

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: F400

Environmental Conditions

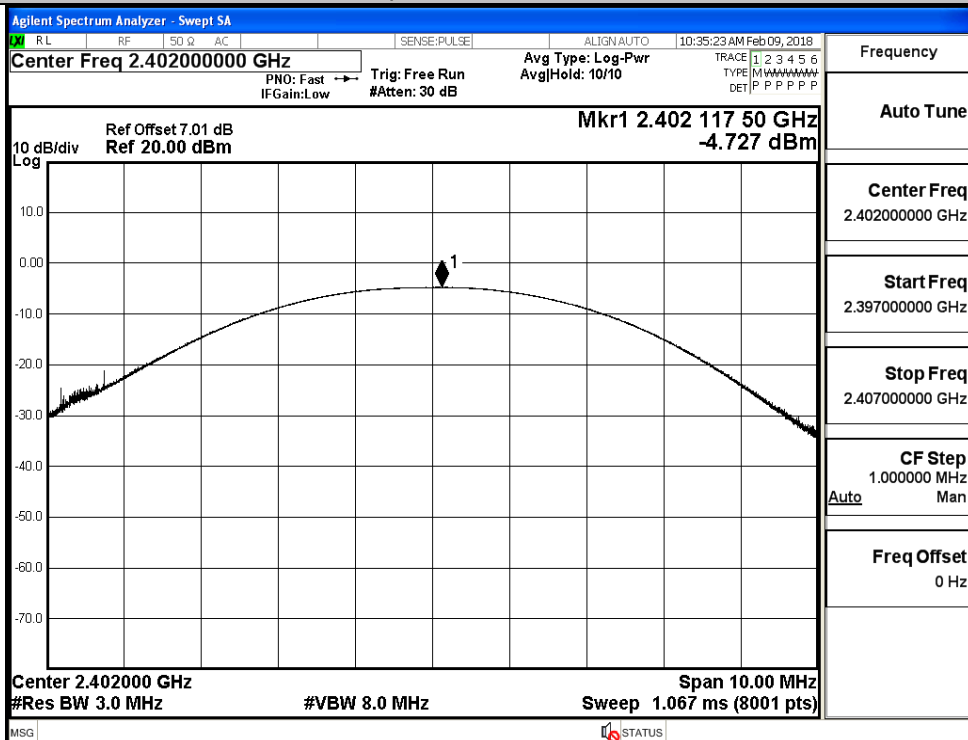
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

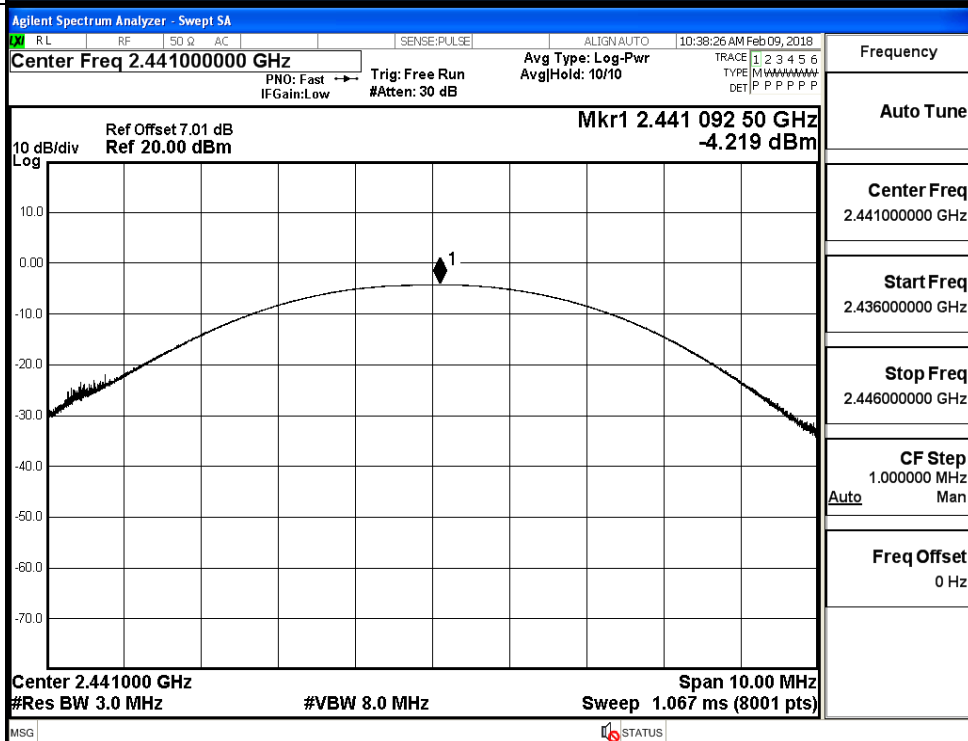
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.727	30	PASS
	MCH	-4.219	30	PASS
	HCH	-3.859	30	PASS
$\pi/4$ DQPSK	LCH	-3.504	21	PASS
	MCH	-2.996	21	PASS
	HCH	-2.695	21	PASS

Test Graphs

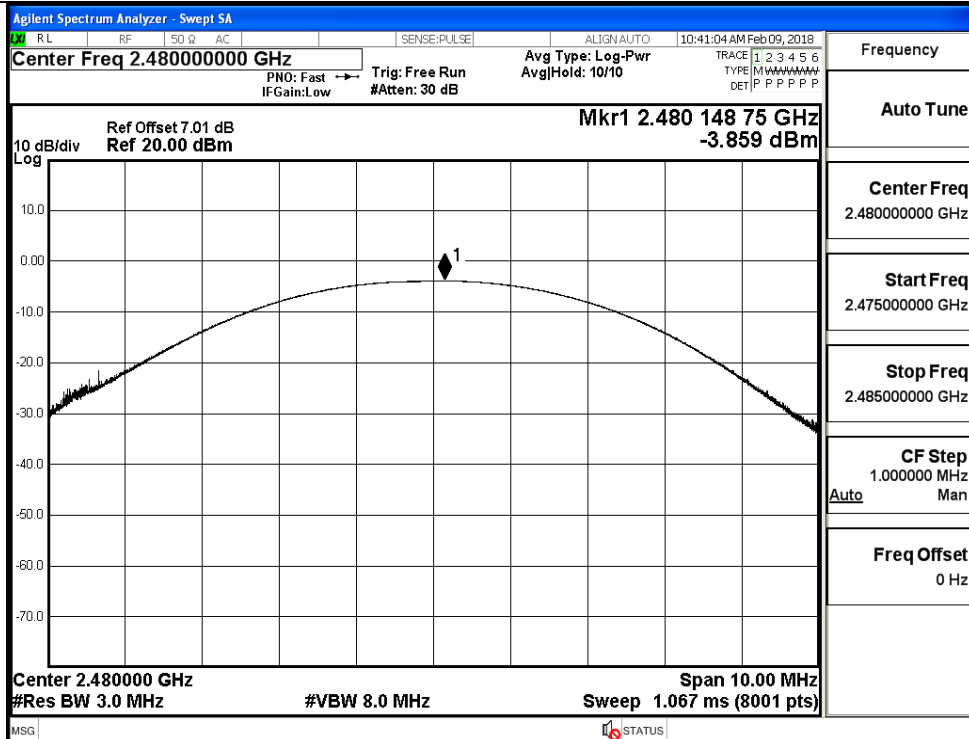
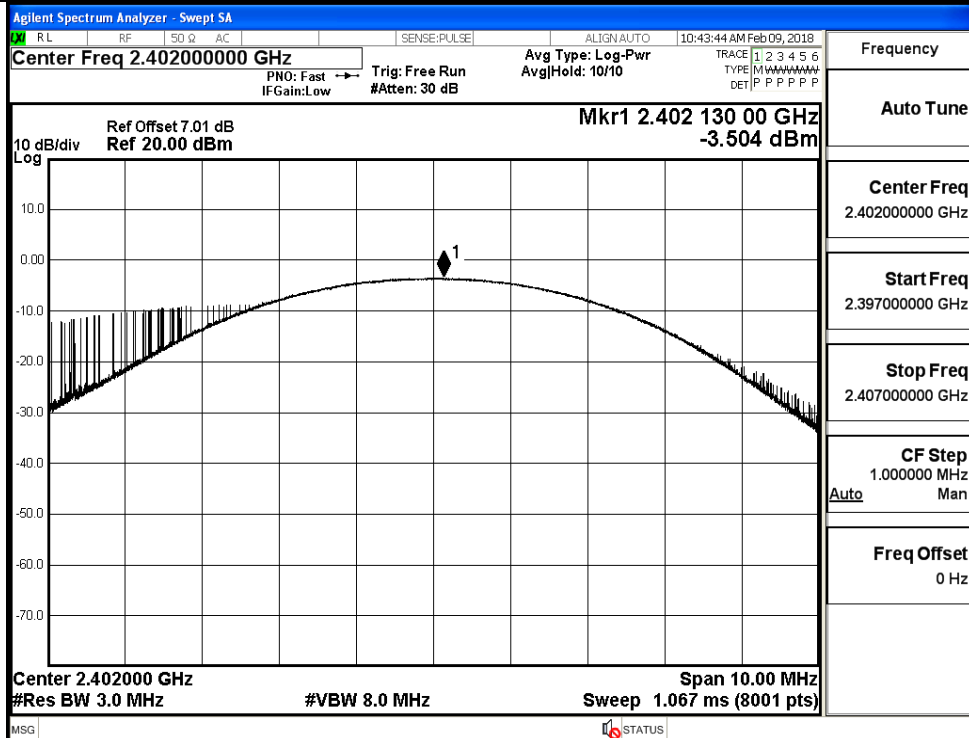
GFSK/LCH

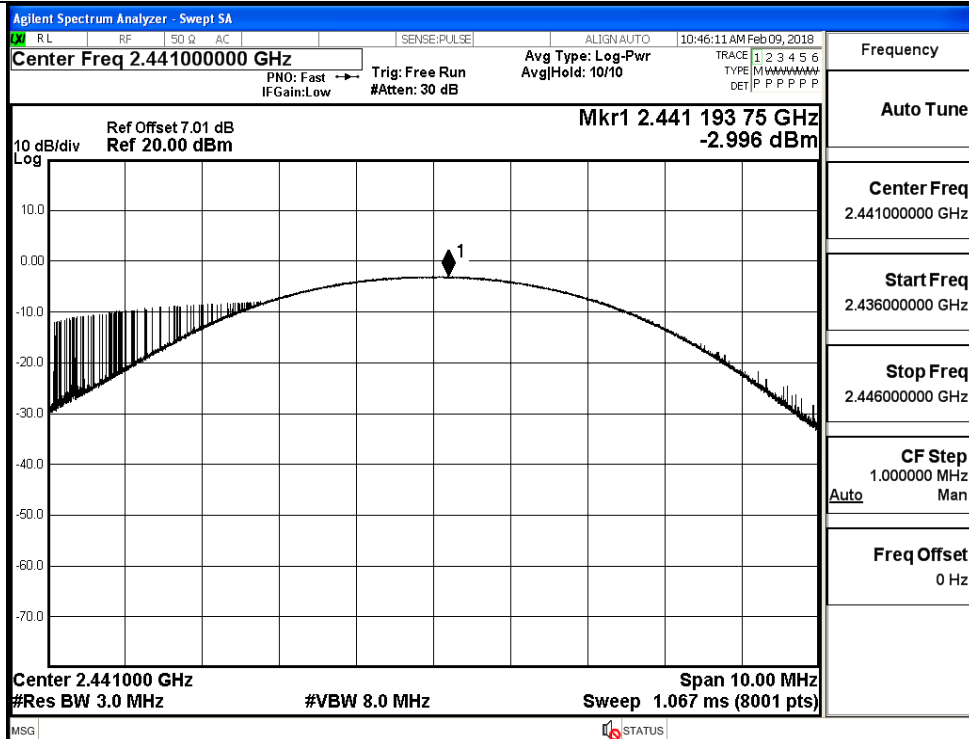
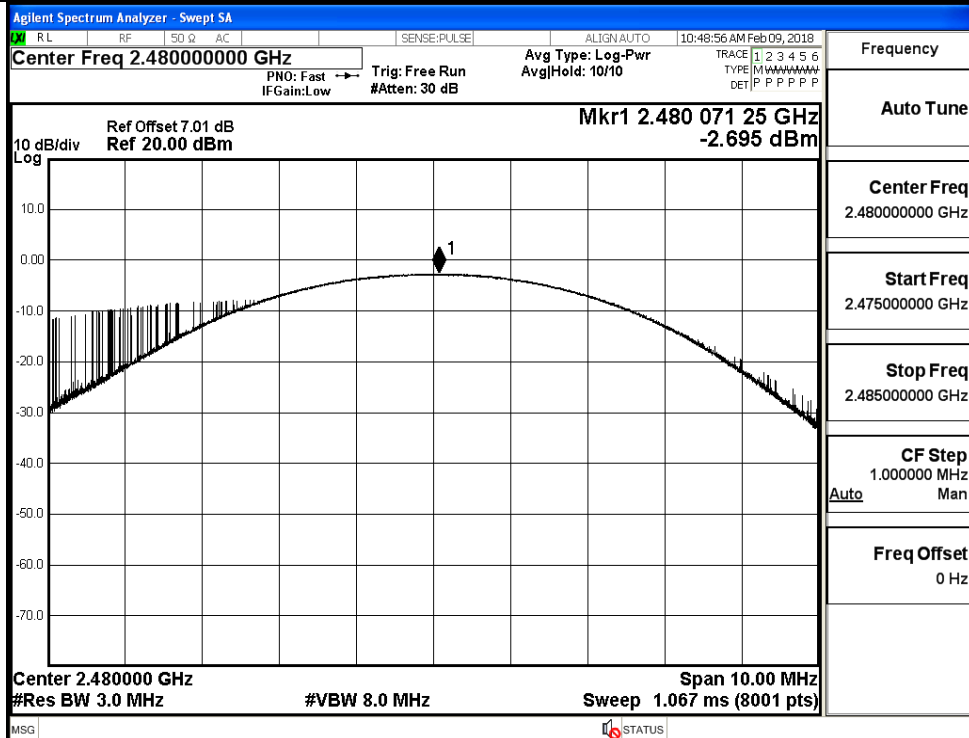


GFSK/MCH



GFSK/HCH

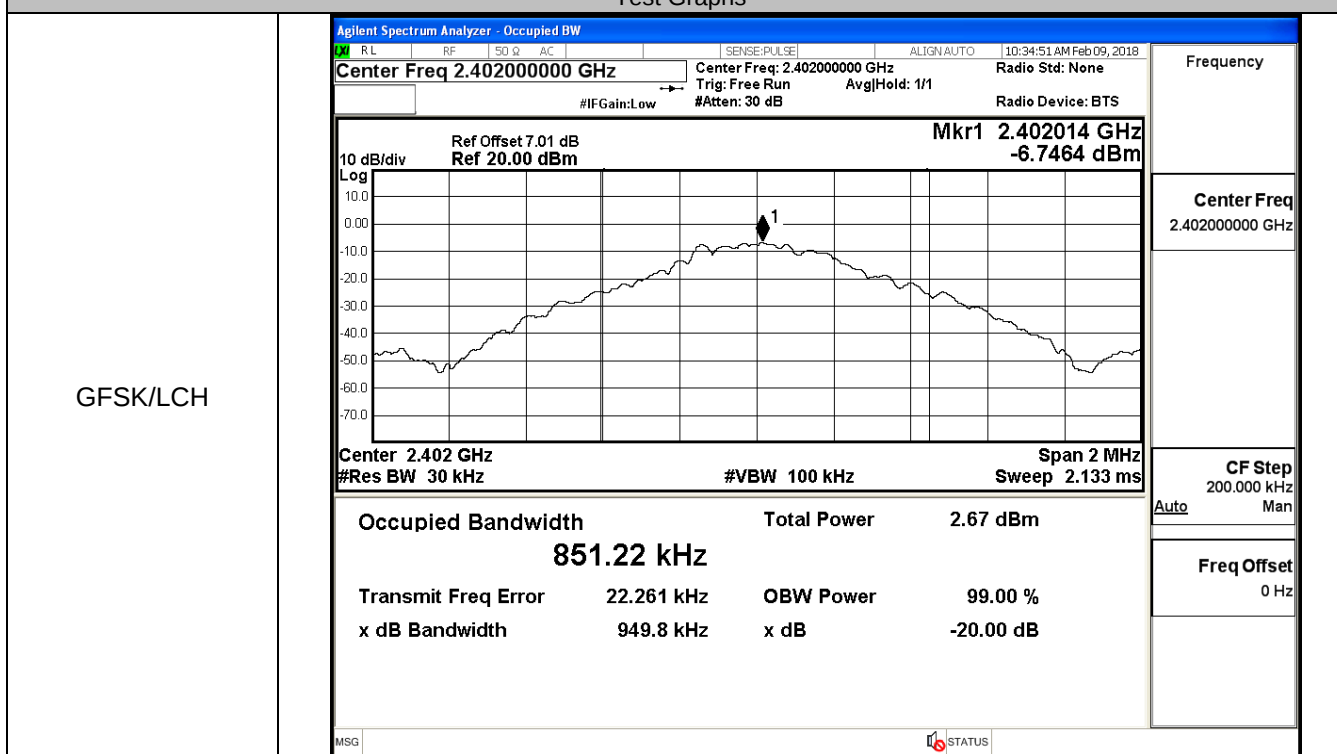
 $\pi/4$ DQPSK/LCH

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

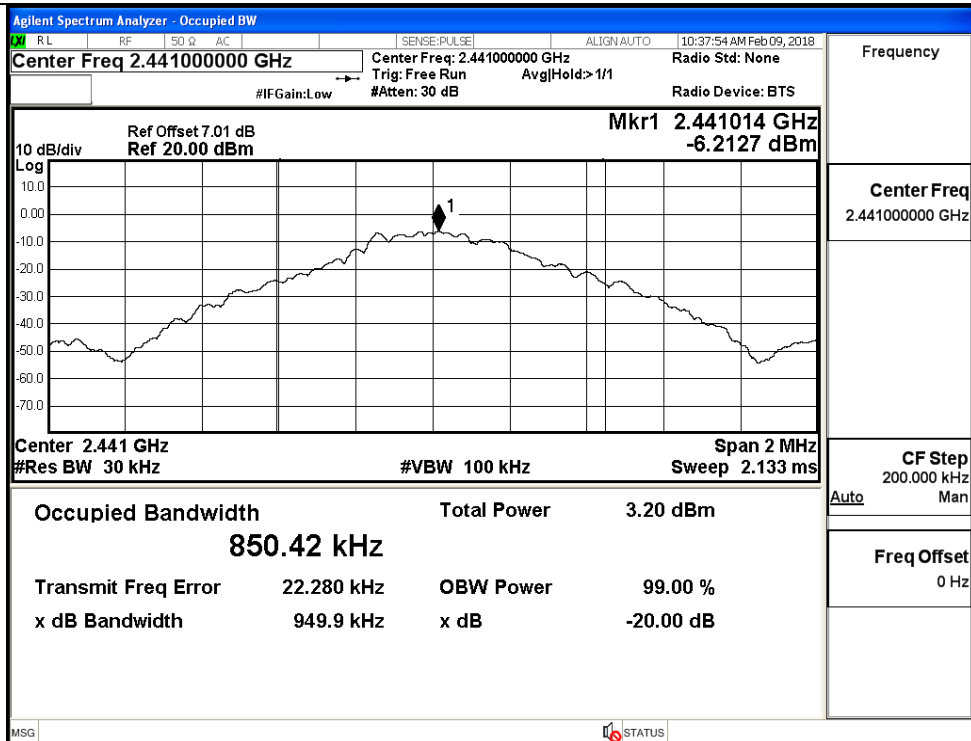
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Verdict
GFSK	LCH	0.9498	PASS
	MCH	0.9499	PASS
	HCH	0.9506	PASS
$\pi/4$ DQPSK	LCH	1.280	PASS
	MCH	1.284	PASS
	HCH	1.280	PASS

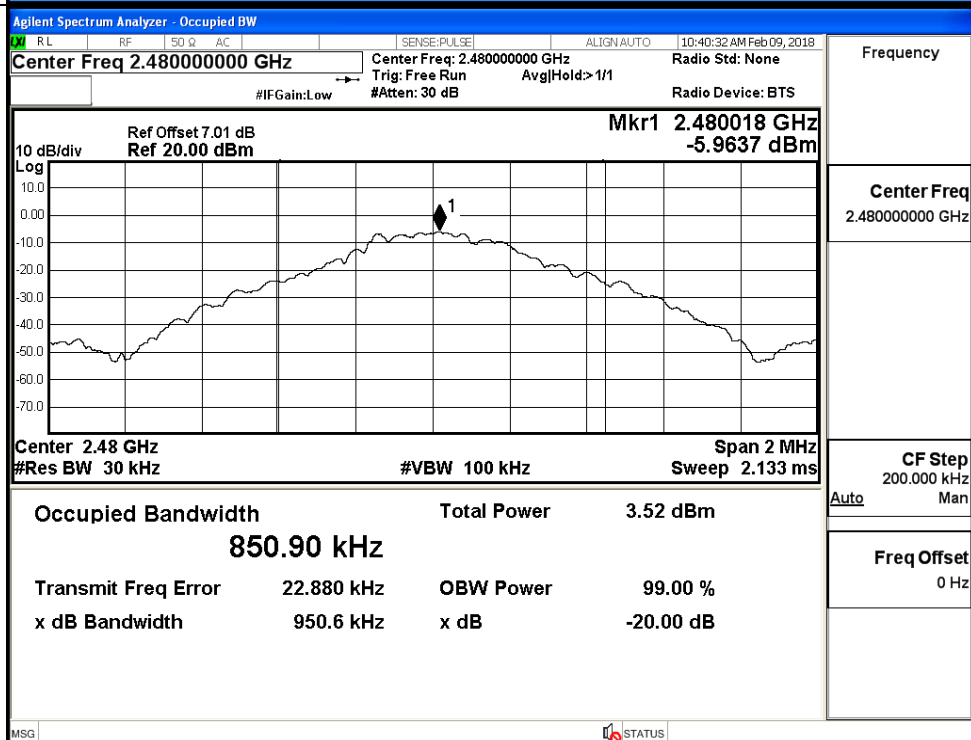
Test Graphs

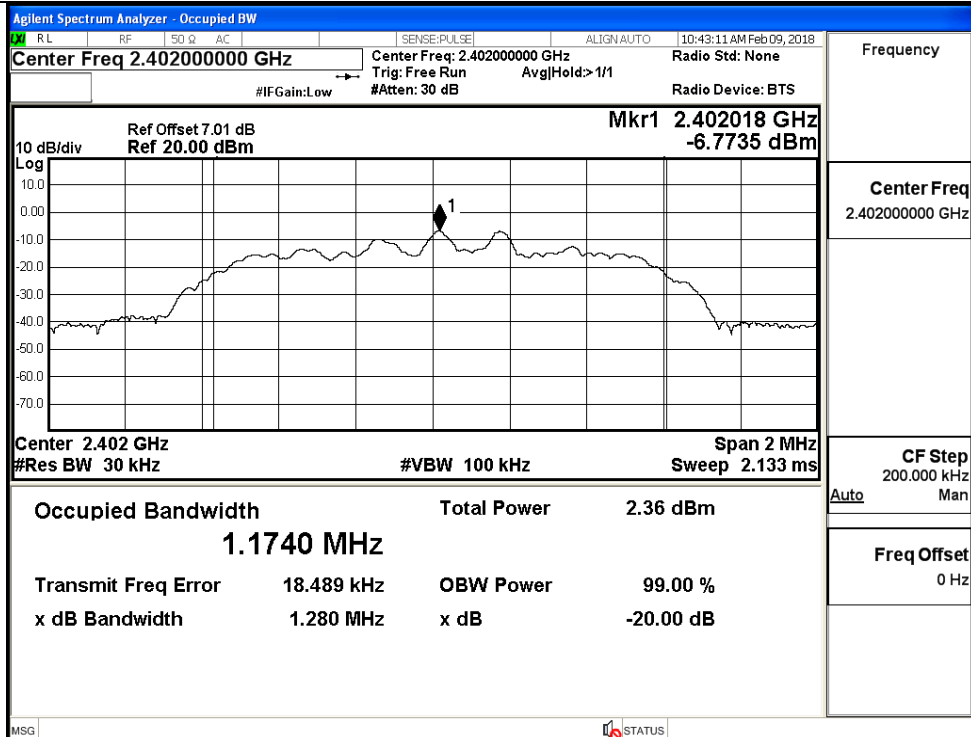
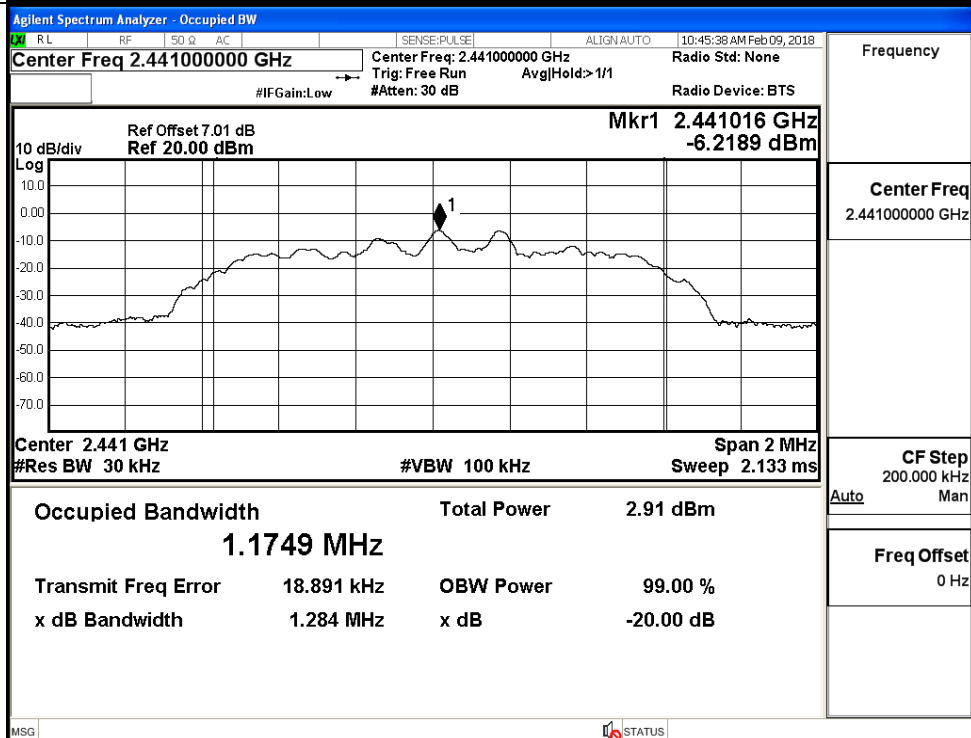


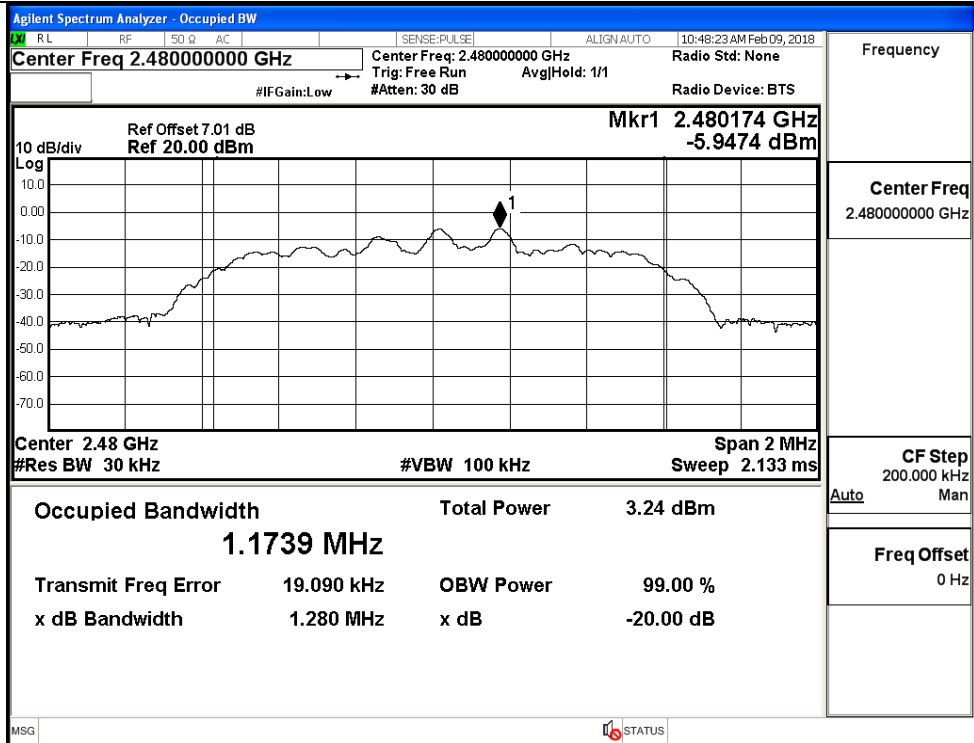
GFSK/MCH



GFSK/HCH



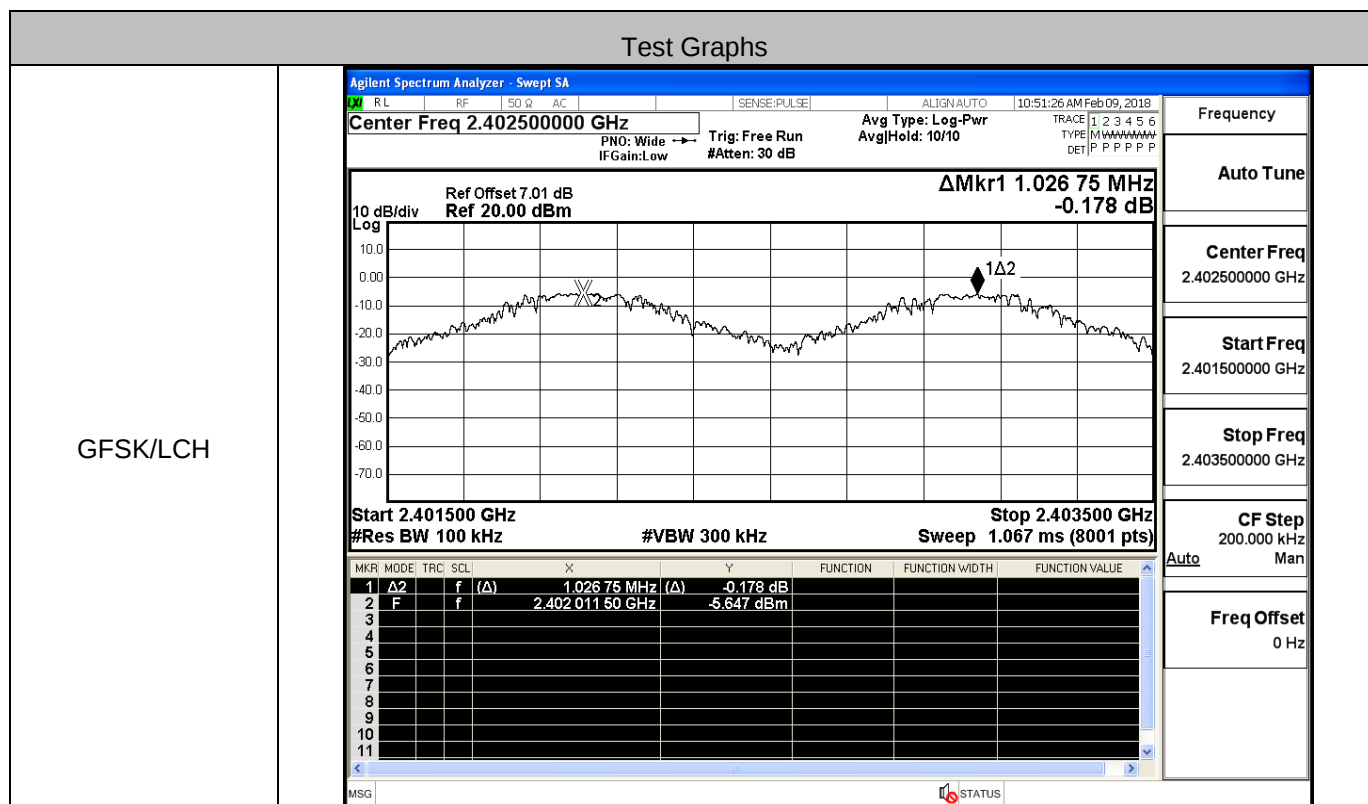
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

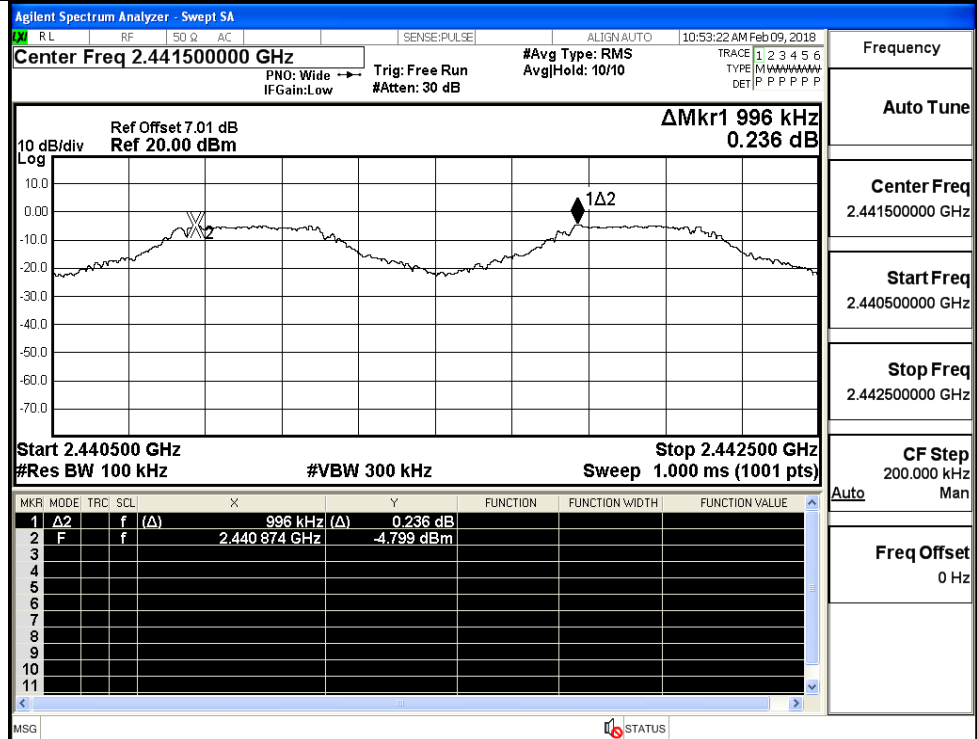
A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.027	20dB Bandwidth or 2/3 of the 20dB Bandwidth	PASS
	MCH	0.996	20dB Bandwidth or 2/3 of the 20dB Bandwidth	PASS
	HCH	0.986	20dB Bandwidth or 2/3 of the 20dB Bandwidth	PASS
$\pi/4$ DQPSK	LCH	1.142	2/3 of the 20dB Bandwidth	PASS
	MCH	1.000	2/3 of the 20dB Bandwidth	PASS
	HCH	0.862	2/3 of the 20dB Bandwidth	PASS

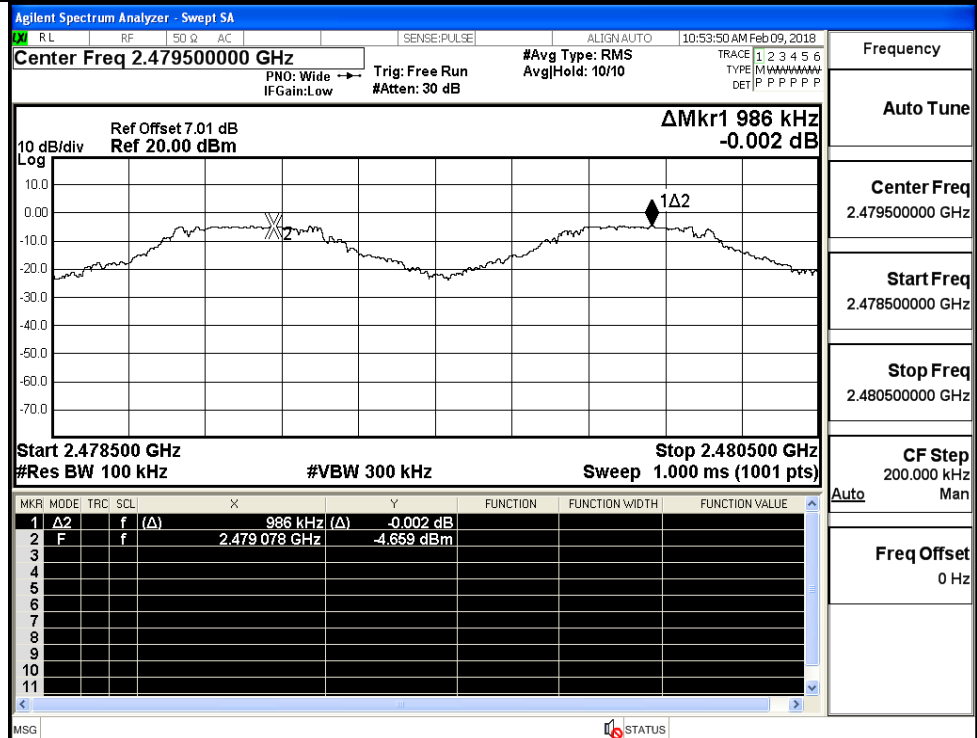
Test Graphs

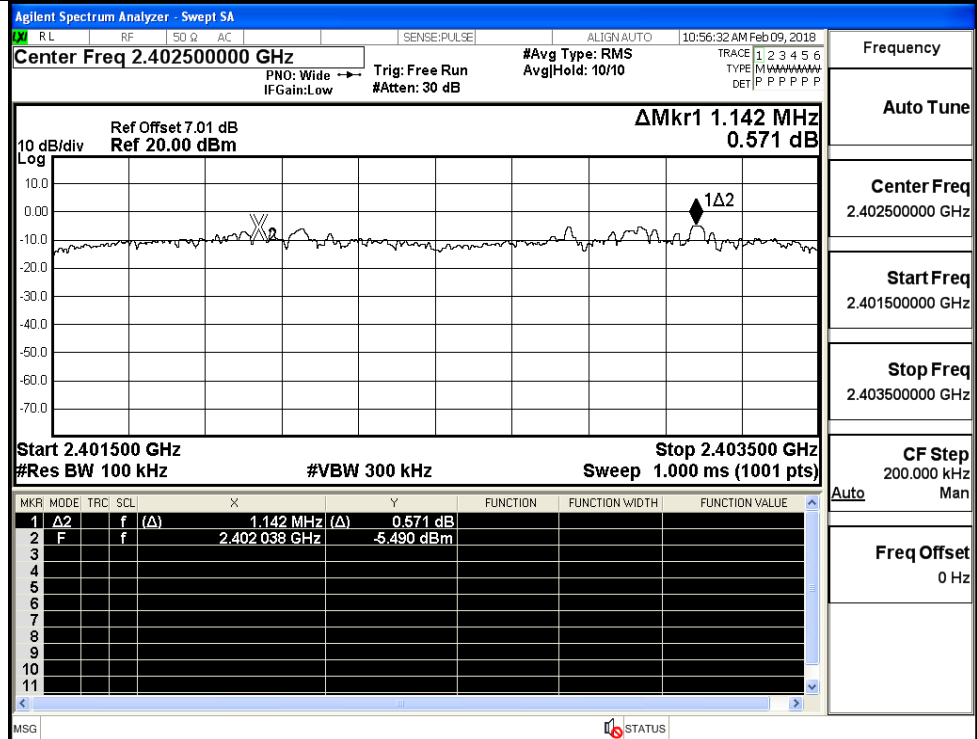
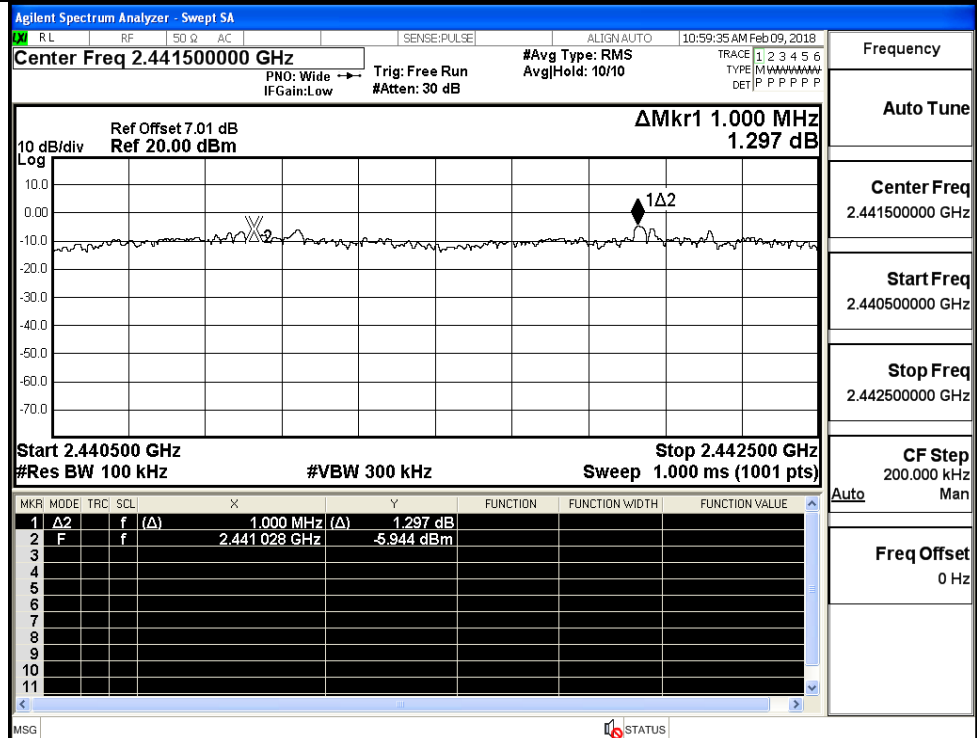


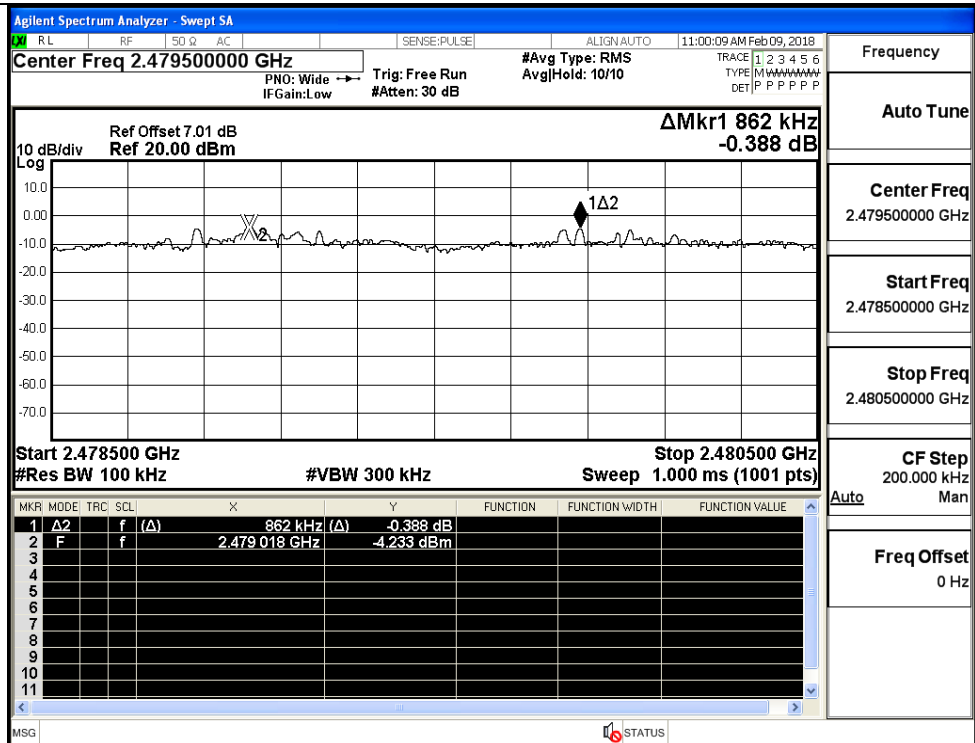
GFSK/MCH



GFSK/HCH



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

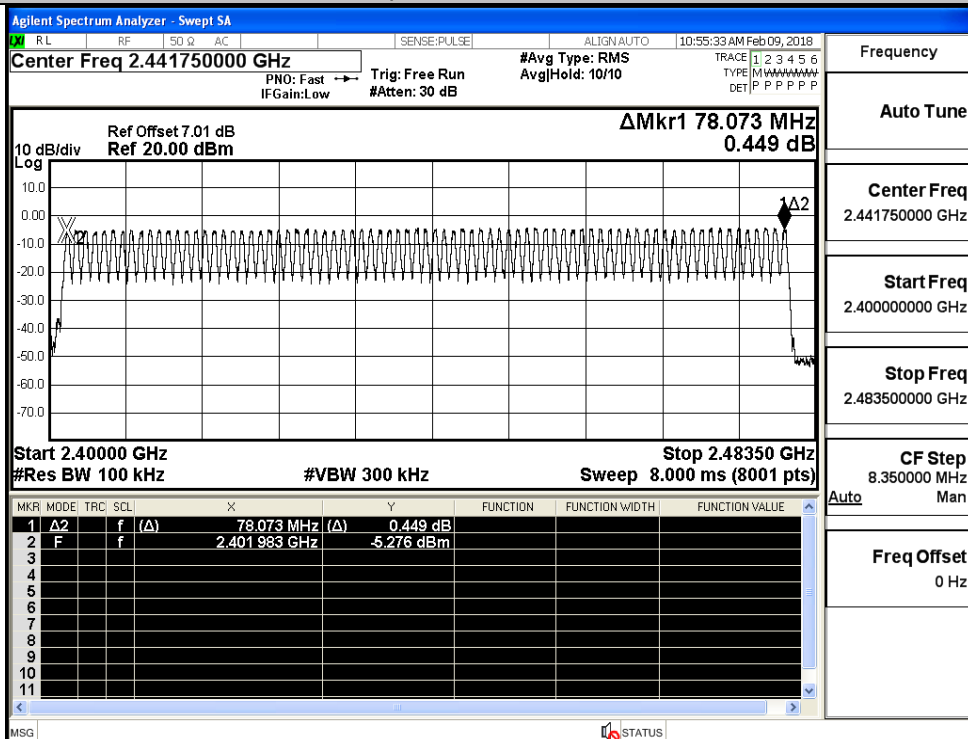
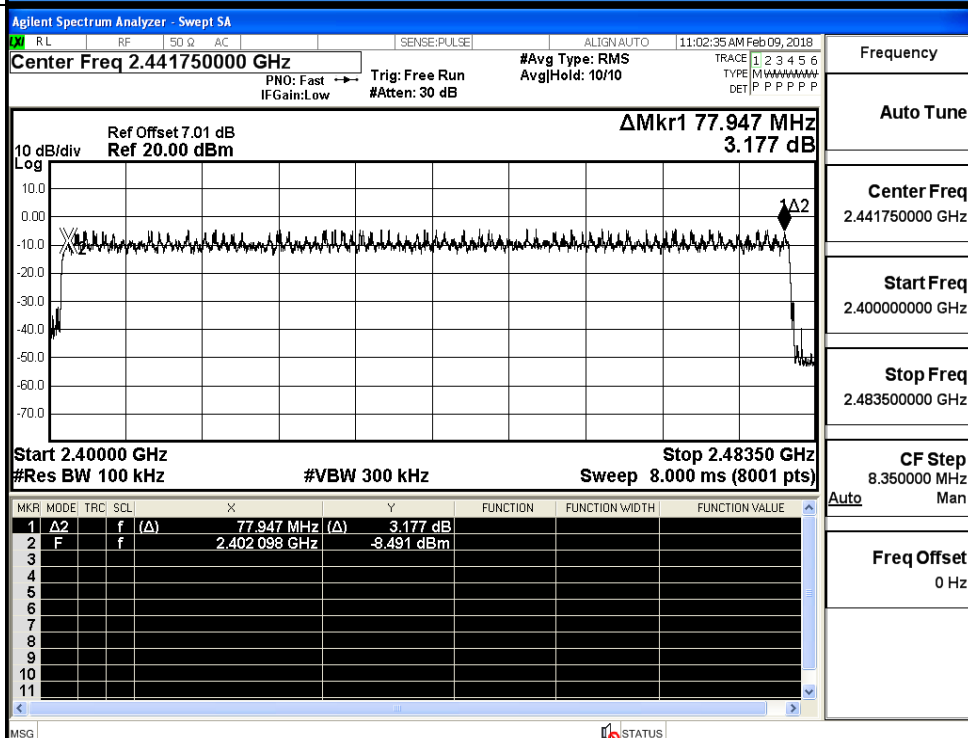
$\pi/4$ DQPSK/HCH

A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Hop	79	PASS
$\pi/4$ DQPSK	Hop	79	PASS

Test Graphs

GFSK/Hop

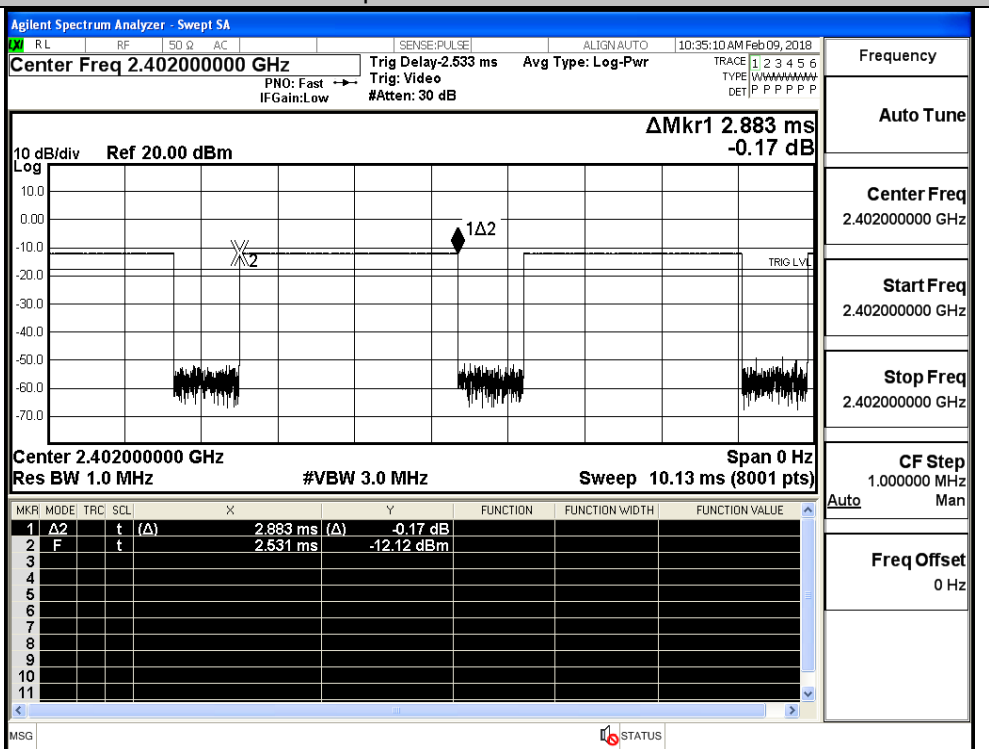
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

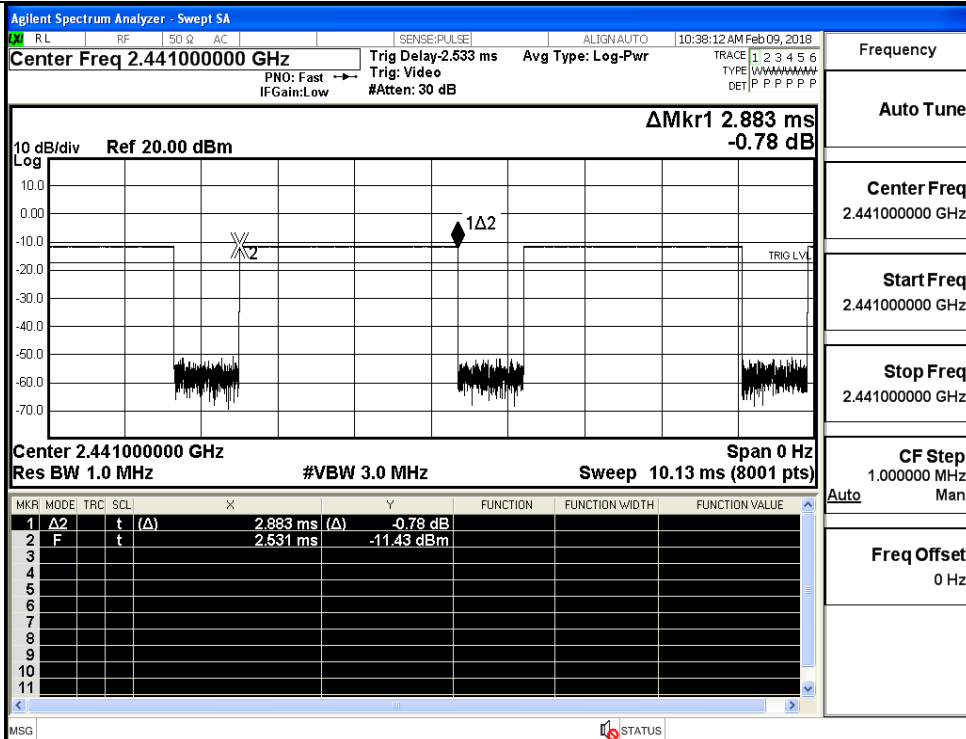
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

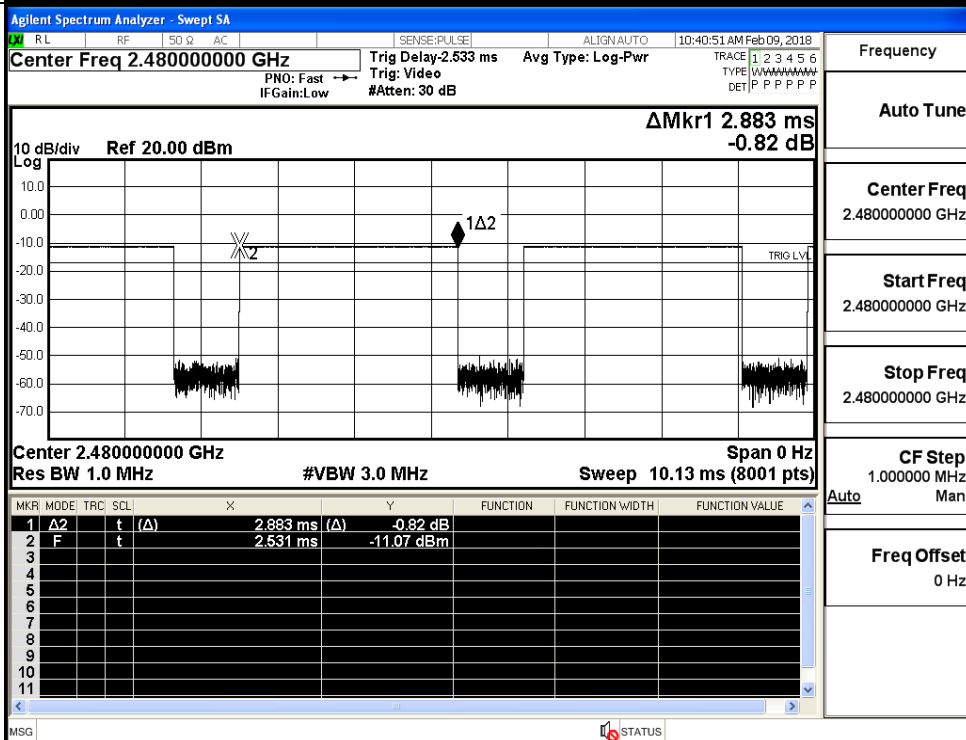
GFSK_DH5/LCH



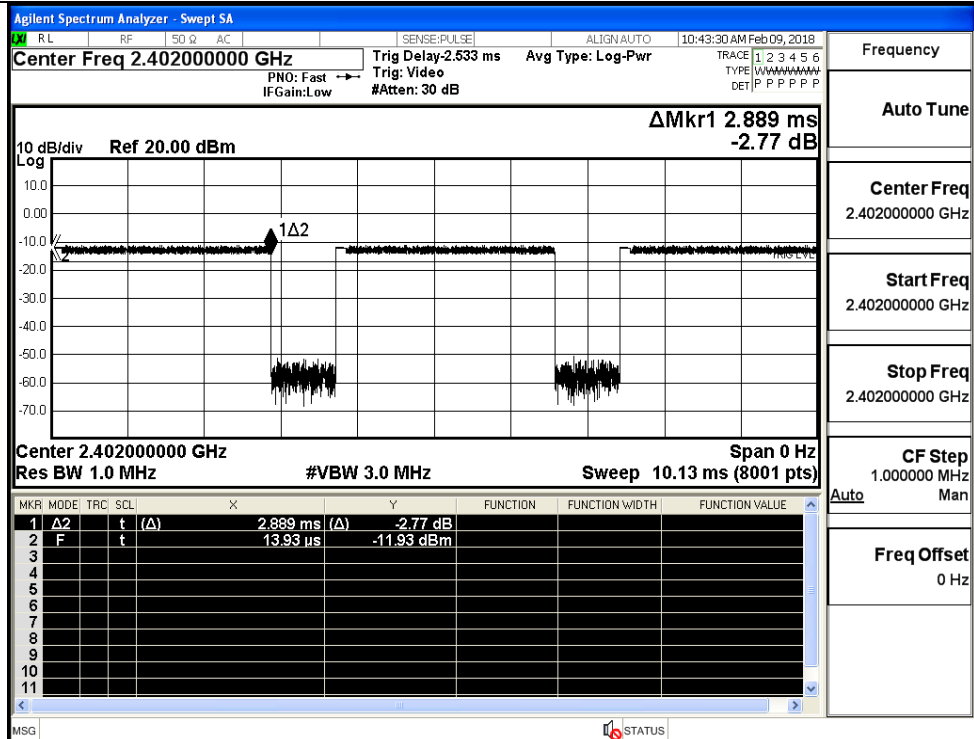
GFSK_DH5/MCH



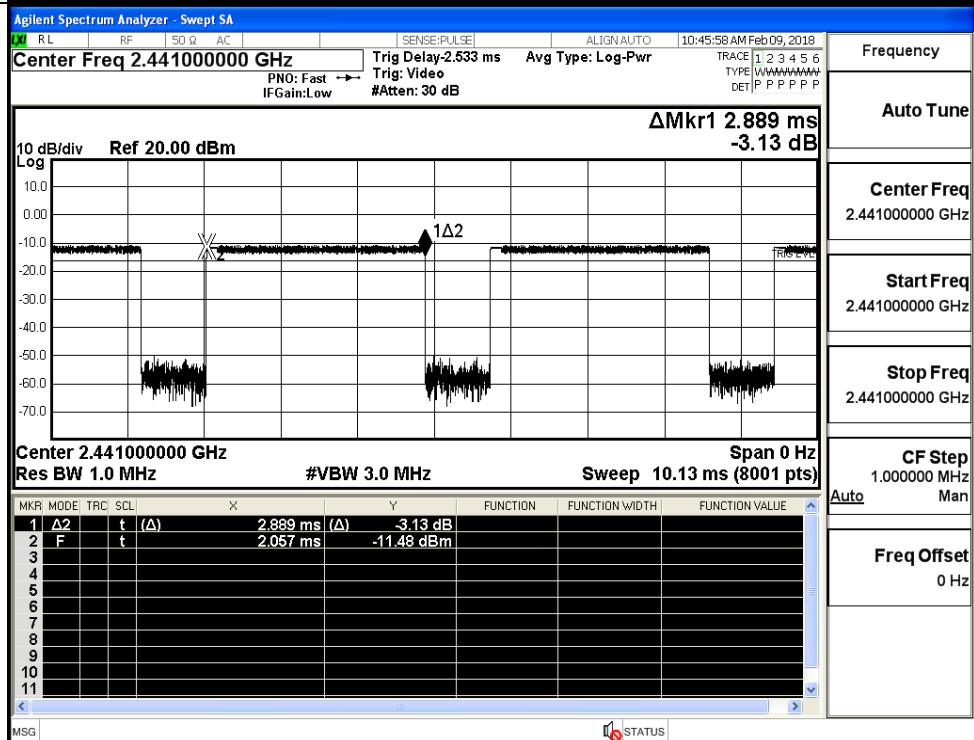
GFSK_DH5/HCH



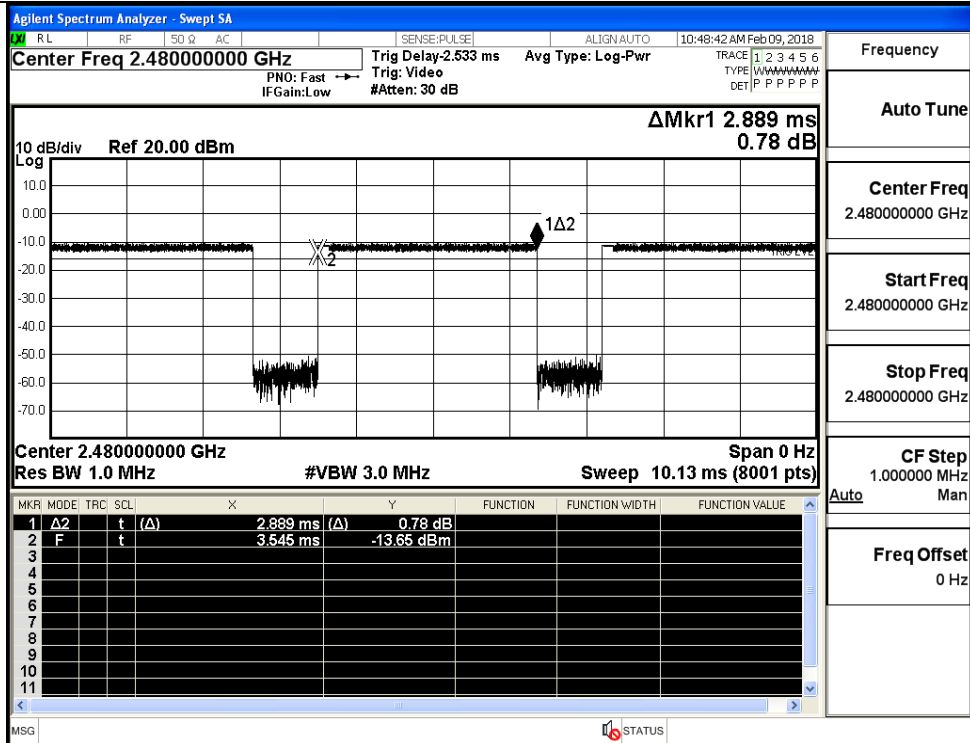
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



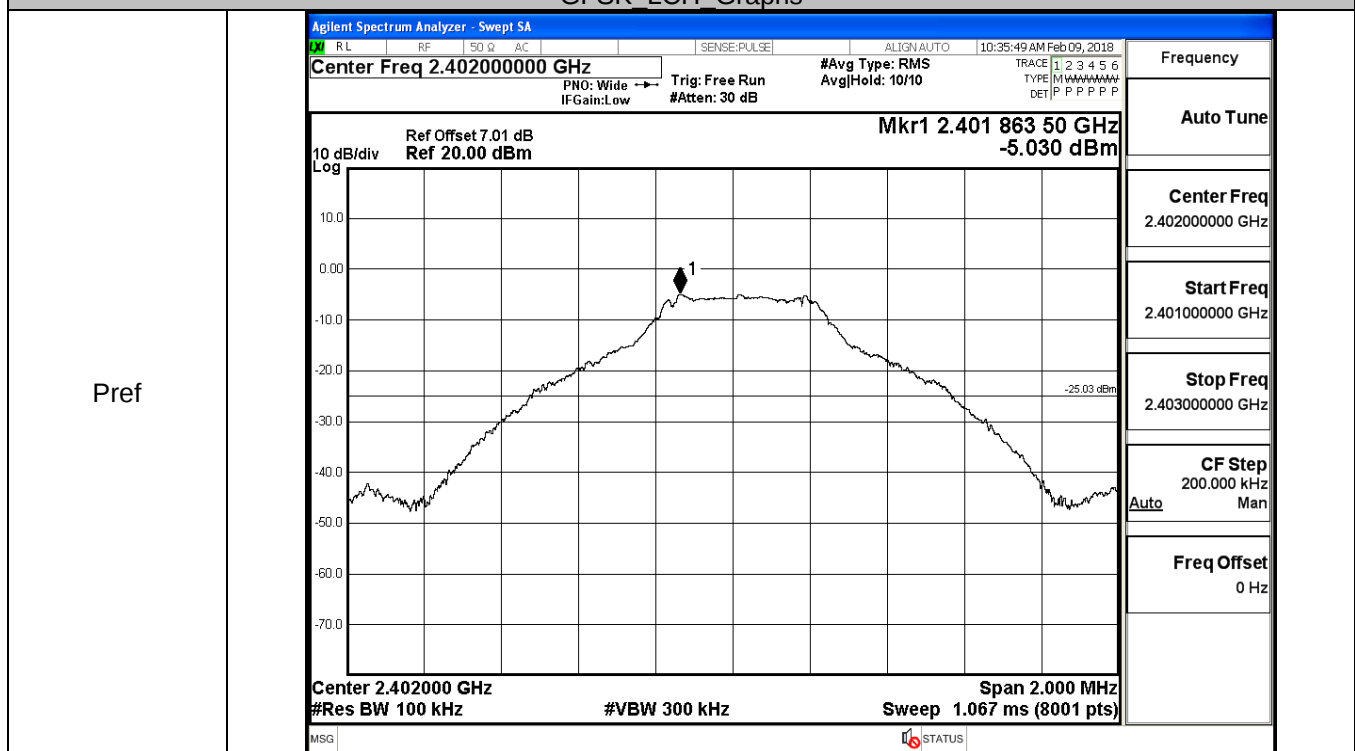
$\pi/4$ DQPSK
_2DH5/HCH

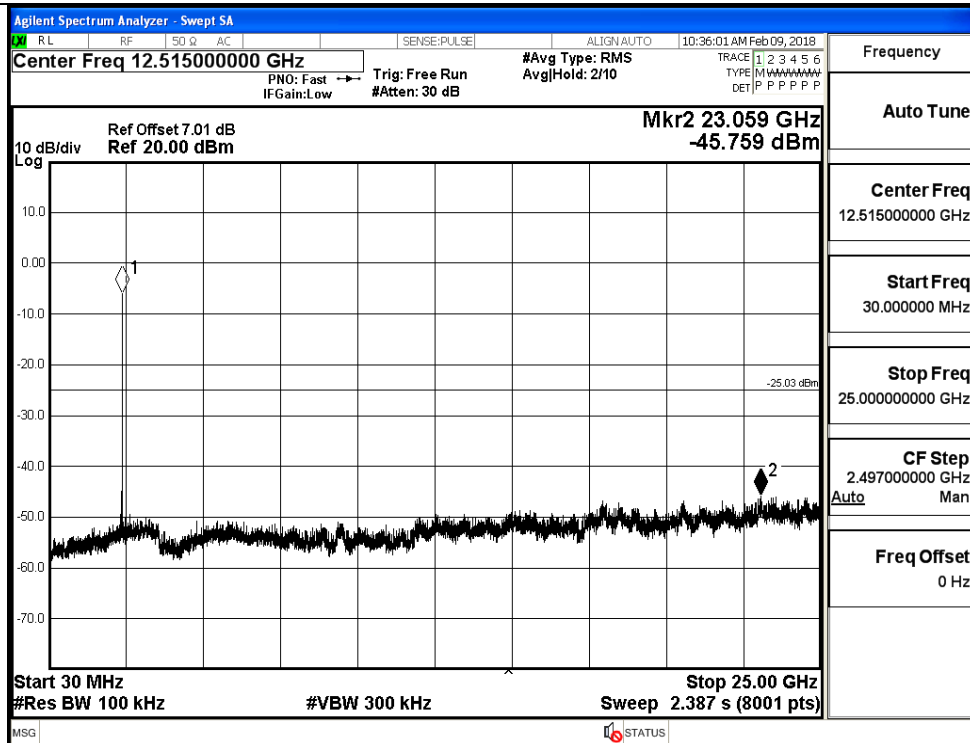


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
GFSK	LCH	-5.03	<Limit	PASS
	MCH	-4.533	<Limit	PASS
	HCH	-4.183	<Limit	PASS
$\pi/4$ DQPSK	LCH	-5.105	<Limit	PASS
	MCH	-4.604	<Limit	PASS
	HCH	-4.073	<Limit	PASS

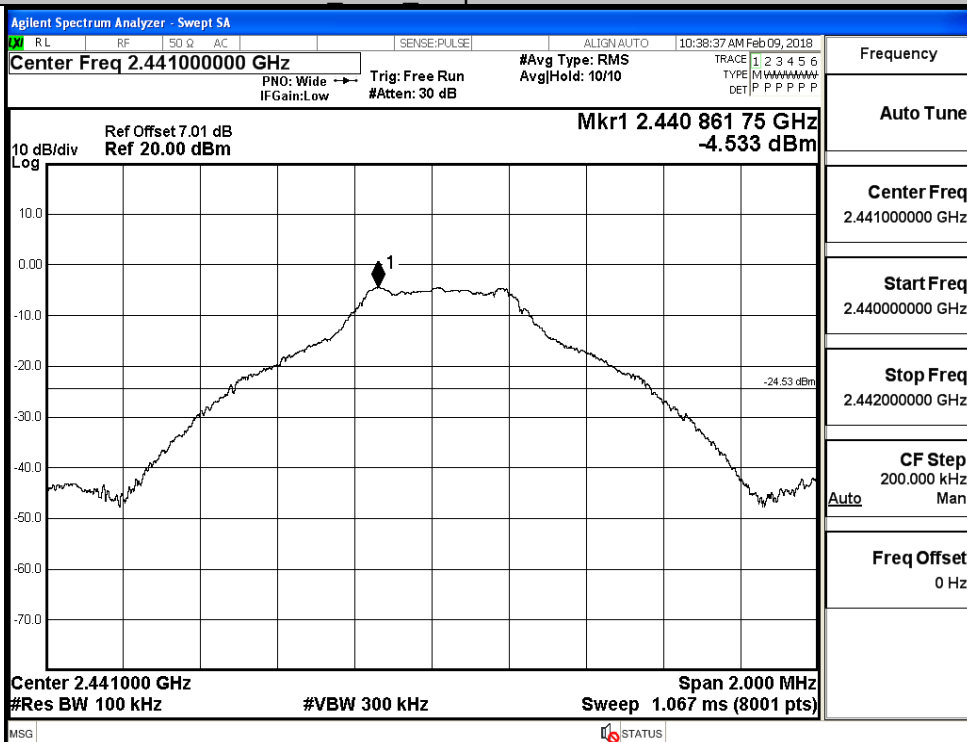
GFSK LCH Graphs



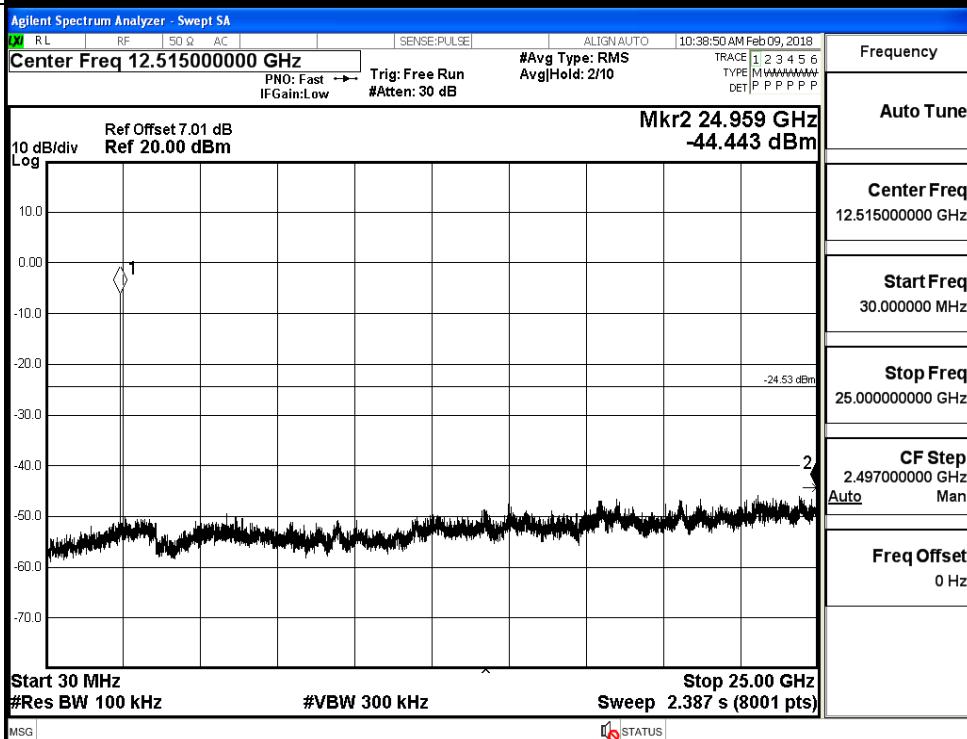


GFSK MCH Graphs

Pref

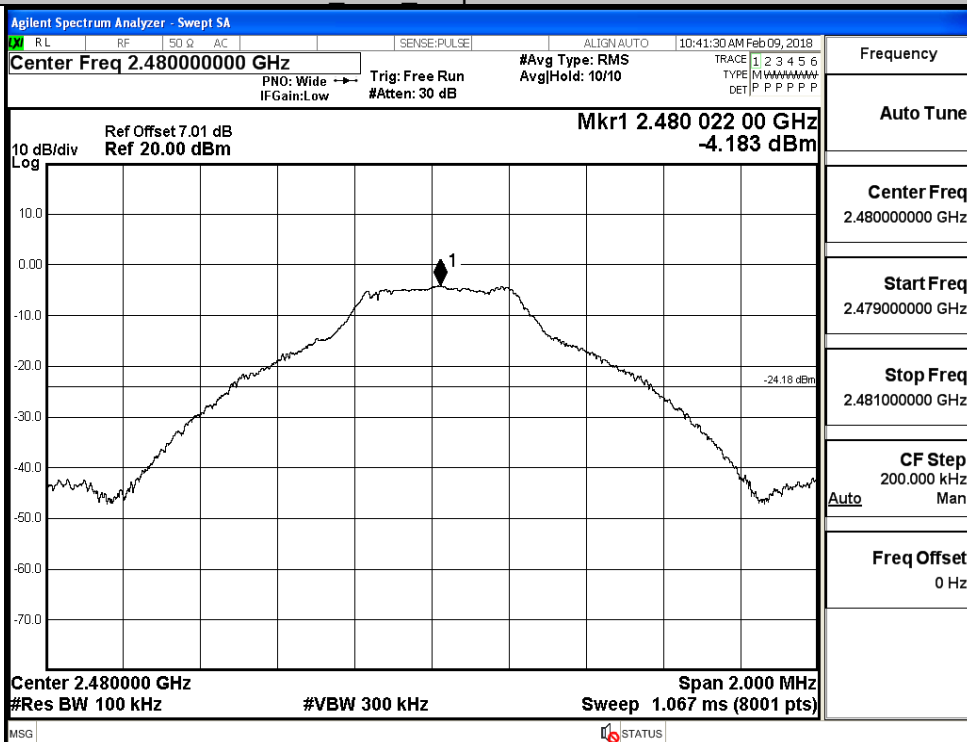


Puw

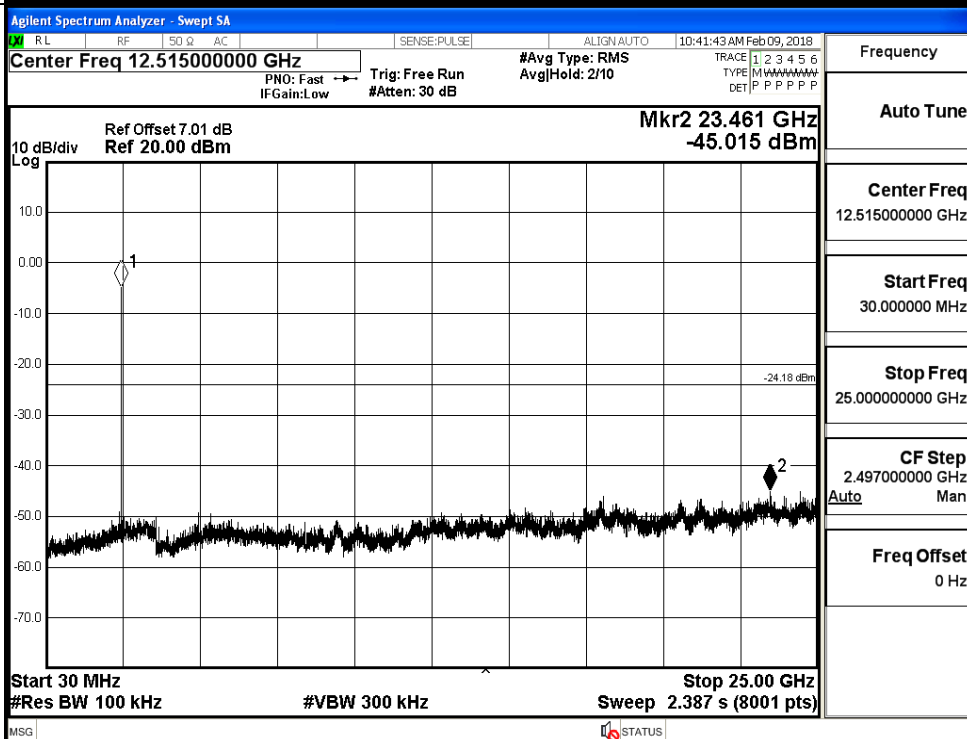


GFSK HCH Graphs

Pref

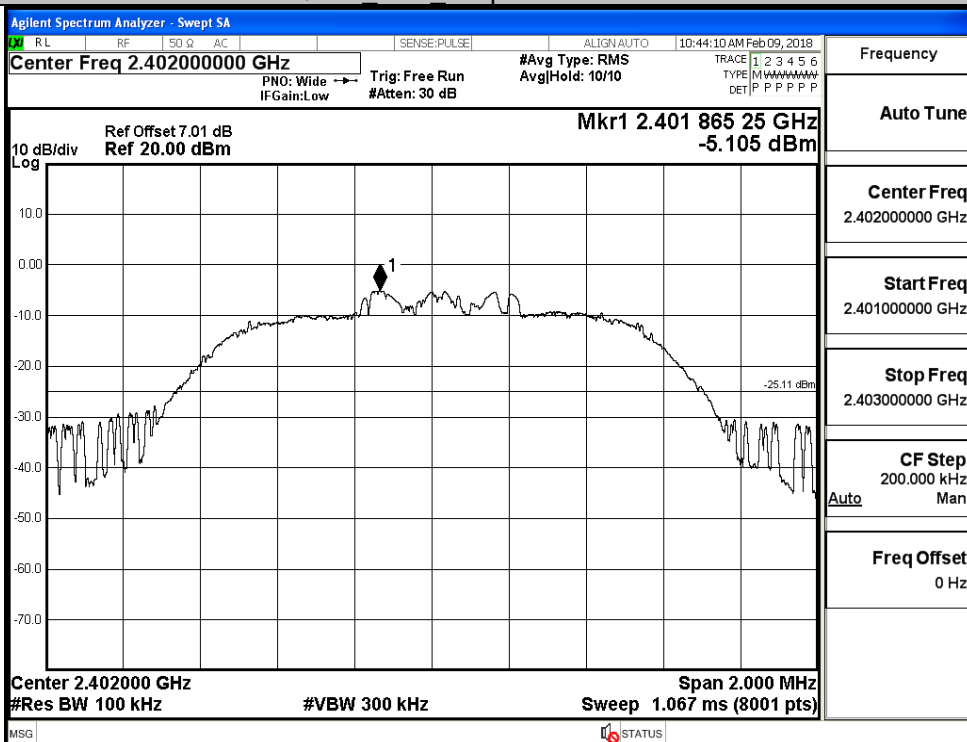


Puw

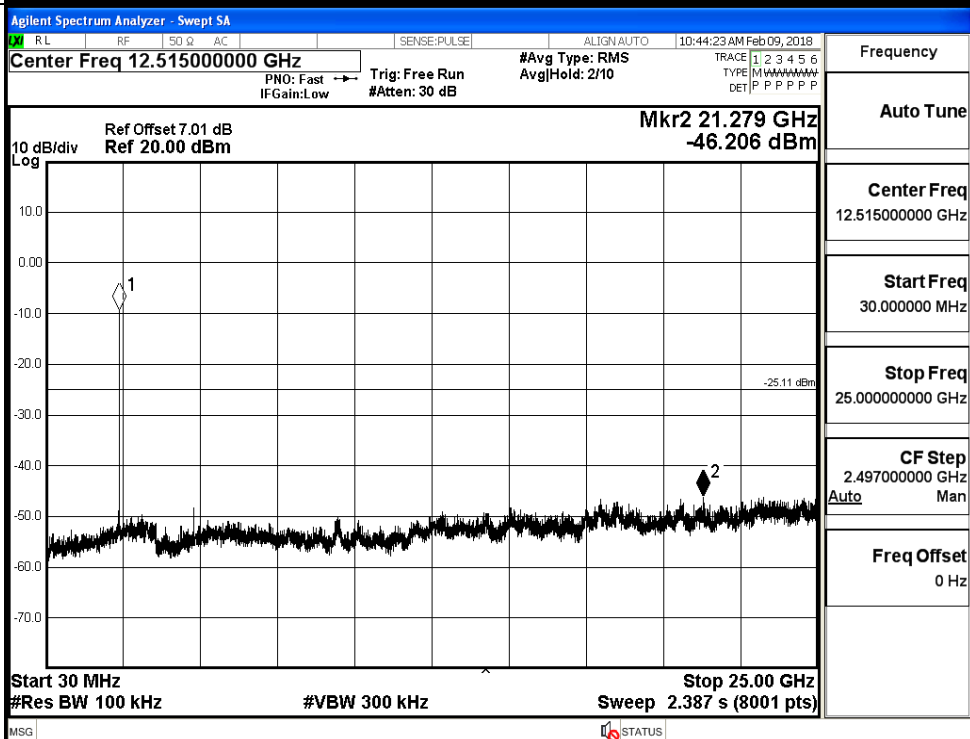


$\pi/4$ DQPSK LCH Graphs

Pref

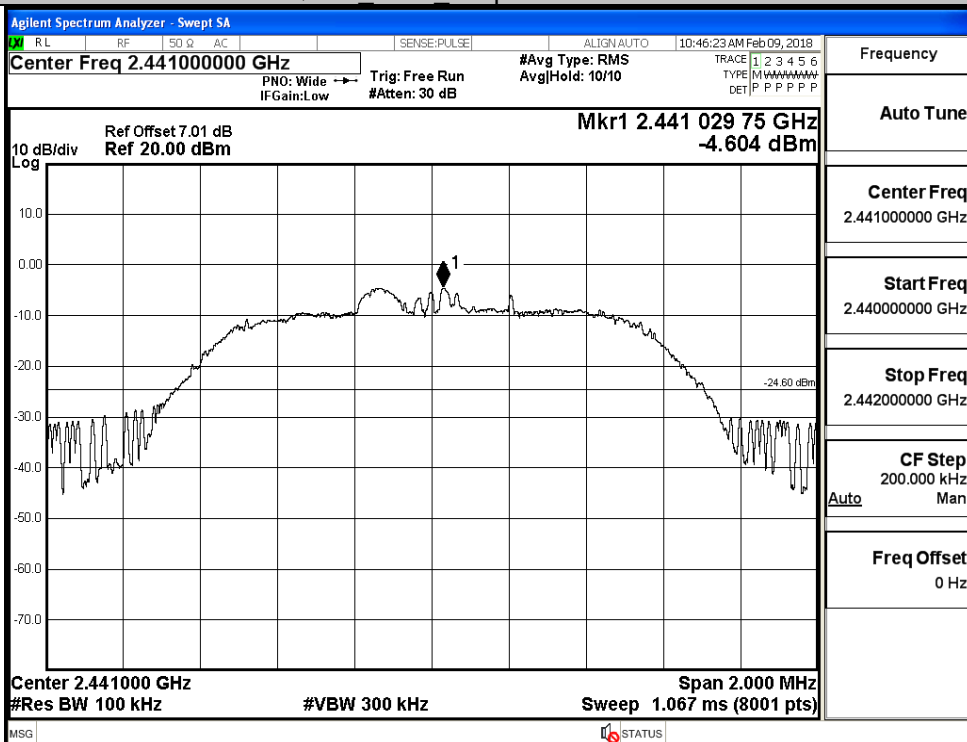


Puw

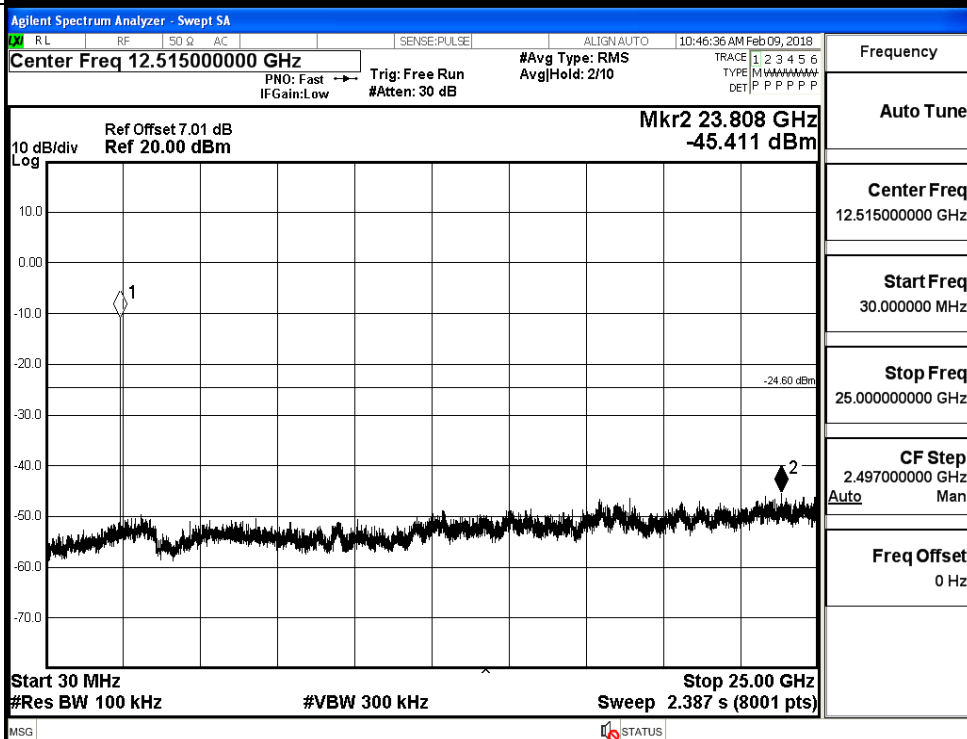


π /4DQPSK MCH Graphs

Pref

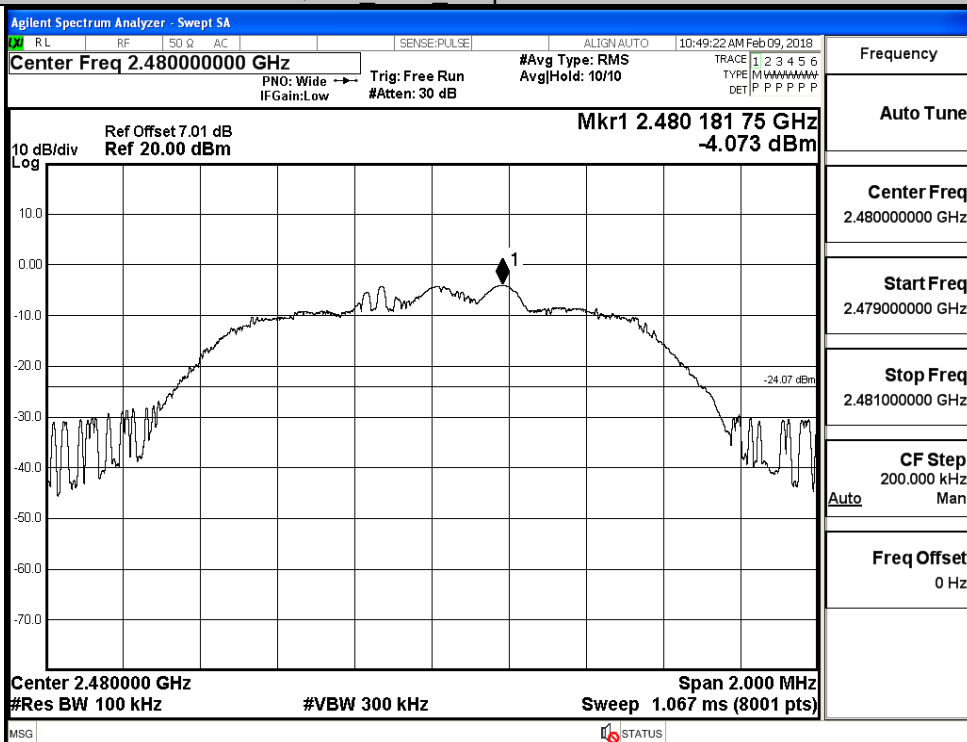


Puw

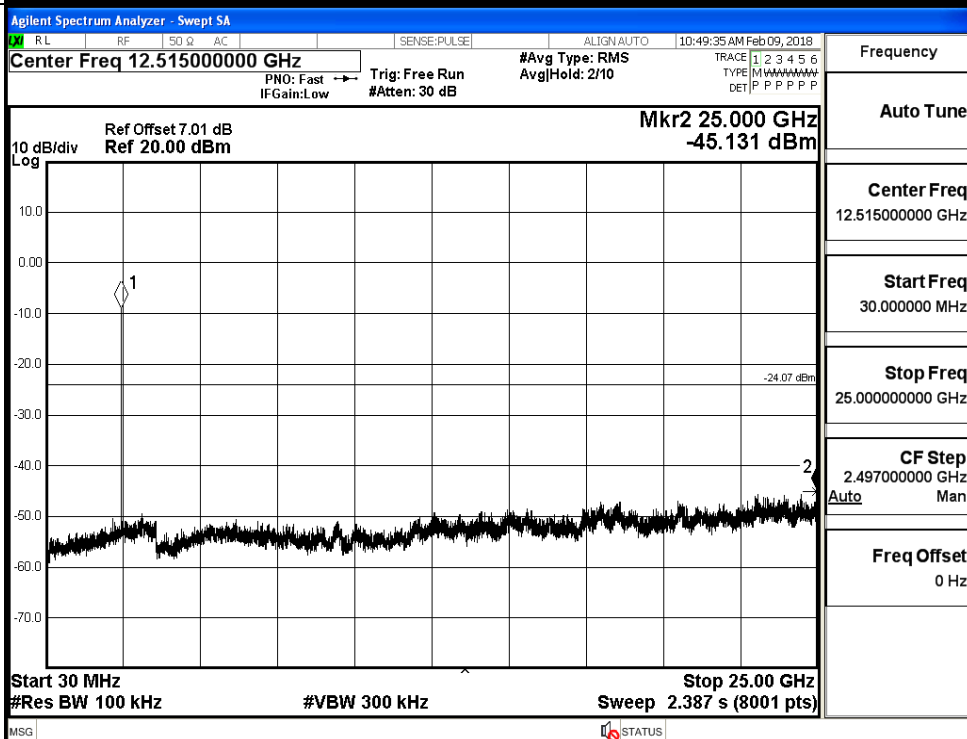


$\pi/4$ DQPSK HCH Graphs

Pref



Puw

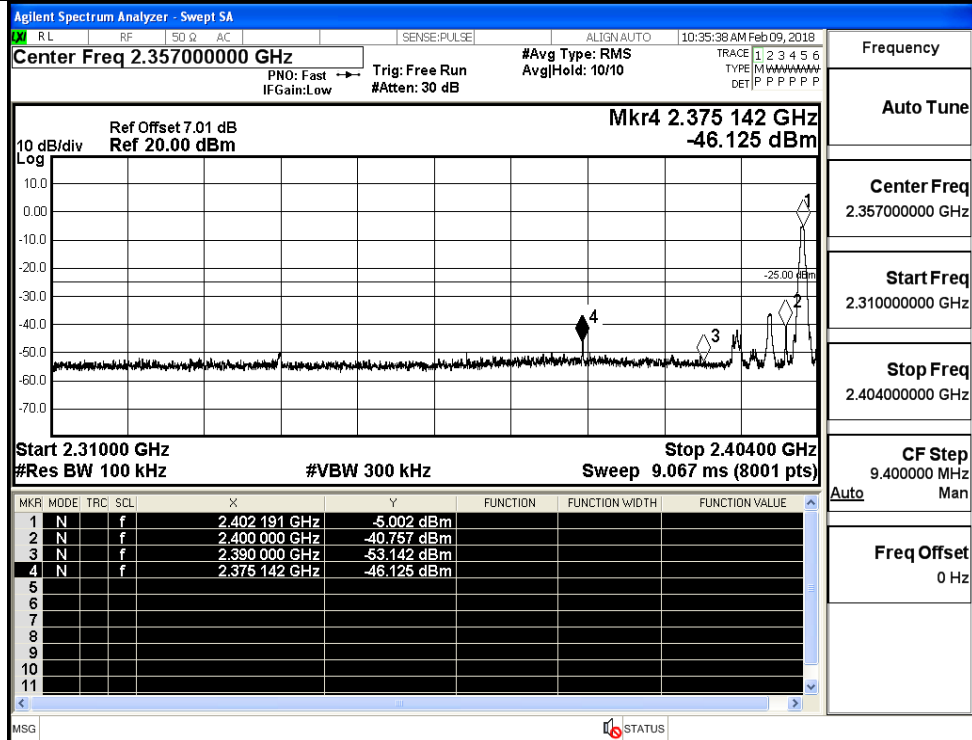


A.7 Band-edge for RF Conducted Emissions

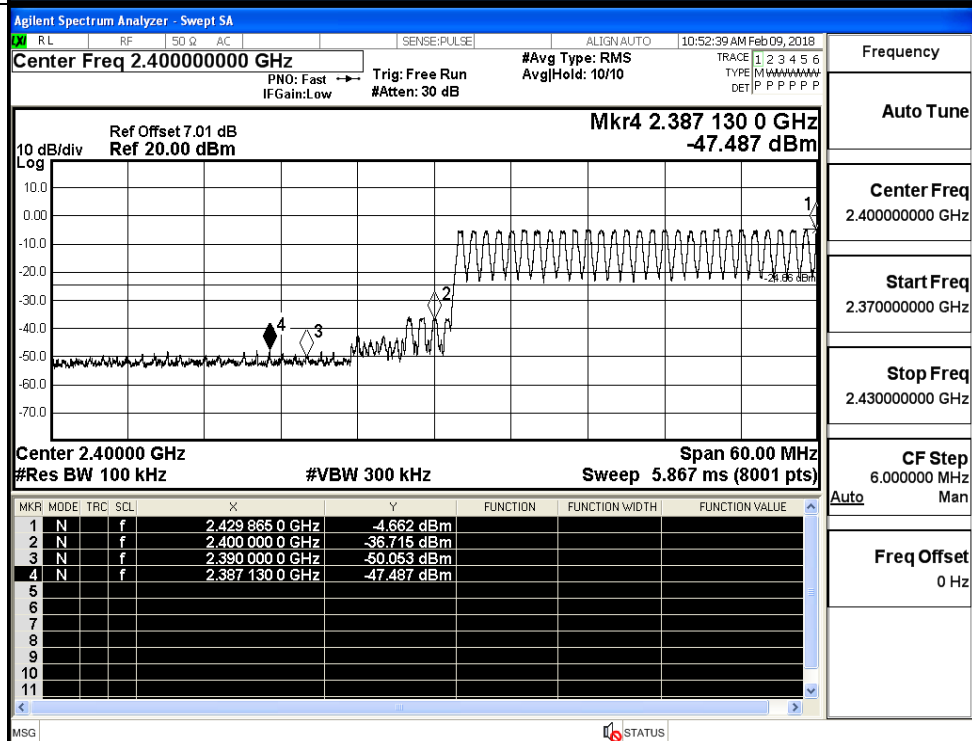
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-5.002	Off	-46.125	-25	PASS
			-4.662	On	-47.487	-24.66	PASS
	HCH	2480	-4.081	Off	-49.195	-24.08	PASS
			-4.309	On	-46.039	-24.31	PASS
$\pi/4$ DQPSK	LCH	2402	-4.913	Off	-48.778	-24.91	PASS
			-4.592	On	-46.905	-24.59	PASS
	HCH	2480	-4.030	Off	-48.920	-24.03	PASS
			-4.231	On	-46.816	-24.23	PASS

Test Graphs

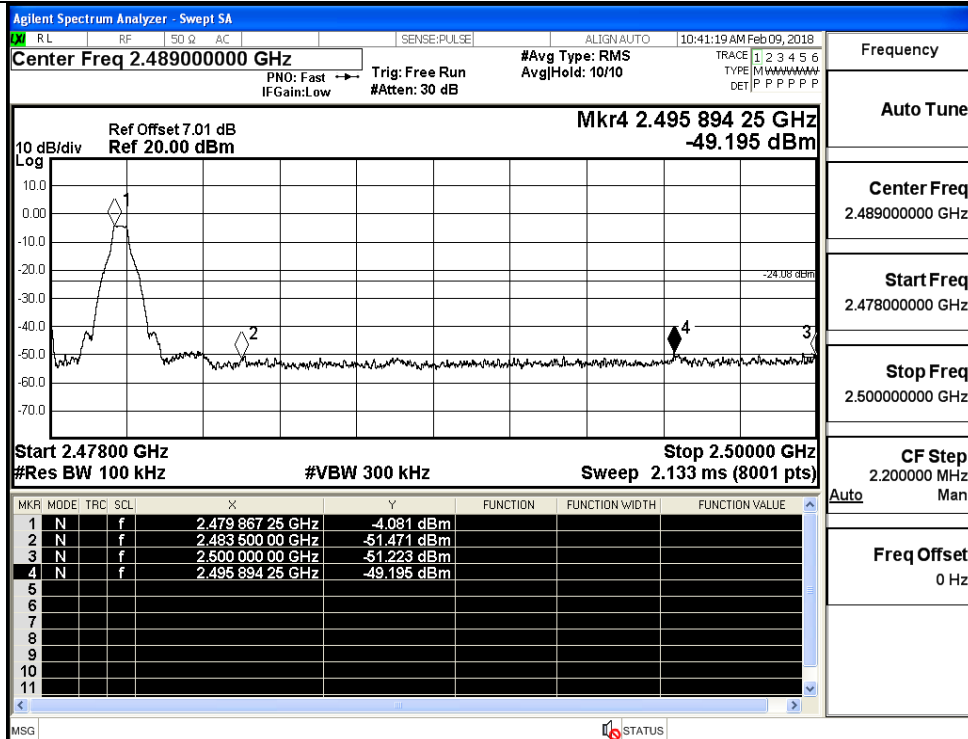
GFSK/LCH/No Hop



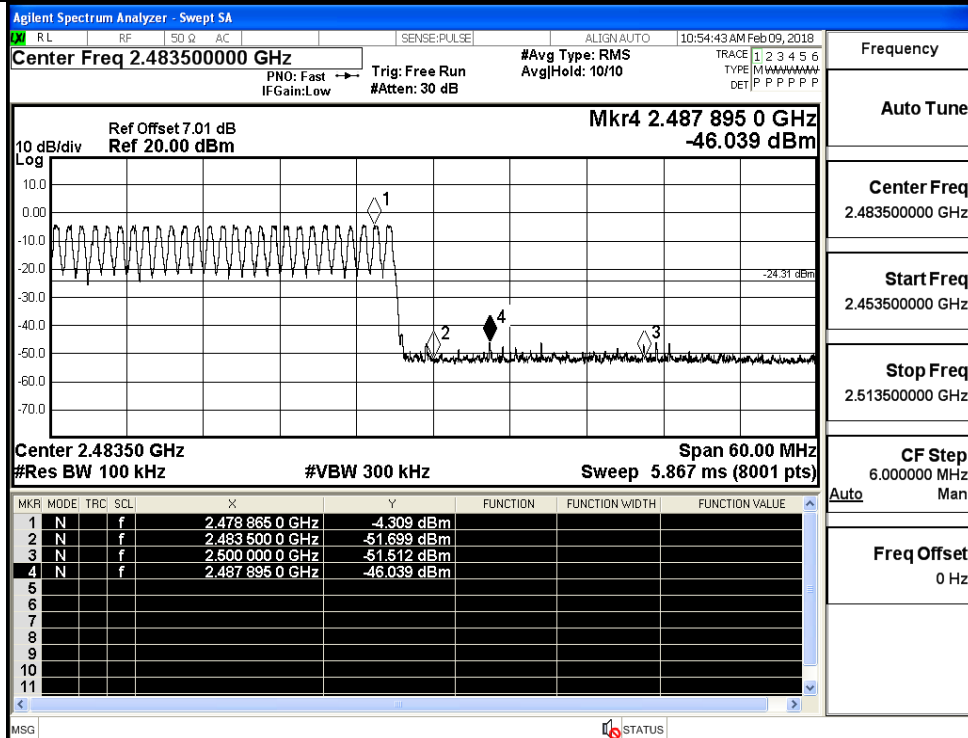
GFSK/LCH/Hop



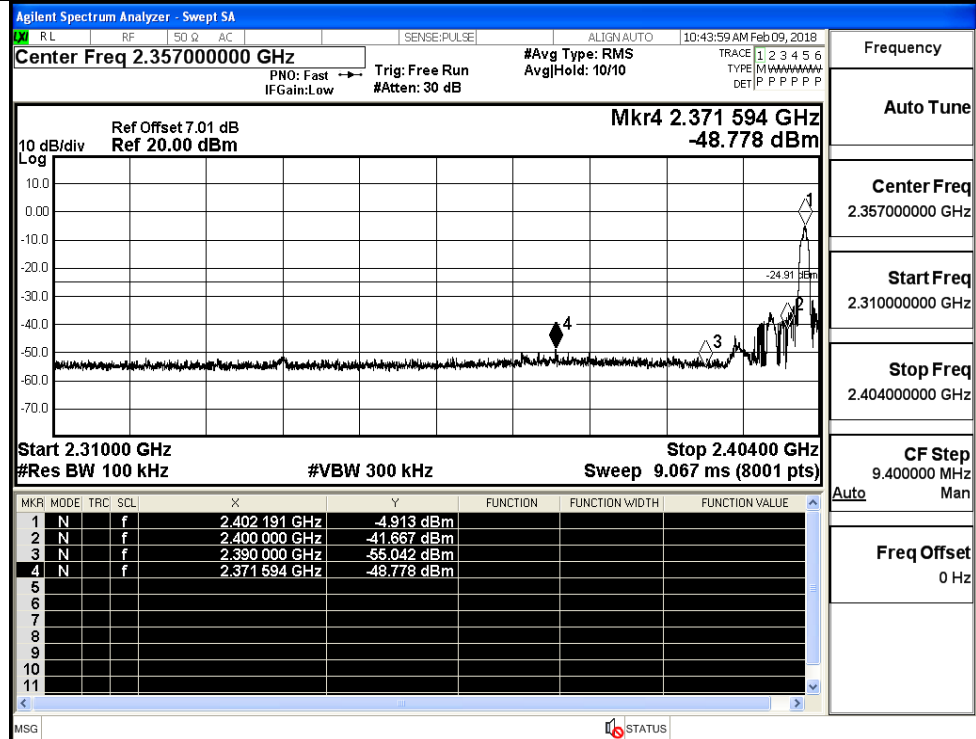
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

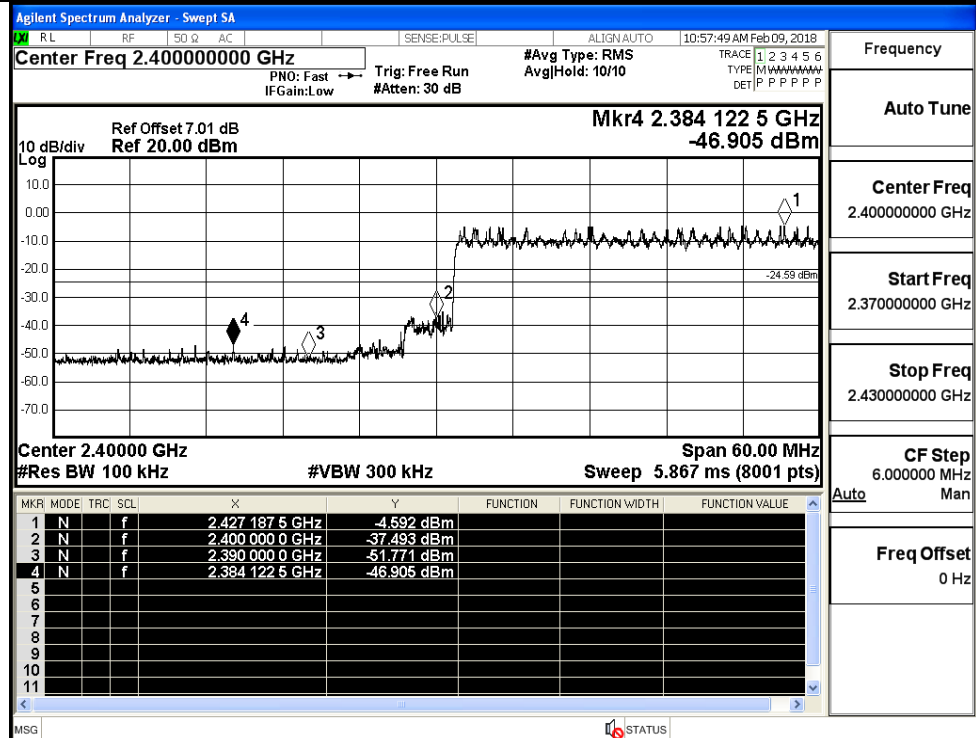
Start Freq
2.310000000 GHz

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

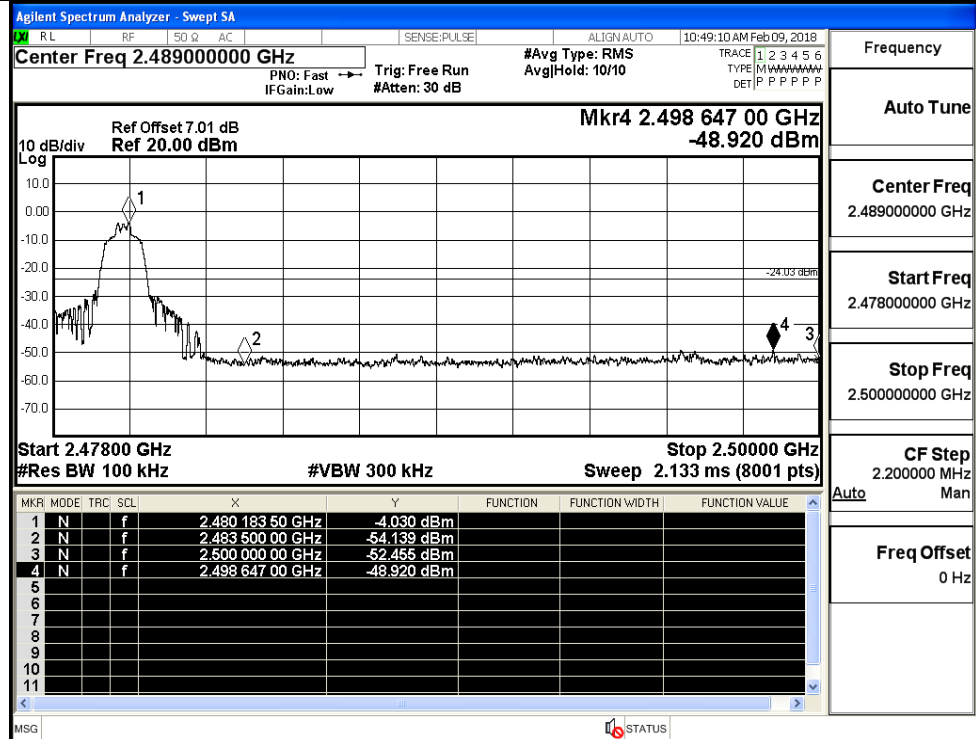
Start Freq
2.370000000 GHz

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 GHz

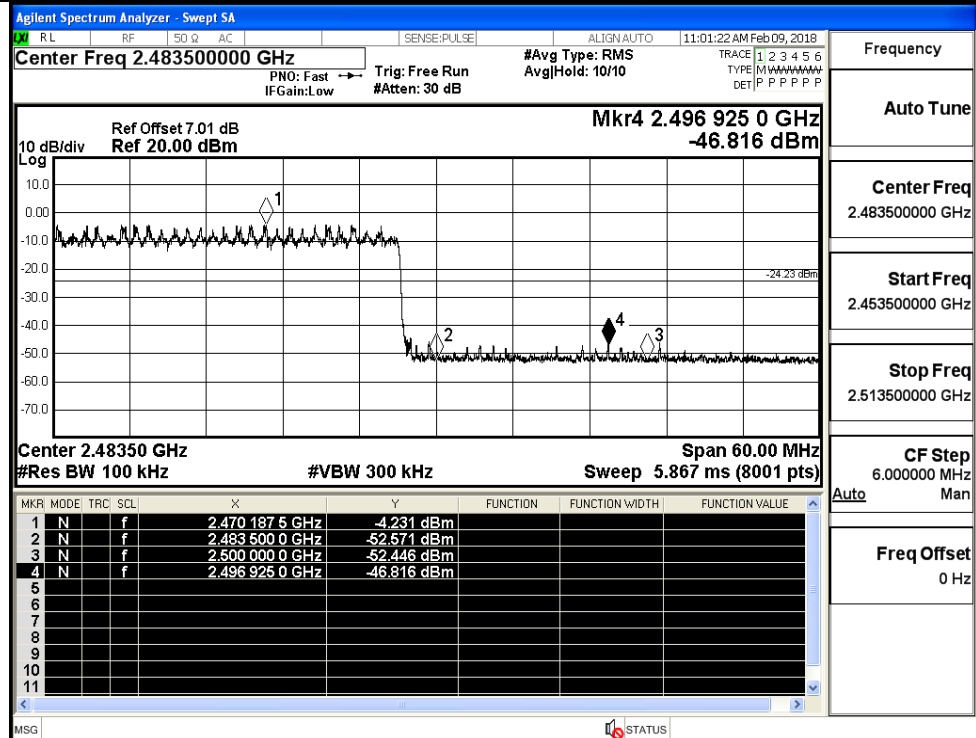
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

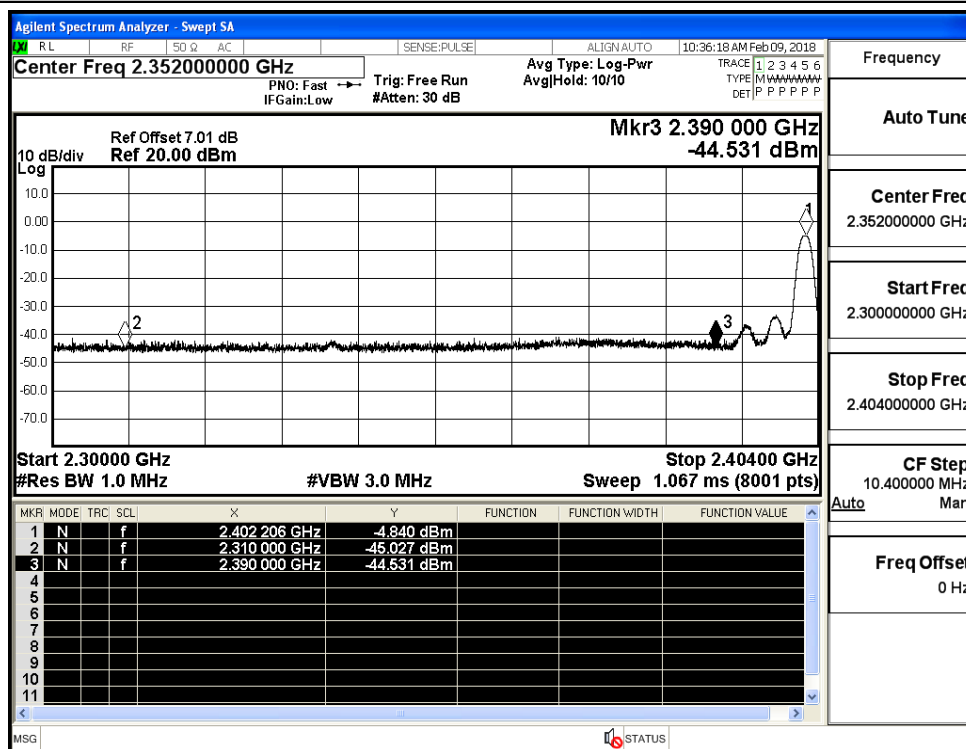
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

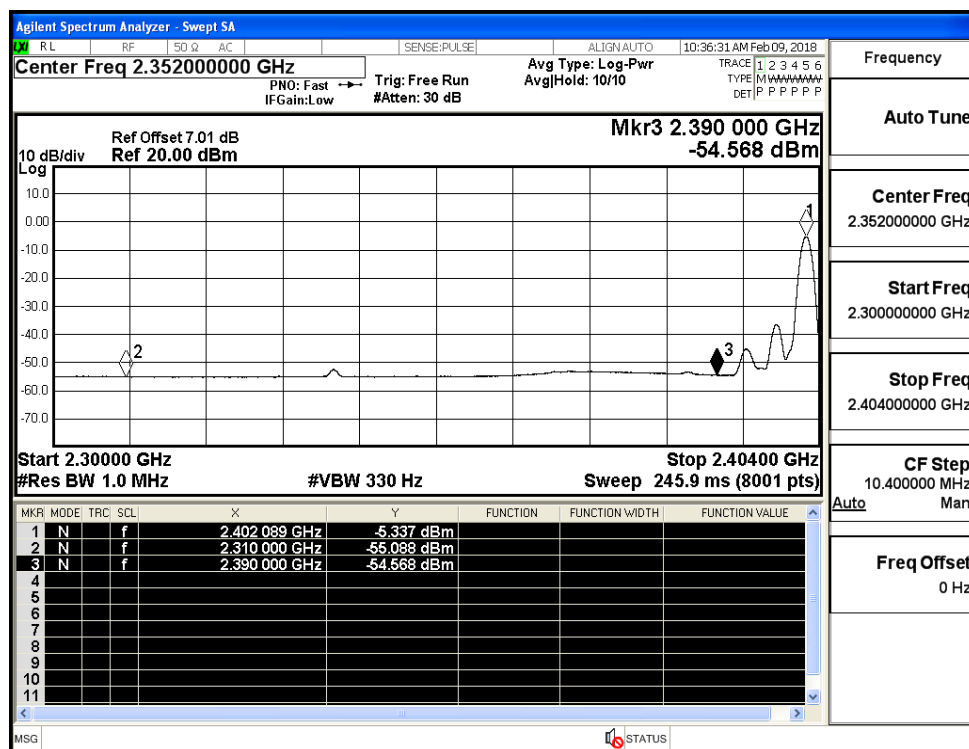
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.03	2.0	0	50.23	PEAK	74	PASS
	Off	2310.0	-55.09	2.0	0	40.17	AV	54	PASS
	Off	2390.0	-44.53	2.0	0	50.73	PEAK	74	PASS
	Off	2390.0	-54.57	2.0	0	40.69	AV	54	PASS
	Off	2483.5	-43.43	2.0	0	51.83	PEAK	74	PASS
	Off	2483.5	-53.30	2.0	0	41.96	AV	54	PASS
	Off	2500.0	-43.95	2.0	0	51.31	PEAK	74	PASS
	Off	2500.0	-52.93	2.0	0	42.32	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.42	2.0	0	52.83	PEAK	74	PASS
	Off	2310.0	-55.04	2.0	0	40.22	AV	54	PASS
	Off	2390.0	-44.08	2.0	0	51.17	PEAK	74	PASS
	Off	2390.0	-54.40	2.0	0	40.85	AV	54	PASS
	Off	2483.5	-42.96	2.0	0	52.30	PEAK	74	PASS
	Off	2483.5	-53.70	2.0	0	41.56	AV	54	PASS
	Off	2500.0	-42.00	2.0	0	53.26	PEAK	74	PASS
	Off	2500.0	-52.80	2.0	0	42.45	AV	54	PASS

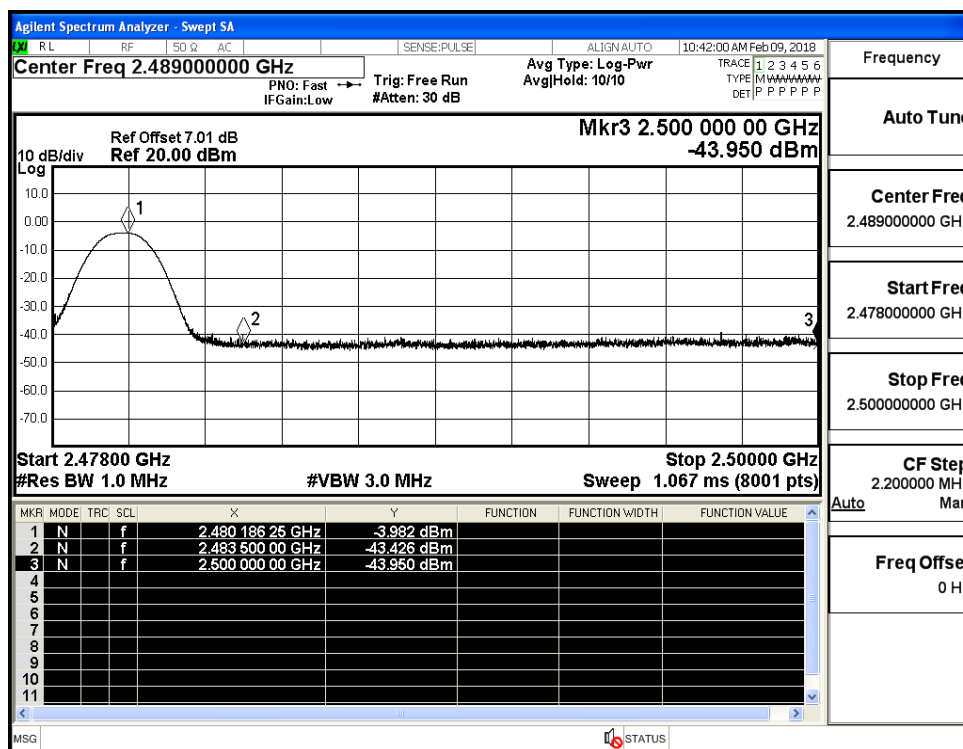
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



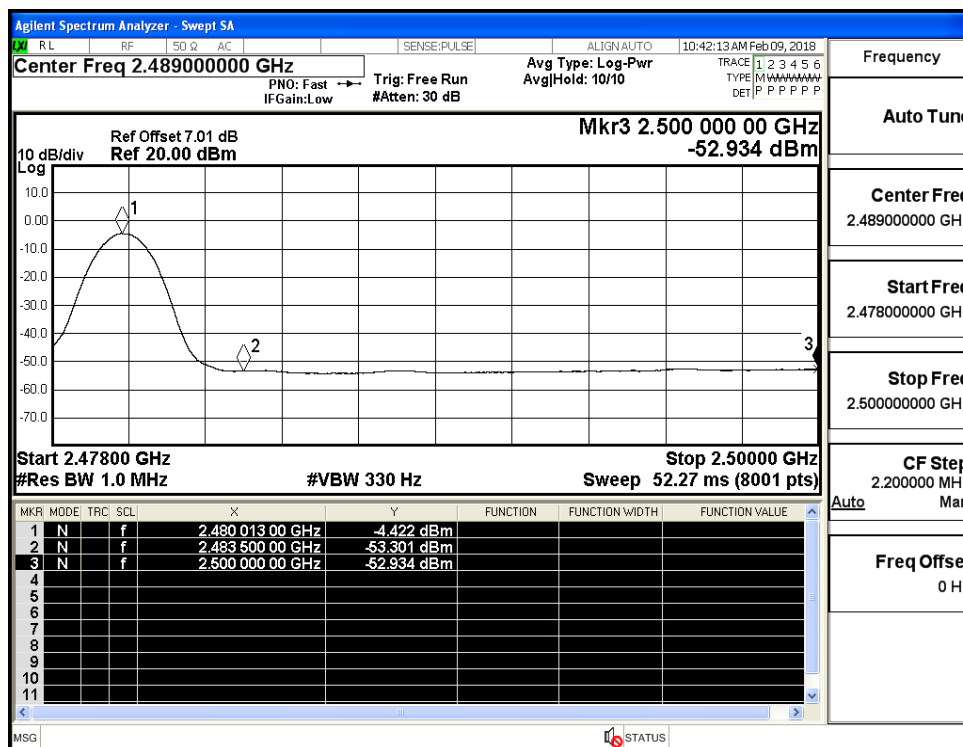
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

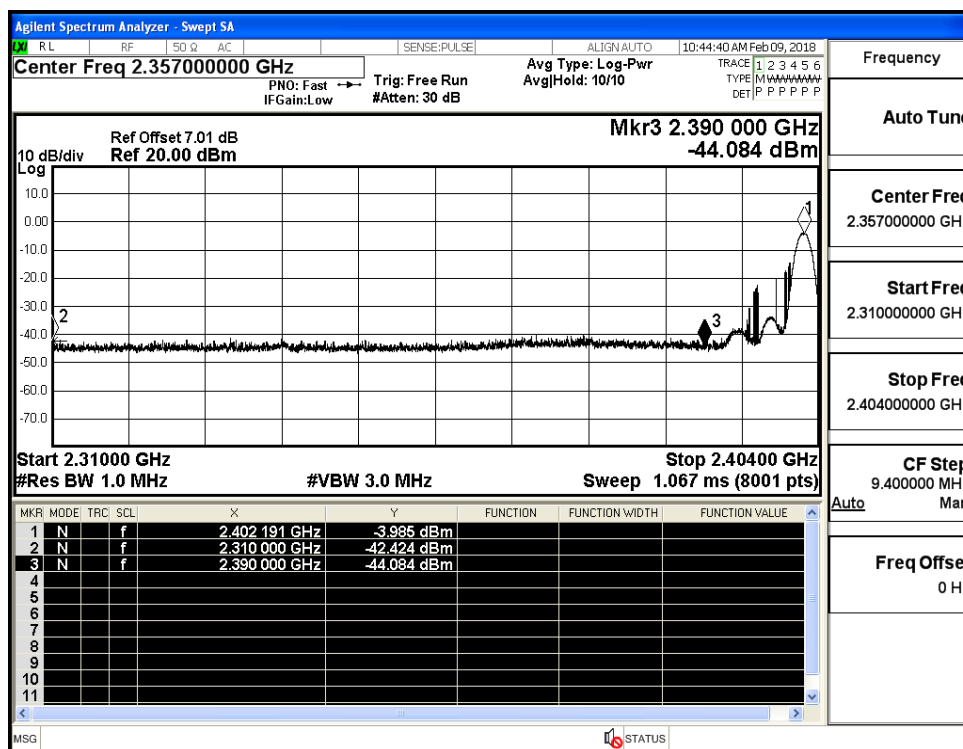
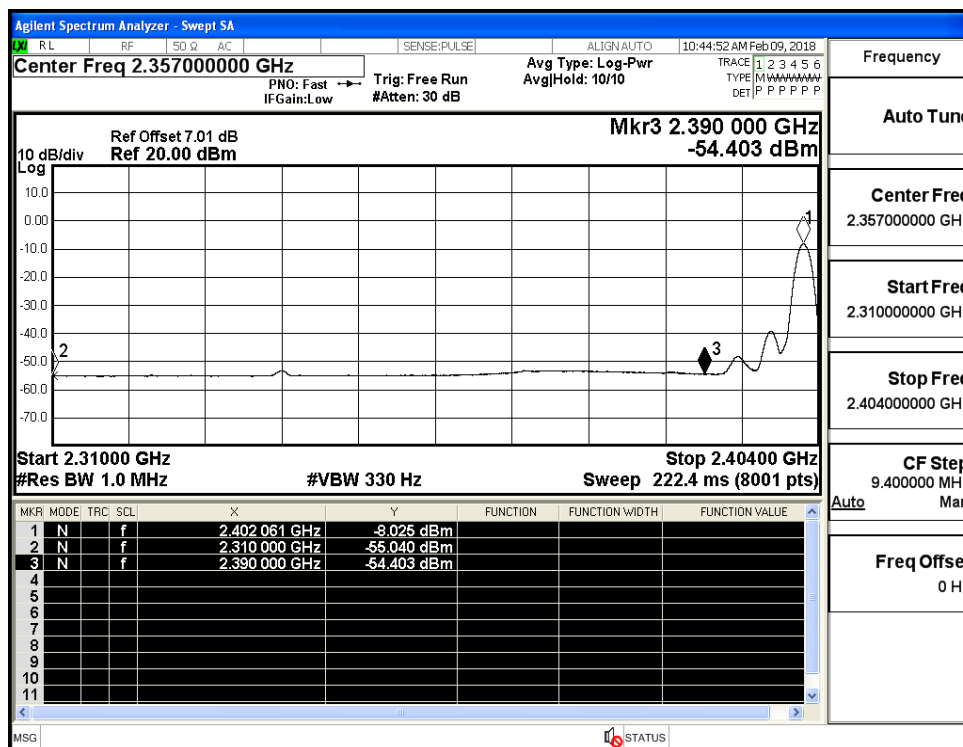


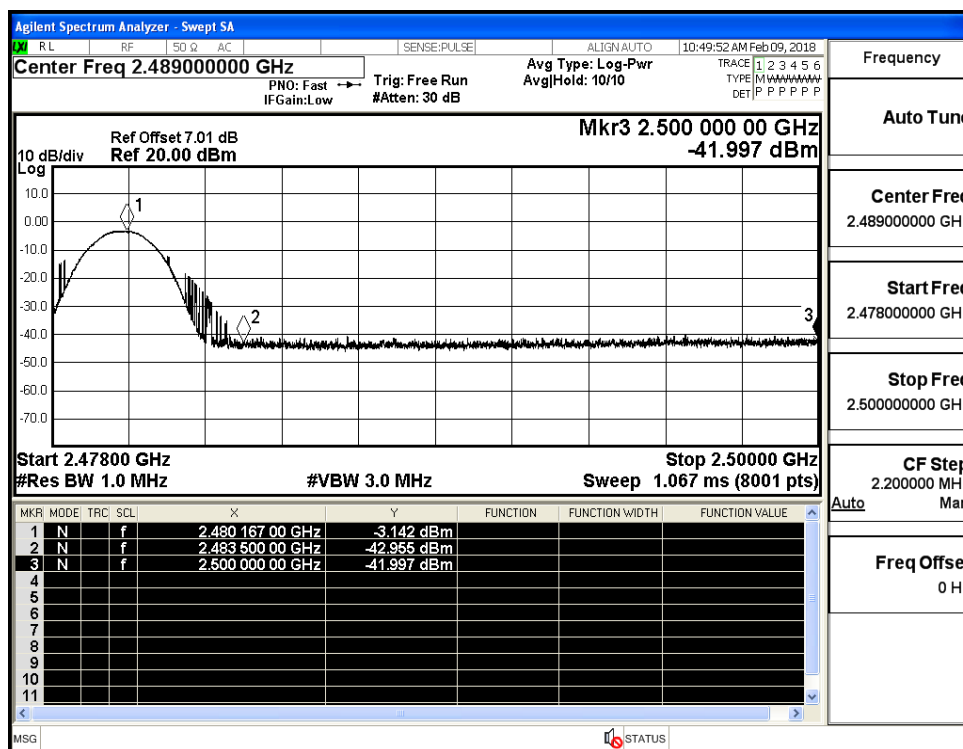
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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)