

Appendix A

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

Product Name: AR-BOX

Trade Mark: Firepack

Test Model: EM_B556

Environmental Conditions

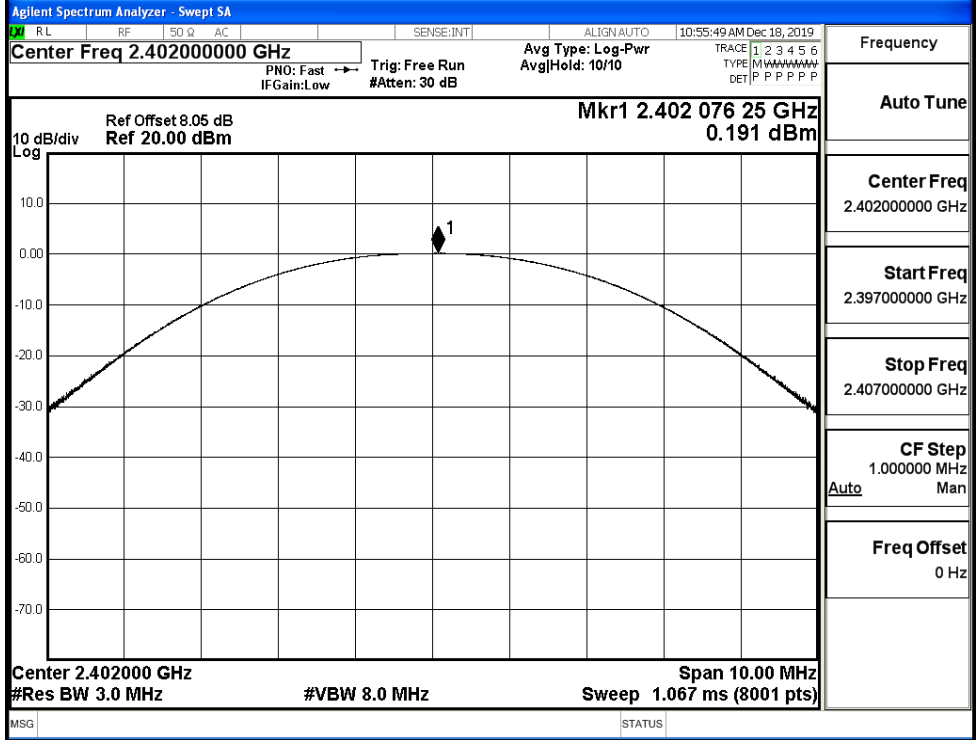
Temperature:	22.6°C
Relative Humidity:	52.8%
ATM Pressure:	100.0 kPa
Test Engineer:	Qu Xin
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

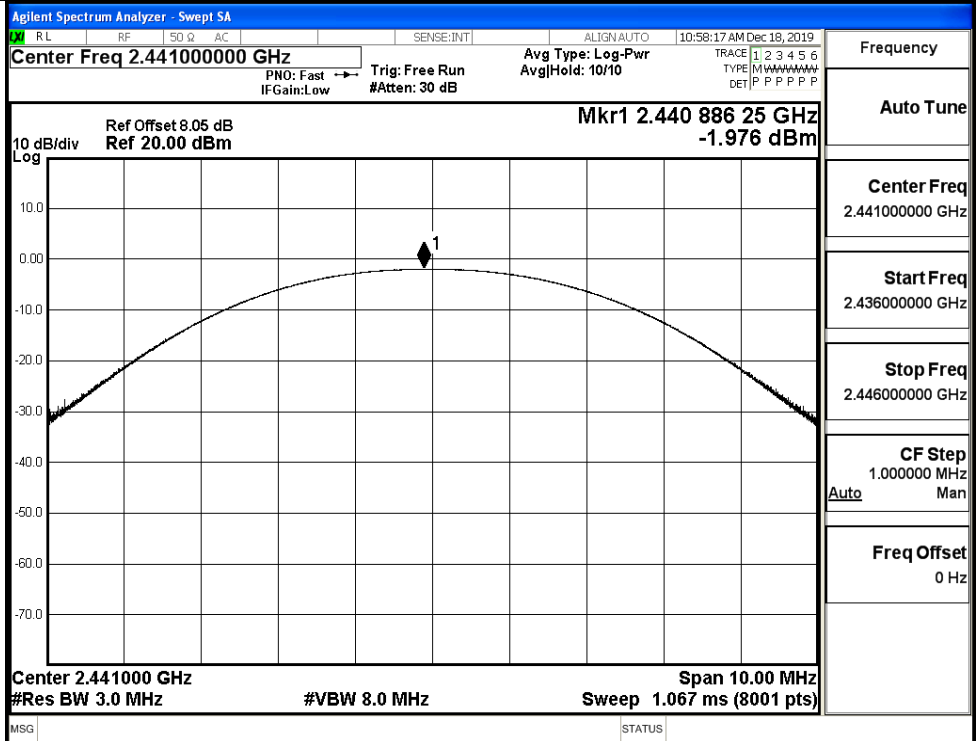
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.191	30	PASS
	MCH	-1.976	30	PASS
	HCH	-0.710	30	PASS
$\pi/4$ DQPSK	LCH	-0.515	21	PASS
	MCH	-2.476	21	PASS
	HCH	-1.672	21	PASS
8DPSK	LCH	-0.317	21	PASS
	MCH	-2.345	21	PASS
	HCH	-1.240	21	PASS

Test Graphs

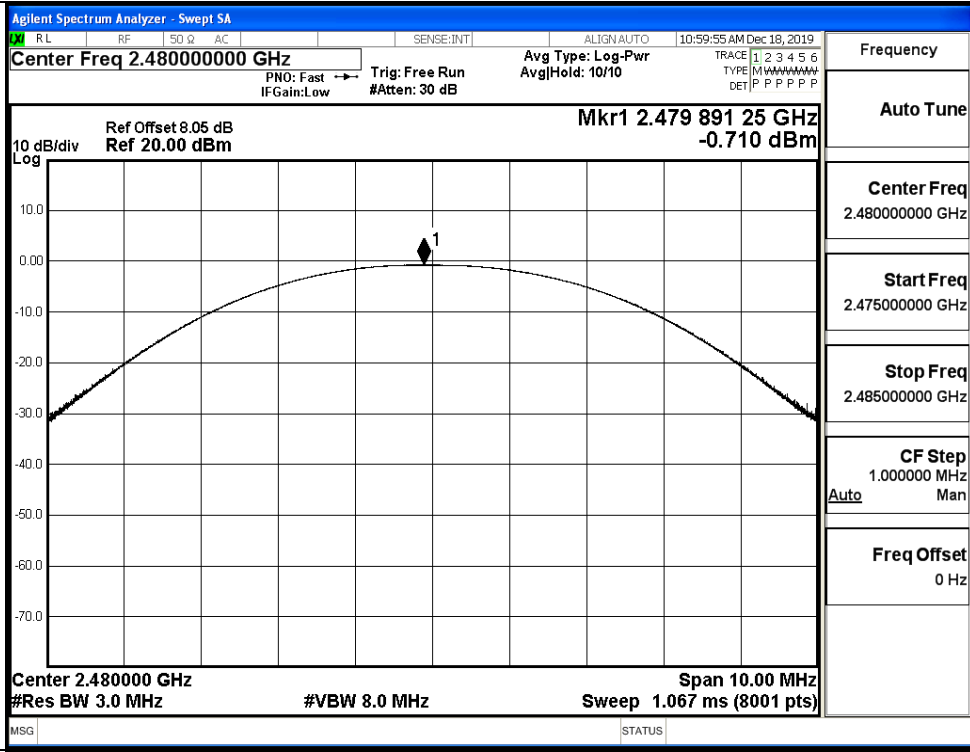
GFSK/LCH



GFSK/MCH

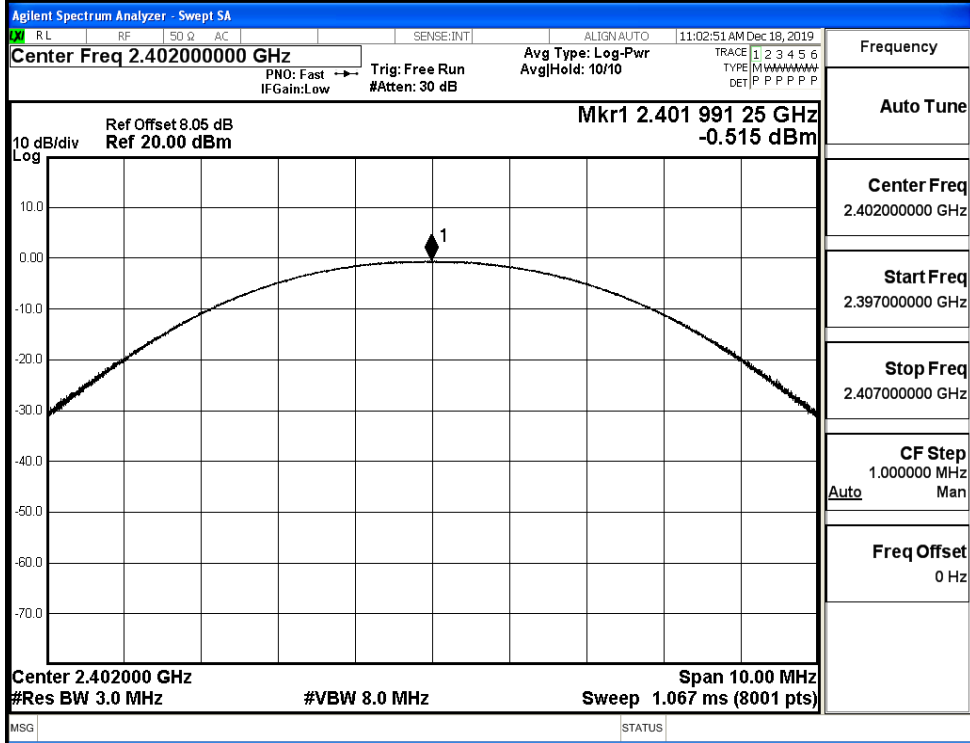


GFSK/HCH



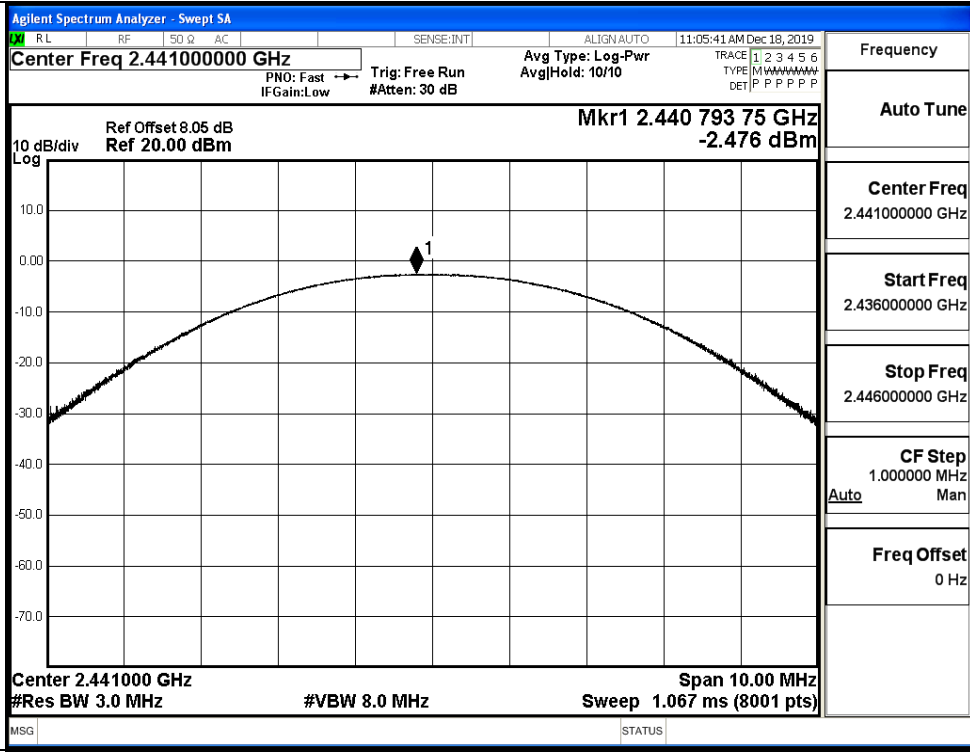
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.475000000 GHz
Stop Freq 2.485000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/LCH

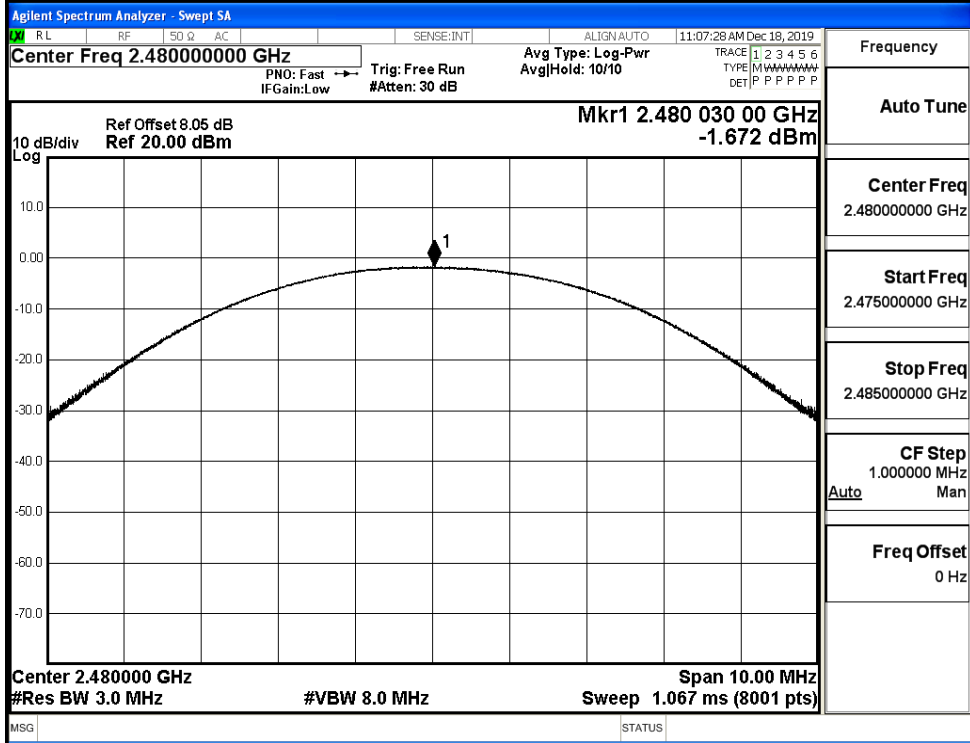


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.397000000 GHz
Stop Freq 2.407000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

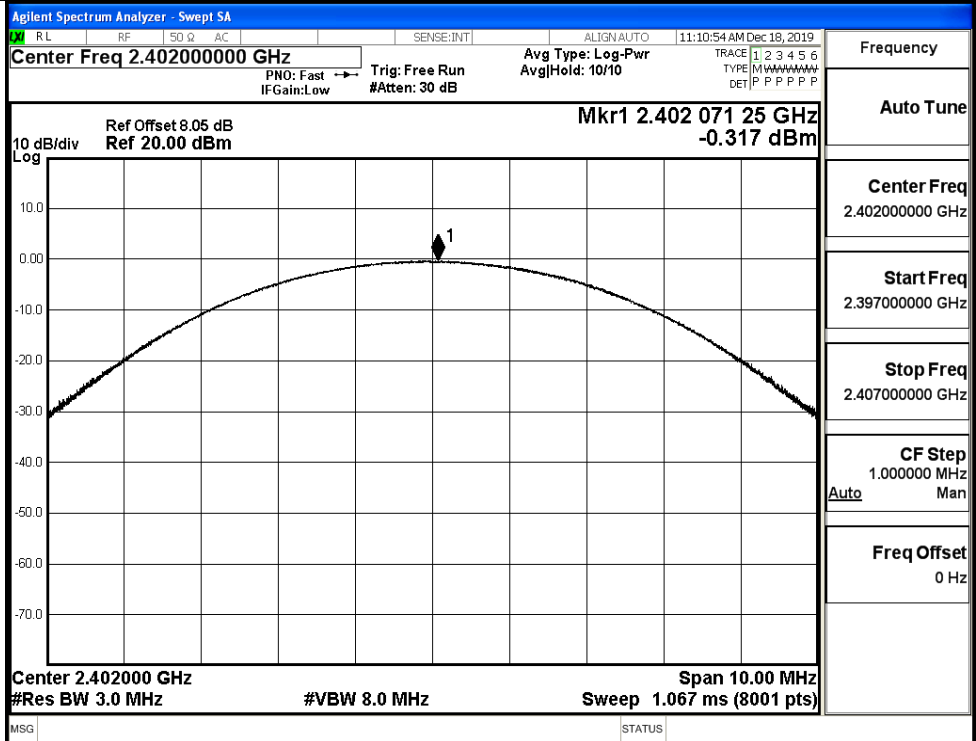
$\pi/4$ DQPSK/MCH



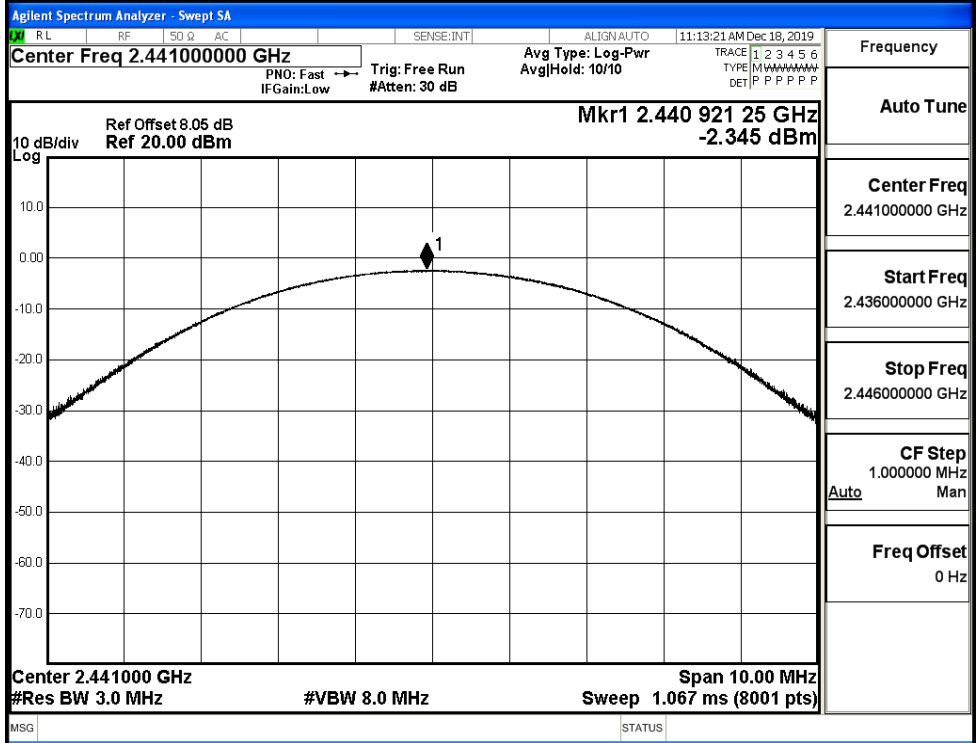
$\pi/4$ DQPSK/HCH



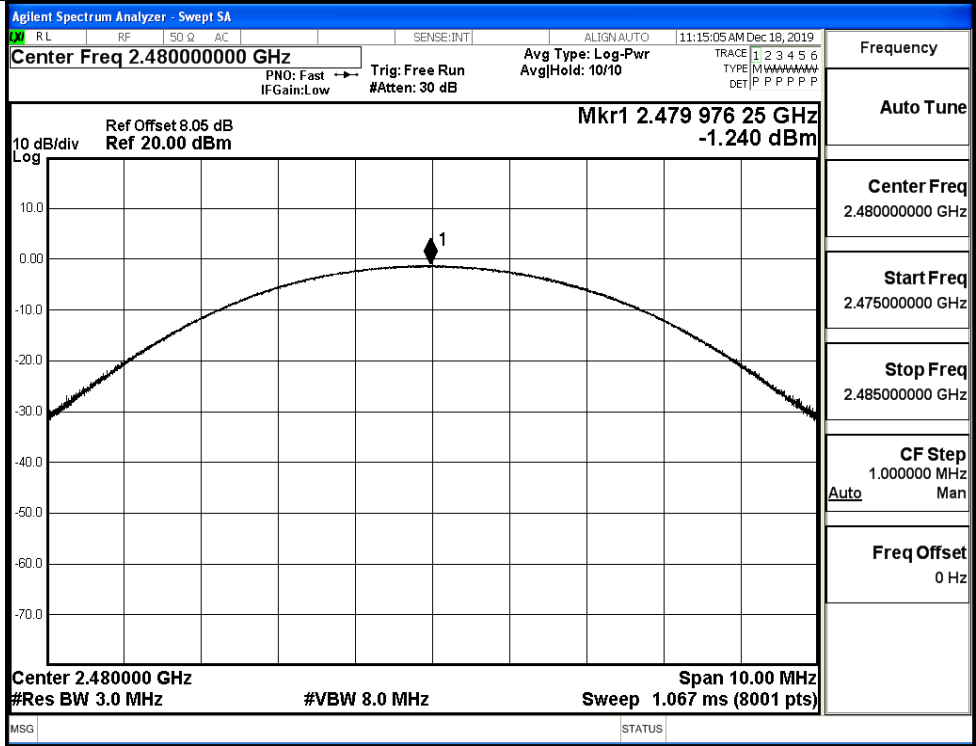
8DPSK/LCH



8DPSK/MCH

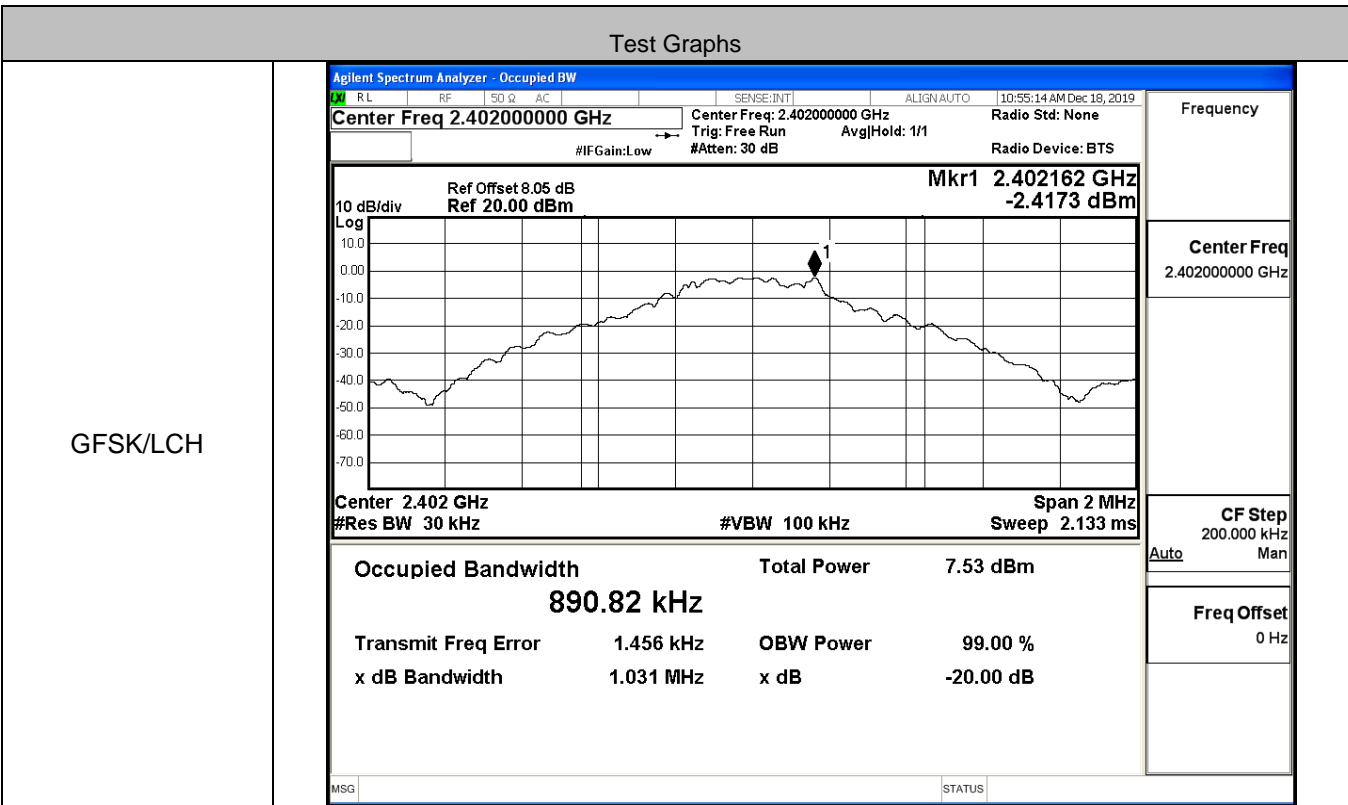


8DPSK/HCH

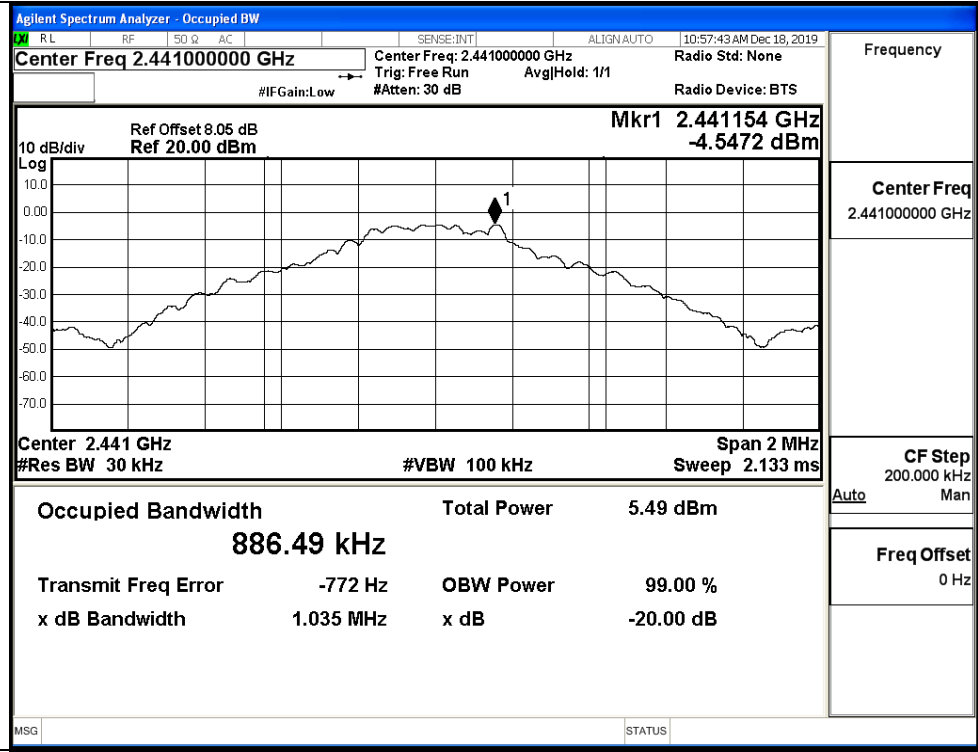


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.031	Not Specified	PASS
	MCH	1.035	Not Specified	PASS
	HCH	1.030	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.291	Not Specified	PASS
	MCH	1.319	Not Specified	PASS
	HCH	1.290	Not Specified	PASS
8DPSK	LCH	1.295	Not Specified	PASS
	MCH	1.299	Not Specified	PASS
	HCH	1.296	Not Specified	PASS

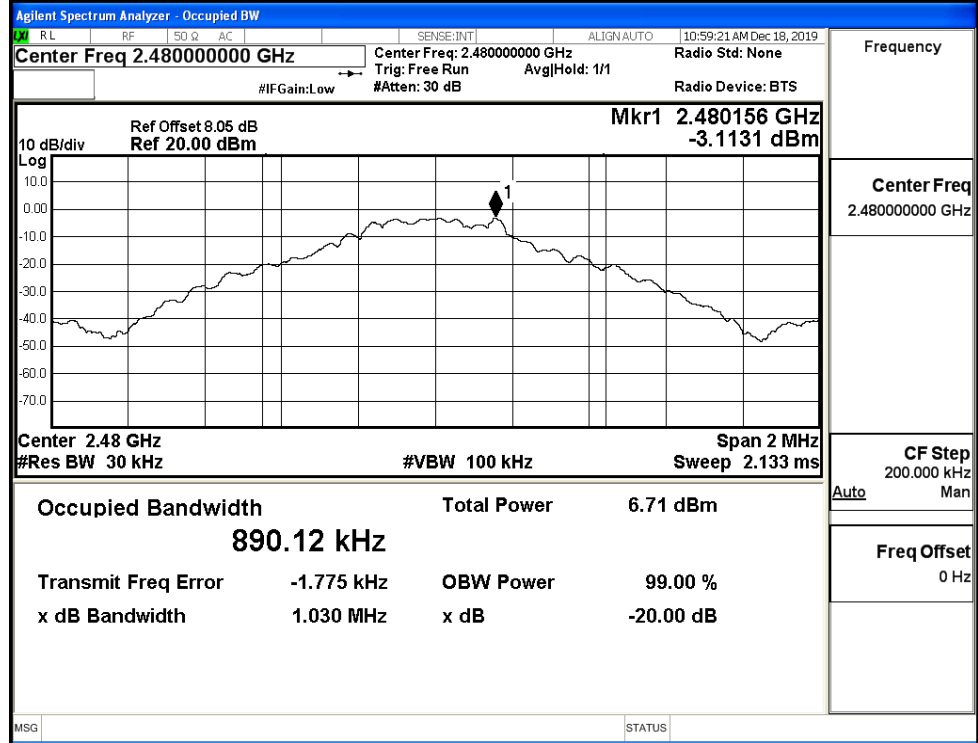


GFSK/MCH



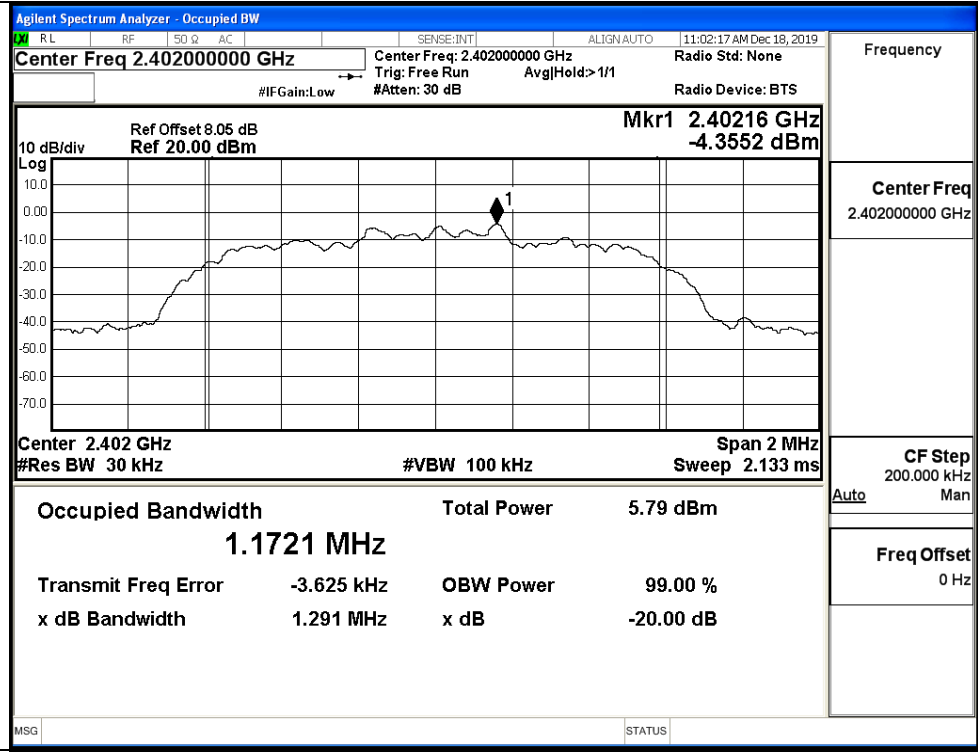
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH



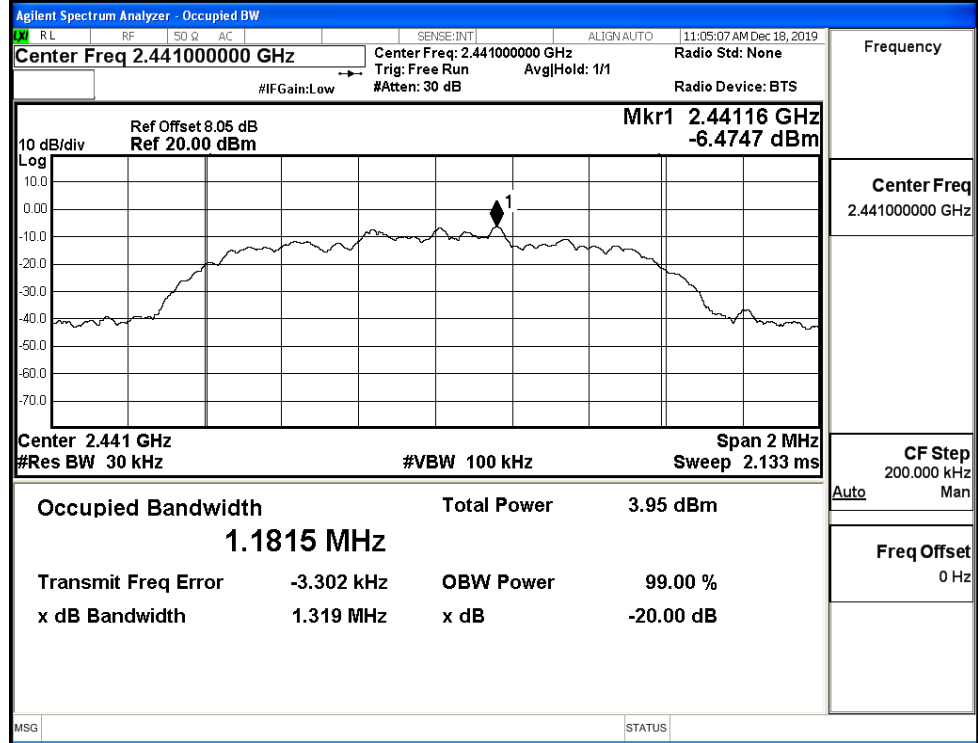
Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/LCH



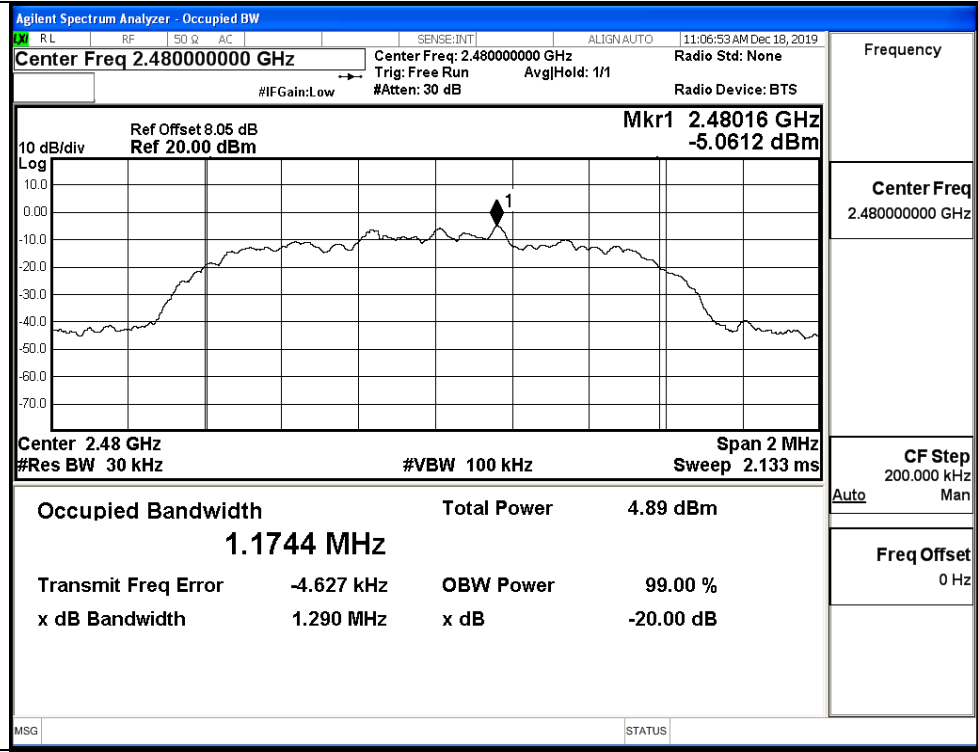
Frequency	2.40200000 GHz
Center Freq	2.40200000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK/MCH

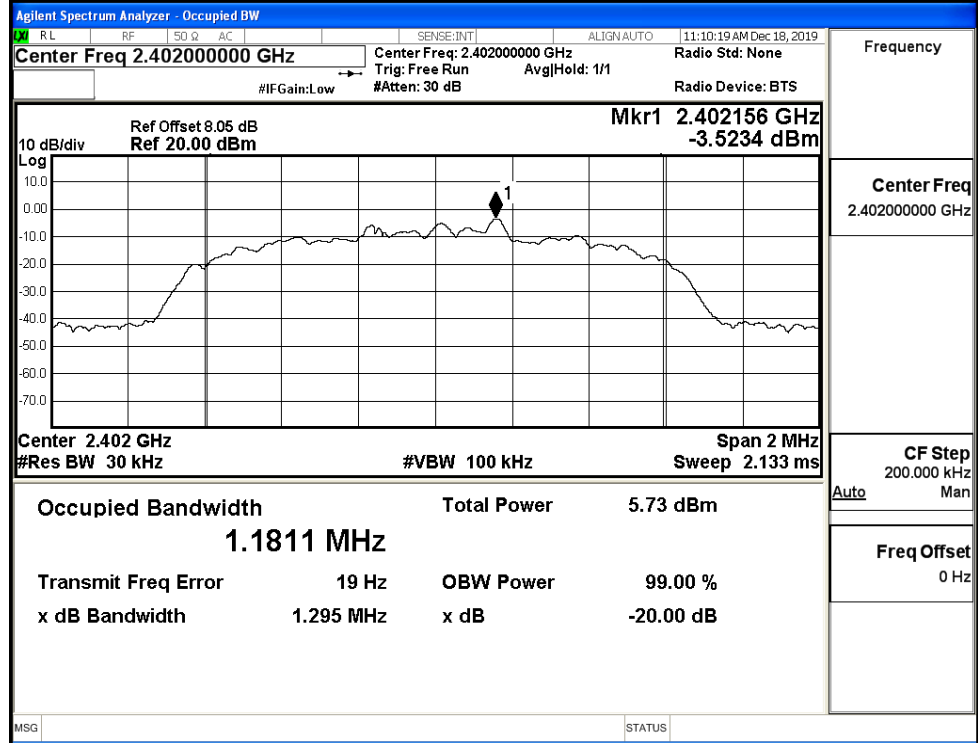


Frequency	2.44100000 GHz
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

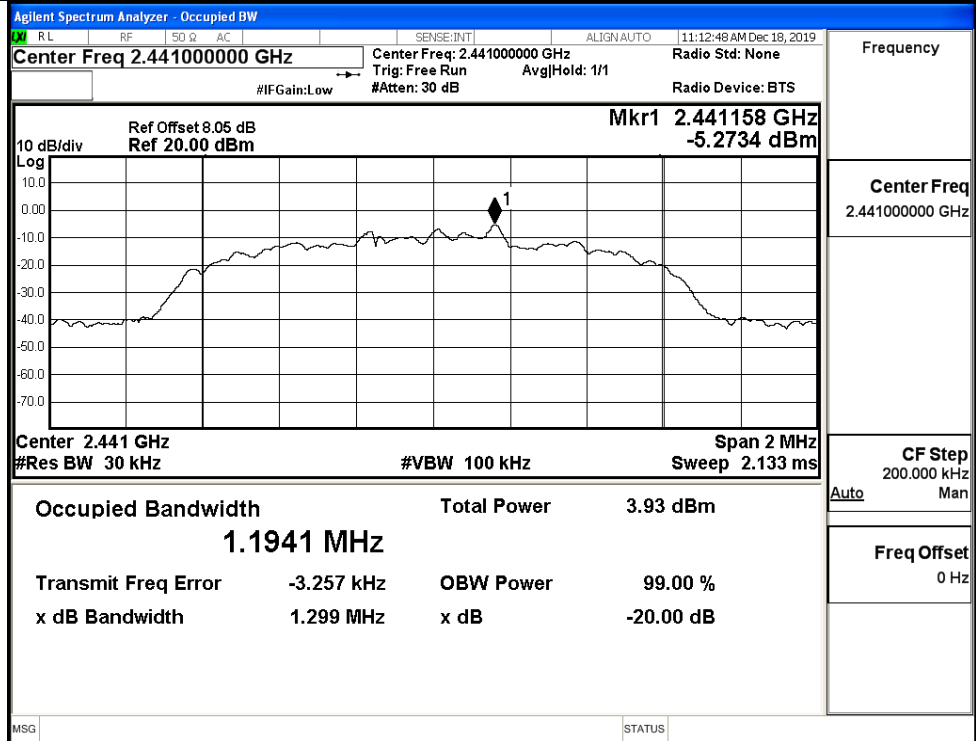
$\pi/4$ DQPSK/HCH



8DPSK/LCH



8DPSK/MCH



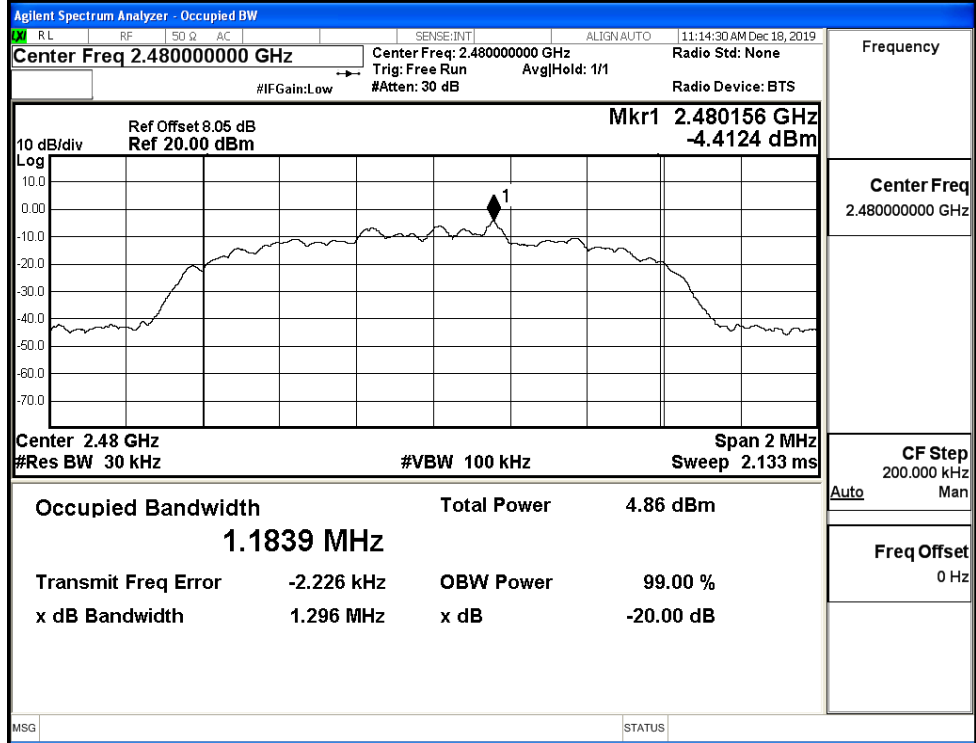
Frequency

Center Freq
2.441000000 GHz

CF Step
200.000 kHz

Freq Offset
0 Hz

8DPSK/HCH



Frequency

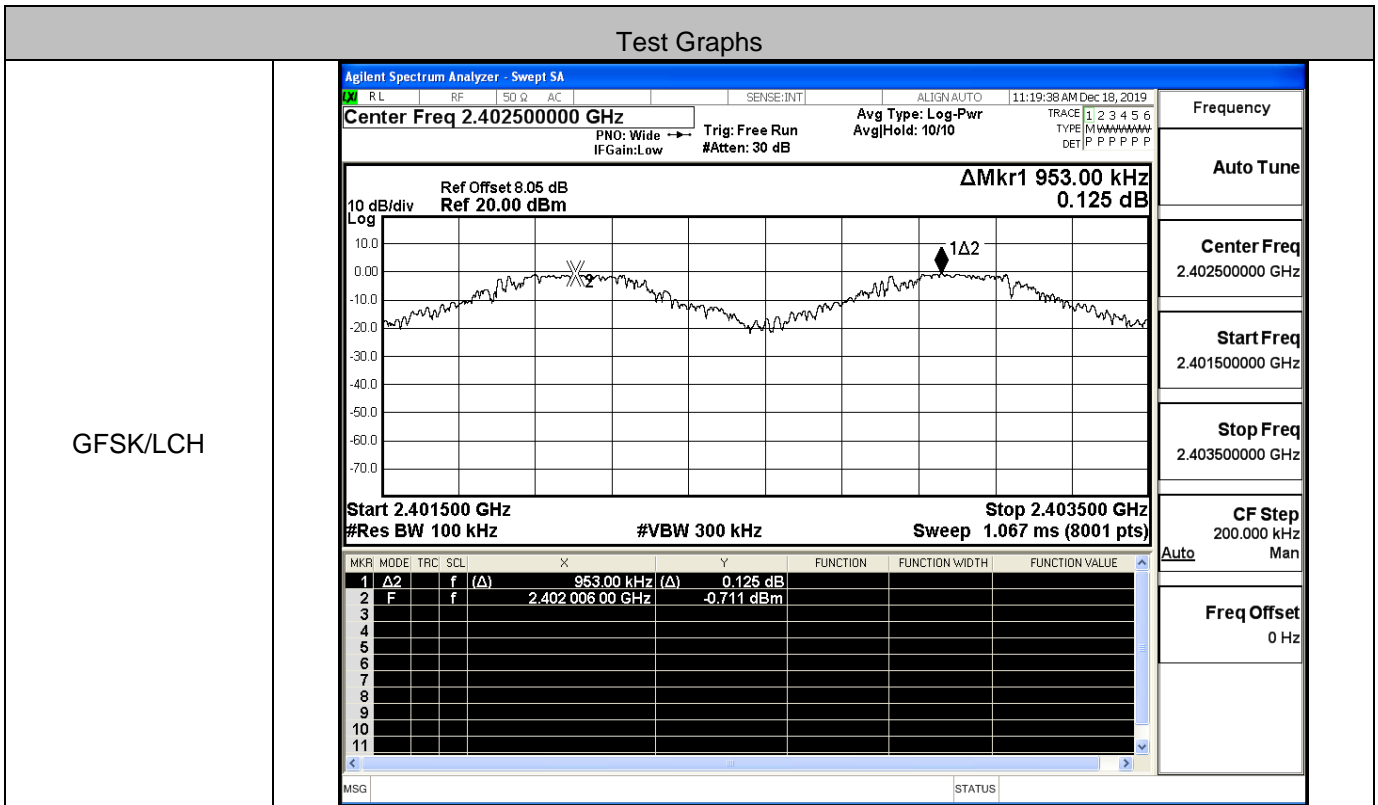
Center Freq
2.480000000 GHz

CF Step
200.000 kHz

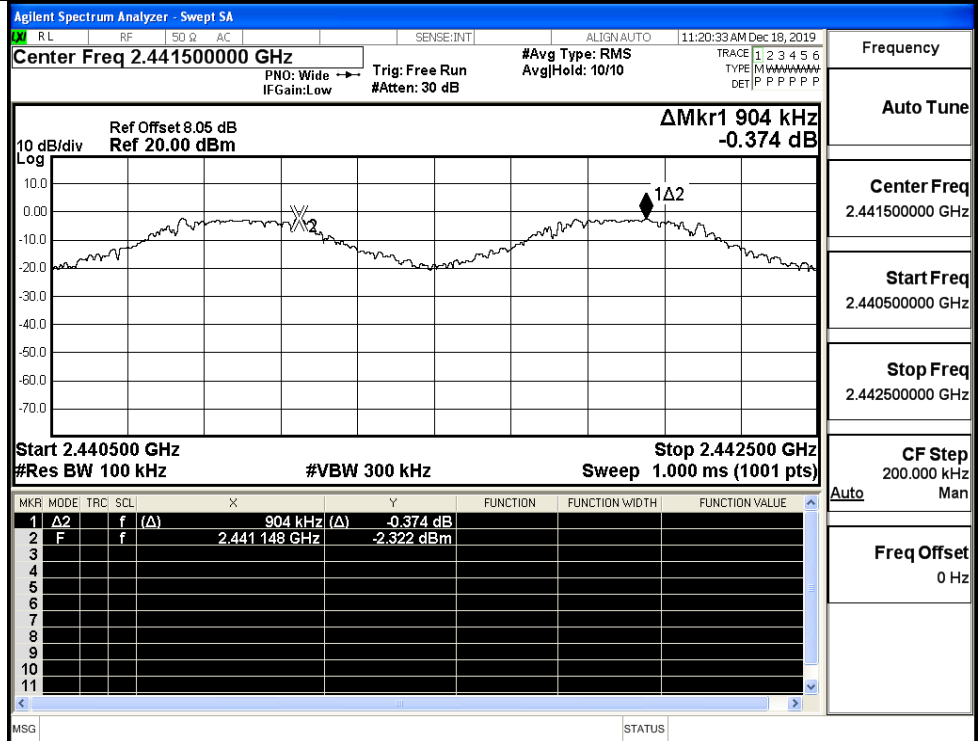
Freq Offset
0 Hz

A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.953	0.690	PASS
	MCH	0.904	0.690	PASS
	HCH	1.160	0.690	PASS
π/4DQPSK	LCH	1.140	0.879	PASS
	MCH	0.996	0.879	PASS
	HCH	0.908	0.879	PASS
8DPSK	LCH	0.902	0.866	PASS
	MCH	1.326	0.866	PASS
	HCH	1.052	0.866	PASS

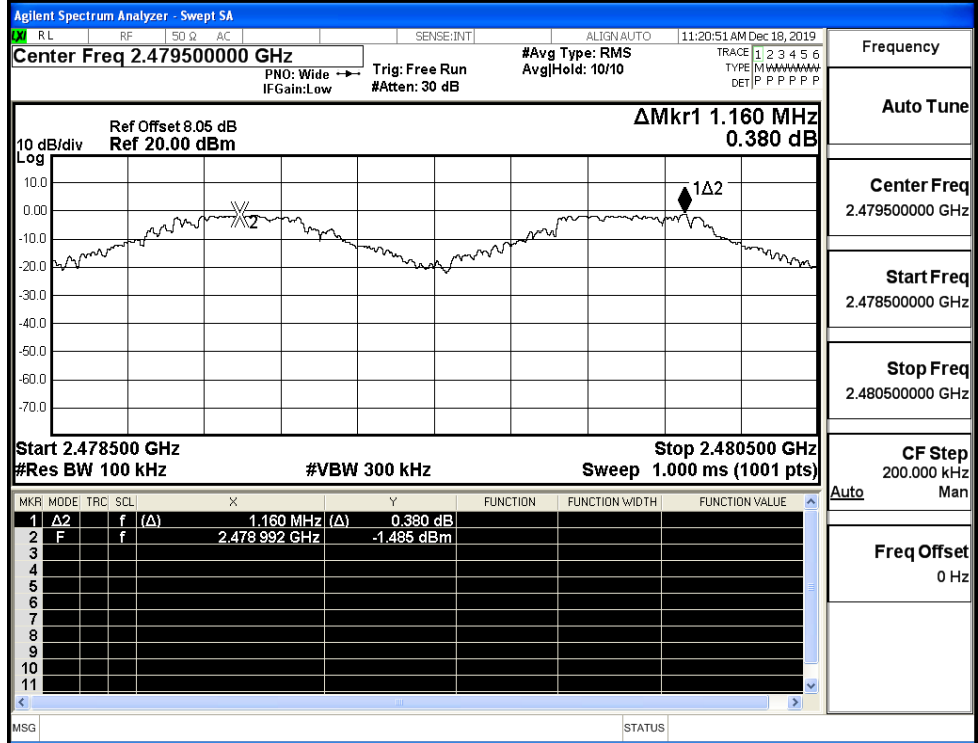


GFSK/MCH



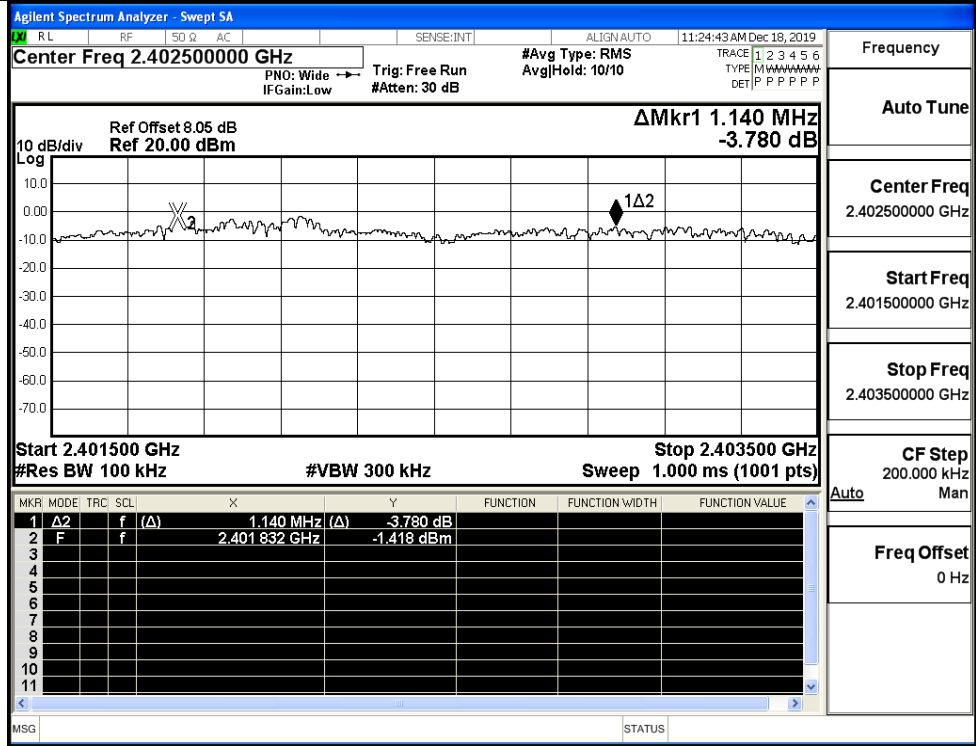
Frequency
Auto Tune
Center Freq
2.441500000 GHz
Start Freq
2.440500000 GHz
Stop Freq
2.442500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

GFSK/HCH



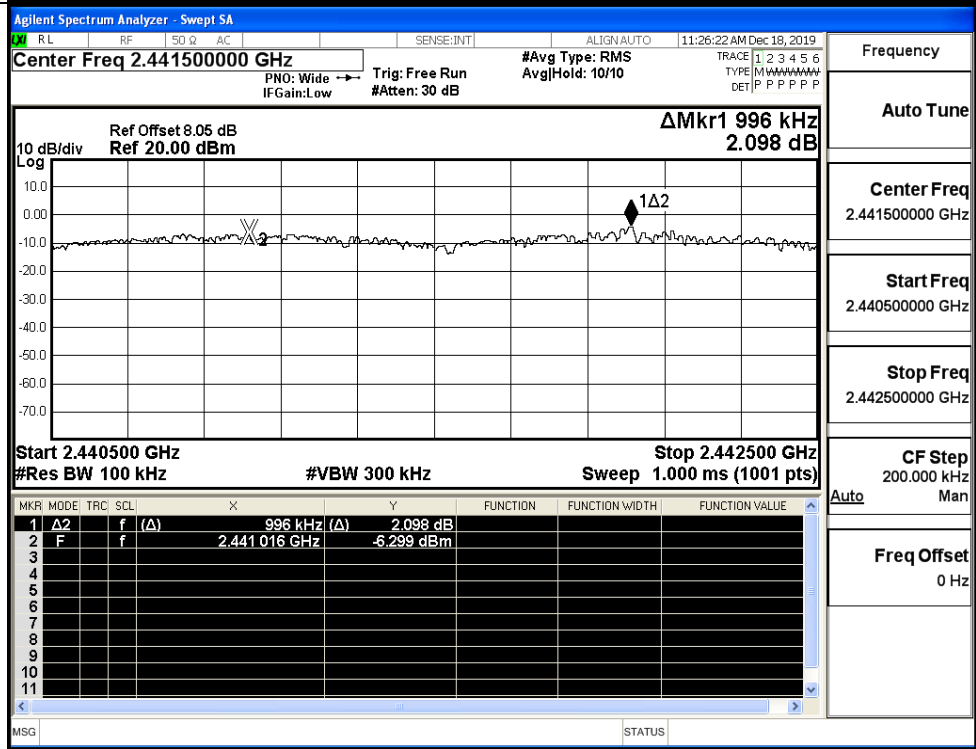
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto
Man
Freq Offset
0 Hz

$\pi/4$ DQPSK/LCH



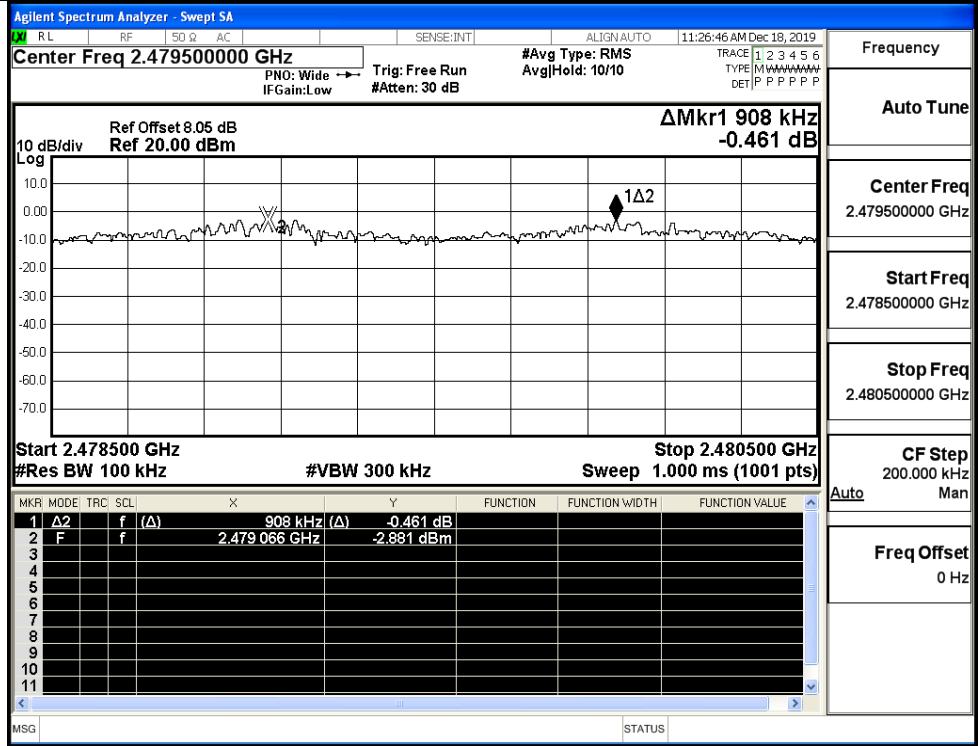
Frequency
Auto Tune
Center Freq 2.402500000 GHz
Start Freq 2.401500000 GHz
Stop Freq 2.403500000 GHz
CF Step 200.000 kHz
Auto
Freq Offset 0 Hz

$\pi/4$ DQPSK/MCH

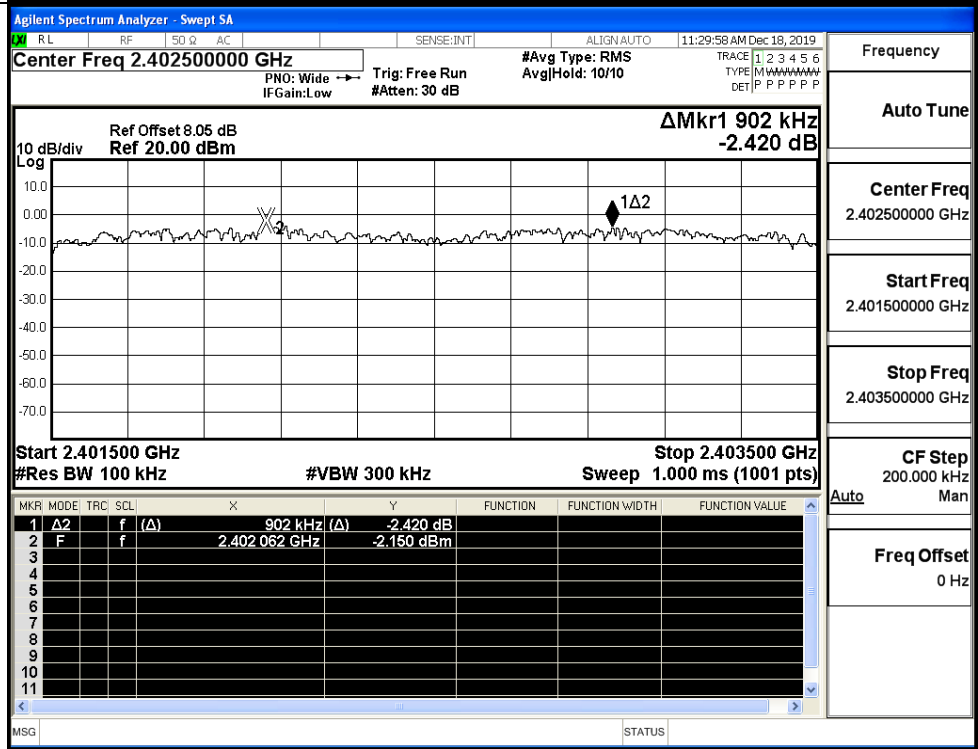


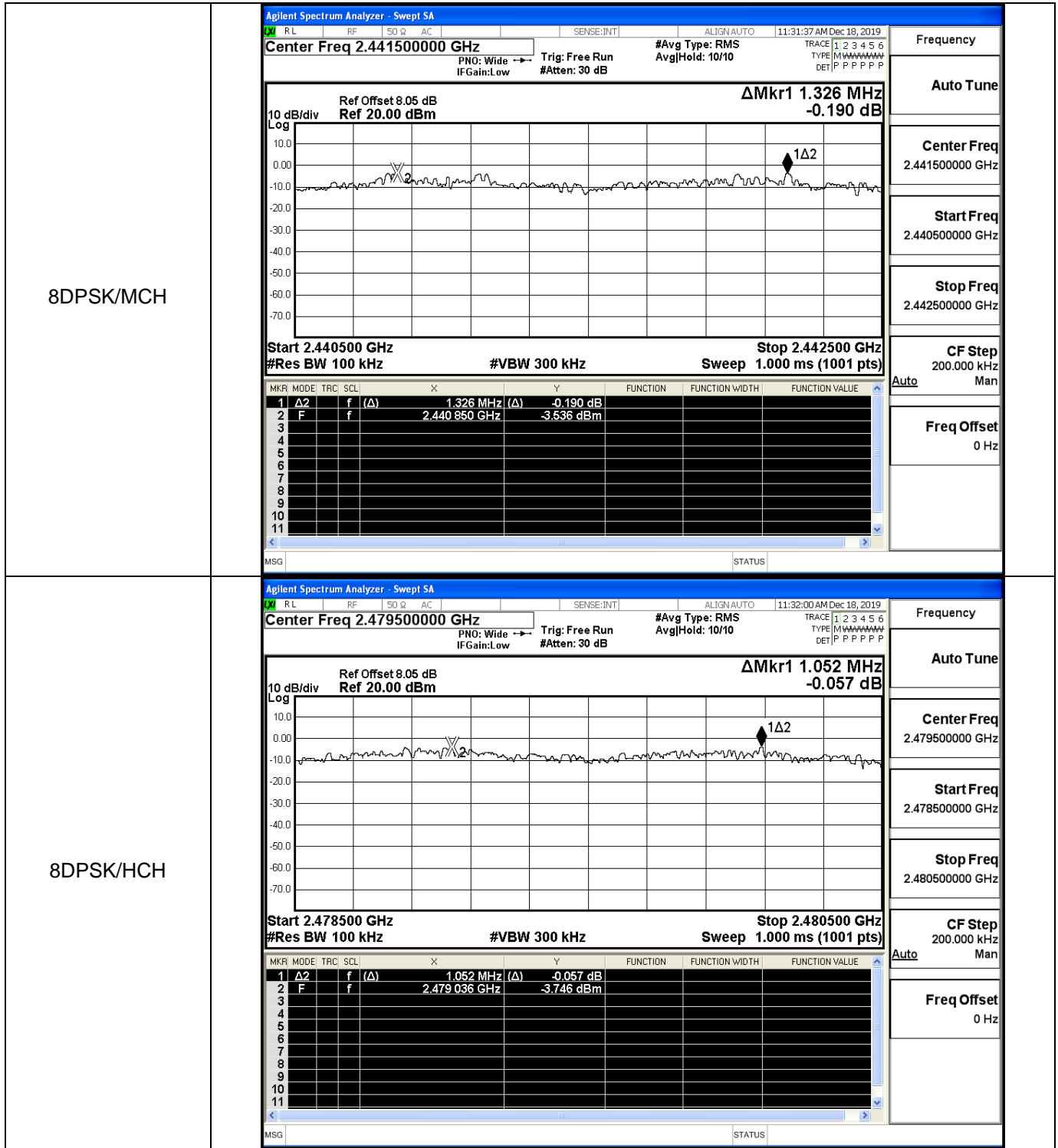
Frequency
Auto Tune
Center Freq 2.441500000 GHz
Start Freq 2.440500000 GHz
Stop Freq 2.442500000 GHz
CF Step 200.000 kHz
Auto
Freq Offset 0 Hz

π/4DQPSK/HCH



8DPSK/LCH



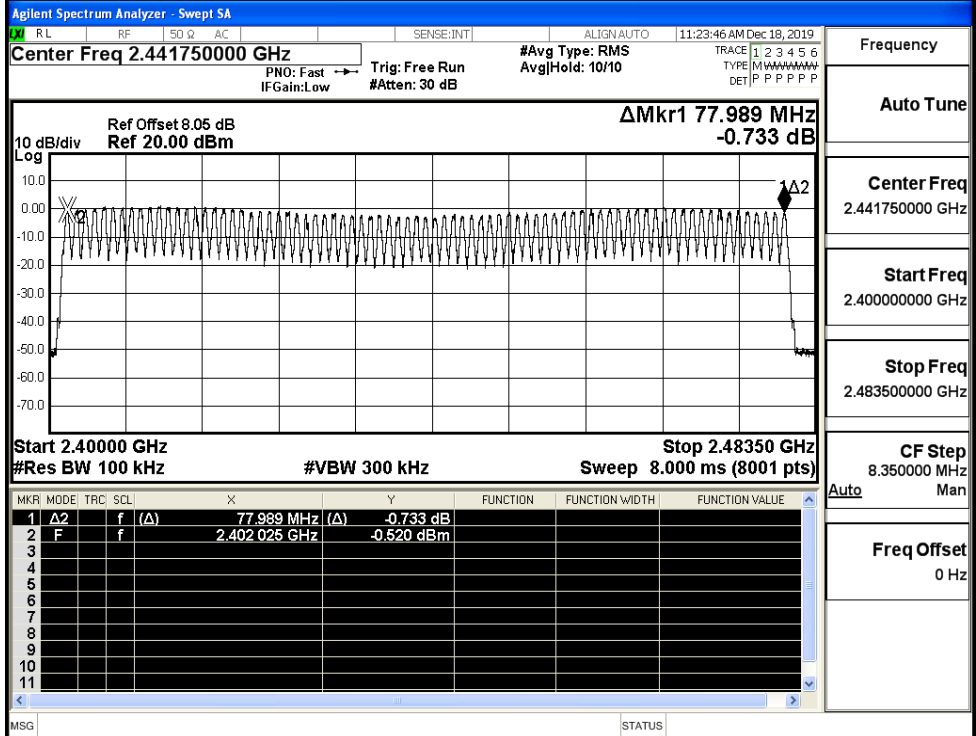


A.4 Hopping Channel Number

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



Frequency

Auto Tune

Center Freq
2.441750000 GHz

Start Freq
2.400000000 GHz

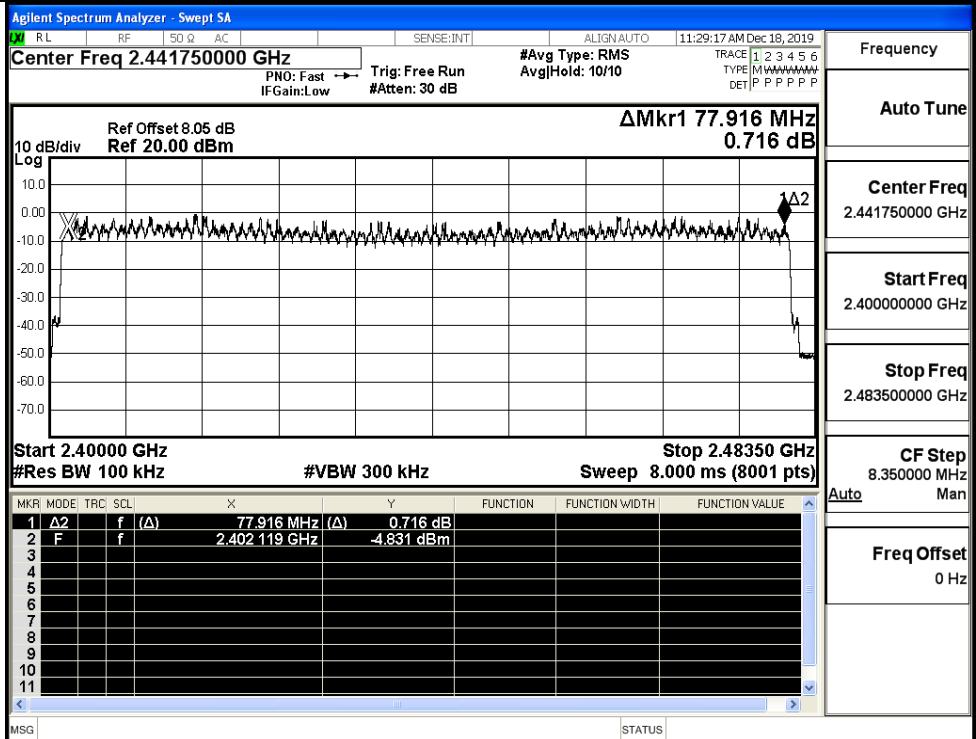
Stop Freq
2.483500000 GHz

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

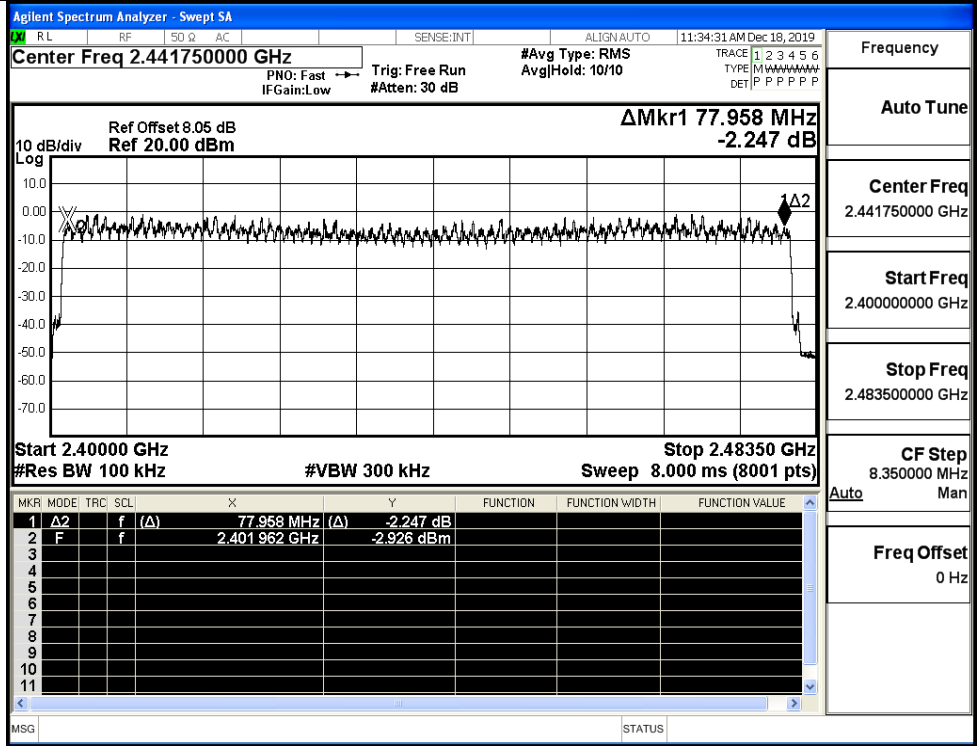
Stop Freq
2.483500000 GHz

CF Step
8.350000 MHz

Auto Man

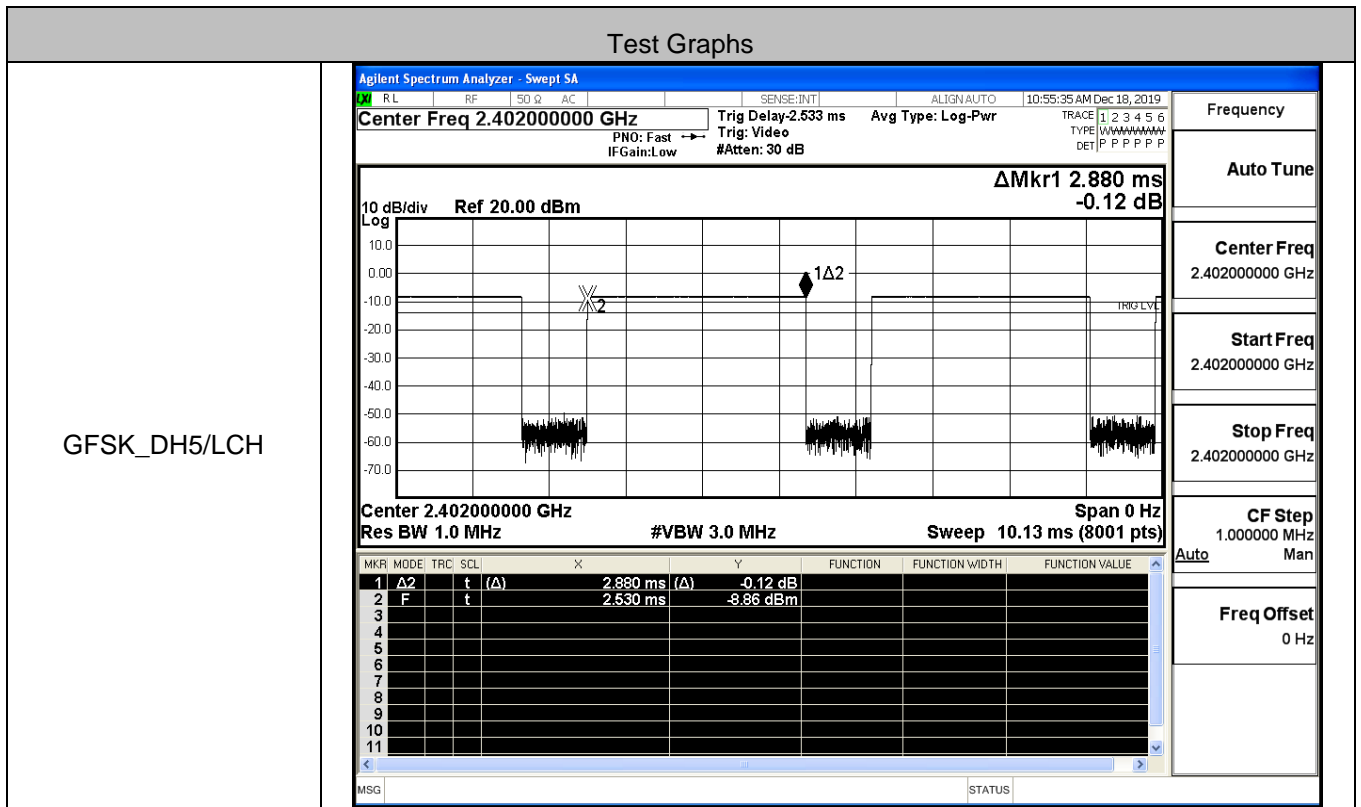
Freq Offset
0 Hz

8DPSK/Hop

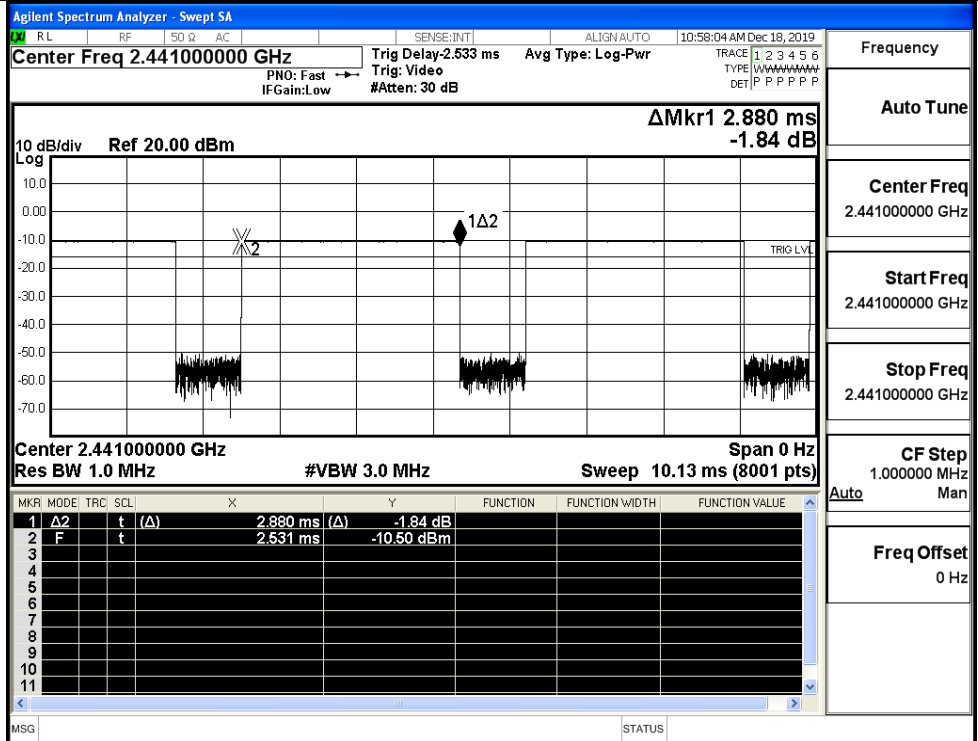


A.5 Dwell Time

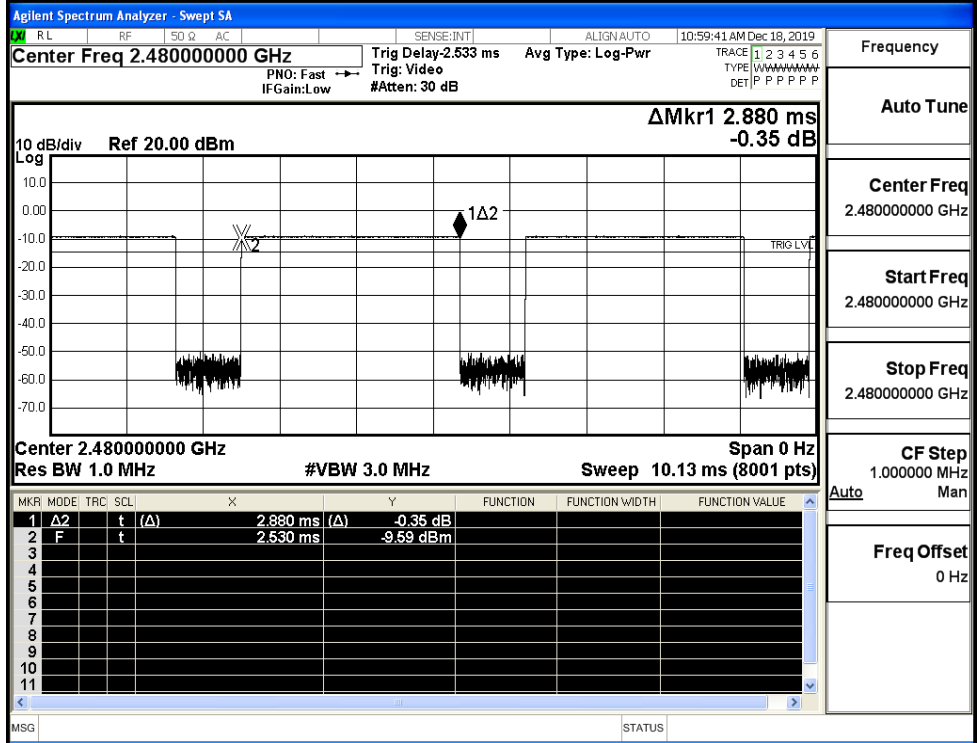
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



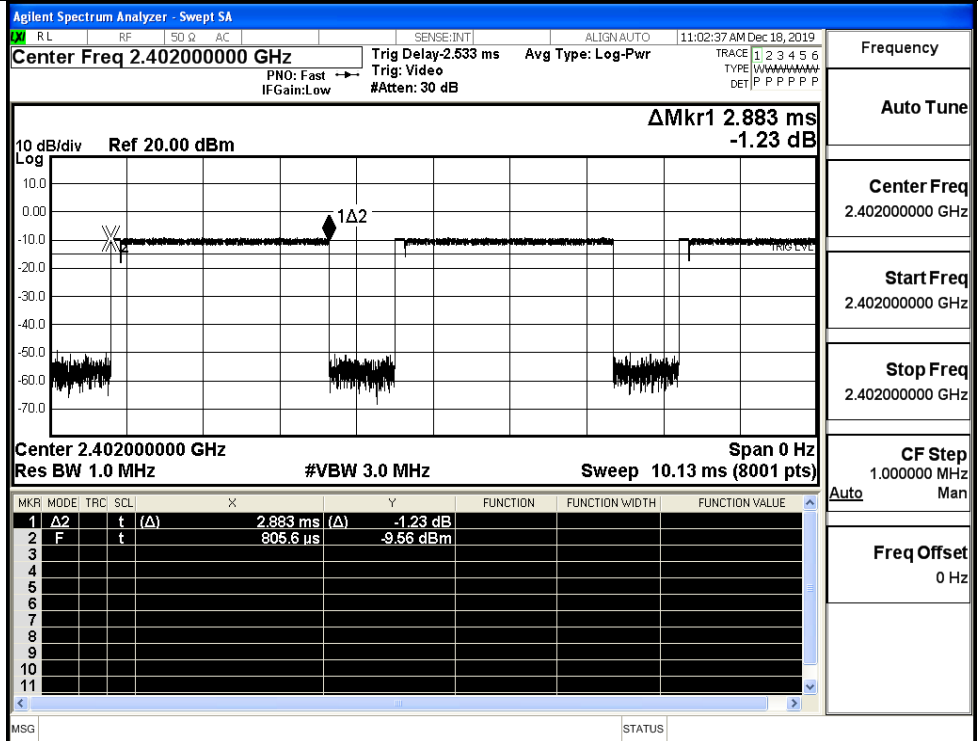
GFSK_DH5/MCH



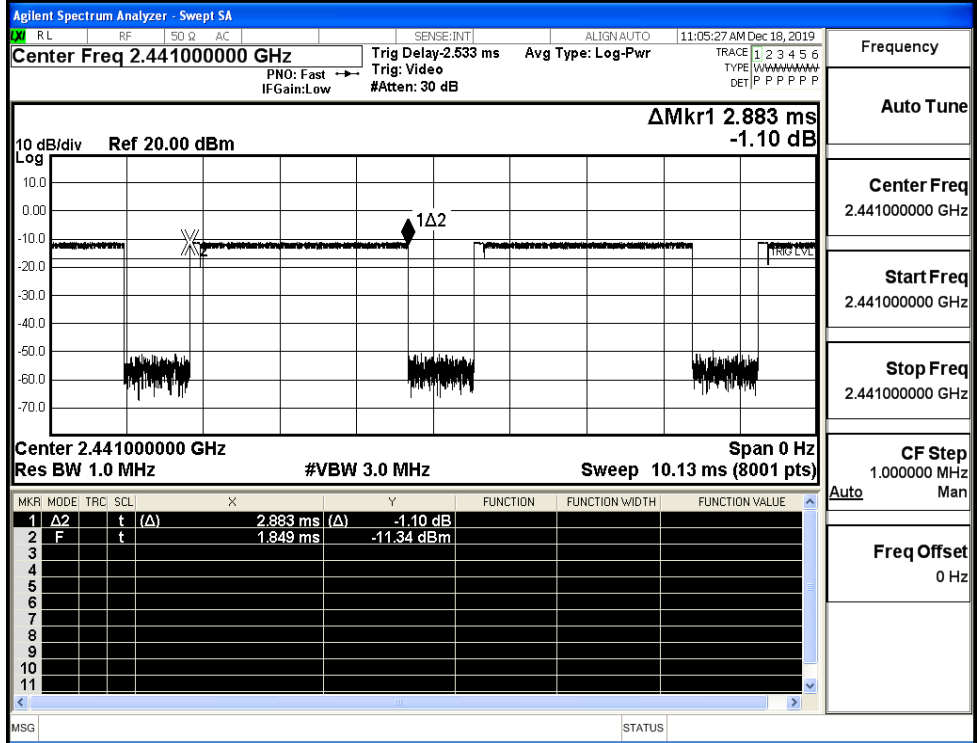
GFSK_DH5/HCH



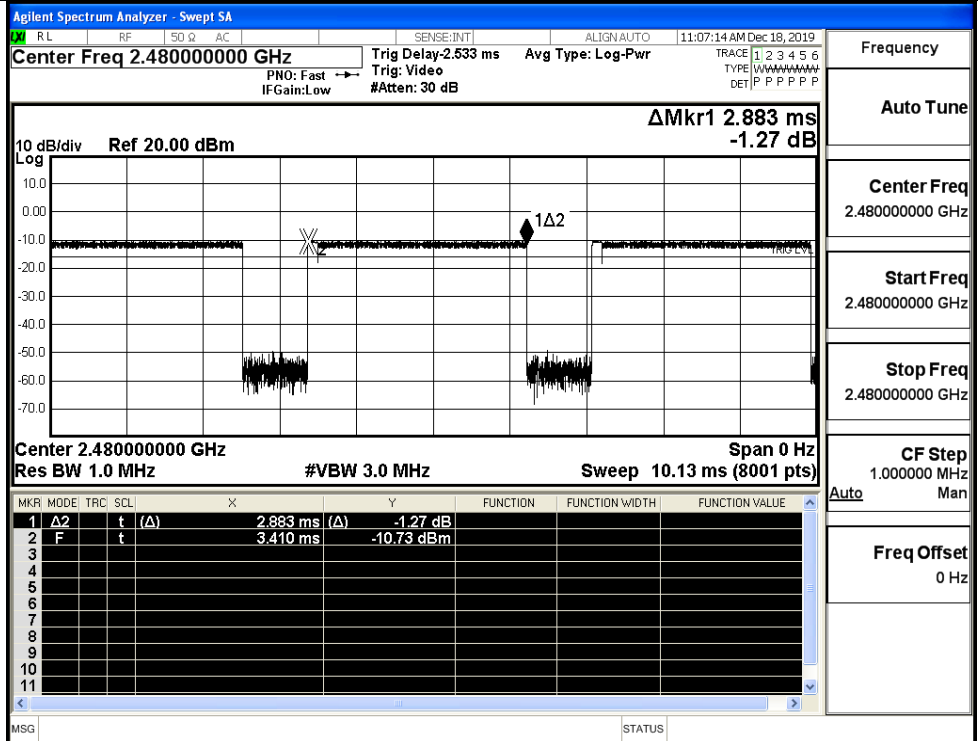
$\pi/4$ DQPSK
_2DH5/LCH



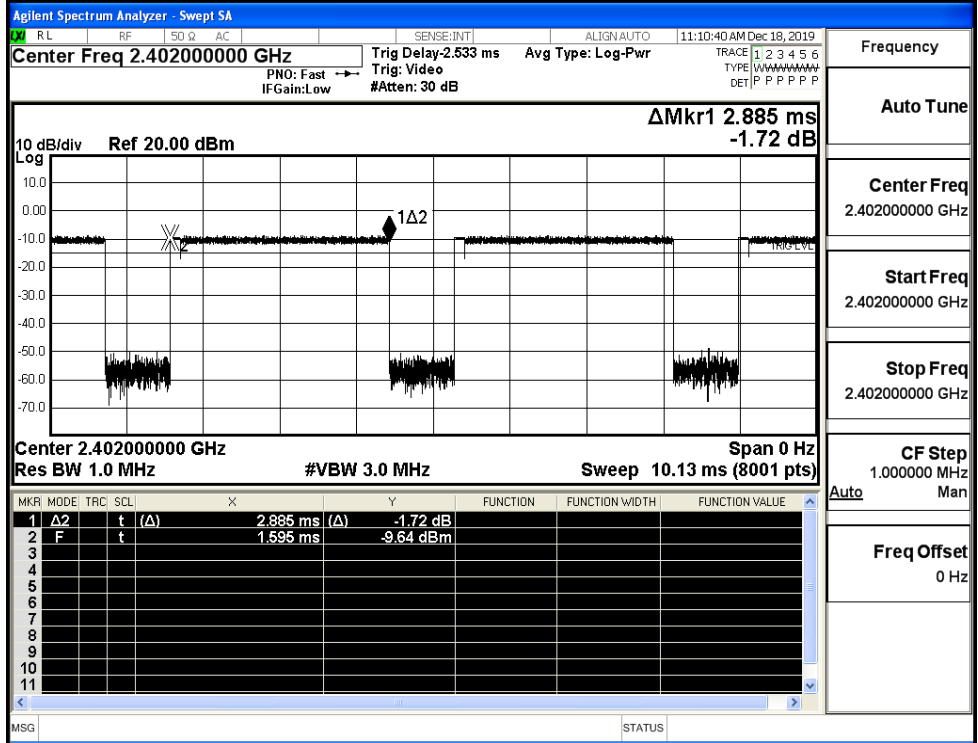
$\pi/4$ DQPSK
_2DH5/MCH



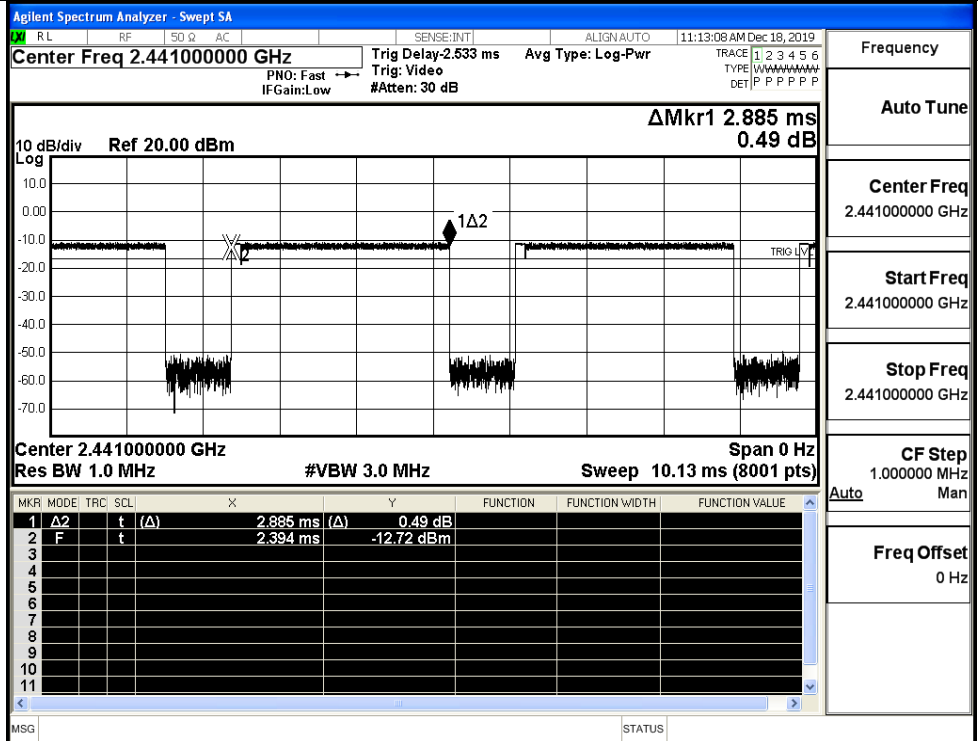
$\pi/4$ DQPSK
_2DH5/HCH



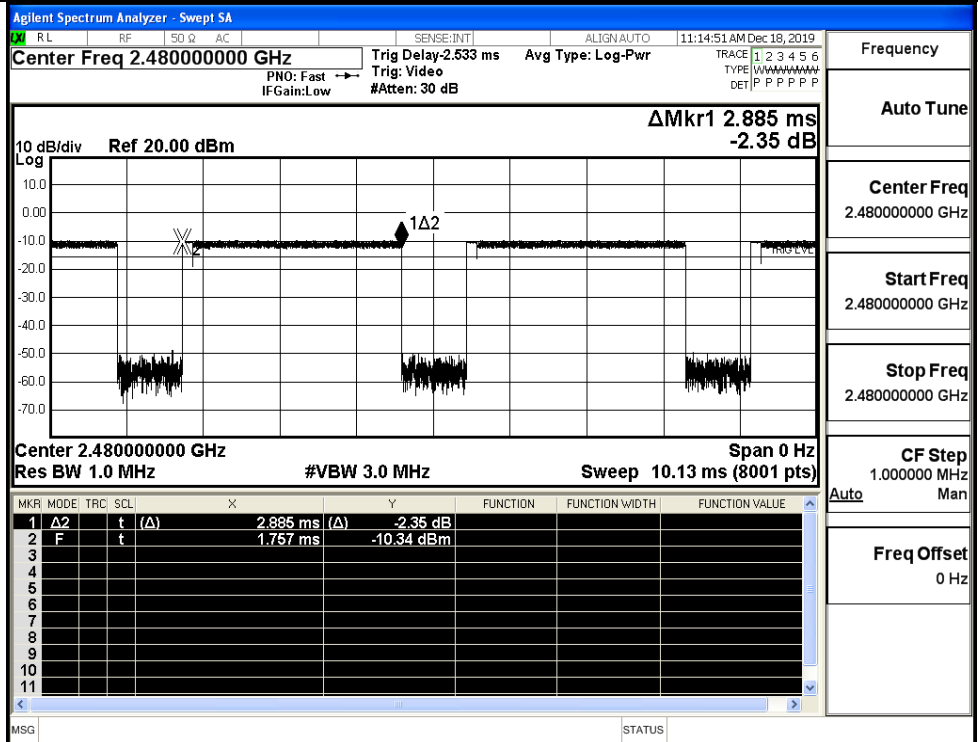
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH

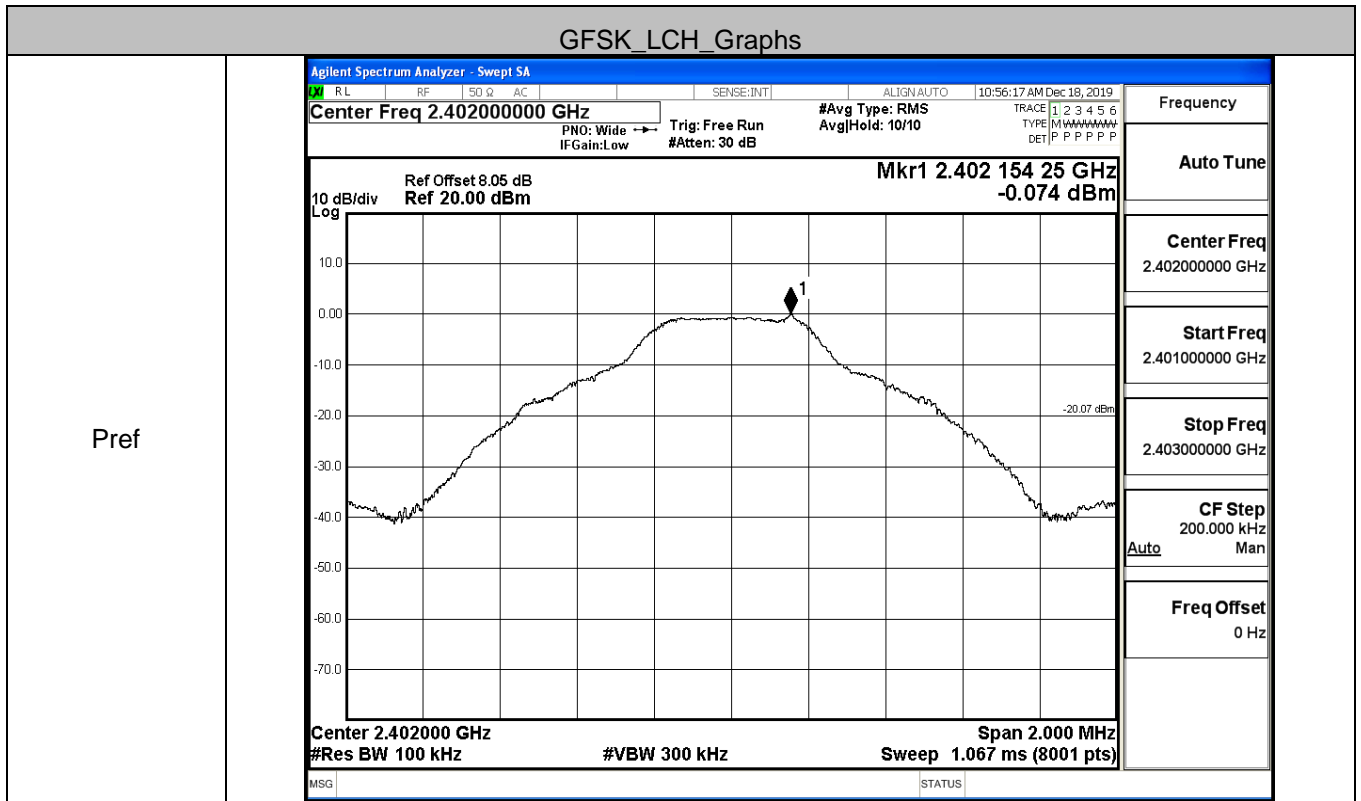


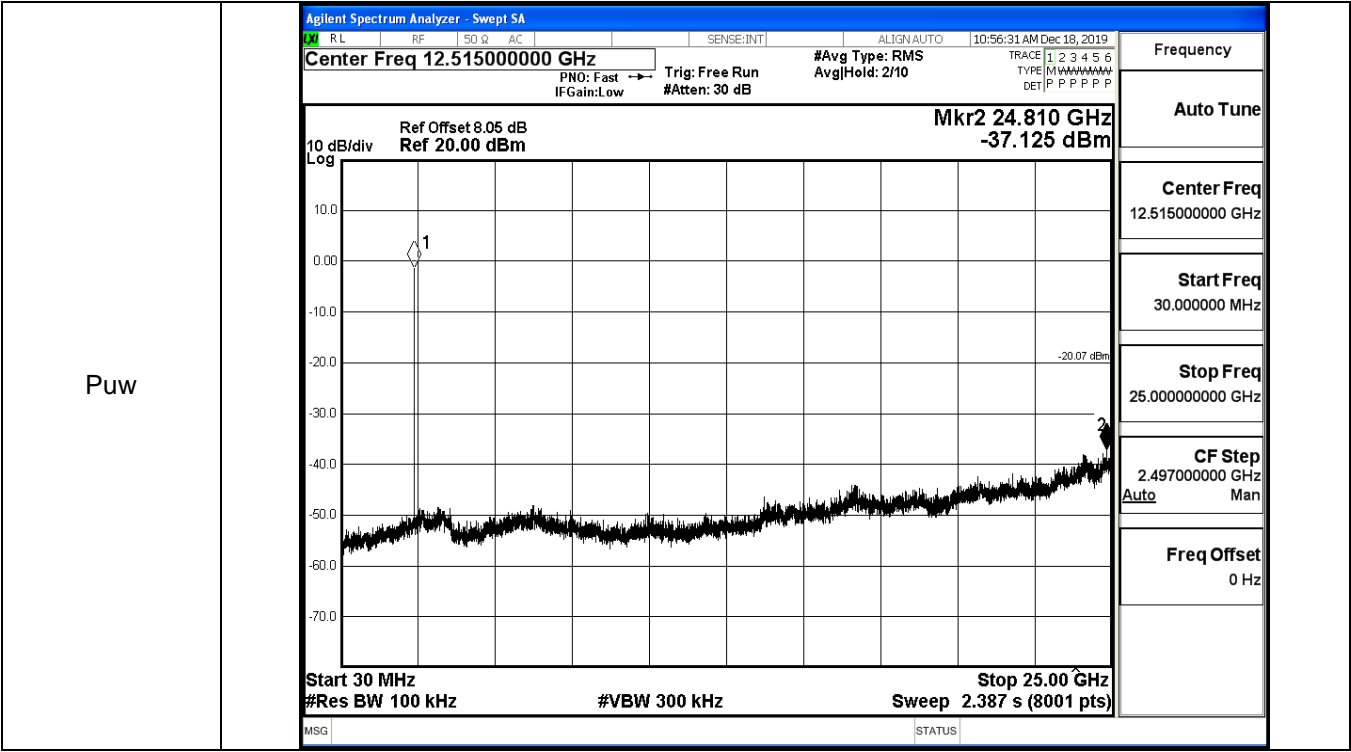
8DPSK_3DH5/HCH



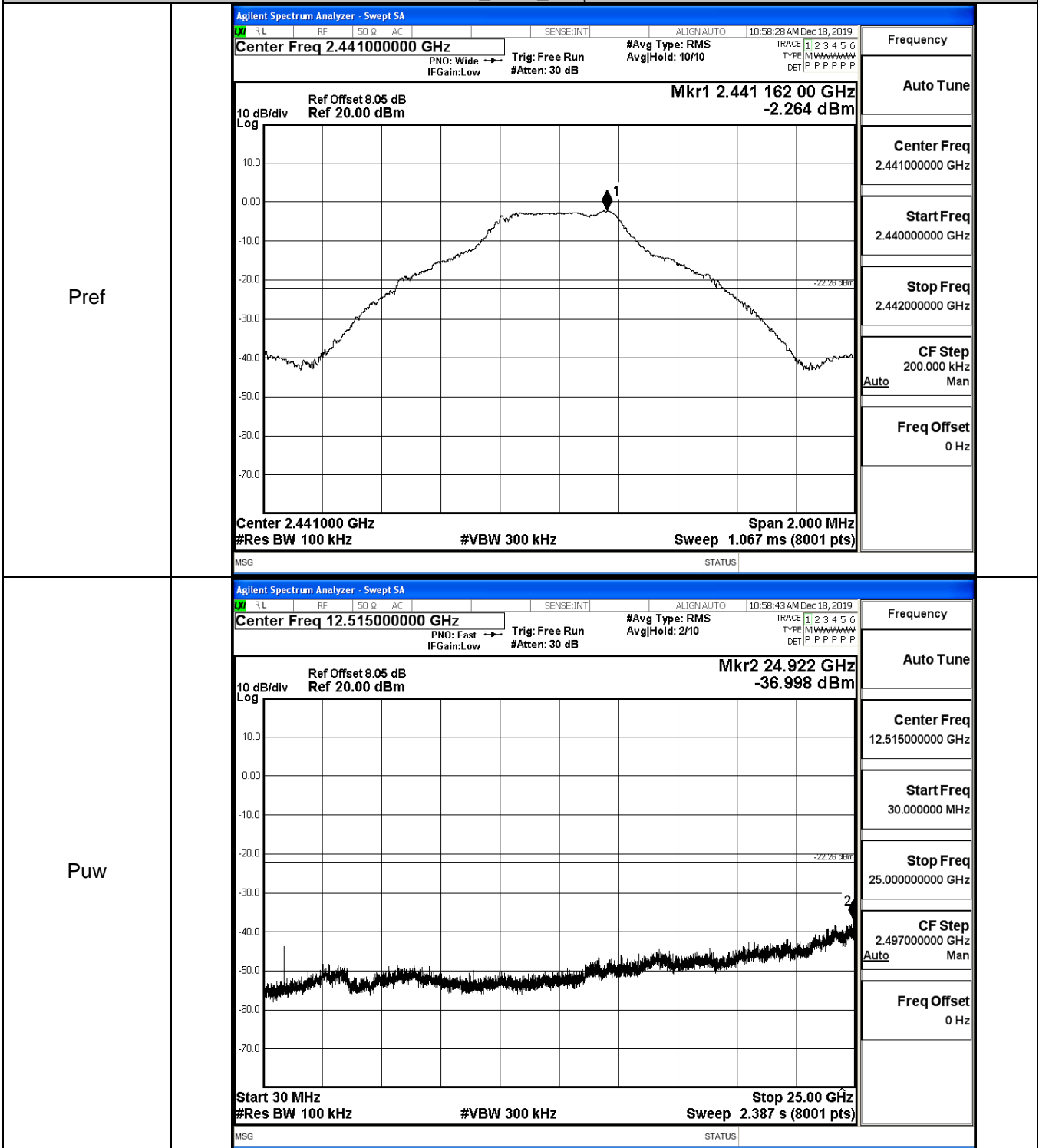
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.074	-37.125	-20.074	PASS
	MCH	-2.264	-36.998	-22.264	PASS
	HCH	-1.067	-37.761	-21.067	PASS
$\pi/4$ DQPSK	LCH	-1.524	-37.482	-21.524	PASS
	MCH	-3.393	-37.761	-23.393	PASS
	HCH	-2.641	-37.514	-22.641	PASS
8DPSK	LCH	-1.726	-37.587	-21.726	PASS
	MCH	-3.213	-37.286	-23.213	PASS
	HCH	-2.294	-37.795	-22.294	PASS

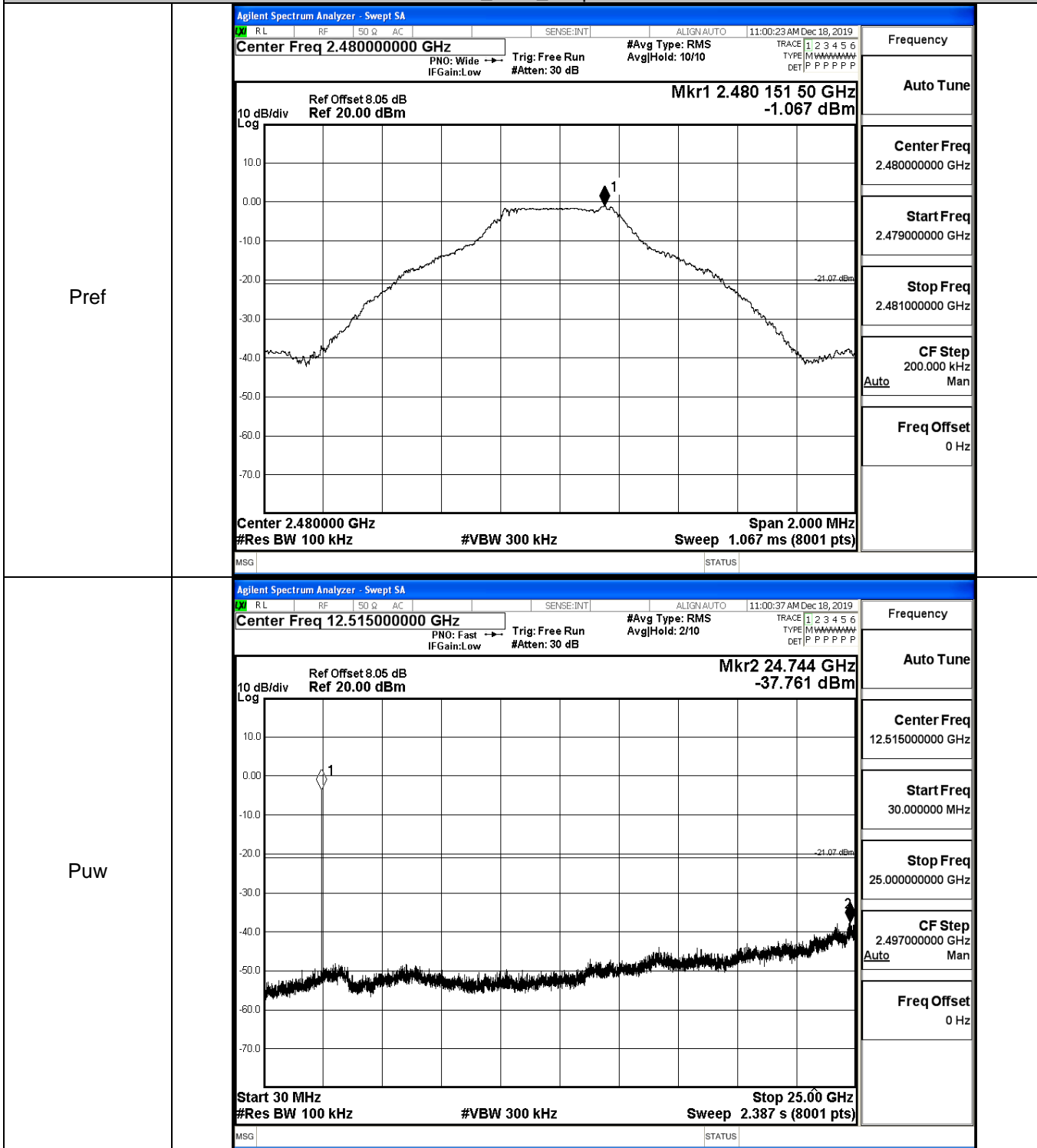




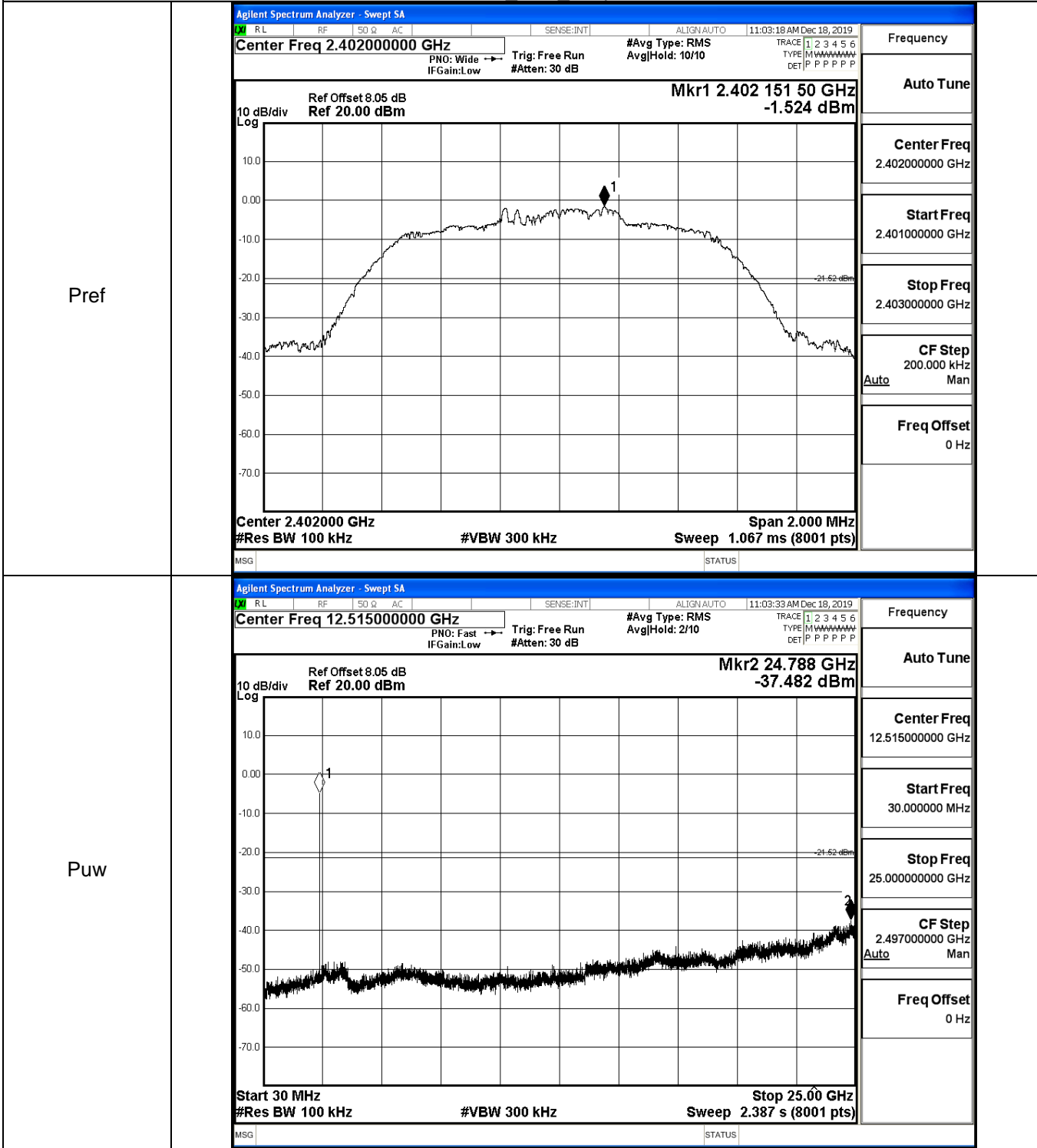
GFSK_MCH_Graphs



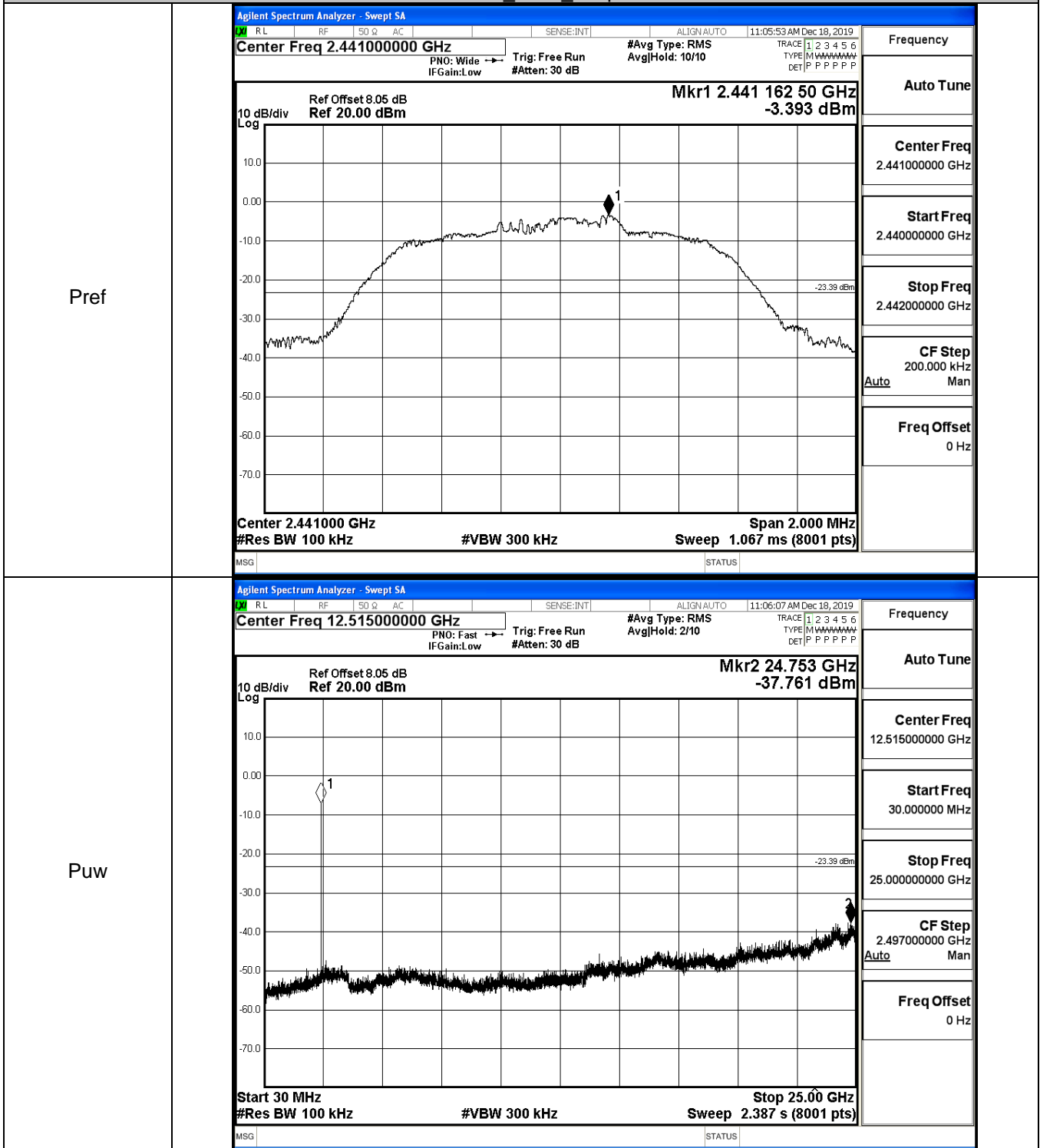
GFSK_HCH_Graphs



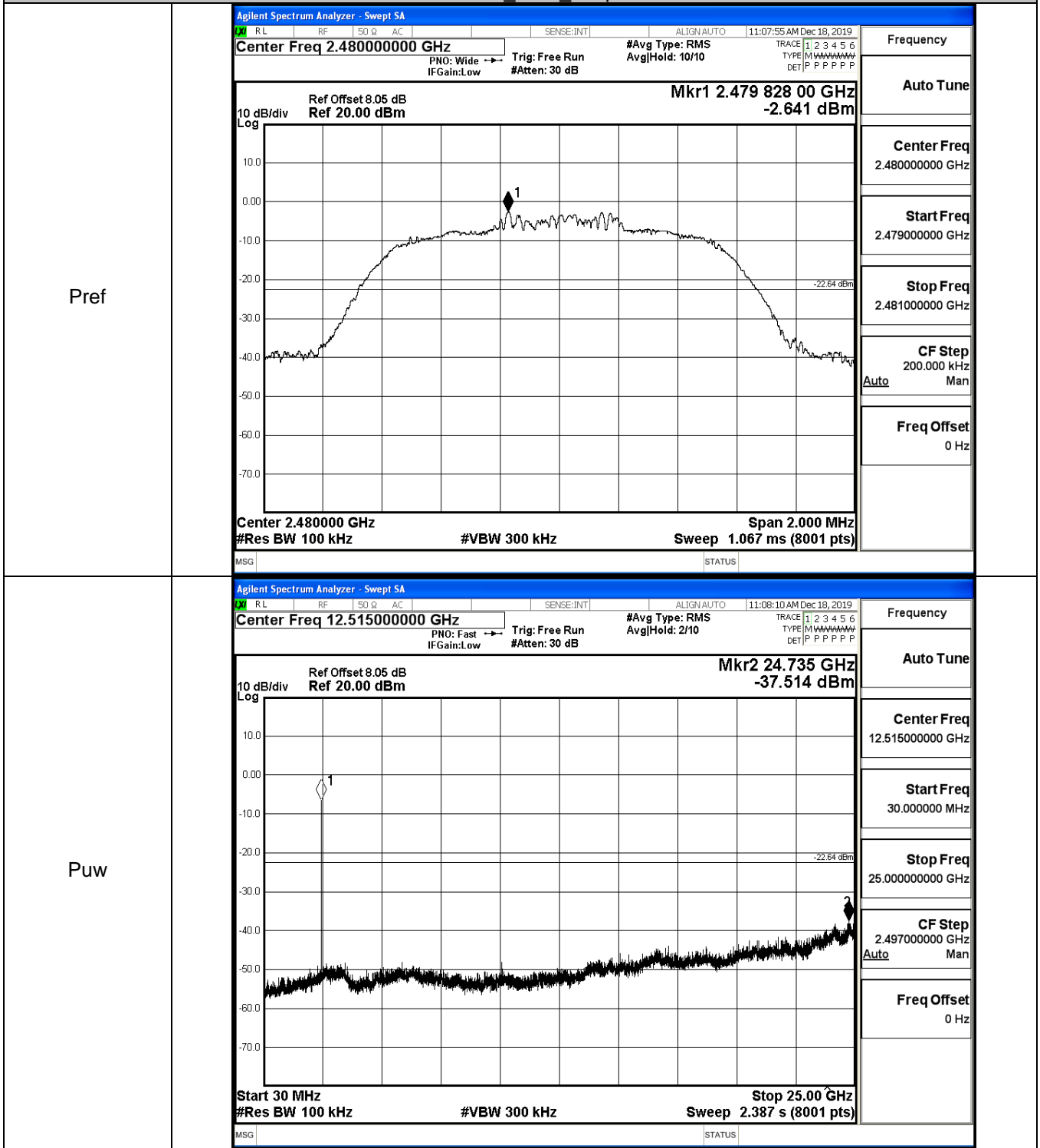
$\pi/4$ DQPSK_LCH_Graphs



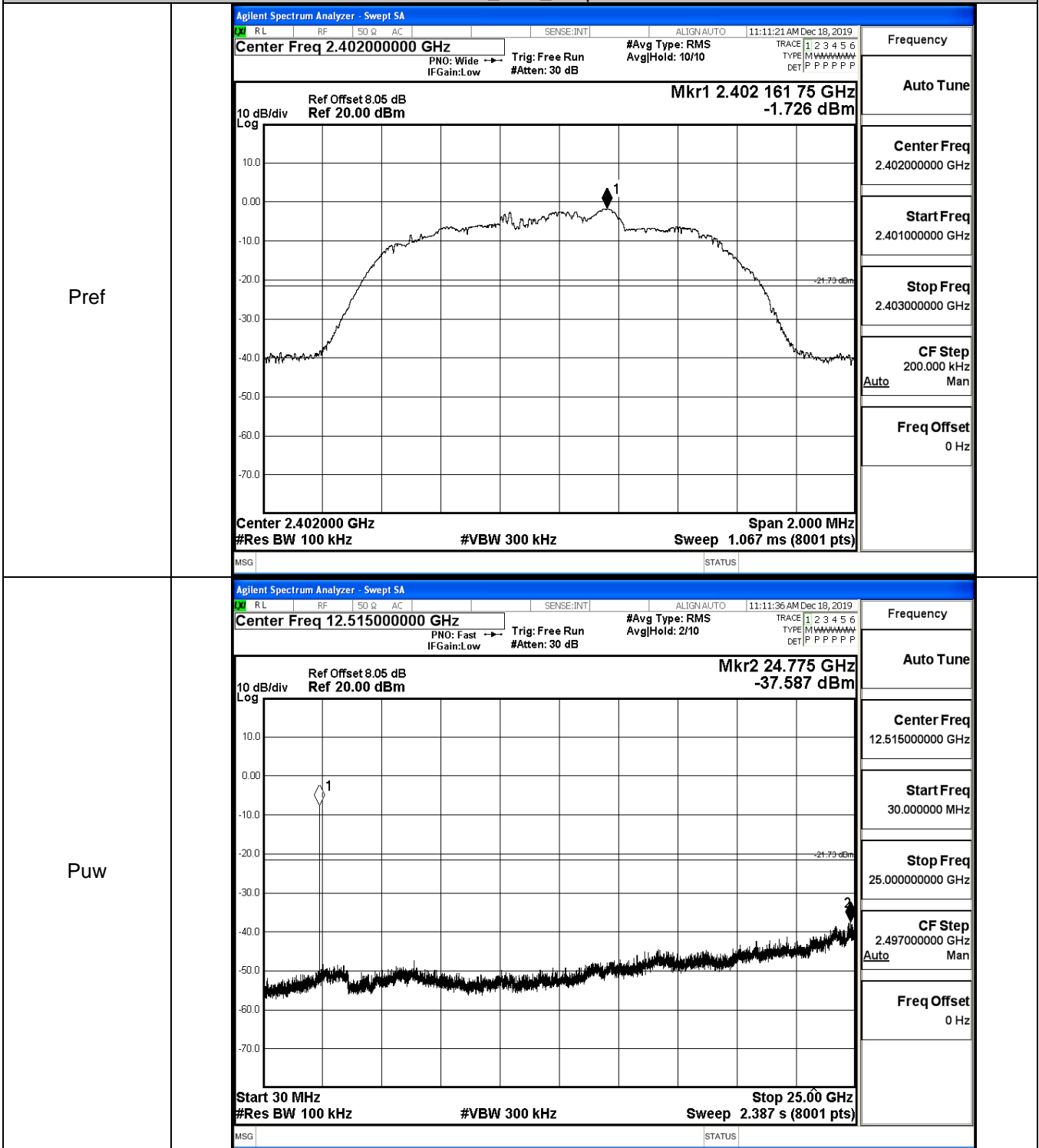
$\pi/4$ DQPSK_MCH_Graphs



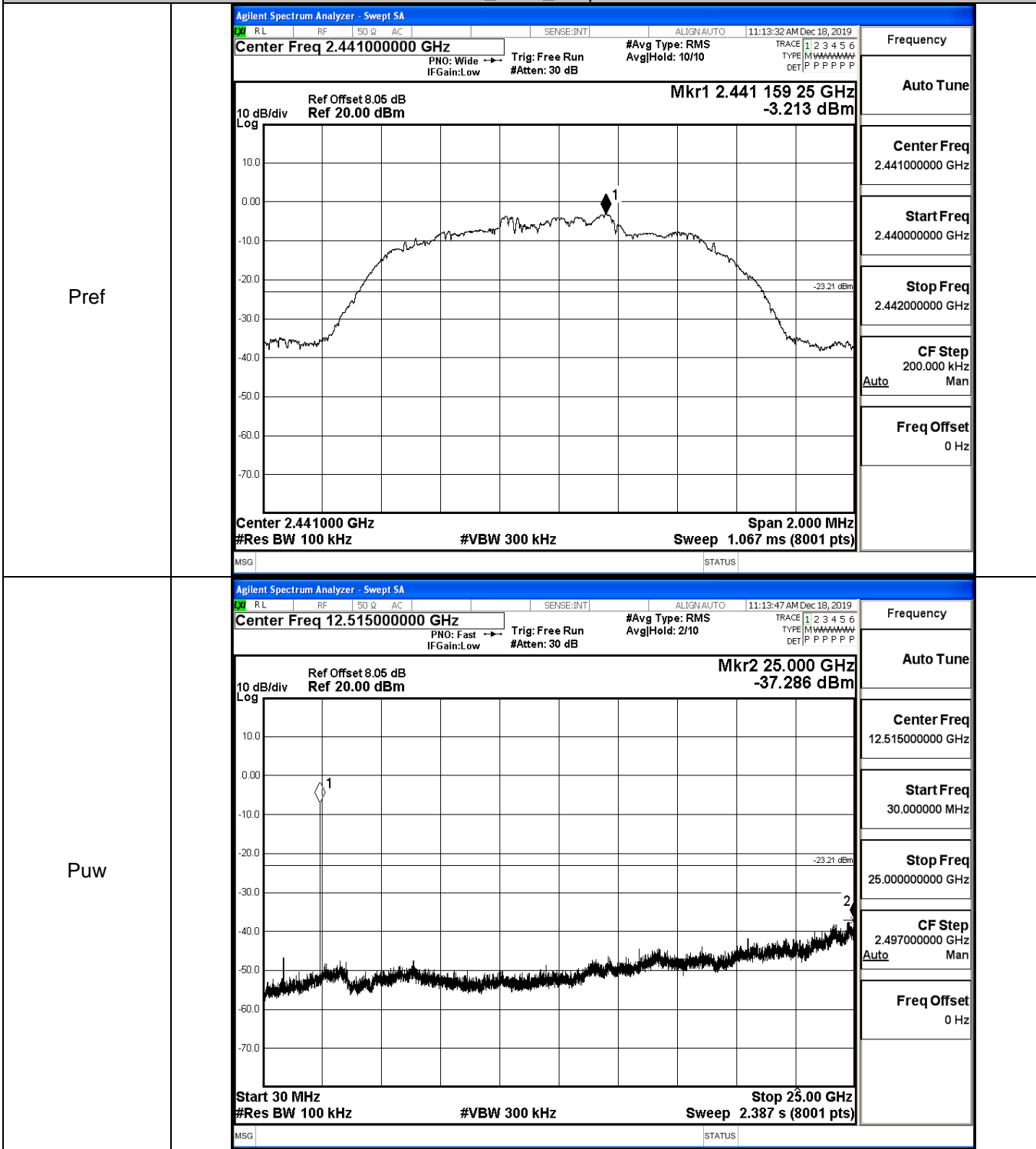
$\pi/4$ DQPSK_HCH_Graphs



8DPSK_LCH_Graphs

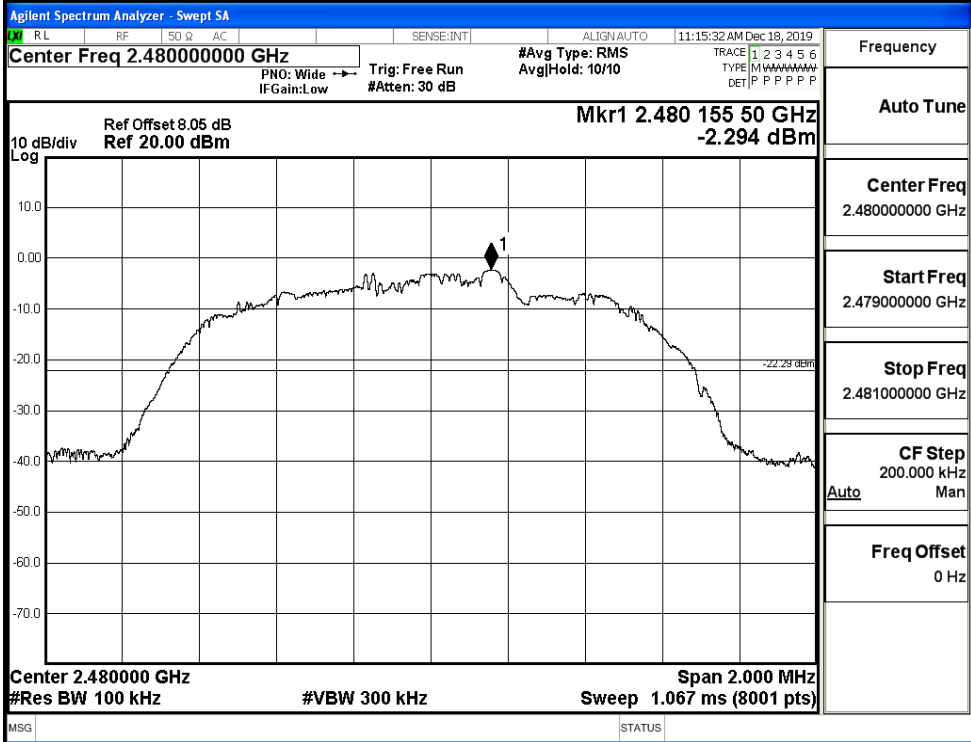


8DPSK_MCH_Graphs

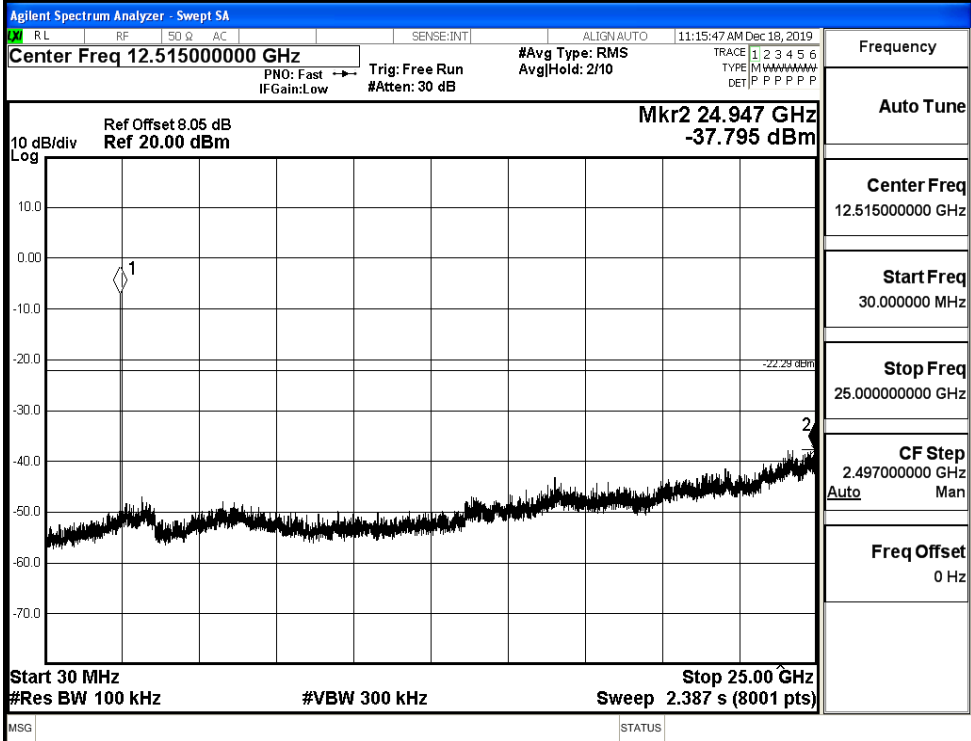


8DPSK_HCH_Graphs

Pref



Puw

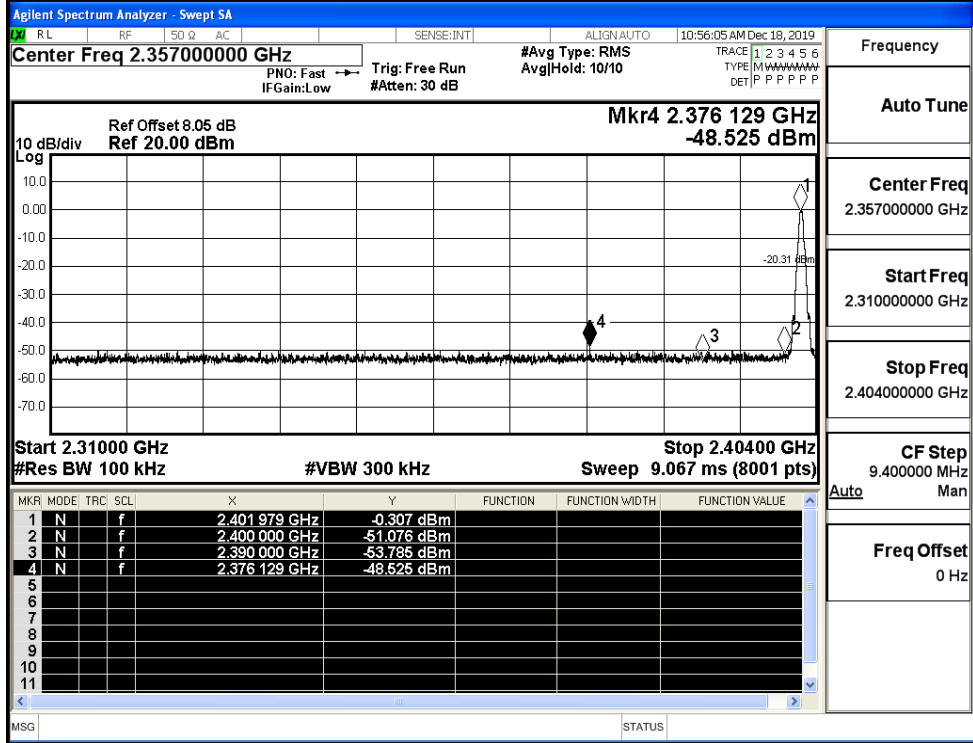


A.7 Band-edge for RF Conducted Emissions

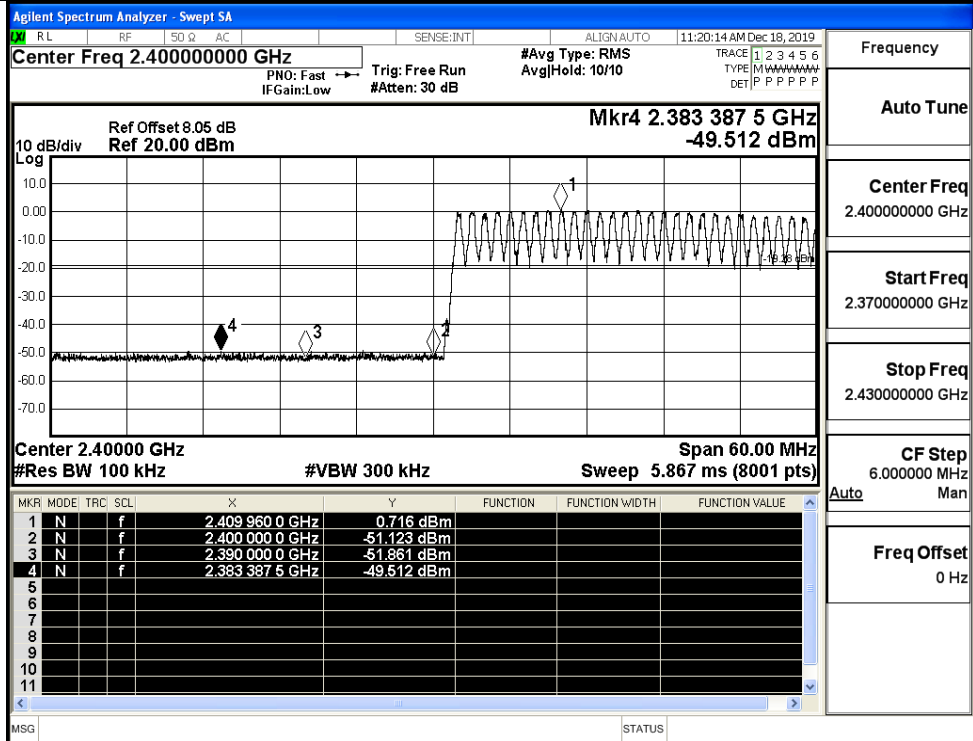
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.307	Off	-48.525	-20.31	PASS
			0.716	On	-49.512	-19.28	PASS
	HCH	2480	-1.021	Off	-49.295	-21.02	PASS
			0.550	On	-47.967	-19.45	PASS
$\pi/4$ DQPSK	LCH	2402	-1.728	Off	-49.264	-21.73	PASS
			-0.460	On	-48.822	-20.46	PASS
	HCH	2480	-2.200	Off	-49.079	-22.2	PASS
			-0.728	On	-48.695	-20.73	PASS
8DPSK	LCH	2402	-1.458	Off	-49.484	-21.46	PASS
			-0.533	On	-49.082	-20.53	PASS
	HCH	2480	-2.799	Off	-49.464	-22.8	PASS
			-1.080	On	-48.529	-21.08	PASS

Test Graphs

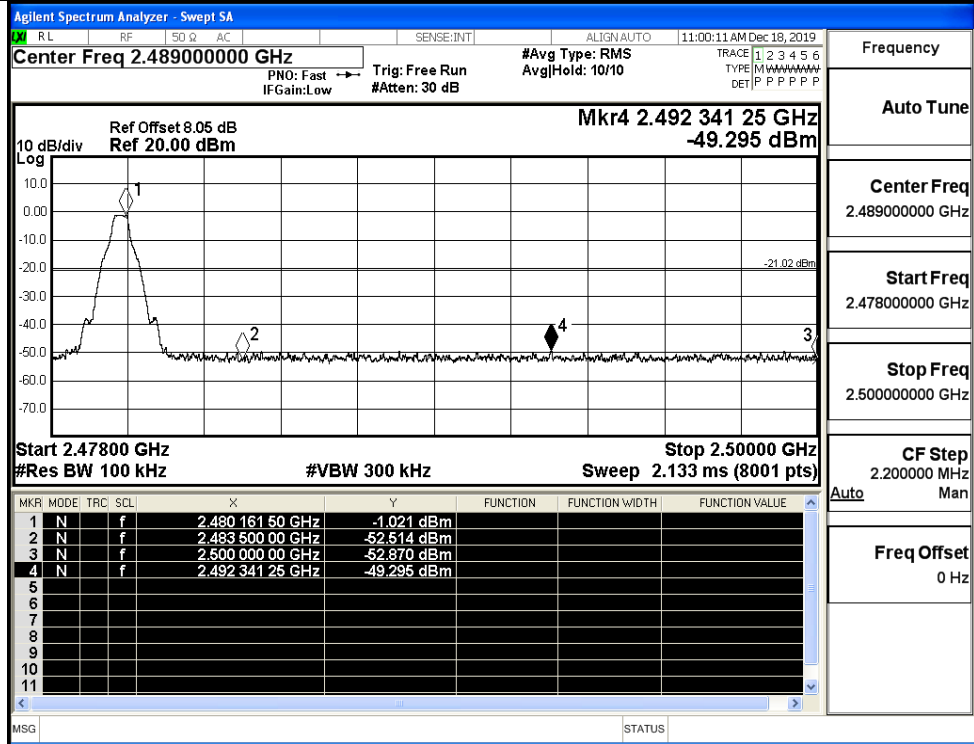
GFSK/LCH/No Hop



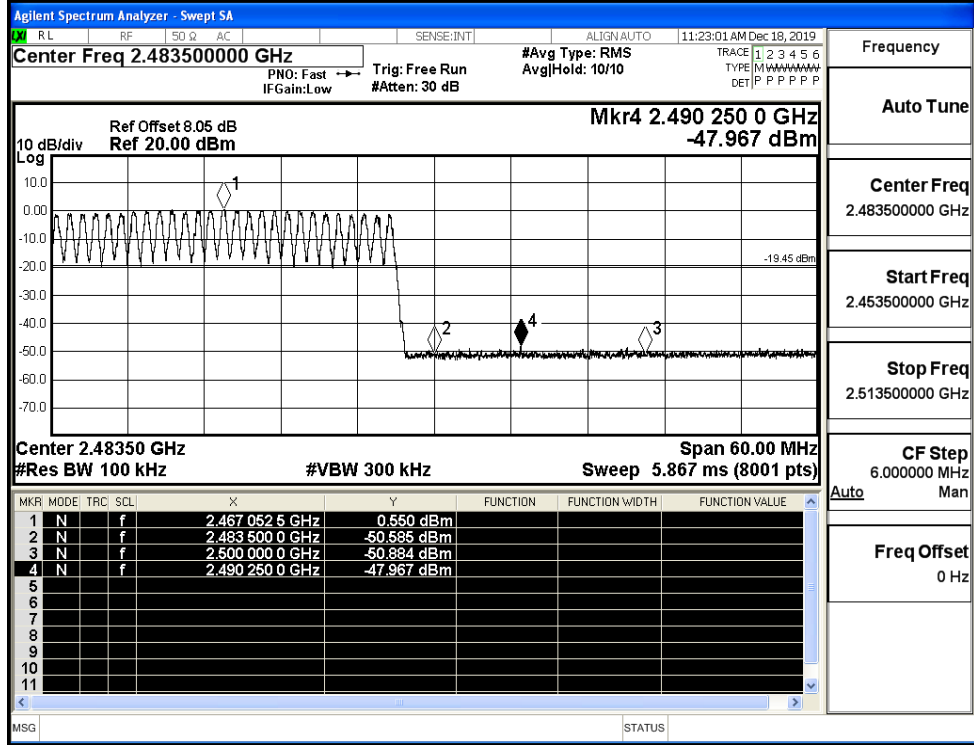
GFSK/LCH/Hop



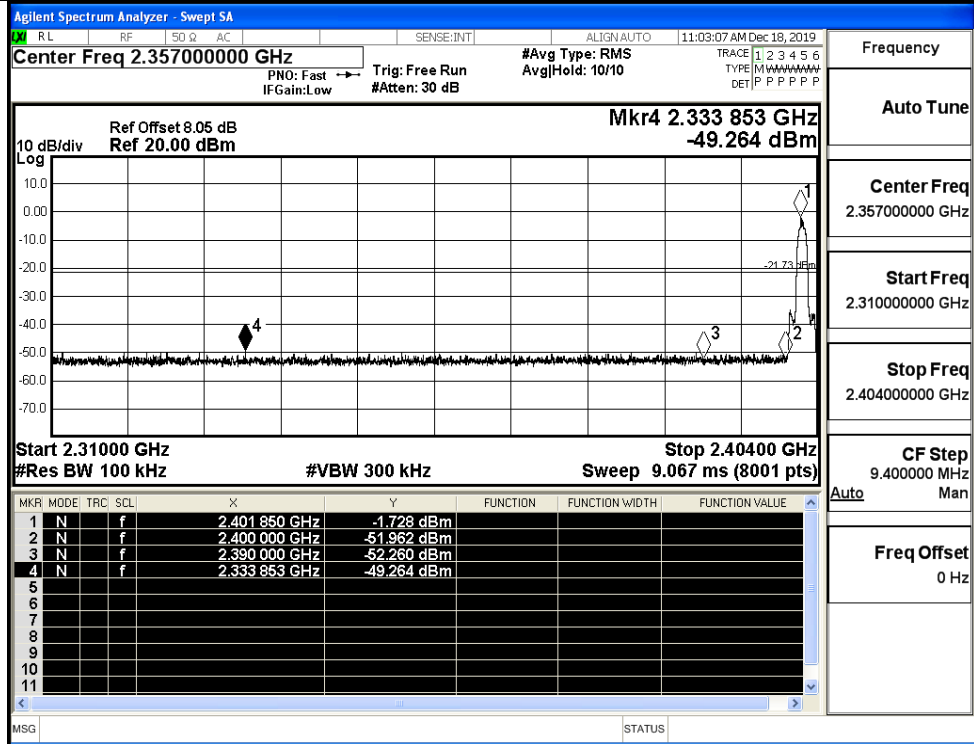
GFSK/HCH/No Hop



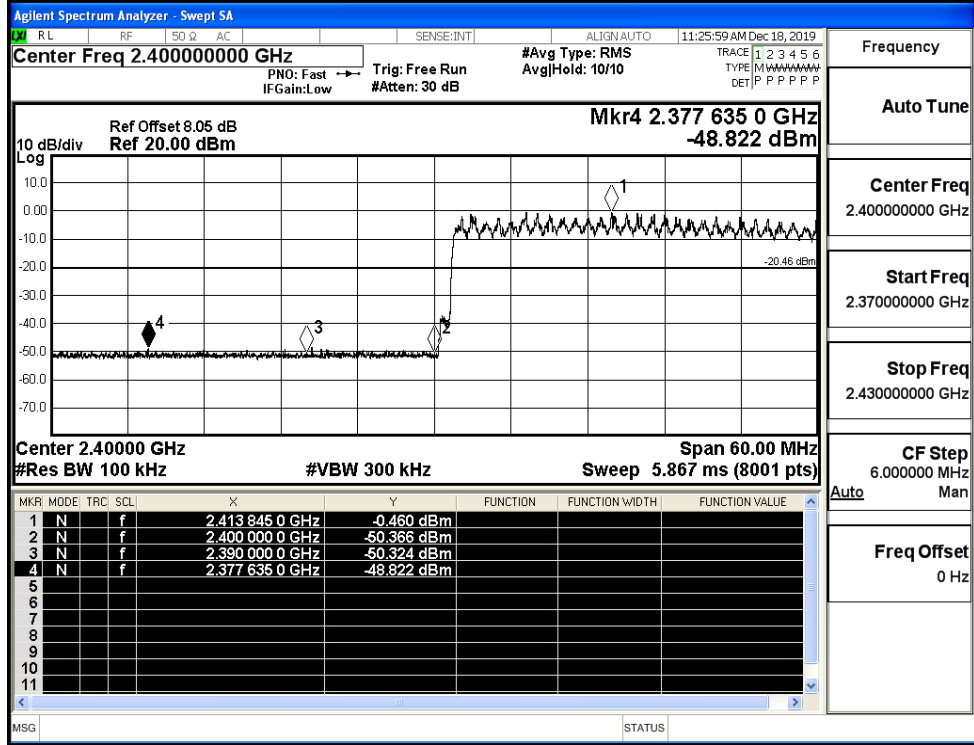
GFSK/HCH/Hop



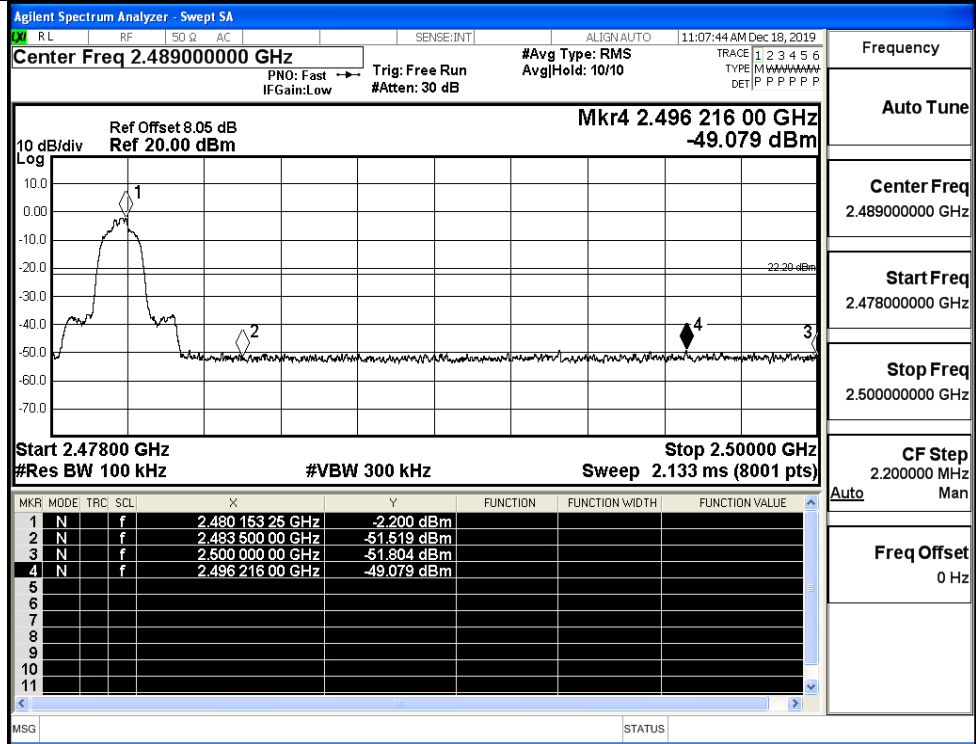
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop

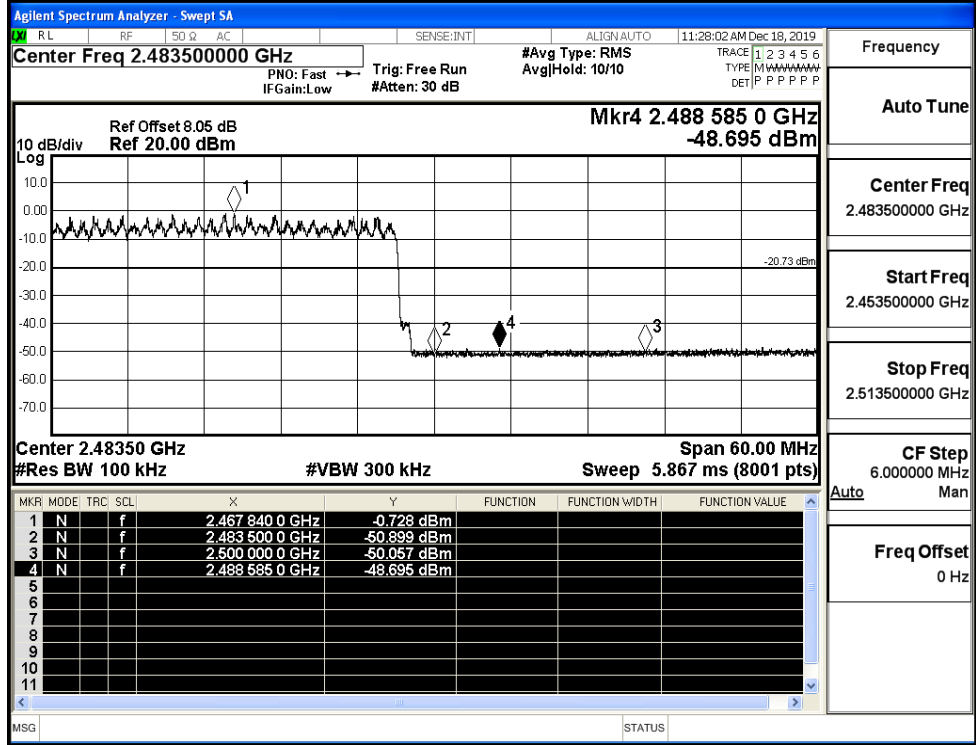


$\pi/4$ DQPSK/HCH/No Hop



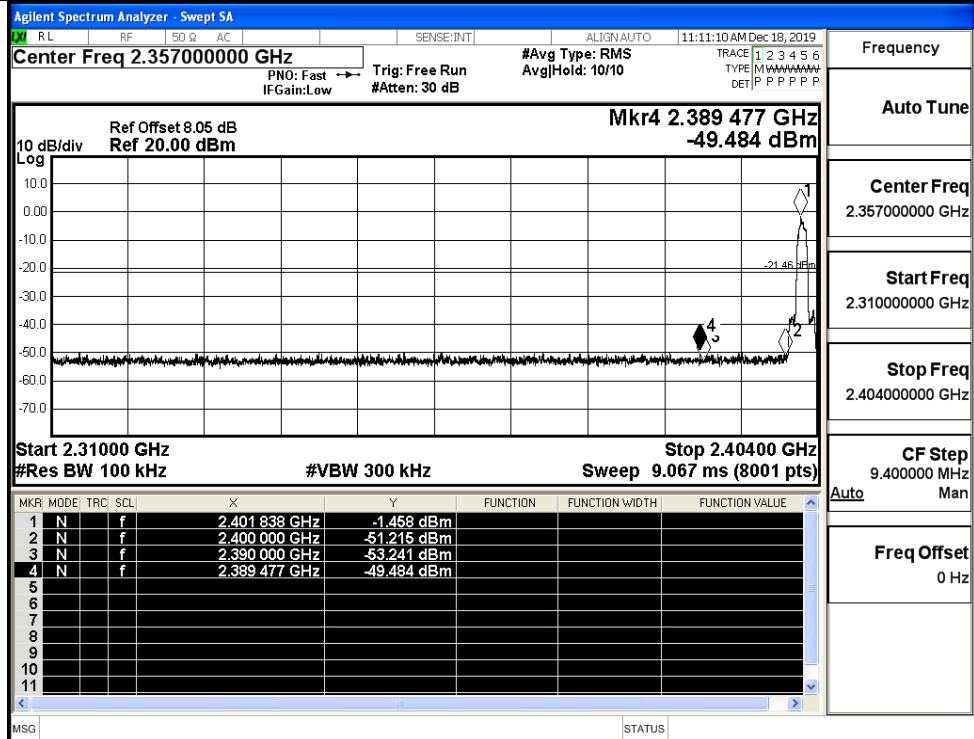
Frequency	2.489000000 GHz
Auto Tune	
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency	2.483500000 GHz
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

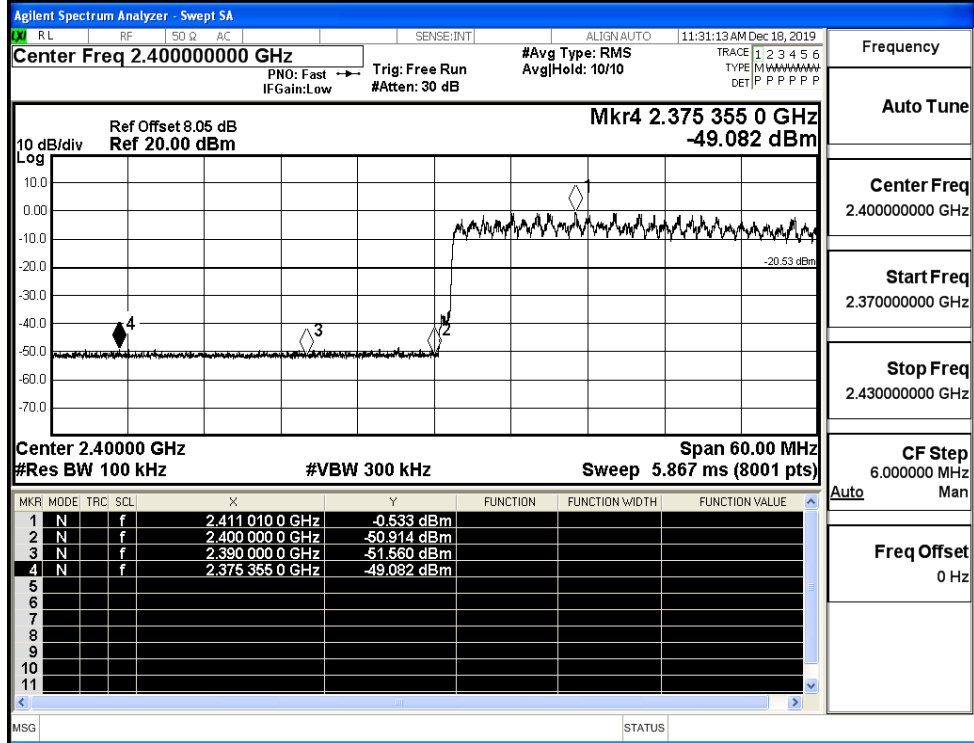
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz

Freq Offset
0 Hz

8DPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

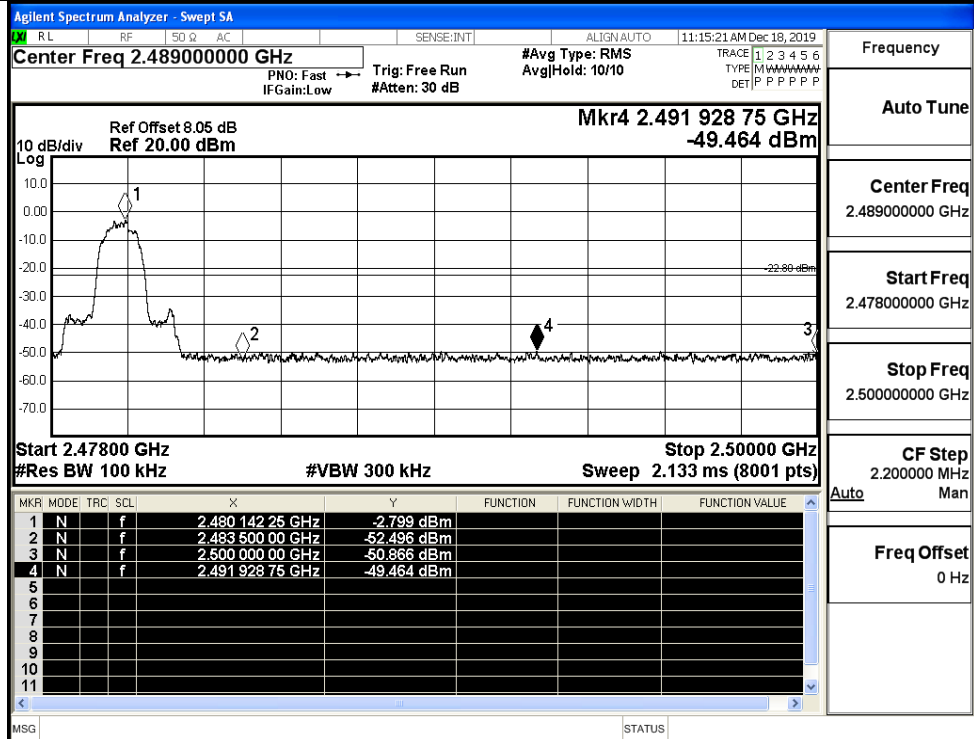
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Freq Offset
0 Hz

8DPSK/HCH/No Hop



Frequency

Auto Tune

Center Freq
2.489000000 GHz

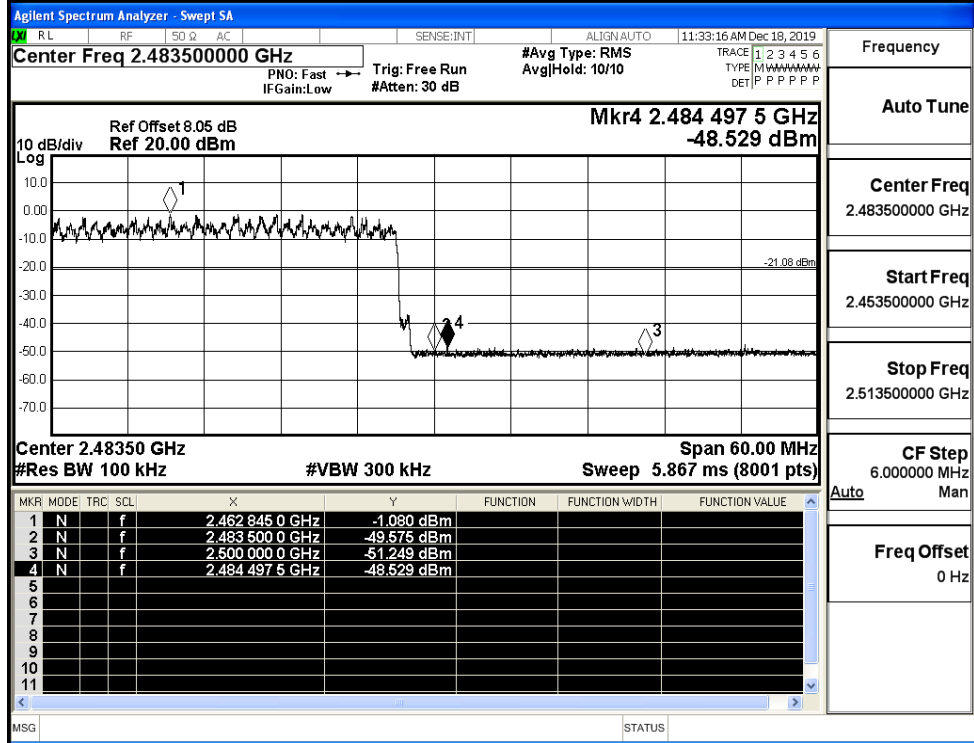
Start Freq
2.478000000 GHz

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

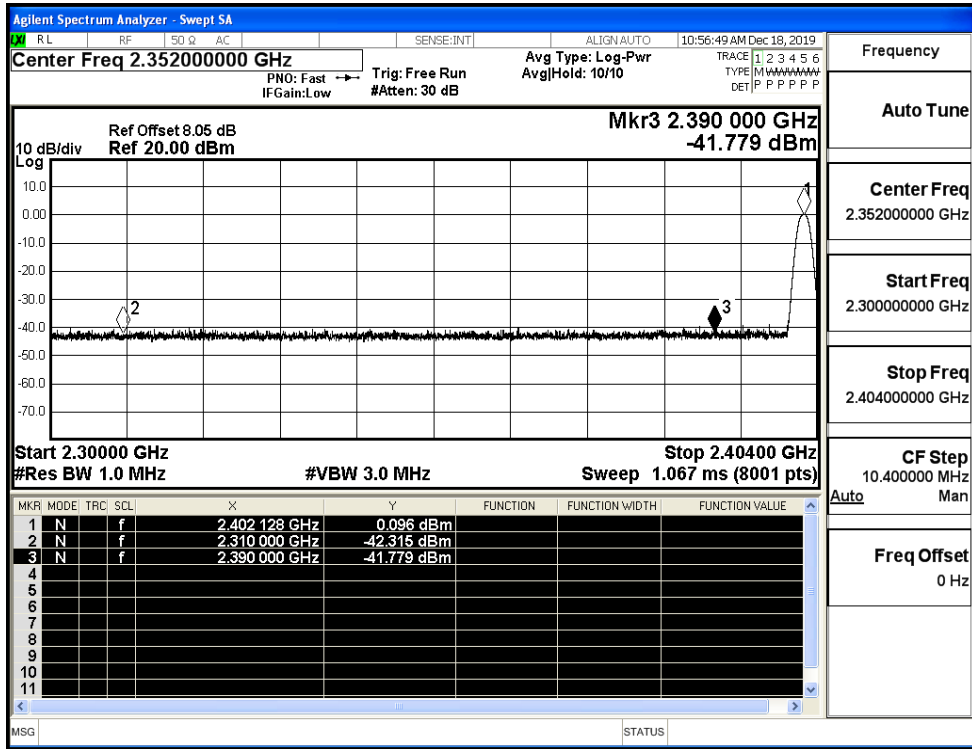
CF Step
6.000000 MHz

Freq Offset
0 Hz

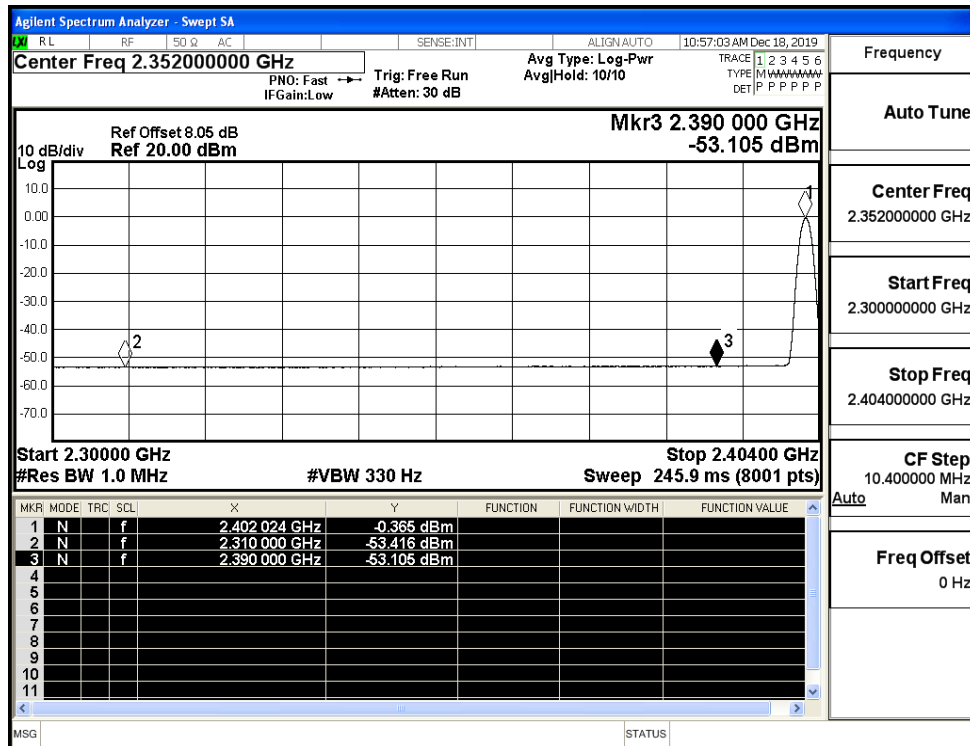
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.32	2.0	0	54.94	PEAK	74	PASS
	Off	2310.0	-53.42	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-41.78	2.0	0	55.48	PEAK	74	PASS
	Off	2390.0	-53.11	2.0	0	44.15	AV	54	PASS
	Off	2483.5	-41.68	2.0	0	55.57	PEAK	74	PASS
	Off	2483.5	-52.61	2.0	0	44.65	AV	54	PASS
	Off	2500.0	-41.38	2.0	0	55.88	PEAK	74	PASS
	Off	2500.0	-52.38	2.0	0	44.87	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.73	2.0	0	53.53	PEAK	74	PASS
	Off	2310.0	-53.40	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-41.37	2.0	0	55.89	PEAK	74	PASS
	Off	2390.0	-53.04	2.0	0	44.21	AV	54	PASS
	Off	2483.5	-42.52	2.0	0	54.74	PEAK	74	PASS
	Off	2483.5	-52.48	2.0	0	44.77	AV	54	PASS
	Off	2500.0	-43.47	2.0	0	53.78	PEAK	74	PASS
	Off	2500.0	-52.33	2.0	0	44.93	AV	54	PASS
8DPSK	Off	2310.0	-42.49	2.0	0	54.77	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-43.92	2.0	0	53.34	PEAK	74	PASS
	Off	2390.0	-52.89	2.0	0	44.37	AV	54	PASS
	Off	2483.5	-40.51	2.0	0	56.75	PEAK	74	PASS
	Off	2483.5	-52.55	2.0	0	44.71	AV	54	PASS
	Off	2500.0	-42.27	2.0	0	54.99	PEAK	74	PASS
	Off	2500.0	-52.36	2.0	0	44.90	AV	54	PASS

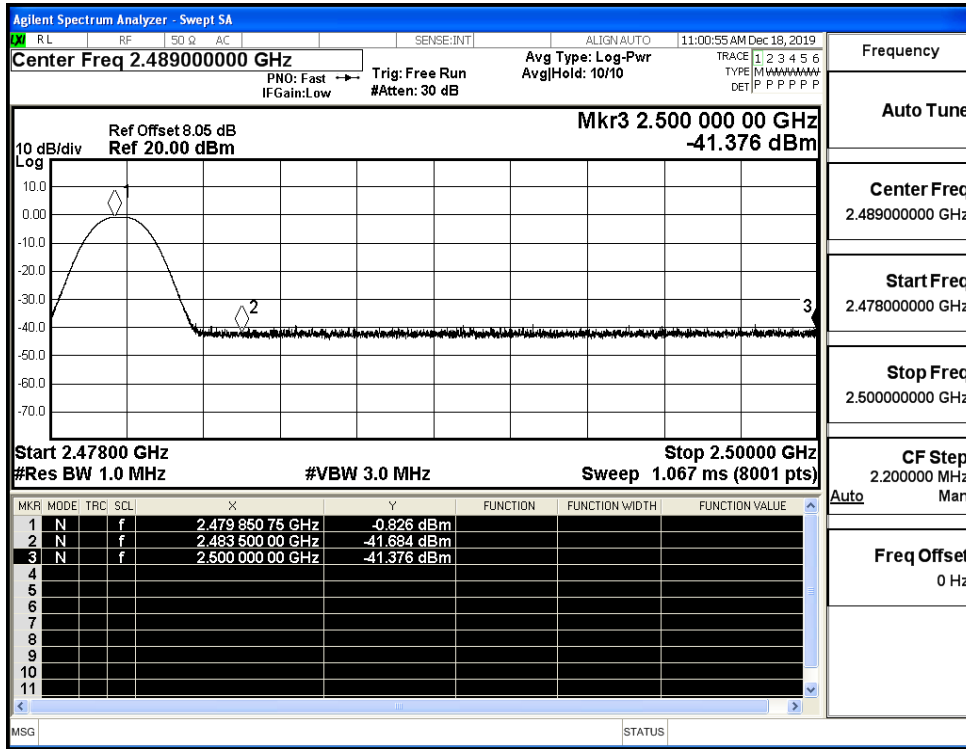
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



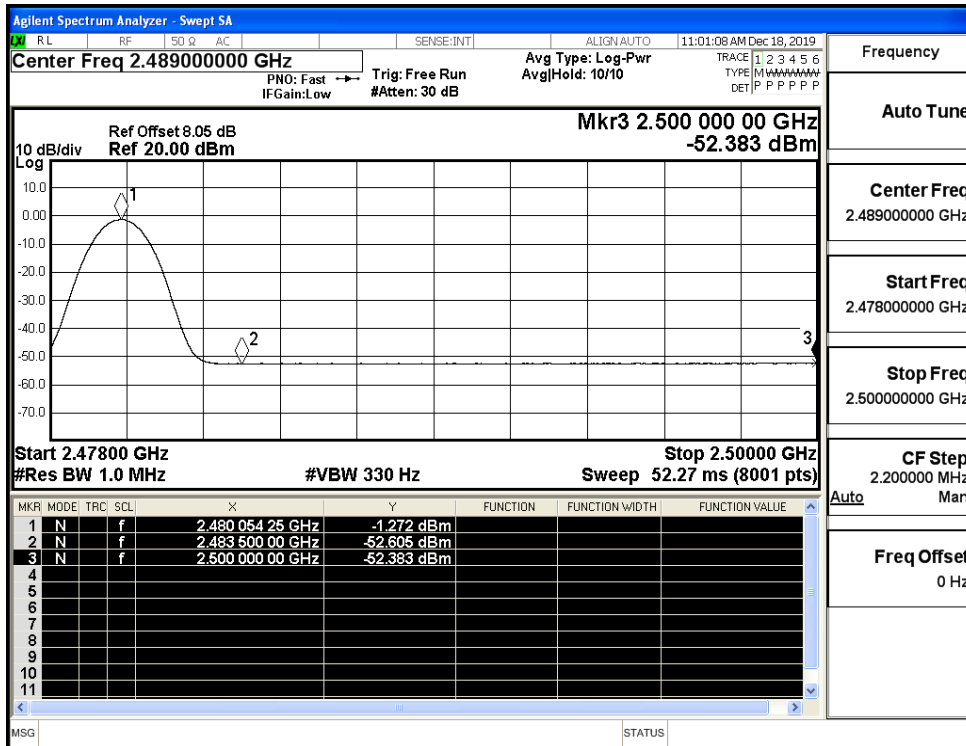
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



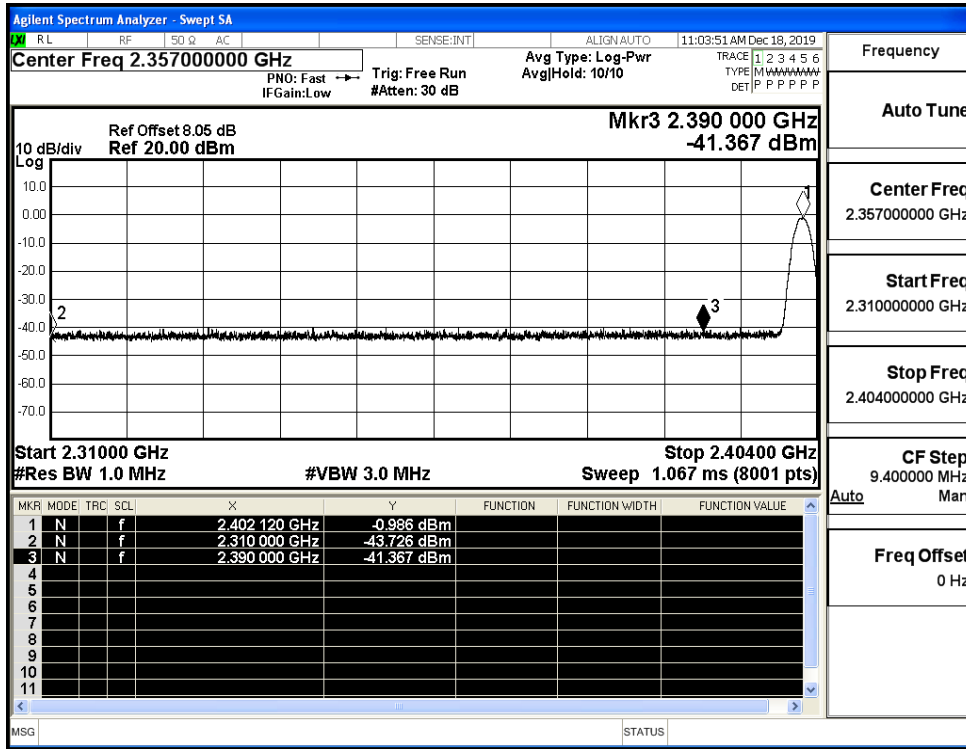
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



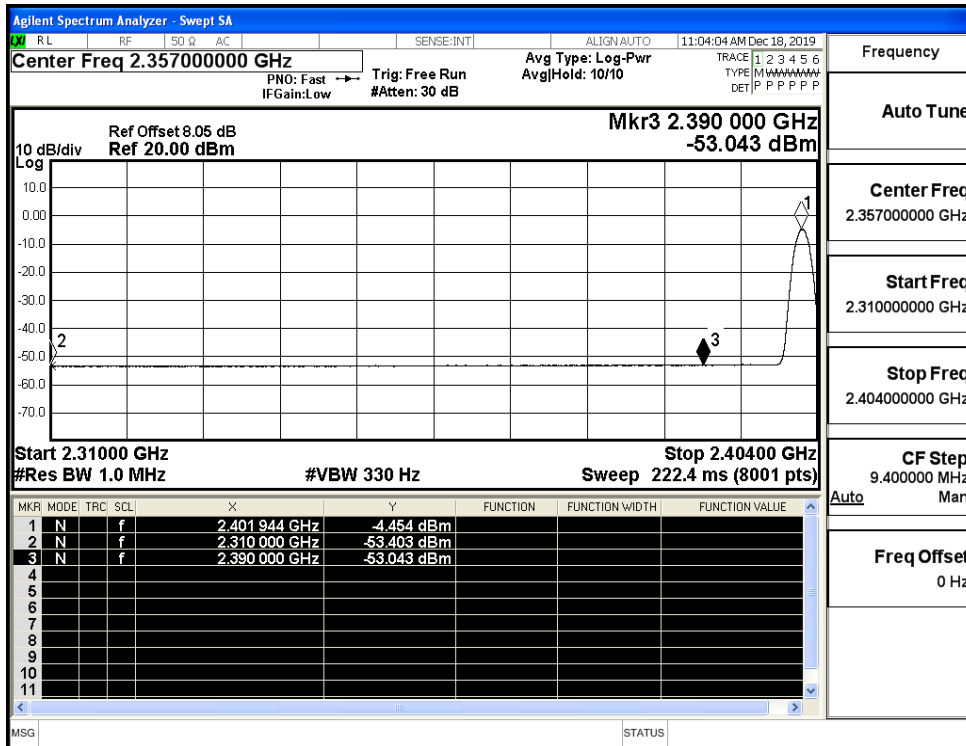
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



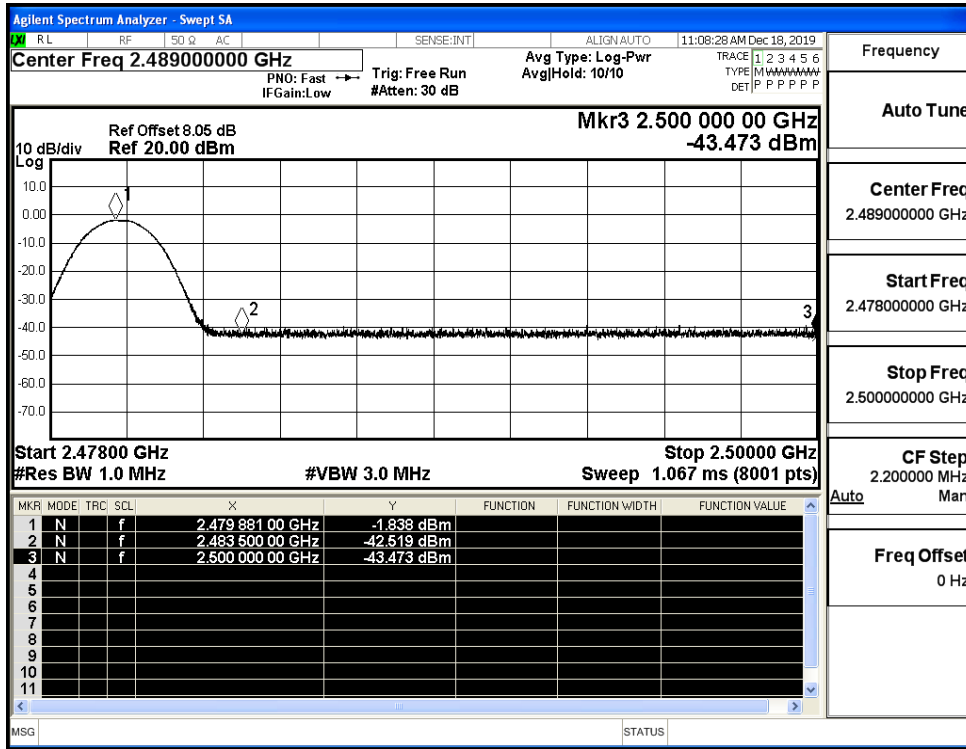
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



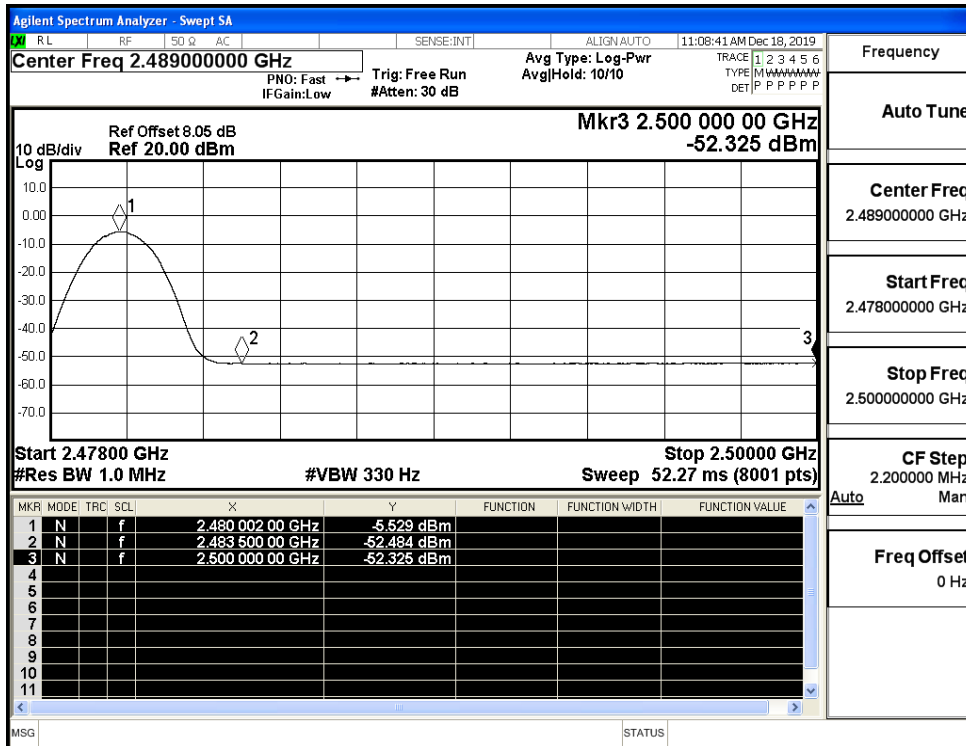
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



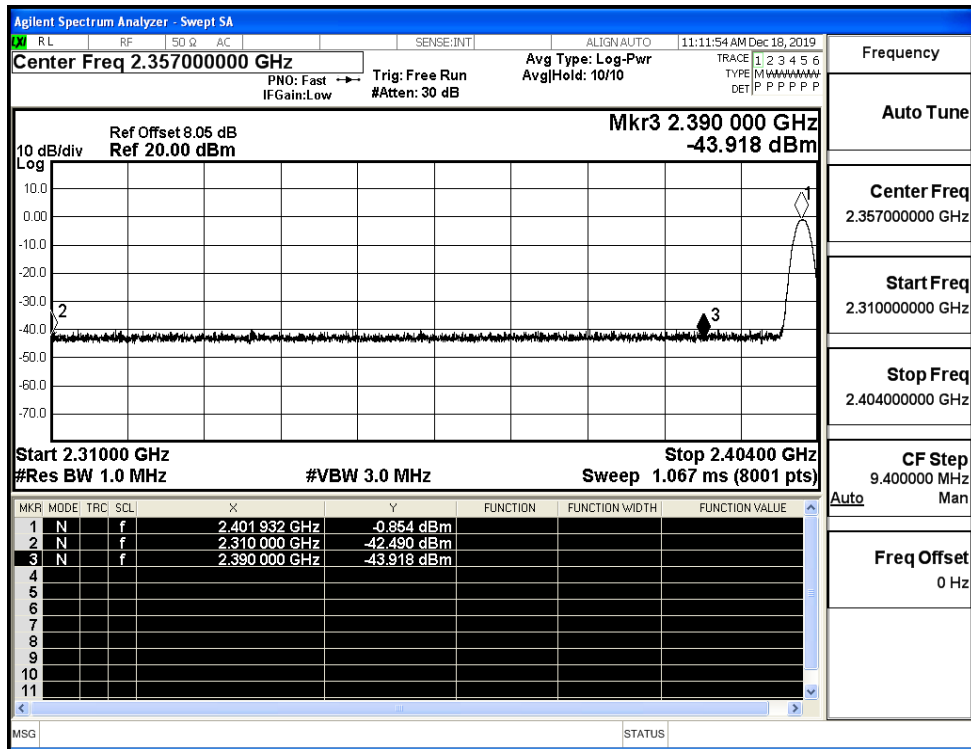
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



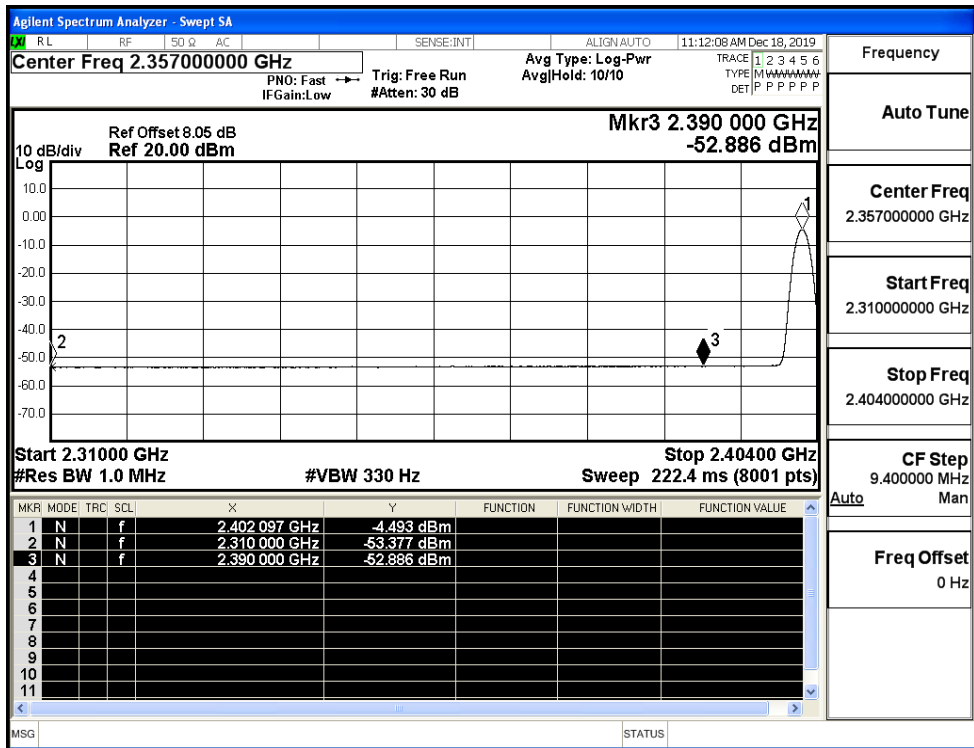
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



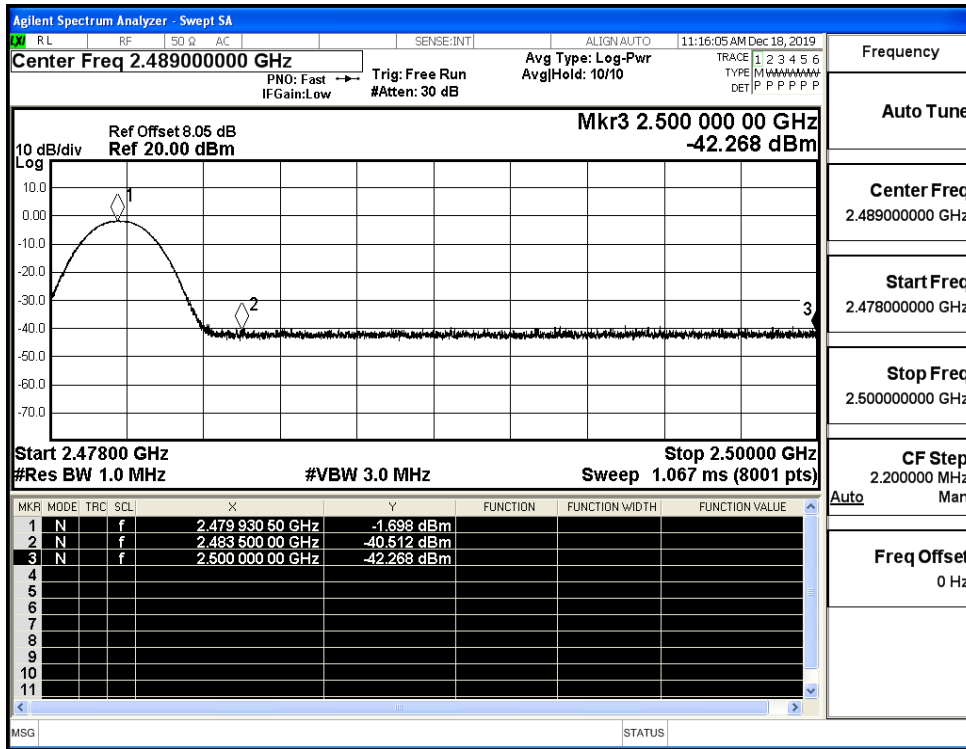
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

