

Appendix A

RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: WIRELESS STEREO HEADPHONES

Trade Mark: Pioneer

Test Model: SE-C7BTSE

Environmental Conditions

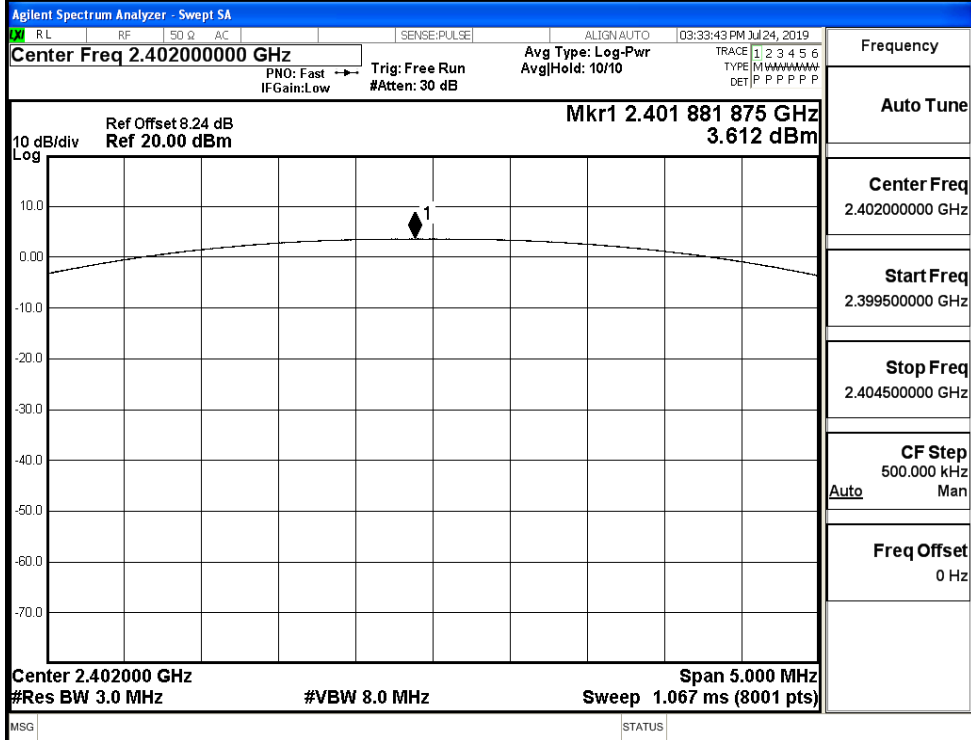
Temperature:	24.1 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Wang.Chuang

A.1 Maxmum Conducted Peak Output Power

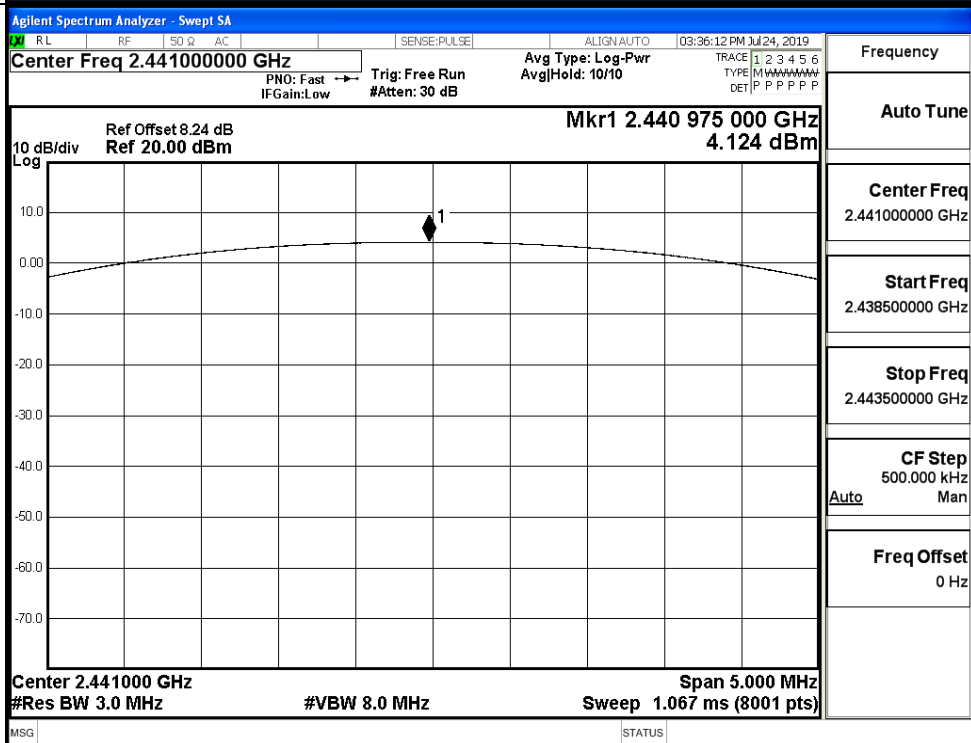
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.612	21	PASS
	MCH	4.124	21	PASS
	HCH	3.205	21	PASS
$\pi/4$ DQPSK	LCH	2.927	21	PASS
	MCH	3.421	21	PASS
	HCH	2.478	21	PASS
8DPSK	LCH	2.943	21	PASS
	MCH	3.472	21	PASS
	HCH	2.528	21	PASS

Test Graphs

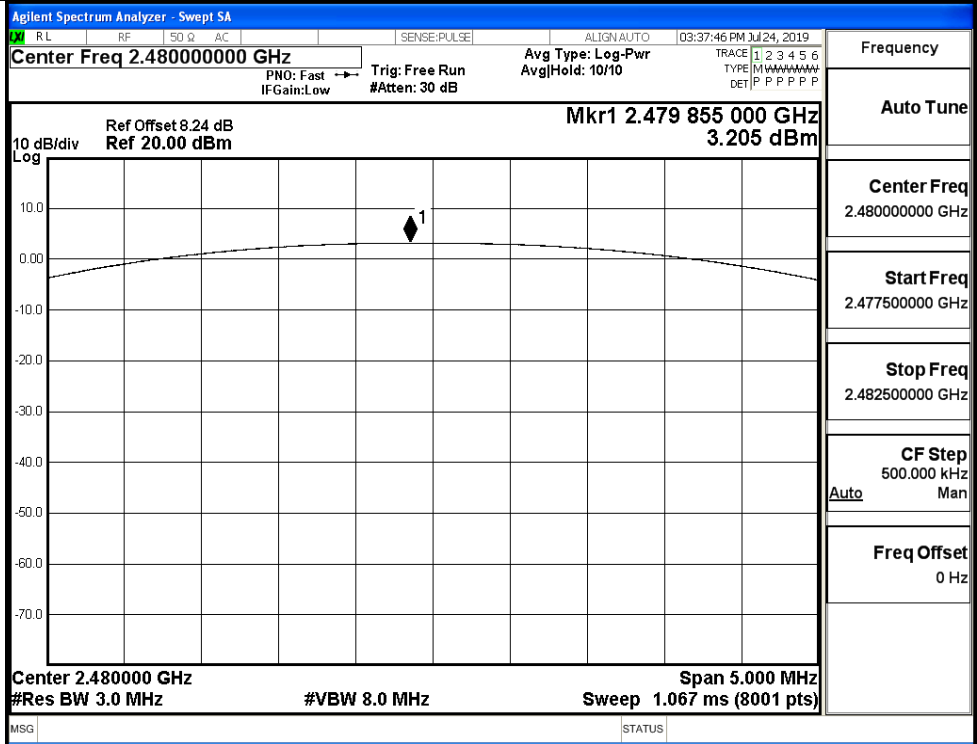
GFSK/LCH



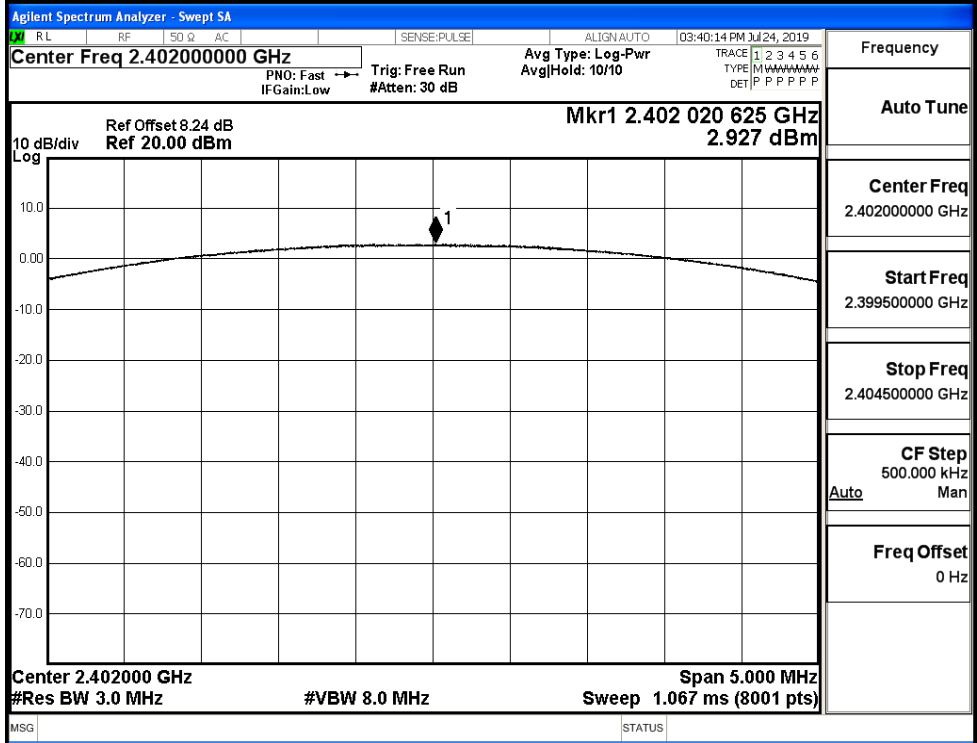
GFSK/MCH



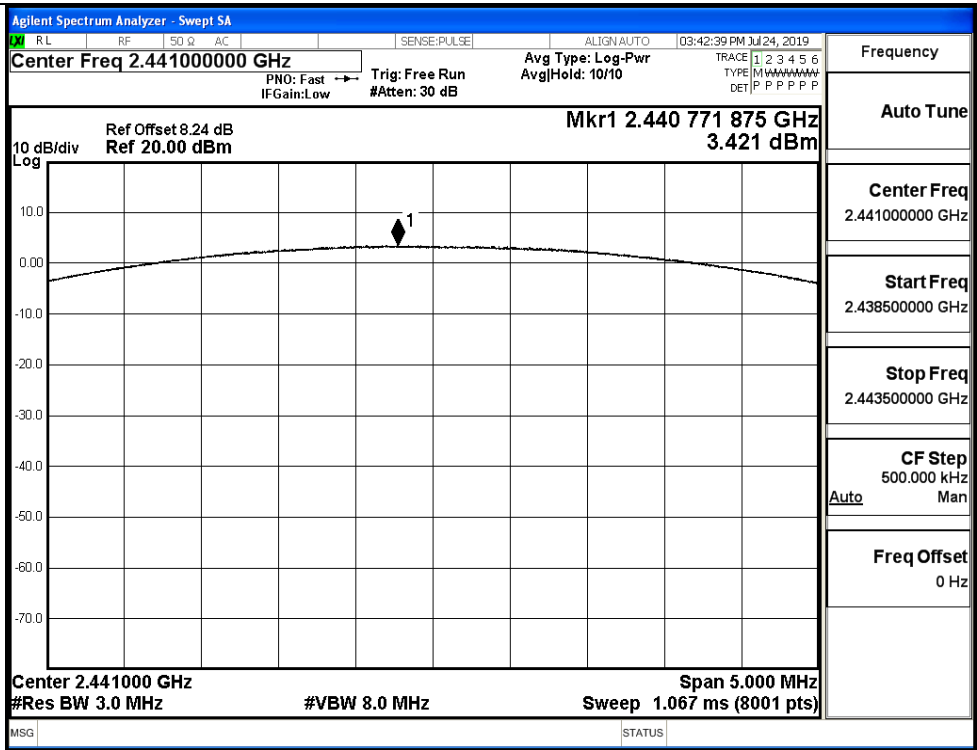
GFSK/HCH



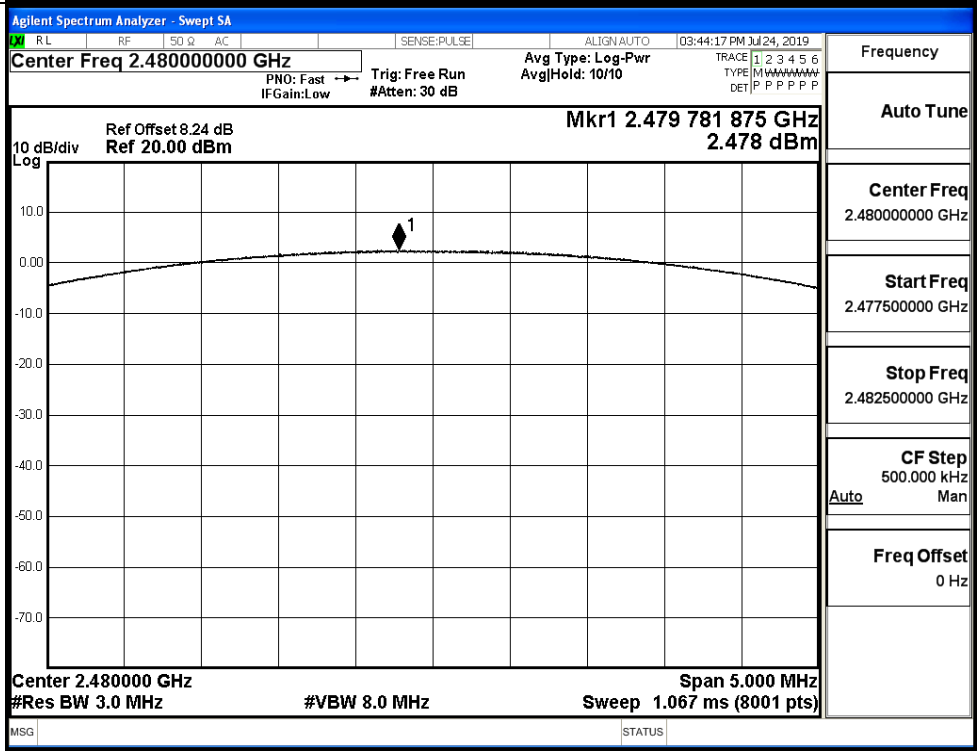
π /4DQPSK/LCH



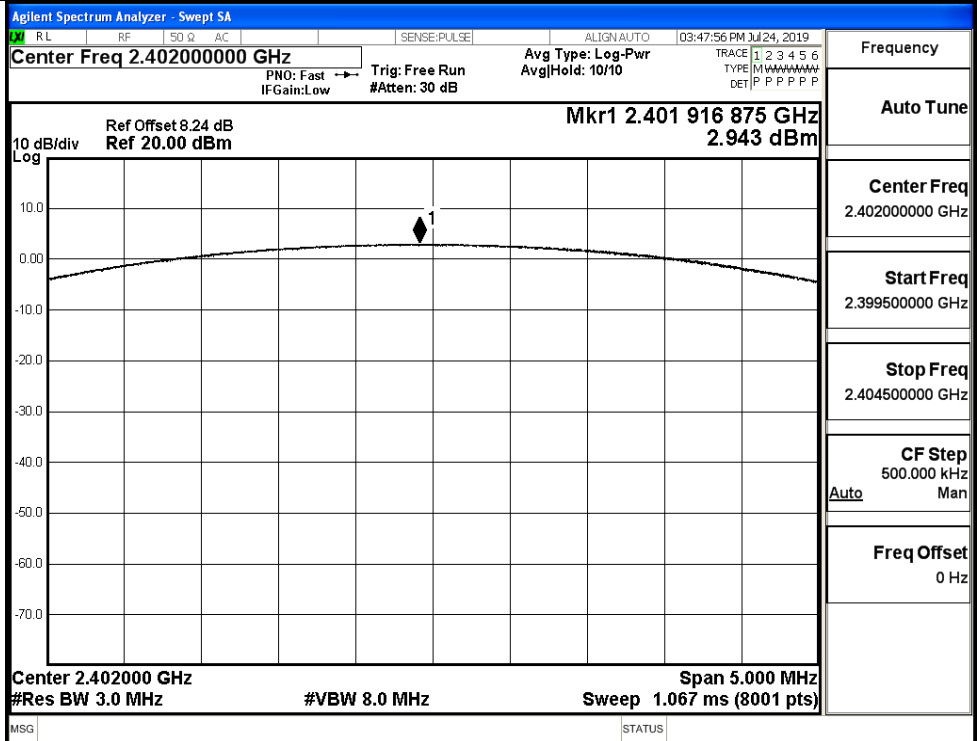
π /4DQPSK/MCH



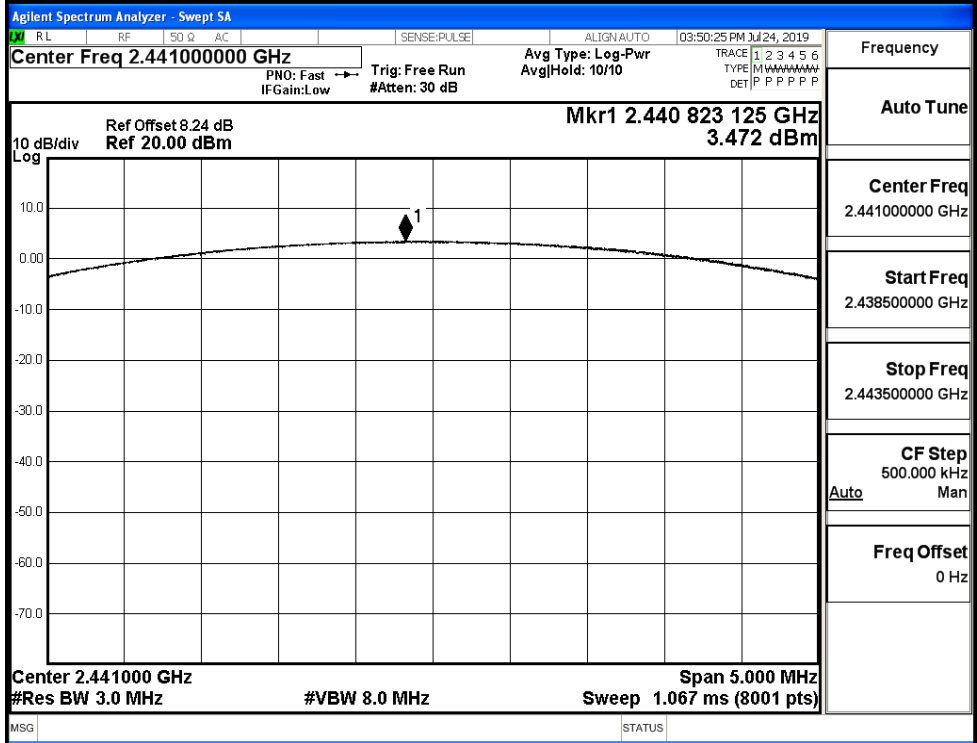
π /4DQPSK/HCH



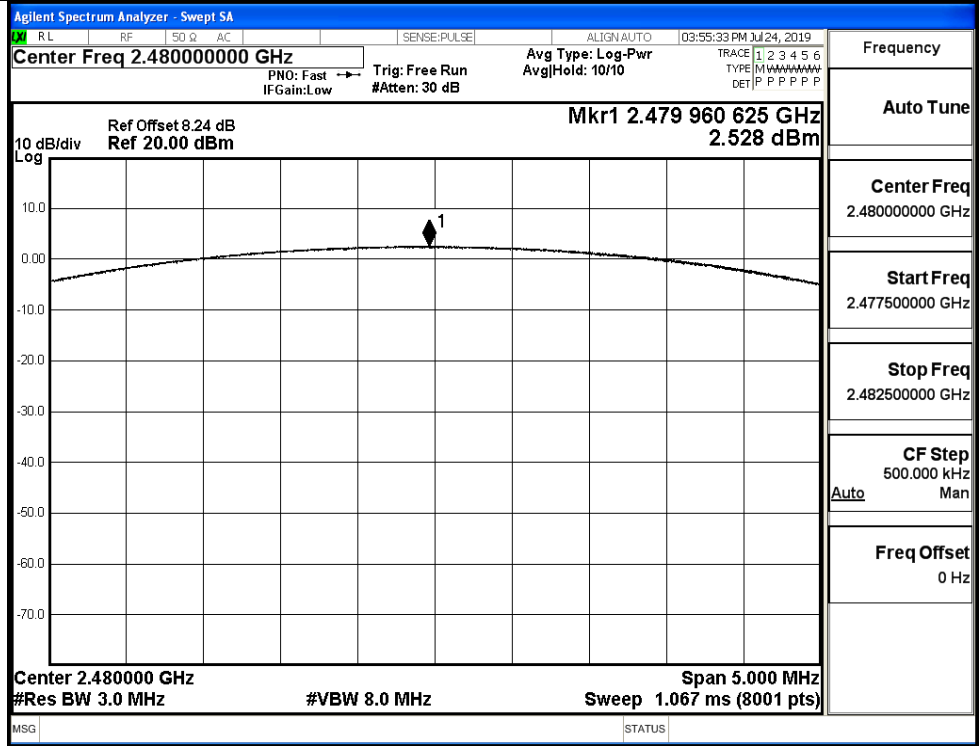
8DPSK/LCH



8DPSK/MCH

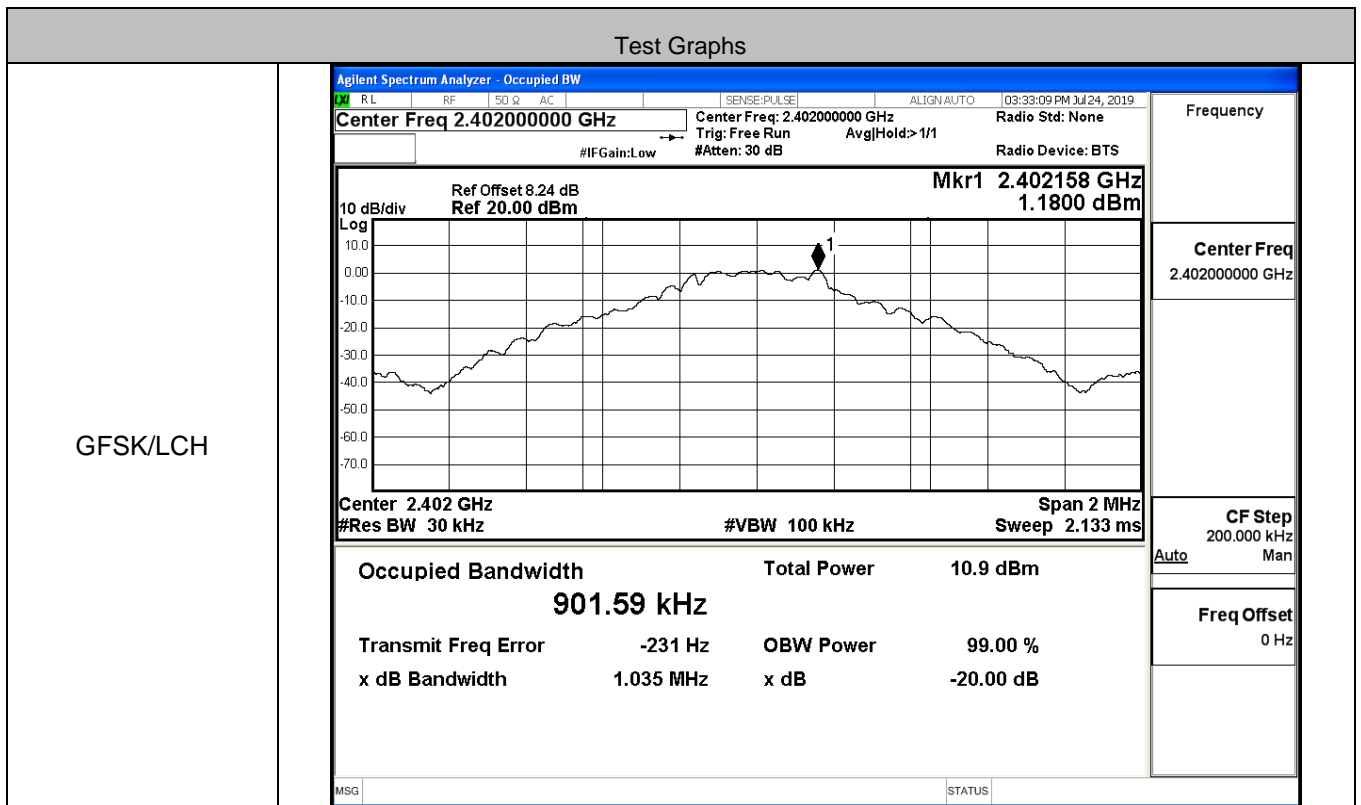


8DPSK/HCH

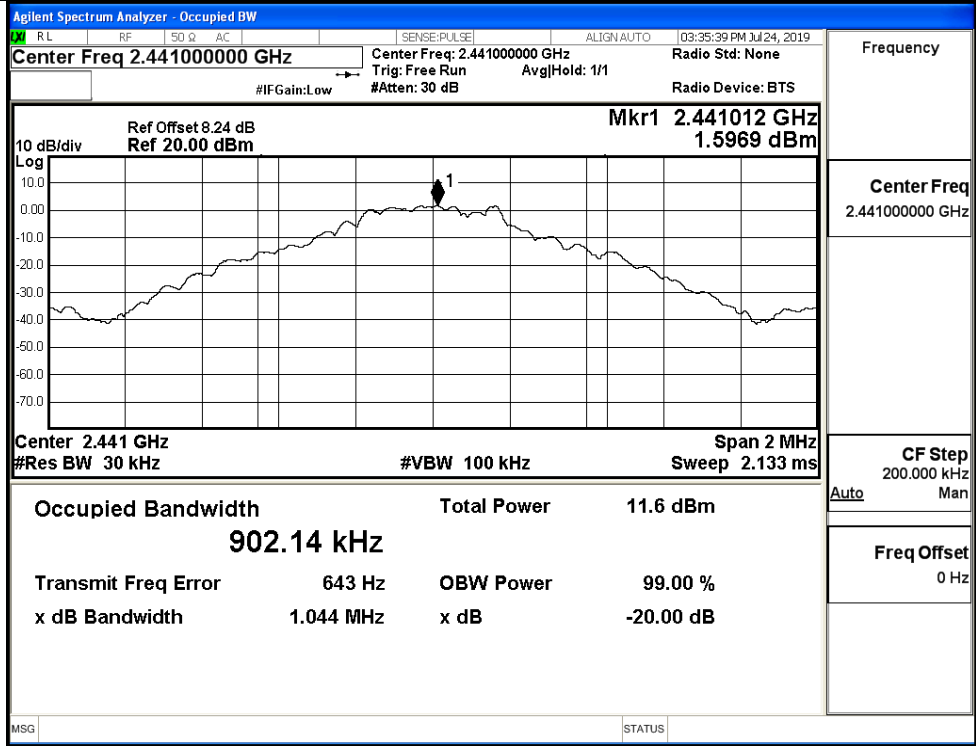


A.2 20dB Bandwidth

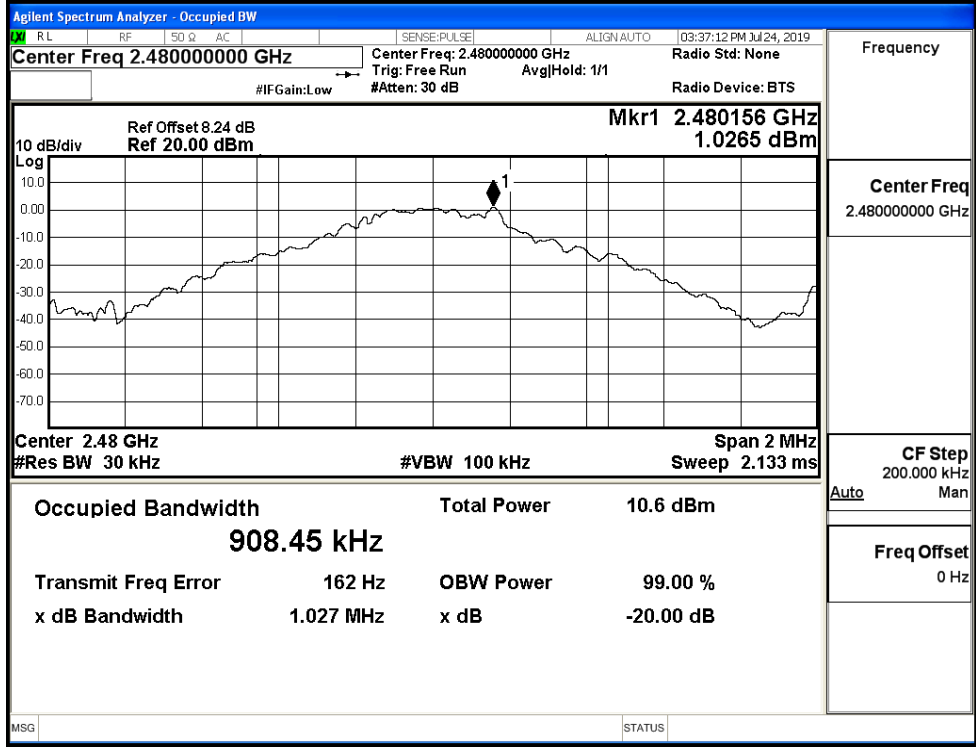
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.035	Not Specified	PASS
	MCH	1.044	Not Specified	PASS
	HCH	1.027	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.310	Not Specified	PASS
	MCH	1.292	Not Specified	PASS
	HCH	1.291	Not Specified	PASS
8DPSK	LCH	1.297	Not Specified	PASS
	MCH	1.295	Not Specified	PASS
	HCH	1.296	Not Specified	PASS



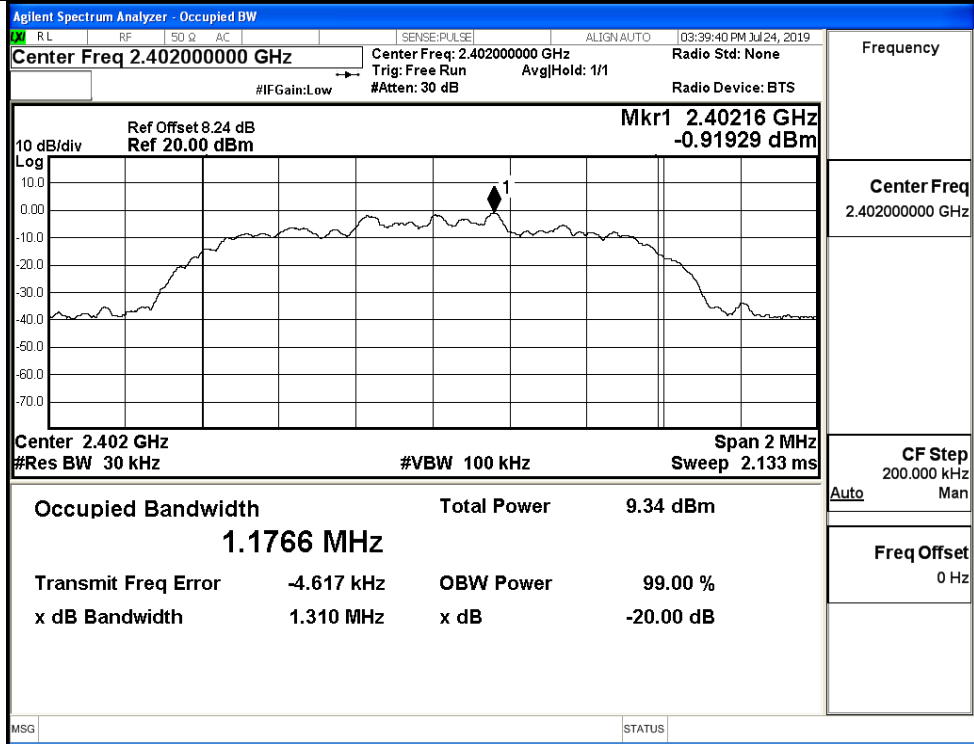
GFSK/MCH



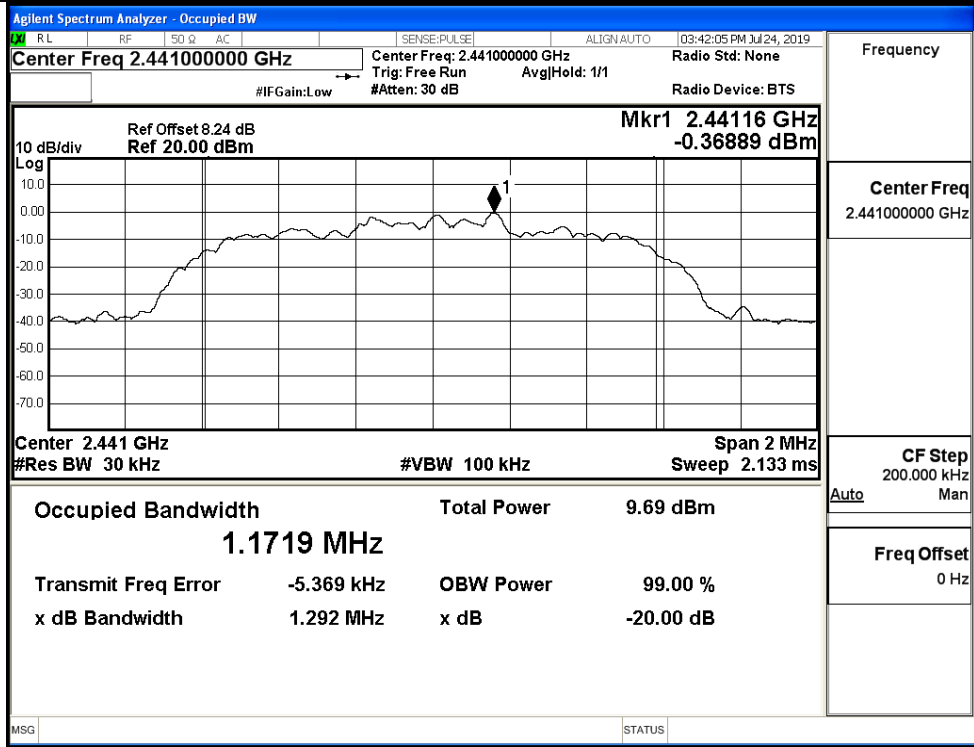
GFSK/HCH



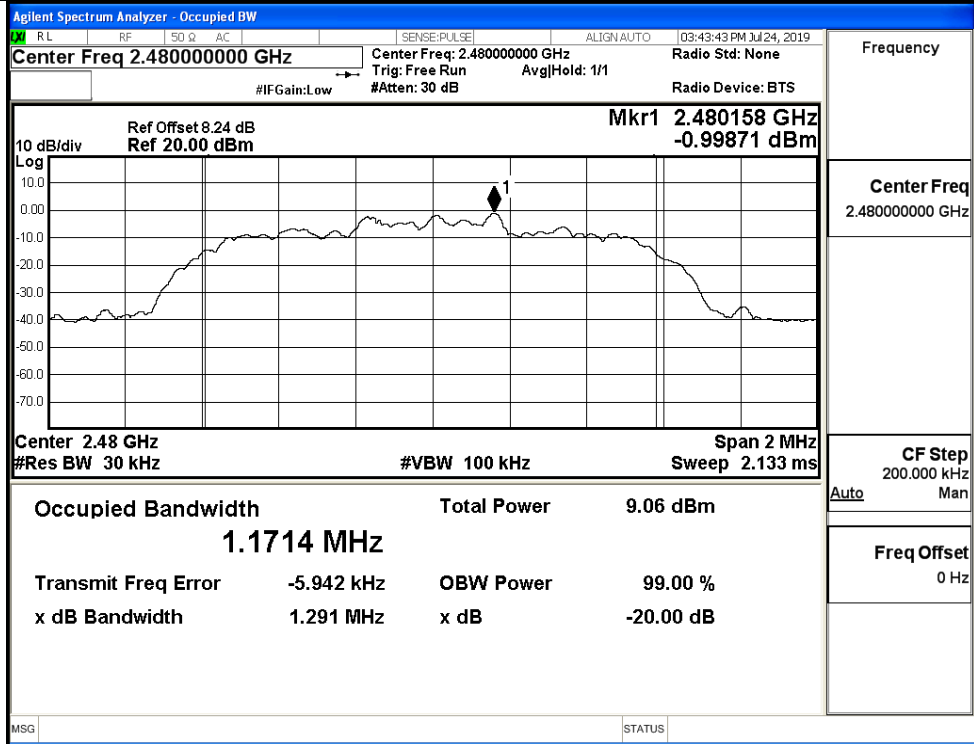
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

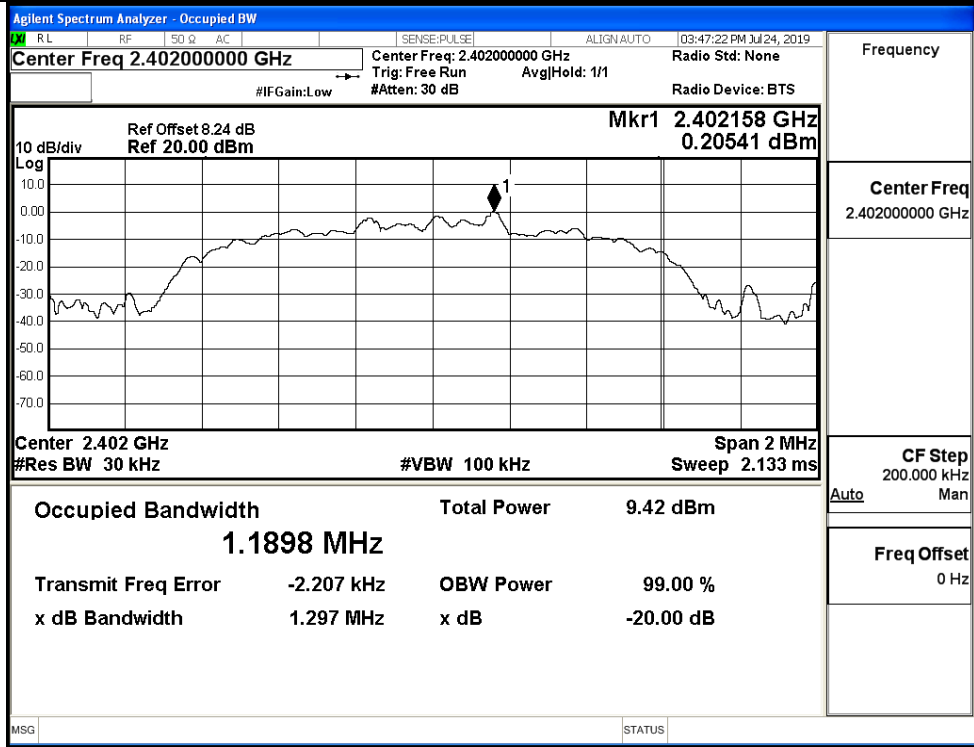


$\pi/4$ DQPSK/HCH



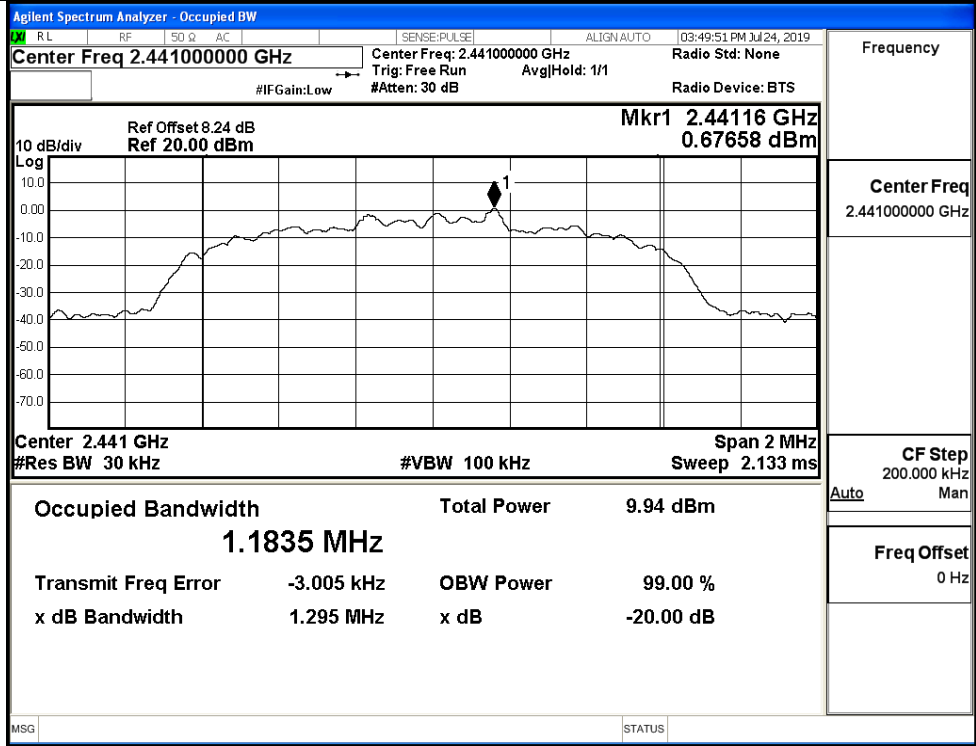
Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH

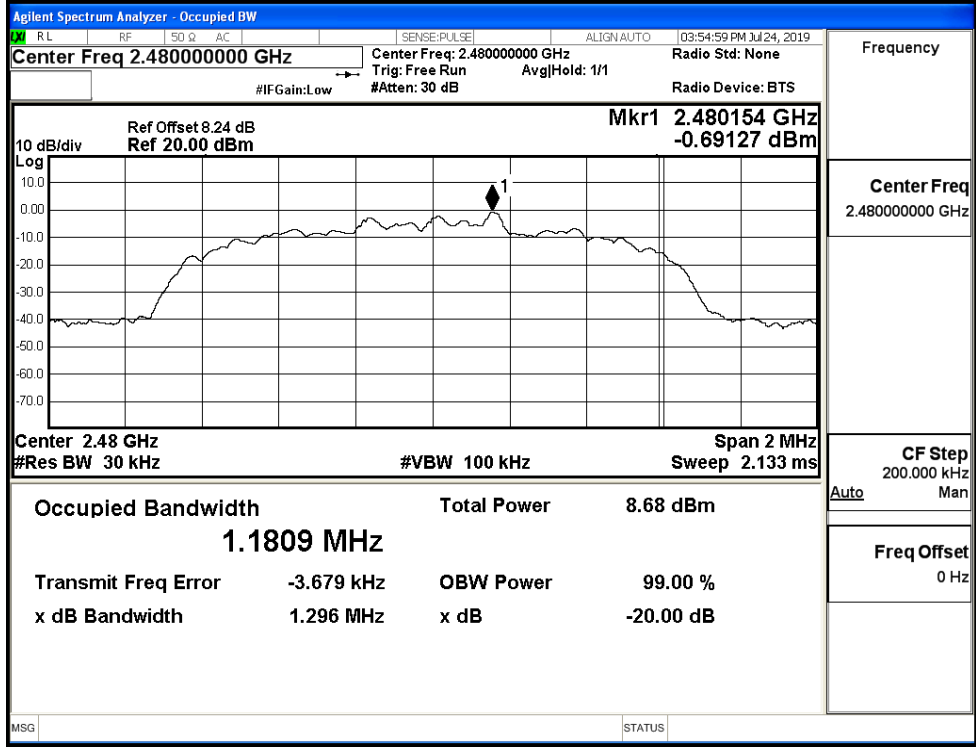


Frequency	2.40200000 GHz
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/MCH

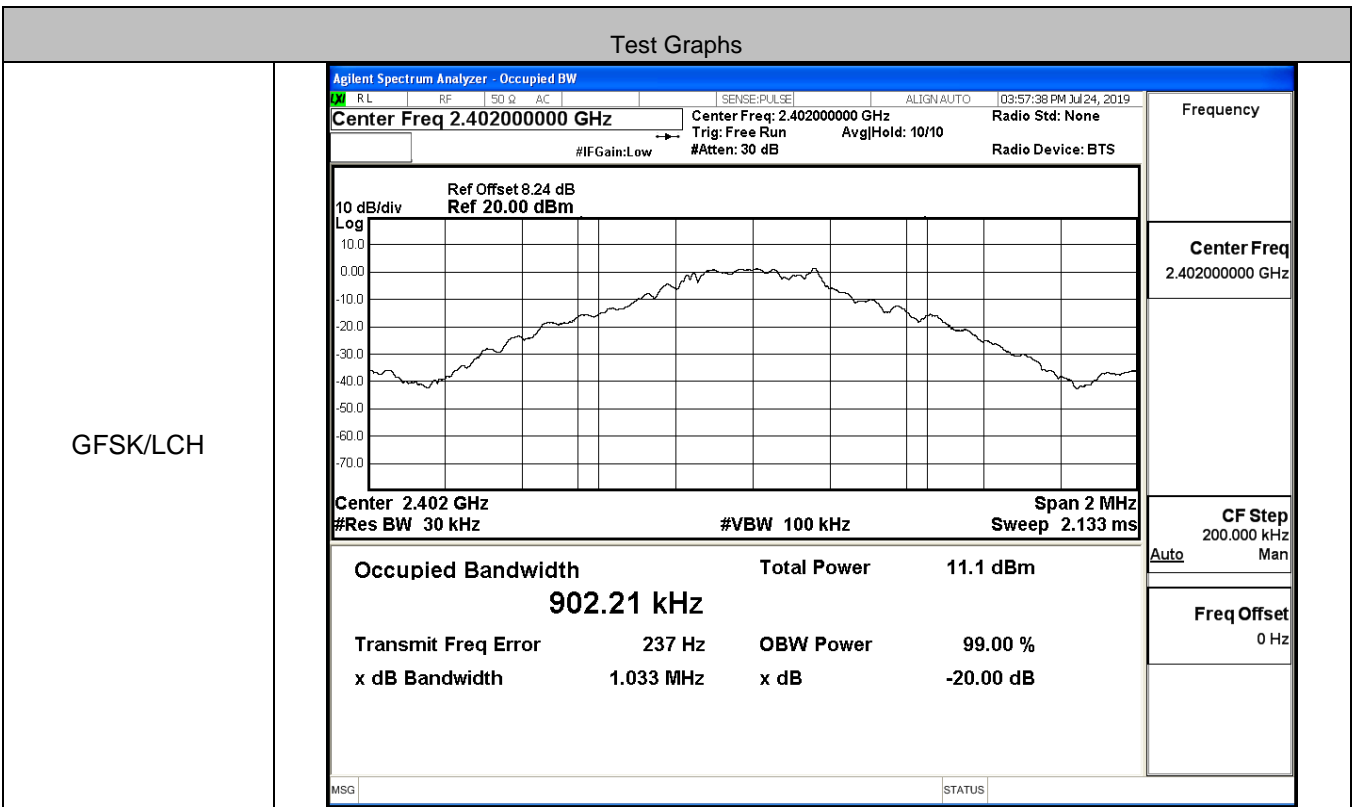


8DPSK/HCH

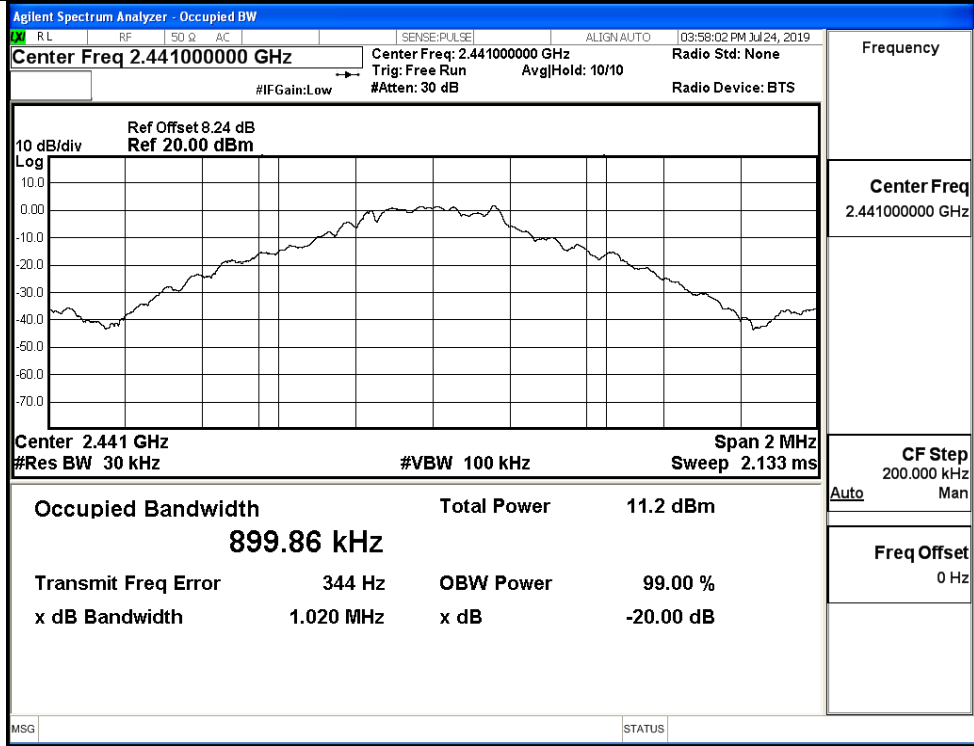


A.3 Occupied Bandwidth

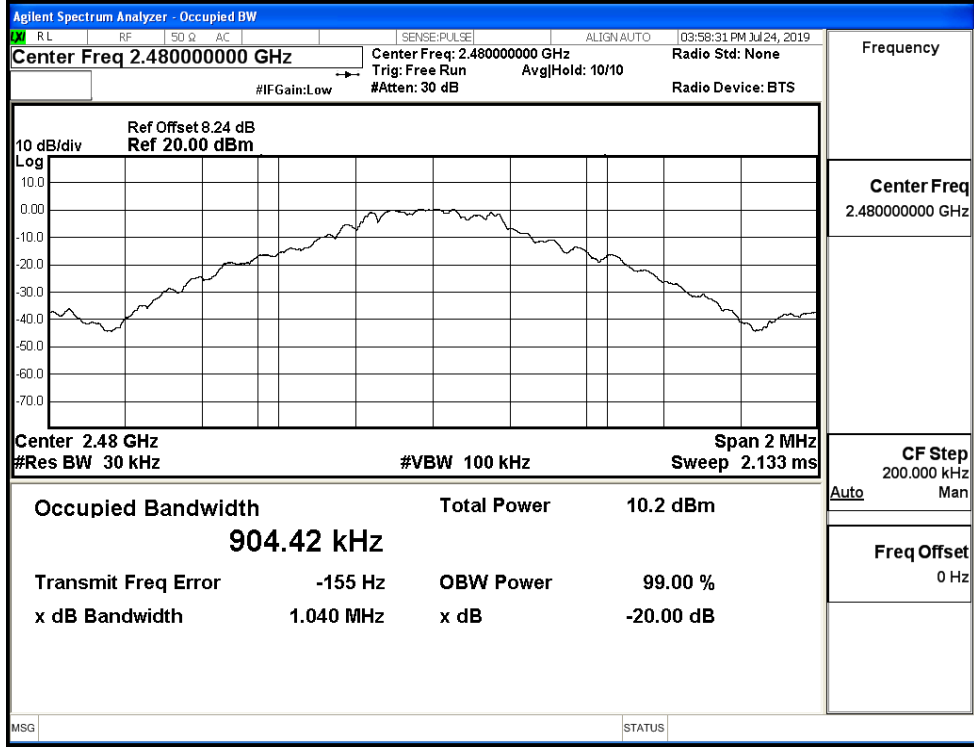
Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.90221	Not Specified	PASS
	MCH	0.89986	Not Specified	PASS
	HCH	0.90442	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1756	Not Specified	PASS
	MCH	1.1714	Not Specified	PASS
	HCH	1.1724	Not Specified	PASS
8DPSK	LCH	1.1864	Not Specified	PASS
	MCH	1.1837	Not Specified	PASS
	HCH	1.1855	Not Specified	PASS



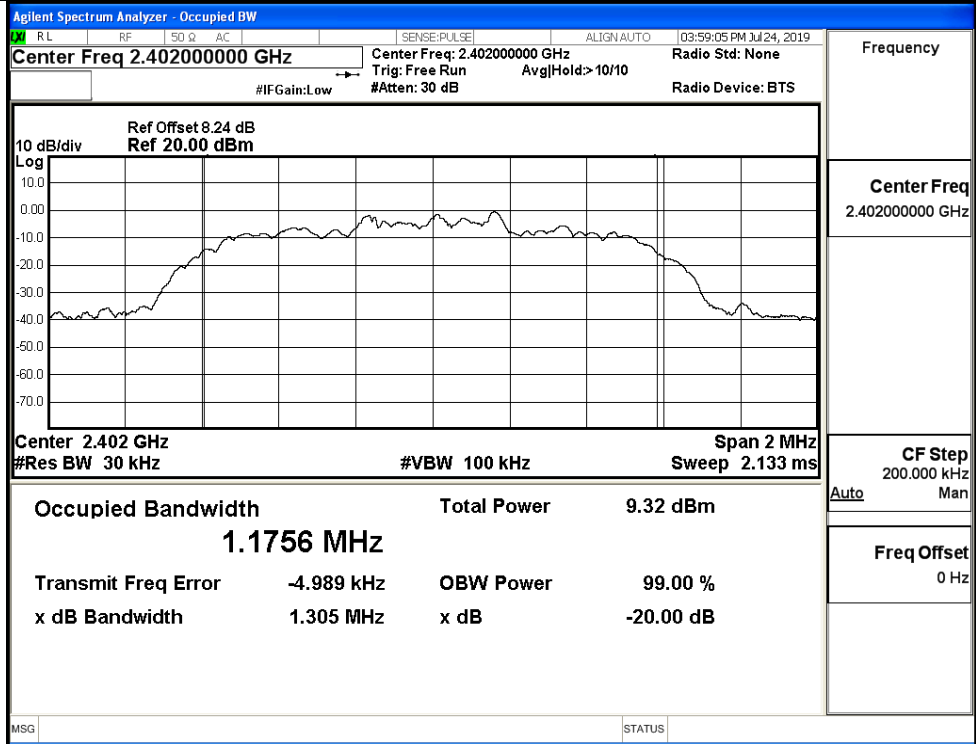
GFSK/MCH



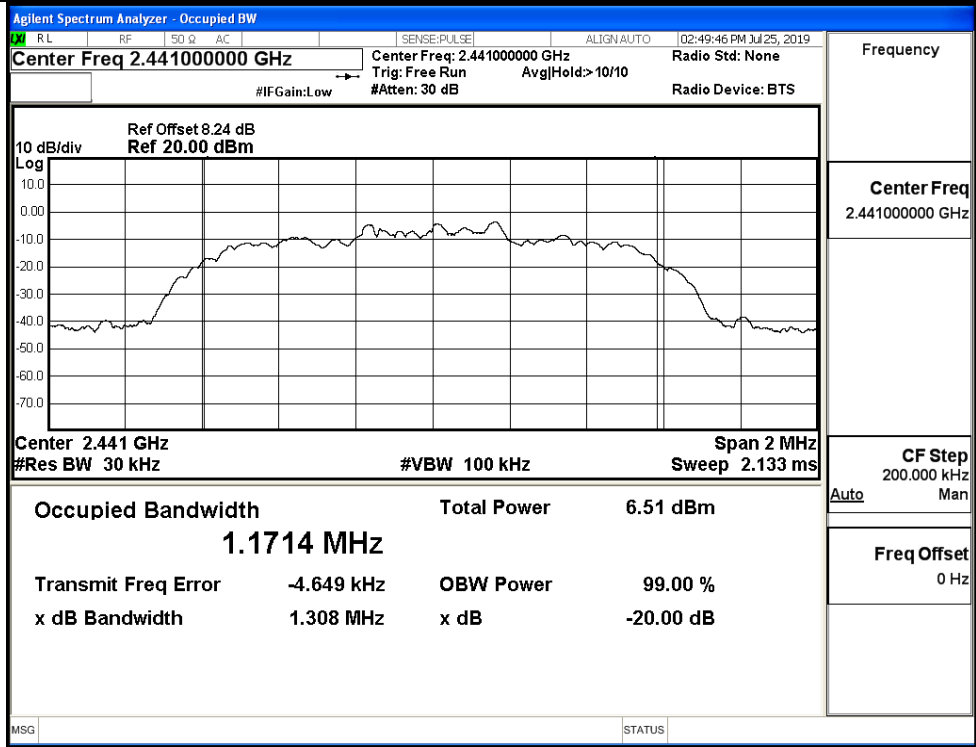
GFSK/HCH



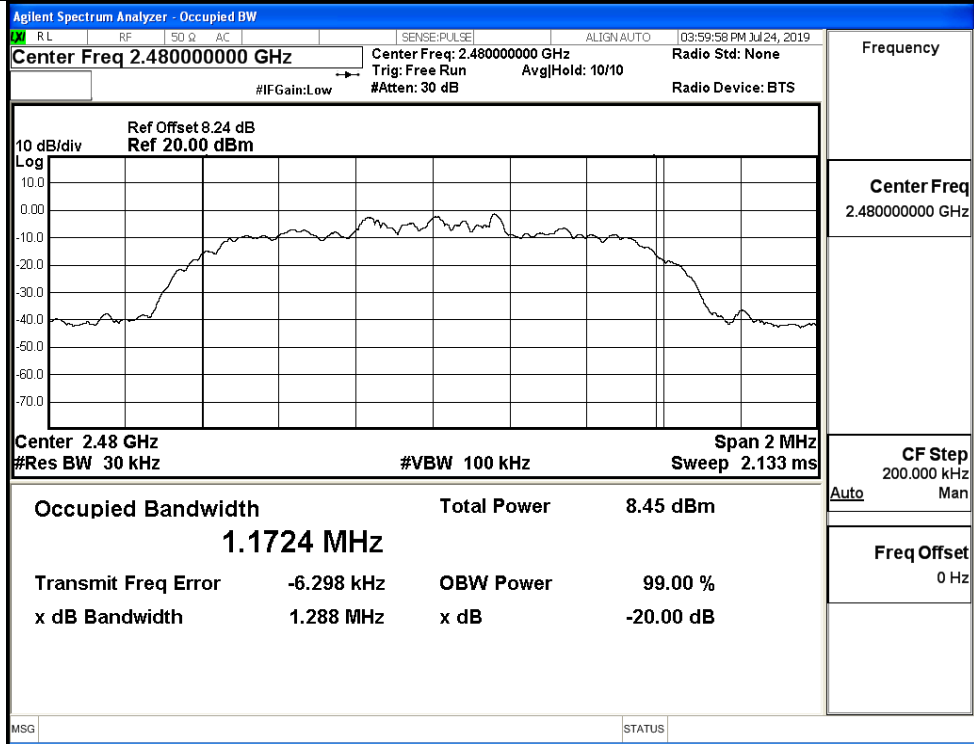
$\pi/4$ DQPSK/LCH



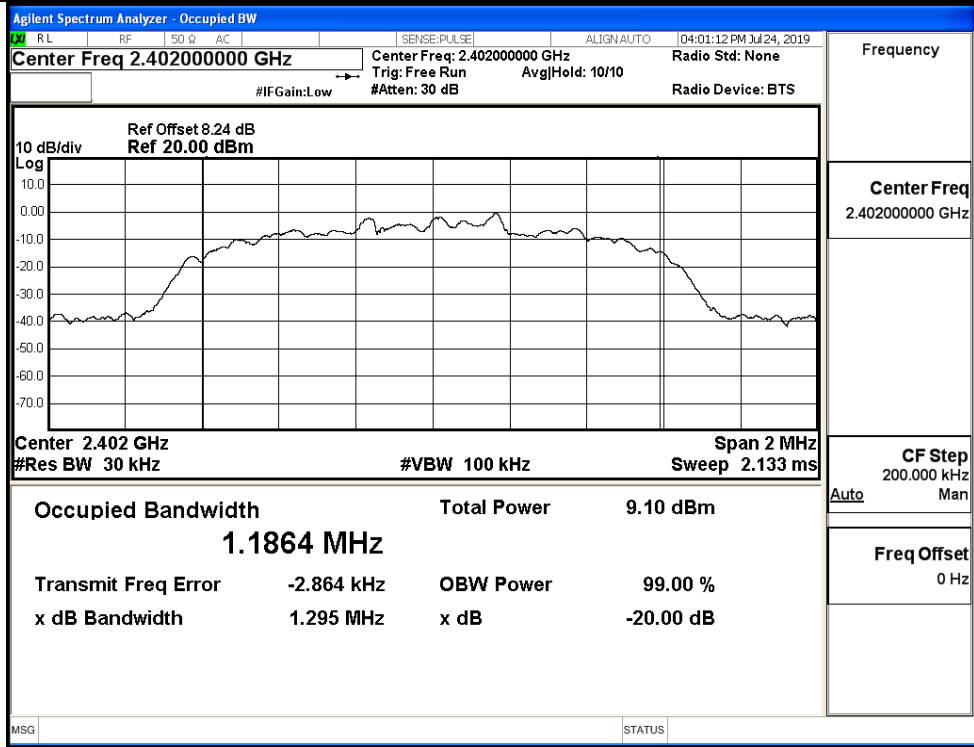
$\pi/4$ DQPSK/MCH

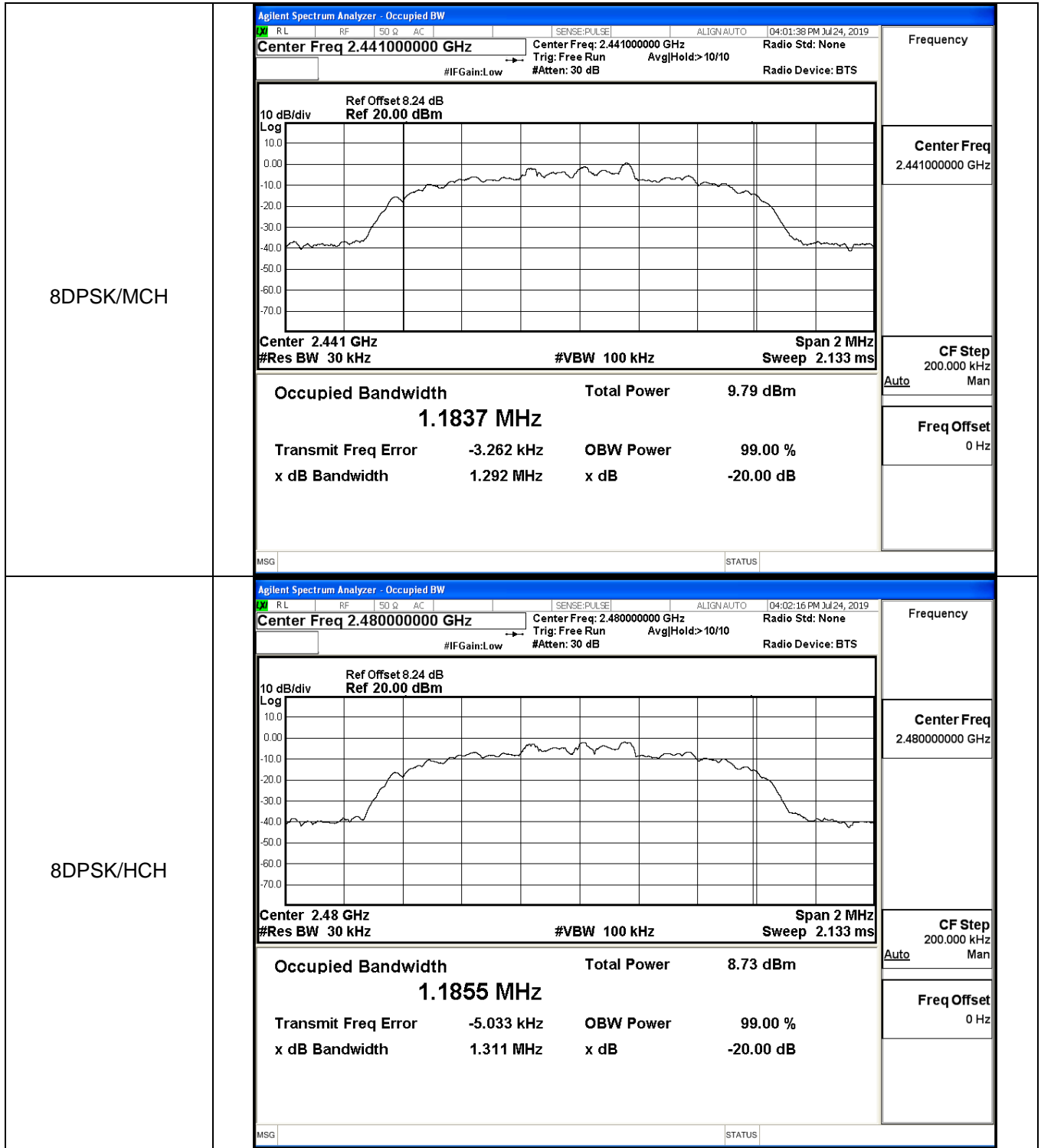


$\pi/4$ DQPSK/HCH



8DPSK/LCH





A.4 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.964	0.696	PASS
	MCH	0.970	0.696	PASS
	HCH	1.020	0.696	PASS
π/4DQPSK	LCH	0.944	0.873	PASS
	MCH	0.942	0.873	PASS

	HCH	1.162	0.873	PASS
8DPSK	LCH	1.164	0.865	PASS
	MCH	1.320	0.865	PASS
	HCH	0.908	0.865	PASS

Test Graphs

GFSK/LCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.402500000 GHz
 Ref Offset 8.24 dB, Ref 20.00 dBm
 ΔMkr1 963.75 kHz, -0.116 dB
 Start 2.401500 GHz, Stop 2.403500 GHz
 #Res BW 100 kHz, #VBW 300 kHz, Sweep 1.067 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	963.75 kHz (Δ)	-0.116 dB			
2	F	f		2.40199450 GHz	2.935 dBm			

Frequency

Auto Tune

Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz

Freq Offset
0 Hz

GFSK/MCH

Agilent Spectrum Analyzer - Swept SA
 Center Freq 2.441500000 GHz
 Ref Offset 8.24 dB, Ref 20.00 dBm
 ΔMkr1 970 kHz, 0.041 dB
 Start 2.440500 GHz, Stop 2.442500 GHz
 #Res BW 100 kHz, #VBW 300 kHz, Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	f	(Δ)	970 kHz (Δ)	0.041 dB			
2	F	f		2.441018 GHz	3.374 dBm			

Frequency

Auto Tune

Center Freq
2.441500000 GHz

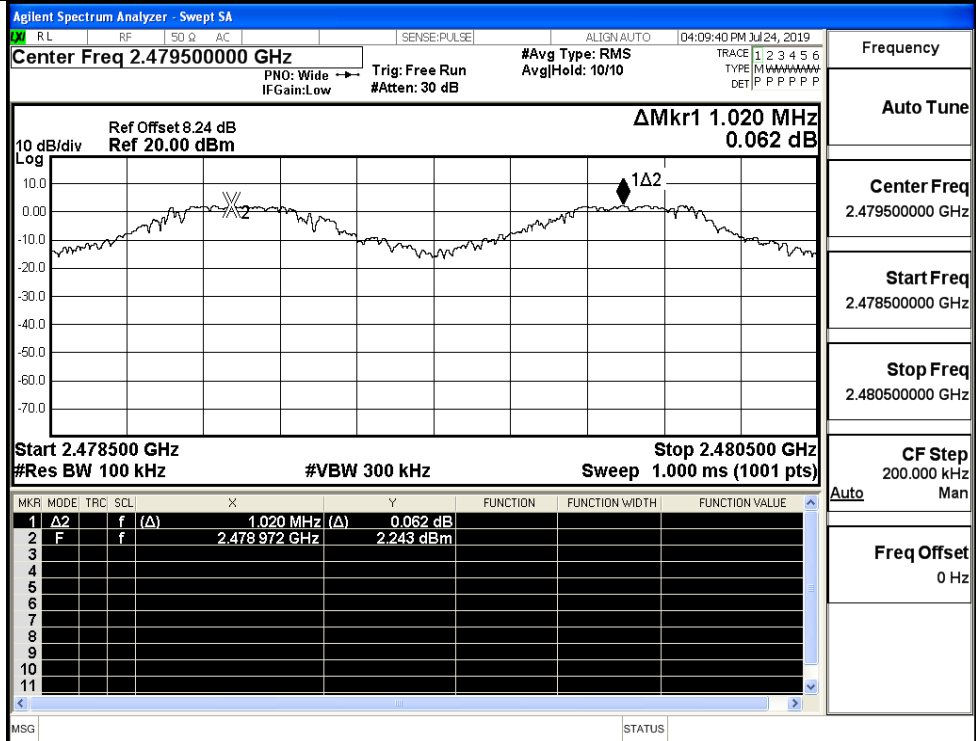
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz

Freq Offset
0 Hz

GFSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

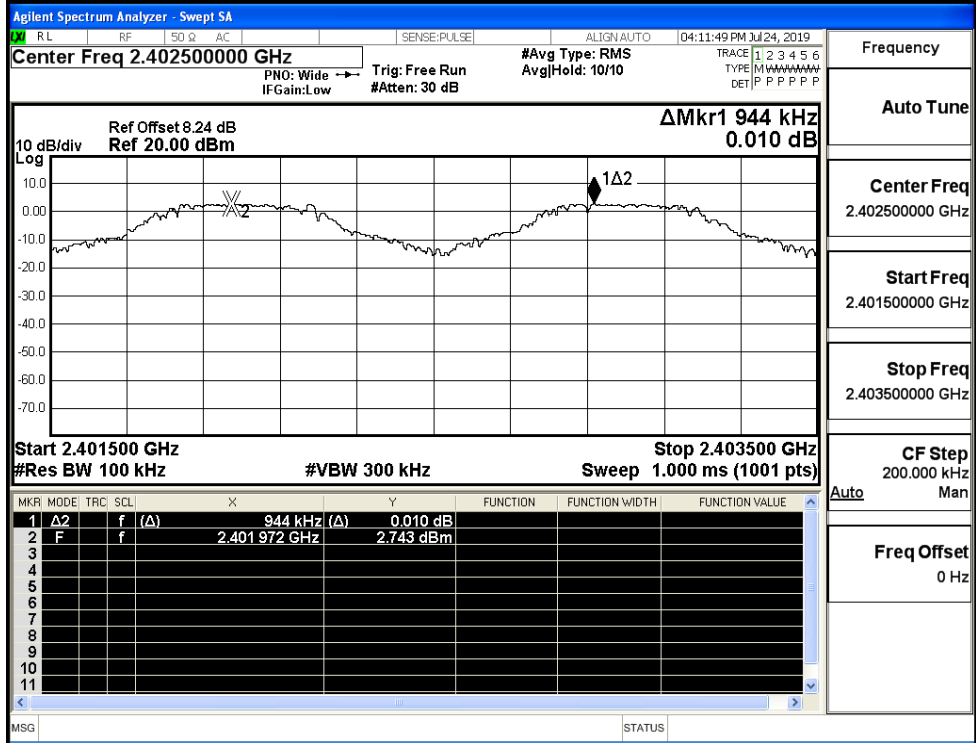
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

π /4DQPSK/LCH



Frequency

Auto Tune

Center Freq
2.402500000 GHz

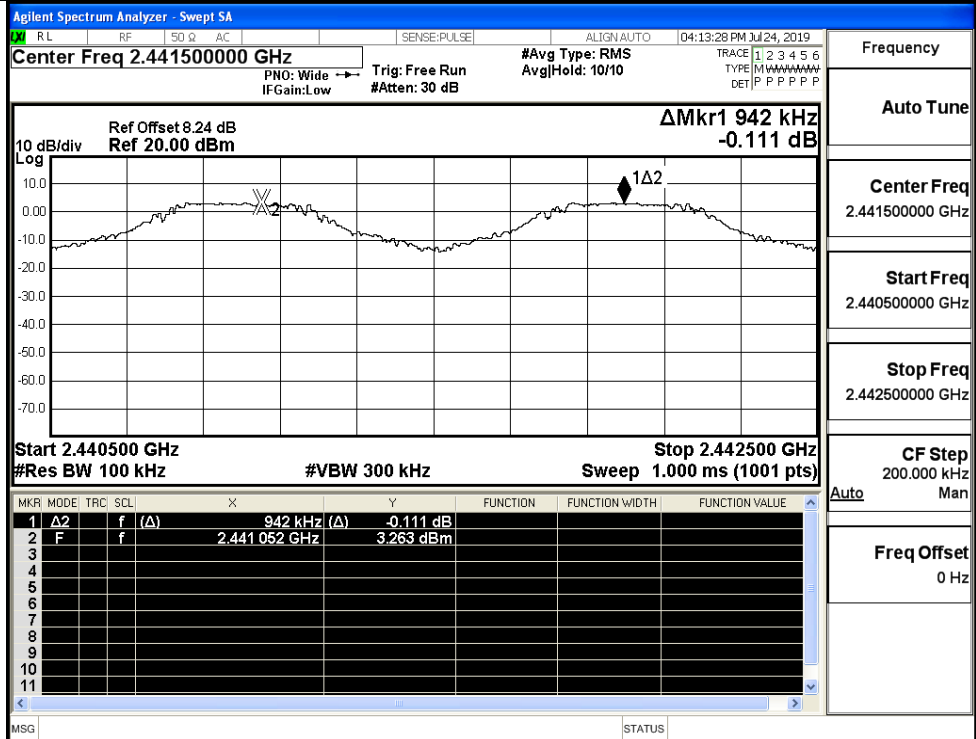
Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

π /4DQPSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

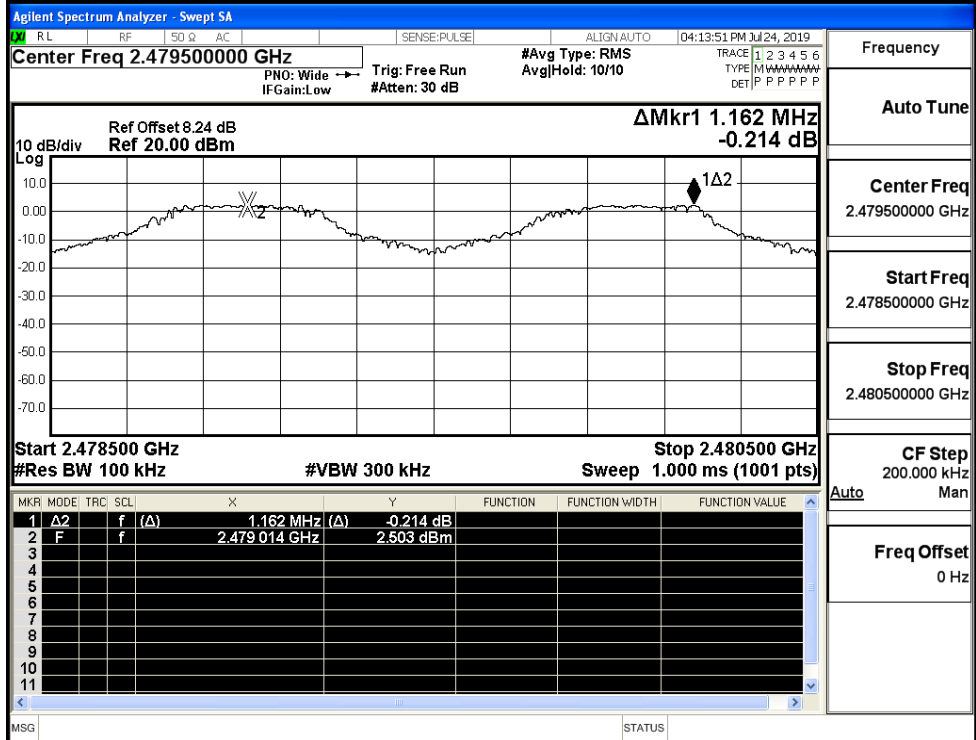
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

π /4DQPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

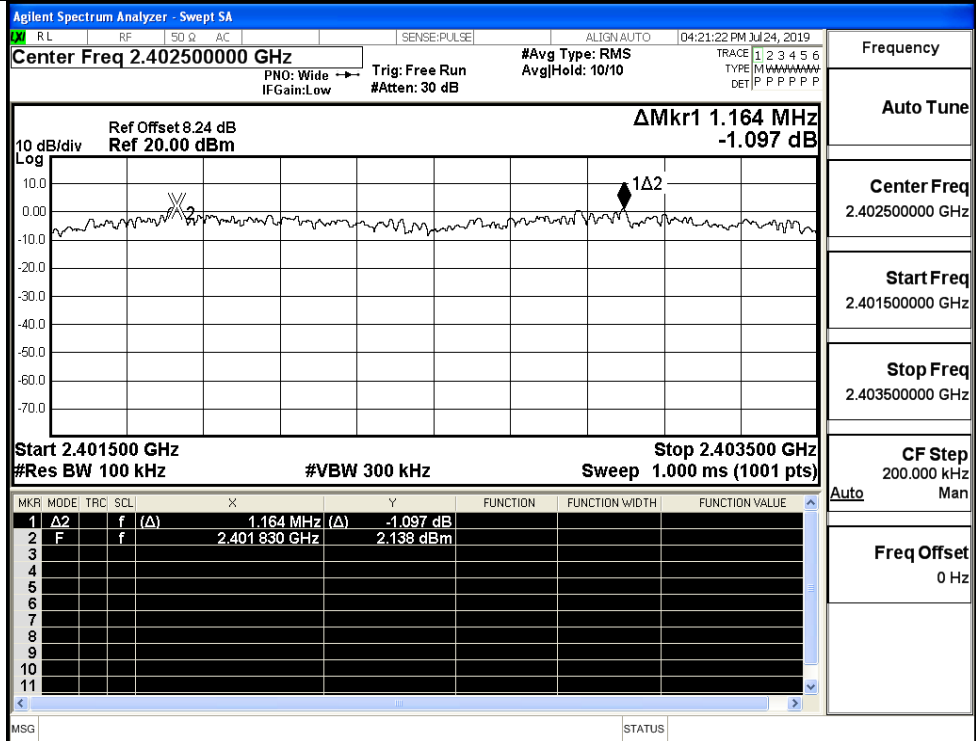
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Auto Man

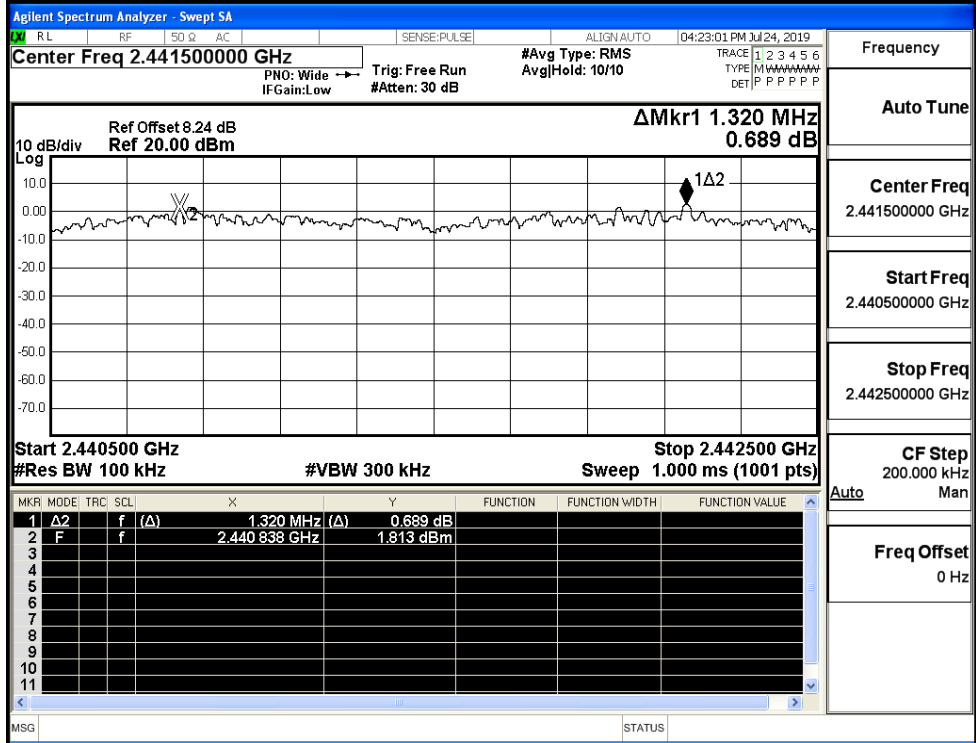
Freq Offset
0 Hz

8DPSK/LCH

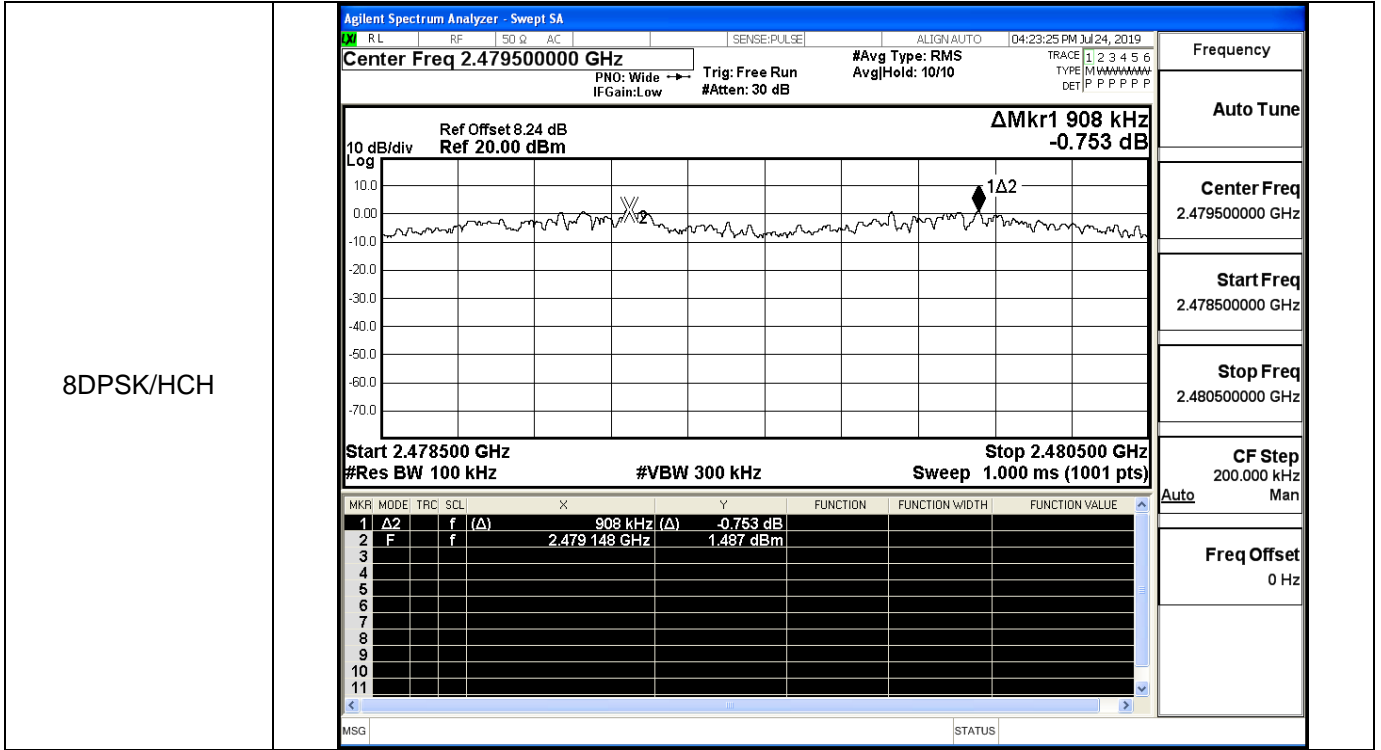


Frequency
Auto Tune
Center Freq
2.402500000 GHz
Start Freq
2.401500000 GHz
Stop Freq
2.403500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz

8DPSK/MCH



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

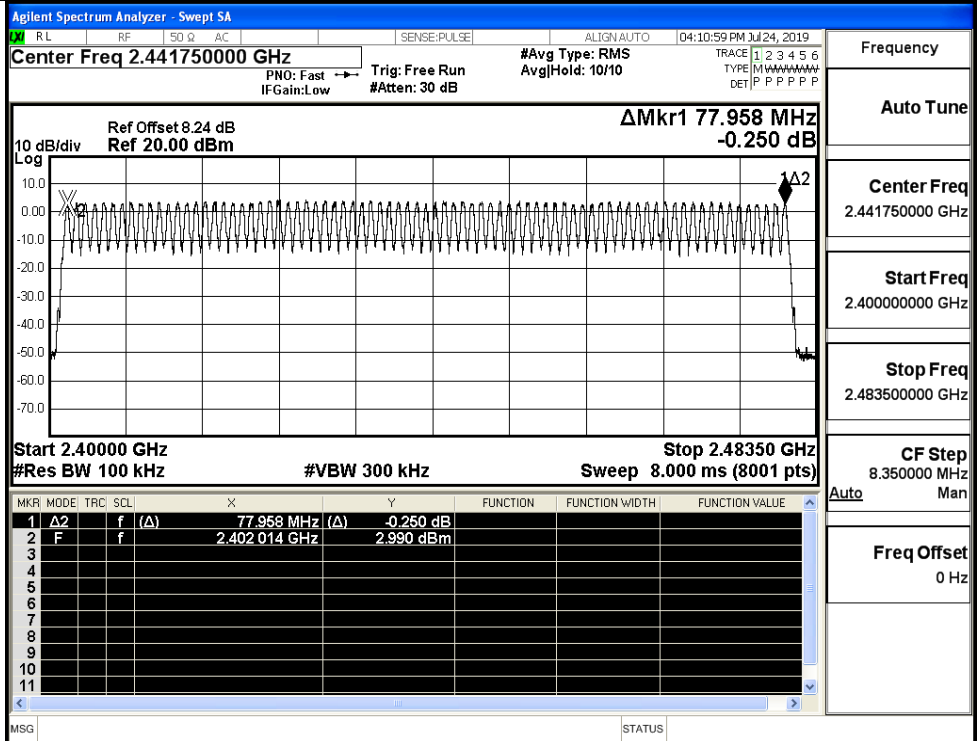


A.5 Hopping Channel Number

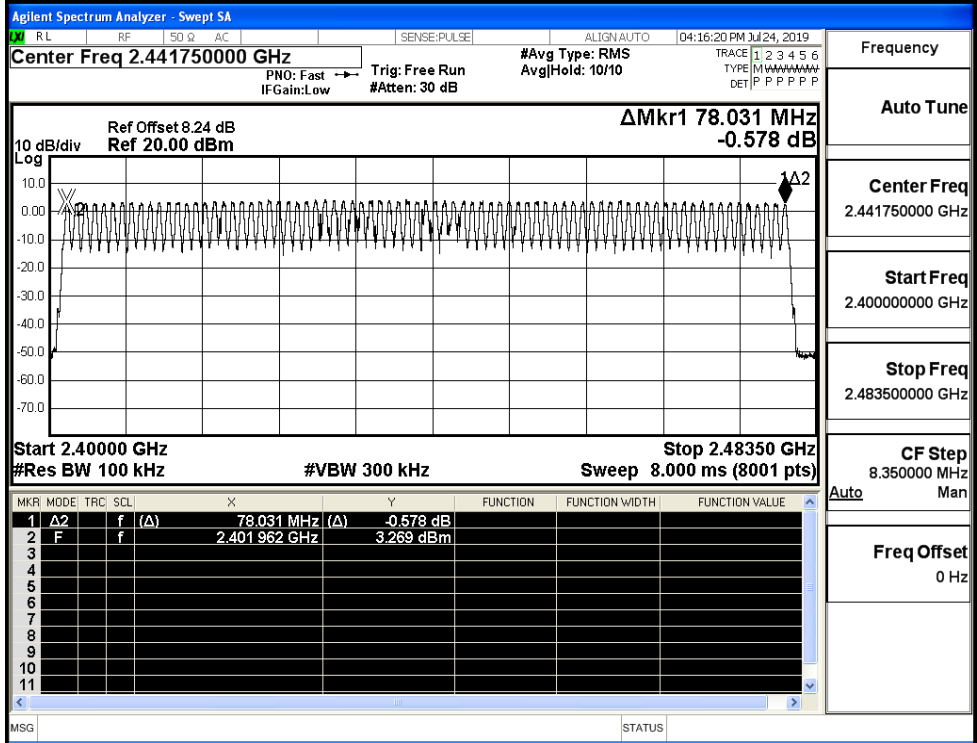
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

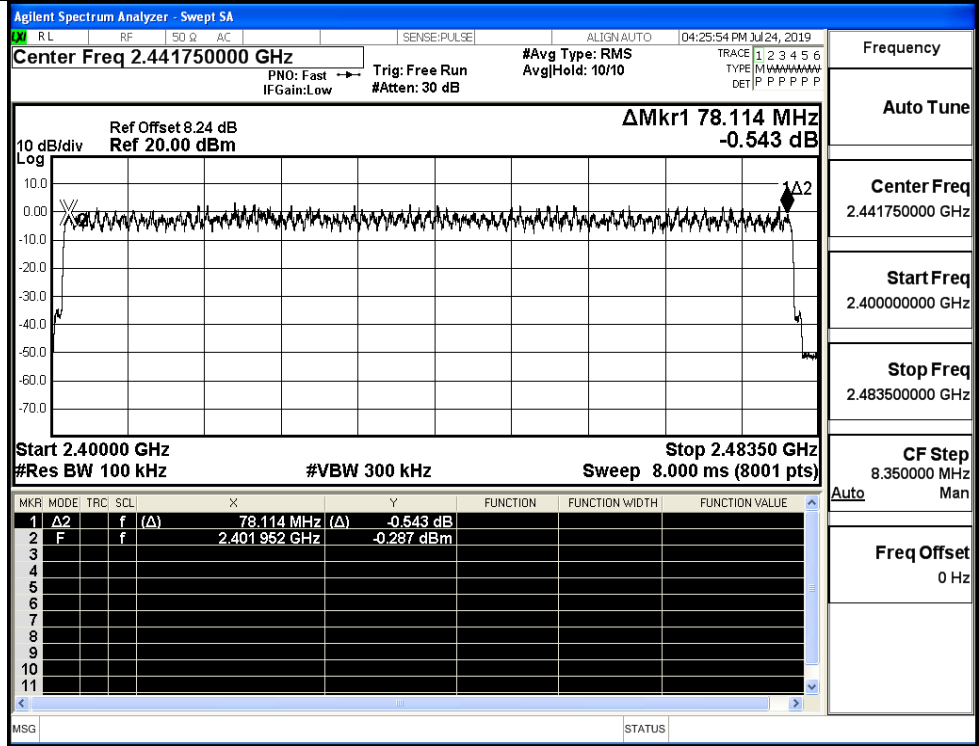
GFSK/Hop



$\pi/4$ DQPSK/Hop

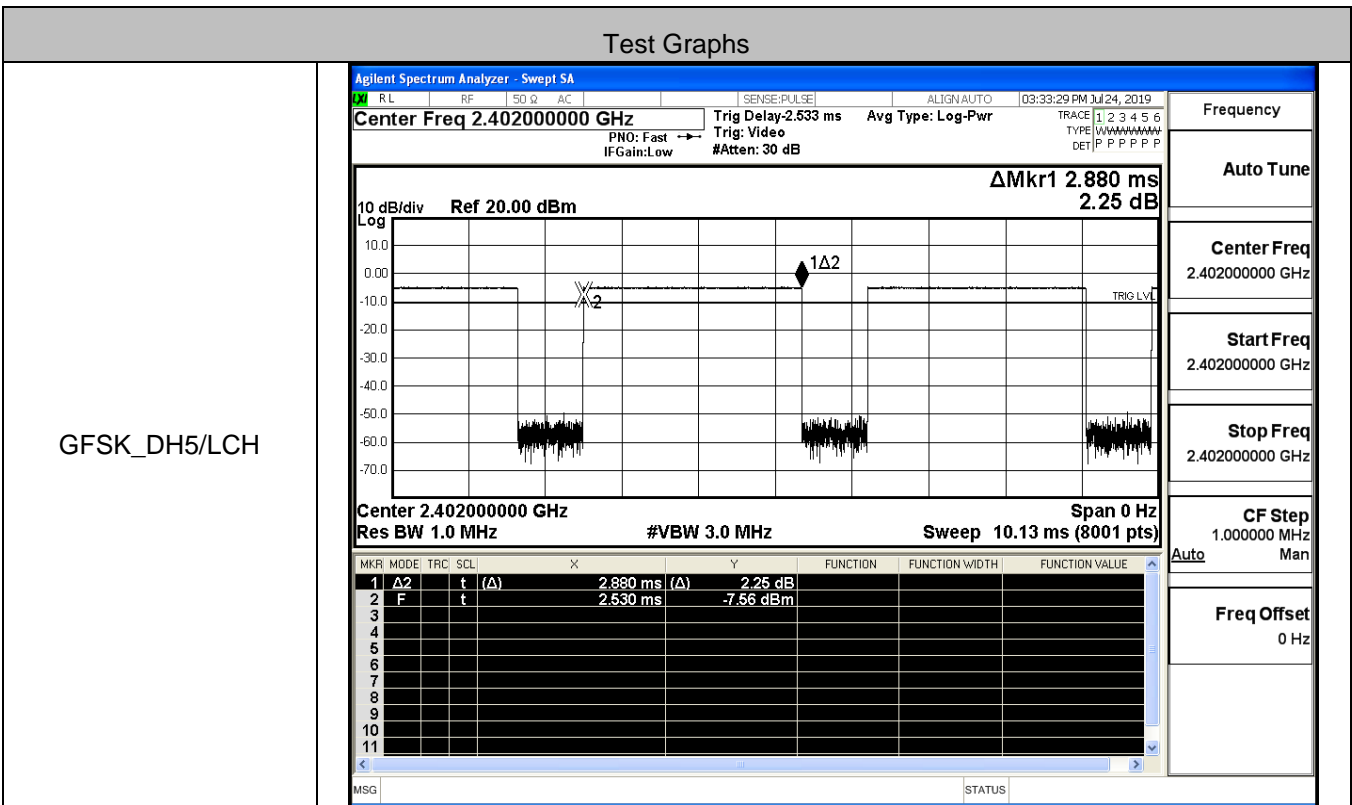


8DPSK/Hop

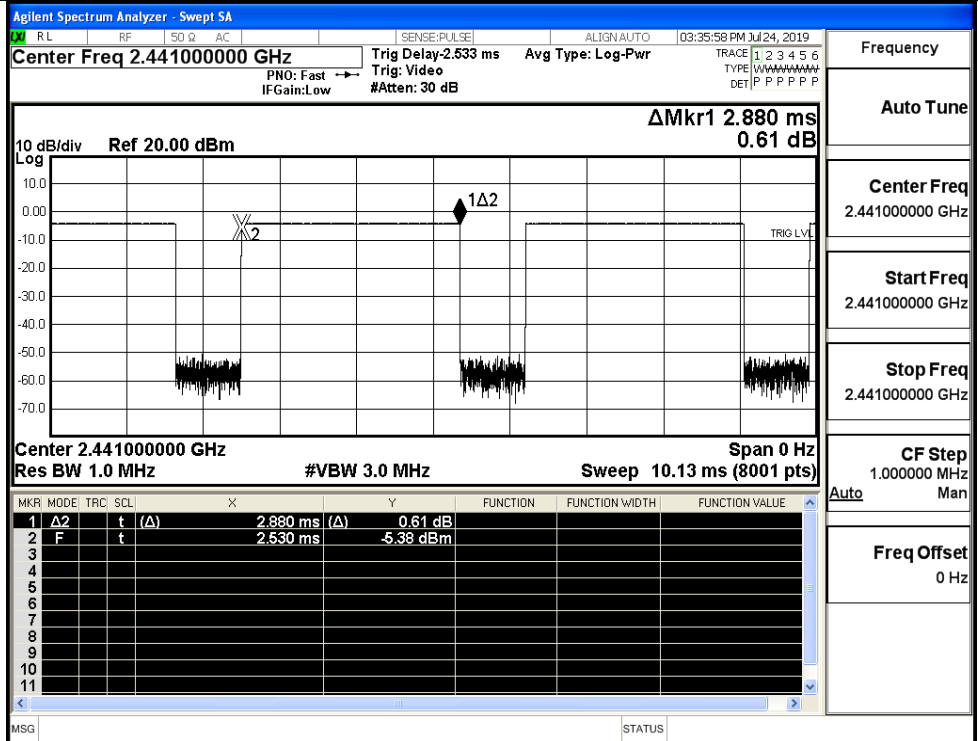


A.6 Dwell Time

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	2.88	106.7	0.308	0.4	PASS
	3DH5	MCH	2.88	106.7	0.308	0.4	PASS
	3DH5	HCH	2.88	106.7	0.308	0.4	PASS

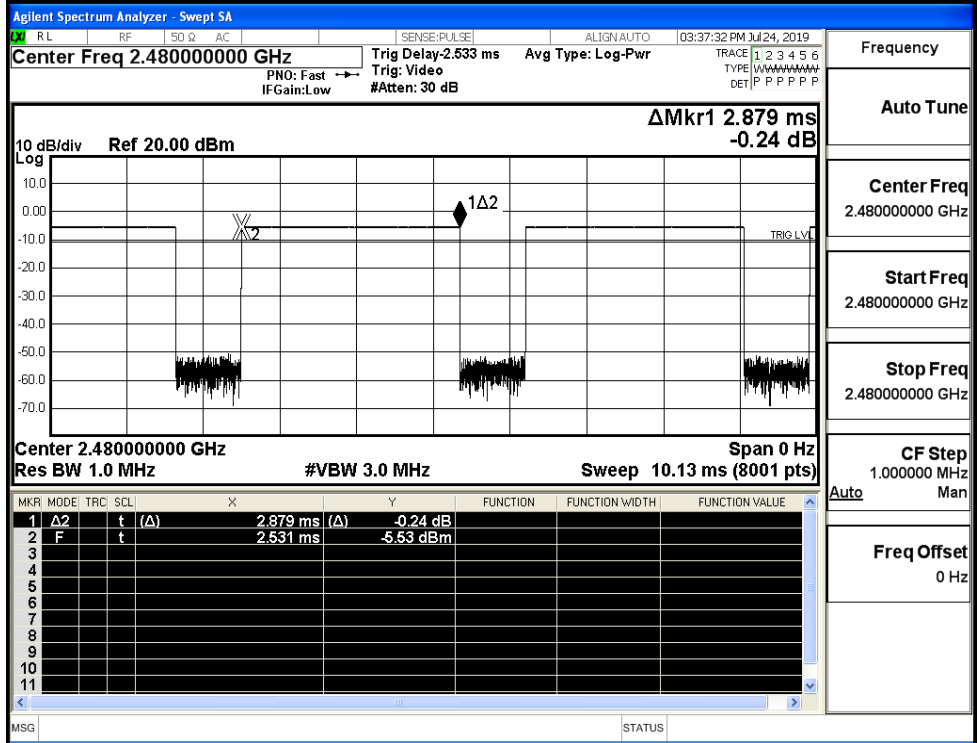


GFSK_DH5/MCH



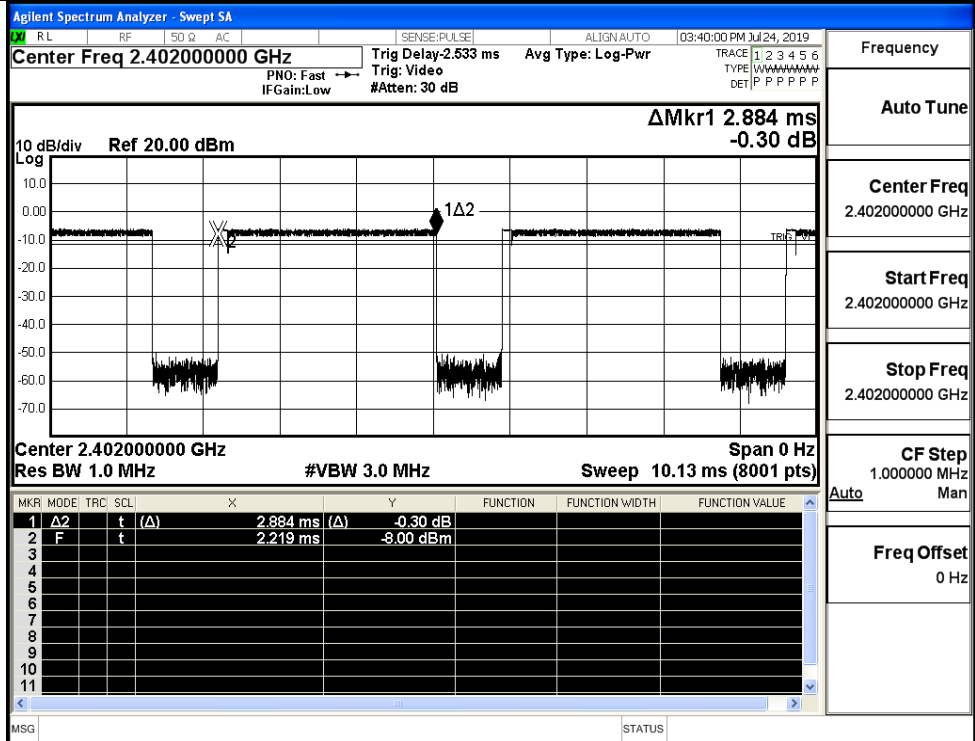
Frequency	
Auto Tune	
Center Freq	2.441000000 GHz
Start Freq	2.441000000 GHz
Stop Freq	2.441000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

GFSK_DH5/HCH

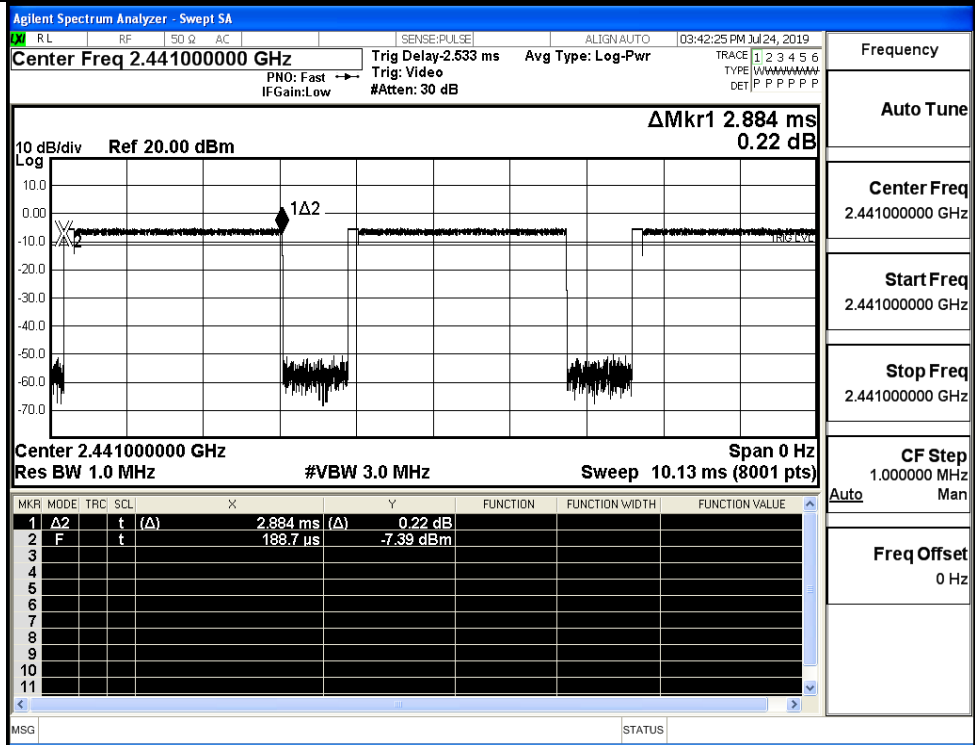


Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

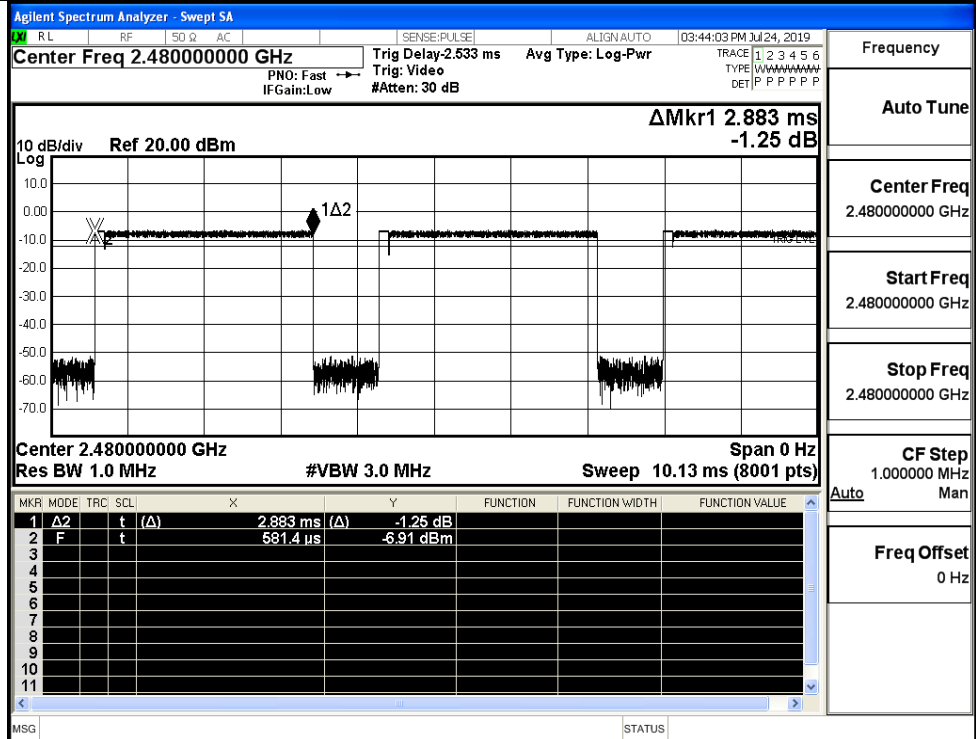
$\pi/4$ DQPSK
_2DH5/LCH



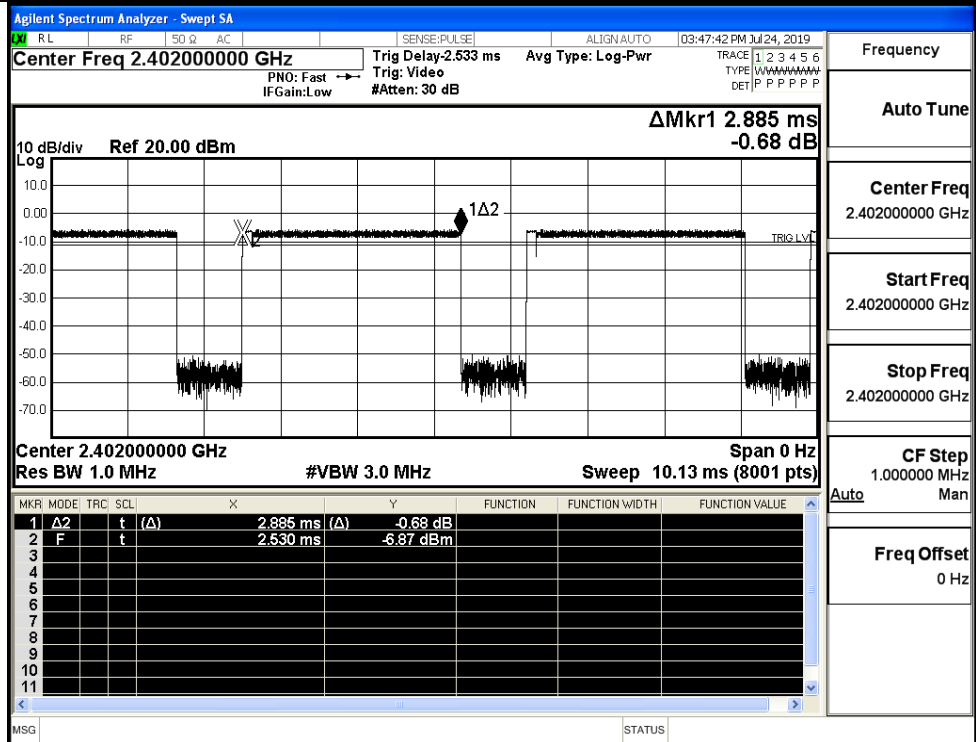
$\pi/4$ DQPSK
_2DH5/MCH



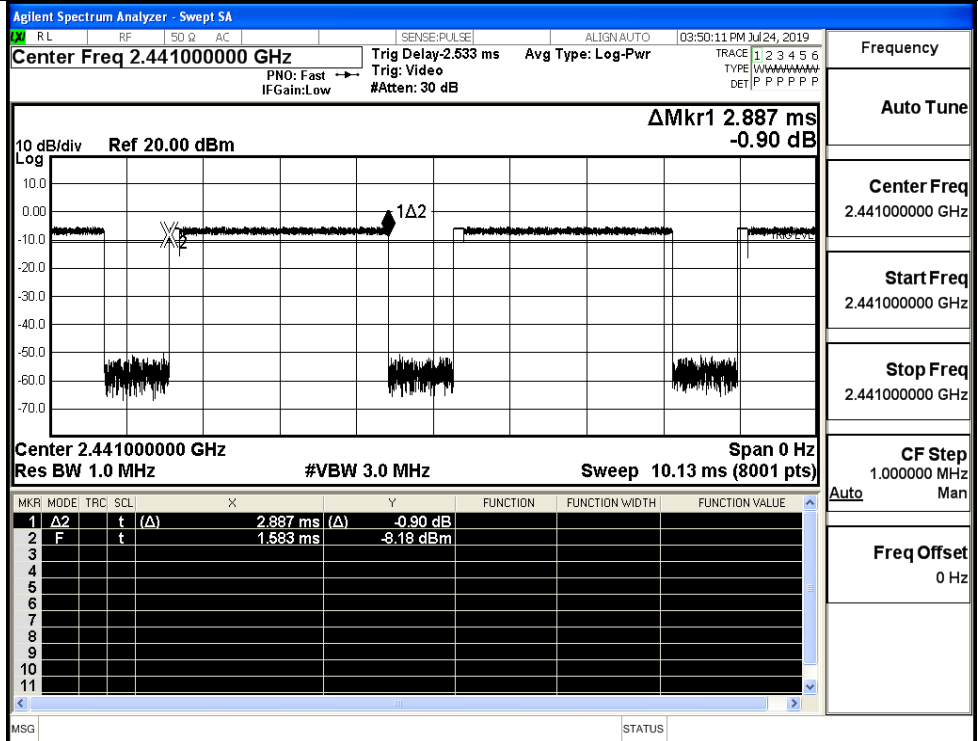
$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



Frequency

Auto Tune

Center Freq 2.441000000 GHz

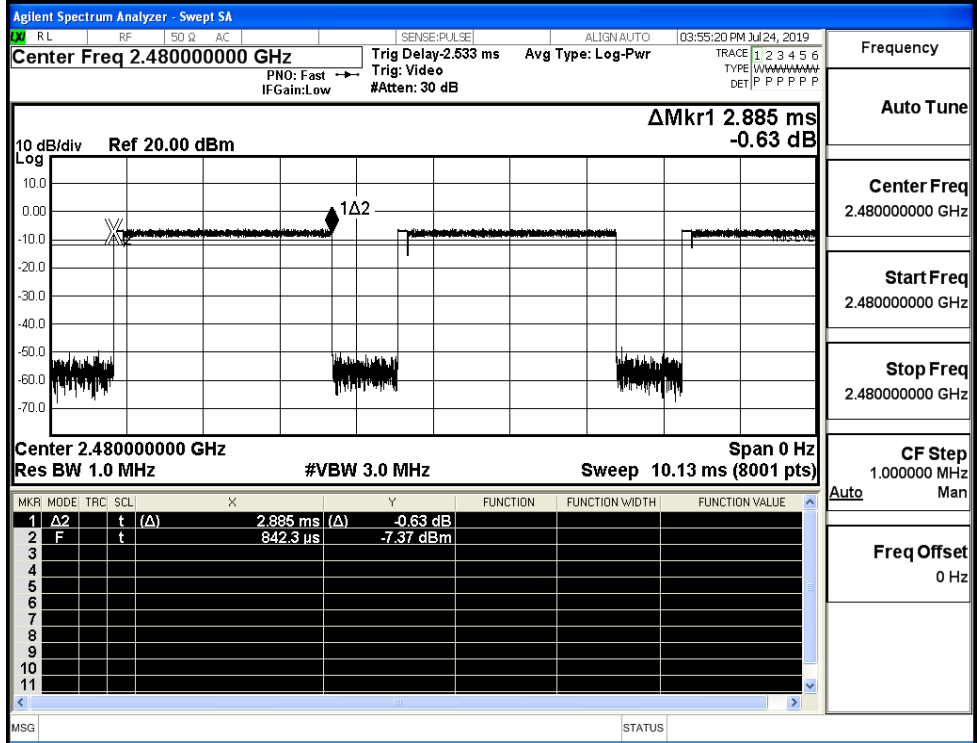
Start Freq 2.441000000 GHz

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

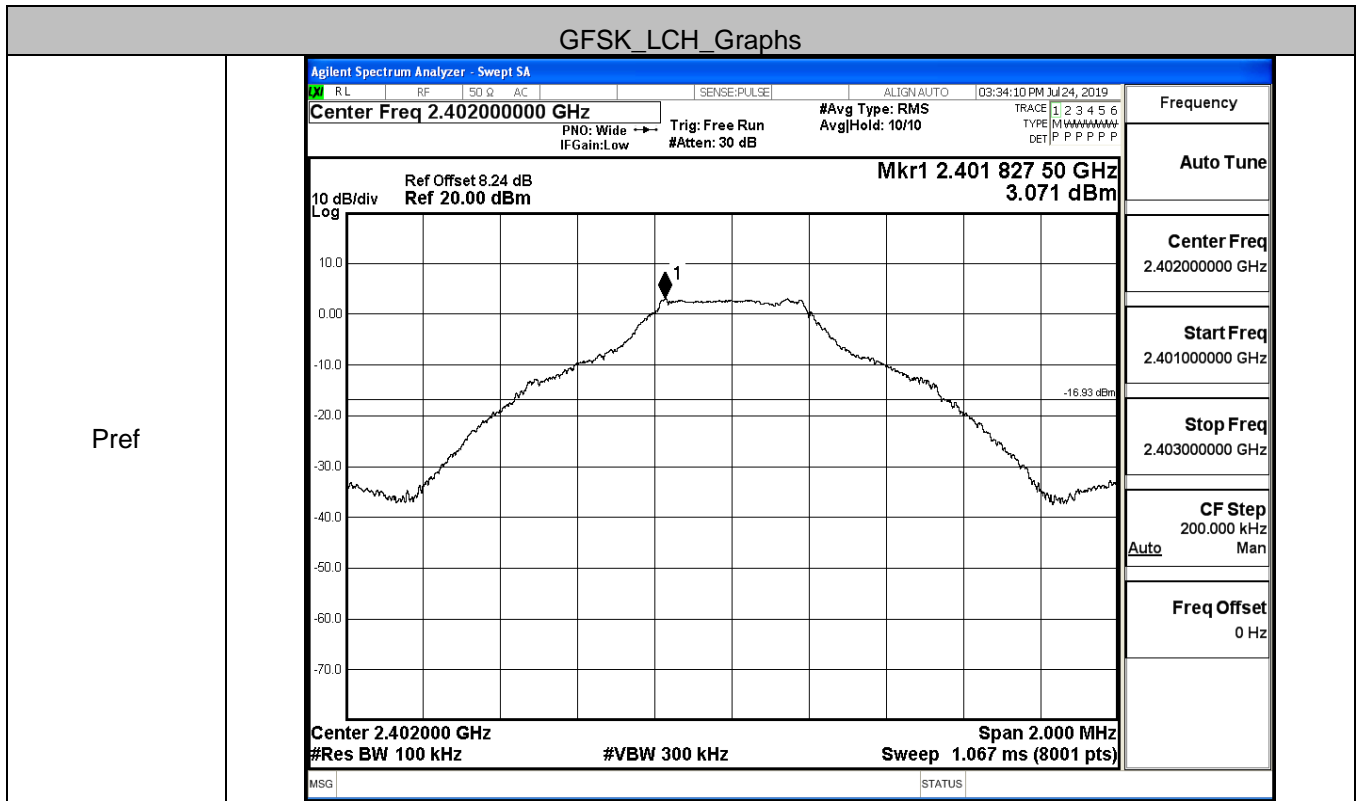
CF Step 1.000000 MHz

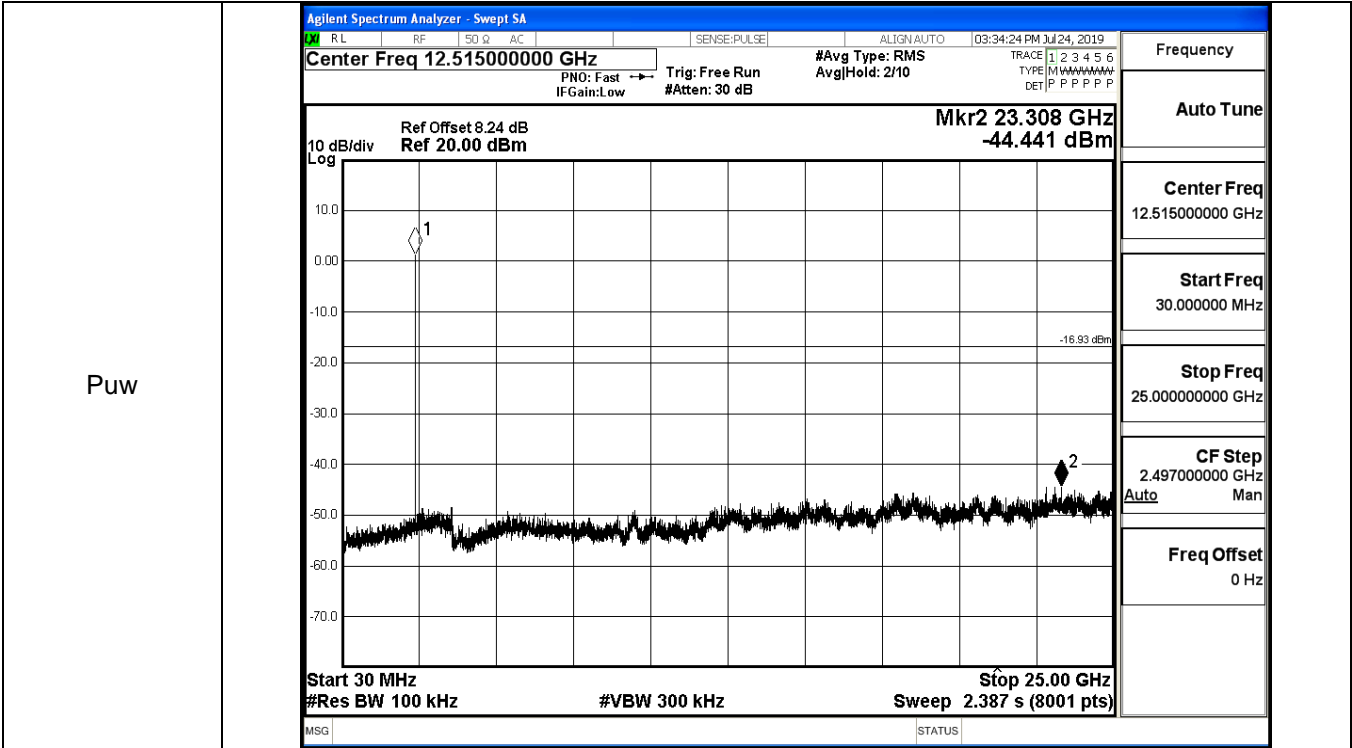
Freq Offset 0 Hz

A.7 RF Conducted Spurious Emissions

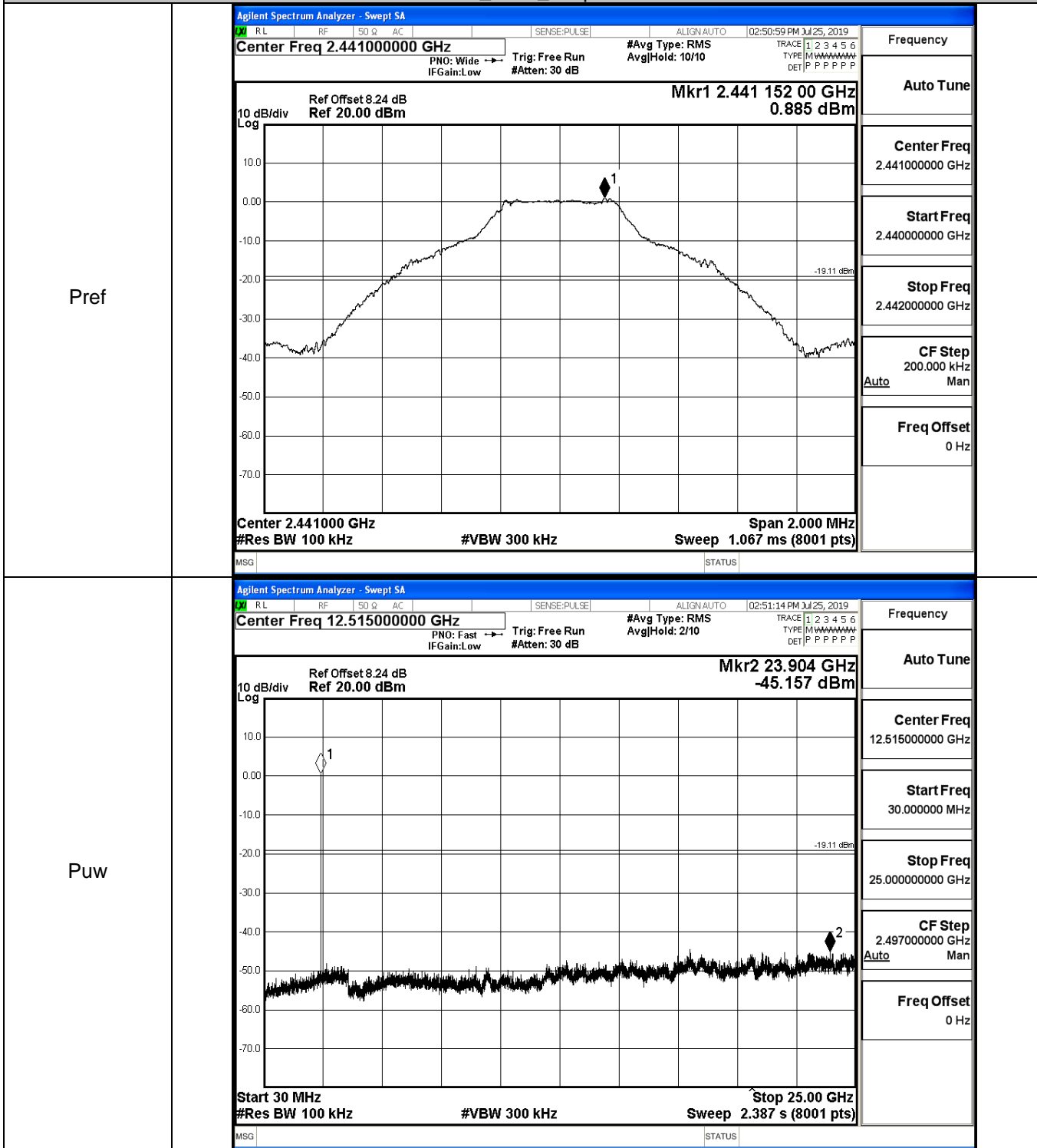
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.071	-44.441	-16.929	PASS
	MCH	0.885	-45.157	-19.115	PASS
	HCH	2.764	-44.505	-17.236	PASS
π /4DQPSK	LCH	1.611	-44.013	-18.389	PASS
	MCH	2.391	-44.725	-17.609	PASS
	HCH	1.507	-45.008	-18.493	PASS
8DPSK	LCH	1.986	-44.369	-18.014	PASS
	MCH	2.421	-44.344	-17.579	PASS
	HCH	1.362	-44.815	-18.638	PASS

GFSK_LCH_Graphs

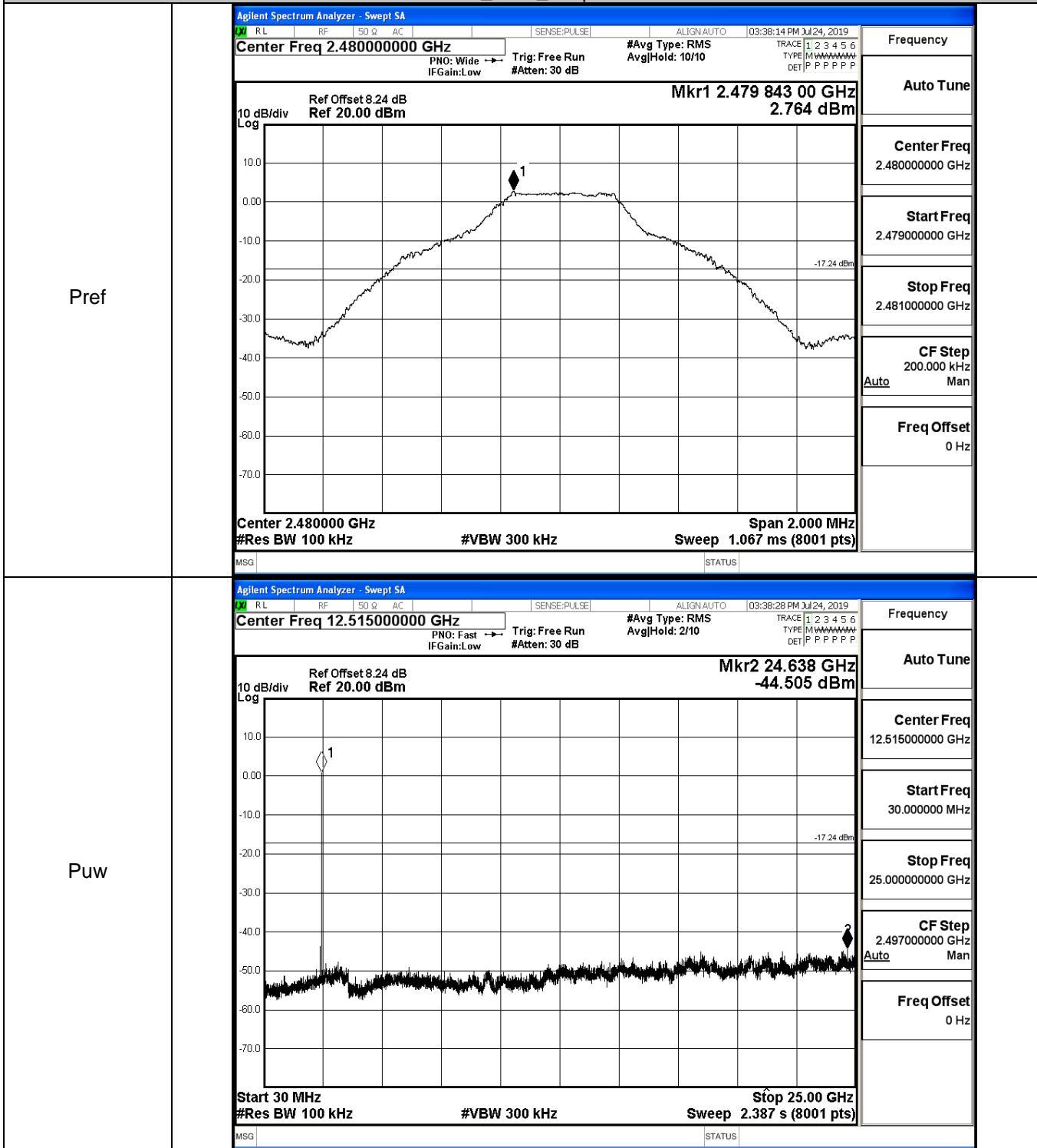




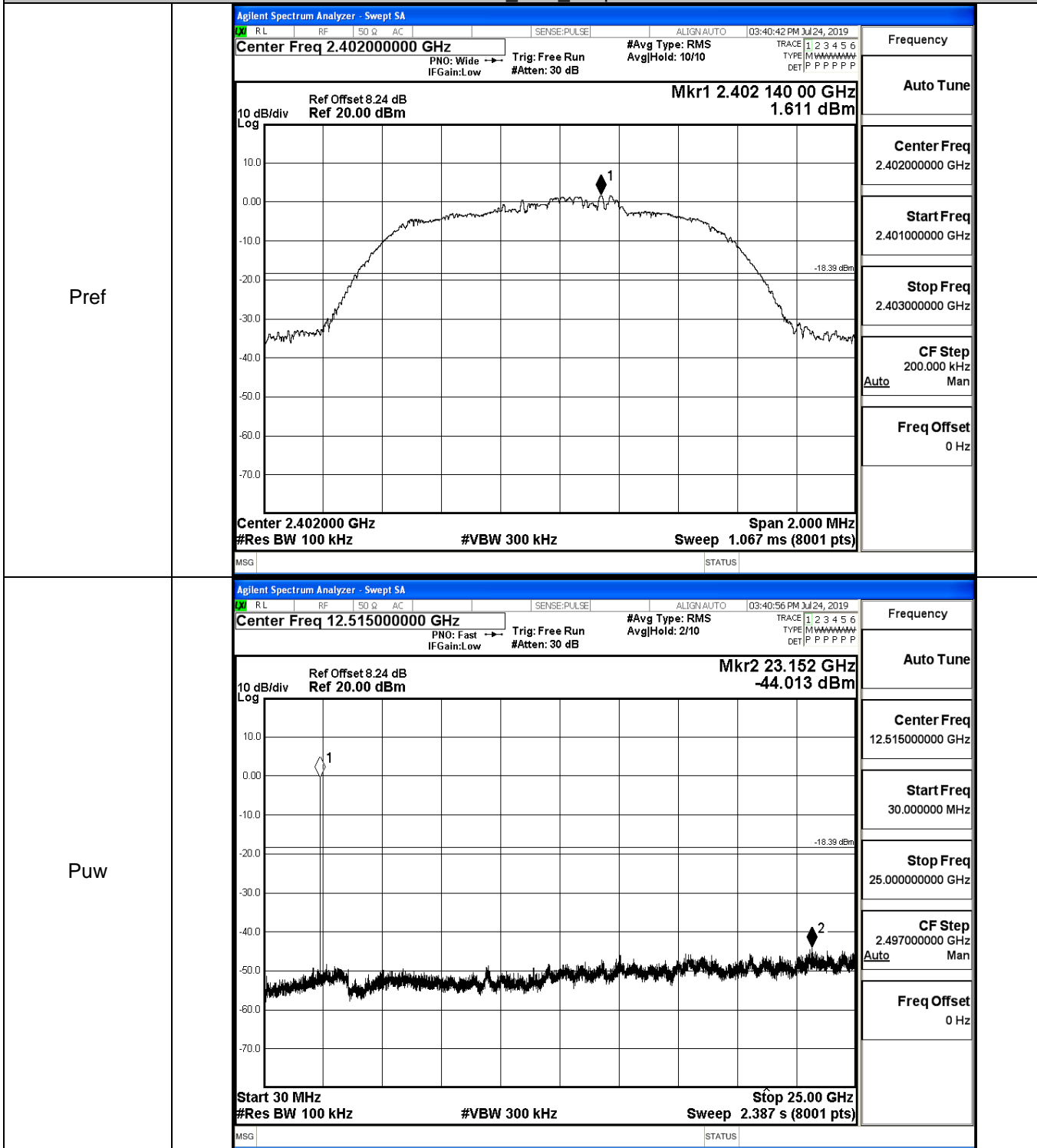
GFSK_MCH_Graphs



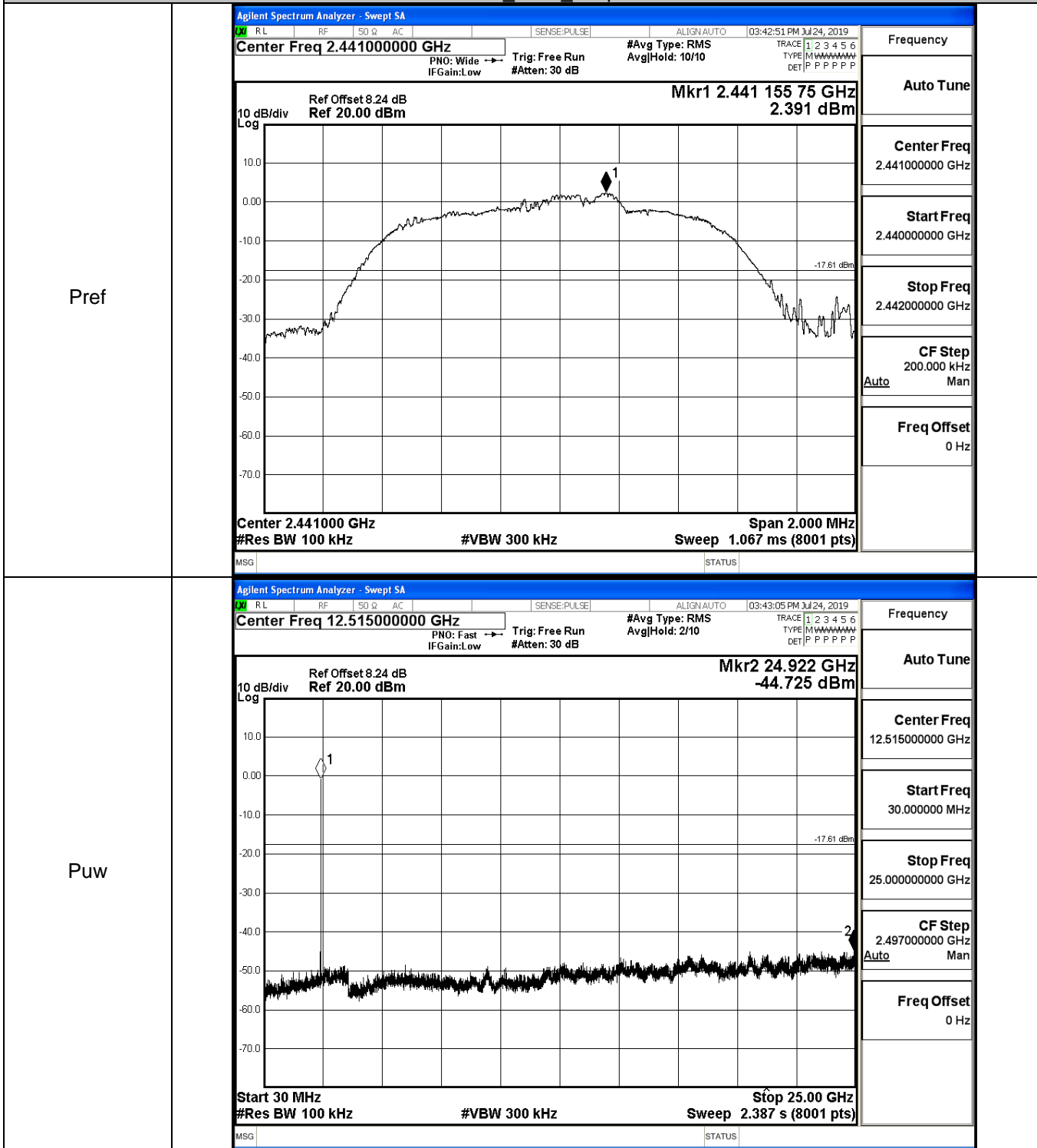
GFSK_HCH_Graphs



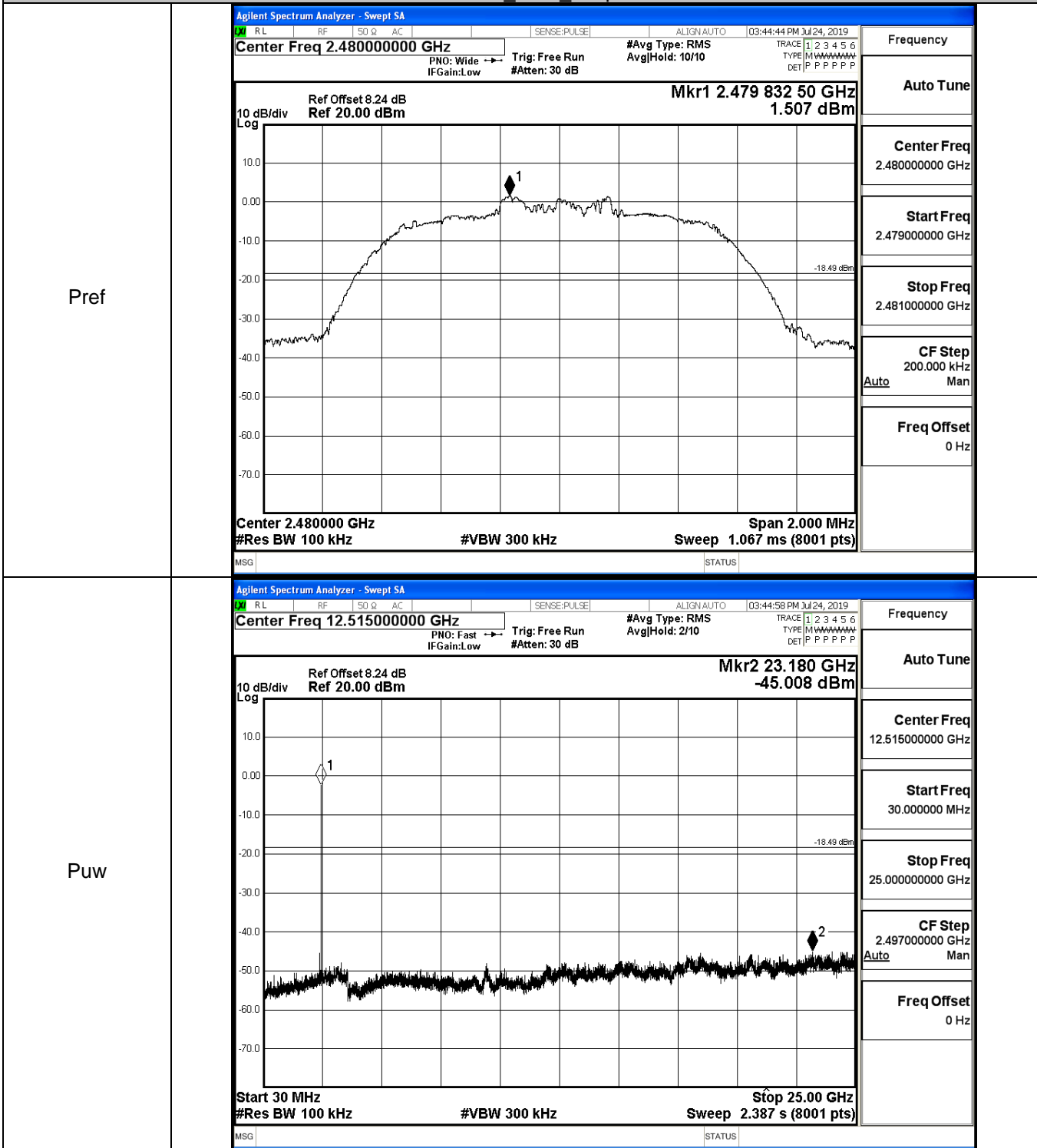
$\pi/4$ DQPSK_LCH_Graphs



π /4DQPSK_MCH_Graphs

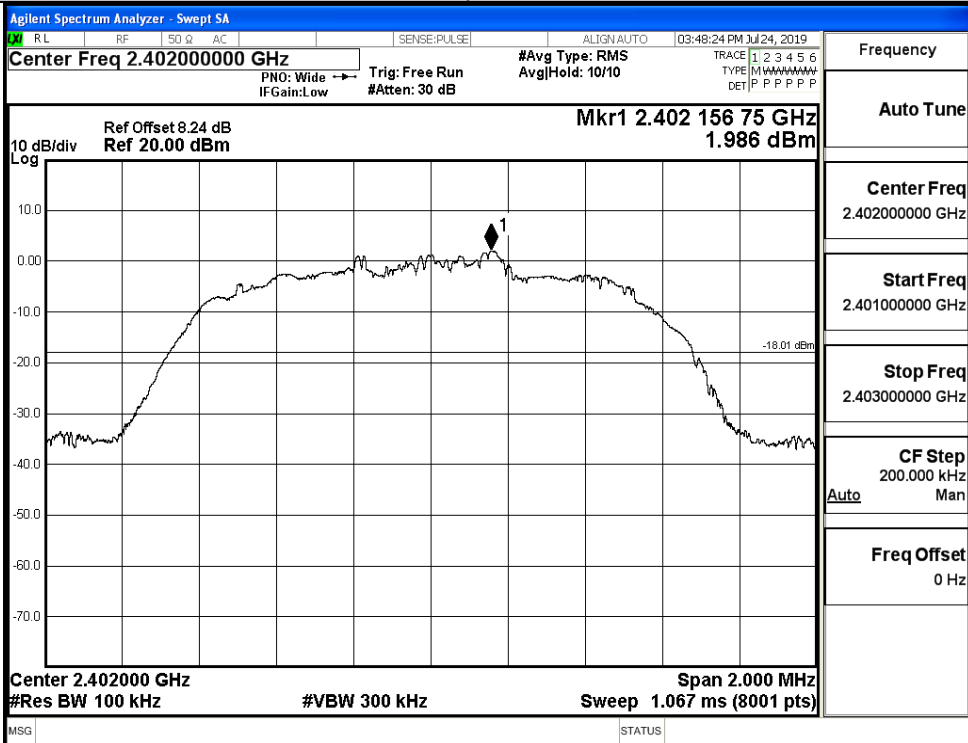


$\pi/4$ DQPSK_HCH_Graphs

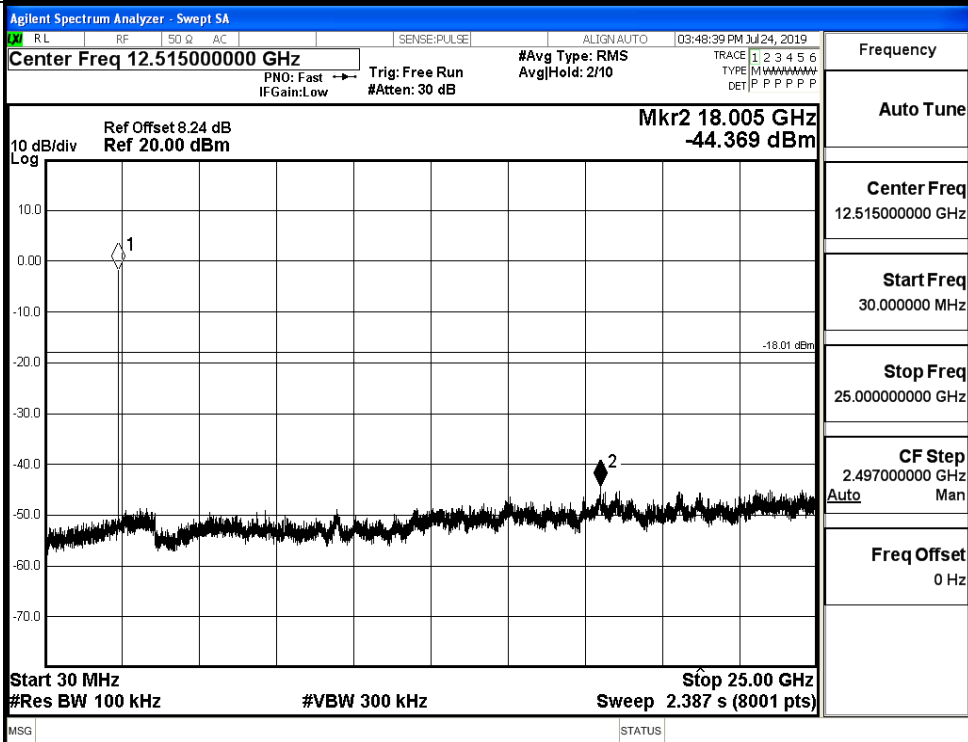


8DPSK_LCH_Graphs

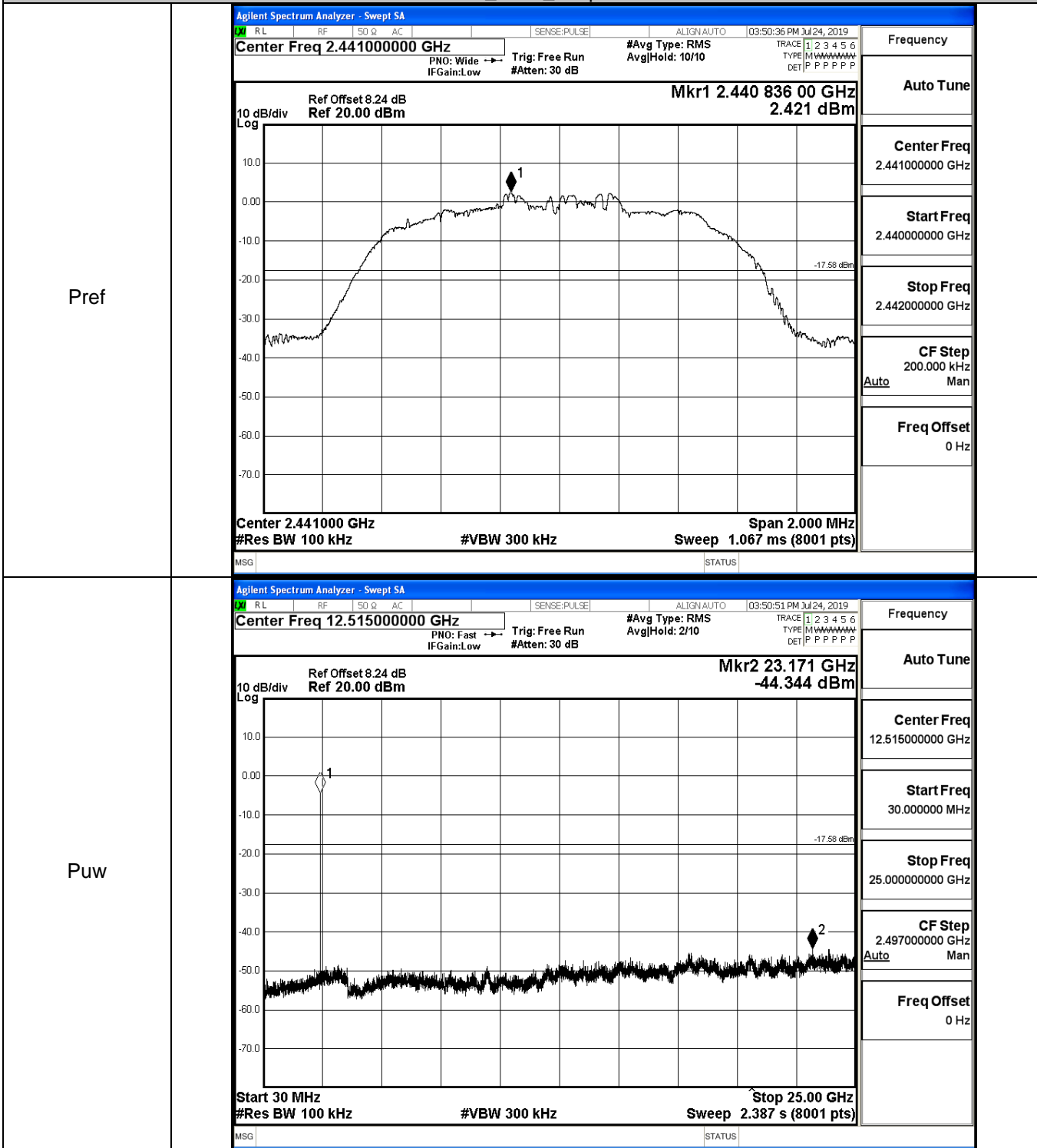
Pref



Puw

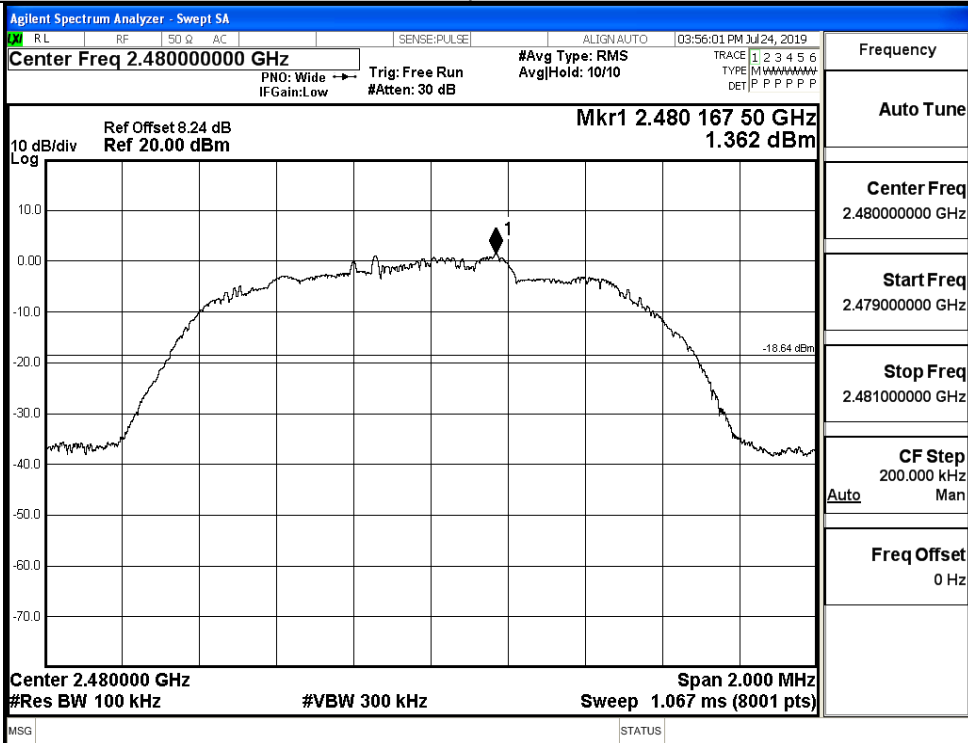


8DPSK_MCH_Graphs

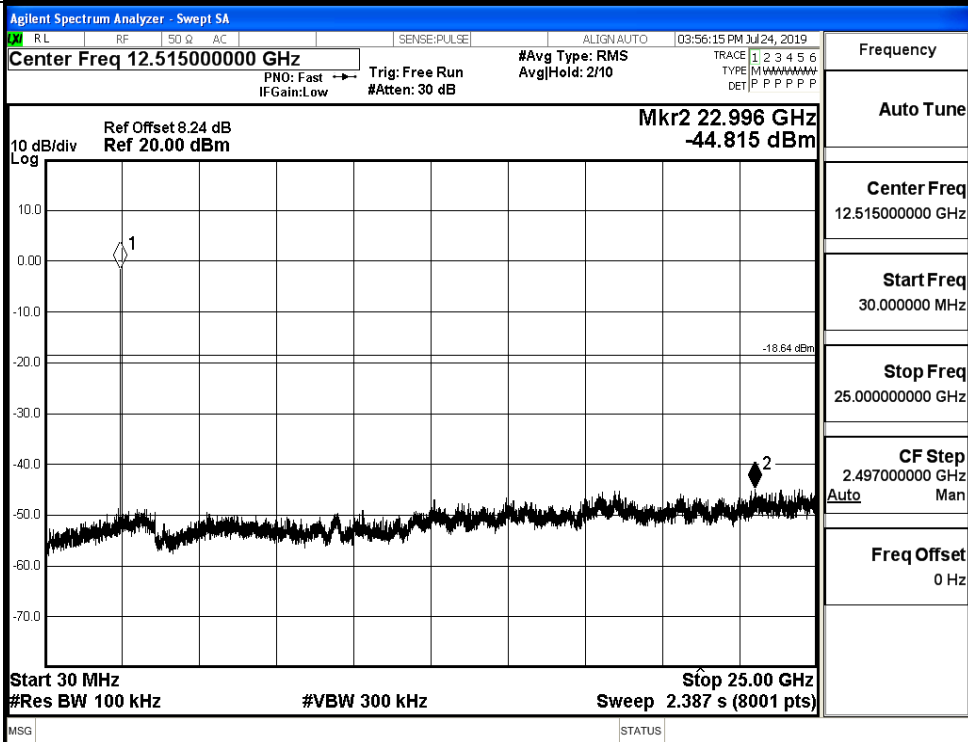


8DPSK_HCH_Graphs

Pref



Puw

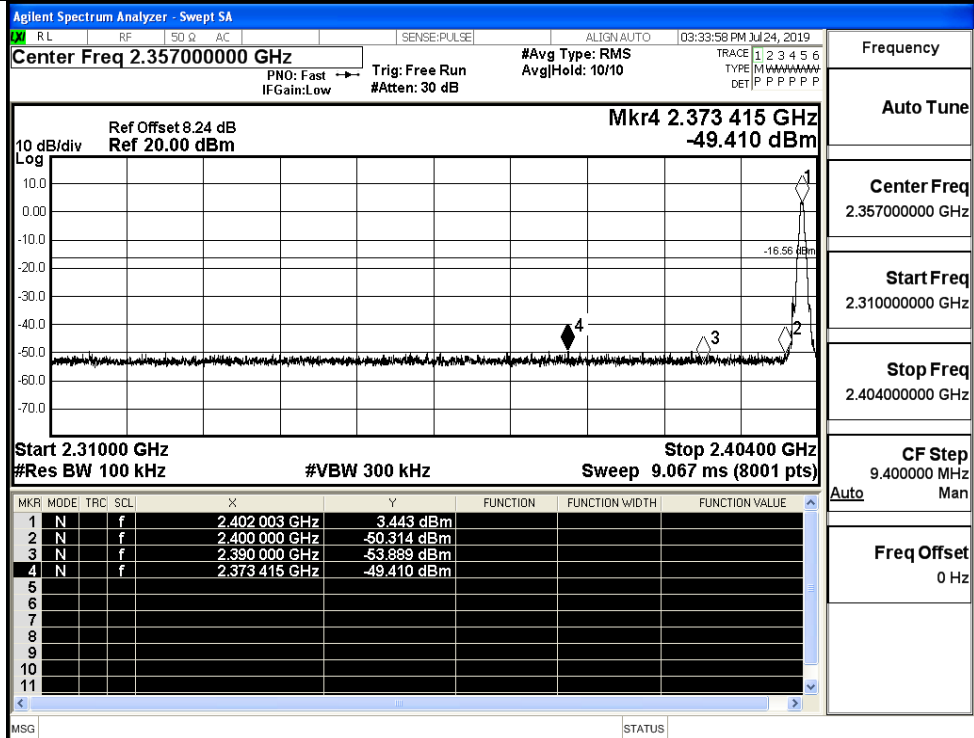


A.8 Band-edge for RF Conducted Emissions

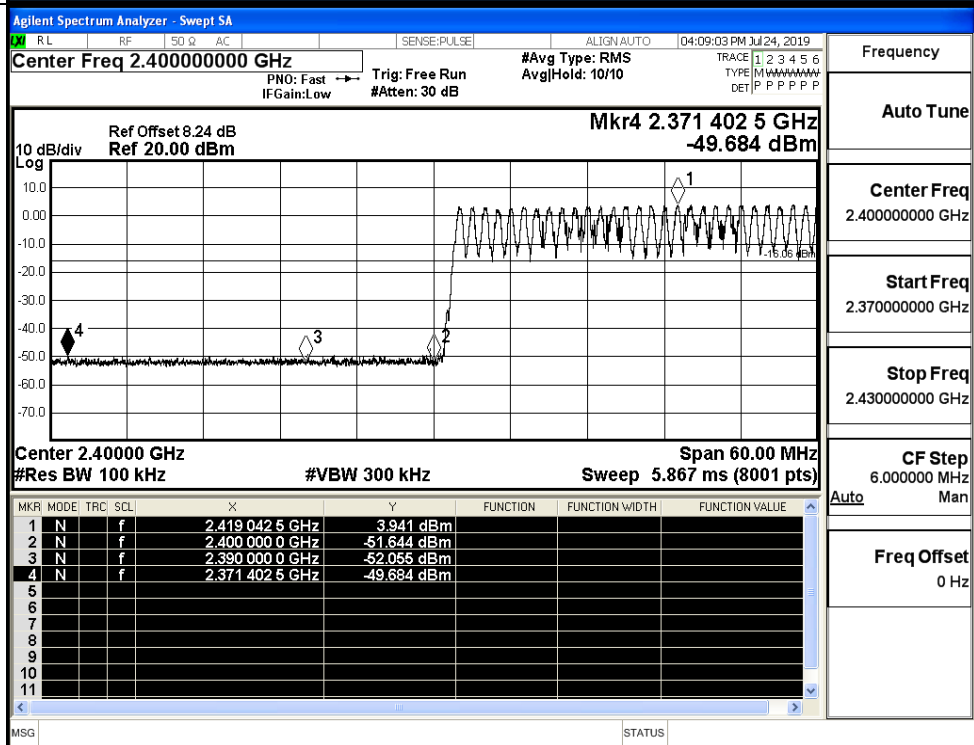
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.443	Off	-49.410	-16.56	PASS
			3.941	On	-49.684	-16.06	PASS
	HCH	2480	2.761	Off	-49.060	-17.24	PASS
			3.516	On	-48.735	-16.48	PASS
$\pi/4$ DQPSK	LCH	2402	1.627	Off	-36.010	-18.37	PASS
			4.083	On	-49.079	-15.92	PASS
	HCH	2480	1.556	Off	-48.394	-18.44	PASS
			3.723	On	-48.884	-16.28	PASS
8DPSK	LCH	2402	1.940	Off	-49.585	-18.06	PASS
			2.672	On	-49.431	-17.33	PASS
	HCH	2480	1.425	Off	-27.570	-18.58	PASS
			2.956	On	-48.291	-17.04	PASS

Test Graphs

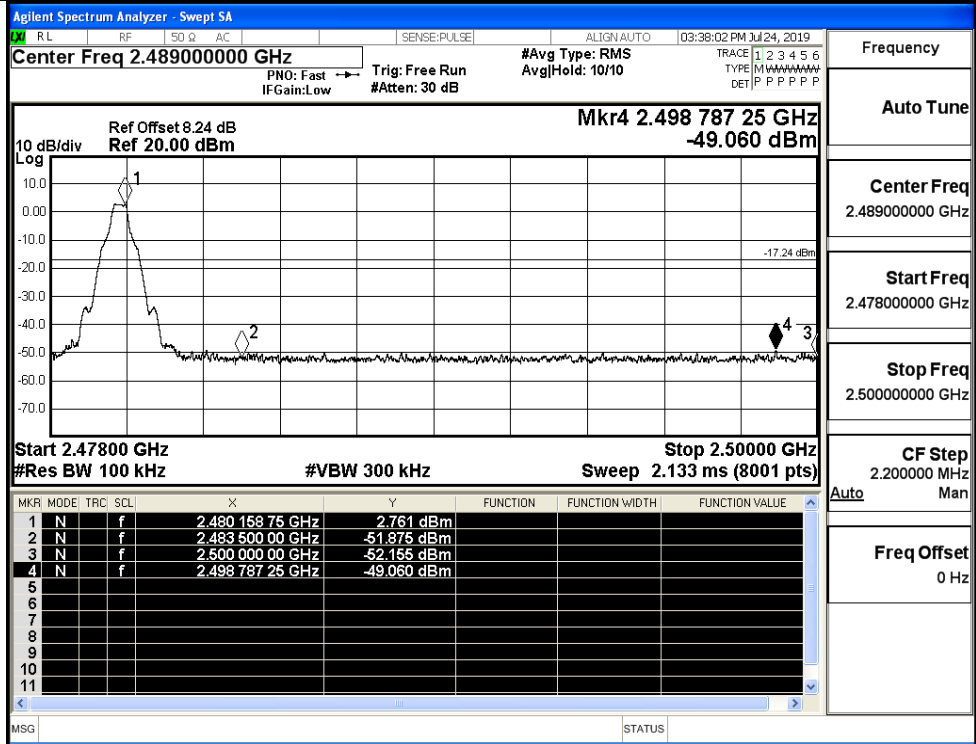
GFSK/LCH/No Hop



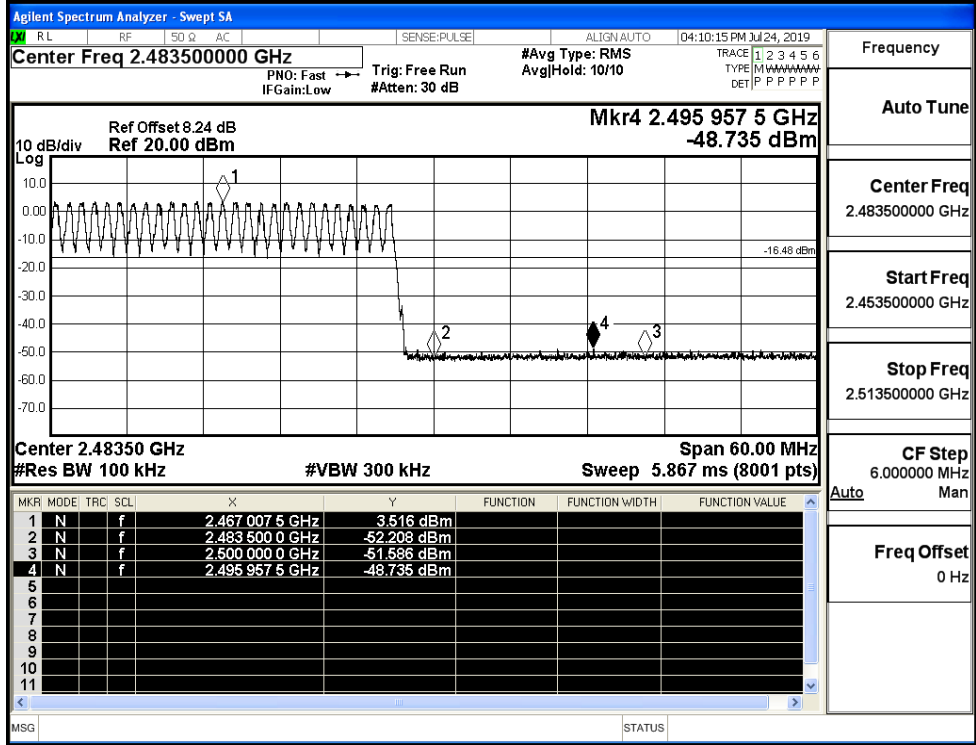
GFSK/LCH/Hop



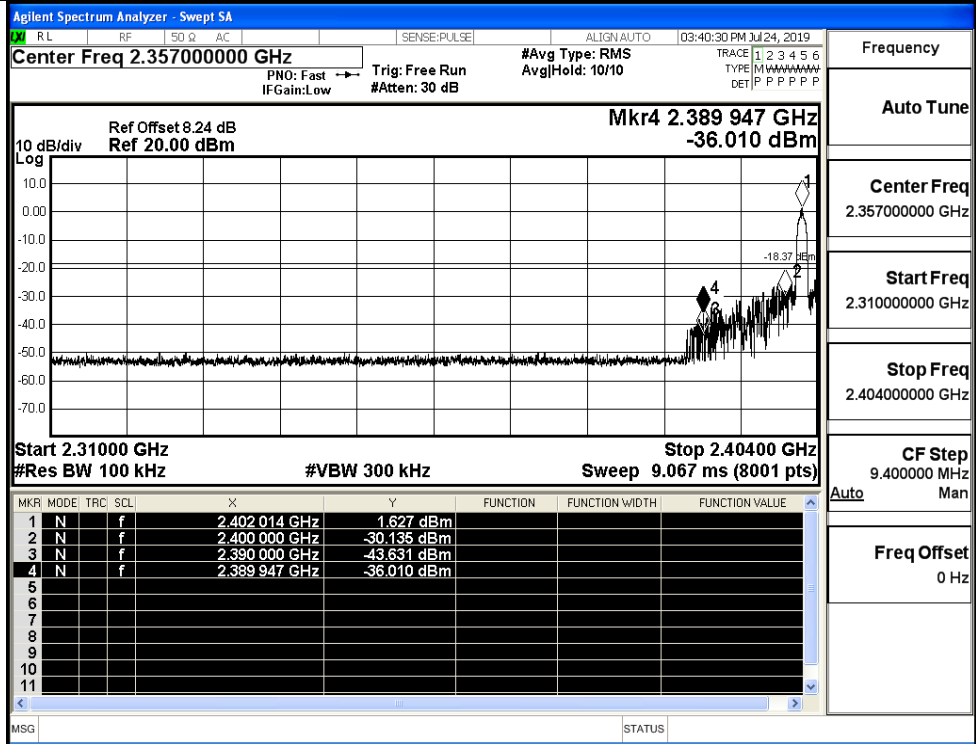
GFSK/HCH/No Hop



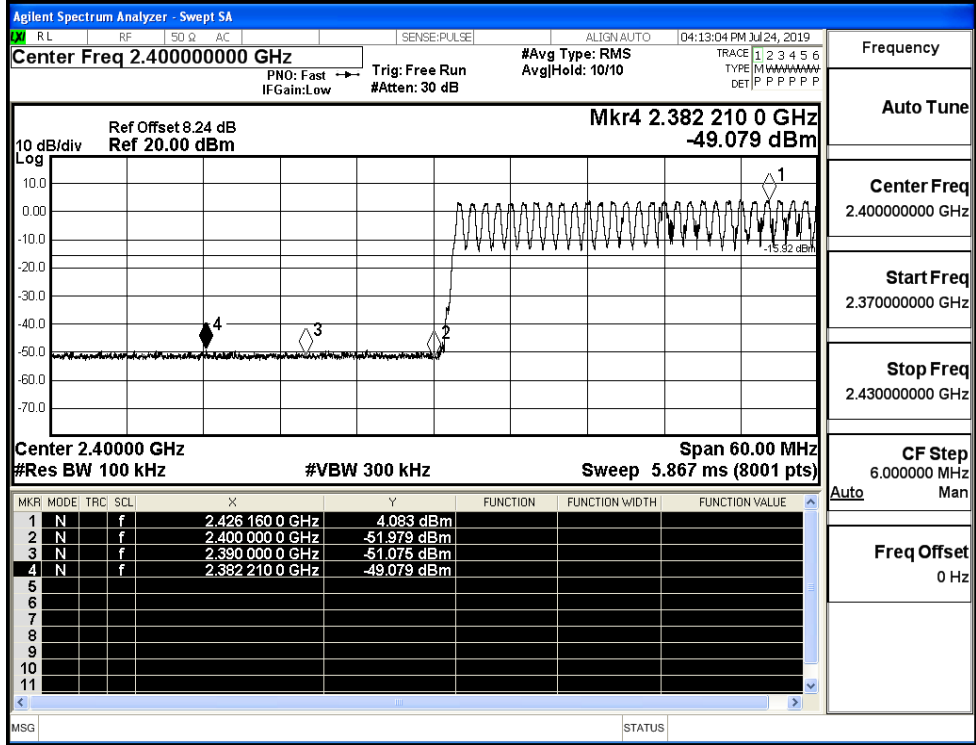
GFSK/HCH/Hop



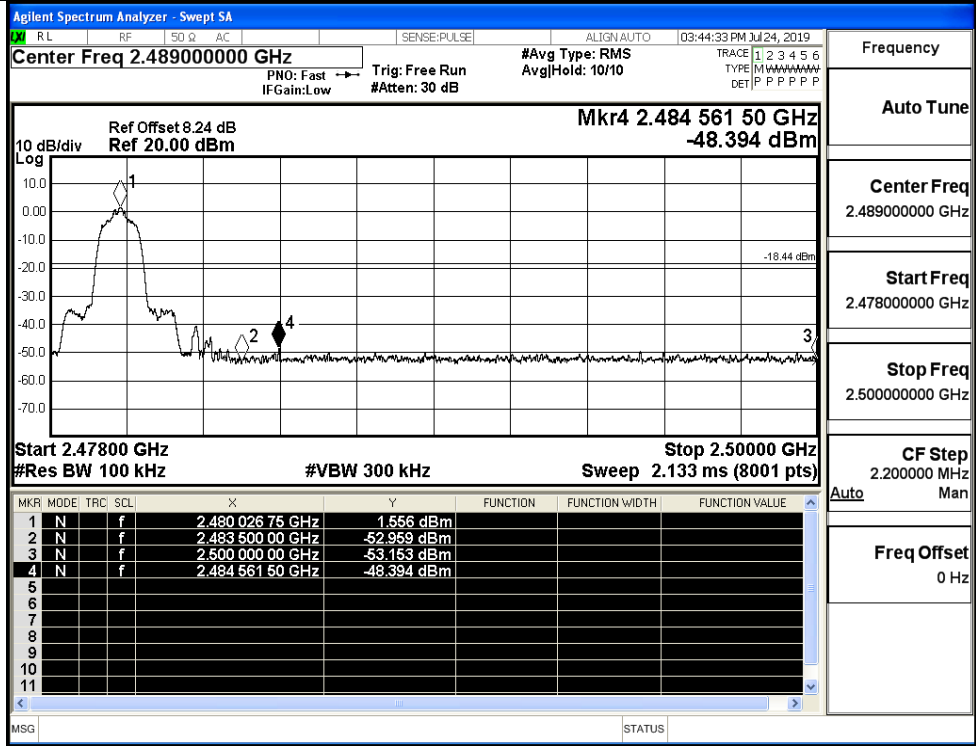
$\pi/4$ DQPSK/LCH/No
Hop



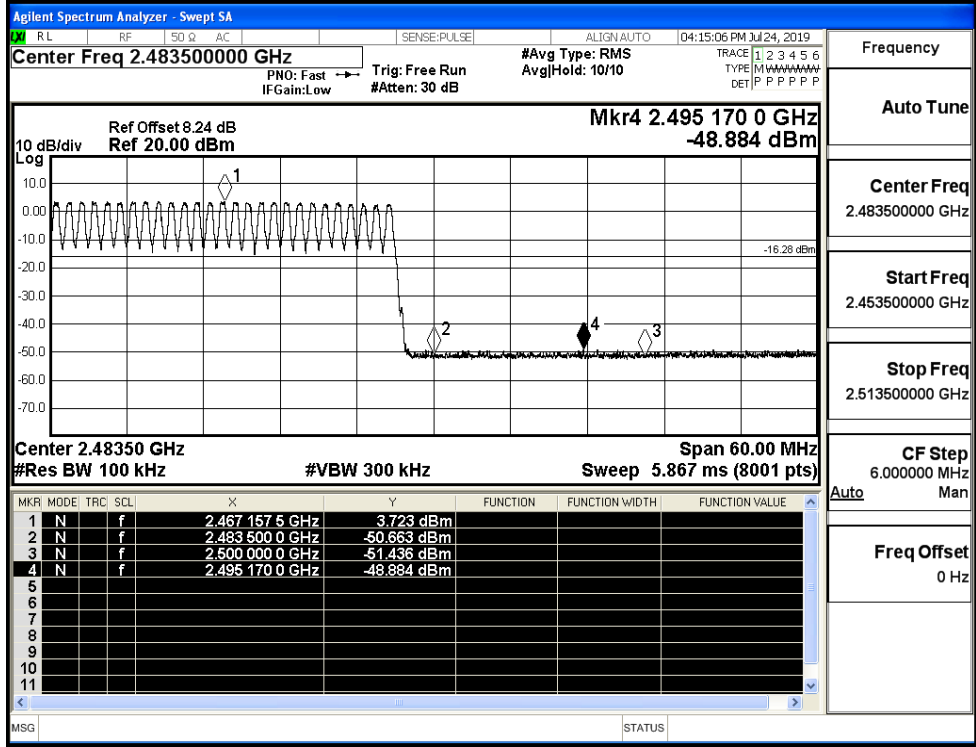
$\pi/4$ DQPSK/LCH/Hop



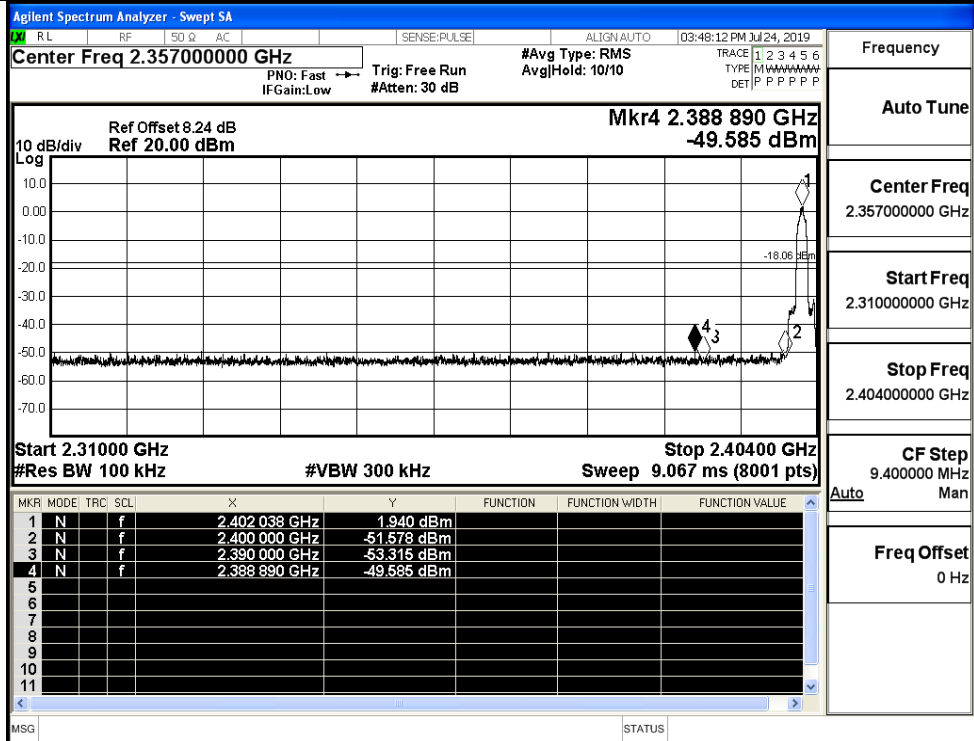
π /4DQPSK/HCH/No
Hop



π /4DQPSK/HCH/Hop

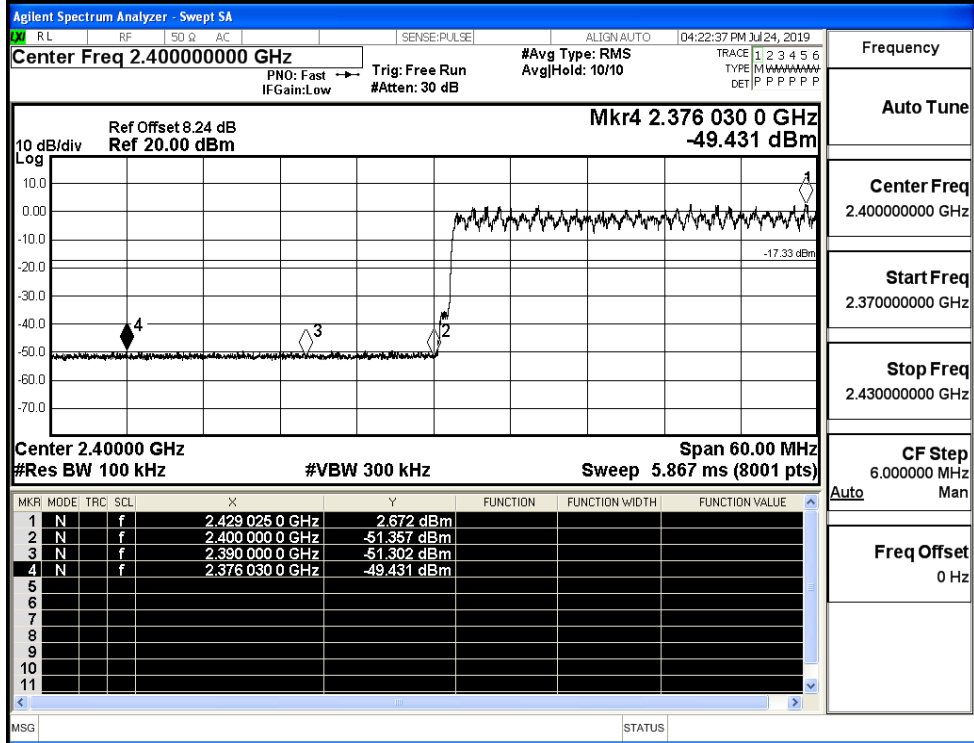


8DPSK/LCH/No Hop



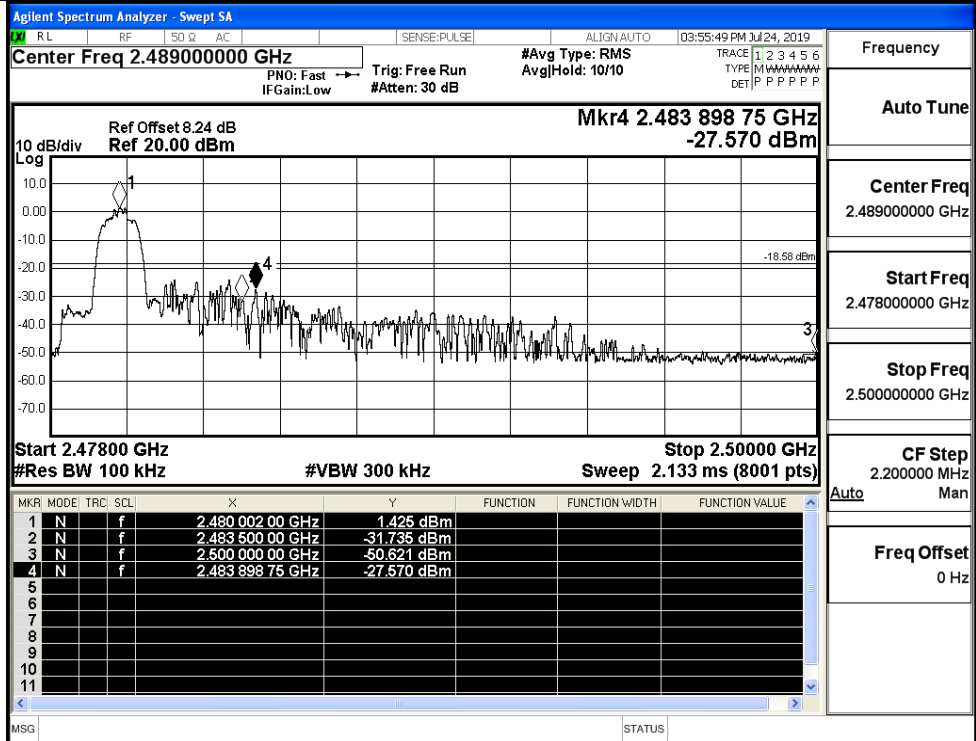
Frequency
Auto Tune
Center Freq
2.357000000 GHz
Start Freq
2.310000000 GHz
Stop Freq
2.404000000 GHz
CF Step
9.400000 MHz
Auto Man
Freq Offset
0 Hz

8DPSK/LCH/Hop



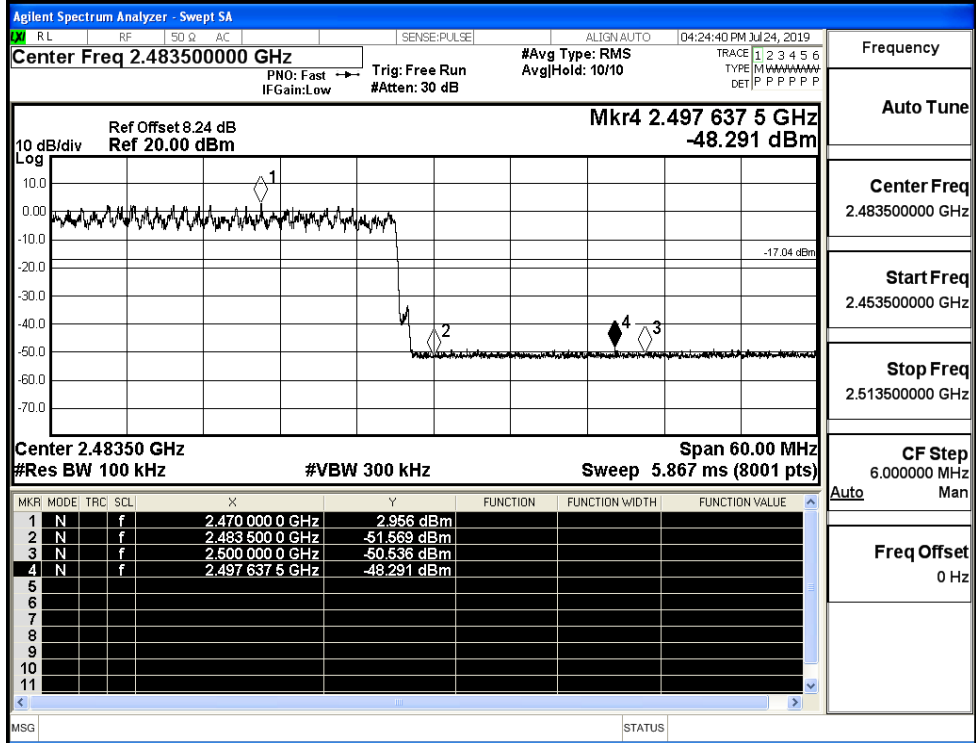
Frequency
Auto Tune
Center Freq
2.400000000 GHz
Start Freq
2.370000000 GHz
Stop Freq
2.430000000 GHz
CF Step
6.000000 MHz
Auto Man
Freq Offset
0 Hz

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

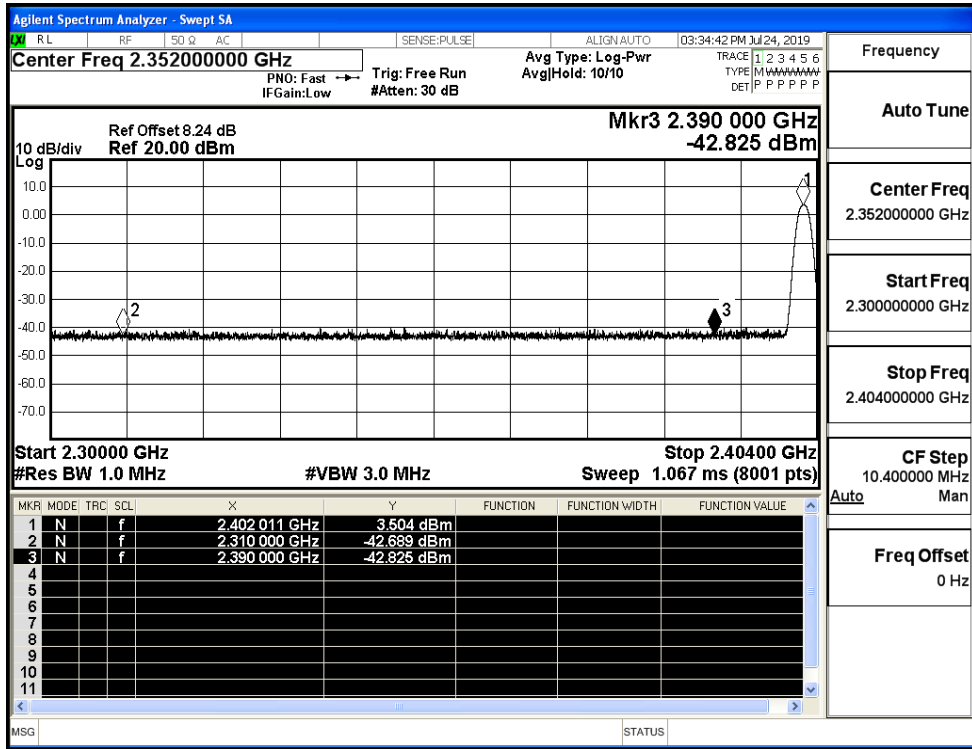


Frequency	
Auto Tune	
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Auto	Man
Freq Offset	0 Hz

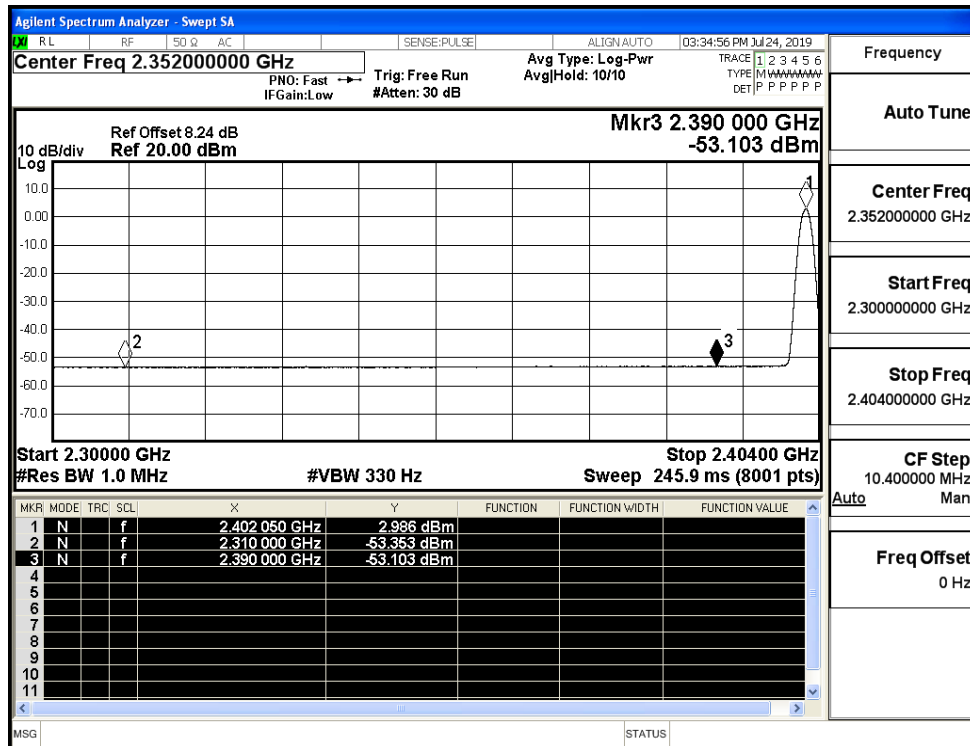
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.69	2.0	0	52.57	PEAK	74	PASS
	Off	2310.0	-53.35	2.0	0	41.90	AV	54	PASS
	Off	2390.0	-42.83	2.0	0	52.43	PEAK	74	PASS
	Off	2390.0	-53.10	2.0	0	42.15	AV	54	PASS
	Off	2483.5	-42.80	2.0	0	52.46	PEAK	74	PASS
	Off	2483.5	-52.74	2.0	0	42.51	AV	54	PASS
	Off	2500.0	-42.94	2.0	0	52.32	PEAK	74	PASS
	Off	2500.0	-52.69	2.0	0	42.57	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.71	2.0	0	51.54	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	41.78	AV	54	PASS
	Off	2390.0	-42.56	2.0	0	52.70	PEAK	74	PASS
	Off	2390.0	-53.16	2.0	0	42.09	AV	54	PASS
	Off	2483.5	-41.60	2.0	0	53.66	PEAK	74	PASS
	Off	2483.5	-44.53	2.0	0	50.73	AV	54	PASS
	Off	2500.0	-42.56	2.0	0	52.70	PEAK	74	PASS
	Off	2500.0	-52.72	2.0	0	42.54	AV	54	PASS
8DPSK	Off	2310.0	-42.69	2.0	0	52.57	PEAK	74	PASS
	Off	2310.0	-53.40	2.0	0	41.86	AV	54	PASS
	Off	2390.0	-43.00	2.0	0	52.25	PEAK	74	PASS
	Off	2390.0	-53.16	2.0	0	42.10	AV	54	PASS
	Off	2483.5	-41.75	2.0	0	53.51	PEAK	74	PASS
	Off	2483.5	-52.53	2.0	0	42.72	AV	54	PASS
	Off	2500.0	-43.38	2.0	0	51.88	PEAK	74	PASS
	Off	2500.0	-52.81	2.0	0	42.44	AV	54	PASS

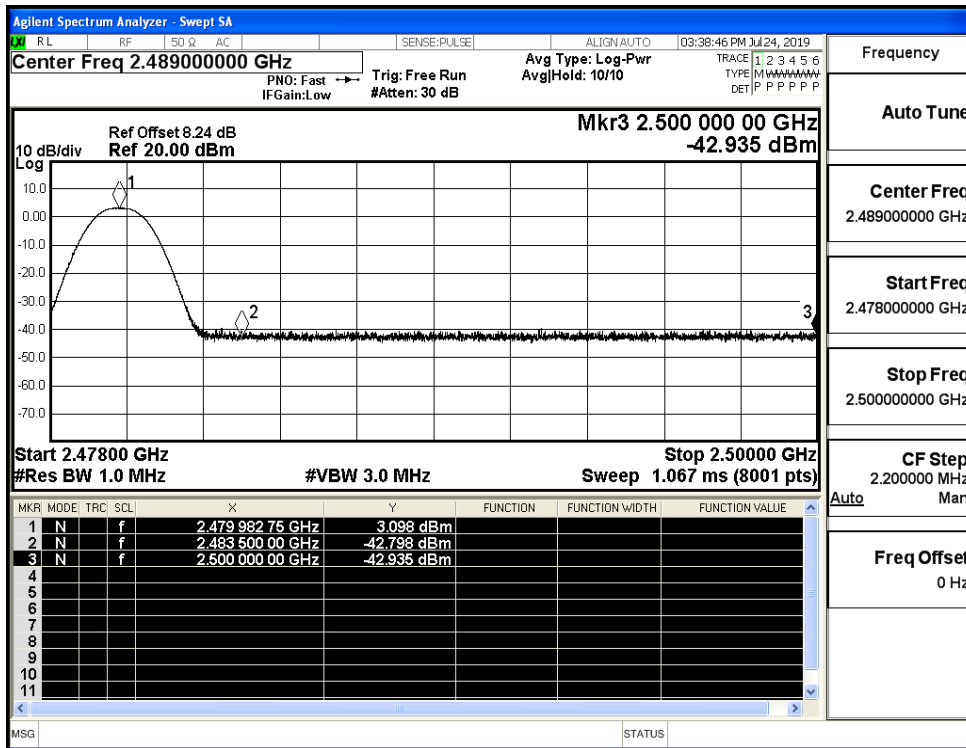
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



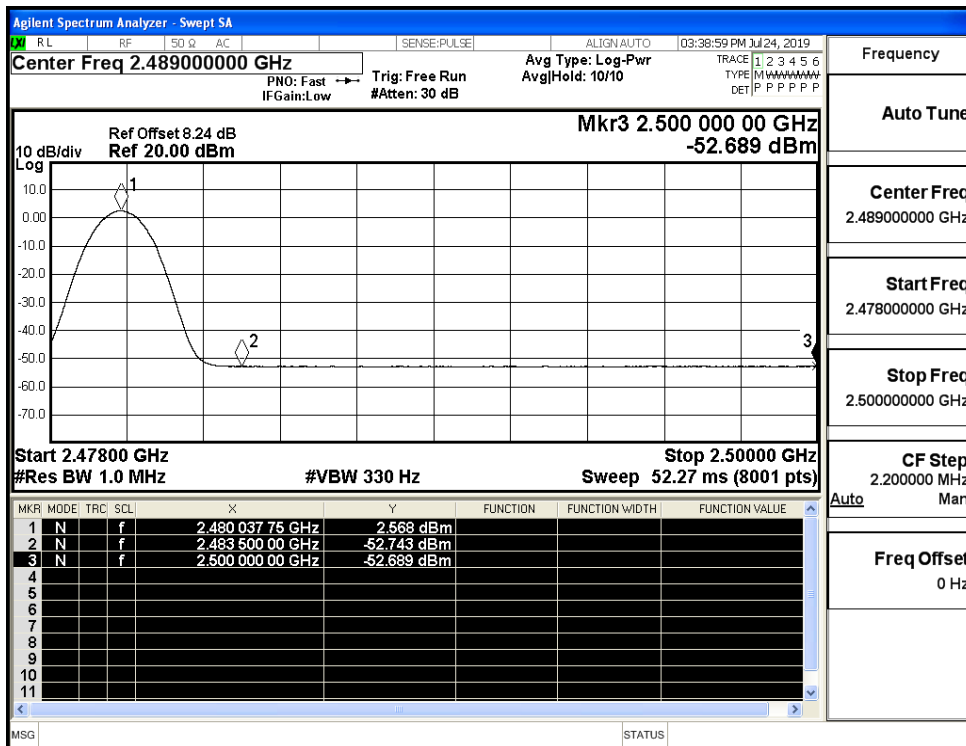
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



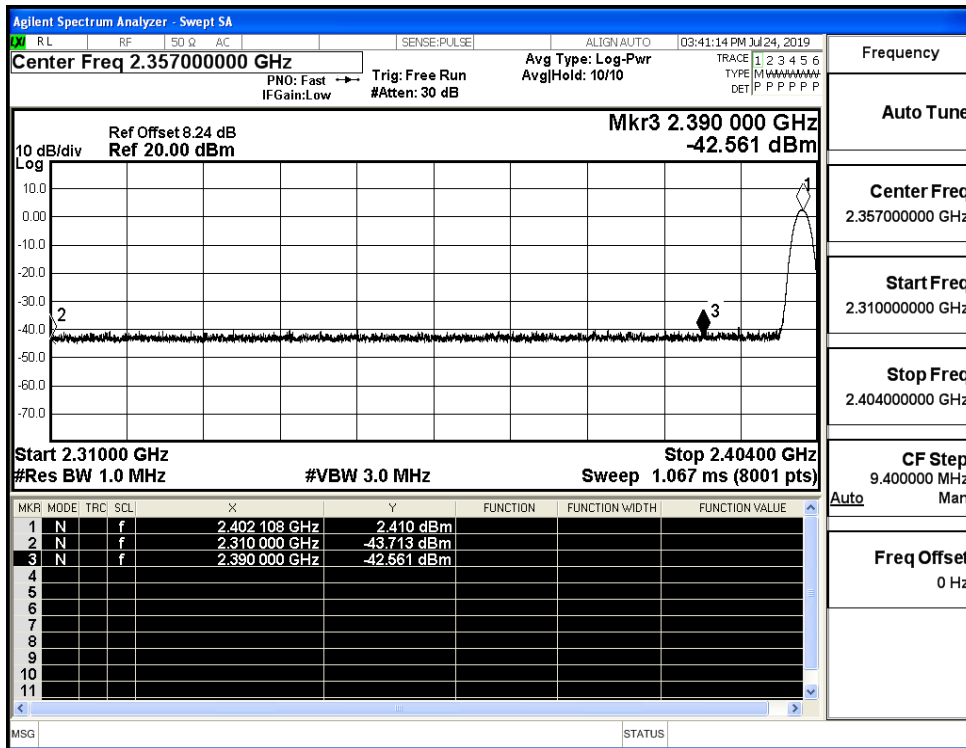
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



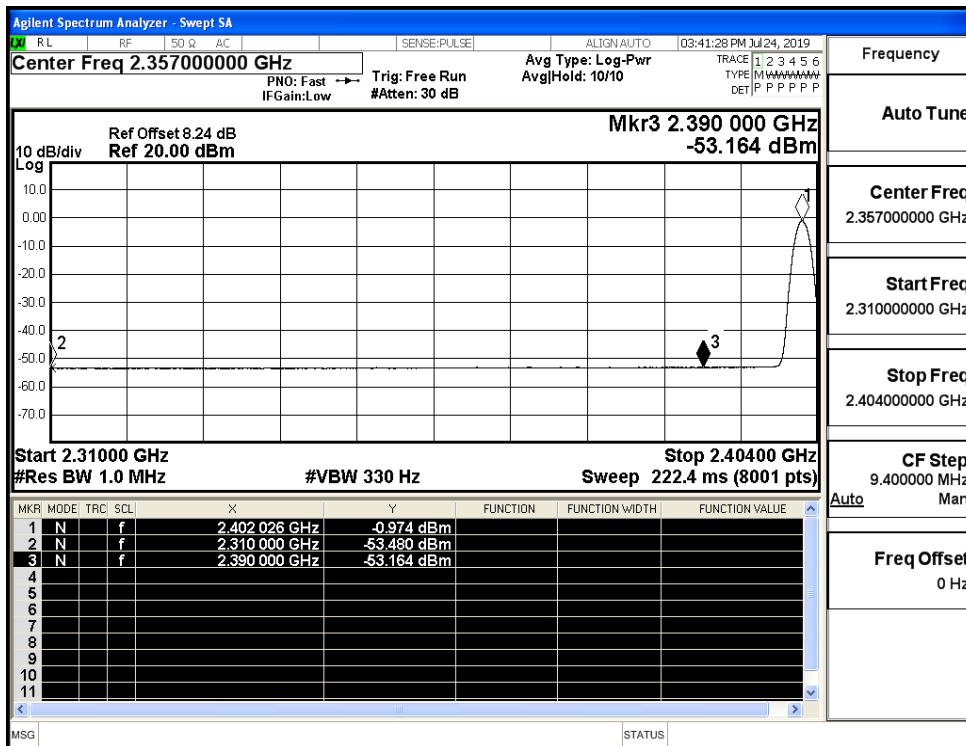
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



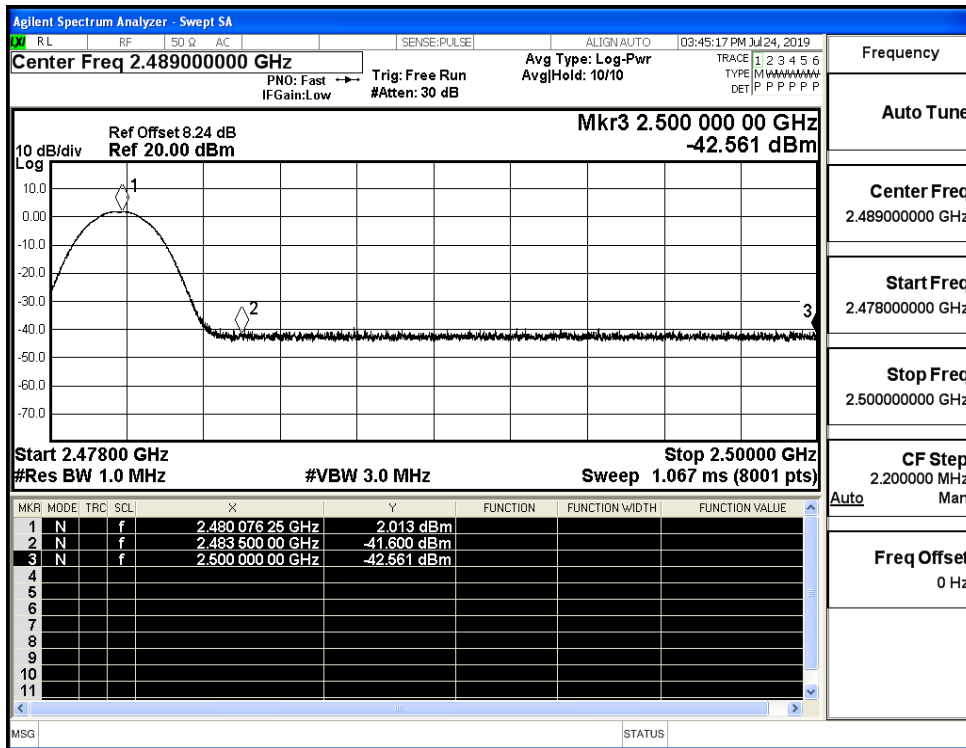
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



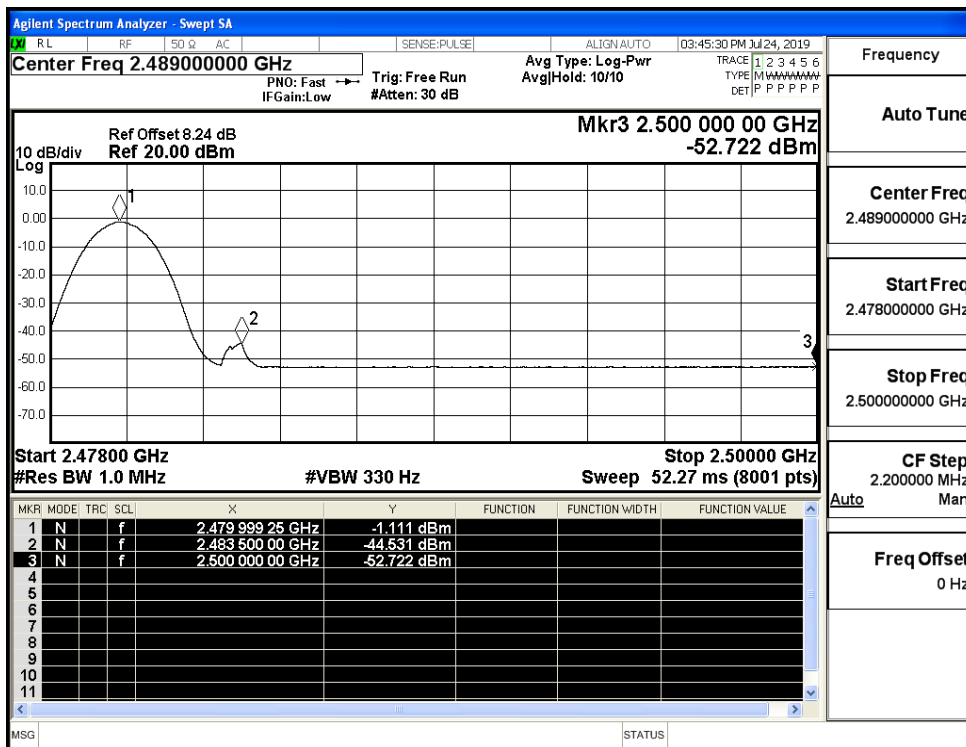
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



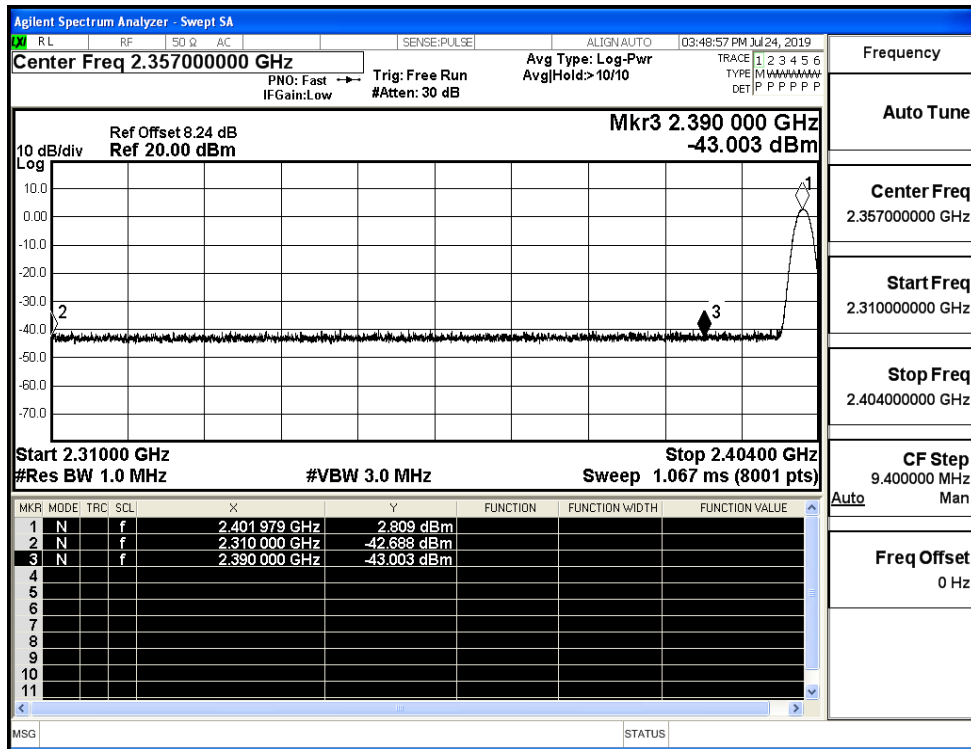
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (High Channel)



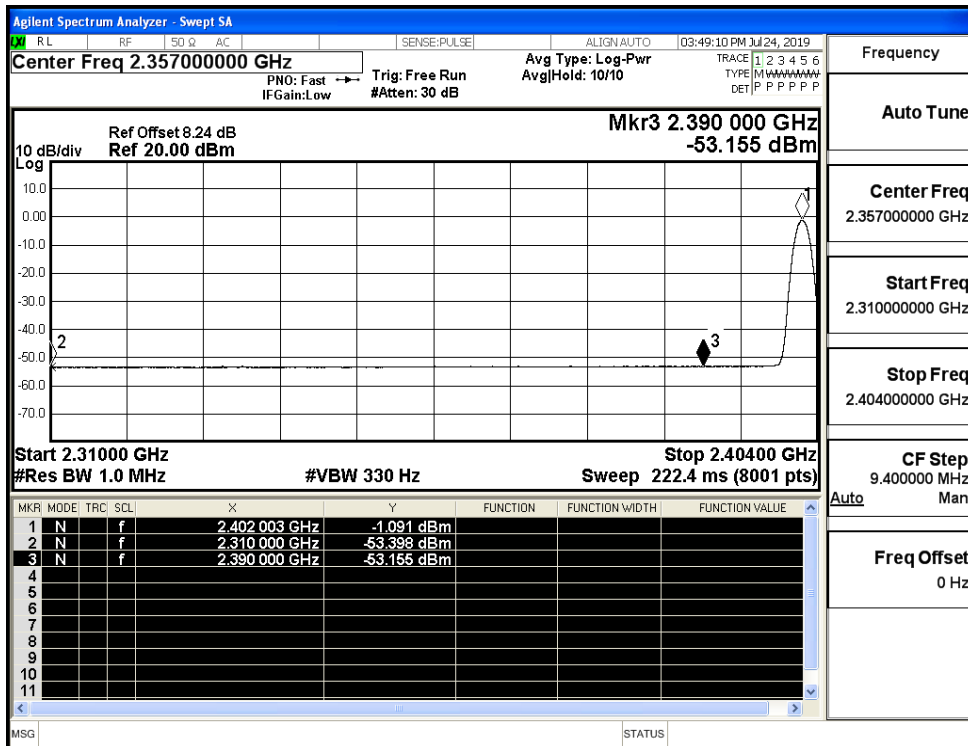
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (High Channel)



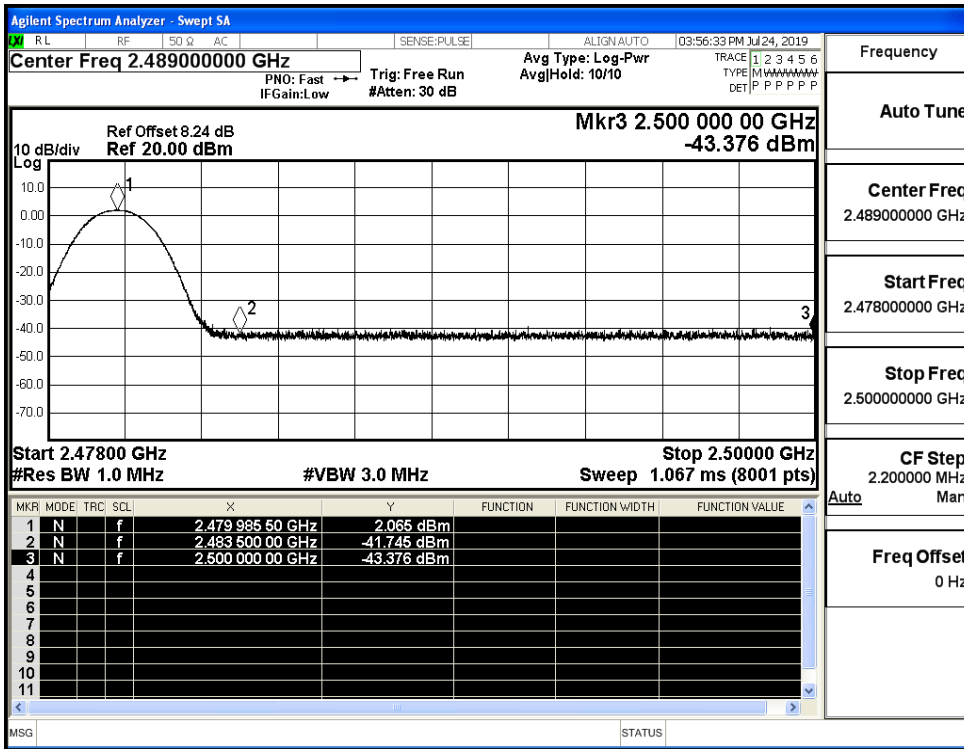
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

