

Appendix A

RF Test Data for BT 3.0(BDR/EDR) (Conducted Measurement)

Product Name: Neckband wireless earphone

Trade Mark: N/A

Test Model: NE03

Environmental Conditions

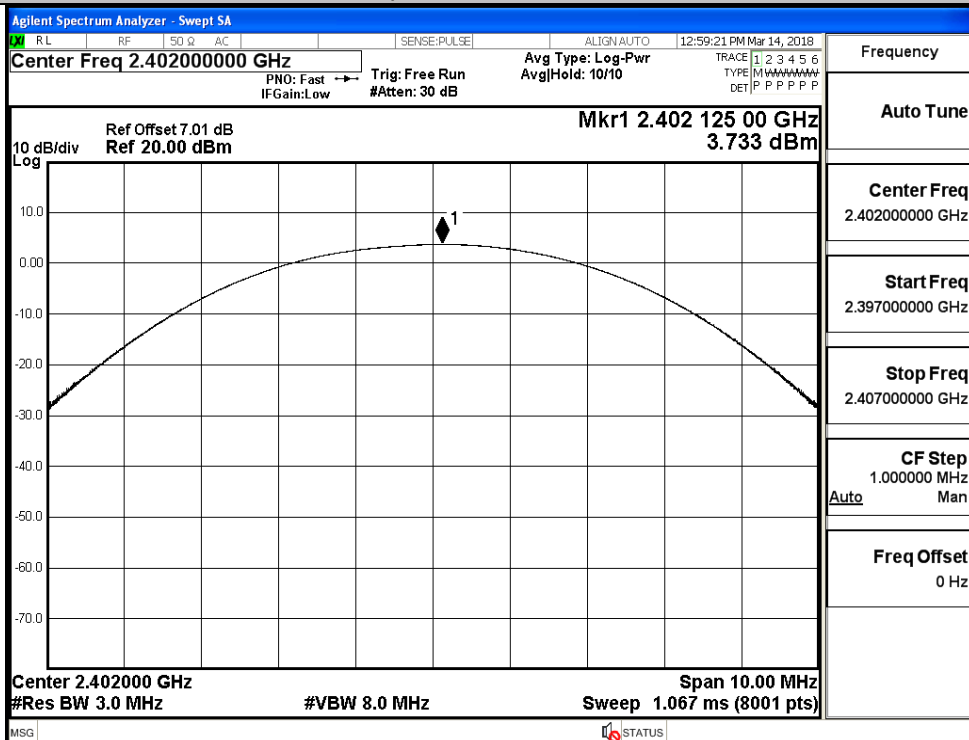
Temperature:	22.5 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jayden.zhao
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

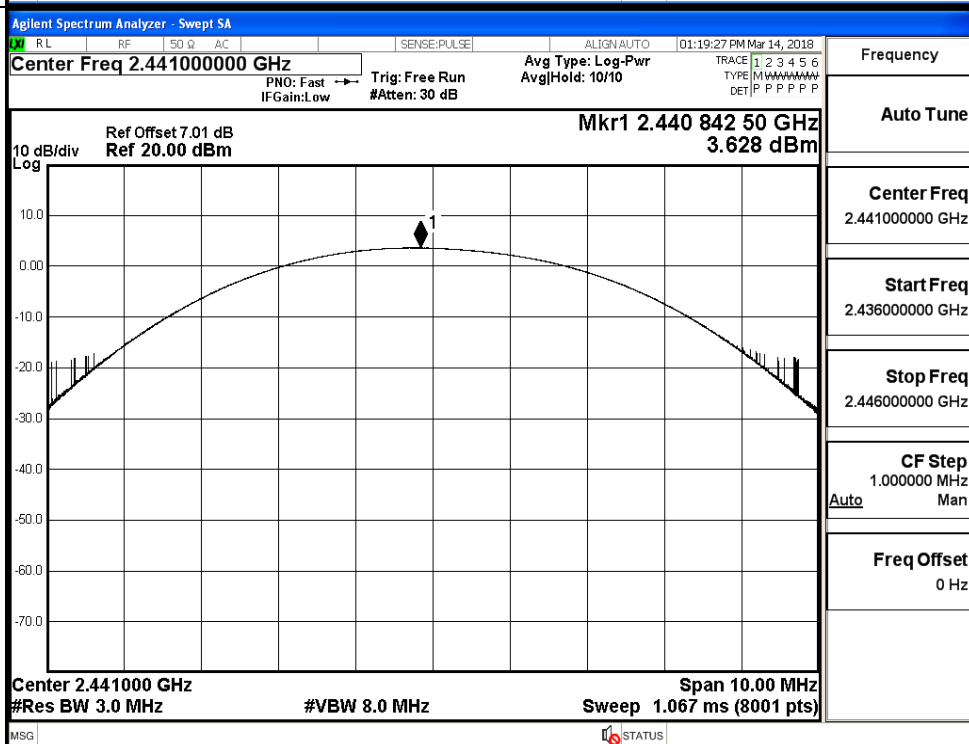
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.733	30	PASS
	MCH	3.628	30	PASS
	HCH	3.255	30	PASS
$\pi/4$ DQPSK	LCH	3.514	21	PASS
	MCH	3.448	21	PASS
	HCH	3.755	21	PASS
8DPSK	LCH	3.954	21	PASS
	MCH	3.987	21	PASS
	HCH	3.467	21	PASS

Test Graphs

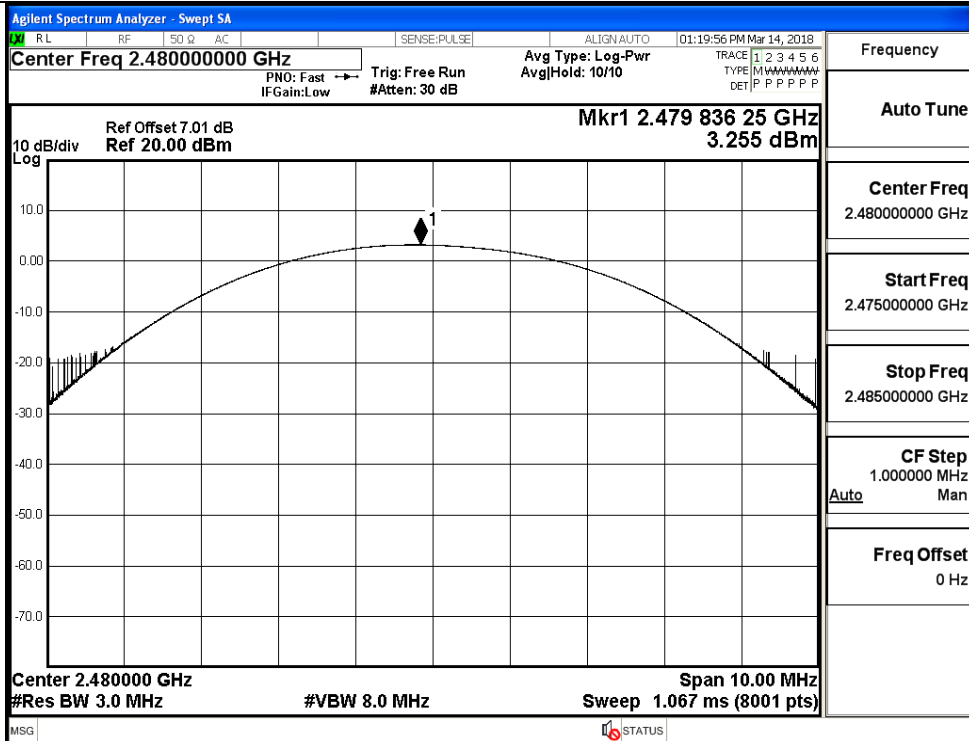
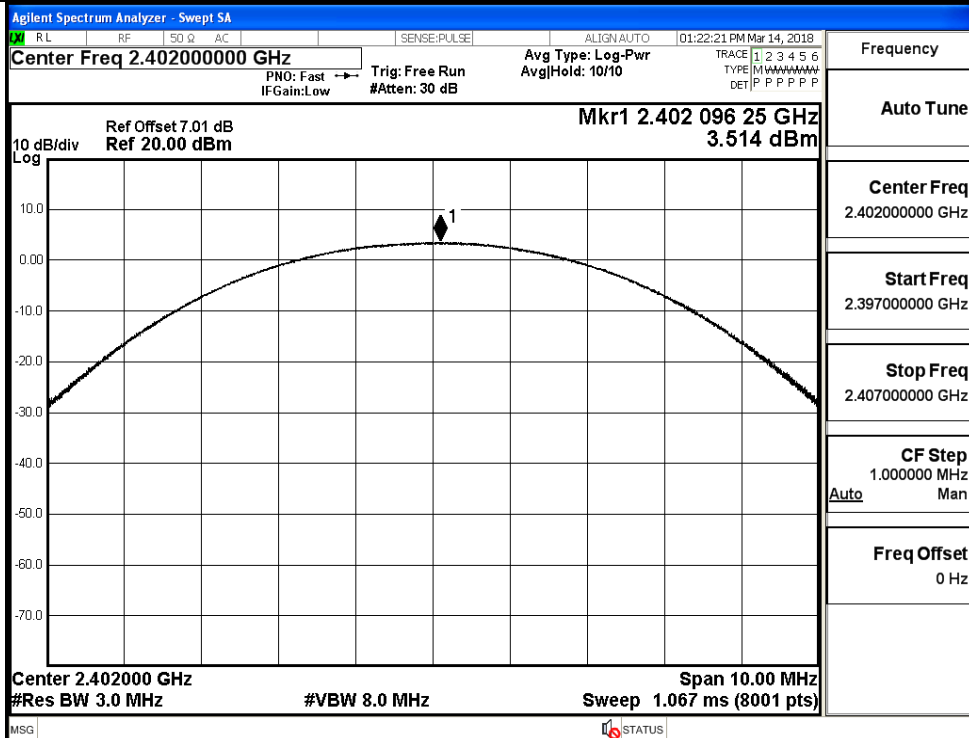
GFSK/LCH

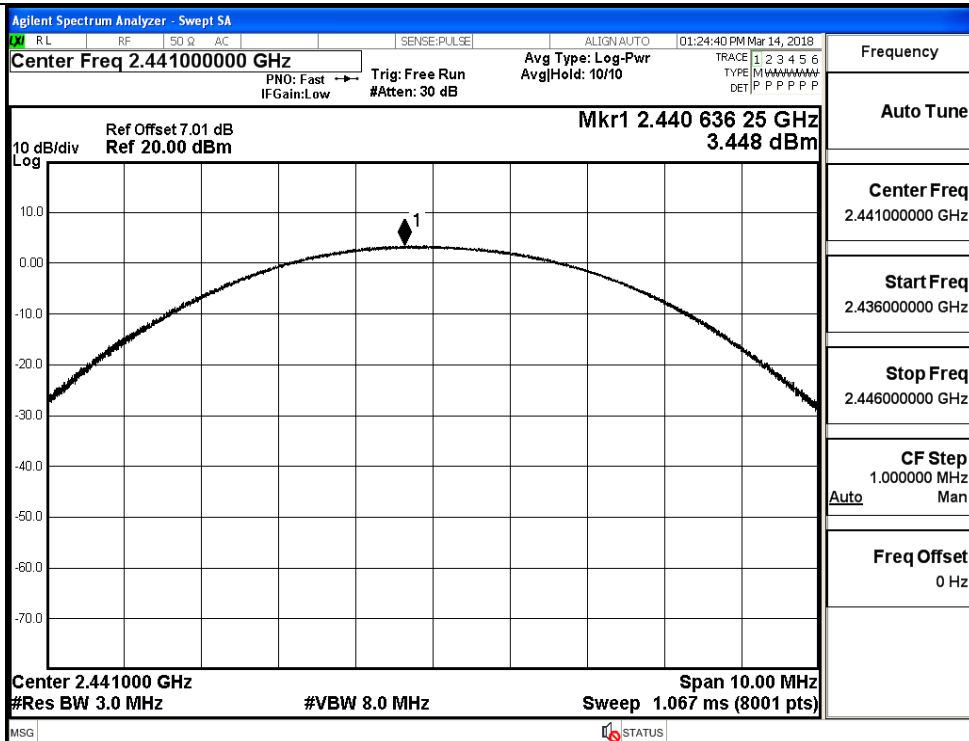
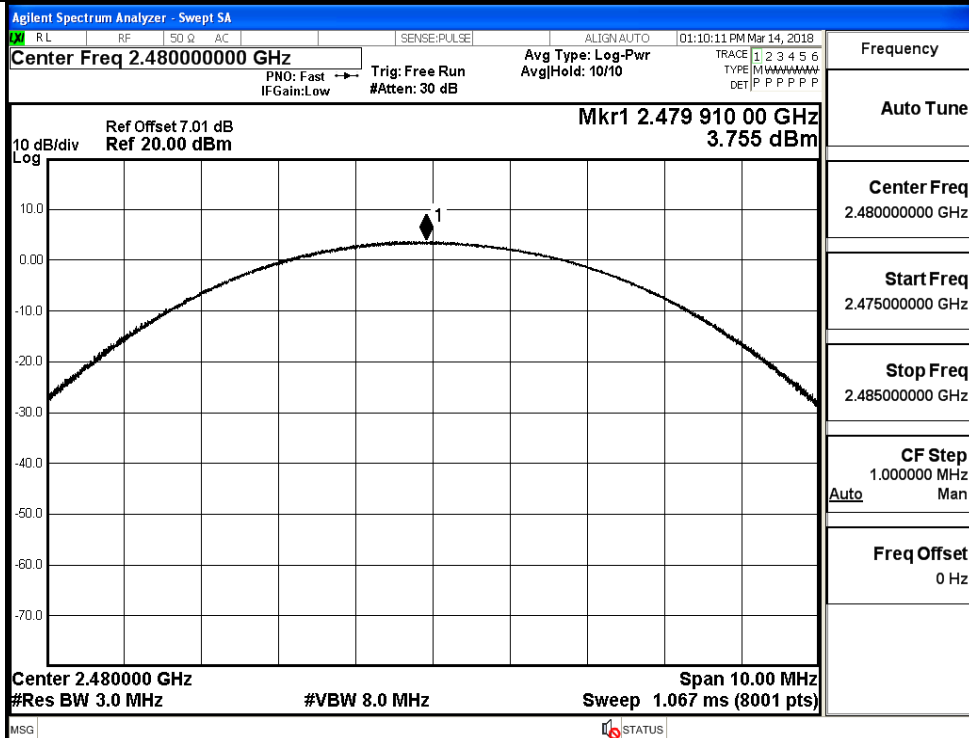


GFSK/MCH

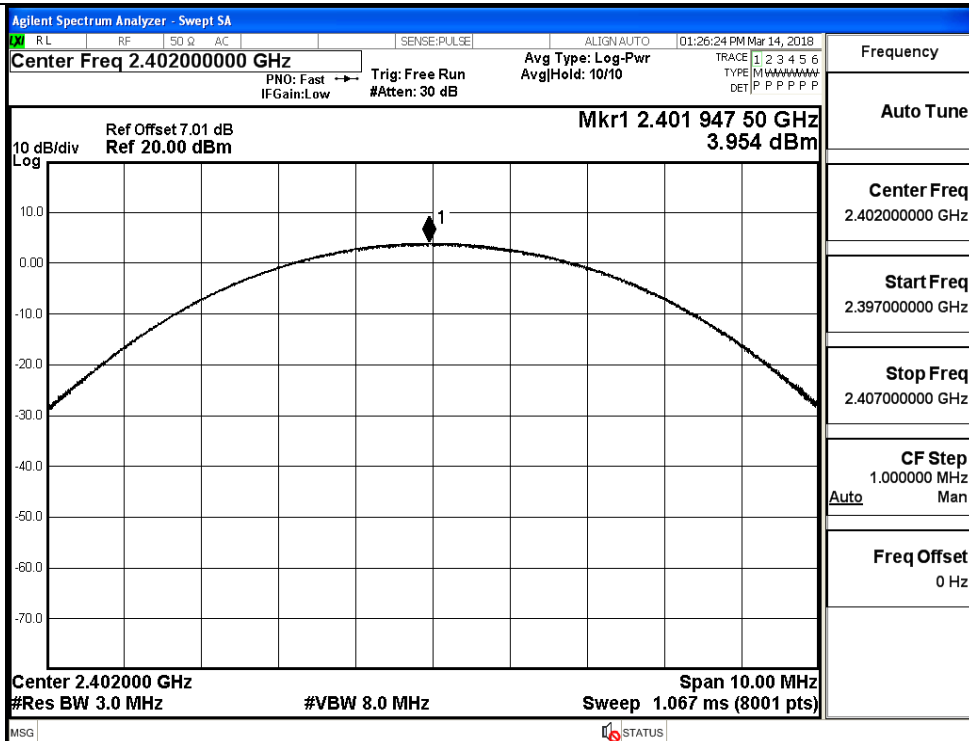


GFSK/HCH

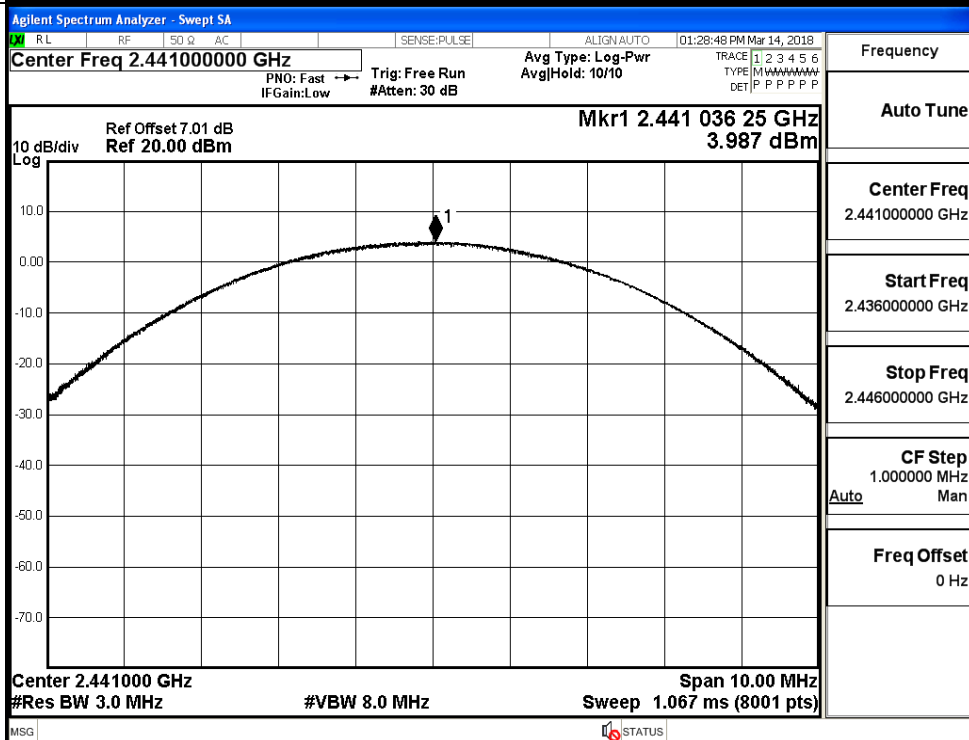
 π /4DQPSK/LCH

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

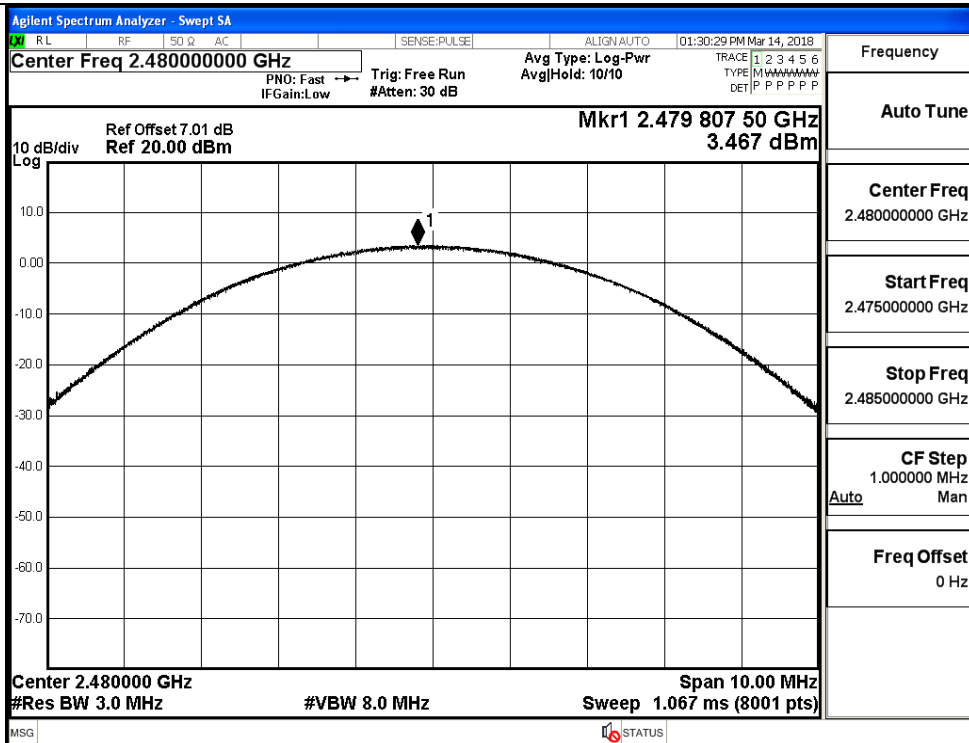
8DPSK/LCH



8DPSK/MCH



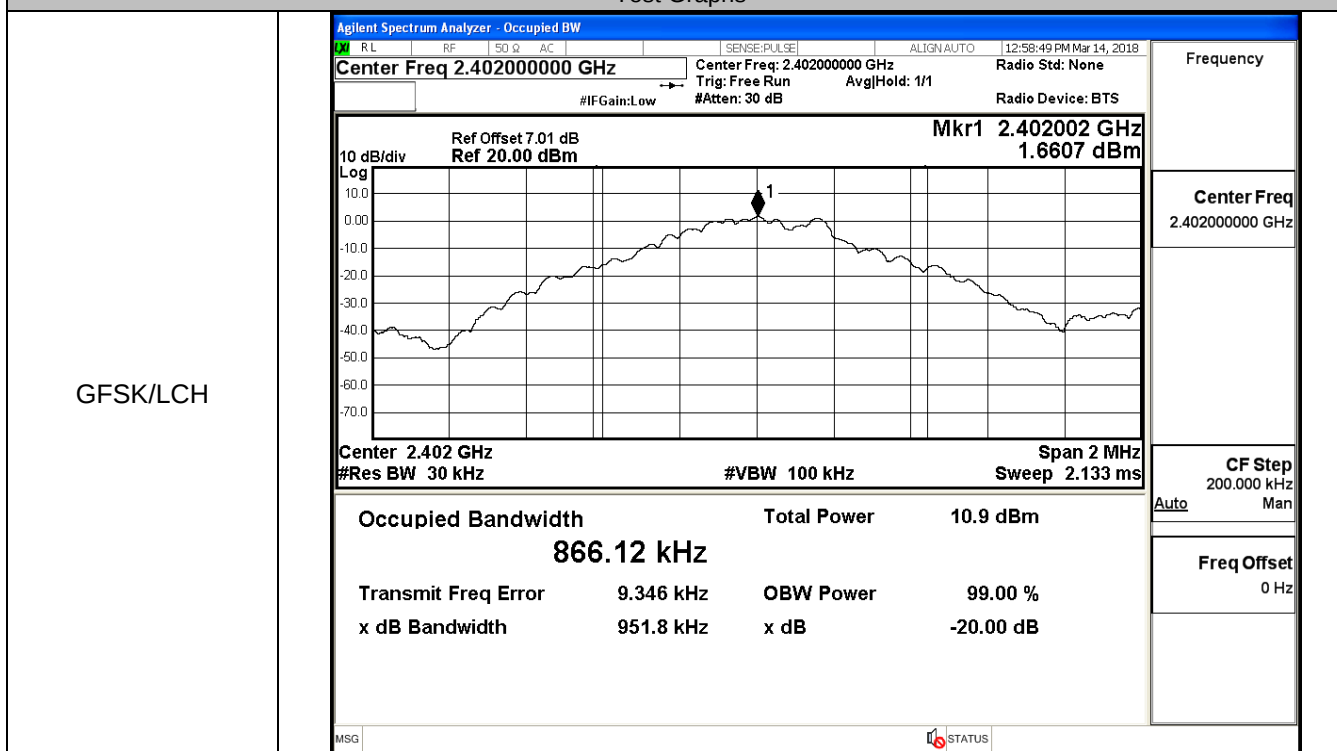
8DPSK/HCH



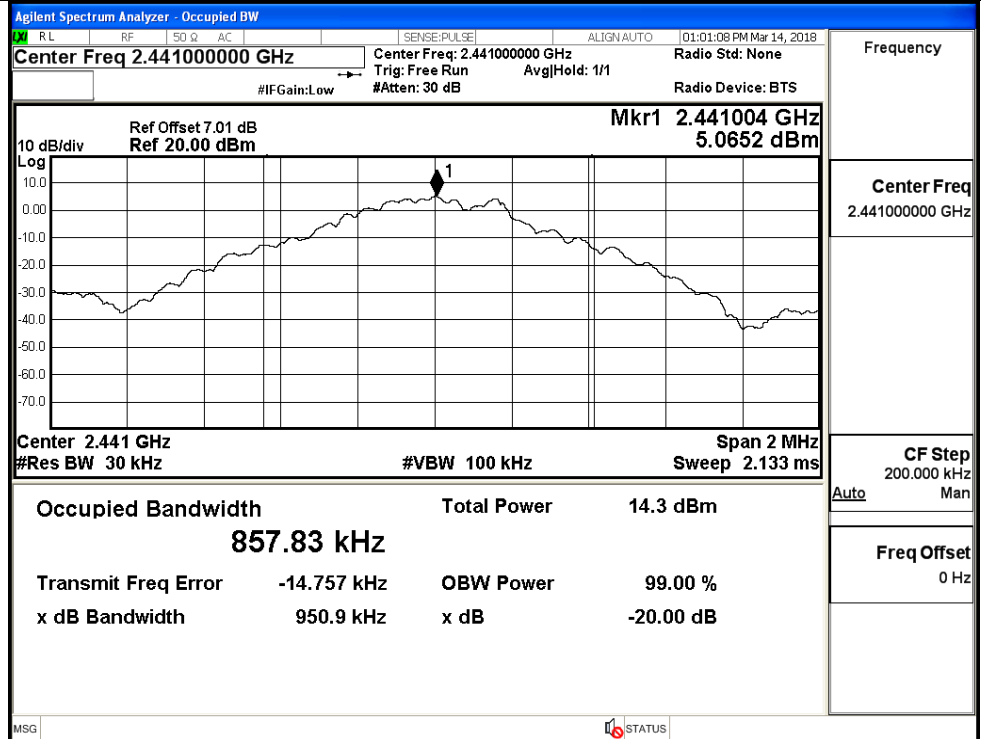
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9518	Not Specified	PASS
	MCH	0.9509	Not Specified	PASS
	HCH	0.9508	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.258	Not Specified	PASS
	MCH	1.231	Not Specified	PASS
	HCH	1.260	Not Specified	PASS
8DPSK	LCH	1.263	Not Specified	PASS
	MCH	1.255	Not Specified	PASS
	HCH	1.254	Not Specified	PASS

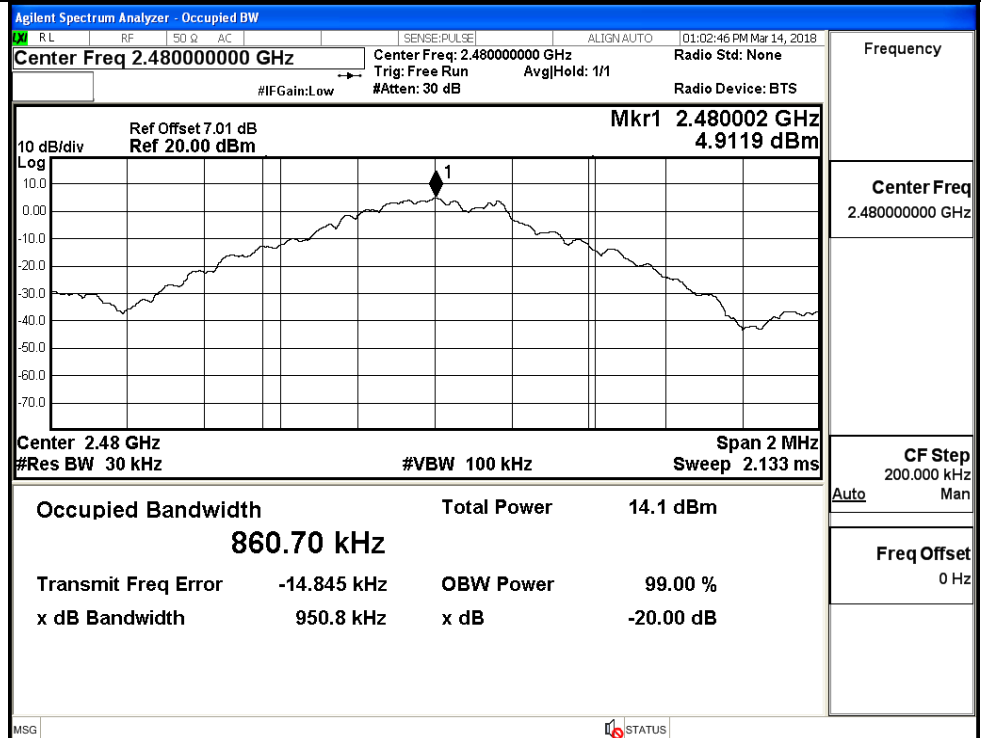
Test Graphs

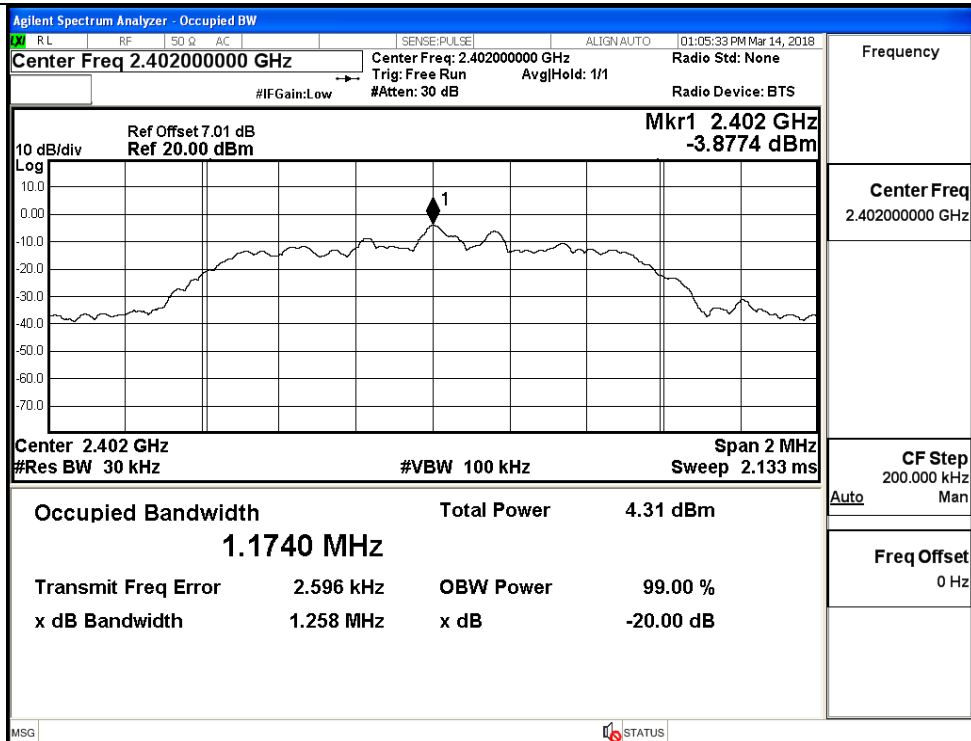
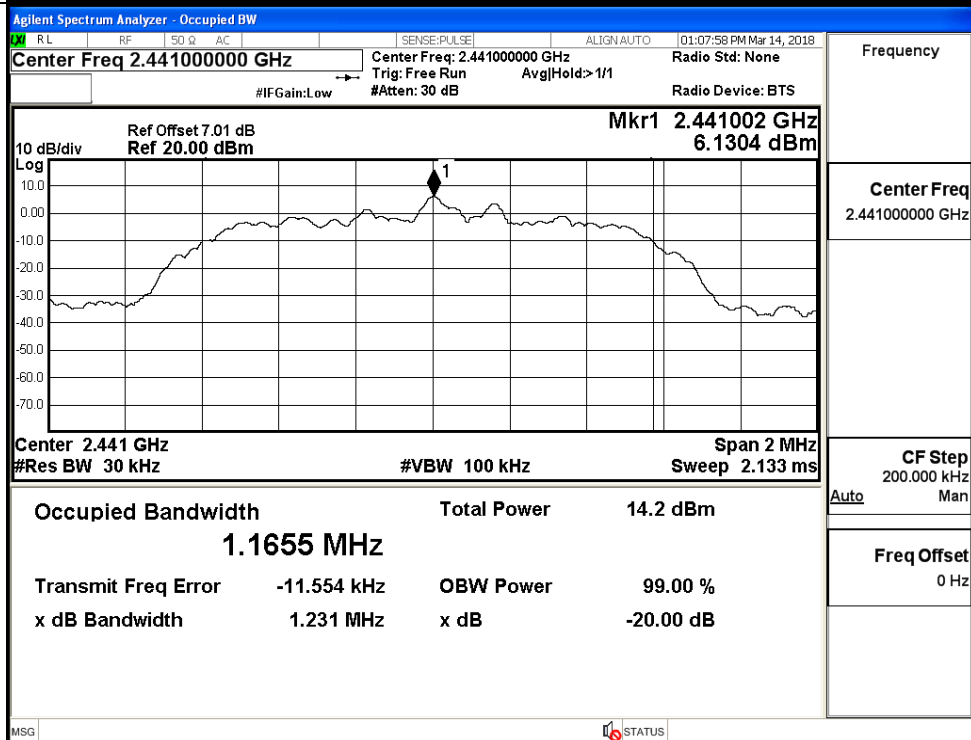


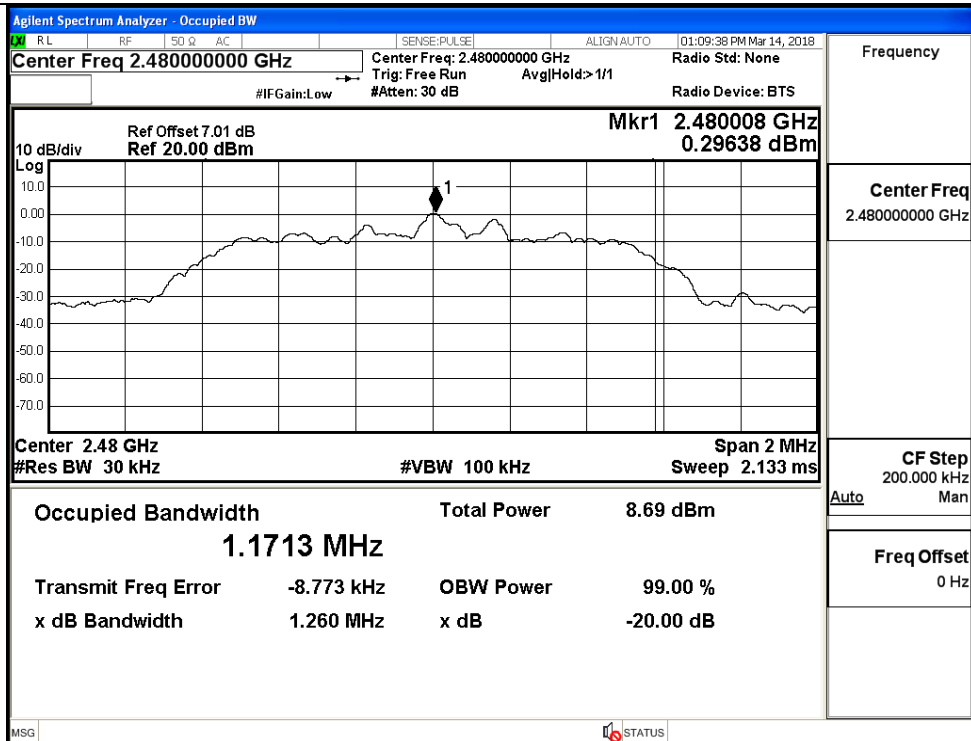
GFSK/MCH



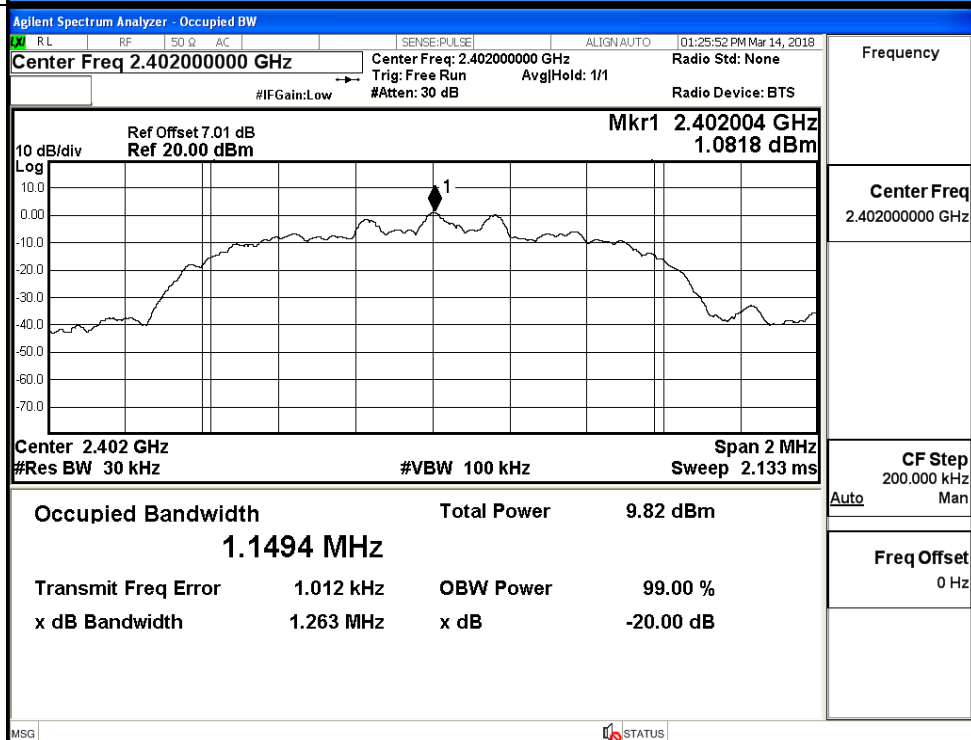
GFSK/HCH



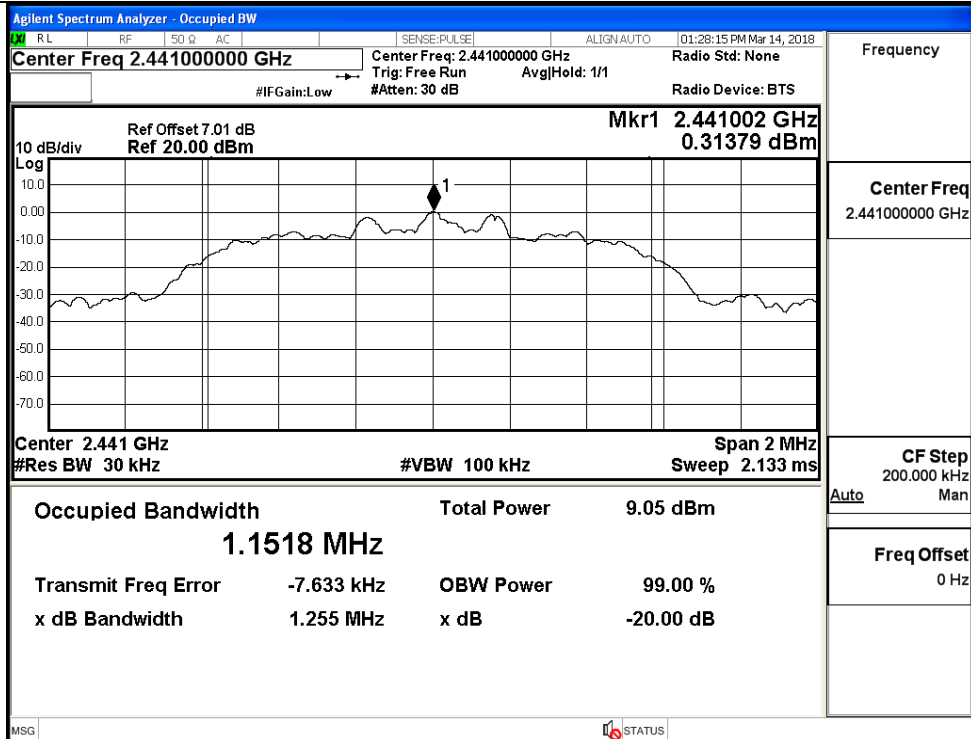
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

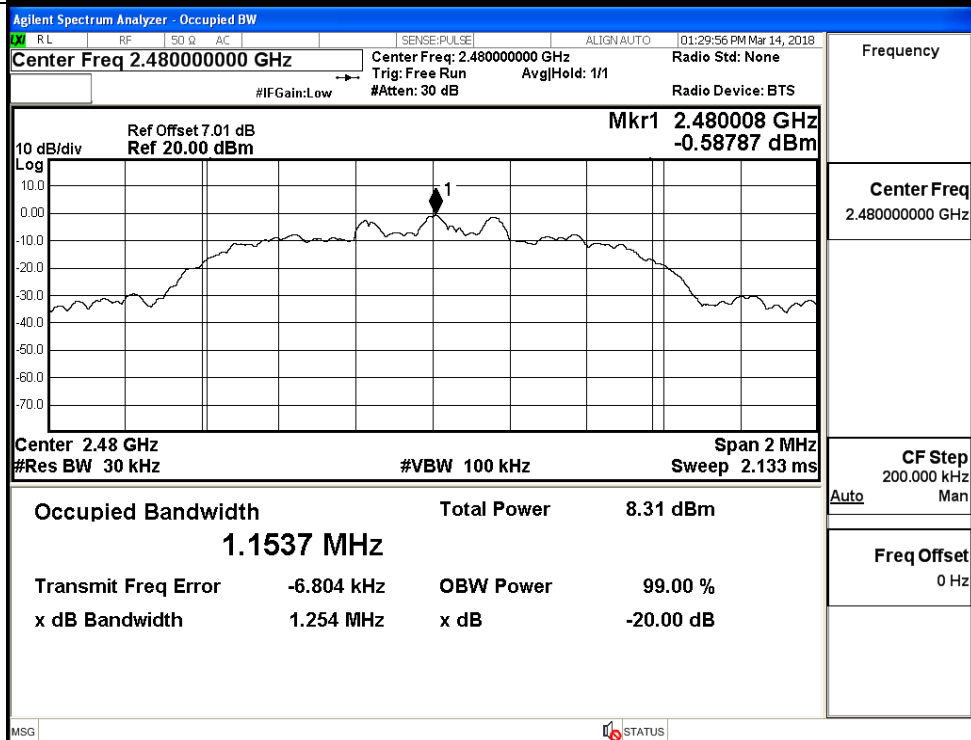
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

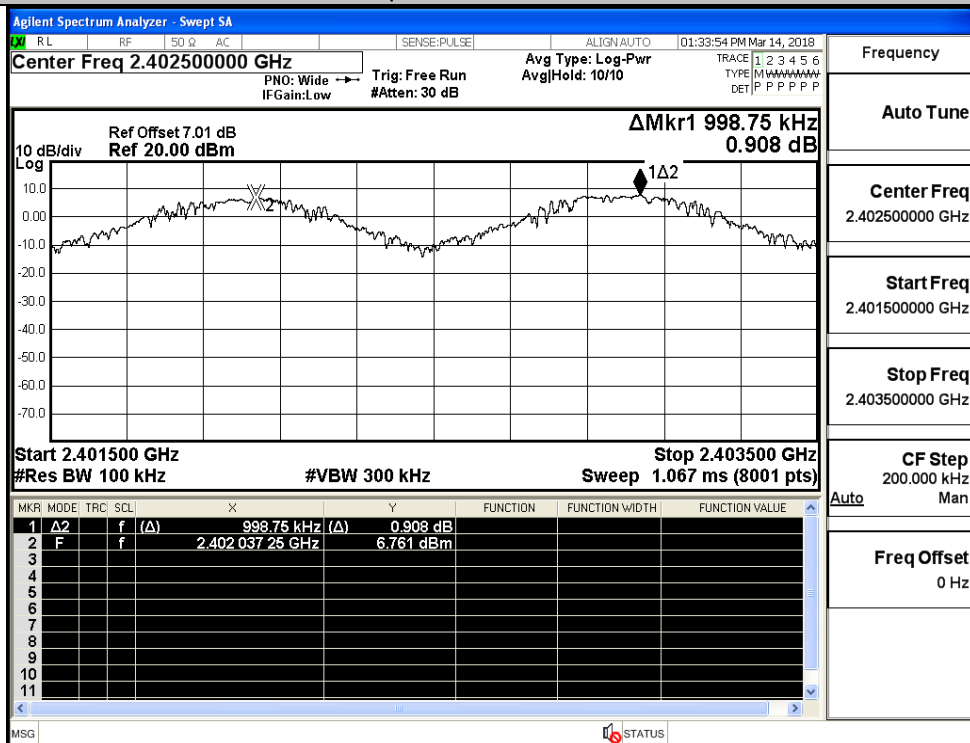


A.3 Carrier Frequency Separation

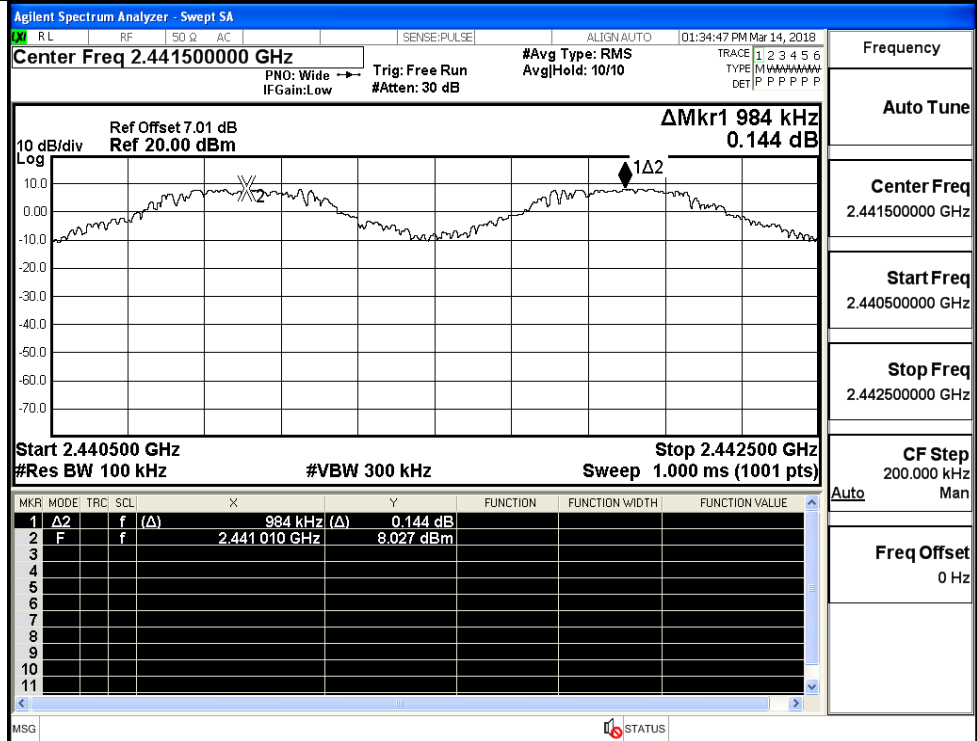
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.635	PASS
	MCH	0.984	0.635	PASS
	HCH	1.352	0.635	PASS
π /4DQPSK	LCH	1.018	0.840	PASS
	MCH	1.028	0.840	PASS
	HCH	1.164	0.840	PASS
8DPSK	LCH	0.916	0.842	PASS
	MCH	1.174	0.842	PASS
	HCH	1.206	0.842	PASS

Test Graphs

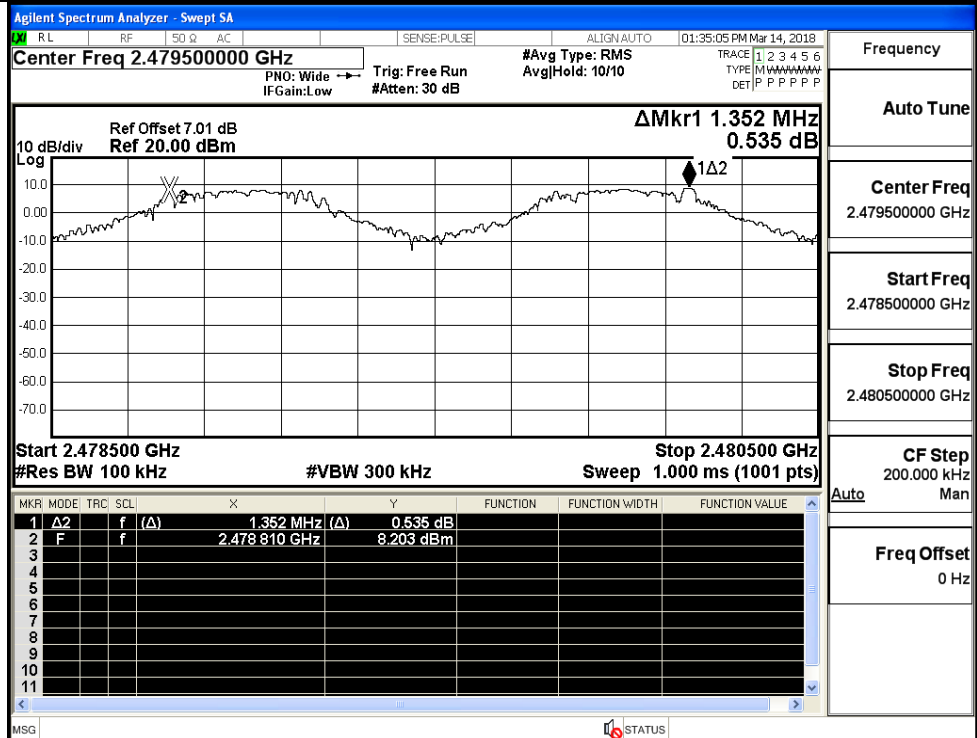
GFSK/LCH

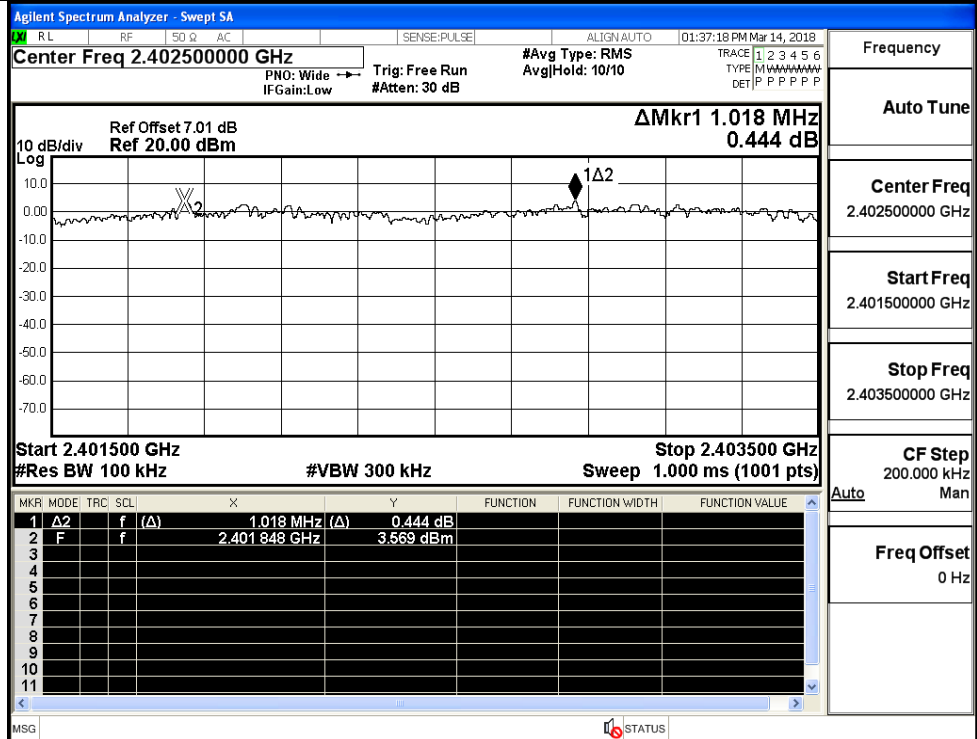
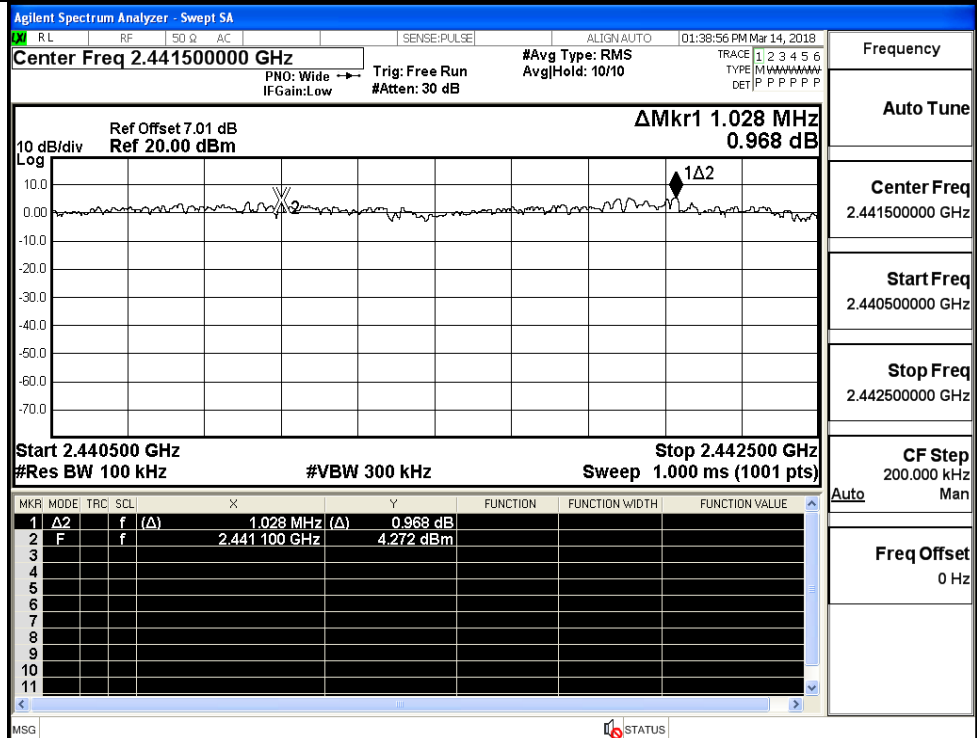


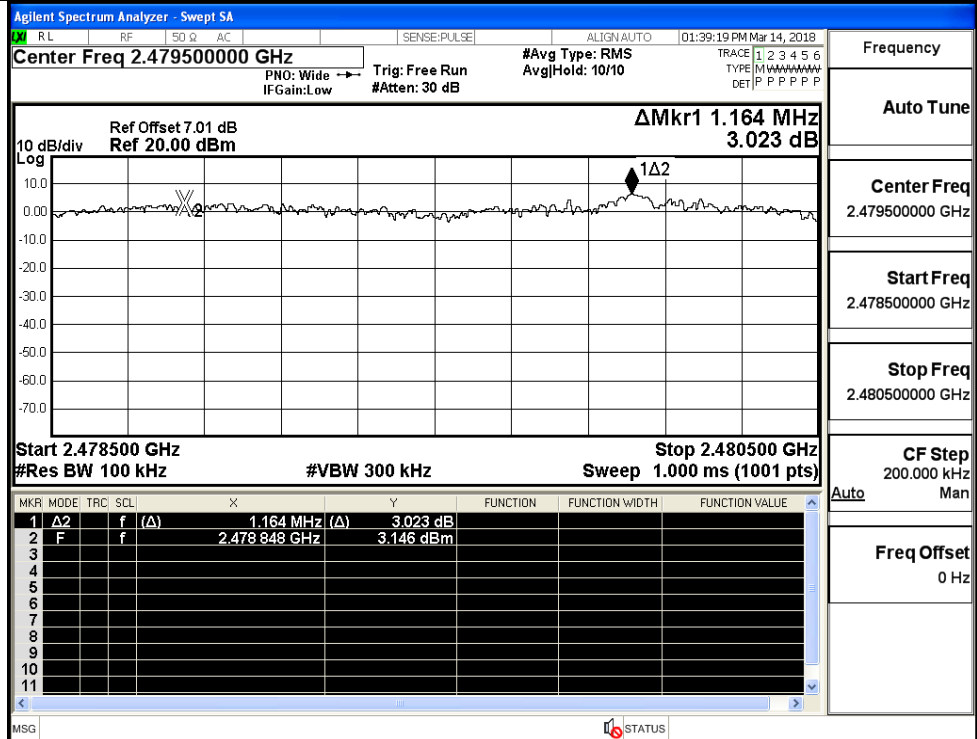
GFSK/MCH



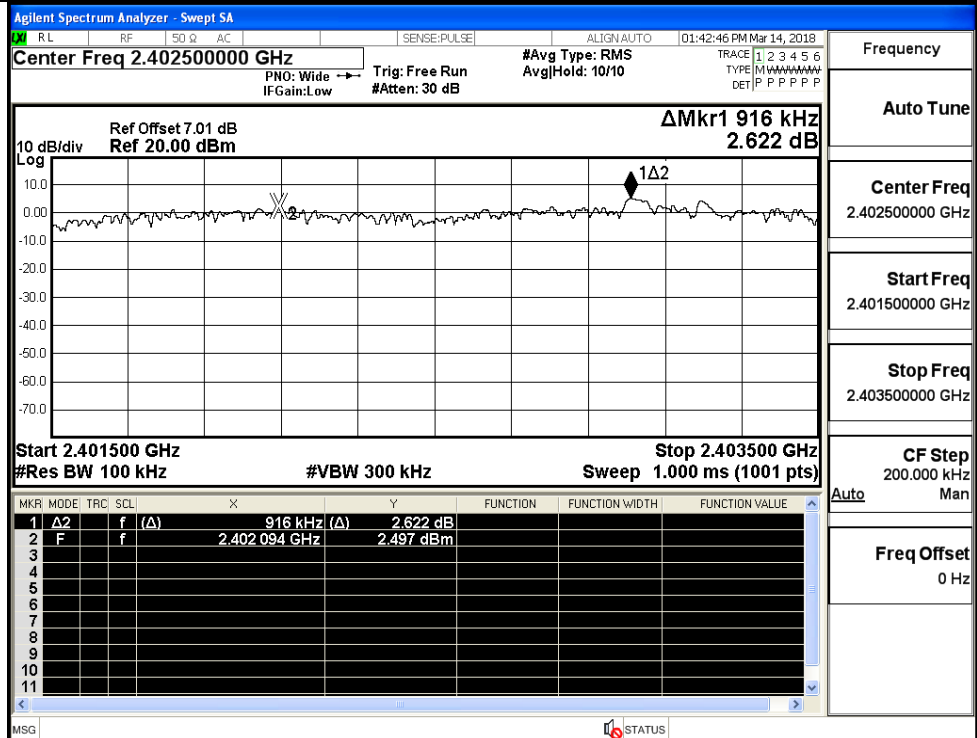
GFSK/HCH



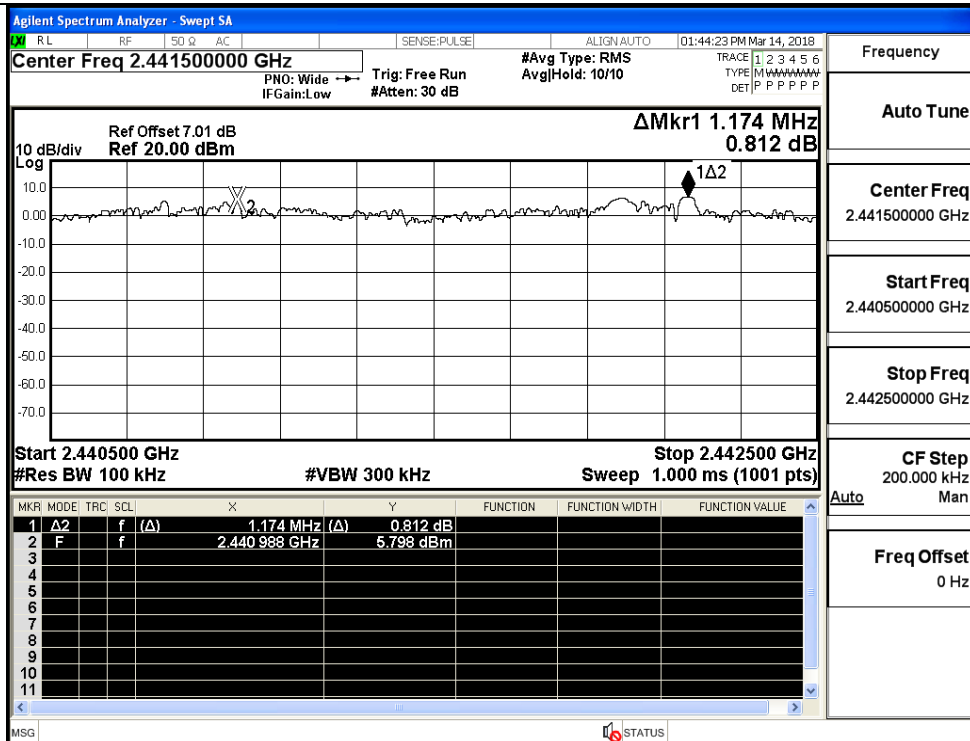
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

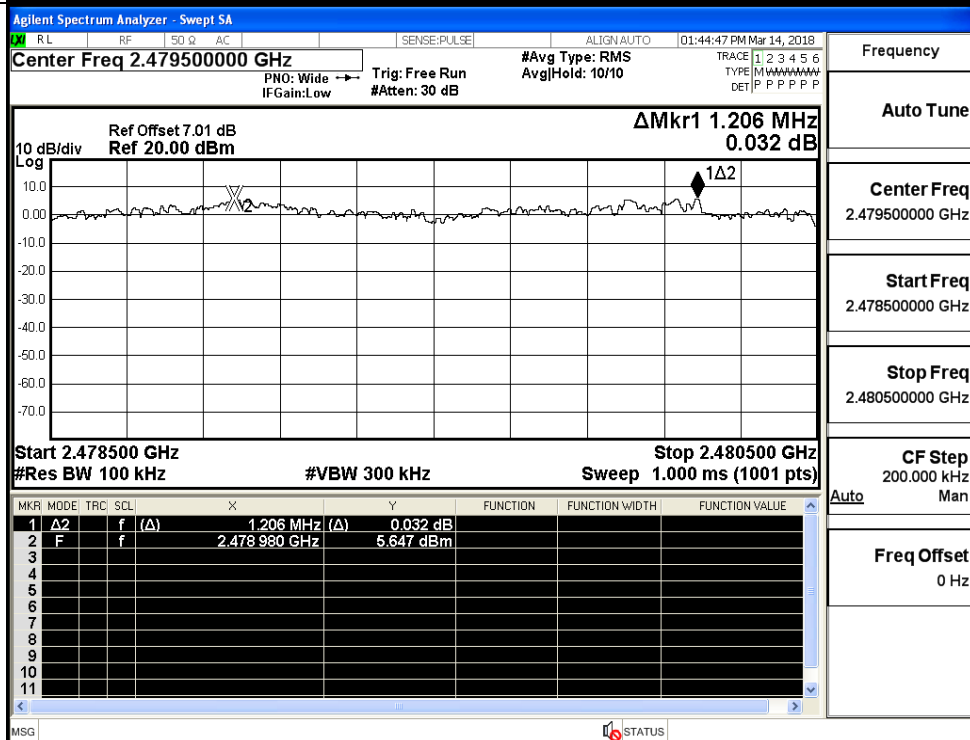
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

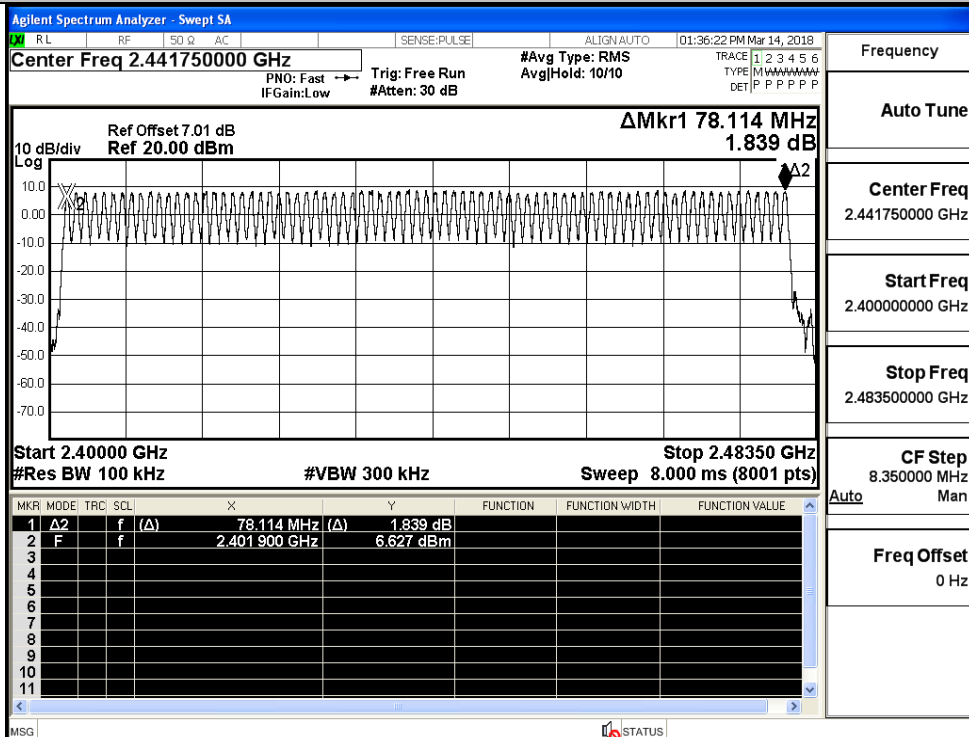


A.4 Hopping Channel Number

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

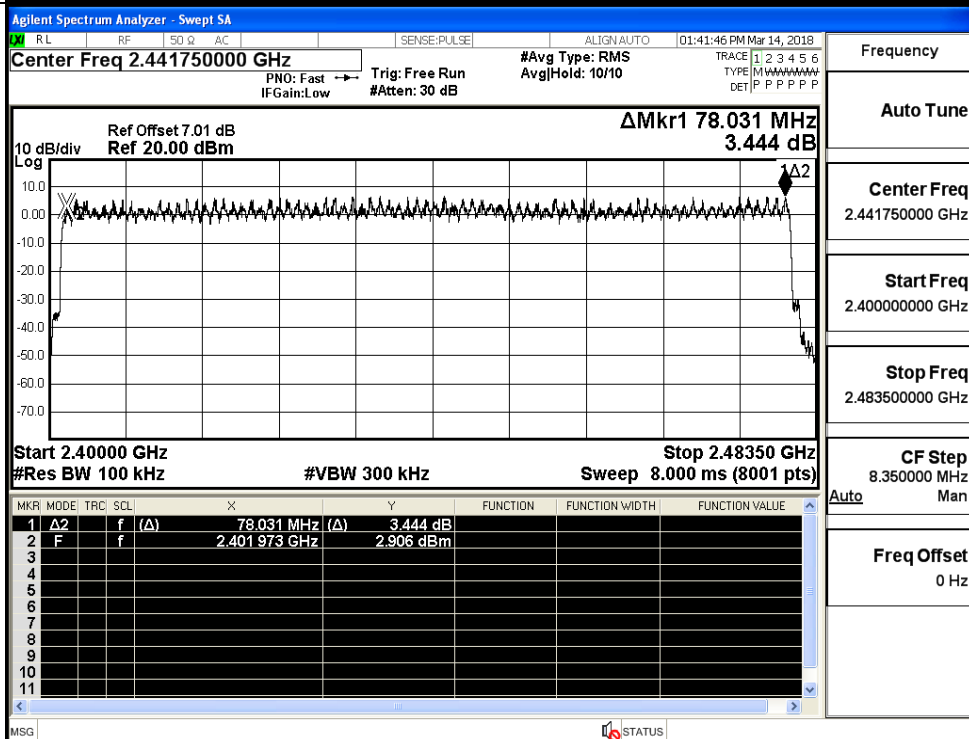
Test Graphs

GFSK/Hop



Frequency

Auto Tune

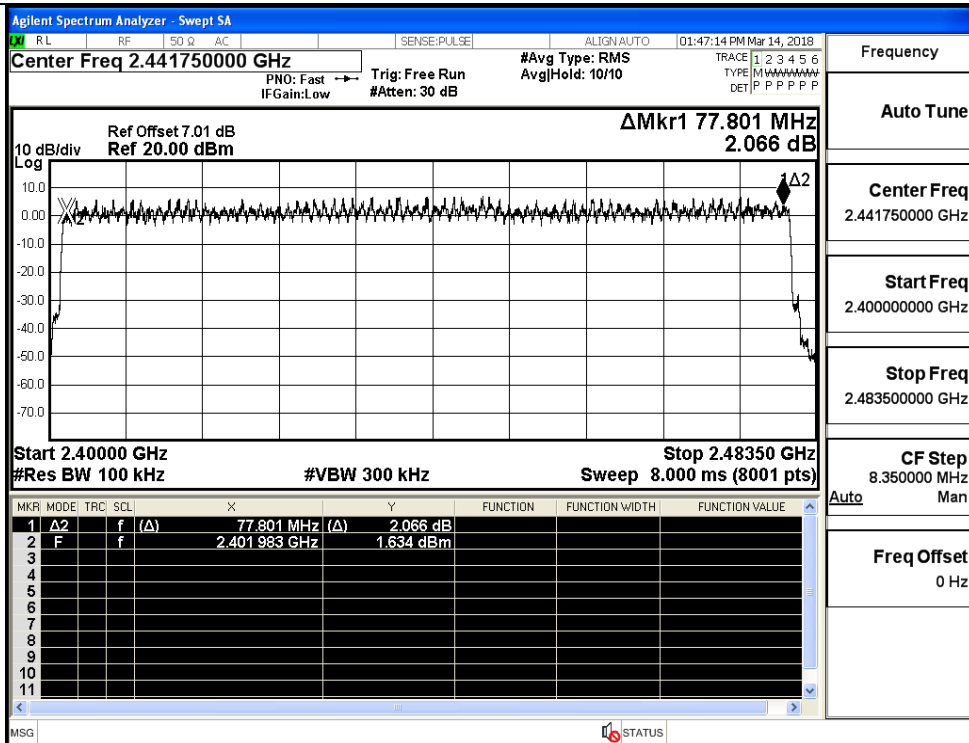
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
Auto ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
Auto ManFreq Offset
0 Hz

8DPSK/Hop

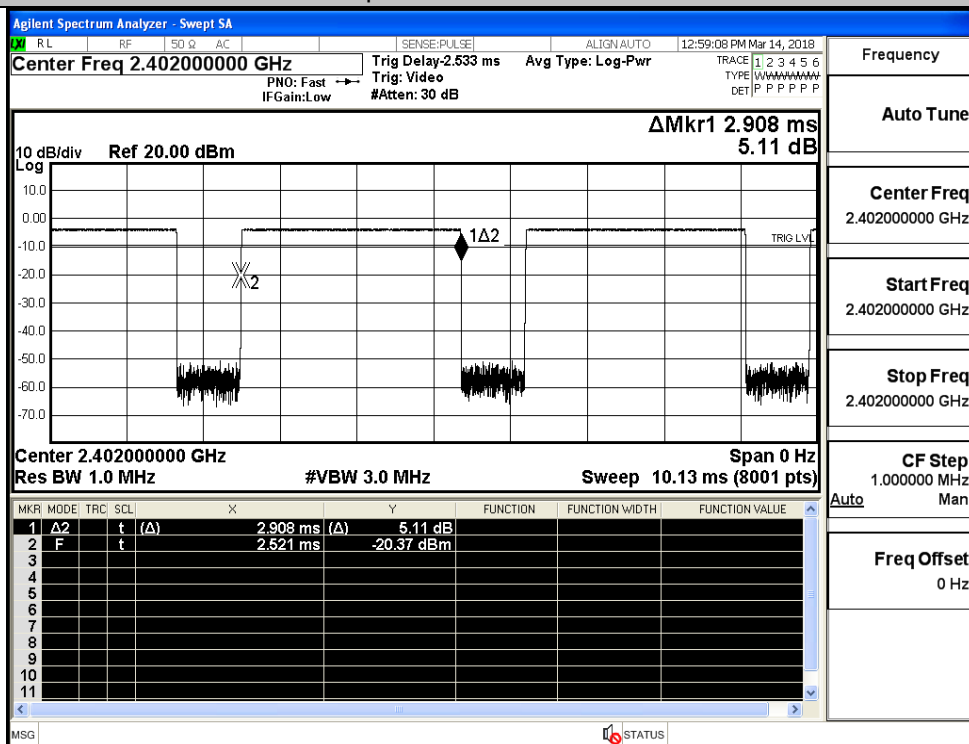


A.5 Dwell Time

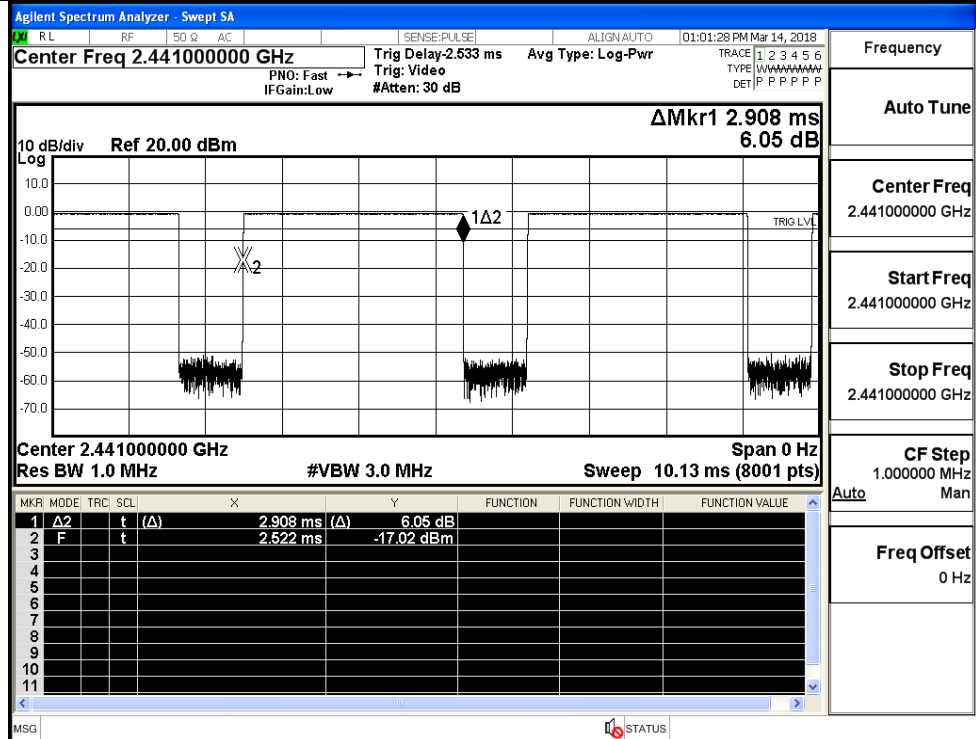
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.91	106.7	0.31	0.4	PASS
	DH5	MCH	2.91	106.7	0.31	0.4	PASS
	DH5	HCH	2.91	106.7	0.31	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.91	106.7	0.312	0.4	PASS
	2DH5	MCH	2.91	106.7	0.312	0.4	PASS
	2DH5	HCH	2.91	106.7	0.312	0.4	PASS
8DPSK	3DH5	LCH	2.91	106.7	0.312	0.4	PASS
	3DH5	MCH	2.91	106.7	0.312	0.4	PASS
	3DH5	HCH	2.91	106.7	0.312	0.4	PASS

Test Graphs

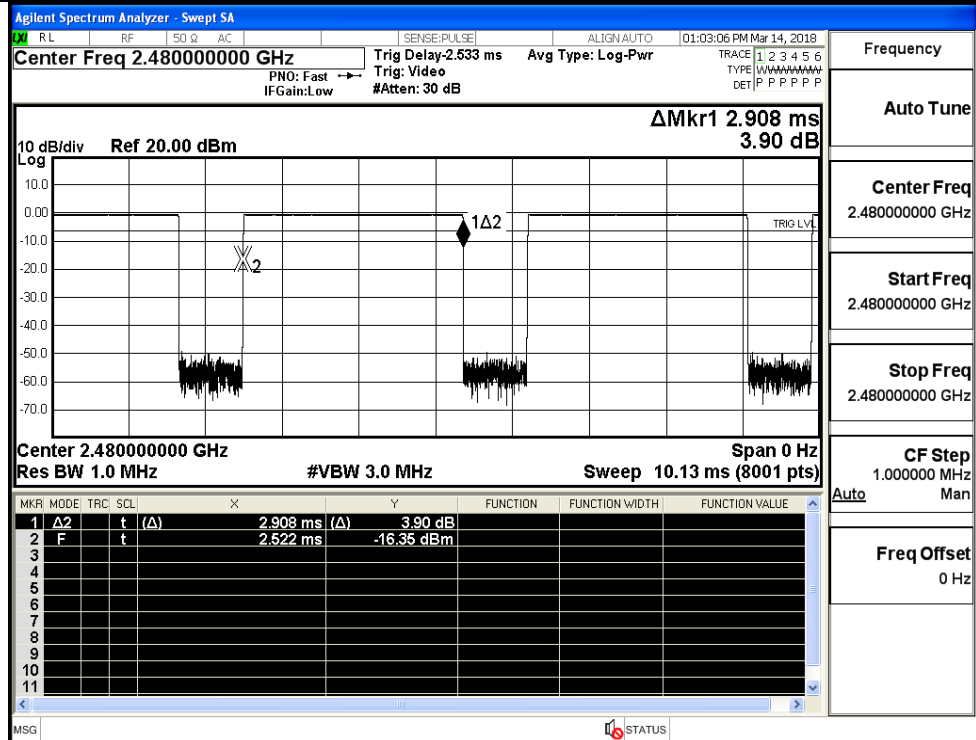
GFSK_DH5/LCH



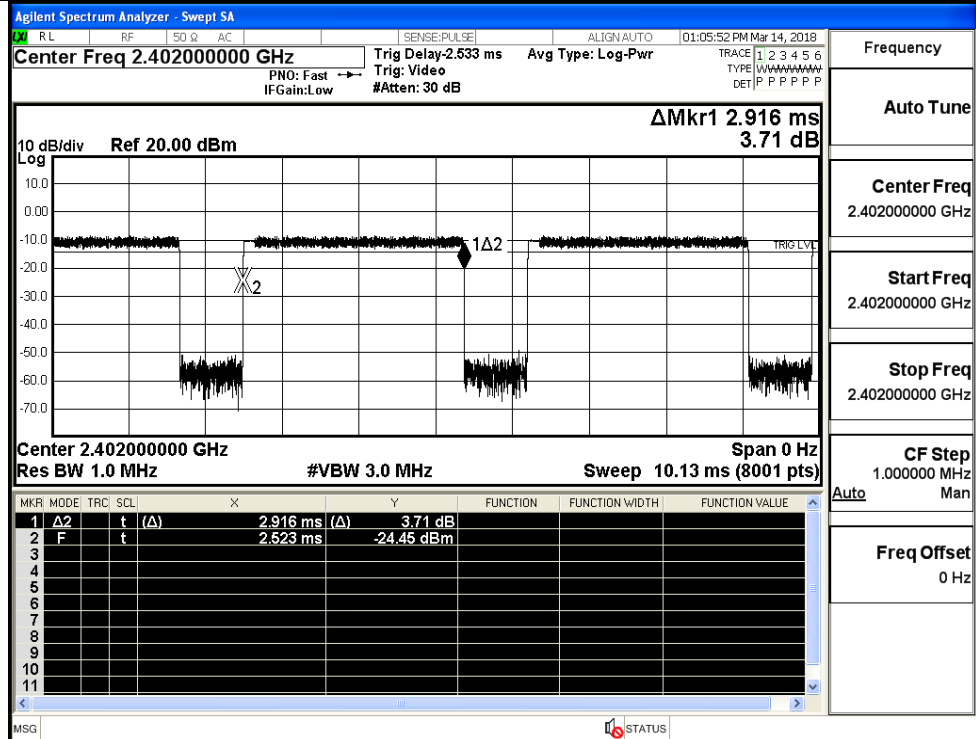
GFSK_DH5/MCH



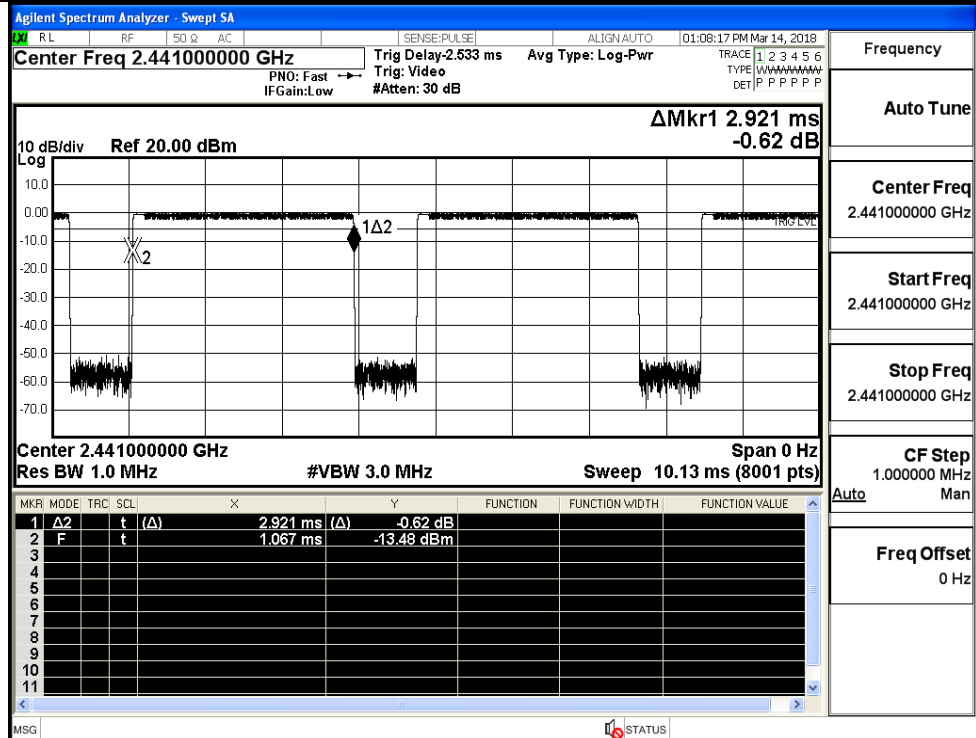
GFSK_DH5/HCH



$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



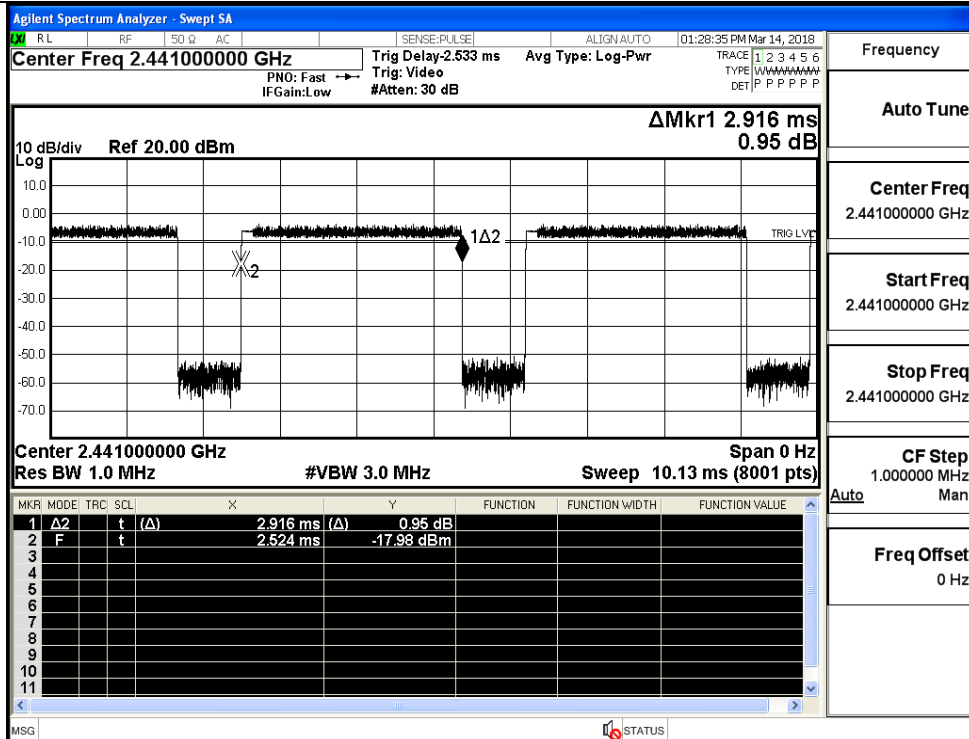
[illegible]

Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

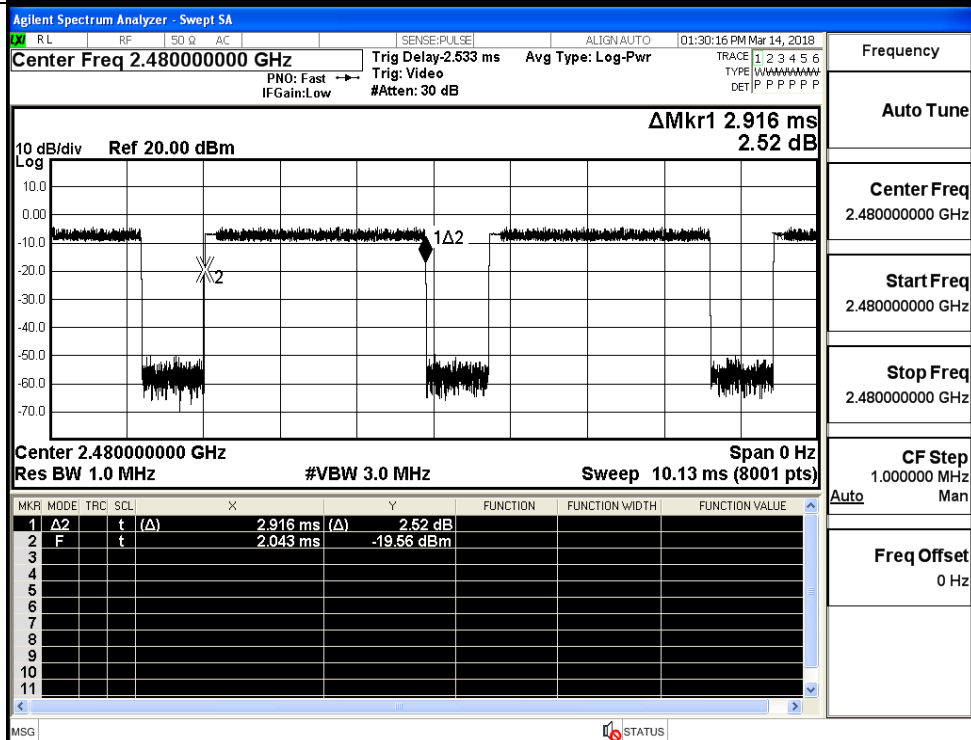
[illegible]

Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/MCH



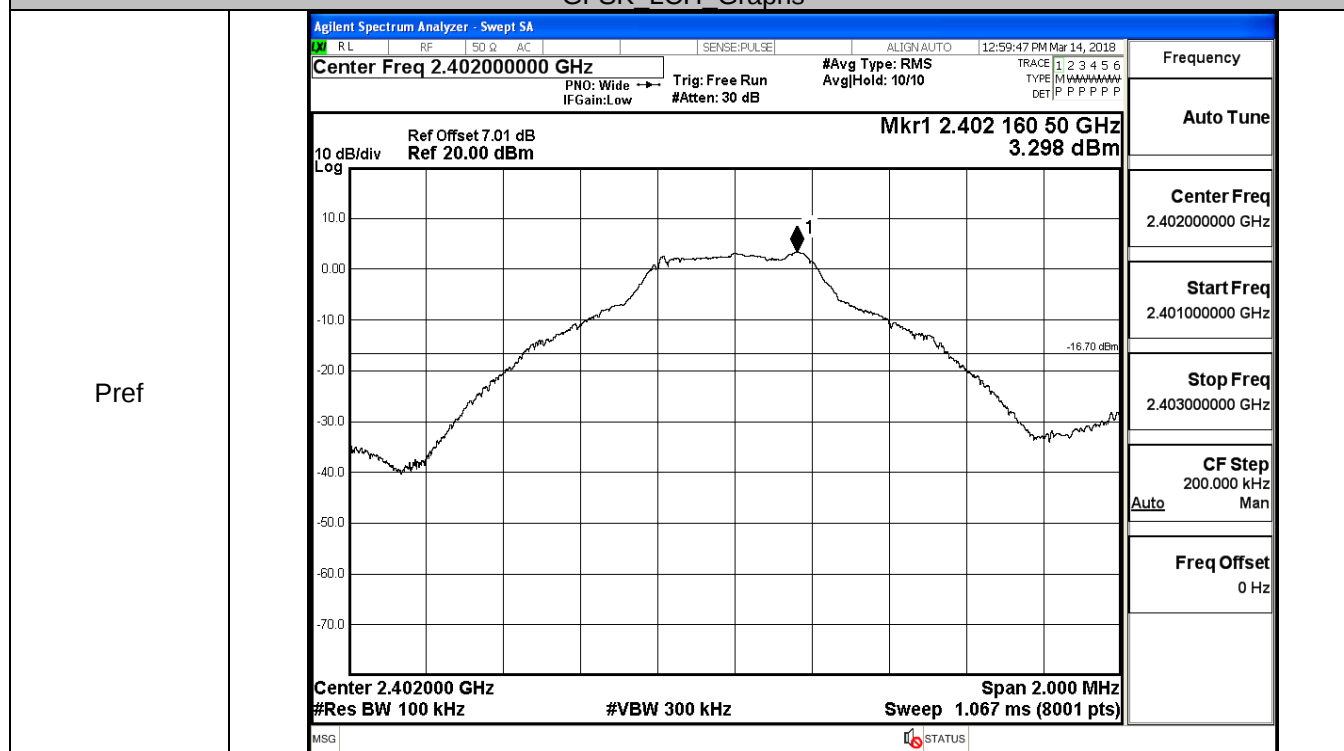
8DPSK_3DH5/HCH



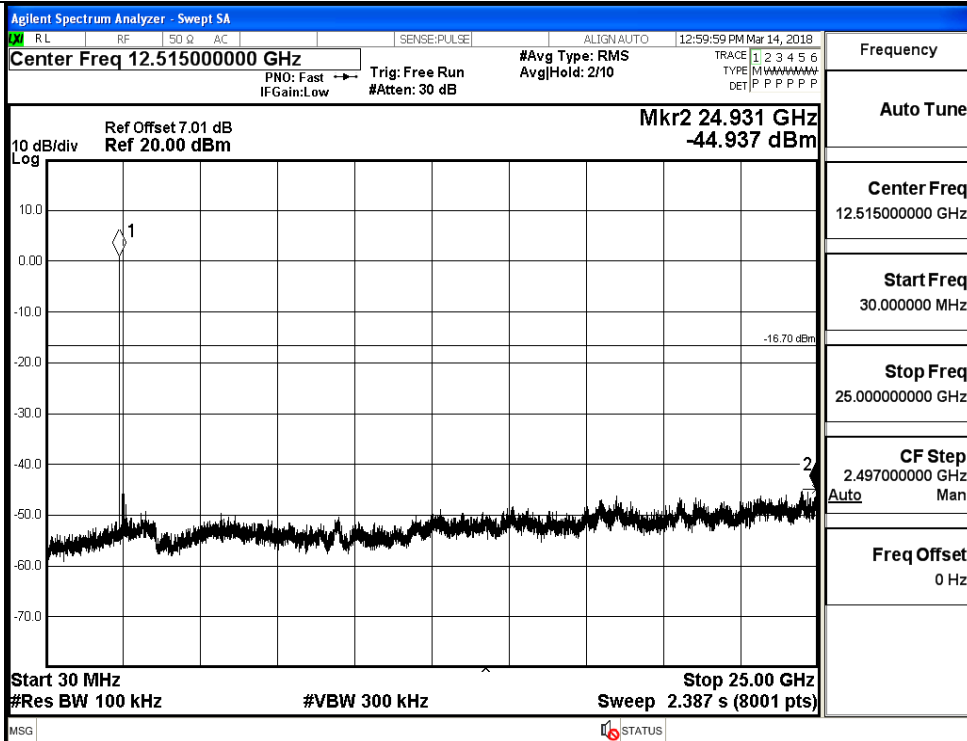
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.298	-44.937	-16.702	PASS
	MCH	6.467	-44.857	-13.533	PASS
	HCH	6.34	-44.283	-13.660	PASS
$\pi/4$ DQPSK	LCH	-3.198	-45.669	-23.198	PASS
	MCH	6.498	-44.635	-13.502	PASS
	HCH	1.147	-45.461	-18.853	PASS
8DPSK	LCH	1.548	-35.485	-18.452	PASS
	MCH	1.158	-45.808	-18.842	PASS
	HCH	0.409	-45.173	-19.591	PASS

GFSK LCH Graphs

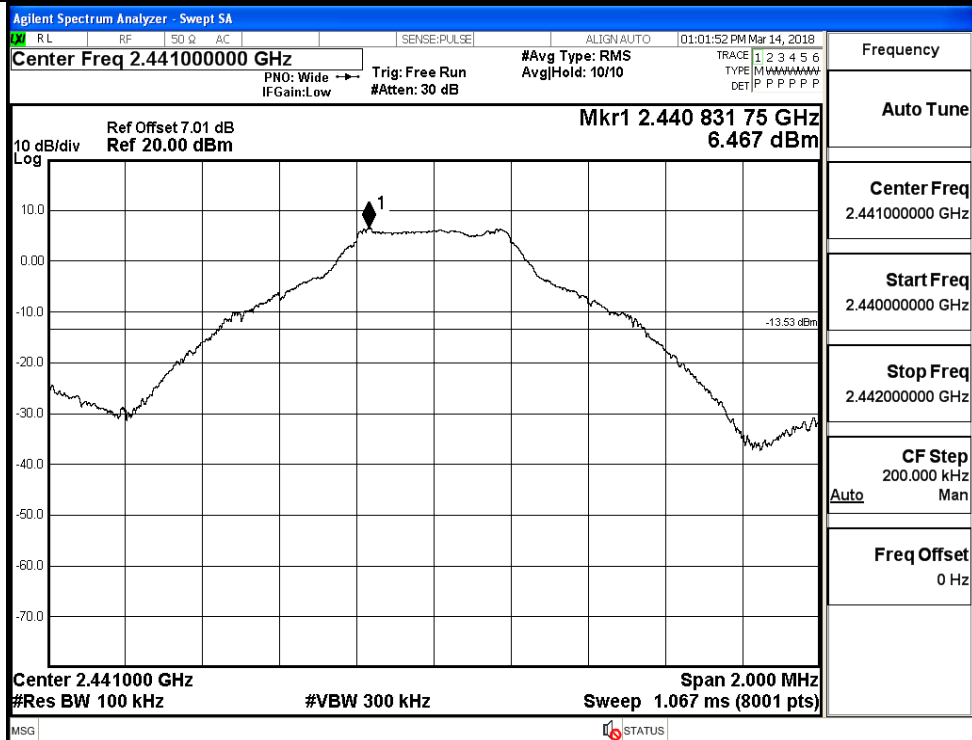


Puw

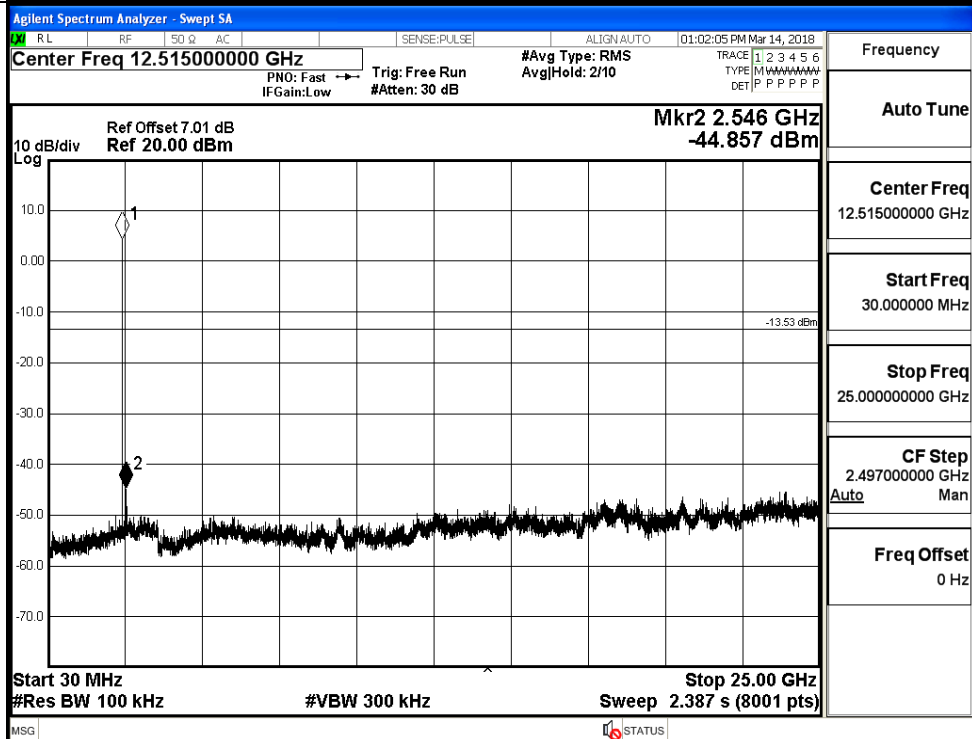


GFSK MCH Graphs

Pref

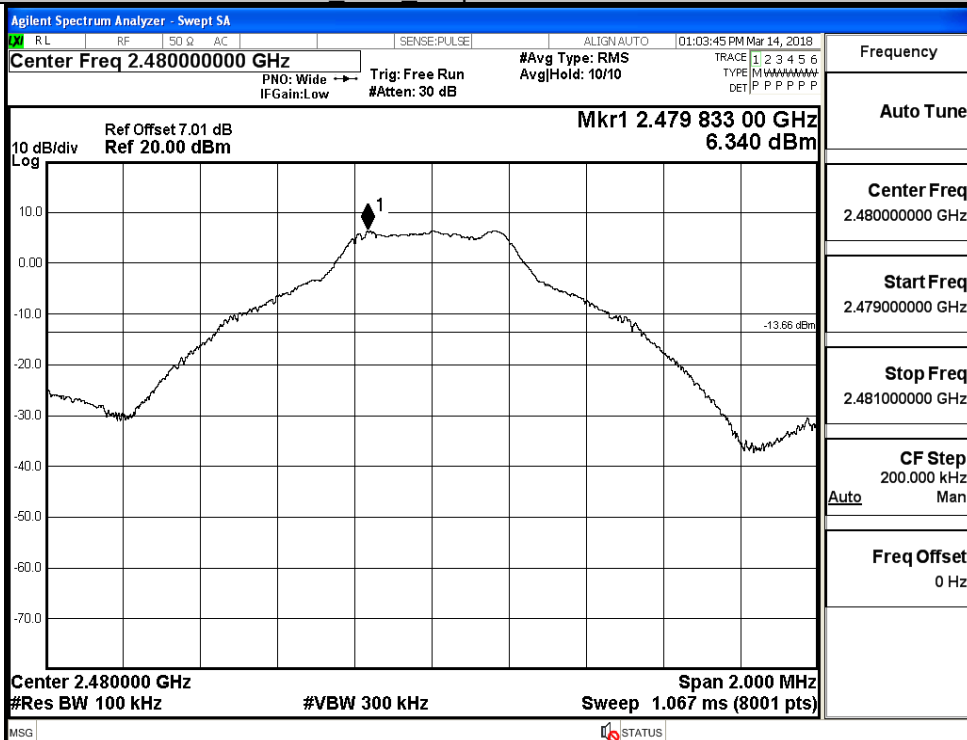


Puw

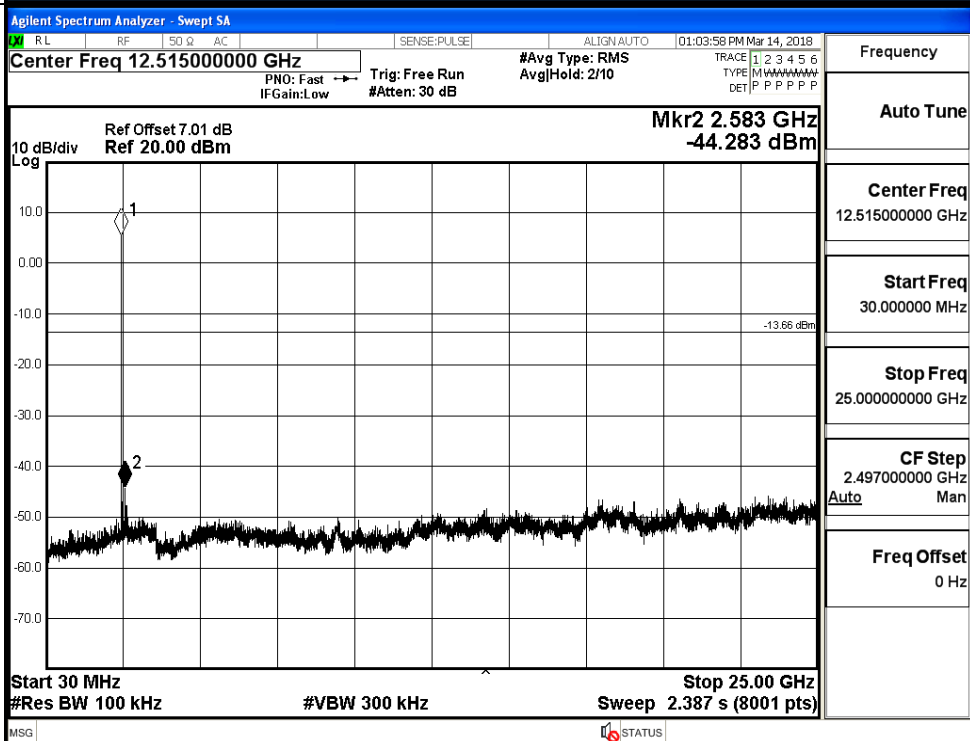


GFSK HCH Graphs

Pref

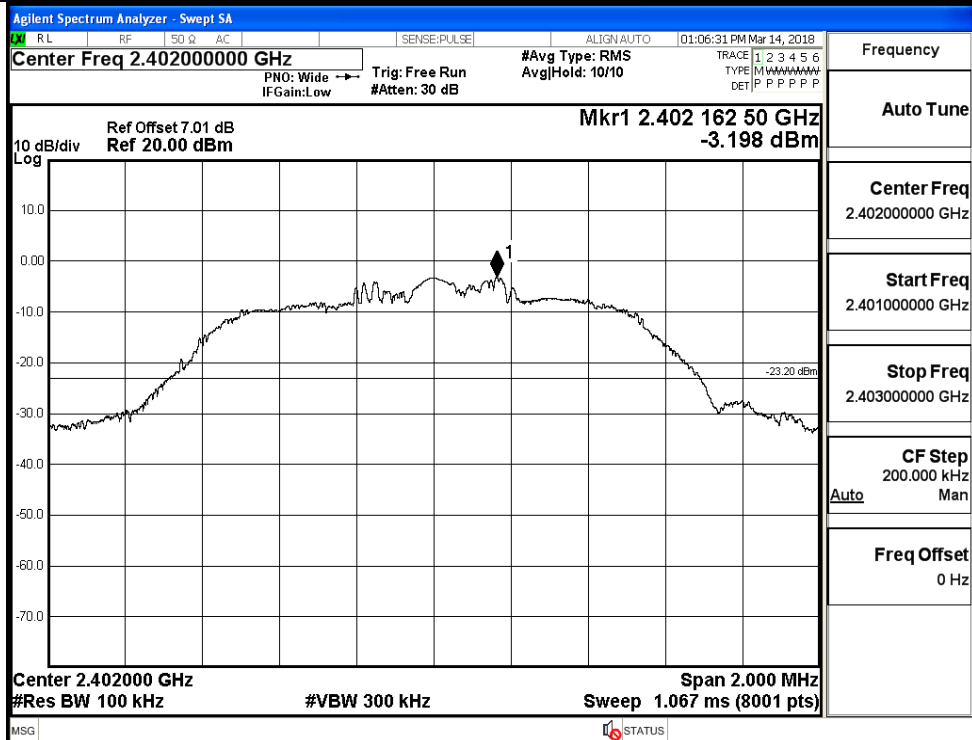


Puw

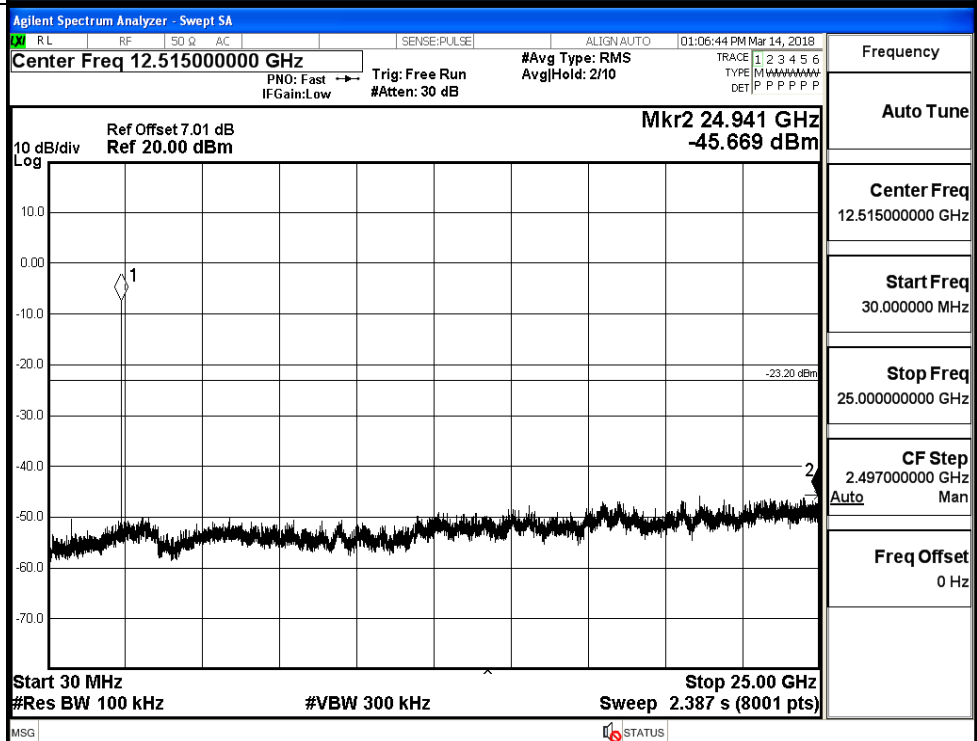


$\pi/4$ DQPSK LCH Graphs

Pref

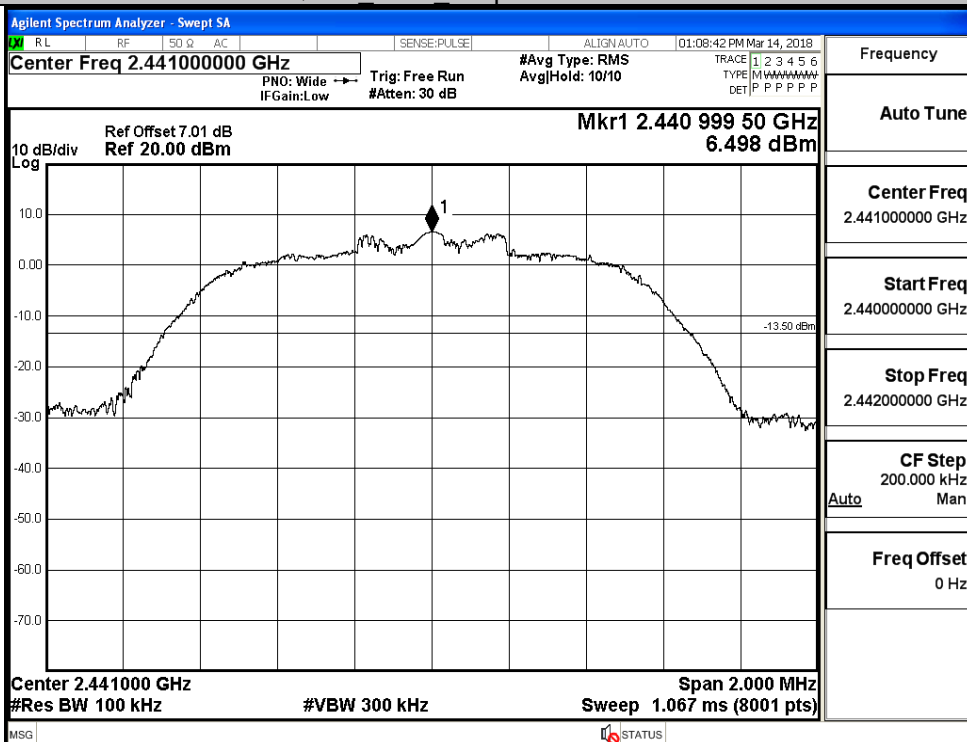


Puw

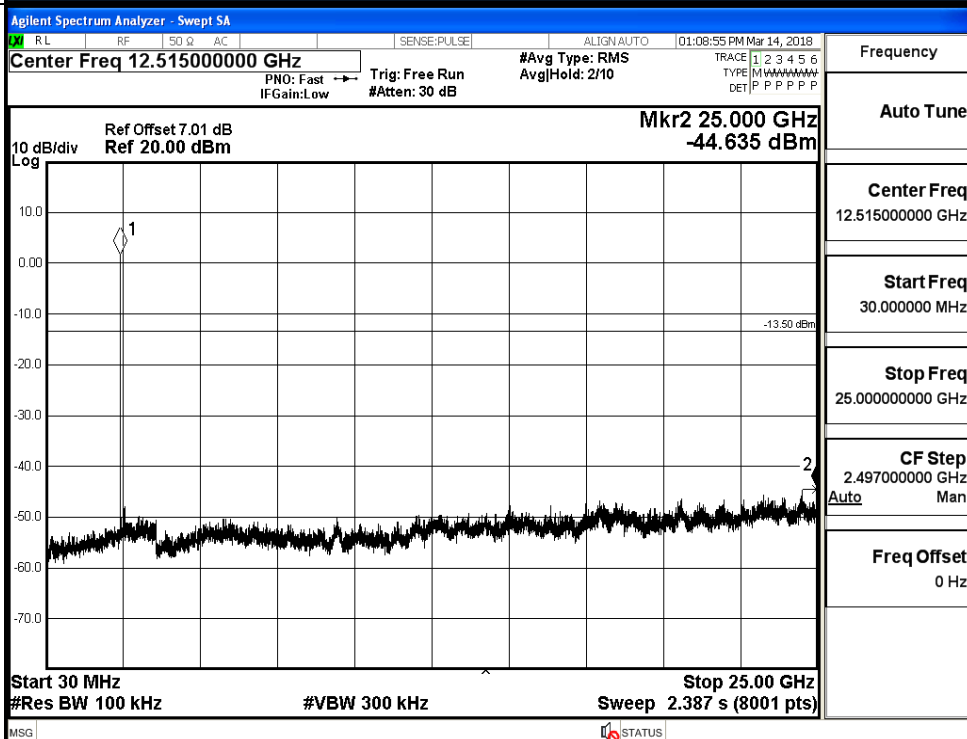


π /4DQPSK MCH Graphs

Pref

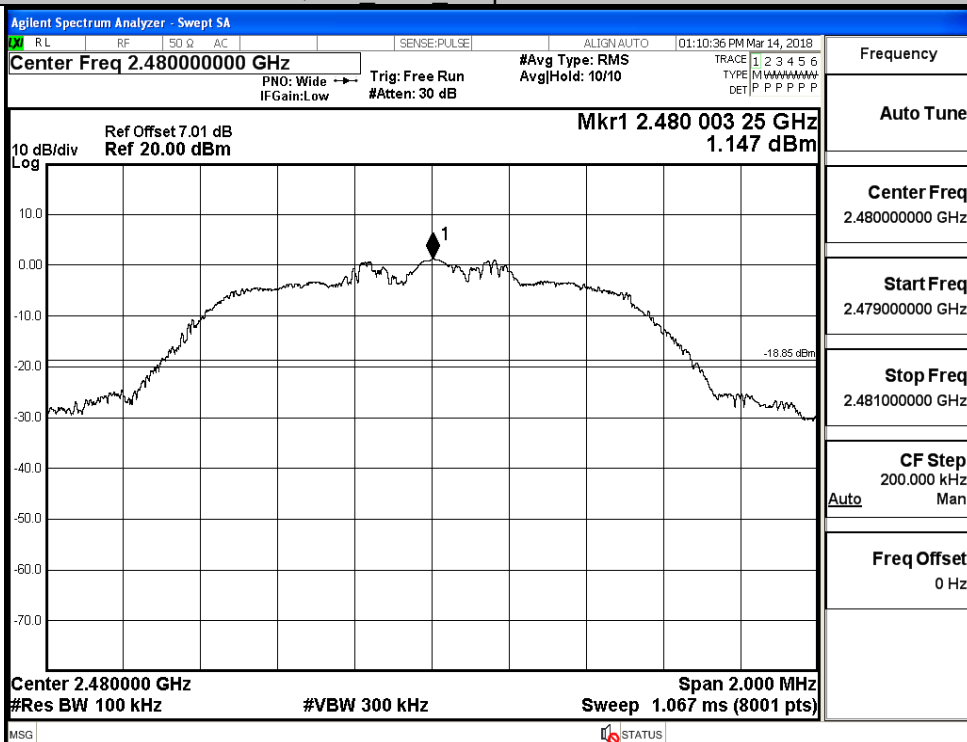


Puw

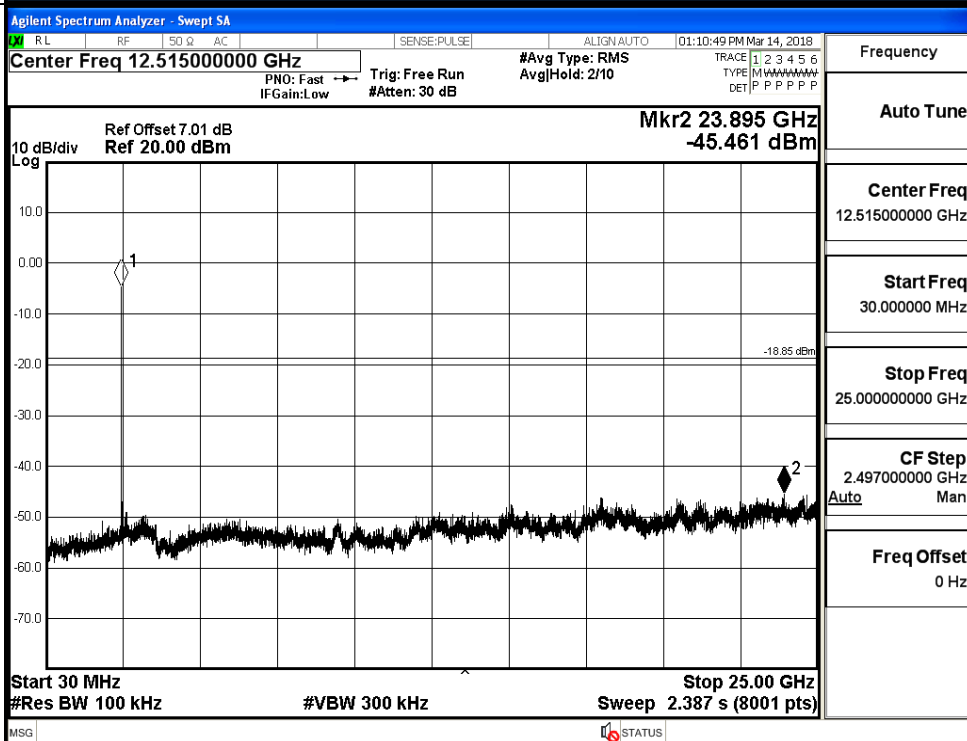


$\pi/4$ DQPSK HCH Graphs

Pref

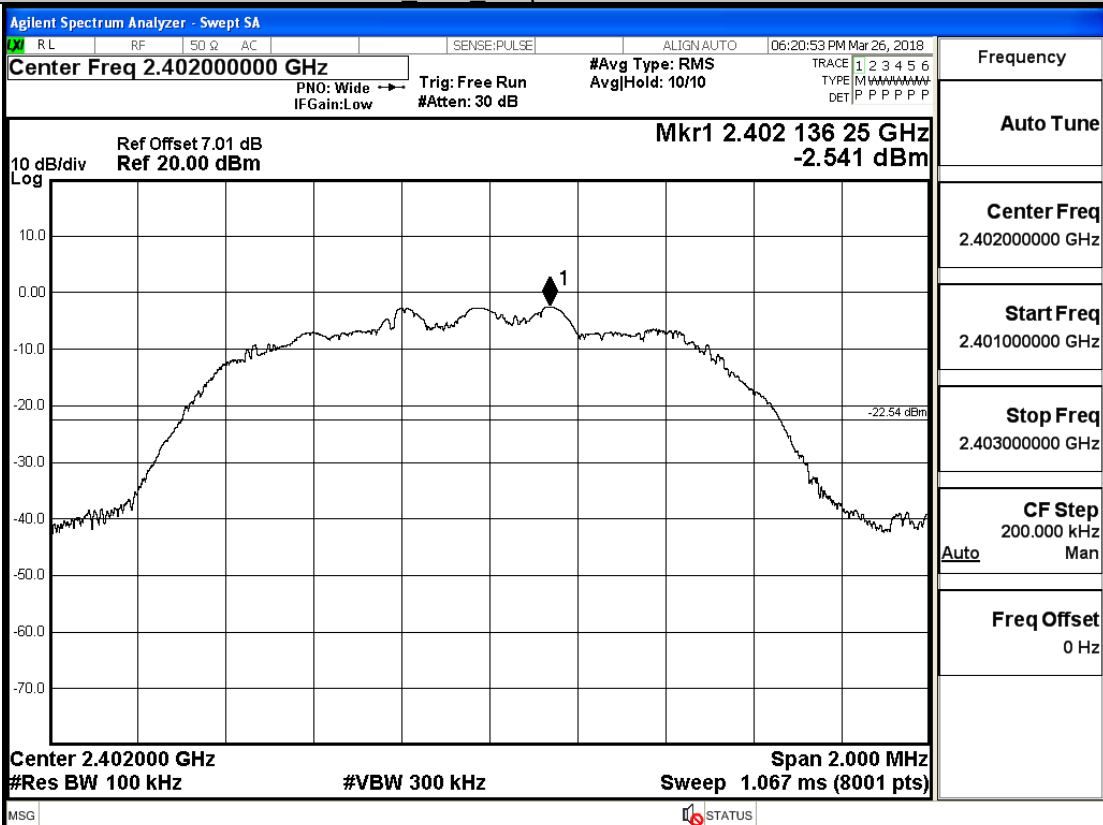


Puw

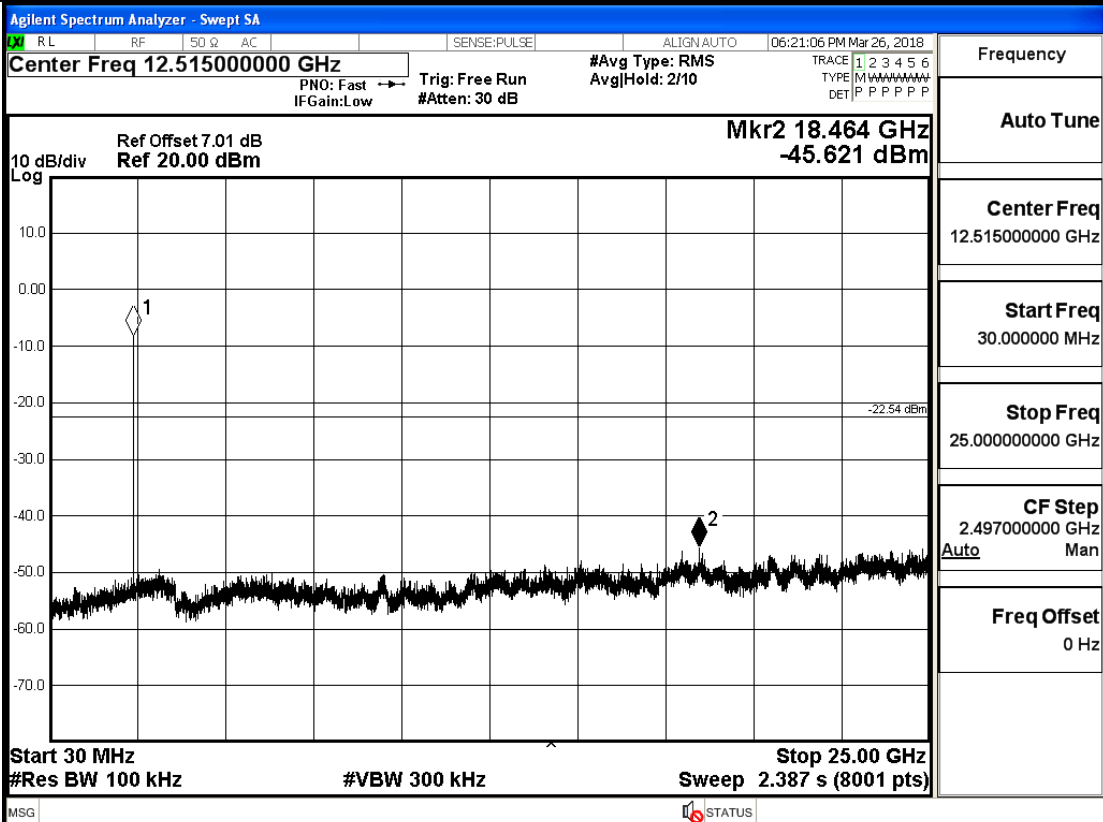


8DPSK LCH Graphs

Pref

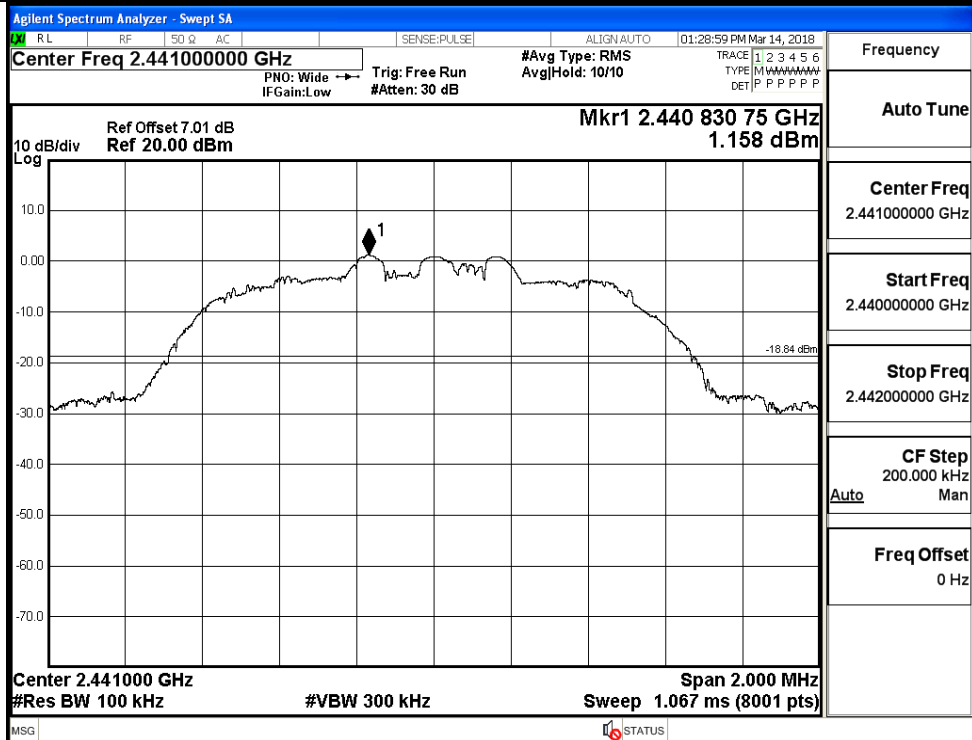


Puw

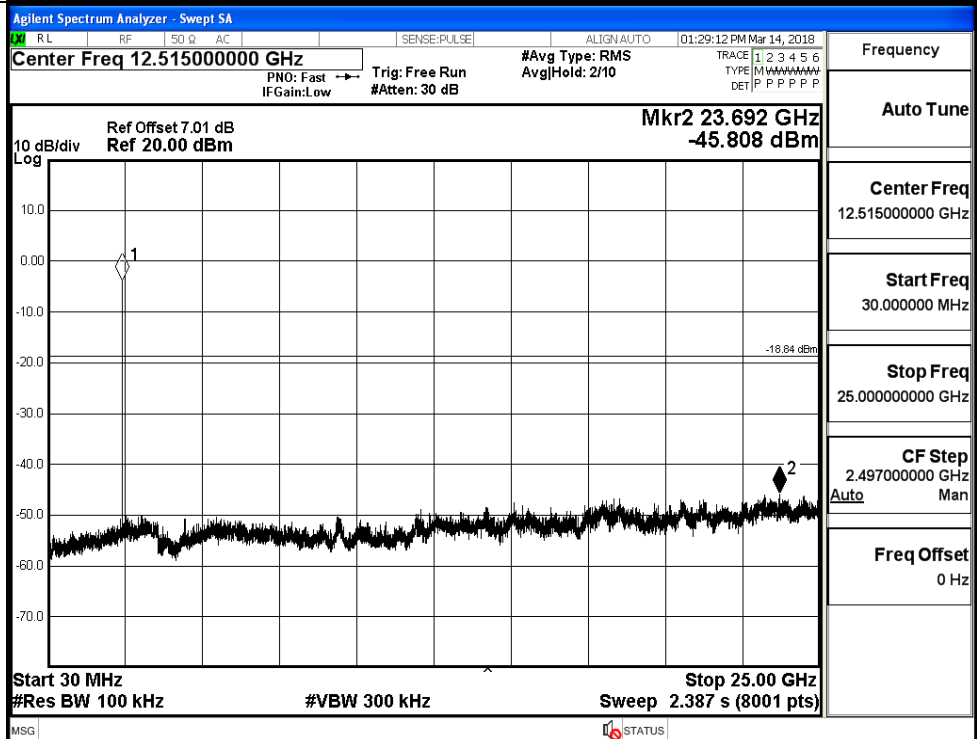


8DPSK MCH Graphs

Pref

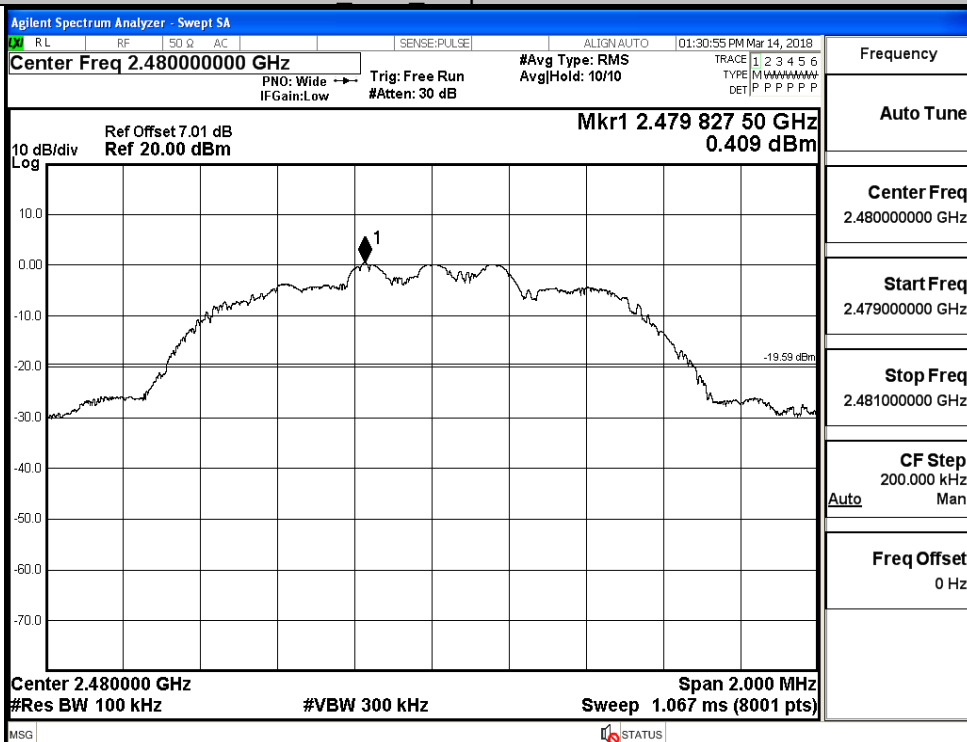


Puw

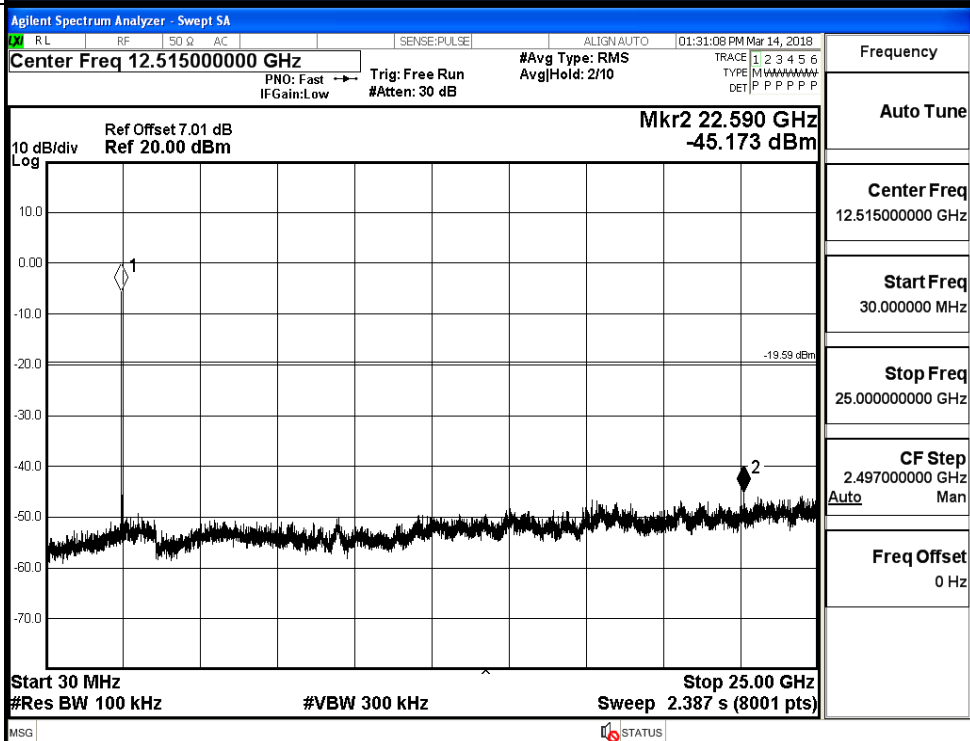


8DPSK_HCH Graphs

Pref



Puw

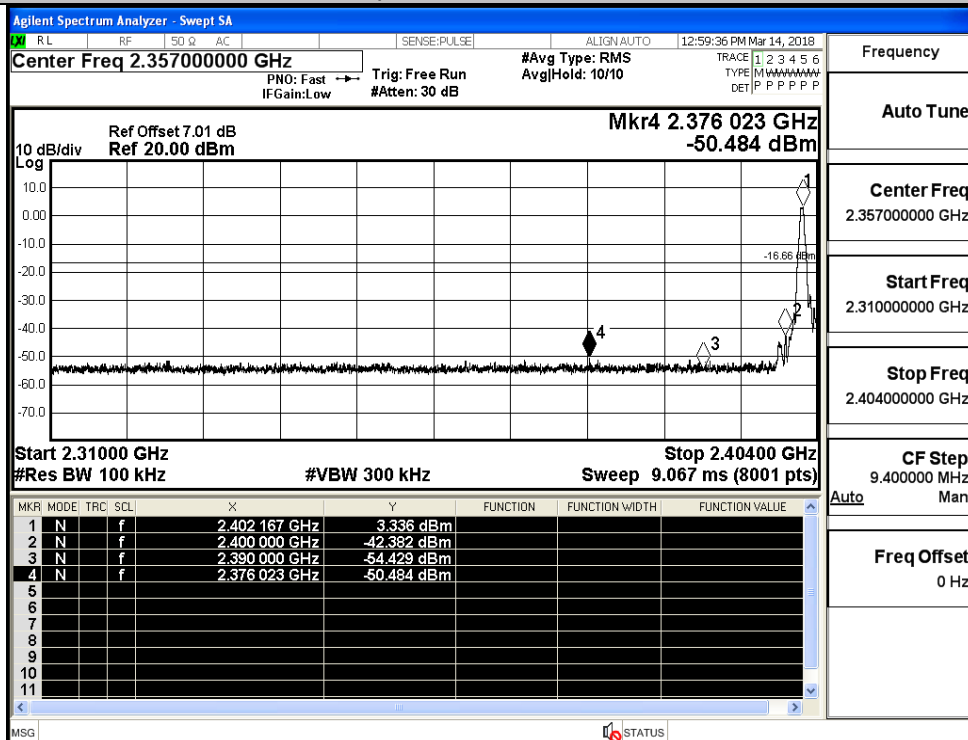


A.7 Band-edge for RF Conducted Emissions

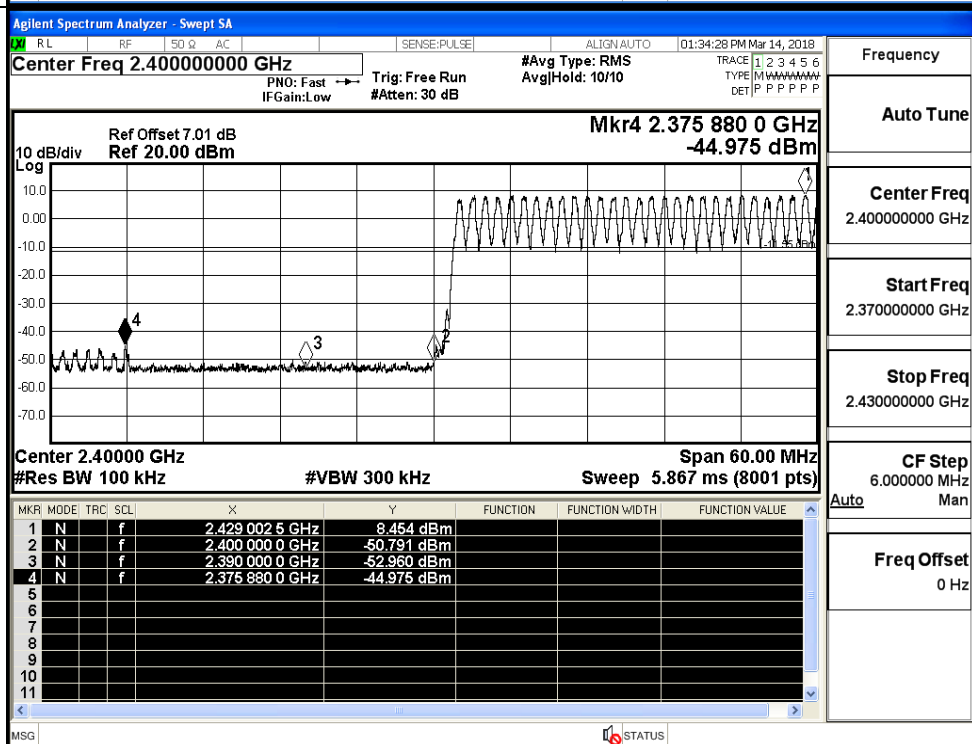
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.336	Off	-50.484	-16.66	PASS
			8.454	On	-44.975	-11.55	PASS
	HCH	2480	6.512	Off	-51.100	-13.49	PASS
			8.620	On	-48.771	-11.38	PASS
$\pi/4$ DQPSK	LCH	2402	-3.173	Off	-50.765	-23.17	PASS
			6.162	On	-50.095	-13.84	PASS
	HCH	2480	1.231	Off	-50.814	-18.77	PASS
			6.587	On	-49.571	-13.41	PASS
8DPSK	LCH	2402	0.209	Off	-50.894	-19.79	PASS
			6.365	On	-49.667	-13.64	PASS
	HCH	2480	0.445	Off	-51.076	-19.56	PASS
			6.621	On	-48.465	-13.38	PASS

Test Graphs

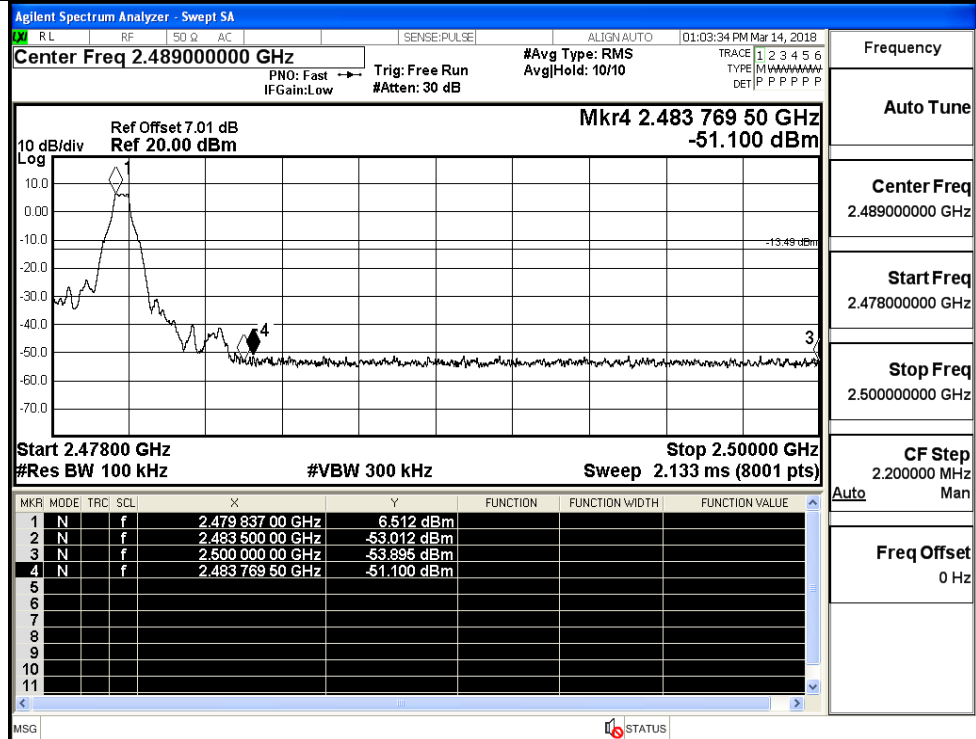
GFSK/LCH/No Hop



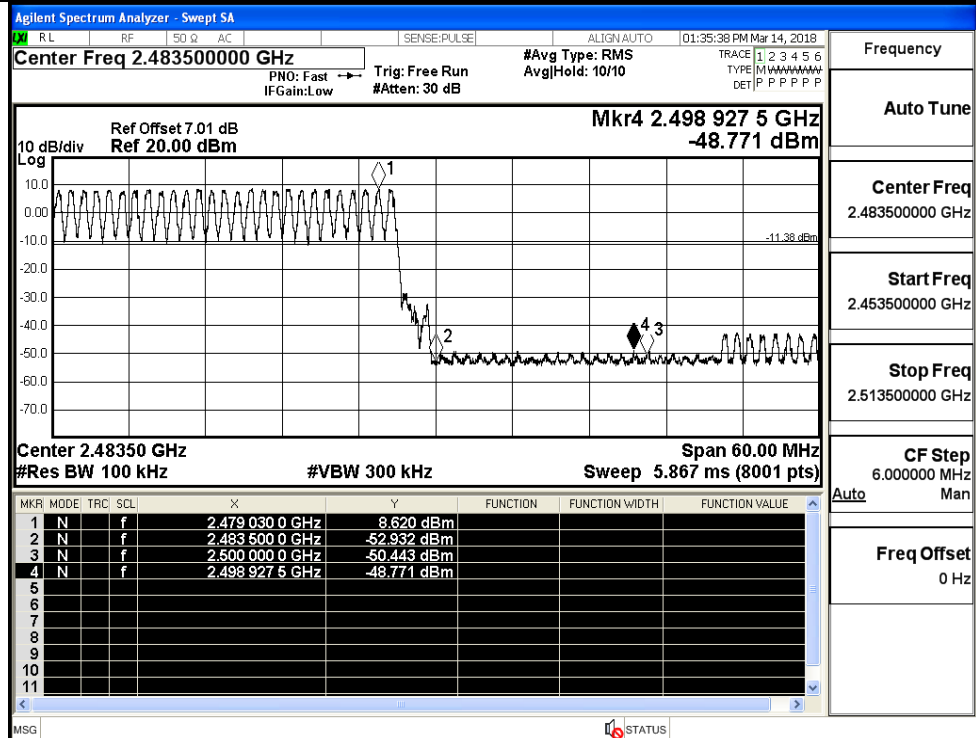
GFSK/LCH/Hop



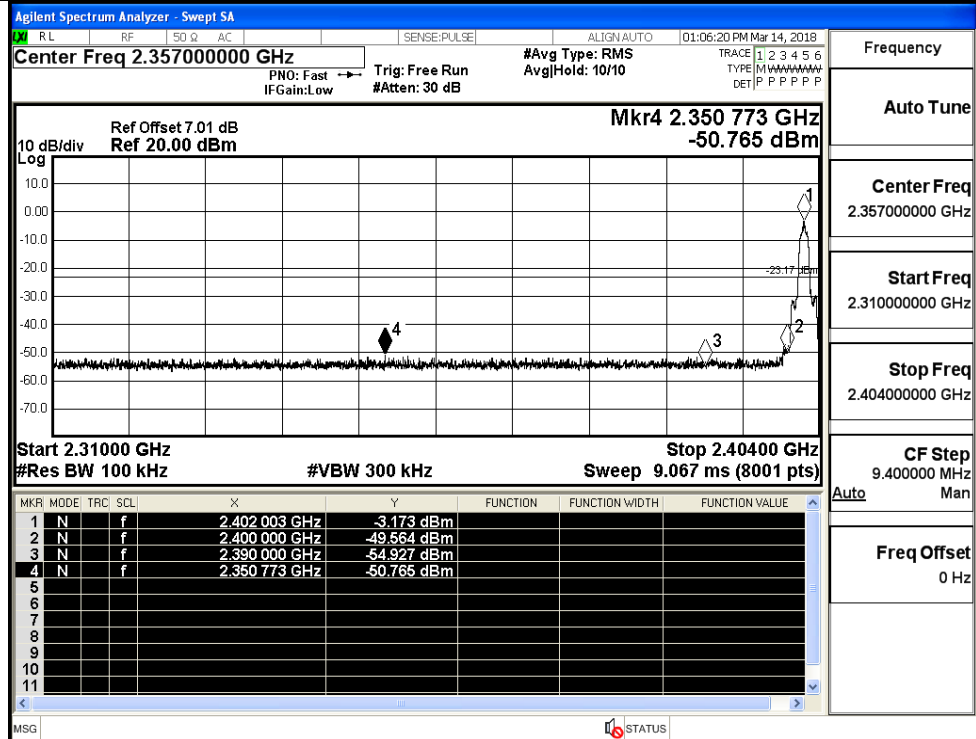
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

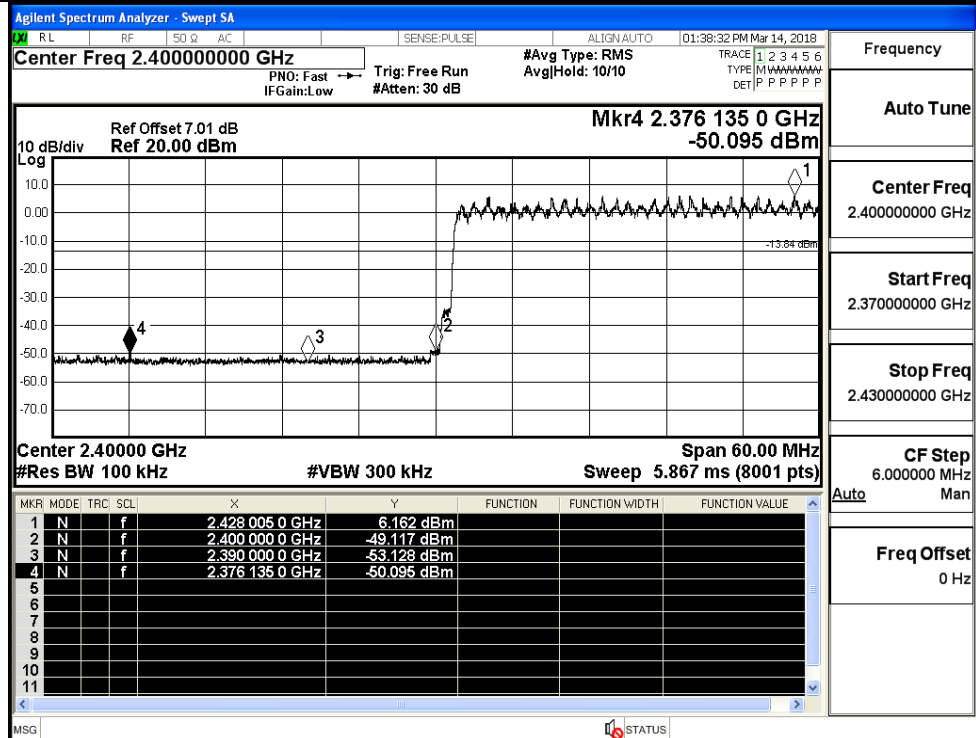
Start Freq
2.310000000 GHz

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

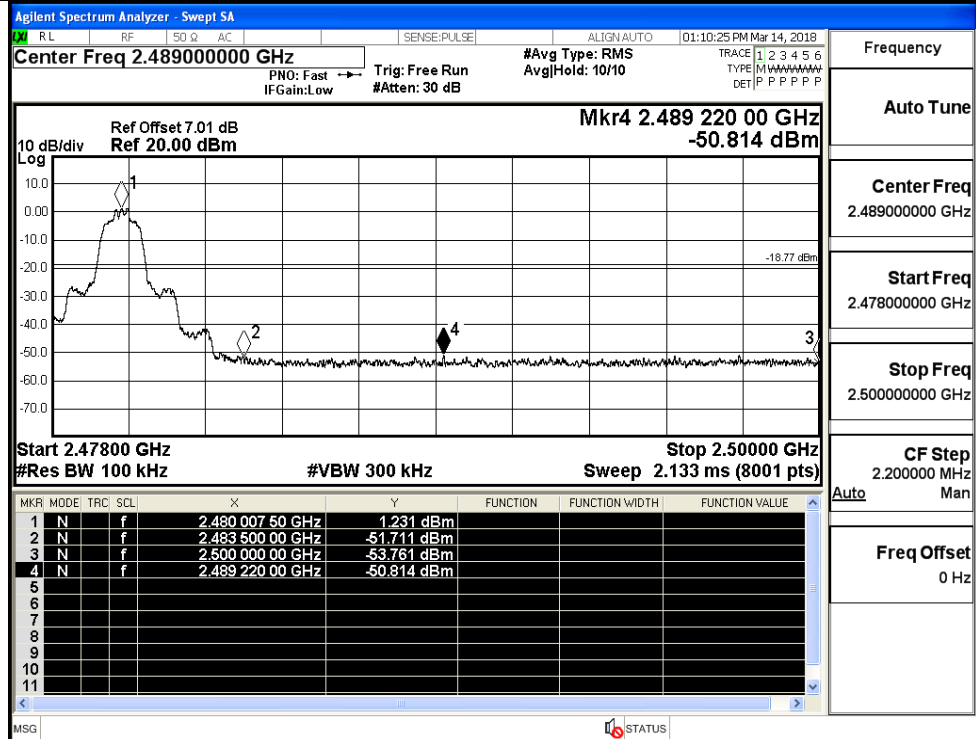
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

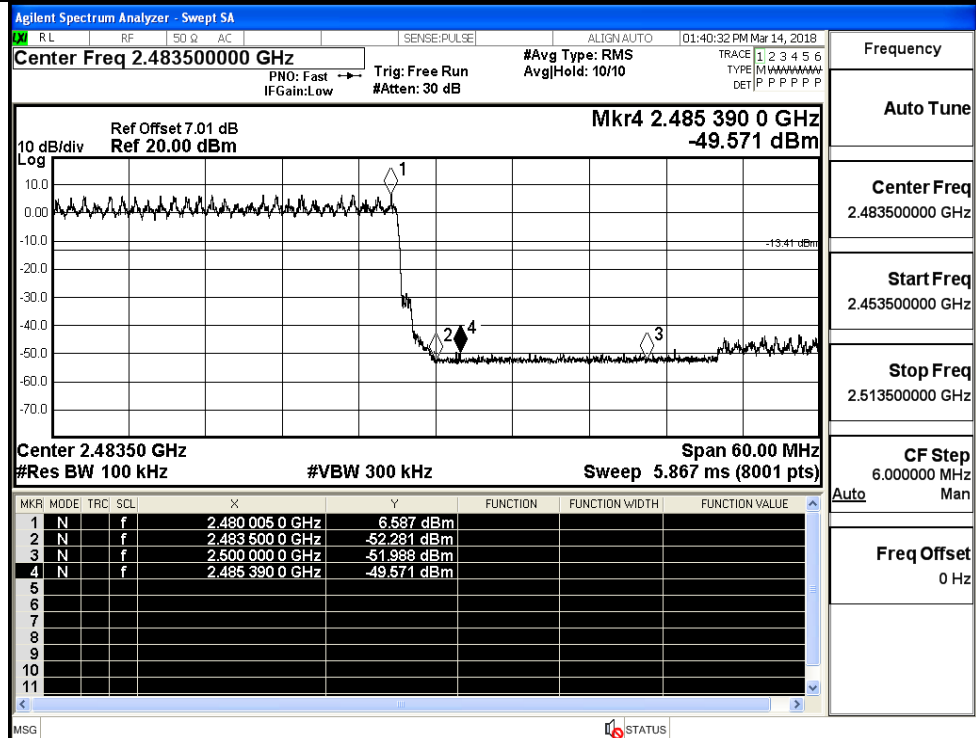
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

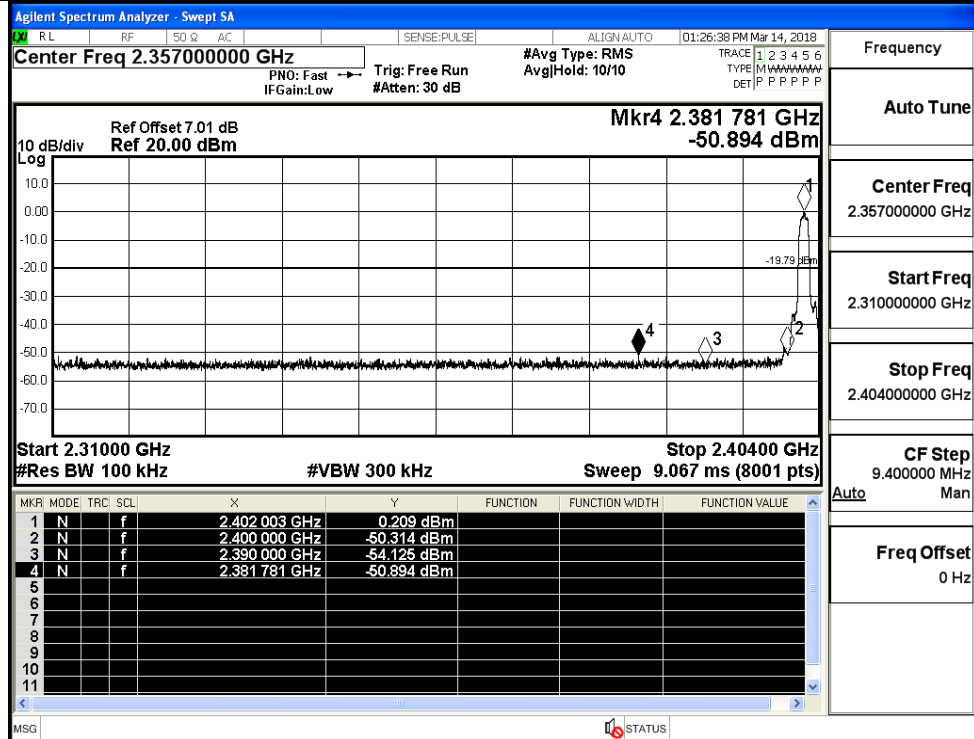
$\pi/4$ DQPSK/HCH/No
Hop



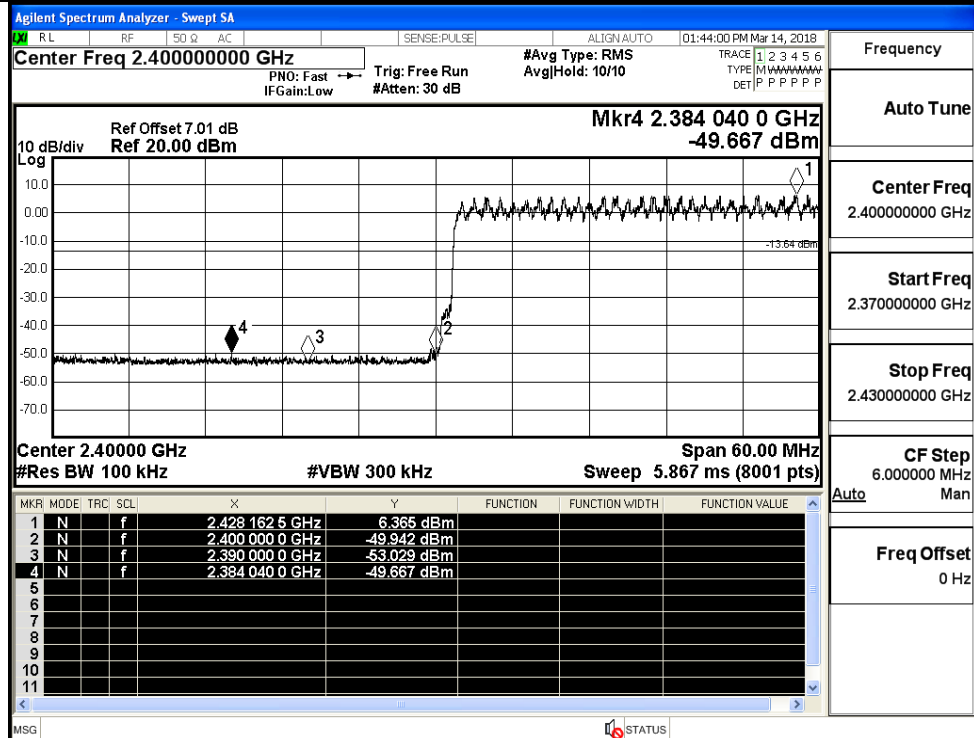
$\pi/4$ DQPSK/HCH/Hop



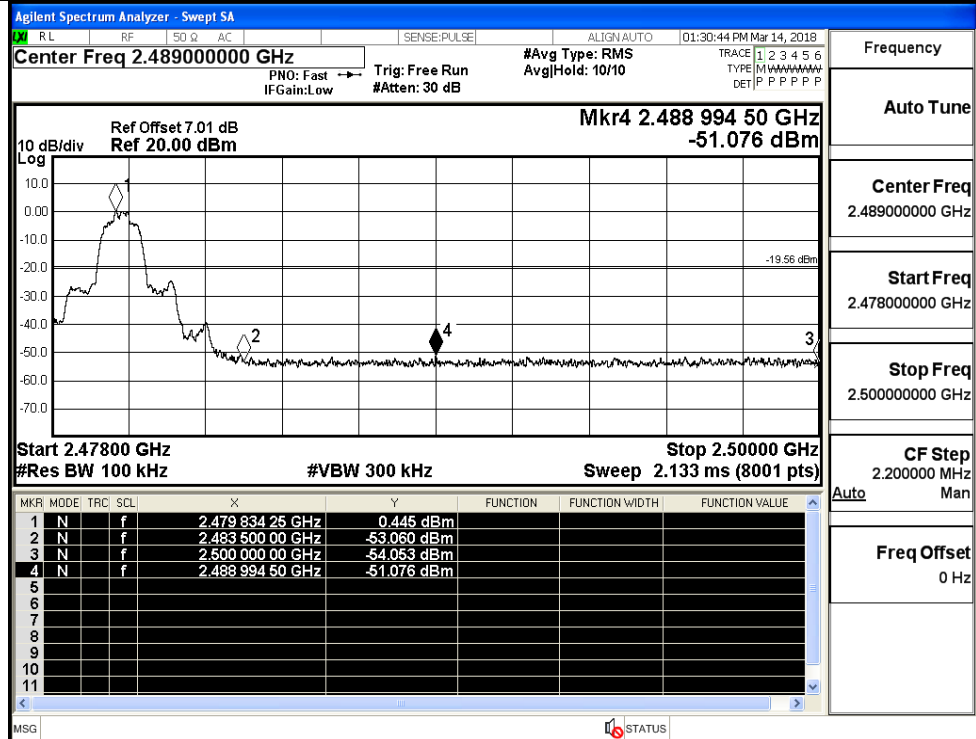
8DPSK/LCH/No Hop



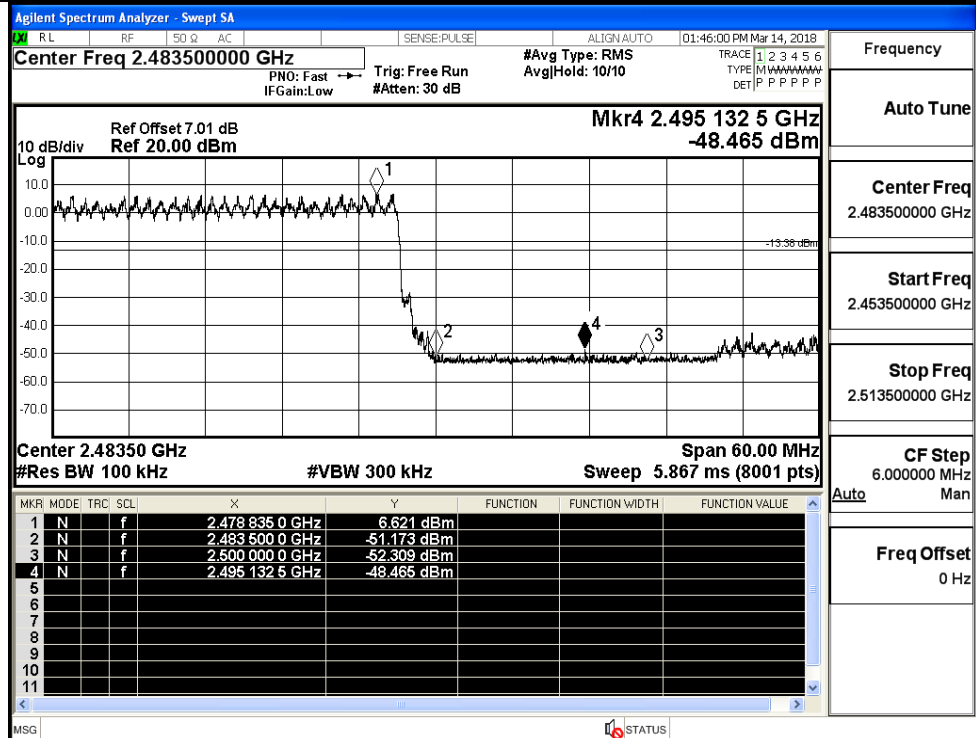
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



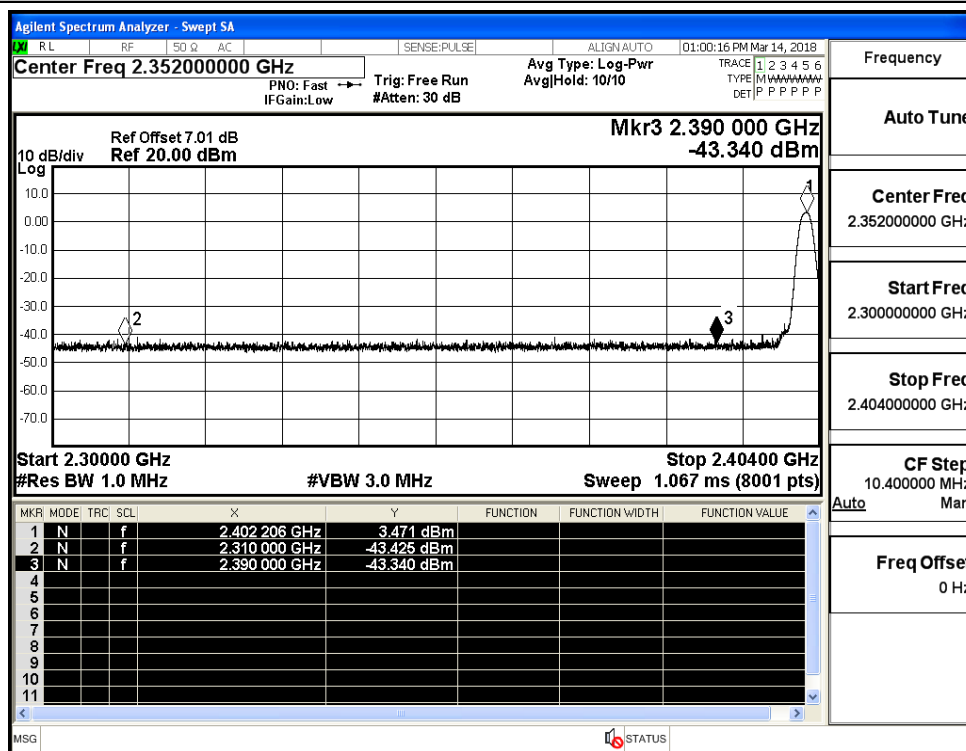
8DPSK/HCH/Hop



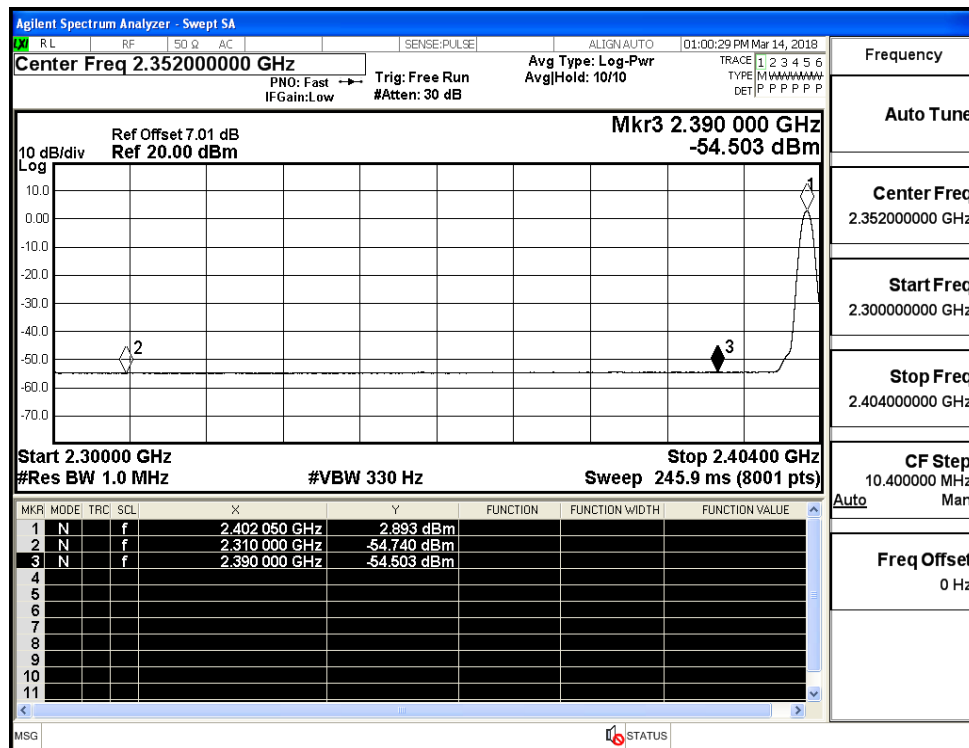
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.43	2.0	0	53.83	PEAK	74	PASS
	Off	2310.0	-54.74	2.0	0	42.52	AV	54	PASS
	Off	2390.0	-43.34	2.0	0	53.92	PEAK	74	PASS
	Off	2390.0	-54.50	2.0	0	42.75	AV	54	PASS
	Off	2483.5	-39.84	2.0	0	57.42	PEAK	74	PASS
	Off	2483.5	-50.59	2.0	0	46.67	AV	54	PASS
	Off	2500.0	-44.80	2.0	0	52.46	PEAK	74	PASS
	Off	2500.0	-54.10	2.0	0	43.16	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.09	2.0	0	54.17	PEAK	74	PASS
	Off	2310.0	-54.76	2.0	0	42.50	AV	54	PASS
	Off	2390.0	-44.83	2.0	0	52.42	PEAK	74	PASS
	Off	2390.0	-54.55	2.0	0	42.71	AV	54	PASS
	Off	2483.5	-40.22	2.0	0	57.03	PEAK	74	PASS
	Off	2483.5	-52.96	2.0	0	44.30	AV	54	PASS
	Off	2500.0	-43.52	2.0	0	53.74	PEAK	74	PASS
	Off	2500.0	-54.21	2.0	0	43.05	AV	54	PASS
8DPSK	Off	2310.0	-44.63	2.0	0	52.62	PEAK	74	PASS
	Off	2310.0	-54.79	2.0	0	42.47	AV	54	PASS
	Off	2390.0	-44.90	2.0	0	52.35	PEAK	74	PASS
	Off	2390.0	-54.52	2.0	0	42.73	AV	54	PASS
	Off	2483.5	-41.70	2.0	0	55.55	PEAK	74	PASS
	Off	2483.5	-52.87	2.0	0	44.39	AV	54	PASS
	Off	2500.0	-44.86	2.0	0	52.40	PEAK	74	PASS
	Off	2500.0	-54.16	2.0	0	43.10	AV	54	PASS

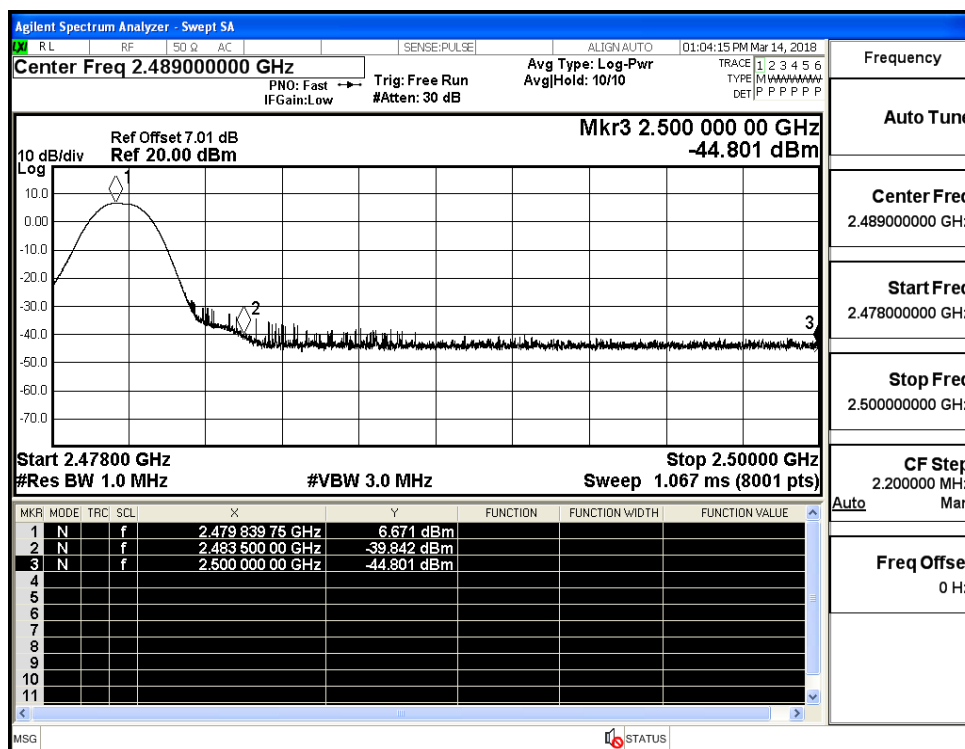
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



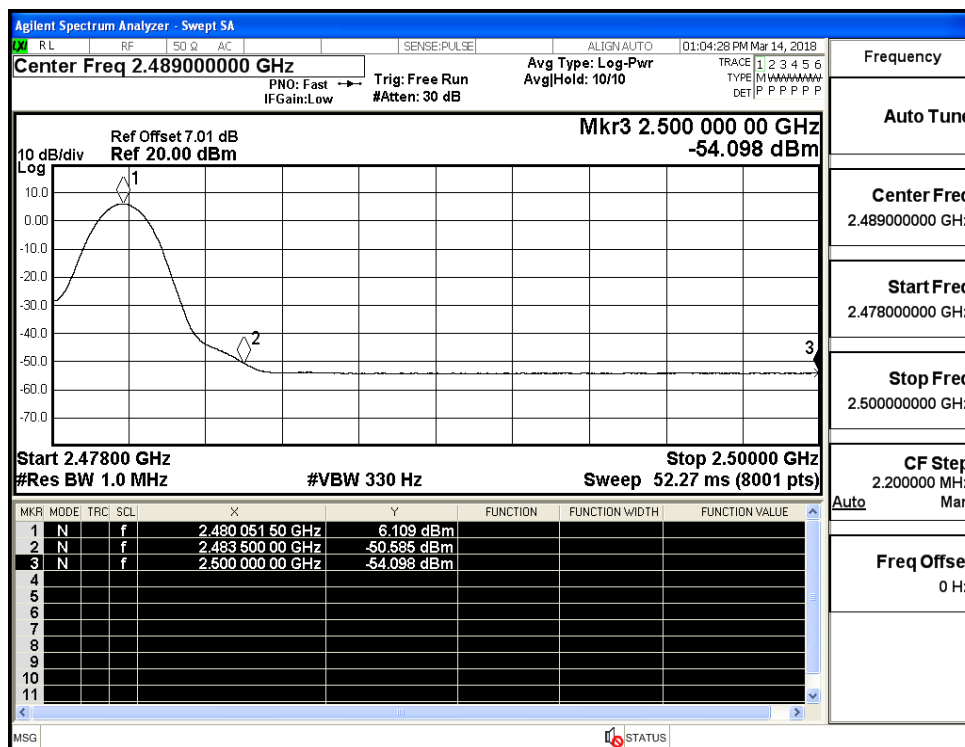
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

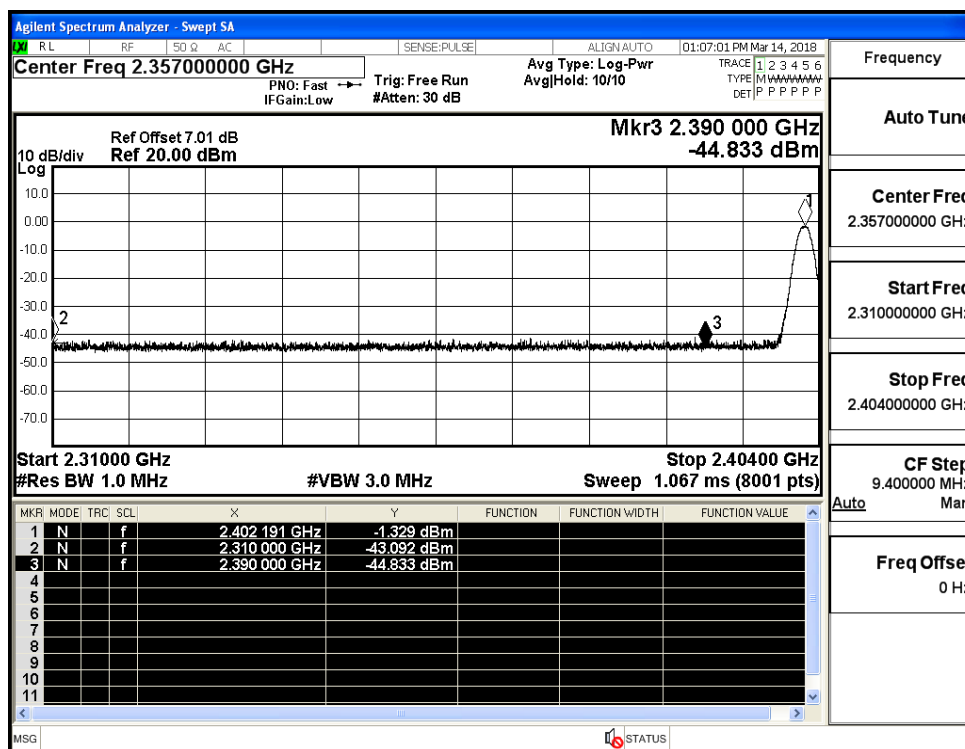
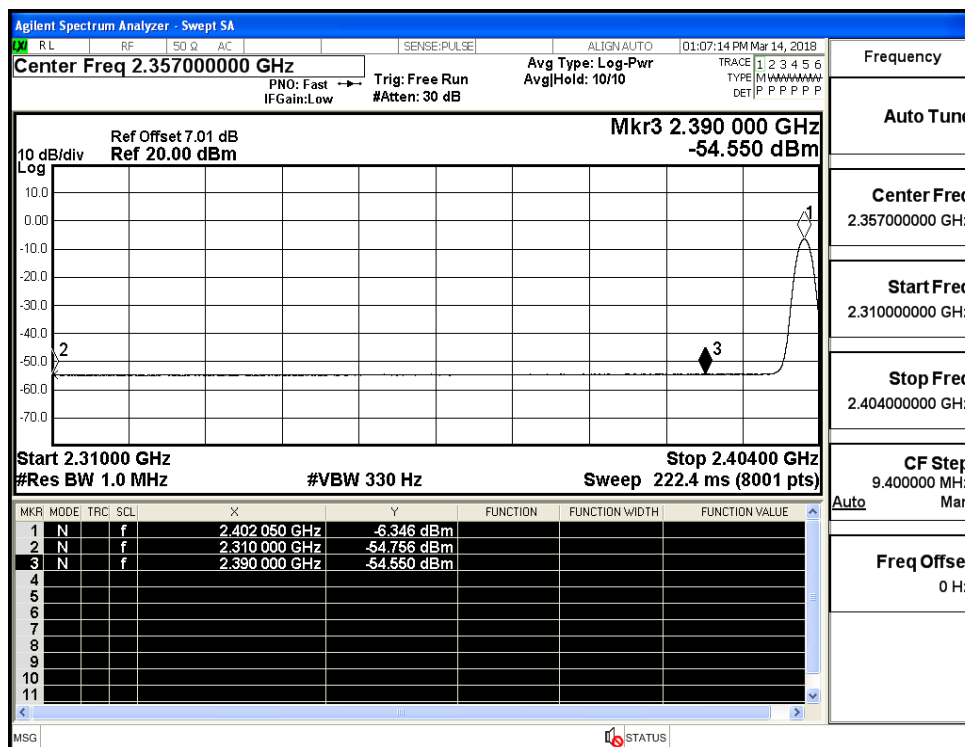


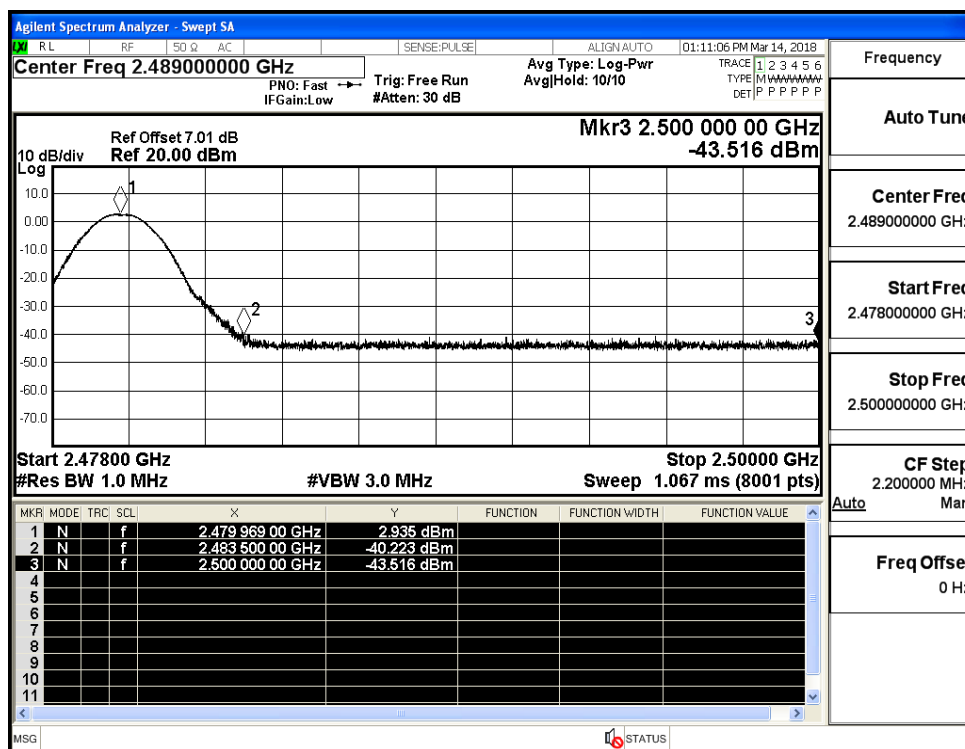
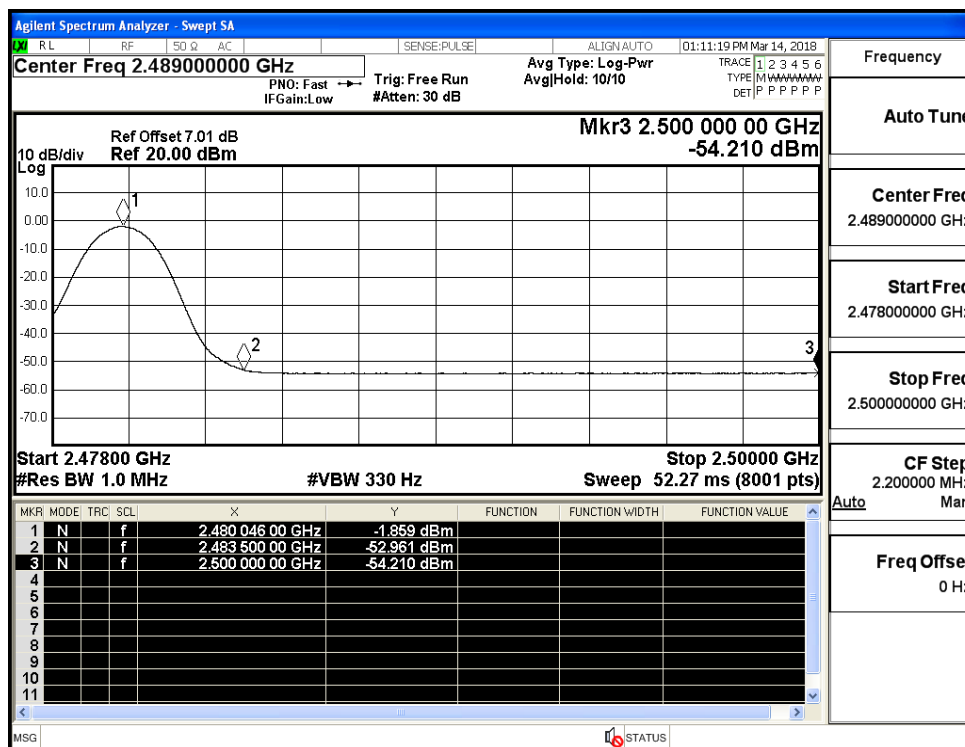
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



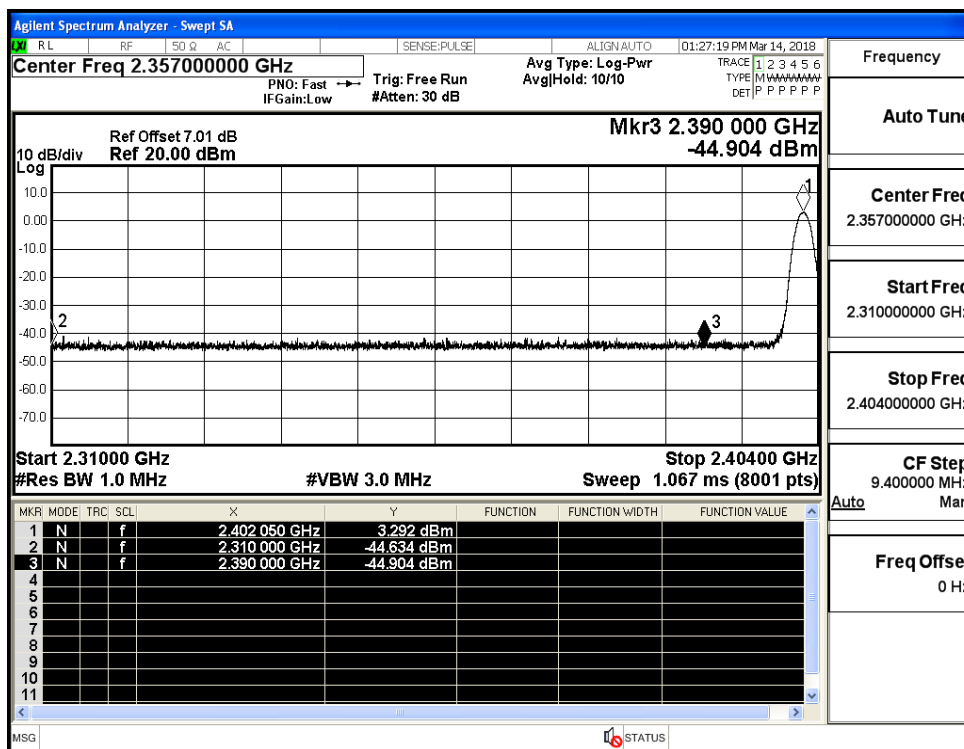
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



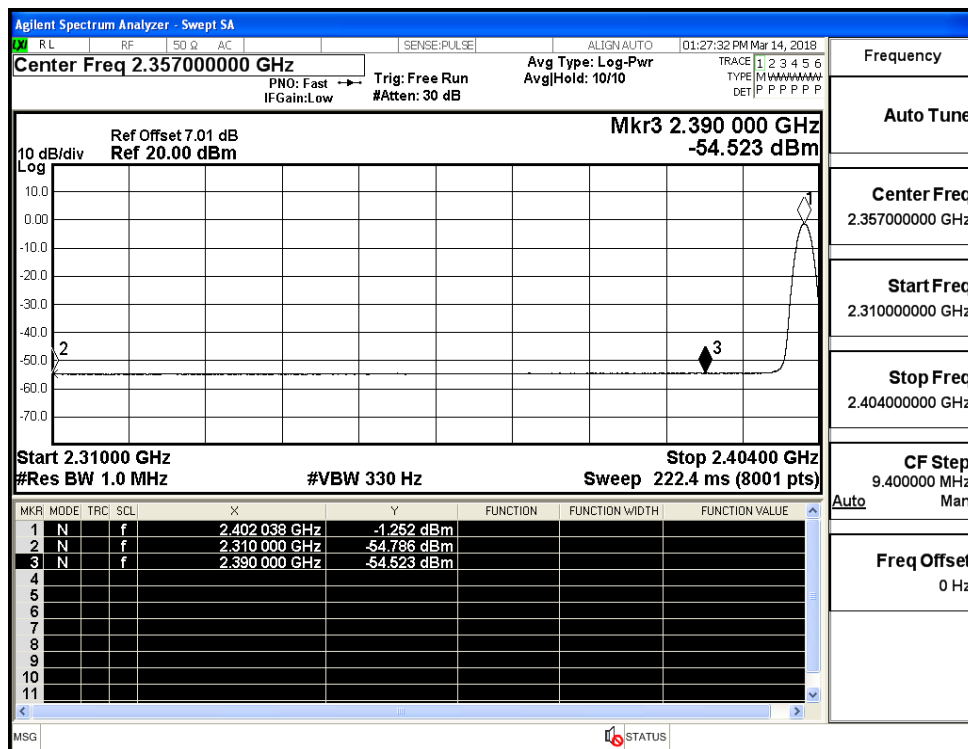
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

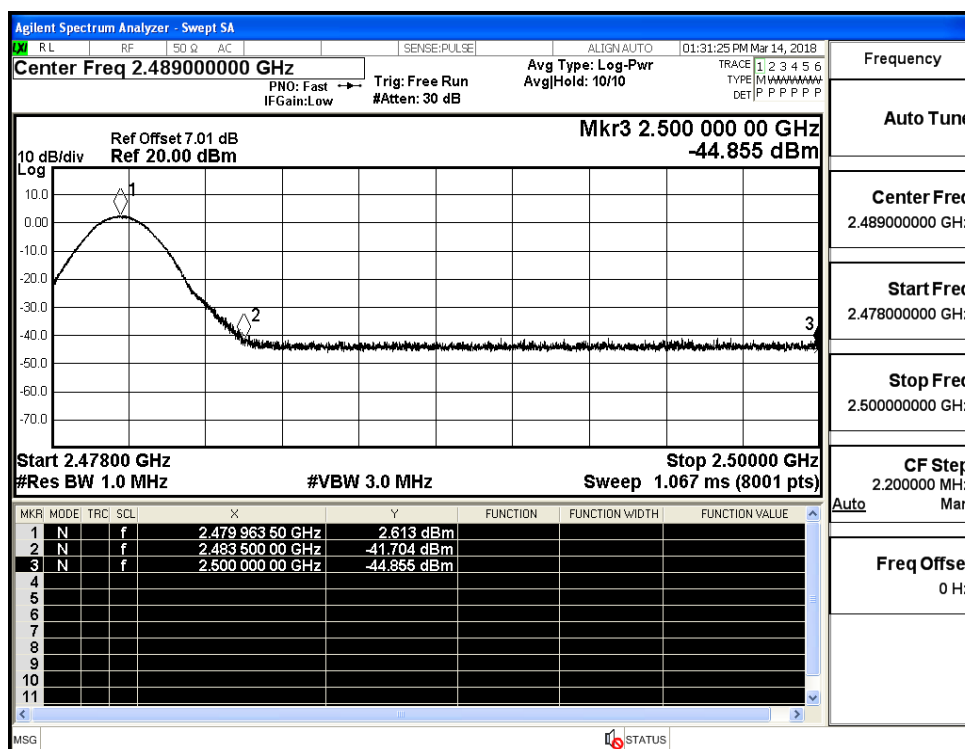
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

