

Appendix A

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

Product Name: iConnect Round

Trade Mark: iConnect By Timex

Test Model: M03Z

Environmental Conditions

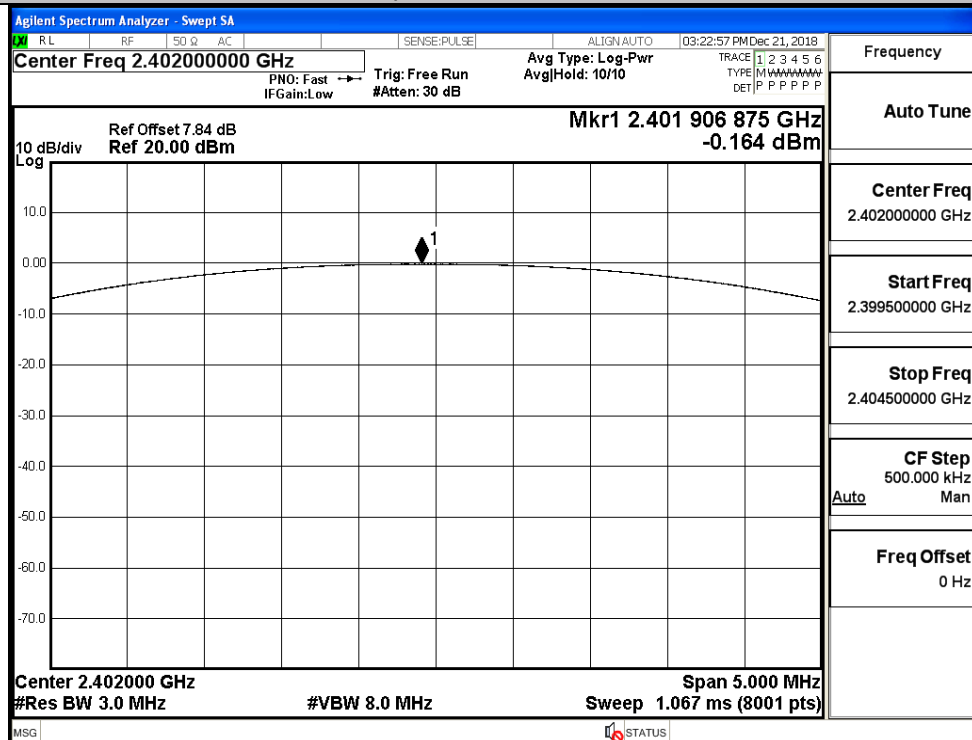
Temperature:	24.3 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

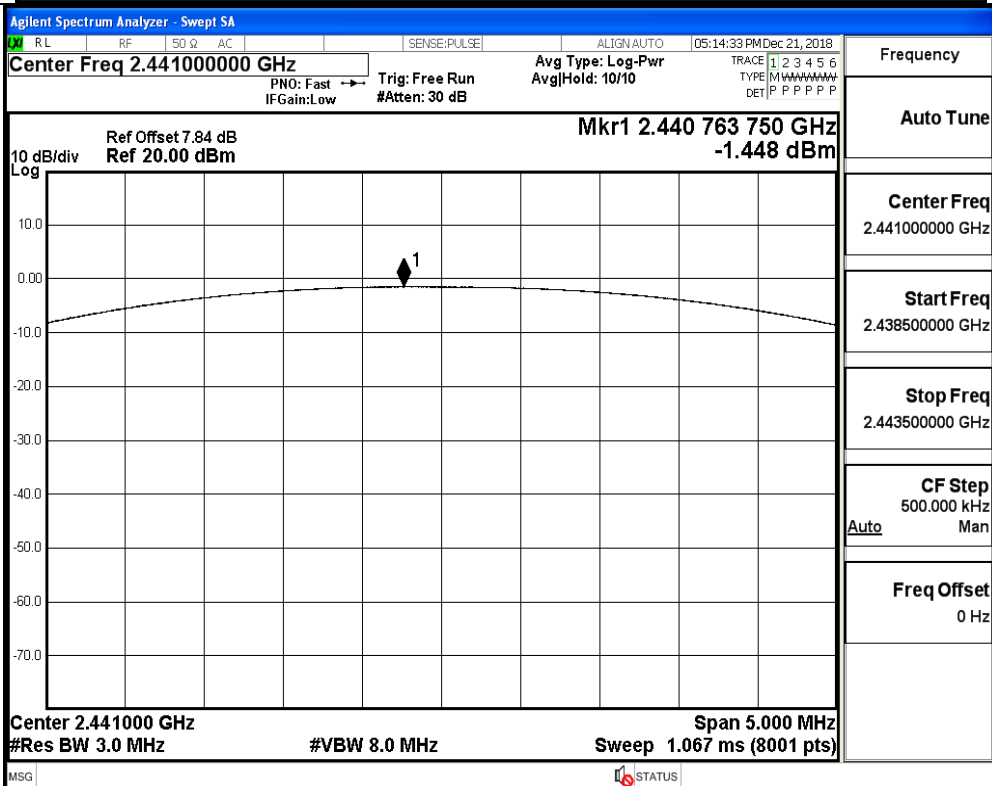
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.164	21	PASS
	MCH	-1.448	21	PASS
	HCH	-1.160	21	PASS
$\pi/4$ DQPSK	LCH	-0.792	21	PASS
	MCH	-0.264	21	PASS
	HCH	0.369	21	PASS
8DPSK	LCH	-0.733	21	PASS
	MCH	-0.153	21	PASS
	HCH	0.567	21	PASS

Test Graphs

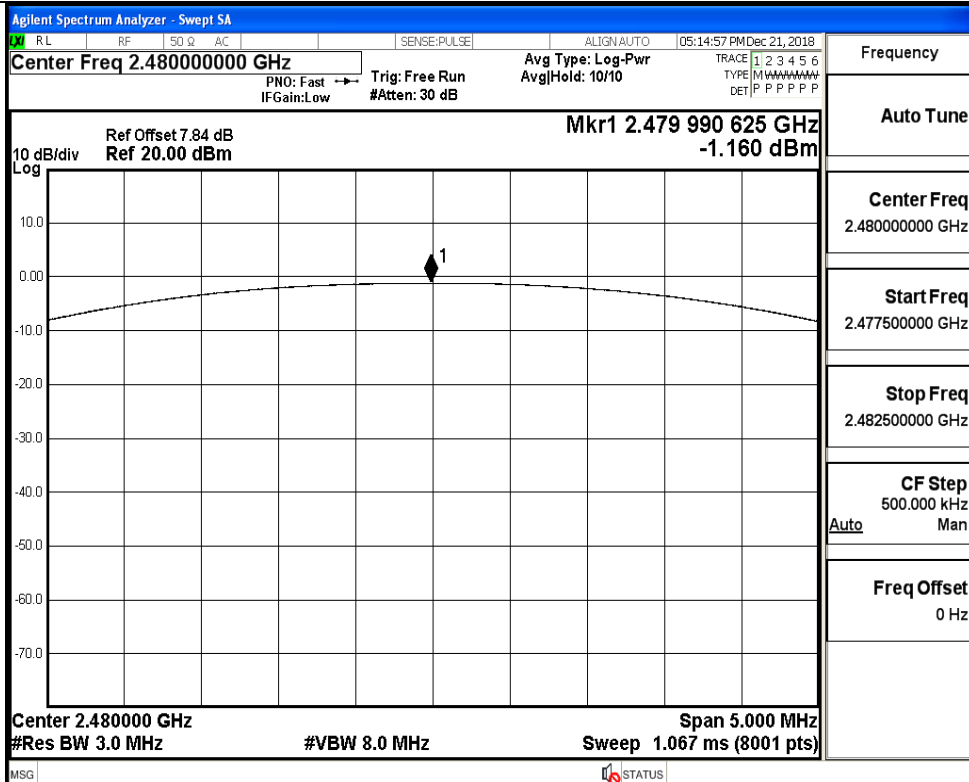
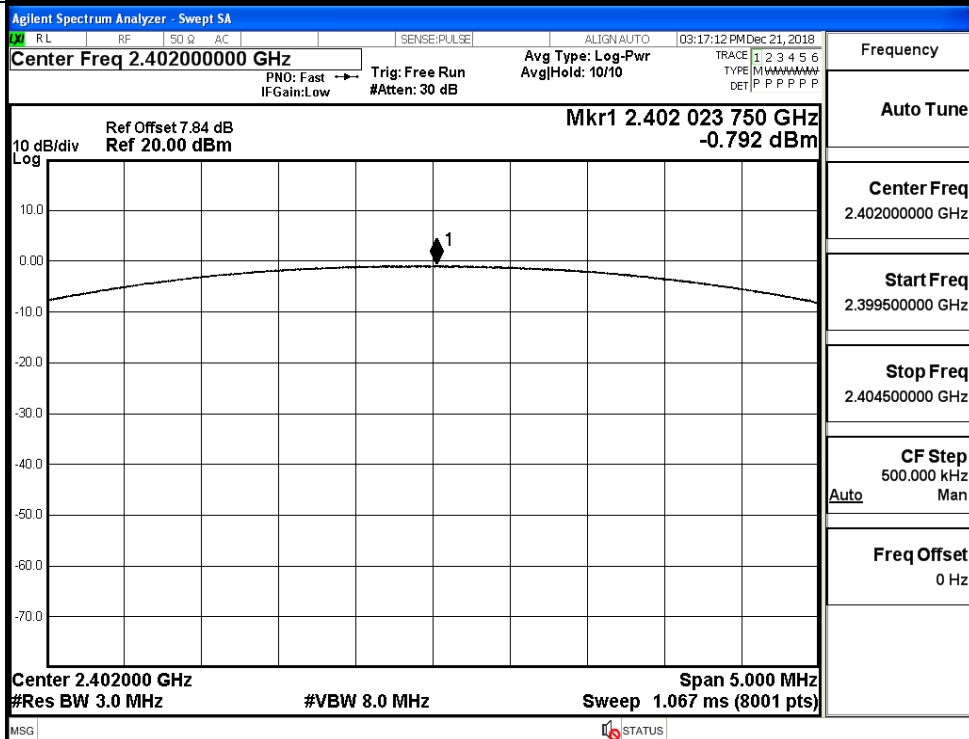
GFSK/LCH

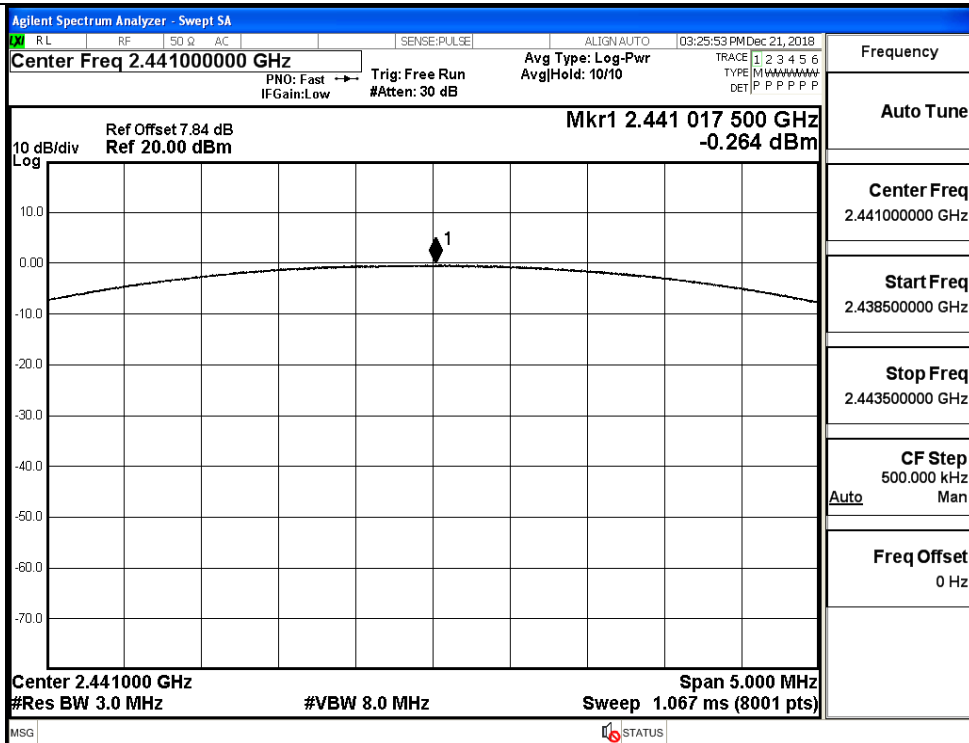
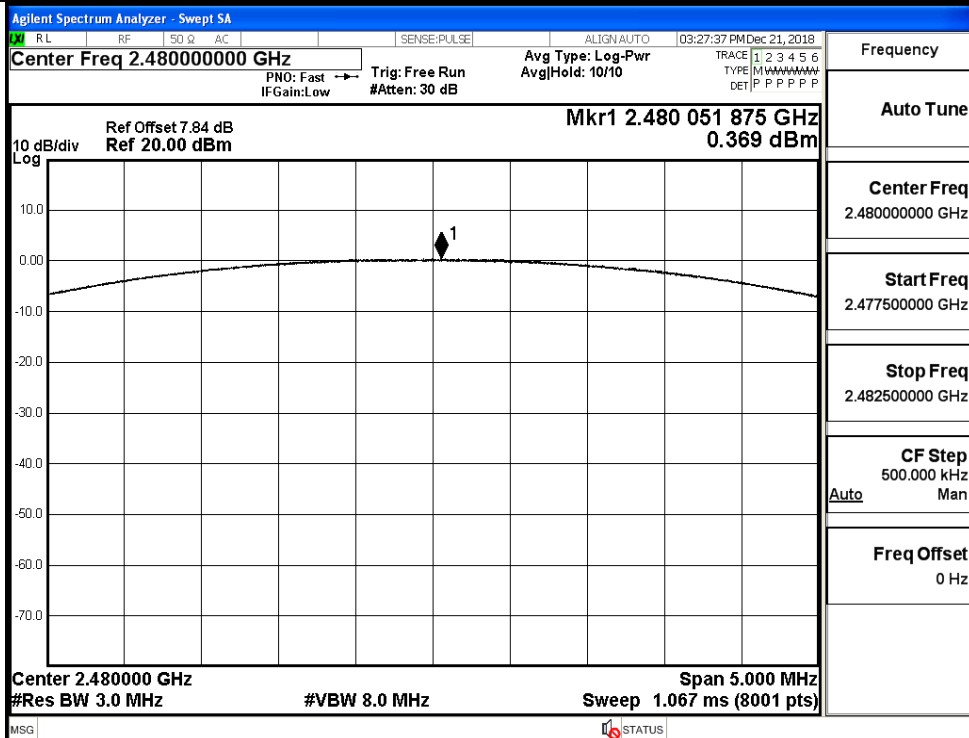


GFSK/MCH

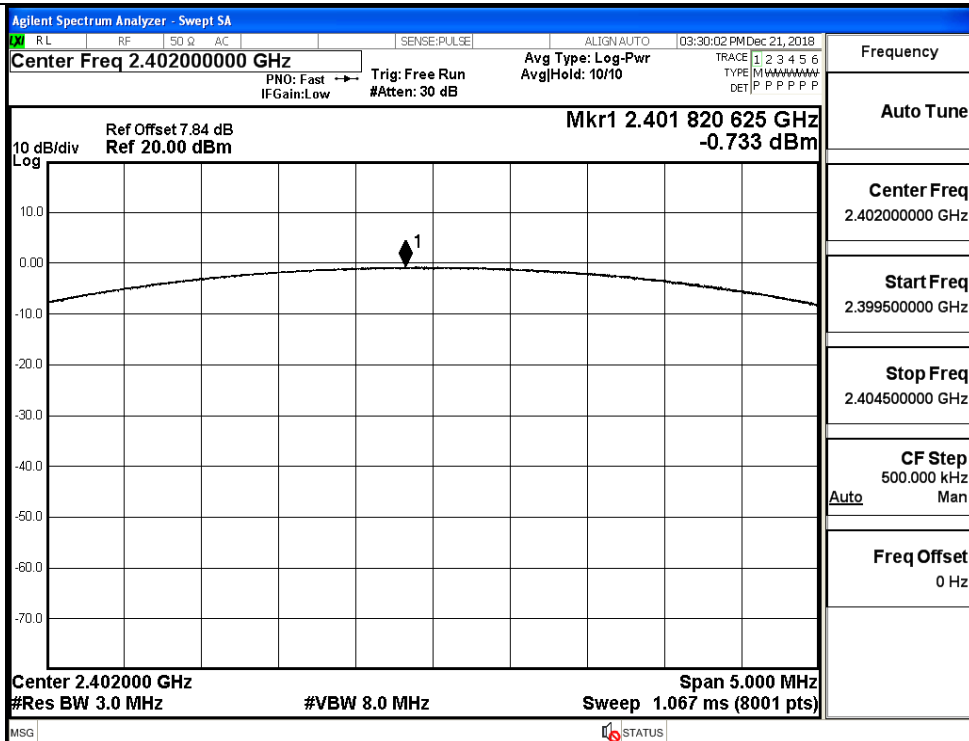


GFSK/HCH

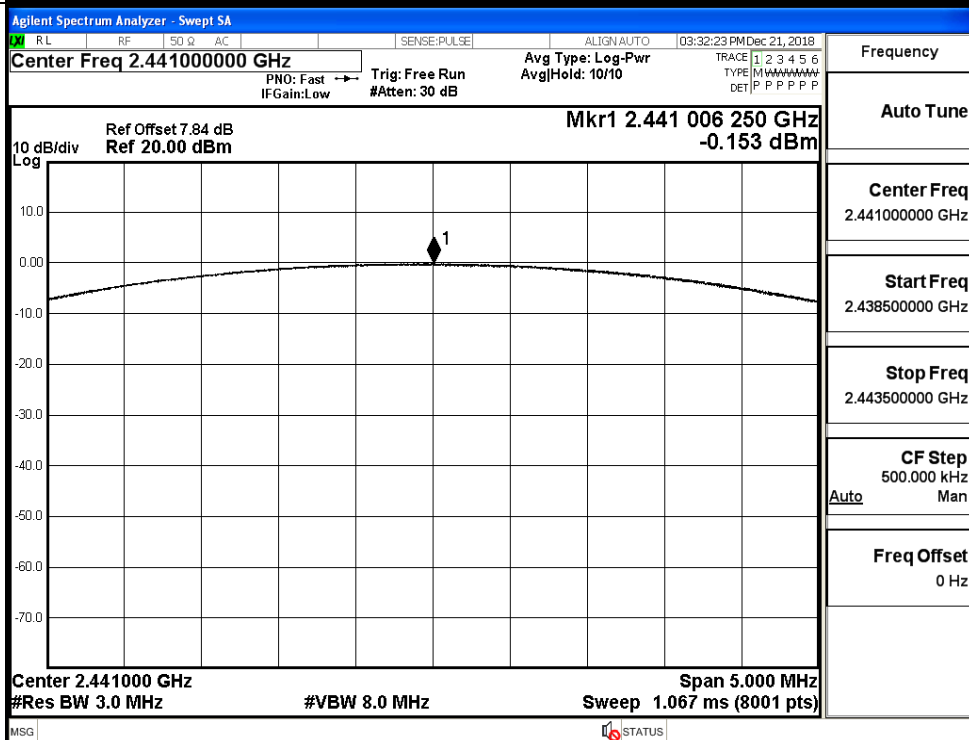
 π /4DQPSK/LCH

π /4DQPSK/MCH π /4DQPSK/HCH

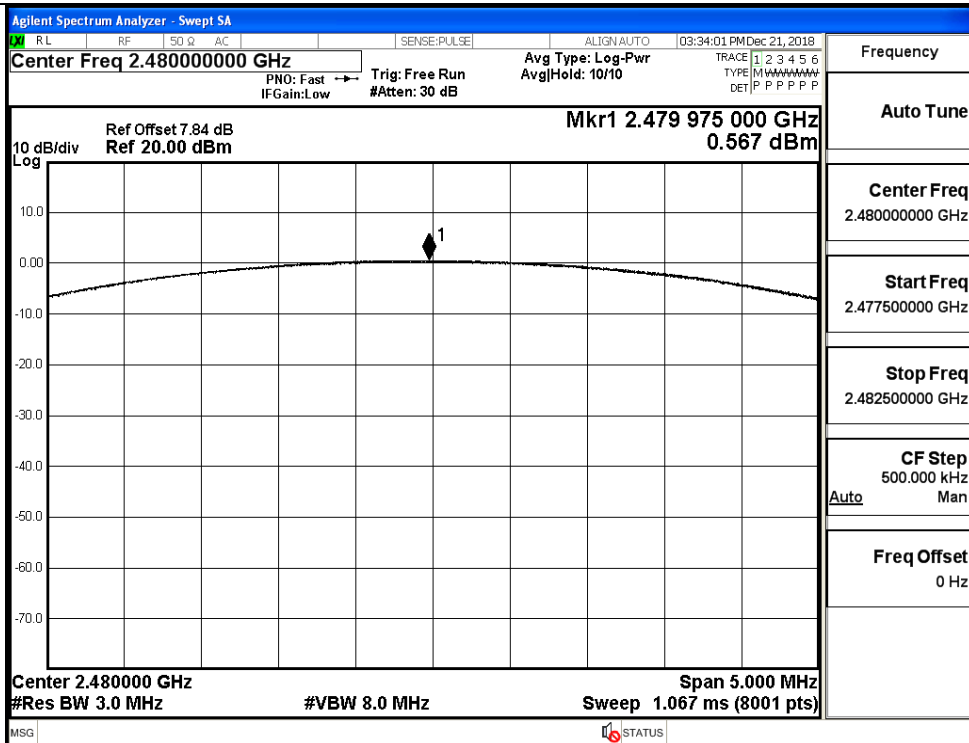
8DPSK/LCH



8DPSK/MCH



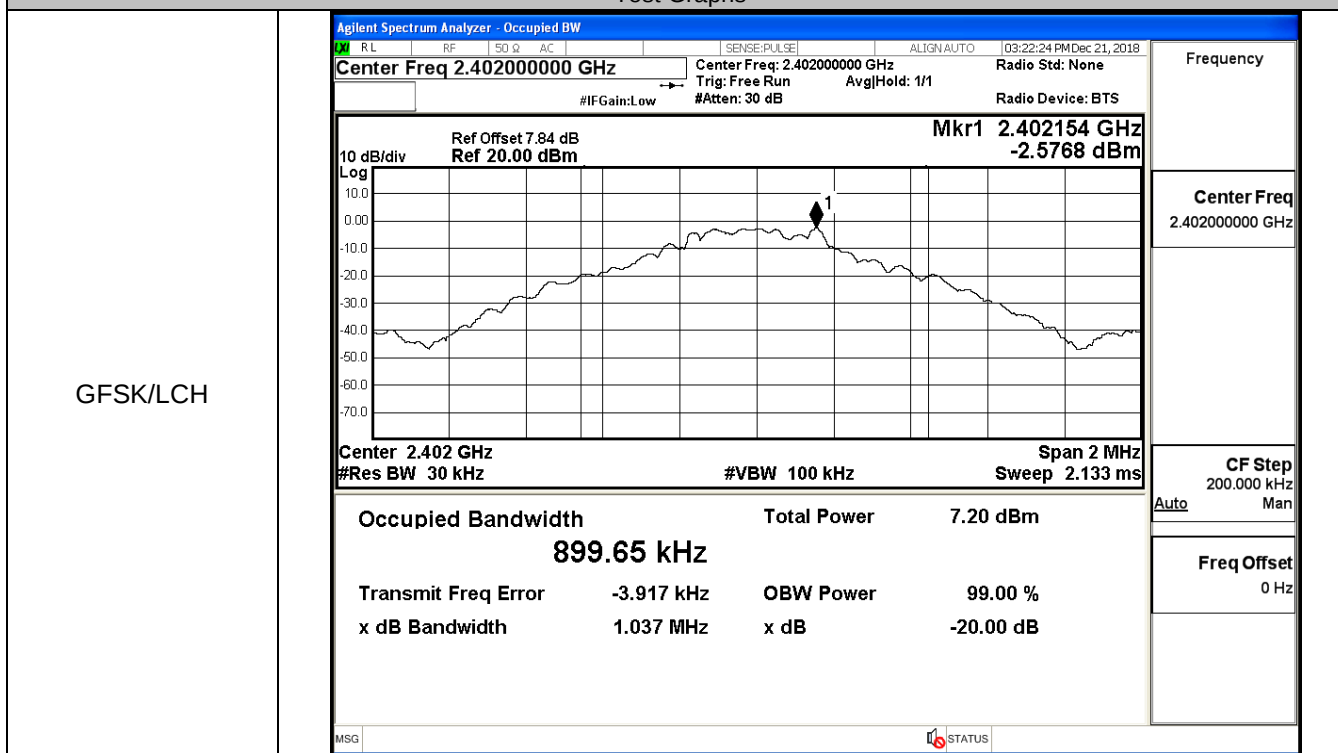
8DPSK/HCH



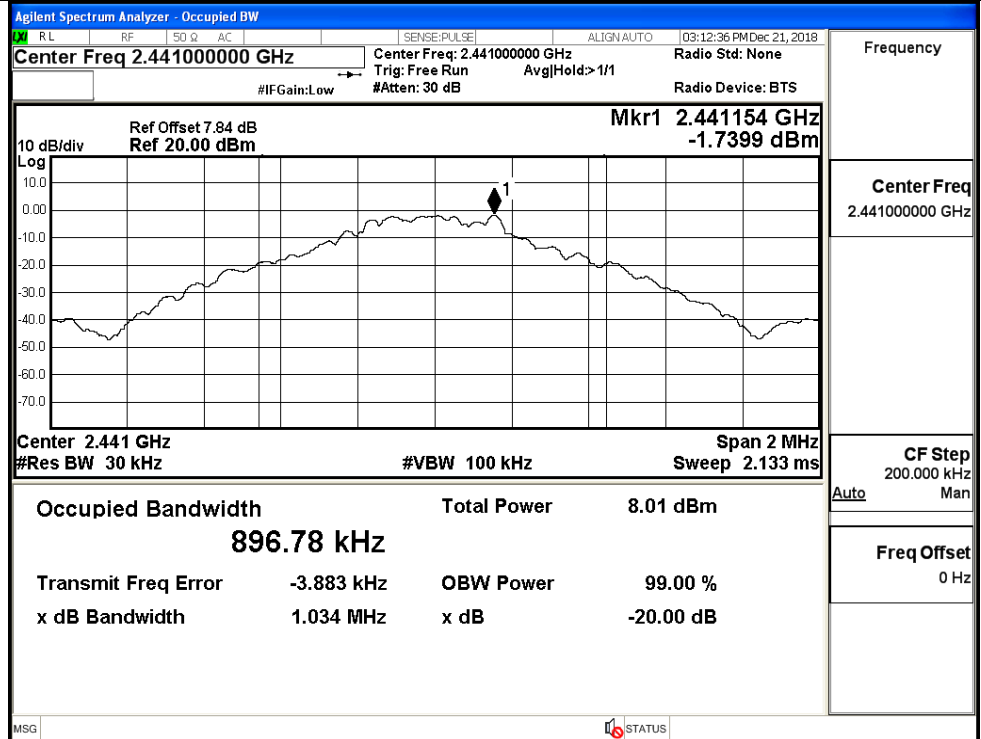
A.2 99% and 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89965	1.037	Not Specified	PASS
	MCH	0.89678	1.034	Not Specified	PASS
	HCH	0.90007	1.038	Not Specified	PASS
π /4DQPSK	LCH	1.1752	1.308	Not Specified	PASS
	MCH	1.1707	1.290	Not Specified	PASS
	HCH	1.1698	1.289	Not Specified	PASS
8DPSK	LCH	1.1853	1.306	Not Specified	PASS
	MCH	1.1801	1.296	Not Specified	PASS
	HCH	1.1793	1.295	Not Specified	PASS

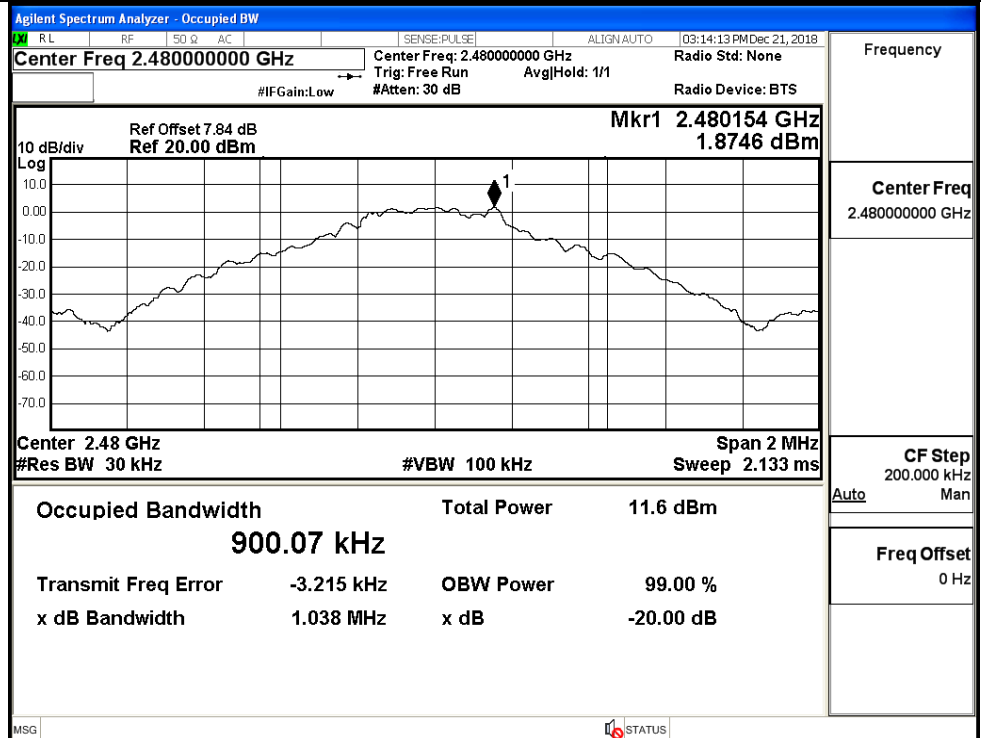
Test Graphs

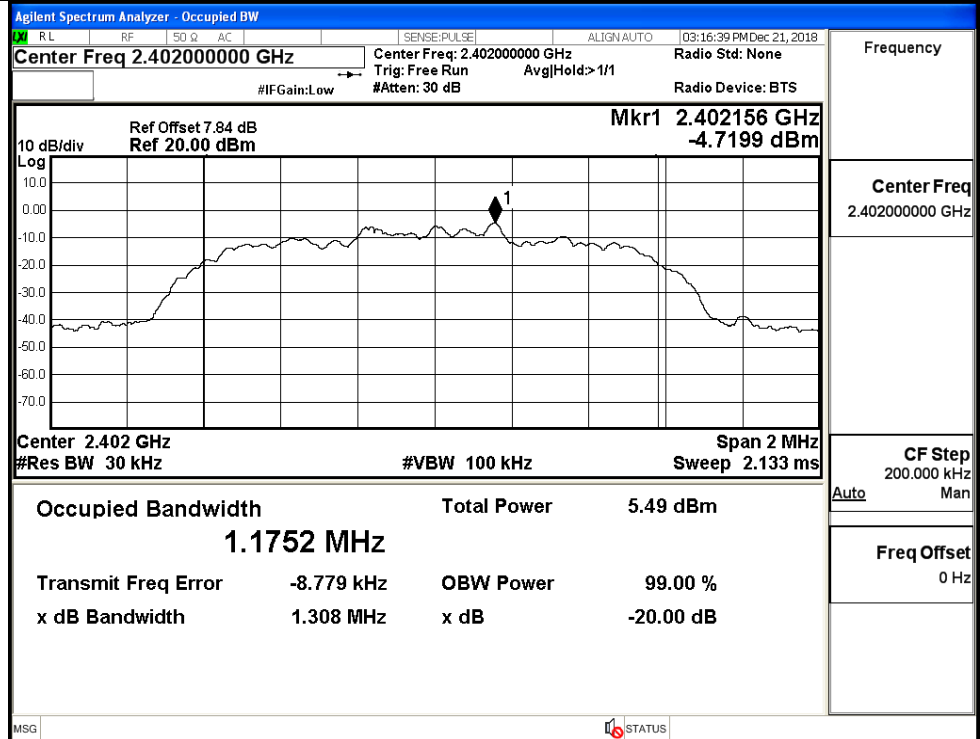
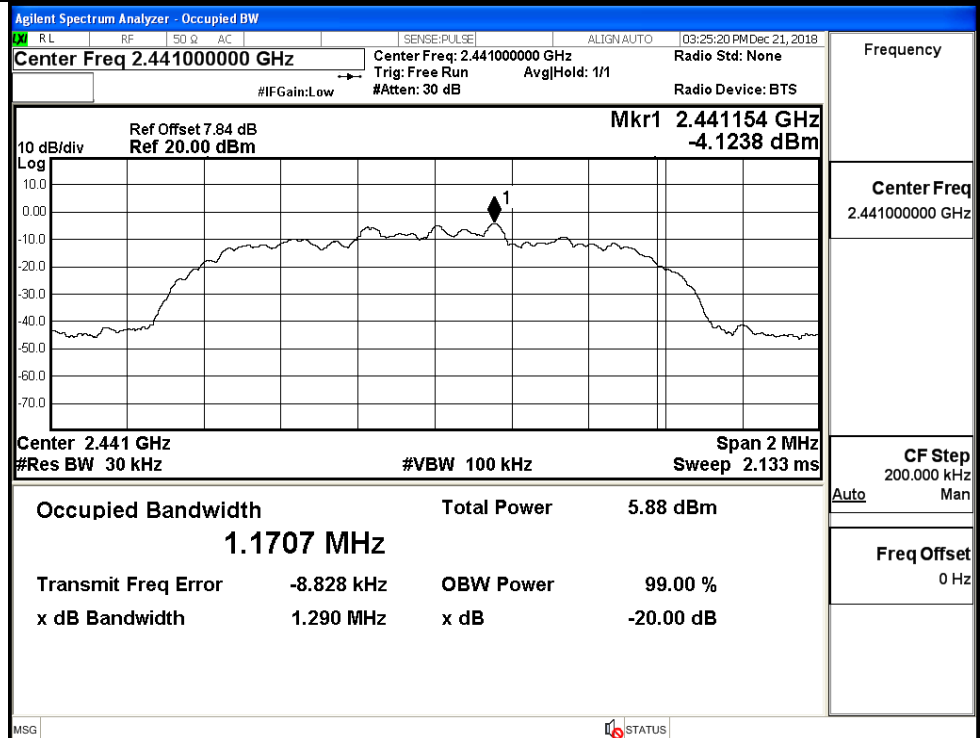


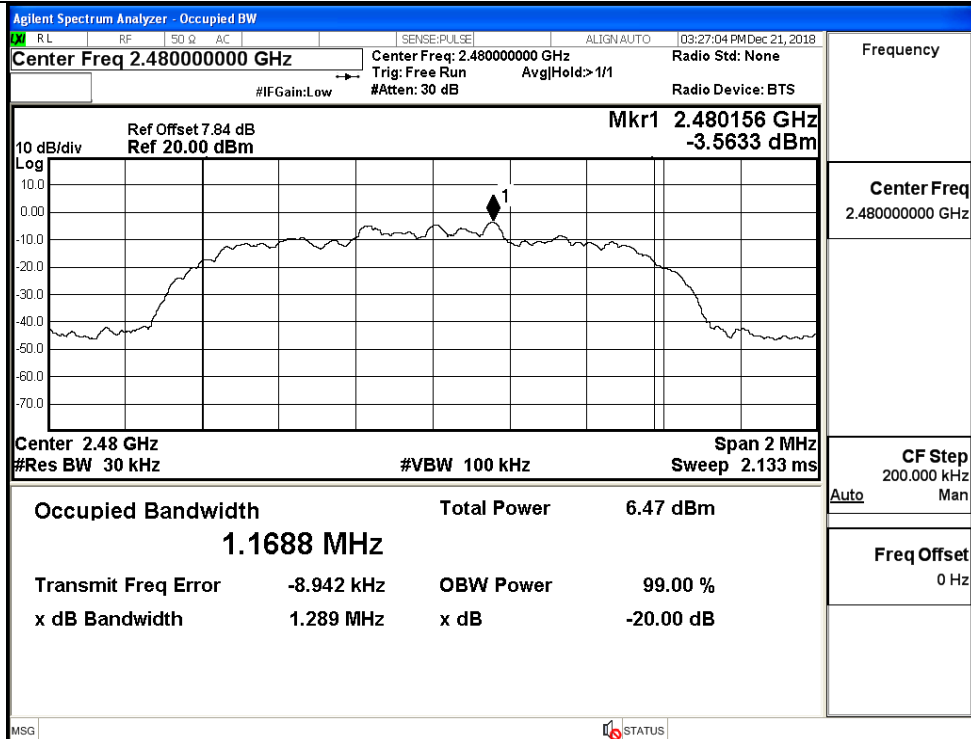
GFSK/MCH



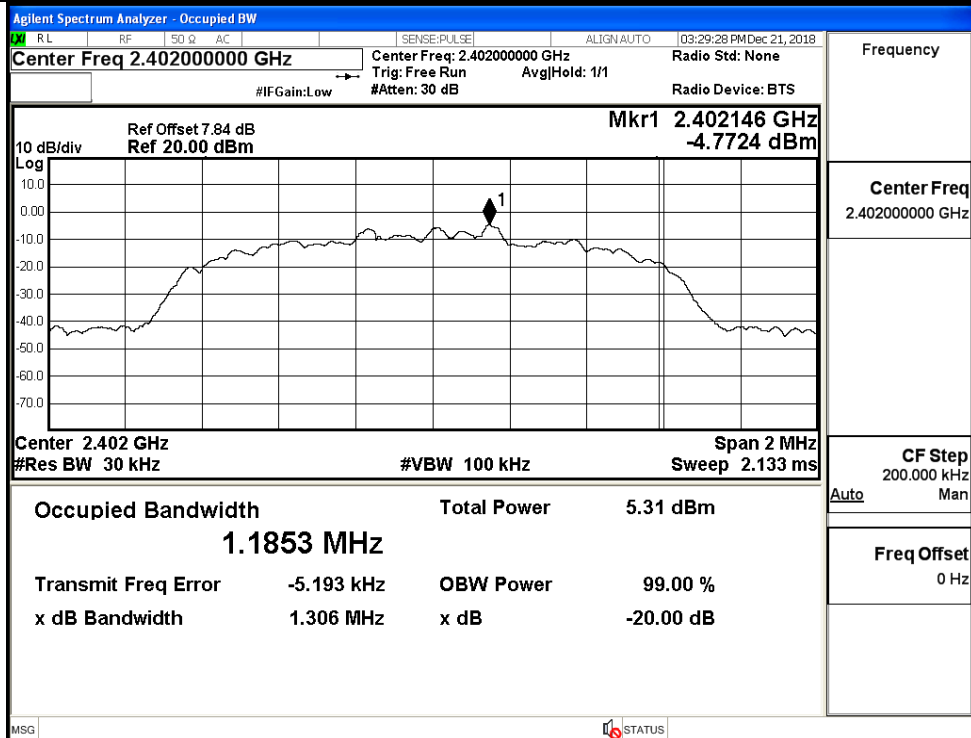
GFSK/HCH



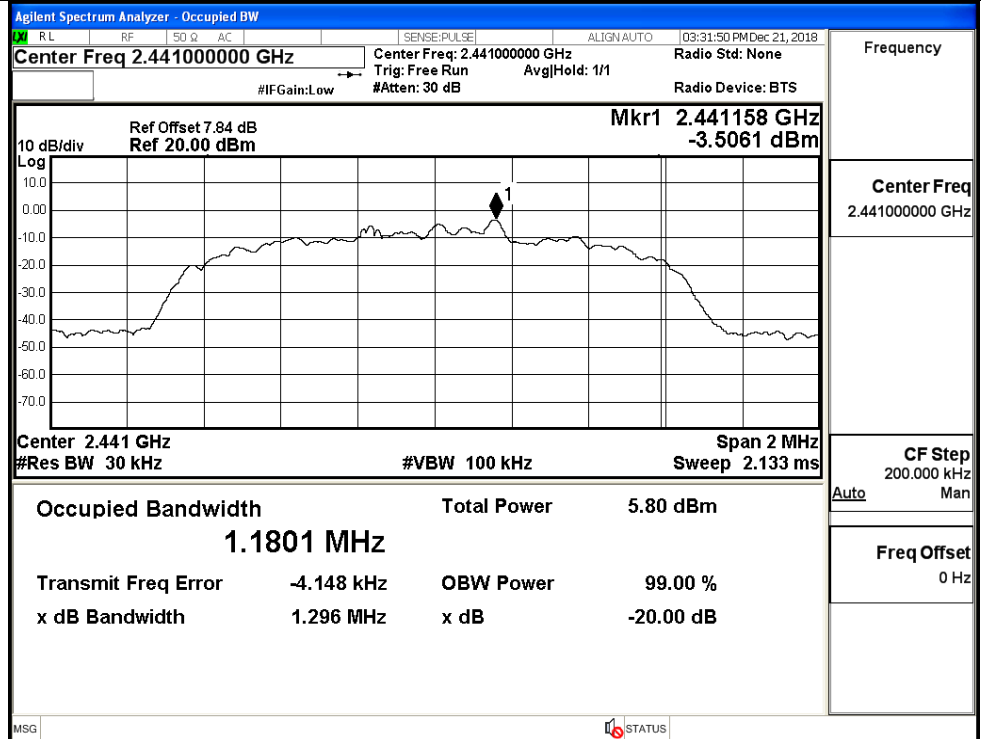
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

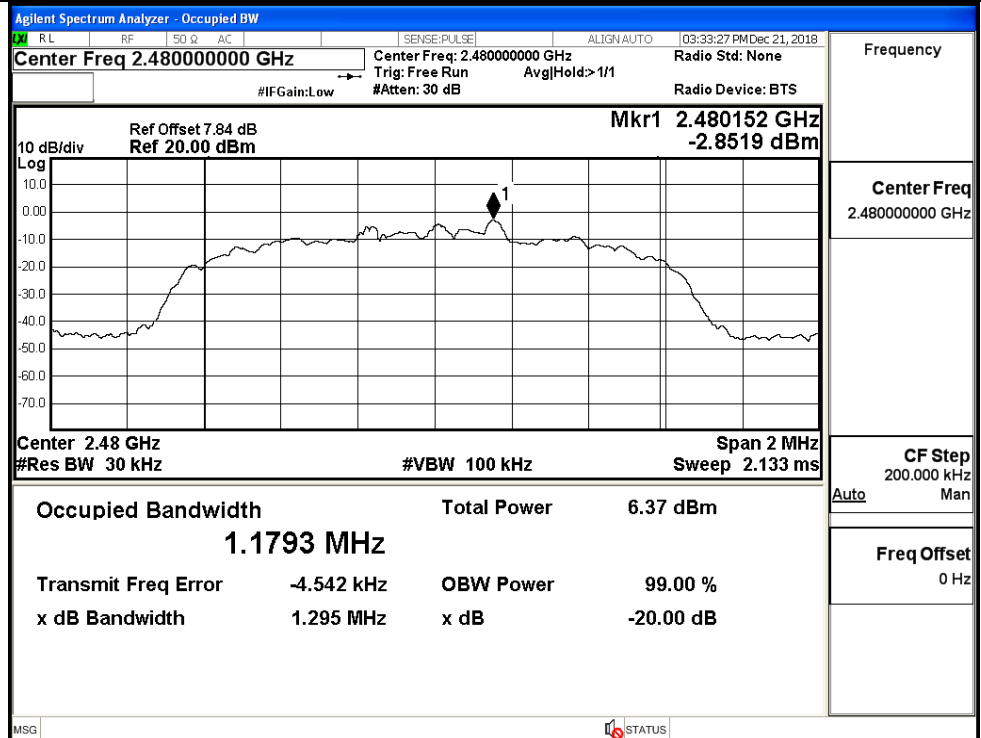
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

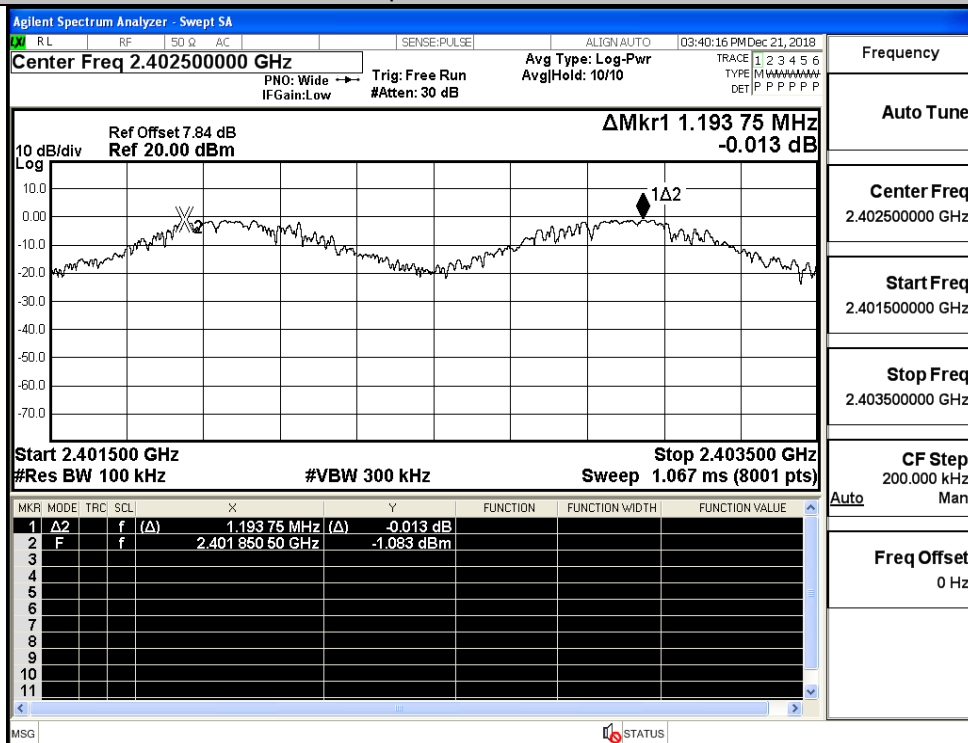


A.3 Carrier Frequency Separation

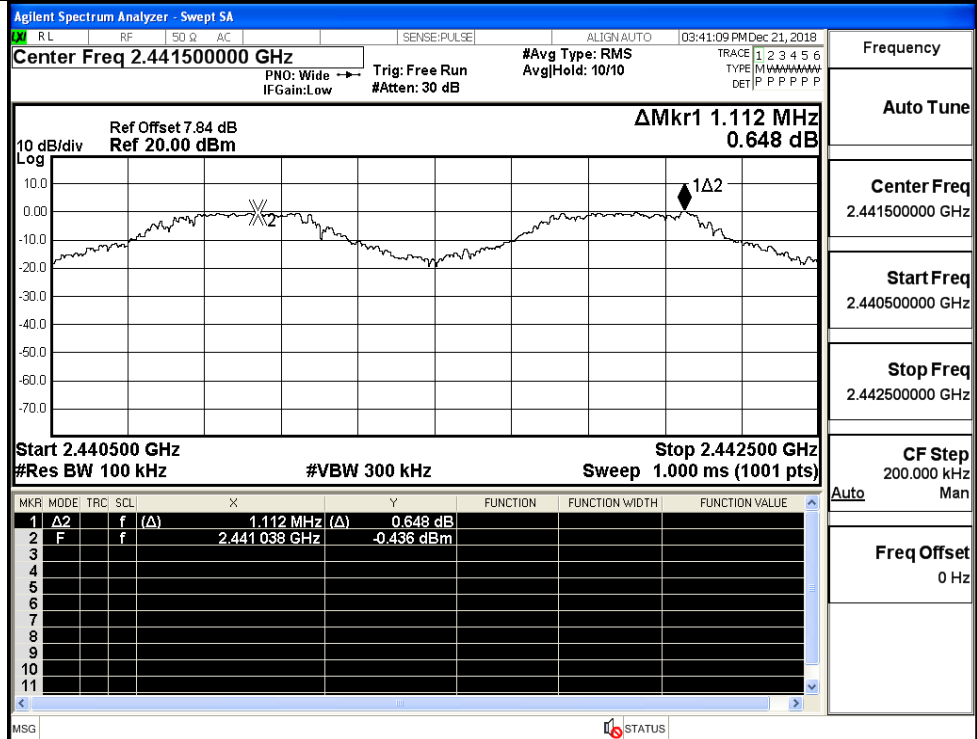
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.194	0.692	PASS
	MCH	1.112	0.692	PASS
	HCH	1.138	0.692	PASS
π /4DQPSK	LCH	1.014	0.872	PASS
	MCH	1.004	0.872	PASS
	HCH	1.108	0.872	PASS
8DPSK	LCH	1.226	0.871	PASS
	MCH	0.982	0.871	PASS
	HCH	1.242	0.871	PASS

Test Graphs

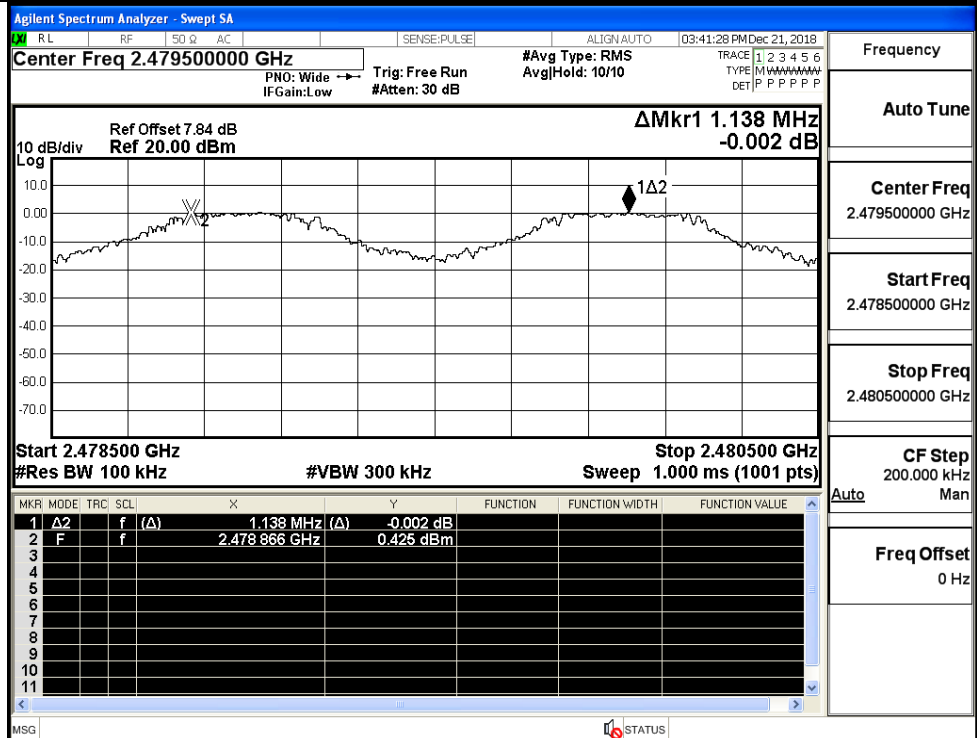
GFSK/LCH

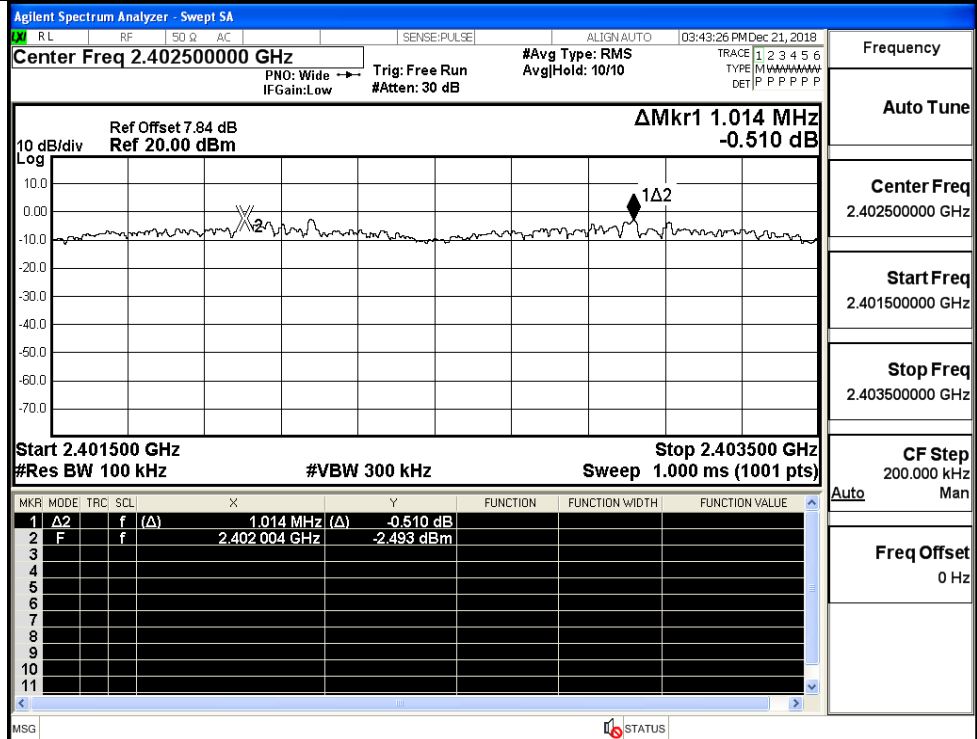
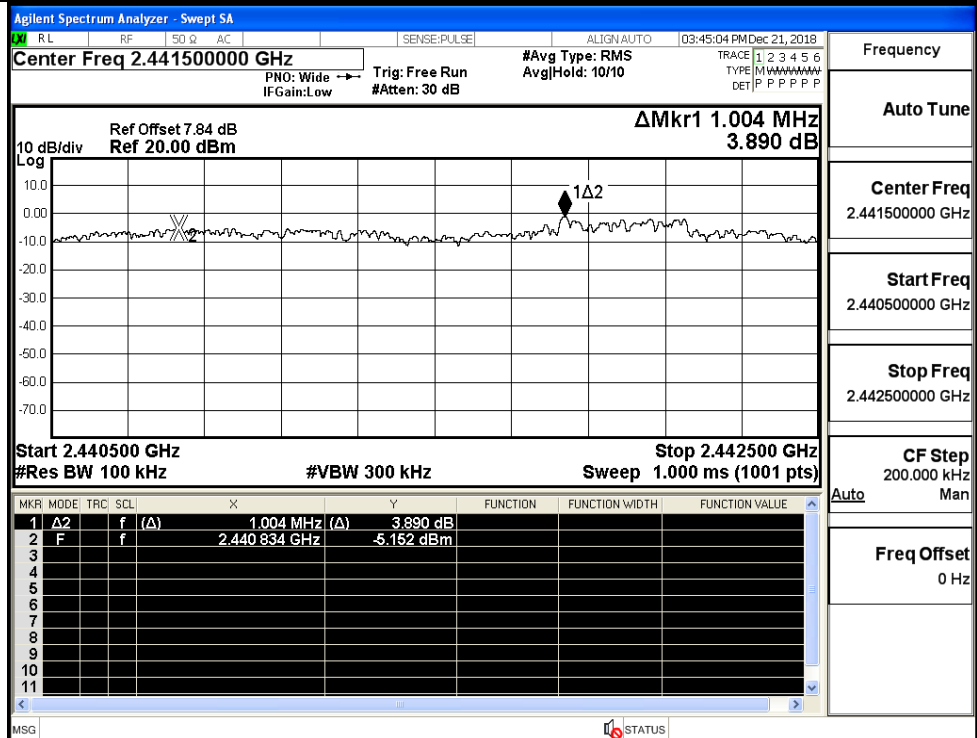


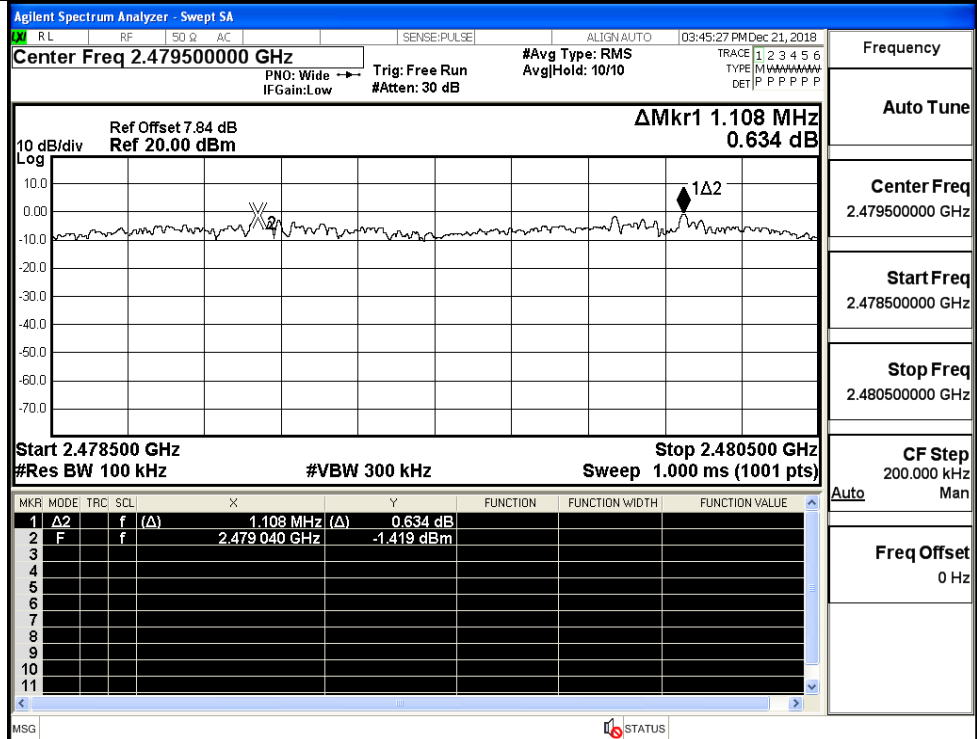
GFSK/MCH



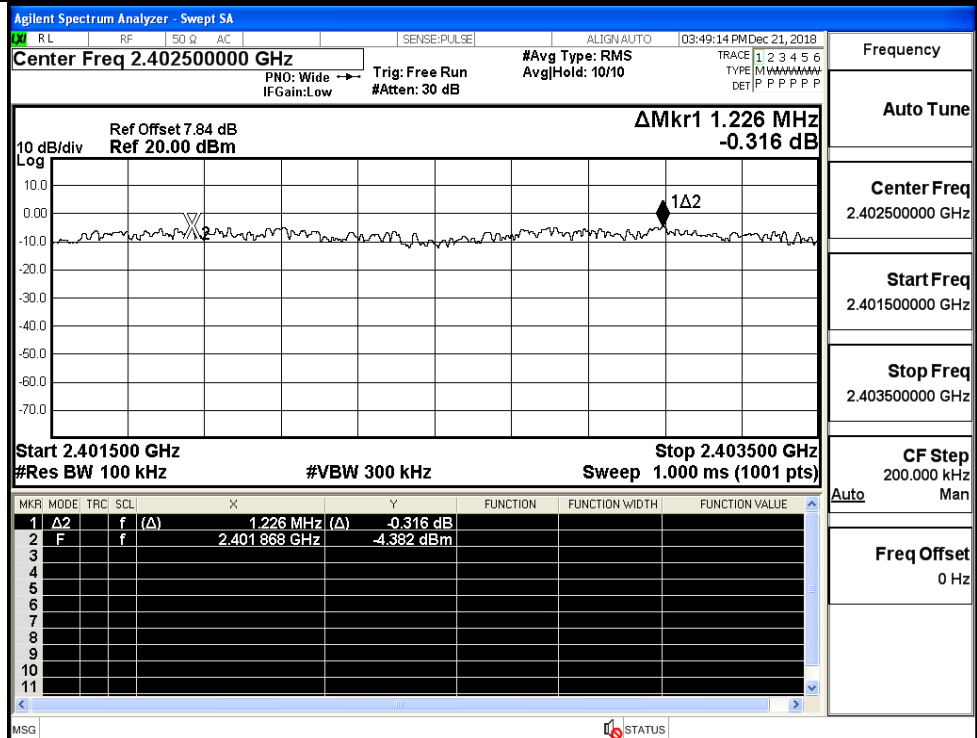
GFSK/HCH



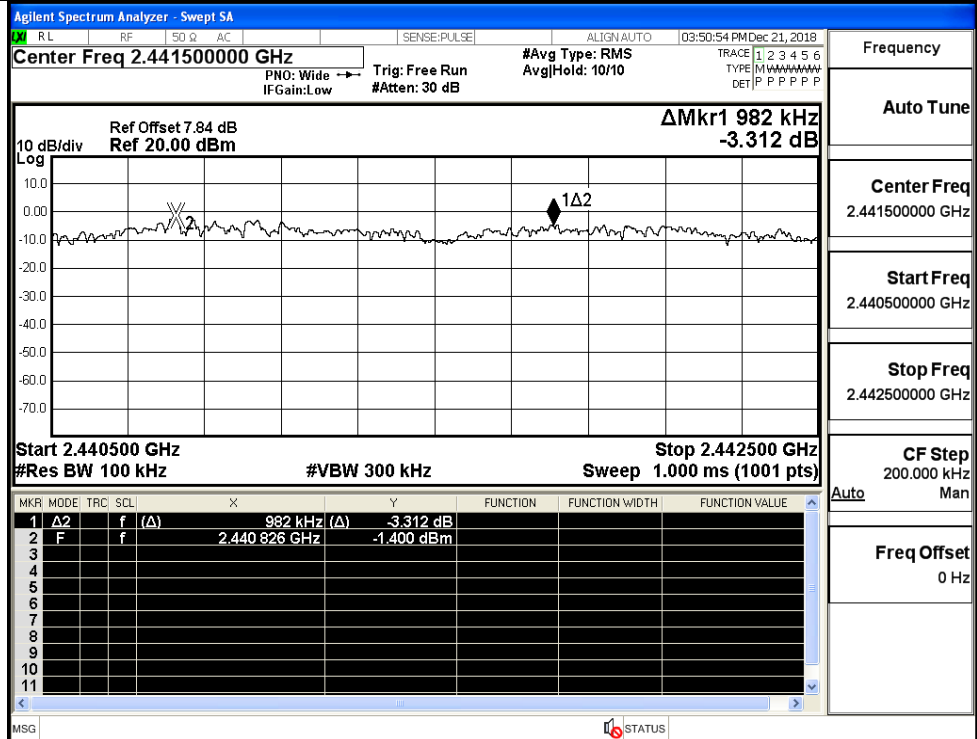
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

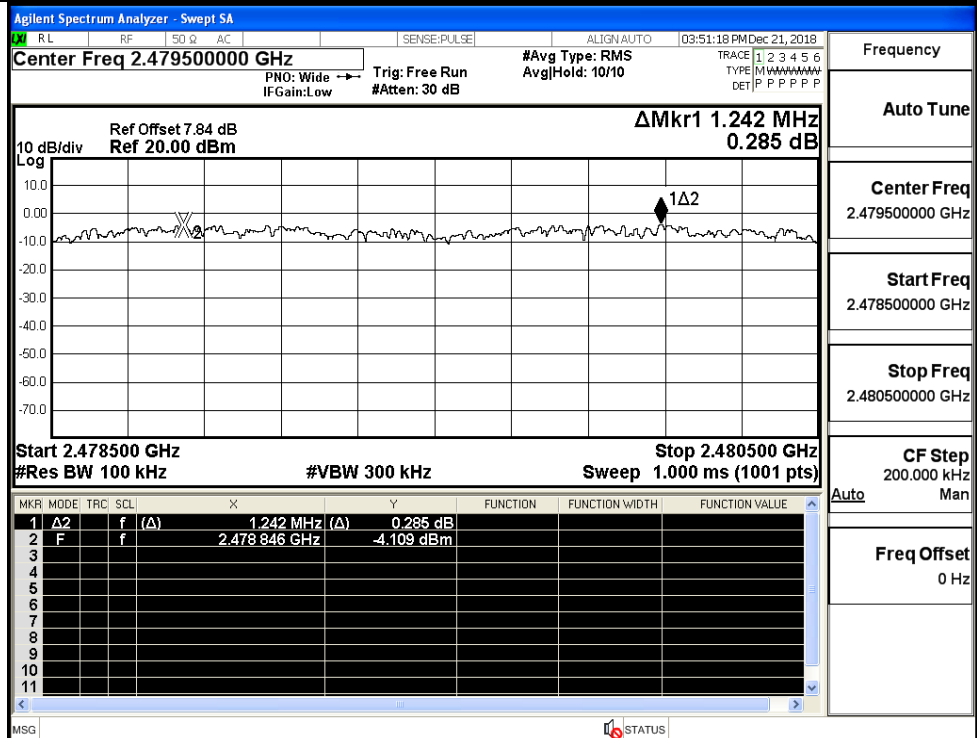
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

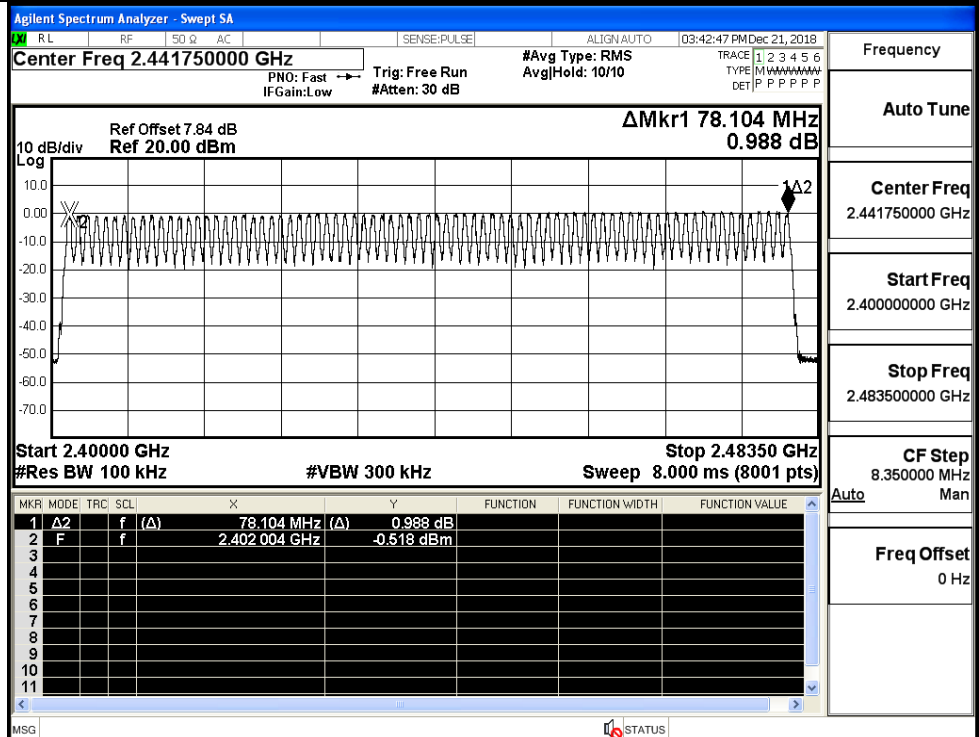
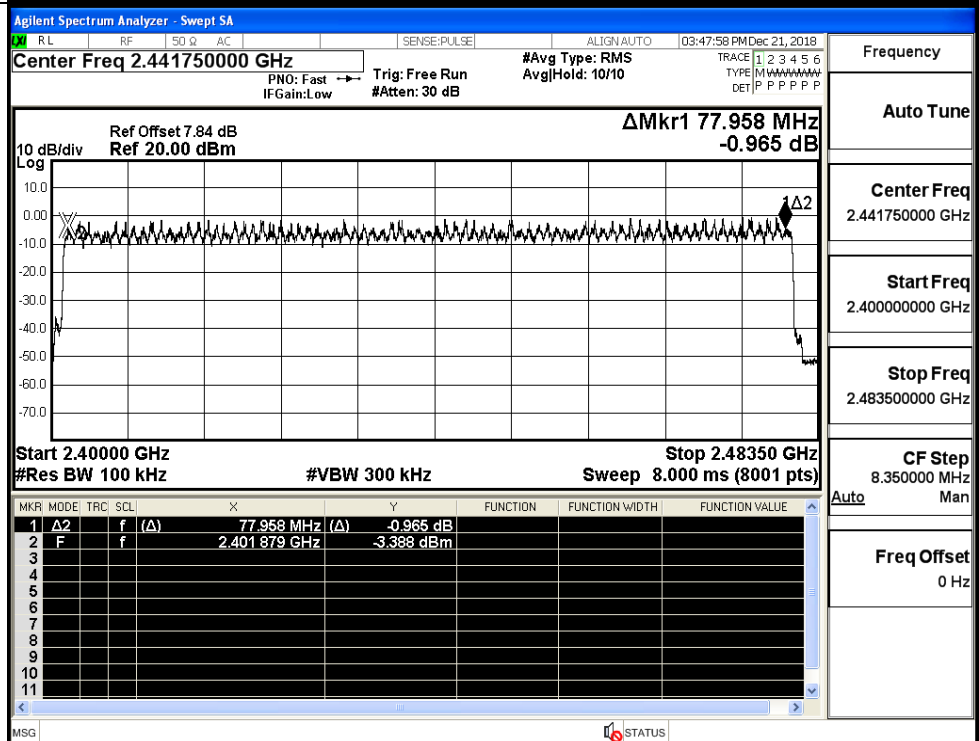


A.4 Hopping Channel Number

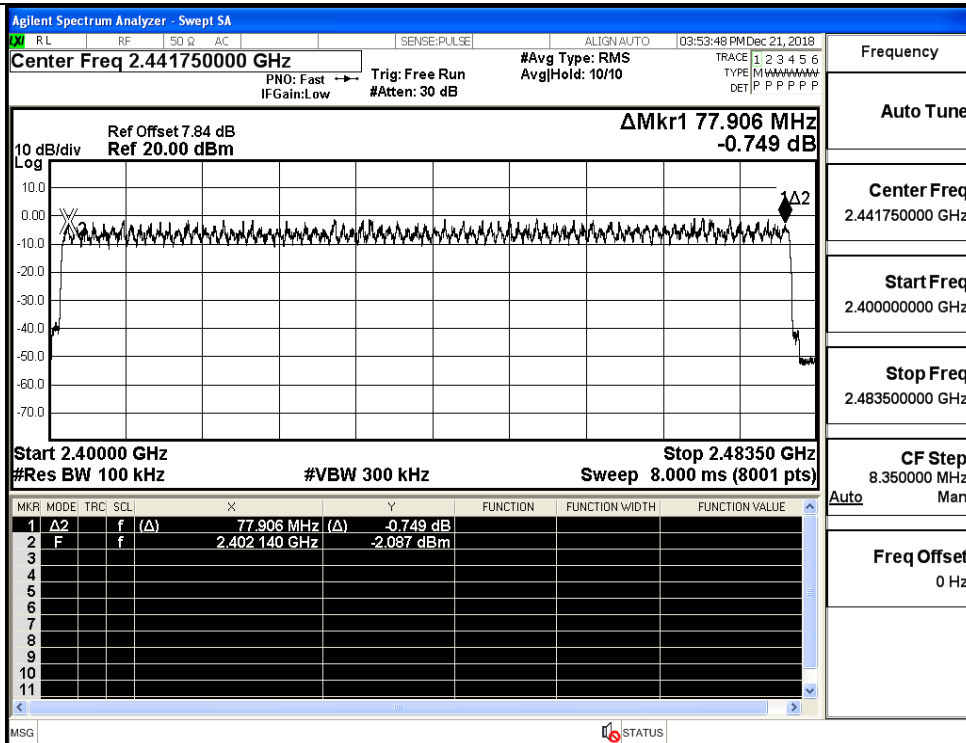
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

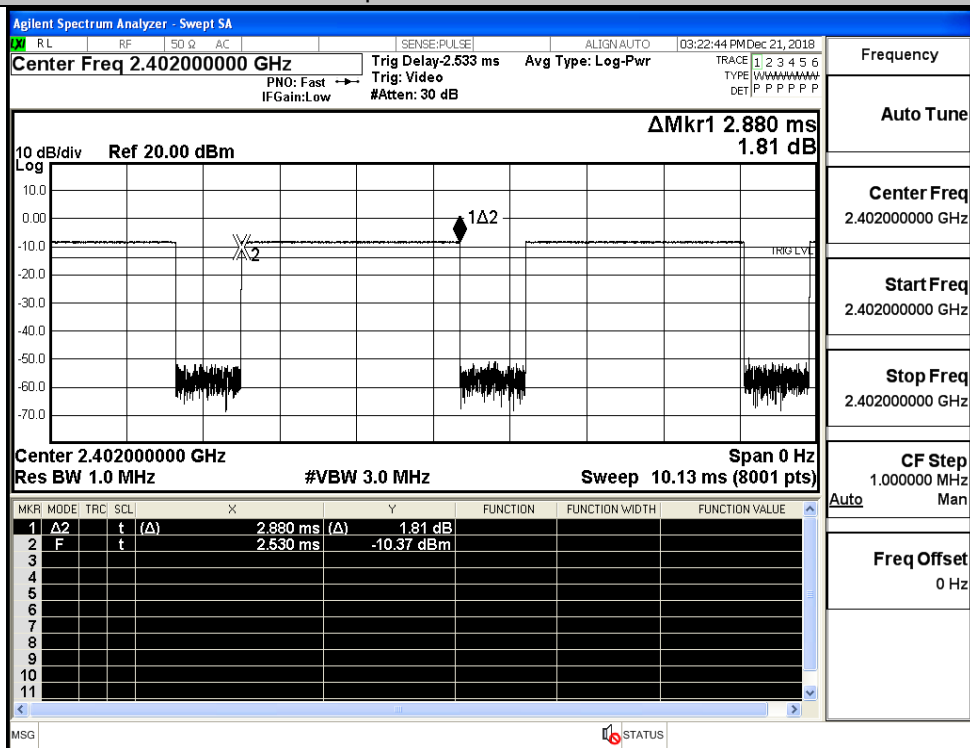


A.5 Dwell Time

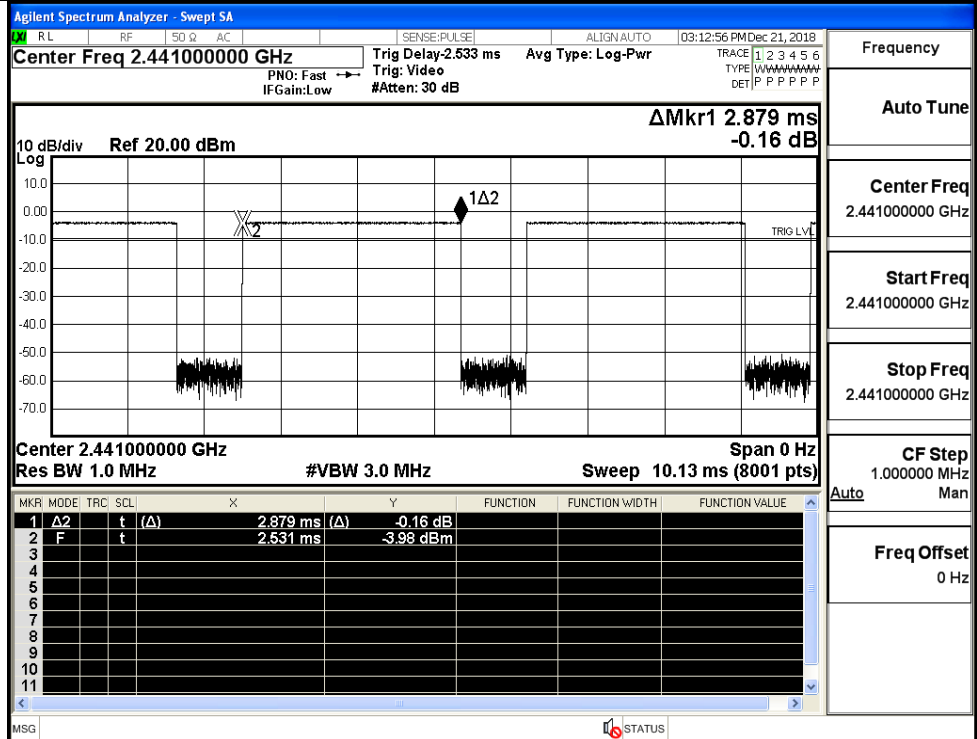
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

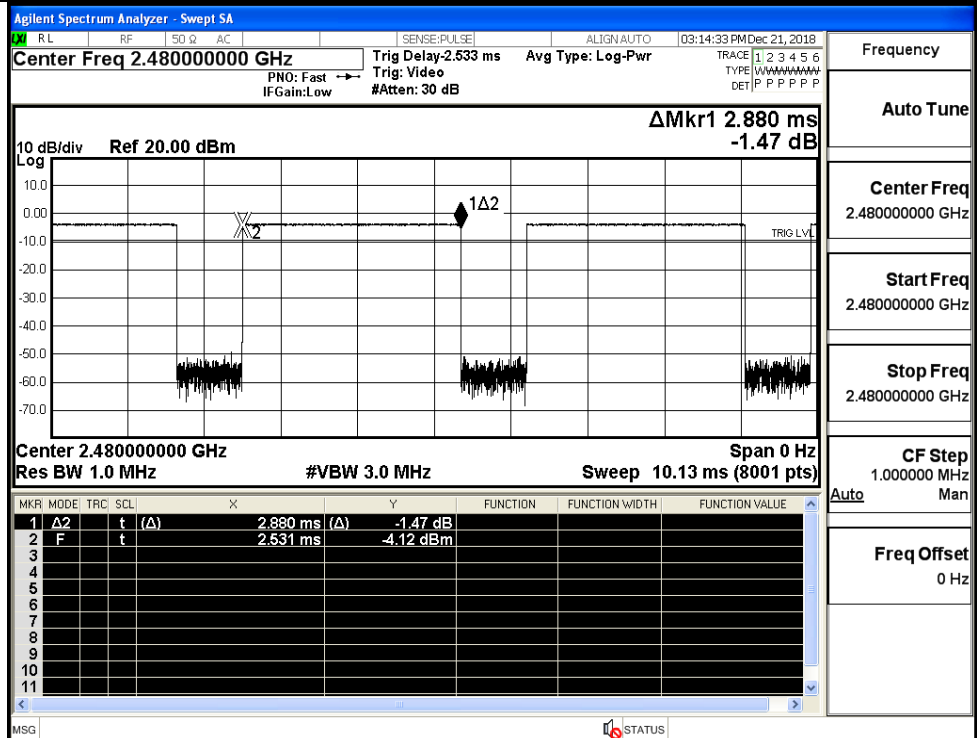
GFSK_DH5/LCH



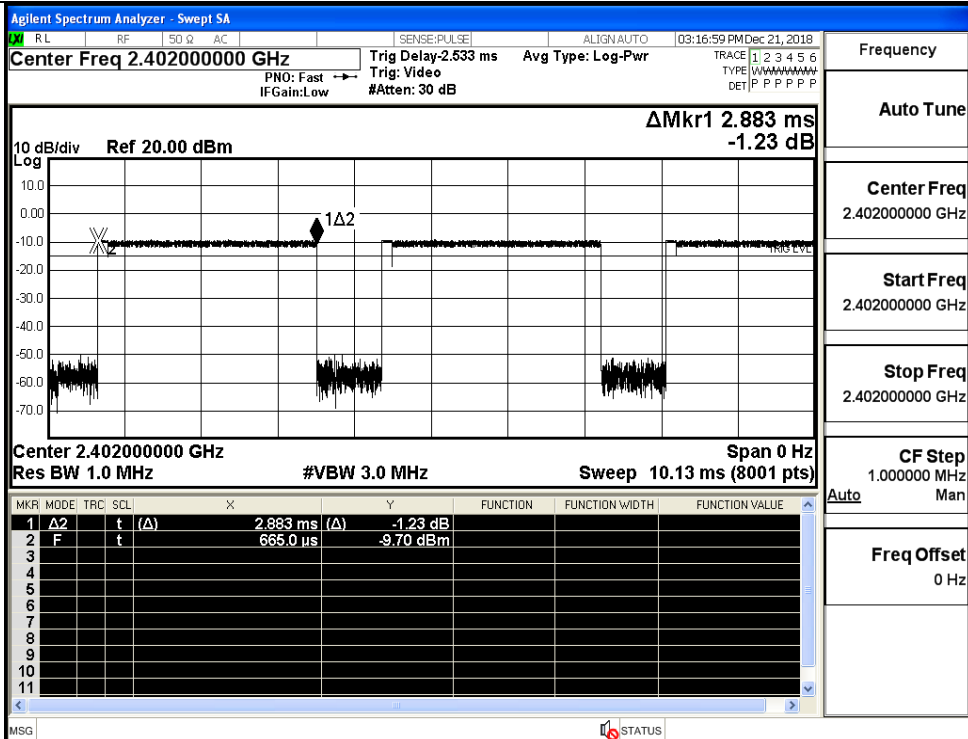
GFSK_DH5/MCH



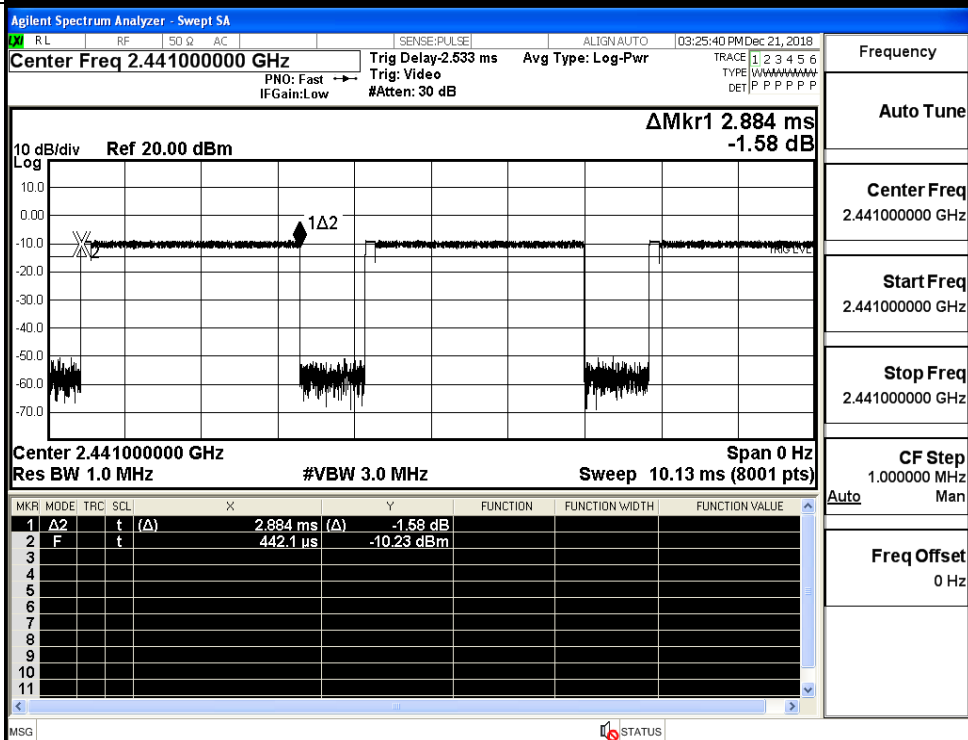
GFSK_DH5/HCH



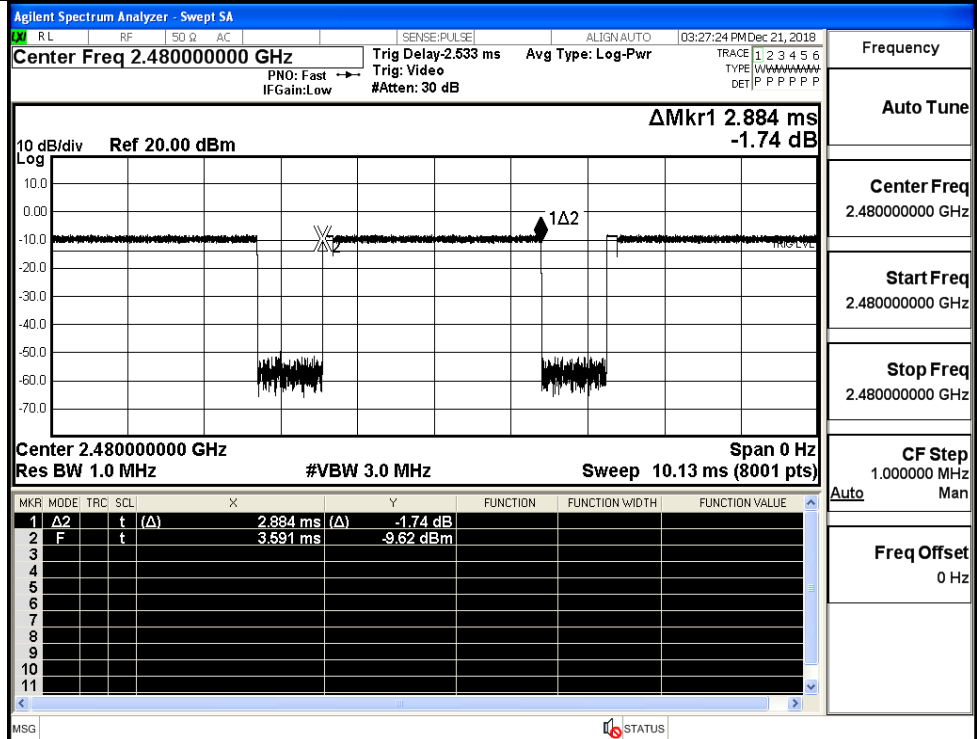
$\pi/4$ DQPSK
_2DH5/LCH



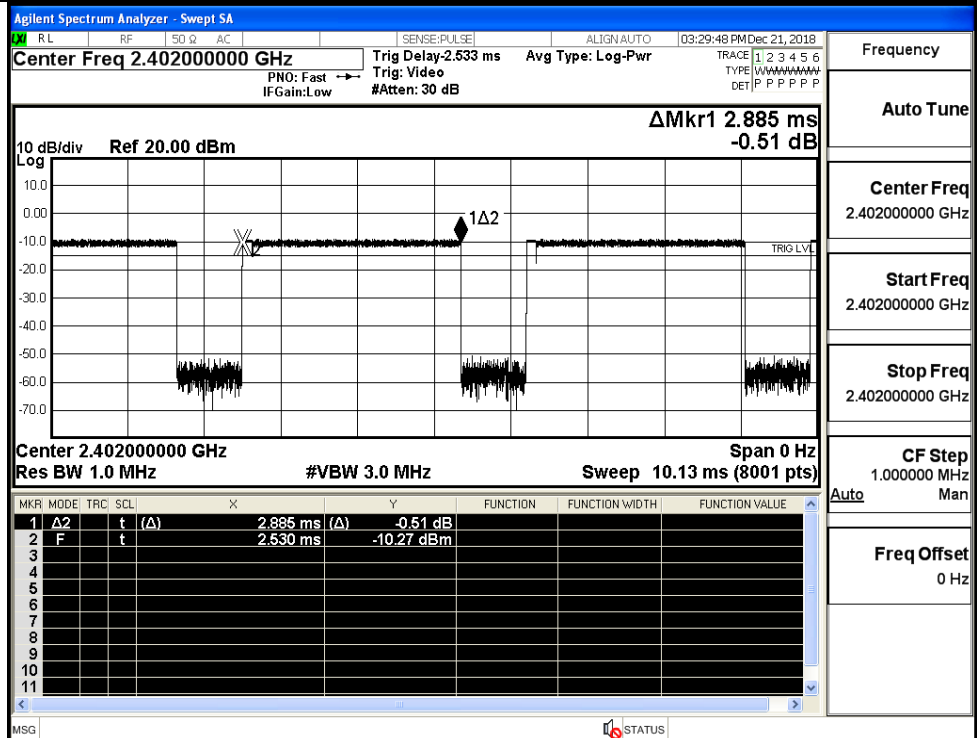
$\pi/4$ DQPSK
_2DH5/MCH



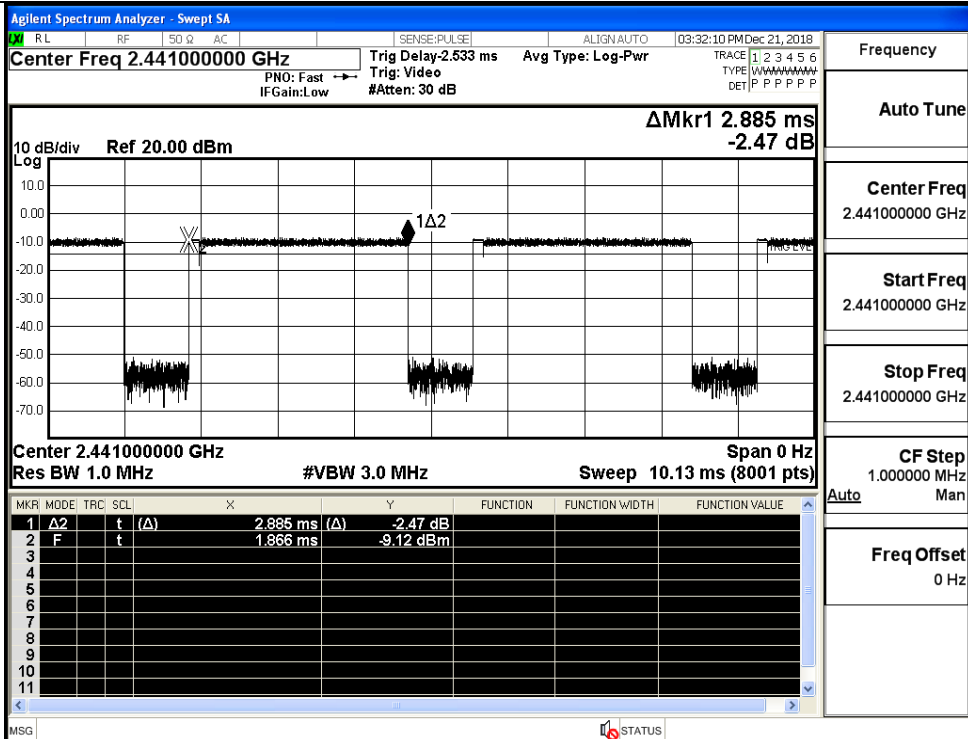
$\pi/4$ DQPSK
_2DH5/HCH



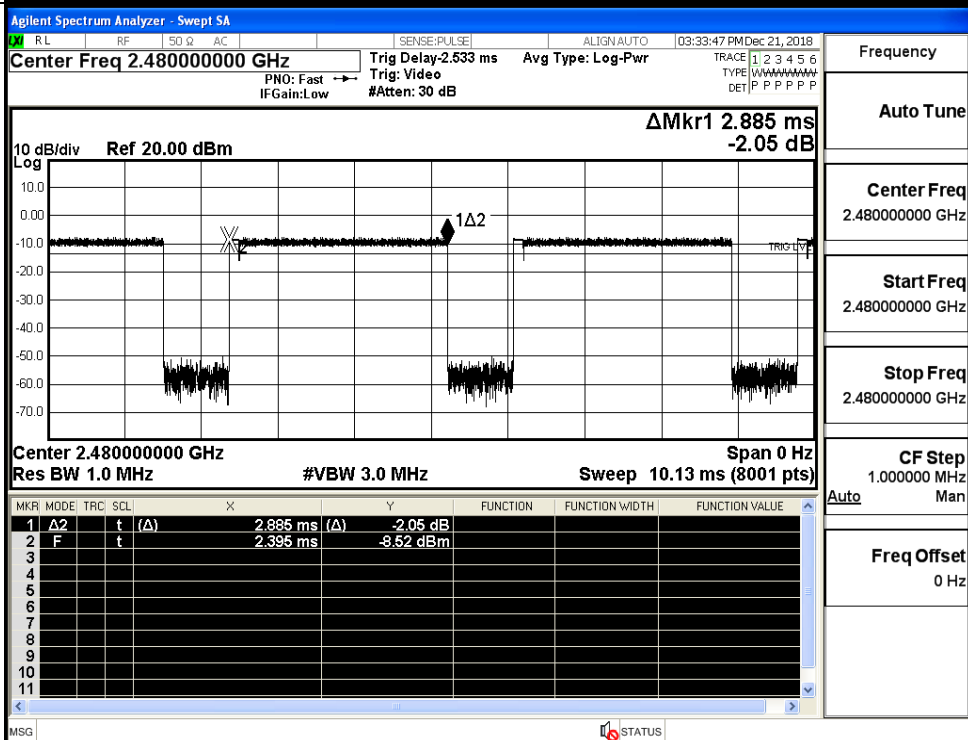
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

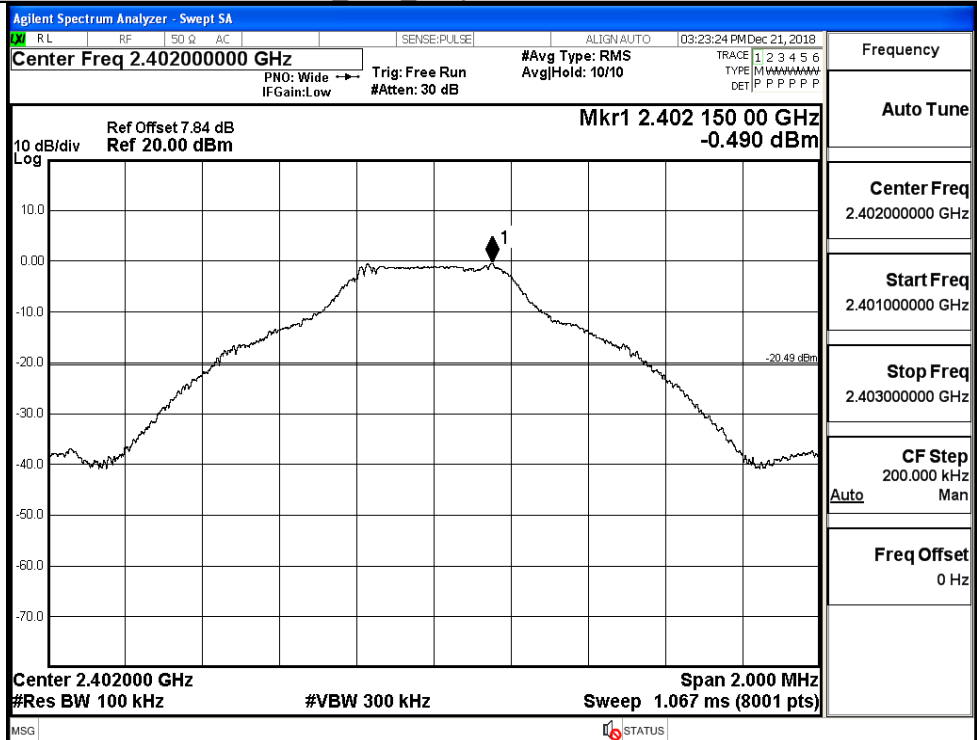


A.6 RF Conducted Spurious Emissions

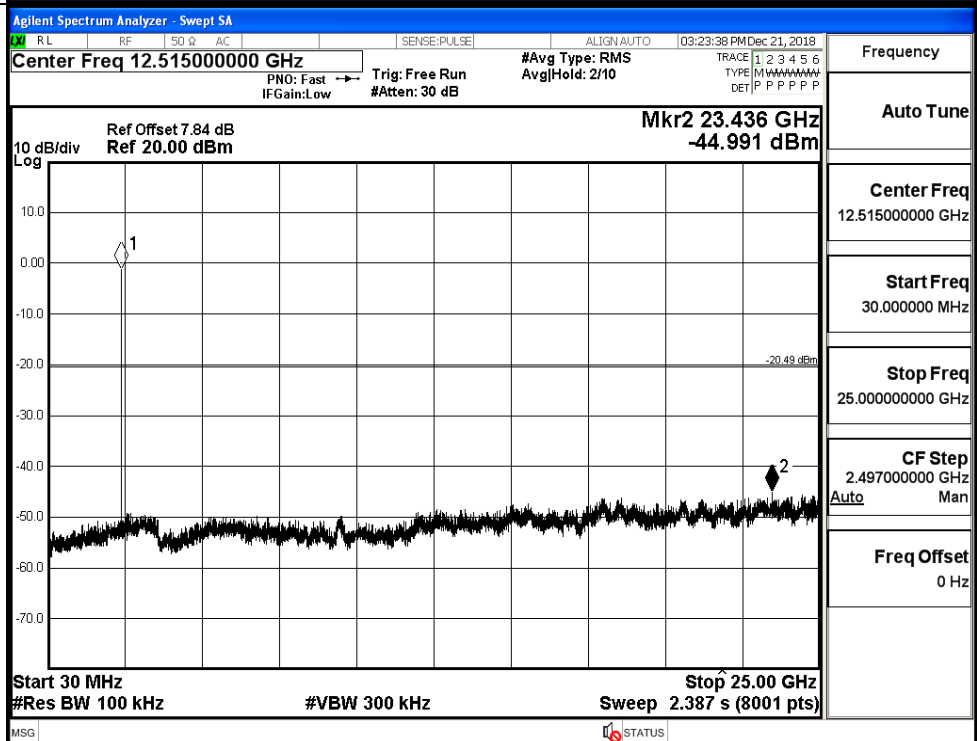
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.49	-44.991	-20.490	PASS
	MCH	3.88	-45.445	-16.120	PASS
	HCH	3.856	-45.021	-16.144	PASS
$\pi/4$ DQPSK	LCH	-1.761	-44.642	-21.761	PASS
	MCH	-1.769	-44.045	-21.769	PASS
	HCH	-0.981	-44.000	-20.981	PASS
8DPSK	LCH	-1.758	-45.034	-21.758	PASS
	MCH	-1.358	-45.052	-21.358	PASS
	HCH	-0.662	-44.599	-20.662	PASS

GFSK LCH Graphs

Pref

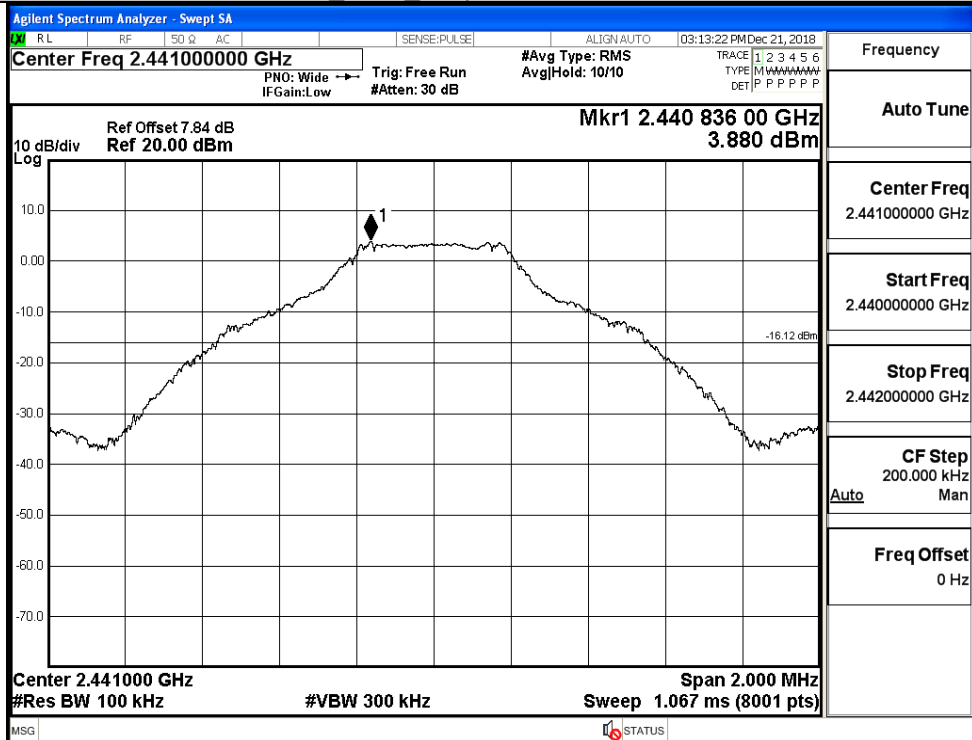


Puw

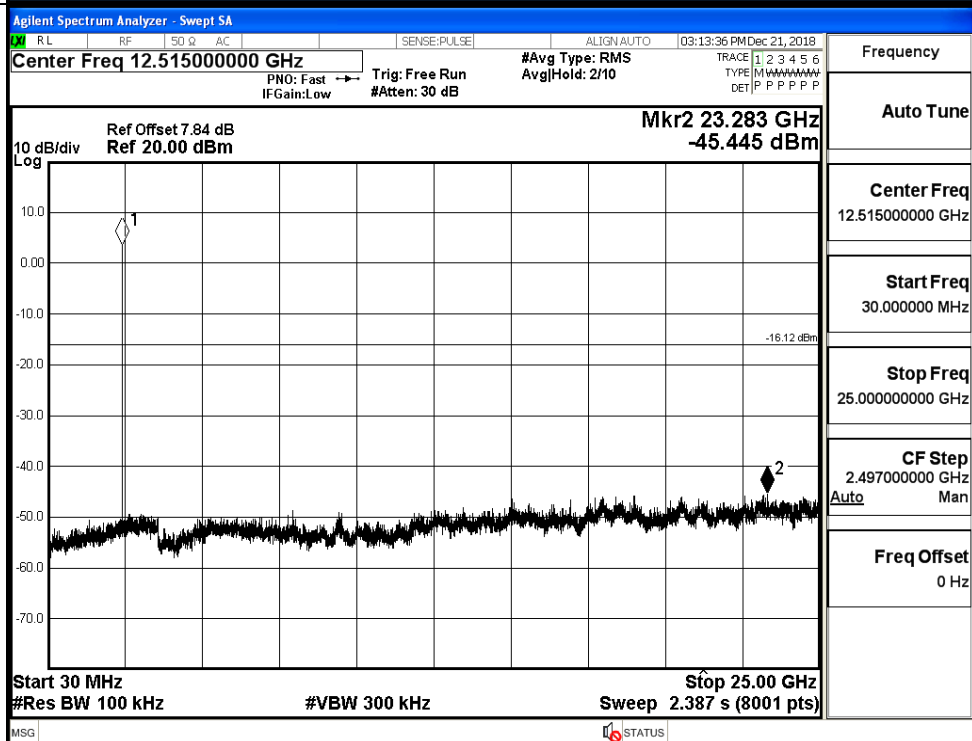


GFSK_MCH_Graphs

Pref

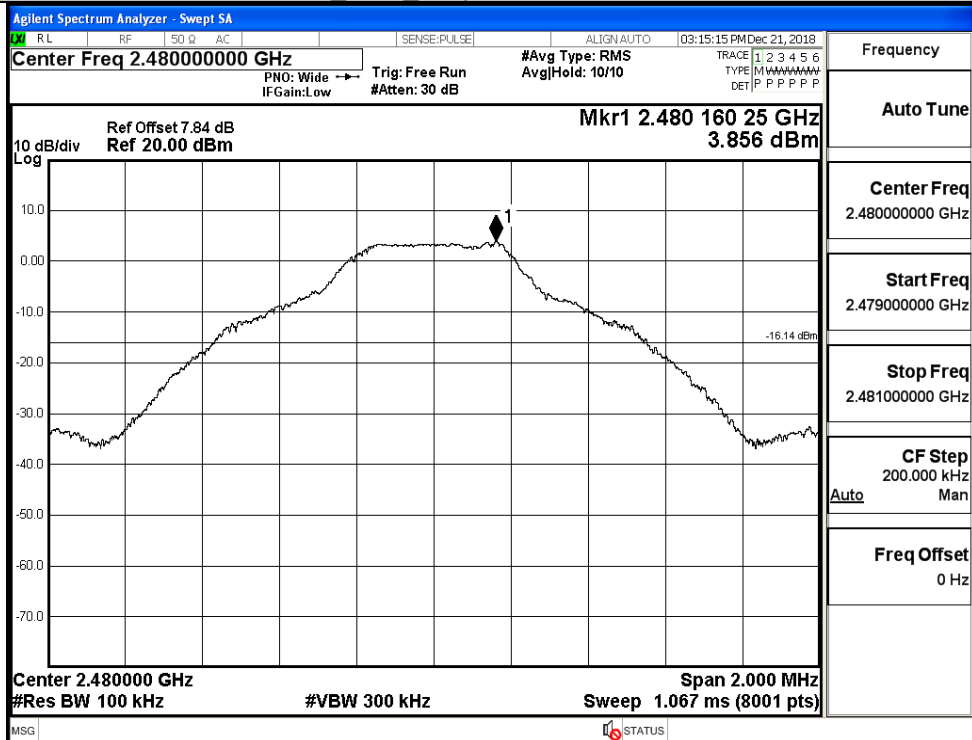


Puw

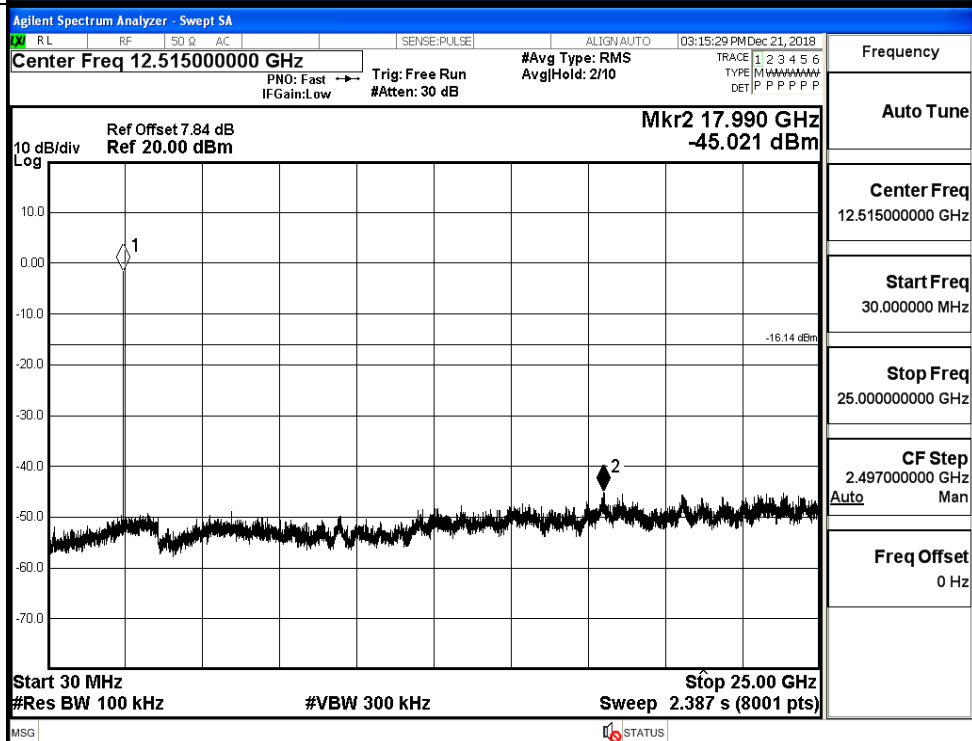


GFSK_HCH_Graphs

Pref

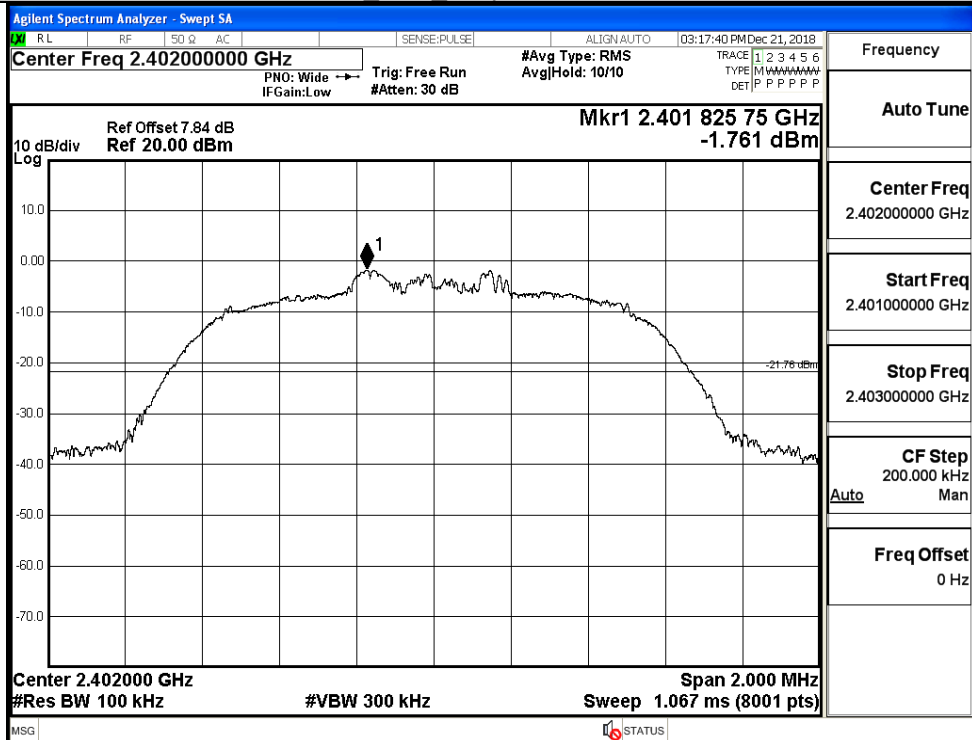


Puw

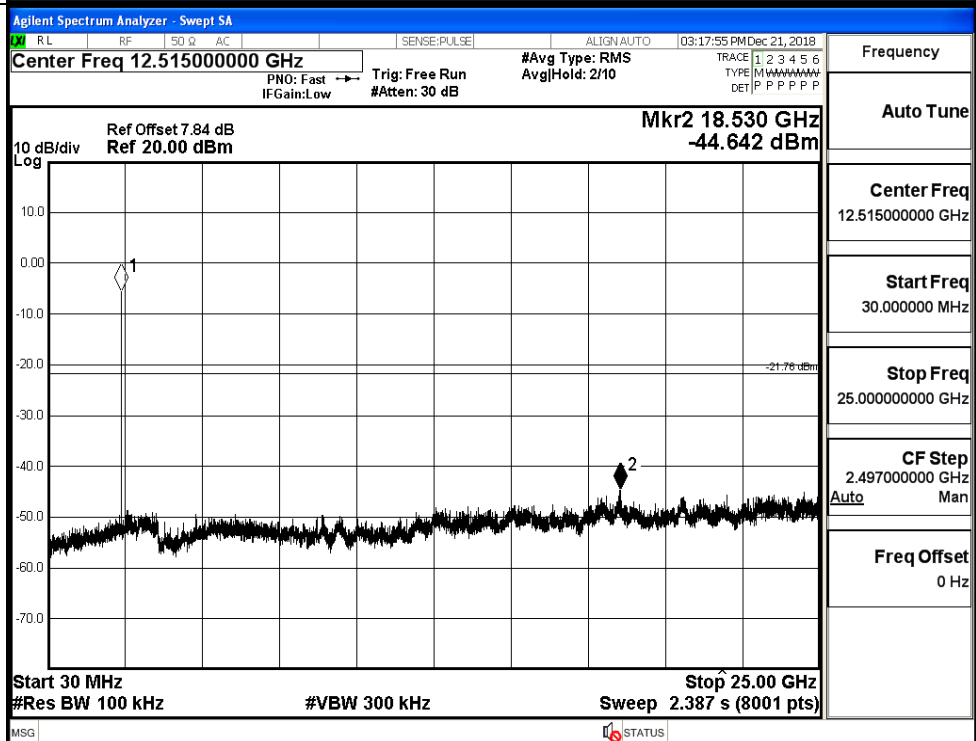


π /4DQPSK LCH_Graphs

Pref

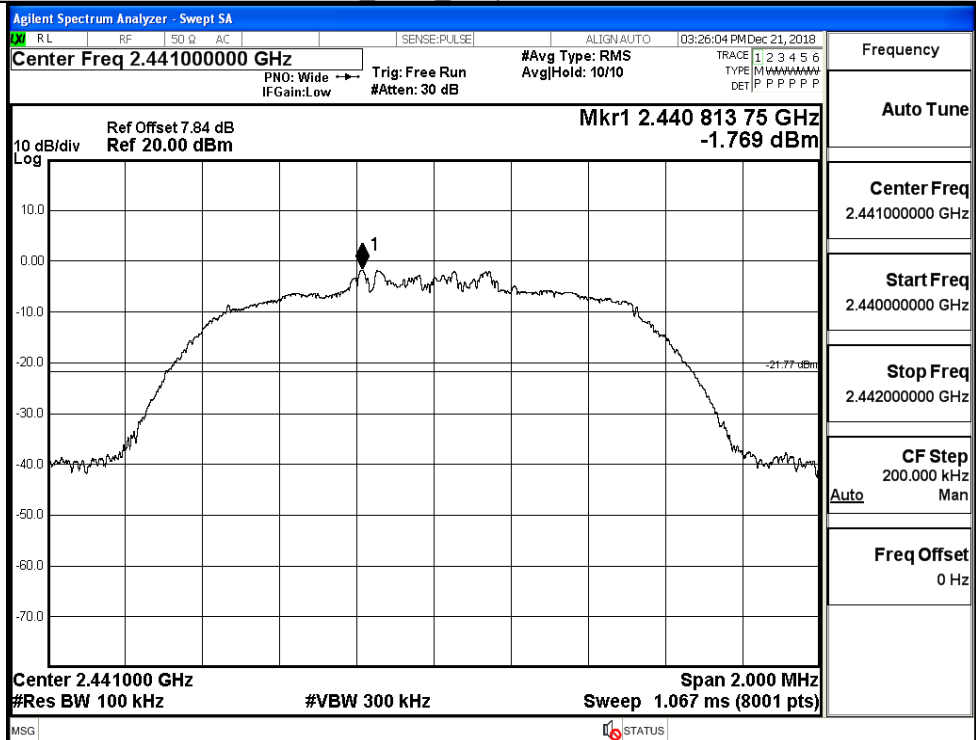


Puw

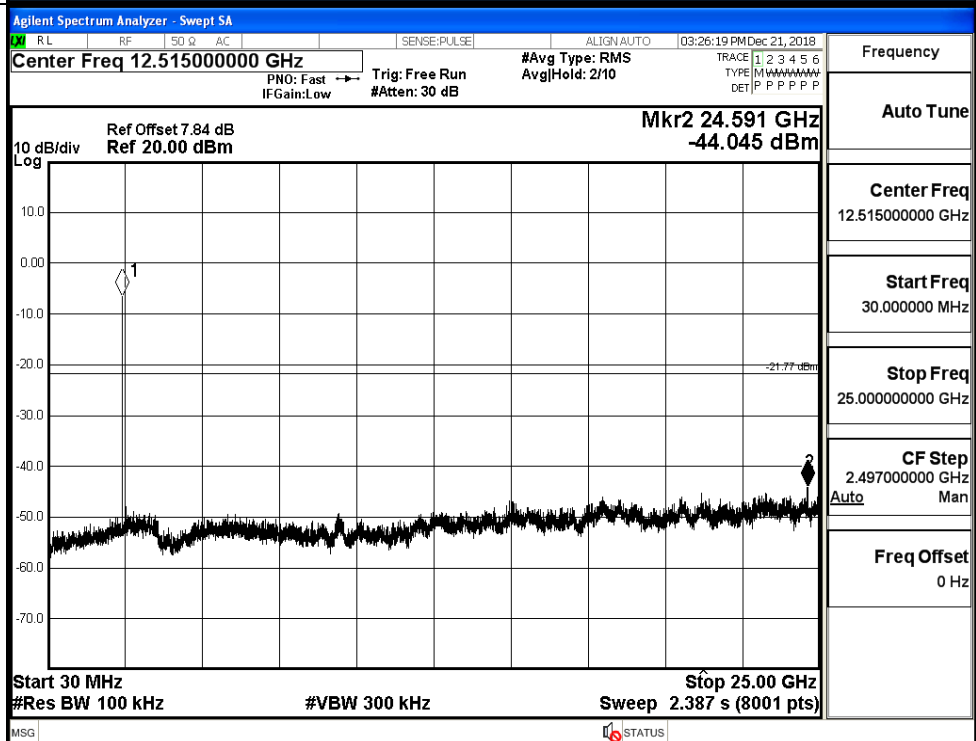


π /4DQPSK_MCH_Graphs

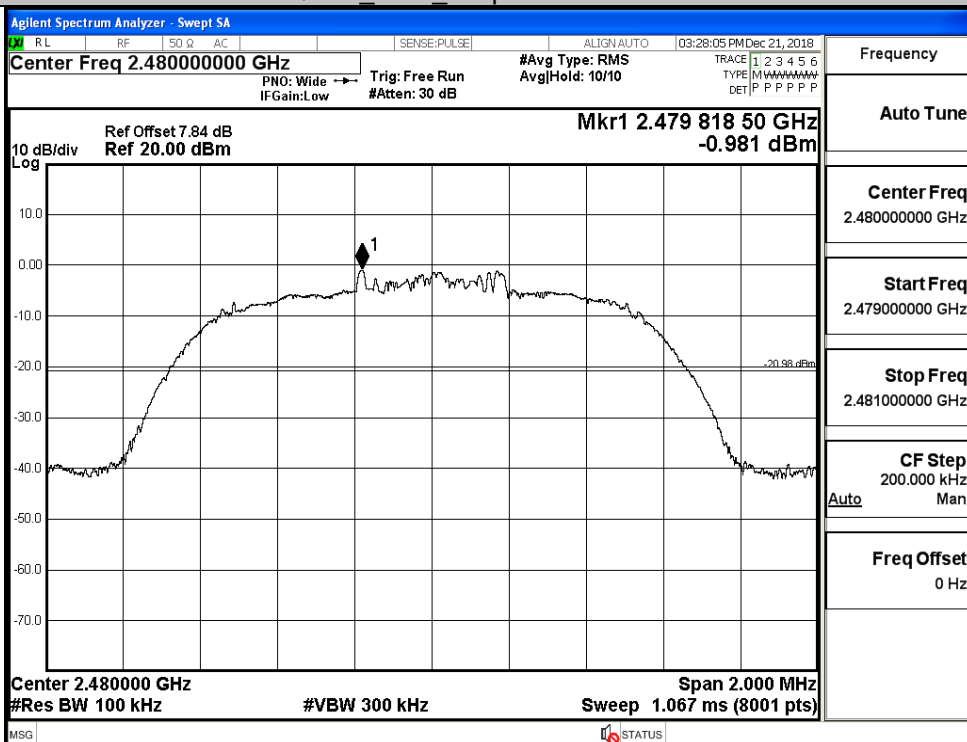
Pref



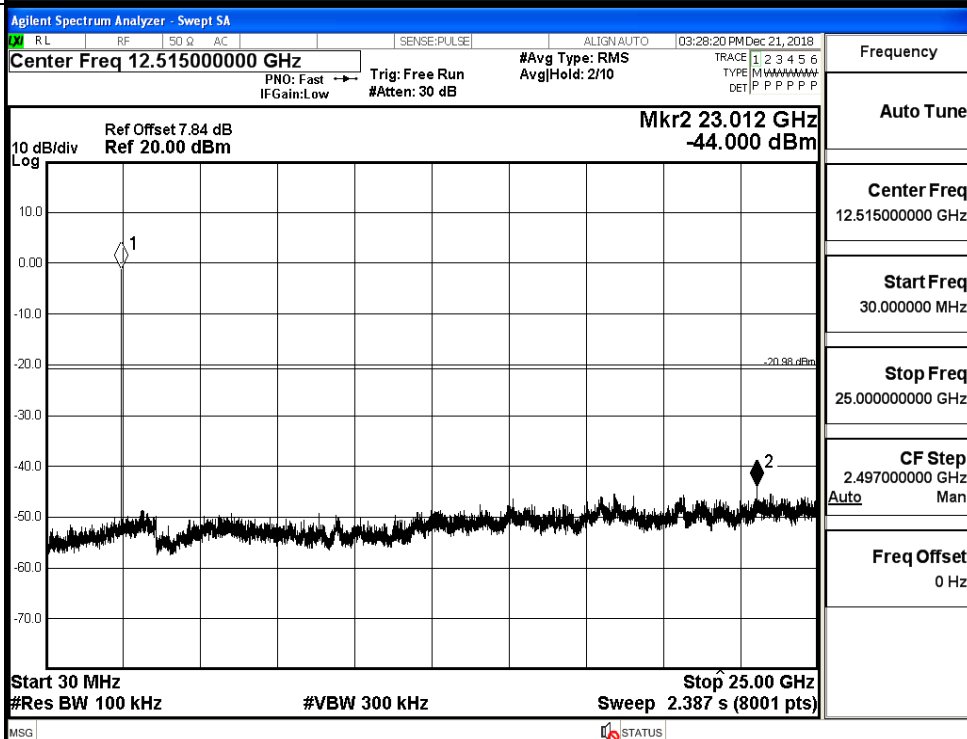
Puw



Pref

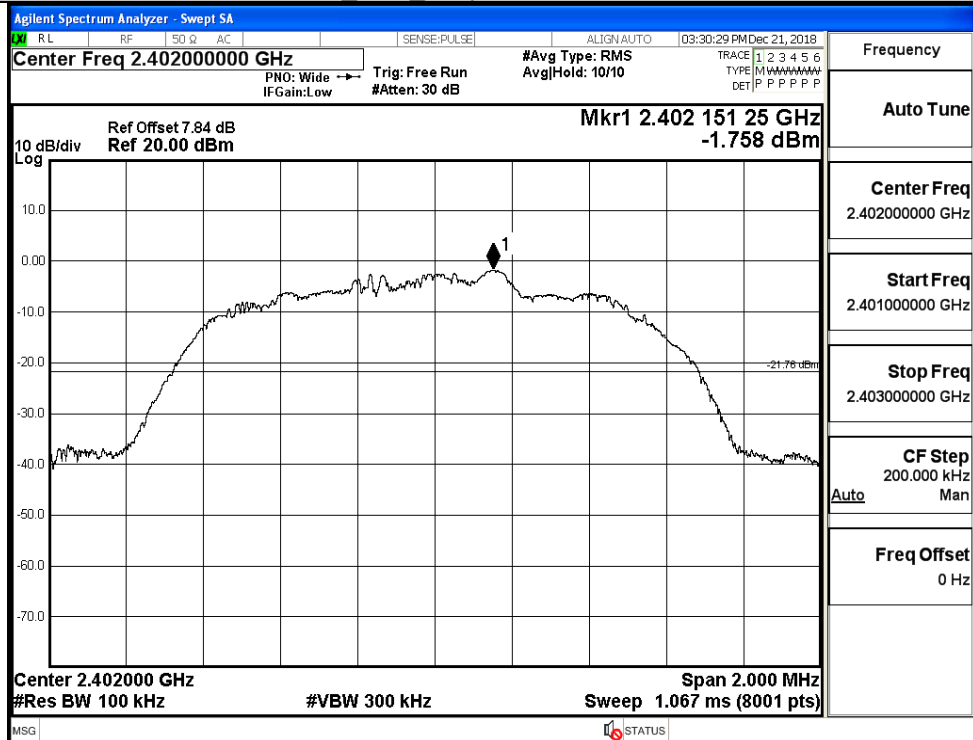


Puw

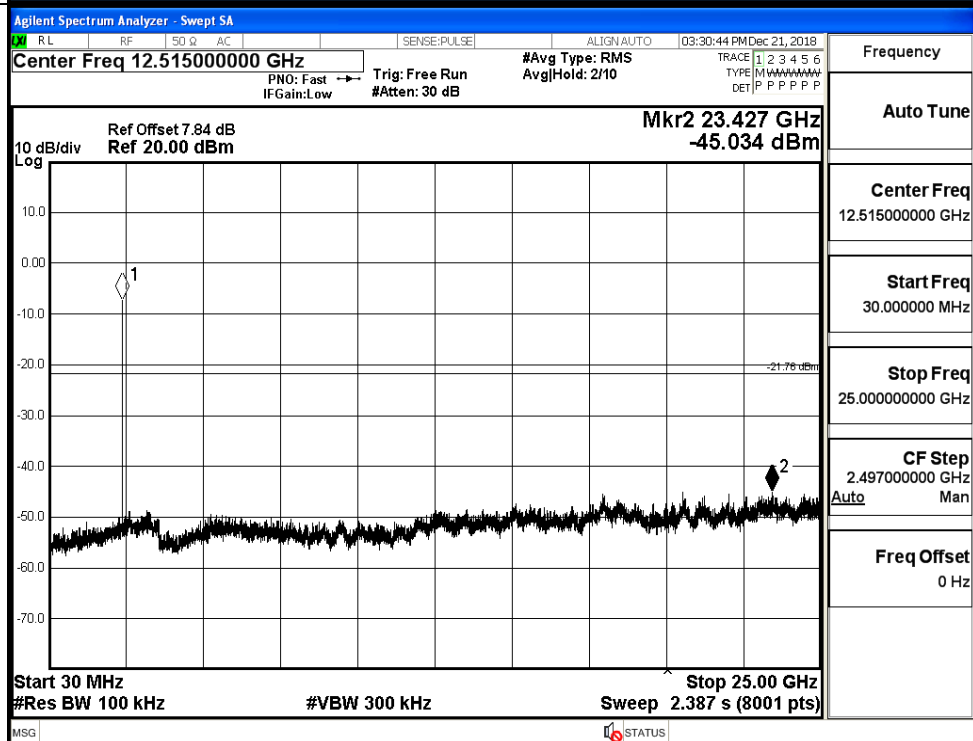


8DPSK_LCH_Graphs

Pref

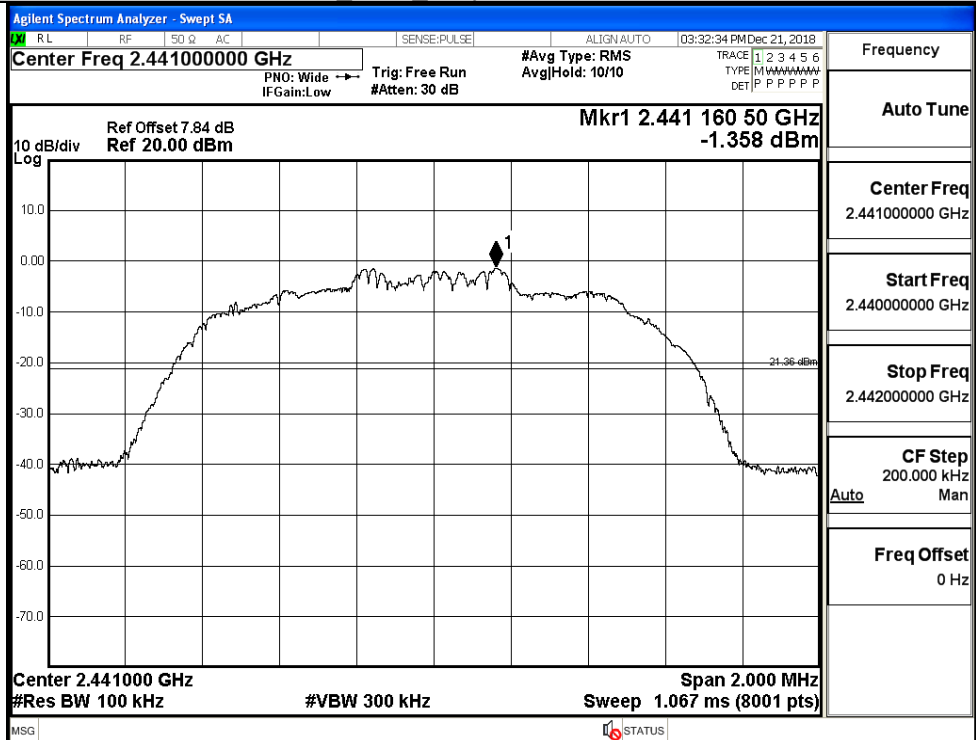


Puw

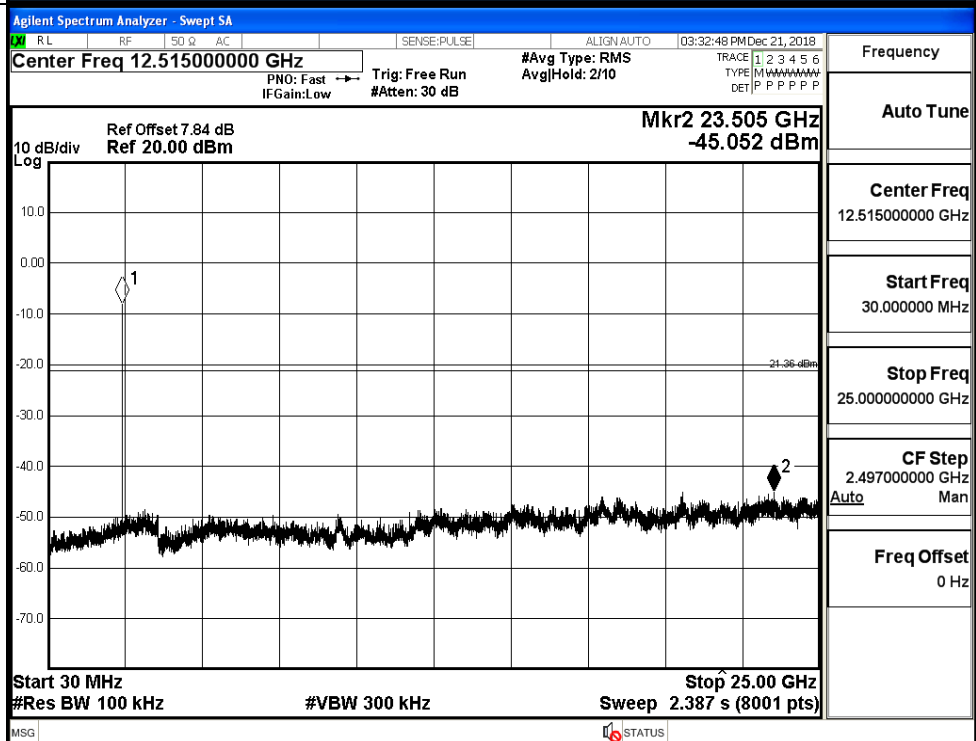


8DPSK_MCH_Graphs

Pref

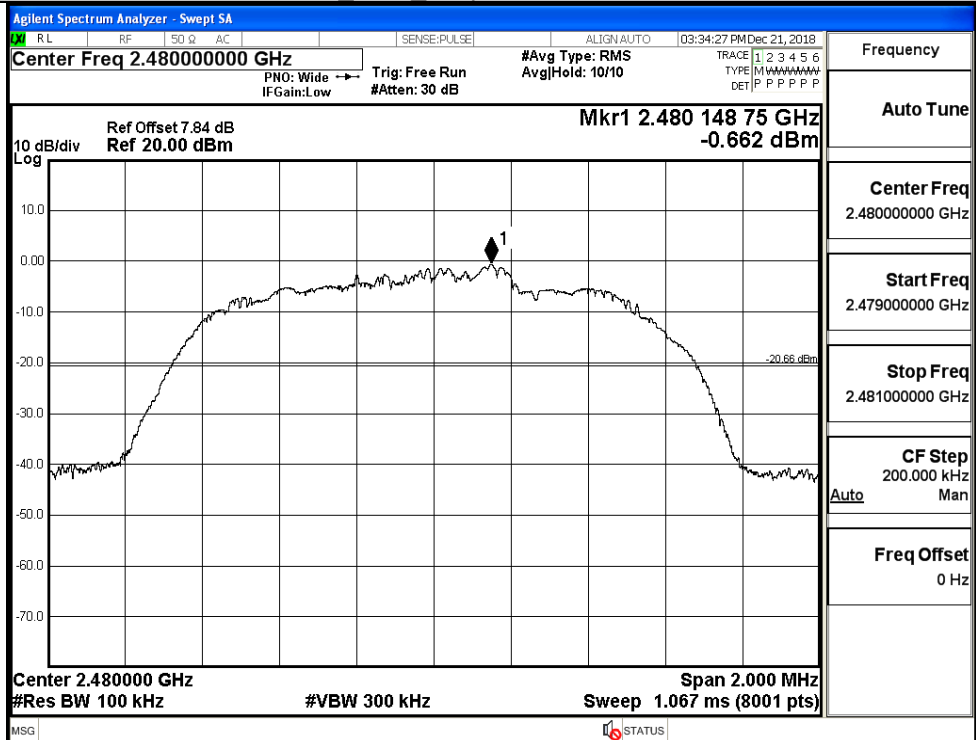


Puw

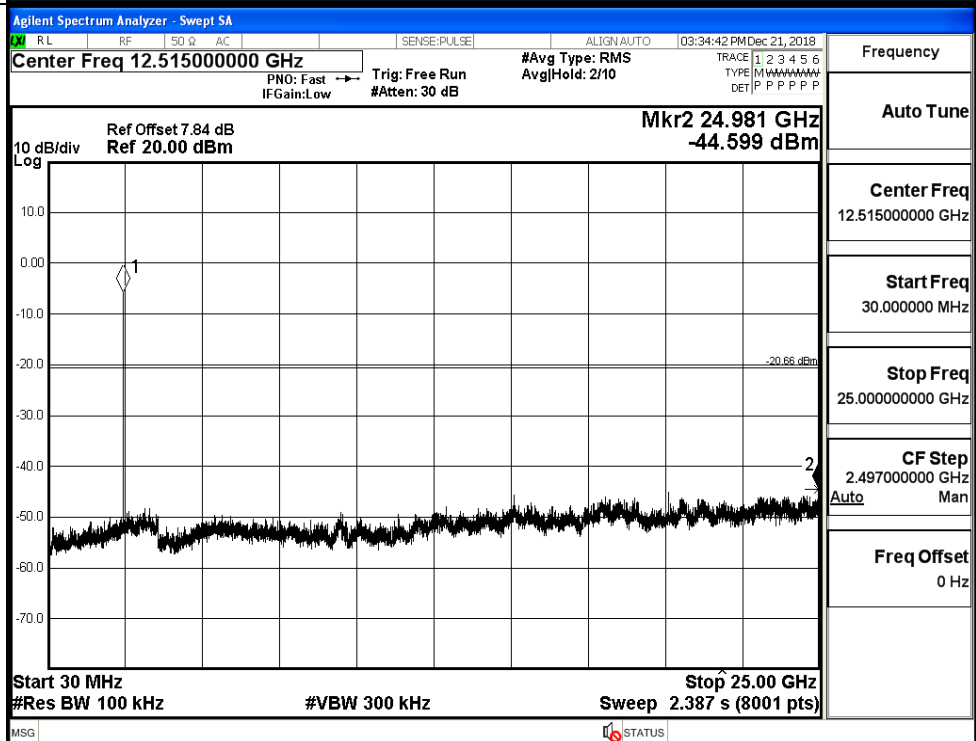


8DPSK_HCH_Graphs

Pref



Puw

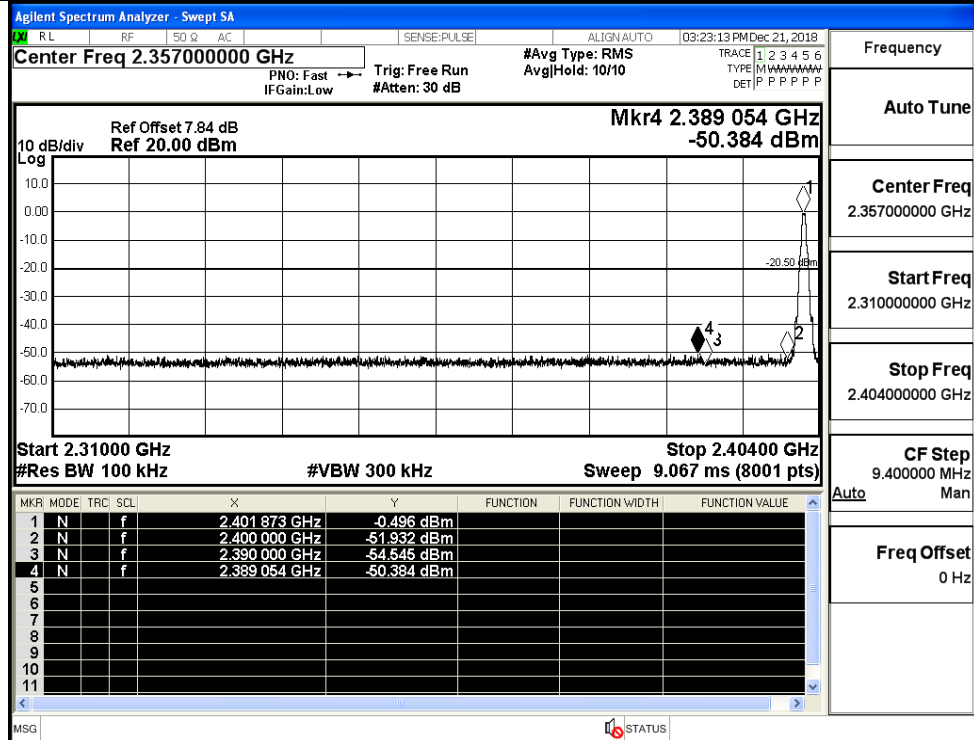


A.7 Band-edge for RF Conducted Emissions

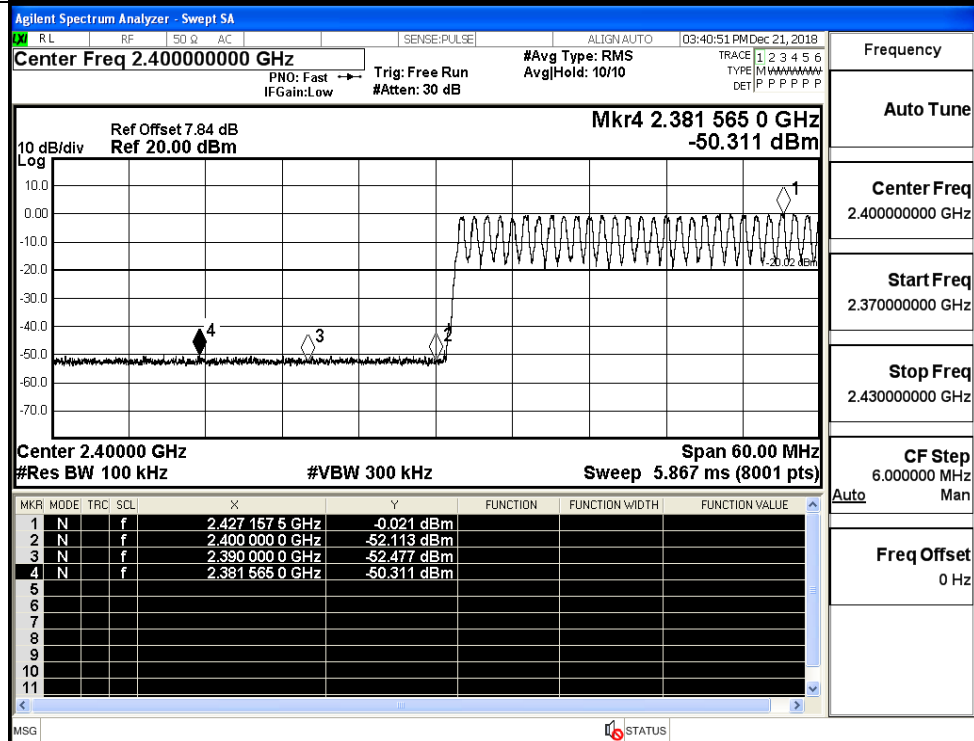
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.496	Off	-50.384	-20.5	PASS
			-0.021	On	-50.311	-20.02	PASS
	HCH	2480	3.948	Off	-50.309	-16.05	PASS
			0.797	On	-49.841	-19.2	PASS
$\pi/4$ DQPSK	LCH	2402	-1.656	Off	-50.270	-21.66	PASS
			-1.625	On	-49.204	-21.63	PASS
	HCH	2480	-1.034	Off	-49.980	-21.03	PASS
			-0.746	On	-49.327	-20.75	PASS
8DPSK	LCH	2402	-1.748	Off	-50.401	-21.75	PASS
			-1.609	On	-50.086	-21.61	PASS
	HCH	2480	-0.621	Off	-49.828	-20.62	PASS
			-0.734	On	-49.303	-20.73	PASS

Test Graphs

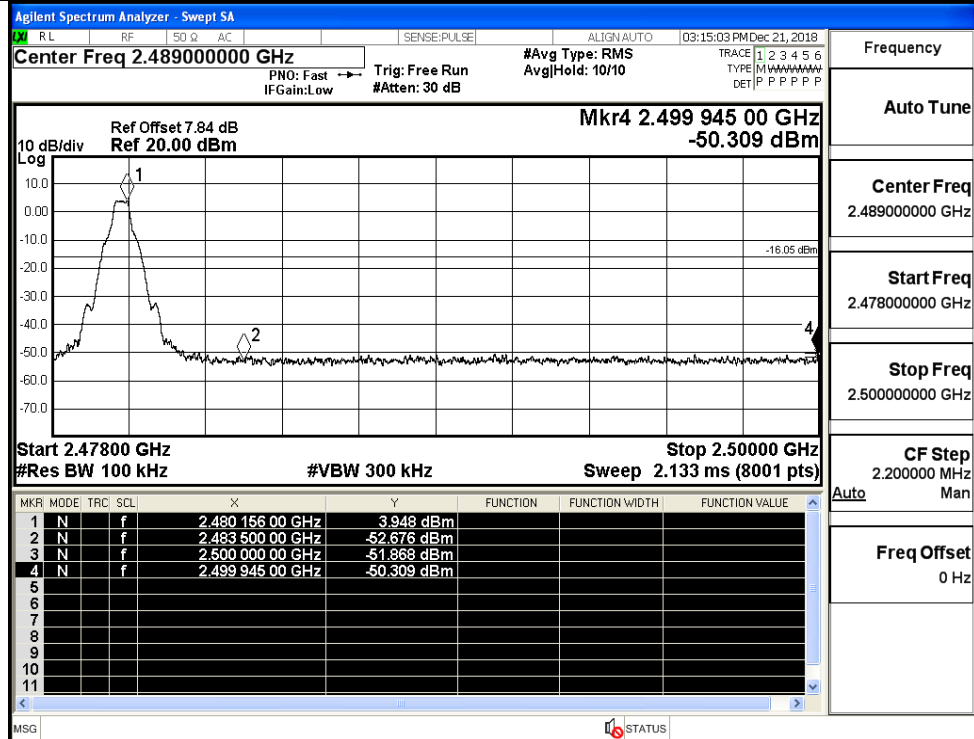
GFSK/LCH/No Hop



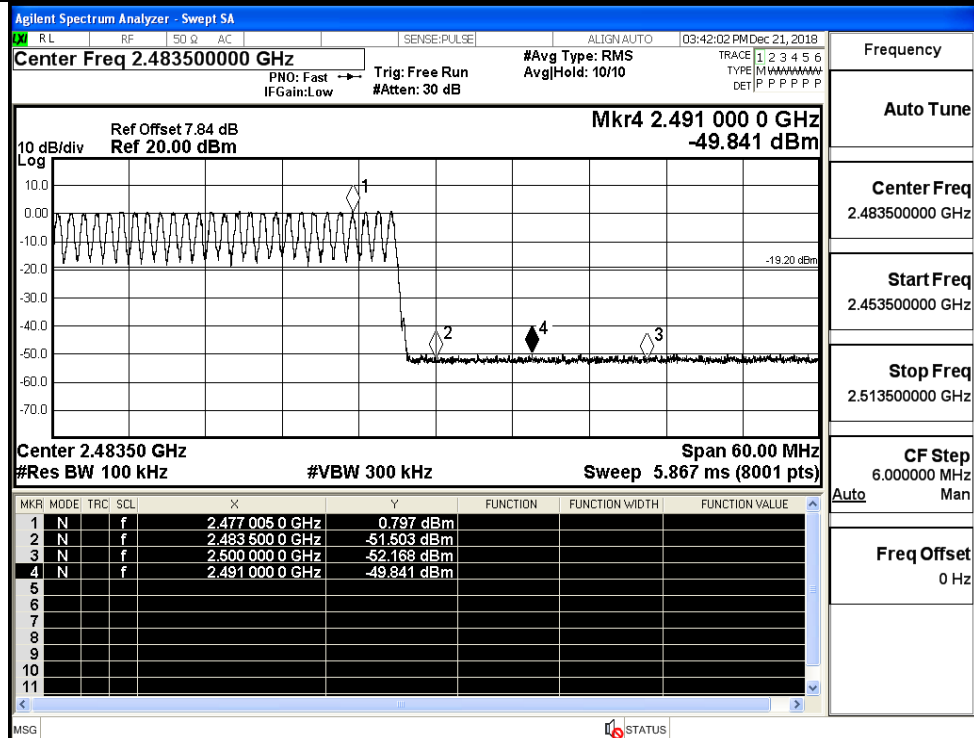
GFSK/LCH/Hop



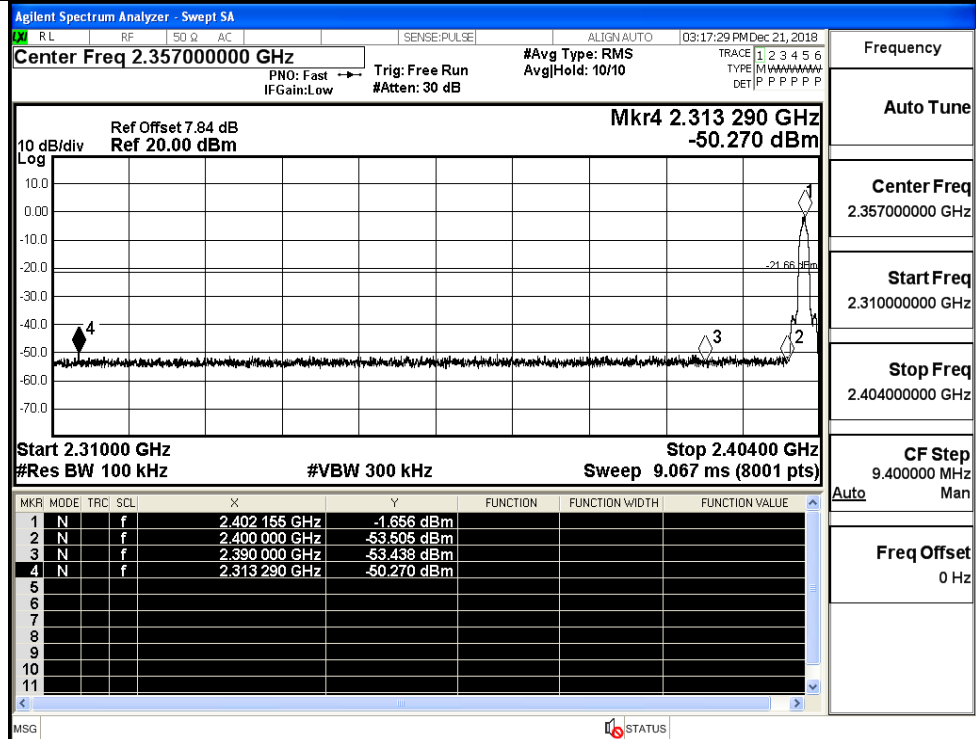
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

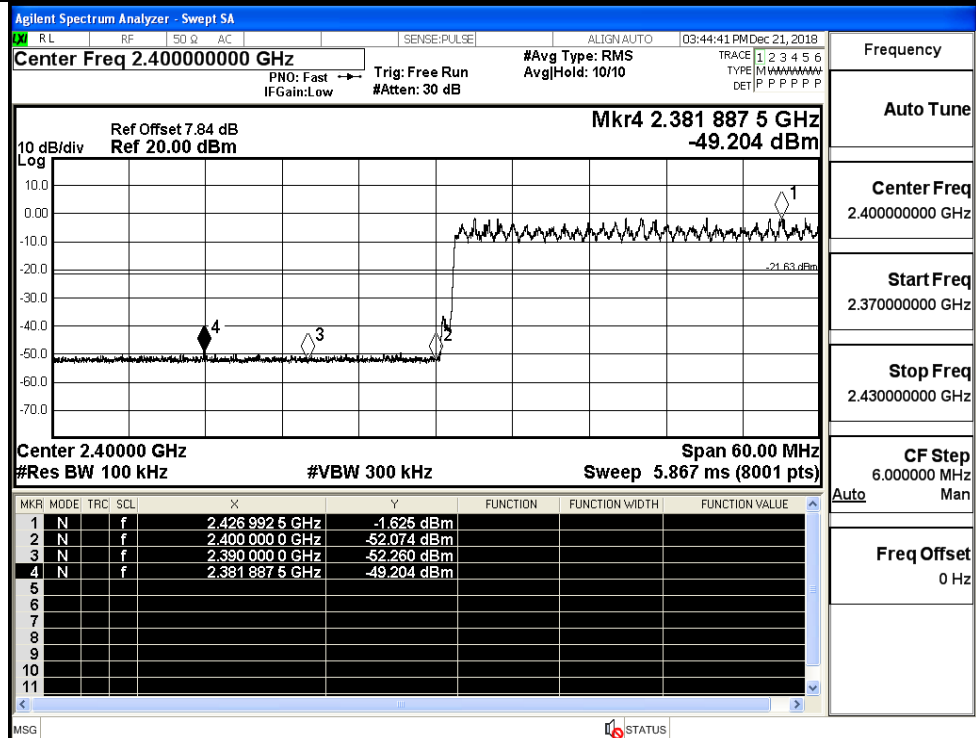
Start Freq
2.310000000 GHz

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

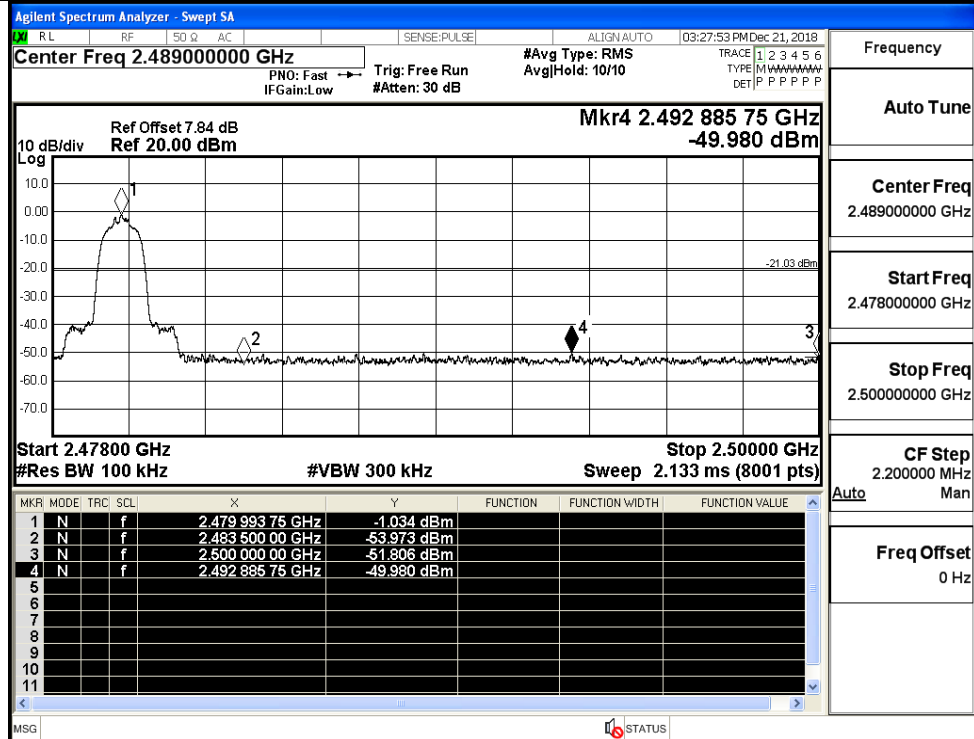
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

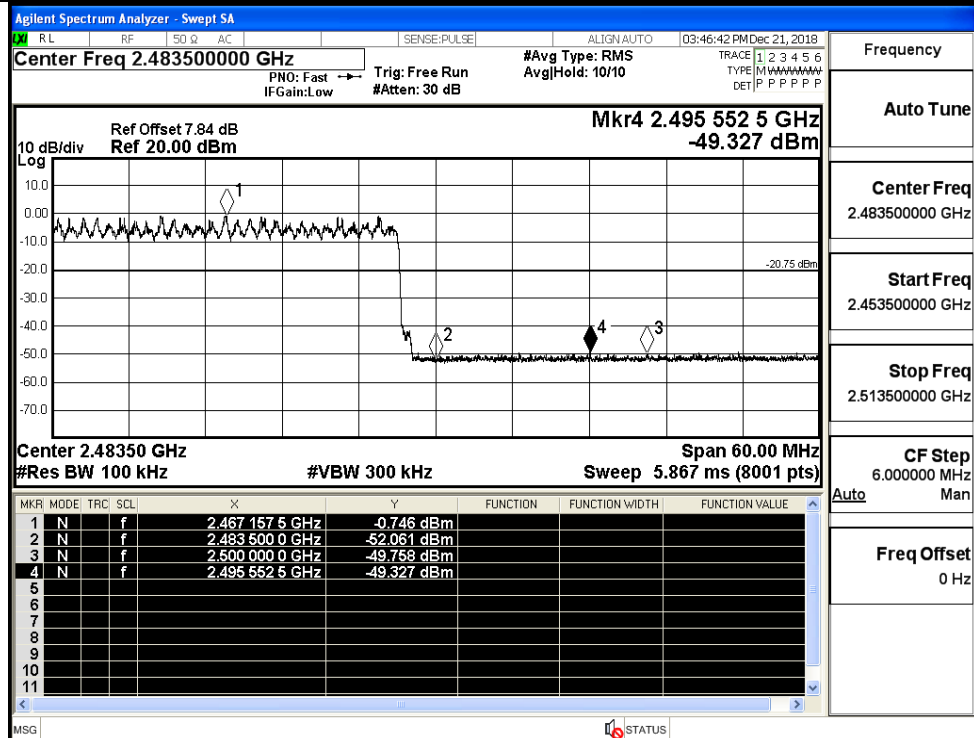


Frequency

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

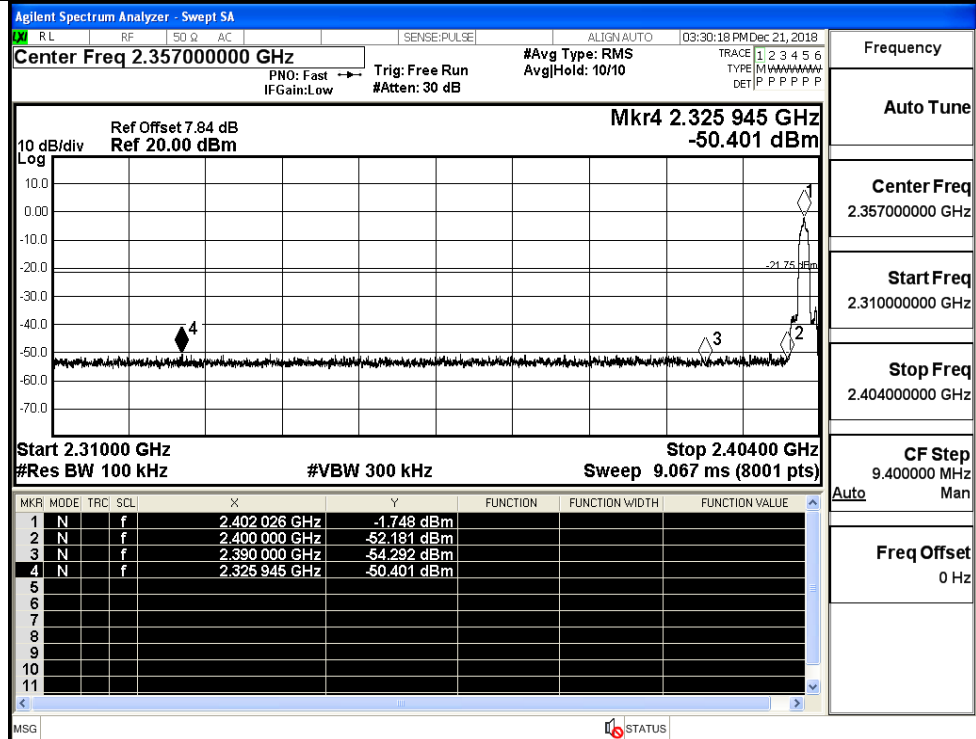


Frequency

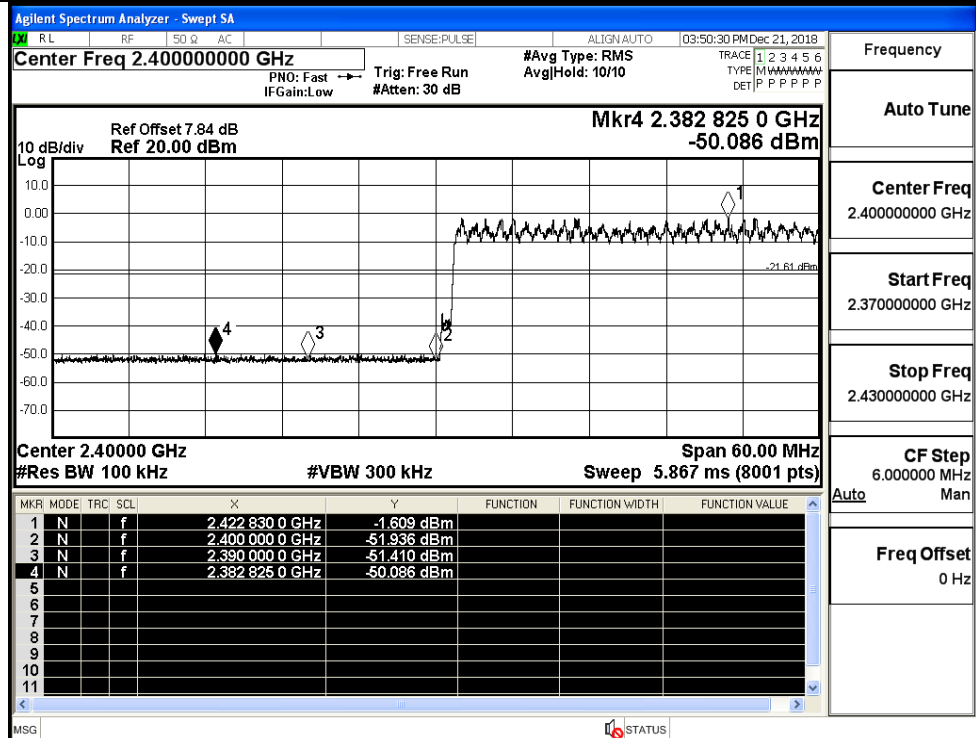
Auto Tune

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

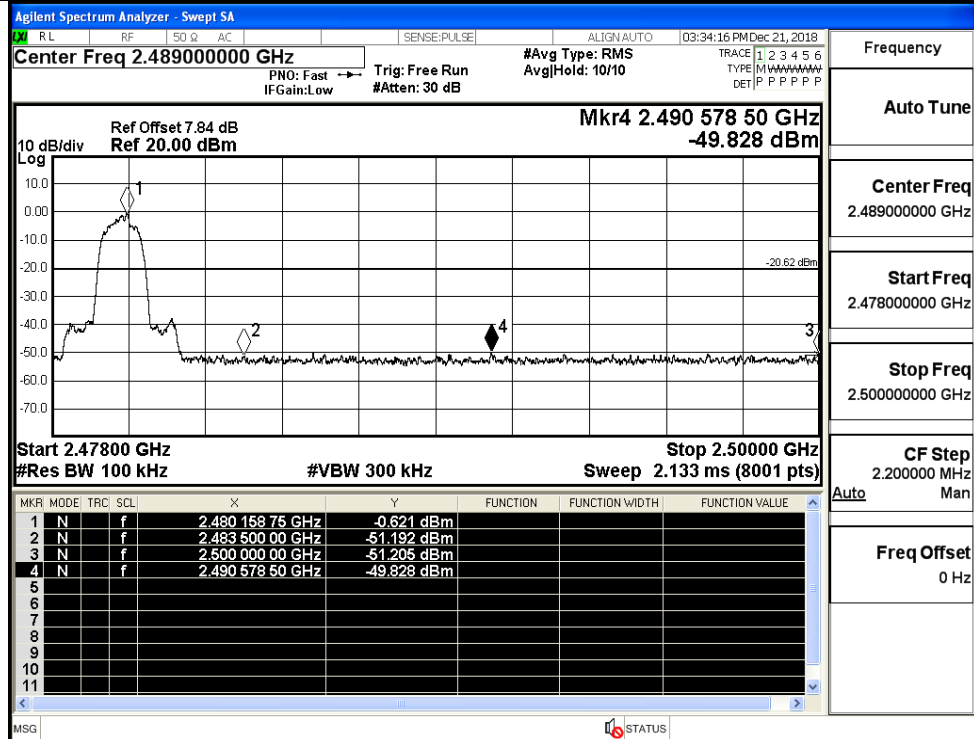
8DPSK/LCH/No Hop



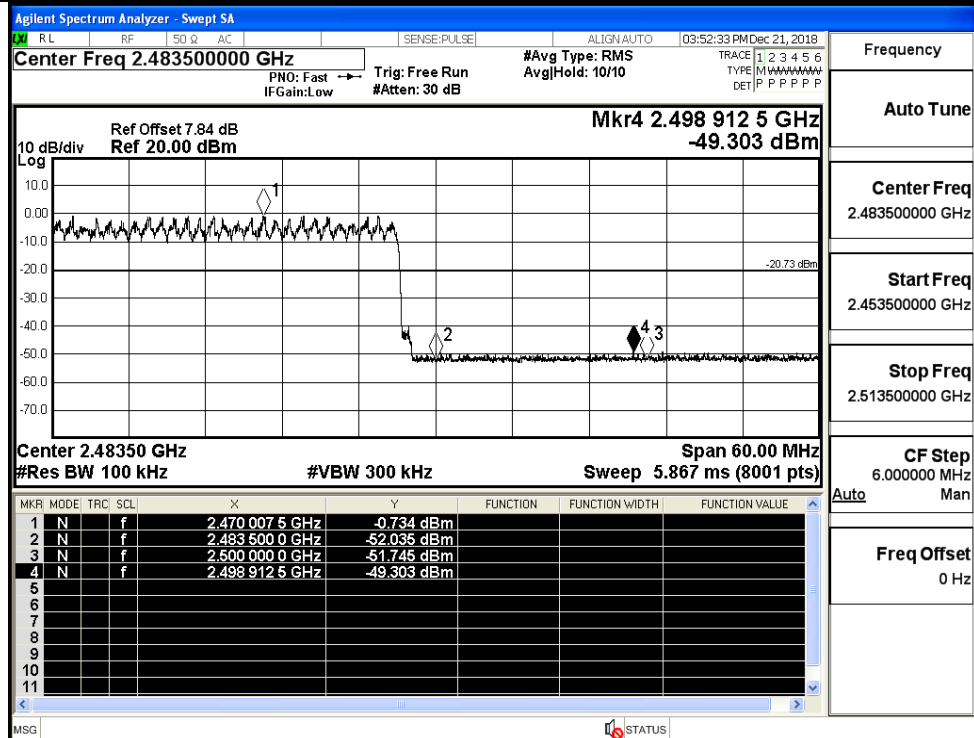
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



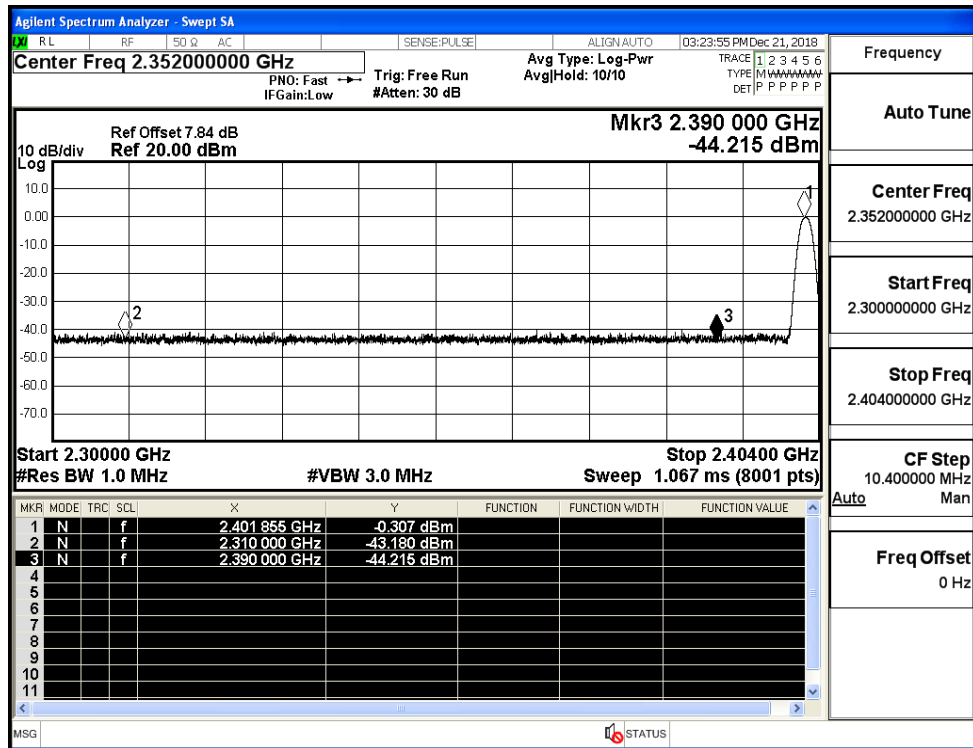
8DPSK/HCH/Hop



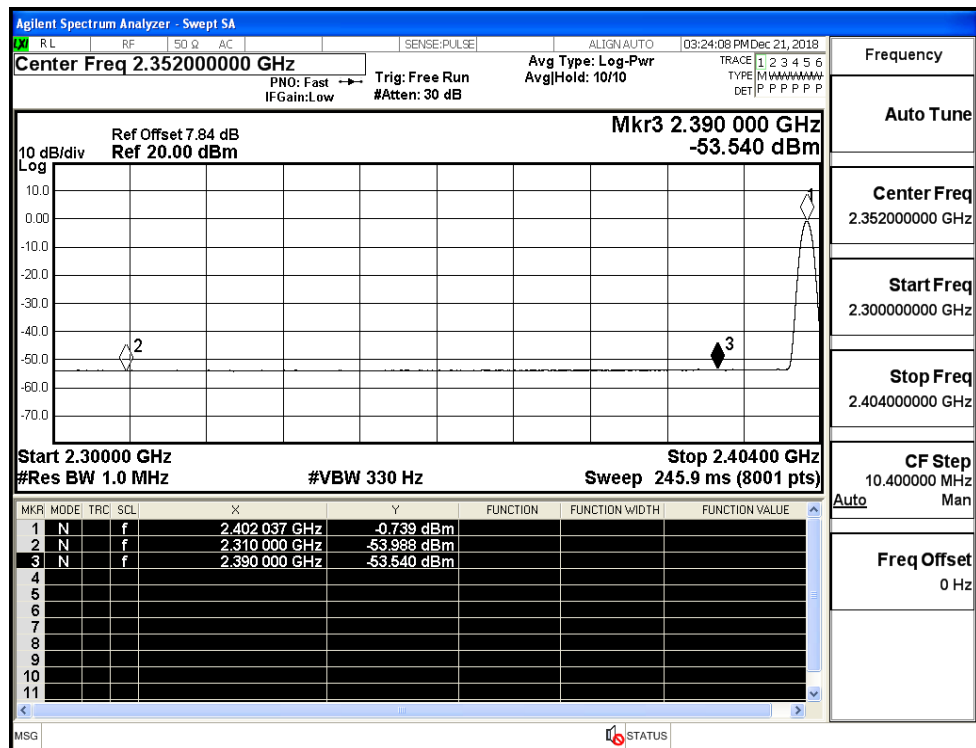
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.18	2.0	0	54.08	PEAK	74	PASS
	Off	2310.0	-53.99	2.0	0	43.27	AV	54	PASS
	Off	2390.0	-44.22	2.0	0	53.04	PEAK	74	PASS
	Off	2390.0	-53.54	2.0	0	43.72	AV	54	PASS
	Off	2483.5	-42.96	2.0	0	54.3	PEAK	74	PASS
	Off	2483.5	-53.37	2.0	0	43.89	AV	54	PASS
	Off	2500.0	-43.16	2.0	0	54.1	PEAK	74	PASS
	Off	2500.0	-53.35	2.0	0	43.91	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.29	2.0	0	53.97	PEAK	74	PASS
	Off	2310.0	-53.87	2.0	0	43.39	AV	54	PASS
	Off	2390.0	-42.94	2.0	0	54.32	PEAK	74	PASS
	Off	2390.0	-53.67	2.0	0	43.59	AV	54	PASS
	Off	2483.5	-43.31	2.0	0	53.95	PEAK	74	PASS
	Off	2483.5	-53.43	2.0	0	43.83	AV	54	PASS
	Off	2500.0	-42.61	2.0	0	54.65	PEAK	74	PASS
	Off	2500.0	-53.32	2.0	0	43.94	AV	54	PASS
8DPSK	Off	2310.0	-42.49	2.0	0	54.77	PEAK	74	PASS
	Off	2310.0	-53.82	2.0	0	43.44	AV	54	PASS
	Off	2390.0	-43.49	2.0	0	53.77	PEAK	74	PASS
	Off	2390.0	-53.74	2.0	0	43.52	AV	54	PASS
	Off	2483.5	-44.52	2.0	0	52.74	PEAK	74	PASS
	Off	2483.5	-53.35	2.0	0	43.91	AV	54	PASS
	Off	2500.0	-42.21	2.0	0	55.05	PEAK	74	PASS
	Off	2500.0	-53.36	2.0	0	43.9	AV	54	PASS

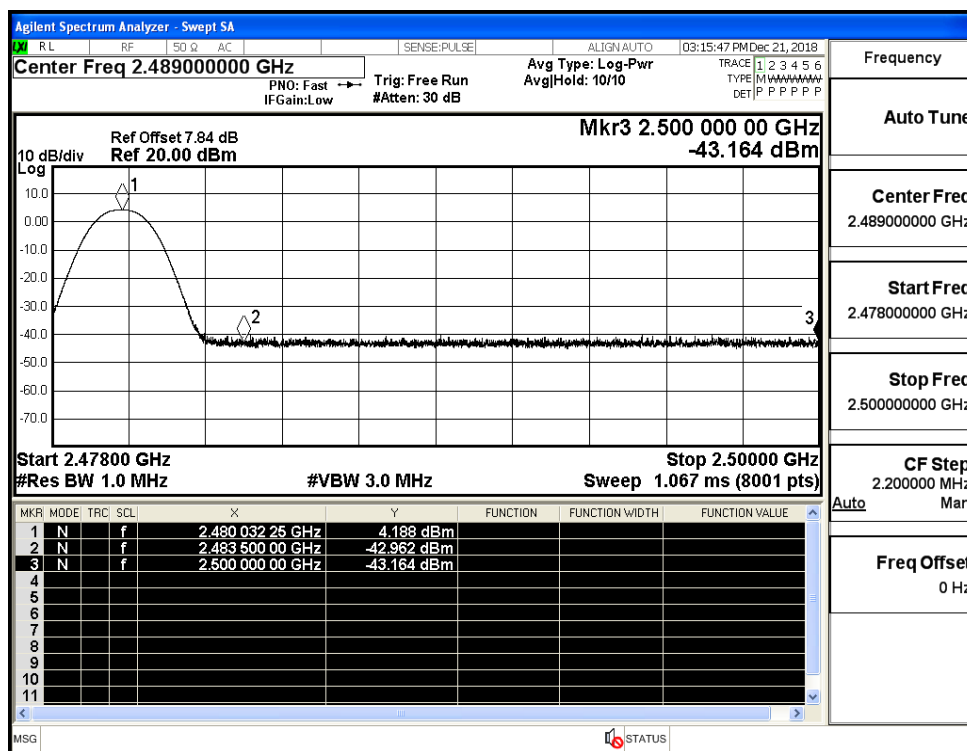
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



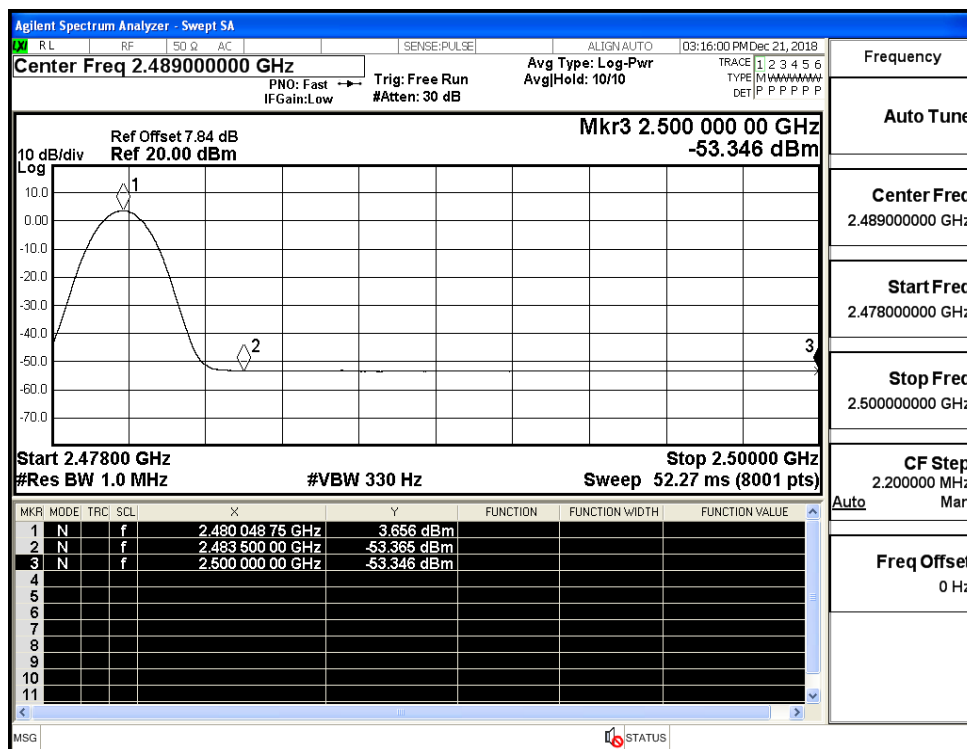
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

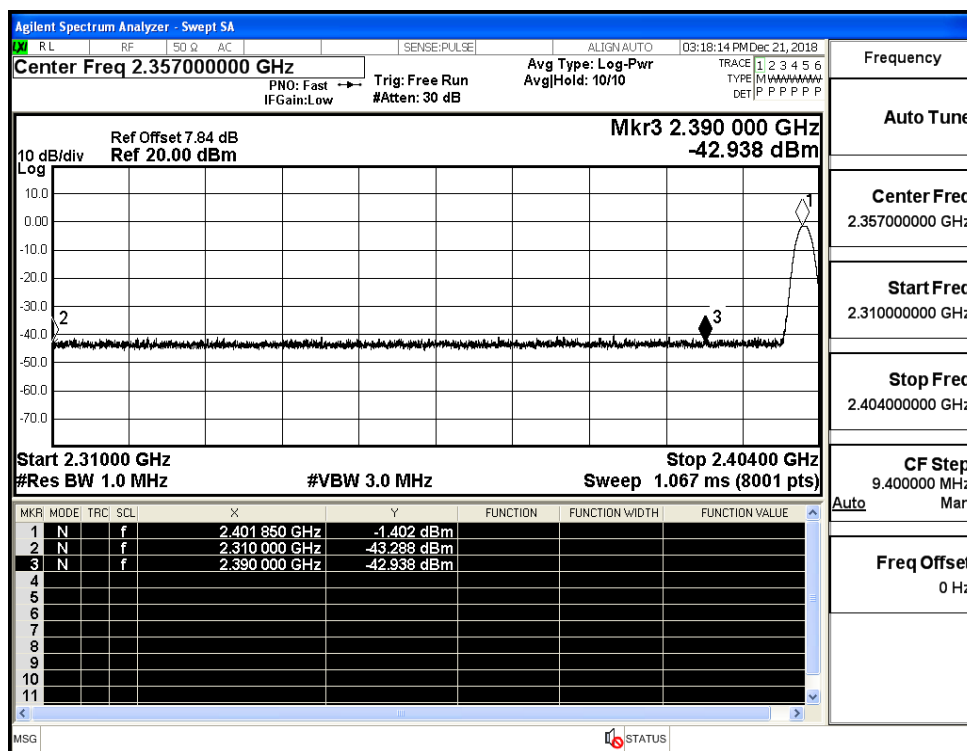
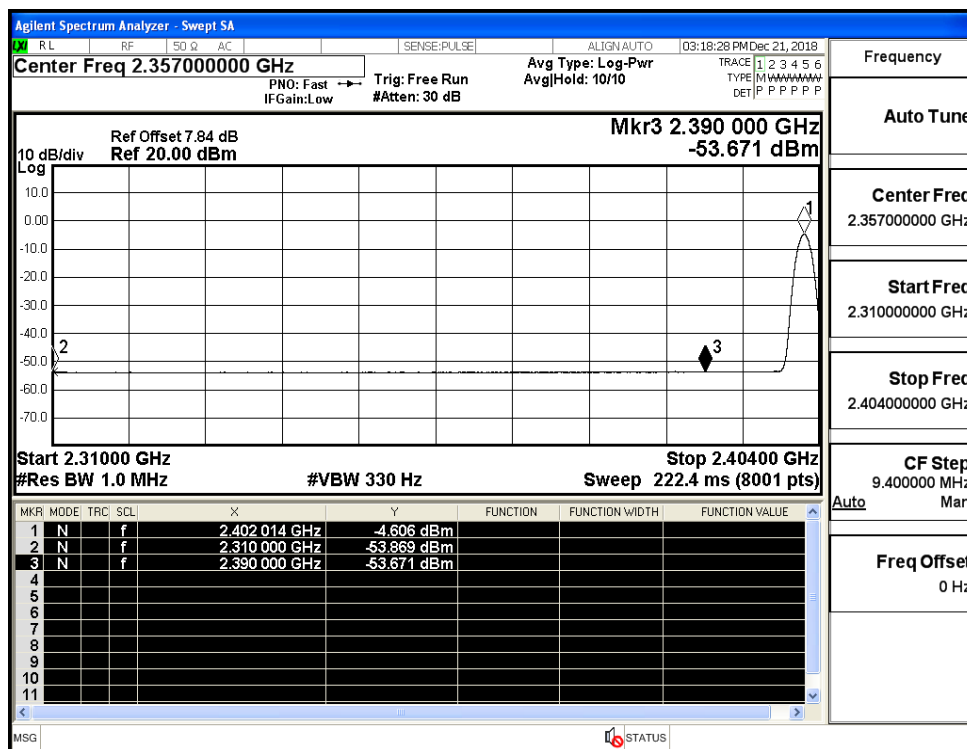


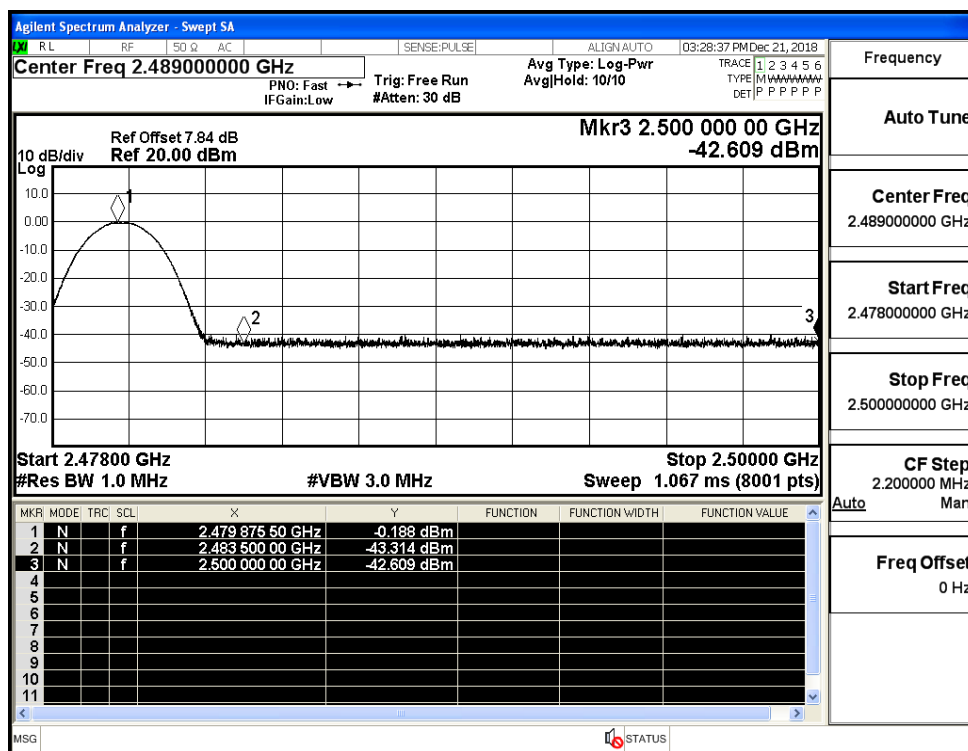
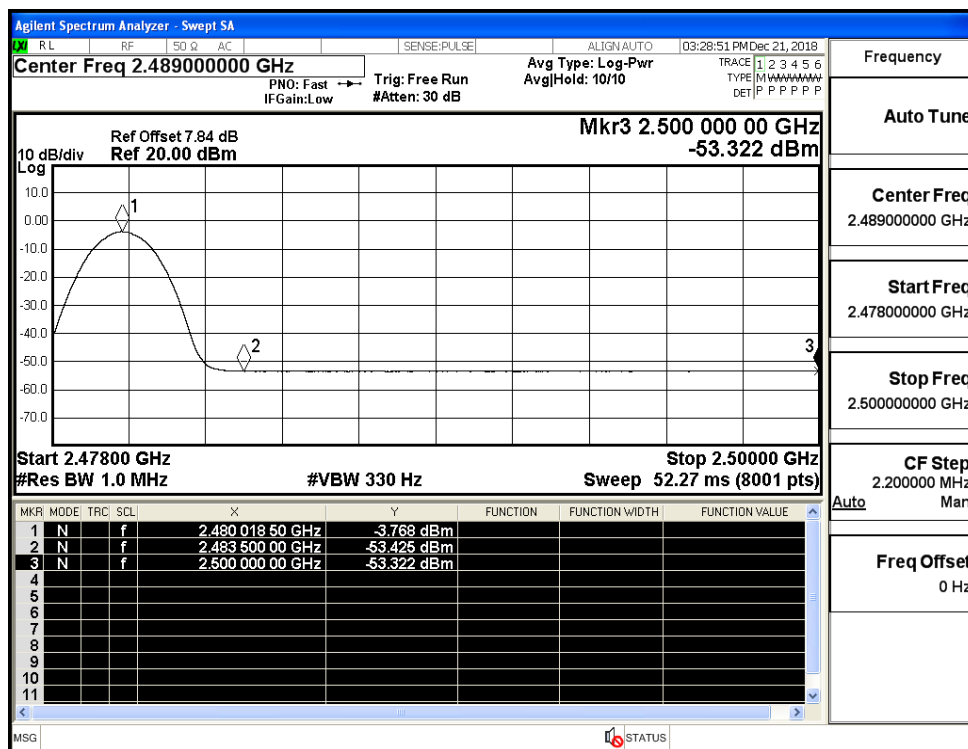
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



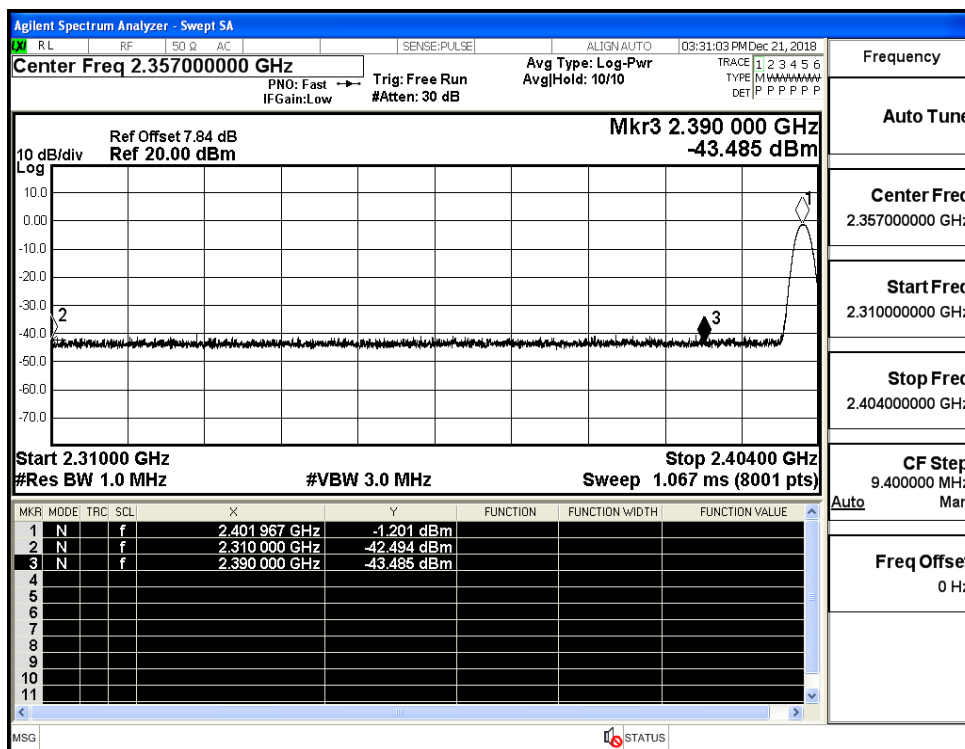
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



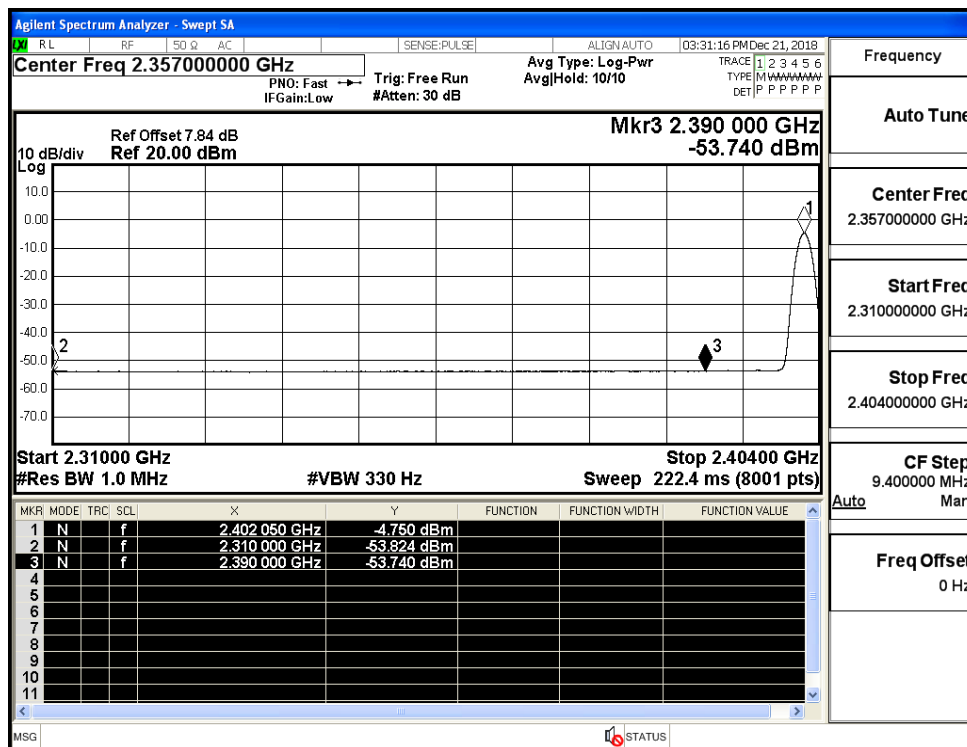
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

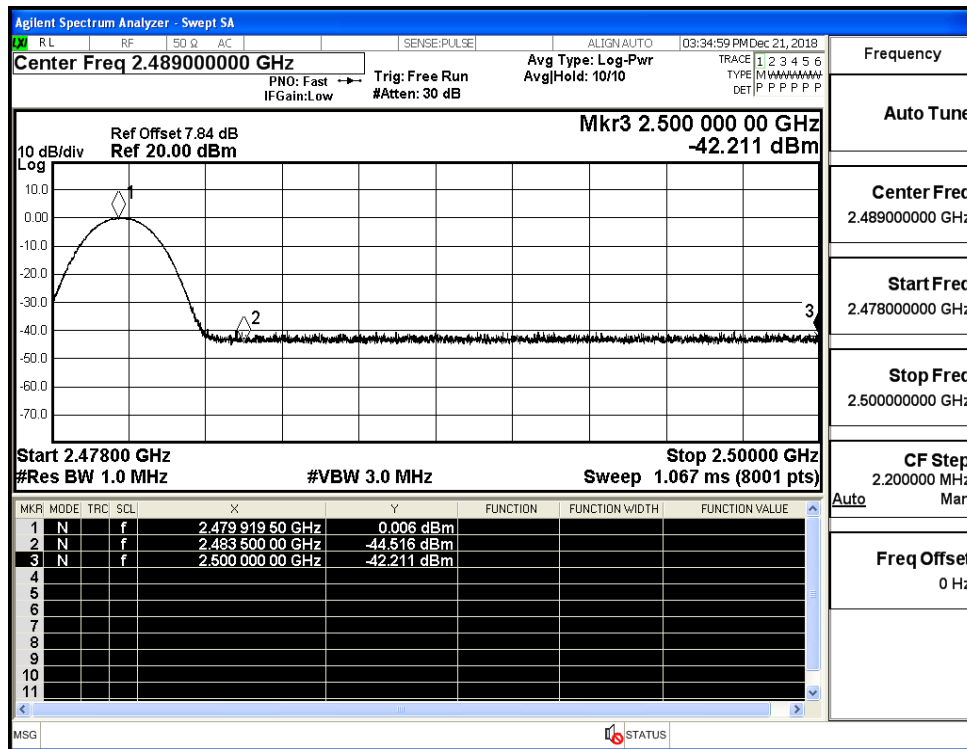
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

