

Appendix A

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

Product Name: Wireless headphone

Trade Mark: N/A

Test Model: boAt Rockerz 640

Environmental Conditions

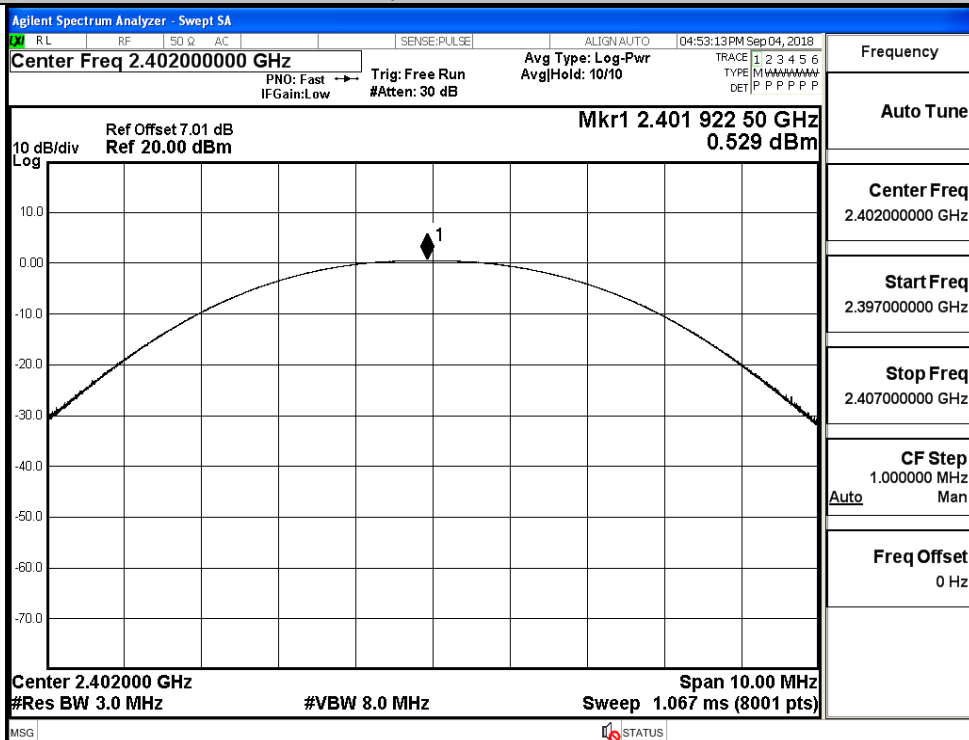
Temperature:	24.5 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	WANGCHUANG
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

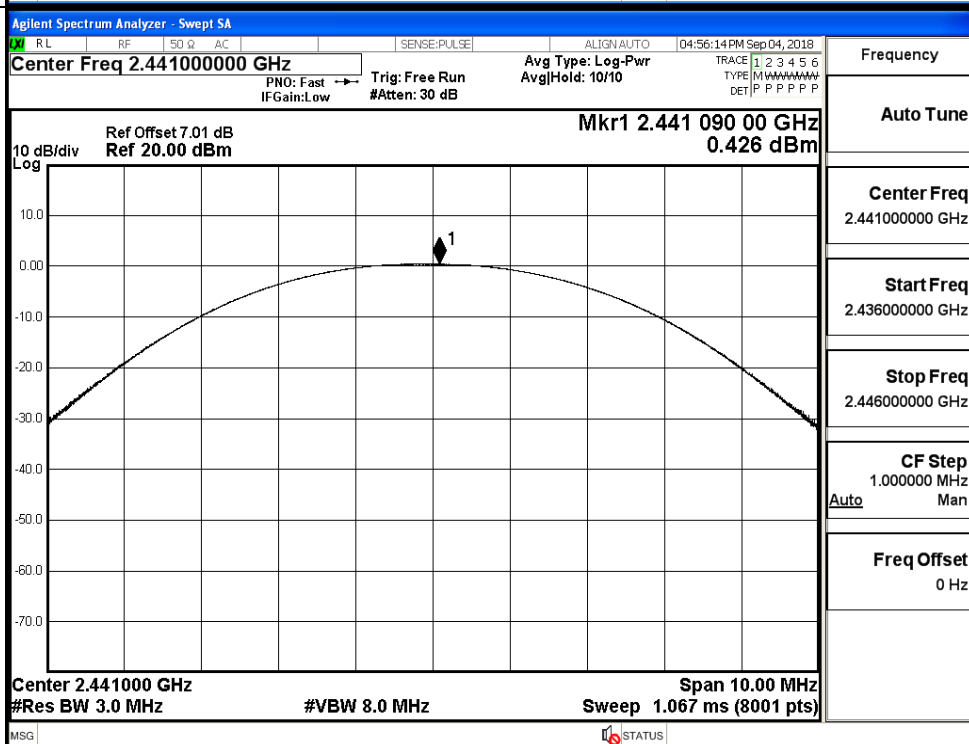
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.529	21	PASS
	MCH	0.426	21	PASS
	HCH	0.290	21	PASS
$\pi/4$ DQPSK	LCH	-0.368	21	PASS
	MCH	-0.382	21	PASS
	HCH	-0.509	21	PASS
8DPSK	LCH	-0.183	21	PASS
	MCH	-0.224	21	PASS
	HCH	-0.308	21	PASS

Test Graphs

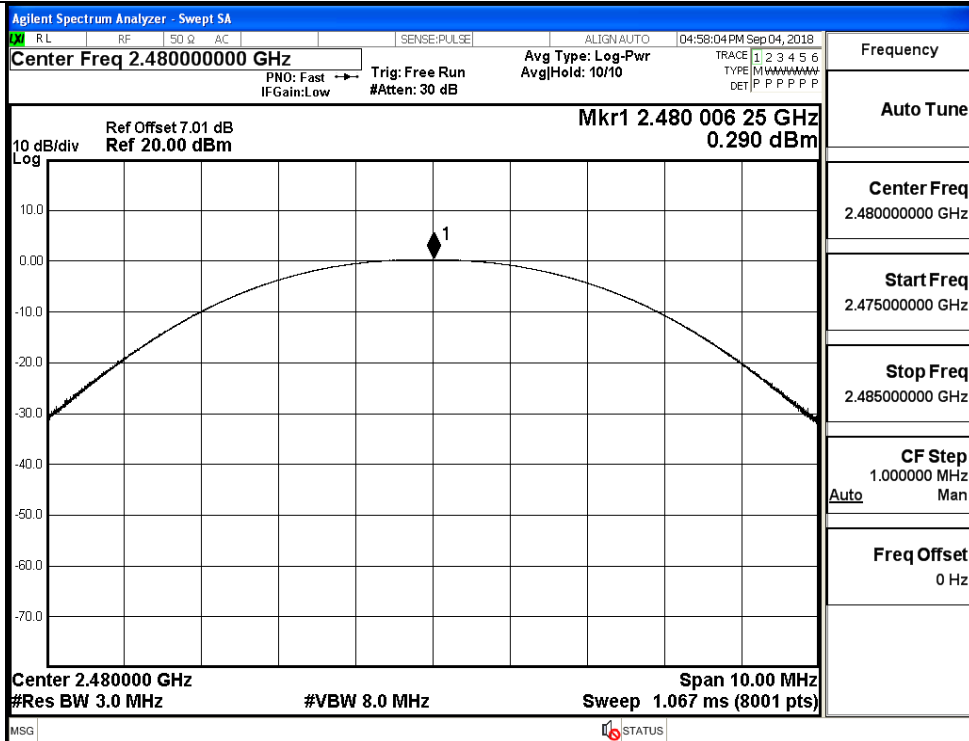
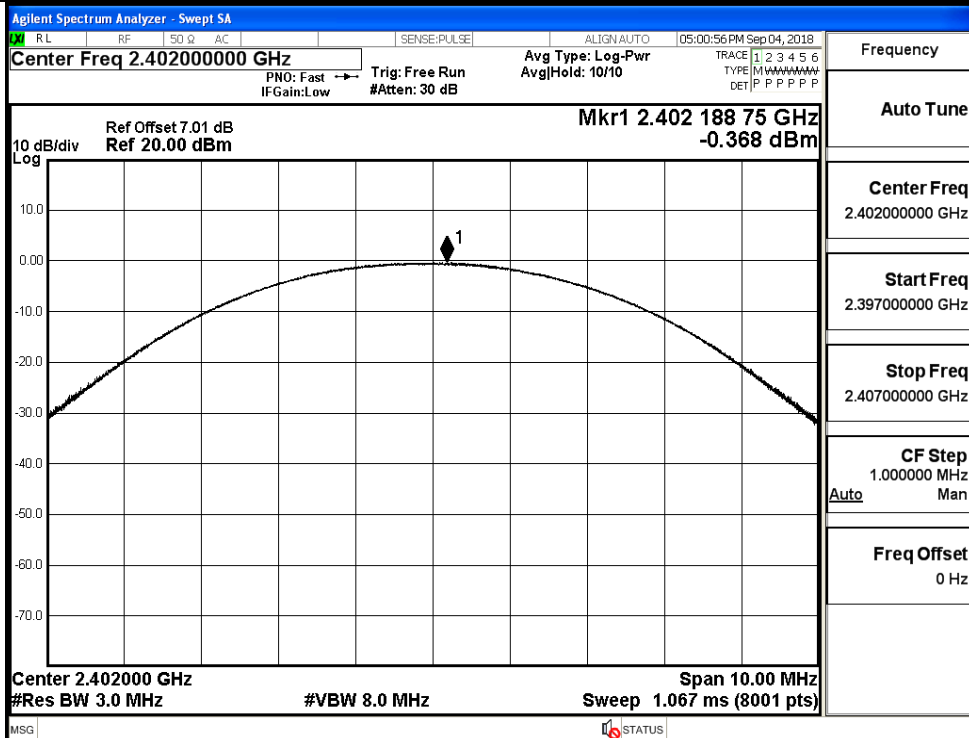
GFSK/LCH

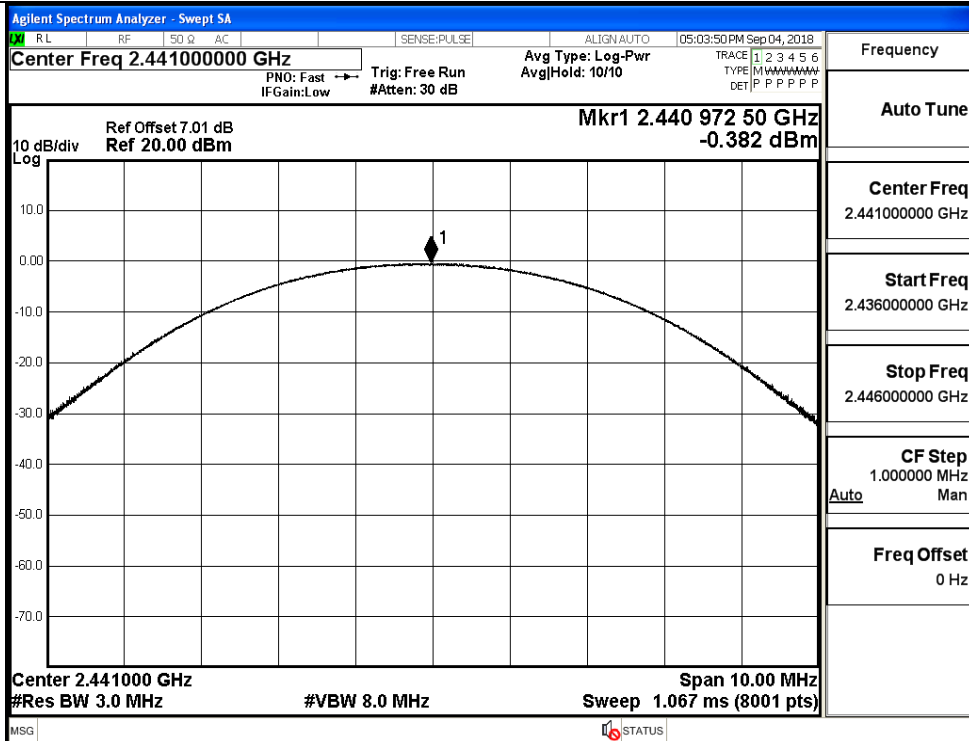
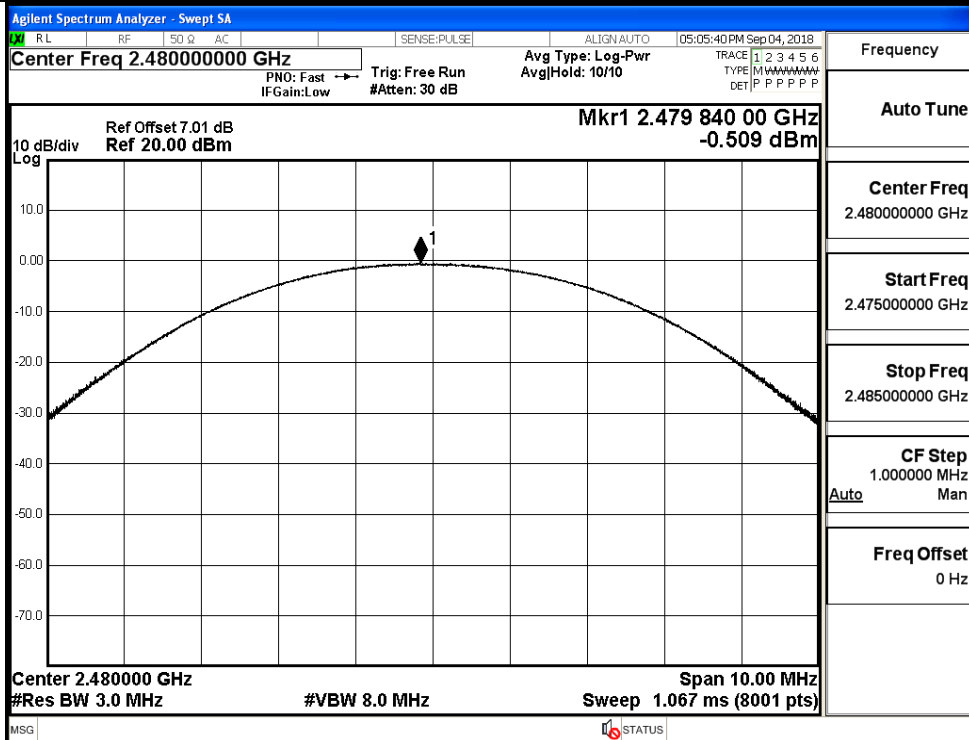


GFSK/MCH

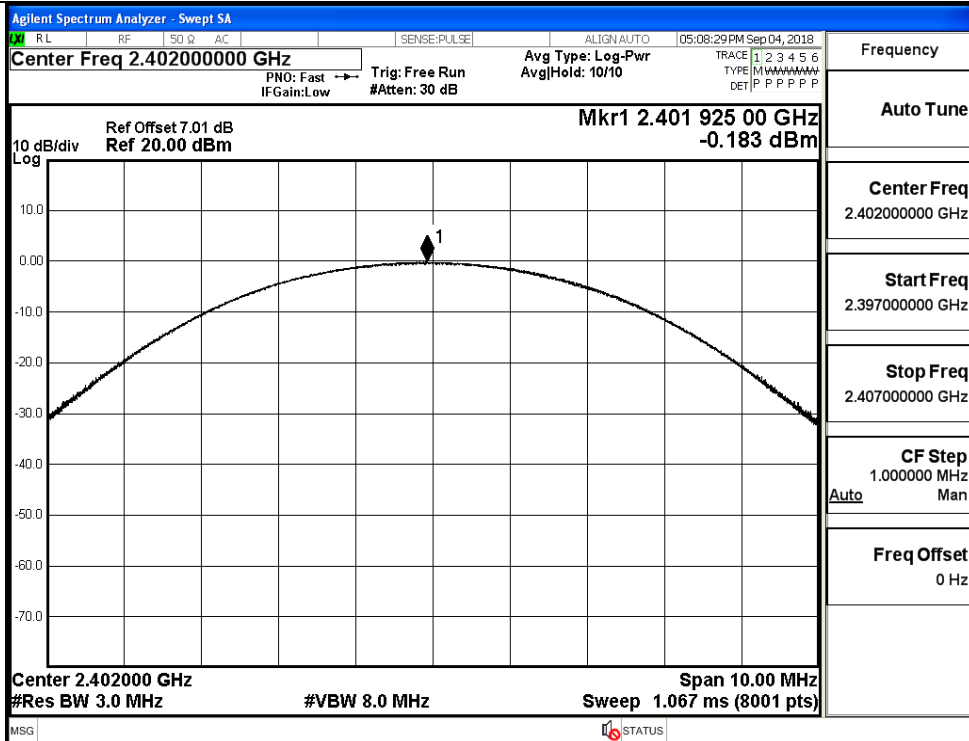


GFSK/HCH

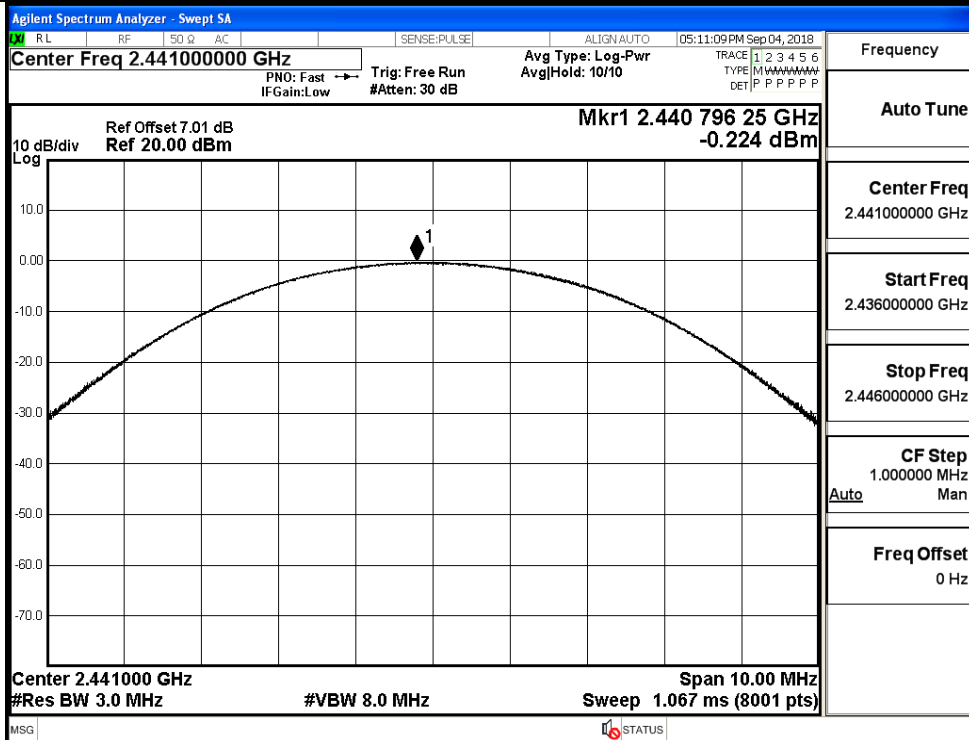
 π /4DQPSK/LCH

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

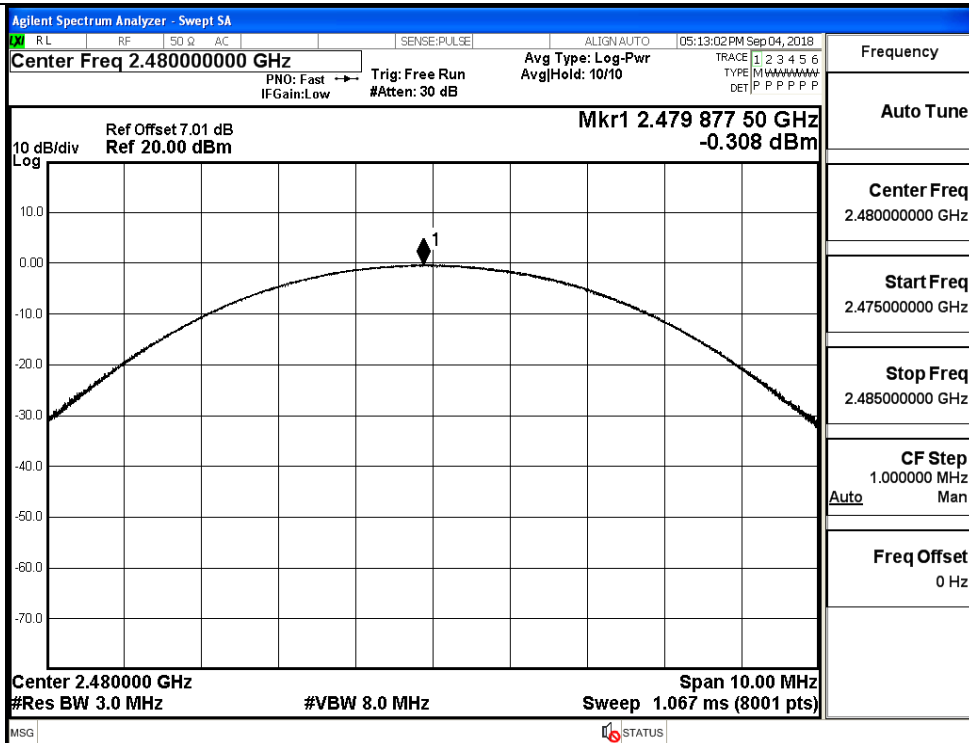
8DPSK/LCH



8DPSK/MCH



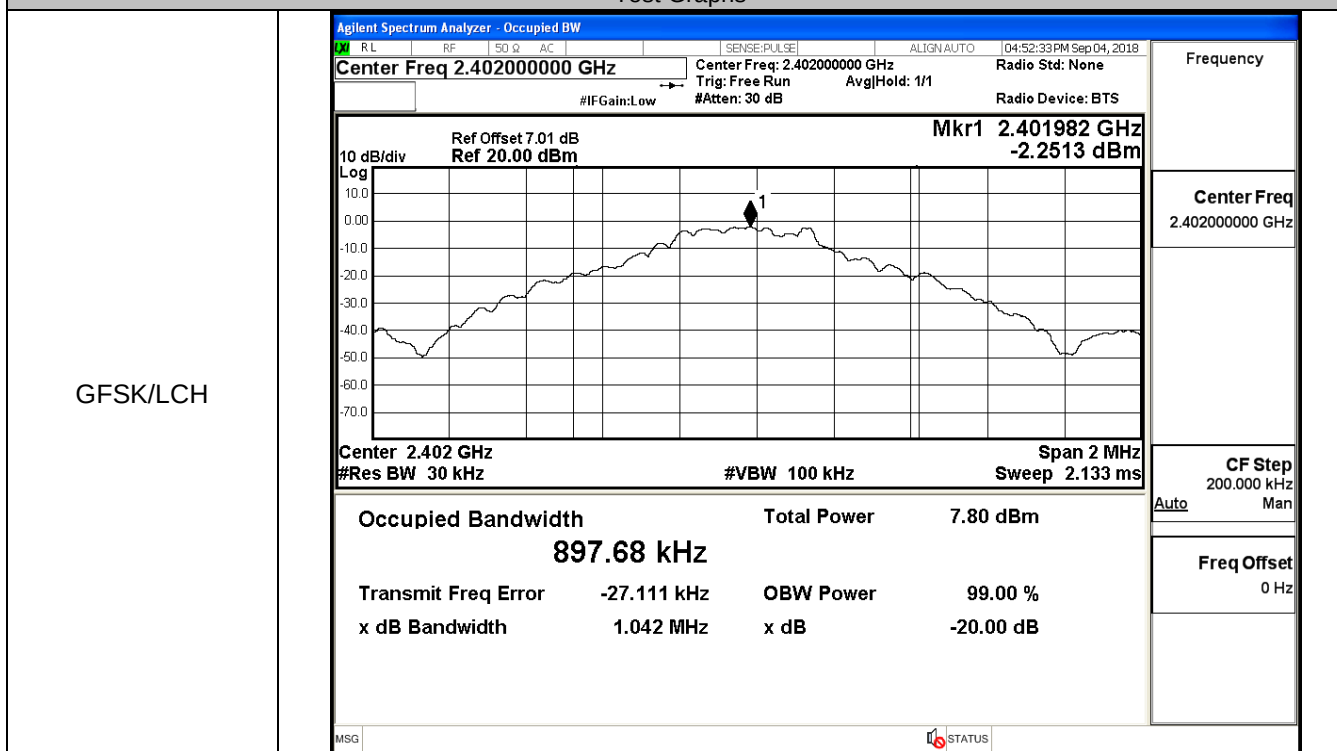
8DPSK/HCH



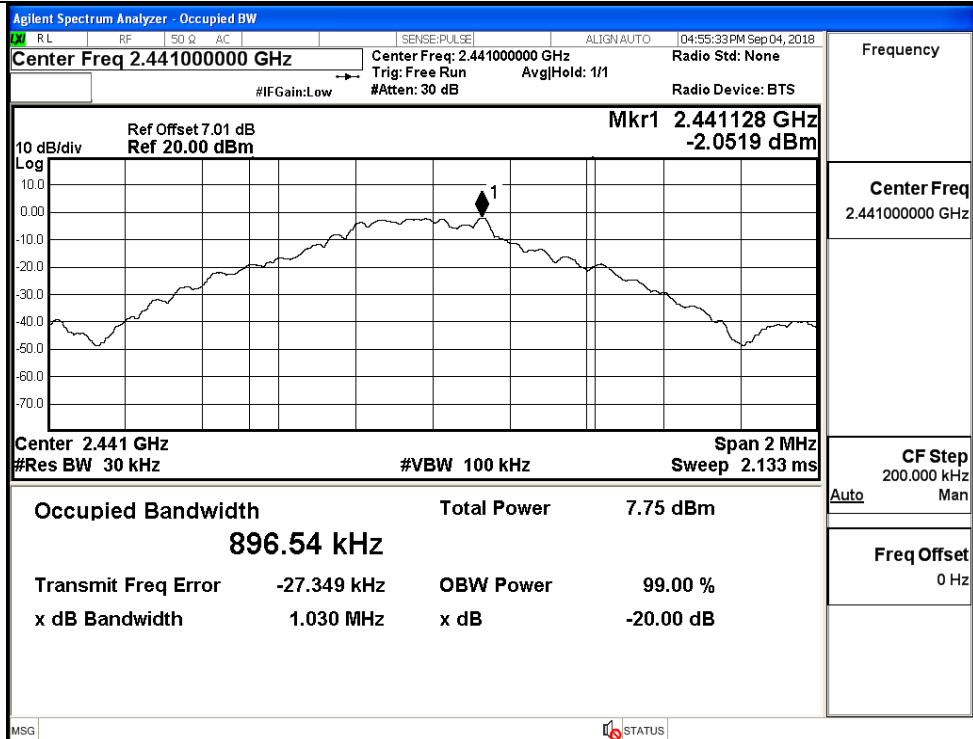
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89768	1.042	Not Specified	PASS
	MCH	0.89654	1.030	Not Specified	PASS
	HCH	0.89676	1.034	Not Specified	PASS
π /4DQPSK	LCH	1.1683	1.287	Not Specified	PASS
	MCH	1.1699	1.290	Not Specified	PASS
	HCH	1.1678	1.289	Not Specified	PASS
8DPSK	LCH	1.1758	1.290	Not Specified	PASS
	MCH	1.1765	1.297	Not Specified	PASS
	HCH	1.1782	1.292	Not Specified	PASS

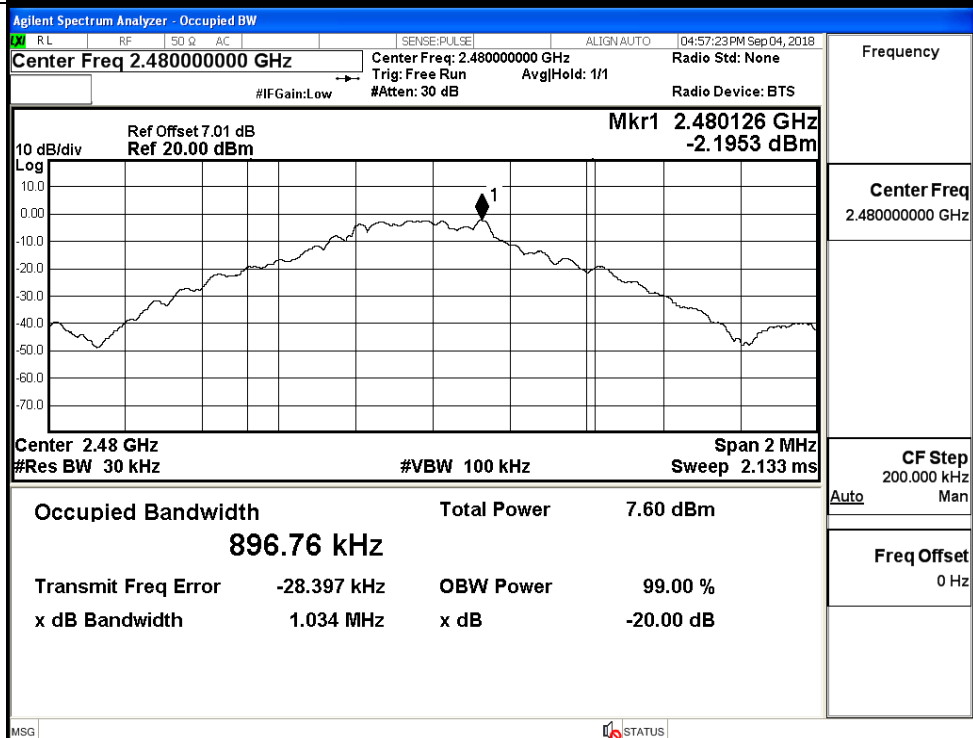
Test Graphs

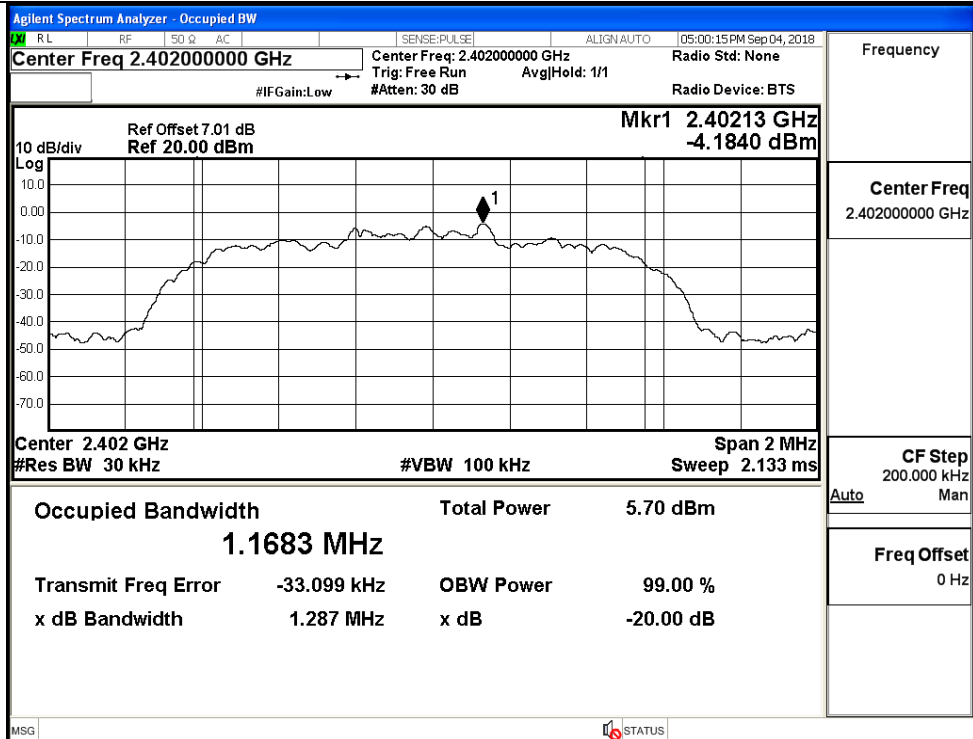
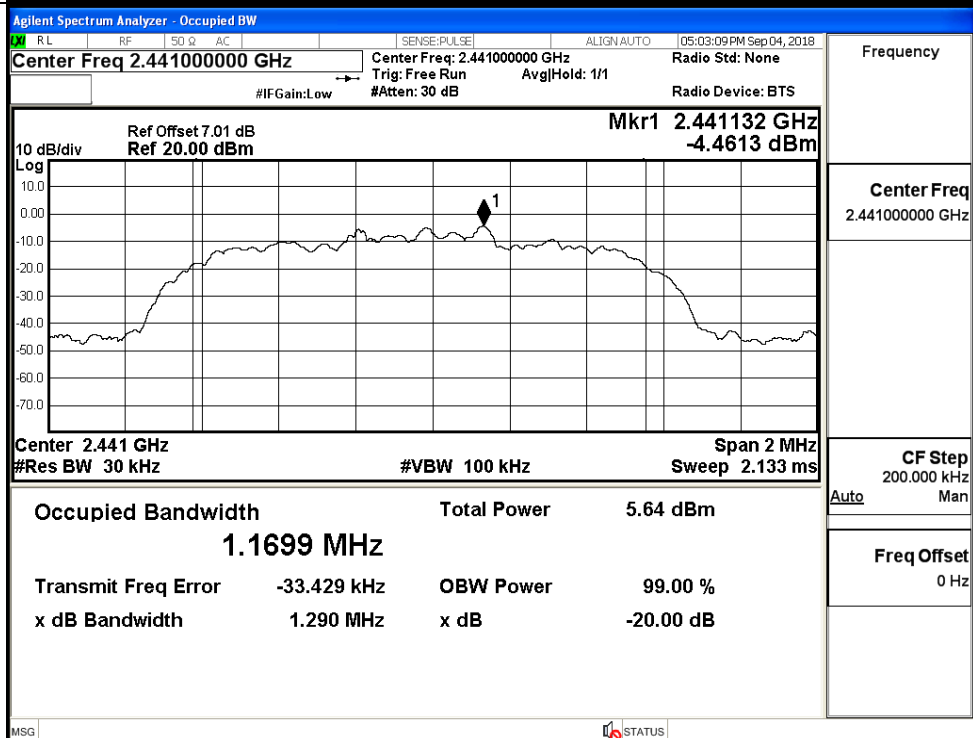


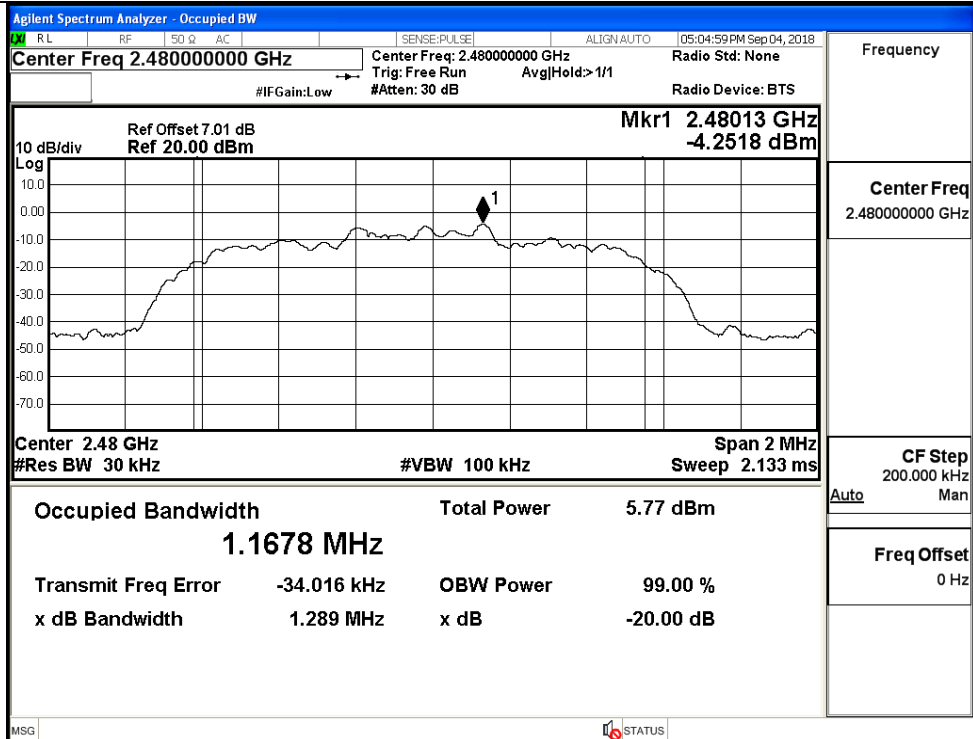
GFSK/MCH



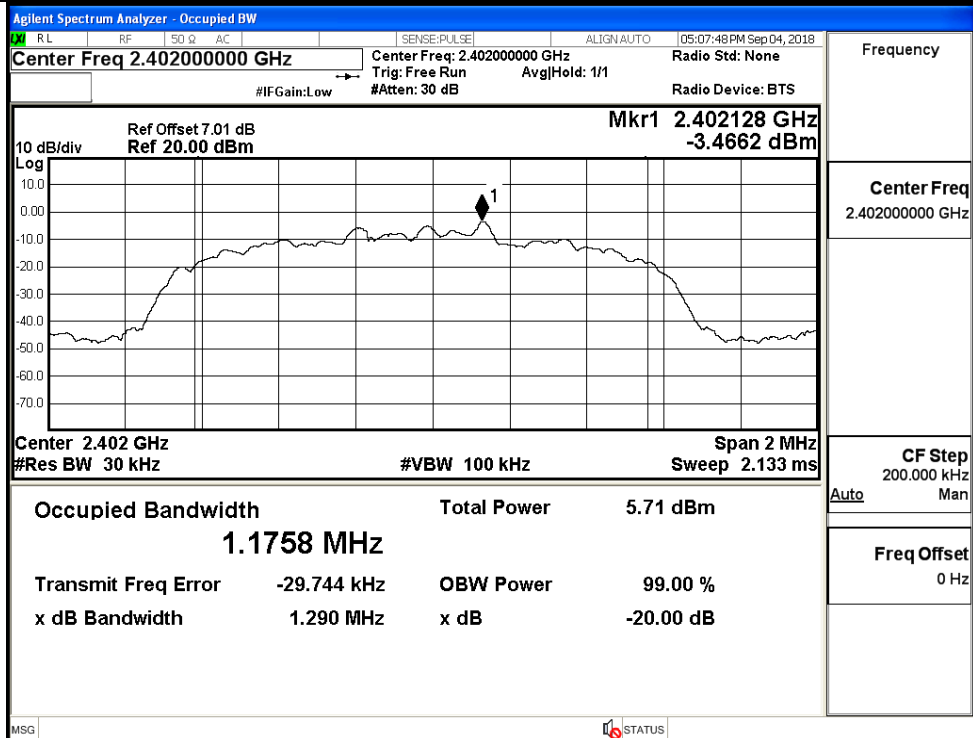
GFSK/HCH



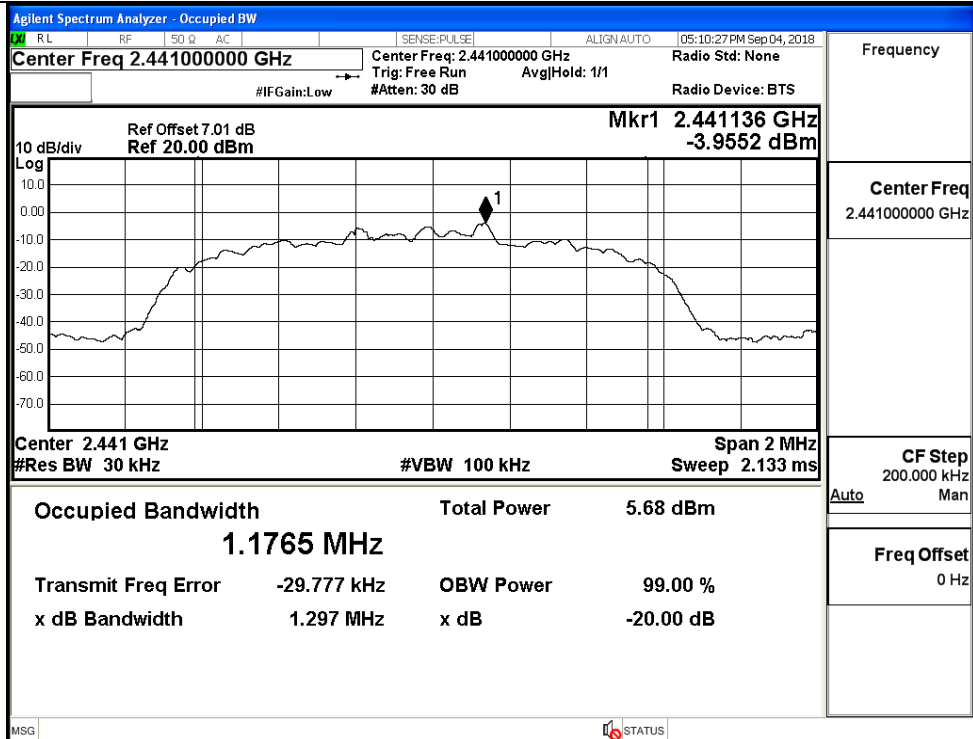
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

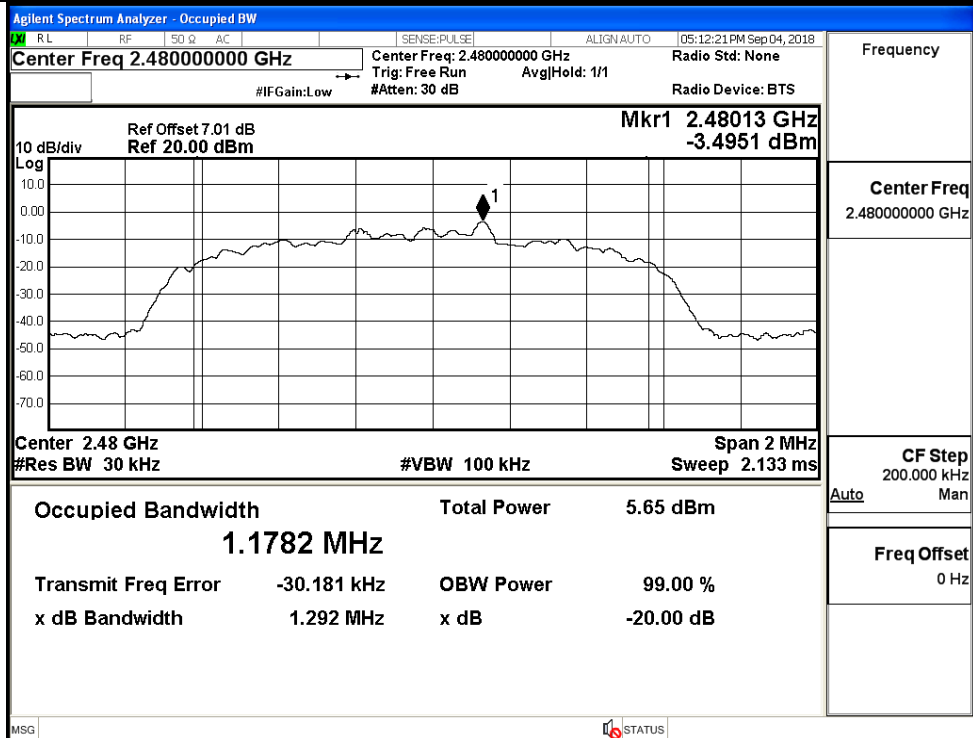
8DPSK/LCH



8DPSK/MCH



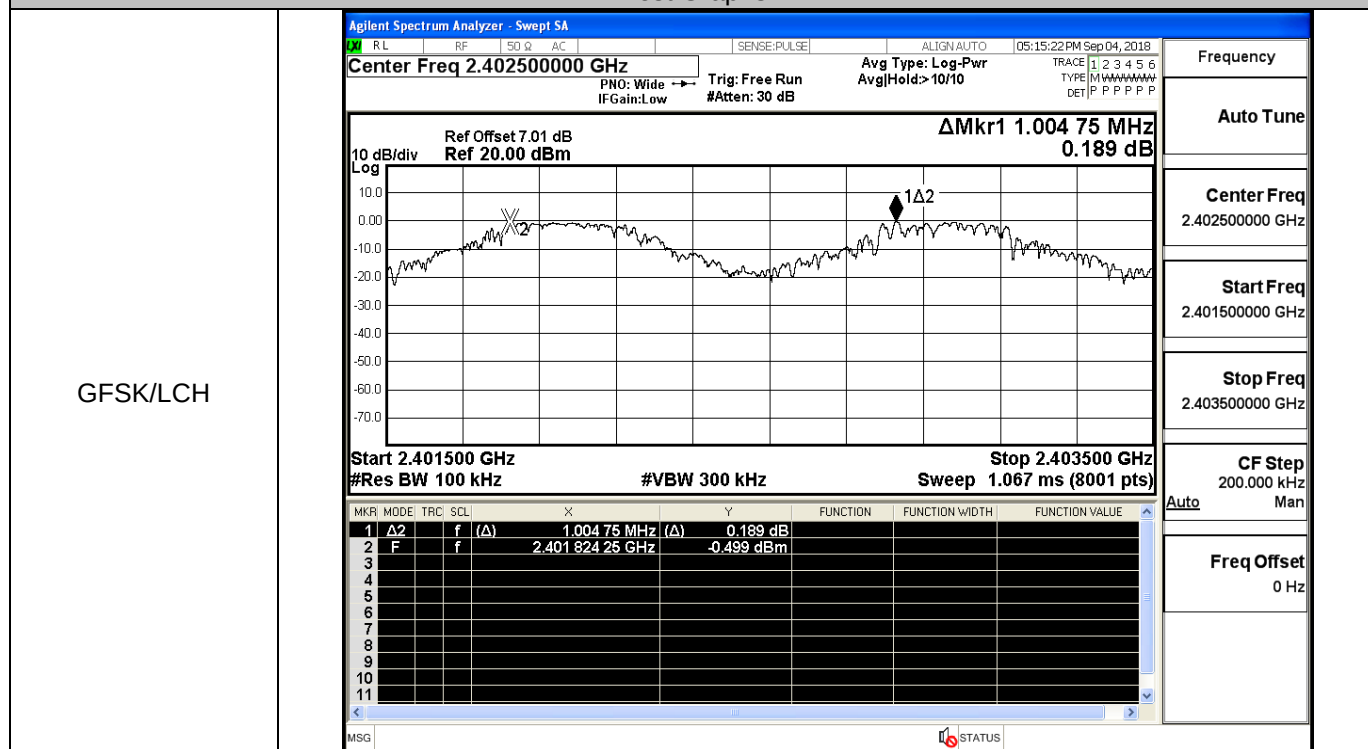
8DPSK/HCH



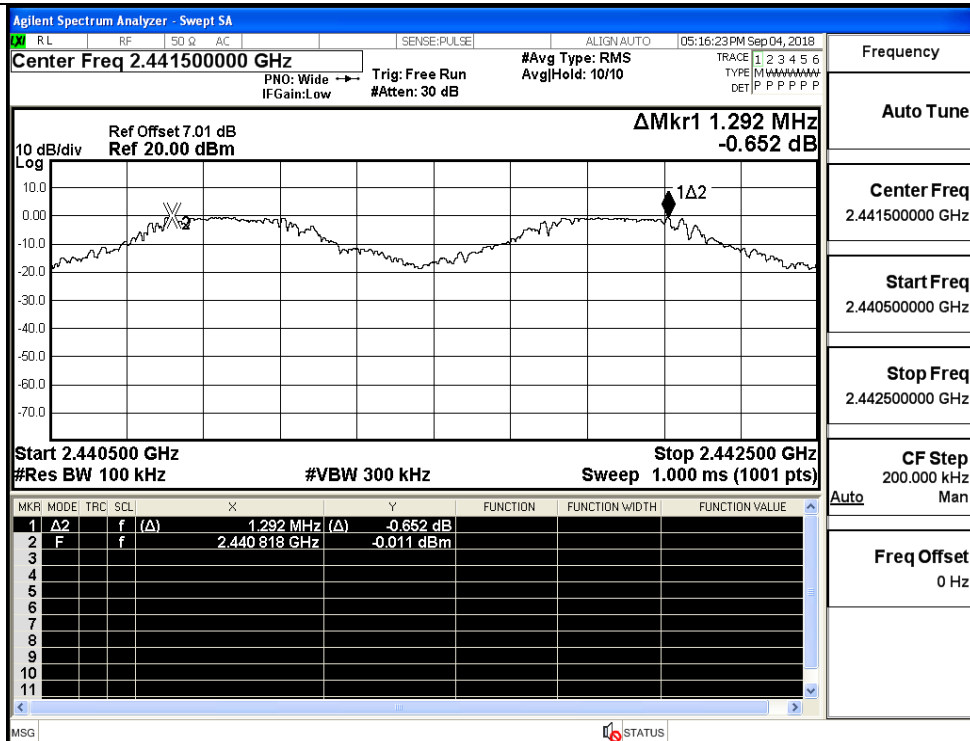
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.005	0.695	PASS
	MCH	1.292	0.695	PASS
	HCH	0.856	0.695	PASS
$\pi/4$ DQPSK	LCH	0.886	0.860	PASS
	MCH	1.014	0.860	PASS
	HCH	0.878	0.860	PASS
8DPSK	LCH	0.936	0.865	PASS
	MCH	1.362	0.865	PASS
	HCH	0.974	0.865	PASS

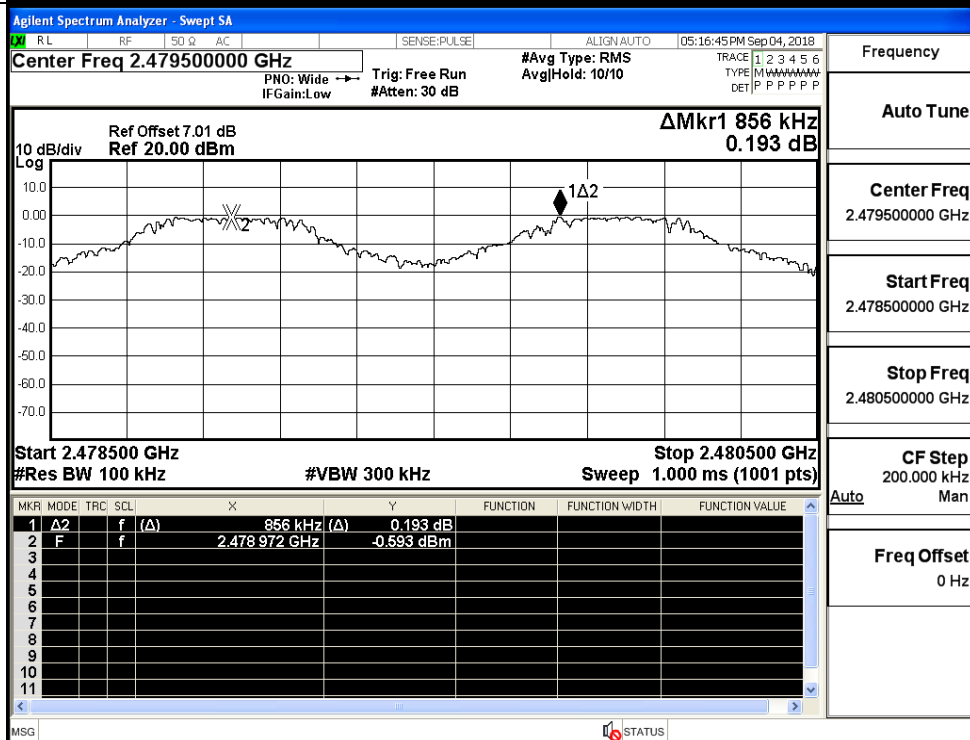
Test Graphs

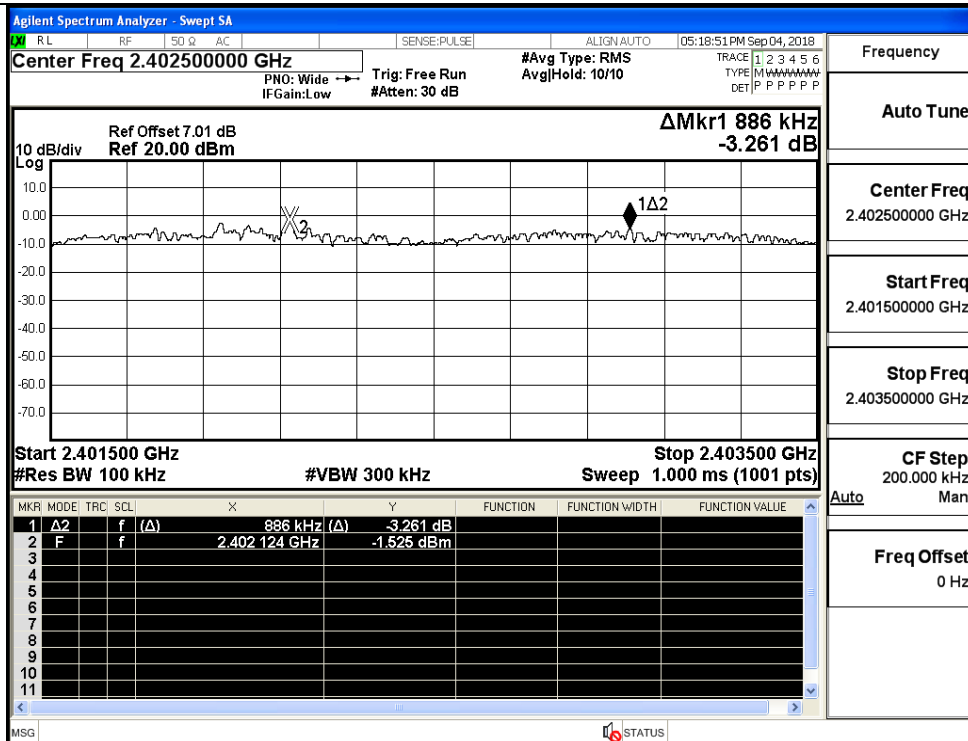


GFSK/MCH



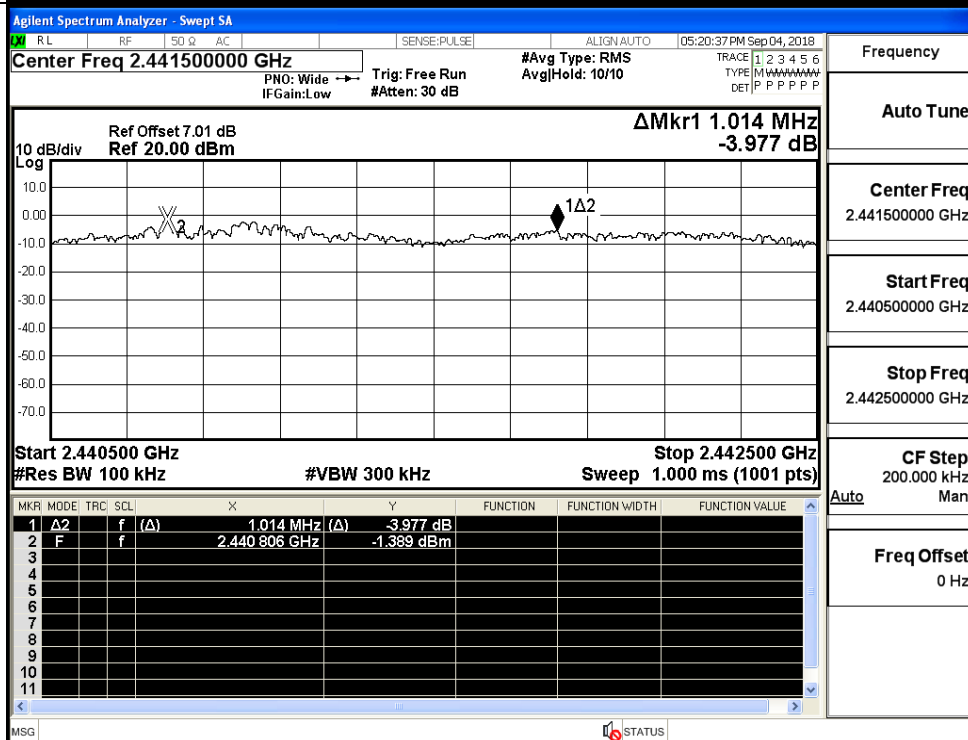
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

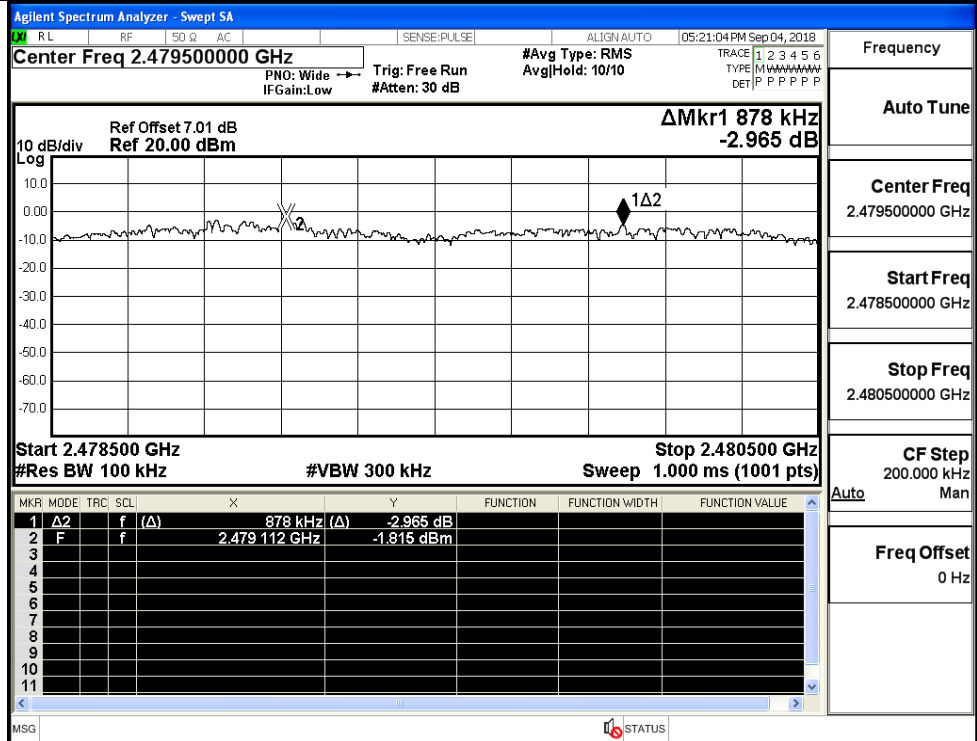
Auto Tune

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

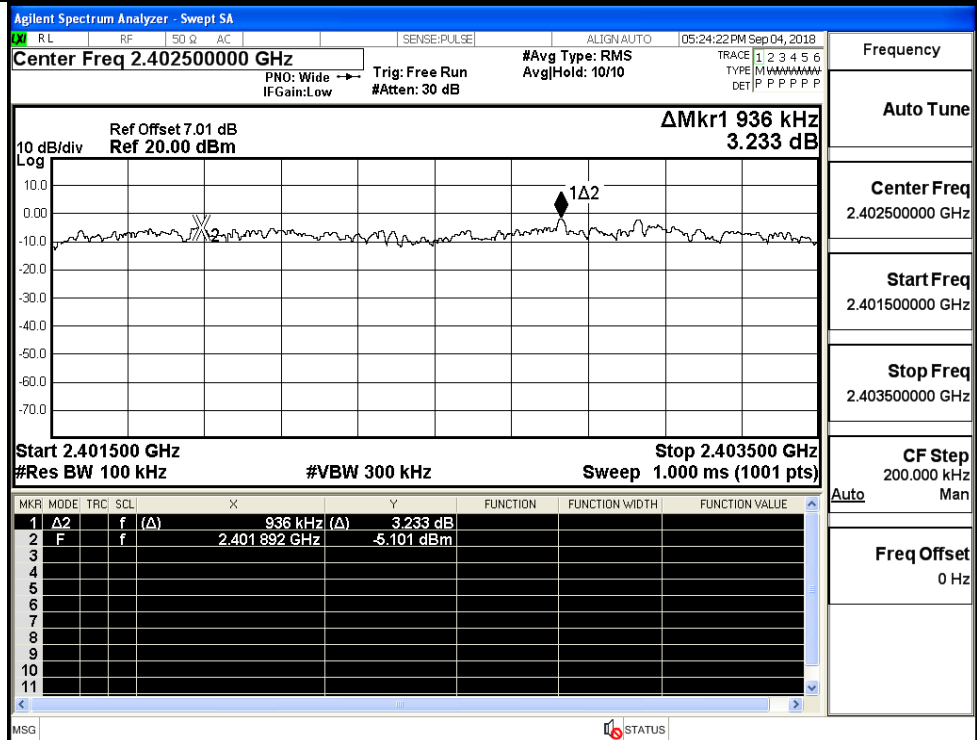
Frequency

Auto Tune

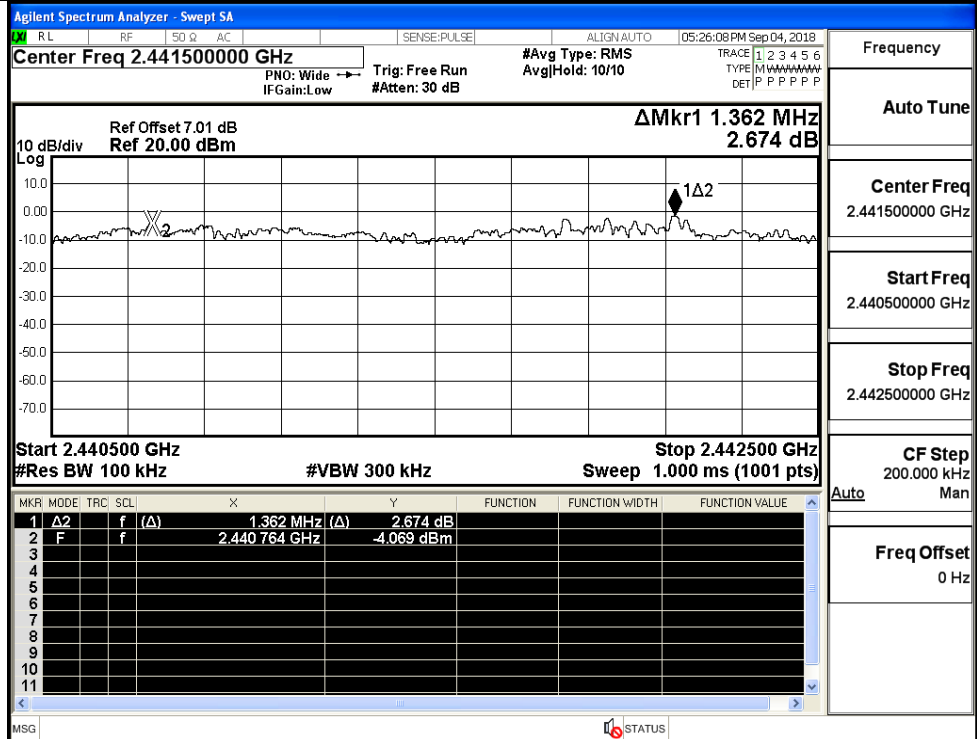
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

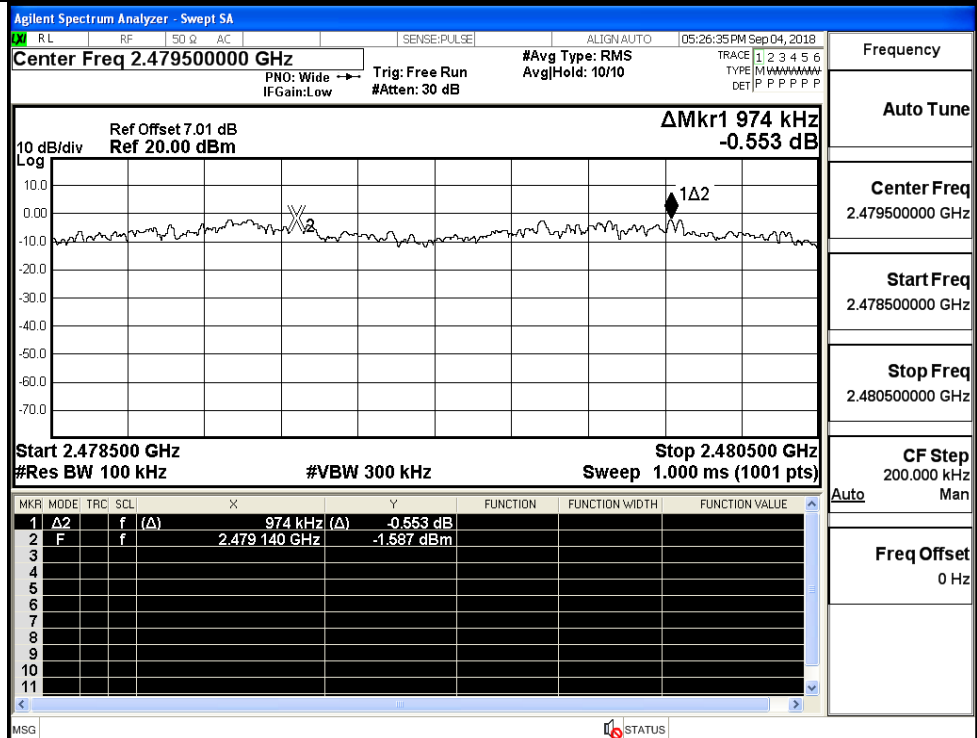
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

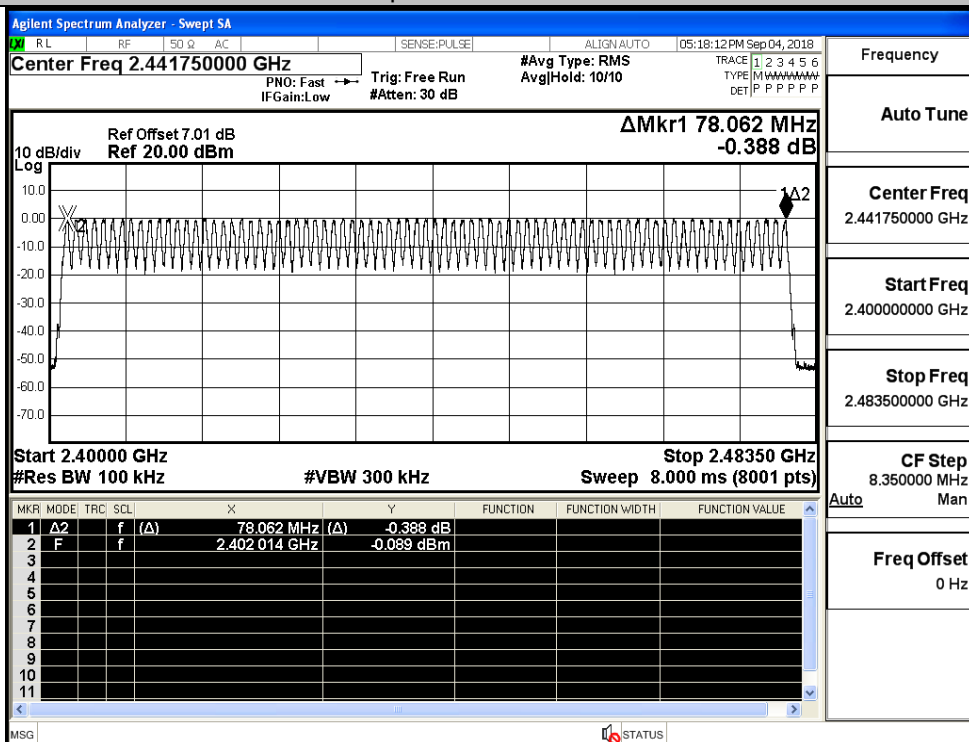
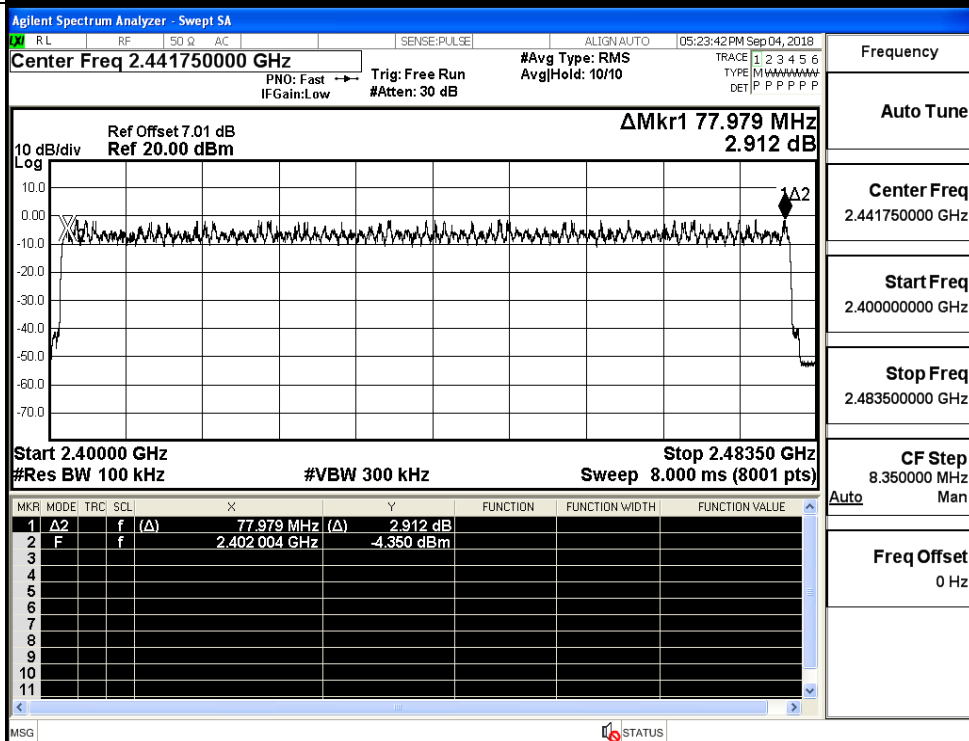


A.4 Hopping Channel Number

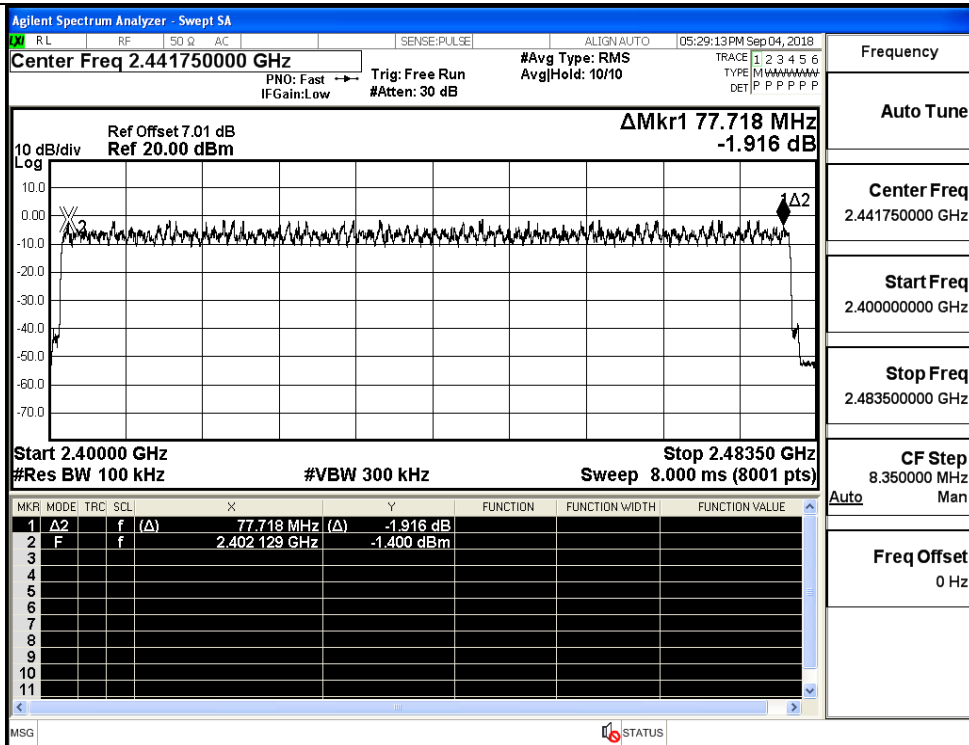
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

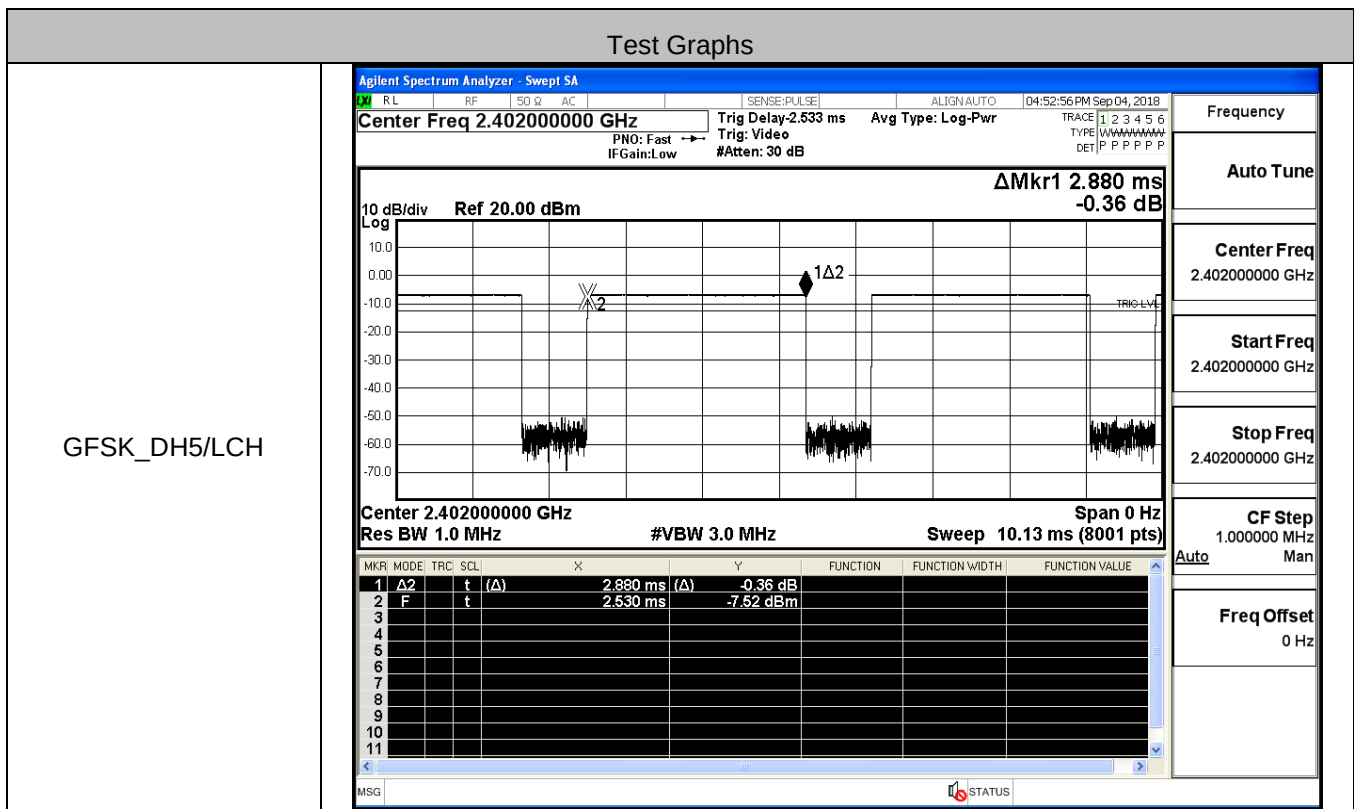
GFSK/Hop

 $\pi/4$ DQPSK/Hop

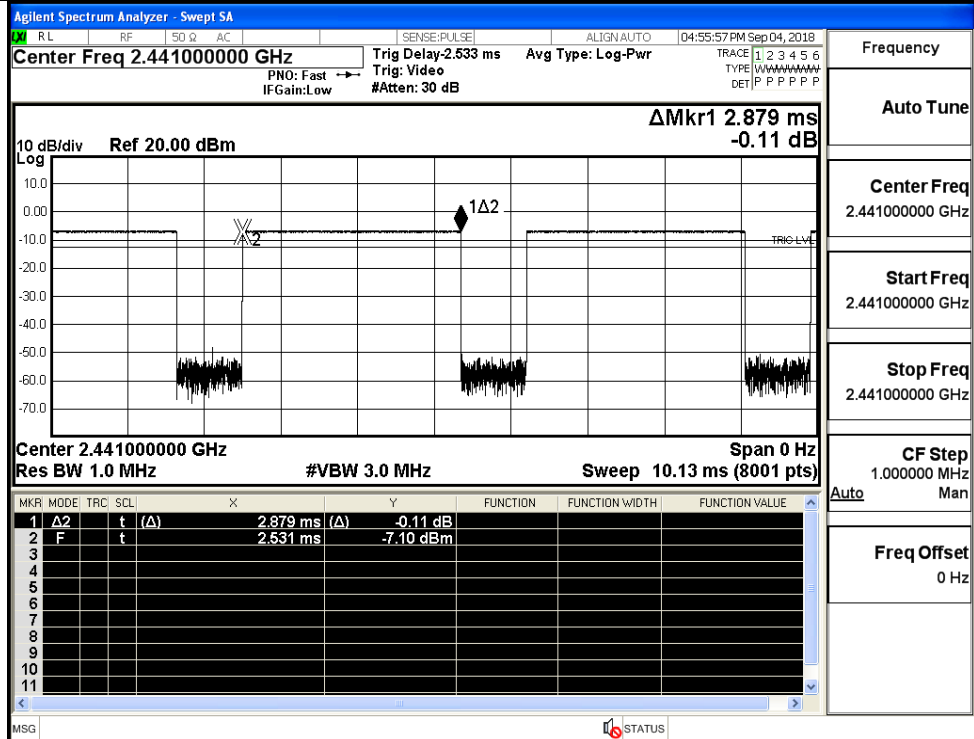
8DPSK/Hop



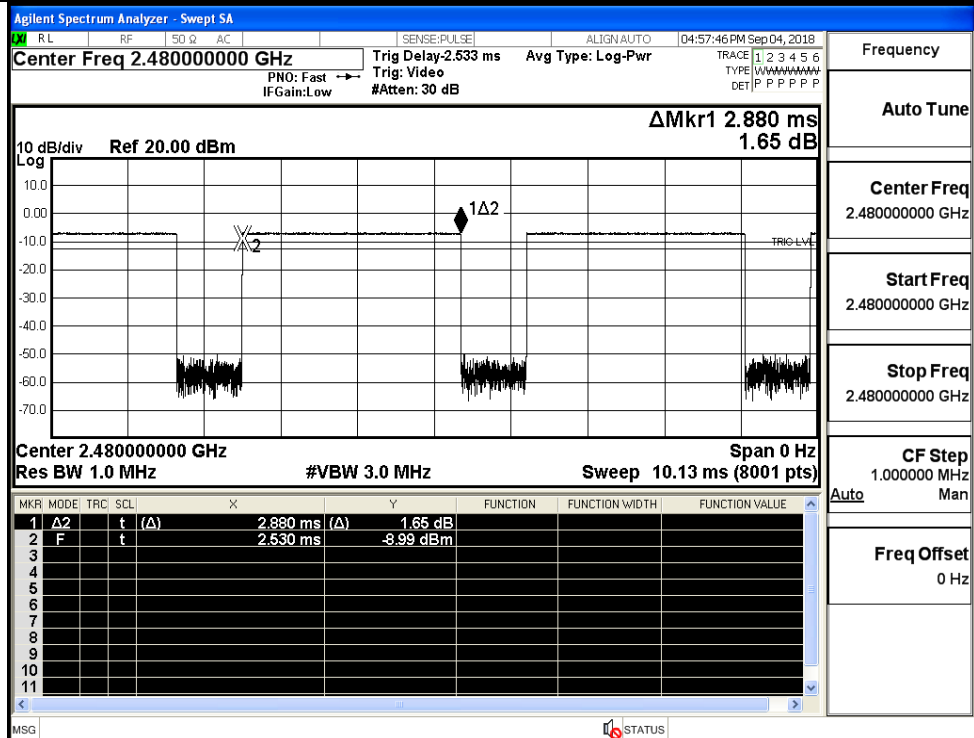
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS



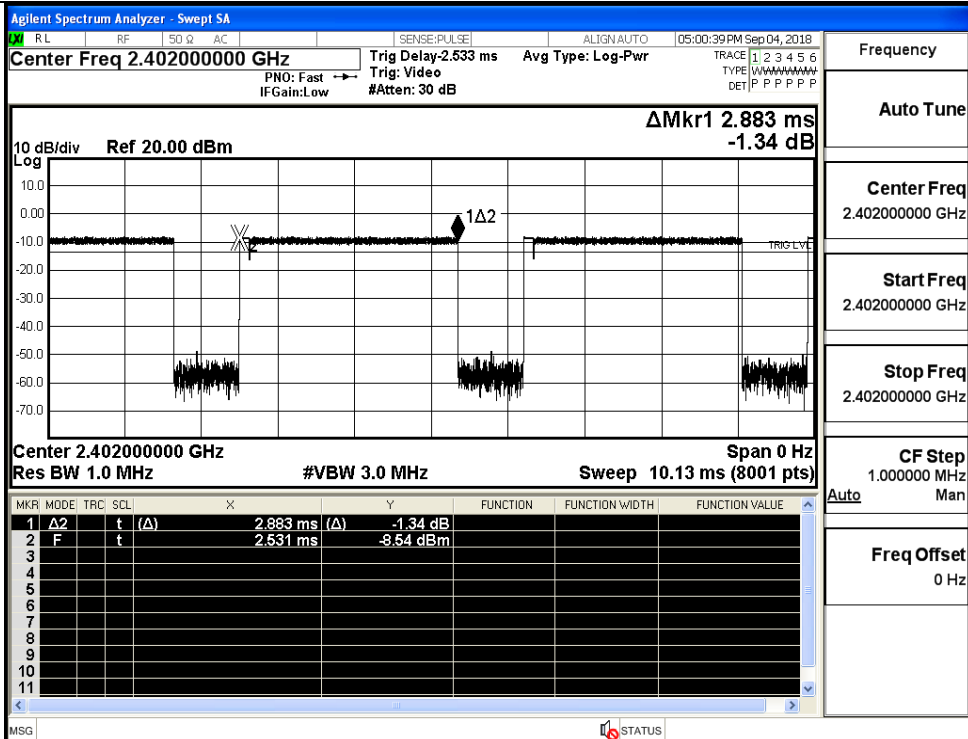
GFSK_DH5/MCH



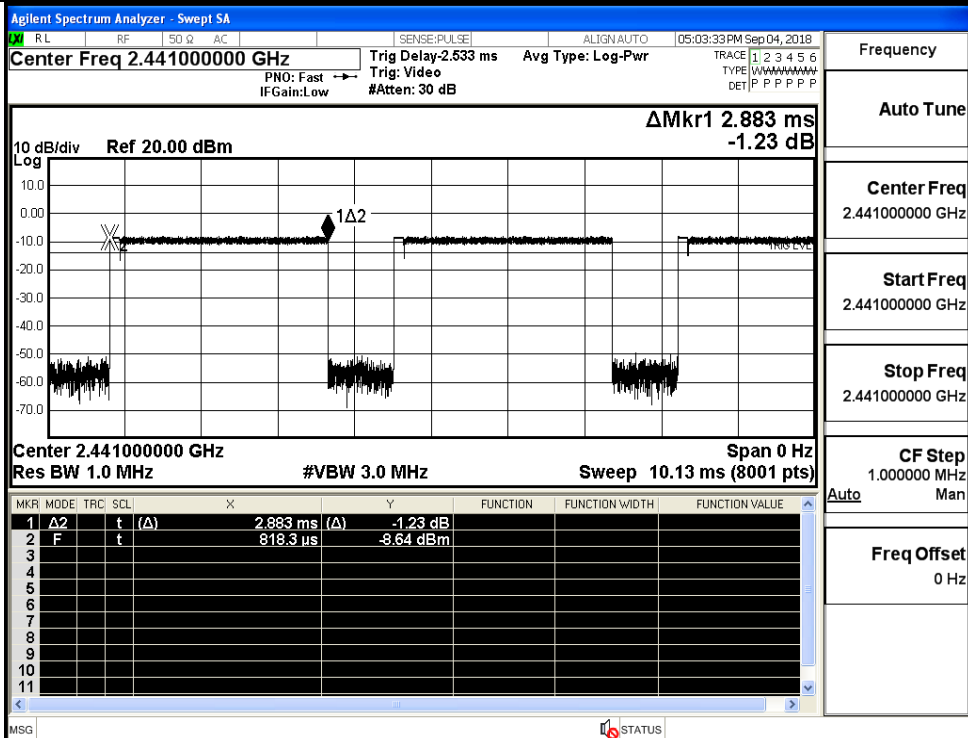
GFSK_DH5/HCH



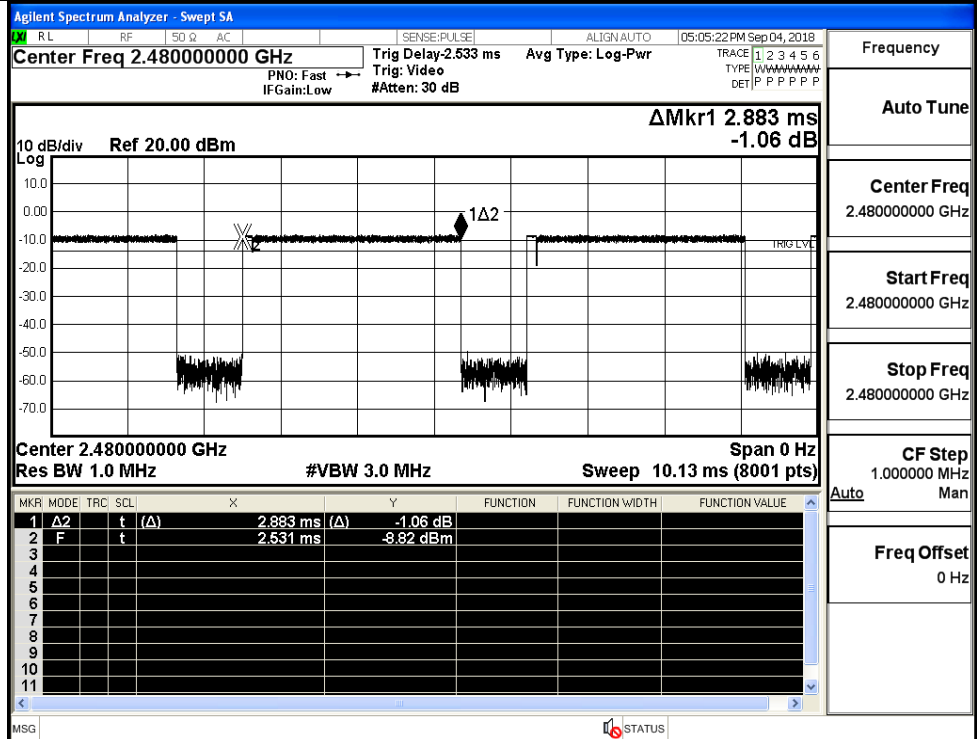
$\pi/4$ DQPSK
_2DH5/LCH



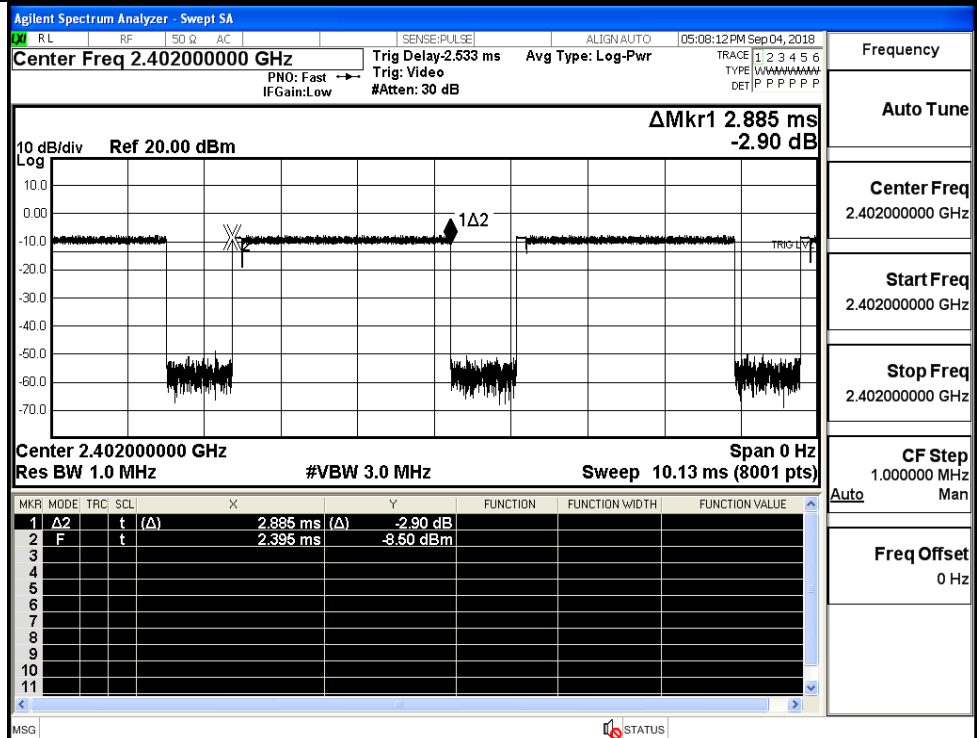
$\pi/4$ DQPSK
_2DH5/MCH



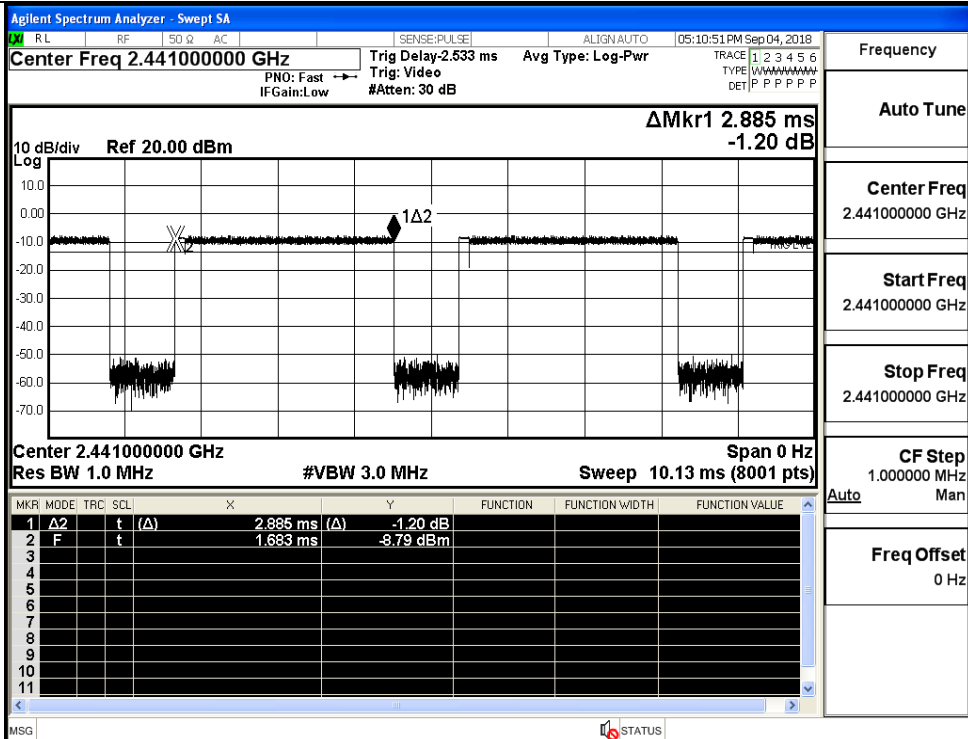
$\pi/4$ DQPSK
_2DH5/HCH



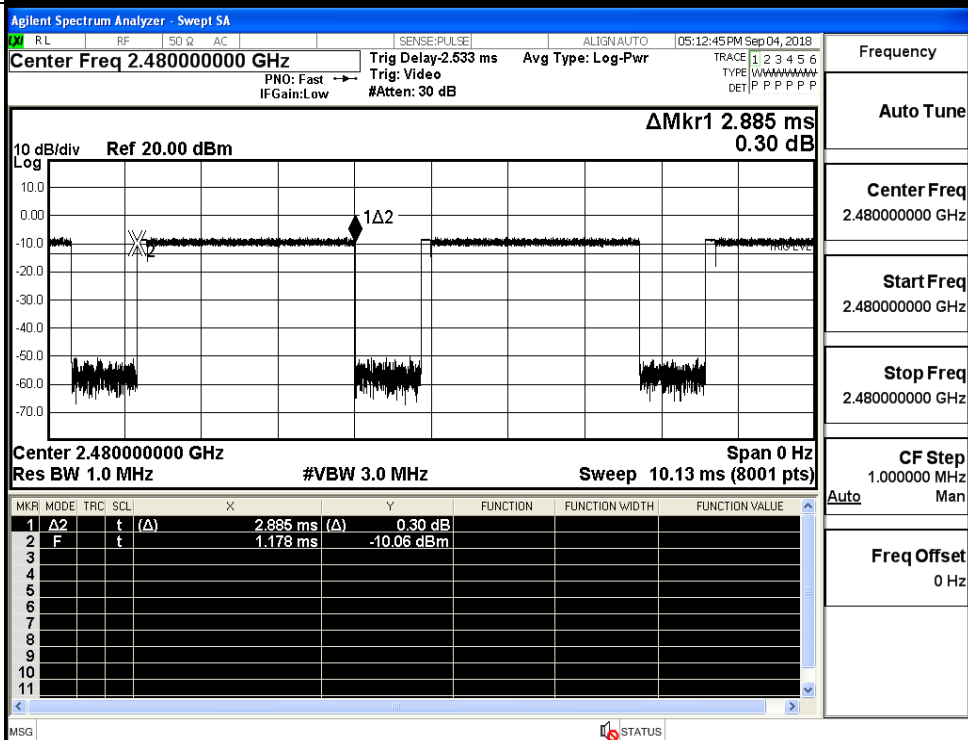
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

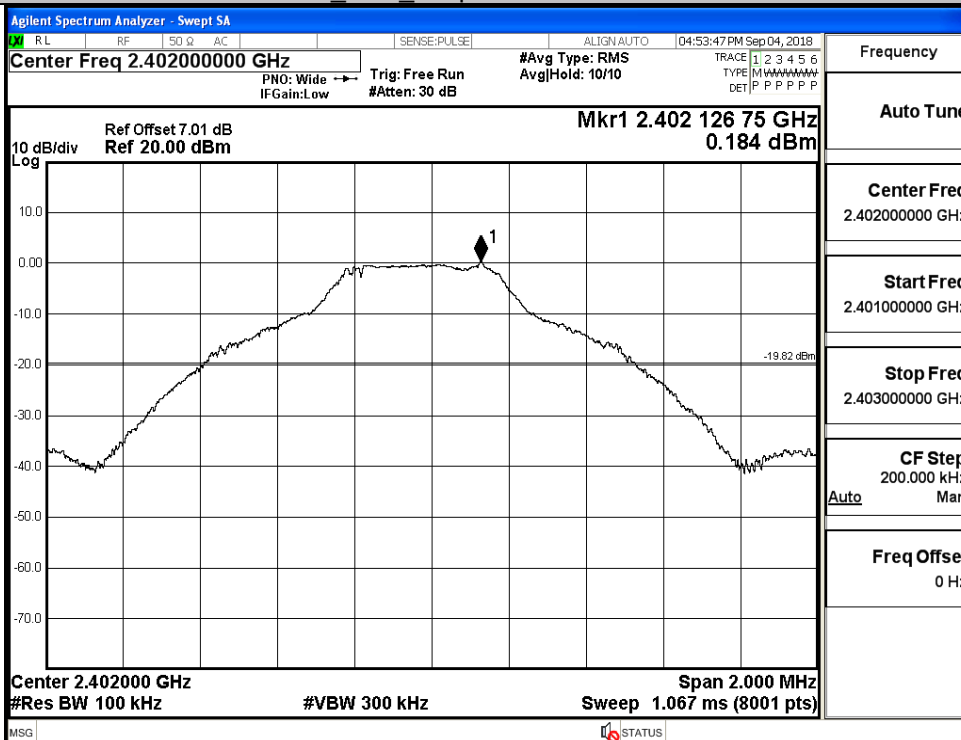


A.6 RF Conducted Spurious Emissions

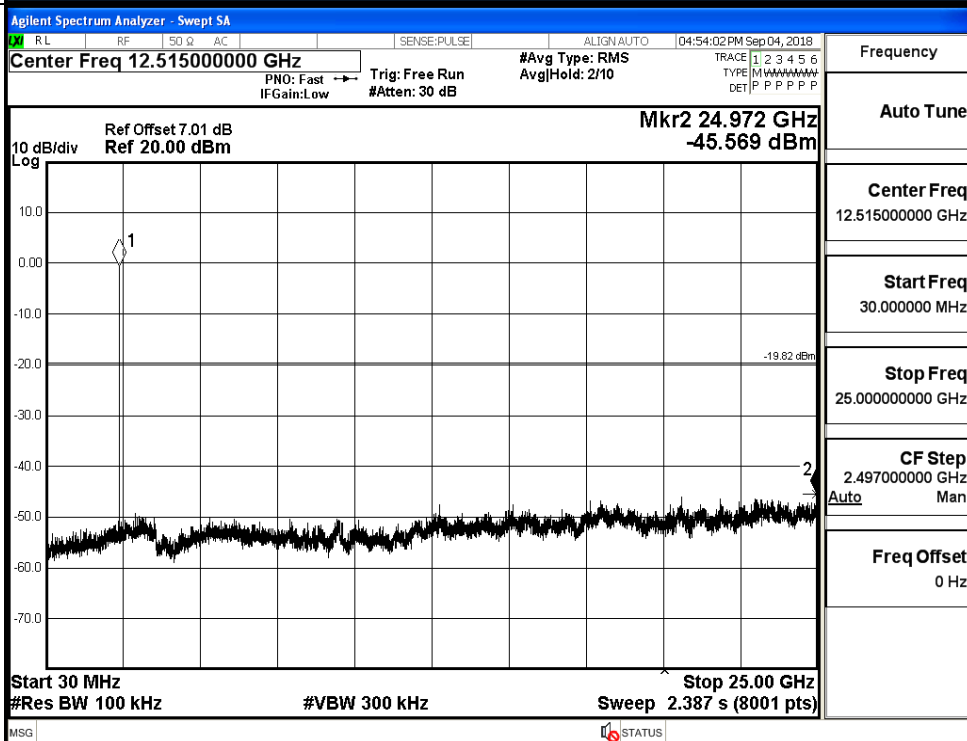
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.184	-45.569	-19.816	PASS
	MCH	0.087	-46.372	-19.913	PASS
	HCH	-0.116	-45.815	-20.116	PASS
$\pi/4$ DQPSK	LCH	-2.09	-45.965	-22.090	PASS
	MCH	-1.504	-44.442	-21.504	PASS
	HCH	-1.96	-46.035	-21.960	PASS
8DPSK	LCH	-1.642	-45.518	-21.642	PASS
	MCH	-1.47	-45.421	-21.470	PASS
	HCH	-1.527	-46.109	-21.527	PASS

GFSK LCH Graphs

Pref

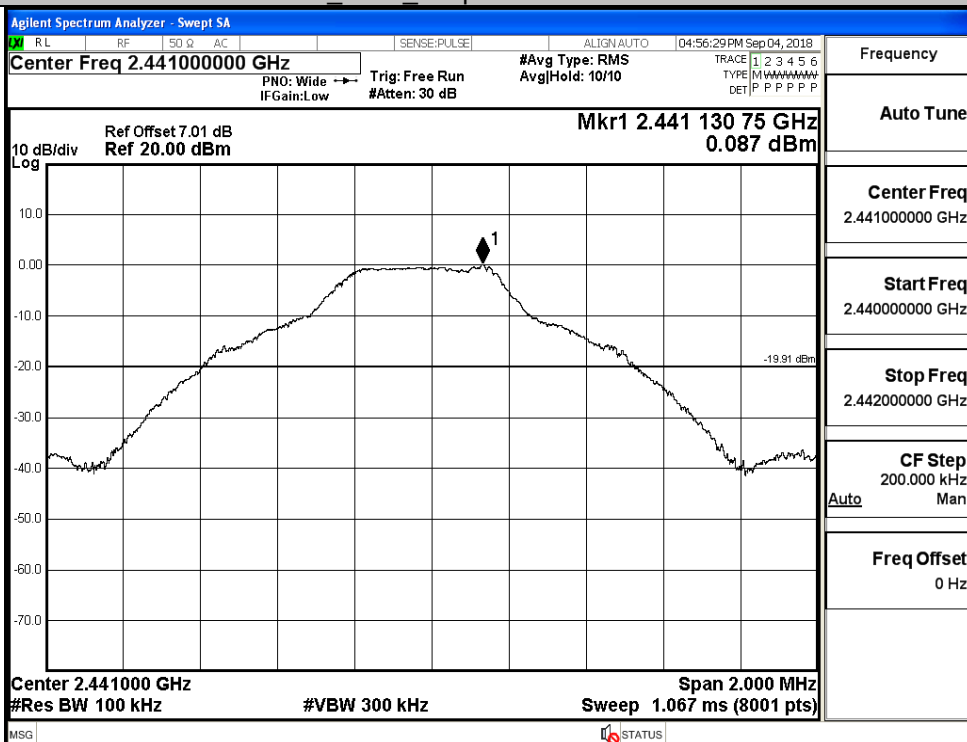


Puw

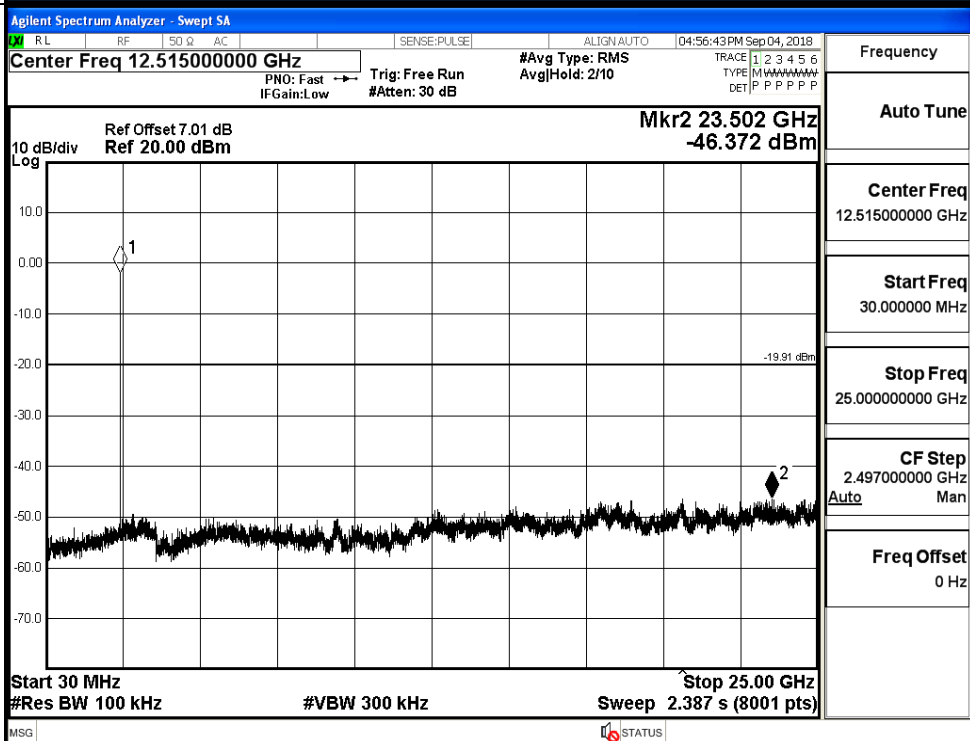


GFSK_MCH_Graphs

Pref

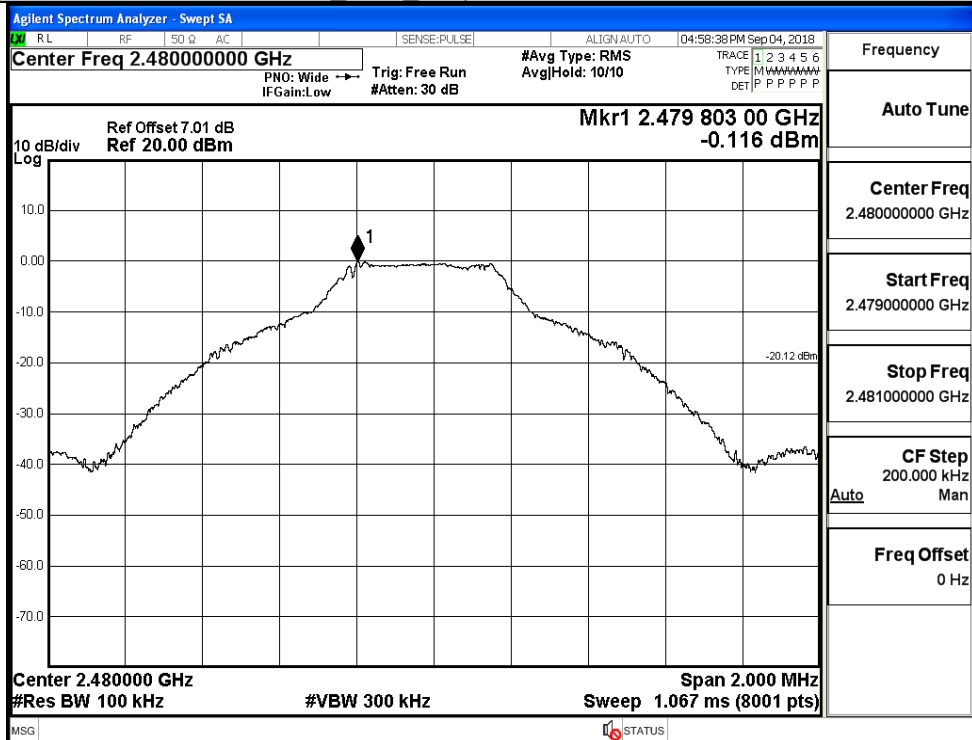


Puw

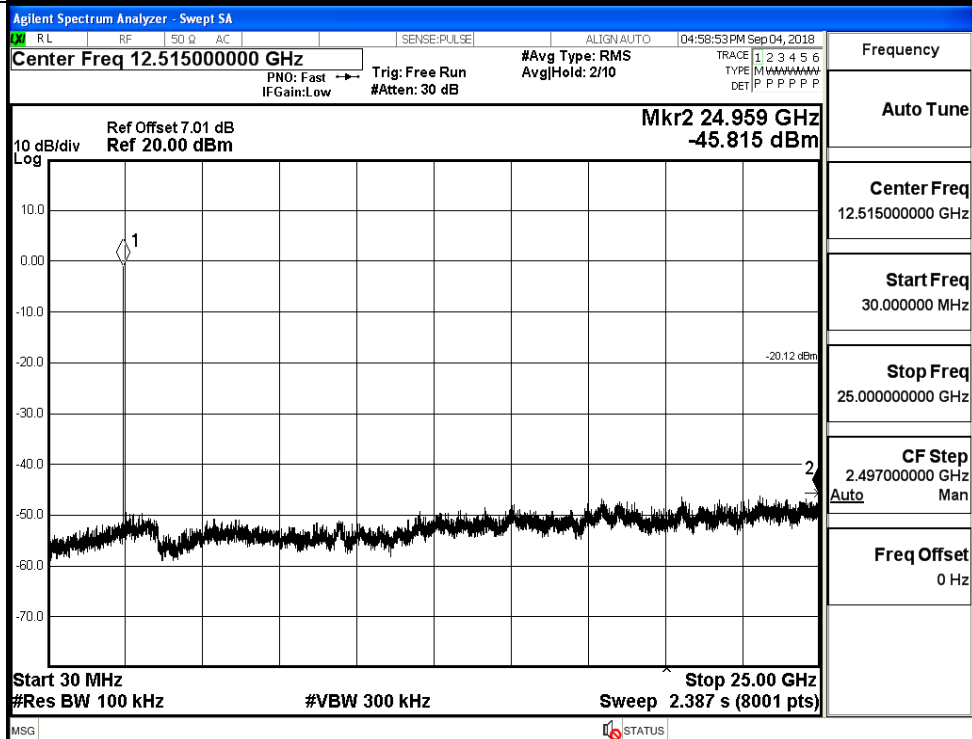


GFSK_HCH_Graphs

Pref

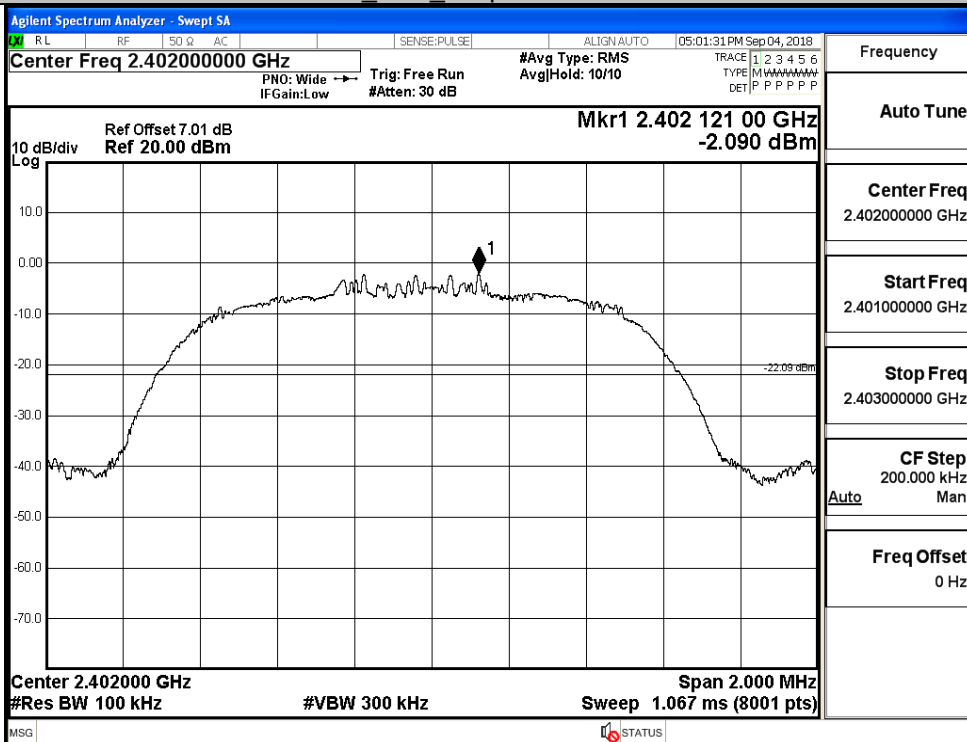


Puw

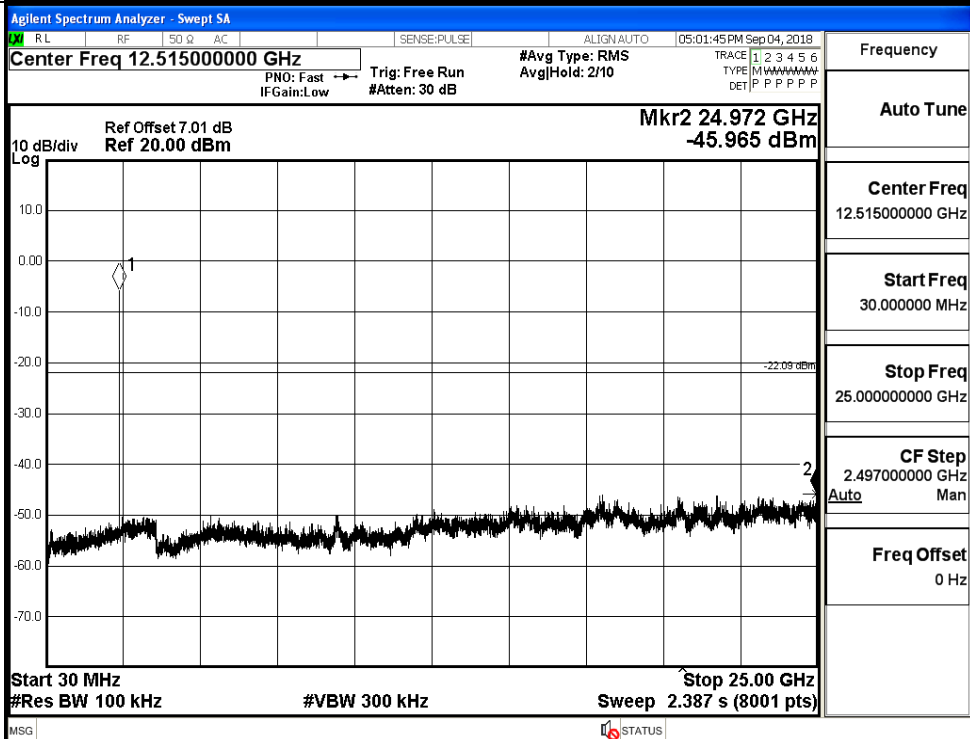


π /4DQPSK LCH_Graphs

Pref

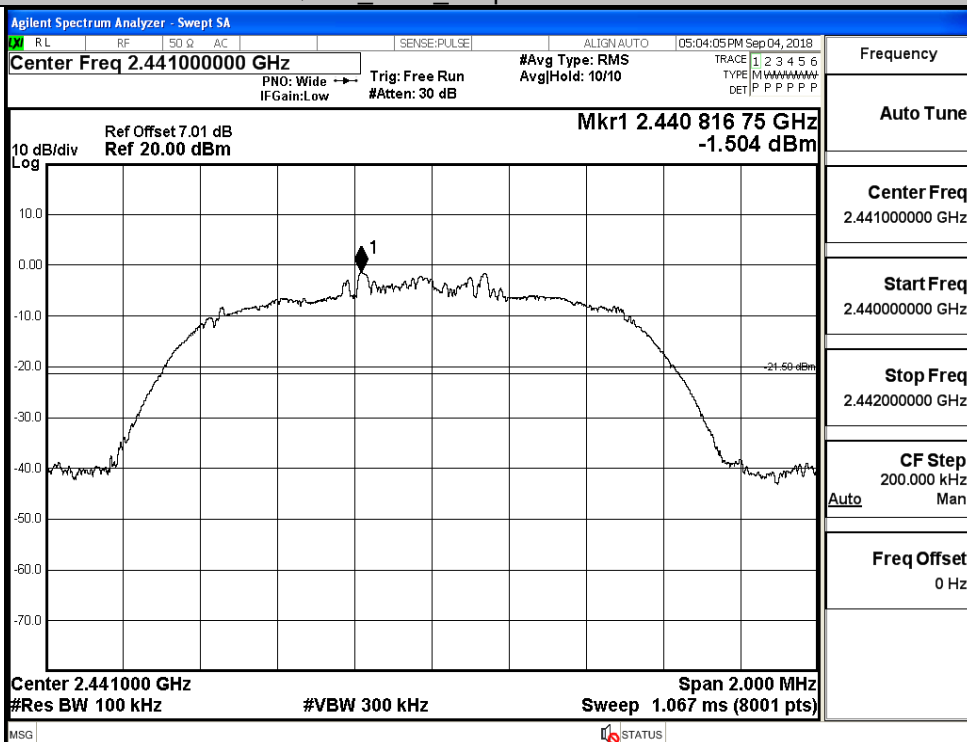


Puw

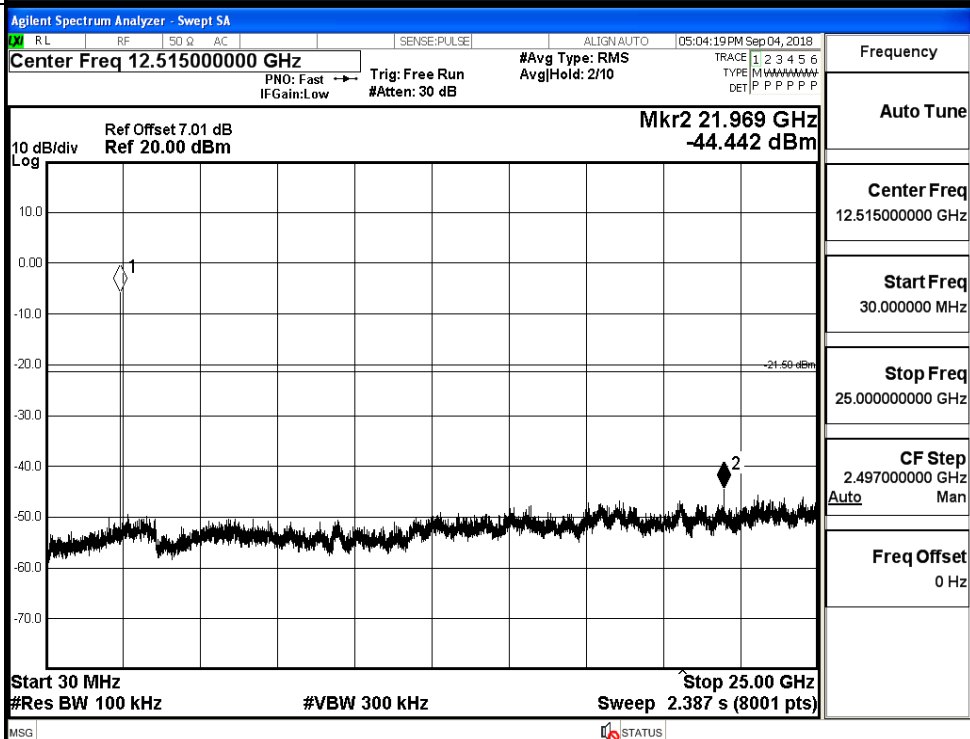


π /4DQPSK_MCH_Graphs

Pref

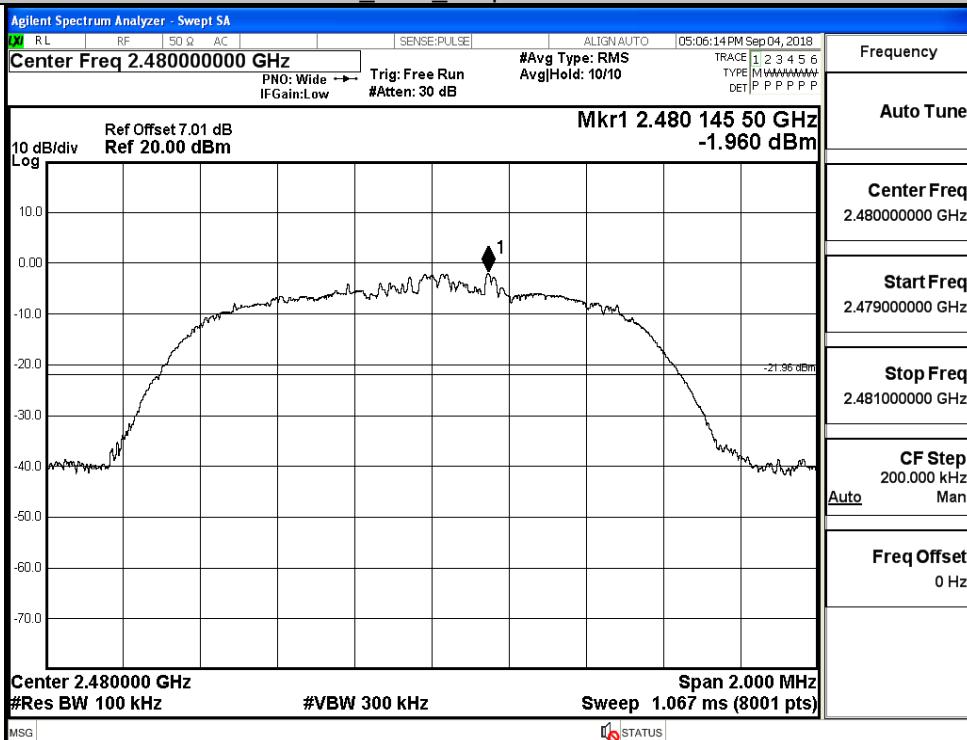


Puw

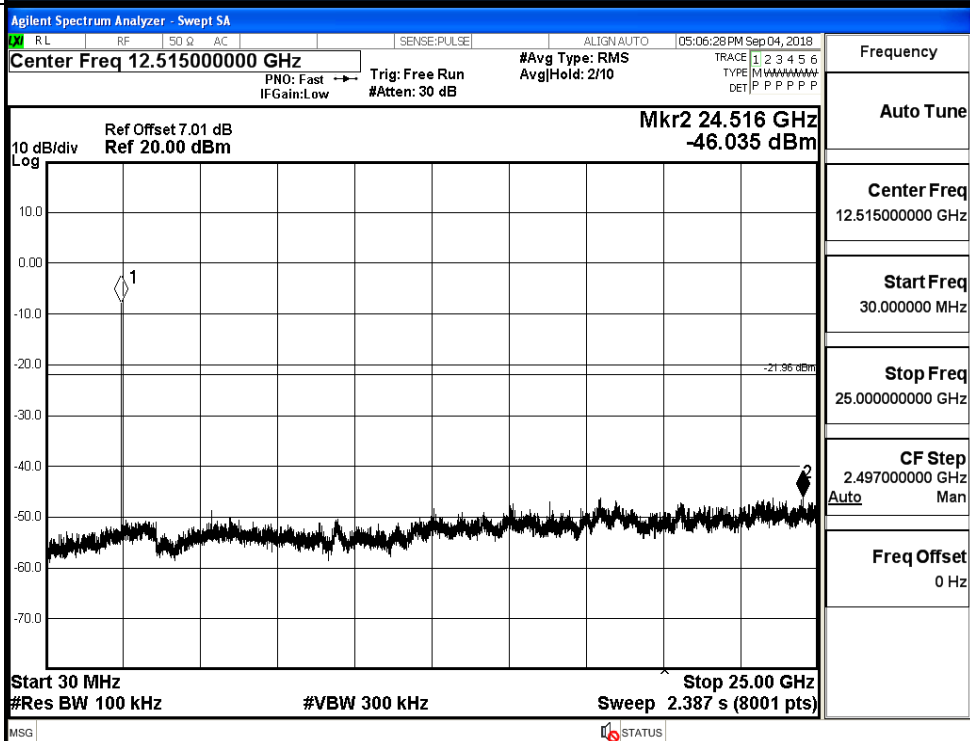


π /4DQPSK_HCH_Graphs

Pref

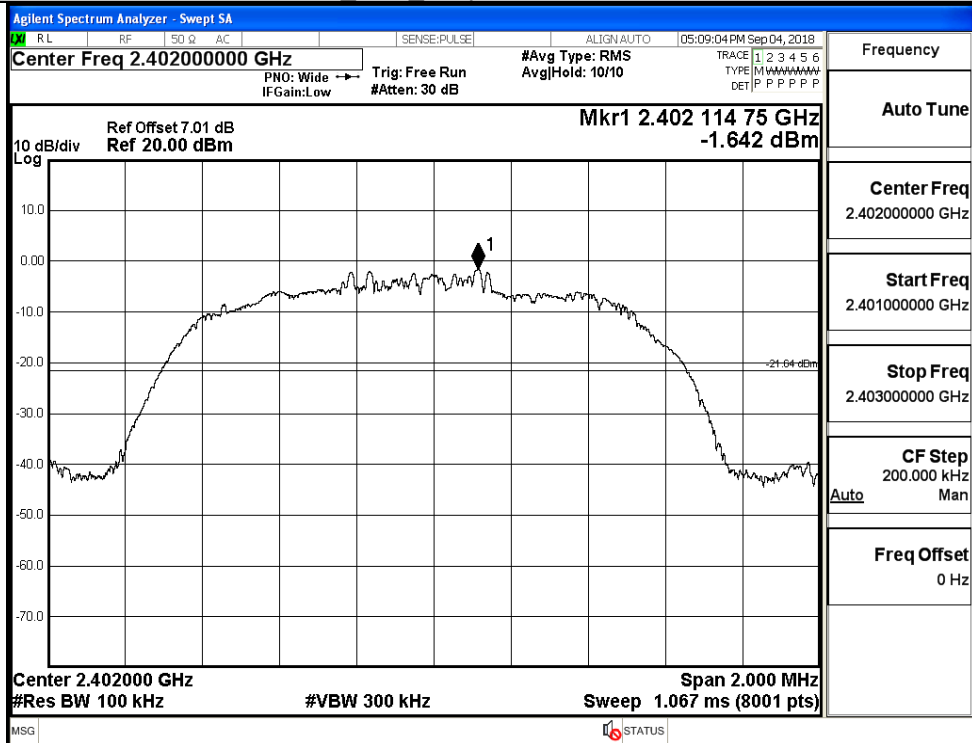


Puw

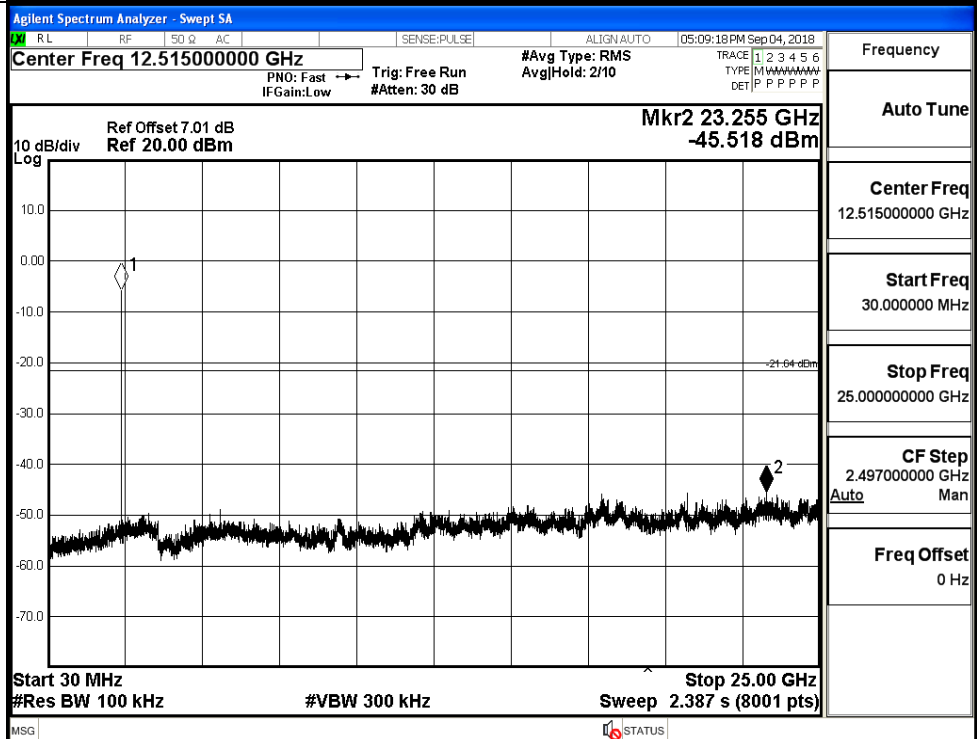


8DPSK_LCH_Graphs

Pref

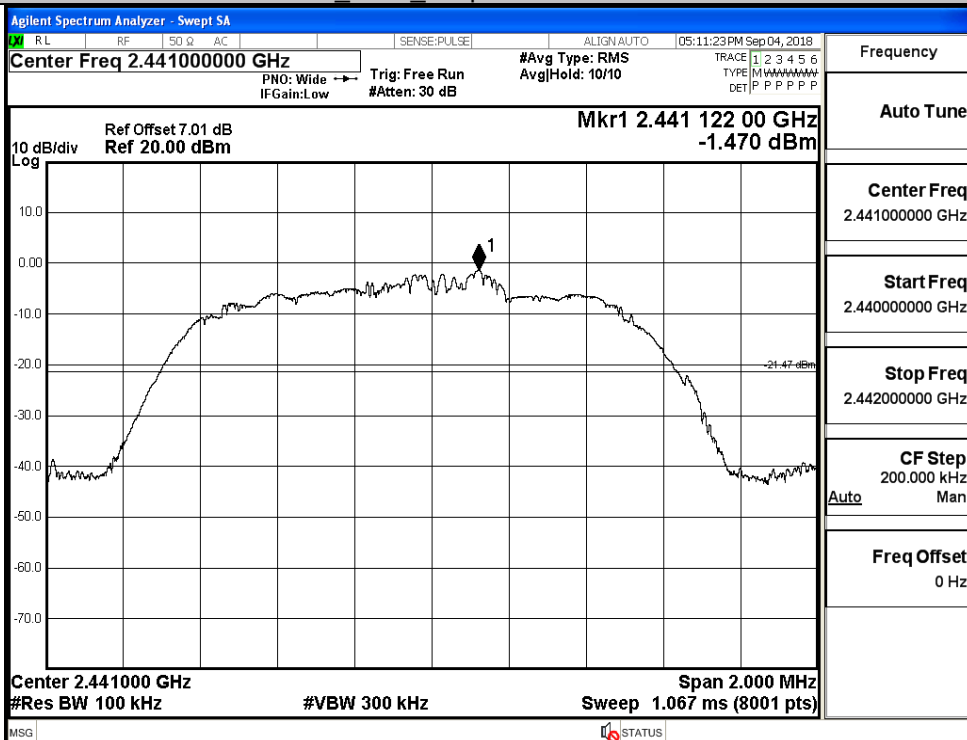


Puw

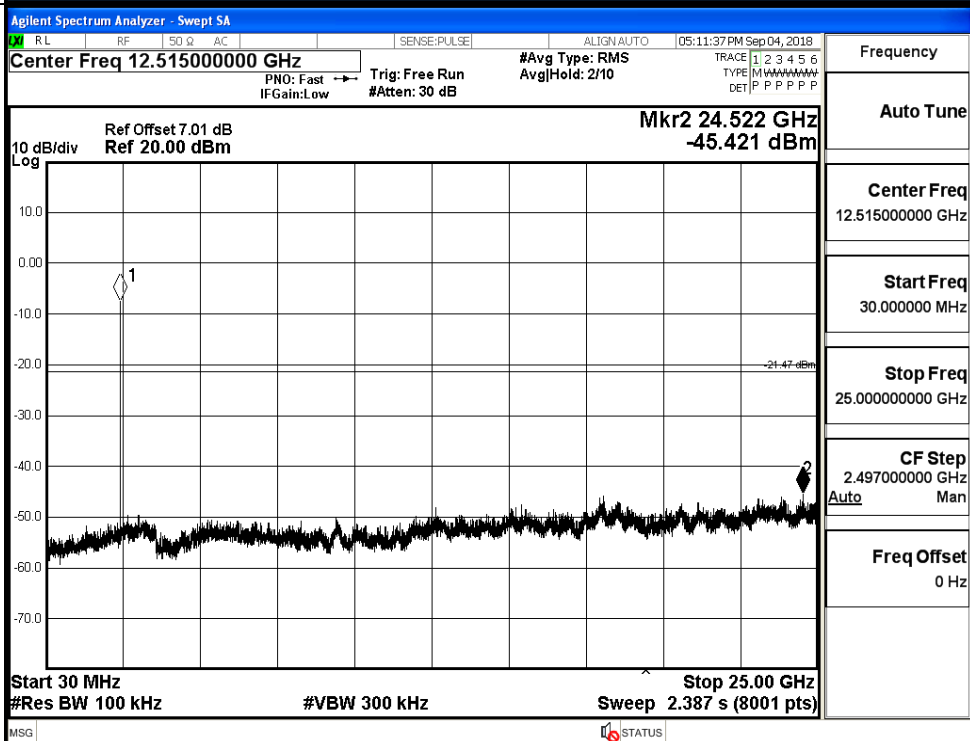


8DPSK_MCH_Graphs

Pref

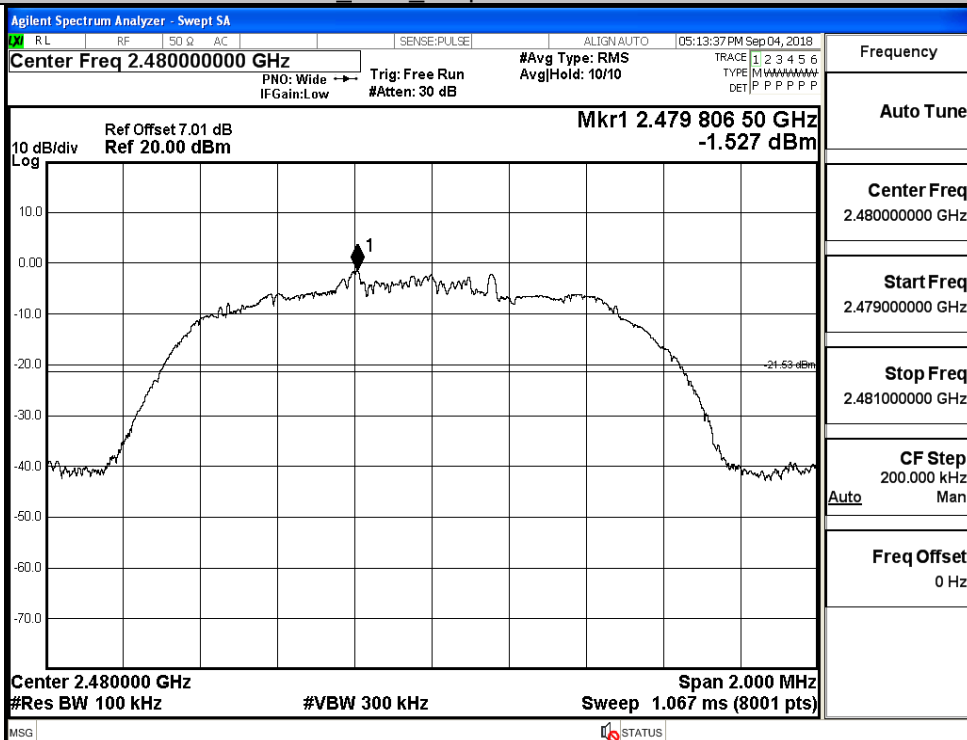


Puw

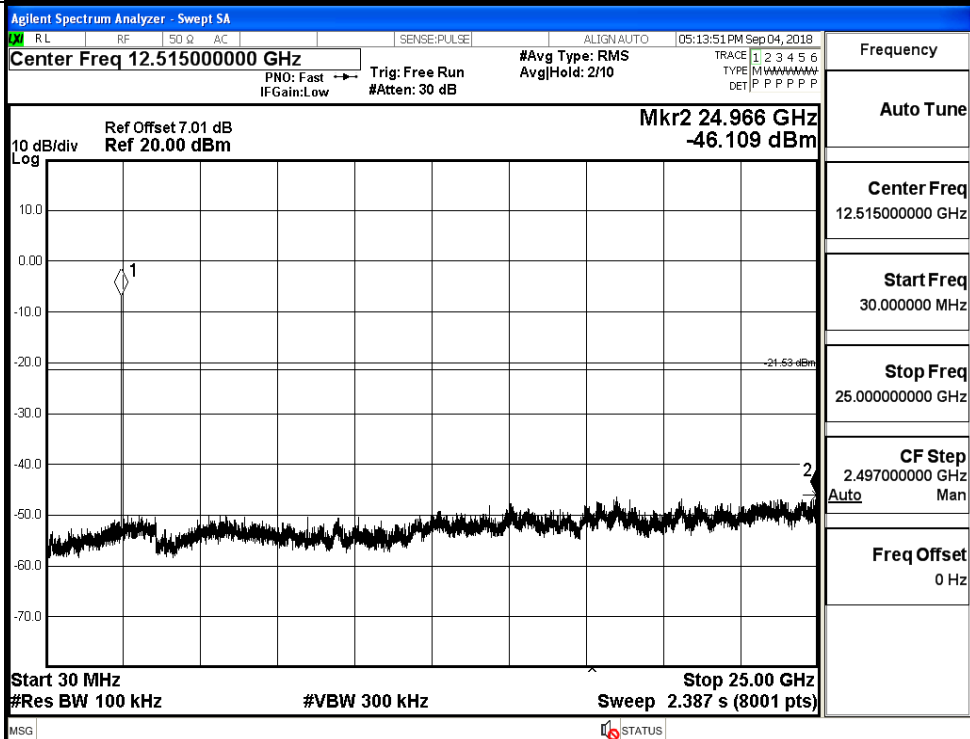


8DPSK_HCH_Graphs

Pref



Puw

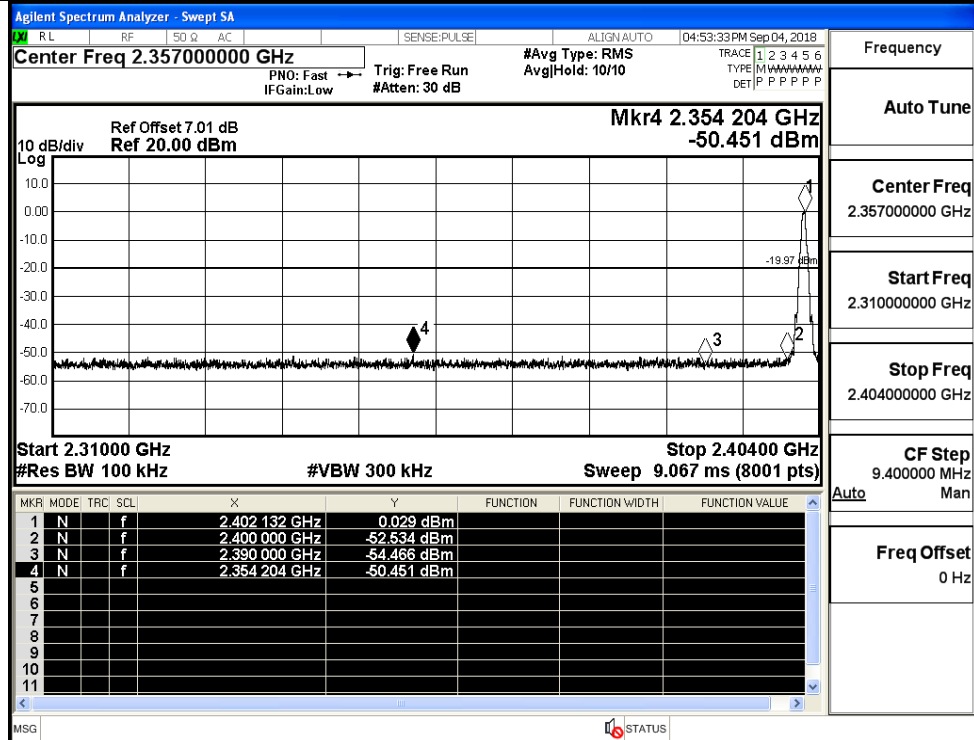


A.7 Band-edge for RF Conducted Emissions

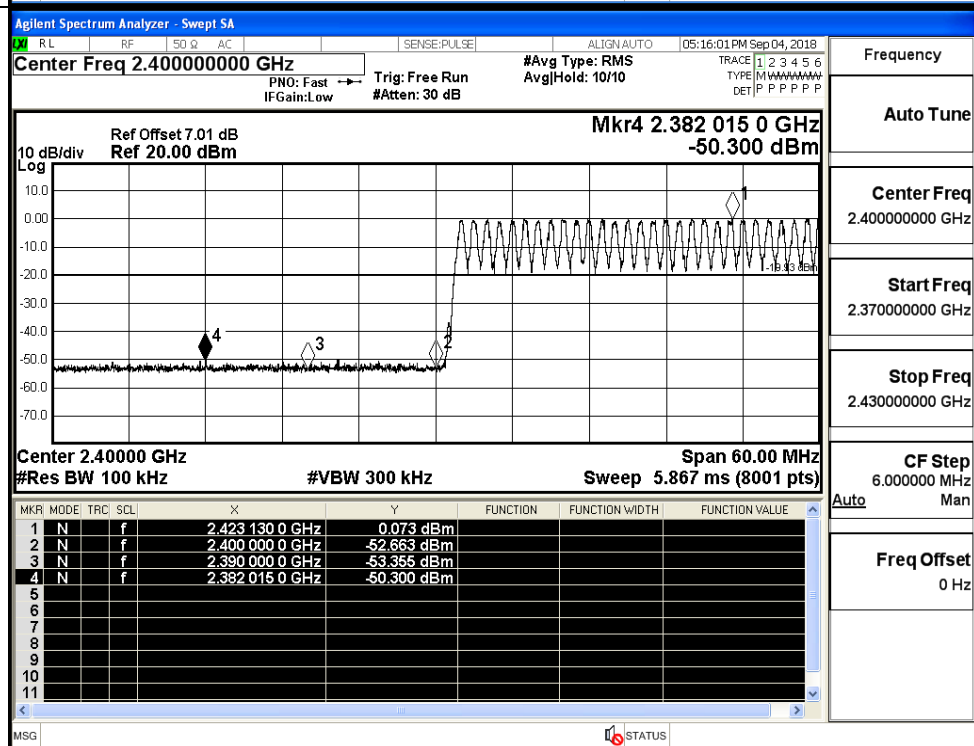
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.029	Off	-50.451	-19.97	PASS
			0.073	On	-50.300	-19.93	PASS
	HCH	2480	-0.107	Off	-50.831	-20.11	PASS
			-0.013	On	-49.916	-20.01	PASS
$\pi/4$ DQPSK	LCH	2402	-1.390	Off	-50.624	-21.39	PASS
			-1.471	On	-50.462	-21.47	PASS
	HCH	2480	-1.431	Off	-50.893	-21.43	PASS
			-1.364	On	-50.313	-21.36	PASS
8DPSK	LCH	2402	-1.378	Off	-50.704	-21.38	PASS
			-1.381	On	-49.930	-21.38	PASS
	HCH	2480	-1.424	Off	-51.085	-21.42	PASS
			-1.353	On	-49.316	-21.35	PASS

Test Graphs

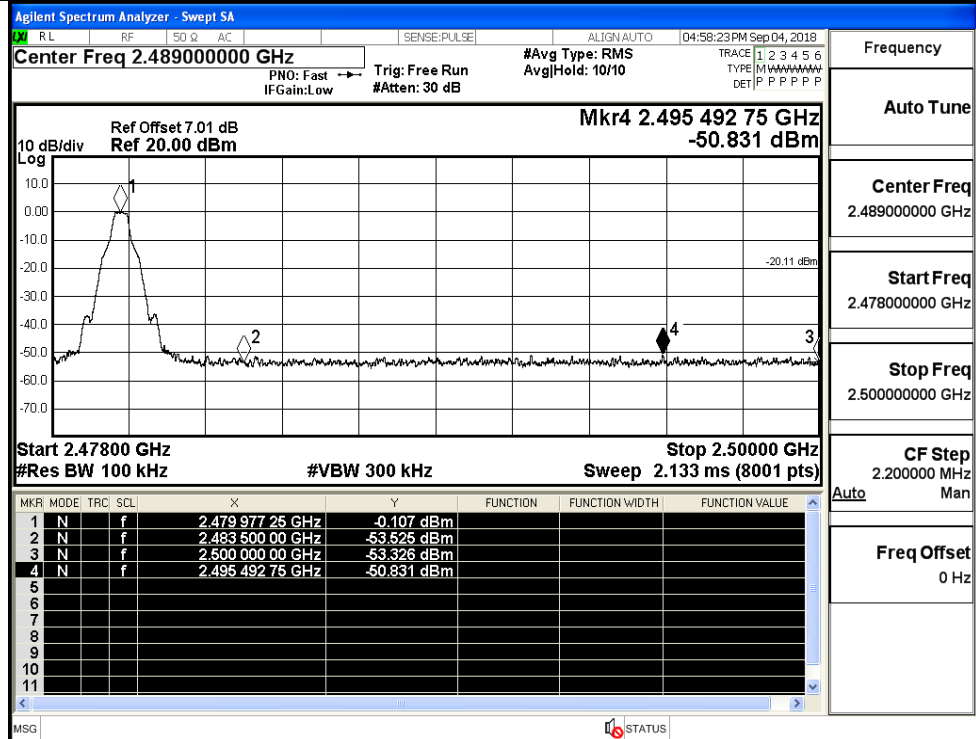
GFSK/LCH/No Hop



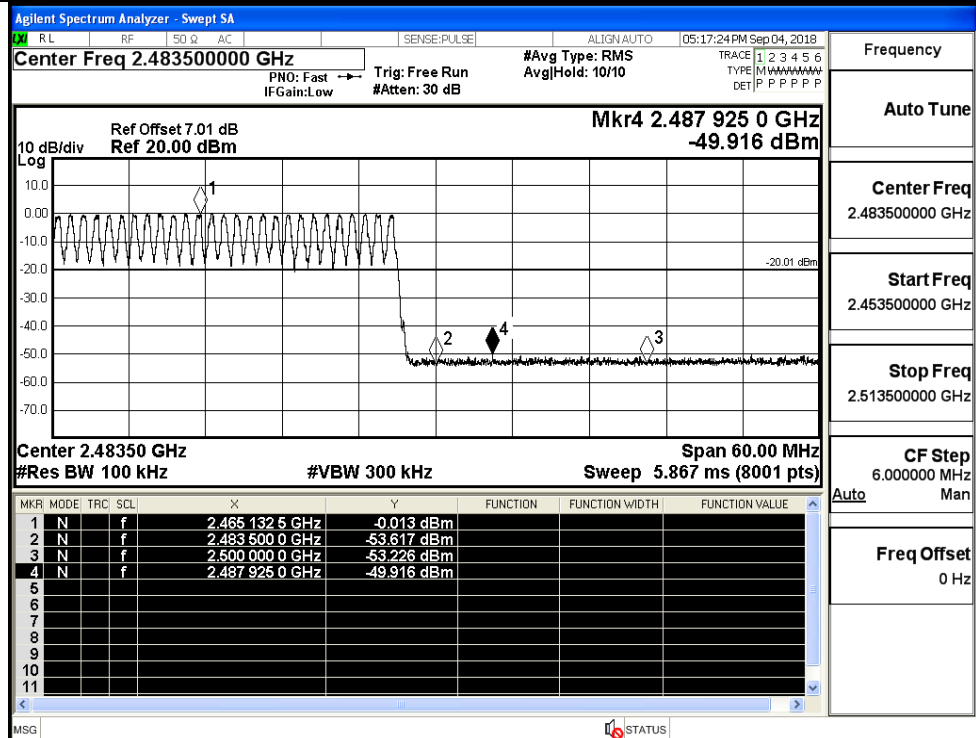
GFSK/LCH/Hop



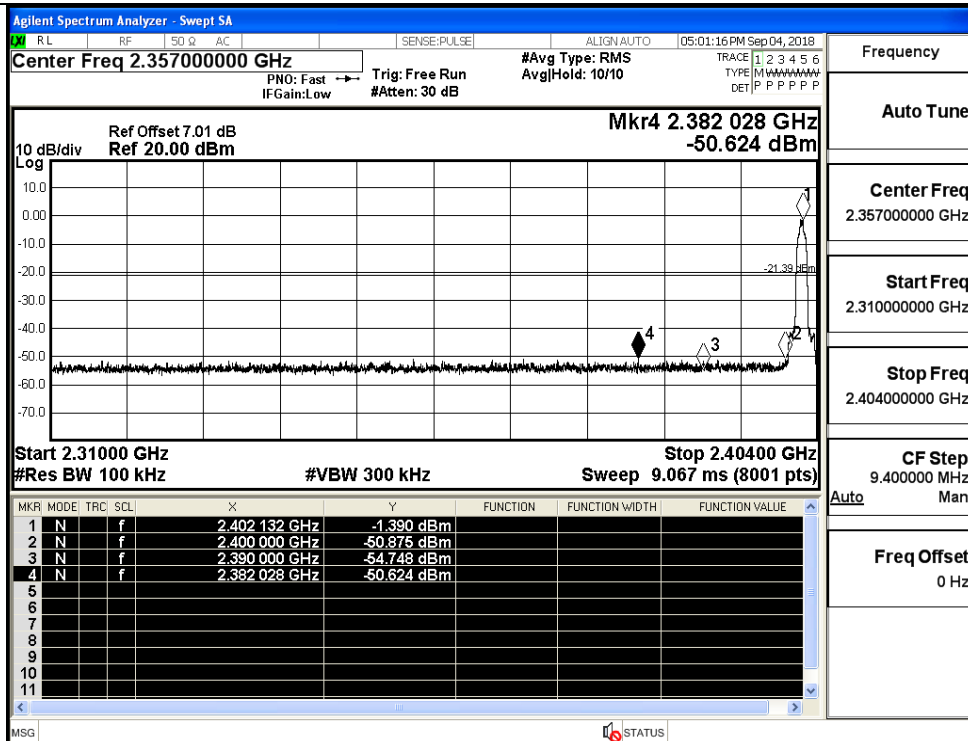
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

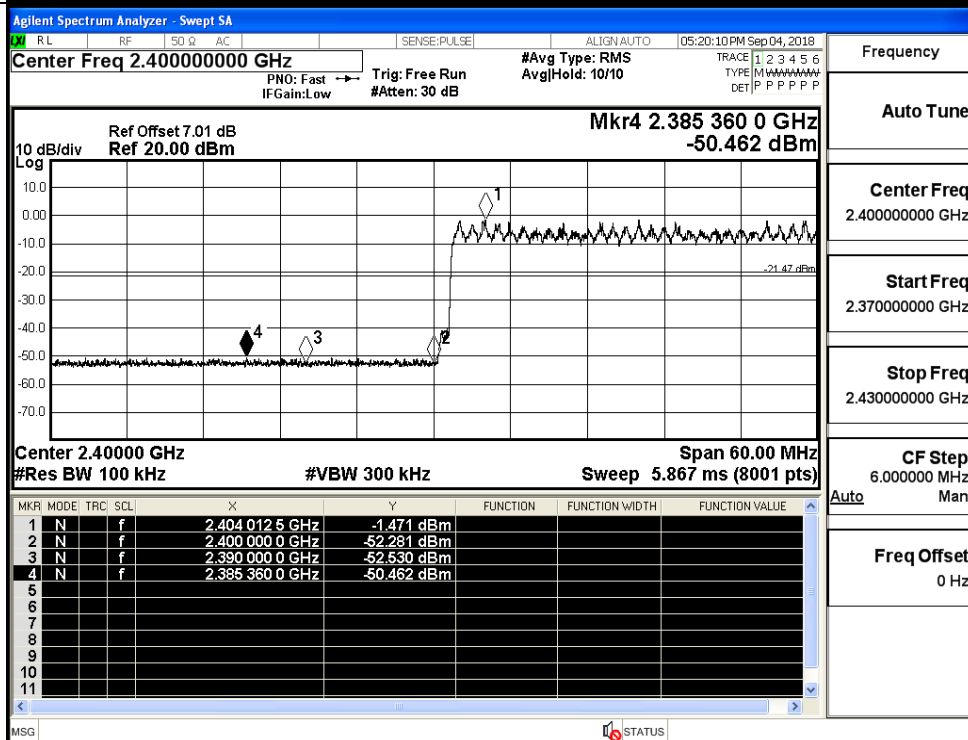


Frequency

Auto Tune

Center Freq
2.357000000 GHzStart Freq
2.310000000 GHzStop Freq
2.404000000 GHzCF Step
9.400000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop

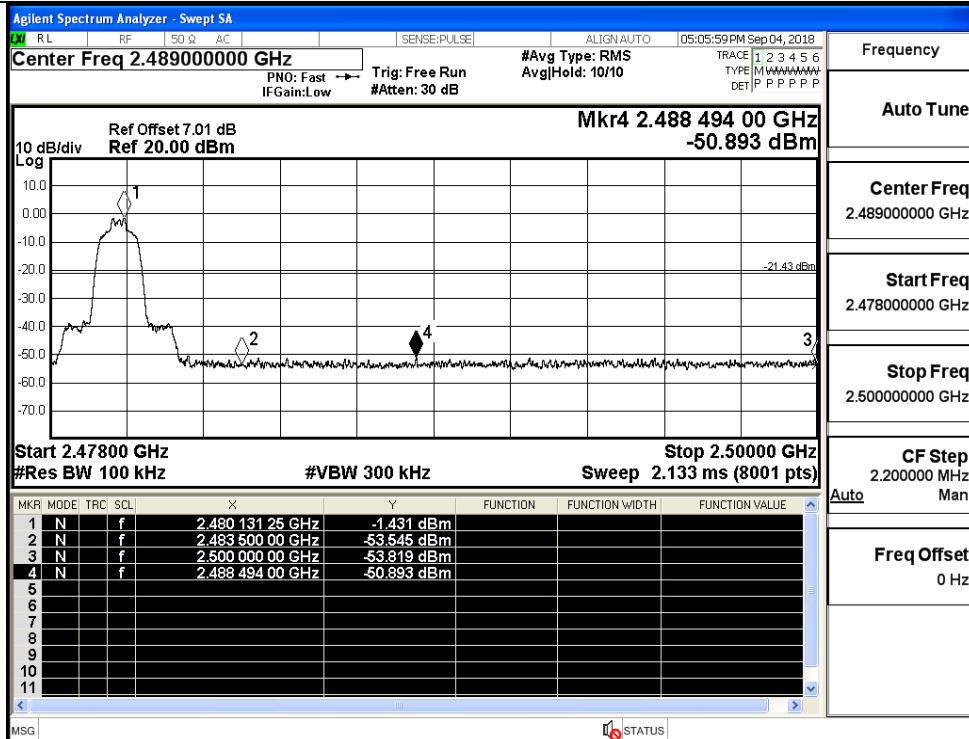


Frequency

Auto Tune

Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

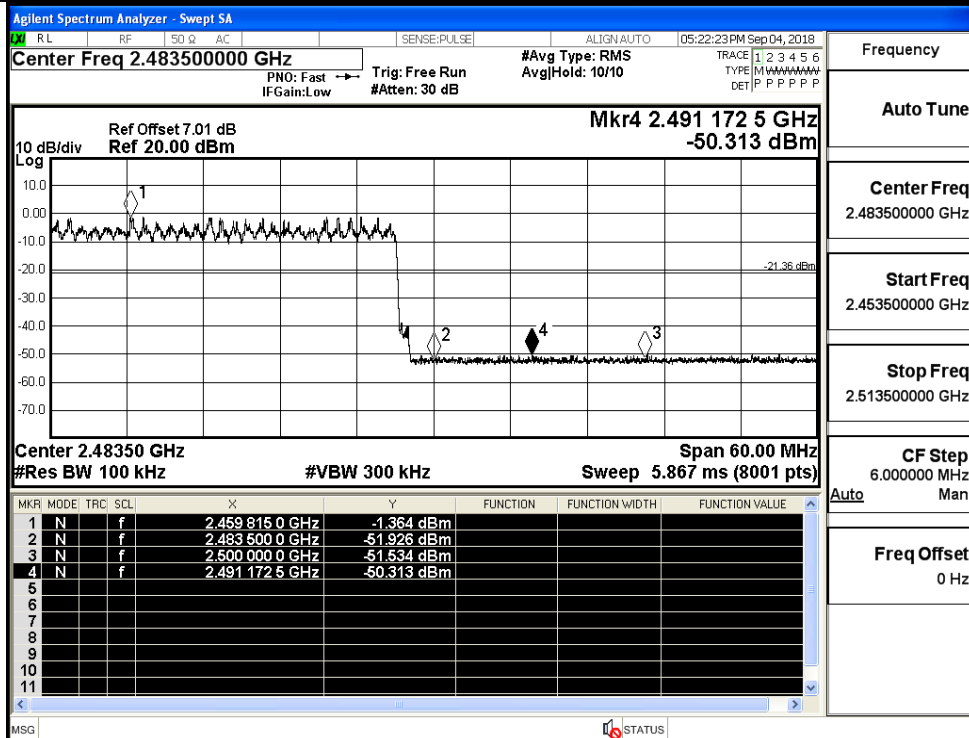
Start Freq
2.478000000 GHz

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

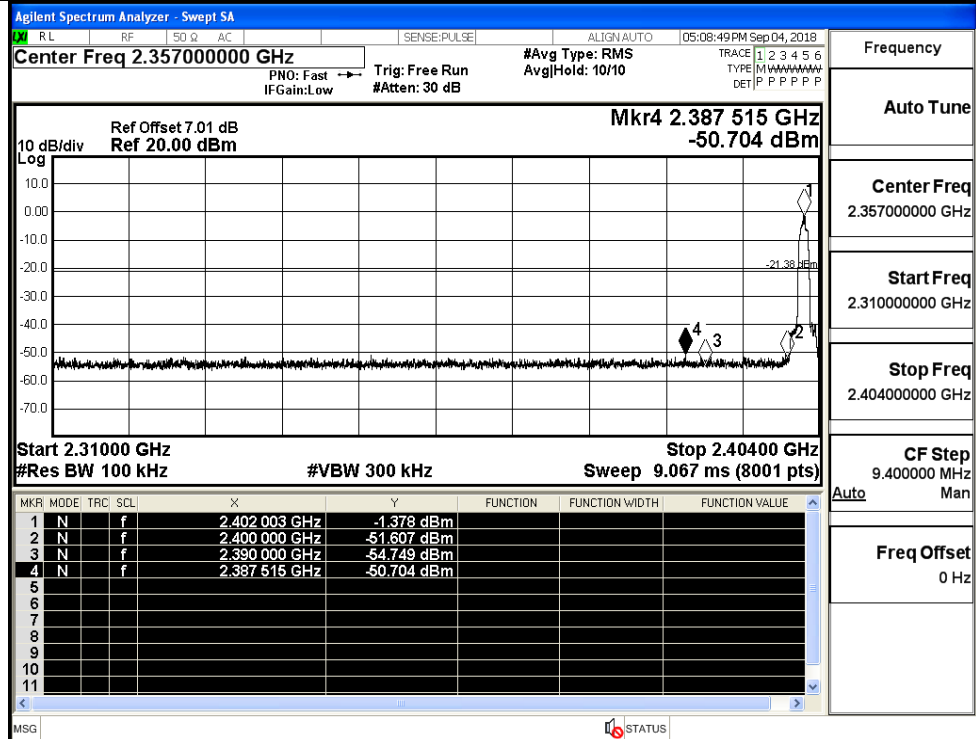
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

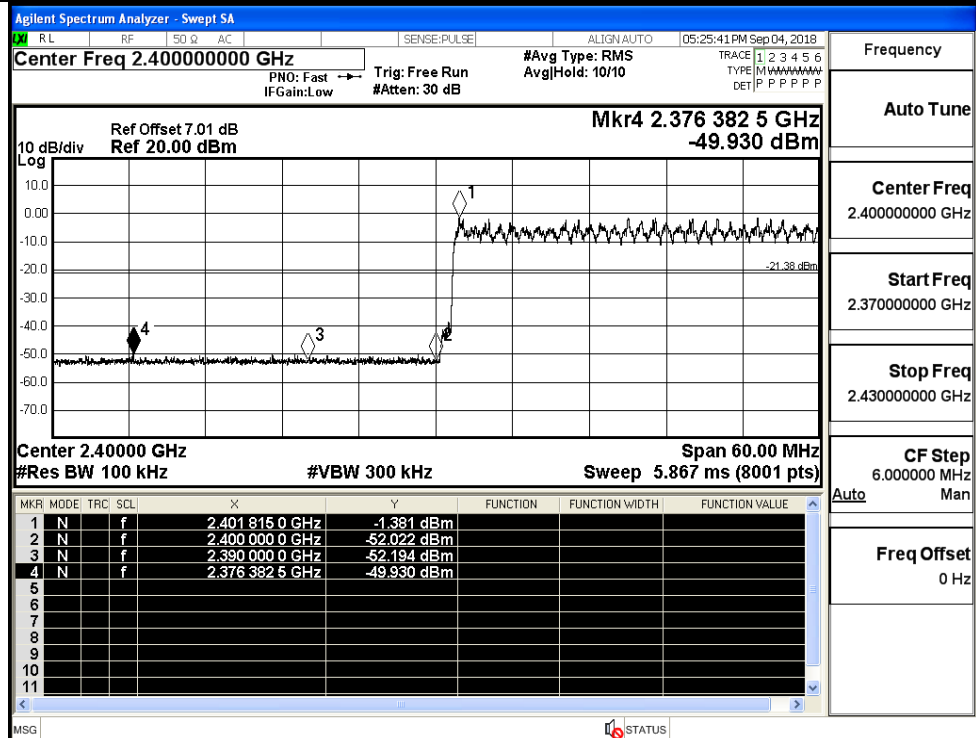
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

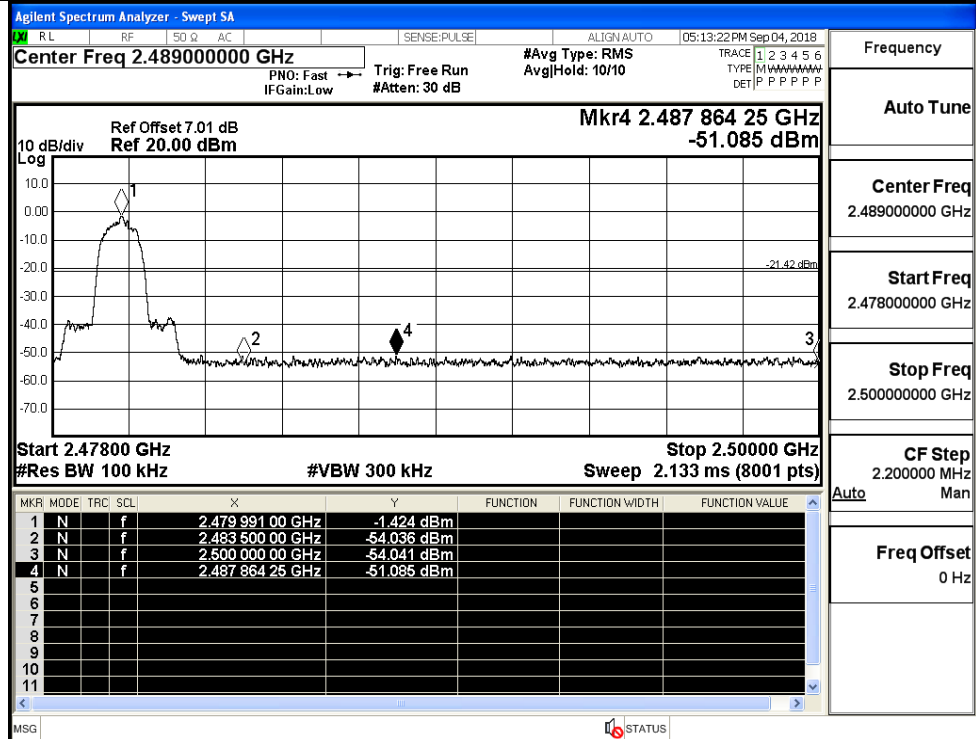
8DPSK/LCH/No Hop



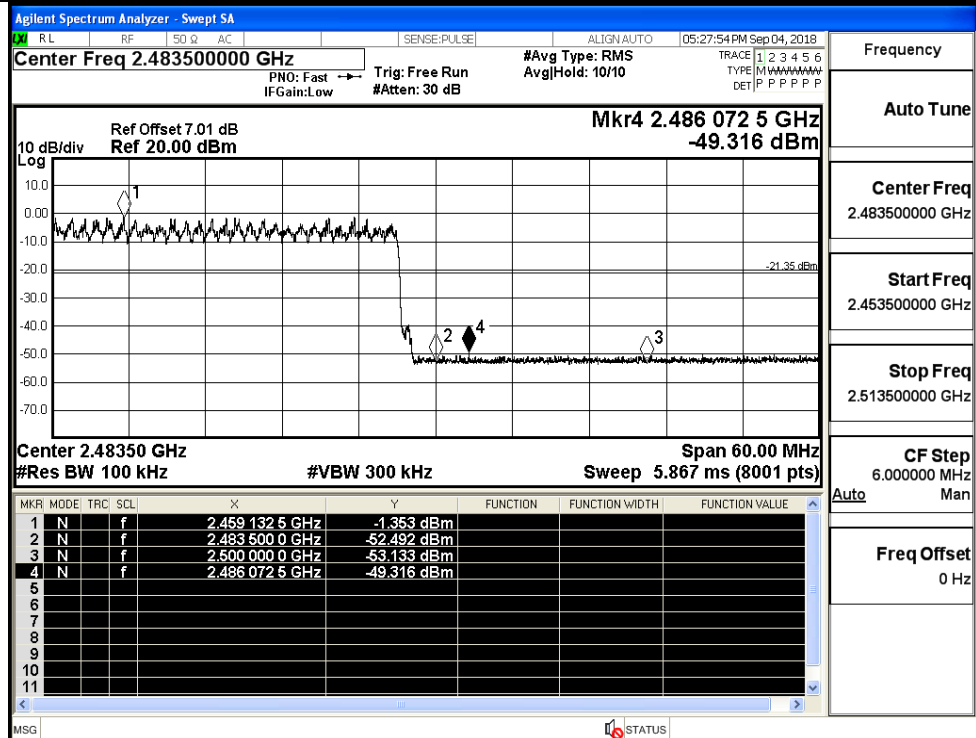
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



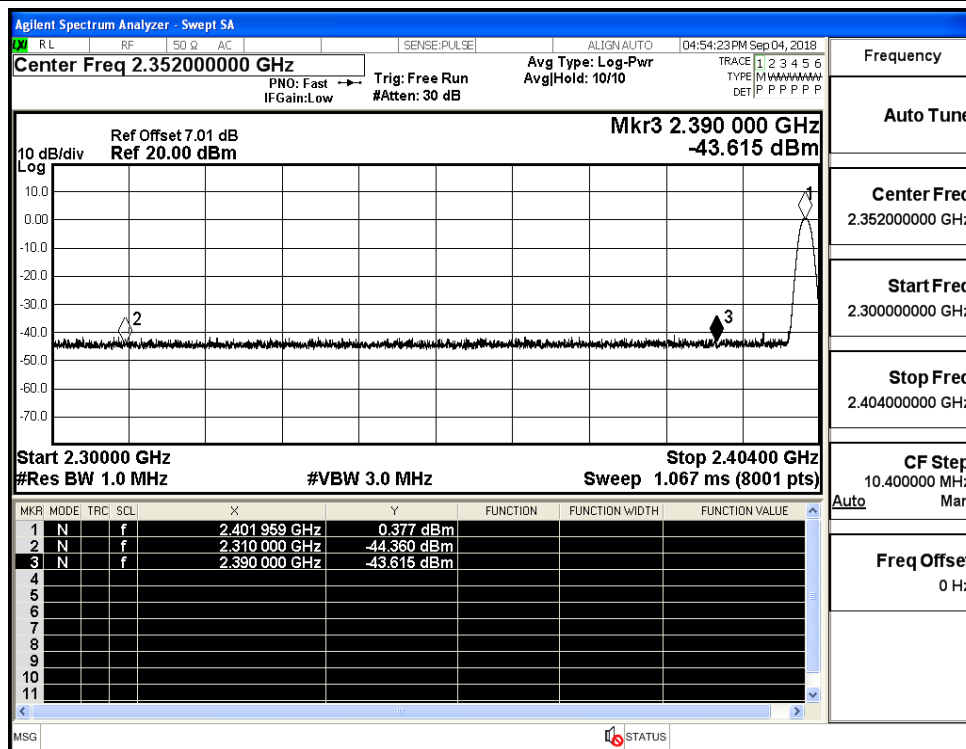
8DPSK/HCH/Hop



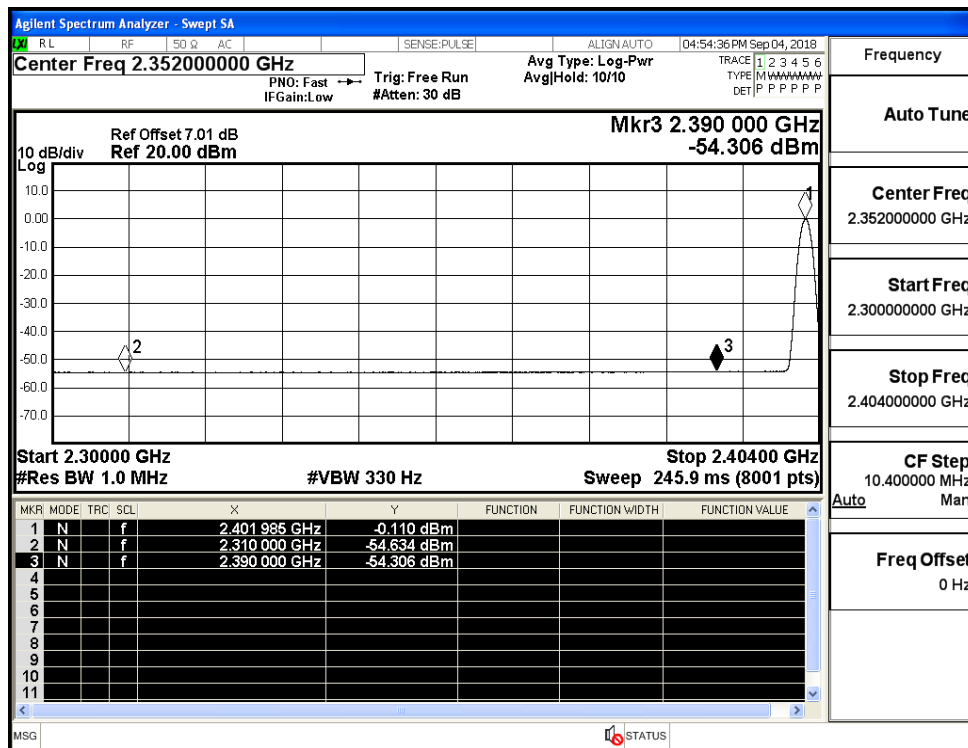
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.36	2.0	0	50.90	PEAK	74	PASS
	Off	2310.0	-54.63	2.0	0	40.62	AV	54	PASS
	Off	2390.0	-43.62	2.0	0	51.64	PEAK	74	PASS
	Off	2390.0	-54.31	2.0	0	40.95	AV	54	PASS
	Off	2483.5	-44.62	2.0	0	50.64	PEAK	74	PASS
	Off	2483.5	-53.98	2.0	0	41.28	AV	54	PASS
	Off	2500.0	-43.55	2.0	0	51.71	PEAK	74	PASS
	Off	2500.0	-53.89	2.0	0	41.37	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.38	2.0	0	50.88	PEAK	74	PASS
	Off	2310.0	-54.57	2.0	0	40.69	AV	54	PASS
	Off	2390.0	-44.59	2.0	0	50.66	PEAK	74	PASS
	Off	2390.0	-54.27	2.0	0	40.99	AV	54	PASS
	Off	2483.5	-44.86	2.0	0	50.40	PEAK	74	PASS
	Off	2483.5	-54.02	2.0	0	41.23	AV	54	PASS
	Off	2500.0	-45.29	2.0	0	49.97	PEAK	74	PASS
	Off	2500.0	-54.04	2.0	0	41.22	AV	54	PASS
8DPSK	Off	2310.0	-44.01	2.0	0	51.24	PEAK	74	PASS
	Off	2310.0	-54.67	2.0	0	40.59	AV	54	PASS
	Off	2390.0	-43.67	2.0	0	51.59	PEAK	74	PASS
	Off	2390.0	-54.33	2.0	0	40.93	AV	54	PASS
	Off	2483.5	-44.05	2.0	0	51.21	PEAK	74	PASS
	Off	2483.5	-54.01	2.0	0	41.25	AV	54	PASS
	Off	2500.0	-42.34	2.0	0	52.92	PEAK	74	PASS
	Off	2500.0	-53.88	2.0	0	41.38	AV	54	PASS

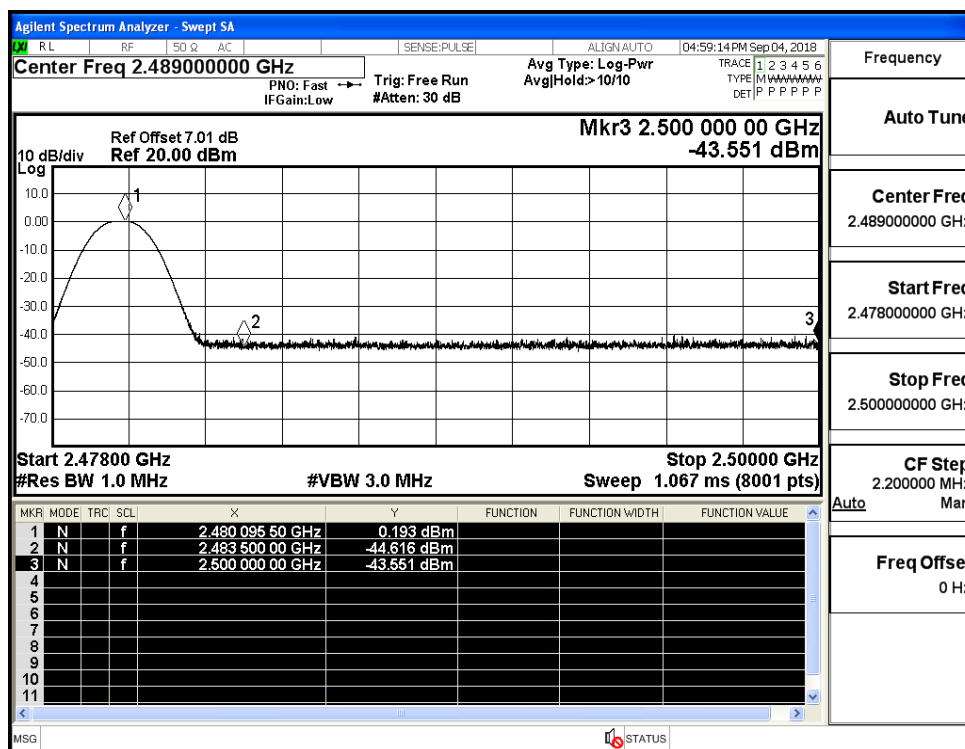
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



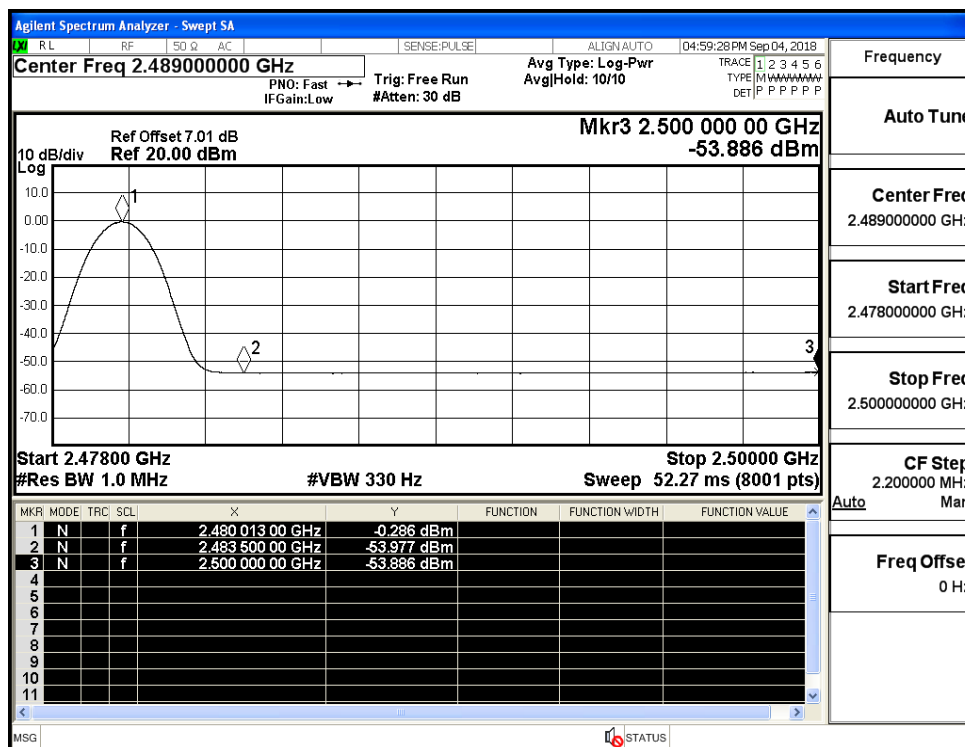
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

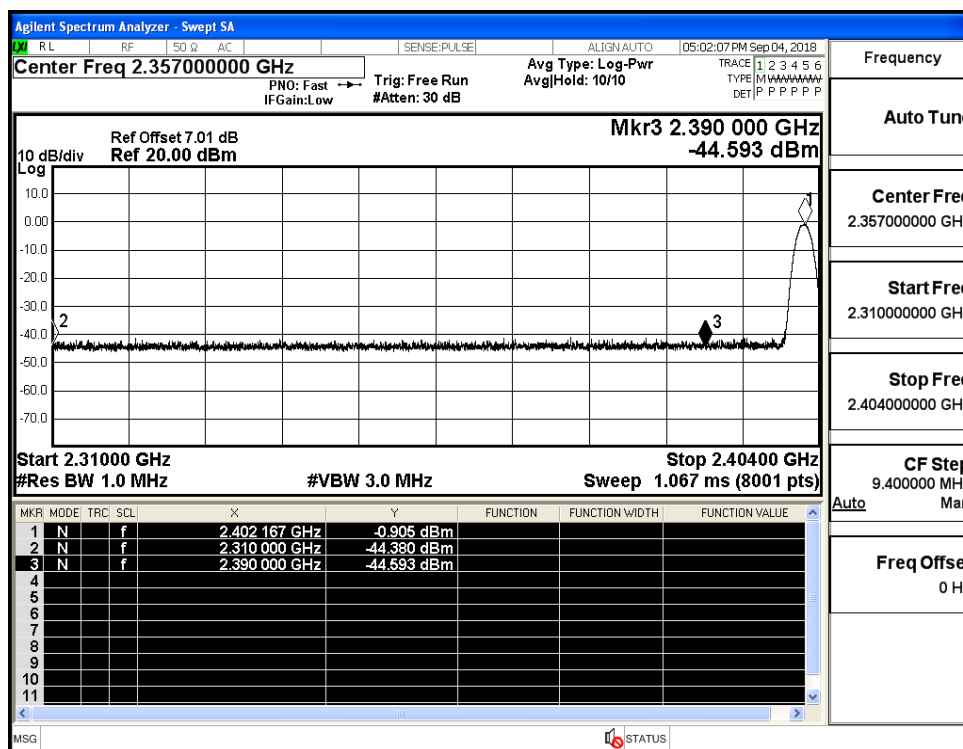
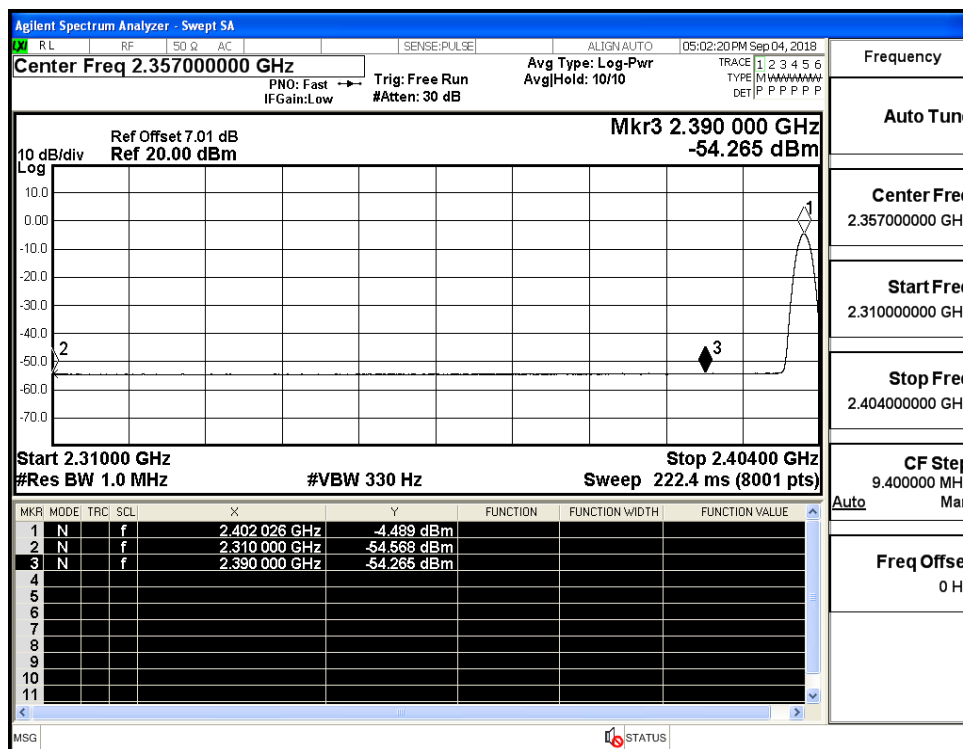


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

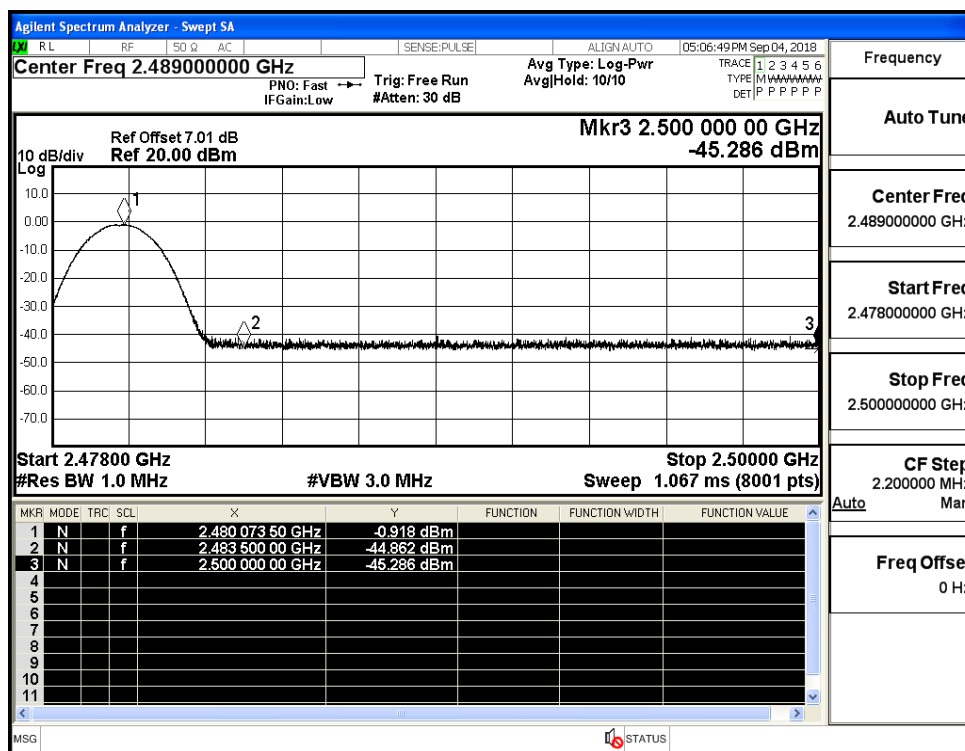


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

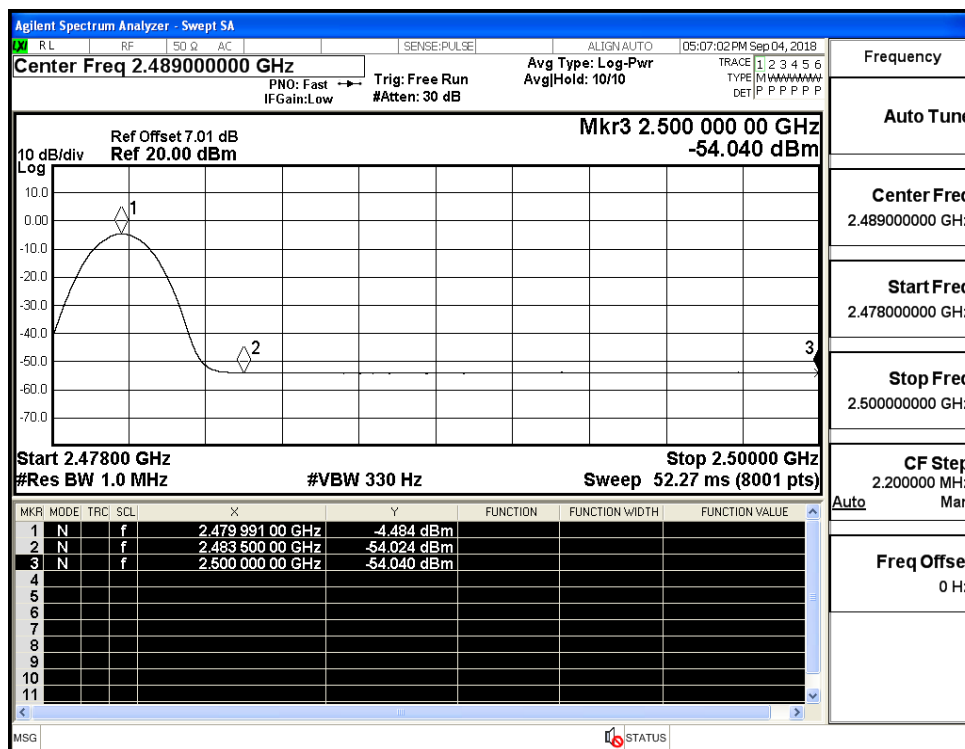


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

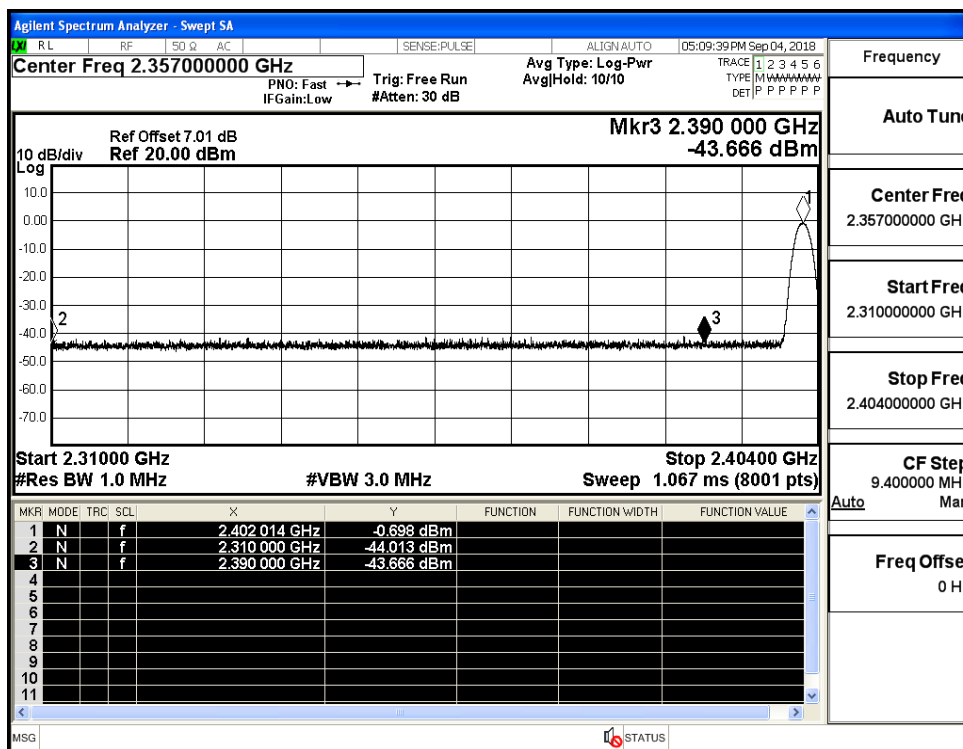
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



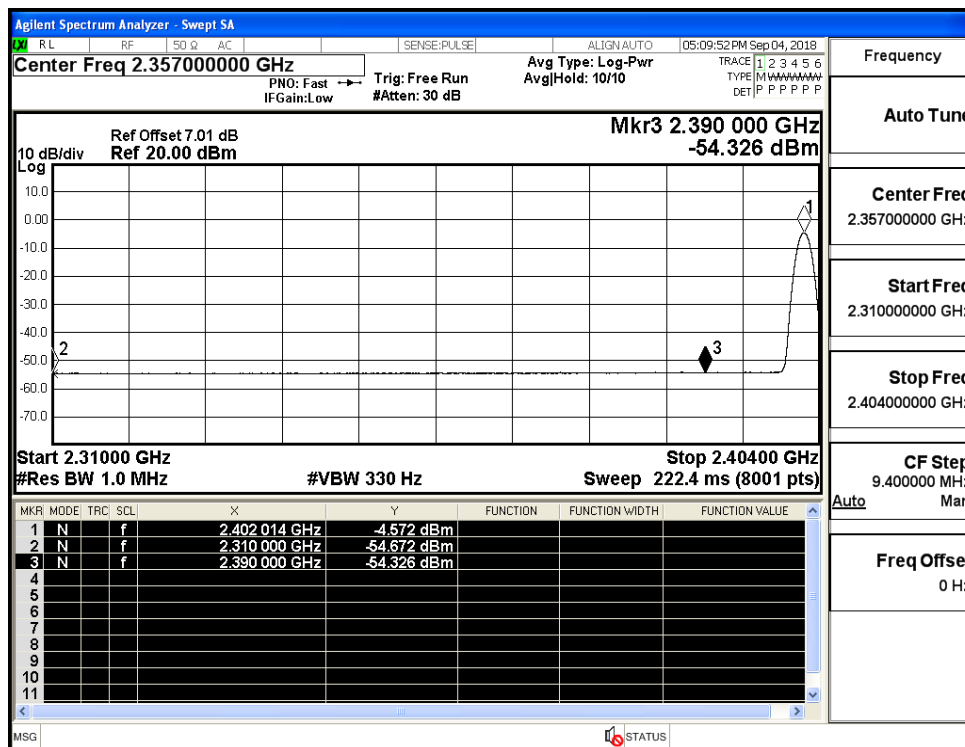
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



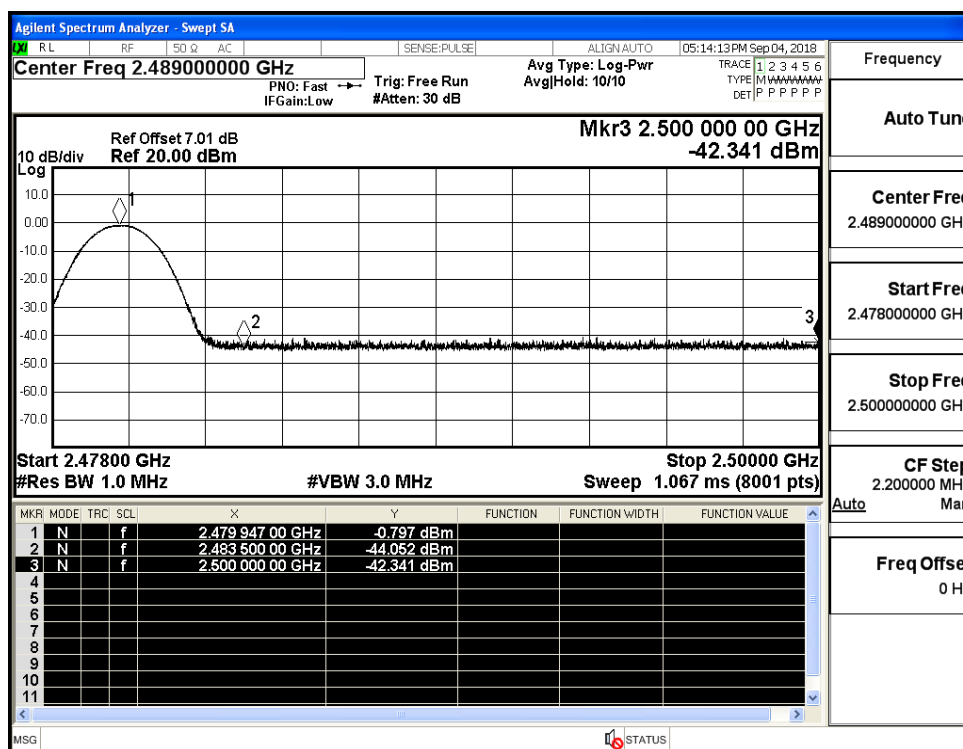
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

