

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: SLENDER WAIST BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: A104

Environmental Conditions

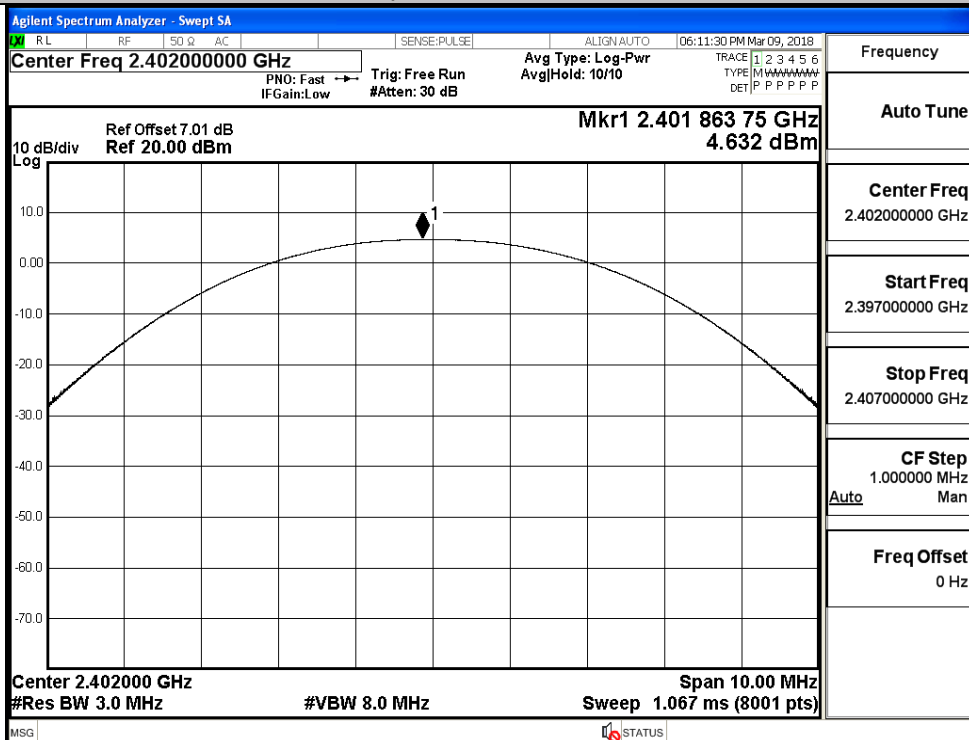
Temperature:	20.5 ° C
Relative Humidity:	50.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.xu
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

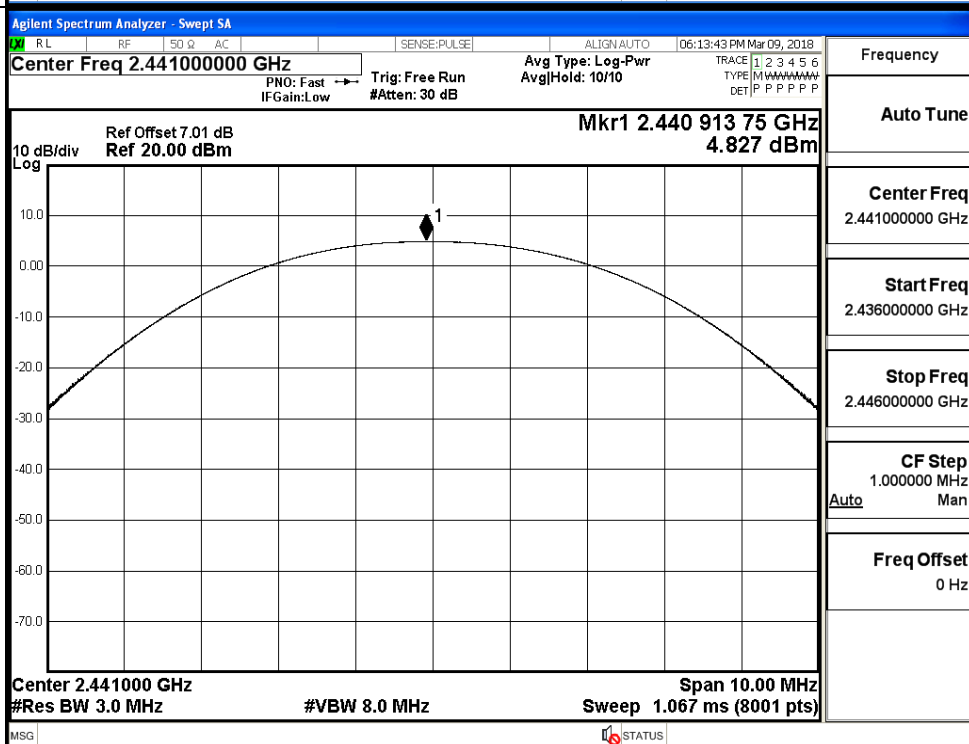
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.632	30	PASS
	MCH	4.827	30	PASS
	HCH	4.850	30	PASS
$\pi/4$ DQPSK	LCH	4.554	21	PASS
	MCH	4.701	21	PASS
	HCH	4.686	21	PASS
8DPSK	LCH	4.702	21	PASS
	MCH	4.871	21	PASS
	HCH	4.861	21	PASS

Test Graphs

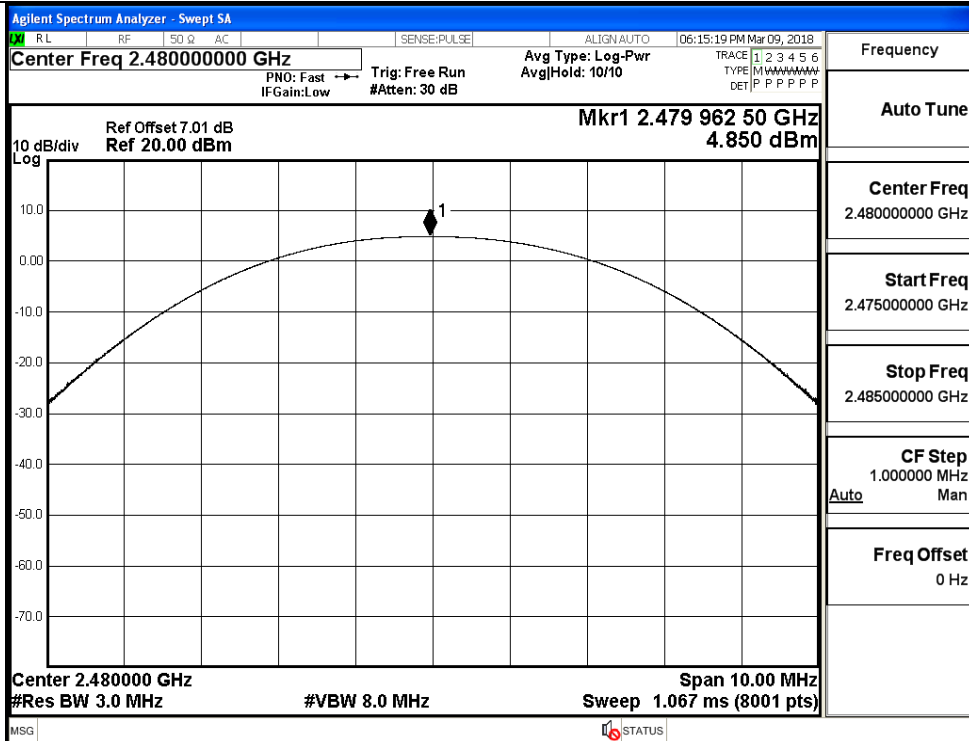
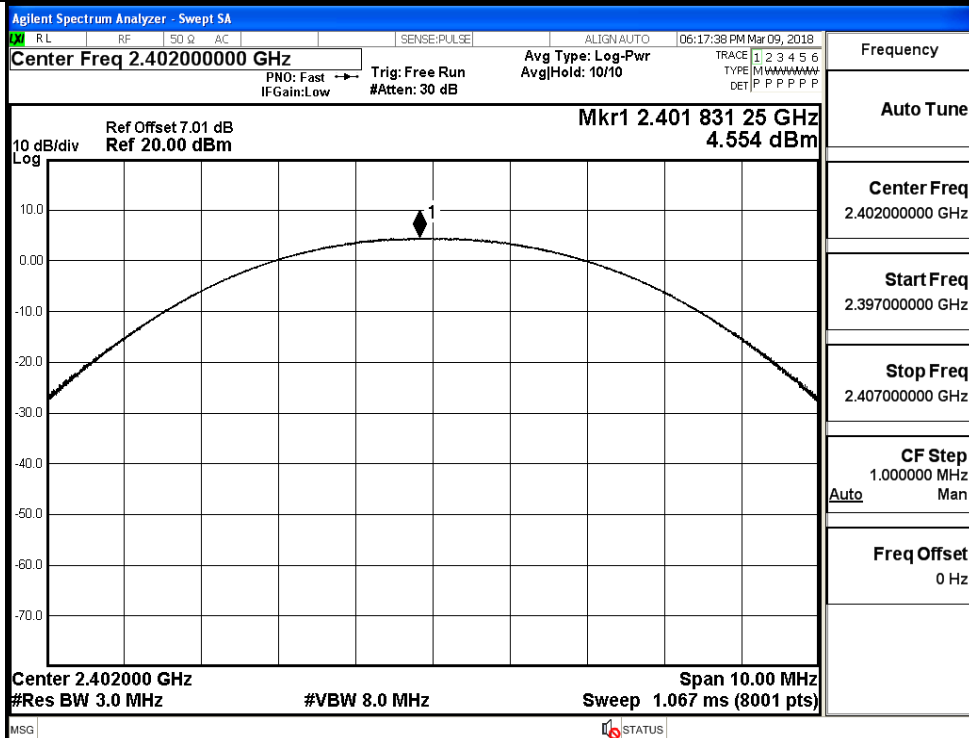
GFSK/LCH

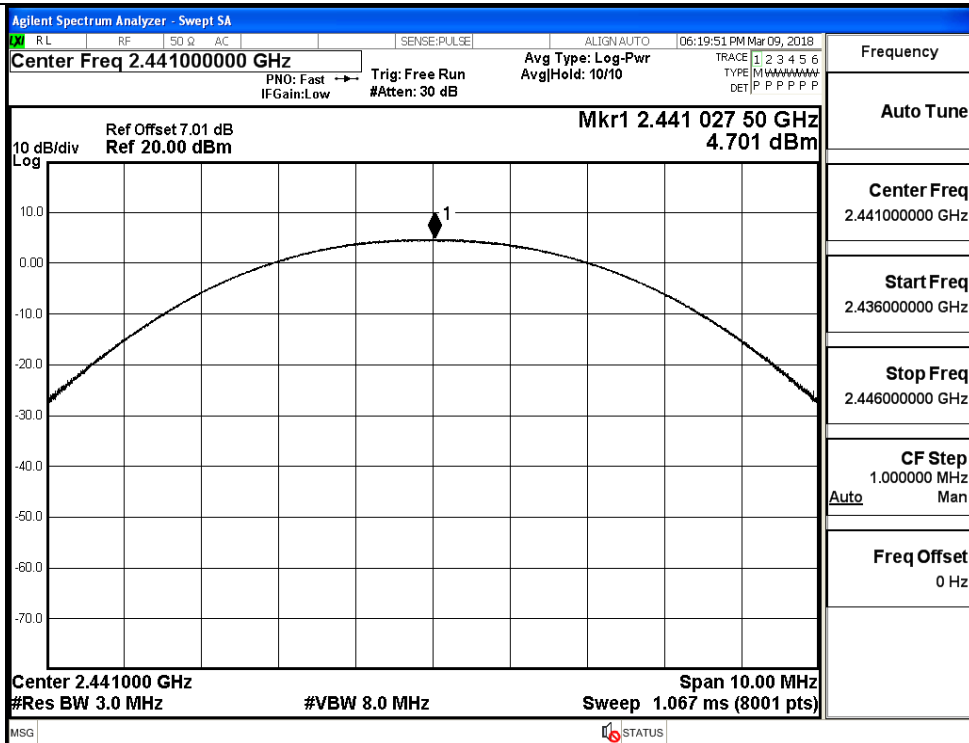
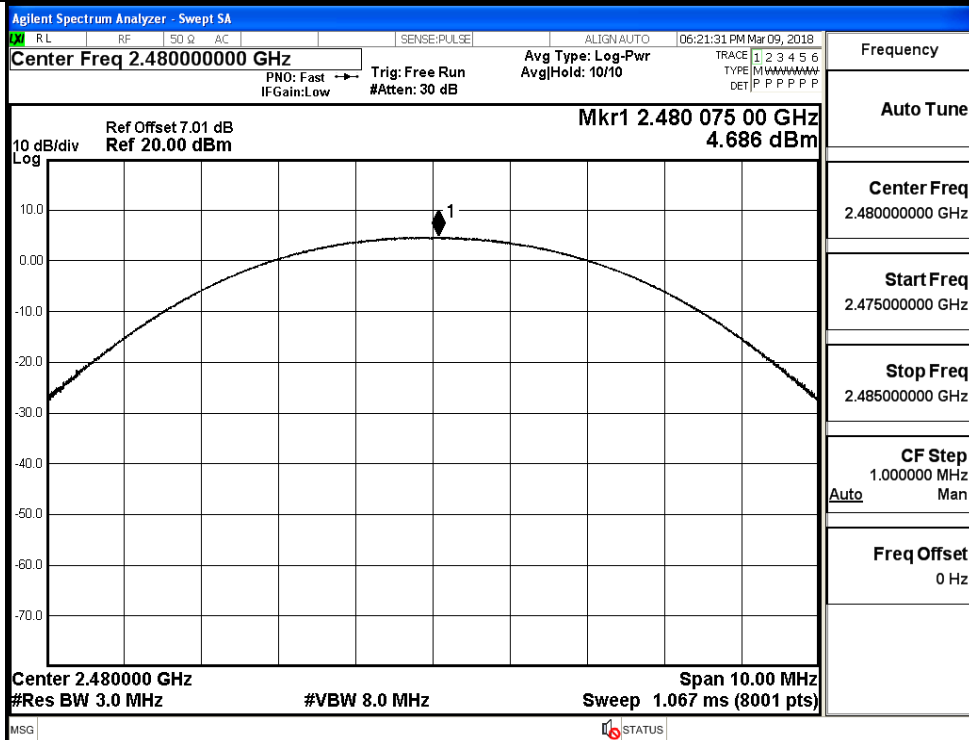


GFSK/MCH

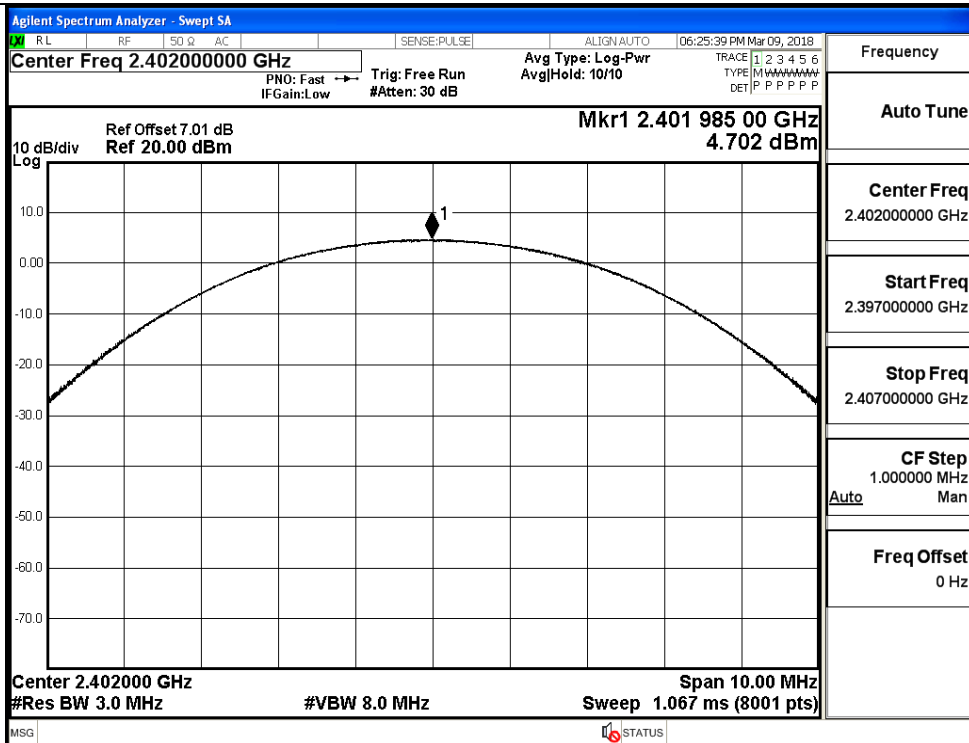


GFSK/HCH

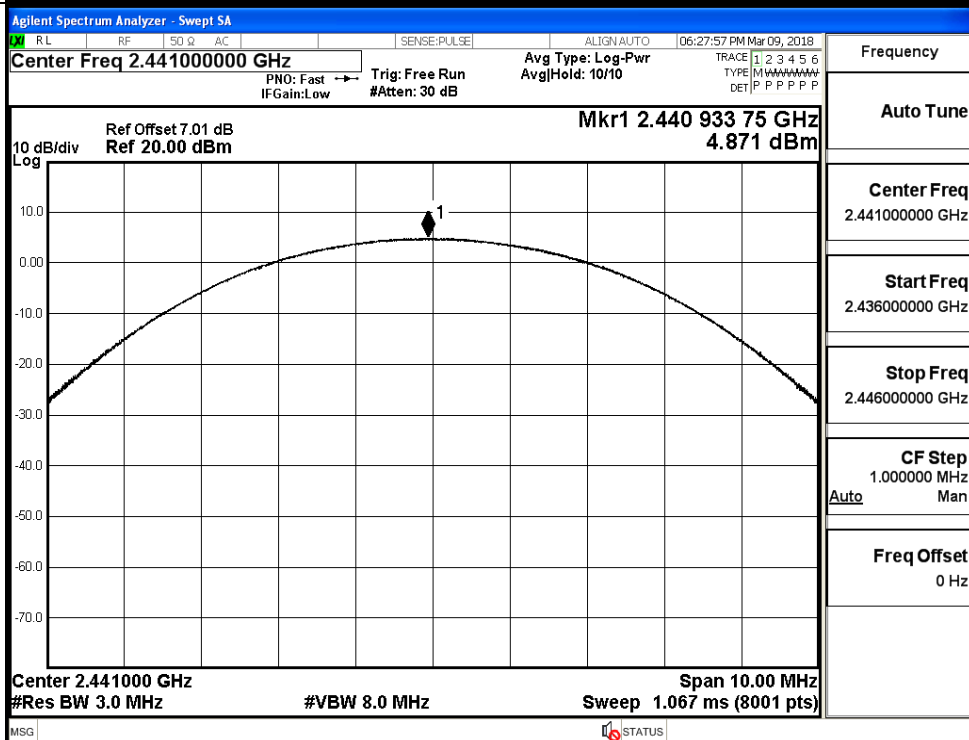
 π /4DQPSK/LCH

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

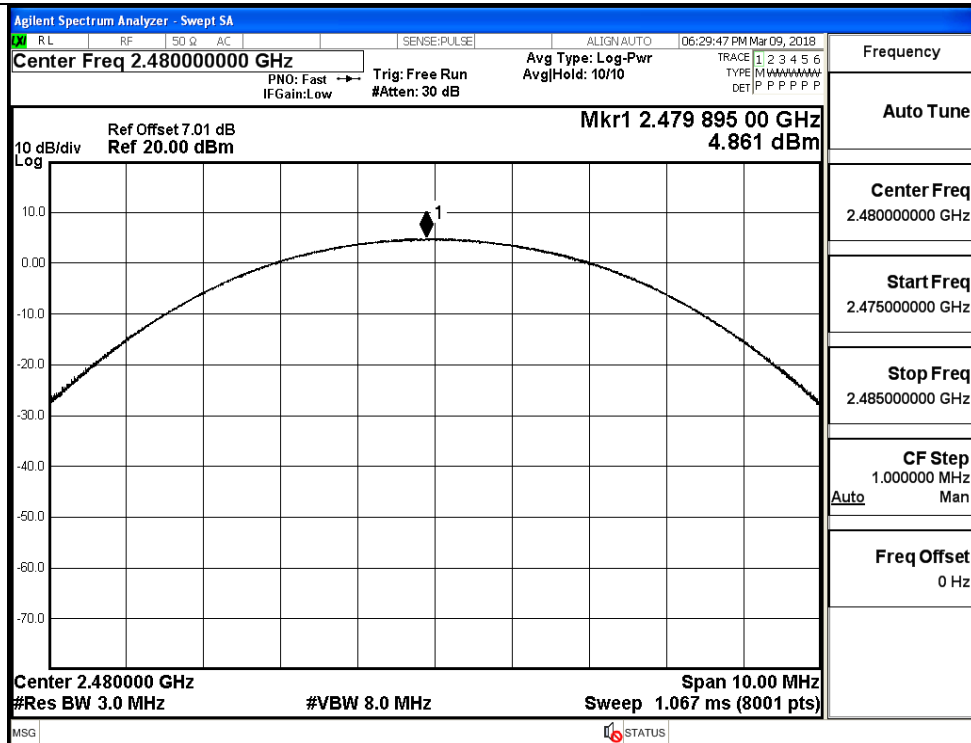
8DPSK/LCH



8DPSK/MCH



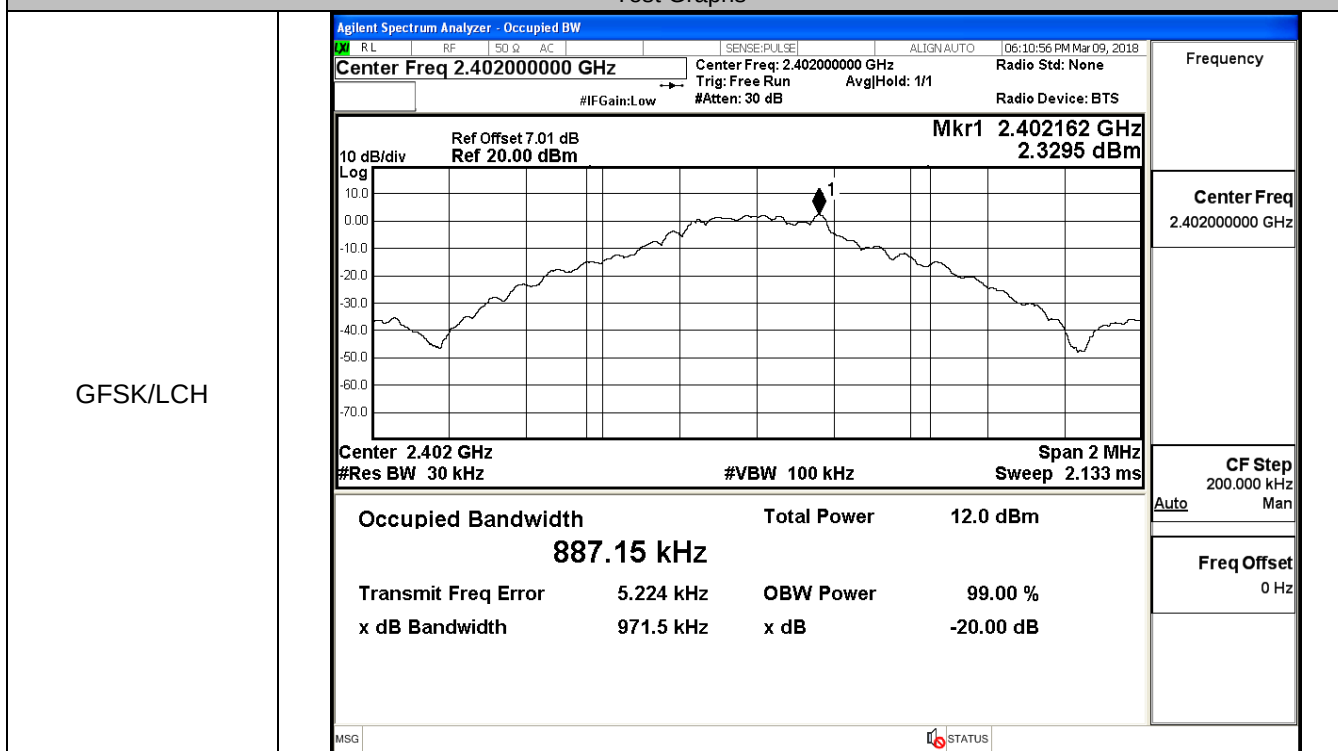
8DPSK/HCH



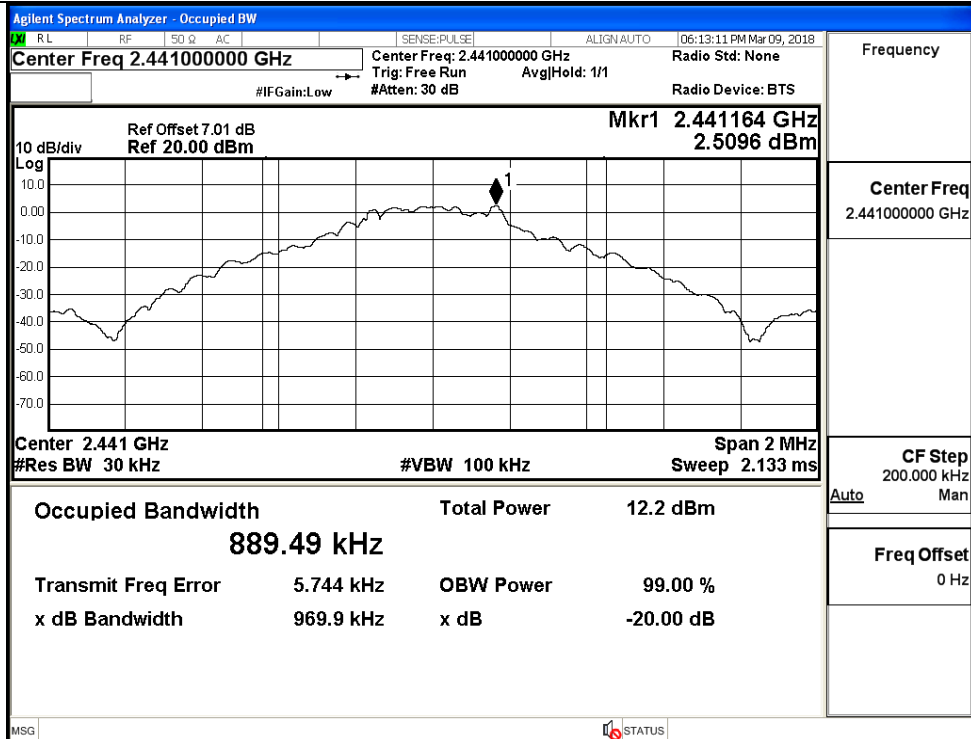
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9715	Not Specified	PASS
	MCH	0.9699	Not Specified	PASS
	HCH	0.9698	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.288	Not Specified	PASS
	MCH	1.288	Not Specified	PASS
	HCH	1.287	Not Specified	PASS
8DPSK	LCH	1.300	Not Specified	PASS
	MCH	1.290	Not Specified	PASS
	HCH	1.289	Not Specified	PASS

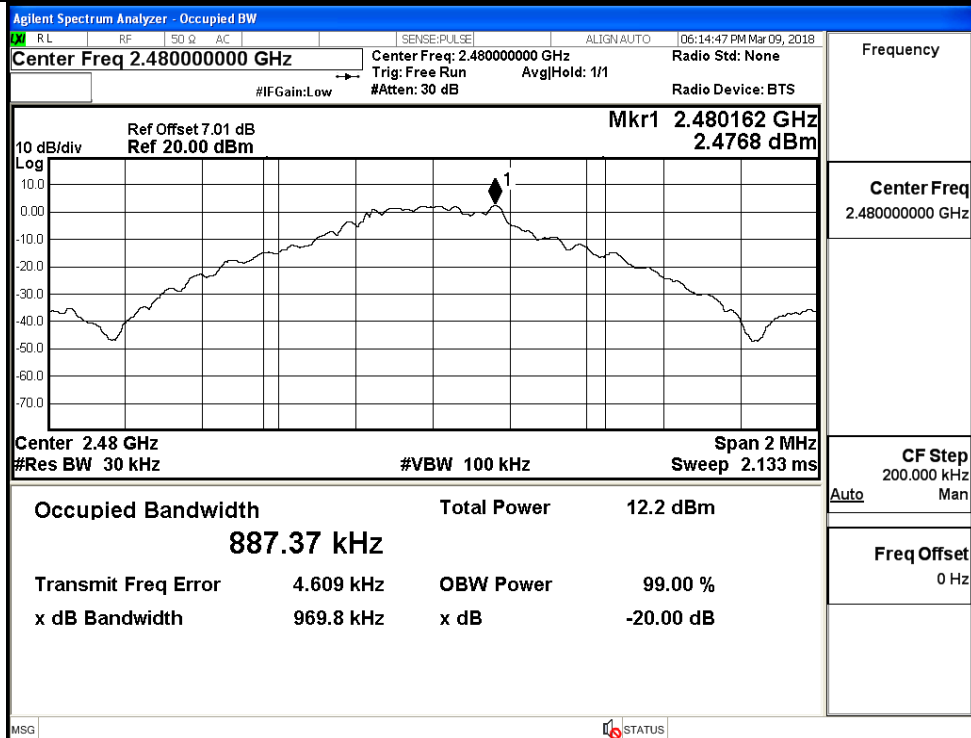
Test Graphs

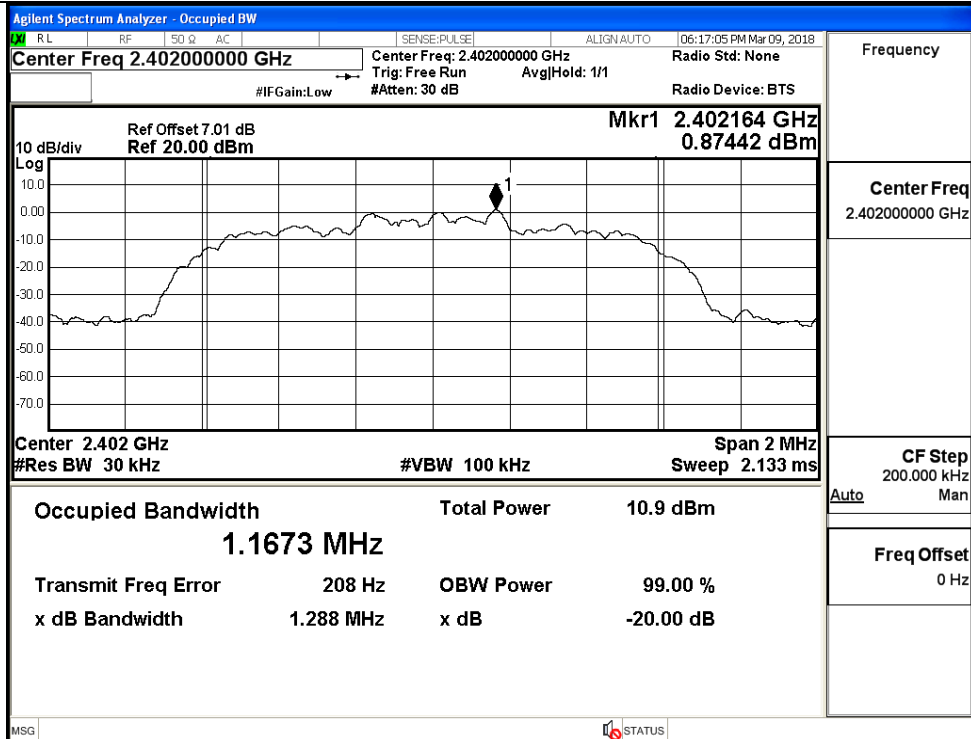
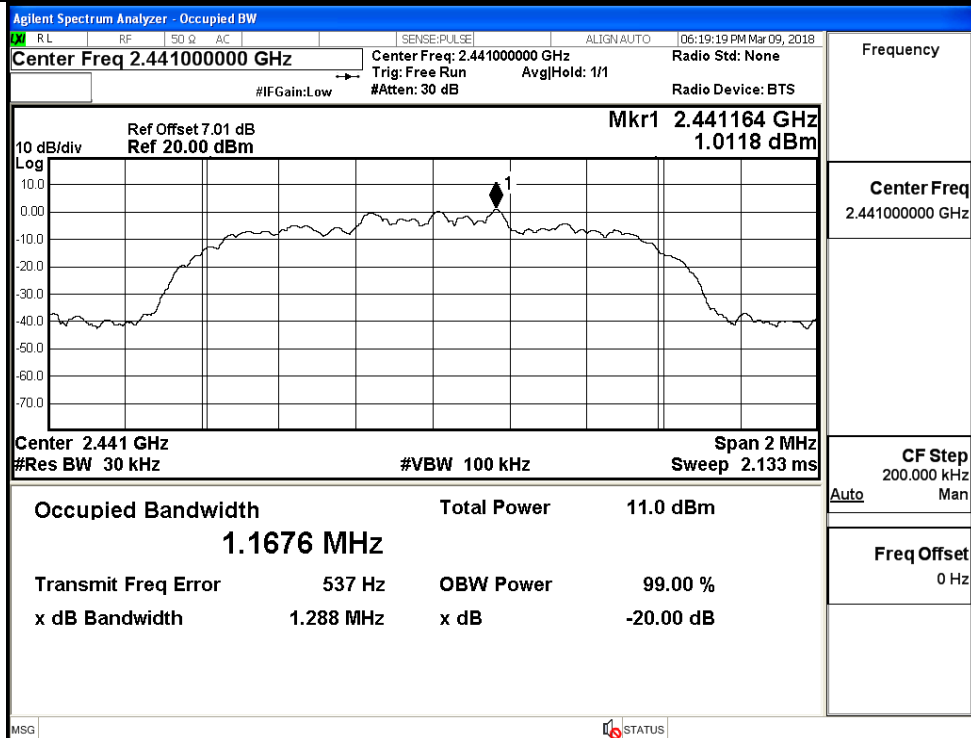


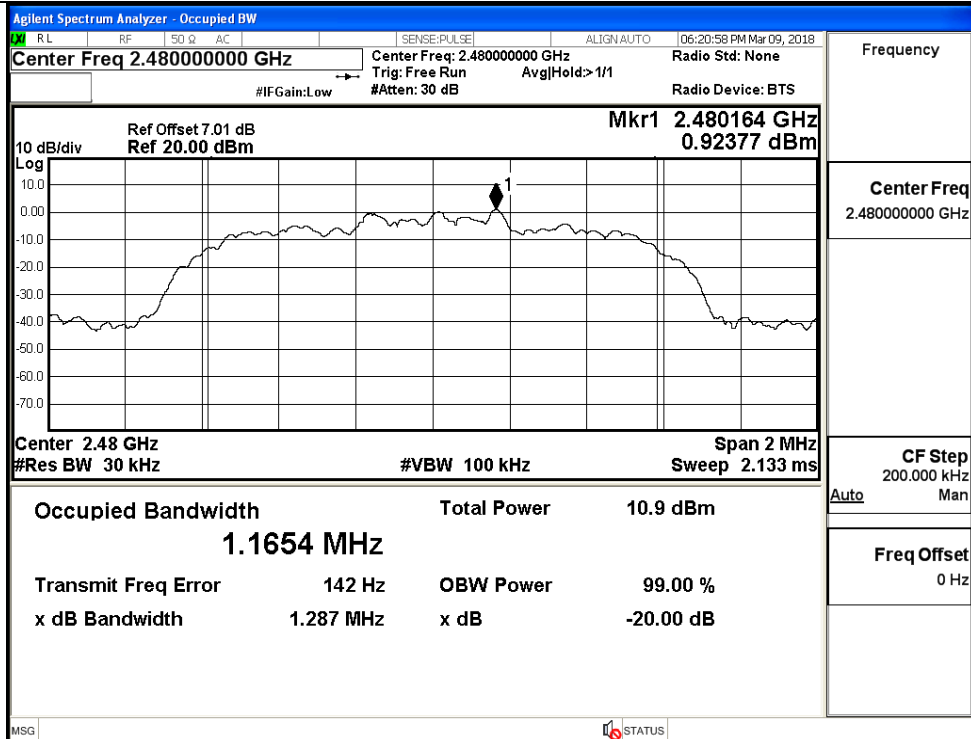
GFSK/MCH



GFSK/HCH



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

$\pi/4$ DQPSK/HCH

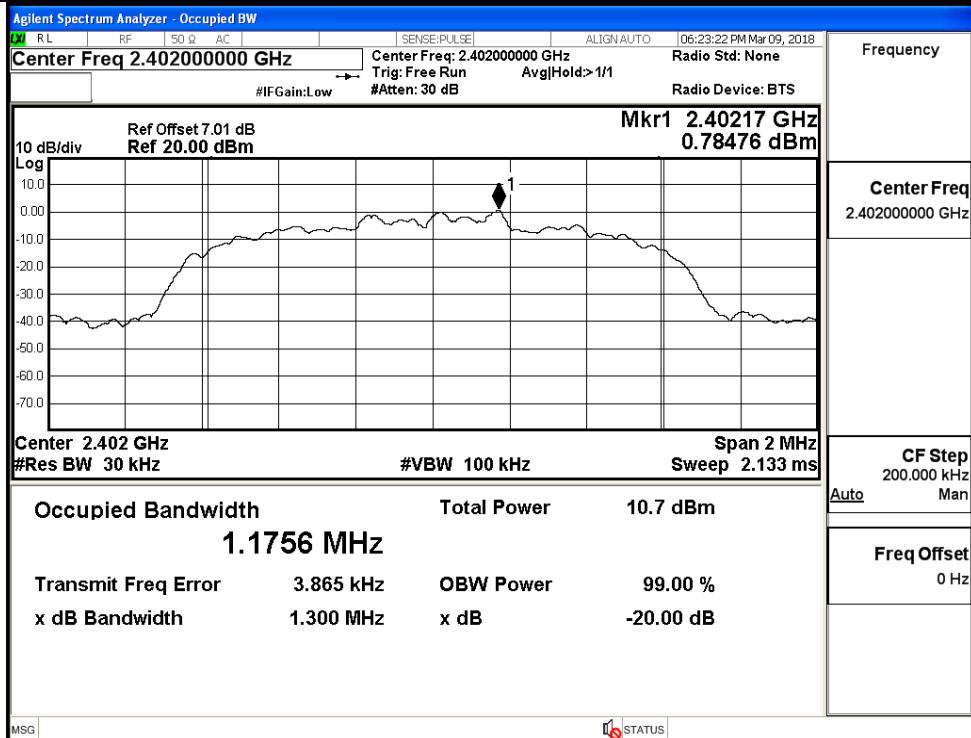
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/LCH



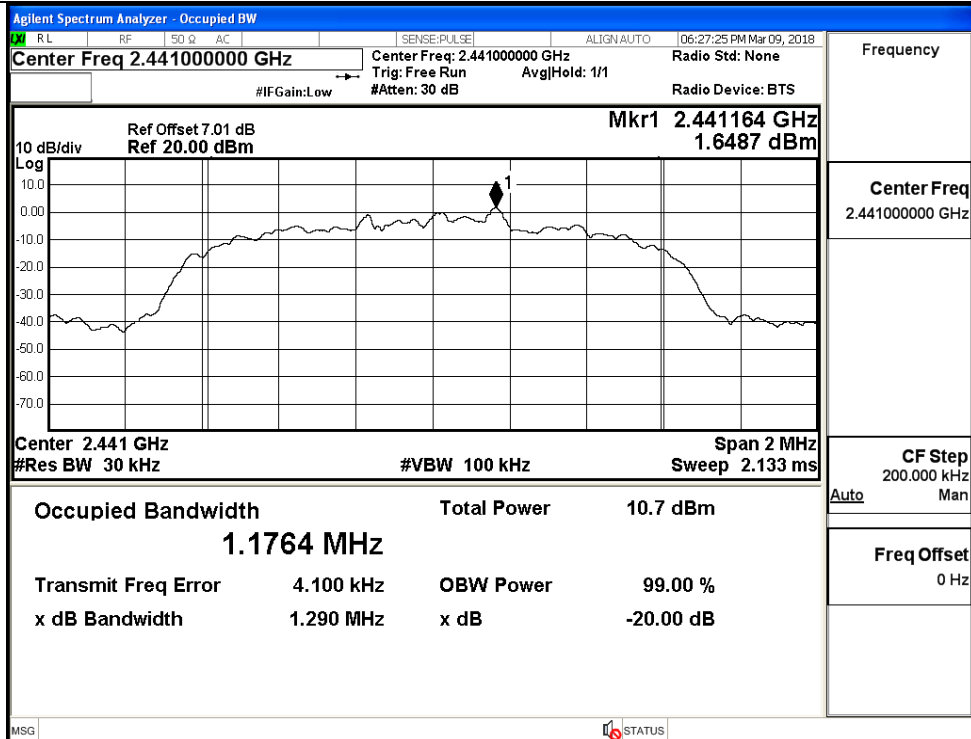
Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

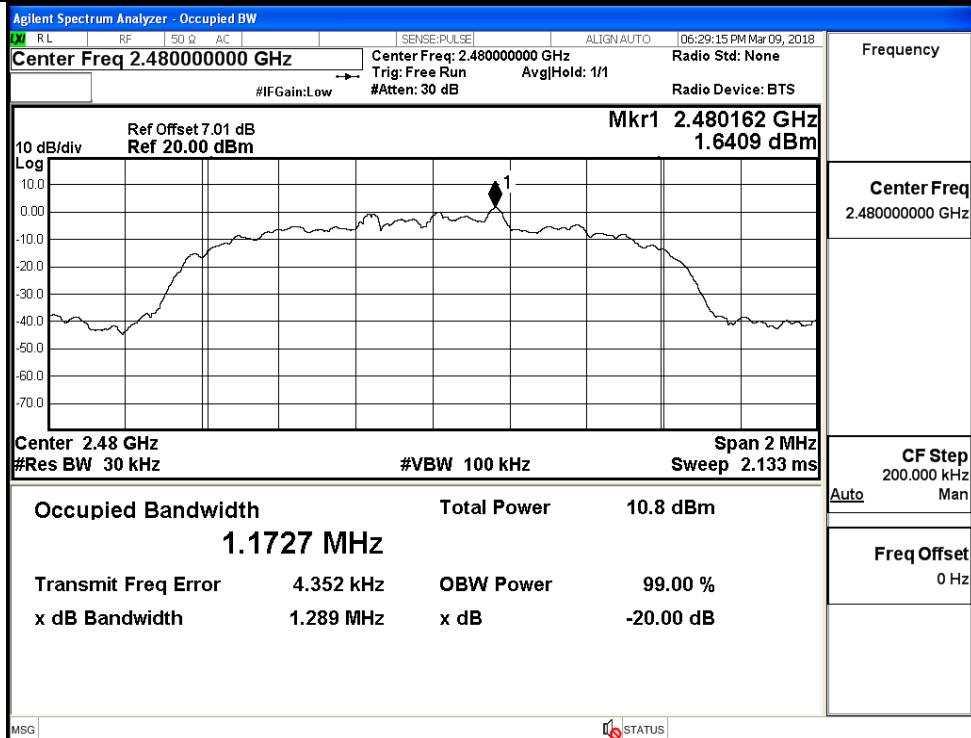
Auto

Freq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH

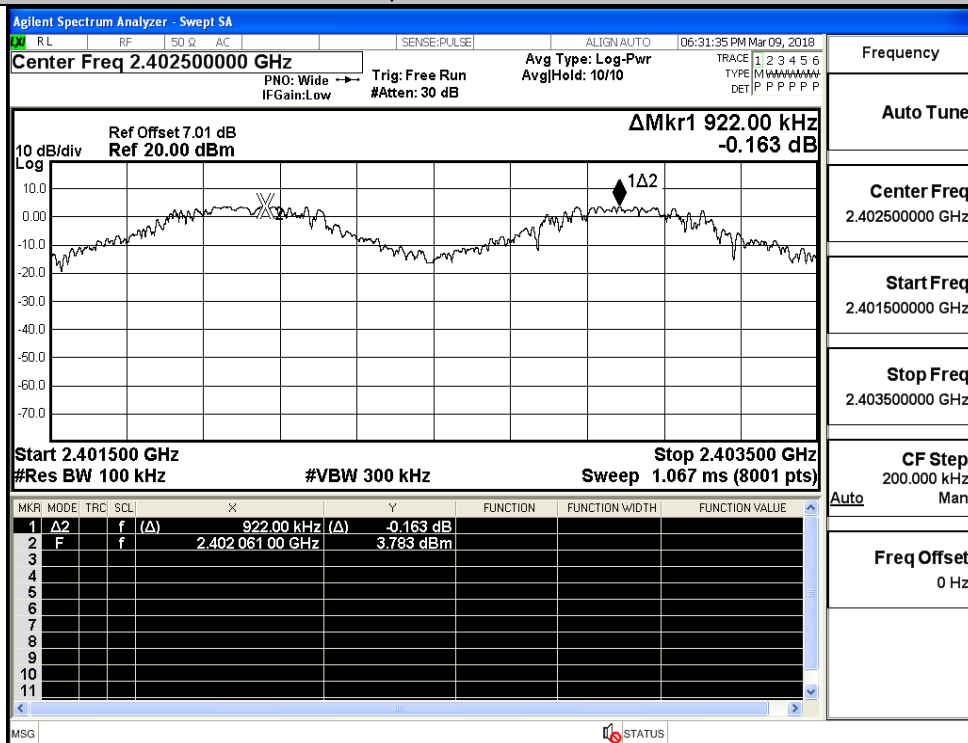


A.3 Carrier Frequency Separation

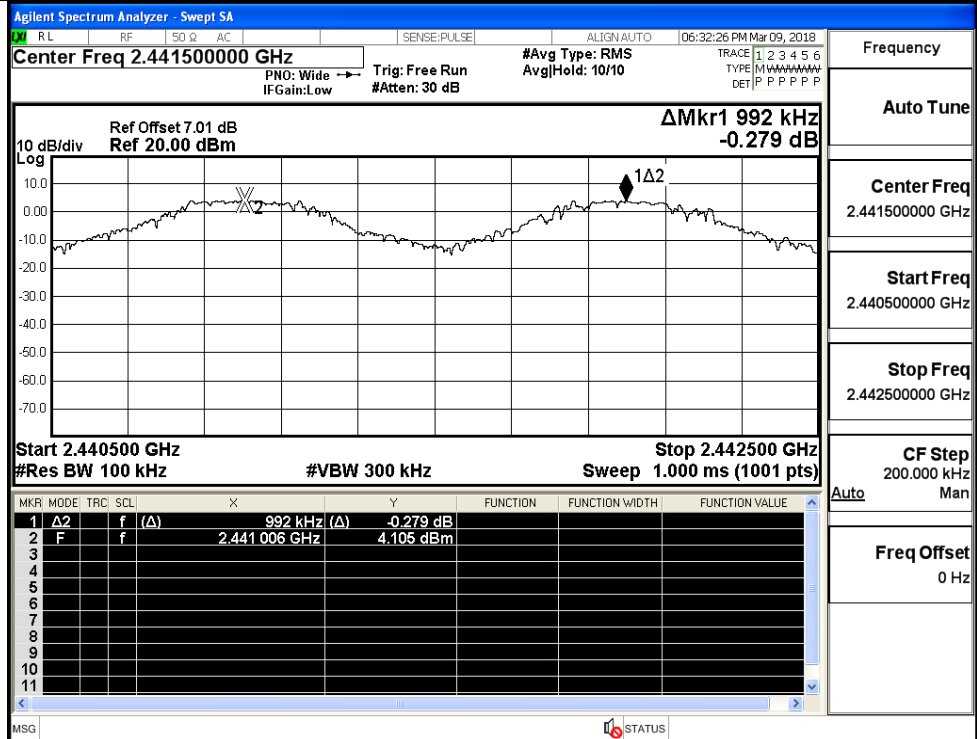
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.922	0.648	PASS
	MCH	0.992	0.648	PASS
	HCH	0.860	0.648	PASS
$\pi/4$ DQPSK	LCH	1.002	0.859	PASS
	MCH	1.136	0.859	PASS
	HCH	1.014	0.859	PASS
8DPSK	LCH	1.222	0.867	PASS
	MCH	1.266	0.867	PASS
	HCH	1.178	0.867	PASS

Test Graphs

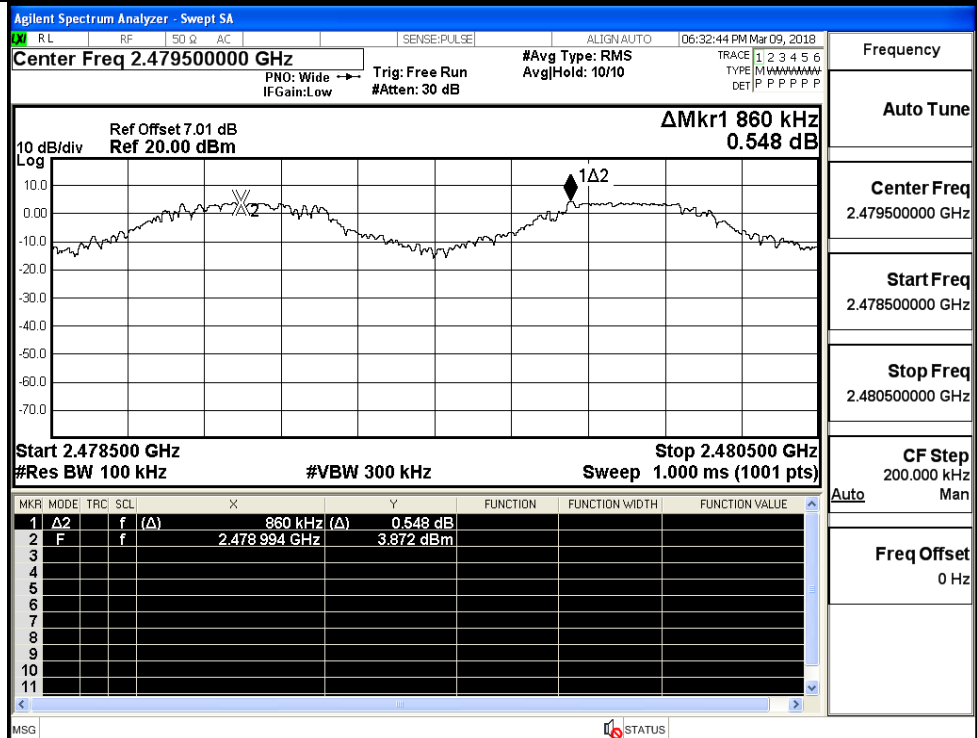
GFSK/LCH

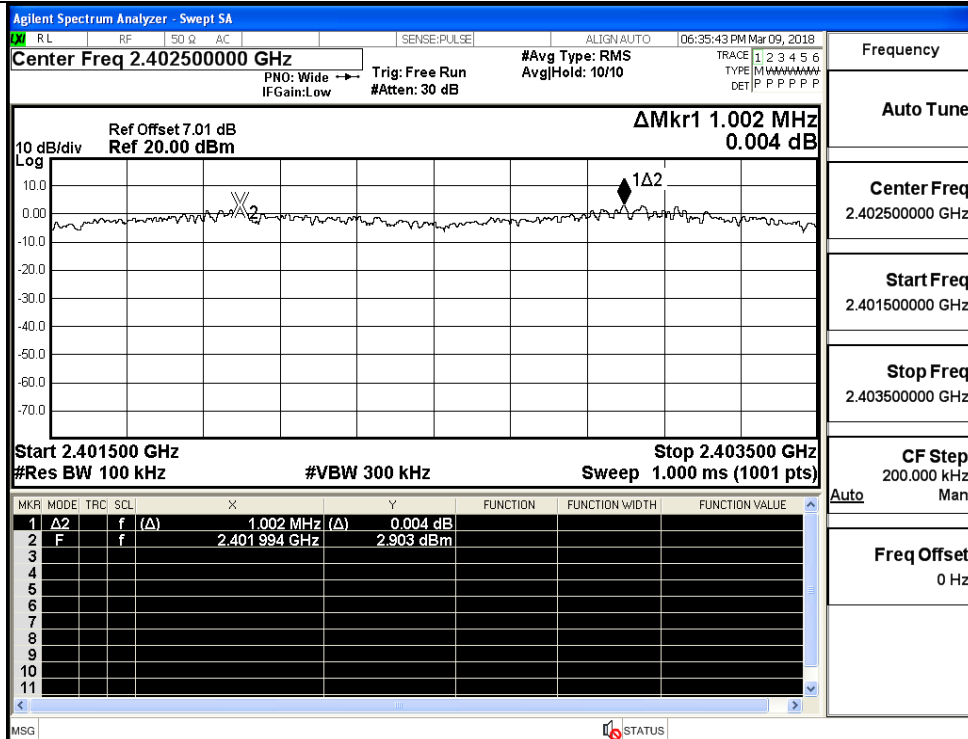


GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

Auto Tune

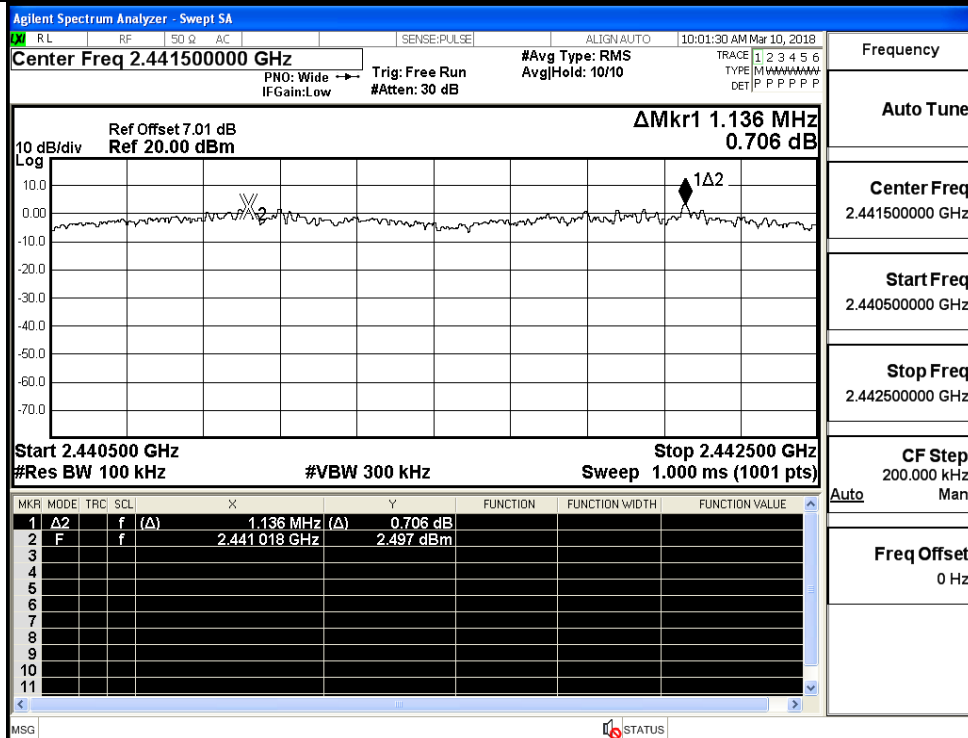
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

 $\pi/4$ DQPSK/MCH

Frequency

Auto Tune

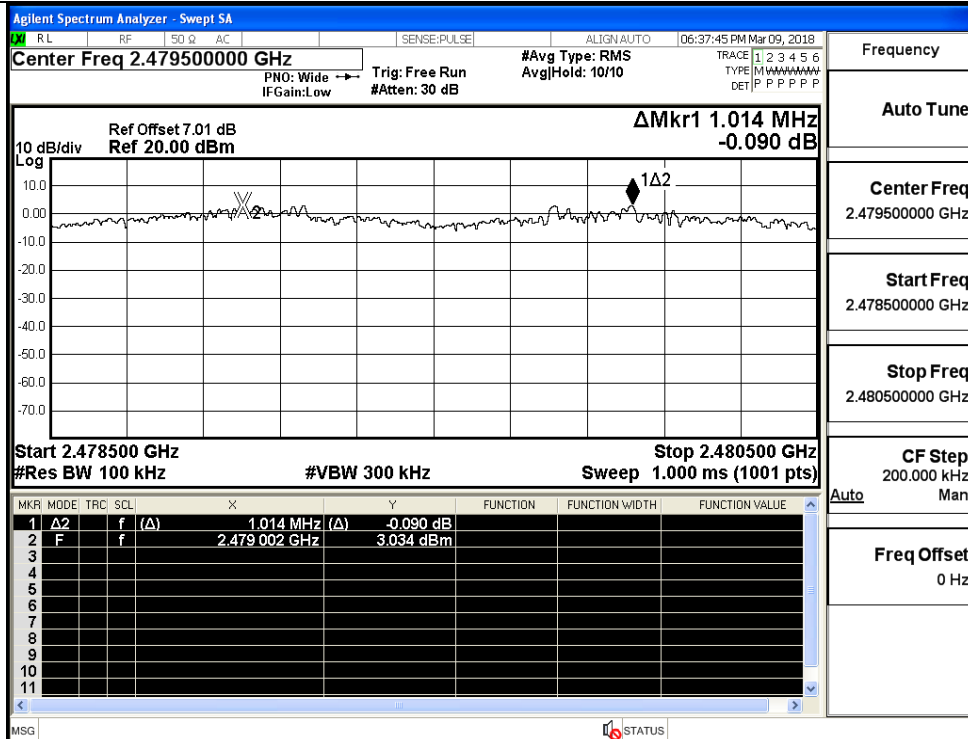
Center Freq
2.441500000 GHz

Start Freq
2.440500000 GHz

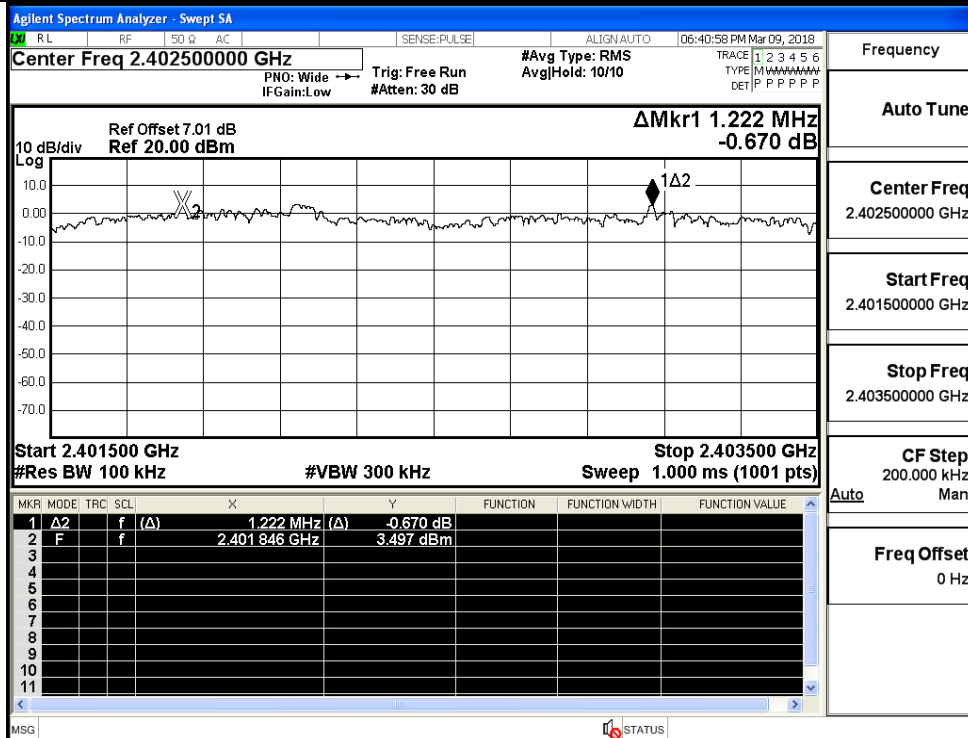
Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

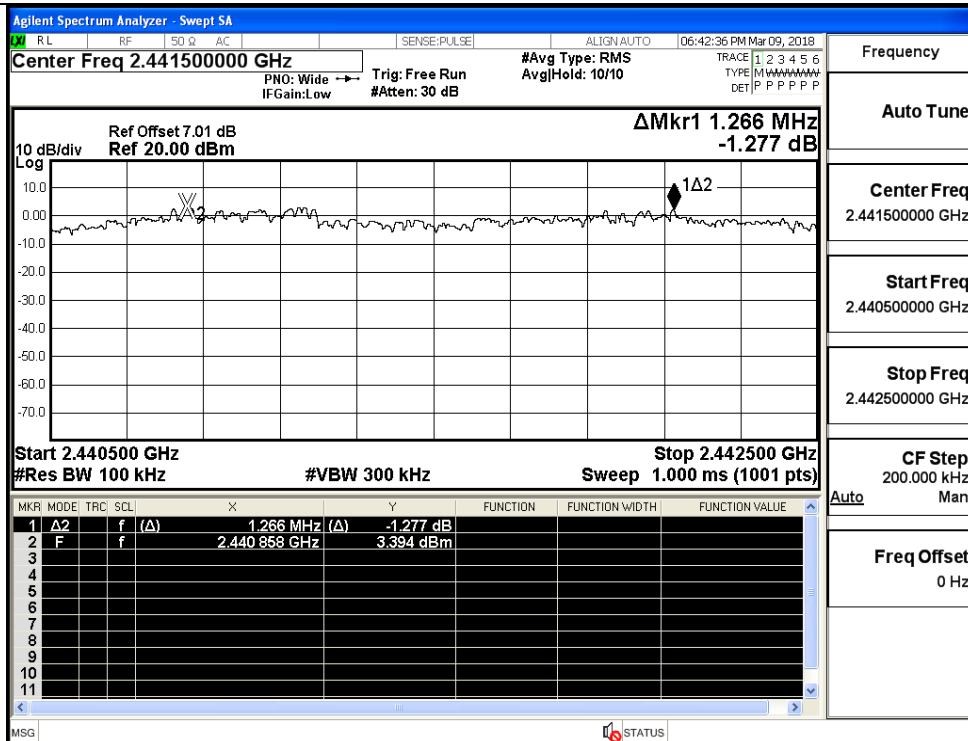
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

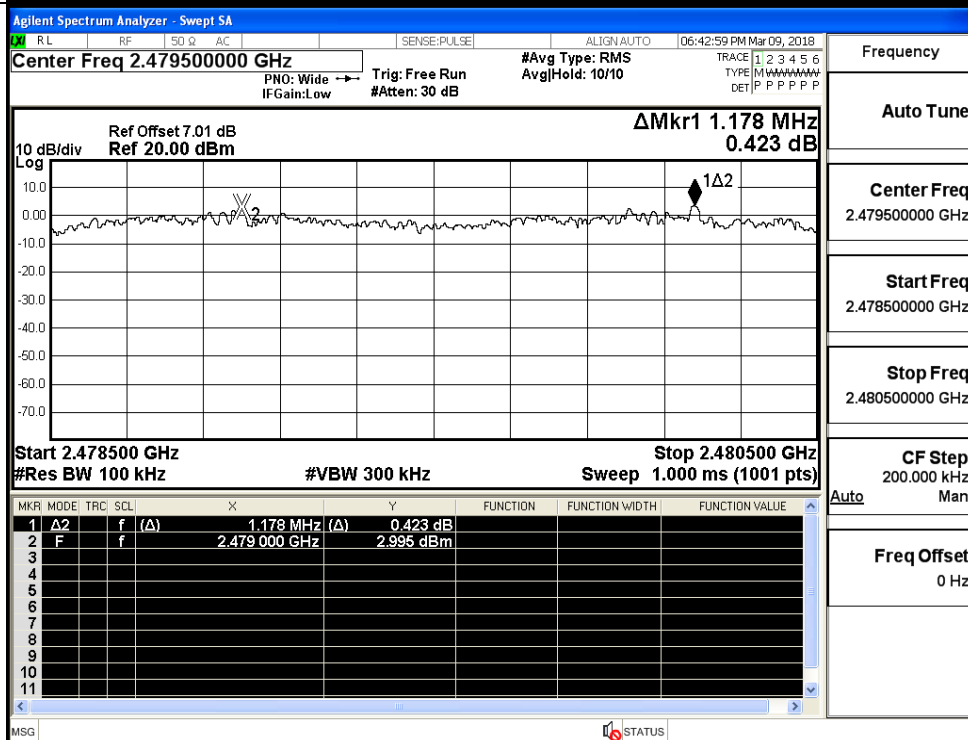
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

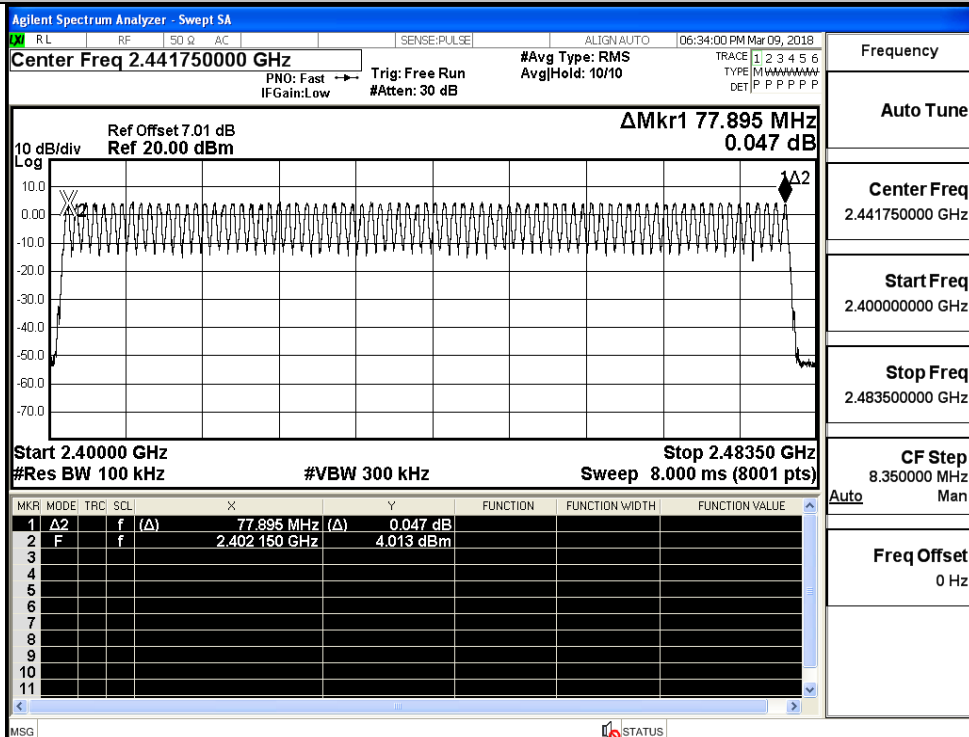
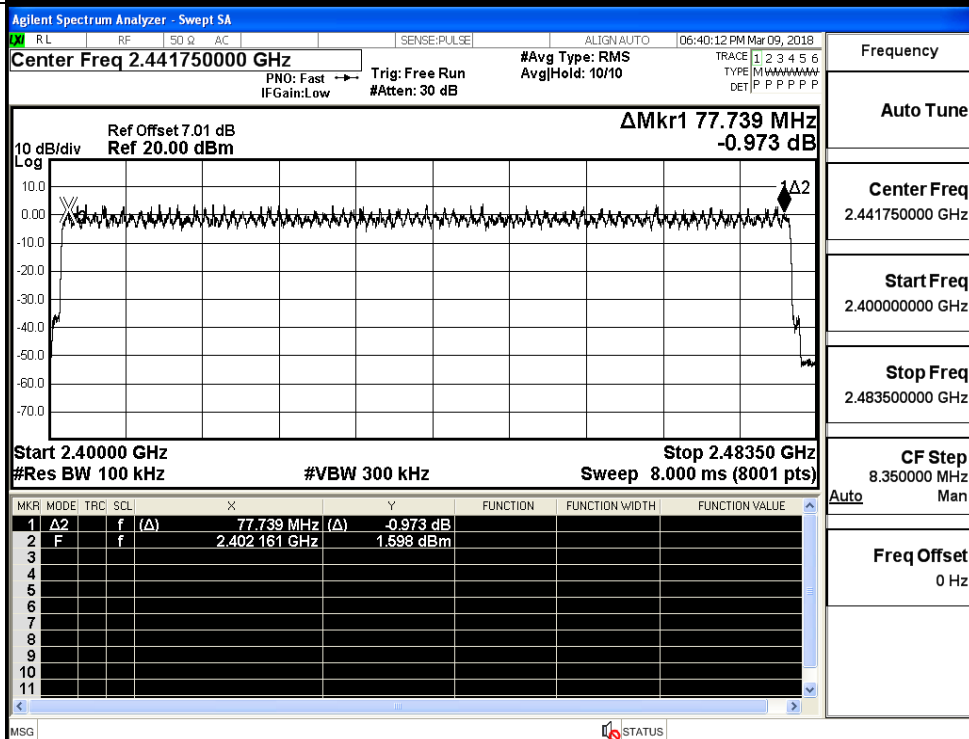


A.4 Hopping Channel Number

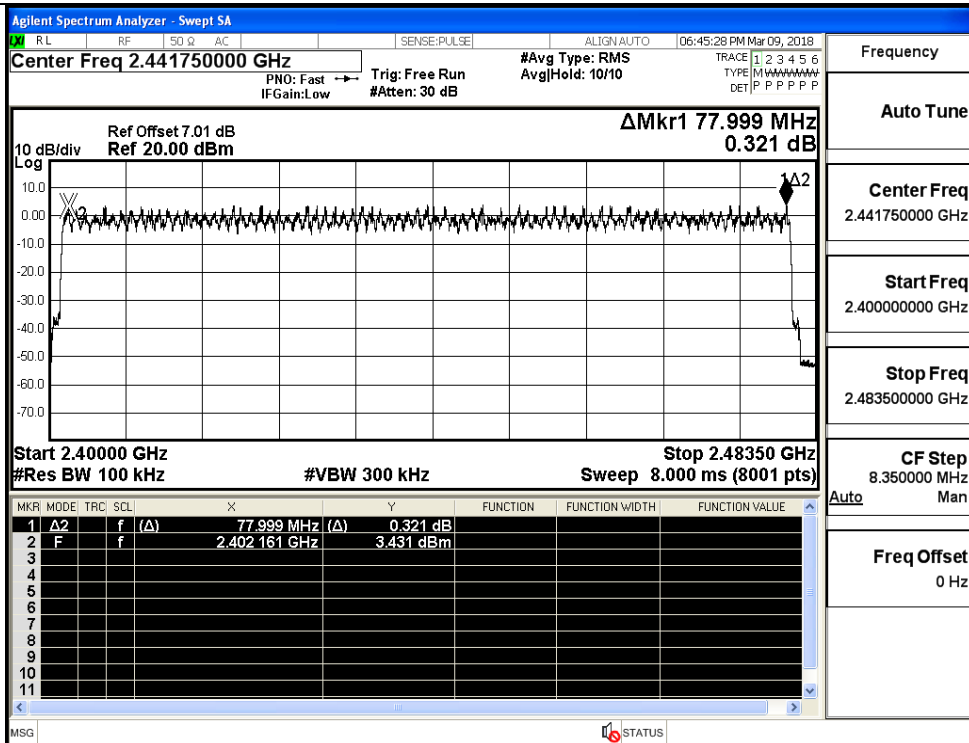
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

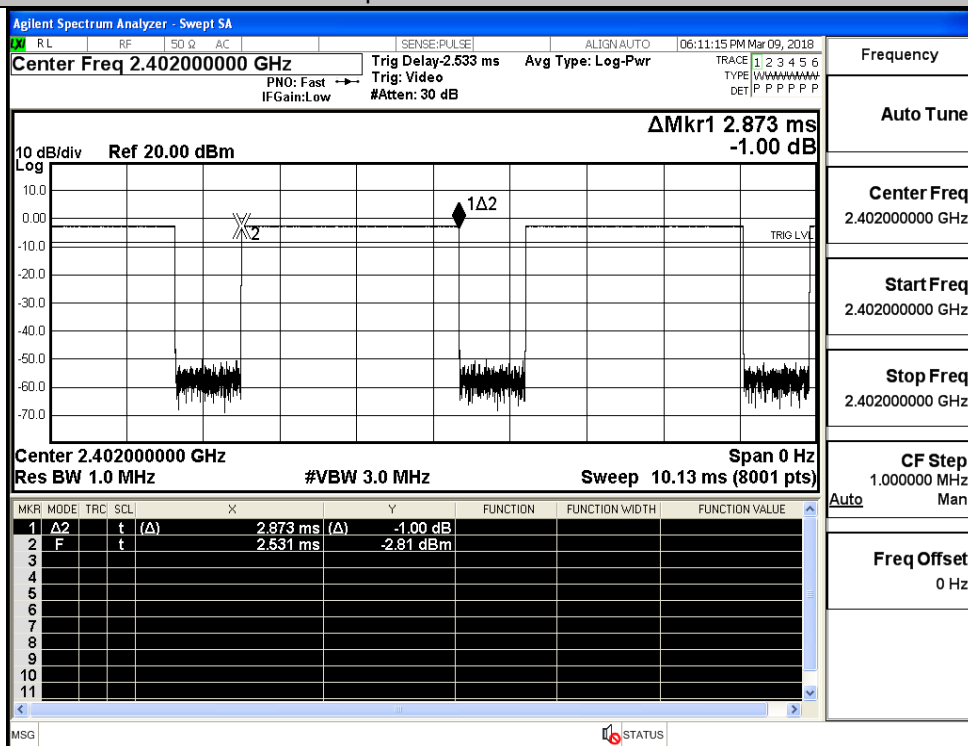


A.5 Dwell Time

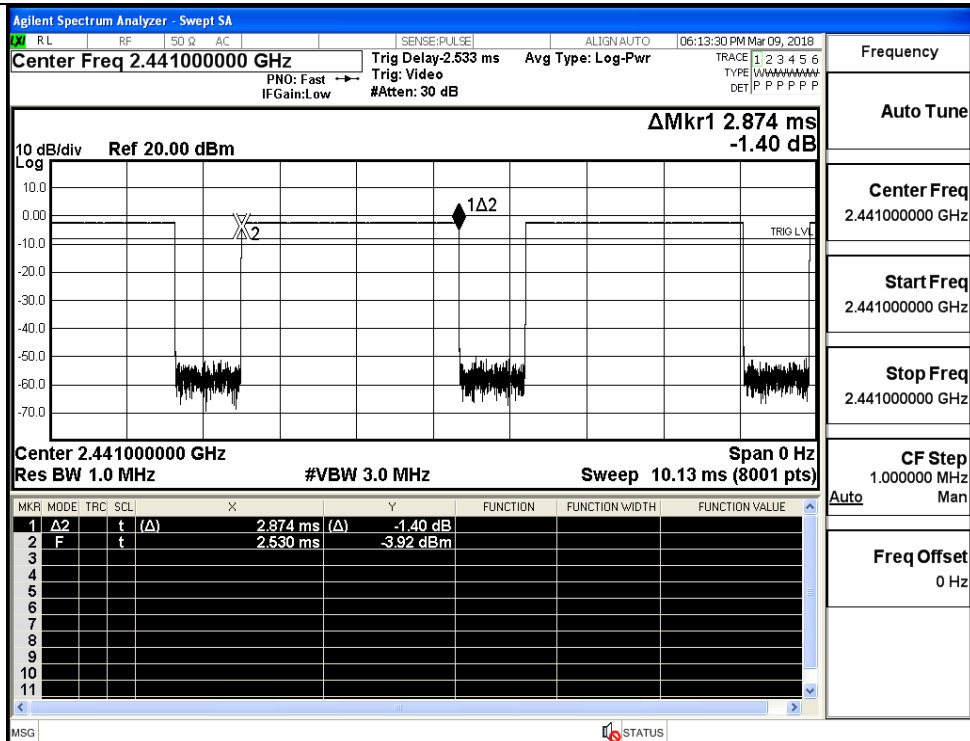
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
	2DH5	HCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.87	106.7	0.307	0.4	PASS
	3DH5	MCH	2.87	106.7	0.307	0.4	PASS
	3DH5	HCH	2.87	106.7	0.307	0.4	PASS

Test Graphs

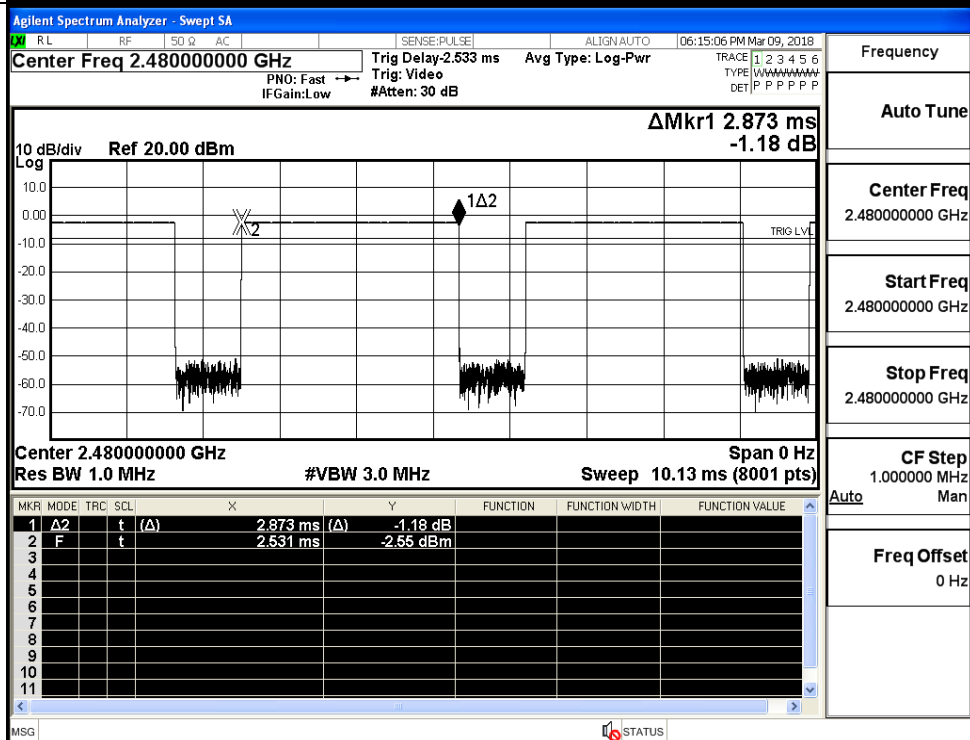
GFSK_DH5/LCH



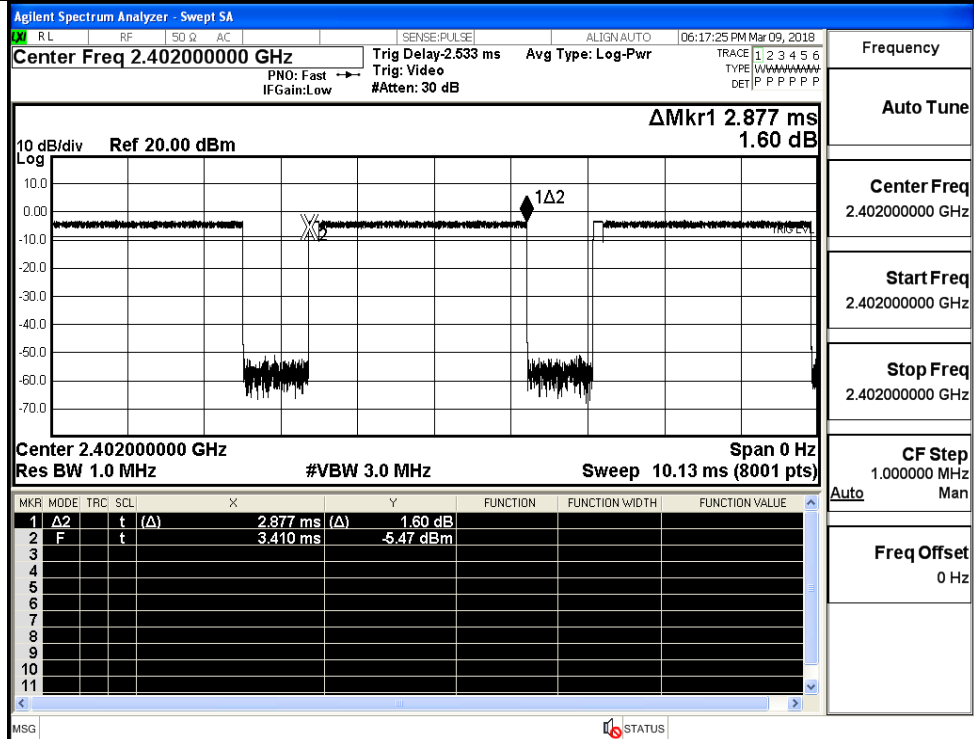
GFSK_DH5/MCH



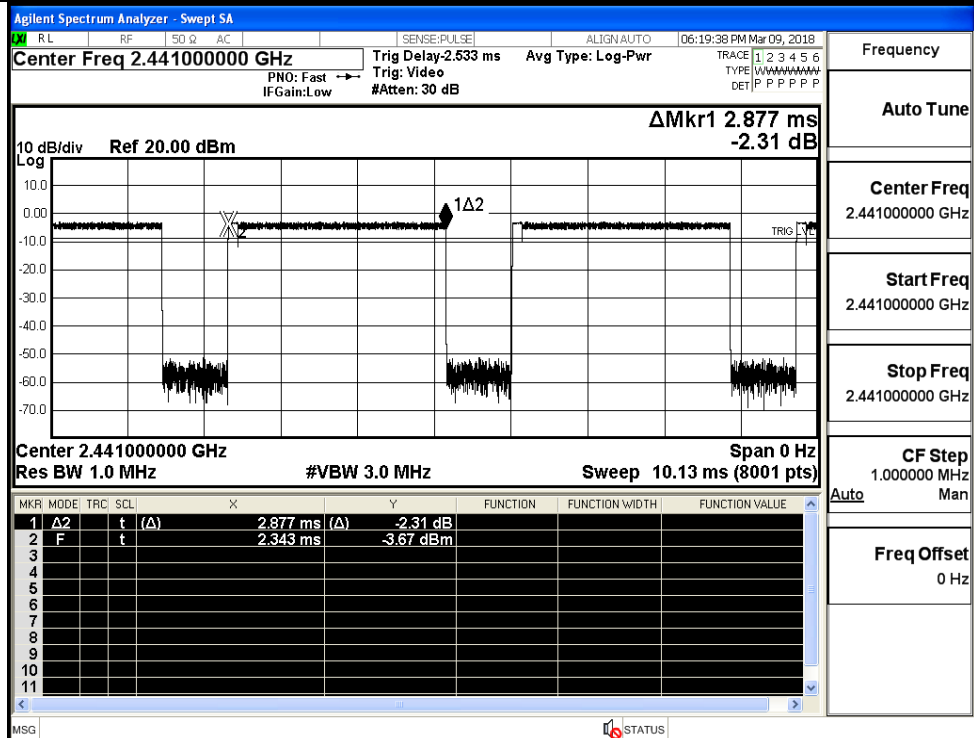
GFSK_DH5/HCH



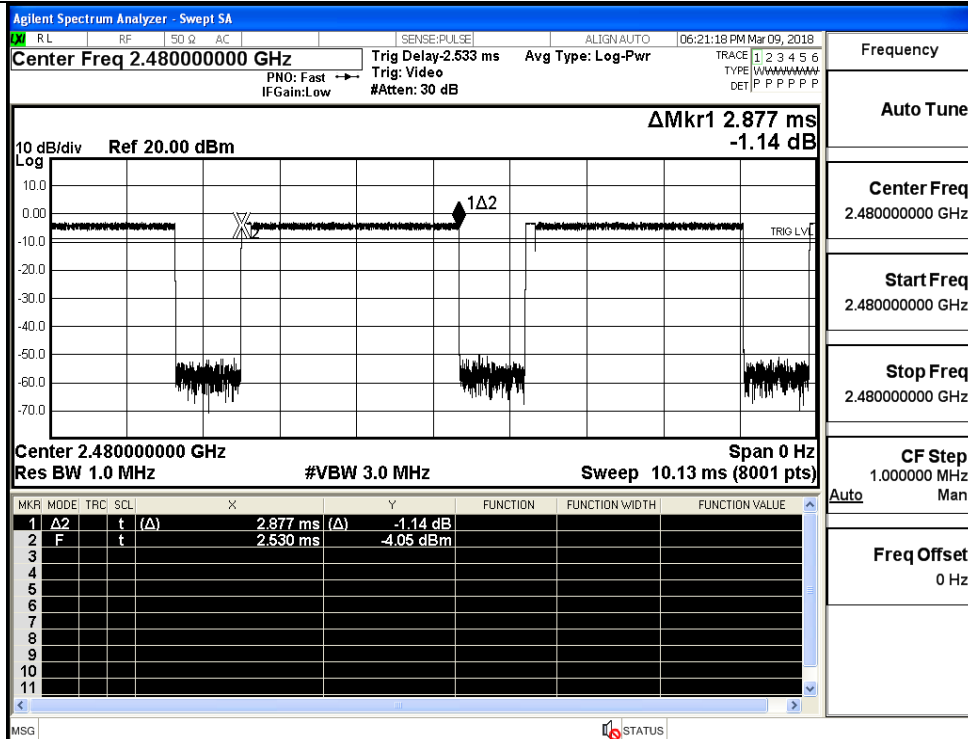
$\pi/4$ DQPSK
_2DH5/LCH



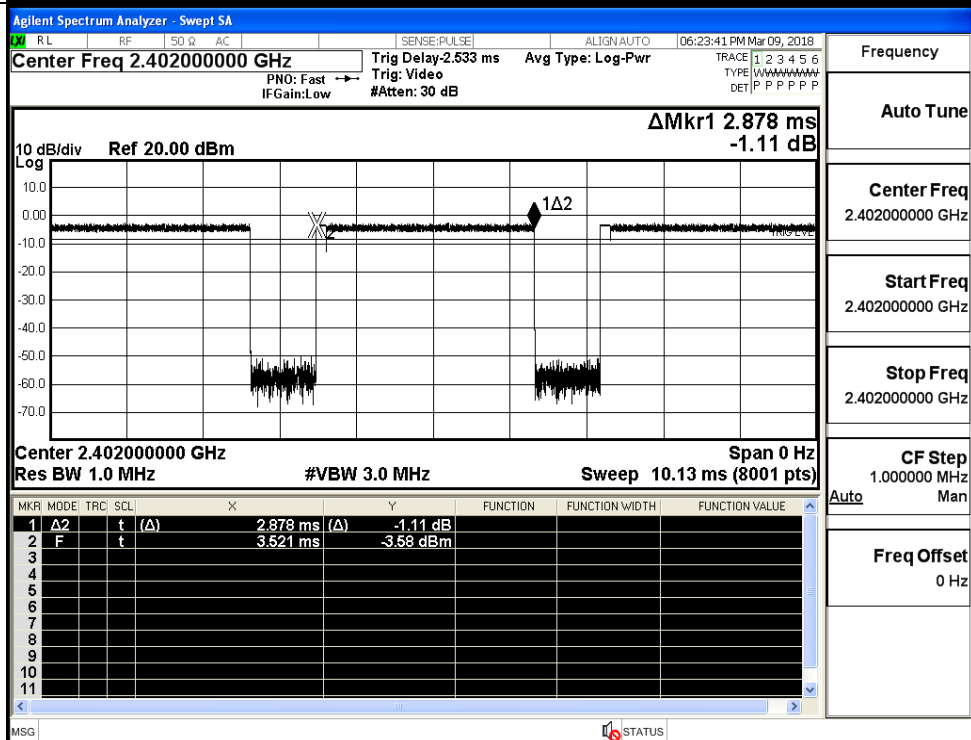
$\pi/4$ DQPSK
_2DH5/MCH



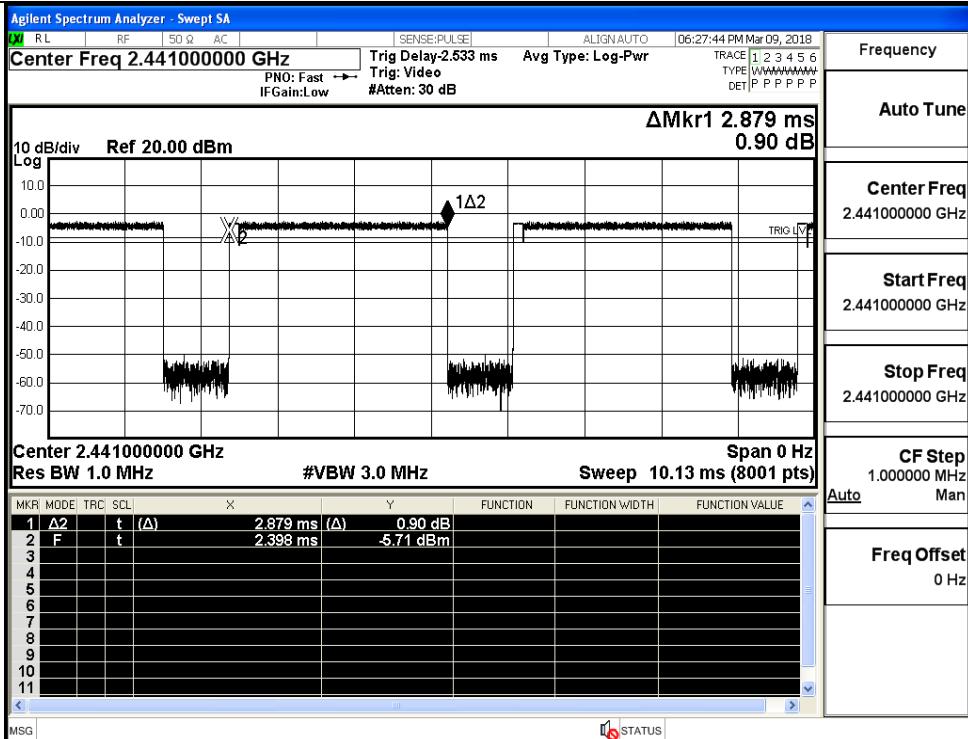
$\pi/4$ DQPSK
_2DH5/HCH



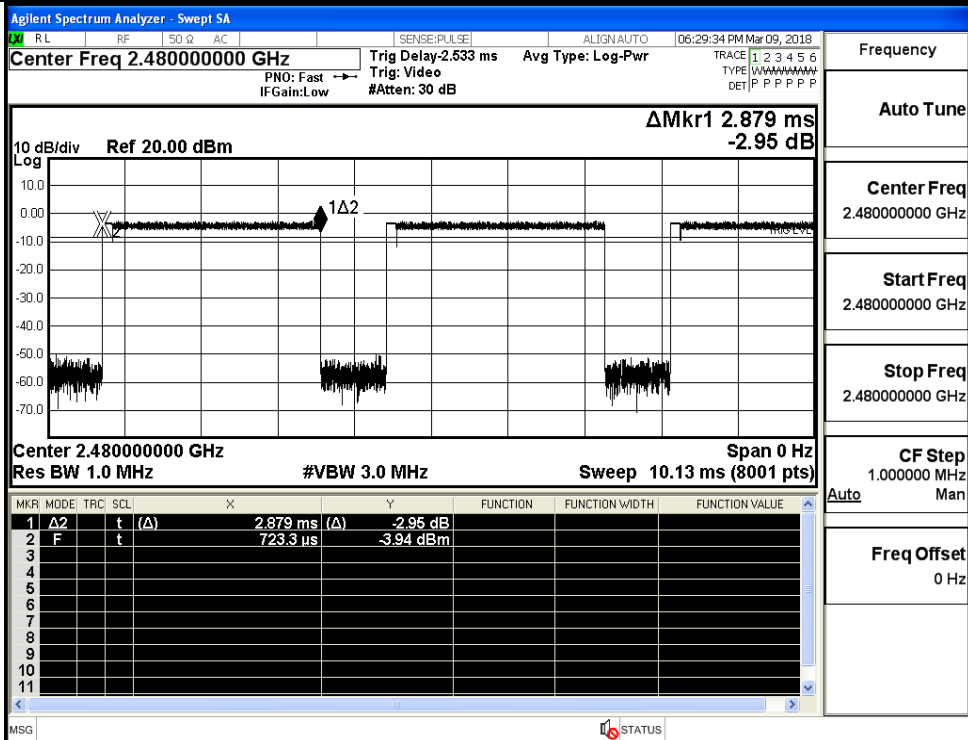
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

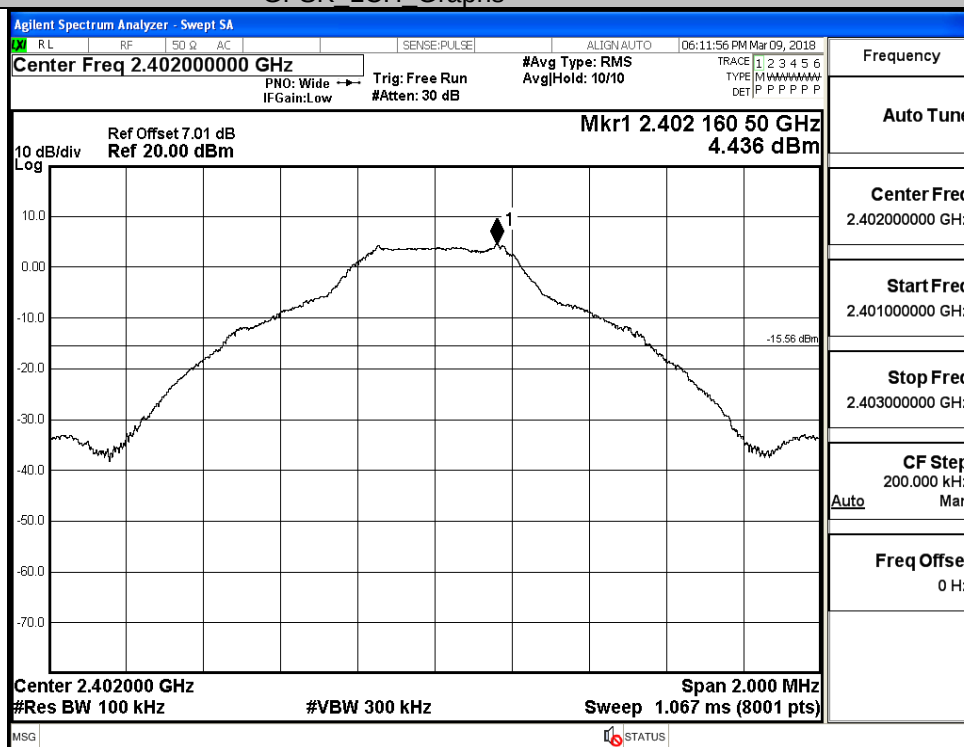


A.6 RF Conducted Spurious Emissions

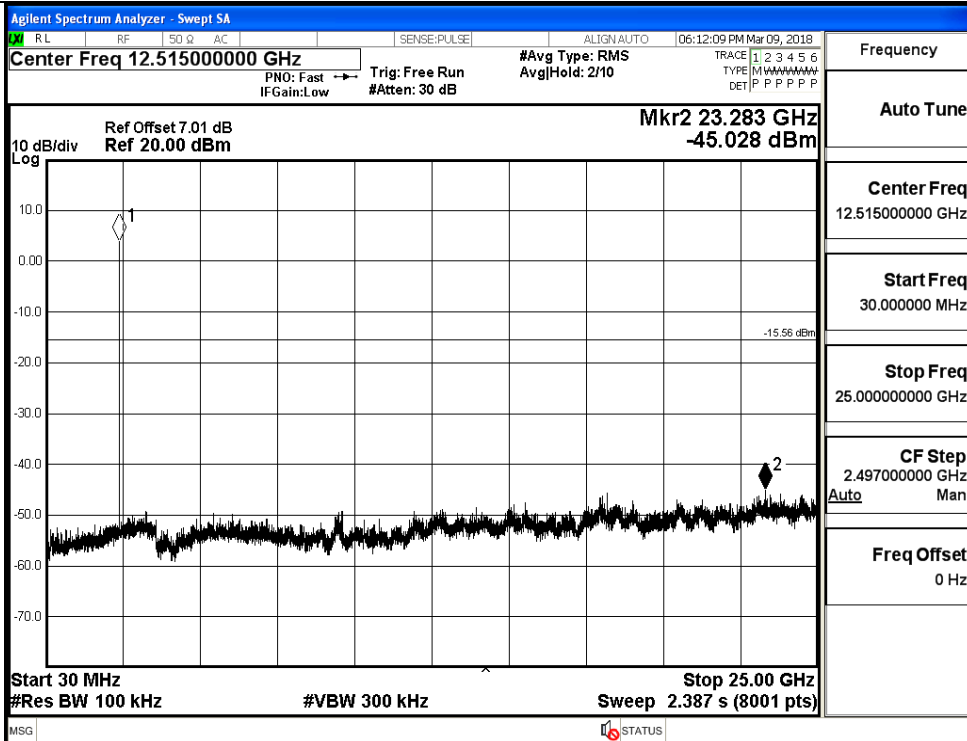
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.436	-45.028	-15.564	PASS
	MCH	4.475	-46.139	-15.525	PASS
	HCH	4.493	-45.519	-15.507	PASS
$\pi/4$ DQPSK	LCH	3.512	-45.647	-16.488	PASS
	MCH	3.66	-45.480	-16.340	PASS
	HCH	3.21	-45.208	-16.790	PASS
8DPSK	LCH	3.467	-45.447	-16.533	PASS
	MCH	3.742	-46.209	-16.258	PASS
	HCH	3.695	-45.261	-16.305	PASS

GFSK LCH Graphs

Pref

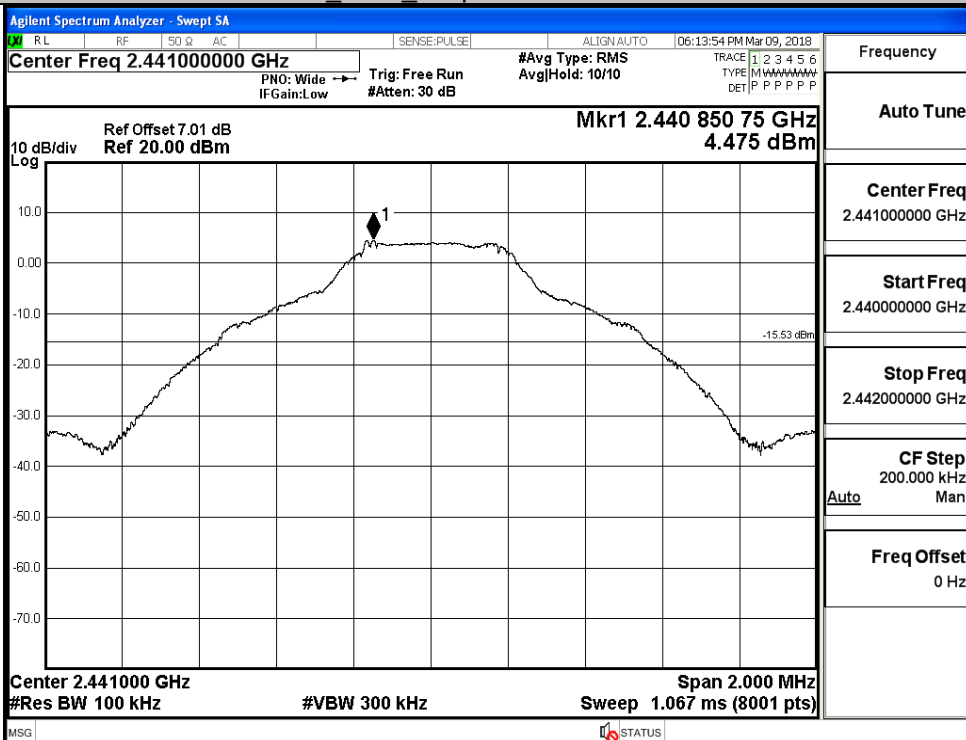


Puw

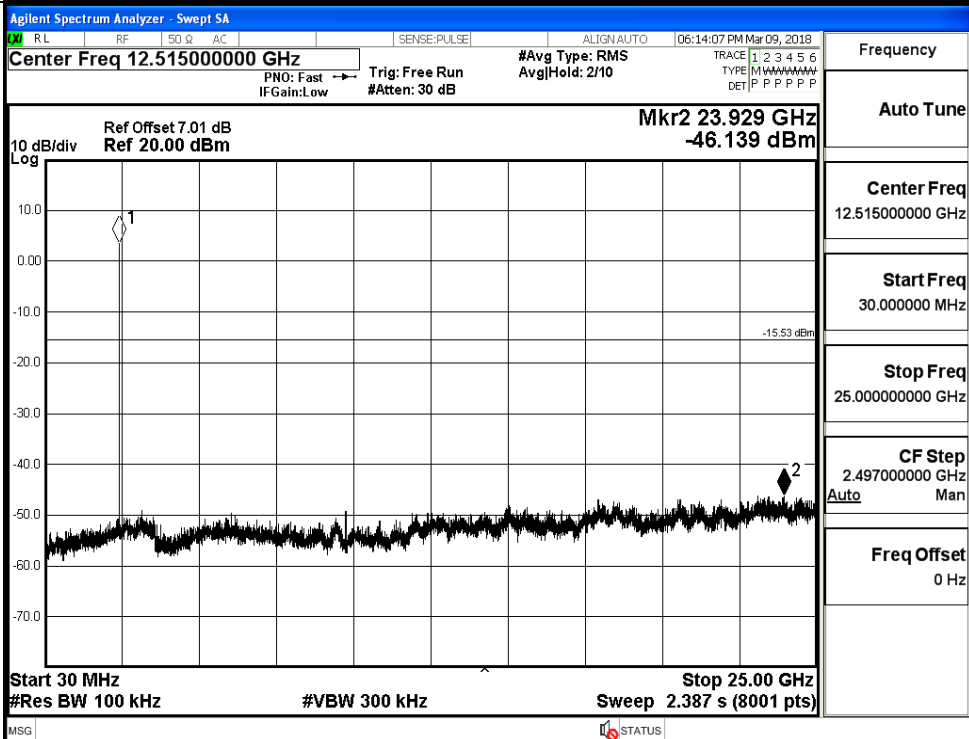


GFSK_MCH_Graphs

Pref

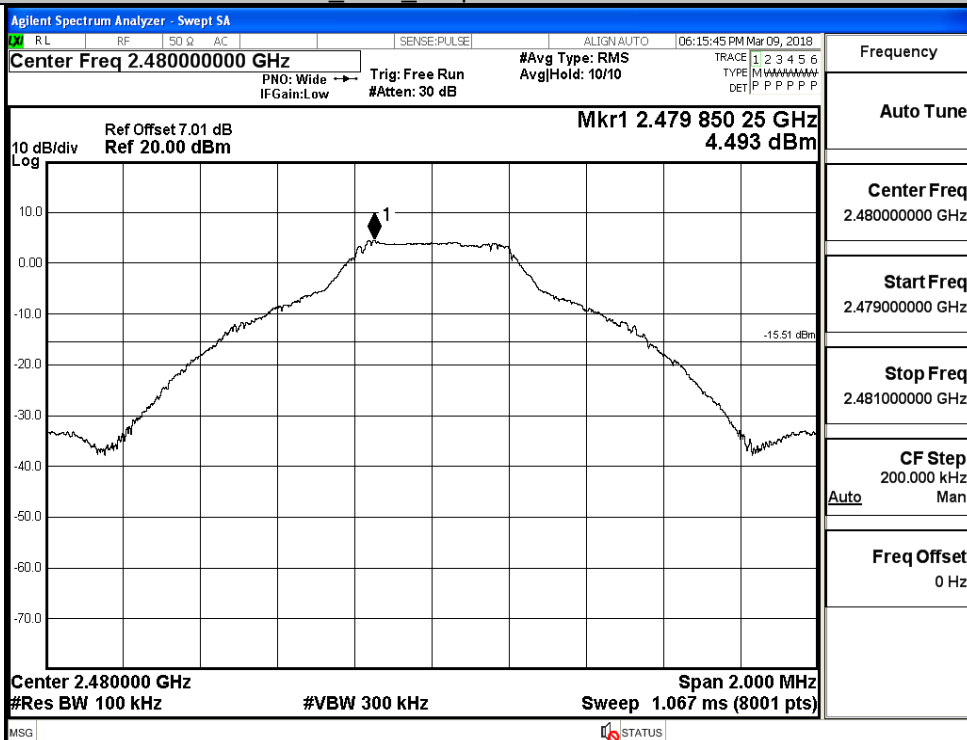


Puw

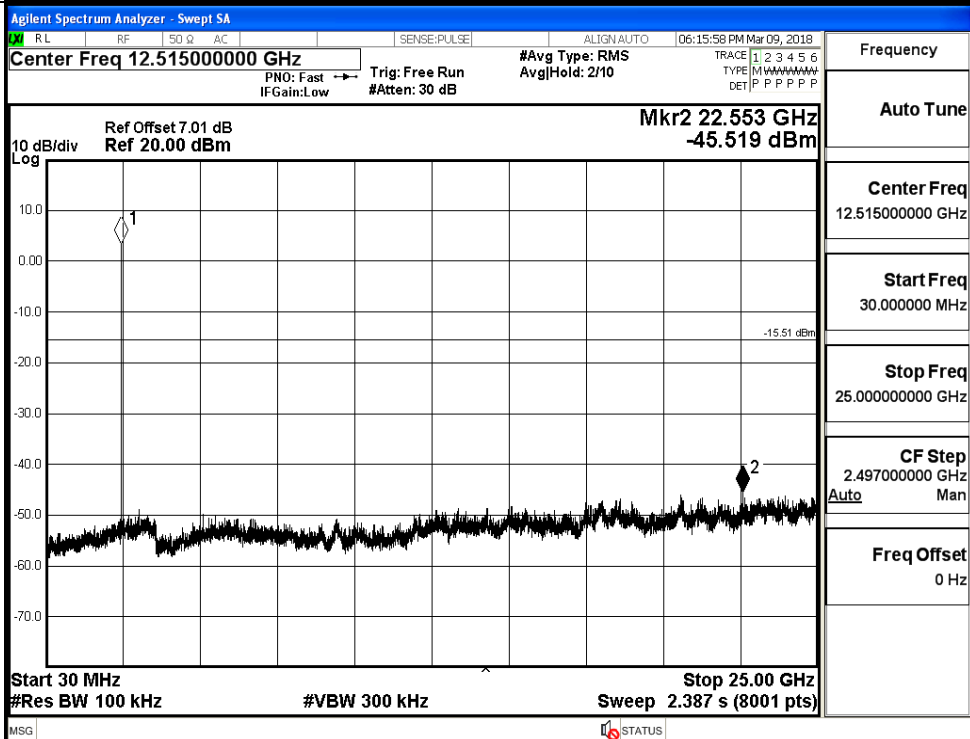


GFSK_HCH_Graphs

Pref

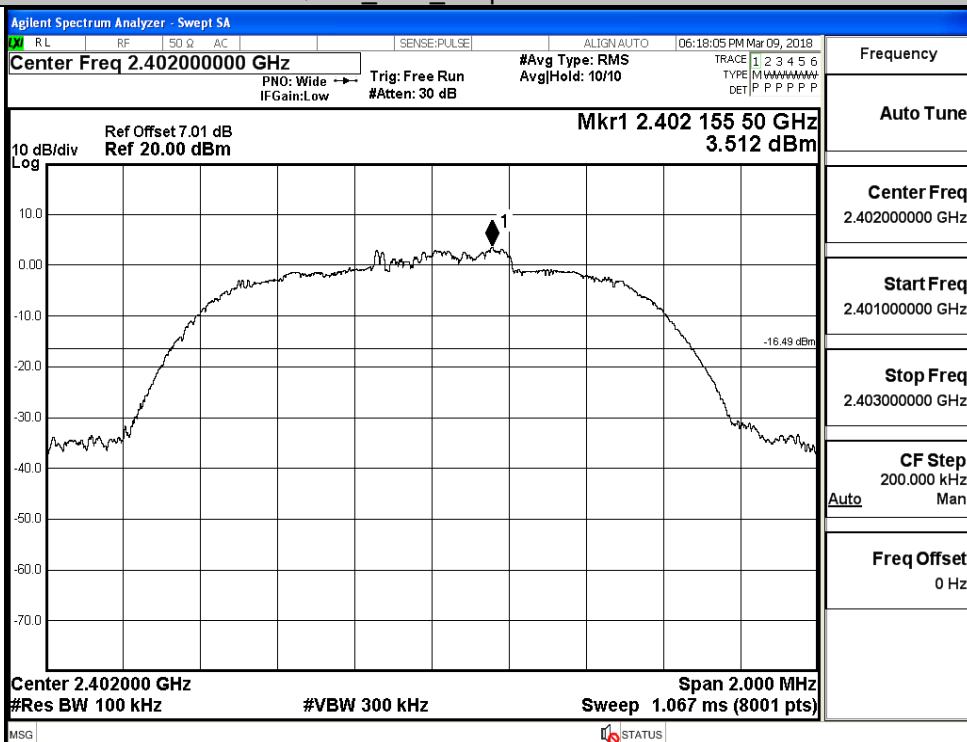


Puw

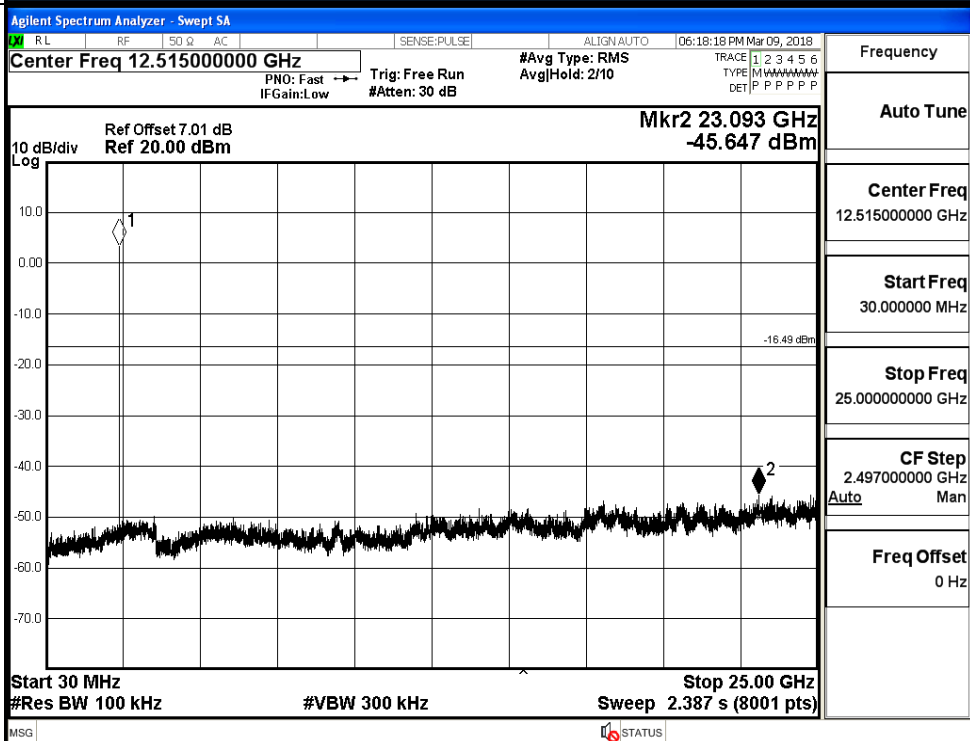


π /4DQPSK_LCH_Graphs

Pref

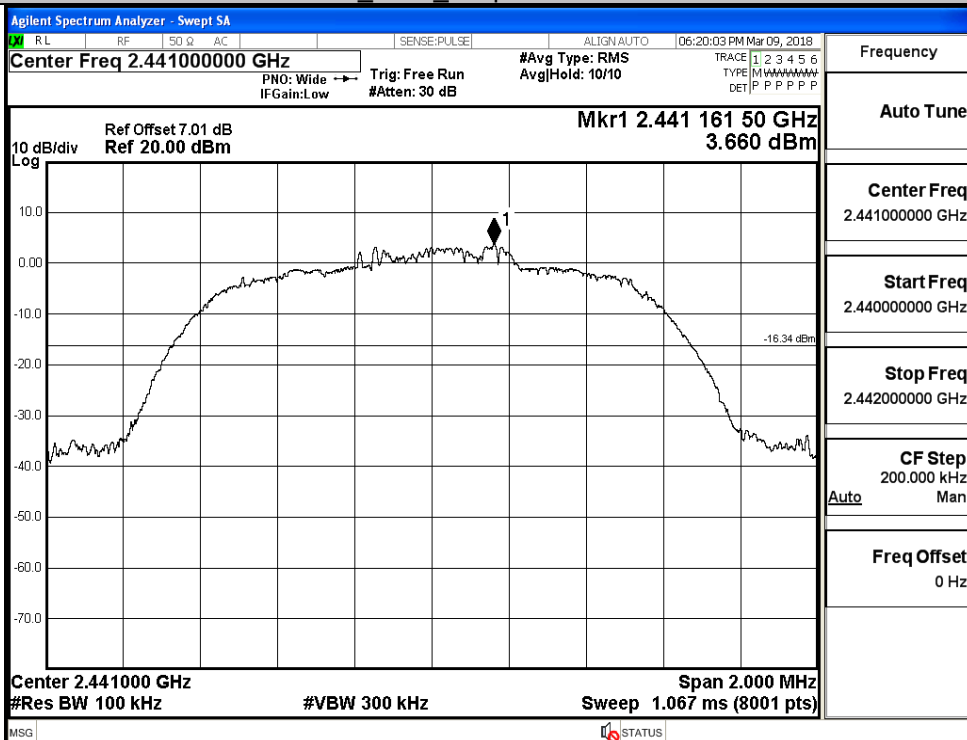


Puw

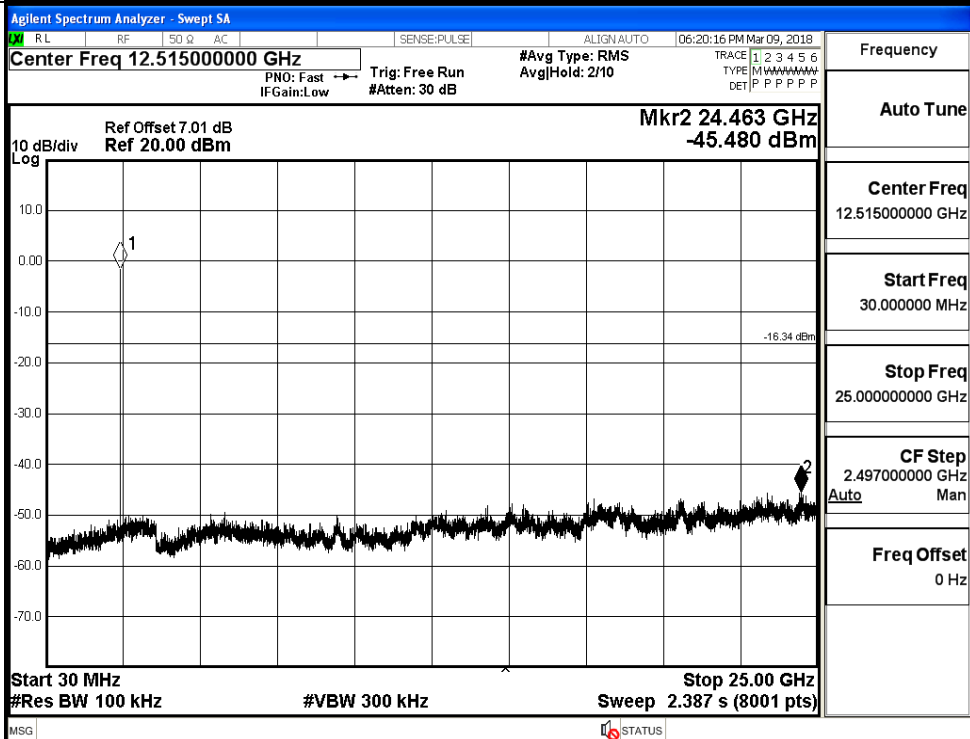


π /4DQPSK_MCH_Graphs

Pref

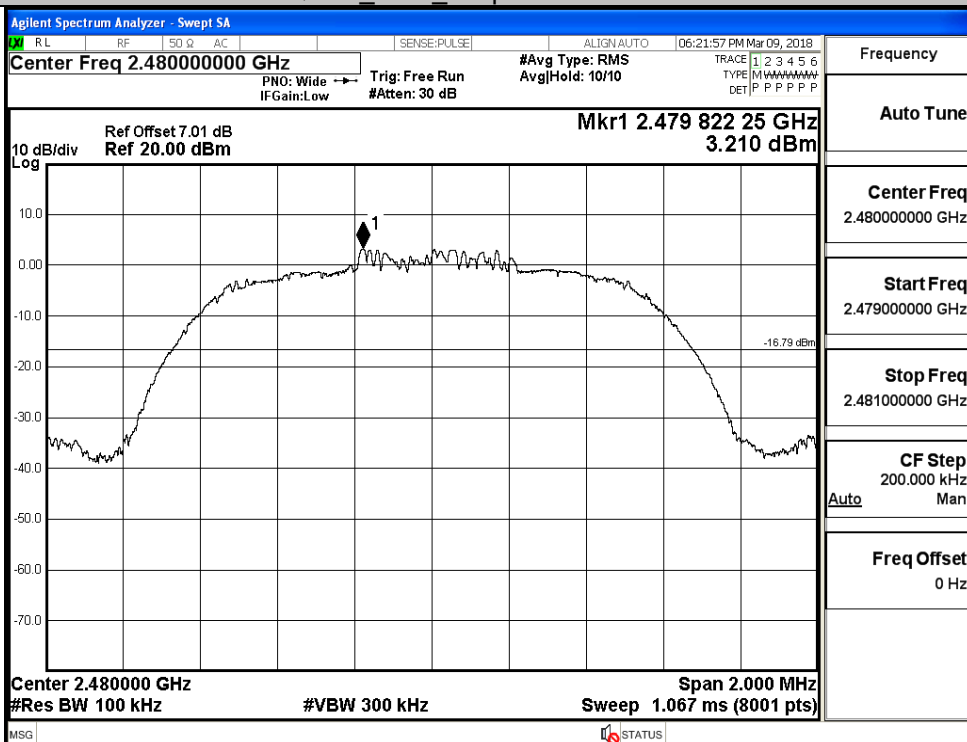


Puw

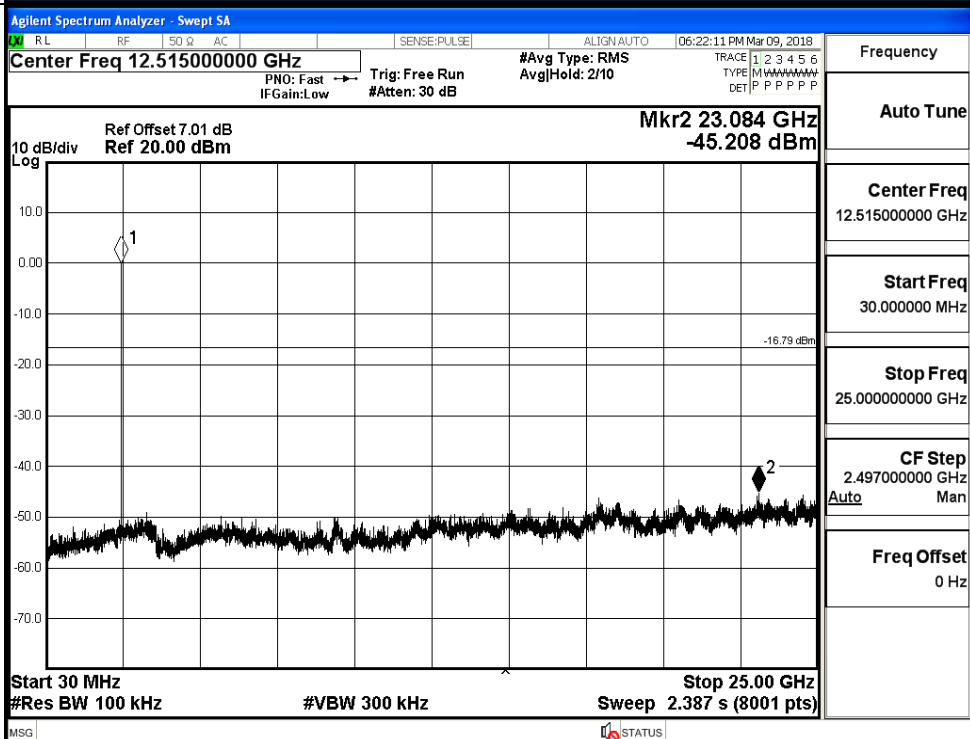


$\pi/4$ DQPSK_HCH_Graphs

Pref

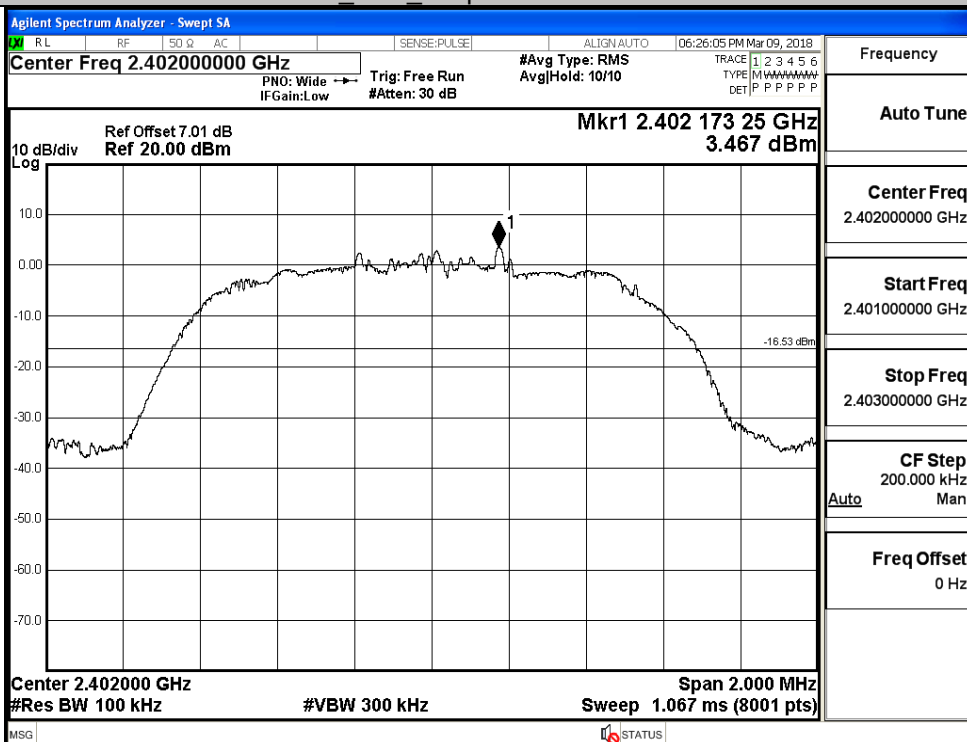


Puw

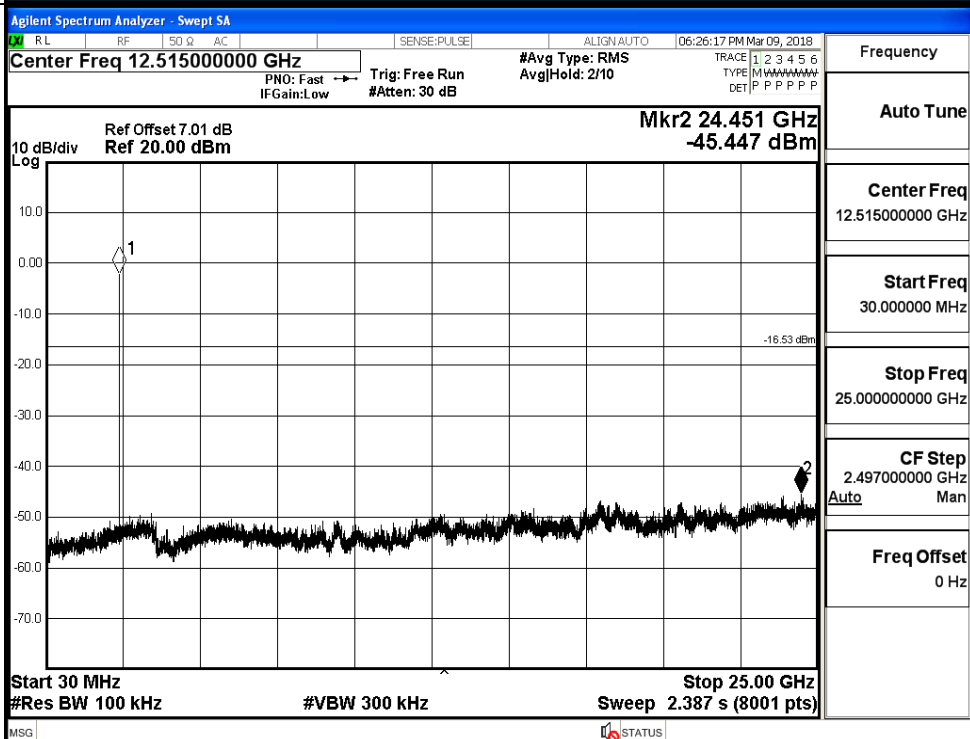


8DPSK_LCH_Graphs

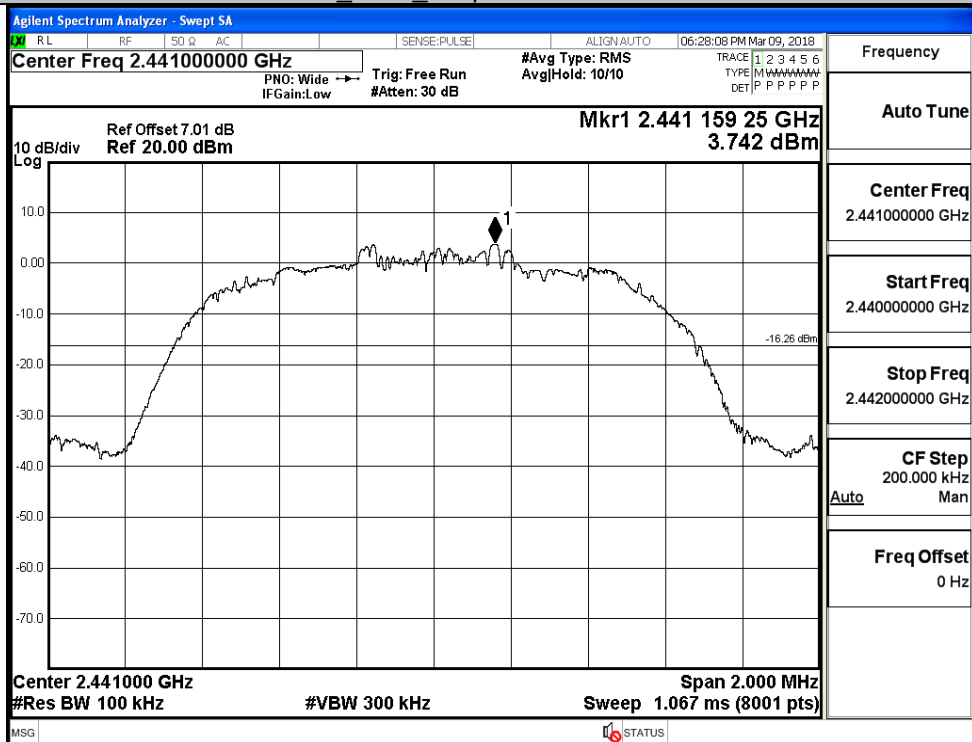
Pref



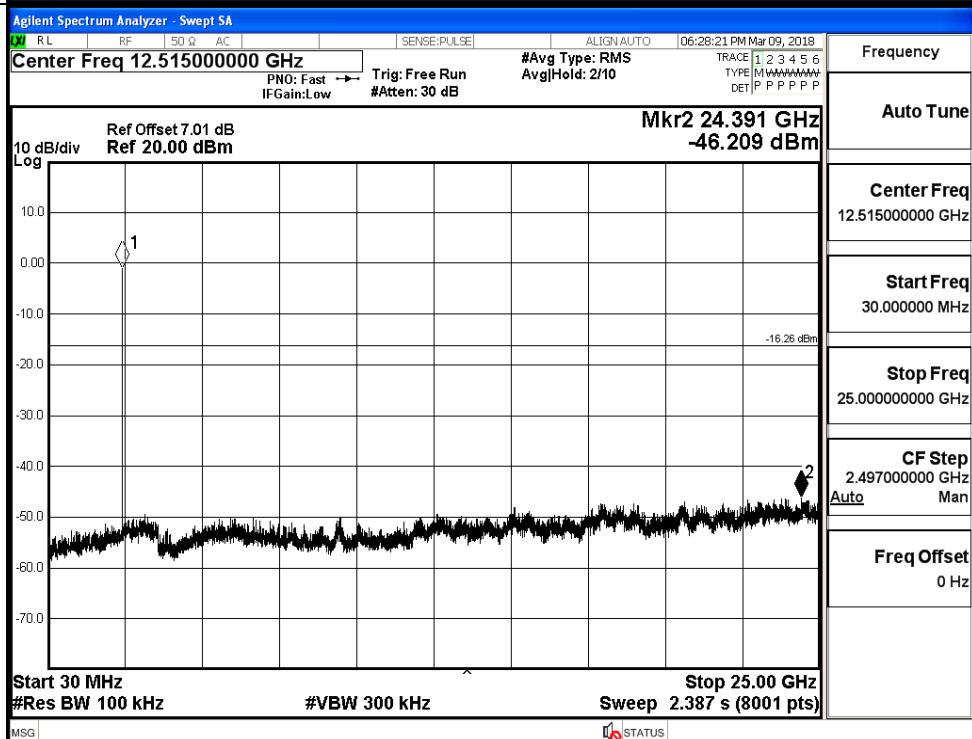
Puw



Pref

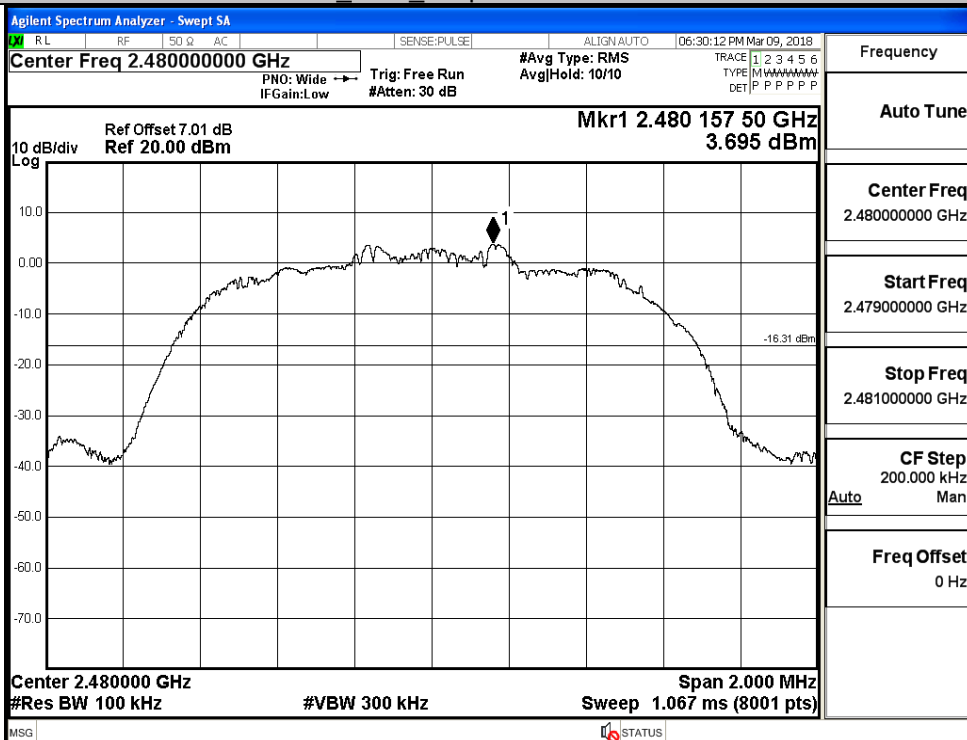


Puw

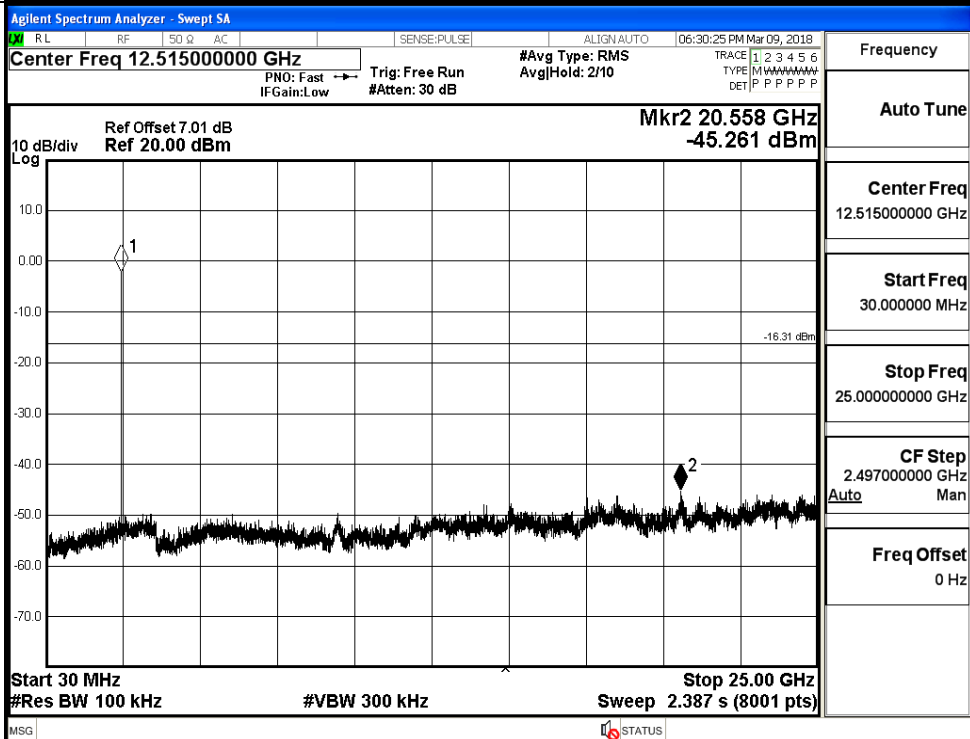


8DPSK_HCH_Graphs

Pref



Puw

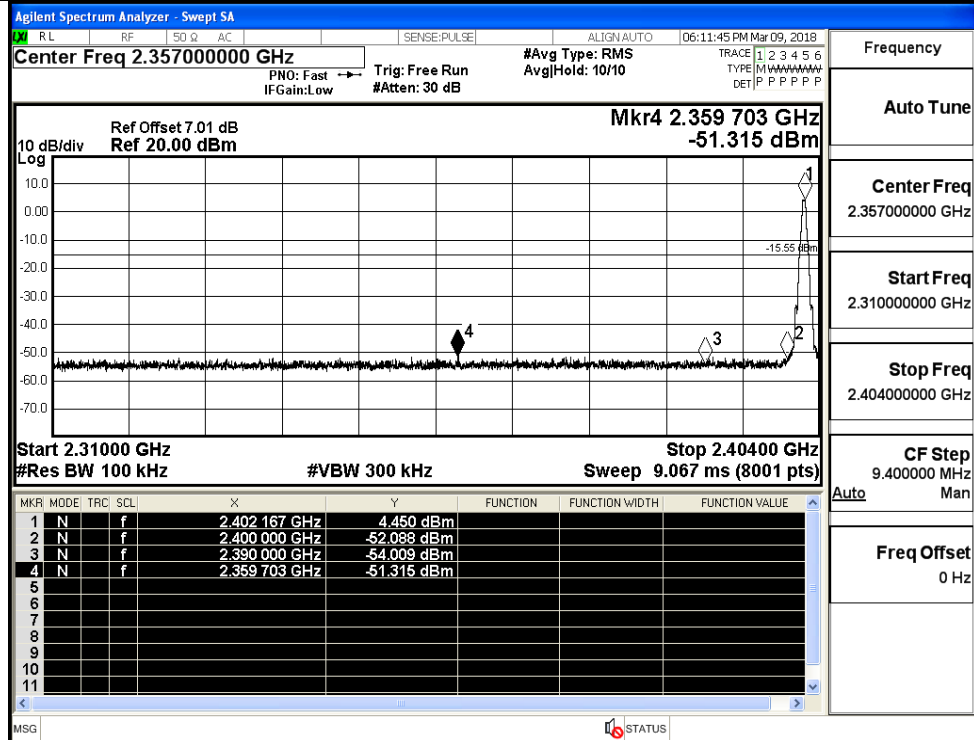


A.7 Band-edge for RF Conducted Emissions

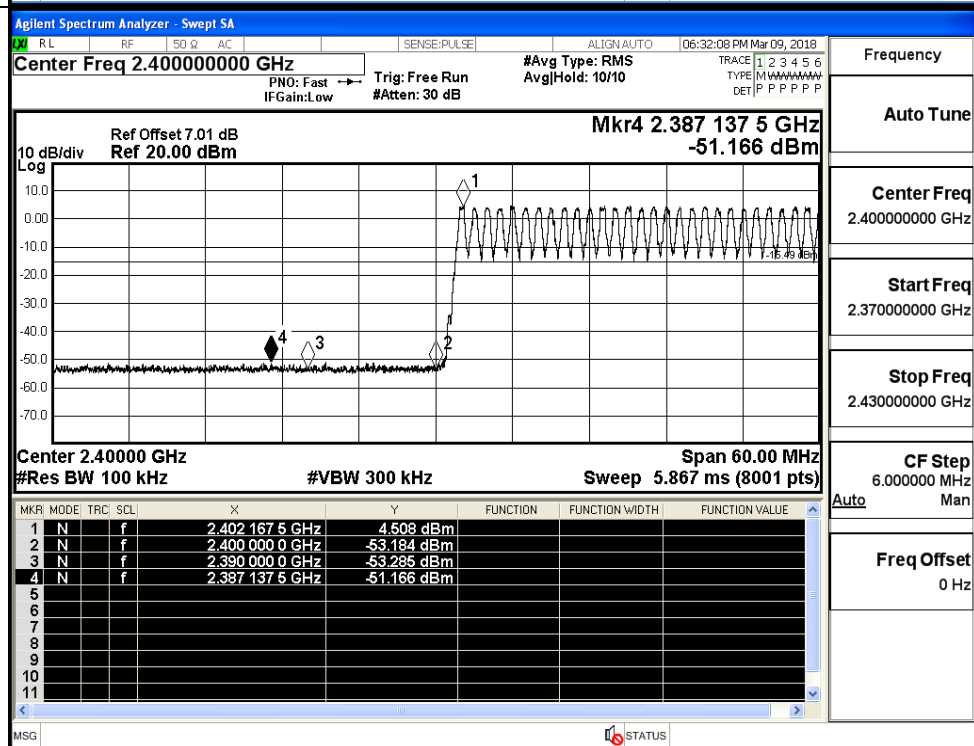
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.450	Off	-51.315	-15.55	PASS
			4.508	On	-51.166	-15.49	PASS
	HCH	2480	4.670	Off	-50.786	-15.33	PASS
			4.622	On	-50.330	-15.38	PASS
$\pi/4$ DQPSK	LCH	2402	3.134	Off	-51.712	-16.87	PASS
			3.702	On	-50.133	-16.3	PASS
	HCH	2480	3.813	Off	-50.690	-16.19	PASS
			3.752	On	-50.274	-16.25	PASS
8DPSK	LCH	2402	2.695	Off	-51.453	-17.31	PASS
			3.655	On	-50.877	-16.35	PASS
	HCH	2480	3.597	Off	-51.052	-16.4	PASS
			3.816	On	-49.969	-16.18	PASS

Test Graphs

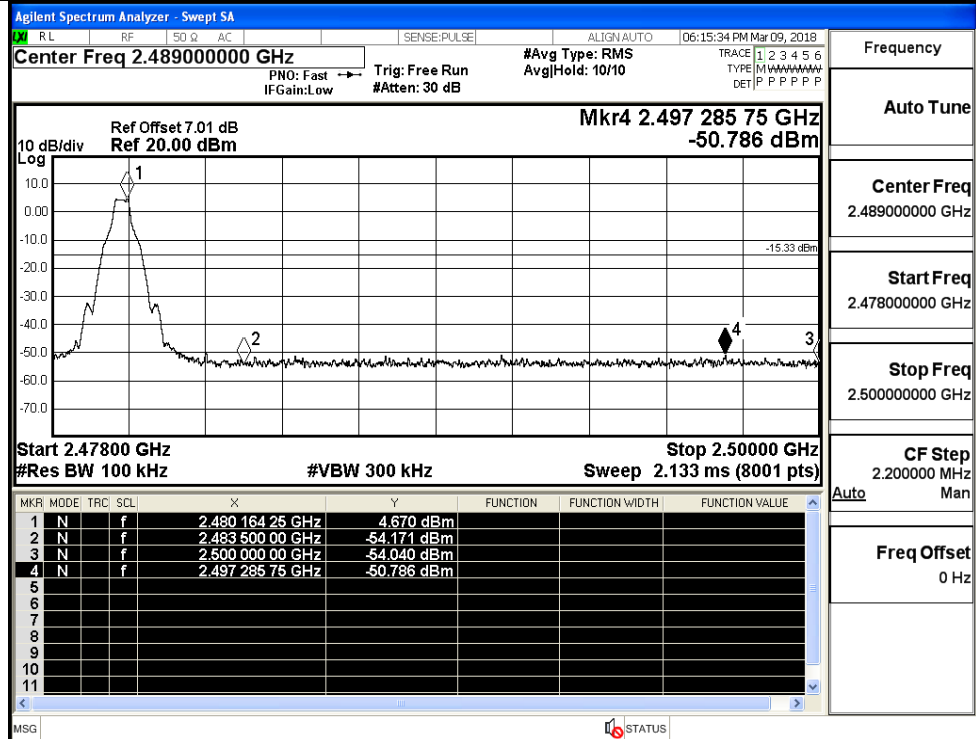
GFSK/LCH/No Hop



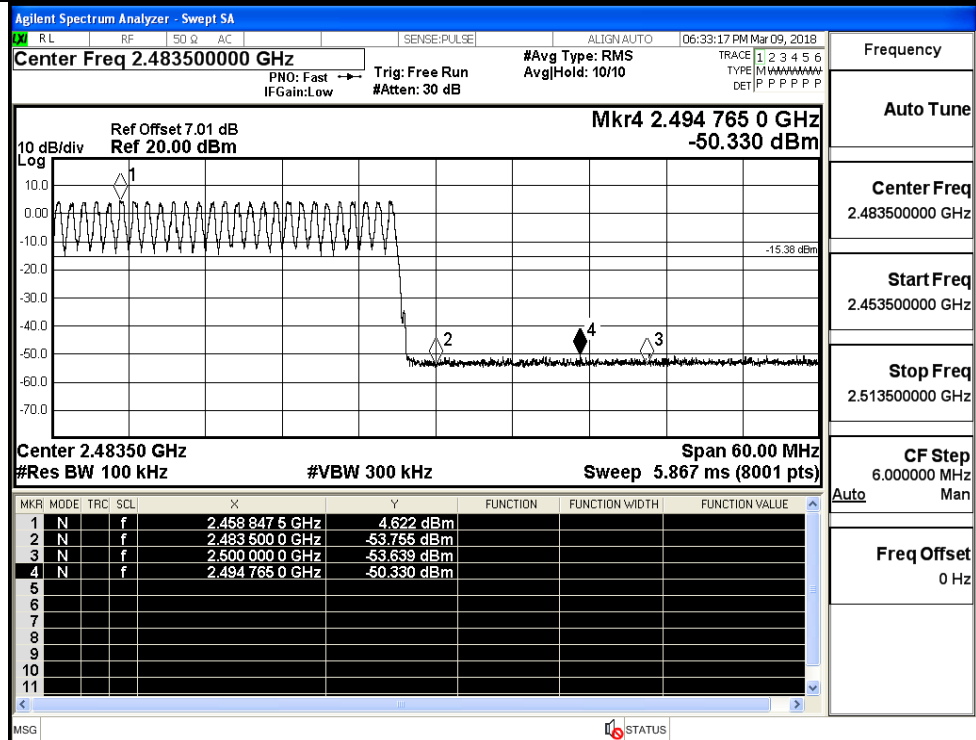
GFSK/LCH/Hop



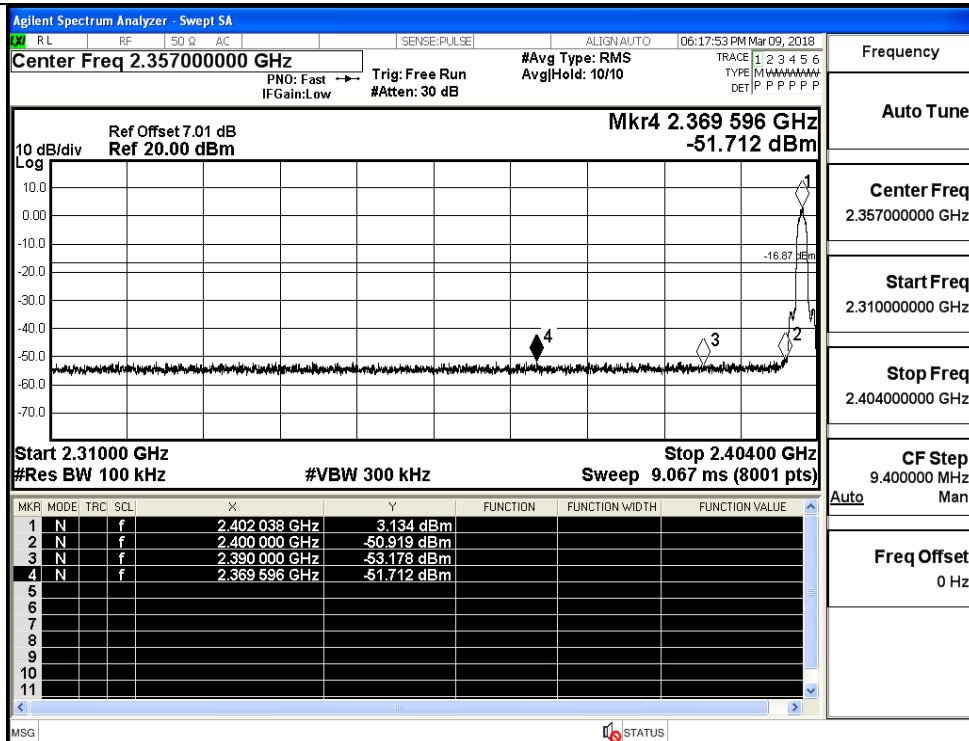
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

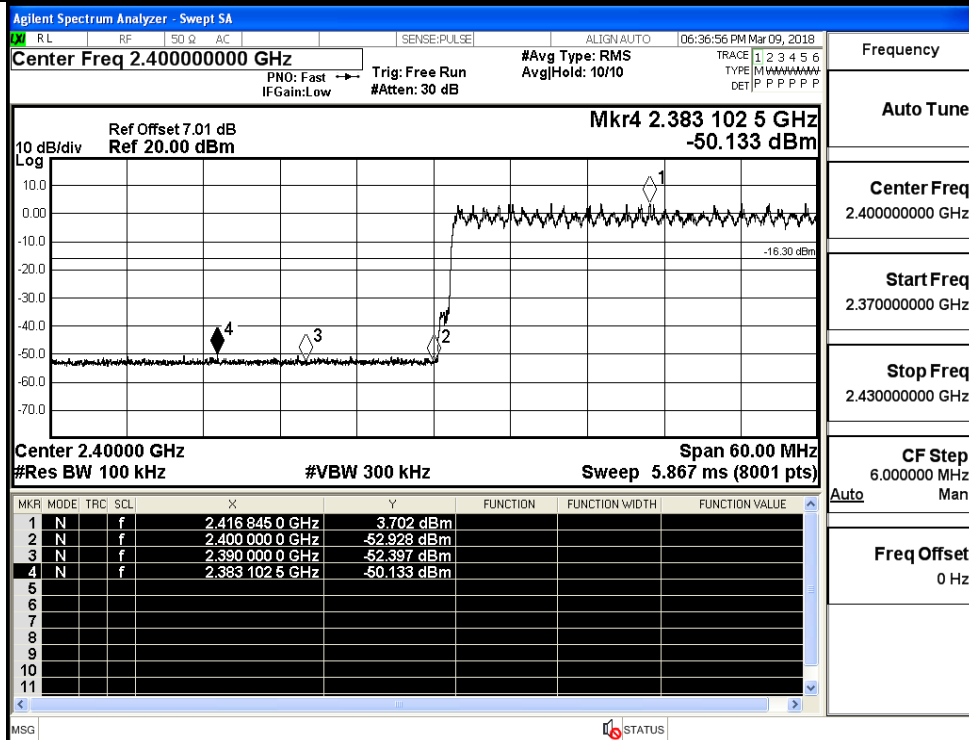
Start Freq
2.310000000 GHz

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

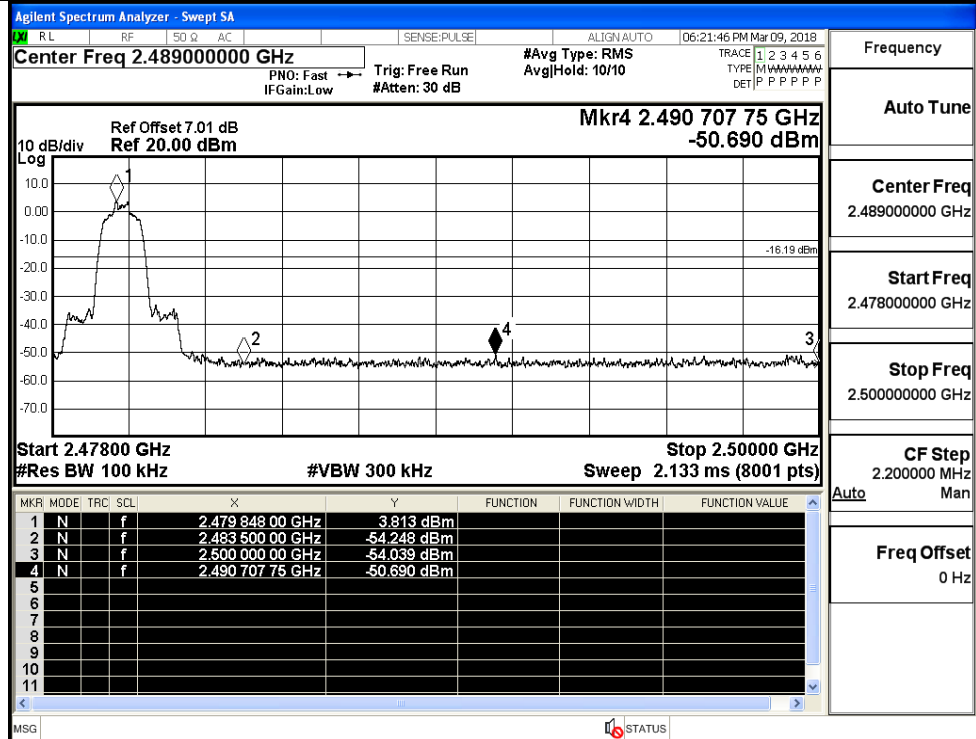
Start Freq
2.370000000 GHz

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 GHz

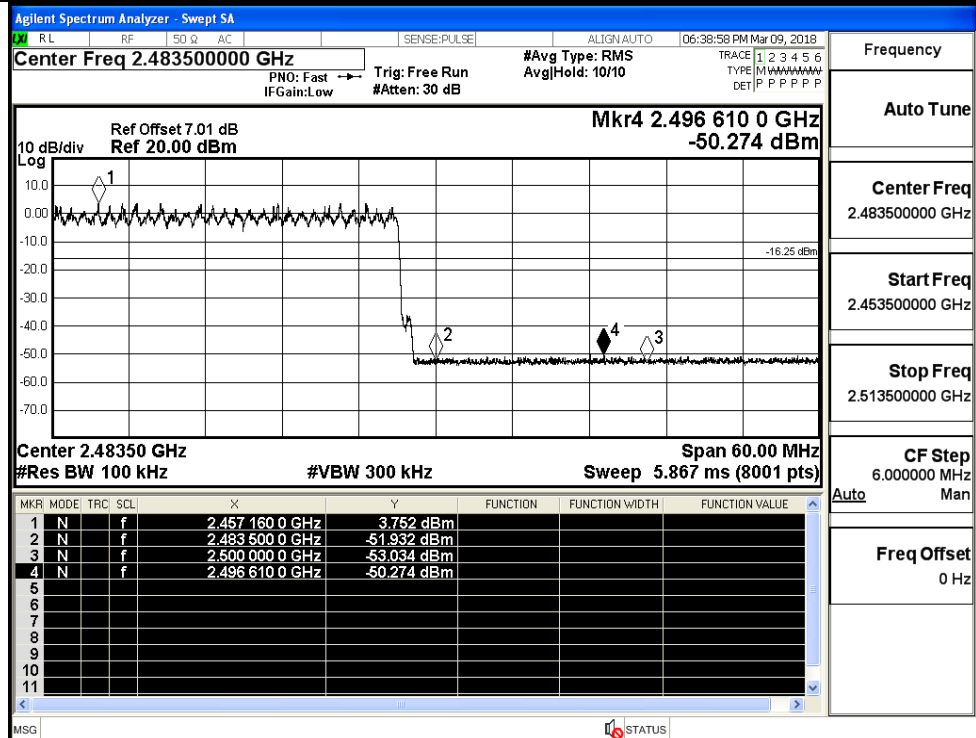
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

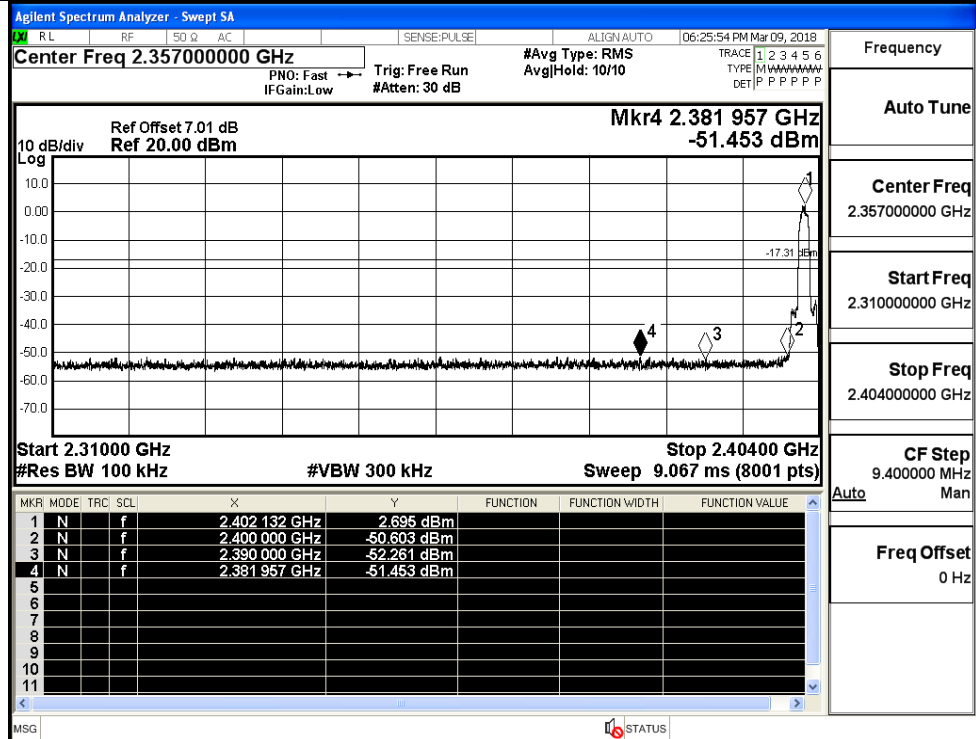
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

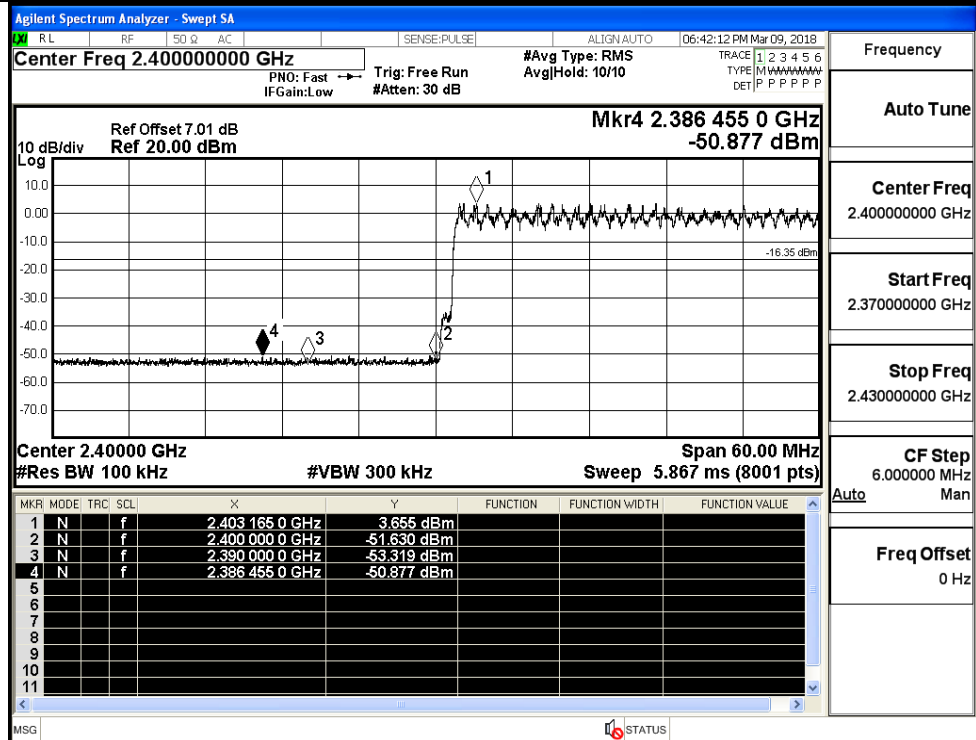
CF Step
6.000000 MHz

Freq Offset
0 Hz

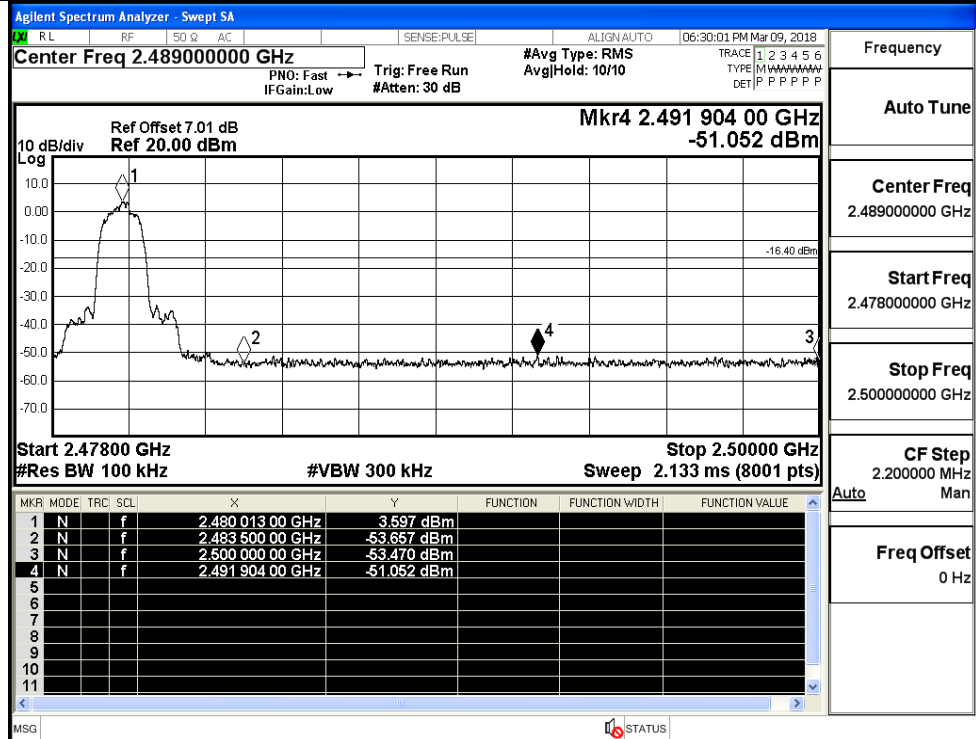
8DPSK/LCH/No Hop



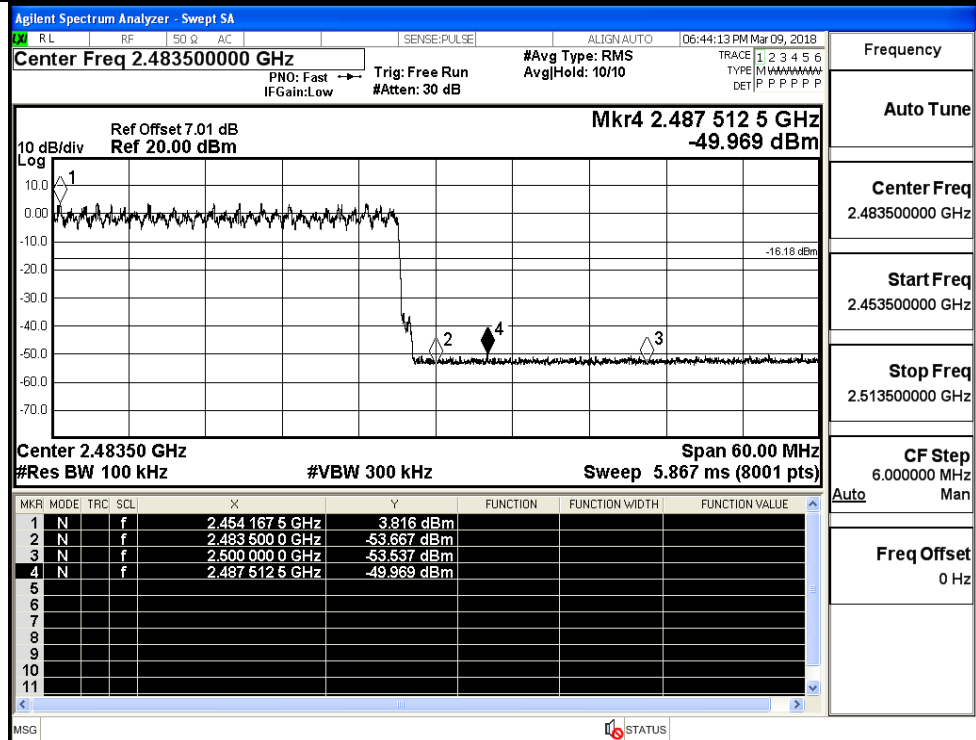
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



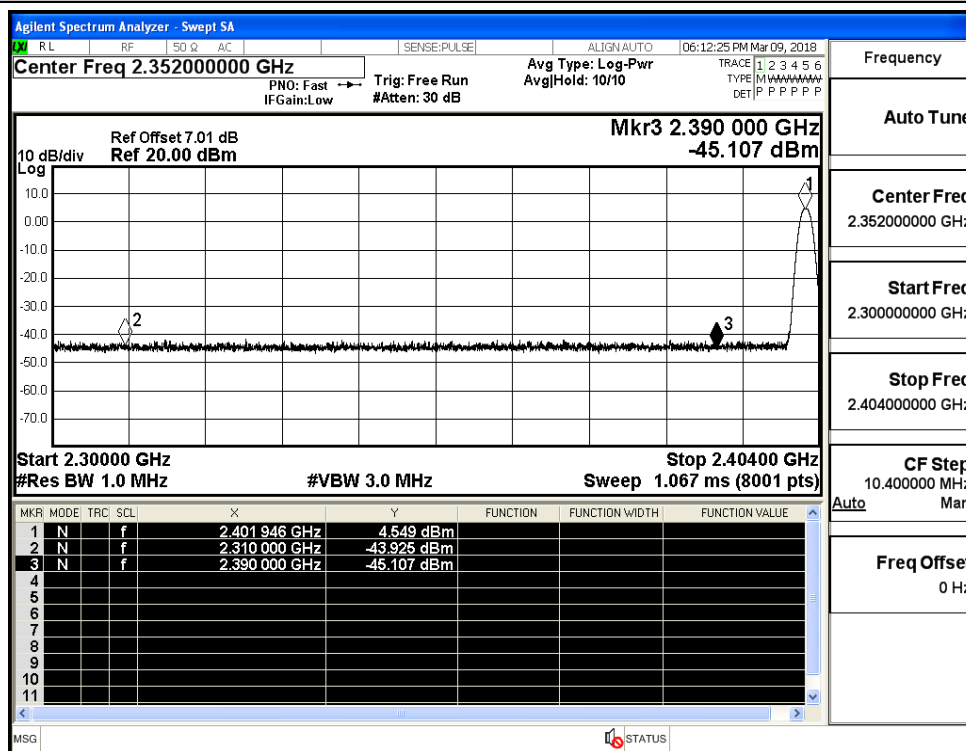
8DPSK/HCH/Hop



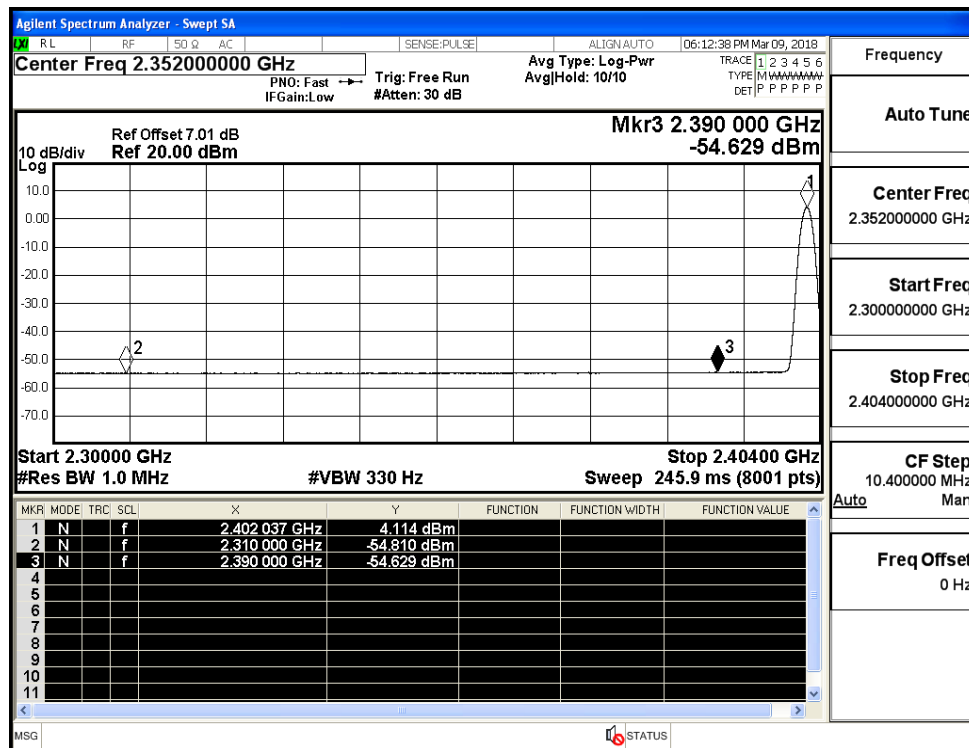
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.93	2.0	0	51.33	PEAK	74	PASS
	Off	2310.0	-54.81	2.0	0	40.45	AV	54	PASS
	Off	2390.0	-45.11	2.0	0	50.15	PEAK	74	PASS
	Off	2390.0	-54.63	2.0	0	40.63	AV	54	PASS
	Off	2483.5	-44.04	2.0	0	51.22	PEAK	74	PASS
	Off	2483.5	-54.07	2.0	0	41.19	AV	54	PASS
	Off	2500.0	-44.59	2.0	0	50.67	PEAK	74	PASS
	Off	2500.0	-54.30	2.0	0	40.96	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.22	2.0	0	52.04	PEAK	74	PASS
	Off	2310.0	-54.86	2.0	0	40.39	AV	54	PASS
	Off	2390.0	-45.03	2.0	0	50.22	PEAK	74	PASS
	Off	2390.0	-54.63	2.0	0	40.63	AV	54	PASS
	Off	2483.5	-43.02	2.0	0	52.23	PEAK	74	PASS
	Off	2483.5	-54.11	2.0	0	41.15	AV	54	PASS
	Off	2500.0	-44.38	2.0	0	50.88	PEAK	74	PASS
	Off	2500.0	-54.23	2.0	0	41.03	AV	54	PASS
8DPSK	Off	2310.0	-45.52	2.0	0	49.74	PEAK	74	PASS
	Off	2310.0	-54.91	2.0	0	40.35	AV	54	PASS
	Off	2390.0	-43.31	2.0	0	51.95	PEAK	74	PASS
	Off	2390.0	-54.59	2.0	0	40.67	AV	54	PASS
	Off	2483.5	-44.35	2.0	0	50.91	PEAK	74	PASS
	Off	2483.5	-54.04	2.0	0	41.21	AV	54	PASS
	Off	2500.0	-44.57	2.0	0	50.69	PEAK	74	PASS
	Off	2500.0	-54.22	2.0	0	41.04	AV	54	PASS

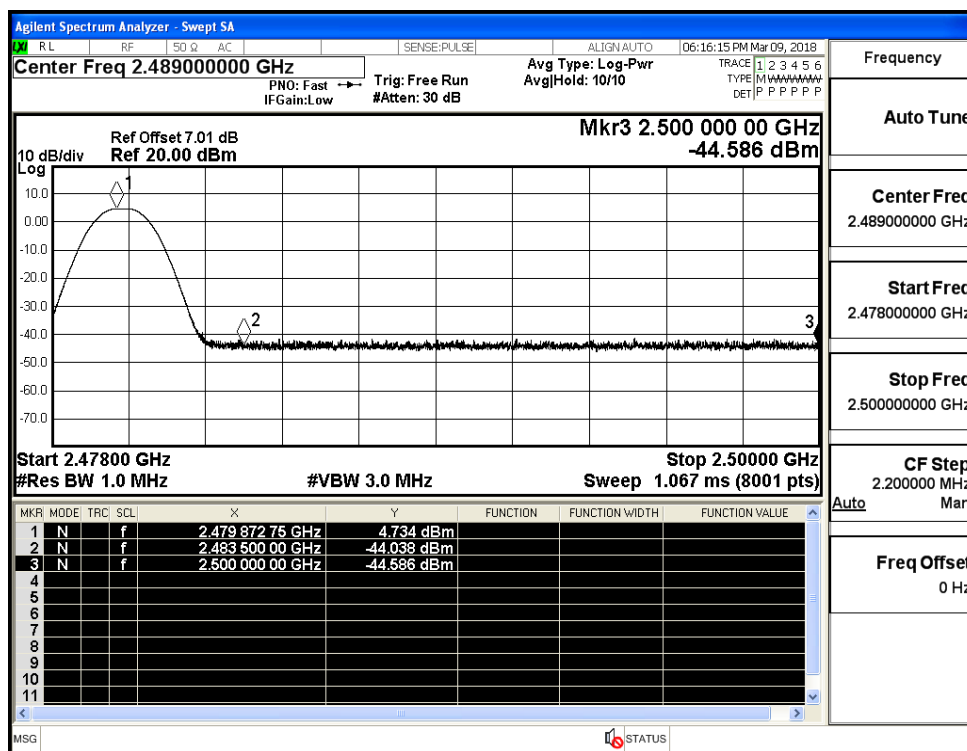
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



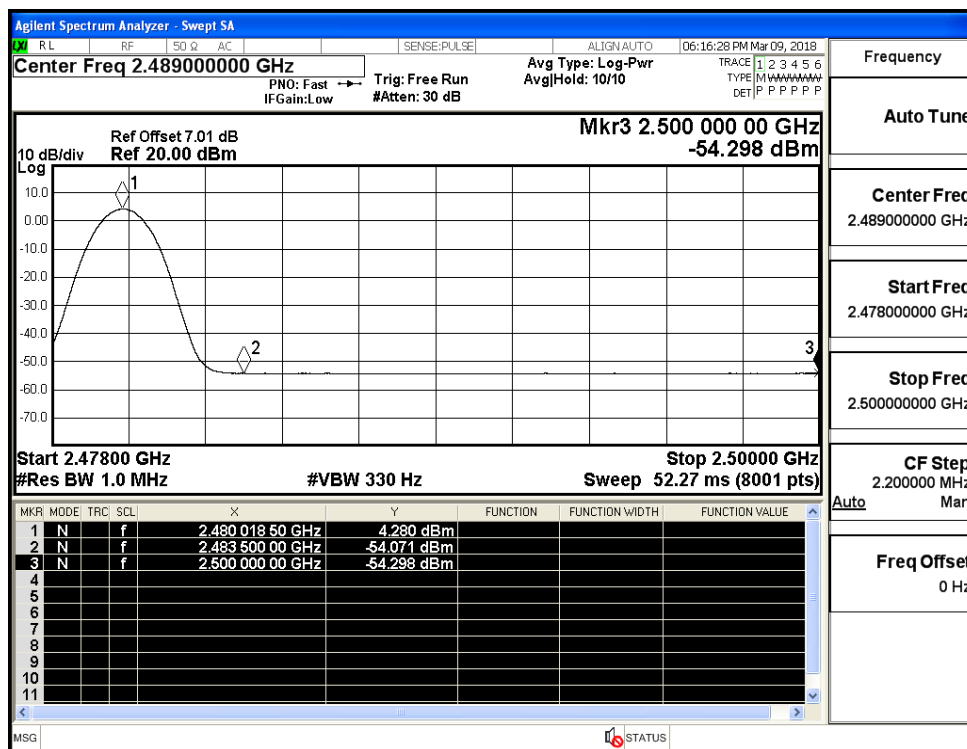
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

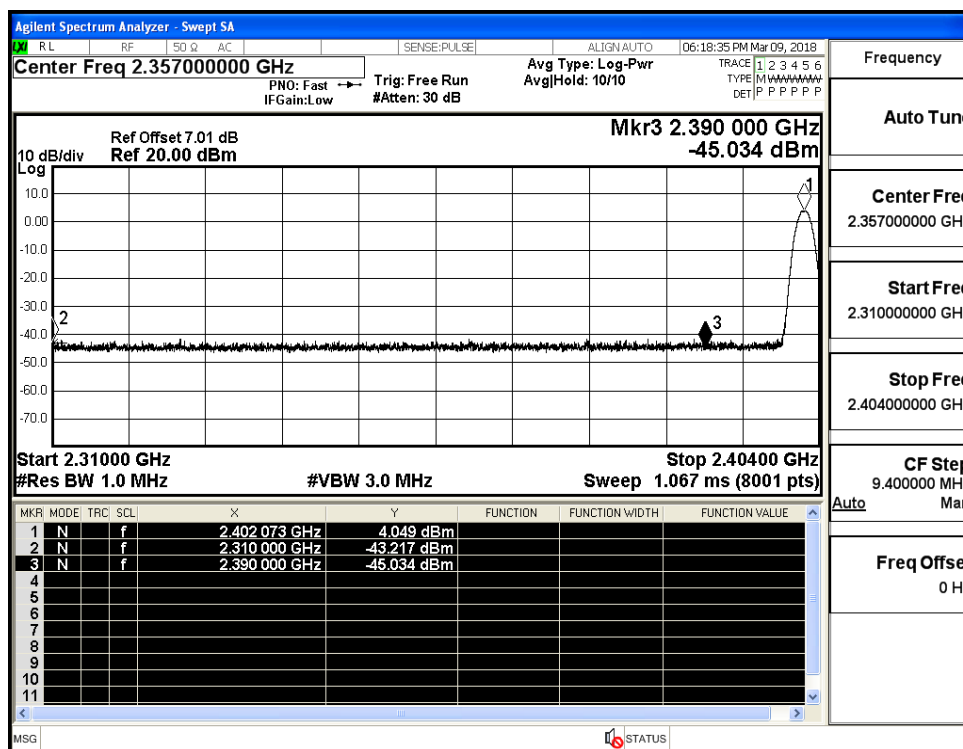
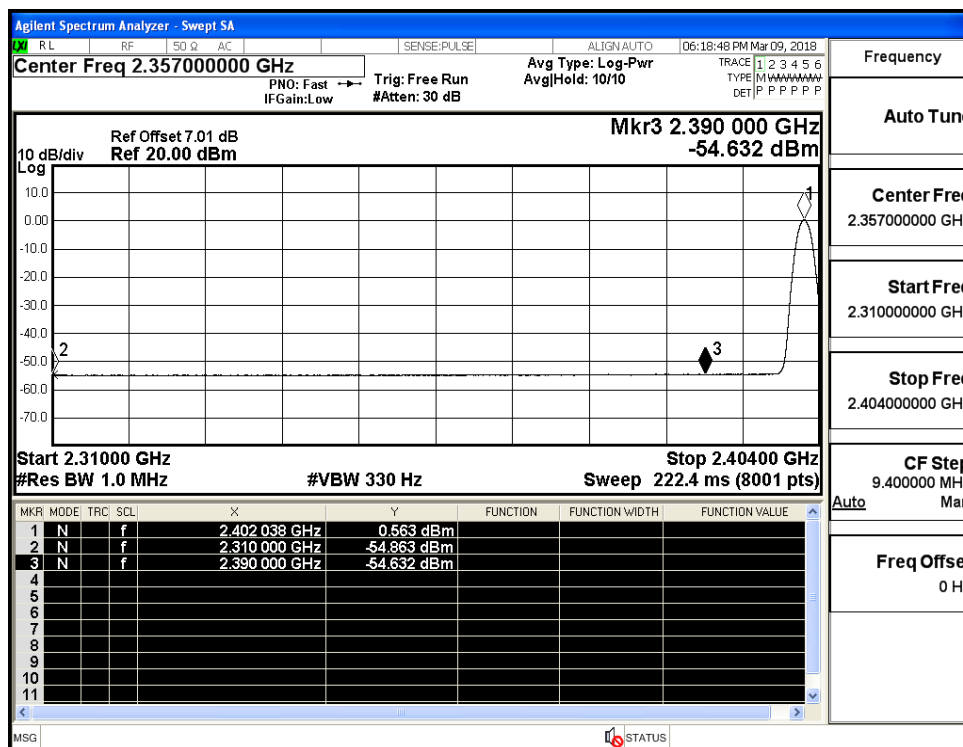


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

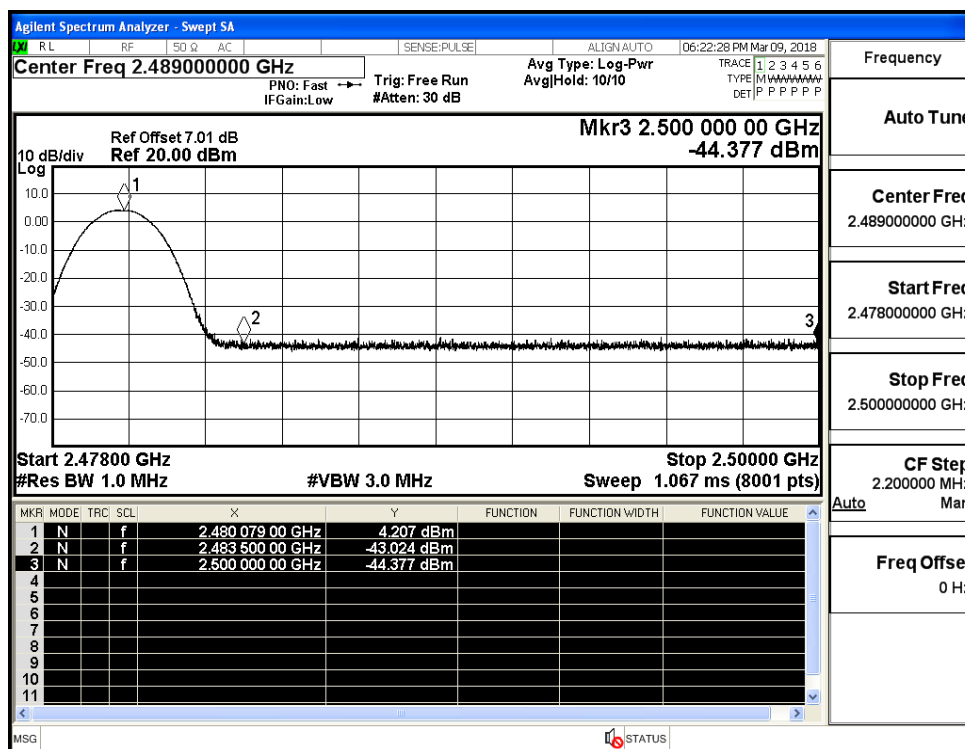


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

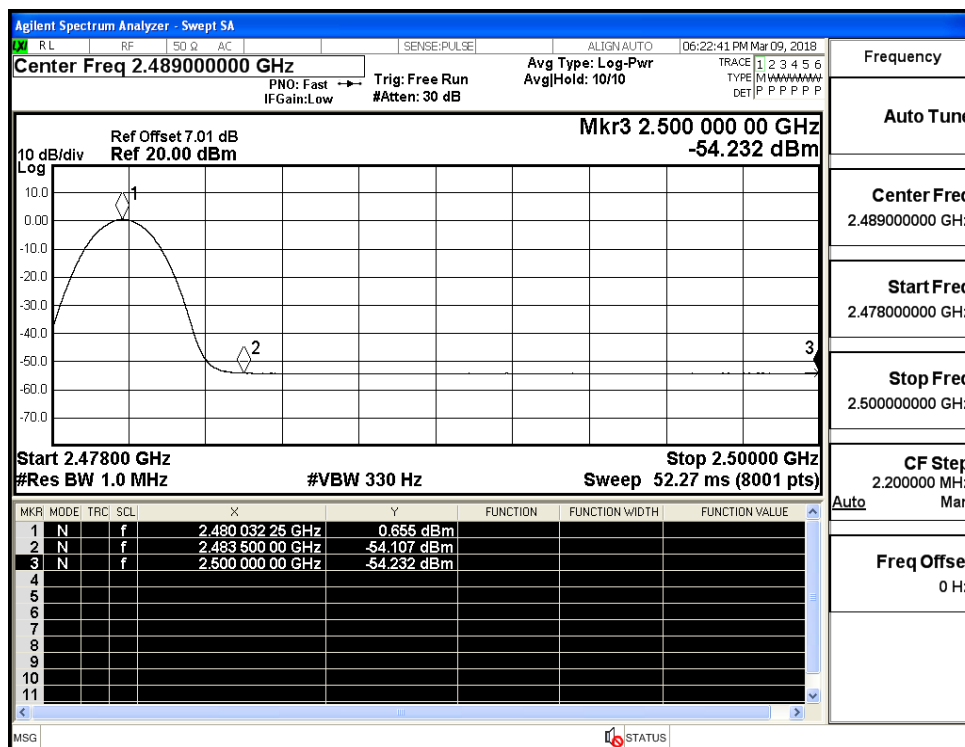


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

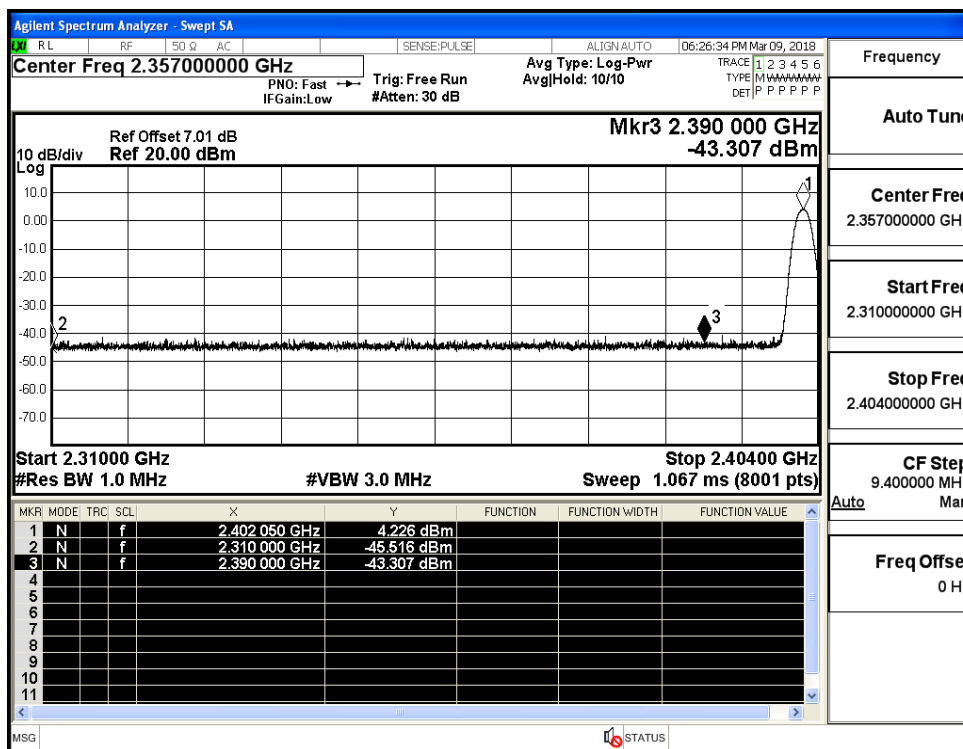
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



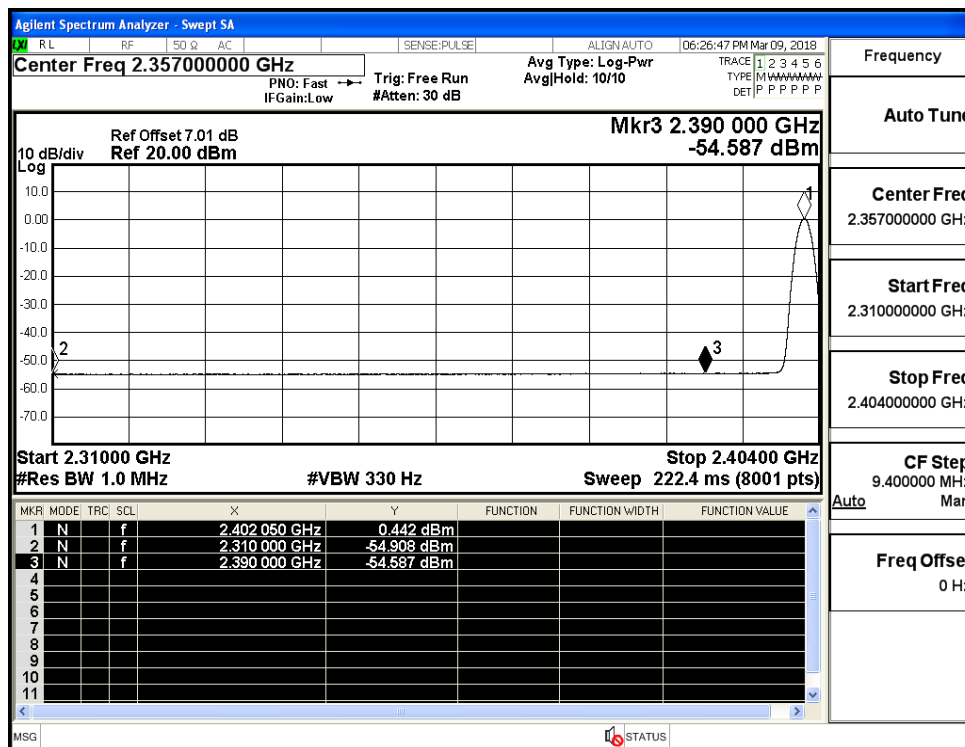
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



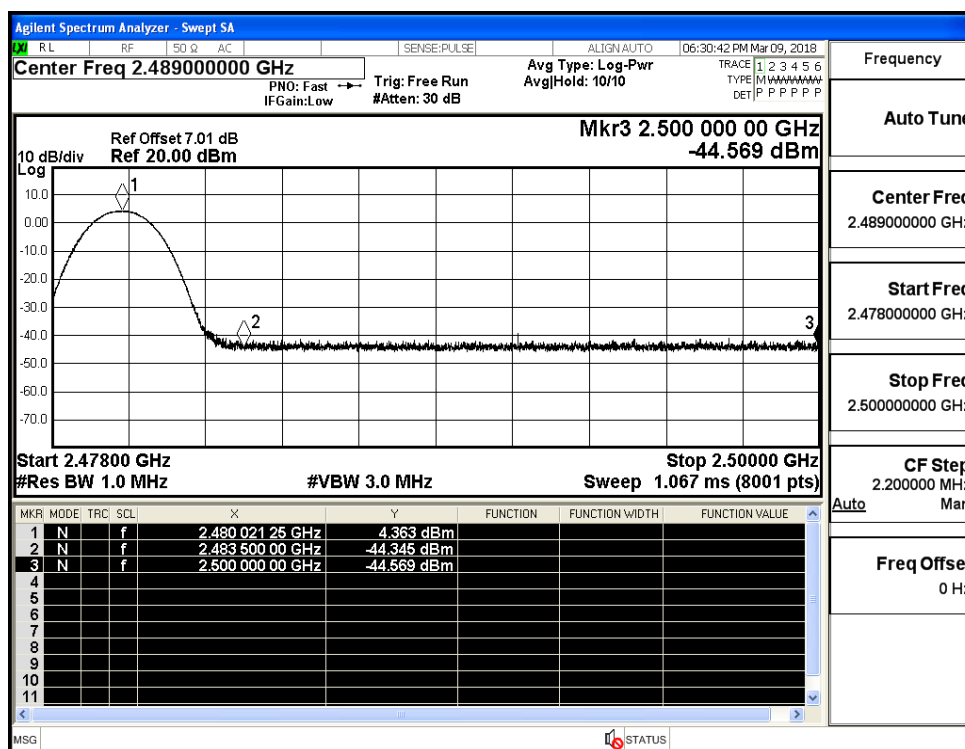
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

