

Appendix A

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

Product Name: Urbanista Boston

Trade Mark: Urbanista

Test Model: Urbanista Boston

Environmental Conditions

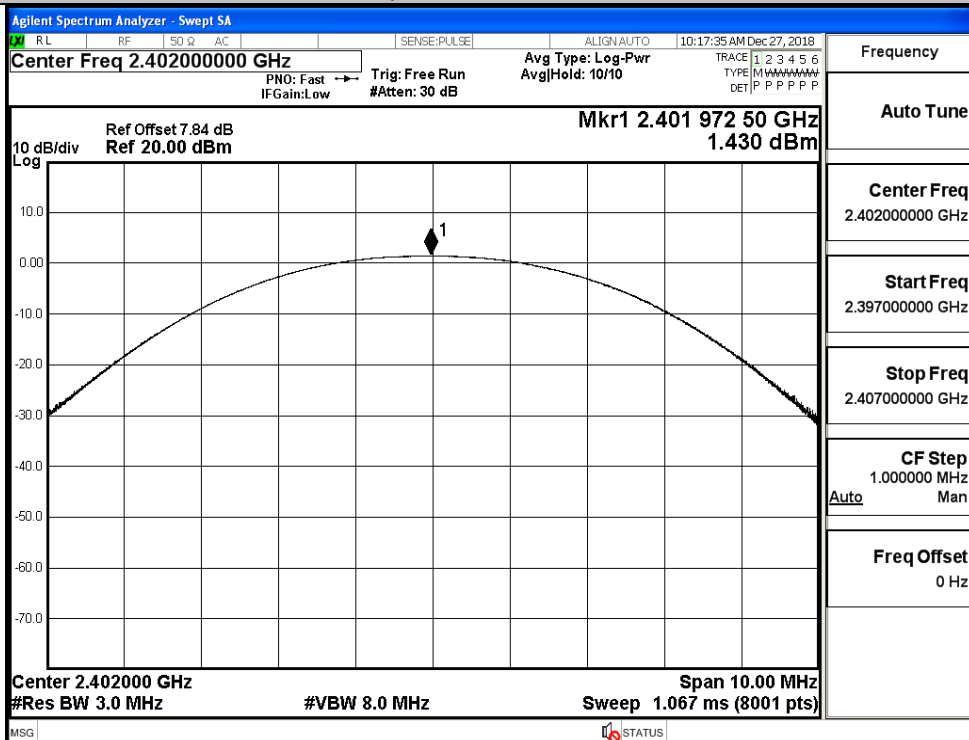
Temperature:	24.1 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

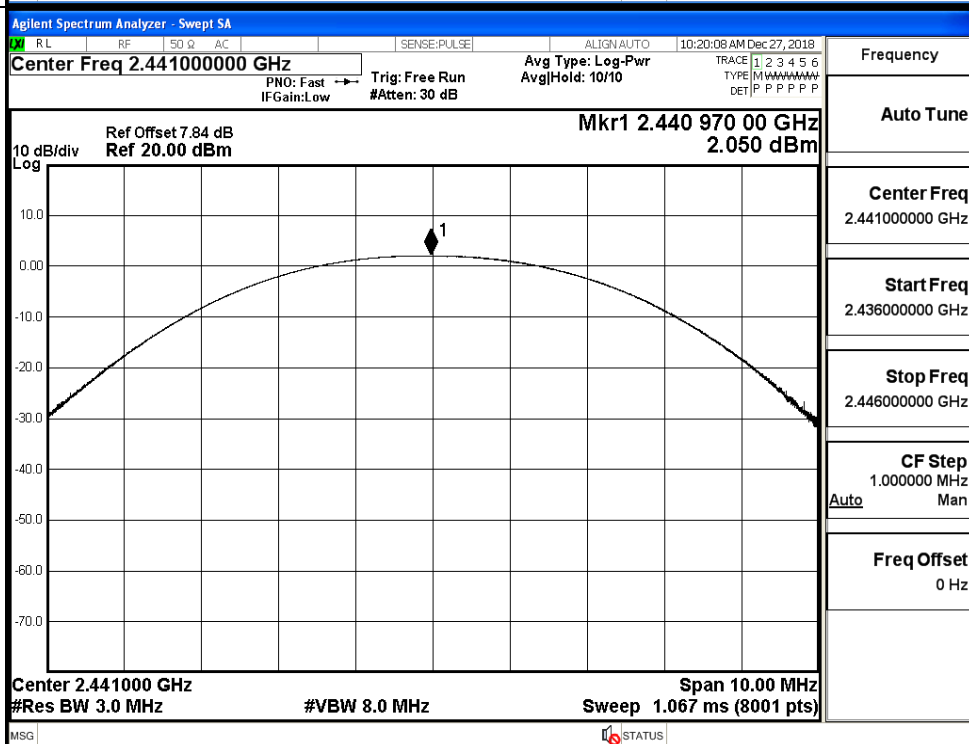
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.430	21	PASS
	MCH	2.050	21	PASS
	HCH	1.605	21	PASS
$\pi/4$ DQPSK	LCH	0.385	21	PASS
	MCH	1.142	21	PASS
	HCH	0.462	21	PASS
8DPSK	LCH	0.279	21	PASS
	MCH	1.014	21	PASS
	HCH	0.382	21	PASS

Test Graphs

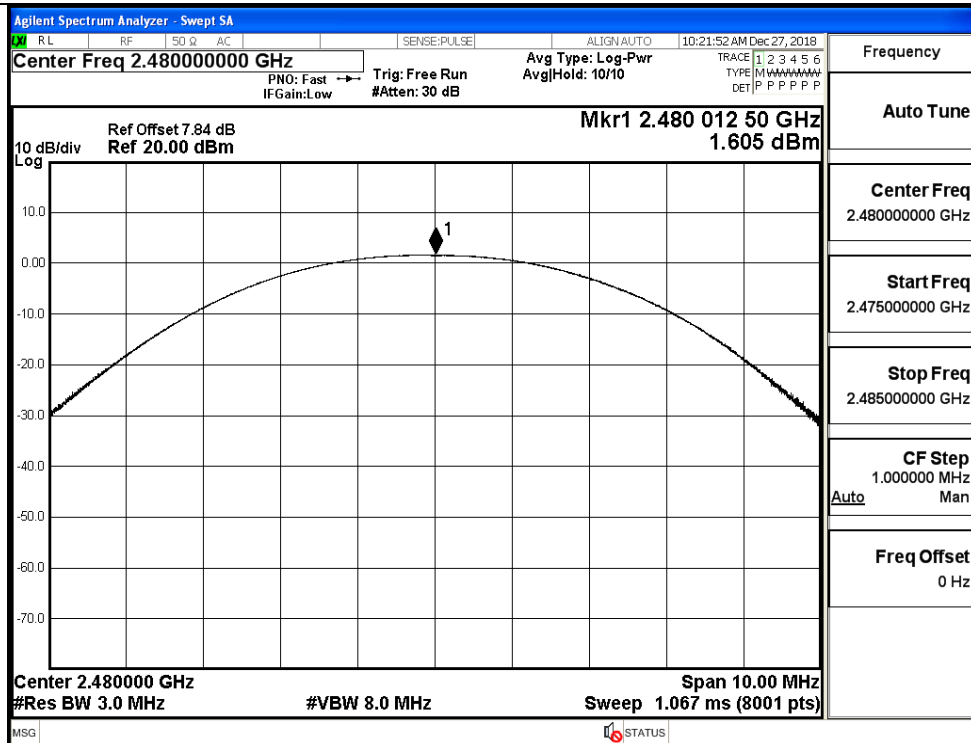
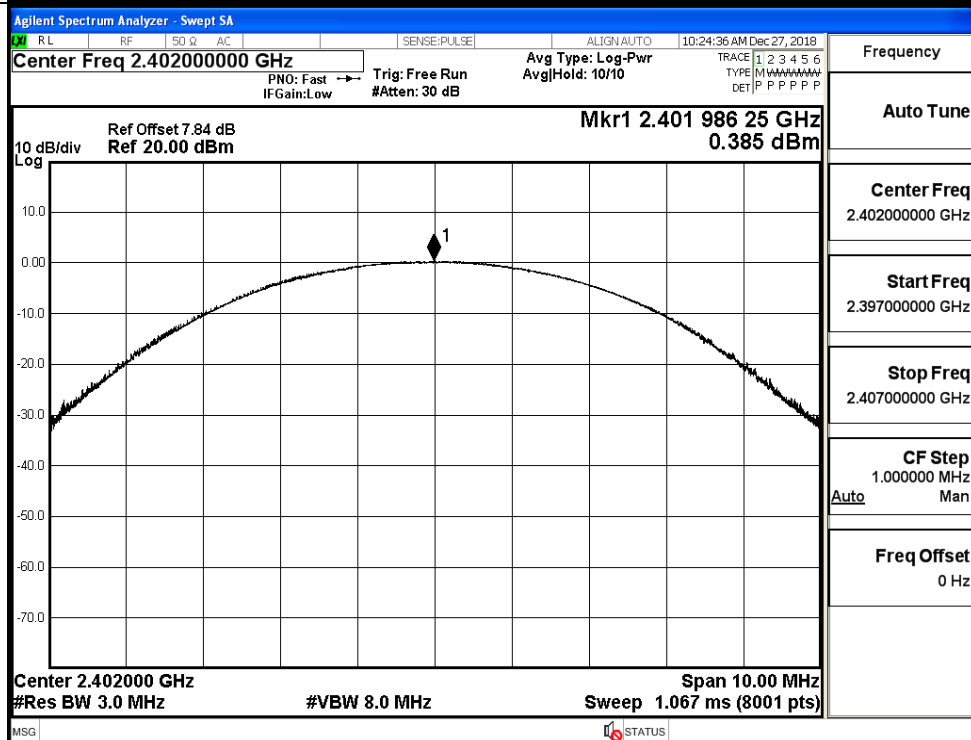
GFSK/LCH

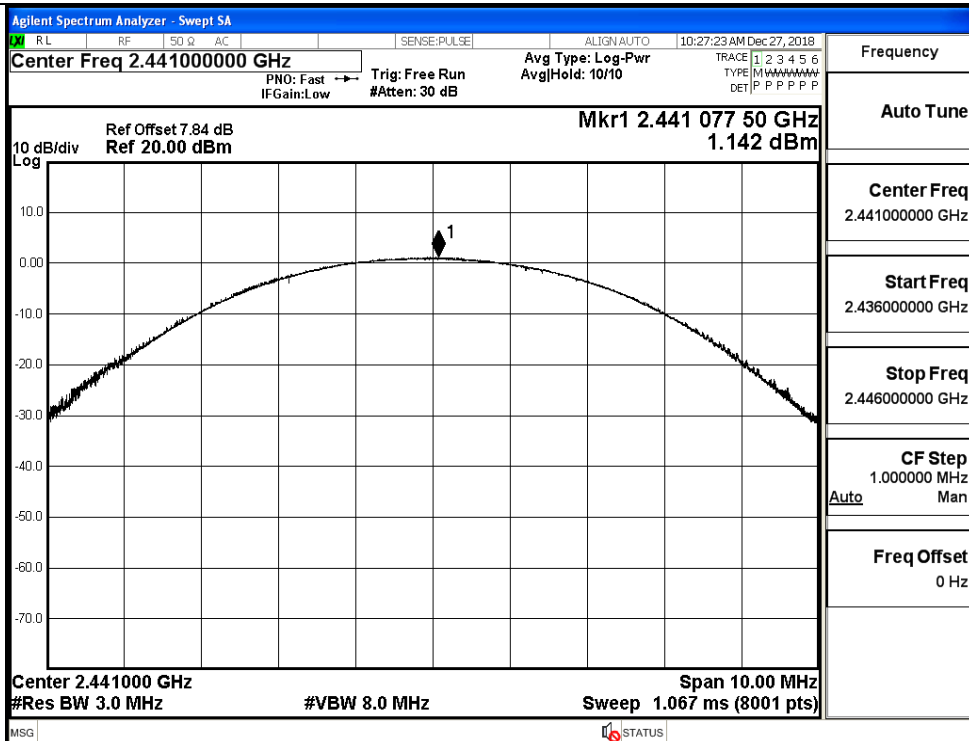
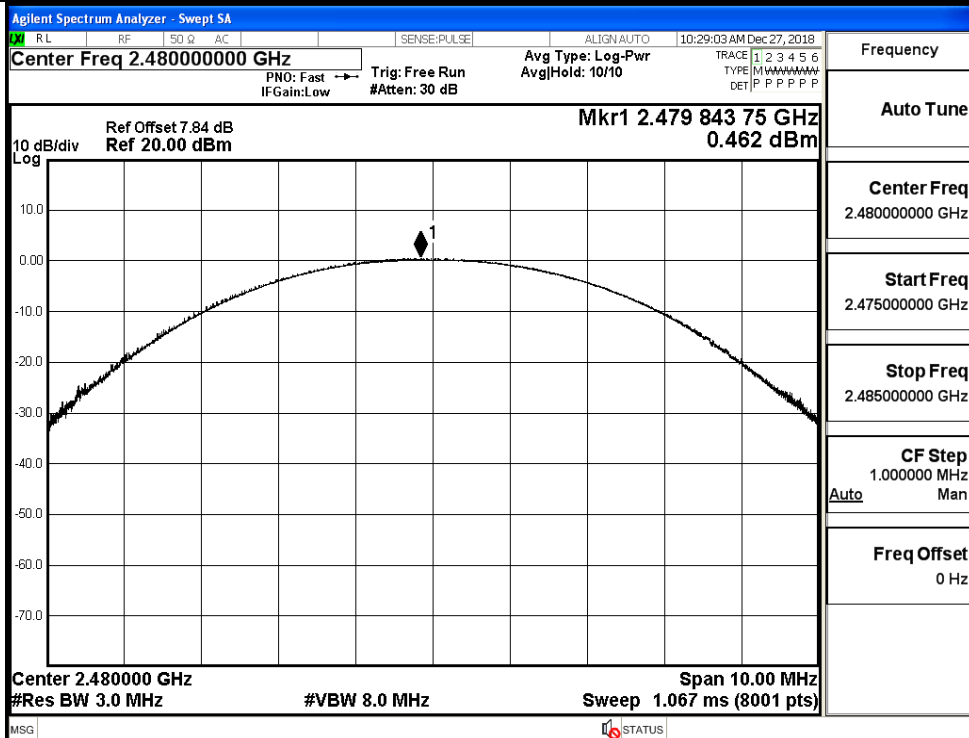


GFSK/MCH

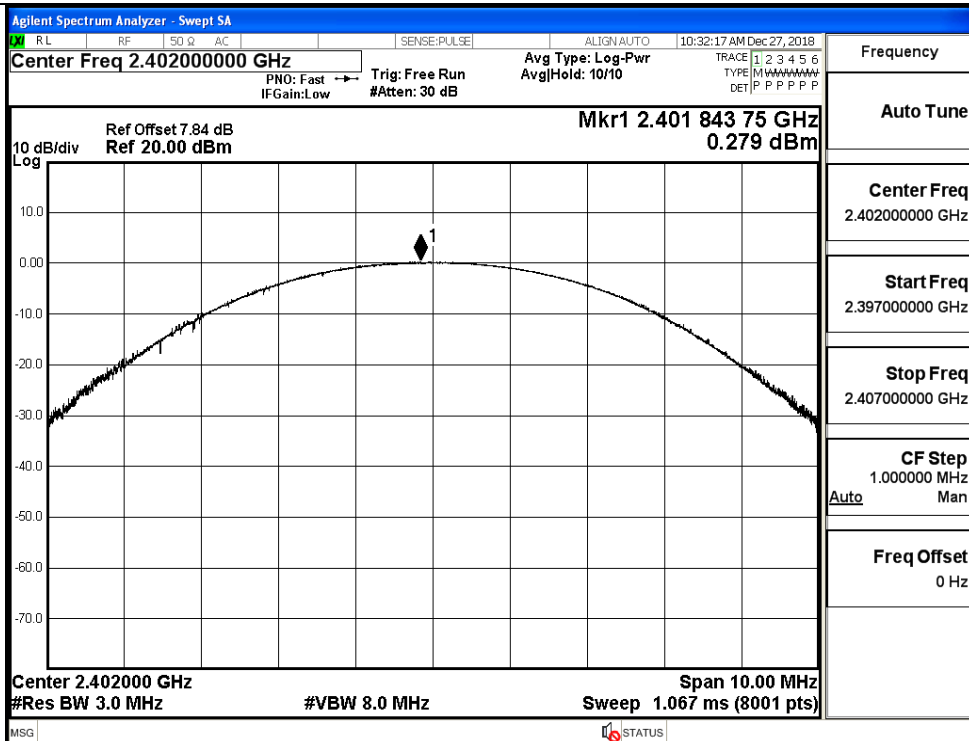


GFSK/HCH

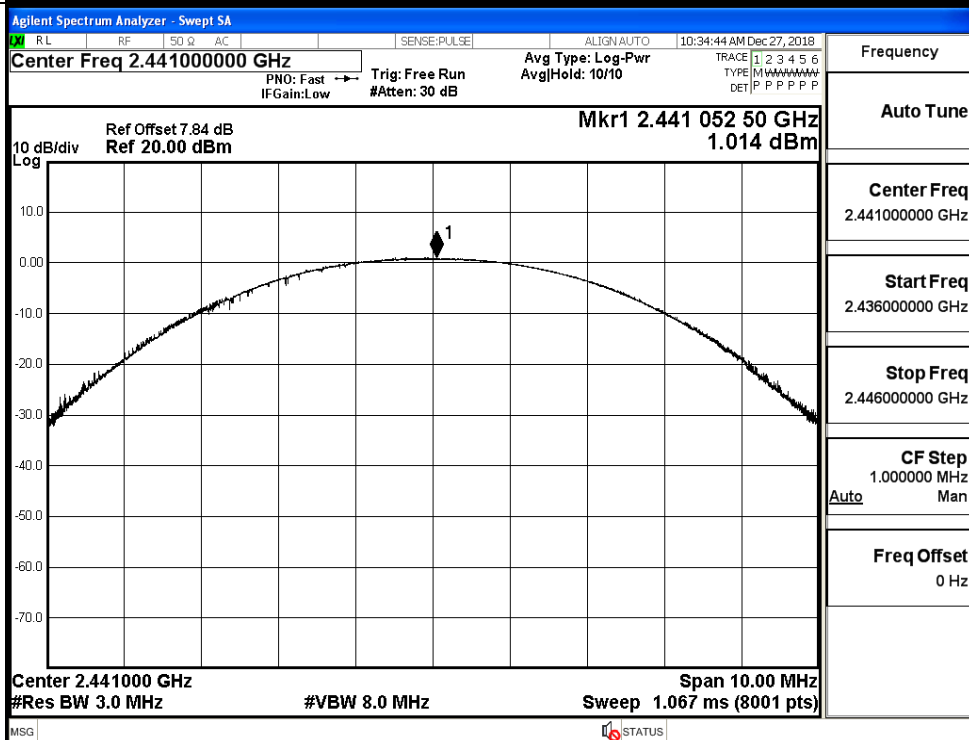
 π /4DQPSK/LCH

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

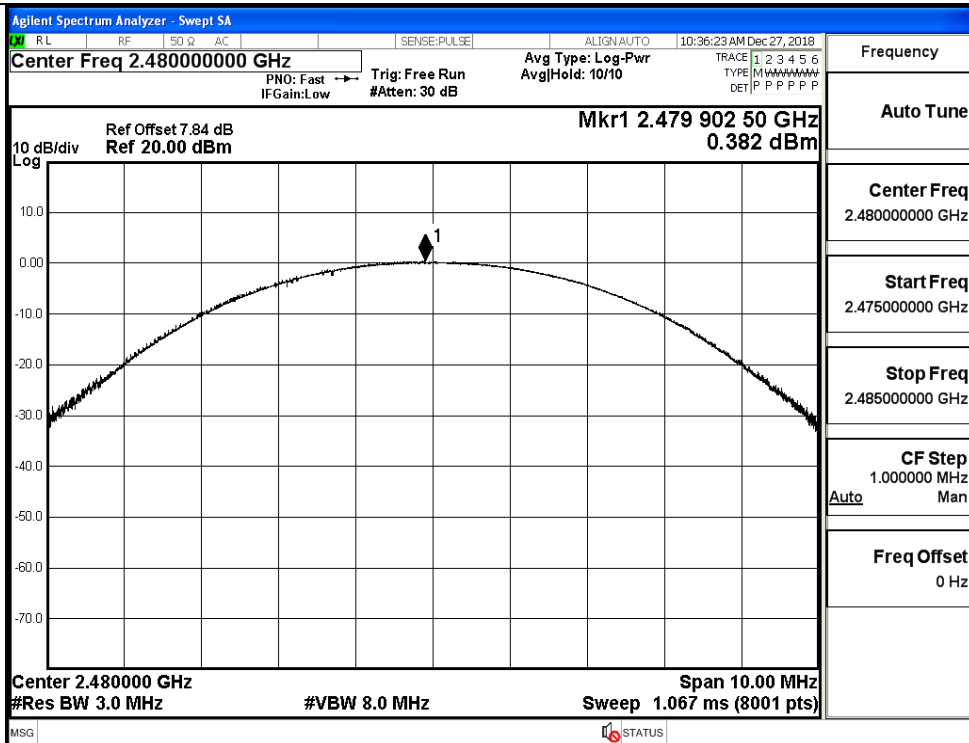
8DPSK/LCH



8DPSK/MCH



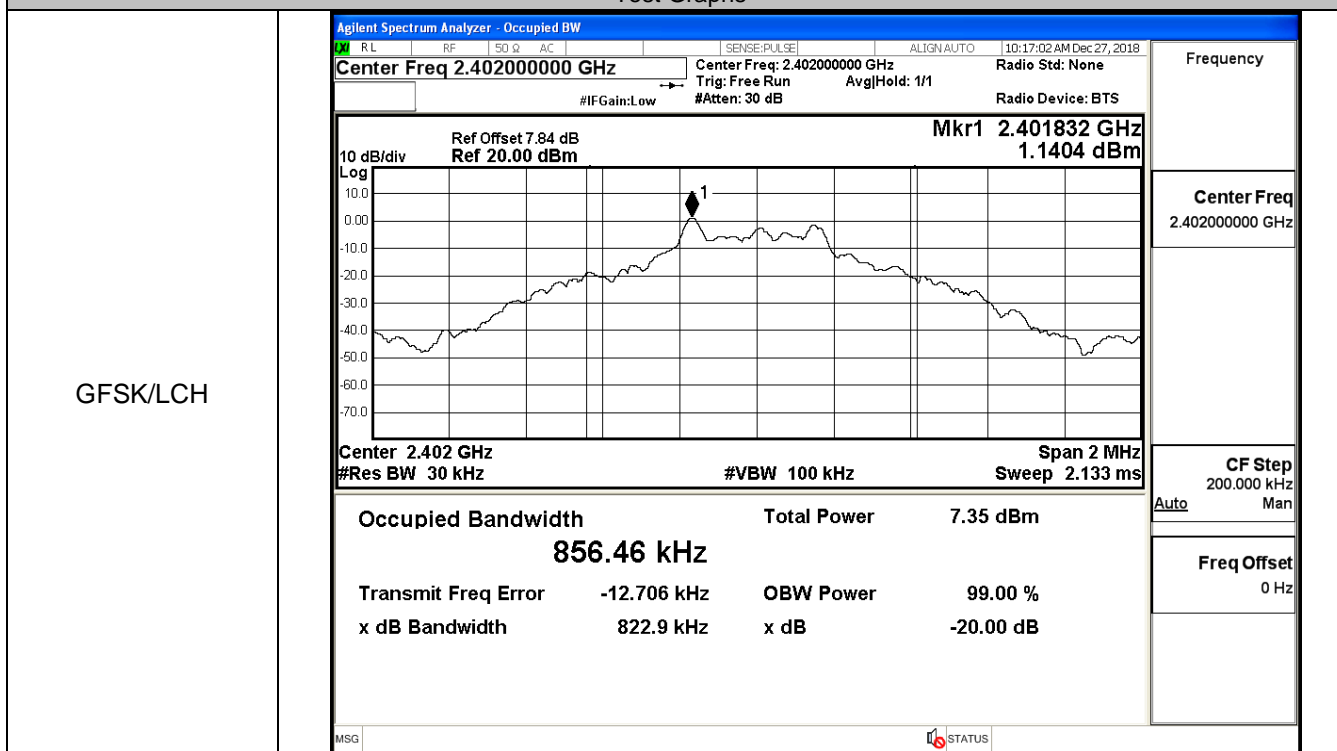
8DPSK/HCH



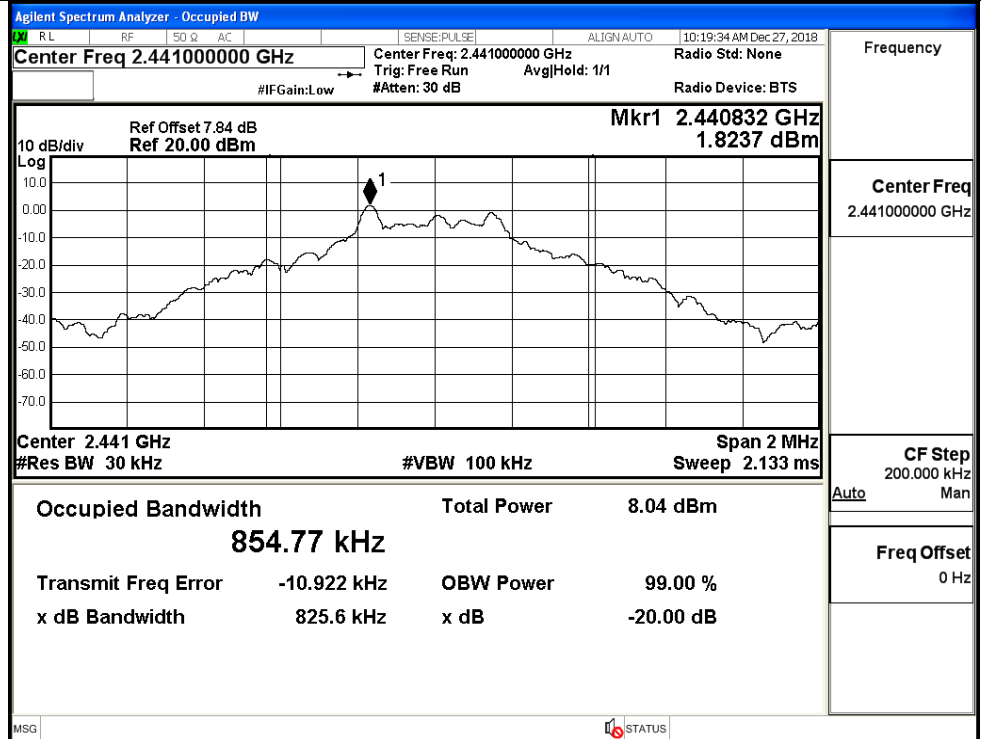
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.85646	0.8229	Not Specified	PASS
	MCH	0.85477	0.8256	Not Specified	PASS
	HCH	0.85934	0.8234	Not Specified	PASS
π /4DQPSK	LCH	1.0738	1.126	Not Specified	PASS
	MCH	1.0729	1.126	Not Specified	PASS
	HCH	1.0739	1.140	Not Specified	PASS
8DPSK	LCH	1.0749	1.150	Not Specified	PASS
	MCH	1.0691	1.141	Not Specified	PASS
	HCH	1.0711	1.148	Not Specified	PASS

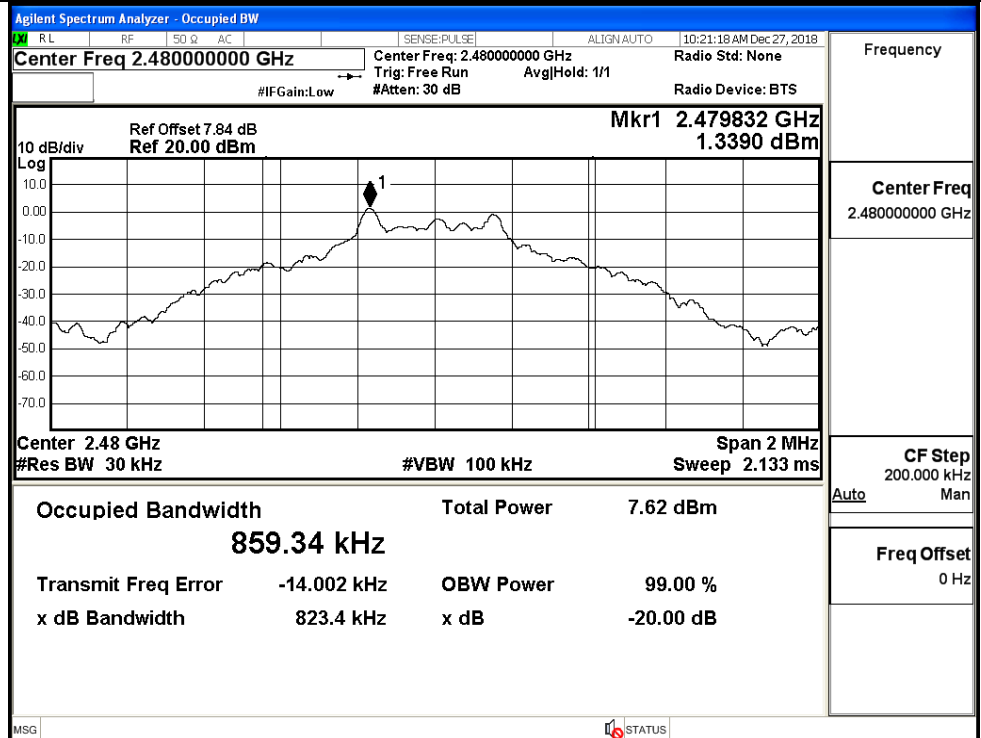
Test Graphs

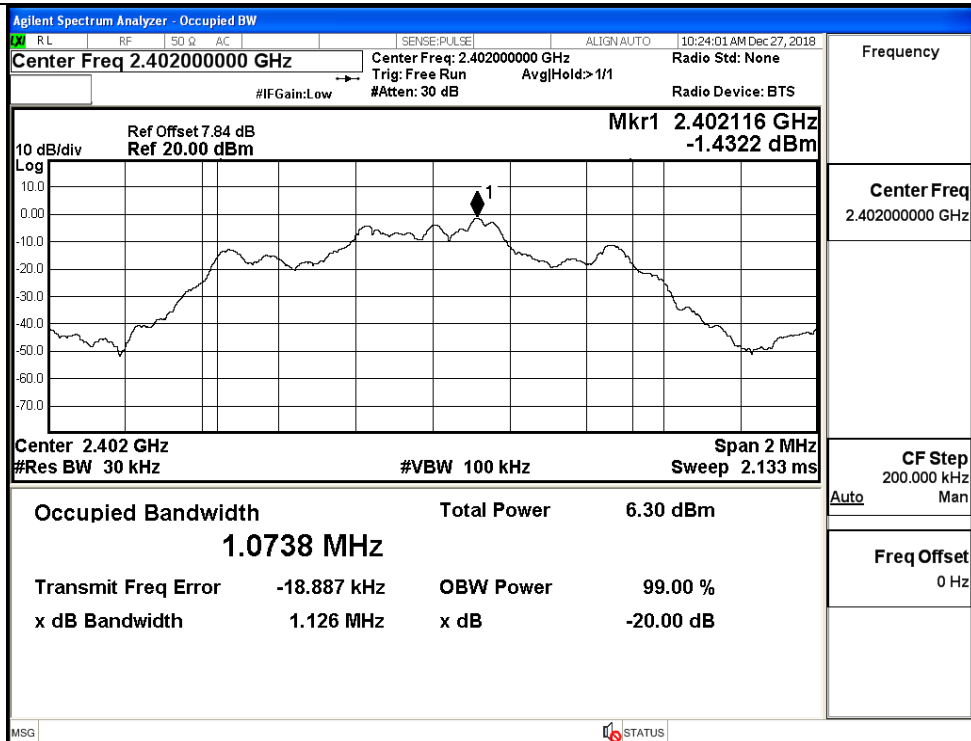
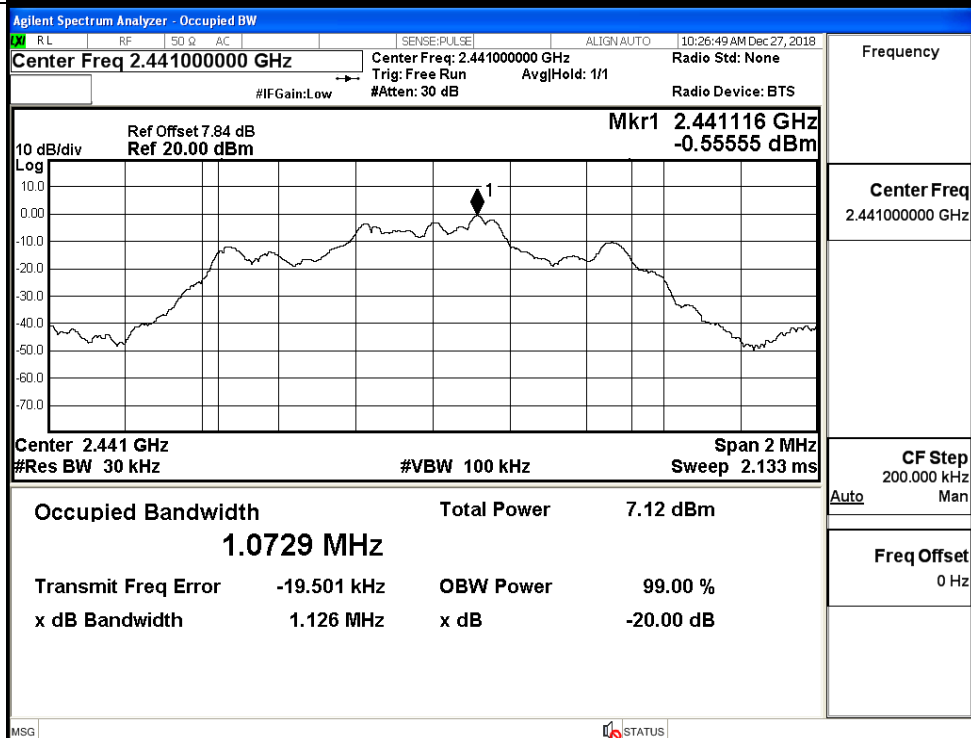


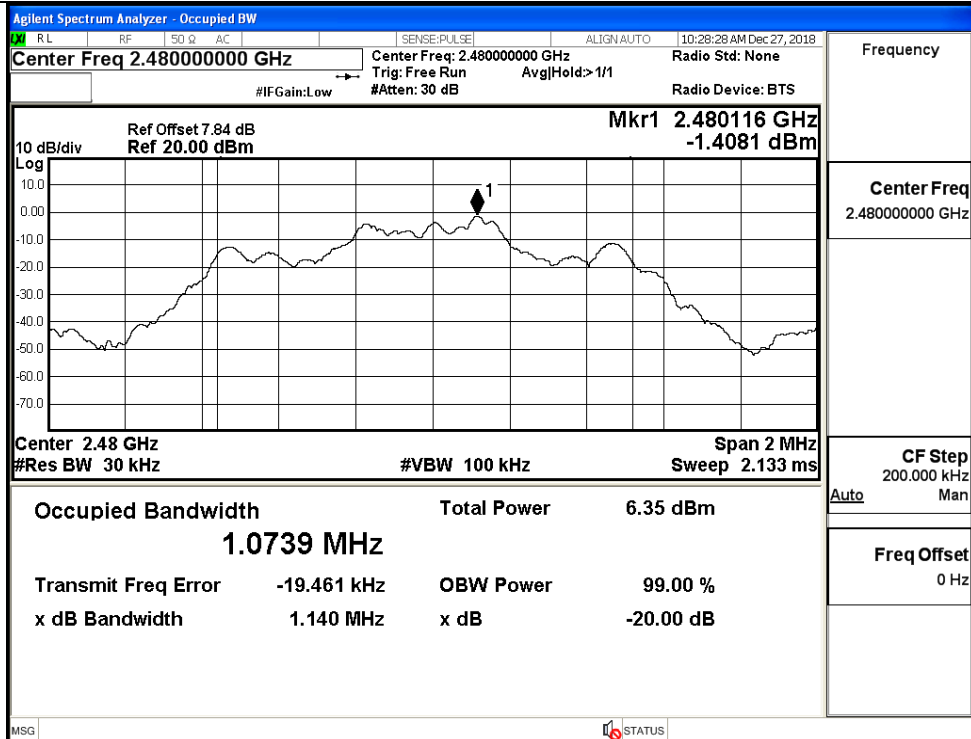
GFSK/MCH



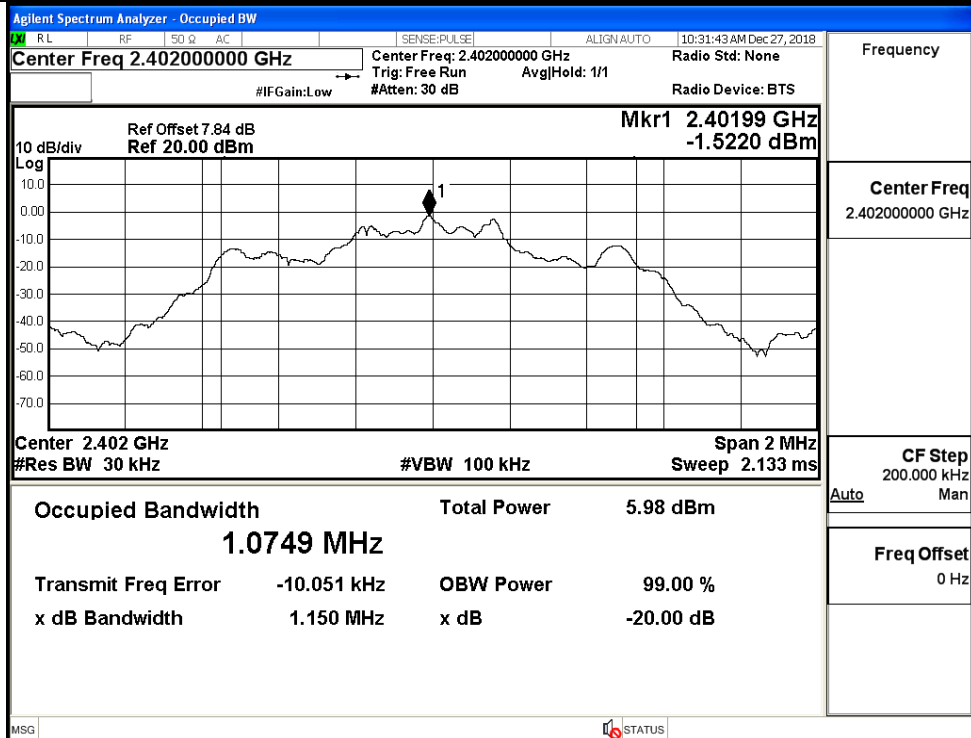
GFSK/HCH



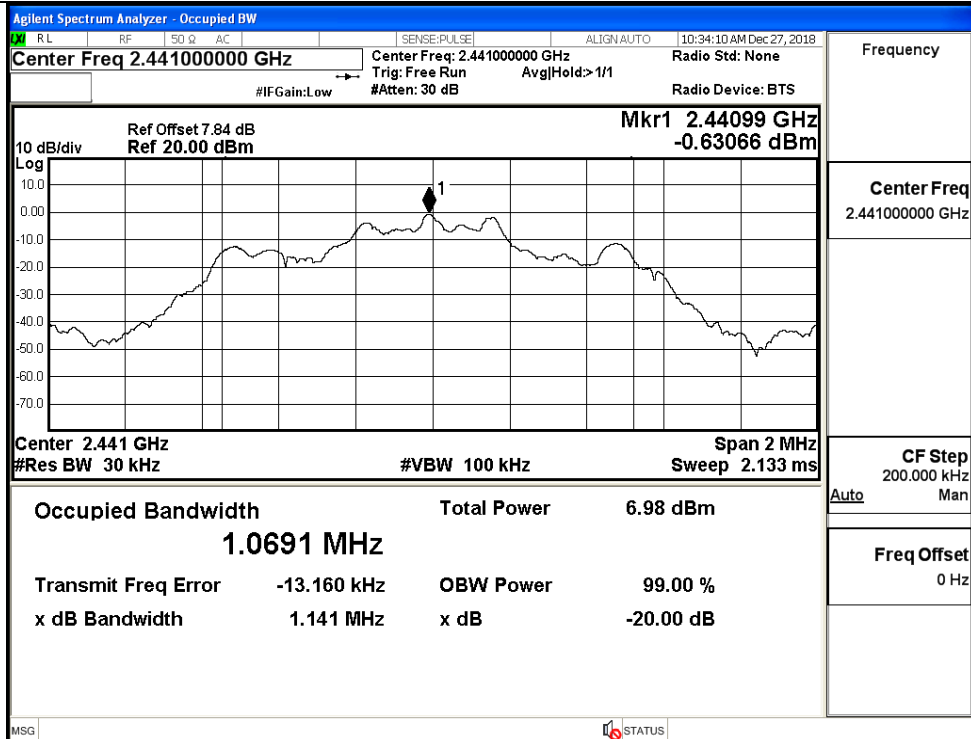
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

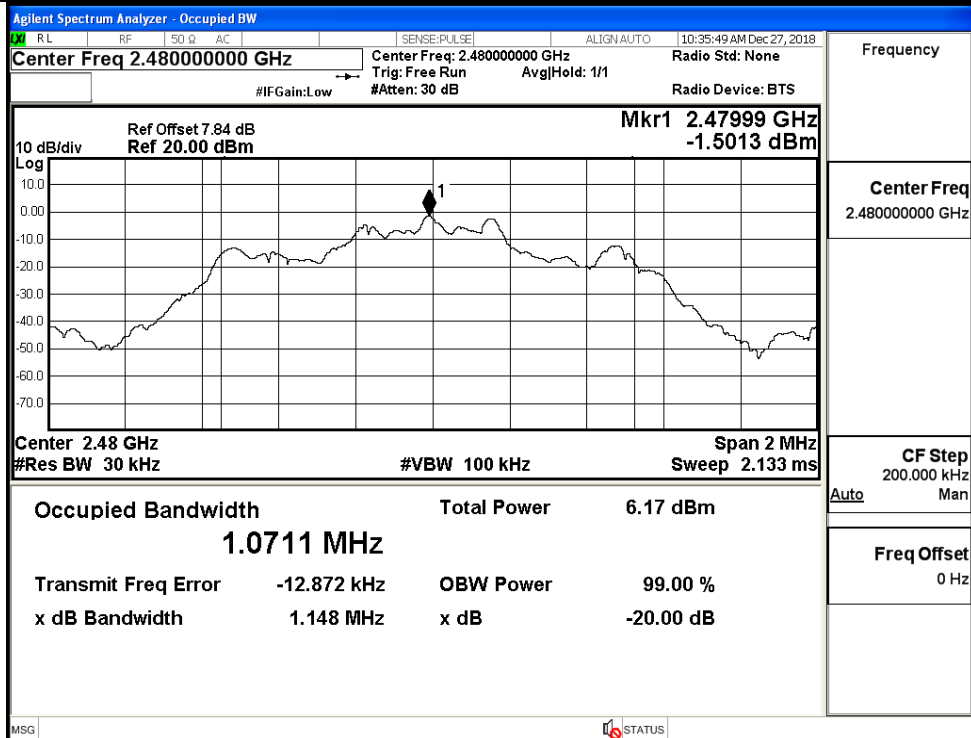
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

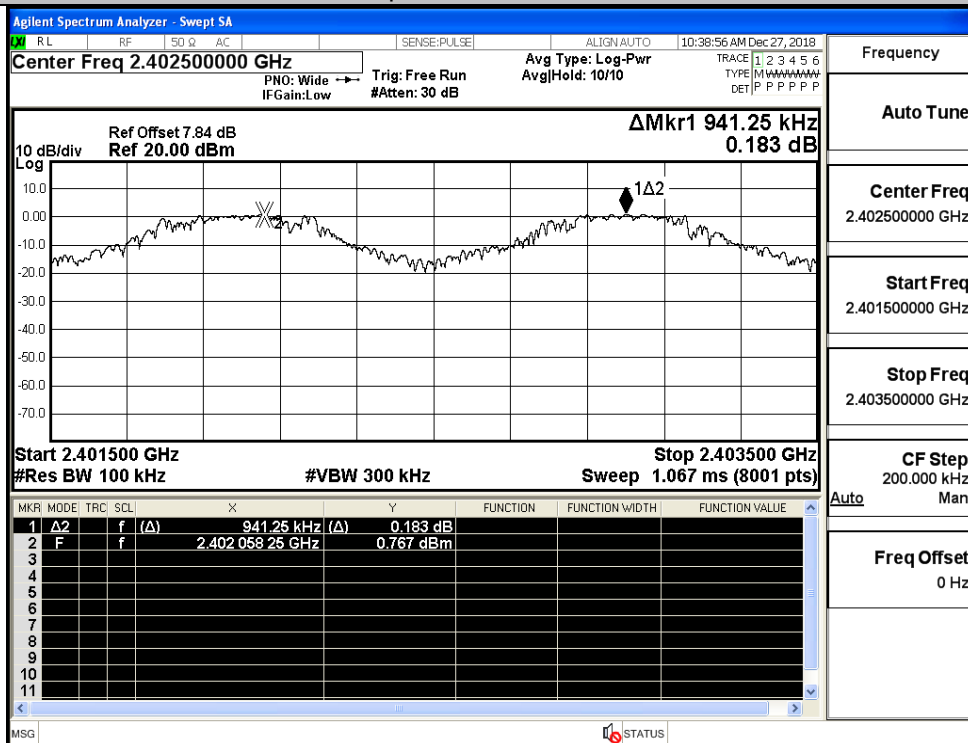


A.3 Carrier Frequency Separation

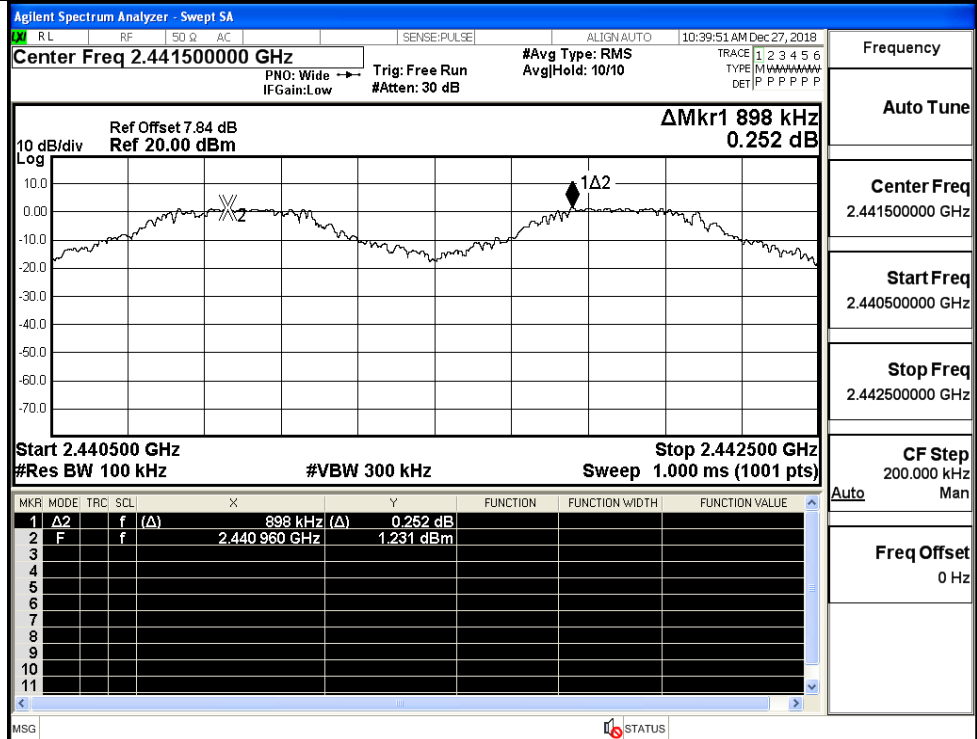
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.941	0.550	PASS
	MCH	0.898	0.550	PASS
	HCH	1.196	0.550	PASS
$\pi/4$ DQPSK	LCH	0.814	0.760	PASS
	MCH	0.942	0.760	PASS
	HCH	1.278	0.760	PASS
8DPSK	LCH	0.926	0.767	PASS
	MCH	1.234	0.767	PASS
	HCH	1.030	0.767	PASS

Test Graphs

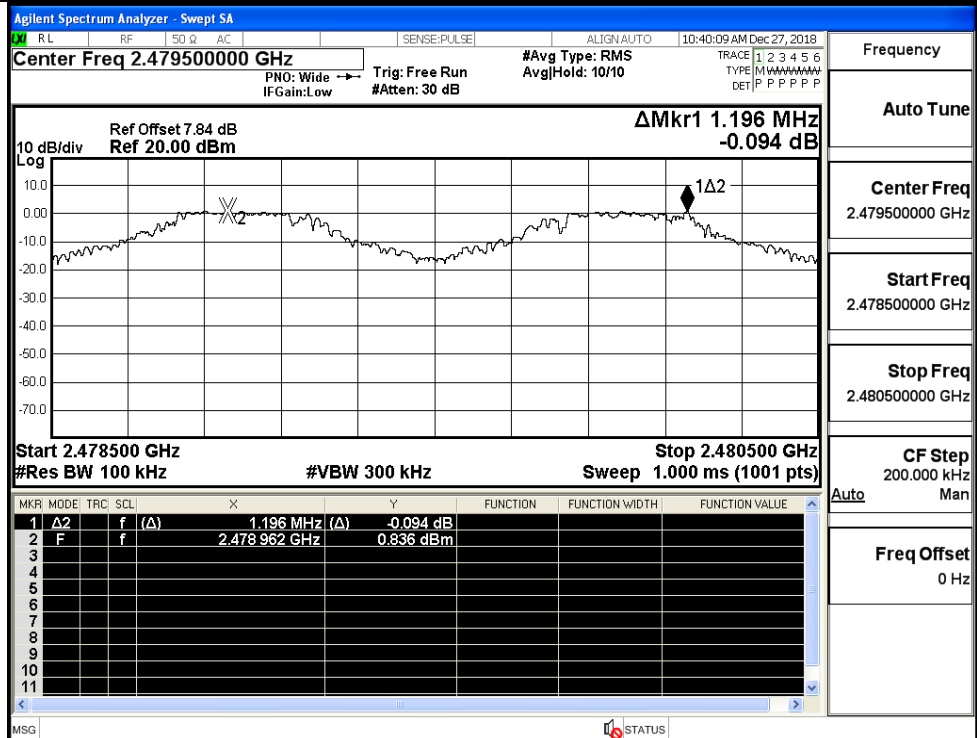
GFSK/LCH

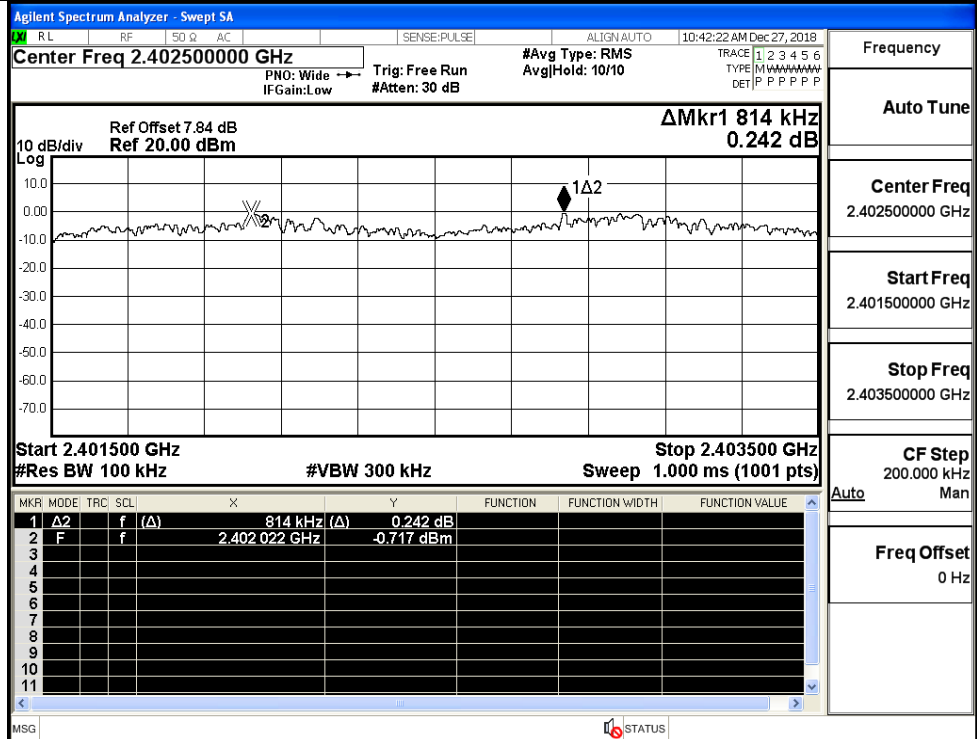
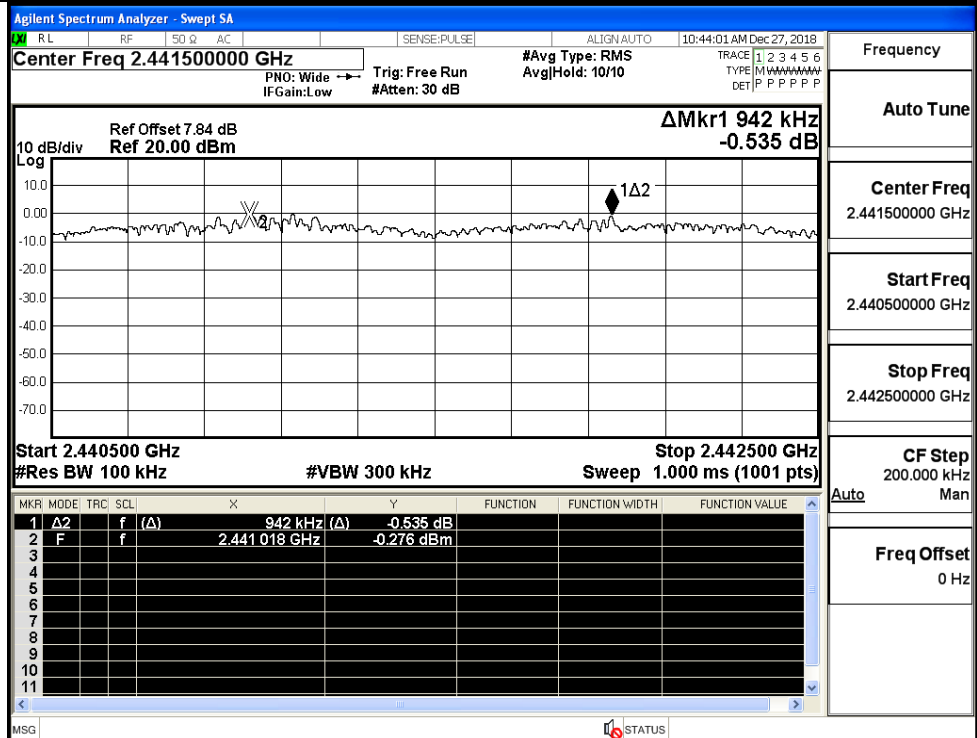


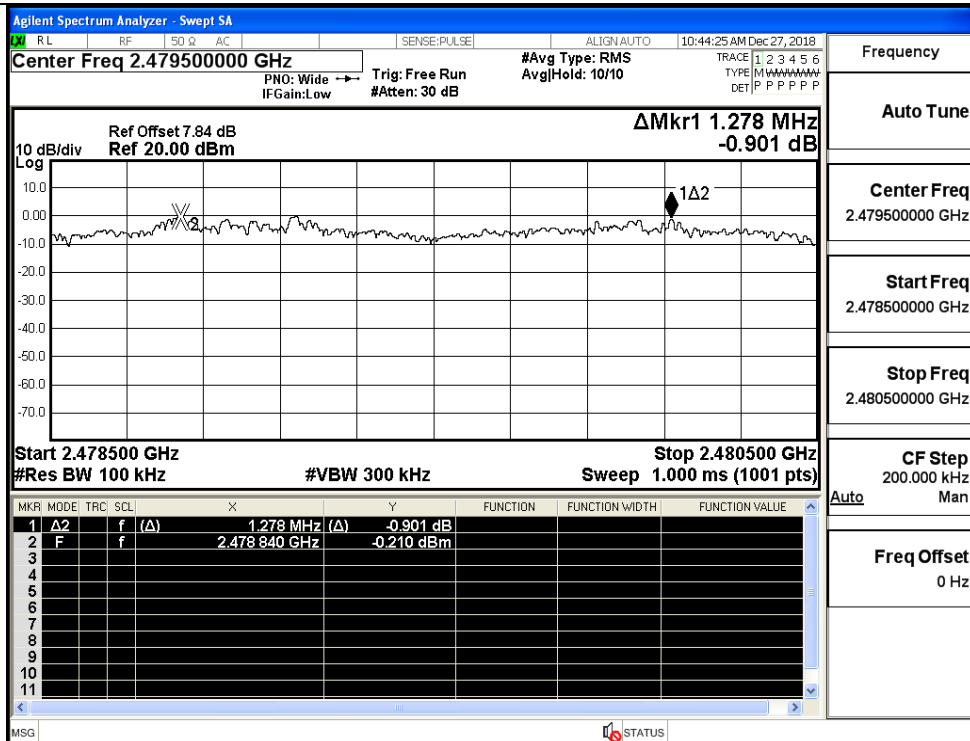
GFSK/MCH



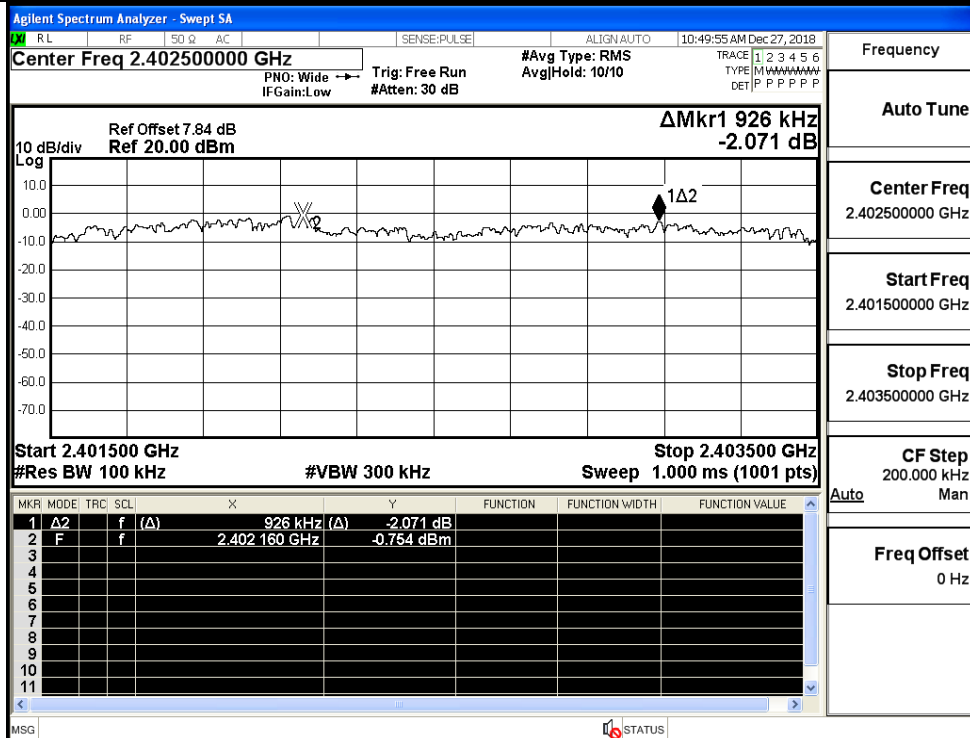
GFSK/HCH



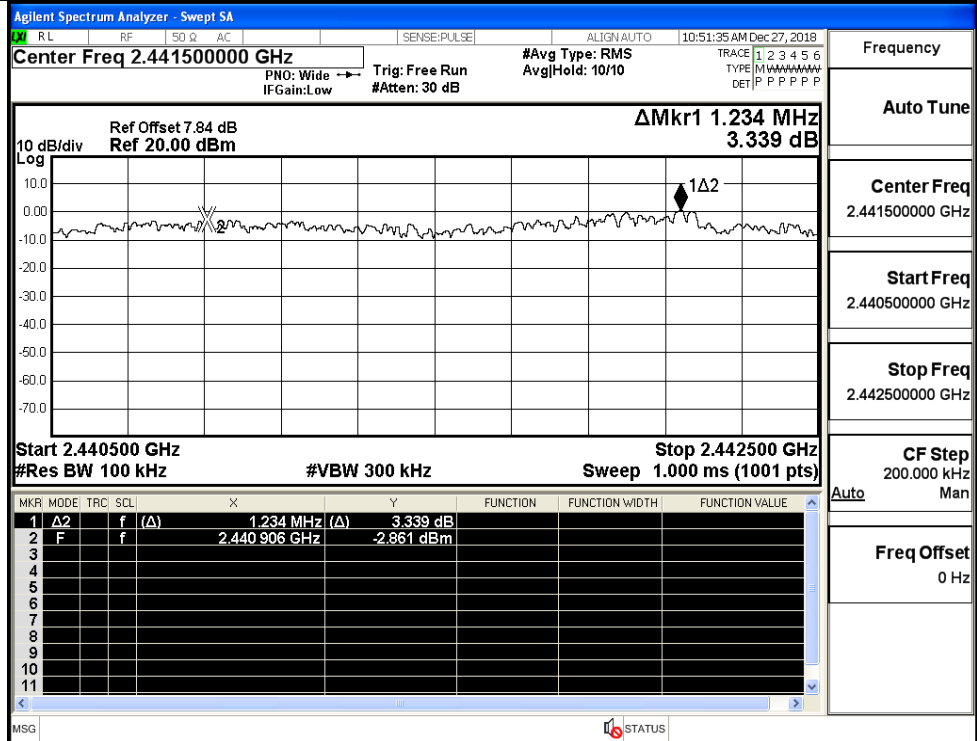
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

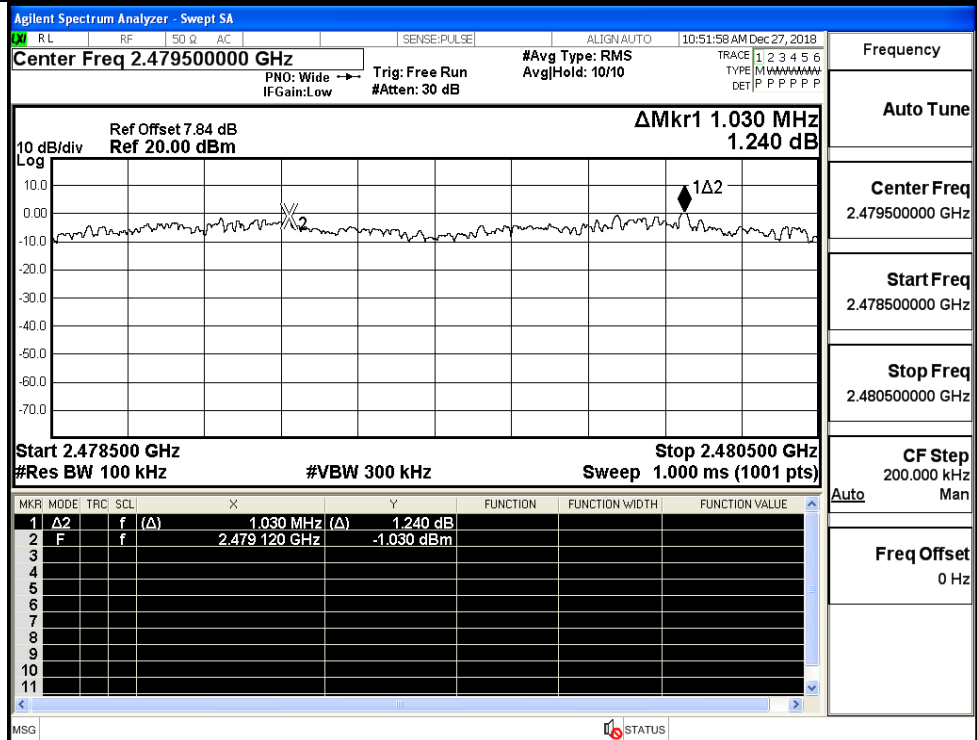
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

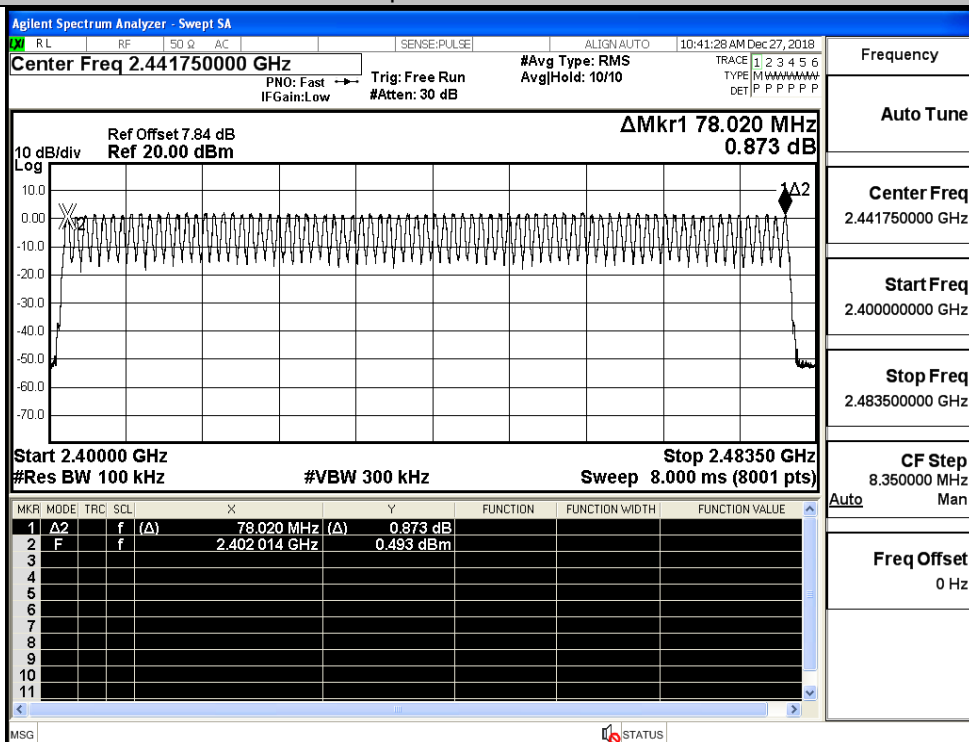
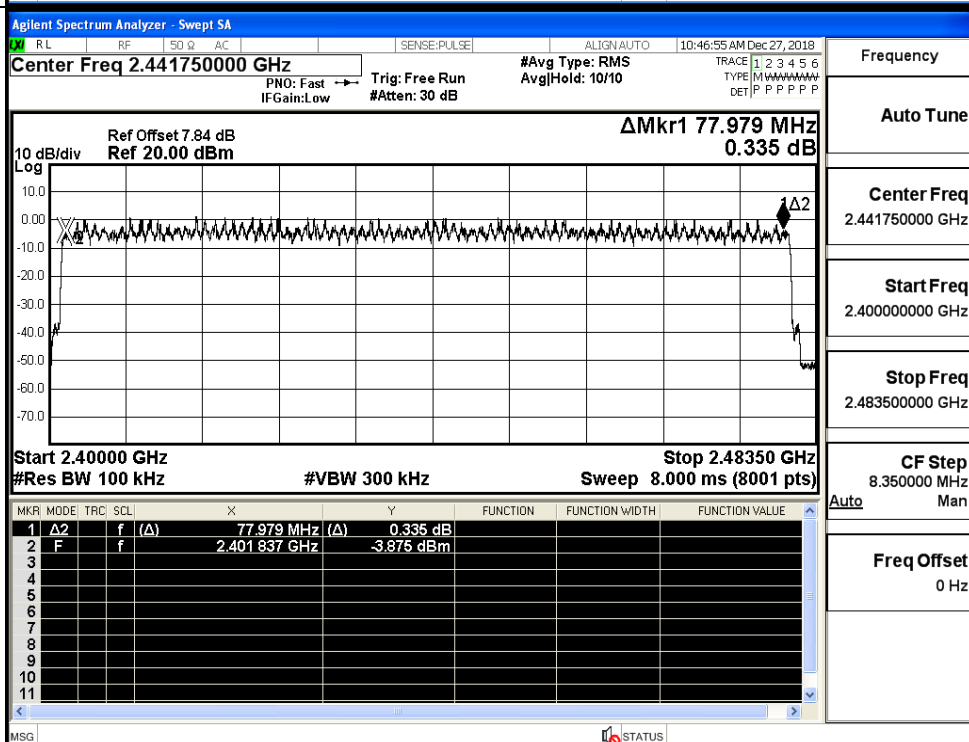


A.4 Hopping Channel Number

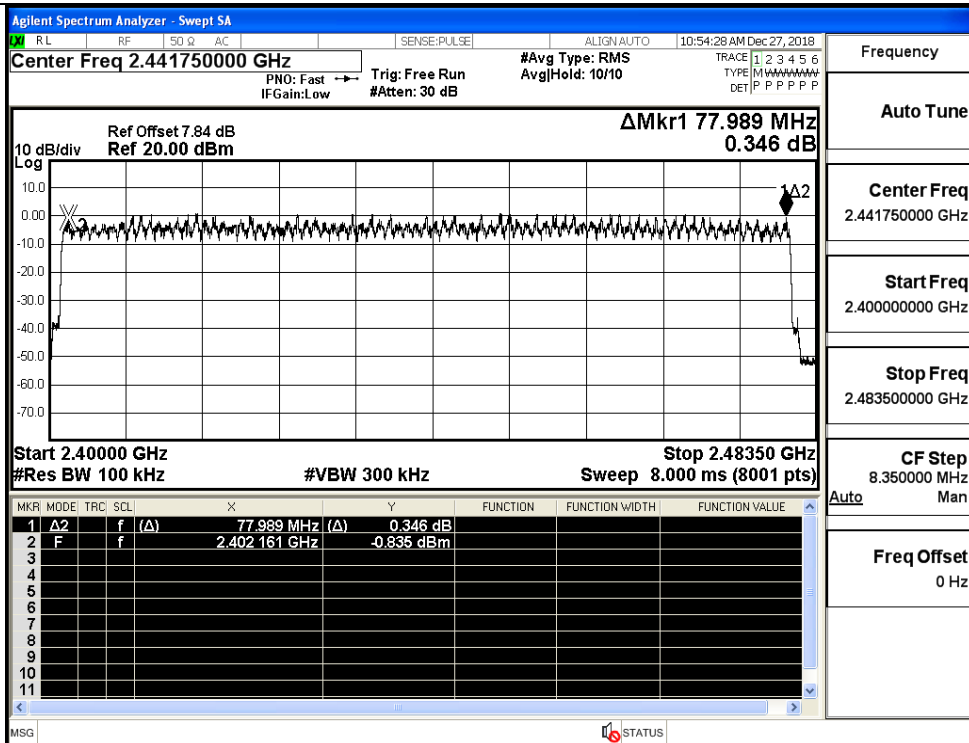
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

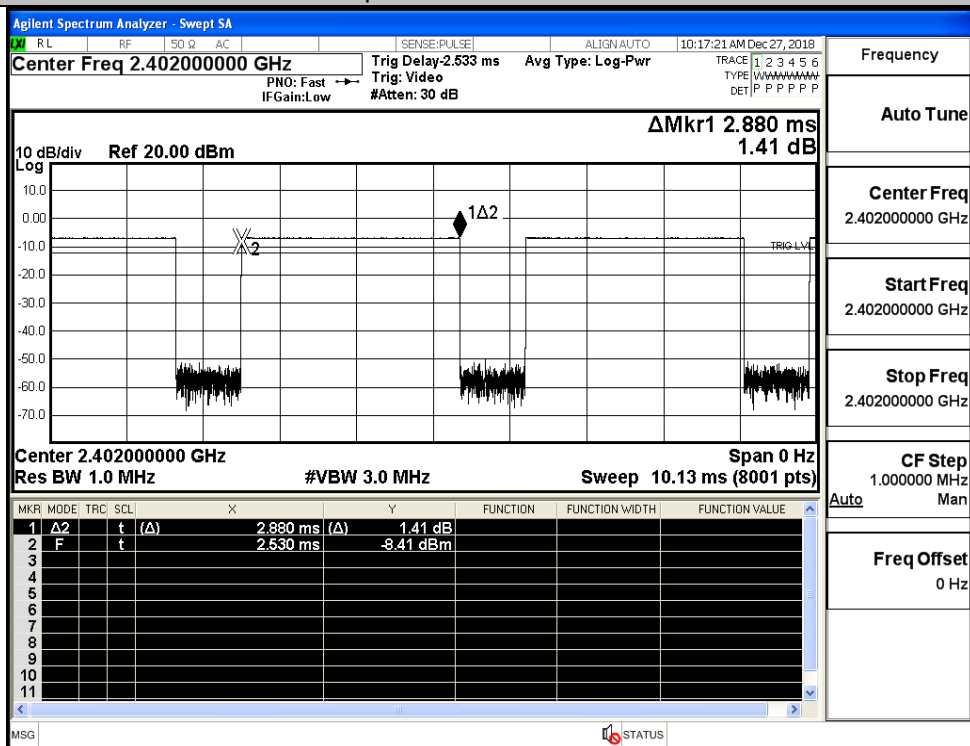


A.5 Dwell Time

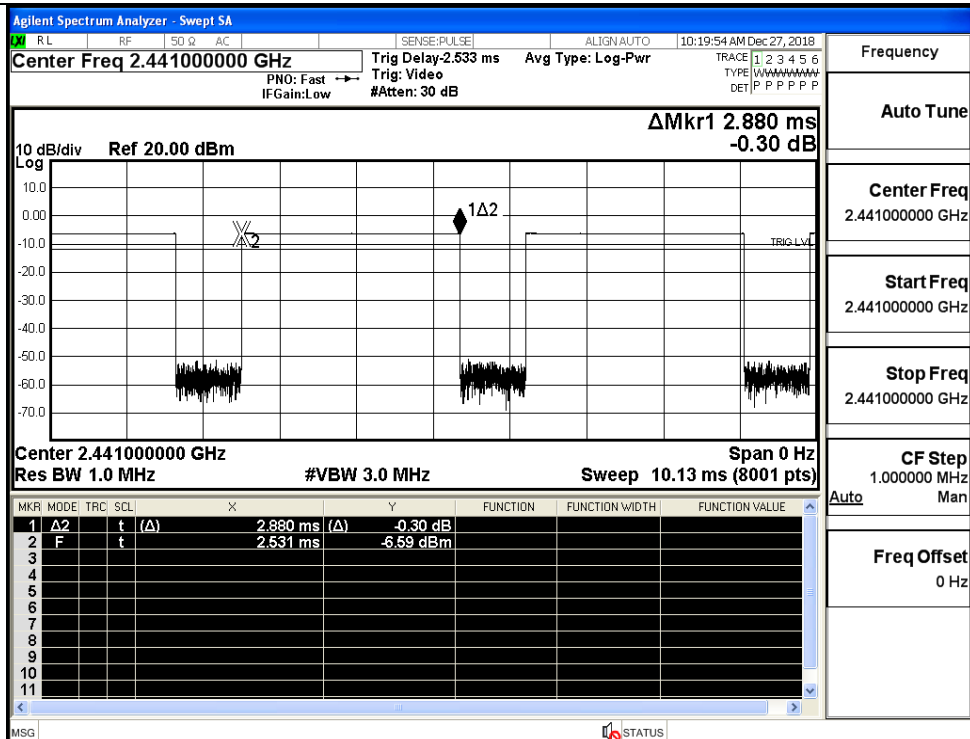
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

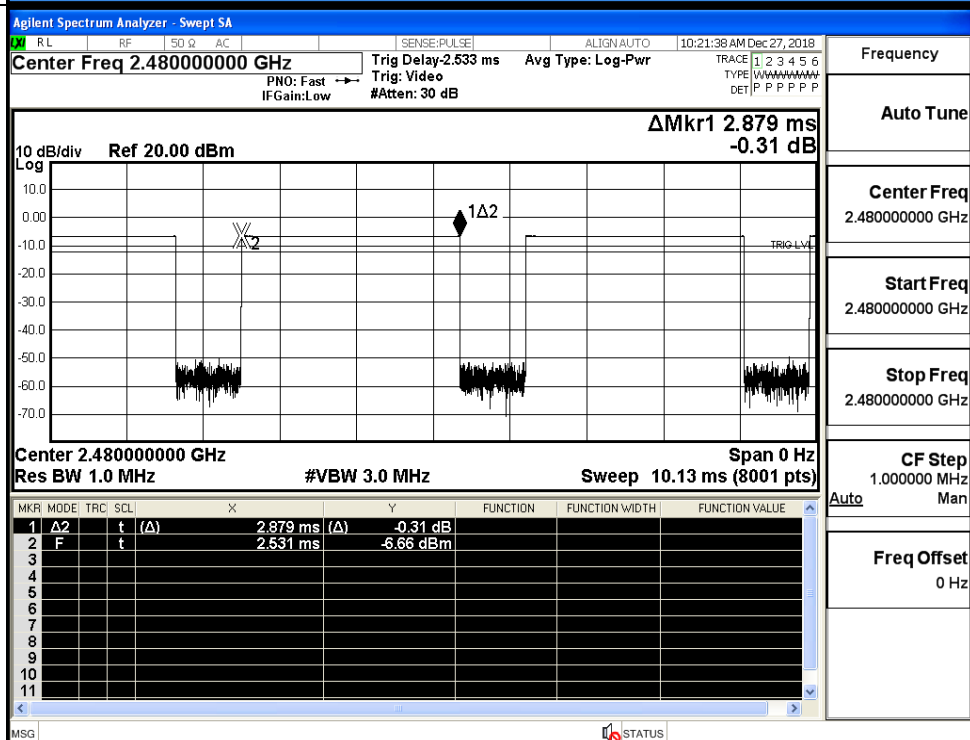
GFSK_DH5/LCH



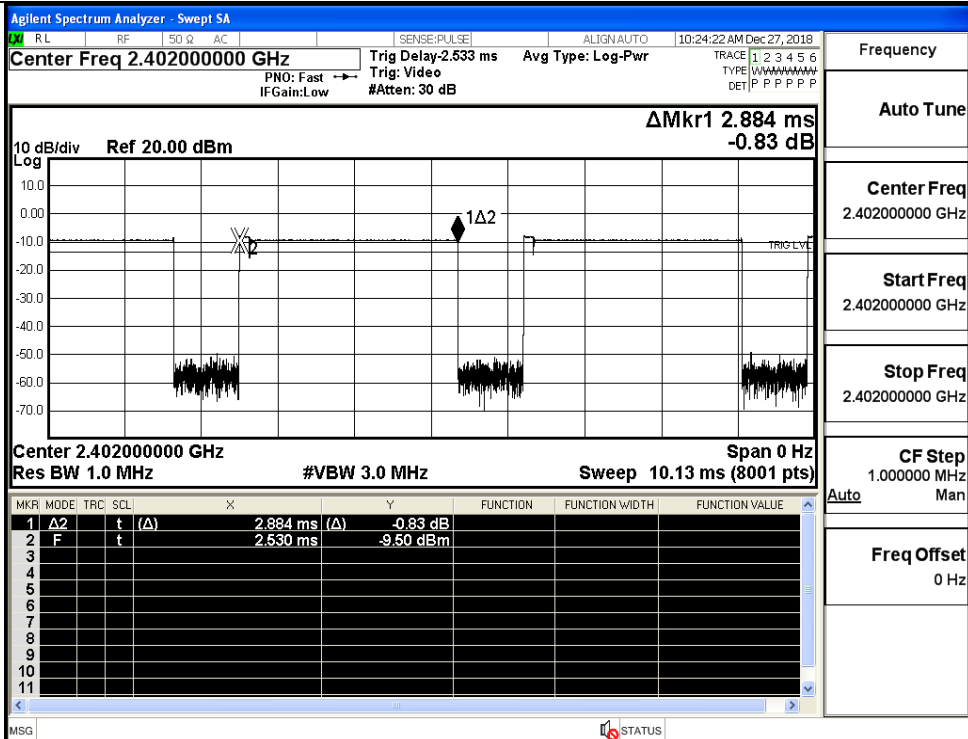
GFSK_DH5/MCH



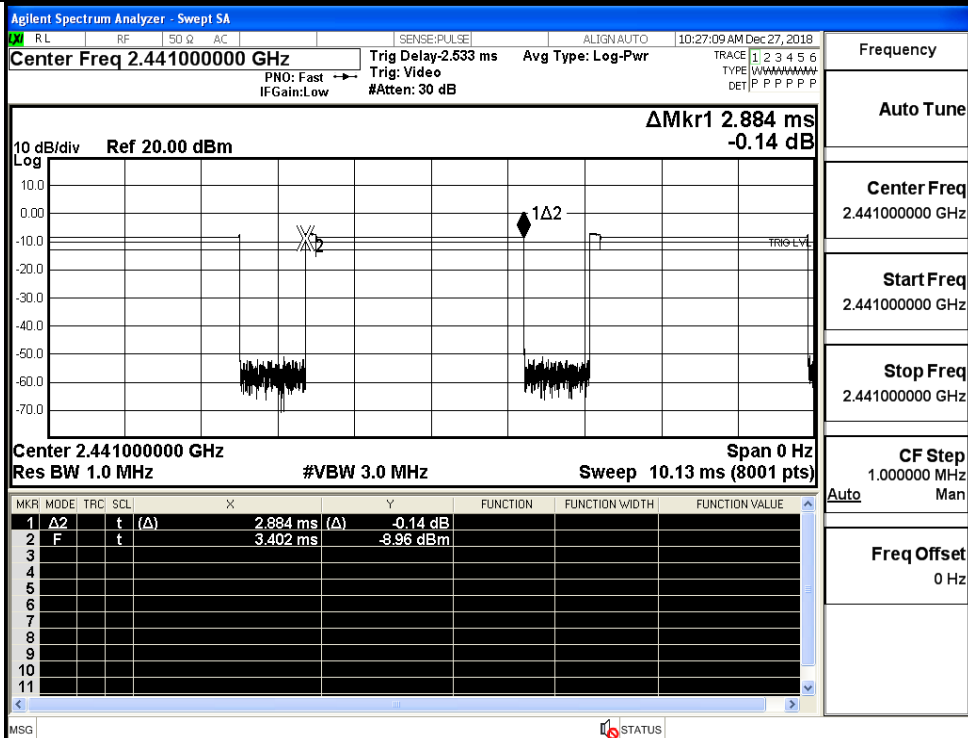
GFSK_DH5/HCH



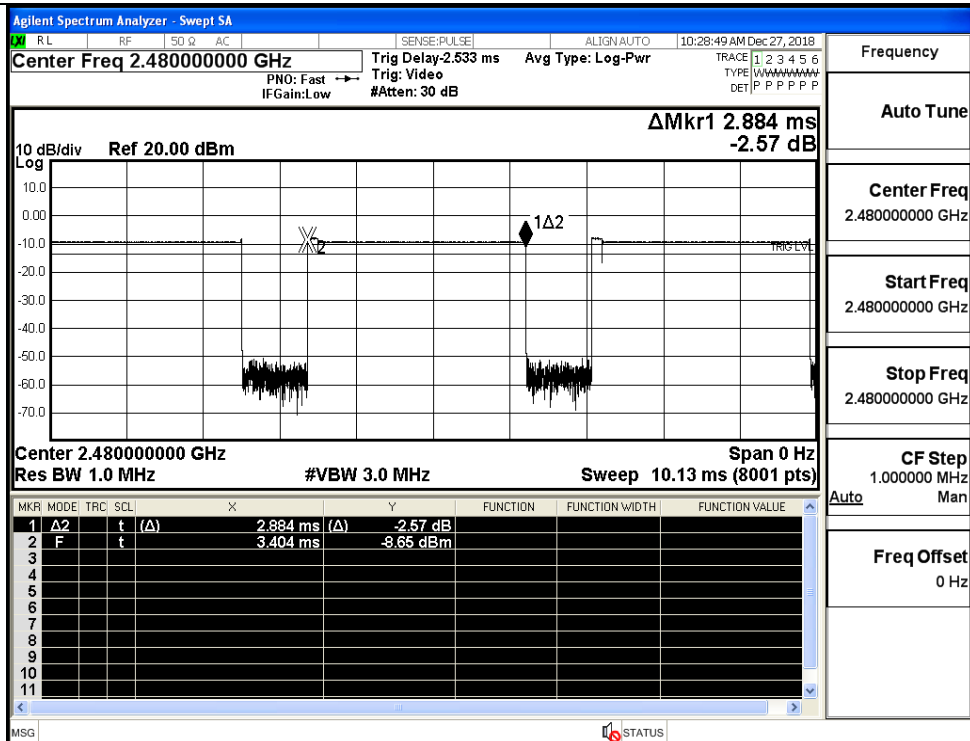
$\pi/4$ DQPSK
_2DH5/LCH



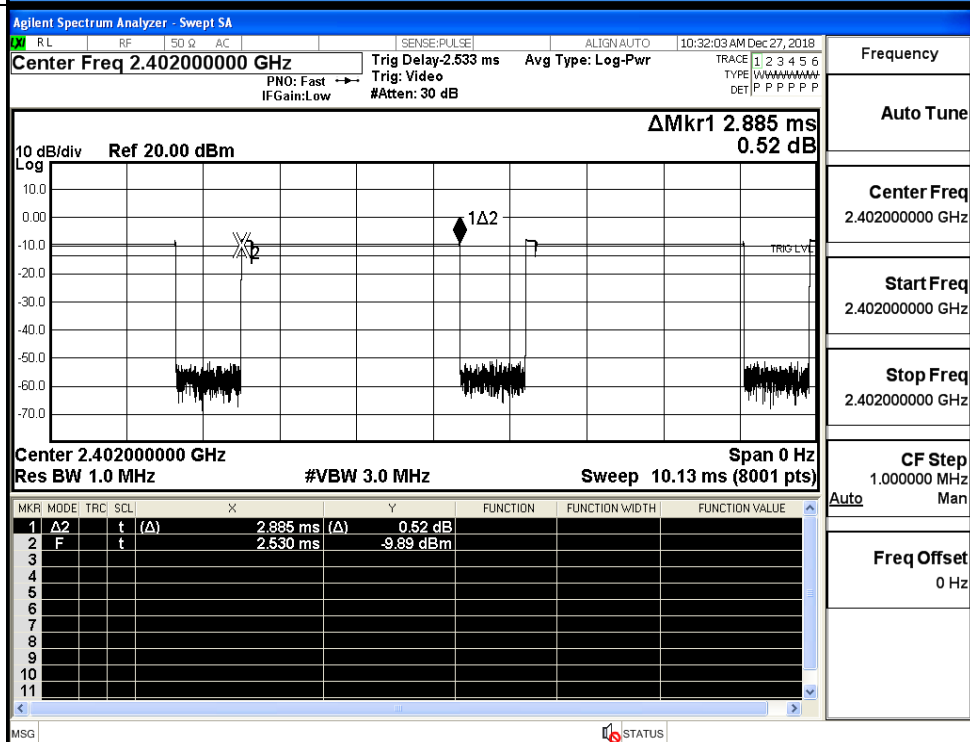
$\pi/4$ DQPSK
_2DH5/MCH



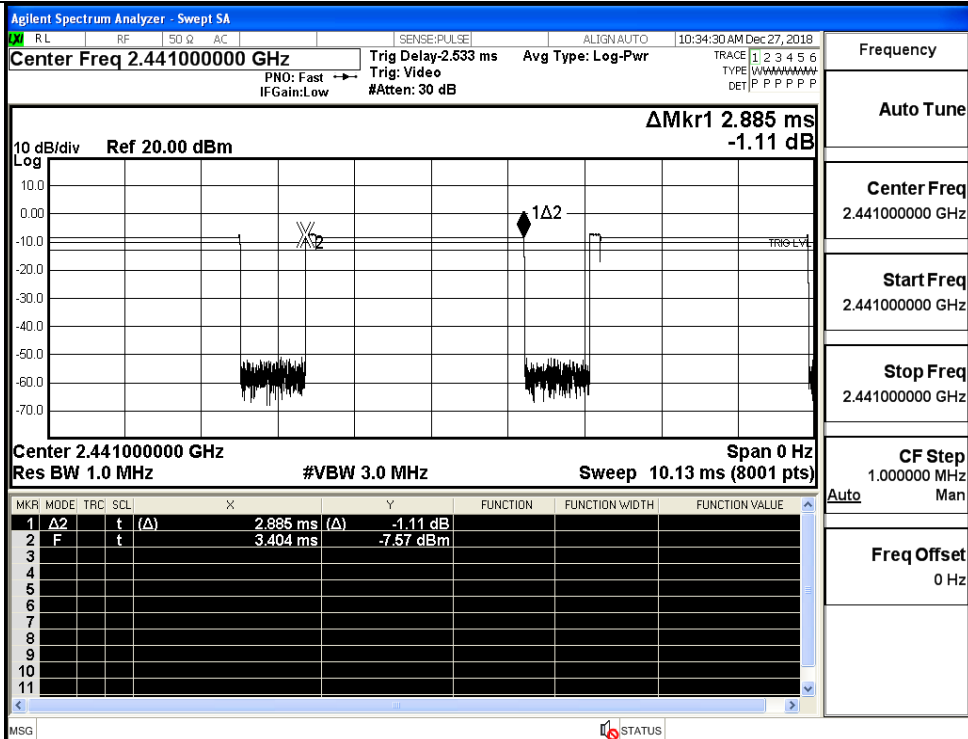
$\pi/4$ DQPSK
_2DH5/HCH



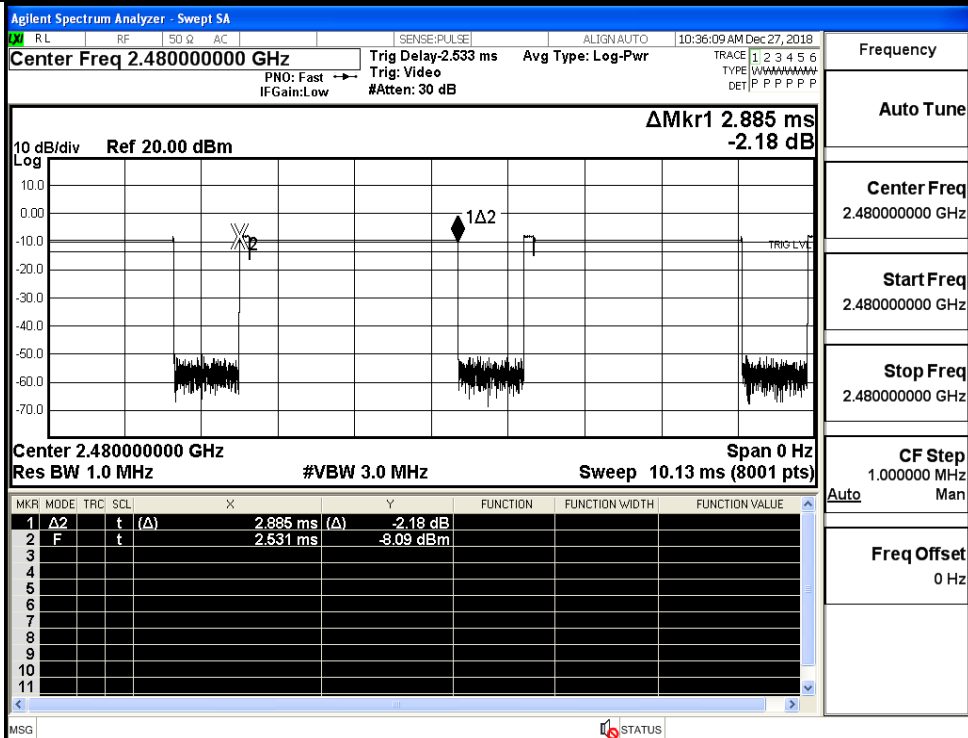
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

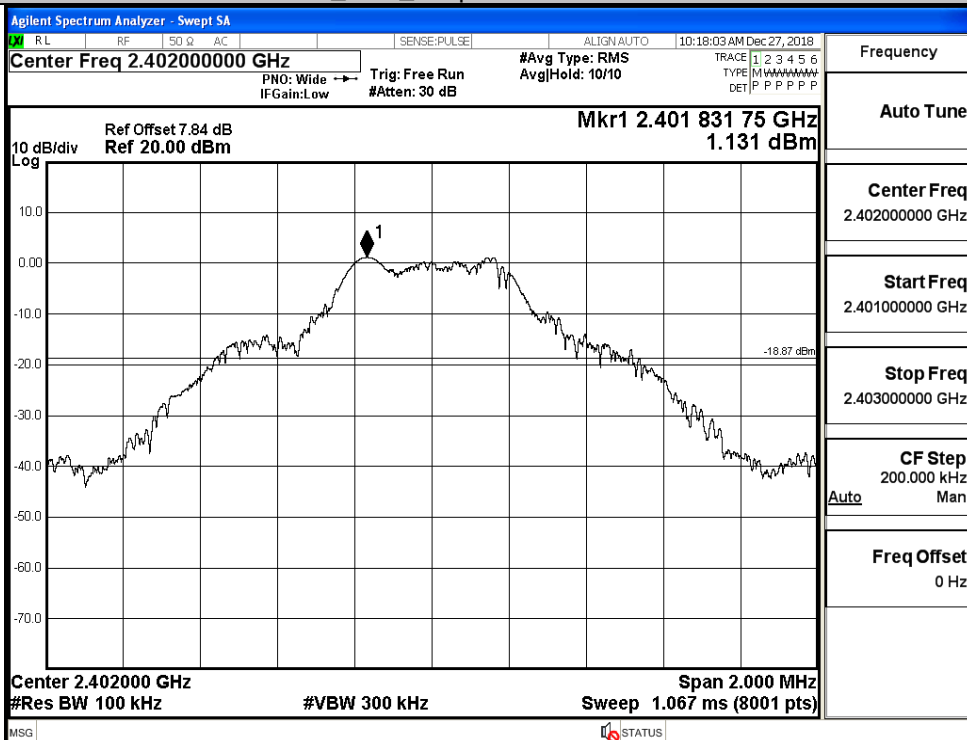


A.6 RF Conducted Spurious Emissions

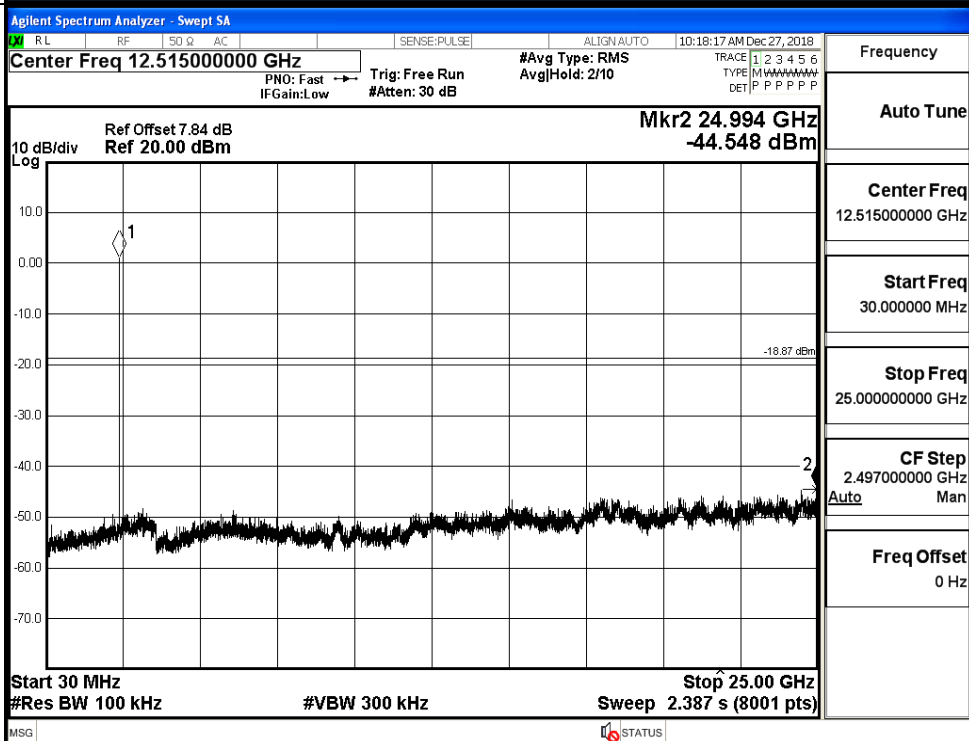
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.131	-44.548	-18.869	PASS
	MCH	1.827	-45.104	-18.173	PASS
	HCH	1.337	-44.775	-18.663	PASS
$\pi/4$ DQPSK	LCH	-0.298	-44.891	-20.298	PASS
	MCH	0.423	-45.108	-19.577	PASS
	HCH	-0.103	-44.763	-20.103	PASS
8DPSK	LCH	-0.247	-44.762	-20.247	PASS
	MCH	0.537	-45.167	-19.463	PASS
	HCH	-0.286	-45.044	-20.286	PASS

GFSK_LCH_Graphs

Pref

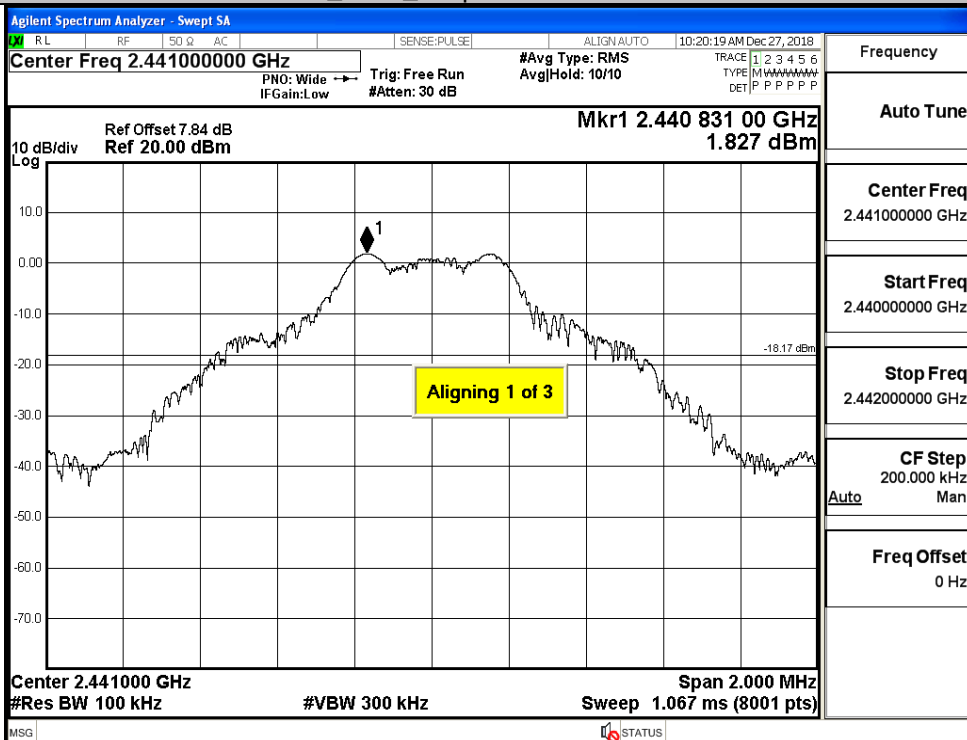


Puw

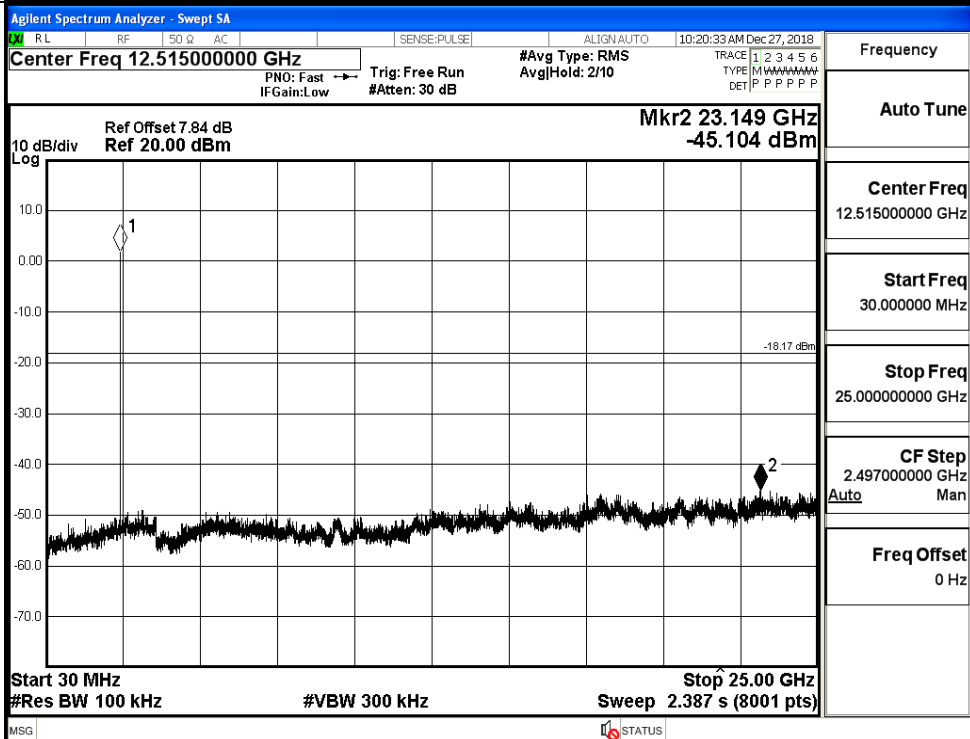


GFSK_MCH_Graphs

Pref

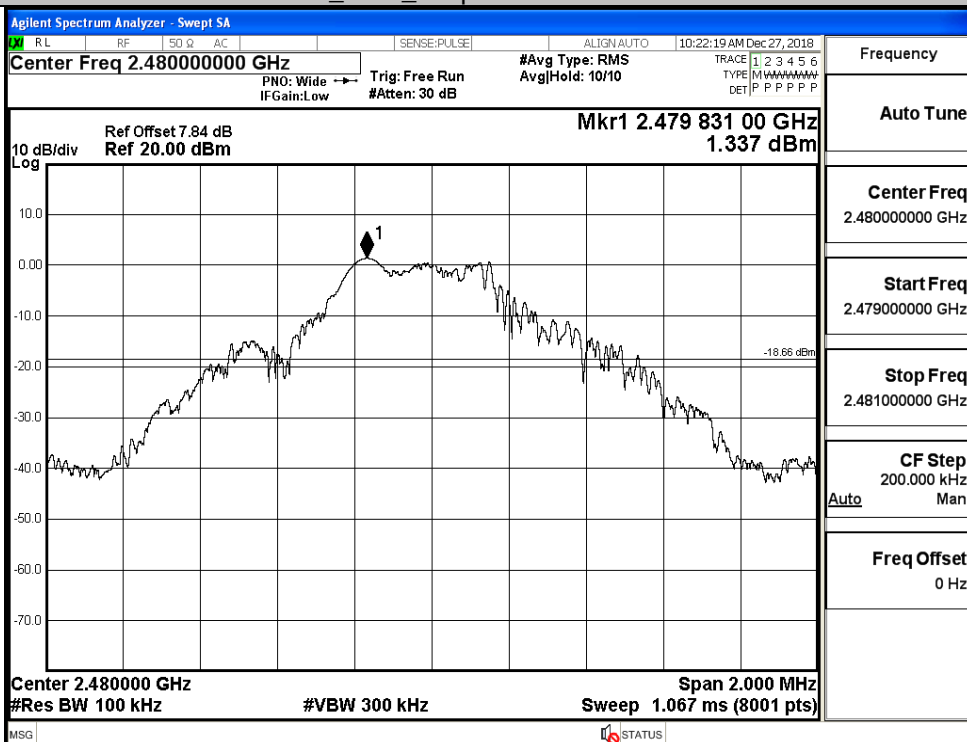


Puw

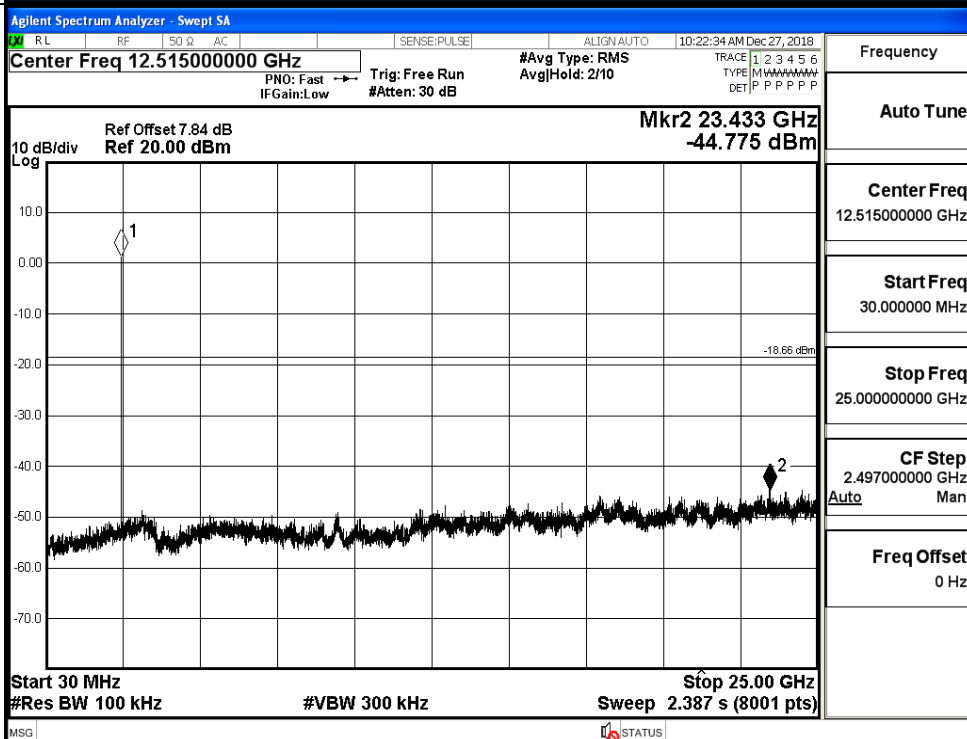


GFSK_HCH_Graphs

Pref

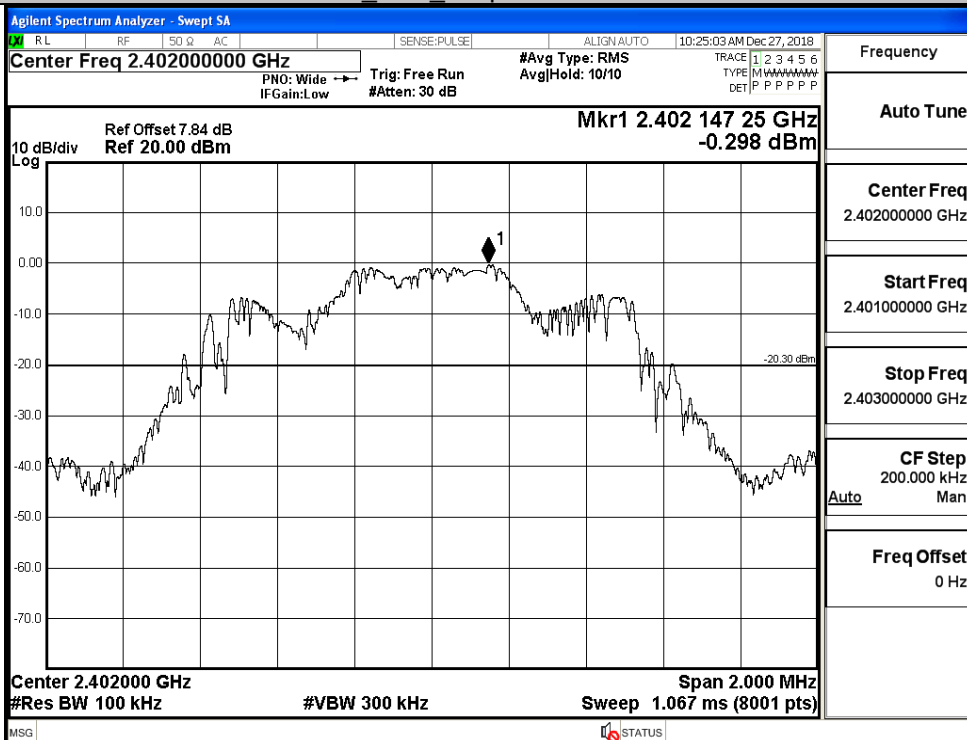


Puw

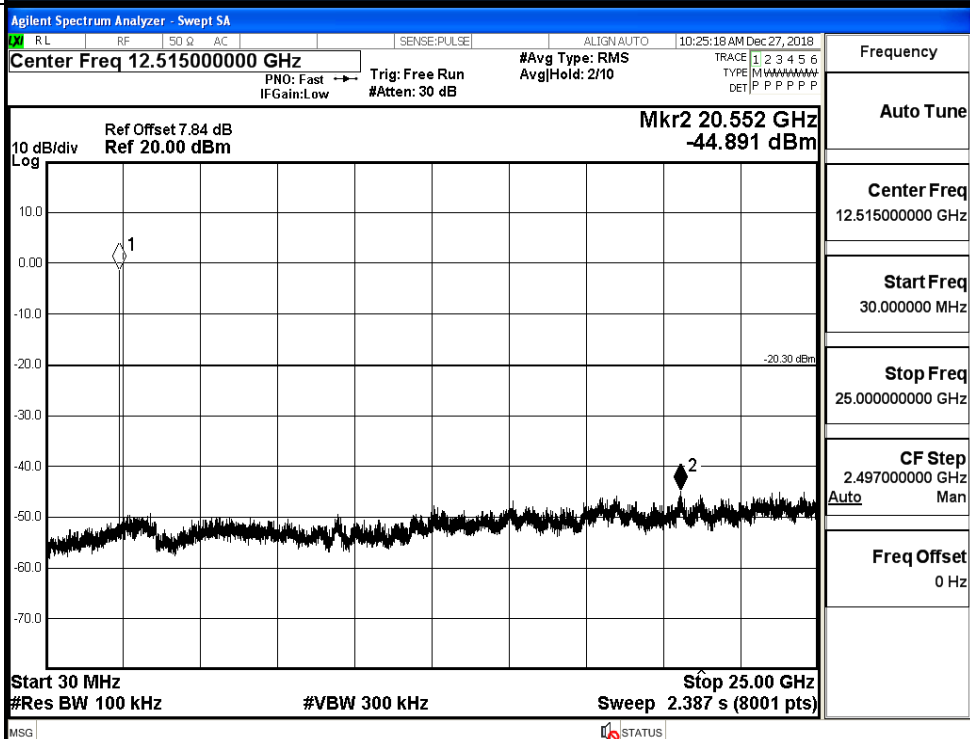


$\pi/4$ DQPSK LCH_Graphs

Pref

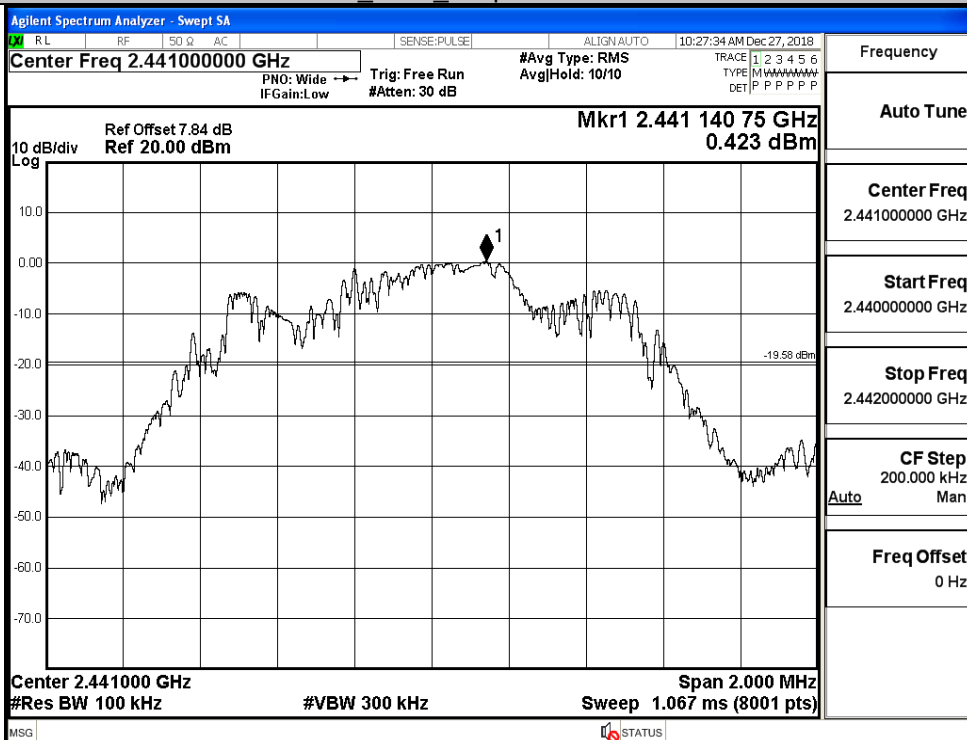


Puw

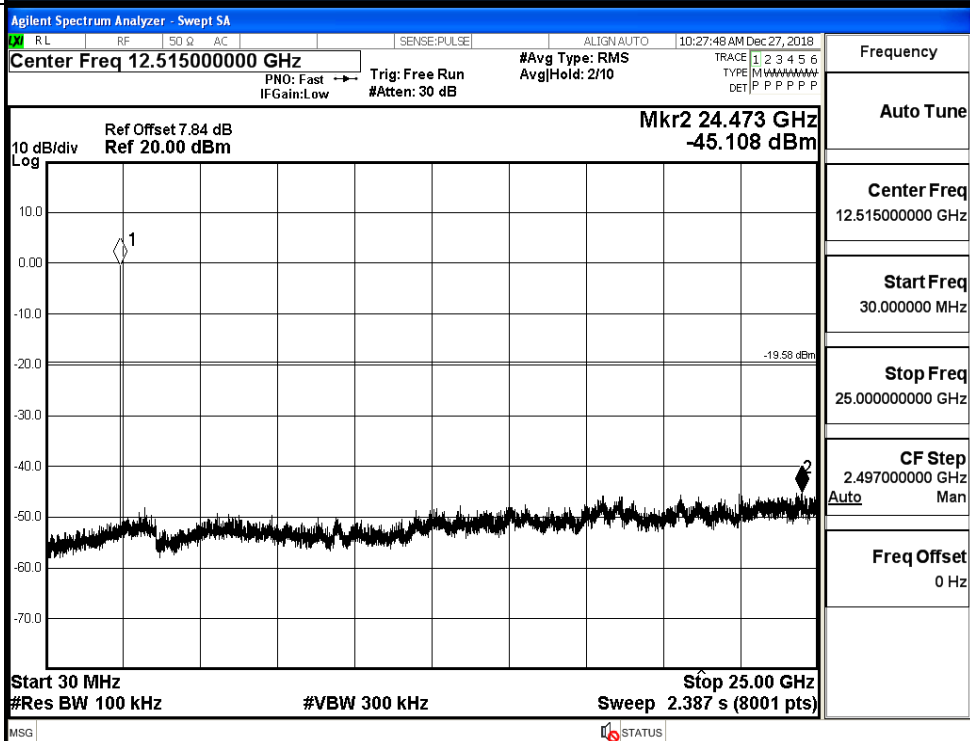


π /4DQPSK_MCH_Graphs

Pref

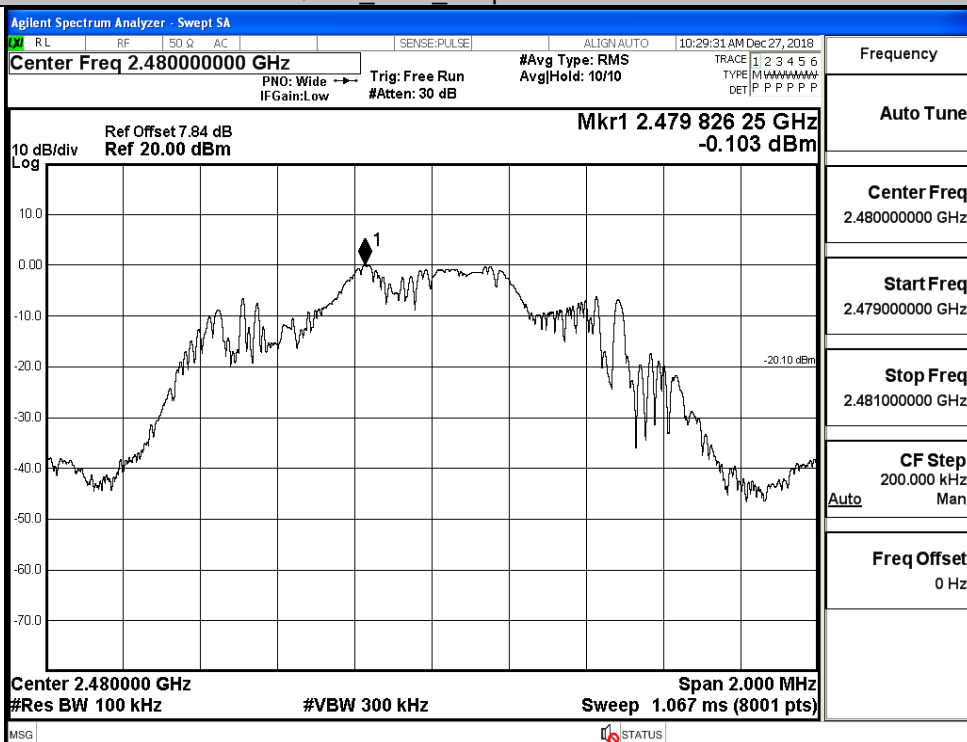


Puw

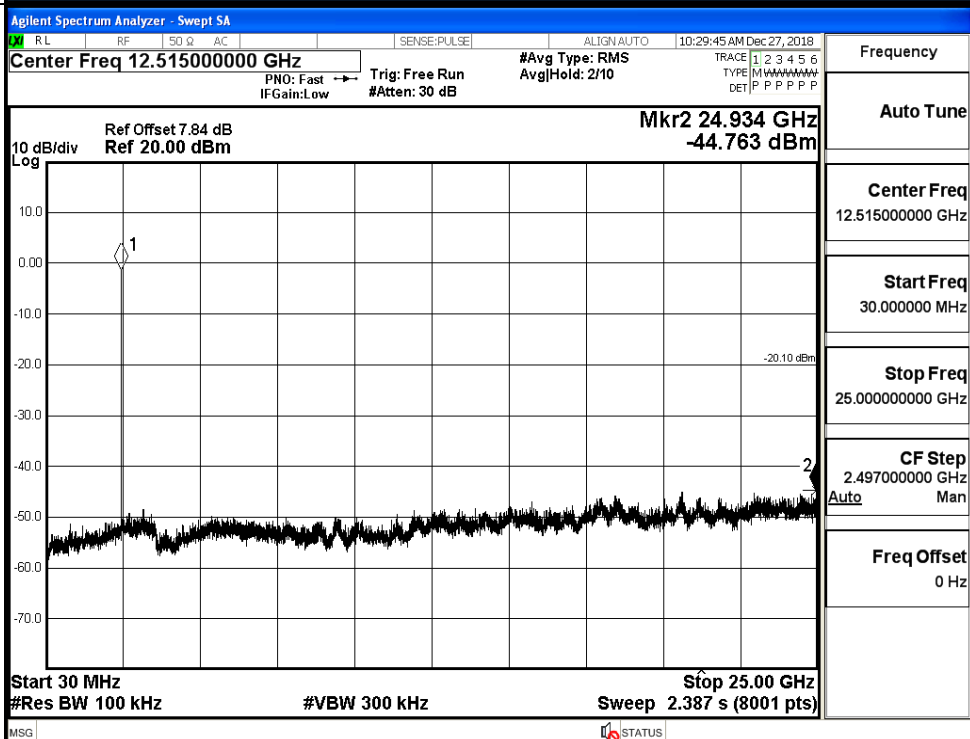


$\pi/4$ DQPSK_HCH_Graphs

Pref

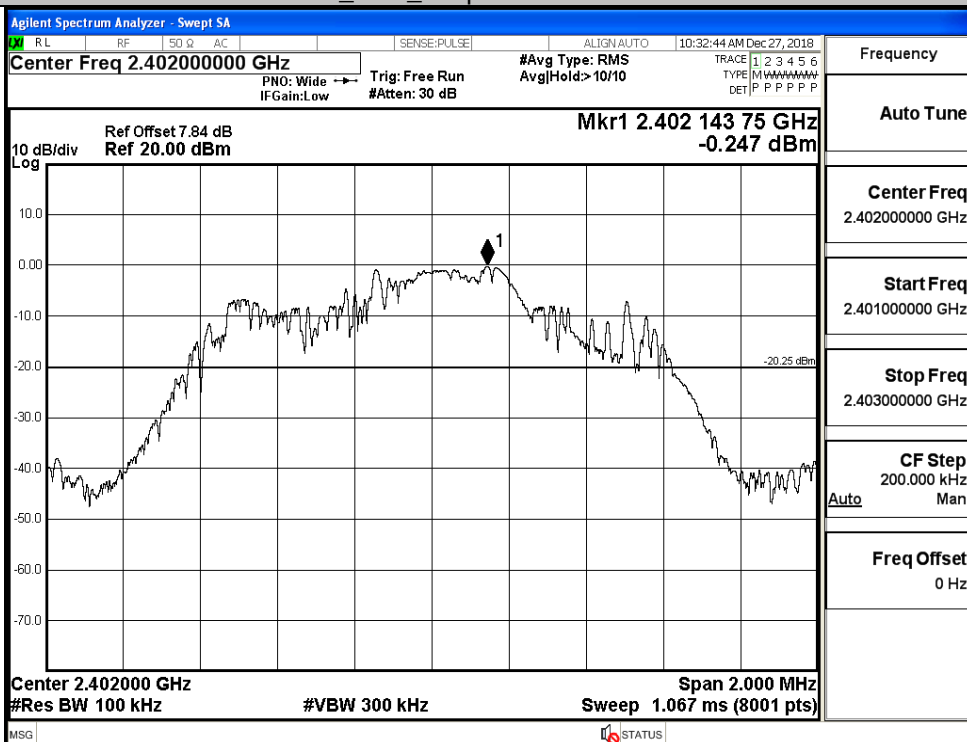


Puw

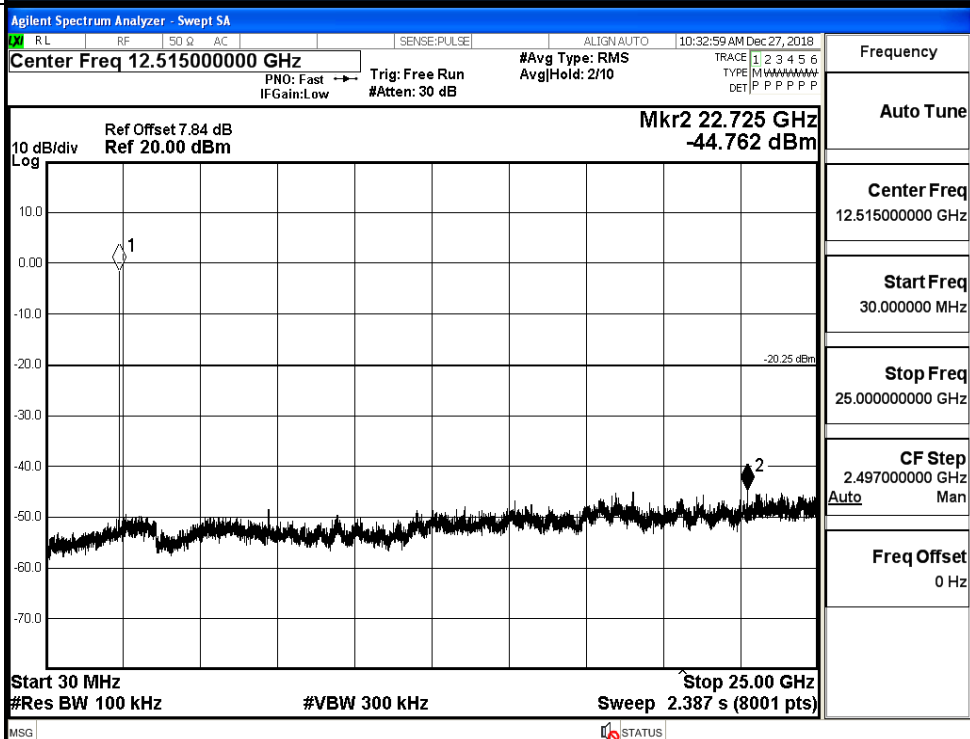


8DPSK_LCH_Graphs

Pref

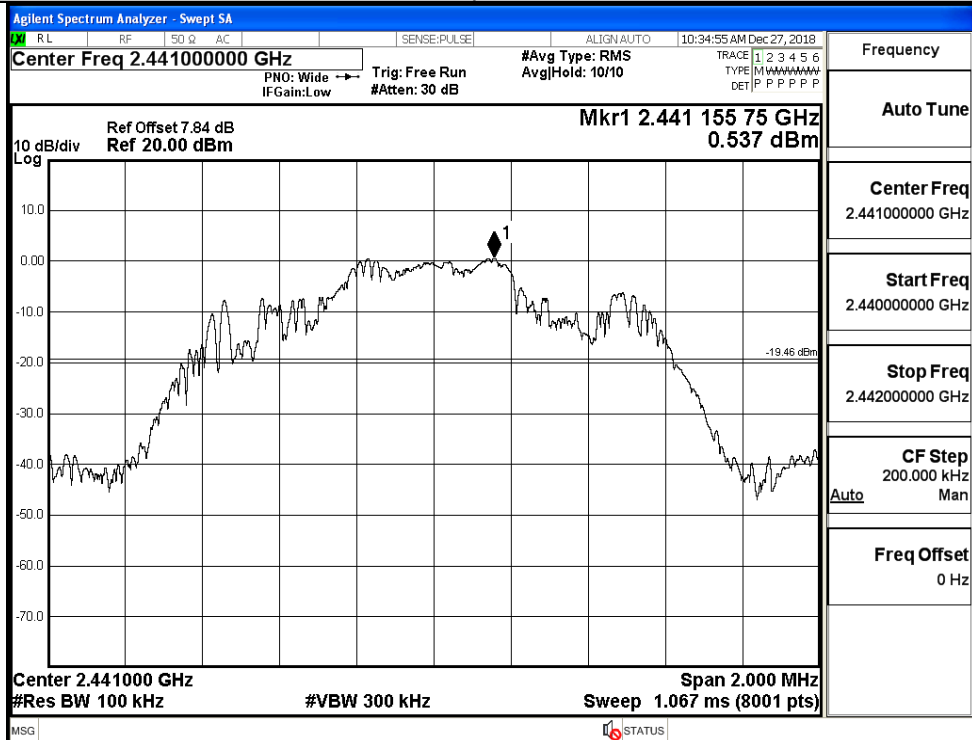


Puw

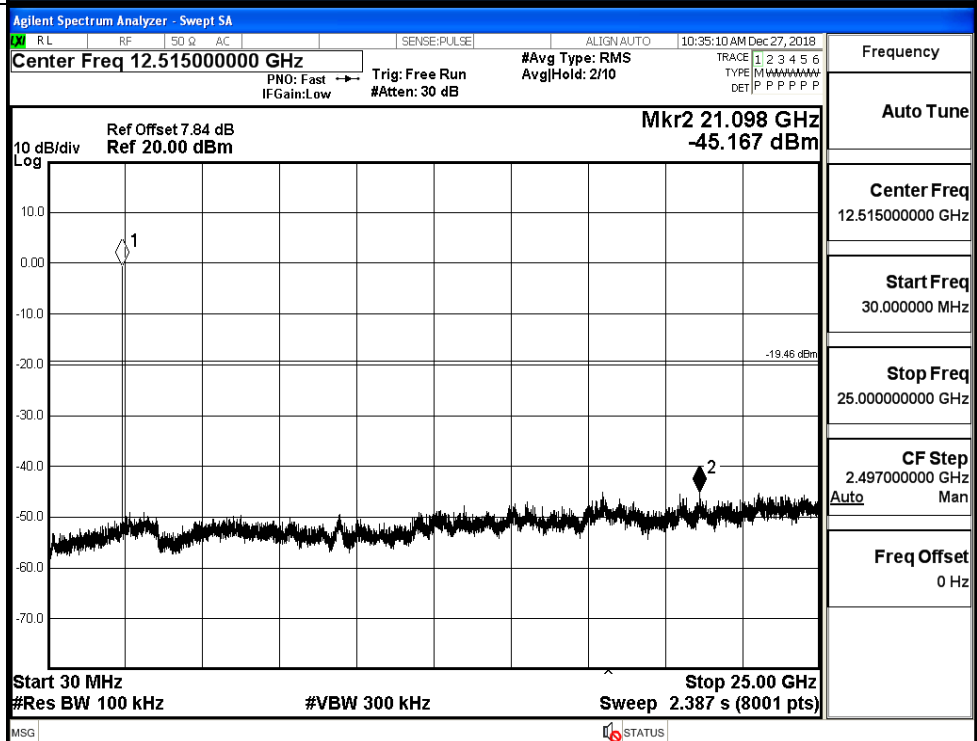


8DPSK_MCH_Graphs

Pref

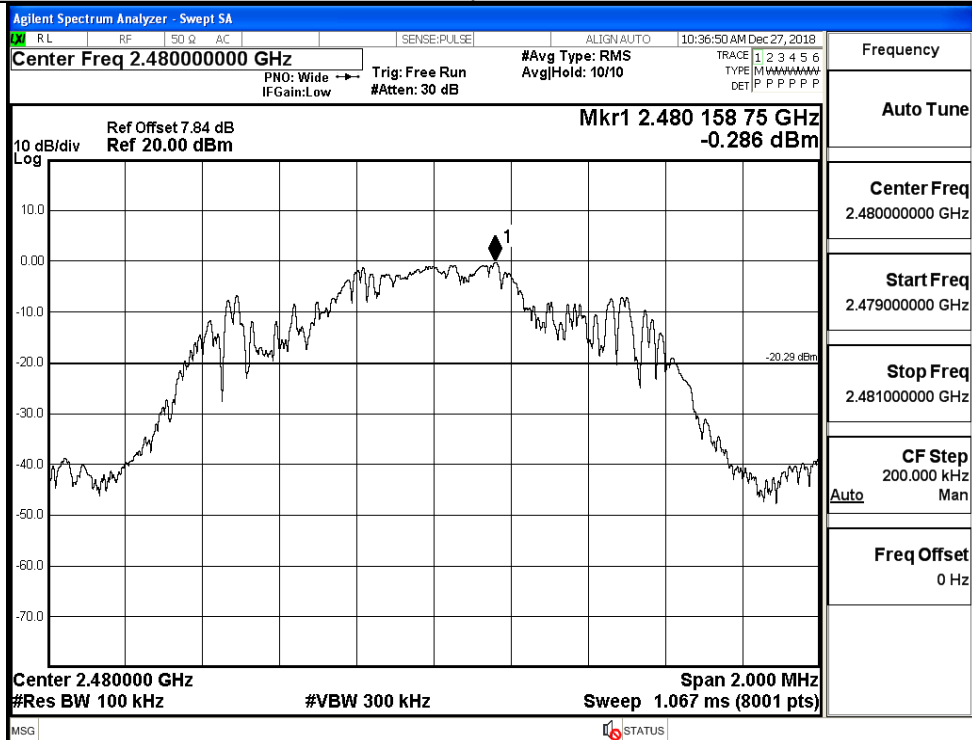


Puw

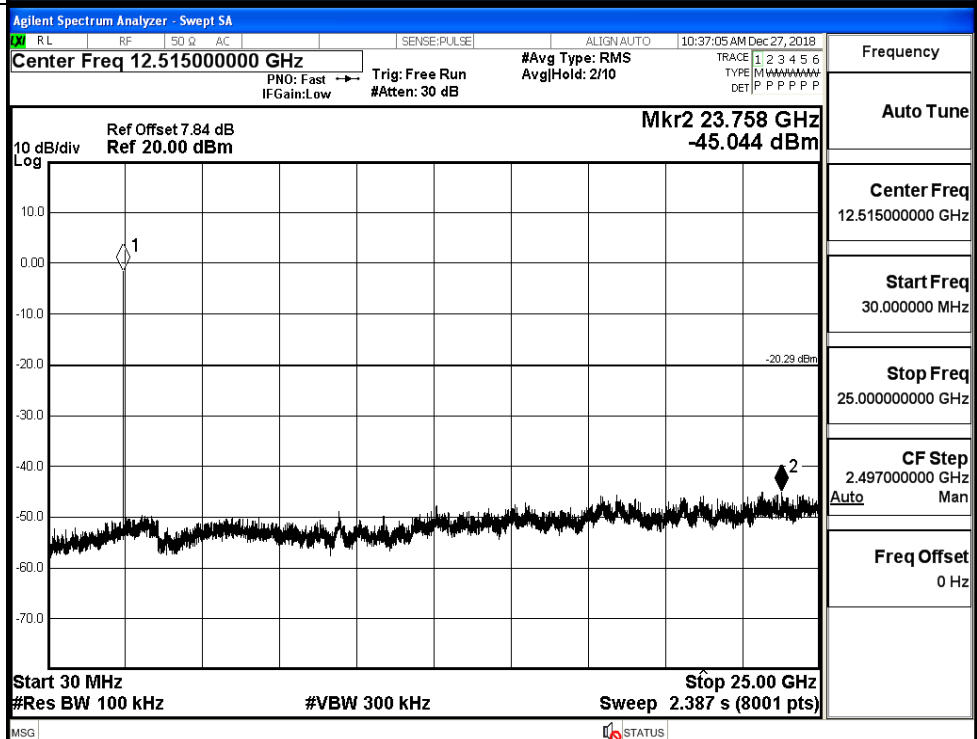


8DPSK_HCH_Graphs

Pref



Puw

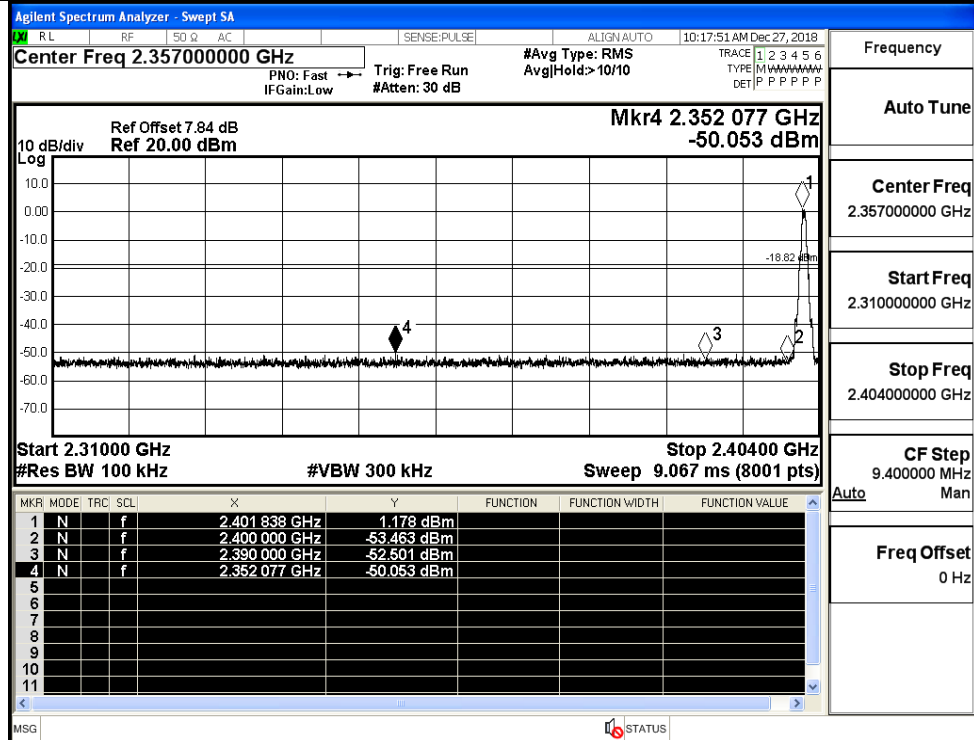


A.7 Band-edge for RF Conducted Emissions

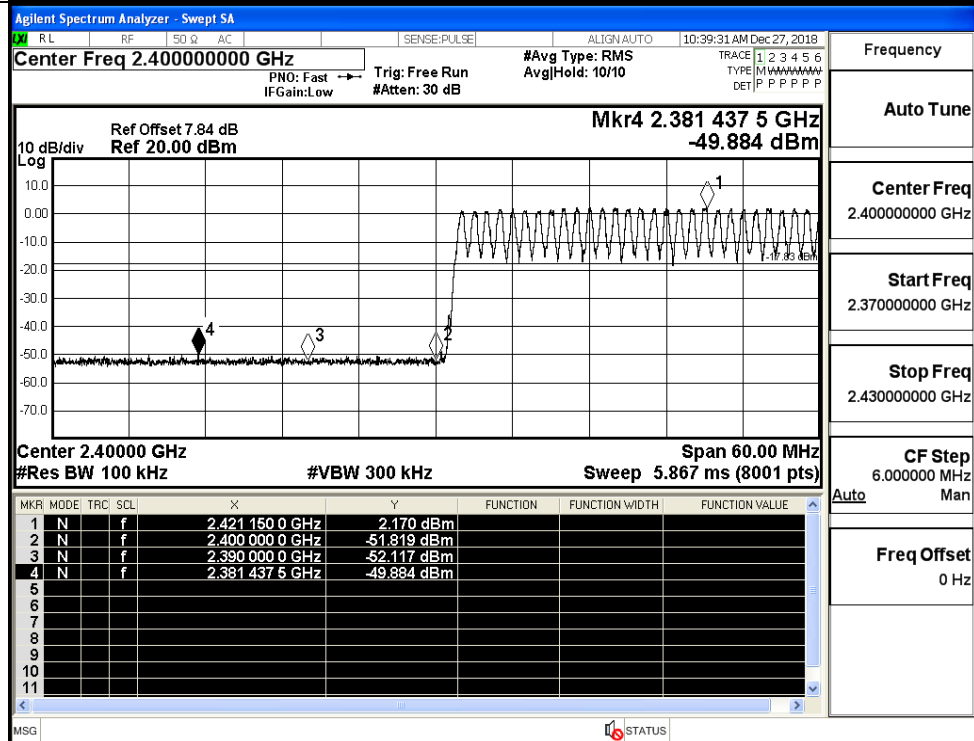
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.178	Off	-50.053	-18.82	PASS
			2.170	On	-49.884	-17.83	PASS
	HCH	2480	1.381	Off	-49.270	-18.62	PASS
			2.281	On	-49.525	-17.72	PASS
$\pi/4$ DQPSK	LCH	2402	-0.111	Off	-50.181	-20.11	PASS
			0.802	On	-49.714	-19.2	PASS
	HCH	2480	-0.195	Off	-50.418	-20.2	PASS
			0.956	On	-48.679	-19.04	PASS
8DPSK	LCH	2402	-0.299	Off	-49.462	-20.3	PASS
			0.980	On	-49.605	-19.02	PASS
	HCH	2480	-0.165	Off	-50.106	-20.17	PASS
			0.558	On	-49.122	-19.44	PASS

Test Graphs

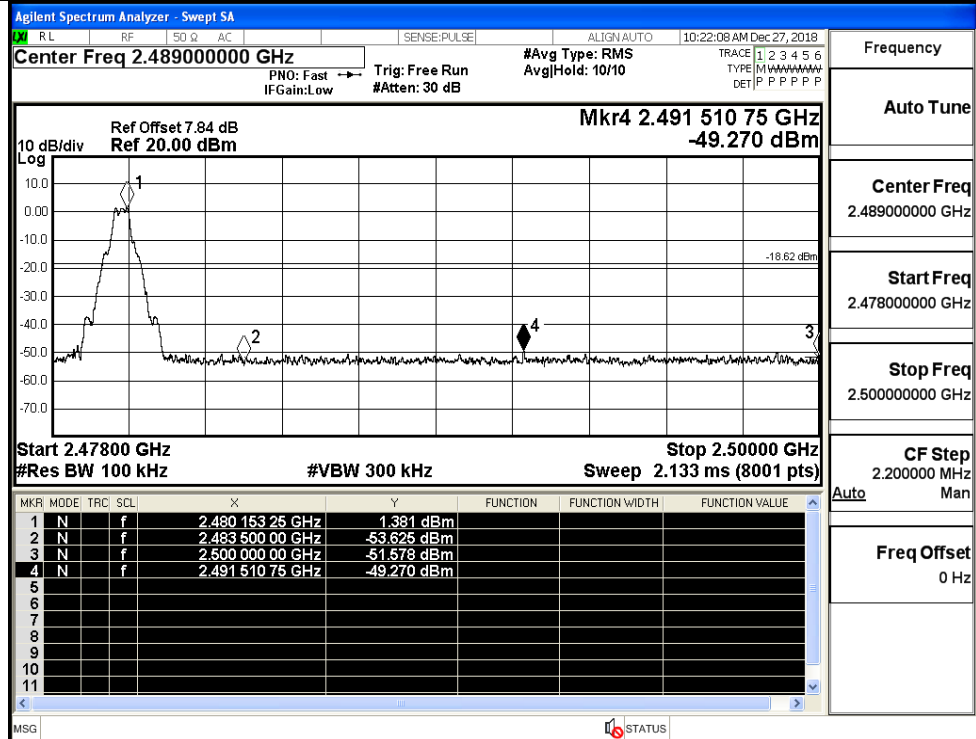
GFSK/LCH/No Hop



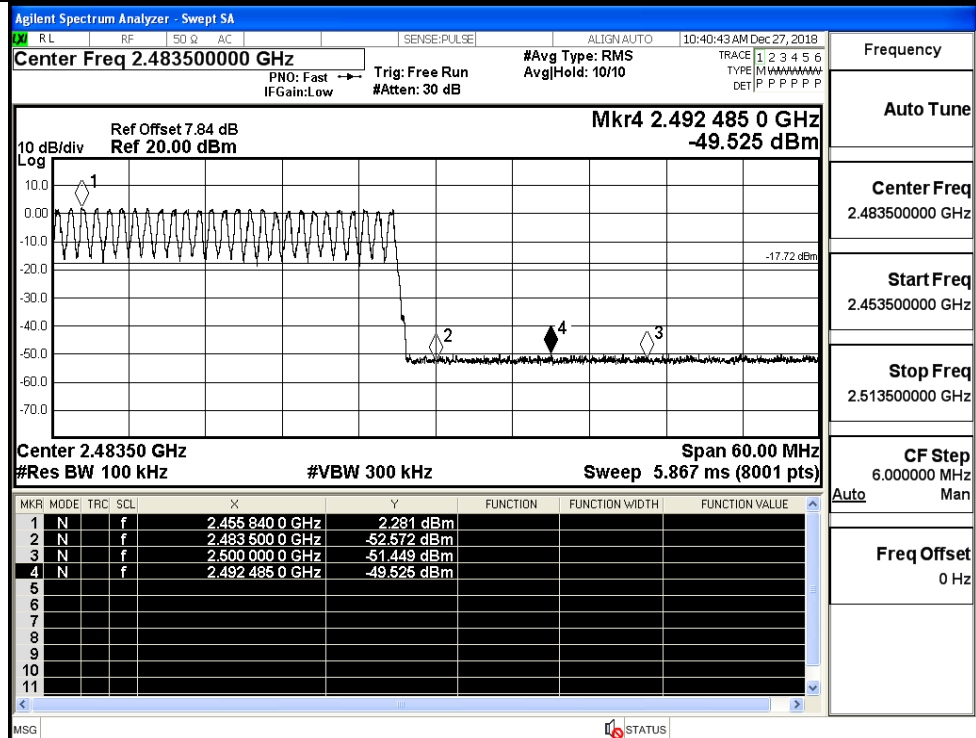
GFSK/LCH/Hop



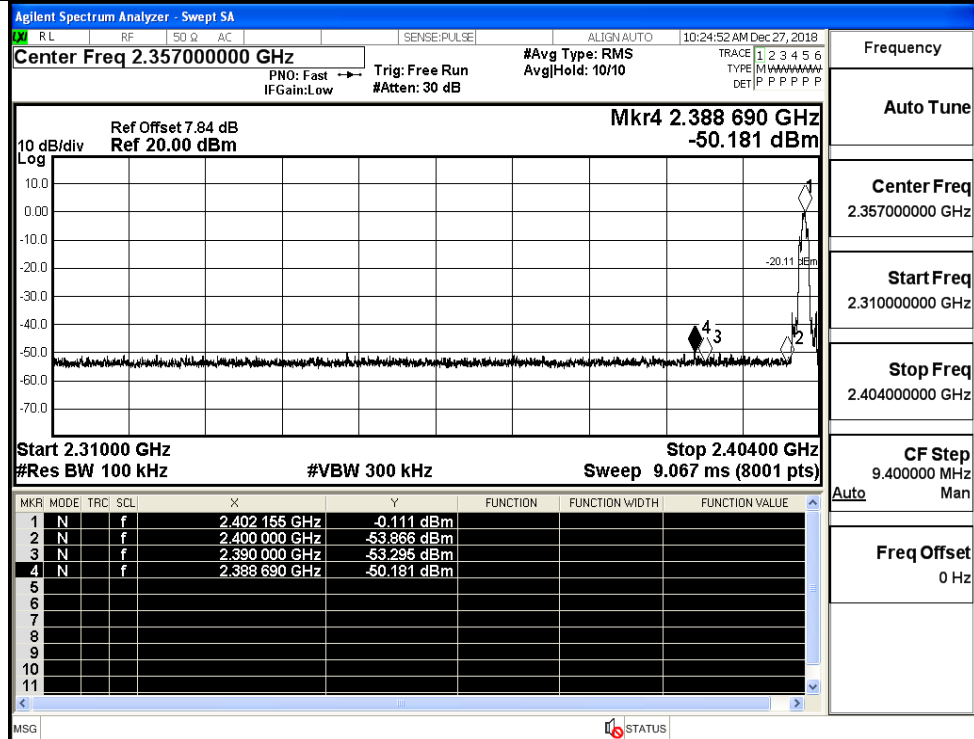
GFSK/HCH/No Hop



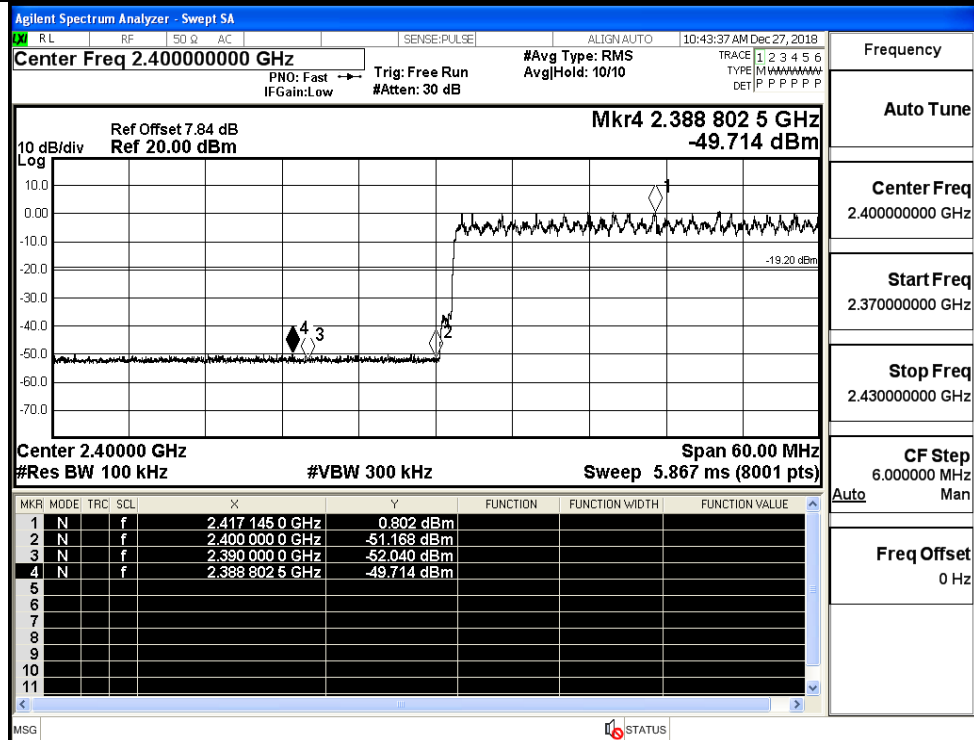
GFSK/HCH/Hop



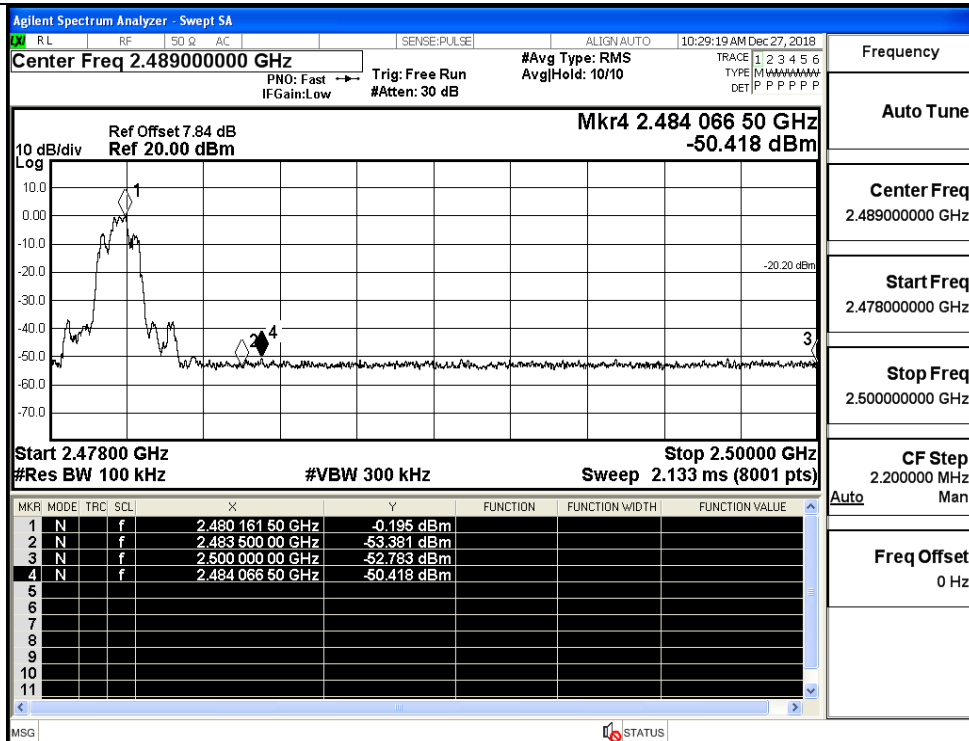
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

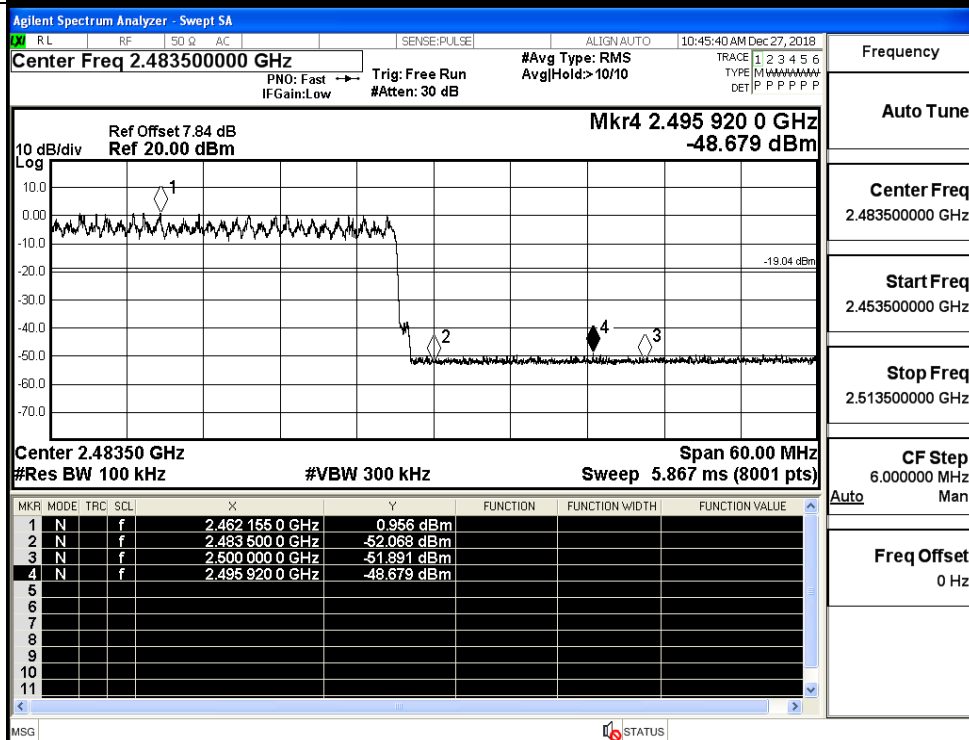


Frequency

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

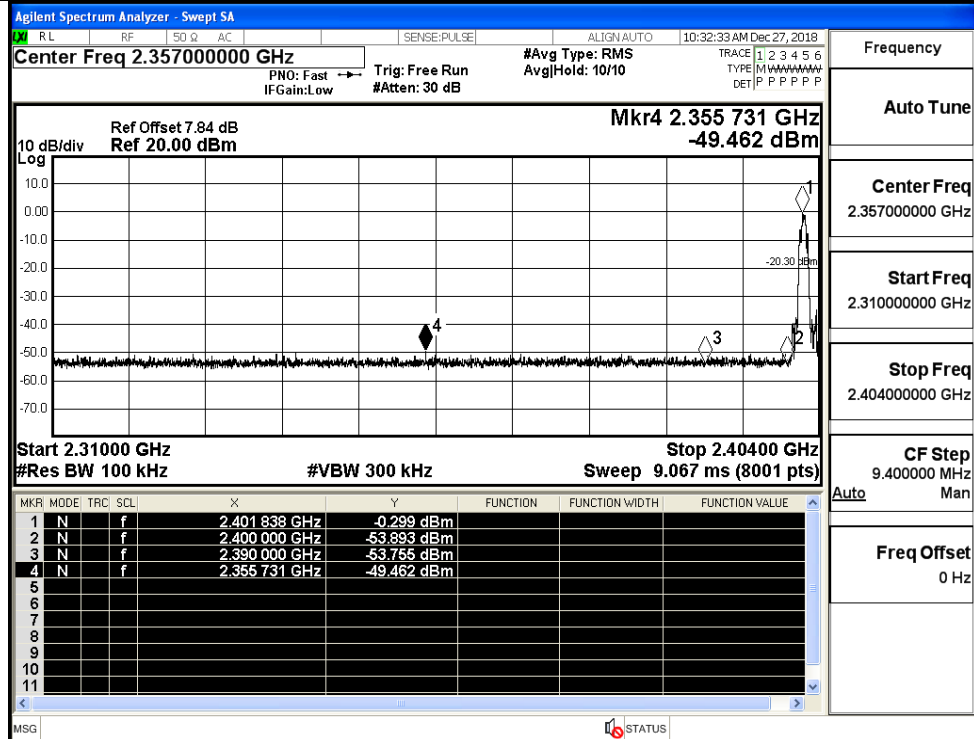


Frequency

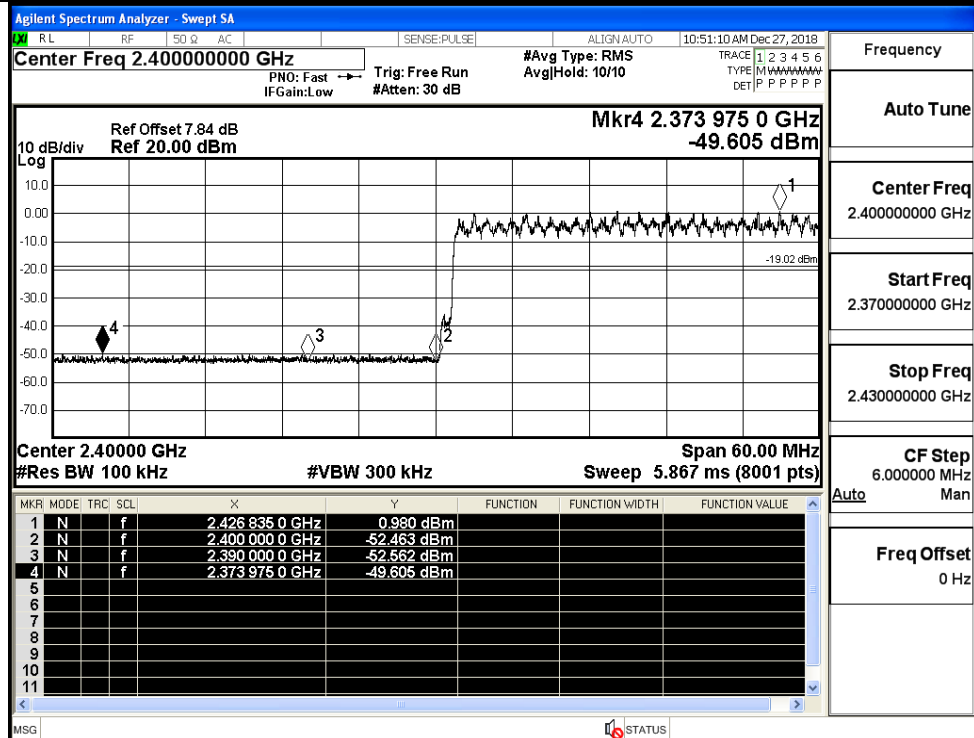
Auto Tune

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

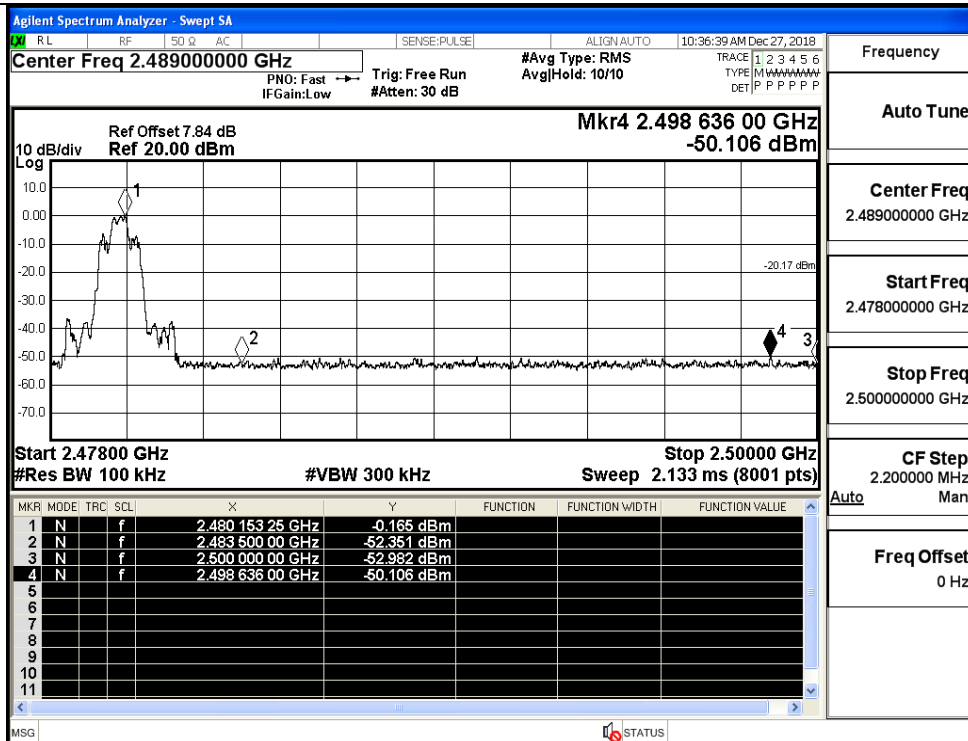
8DPSK/LCH/No Hop



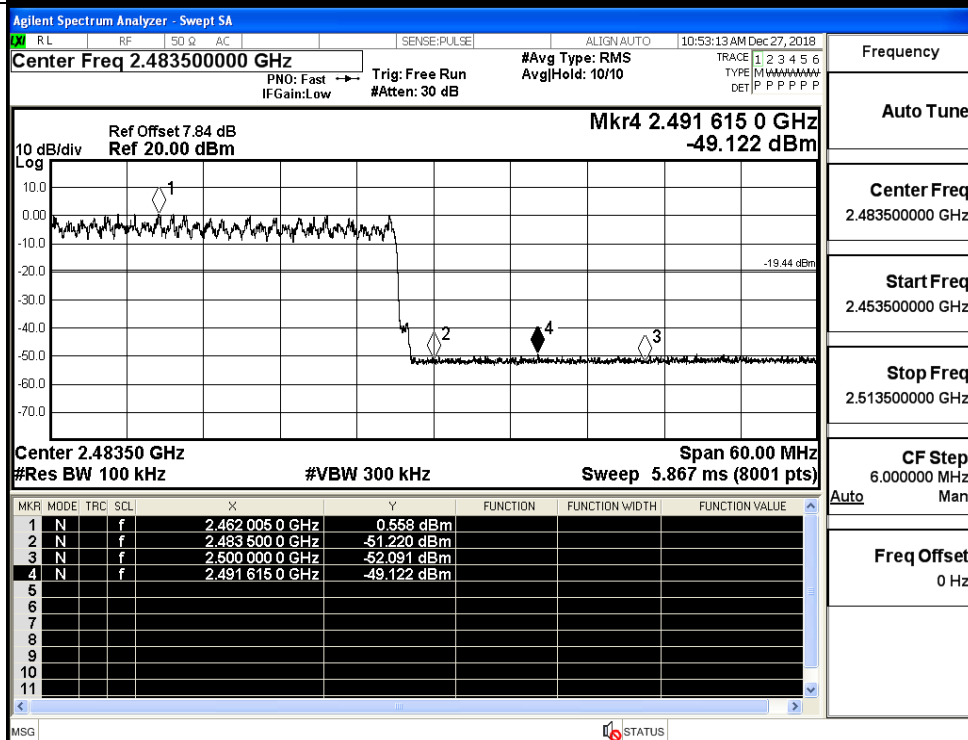
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



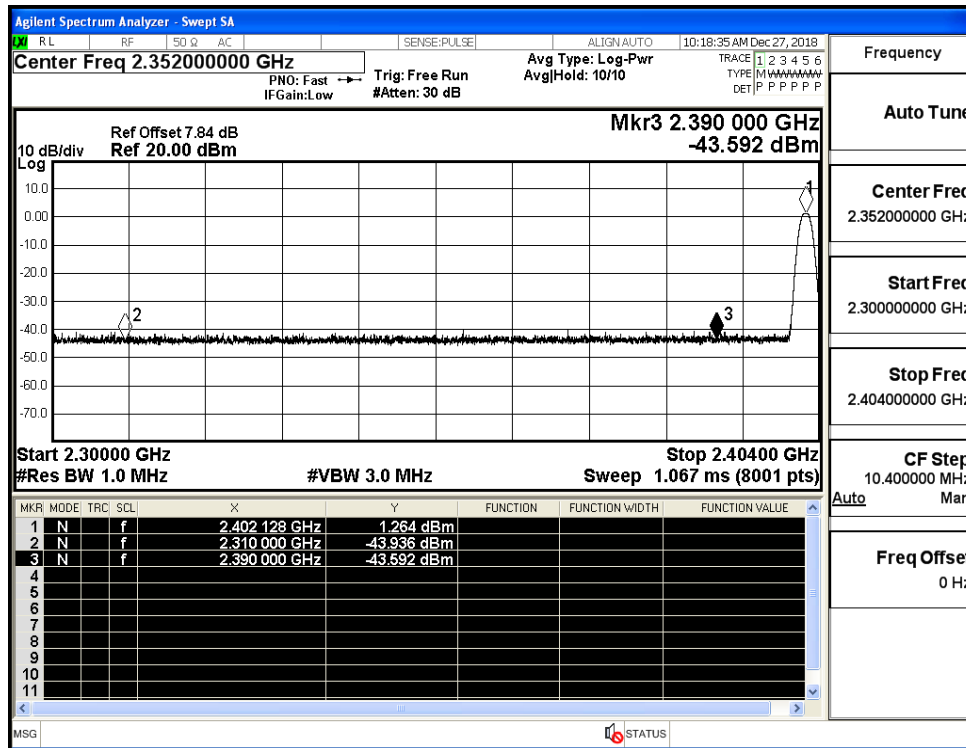
8DPSK/HCH/Hop



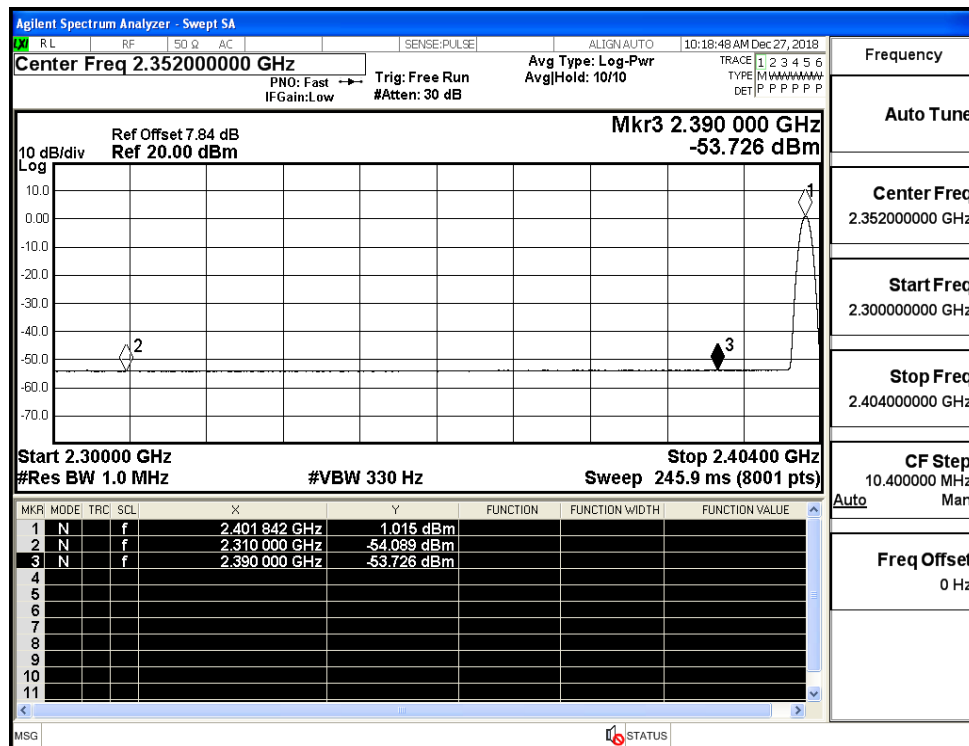
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.94	2.0	0	53.32	PEAK	74	PASS
	Off	2310.0	-54.09	2.0	0	43.17	AV	54	PASS
	Off	2390.0	-43.59	2.0	0	53.67	PEAK	74	PASS
	Off	2390.0	-53.73	2.0	0	43.53	AV	54	PASS
	Off	2483.5	-42.98	2.0	0	54.27	PEAK	74	PASS
	Off	2483.5	-53.49	2.0	0	43.77	AV	54	PASS
	Off	2500.0	-42.71	2.0	0	54.54	PEAK	74	PASS
	Off	2500.0	-53.33	2.0	0	43.92	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.85	2.0	0	53.41	PEAK	74	PASS
	Off	2310.0	-54.06	2.0	0	43.20	AV	54	PASS
	Off	2390.0	-43.74	2.0	0	53.52	PEAK	74	PASS
	Off	2390.0	-53.88	2.0	0	43.38	AV	54	PASS
	Off	2483.5	-42.75	2.0	0	54.51	PEAK	74	PASS
	Off	2483.5	-53.41	2.0	0	43.85	AV	54	PASS
	Off	2500.0	-43.74	2.0	0	53.52	PEAK	74	PASS
	Off	2500.0	-53.46	2.0	0	43.80	AV	54	PASS
8DPSK	Off	2310.0	-41.89	2.0	0	55.37	PEAK	74	PASS
	Off	2310.0	-54.05	2.0	0	43.21	AV	54	PASS
	Off	2390.0	-43.94	2.0	0	53.31	PEAK	74	PASS
	Off	2390.0	-53.53	2.0	0	43.73	AV	54	PASS
	Off	2483.5	-43.19	2.0	0	54.07	PEAK	74	PASS
	Off	2483.5	-53.48	2.0	0	43.78	AV	54	PASS
	Off	2500.0	-41.72	2.0	0	55.53	PEAK	74	PASS
	Off	2500.0	-53.36	2.0	0	43.90	AV	54	PASS

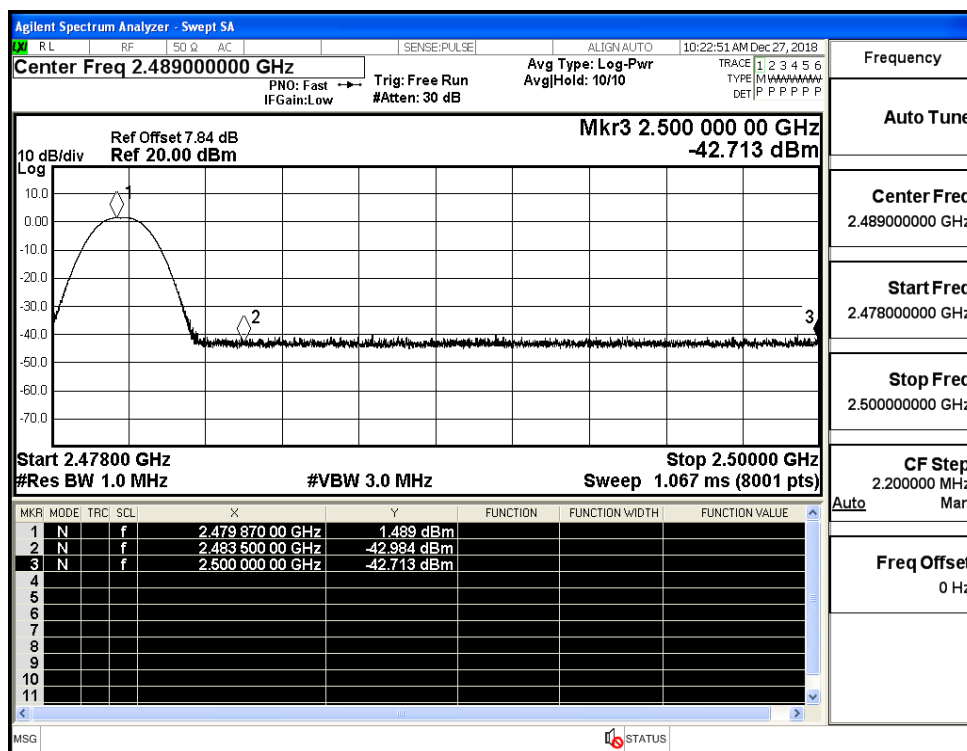
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



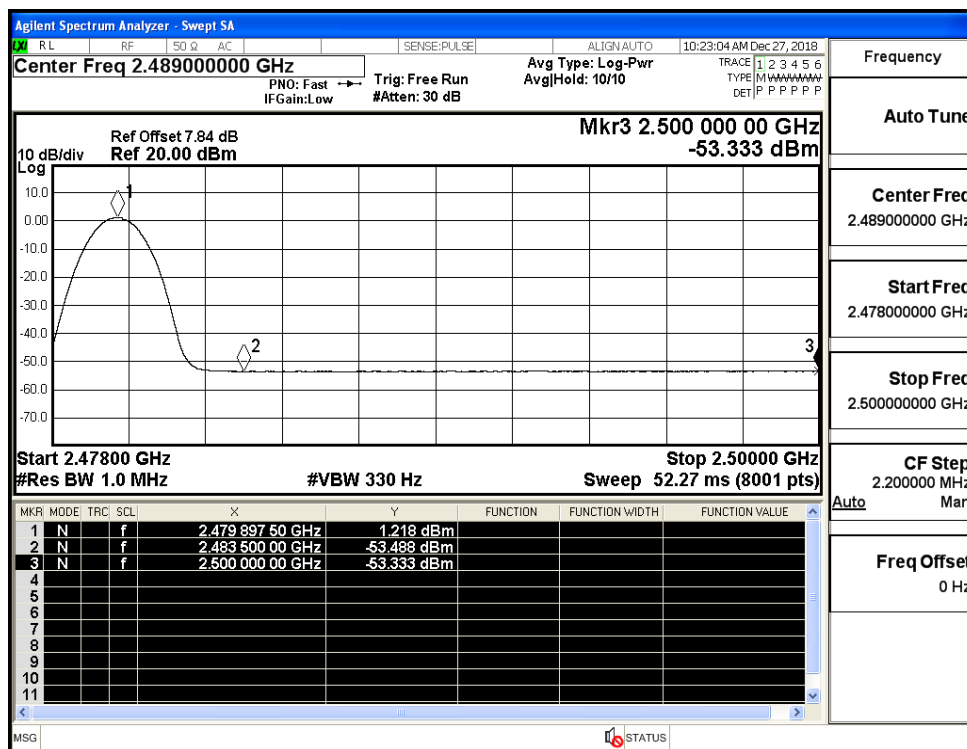
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

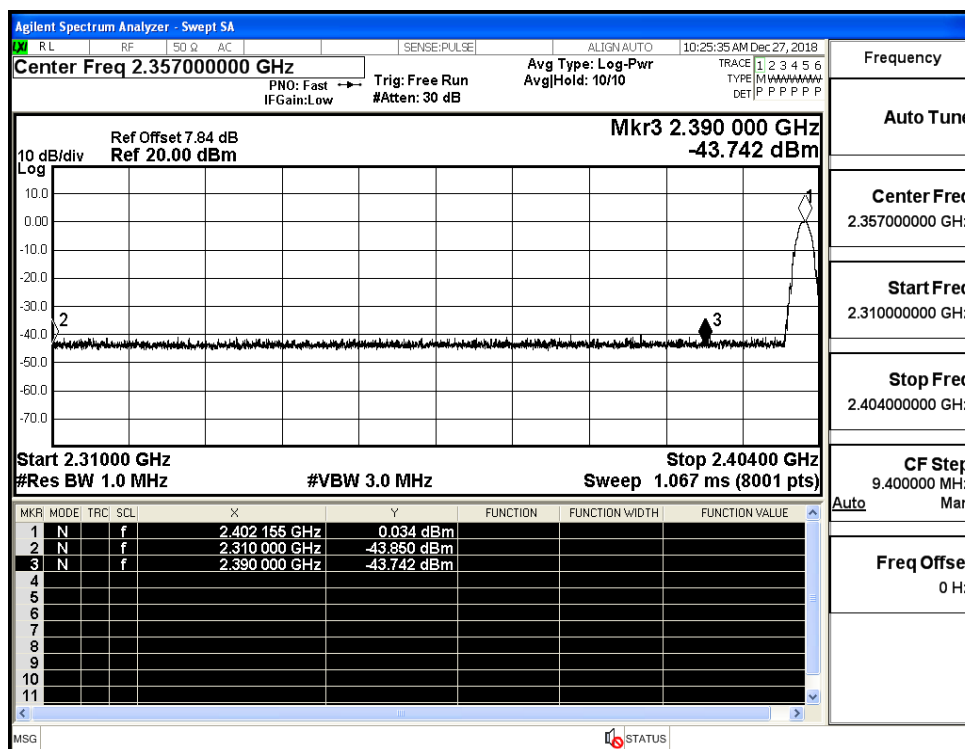
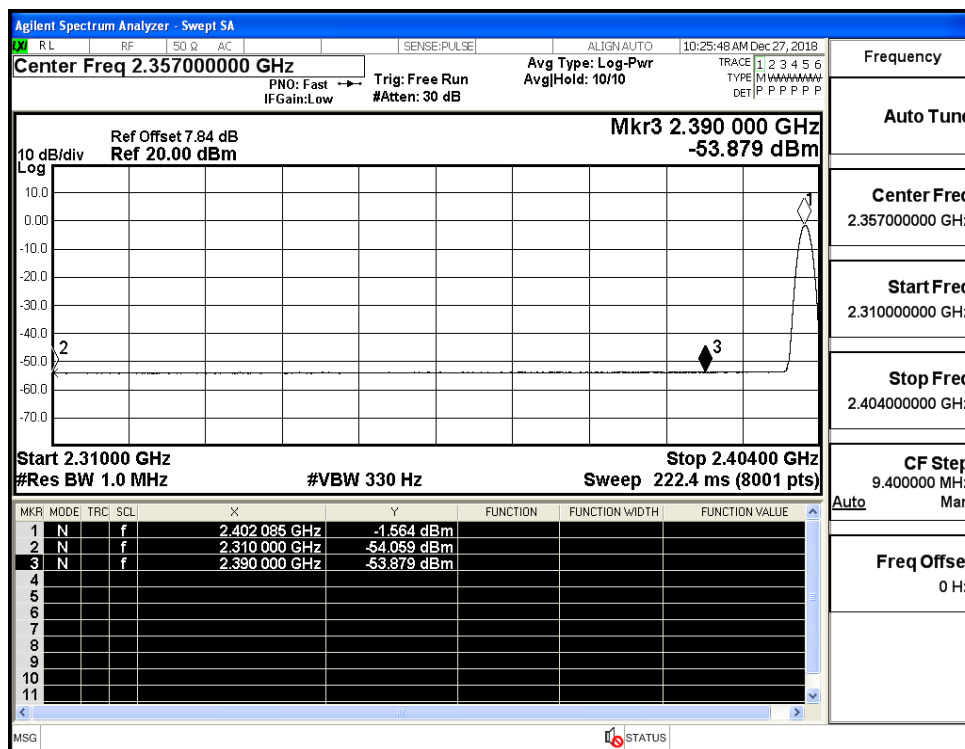


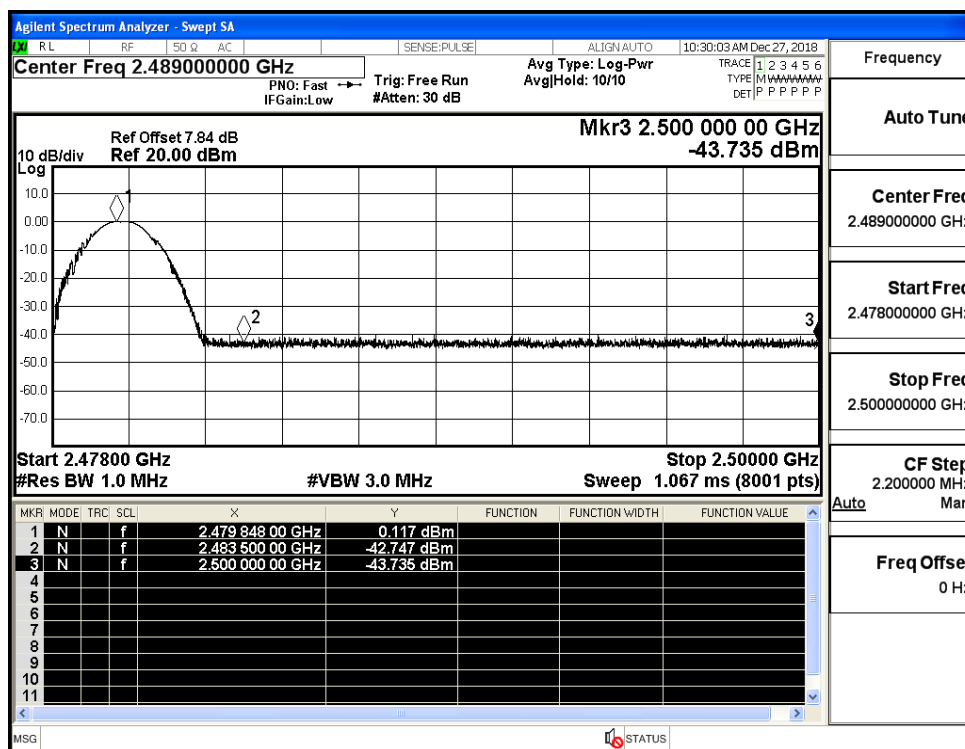
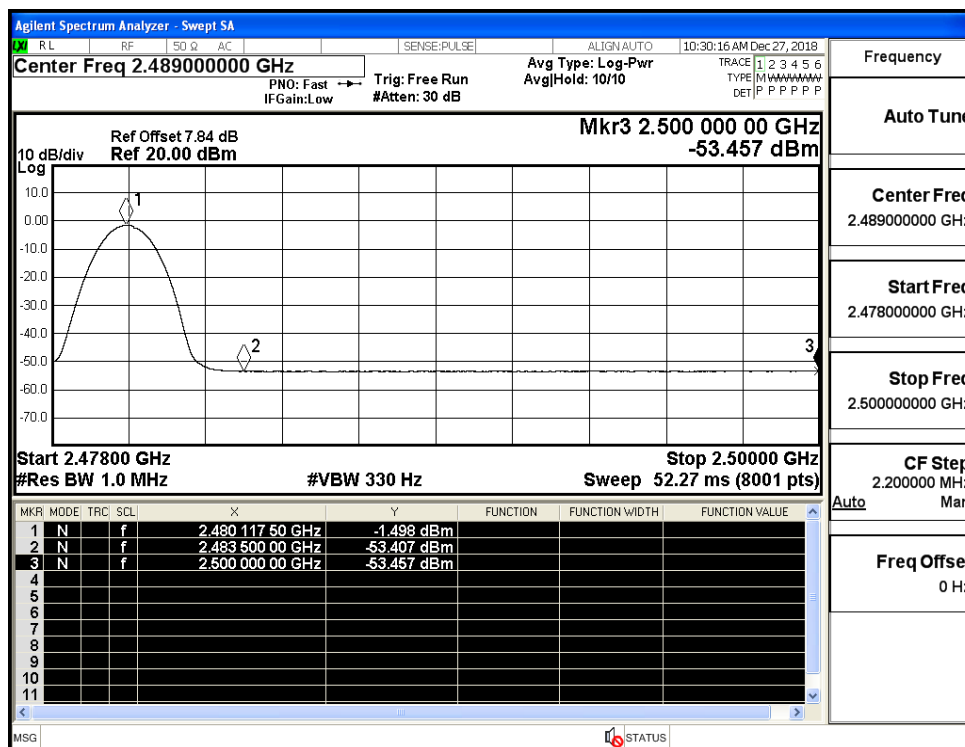
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



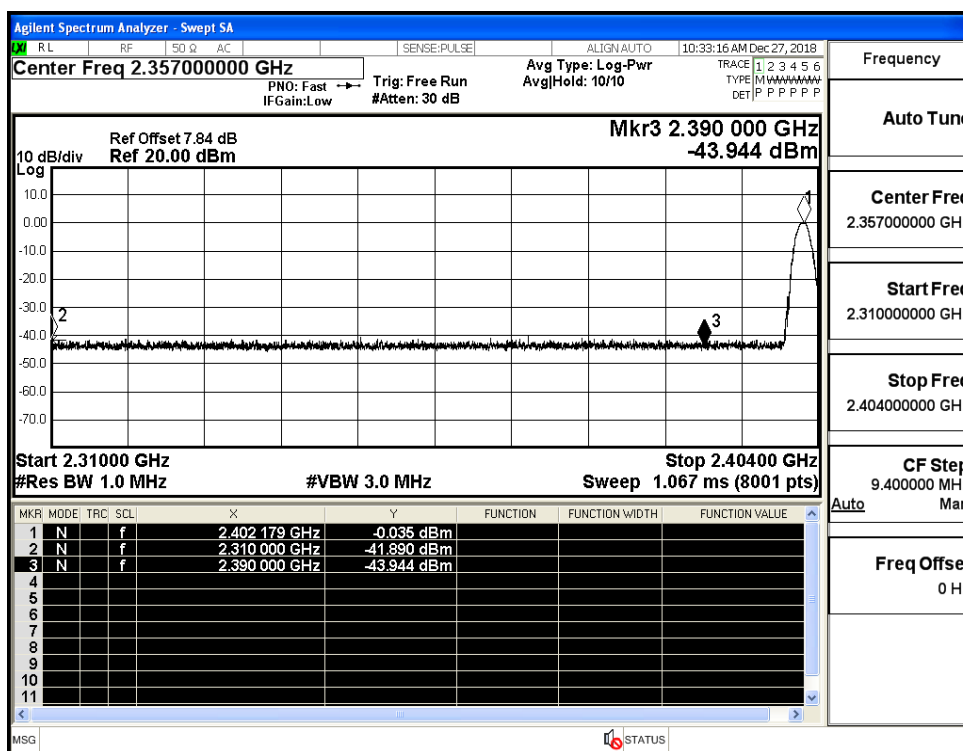
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



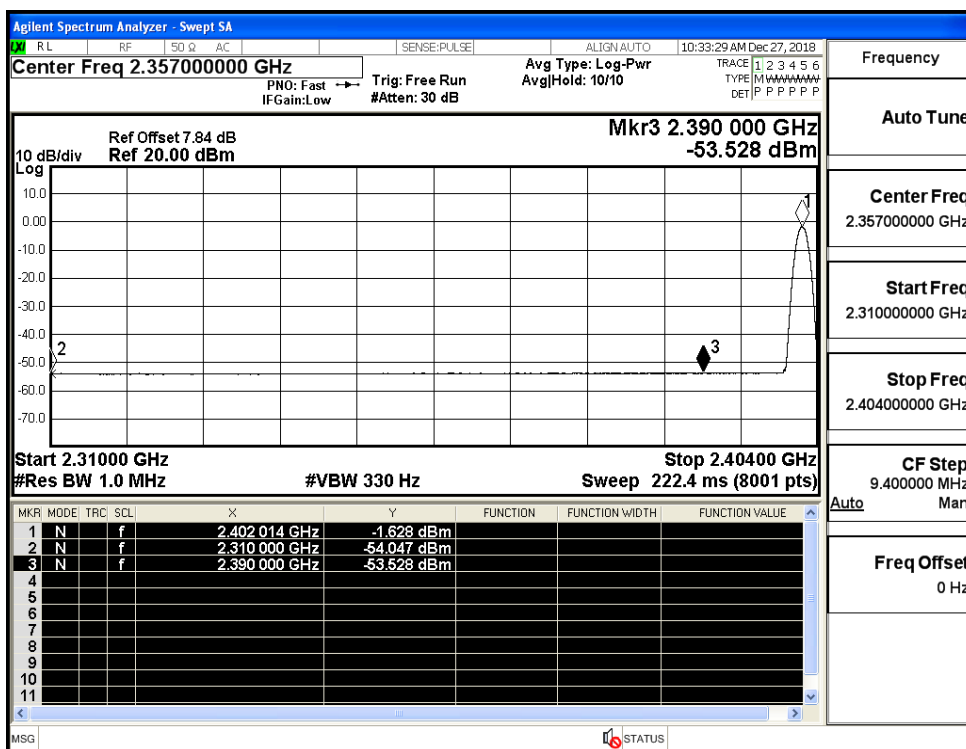
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

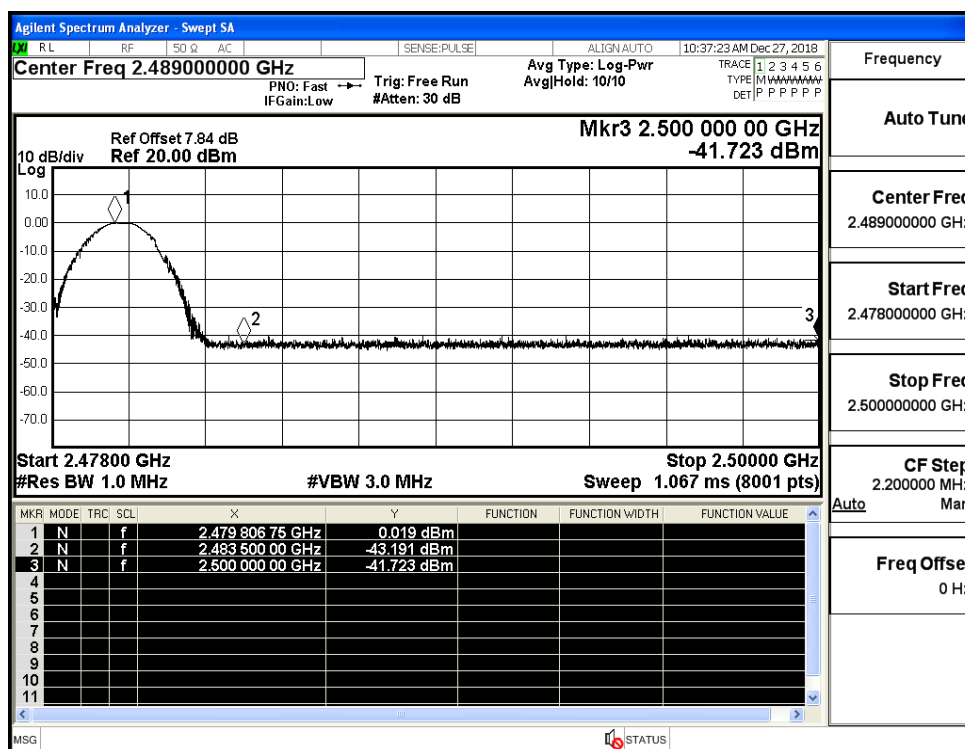
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

