

## Appendix A

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

Product Name: Survey Camera

Trade Mark: MAPIR

Test Model: Survey3

#### Environmental Conditions

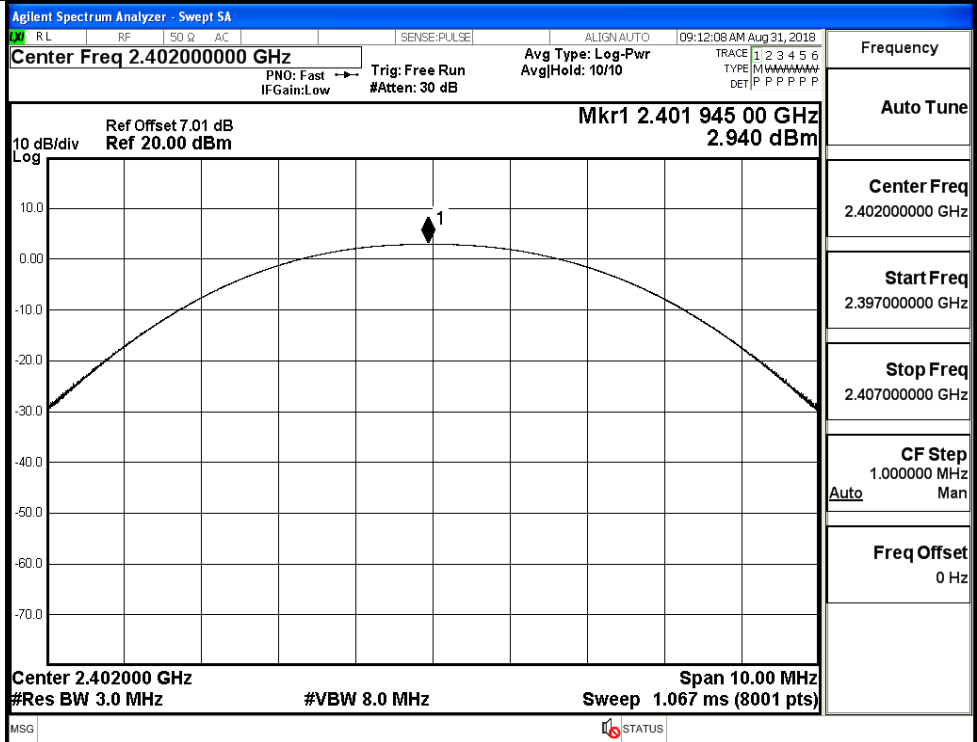
Temperature:	23.6° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	
Supervised by:	Jayden.Zhuo

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

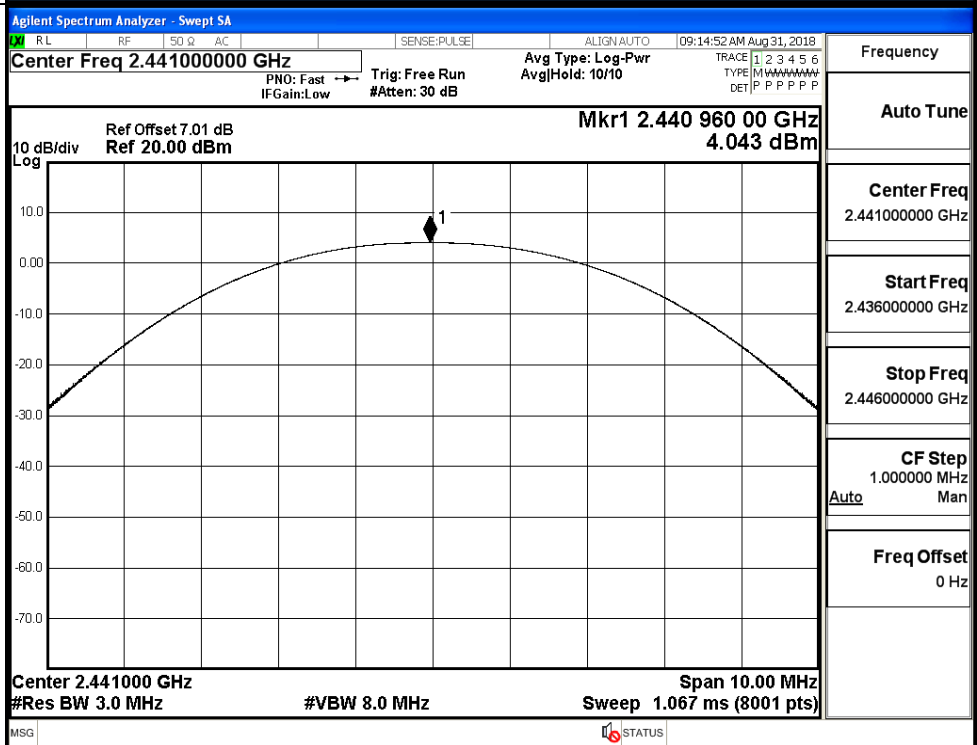
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.940	21	PASS
	MCH	4.043	21	PASS
	HCH	4.264	21	PASS
$\pi/4$ DQPSK	LCH	2.784	21	PASS
	MCH	3.918	21	PASS
	HCH	4.171	21	PASS
8DPSK	LCH	2.896	21	PASS
	MCH	4.025	21	PASS
	HCH	4.258	21	PASS

Test Graphs

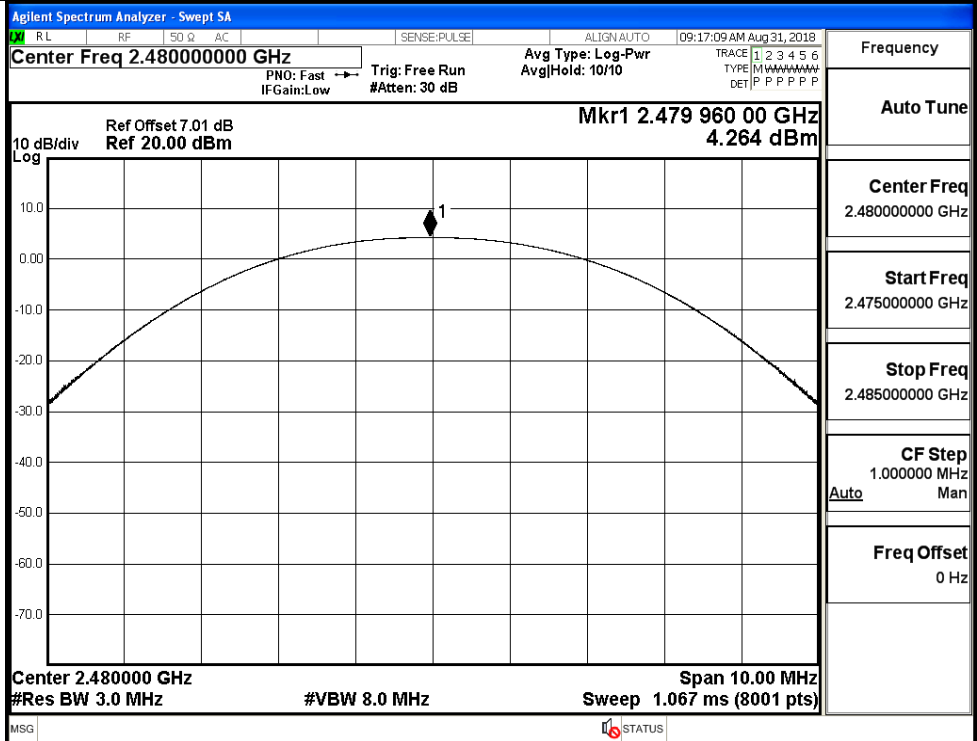
GFSK/LCH



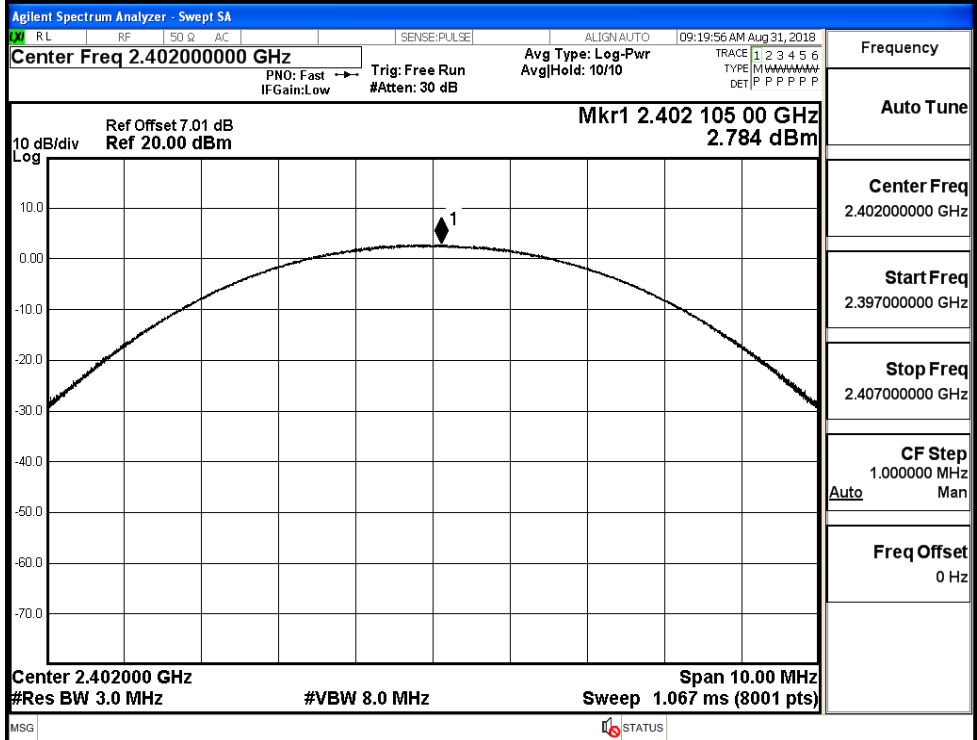
GFSK/MCH



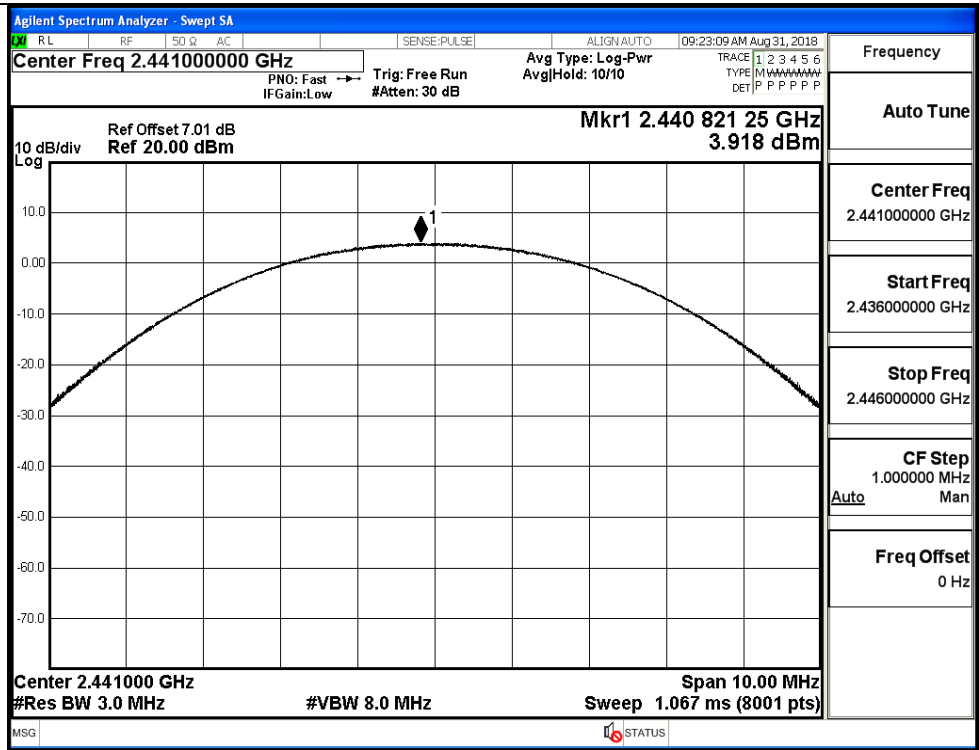
GFSK/HCH



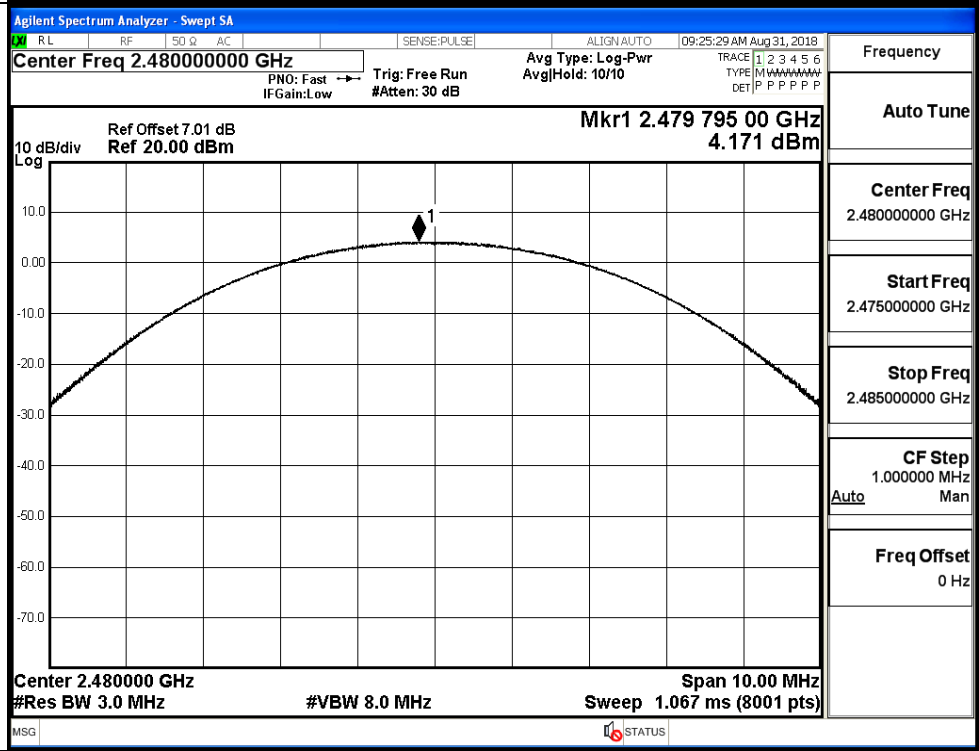
$\pi$ /4DQPSK/LCH



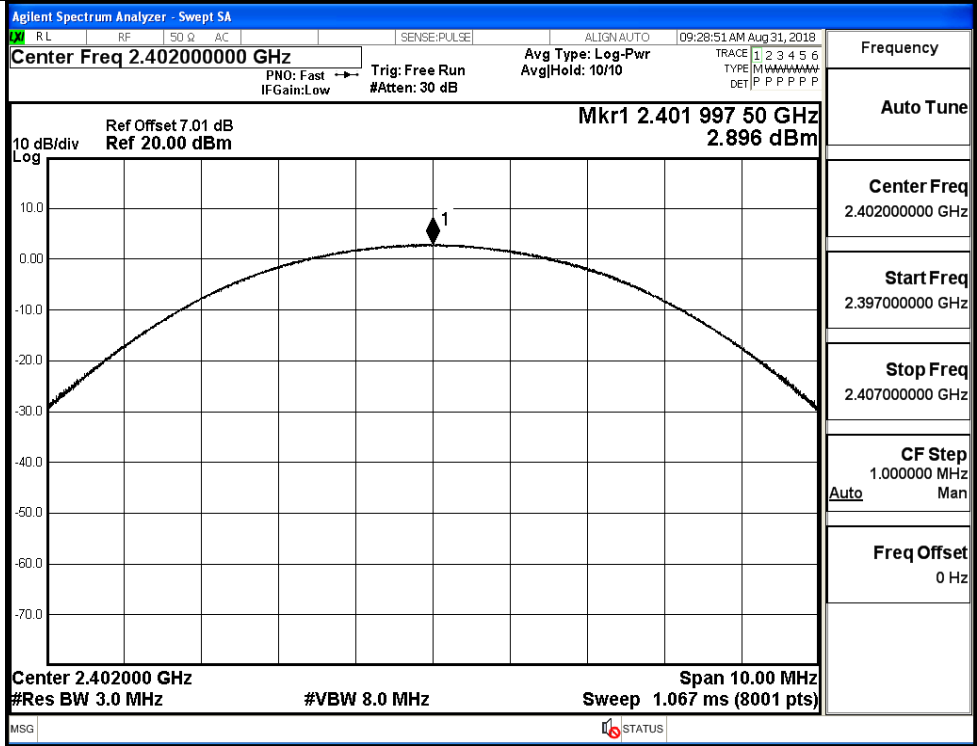
$\pi$ /4DQPSK/MCH



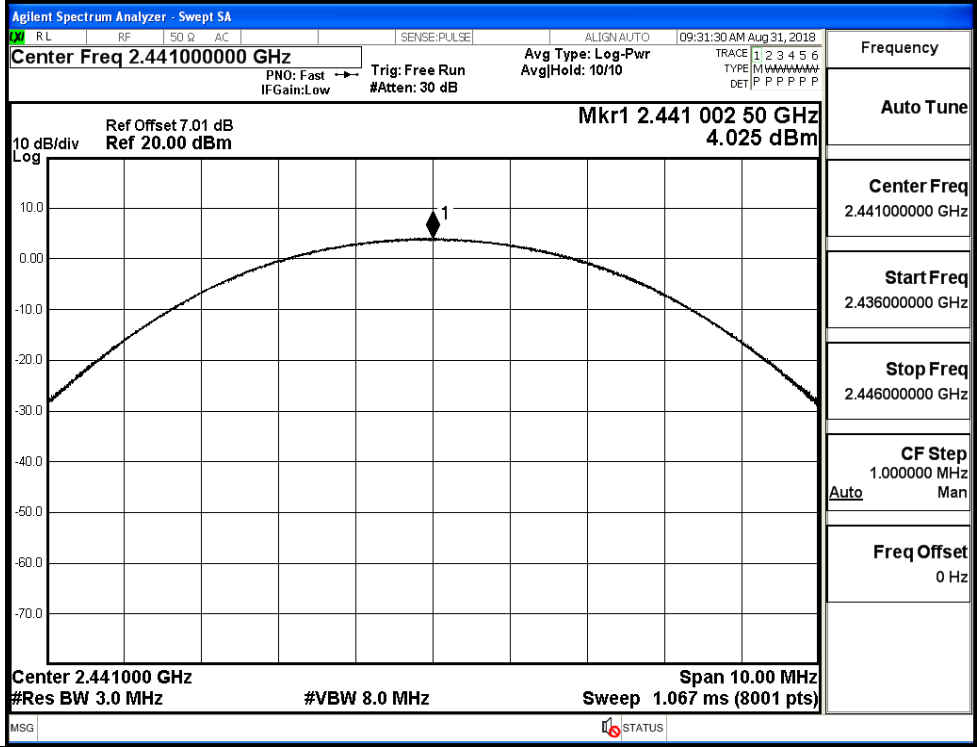
$\pi$ /4DQPSK/HCH



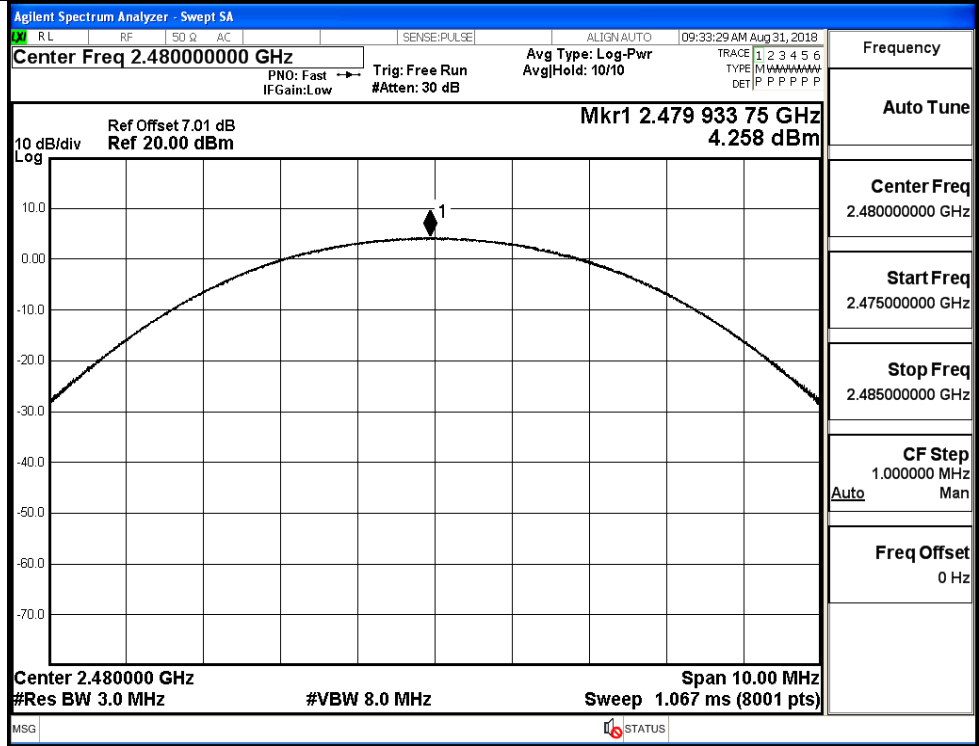
8DPSK/LCH



8DPSK/MCH

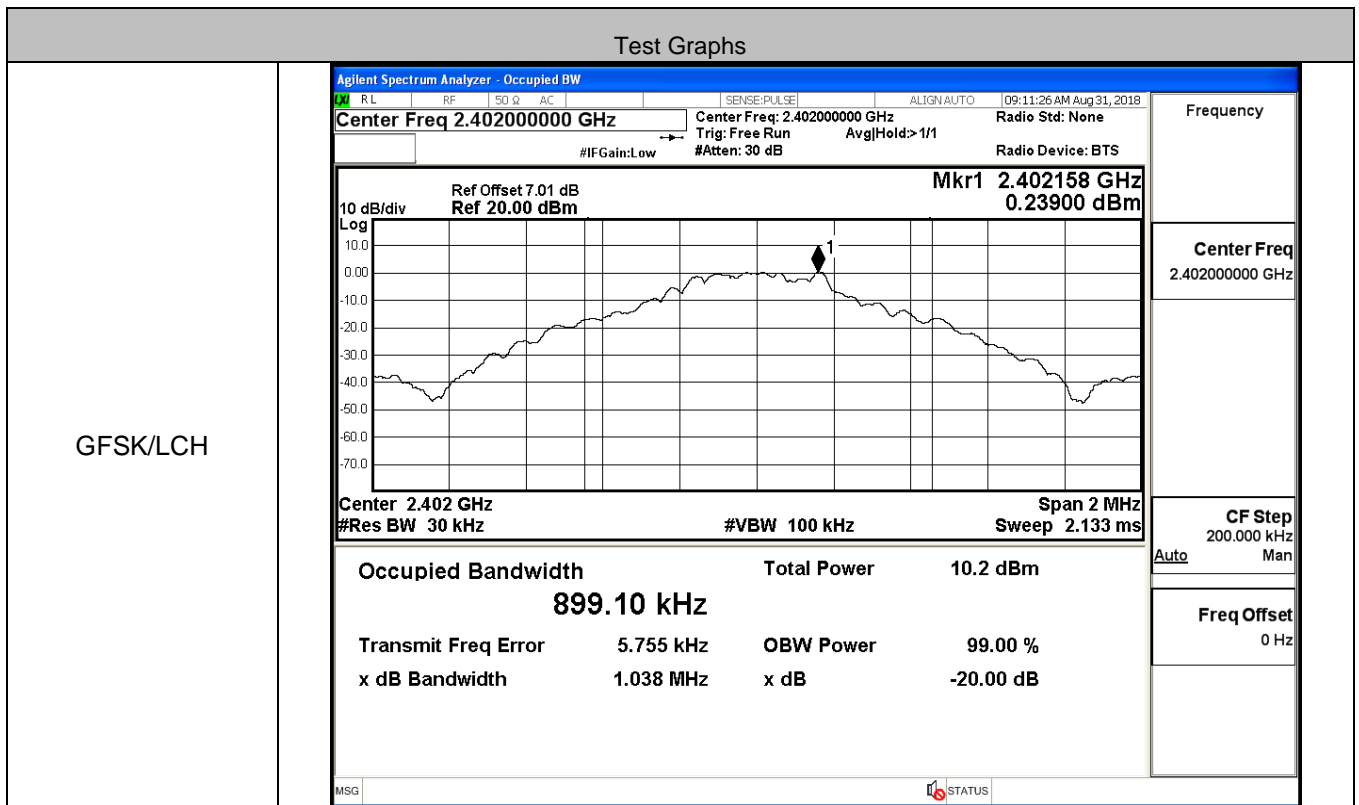


8DPSK/HCH

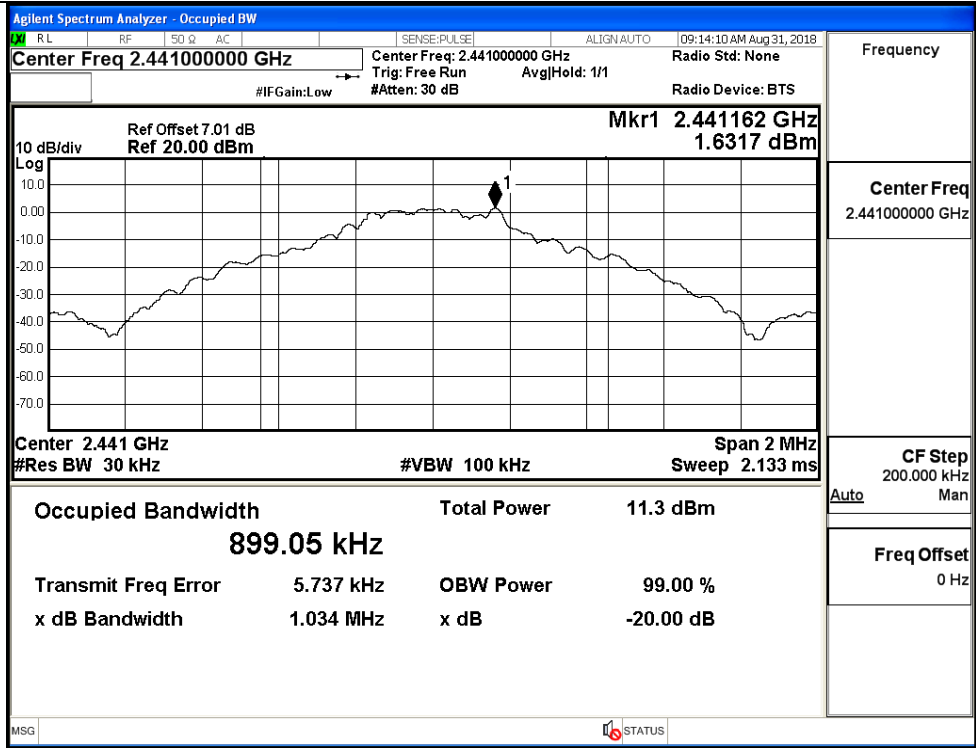


**A.2 99% and 20dB Bandwidth**

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89910	1.038	Not Specified	PASS
	MCH	0.89905	1.034	Not Specified	PASS
	HCH	0.89705	1.034	Not Specified	PASS
π/4DQPSK	LCH	1.1699	1.286	Not Specified	PASS
	MCH	1.1650	1.286	Not Specified	PASS
	HCH	1.1659	1.288	Not Specified	PASS
8DPSK	LCH	1.1663	1.285	Not Specified	PASS
	MCH	1.1660	1.283	Not Specified	PASS
	HCH	1.1679	1.285	Not Specified	PASS

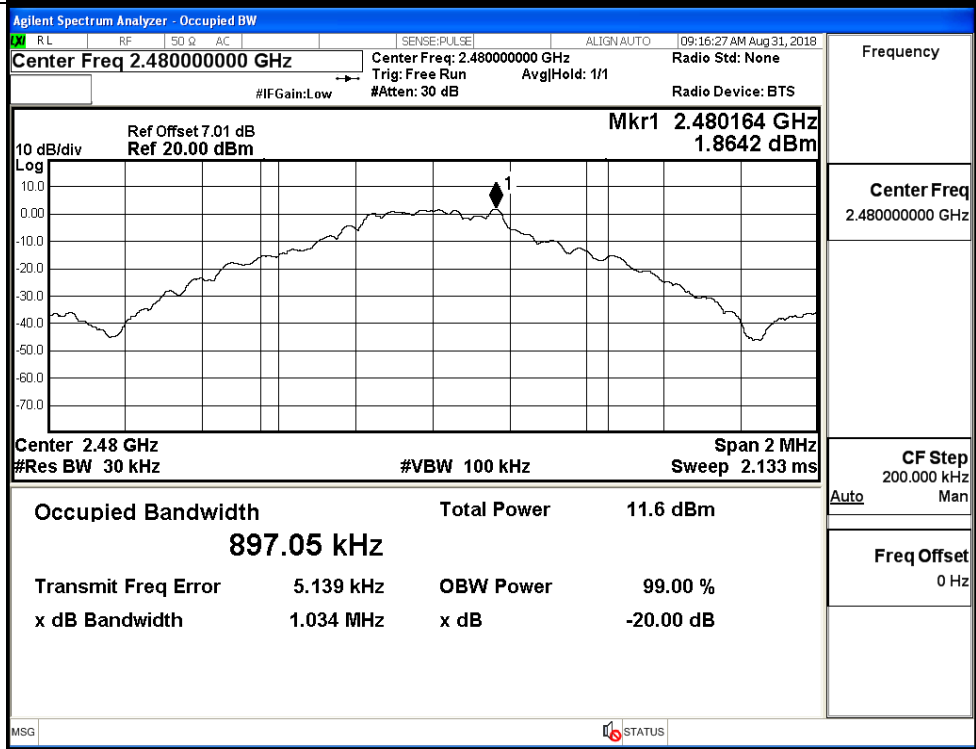


GFSK/MCH



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

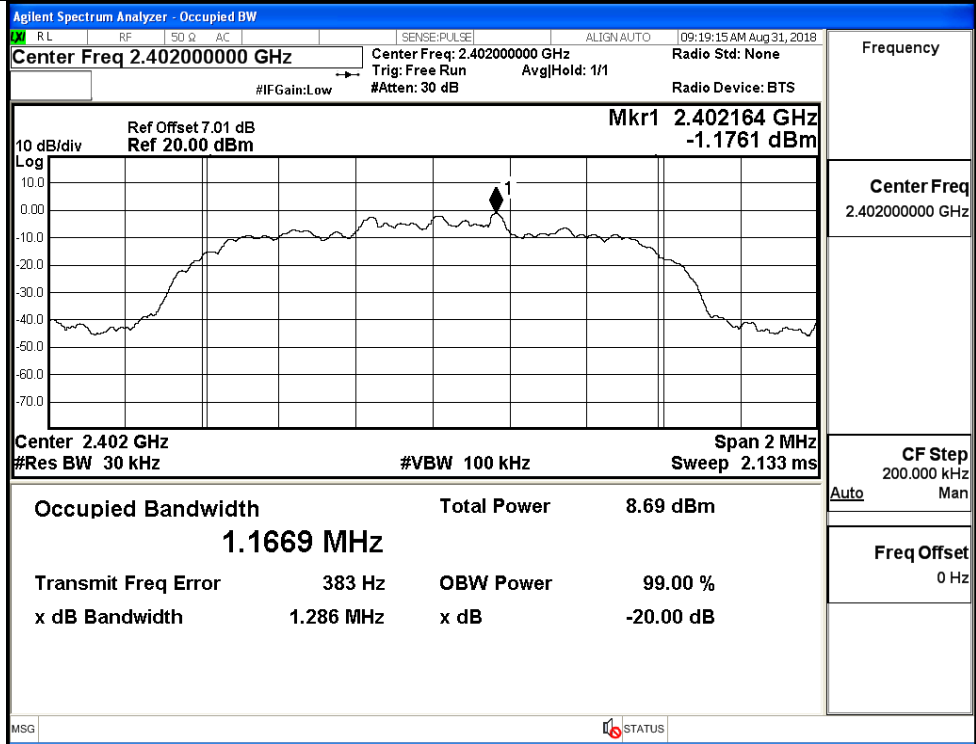
GFSK/HCH



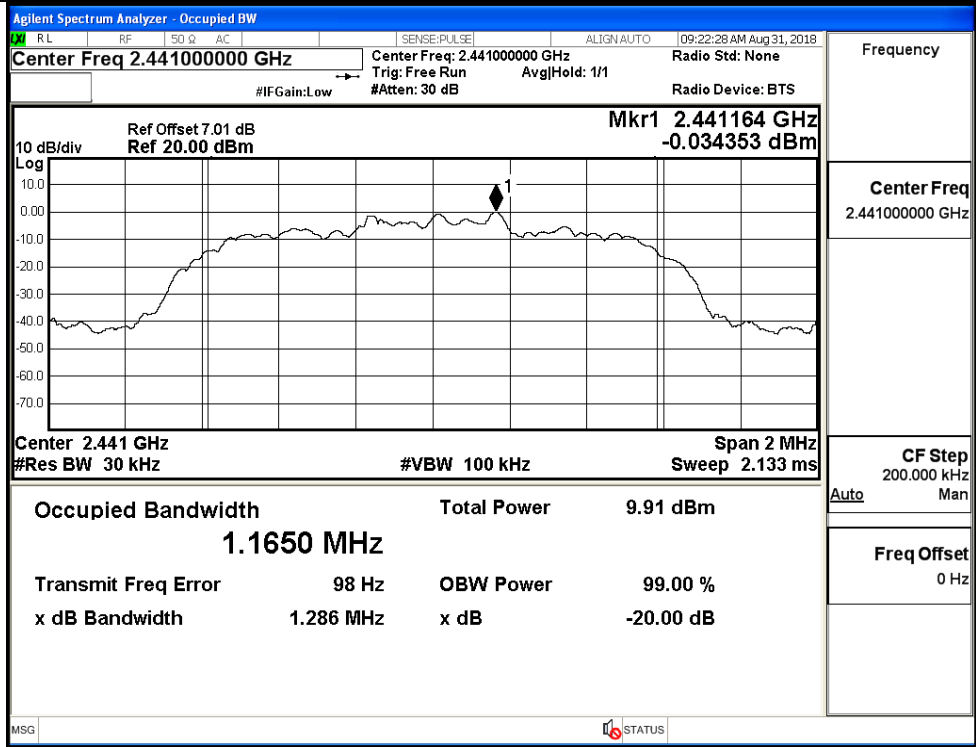
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz



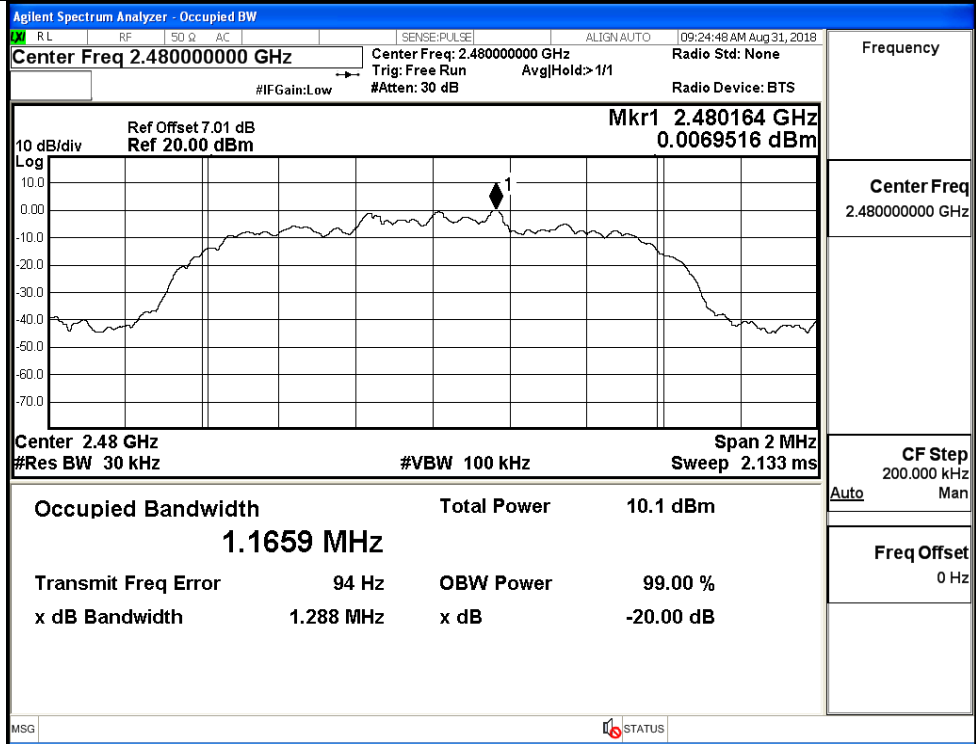
$\pi/4$ DQPSK/LCH



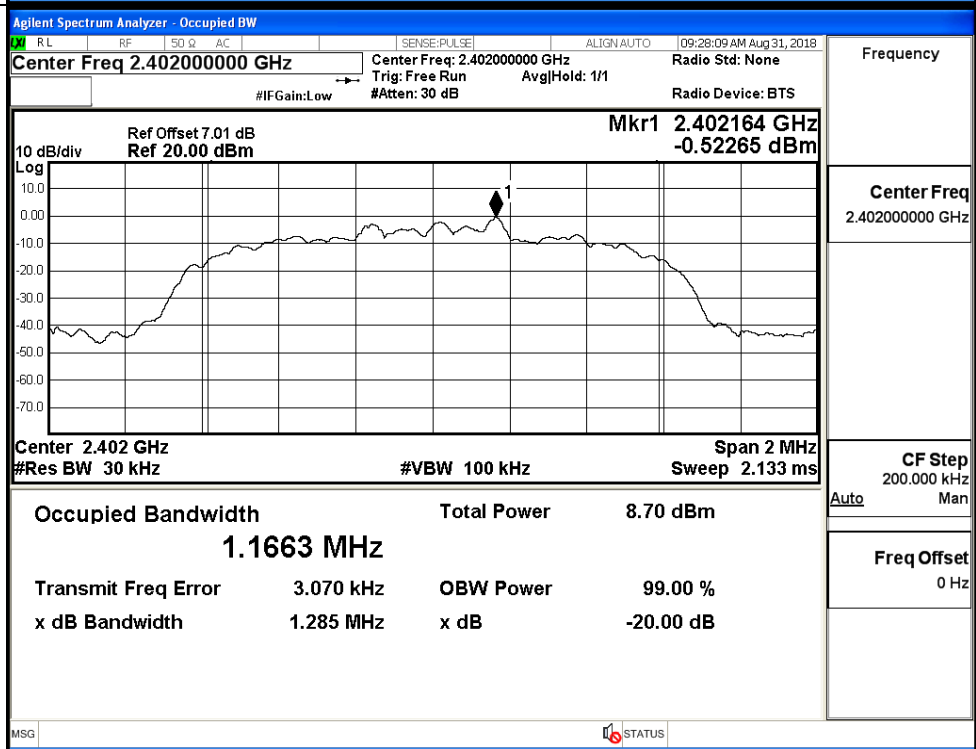
$\pi/4$ DQPSK/MCH



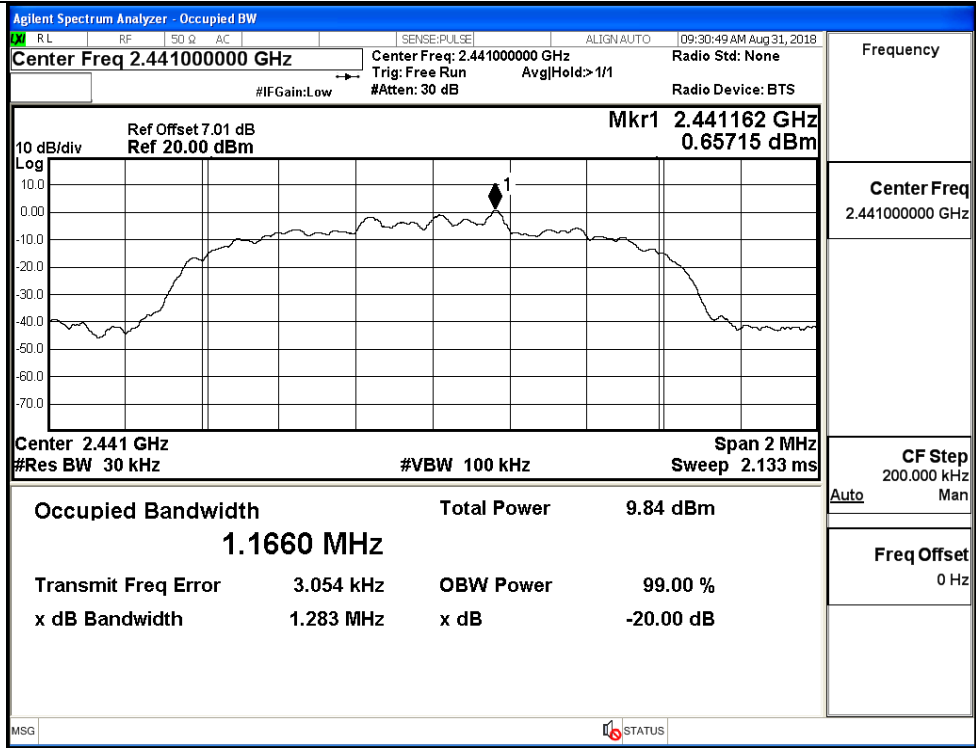
$\pi/4$ DQPSK/HCH



8DPSK/LCH

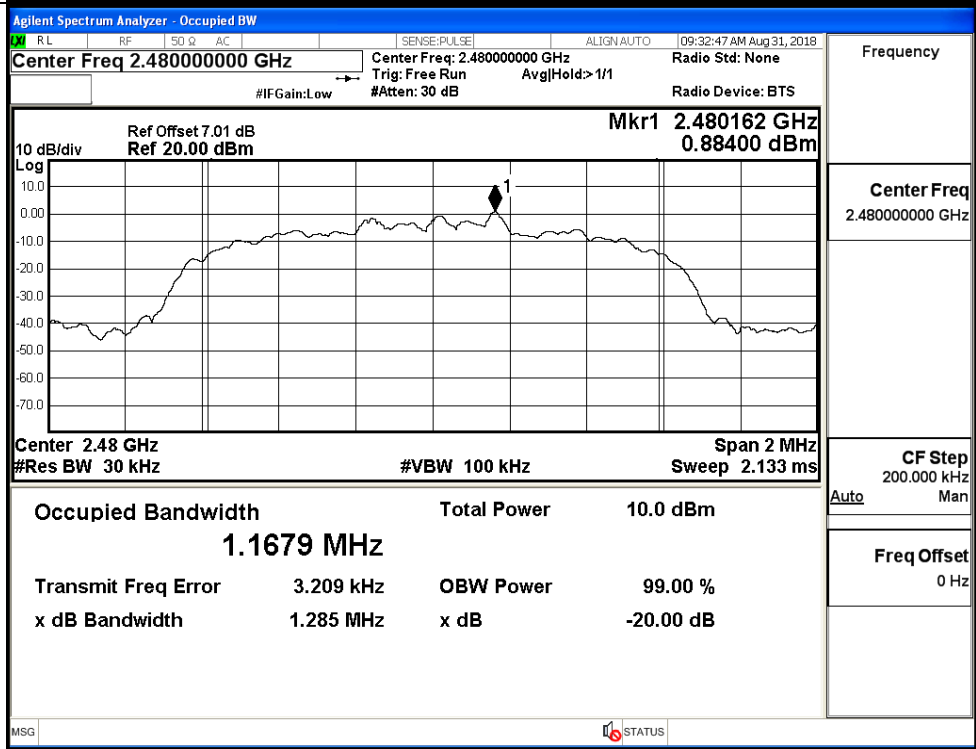


8DPSK/MCH



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

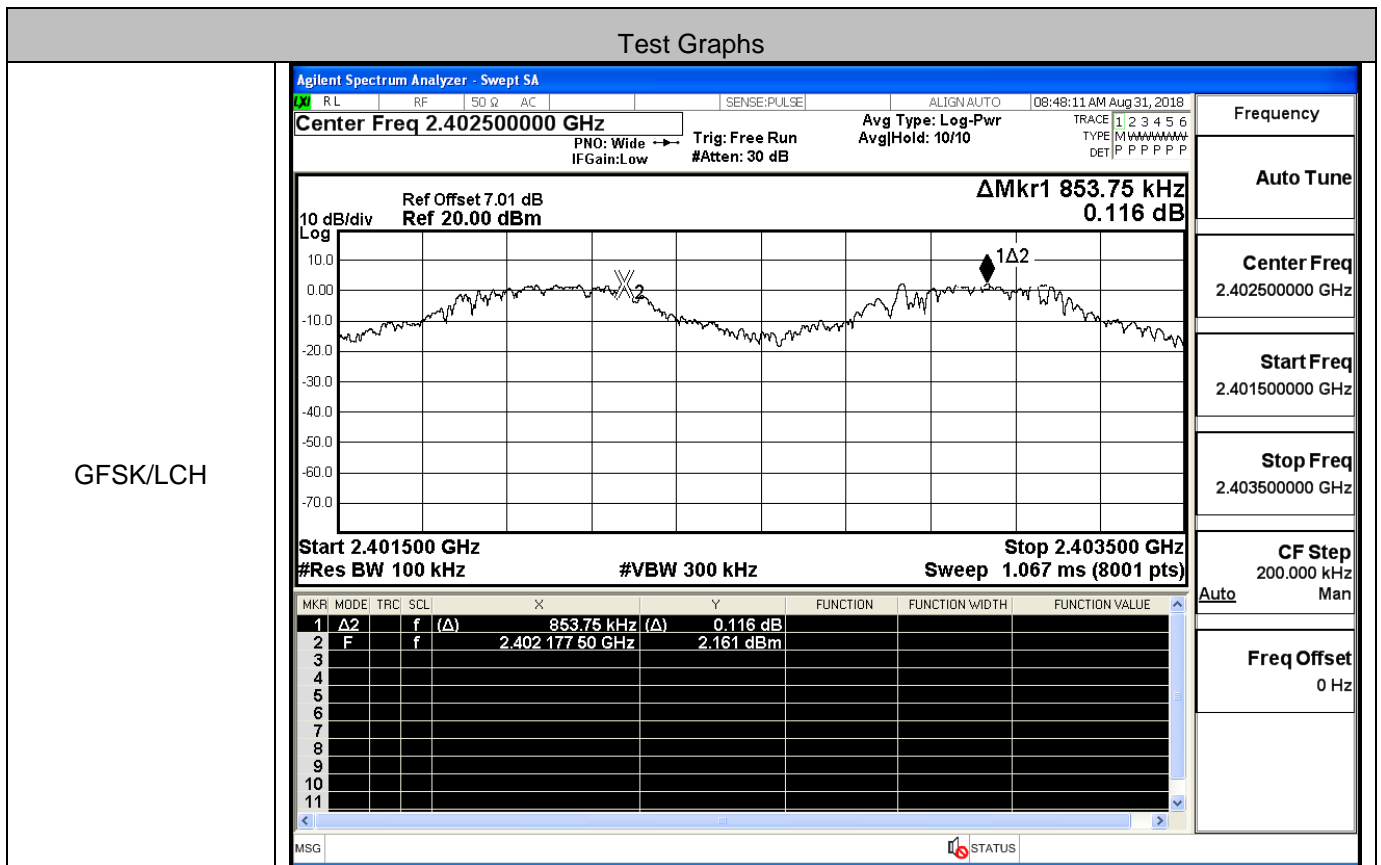
8DPSK/HCH



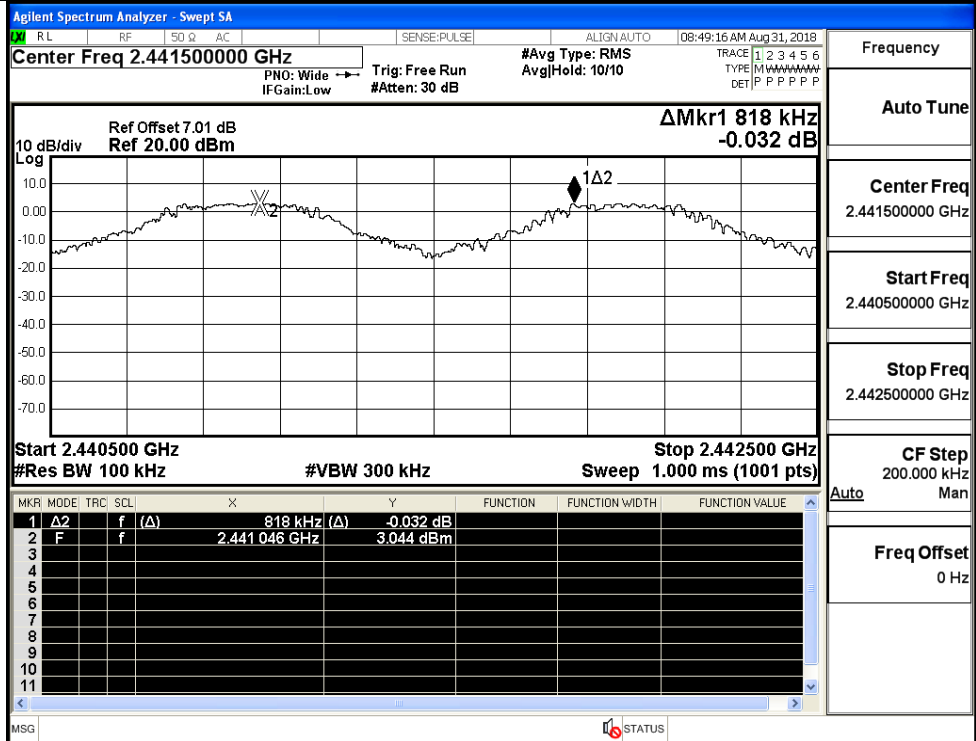
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

### A.3 Carrier Frequency Separation

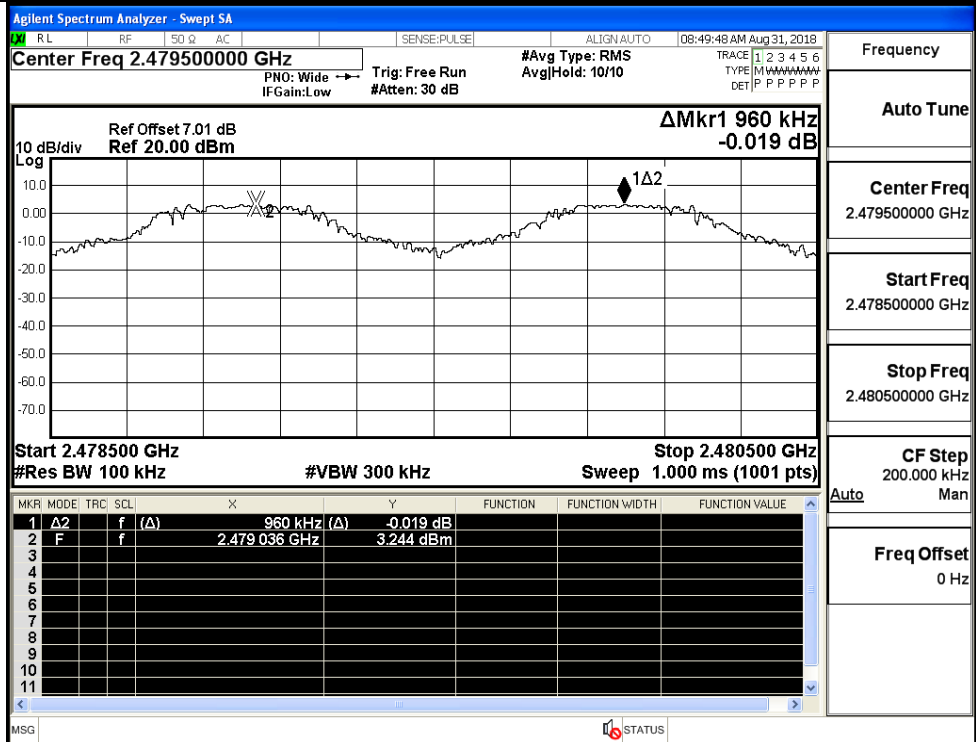
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.854	0.692	PASS
	MCH	0.818	0.689	PASS
	HCH	0.960	0.689	PASS
π/4DQPSK	LCH	1.020	0.857	PASS
	MCH	1.018	0.857	PASS
	HCH	1.122	0.859	PASS
8DPSK	LCH	1.002	0.857	PASS
	MCH	0.828	0.855	PASS
	HCH	0.700	0.857	PASS



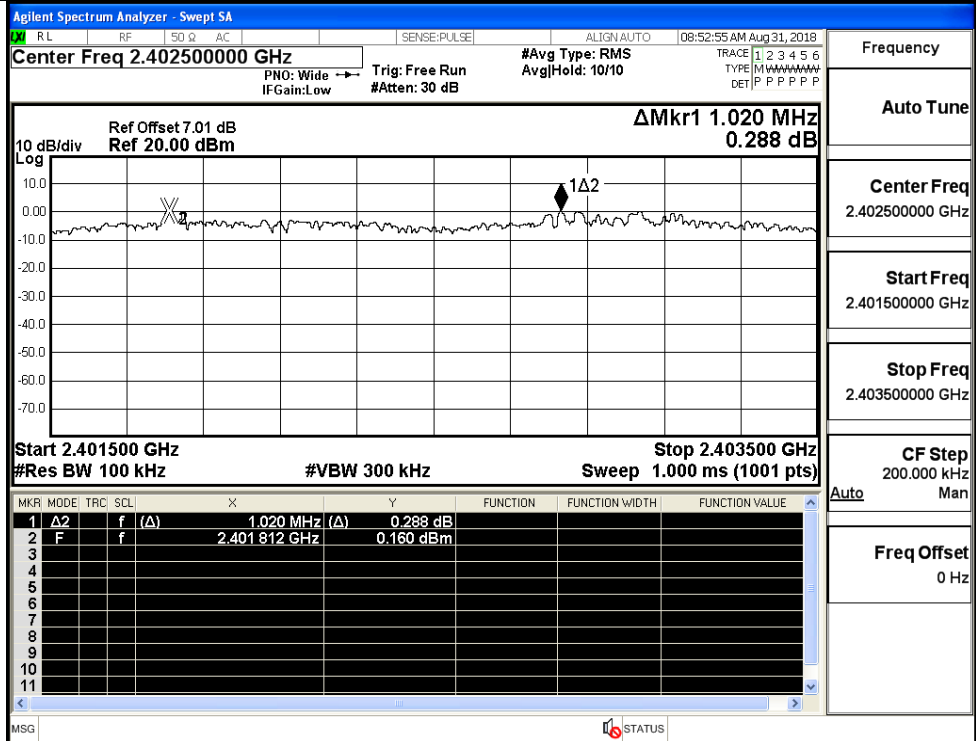
GFSK/MCH



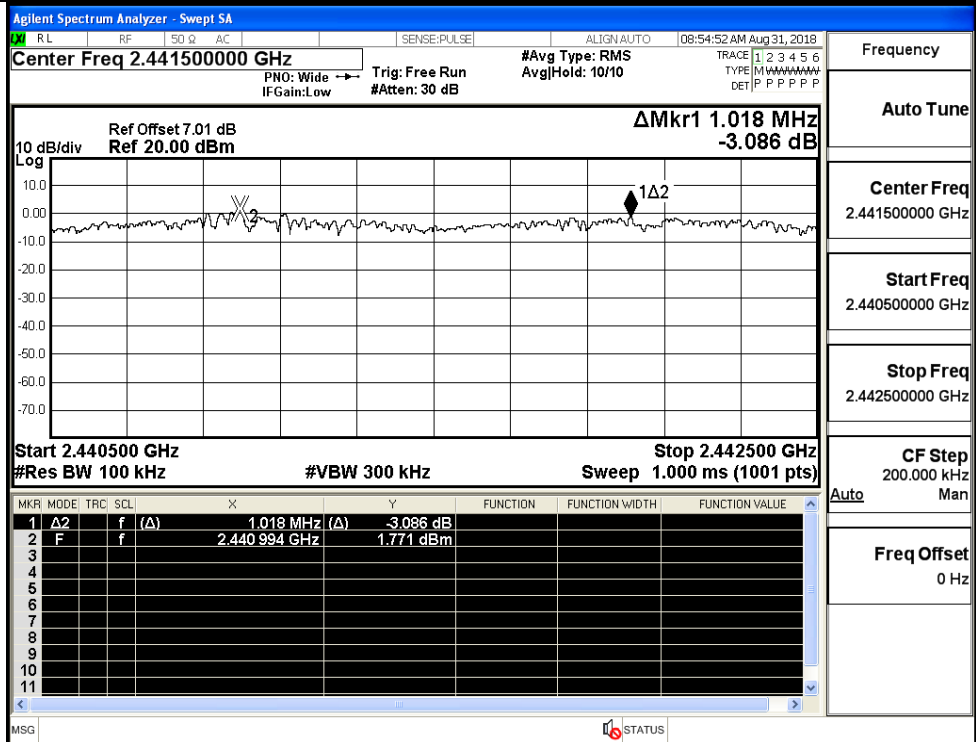
GFSK/HCH



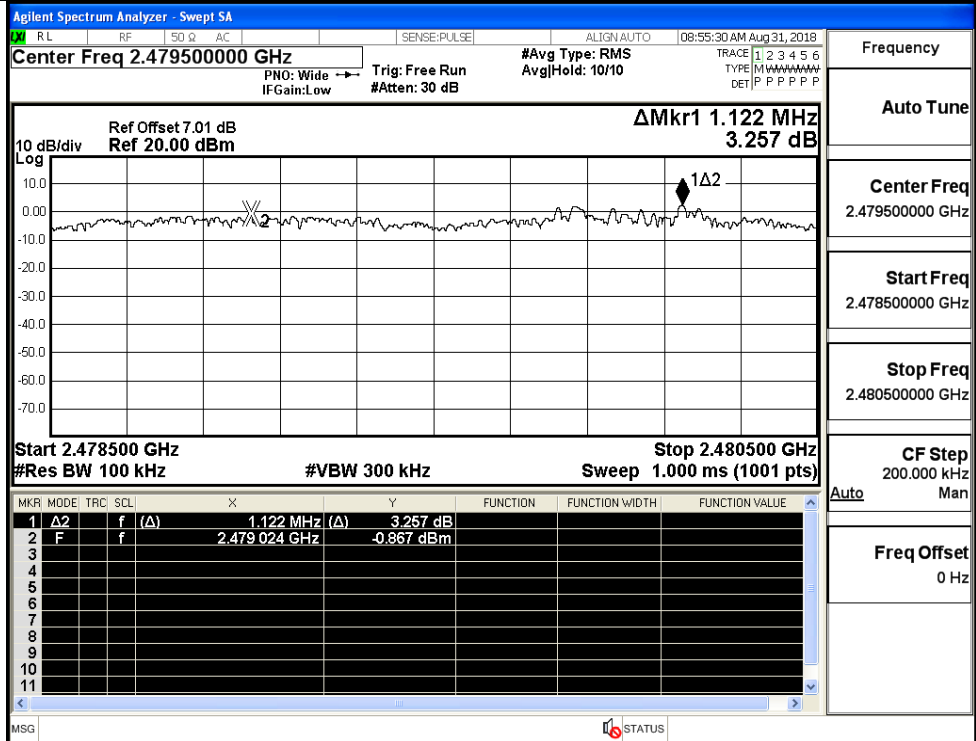
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

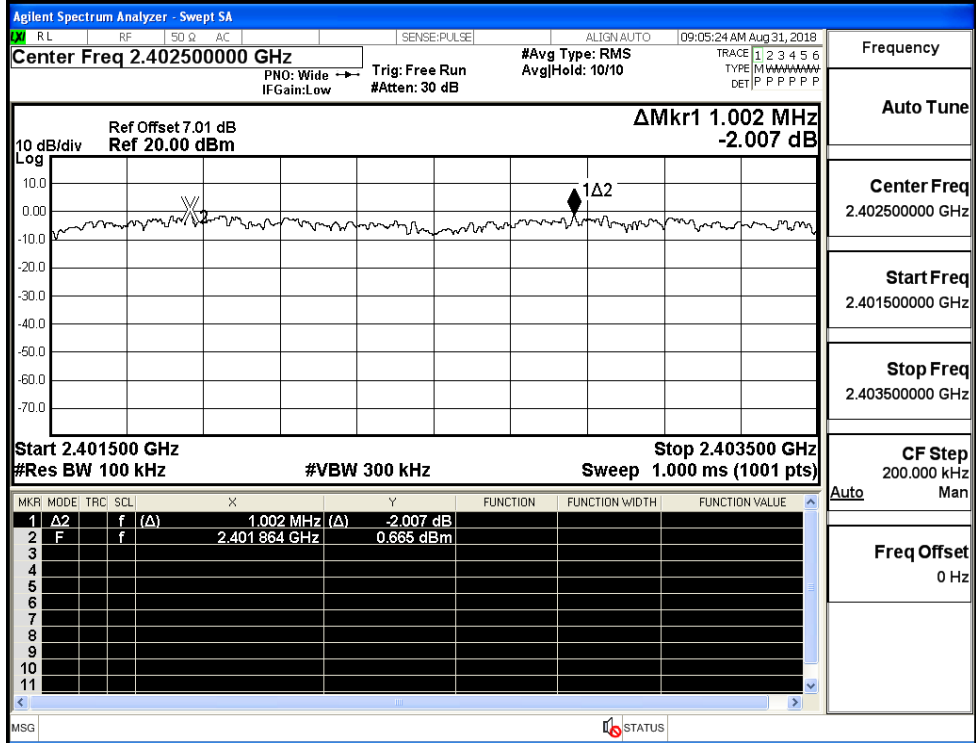


π/4DQPSK/HCH



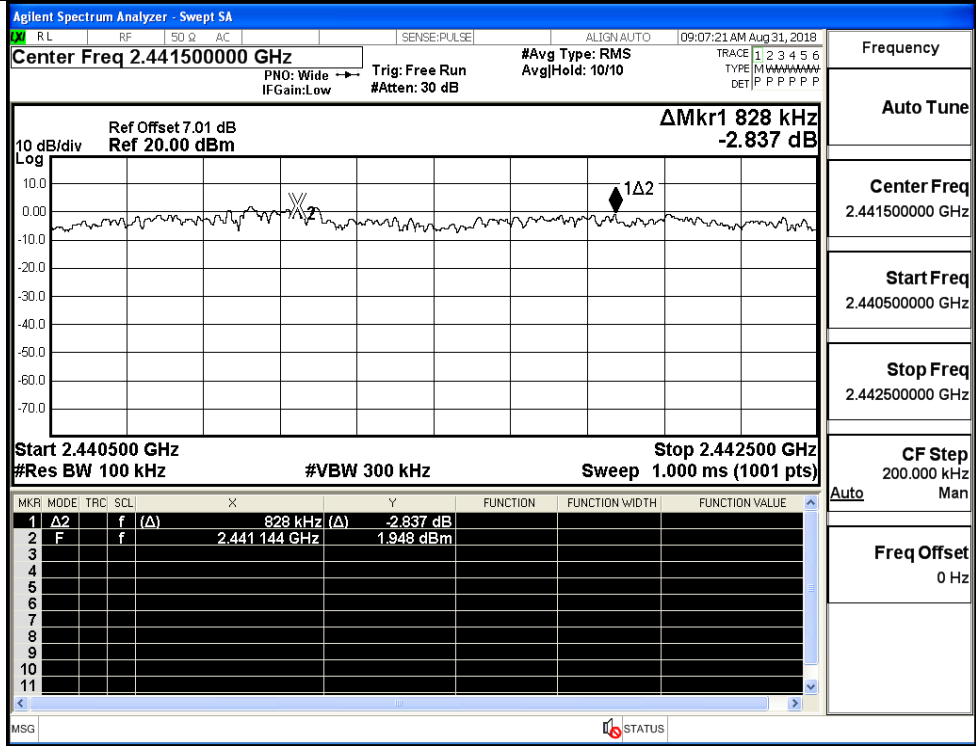
Frequency  
Auto Tune  
Center Freq  
2.479500000 GHz  
Start Freq  
2.478500000 GHz  
Stop Freq  
2.480500000 GHz  
CF Step  
200.000 kHz  
Auto  
Man  
Freq Offset  
0 Hz

8DPSK/LCH

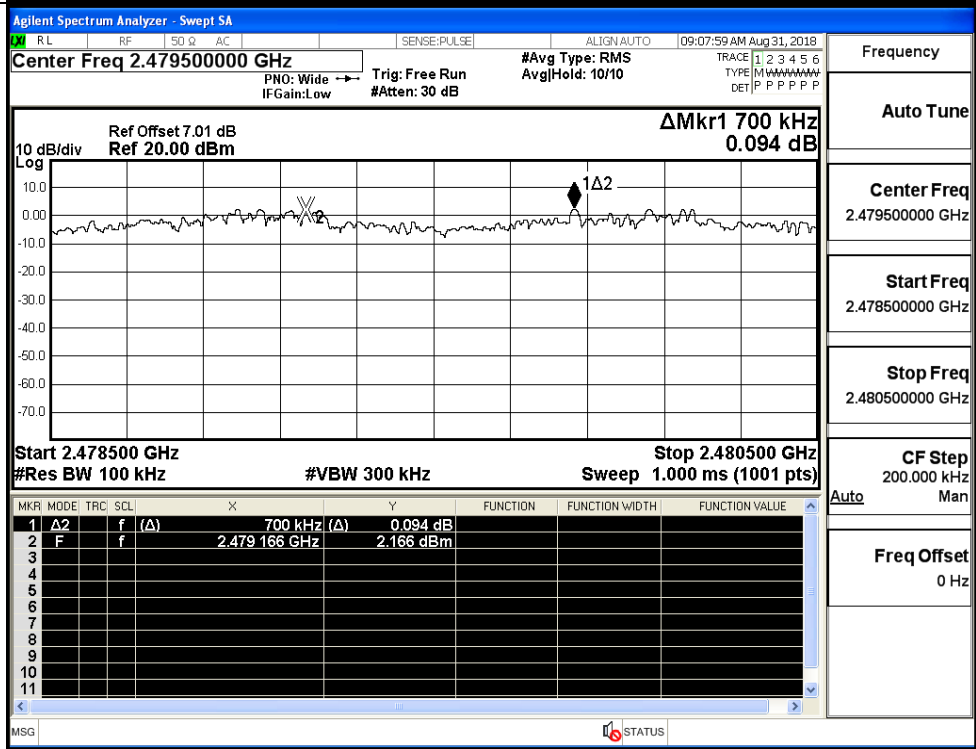


Frequency  
Auto Tune  
Center Freq  
2.402500000 GHz  
Start Freq  
2.401500000 GHz  
Stop Freq  
2.403500000 GHz  
CF Step  
200.000 kHz  
Auto  
Man  
Freq Offset  
0 Hz

8DPSK/MCH



8DPSK/HCH



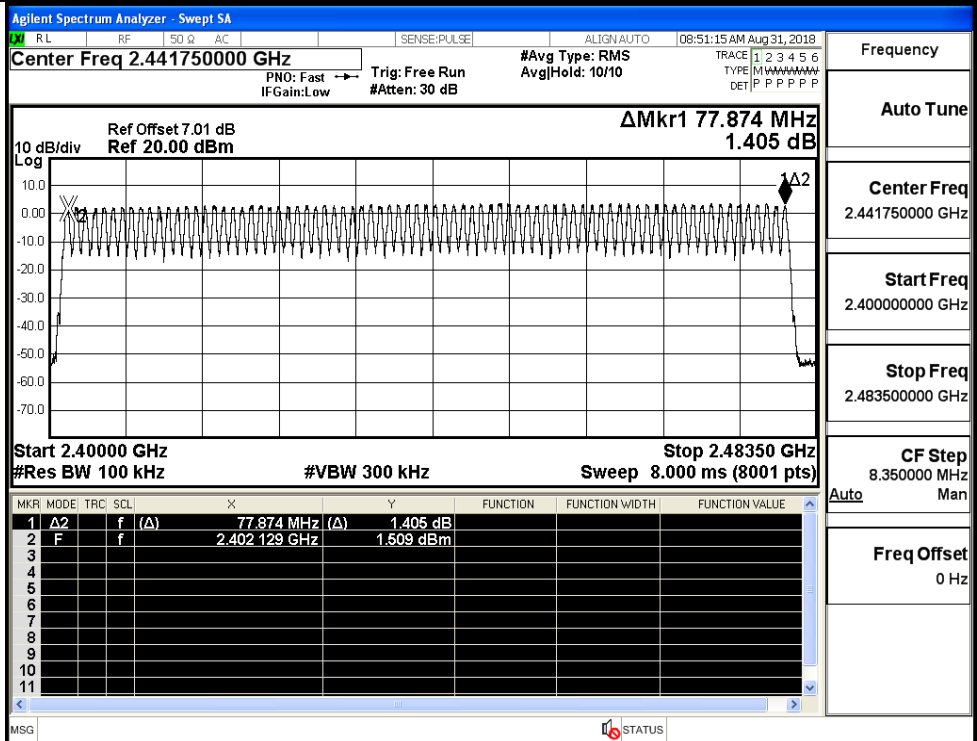


### A.4 Hopping Channel Number

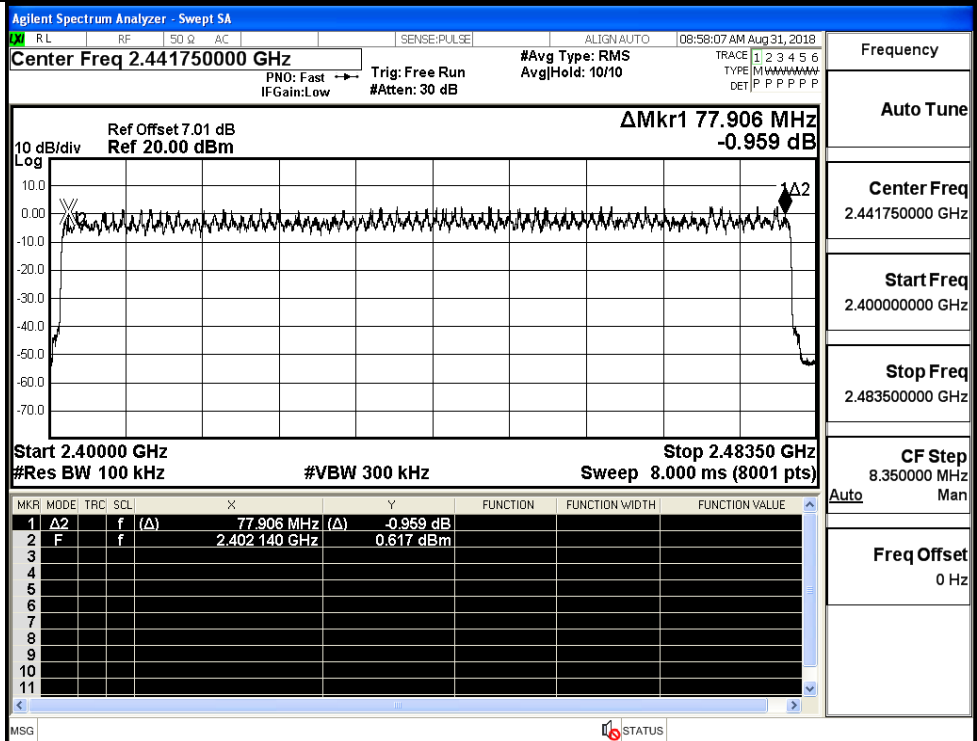
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

#### Test Graphs

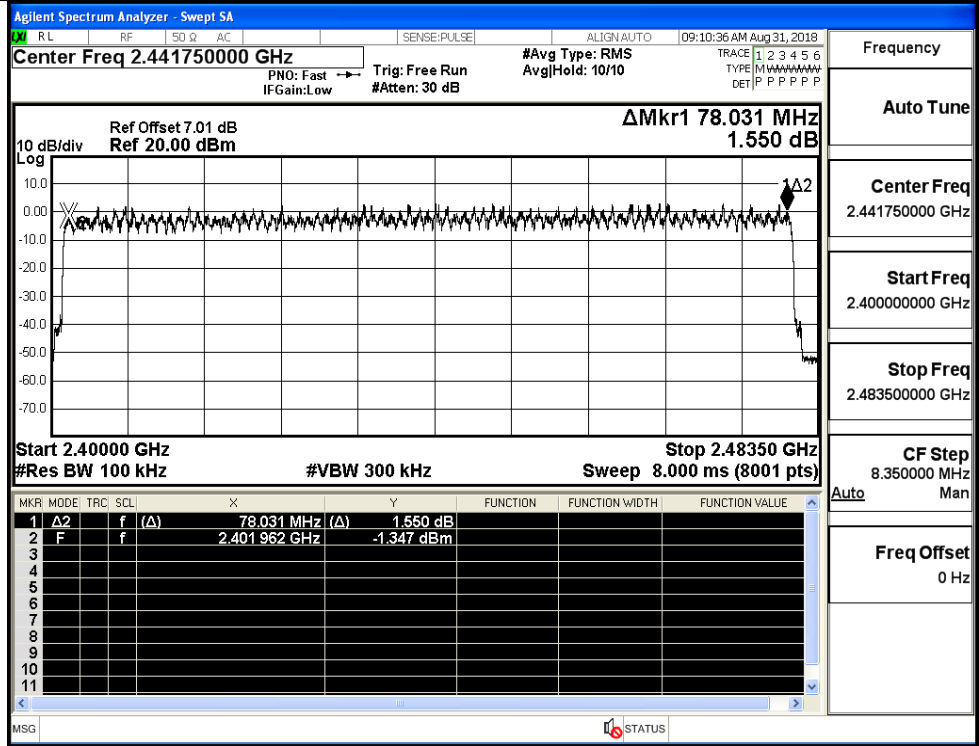
GFSK/Hop



$\pi/4$ DQPSK/Hop

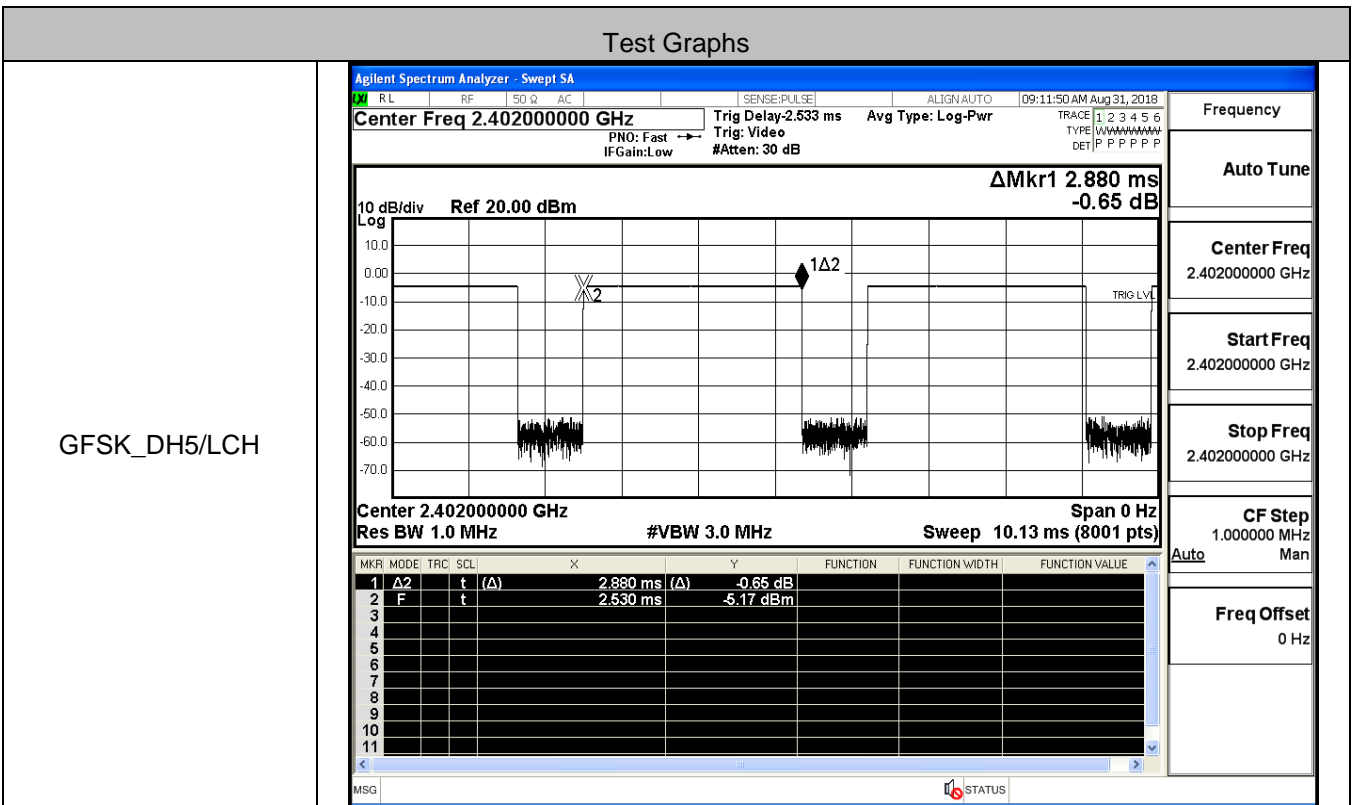


8DPSK/Hop

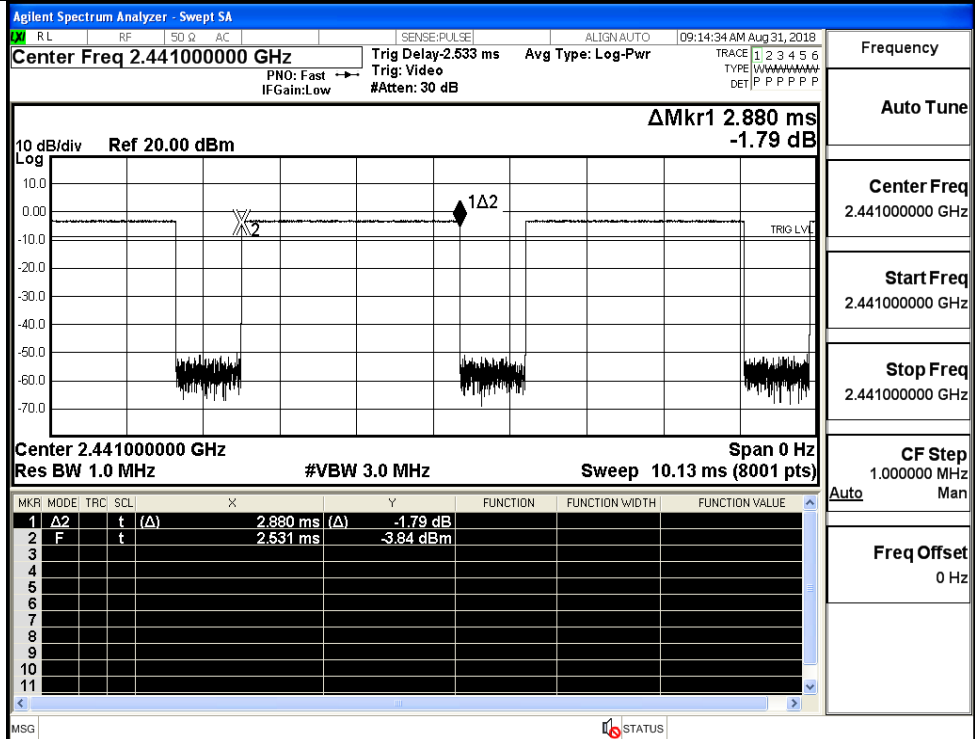


**A.5 Dwell Time**

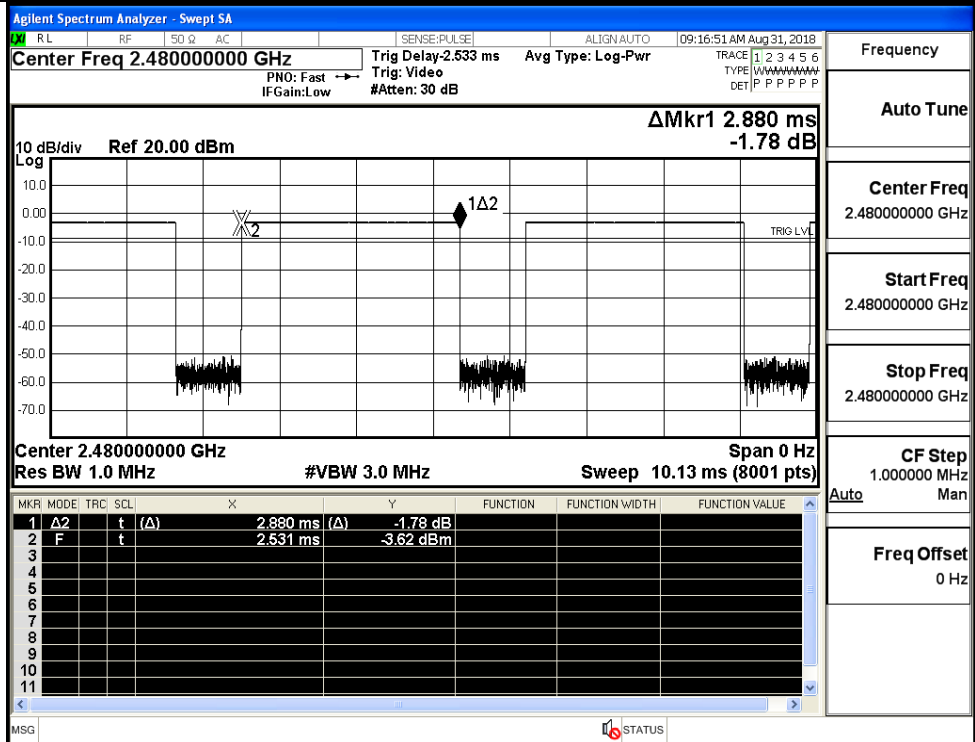
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



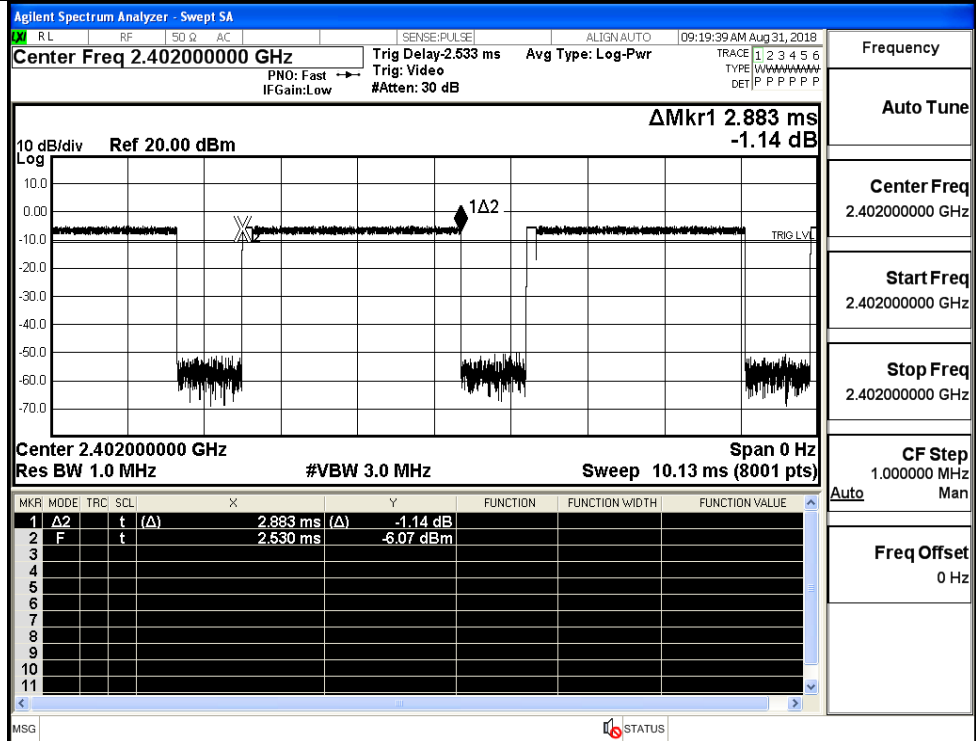
GFSK\_DH5/MCH



GFSK\_DH5/HCH

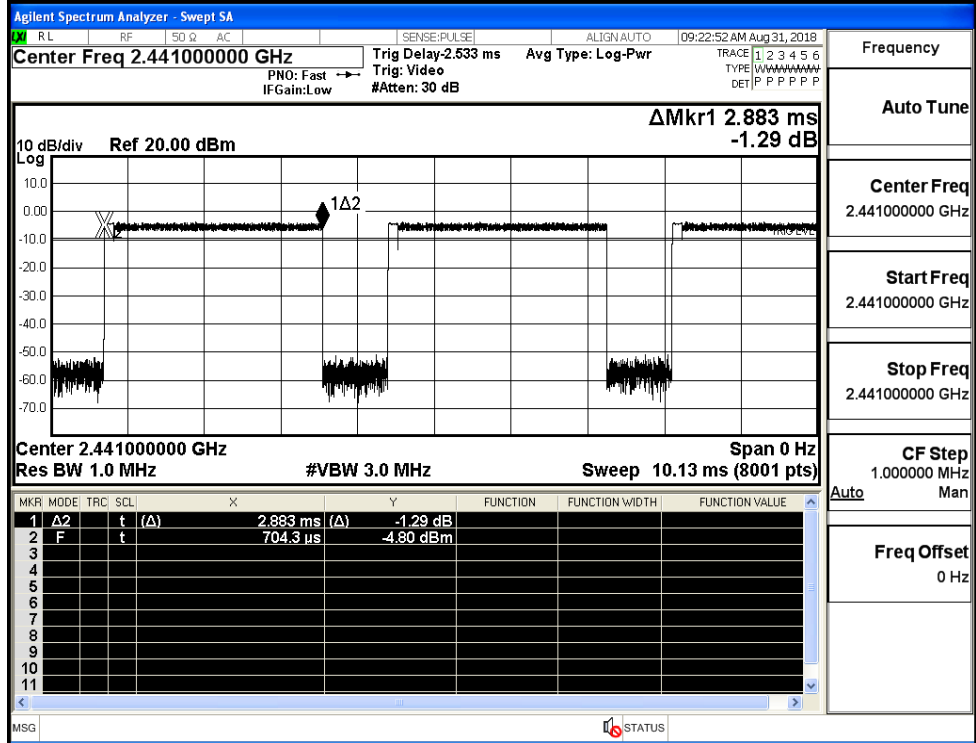


$\pi/4$ DQPSK  
\_2DH5/LCH



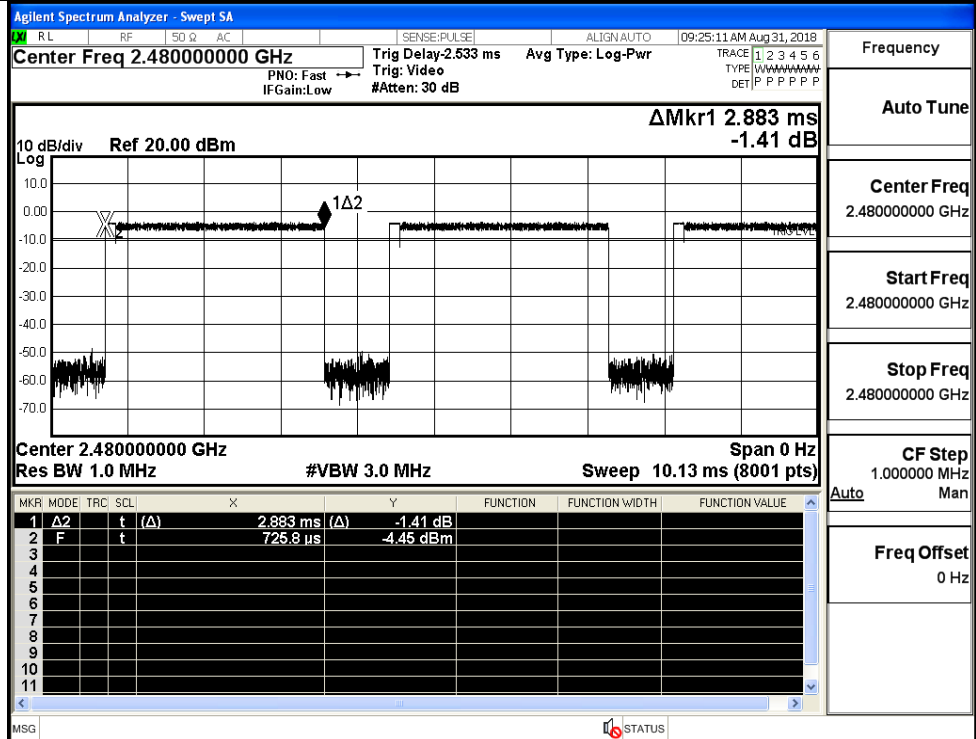
Frequency	2.40200000 GHz
Auto Tune	
Center Freq	2.40200000 GHz
Start Freq	2.40200000 GHz
Stop Freq	2.40200000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK  
\_2DH5/MCH

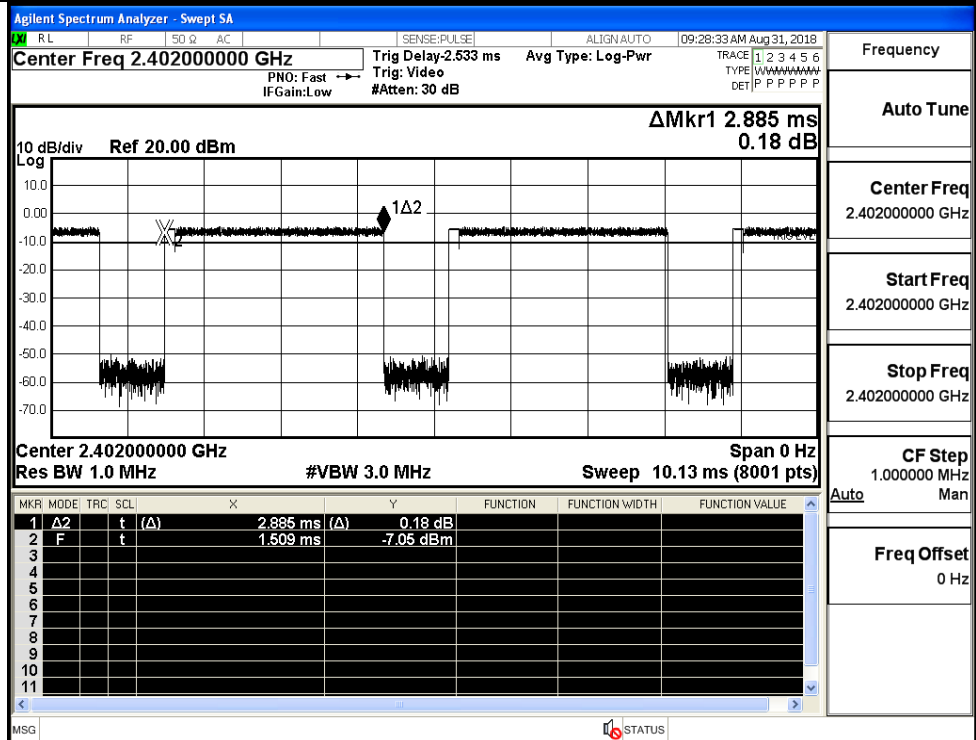


Frequency	2.44100000 GHz
Auto Tune	
Center Freq	2.44100000 GHz
Start Freq	2.44100000 GHz
Stop Freq	2.44100000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

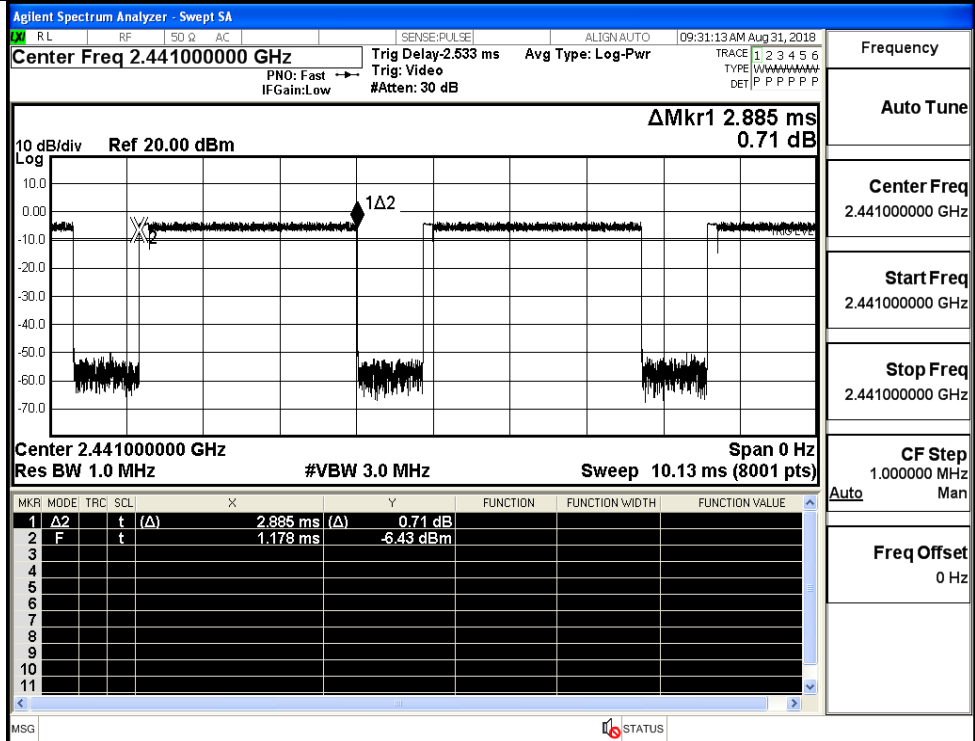
$\pi/4$ DQPSK  
\_2DH5/HCH



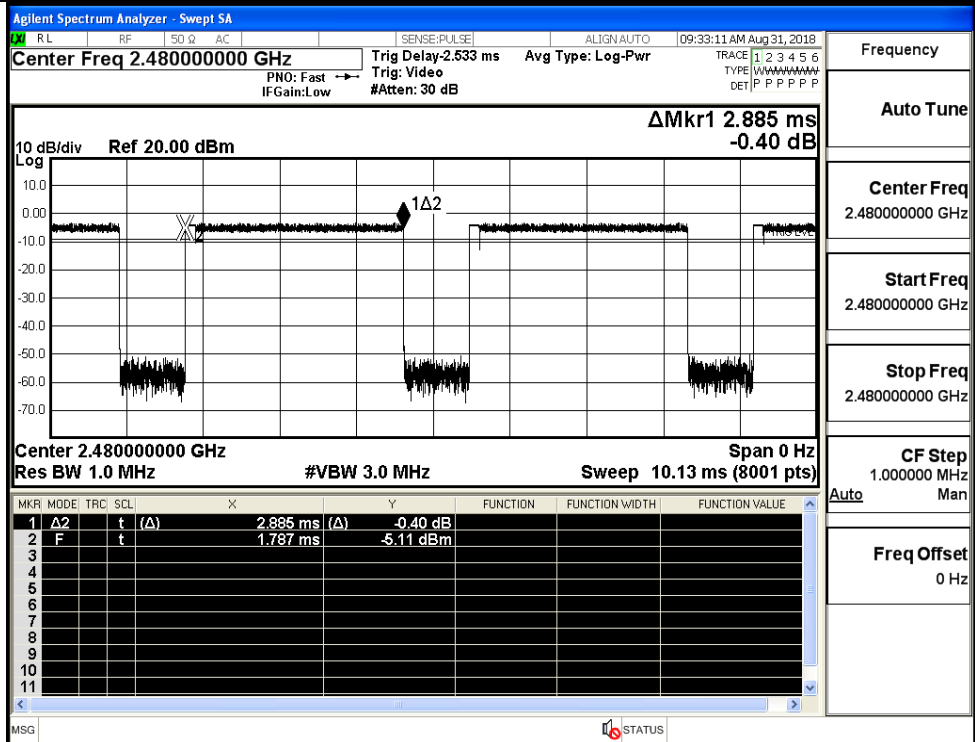
8DPSK\_3DH5/LCH



8DPSK\_3DH5/MCH



8DPSK\_3DH5/HCH



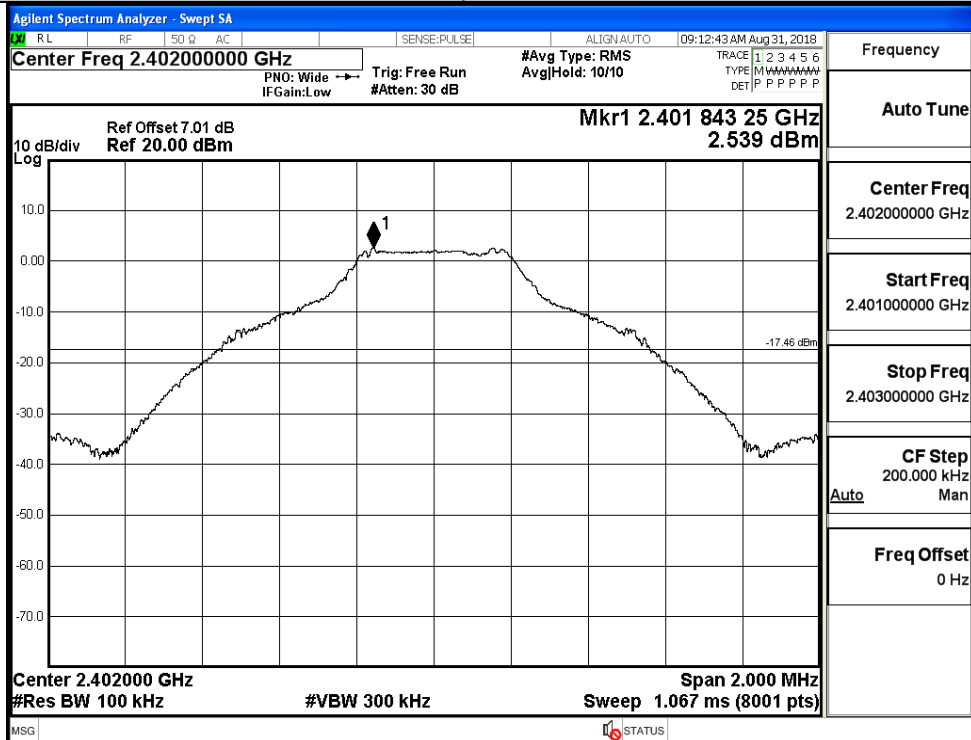
**A.6 RF Conducted Spurious Emissions**

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.539	-44.622	-17.461	PASS
	MCH	3.614	-45.085	-16.386	PASS
	HCH	3.773	-45.303	-16.227	PASS
$\pi/4$ DQPSK	LCH	1.484	-44.760	-18.516	PASS
	MCH	2.695	-44.423	-17.305	PASS
	HCH	2.263	-45.242	-17.737	PASS
8DPSK	LCH	1.523	-45.437	-18.477	PASS
	MCH	2.679	-46.018	-17.321	PASS
	HCH	2.546	-45.699	-17.454	PASS

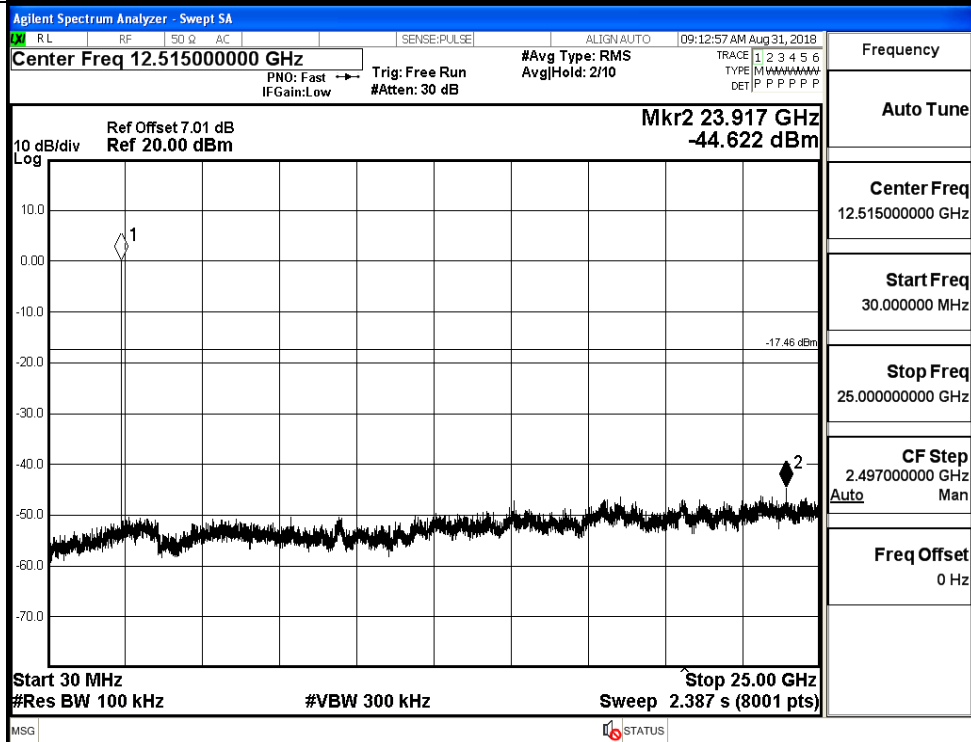


GFSK\_LCH\_Graphs

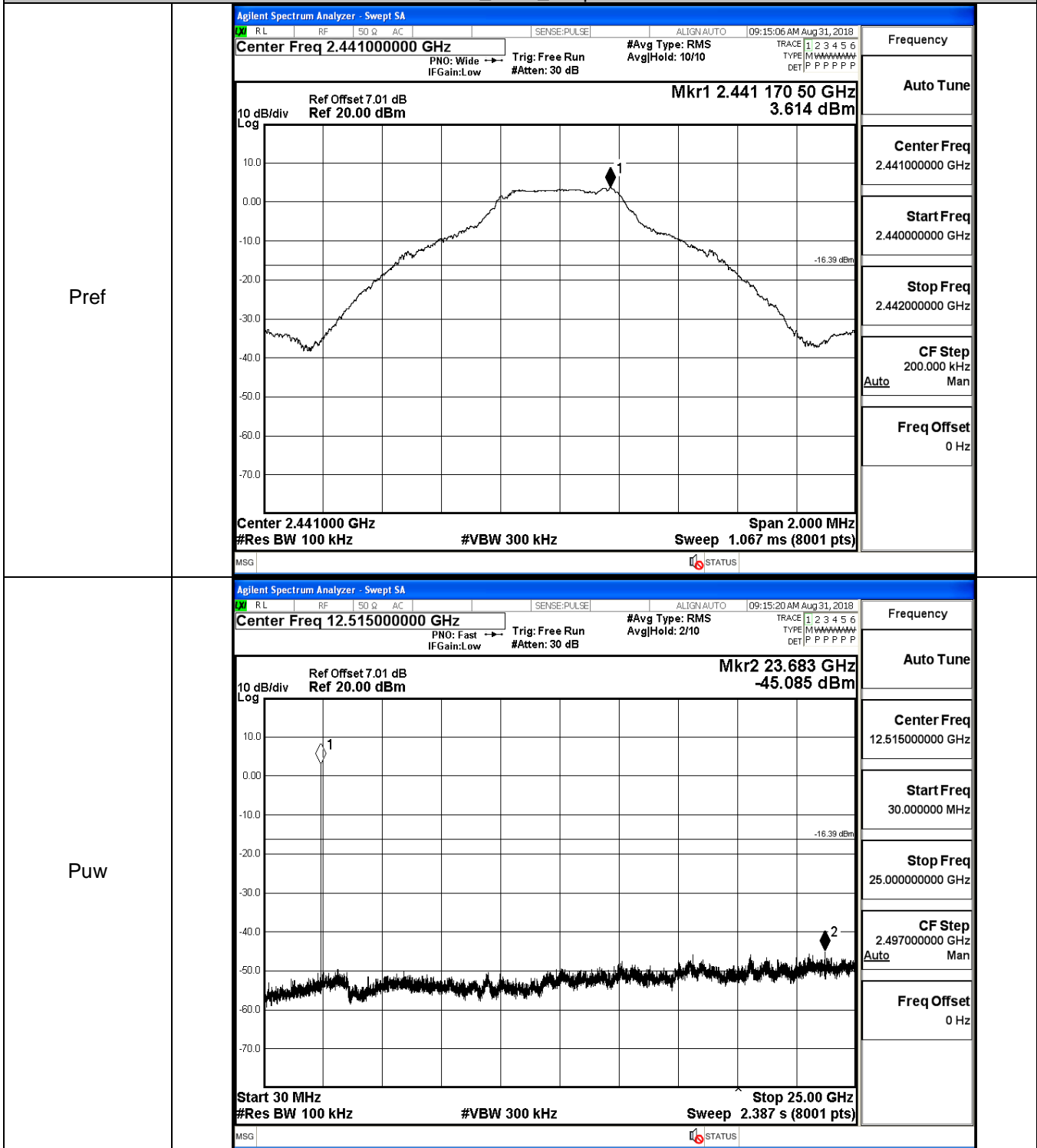
Pref



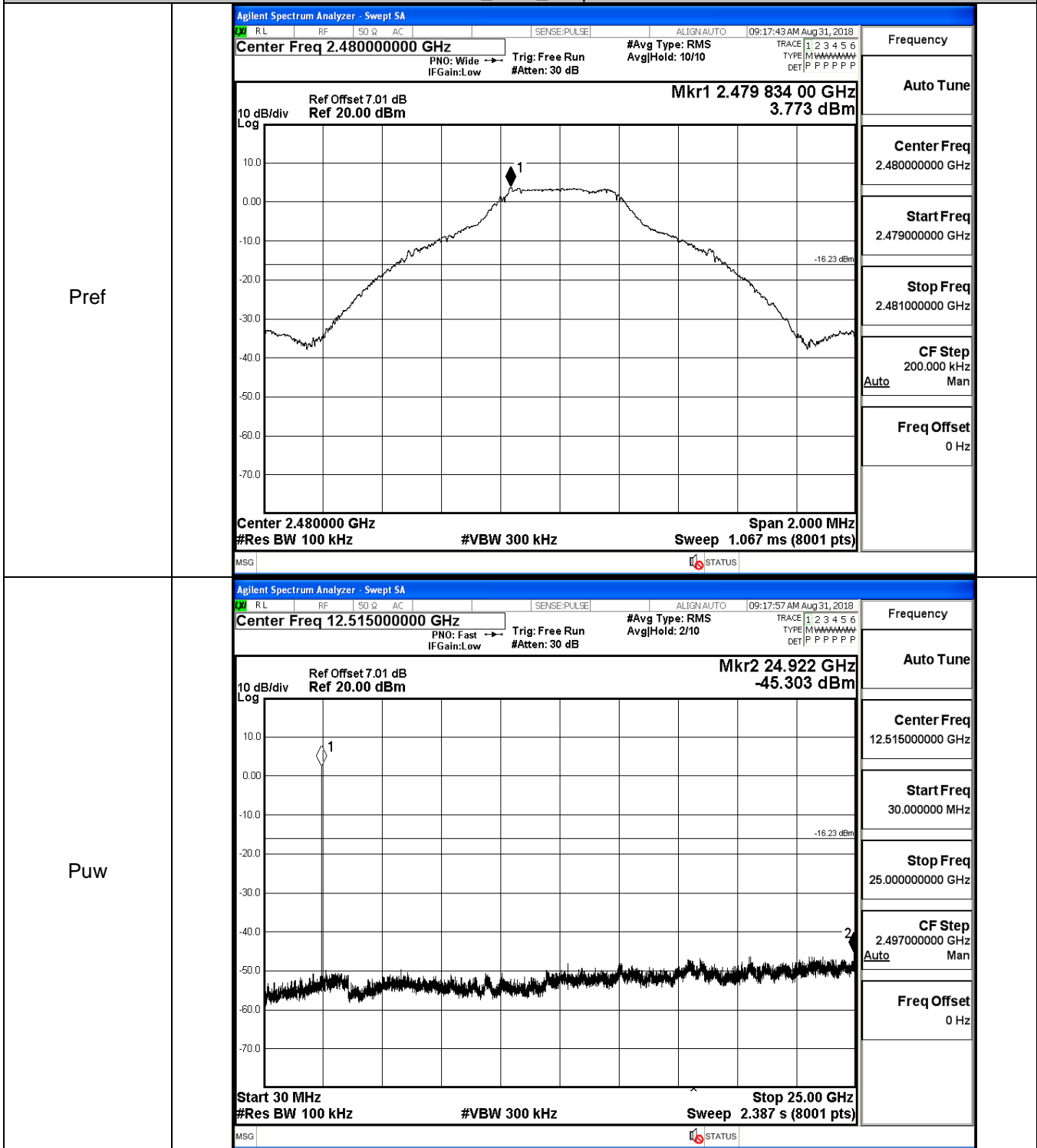
Puw



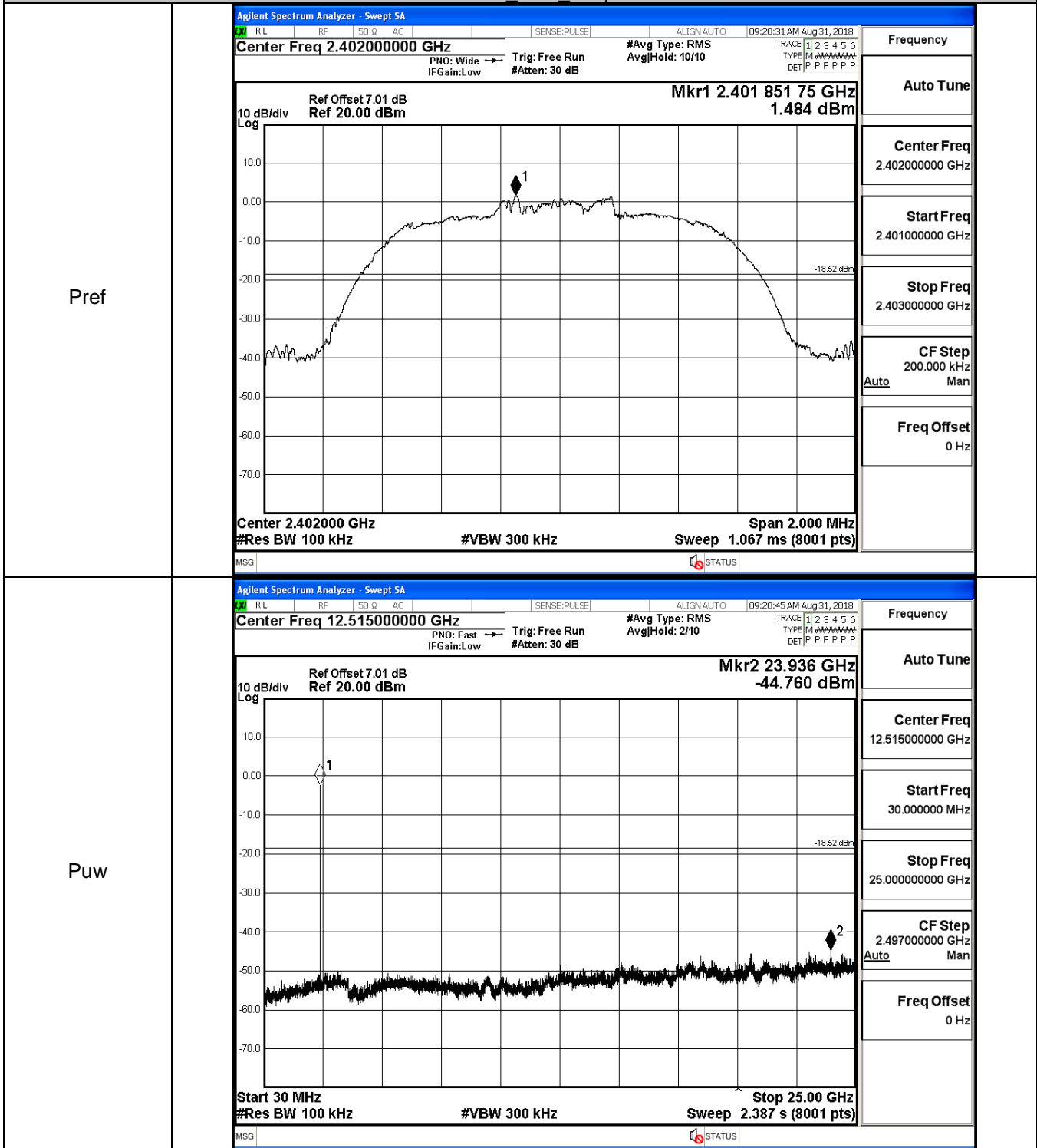
GFSK\_MCH\_Graphs



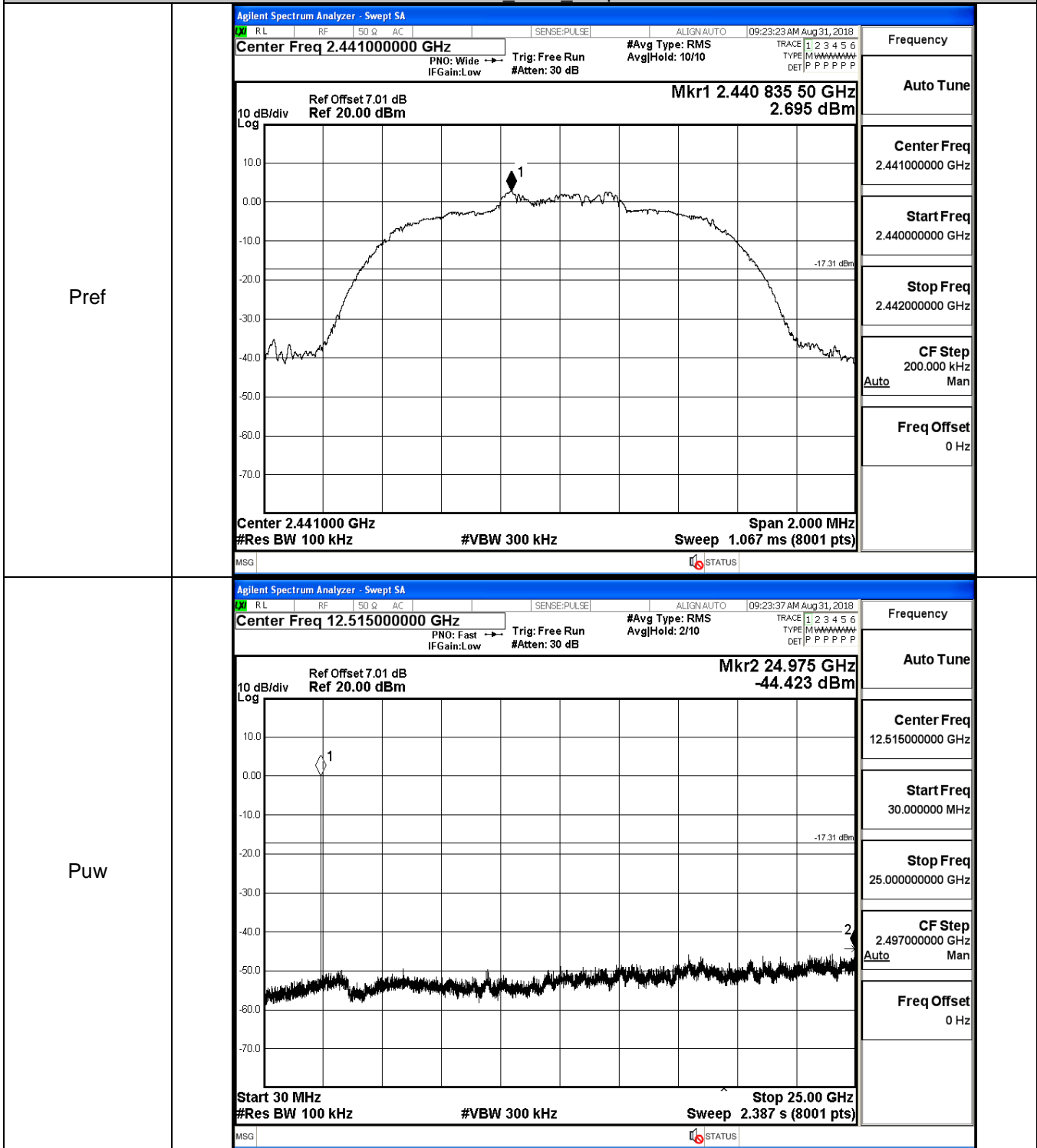
GFSK\_HCH\_Graphs



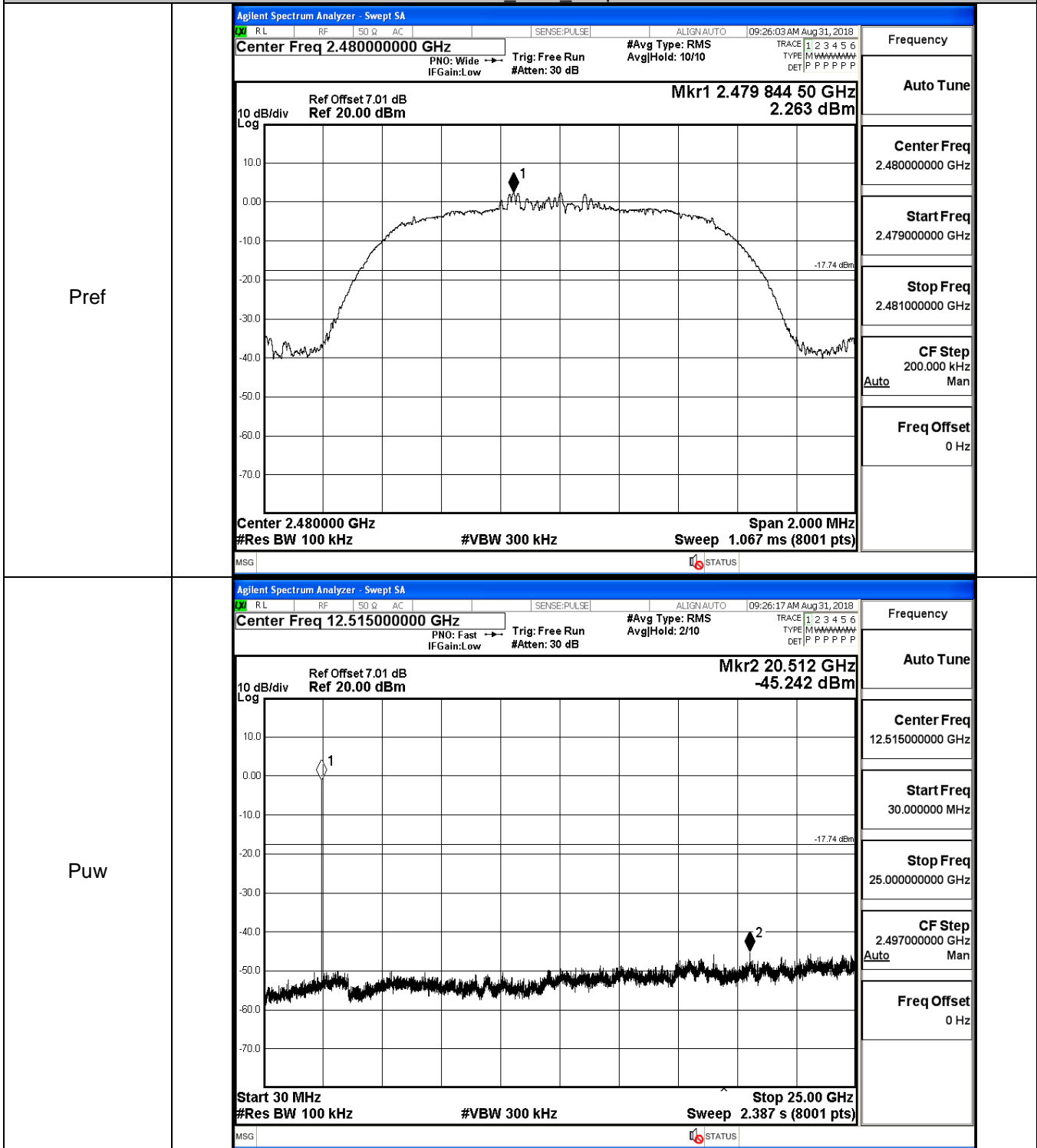
$\pi/4$ DQPSK LCH\_Graphs



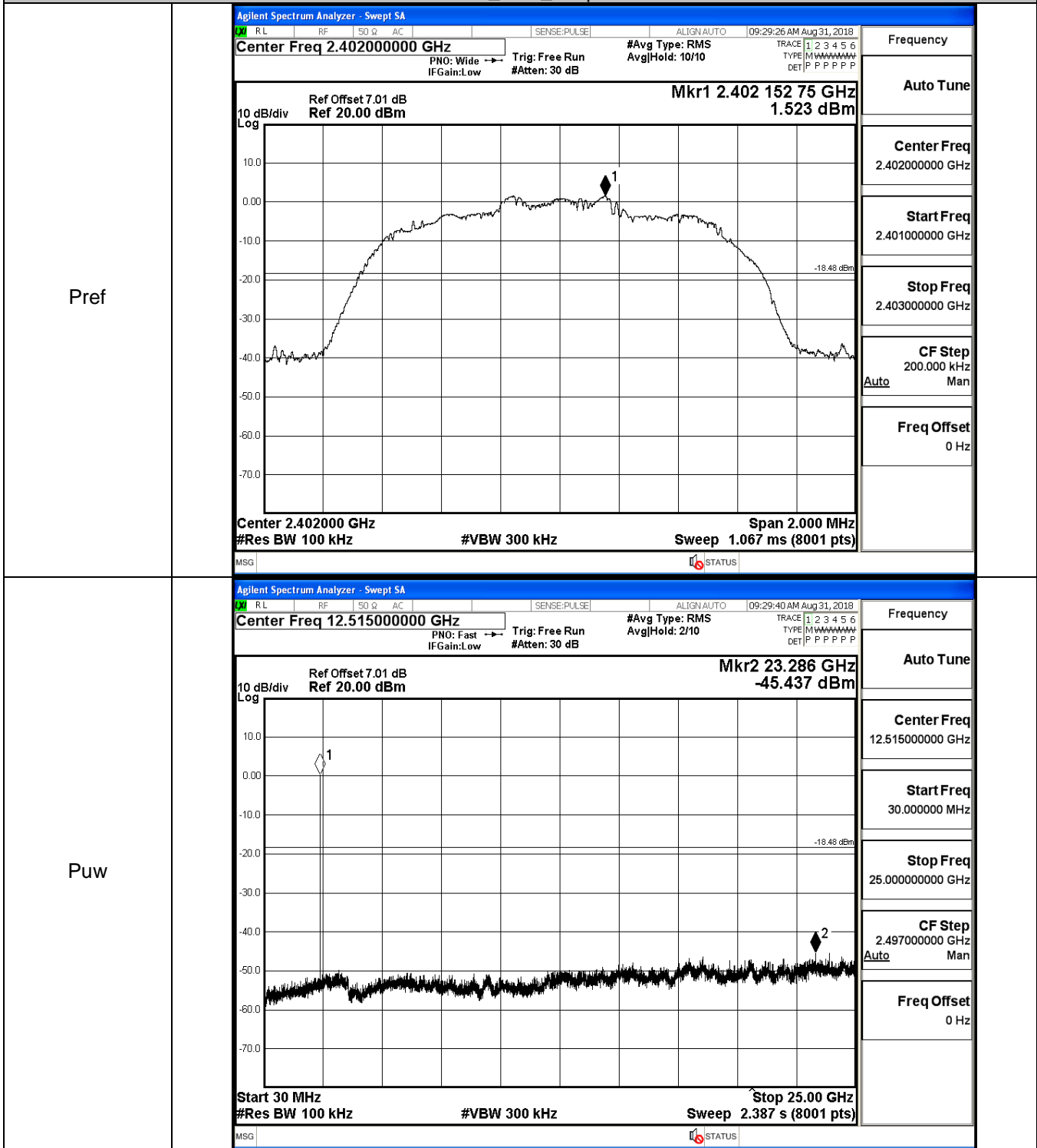
$\pi$ /4DQPSK\_MCH\_Graphs



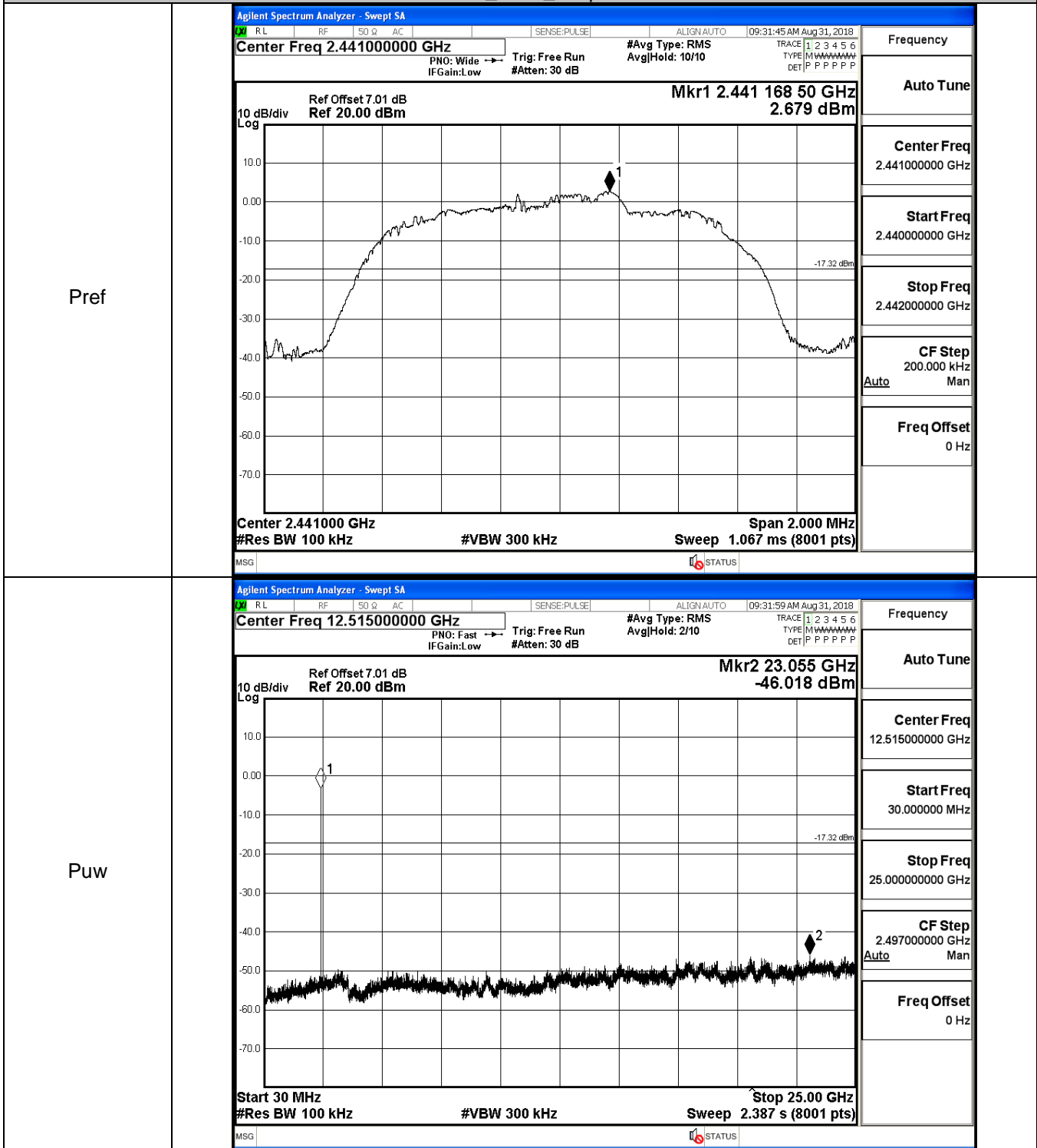
$\pi/4$ DQPSK\_HCH\_Graphs



8DPSK\_LCH\_Graphs

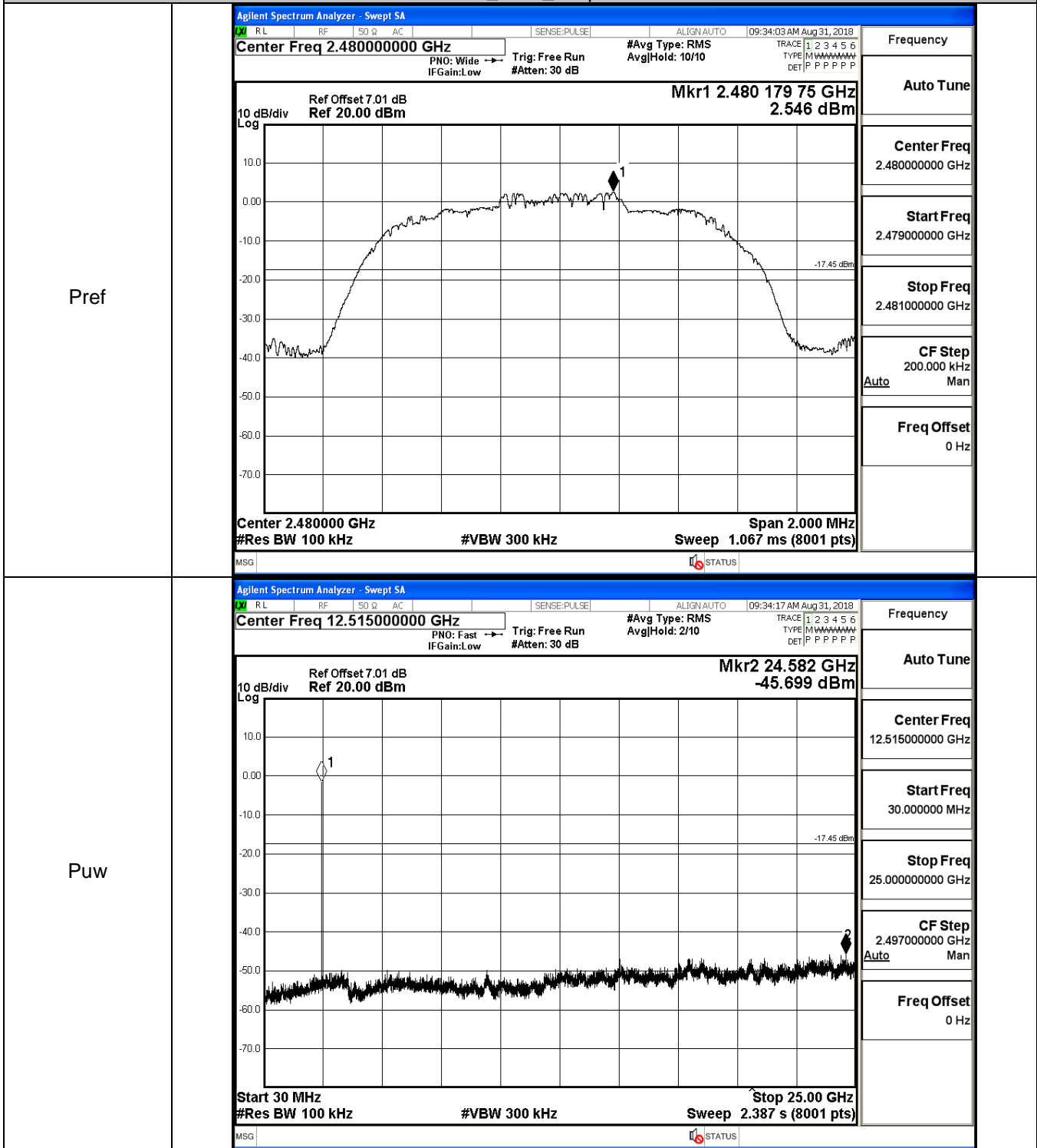


8DPSK\_MCH\_Graphs





8DPSK\_HCH\_Graphs

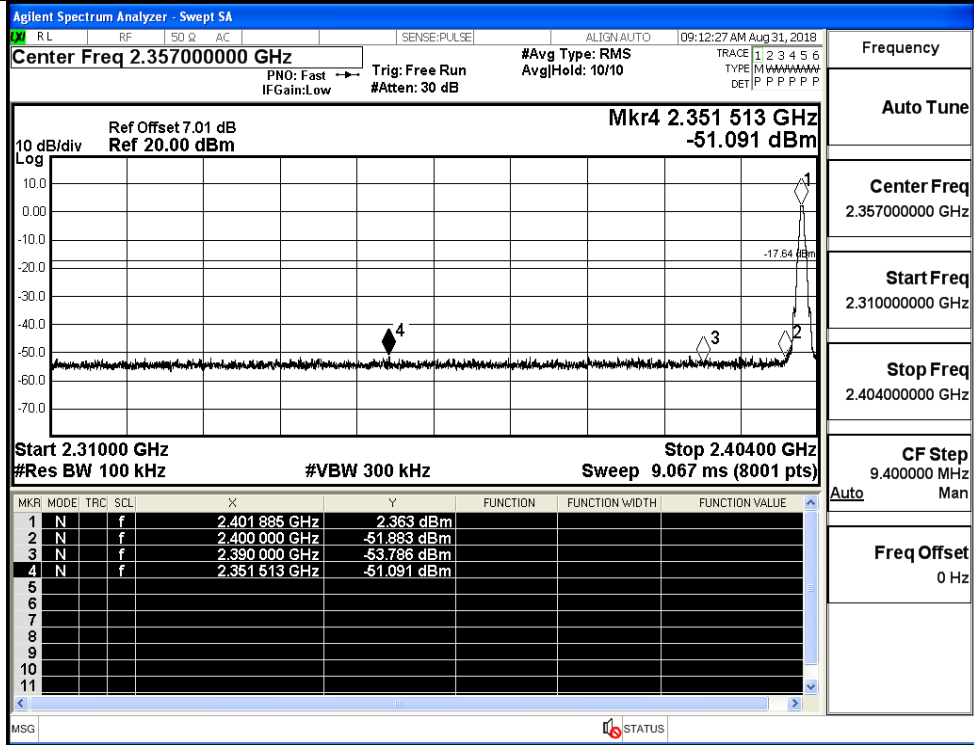


## A.7 Band-edge for RF Conducted Emissions

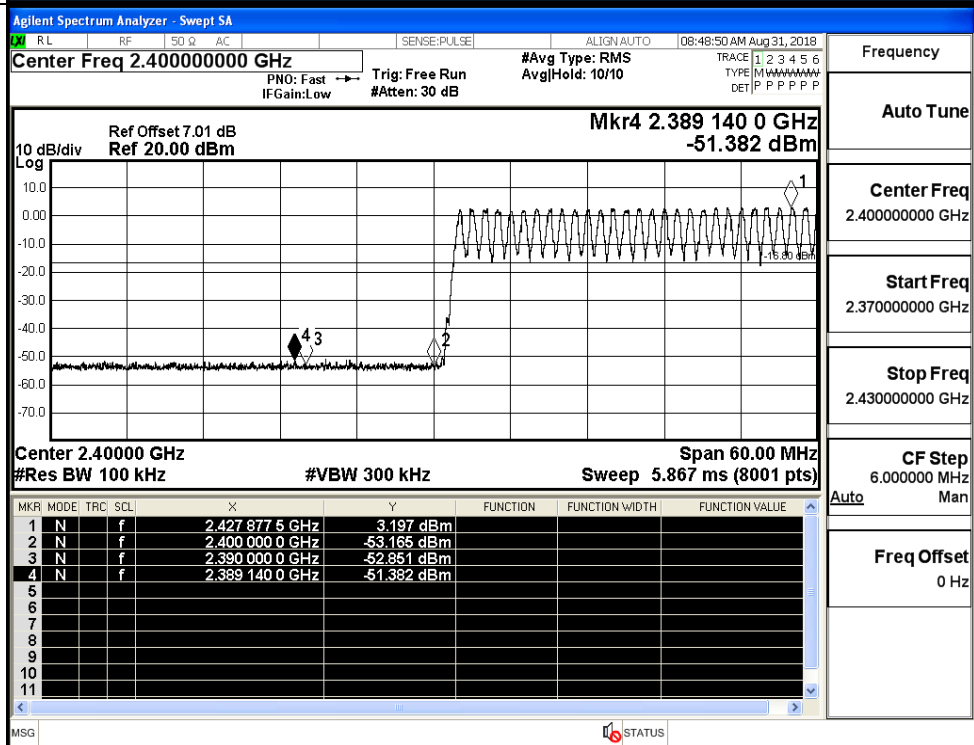
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.363	Off	-51.091	-17.64	PASS
			3.197	On	-51.382	-16.8	PASS
	HCH	2480	4.005	Off	-50.675	-16	PASS
			3.849	On	-50.570	-16.15	PASS
$\pi/4$ DQPSK	LCH	2402	1.233	Off	-50.723	-18.77	PASS
			2.087	On	-50.012	-17.91	PASS
	HCH	2480	3.027	Off	-51.259	-16.97	PASS
			2.731	On	-50.275	-17.27	PASS
8DPSK	LCH	2402	1.466	Off	-50.863	-18.53	PASS
			2.261	On	-50.644	-17.74	PASS
	HCH	2480	2.858	Off	-51.644	-17.14	PASS
			3.080	On	-50.374	-16.92	PASS

Test Graphs

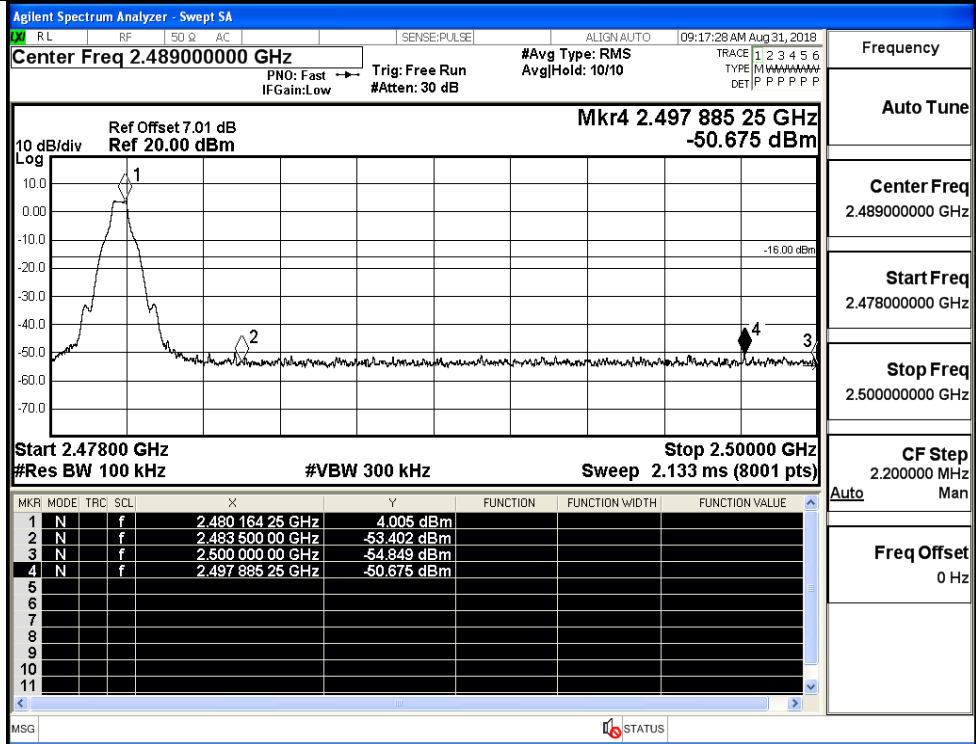
GFSK/LCH/No Hop



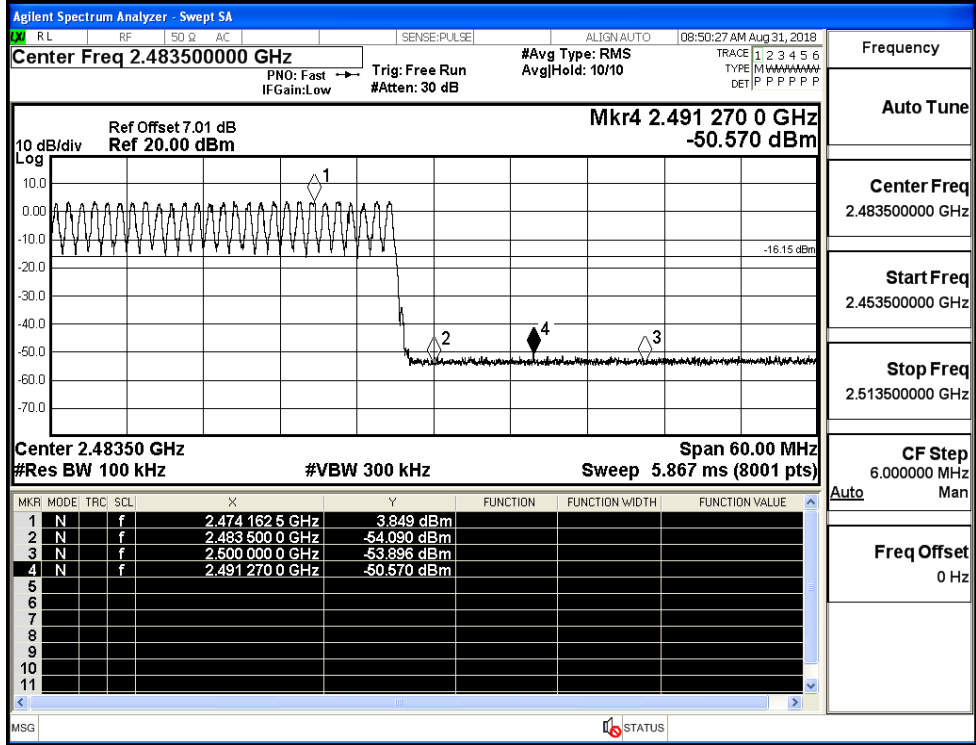
GFSK/LCH/Hop



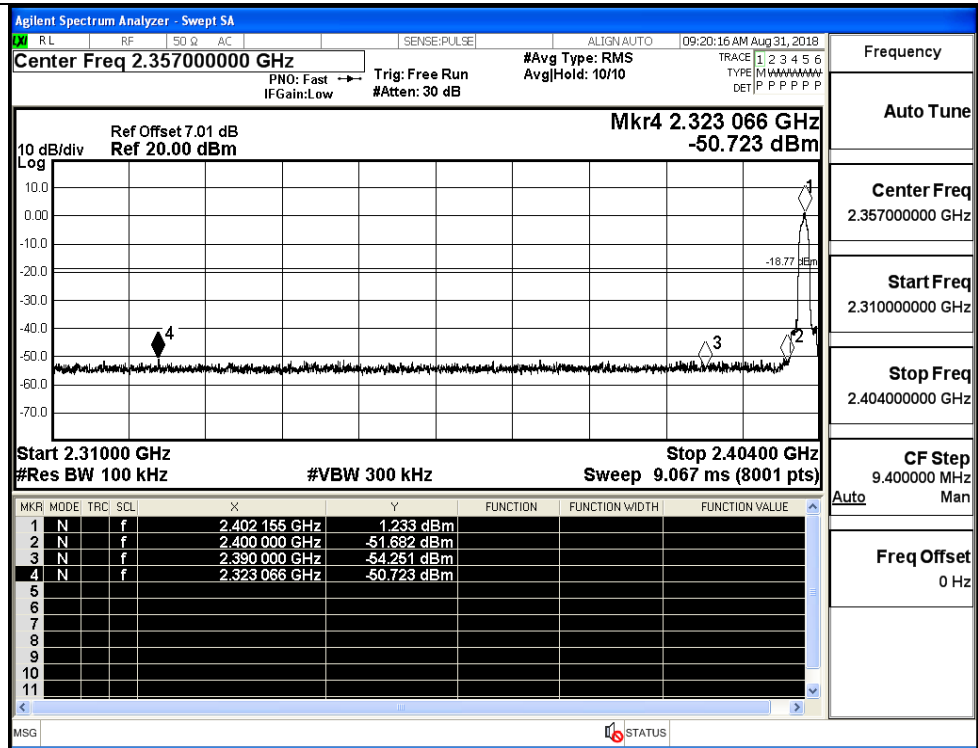
GFSK/HCH/No Hop



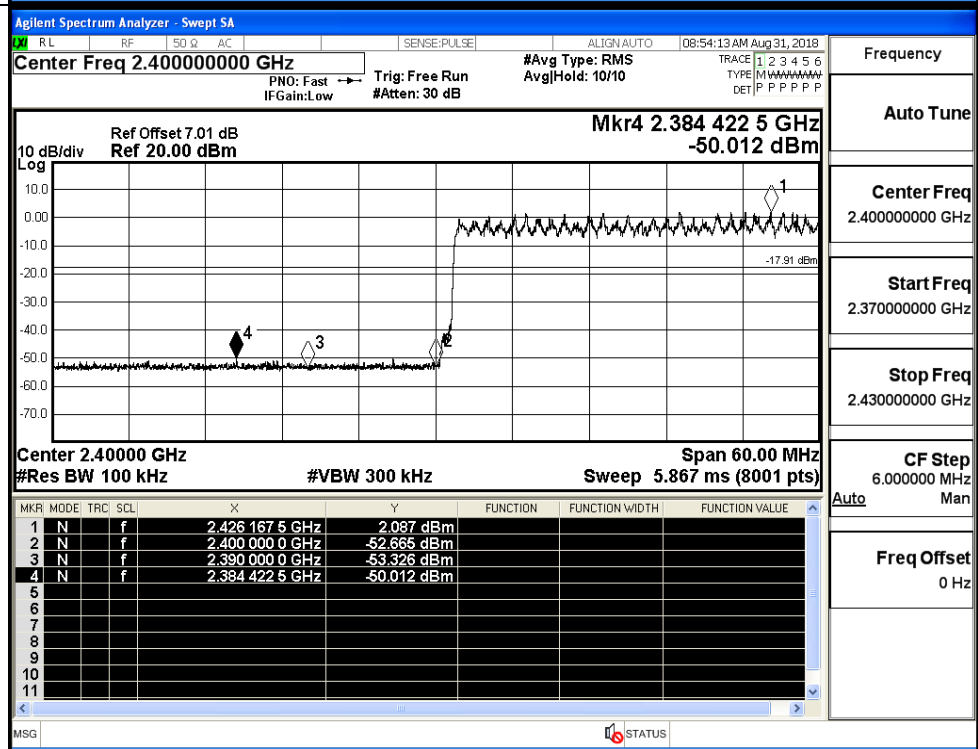
GFSK/HCH/Hop



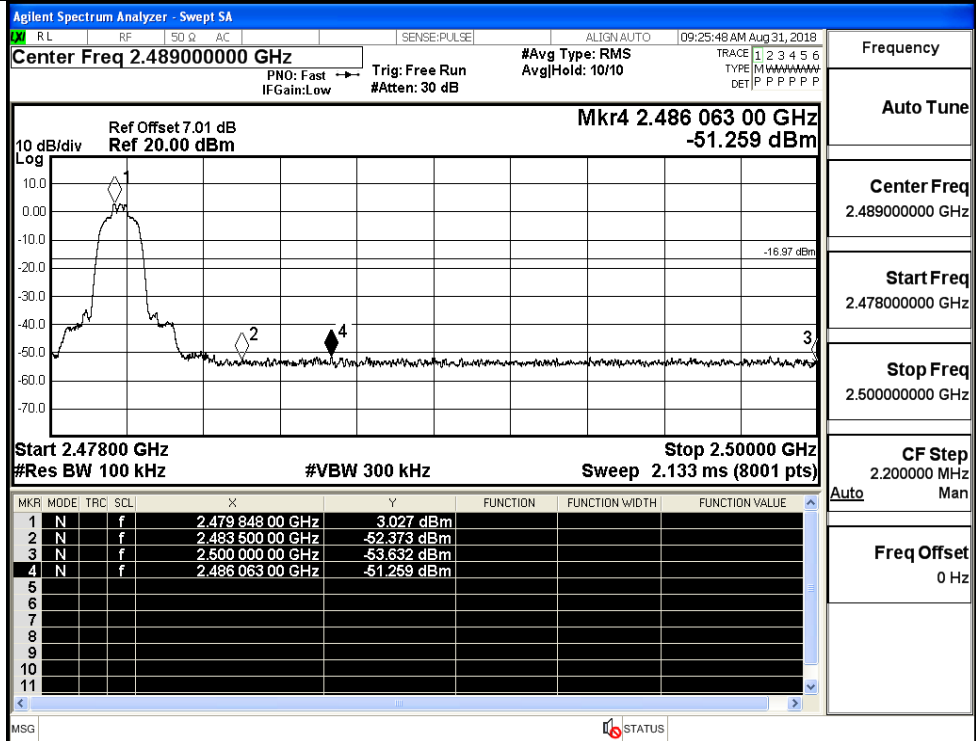
$\pi/4$ DQPSK/LCH/No Hop



$\pi/4$ DQPSK/LCH/Hop

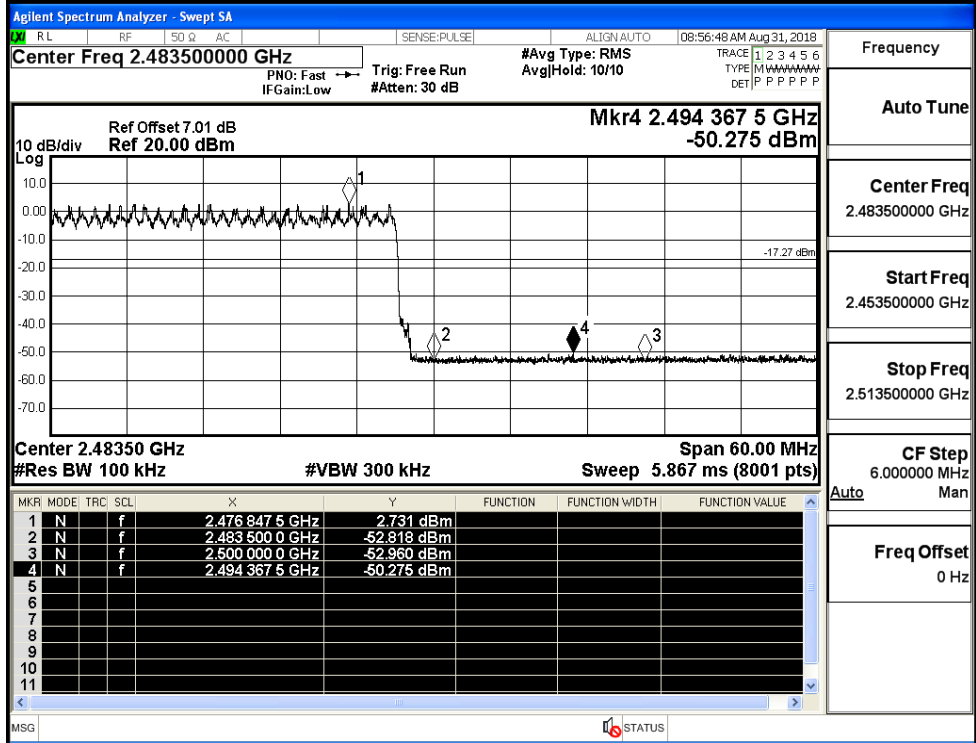


$\pi$ /4DQPSK/HCH/No Hop



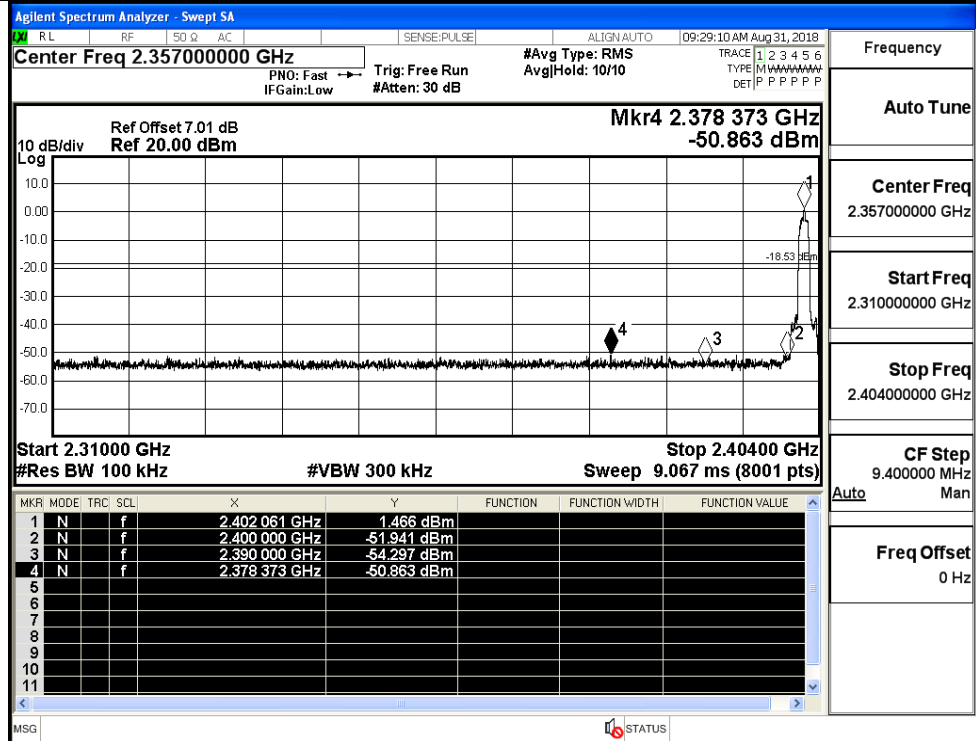
Frequency	
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

$\pi$ /4DQPSK/HCH/Hop



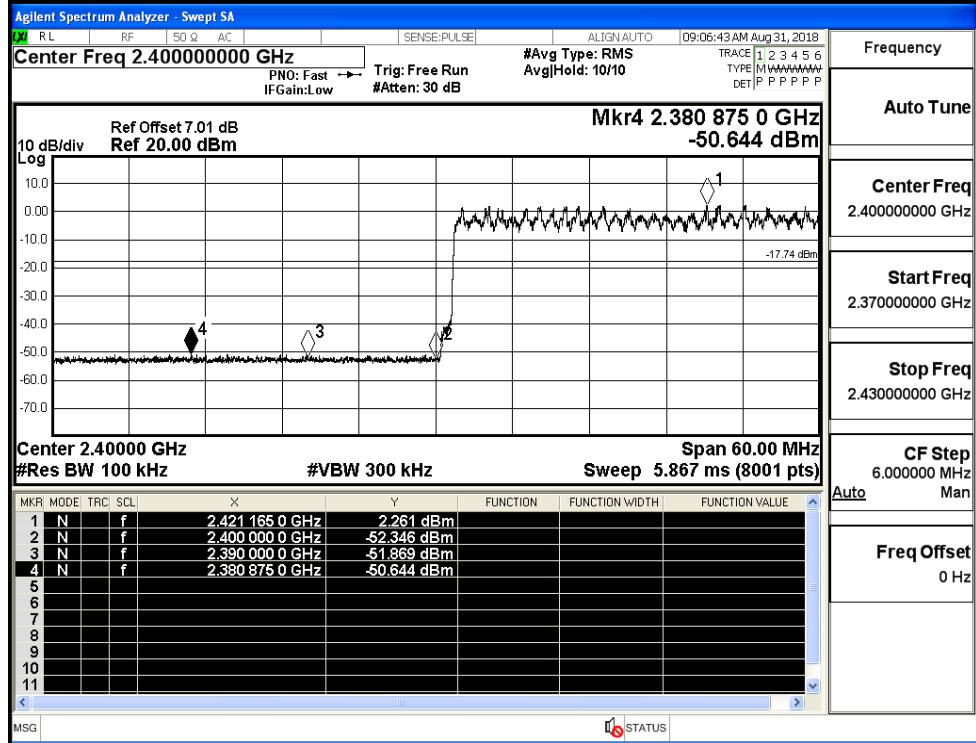
Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

8DPSK/LCH/No Hop



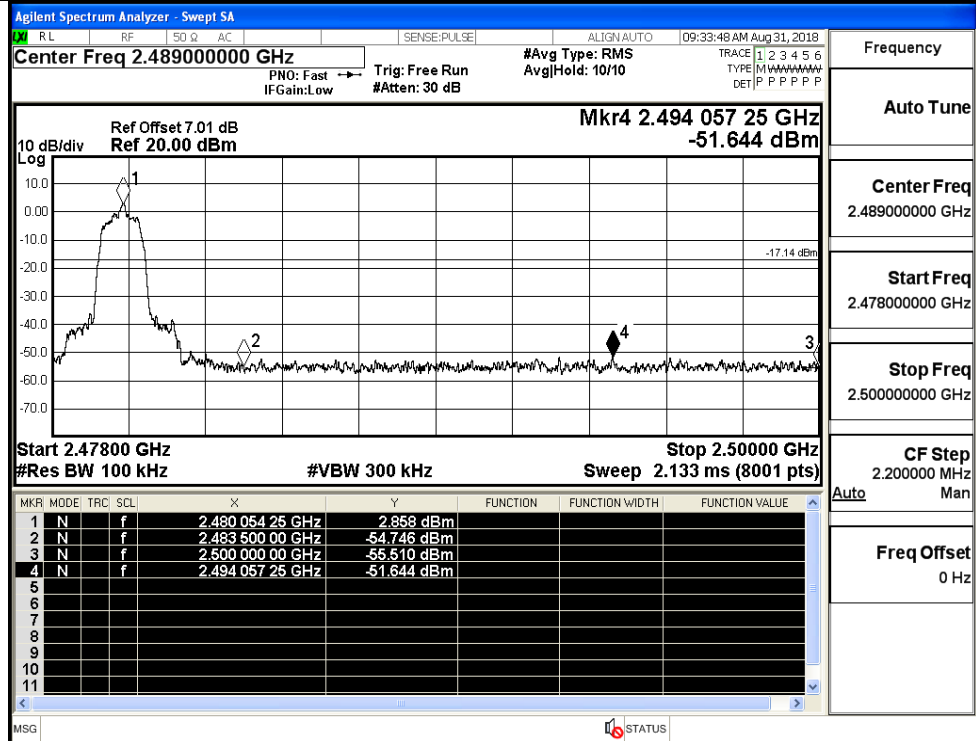
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH/Hop



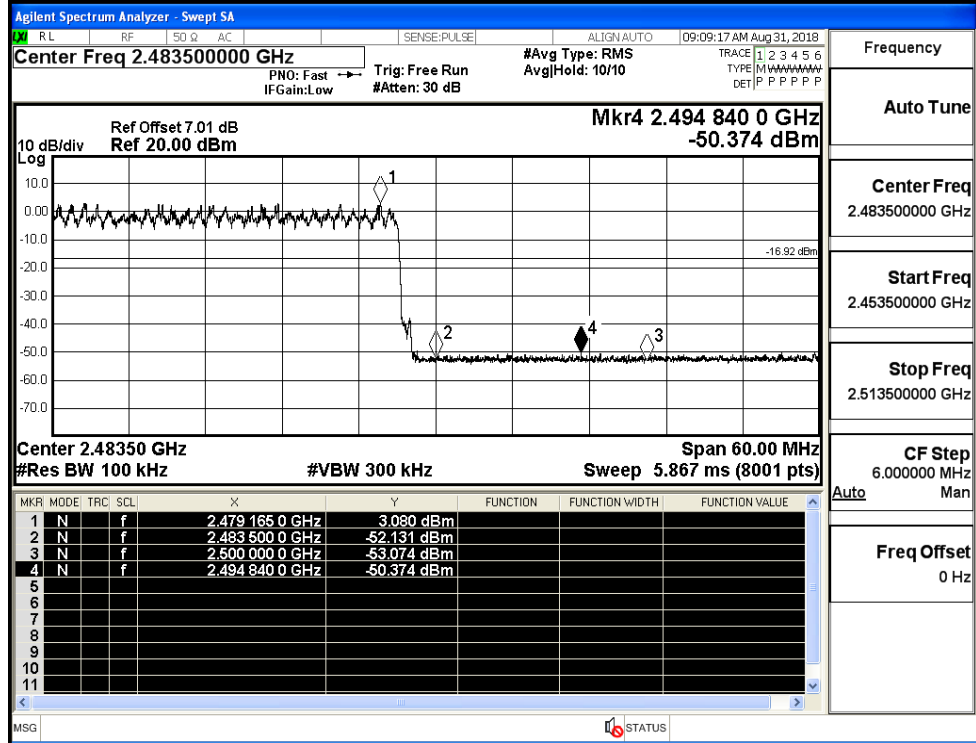
Frequency	
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

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
Auto	Man
Freq Offset	0 Hz

8DPSK/HCH/Hop



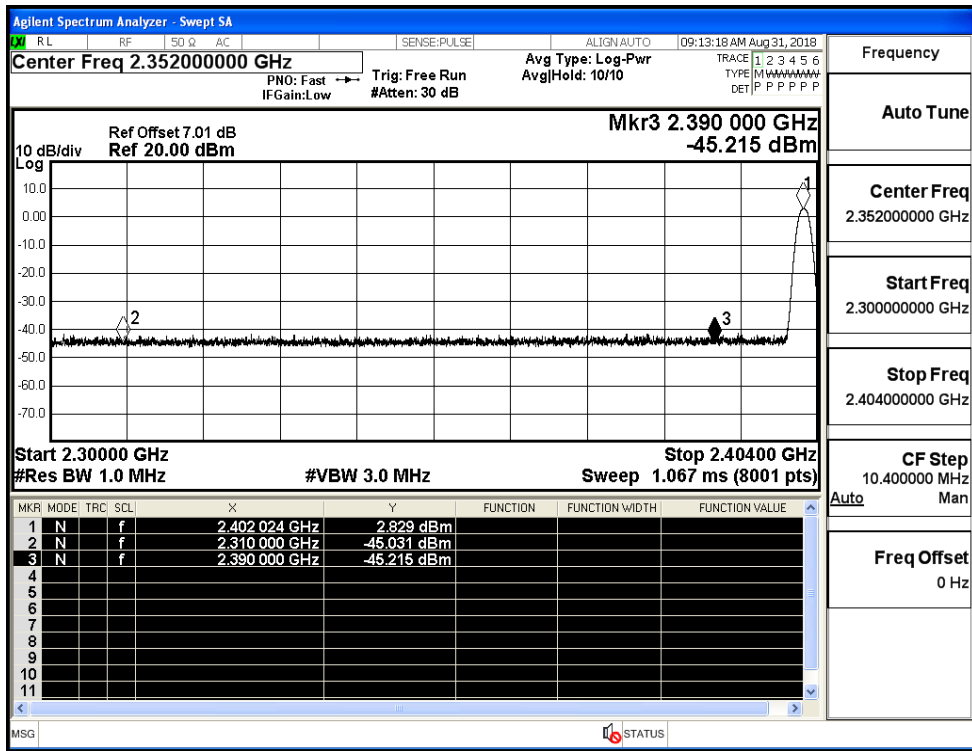
Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz



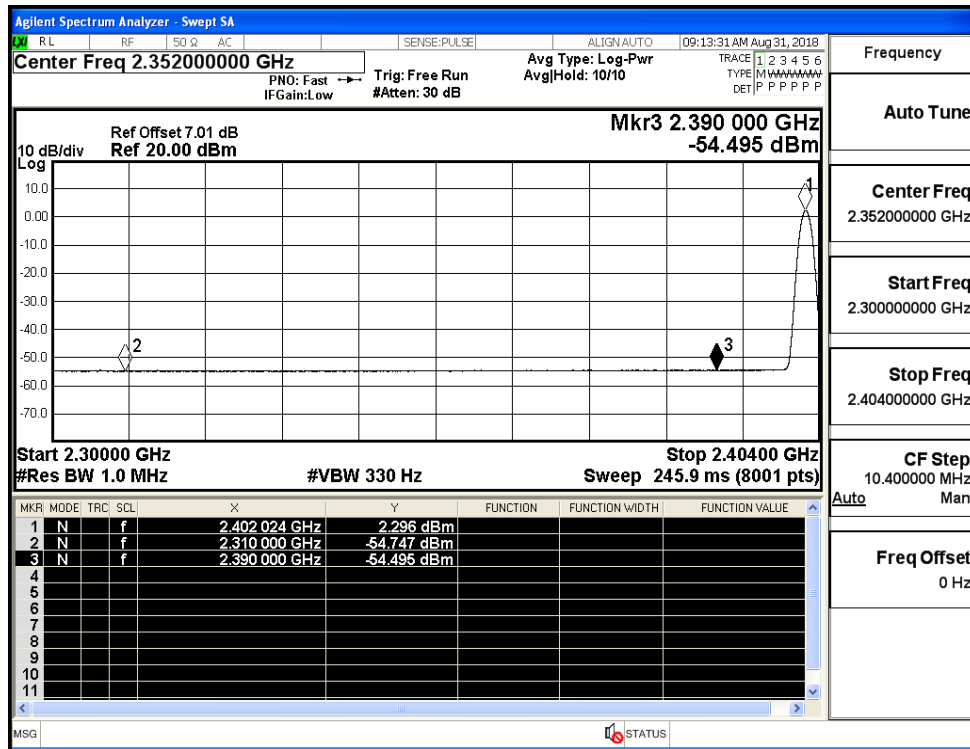
## A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.03	2.43	0	52.60	PEAK	74	PASS
	Off	2310.0	-54.75	2.43	0	42.88	AV	54	PASS
	Off	2390.0	-45.22	2.43	0	52.41	PEAK	74	PASS
	Off	2390.0	-54.50	2.43	0	43.13	AV	54	PASS
	Off	2483.5	-44.02	2.43	0	53.61	PEAK	74	PASS
	Off	2483.5	-54.01	2.43	0	43.62	AV	54	PASS
	Off	2500.0	-43.05	2.43	0	54.58	PEAK	74	PASS
	Off	2500.0	-54.15	2.43	0	43.48	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.52	2.43	0	53.11	PEAK	74	PASS
	Off	2310.0	-54.79	2.43	0	42.84	AV	54	PASS
	Off	2390.0	-44.89	2.43	0	52.74	PEAK	74	PASS
	Off	2390.0	-54.56	2.43	0	43.07	AV	54	PASS
	Off	2483.5	-44.16	2.43	0	53.47	PEAK	74	PASS
	Off	2483.5	-54.00	2.43	0	43.63	AV	54	PASS
	Off	2500.0	-43.27	2.43	0	54.36	PEAK	74	PASS
	Off	2500.0	-54.01	2.43	0	43.62	AV	54	PASS
8DPSK	Off	2310.0	-43.85	2.43	0	53.78	PEAK	74	PASS
	Off	2310.0	-54.66	2.43	0	42.97	AV	54	PASS
	Off	2390.0	-44.42	2.43	0	53.21	PEAK	74	PASS
	Off	2390.0	-54.49	2.43	0	43.14	AV	54	PASS
	Off	2483.5	-44.75	2.43	0	52.88	PEAK	74	PASS
	Off	2483.5	-53.97	2.43	0	43.66	AV	54	PASS
	Off	2500.0	-43.60	2.43	0	54.03	PEAK	74	PASS
	Off	2500.0	-54.10	2.43	0	43.53	AV	54	PASS

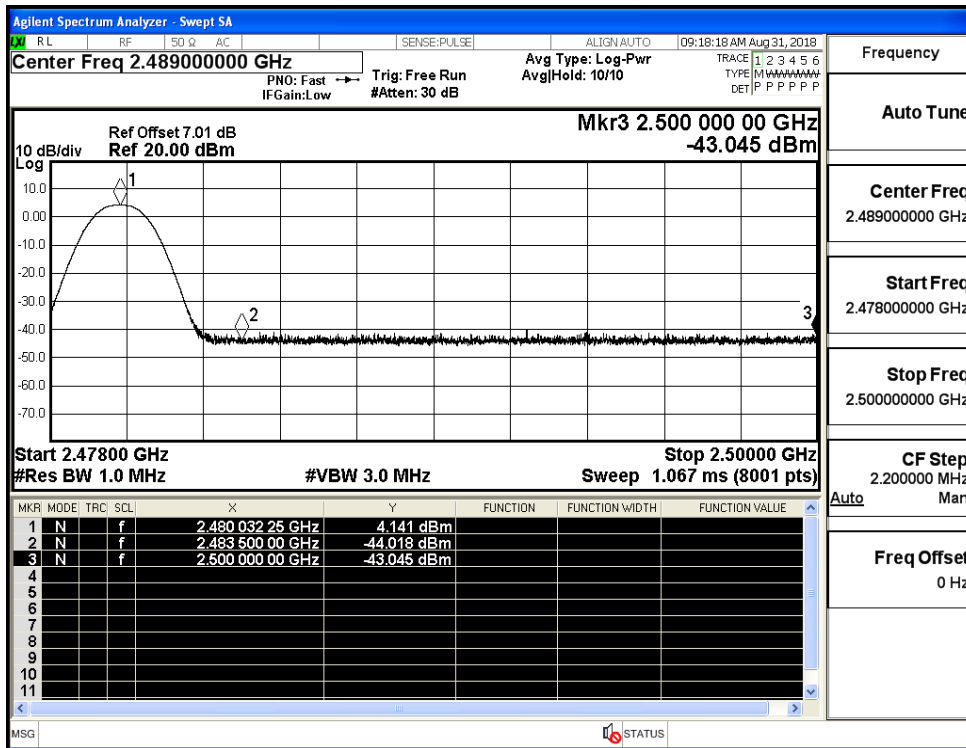
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (Low Channel)



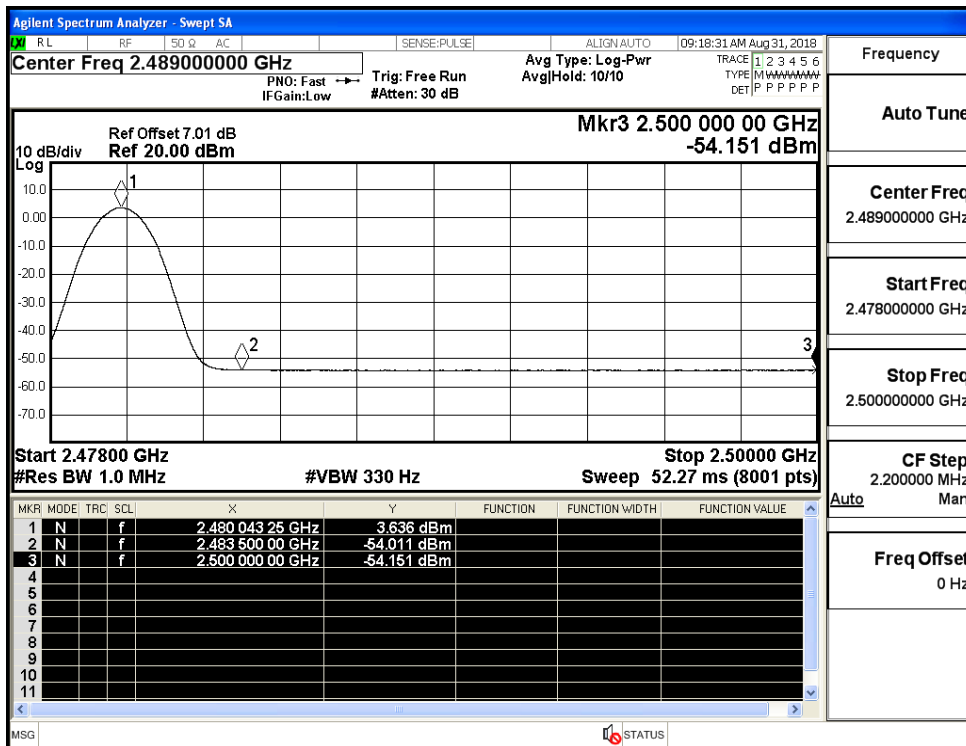
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (Low Channel)



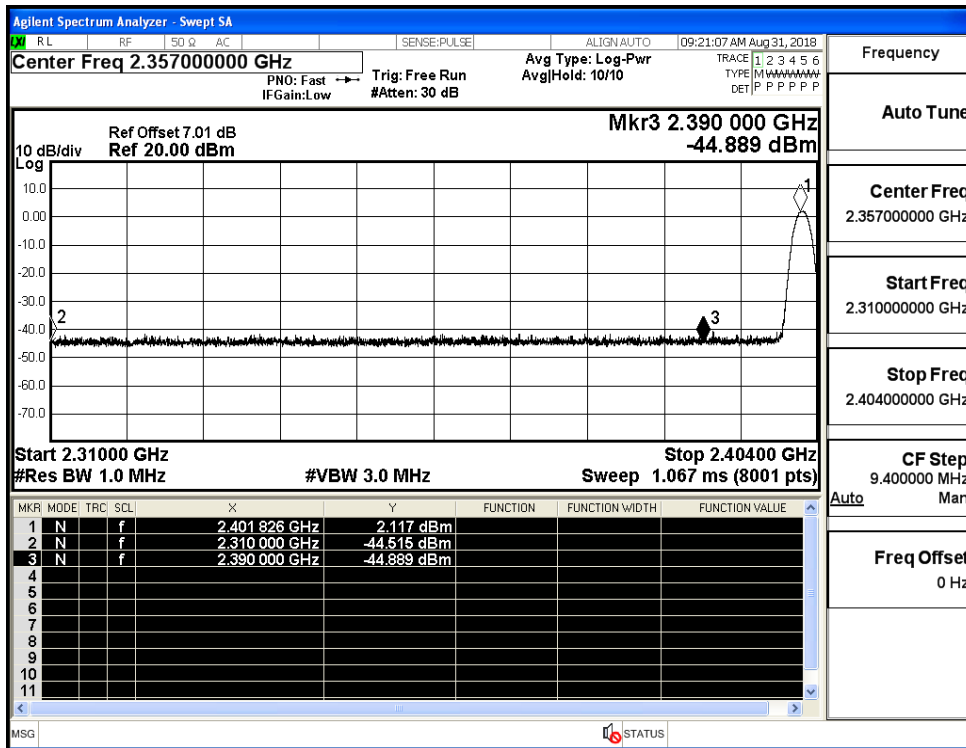
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_PEAK (High Channel)



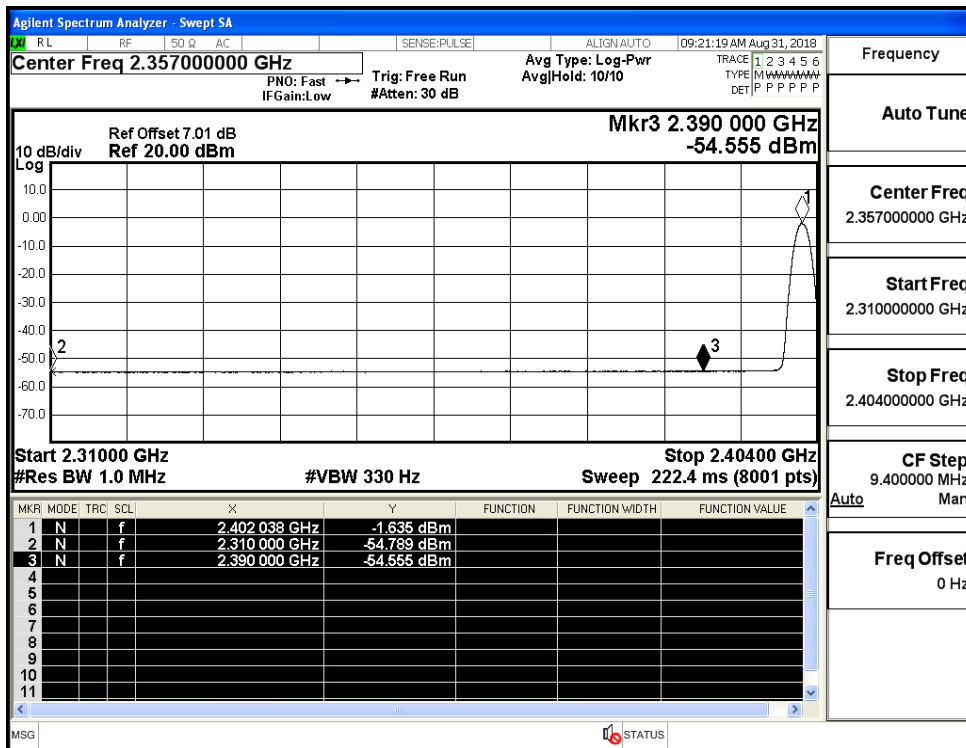
Restrict-band band-edge measurements\_Hopping Off\_GFSK\_Average (High Channel)



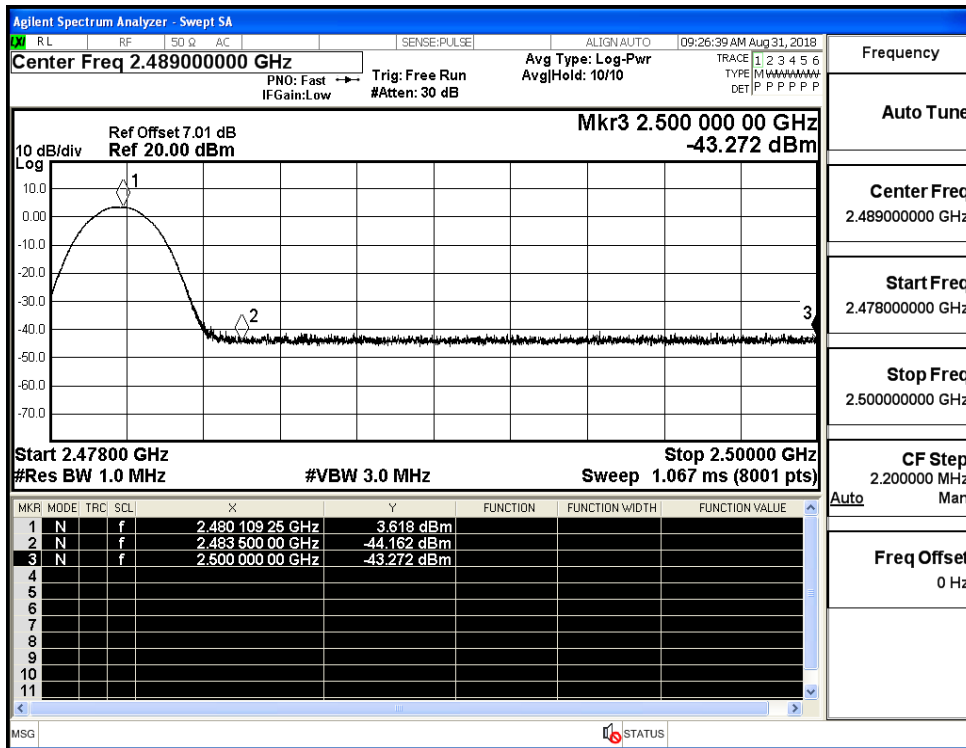
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (Low Channel)



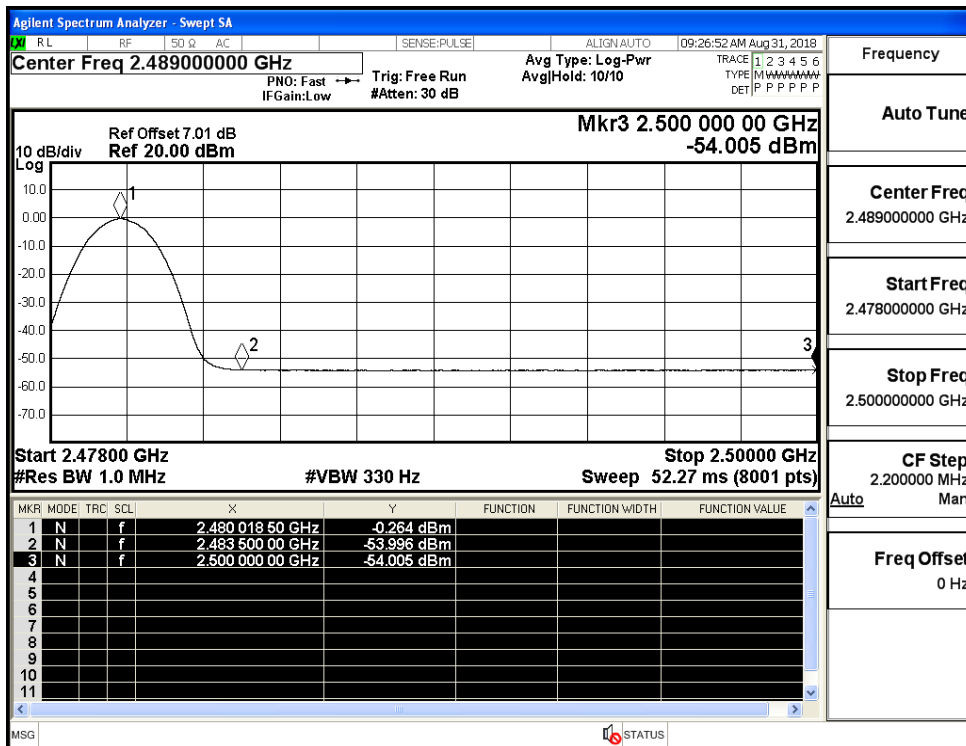
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (Low Channel)



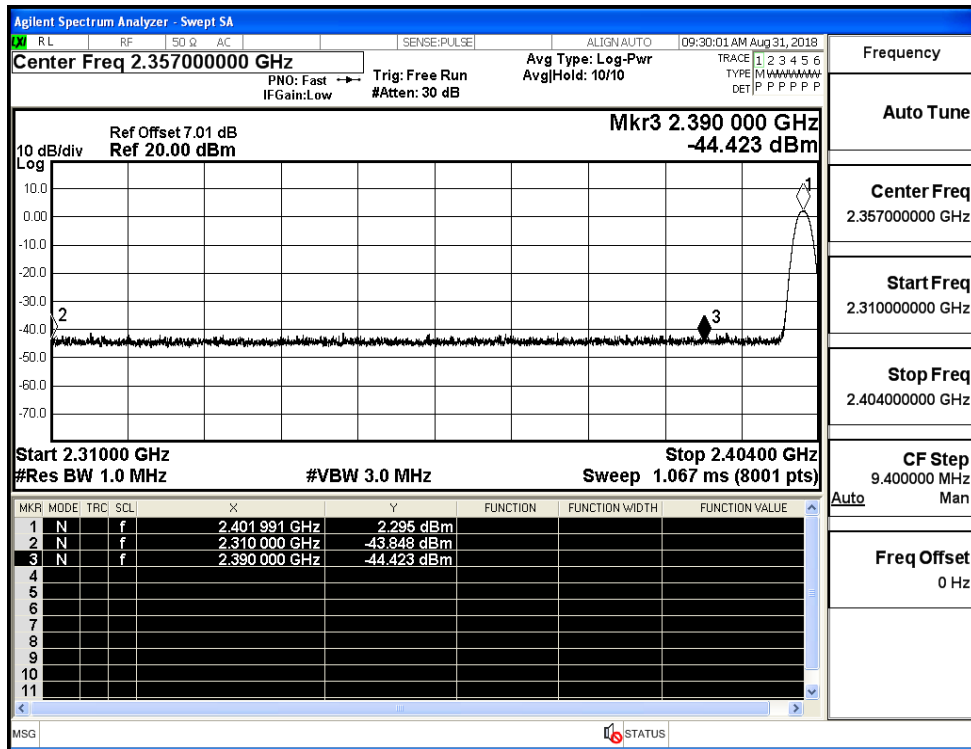
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_PEAK (High Channel)



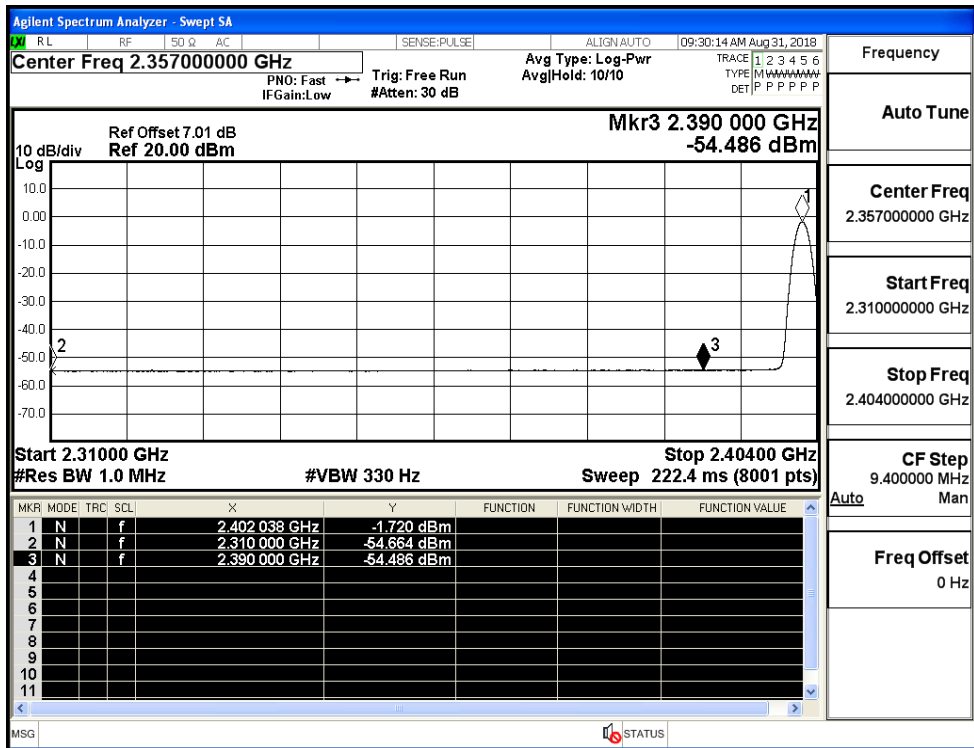
Restrict-band band-edge measurements\_Hopping Off  $\pi/4$ -DQPSK\_Average (High Channel)



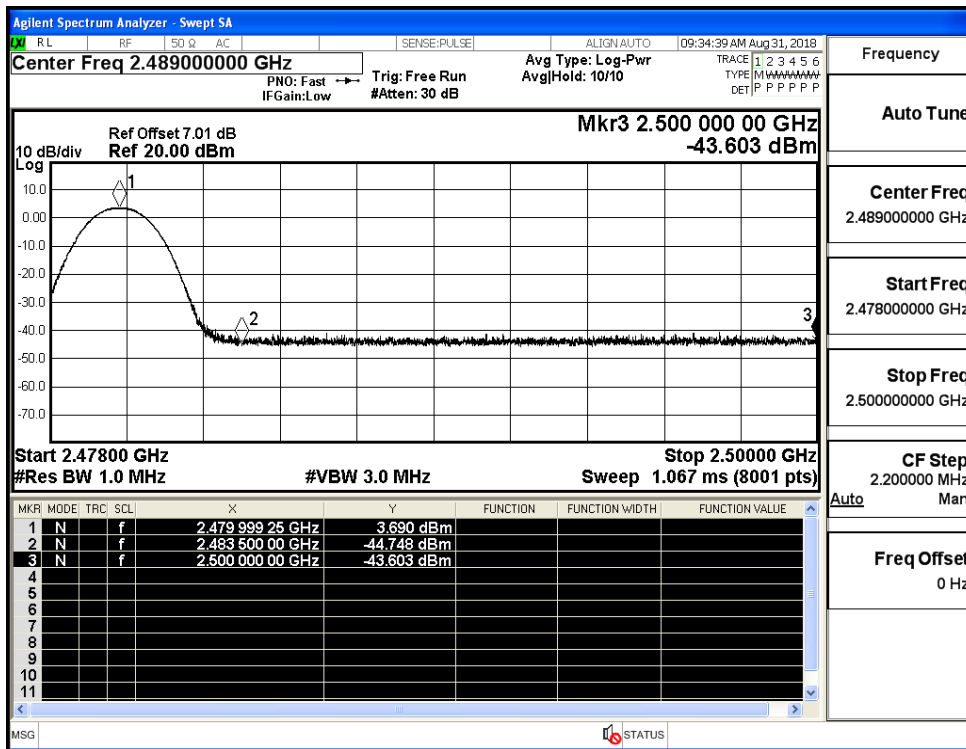
Restrict-band band-edge measurements\_Hopping Off\_8DPSK\_PEAK (Low Channel)



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)

