

Appendix A

RF Test Data for BT V4.0 (BDR/EDR) (Conducted Measurement)

Product Name: Revo Bluetooth® Headphones

Trade Mark: Gemline

Test Model: 100239-001B

Environmental Conditions

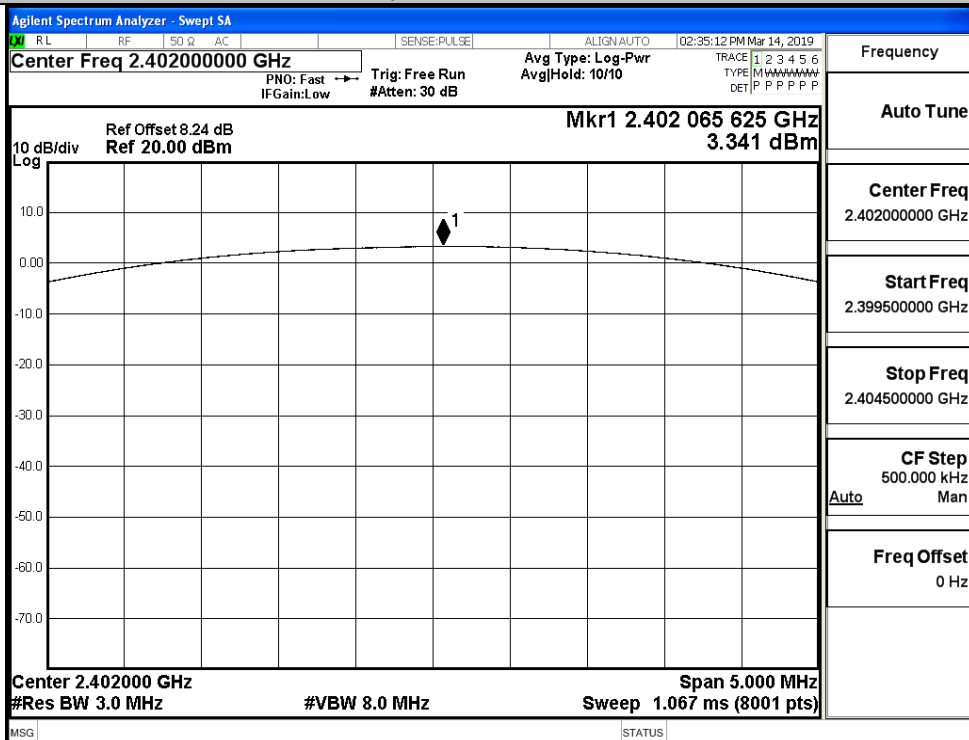
Temperature:	24.5 ° C
Relative Humidity:	53.8%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Wang Chuang

A.1 Maximum Conducted Peak Output Power

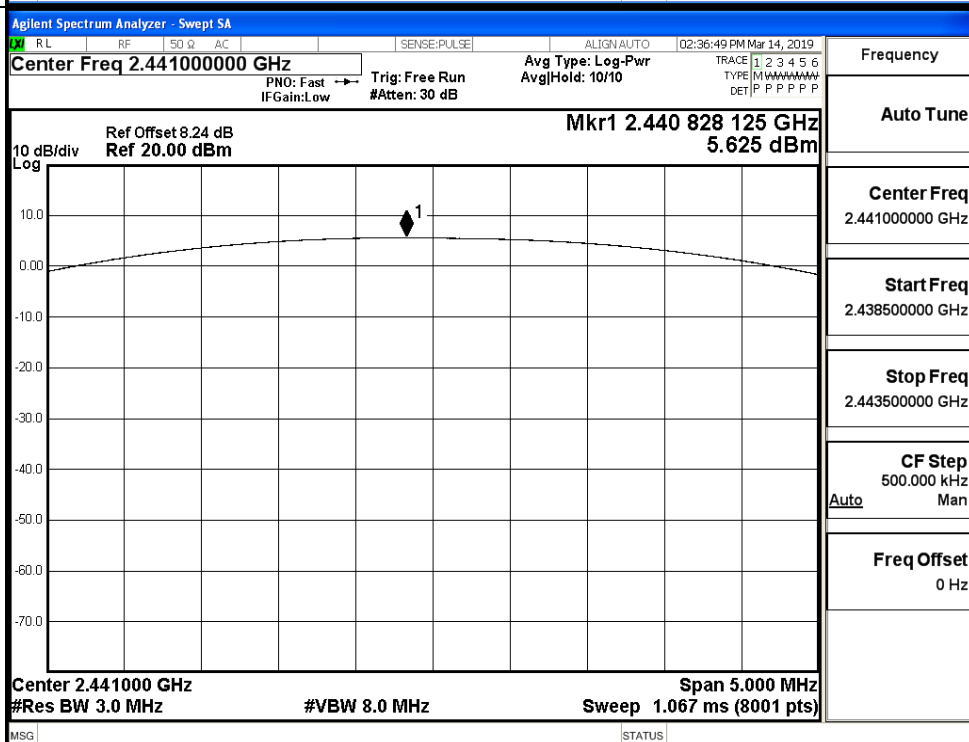
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.341	21	PASS
	MCH	5.625	21	PASS
	HCH	5.799	21	PASS
$\pi/4$ DQPSK	LCH	1.857	21	PASS
	MCH	4.612	21	PASS
	HCH	4.768	21	PASS
8DPSK	LCH	2.128	21	PASS
	MCH	4.958	21	PASS
	HCH	5.073	21	PASS

Test Graphs

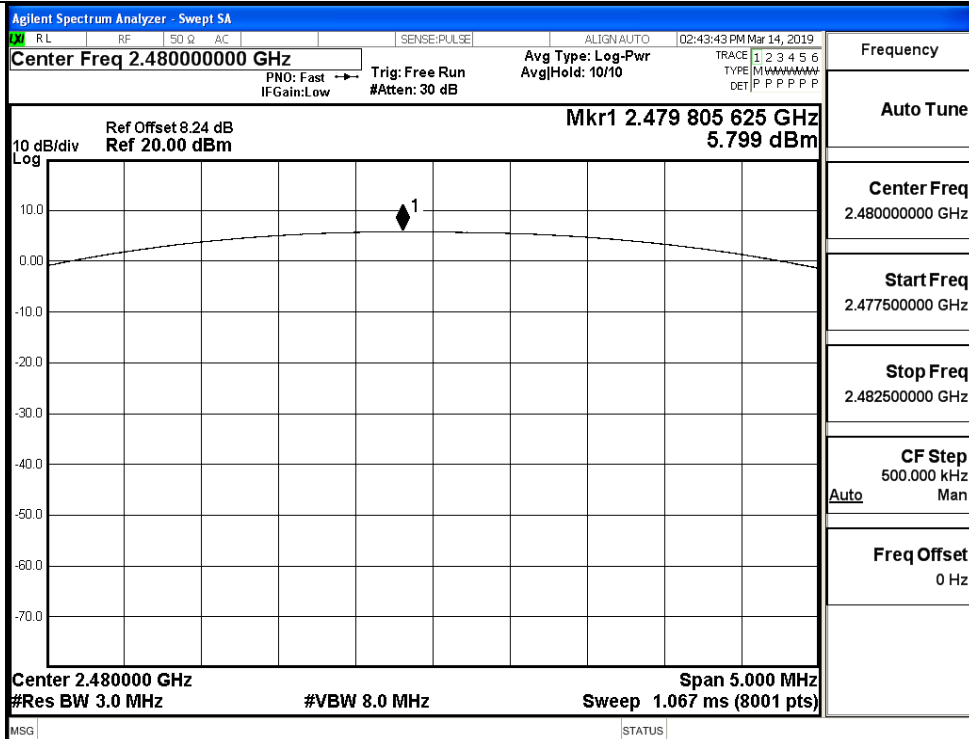
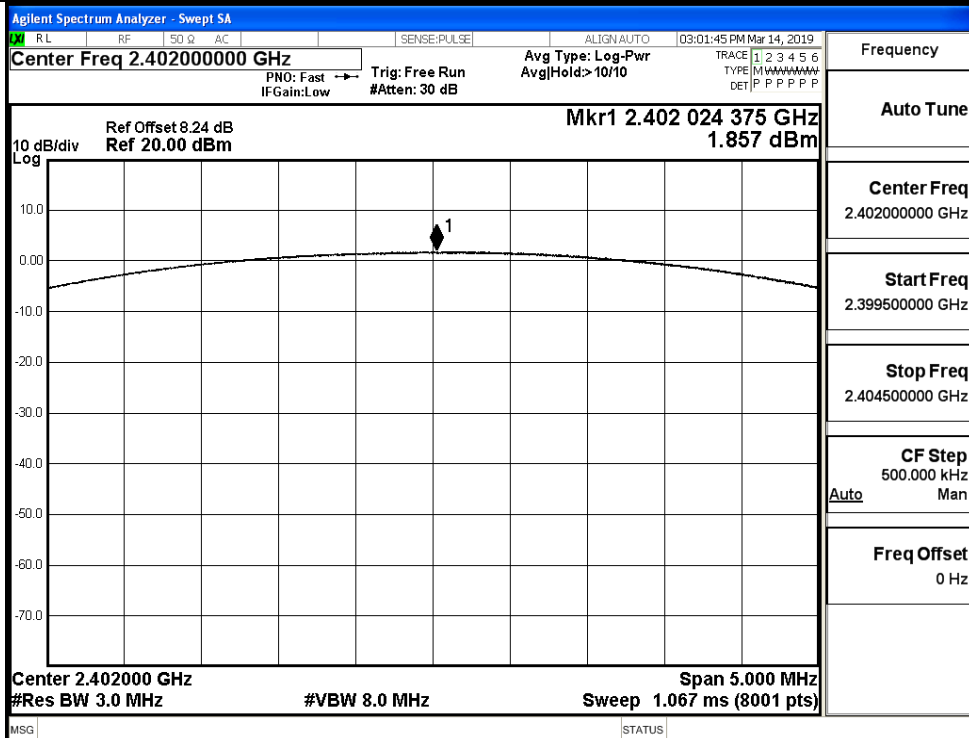
GFSK/LCH

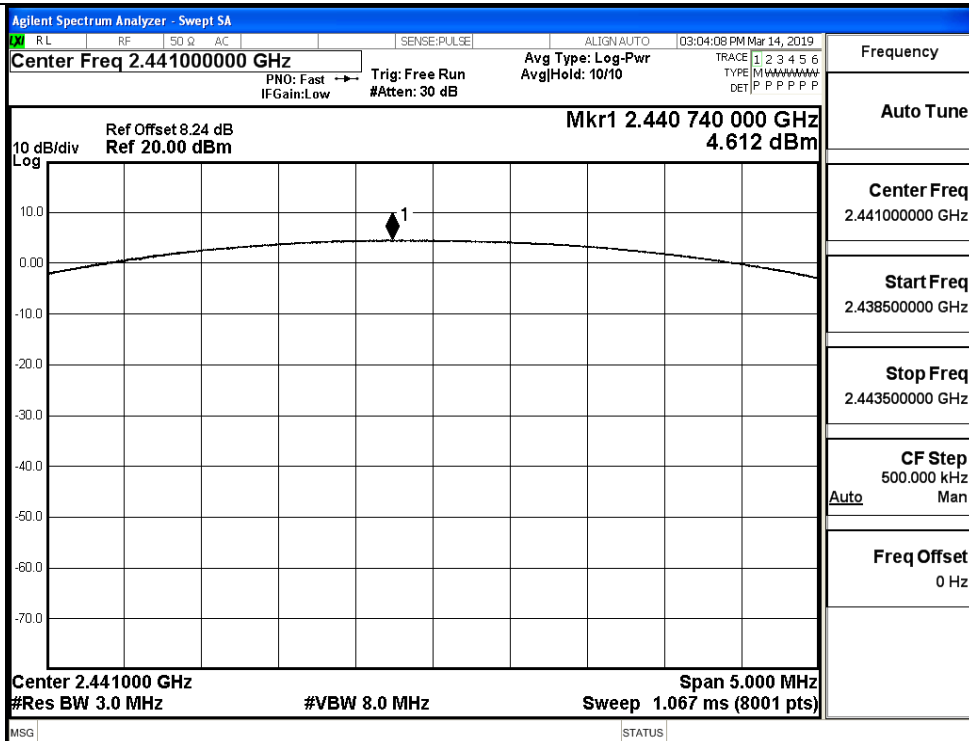
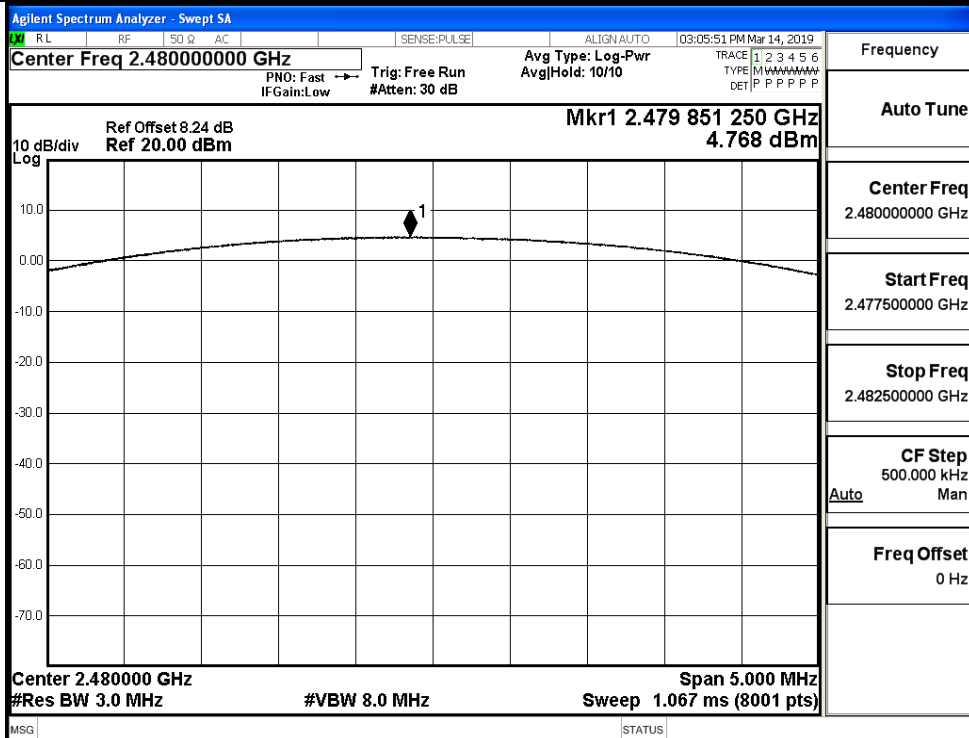


GFSK/MCH

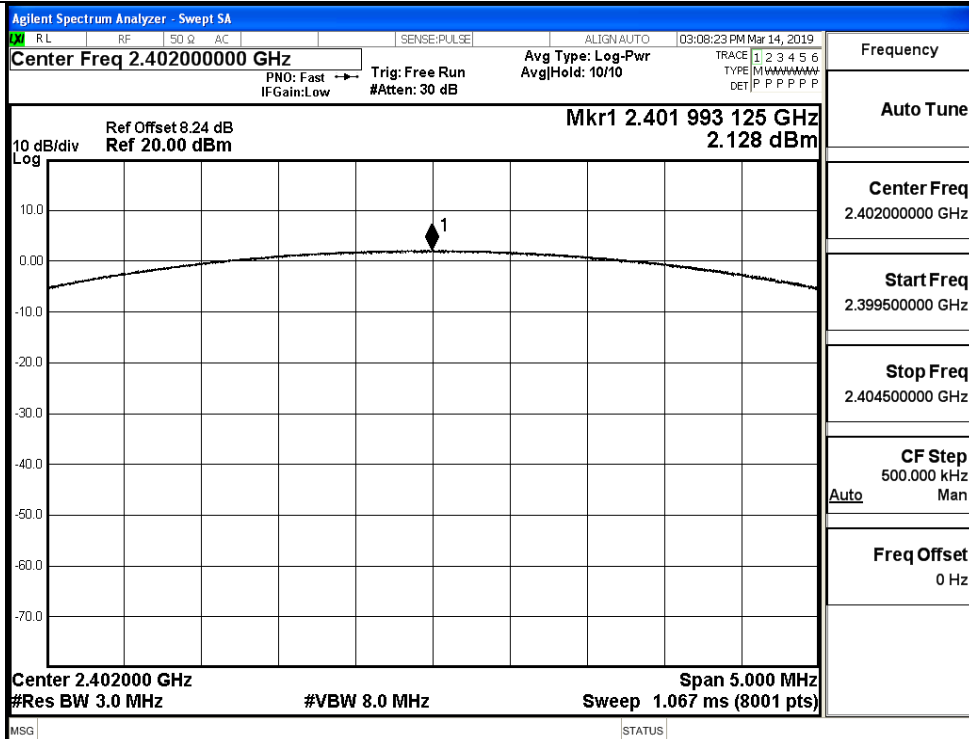


GFSK/HCH

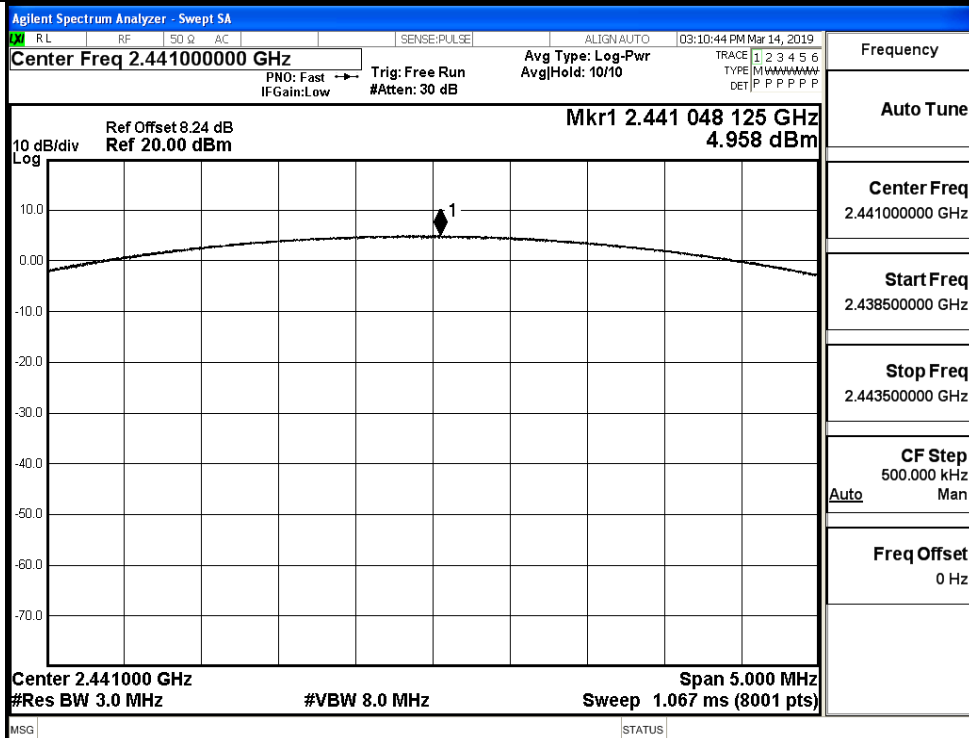
 π /4DQPSK/LCH

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

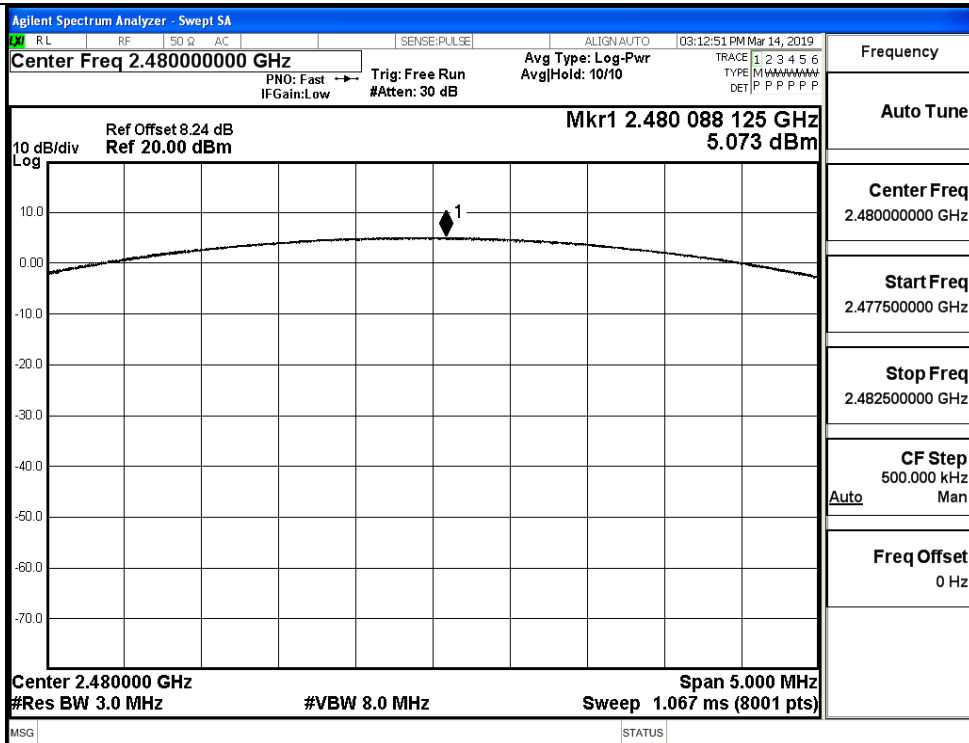
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

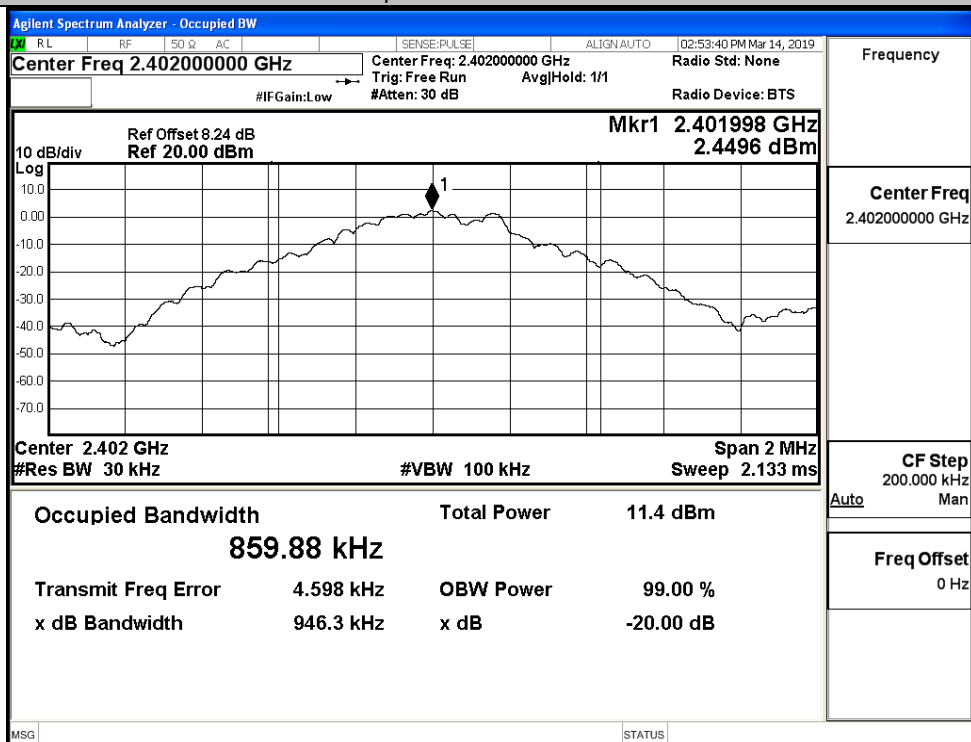


A.2 99% and 20dB Bandwidth

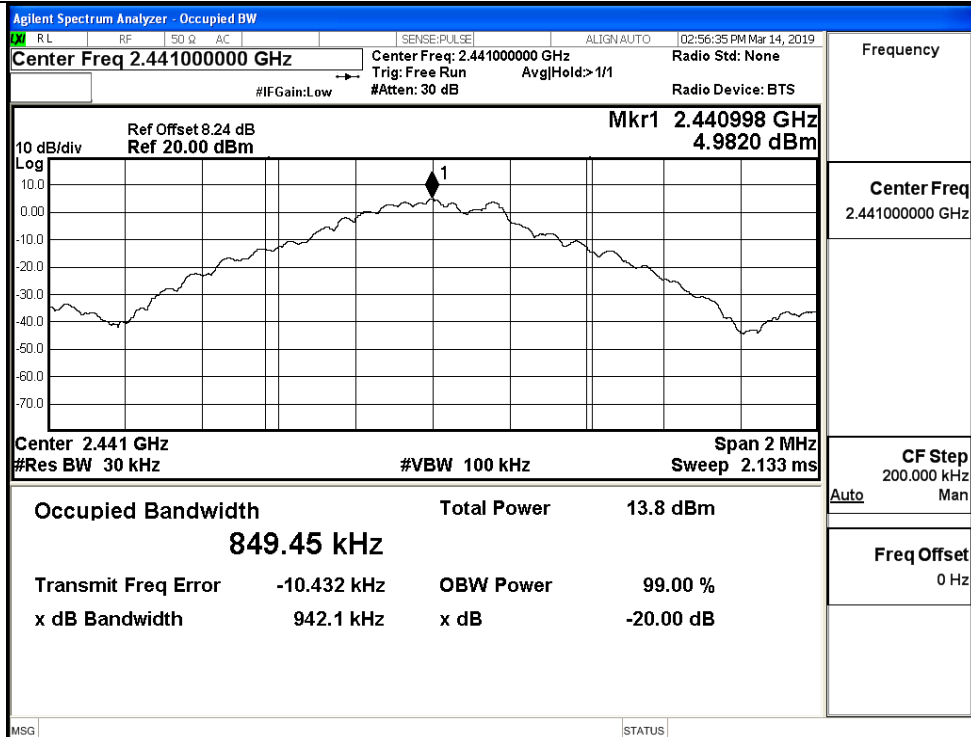
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.85988	0.9463	Not Specified	PASS
	MCH	0.84945	0.9421	Not Specified	PASS
	HCH	0.85019	0.9418	Not Specified	PASS
π /4DQPSK	LCH	1.1627	1.254	Not Specified	PASS
	MCH	1.1620	1.230	Not Specified	PASS
	HCH	1.1618	1.228	Not Specified	PASS
8DPSK	LCH	1.1576	1.276	Not Specified	PASS
	MCH	1.1537	1.260	Not Specified	PASS
	HCH	1.1549	1.259	Not Specified	PASS

Test Graphs

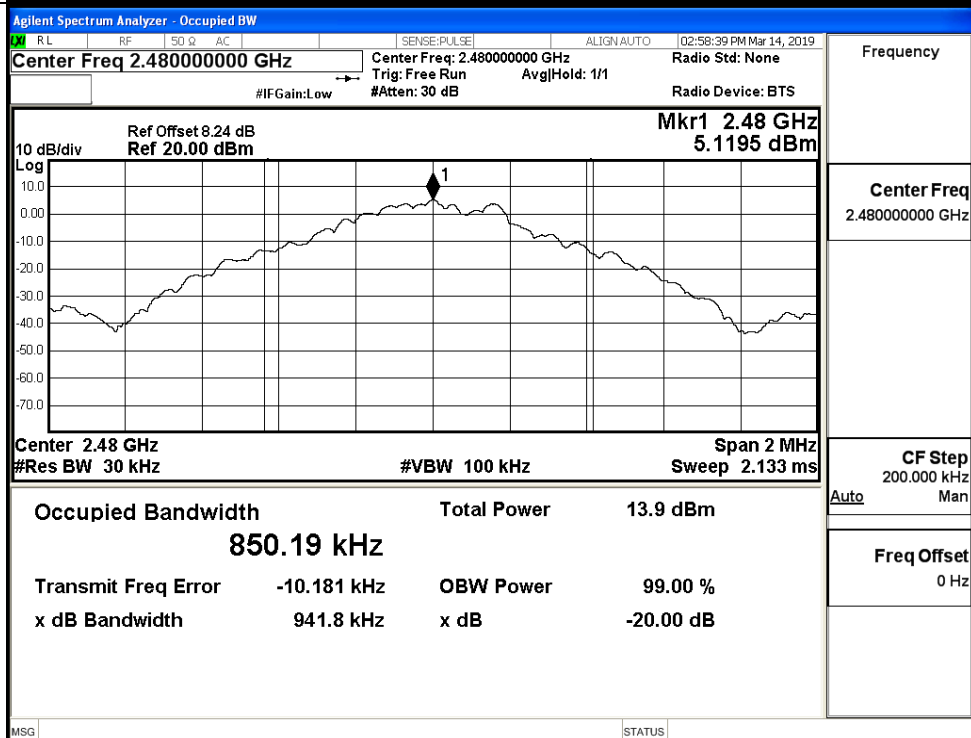
GFSK/LCH

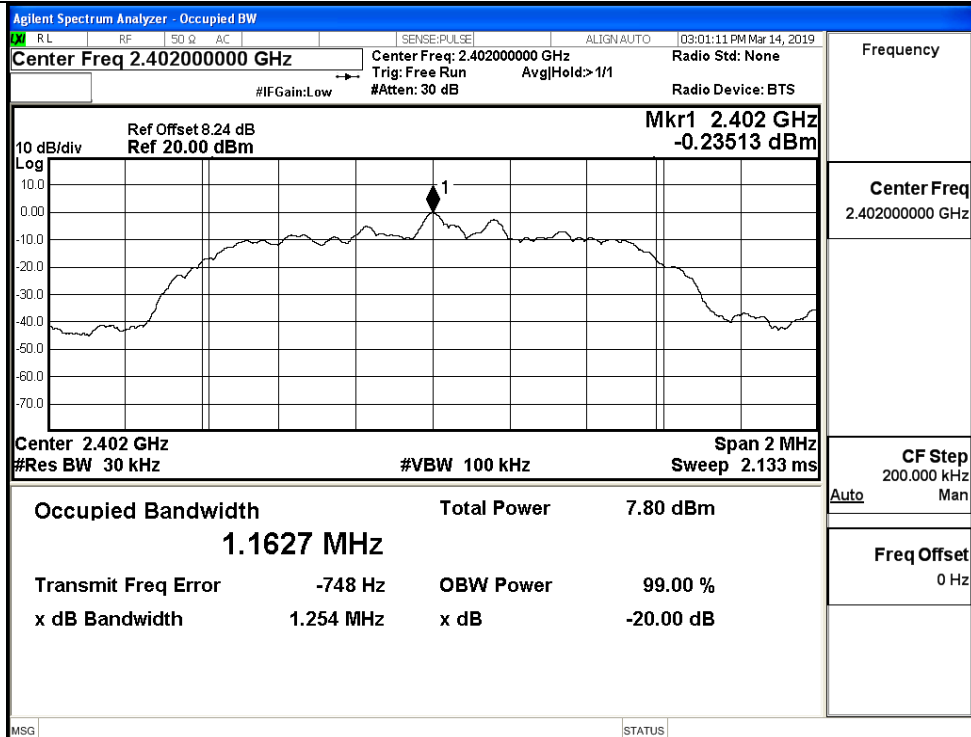
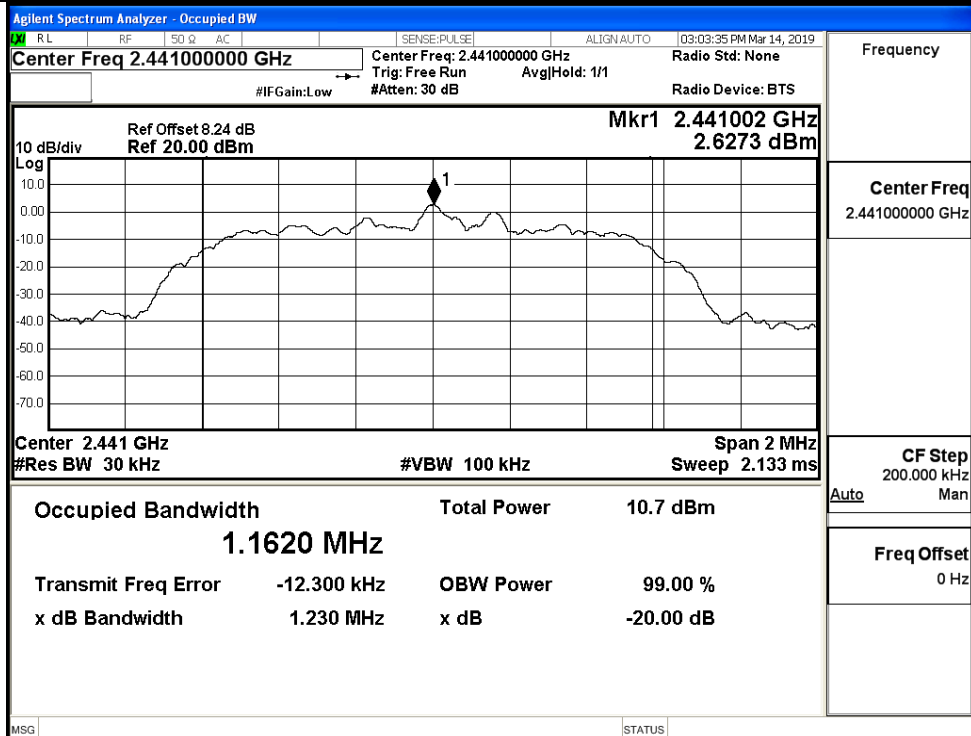


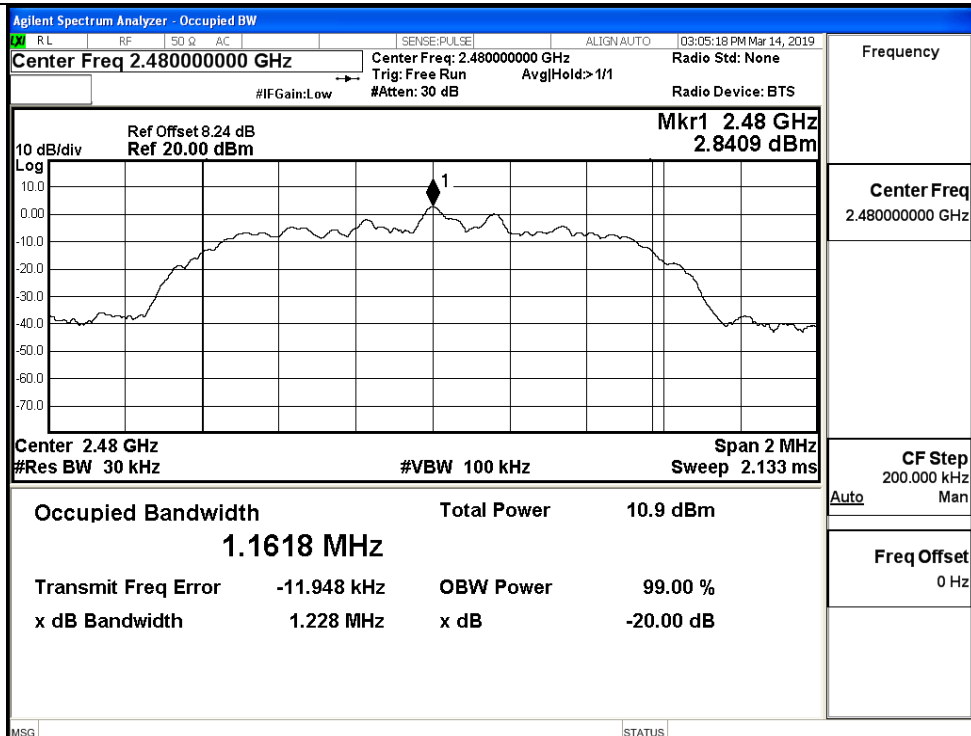
GFSK/MCH



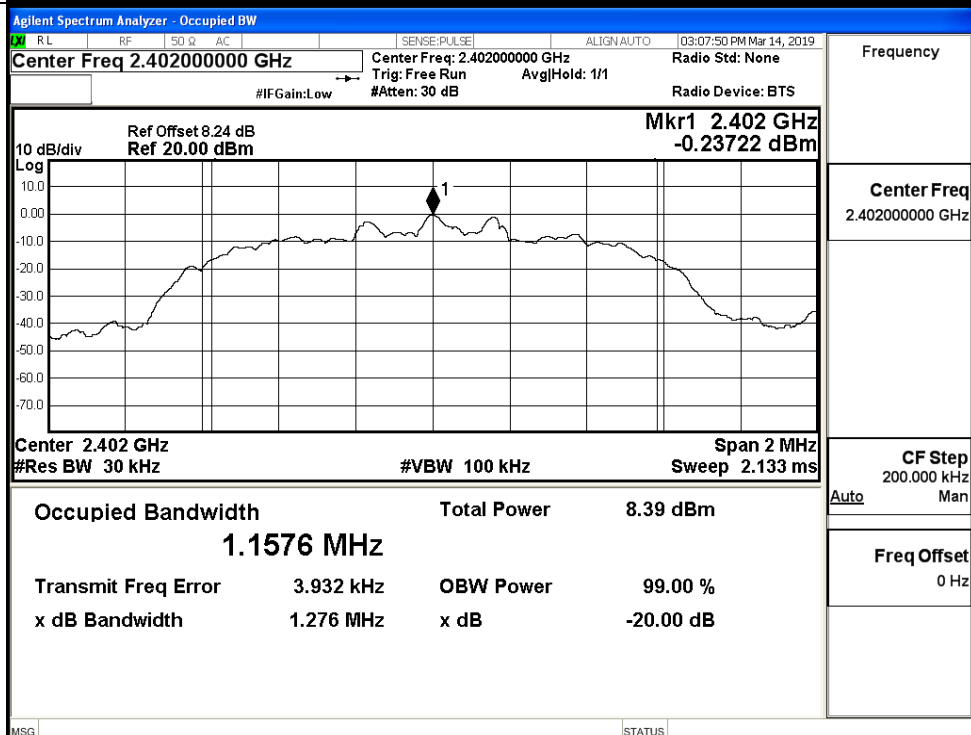
GFSK/HCH



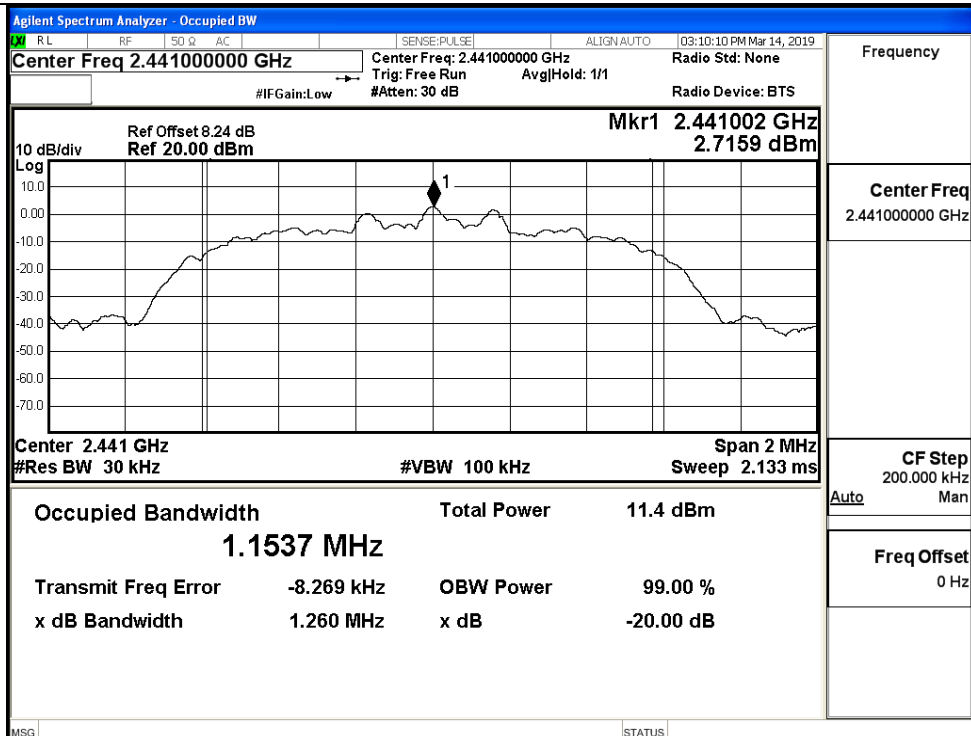
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

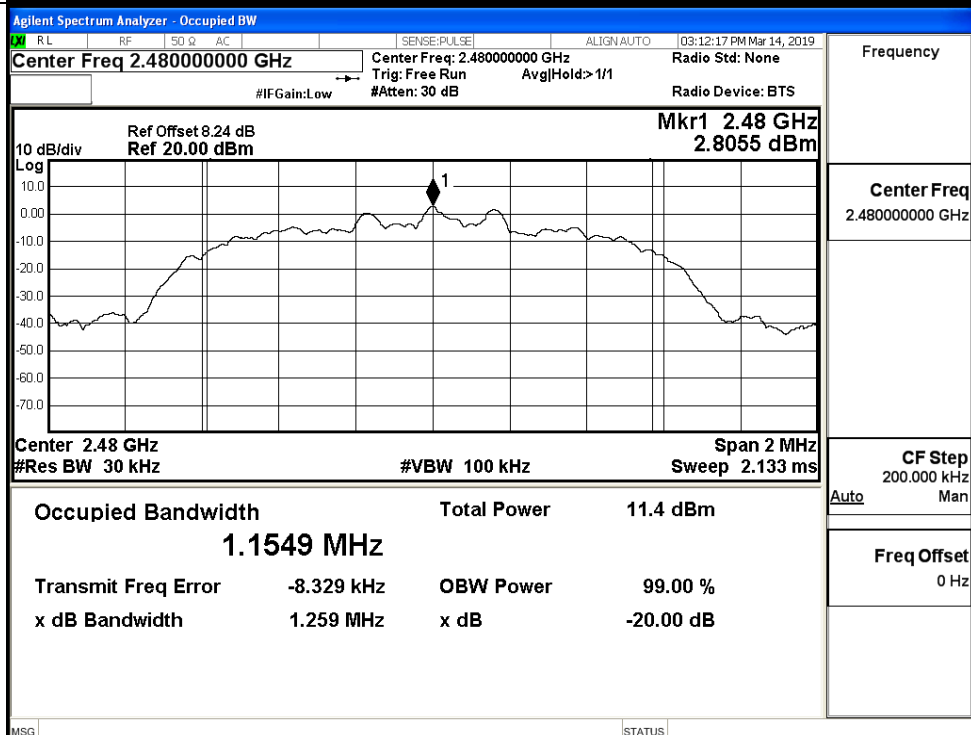
8DPSK/LCH



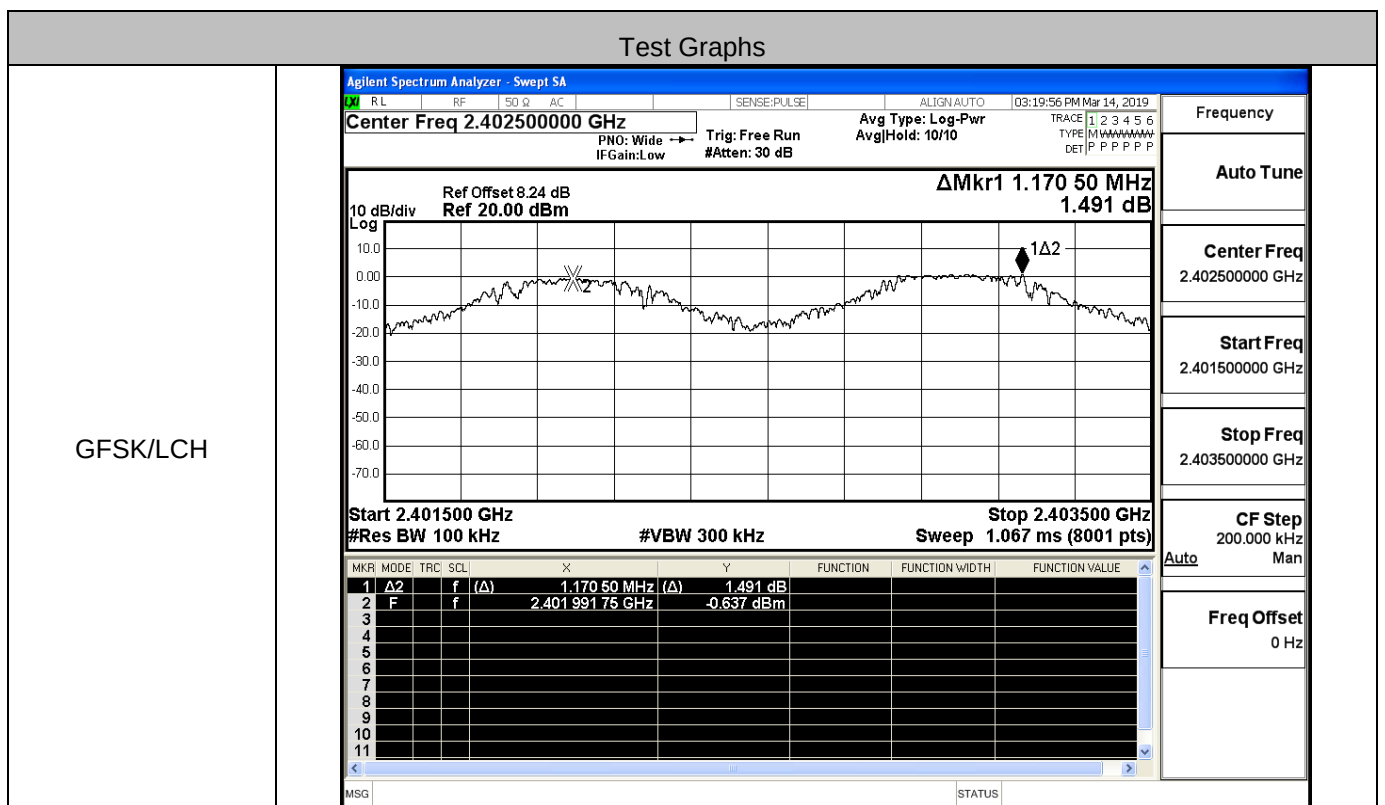
8DPSK/MCH



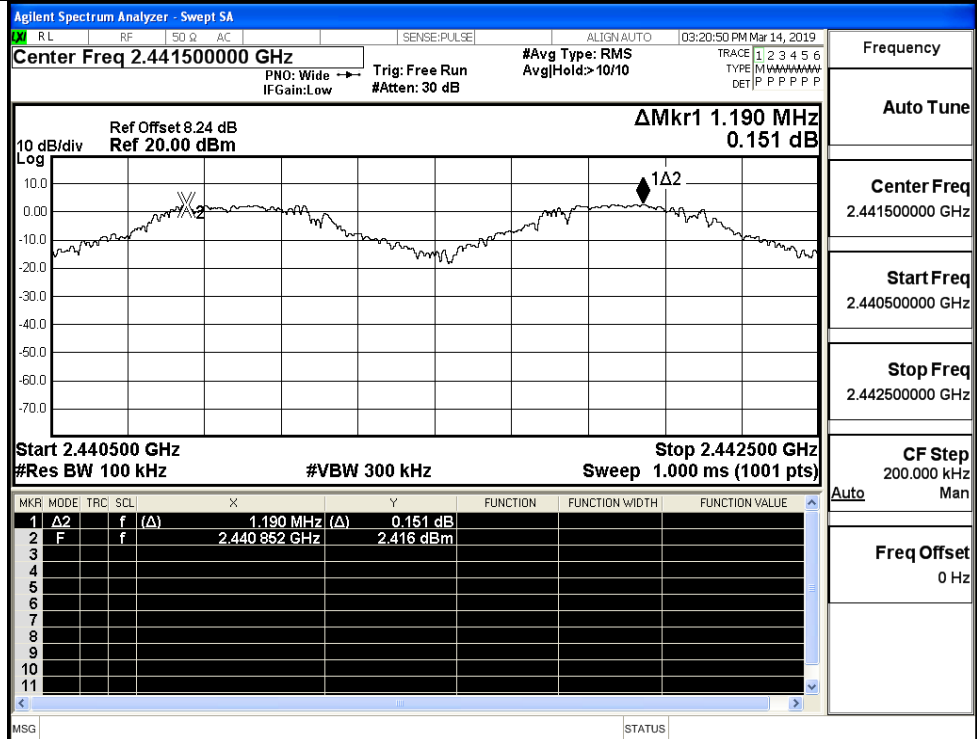
8DPSK/HCH



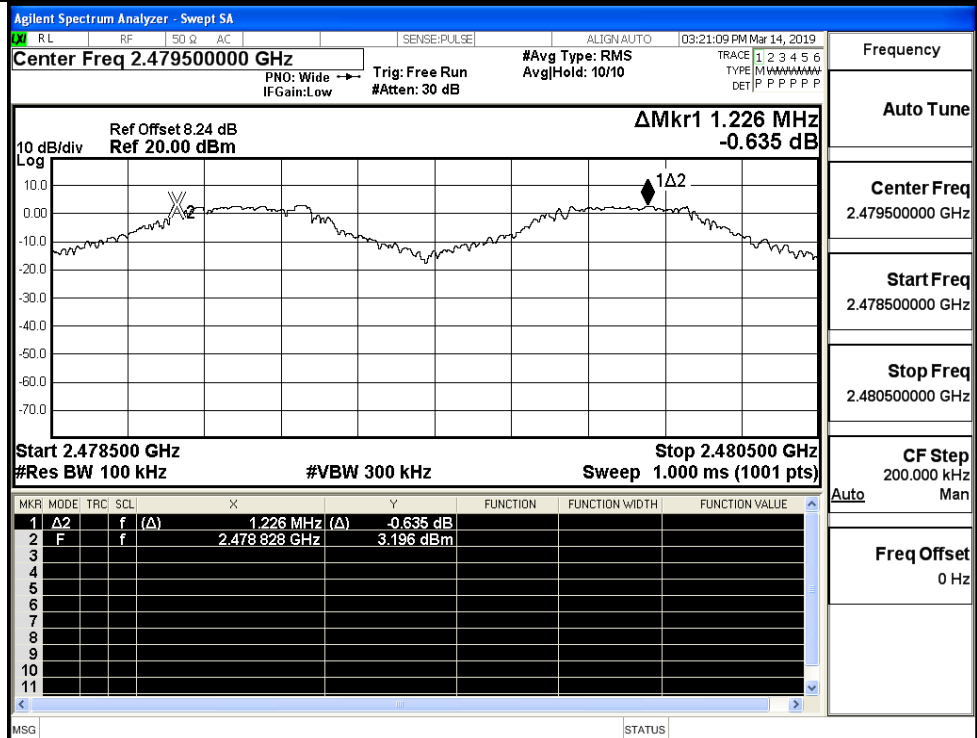
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.170	0.631	PASS
	MCH	1.190	0.631	PASS
	HCH	1.226	0.631	PASS
$\pi/4$ DQPSK	LCH	0.974	0.836	PASS
	MCH	1.004	0.836	PASS
	HCH	1.002	0.836	PASS
8DPSK	LCH	1.014	0.851	PASS
	MCH	1.004	0.851	PASS
	HCH	1.156	0.851	PASS

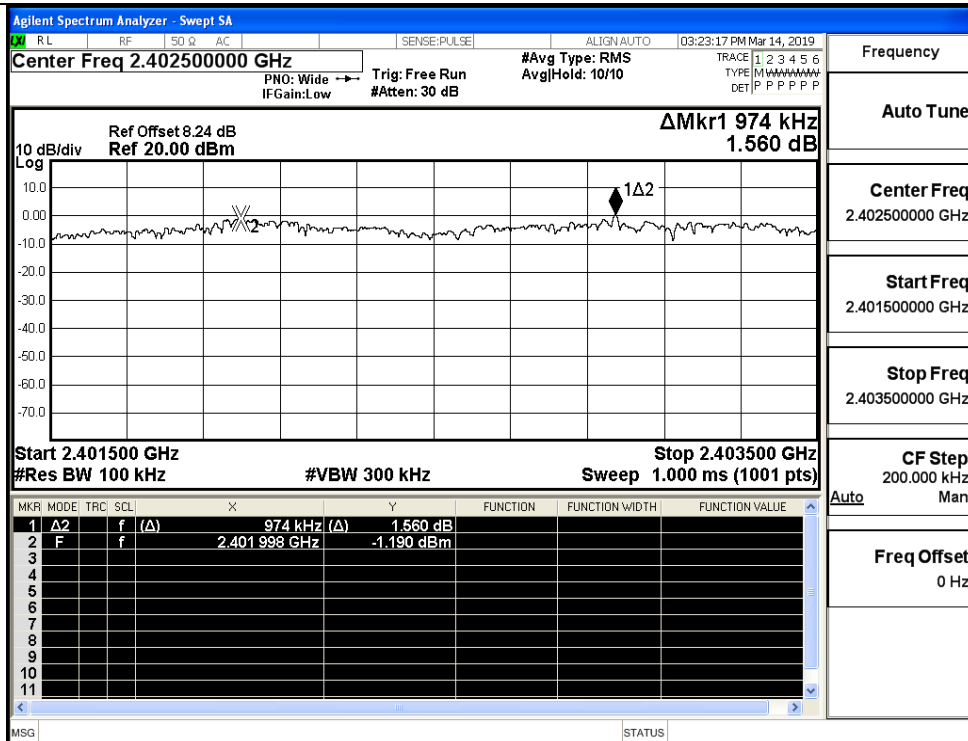


GFSK/MCH



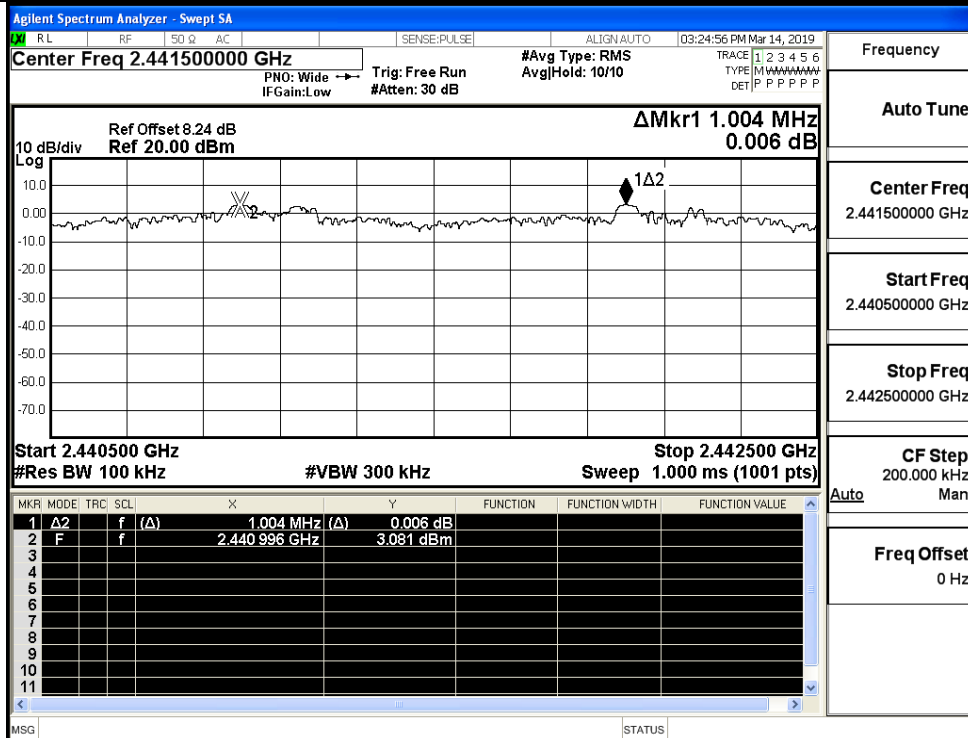
GFSK/HCH



π /4DQPSK/LCH

Frequency

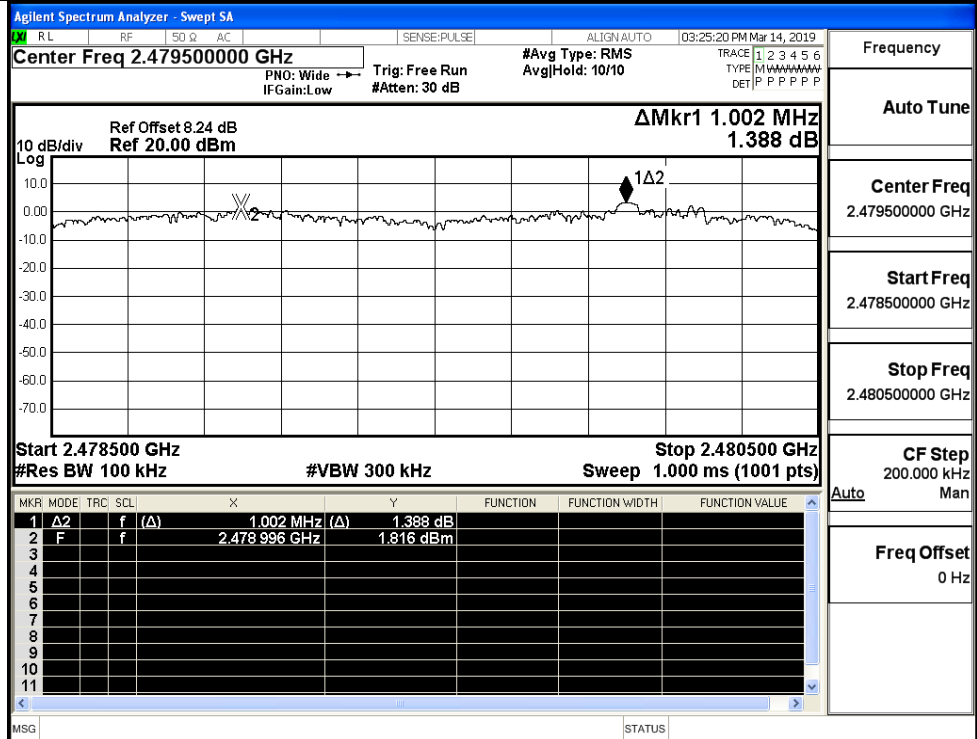
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz π /4DQPSK/MCH

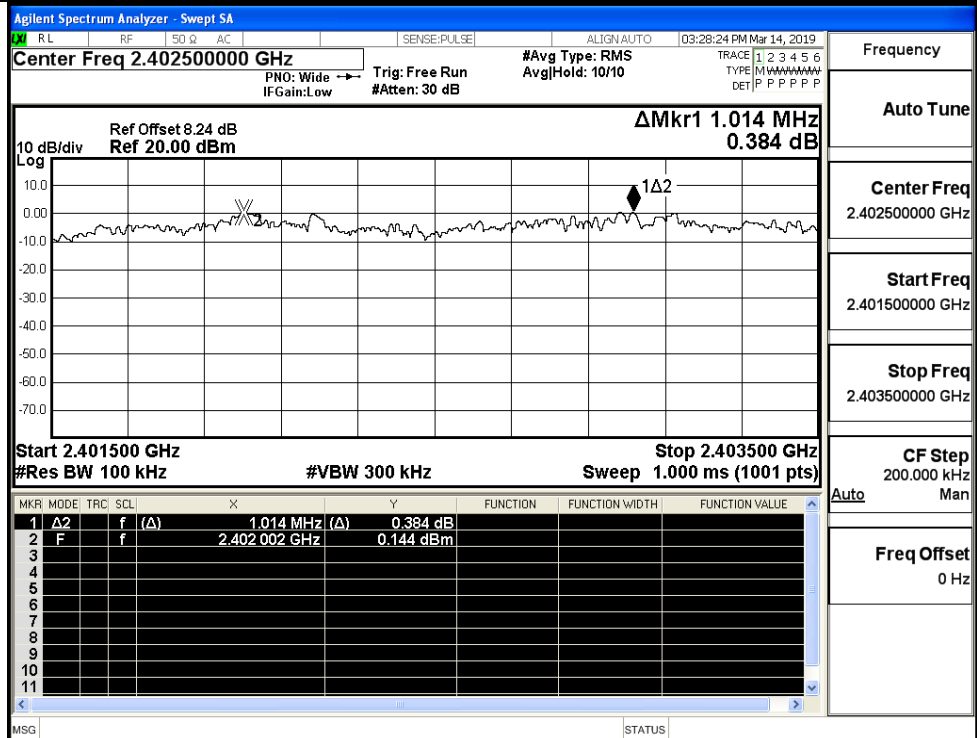
Frequency

Auto Tune

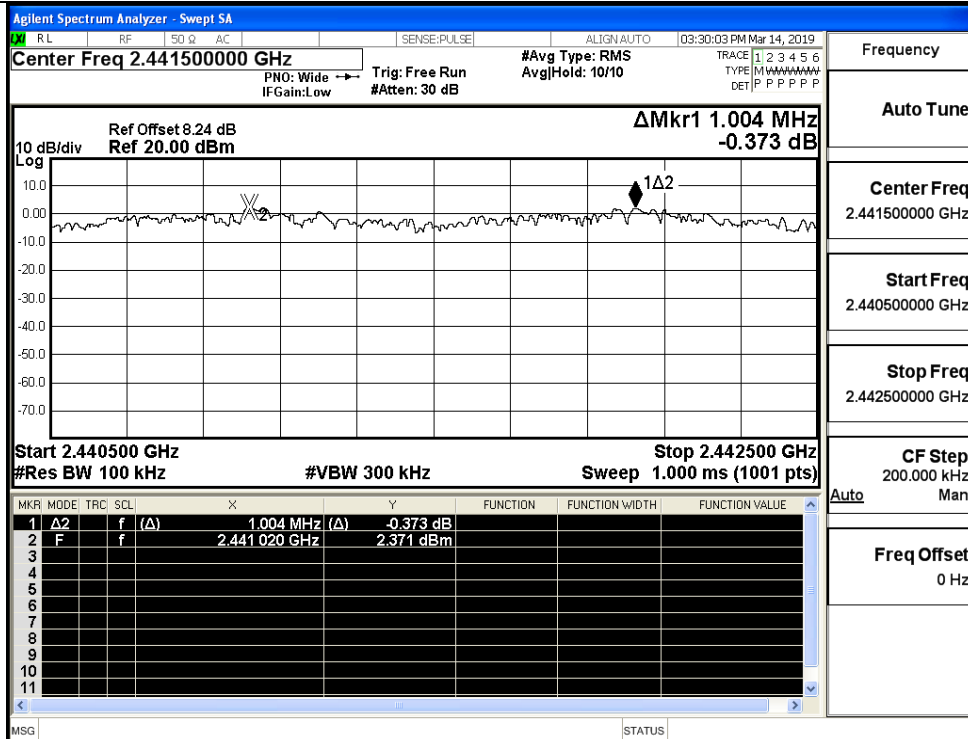
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

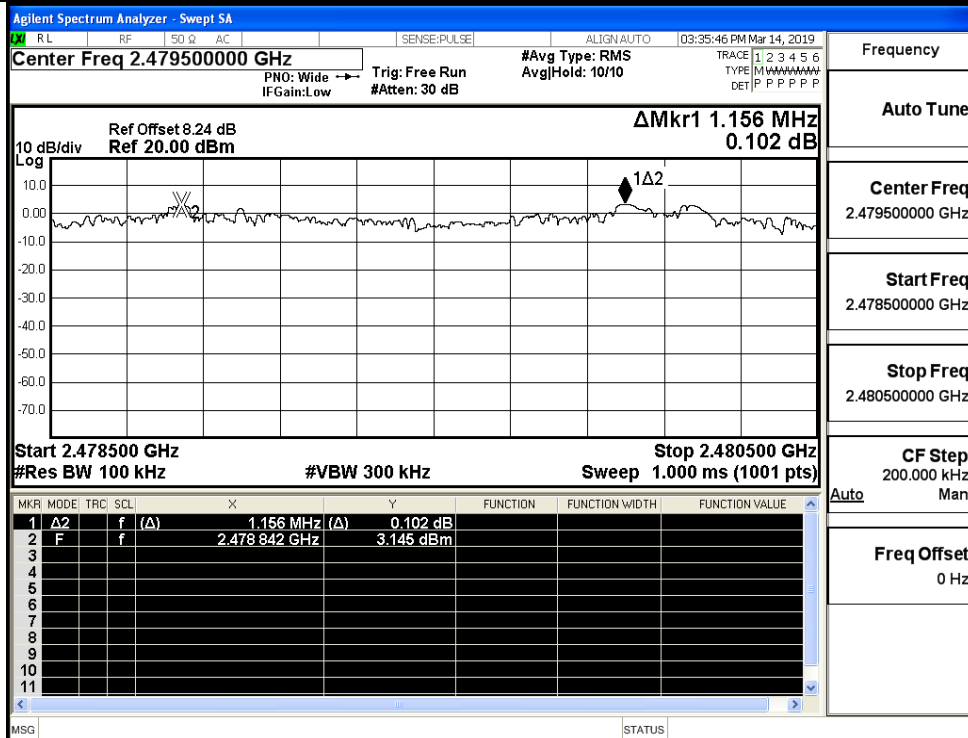
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

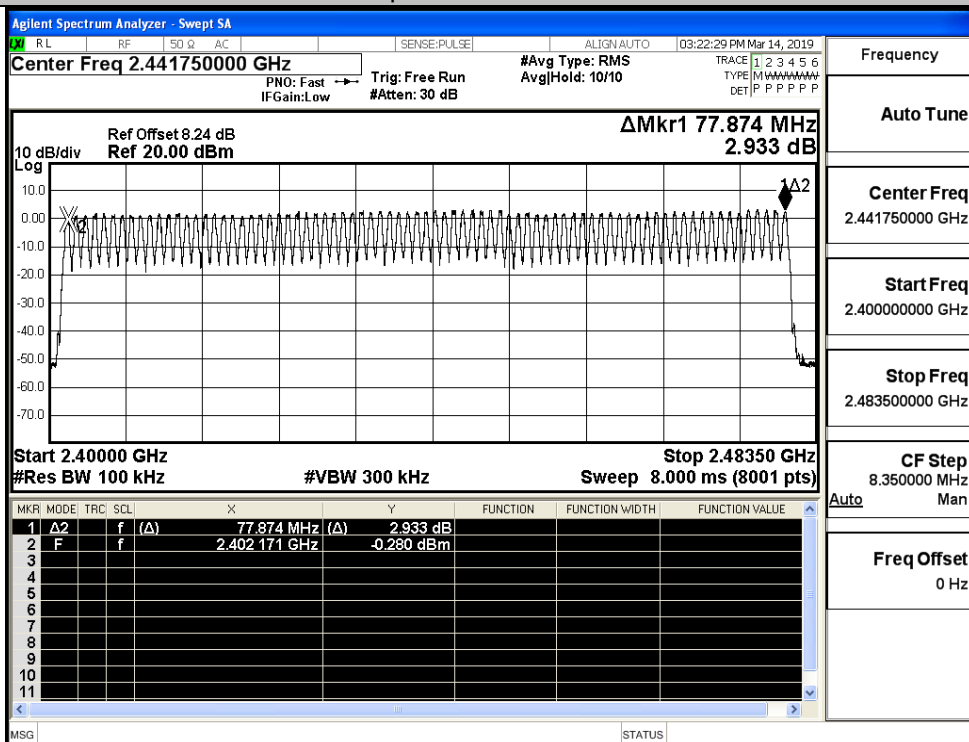
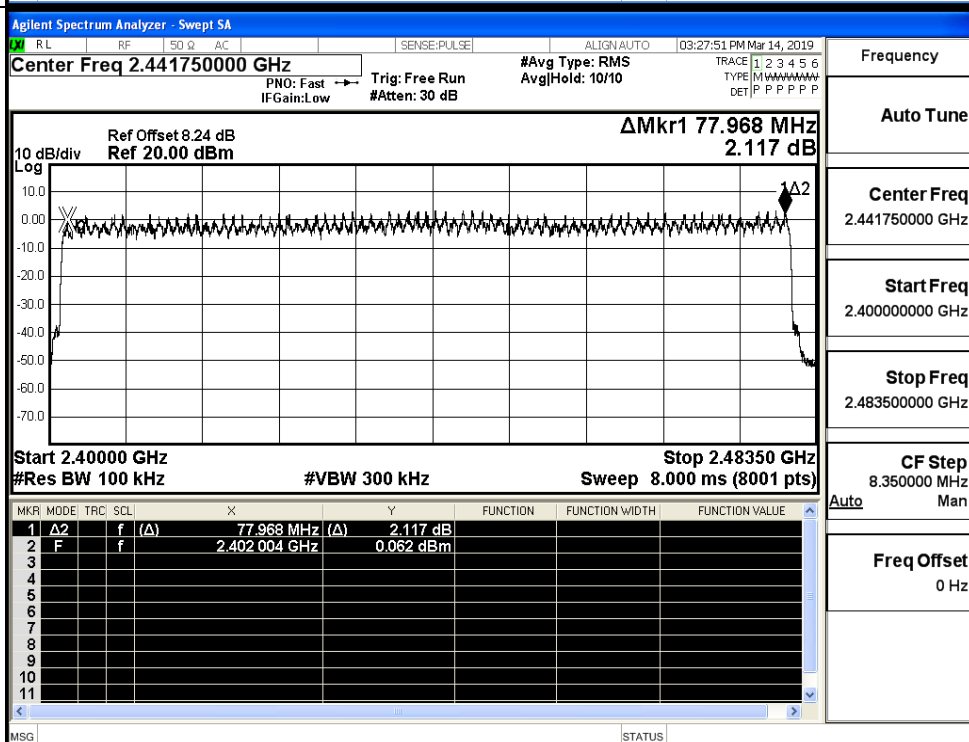


A.4 Hopping Channel Number

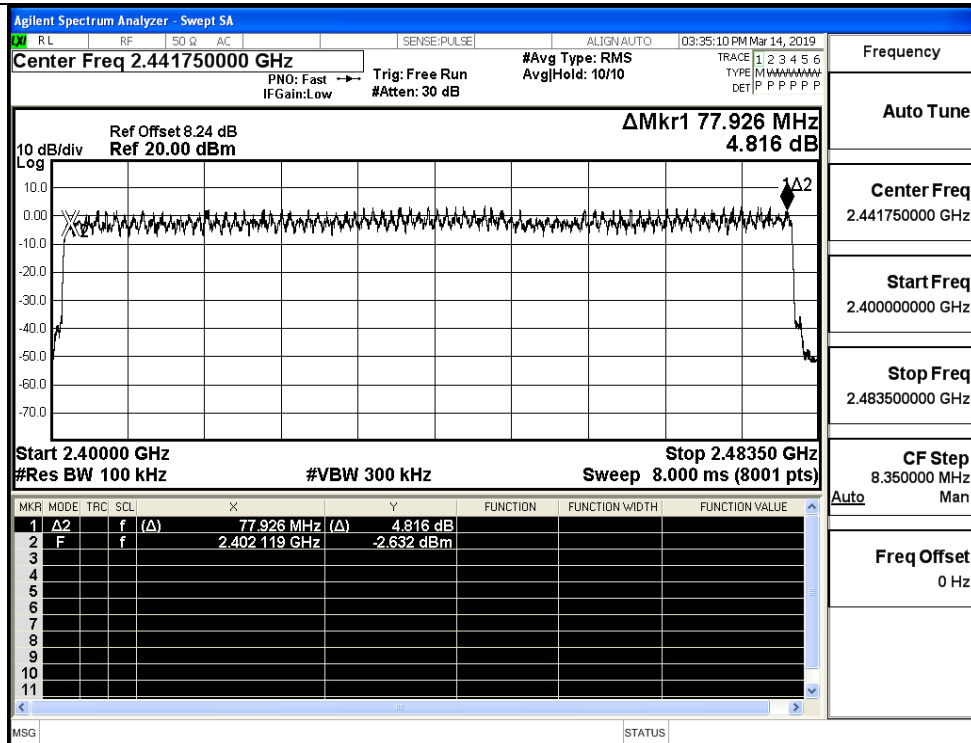
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

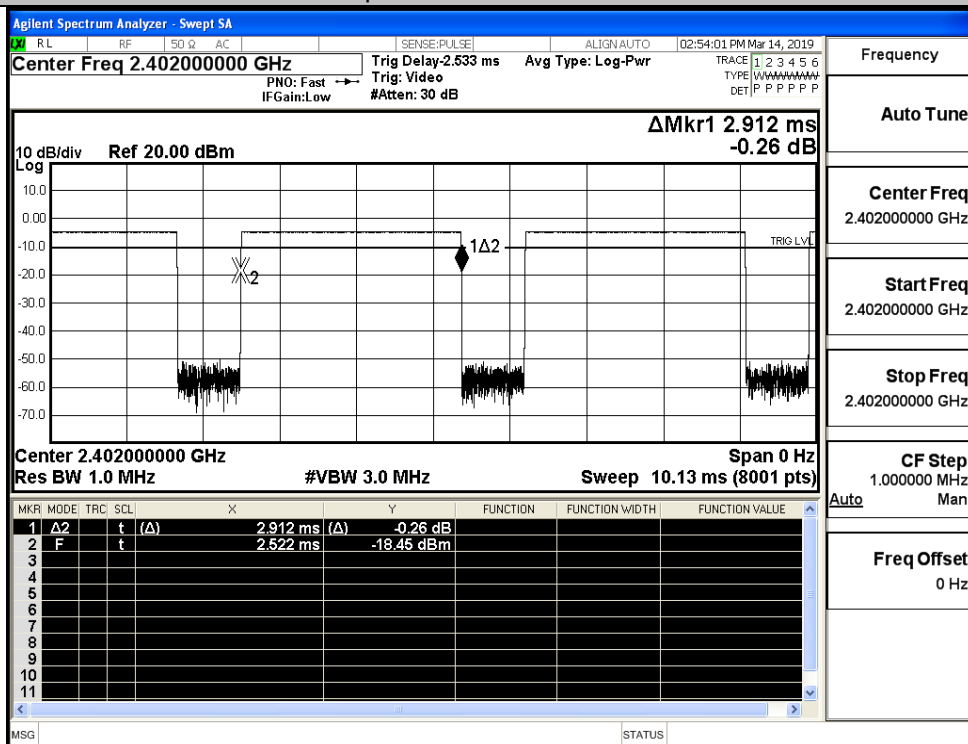


A.5 Dwell Time

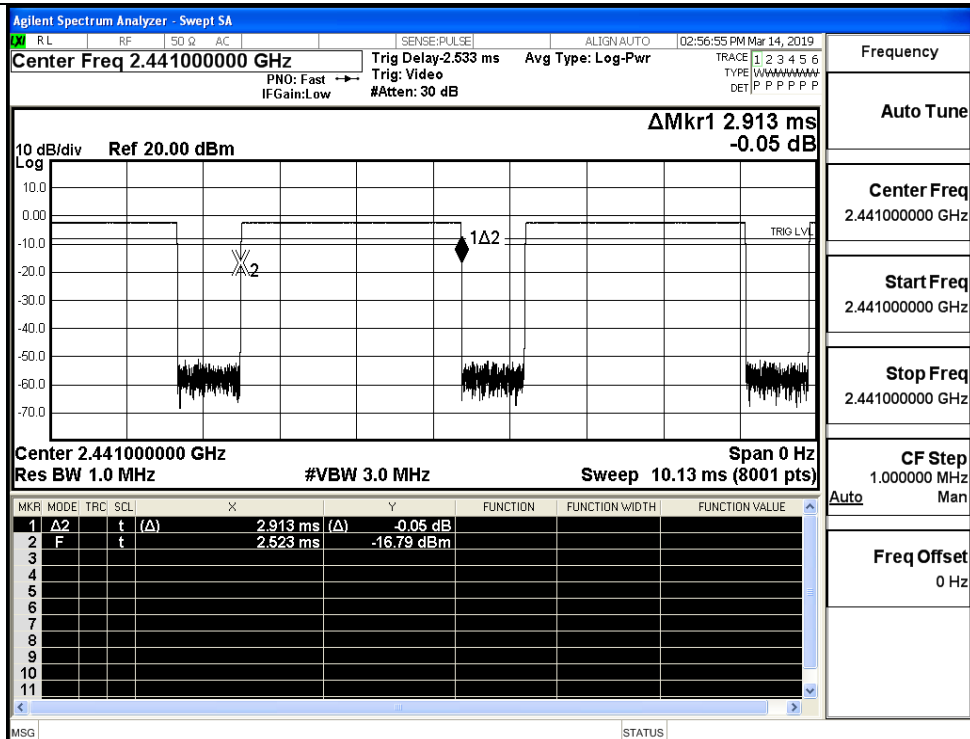
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.91	106.7	0.31	0.4	PASS
	DH5	MCH	2.91	106.7	0.31	0.4	PASS
	DH5	HCH	2.91	106.7	0.31	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.92	106.7	0.312	0.4	PASS
	2DH5	MCH	2.92	106.7	0.312	0.4	PASS
	2DH5	HCH	2.92	106.7	0.312	0.4	PASS
8DPSK	3DH5	LCH	2.92	106.7	0.312	0.4	PASS
	3DH5	MCH	2.92	106.7	0.312	0.4	PASS
	3DH5	HCH	2.92	106.7	0.312	0.4	PASS

Test Graphs

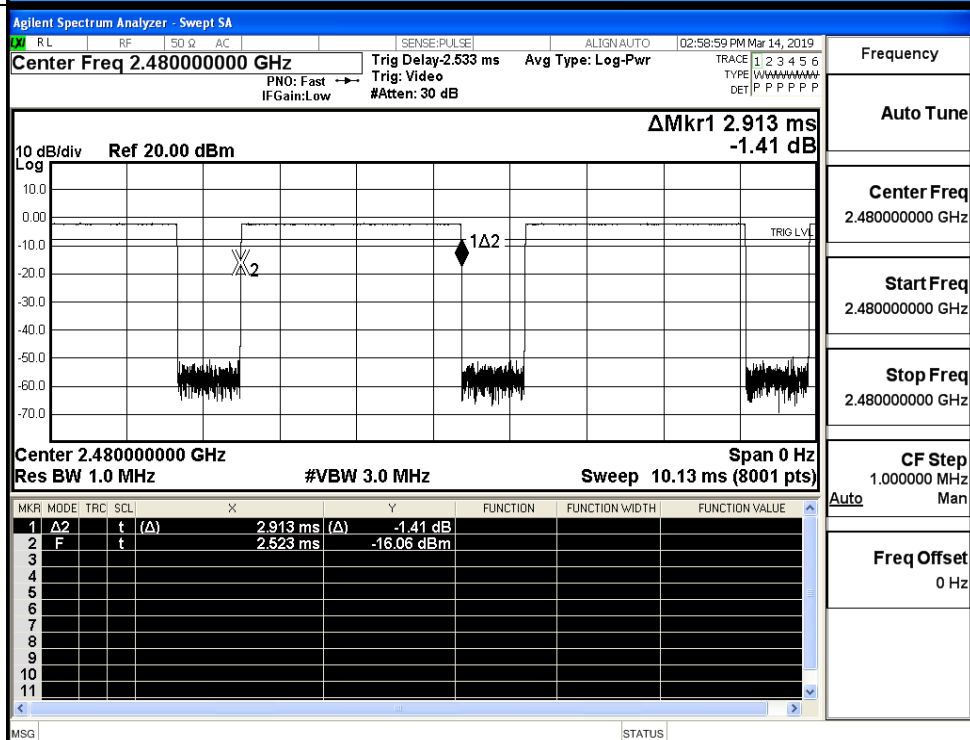
GFSK_DH5/LCH



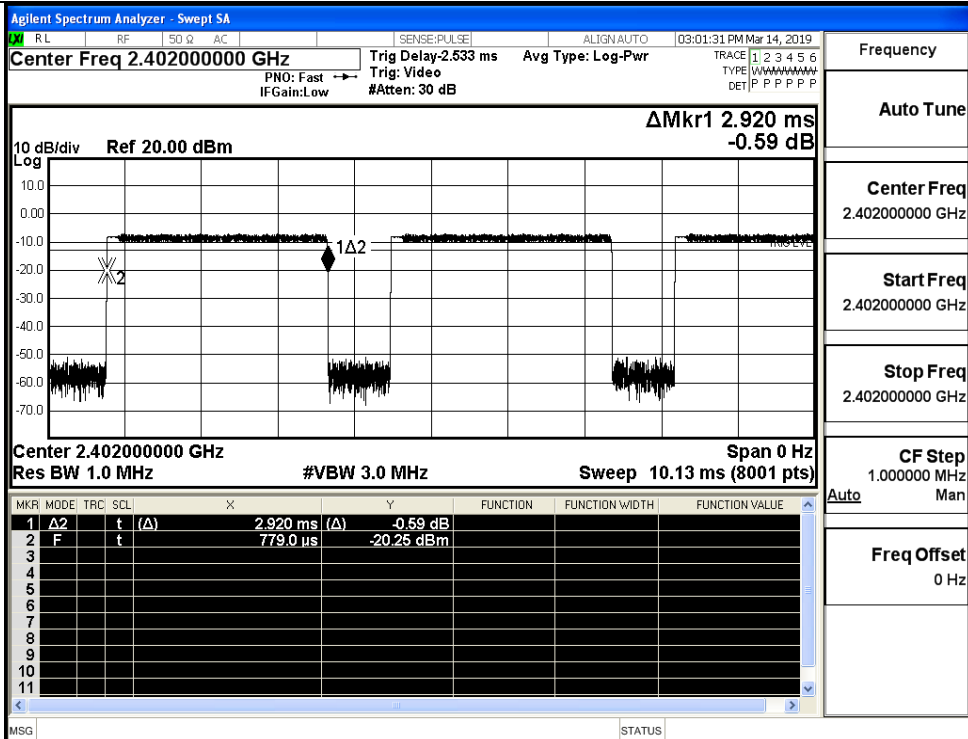
GFSK_DH5/MCH



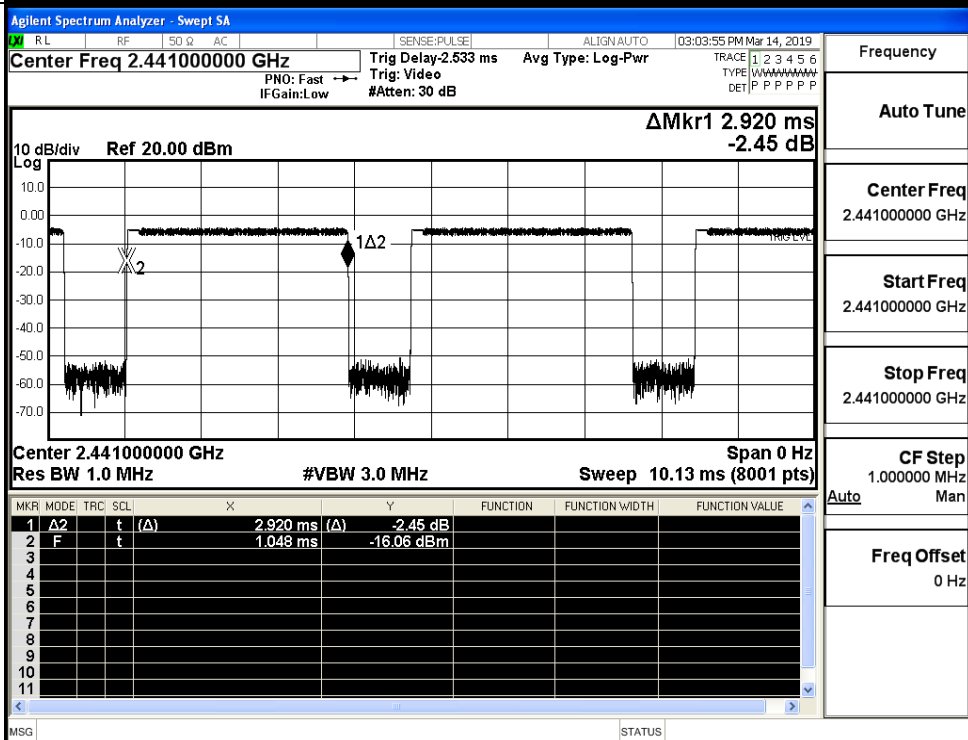
GFSK_DH5/HCH



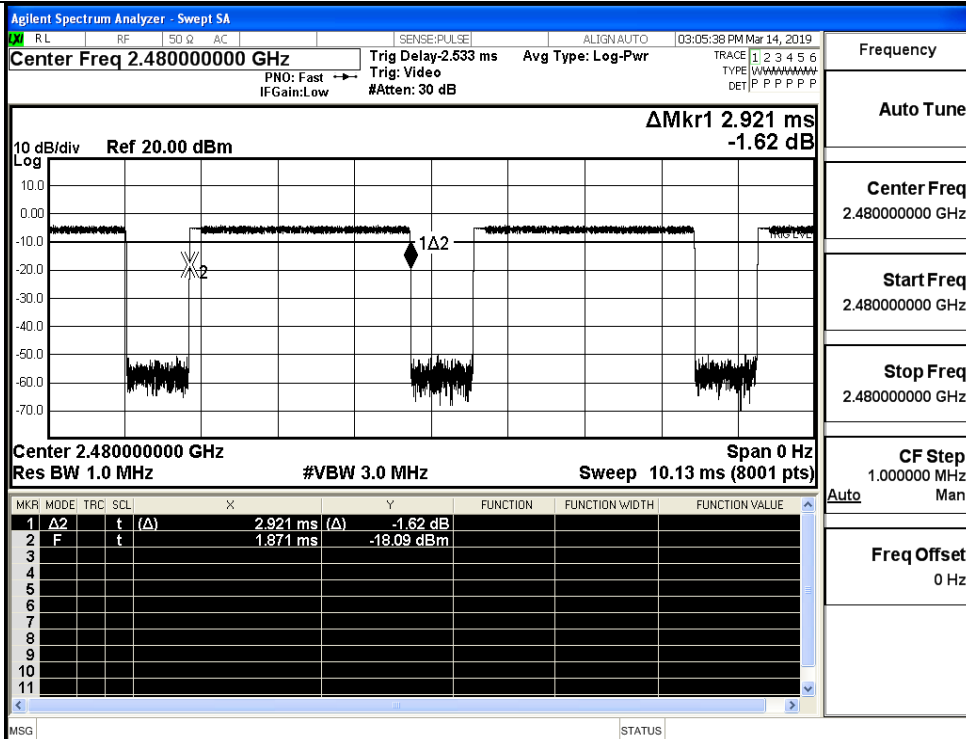
$\pi/4$ DQPSK
_2DH5/LCH



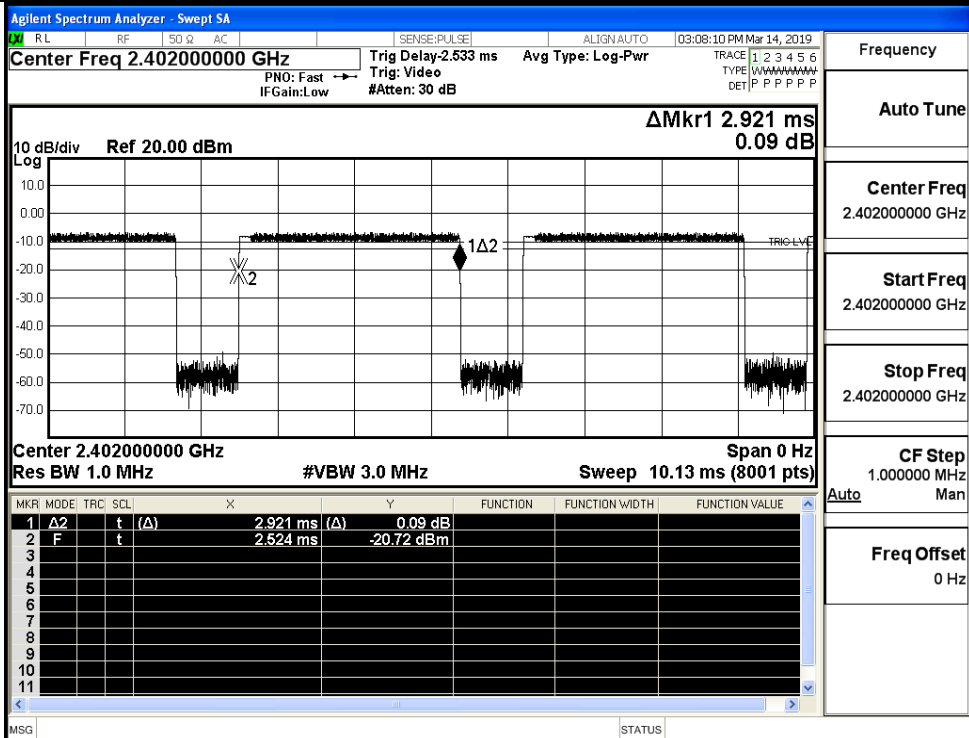
$\pi/4$ DQPSK
_2DH5/MCH



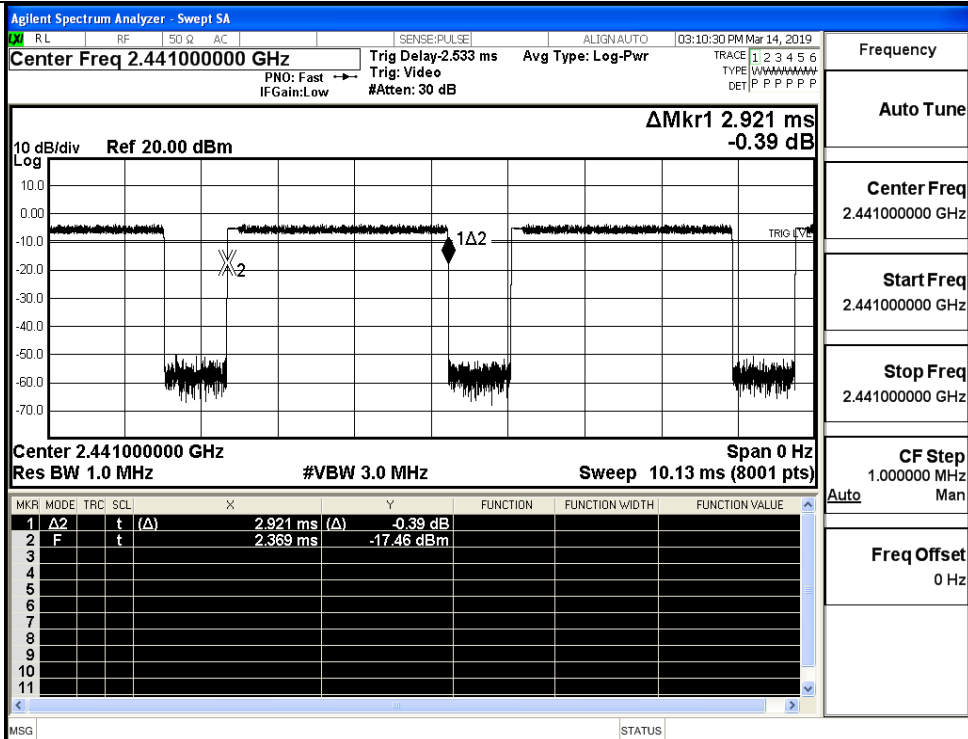
$\pi/4$ DQPSK
_2DH5/HCH



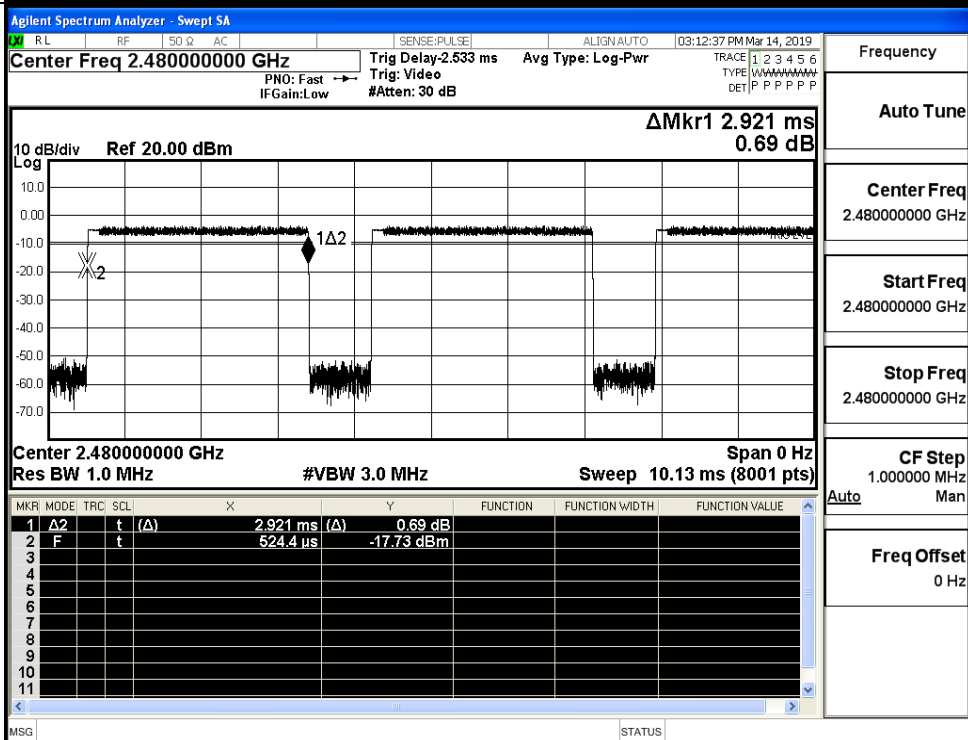
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

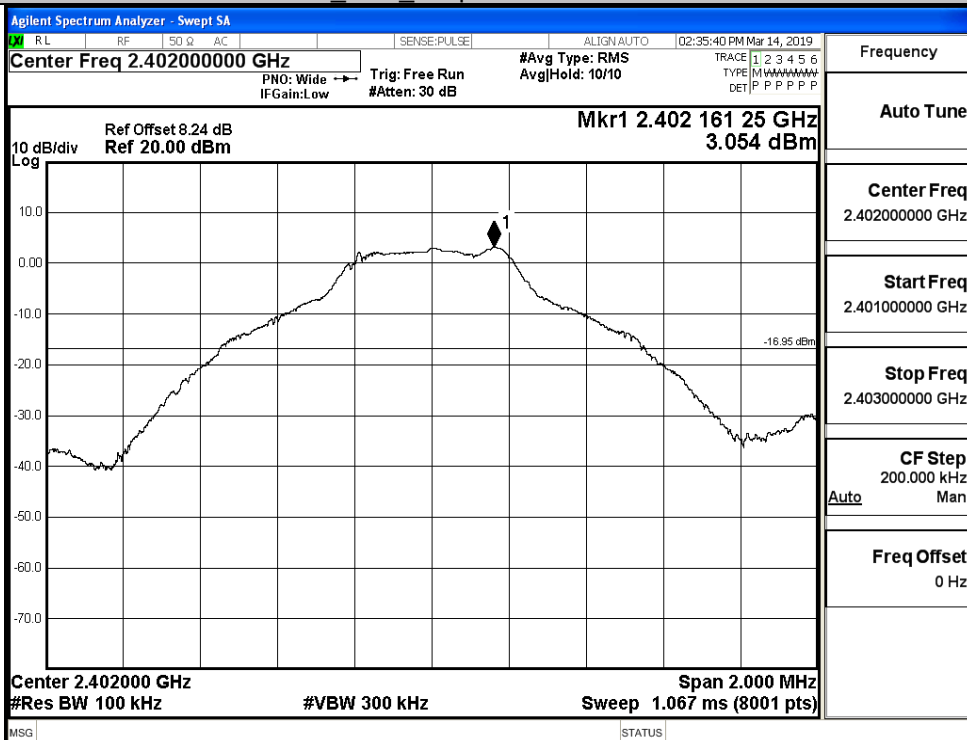


A.6 RF Conducted Spurious Emissions

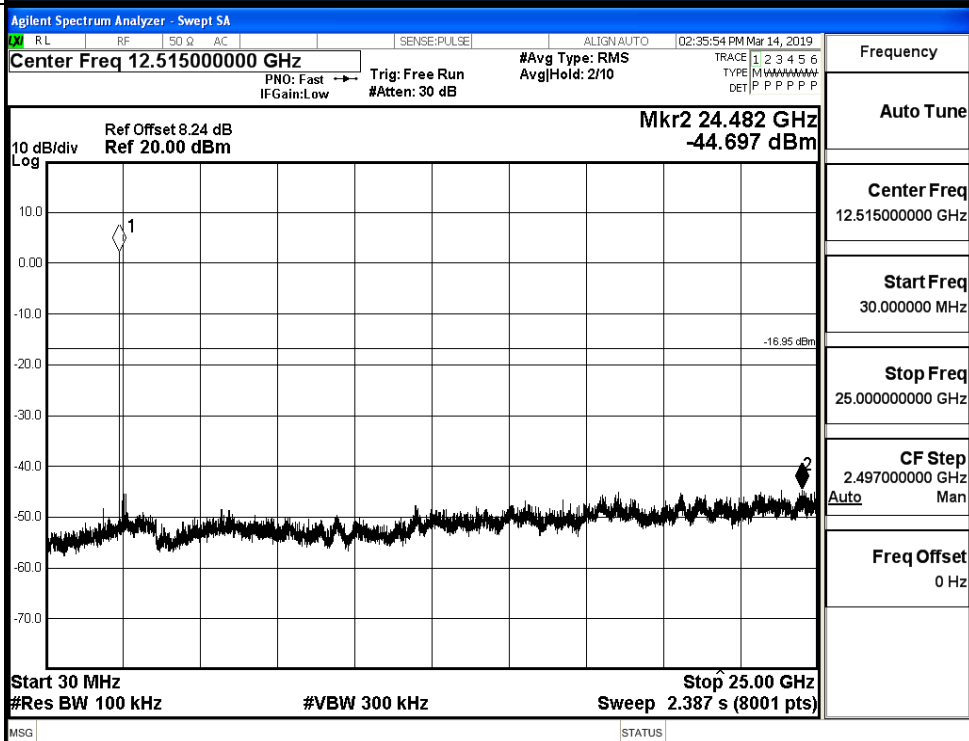
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.054	-44.697	-16.946	PASS
	MCH	5.298	-36.644	-14.702	PASS
	HCH	2.705	-43.633	-17.295	PASS
$\pi/4$ DQPSK	LCH	-0.011	-43.662	-20.011	PASS
	MCH	3.137	-44.359	-16.863	PASS
	HCH	3.185	-43.361	-16.815	PASS
8DPSK	LCH	0.35	-44.048	-19.650	PASS
	MCH	3.118	-44.362	-16.882	PASS
	HCH	3.262	-43.981	-16.738	PASS

GFSK LCH Graphs

Pref

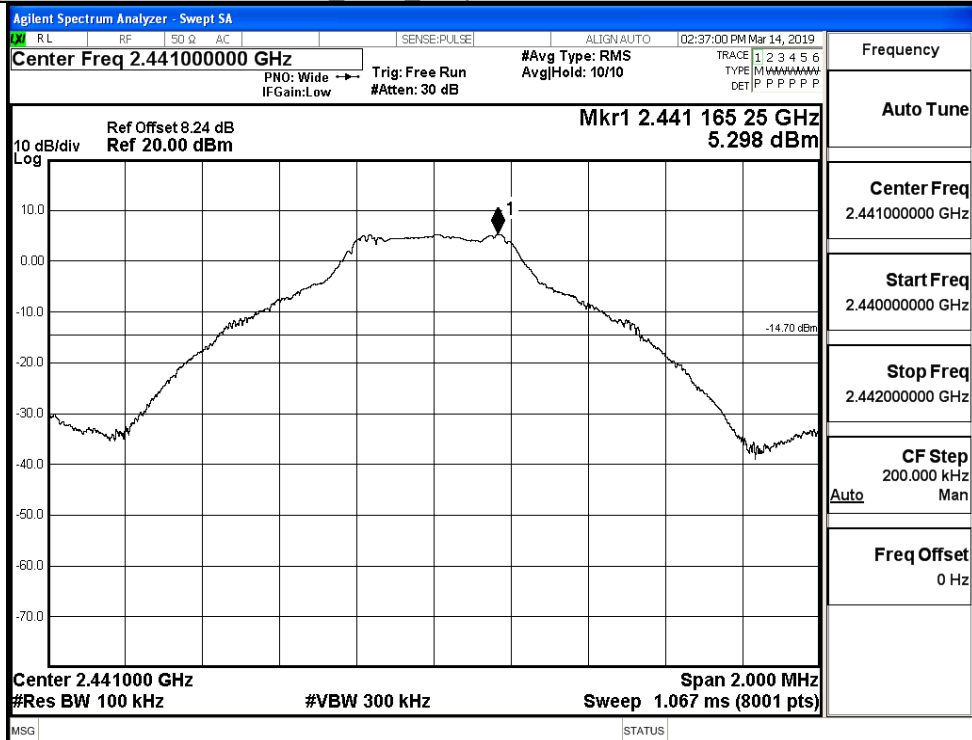


Puw

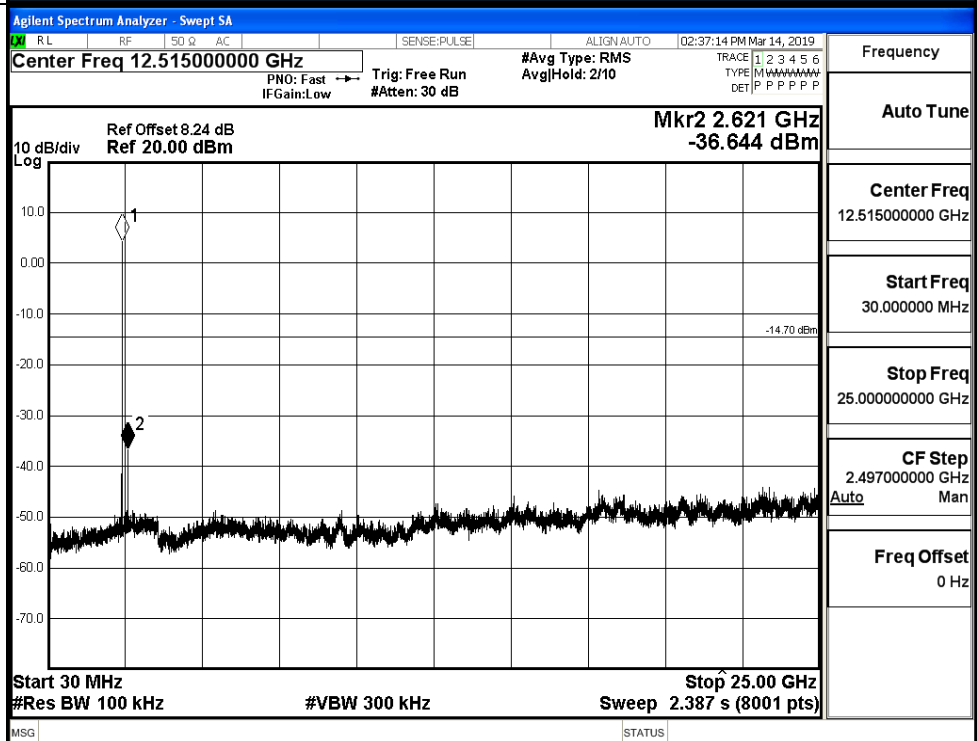


GFSK_MCH_Graphs

Pref

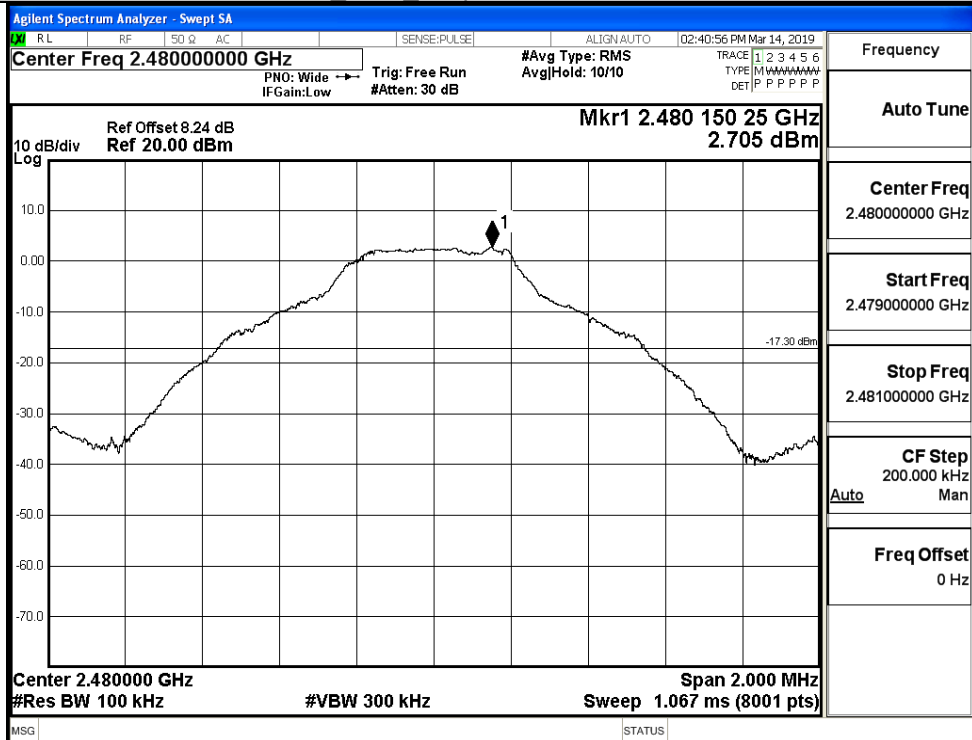


Puw

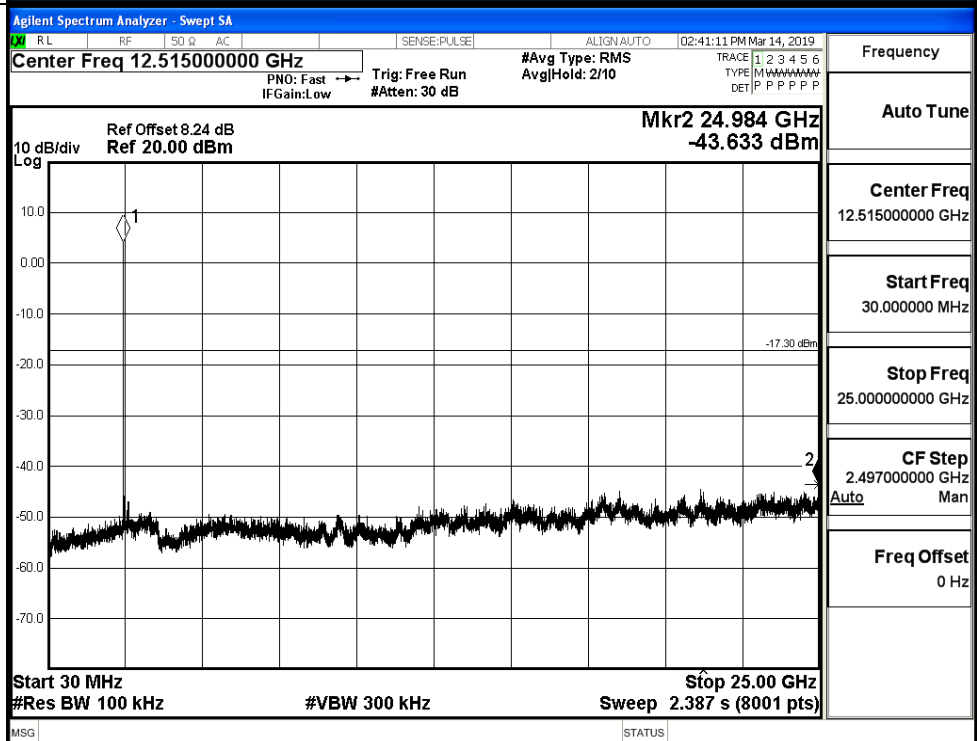


GFSK_HCH_Graphs

Pref

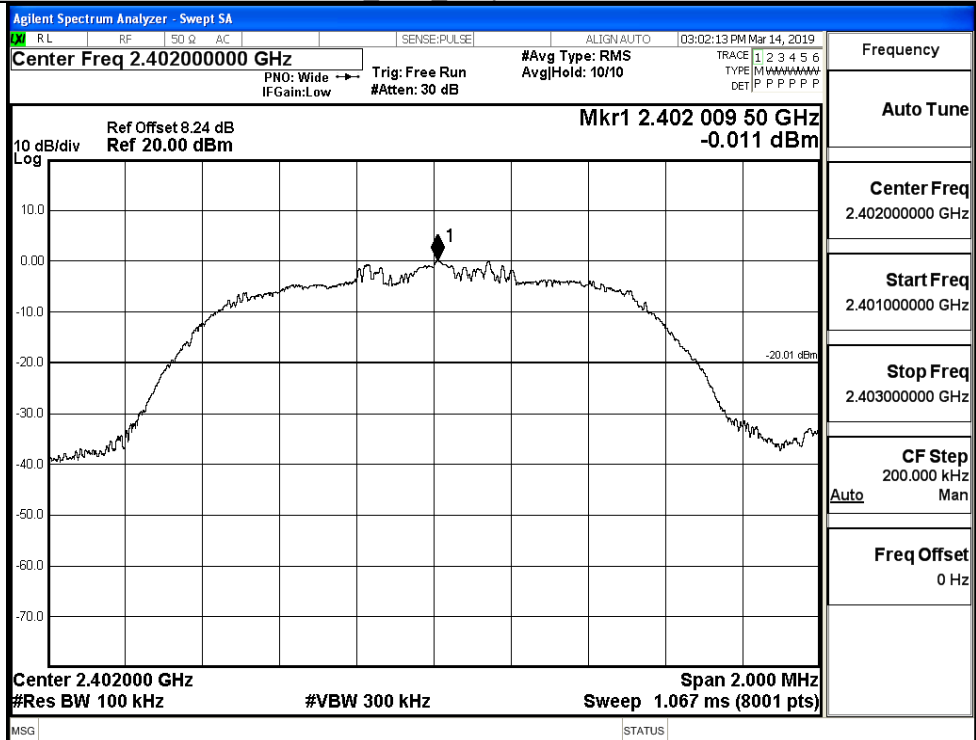


Puw

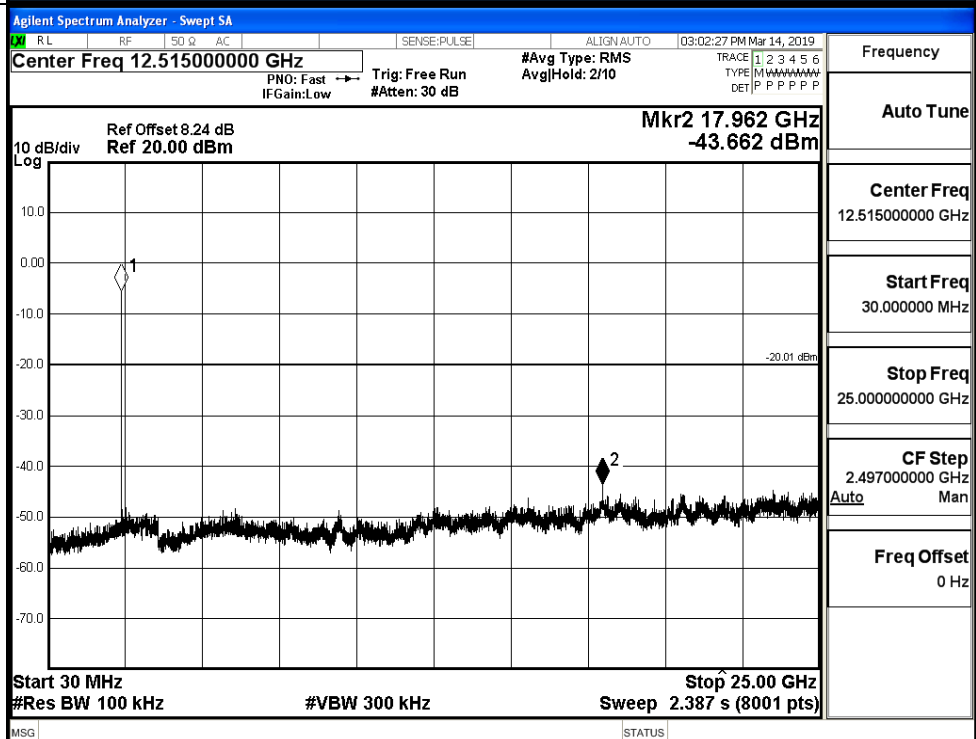


π /4DQPSK LCH_Graphs

Pref

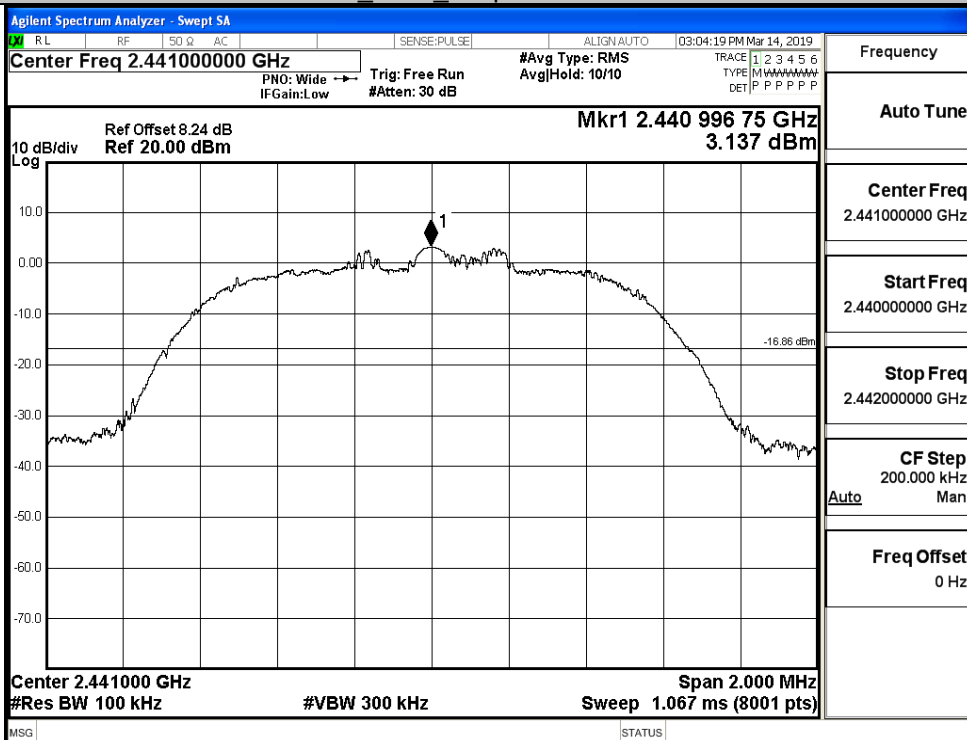


Puw

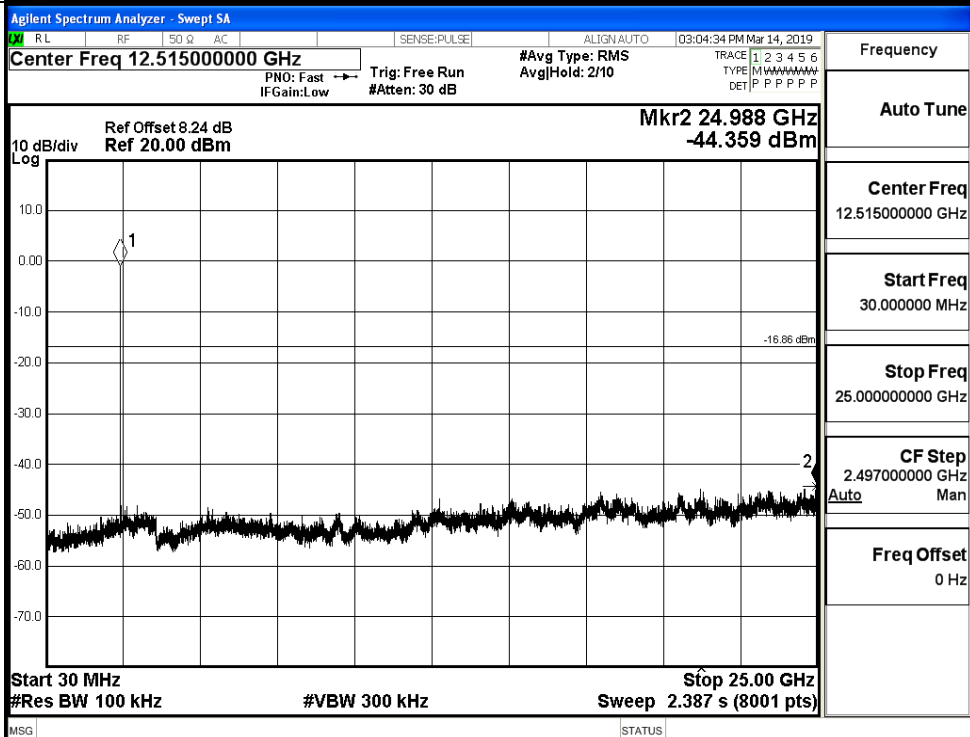


π /4DQPSK_MCH_Graphs

Pref

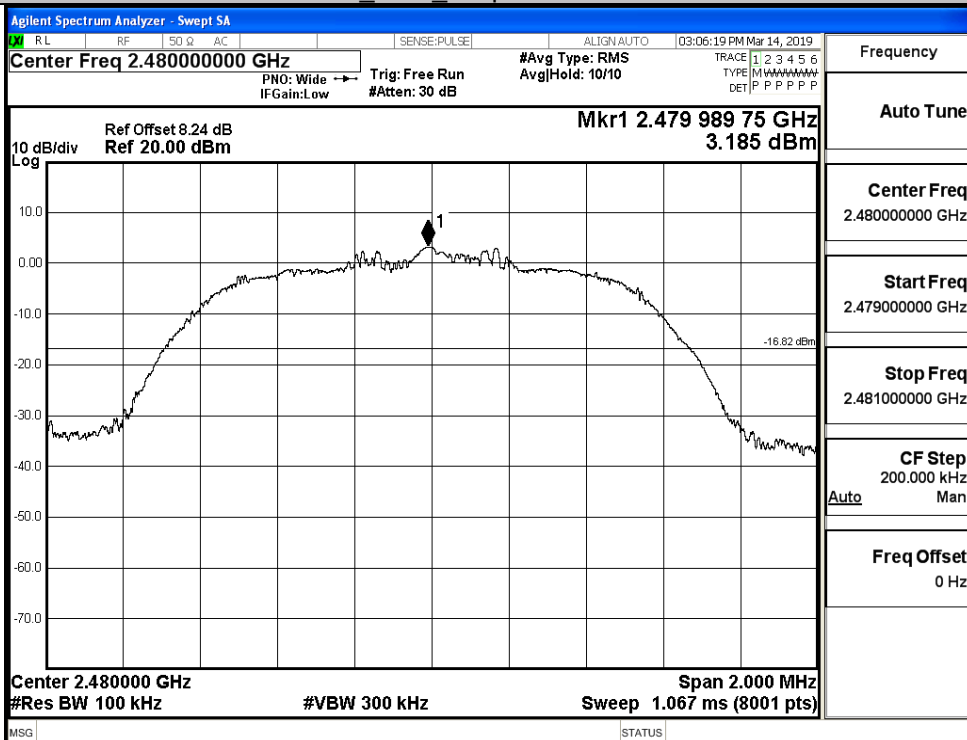


Puw

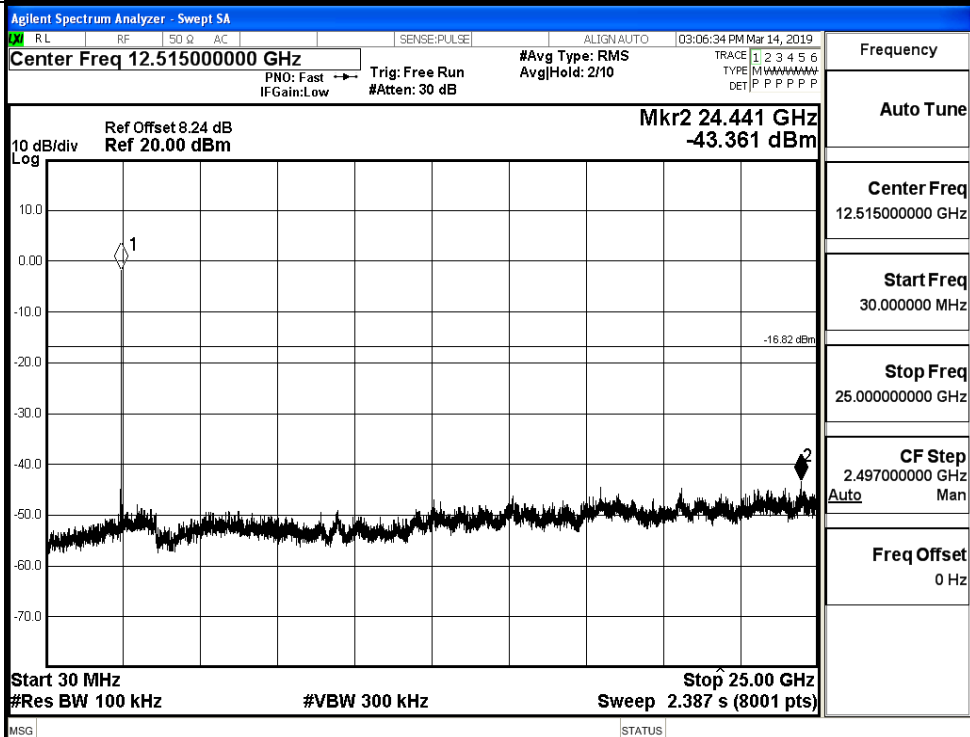


π /4DQPSK_HCH_Graphs

Pref

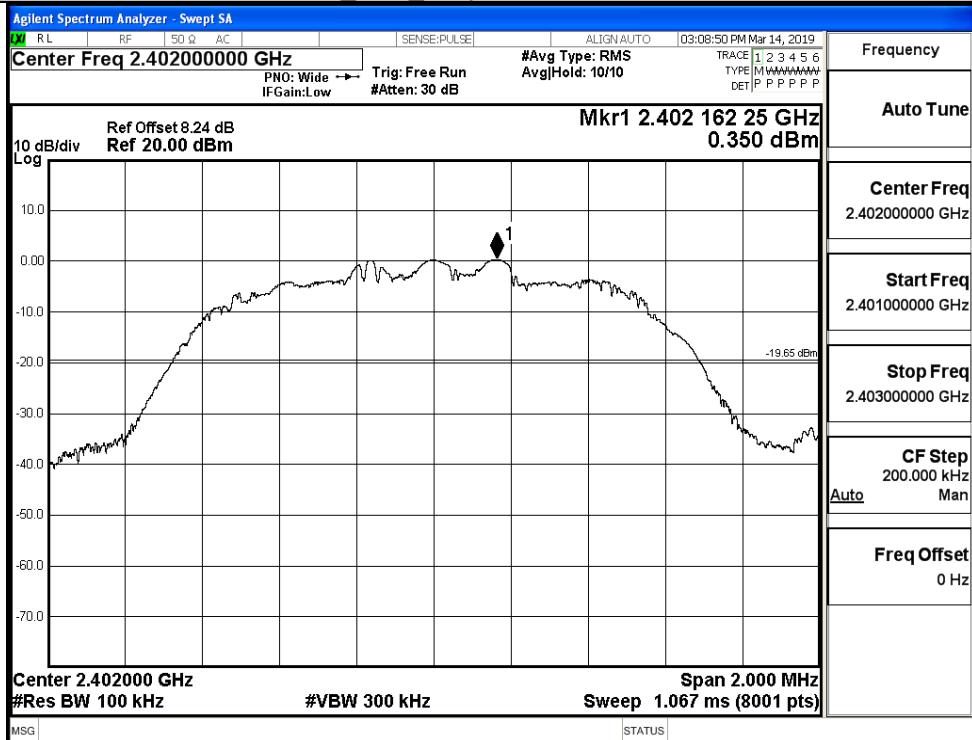


Puw

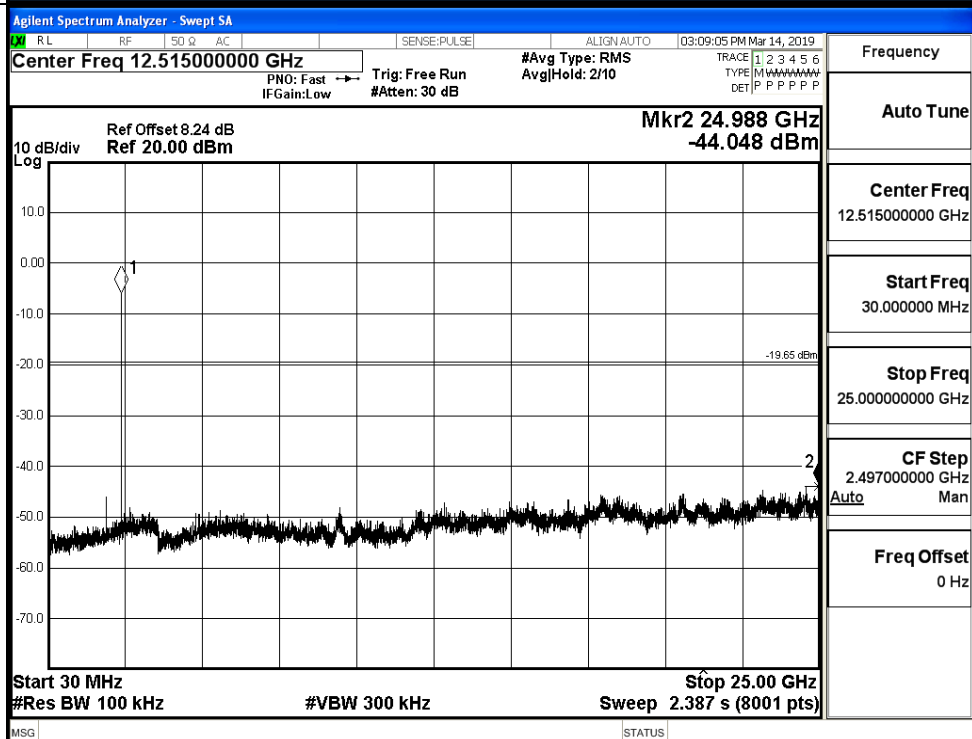


8DPSK_LCH_Graphs

Pref

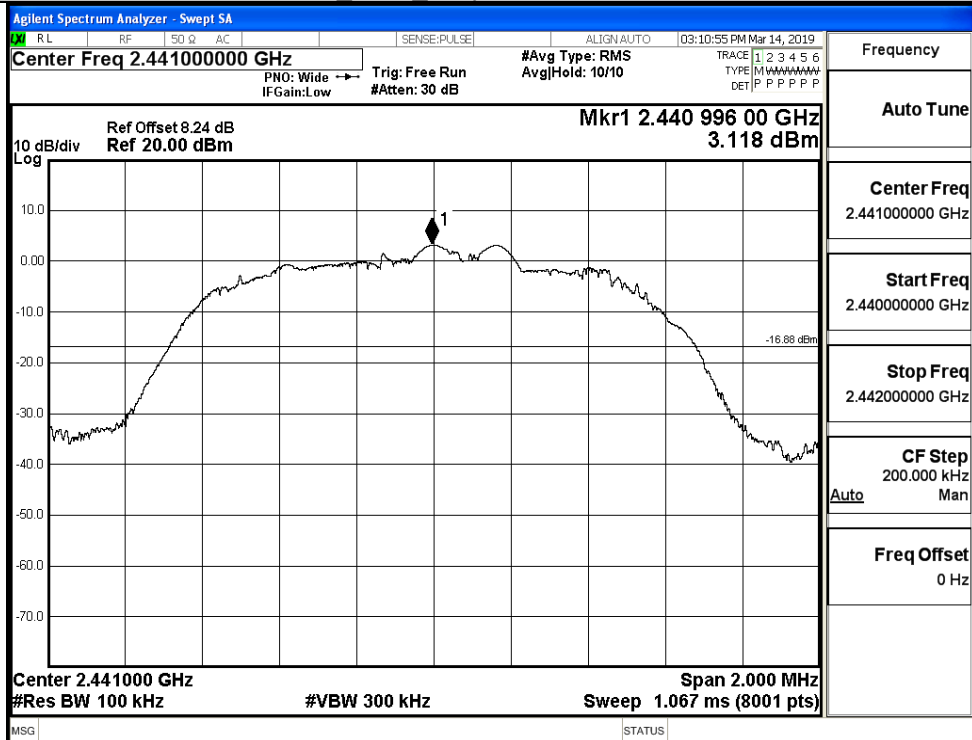


Puw

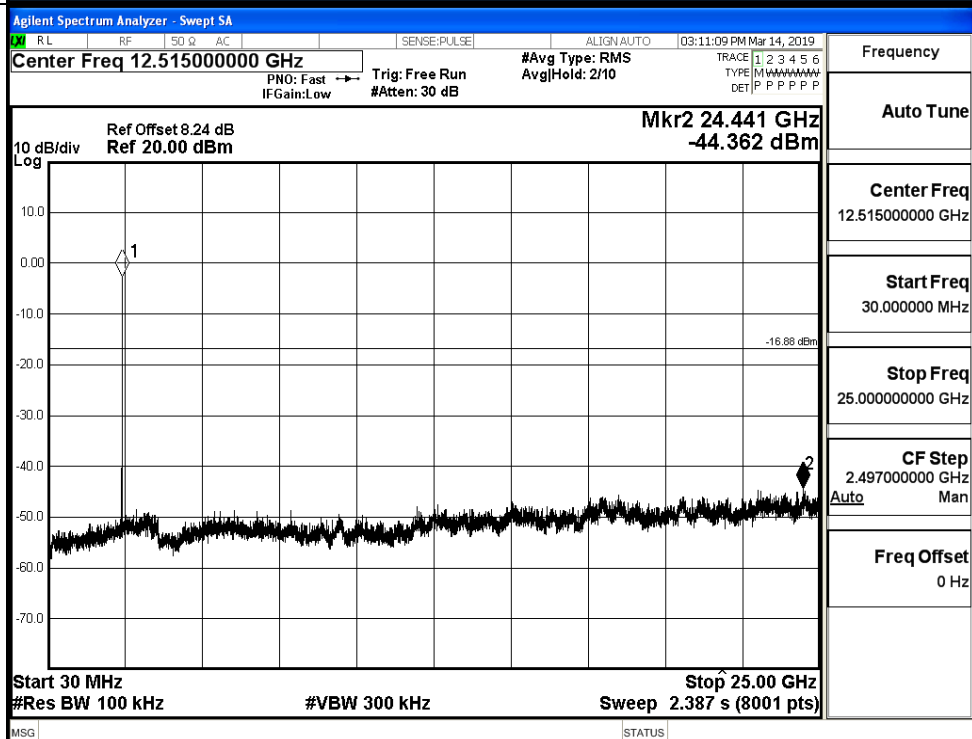


8DPSK_MCH_Graphs

Pref

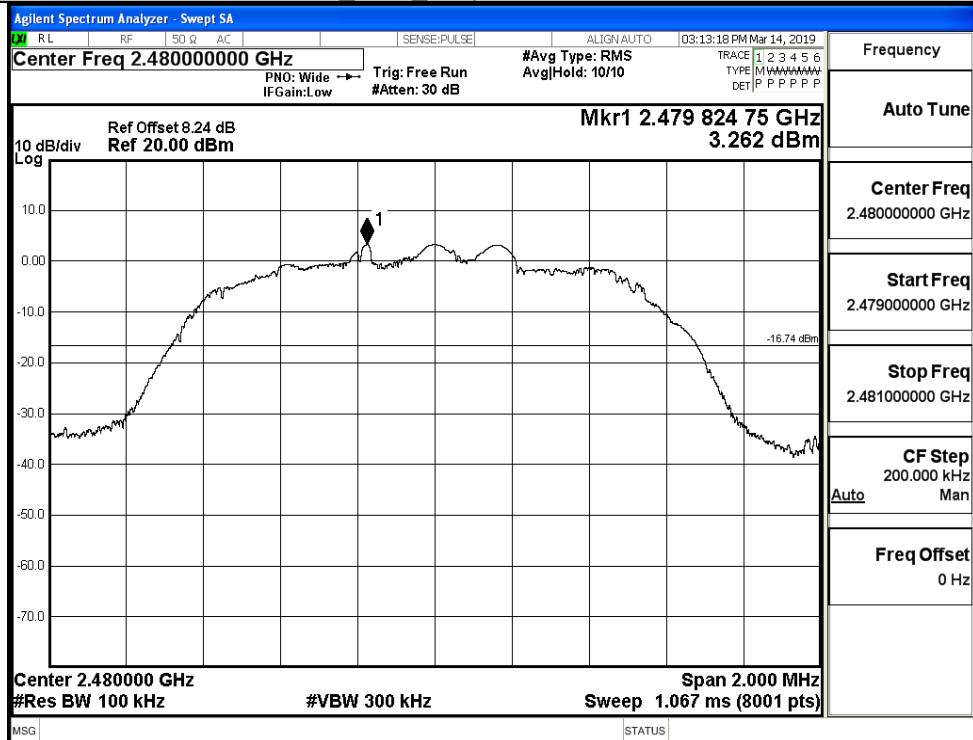


Puw

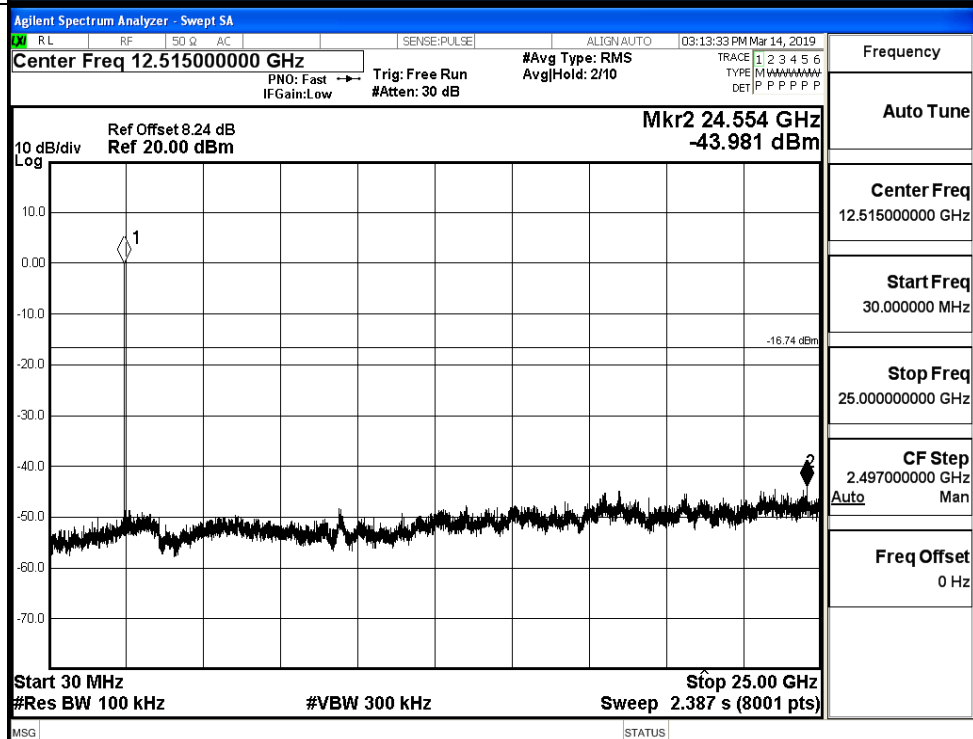


8DPSK_HCH_Graphs

Pref



Puw

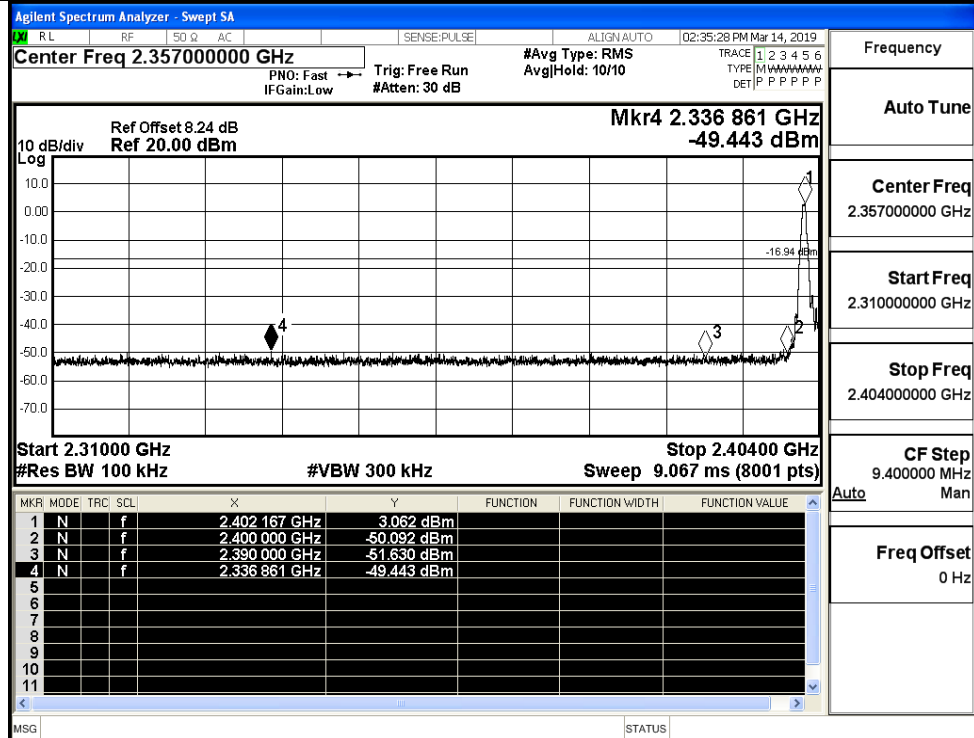


A.7 Band-edge for RF Conducted Emissions

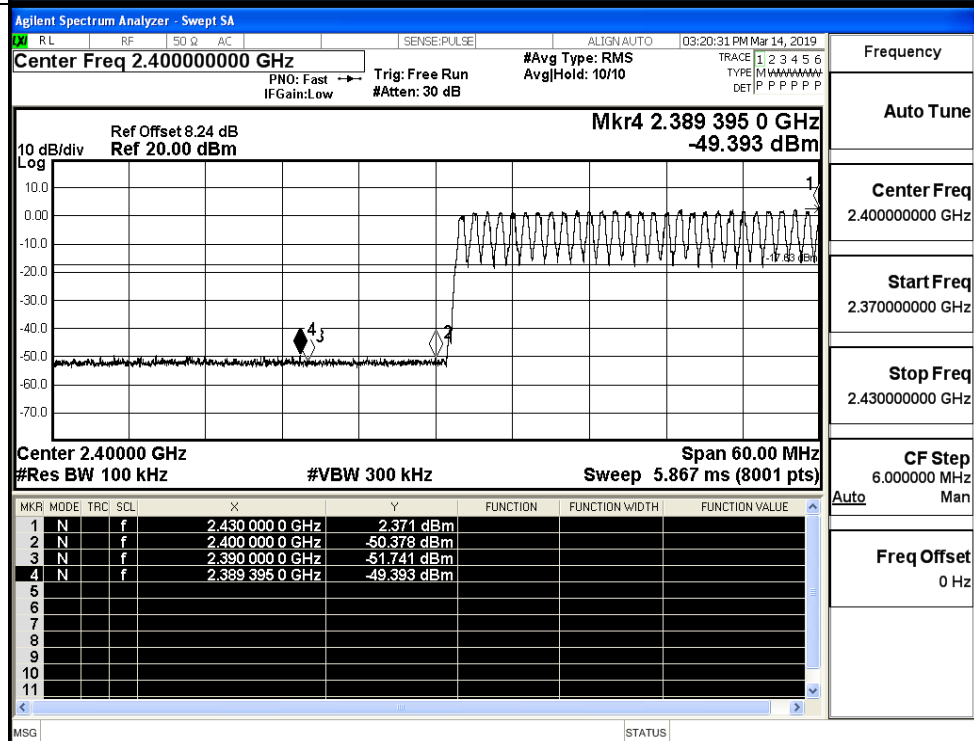
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.062	Off	-49.443	-16.94	PASS
			2.371	On	-49.393	-17.63	PASS
	HCH	2480	4.830	Off	-49.235	-15.17	PASS
			3.045	On	-47.464	-16.96	PASS
$\pi/4$ DQPSK	LCH	2402	-0.689	Off	-49.689	-20.69	PASS
			2.281	On	-49.379	-17.72	PASS
	HCH	2480	3.355	Off	-49.618	-16.65	PASS
			3.142	On	-49.046	-16.86	PASS
8DPSK	LCH	2402	0.298	Off	-49.611	-19.7	PASS
			2.288	On	-49.084	-17.71	PASS
	HCH	2480	3.377	Off	-49.654	-16.62	PASS
			3.273	On	-48.781	-16.73	PASS

Test Graphs

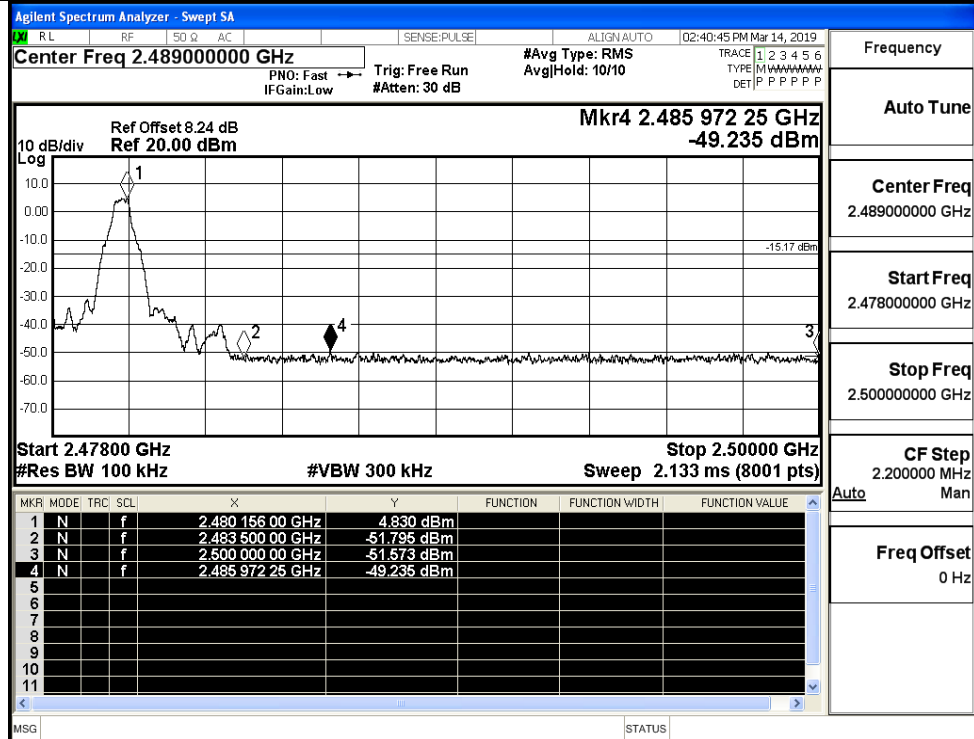
GFSK/LCH/No Hop



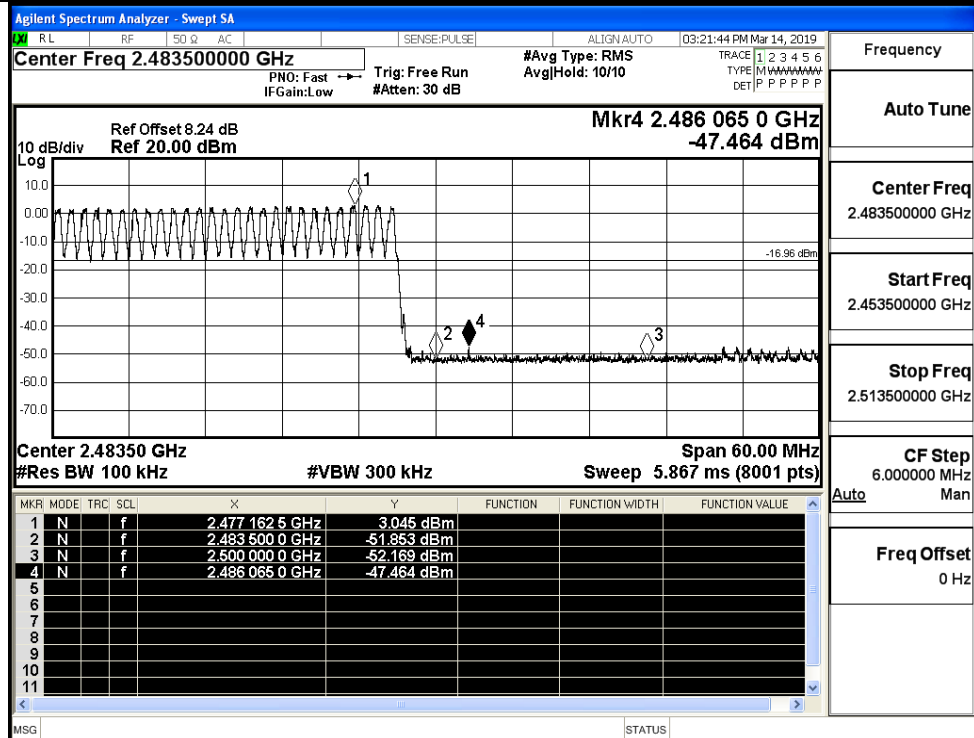
GFSK/LCH/Hop



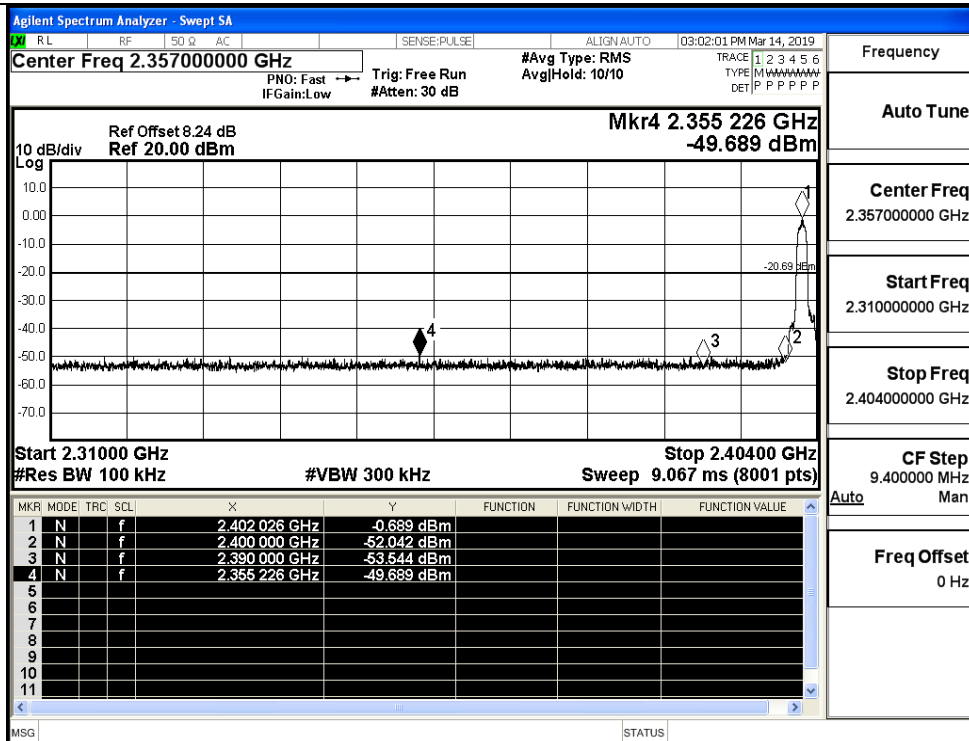
GFSK/HCH/No Hop



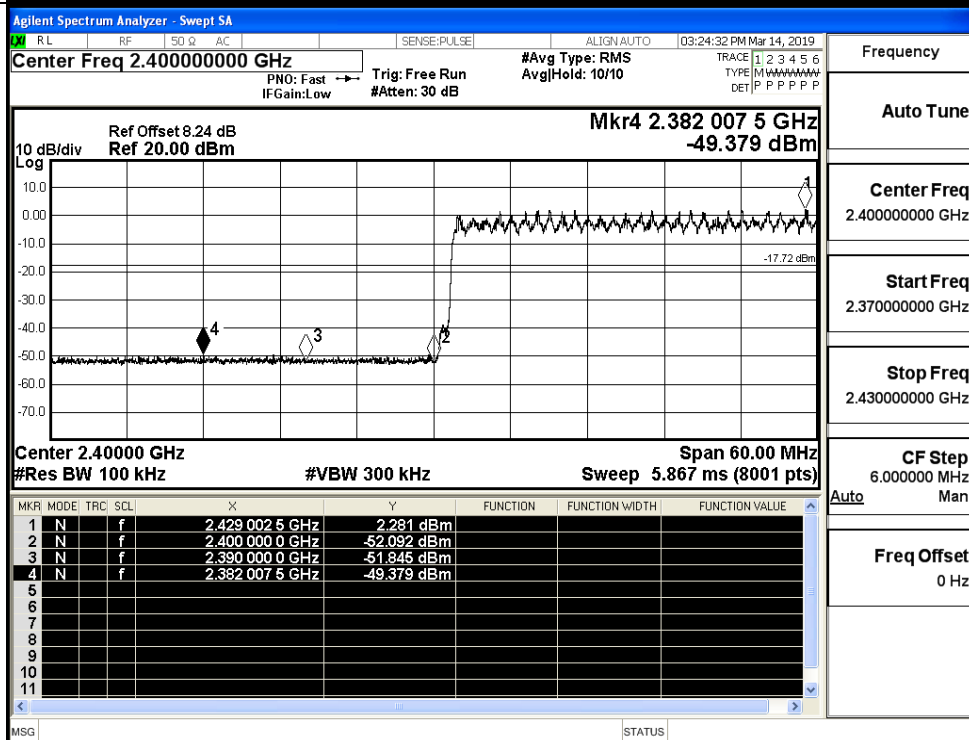
GFSK/HCH/Hop



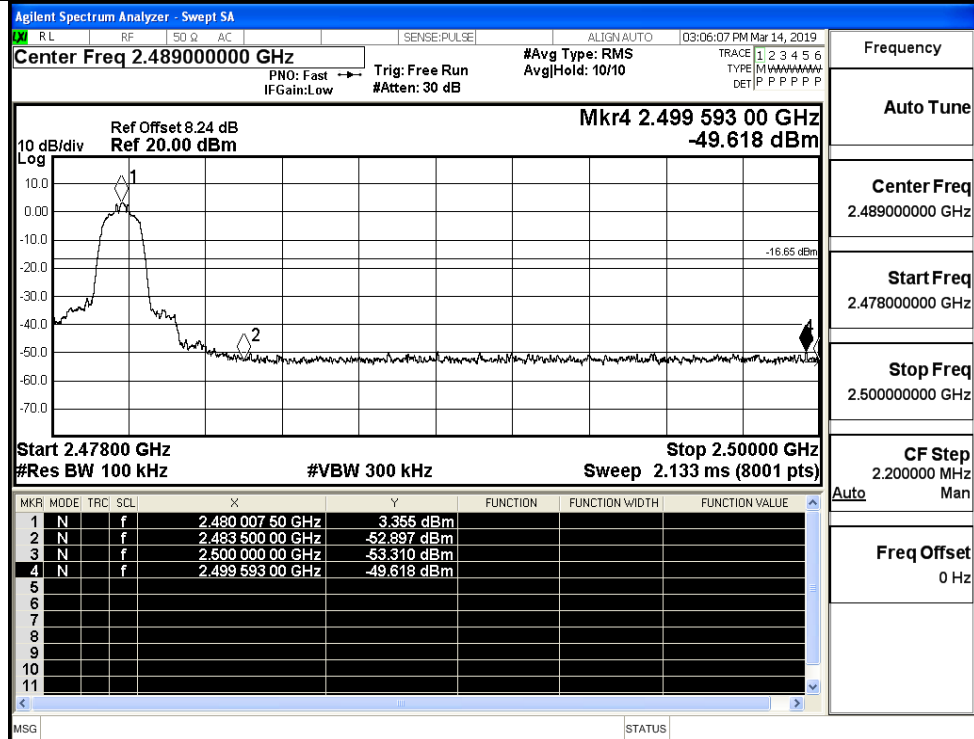
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

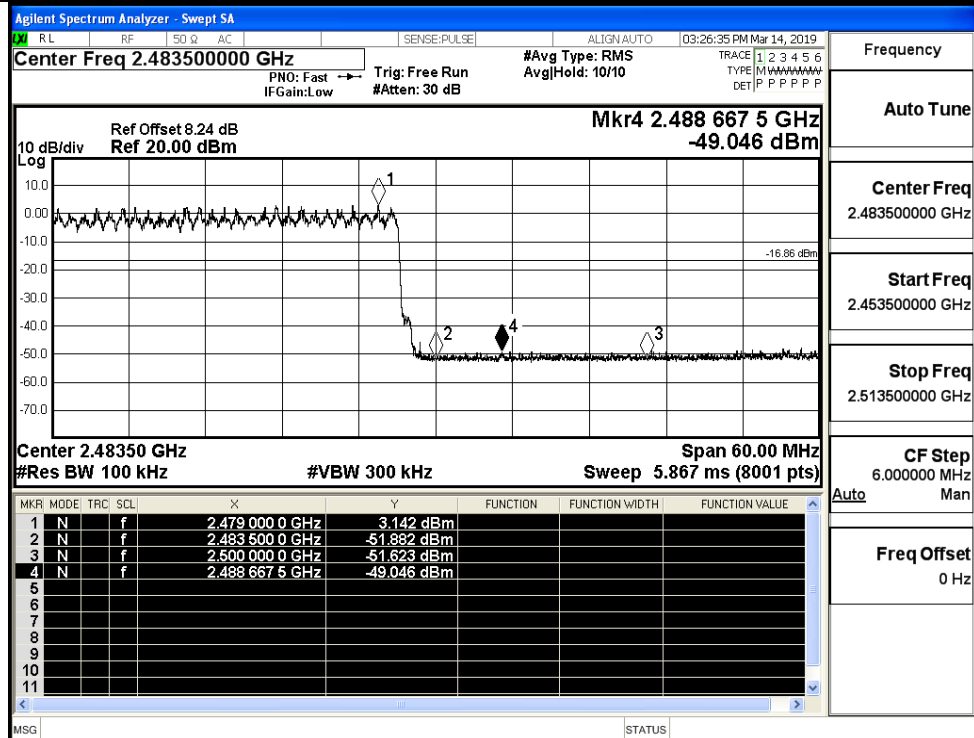
Start Freq
2.478000000 GHz

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

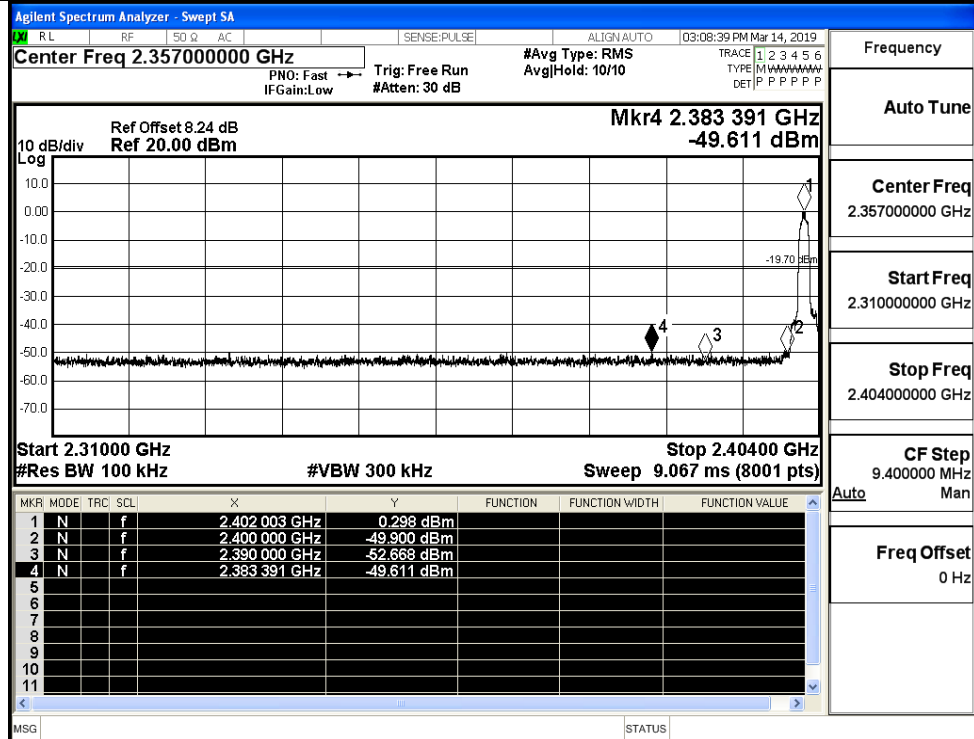
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

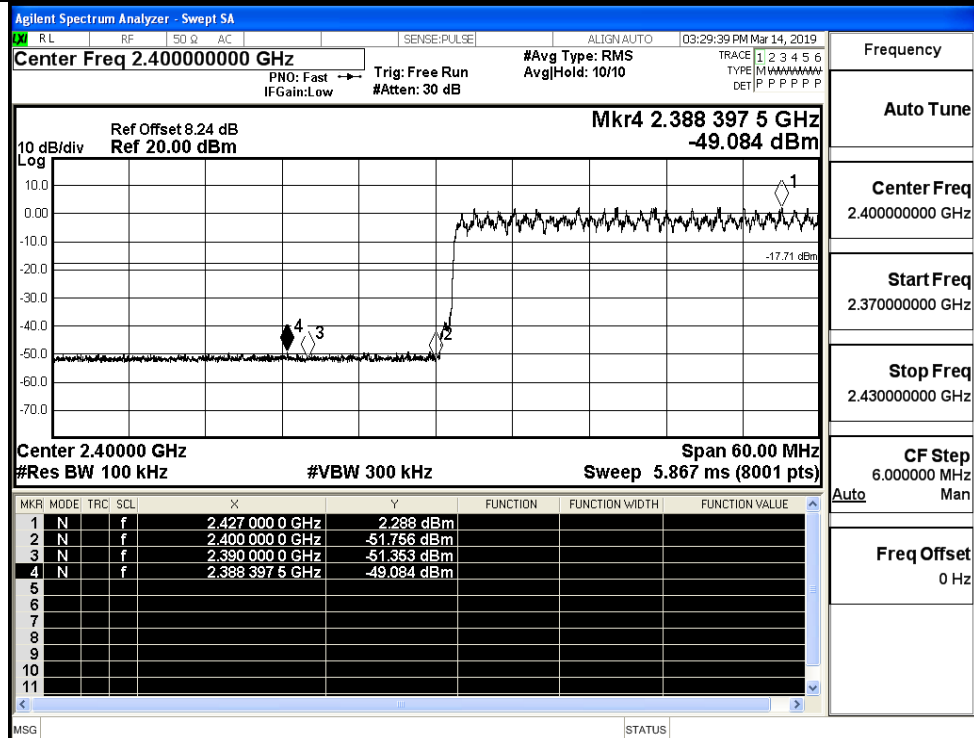
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

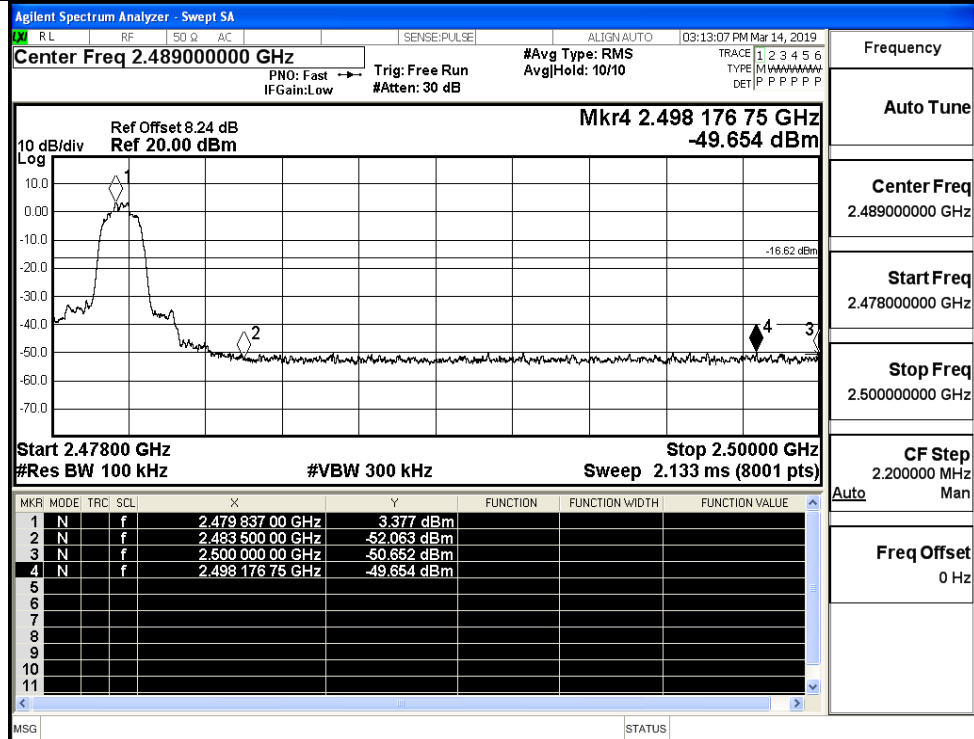
8DPSK/LCH/No Hop



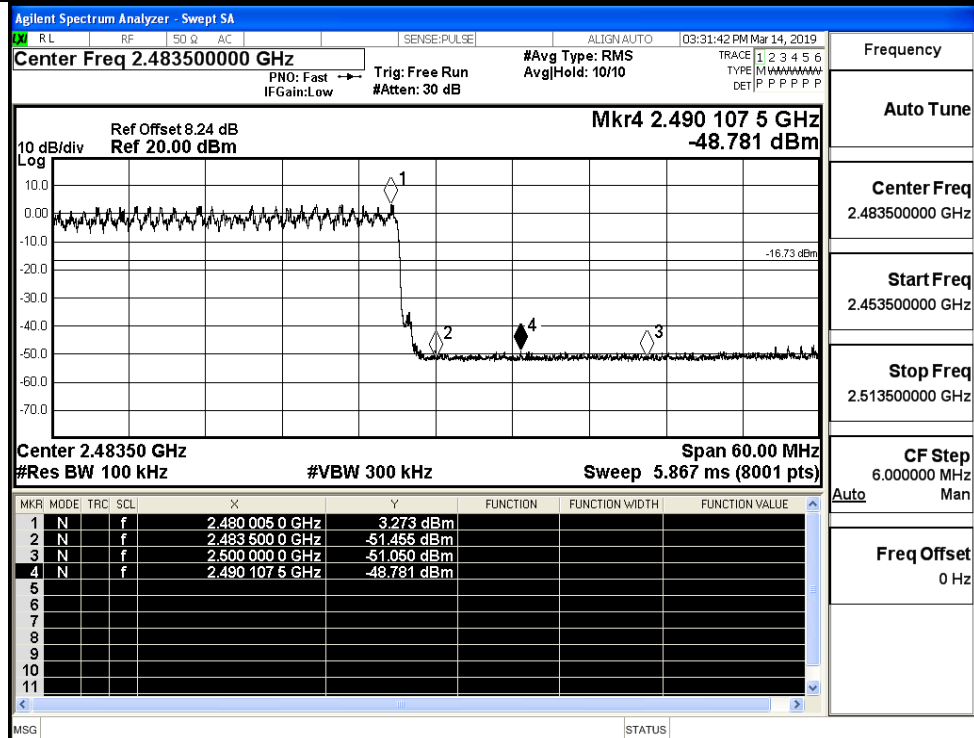
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



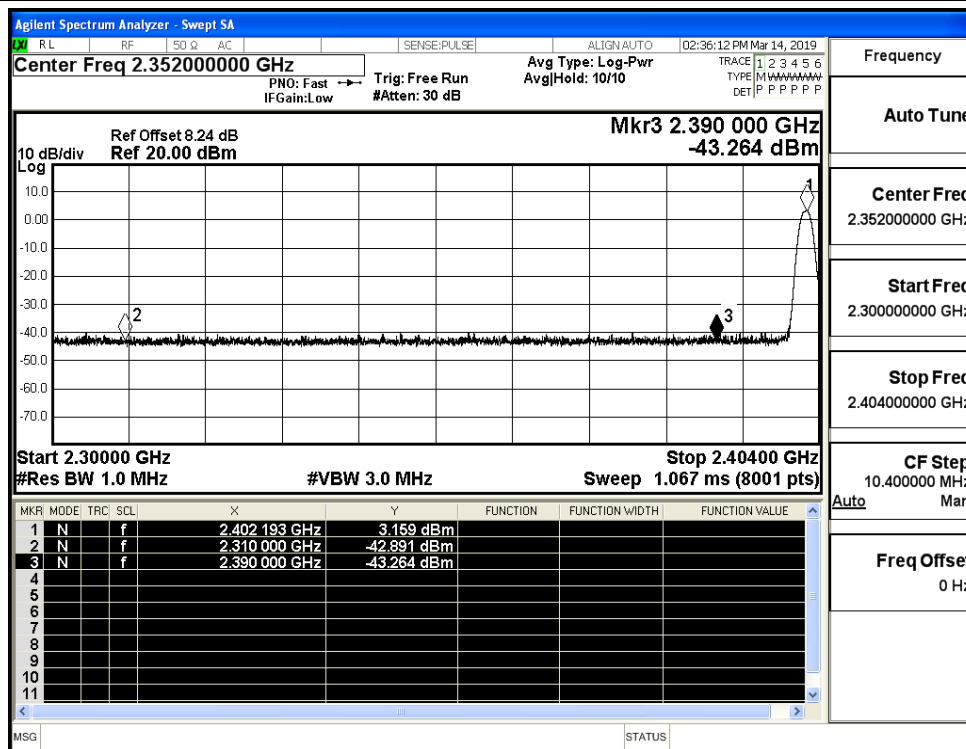
8DPSK/HCH/Hop



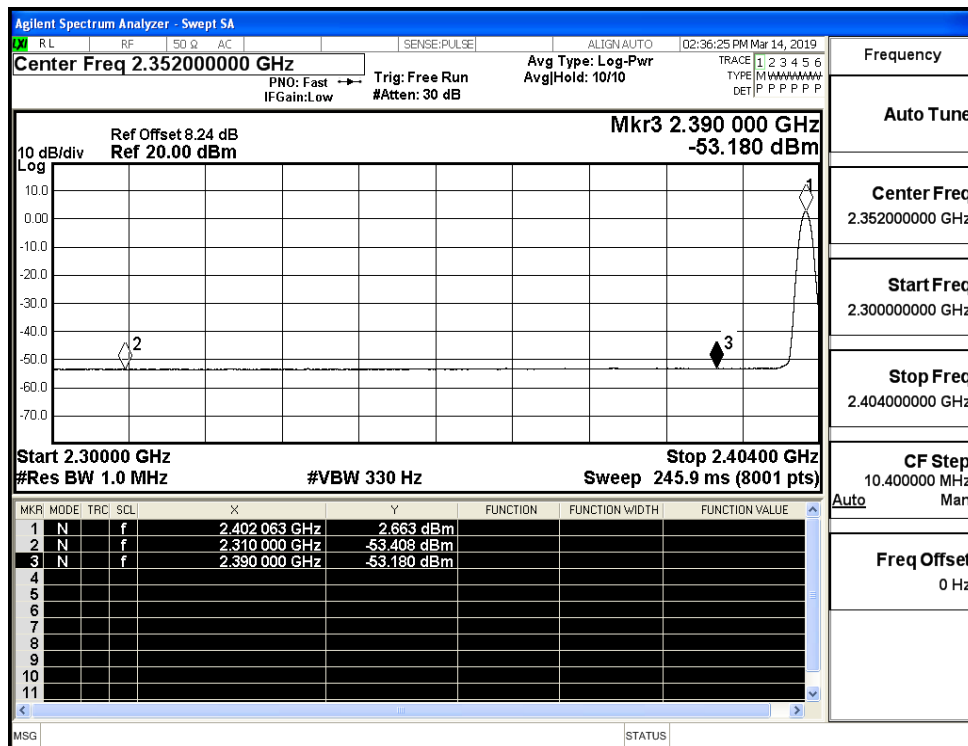
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.89	2.0	0	54.37	PEAK	74	PASS
	Off	2310.0	-53.41	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-43.26	2.0	0	53.99	PEAK	74	PASS
	Off	2390.0	-53.18	2.0	0	44.08	AV	54	PASS
	Off	2483.5	-39.52	2.0	0	57.74	PEAK	74	PASS
	Off	2483.5	-49.70	2.0	0	47.56	AV	54	PASS
	Off	2500.0	-42.06	2.0	0	55.20	PEAK	74	PASS
	Off	2500.0	-52.90	2.0	0	44.36	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.39	2.0	0	54.87	PEAK	74	PASS
	Off	2310.0	-53.65	2.0	0	43.60	AV	54	PASS
	Off	2390.0	-41.46	2.0	0	55.80	PEAK	74	PASS
	Off	2390.0	-53.36	2.0	0	43.90	AV	54	PASS
	Off	2483.5	-40.83	2.0	0	56.43	PEAK	74	PASS
	Off	2483.5	-52.30	2.0	0	44.96	AV	54	PASS
	Off	2500.0	-43.46	2.0	0	53.80	PEAK	74	PASS
	Off	2500.0	-52.94	2.0	0	44.32	AV	54	PASS
8DPSK	Off	2310.0	-43.95	2.0	0	53.31	PEAK	74	PASS
	Off	2310.0	-53.54	2.0	0	43.72	AV	54	PASS
	Off	2390.0	-42.57	2.0	0	54.69	PEAK	74	PASS
	Off	2390.0	-53.34	2.0	0	43.92	AV	54	PASS
	Off	2483.5	-41.79	2.0	0	55.46	PEAK	74	PASS
	Off	2483.5	-52.30	2.0	0	44.96	AV	54	PASS
	Off	2500.0	-44.03	2.0	0	53.22	PEAK	74	PASS
	Off	2500.0	-52.91	2.0	0	44.34	AV	54	PASS

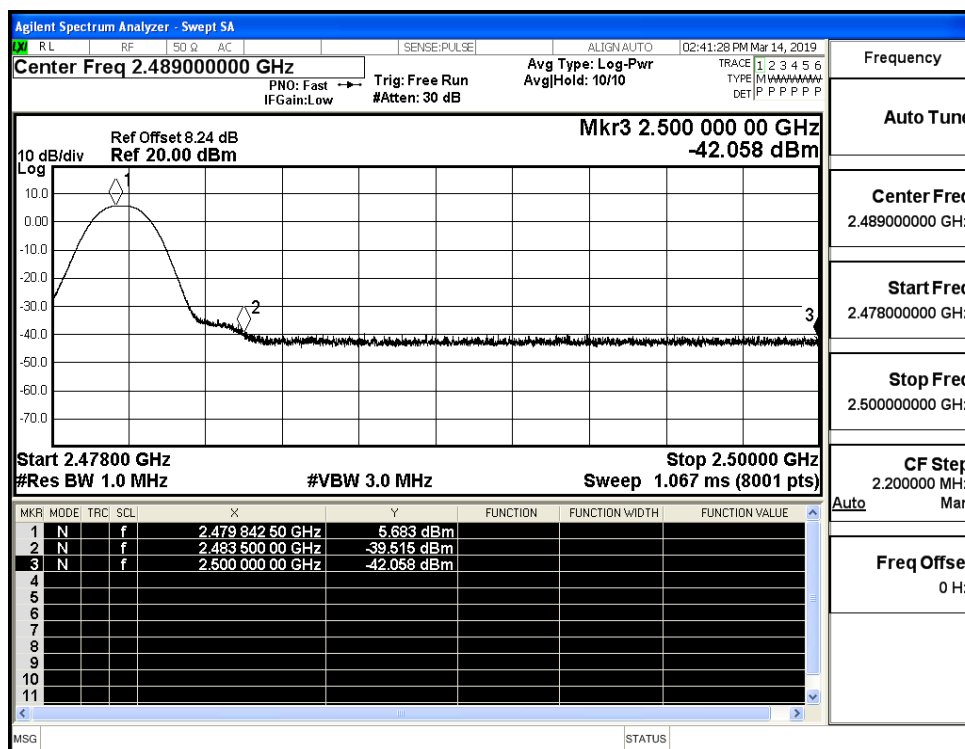
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



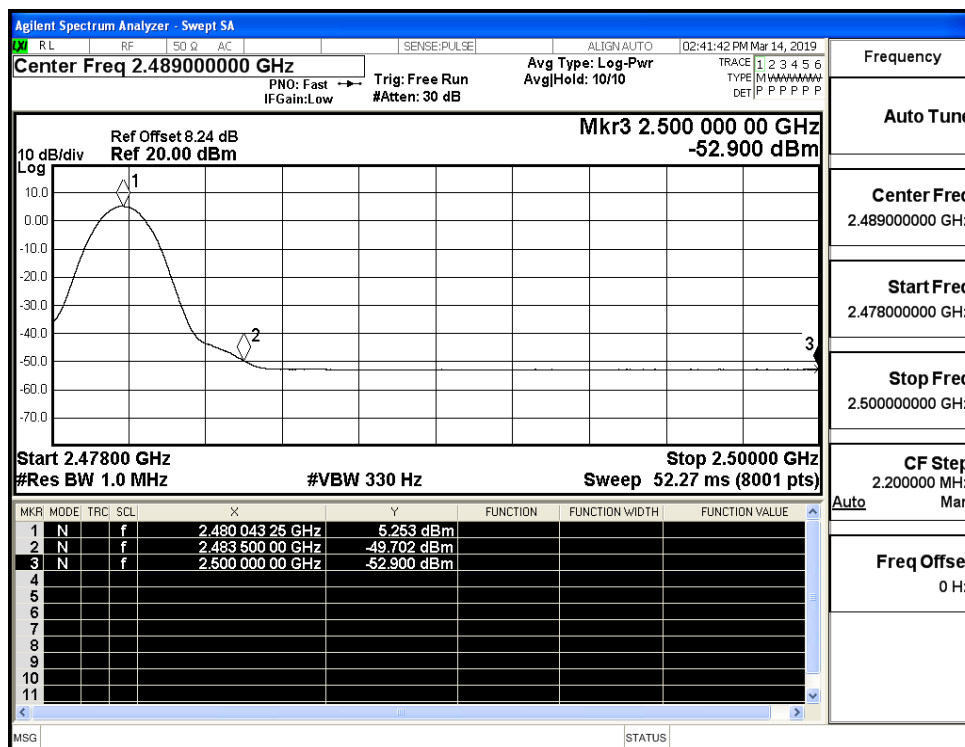
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

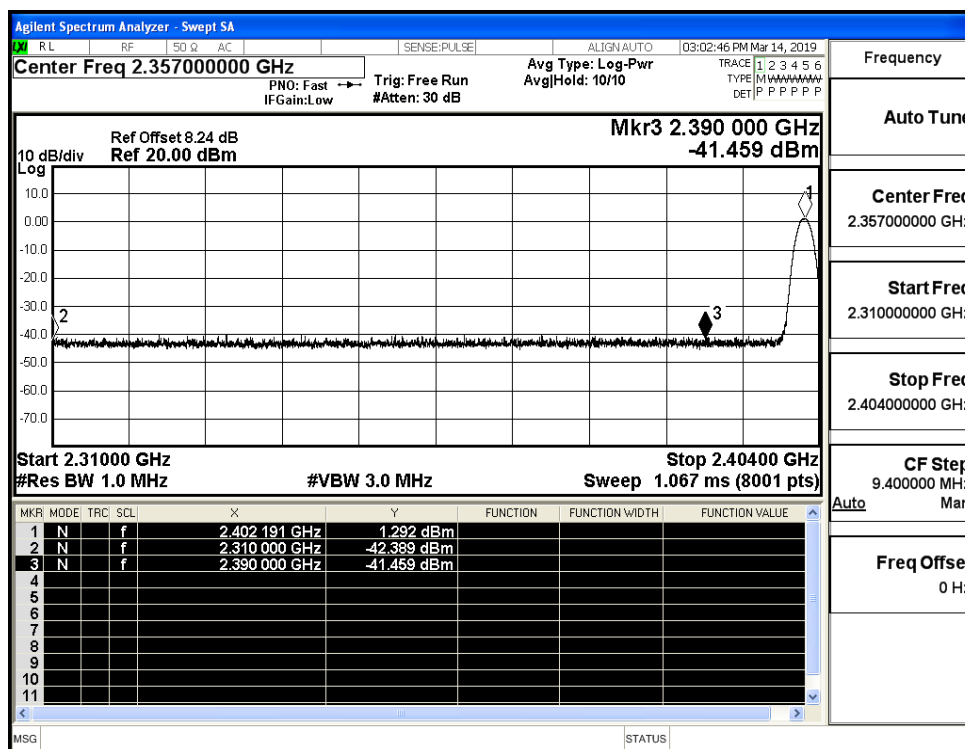
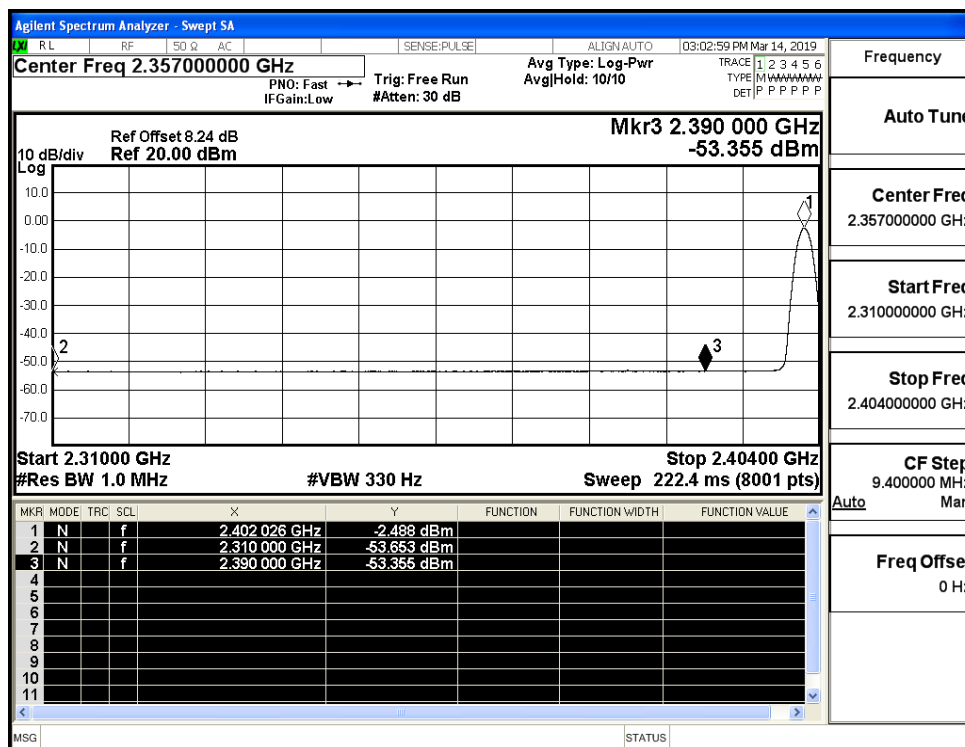


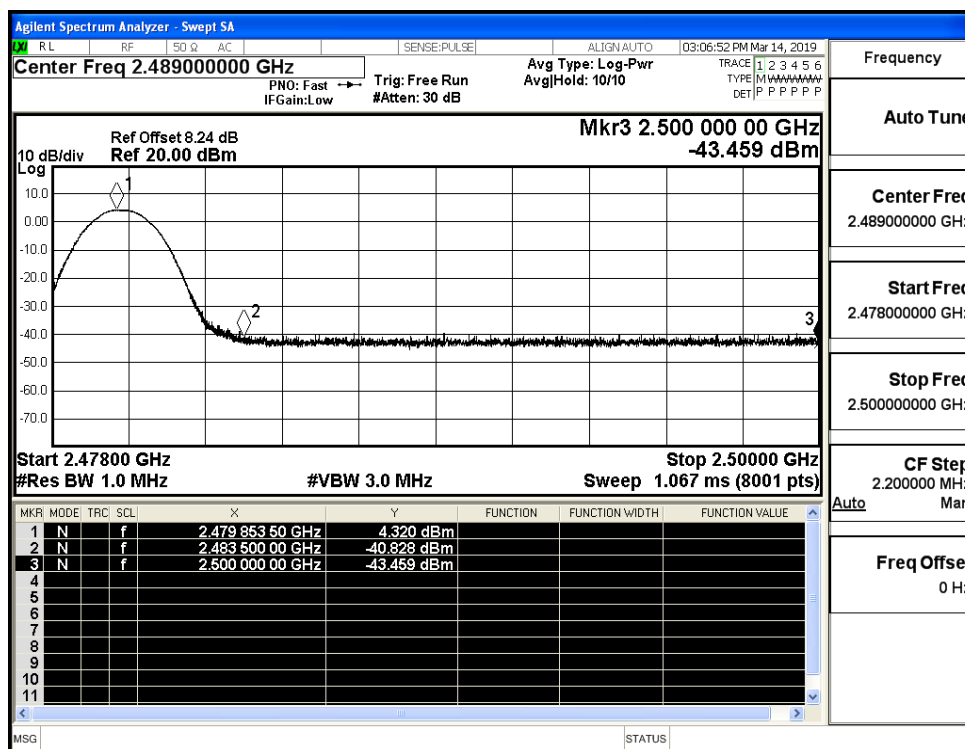
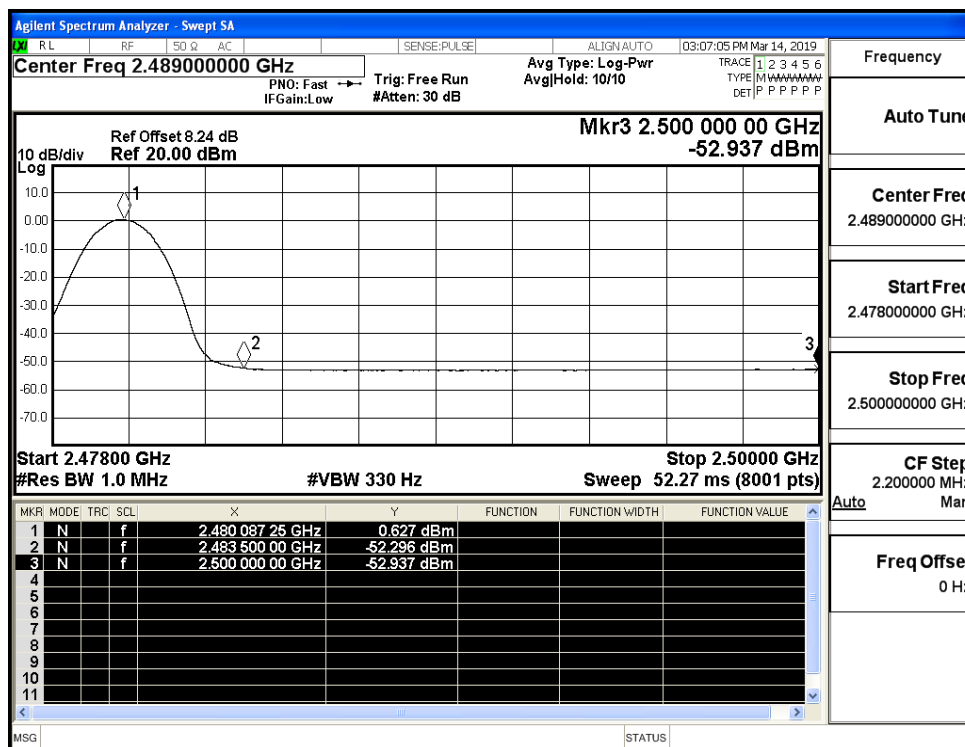
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



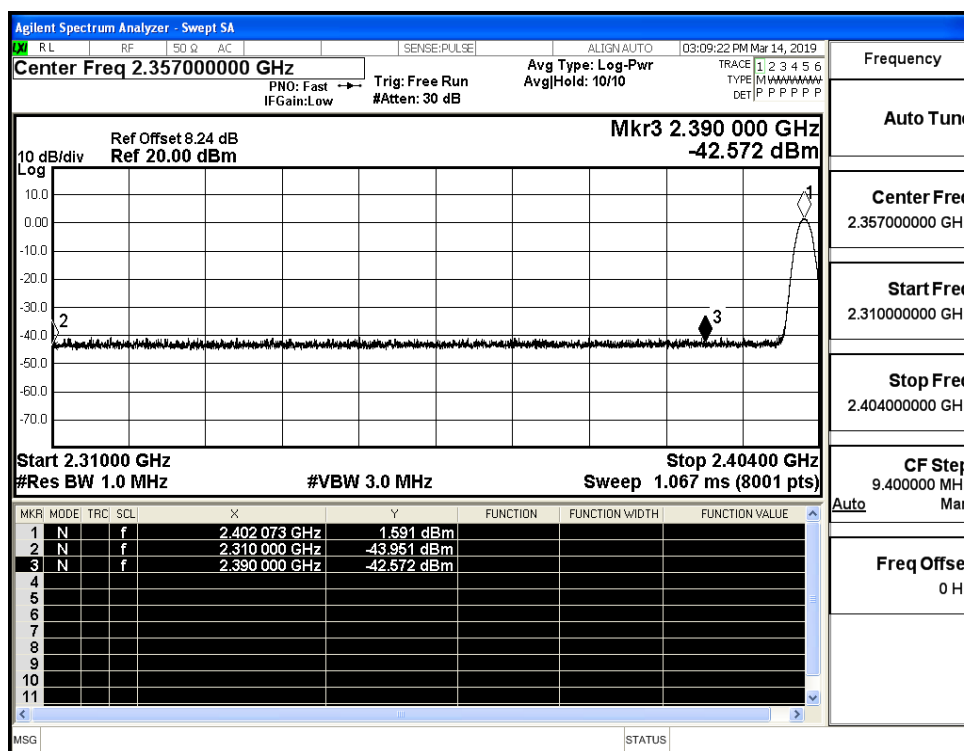
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



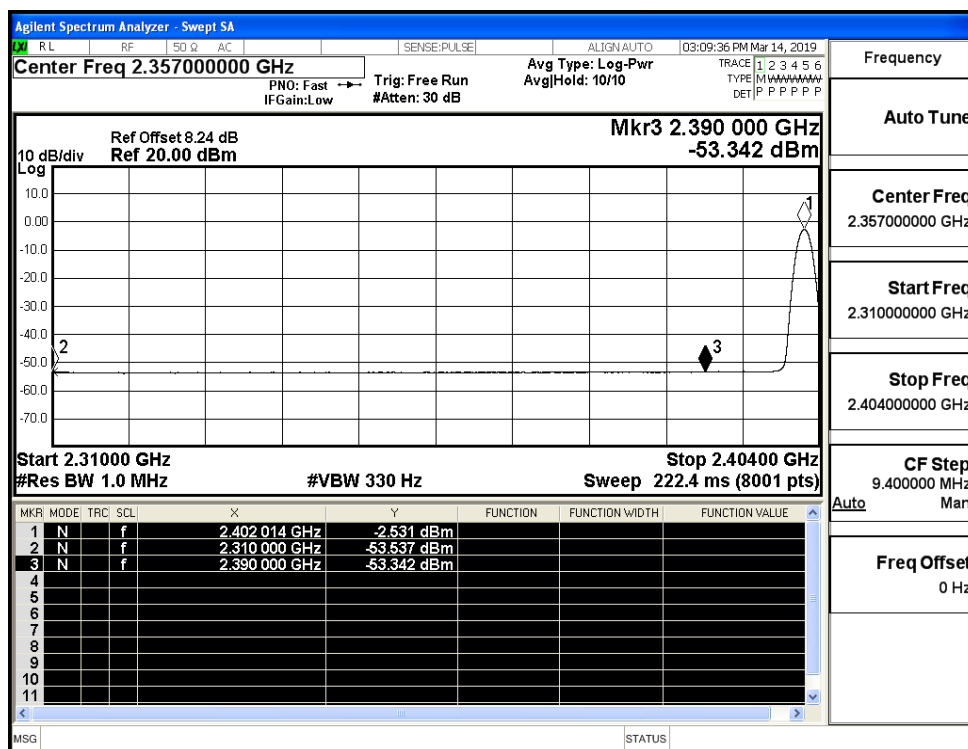
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

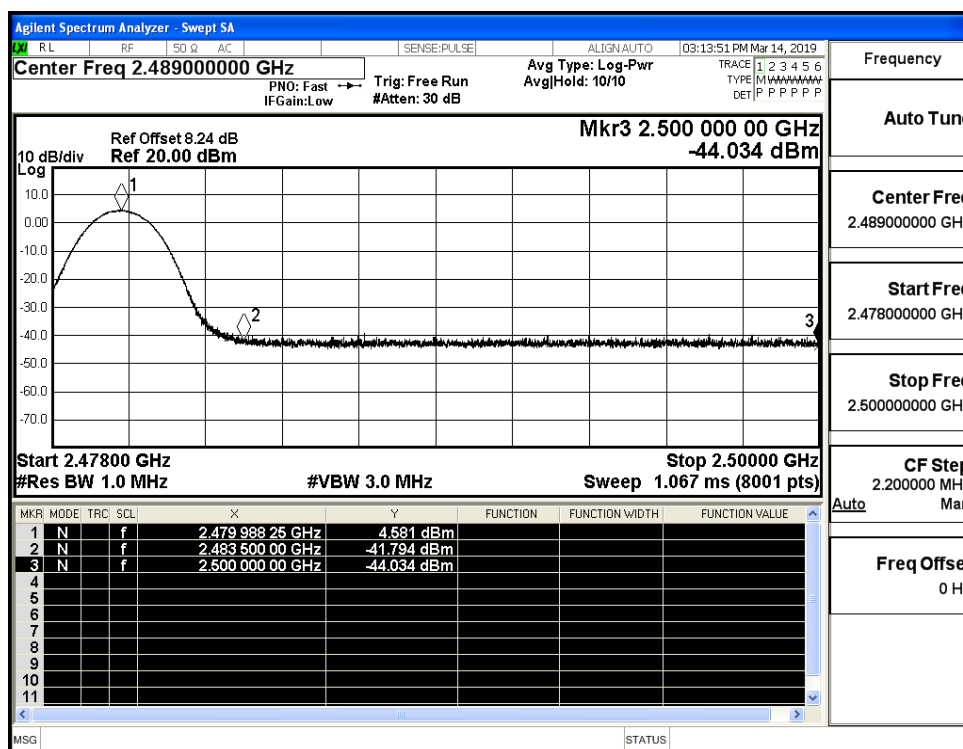
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

