

Appendix A

RF Test Data for BT V5.0 (BDR/EDR) (Conducted Measurement)

Product Name: Jax Bluetooth® Speaker

Trade Mark: Gemline

Test Model: 100246-001B

Environmental Conditions

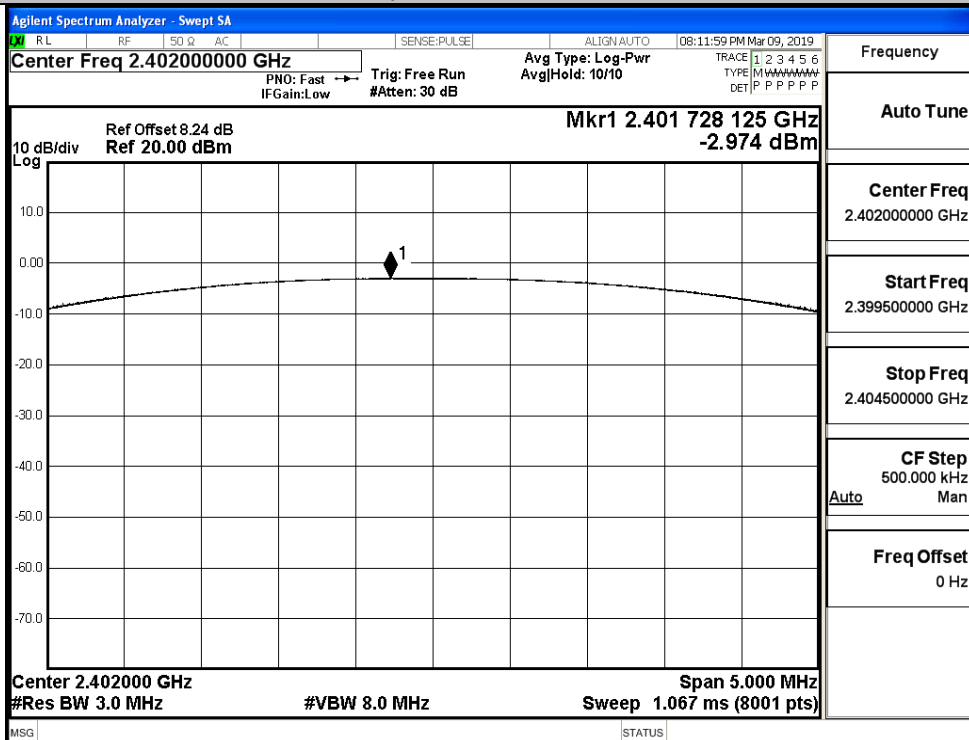
Temperature:	23.5 ° C
Relative Humidity:	53.3%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Wang Chuang

A.1 Maximum Conducted Peak Output Power

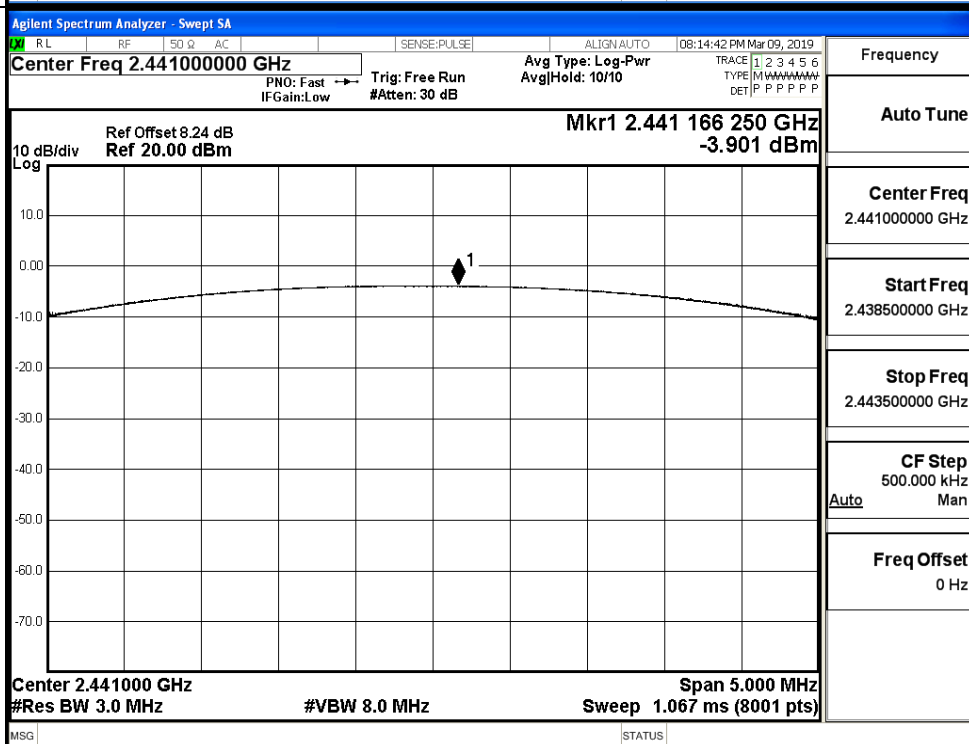
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.974	21	PASS
	MCH	-3.901	21	PASS
	HCH	-4.874	21	PASS
$\pi/4$ DQPSK	LCH	-3.044	21	PASS
	MCH	-3.983	21	PASS
	HCH	-4.906	21	PASS
8DPSK	LCH	-3.128	21	PASS
	MCH	-4.024	21	PASS
	HCH	-4.975	21	PASS

Test Graphs

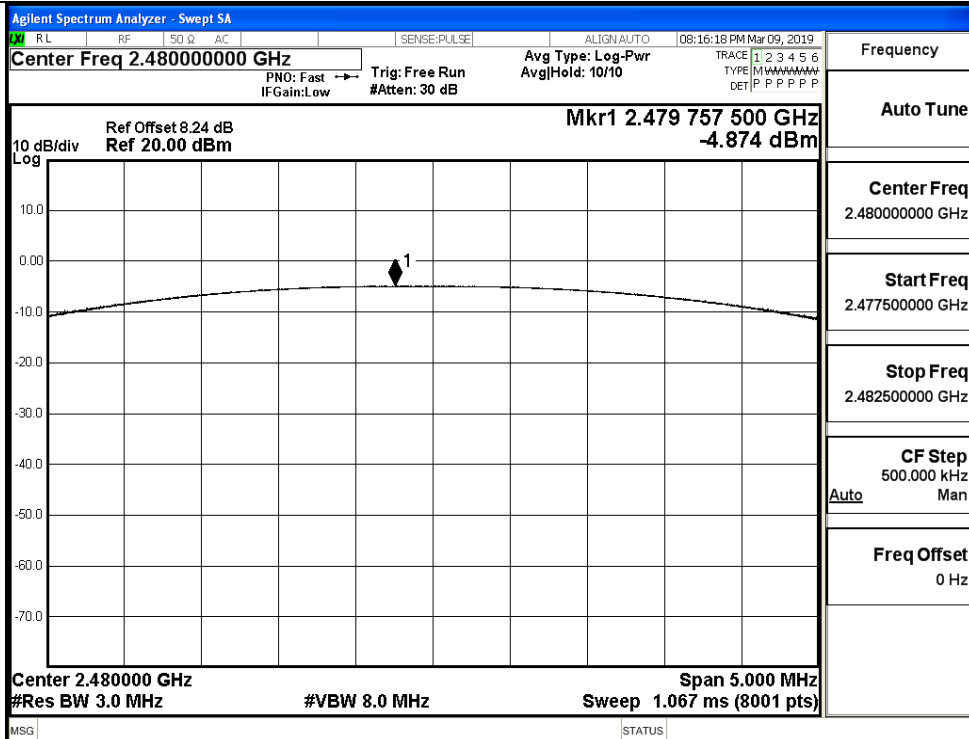
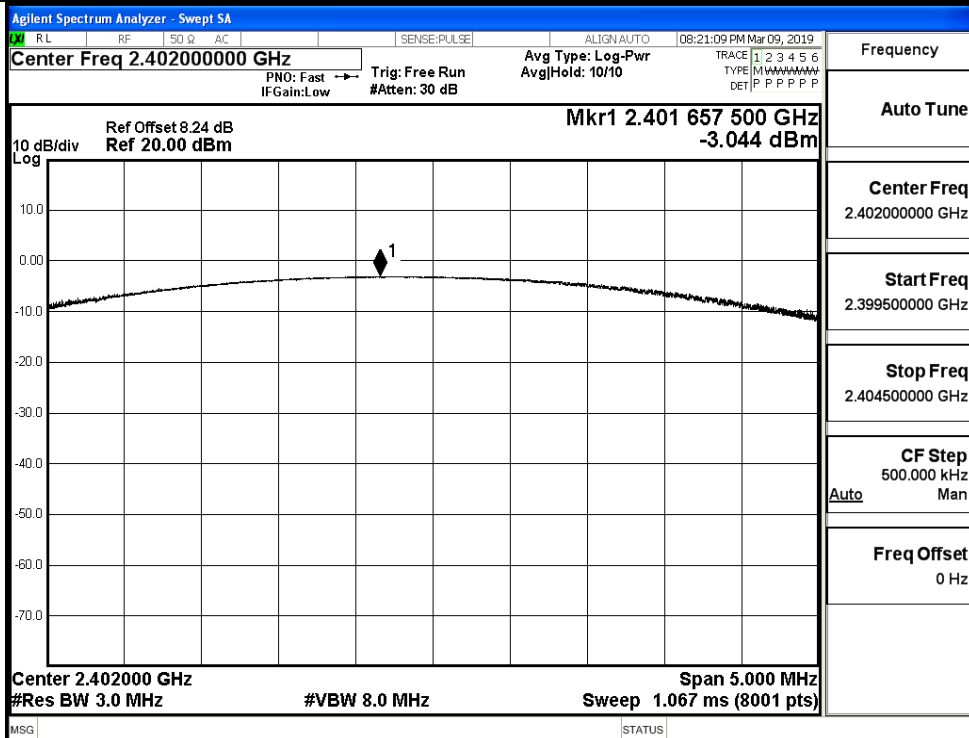
GFSK/LCH

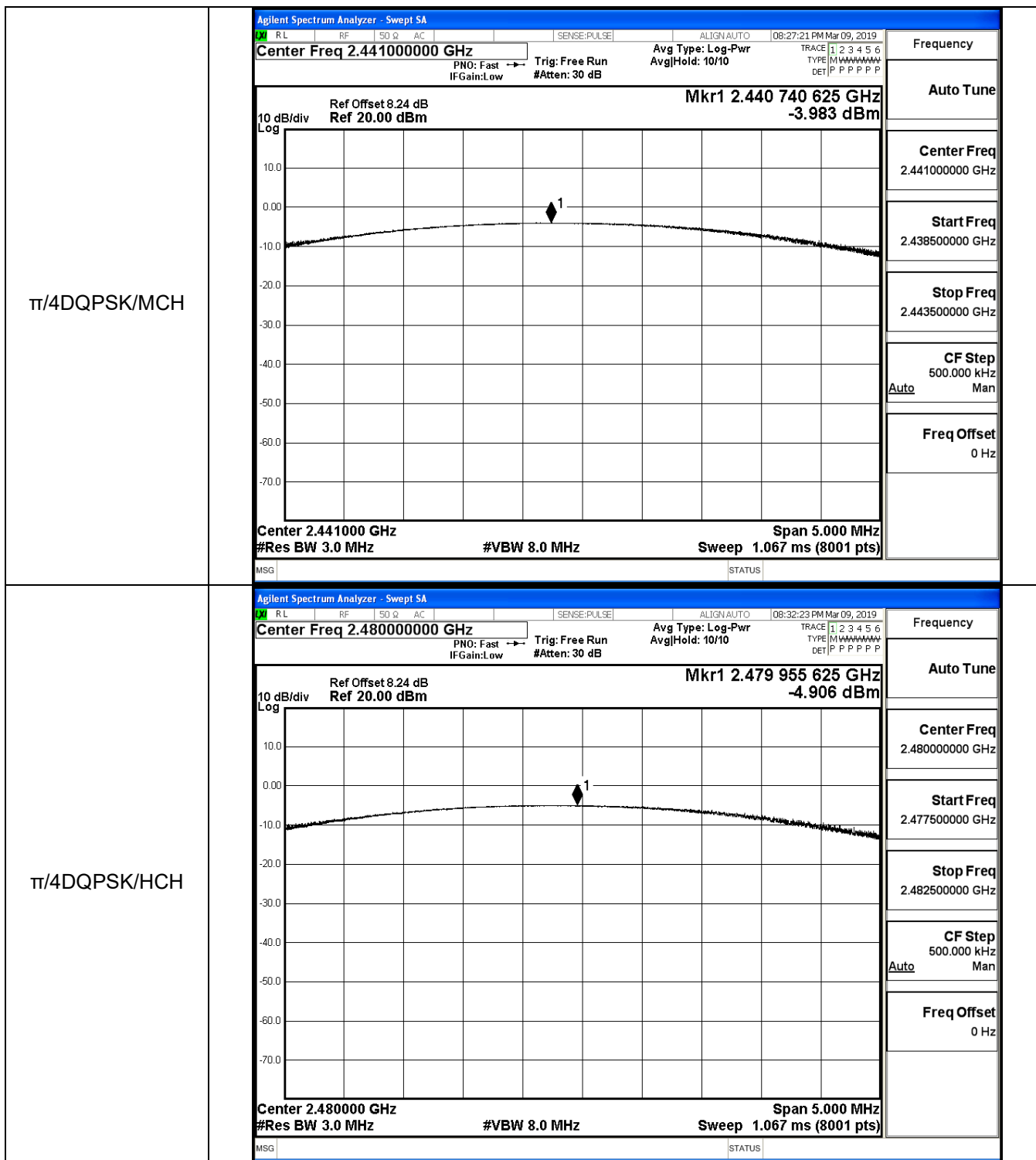


GFSK/MCH

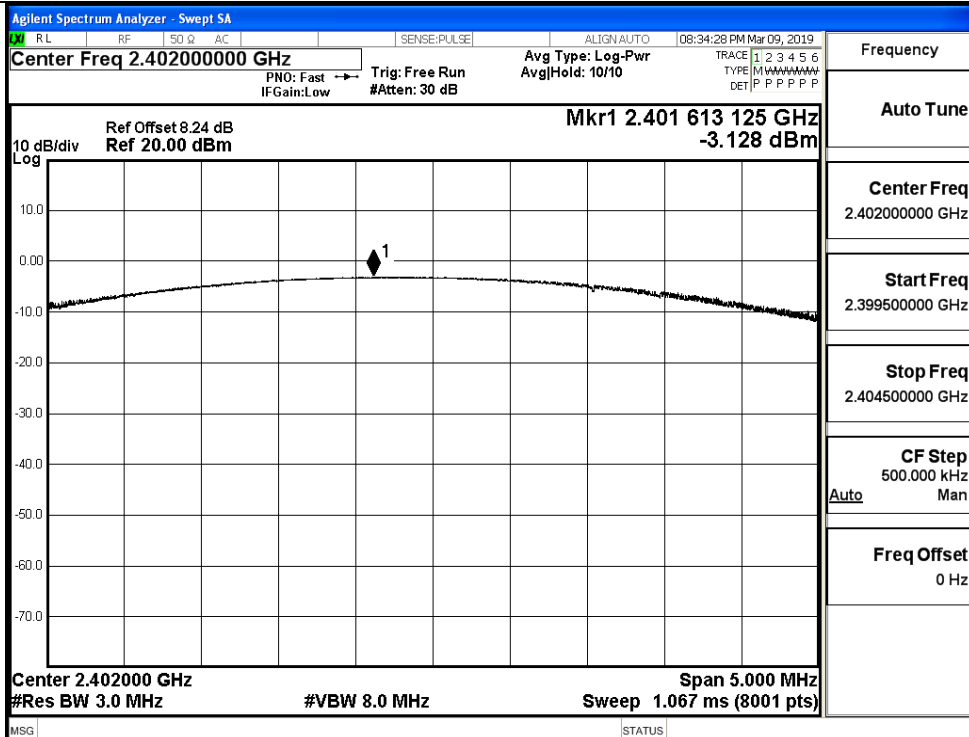


GFSK/HCH

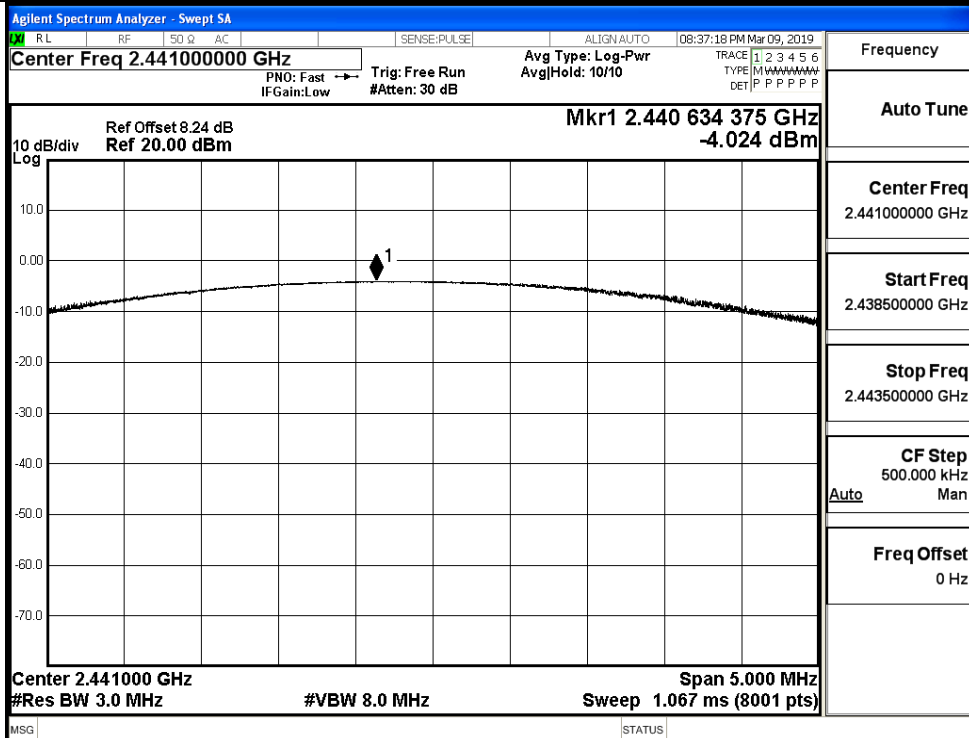
 π /4DQPSK/LCH



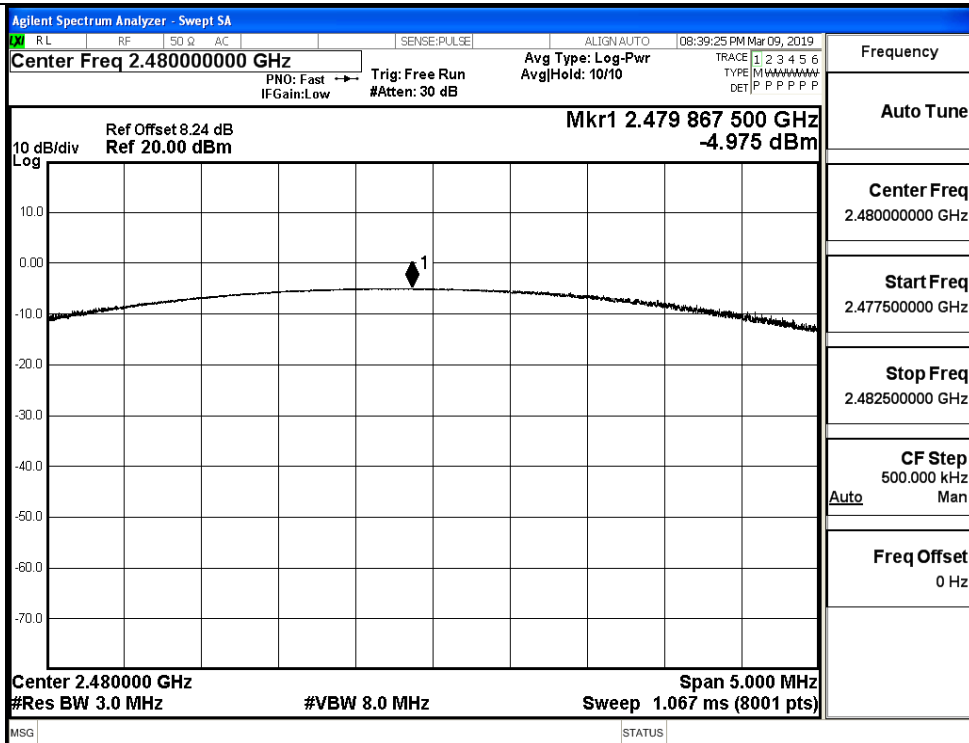
8DPSK/LCH



8DPSK/MCH



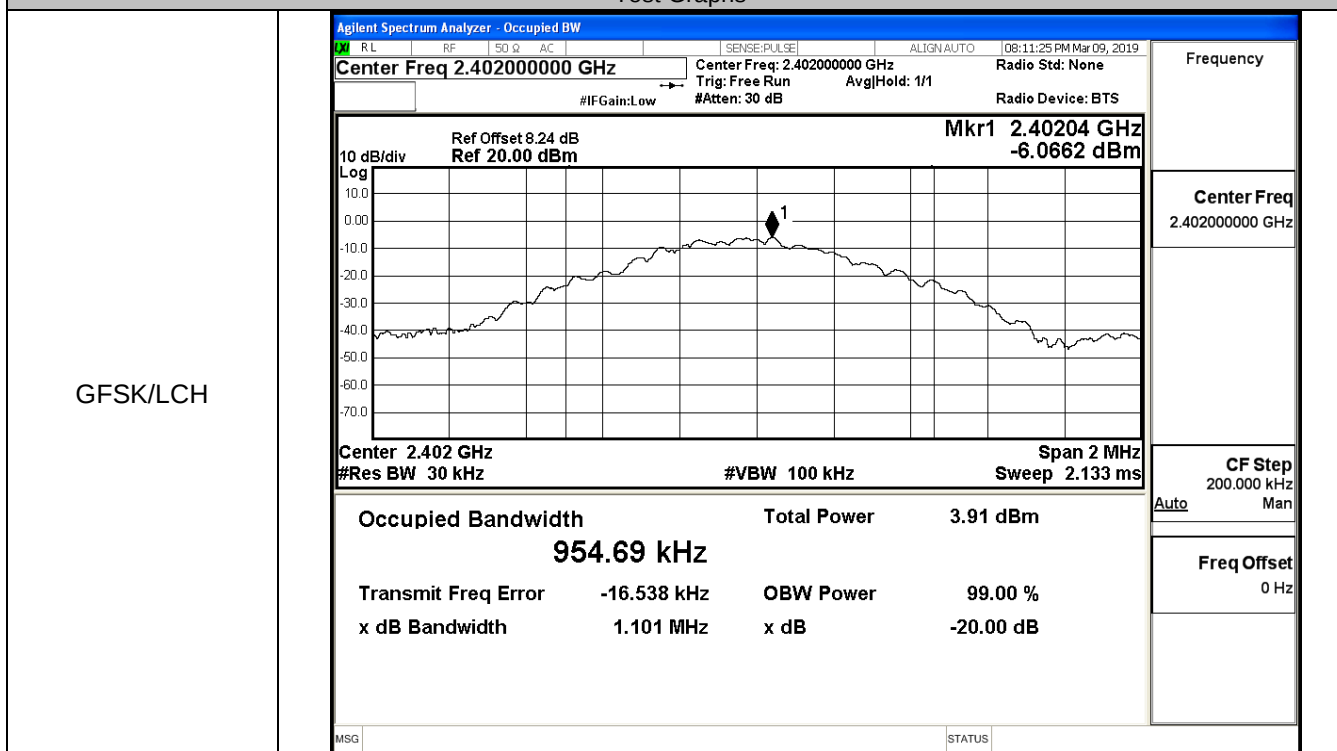
8DPSK/HCH



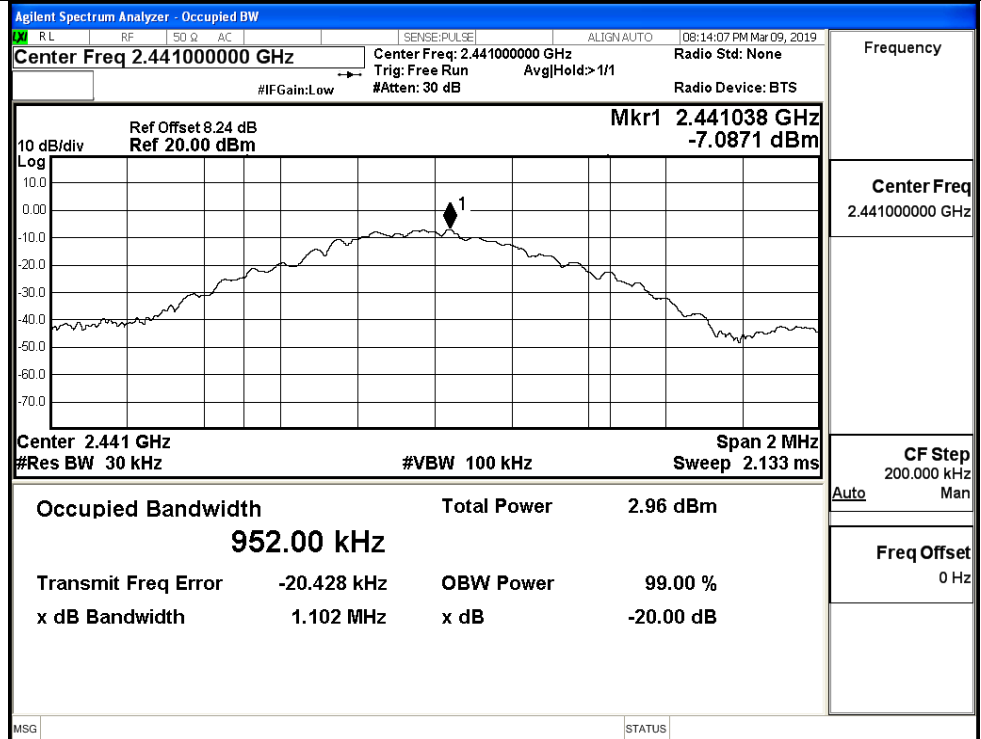
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.95469	1.101	Not Specified	PASS
	MCH	0.95200	1.102	Not Specified	PASS
	HCH	0.95359	1.101	Not Specified	PASS
π /4DQPSK	LCH	1.2173	1.345	Not Specified	PASS
	MCH	1.2142	1.343	Not Specified	PASS
	HCH	1.2140	1.345	Not Specified	PASS
8DPSK	LCH	1.2221	1.342	Not Specified	PASS
	MCH	1.2205	1.347	Not Specified	PASS
	HCH	1.2207	1.342	Not Specified	PASS

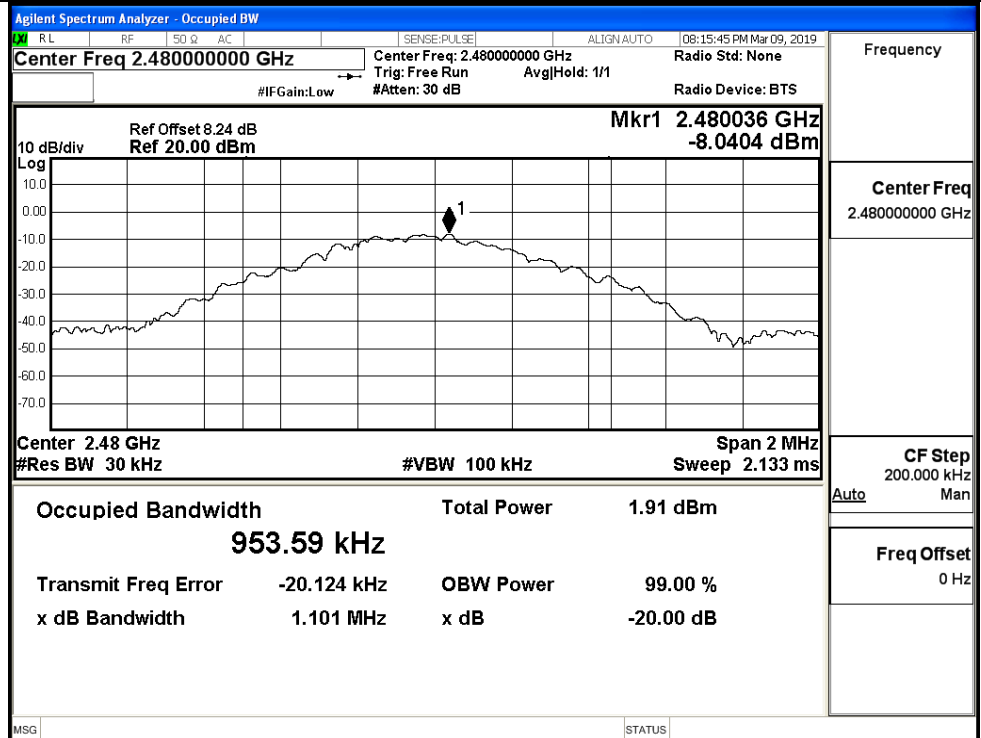
Test Graphs

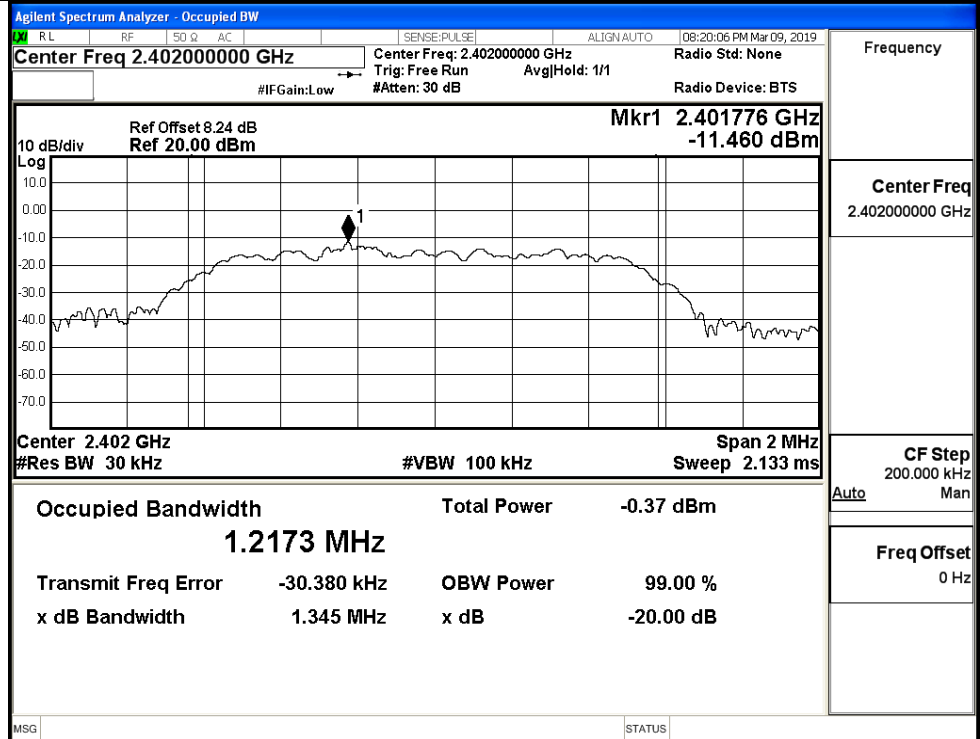
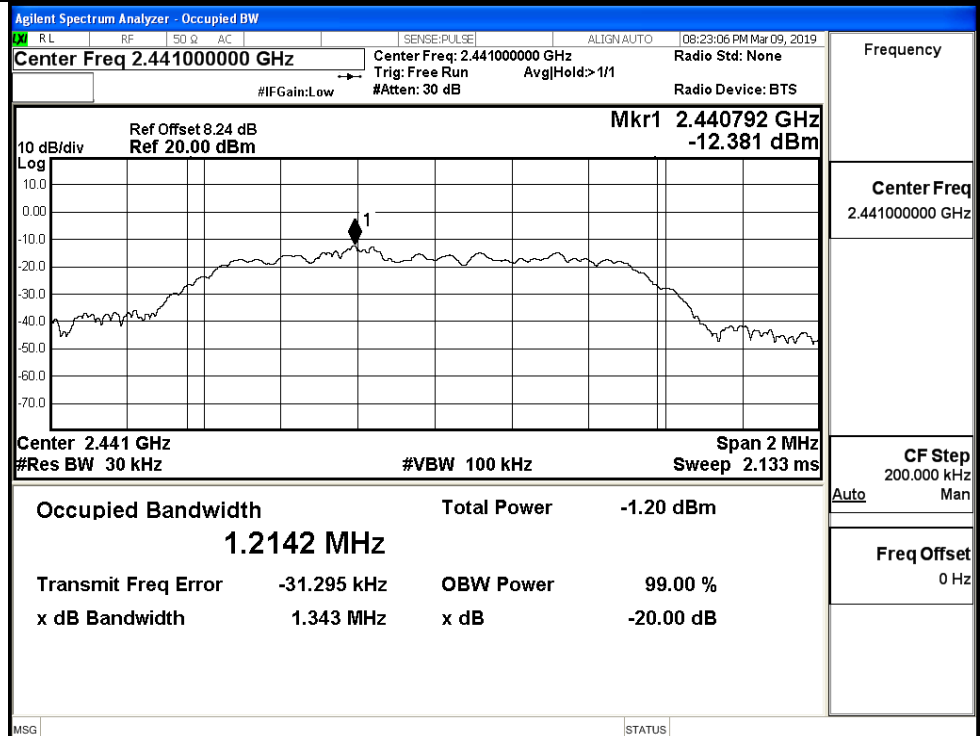


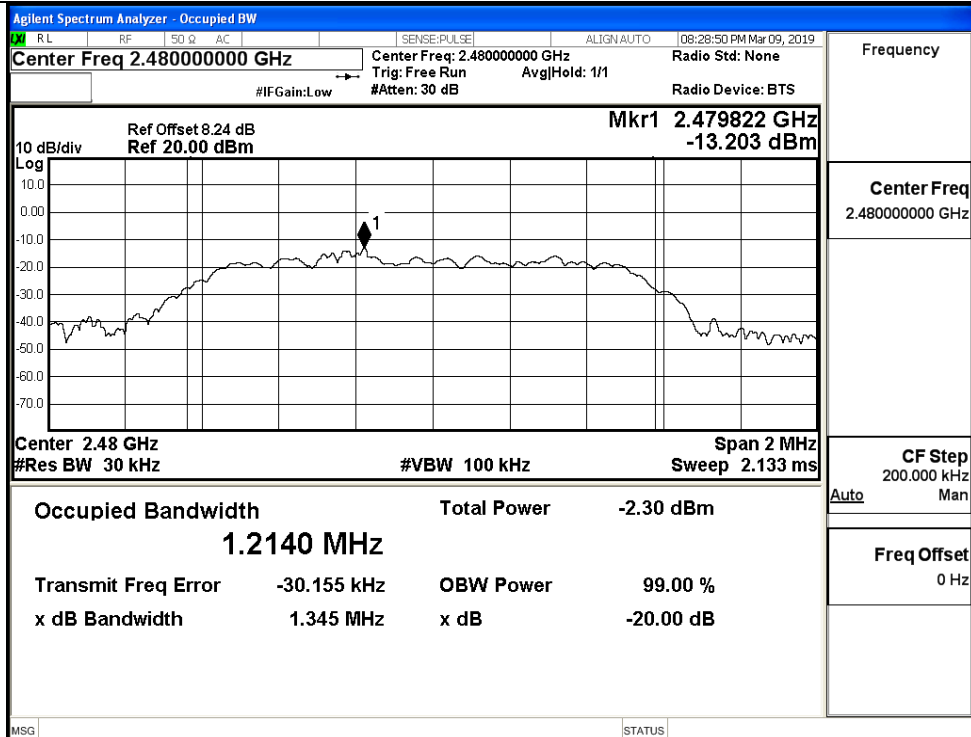
GFSK/MCH



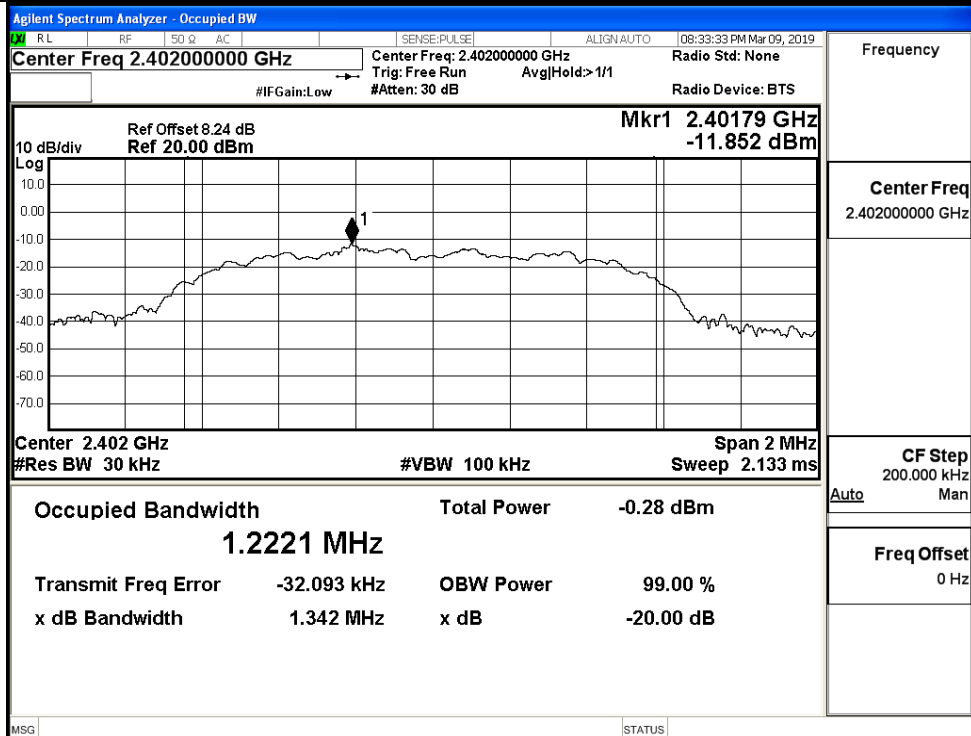
GFSK/HCH



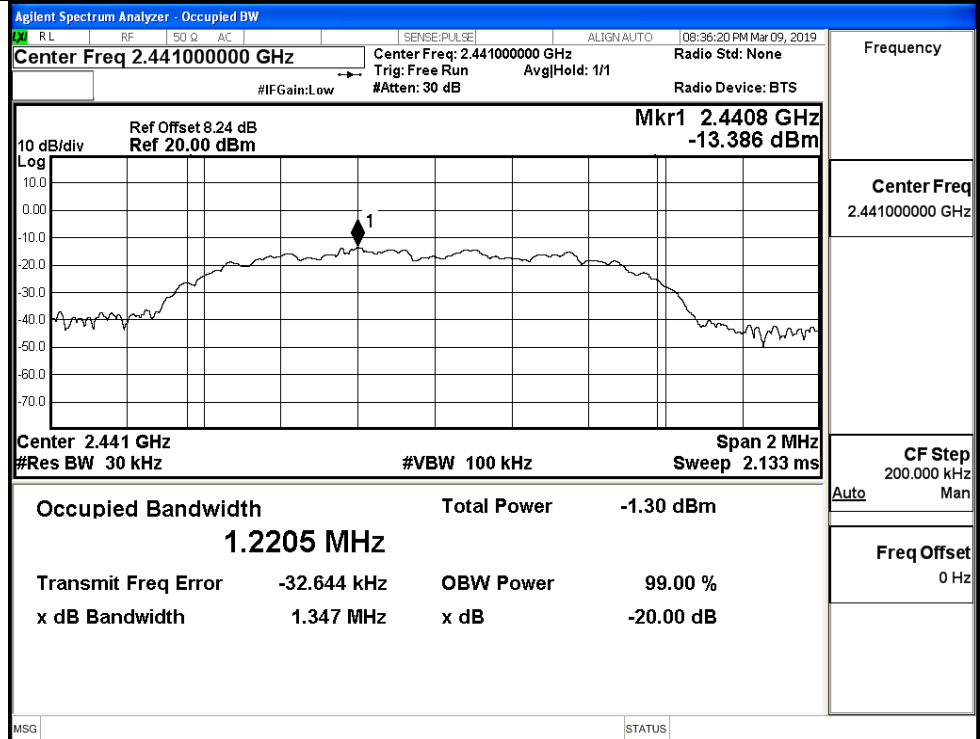
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

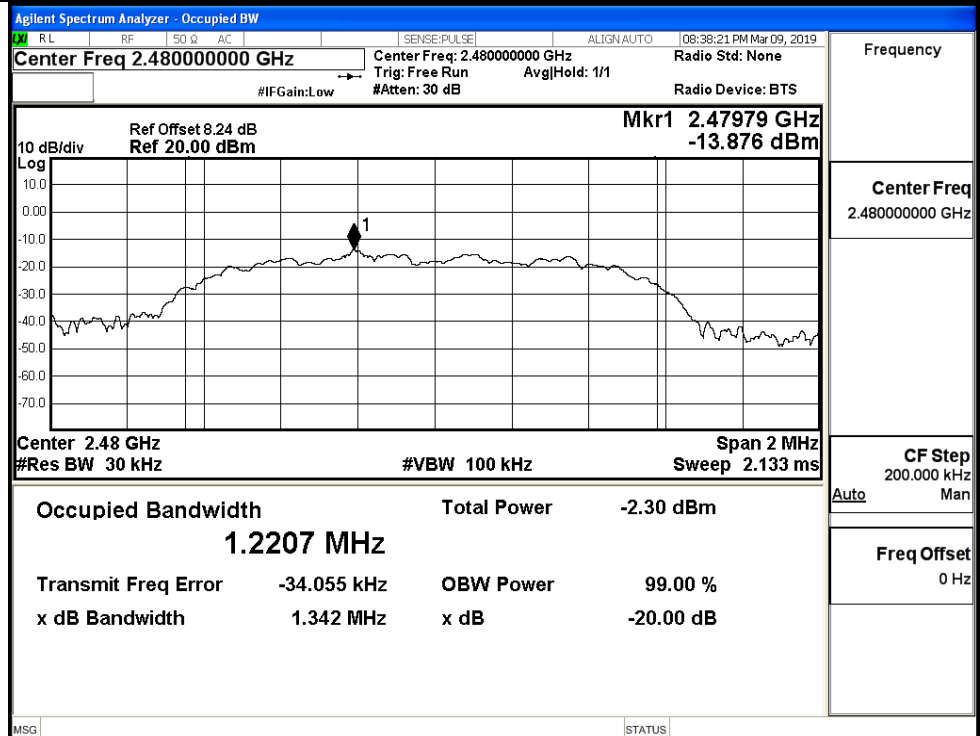
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

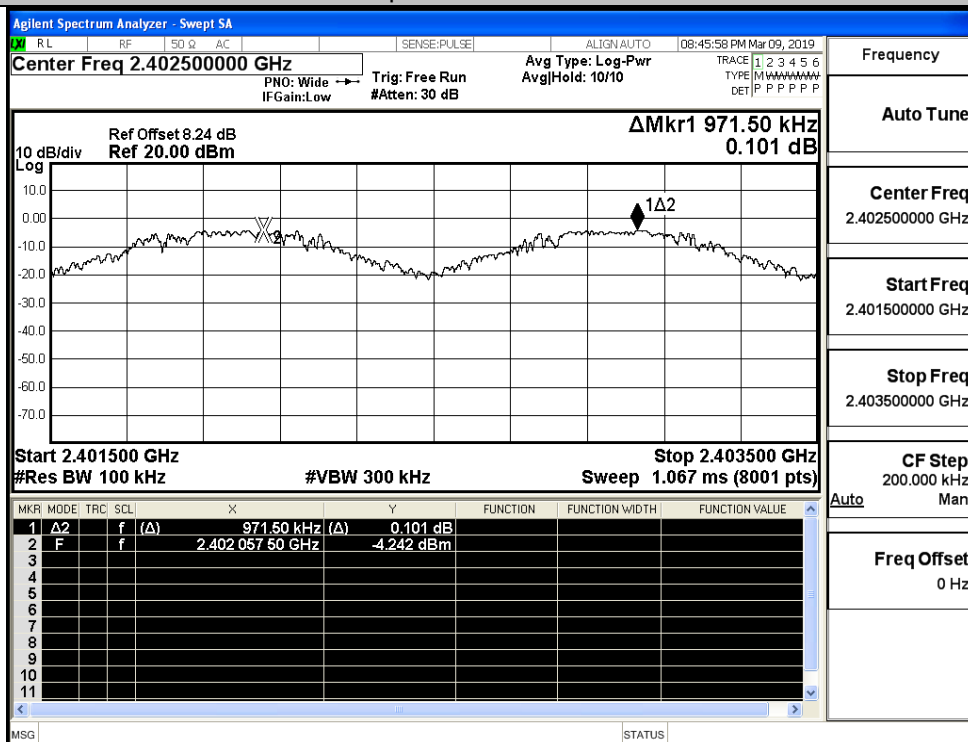


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.972	0.735	PASS
	MCH	0.846	0.735	PASS
	HCH	1.022	0.735	PASS
$\pi/4$ DQPSK	LCH	0.984	0.897	PASS
	MCH	0.984	0.897	PASS
	HCH	1.004	0.897	PASS
8DPSK	LCH	0.916	0.898	PASS
	MCH	1.006	0.898	PASS
	HCH	0.990	0.898	PASS

Test Graphs

GFSK/LCH

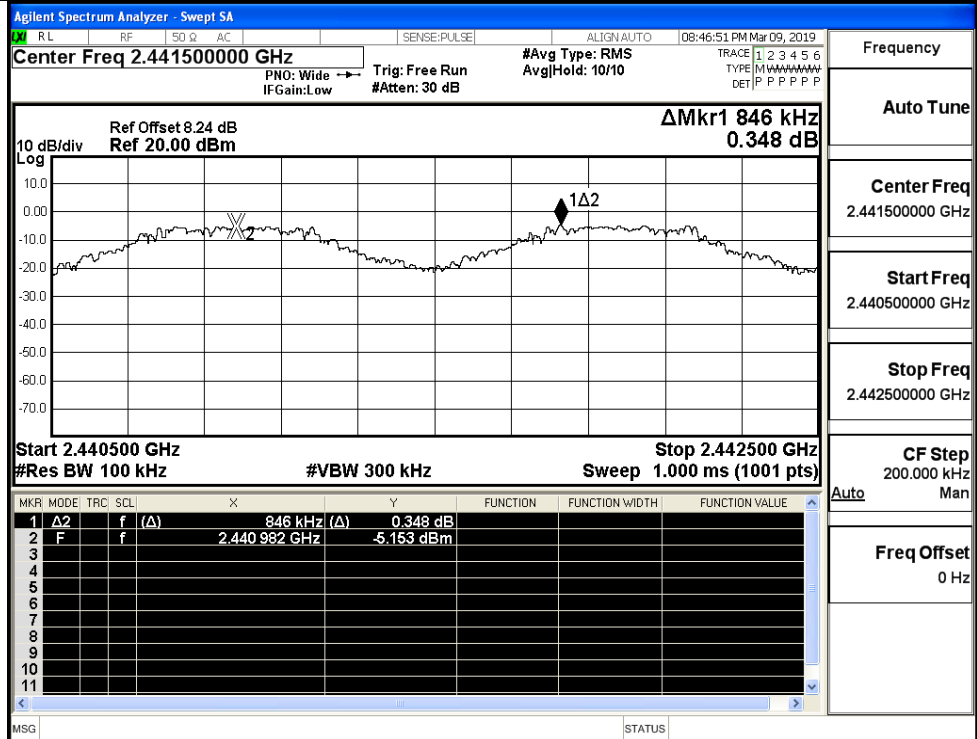


Frequency

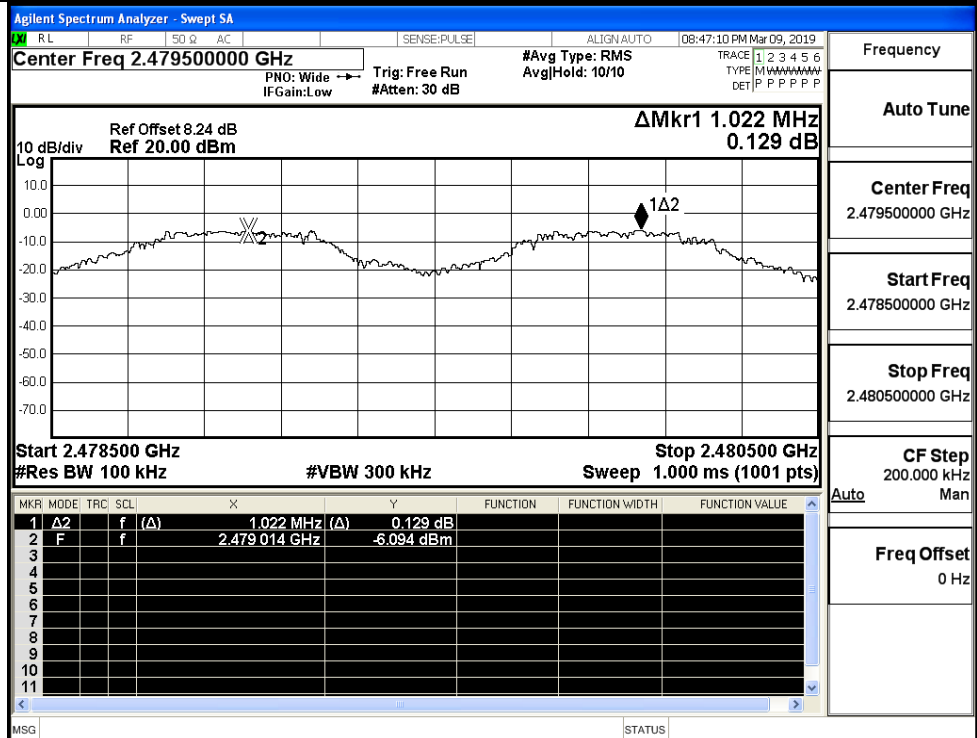
Auto Tune

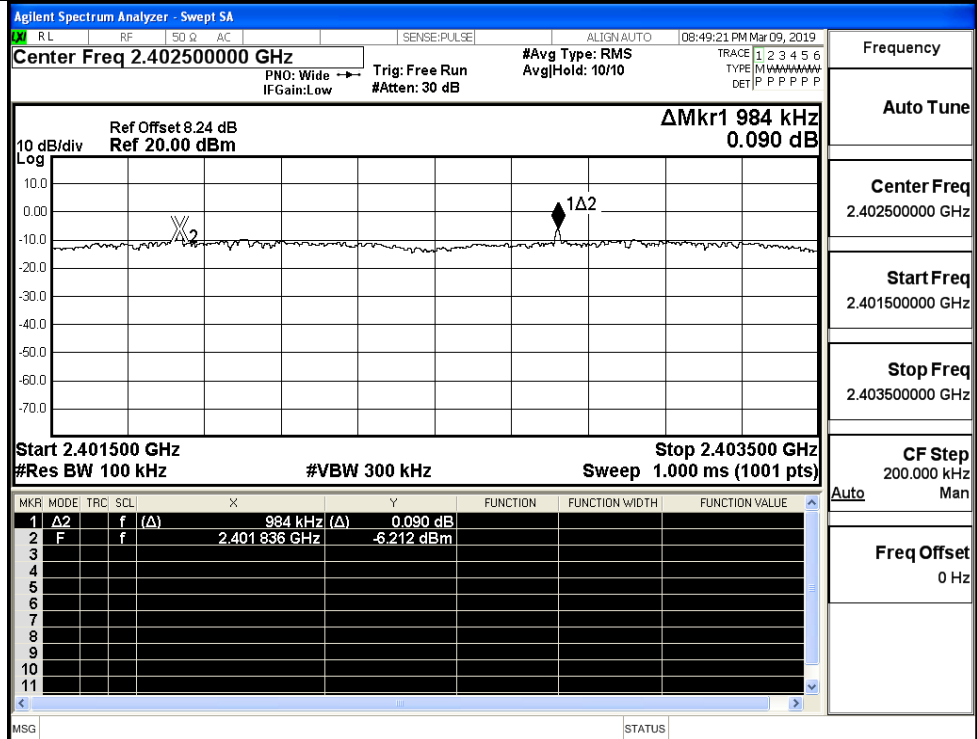
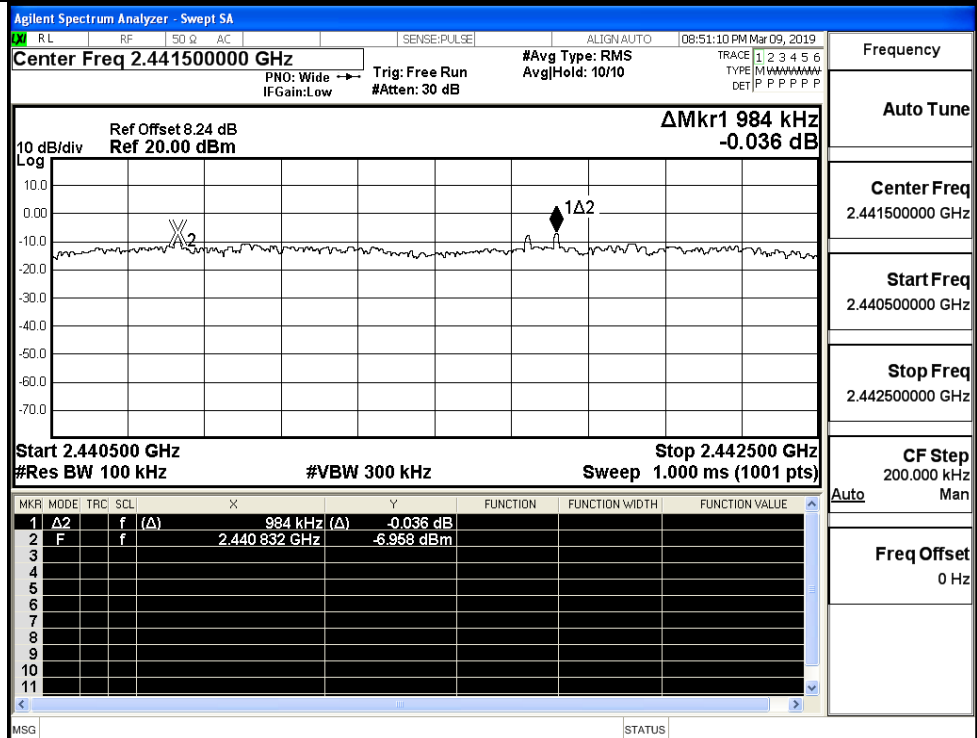
Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 Hz

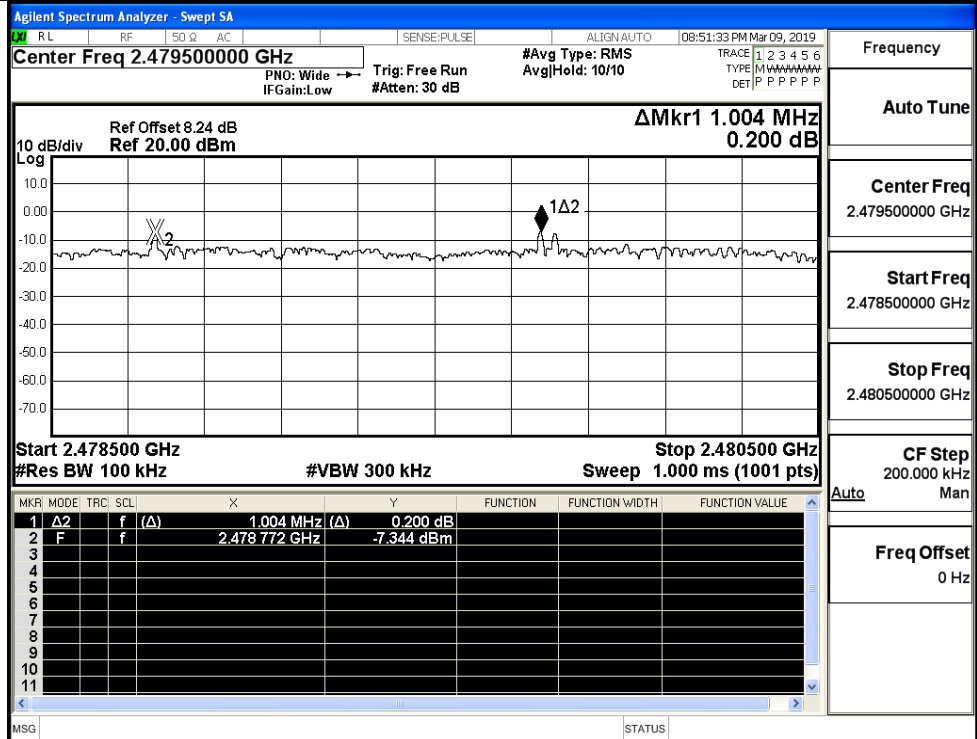
GFSK/MCH



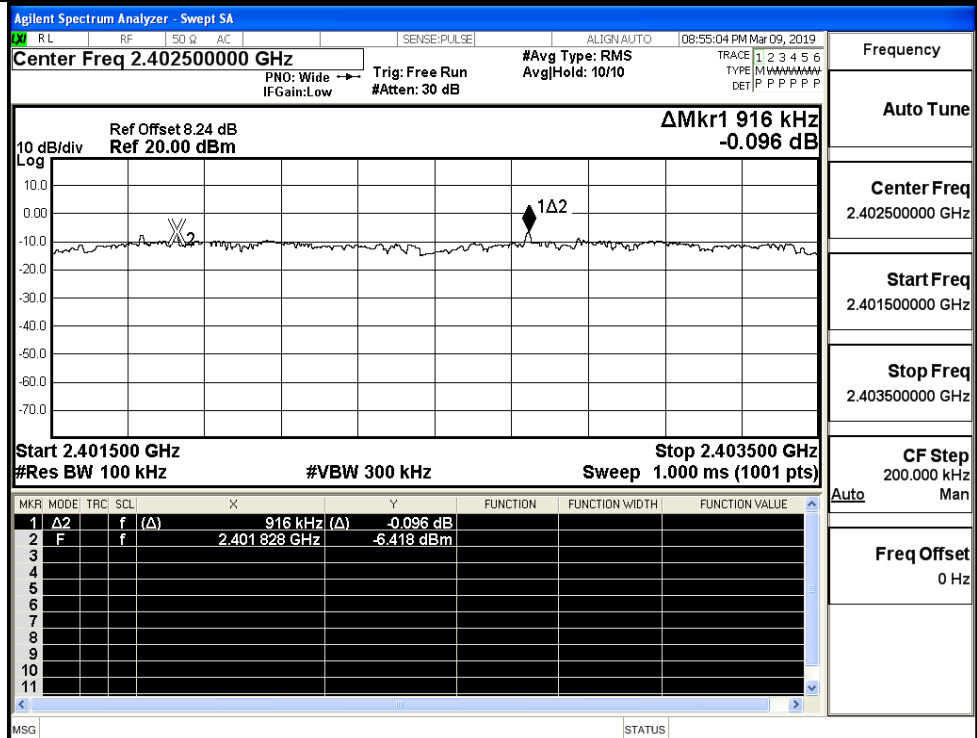
GFSK/HCH



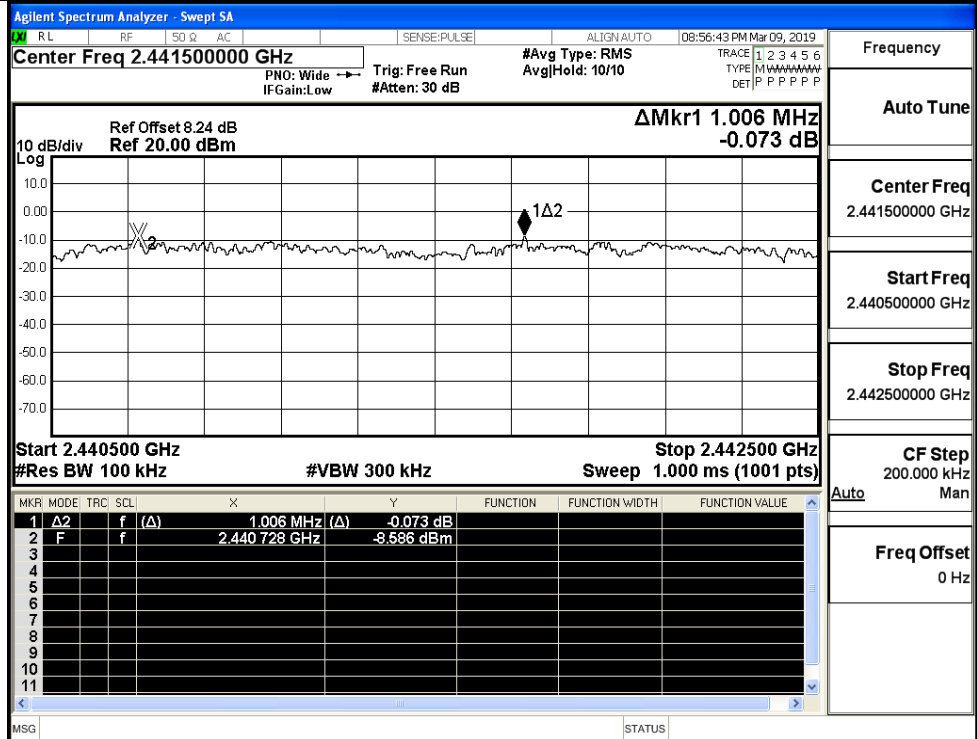
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

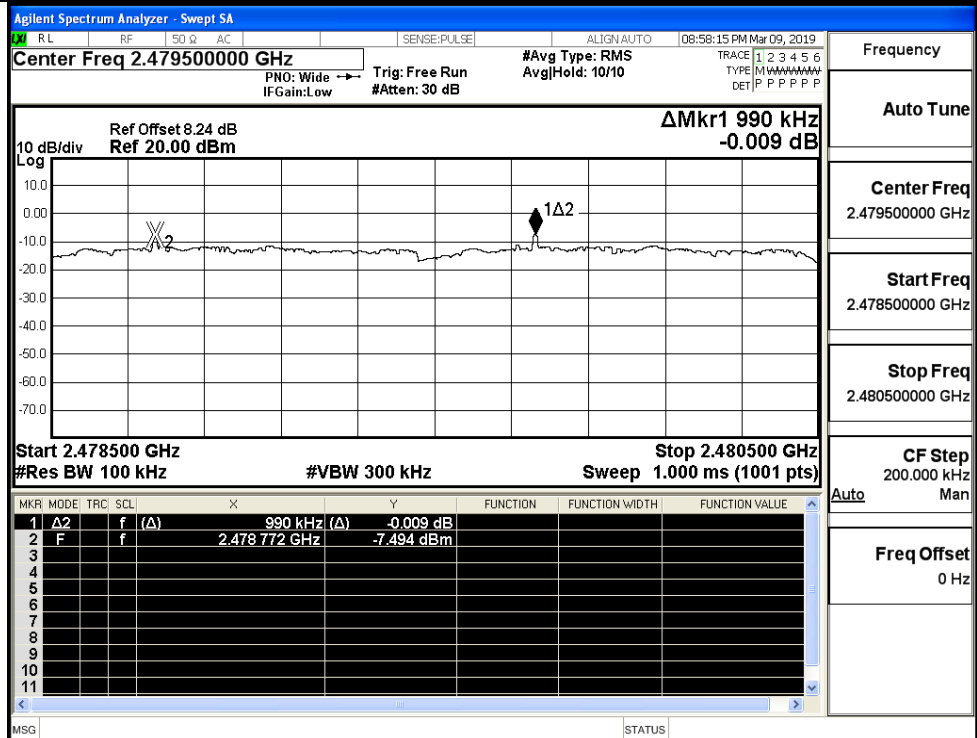
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

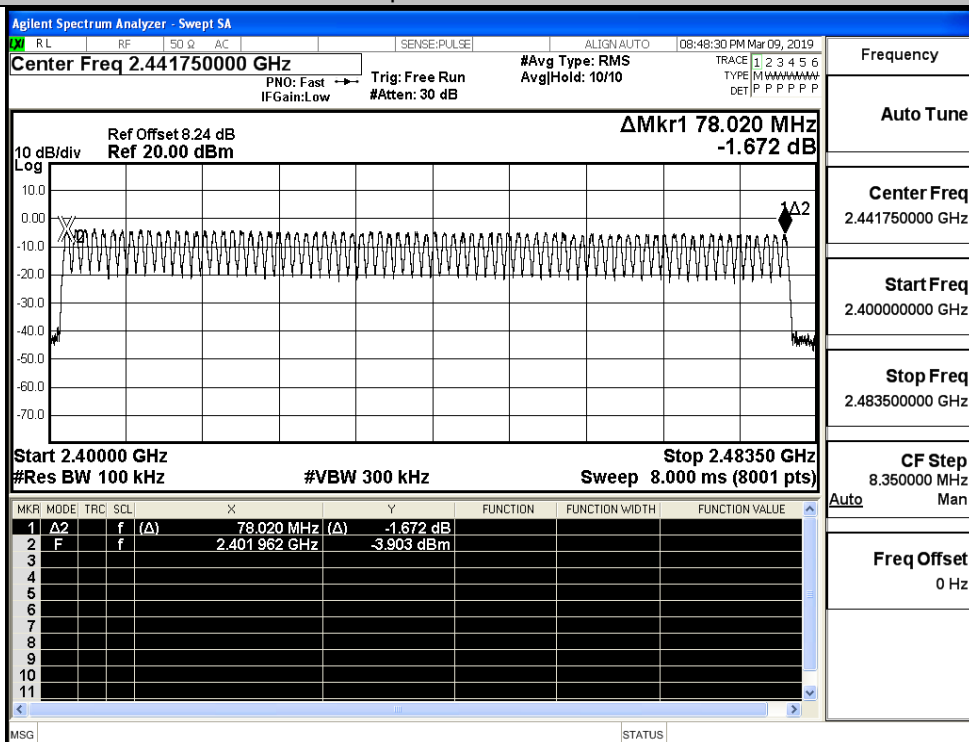


A.4 Hopping Channel Number

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

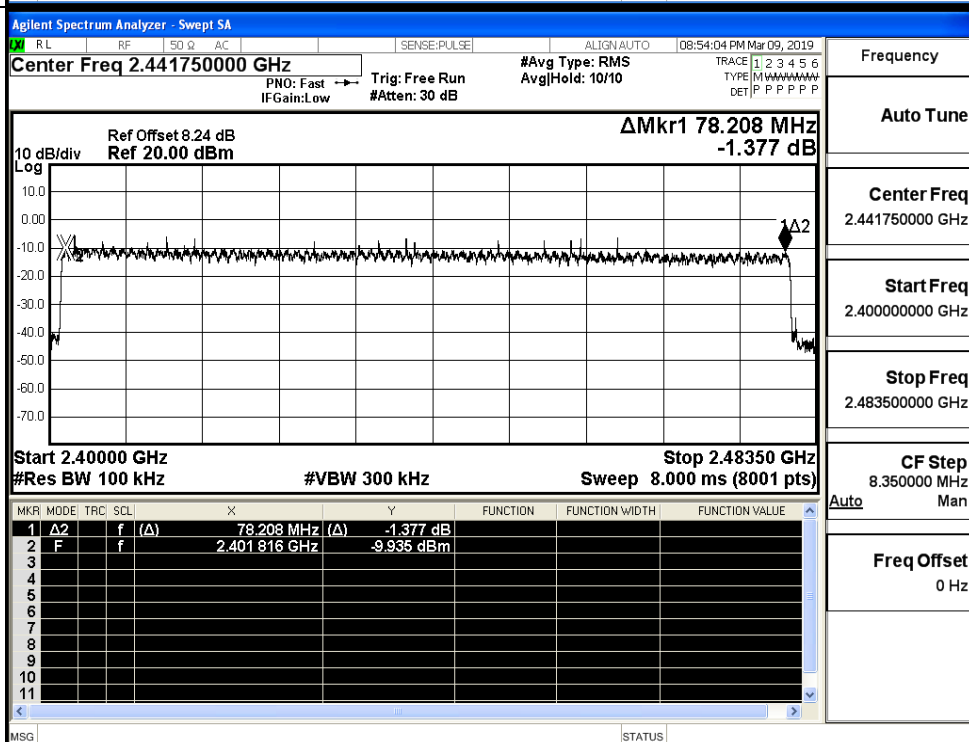
Test Graphs

GFSK/Hop



Frequency

Auto Tune

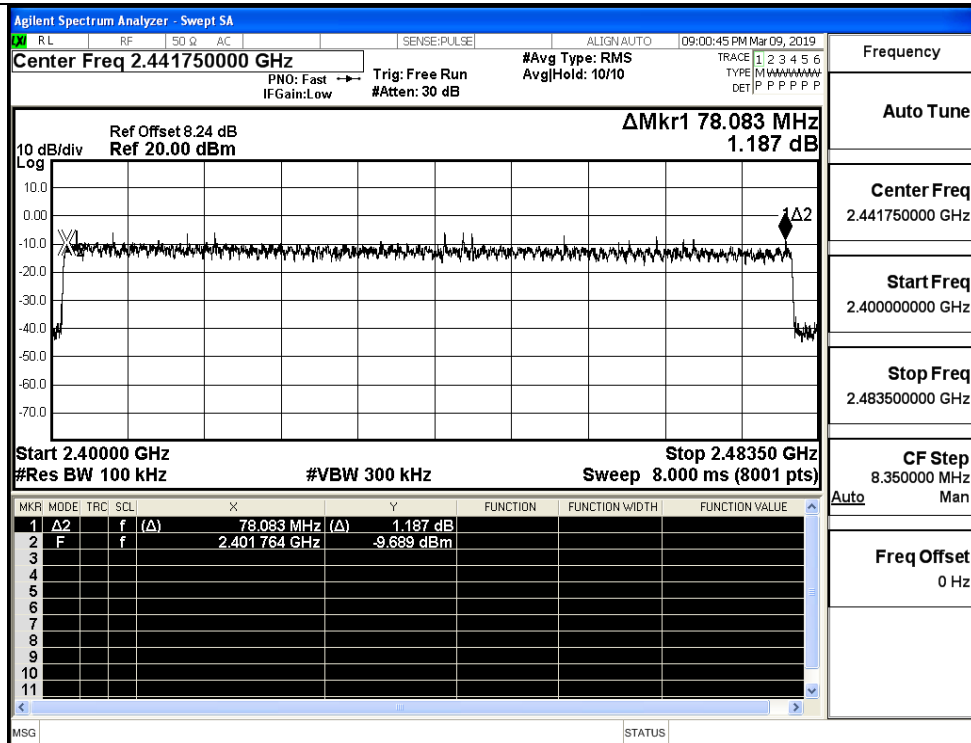
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2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

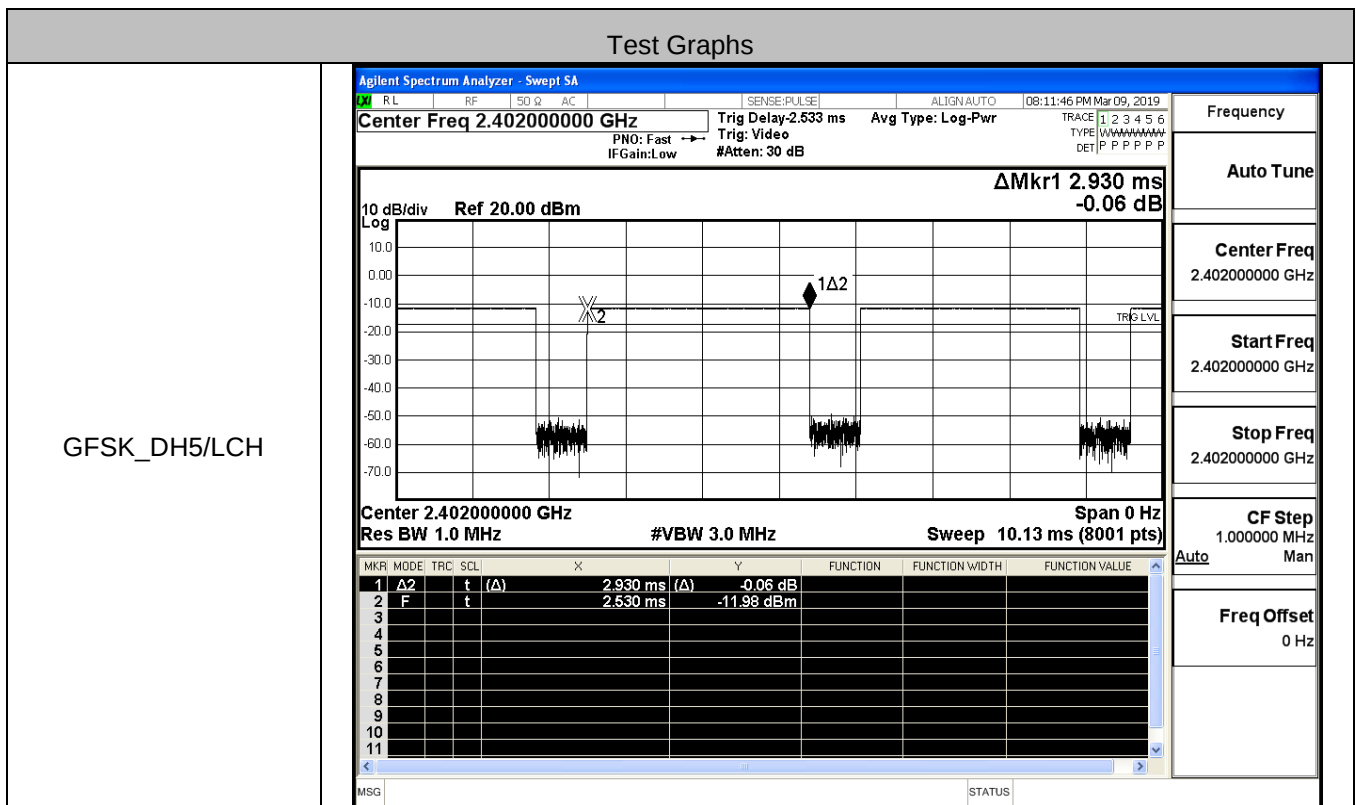
Auto Tune

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

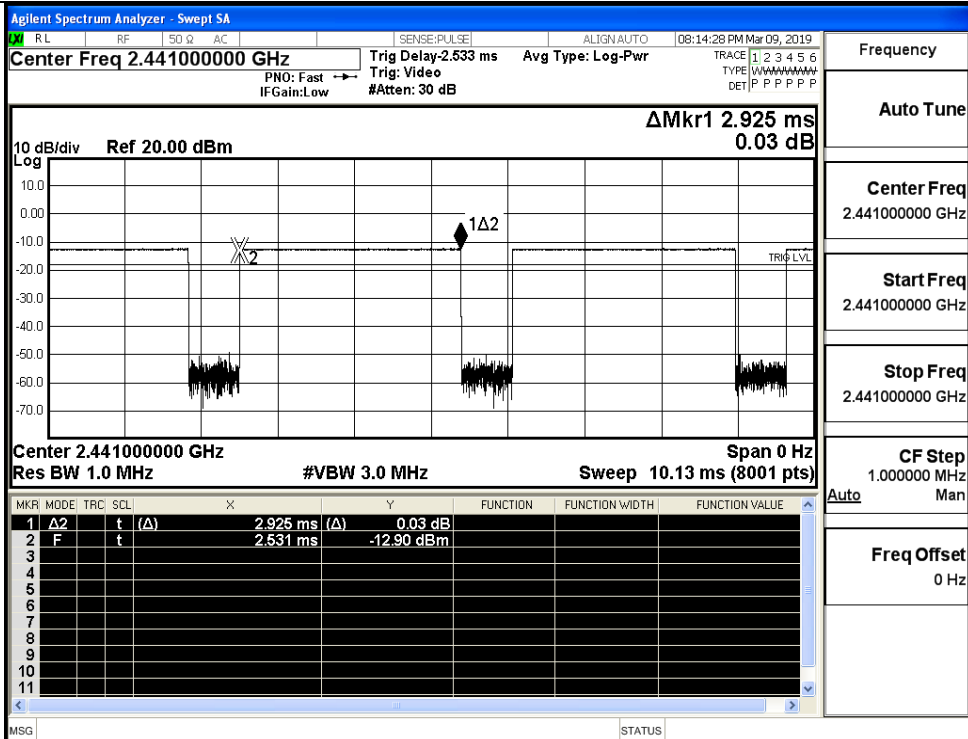
8DPSK/Hop



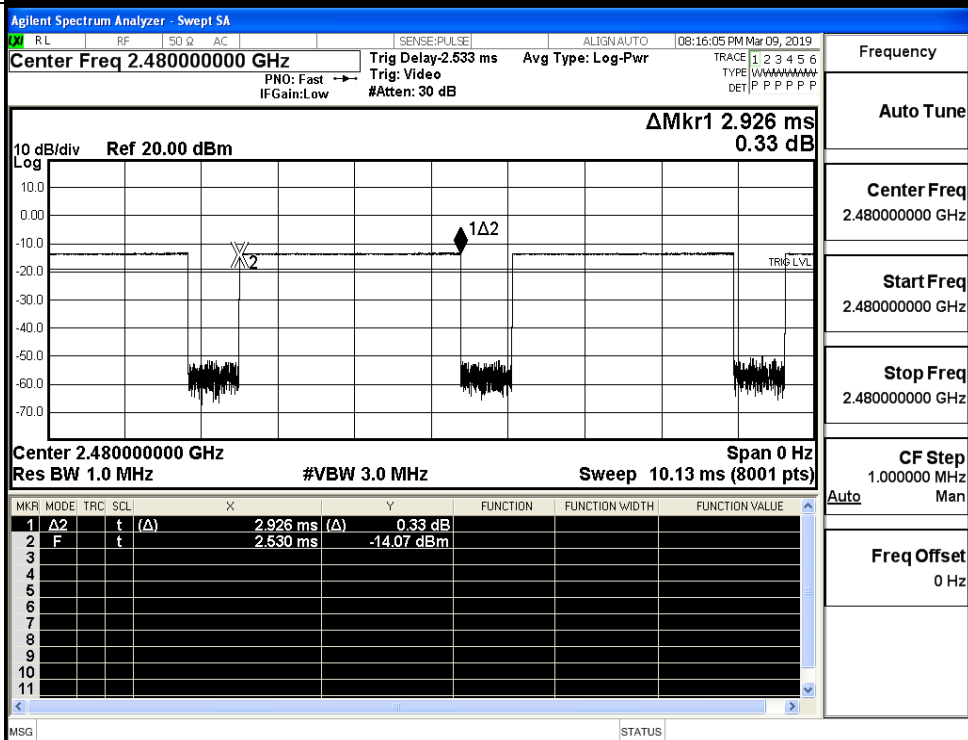
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.93	106.7	0.313	0.4	PASS
	DH5	MCH	2.93	106.7	0.313	0.4	PASS
	DH5	HCH	2.93	106.7	0.313	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.93	106.7	0.313	0.4	PASS
	2DH5	MCH	2.93	106.7	0.313	0.4	PASS
	2DH5	HCH	2.93	106.7	0.313	0.4	PASS
8DPSK	3DH5	LCH	2.93	106.7	0.313	0.4	PASS
	3DH5	MCH	2.93	106.7	0.313	0.4	PASS
	3DH5	HCH	2.93	106.7	0.313	0.4	PASS



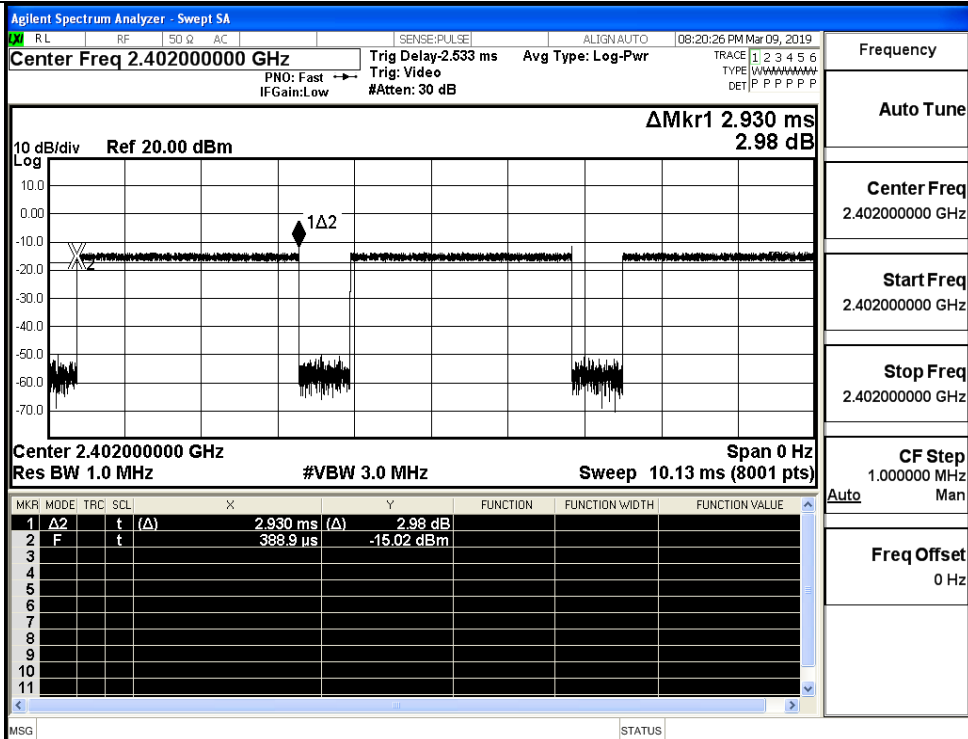
GFSK_DH5/MCH



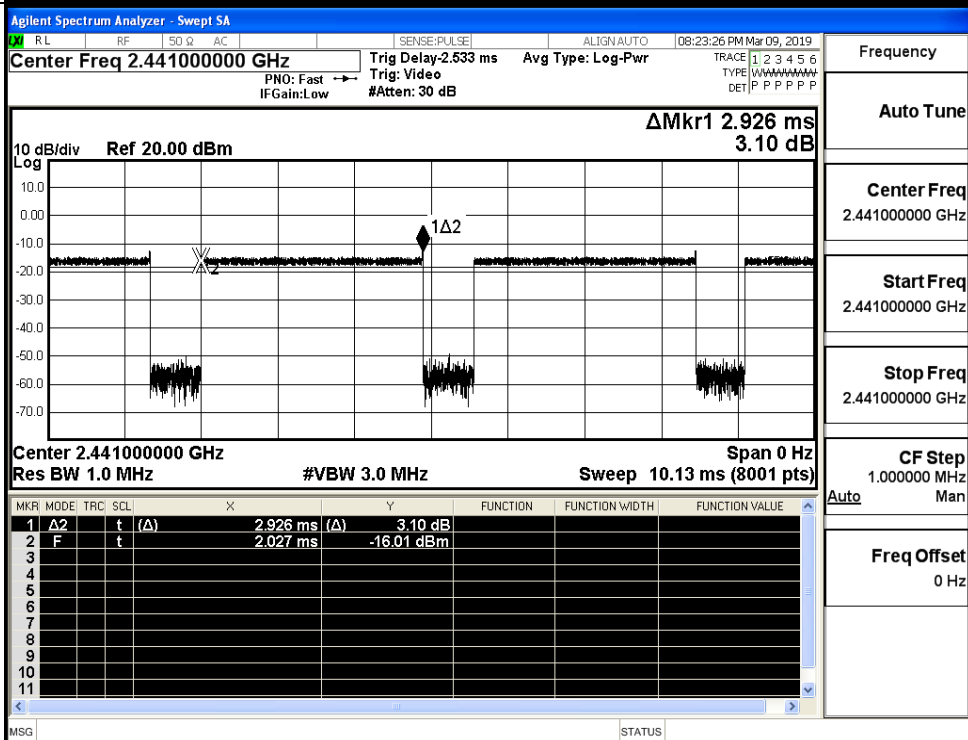
GFSK_DH5/HCH



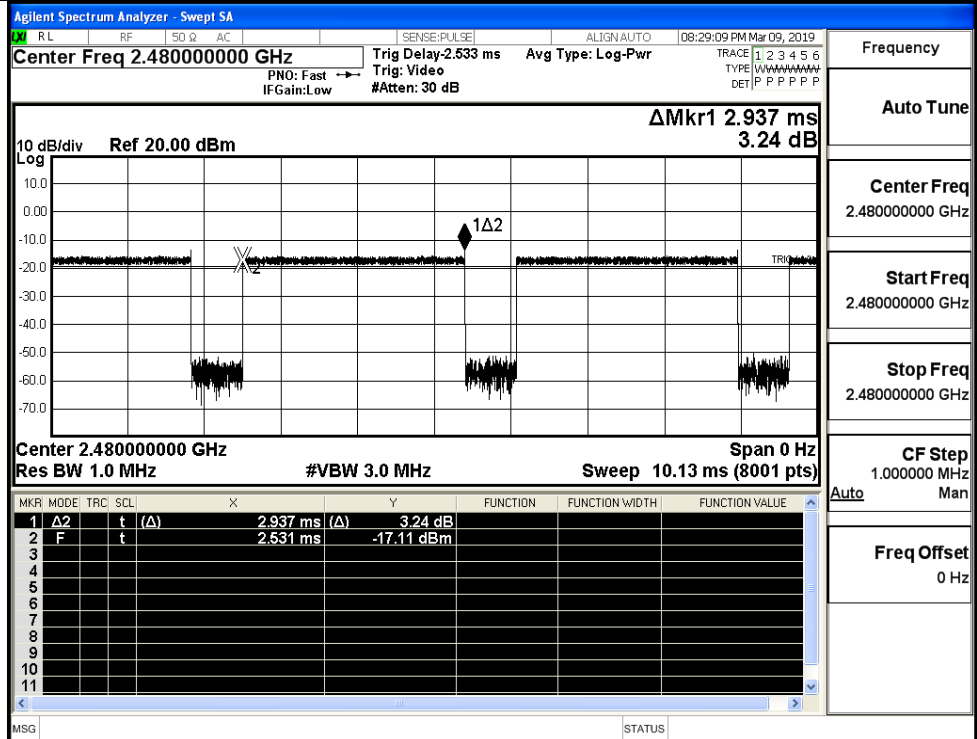
$\pi/4$ DQPSK
_2DH5/LCH



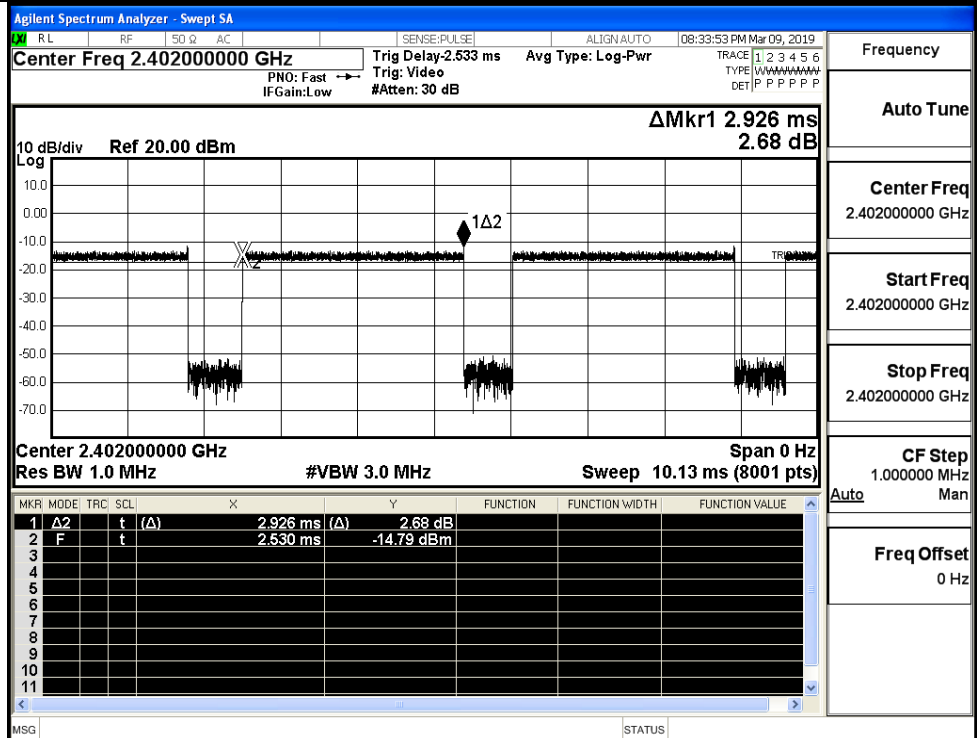
$\pi/4$ DQPSK
_2DH5/MCH



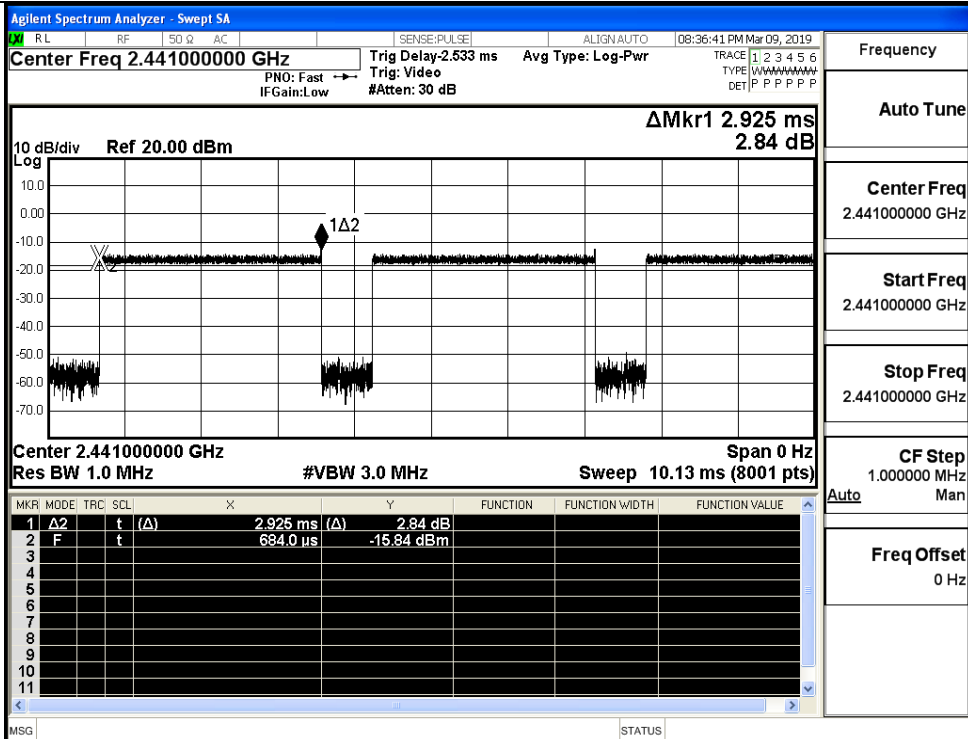
$\pi/4$ DQPSK
_2DH5/HCH



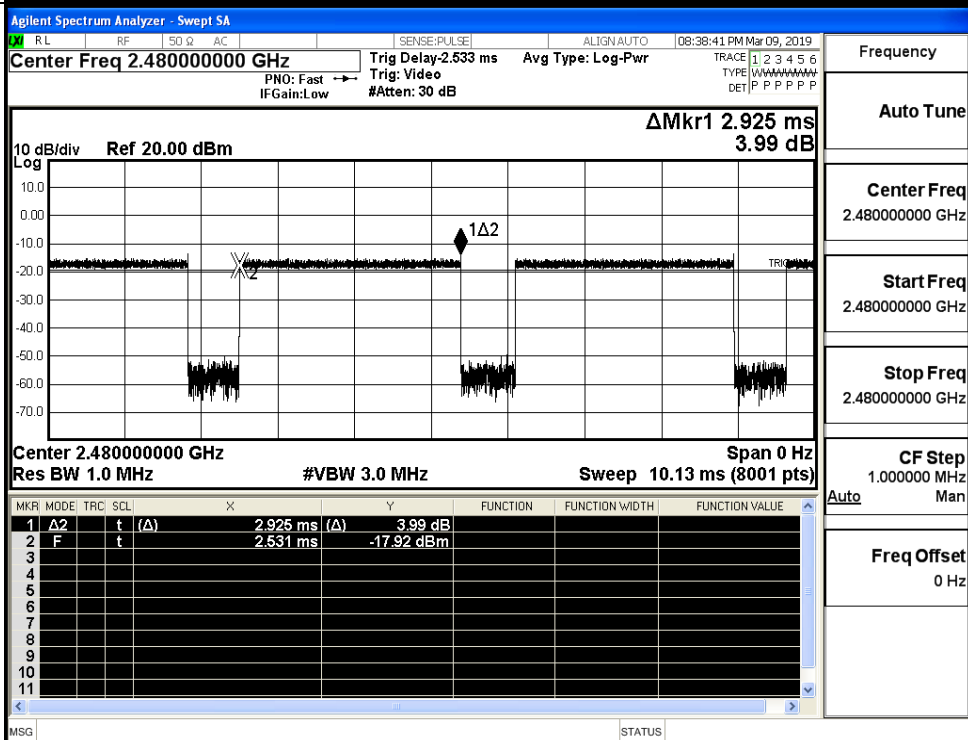
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



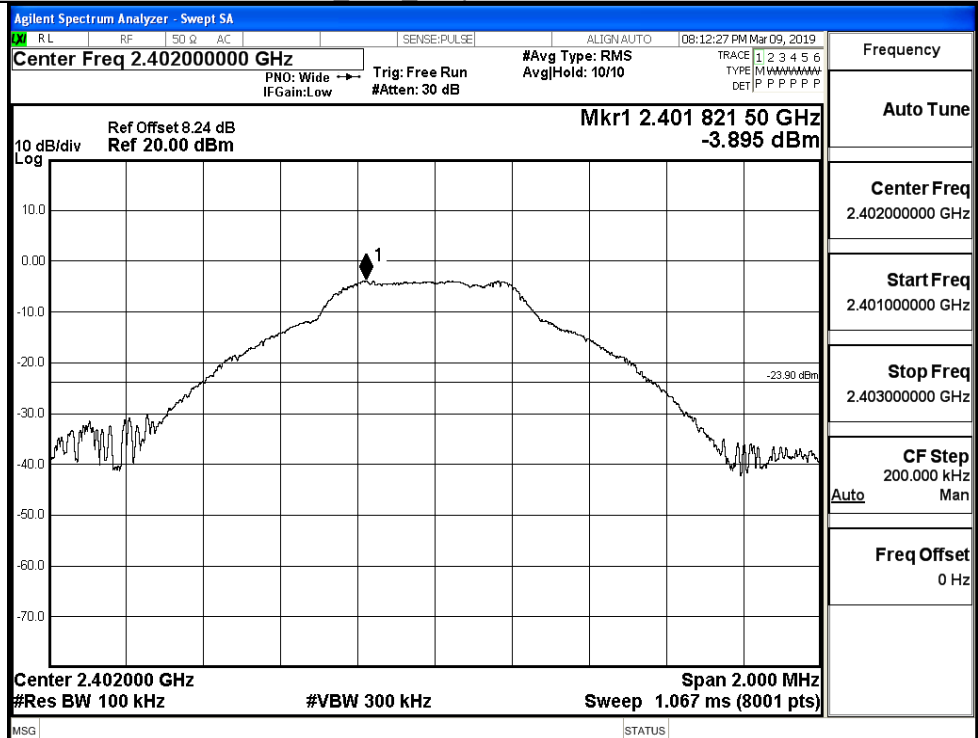
8DPSK_3DH5/HCH



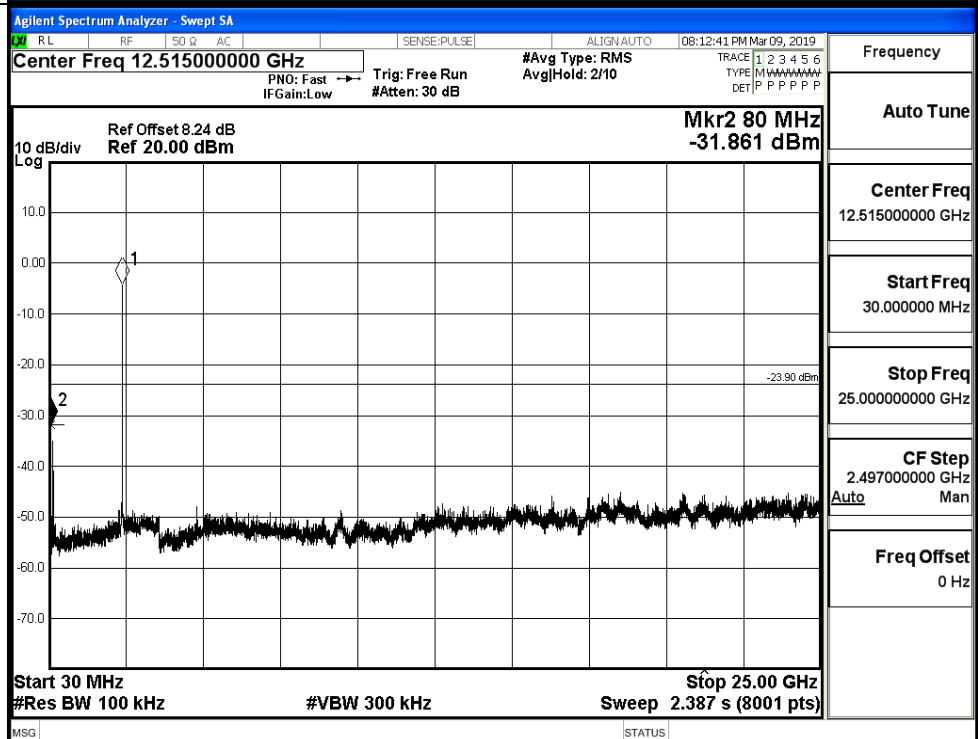
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.895	-31.861	-23.895	PASS
	MCH	-4.704	-31.563	-24.704	PASS
	HCH	-5.71	-30.547	-25.710	PASS
$\pi/4$ DQPSK	LCH	-5.356	-29.891	-25.356	PASS
	MCH	-6.311	-27.971	-26.311	PASS
	HCH	-7.276	-31.607	-27.276	PASS
8DPSK	LCH	-4.997	-29.984	-24.997	PASS
	MCH	-6.064	-30.951	-26.064	PASS
	HCH	-8.067	-31.080	-28.067	PASS

Pref

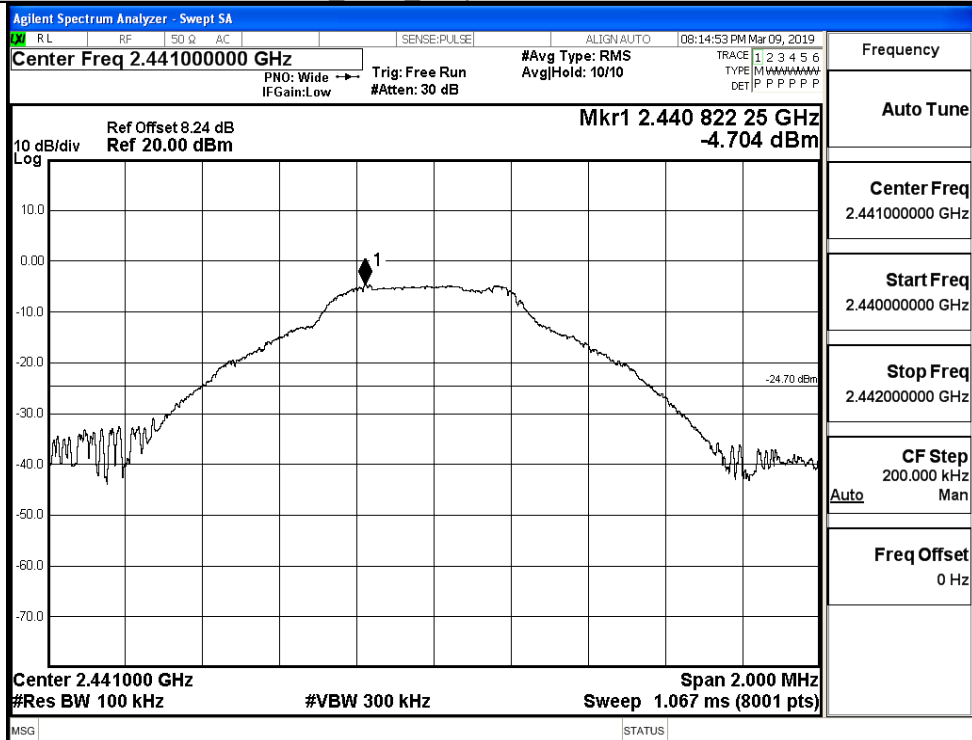


Puw

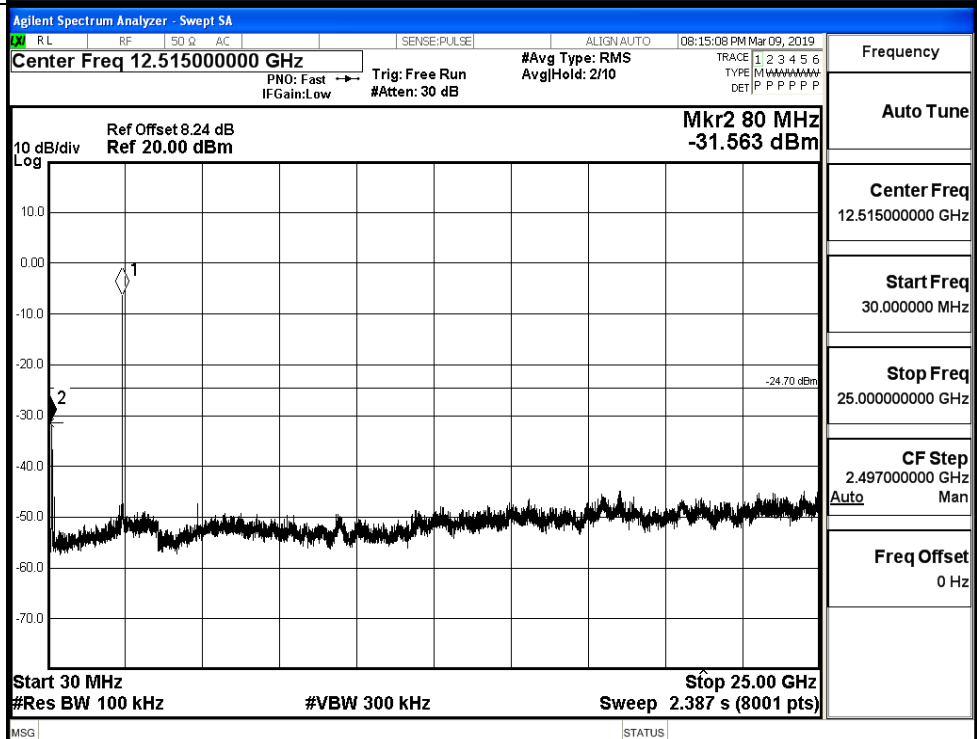


GFSK_MCH_Graphs

Pref

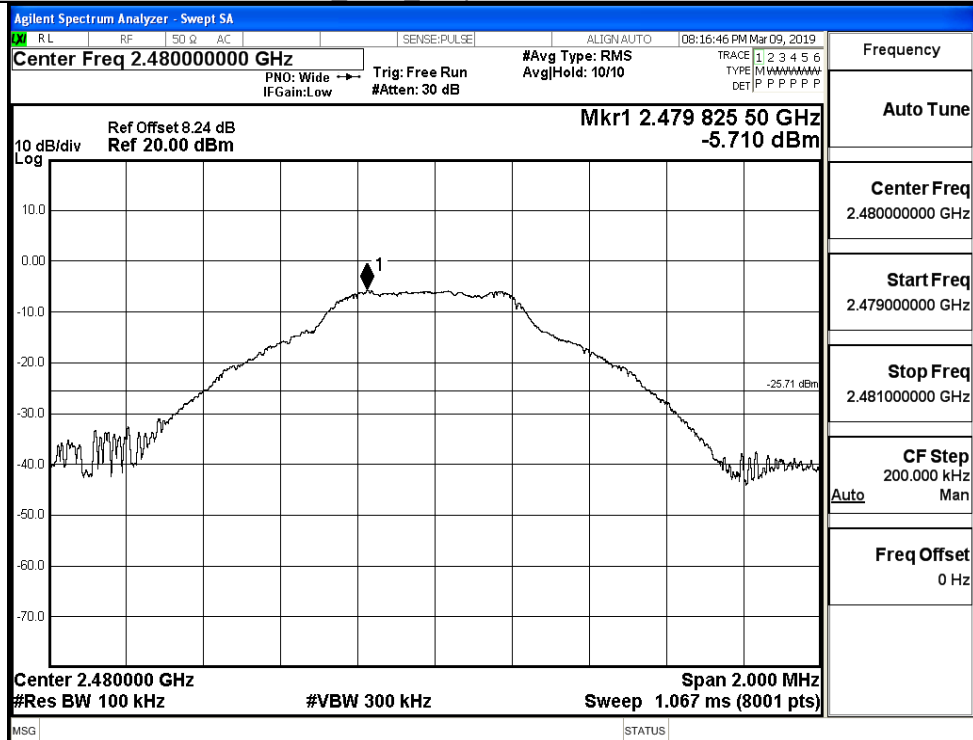


Puw

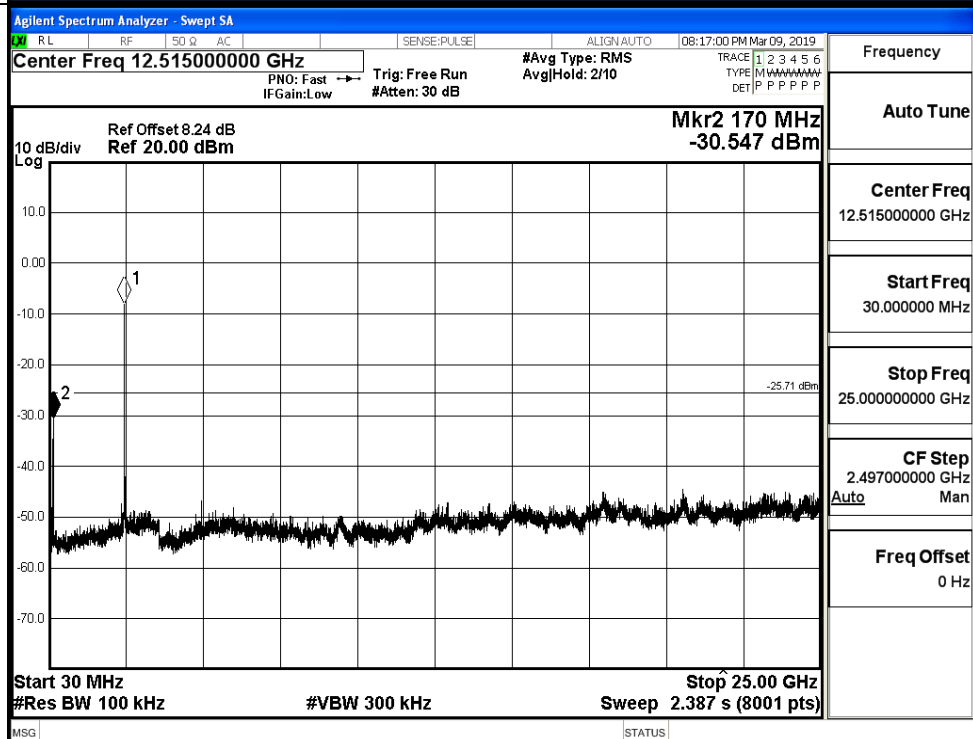


GFSK_HCH_Graphs

Pref

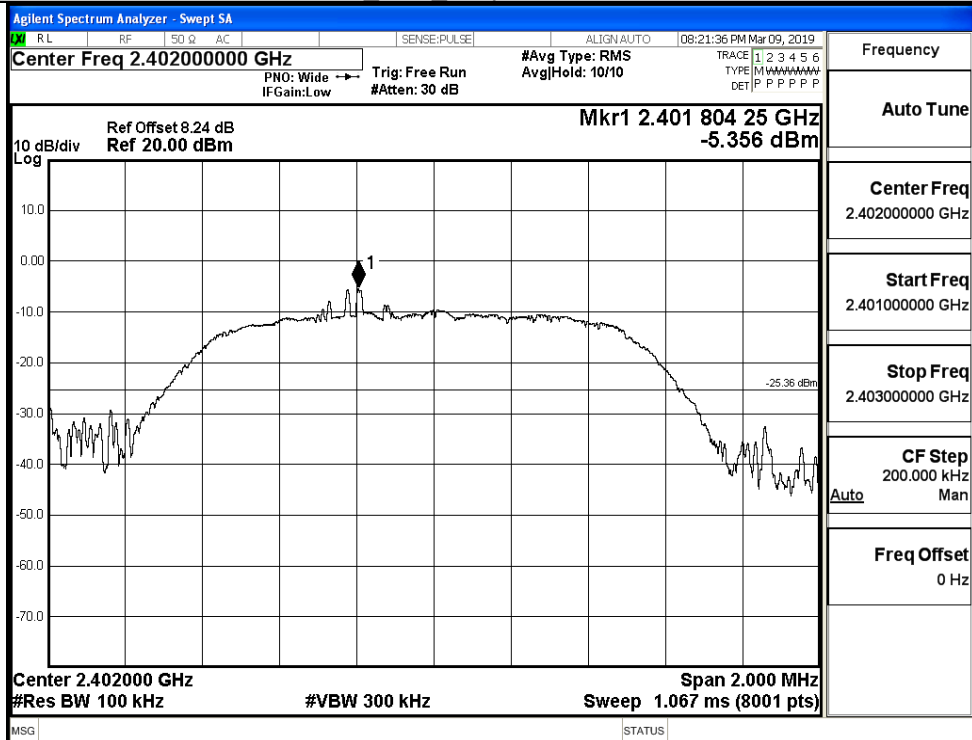


Puw

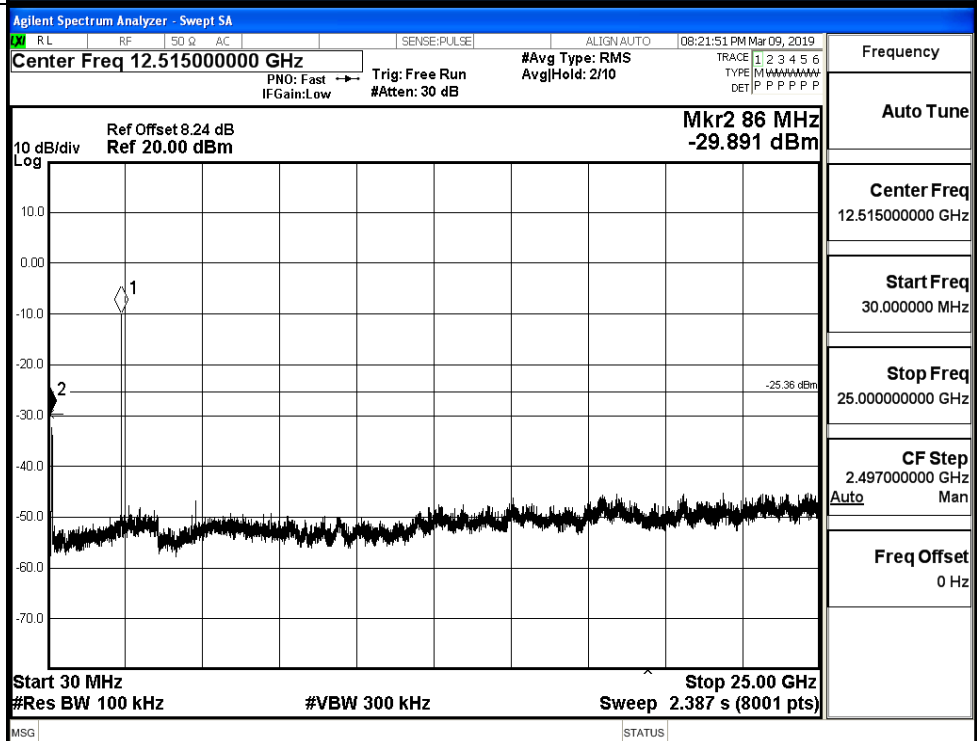


$\pi/4$ DQPSK_LCH_Graphs

Pref

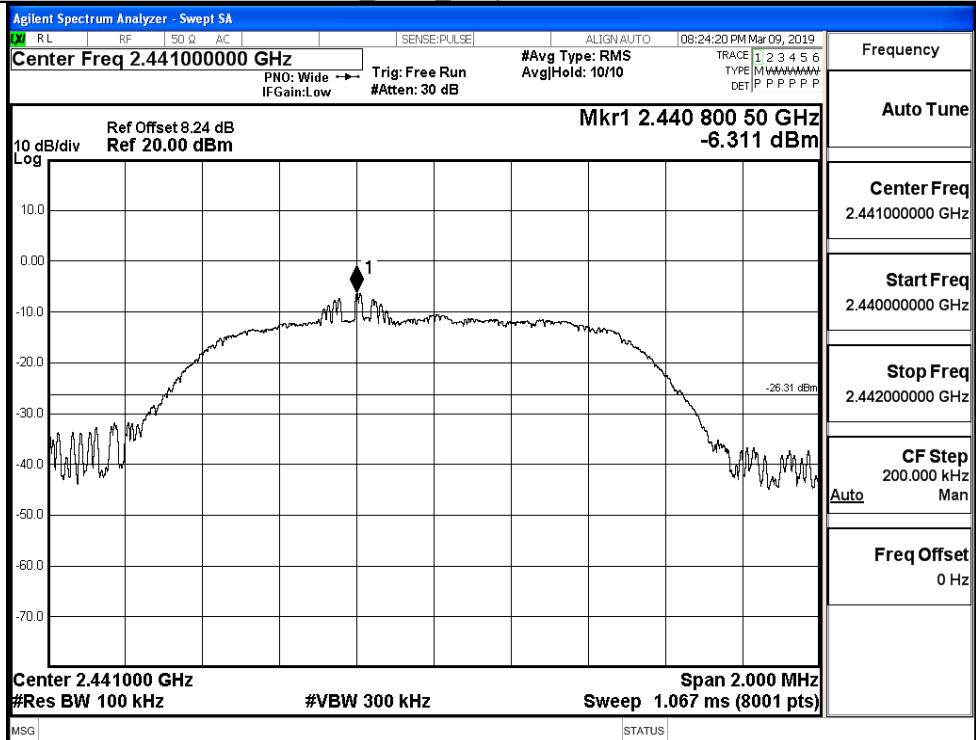


Puw

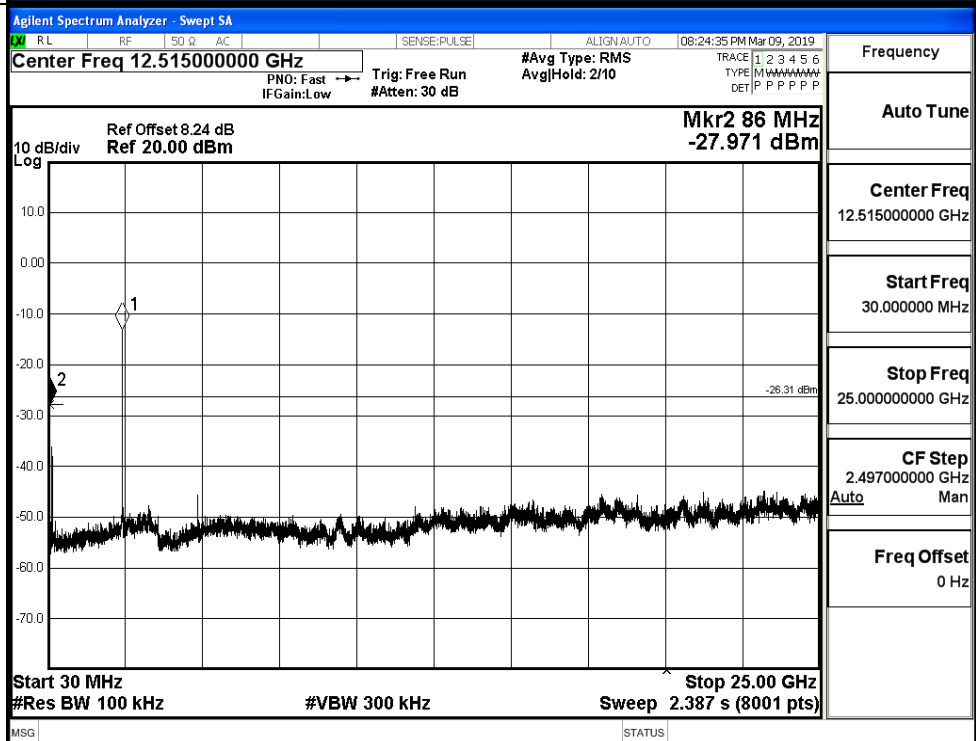


π /4DQPSK_MCH_Graphs

Pref

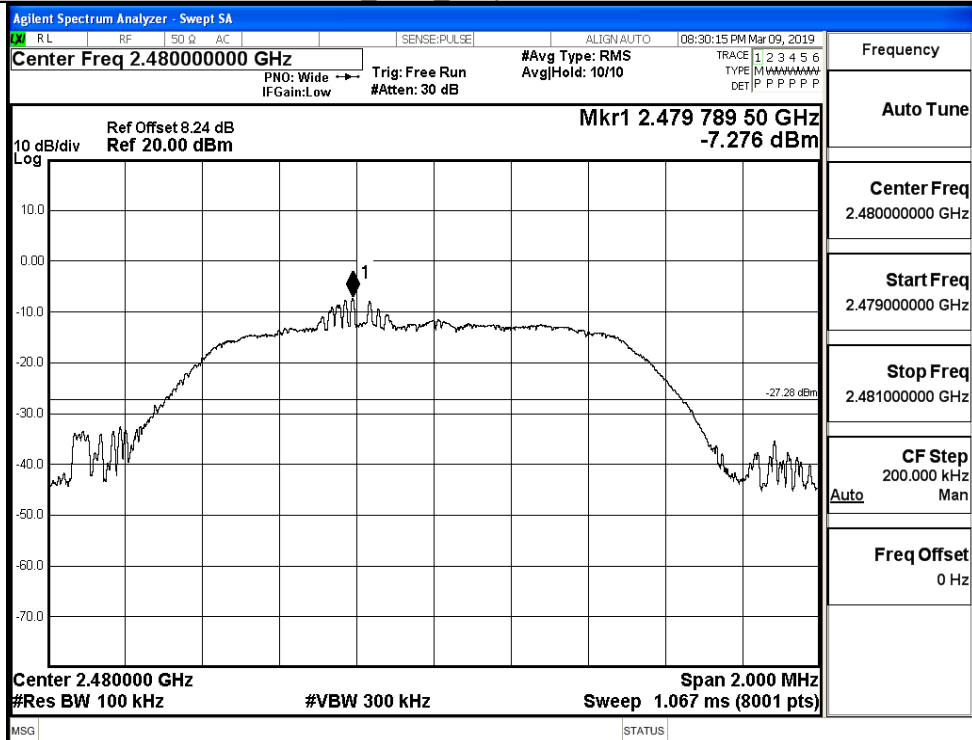


Puw

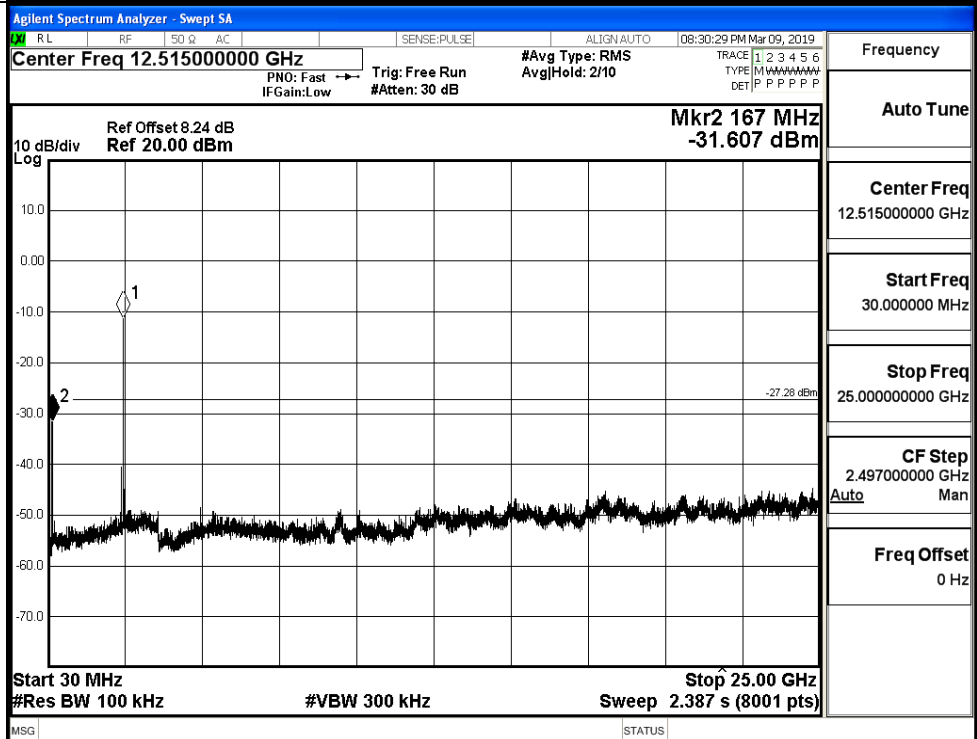


π /4DQPSK_HCH_Graphs

Pref

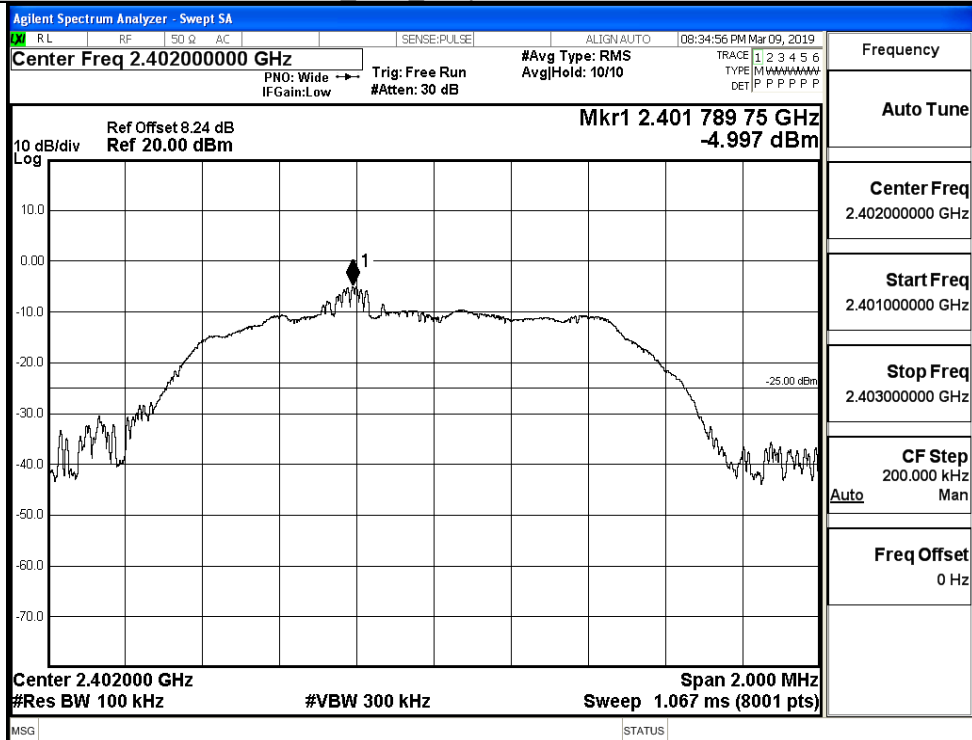


Puw

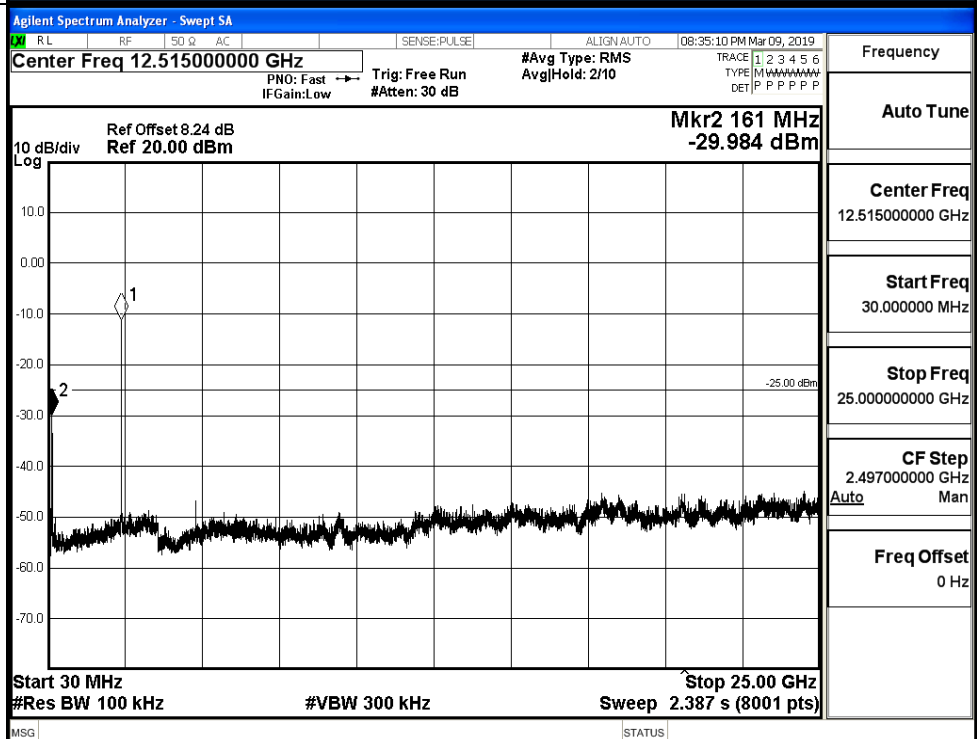


8DPSK_LCH_Graphs

Pref

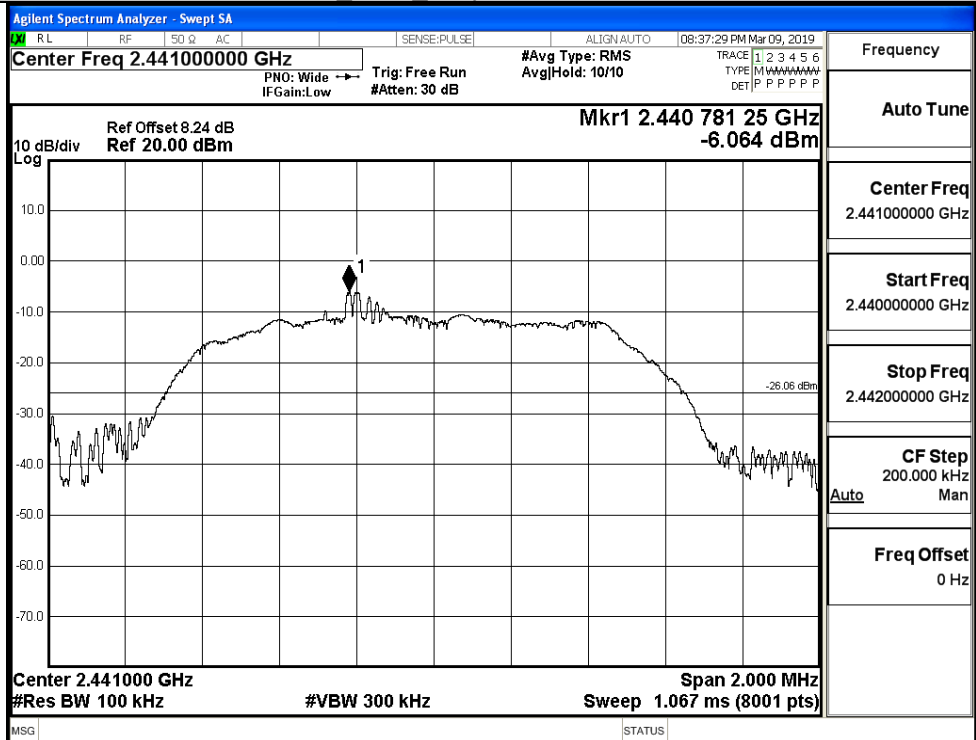


Puw

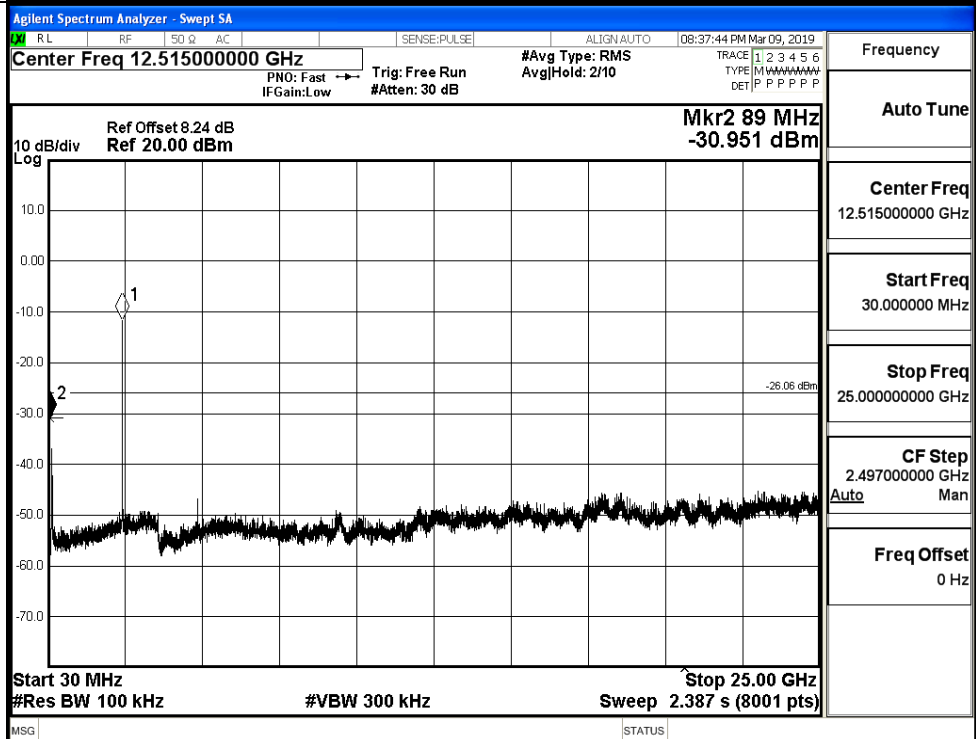


8DPSK_MCH_Graphs

Pref

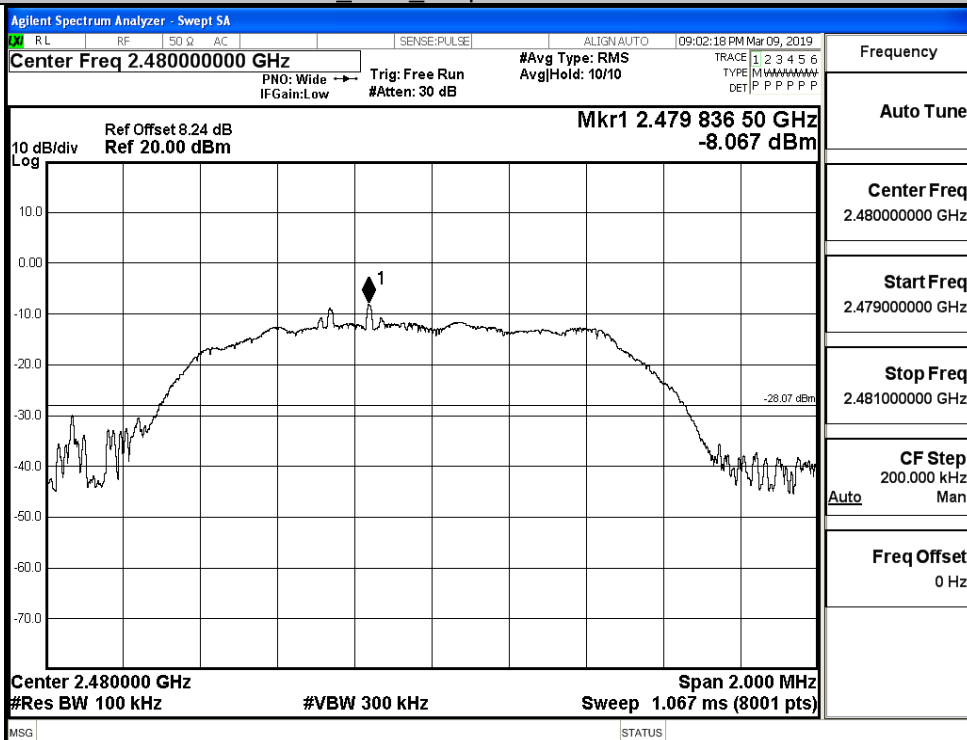


Puw

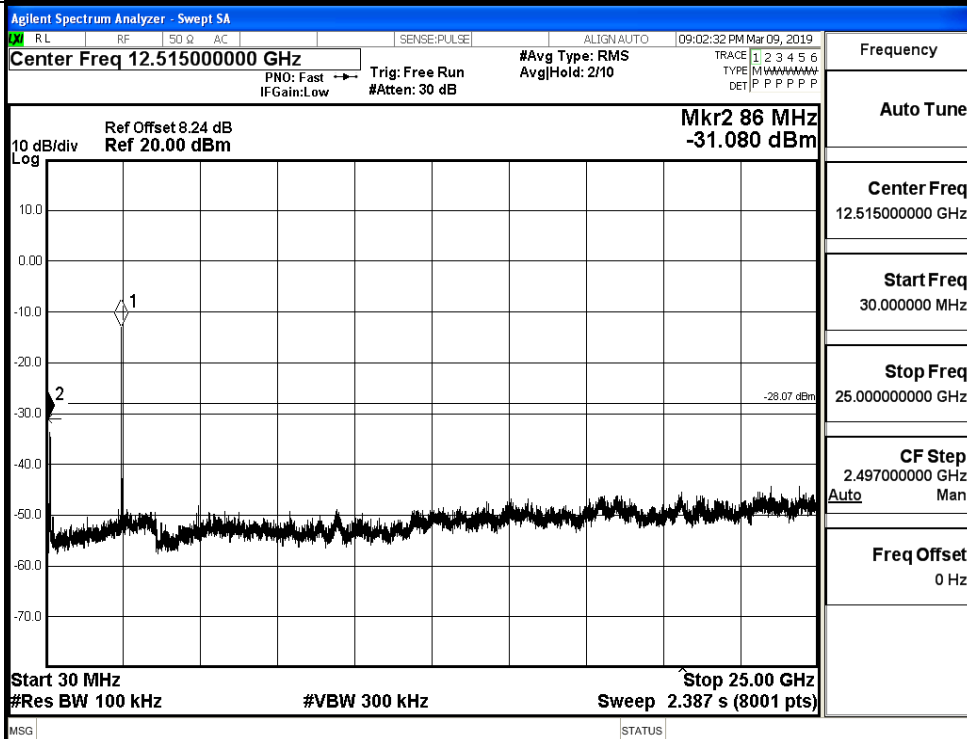


8DPSK_HCH_Graphs

Pref



Puw

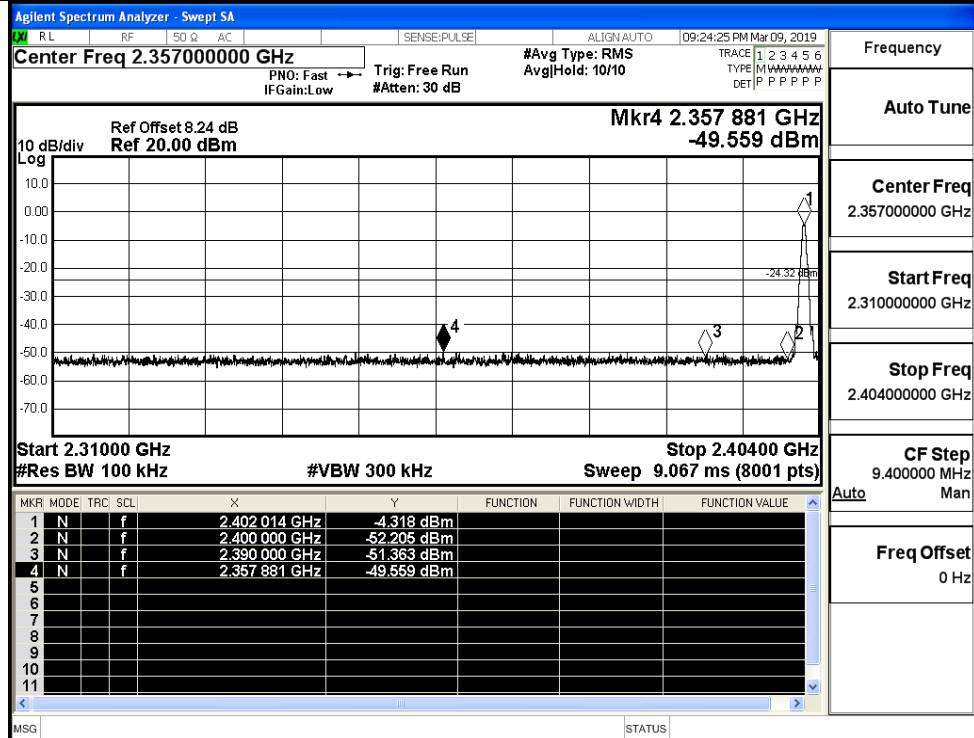


A.7 Band-edge for RF Conducted Emissions

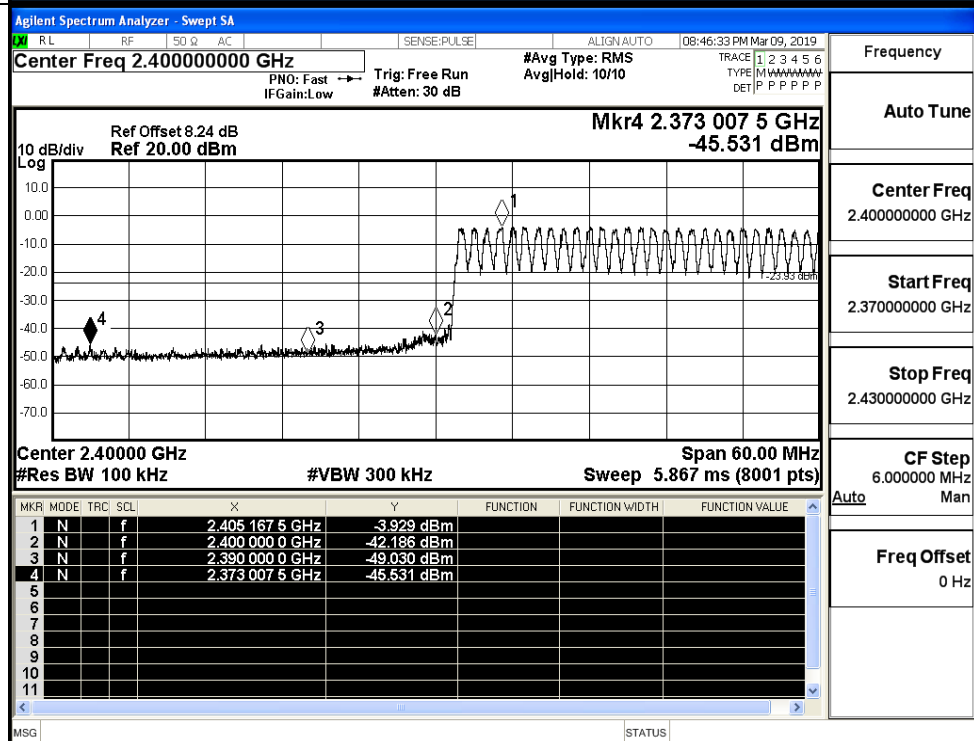
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-4.318	Off	-49.559	-24.32	PASS
			-3.929	On	-45.531	-23.93	PASS
	HCH	2480	-4.801	Off	-49.766	-24.8	PASS
			-5.241	On	-40.650	-25.24	PASS
$\pi/4$ DQPSK	LCH	2402	-5.401	Off	-49.201	-25.4	PASS
			-5.260	On	-47.236	-25.26	PASS
	HCH	2480	-5.883	Off	-49.634	-25.88	PASS
			-6.877	On	-40.012	-26.88	PASS
8DPSK	LCH	2402	-5.872	Off	-49.690	-25.87	PASS
			-5.445	On	-45.812	-25.45	PASS
	HCH	2480	-5.740	Off	-49.647	-25.74	PASS
			-6.418	On	-42.555	-26.42	PASS

Test Graphs

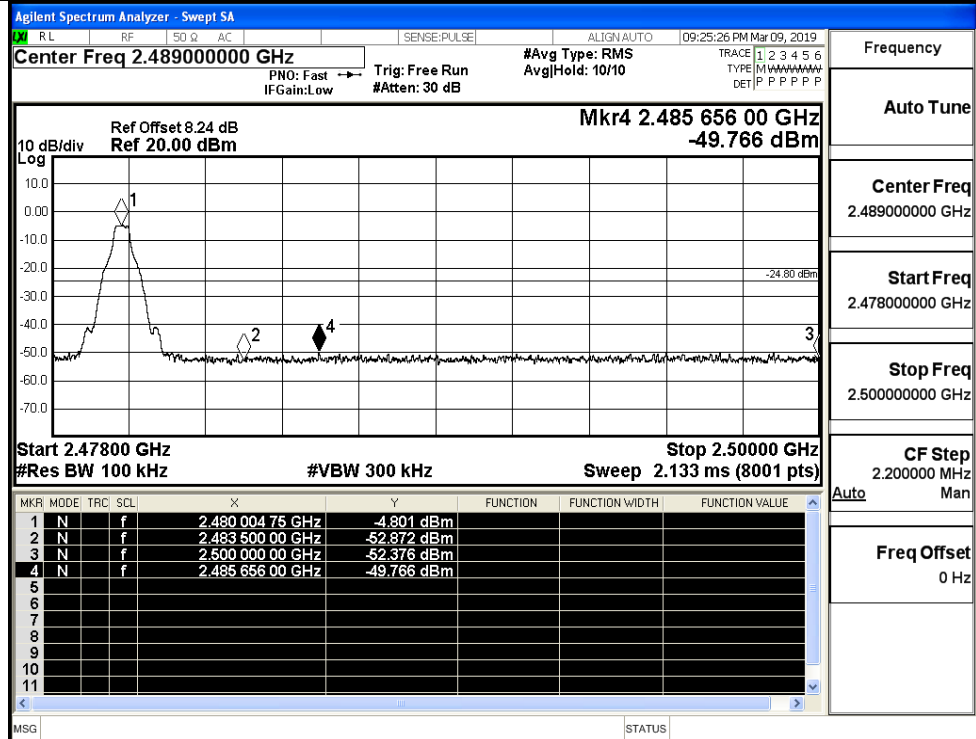
GFSK/LCH/No Hop



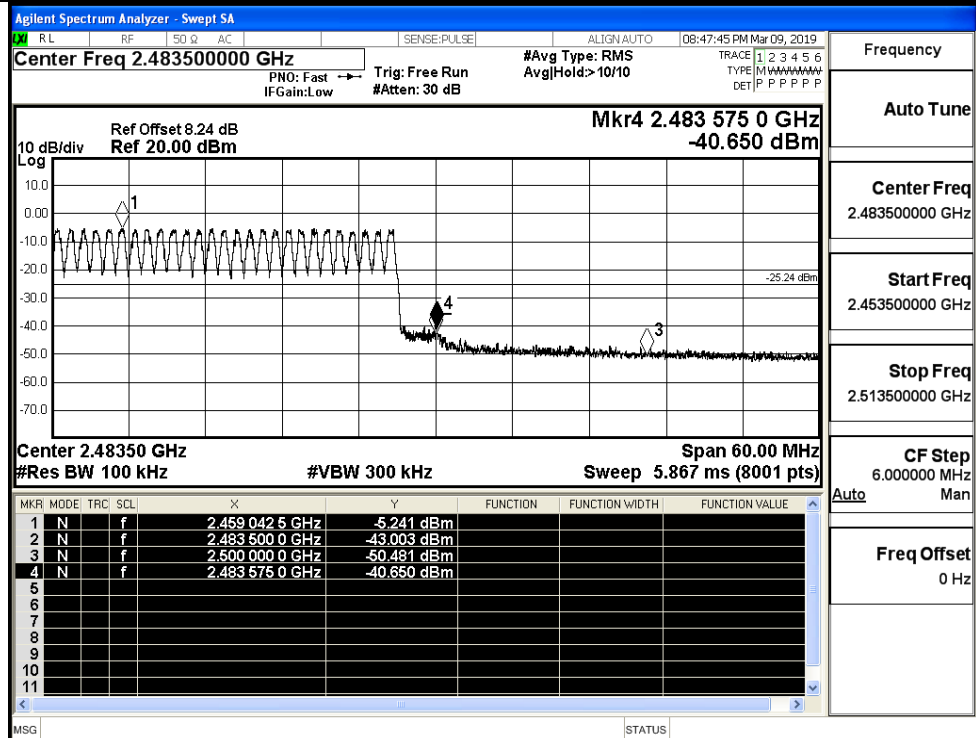
GFSK/LCH/Hop



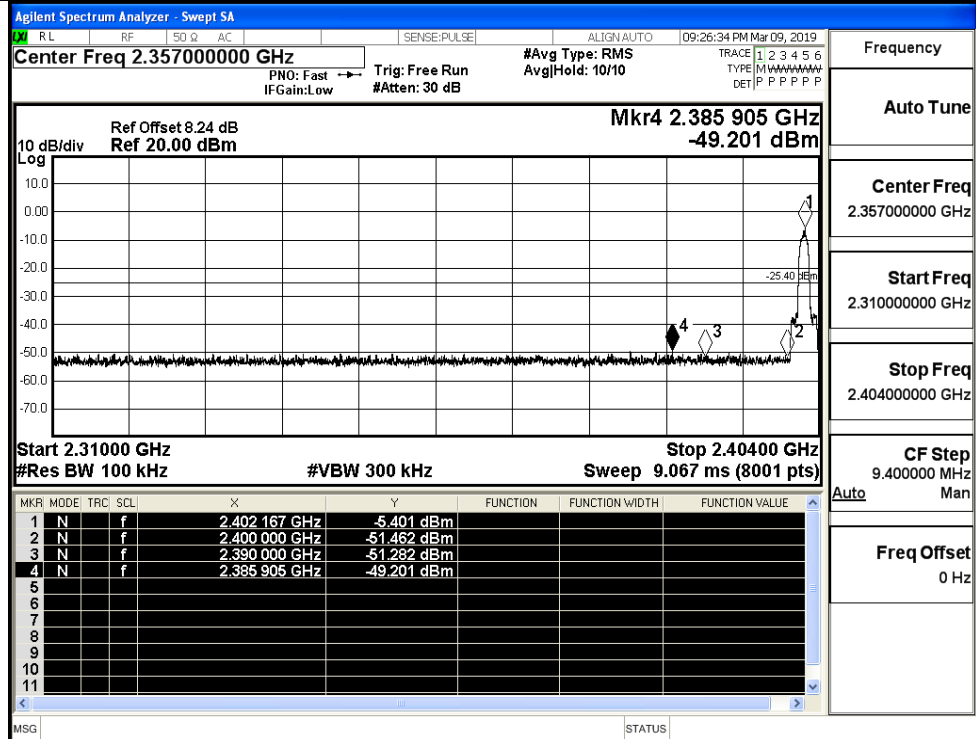
GFSK/HCH/No Hop



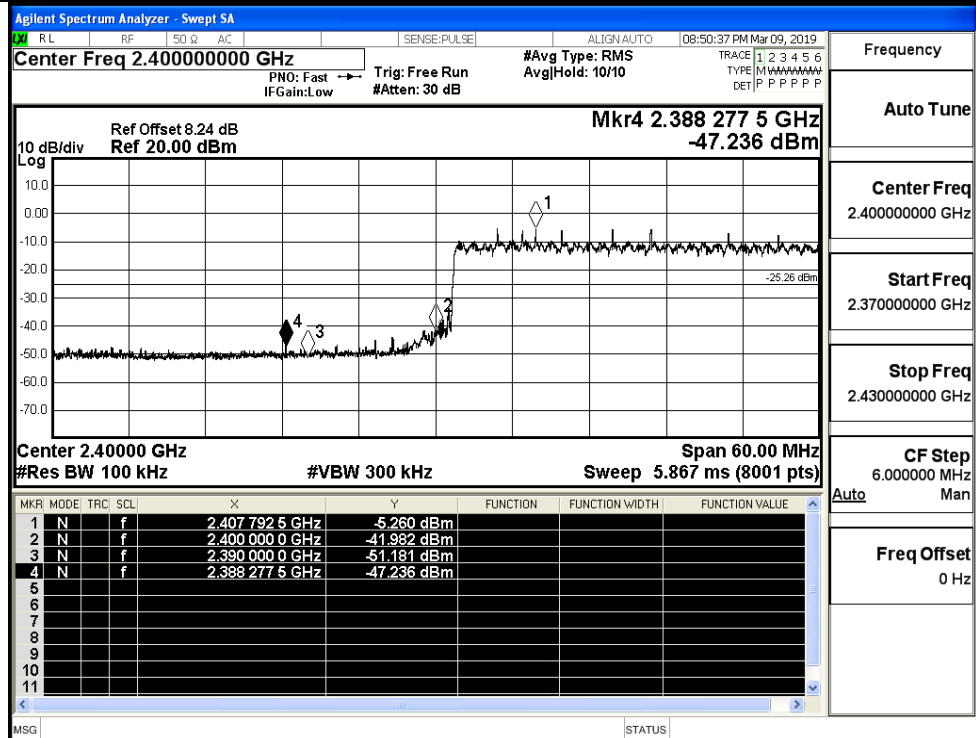
GFSK/HCH/Hop



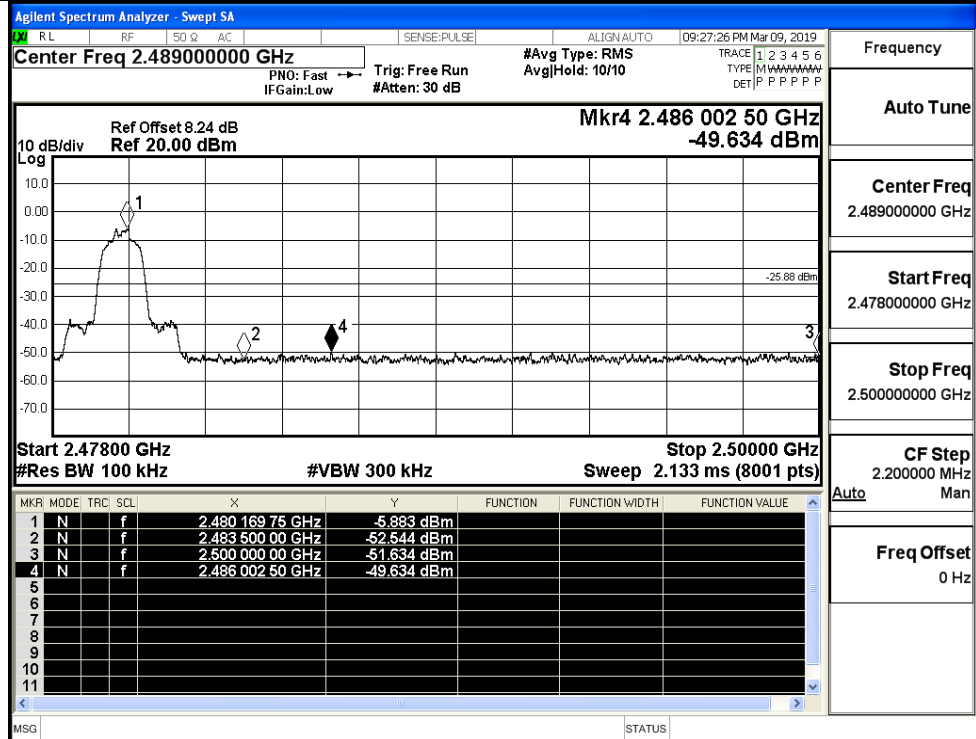
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

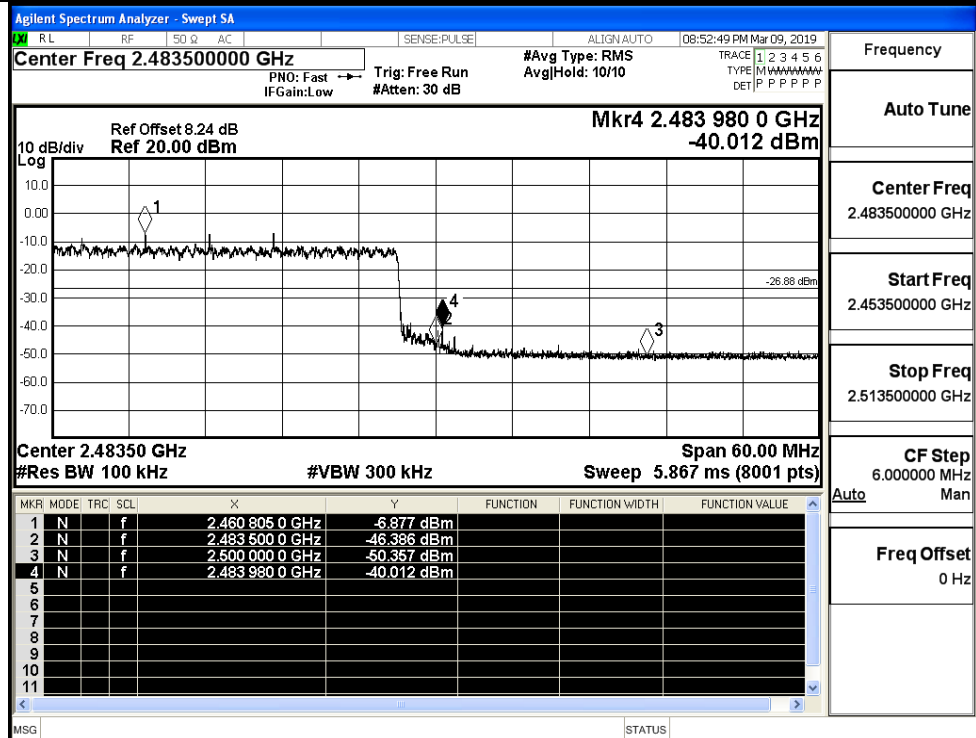


Frequency

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

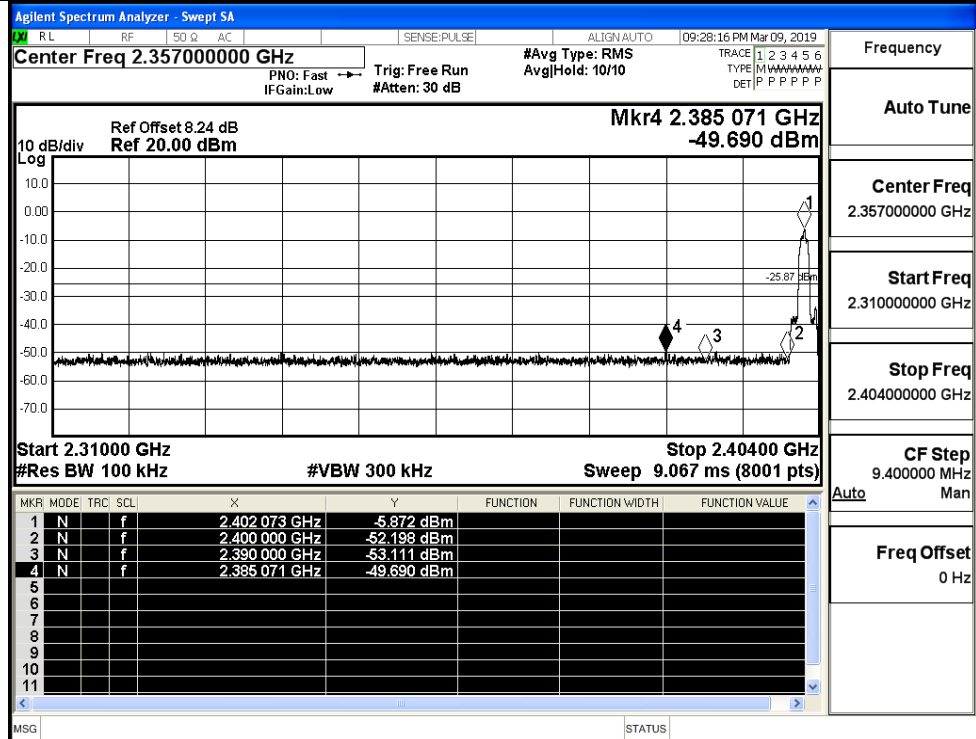


Frequency

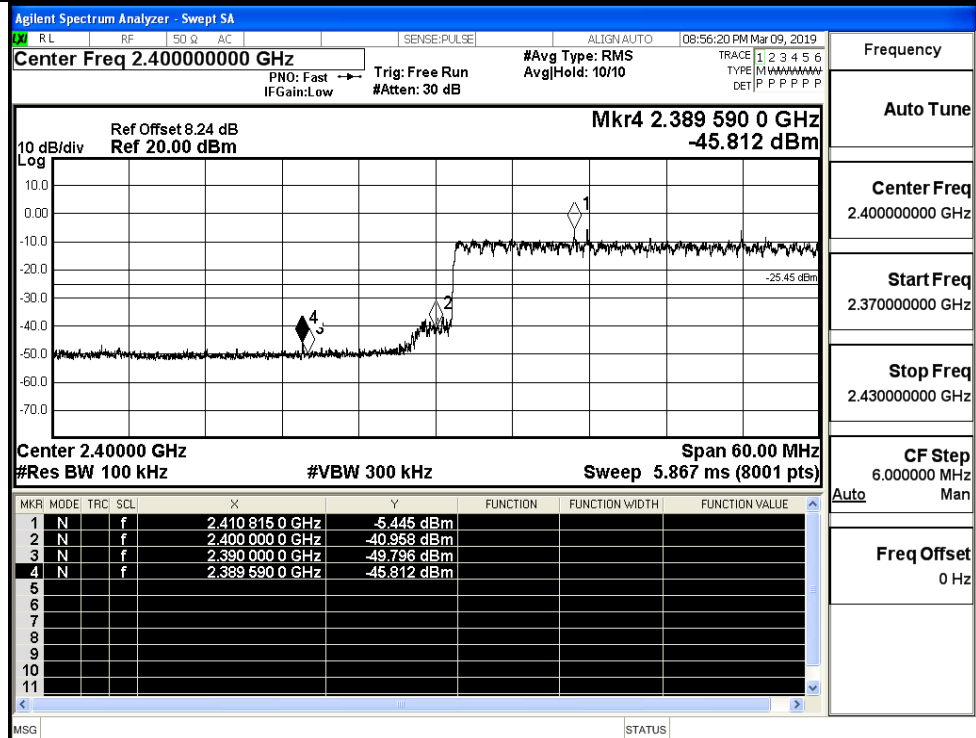
Auto Tune

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

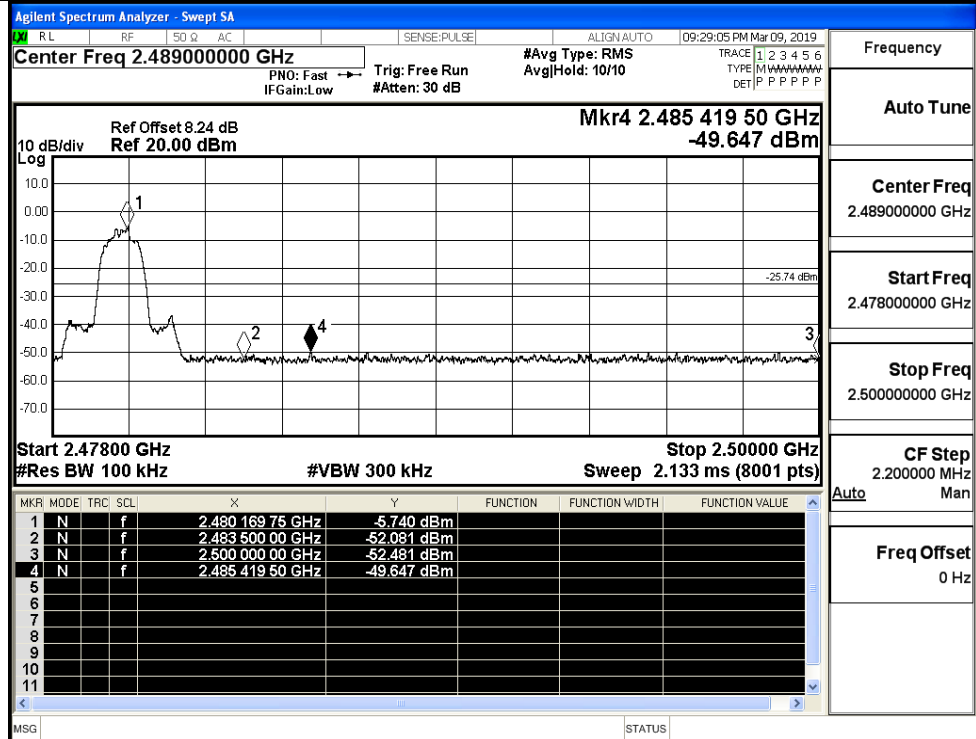
8DPSK/LCH/No Hop



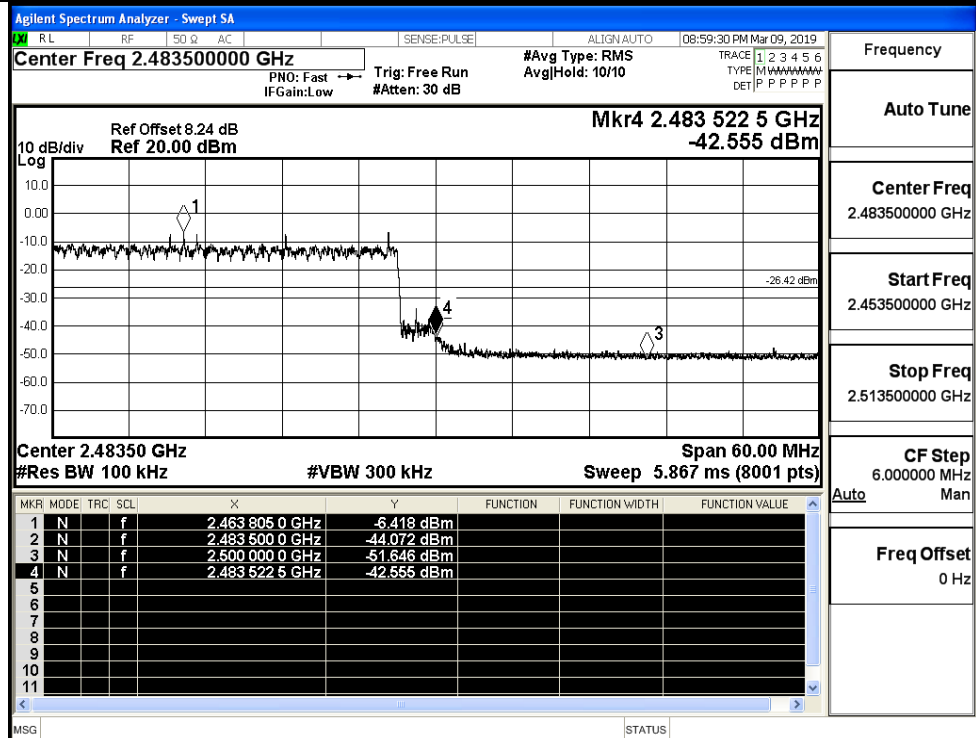
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



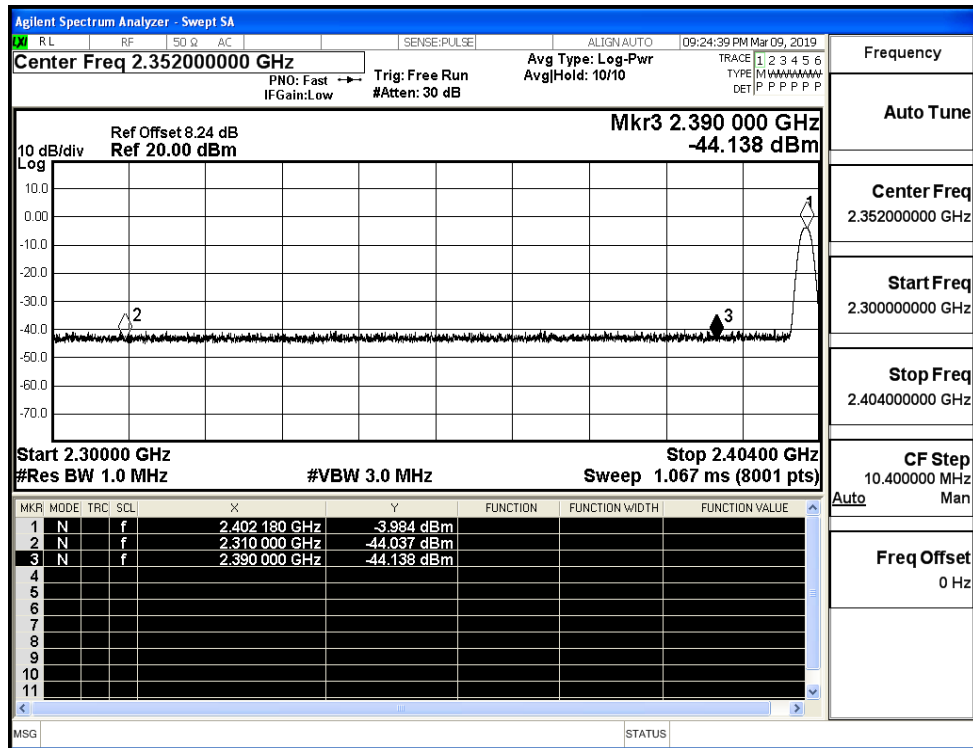
8DPSK/HCH/Hop



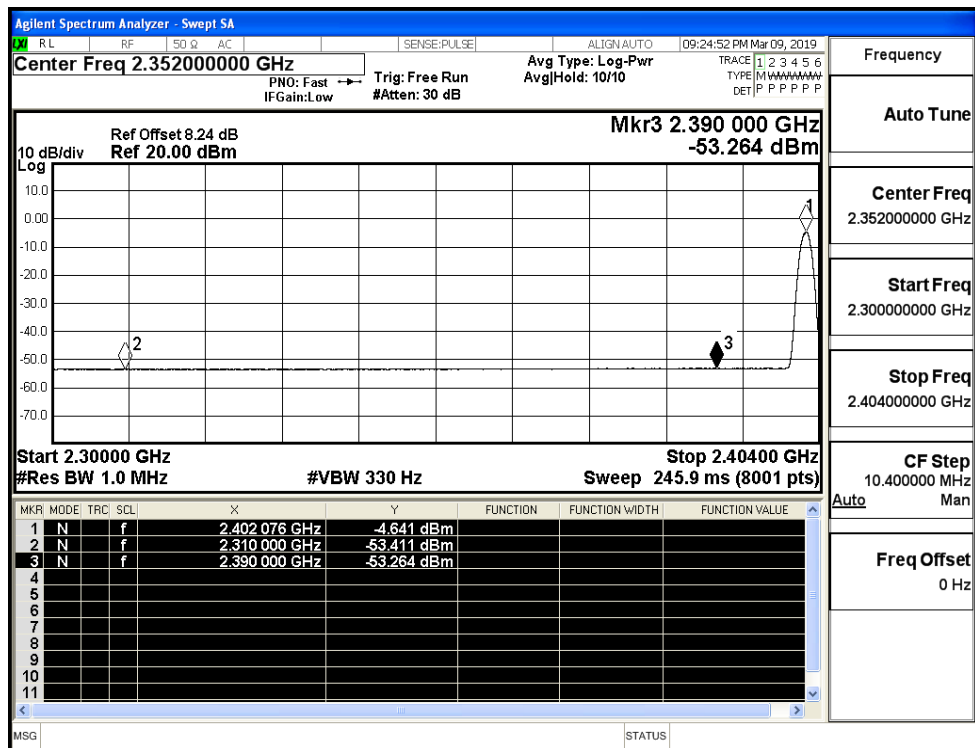
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.04	2.0	0	53.22	PEAK	74	PASS
	Off	2310.0	-53.41	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-44.14	2.0	0	53.12	PEAK	74	PASS
	Off	2390.0	-53.26	2.0	0	43.99	AV	54	PASS
	Off	2483.5	-41.94	2.0	0	55.32	PEAK	74	PASS
	Off	2483.5	-52.95	2.0	0	44.31	AV	54	PASS
	Off	2500.0	-42.09	2.0	0	55.17	PEAK	74	PASS
	Off	2500.0	-52.86	2.0	0	44.40	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.71	2.0	0	53.55	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2390.0	-42.78	2.0	0	54.47	PEAK	74	PASS
	Off	2390.0	-53.20	2.0	0	44.06	AV	54	PASS
	Off	2483.5	-43.20	2.0	0	54.06	PEAK	74	PASS
	Off	2483.5	-52.98	2.0	0	44.28	AV	54	PASS
	Off	2500.0	-42.94	2.0	0	54.32	PEAK	74	PASS
	Off	2500.0	-52.78	2.0	0	44.47	AV	54	PASS
8DPSK	Off	2310.0	-43.95	2.0	0	53.30	PEAK	74	PASS
	Off	2310.0	-53.51	2.0	0	43.74	AV	54	PASS
	Off	2390.0	-43.09	2.0	0	54.17	PEAK	74	PASS
	Off	2390.0	-53.25	2.0	0	44.01	AV	54	PASS
	Off	2483.5	-42.23	2.0	0	55.03	PEAK	74	PASS
	Off	2483.5	-52.93	2.0	0	44.33	AV	54	PASS
	Off	2500.0	-43.31	2.0	0	53.95	PEAK	74	PASS
	Off	2500.0	-52.85	2.0	0	44.41	AV	54	PASS

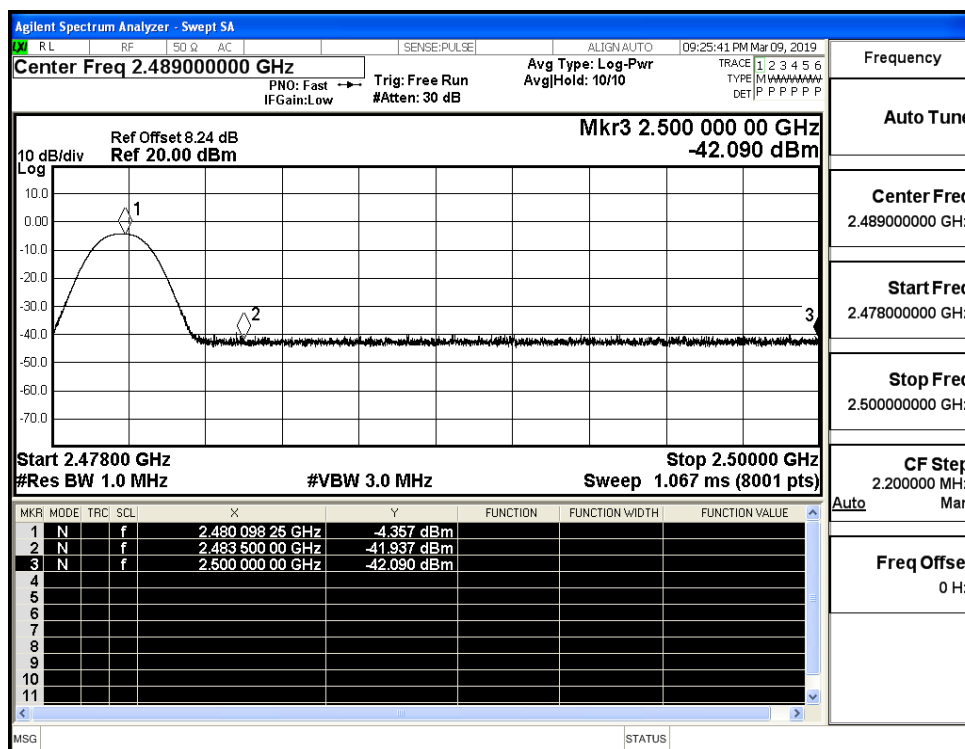
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



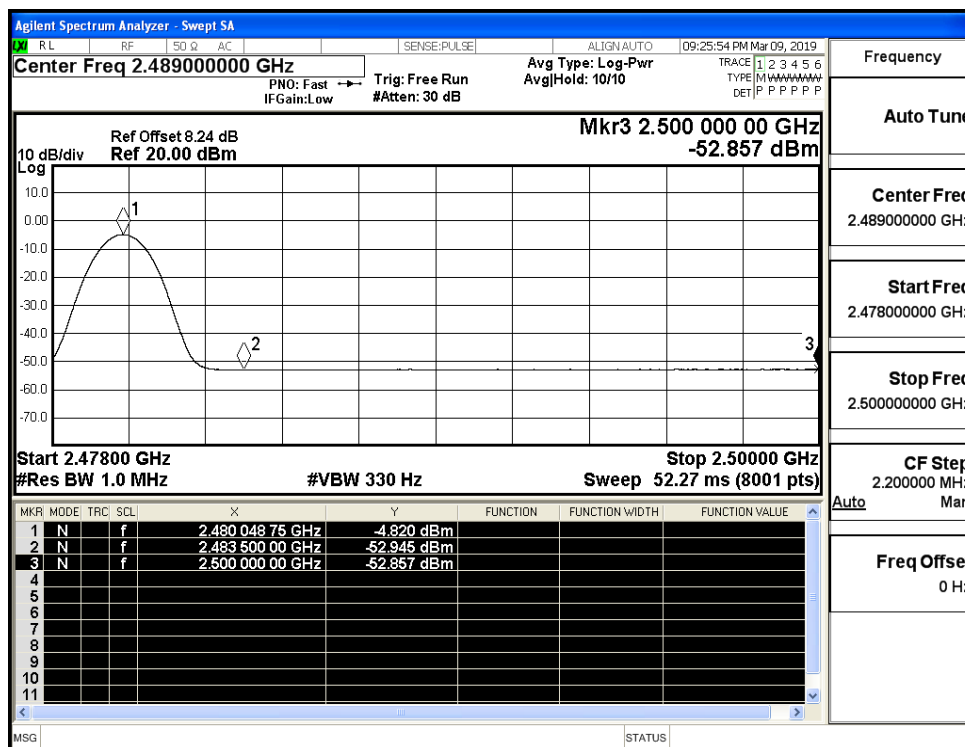
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

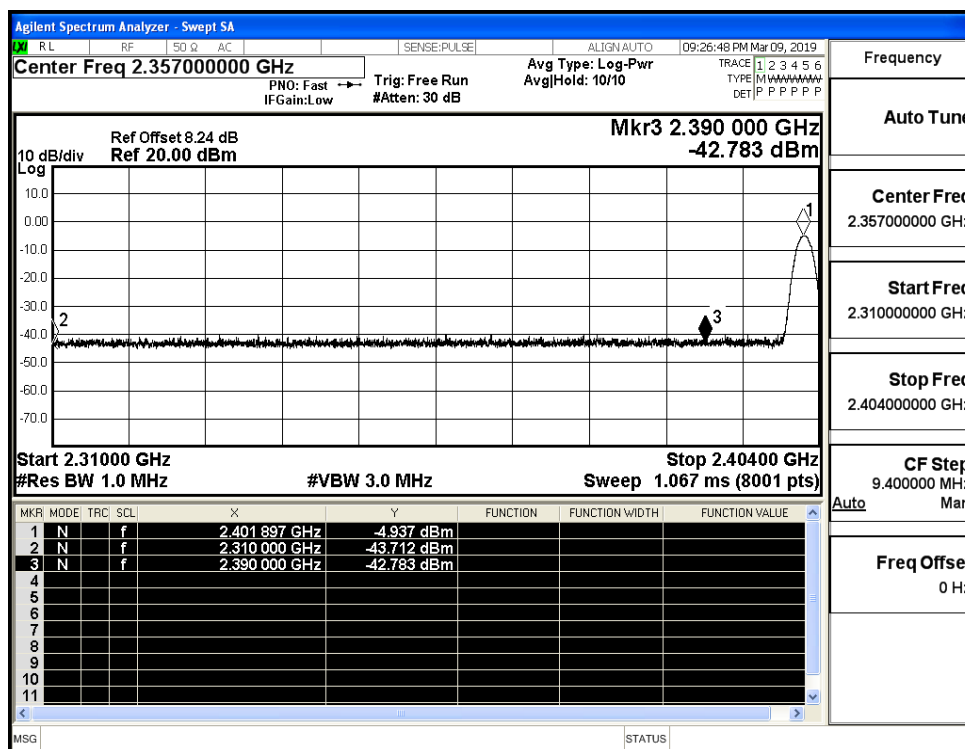
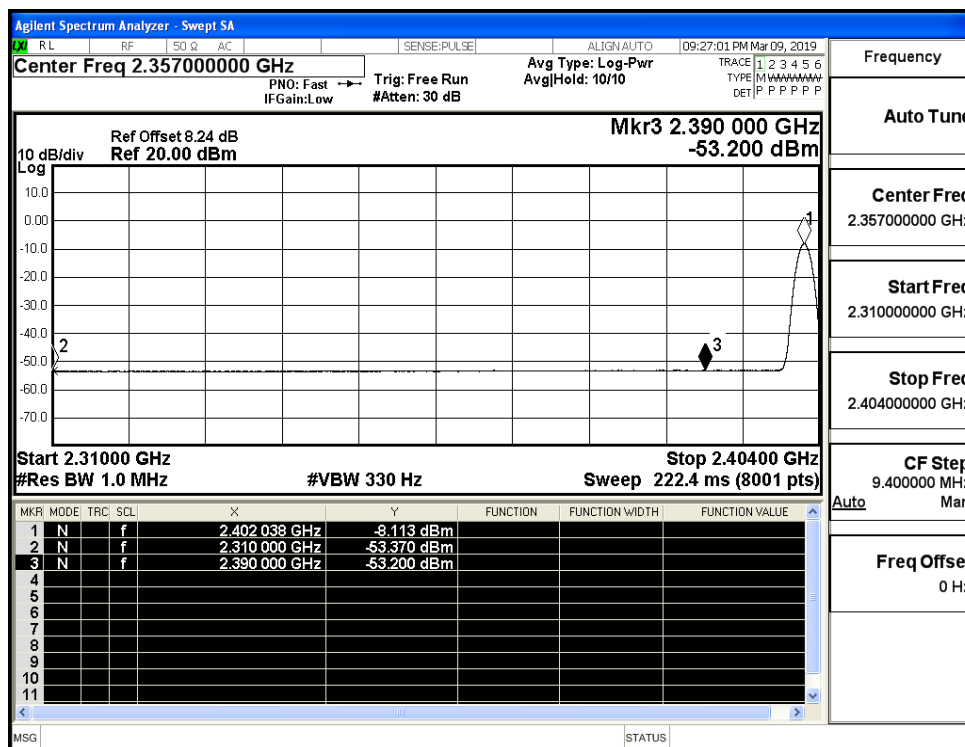


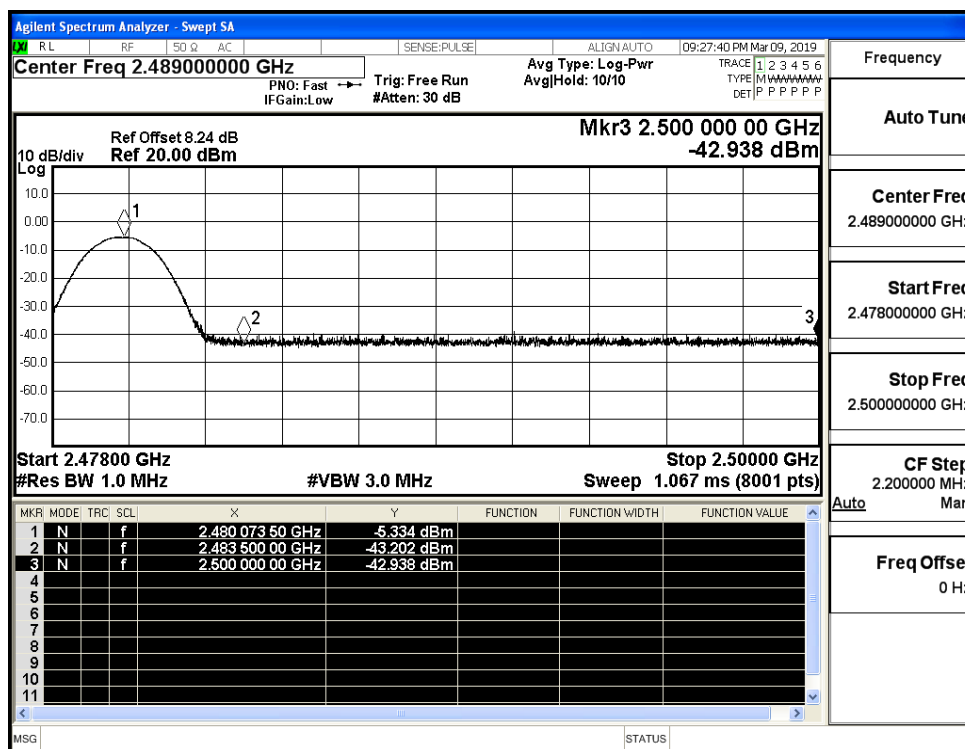
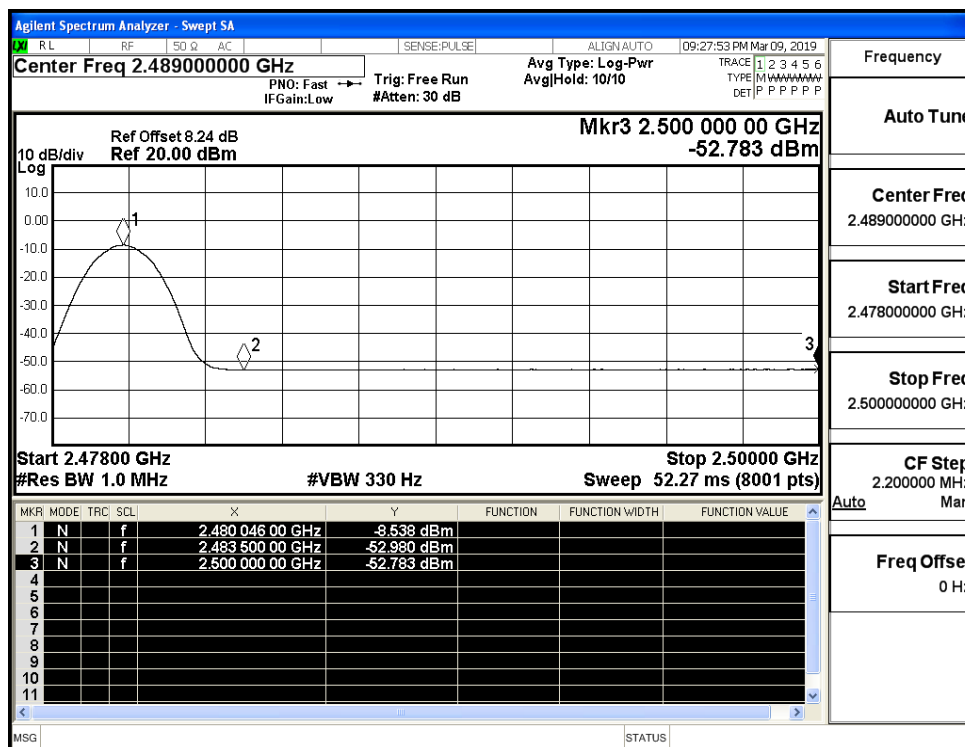
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



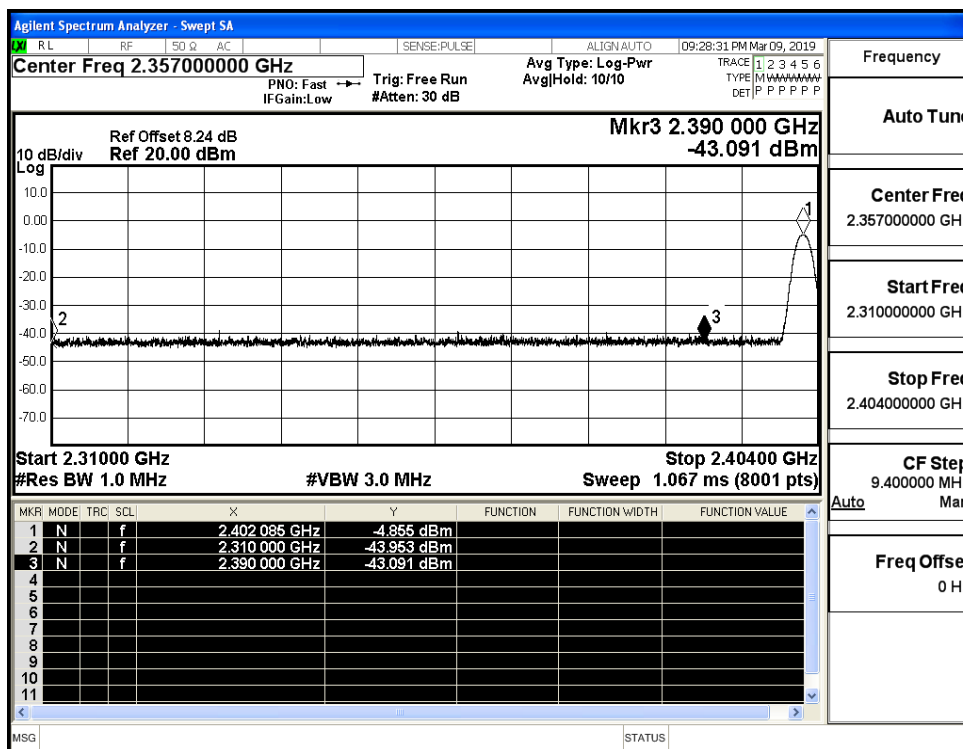
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



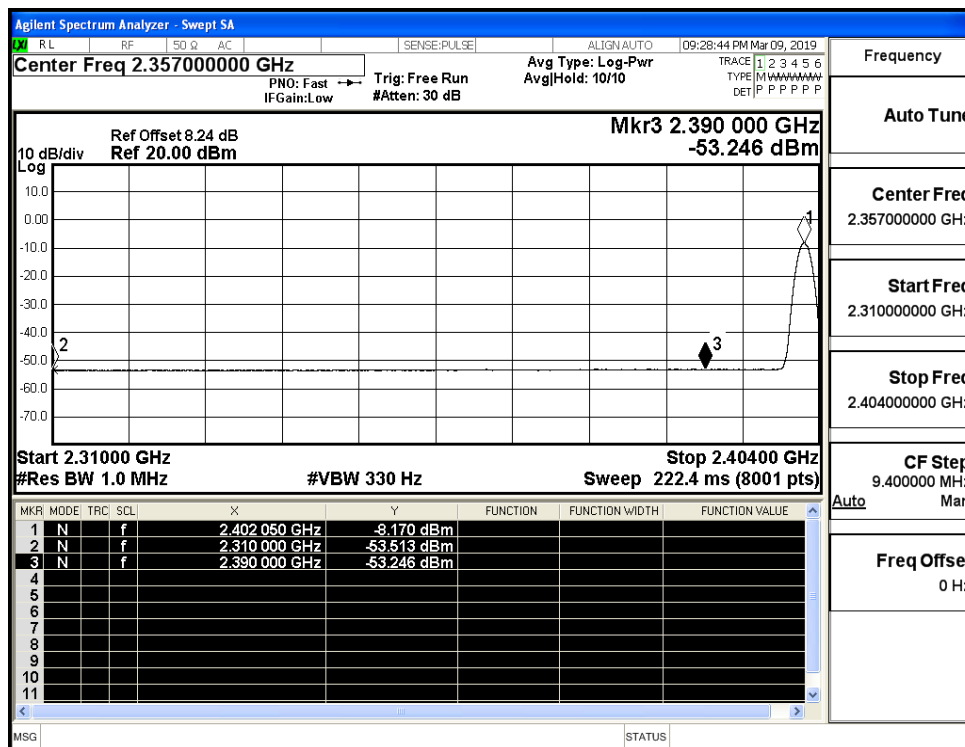
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

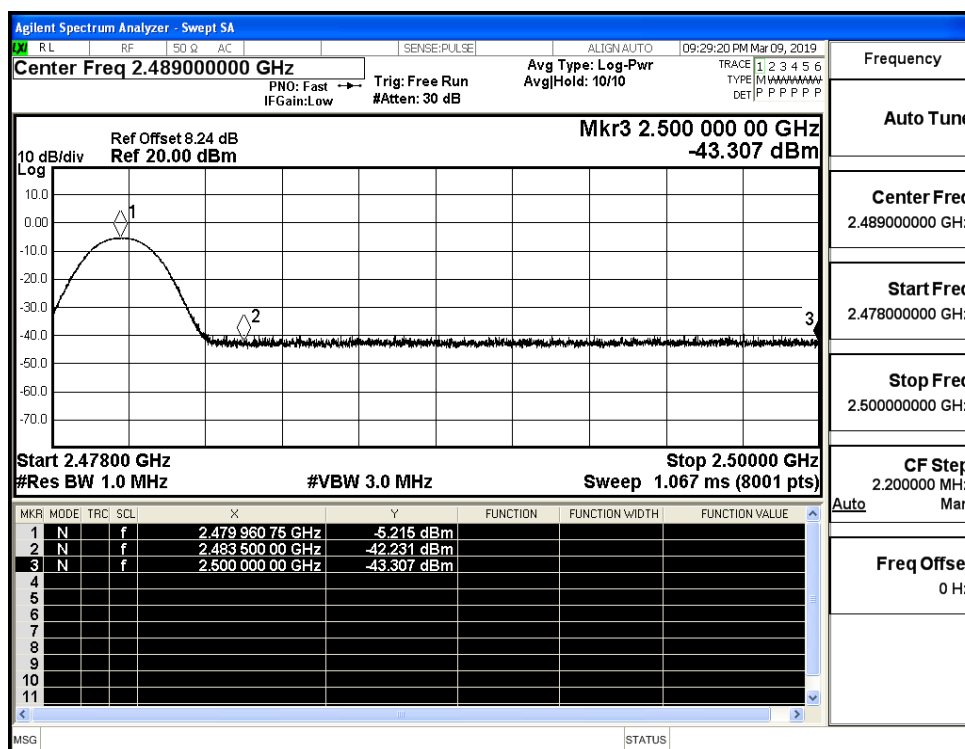
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

