

Appendix A

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

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: BS-615S

Environmental Conditions

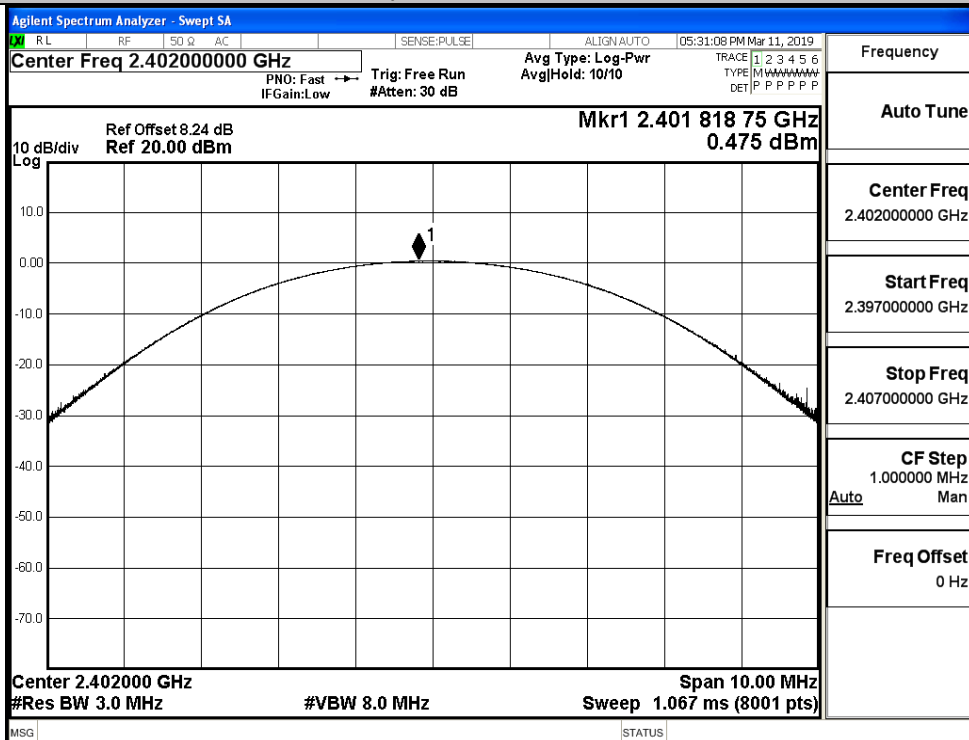
Temperature:	23.2 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.lu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

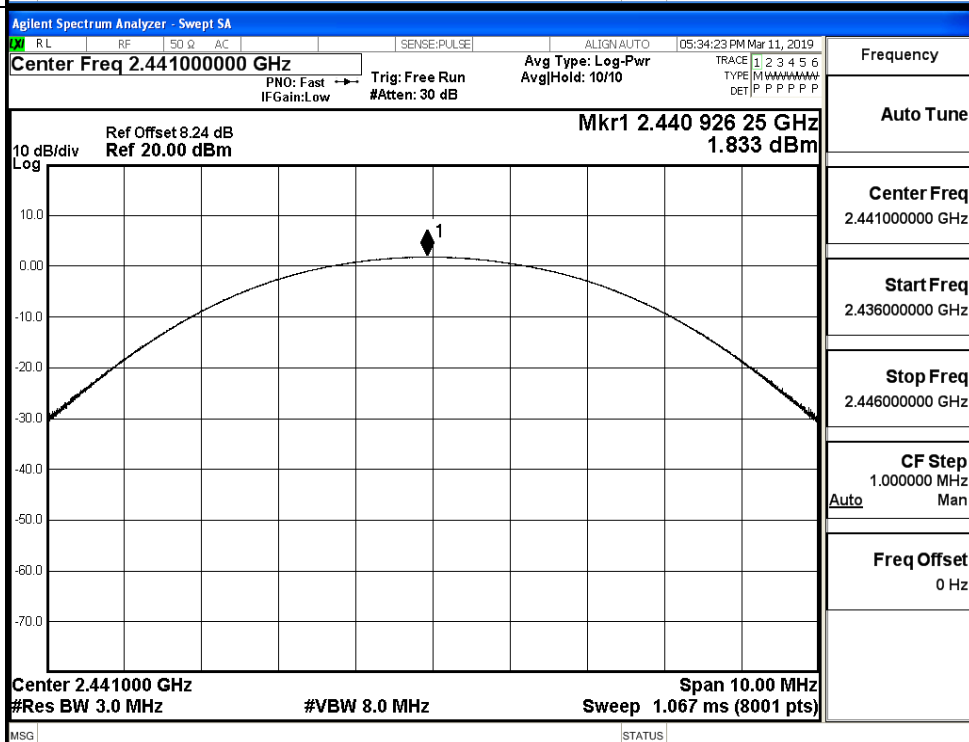
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.475	21	PASS
	MCH	1.833	21	PASS
	HCH	2.000	21	PASS
$\pi/4$ DQPSK	LCH	-0.011	21	PASS
	MCH	1.507	21	PASS
	HCH	1.439	21	PASS

Test Graphs

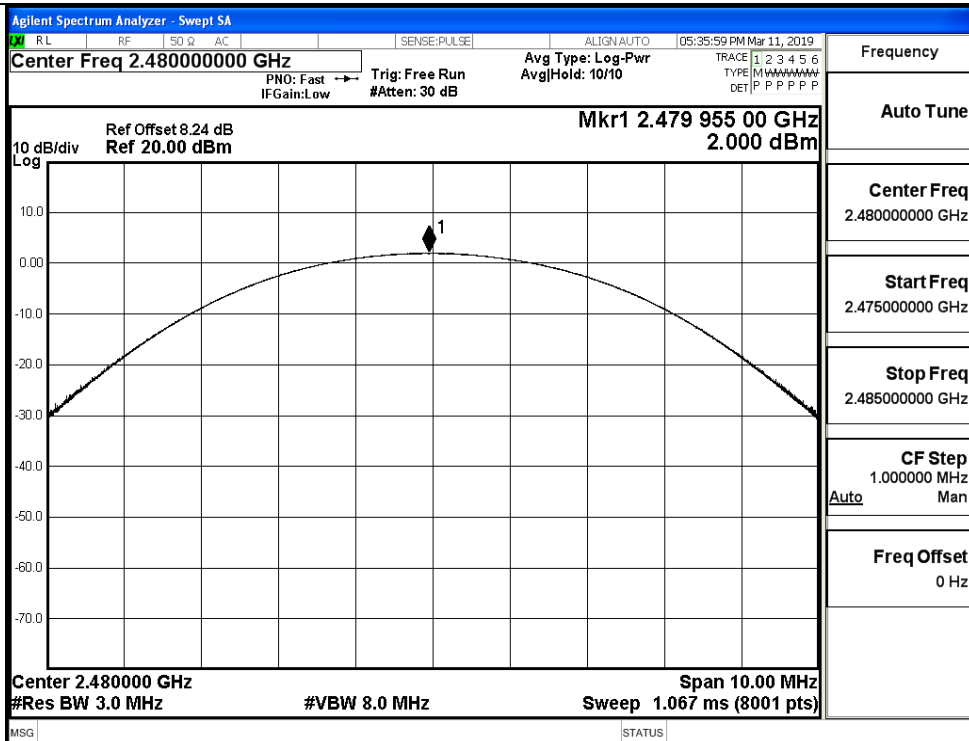
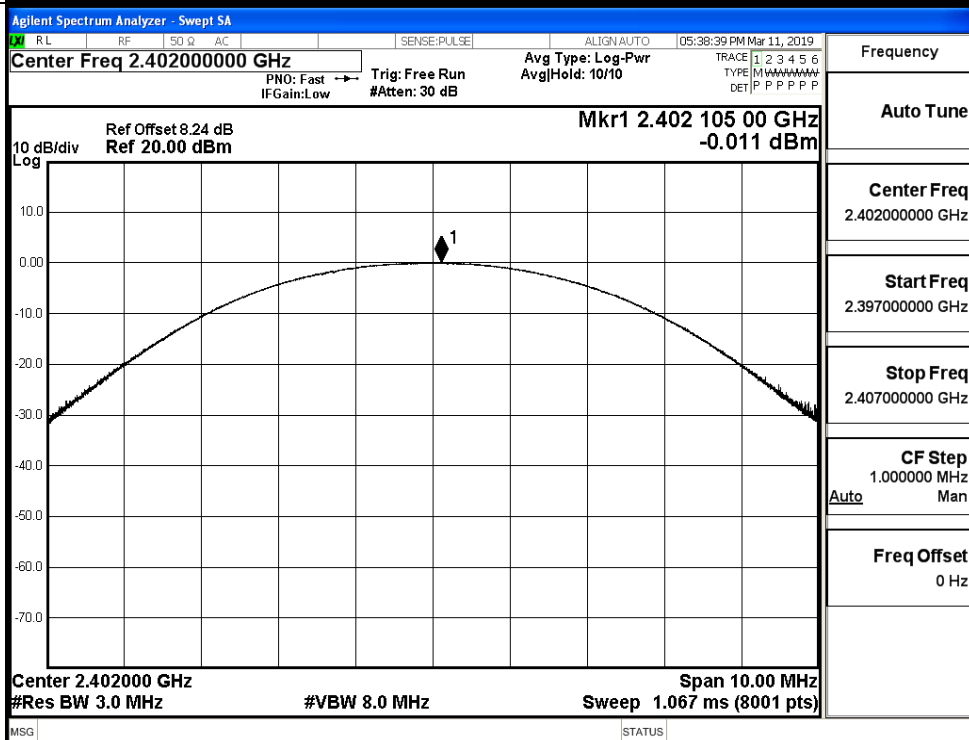
GFSK/LCH

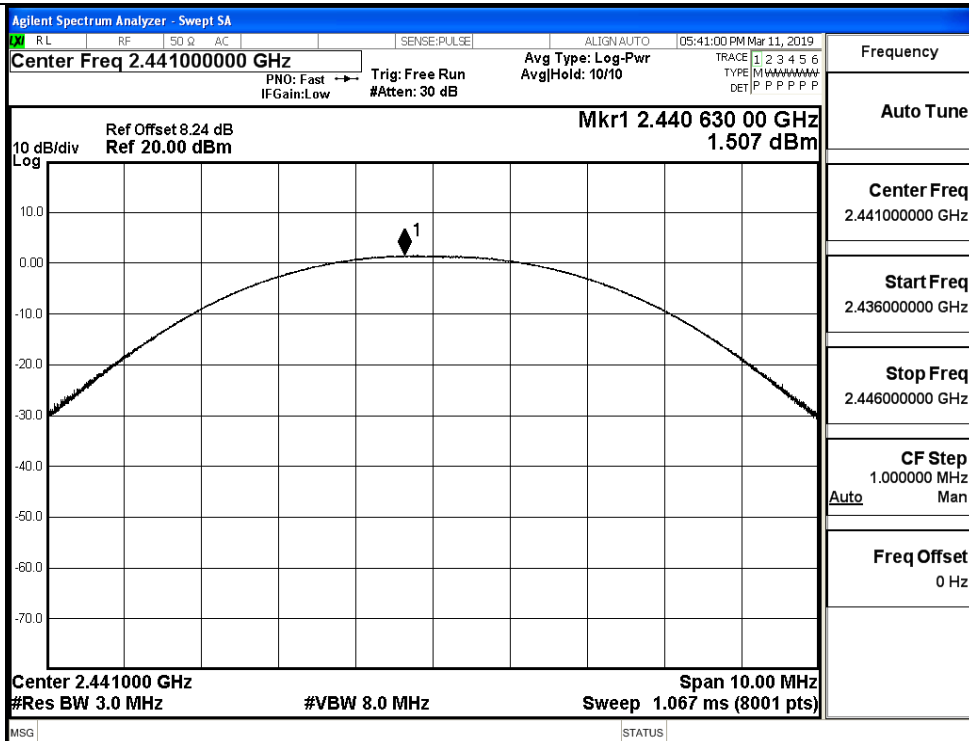
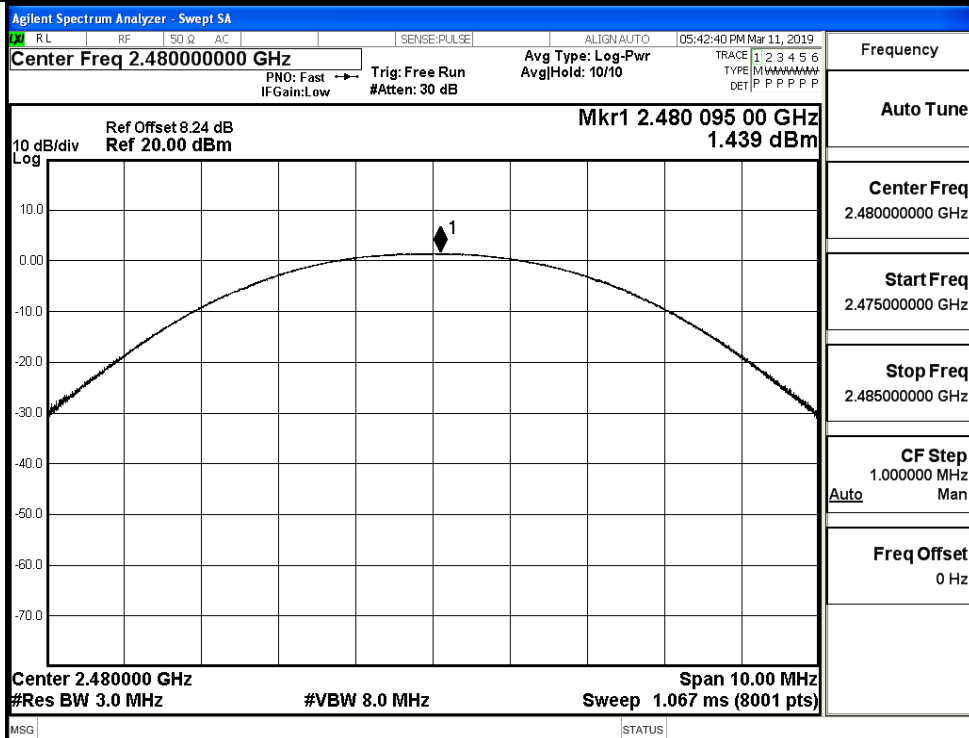


GFSK/MCH



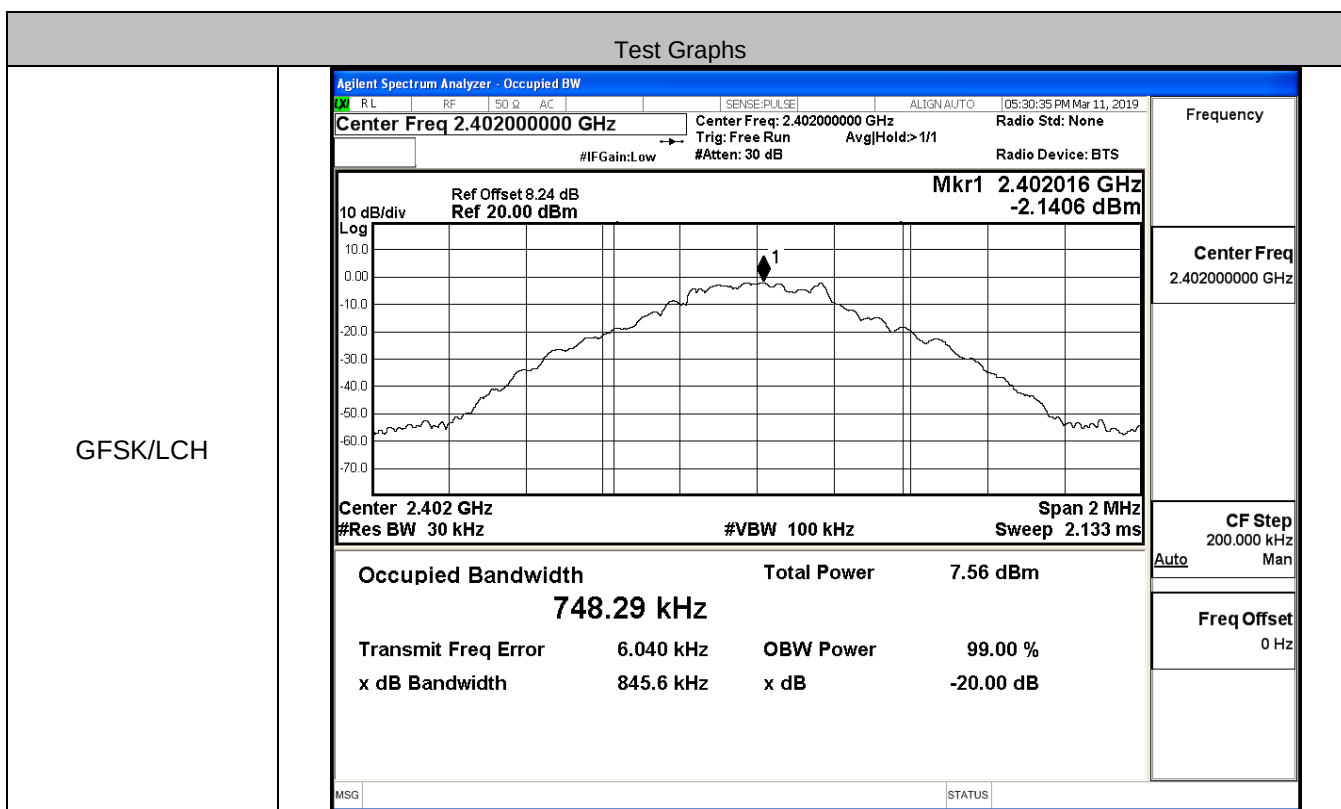
GFSK/HCH

 π /4DQPSK/LCH

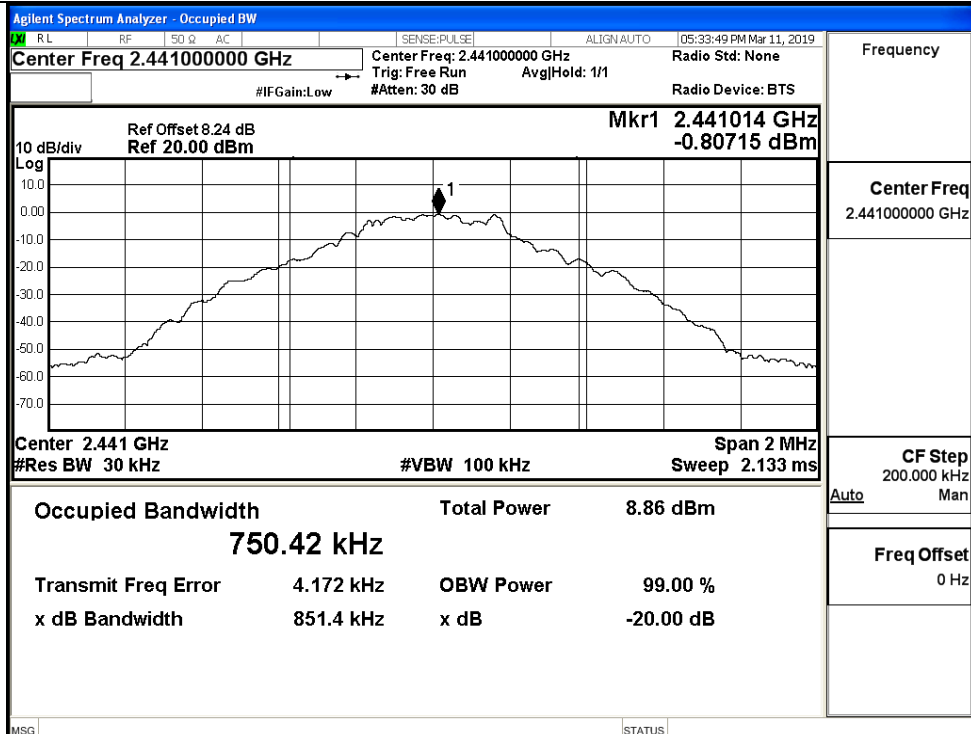
$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

A.2 99% and 20dB Bandwidth

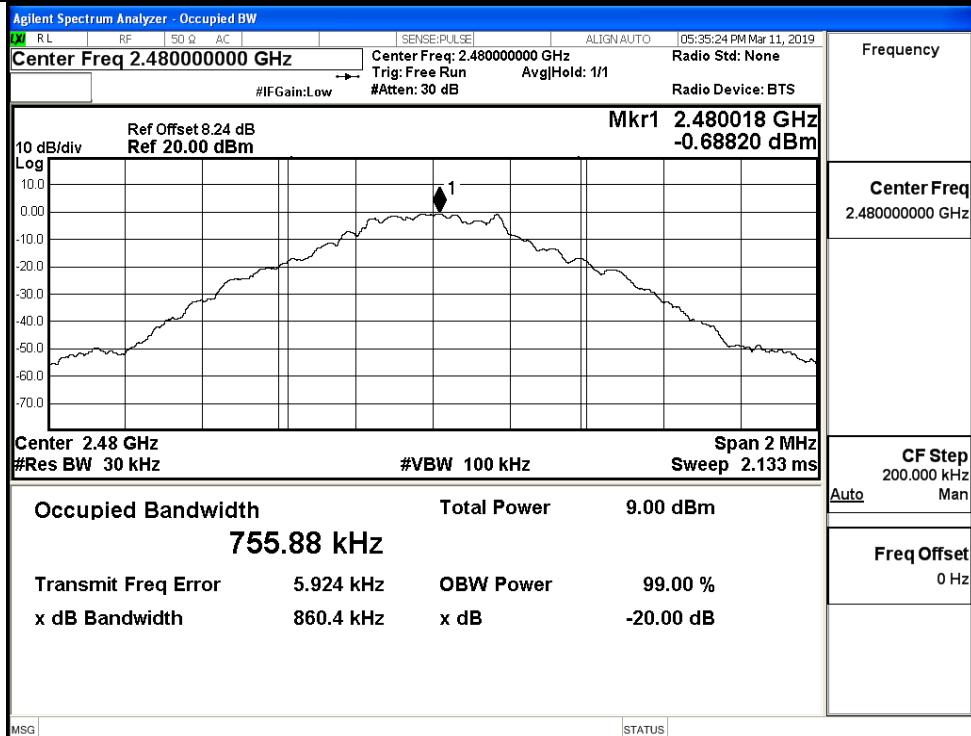
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.74829	0.8456	Not Specified	PASS
	MCH	0.75042	0.8514	Not Specified	PASS
	HCH	0.75588	0.8604	Not Specified	PASS
π /4DQPSK	LCH	1.1460	1.269	Not Specified	PASS
	MCH	1.1481	1.265	Not Specified	PASS
	HCH	1.1491	1.275	Not Specified	PASS

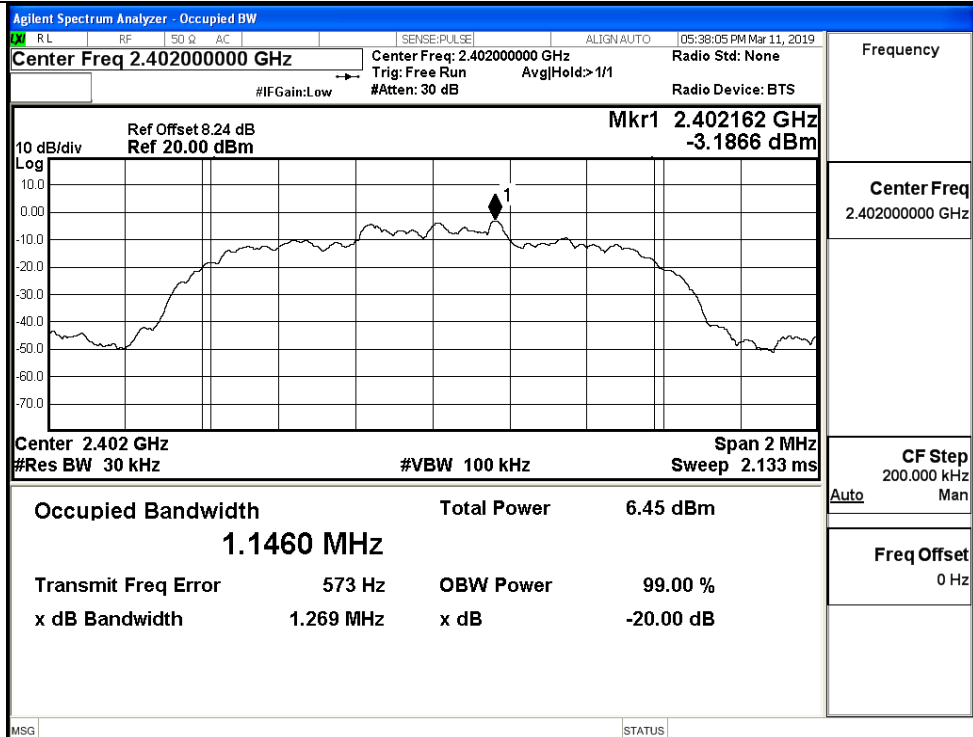
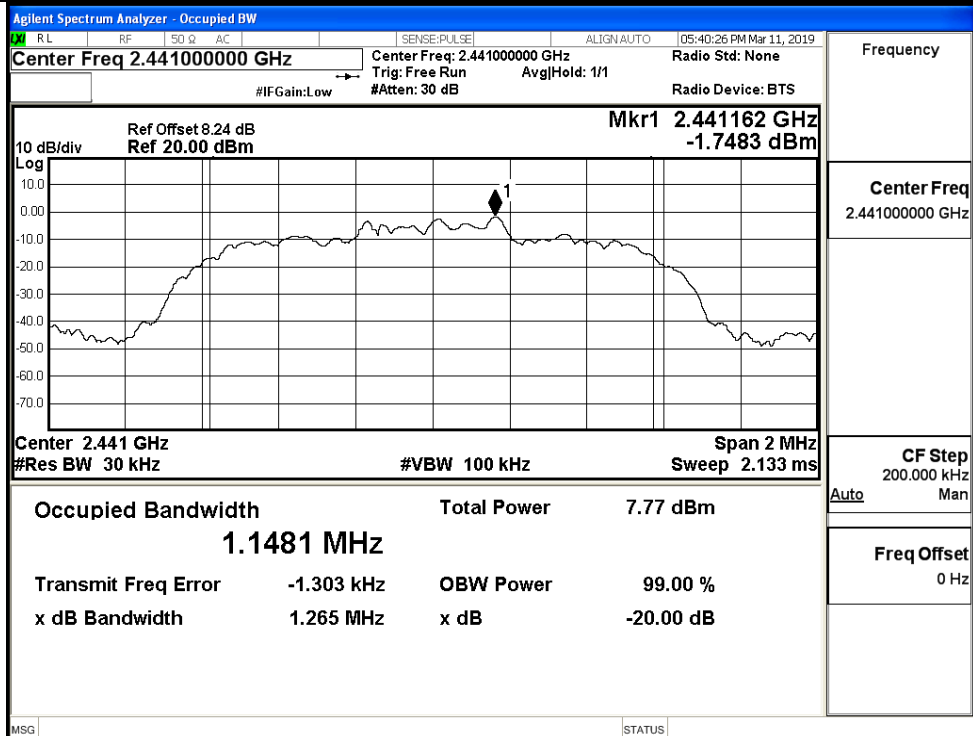


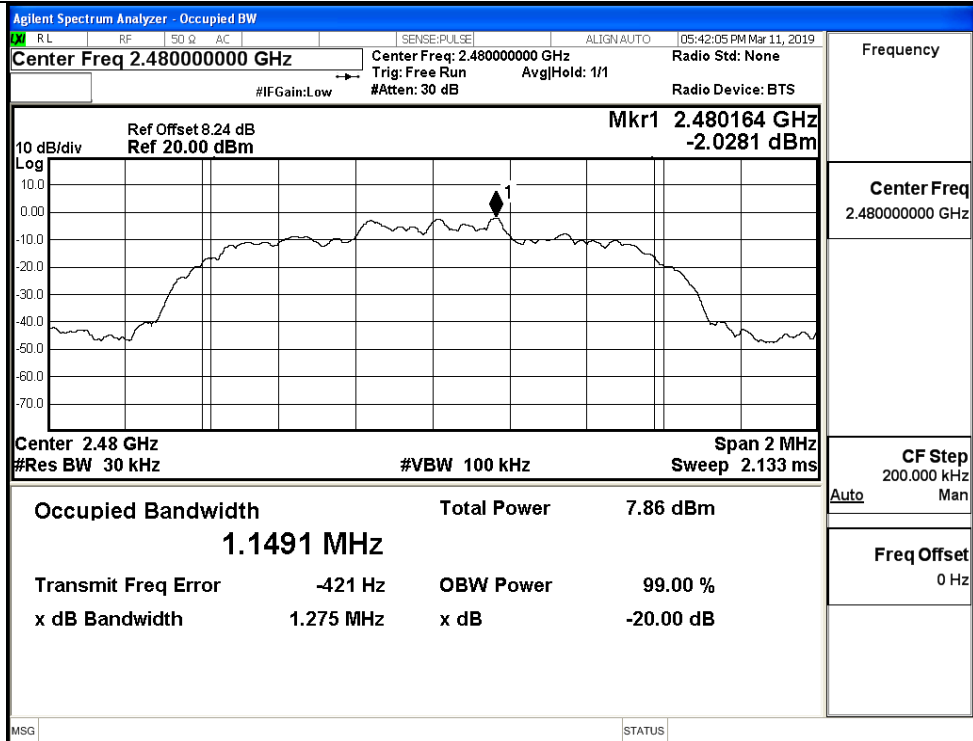
GFSK/MCH



GFSK/HCH



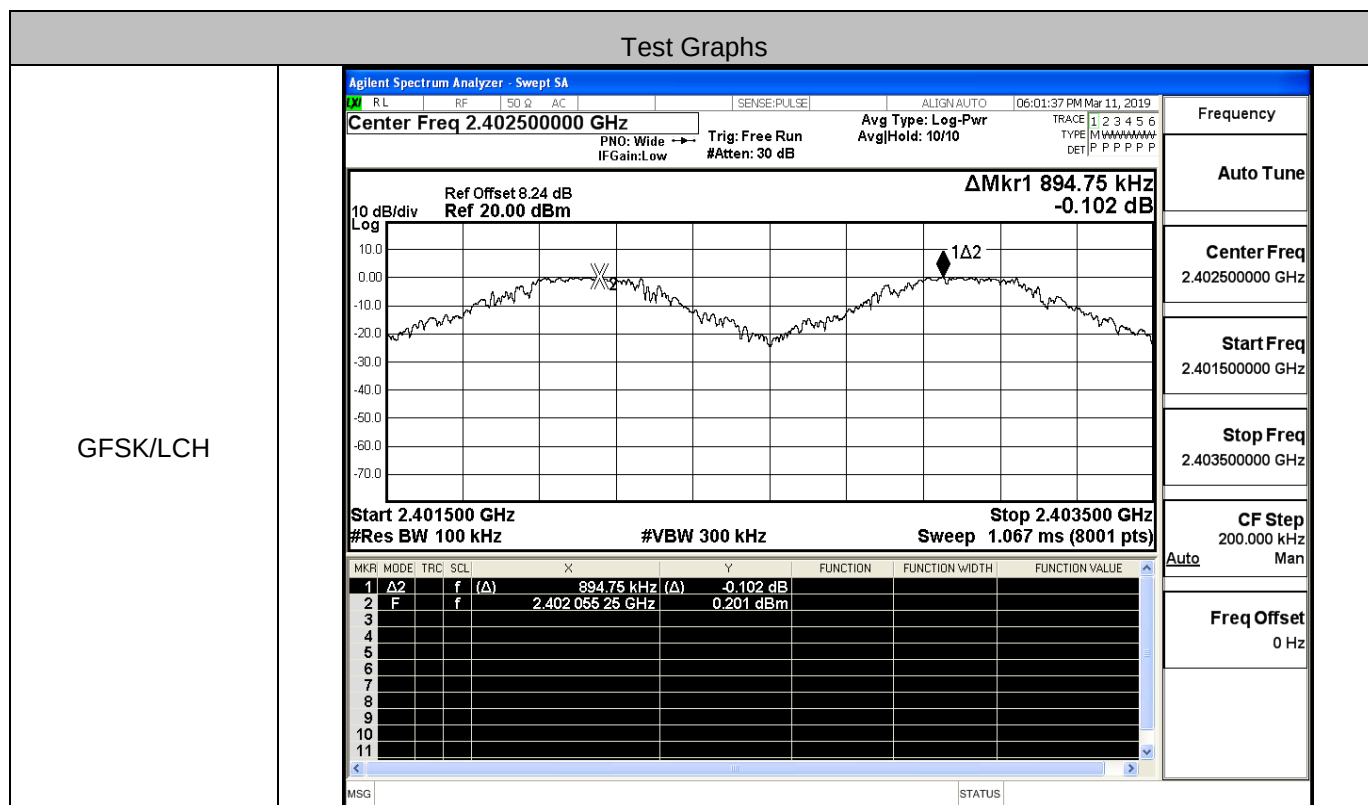
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

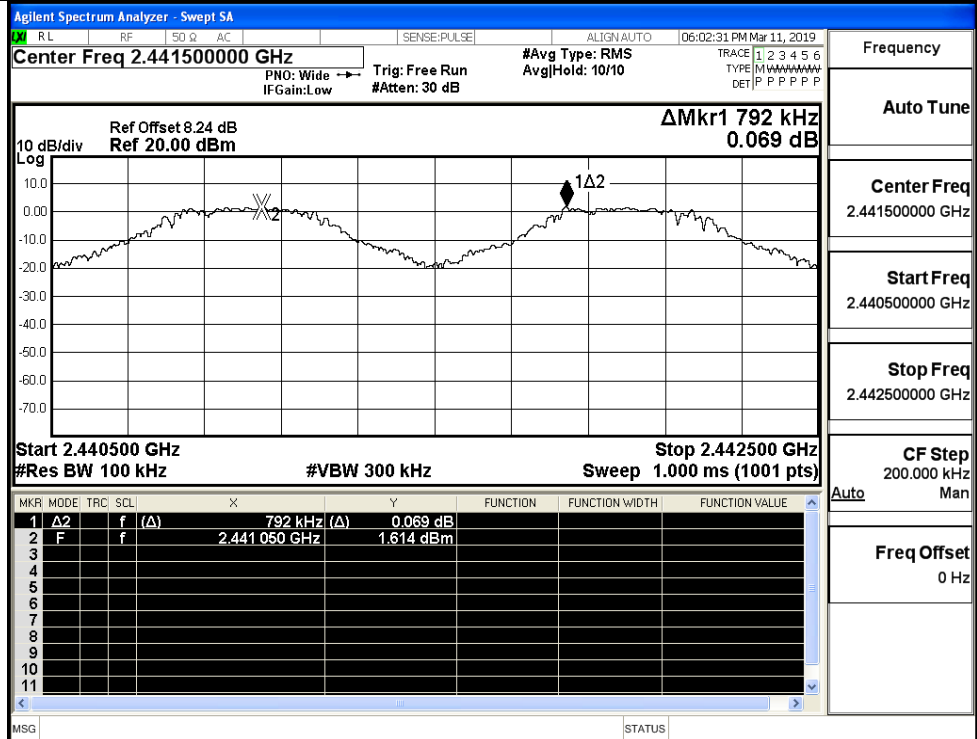
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.895	0.574	PASS
	MCH	0.792	0.574	PASS
	HCH	0.970	0.574	PASS
π /4DQPSK	LCH	0.958	0.850	PASS
	MCH	1.034	0.850	PASS
	HCH	1.316	0.850	PASS

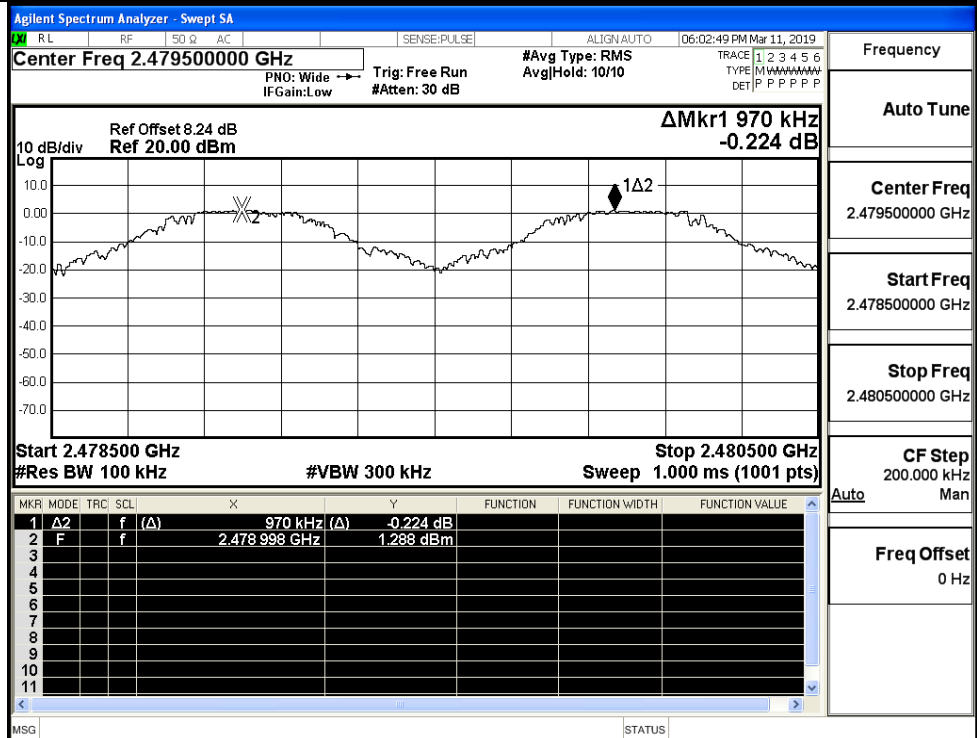
Test Graphs

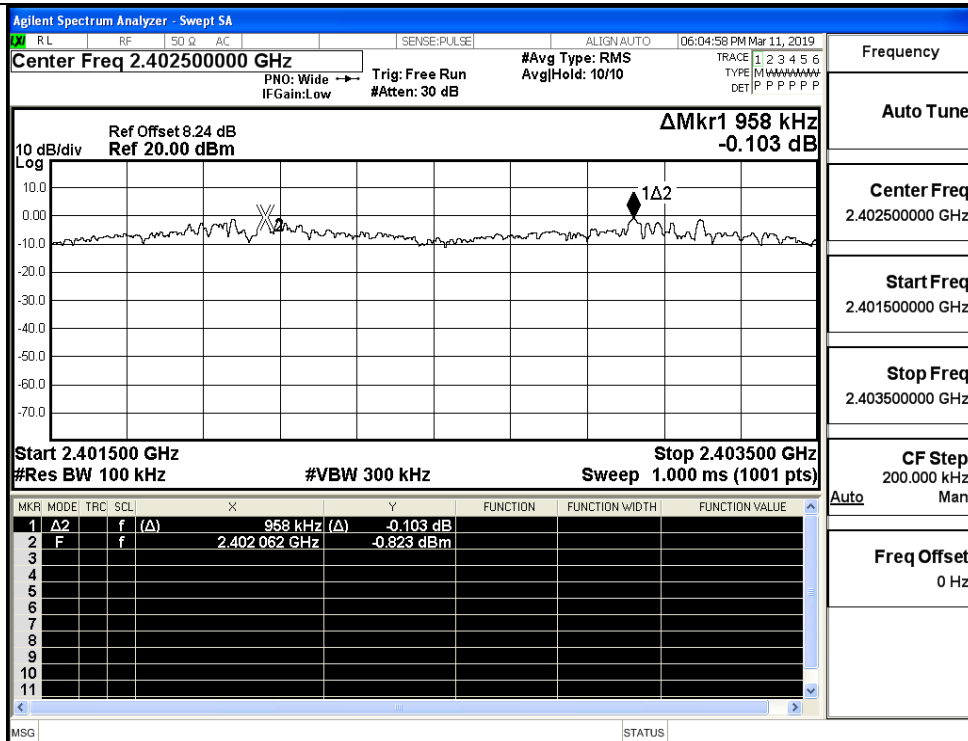
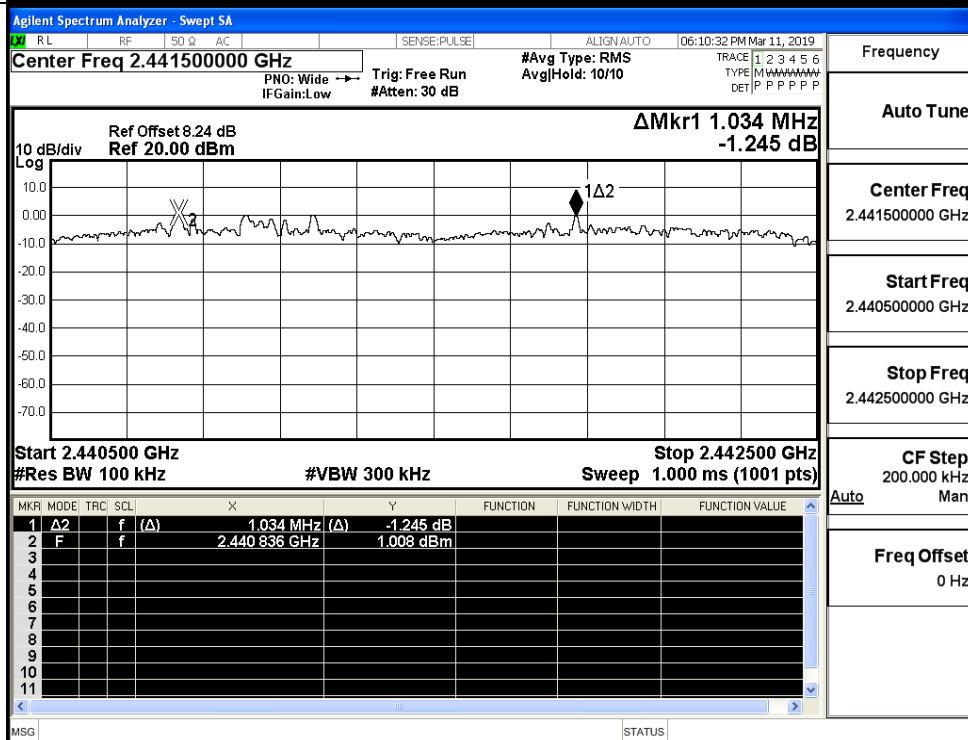


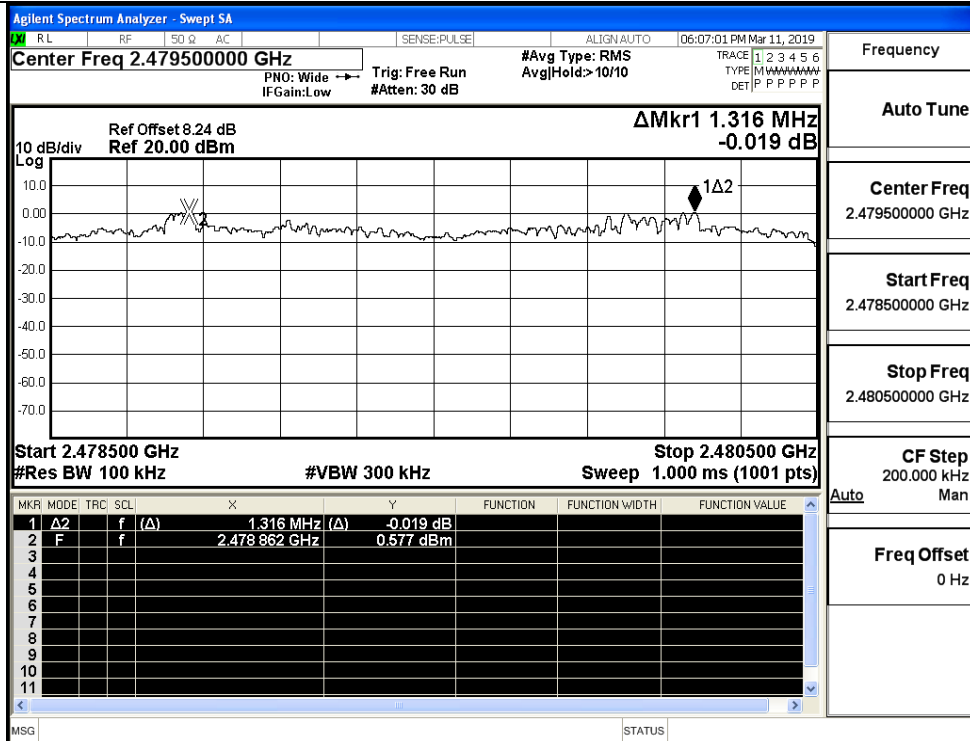
GFSK/MCH



GFSK/HCH



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

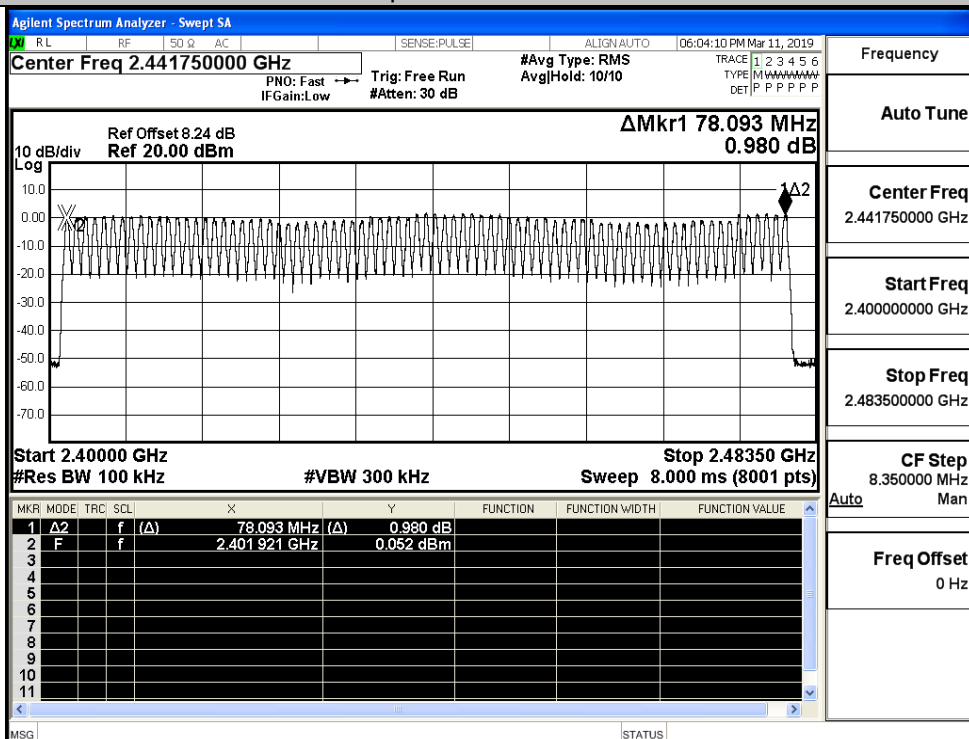
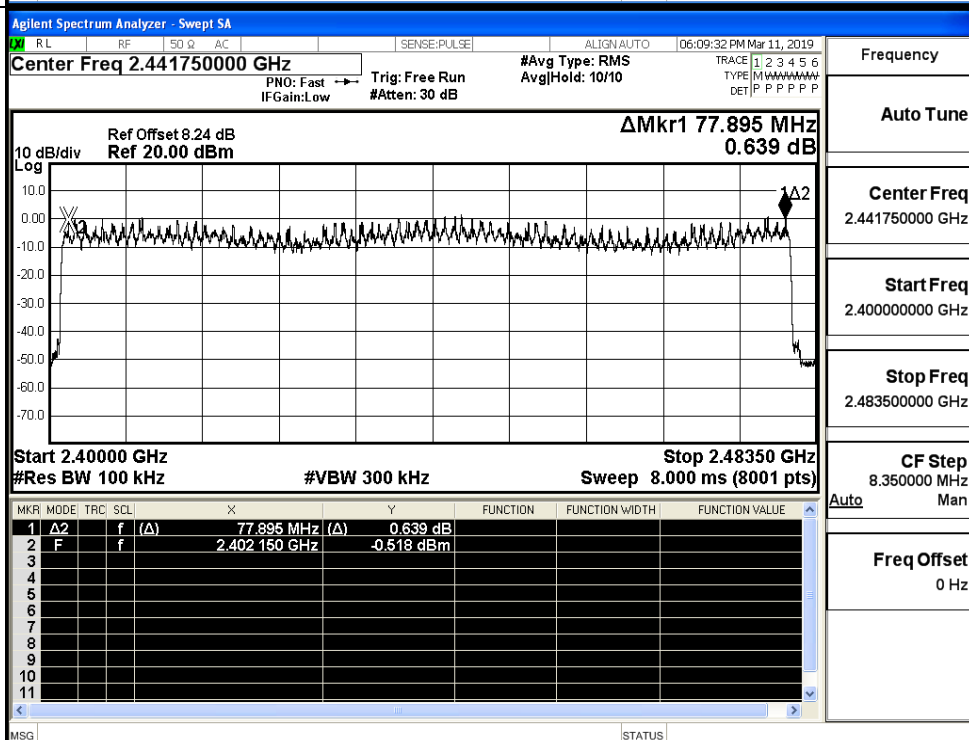
$\pi/4$ DQPSK/HCH

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

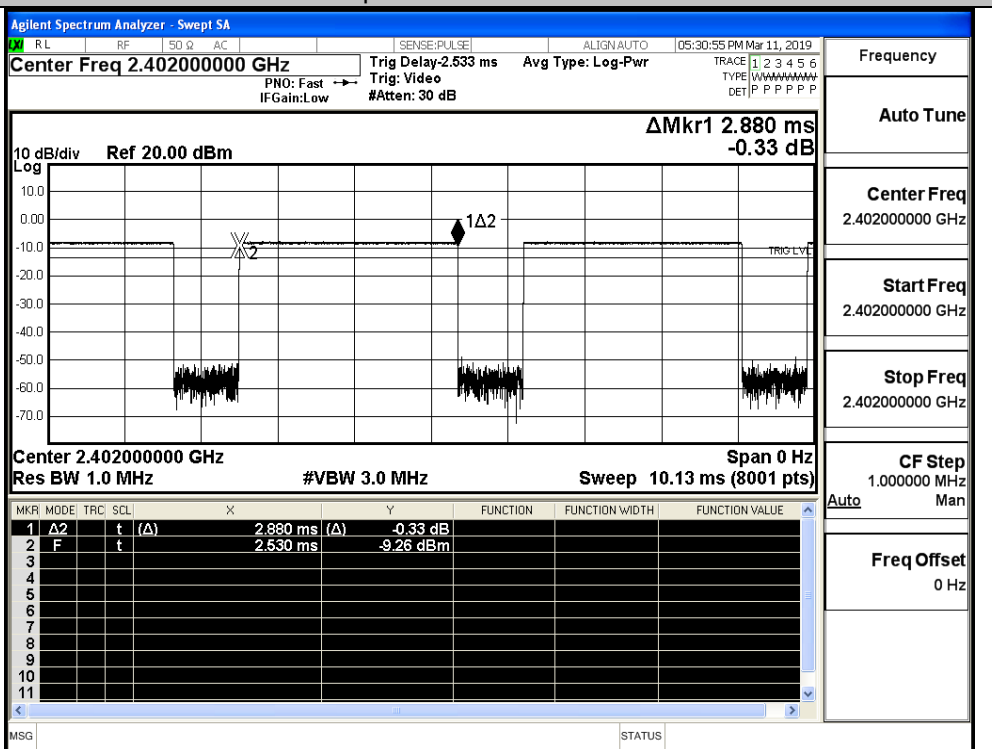
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

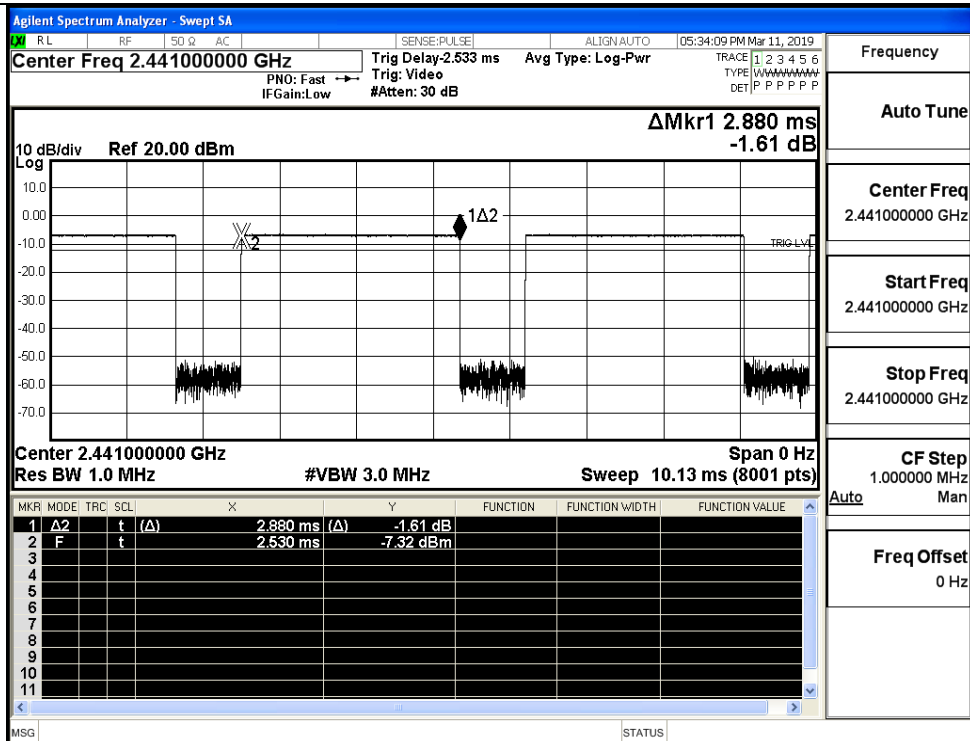
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

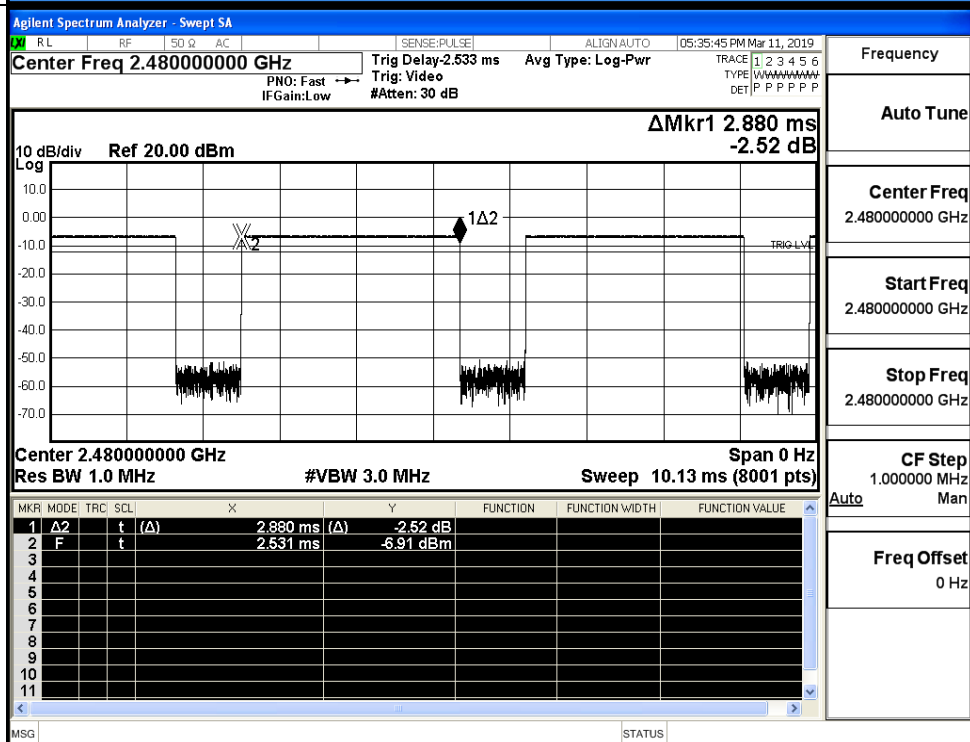
GFSK_DH5/LCH



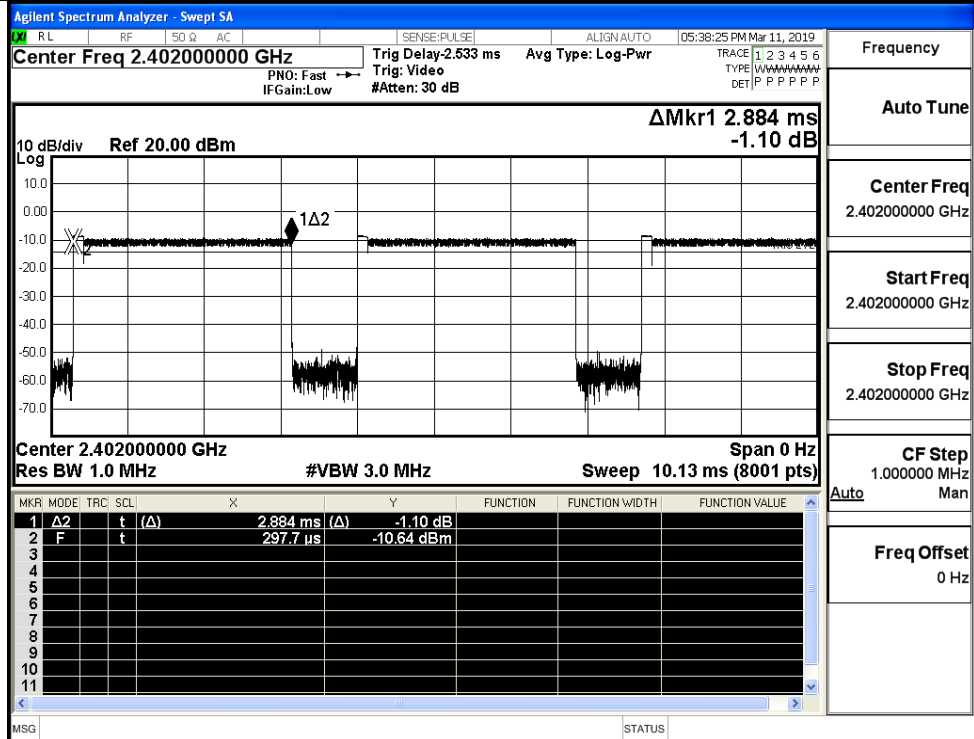
GFSK_DH5/MCH



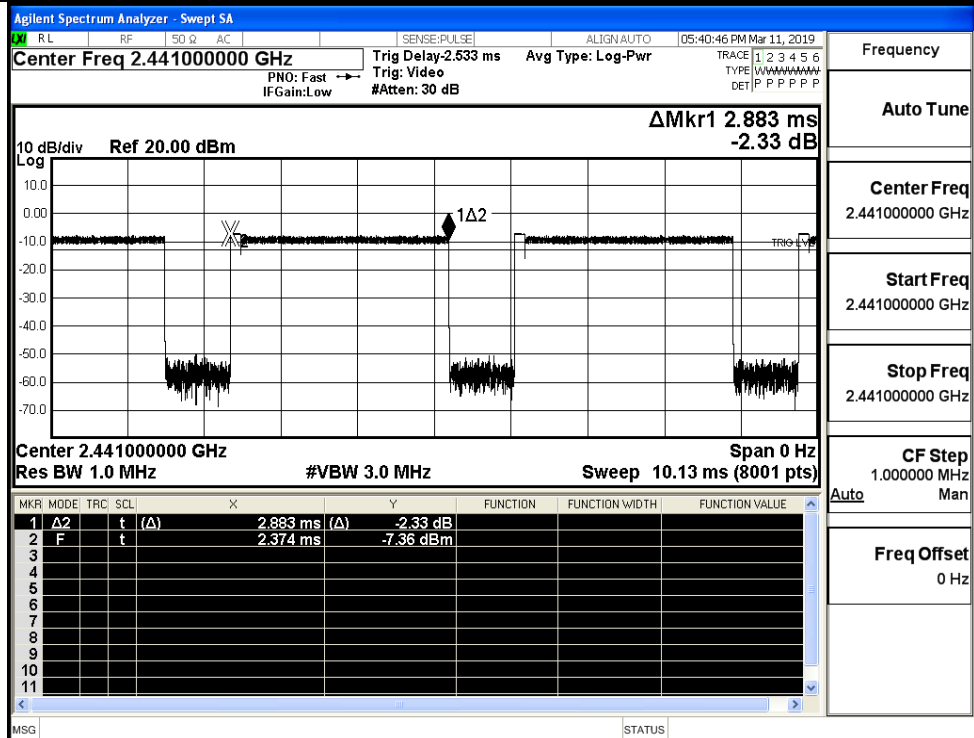
GFSK_DH5/HCH



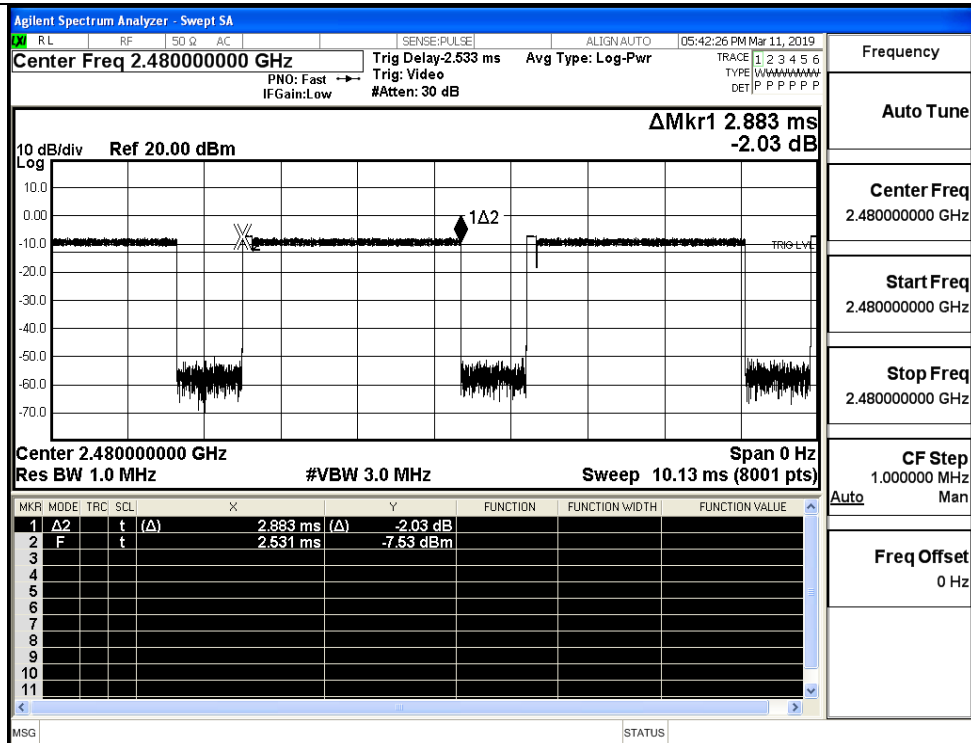
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



π/4DQPSK
_2DH5/HCH

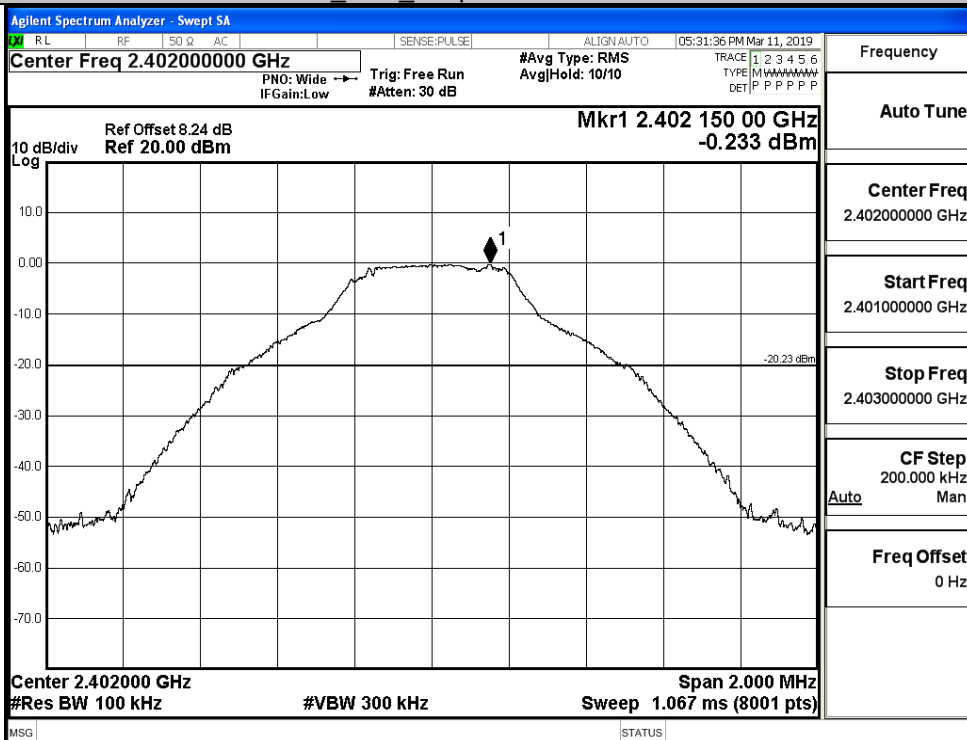


A.6 RF Conducted Spurious Emissions

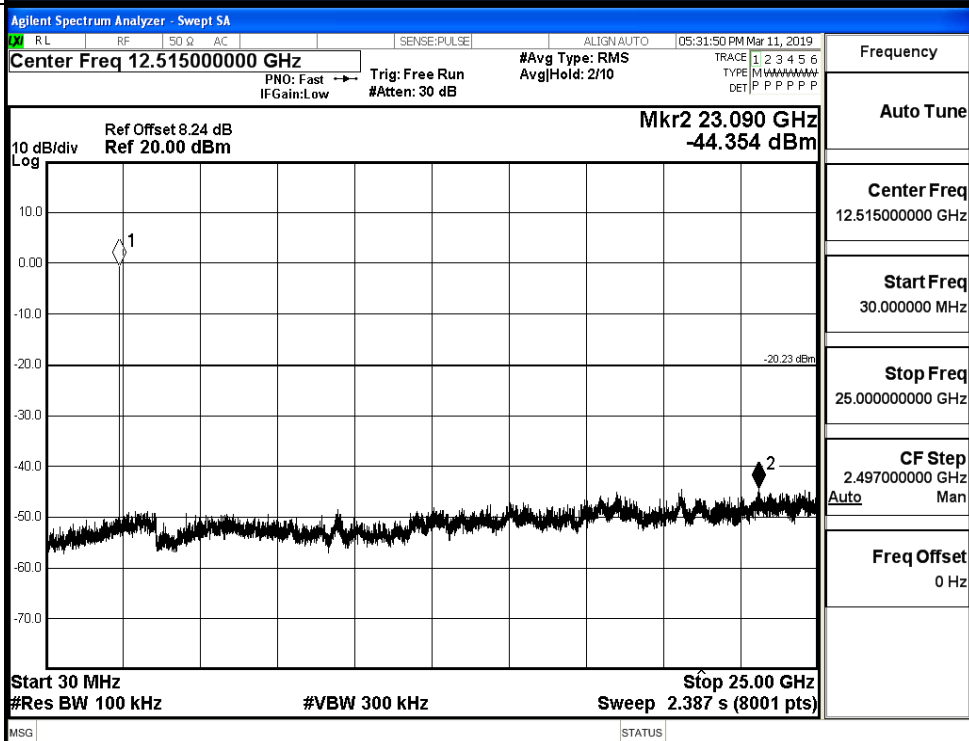
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.233	-44.354	-20.233	PASS
	MCH	1.191	-44.407	-18.809	PASS
	HCH	1.39	-44.533	-18.610	PASS
$\pi/4$ DQPSK	LCH	-0.107	-44.372	-20.107	PASS
	MCH	1.285	-43.277	-18.715	PASS
	HCH	0.833	-42.434	-19.167	PASS

GFSK LCH Graphs

Pref

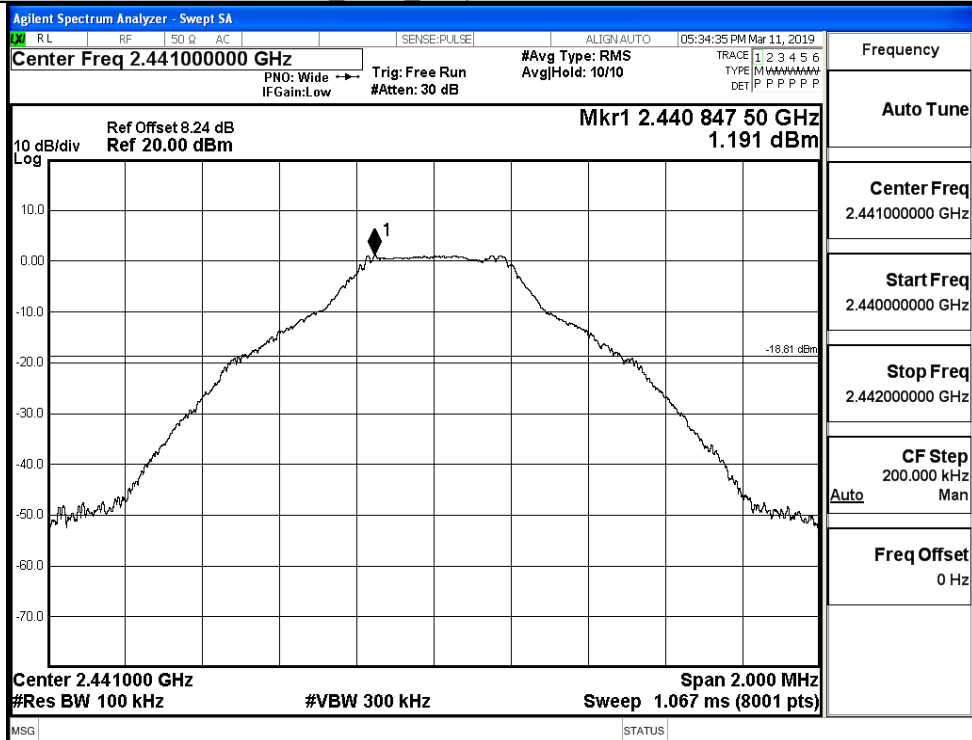


Puw

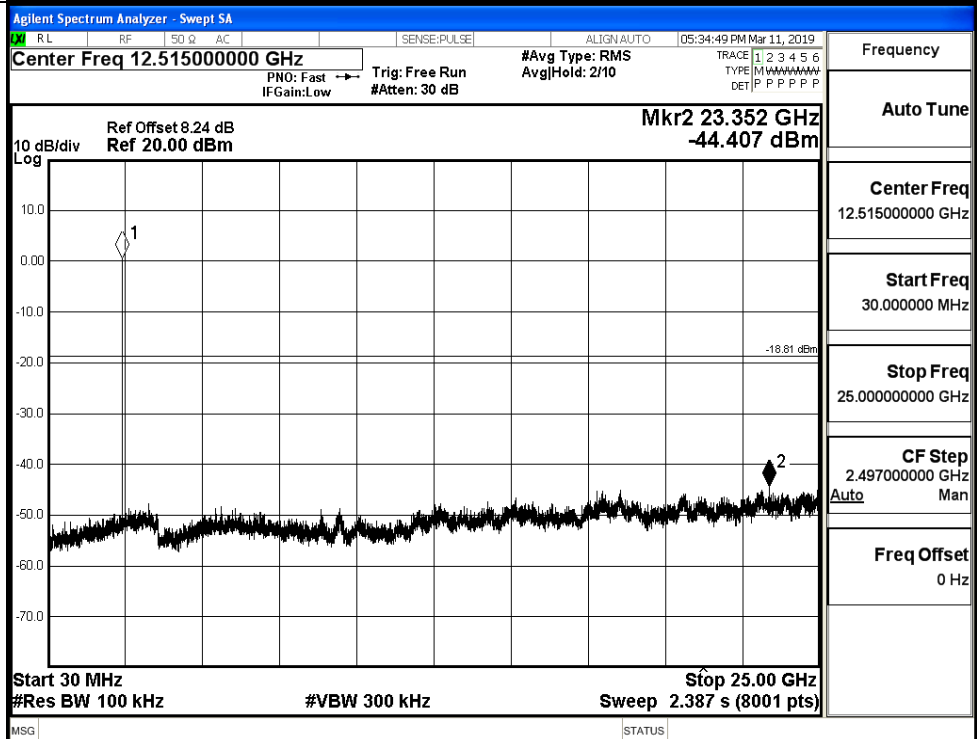


GFSK_MCH_Graphs

Pref

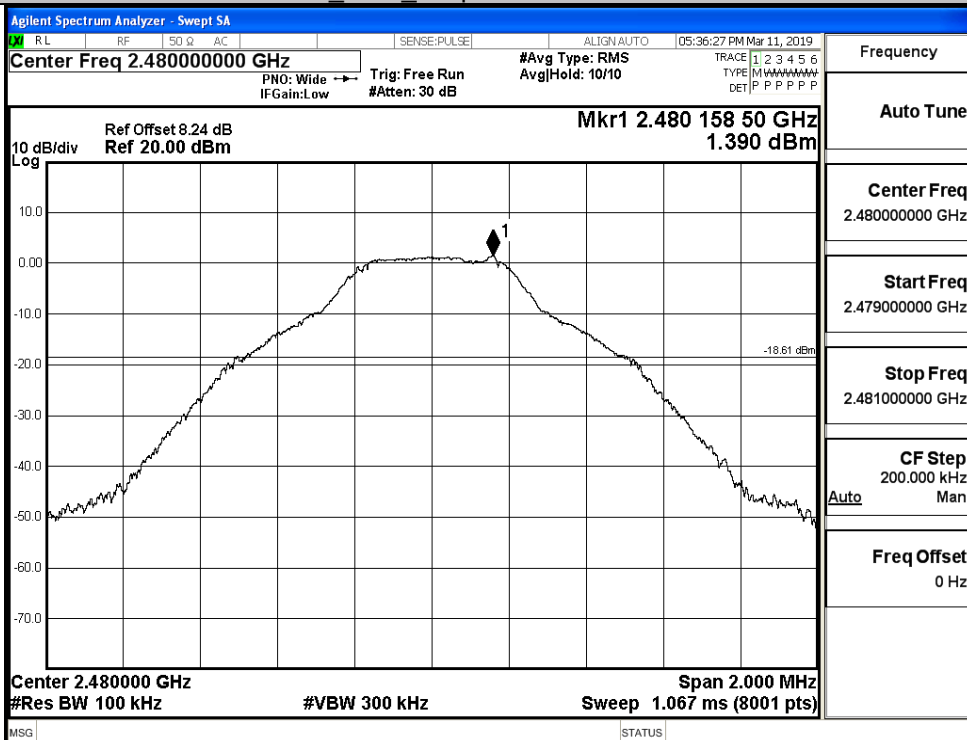


Puw

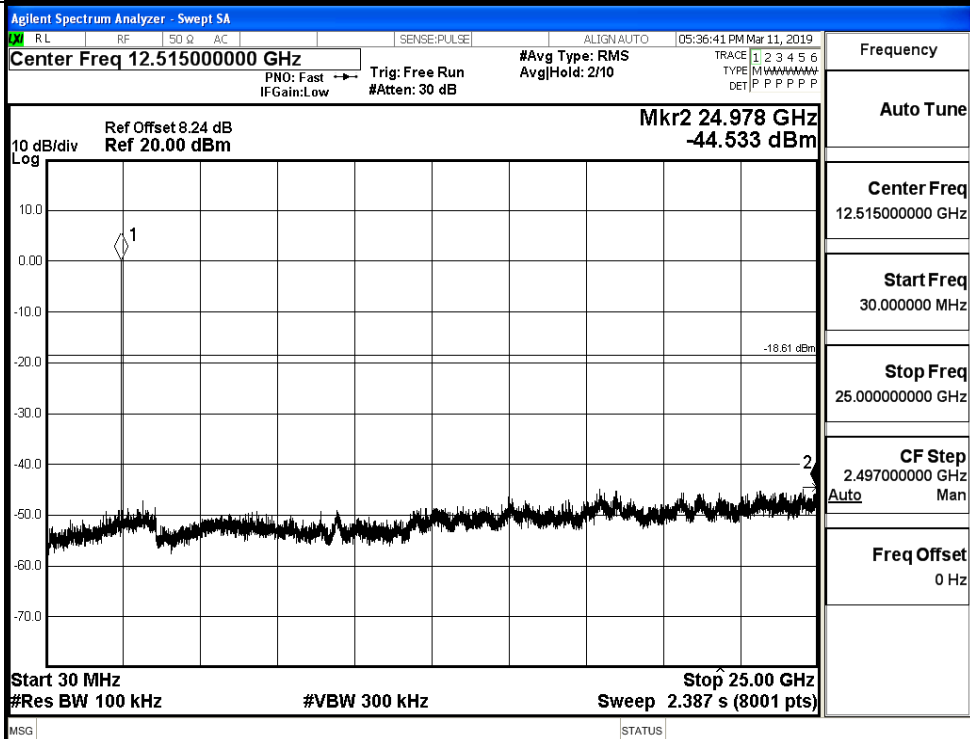


GFSK_HCH_Graphs

Pref

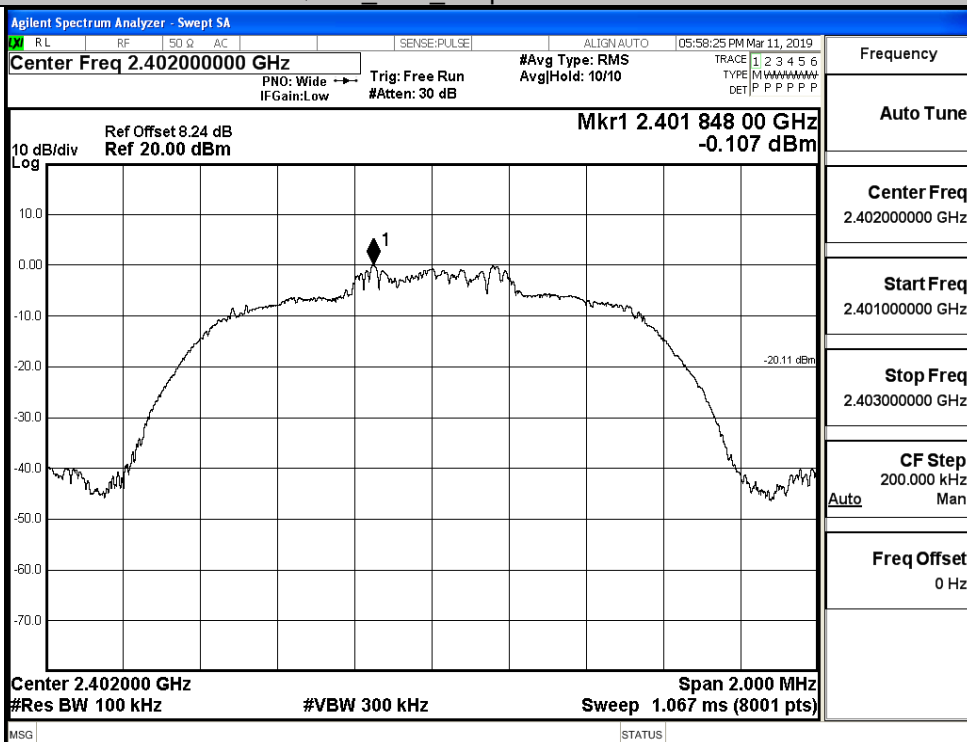


Puw

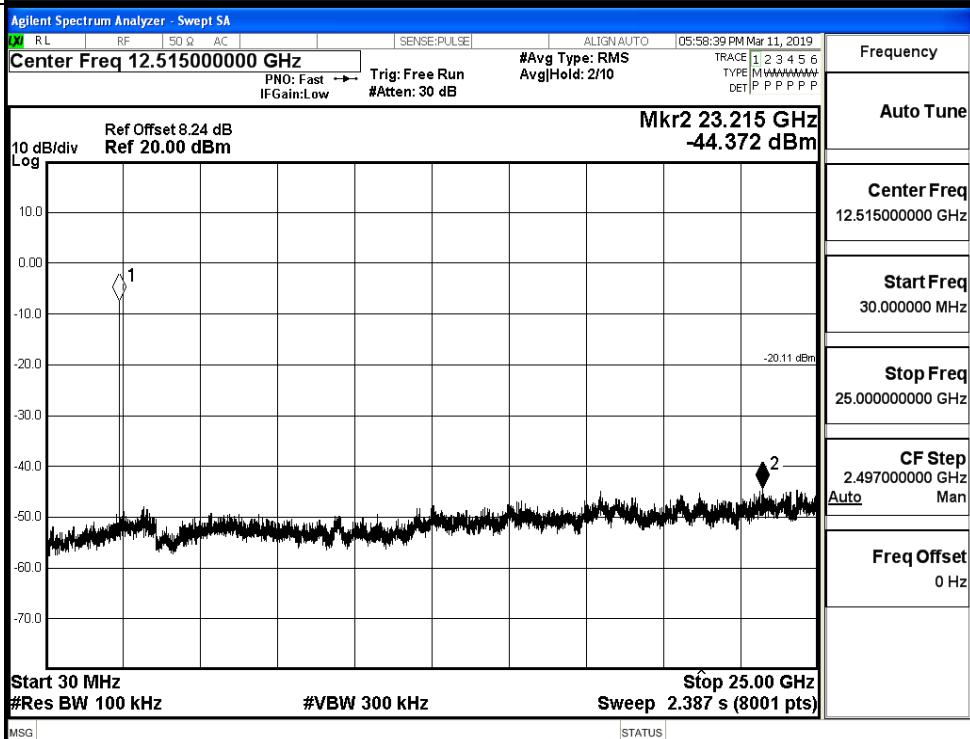


π /4DQPSK LCH_Graphs

Pref

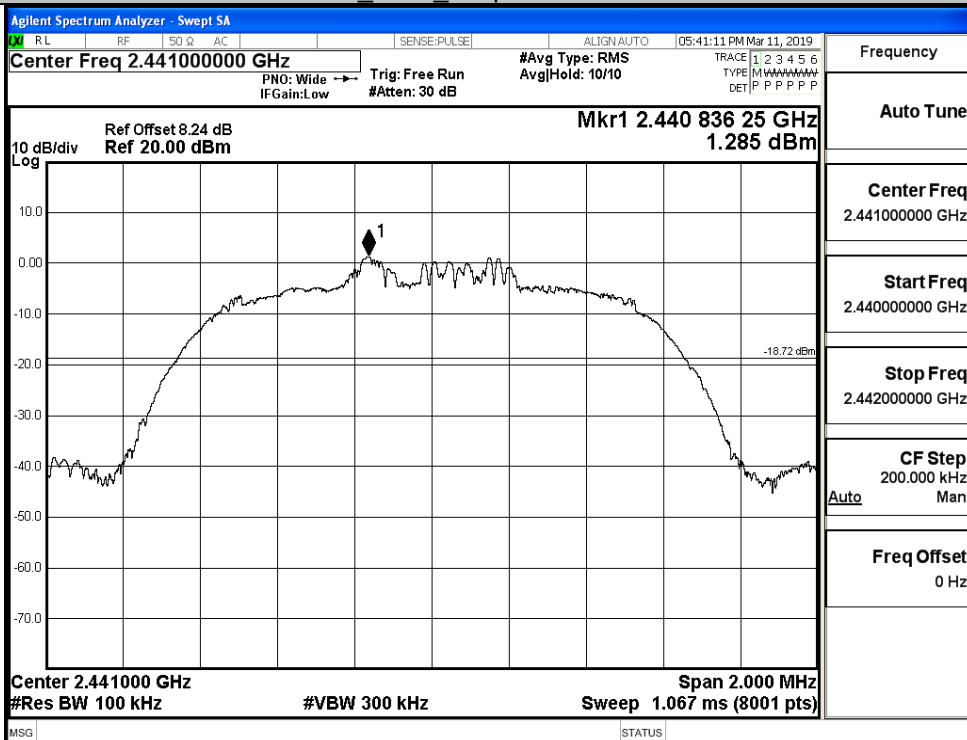


Puw

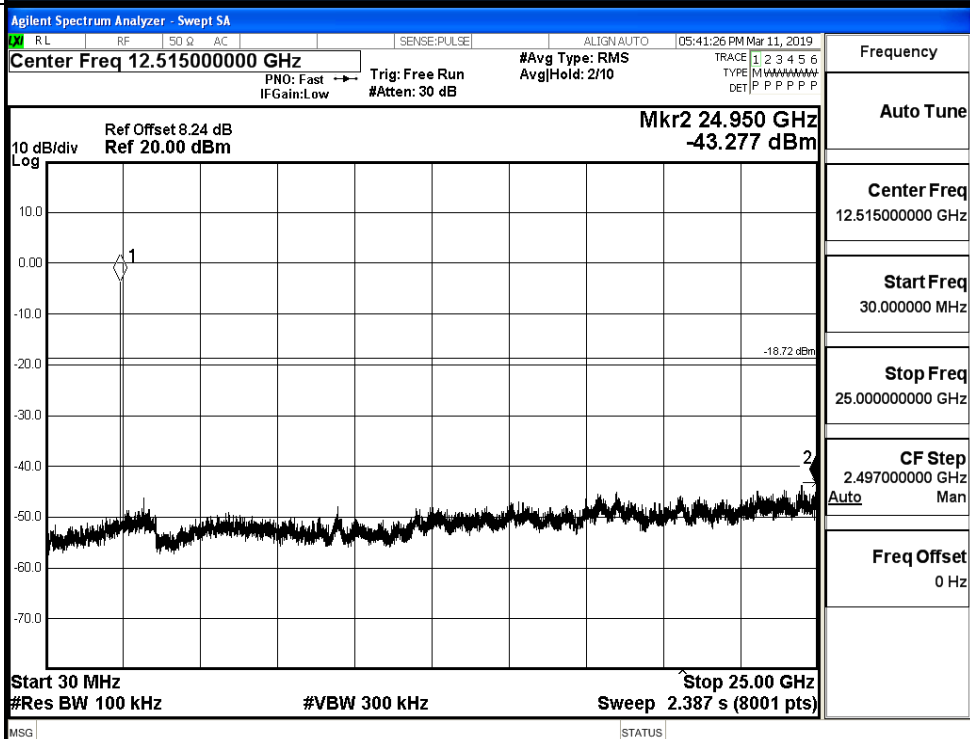


π /4DQPSK_MCH_Graphs

Pref

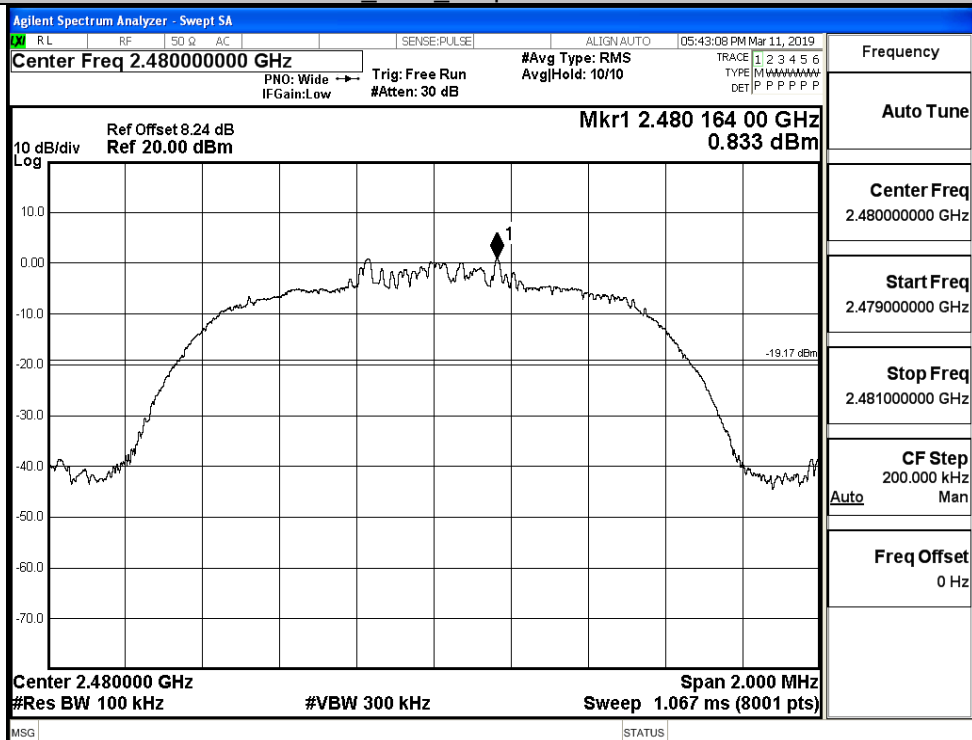


Puw

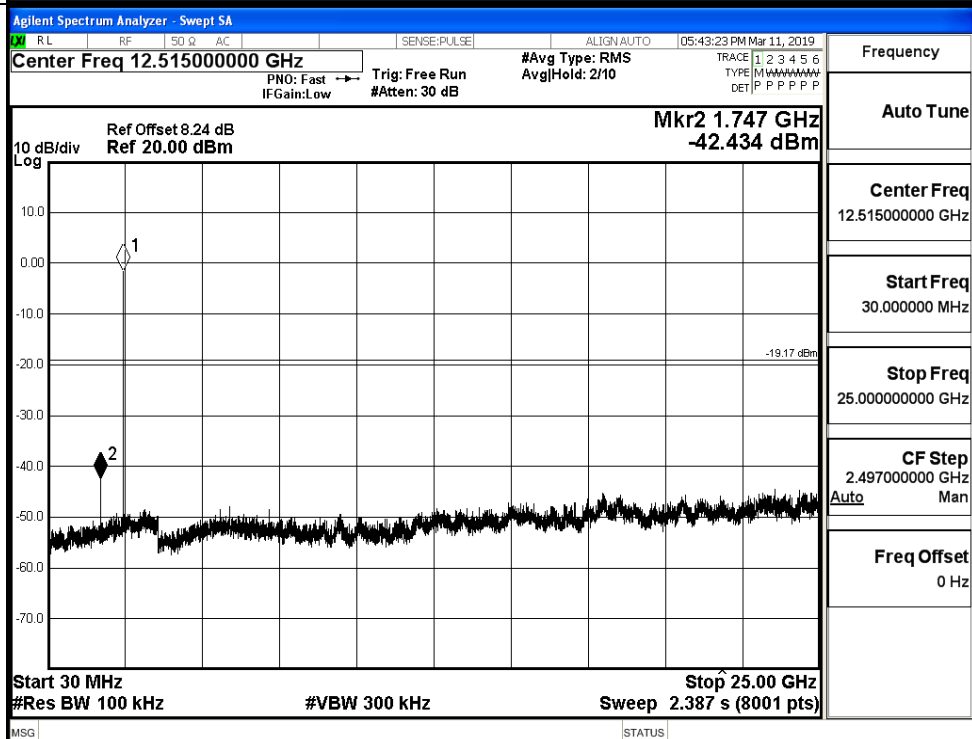


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

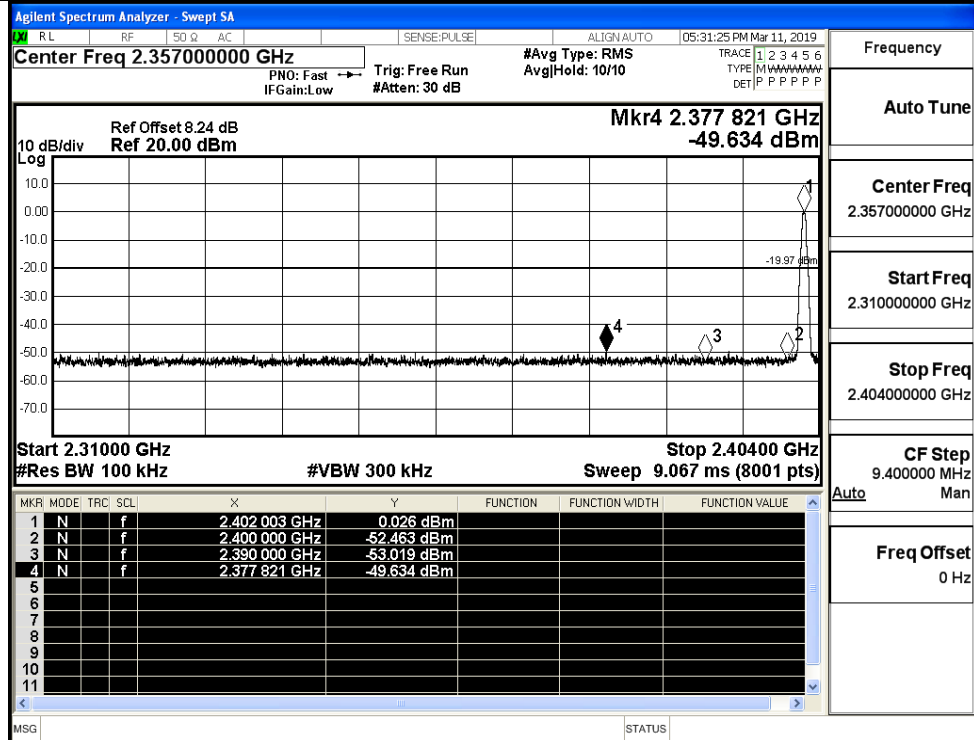


A.7 Band-edge for RF Conducted Emissions

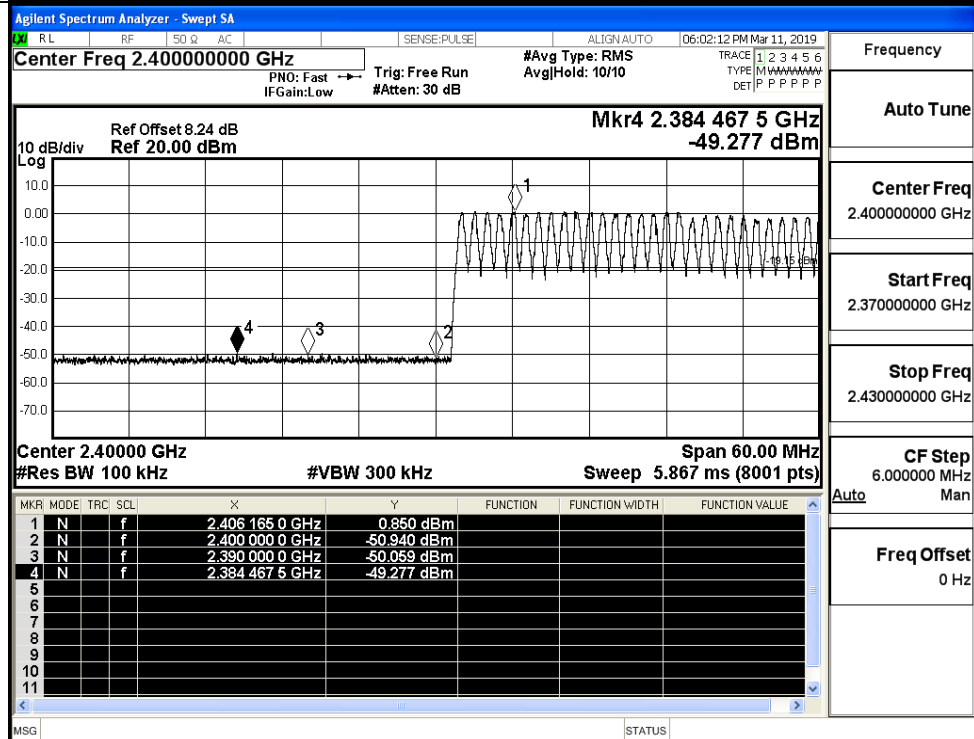
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.026	Off	-49.634	-19.97	PASS
			0.850	On	-49.277	-19.15	PASS
	HCH	2480	1.577	Off	-49.605	-18.42	PASS
			1.460	On	-48.995	-18.54	PASS
$\pi/4$ DQPSK	LCH	2402	-0.357	Off	-50.015	-20.36	PASS
			0.466	On	-49.697	-19.53	PASS
	HCH	2480	0.936	Off	-49.602	-19.06	PASS
			0.946	On	-49.198	-19.05	PASS

Test Graphs

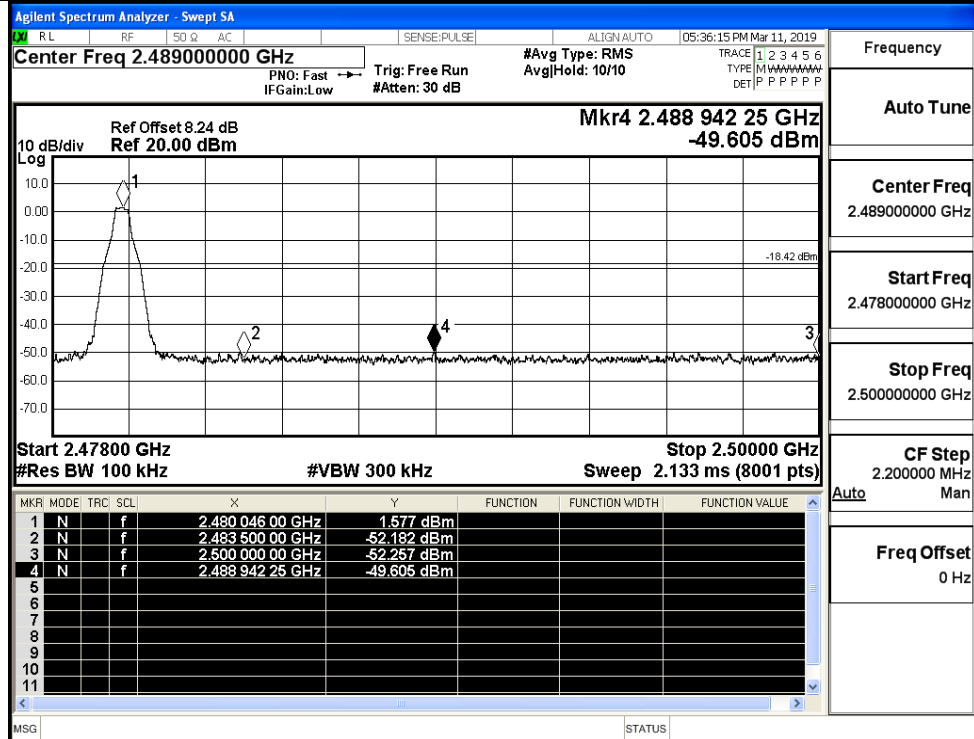
GFSK/LCH/No Hop



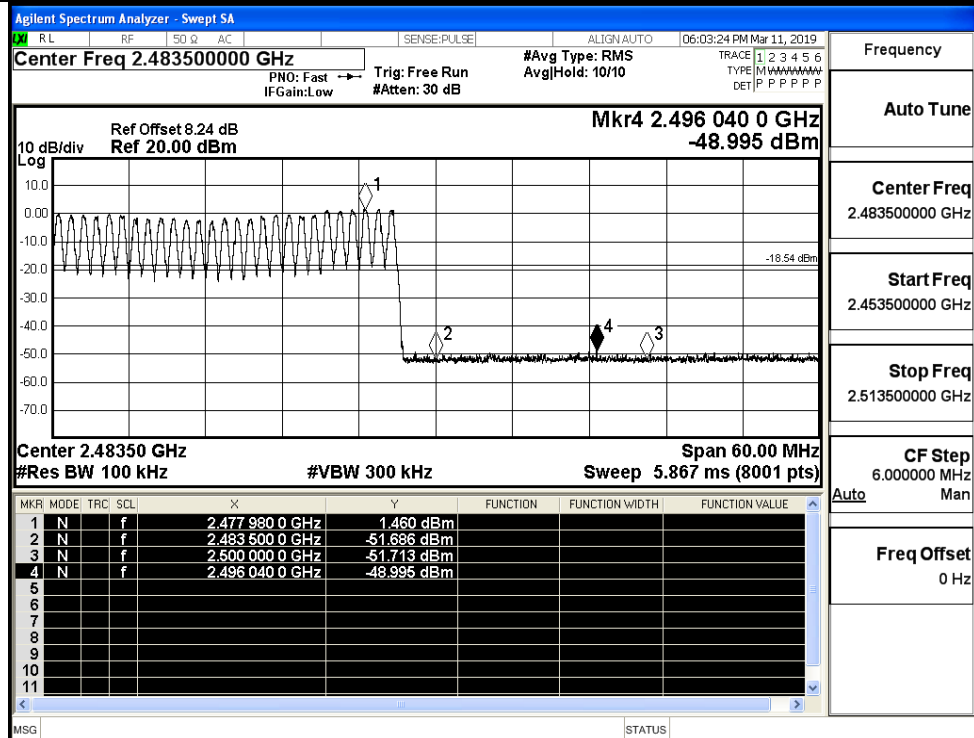
GFSK/LCH/Hop



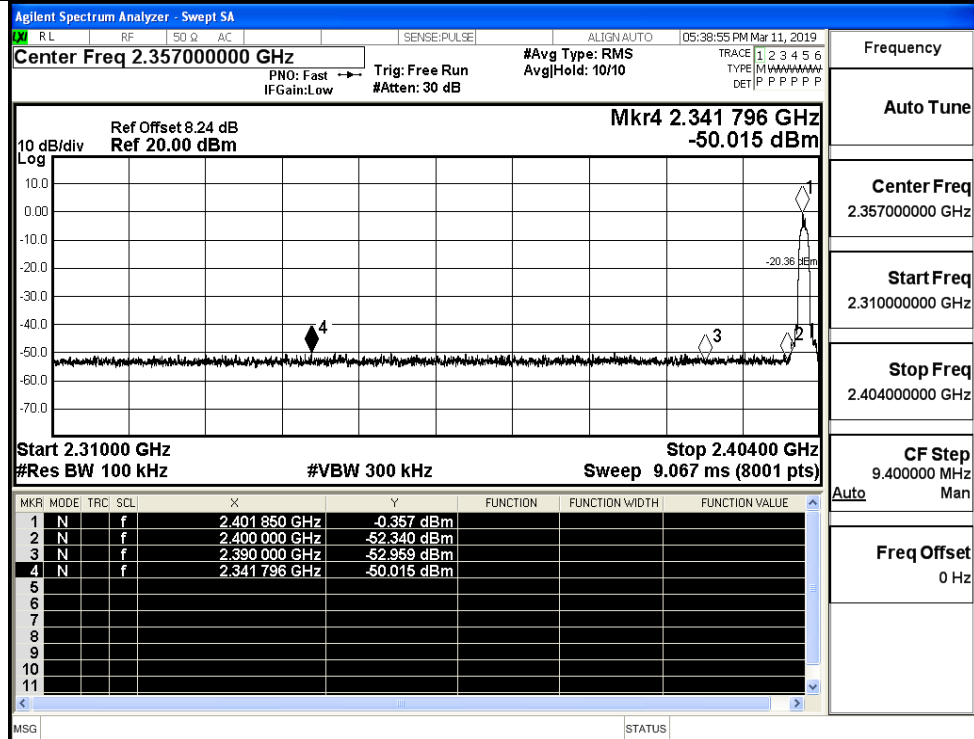
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

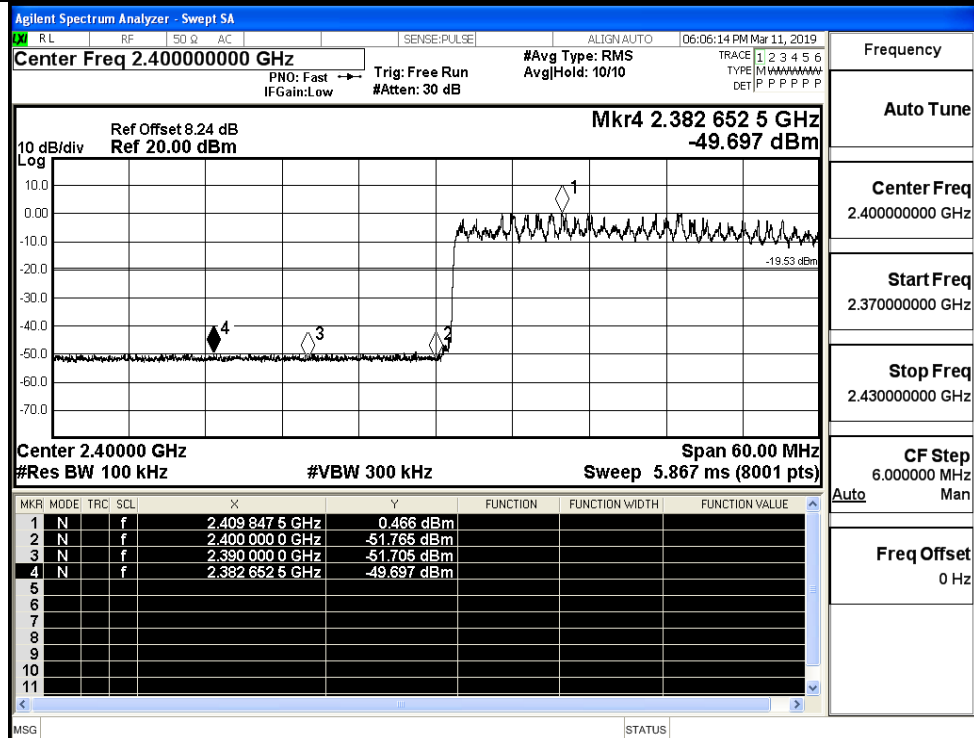
Stop Freq
2.404000000 GHz

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

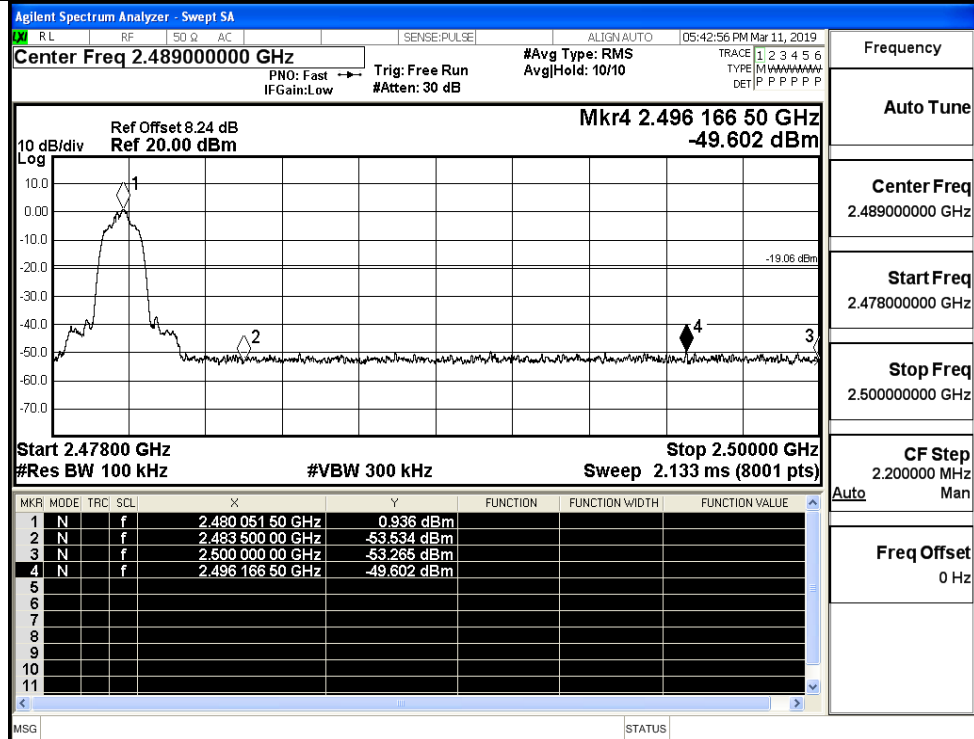
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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

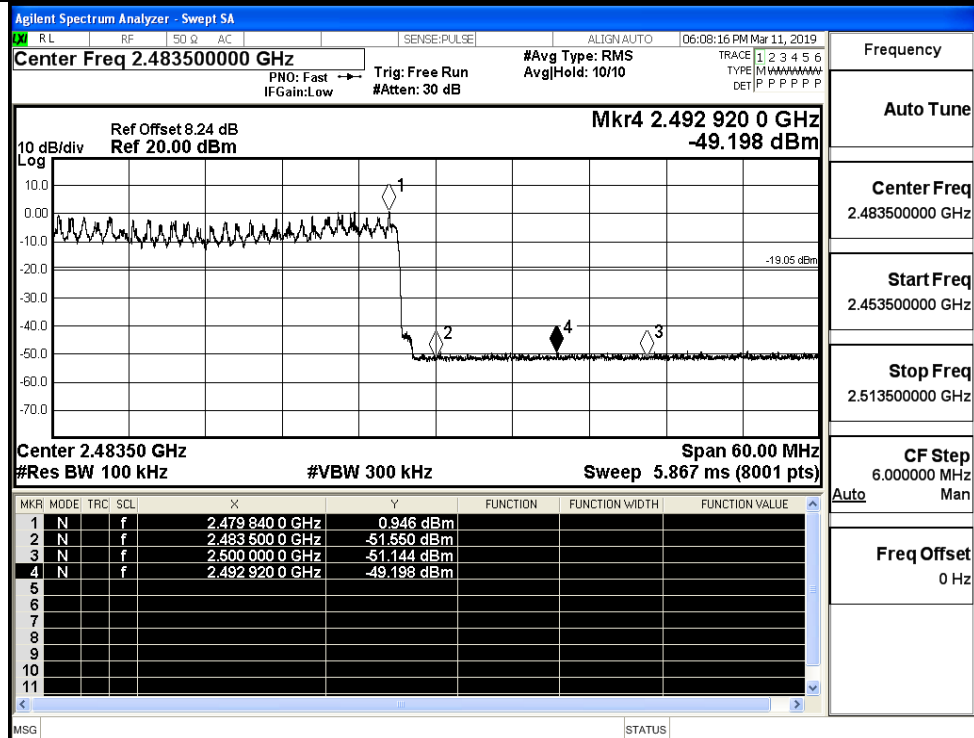


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

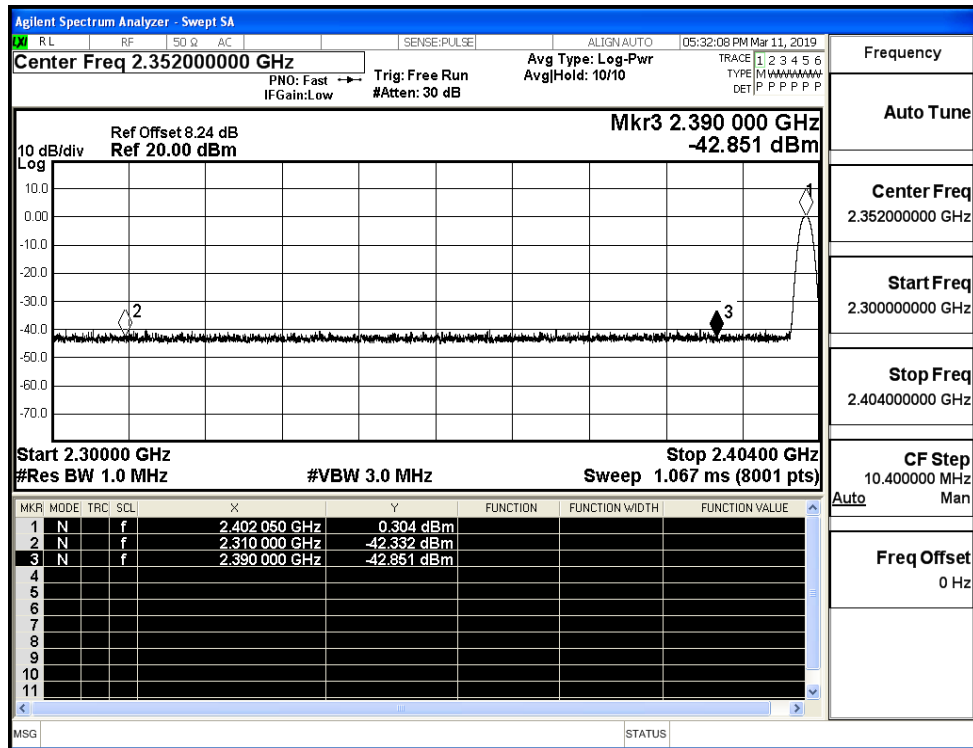
Auto Tune

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

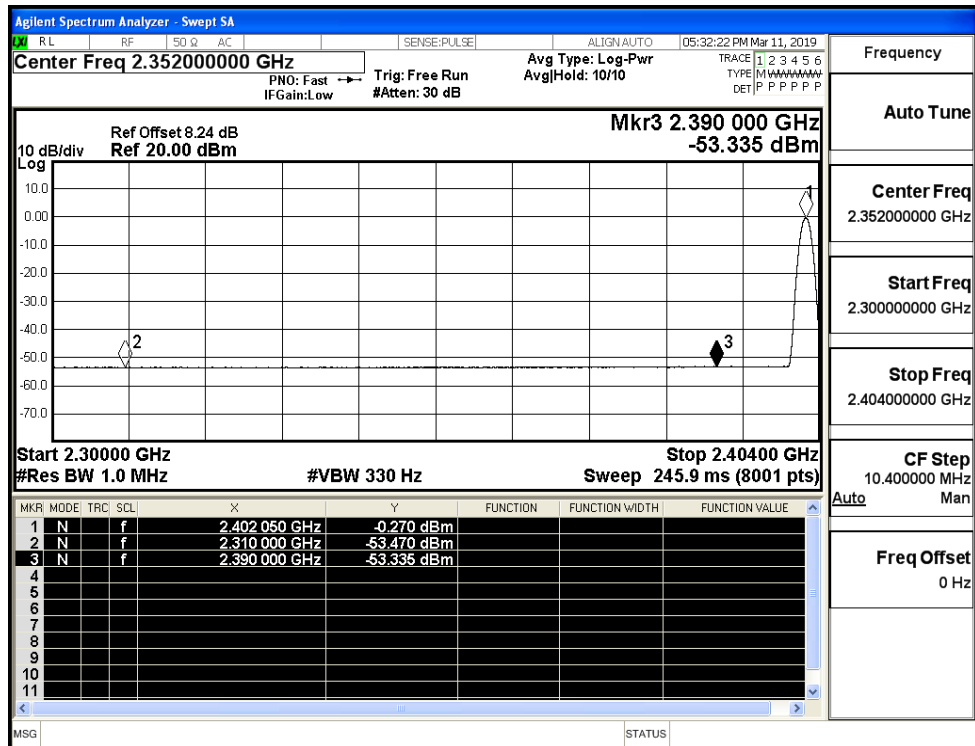
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.33	2.0	0	52.93	PEAK	74	PASS
	Off	2310.0	-53.47	2.0	0	41.79	AV	54	PASS
	Off	2390.0	-42.85	2.0	0	52.41	PEAK	74	PASS
	Off	2390.0	-53.34	2.0	0	41.92	AV	54	PASS
	Off	2483.5	-43.29	2.0	0	51.97	PEAK	74	PASS
	Off	2483.5	-53.00	2.0	0	42.26	AV	54	PASS
	Off	2500.0	-43.25	2.0	0	52.00	PEAK	74	PASS
	Off	2500.0	-52.92	2.0	0	42.34	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.41	2.0	0	51.84	PEAK	74	PASS
	Off	2310.0	-53.61	2.0	0	41.64	AV	54	PASS
	Off	2390.0	-42.64	2.0	0	52.62	PEAK	74	PASS
	Off	2390.0	-53.22	2.0	0	42.03	AV	54	PASS
	Off	2483.5	-43.02	2.0	0	52.24	PEAK	74	PASS
	Off	2483.5	-52.98	2.0	0	42.28	AV	54	PASS
	Off	2500.0	-42.80	2.0	0	52.45	PEAK	74	PASS
	Off	2500.0	-52.96	2.0	0	42.30	AV	54	PASS

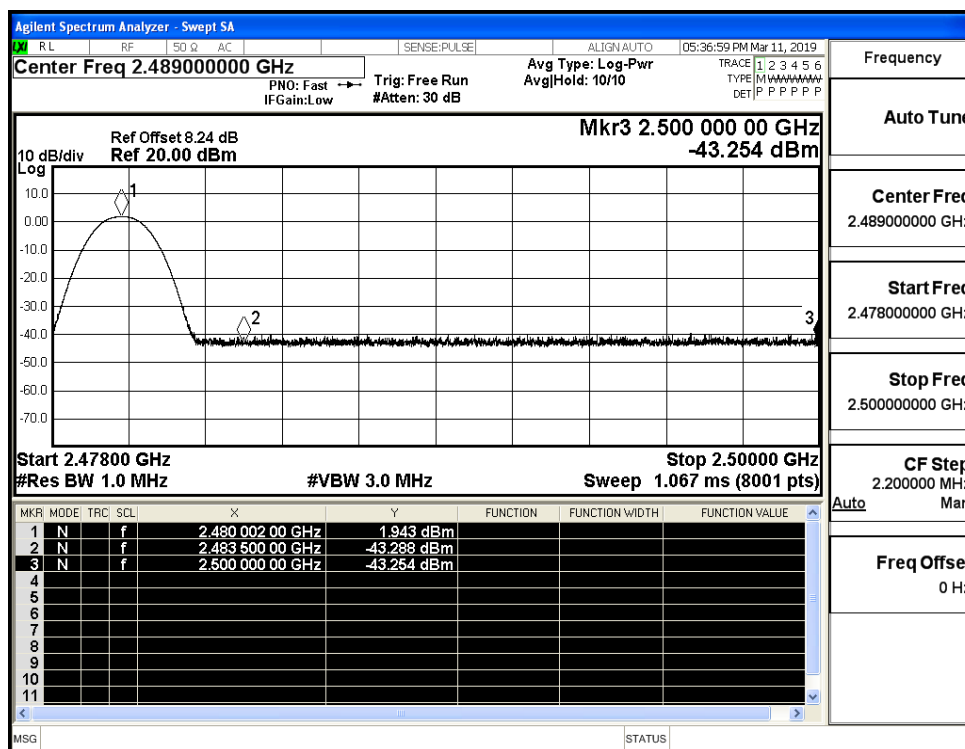
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



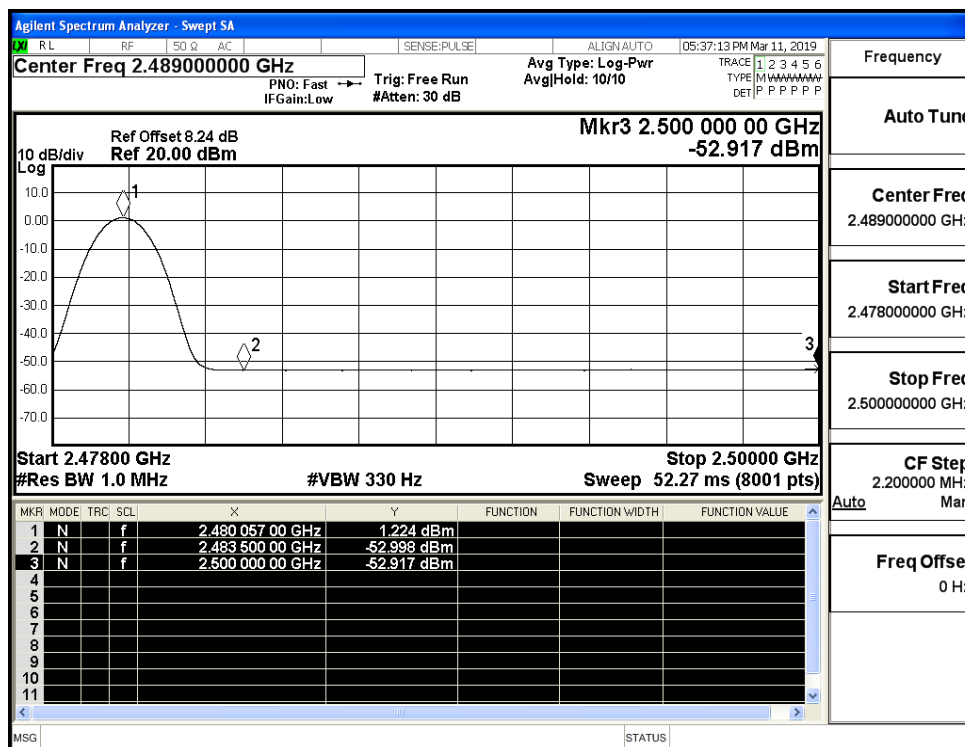
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

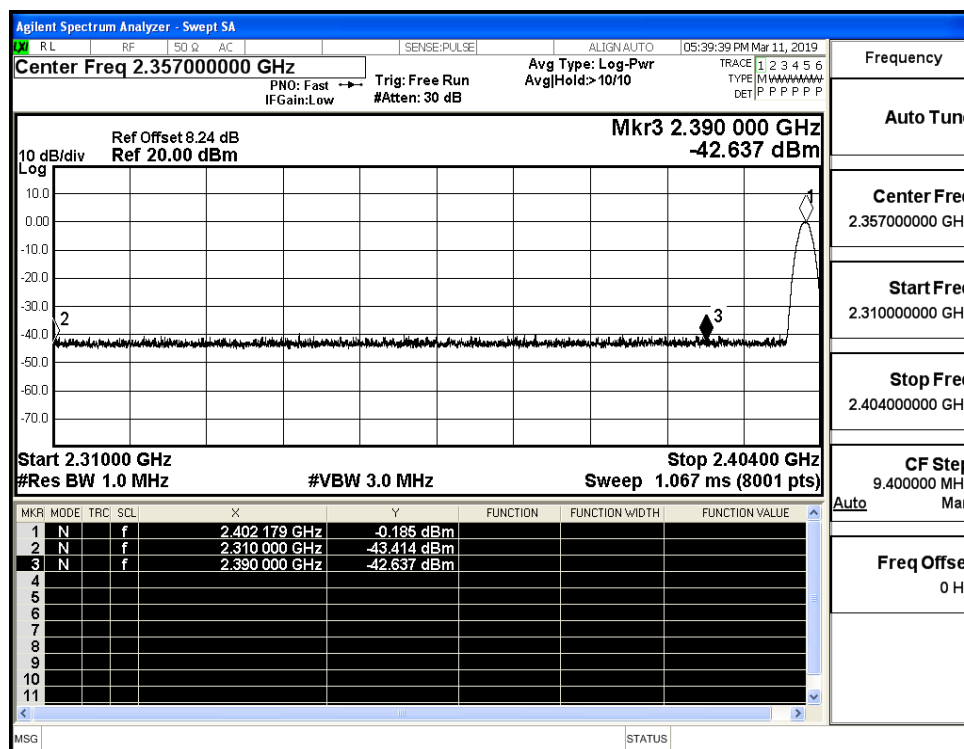
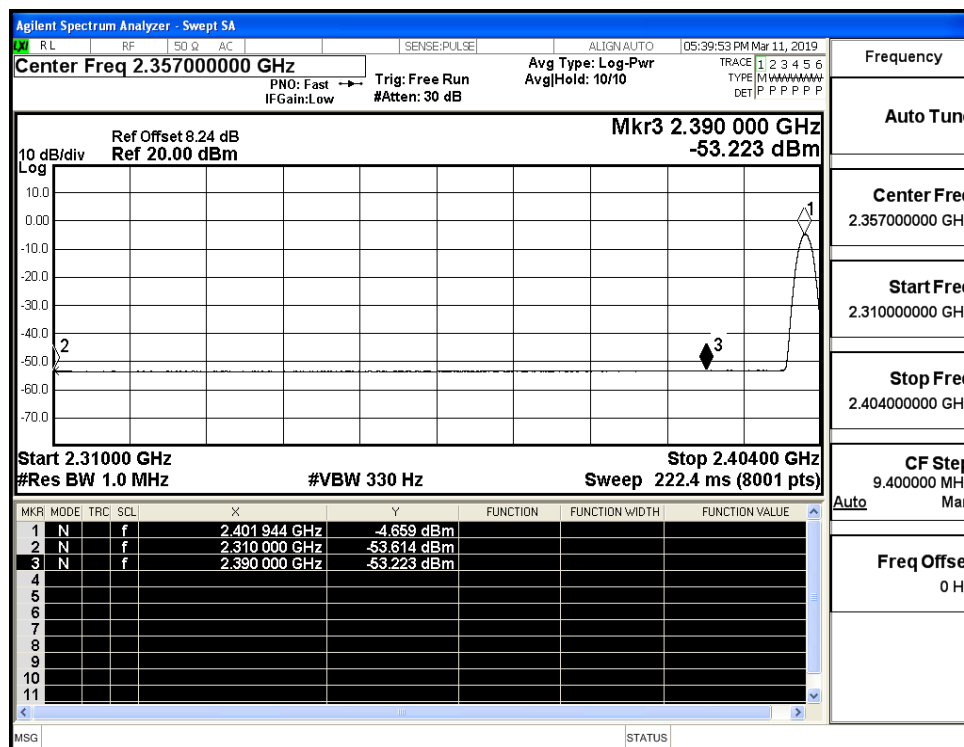


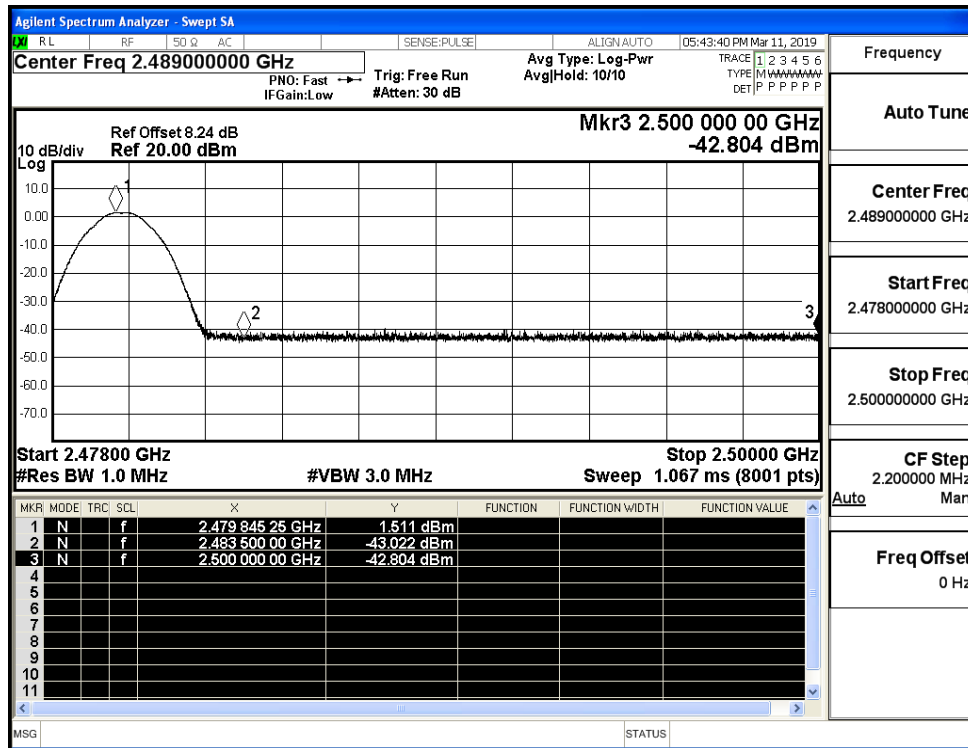
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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)