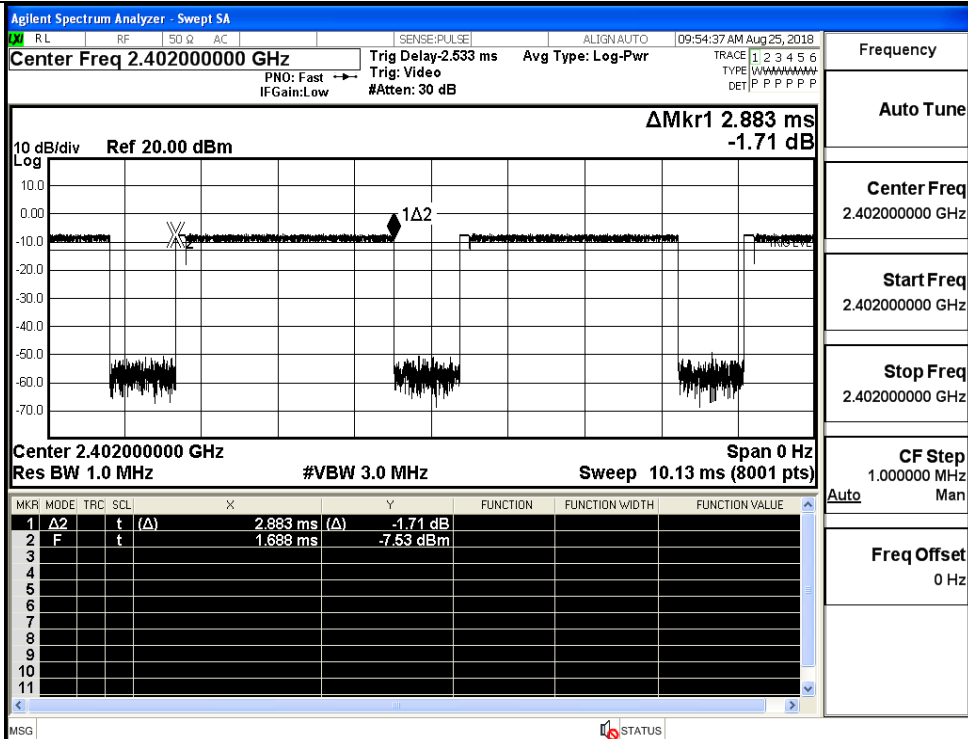
GFSK_DH5/MCH



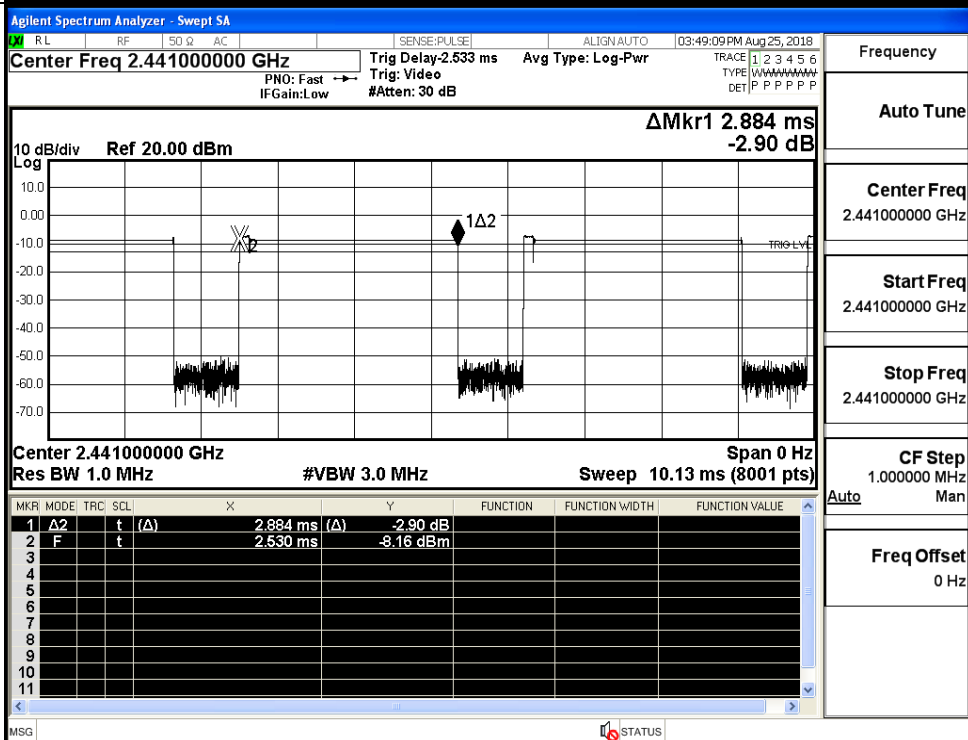
GFSK_DH5/HCH



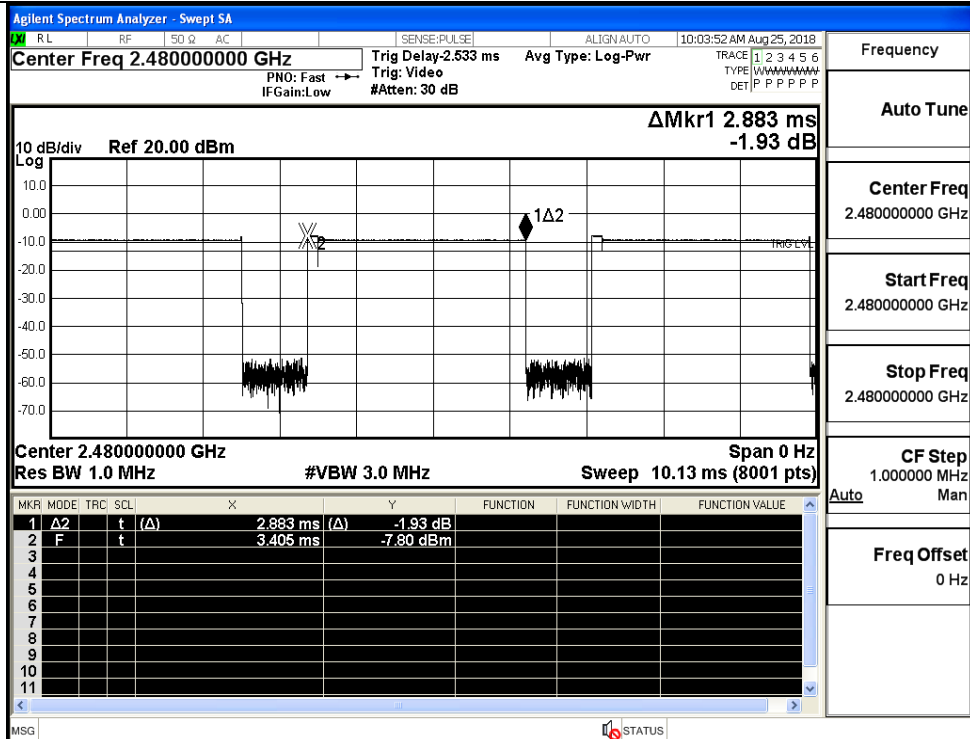
$\pi/4$ DQPSK
_2DH5/LCH



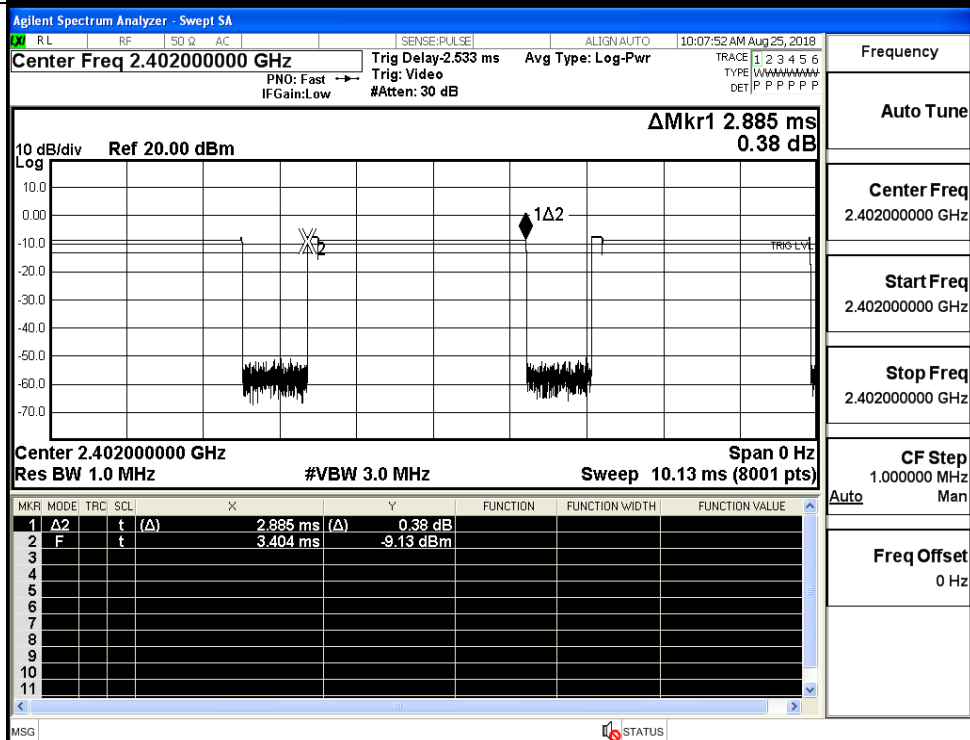
$\pi/4$ DQPSK
_2DH5/MCH



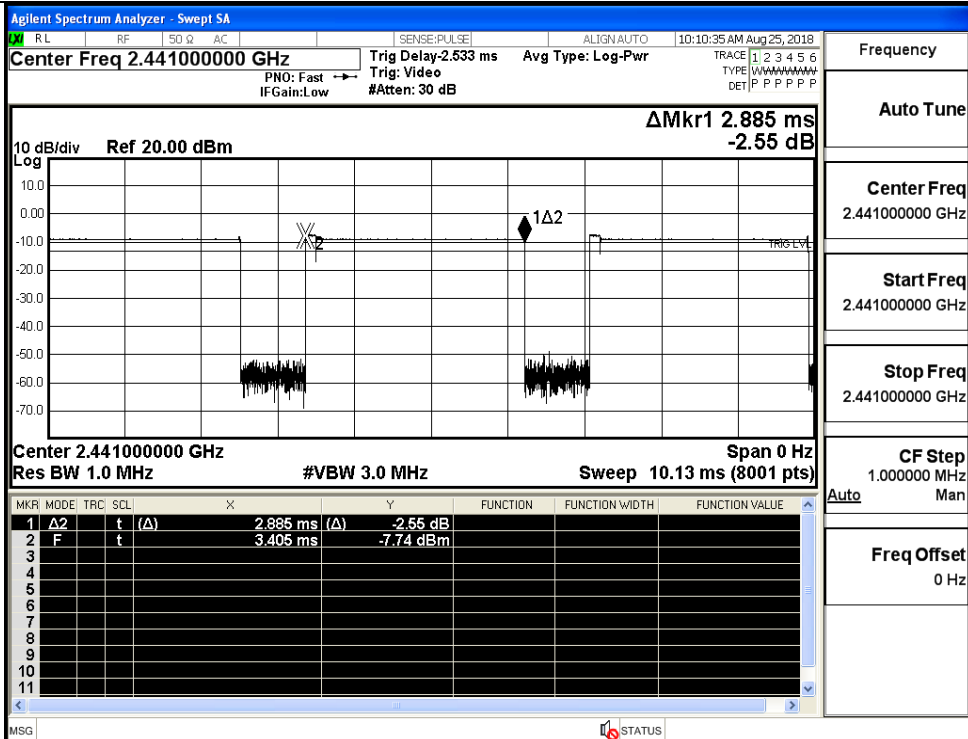
$\pi/4$ DQPSK
_2DH5/HCH



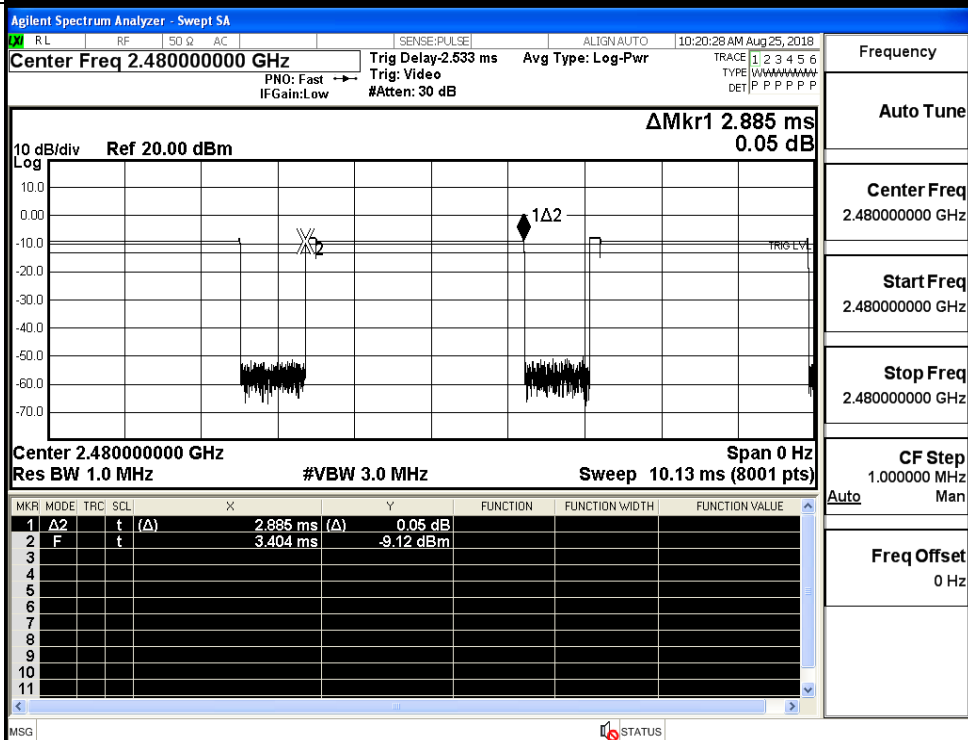
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

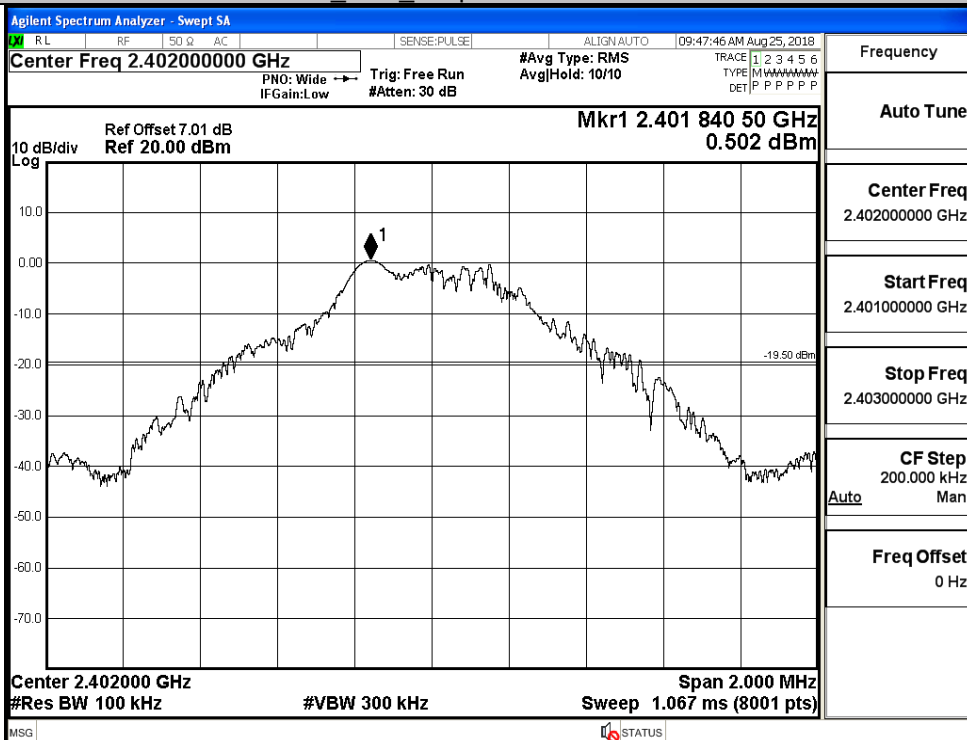


A.6 RF Conducted Spurious Emissions

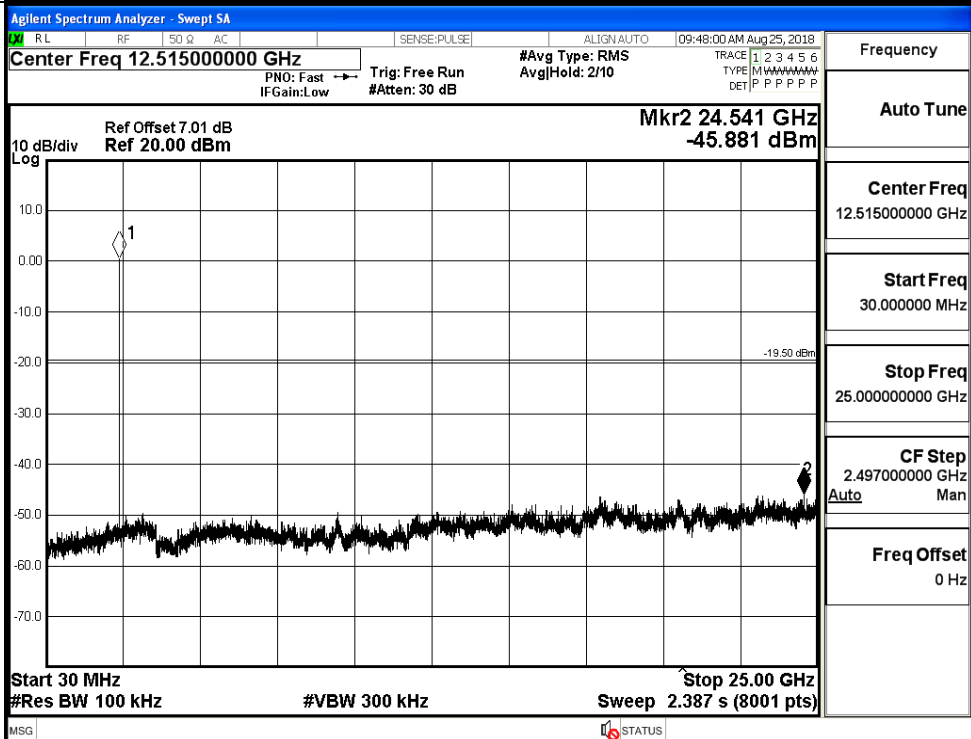
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.502	-45.881	-19.498	PASS
	MCH	0.4	-45.841	-19.600	PASS
	HCH	0.219	-45.977	-19.781	PASS
$\pi/4$ DQPSK	LCH	-1.238	-45.305	-21.238	PASS
	MCH	-1.054	-46.206	-21.054	PASS
	HCH	-0.885	-46.070	-20.885	PASS
8DPSK	LCH	-0.53	-45.785	-20.530	PASS
	MCH	-0.581	-46.405	-20.581	PASS
	HCH	-0.76	-45.313	-20.760	PASS

GFSK LCH Graphs

Pref

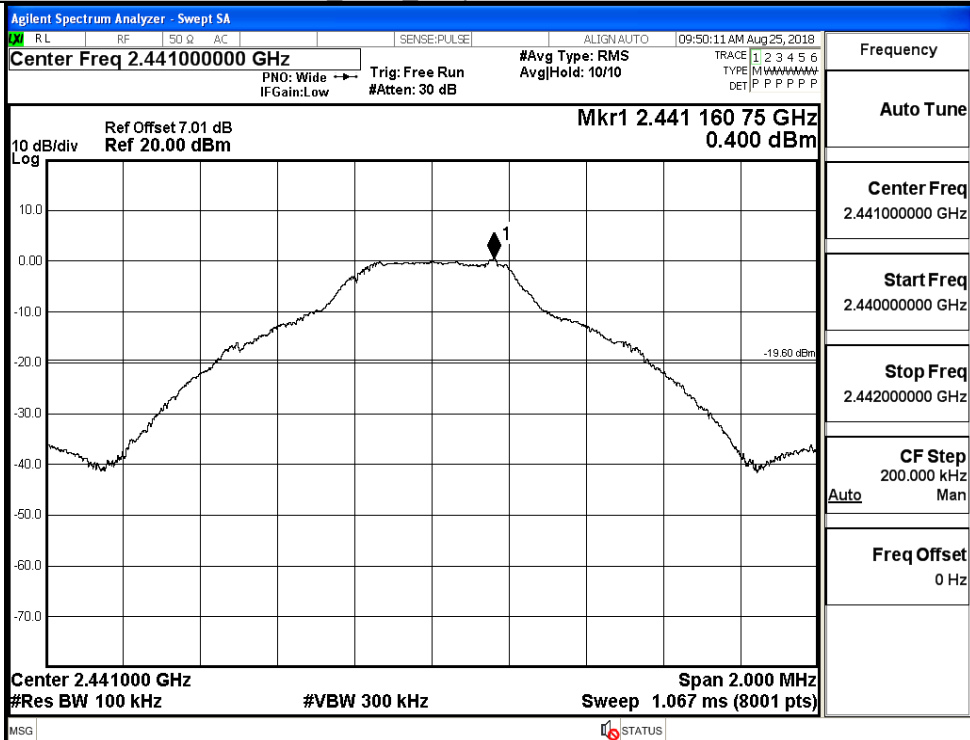


Puw

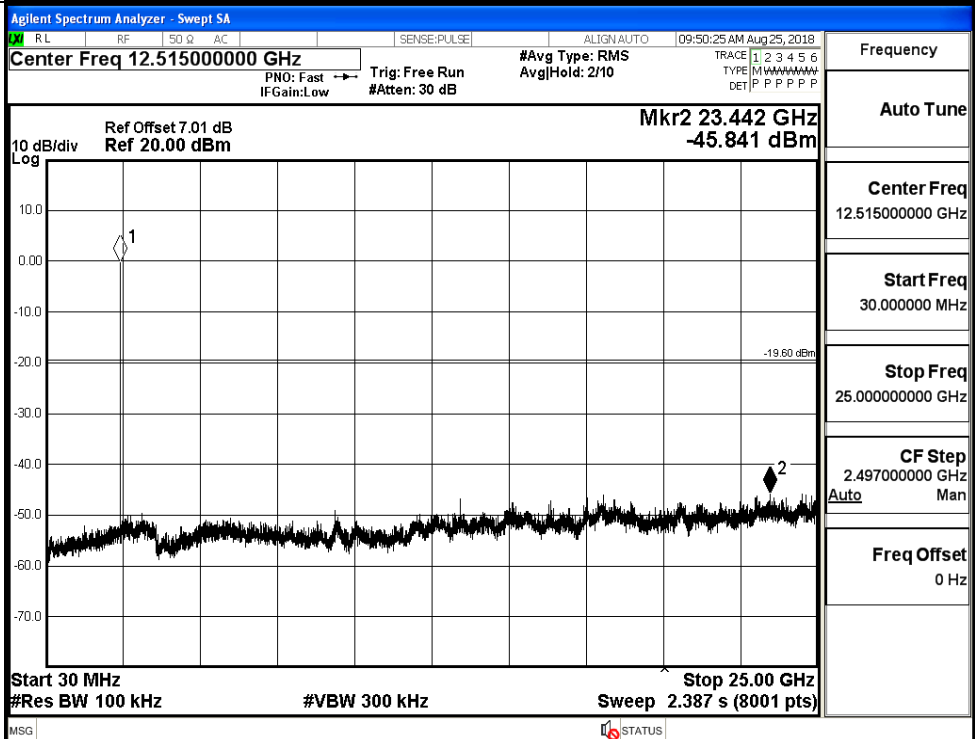


GFSK_MCH_Graphs

Pref

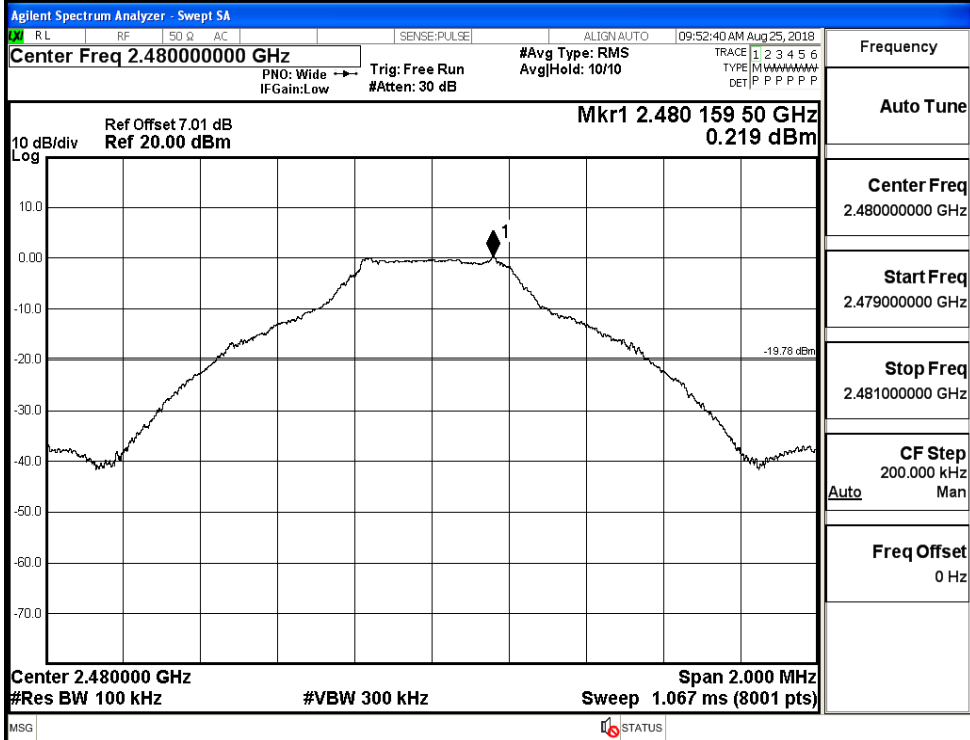


Puw

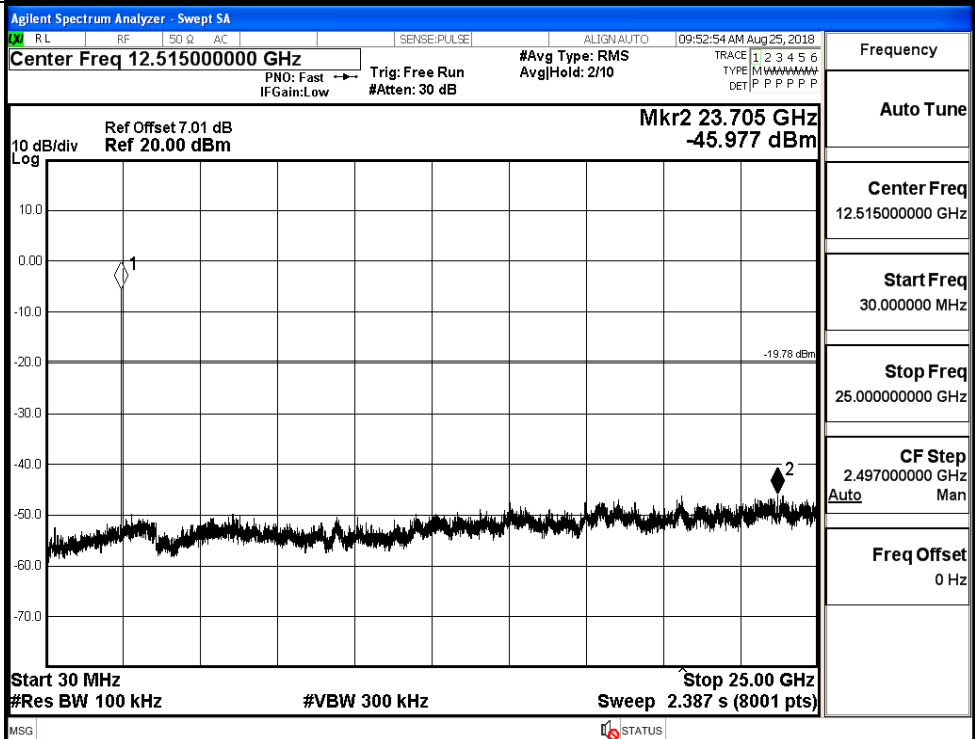


GFSK_HCH_Graphs

Pref

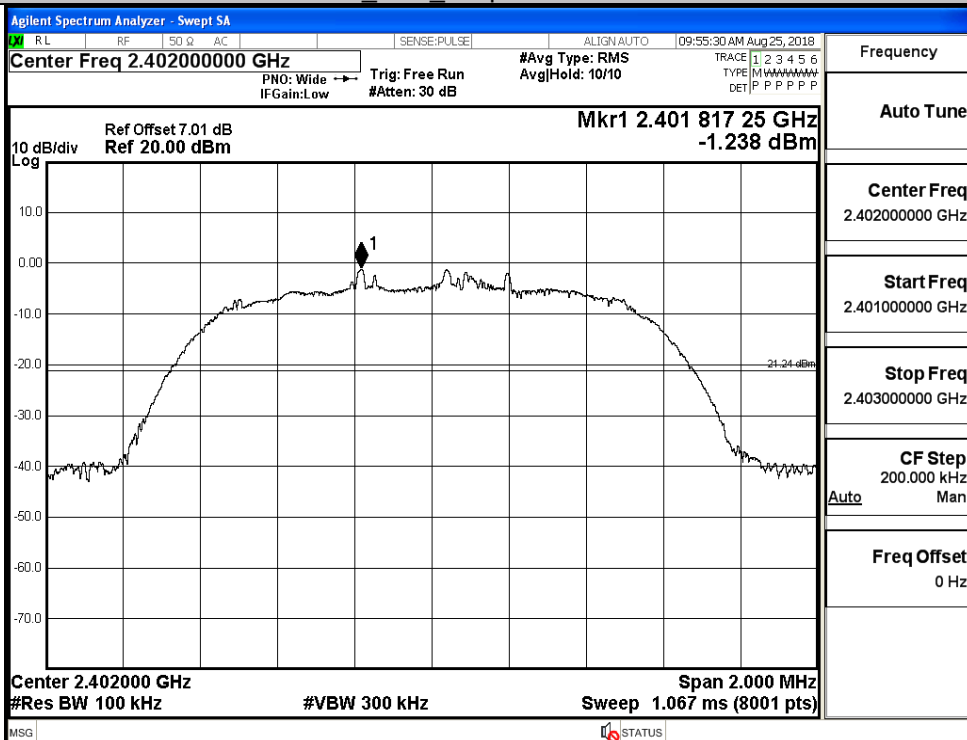


Puw

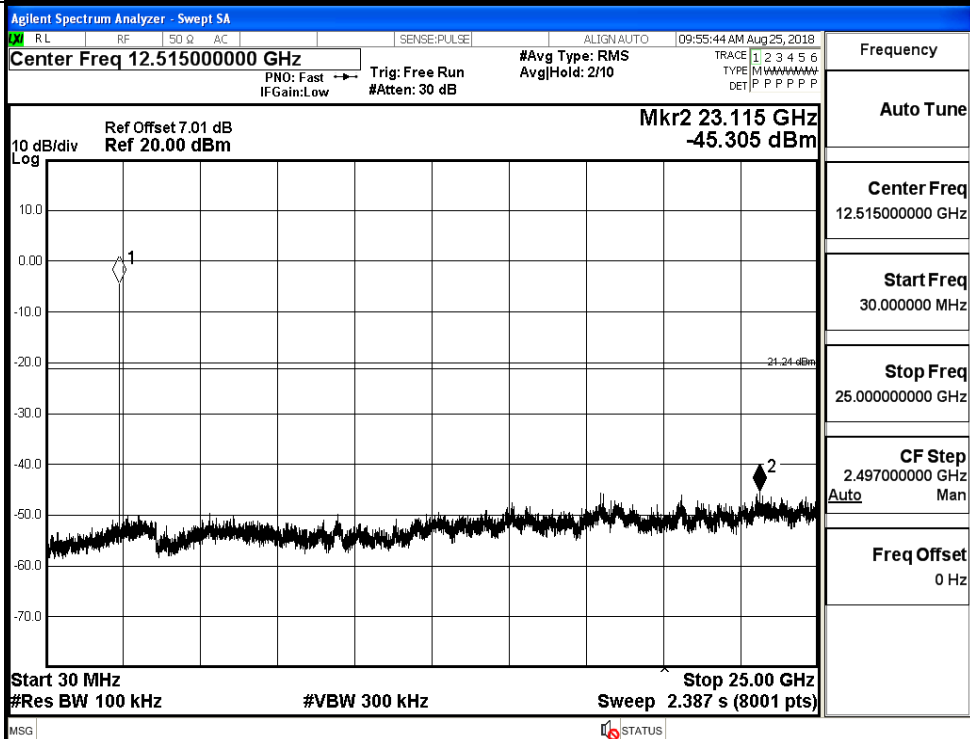


$\pi/4$ DQPSK LCH_Graphs

Pref

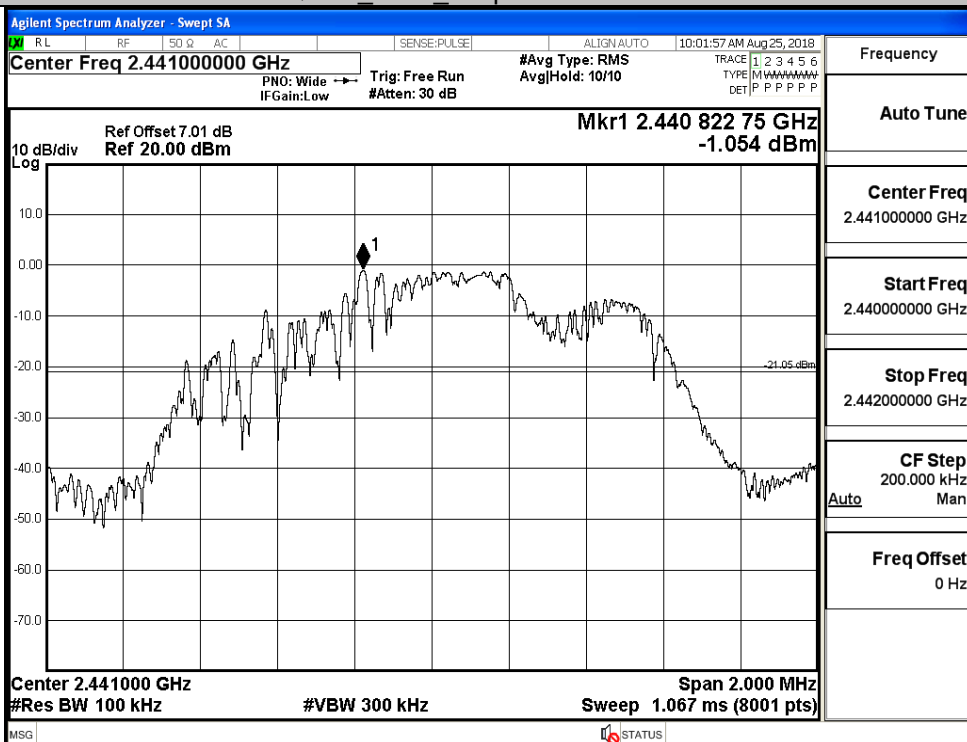


Puw

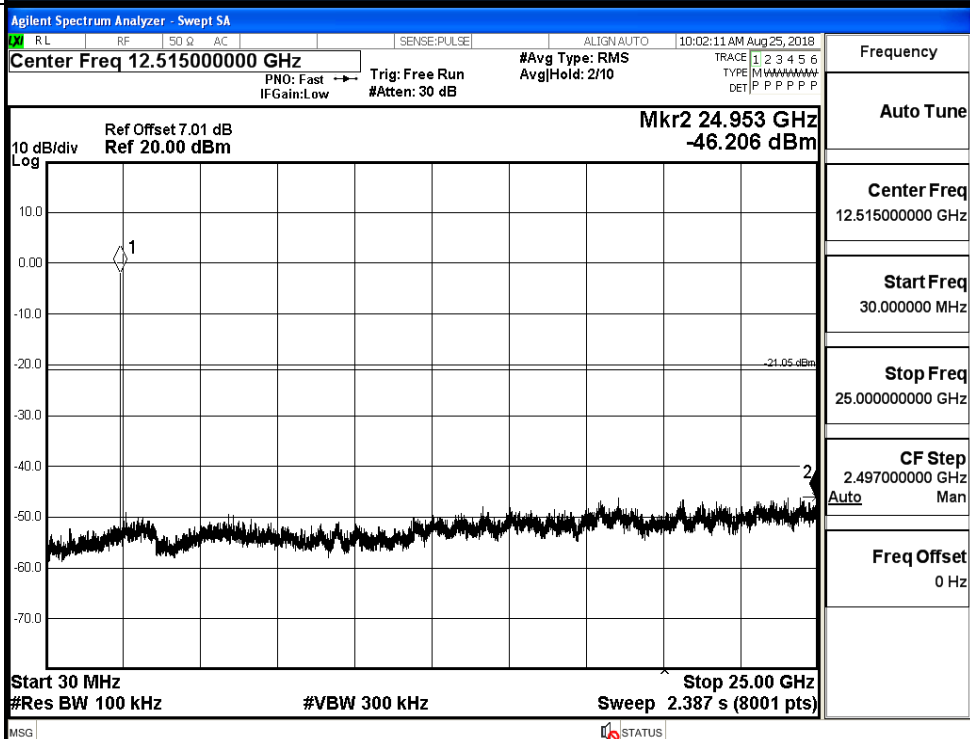


π /4DQPSK_MCH_Graphs

Pref

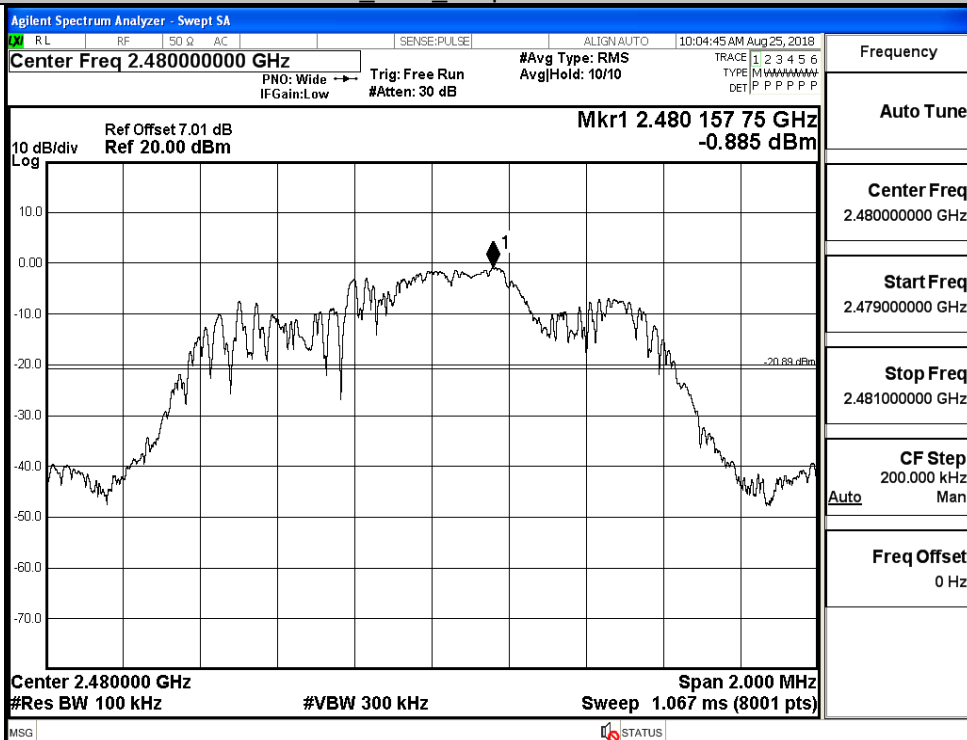


Puw

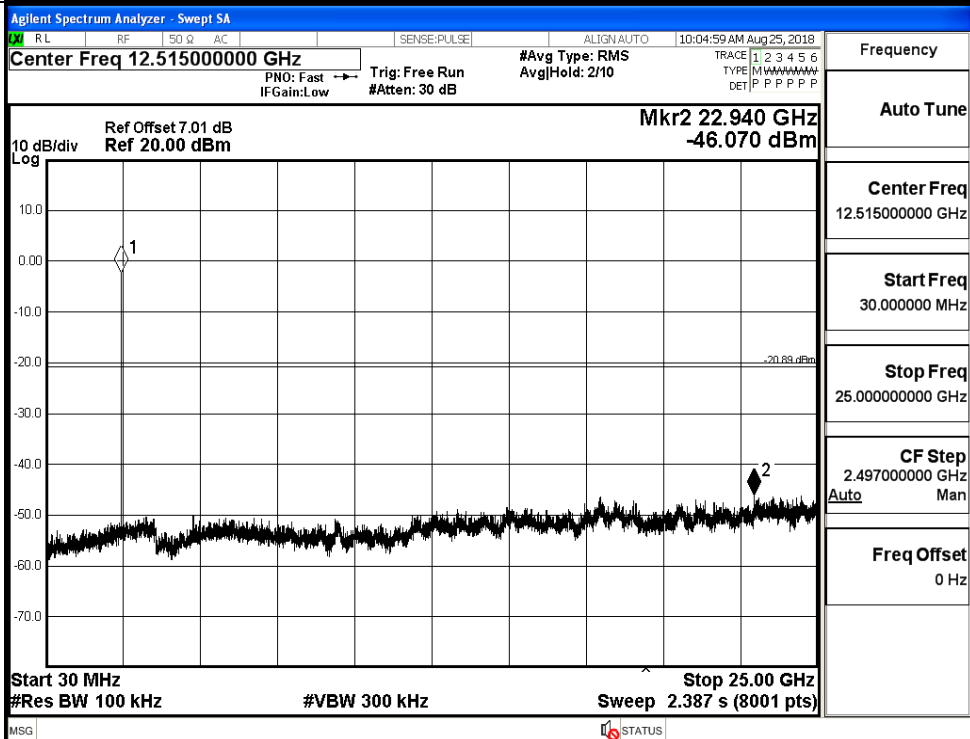


π /4DQPSK_HCH_Graphs

Pref

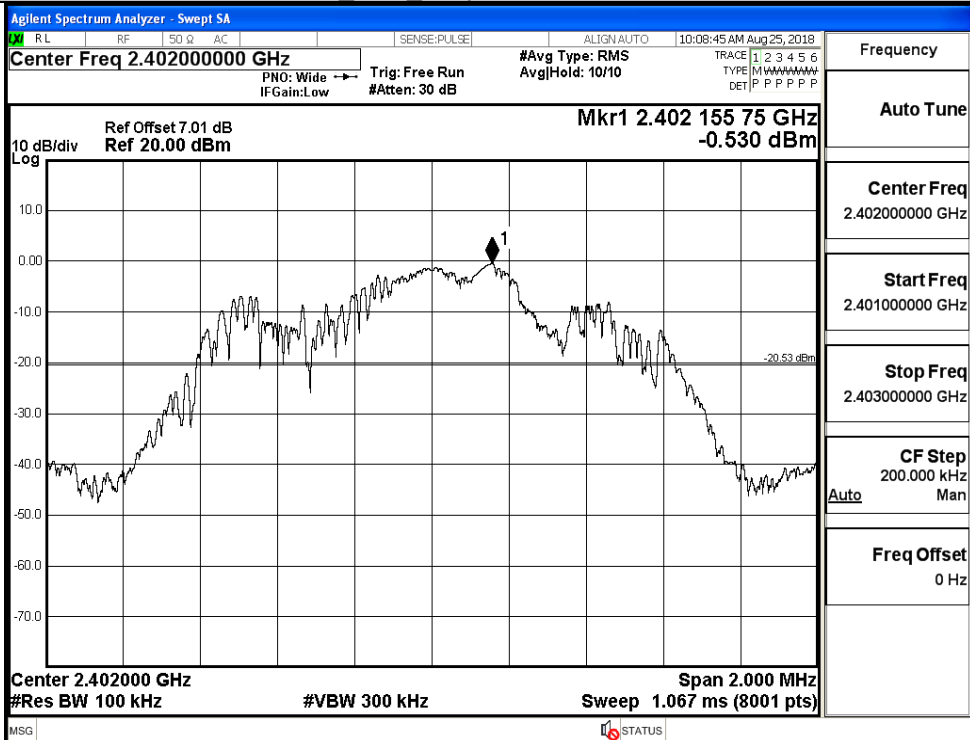


Puw

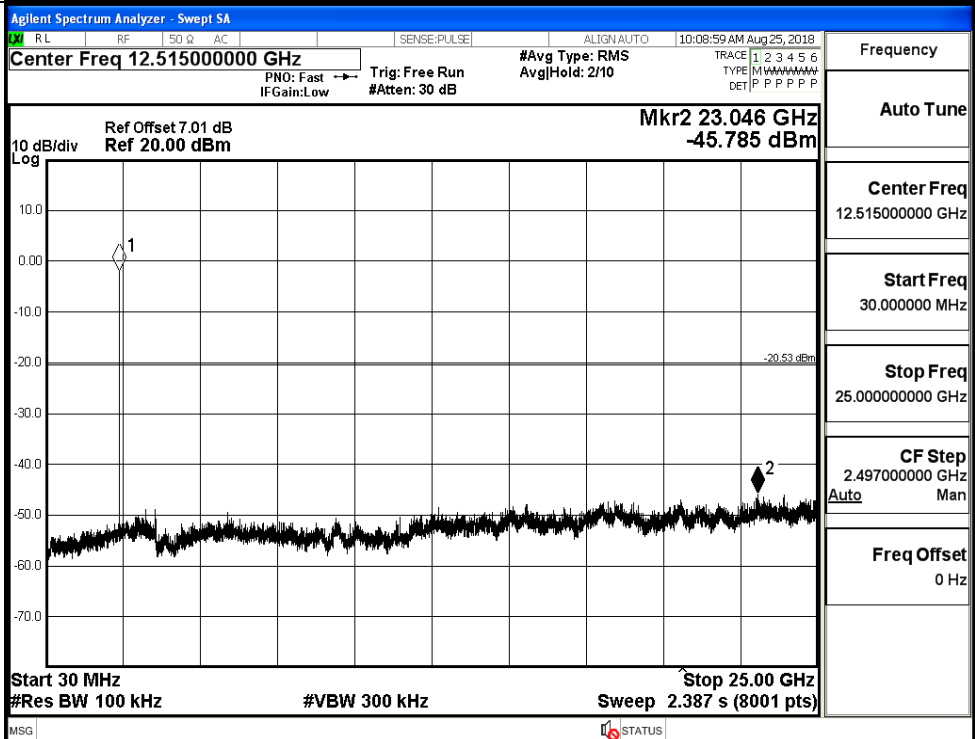


8DPSK_LCH_Graphs

Pref

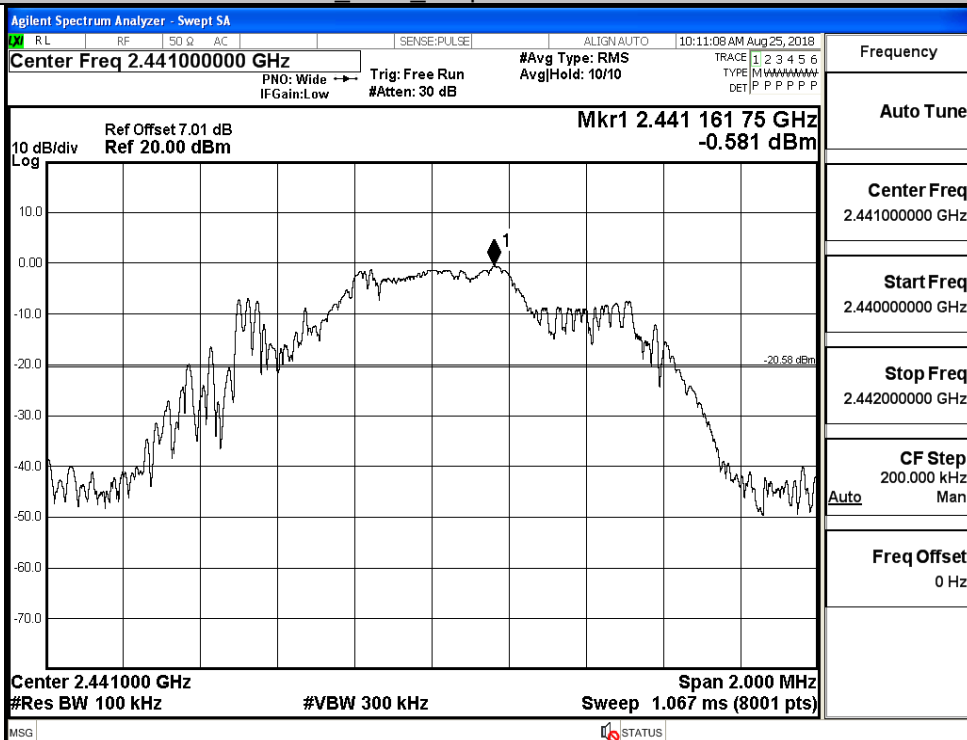


Puw

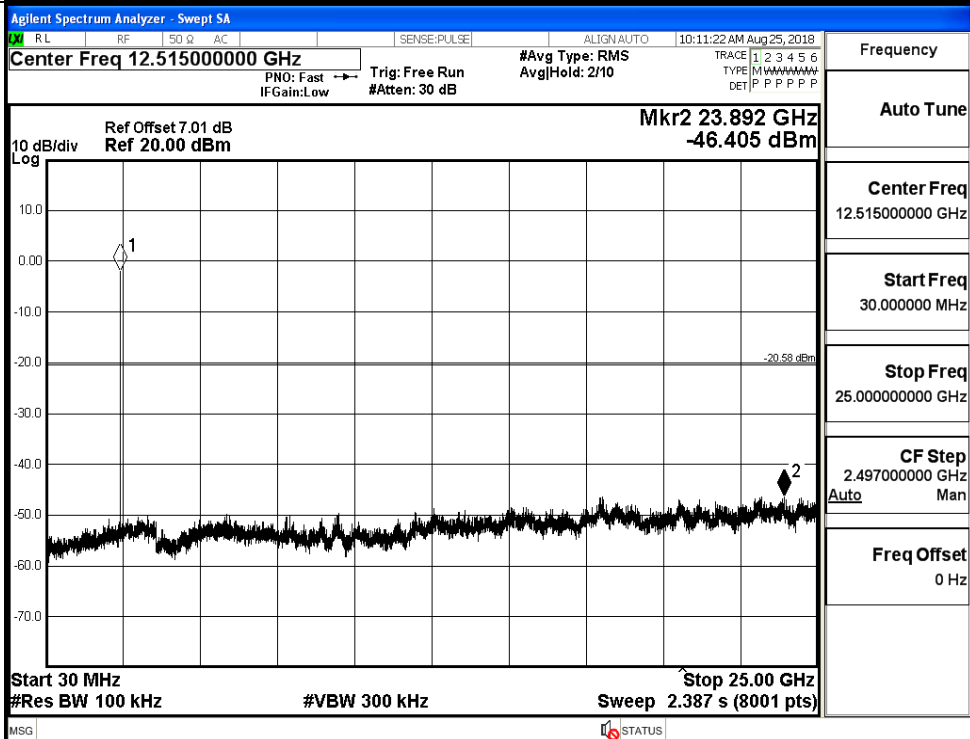


8DPSK_MCH_Graphs

Pref

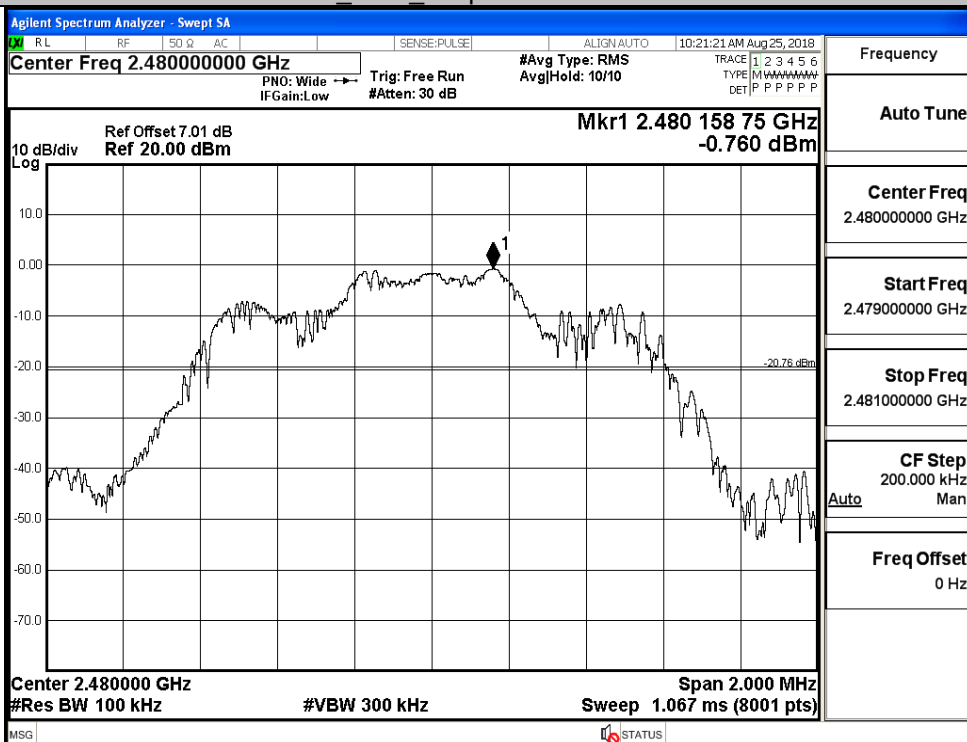


Puw

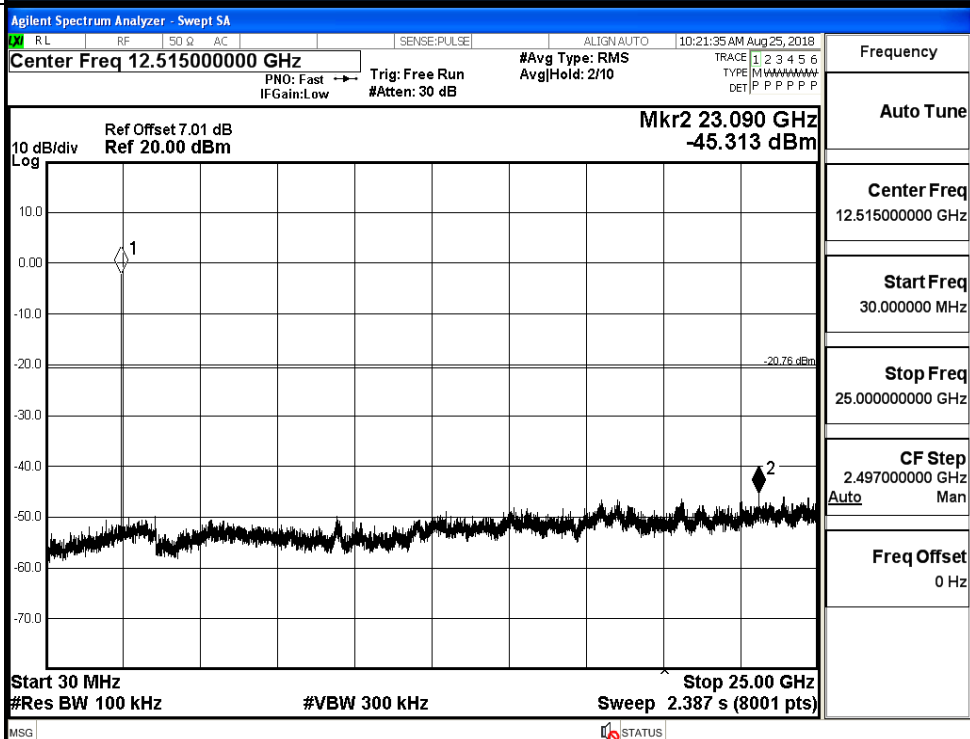


8DPSK_HCH_Graphs

Pref



Puw

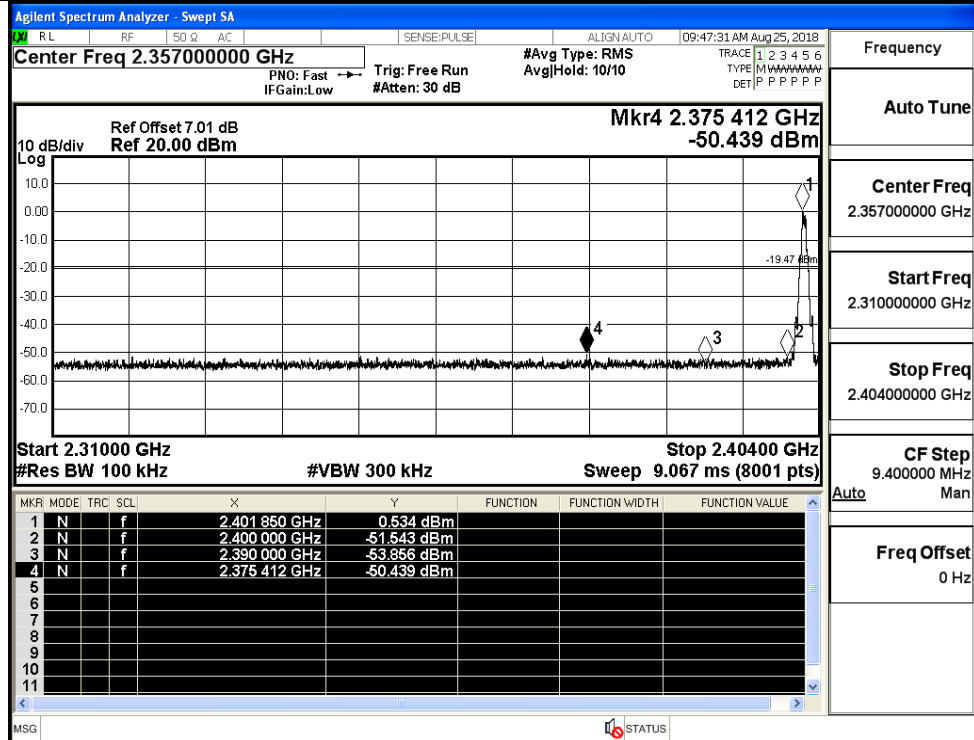


A.7 Band-edge for RF Conducted Emissions

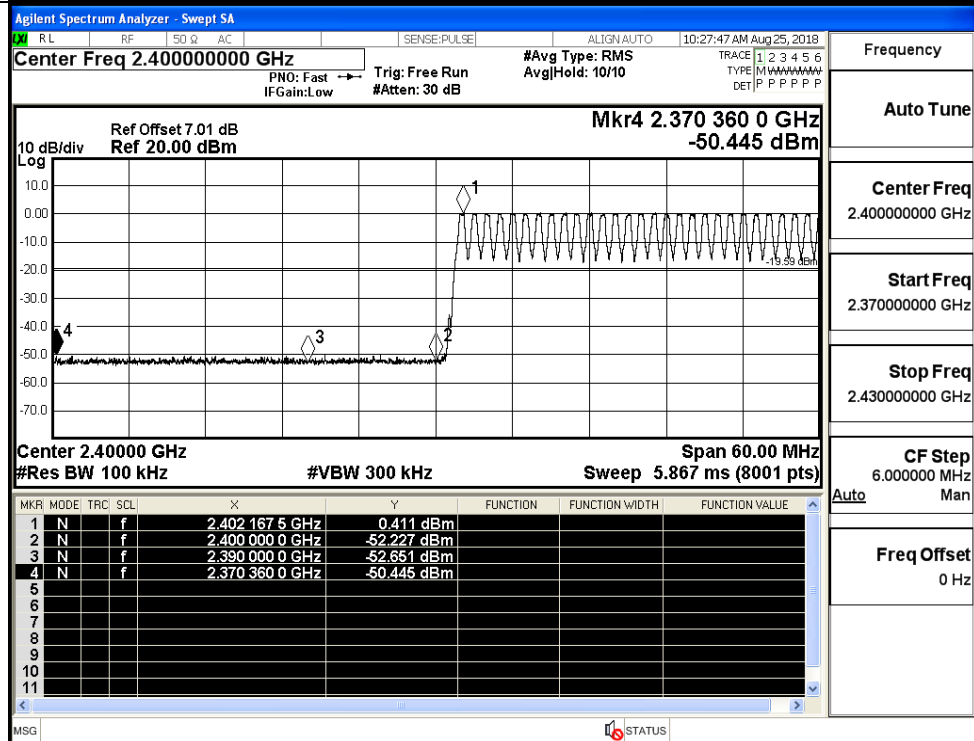
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.534	Off	-50.439	-19.47	PASS
			0.411	On	-50.445	-19.59	PASS
	HCH	2480	0.306	Off	-51.045	-19.69	PASS
			0.260	On	-50.275	-19.74	PASS
$\pi/4$ DQPSK	LCH	2402	-0.934	Off	-50.279	-20.93	PASS
			-0.590	On	-50.426	-20.59	PASS
	HCH	2480	-0.763	Off	-51.008	-20.76	PASS
			-0.681	On	-50.266	-20.68	PASS
8DPSK	LCH	2402	-0.396	Off	-50.982	-20.4	PASS
			-0.509	On	-50.160	-20.51	PASS
	HCH	2480	-0.663	Off	-50.898	-20.66	PASS
			-0.742	On	-50.297	-20.74	PASS

Test Graphs

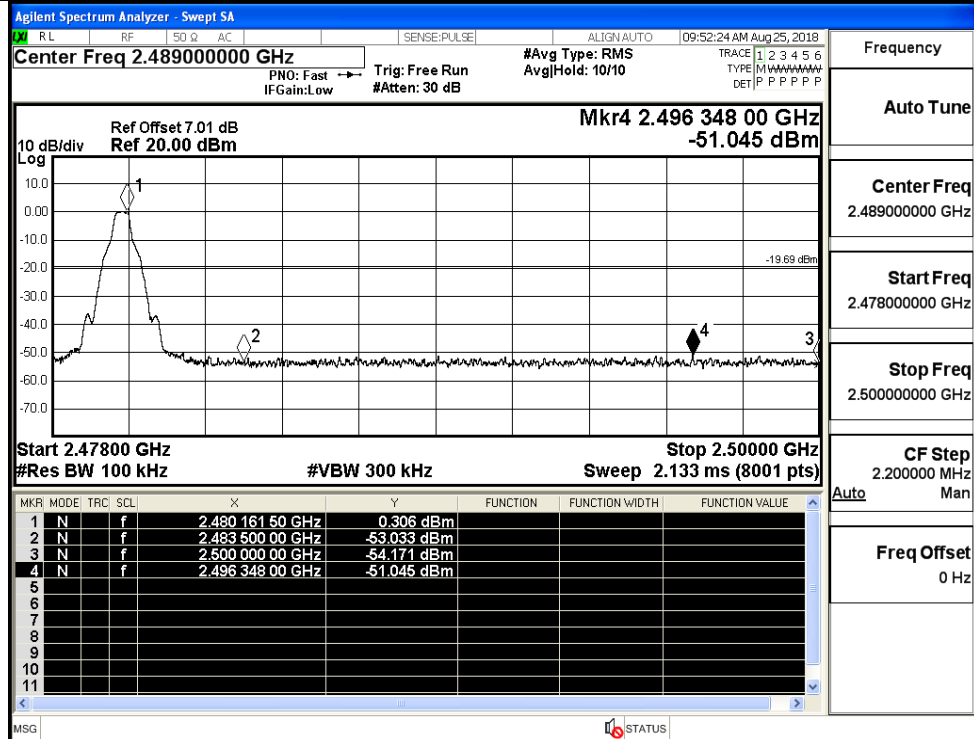
GFSK/LCH/No Hop



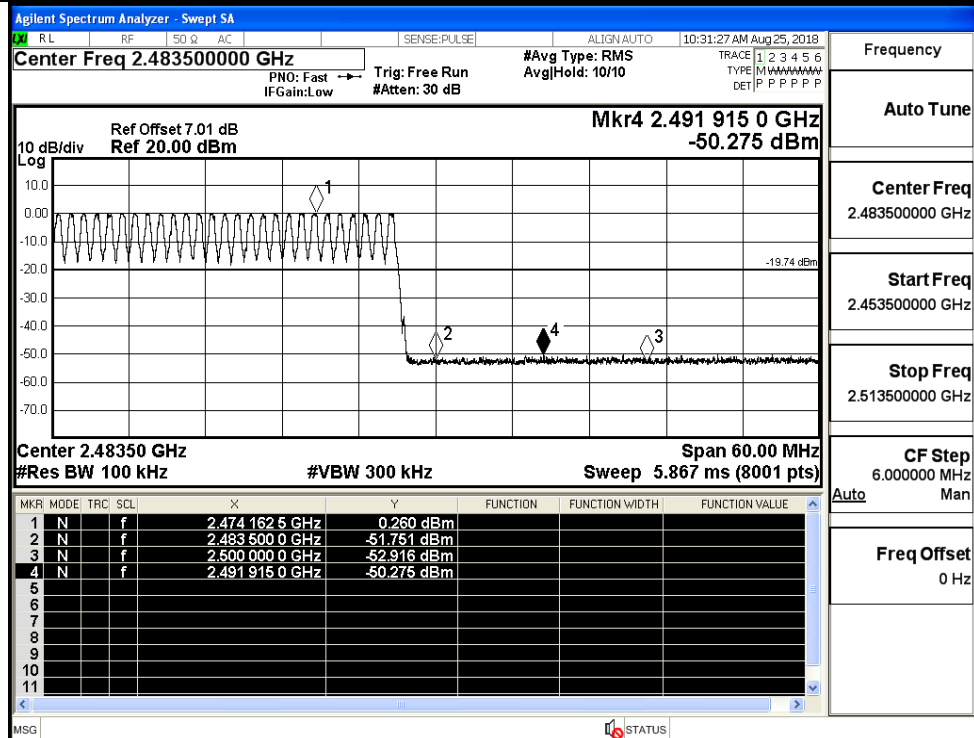
GFSK/LCH/Hop



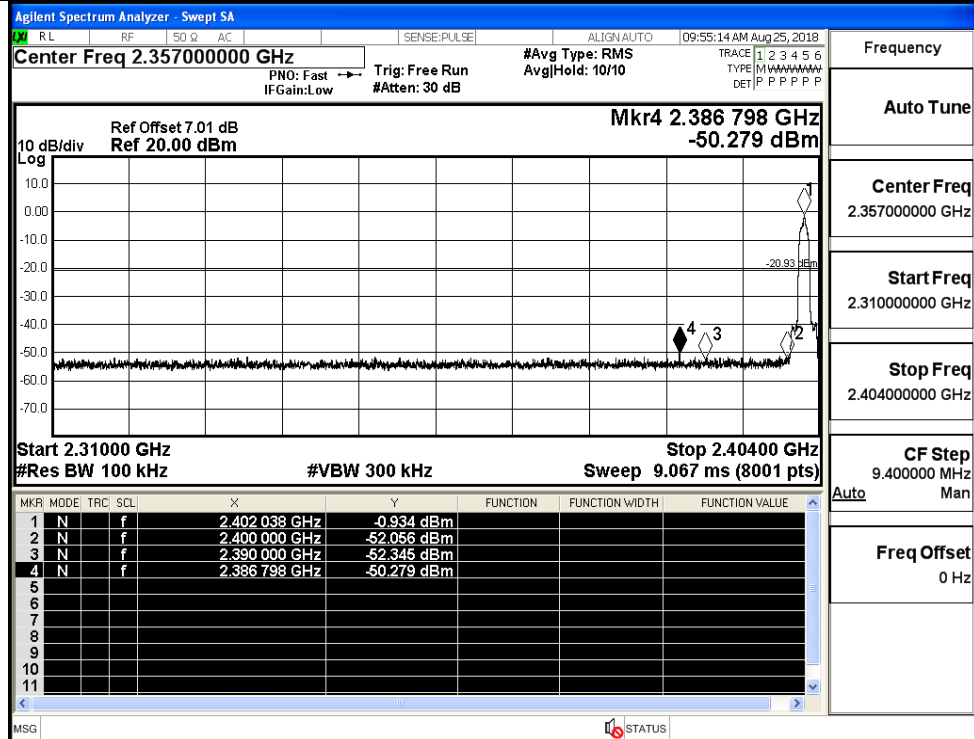
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

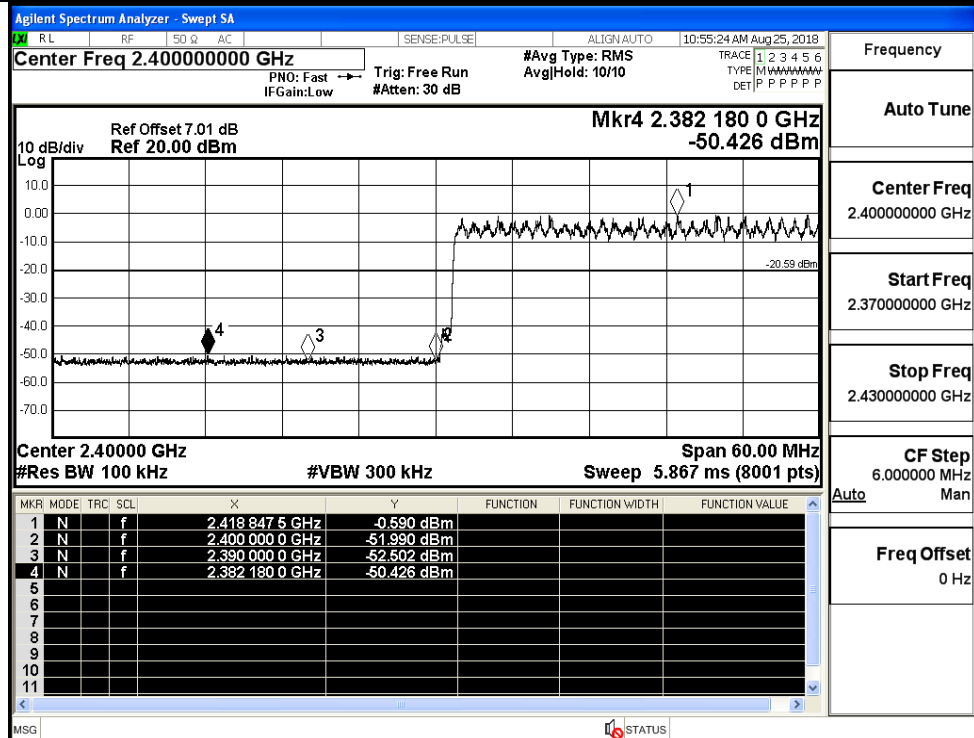
Start Freq
2.310000000 GHz

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

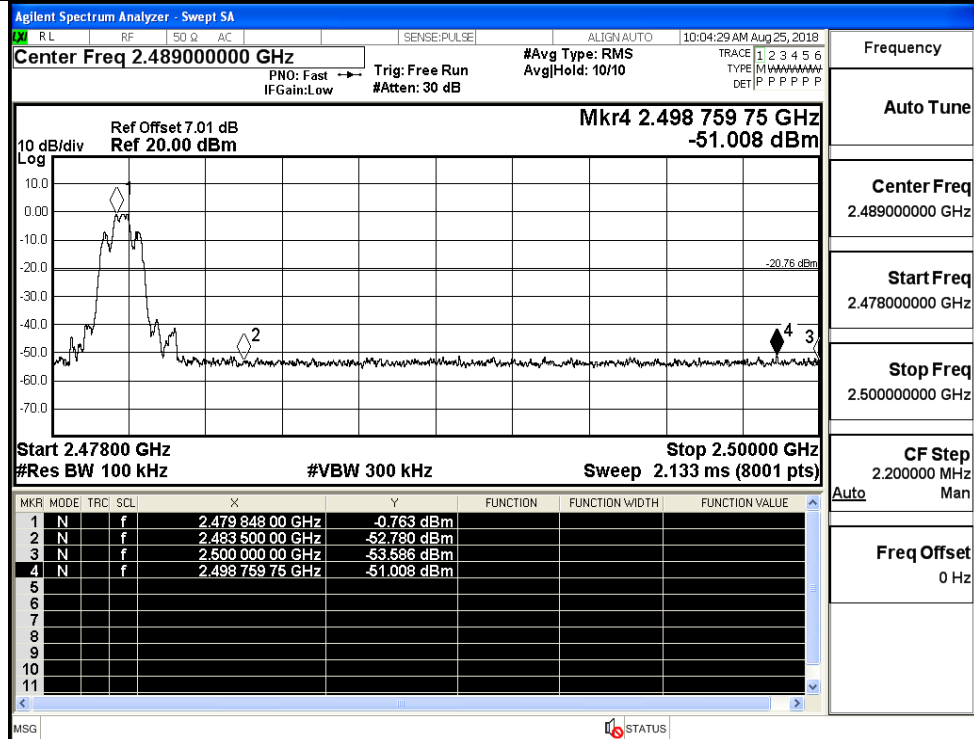
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

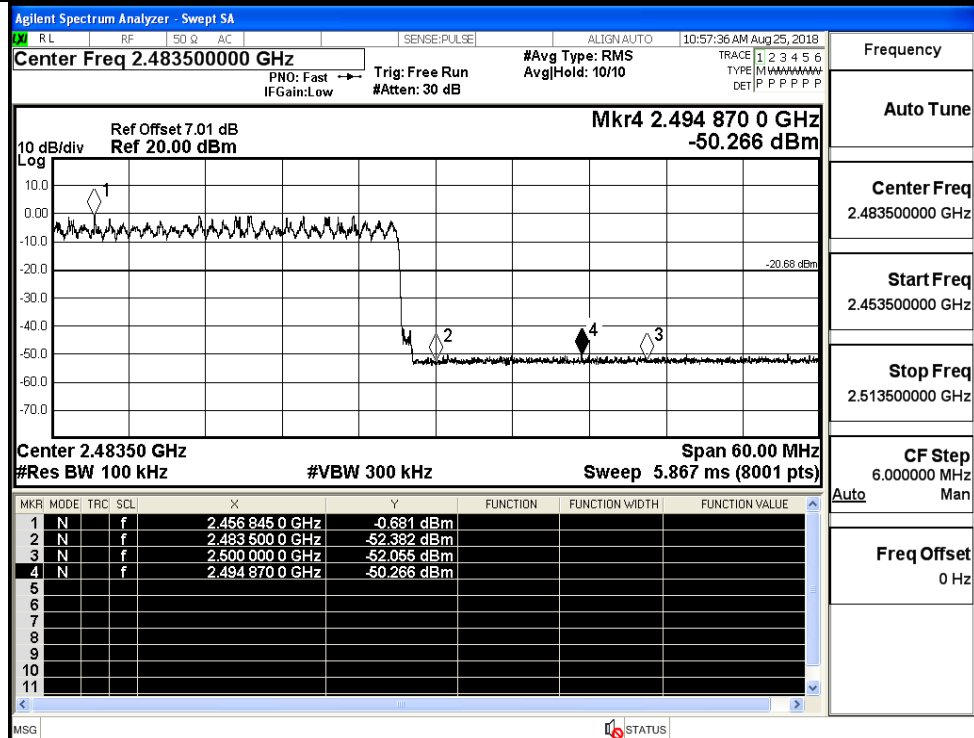


Frequency

Auto Tune

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

$\pi/4$ DQPSK/HCH/Hop

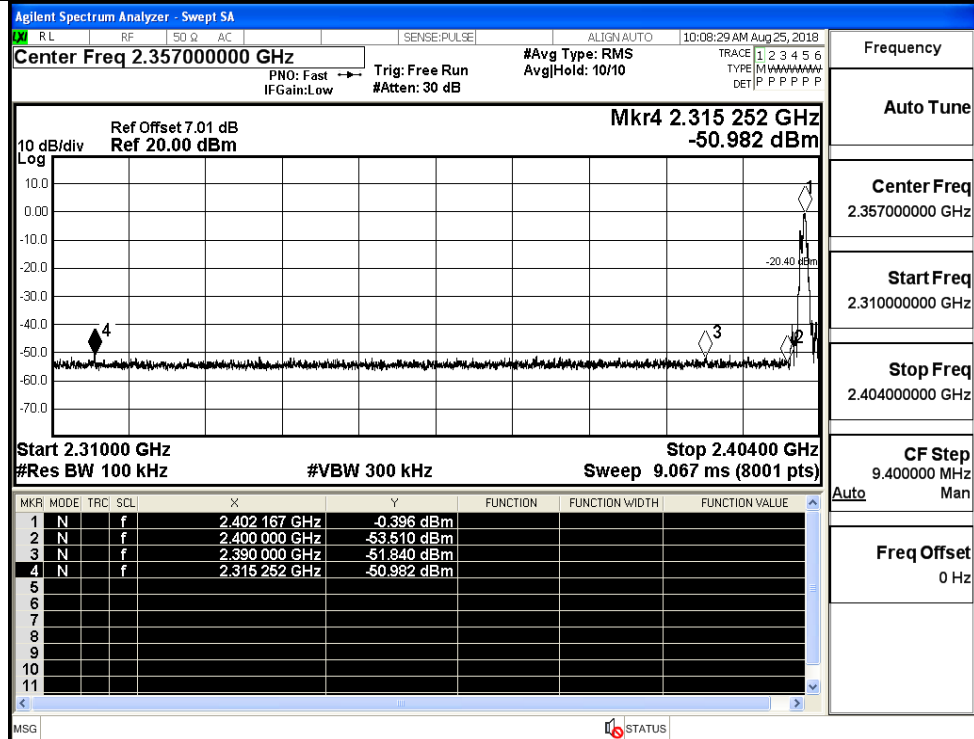


Frequency

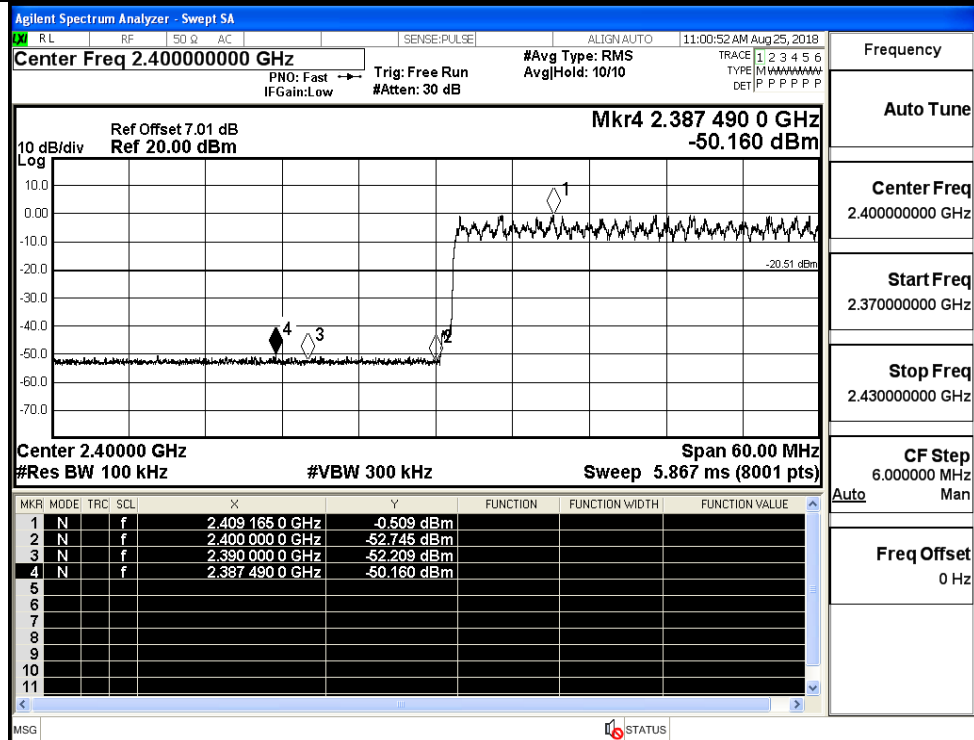
Auto Tune

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

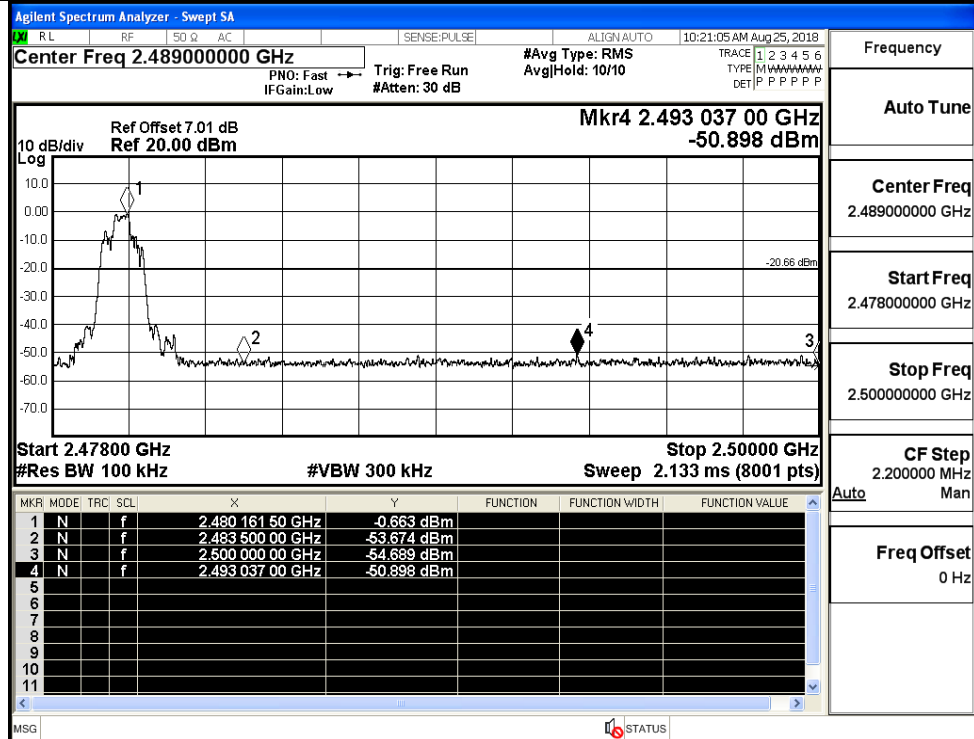
8DPSK/LCH/No Hop



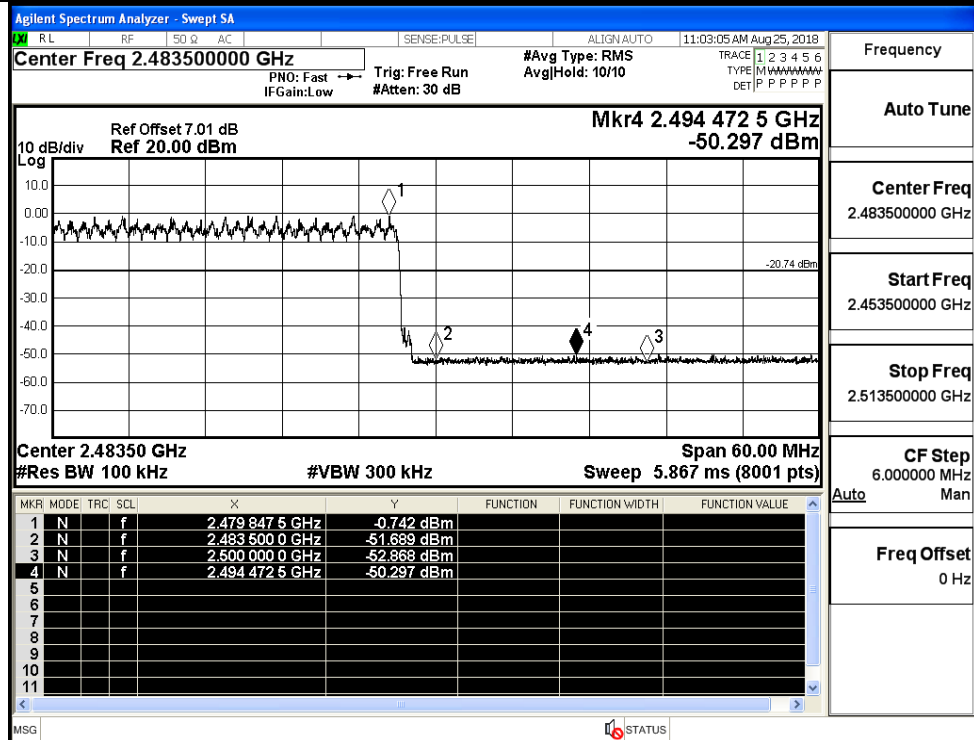
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



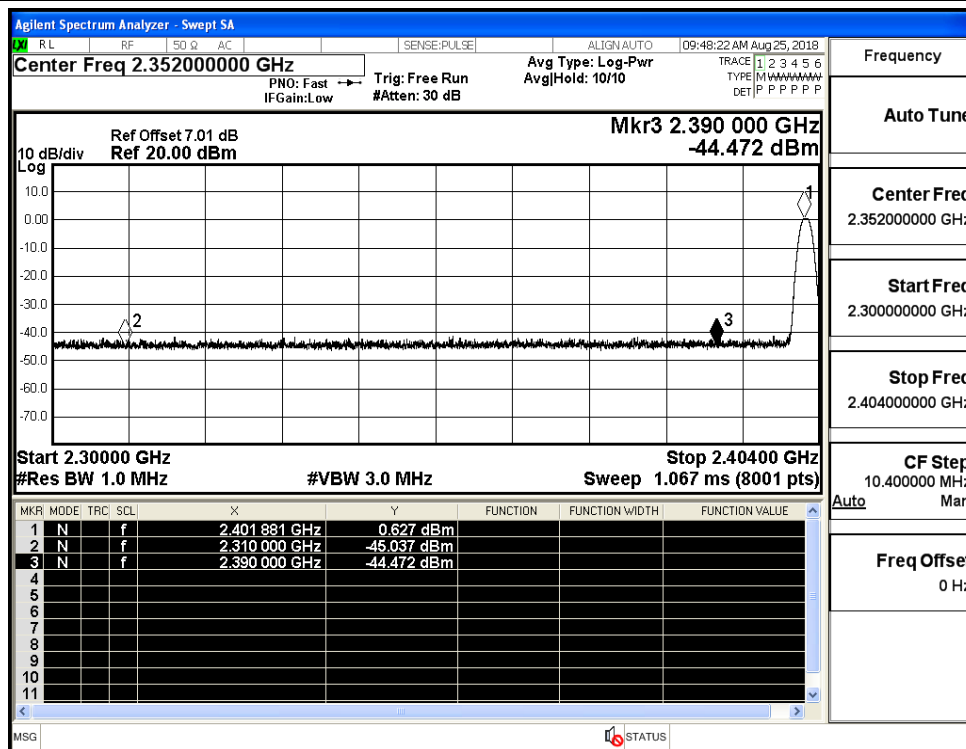
8DPSK/HCH/Hop



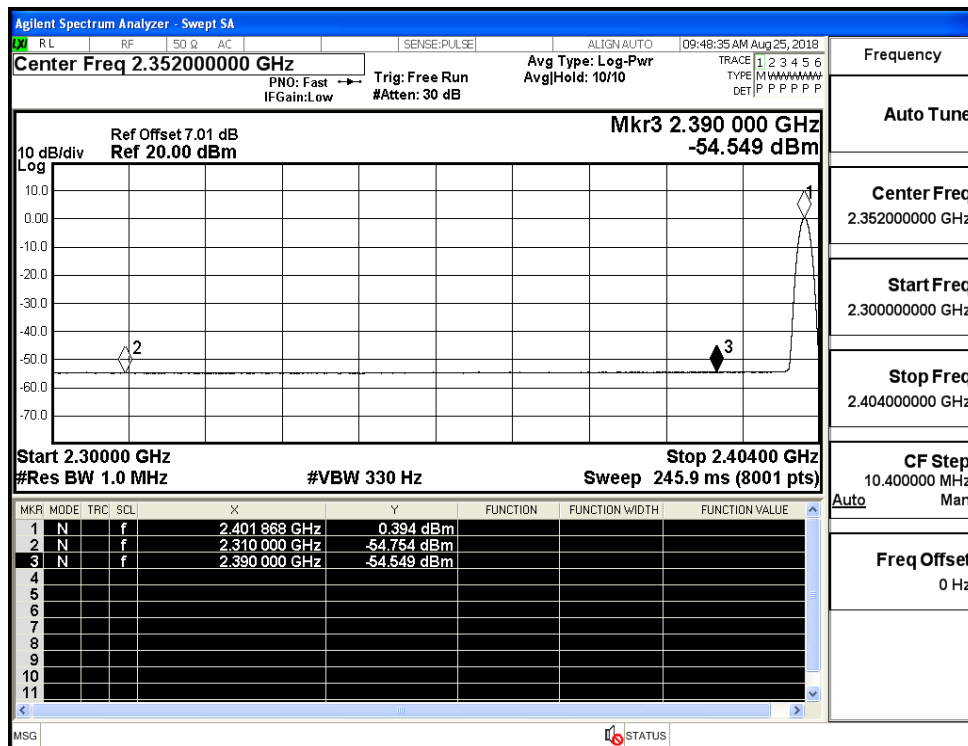
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.04	2.0	0	50.22	PEAK	74	PASS
	Off	2310.0	-54.75	2.0	0	40.50	AV	54	PASS
	Off	2390.0	-44.47	2.0	0	50.79	PEAK	74	PASS
	Off	2390.0	-54.55	2.0	0	40.71	AV	54	PASS
	Off	2483.5	-44.07	2.0	0	51.19	PEAK	74	PASS
	Off	2483.5	-54.17	2.0	0	41.09	AV	54	PASS
	Off	2500.0	-43.45	2.0	0	51.81	PEAK	74	PASS
	Off	2500.0	-54.12	2.0	0	41.14	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-45.15	2.0	0	50.11	PEAK	74	PASS
	Off	2310.0	-54.75	2.0	0	40.51	AV	54	PASS
	Off	2390.0	-44.18	2.0	0	51.08	PEAK	74	PASS
	Off	2390.0	-54.46	2.0	0	40.80	AV	54	PASS
	Off	2483.5	-44.28	2.0	0	50.98	PEAK	74	PASS
	Off	2483.5	-54.20	2.0	0	41.06	AV	54	PASS
	Off	2500.0	-44.56	2.0	0	50.70	PEAK	74	PASS
	Off	2500.0	-54.04	2.0	0	41.22	AV	54	PASS
8DPSK	Off	2310.0	-46.02	2.0	0	49.24	PEAK	74	PASS
	Off	2310.0	-54.81	2.0	0	40.45	AV	54	PASS
	Off	2390.0	-44.88	2.0	0	50.37	PEAK	74	PASS
	Off	2390.0	-54.54	2.0	0	40.72	AV	54	PASS
	Off	2483.5	-44.20	2.0	0	51.06	PEAK	74	PASS
	Off	2483.5	-54.21	2.0	0	41.05	AV	54	PASS
	Off	2500.0	-43.63	2.0	0	51.63	PEAK	74	PASS
	Off	2500.0	-54.04	2.0	0	41.22	AV	54	PASS

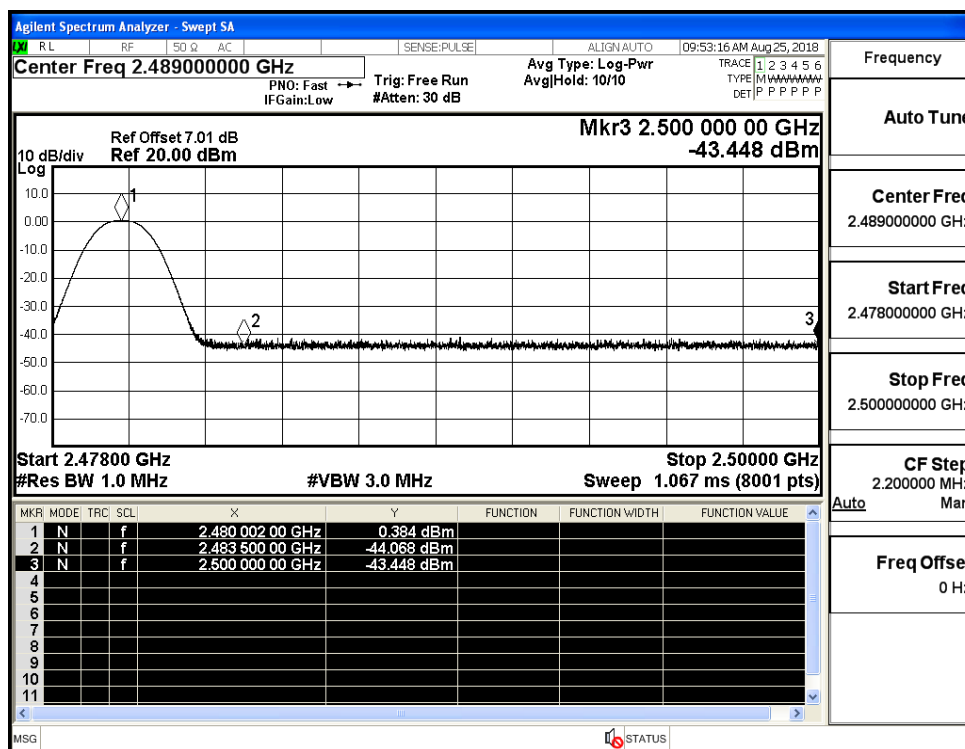
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



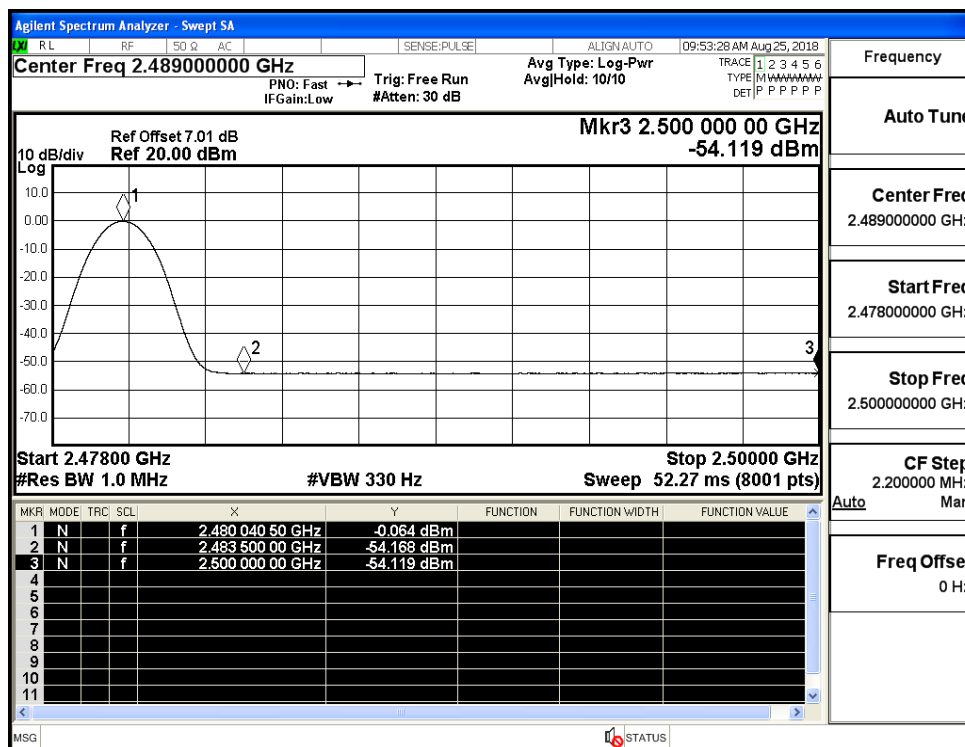
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

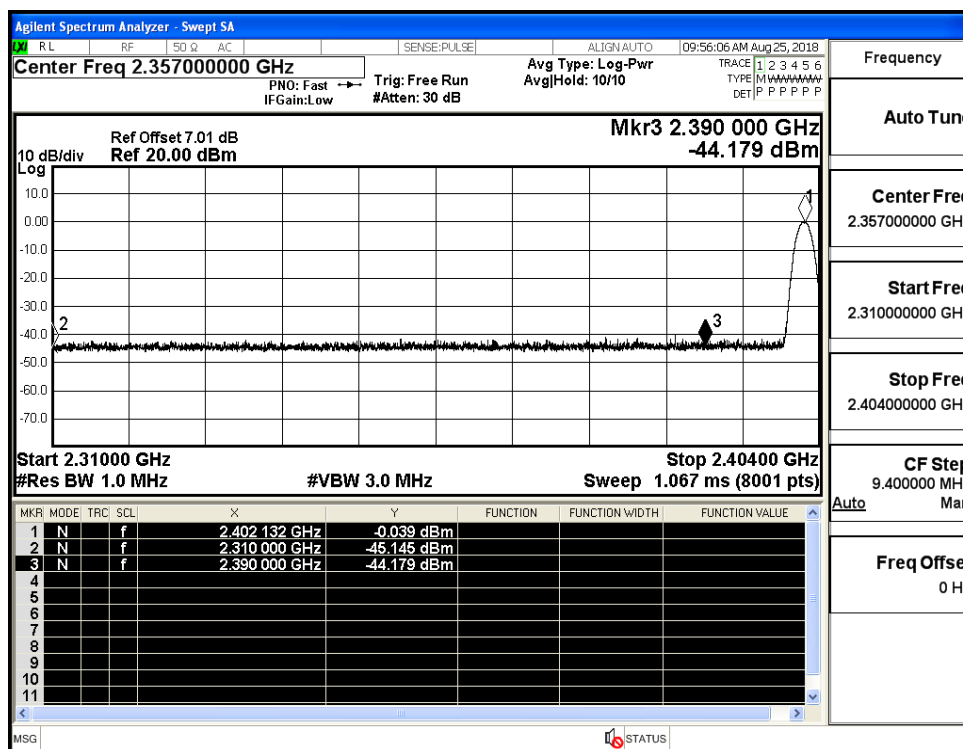
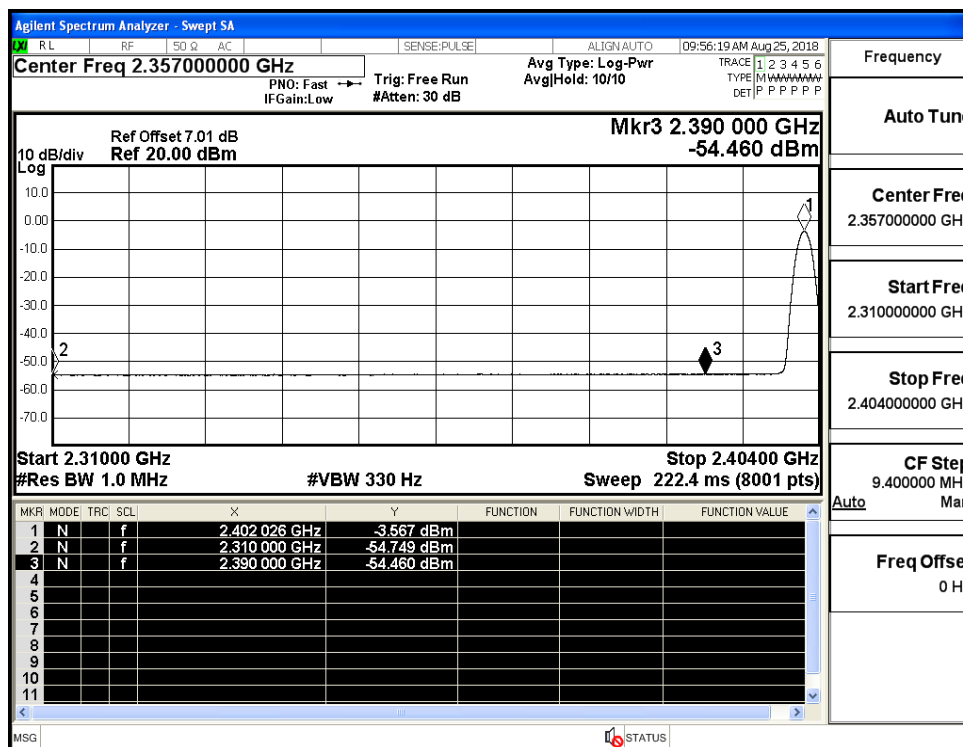


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

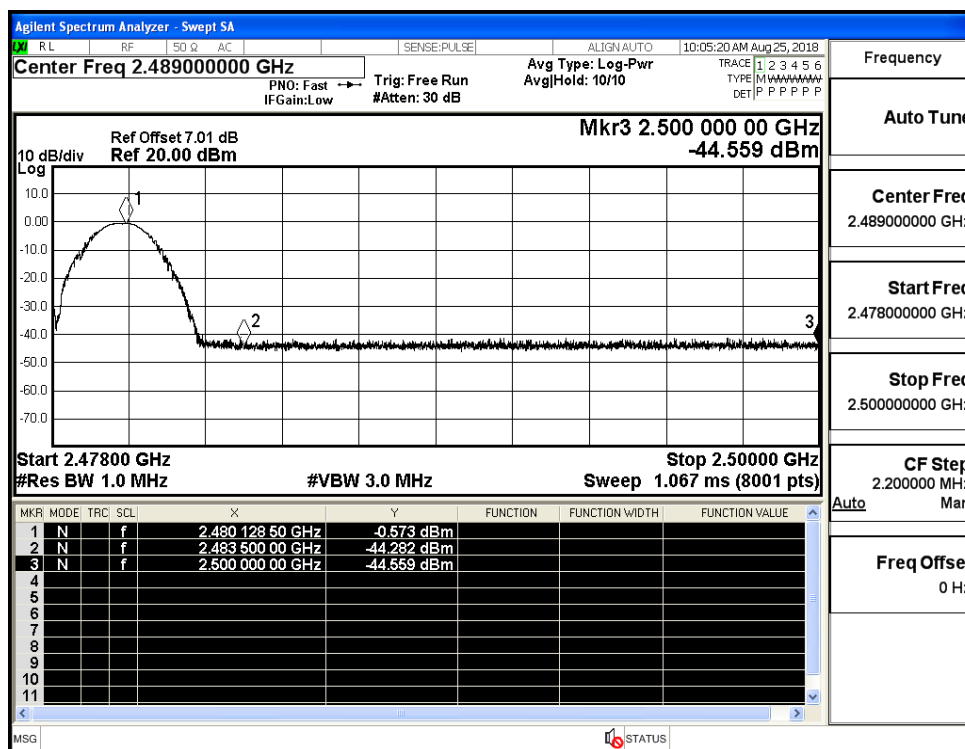


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

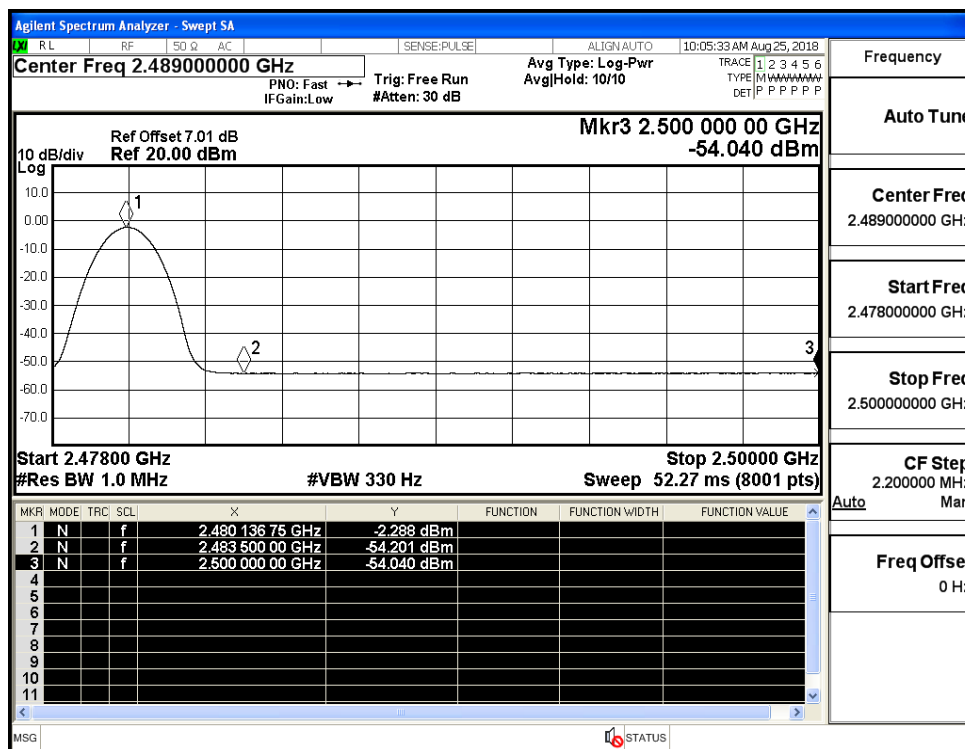


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

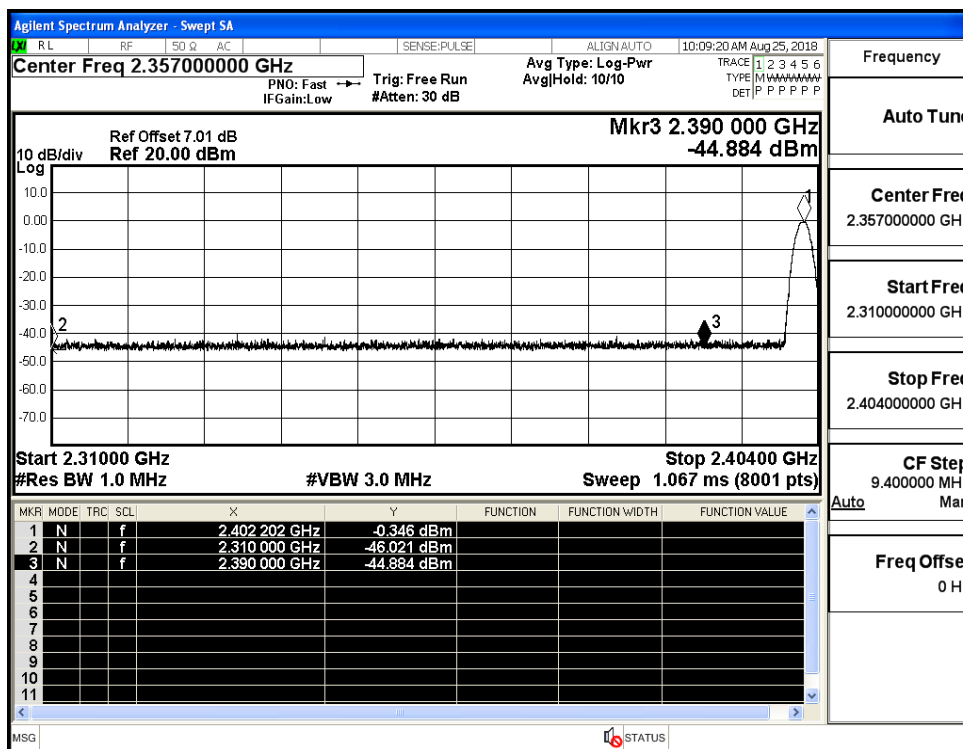
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



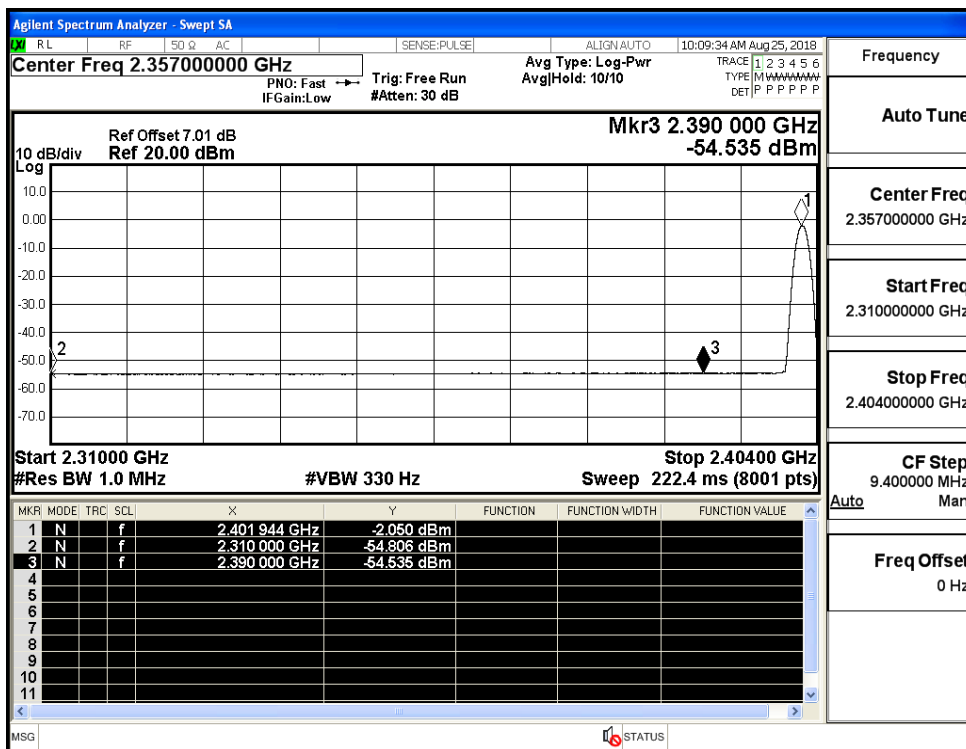
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



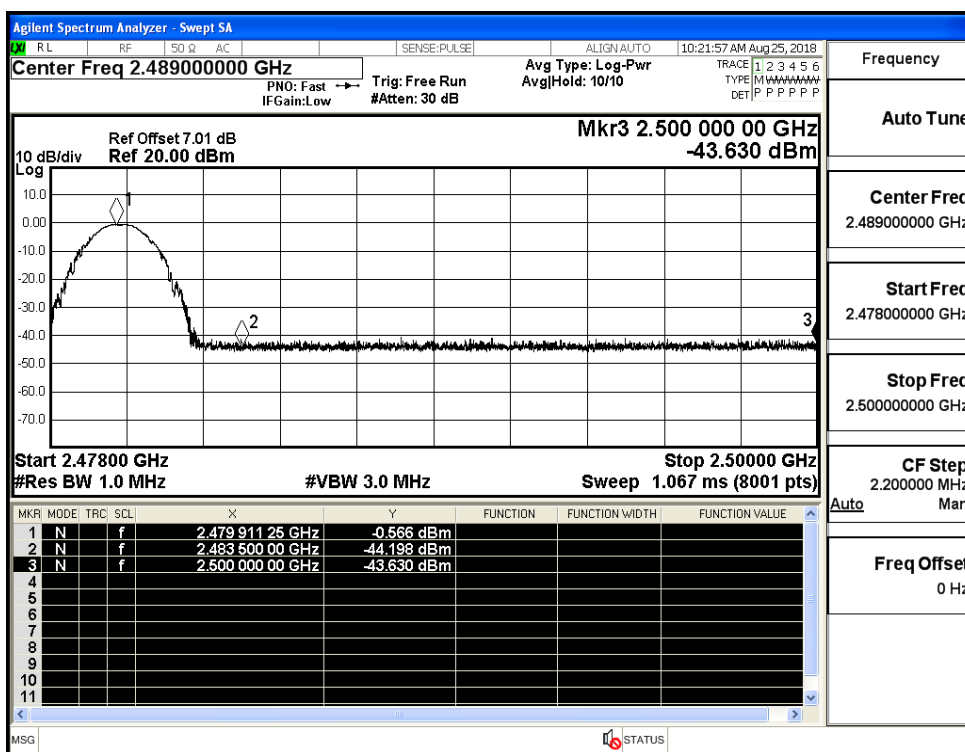
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

