

Appendix A

RF Test Data for BT V4.0(BDR/EDR) (Conducted Measurement)

Product Name: LTE GSM/WCDMA Smartphone

Trade Mark: DOOGEE

Test Model: S70

Environmental Conditions

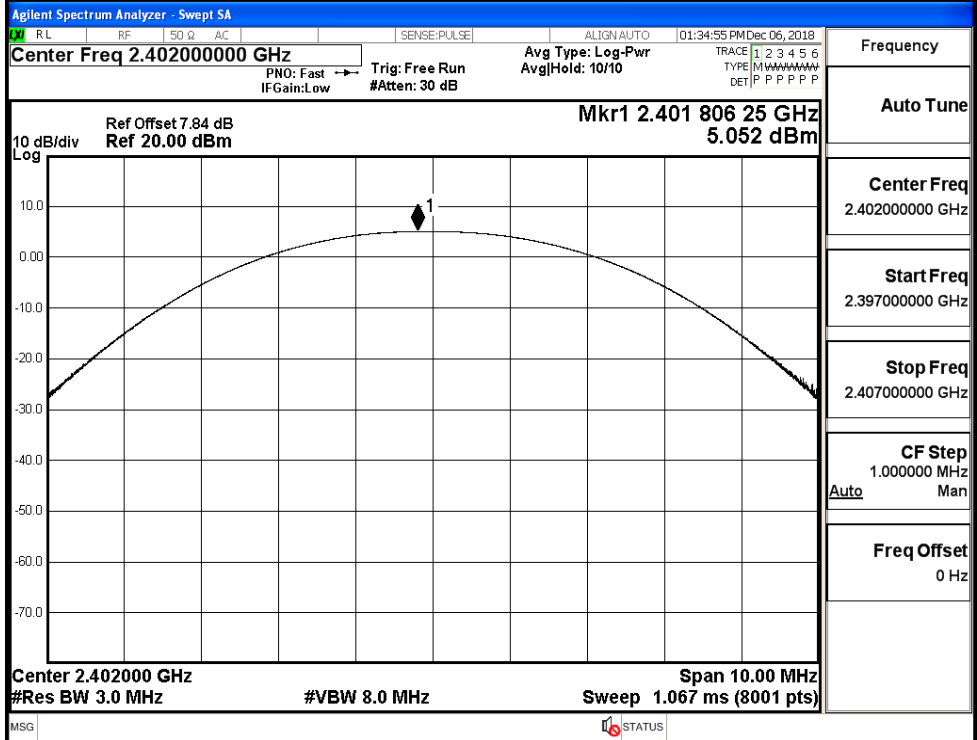
Temperature:	22.8 ° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maxmum Conducted Peak Output Power

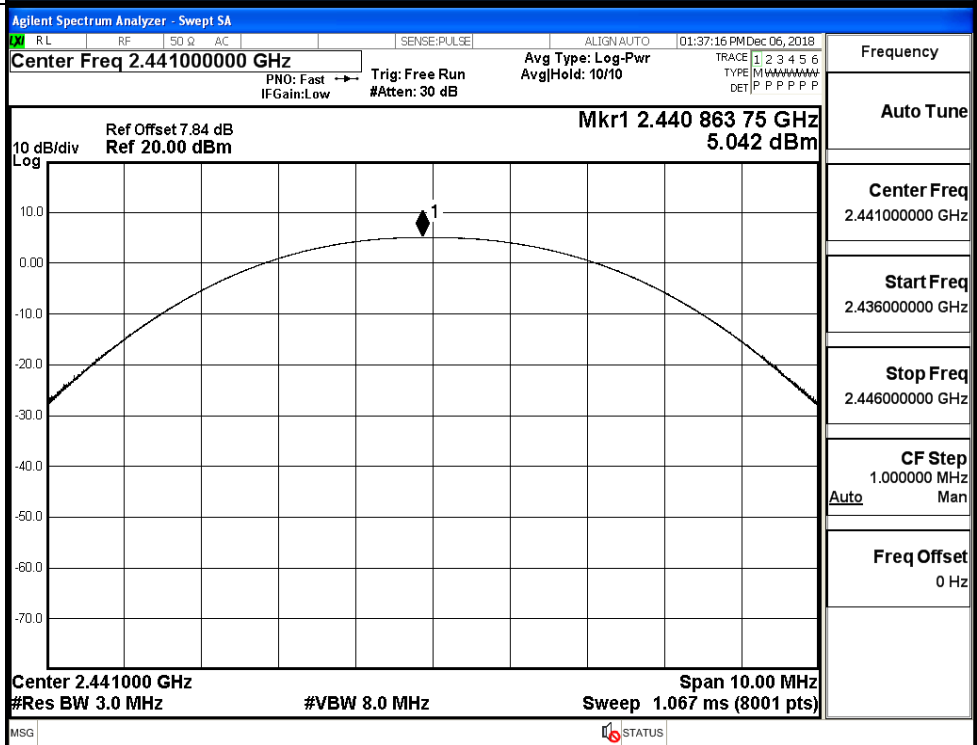
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.052	30	PASS
	MCH	5.042	30	PASS
	HCH	5.121	30	PASS
$\pi/4$ DQPSK	LCH	4.454	21	PASS
	MCH	4.481	21	PASS
	HCH	4.619	21	PASS
8DPSK	LCH	4.545	21	PASS
	MCH	4.575	21	PASS
	HCH	4.699	21	PASS

Test Graphs

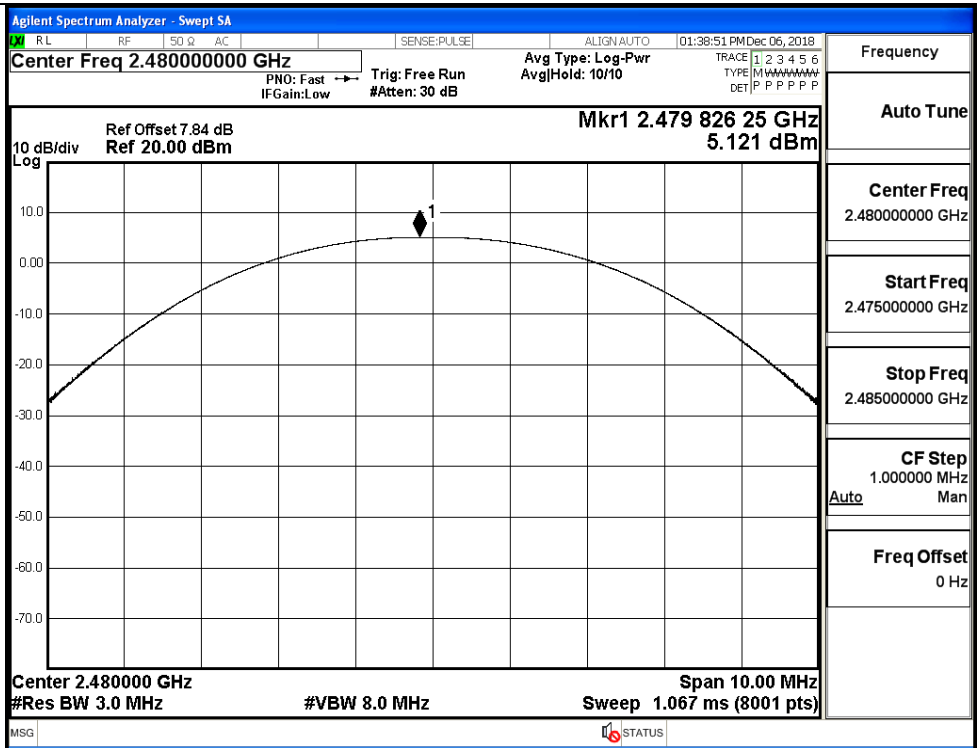
GFSK/LCH



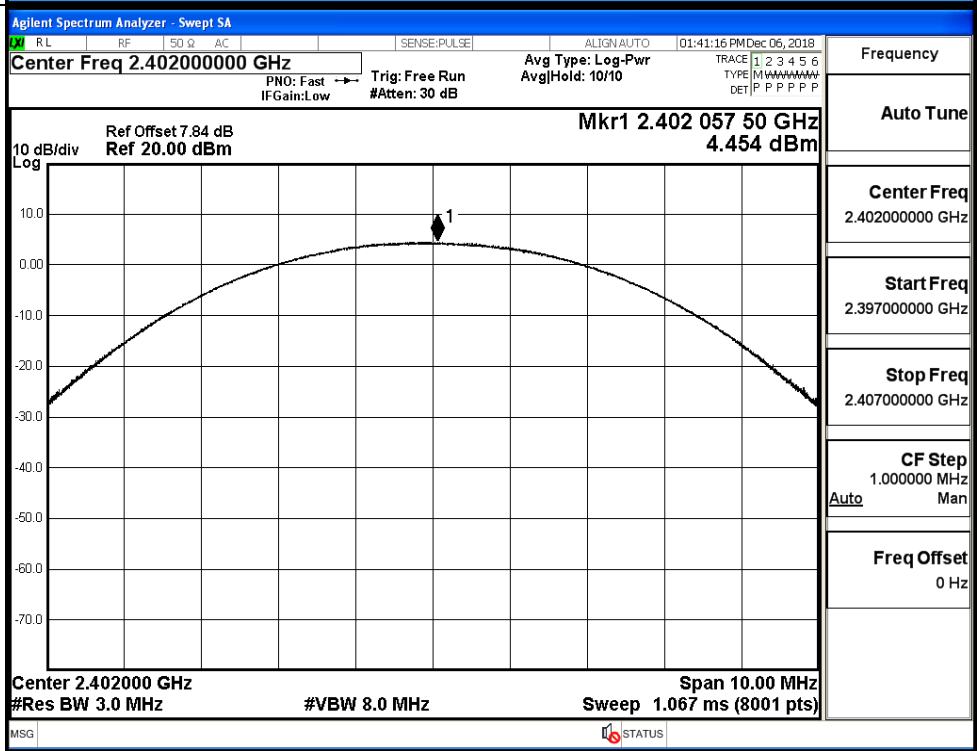
GFSK/MCH



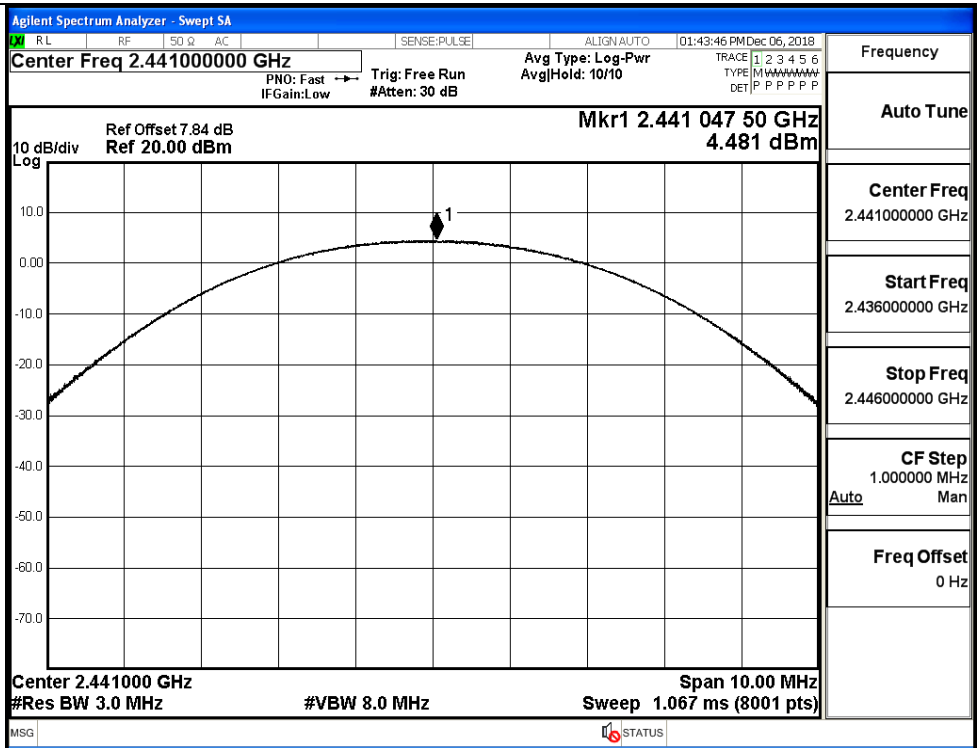
GFSK/HCH



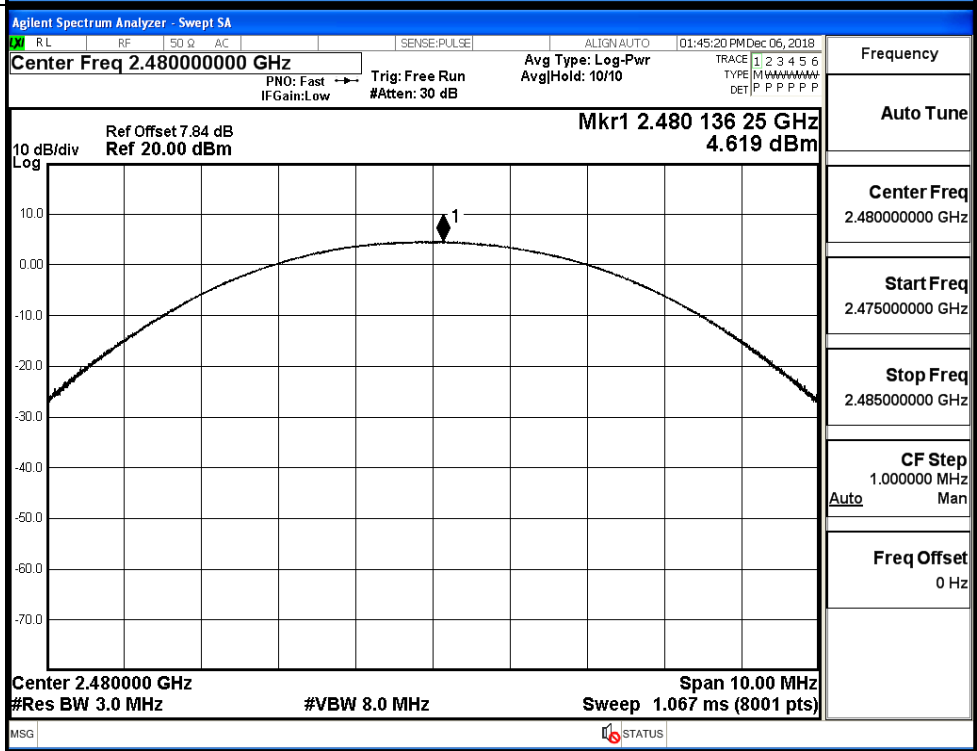
$\pi/4$ DQPSK/LCH



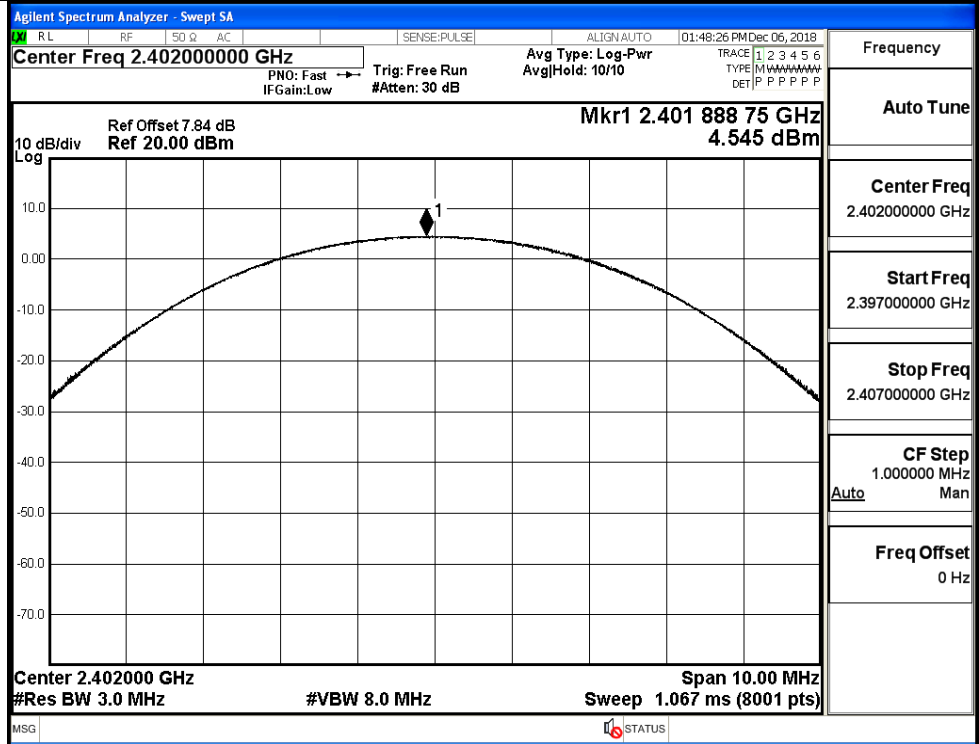
π /4DQPSK/MCH



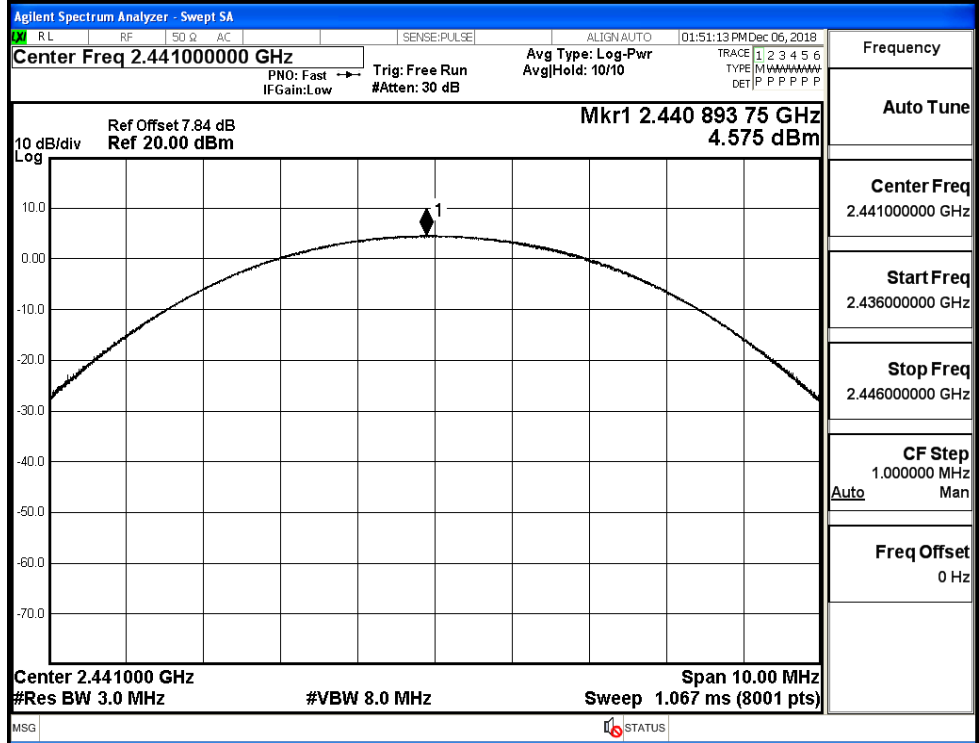
π /4DQPSK/HCH



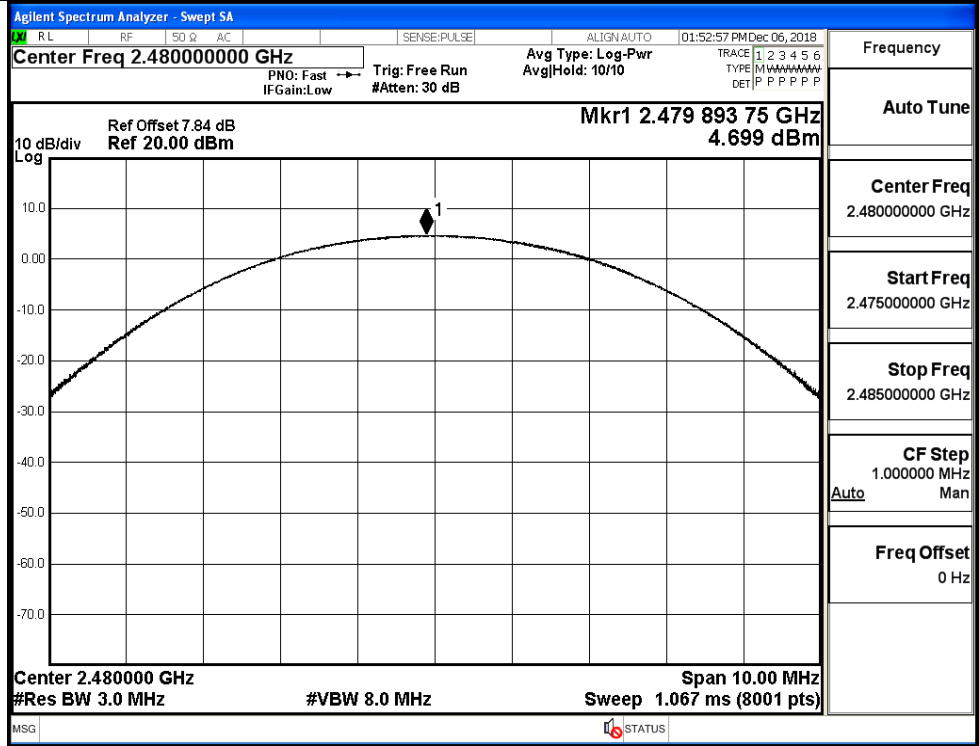
8DPSK/LCH



8DPSK/MCH

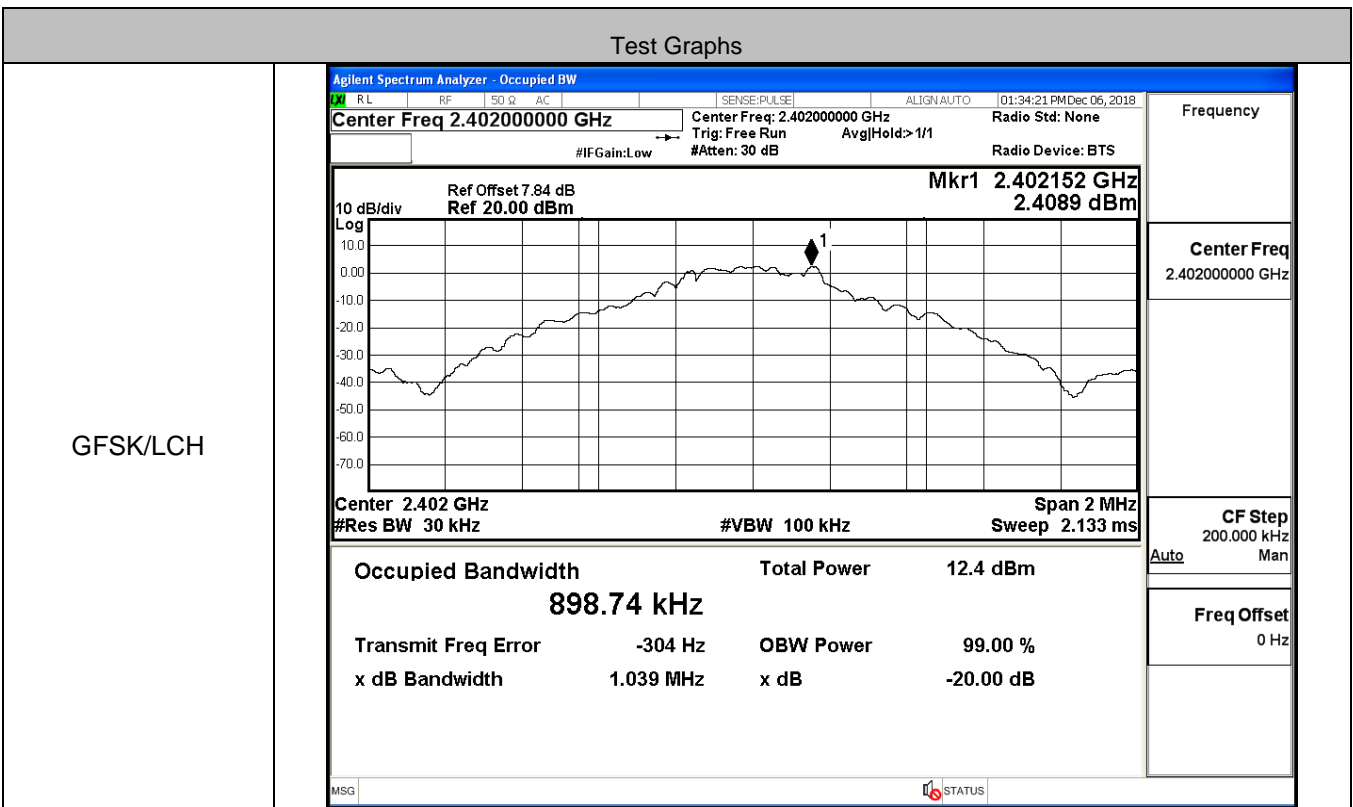


8DPSK/HCH

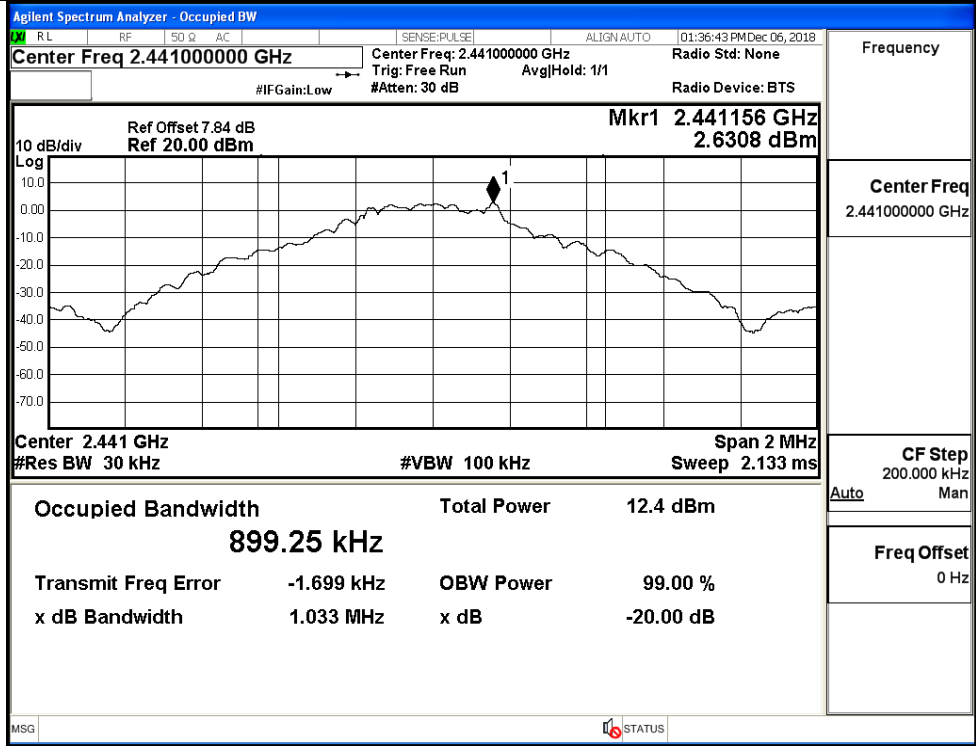


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.039	Not Specified	PASS
	MCH	1.033	Not Specified	PASS
	HCH	1.035	Not Specified	PASS
π/4DQPSK	LCH	1.288	Not Specified	PASS
	MCH	1.289	Not Specified	PASS
	HCH	1.294	Not Specified	PASS
8DPSK	LCH	1.293	Not Specified	PASS
	MCH	1.294	Not Specified	PASS
	HCH	1.298	Not Specified	PASS

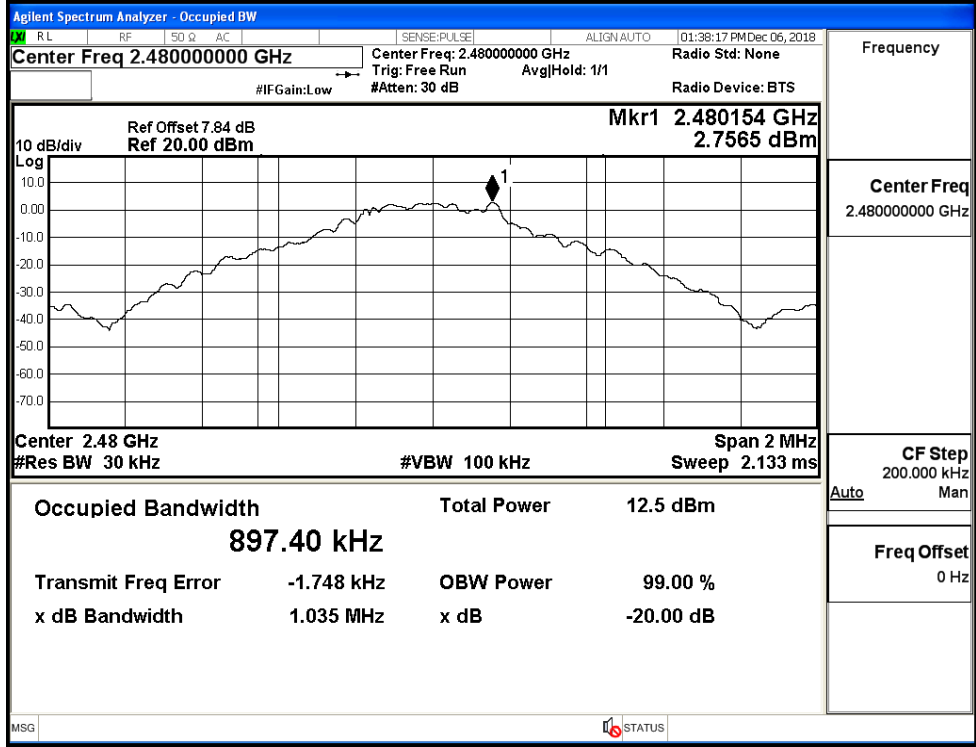


GFSK/MCH



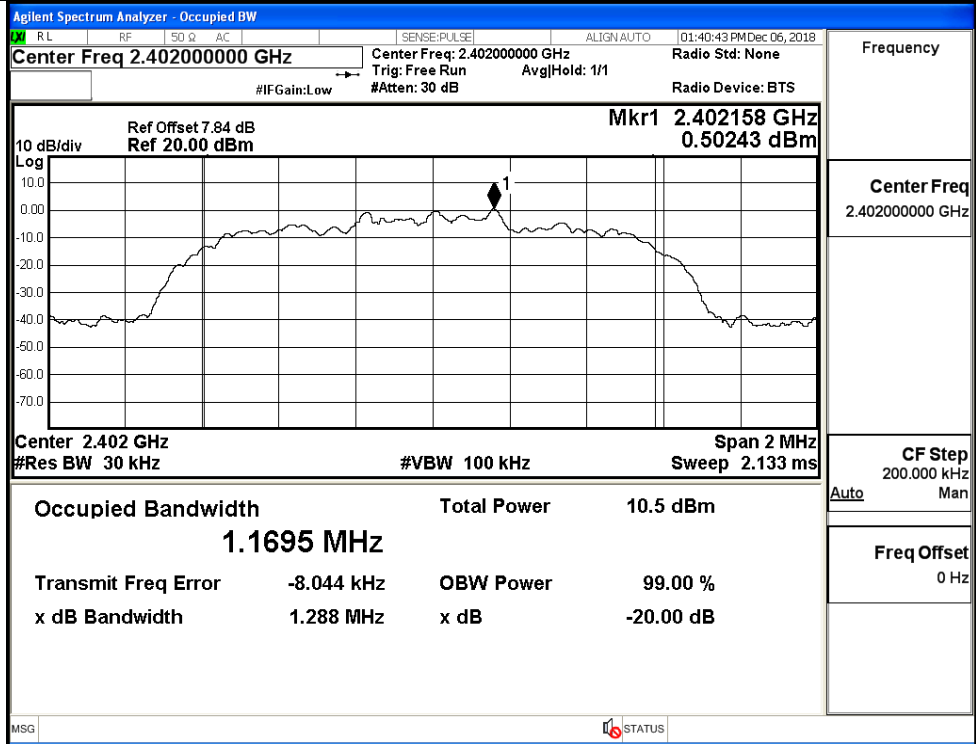
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

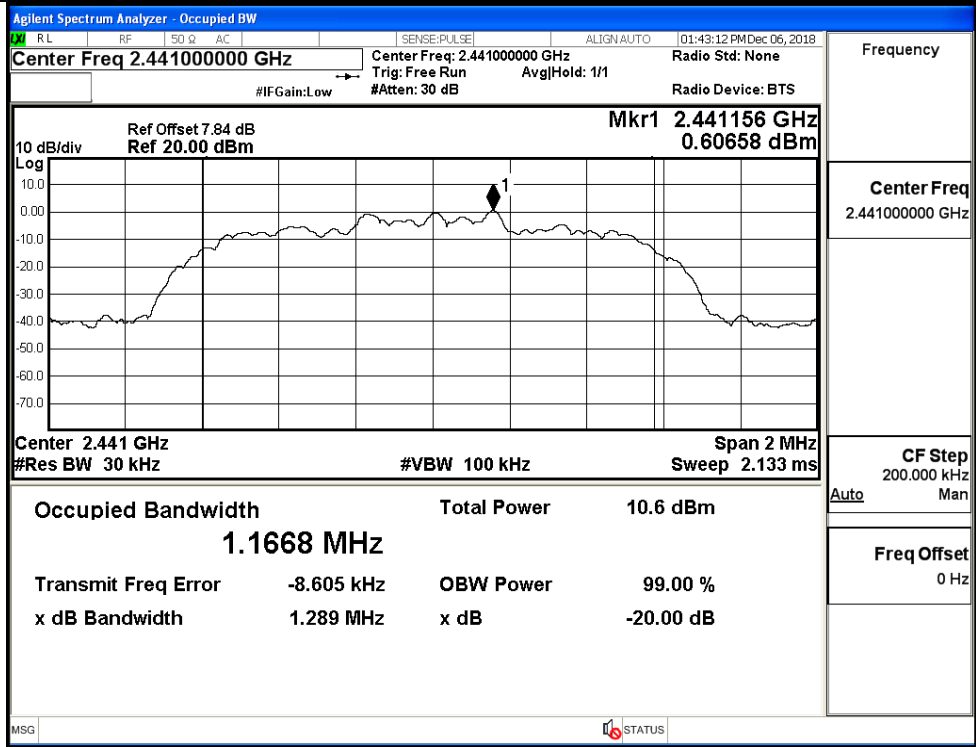


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

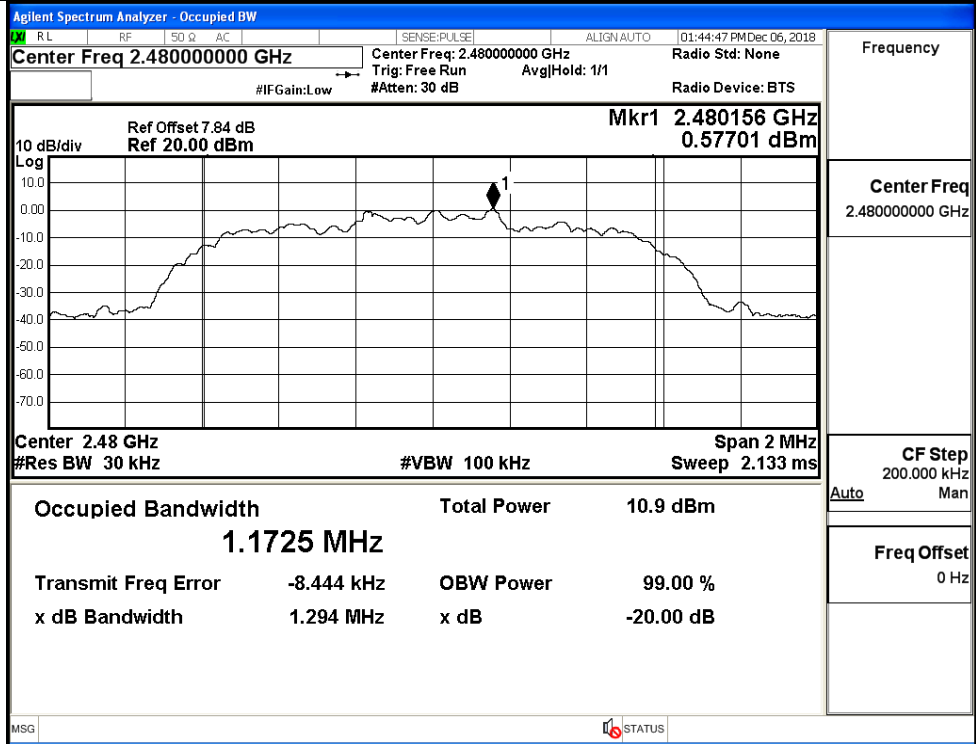
$\pi/4$ DQPSK/LCH



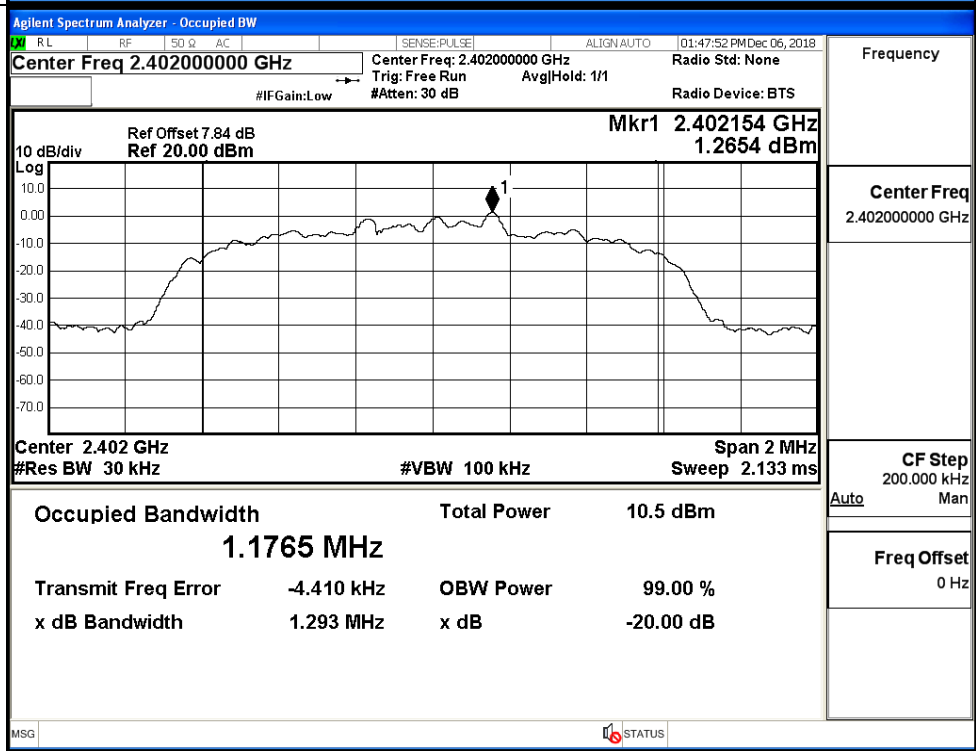
$\pi/4$ DQPSK/MCH



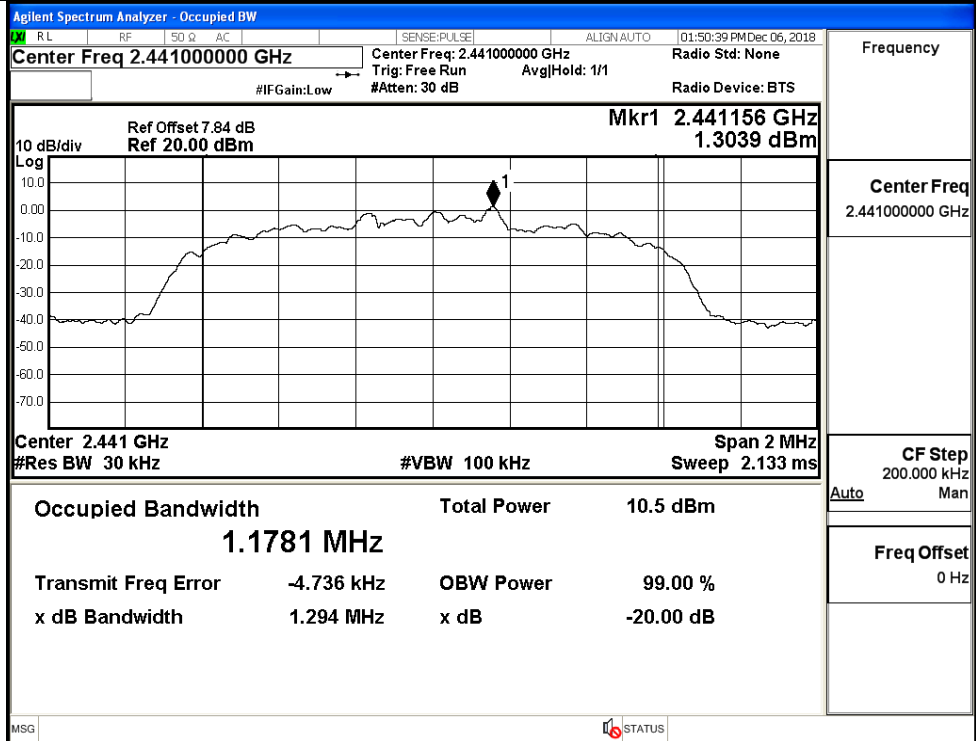
$\pi/4$ DQPSK/HCH



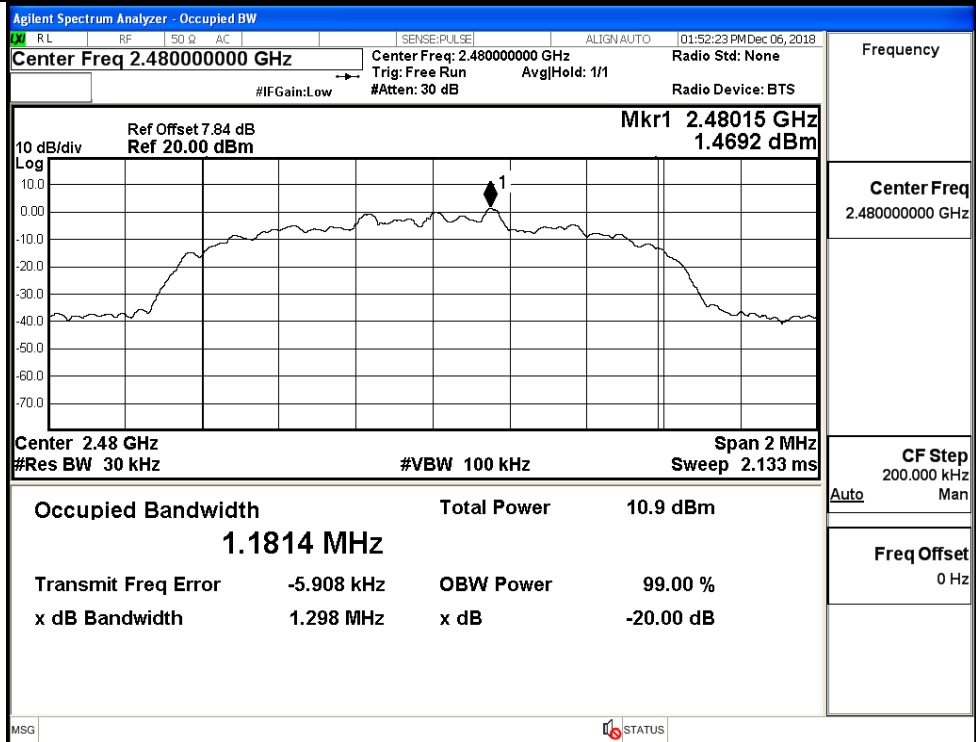
8DPSK/LCH



8DPSK/MCH

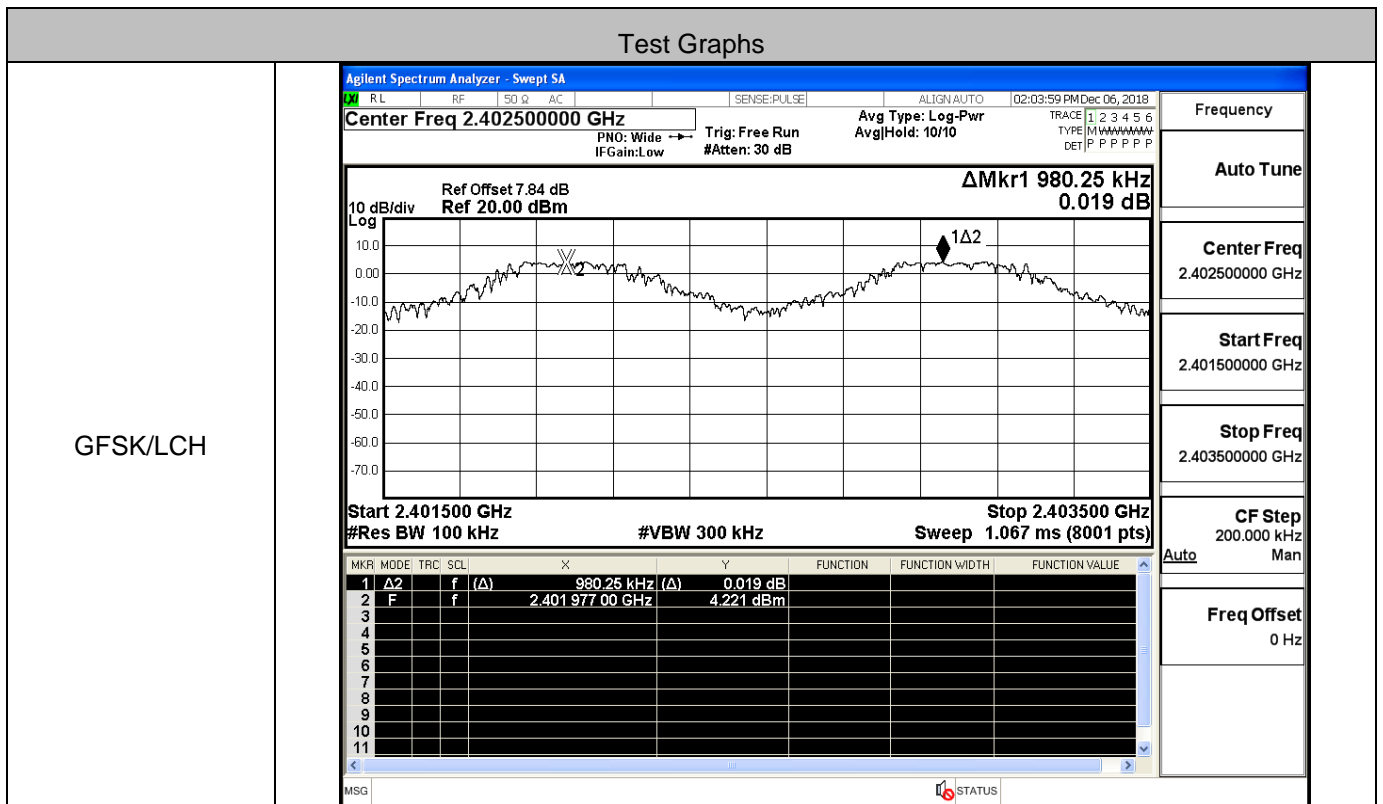


8DPSK/HCH

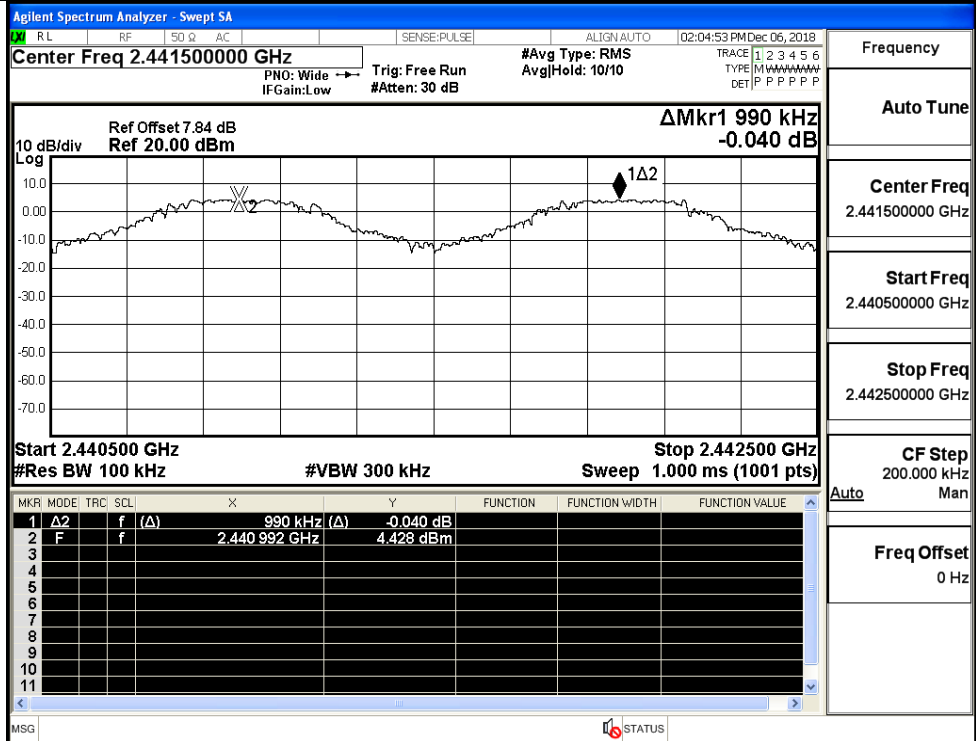


A.3 Carrier Frequency Separation

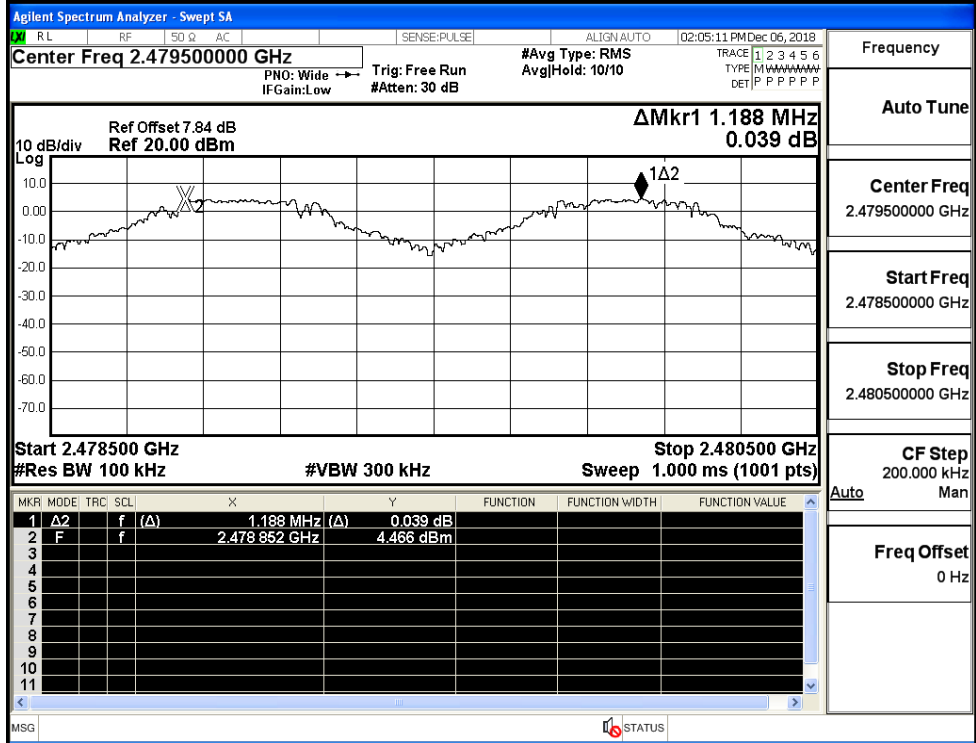
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.980	0.693	PASS
	MCH	0.990	0.693	PASS
	HCH	1.188	0.693	PASS
π/4DQPSK	LCH	1.130	0.863	PASS
	MCH	0.992	0.863	PASS
	HCH	1.274	0.863	PASS
8DPSK	LCH	1.050	0.865	PASS
	MCH	1.018	0.865	PASS
	HCH	1.098	0.865	PASS



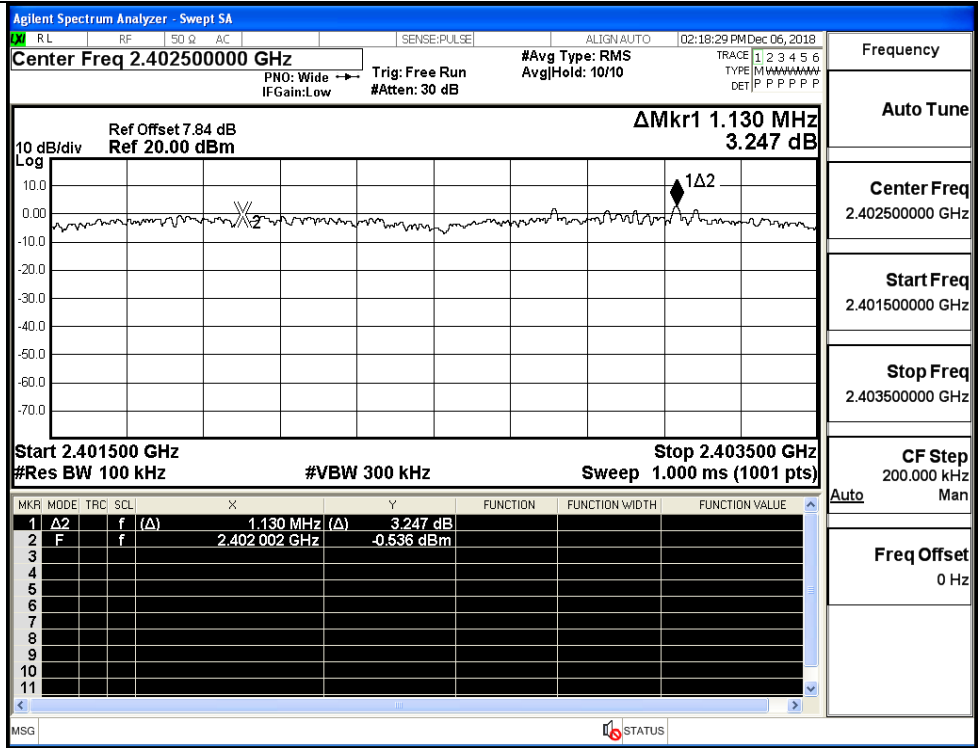
GFSK/MCH



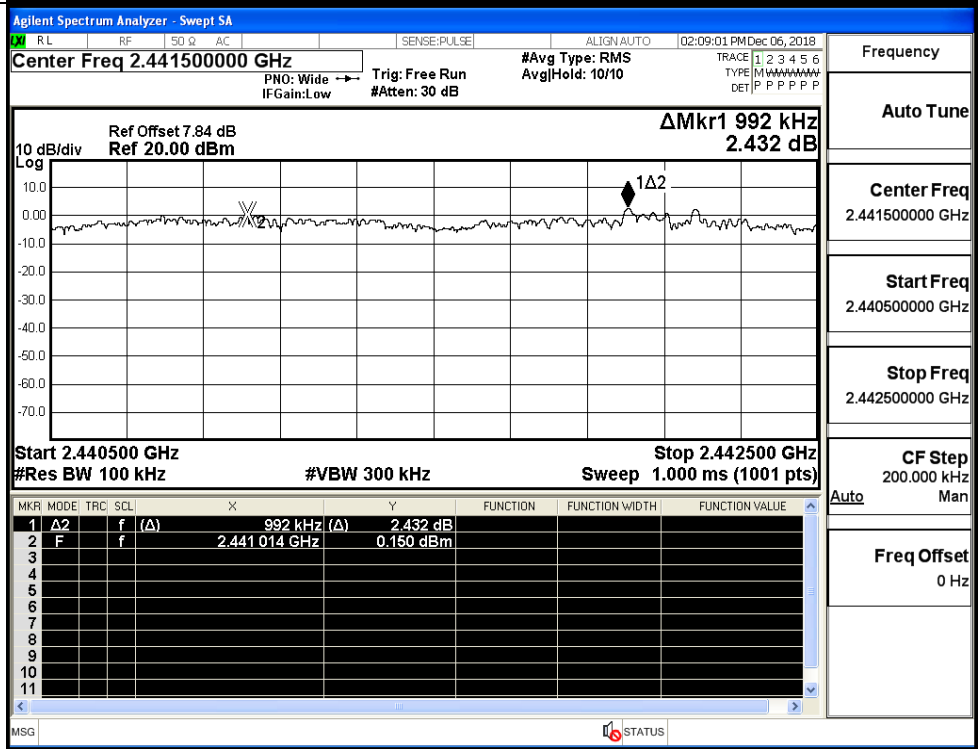
GFSK/HCH



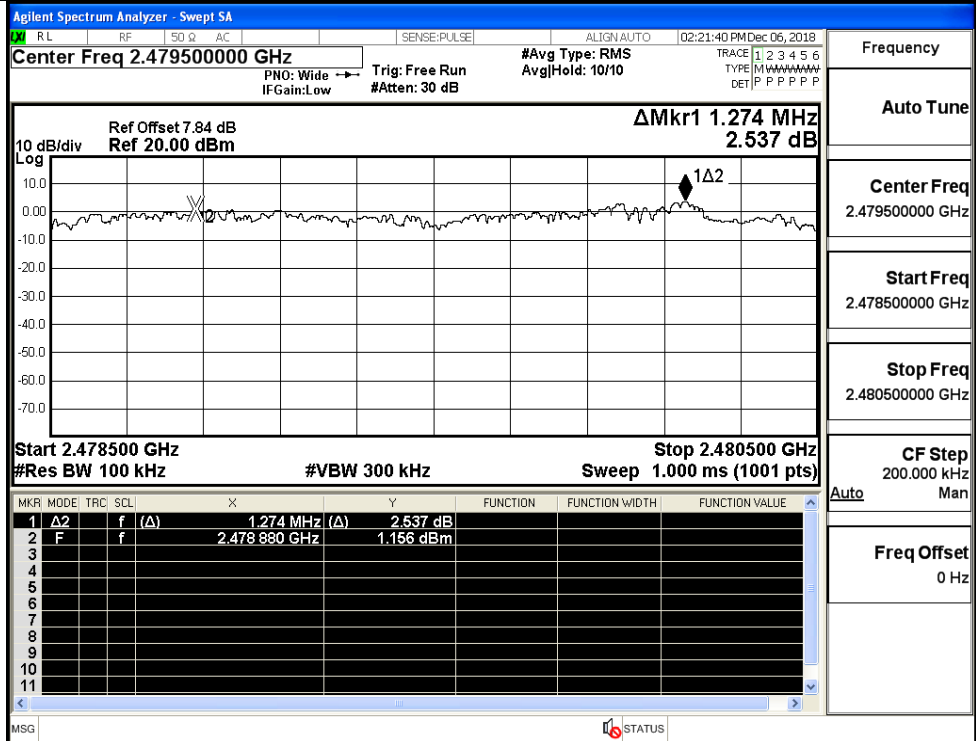
π/4DQPSK/LCH



π/4DQPSK/MCH



π/4DQPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

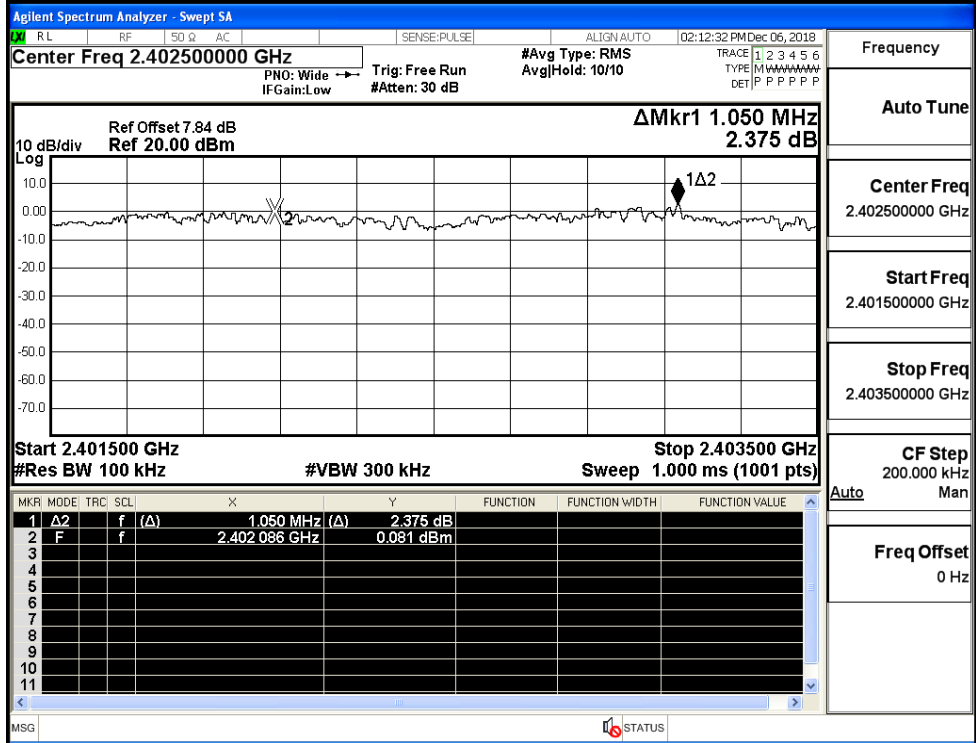
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

8DPSK/LCH



Frequency

Auto Tune

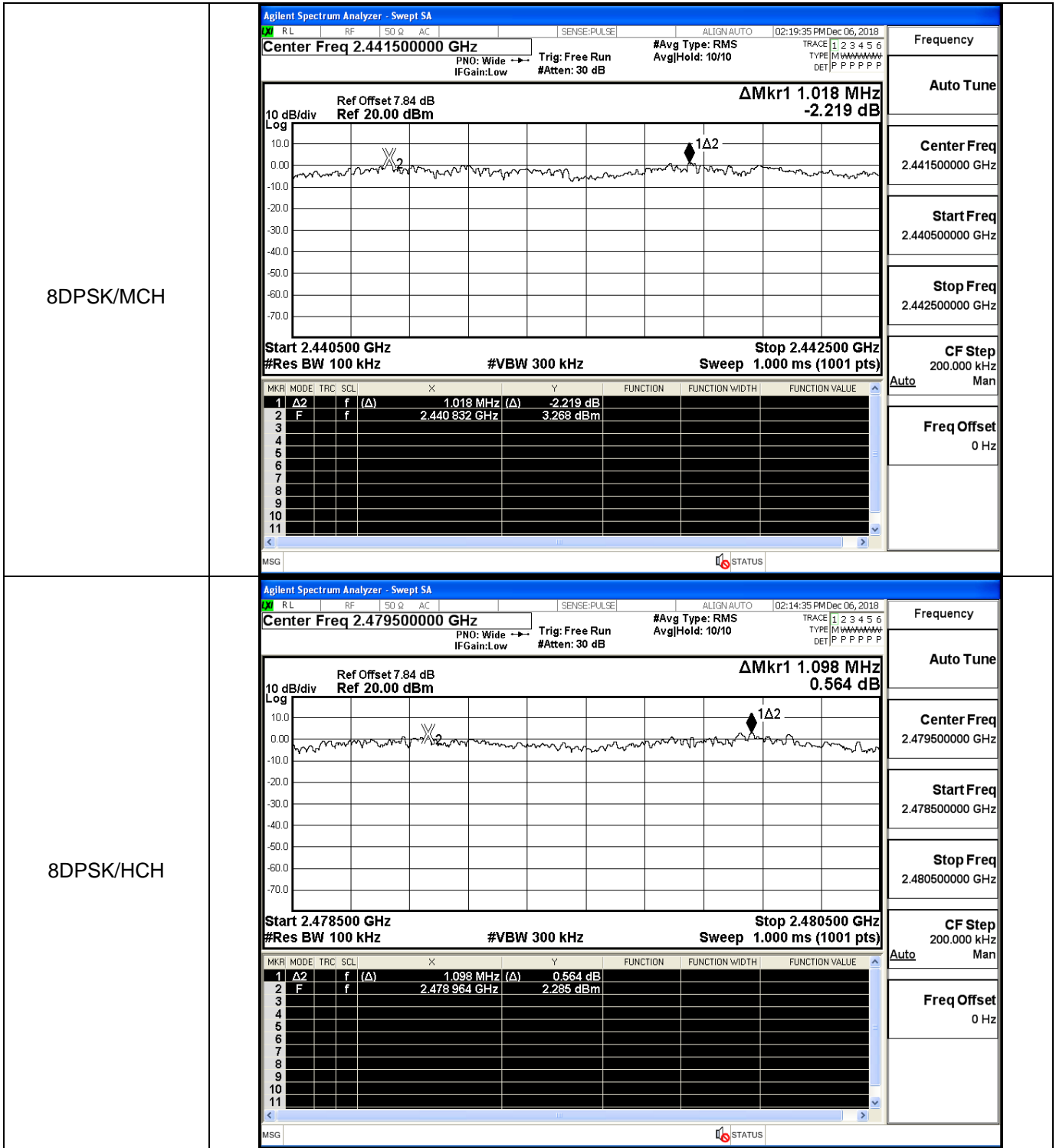
Center Freq
2.402500000 GHz

Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

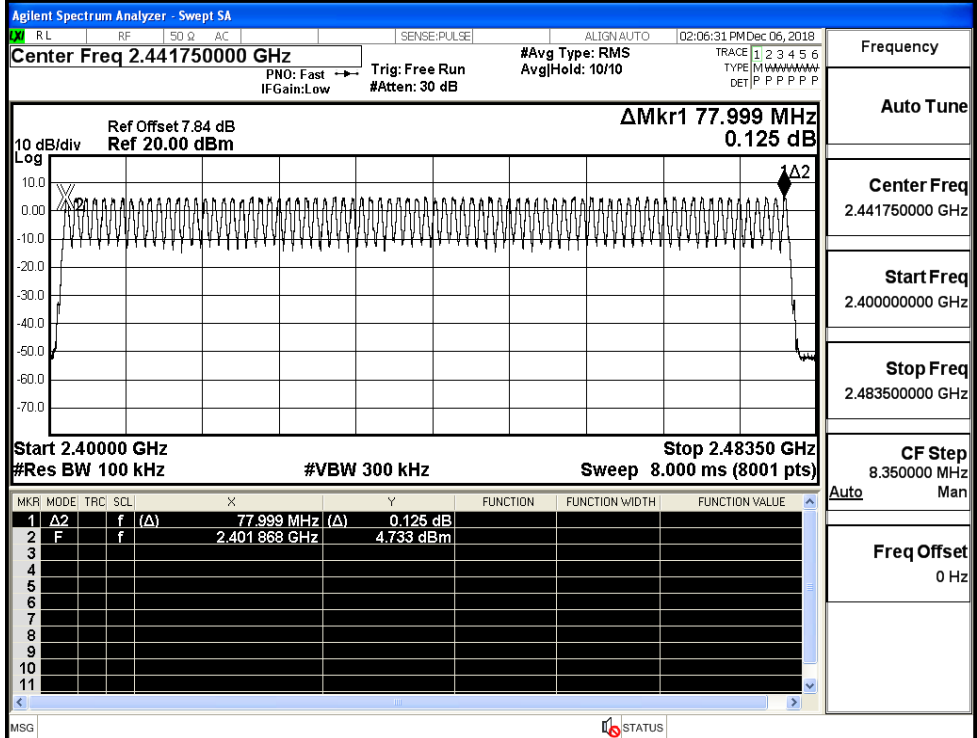


A.4 Hopping Channel Number

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

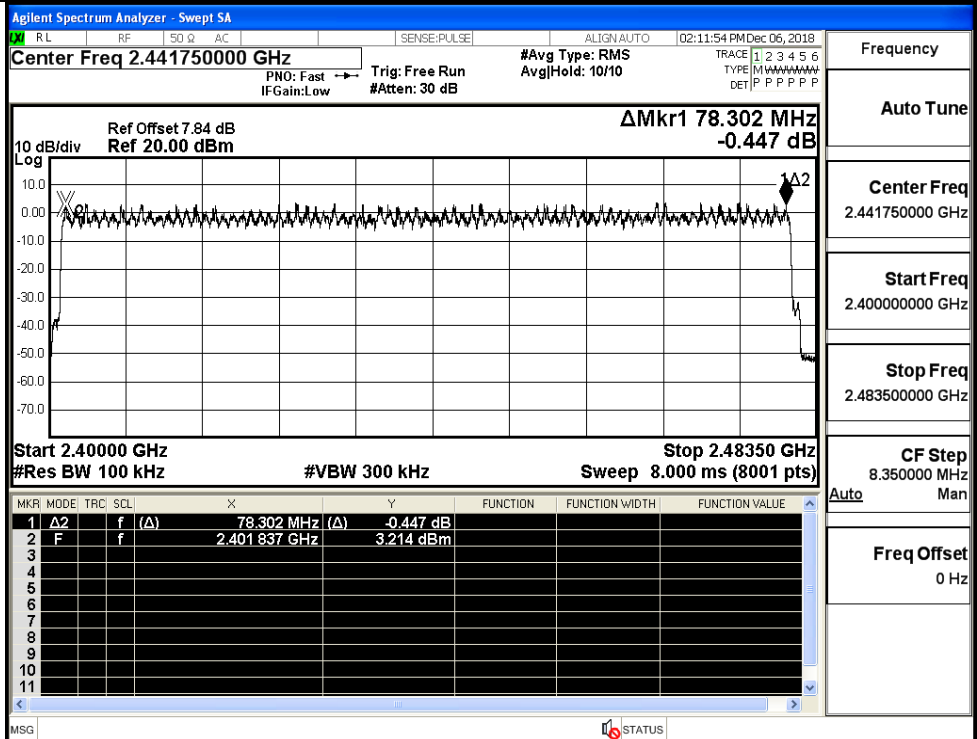
Test Graphs

GFSK/Hop



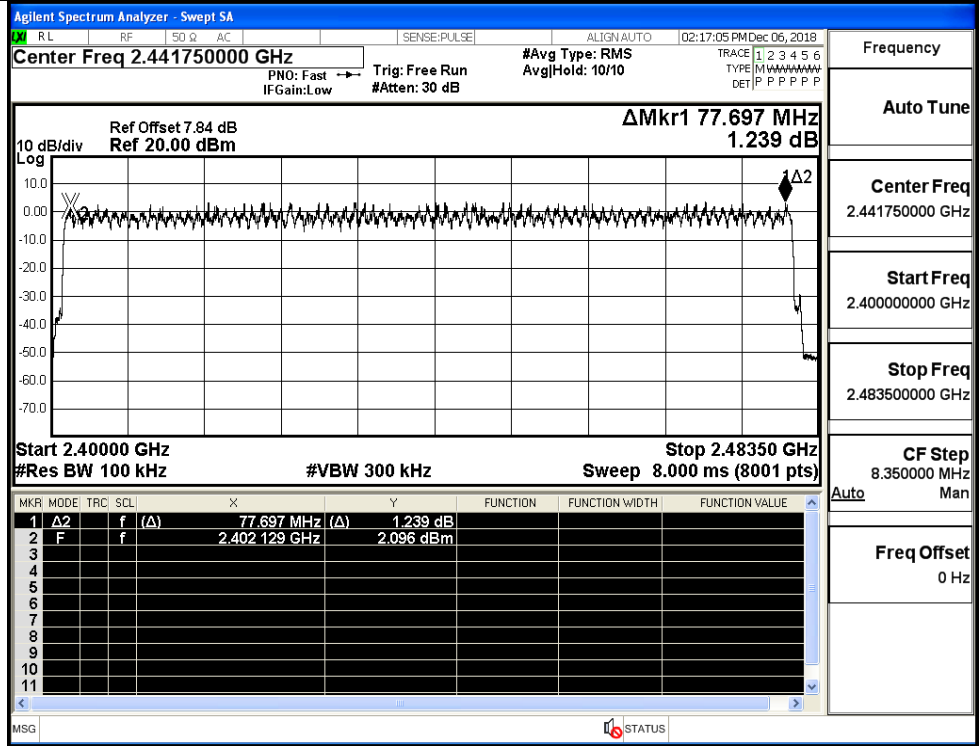
Frequency
Auto Tune
Center Freq 2.441750000 GHz
Start Freq 2.400000000 GHz
Stop Freq 2.483500000 GHz
CF Step 8.350000 MHz
Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK/Hop



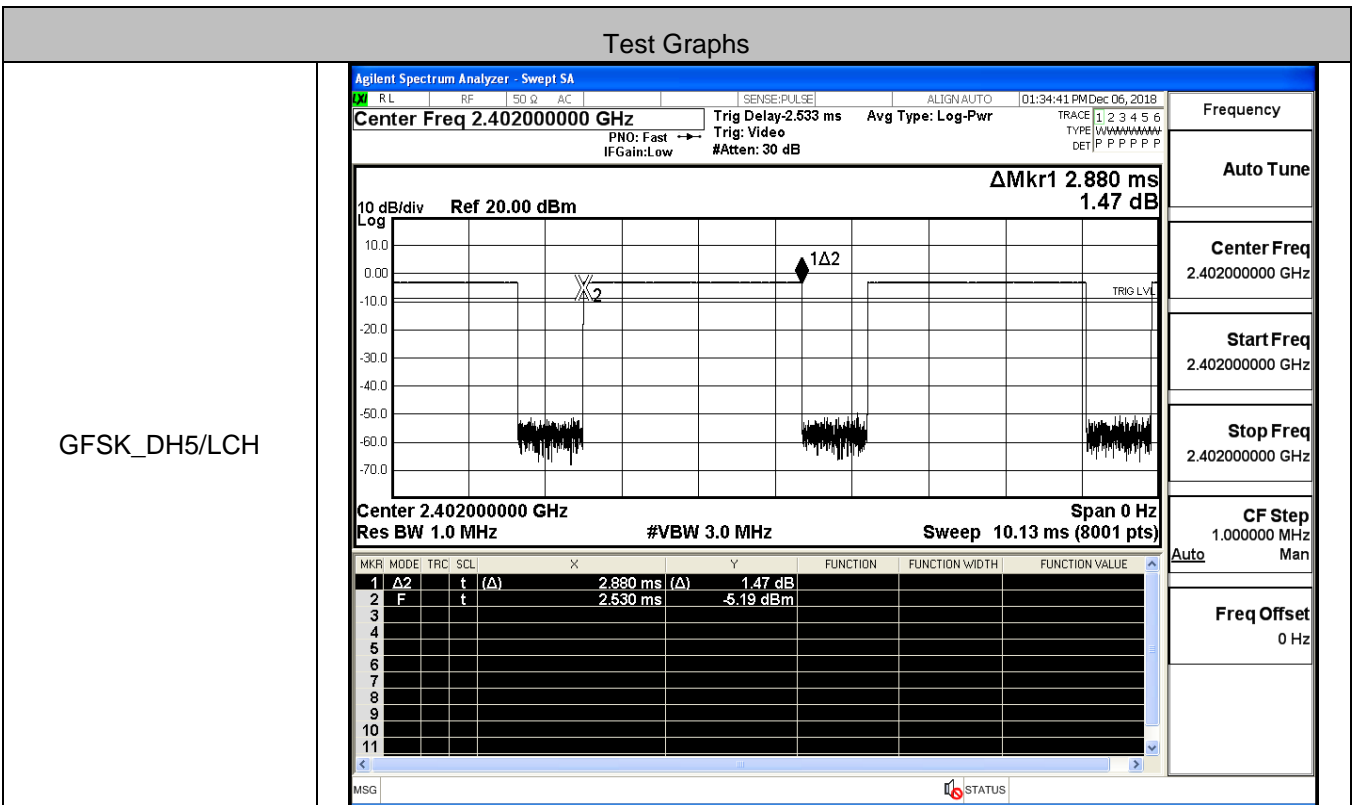
Frequency
Auto Tune
Center Freq 2.441750000 GHz
Start Freq 2.400000000 GHz
Stop Freq 2.483500000 GHz
CF Step 8.350000 MHz
Auto Man
Freq Offset 0 Hz

8DPSK/Hop

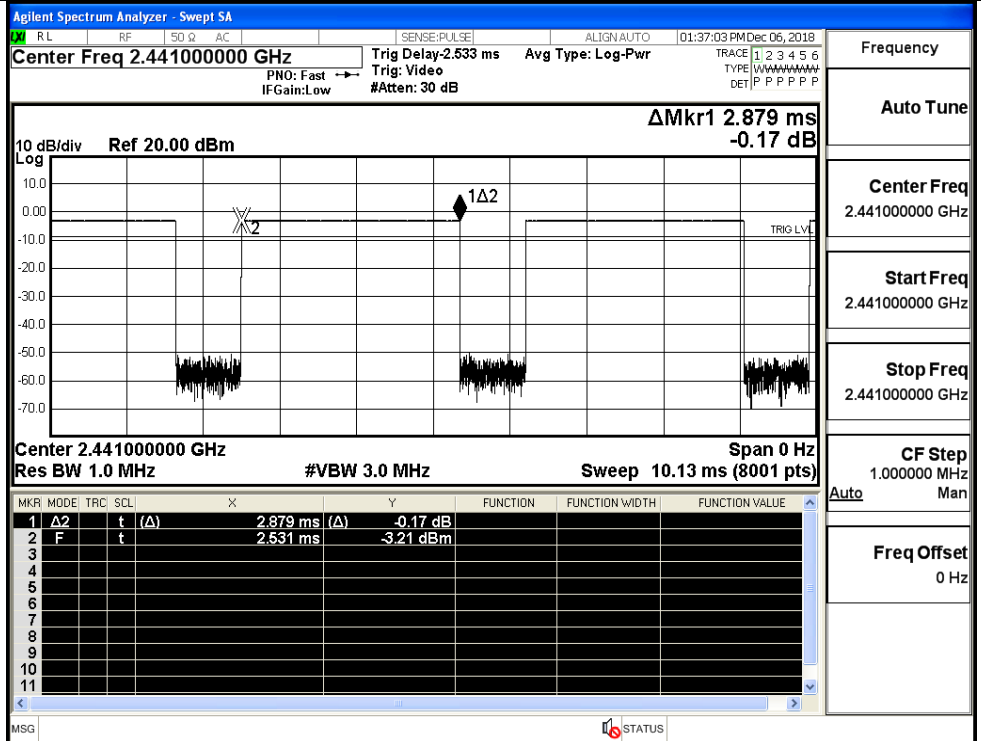


A.5 Dwell Time

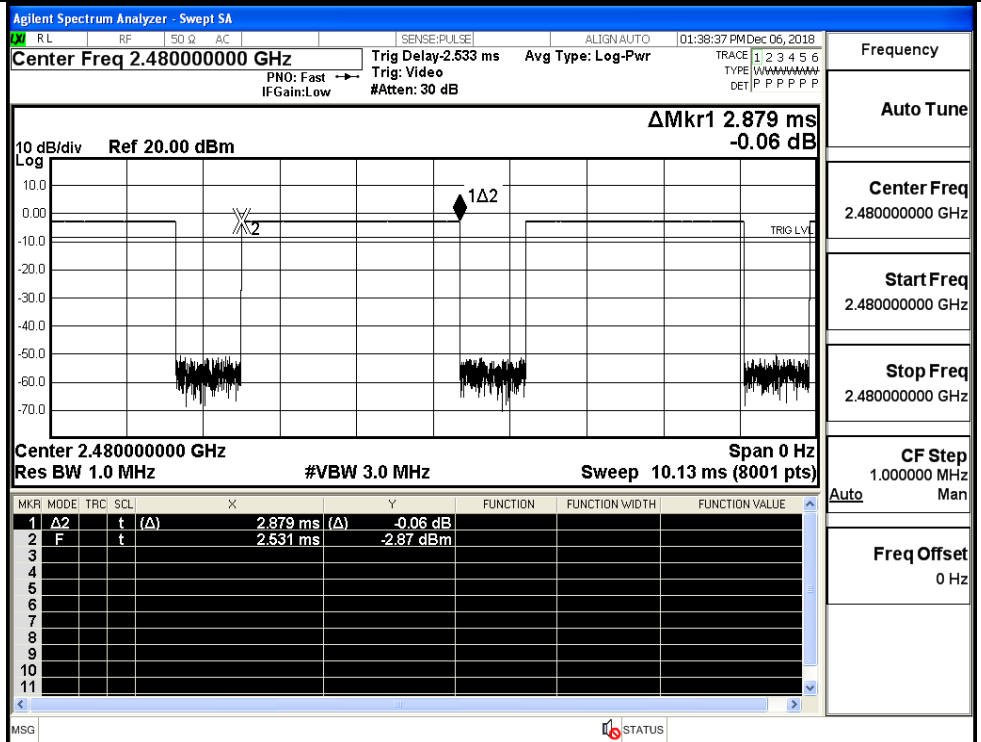
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



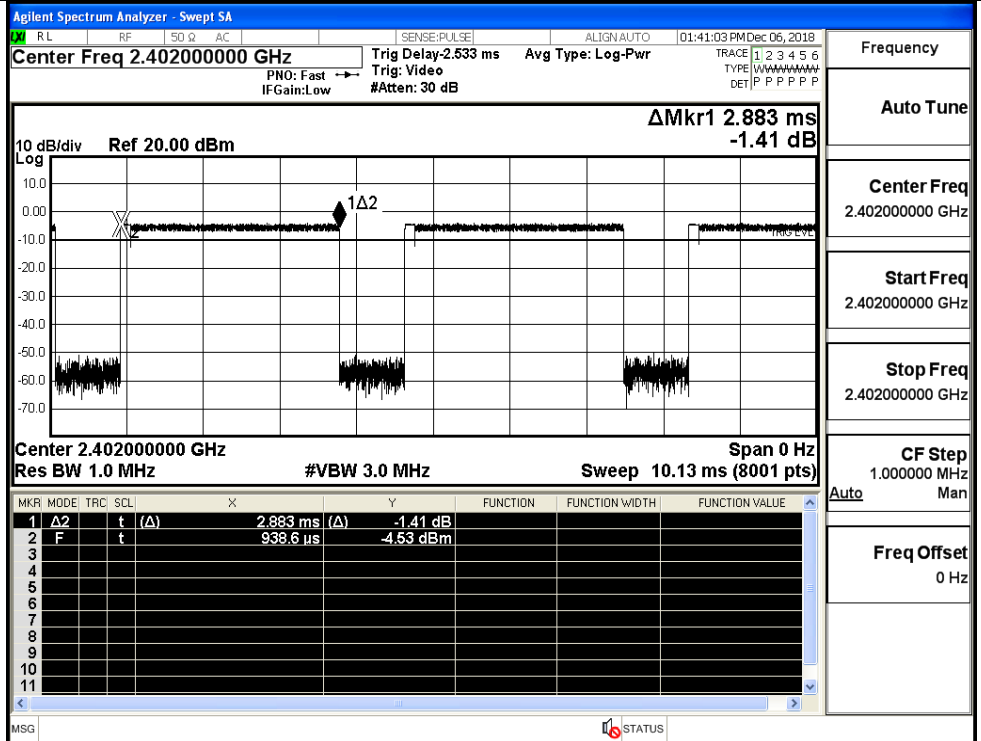
GFSK_DH5/MCH



GFSK_DH5/HCH

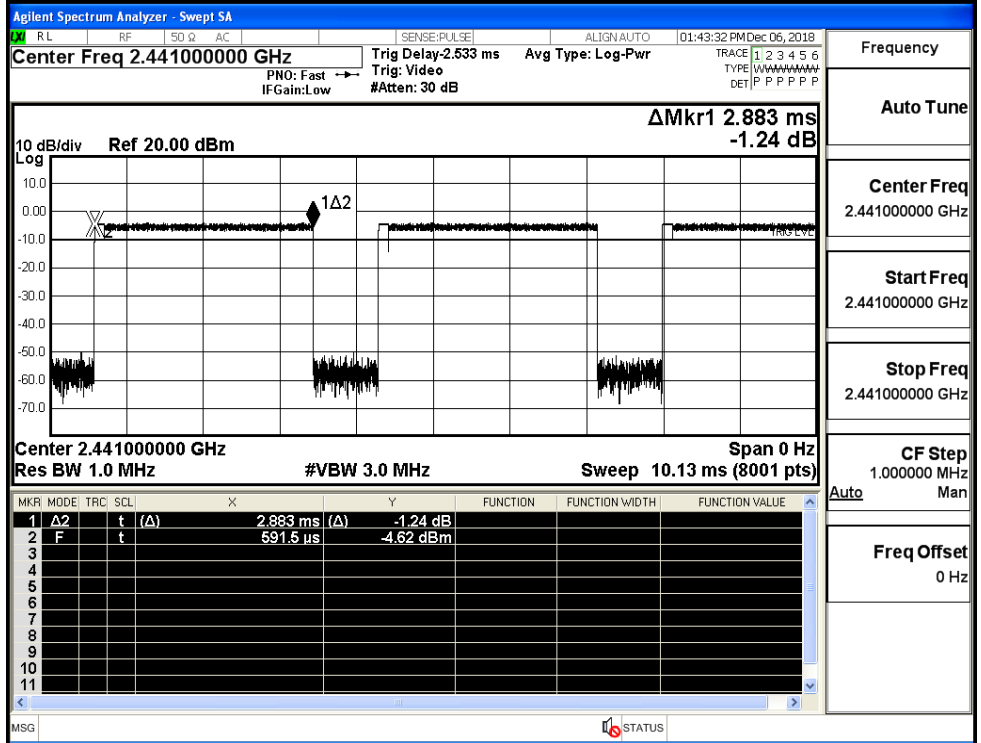


$\pi/4$ DQPSK
_2DH5/LCH



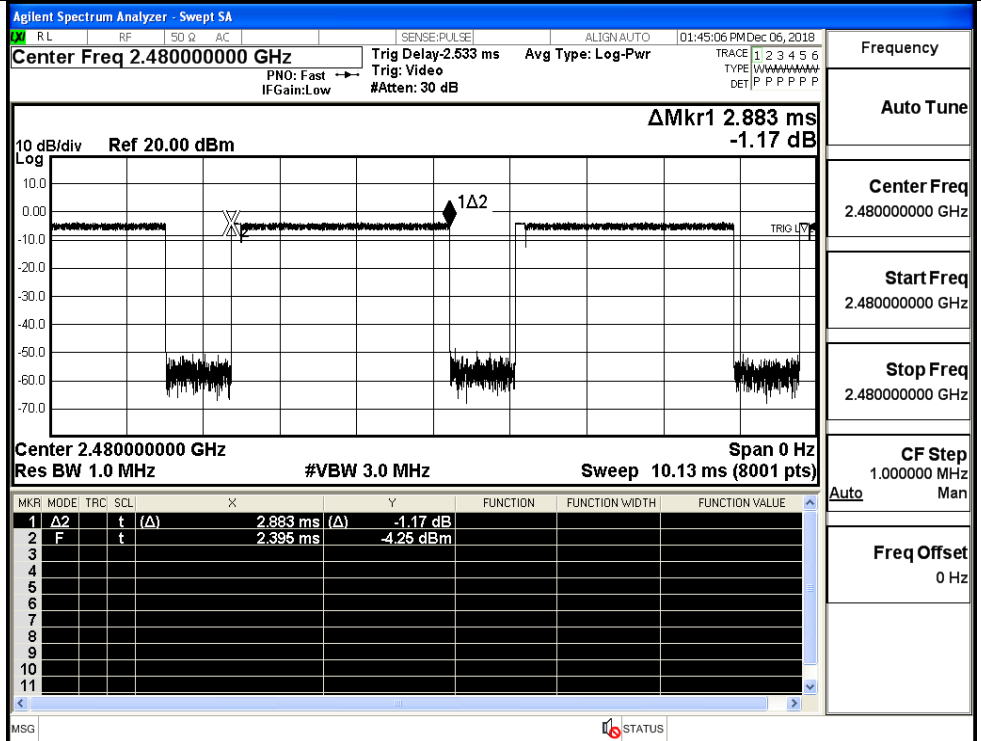
Frequency	2.40200000 GHz
Auto Tune	
Center Freq	2.40200000 GHz
Start Freq	2.40200000 GHz
Stop Freq	2.40200000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/MCH

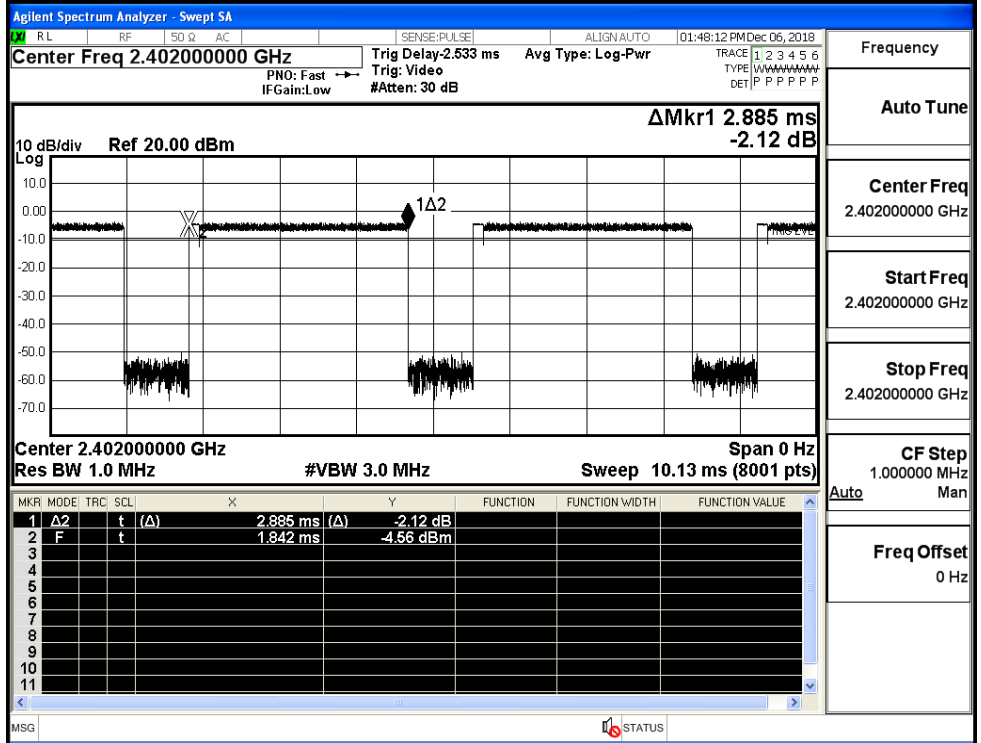


Frequency	2.44100000 GHz
Auto Tune	
Center Freq	2.44100000 GHz
Start Freq	2.44100000 GHz
Stop Freq	2.44100000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

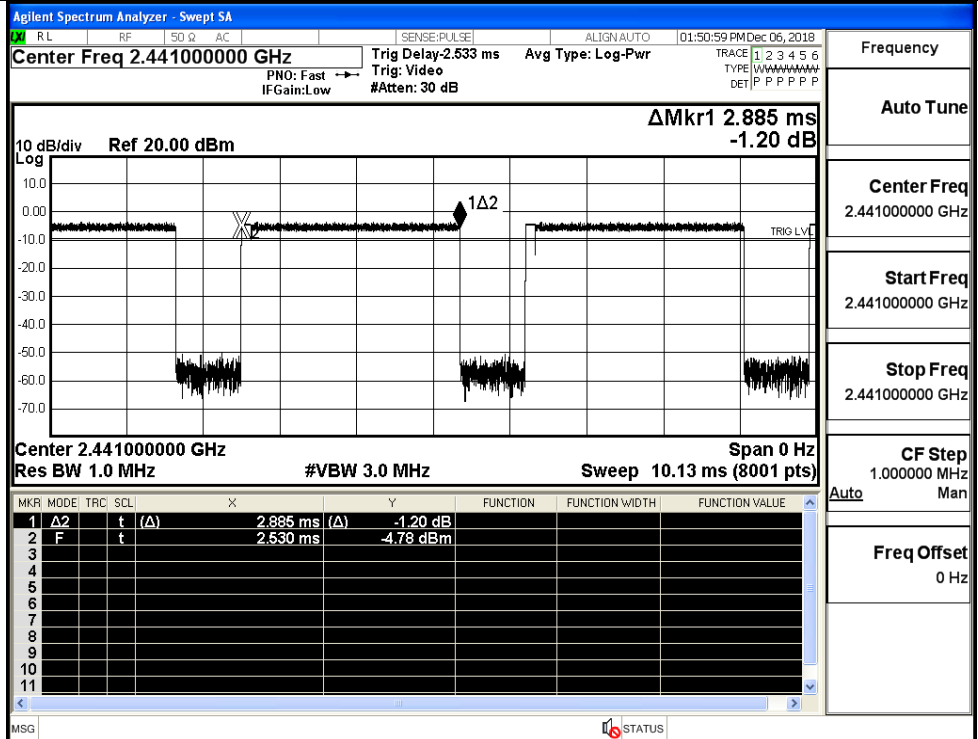
$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



Frequency

Auto Tune

Center Freq 2.441000000 GHz

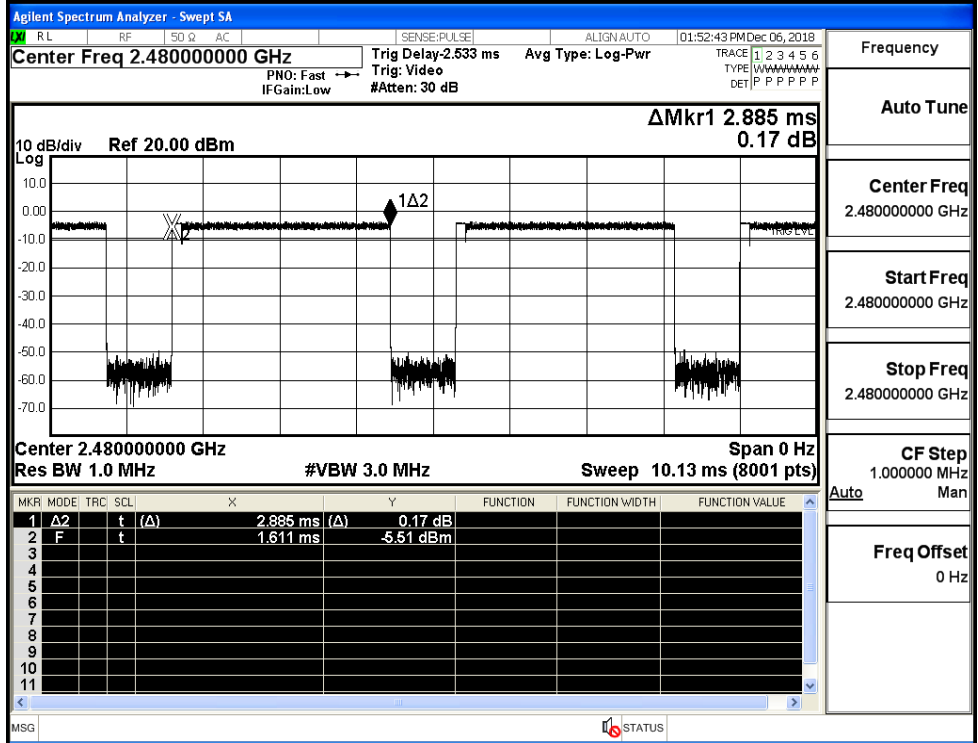
Start Freq 2.441000000 GHz

Stop Freq 2.441000000 GHz

CF Step 1.000000 MHz

Freq Offset 0 Hz

8DPSK_3DH5/HCH



Frequency

Auto Tune

Center Freq 2.480000000 GHz

Start Freq 2.480000000 GHz

Stop Freq 2.480000000 GHz

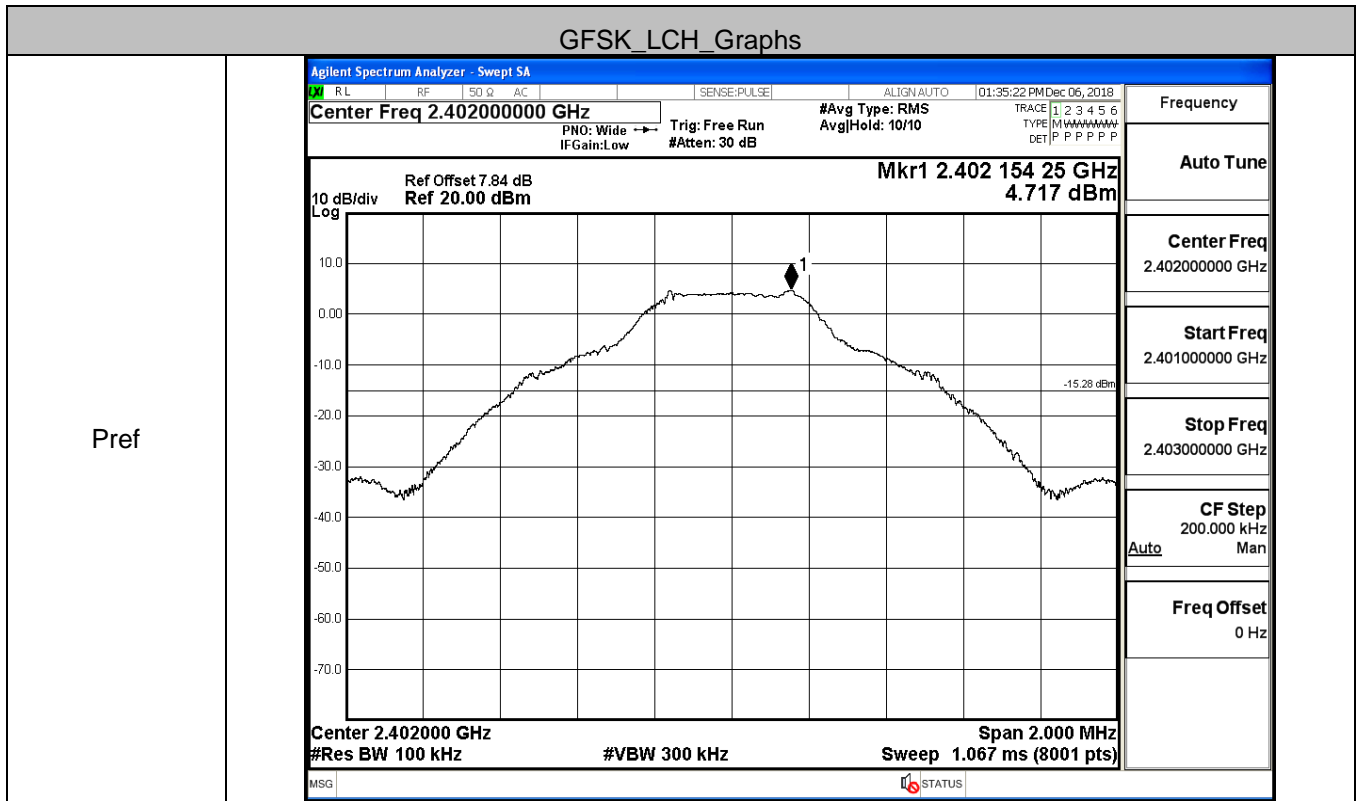
CF Step 1.000000 MHz

Freq Offset 0 Hz

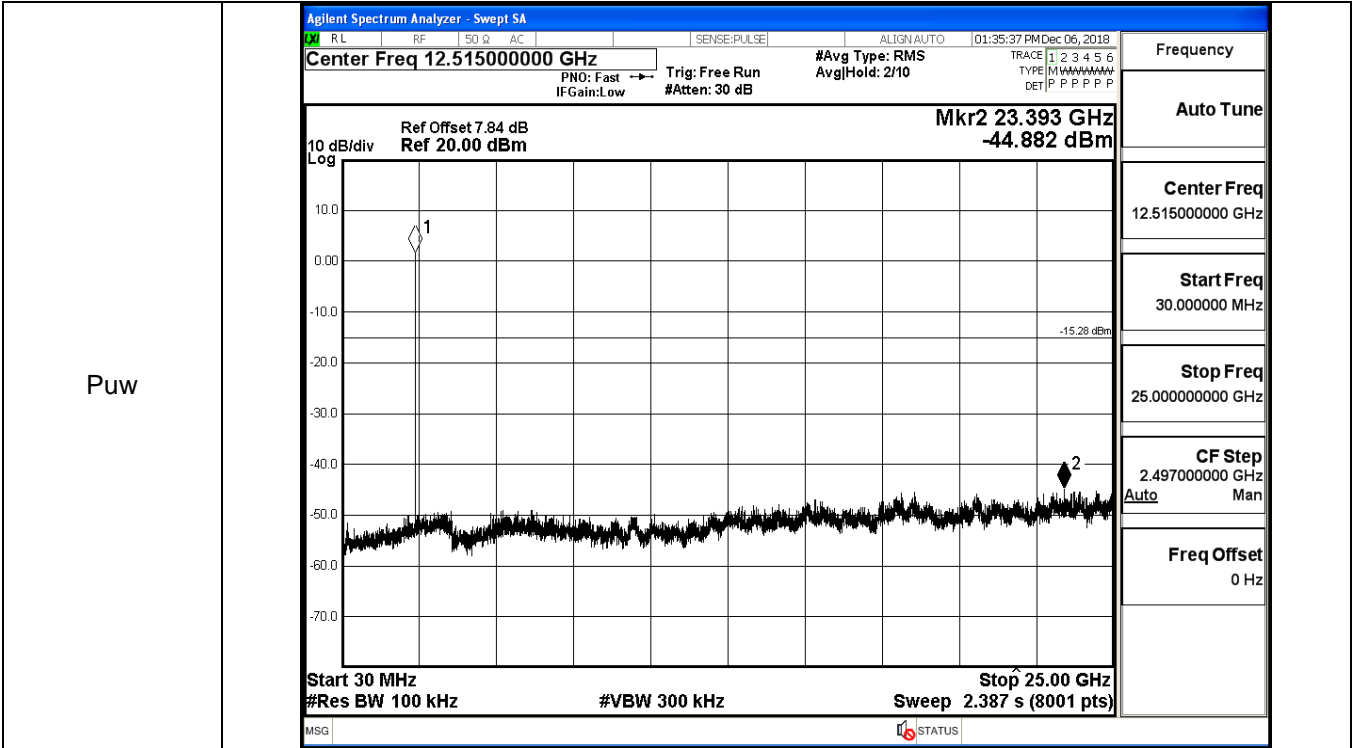
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.717	-44.882	-15.283	PASS
	MCH	4.65	-45.157	-15.350	PASS
	HCH	4.589	-45.351	-15.411	PASS
π /4DQPSK	LCH	3.149	-45.171	-16.851	PASS
	MCH	3.009	-44.794	-16.991	PASS
	HCH	3.507	-39.451	-16.493	PASS
8DPSK	LCH	3.323	-45.468	-16.677	PASS
	MCH	3.378	-44.874	-16.622	PASS
	HCH	3.552	-44.751	-16.448	PASS

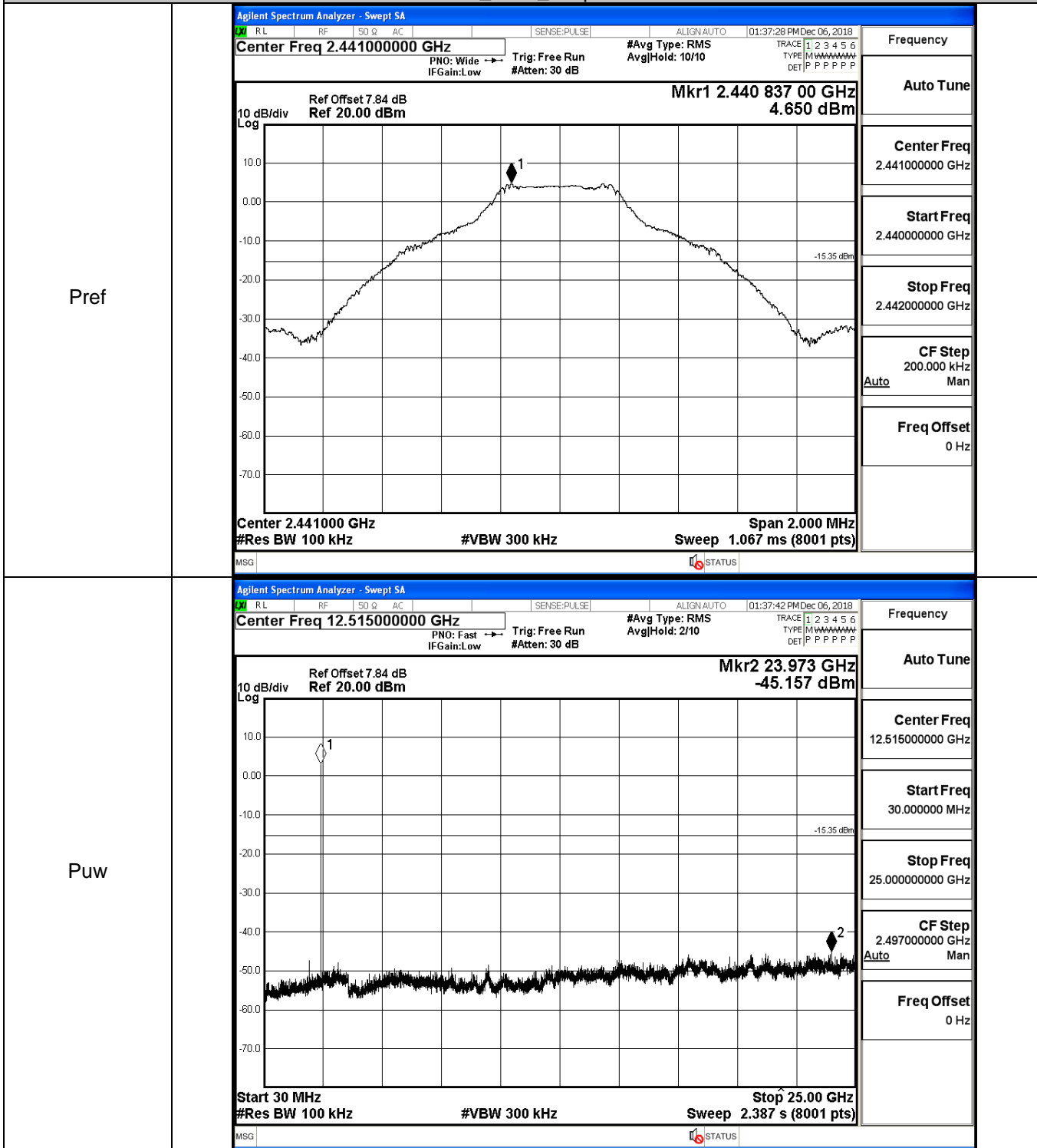
GFSK_LCH_Graphs



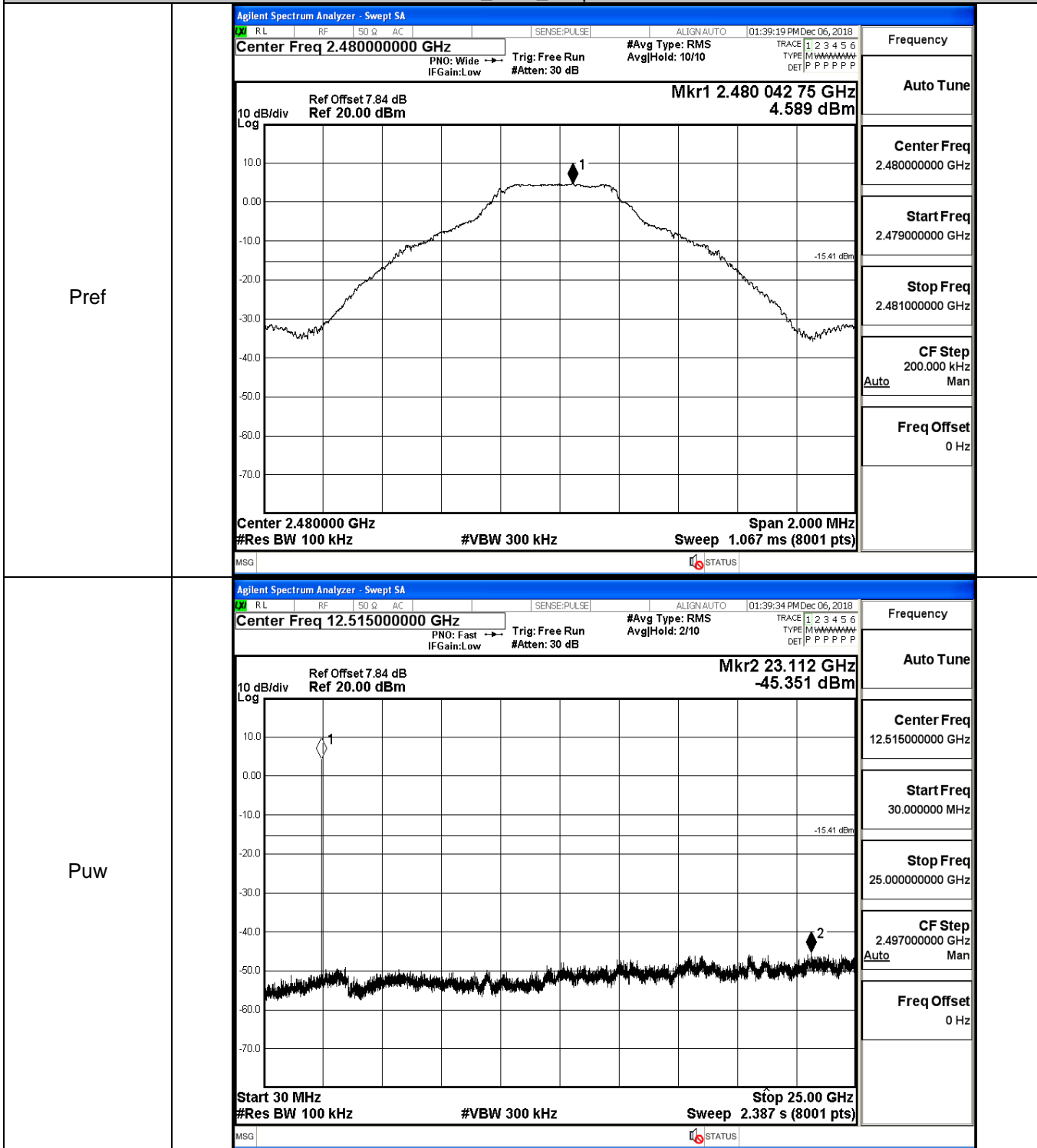
Pref



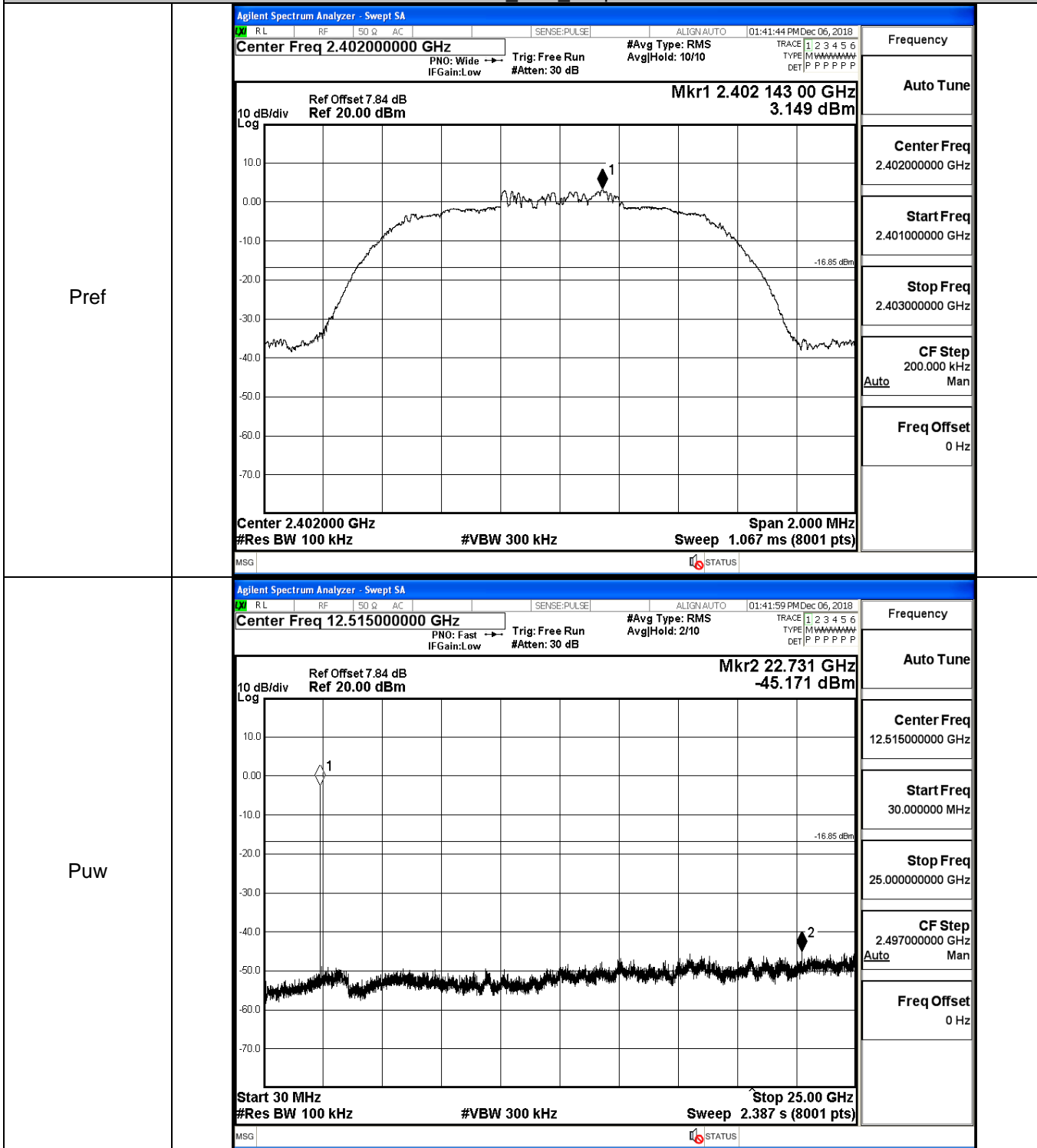
GFSK_MCH_Graphs



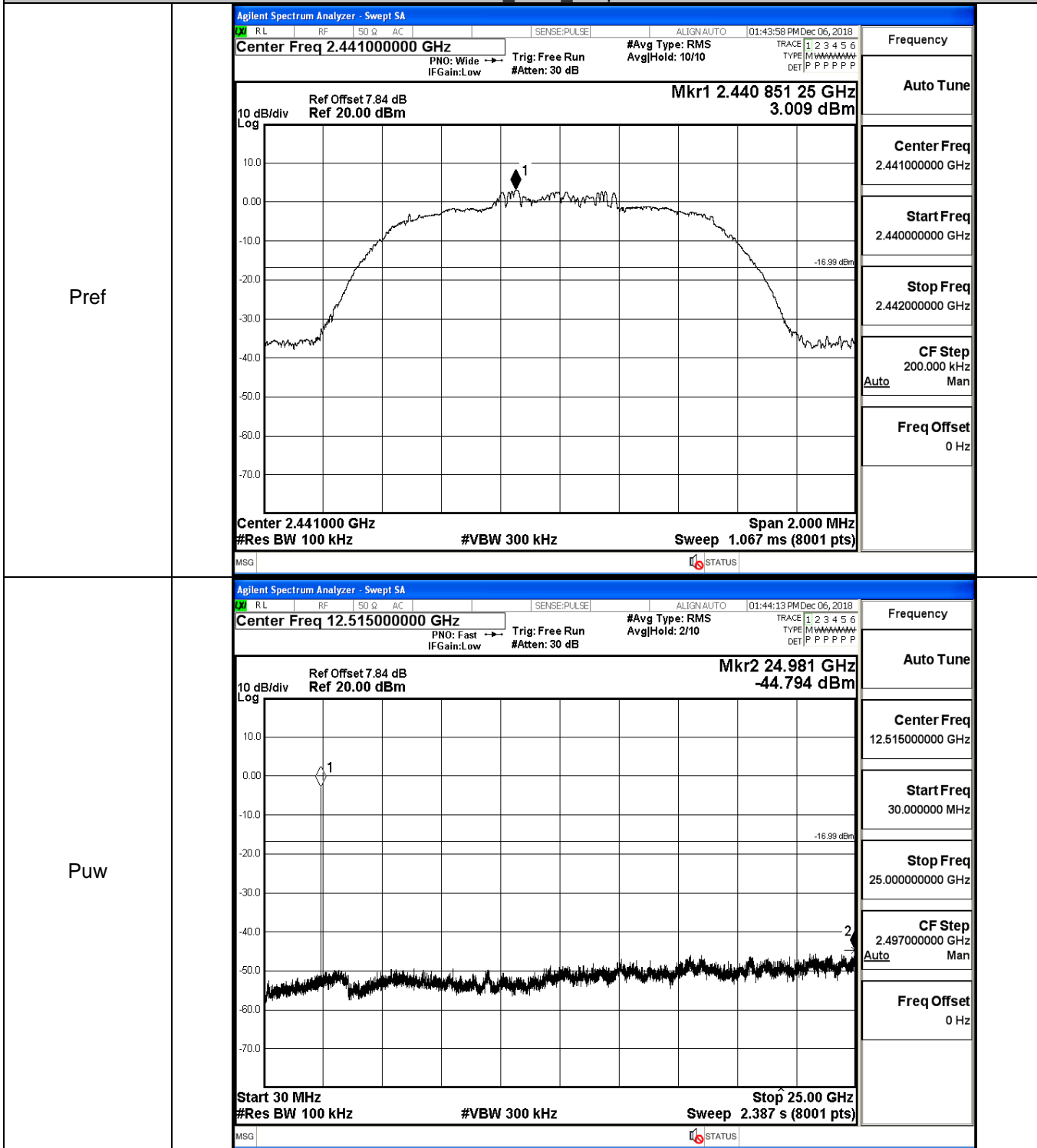
GFSK_HCH_Graphs



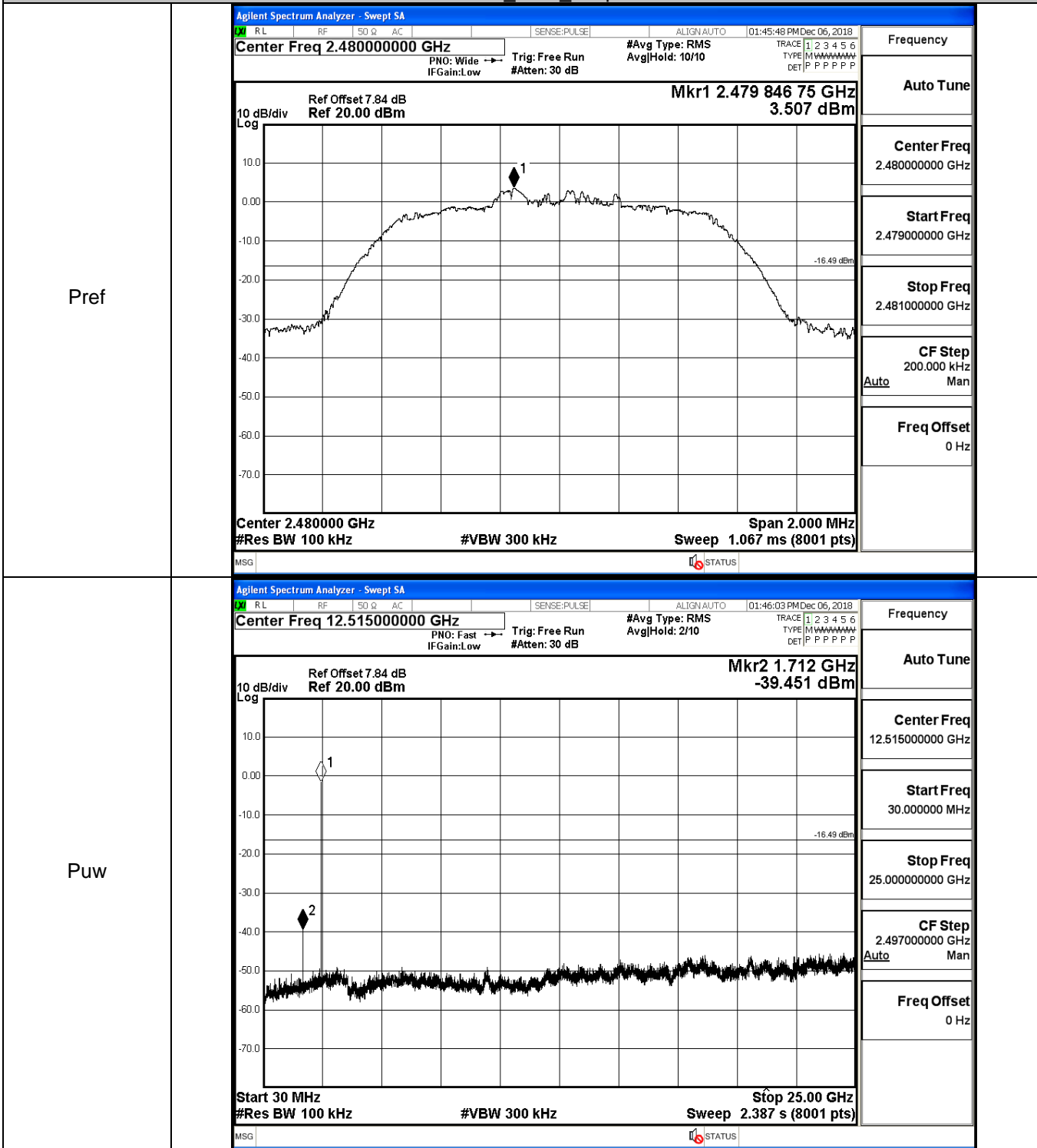
$\pi/4$ DQPSK_LCH_Graphs



$\pi/4$ DQPSK_MCH_Graphs

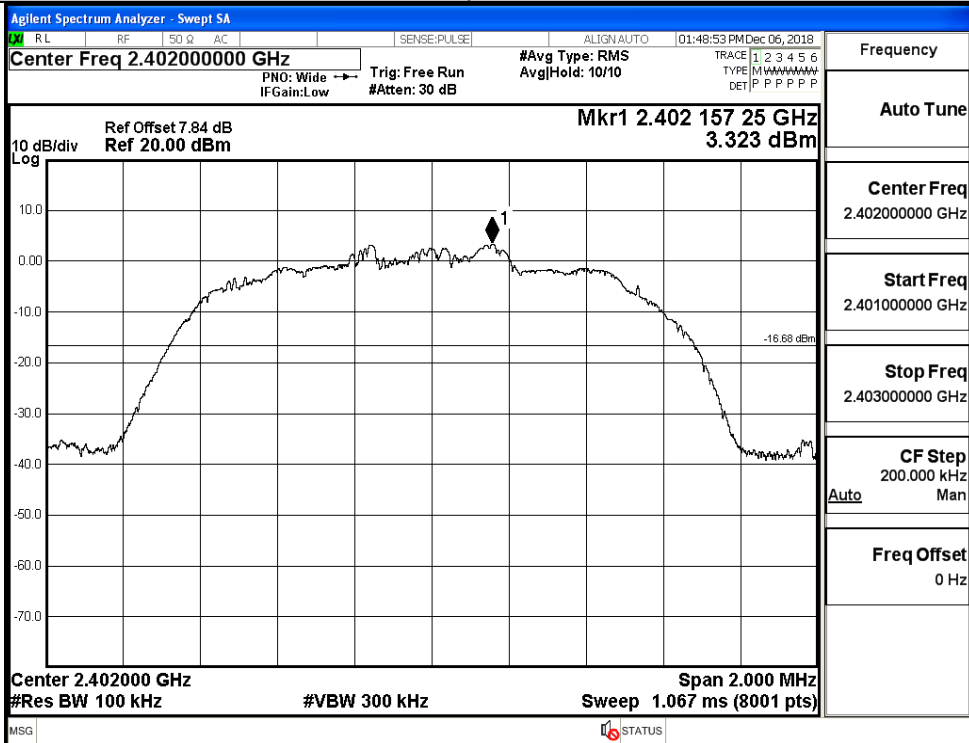


$\pi/4$ DQPSK_HCH_Graphs

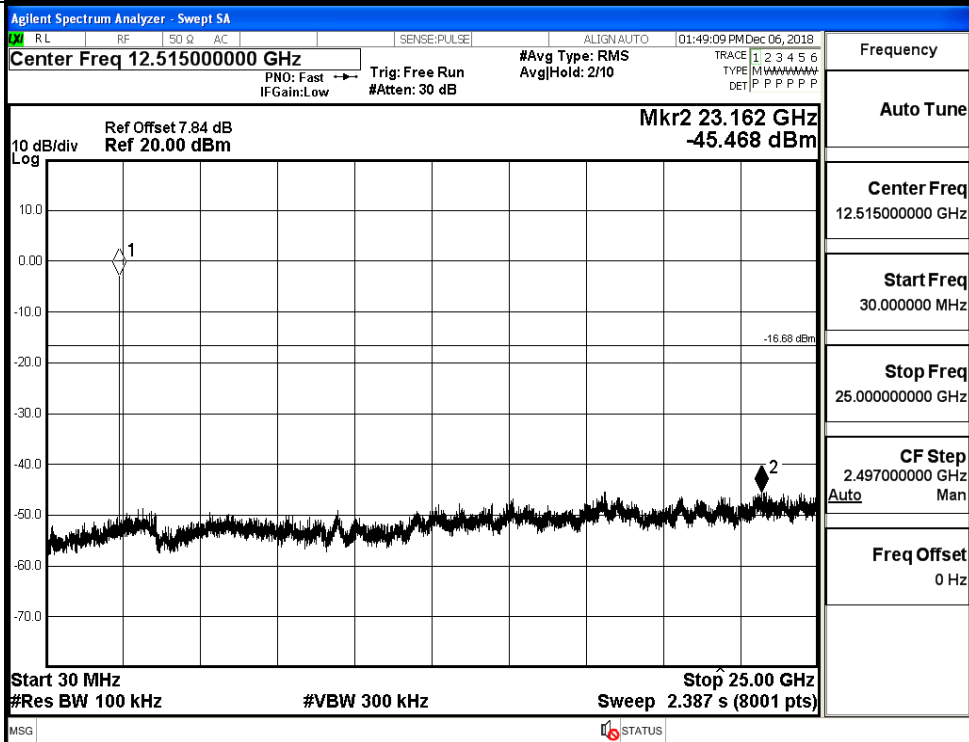


8DPSK_LCH_Graphs

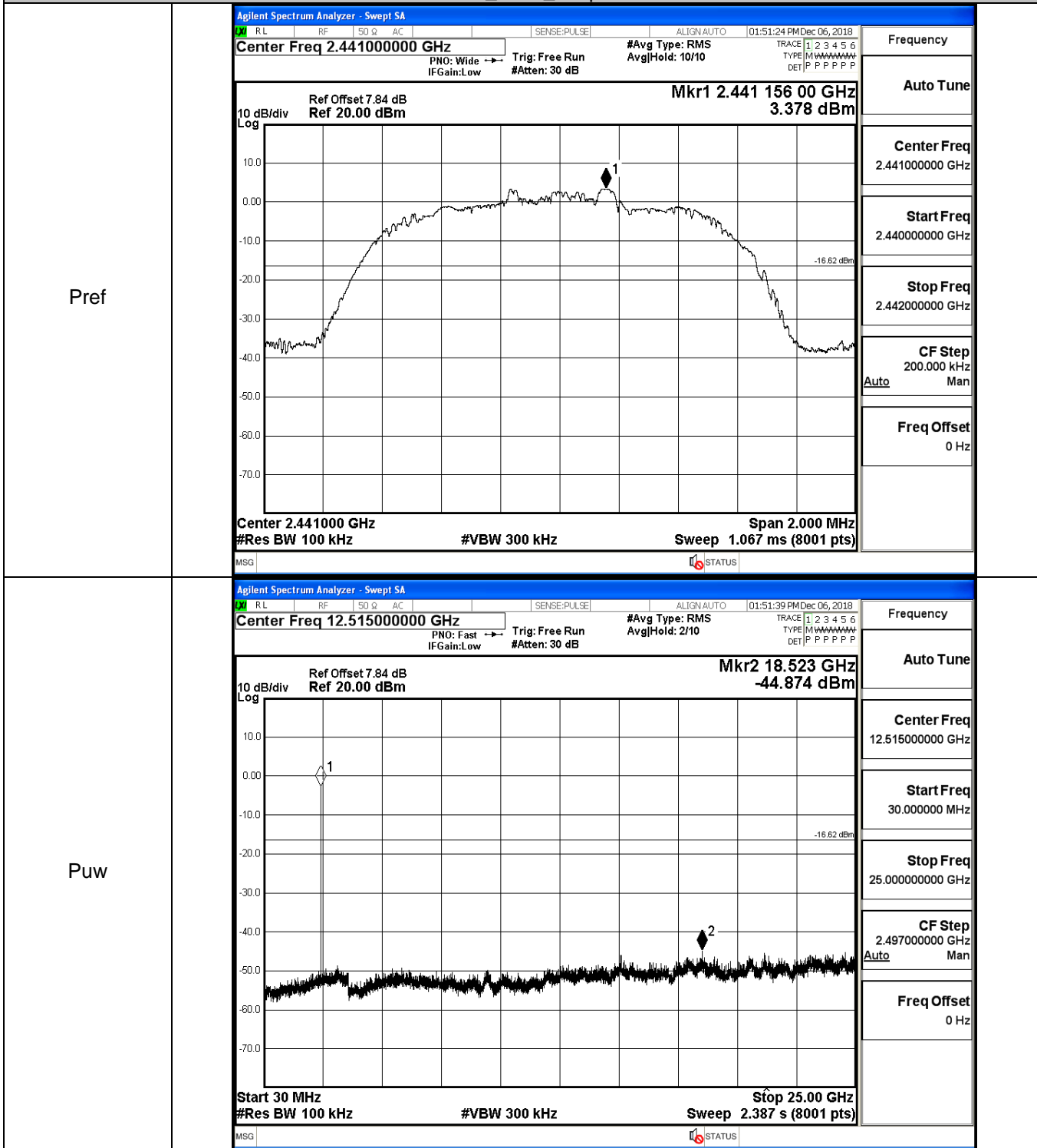
Pref



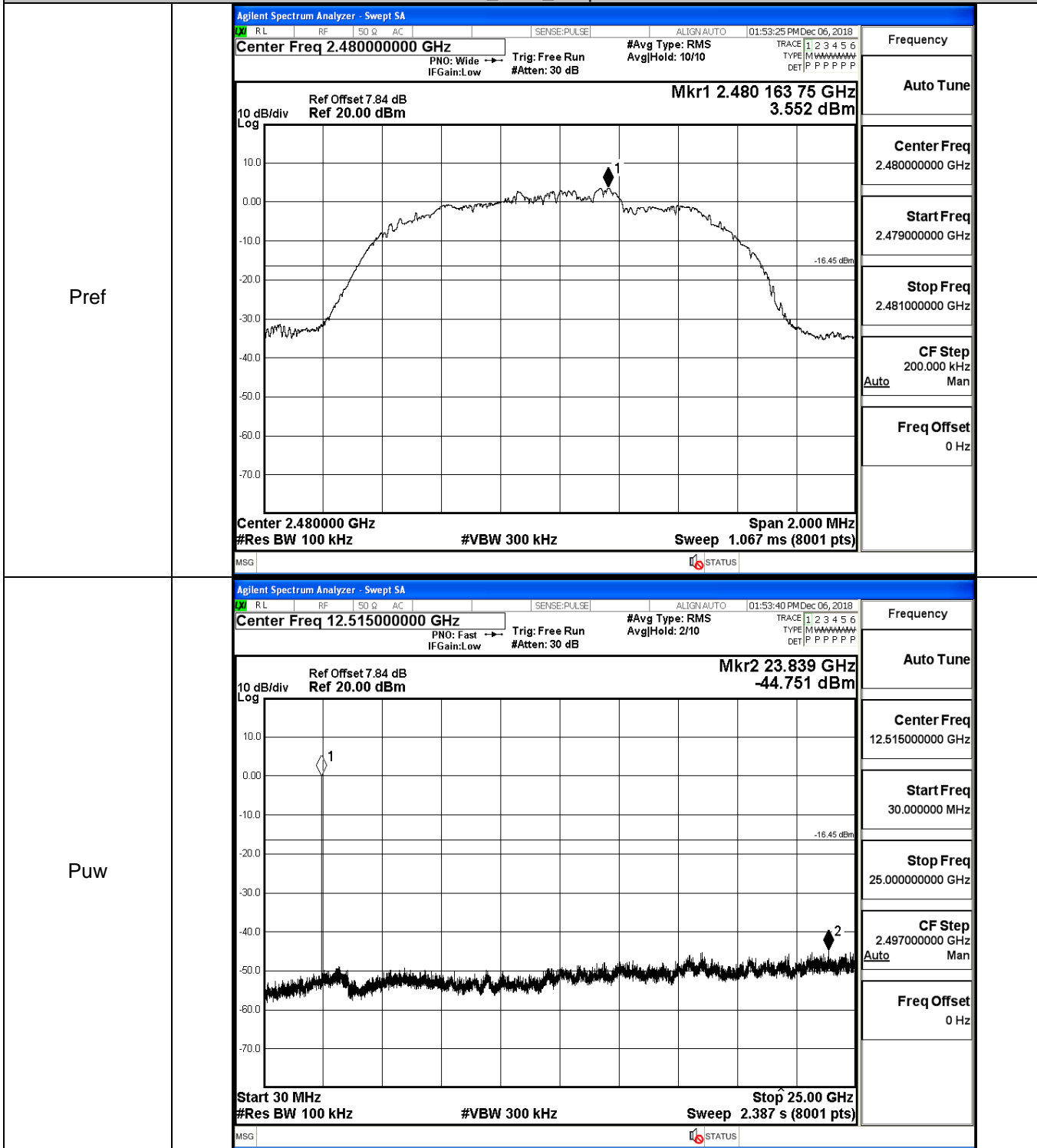
Puw



8DPSK_MCH_Graphs



8DPSK_HCH_Graphs

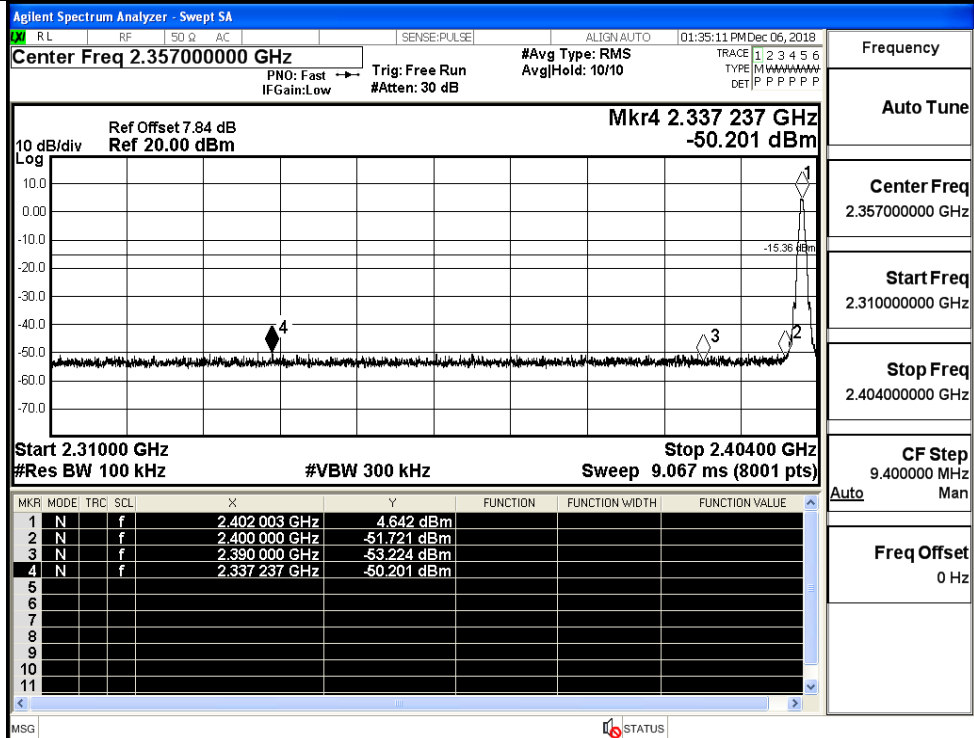


A.7 Band-edge for RF Conducted Emissions

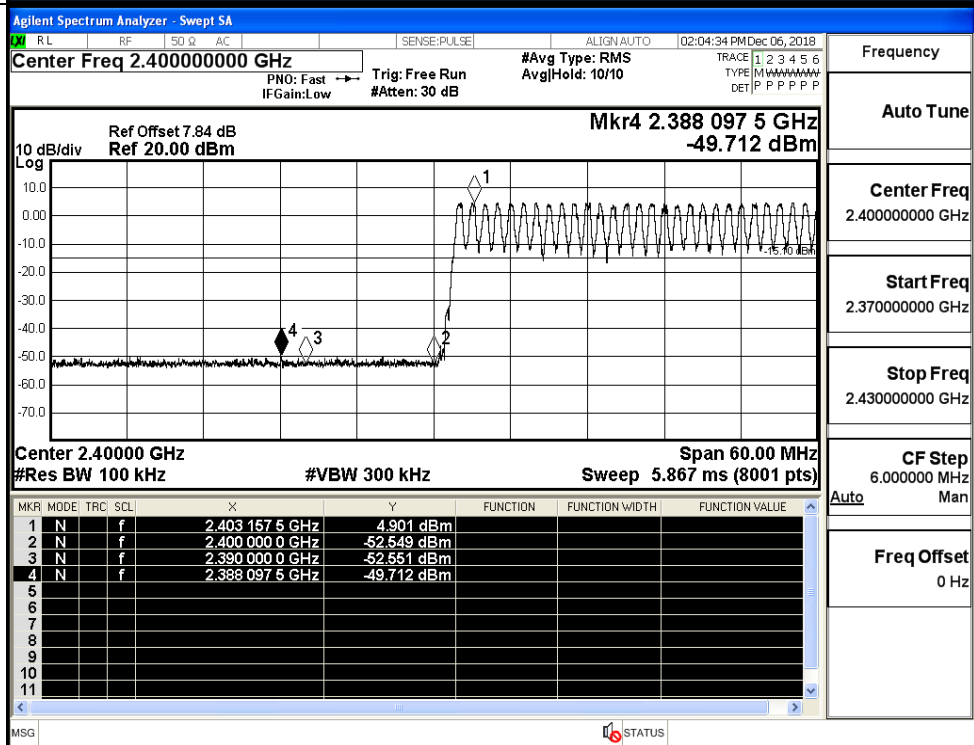
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.642	Off	-50.201	-15.36	PASS
			4.901	On	-49.712	-15.1	PASS
	HCH	2480	5.023	Off	-49.812	-14.98	PASS
			5.026	On	-49.822	-14.97	PASS
$\pi/4$ DQPSK	LCH	2402	2.578	Off	-48.629	-17.42	PASS
			3.428	On	-49.638	-16.57	PASS
	HCH	2480	3.753	Off	-48.968	-16.25	PASS
			3.782	On	-49.192	-16.22	PASS
8DPSK	LCH	2402	1.622	Off	-49.862	-18.38	PASS
			3.187	On	-49.801	-16.81	PASS
	HCH	2480	2.898	Off	-50.185	-17.1	PASS
			3.665	On	-49.287	-16.34	PASS

Test Graphs

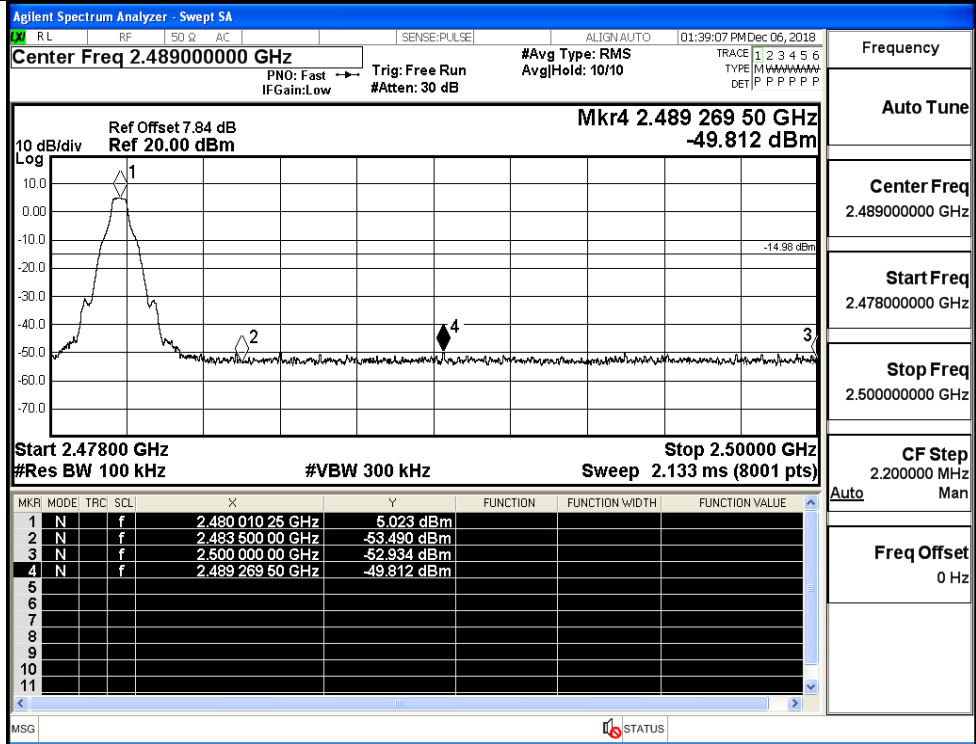
GFSK/LCH/No Hop



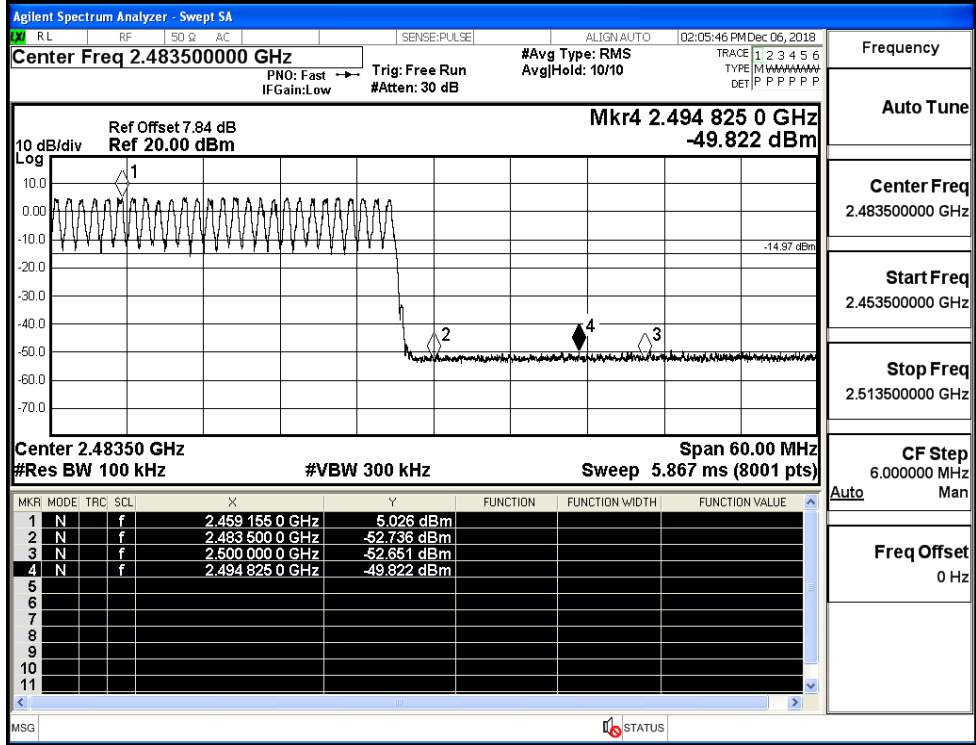
GFSK/LCH/Hop



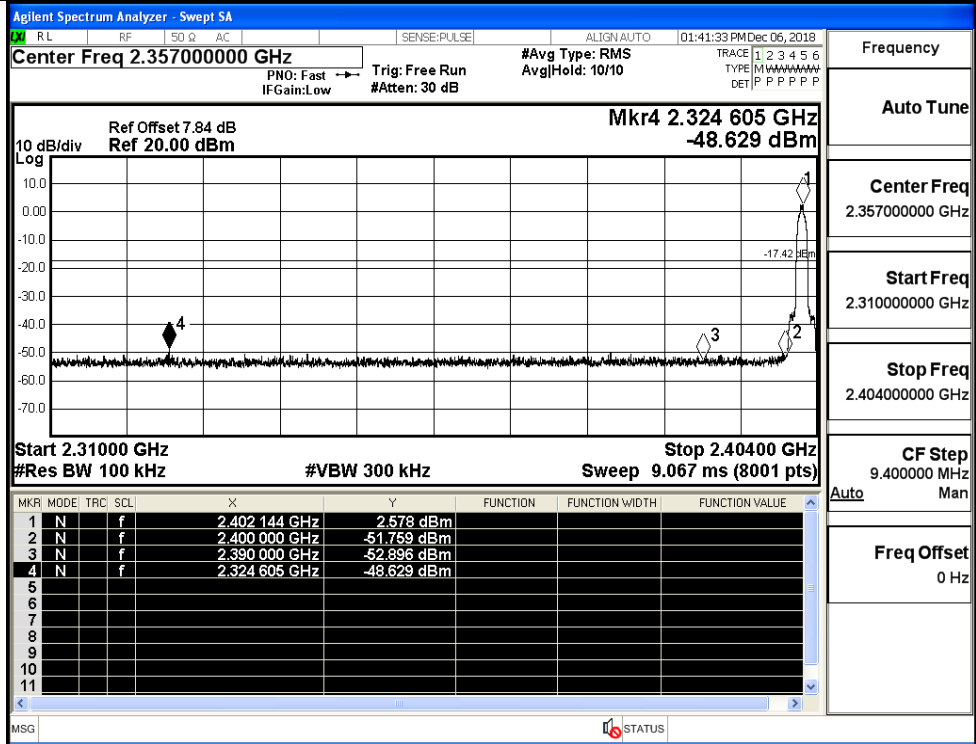
GFSK/HCH/No Hop



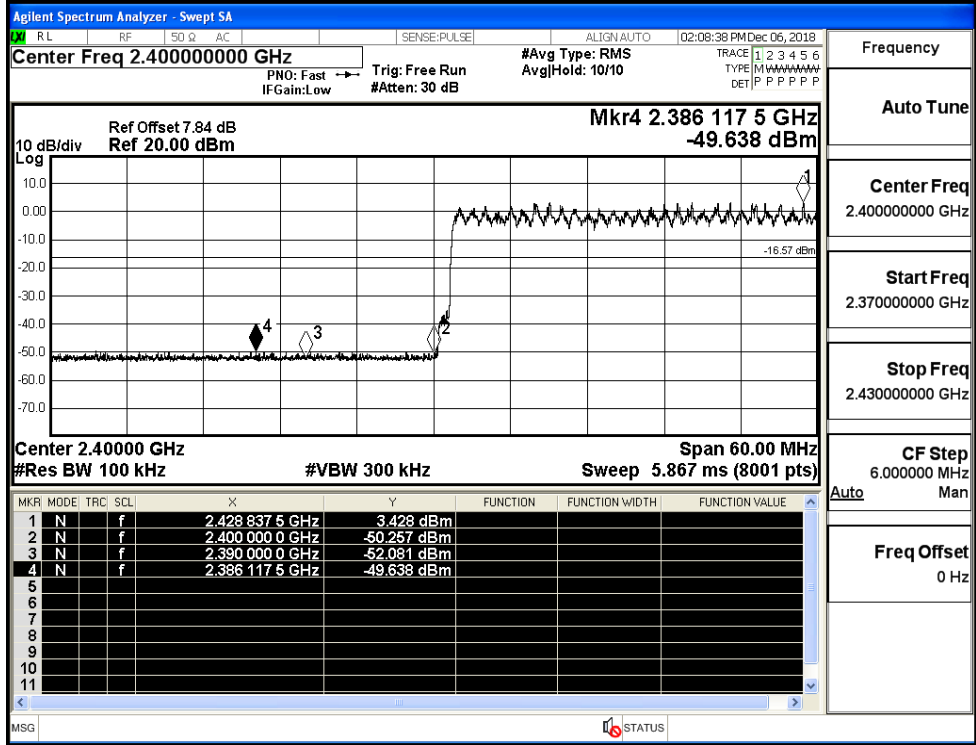
GFSK/HCH/Hop



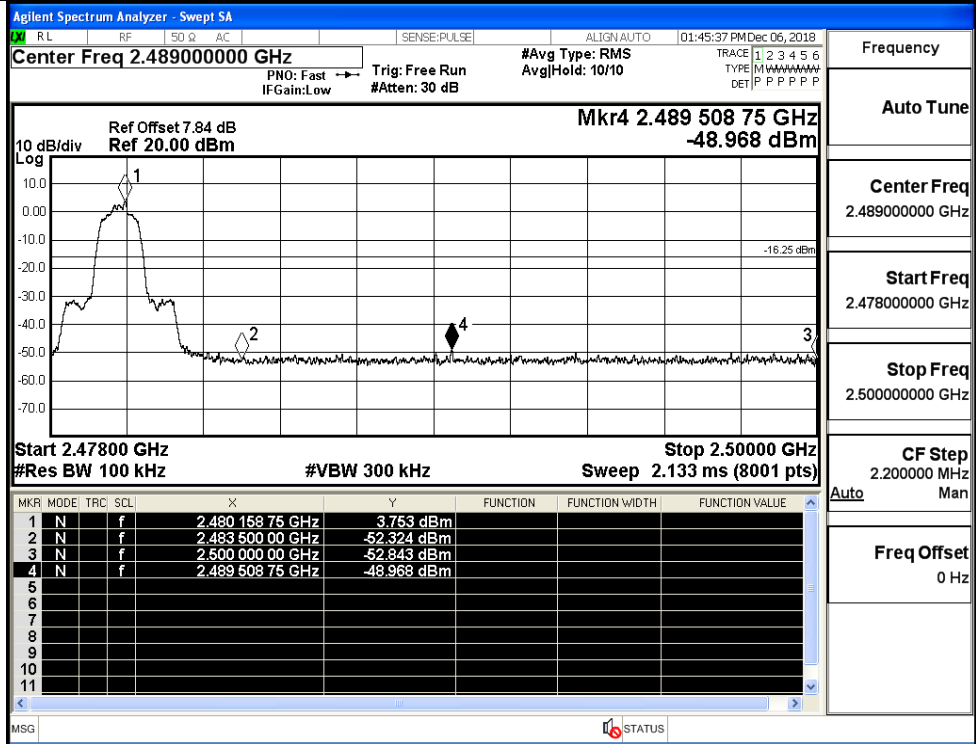
$\pi/4$ DQPSK/LCH/No
Hop



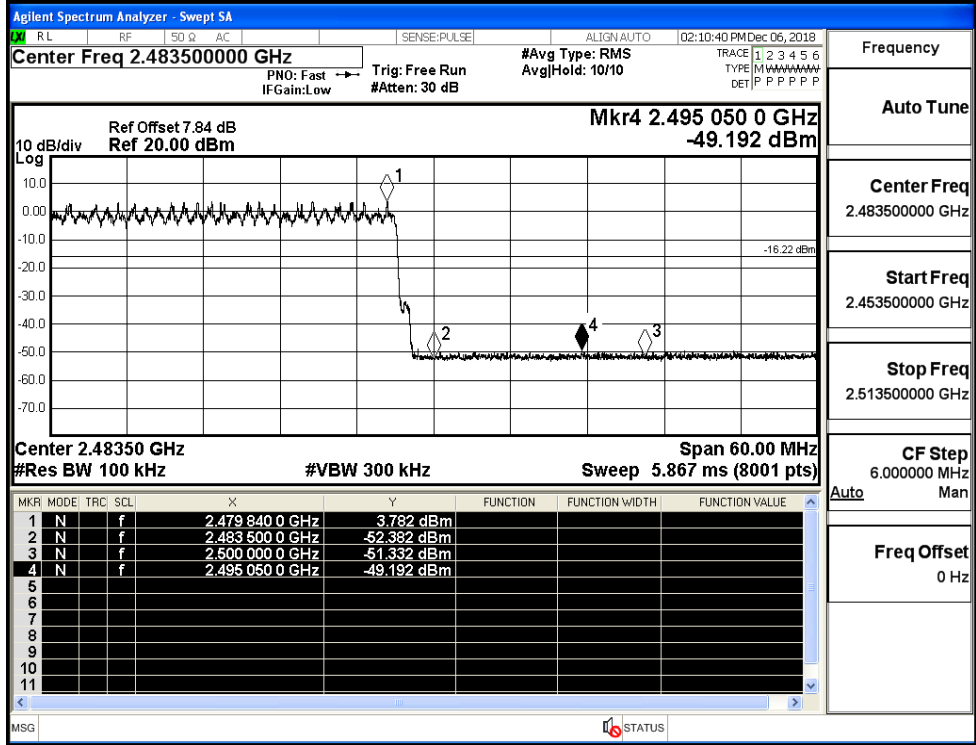
$\pi/4$ DQPSK/LCH/Hop



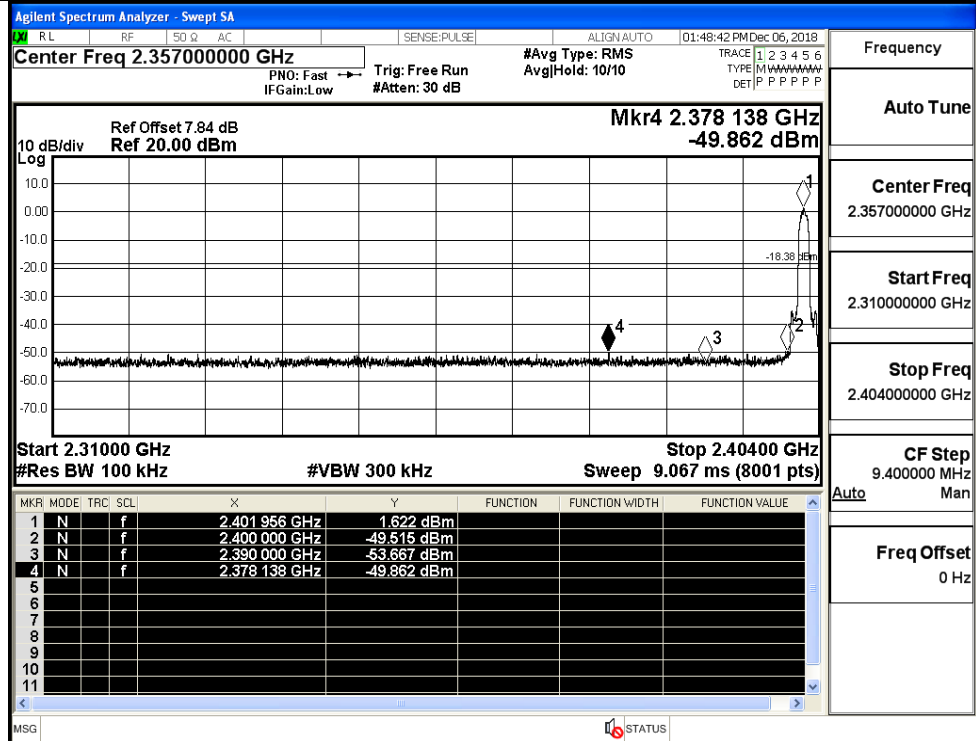
π /4DQPSK/HCH/No
Hop



π /4DQPSK/HCH/Hop

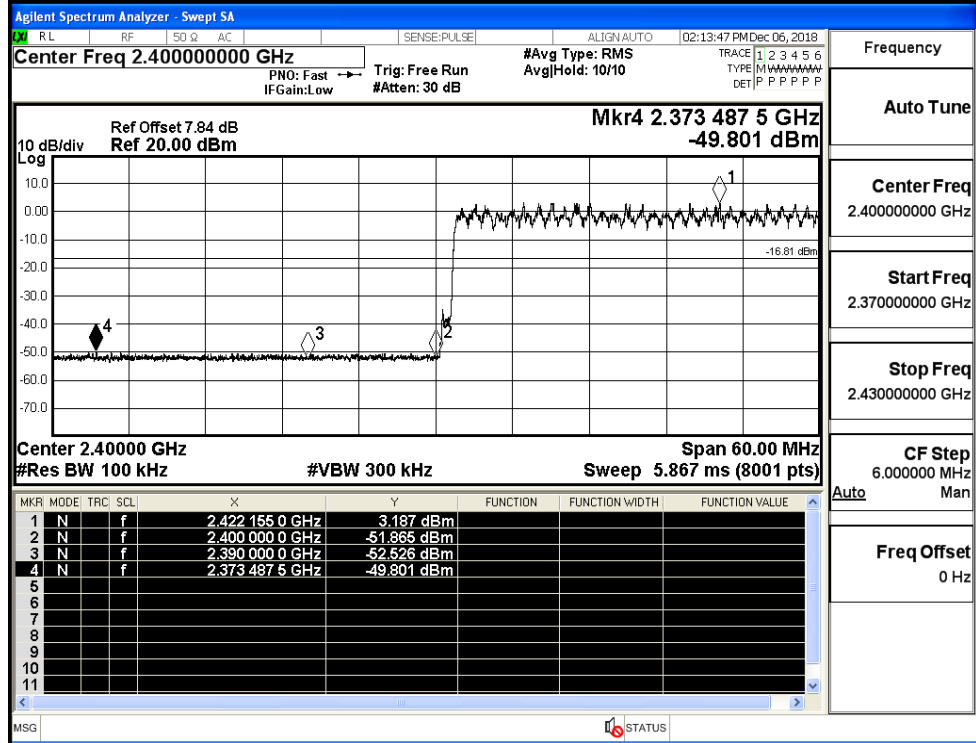


8DPSK/LCH/No Hop



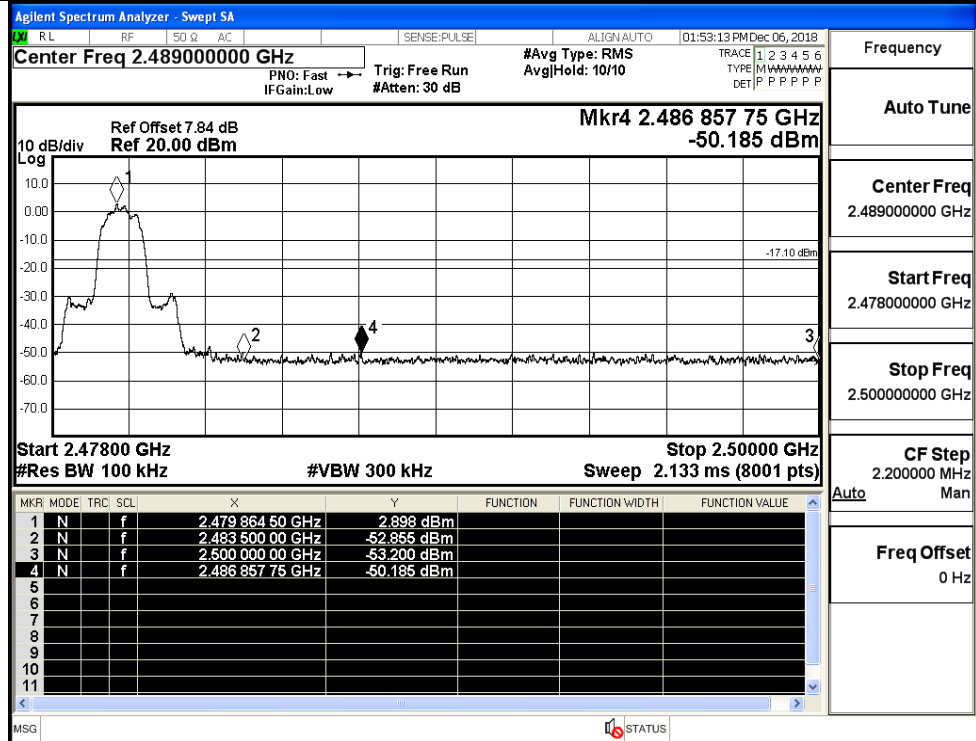
Frequency	
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Freq Offset	0 Hz

8DPSK/LCH/Hop



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

8DPSK/HCH/No Hop



Frequency

Auto Tune

Center Freq
2.489000000 GHz

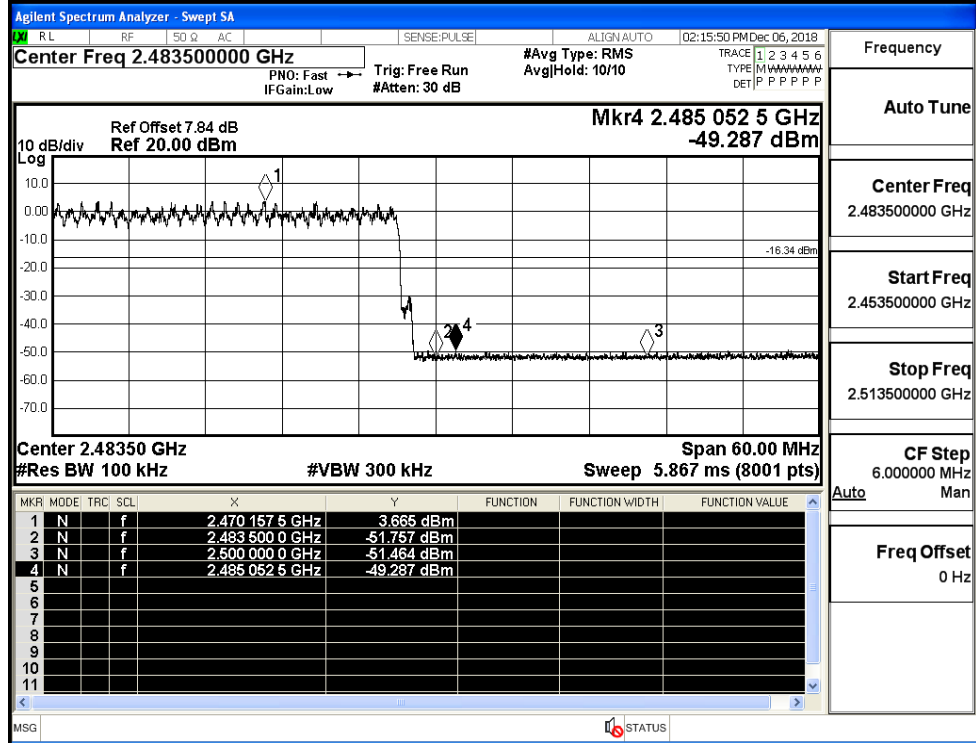
Start Freq
2.478000000 GHz

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

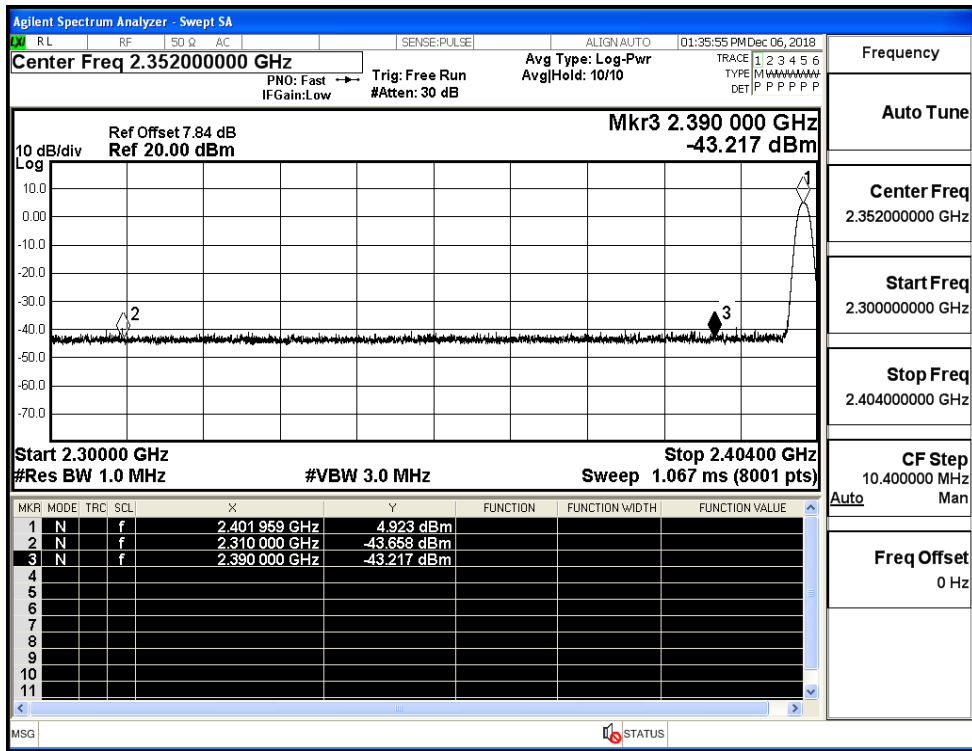
CF Step
6.000000 MHz

Freq Offset
0 Hz

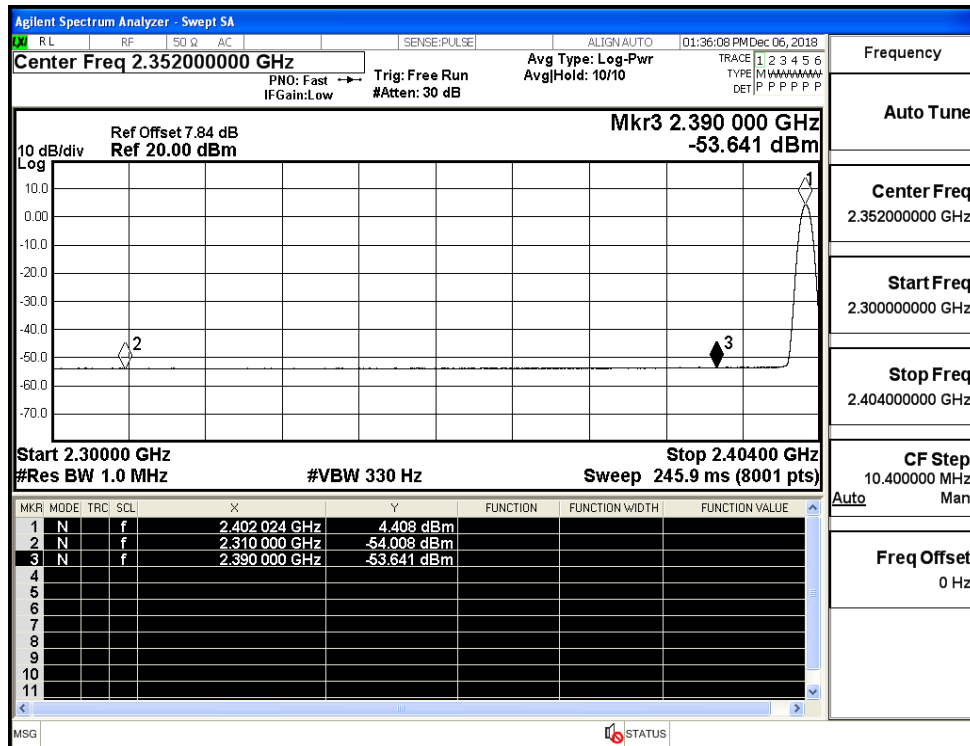
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.66	2.0	0	53.60	PEAK	74	PASS
	Off	2310.0	-54.01	2.0	0	43.25	AV	54	PASS
	Off	2390.0	-43.22	2.0	0	54.04	PEAK	74	PASS
	Off	2390.0	-53.64	2.0	0	43.62	AV	54	PASS
	Off	2483.5	-43.16	2.0	0	54.10	PEAK	74	PASS
	Off	2483.5	-53.04	2.0	0	44.21	AV	54	PASS
	Off	2500.0	-42.85	2.0	0	54.41	PEAK	74	PASS
	Off	2500.0	-53.33	2.0	0	43.93	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.40	2.0	0	52.86	PEAK	74	PASS
	Off	2310.0	-53.94	2.0	0	43.32	AV	54	PASS
	Off	2390.0	-42.86	2.0	0	54.40	PEAK	74	PASS
	Off	2390.0	-53.56	2.0	0	43.70	AV	54	PASS
	Off	2483.5	-42.12	2.0	0	55.14	PEAK	74	PASS
	Off	2483.5	-53.11	2.0	0	44.15	AV	54	PASS
	Off	2500.0	-43.34	2.0	0	53.91	PEAK	74	PASS
	Off	2500.0	-53.11	2.0	0	44.15	AV	54	PASS
8DPSK	Off	2310.0	-43.95	2.0	0	53.30	PEAK	74	PASS
	Off	2310.0	-53.92	2.0	0	43.34	AV	54	PASS
	Off	2390.0	-43.95	2.0	0	53.31	PEAK	74	PASS
	Off	2390.0	-53.69	2.0	0	43.56	AV	54	PASS
	Off	2483.5	-42.18	2.0	0	55.08	PEAK	74	PASS
	Off	2483.5	-52.94	2.0	0	44.31	AV	54	PASS
	Off	2500.0	-42.69	2.0	0	54.57	PEAK	74	PASS
	Off	2500.0	-53.24	2.0	0	44.01	AV	54	PASS

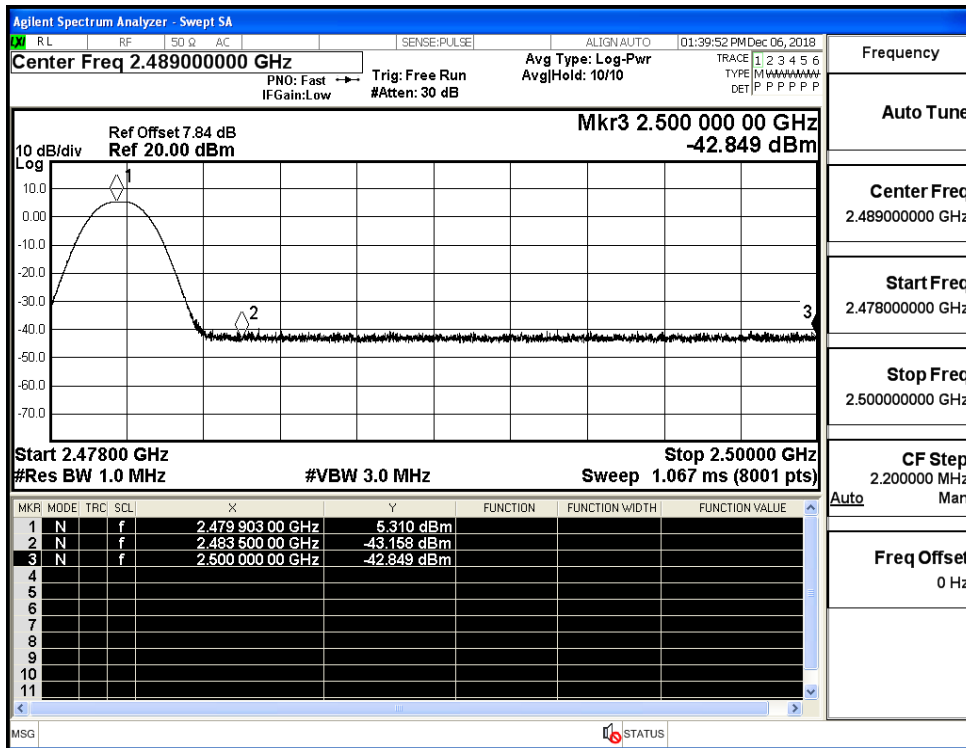
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



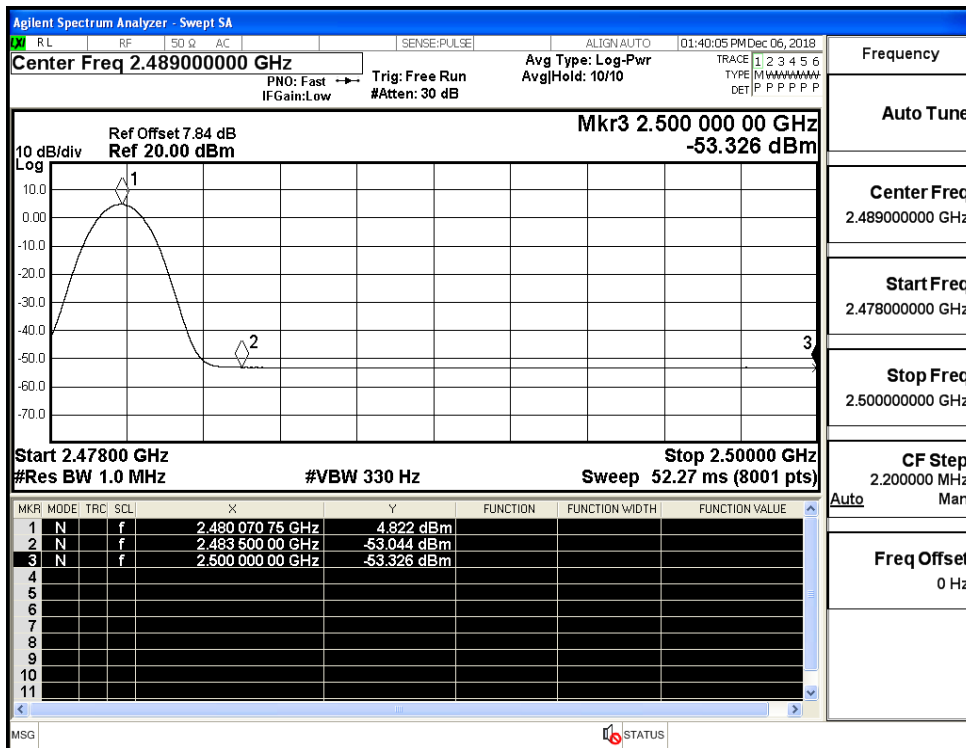
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



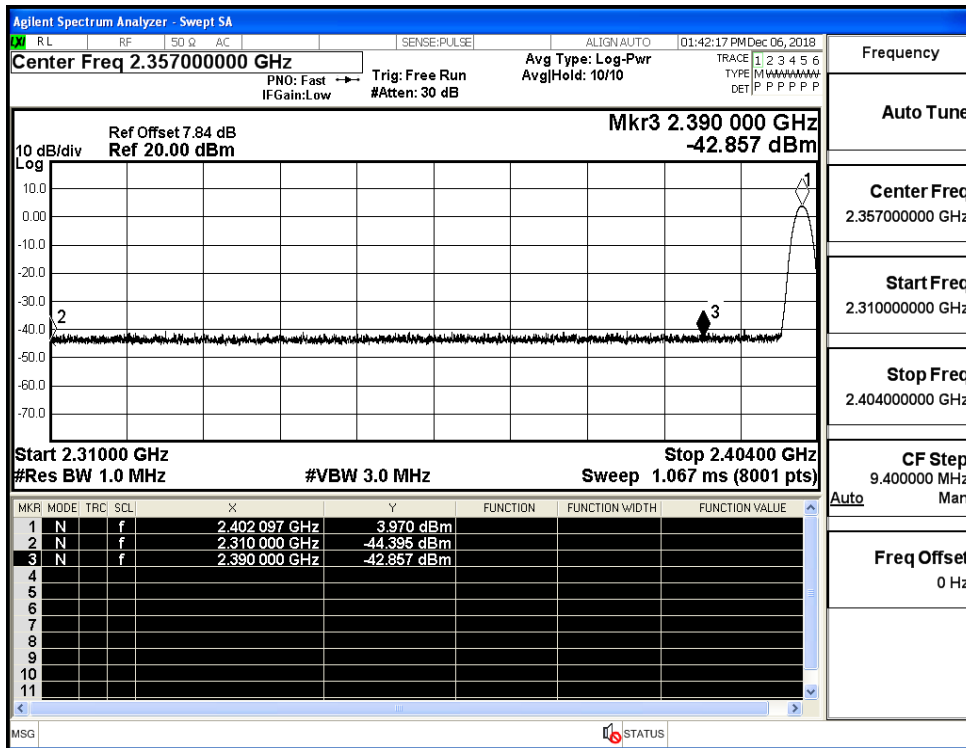
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



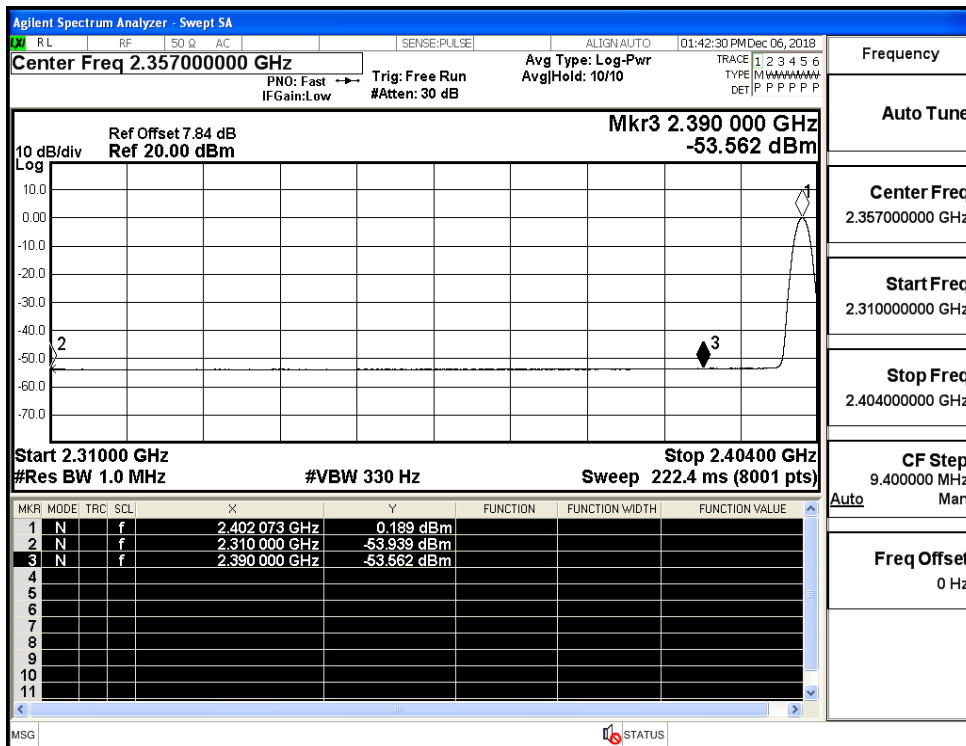
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



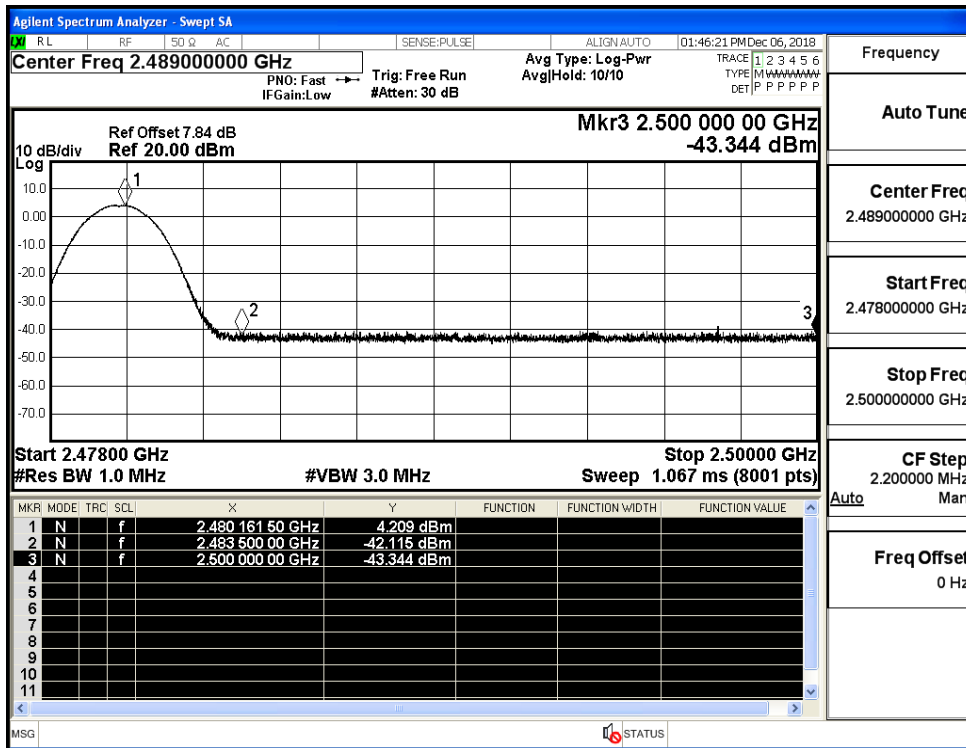
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



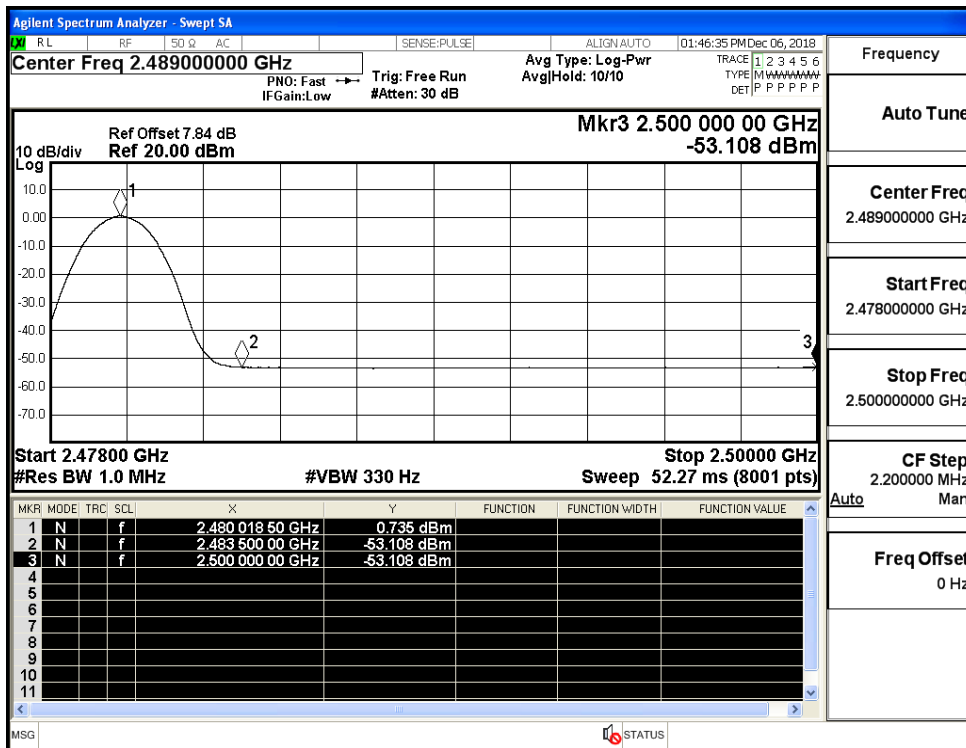
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



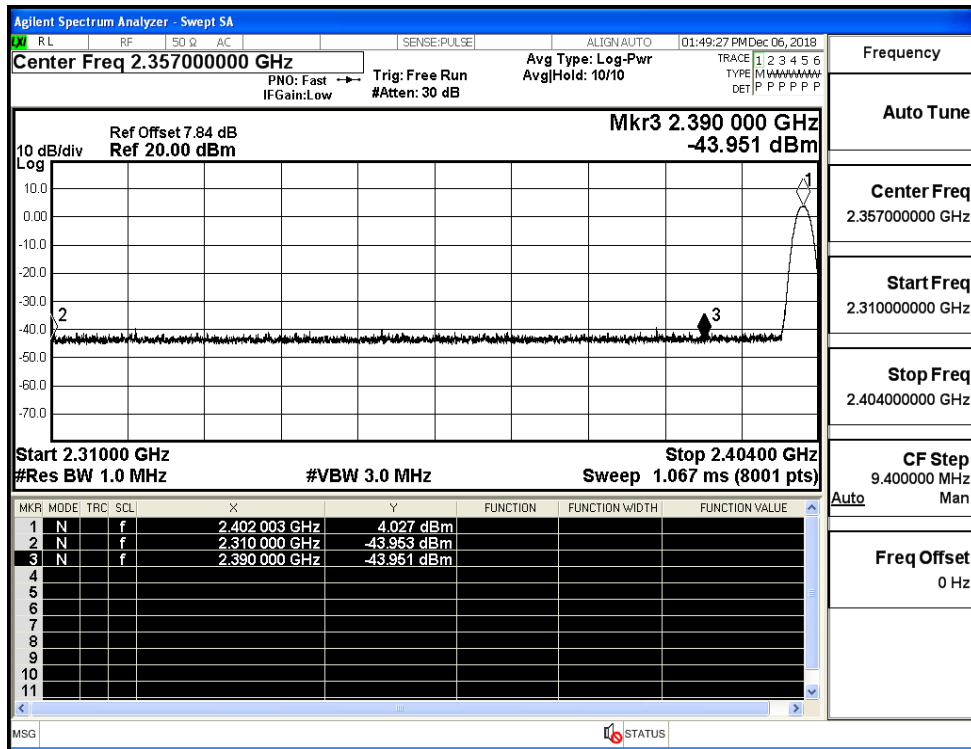
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



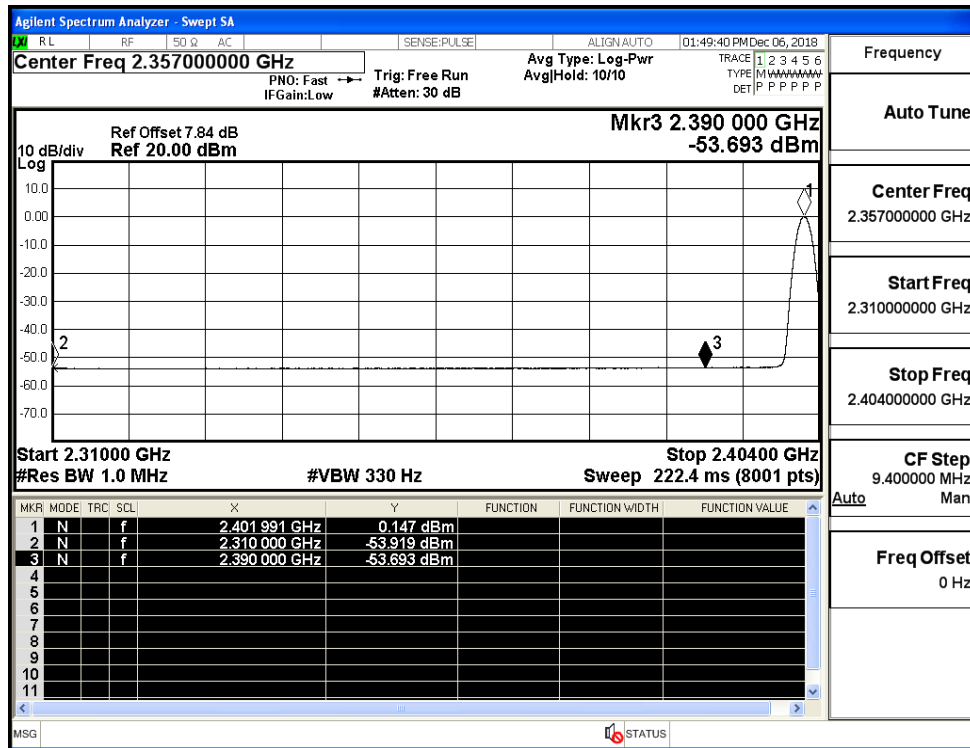
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



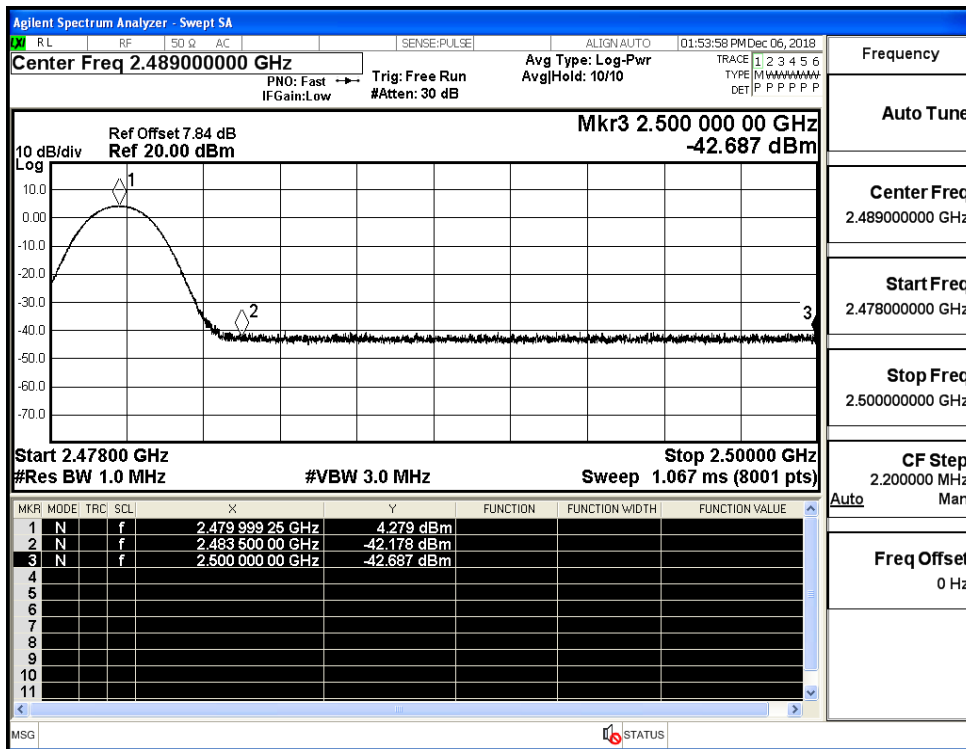
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

