

Appendix A

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

Product Name: Bluetooth earphone

Trade Mark: Woozik

Test Model: F07

Environmental Conditions

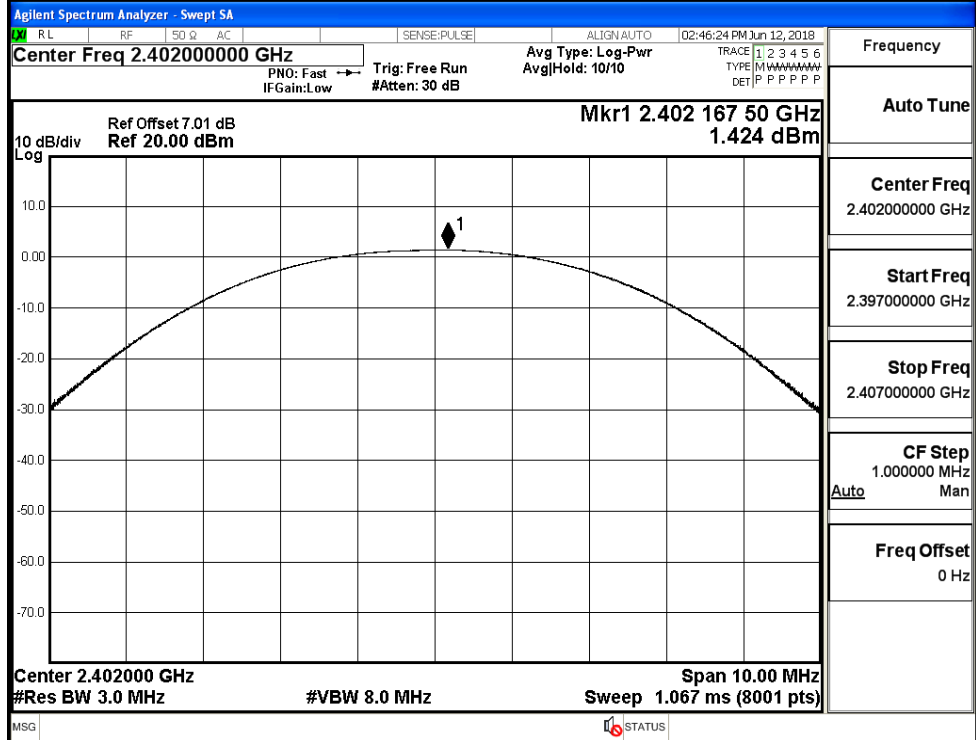
Temperature:	22.5° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom.Liu
Supervised by:	Jayden.Zhuo

A.1 Maxmum Conducted Peak Output Power

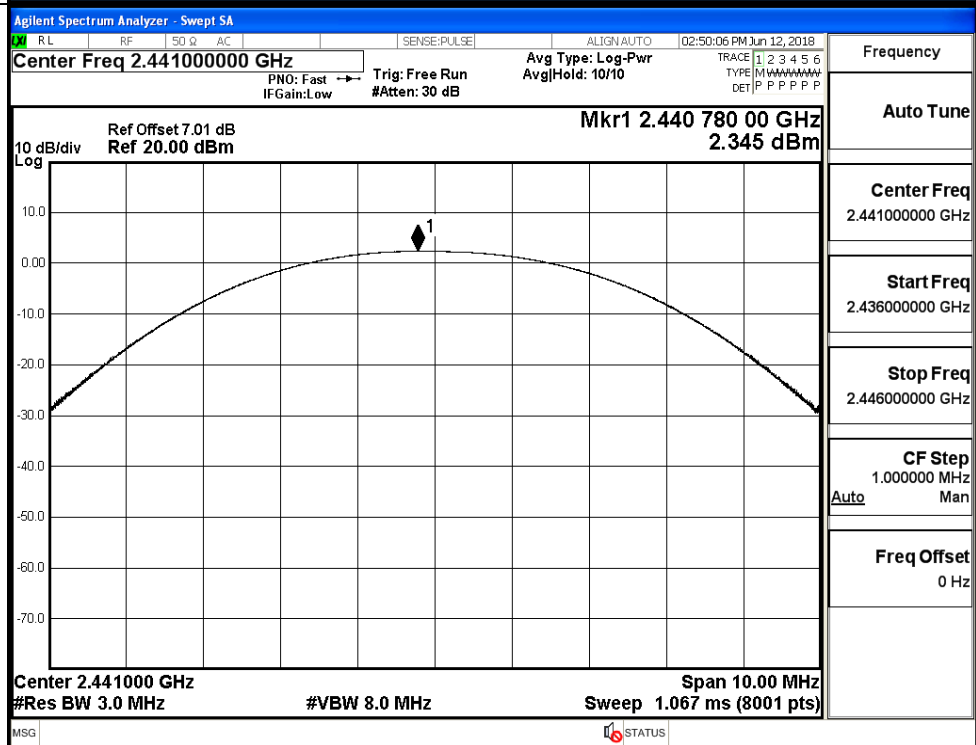
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.424	30	PASS
	MCH	2.345	30	PASS
	HCH	2.877	30	PASS
$\pi/4$ DQPSK	LCH	0.356	21	PASS
	MCH	1.791	21	PASS
	HCH	2.429	21	PASS
8DPSK	LCH	0.721	21	PASS
	MCH	1.956	21	PASS
	HCH	2.517	21	PASS

Test Graphs

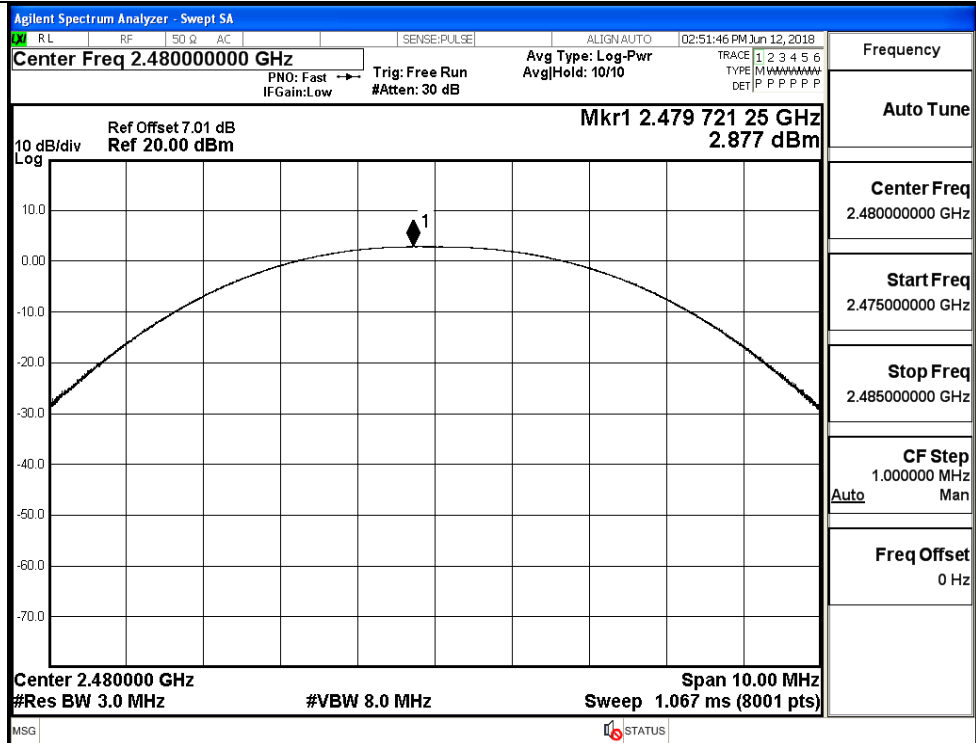
GFSK/LCH



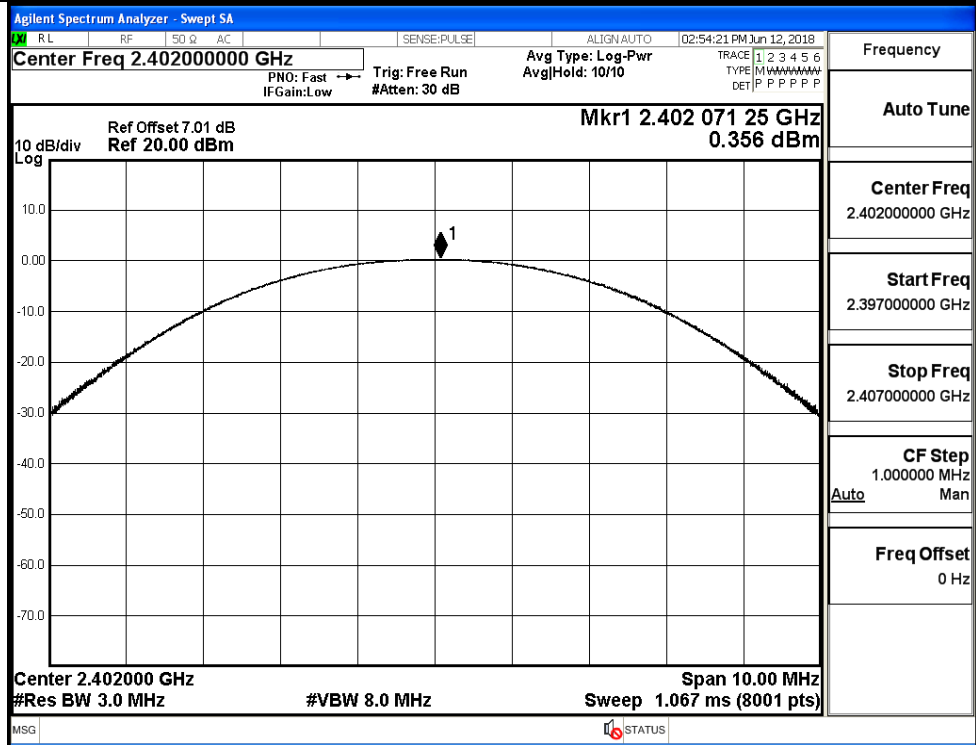
GFSK/MCH



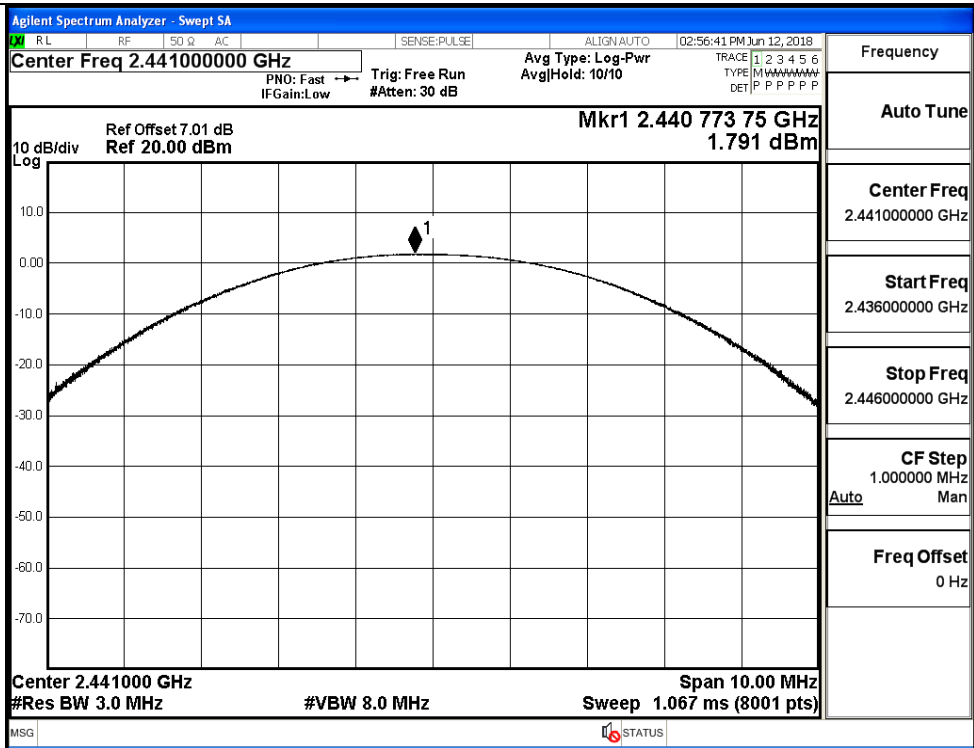
GFSK/HCH



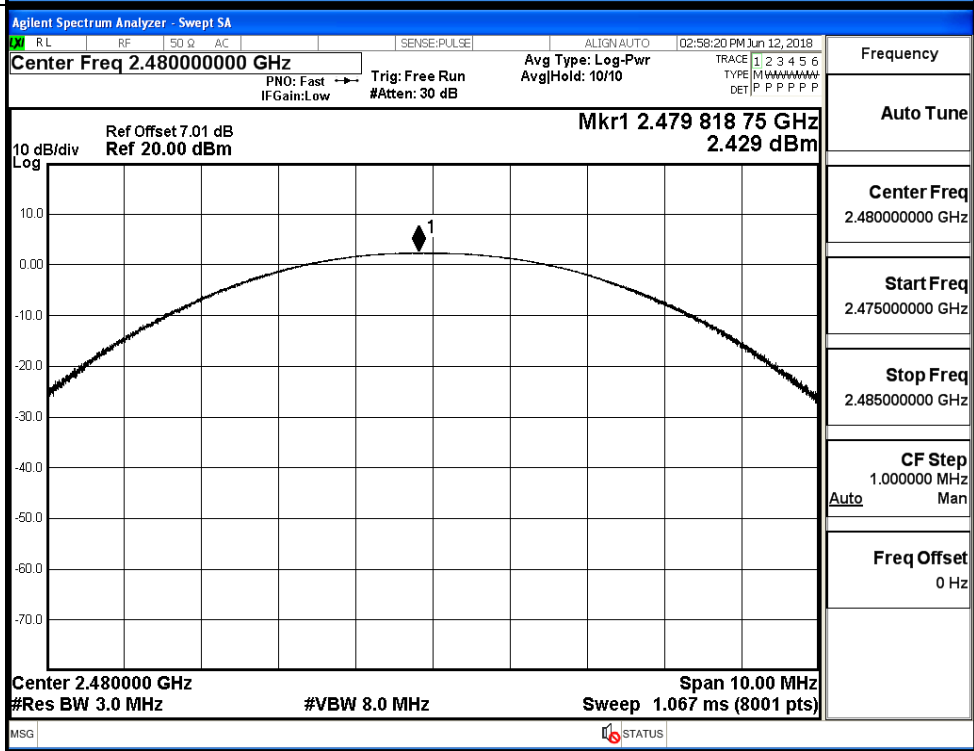
π /4DQPSK/LCH



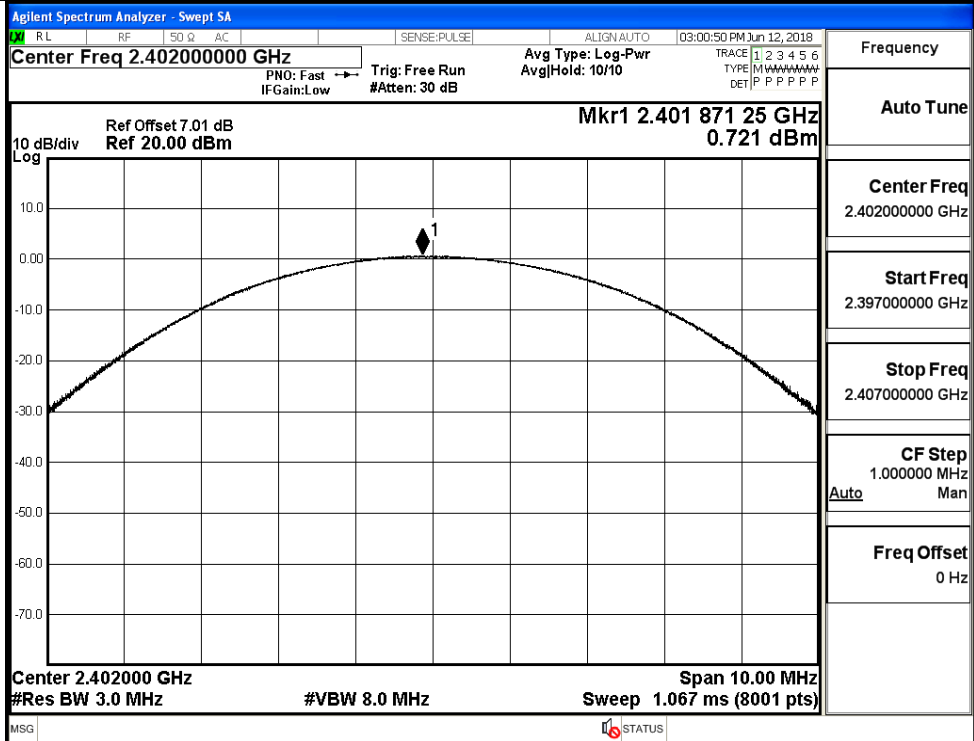
π /4DQPSK/MCH



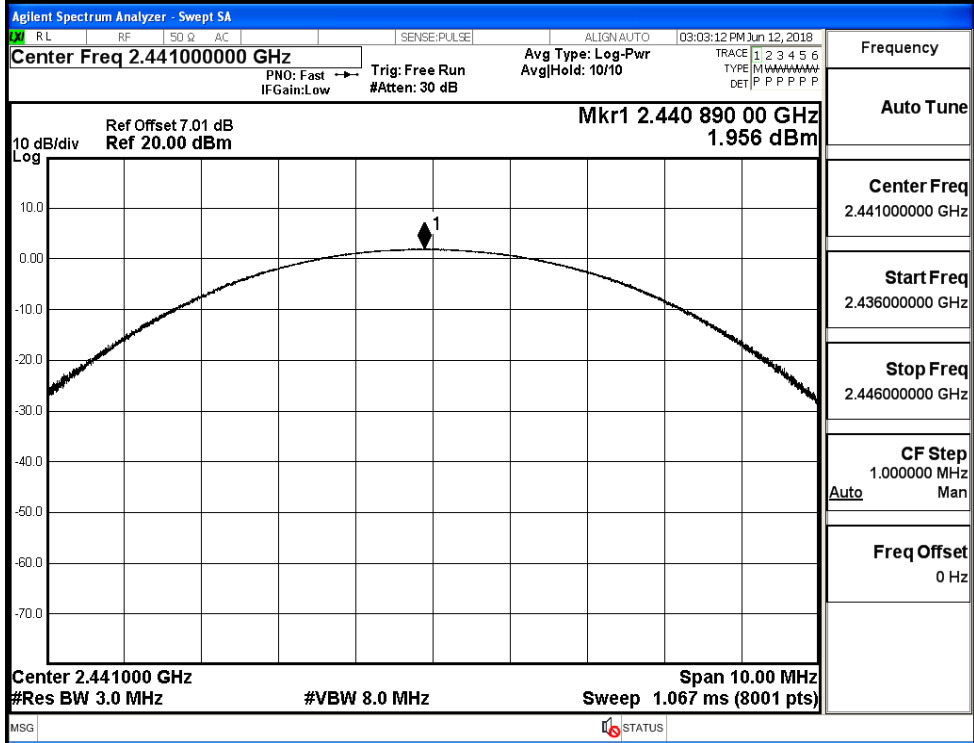
π /4DQPSK/HCH



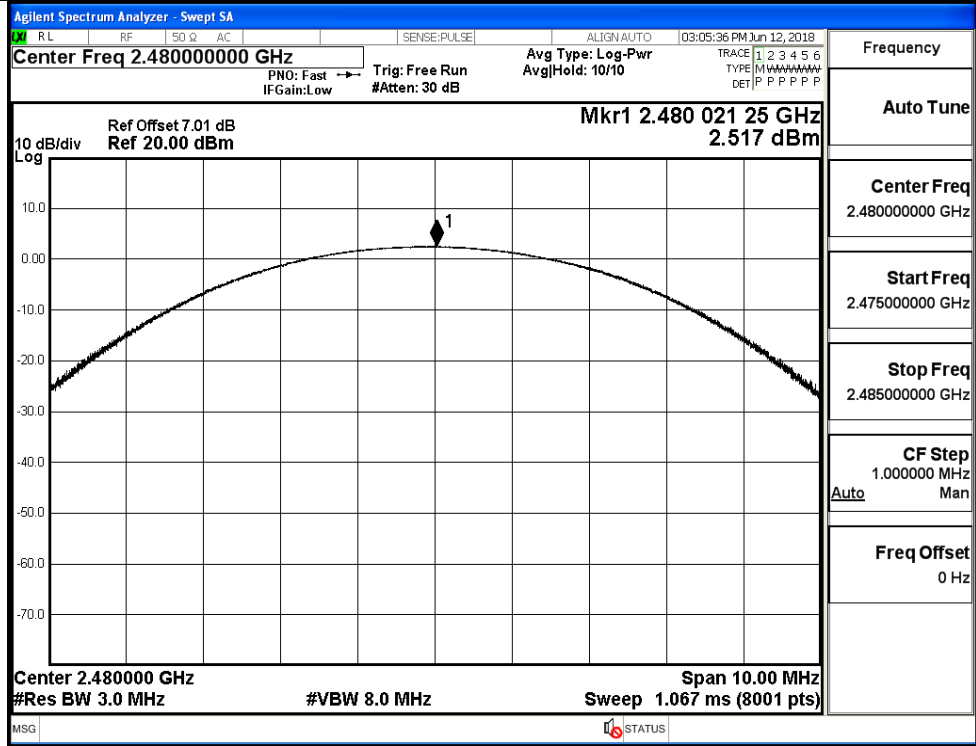
8DPSK/LCH



8DPSK/MCH

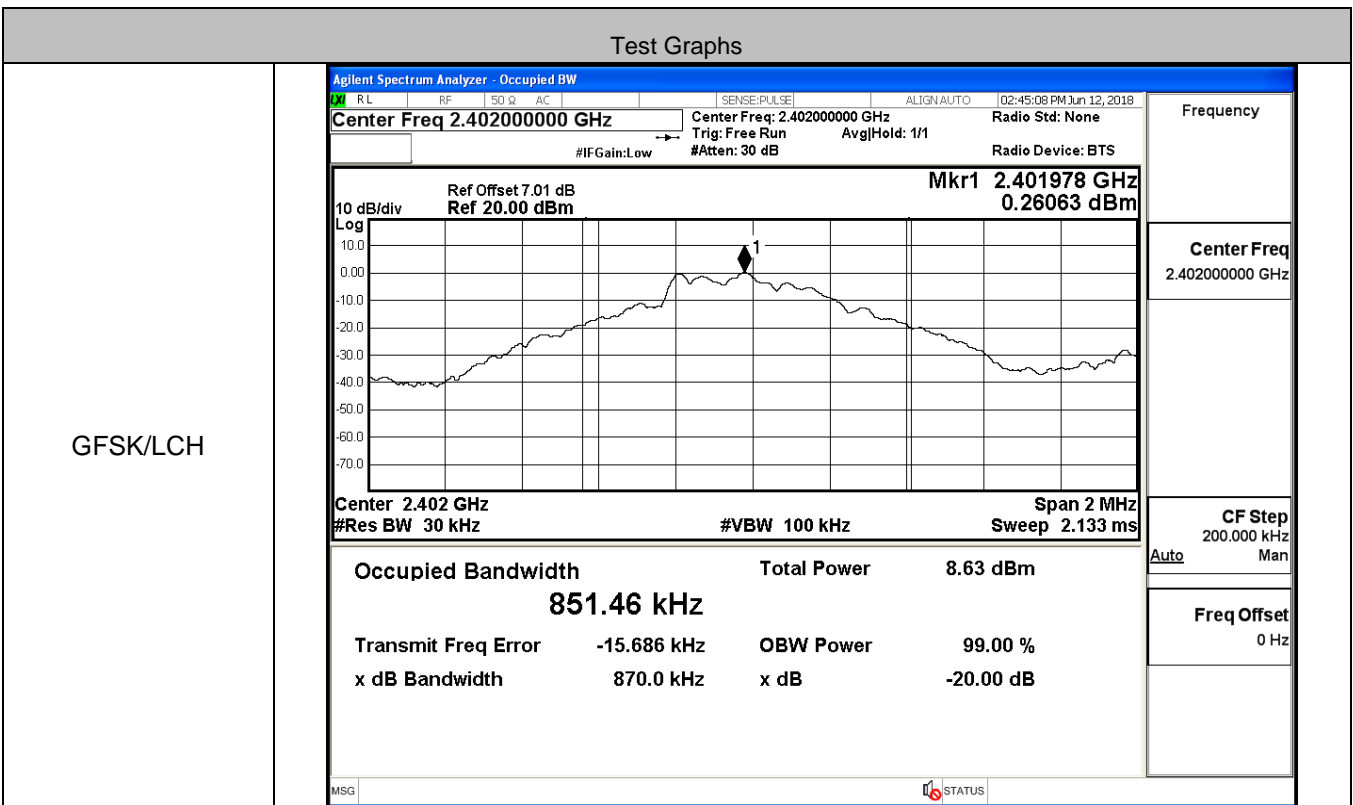


8DPSK/HCH

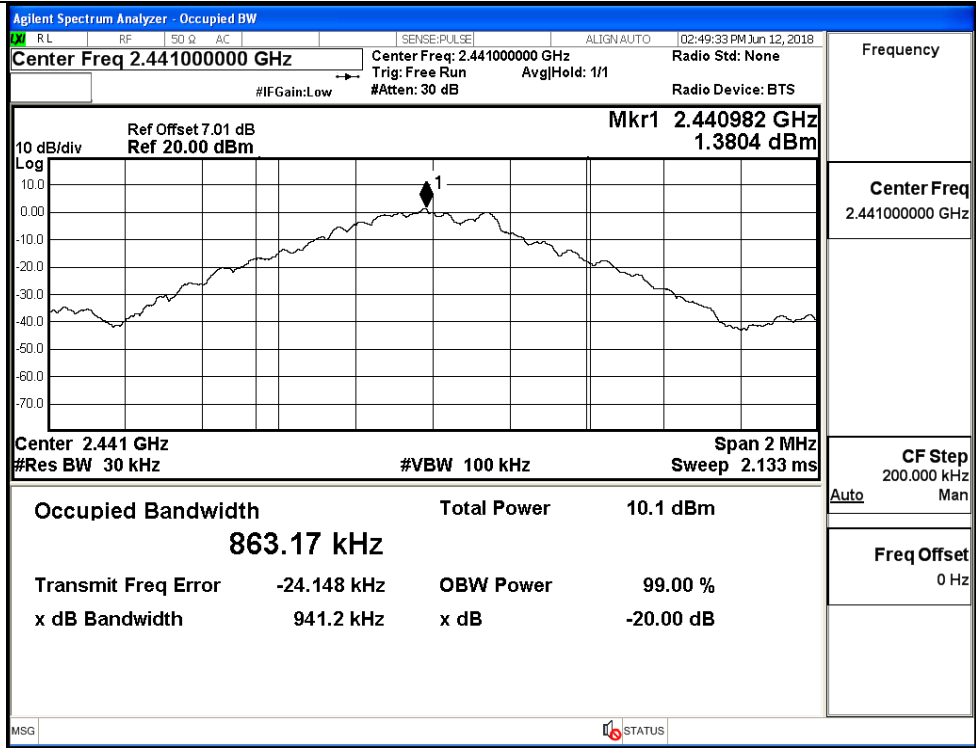


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8700	Not Specified	PASS
	MCH	0.9412	Not Specified	PASS
	HCH	0.9507	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.276	Not Specified	PASS
	MCH	1.298	Not Specified	PASS
	HCH	1.311	Not Specified	PASS
8DPSK	LCH	1.293	Not Specified	PASS
	MCH	1.276	Not Specified	PASS
	HCH	1.286	Not Specified	PASS

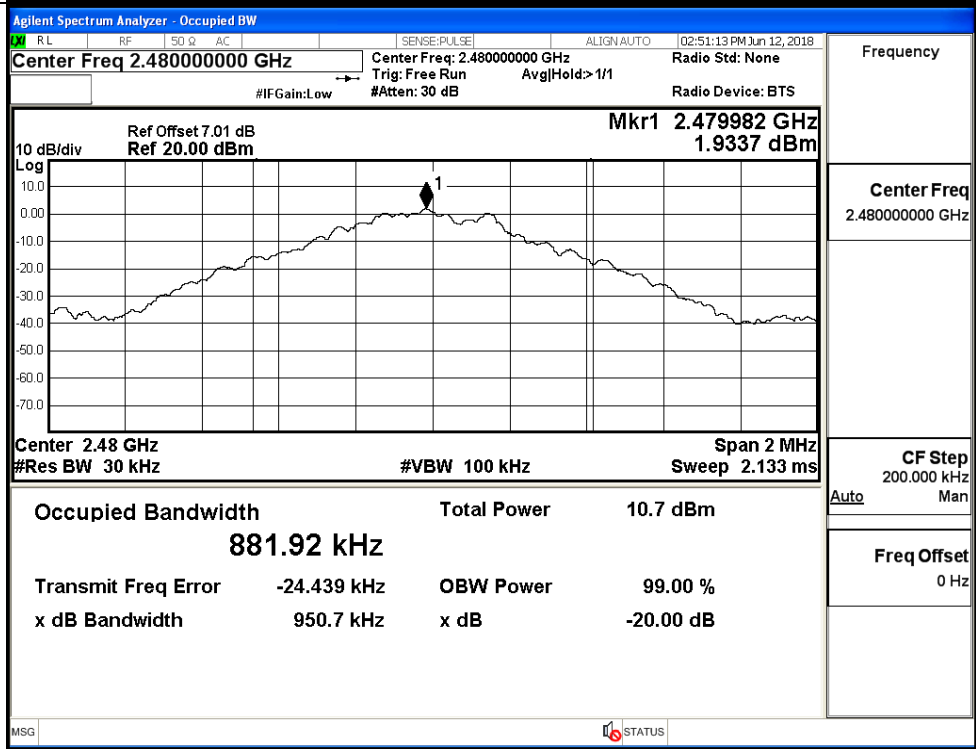


GFSK/MCH



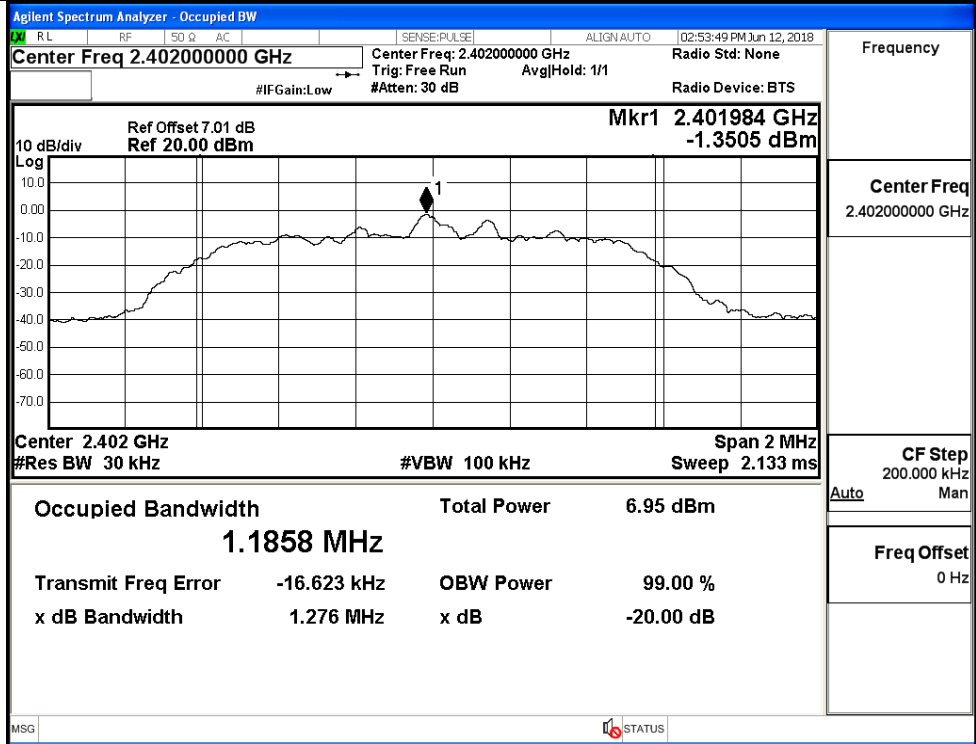
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

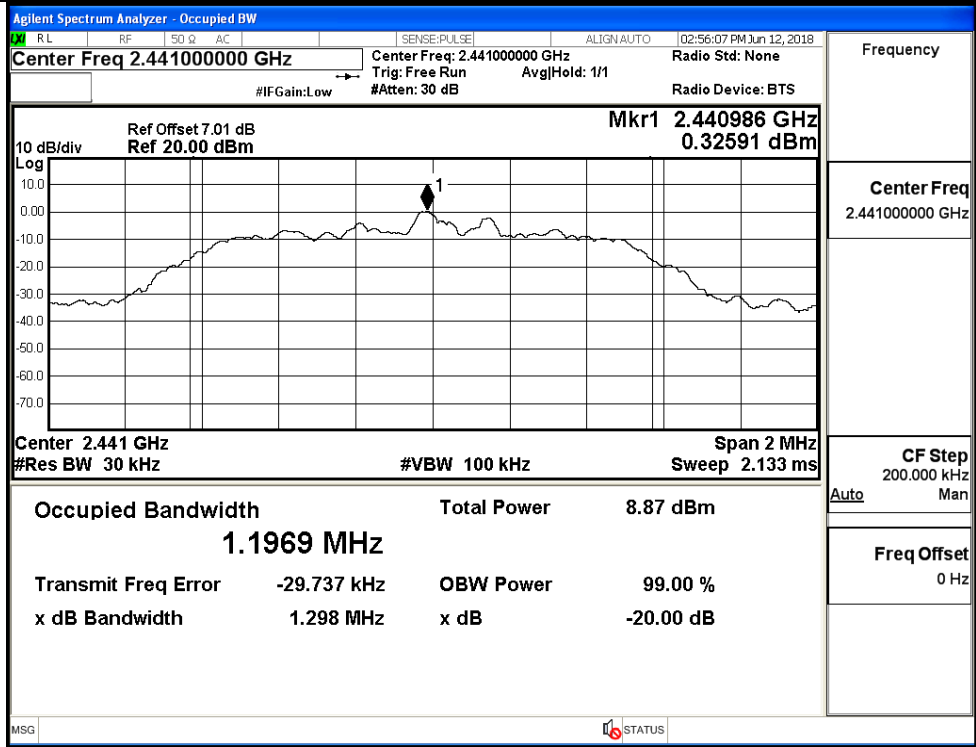


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

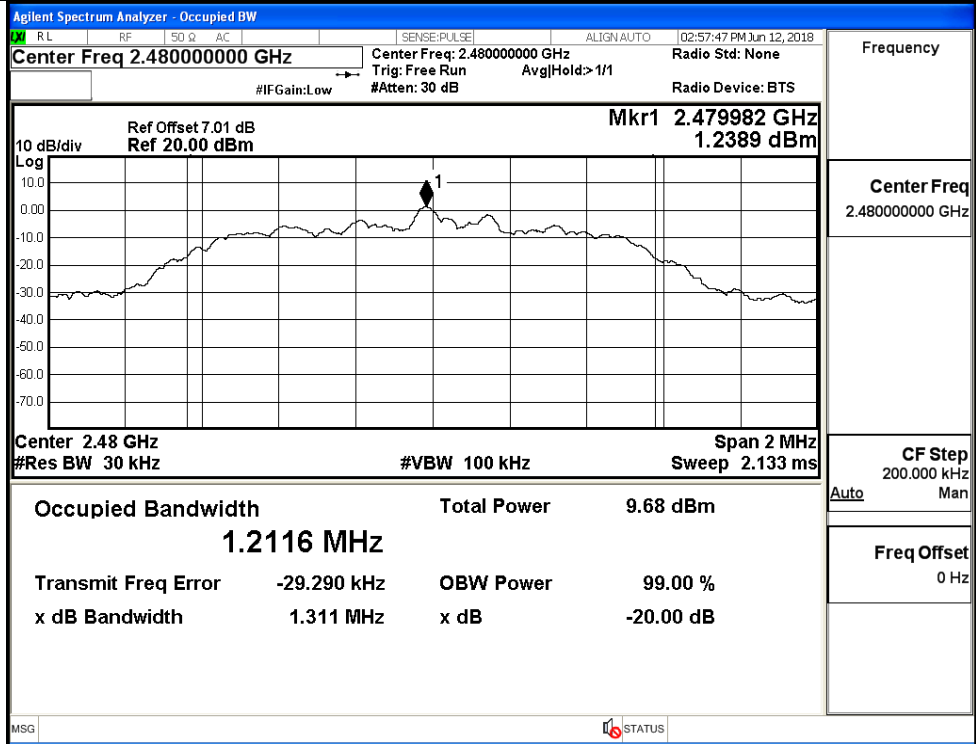
$\pi/4$ DQPSK/LCH



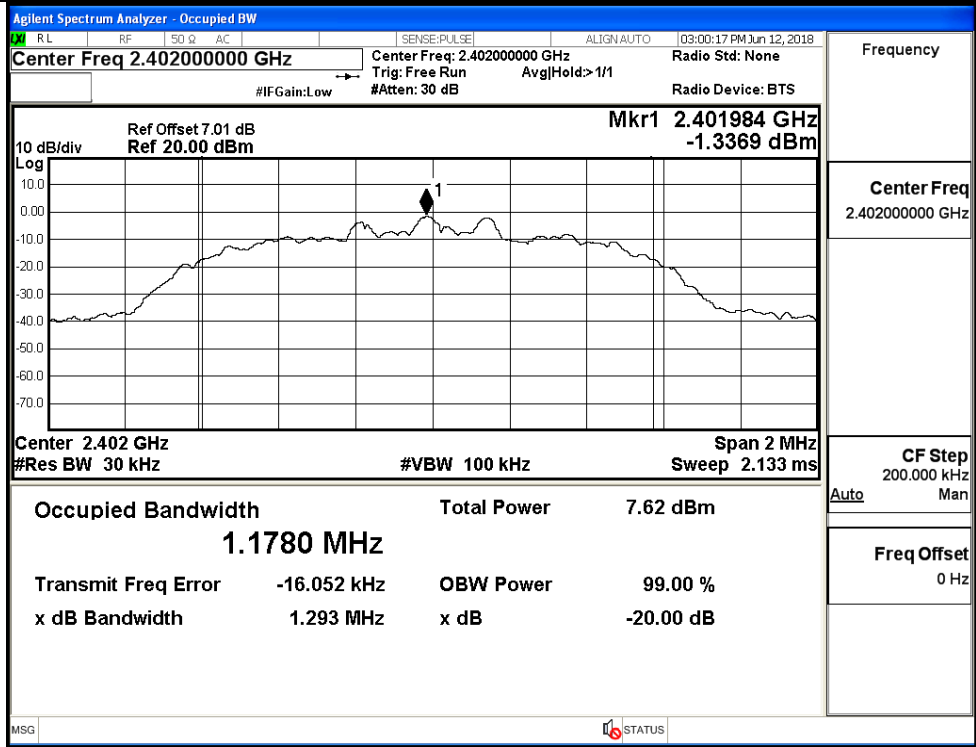
$\pi/4$ DQPSK/MCH



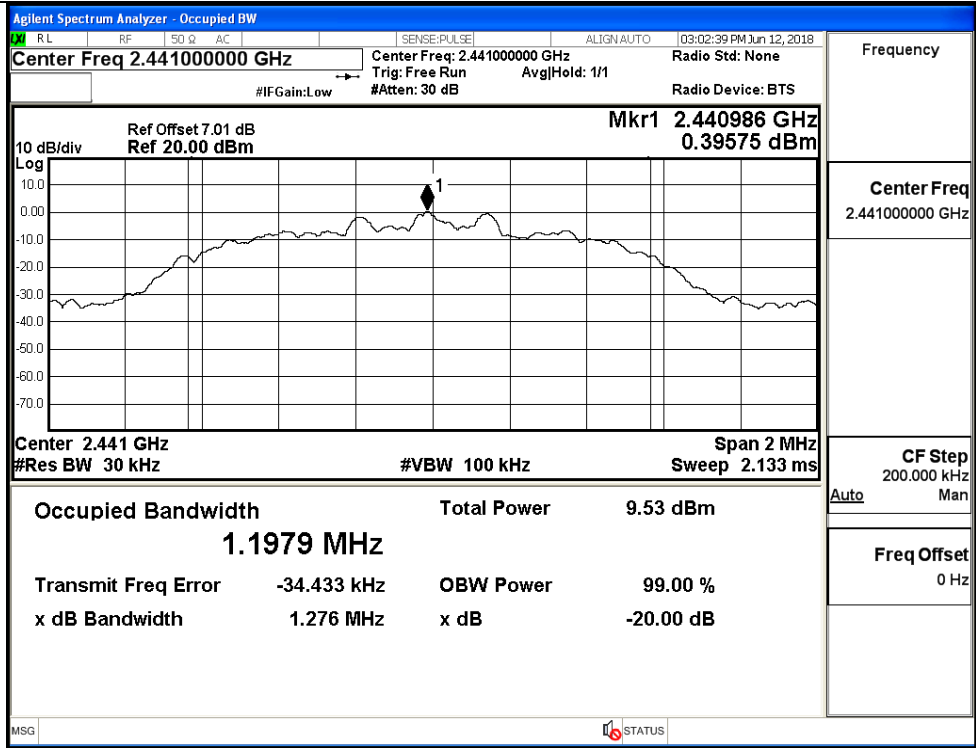
$\pi/4$ DQPSK/HCH



8DPSK/LCH

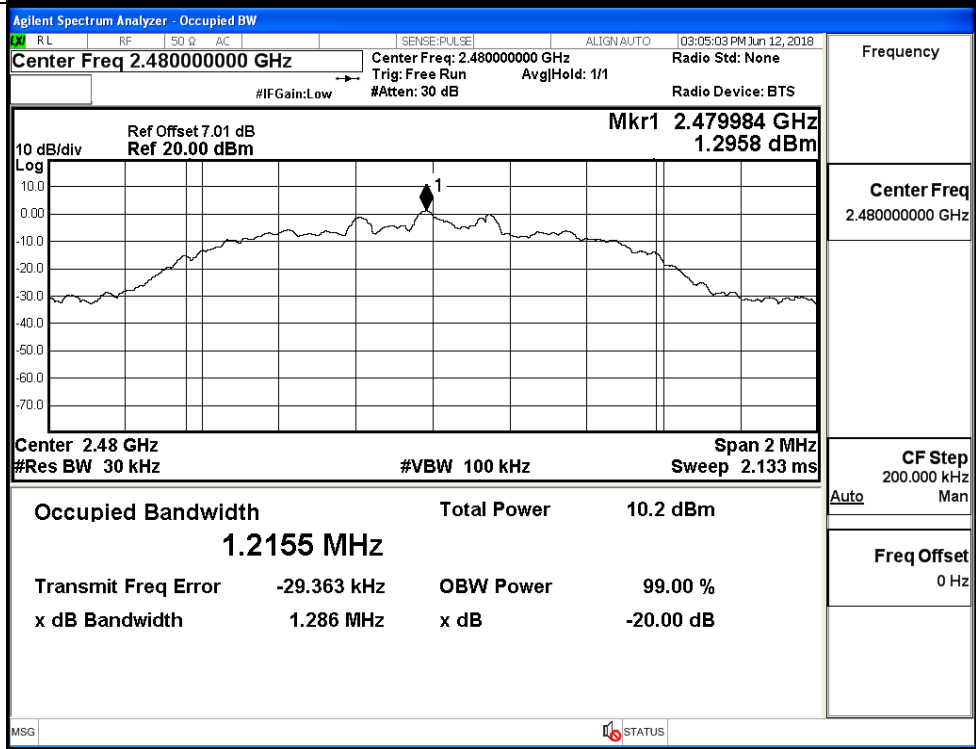


8DPSK/MCH



Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/HCH



Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

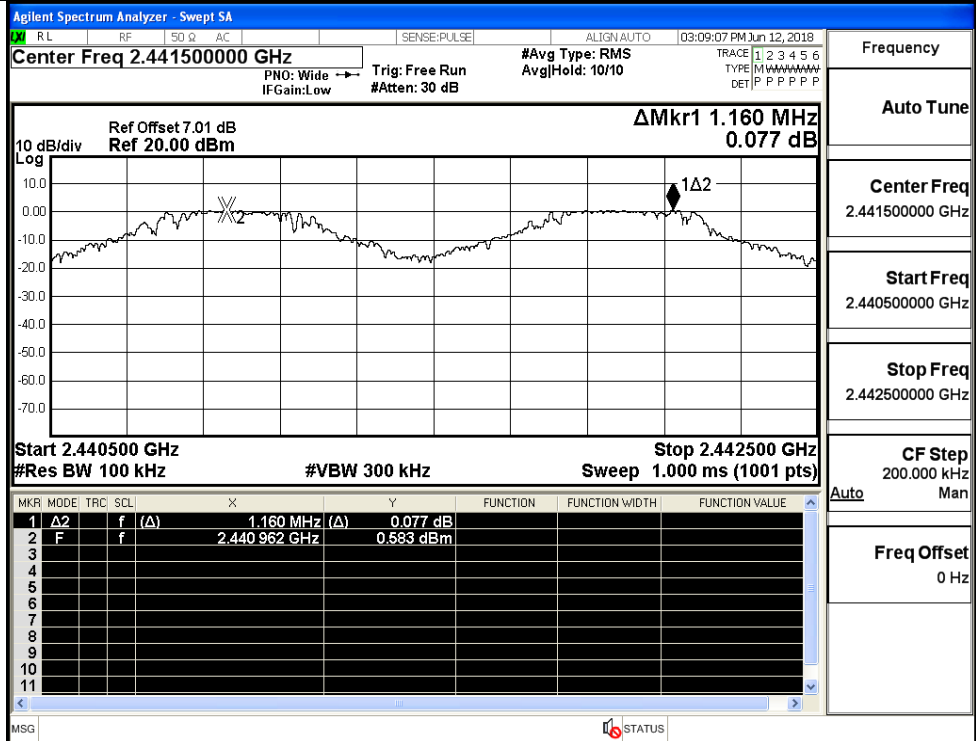
A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.853	0.634	PASS
	MCH	1.160	0.634	PASS
	HCH	1.180	0.634	PASS
π/4DQPSK	LCH	1.162	0.874	PASS
	MCH	1.018	0.874	PASS
	HCH	1.040	0.874	PASS
8DPSK	LCH	1.080	0.862	PASS
	MCH	1.008	0.862	PASS
	HCH	1.338	0.862	PASS

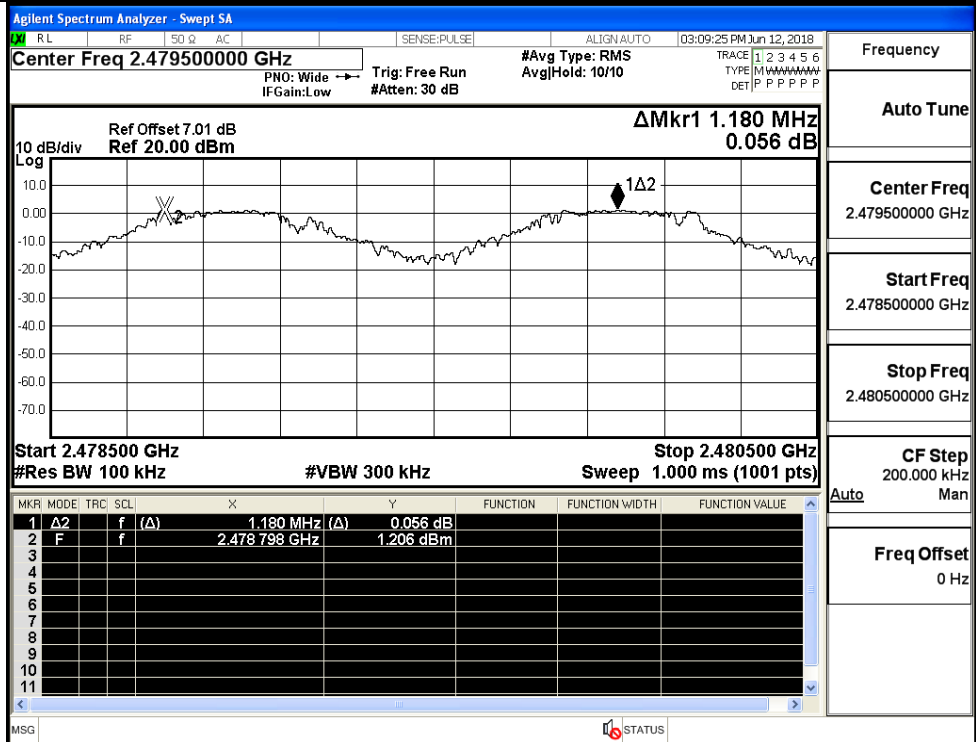
Test Graphs

GFSK/LCH		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Frequency</td></tr> <tr><td>Auto Tune</td></tr> <tr><td>Center Freq 2.402500000 GHz</td></tr> <tr><td>Start Freq 2.401500000 GHz</td></tr> <tr><td>Stop Freq 2.403500000 GHz</td></tr> <tr><td>CF Step 200.000 kHz Auto Man</td></tr> <tr><td>Freq Offset 0 Hz</td></tr> </table>	Frequency	Auto Tune	Center Freq 2.402500000 GHz	Start Freq 2.401500000 GHz	Stop Freq 2.403500000 GHz	CF Step 200.000 kHz Auto Man	Freq Offset 0 Hz
Frequency									
Auto Tune									
Center Freq 2.402500000 GHz									
Start Freq 2.401500000 GHz									
Stop Freq 2.403500000 GHz									
CF Step 200.000 kHz Auto Man									
Freq Offset 0 Hz									

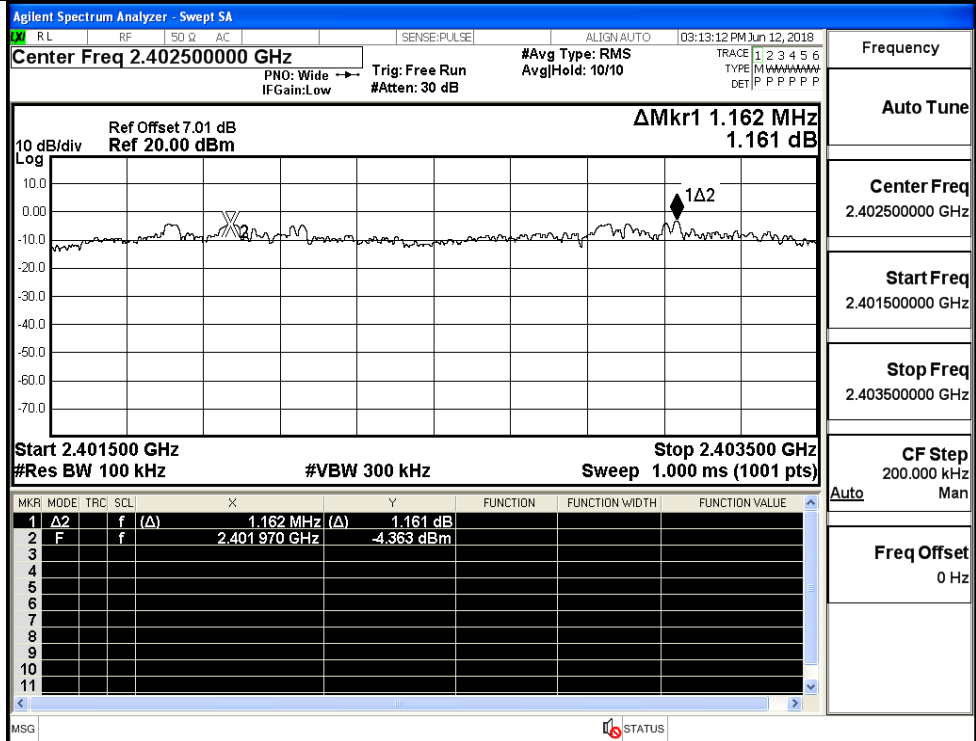
GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH



Frequency

Auto Tune

Center Freq
2.40250000 GHz

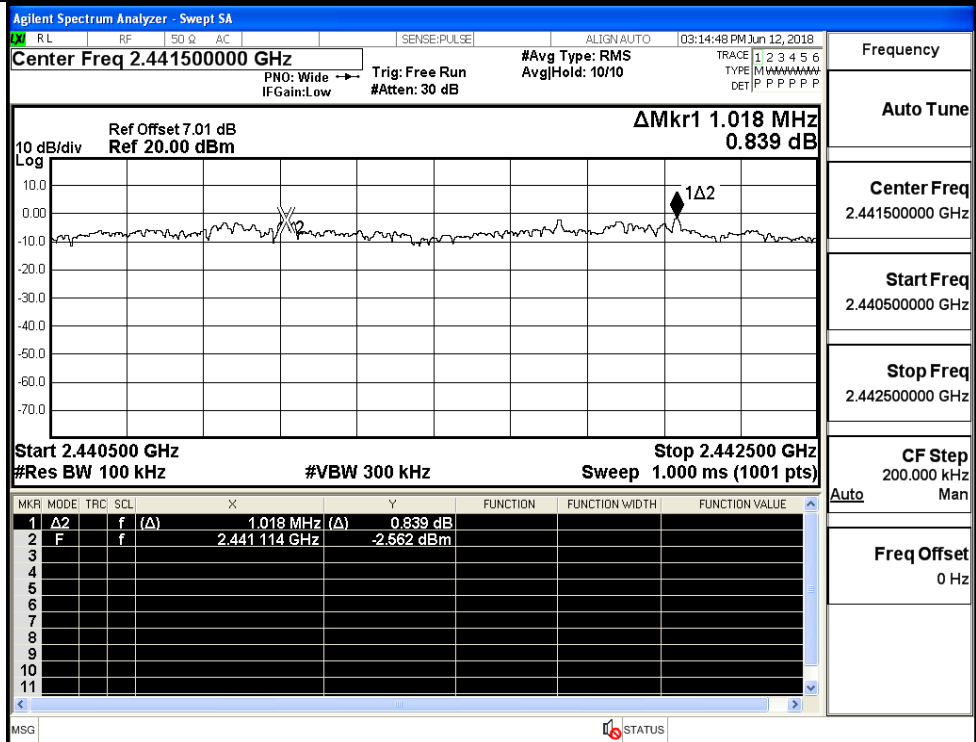
Start Freq
2.40150000 GHz

Stop Freq
2.40350000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/MCH



Frequency

Auto Tune

Center Freq
2.44150000 GHz

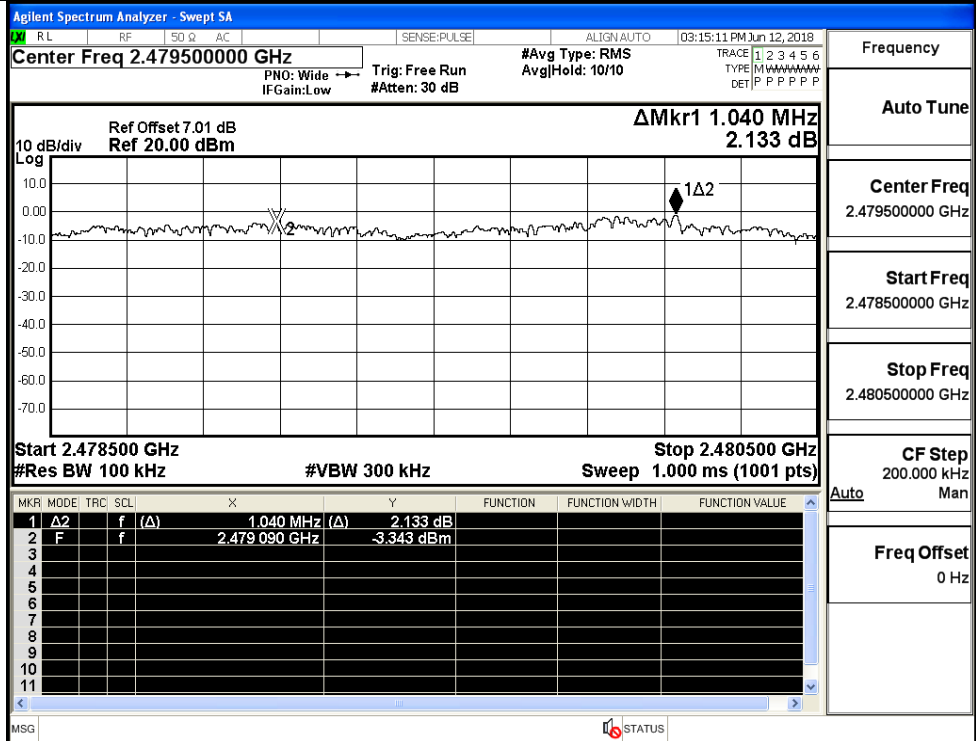
Start Freq
2.44050000 GHz

Stop Freq
2.44250000 GHz

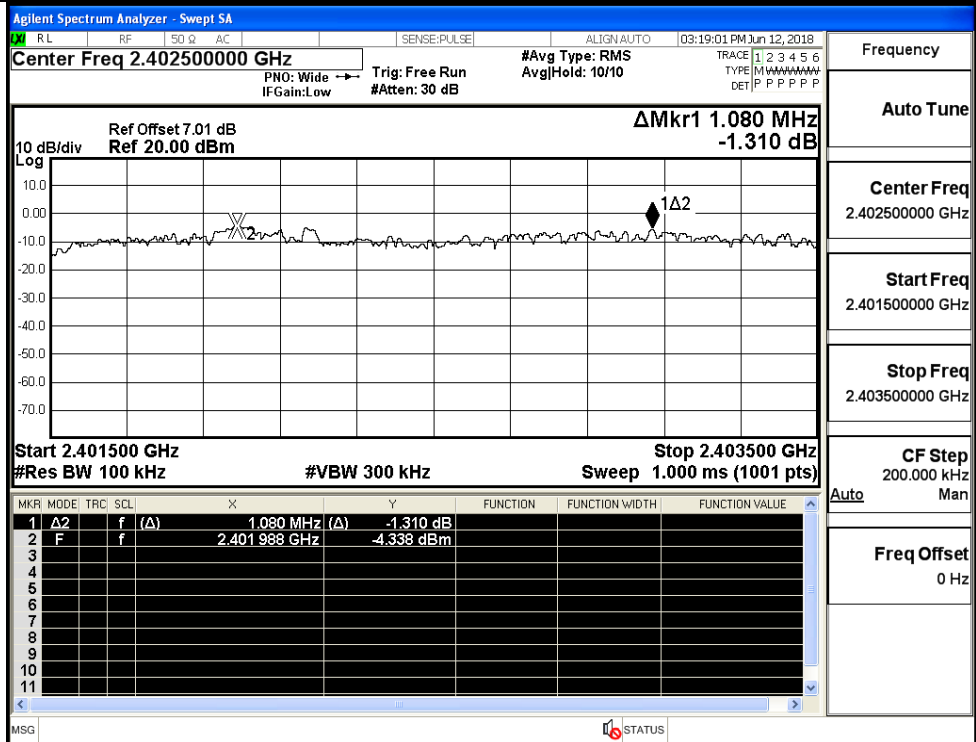
CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

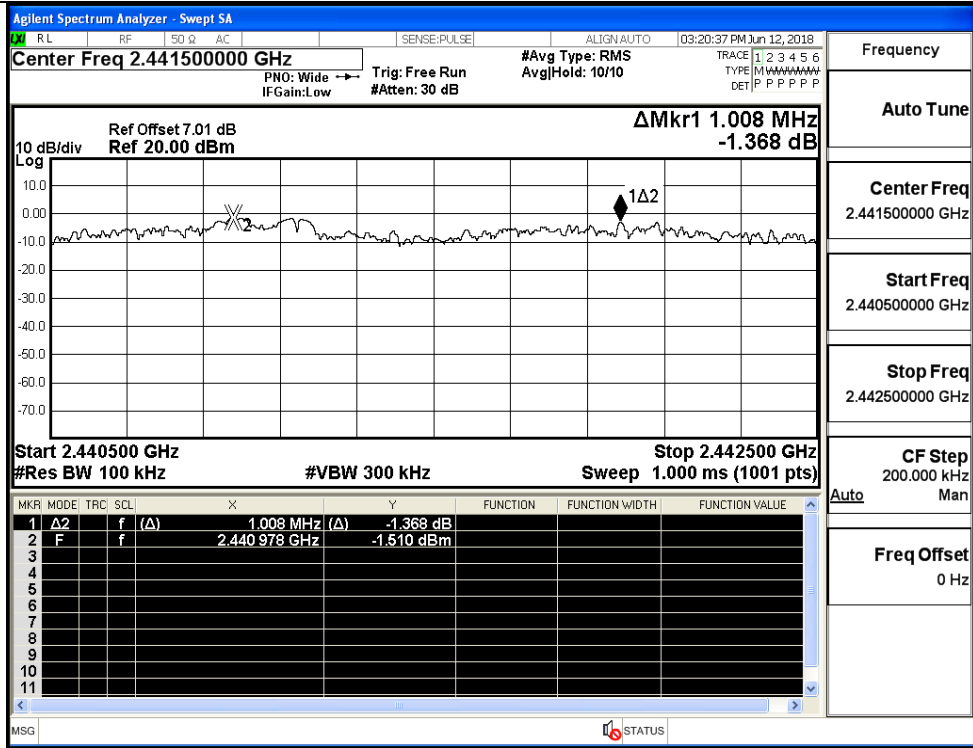
π/4DQPSK/HCH



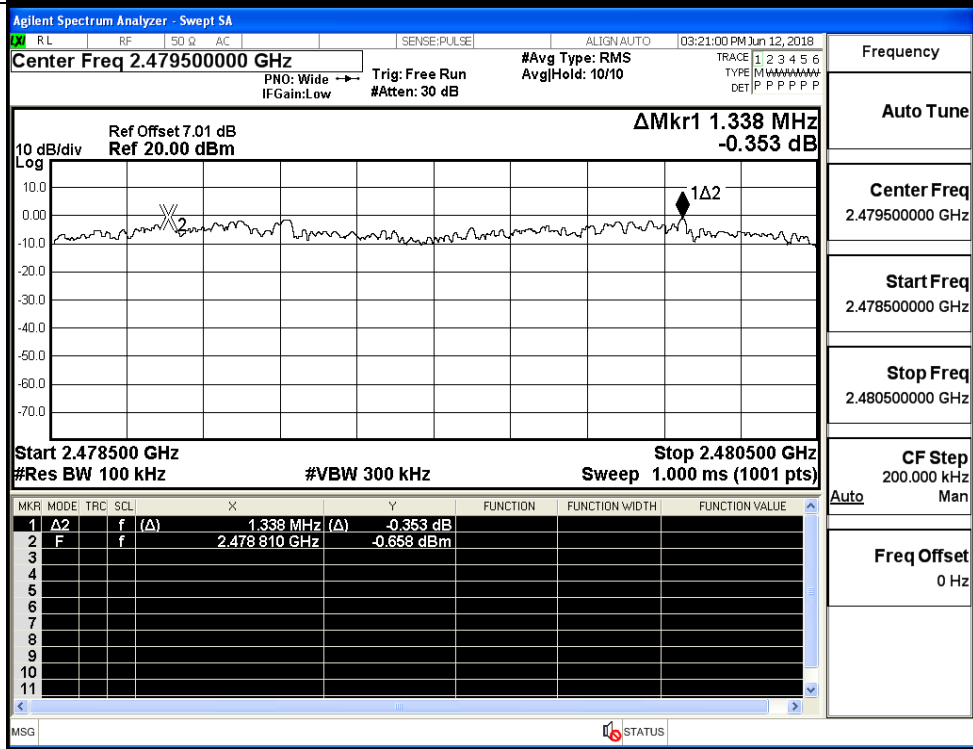
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

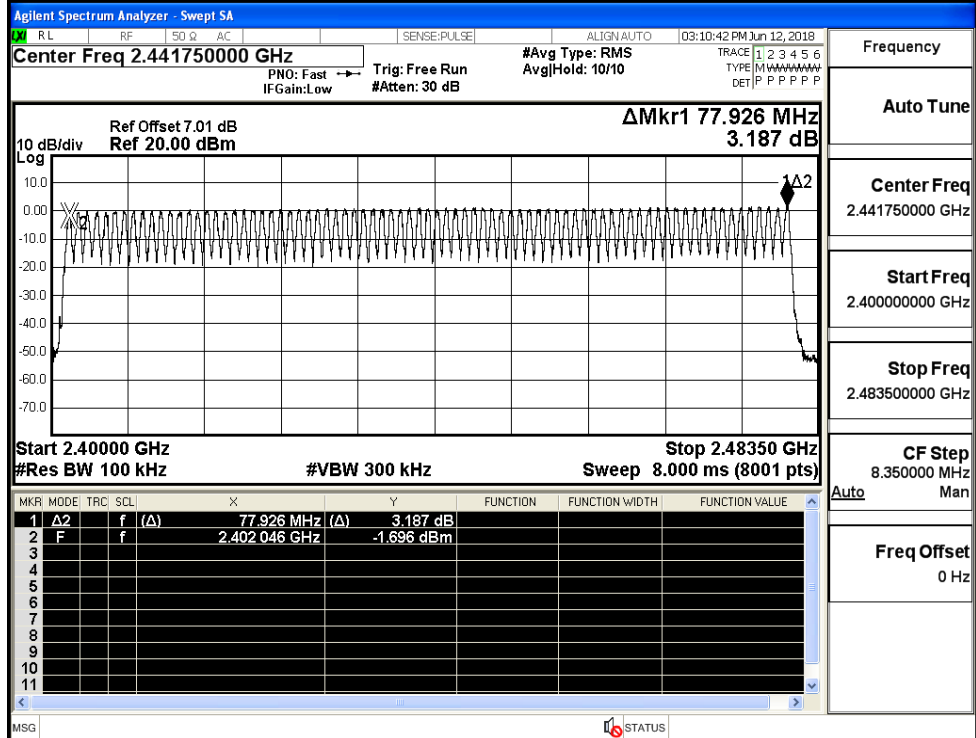


A.4 Hopping Channel Number

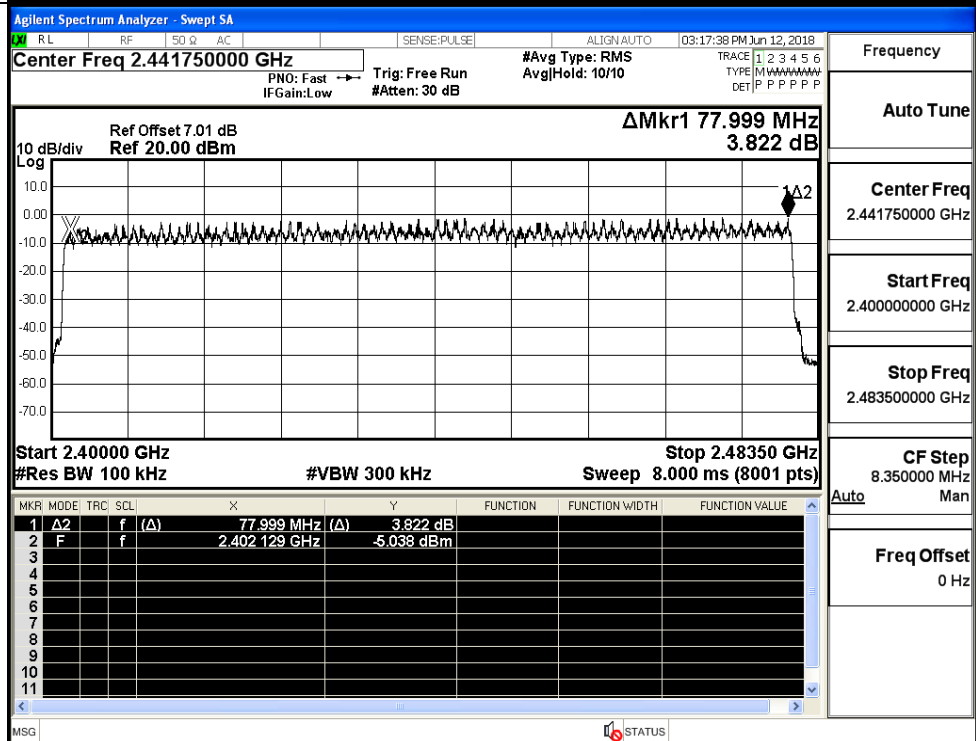
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

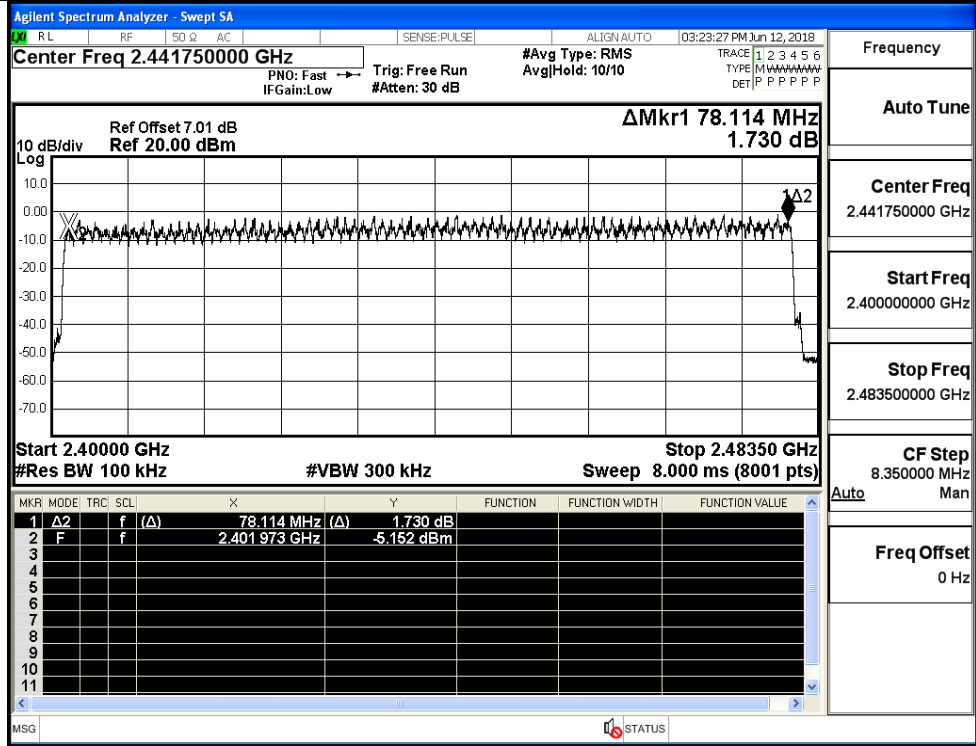
GFSK/Hop



π/4DQPSK/Hop

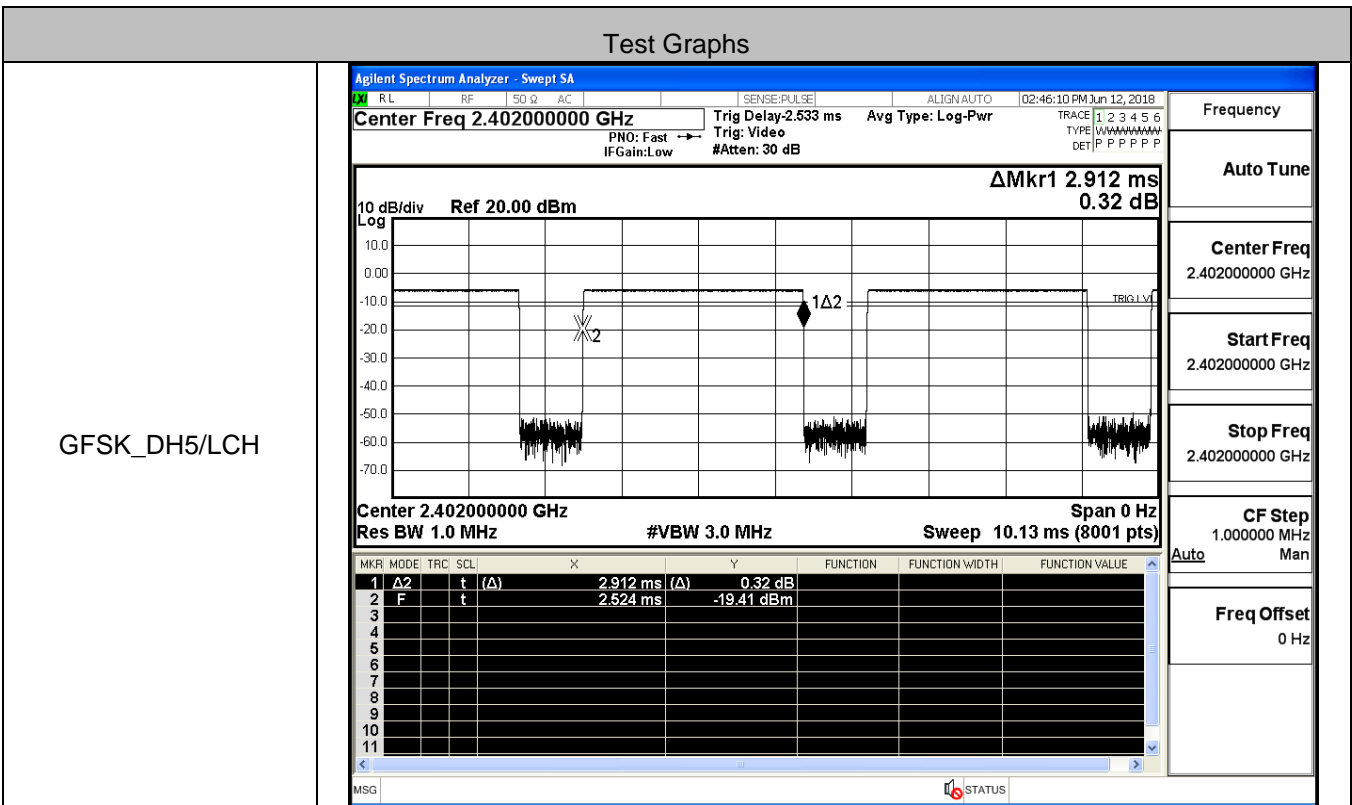


8DPSK/Hop

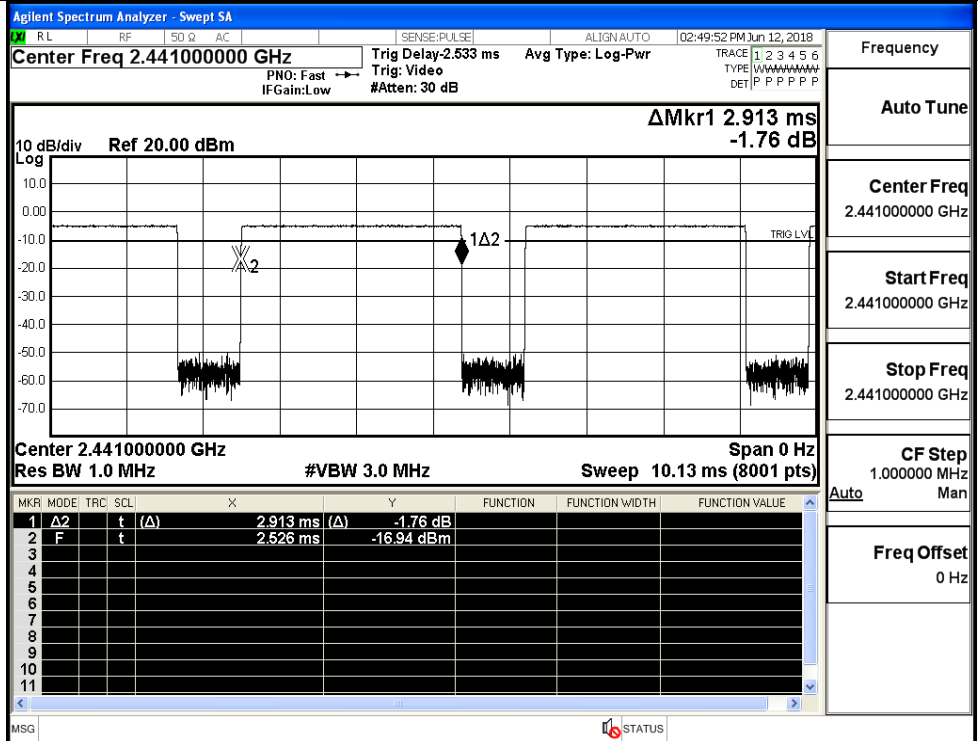


A.5 Dwell Time

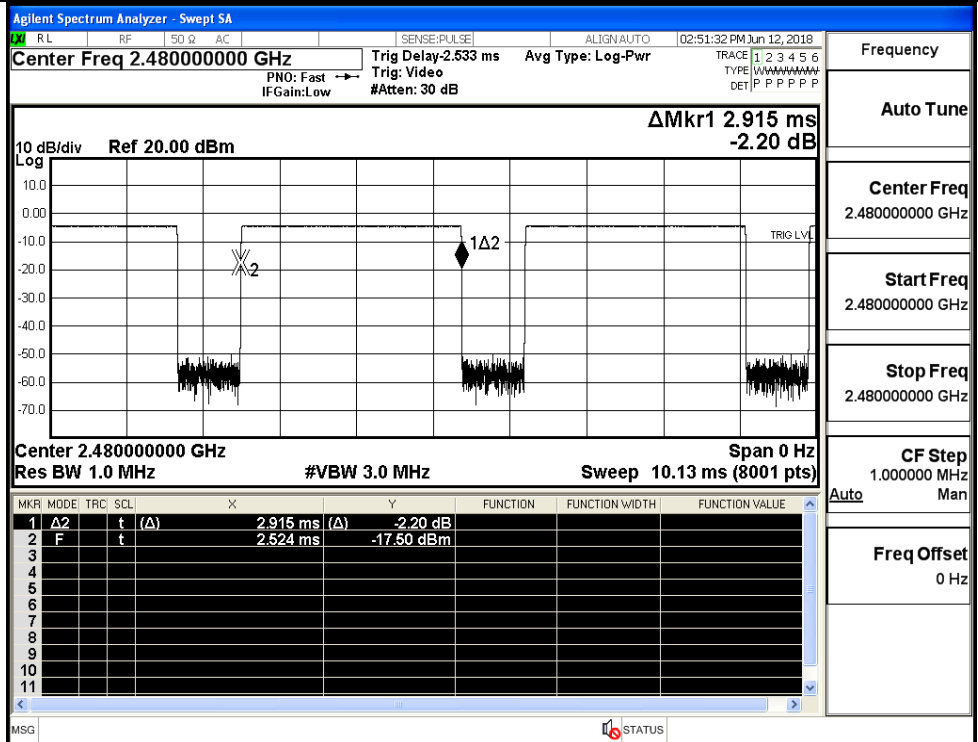
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.91	106.7	0.31	0.4	PASS
	DH5	MCH	2.91	106.7	0.31	0.4	PASS
	DH5	HCH	2.91	106.7	0.31	0.4	PASS
π/4DQPSK	2DH5	LCH	2.92	106.7	0.311	0.4	PASS
	2DH5	MCH	2.92	106.7	0.311	0.4	PASS
	2DH5	HCH	2.92	106.7	0.311	0.4	PASS
8DPSK	3DH5	LCH	2.92	106.7	0.311	0.4	PASS
	3DH5	MCH	2.92	106.7	0.311	0.4	PASS
	3DH5	HCH	2.92	106.7	0.311	0.4	PASS



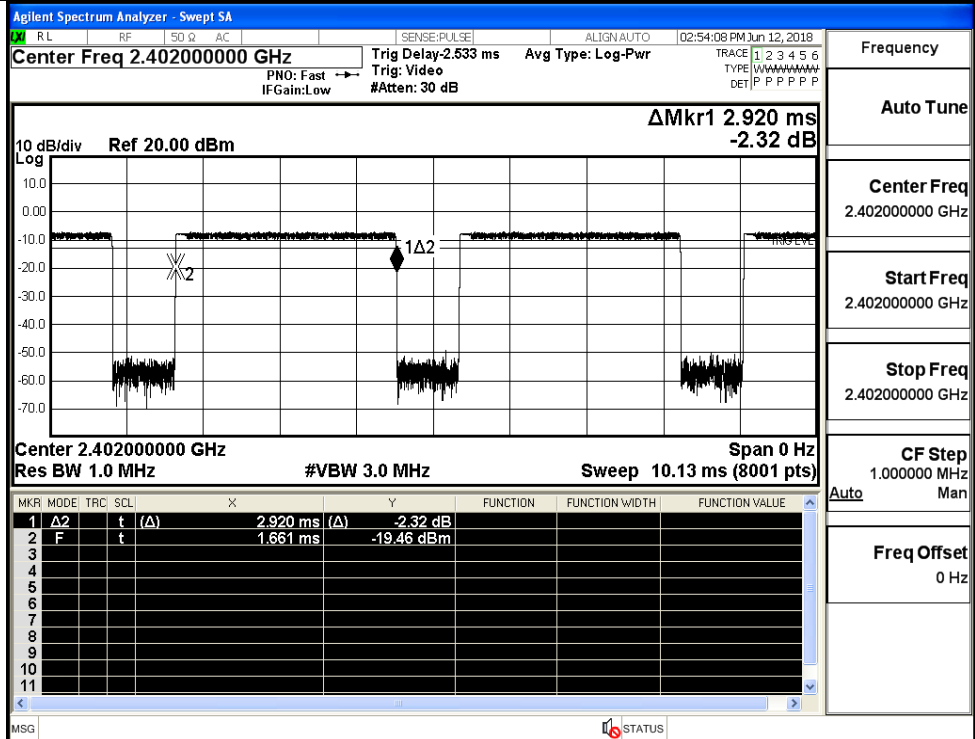
GFSK_DH5/MCH



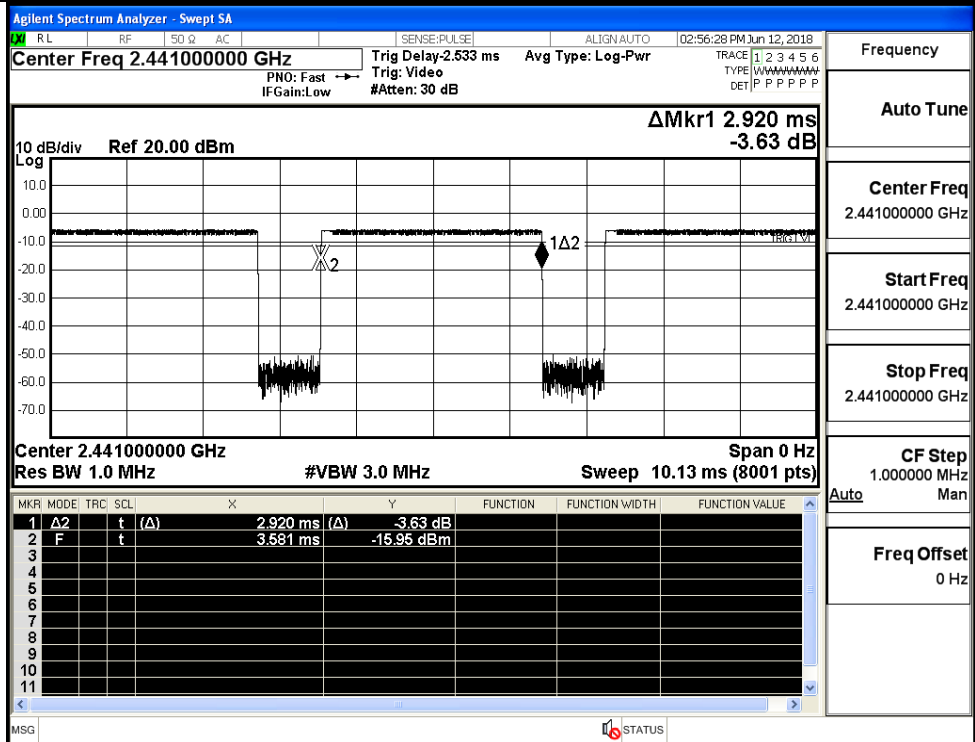
GFSK_DH5/HCH



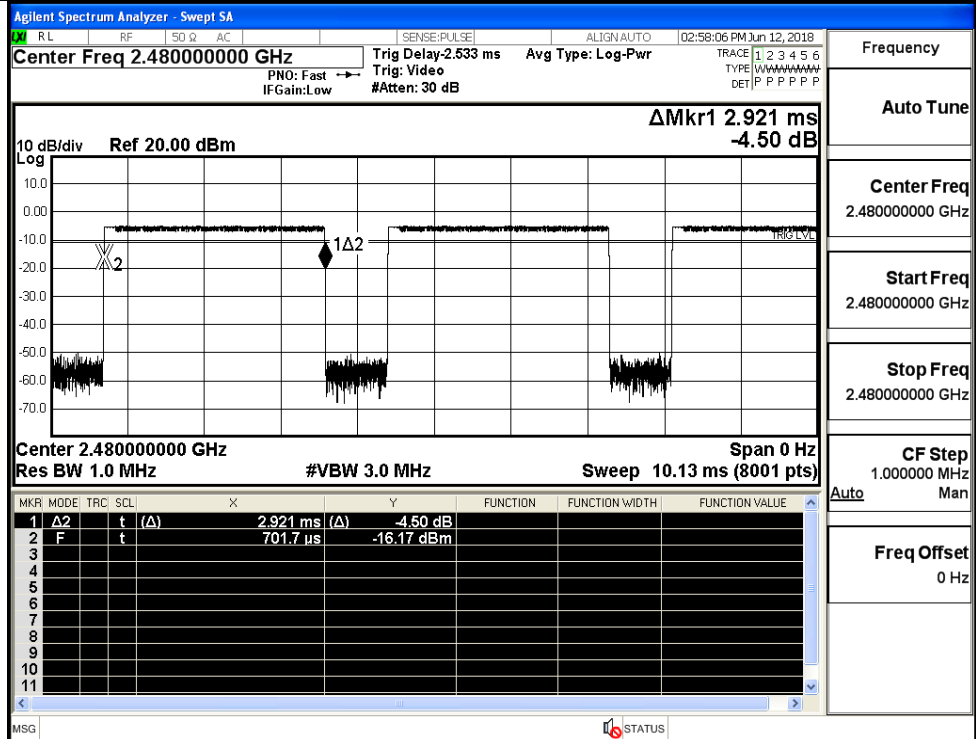
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH



Frequency

Auto Tune

Center Freq
2.480000000 GHz

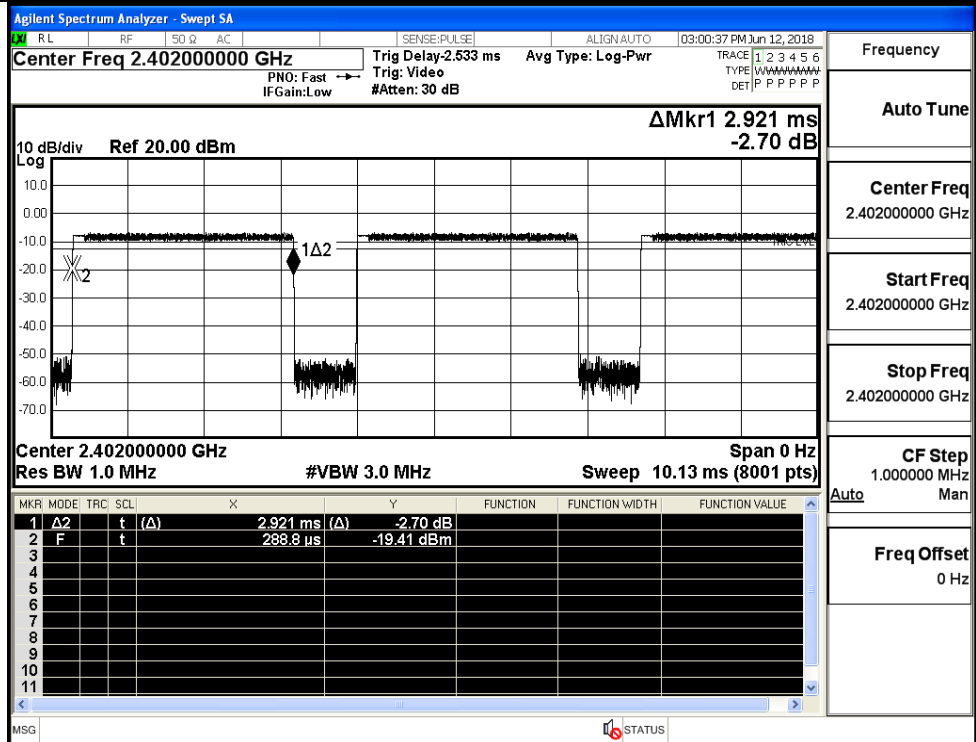
Start Freq
2.480000000 GHz

Stop Freq
2.480000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

8DPSK_3DH5/LCH



Frequency

Auto Tune

Center Freq
2.402000000 GHz

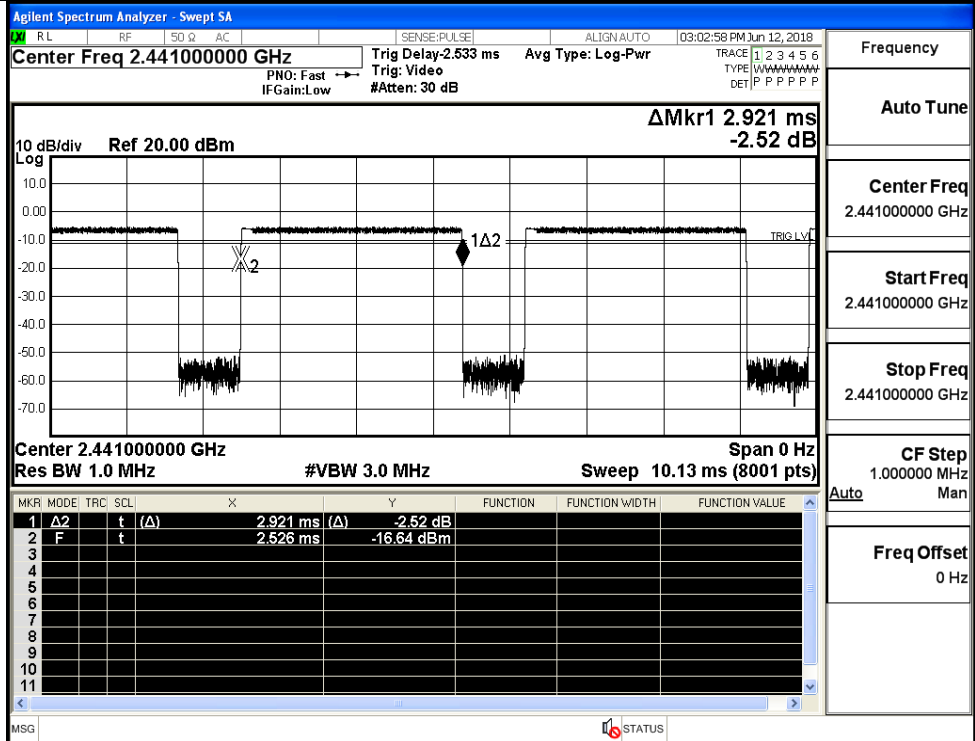
Start Freq
2.402000000 GHz

Stop Freq
2.402000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

8DPSK_3DH5/MCH



Frequency

Auto Tune

Center Freq 2.441000000 GHz

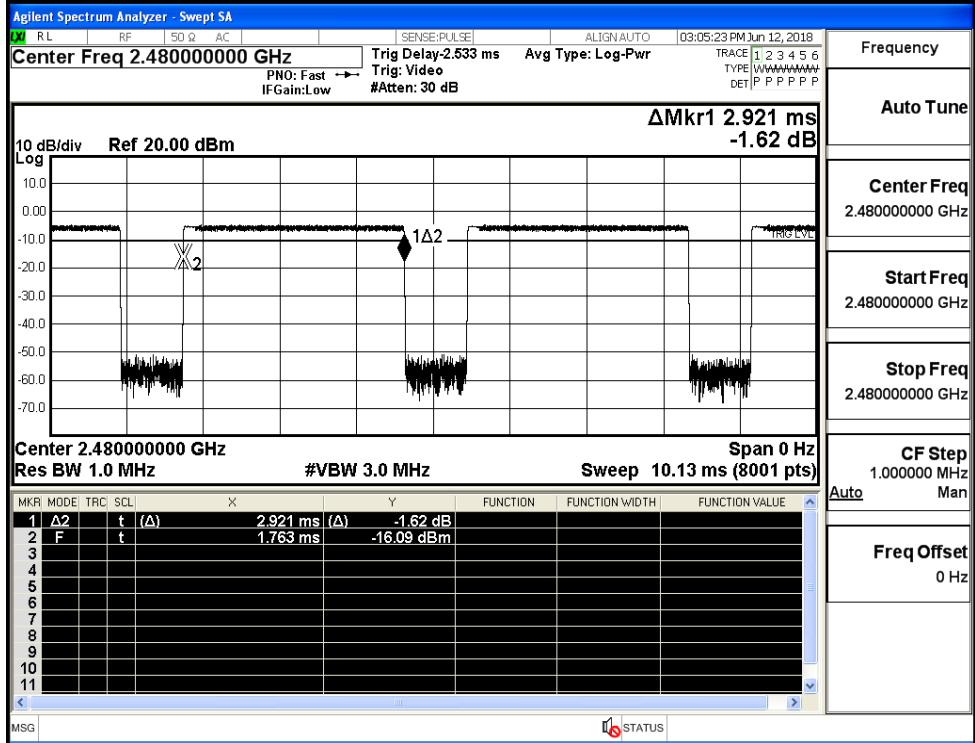
Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Freq Offset 0 Hz

8DPSK_3DH5/HCH



Frequency

Auto Tune

Center Freq 2.480000000 GHz

Start Freq 2.480000000 GHz

Stop Freq 2.480000000 GHz

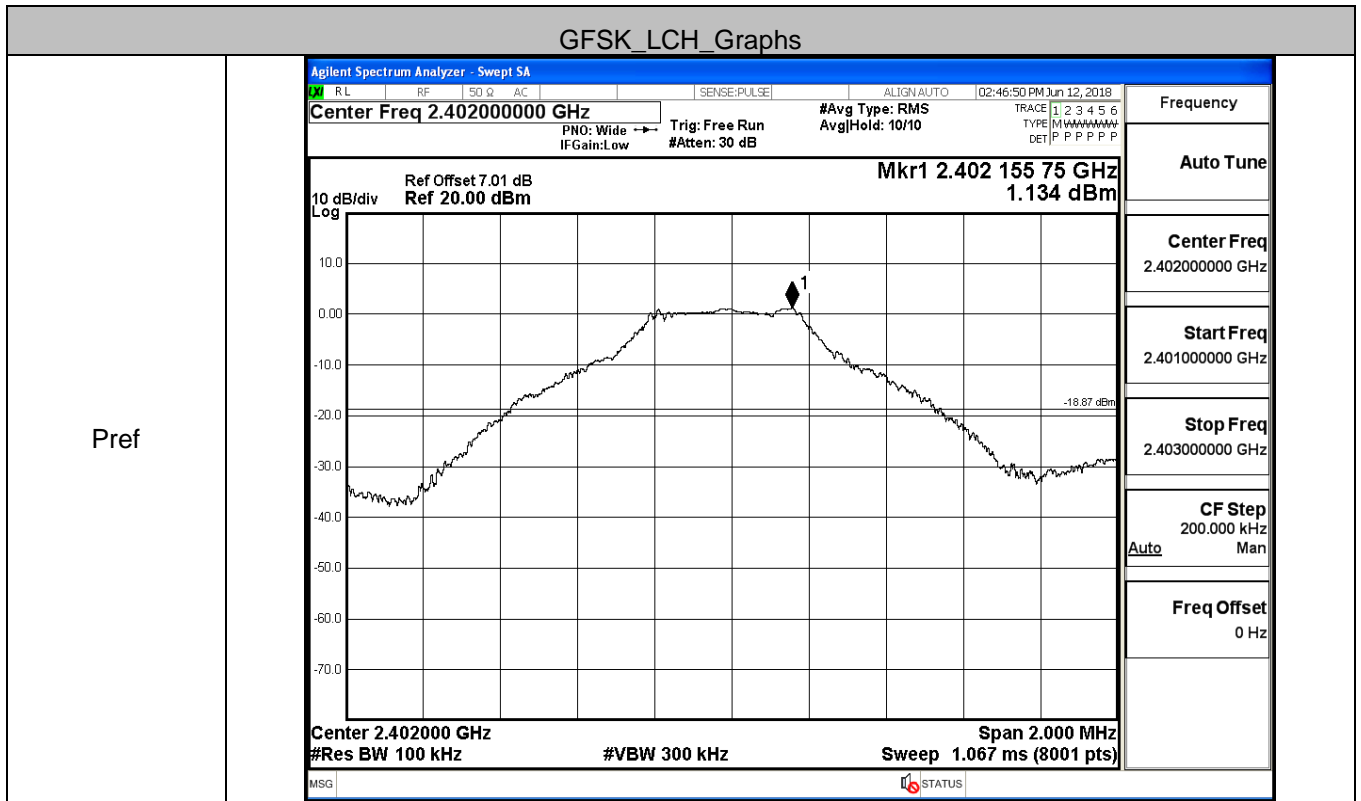
CF Step 1.000000 MHz

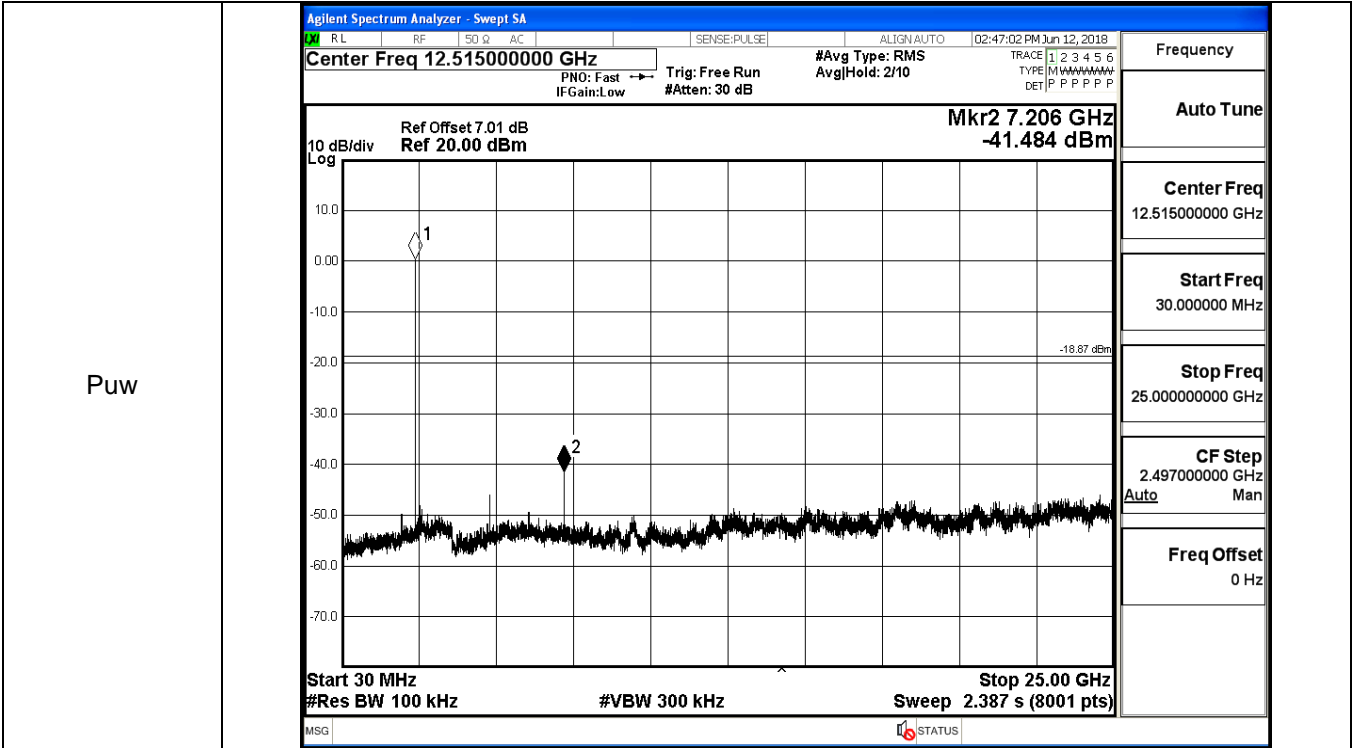
Freq Offset 0 Hz

A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.134	-41.484	-18.866	PASS
	MCH	2.133	-34.251	-17.867	PASS
	HCH	2.54	-32.723	-17.460	PASS
$\pi/4$ DQPSK	LCH	-0.808	-46.173	-20.808	PASS
	MCH	1.124	-45.148	-18.876	PASS
	HCH	1.658	-40.963	-18.342	PASS
8DPSK	LCH	-0.632	-46.320	-20.632	PASS
	MCH	1.141	-42.542	-18.859	PASS
	HCH	1.794	-41.861	-18.206	PASS

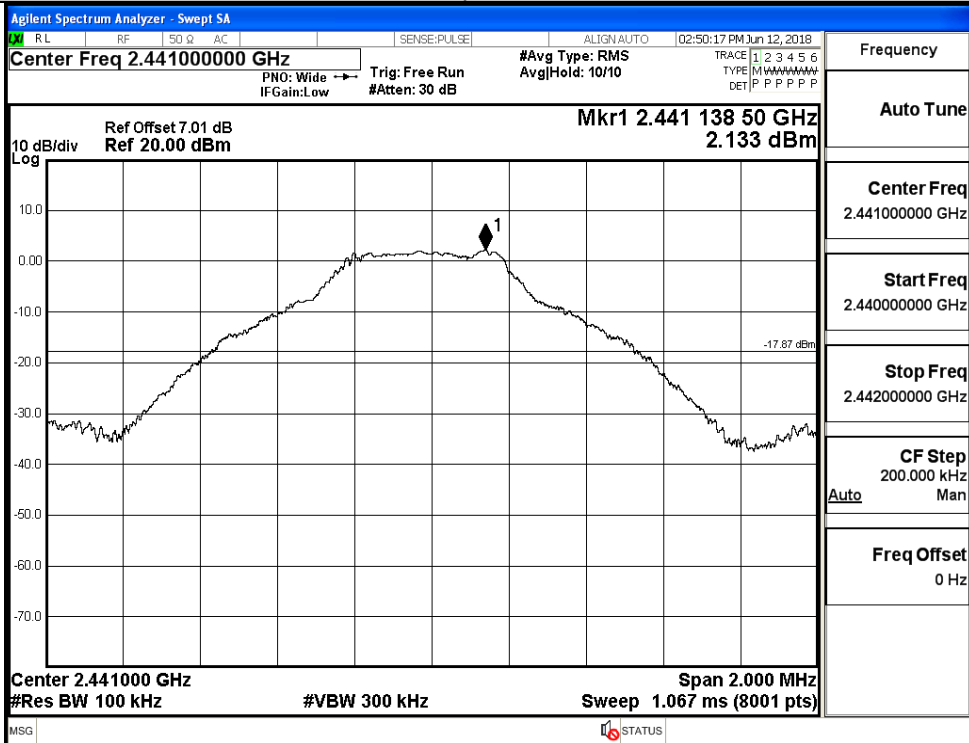
GFSK_LCH_Graphs



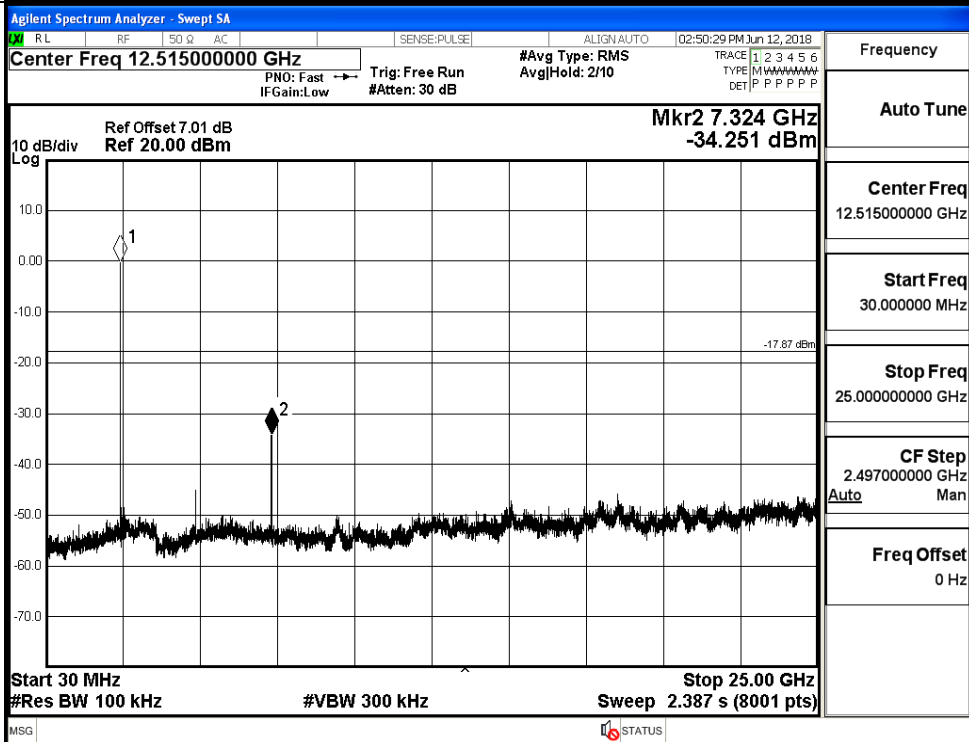


GFSK_MCH_Graphs

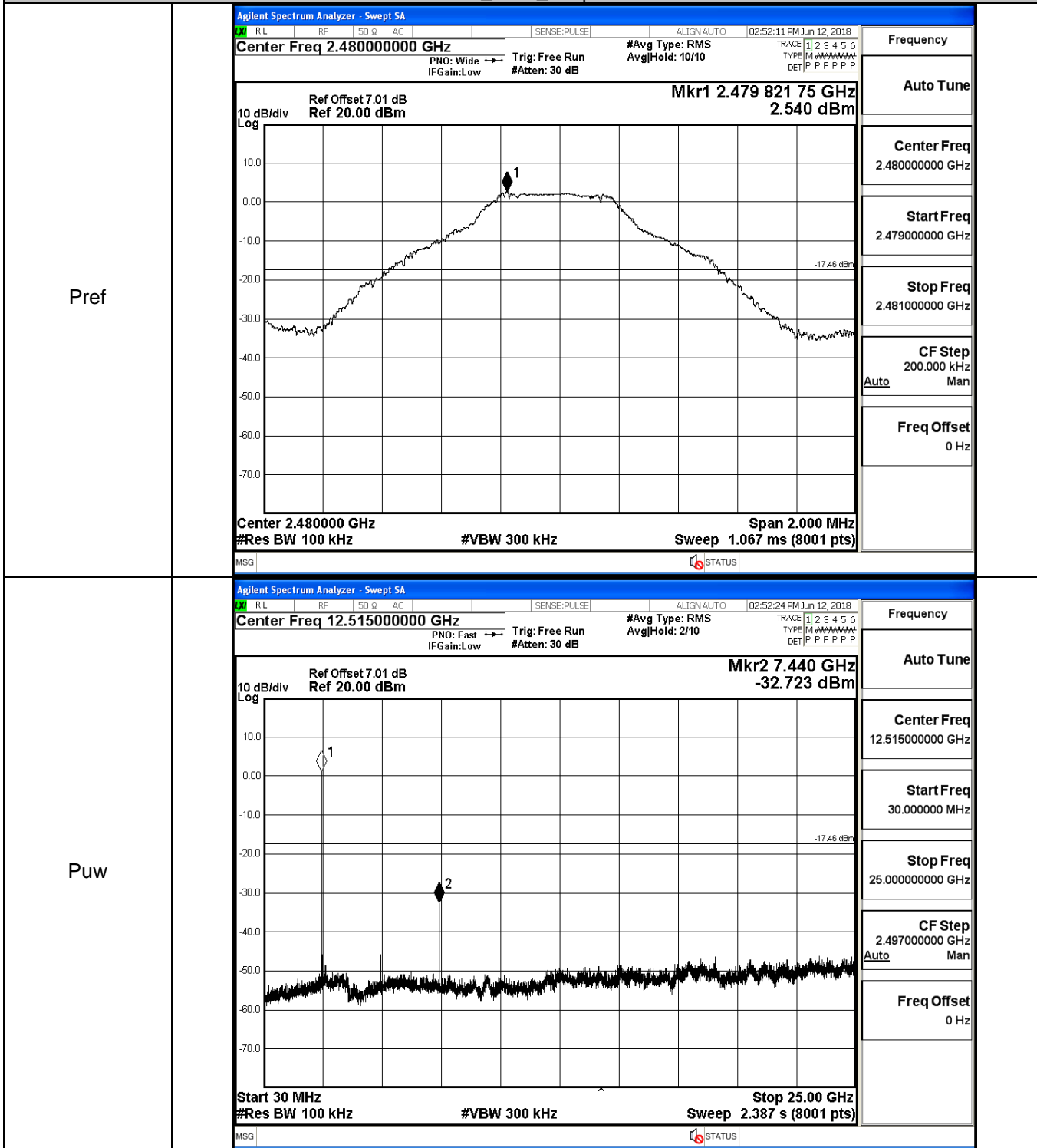
Pref



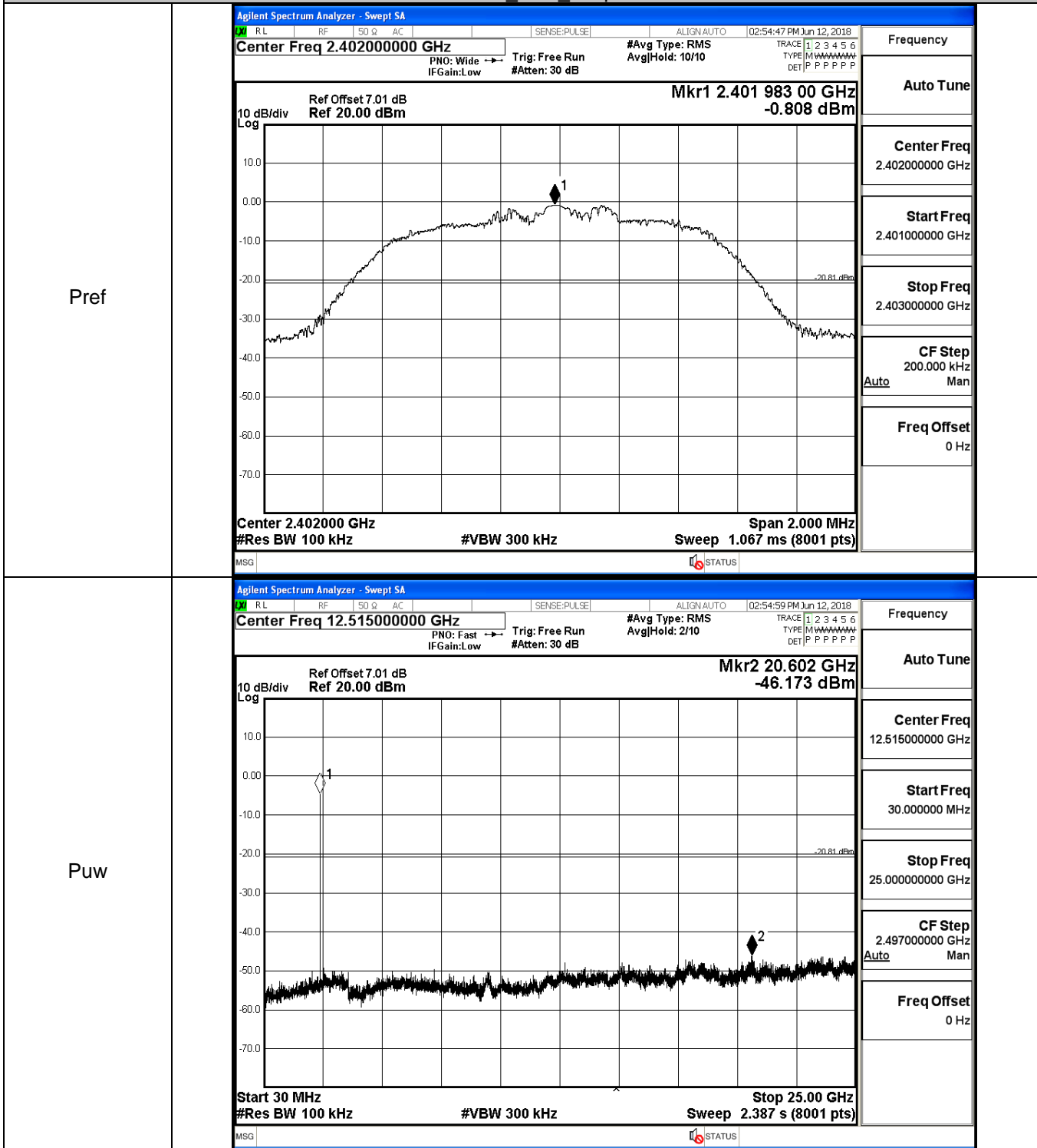
Puw



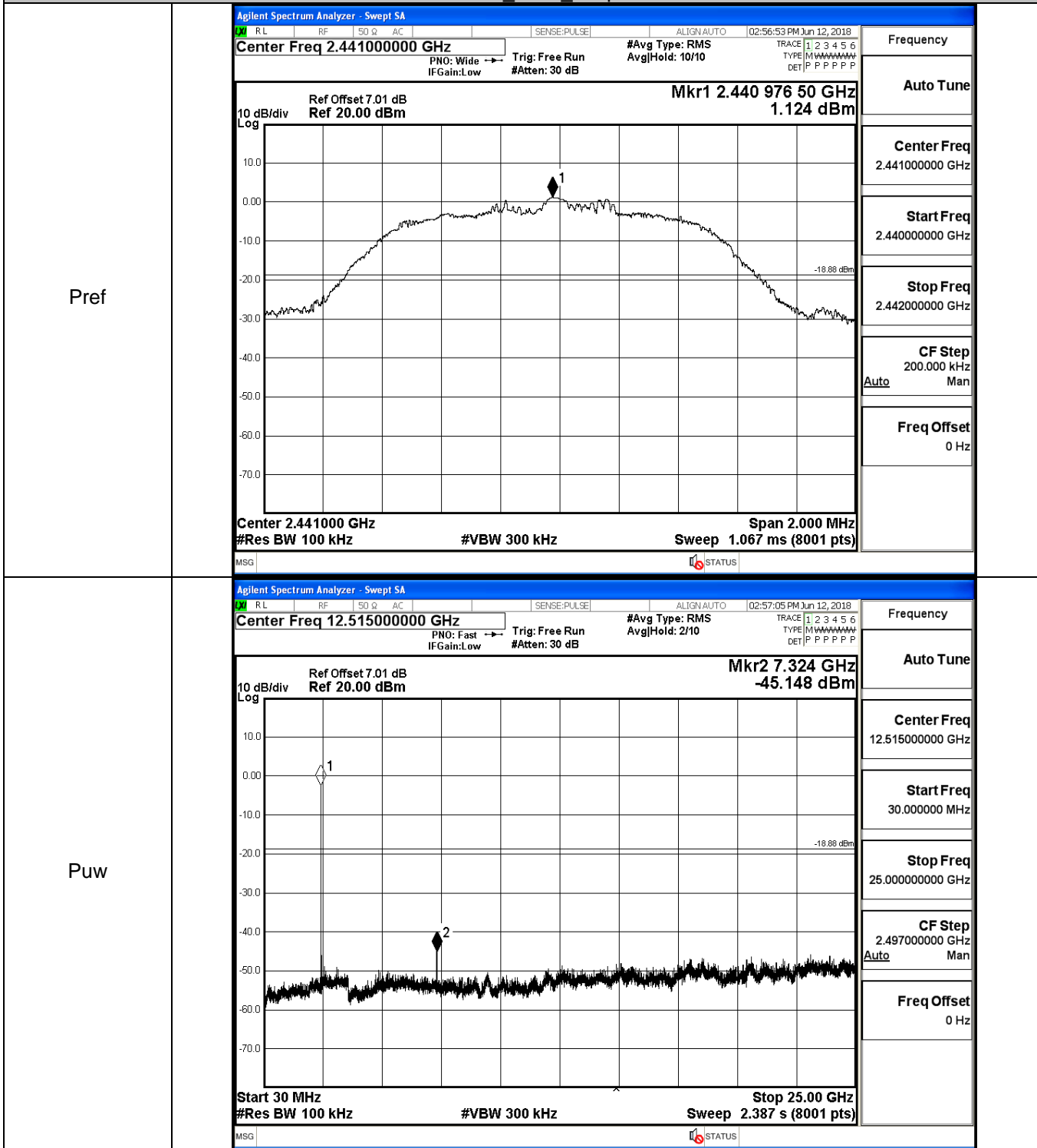
GFSK_HCH_Graphs



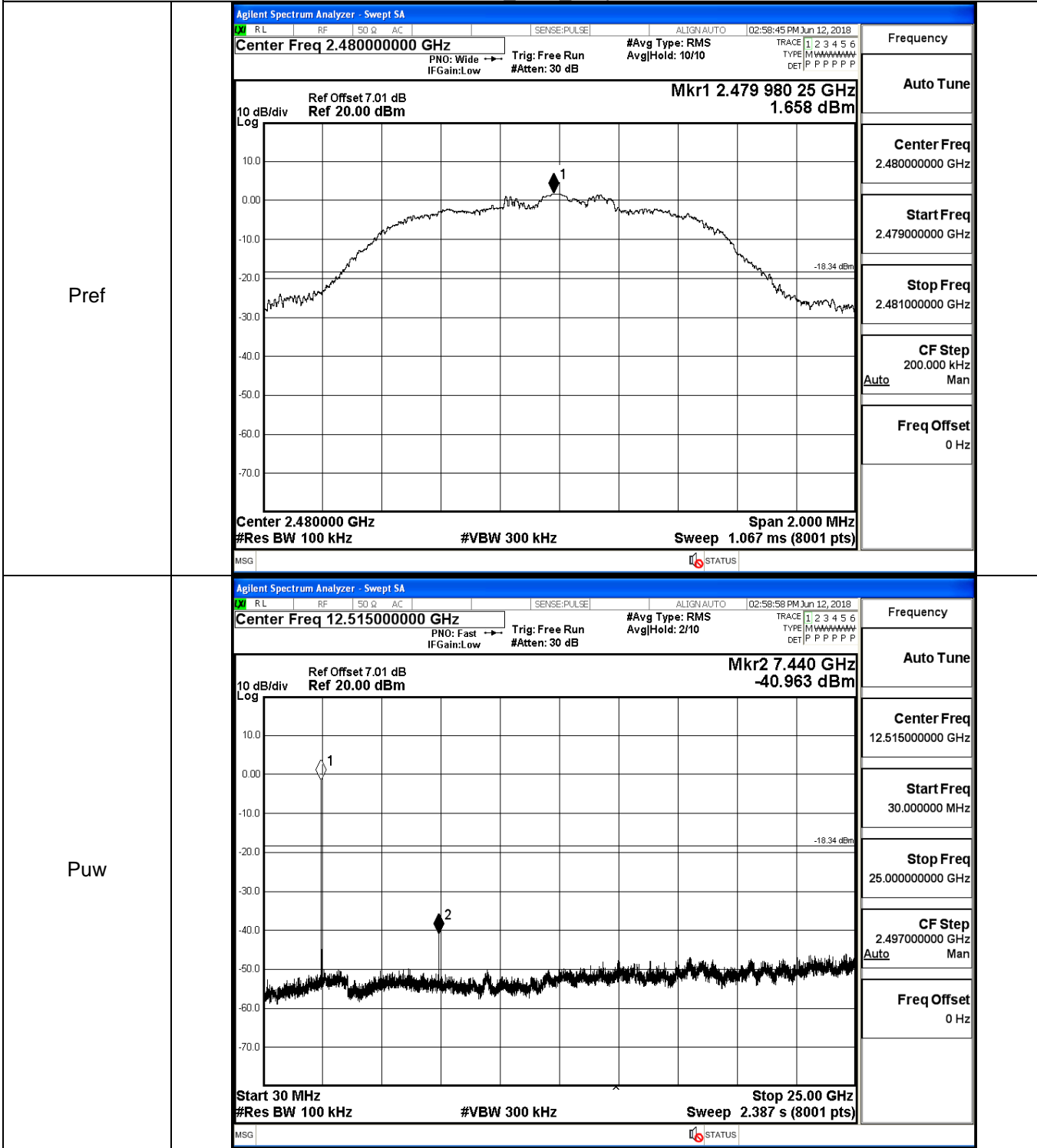
$\pi/4$ DQPSK_LCH_Graphs



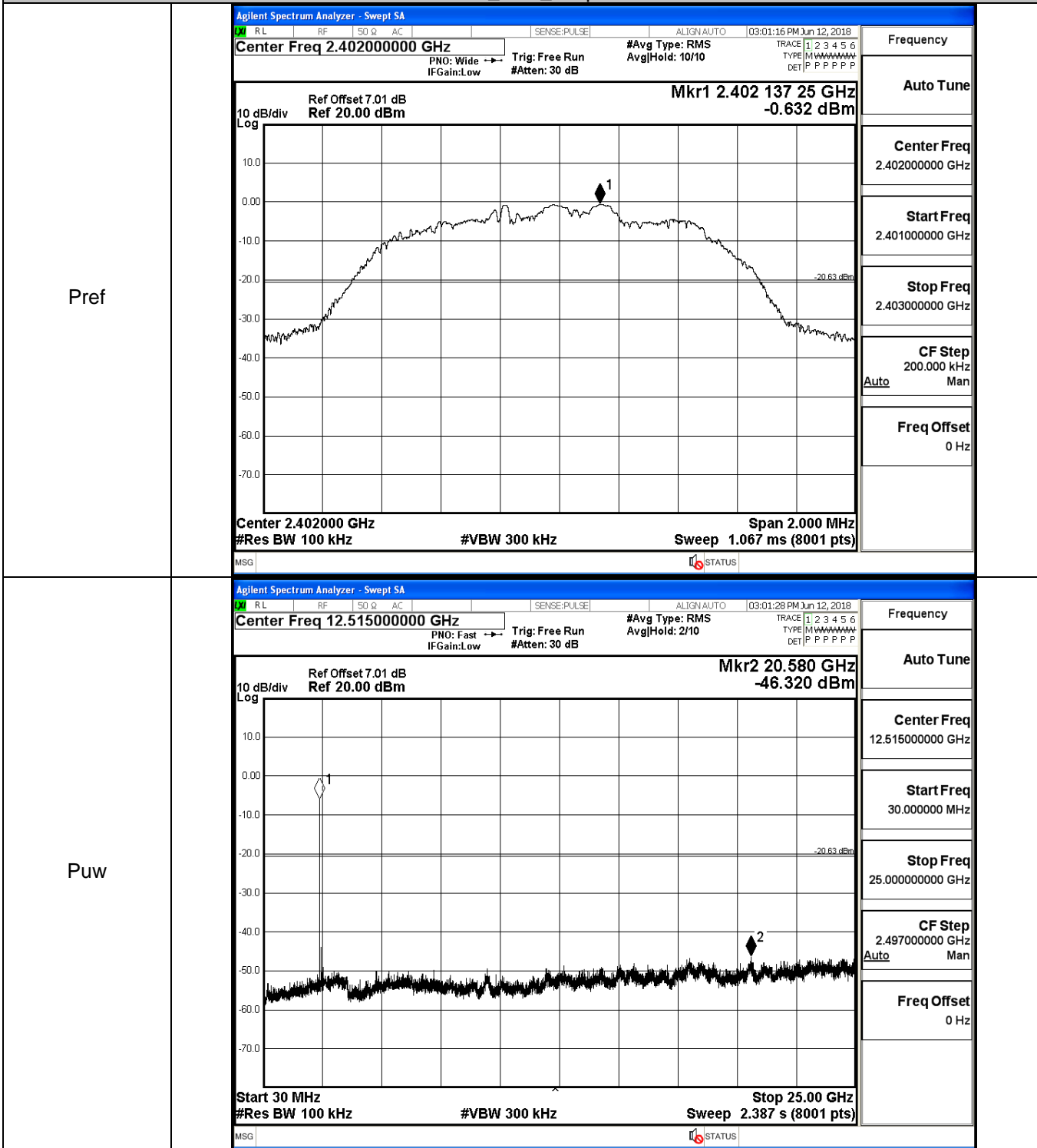
$\pi/4$ DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

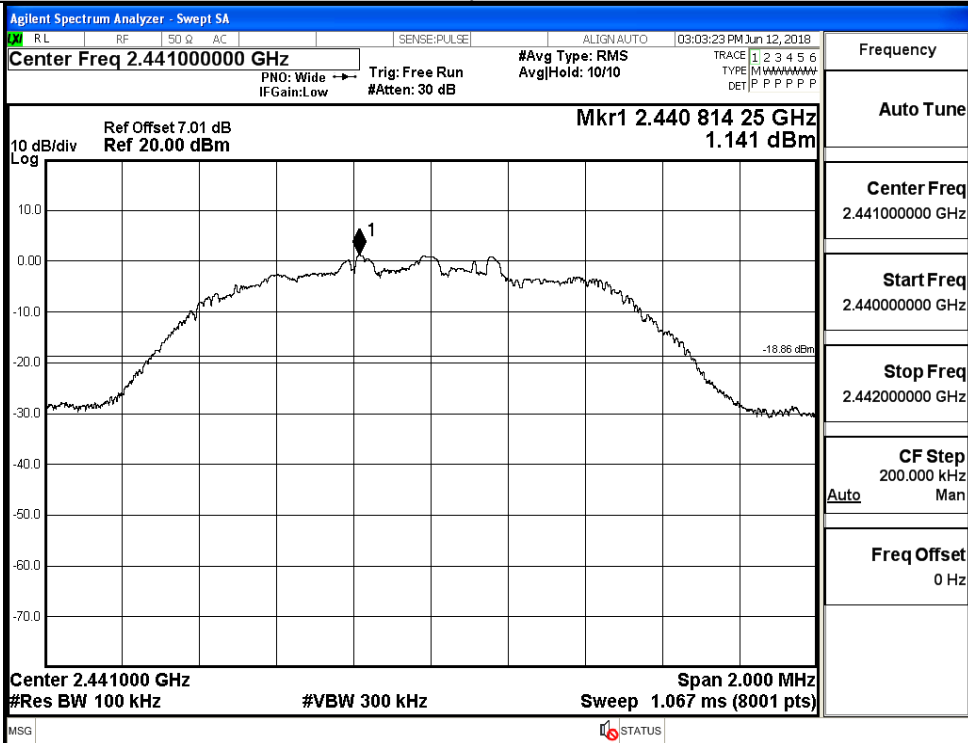


8DPSK_LCH_Graphs

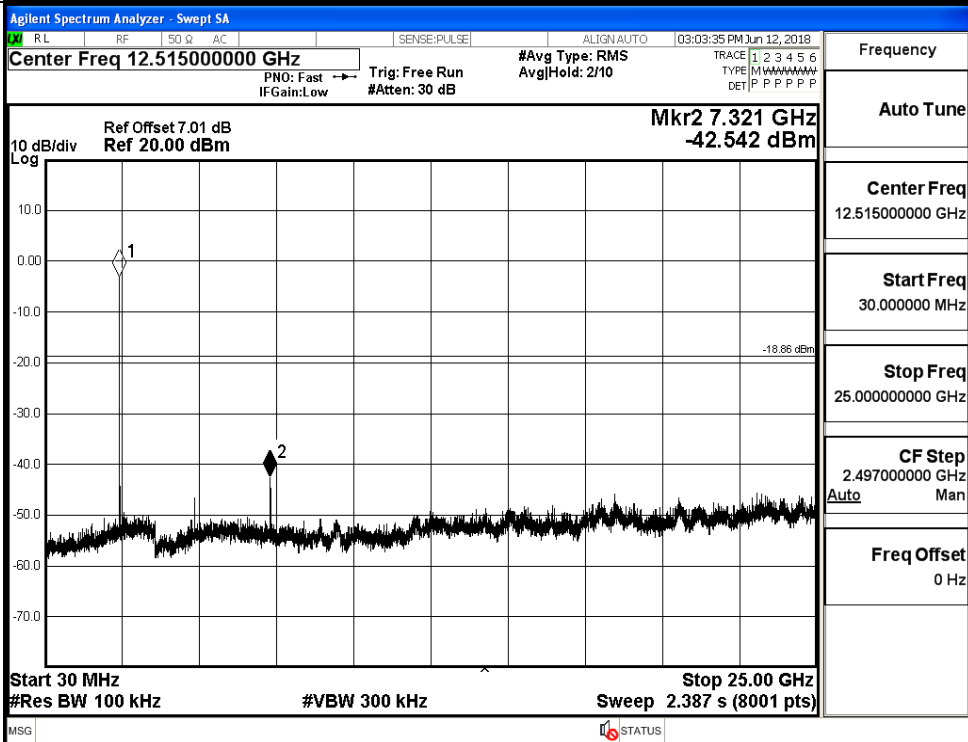


8DPSK_MCH_Graphs

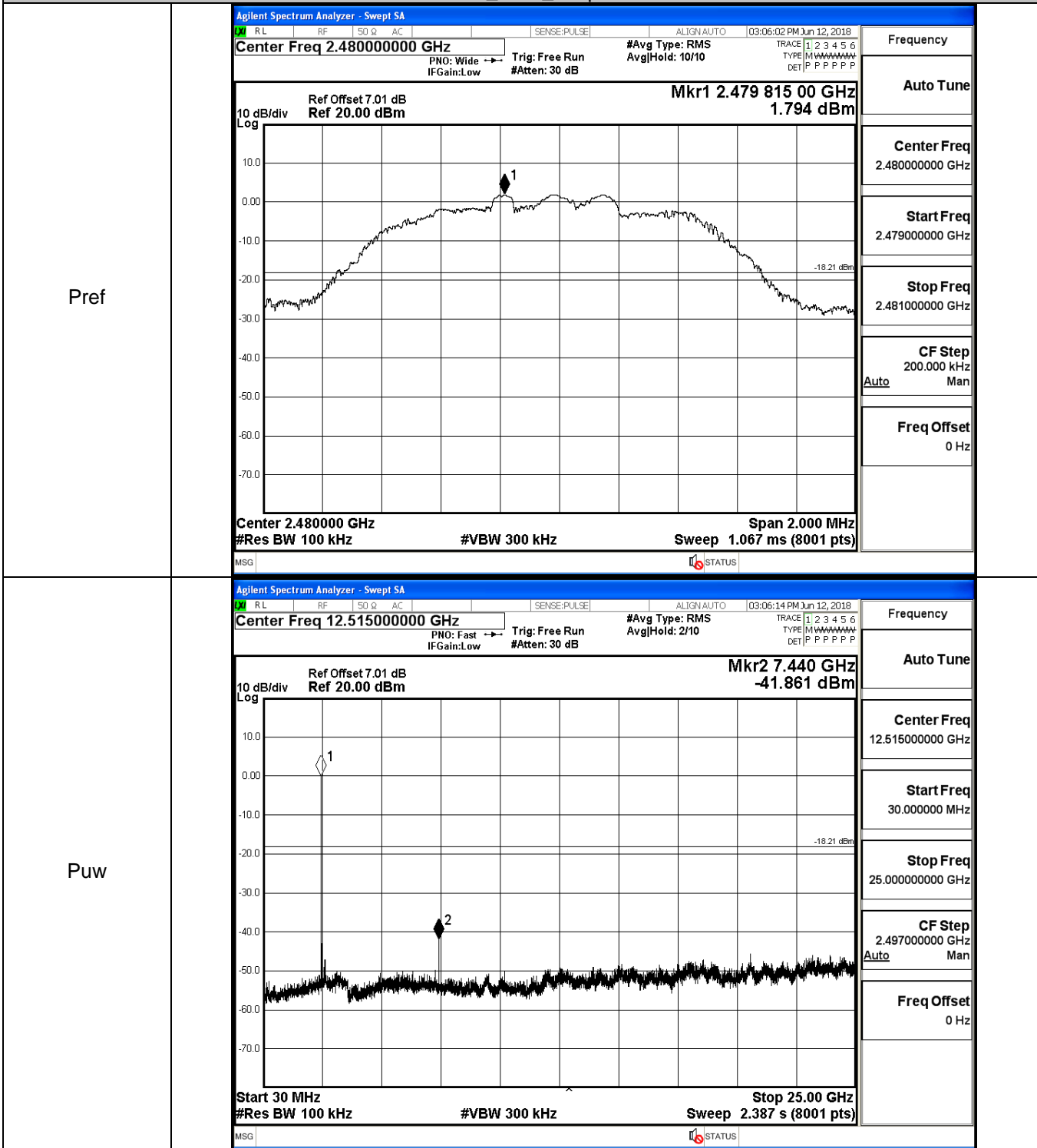
Pref



Puw



8DPSK_HCH_Graphs

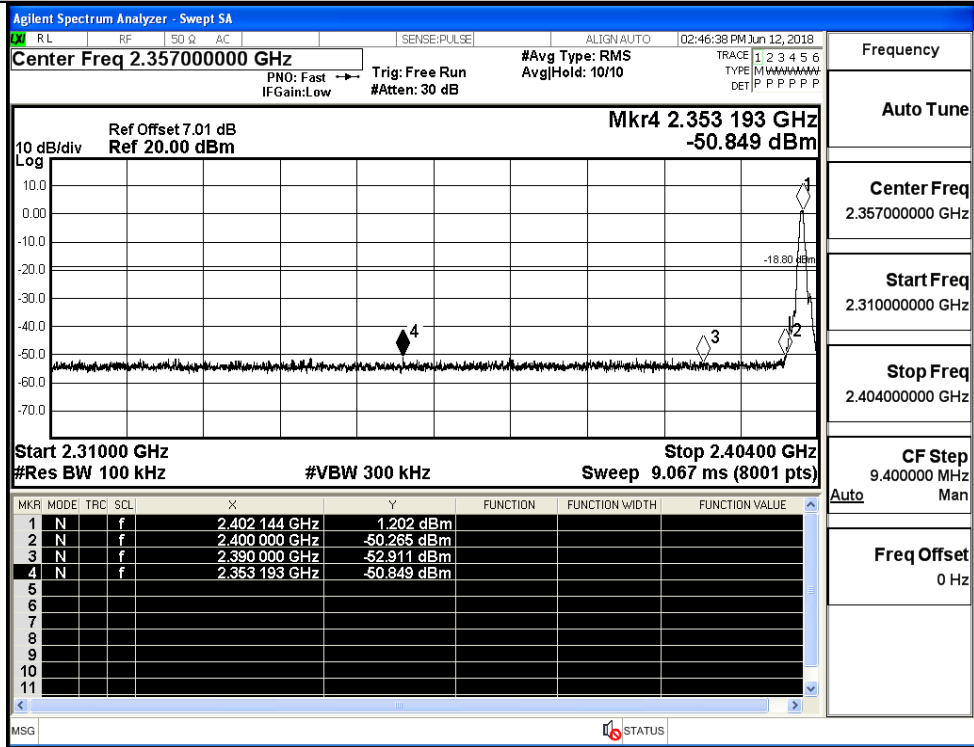


A.7 Band-edge for RF Conducted Emissions

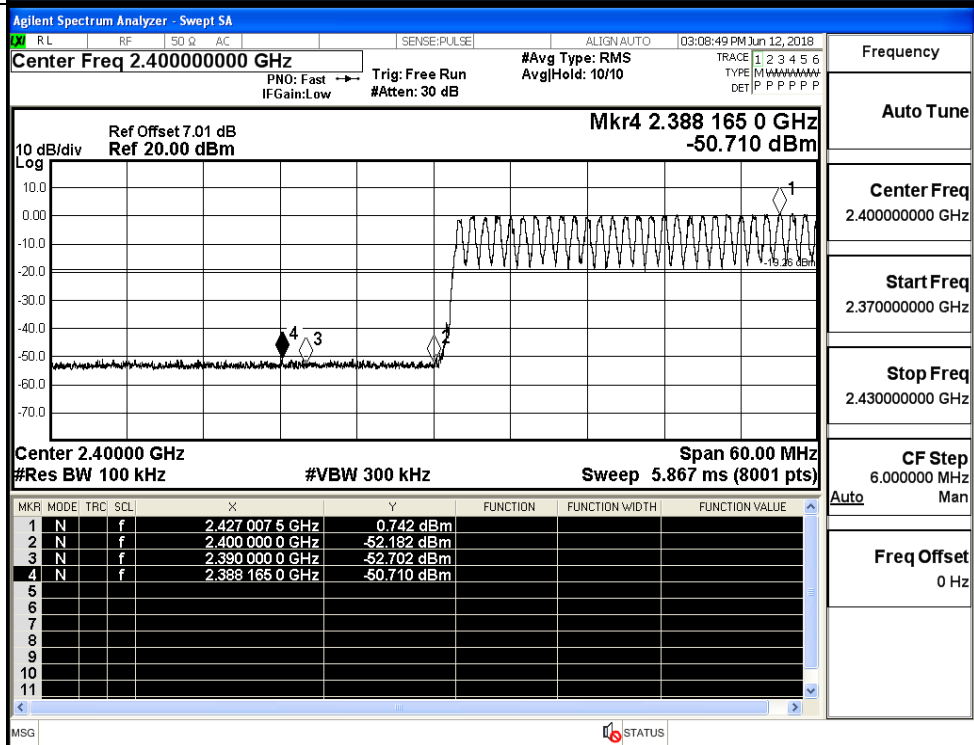
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.202	Off	-50.849	-18.8	PASS
			0.742	On	-50.710	-19.26	PASS
	HCH	2480	2.938	Off	-51.083	-17.06	PASS
			1.706	On	-49.349	-18.29	PASS
$\pi/4$ DQPSK	LCH	2402	-2.379	Off	-50.936	-22.38	PASS
			-1.814	On	-49.748	-21.81	PASS
	HCH	2480	1.922	Off	-51.261	-18.08	PASS
			-1.238	On	-50.391	-21.24	PASS
8DPSK	LCH	2402	-0.491	Off	-50.846	-20.49	PASS
			-1.894	On	-50.117	-21.89	PASS
	HCH	2480	2.007	Off	-50.611	-17.99	PASS
			-0.750	On	-50.357	-20.75	PASS

Test Graphs

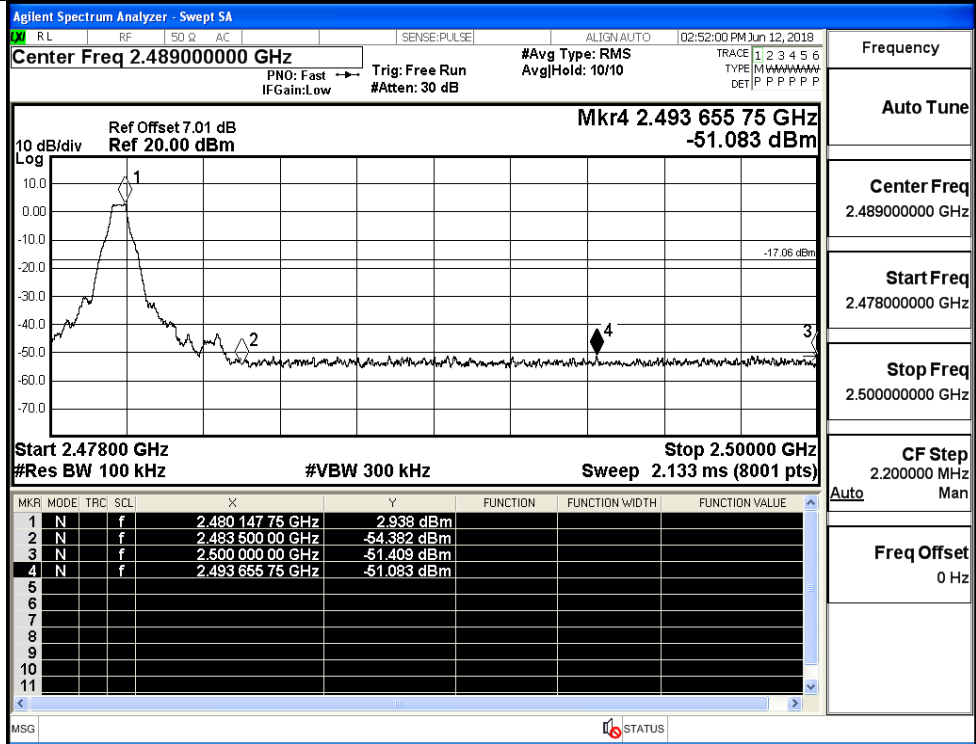
GFSK/LCH/No Hop



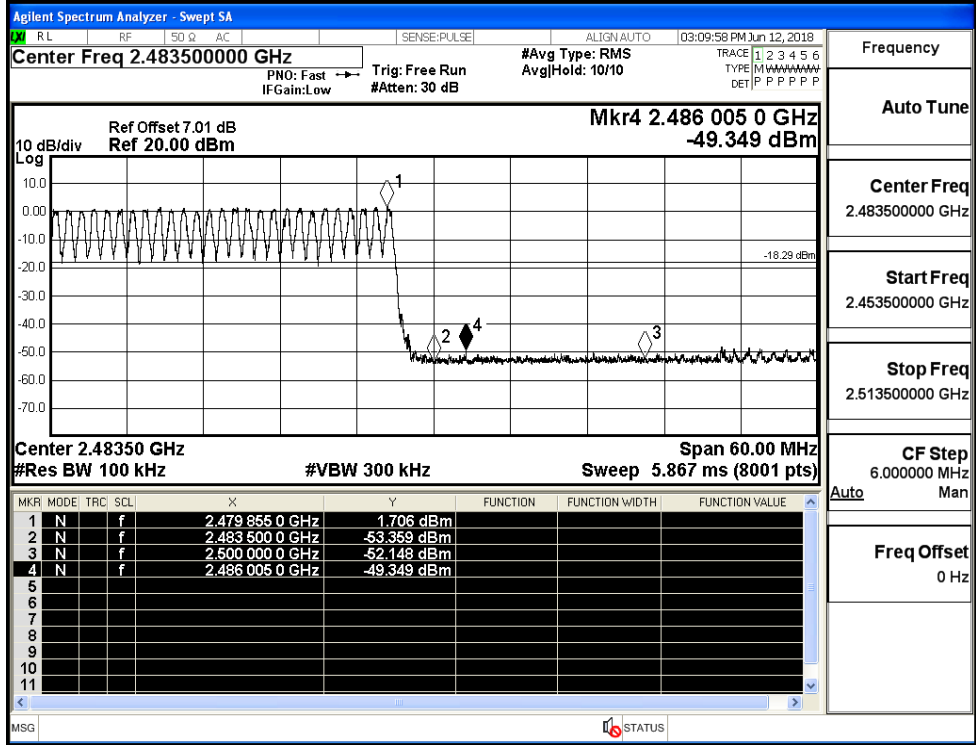
GFSK/LCH/Hop



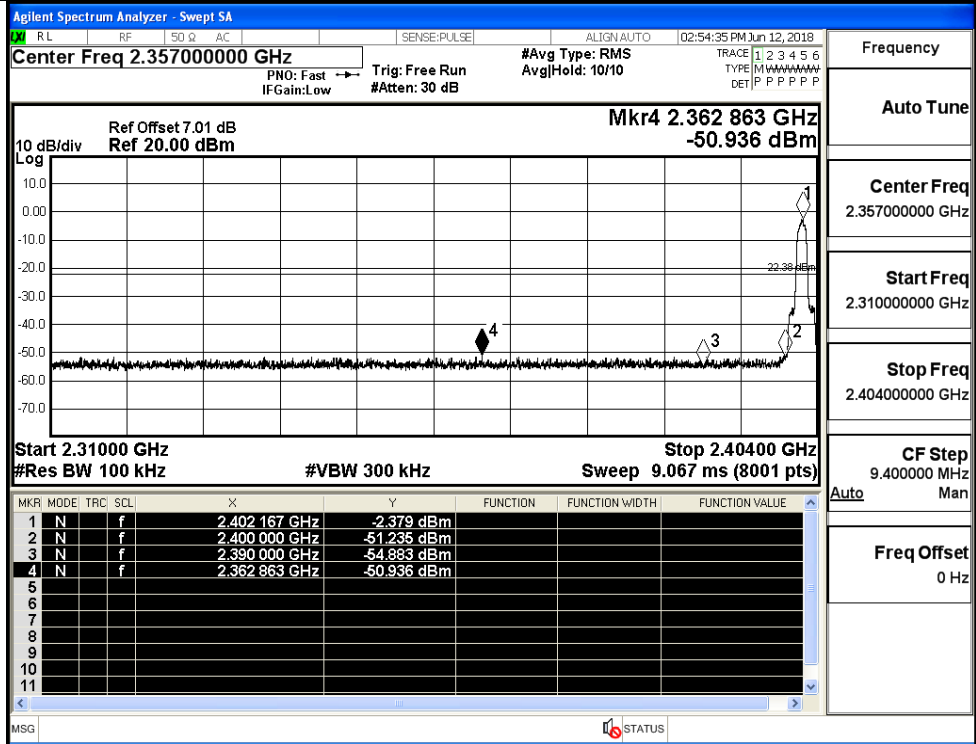
GFSK/HCH/No Hop



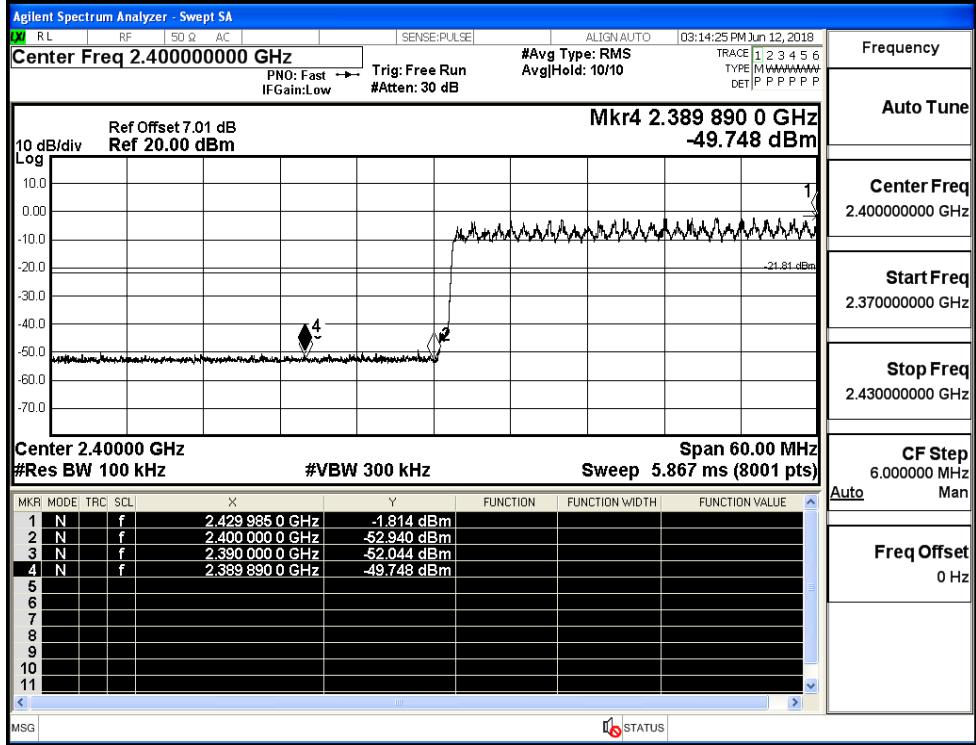
GFSK/HCH/Hop



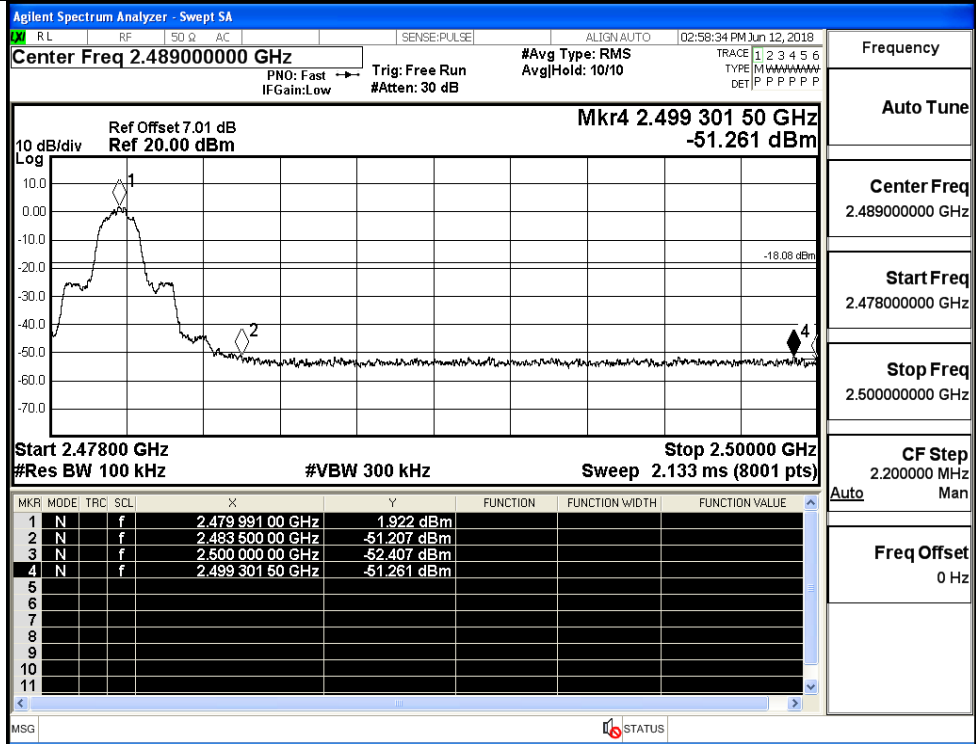
$\pi/4$ DQPSK/LCH/No
Hop



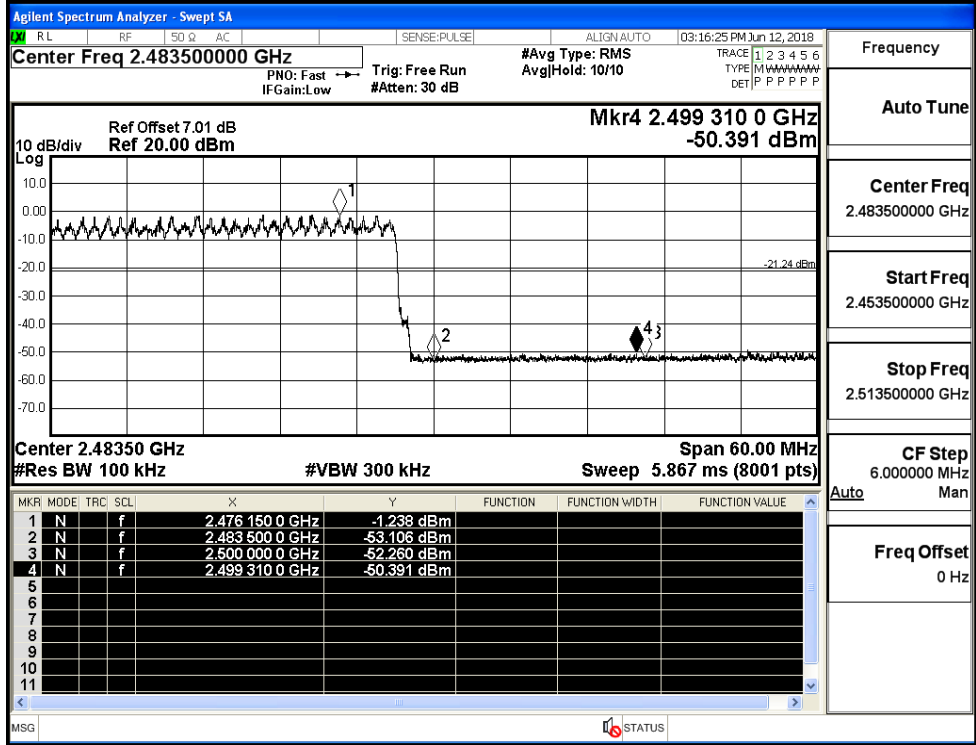
$\pi/4$ DQPSK/LCH/Hop



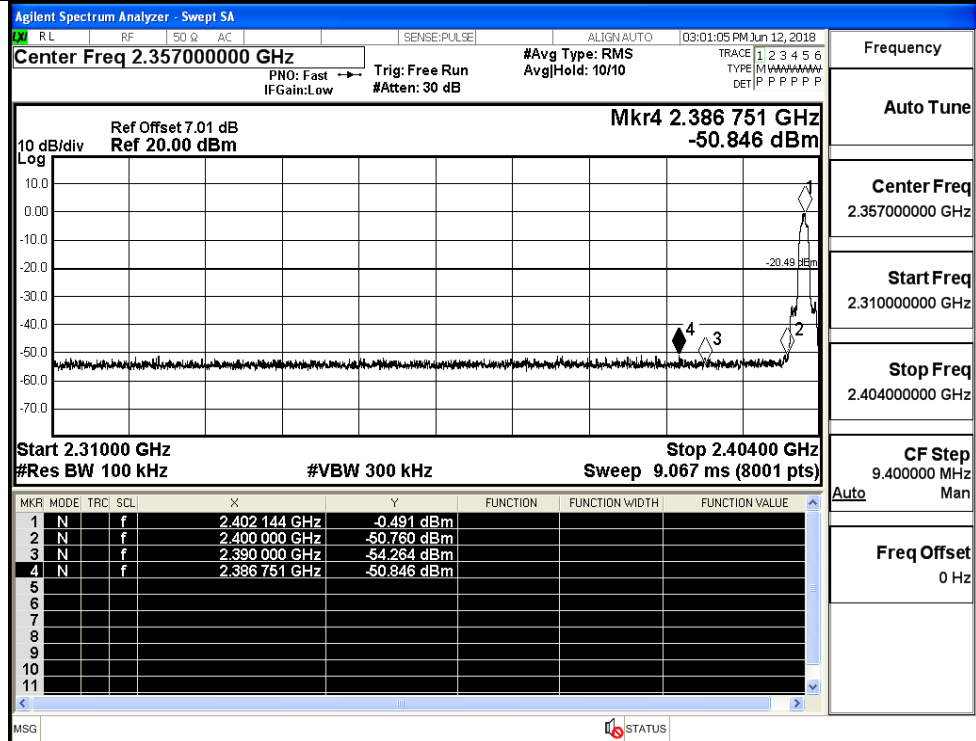
π /4DQPSK/HCH/No Hop



π /4DQPSK/HCH/Hop



8DPSK/LCH/No Hop



Frequency

Auto Tune

Center Freq
2.357000000 GHz

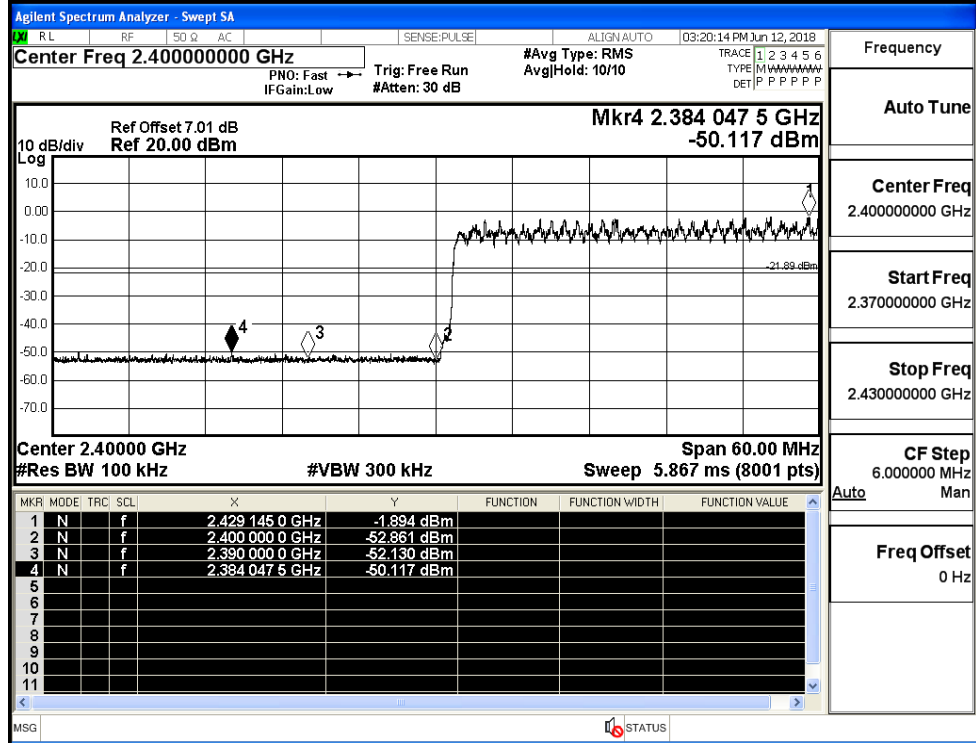
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz

Freq Offset
0 Hz

8DPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

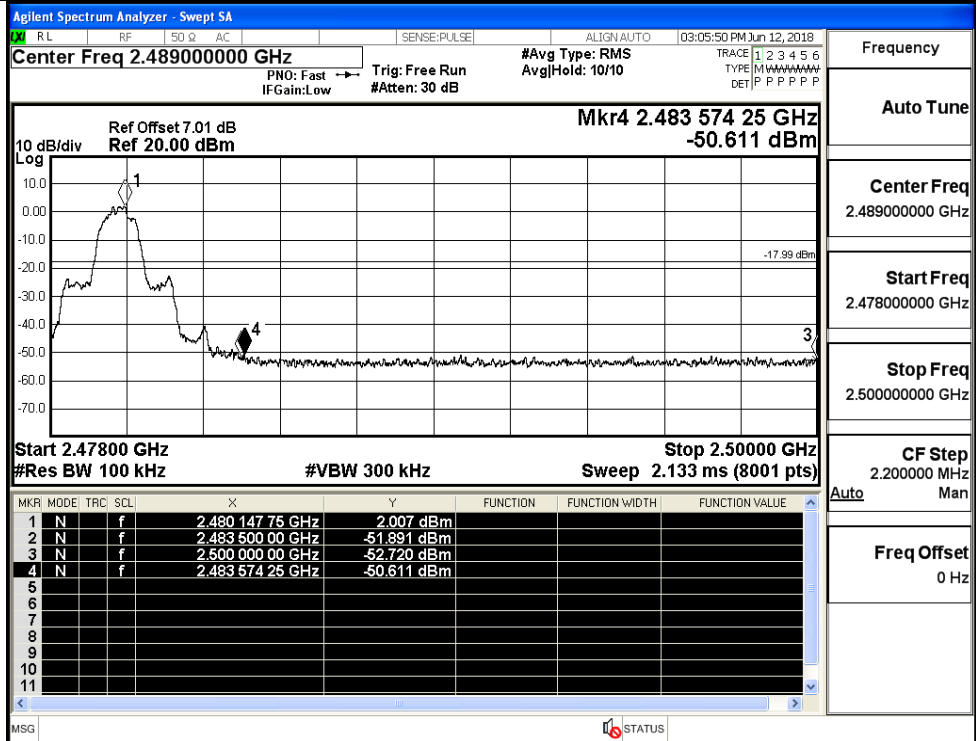
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

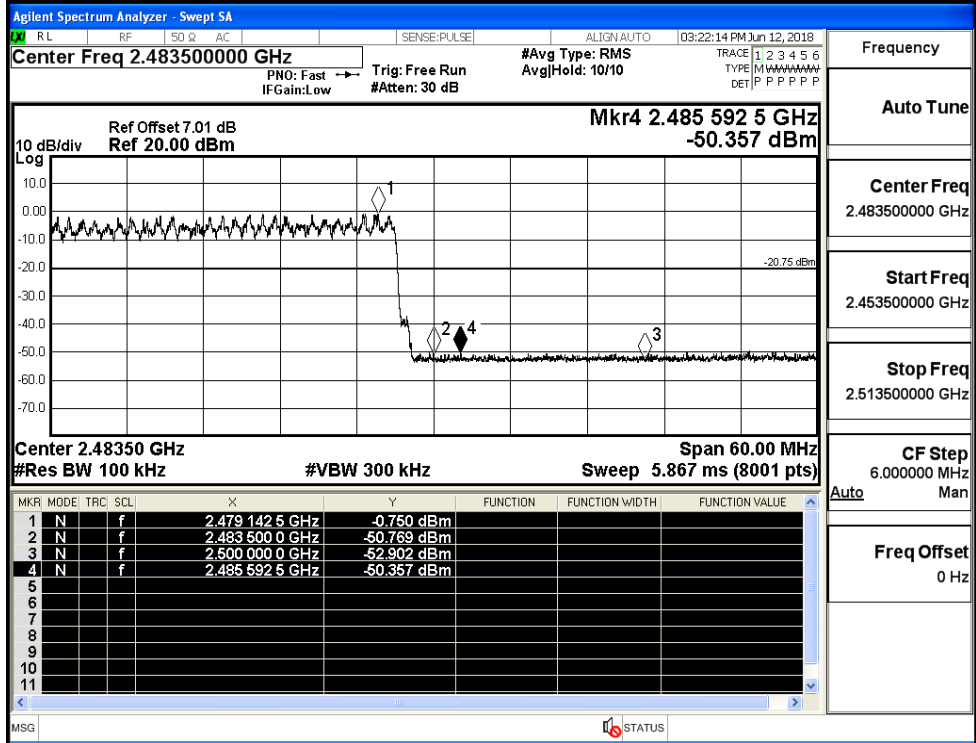
CF Step
6.000000 MHz

Freq Offset
0 Hz

8DPSK/HCH/No Hop



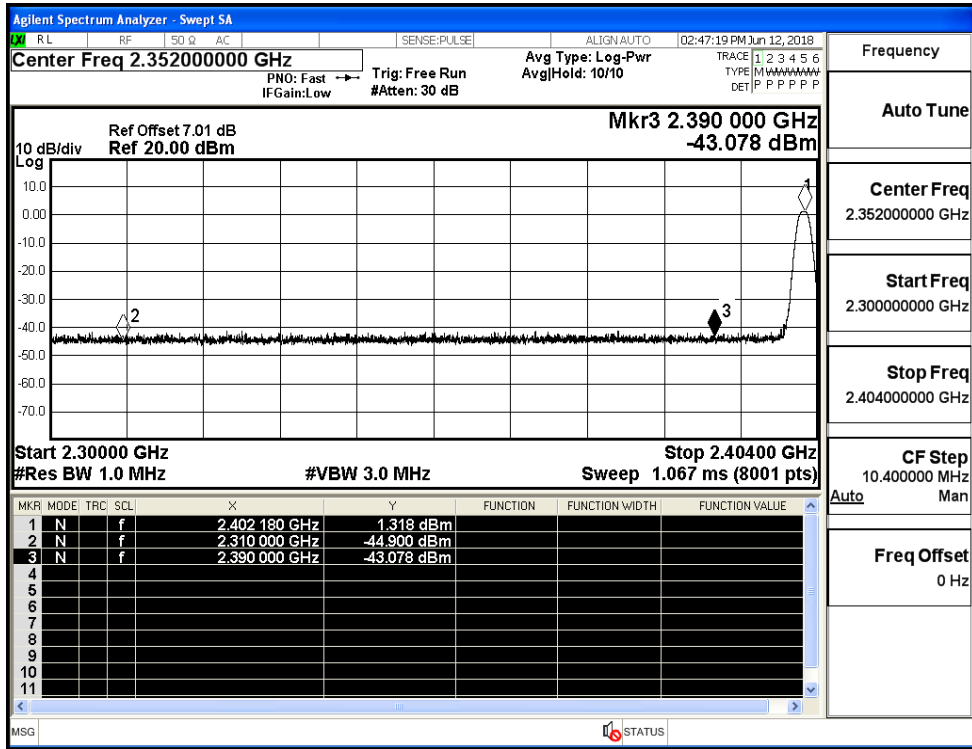
8DPSK/HCH/Hop



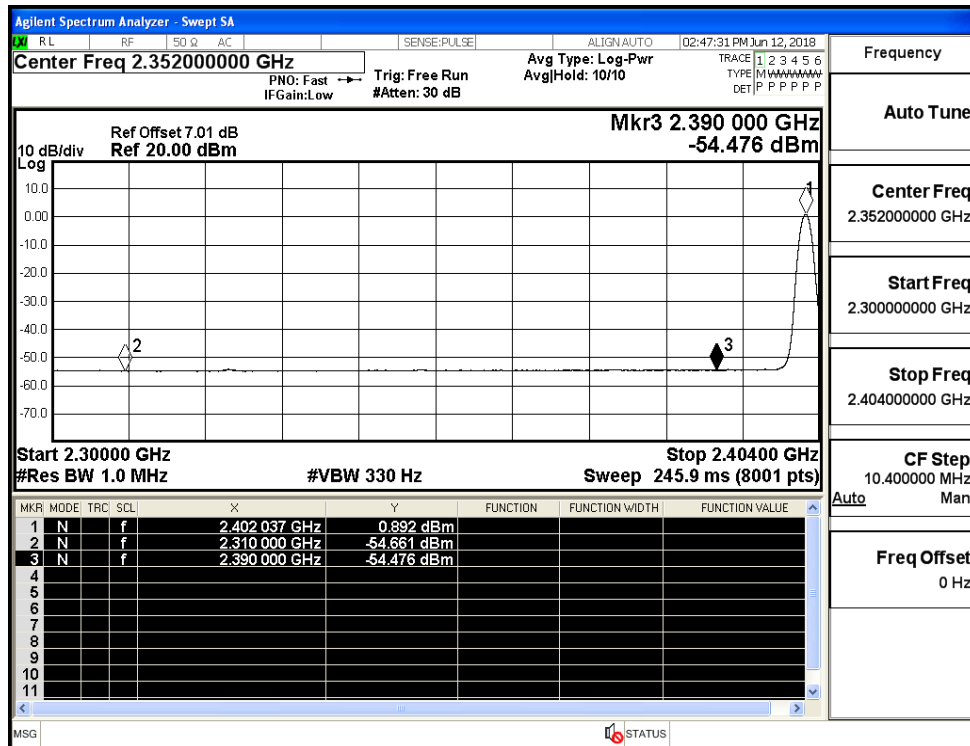
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.90	2.0	0	50.36	PEAK	74	PASS
	Off	2310.0	-54.66	2.0	0	40.60	AV	54	PASS
	Off	2390.0	-43.08	2.0	0	52.18	PEAK	74	PASS
	Off	2390.0	-54.48	2.0	0	40.78	AV	54	PASS
	Off	2483.5	-41.47	2.0	0	53.79	PEAK	74	PASS
	Off	2483.5	-51.73	2.0	0	43.53	AV	54	PASS
	Off	2500.0	-43.11	2.0	0	52.15	PEAK	74	PASS
	Off	2500.0	-53.93	2.0	0	41.32	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.52	2.0	0	50.74	PEAK	74	PASS
	Off	2310.0	-54.81	2.0	0	40.45	AV	54	PASS
	Off	2390.0	-44.68	2.0	0	50.58	PEAK	74	PASS
	Off	2390.0	-54.34	2.0	0	40.92	AV	54	PASS
	Off	2483.5	-42.44	2.0	0	52.82	PEAK	74	PASS
	Off	2483.5	-52.49	2.0	0	42.77	AV	54	PASS
	Off	2500.0	-41.91	2.0	0	53.35	PEAK	74	PASS
	Off	2500.0	-54.03	2.0	0	41.23	AV	54	PASS
8DPSK	Off	2310.0	-44.66	2.0	0	50.60	PEAK	74	PASS
	Off	2310.0	-54.60	2.0	0	40.66	AV	54	PASS
	Off	2390.0	-44.71	2.0	0	50.55	PEAK	74	PASS
	Off	2390.0	-54.40	2.0	0	40.86	AV	54	PASS
	Off	2483.5	-41.37	2.0	0	53.89	PEAK	74	PASS
	Off	2483.5	-52.30	2.0	0	42.96	AV	54	PASS
	Off	2500.0	-42.59	2.0	0	52.67	PEAK	74	PASS
	Off	2500.0	-53.97	2.0	0	41.28	AV	54	PASS

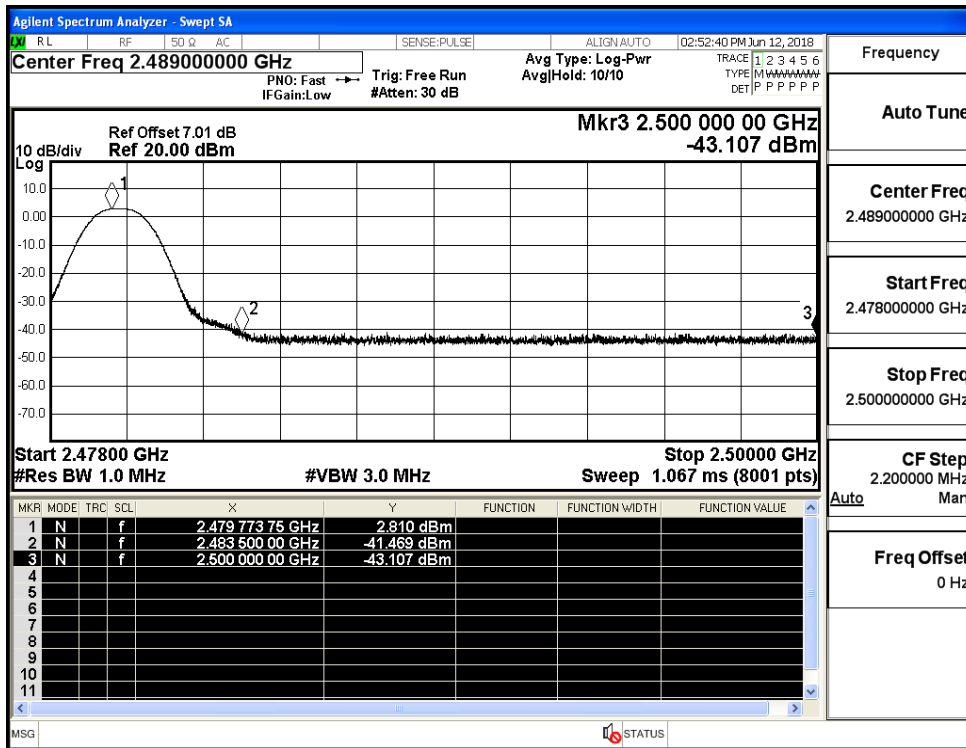
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



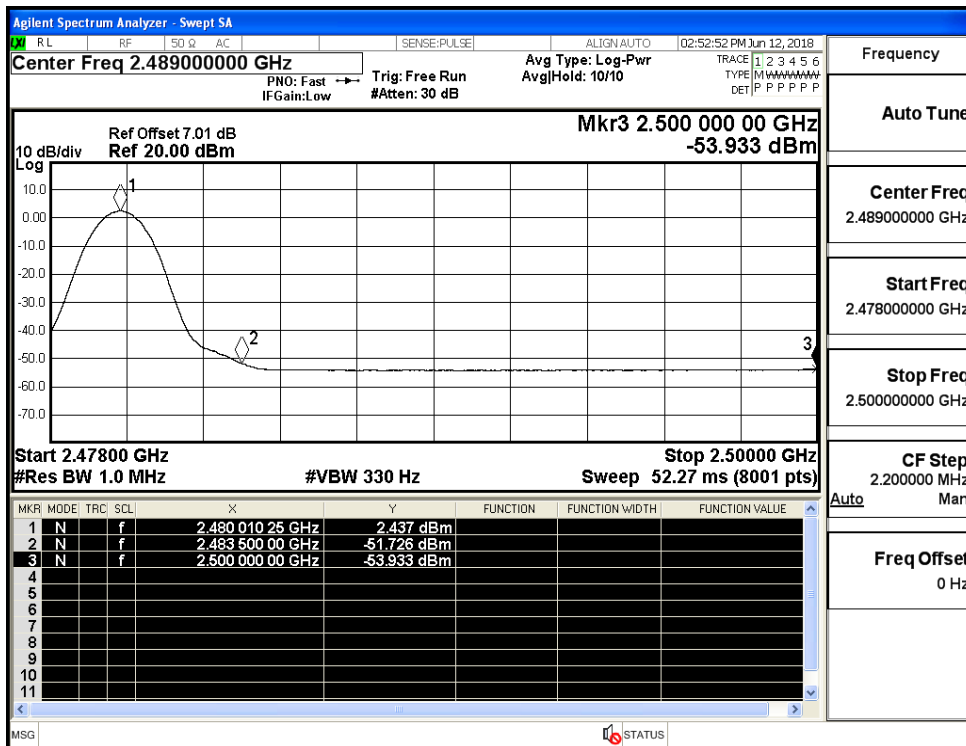
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



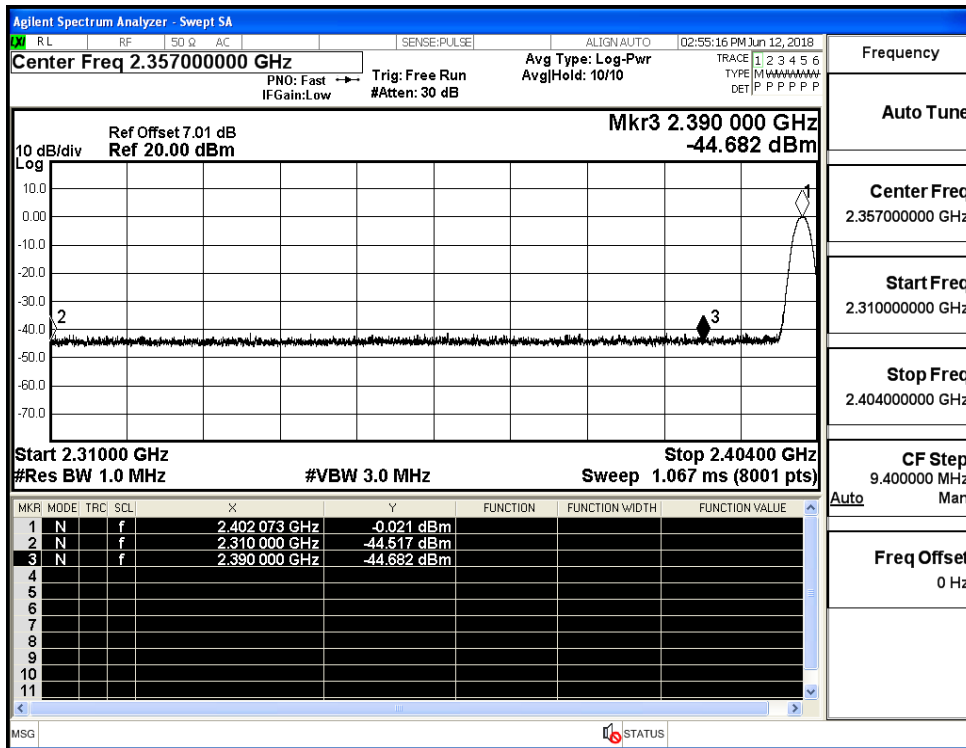
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



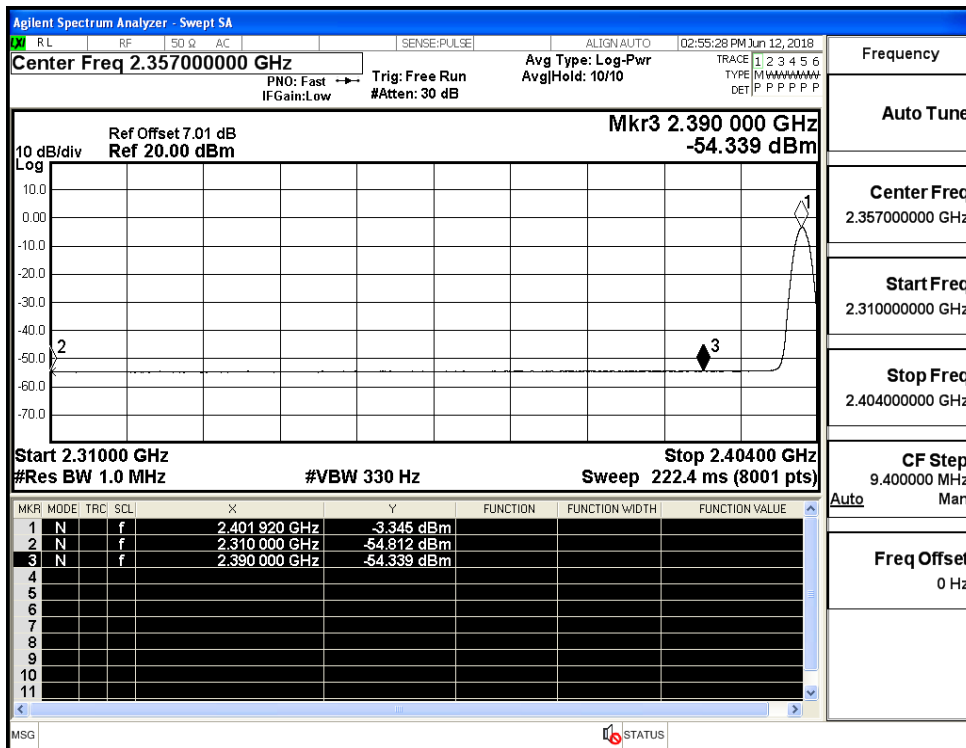
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



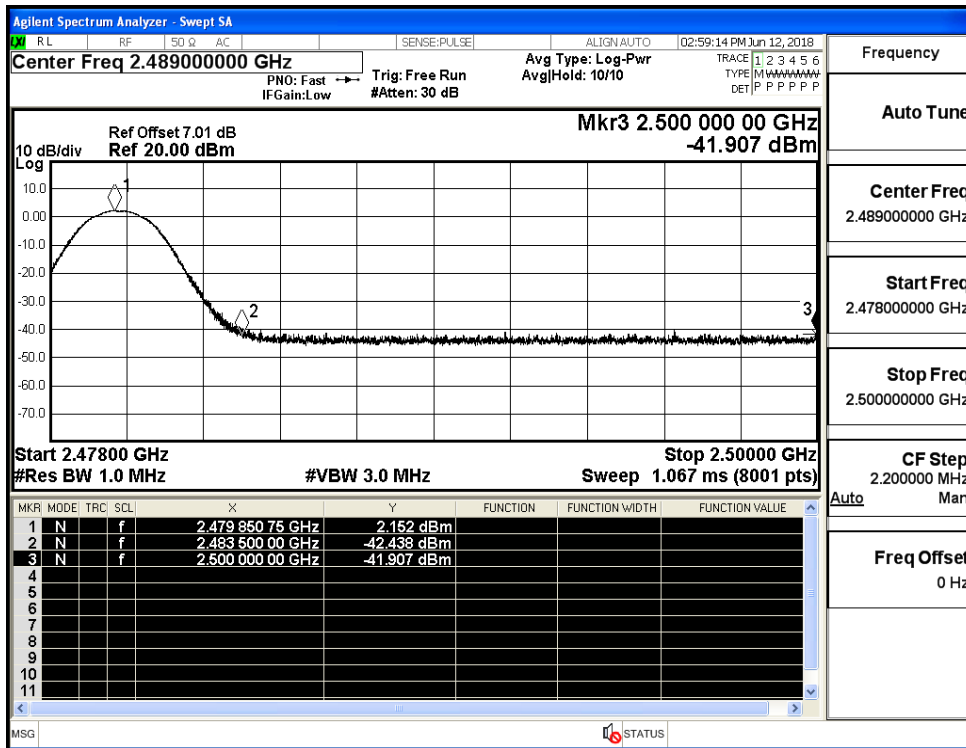
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



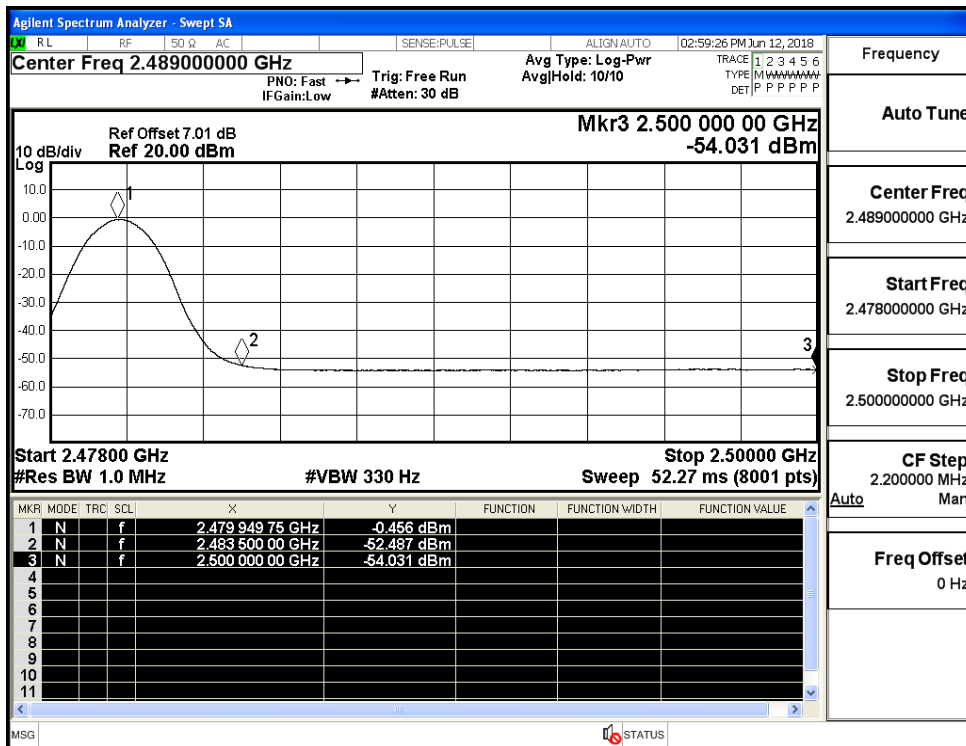
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



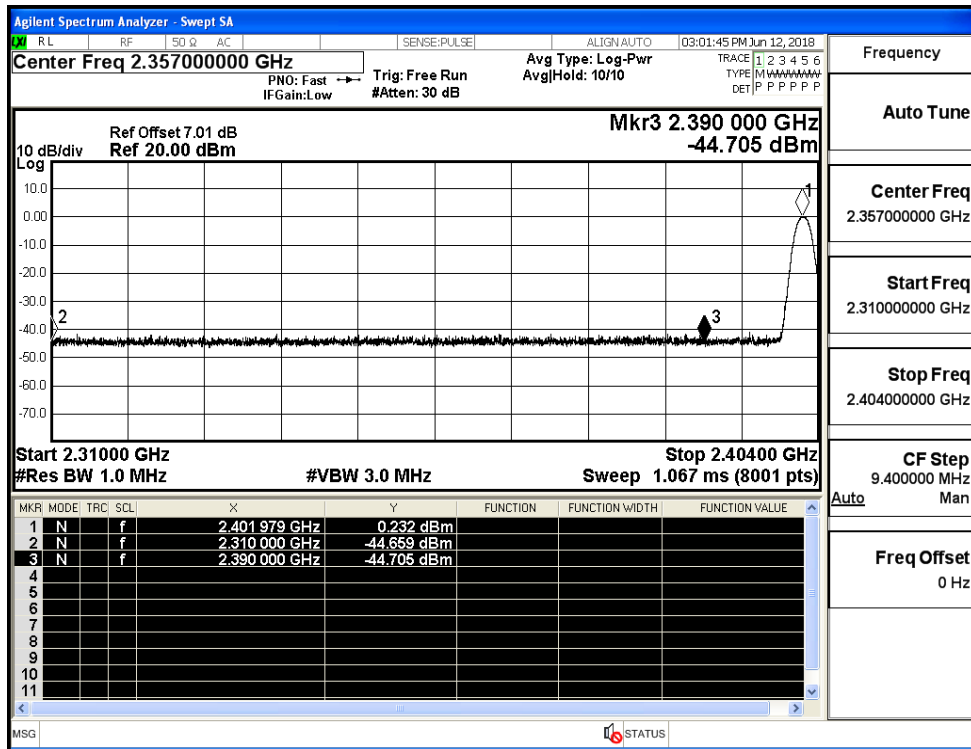
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



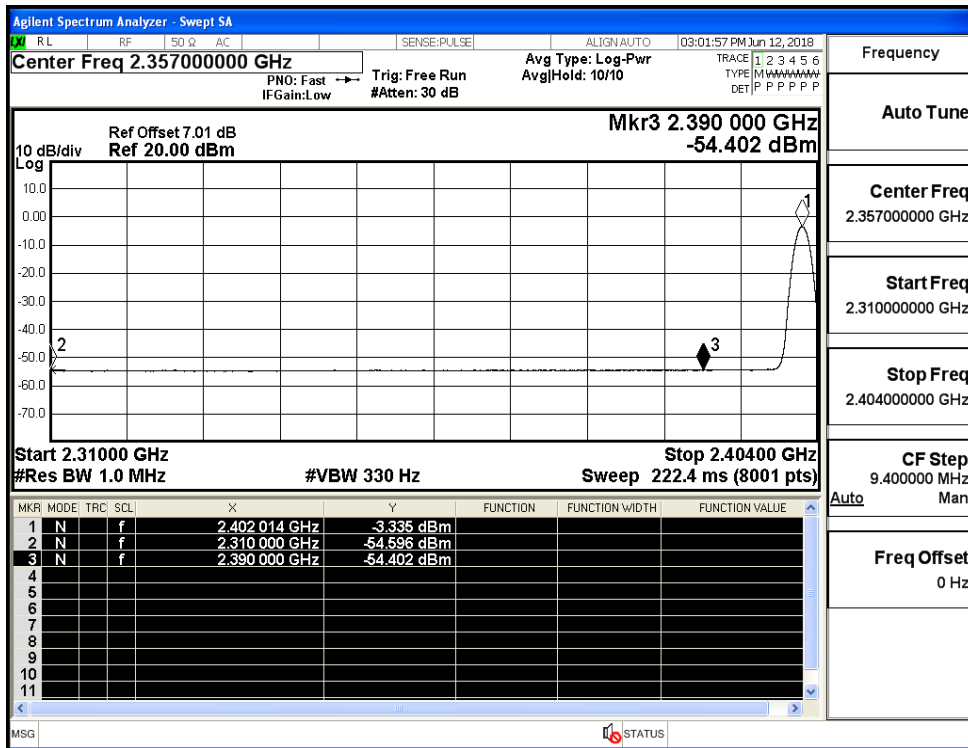
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



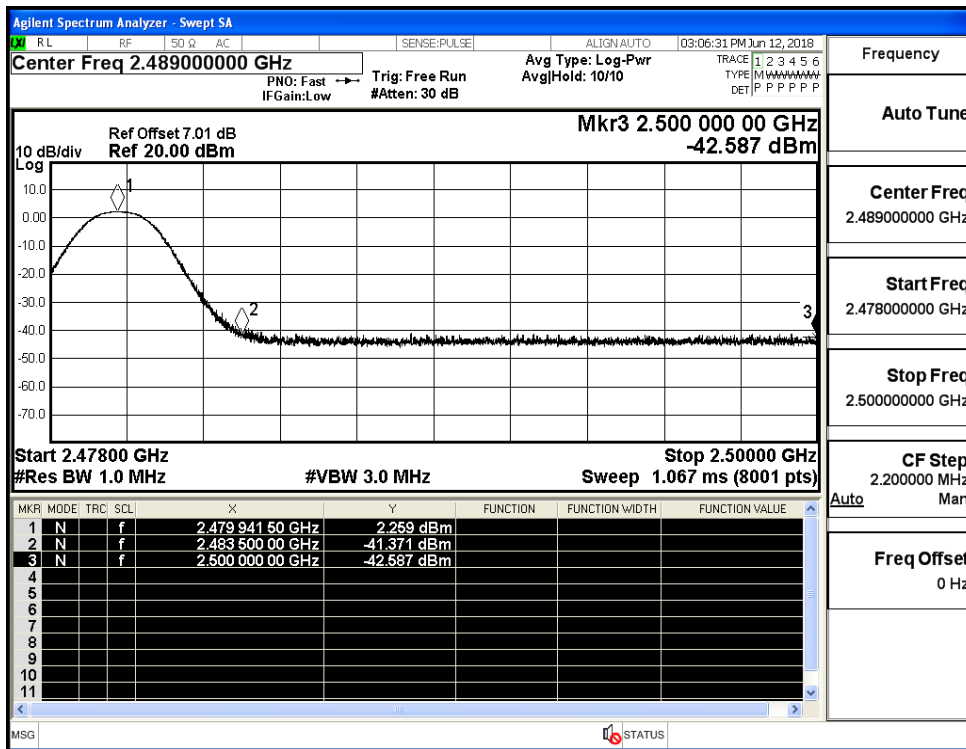
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

