

Appendix A

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

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: M1

Environmental Conditions

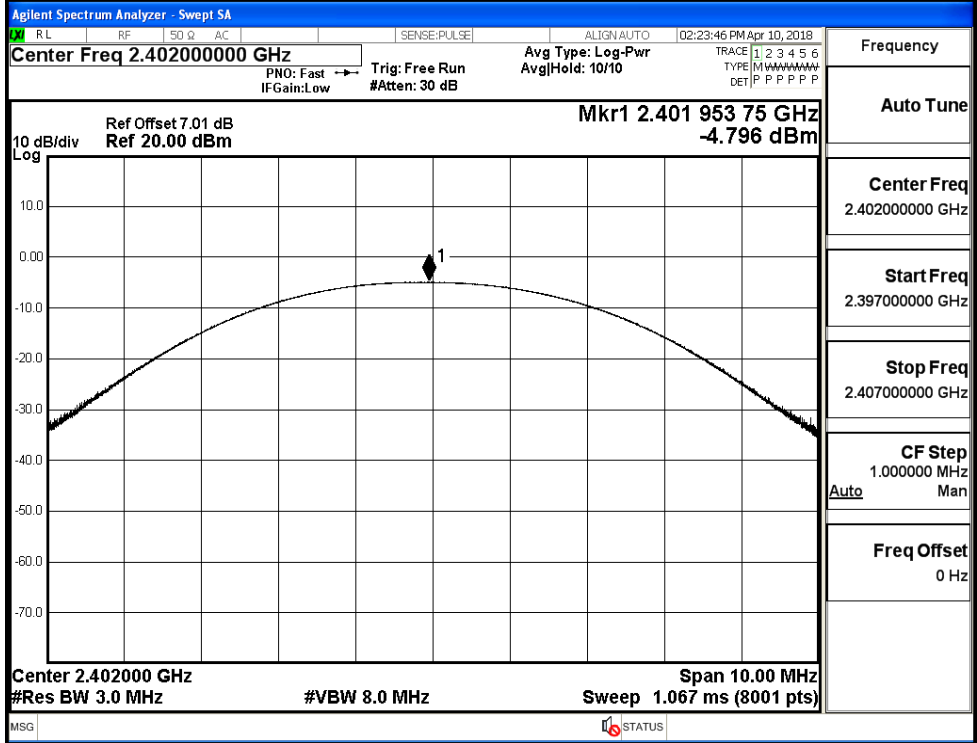
Temperature:	23.2 ° C
Relative Humidity:	52.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Ryan.Hu
Supervised by:	Jayden Zhuo

A.1 Maxmum Conducted Peak Output Power

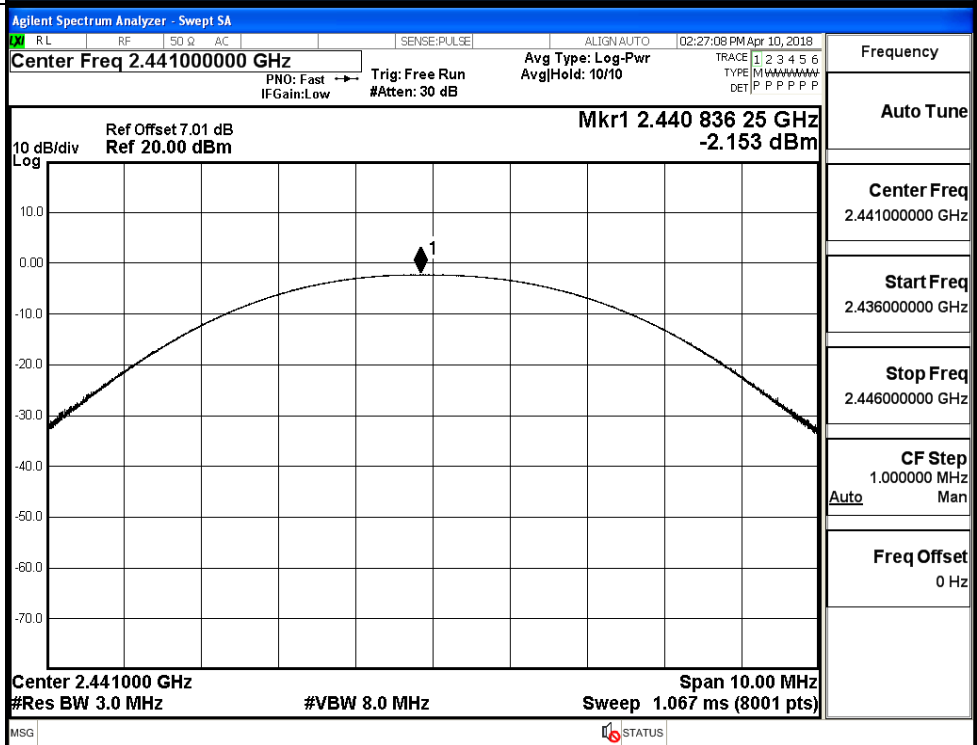
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-4.796	30	PASS
	MCH	-2.153	30	PASS
	HCH	0.597	30	PASS
$\pi/4$ DQPSK	LCH	-3.494	21	PASS
	MCH	-0.868	21	PASS
	HCH	1.675	21	PASS
8DPSK	LCH	-3.146	21	PASS
	MCH	-0.400	21	PASS
	HCH	2.098	21	PASS

Test Graphs

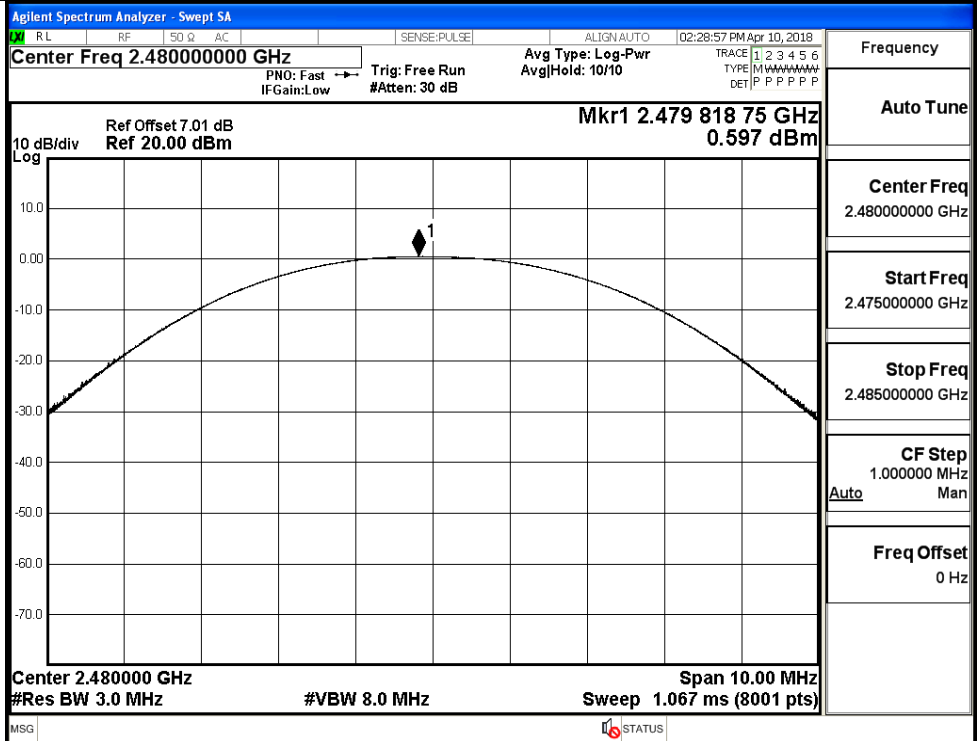
GFSK/LCH



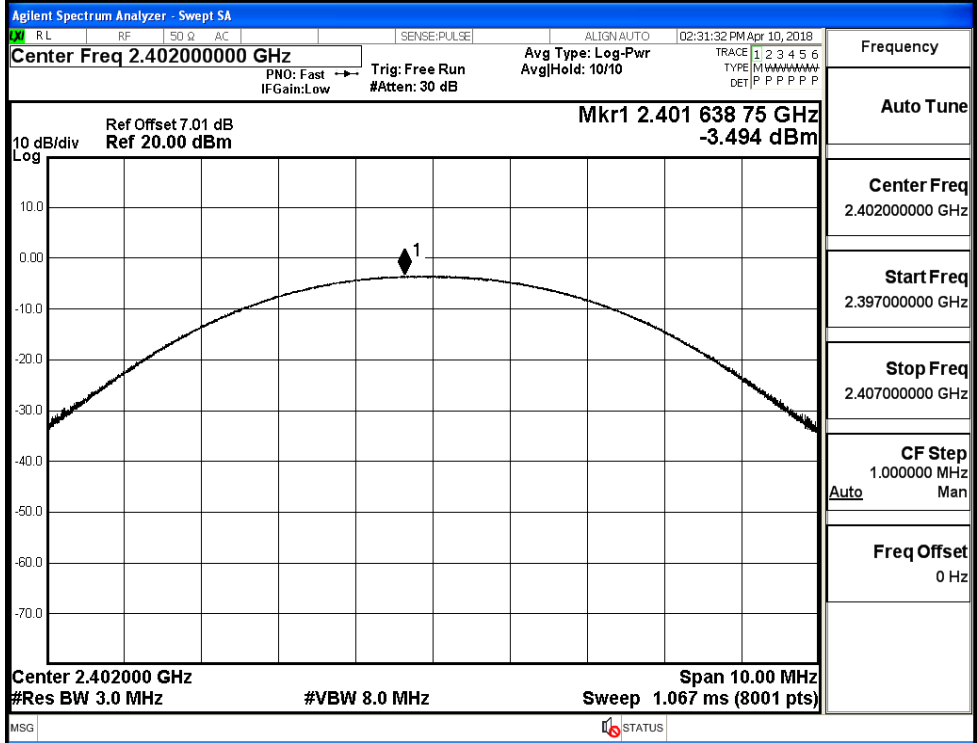
GFSK/MCH



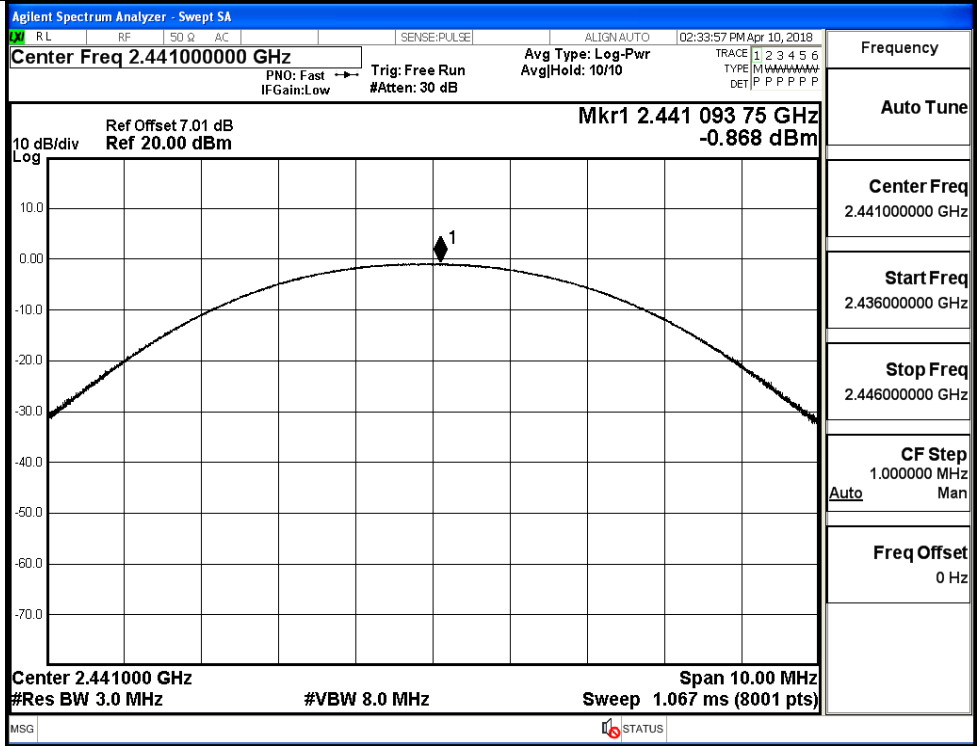
GFSK/HCH



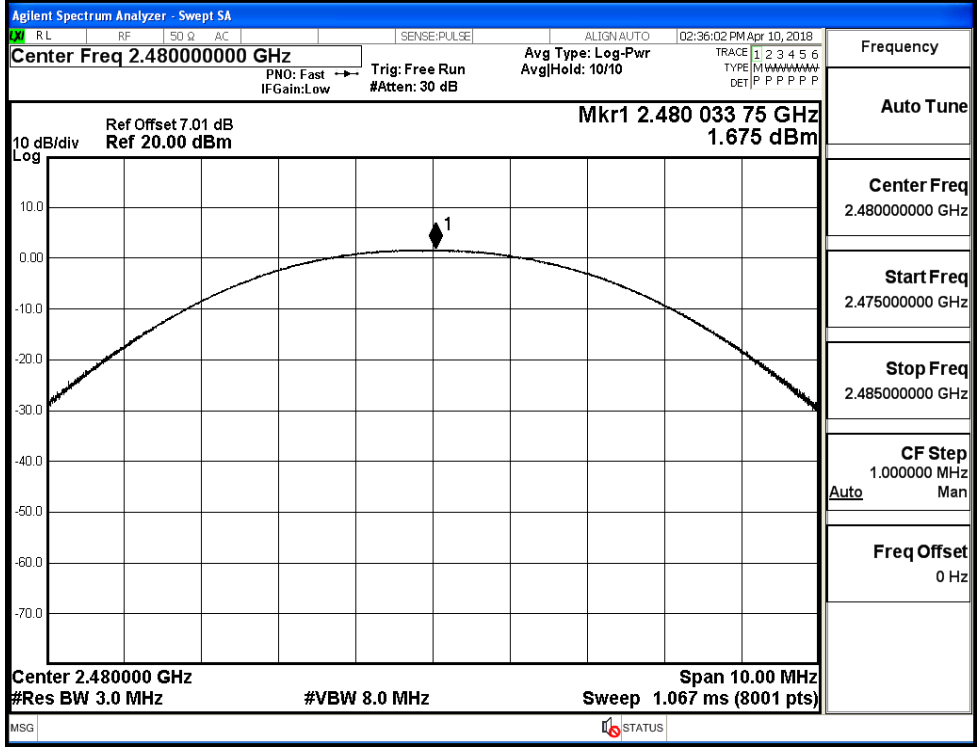
$\pi/4$ DQPSK/LCH



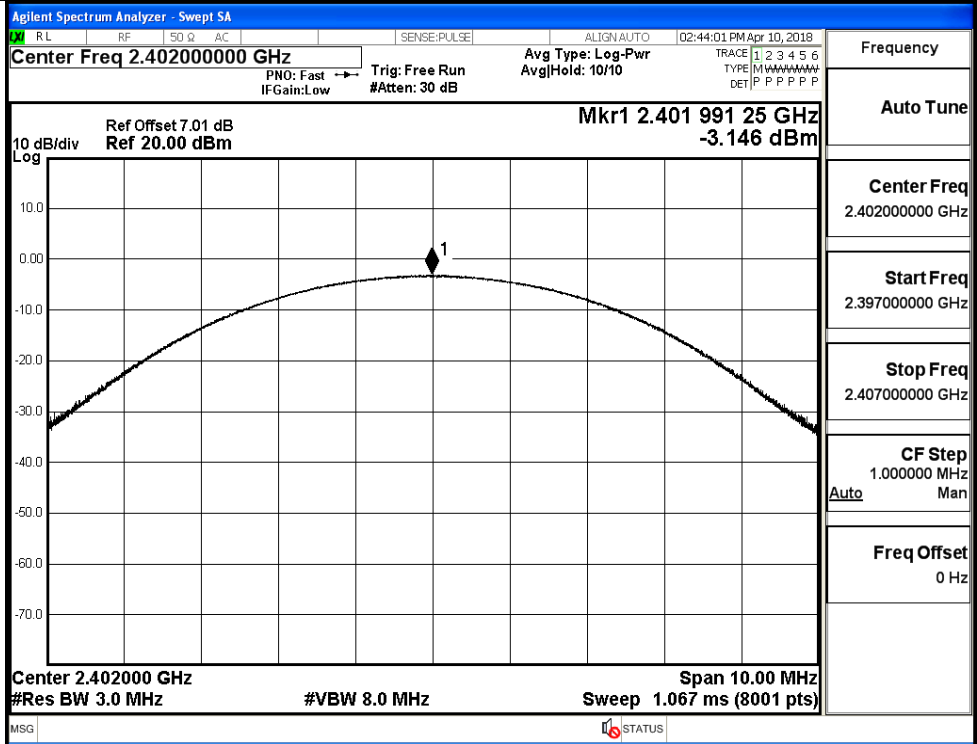
π /4DQPSK/MCH



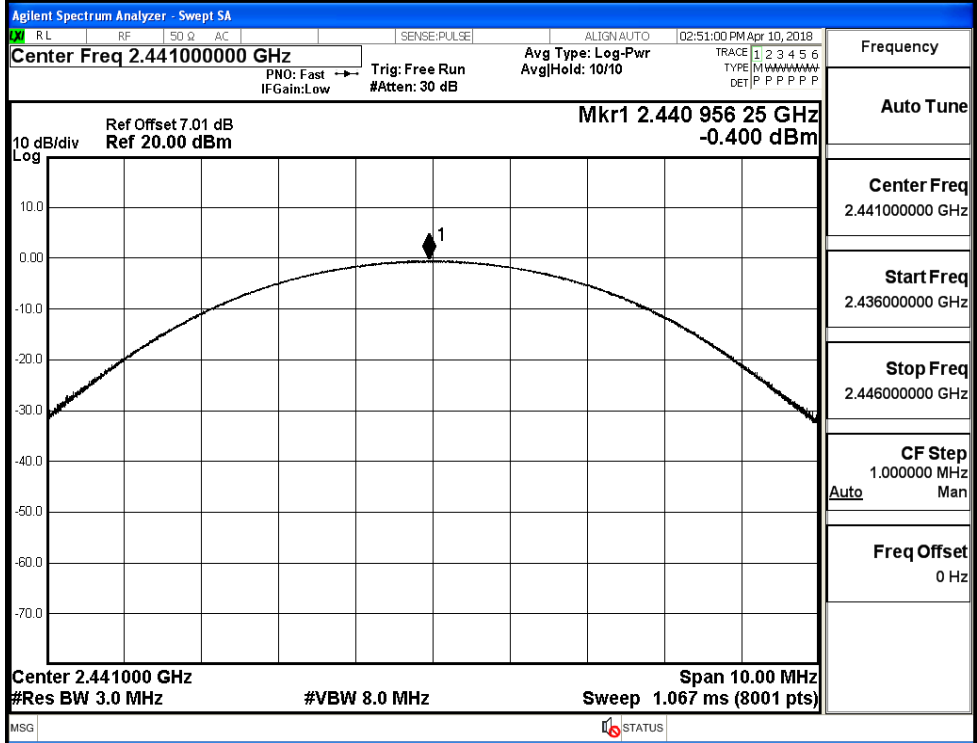
π /4DQPSK/HCH



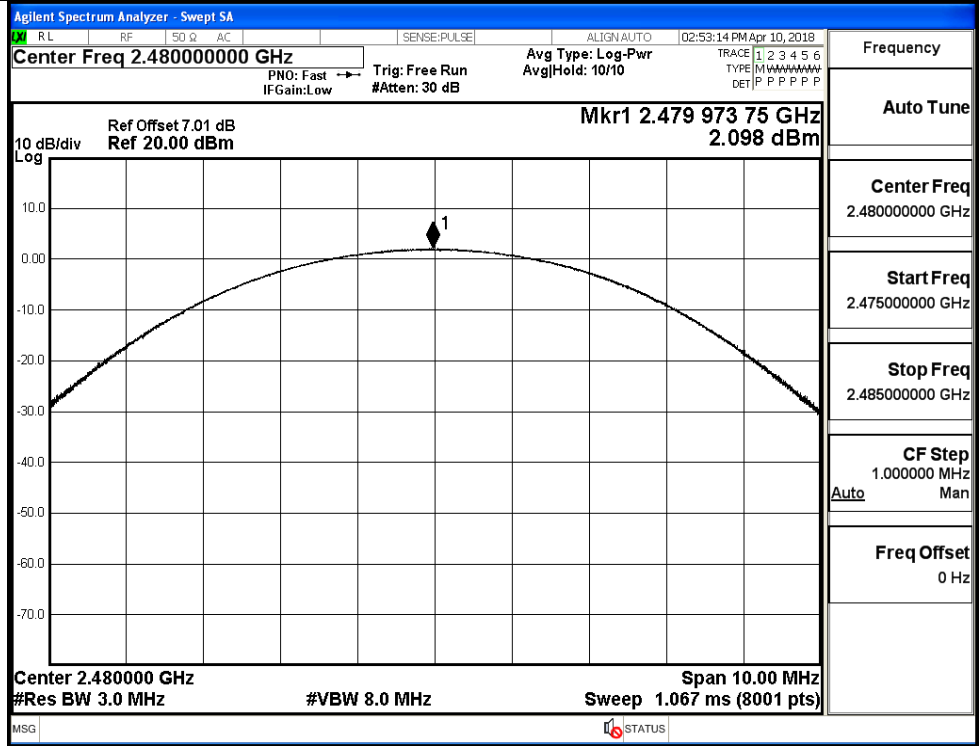
8DPSK/LCH



8DPSK/MCH

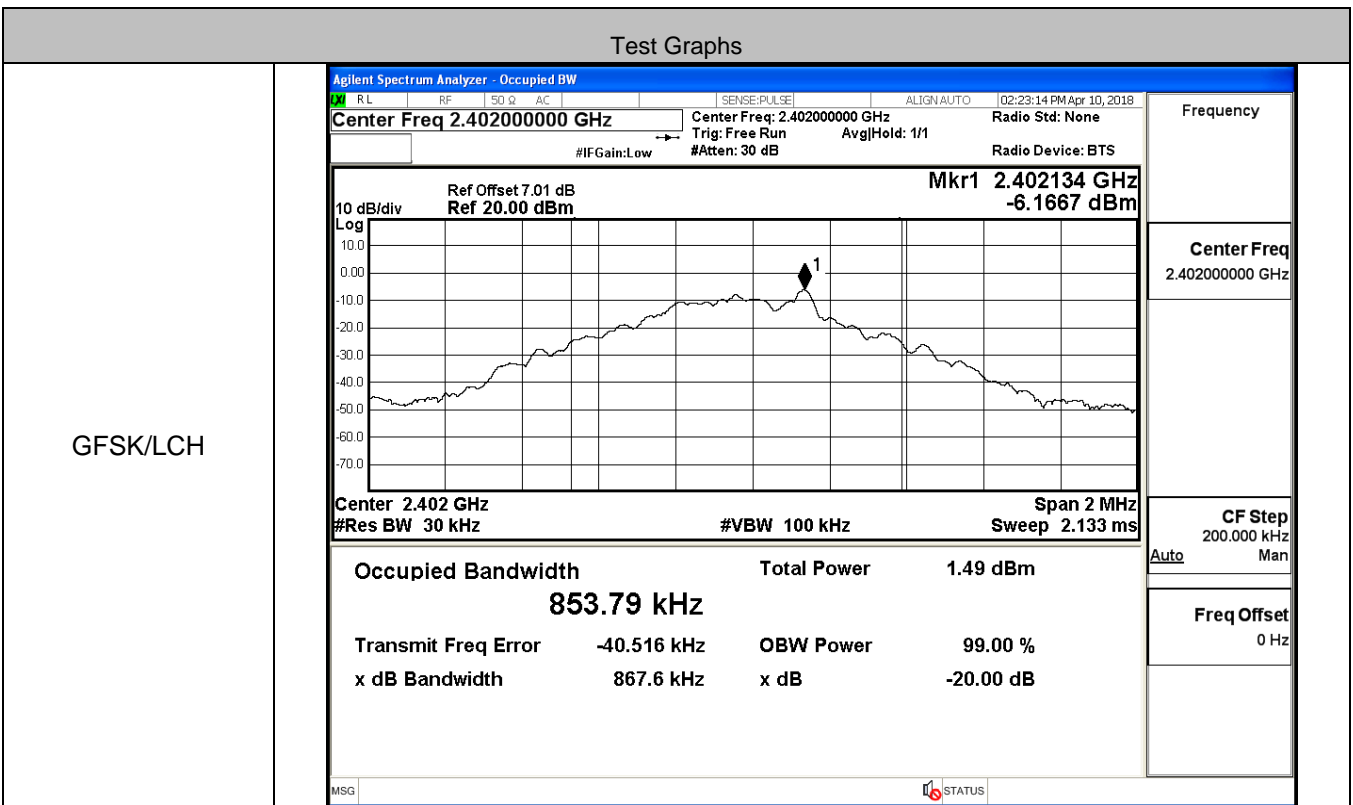


8DPSK/HCH

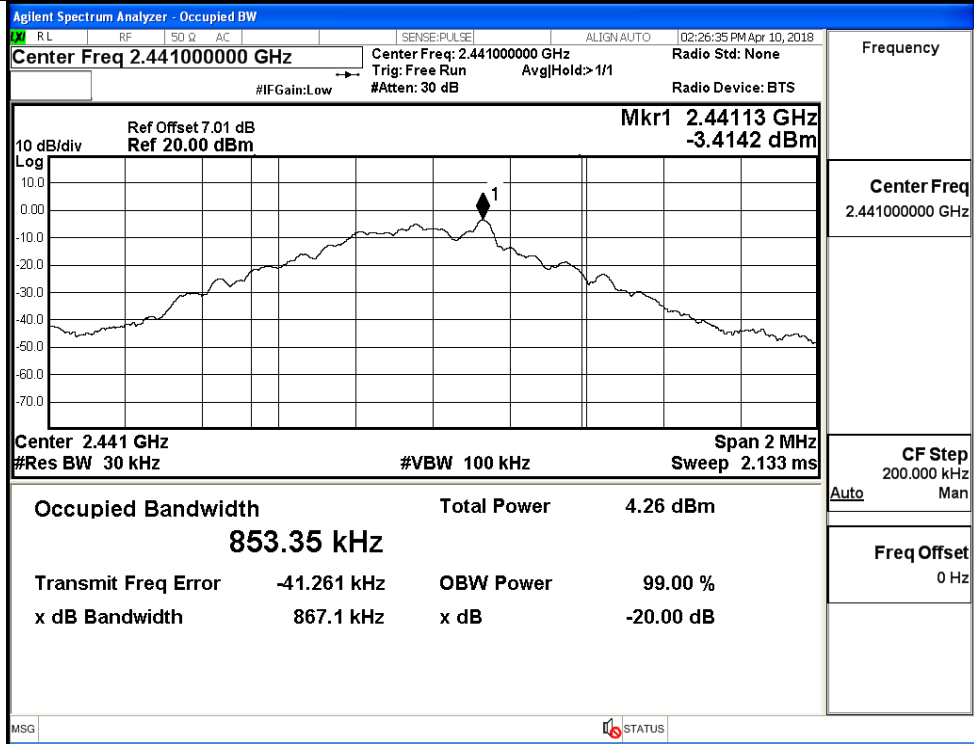


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8676	Not Specified	PASS
	MCH	0.8671	Not Specified	PASS
	HCH	0.9231	Not Specified	PASS
π/4DQPSK	LCH	1.228	Not Specified	PASS
	MCH	1.227	Not Specified	PASS
	HCH	1.226	Not Specified	PASS
8DPSK	LCH	1.262	Not Specified	PASS
	MCH	1.265	Not Specified	PASS
	HCH	1.266	Not Specified	PASS

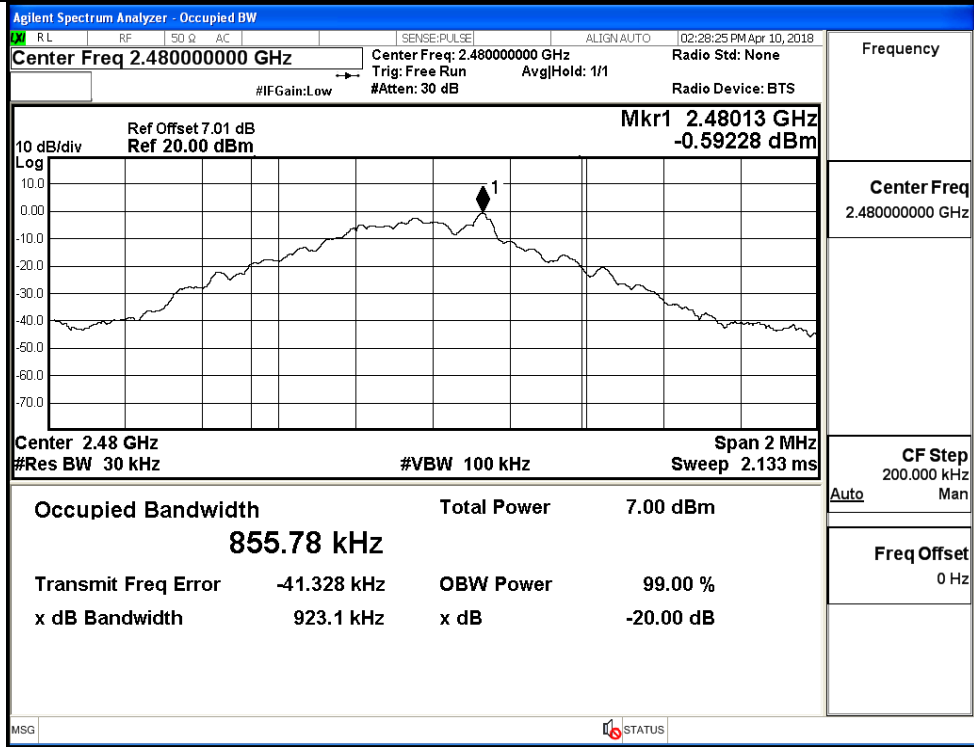


GFSK/MCH



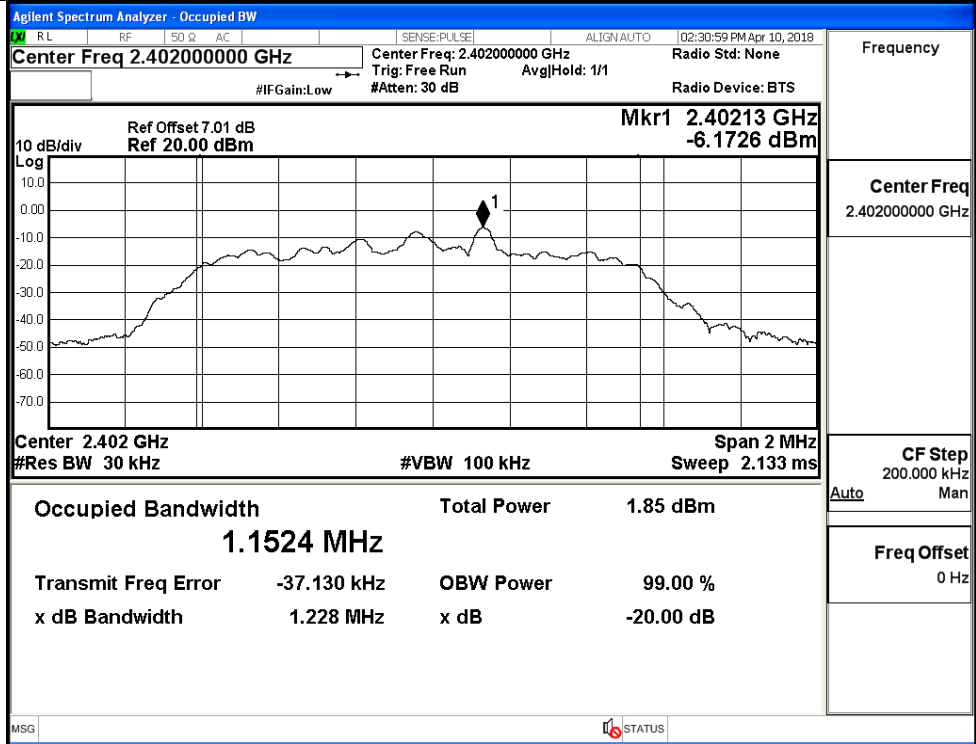
Frequency	2.44100000 GHz
Center Freq	2.44100000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

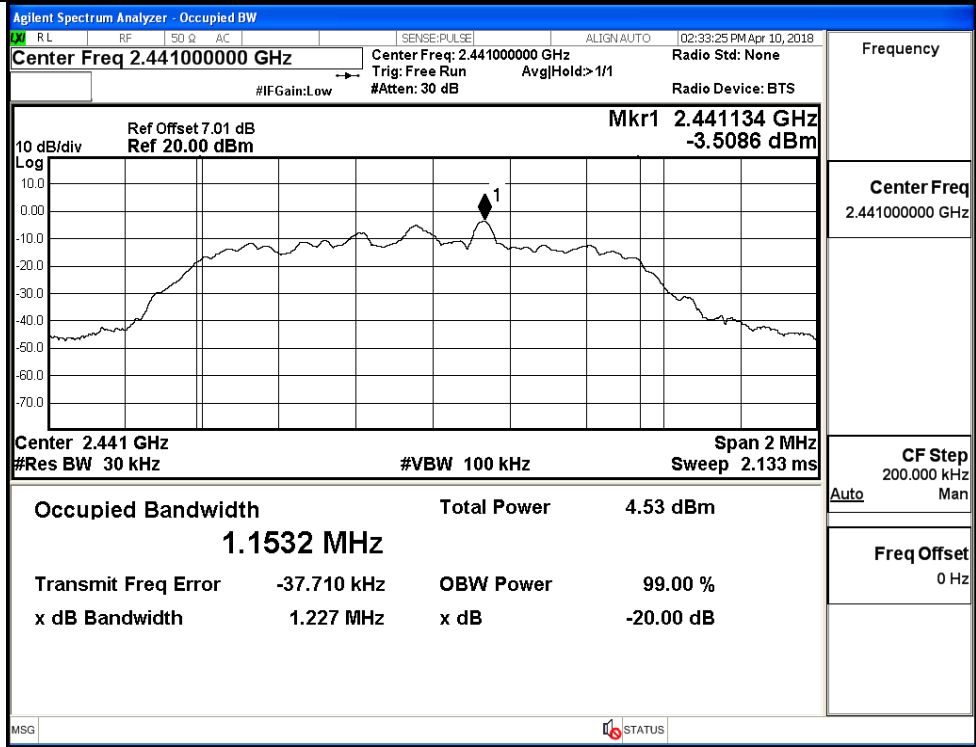


Frequency	2.48000000 GHz
Center Freq	2.48000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

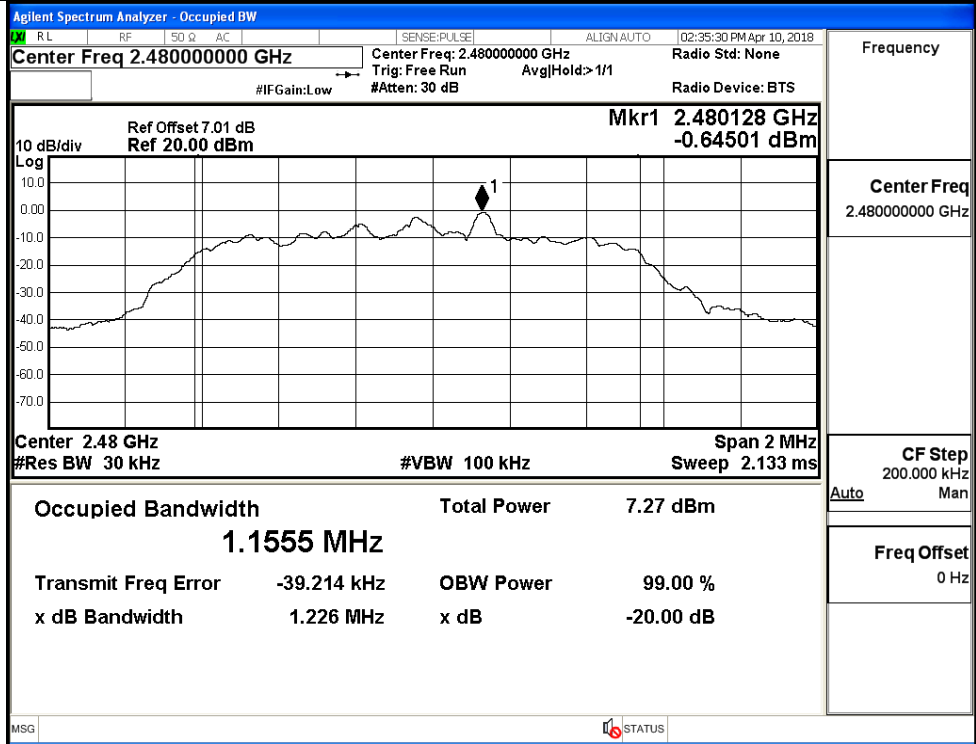
$\pi/4$ DQPSK/LCH



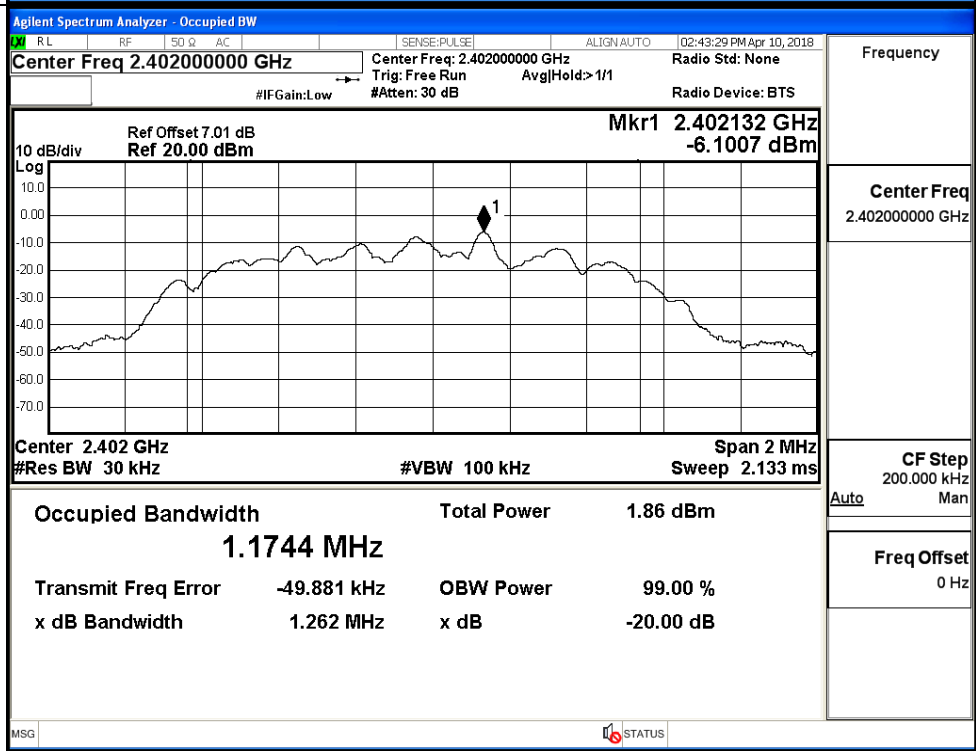
$\pi/4$ DQPSK/MCH



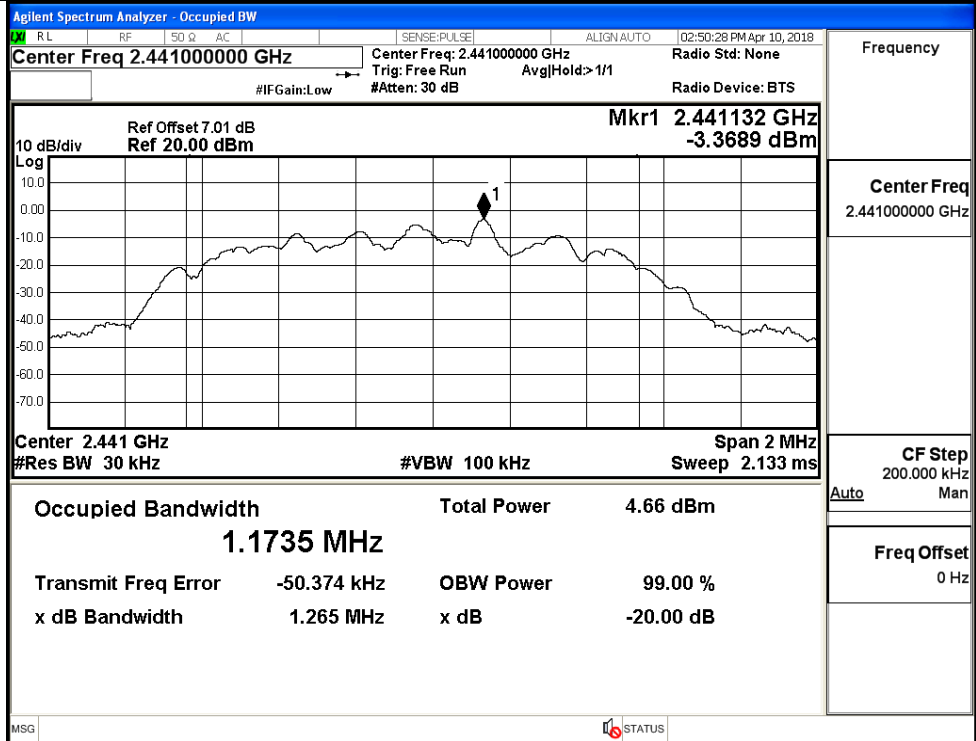
$\pi/4$ DQPSK/HCH



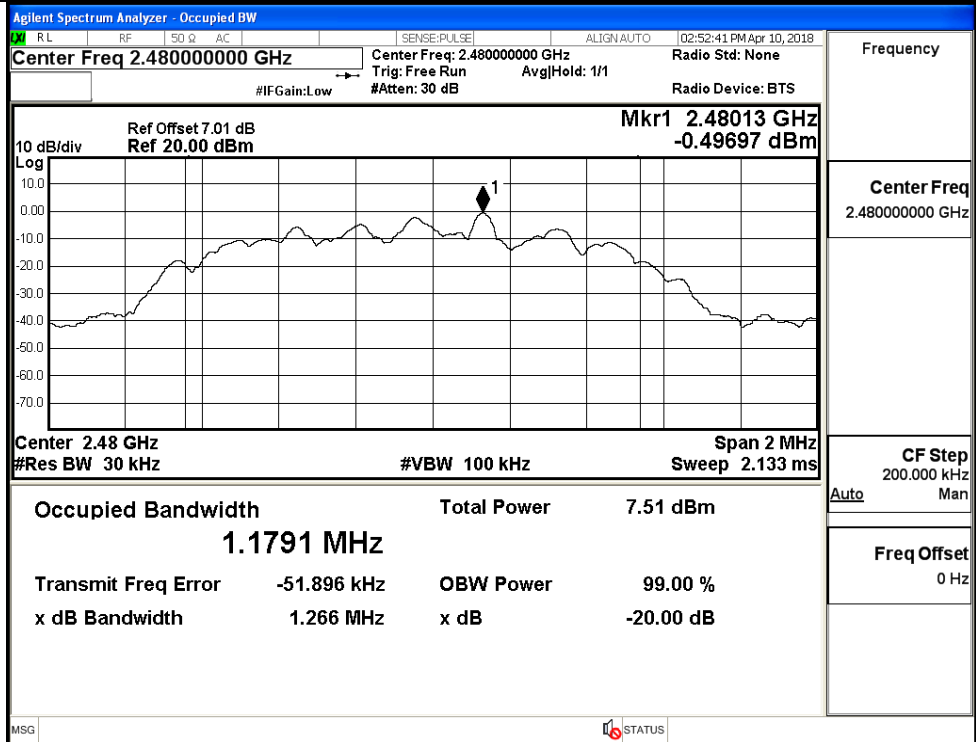
8DPSK/LCH



8DPSK/MCH

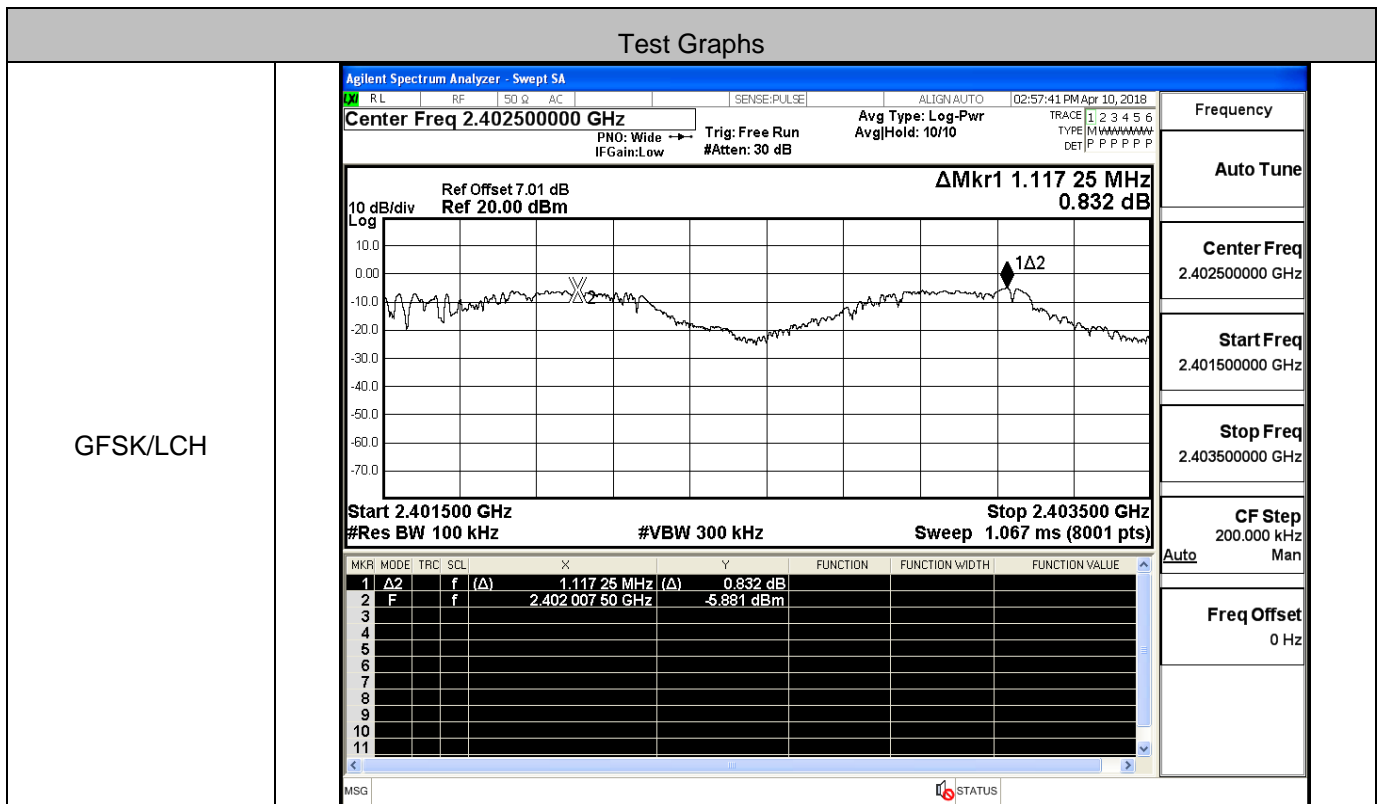


8DPSK/HCH

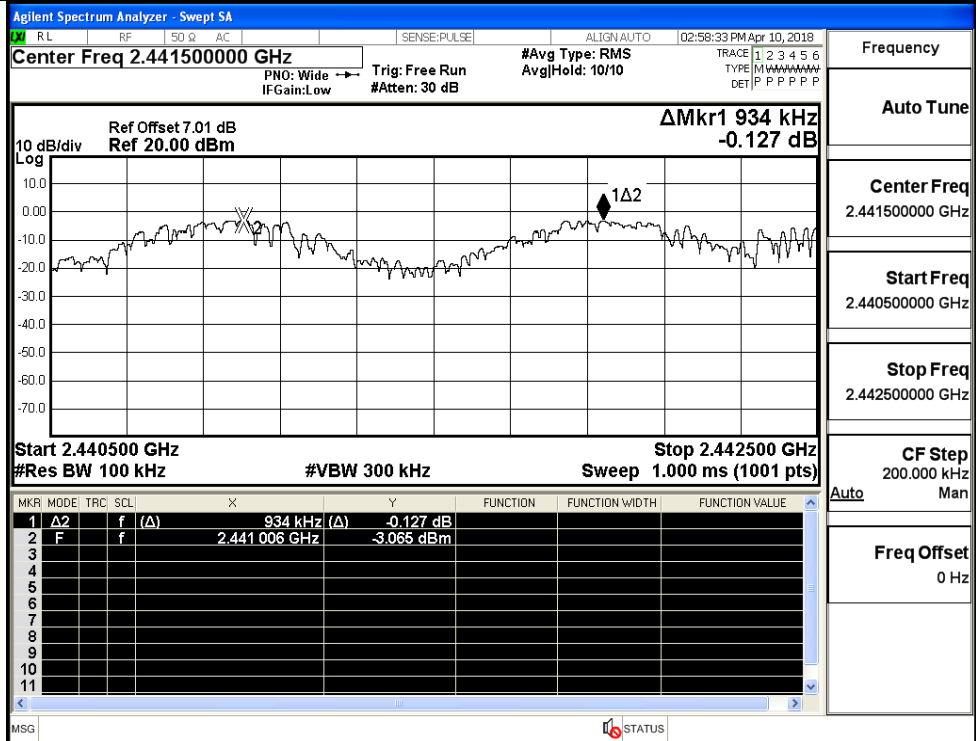


A.3 Carrier Frequency Separation

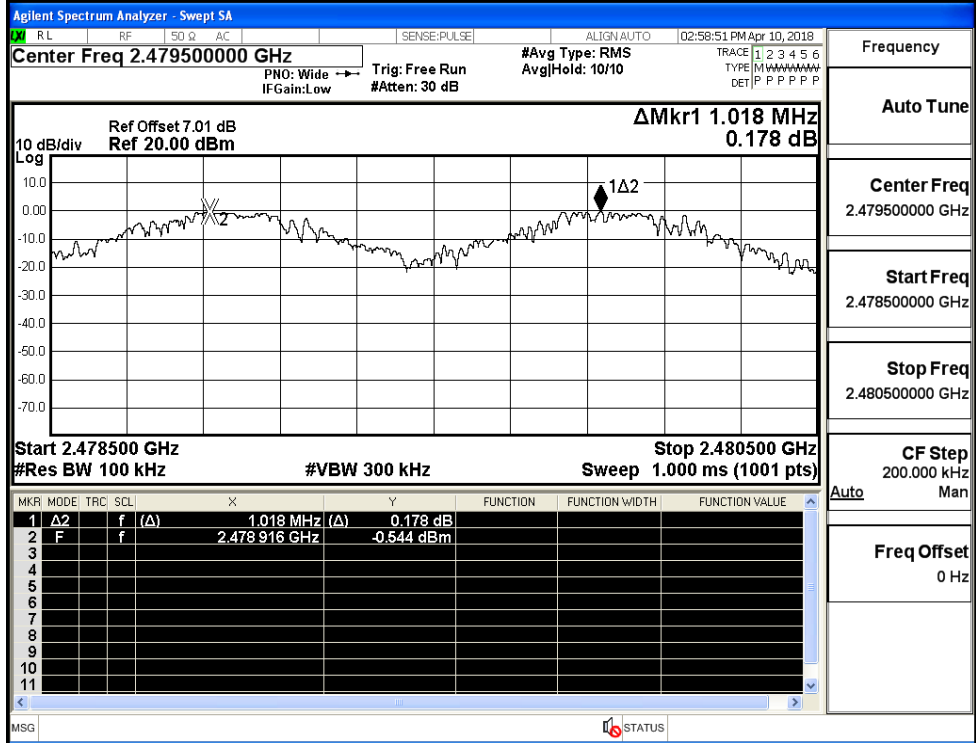
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.117	0.615	PASS
	MCH	0.934	0.615	PASS
	HCH	1.018	0.615	PASS
π/4DQPSK	LCH	1.002	0.819	PASS
	MCH	0.996	0.819	PASS
	HCH	1.002	0.819	PASS
8DPSK	LCH	0.866	0.844	PASS
	MCH	1.136	0.844	PASS
	HCH	0.866	0.844	PASS



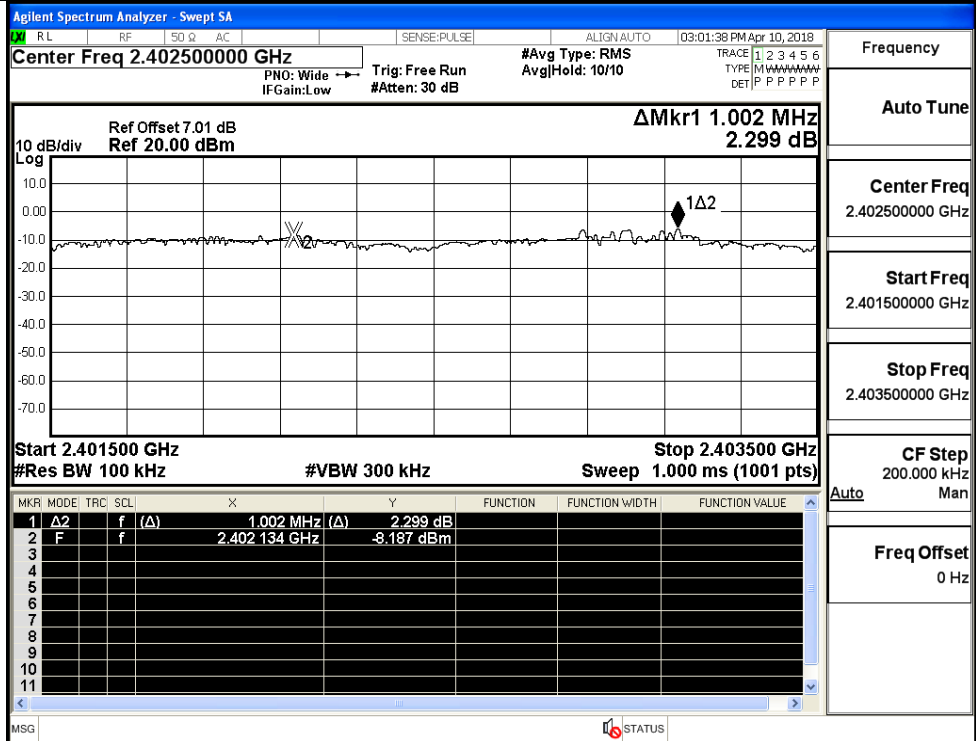
GFSK/MCH



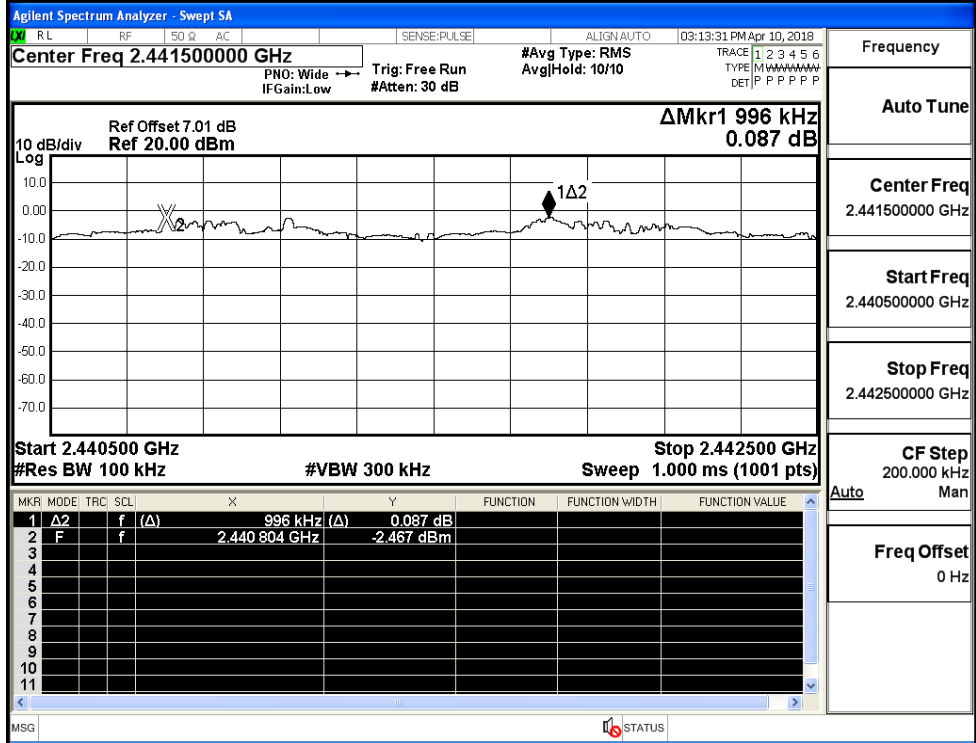
GFSK/HCH



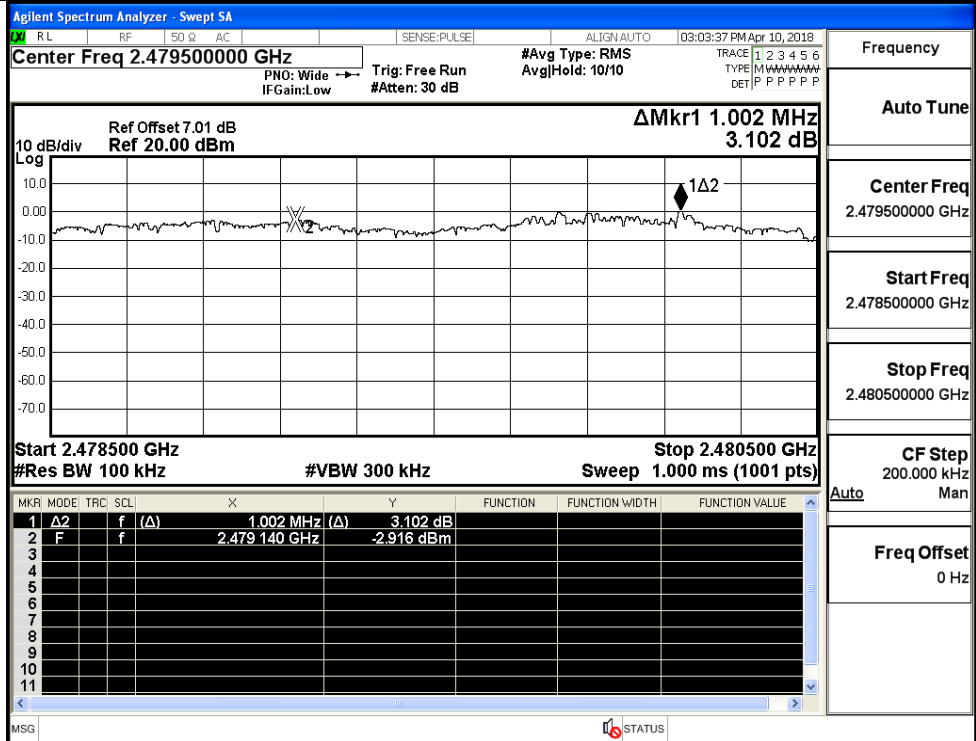
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

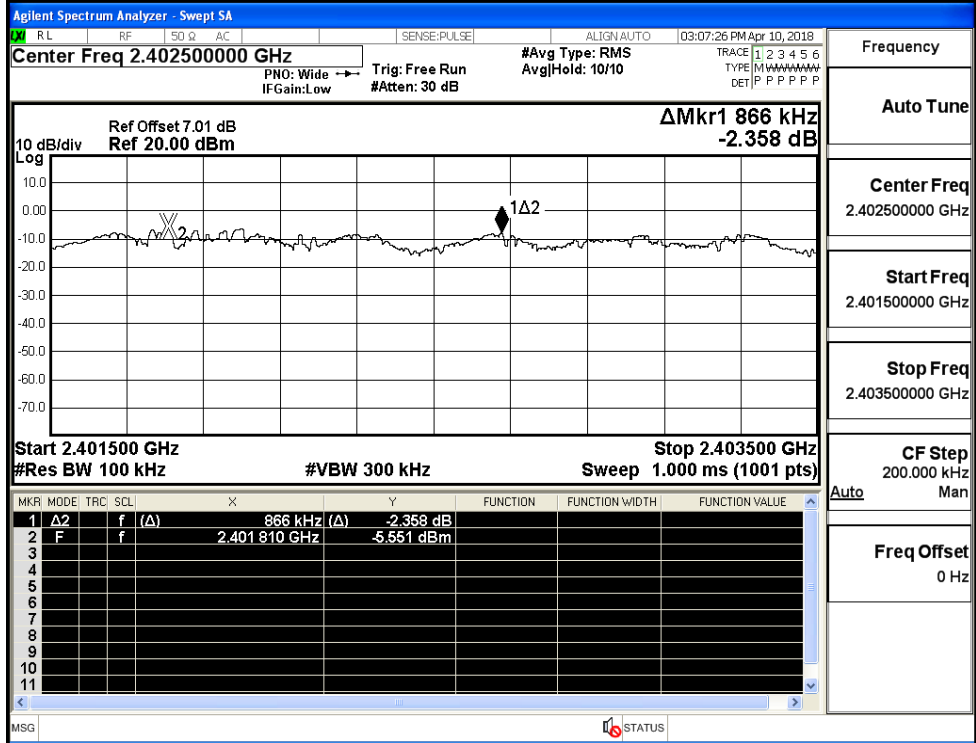


π/4DQPSK/HCH



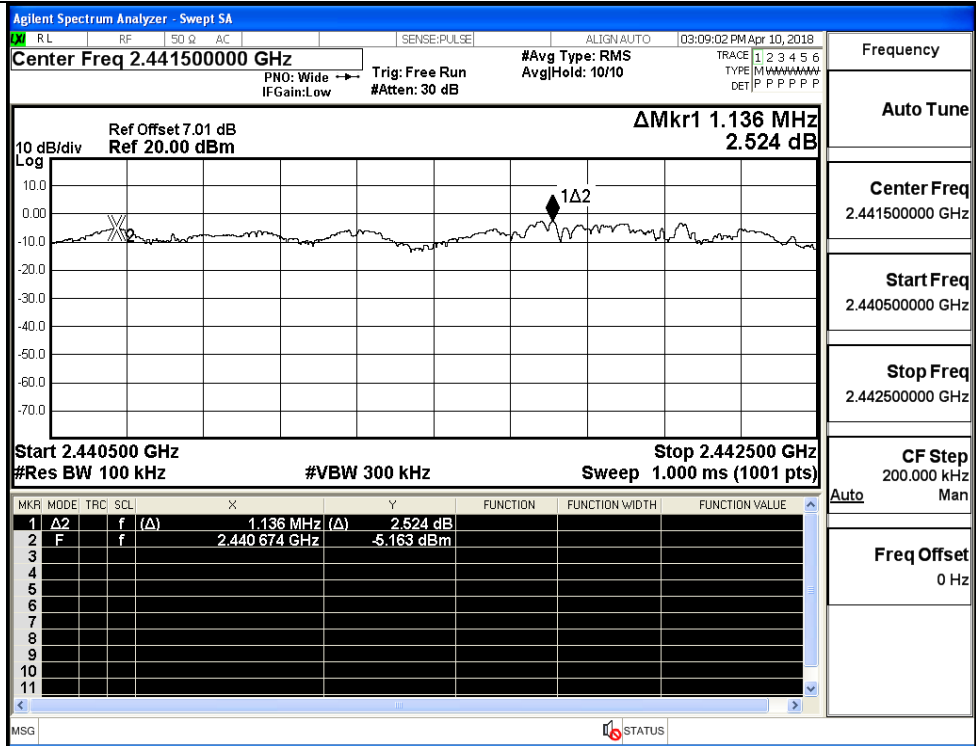
Frequency	2.479500000 GHz
Auto Tune	
Center Freq	2.479500000 GHz
Start Freq	2.478500000 GHz
Stop Freq	2.480500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/LCH

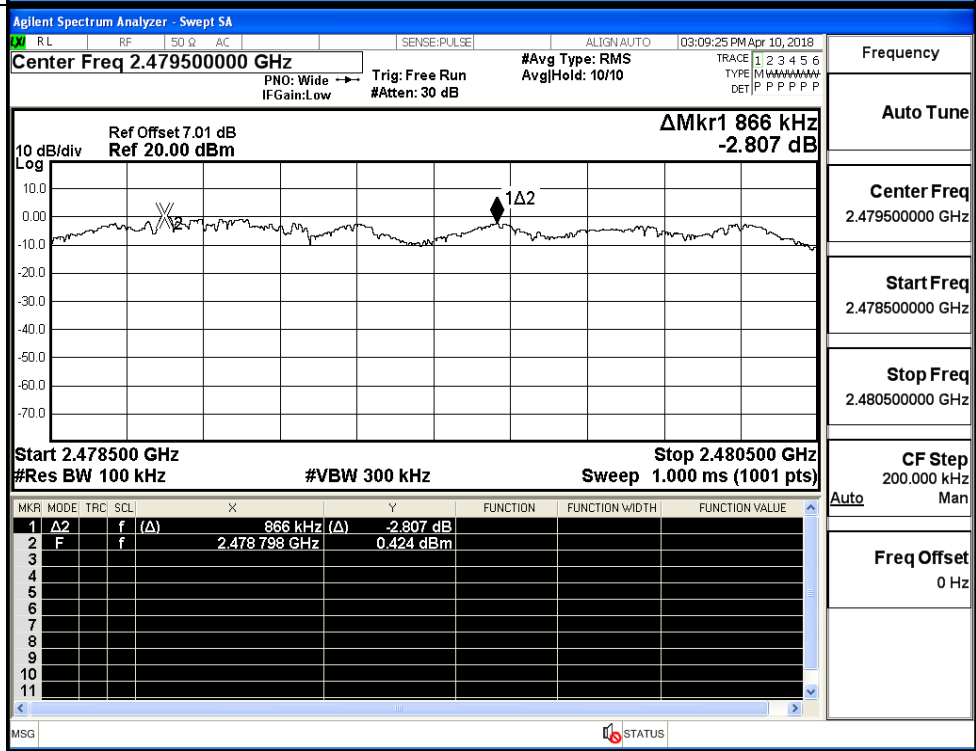


Frequency	2.402500000 GHz
Auto Tune	
Center Freq	2.402500000 GHz
Start Freq	2.401500000 GHz
Stop Freq	2.403500000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

8DPSK/MCH



8DPSK/HCH

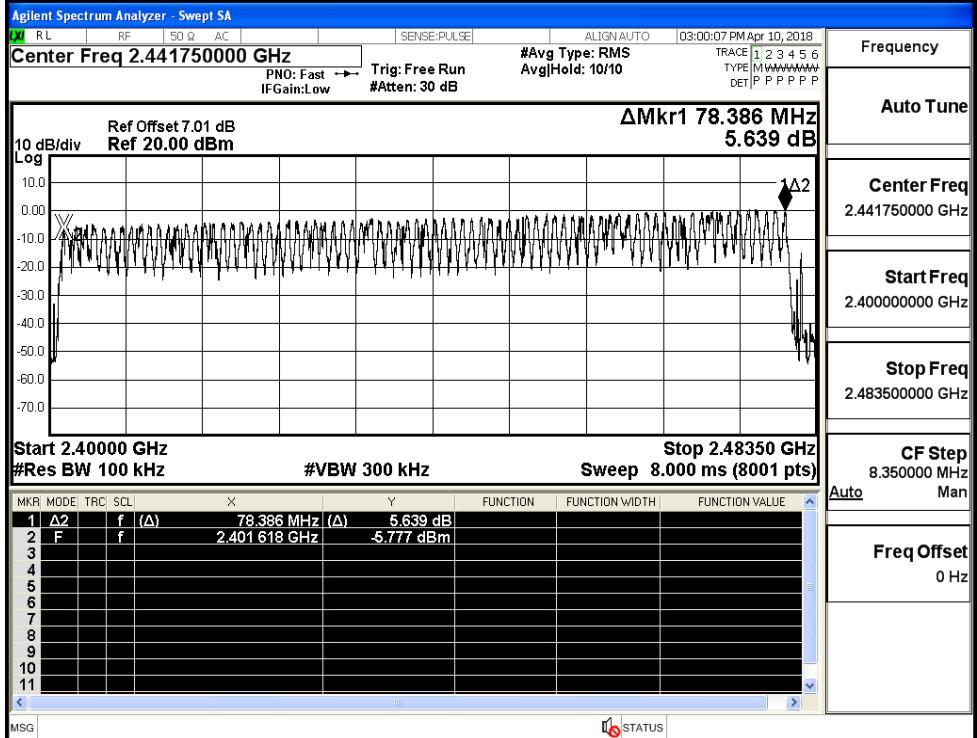


A.4 Hopping Channel Number

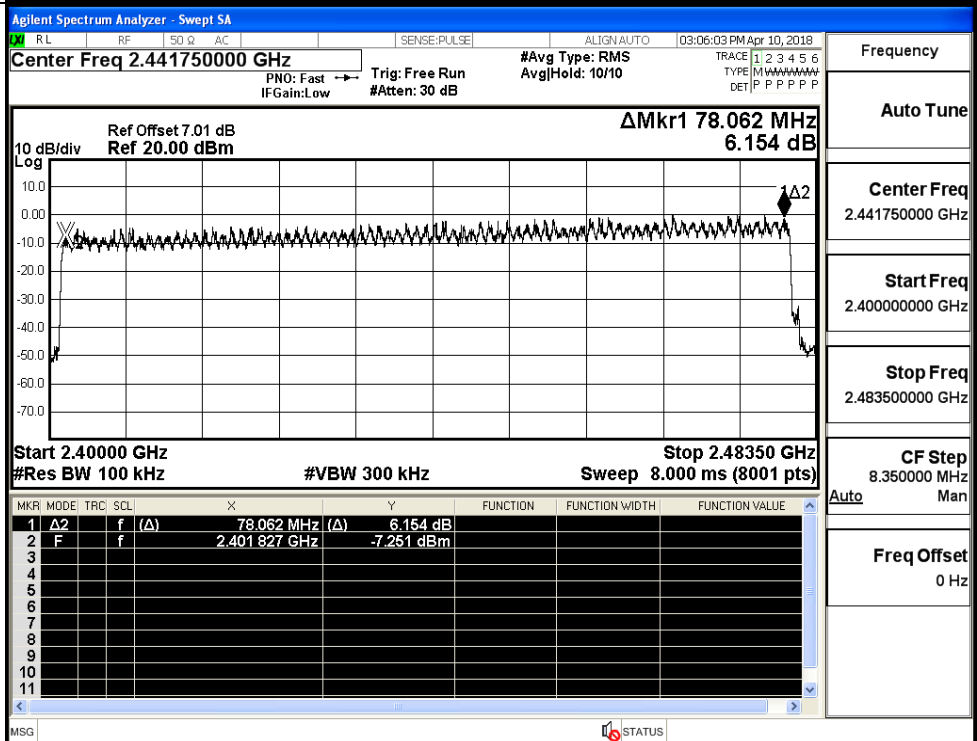
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

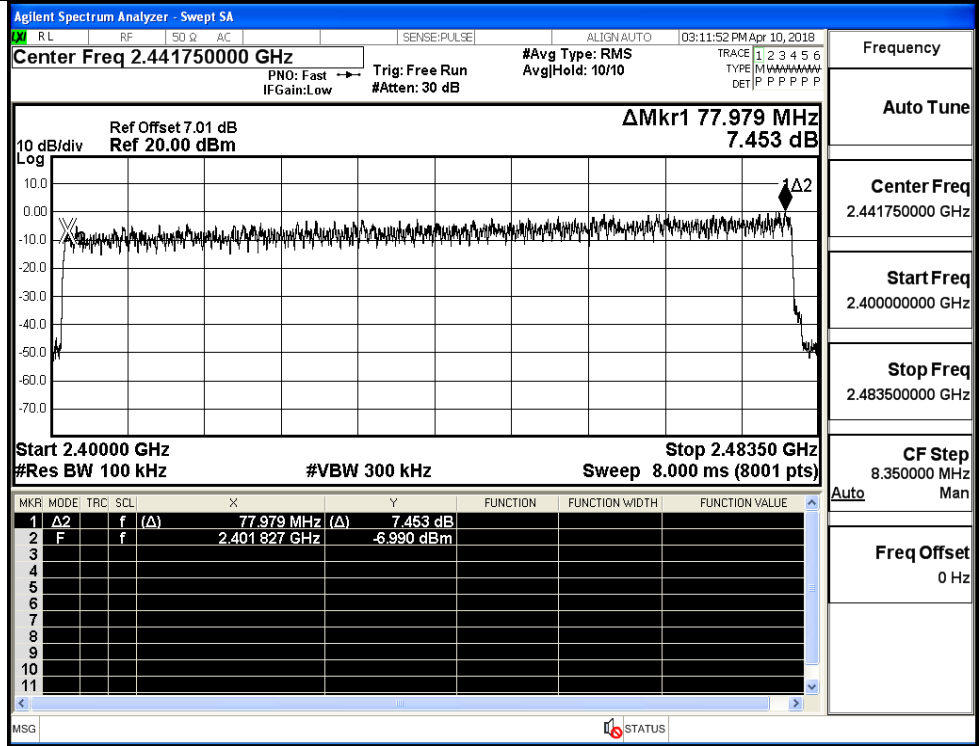
GFSK/Hop



$\pi/4$ DQPSK/Hop

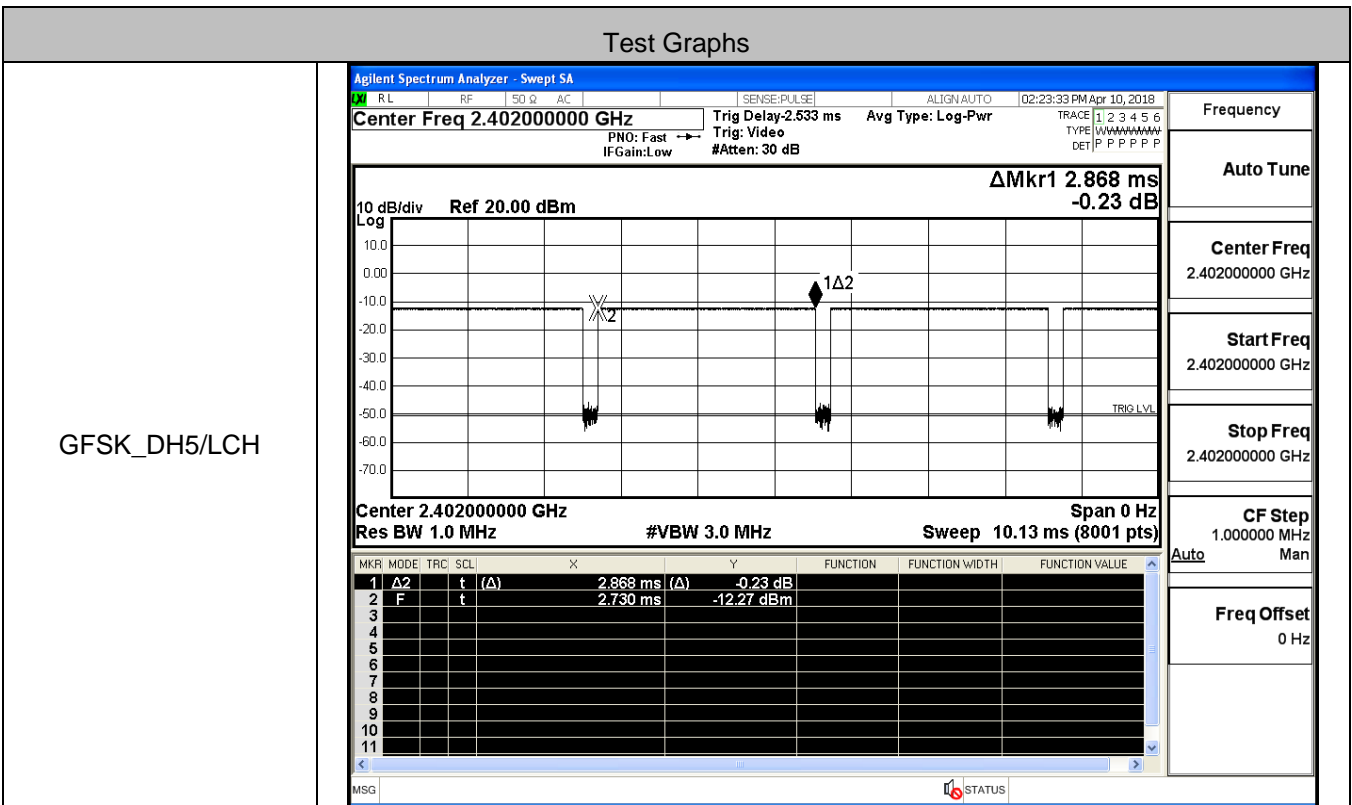


8DPSK/Hop

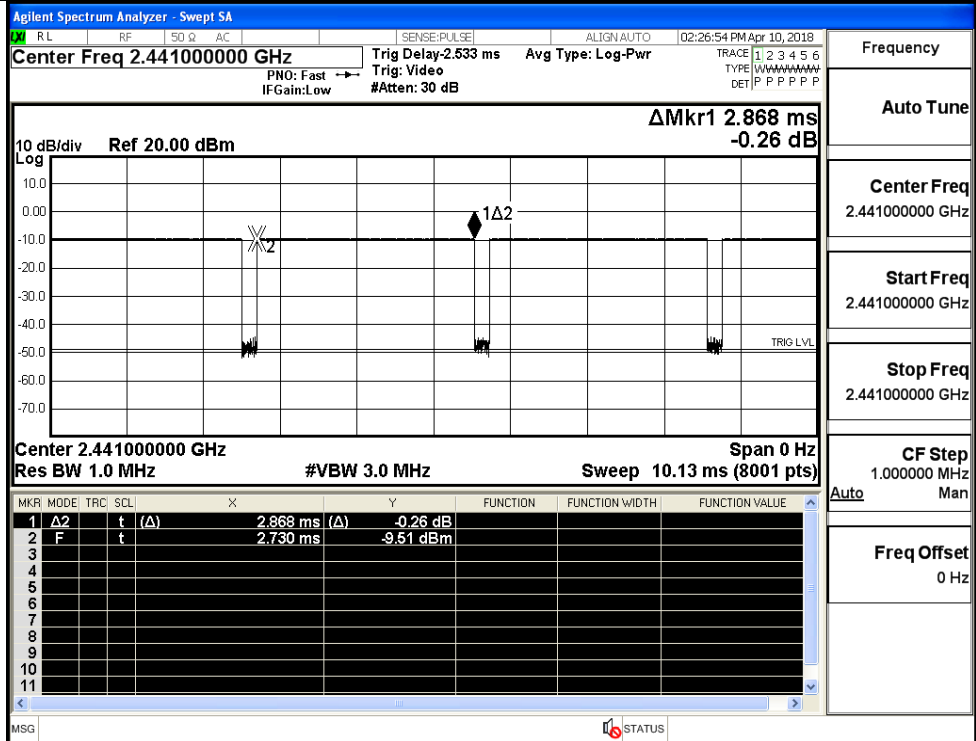


A.5 Dwell Time

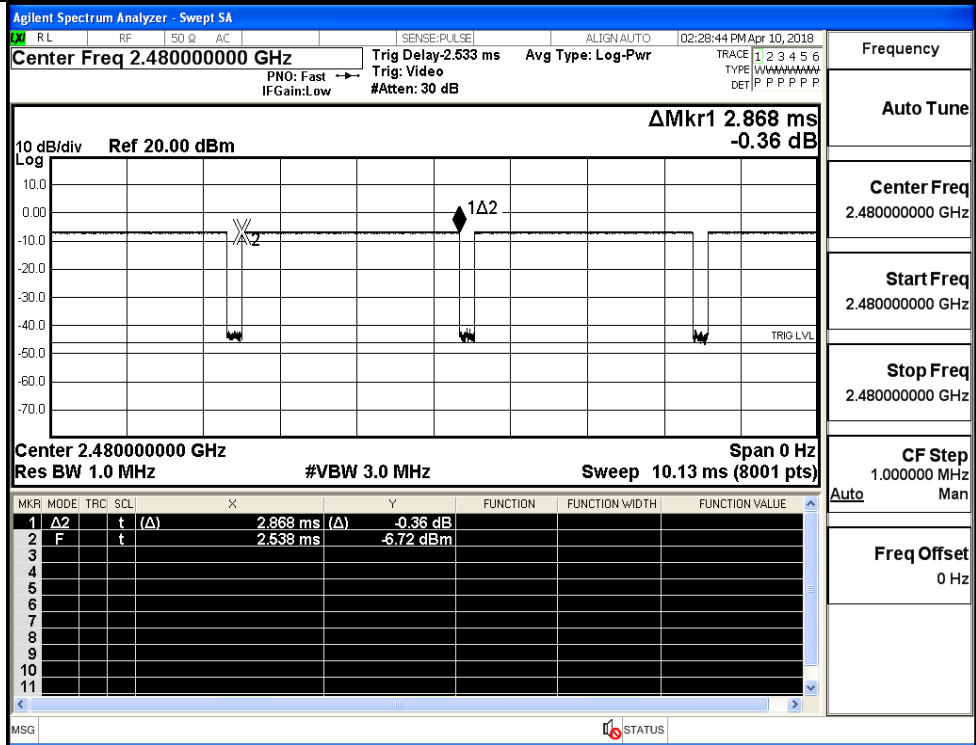
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
π/4DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
	2DH5	HCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.87	106.7	0.308	0.4	PASS
	3DH5	MCH	2.87	106.7	0.307	0.4	PASS
	3DH5	HCH	2.87	106.7	0.307	0.4	PASS



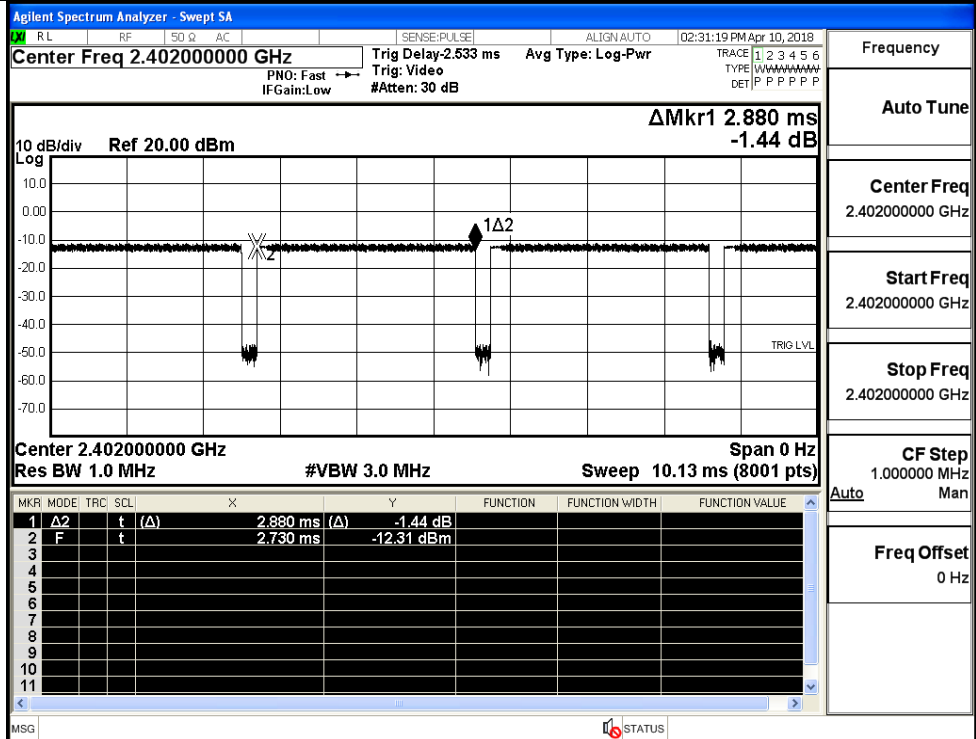
GFSK_DH5/MCH



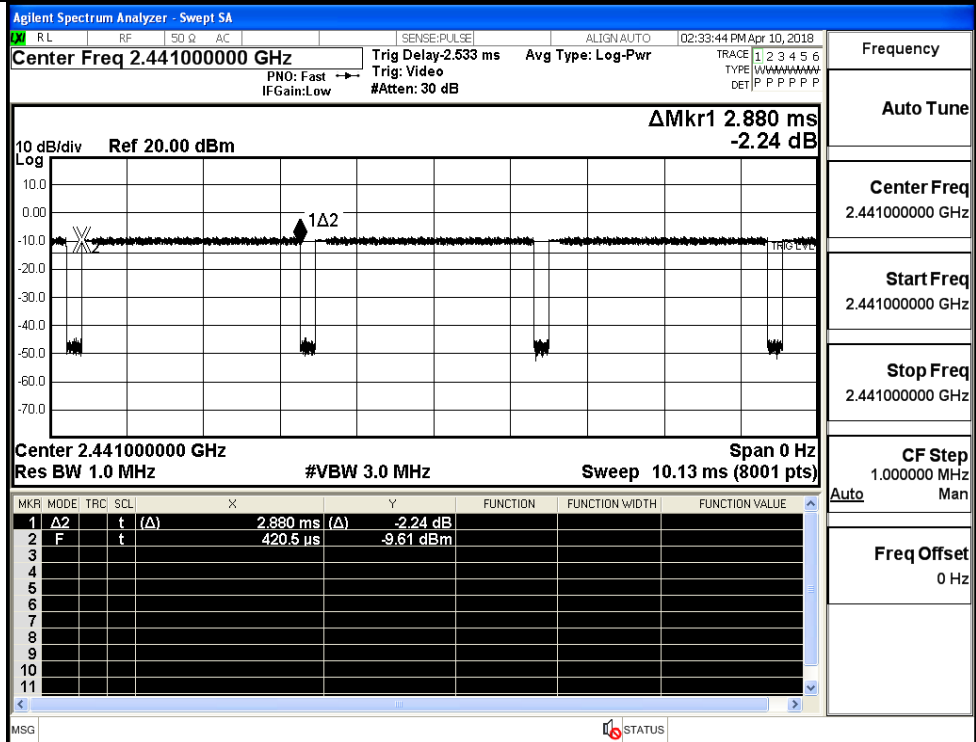
GFSK_DH5/HCH



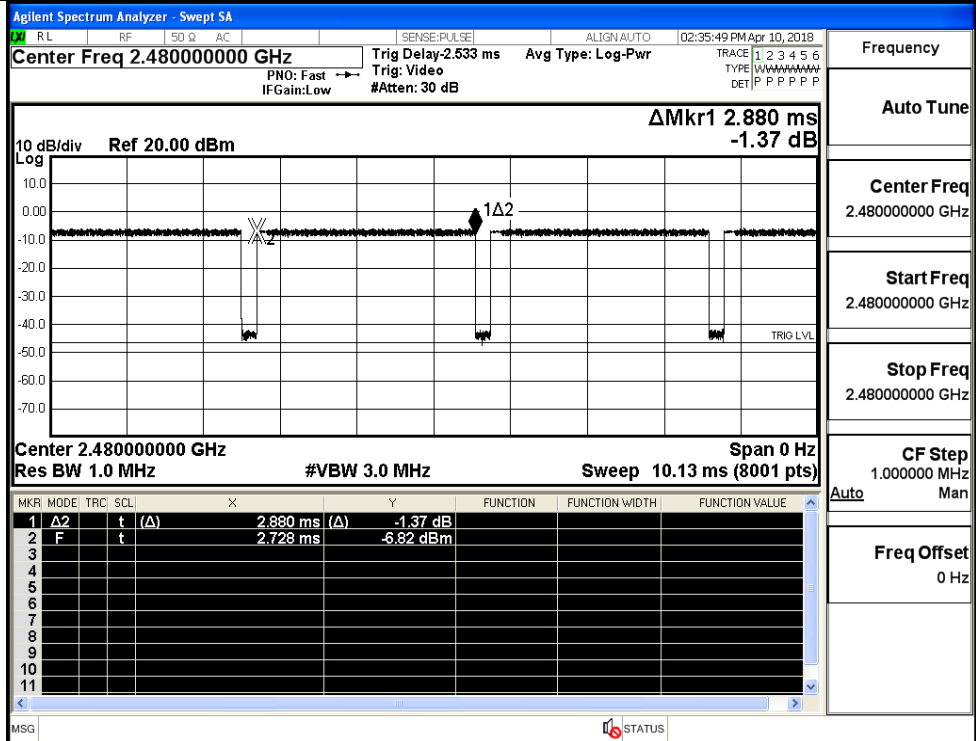
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

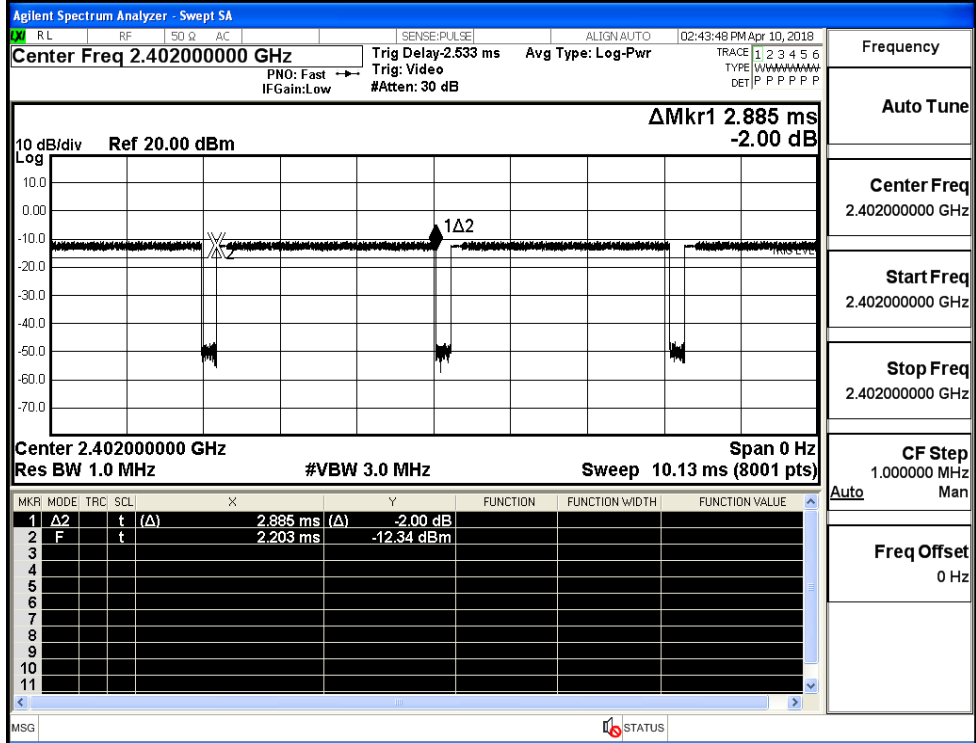


$\pi/4$ DQPSK
_2DH5/HCH



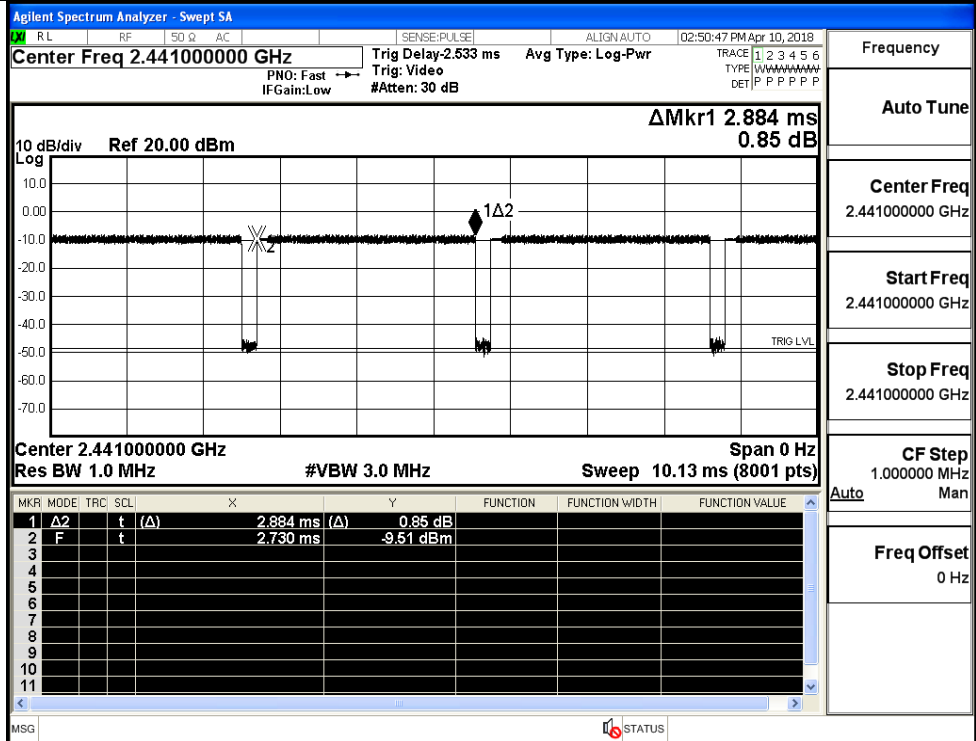
Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.480000000 GHz
Stop Freq	2.480000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/LCH

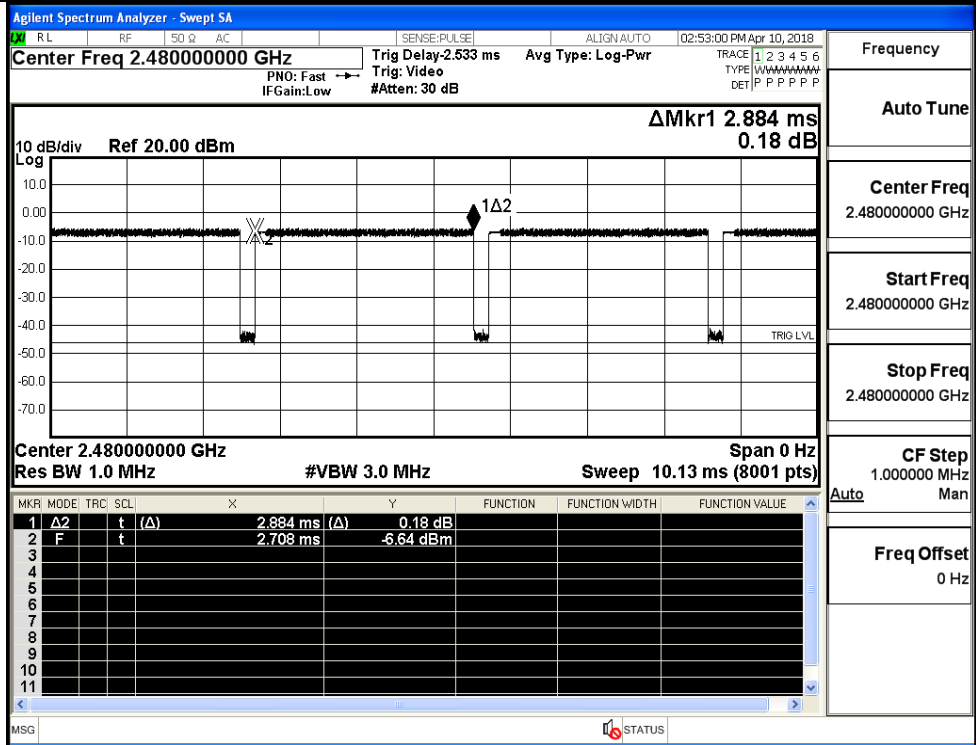


Frequency	
Auto Tune	
Center Freq	2.402000000 GHz
Start Freq	2.402000000 GHz
Stop Freq	2.402000000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

8DPSK_3DH5/MCH



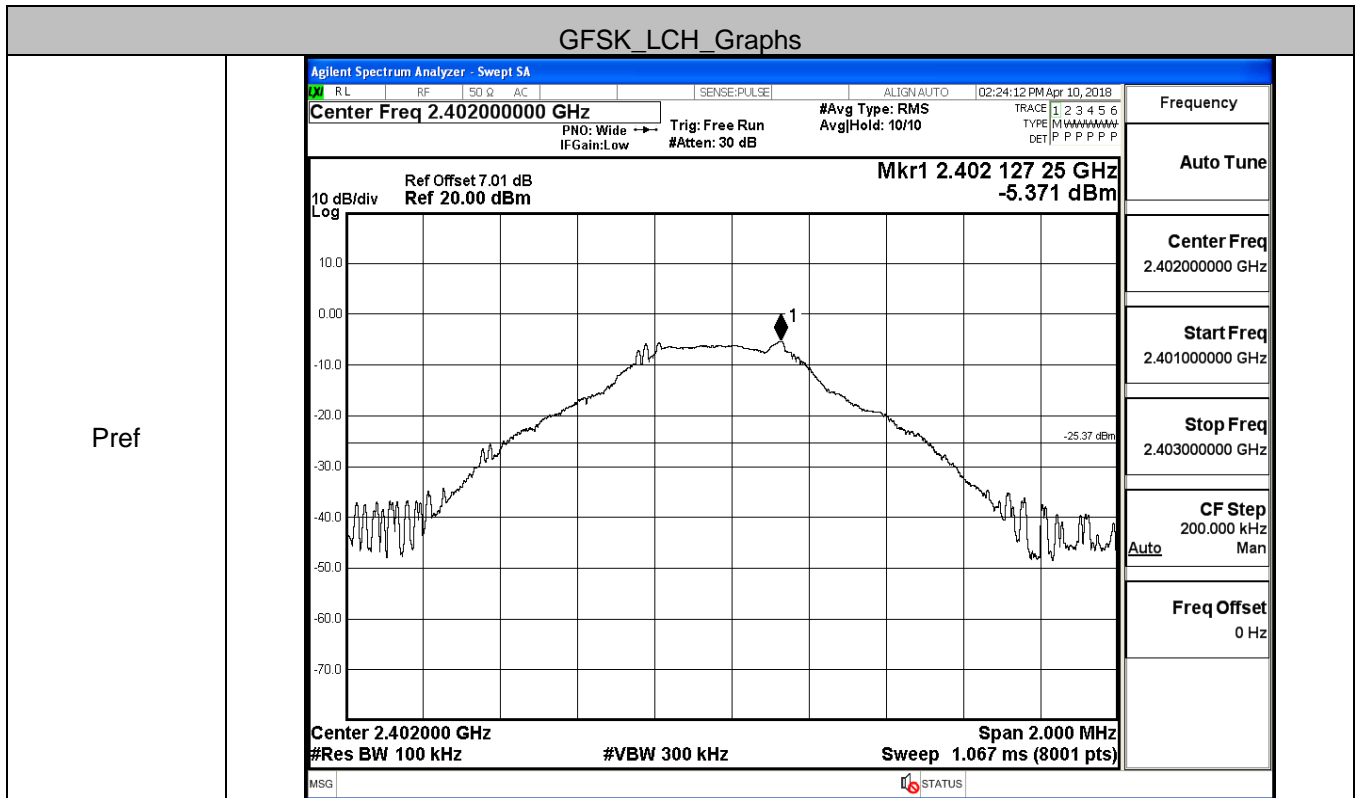
8DPSK_3DH5/HCH

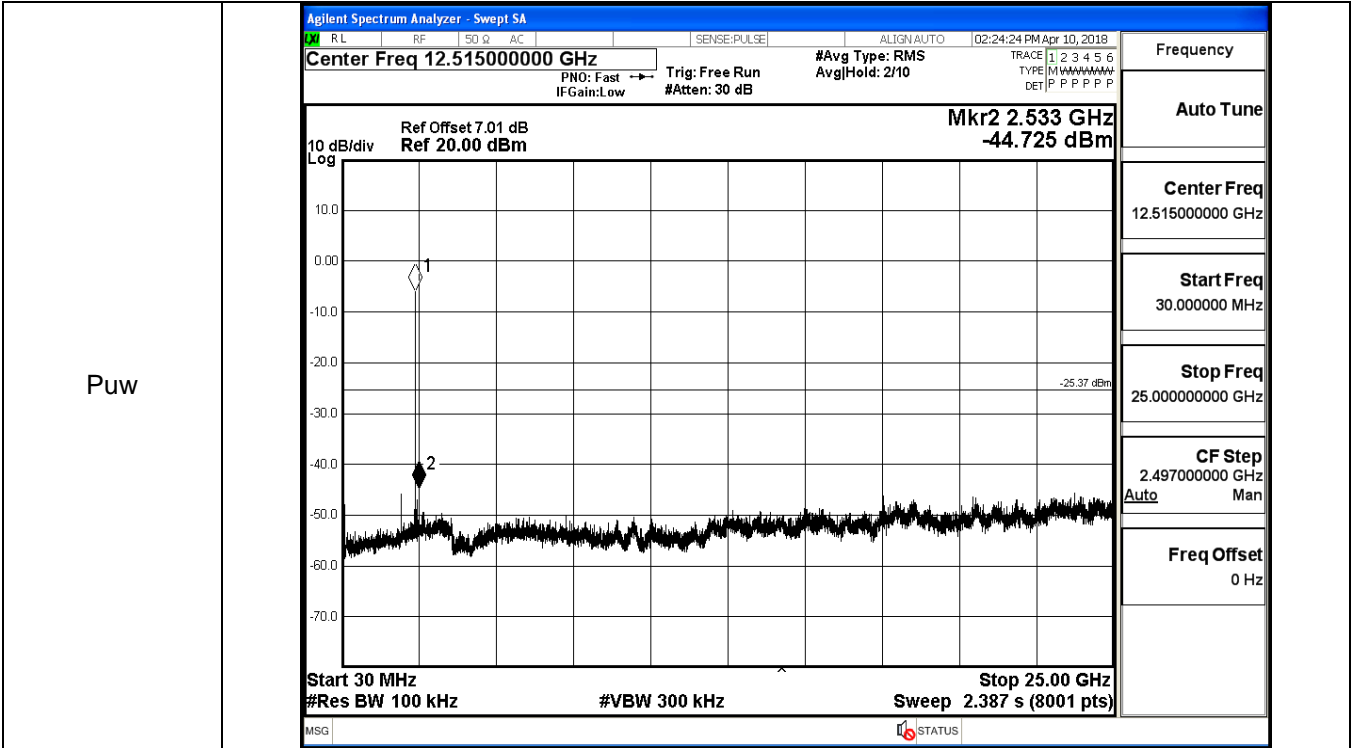


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.371	-44.725	-25.371	PASS
	MCH	-2.614	-45.360	-22.614	PASS
	HCH	0.21	-45.443	-19.790	PASS
π /4DQPSK	LCH	-5.412	-45.770	-25.412	PASS
	MCH	-2.776	-45.785	-22.776	PASS
	HCH	-0.062	-45.255	-20.062	PASS
8DPSK	LCH	-5.356	-45.213	-25.356	PASS
	MCH	-2.576	-45.780	-22.576	PASS
	HCH	-0.019	-45.894	-20.019	PASS

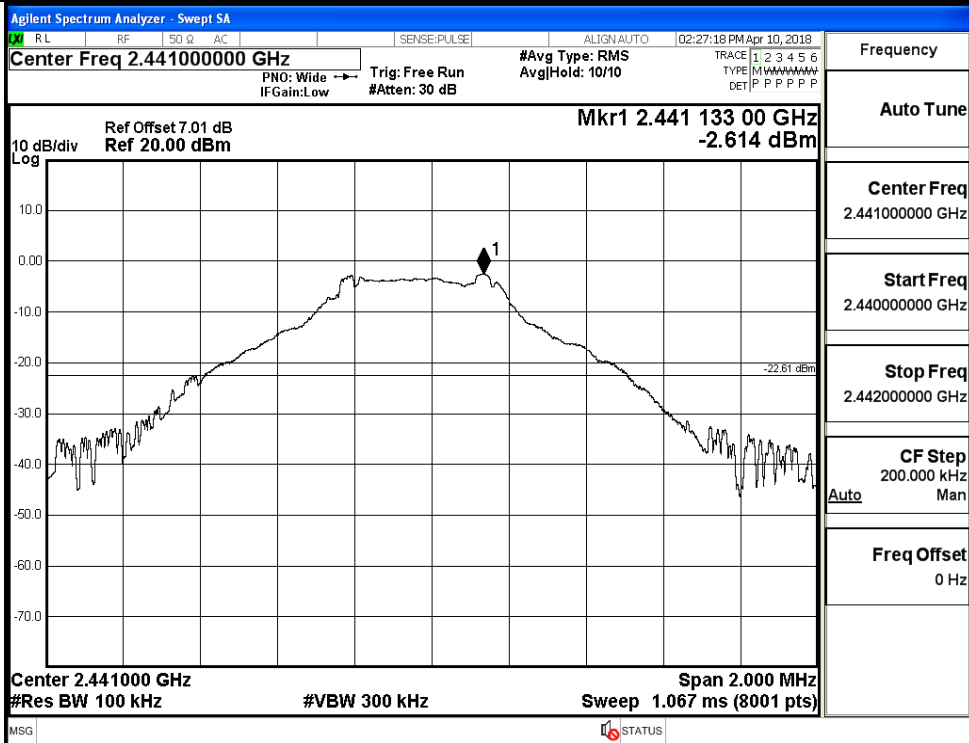
GFSK_LCH_Graphs



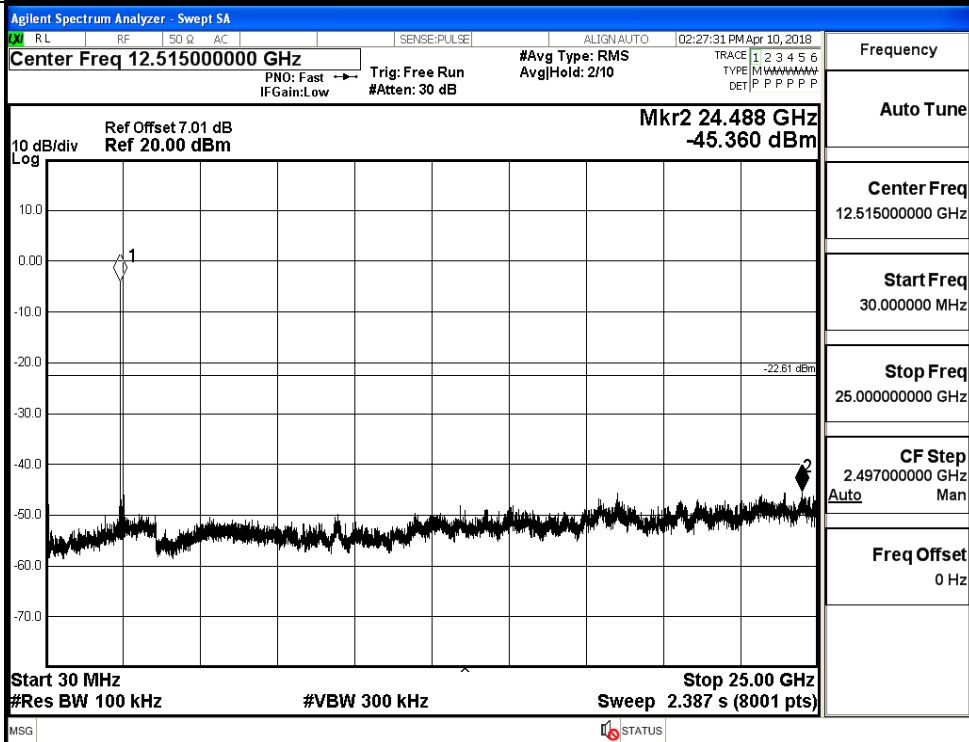


GFSK_MCH_Graphs

Pref

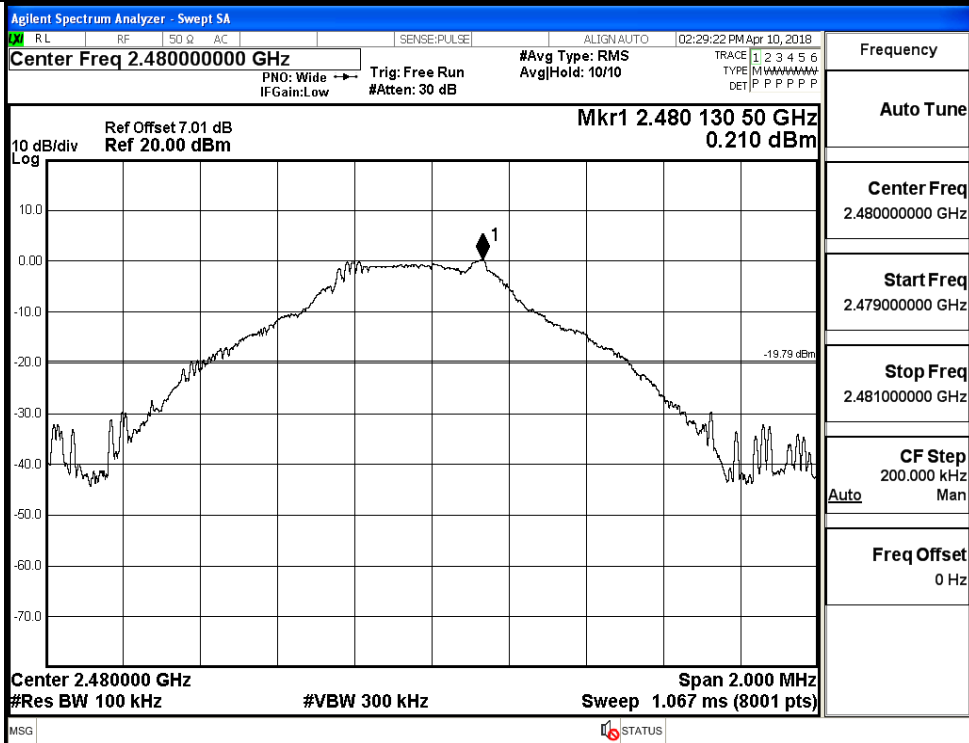


Puw

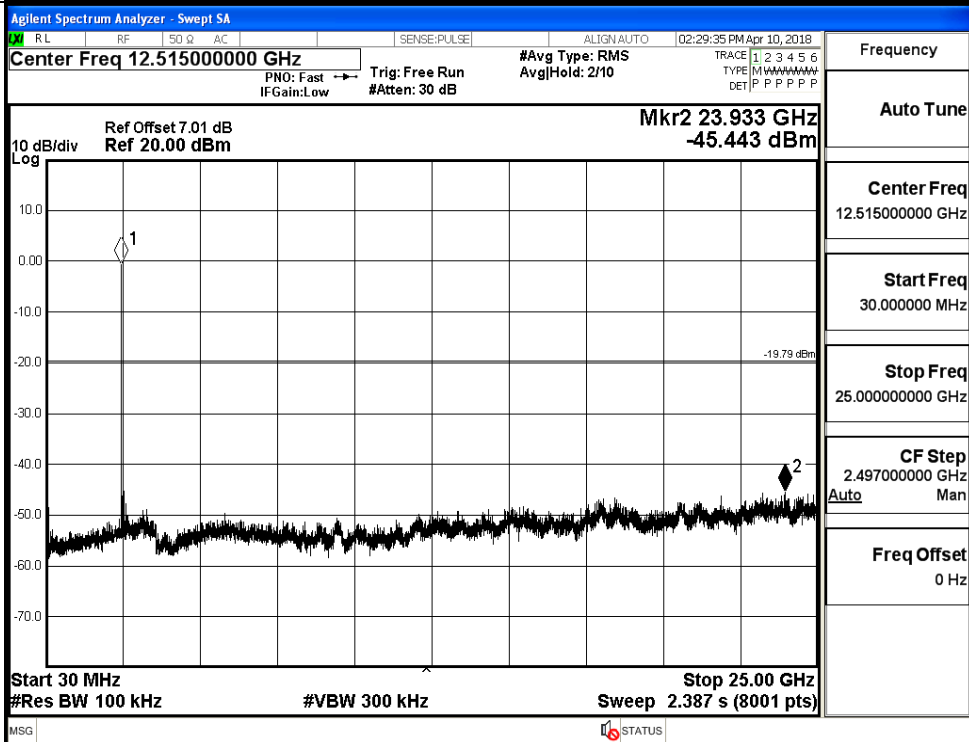


GFSK_HCH_Graphs

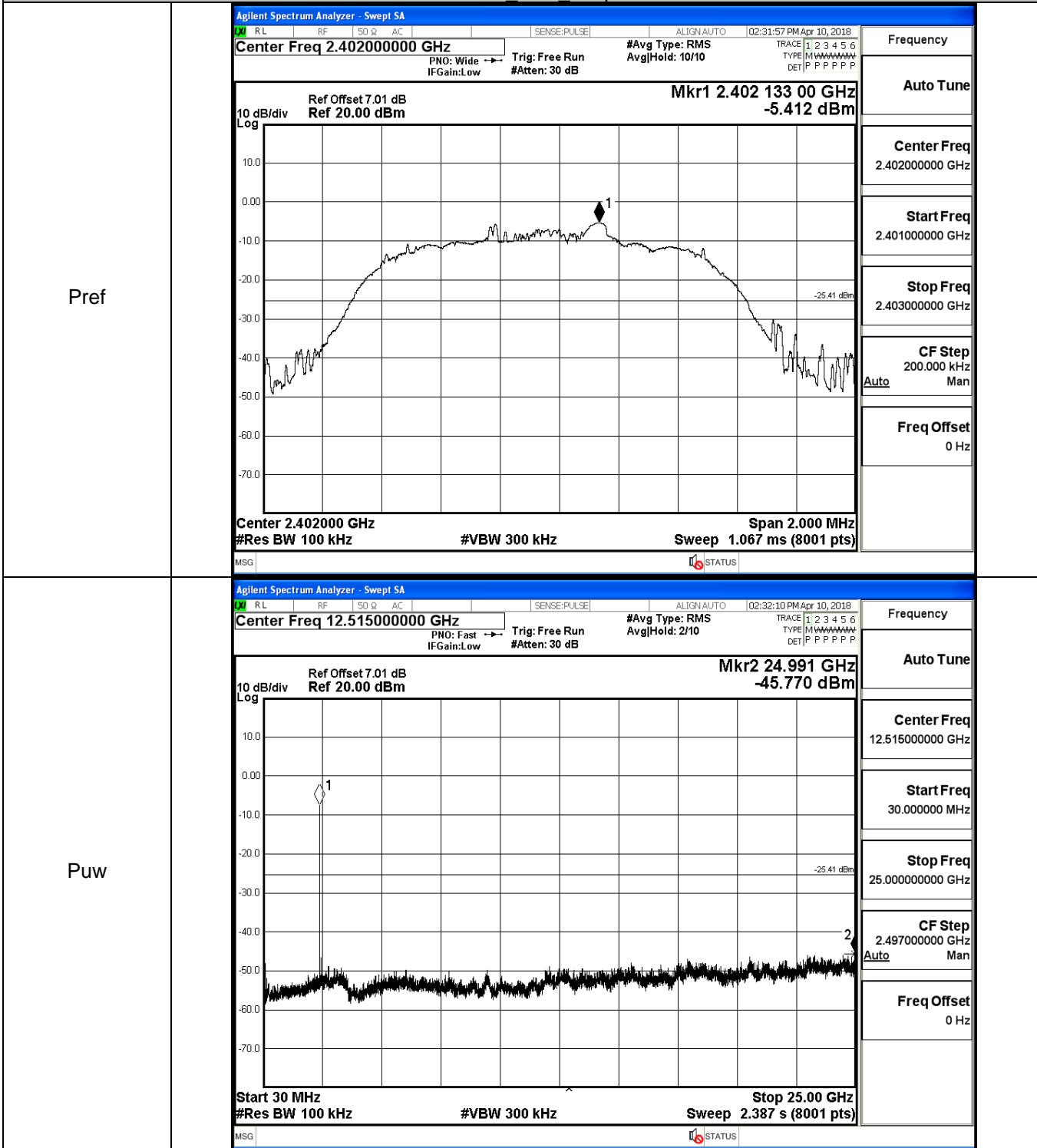
Pref



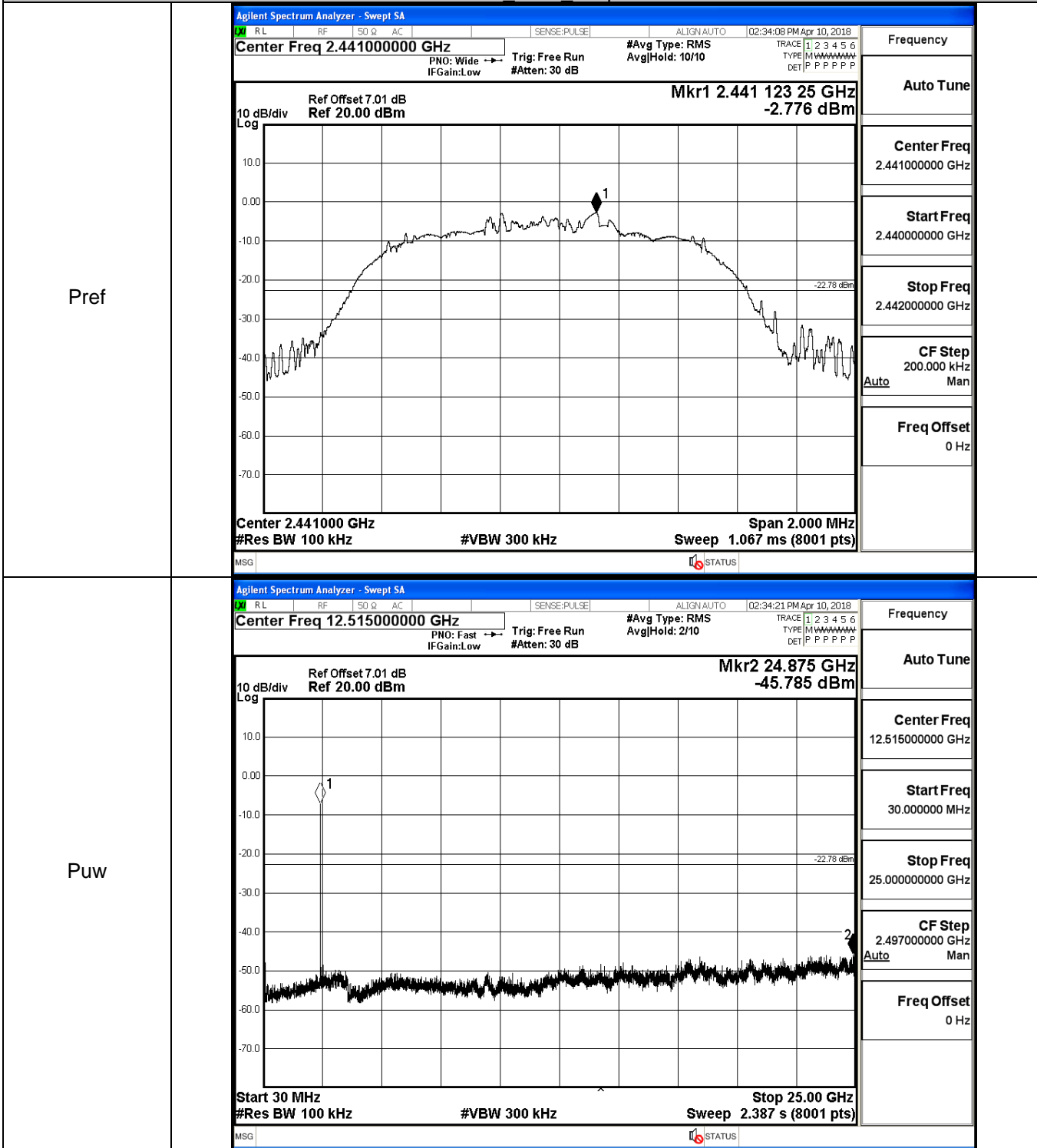
Puw



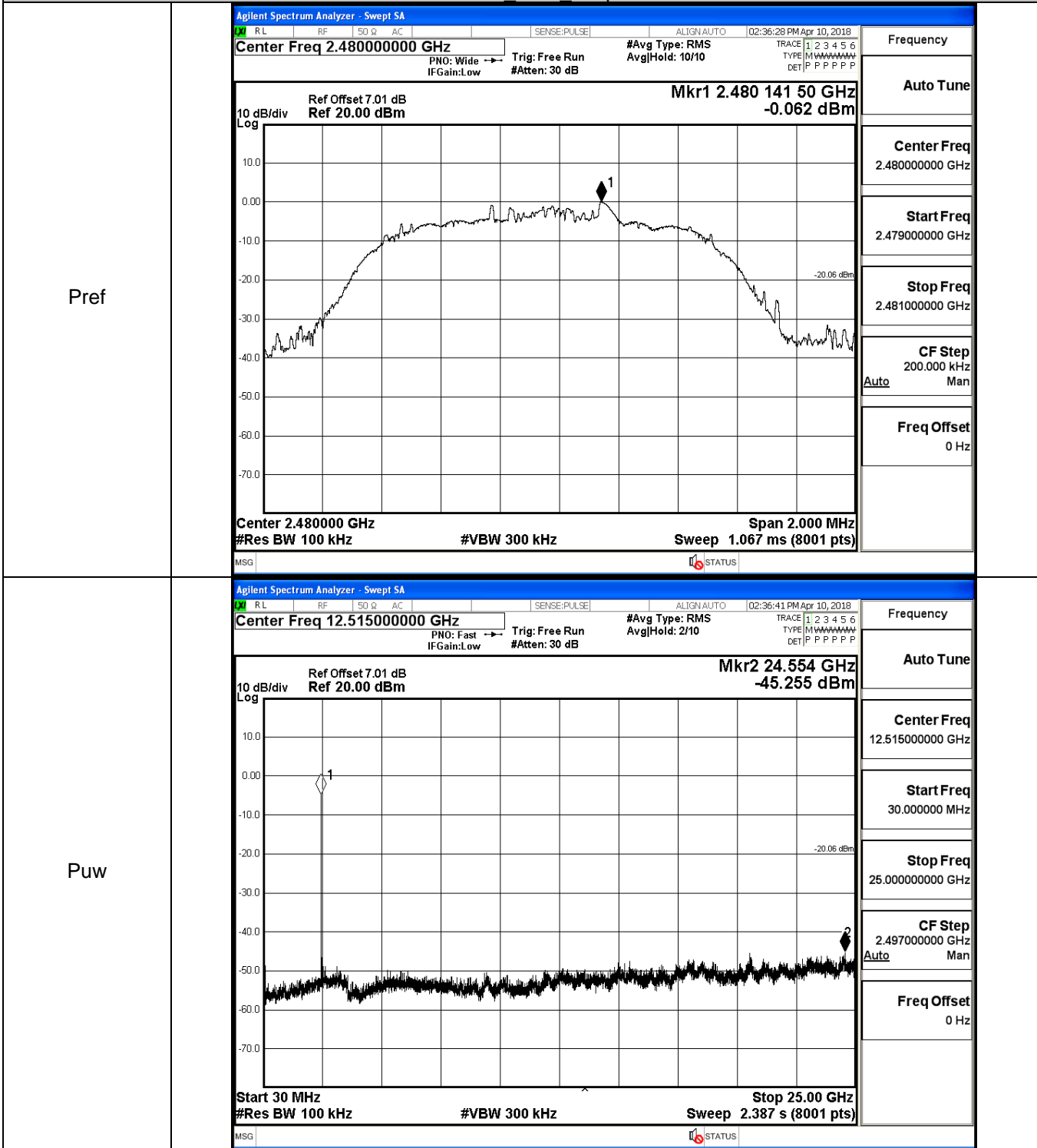
$\pi/4$ DQPSK LCH Graphs



$\pi/4$ DQPSK MCH Graphs

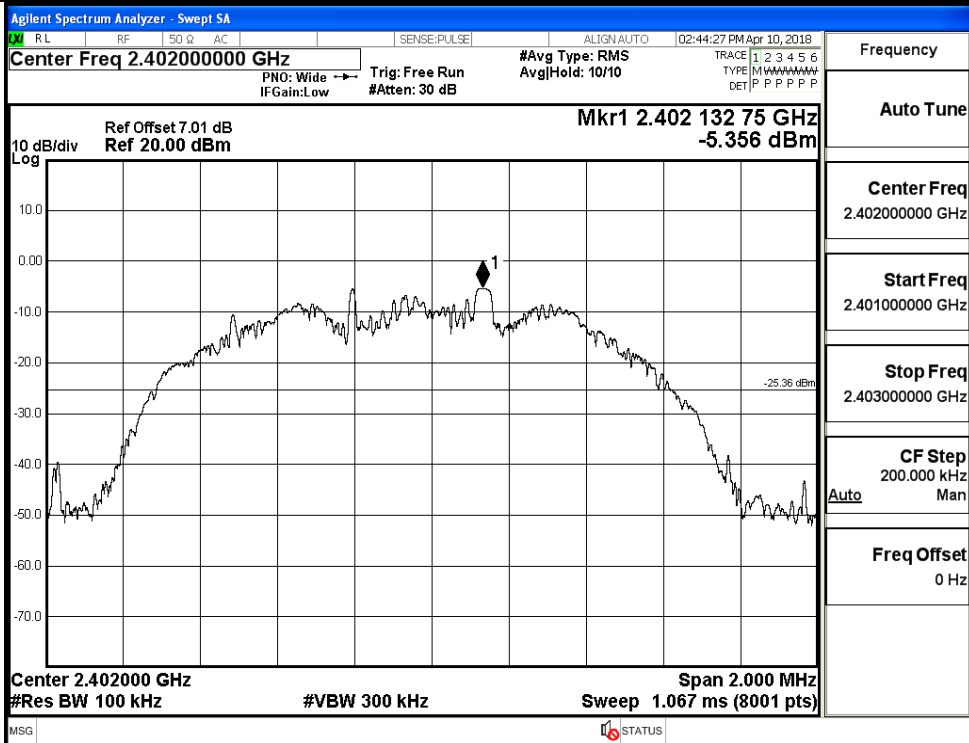


$\pi/4$ DQPSK HCH Graphs

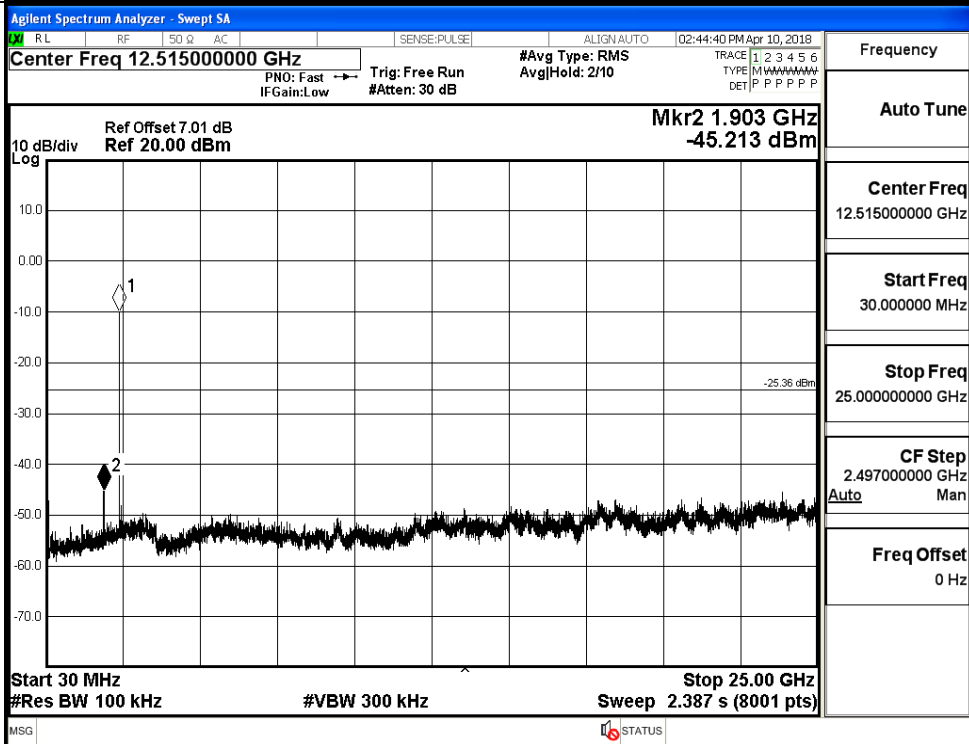


8DPSK_LCH_Graphs

Pref

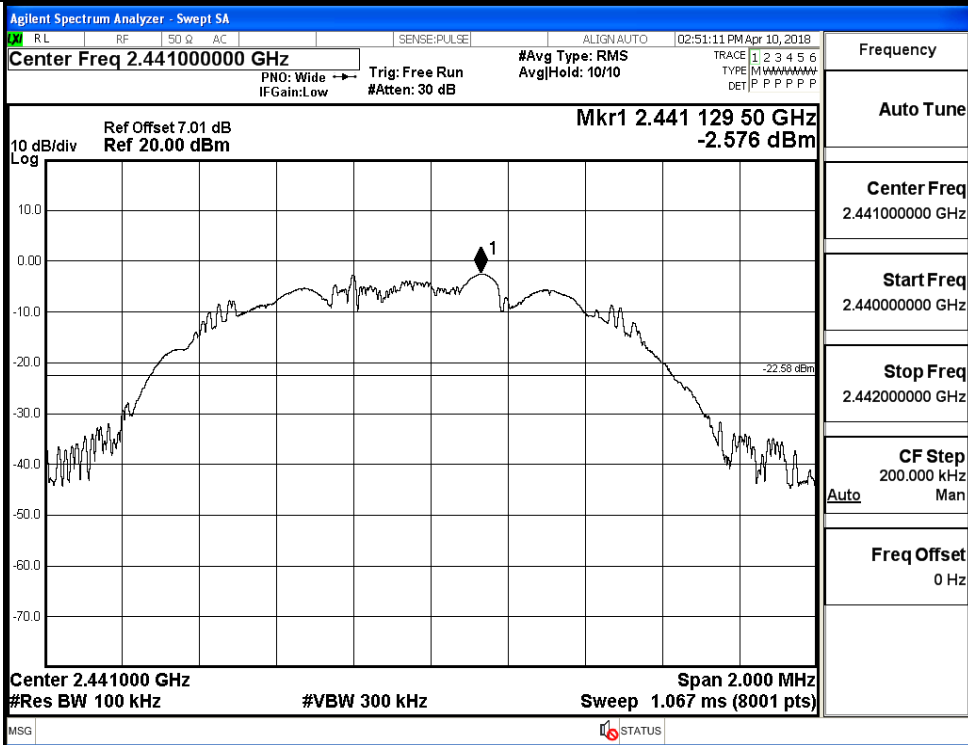


Puw

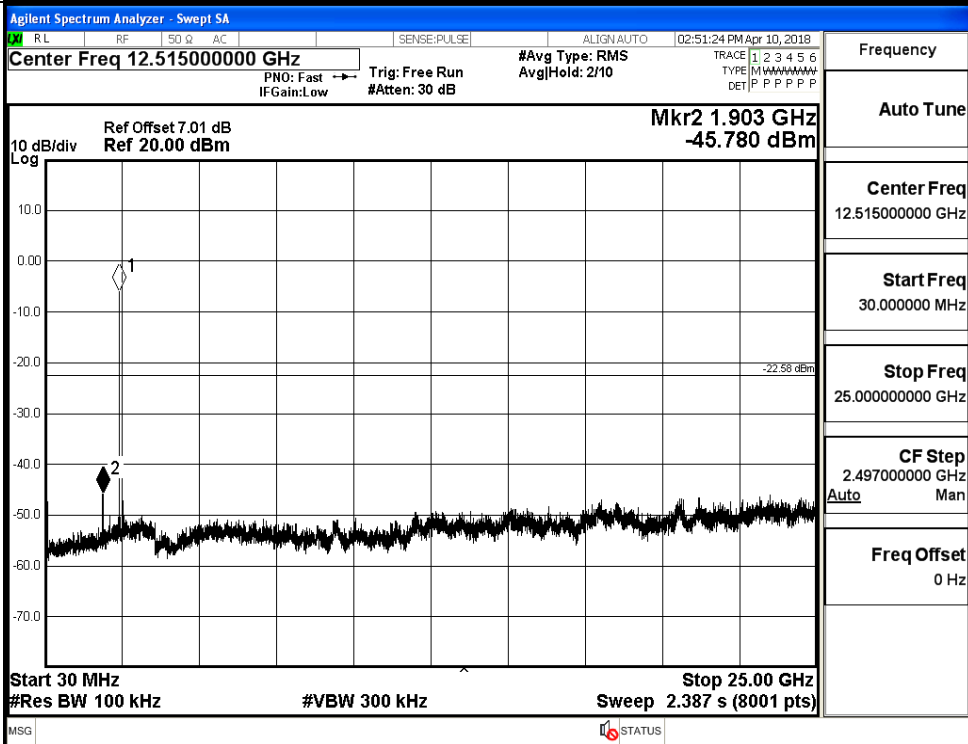


8DPSK_MCH_Graphs

Pref

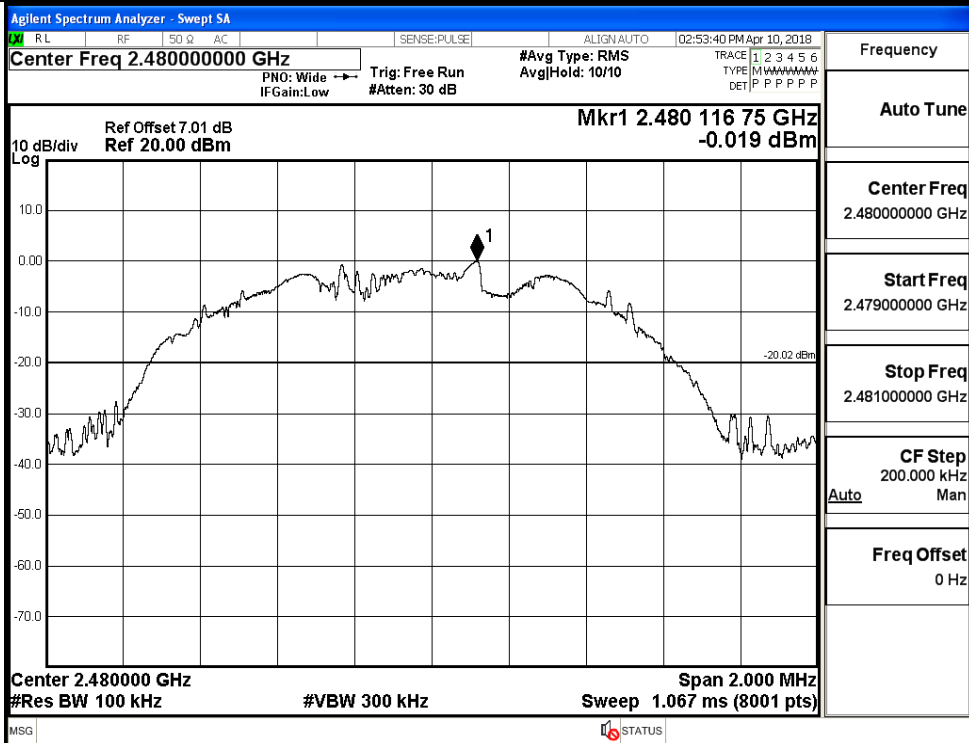


Puw

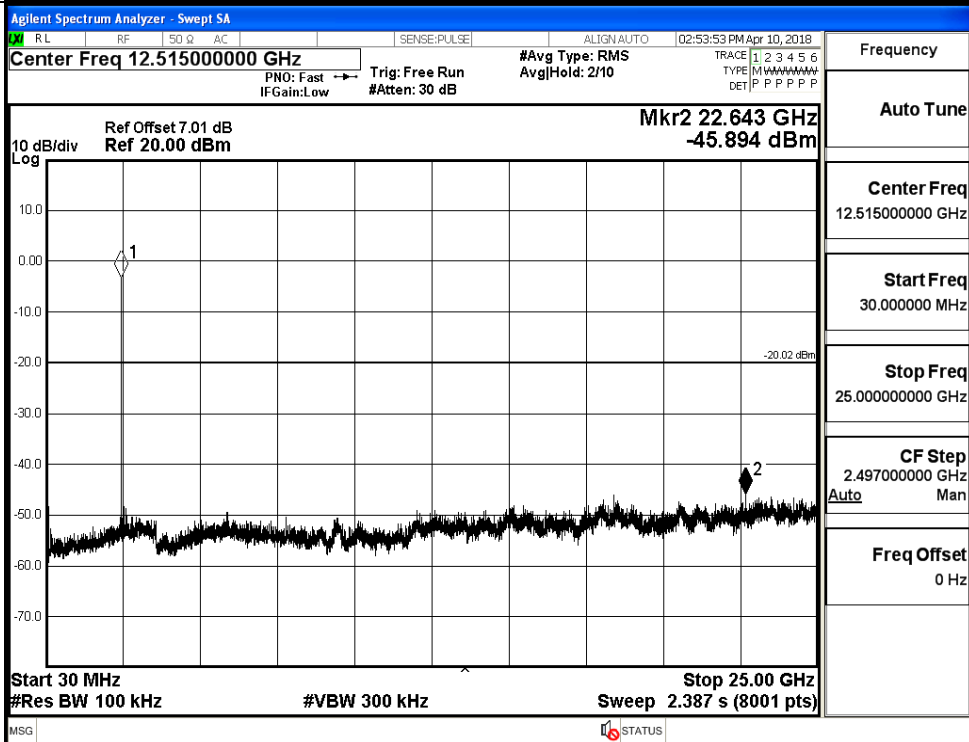


8DPSK_HCH_Graphs

Pref



Puw

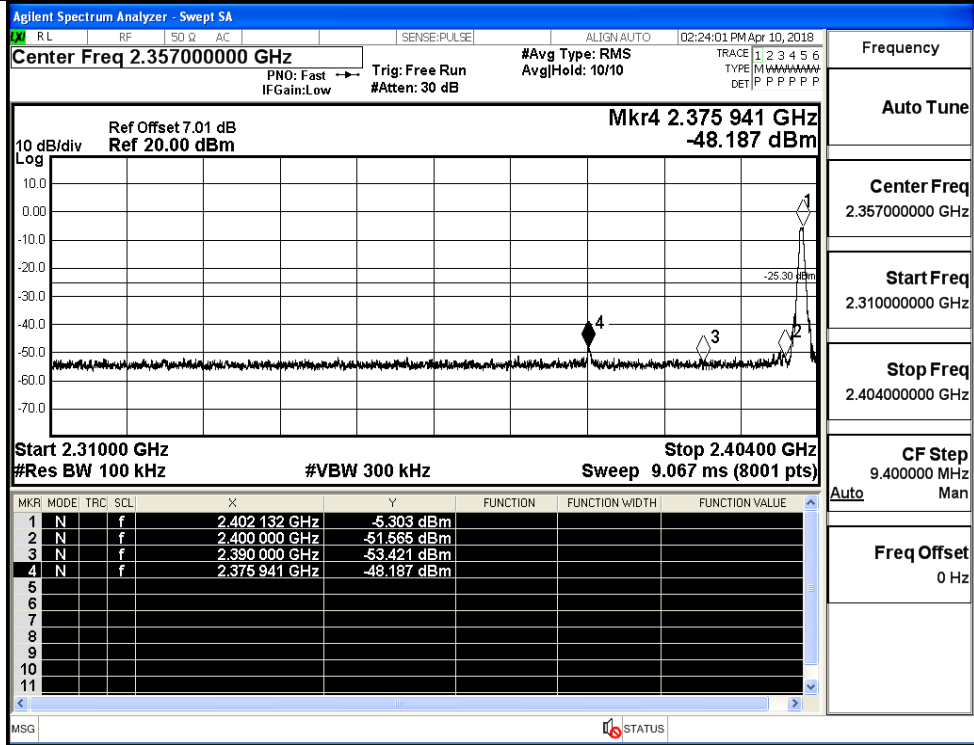


A.7 Band-edge for RF Conducted Emissions

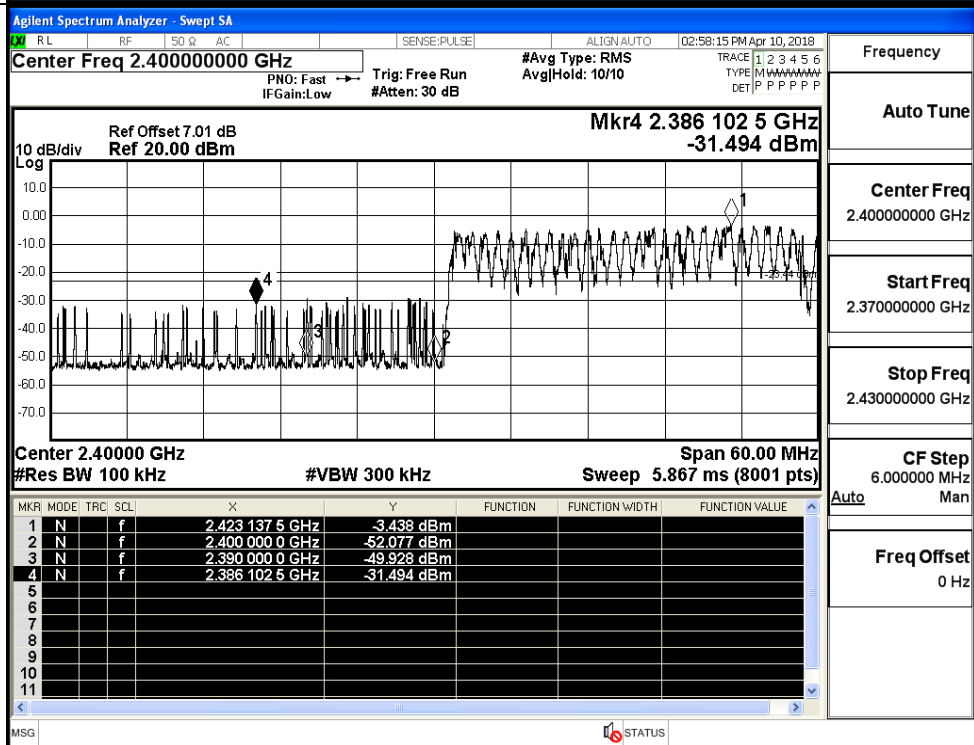
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-5.303	Off	-48.187	-25.3	PASS
			-3.438	On	-31.494	-23.44	PASS
	HCH	2480	0.268	Off	-50.272	-19.73	PASS
			0.243	On	-31.114	-19.76	PASS
$\pi/4$ DQPSK	LCH	2402	-6.226	Off	-48.778	-26.23	PASS
			-3.210	On	-47.122	-23.21	PASS
	HCH	2480	0.176	Off	-50.550	-19.82	PASS
			-0.030	On	-42.650	-20.03	PASS
8DPSK	LCH	2402	-5.809	Off	-49.303	-25.81	PASS
			-3.703	On	-48.463	-23.7	PASS
	HCH	2480	0.381	Off	-50.356	-19.62	PASS
			0.430	On	-42.888	-19.57	PASS

Test Graphs

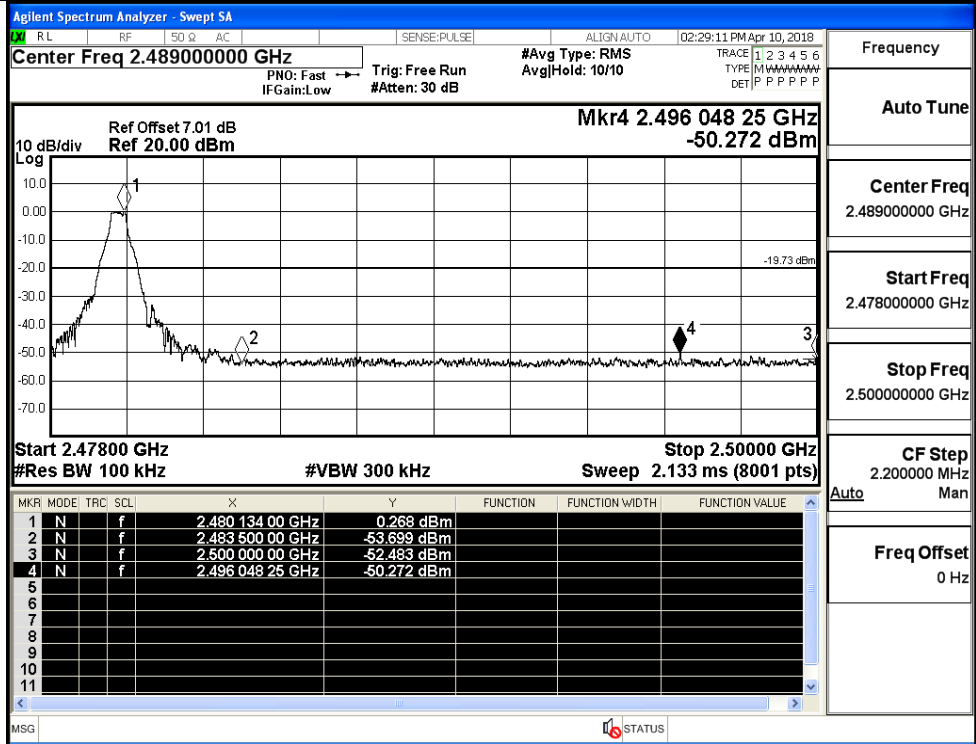
GFSK/LCH/No Hop



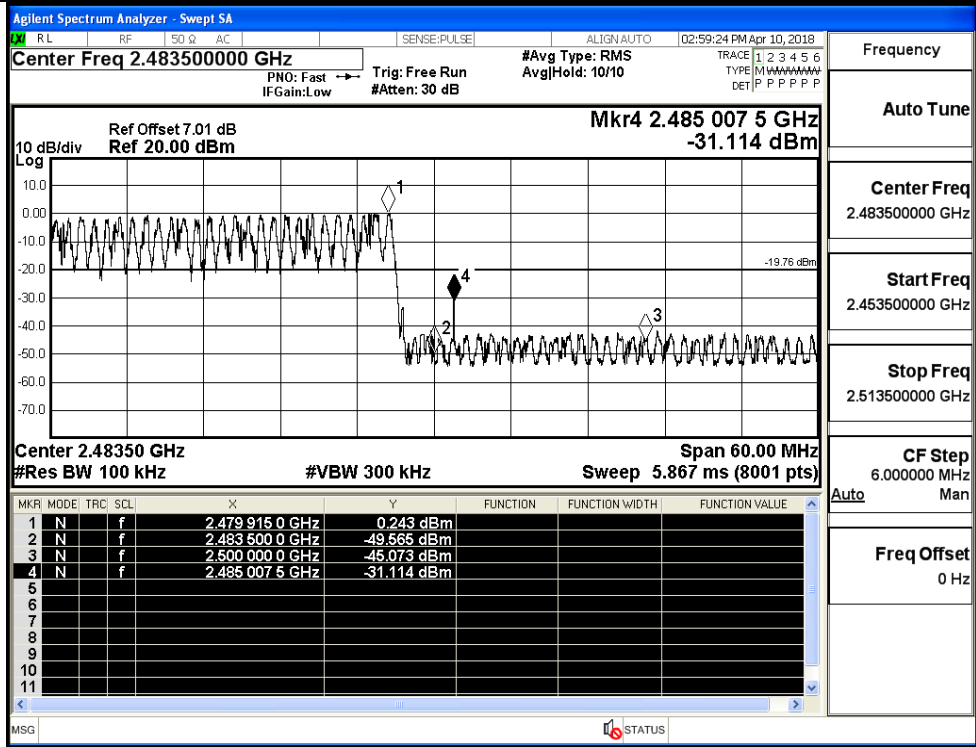
GFSK/LCH/Hop



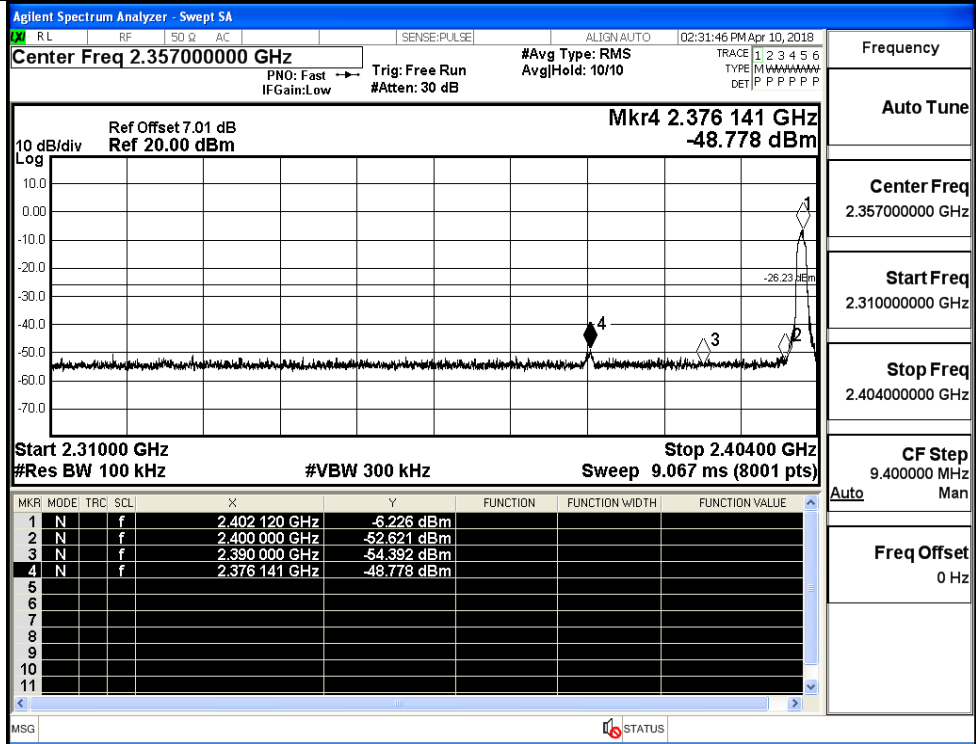
GFSK/HCH/No Hop



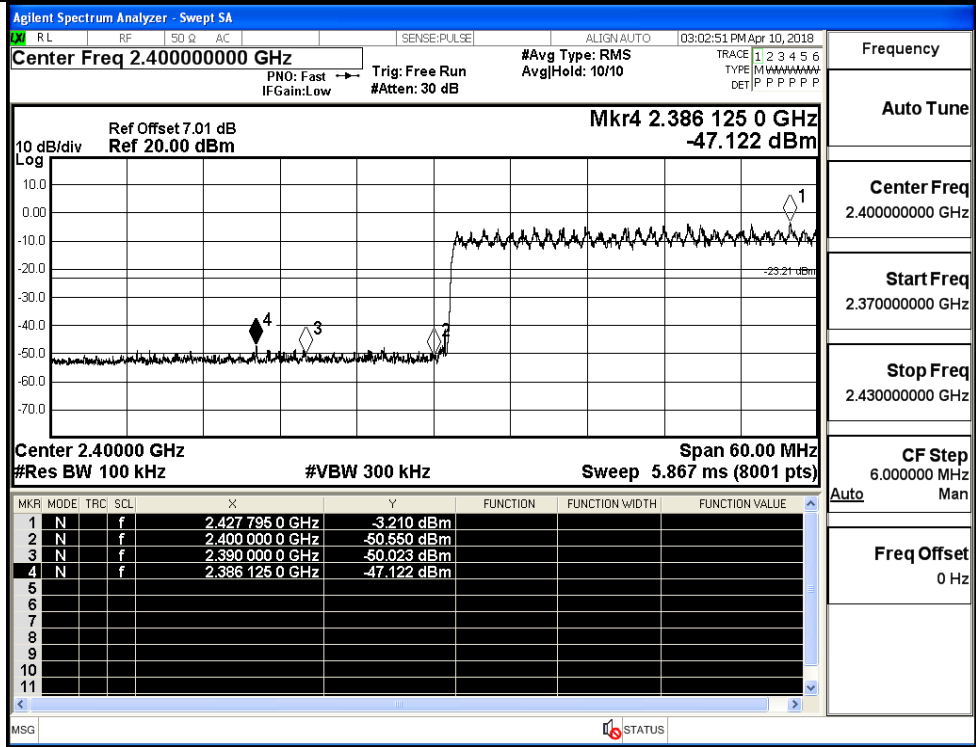
GFSK/HCH/Hop



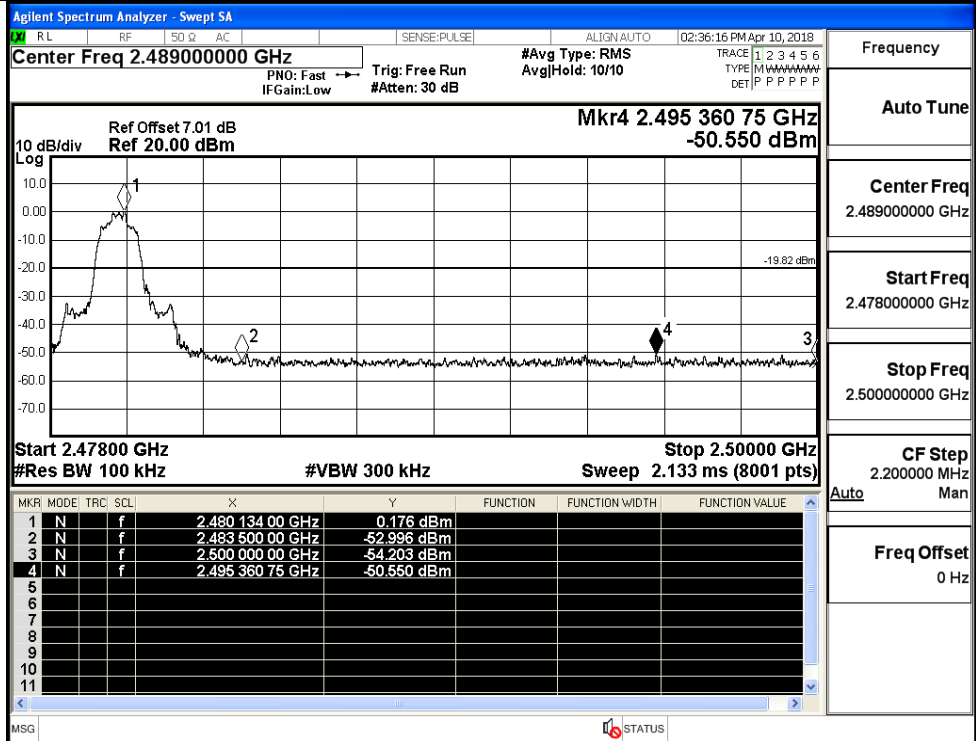
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



π /4DQPSK/HCH/No
Hop



Frequency

Auto Tune

Center Freq
2.489000000 GHz

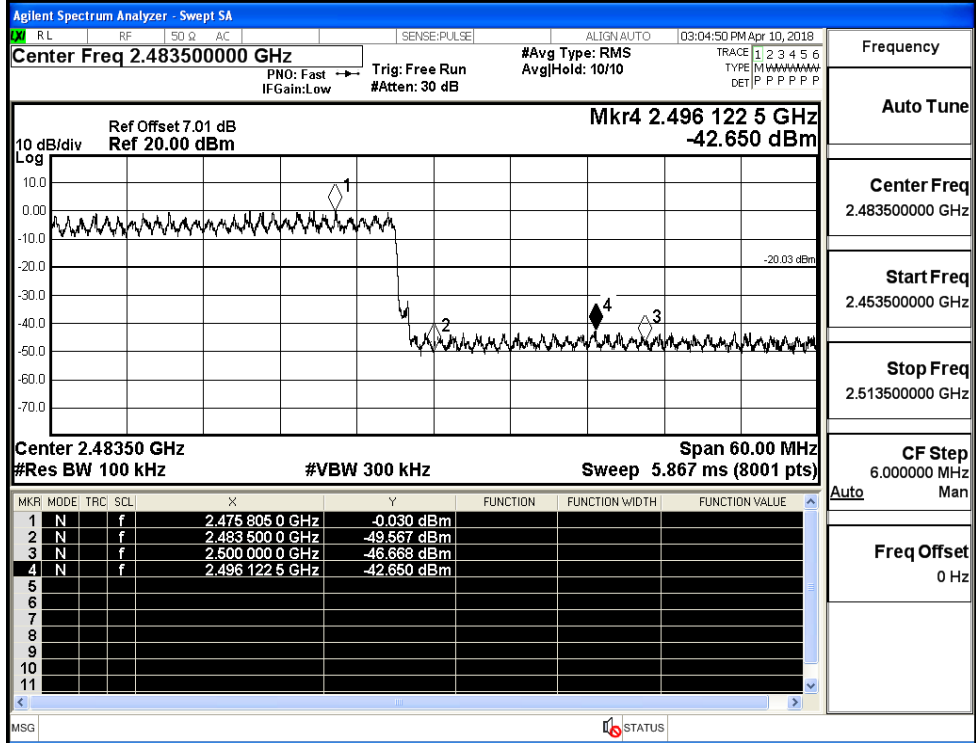
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

π /4DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

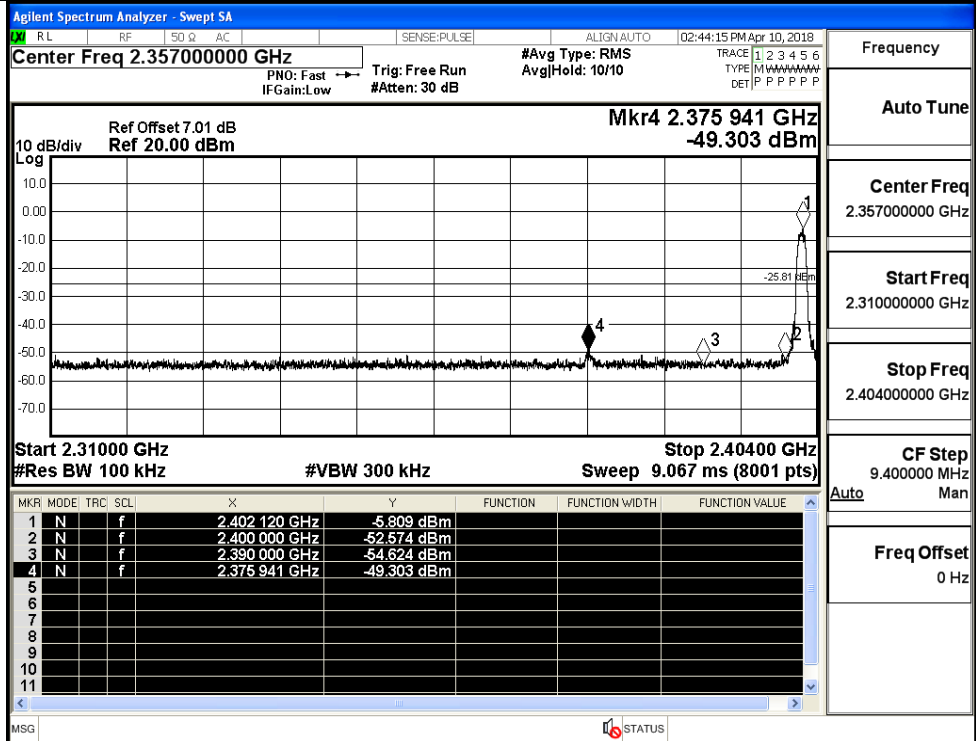
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

CF Step
6.000000 MHz

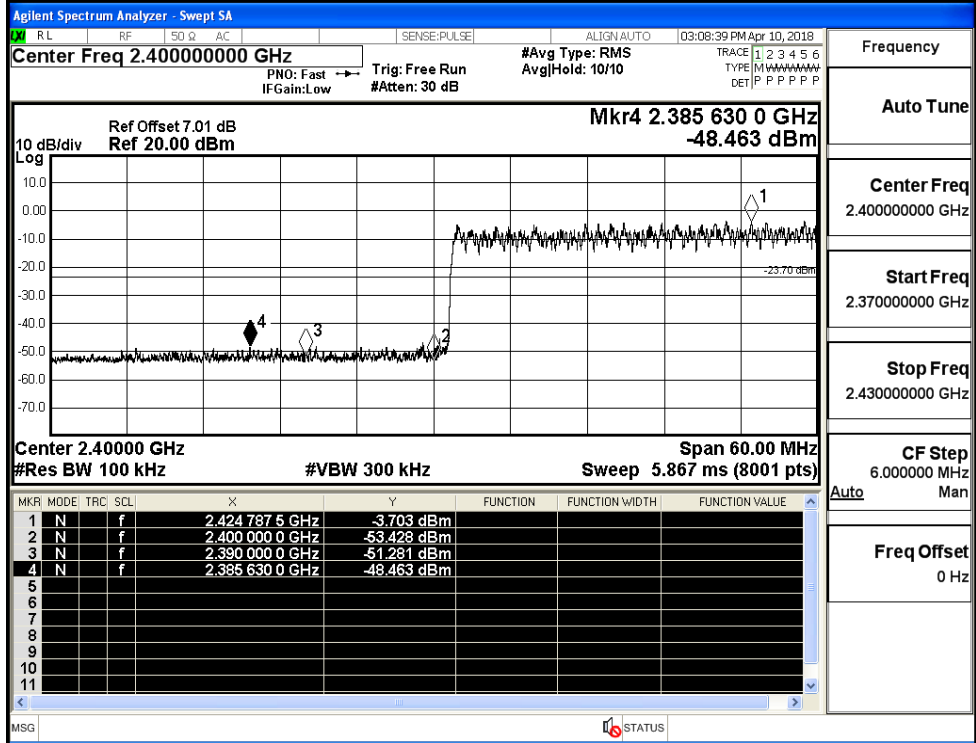
Freq Offset
0 Hz

8DPSK/LCH/No Hop



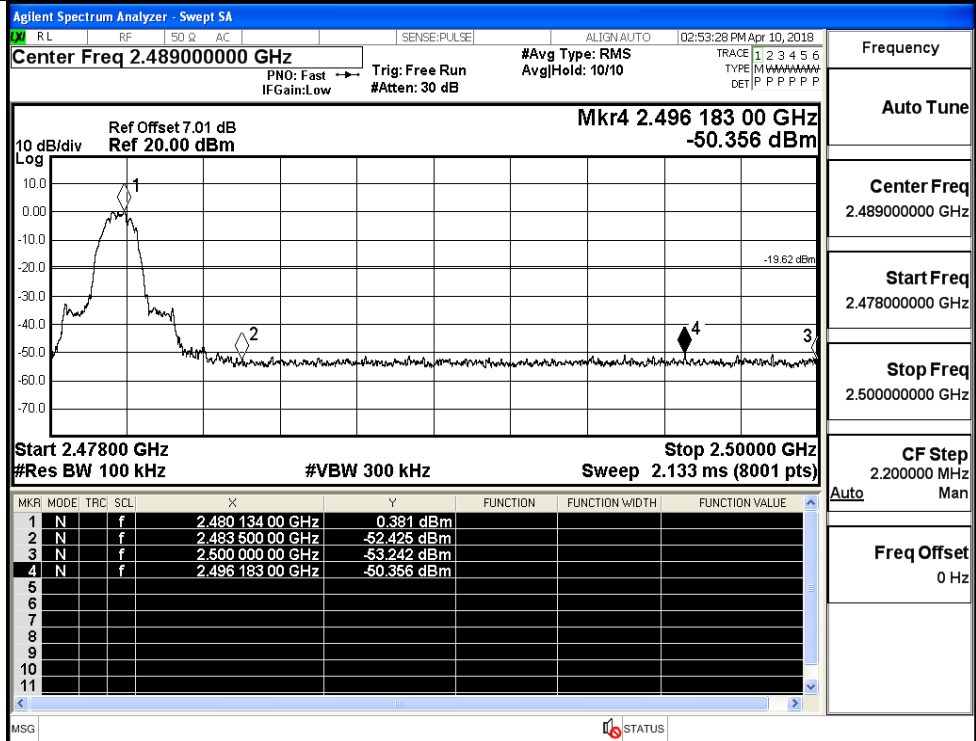
Frequency	2.357000000 GHz
Auto Tune	
Center Freq	2.357000000 GHz
Start Freq	2.310000000 GHz
Stop Freq	2.404000000 GHz
CF Step	9.400000 MHz
Freq Offset	0 Hz

8DPSK/LCH/Hop



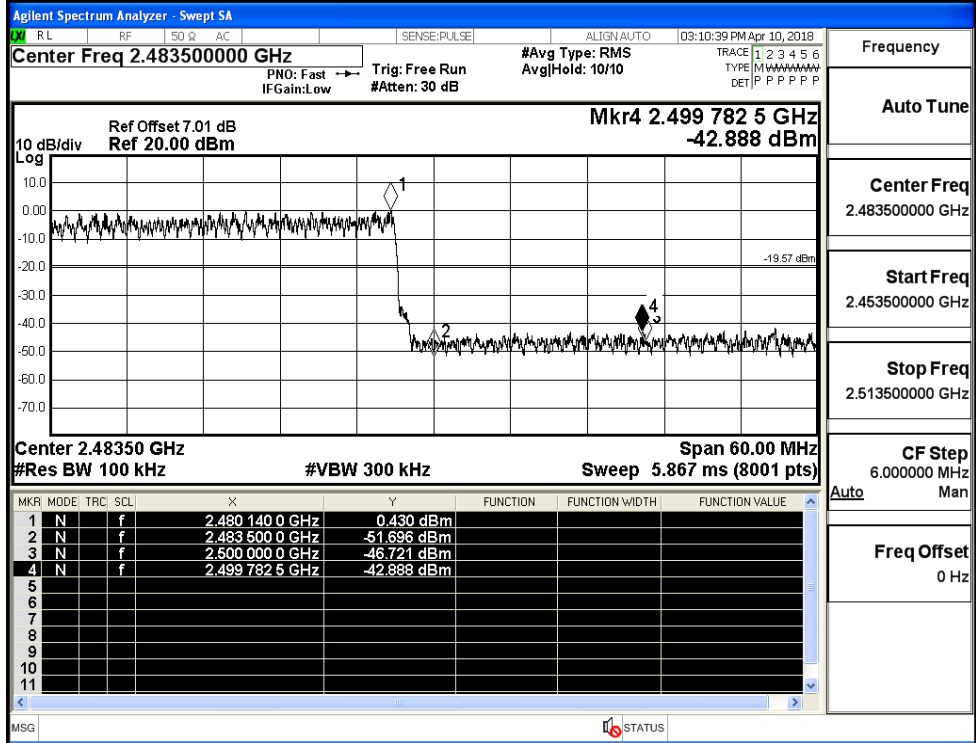
Frequency	2.400000000 GHz
Auto Tune	
Center Freq	2.400000000 GHz
Start Freq	2.370000000 GHz
Stop Freq	2.430000000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

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
Auto Man
Freq Offset
0 Hz

8DPSK/HCH/Hop

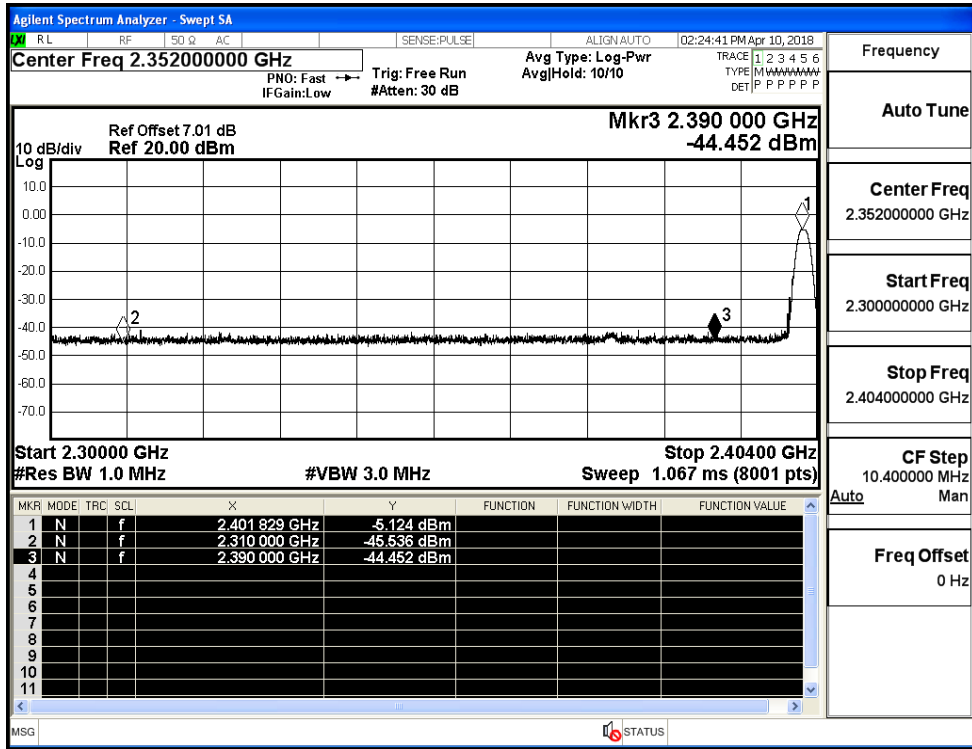


Frequency
Auto Tune
Center Freq
2.483500000 GHz
Start Freq
2.453500000 GHz
Stop Freq
2.513500000 GHz
CF Step
6.000000 MHz
Auto Man
Freq Offset
0 Hz

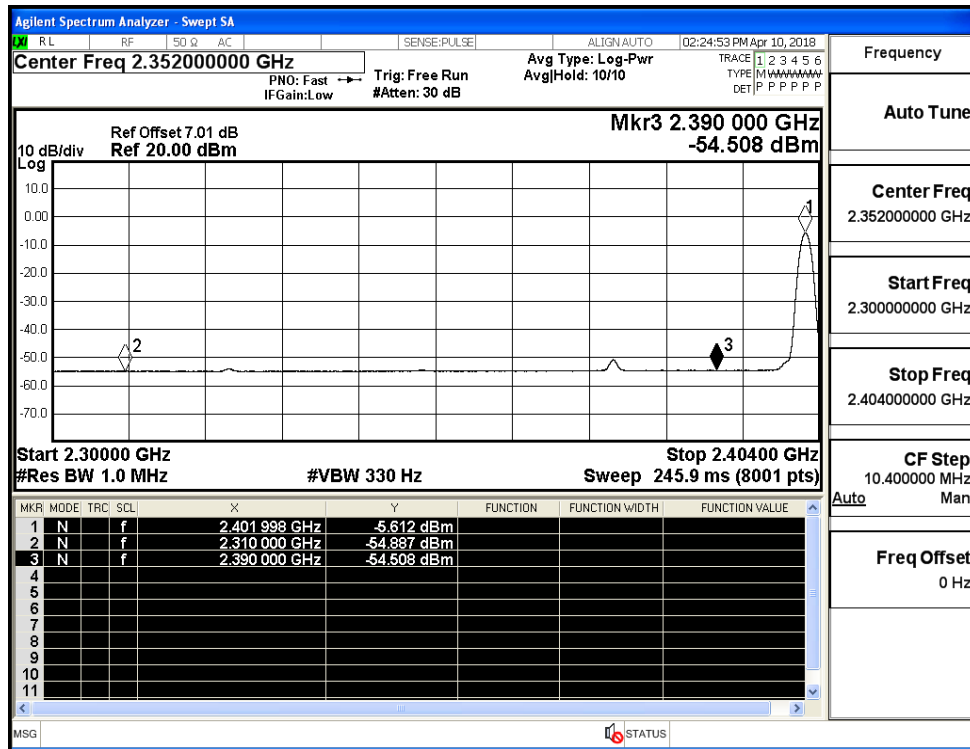
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.54	2.0	0	51.72	PEAK	74	PASS
	Off	2310.0	-54.89	2.0	0	42.37	AV	54	PASS
	Off	2390.0	-44.45	2.0	0	52.81	PEAK	74	PASS
	Off	2390.0	-54.51	2.0	0	42.75	AV	54	PASS
	Off	2483.5	-44.39	2.0	0	52.87	PEAK	74	PASS
	Off	2483.5	-52.70	2.0	0	44.56	AV	54	PASS
	Off	2500.0	-43.42	2.0	0	53.84	PEAK	74	PASS
	Off	2500.0	-54.12	2.0	0	43.14	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.74	2.0	0	52.52	PEAK	74	PASS
	Off	2310.0	-54.87	2.0	0	42.39	AV	54	PASS
	Off	2390.0	-44.73	2.0	0	52.52	PEAK	74	PASS
	Off	2390.0	-54.54	2.0	0	42.72	AV	54	PASS
	Off	2483.5	-42.91	2.0	0	54.35	PEAK	74	PASS
	Off	2483.5	-52.75	2.0	0	44.5	AV	54	PASS
	Off	2500.0	-44.47	2.0	0	52.79	PEAK	74	PASS
	Off	2500.0	-54.03	2.0	0	43.23	AV	54	PASS
8DPSK	Off	2310.0	-42.70	2.0	0	54.56	PEAK	74	PASS
	Off	2310.0	-54.91	2.0	0	42.35	AV	54	PASS
	Off	2390.0	-44.05	2.0	0	53.21	PEAK	74	PASS
	Off	2390.0	-54.58	2.0	0	42.67	AV	54	PASS
	Off	2483.5	-44.64	2.0	0	52.62	PEAK	74	PASS
	Off	2483.5	-52.75	2.0	0	44.51	AV	54	PASS
	Off	2500.0	-44.90	2.0	0	52.35	PEAK	74	PASS
	Off	2500.0	-54.04	2.0	0	43.22	AV	54	PASS

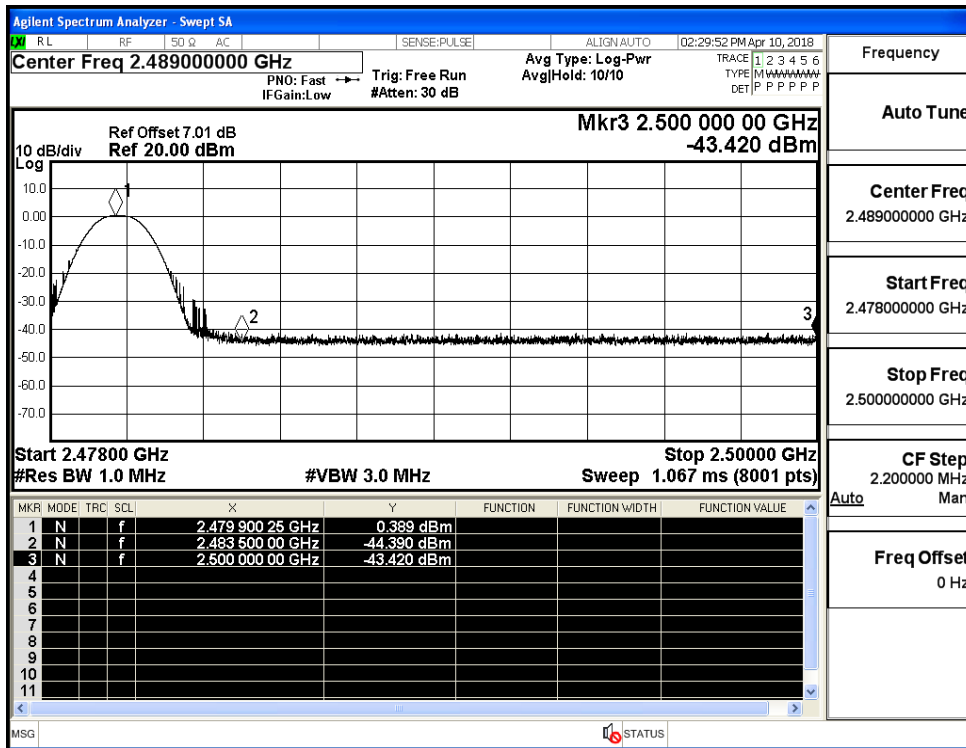
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



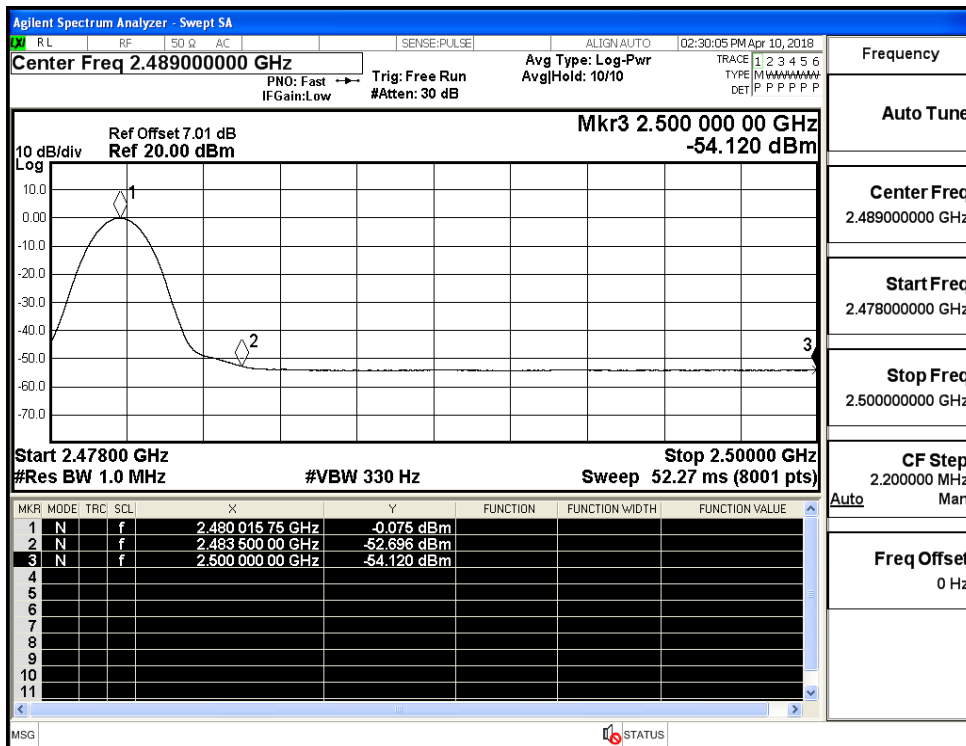
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



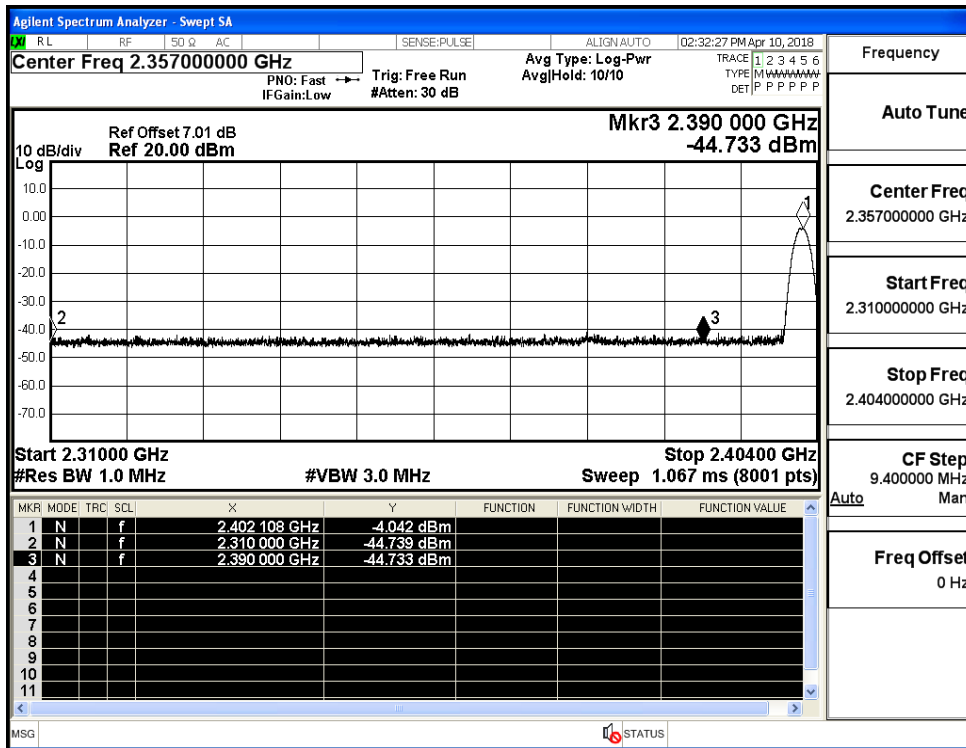
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



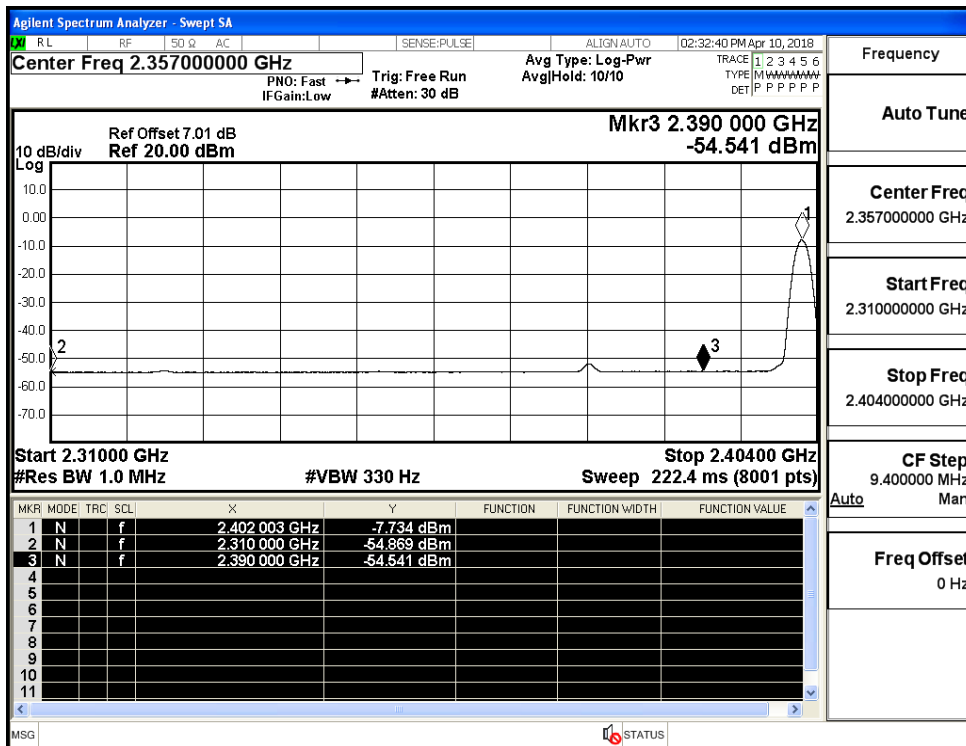
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



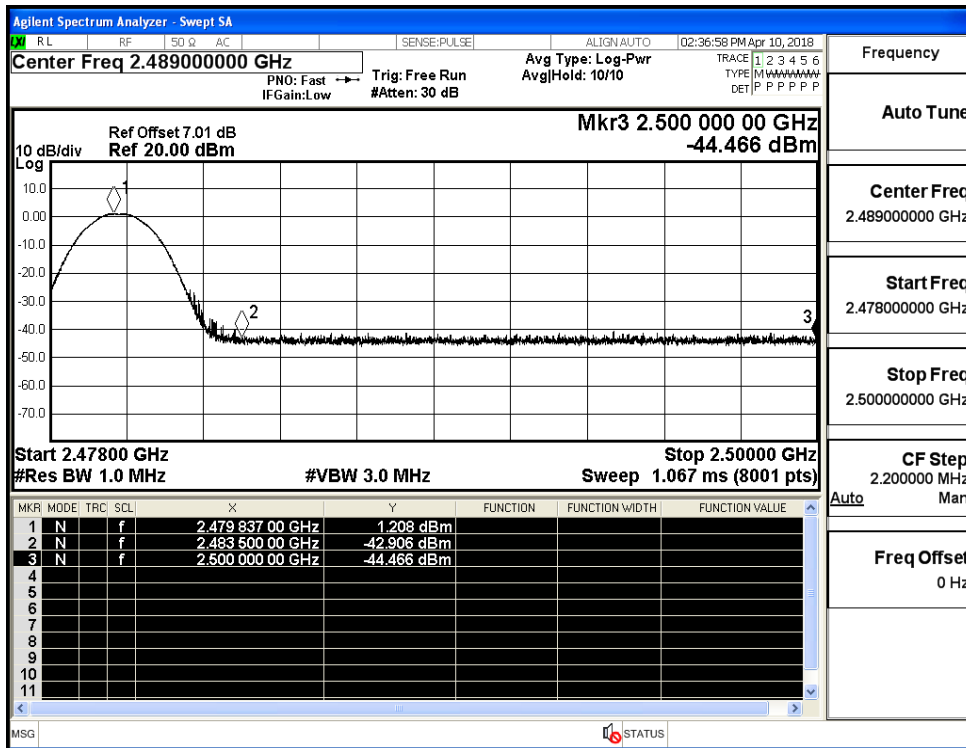
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



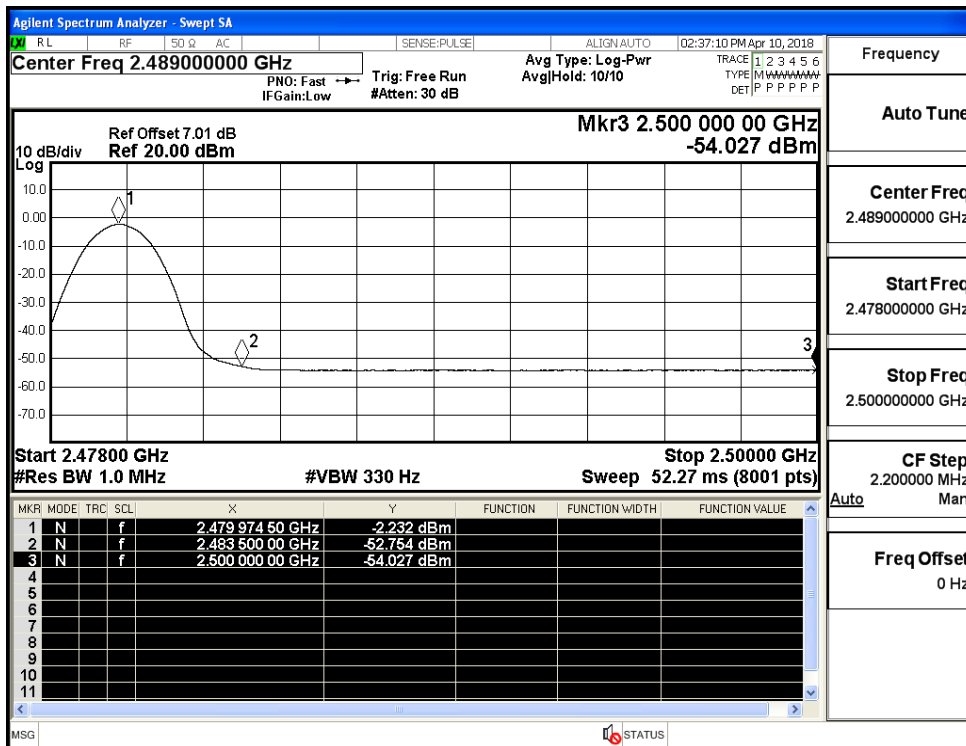
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



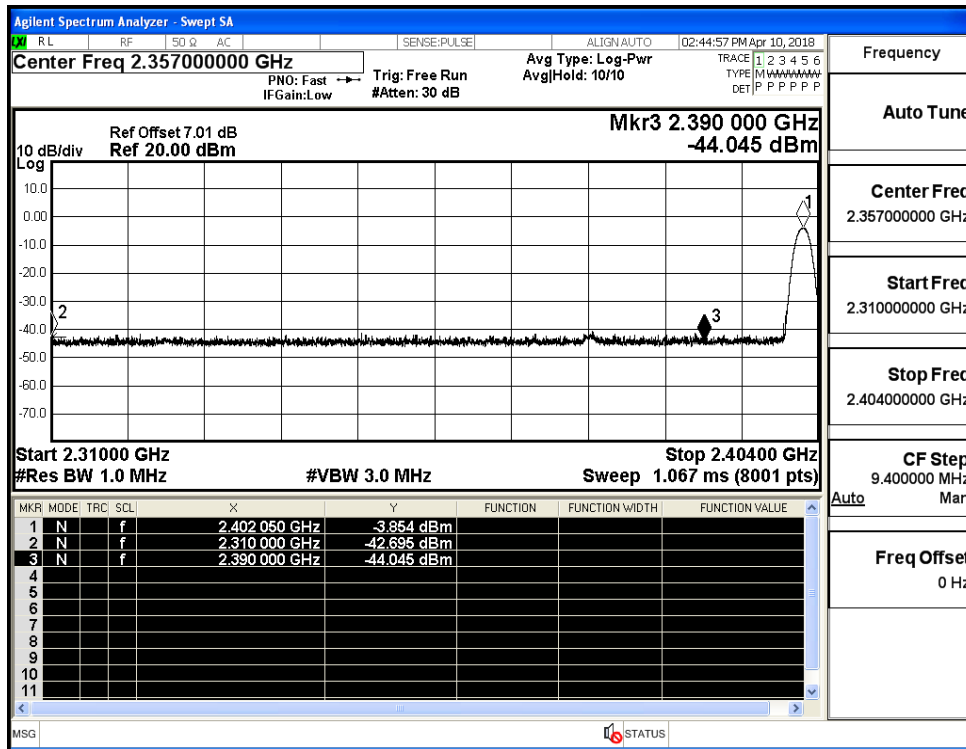
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



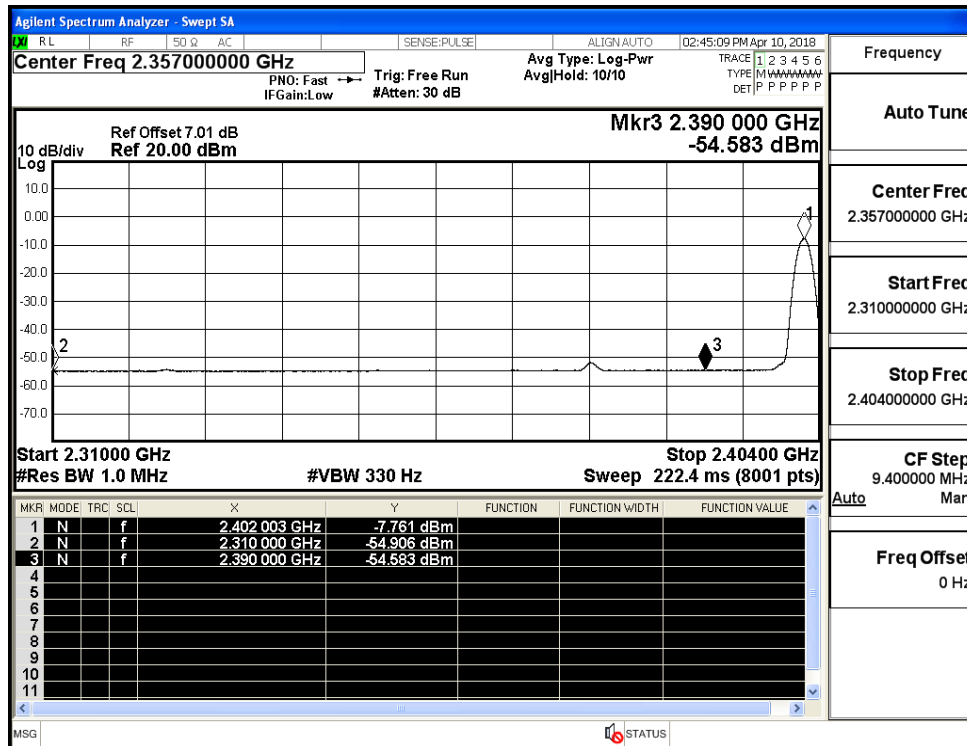
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



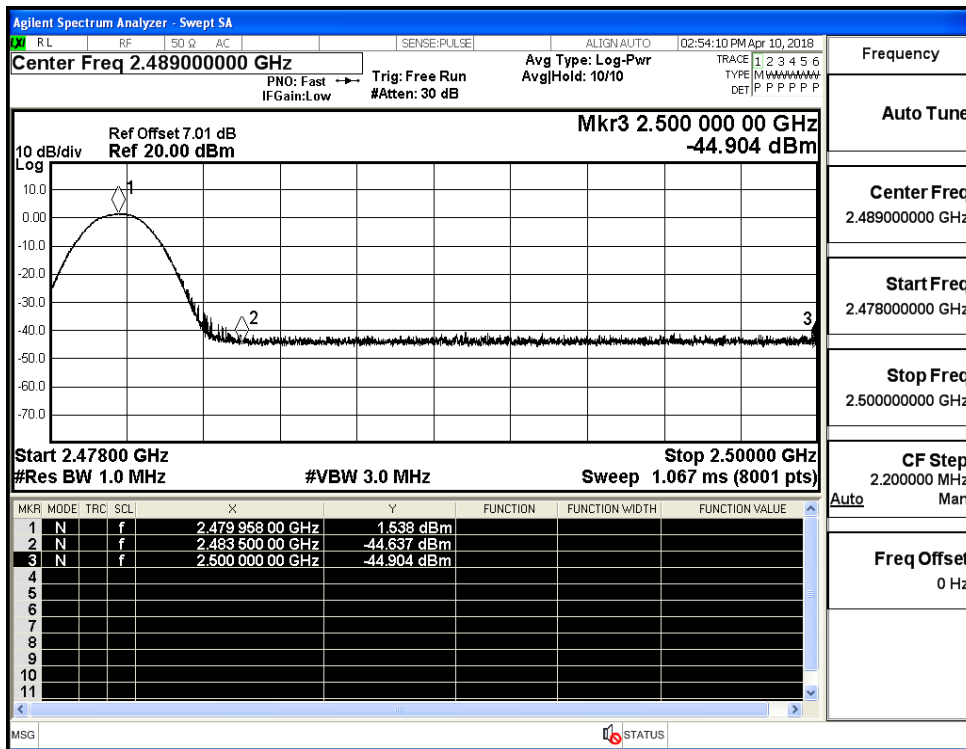
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

