

## Appendix A

### RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Speaker

Trade Mark: iCreation,samwe

Test Model: BT-143

#### Environmental Conditions

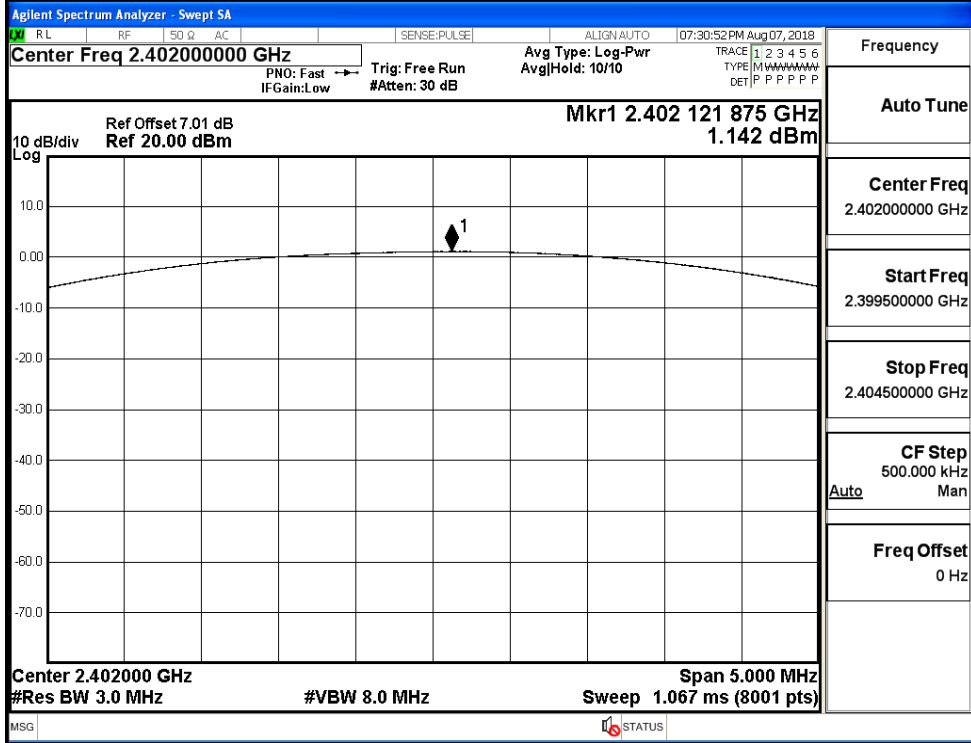
Temperature:	24.3 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

#### A.1 Maxmum Conducted Peak Output Power

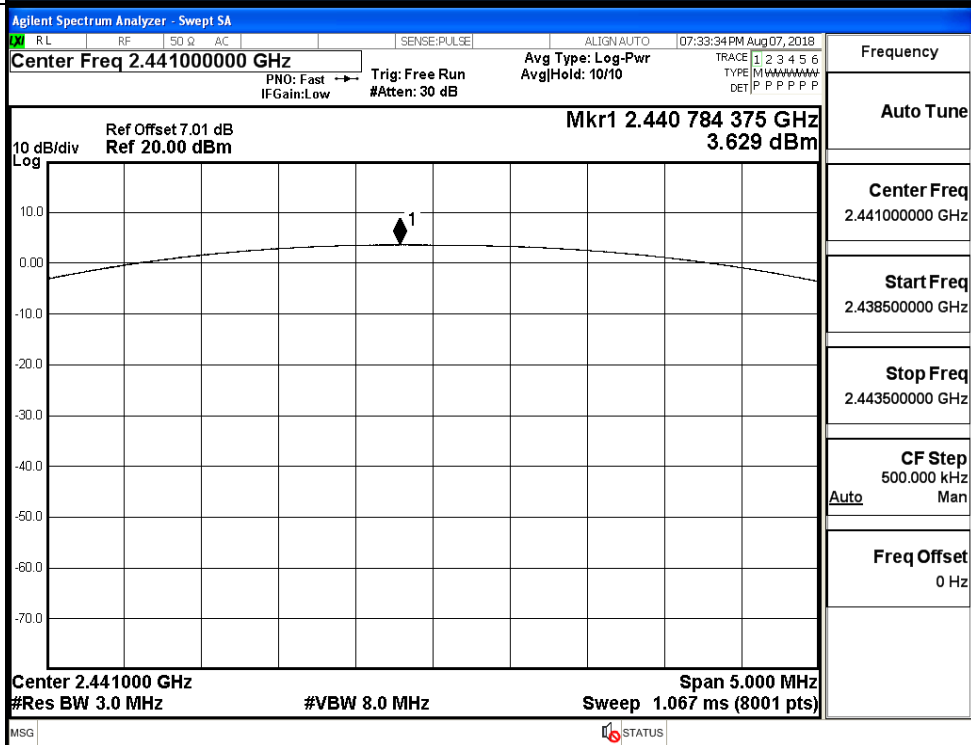
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.142	30	PASS
	MCH	3.629	30	PASS
	HCH	3.690	30	PASS
$\pi/4$ DQPSK	LCH	-1.090	21	PASS
	MCH	2.125	21	PASS
	HCH	3.039	21	PASS
8DPSK	LCH	-0.738	21	PASS
	MCH	2.436	21	PASS
	HCH	3.341	21	PASS

Test Graphs

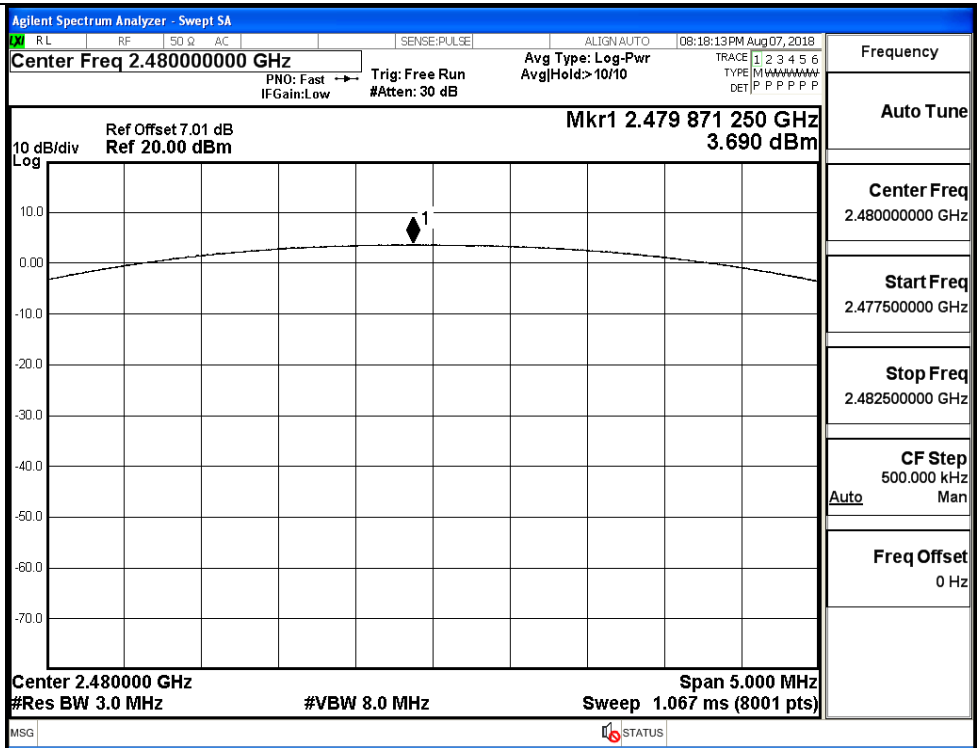
GFSK/LCH



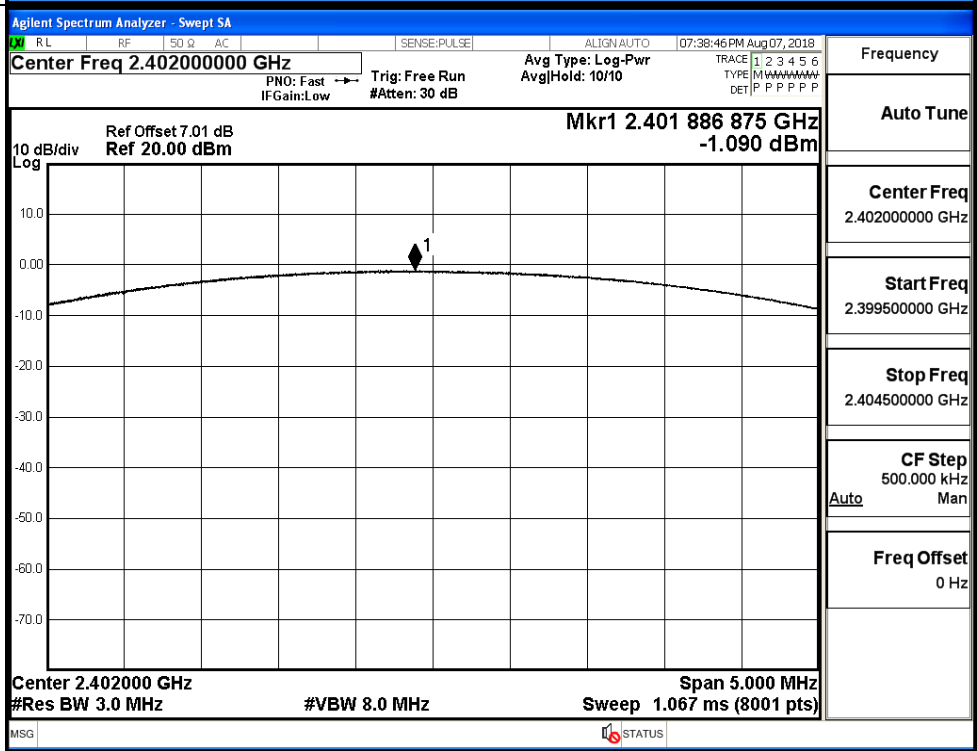
GFSK/MCH



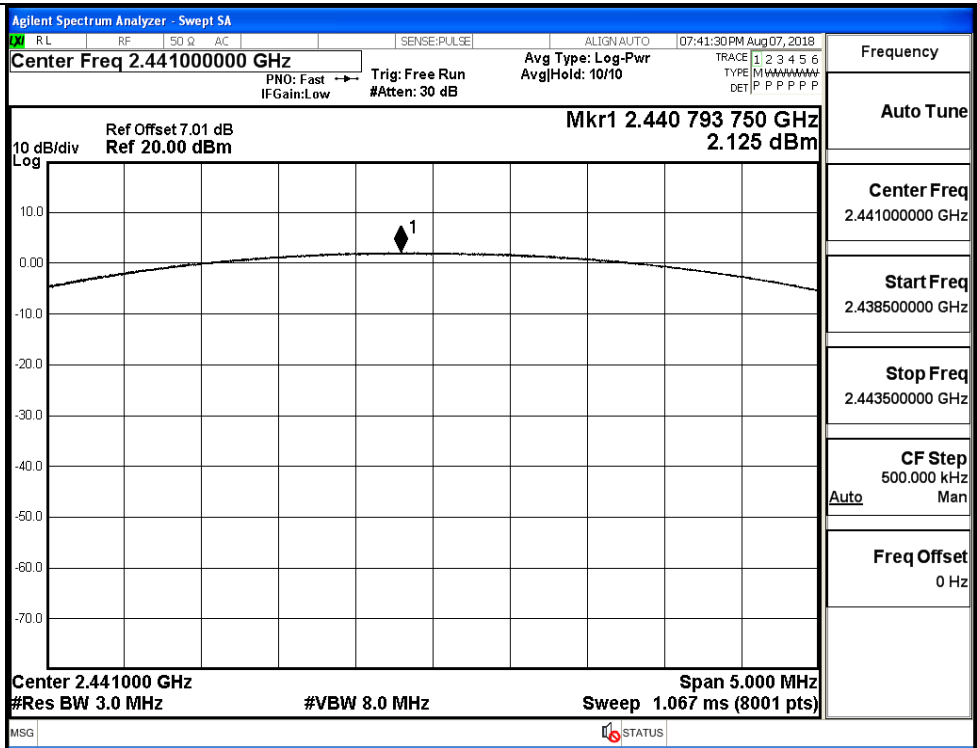
GFSK/HCH



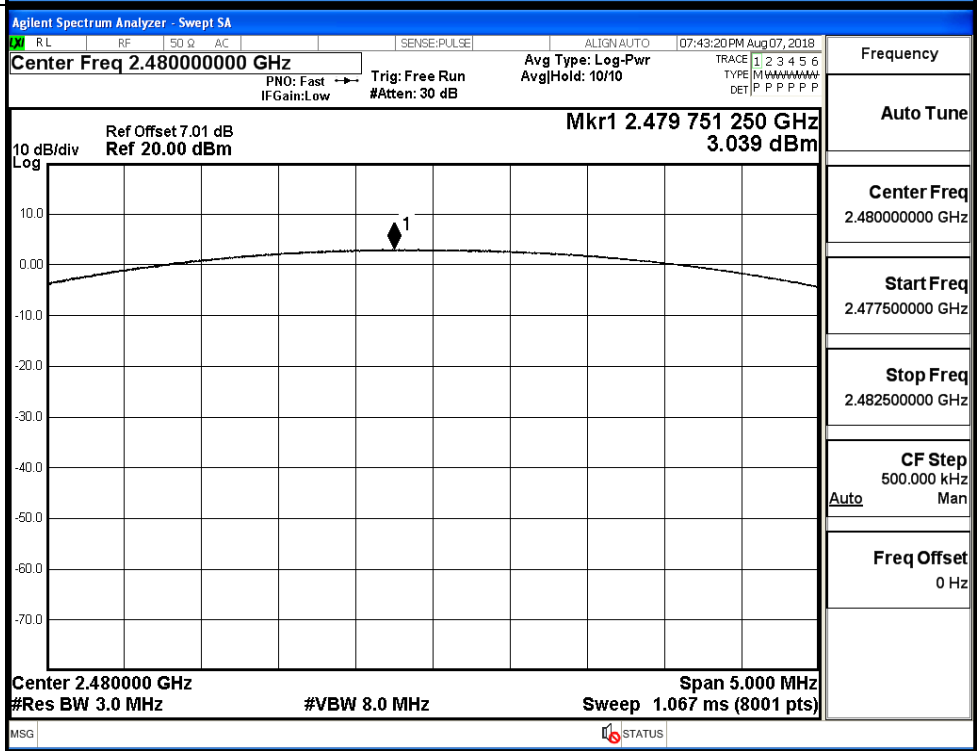
$\pi/4$ DQPSK/LCH



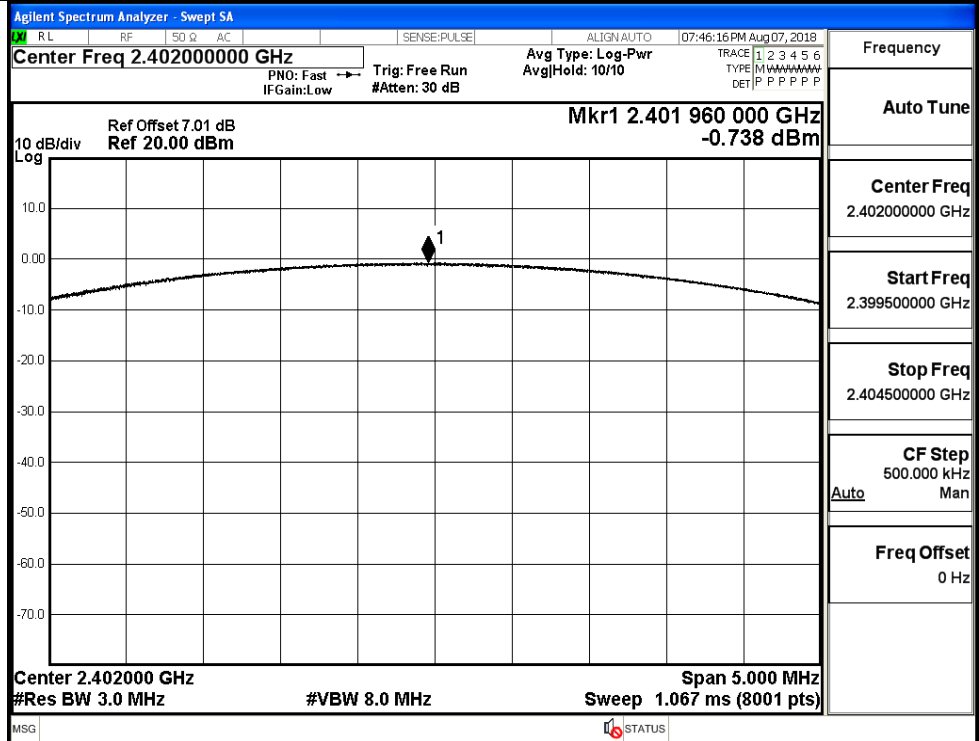
$\pi$ /4DQPSK/MCH



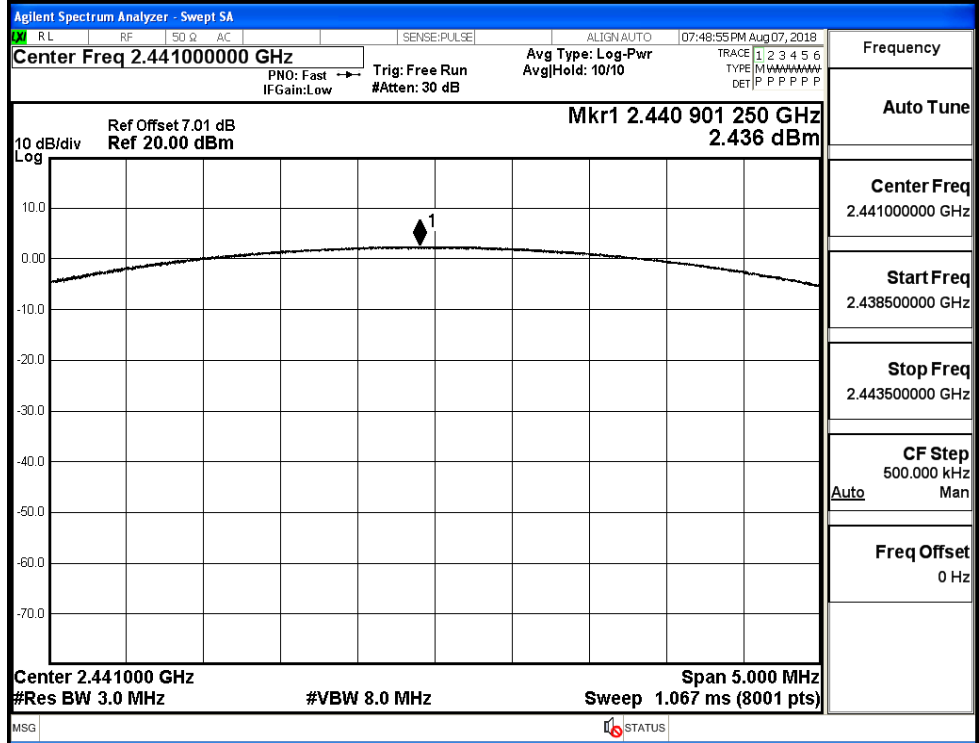
$\pi$ /4DQPSK/HCH



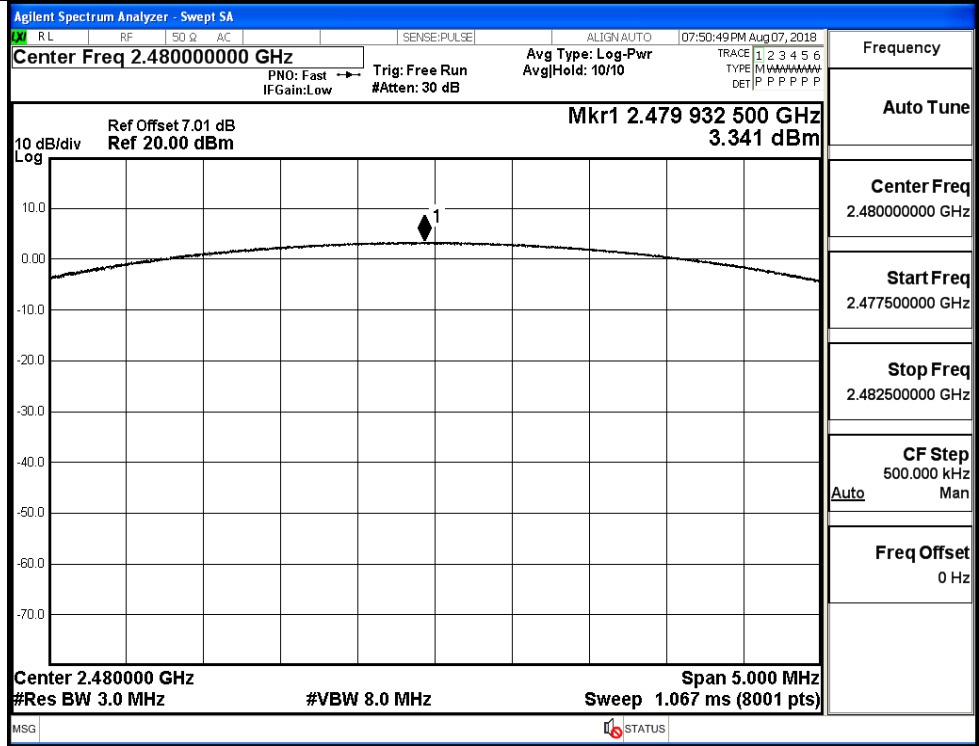
8DPSK/LCH



8DPSK/MCH

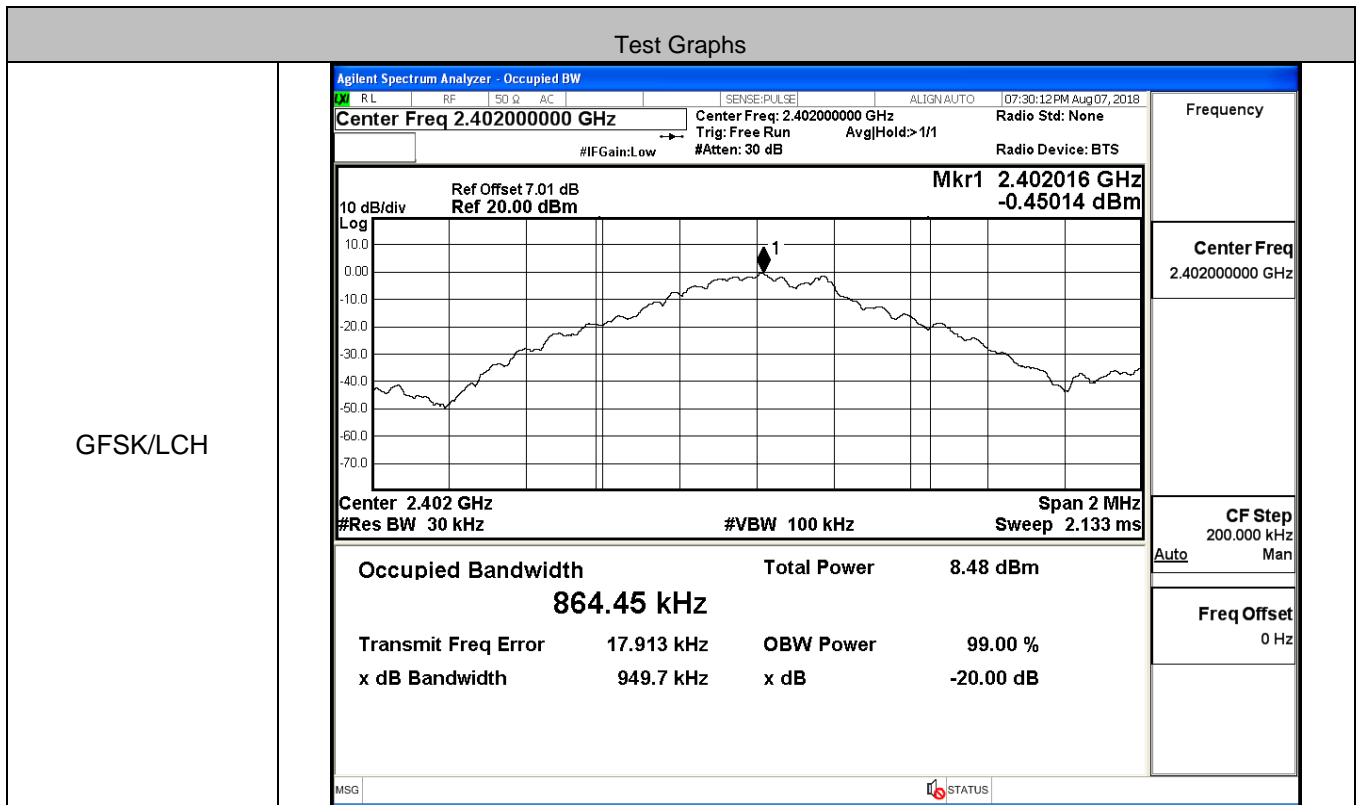


8DPSK/HCH

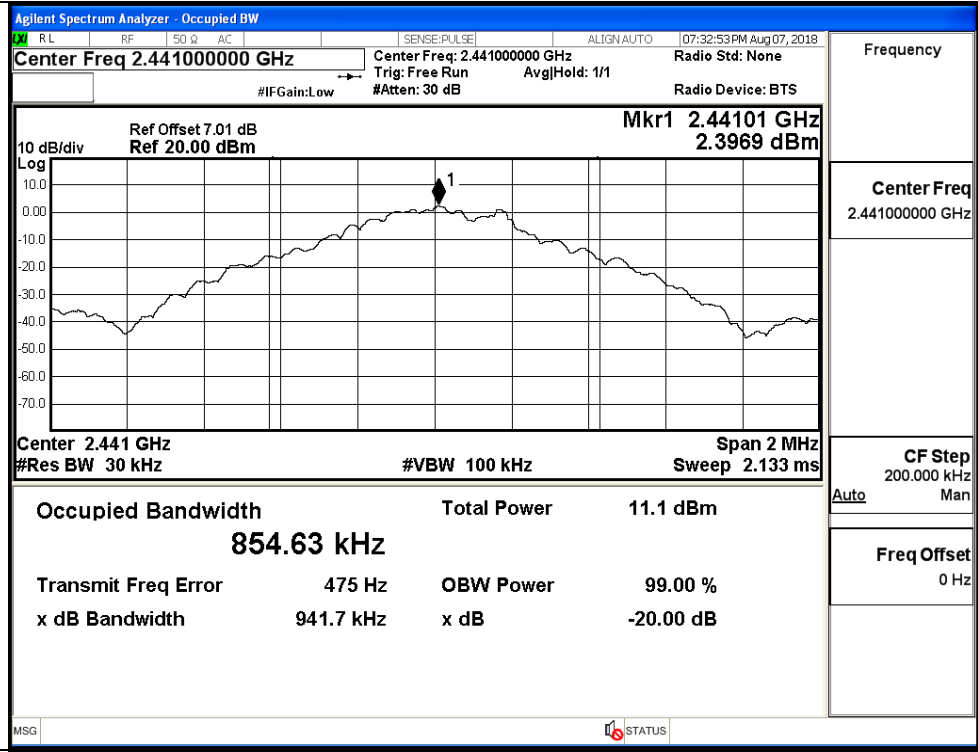


**A.2 99% and 20dB Bandwidth**

Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9497	0.86445	Not Specified	PASS
	MCH	0.9417	0.85463	Not Specified	PASS
	HCH	0.9407	0.85188	Not Specified	PASS
π/4DQPSK	LCH	1.228	1.1629	Not Specified	PASS
	MCH	1.229	1.1628	Not Specified	PASS
	HCH	1.229	1.1635	Not Specified	PASS
8DPSK	LCH	1.260	1.1551	Not Specified	PASS
	MCH	1.260	1.1575	Not Specified	PASS
	HCH	1.263	1.1585	Not Specified	PASS

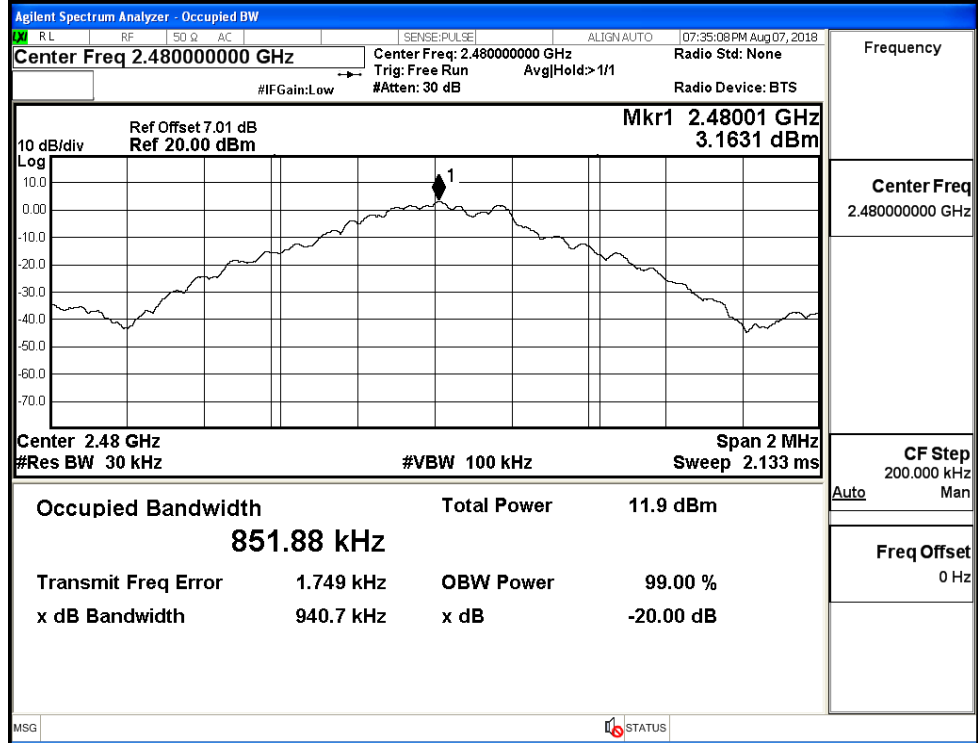


GFSK/MCH



Frequency	2.44100000 GHz
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

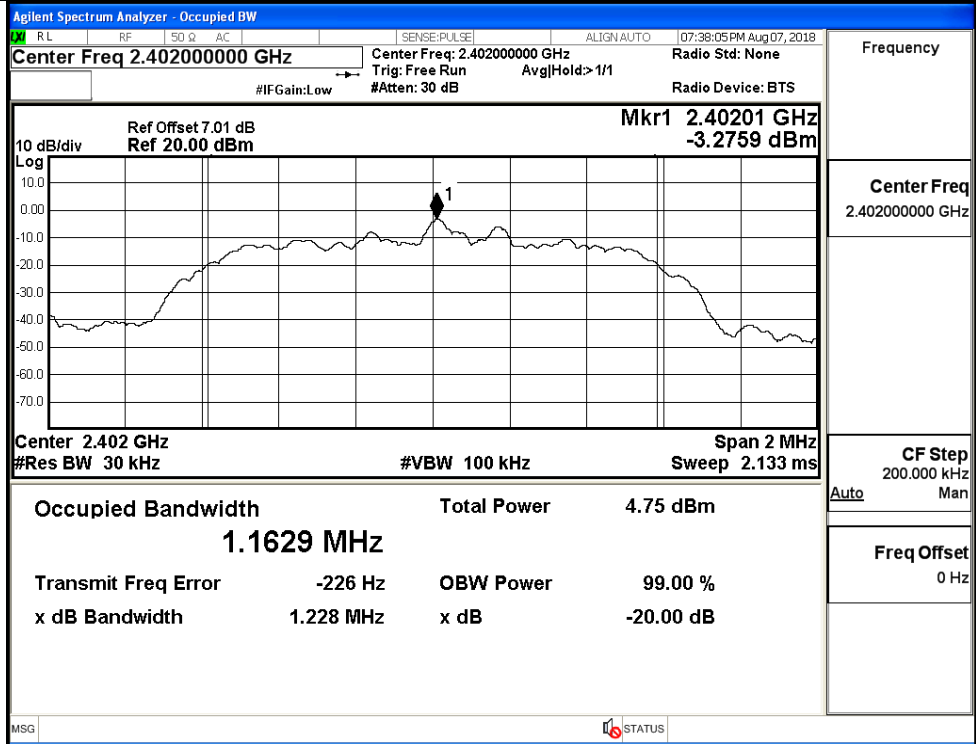
GFSK/HCH



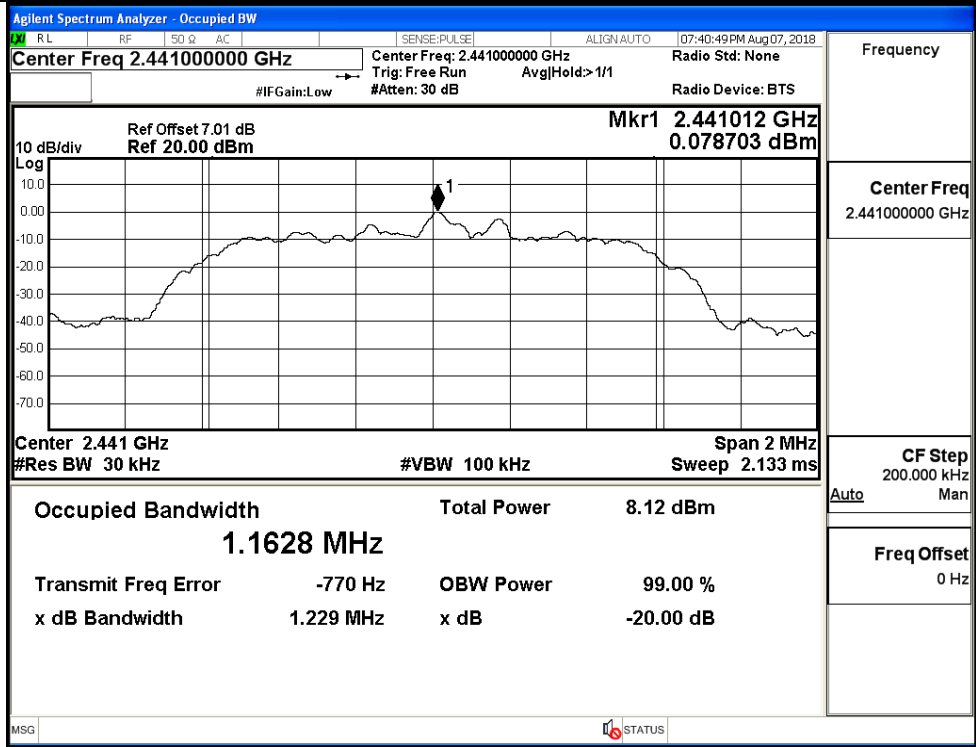
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz



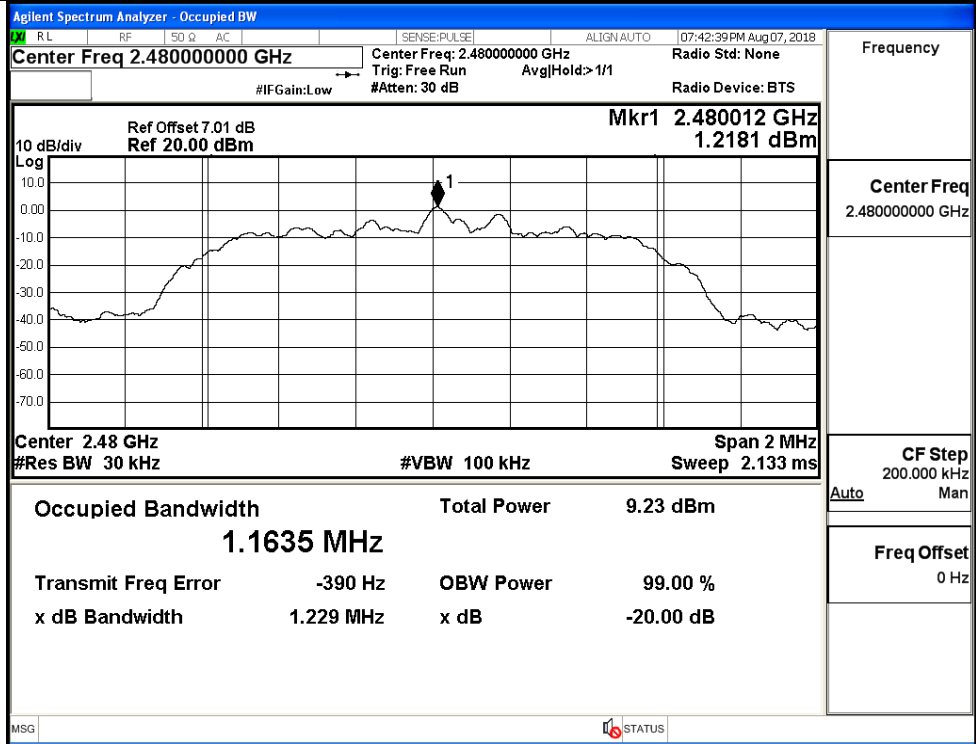
$\pi/4$ DQPSK/LCH



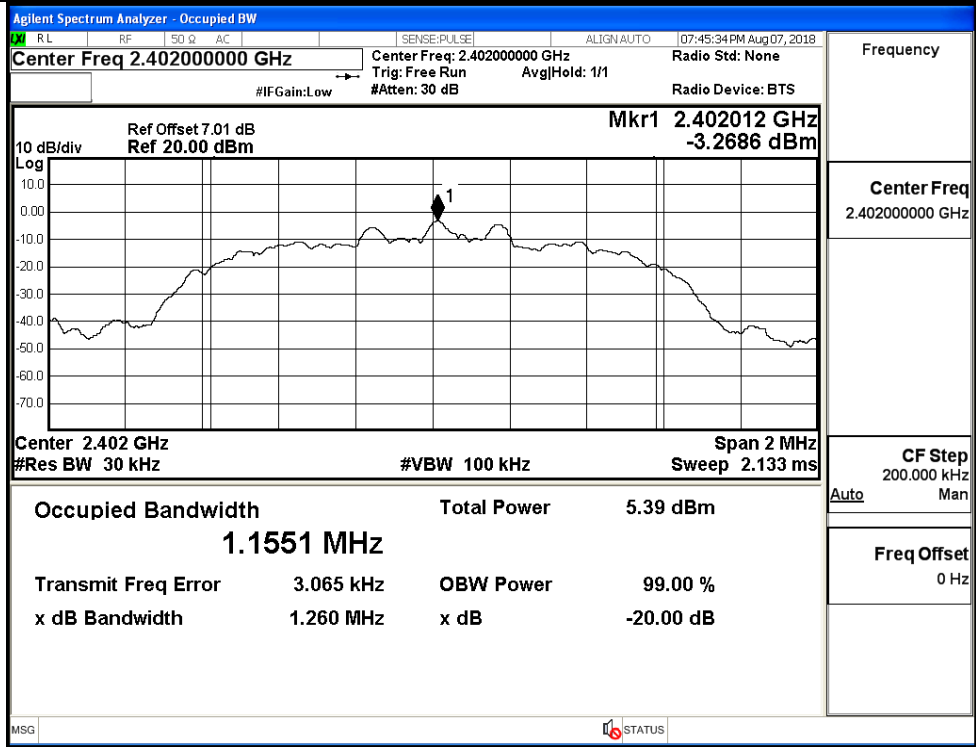
$\pi/4$ DQPSK/MCH



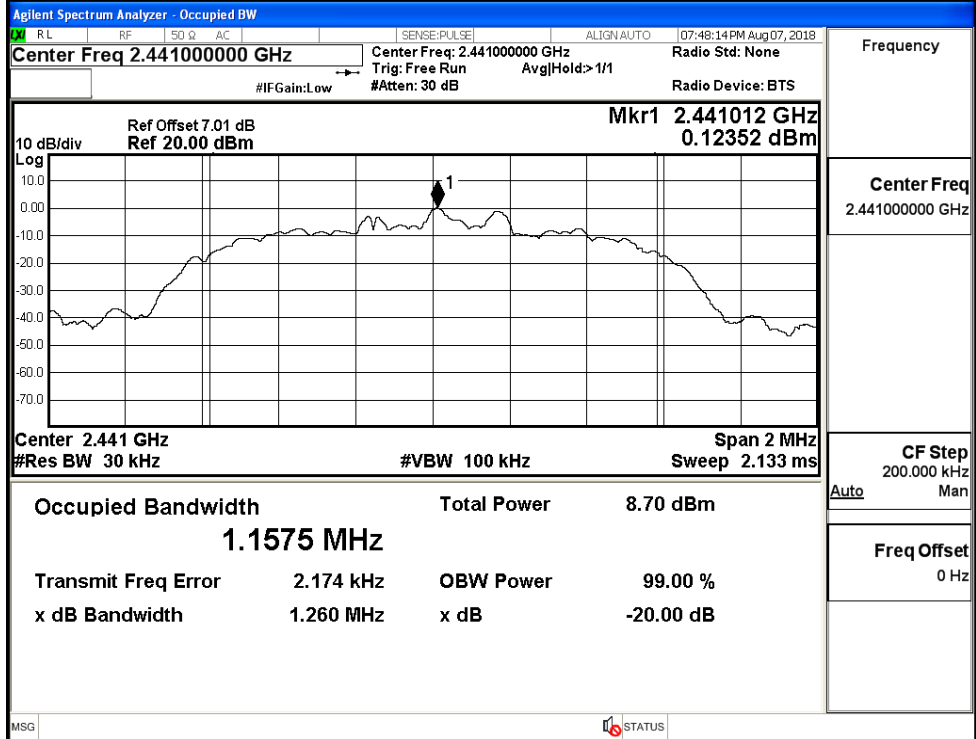
$\pi/4$ DQPSK/HCH



8DPSK/LCH



8DPSK/MCH



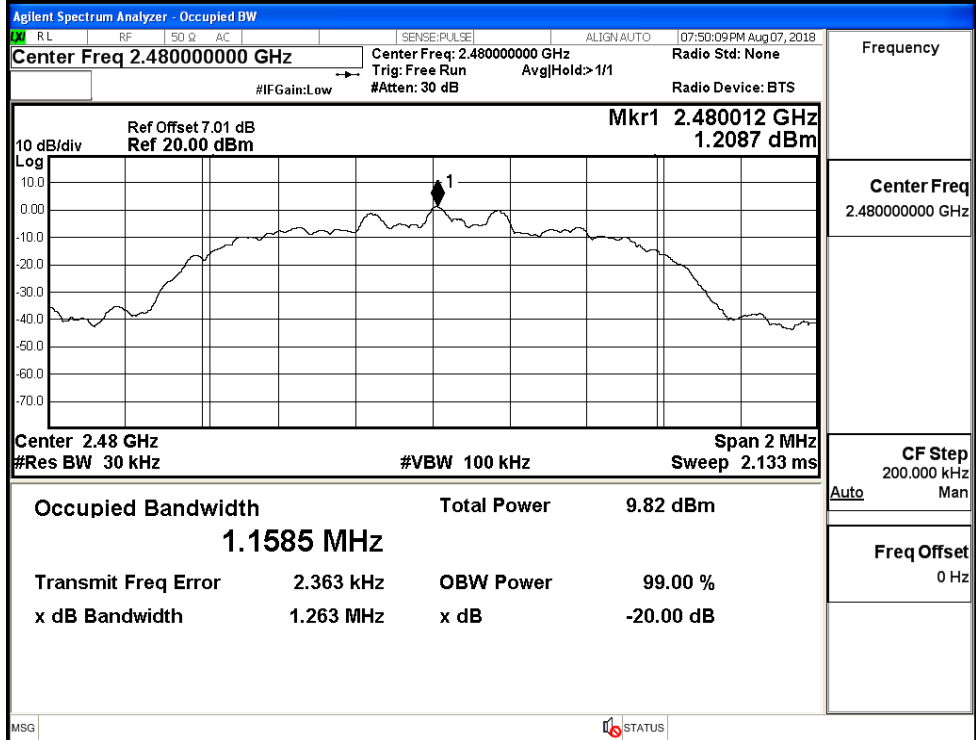
Frequency

Center Freq  
2.441000000 GHz

CF Step  
200.000 kHz

Freq Offset  
0 Hz

8DPSK/HCH



Frequency

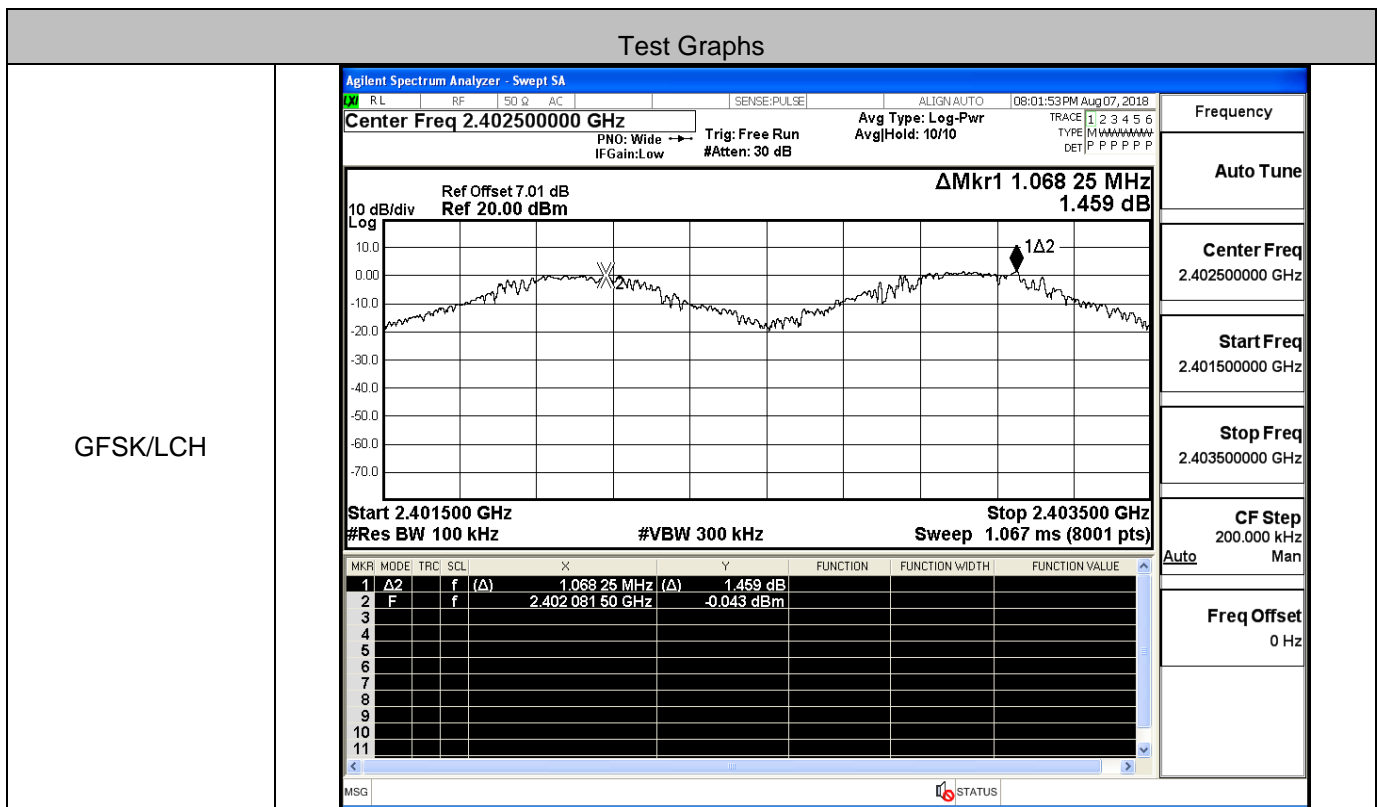
Center Freq  
2.480000000 GHz

CF Step  
200.000 kHz

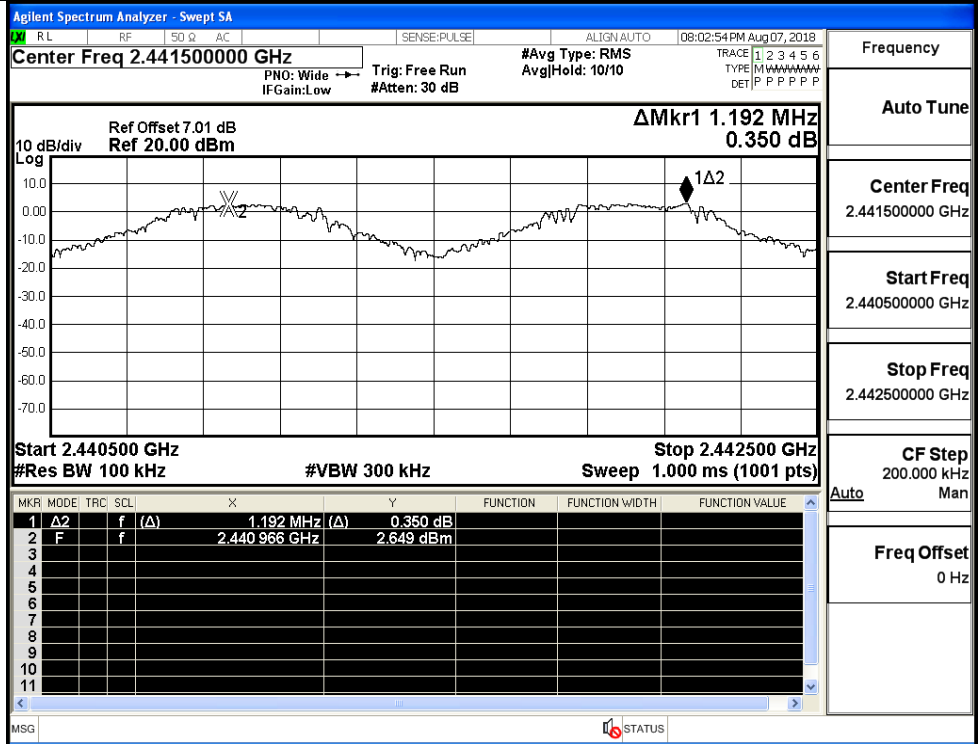
Freq Offset  
0 Hz

### A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.068	0.633	PASS
	MCH	1.192	0.633	PASS
	HCH	0.994	0.633	PASS
$\pi/4$ DQPSK	LCH	1.342	0.819	PASS
	MCH	1.176	0.819	PASS
	HCH	1.004	0.819	PASS
8DPSK	LCH	1.000	0.842	PASS
	MCH	1.182	0.842	PASS
	HCH	0.852	0.842	PASS

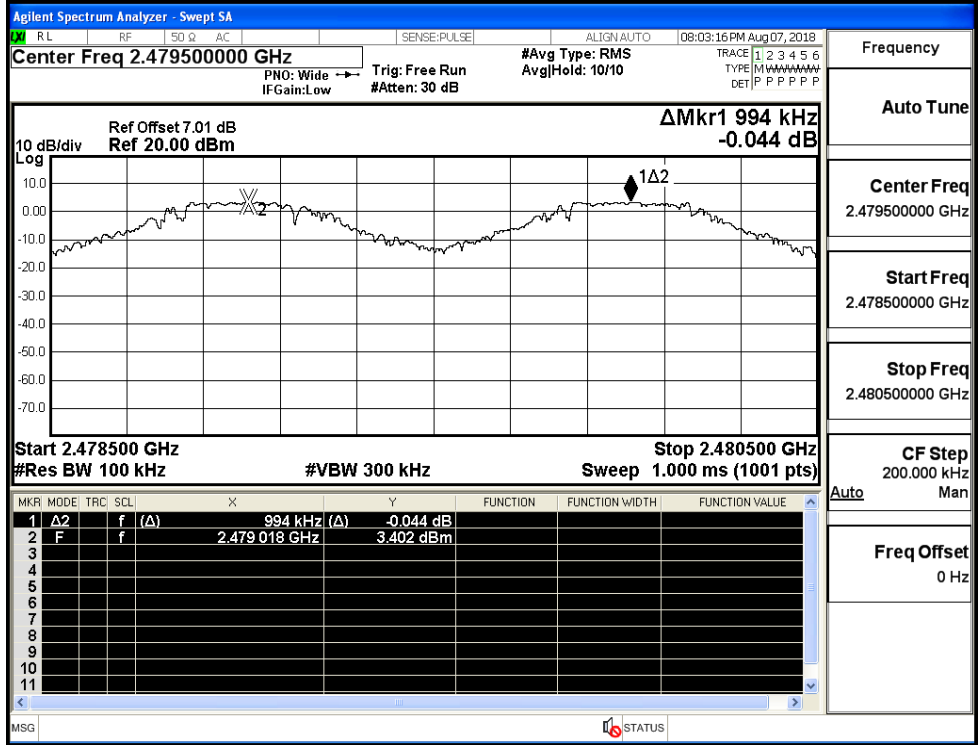


GFSK/MCH



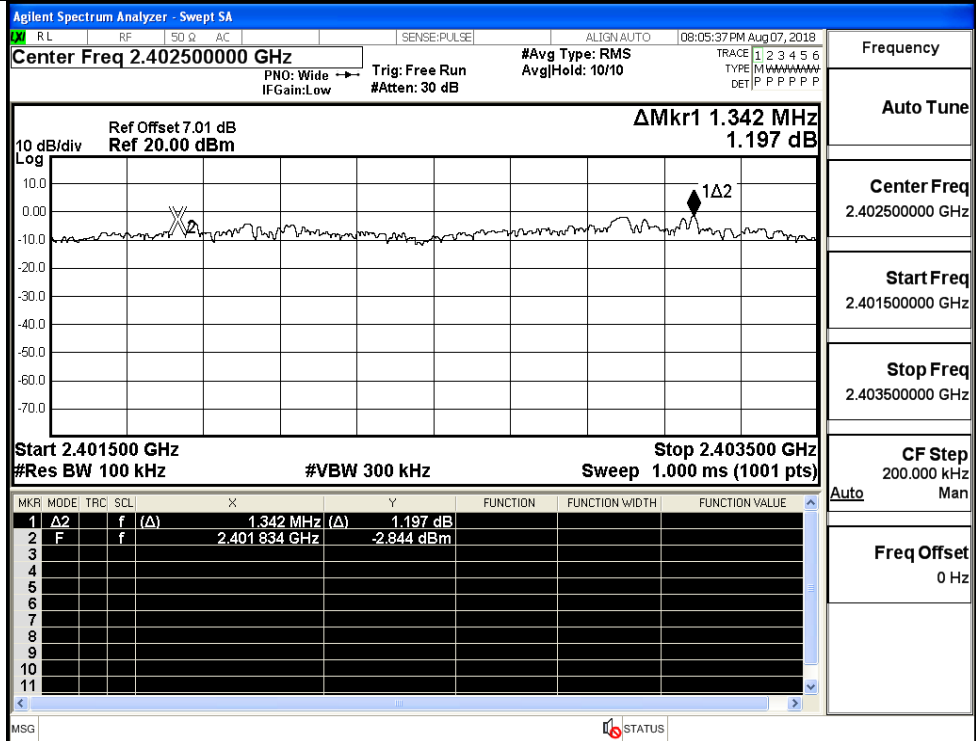
Frequency  
Auto Tune  
Center Freq  
2.441500000 GHz  
Start Freq  
2.440500000 GHz  
Stop Freq  
2.442500000 GHz  
CF Step  
200.000 kHz  
Auto Man  
Freq Offset  
0 Hz

GFSK/HCH

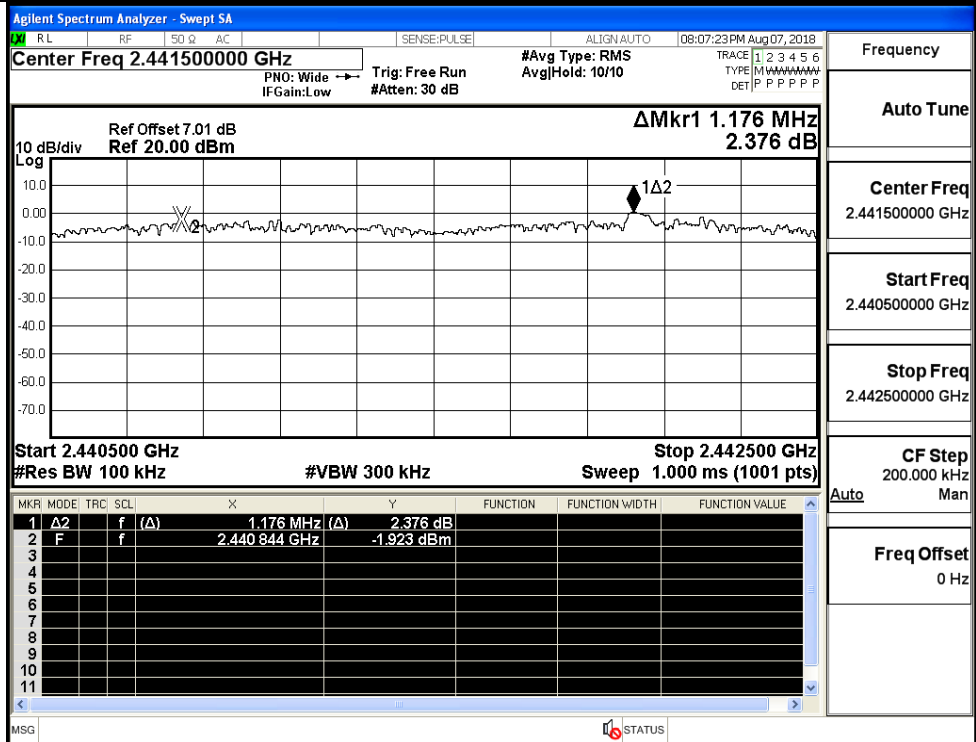


Frequency  
Auto Tune  
Center Freq  
2.479500000 GHz  
Start Freq  
2.478500000 GHz  
Stop Freq  
2.480500000 GHz  
CF Step  
200.000 kHz  
Auto Man  
Freq Offset  
0 Hz

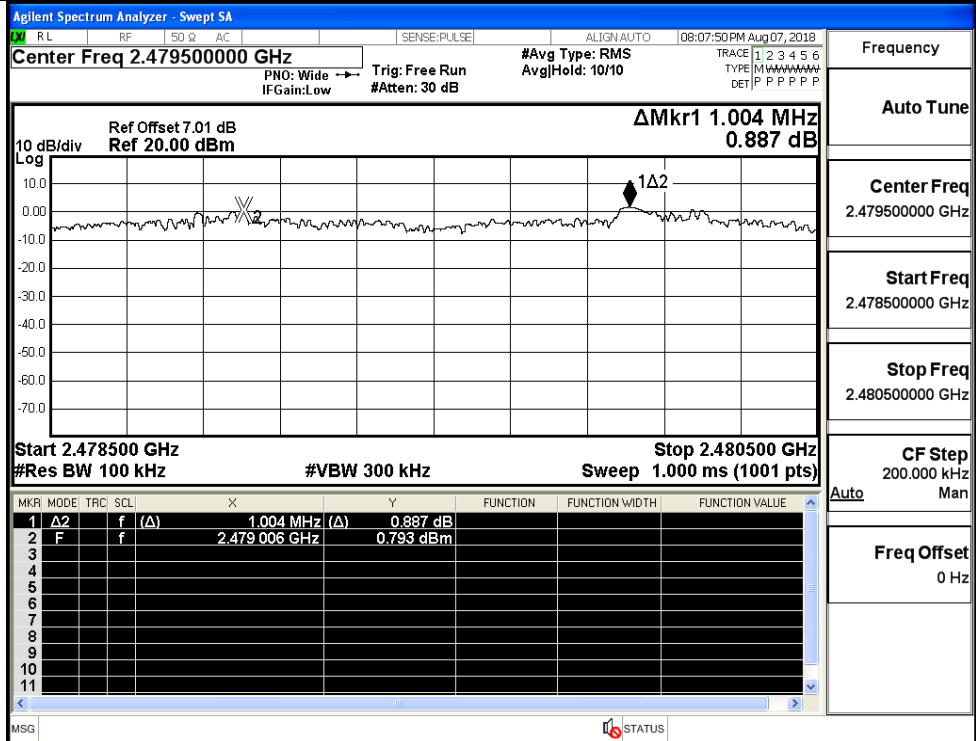
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



π/4DQPSK/HCH



Frequency

Auto Tune

Center Freq  
2.479500000 GHz

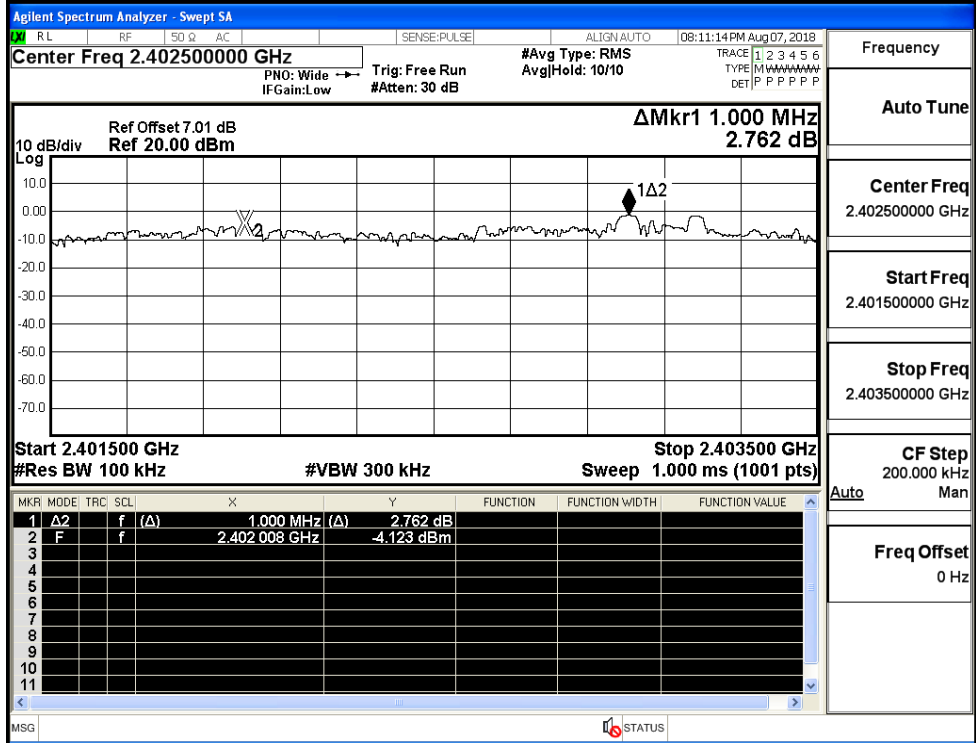
Start Freq  
2.478500000 GHz

Stop Freq  
2.480500000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz

8DPSK/LCH



Frequency

Auto Tune

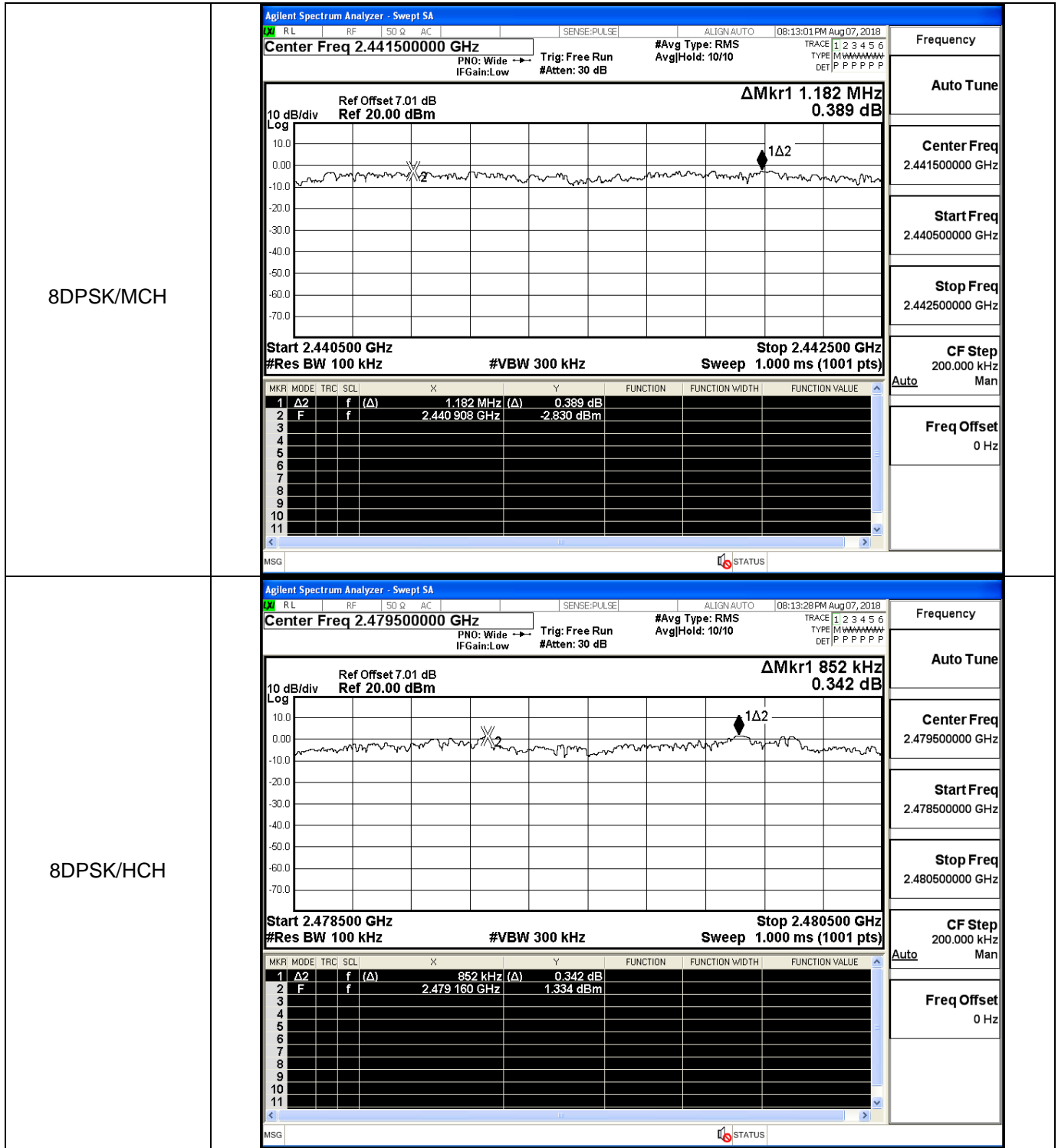
Center Freq  
2.402500000 GHz

Start Freq  
2.401500000 GHz

Stop Freq  
2.403500000 GHz

CF Step  
200.000 kHz  
Auto Man

Freq Offset  
0 Hz



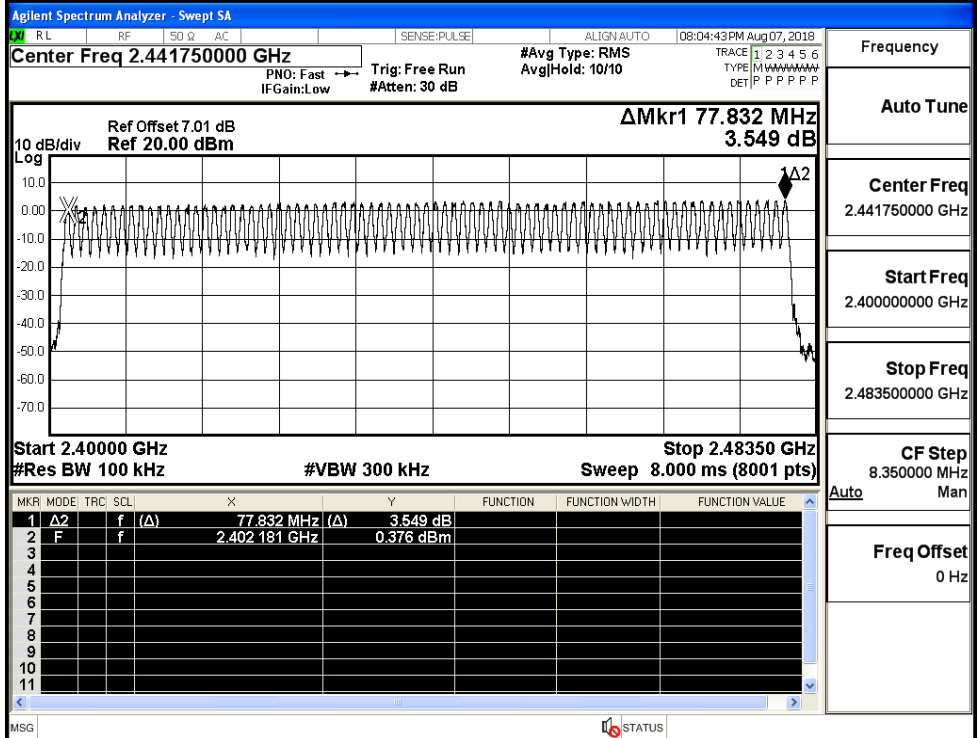
**A.4 Hopping Channel Number**

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



Frequency

Auto Tune

Center Freq  
2.441750000 GHz

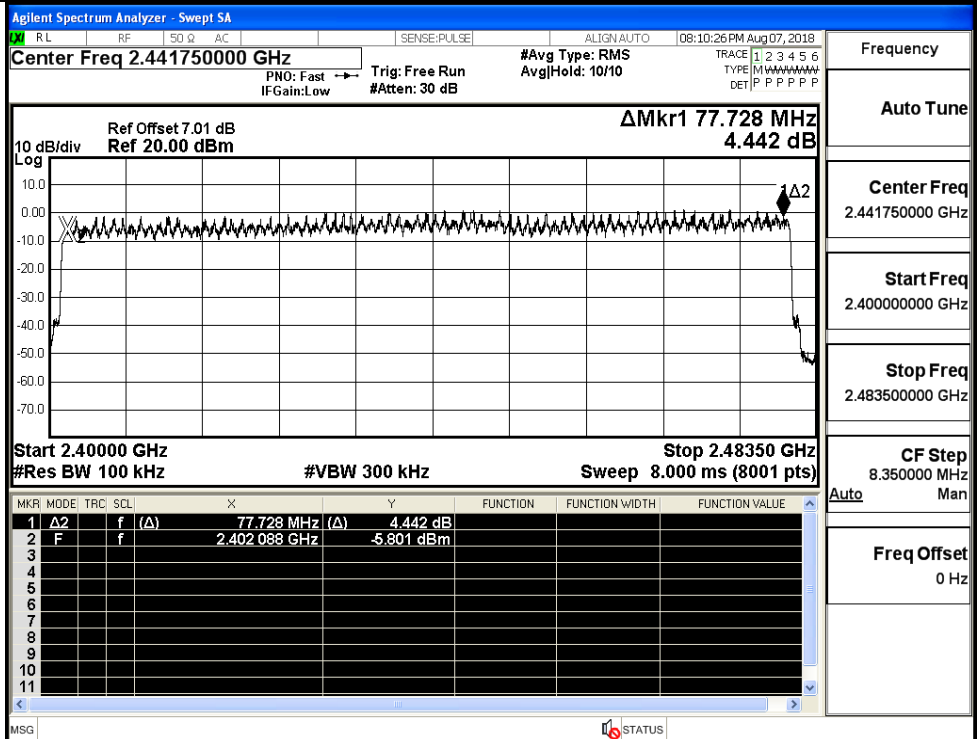
Start Freq  
2.400000000 GHz

Stop Freq  
2.483500000 GHz

CF Step  
8.350000 MHz  
Auto Man

Freq Offset  
0 Hz

$\pi/4$ DQPSK/Hop



Frequency

Auto Tune

Center Freq  
2.441750000 GHz

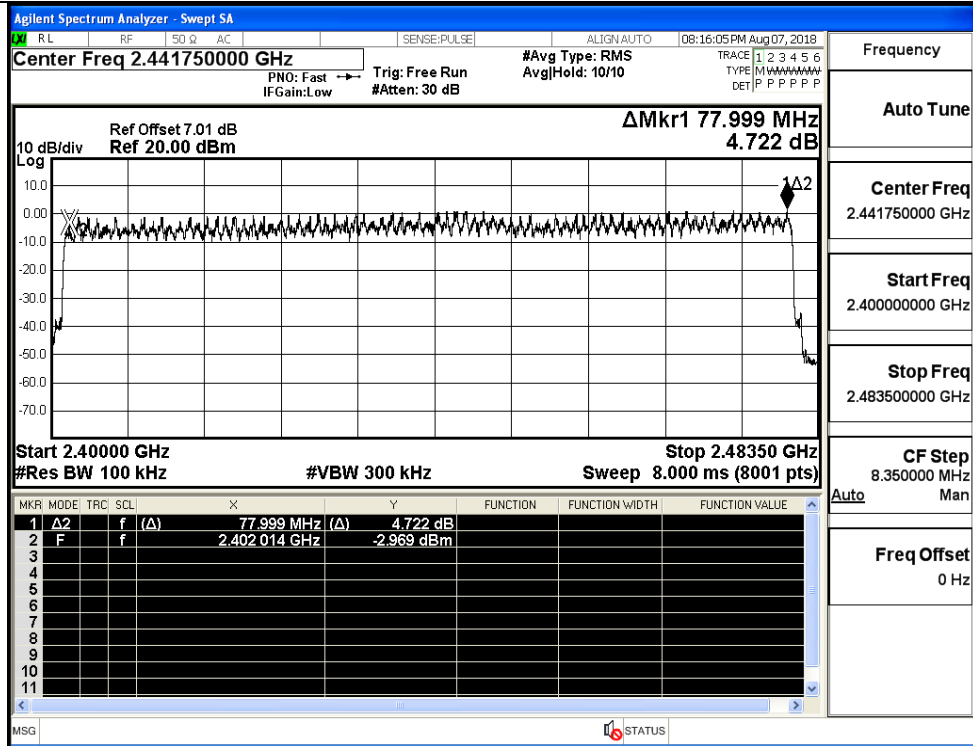
Start Freq  
2.400000000 GHz

Stop Freq  
2.483500000 GHz

CF Step  
8.350000 MHz  
Auto Man

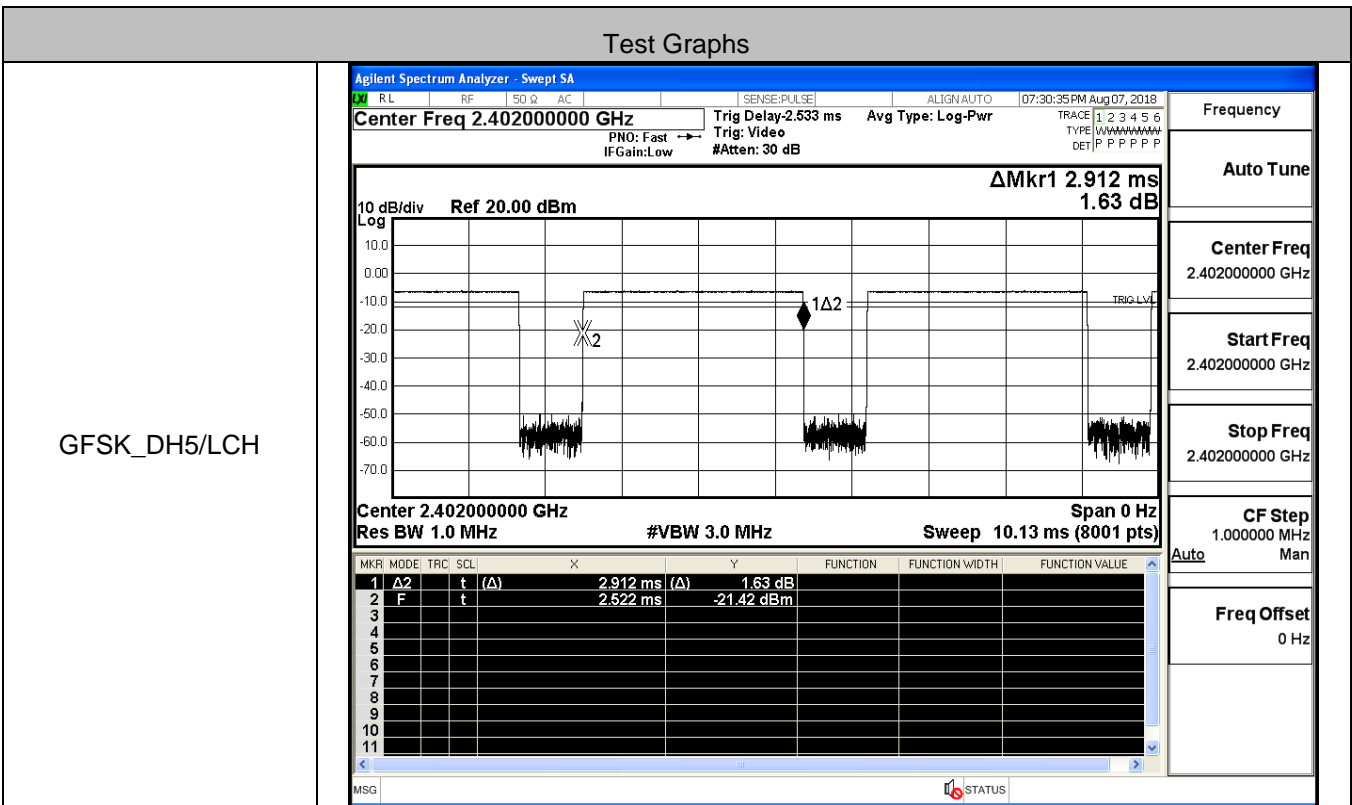
Freq Offset  
0 Hz

8DPSK/Hop

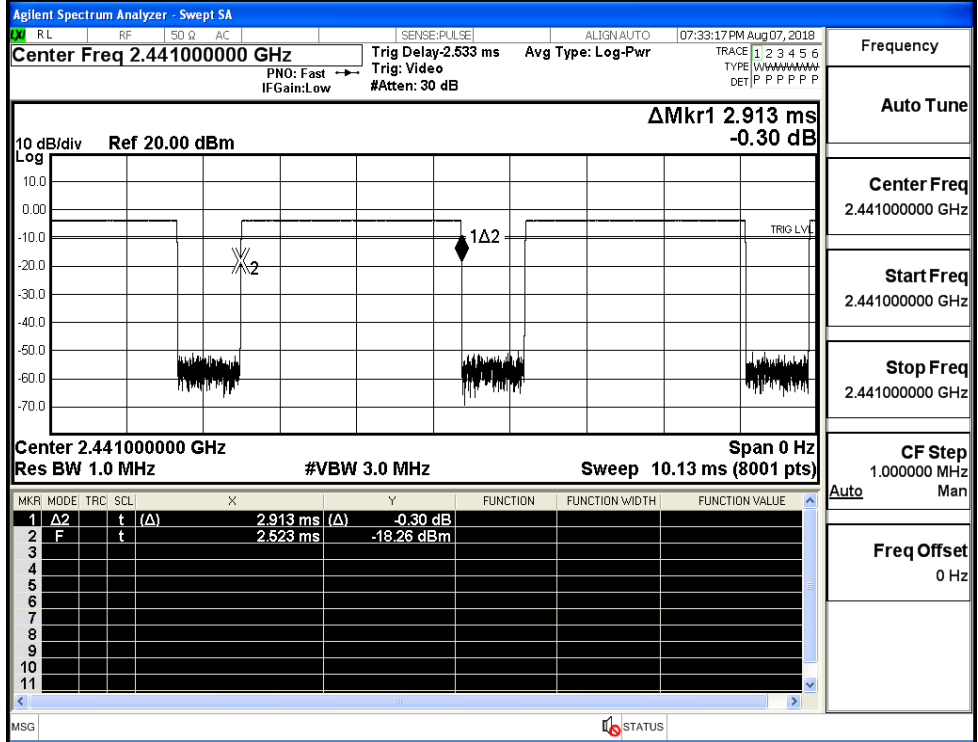


A.5 Dwell Time

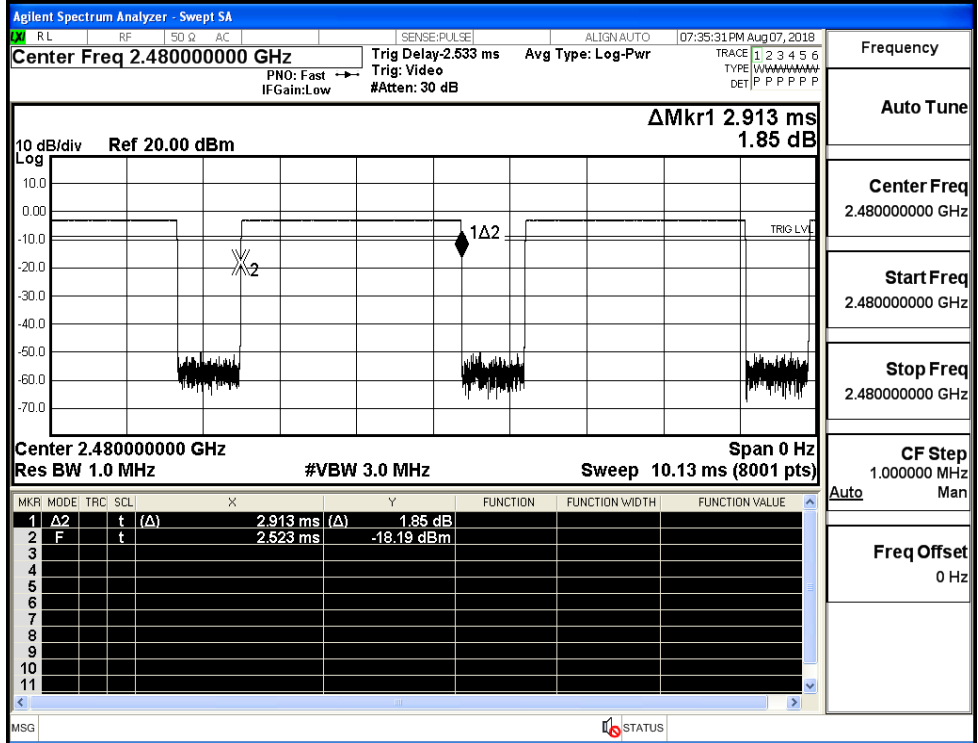
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.91	106.7	0.31	0.4	PASS
	DH5	MCH	2.91	106.7	0.31	0.4	PASS
	DH5	HCH	2.91	106.7	0.31	0.4	PASS
π/4DQPSK	2DH5	LCH	2.91	106.7	0.312	0.4	PASS
	2DH5	MCH	2.91	106.7	0.312	0.4	PASS
	2DH5	HCH	2.91	106.7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



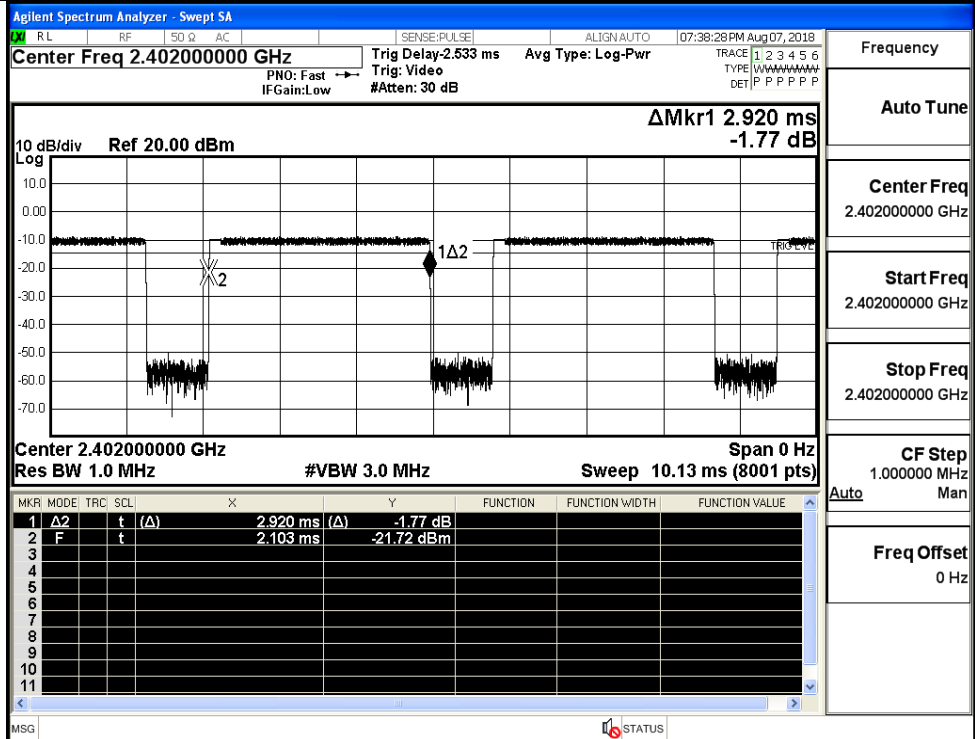
GFSK\_DH5/MCH



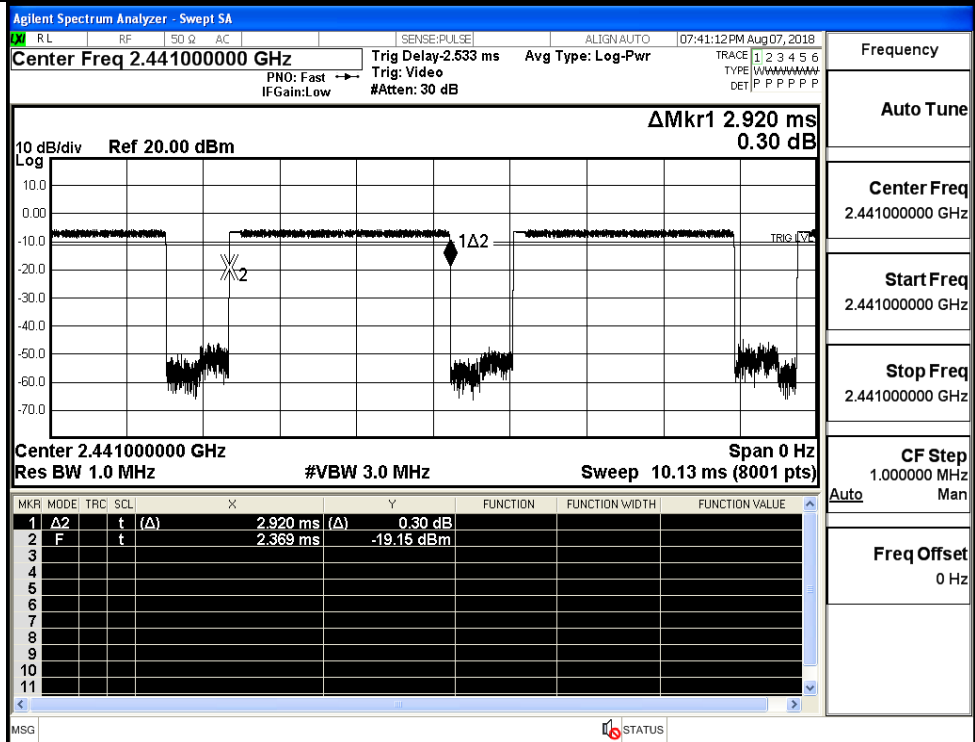
GFSK\_DH5/HCH



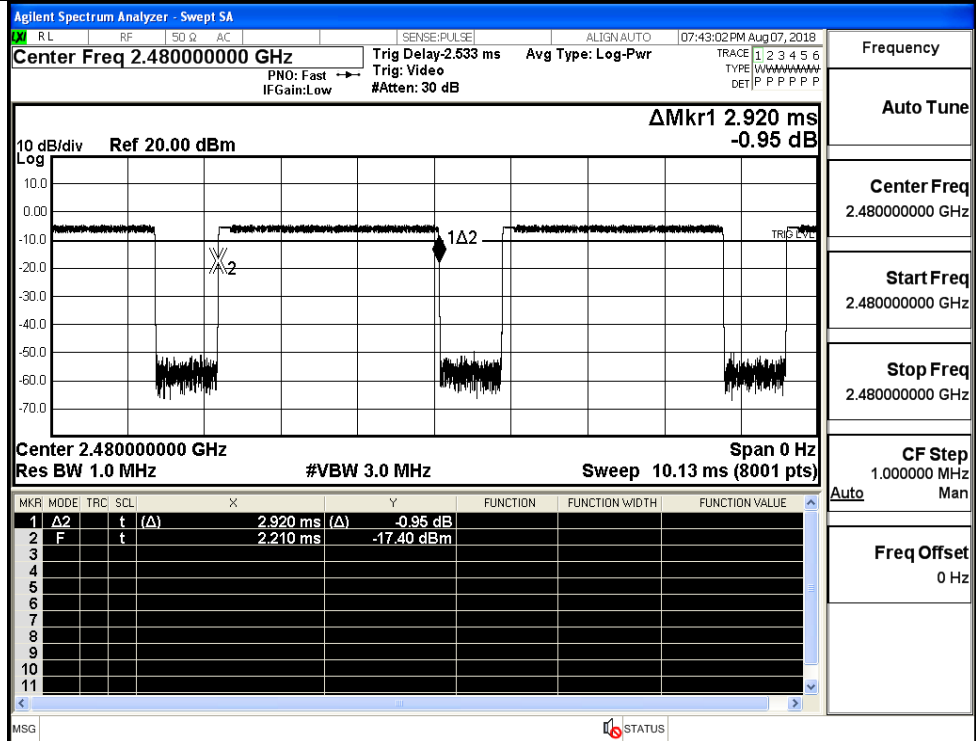
$\pi/4$ DQPSK  
\_2DH5/LCH



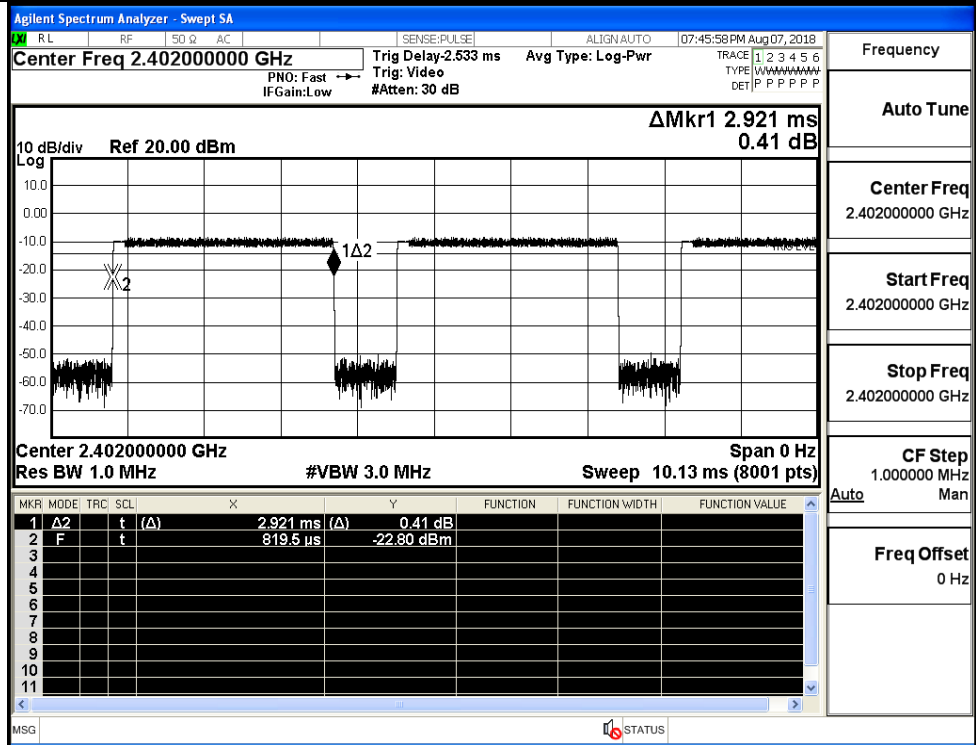
$\pi/4$ DQPSK  
\_2DH5/MCH



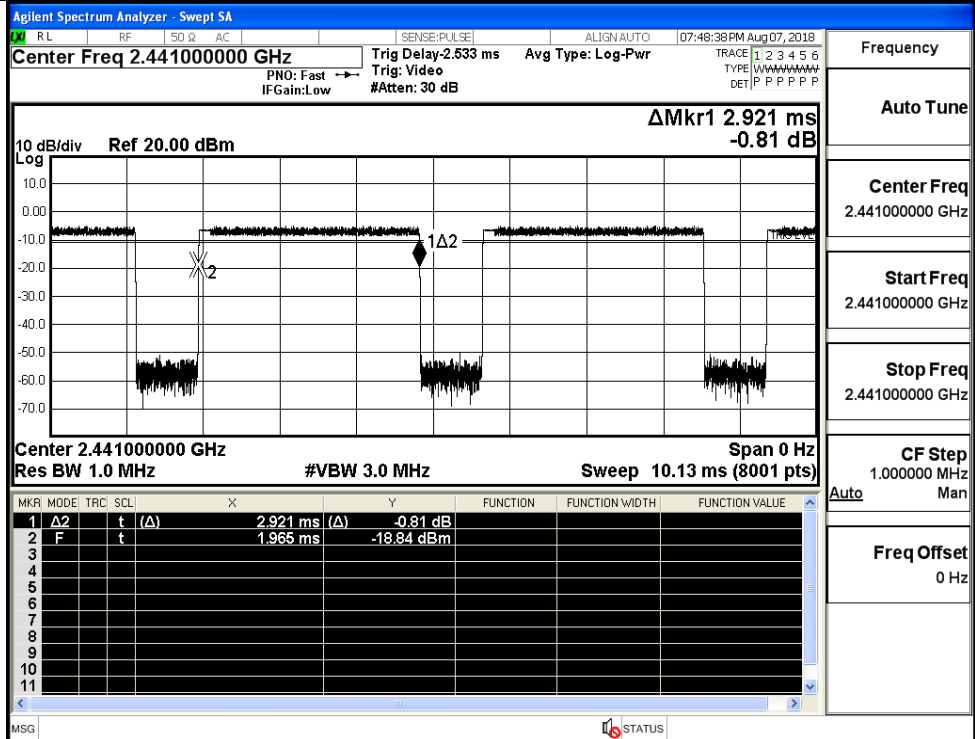
$\pi/4$ DQPSK  
\_2DH5/HCH



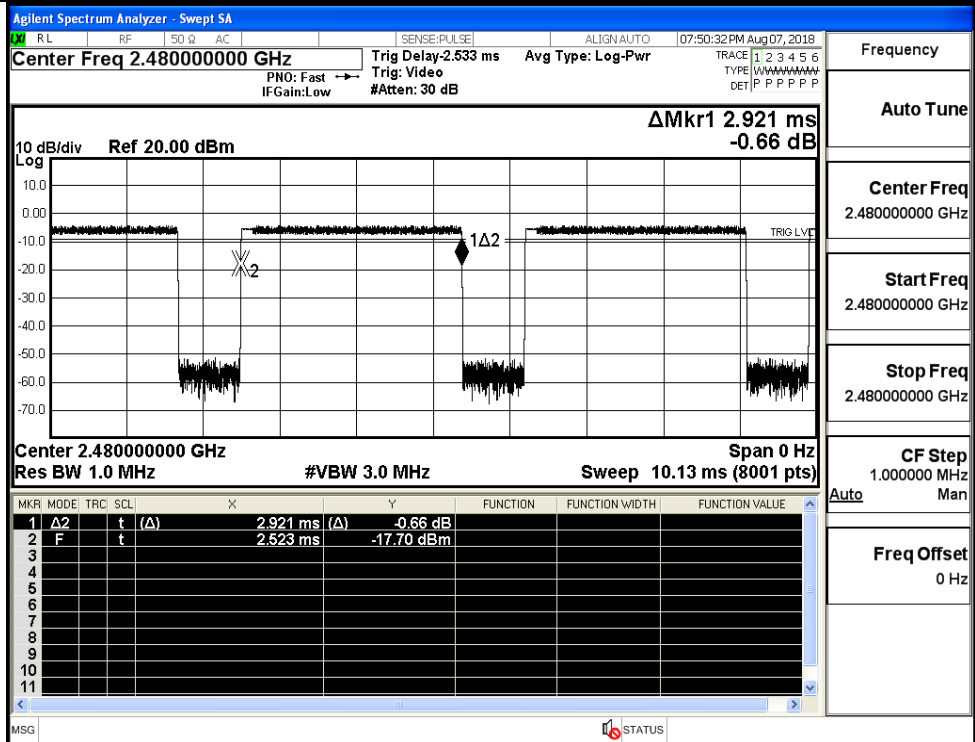
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



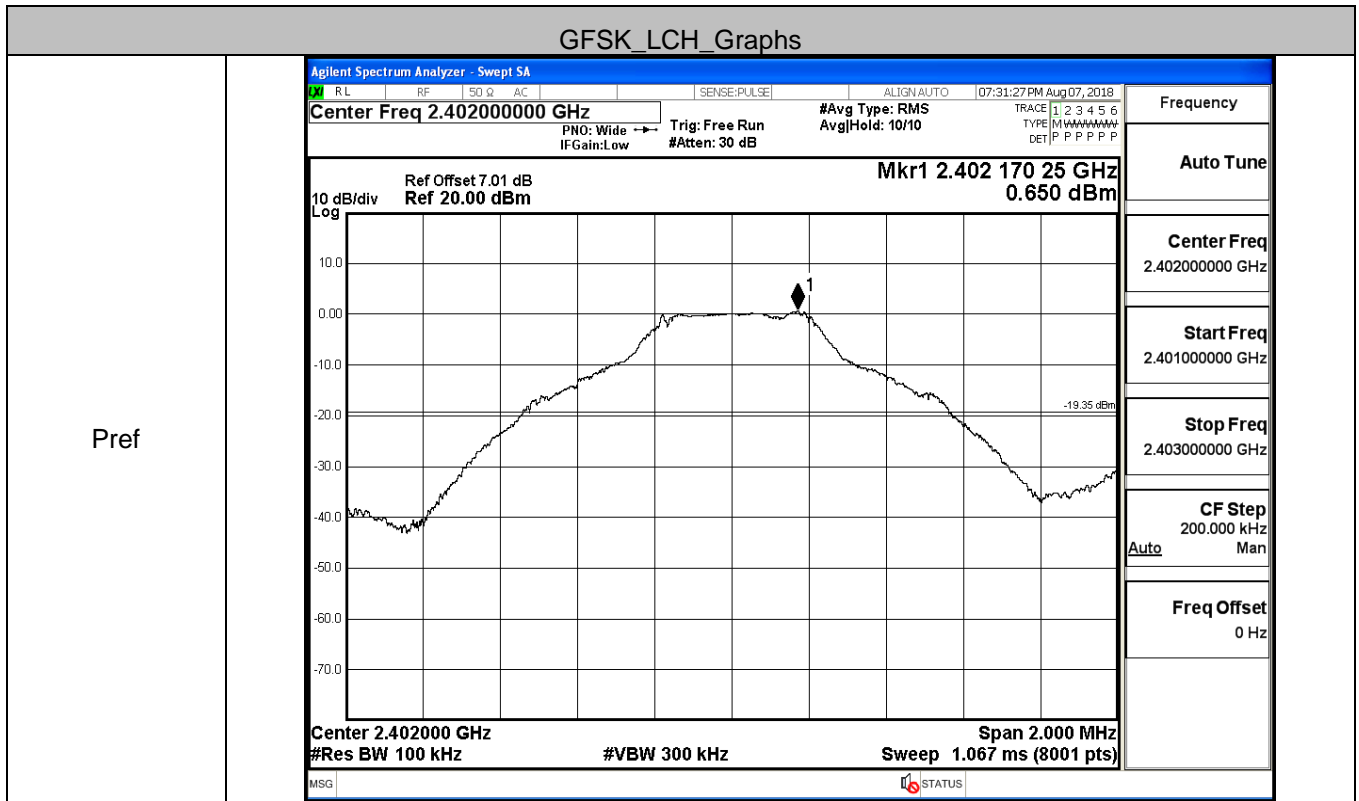
8DPSK\_3DH5/HCH



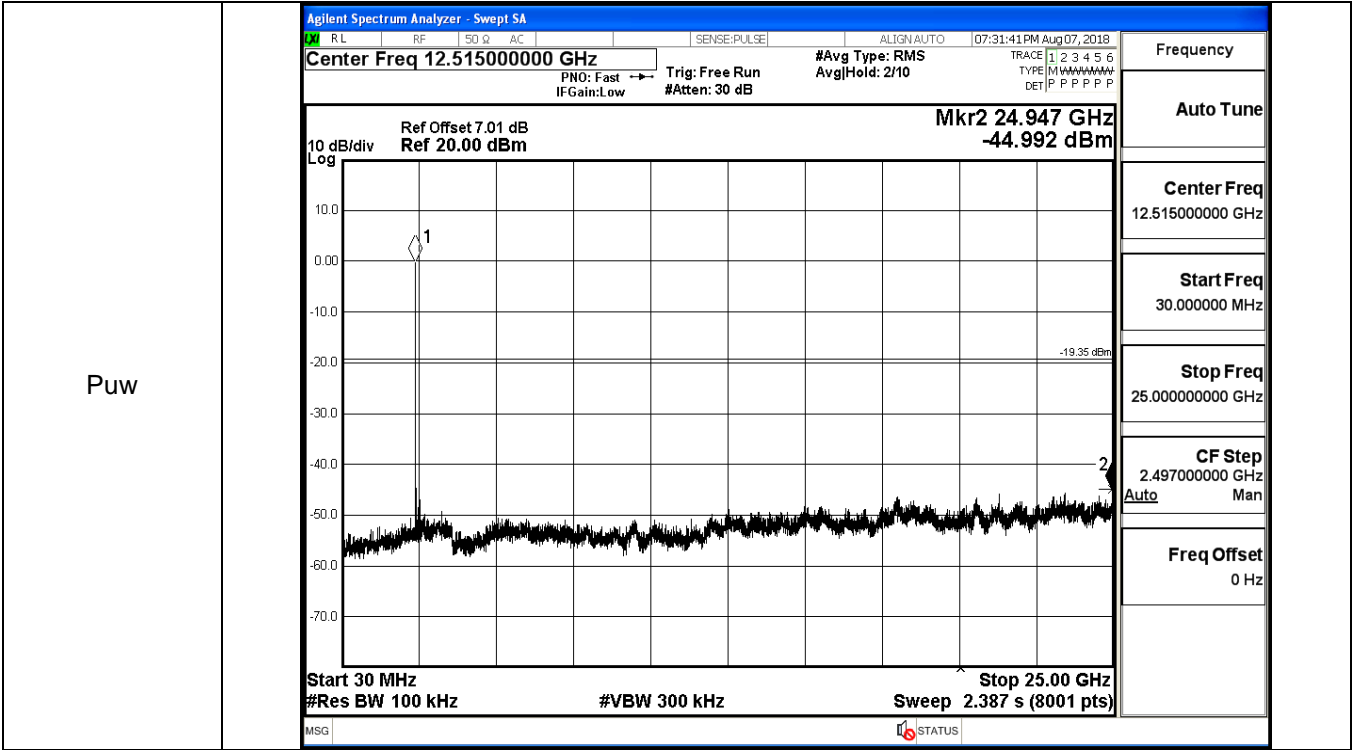
**A.6 RF Conducted Spurious Emissions**

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.65	-44.992	-19.350	PASS
	MCH	2.977	-45.871	-17.023	PASS
	HCH	4.063	-46.094	-15.937	PASS
$\pi$ /4DQPSK	LCH	-2.818	-45.854	-22.818	PASS
	MCH	0.581	-45.721	-19.419	PASS
	HCH	1.639	-45.974	-18.361	PASS
8DPSK	LCH	-3.072	-45.690	-23.072	PASS
	MCH	0.654	-45.518	-19.346	PASS
	HCH	1.724	-45.831	-18.276	PASS

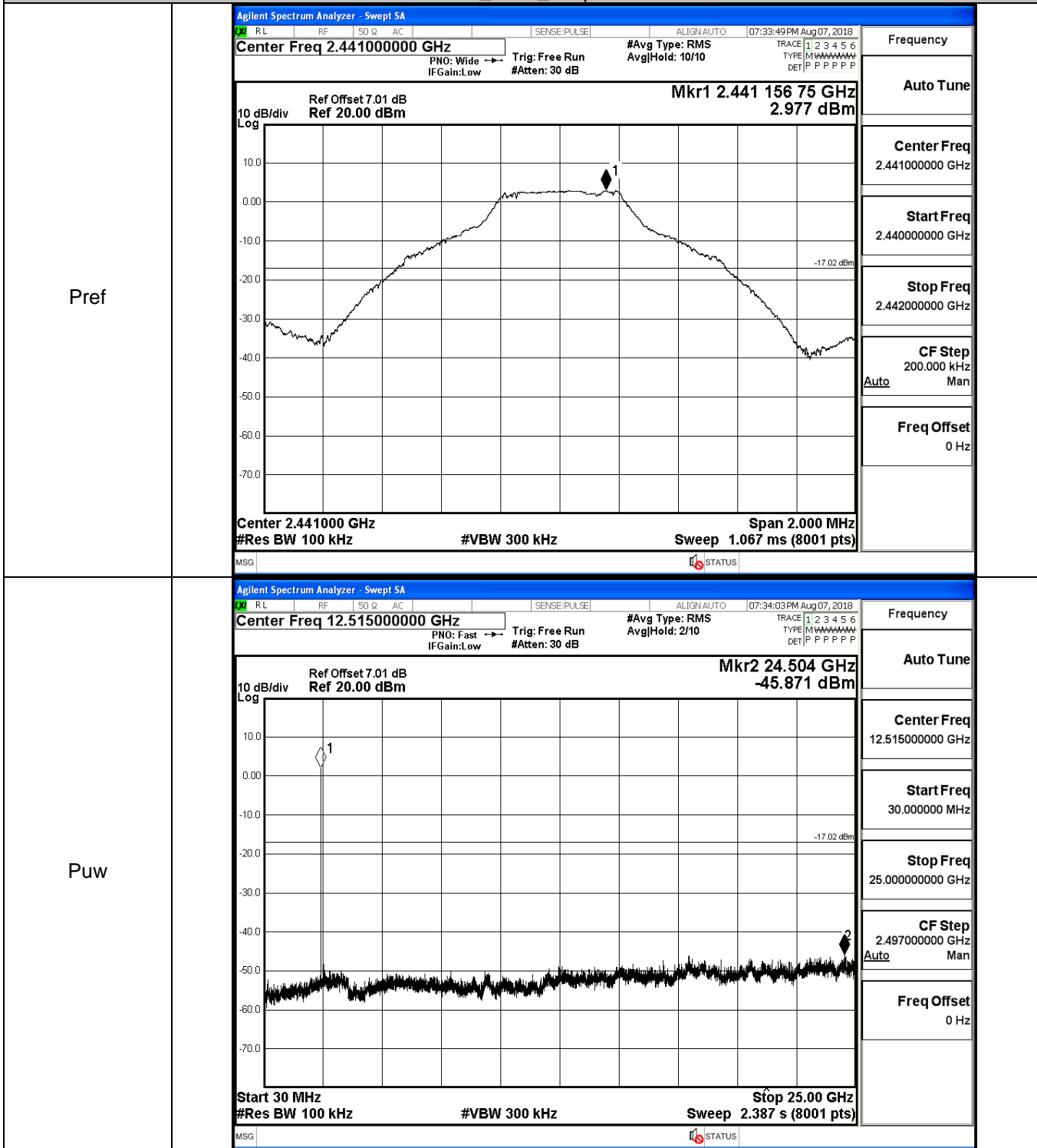
GFSK\_LCH\_Graphs



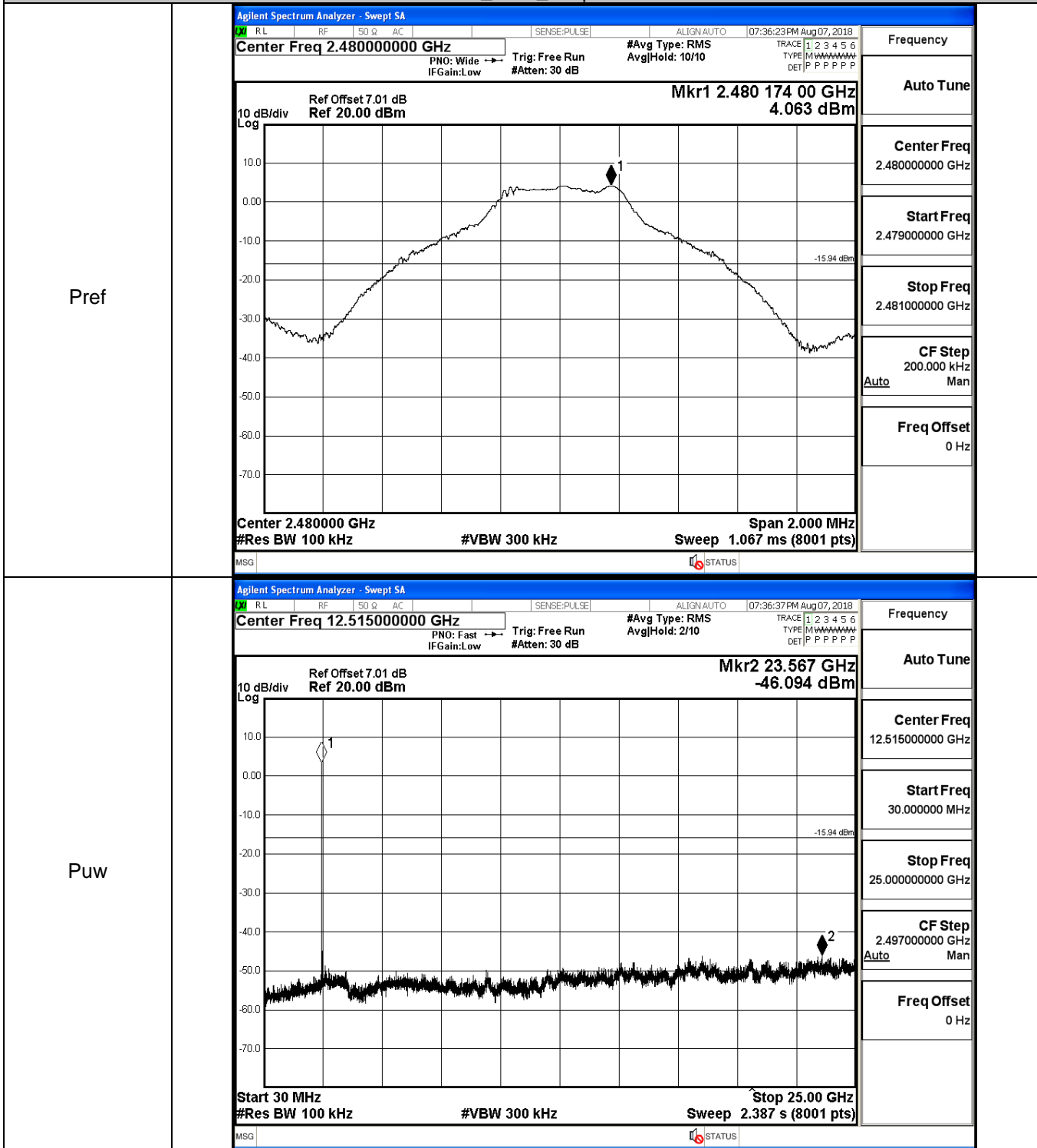




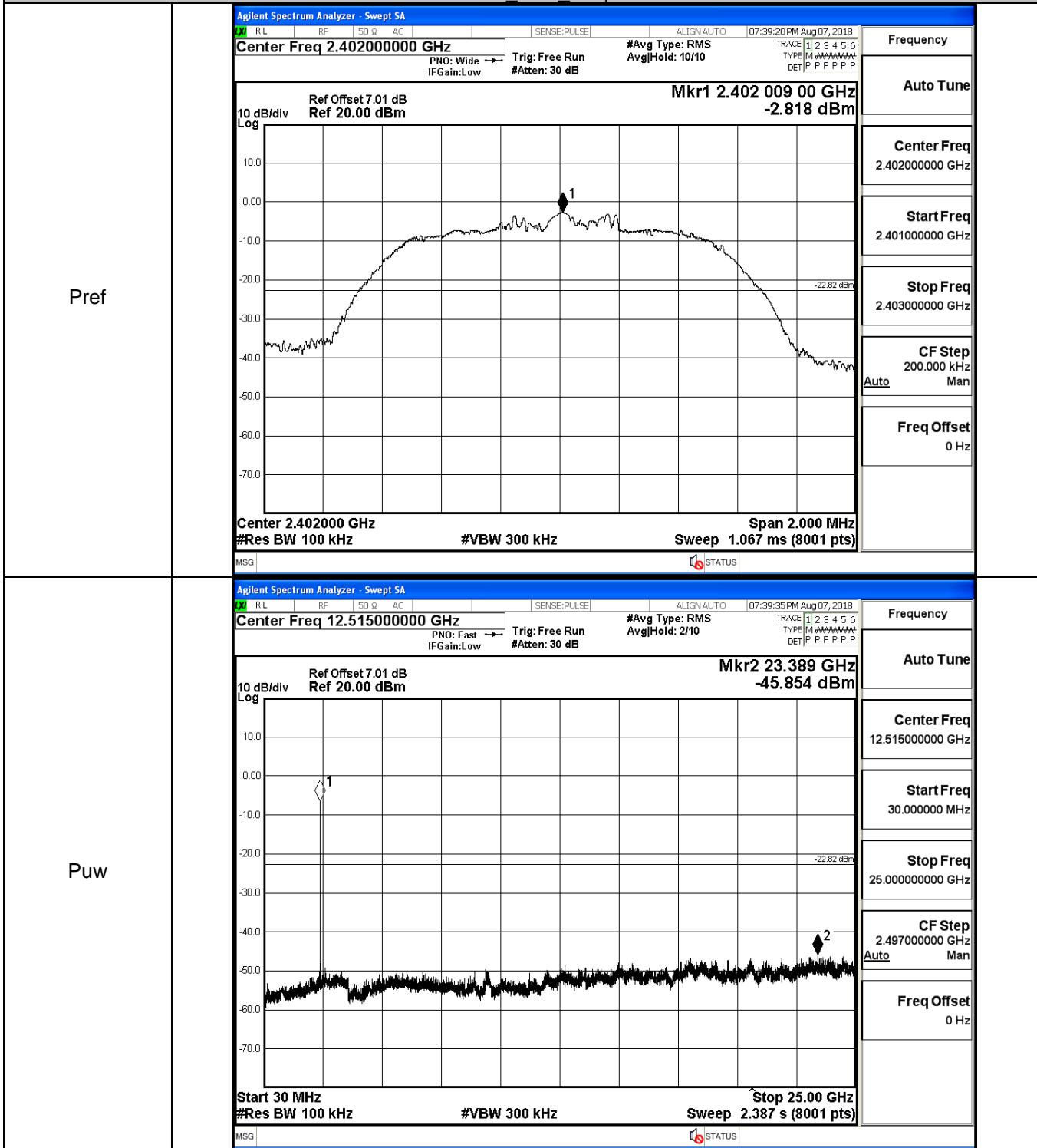
GFSK\_MCH\_Graphs



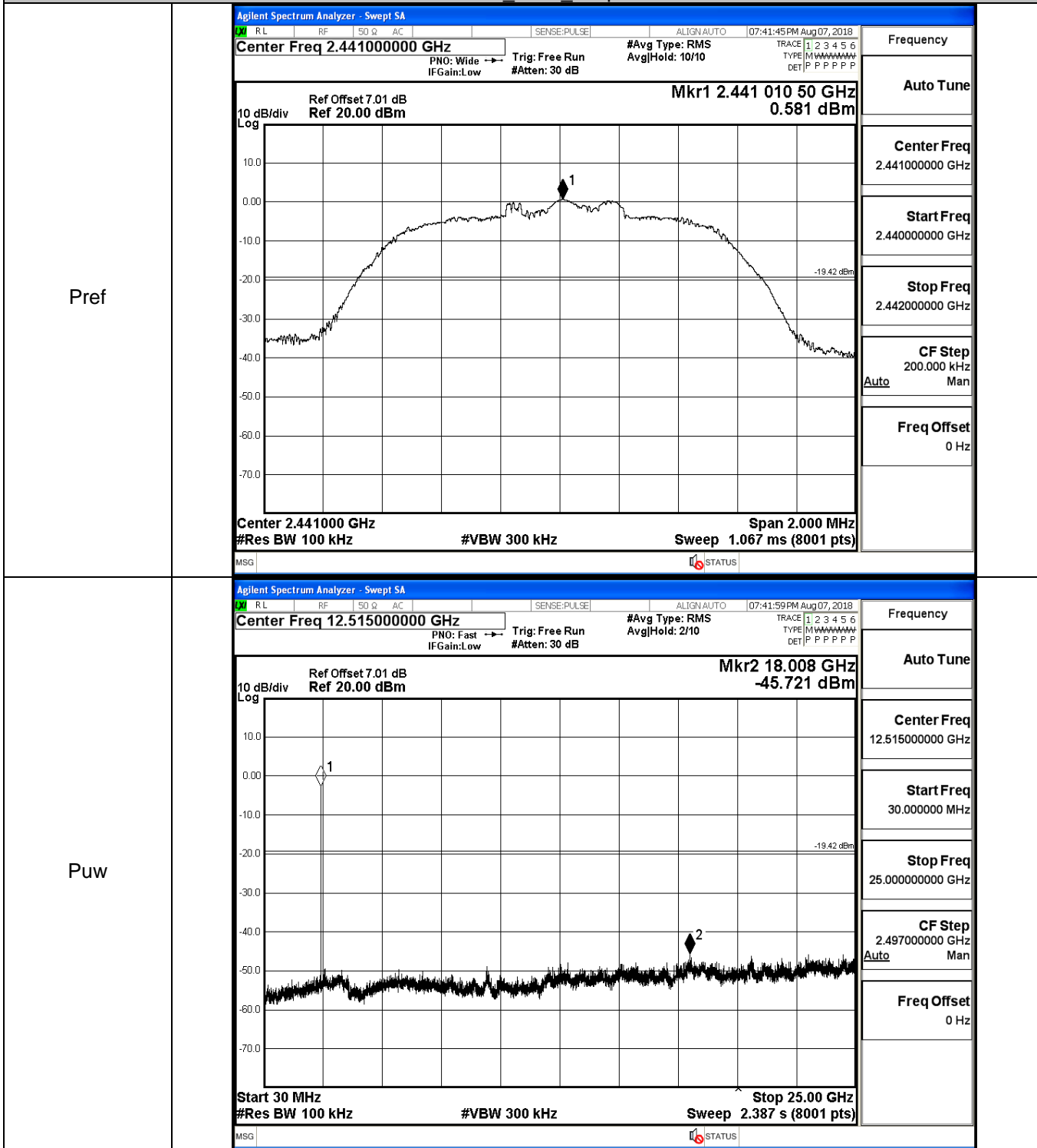
GFSK\_HCH\_Graphs



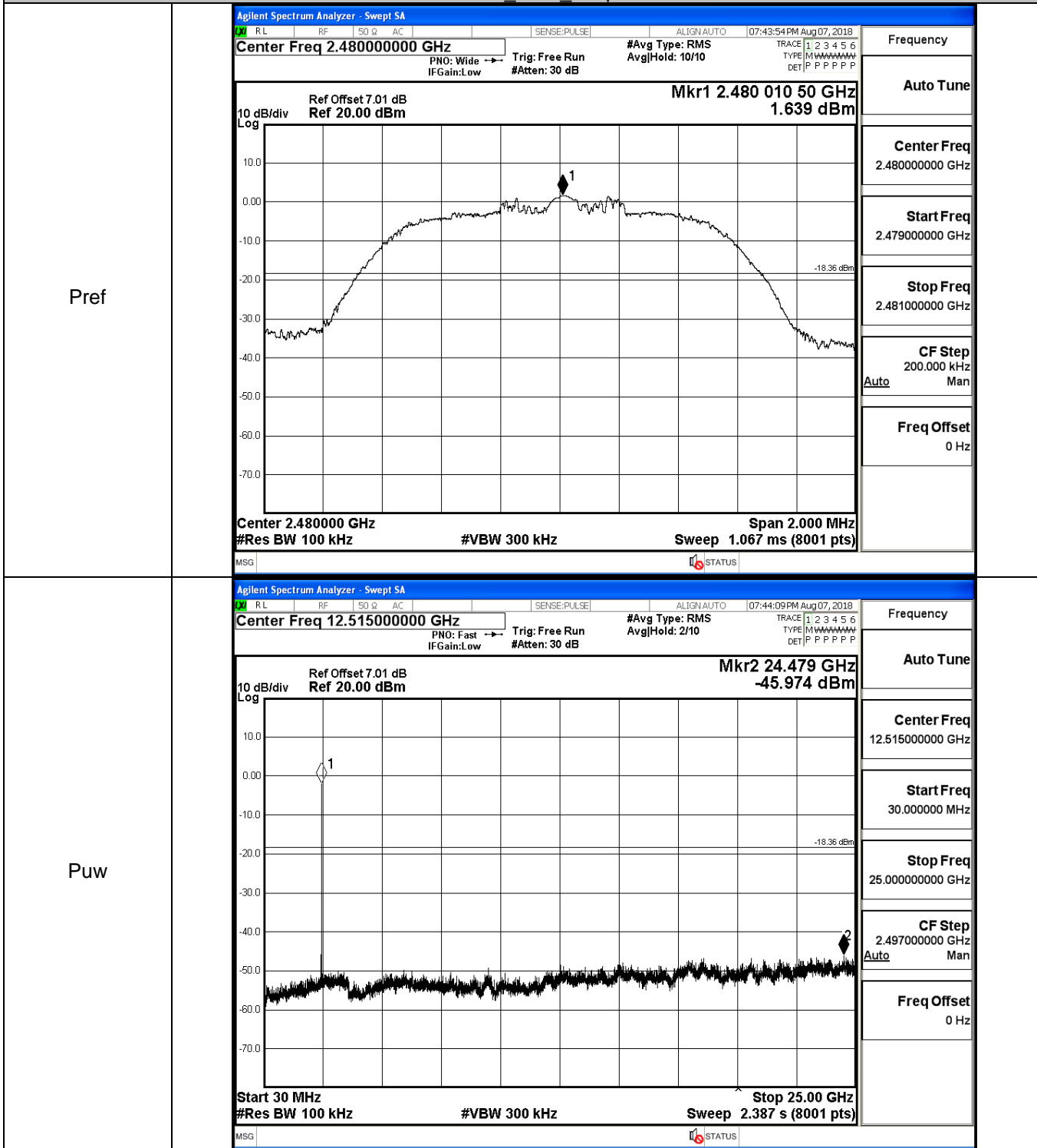
$\pi/4$ DQPSK LCH\_Graphs



$\pi/4$ DQPSK\_MCH\_Graphs

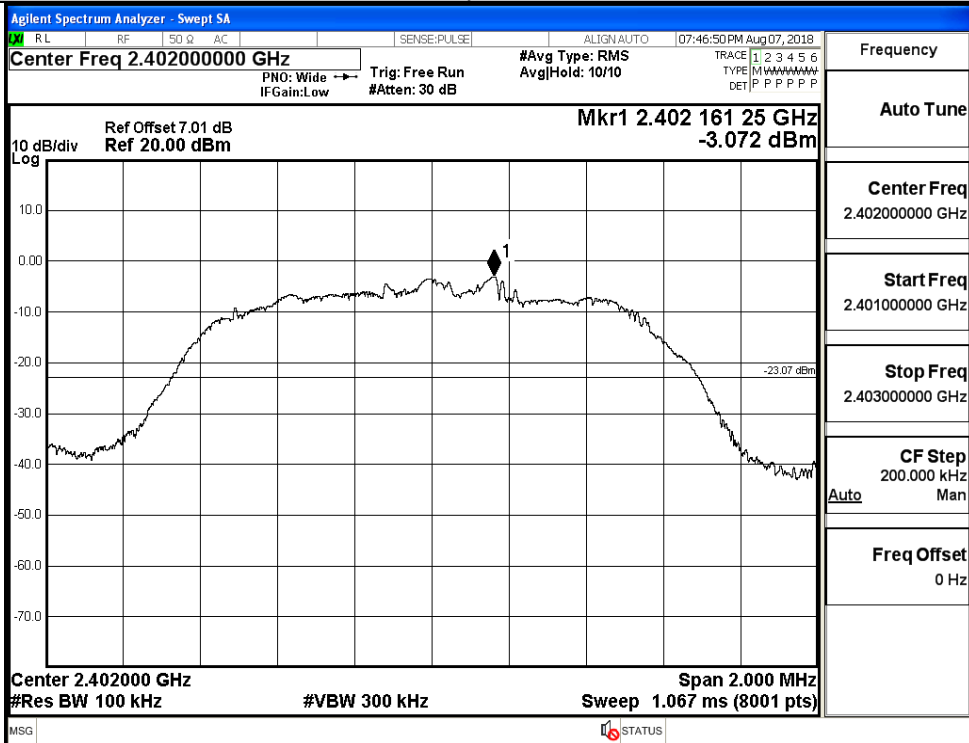


$\pi/4$ DQPSK\_HCH\_Graphs

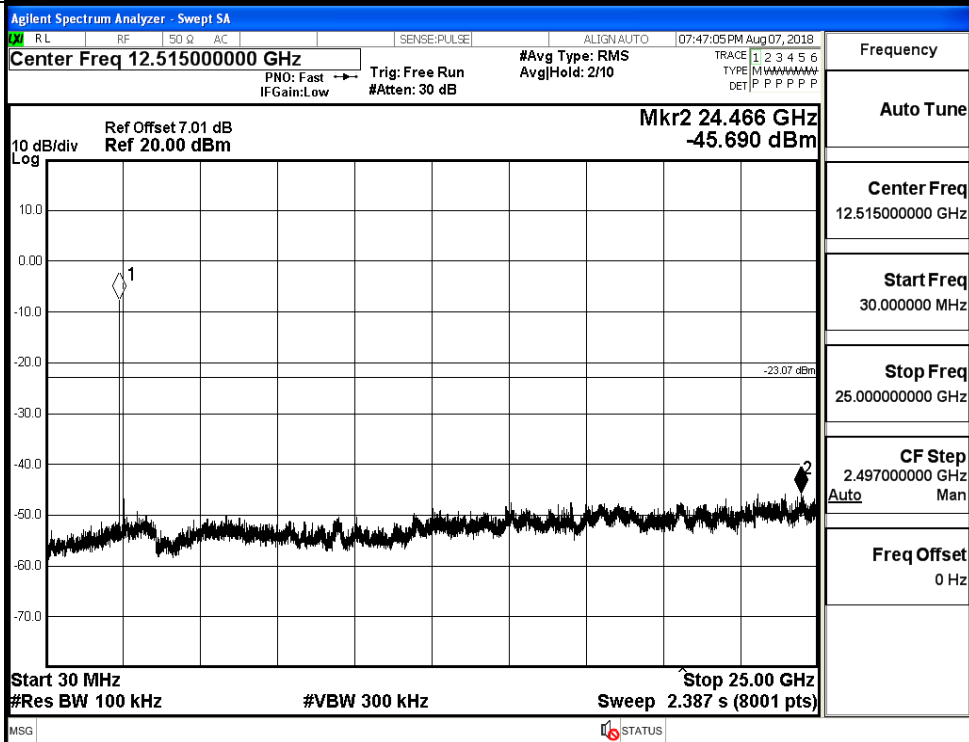


8DPSK\_LCH\_Graphs

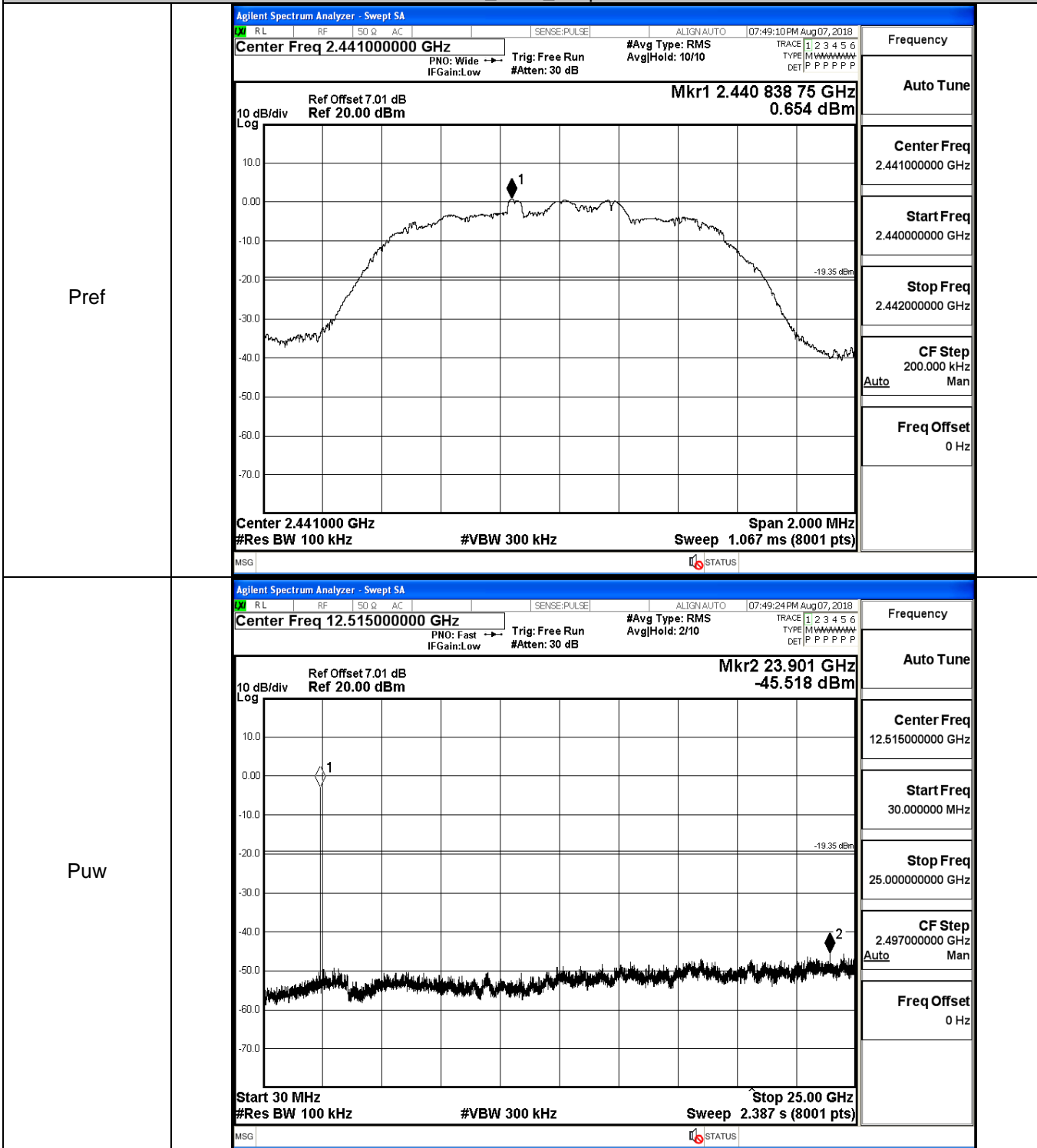
Pref



Puw

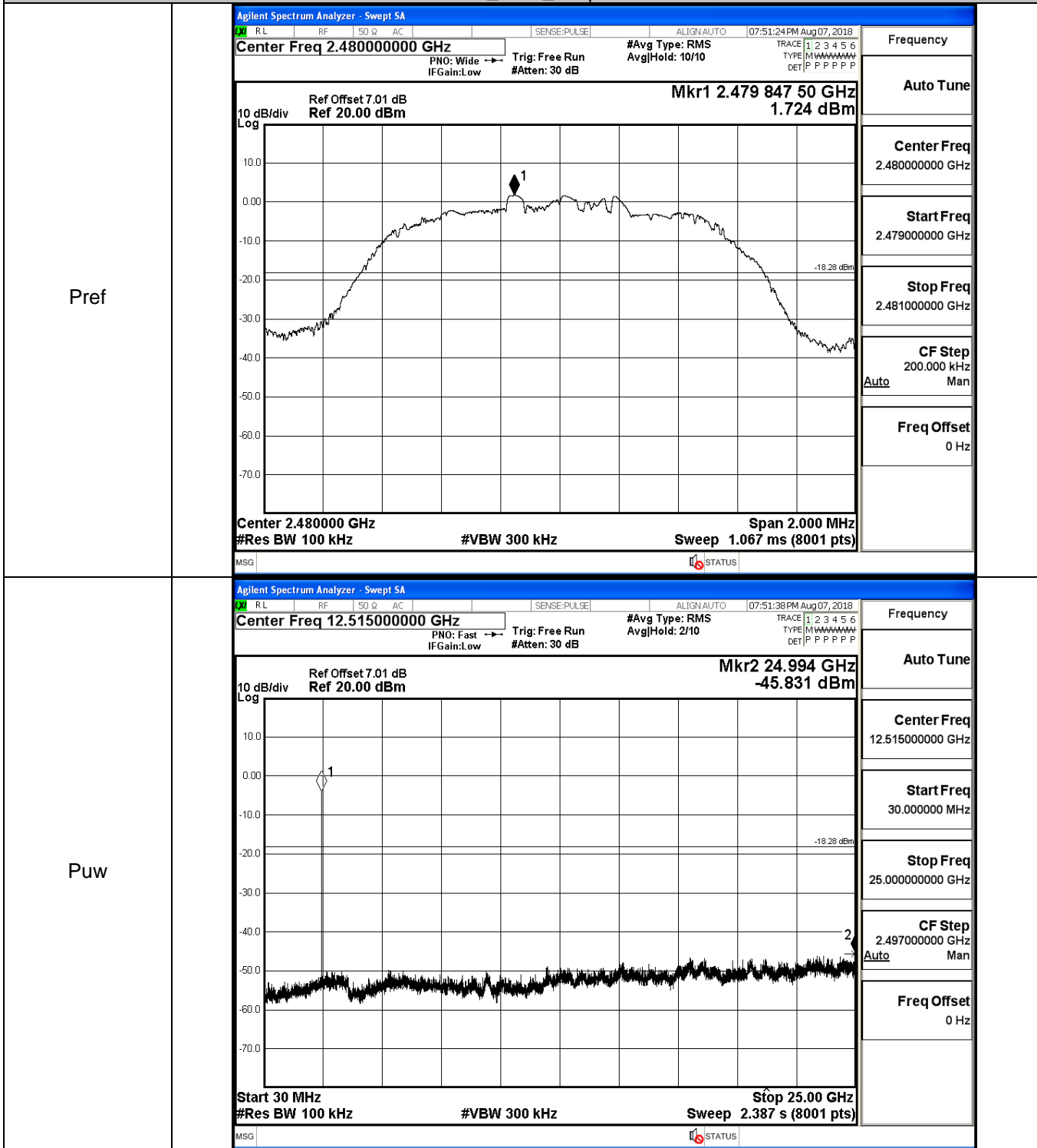


8DPSK\_MCH\_Graphs





8DPSK\_HCH\_Graphs

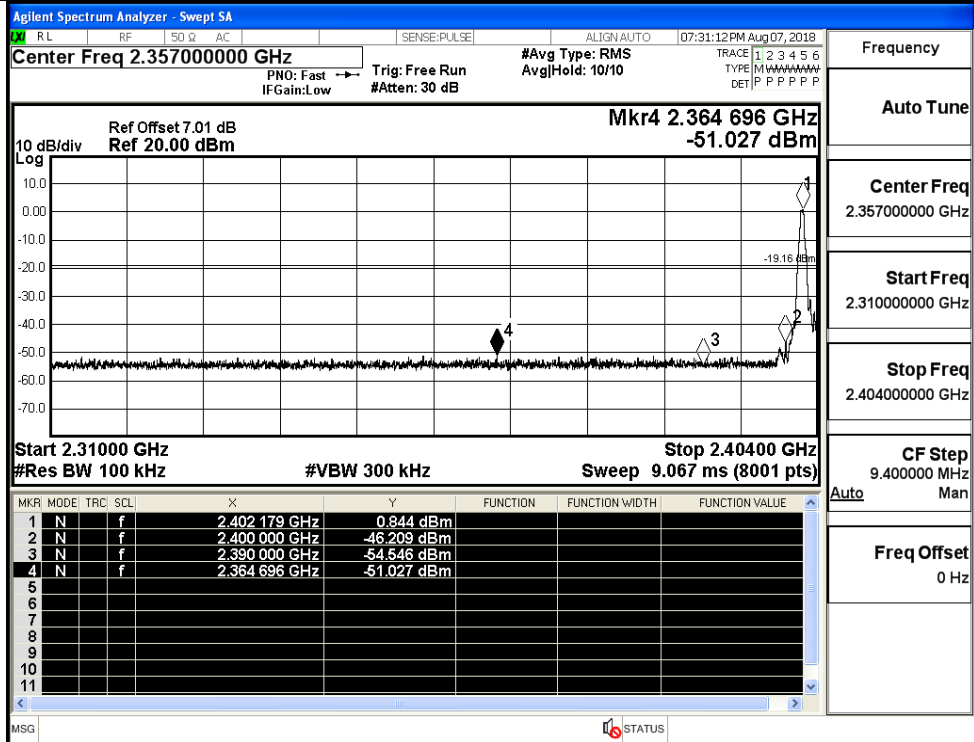


## A.7 Band-edge for RF Conducted Emissions

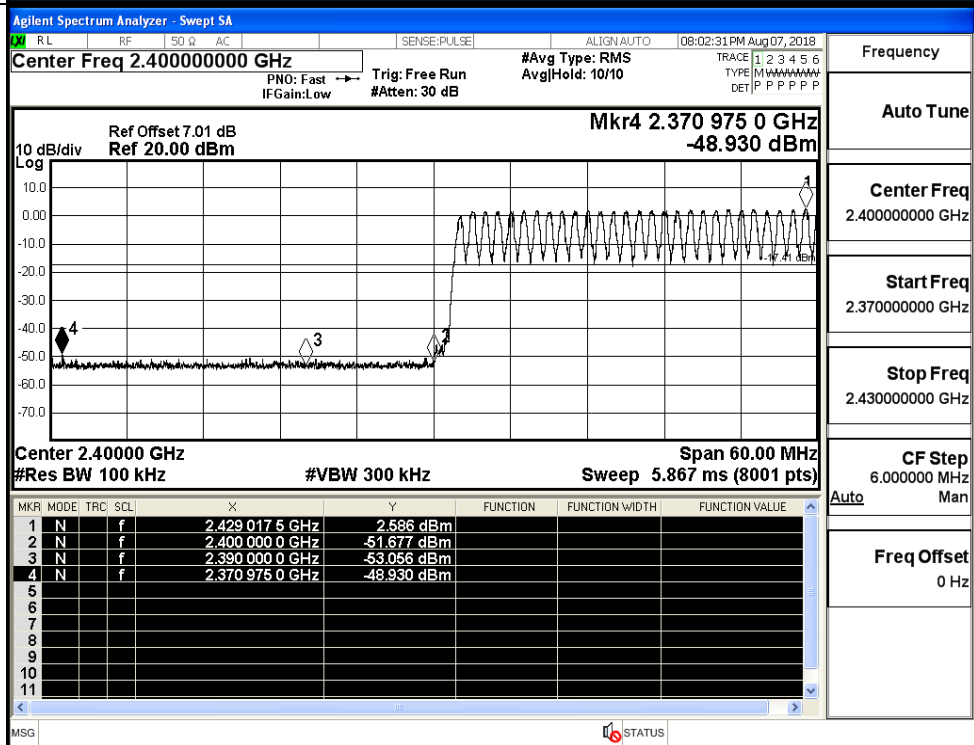
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.844	Off	-51.027	-19.16	PASS
			2.586	On	-48.930	-17.41	PASS
	HCH	2480	4.070	Off	-50.046	-15.93	PASS
			3.876	On	-48.626	-16.12	PASS
$\pi/4$ DQPSK	LCH	2402	-3.006	Off	-51.192	-23.01	PASS
			-0.177	On	-50.859	-20.18	PASS
	HCH	2480	1.674	Off	-50.615	-18.33	PASS
			1.506	On	-50.023	-18.49	PASS
8DPSK	LCH	2402	-2.664	Off	-51.047	-22.66	PASS
			-0.240	On	-50.510	-20.24	PASS
	HCH	2480	1.736	Off	-50.041	-18.26	PASS
			1.729	On	-50.613	-18.27	PASS

Test Graphs

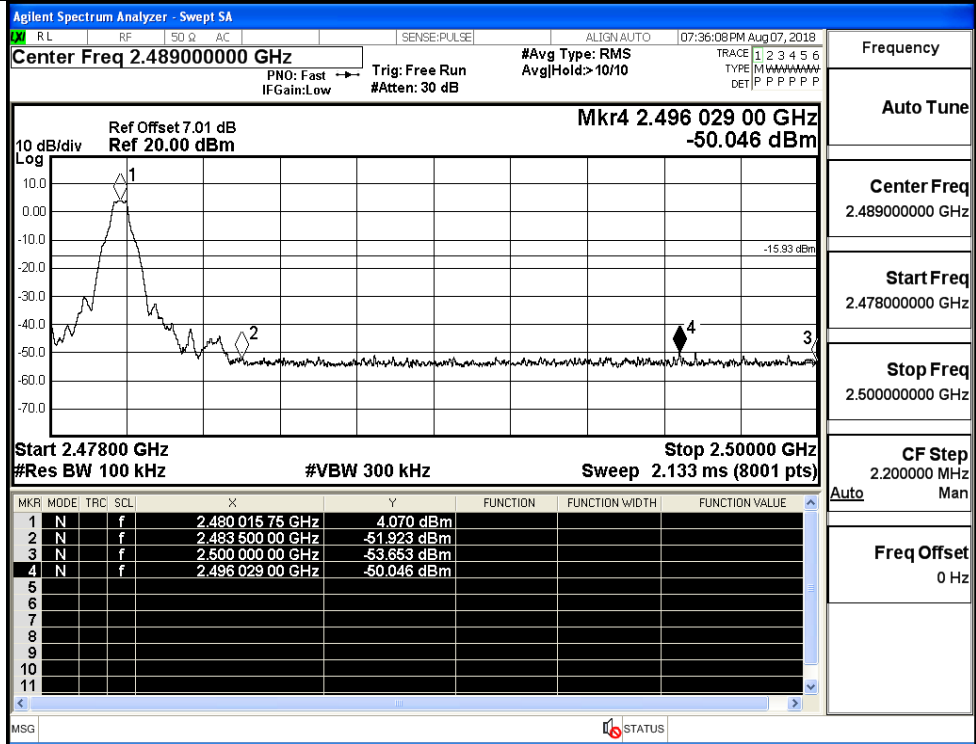
GFSK/LCH/No Hop



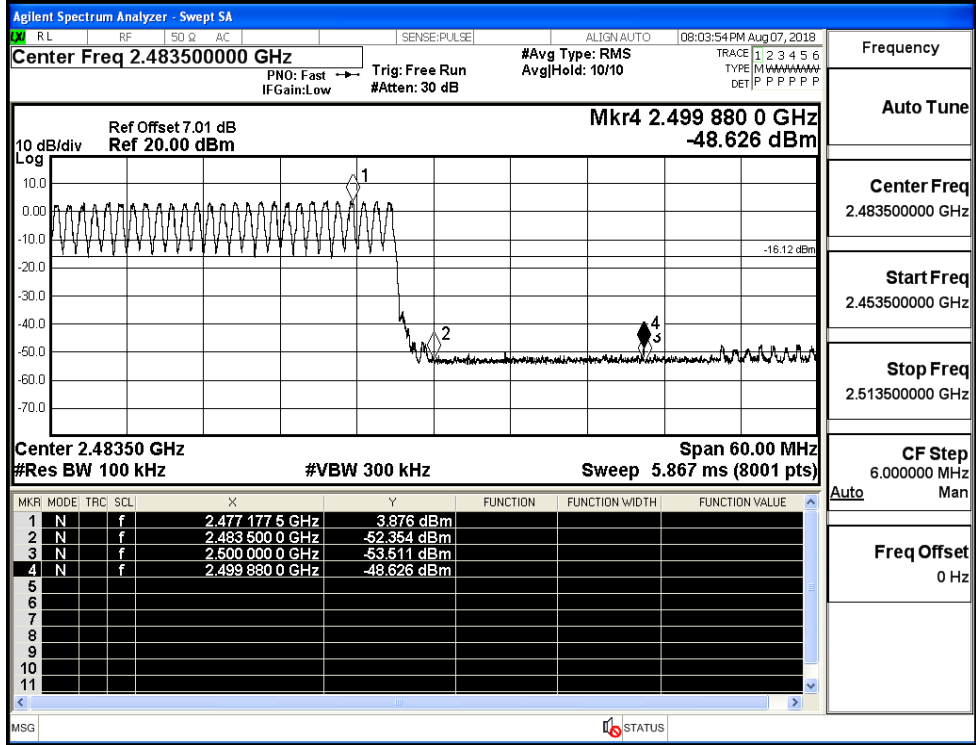
GFSK/LCH/Hop



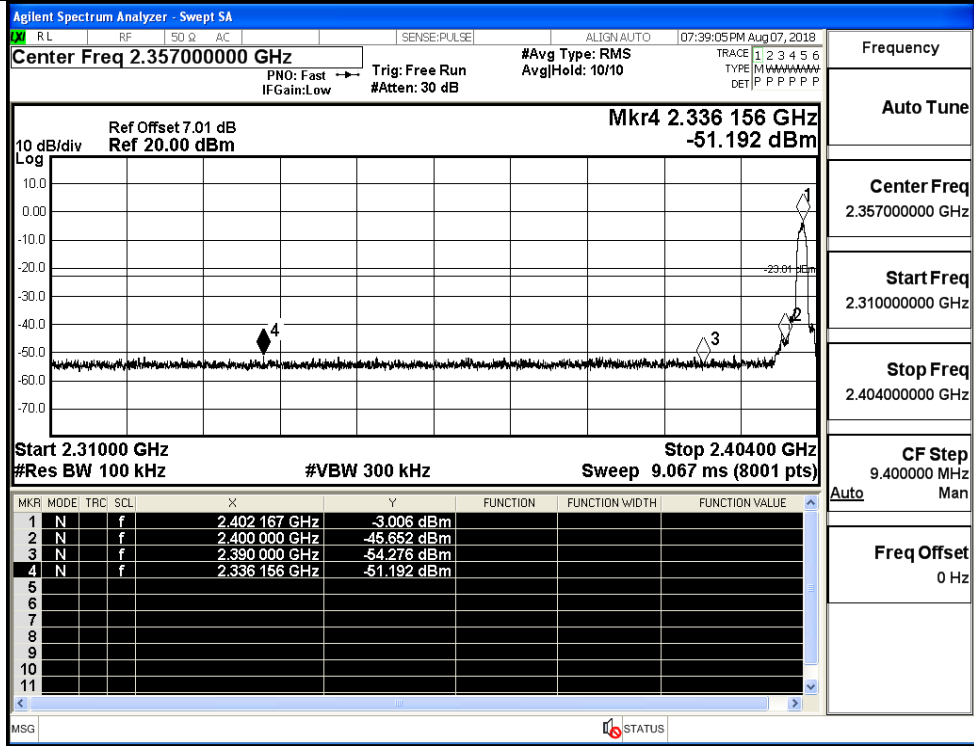
GFSK/HCH/No Hop



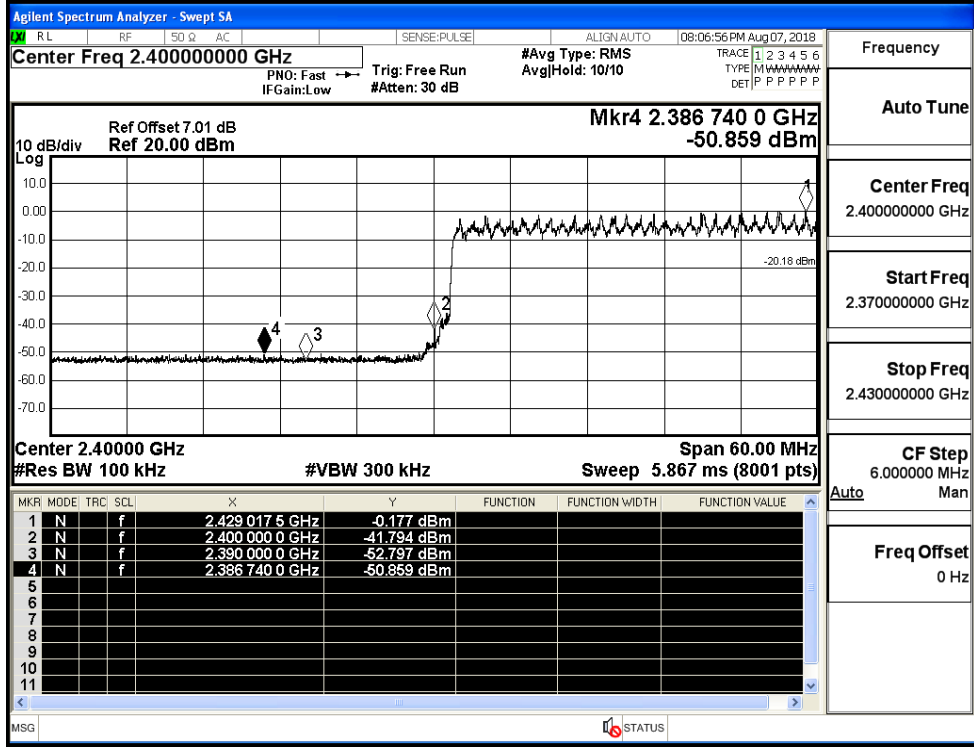
GFSK/HCH/Hop



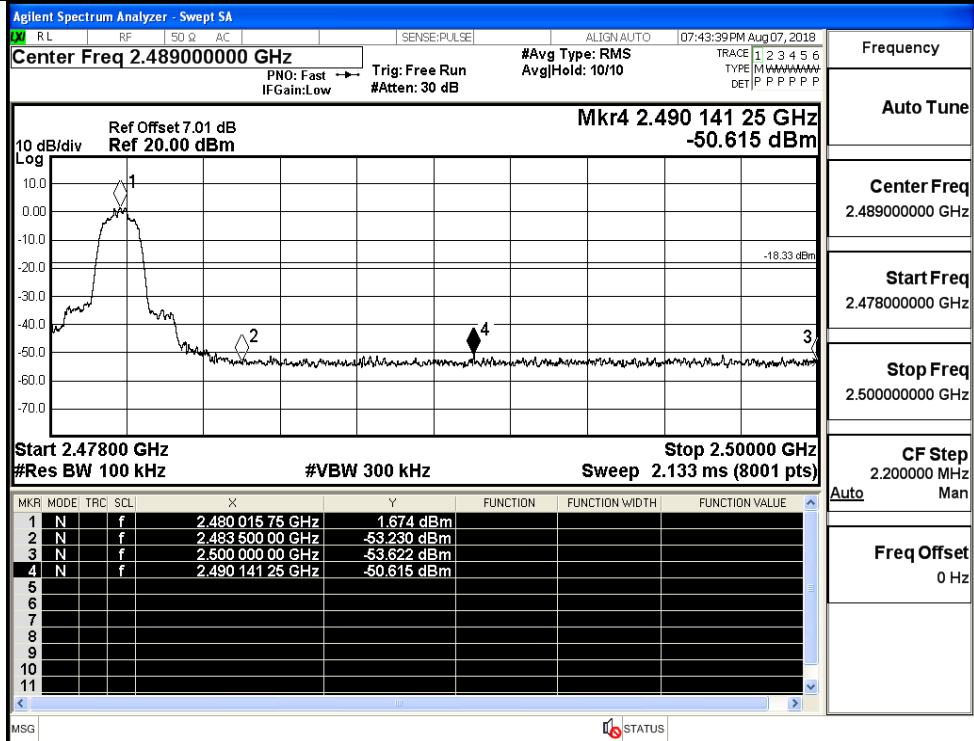
$\pi$ /4DQPSK/LCH/No  
Hop



$\pi$ /4DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

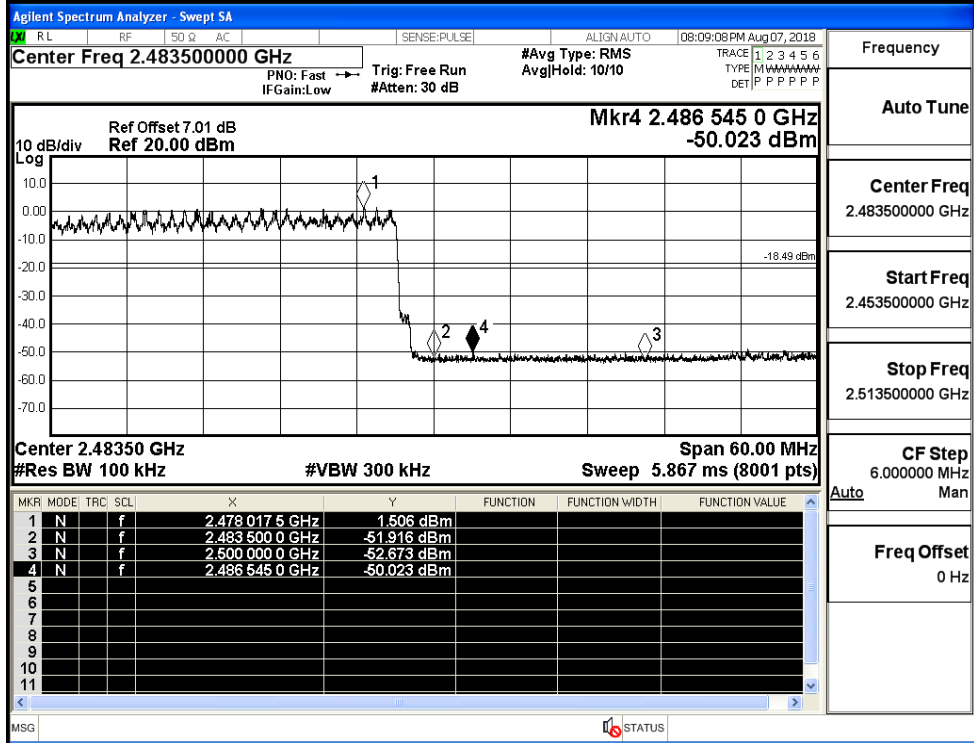
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz

Freq Offset  
0 Hz

$\pi$ /4DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq  
2.483500000 GHz

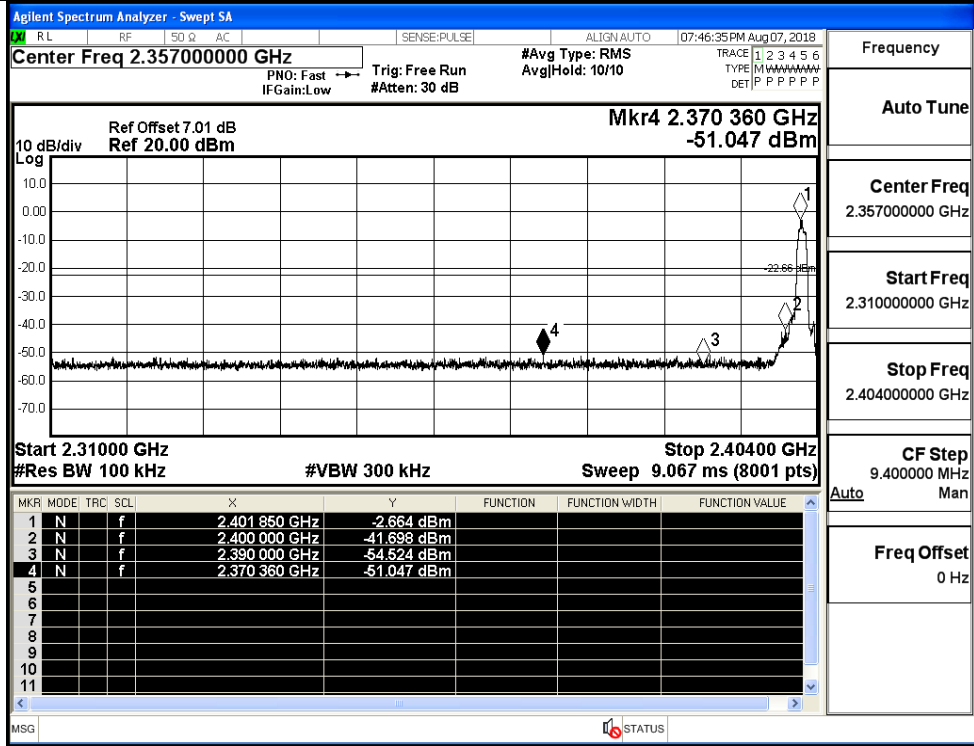
Start Freq  
2.453500000 GHz

Stop Freq  
2.513500000 GHz

CF Step  
6.000000 MHz

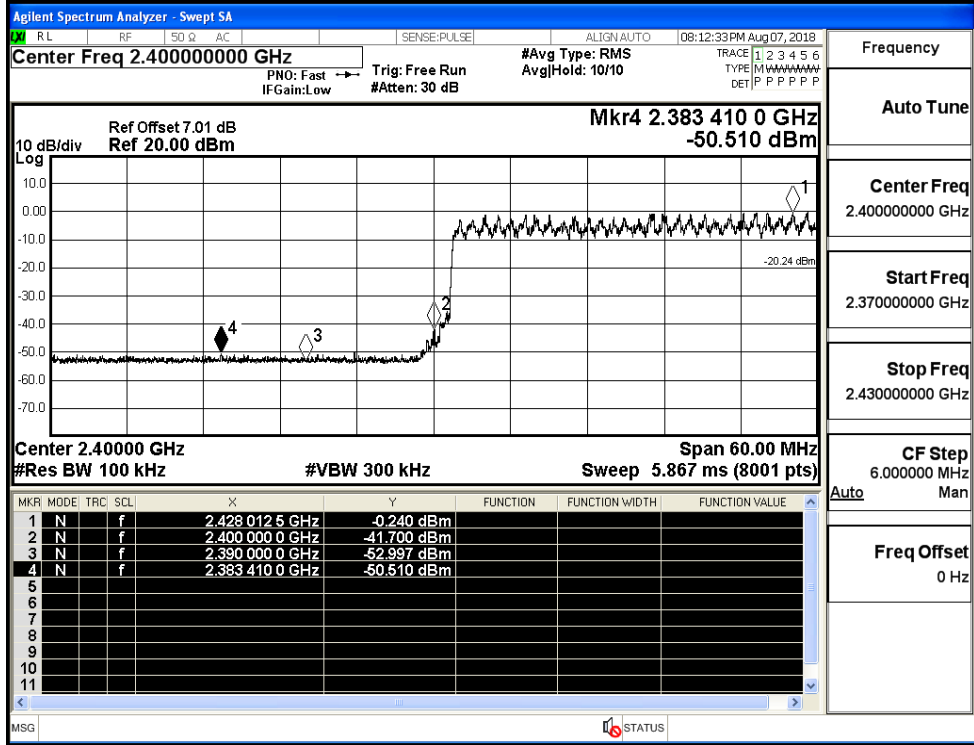
Freq Offset  
0 Hz

8DPSK/LCH/No Hop



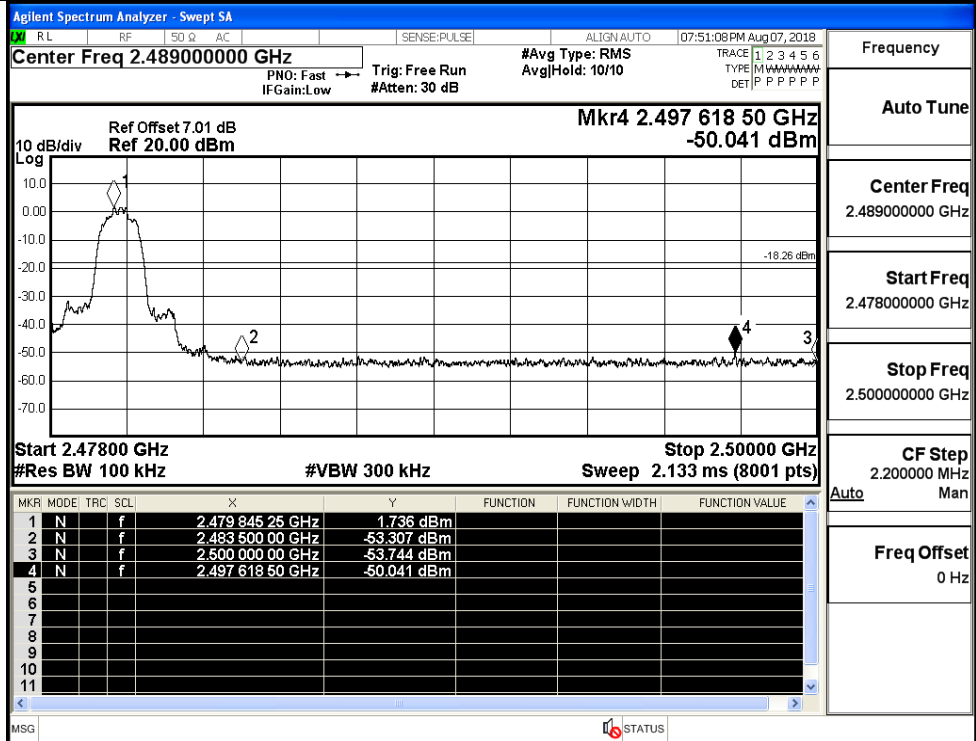
Frequency  
Auto Tune  
Center Freq  
2.357000000 GHz  
Start Freq  
2.310000000 GHz  
Stop Freq  
2.404000000 GHz  
CF Step  
9.400000 MHz  
Auto Man  
Freq Offset  
0 Hz

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  
Auto Man  
Freq Offset  
0 Hz

8DPSK/HCH/No Hop



Frequency

Auto Tune

Center Freq  
2.489000000 GHz

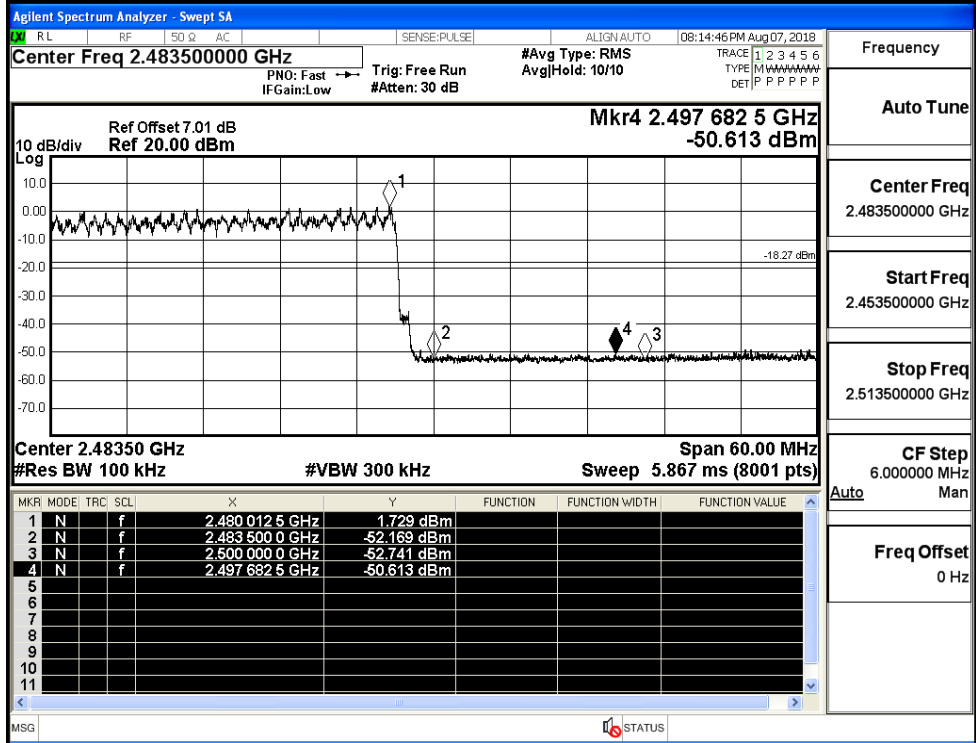
Start Freq  
2.478000000 GHz

Stop Freq  
2.500000000 GHz

CF Step  
2.200000 MHz

Freq Offset  
0 Hz

8DPSK/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

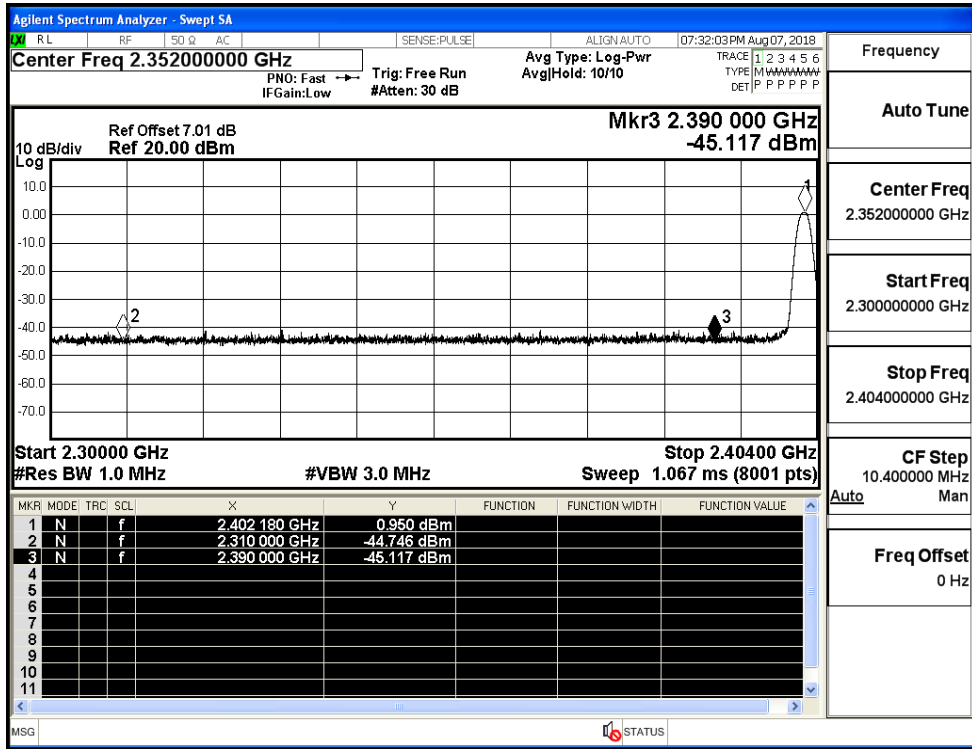
Freq Offset  
0 Hz



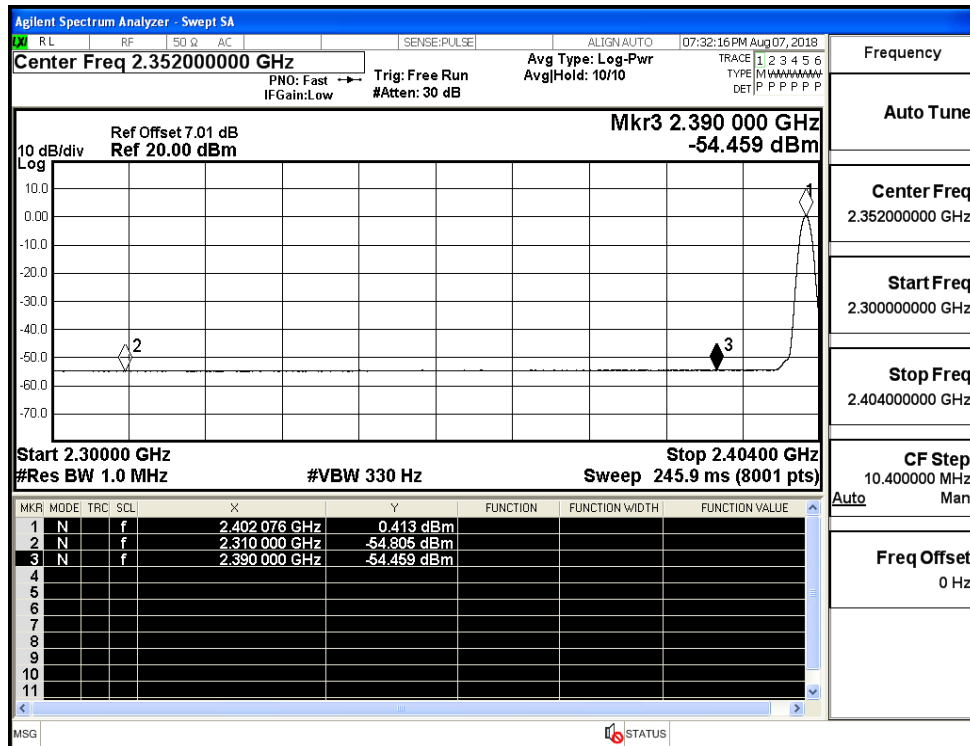
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.75	2.0	0	52.51	PEAK	74	PASS
	Off	2310.0	-54.81	2.0	0	42.45	AV	54	PASS
	Off	2390.0	-45.12	2.0	0	52.14	PEAK	74	PASS
	Off	2390.0	-54.46	2.0	0	42.80	AV	54	PASS
	Off	2483.5	-42.06	2.0	0	55.20	PEAK	74	PASS
	Off	2483.5	-51.96	2.0	0	45.29	AV	54	PASS
	Off	2500.0	-43.89	2.0	0	53.36	PEAK	74	PASS
	Off	2500.0	-54.06	2.0	0	43.20	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.16	2.0	0	53.10	PEAK	74	PASS
	Off	2310.0	-54.80	2.0	0	42.46	AV	54	PASS
	Off	2390.0	-44.22	2.0	0	53.04	PEAK	74	PASS
	Off	2390.0	-54.40	2.0	0	42.86	AV	54	PASS
	Off	2483.5	-44.78	2.0	0	52.48	PEAK	74	PASS
	Off	2483.5	-53.68	2.0	0	43.58	AV	54	PASS
	Off	2500.0	-44.03	2.0	0	53.23	PEAK	74	PASS
	Off	2500.0	-54.08	2.0	0	43.18	AV	54	PASS
8DPSK	Off	2310.0	-44.80	2.0	0	52.46	PEAK	74	PASS
	Off	2310.0	-54.72	2.0	0	42.54	AV	54	PASS
	Off	2390.0	-44.39	2.0	0	52.87	PEAK	74	PASS
	Off	2390.0	-54.35	2.0	0	42.91	AV	54	PASS
	Off	2483.5	-44.33	2.0	0	52.93	PEAK	74	PASS
	Off	2483.5	-53.60	2.0	0	43.66	AV	54	PASS
	Off	2500.0	-43.73	2.0	0	53.52	PEAK	74	PASS
	Off	2500.0	-53.98	2.0	0	43.28	AV	54	PASS

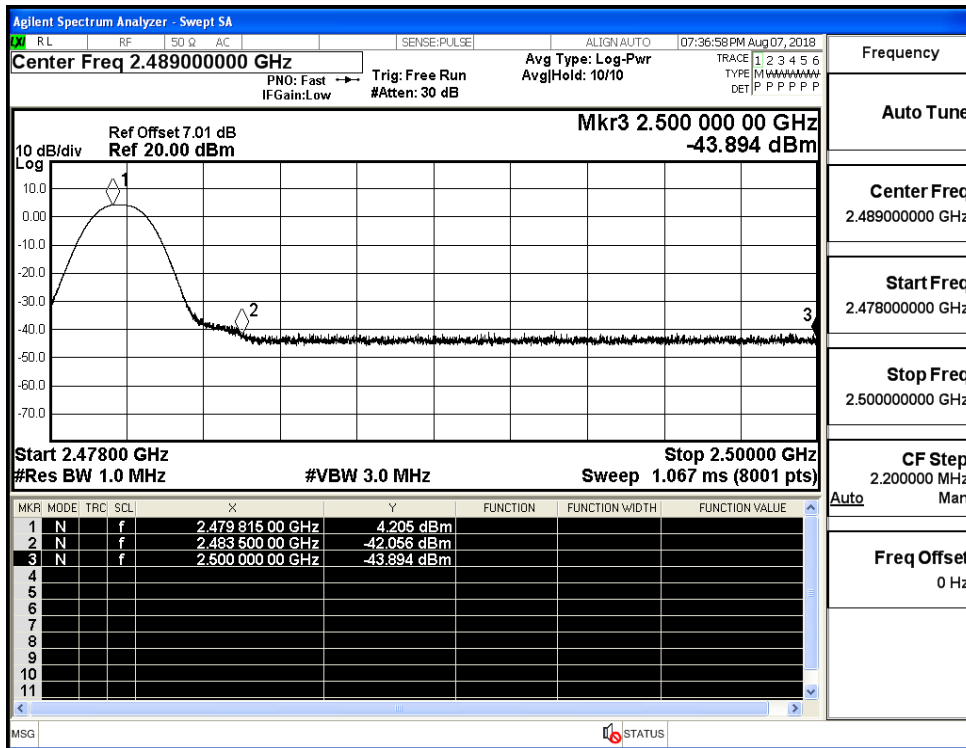
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



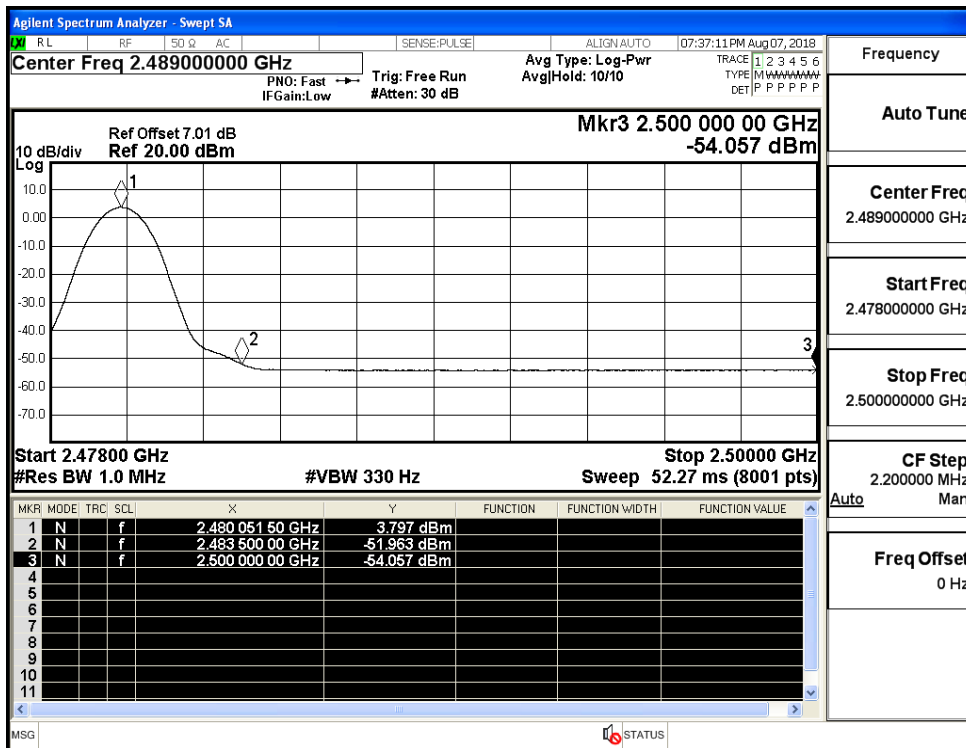
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



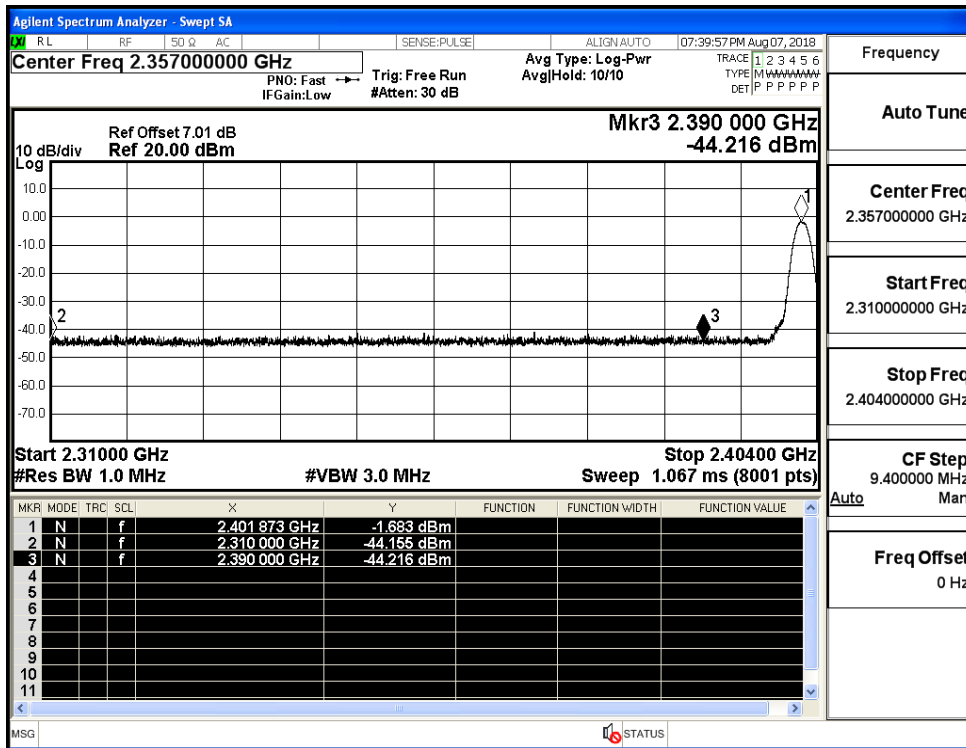
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



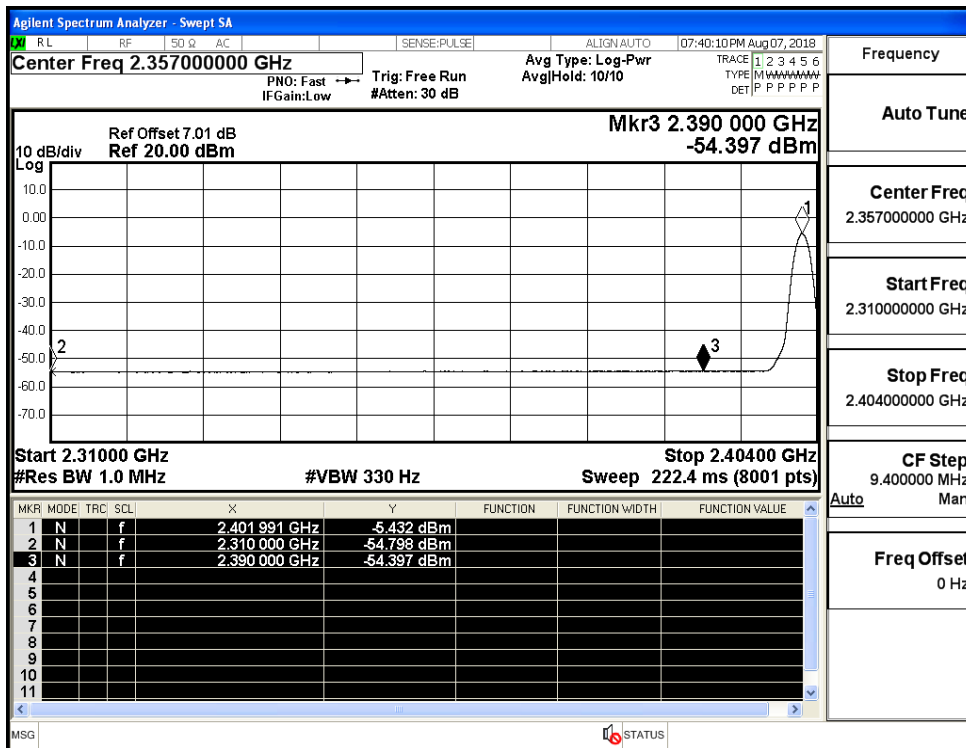
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



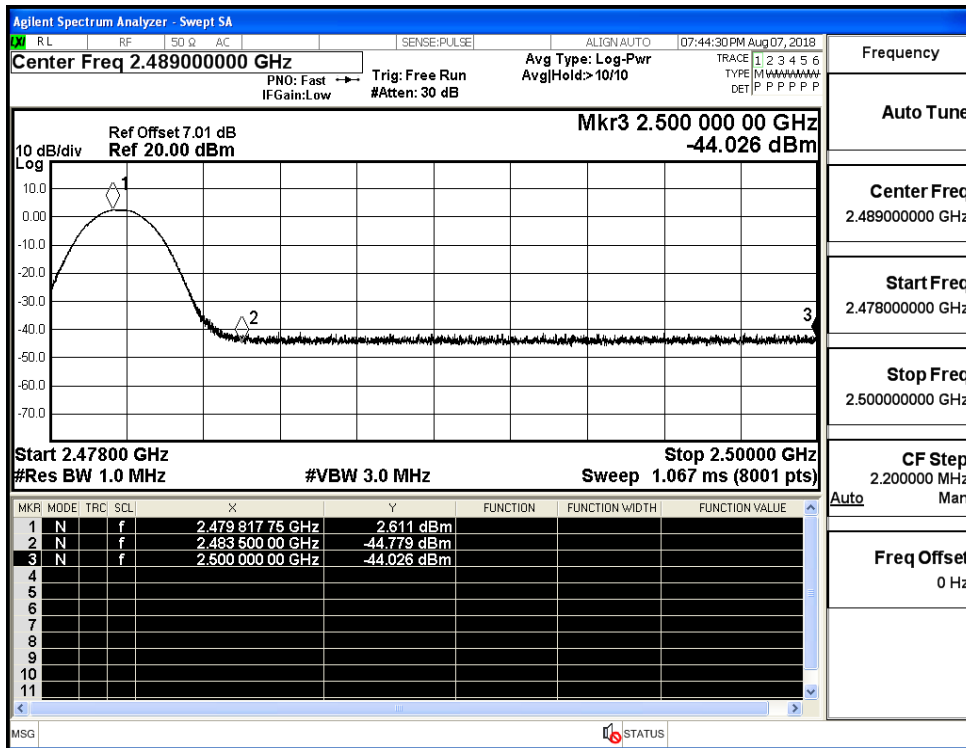
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



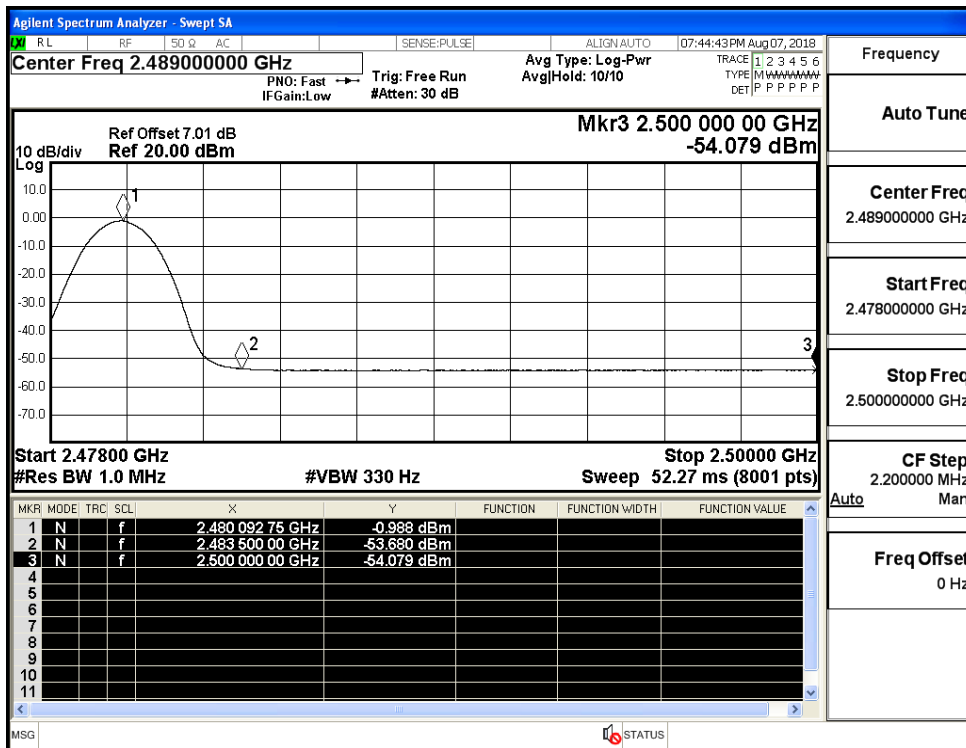
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



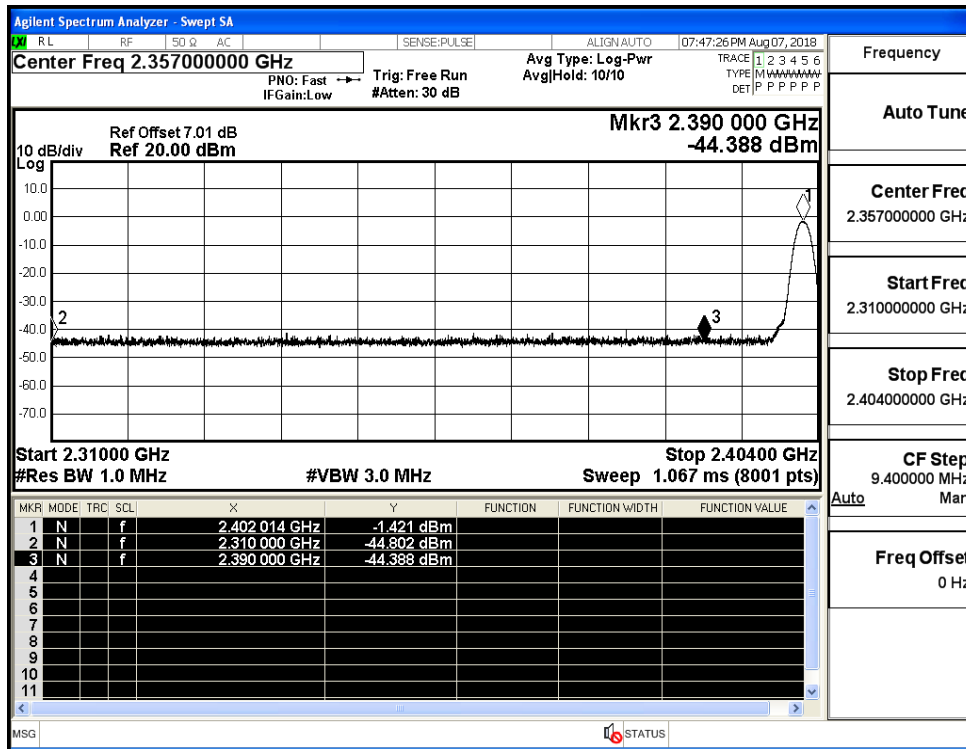
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_PEAK (High Channel)



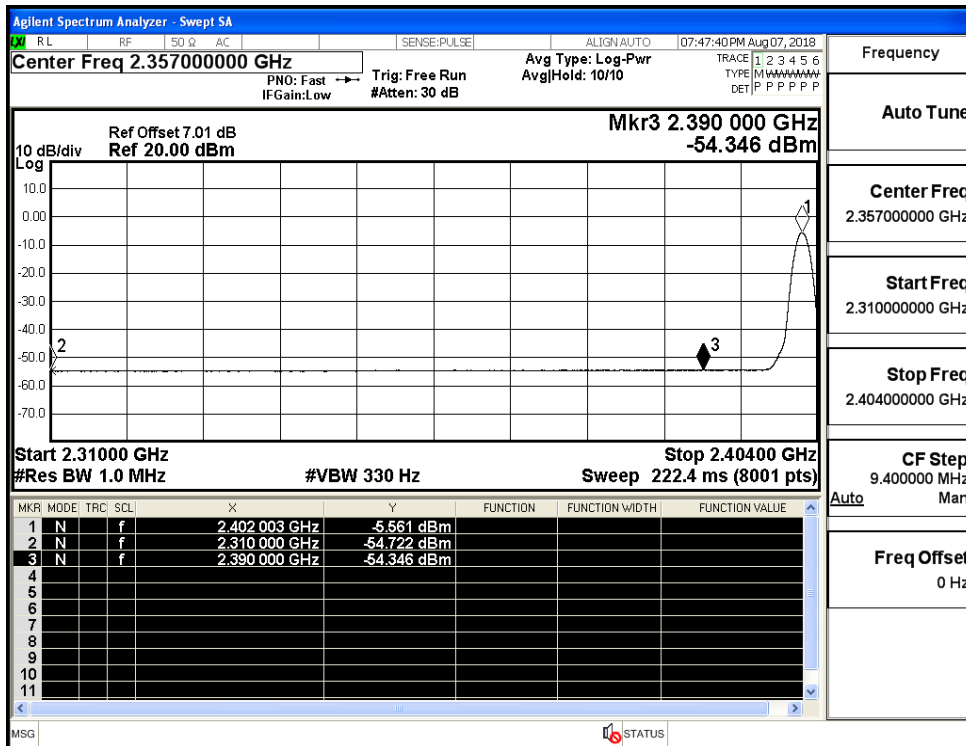
Restrict-band band-edge measurements\_Hopping Off\_π/4-DQPSK\_Average (High Channel)



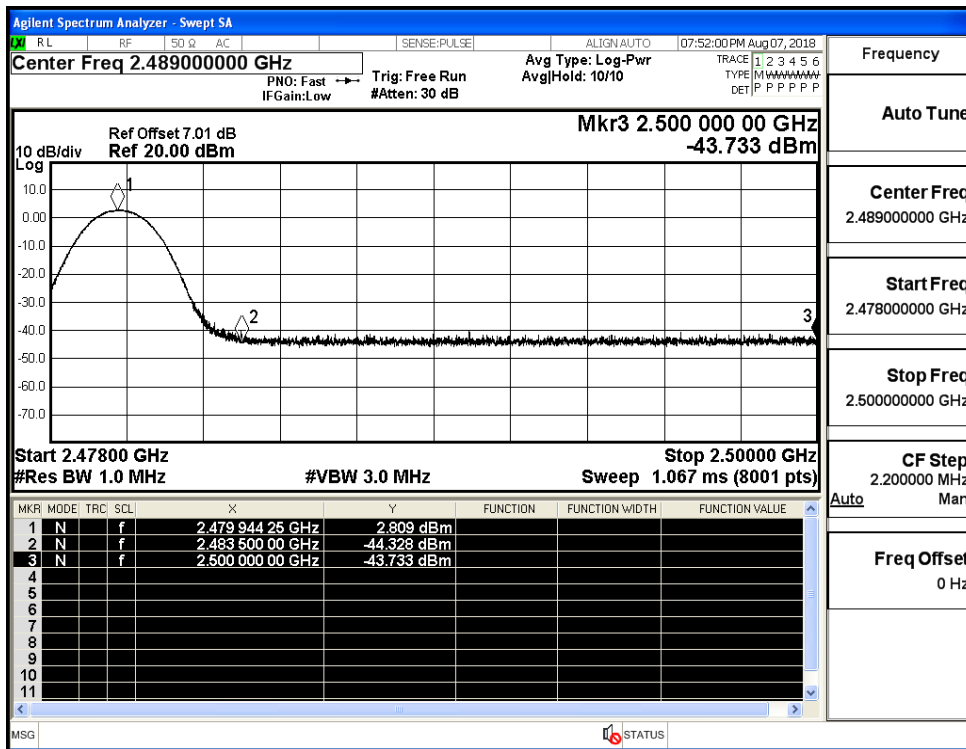
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

