

Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Speaker

Trade Mark: N/A

Test Model: Ms170

Environmental Conditions

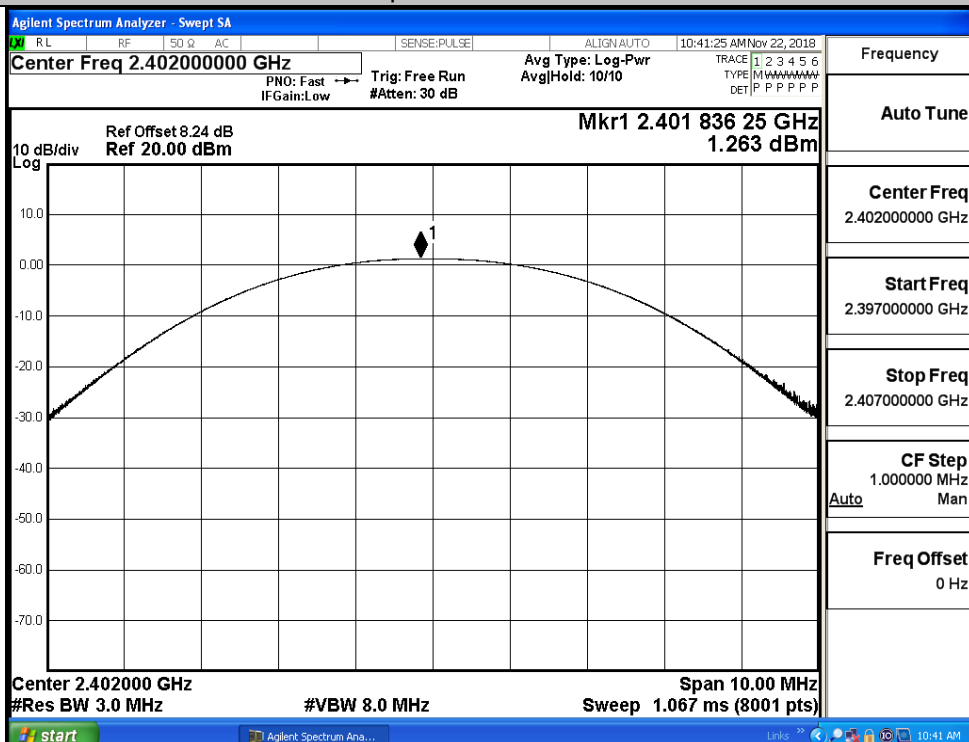
Temperature:	24.5 ° C
Relative Humidity:	52.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

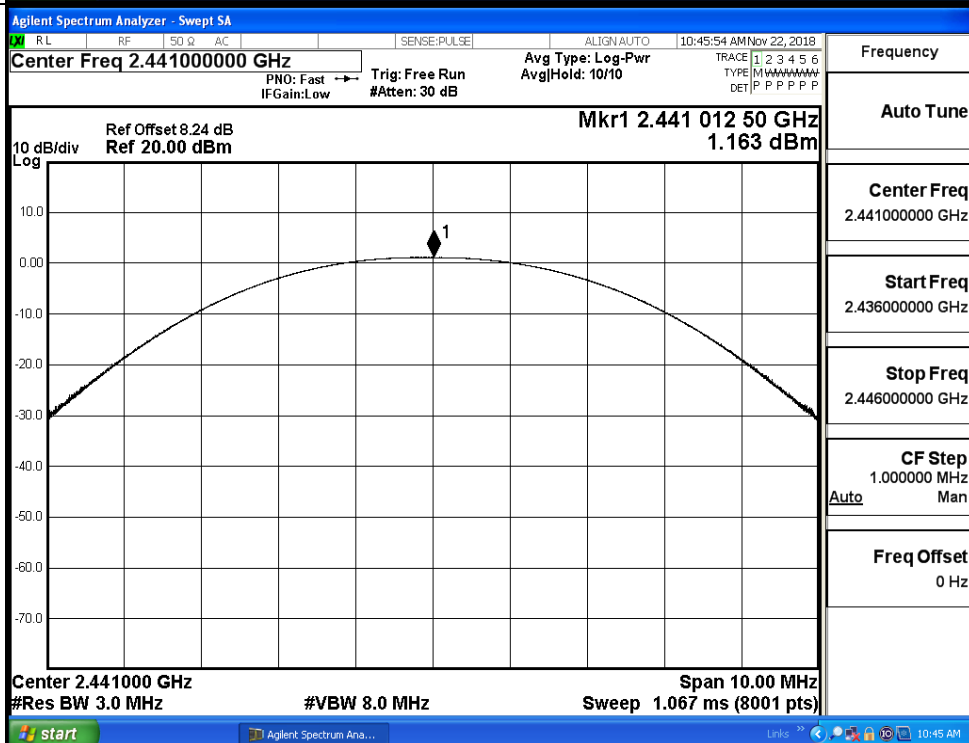
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.263	30	PASS
	MCH	1.163	30	PASS
	HCH	0.006	30	PASS
$\pi/4$ DQPSK	LCH	0.252	21	PASS
	MCH	-0.281	21	PASS
	HCH	-1.061	21	PASS

Test Graphs

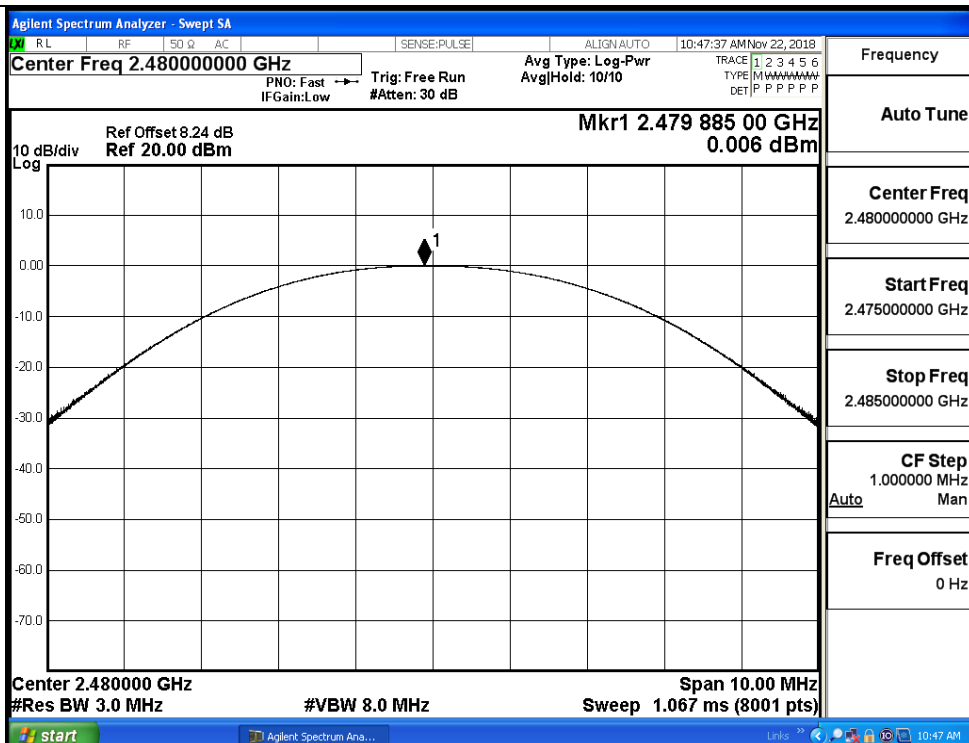
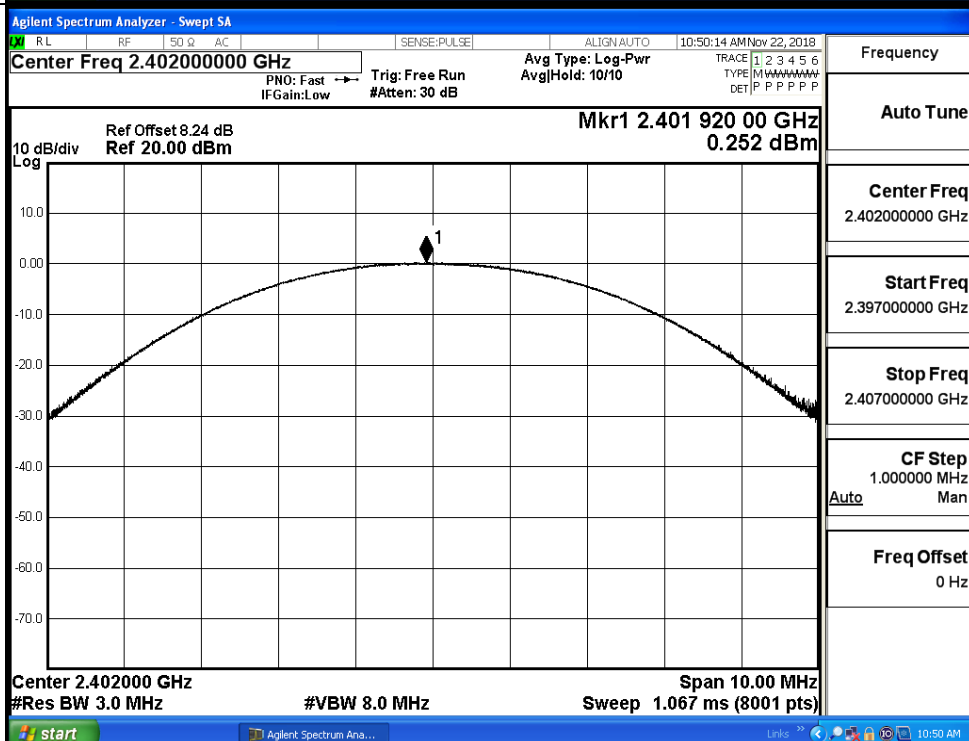
GFSK/LCH

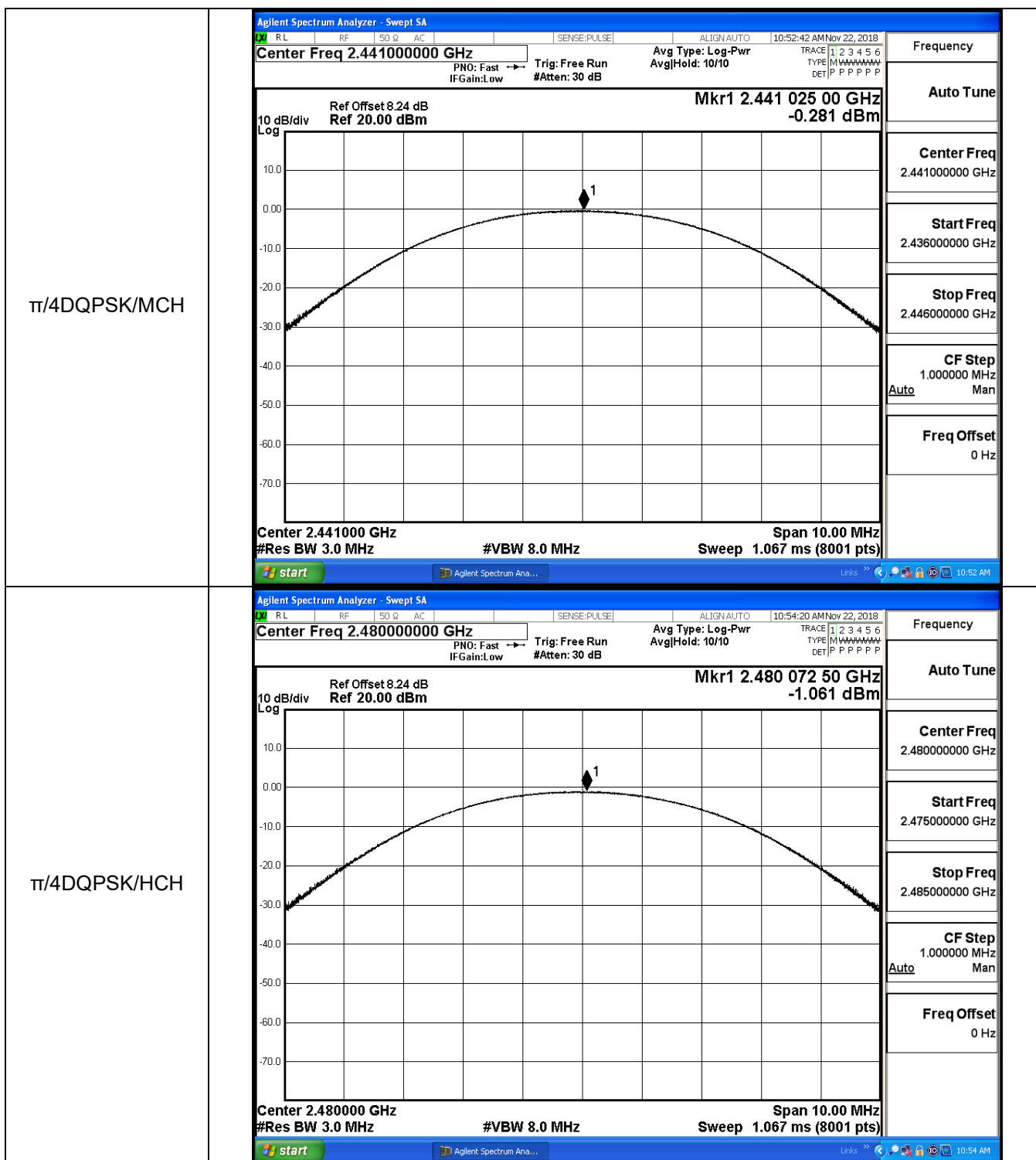


GFSK/MCH



GFSK/HCH

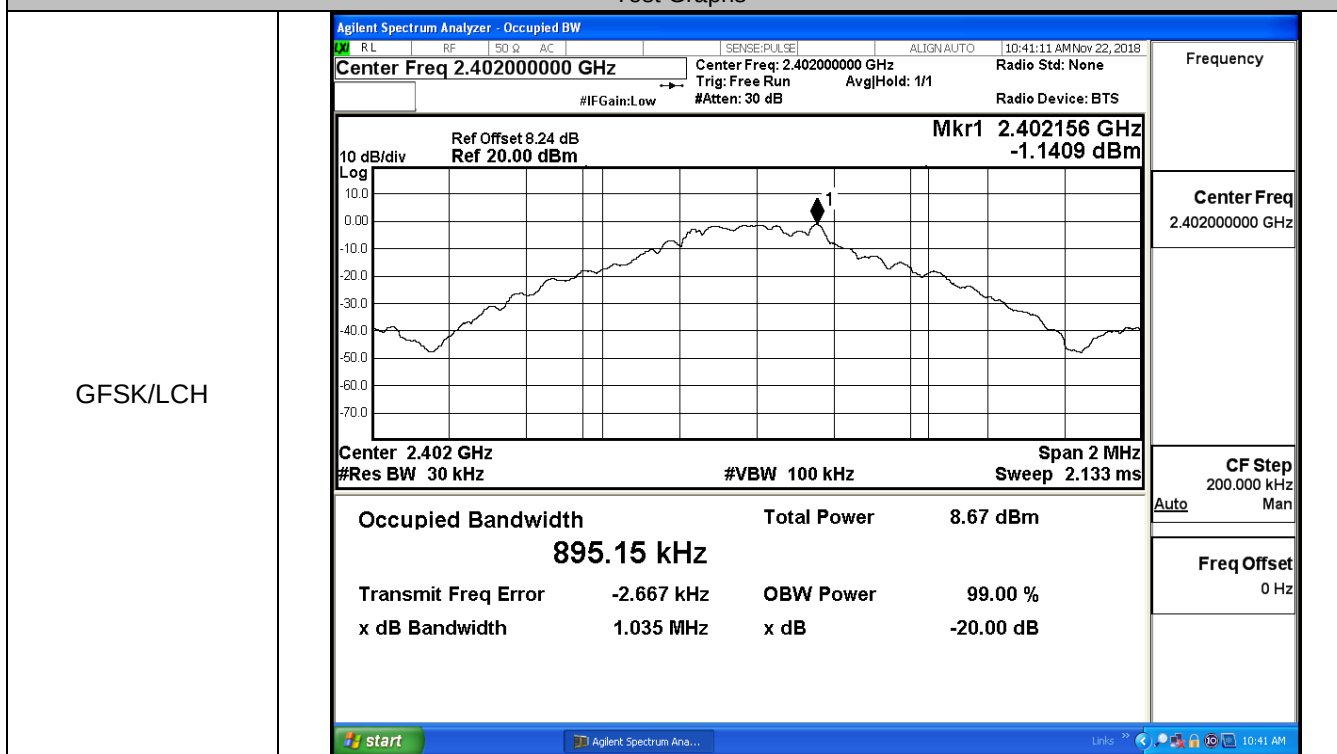
 π /4DQPSK/LCH



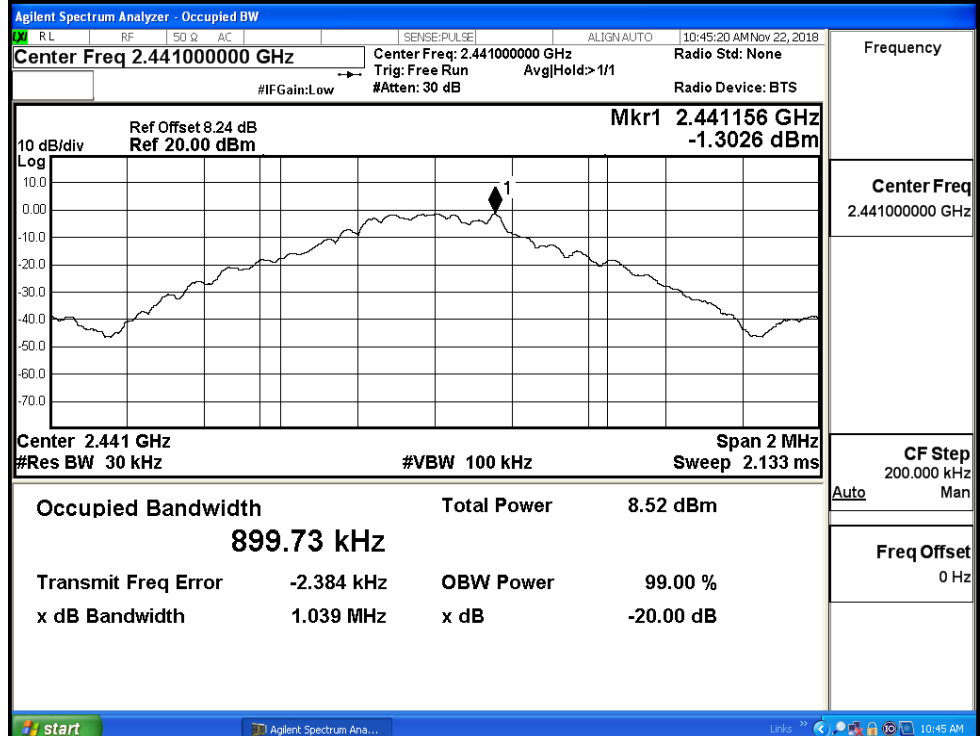
A.2 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89515	1.035	Not Specified	PASS
	MCH	0.89973	1.039	Not Specified	PASS
	HCH	0.89844	1.038	Not Specified	PASS
π /4DQPSK	LCH	1.1702	1.289	Not Specified	PASS
	MCH	1.1711	1.290	Not Specified	PASS
	HCH	1.1721	1.308	Not Specified	PASS

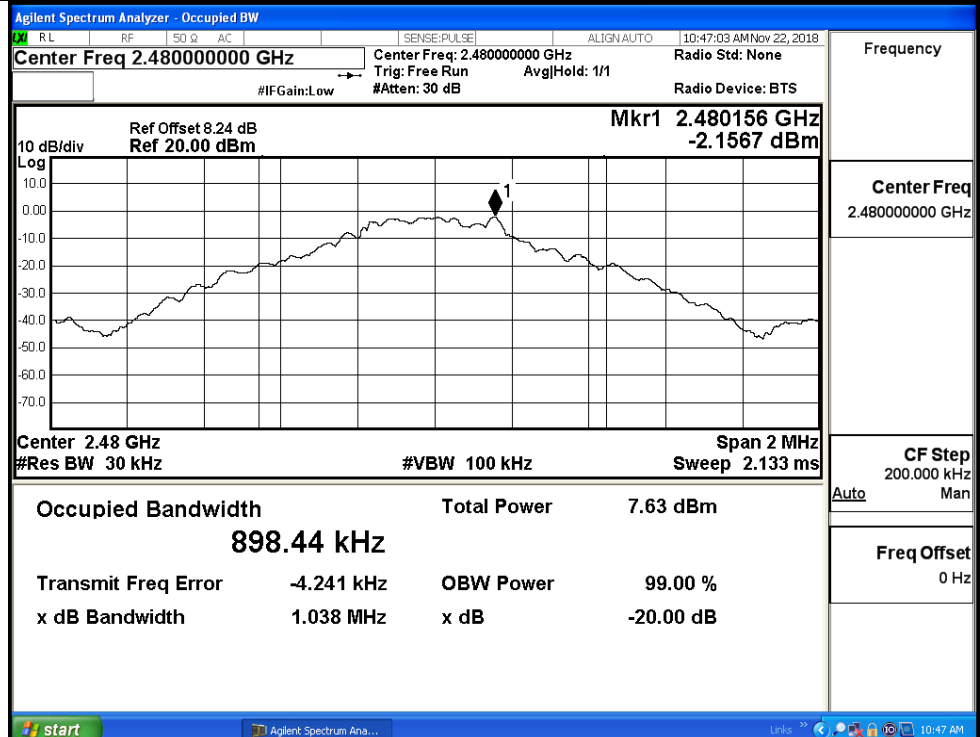
Test Graphs

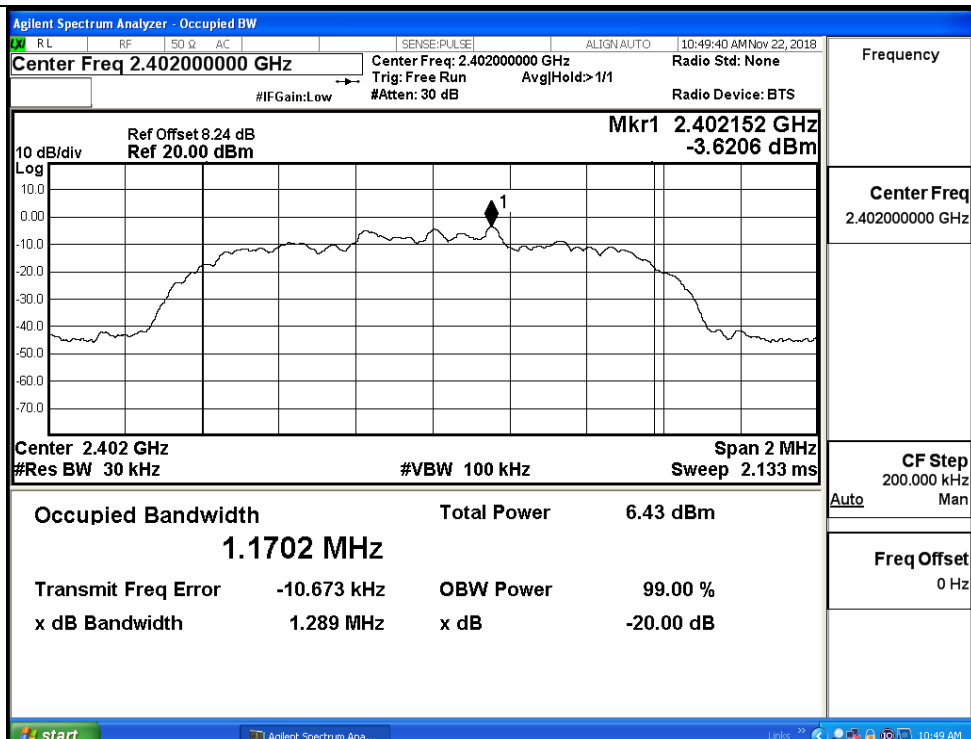


GFSK/MCH



GFSK/HCH

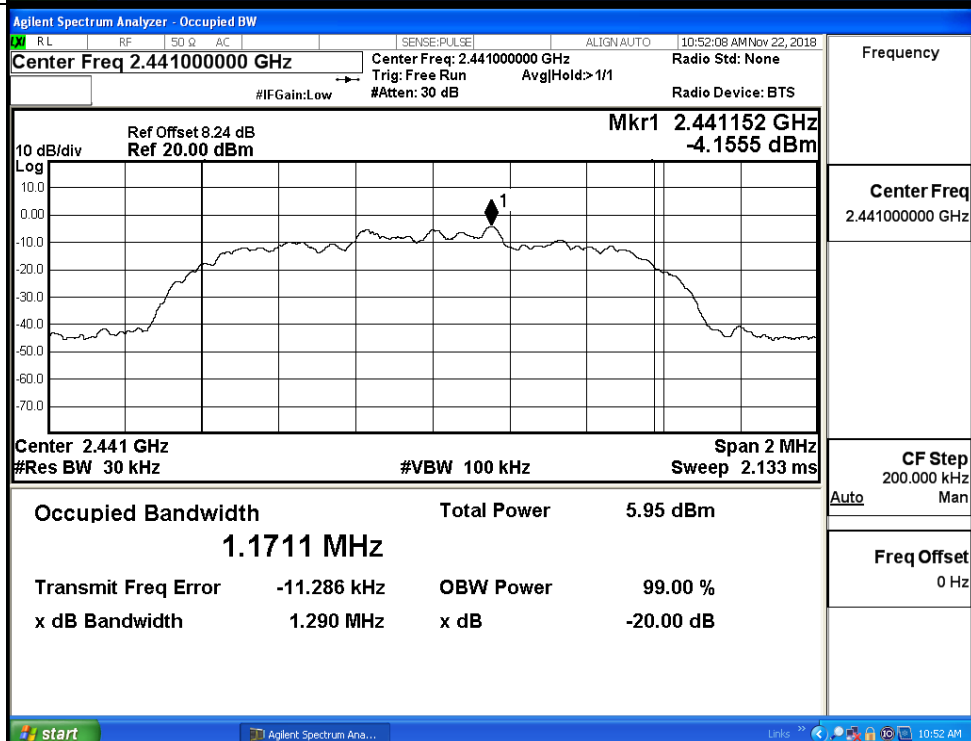


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

Auto

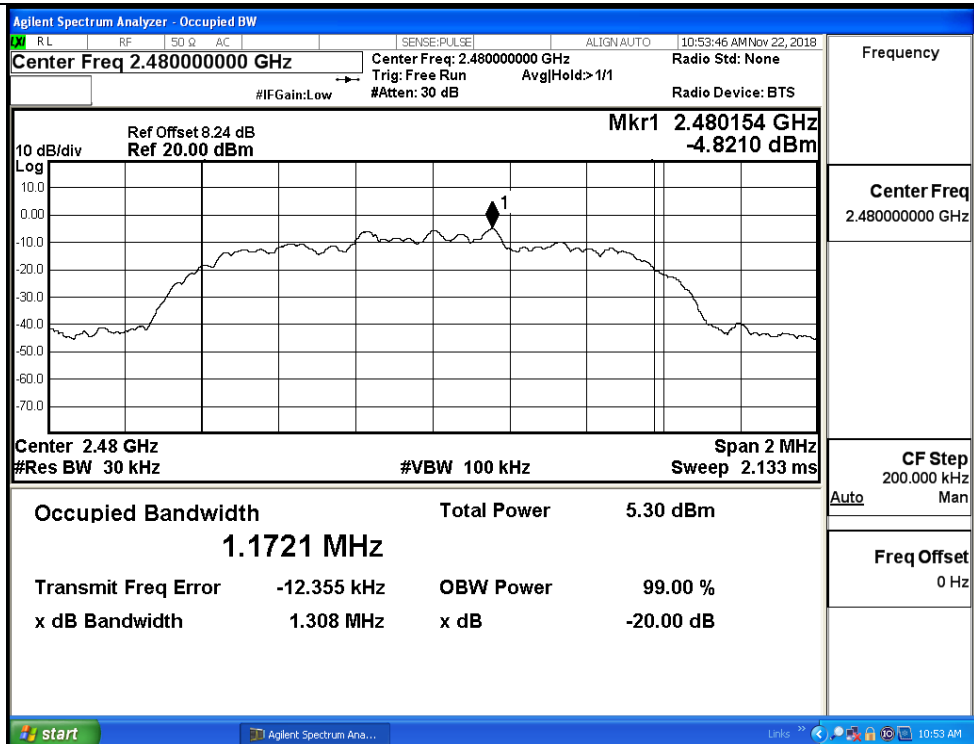
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

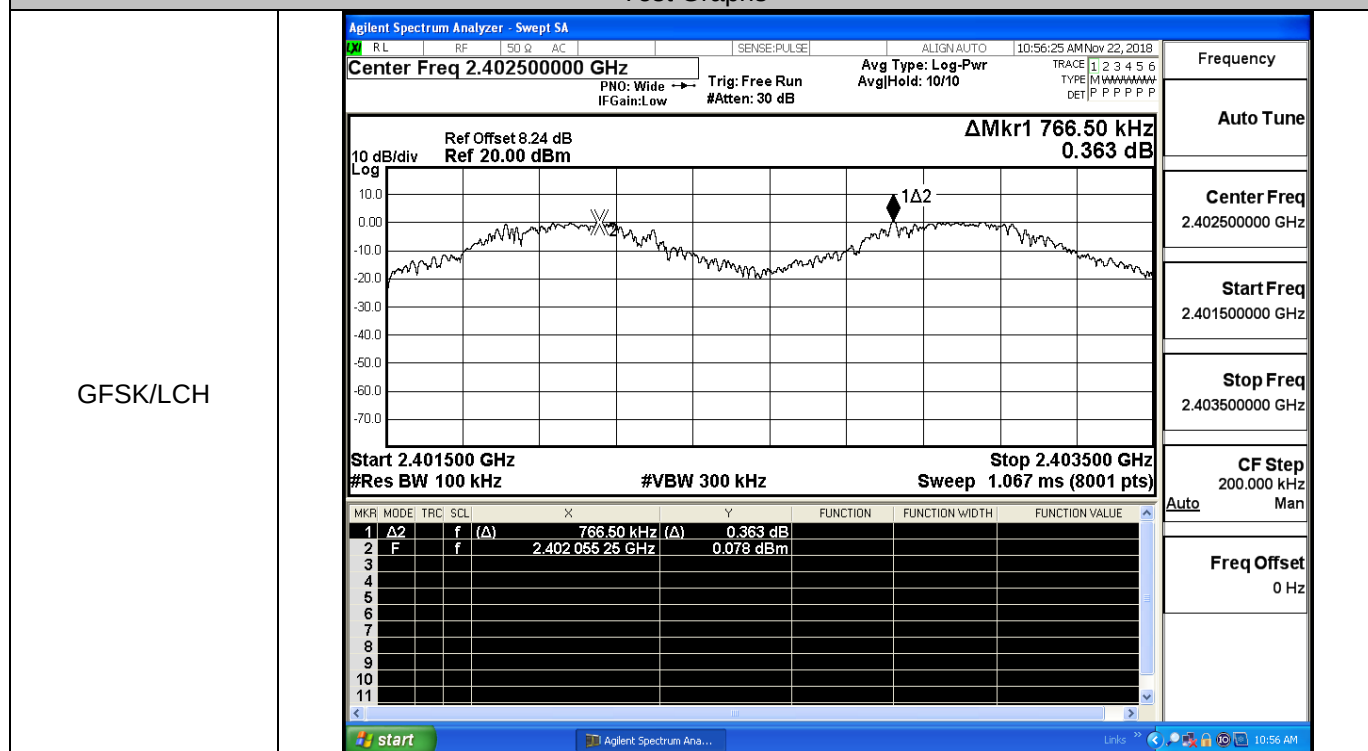
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

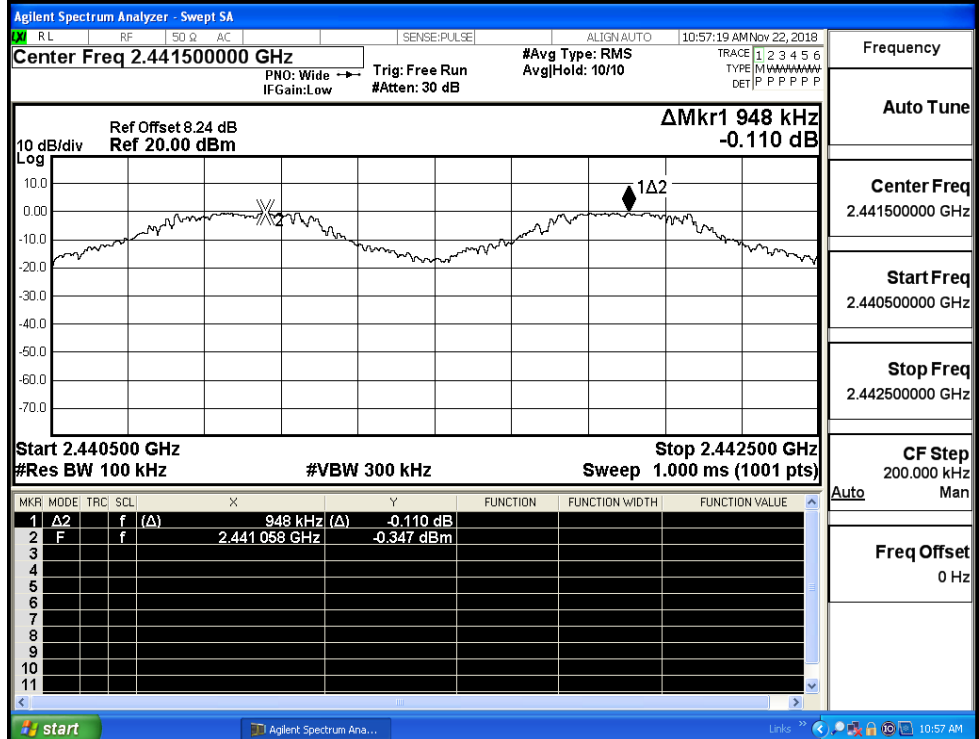
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.767	0.693	PASS
	MCH	0.948	0.693	PASS
	HCH	1.010	0.693	PASS
π /4DQPSK	LCH	0.888	0.872	PASS
	MCH	1.012	0.872	PASS
	HCH	0.954	0.872	PASS

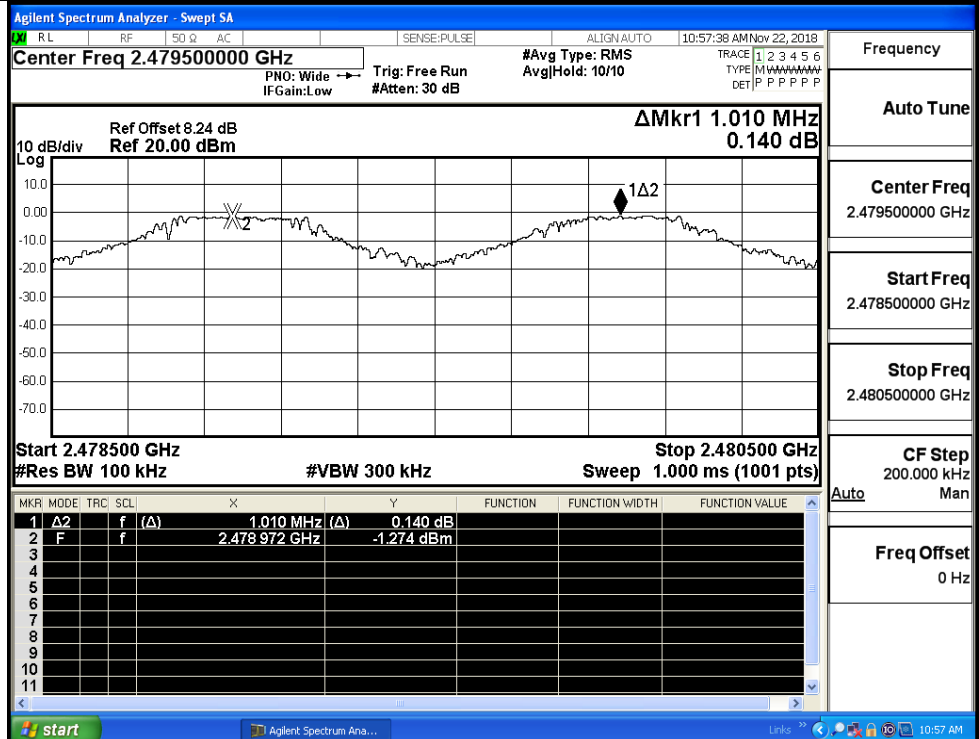
Test Graphs

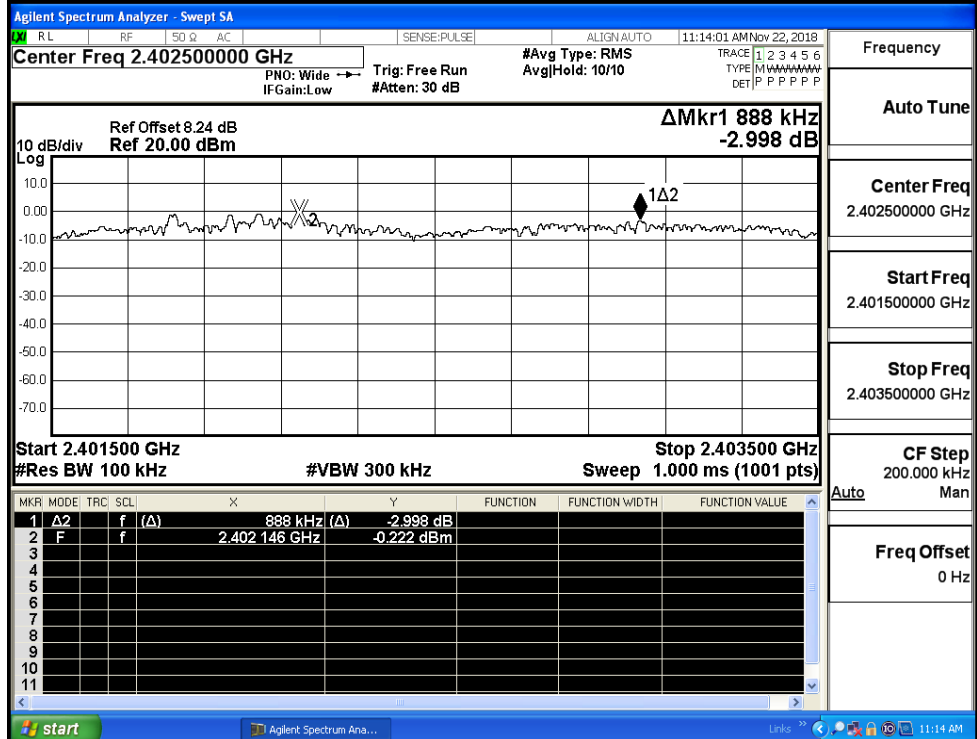
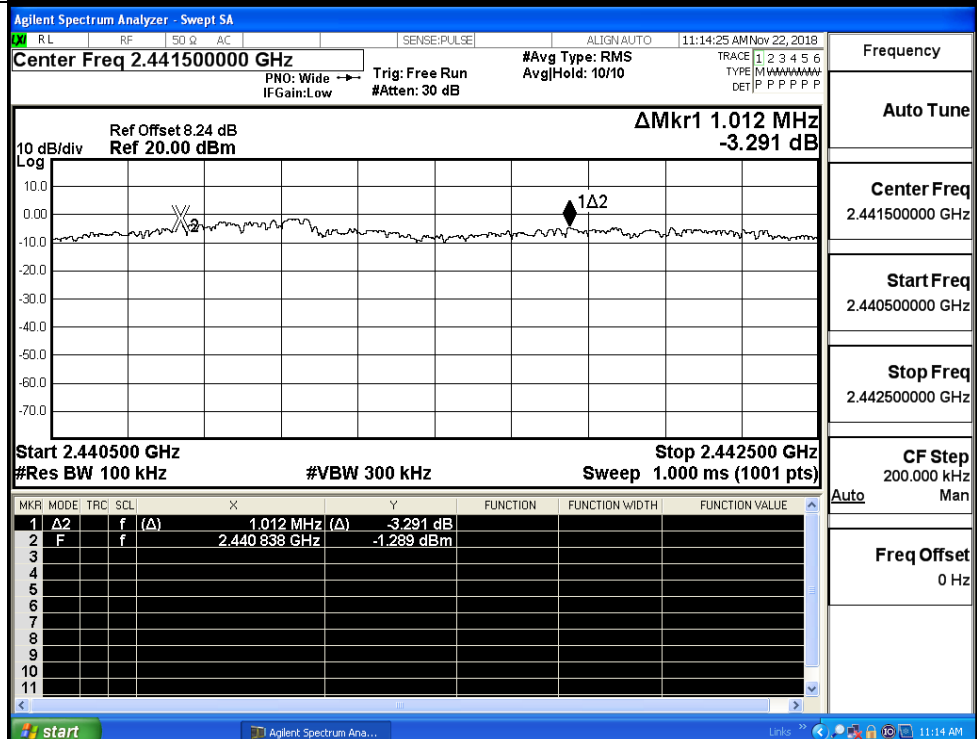


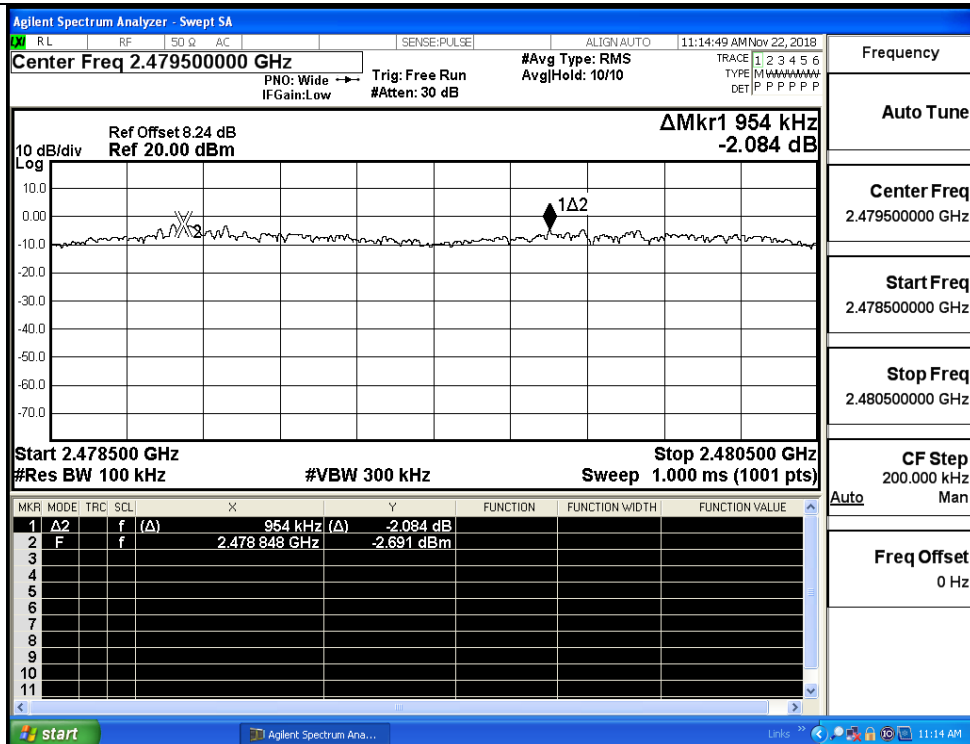
GFSK/MCH



GFSK/HCH



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

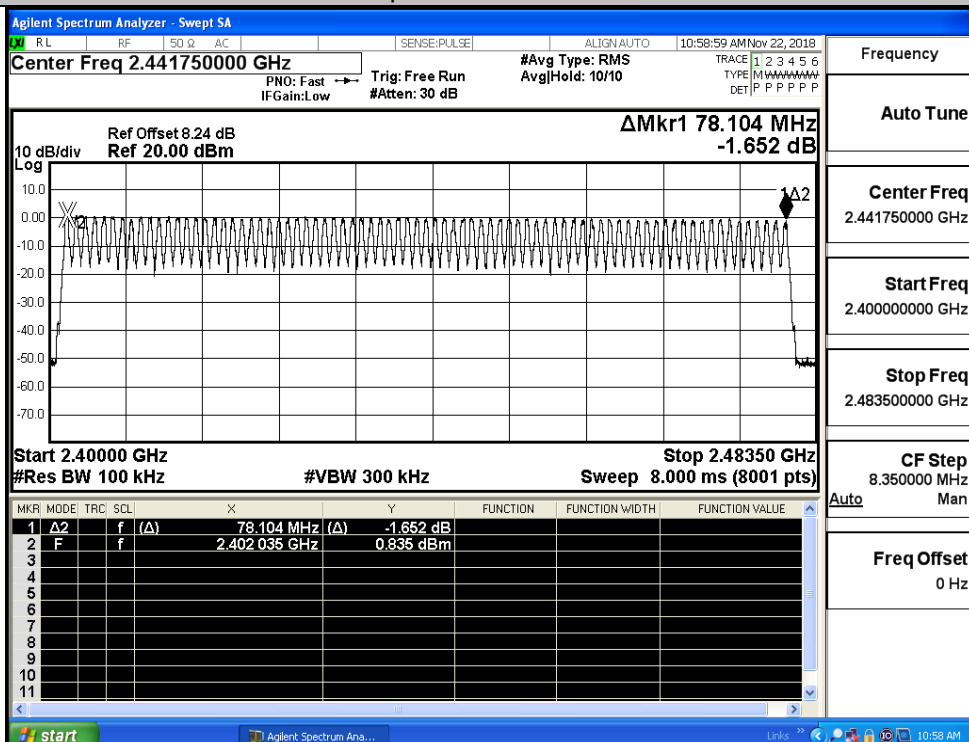
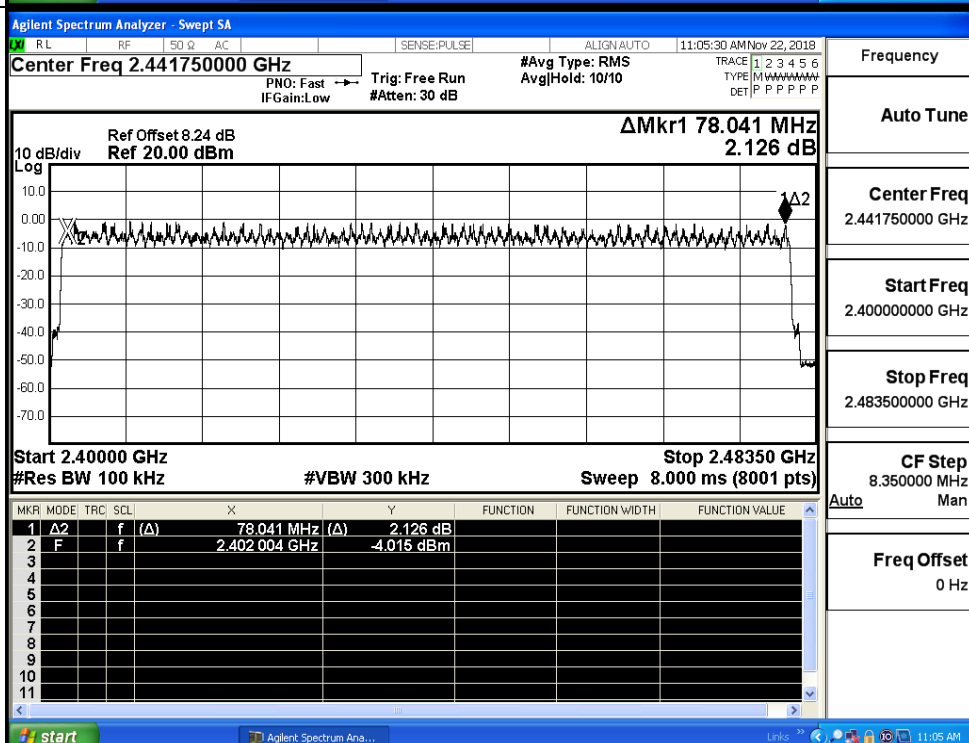
$\pi/4$ DQPSK/HCH

A.4 Hopping Channel Number

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

Test Graphs

GFSK/Hop

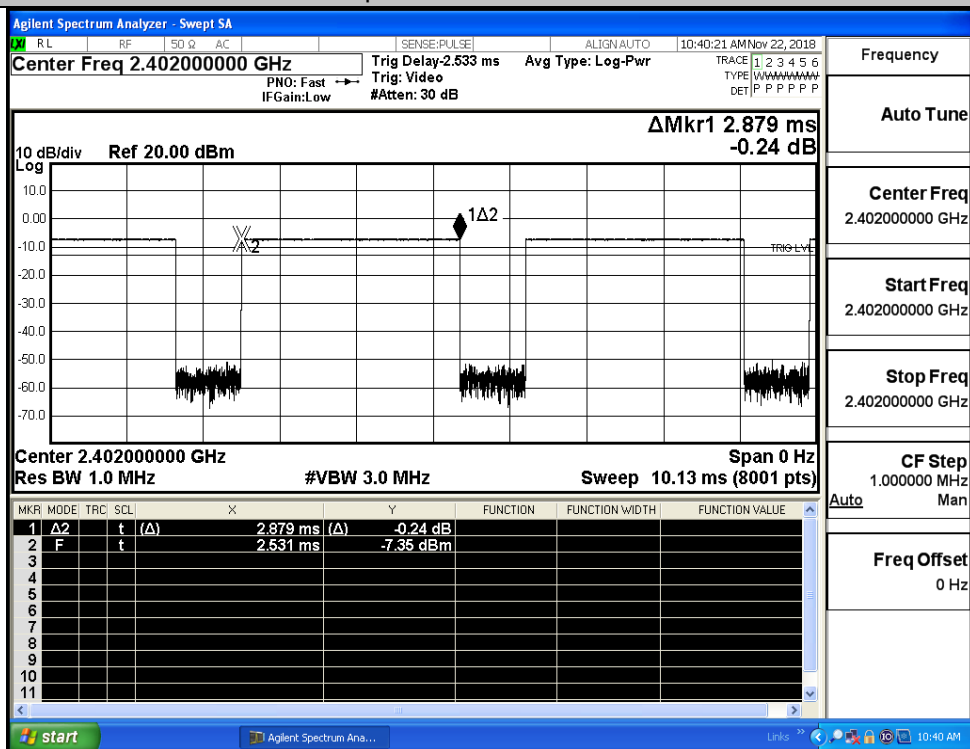
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

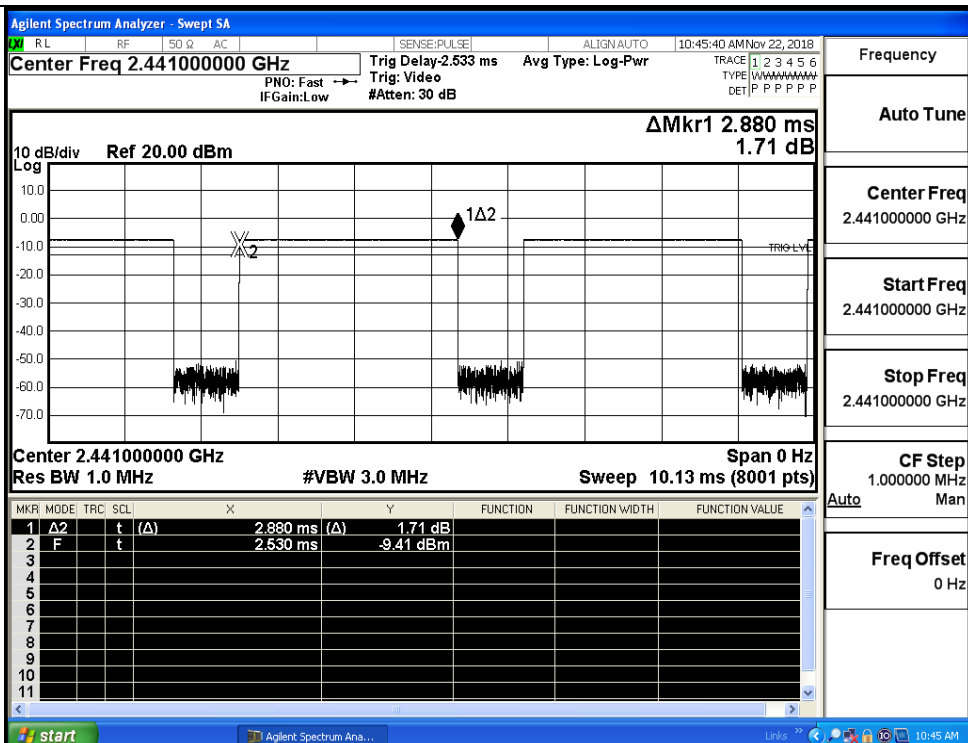
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

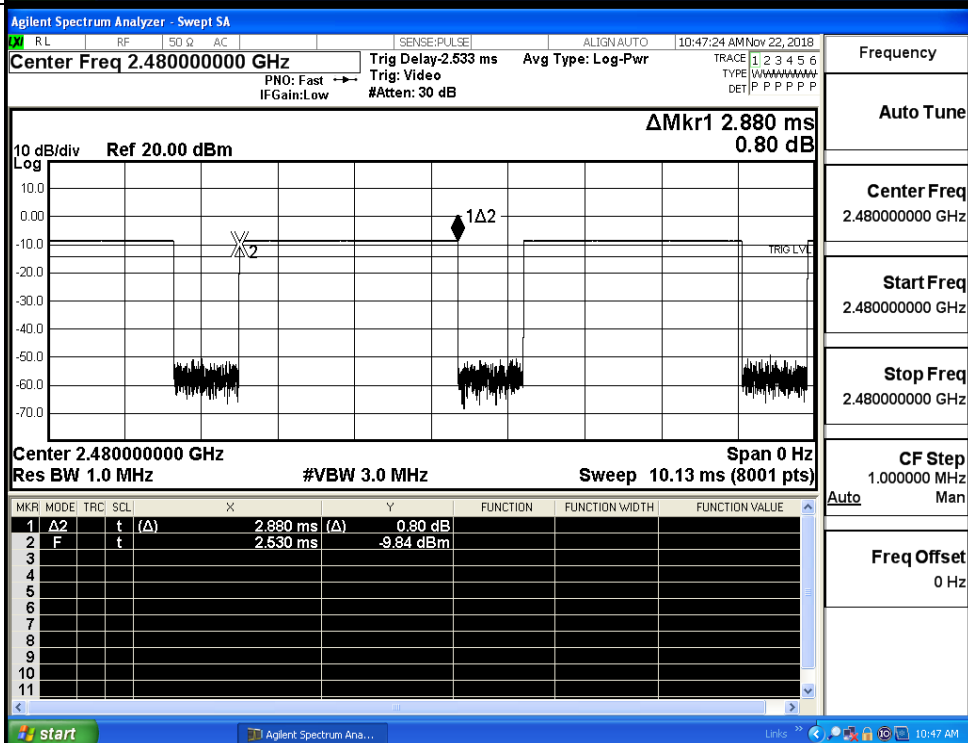
GFSK_DH5/LCH

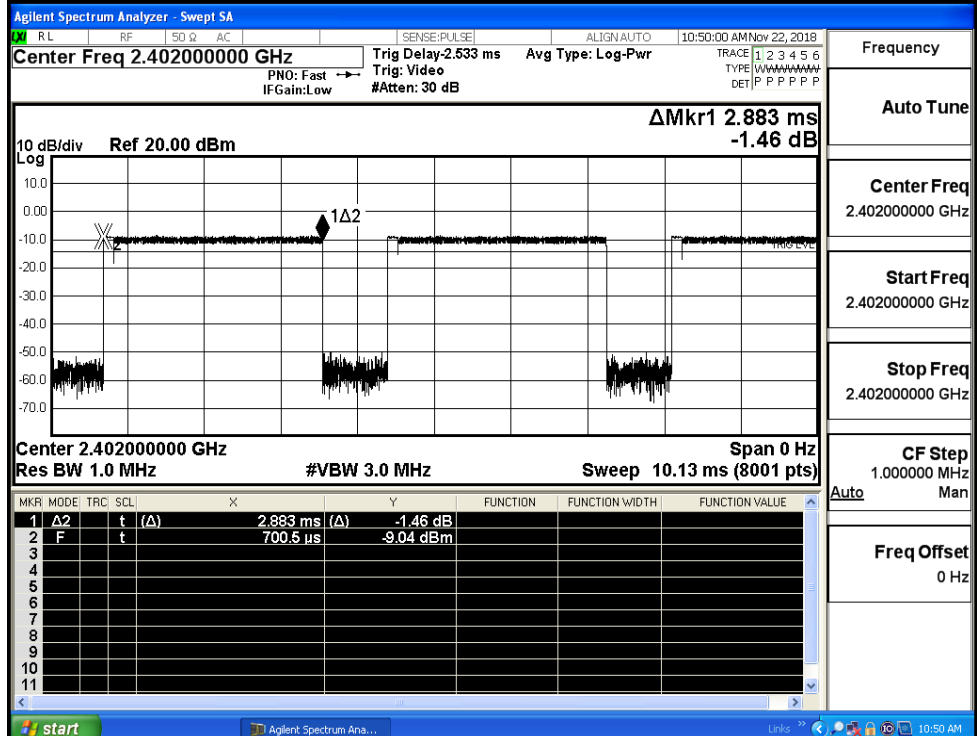
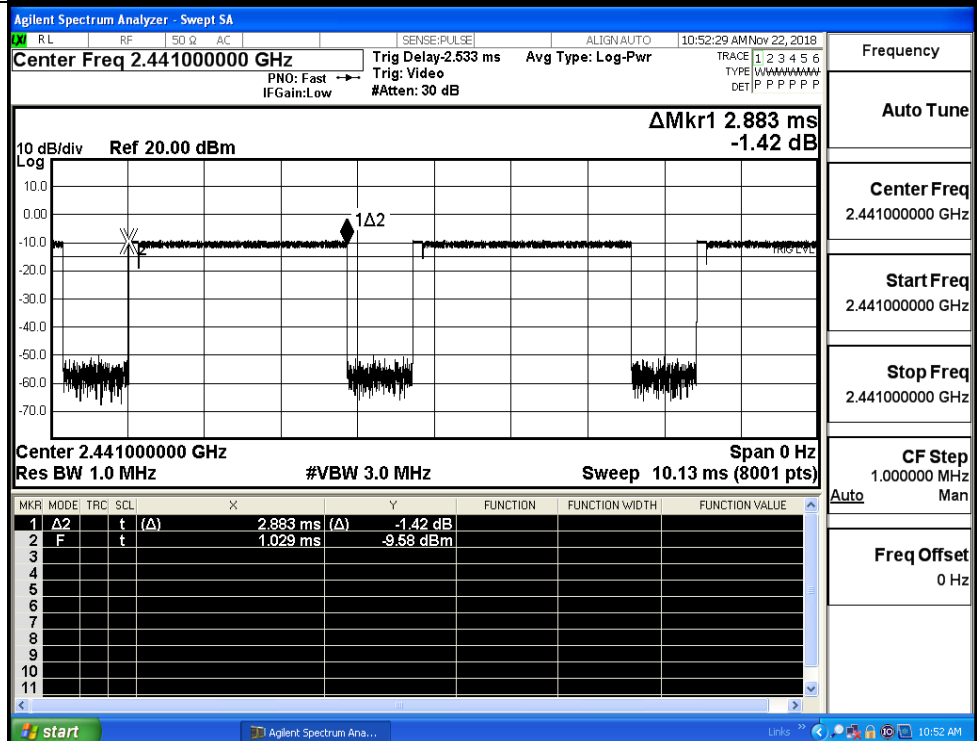


GFSK_DH5/MCH

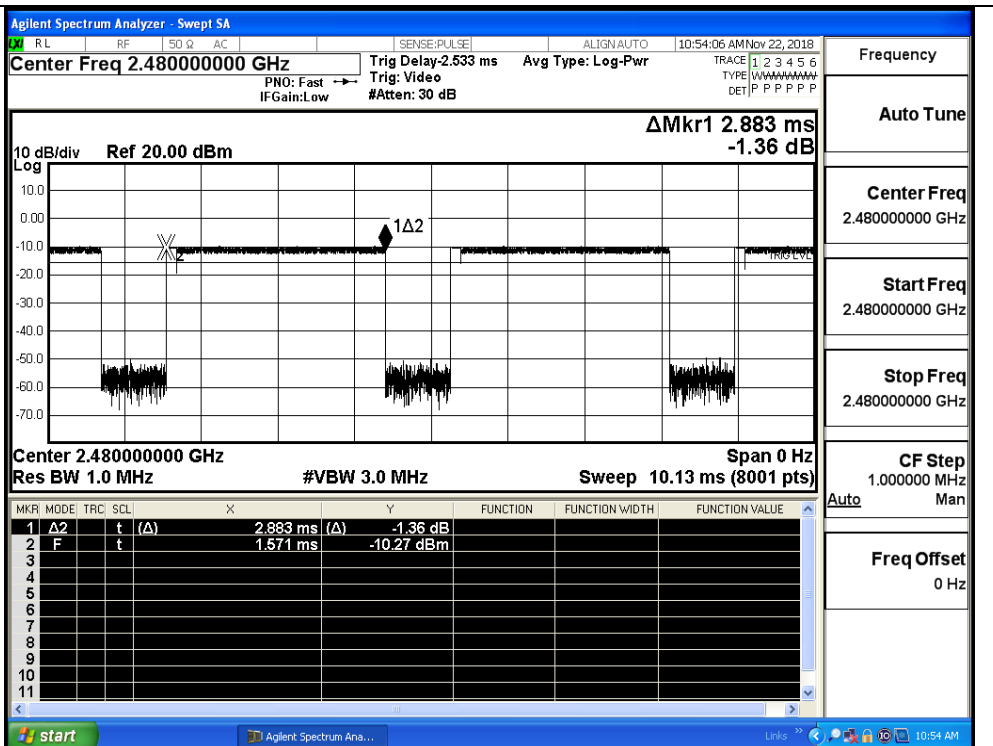


GFSK_DH5/HCH



$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

$\pi/4$ DQPSK
_2DH5/HCH

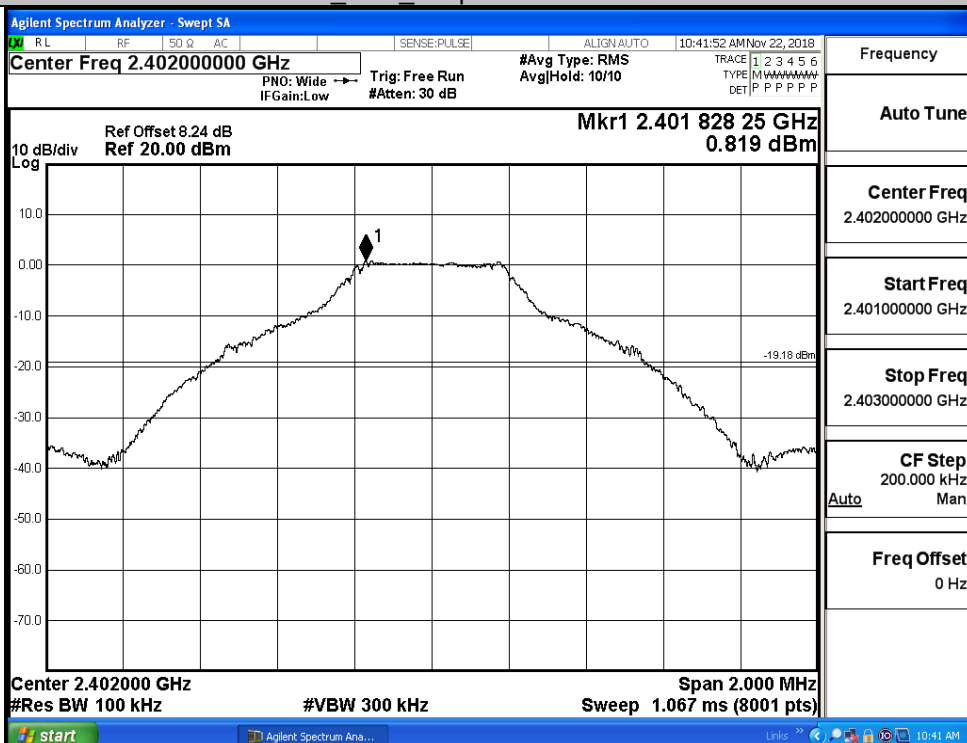


A.6 RF Conducted Spurious Emissions

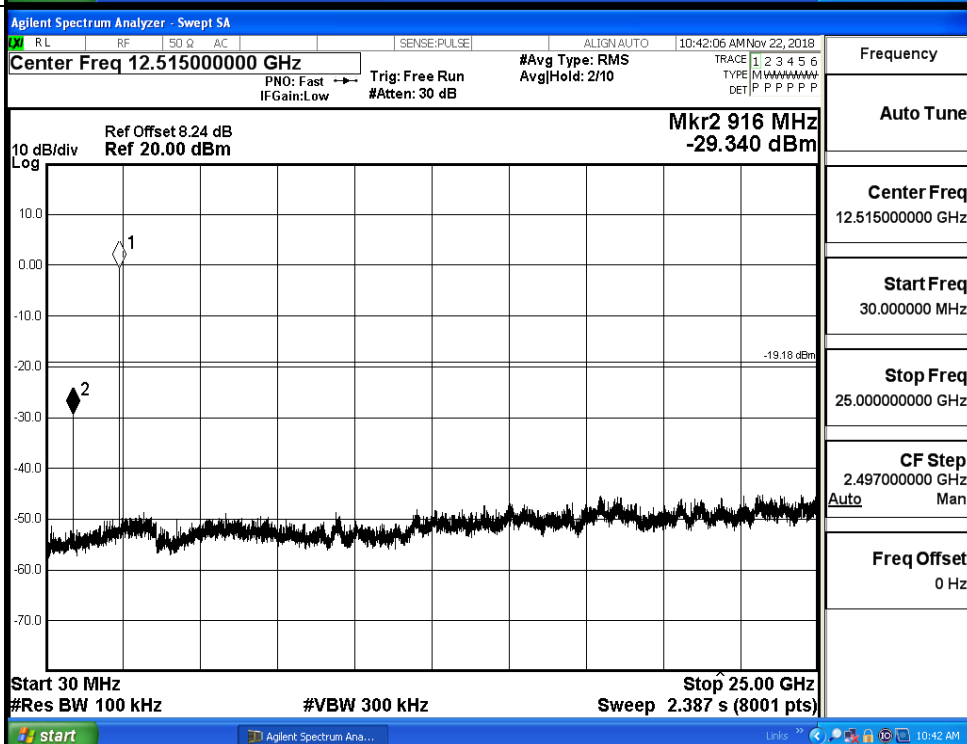
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.819	-29.340	-19.181	PASS
	MCH	0.76	-27.760	-19.240	PASS
	HCH	-0.37	-31.677	-20.370	PASS
$\pi/4$ DQPSK	LCH	-1.005	-30.907	-21.005	PASS
	MCH	-1.632	-29.965	-21.632	PASS
	HCH	-1.977	-33.389	-21.977	PASS

GFSK LCH Graphs

Pref

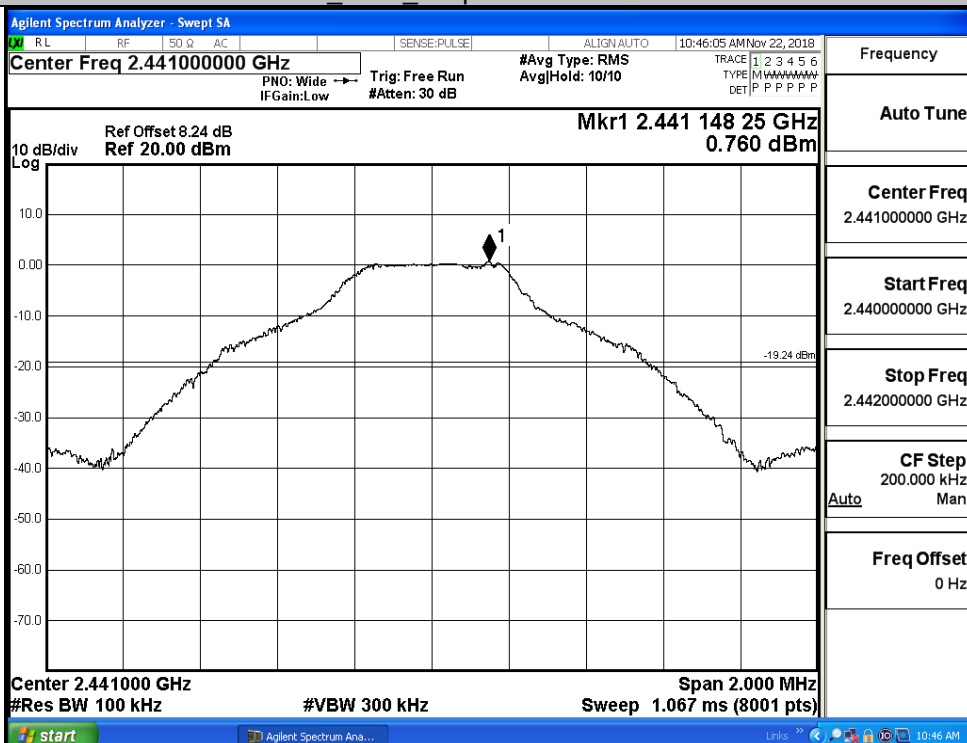


Puw

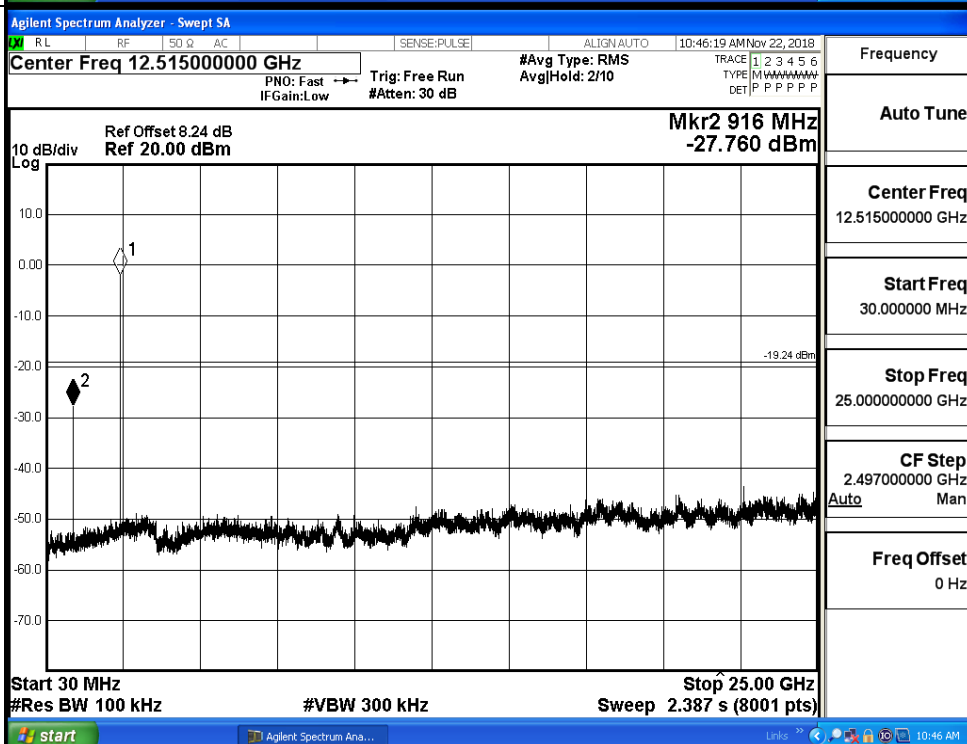


GFSK MCH_Graphs

Pref

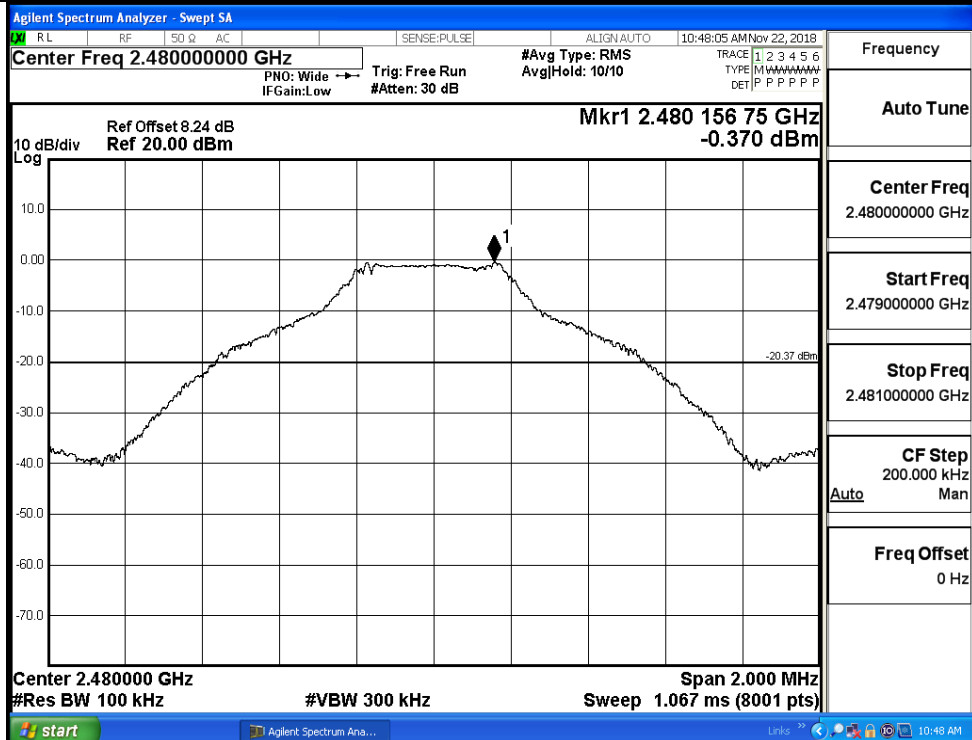


Puw

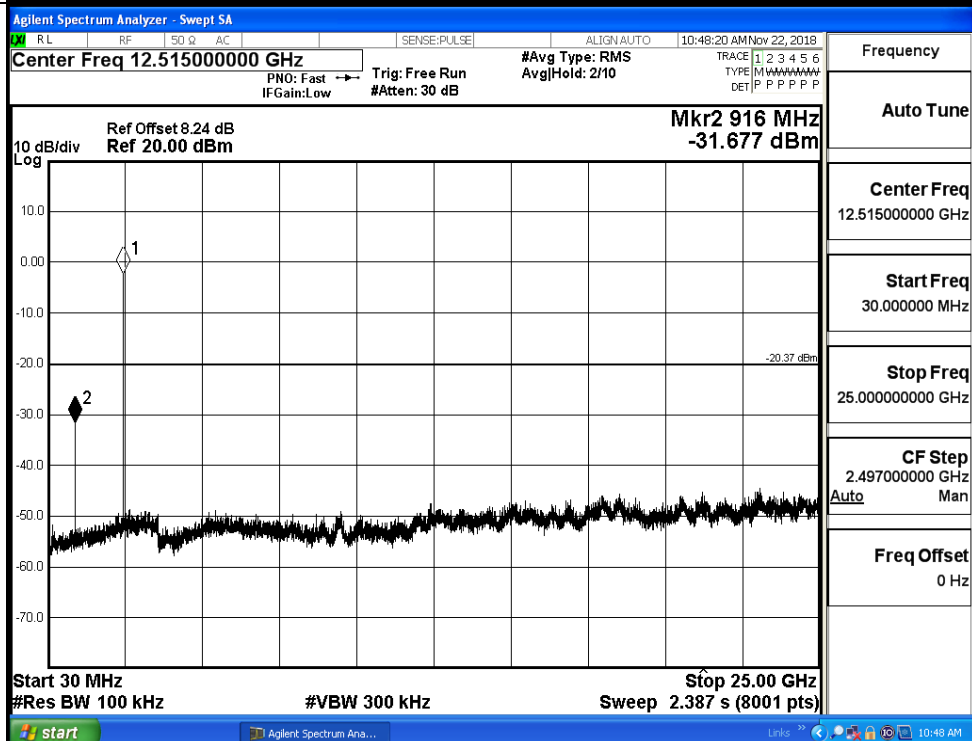


GFSK HCH Graphs

Pref

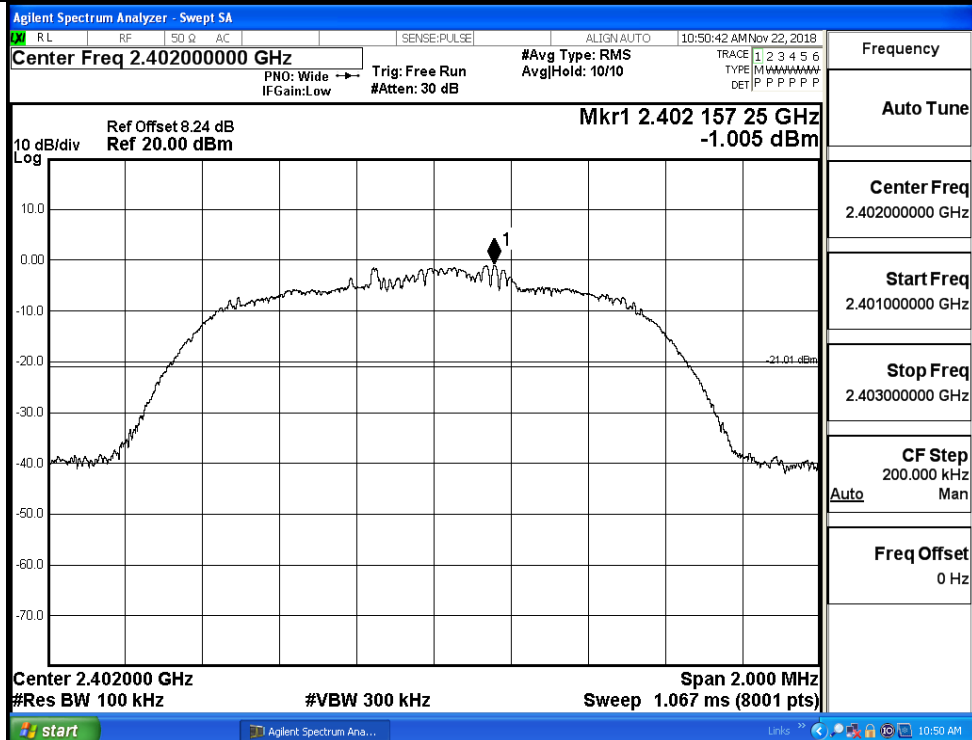


Puw

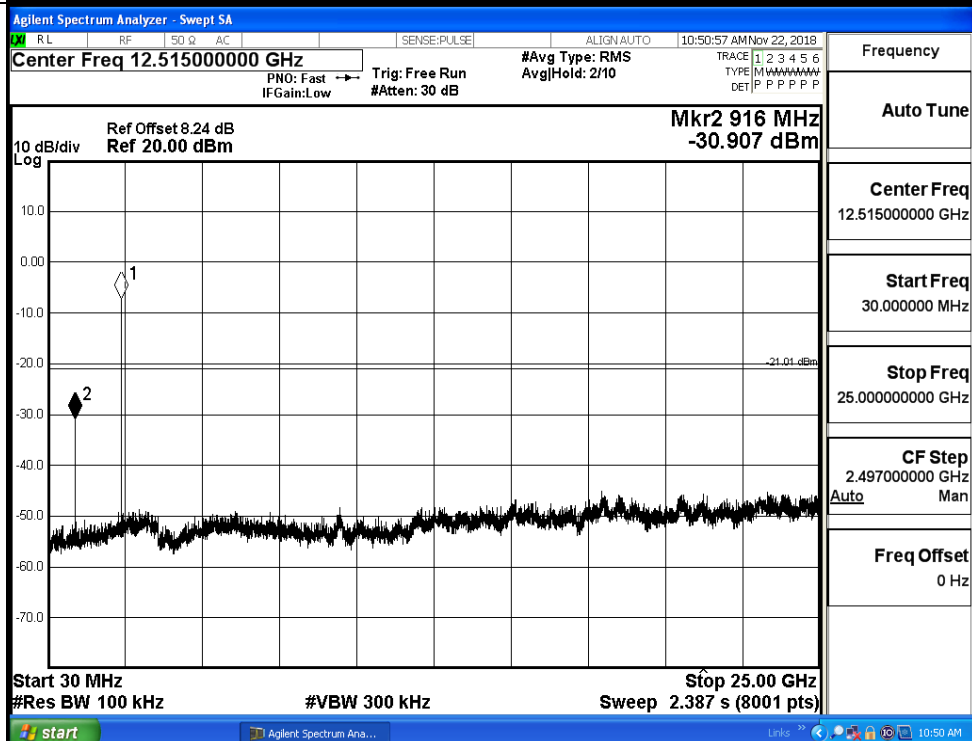


$\pi/4$ DQPSK LCH_Graphs

Pref

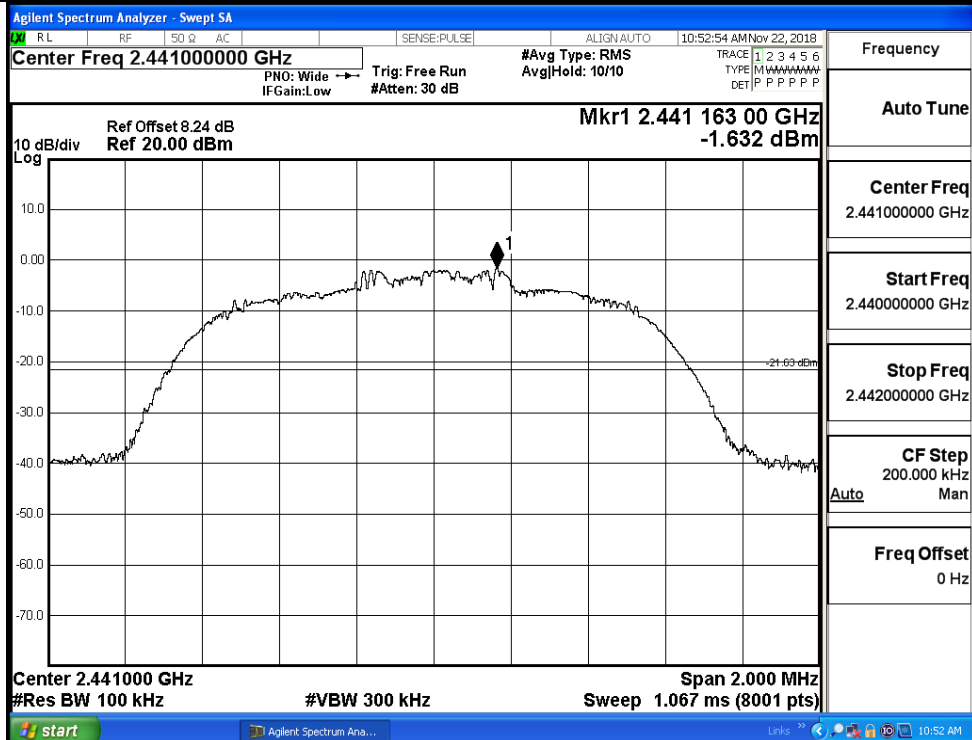


Puw

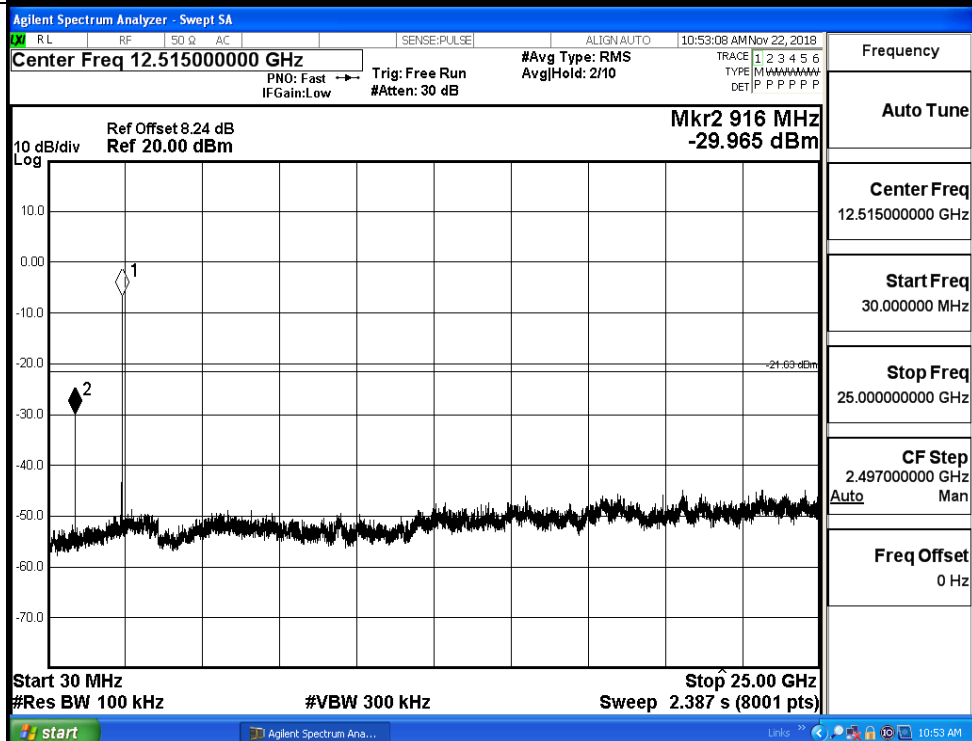


$\pi/4$ DQPSK MCH Graphs

Pref

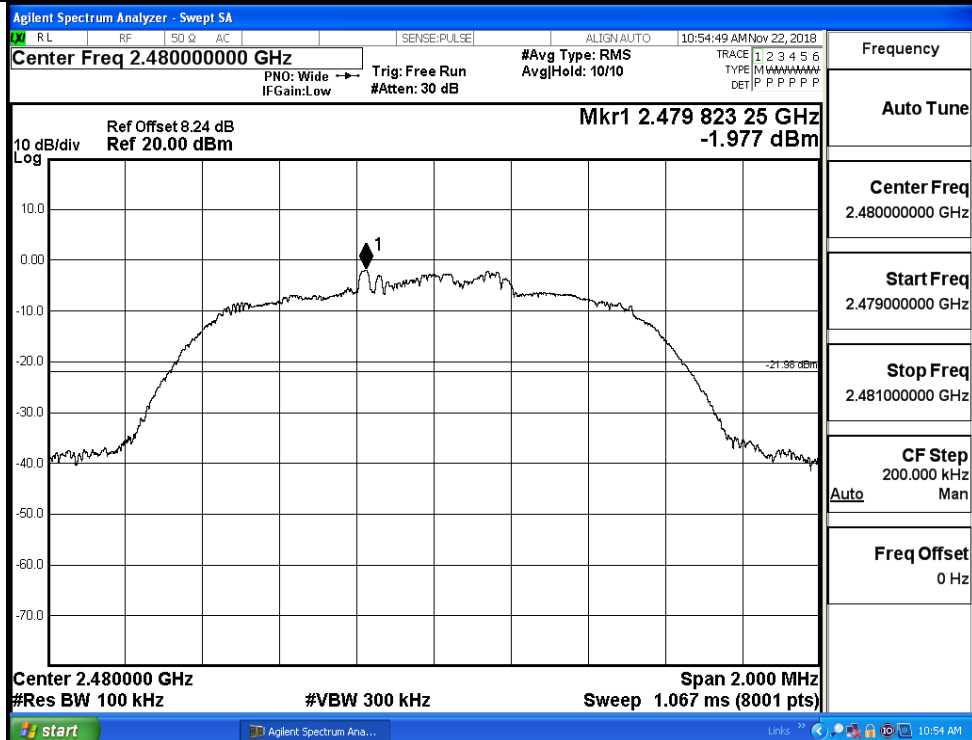


Puw

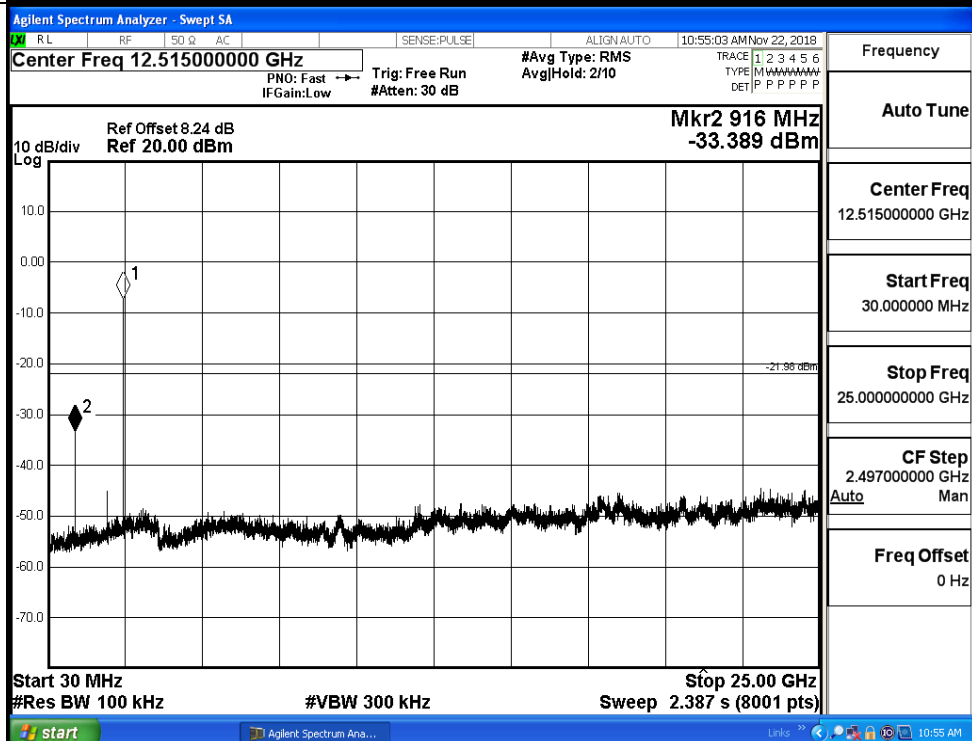


$\pi/4$ DQPSK HCH Graphs

Pref



Puw

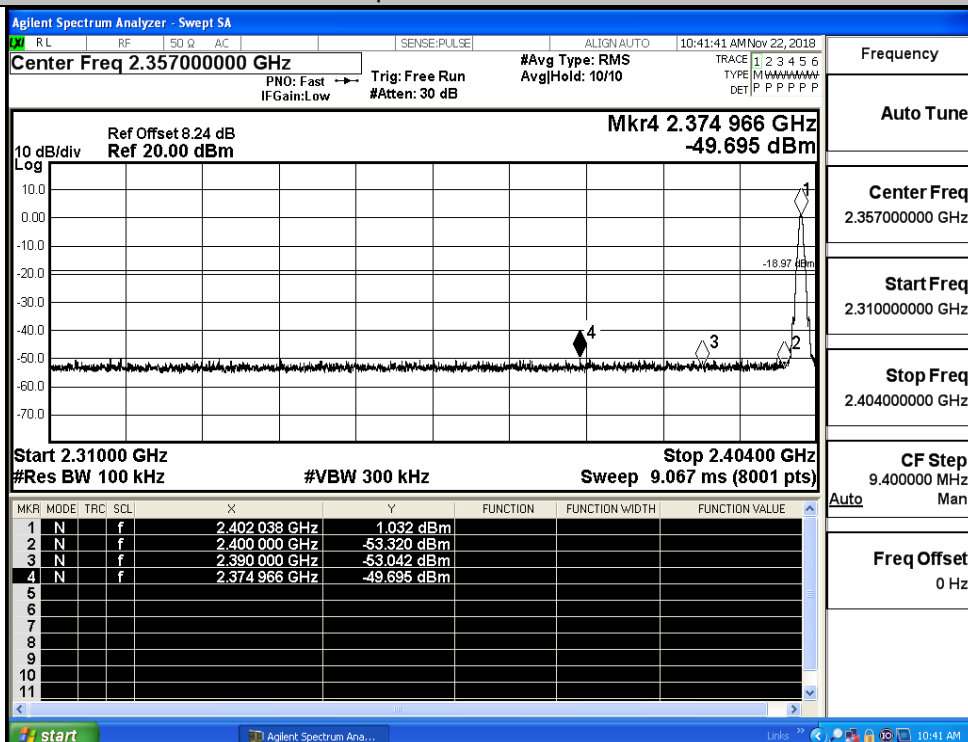


A.7 Band-edge for RF Conducted Emissions

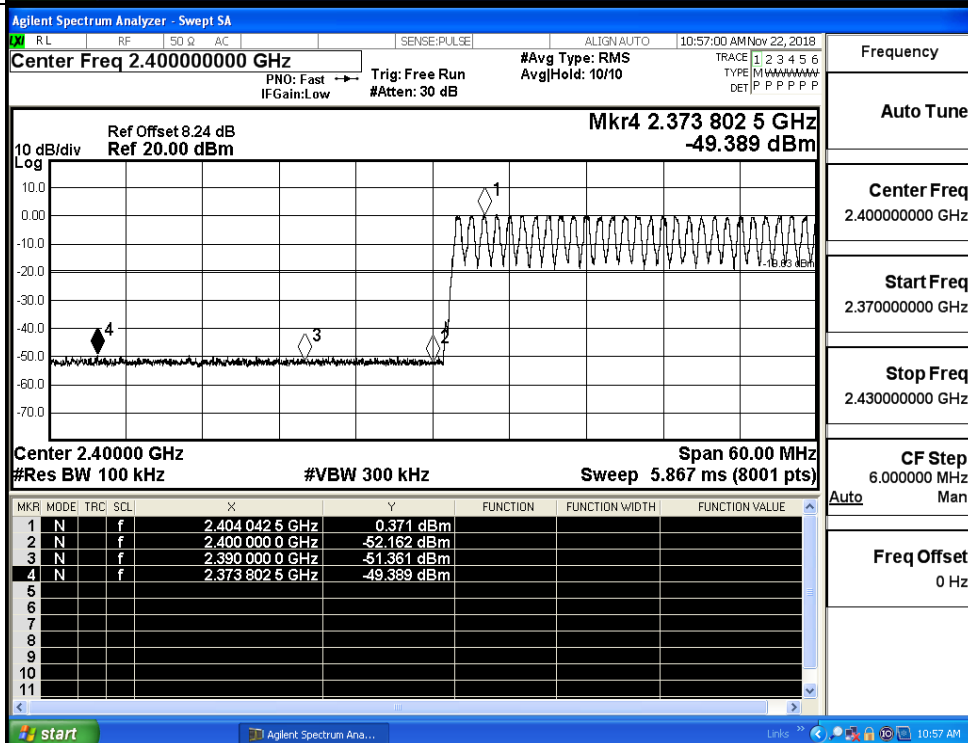
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.032	Off	-49.695	-18.97	PASS
			0.371	On	-49.389	-19.63	PASS
	HCH	2480	-0.205	Off	-49.894	-20.21	PASS
			-0.305	On	-49.124	-20.31	PASS
π /4DQPSK	LCH	2402	-1.059	Off	-50.048	-21.06	PASS
			-0.612	On	-49.285	-20.61	PASS
	HCH	2480	-1.897	Off	-49.958	-21.9	PASS
			-1.512	On	-49.004	-21.51	PASS

Test Graphs

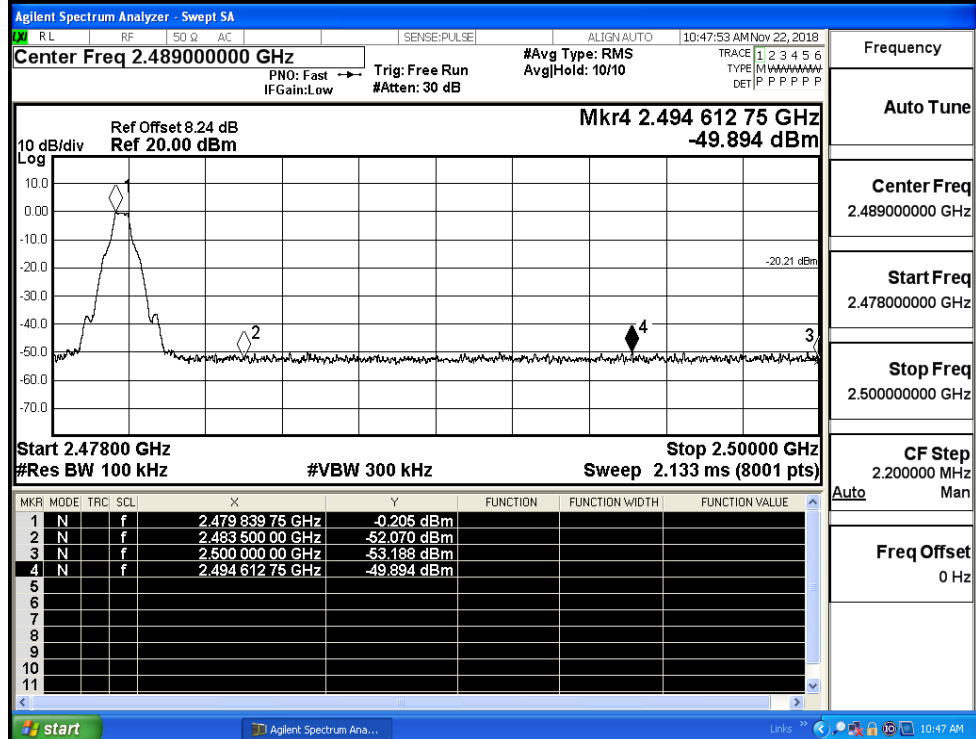
GFSK/LCH/No Hop



GFSK/LCH/Hop



GFSK/HCH/No Hop



Frequency

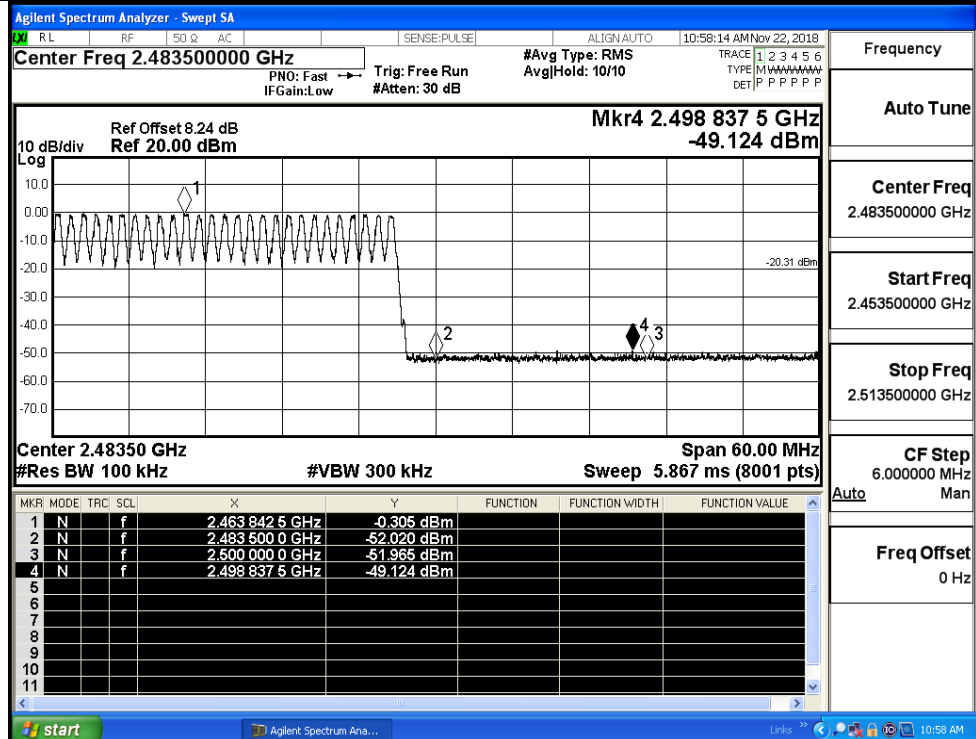
Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz

Auto

Freq Offset
0 Hz

GFSK/HCH/Hop



Frequency

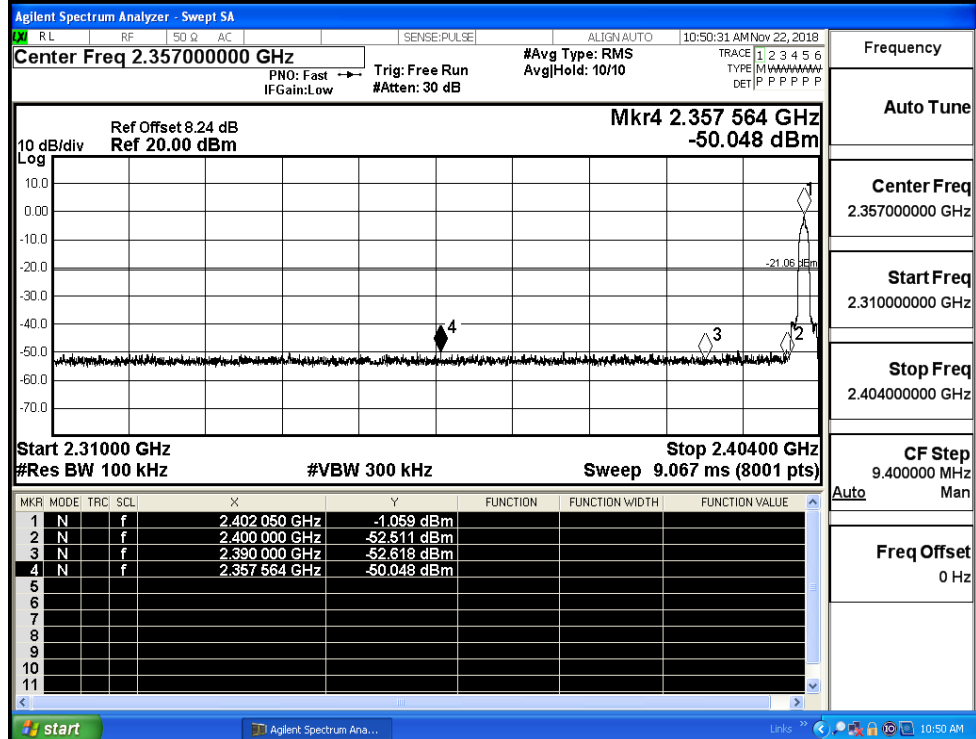
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz

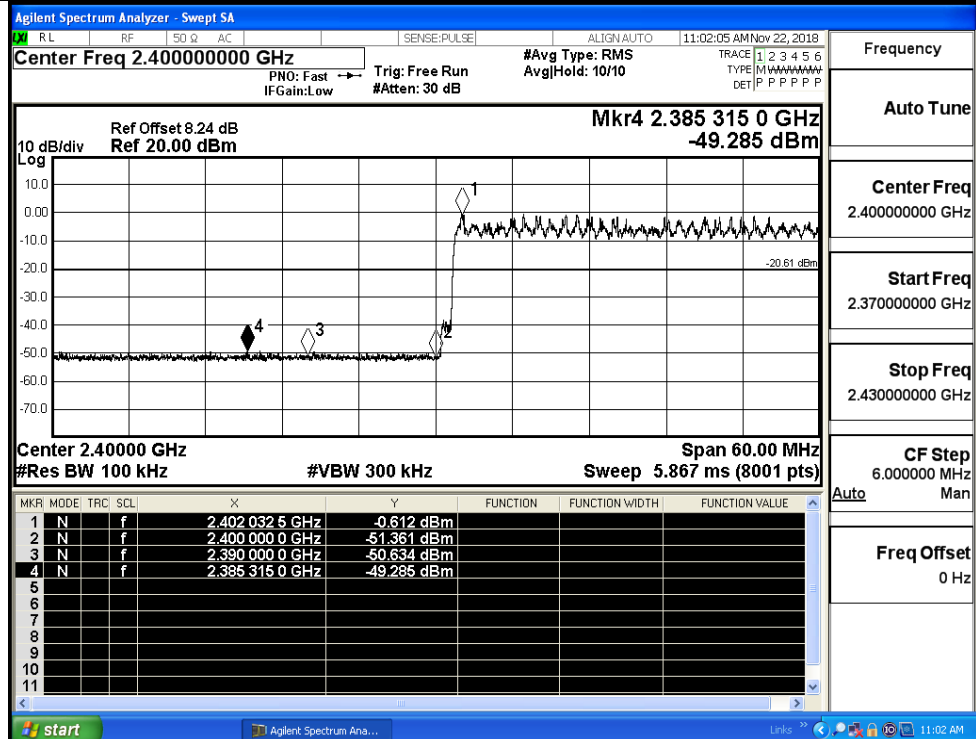
Auto

Freq Offset
0 Hz

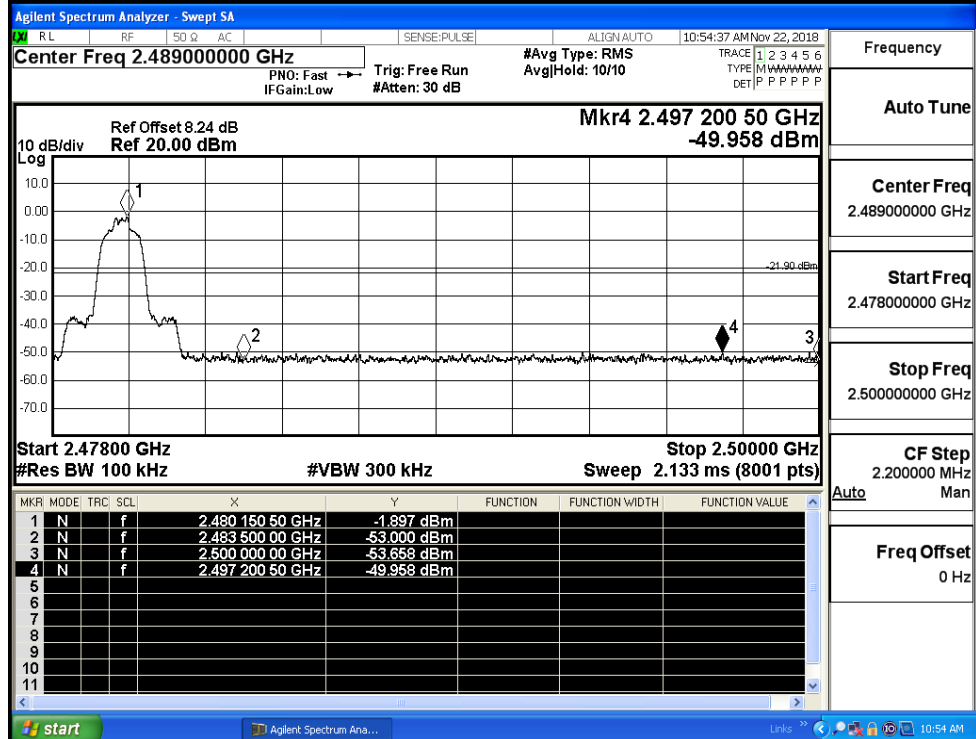
$\pi/4$ DQPSK/LCH/No
Hop



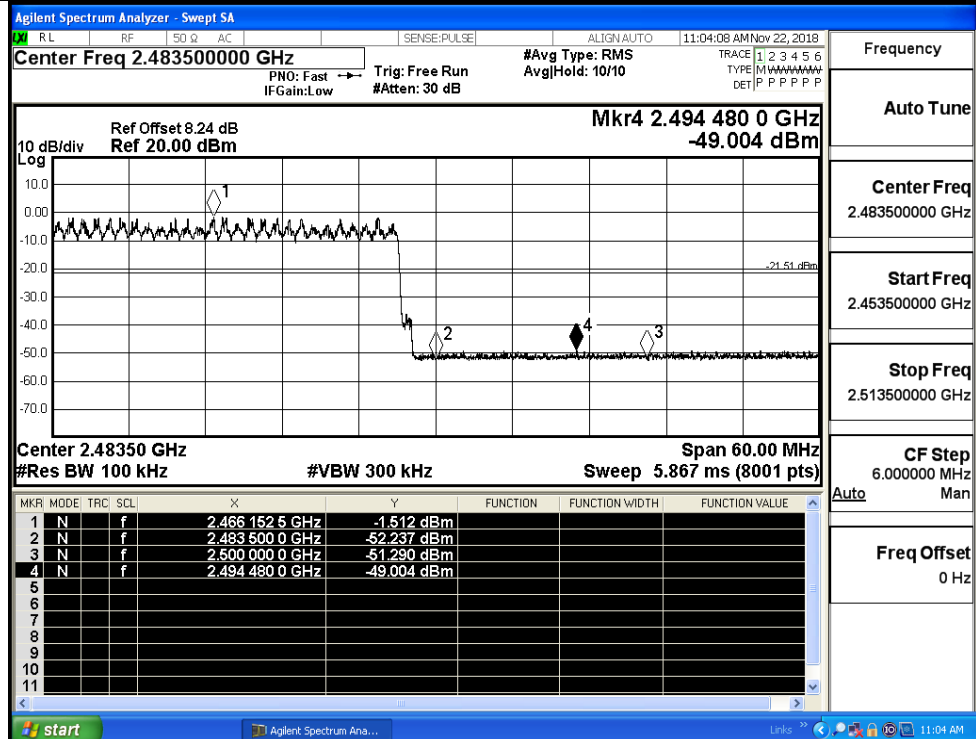
$\pi/4$ DQPSK/LCH/Hop



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



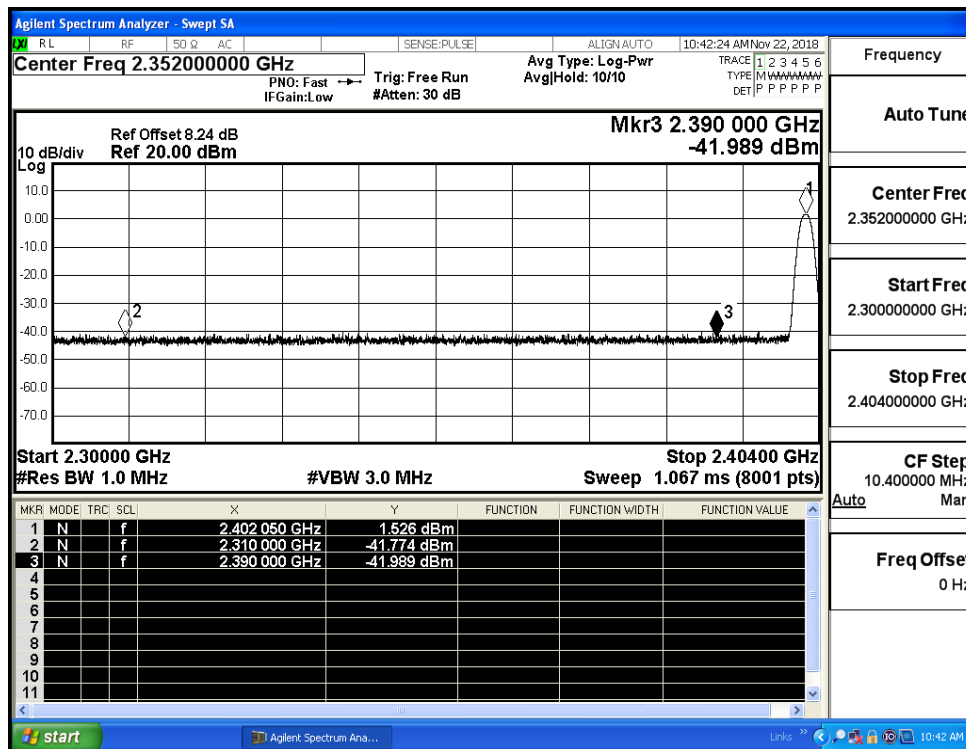
$\pi/4$ DQPSK/HCH/Hop



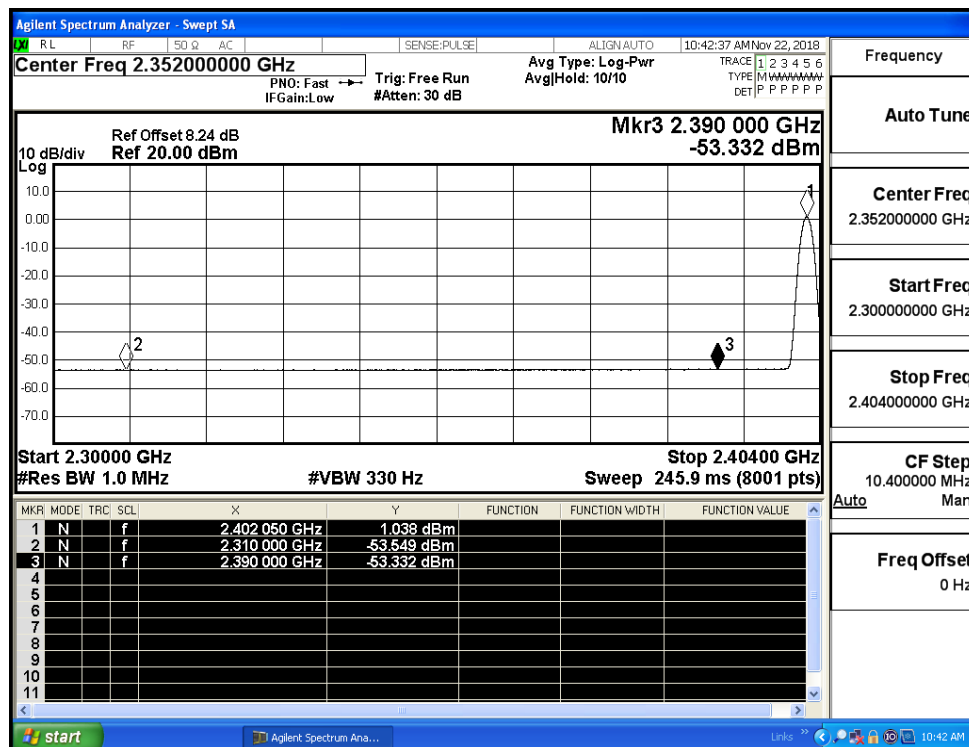
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.774	3.30	0	56.754	PEAK	74	PASS
	Off	2310.0	-53.549	3.30	0	44.979	AV	54	PASS
	Off	2390.0	-41.999	3.30	0	56.529	PEAK	74	PASS
	Off	2390.0	-53.332	3.30	0	45.196	AV	54	PASS
	Off	2483.5	-43.595	3.30	0	54.933	PEAK	74	PASS
	Off	2483.5	-52.968	3.30	0	45.560	AV	54	PASS
	Off	2500.0	-43.627	3.30	0	54.901	PEAK	74	PASS
	Off	2500.0	-52.903	3.30	0	45.625	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.763	3.30	0	55.765	PEAK	74	PASS
	Off	2310.0	-53.583	3.30	0	44.945	AV	54	PASS
	Off	2390.0	-42.752	3.30	0	55.776	PEAK	74	PASS
	Off	2390.0	-53.374	3.30	0	45.154	AV	54	PASS
	Off	2483.5	-43.530	3.30	0	54.998	PEAK	74	PASS
	Off	2483.5	-53.030	3.30	0	45.498	AV	54	PASS
	Off	2500.0	-42.557	3.30	0	55.971	PEAK	74	PASS
	Off	2500.0	-52.914	3.30	0	45.614	AV	54	PASS

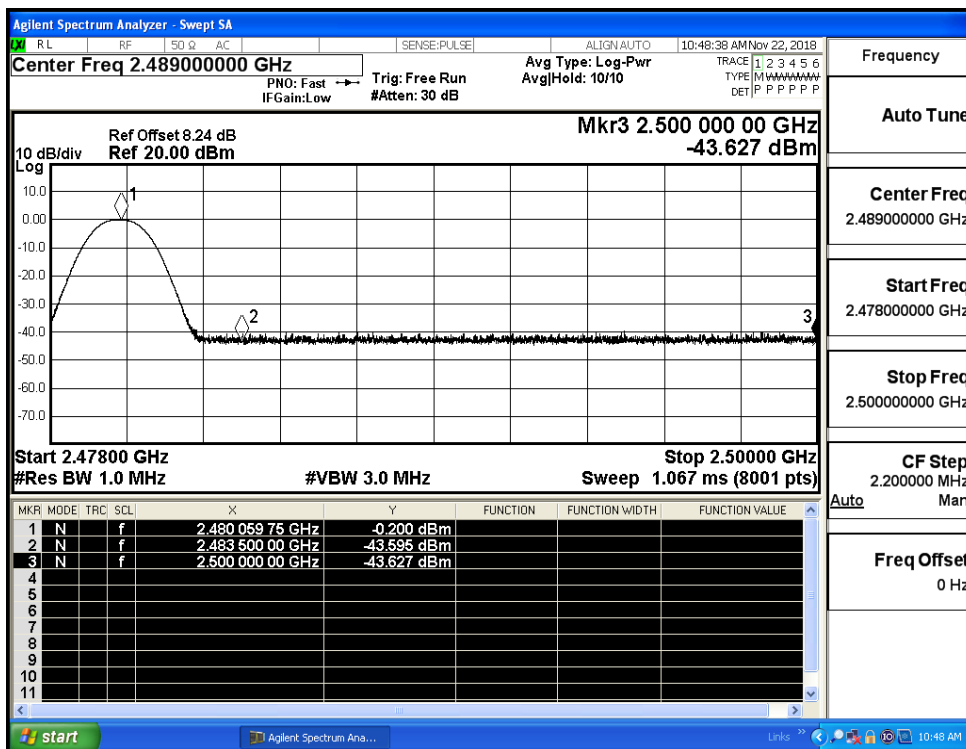
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



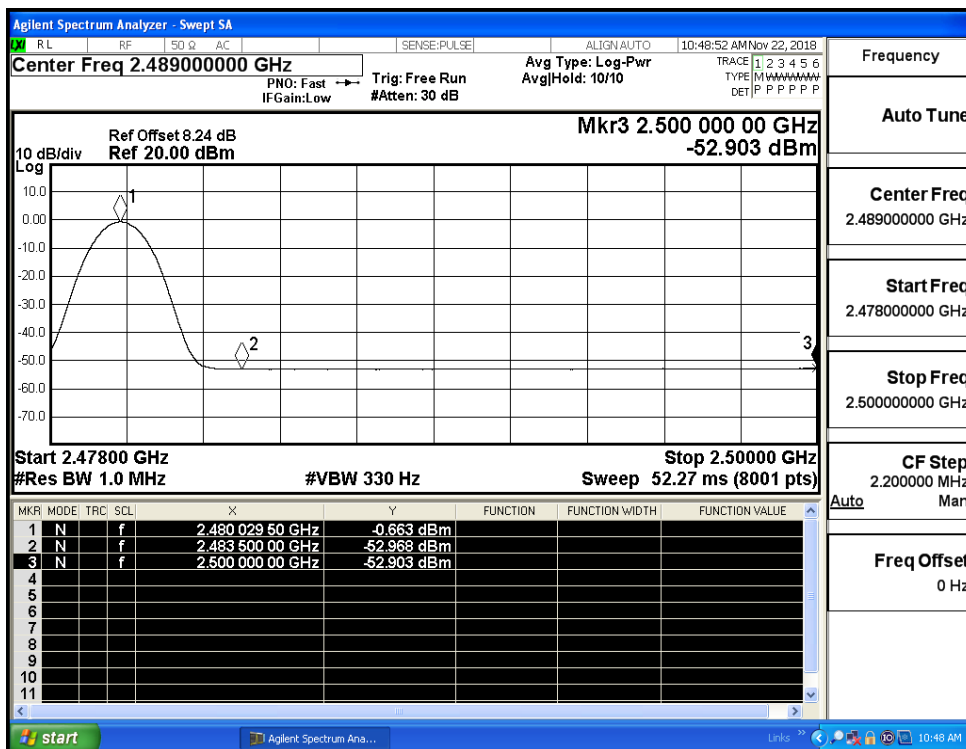
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

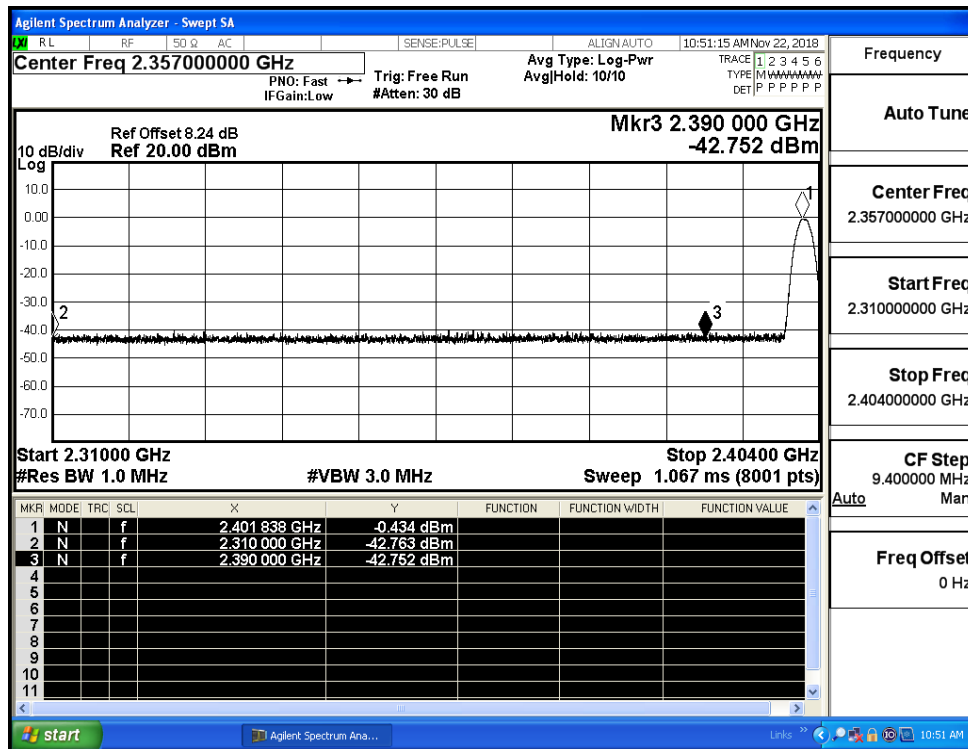
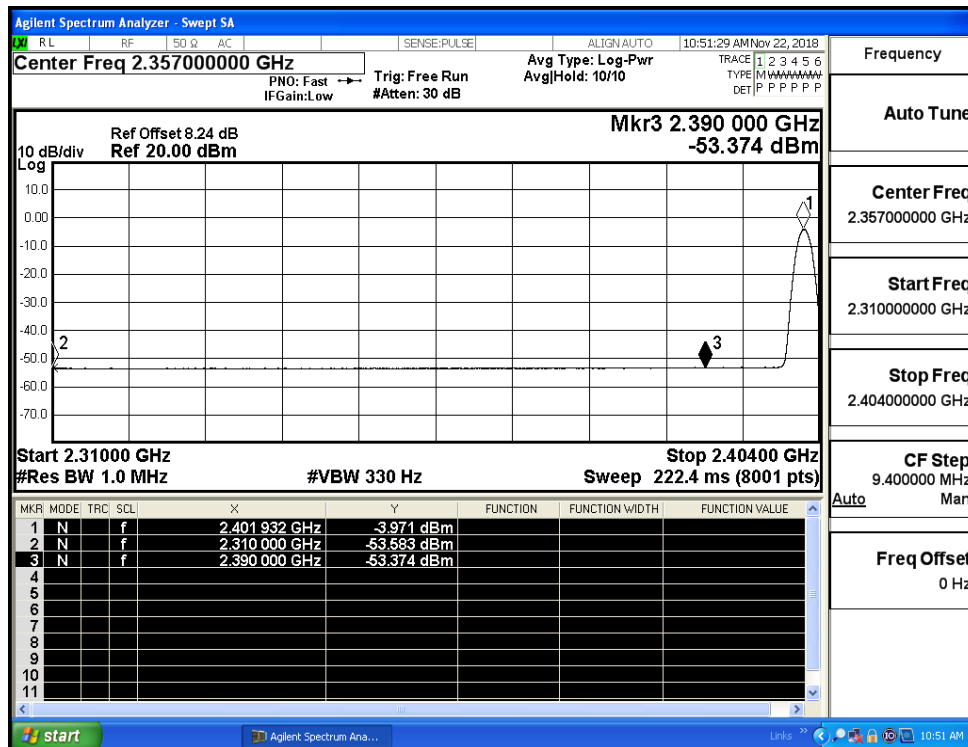


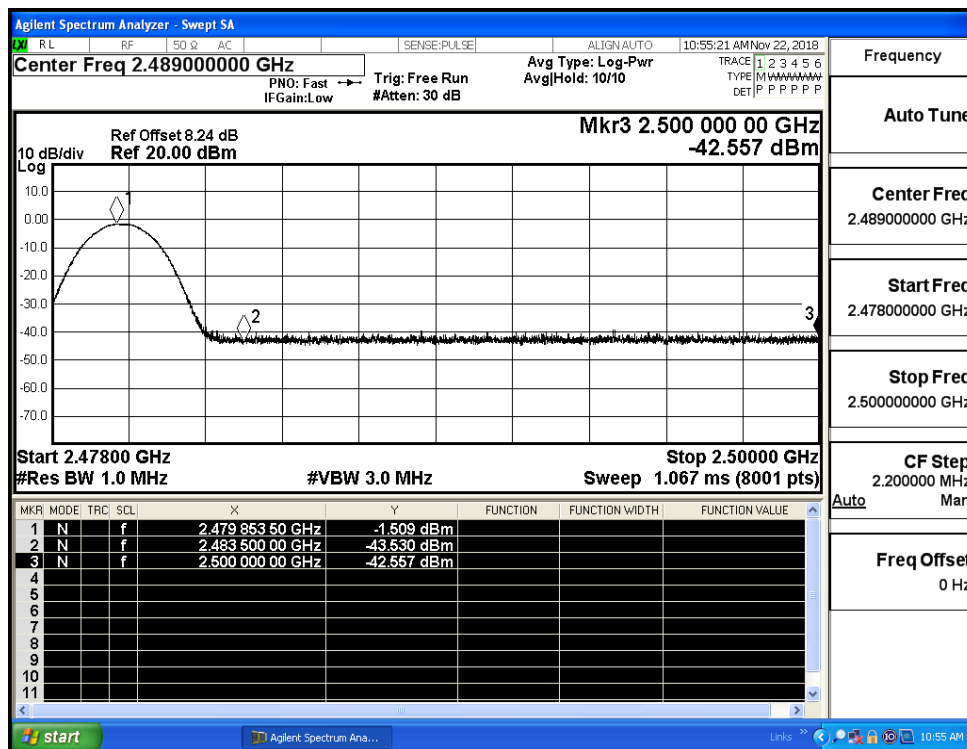
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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)