

Appendix A

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

Product Name: Sunapee Bluetooth® Outdoor Speaker

Trade Mark: Gemline

Test Model: 100240-001B

Environmental Conditions

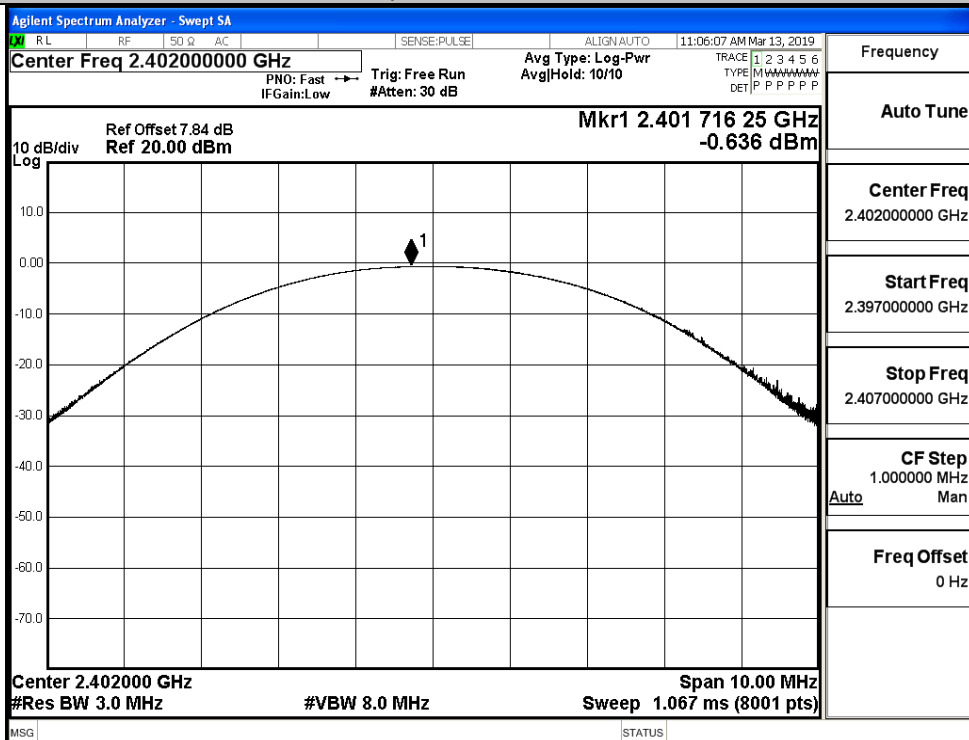
Temperature:	22.4 ° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

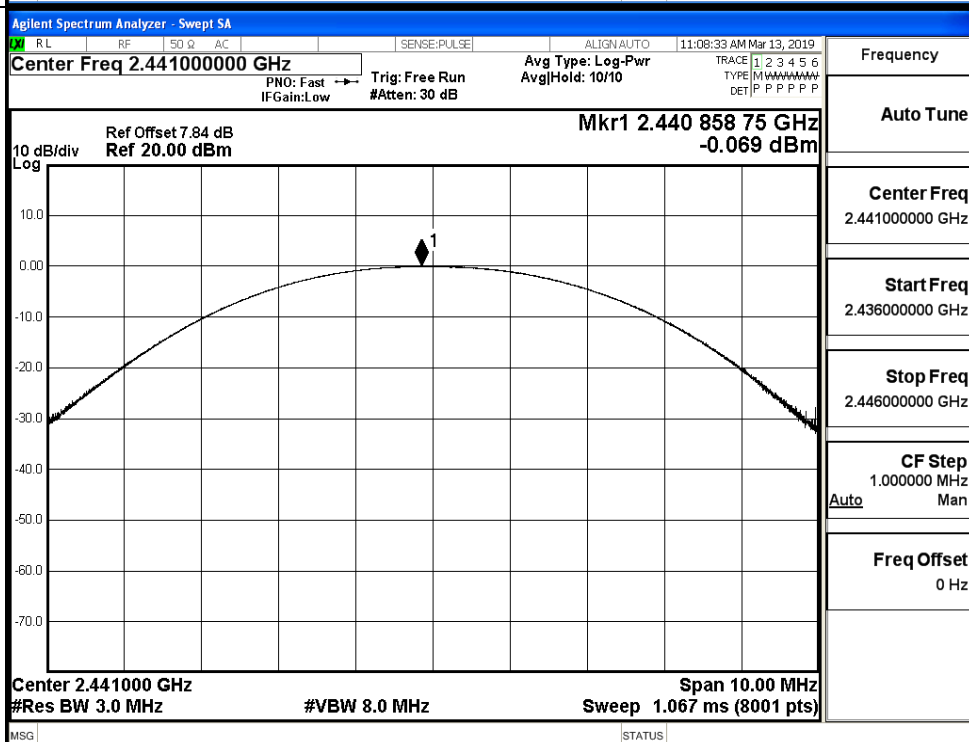
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.636	21	PASS
	MCH	-0.069	21	PASS
	HCH	-1.555	21	PASS
$\pi/4$ DQPSK	LCH	-1.474	21	PASS
	MCH	-0.769	21	PASS
	HCH	-2.282	21	PASS
8DPSK	LCH	-1.426	21	PASS
	MCH	-0.871	21	PASS
	HCH	-2.306	21	PASS

Test Graphs

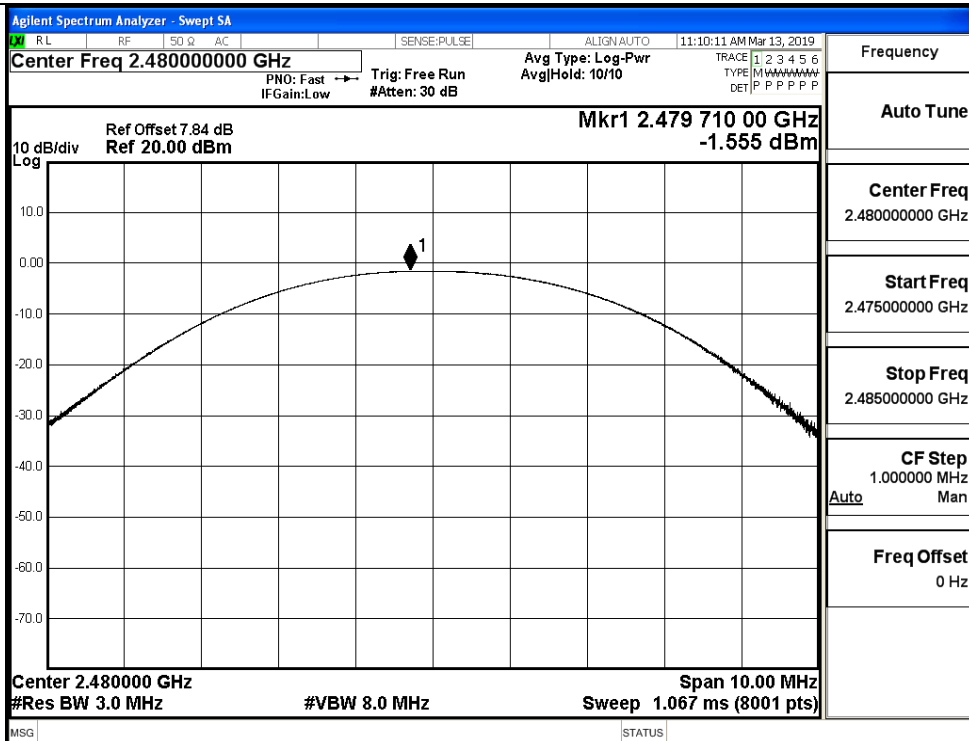
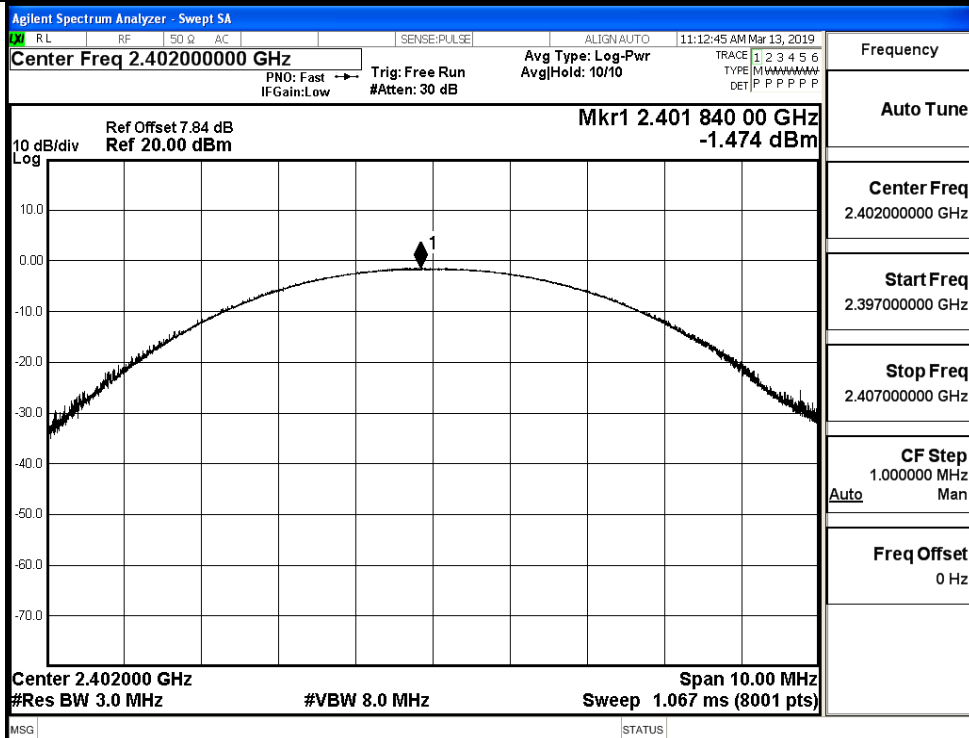
GFSK/LCH

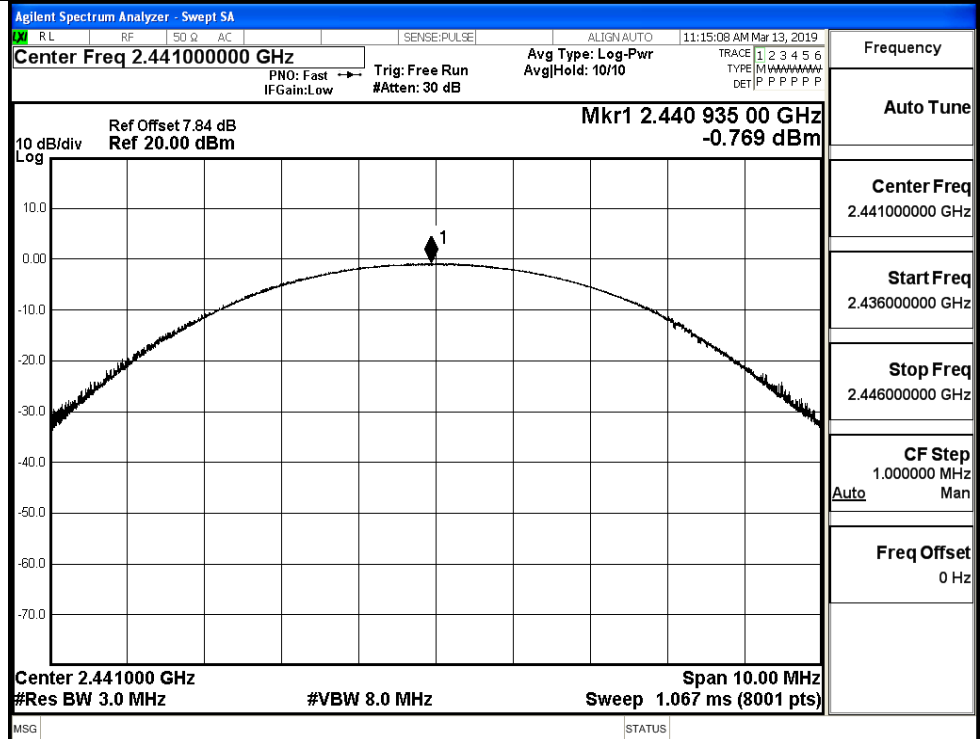
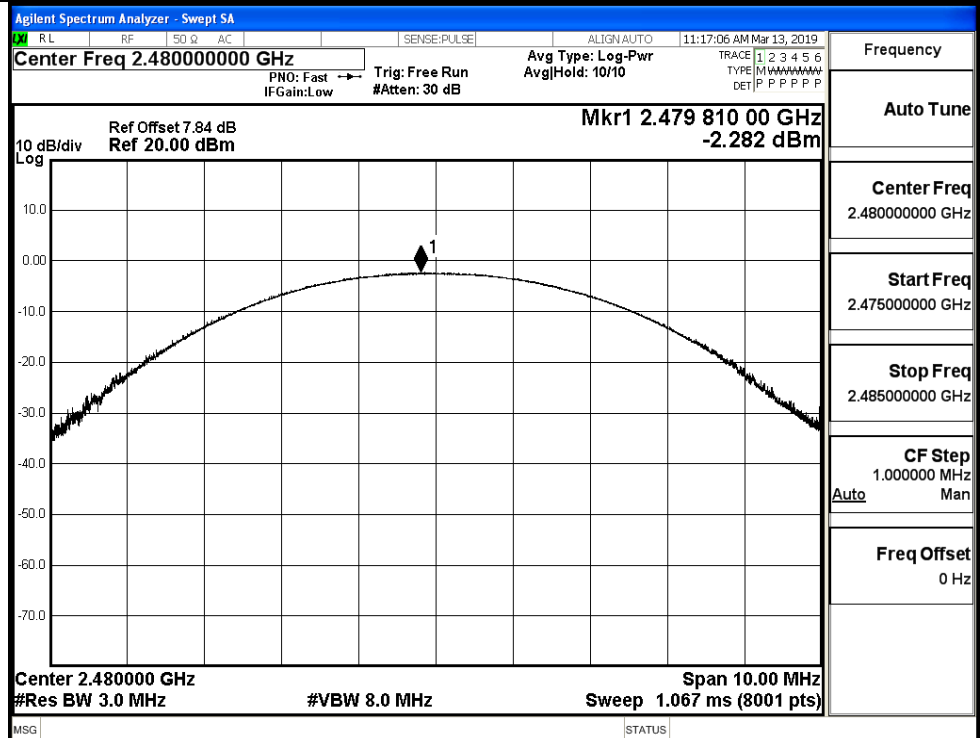


GFSK/MCH

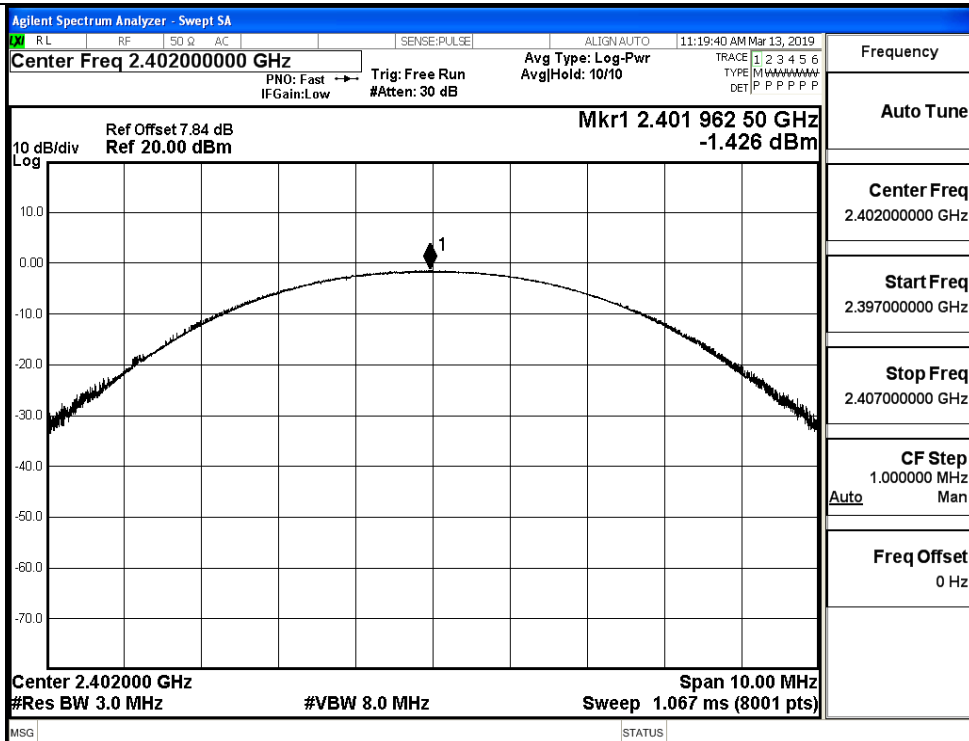


GFSK/HCH

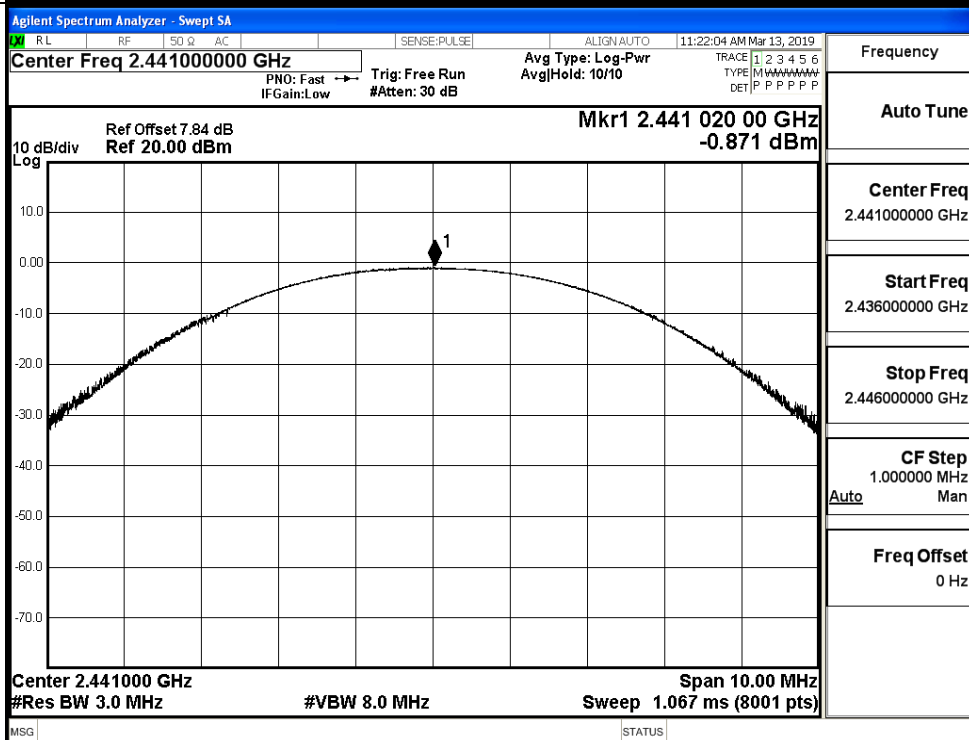
 π /4DQPSK/LCH

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

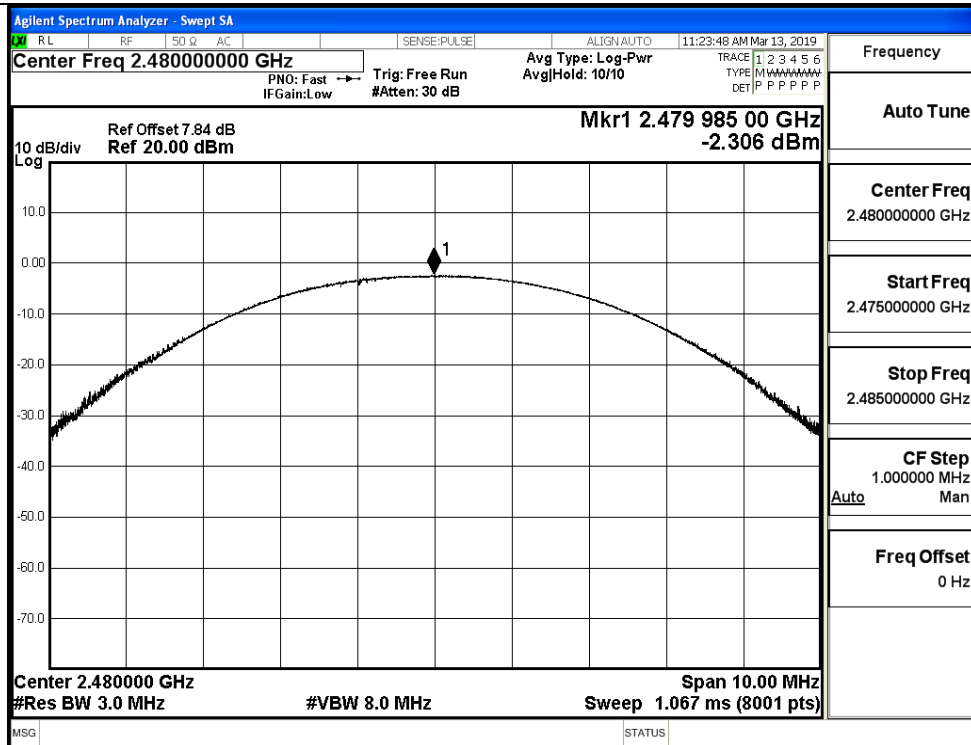
8DPSK/LCH



8DPSK/MCH



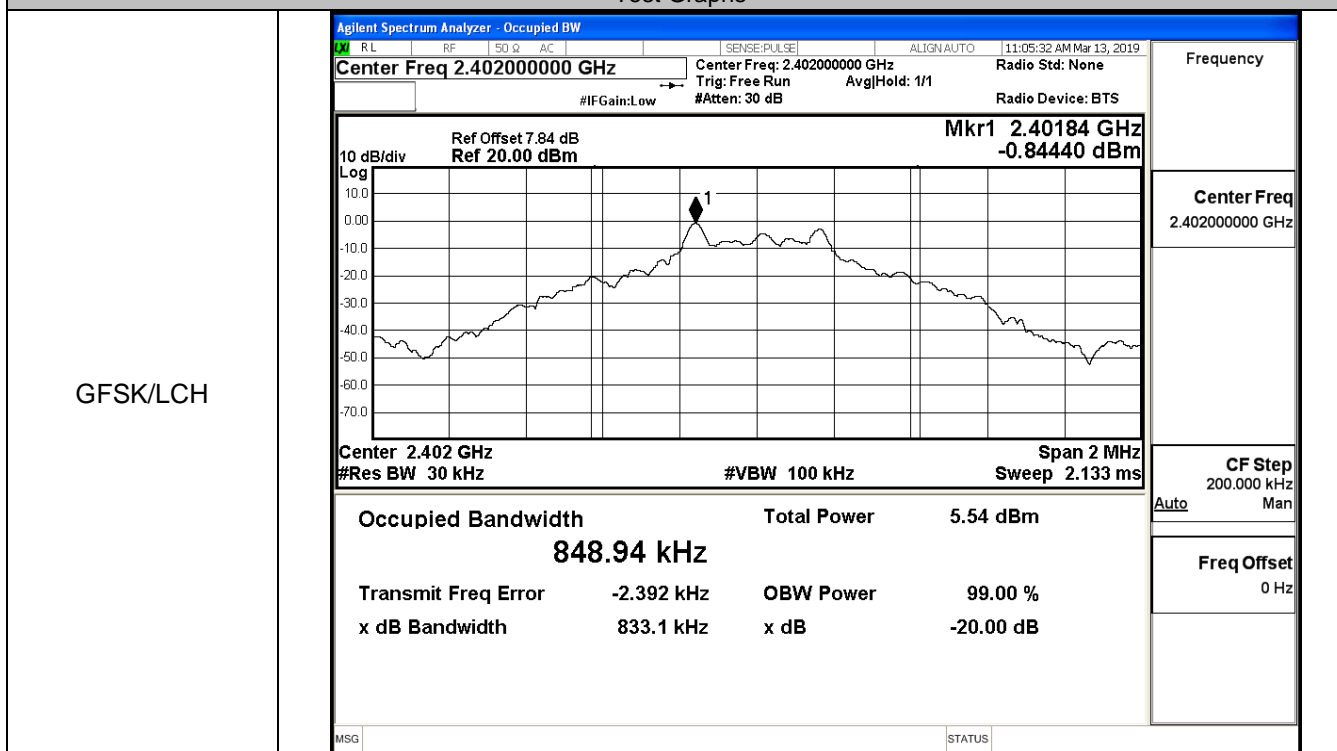
8DPSK/HCH



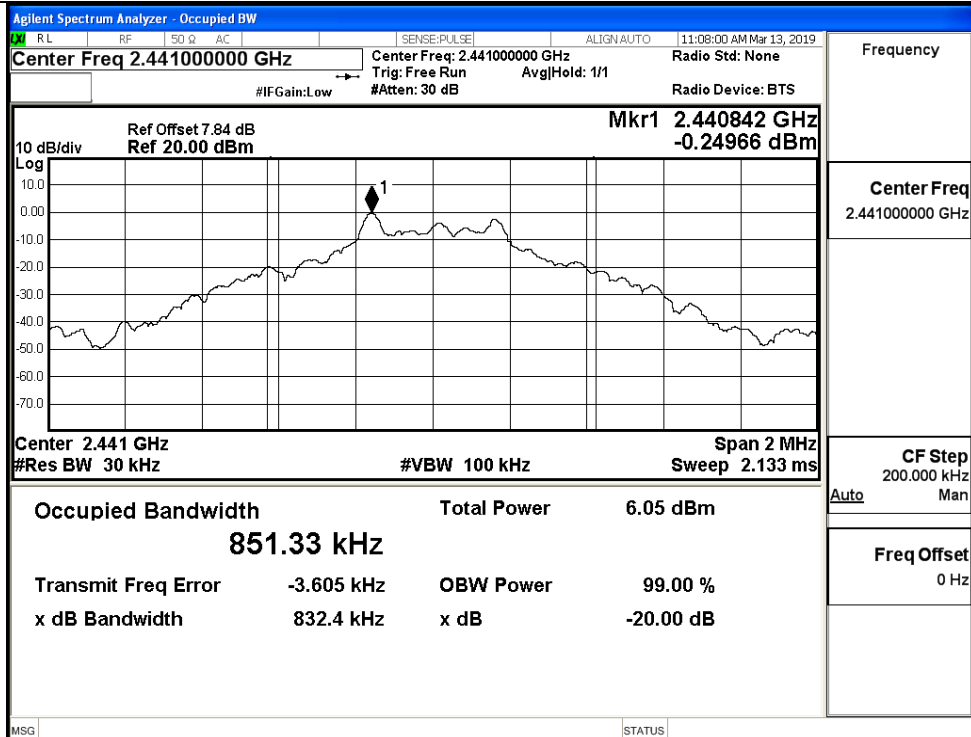
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.84894	0.8331	Not Specified	PASS
	MCH	0.85133	0.8324	Not Specified	PASS
	HCH	0.85478	0.8286	Not Specified	PASS
π /4DQPSK	LCH	1.0708	1.115	Not Specified	PASS
	MCH	1.0713	1.119	Not Specified	PASS
	HCH	1.0722	1.116	Not Specified	PASS
8DPSK	LCH	1.0709	1.126	Not Specified	PASS
	MCH	1.0691	1.117	Not Specified	PASS
	HCH	1.0699	1.124	Not Specified	PASS

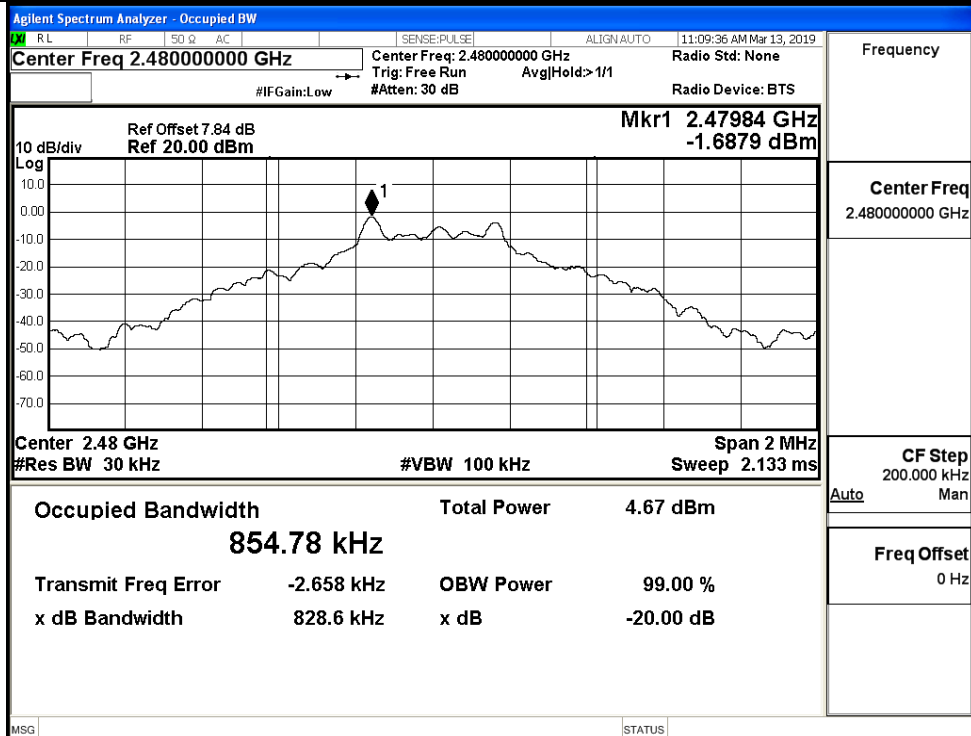
Test Graphs

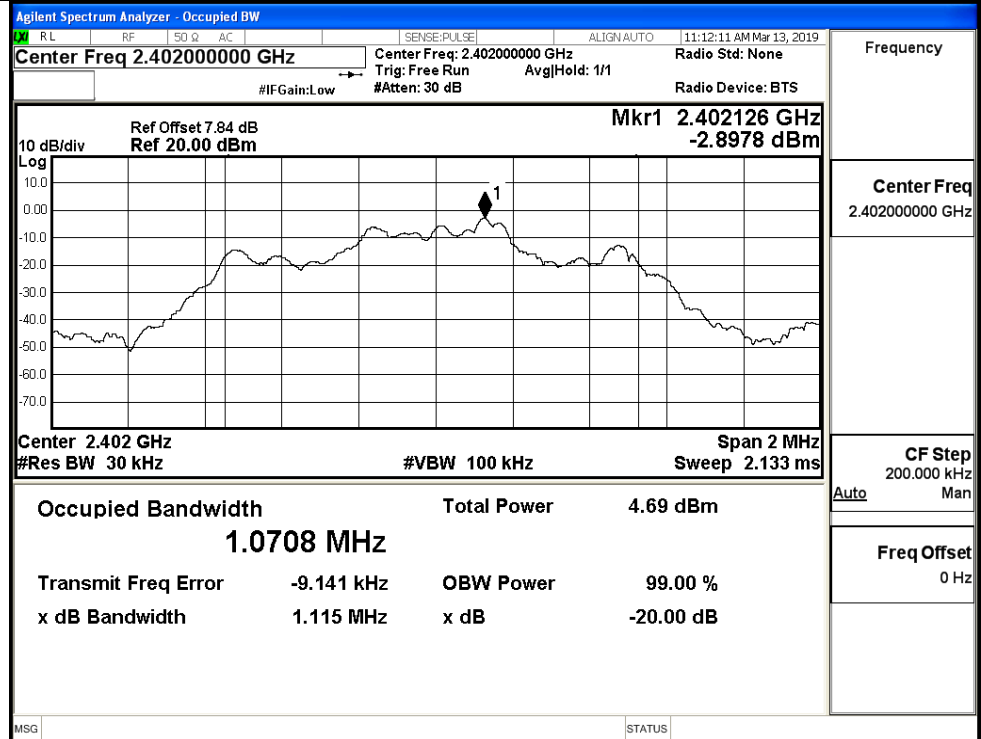
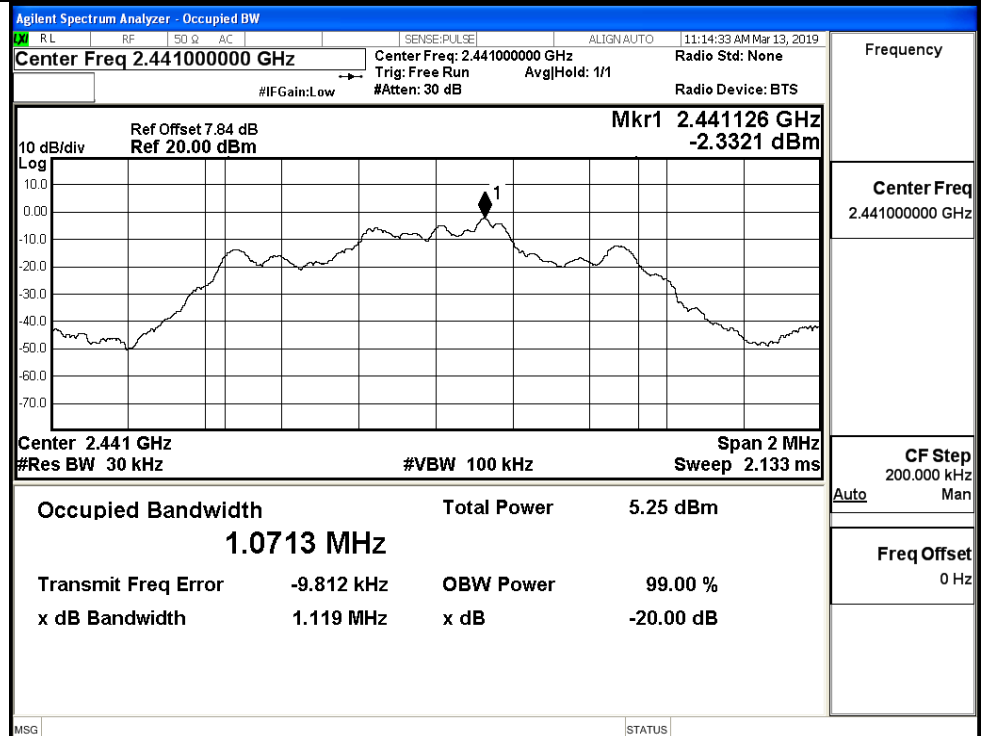


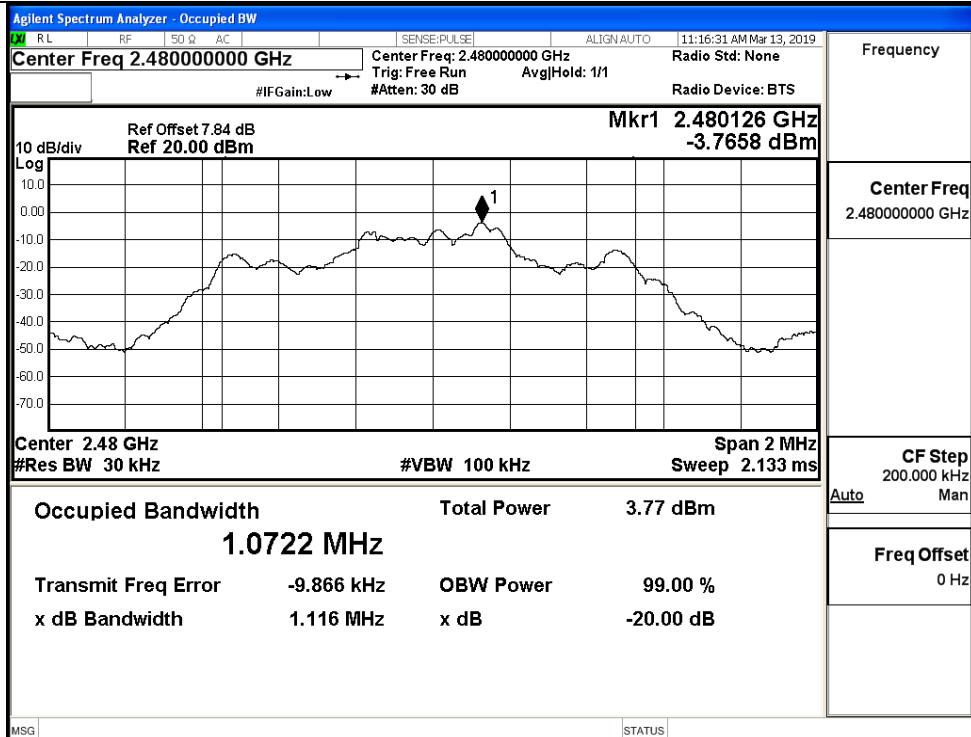
GFSK/MCH



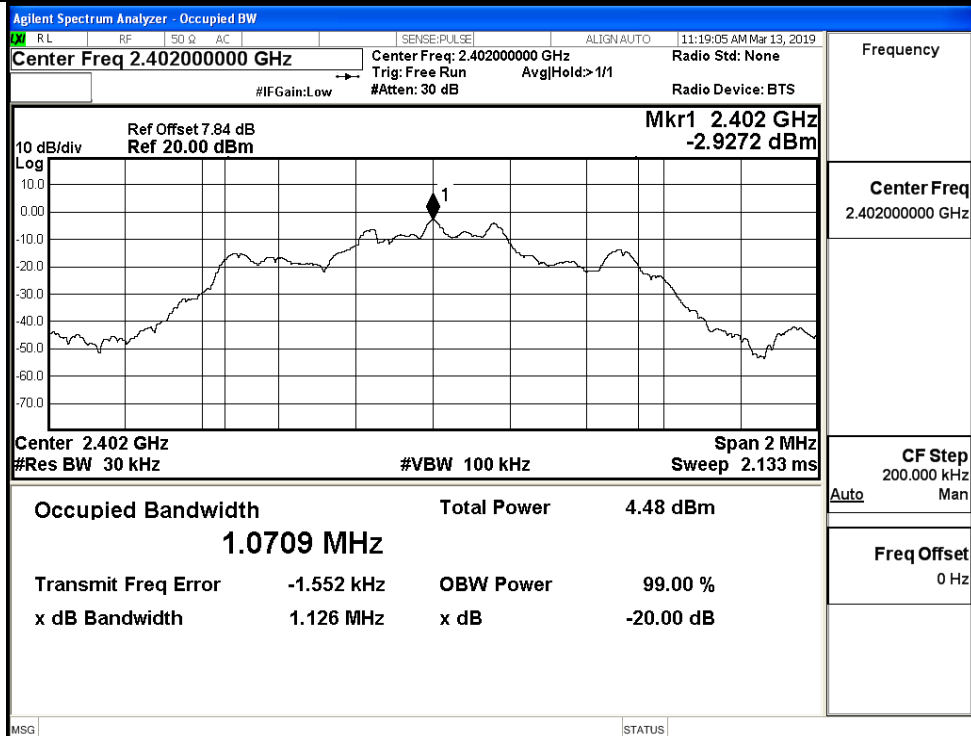
GFSK/HCH



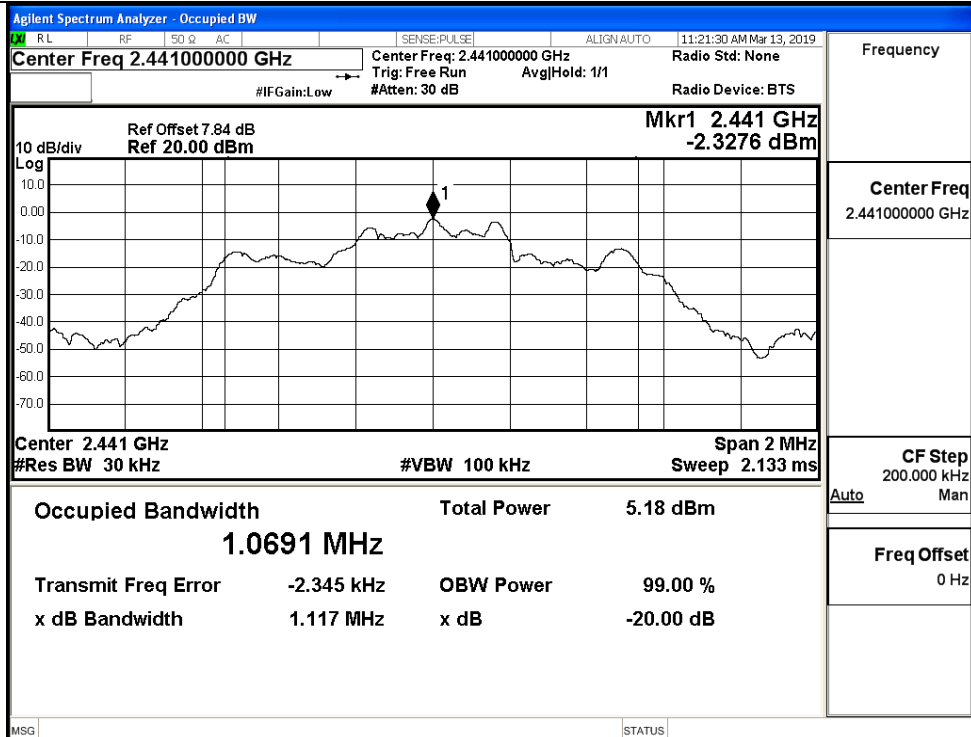
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

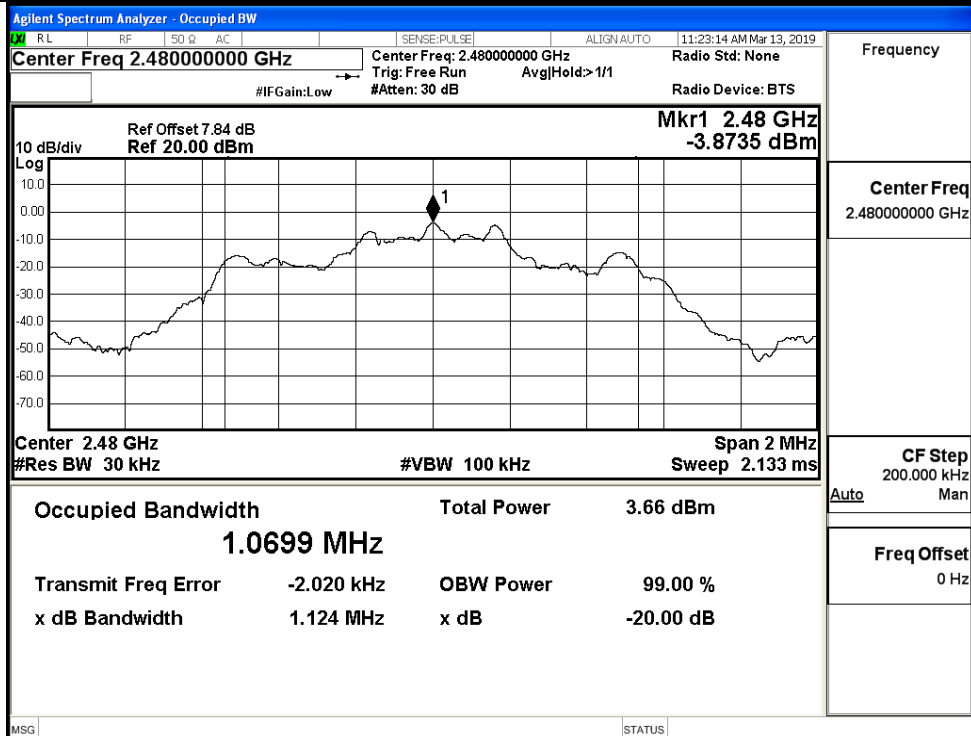
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

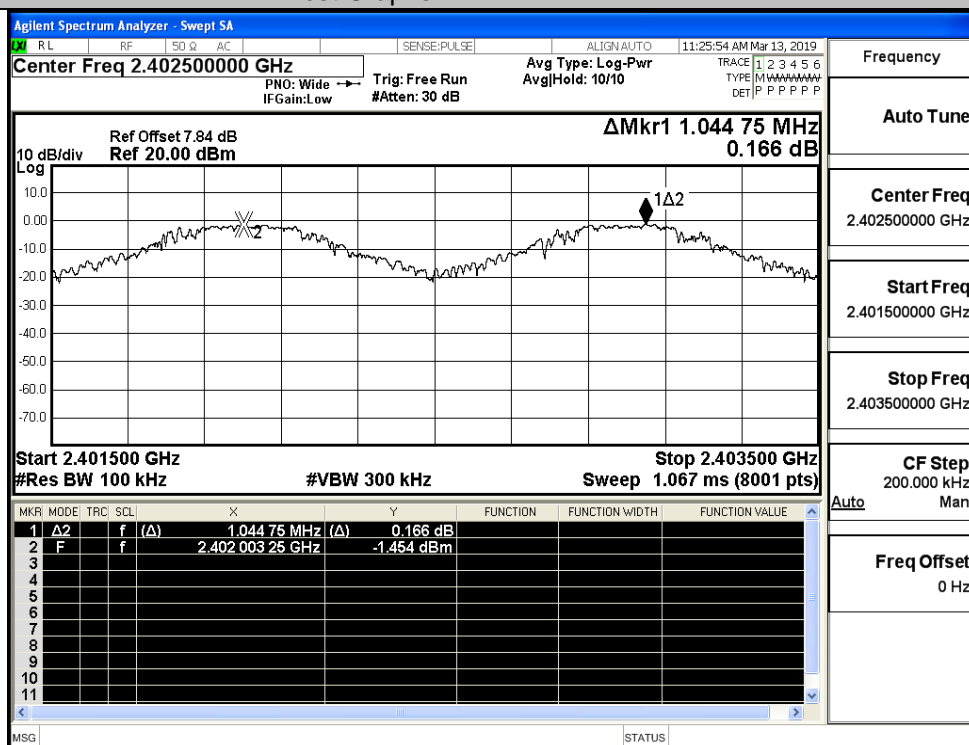


A.3 Carrier Frequency Separation

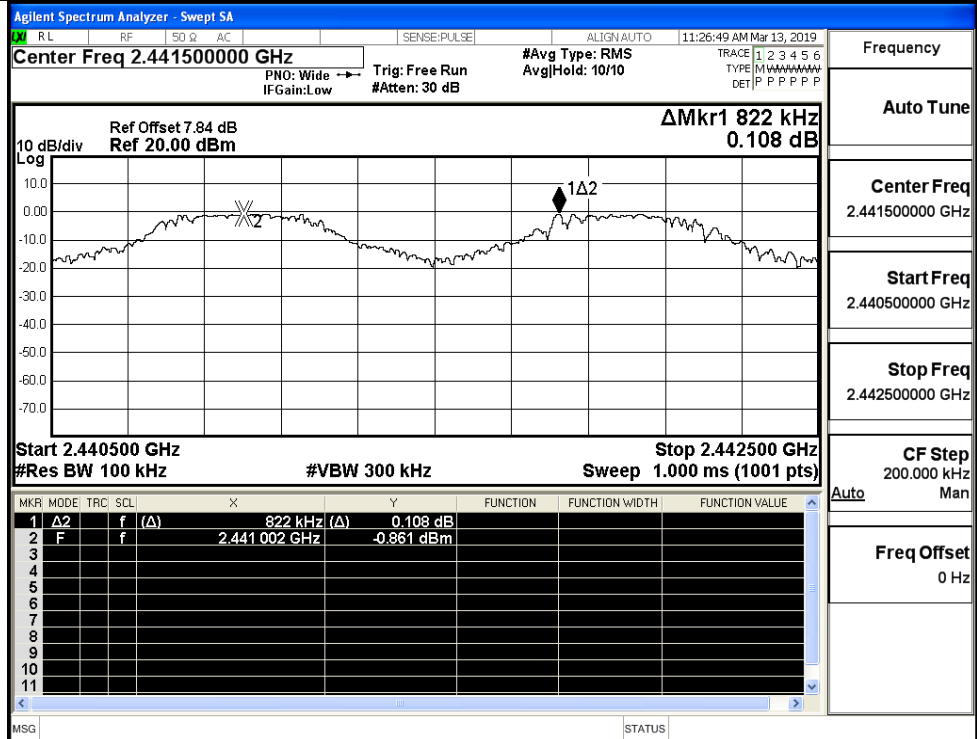
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.045	0.555	PASS
	MCH	0.822	0.555	PASS
	HCH	0.700	0.555	PASS
$\pi/4$ DQPSK	LCH	0.986	0.746	PASS
	MCH	0.796	0.746	PASS
	HCH	1.118	0.746	PASS
8DPSK	LCH	0.764	0.751	PASS
	MCH	0.976	0.751	PASS
	HCH	1.114	0.751	PASS

Test Graphs

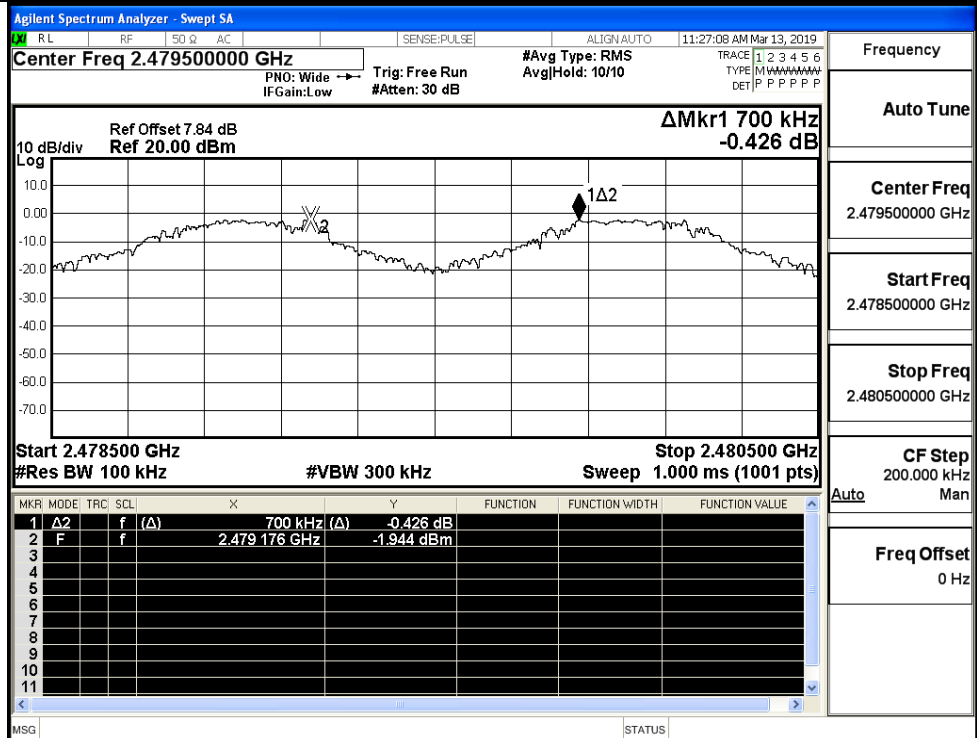
GFSK/LCH

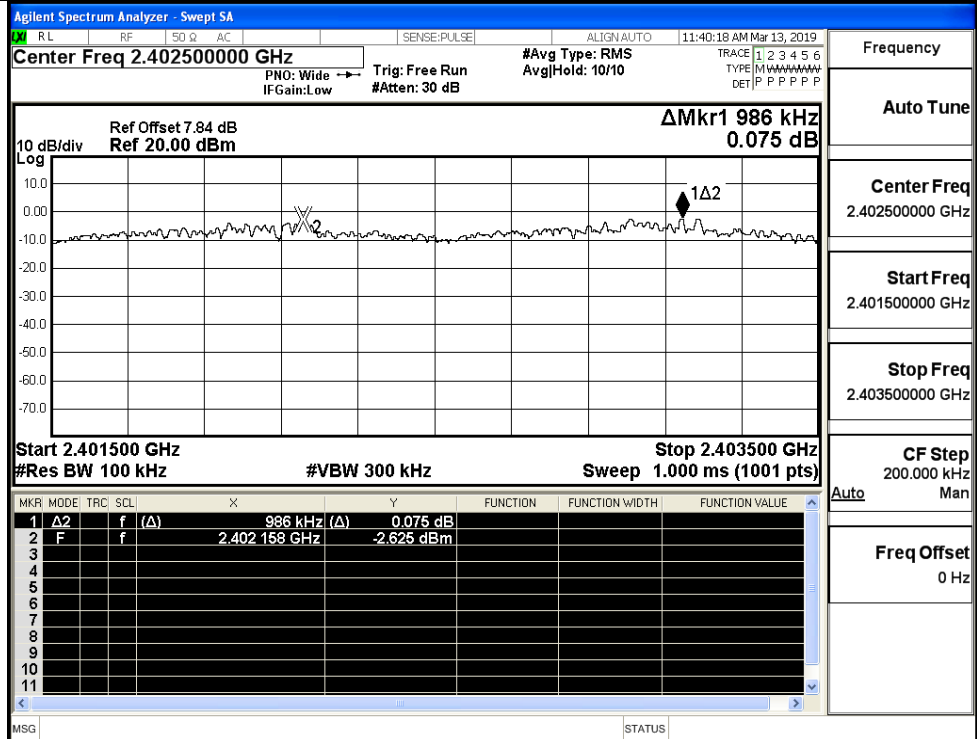
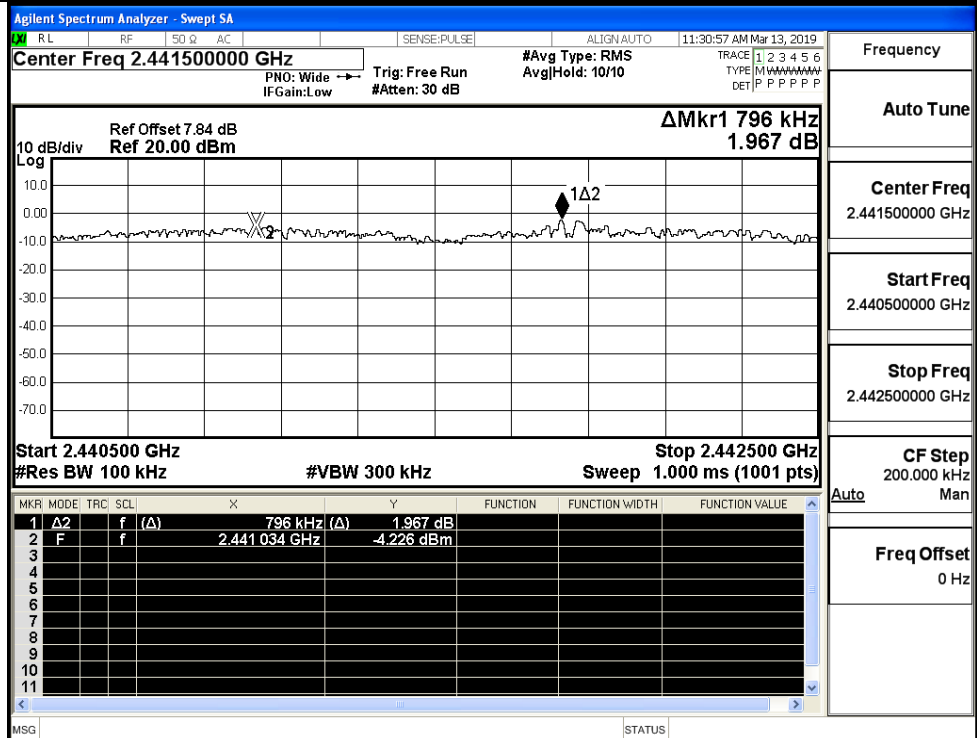


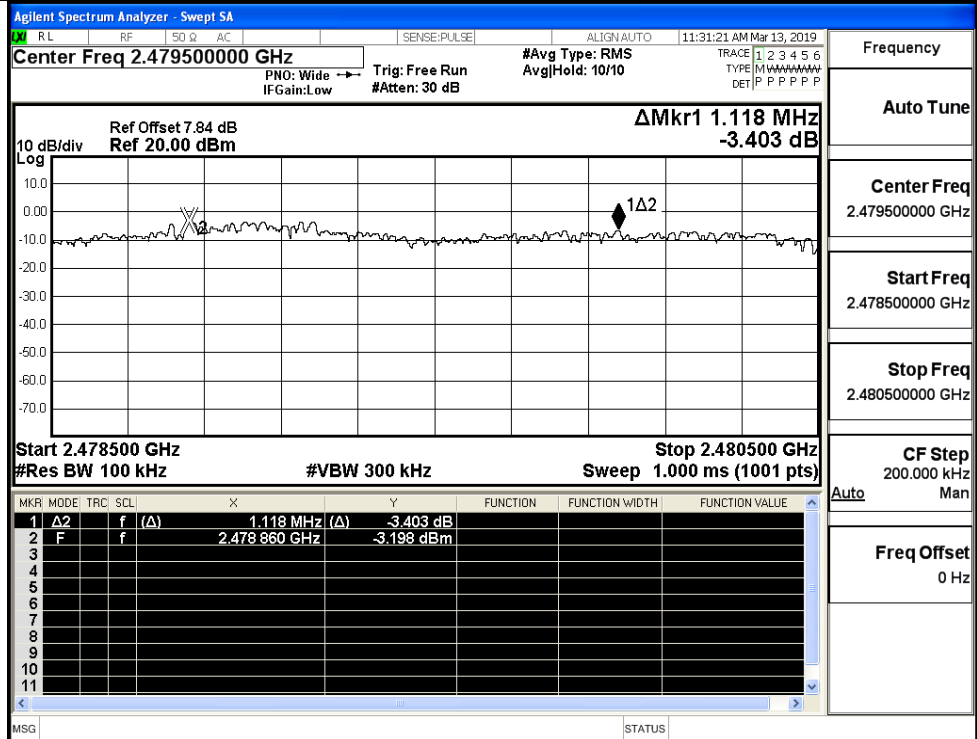
GFSK/MCH



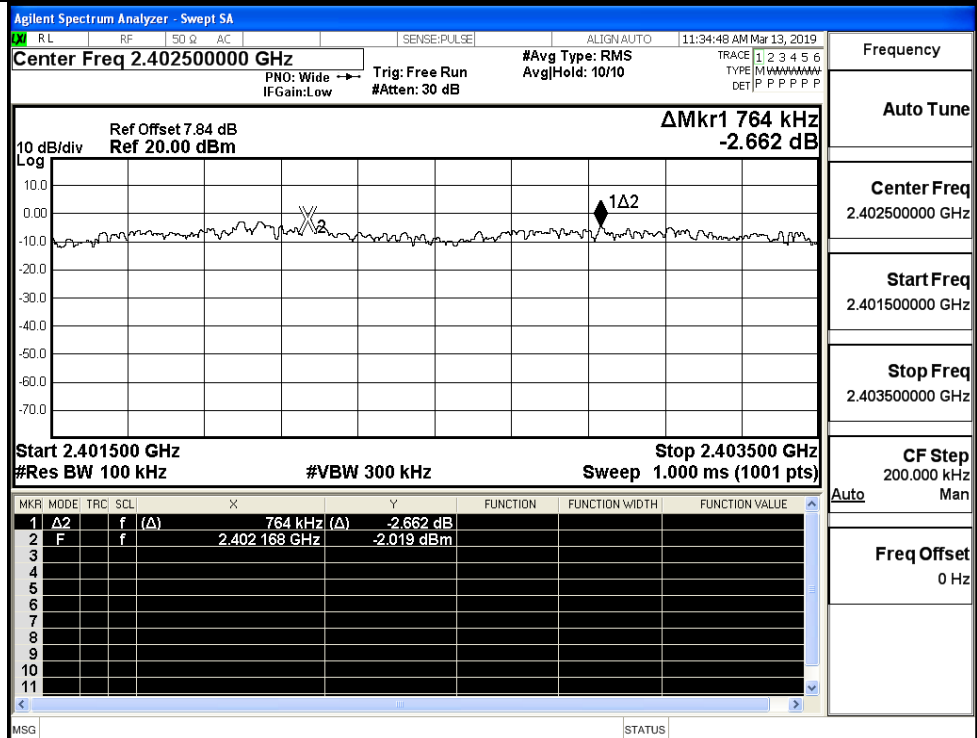
GFSK/HCH



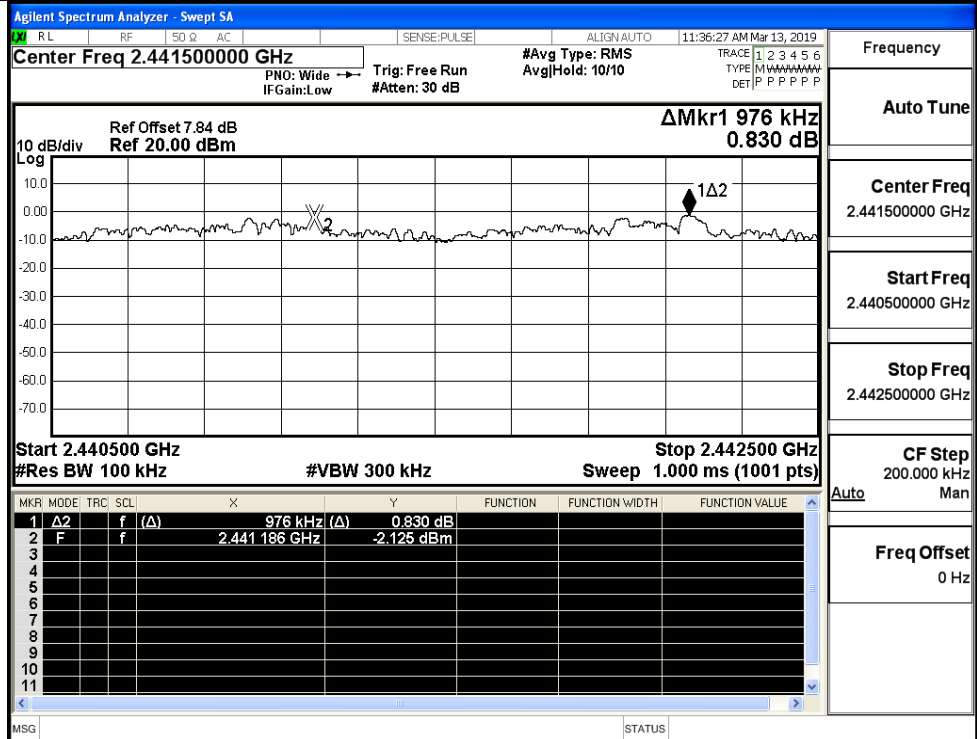
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

π /4DQPSK/HCH

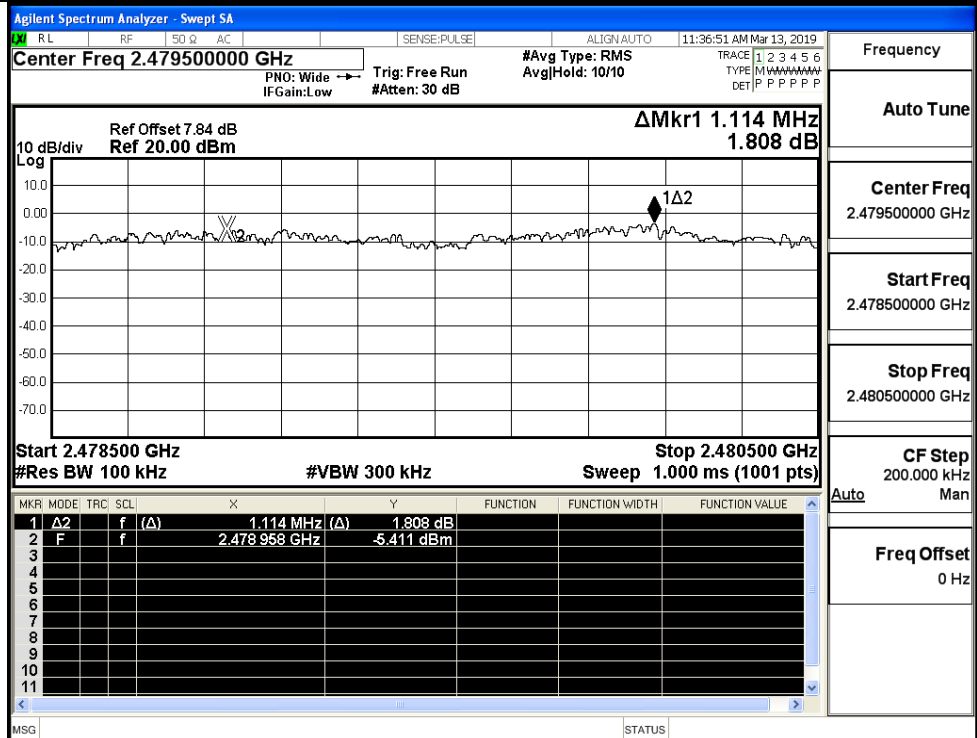
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

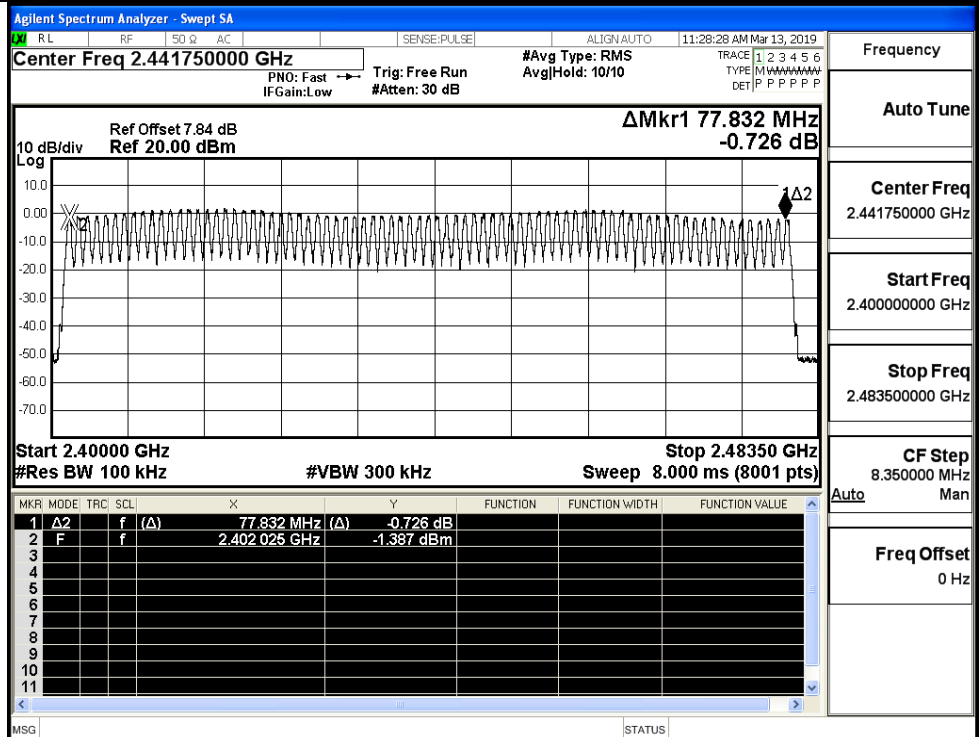
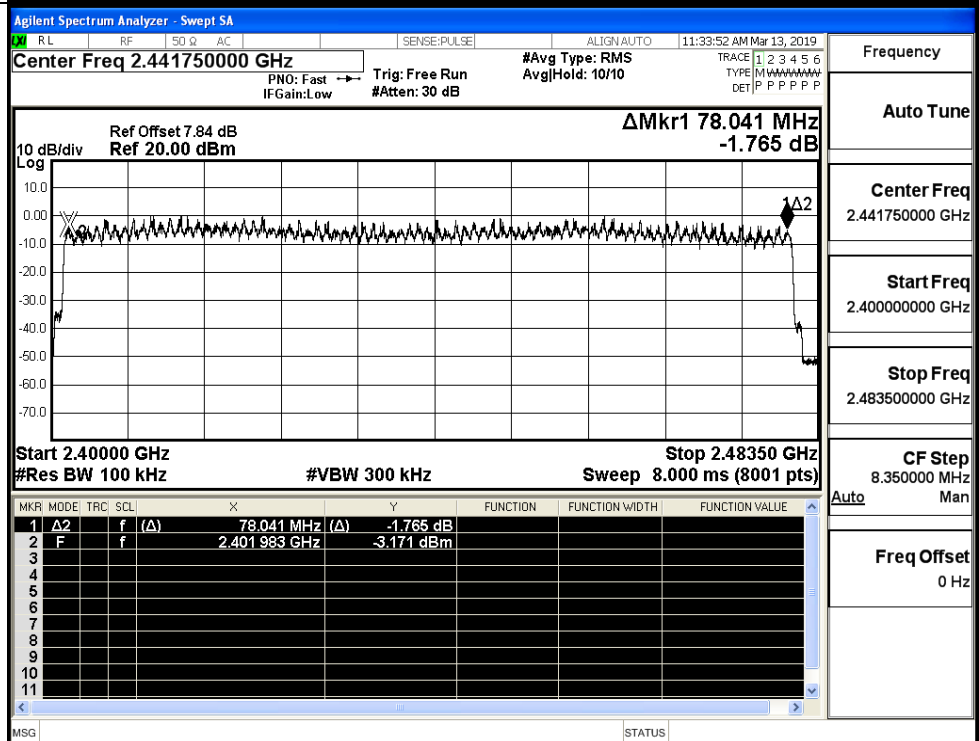


A.4 Hopping Channel Number

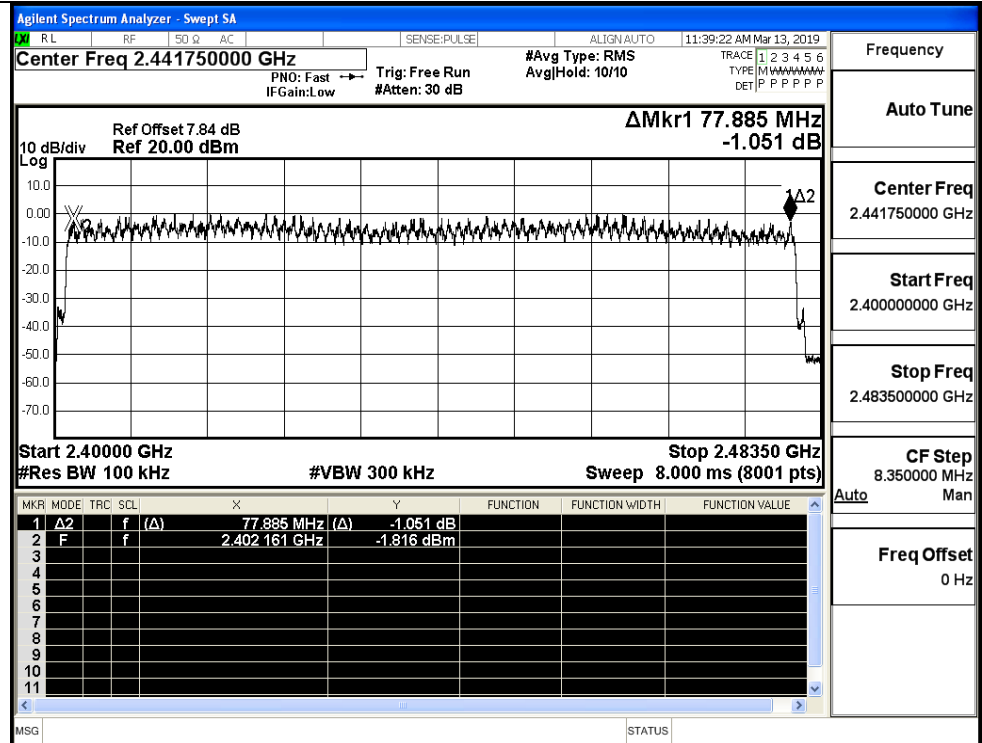
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

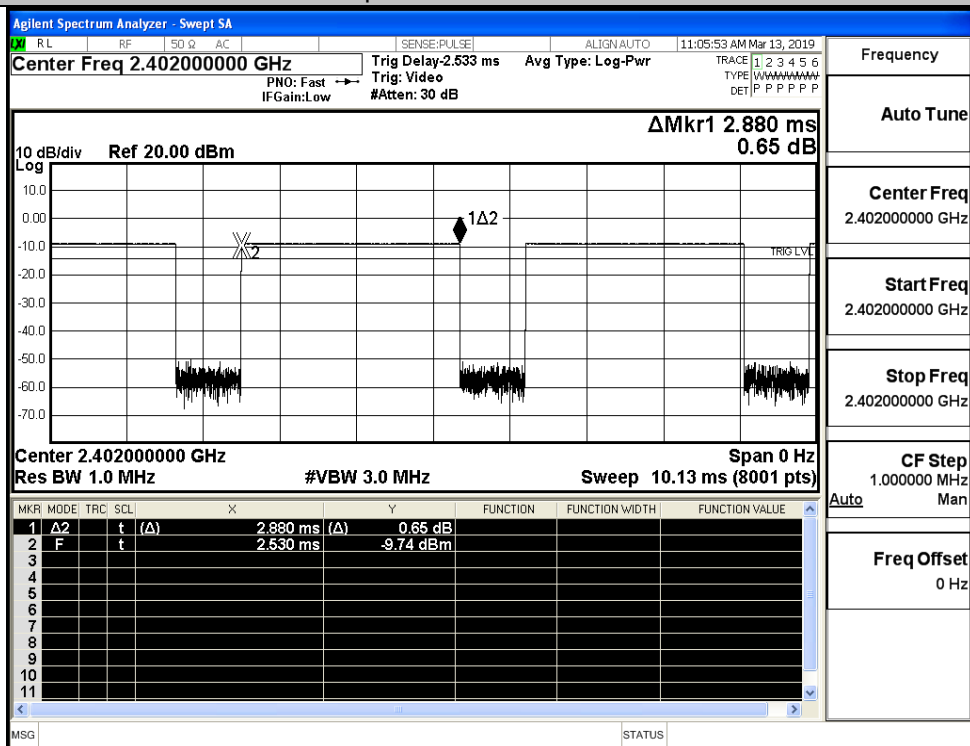


A.5 Dwell Time

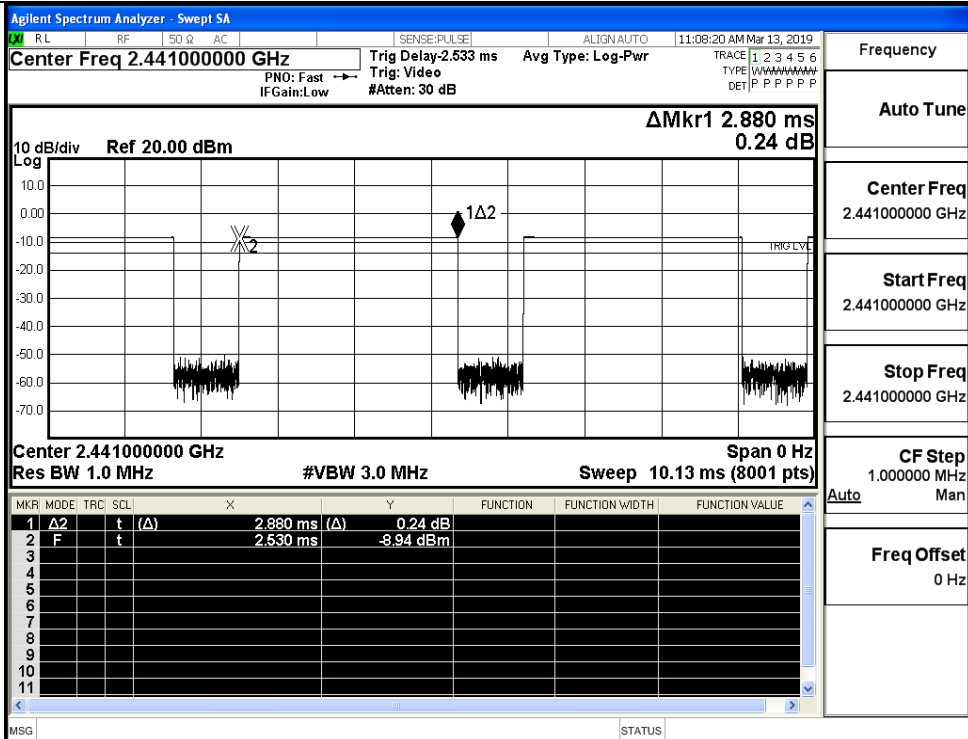
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

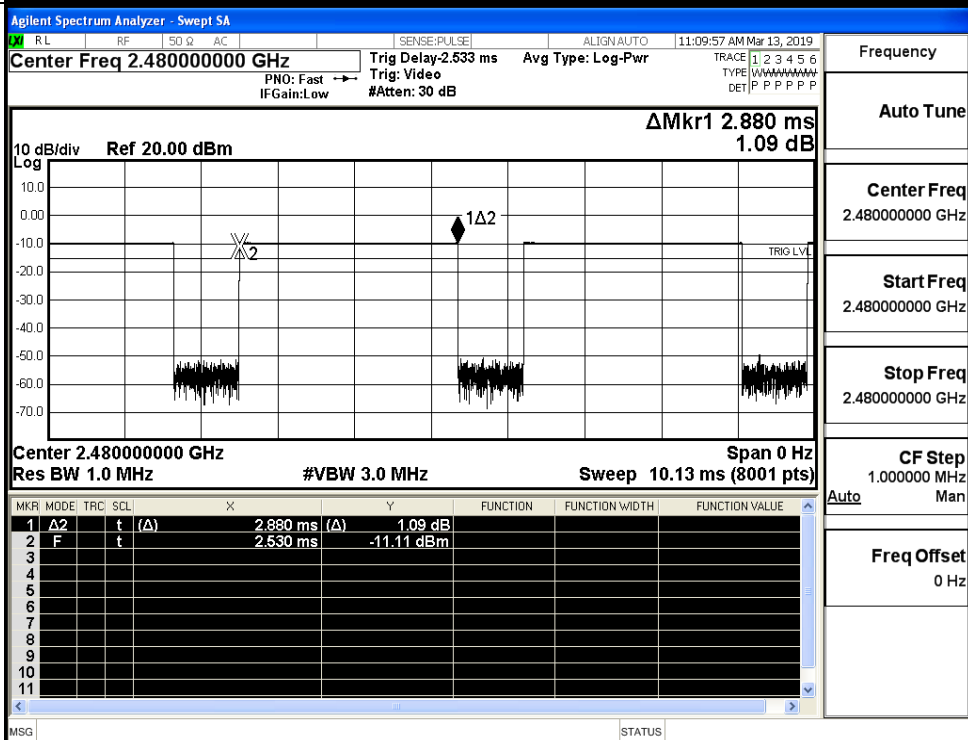
GFSK_DH5/LCH



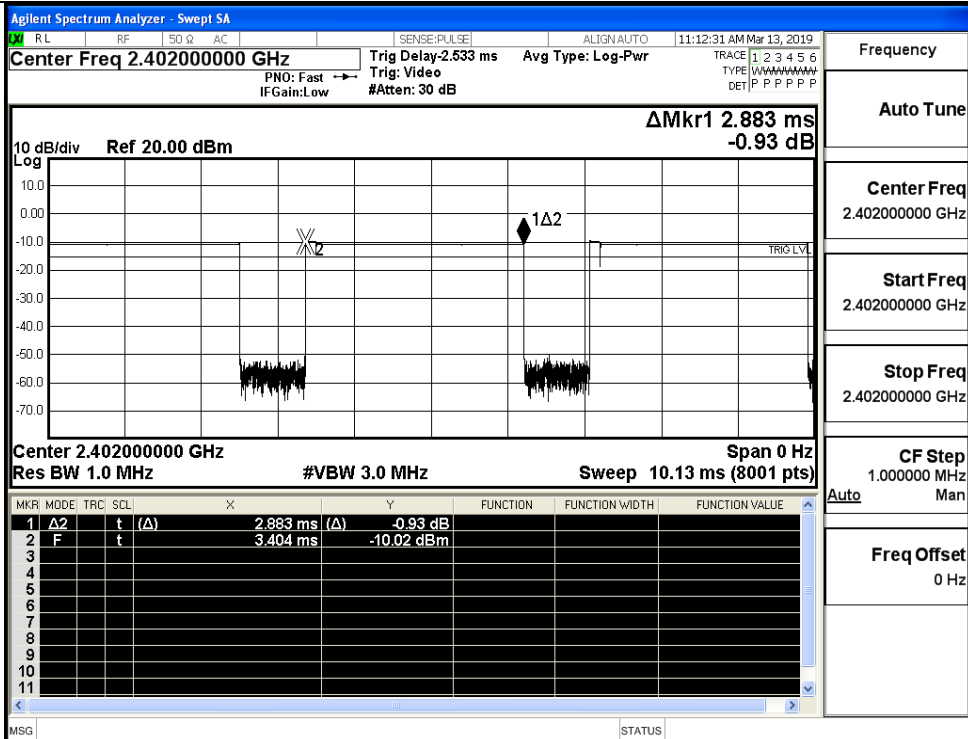
GFSK_DH5/MCH



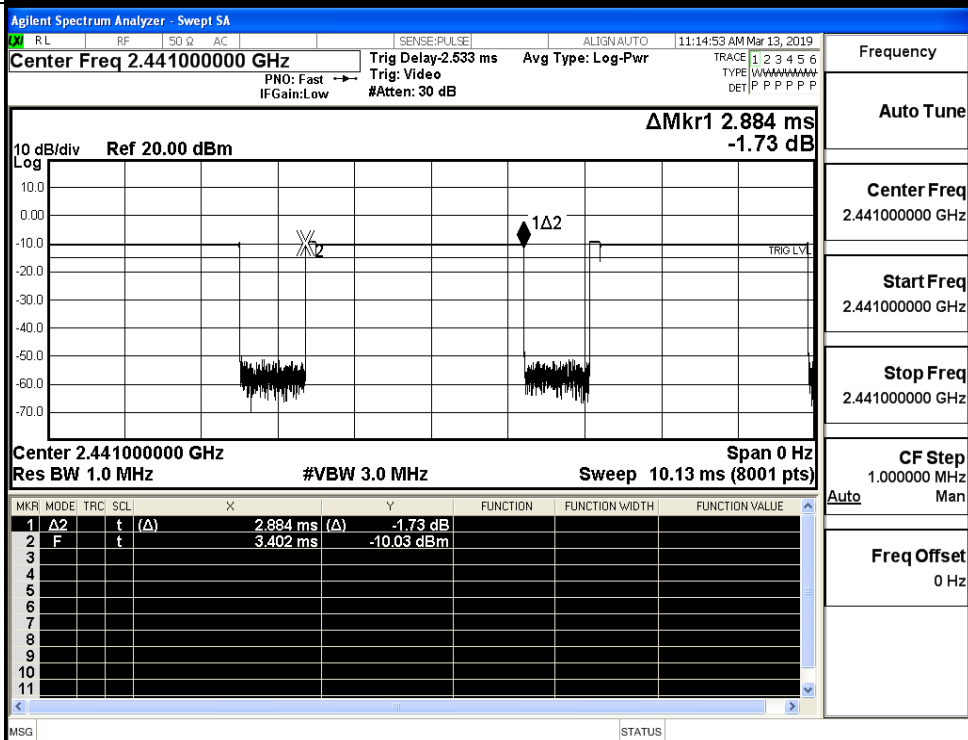
GFSK_DH5/HCH



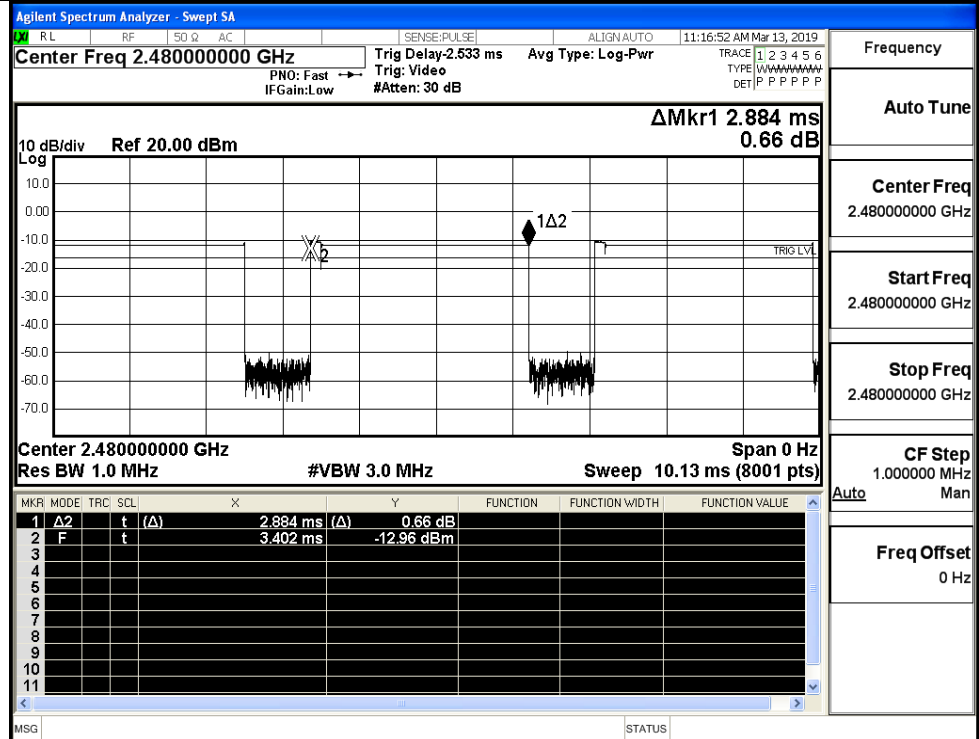
$\pi/4$ DQPSK
_2DH5/LCH



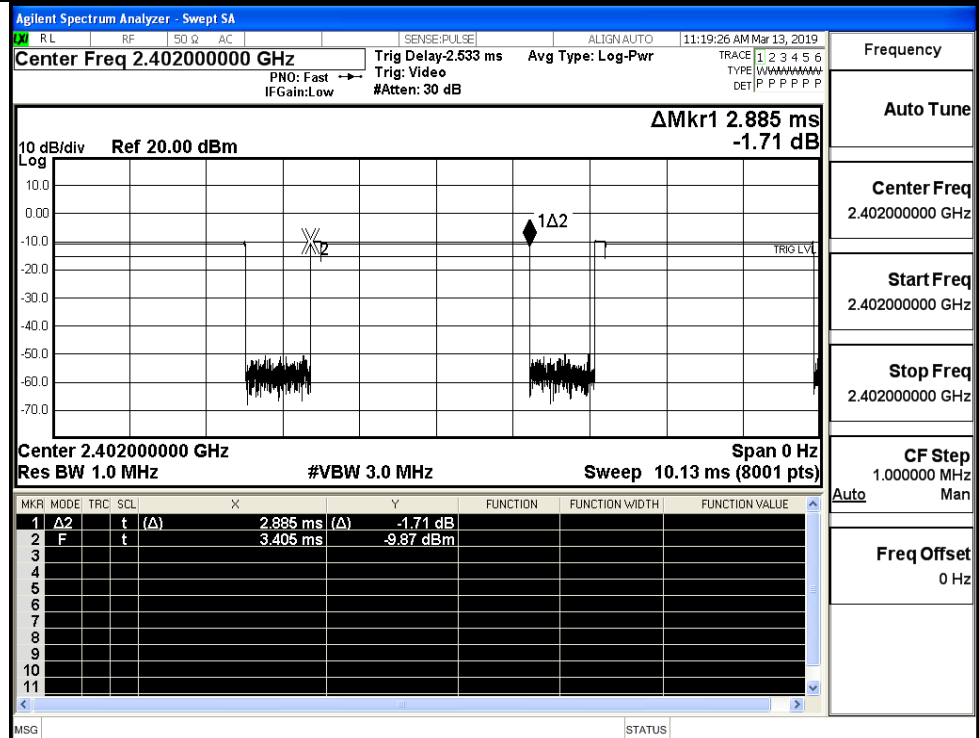
$\pi/4$ DQPSK
_2DH5/MCH



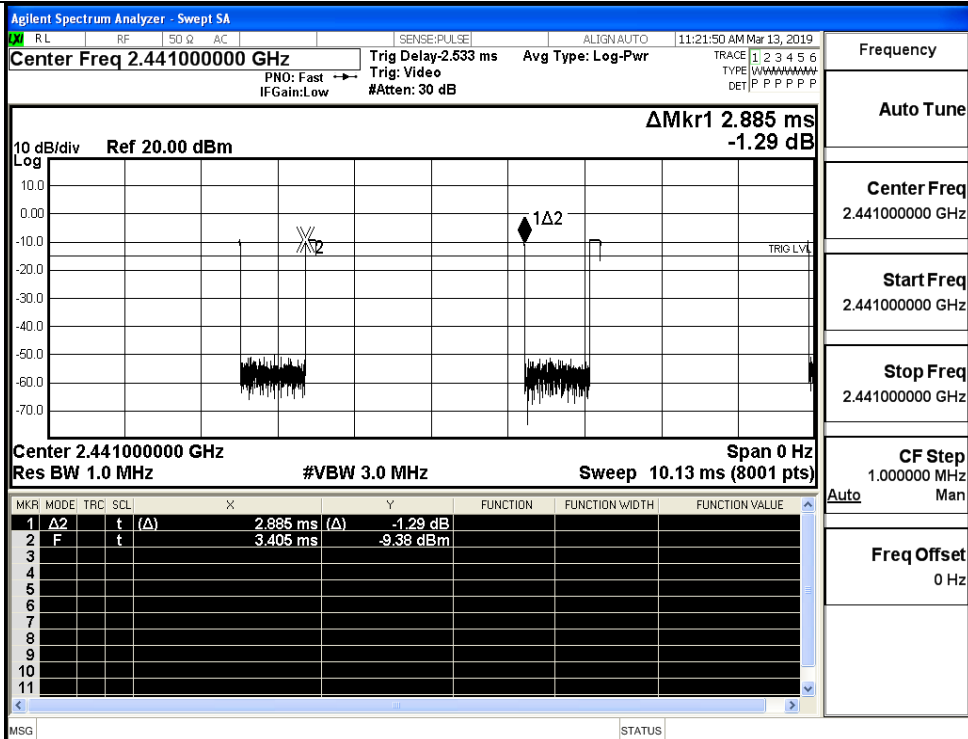
$\pi/4$ DQPSK
_2DH5/HCH



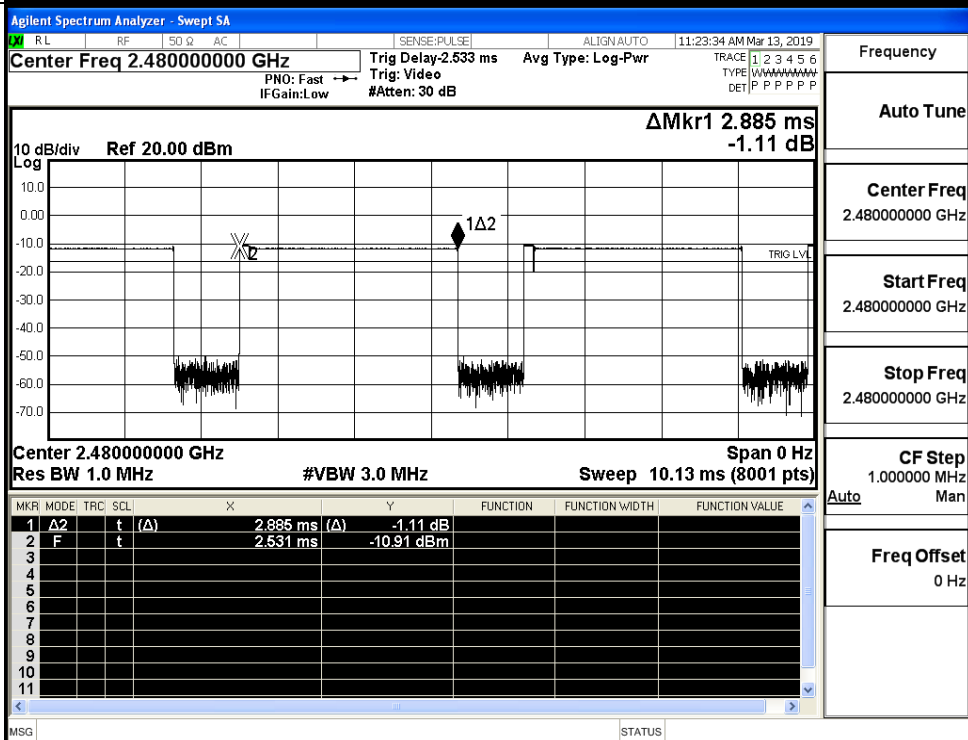
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



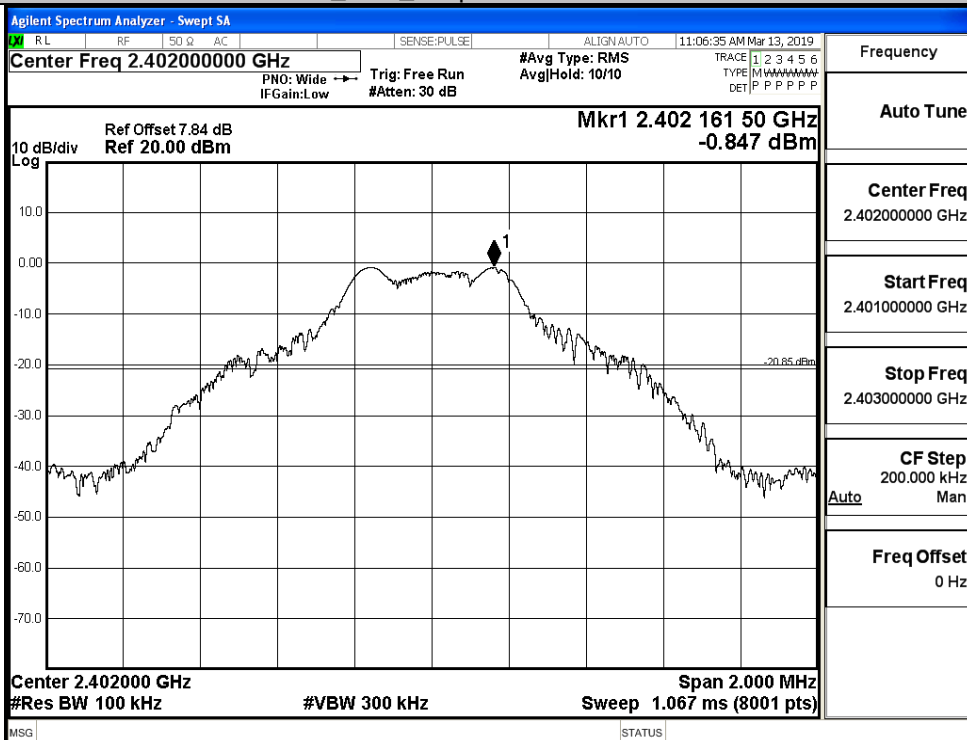
8DPSK_3DH5/HCH



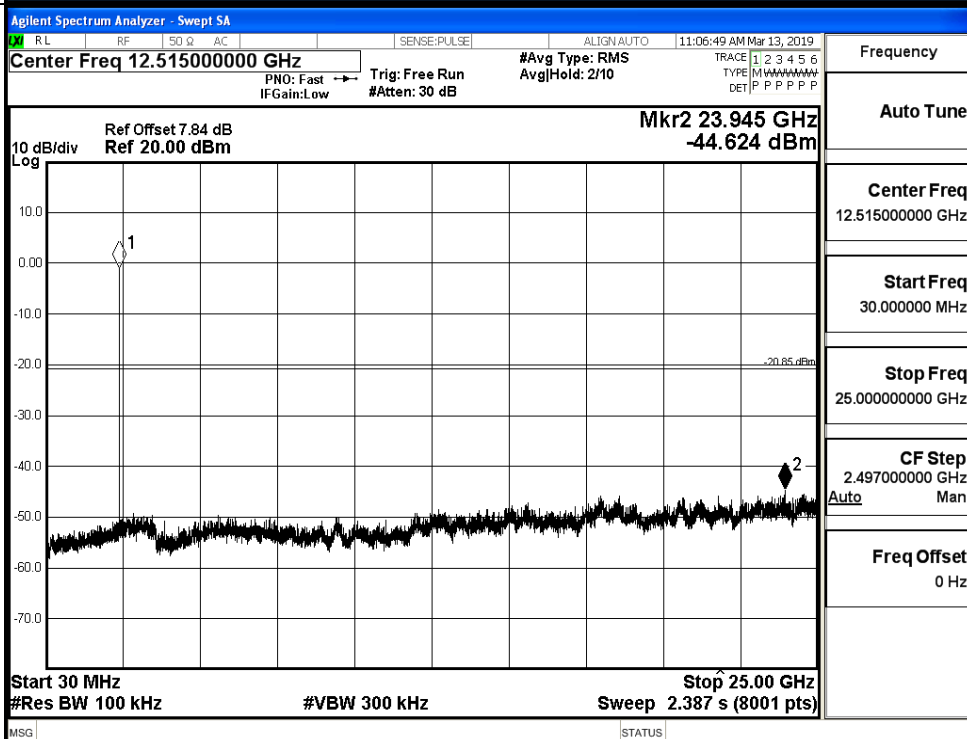
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.847	-44.624	-20.847	PASS
	MCH	-0.284	-43.819	-20.284	PASS
	HCH	-1.745	-45.180	-21.745	PASS
$\pi/4$ DQPSK	LCH	-1.919	-44.748	-21.919	PASS
	MCH	-1.592	-44.178	-21.592	PASS
	HCH	-3.043	-44.978	-23.043	PASS
8DPSK	LCH	-1.888	-45.044	-21.888	PASS
	MCH	-1.274	-44.755	-21.274	PASS
	HCH	-2.753	-44.403	-22.753	PASS

Pref

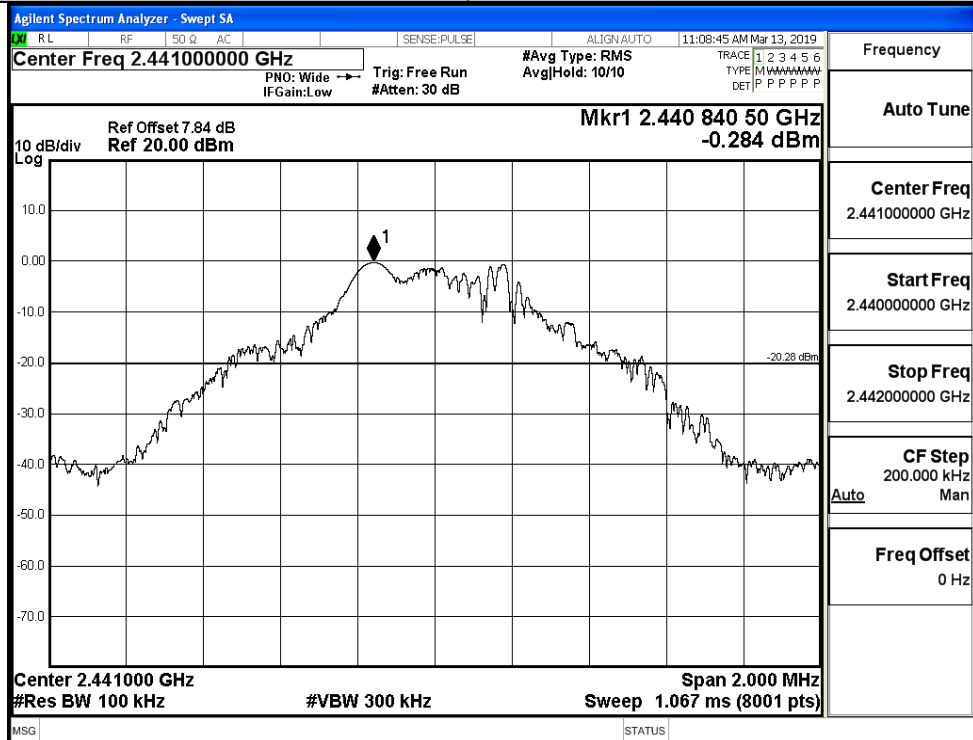


Puw

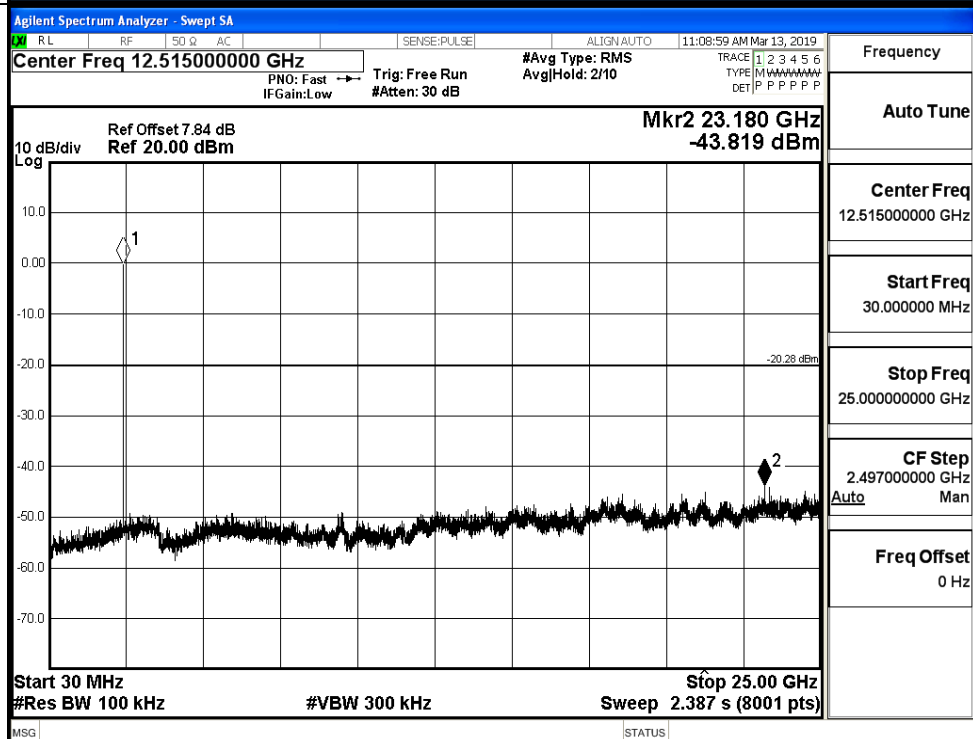


GFSK_MCH_Graphs

Pref

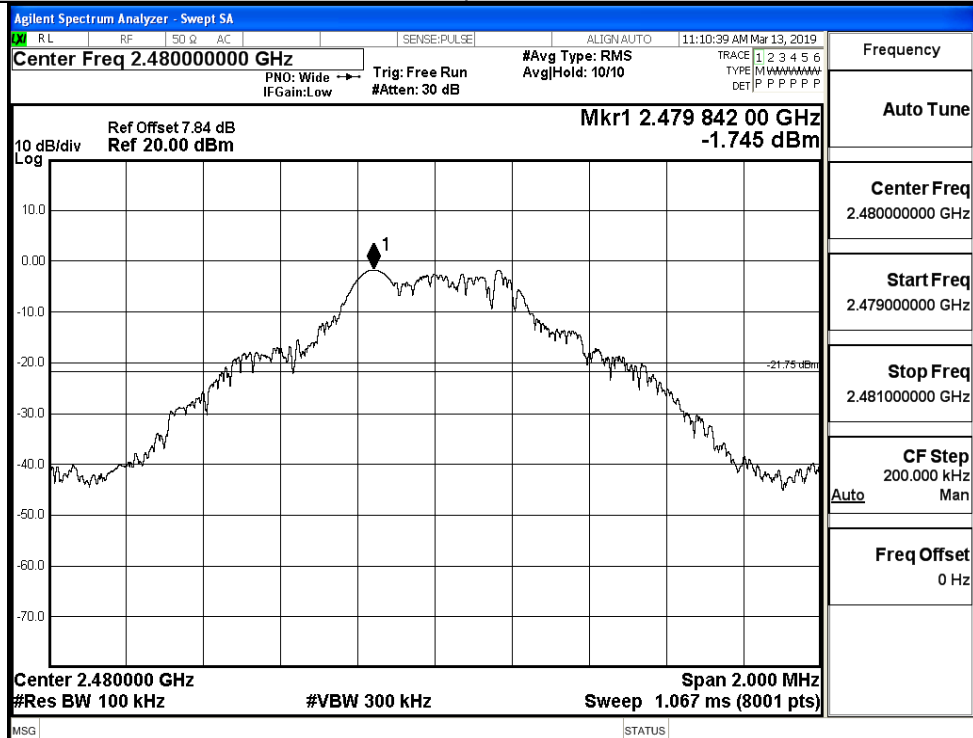


Puw

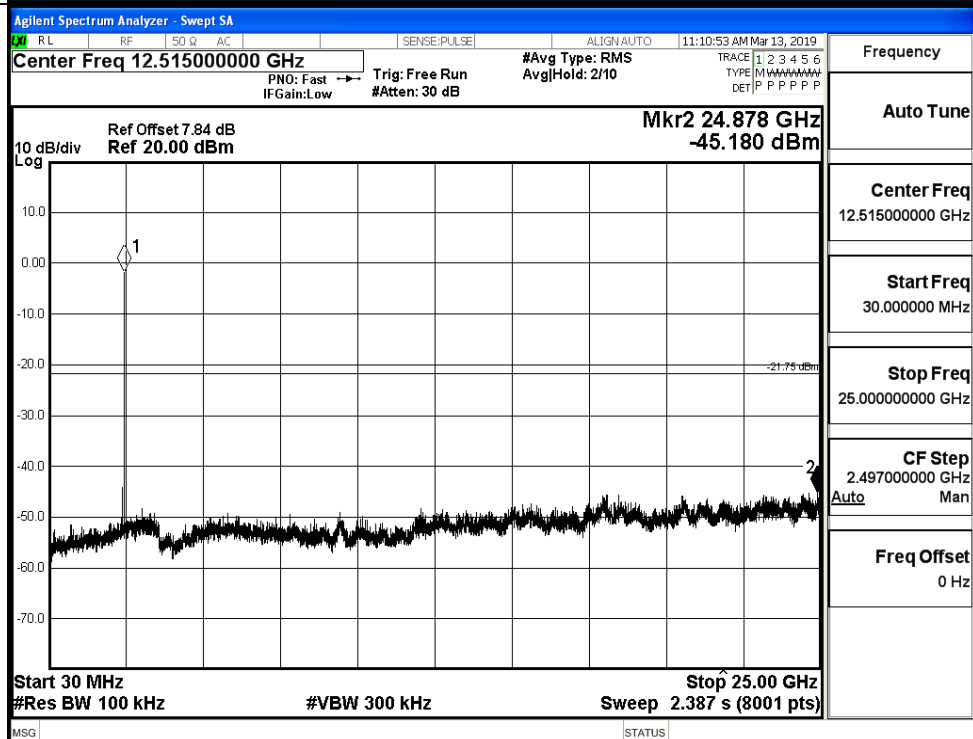


GFSK_HCH_Graphs

Pref

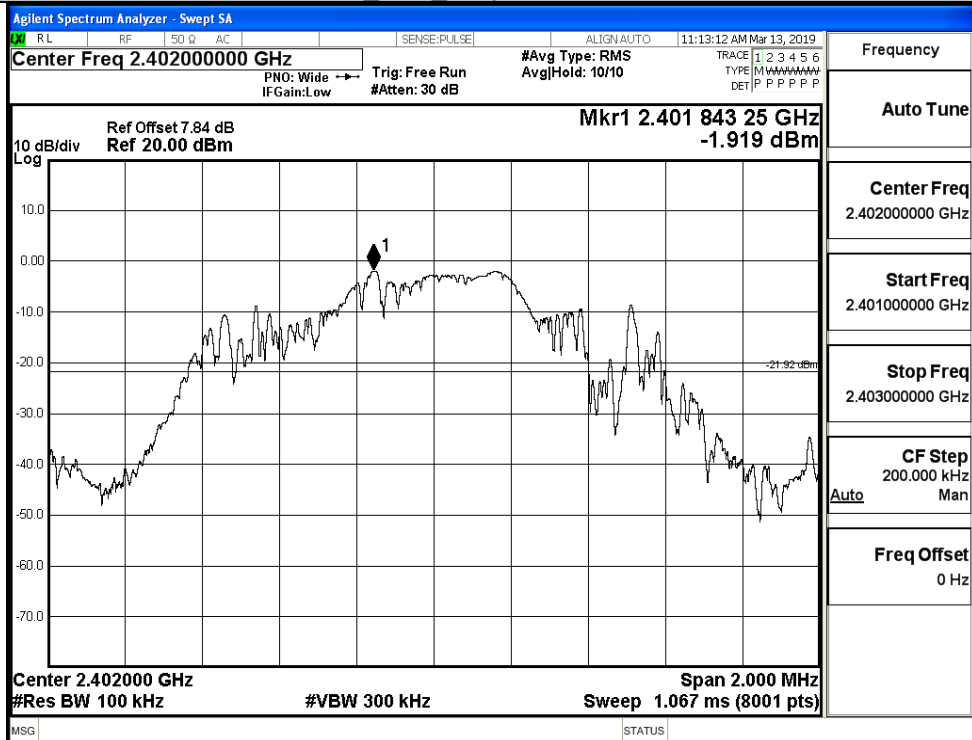


Puw

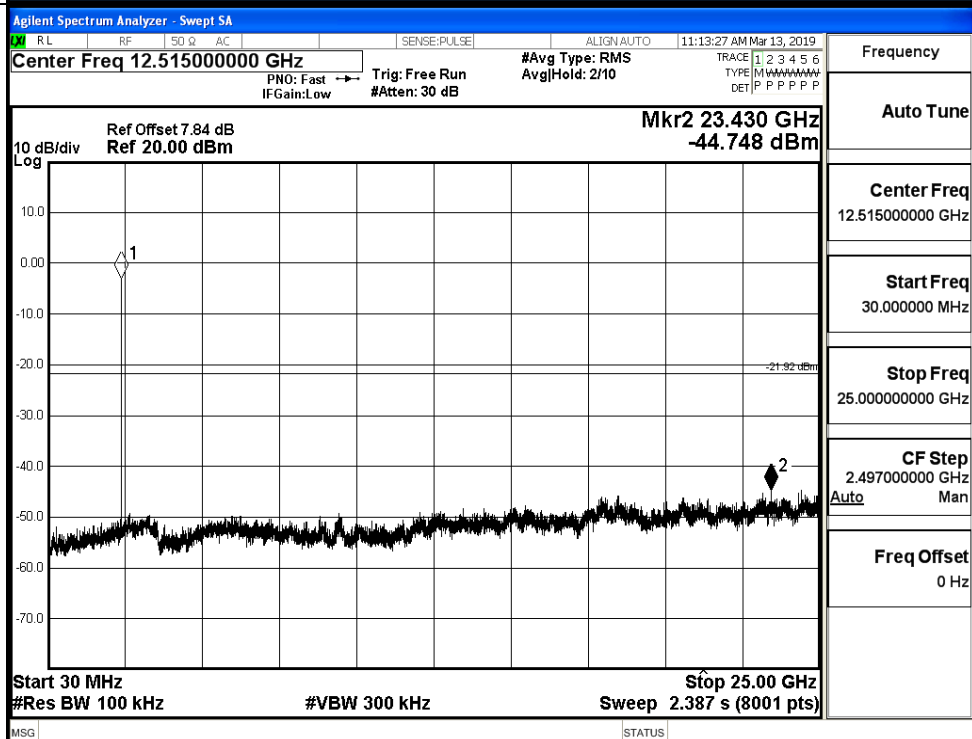


π /4DQPSK_LCH_Graphs

Pref

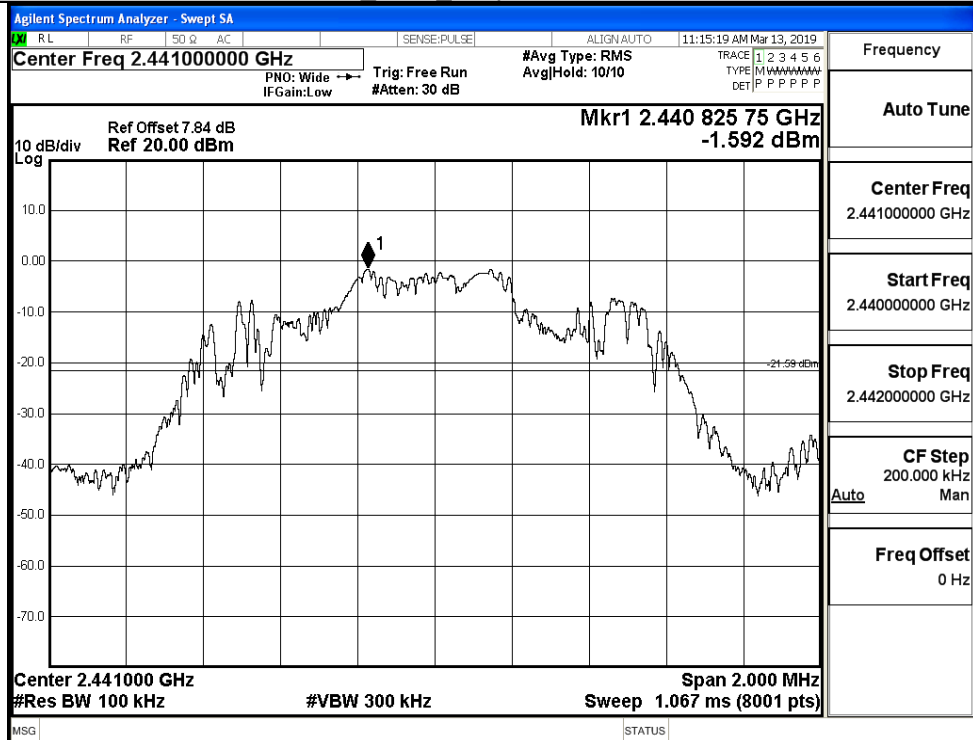


Puw

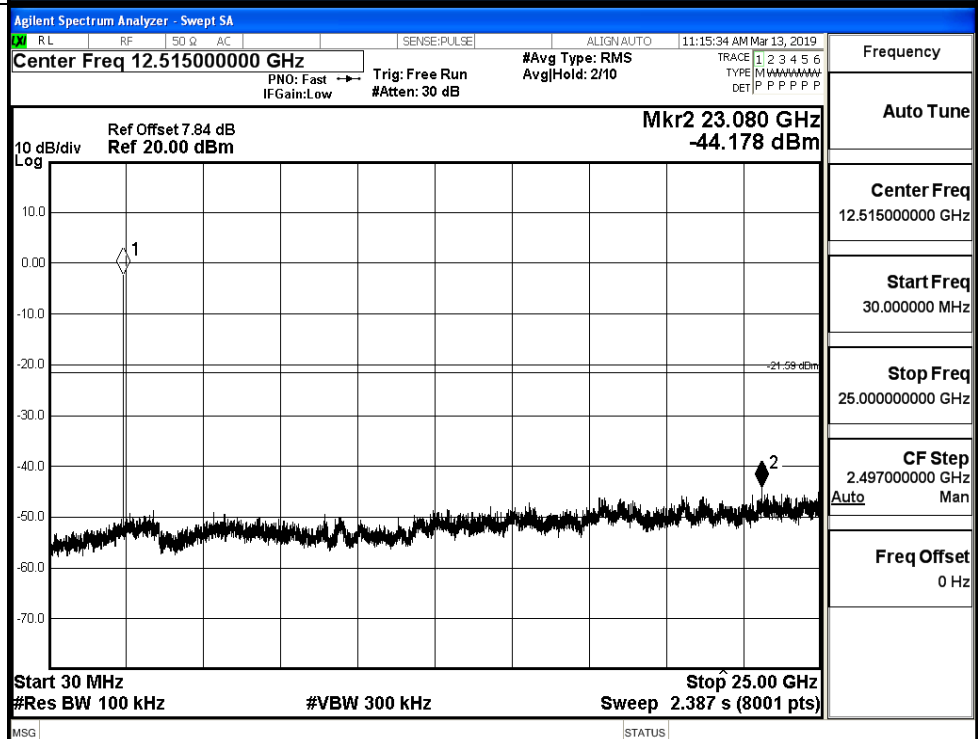


π /4DQPSK_MCH_Graphs

Pref

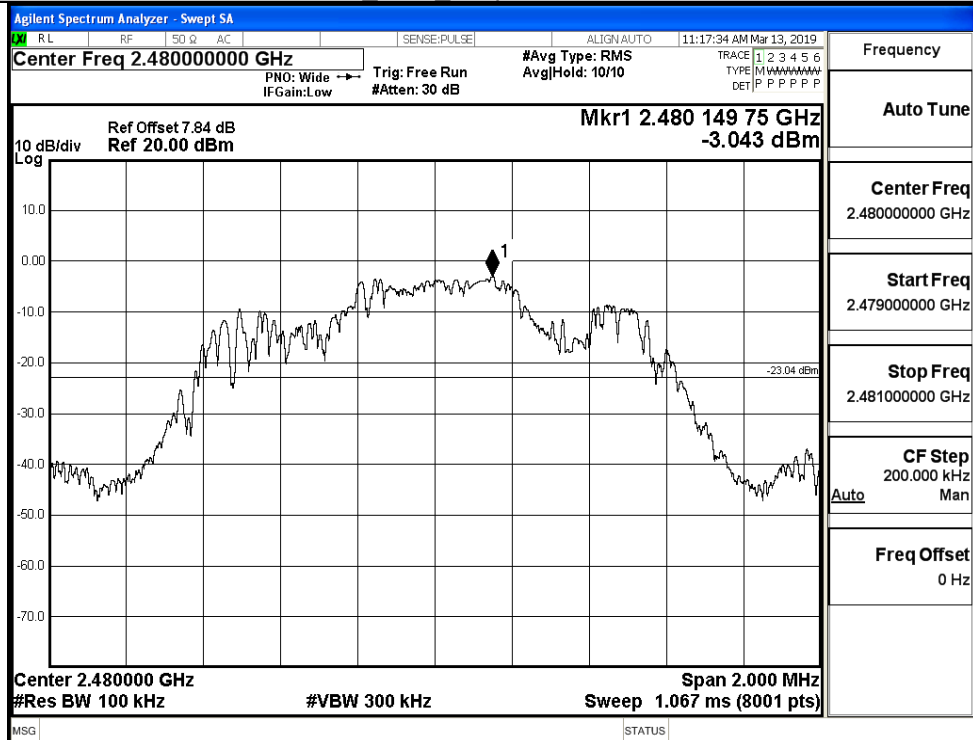


Puw

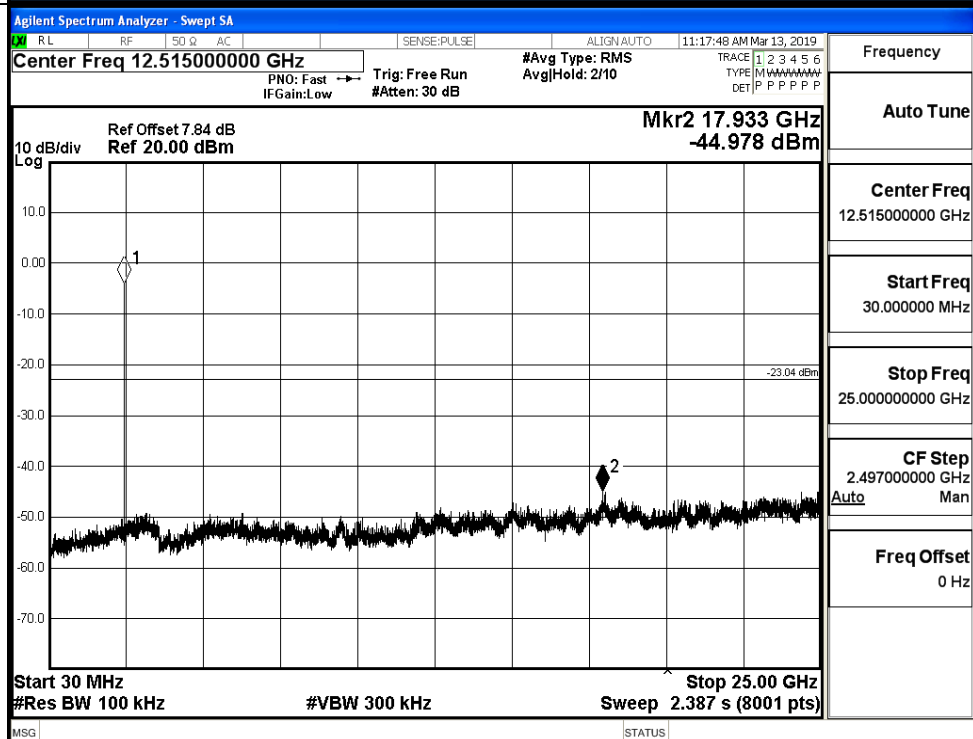


$\pi/4$ DQPSK_HCH_Graphs

Pref

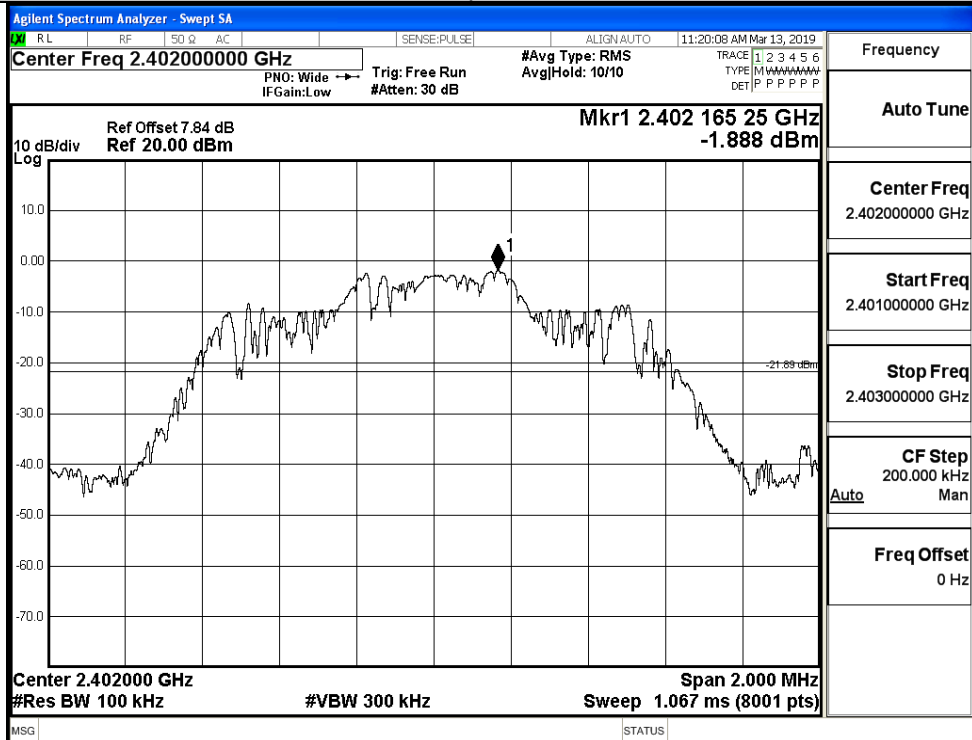


Puw

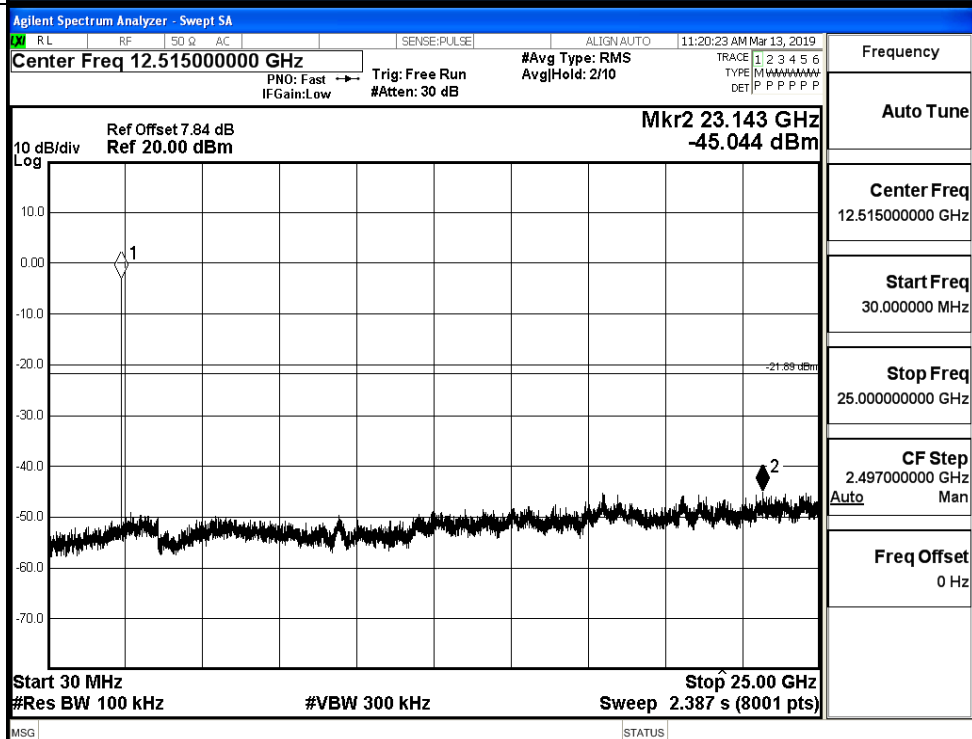


8DPSK_LCH_Graphs

Pref

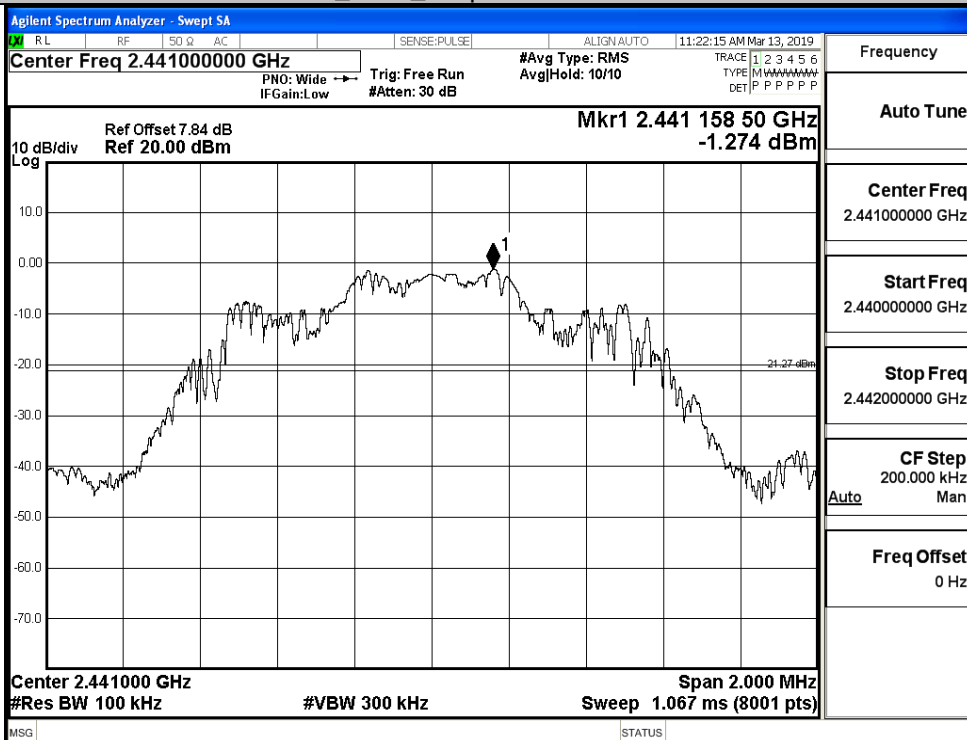


Puw

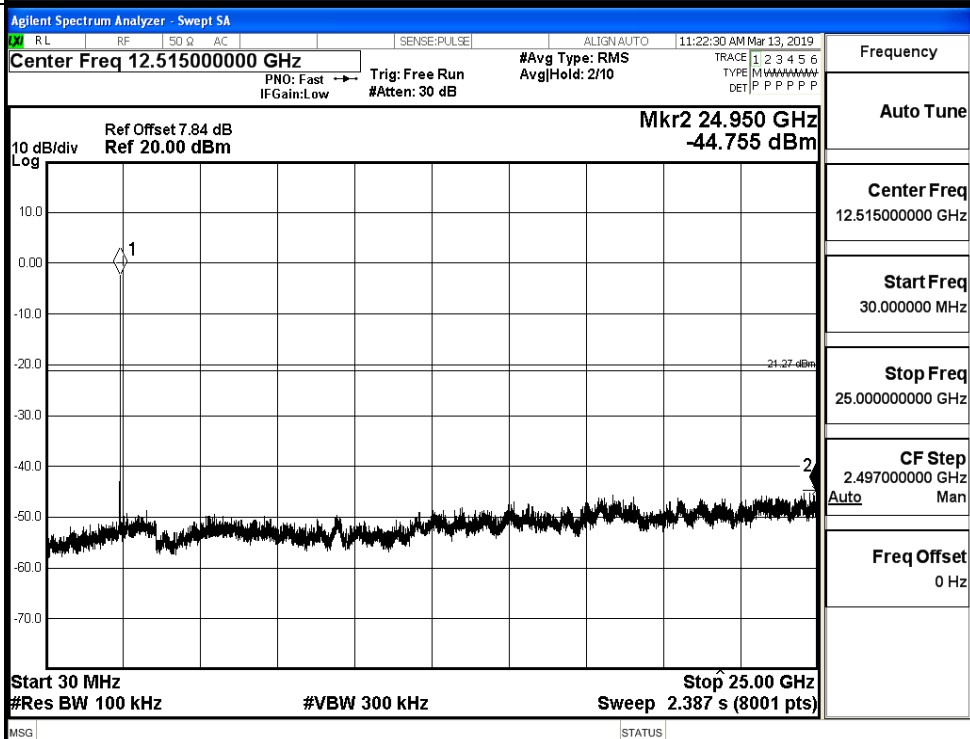


8DPSK_MCH_Graphs

Pref

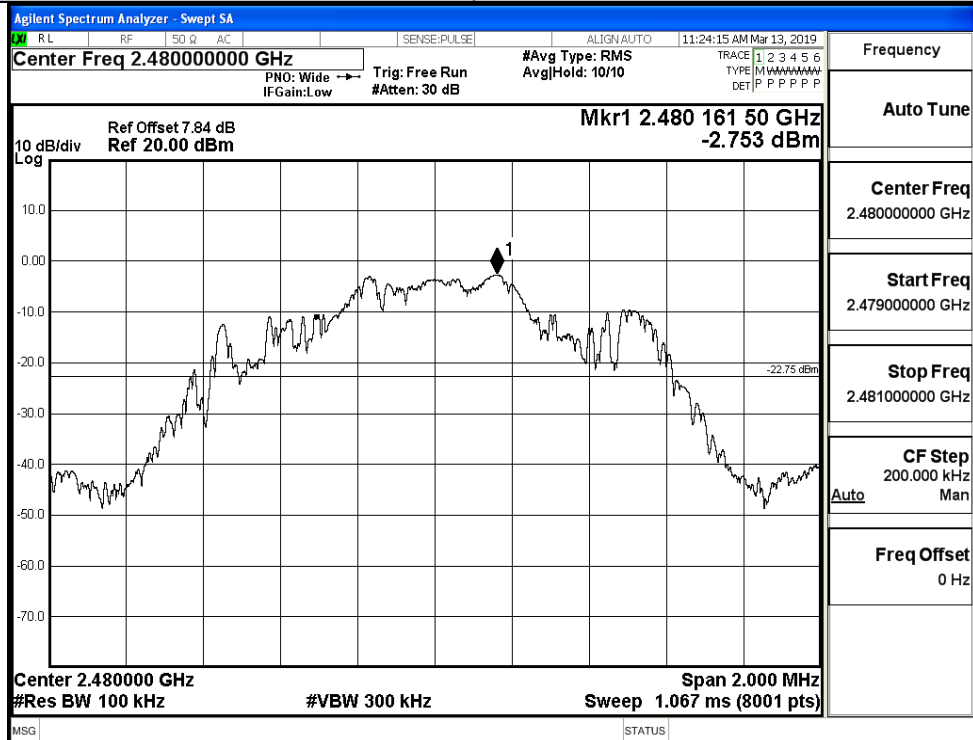


Puw

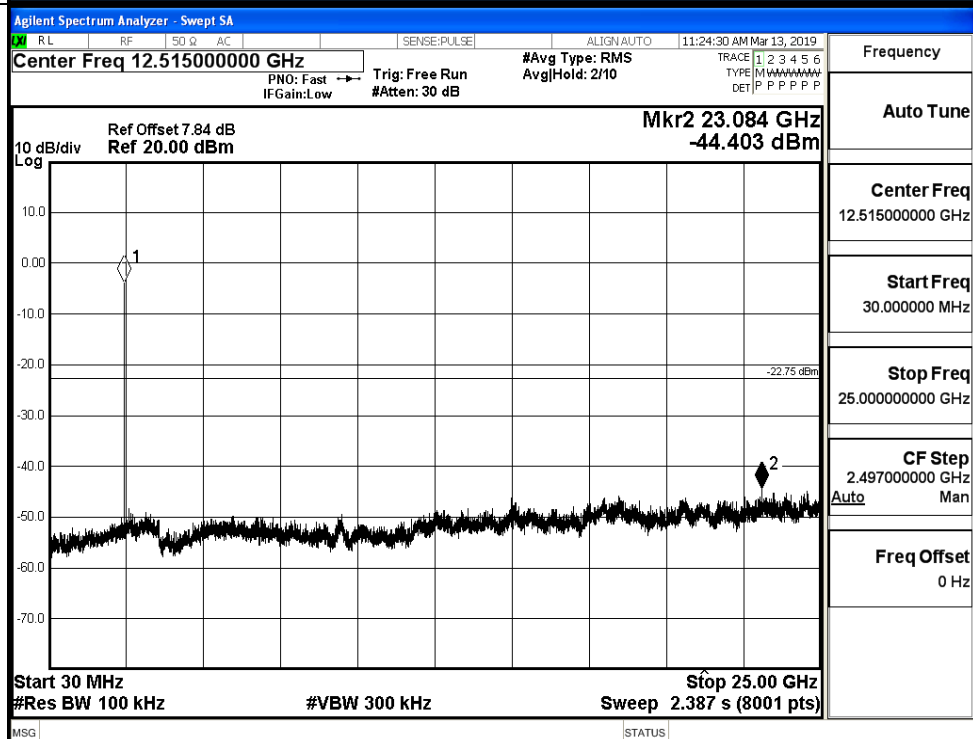


8DPSK_HCH_Graphs

Pref



Puw

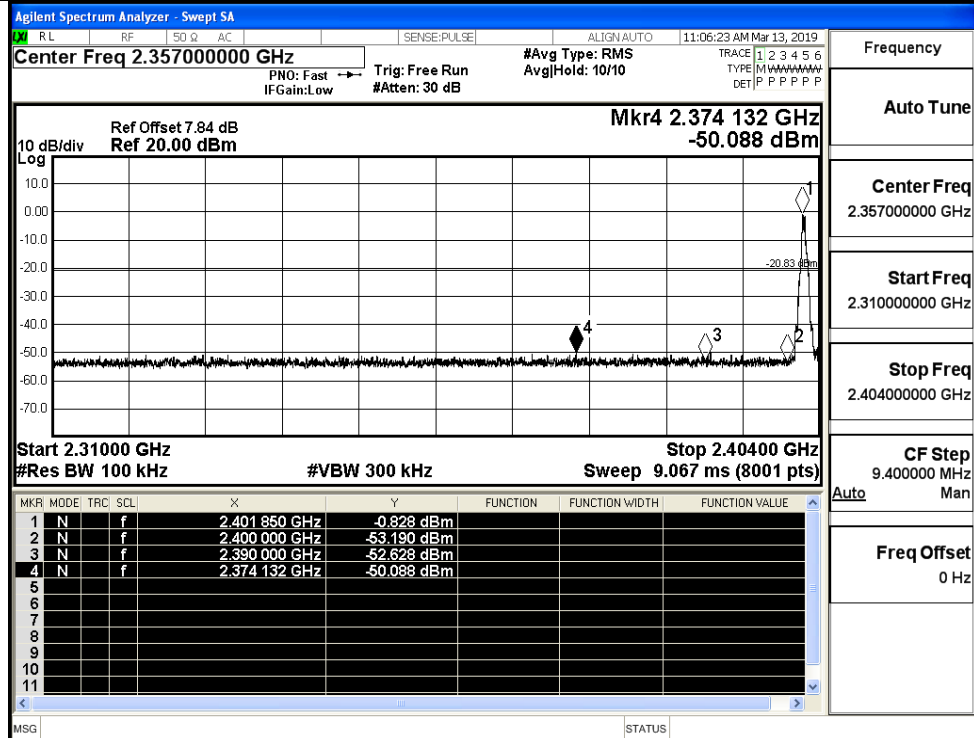


A.7 Band-edge for RF Conducted Emissions

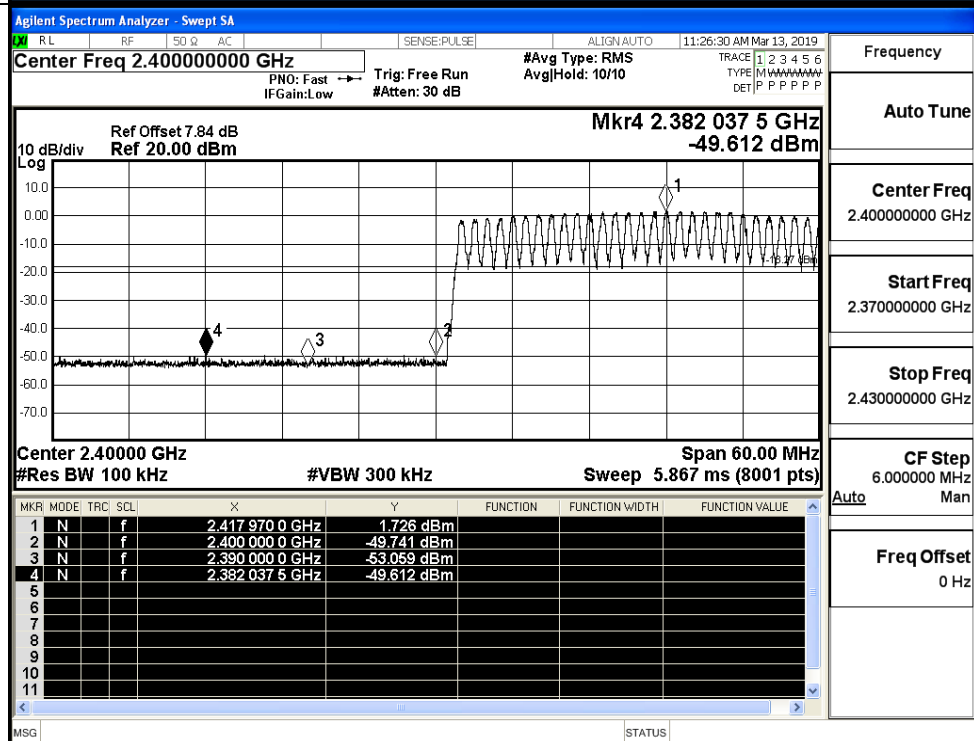
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.828	Off	-50.088	-20.83	PASS
			1.726	On	-49.612	-18.27	PASS
	HCH	2480	-1.717	Off	-49.938	-21.72	PASS
			1.304	On	-50.196	-18.7	PASS
$\pi/4$ DQPSK	LCH	2402	-2.899	Off	-50.046	-22.9	PASS
			0.381	On	-49.549	-19.62	PASS
	HCH	2480	-2.749	Off	-49.480	-22.75	PASS
			0.003	On	-49.331	-20	PASS
8DPSK	LCH	2402	-1.793	Off	-50.273	-21.79	PASS
			0.517	On	-49.747	-19.48	PASS
	HCH	2480	-2.814	Off	-49.798	-22.81	PASS
			-0.171	On	-49.270	-20.17	PASS

Test Graphs

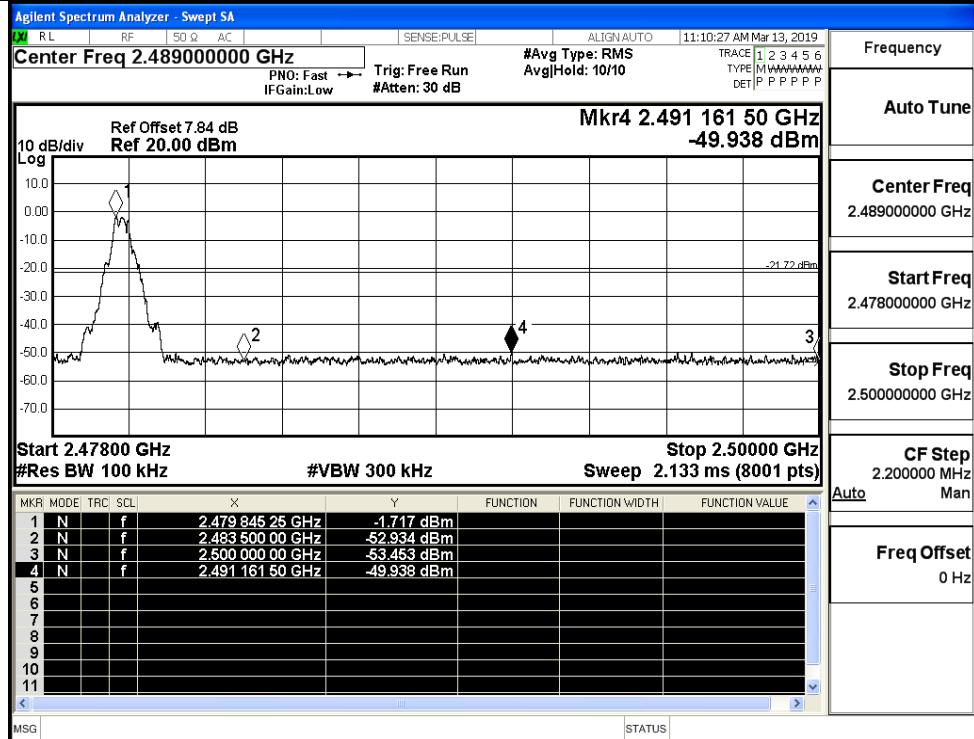
GFSK/LCH/No Hop



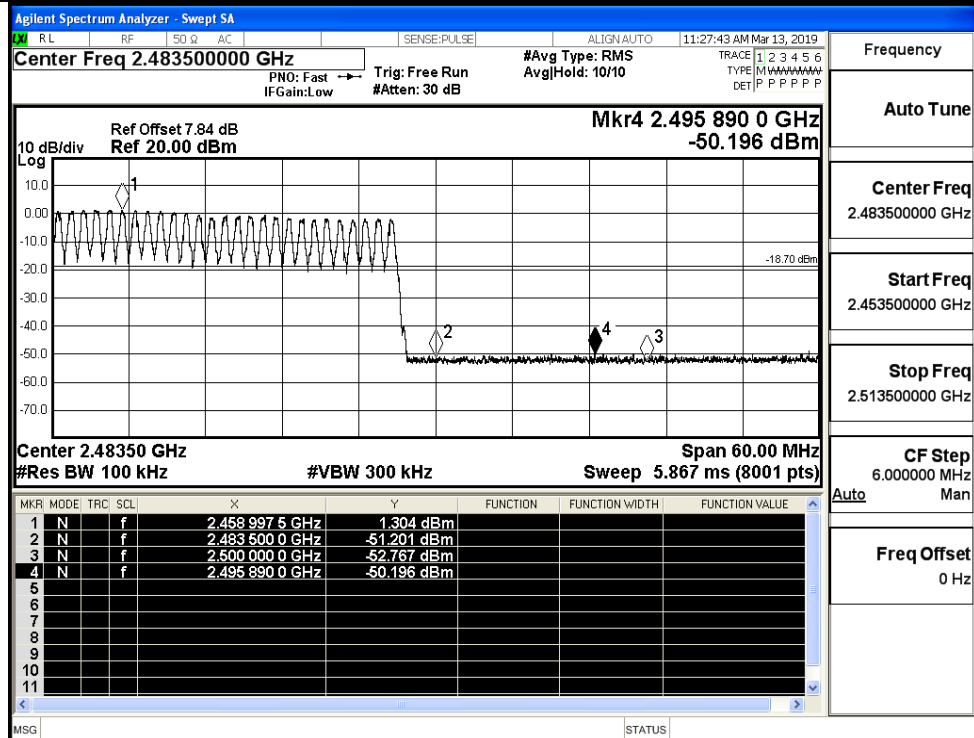
GFSK/LCH/Hop



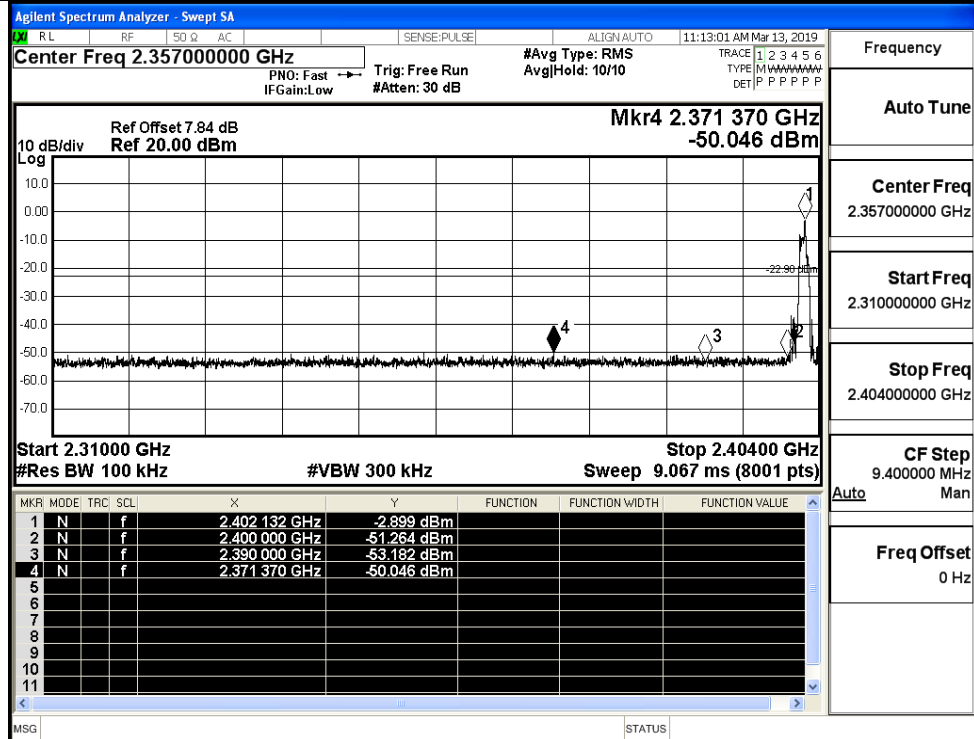
GFSK/HCH/No Hop



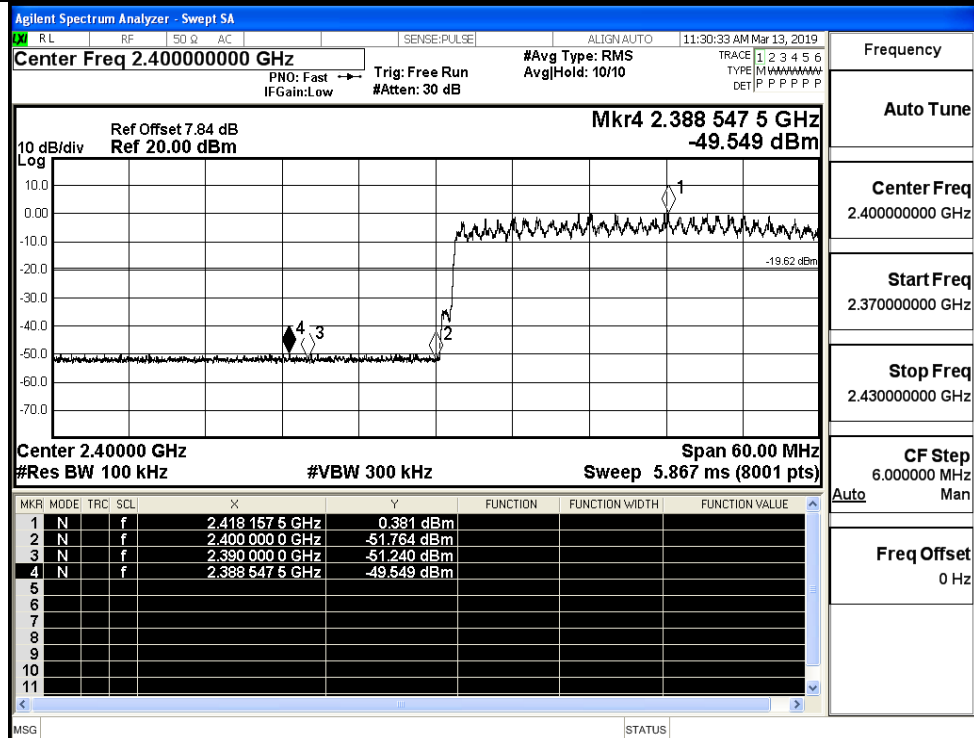
GFSK/HCH/Hop



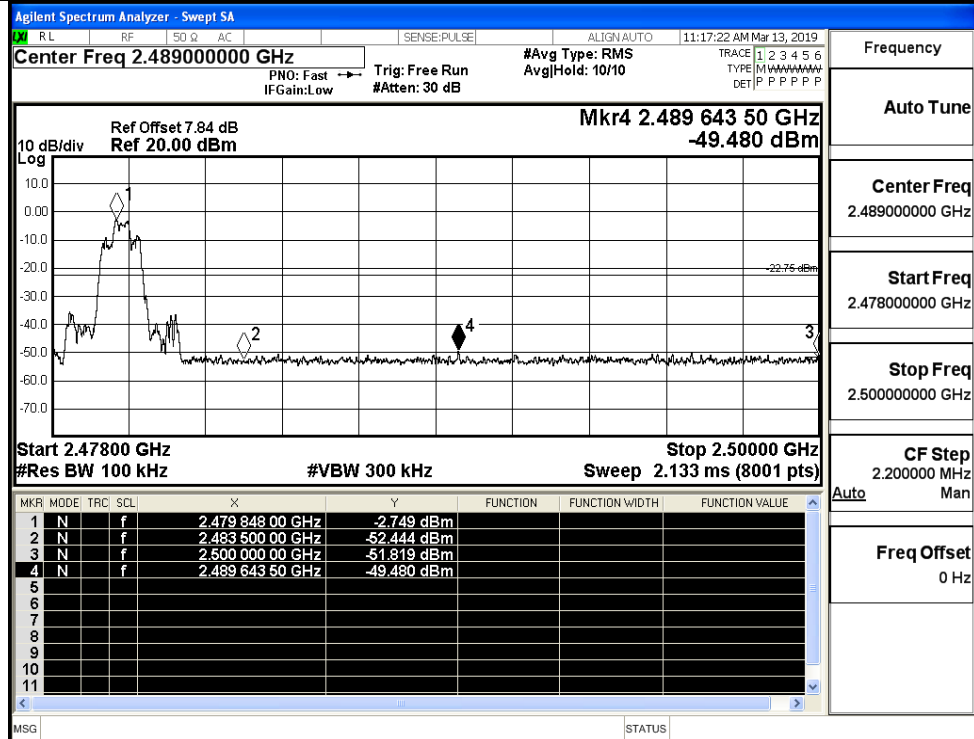
$\pi/4$ DQPSK/LCH/No
Hop



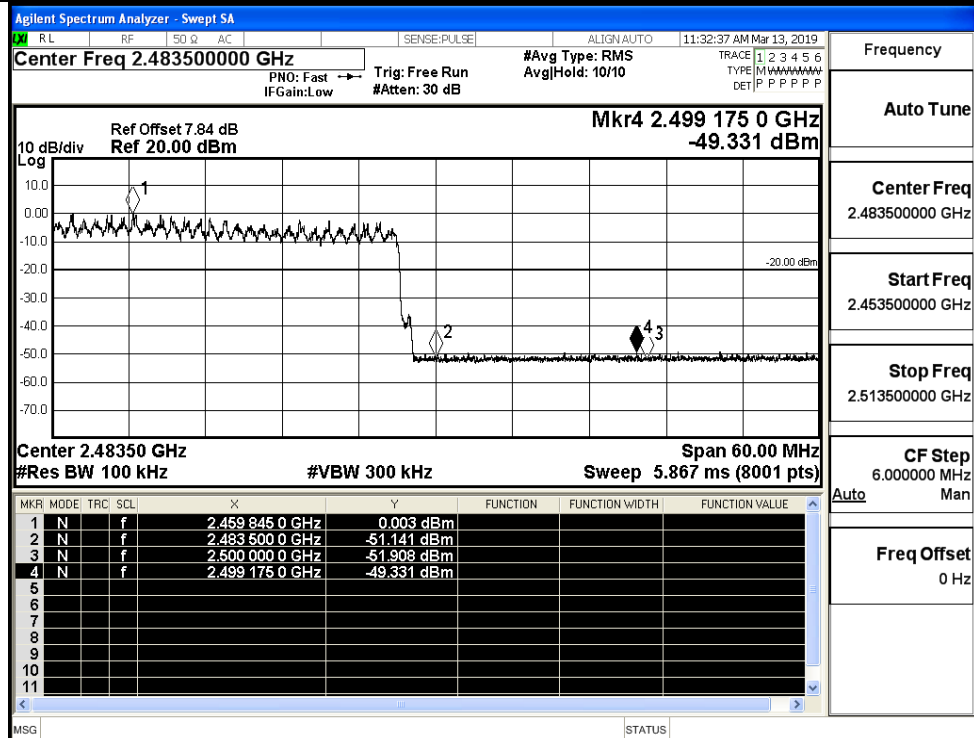
$\pi/4$ DQPSK/LCH/Hop



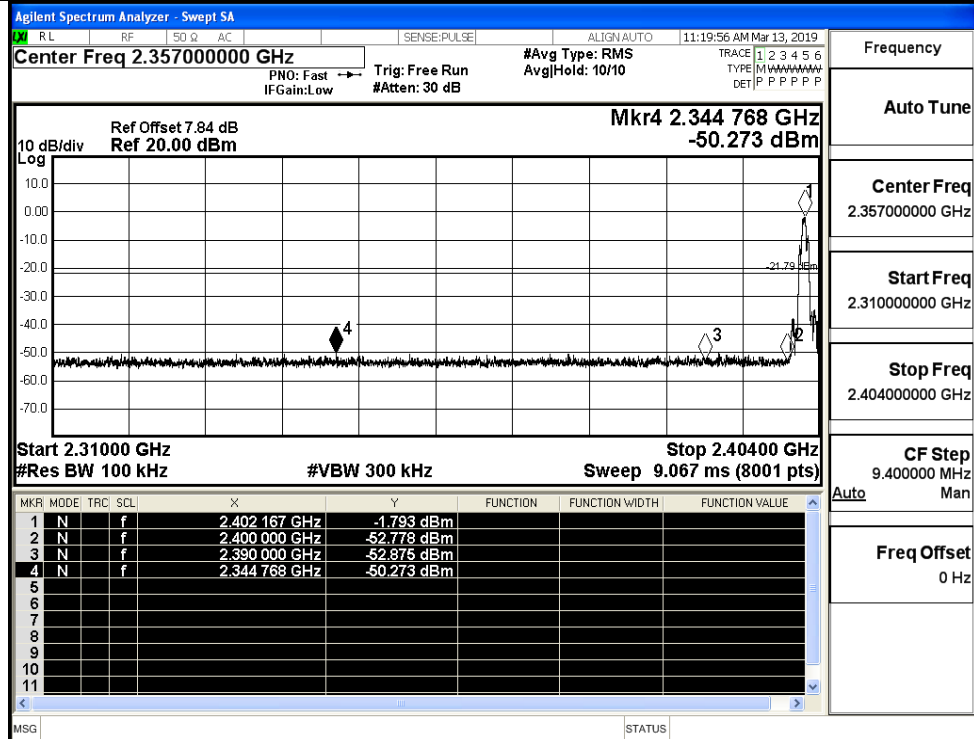
$\pi/4$ DQPSK/HCH/No
Hop



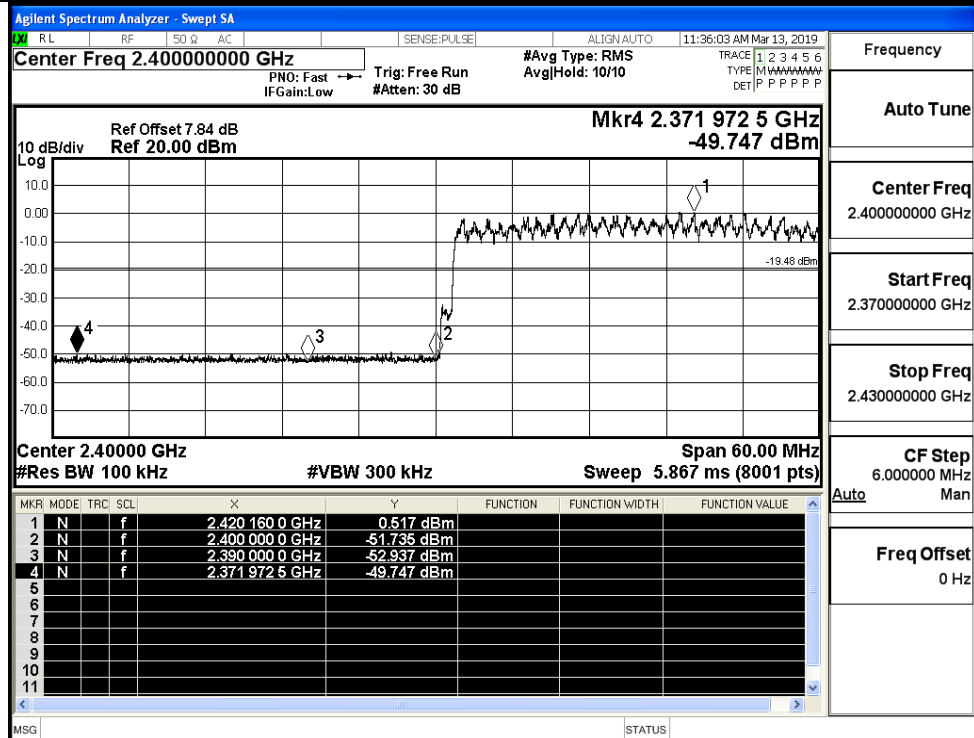
$\pi/4$ DQPSK/HCH/Hop



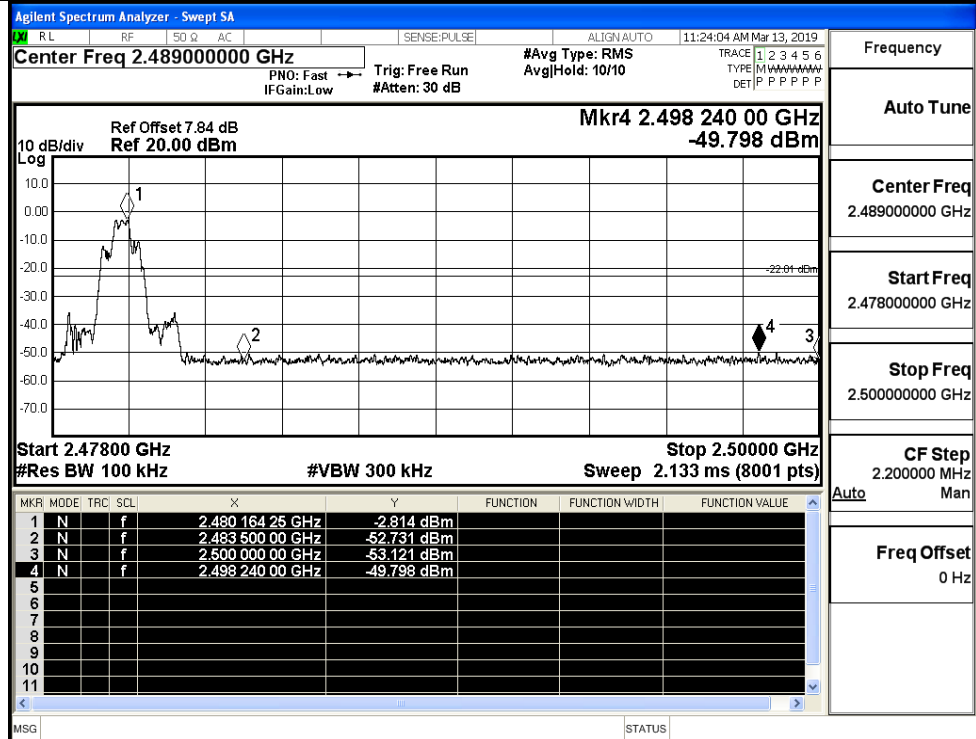
8DPSK/LCH/No Hop



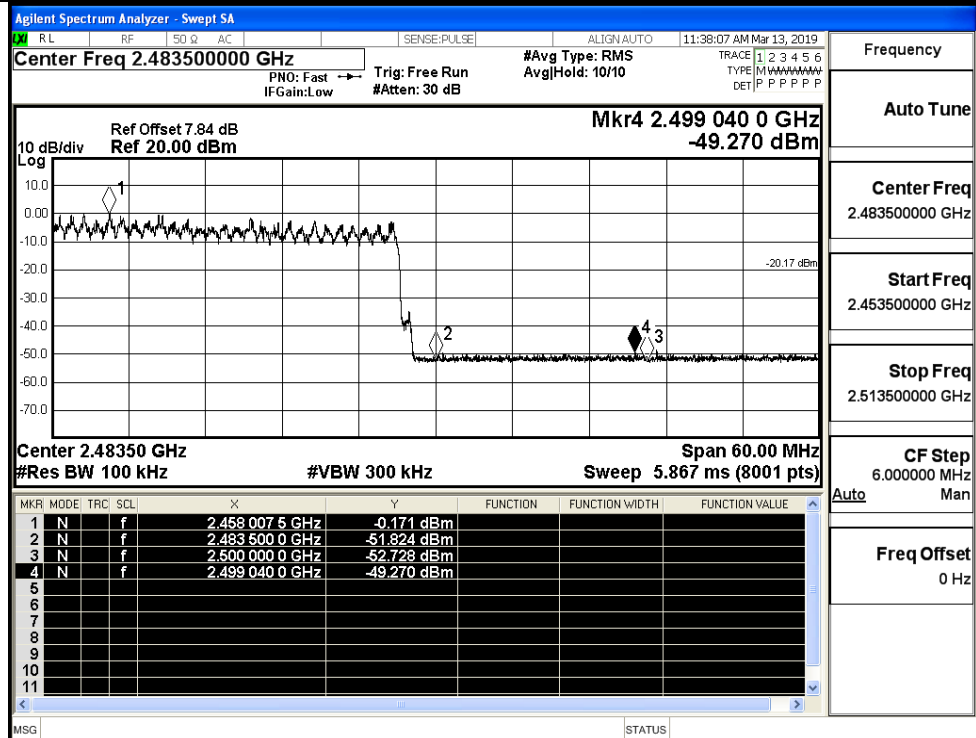
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



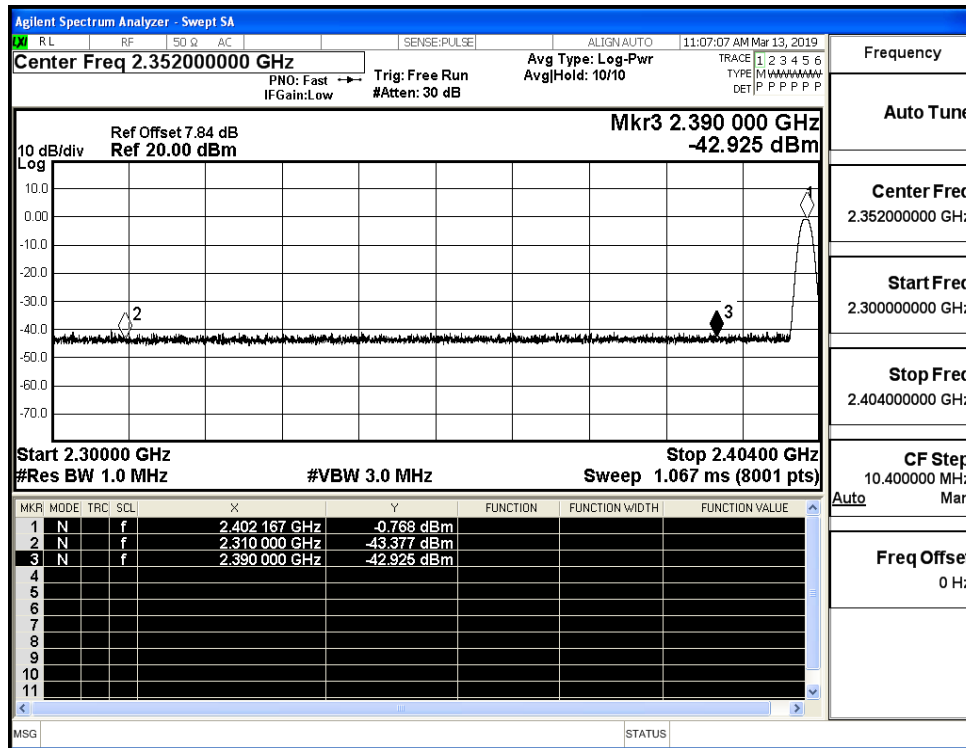
8DPSK/HCH/Hop



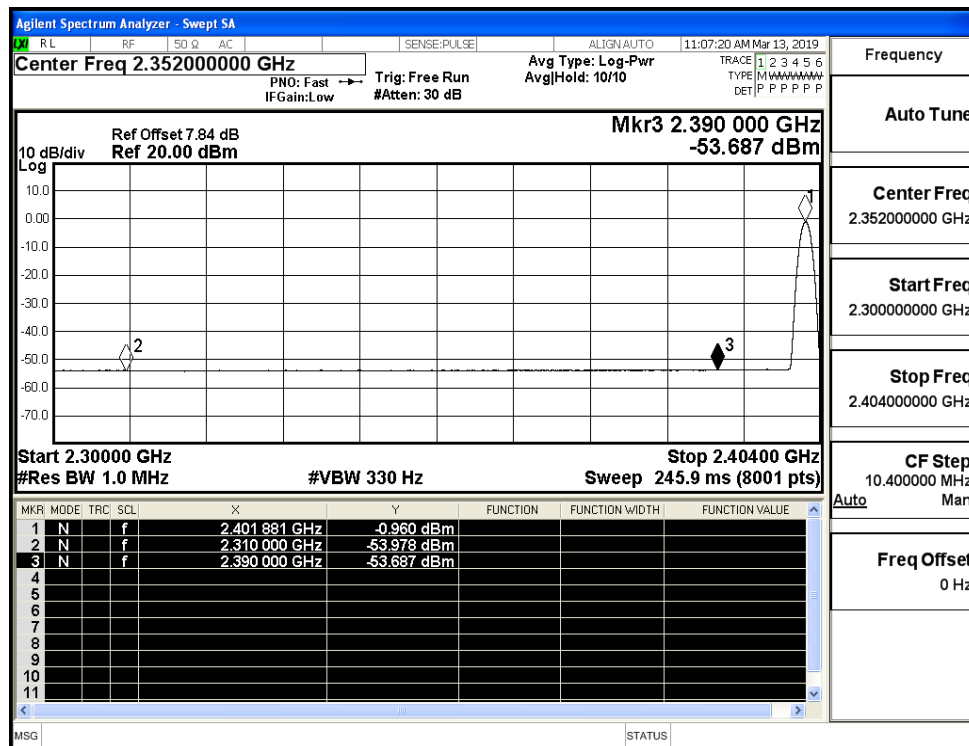
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.38	2.0	0	53.88	PEAK	74	PASS
	Off	2310.0	-53.98	2.0	0	43.28	AV	54	PASS
	Off	2390.0	-42.93	2.0	0	54.33	PEAK	74	PASS
	Off	2390.0	-53.69	2.0	0	43.57	AV	54	PASS
	Off	2483.5	-42.65	2.0	0	54.60	PEAK	74	PASS
	Off	2483.5	-53.47	2.0	0	43.79	AV	54	PASS
	Off	2500.0	-42.20	2.0	0	55.06	PEAK	74	PASS
	Off	2500.0	-53.29	2.0	0	43.97	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.46	2.0	0	54.80	PEAK	74	PASS
	Off	2310.0	-54.01	2.0	0	43.25	AV	54	PASS
	Off	2390.0	-43.37	2.0	0	53.88	PEAK	74	PASS
	Off	2390.0	-53.63	2.0	0	43.63	AV	54	PASS
	Off	2483.5	-43.20	2.0	0	54.06	PEAK	74	PASS
	Off	2483.5	-53.32	2.0	0	43.94	AV	54	PASS
	Off	2500.0	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2500.0	-53.29	2.0	0	43.97	AV	54	PASS
8DPSK	Off	2310.0	-44.04	2.0	0	53.22	PEAK	74	PASS
	Off	2310.0	-53.99	2.0	0	43.27	AV	54	PASS
	Off	2390.0	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2390.0	-53.64	2.0	0	43.62	AV	54	PASS
	Off	2483.5	-43.37	2.0	0	53.88	PEAK	74	PASS
	Off	2483.5	-53.48	2.0	0	43.77	AV	54	PASS
	Off	2500.0	-43.22	2.0	0	54.03	PEAK	74	PASS
	Off	2500.0	-53.27	2.0	0	43.99	AV	54	PASS

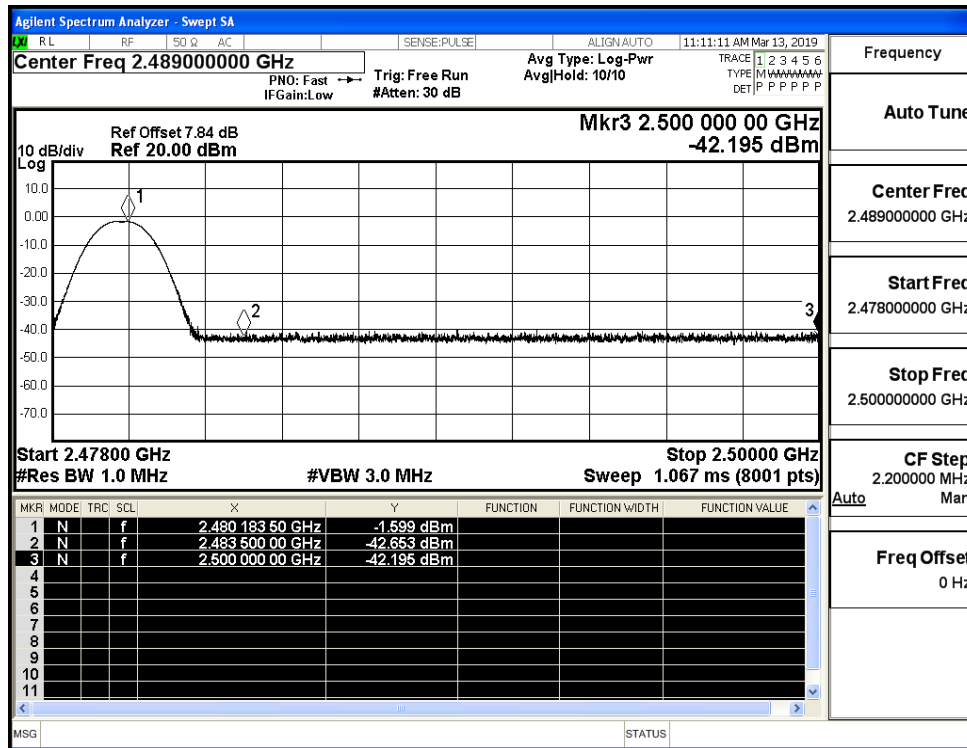
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



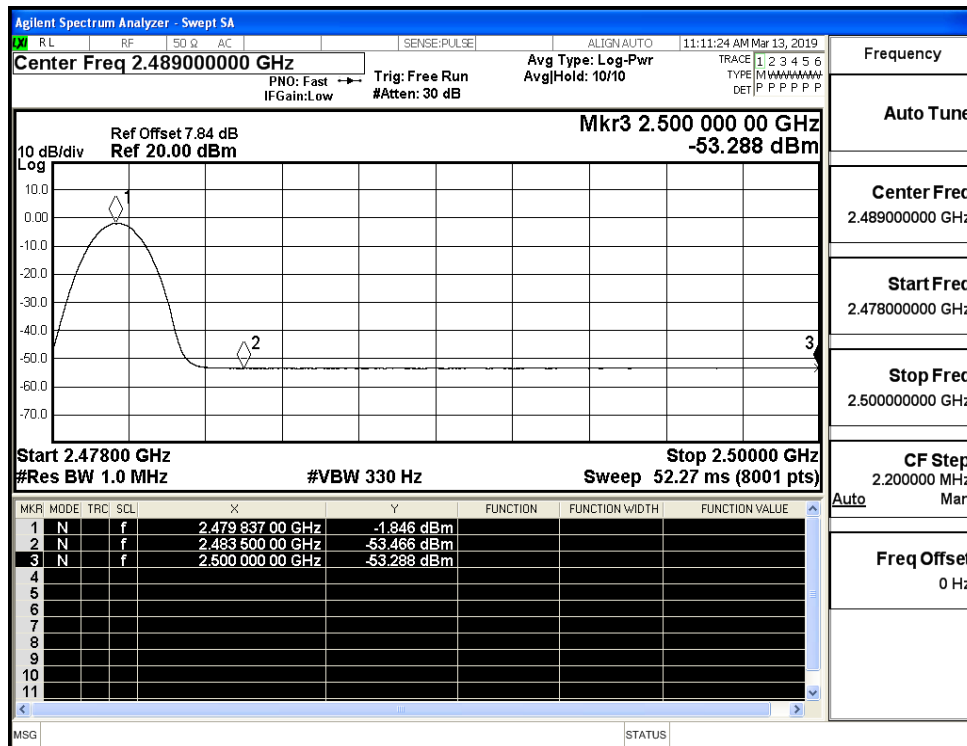
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

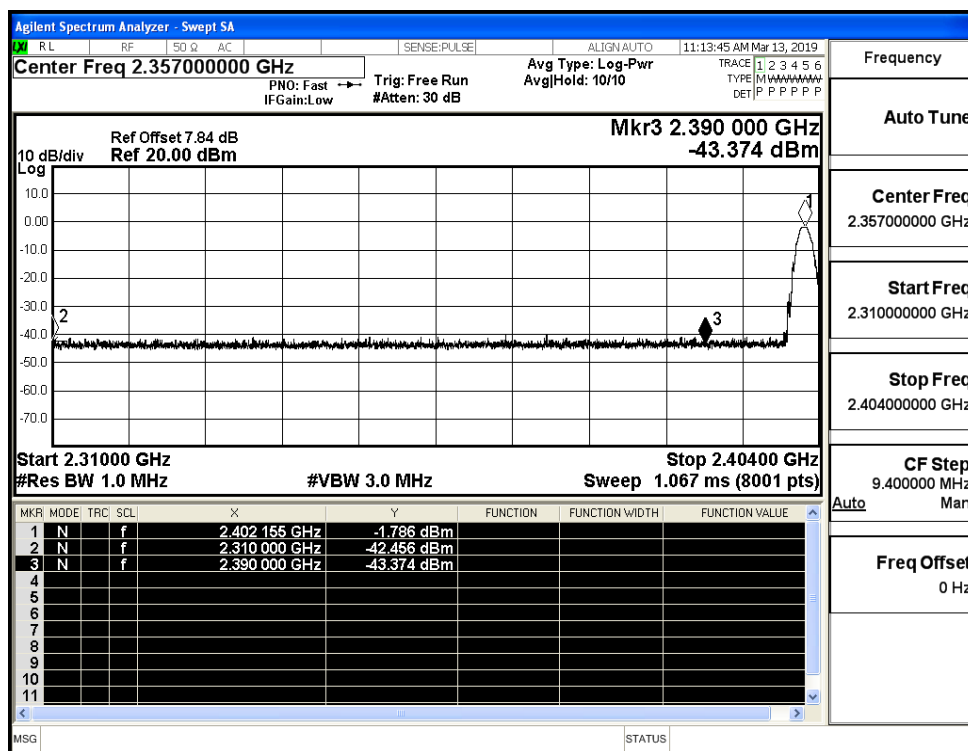
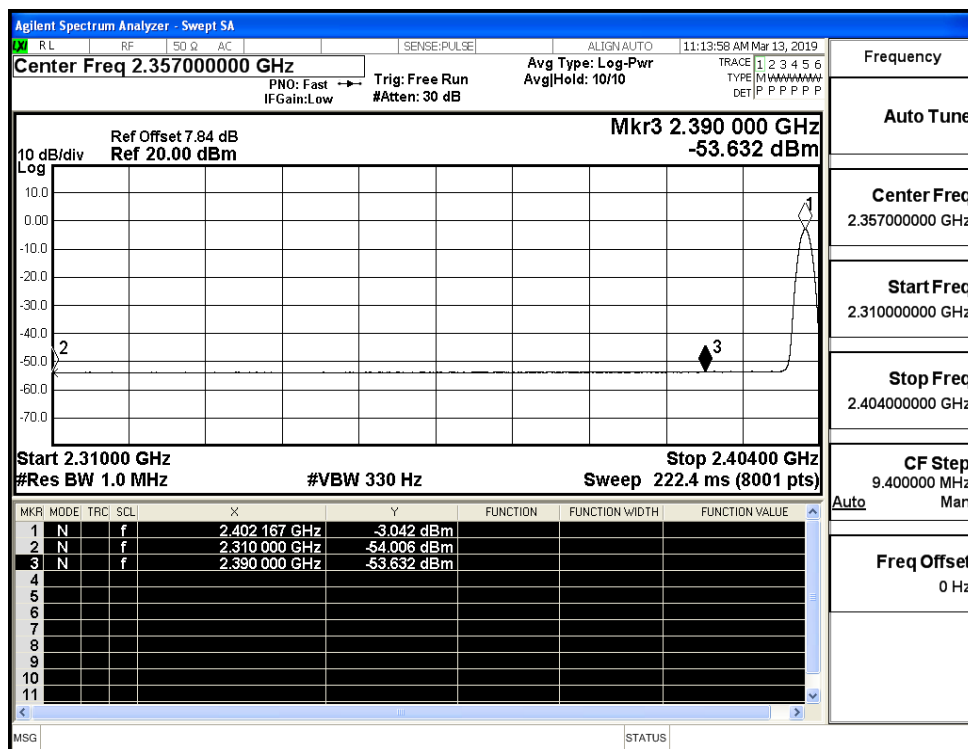


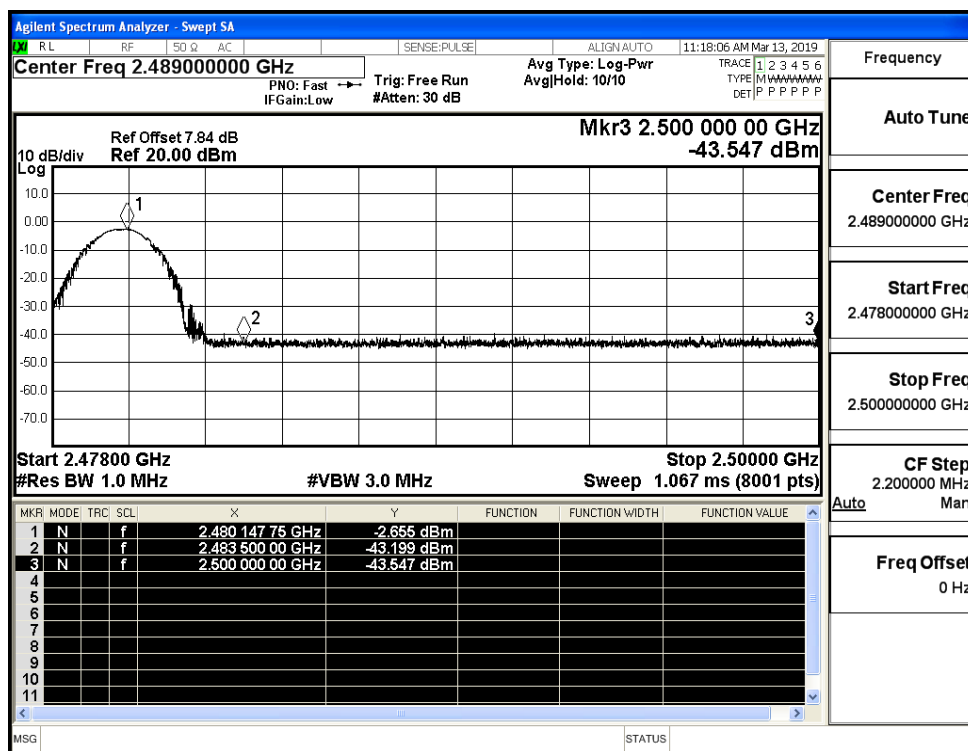
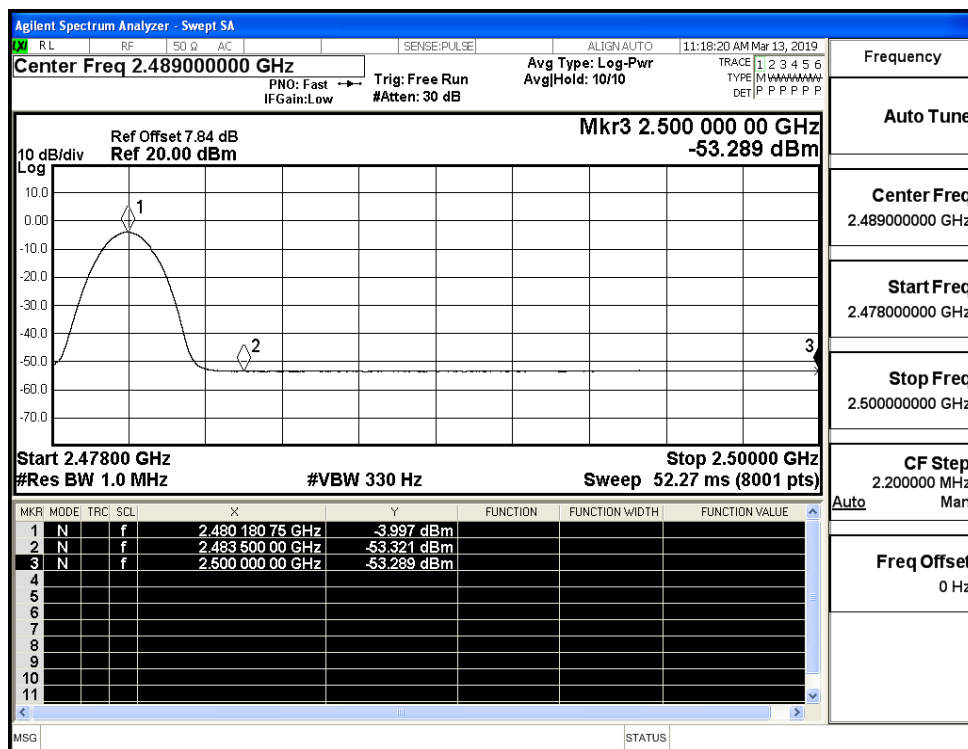
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



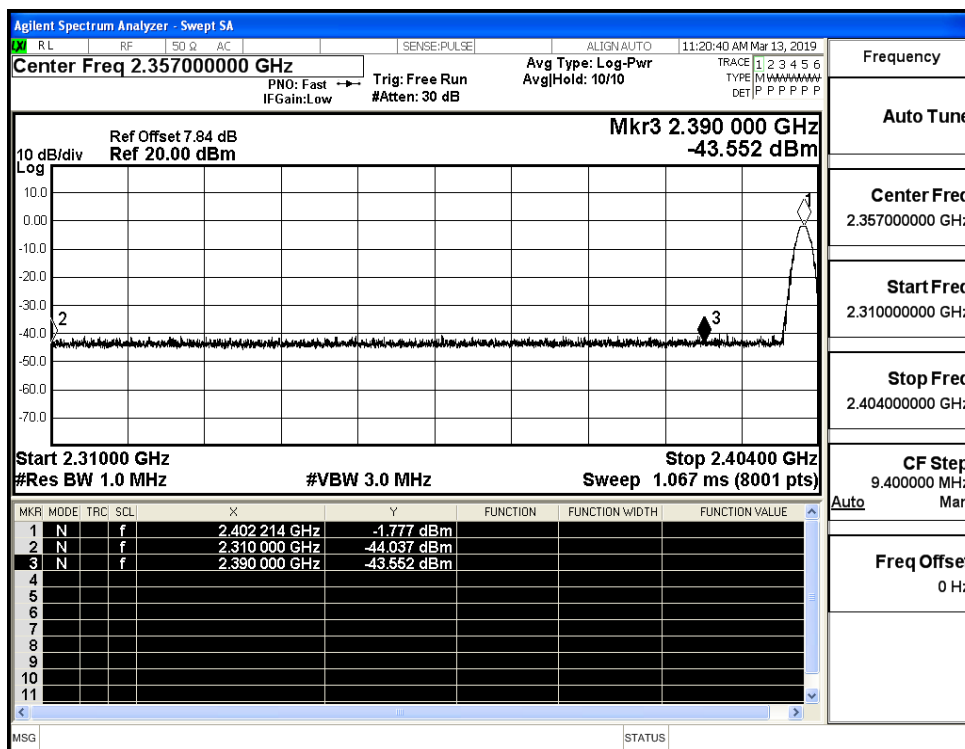
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



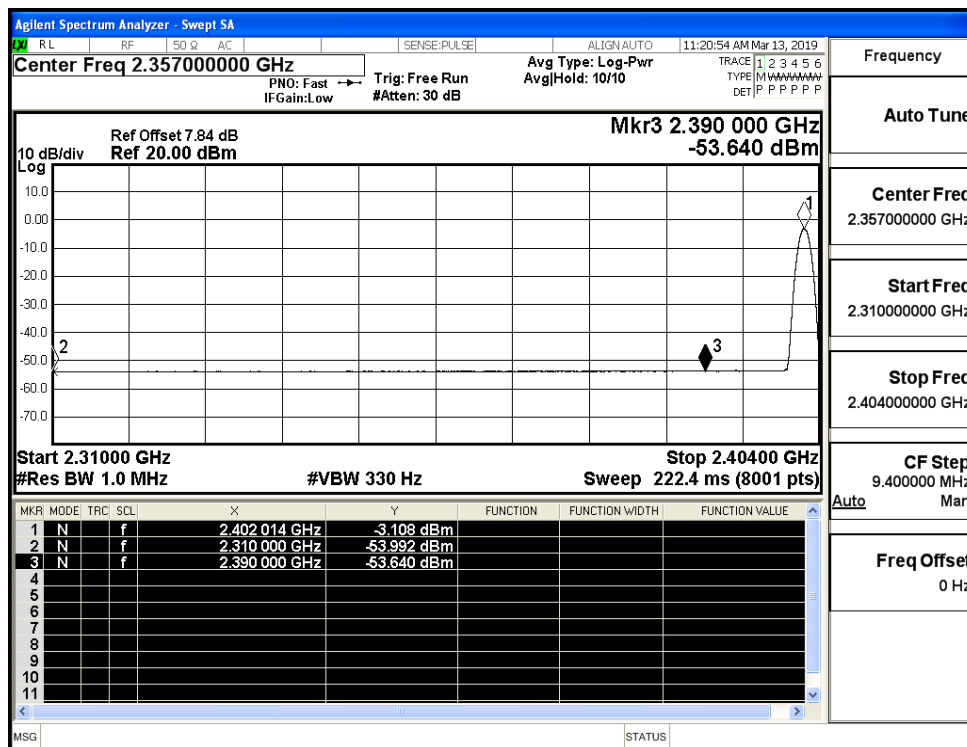
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

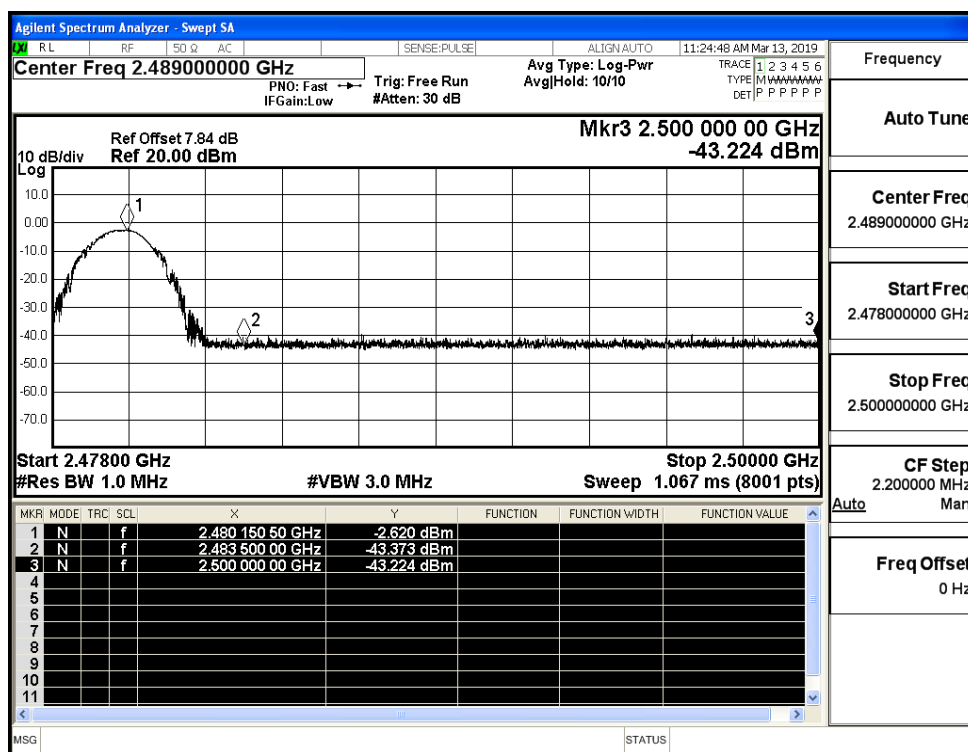
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

