

Appendix A

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

Product Name: Bluetooth Speaker with Magnet and Hook

Trade Mark: Klein Tools

Test Model: AEPJS3

Environmental Conditions

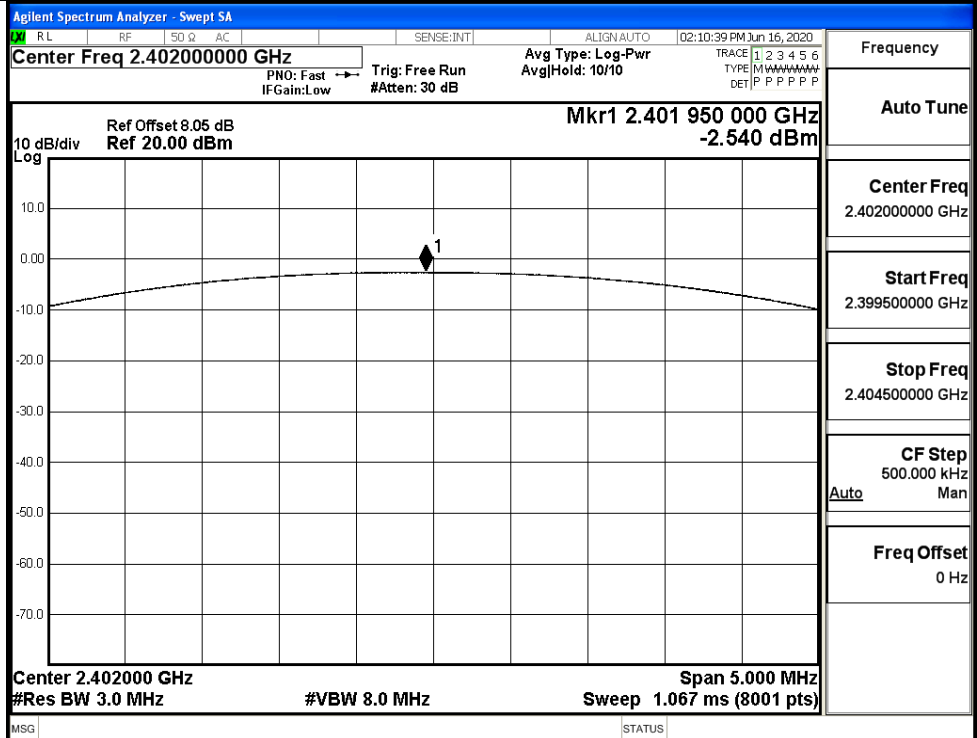
Temperature:	25.1 ° C
Relative Humidity:	53.4%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

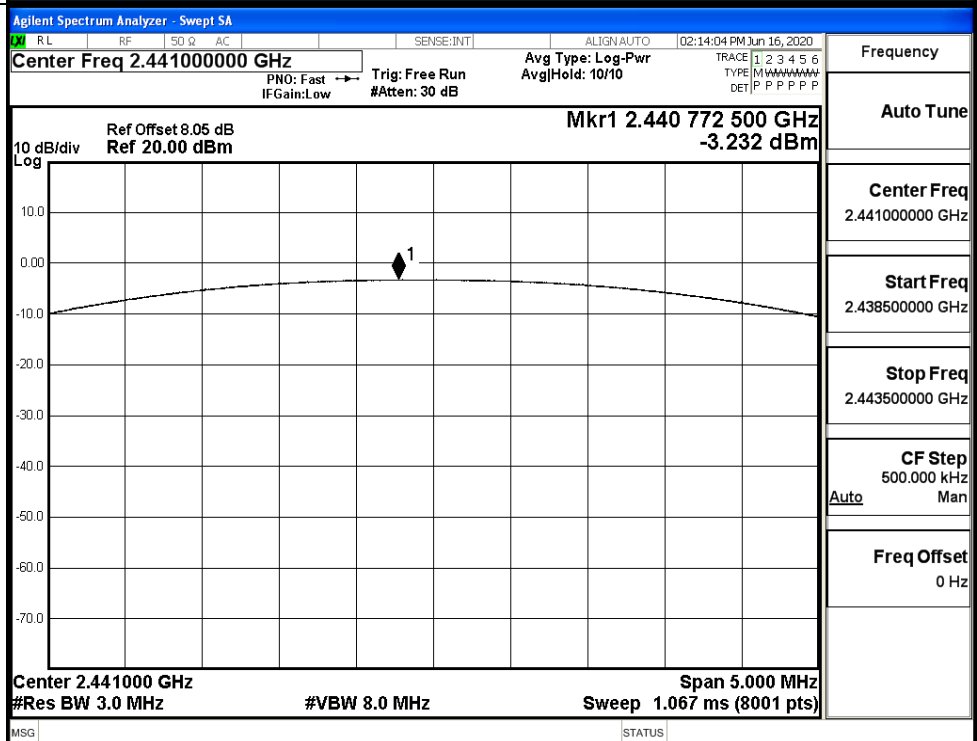
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.540	21	PASS
	MCH	-3.232	21	PASS
	HCH	-2.942	21	PASS
$\pi/4$ DQPSK	LCH	1.284	21	PASS
	MCH	0.409	21	PASS
	HCH	0.753	21	PASS
8DPSK	LCH	1.906	21	PASS
	MCH	-4.421	21	PASS
	HCH	-4.036	21	PASS

Test Graphs

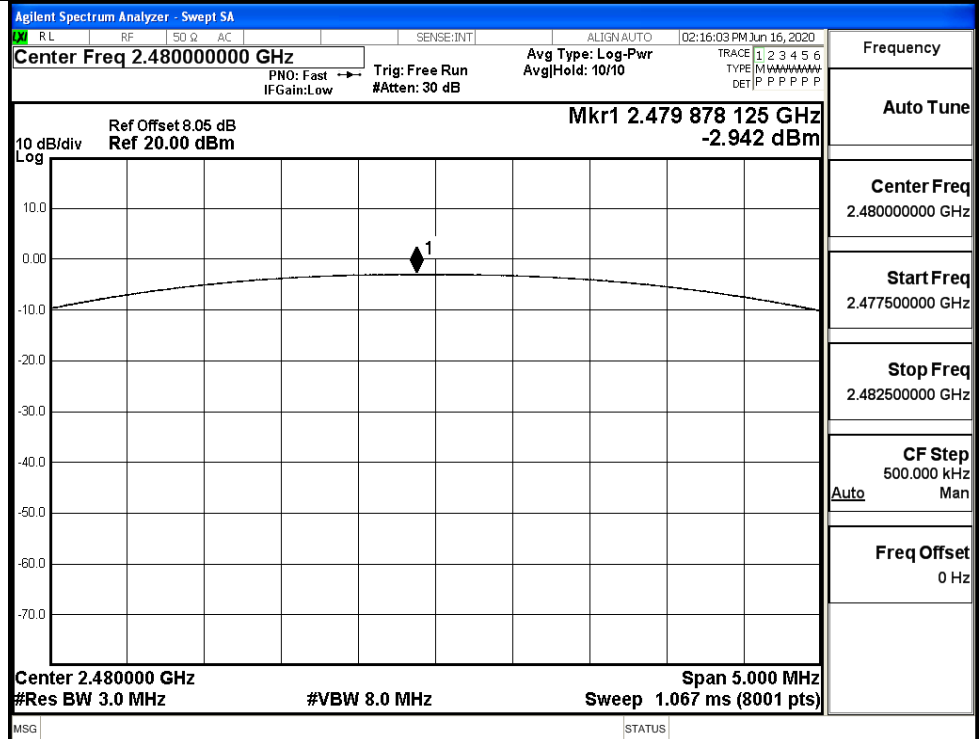
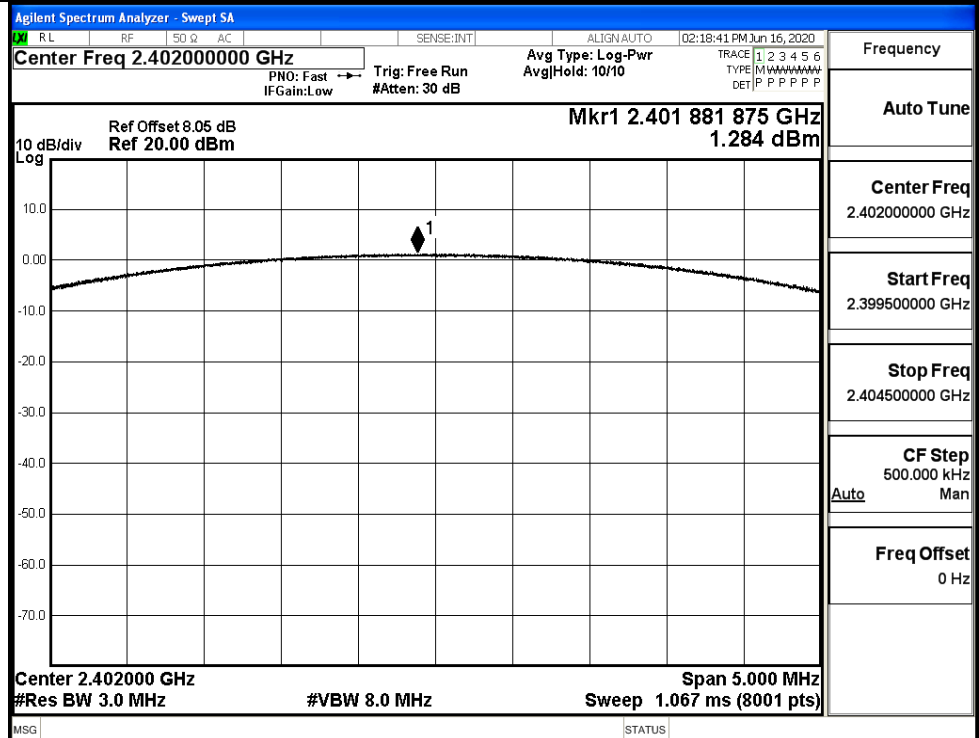
GFSK/LCH

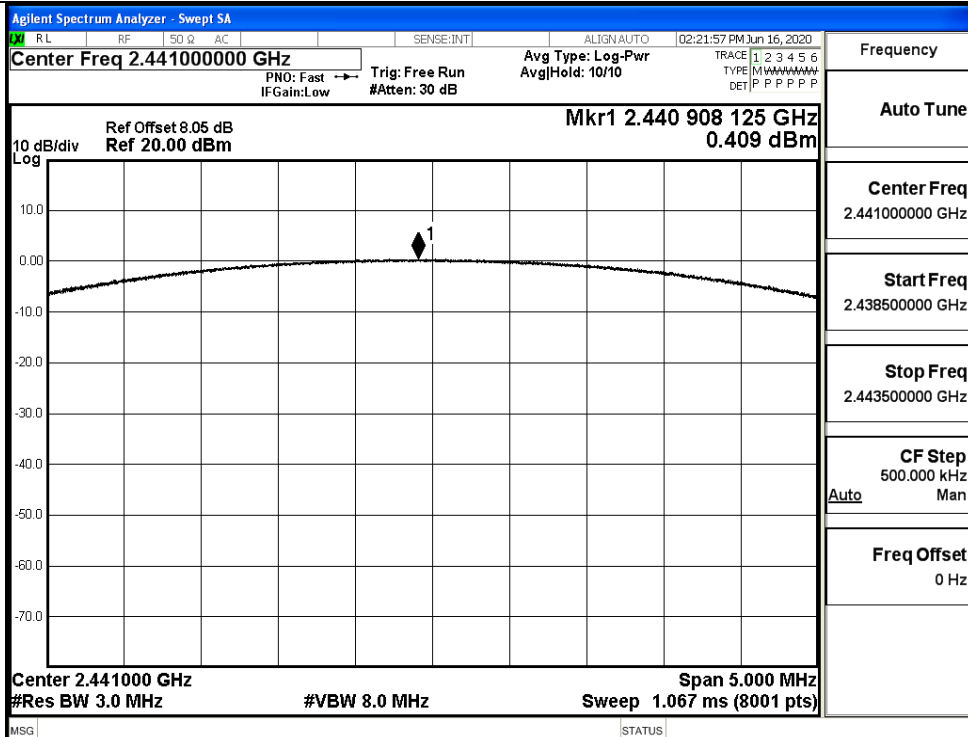
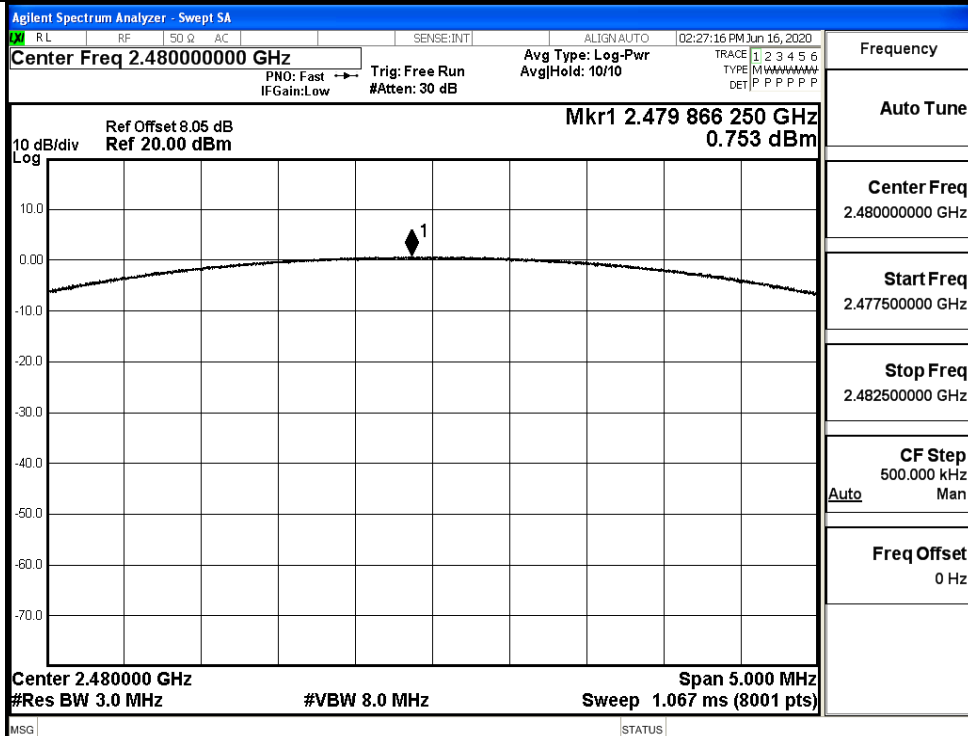


GFSK/MCH

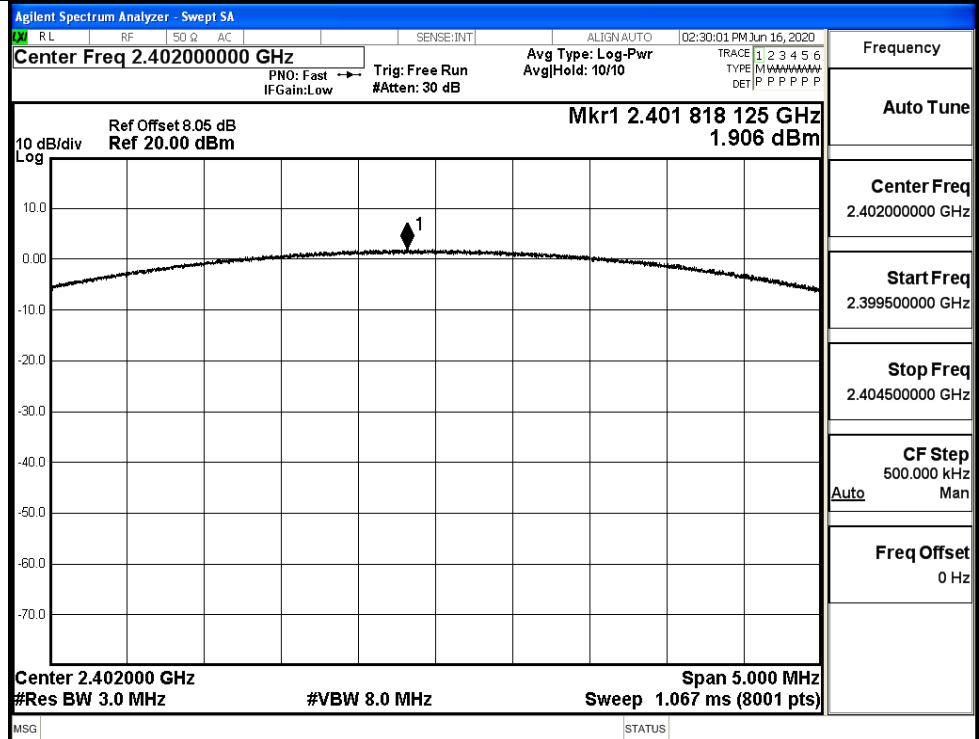


GFSK/HCH

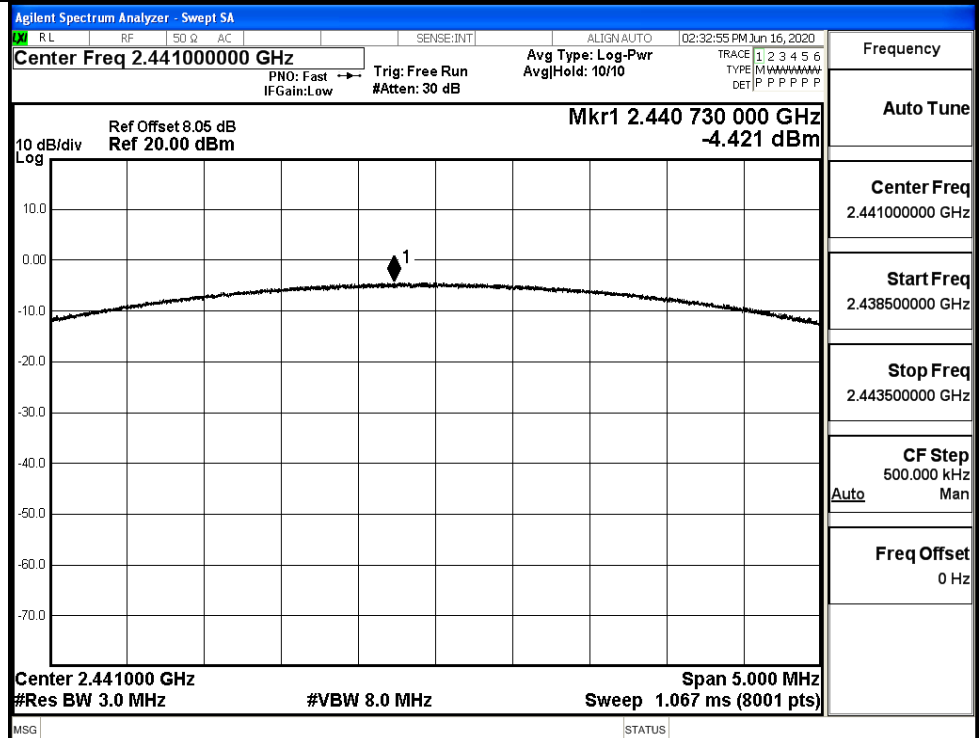
 $\pi/4$ DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

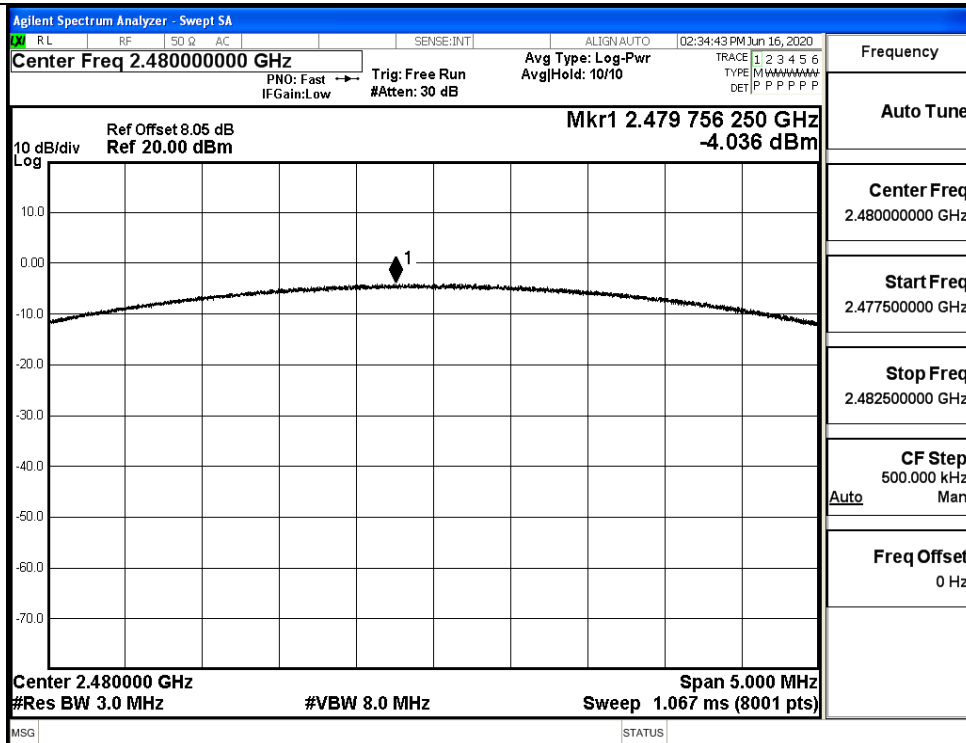
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

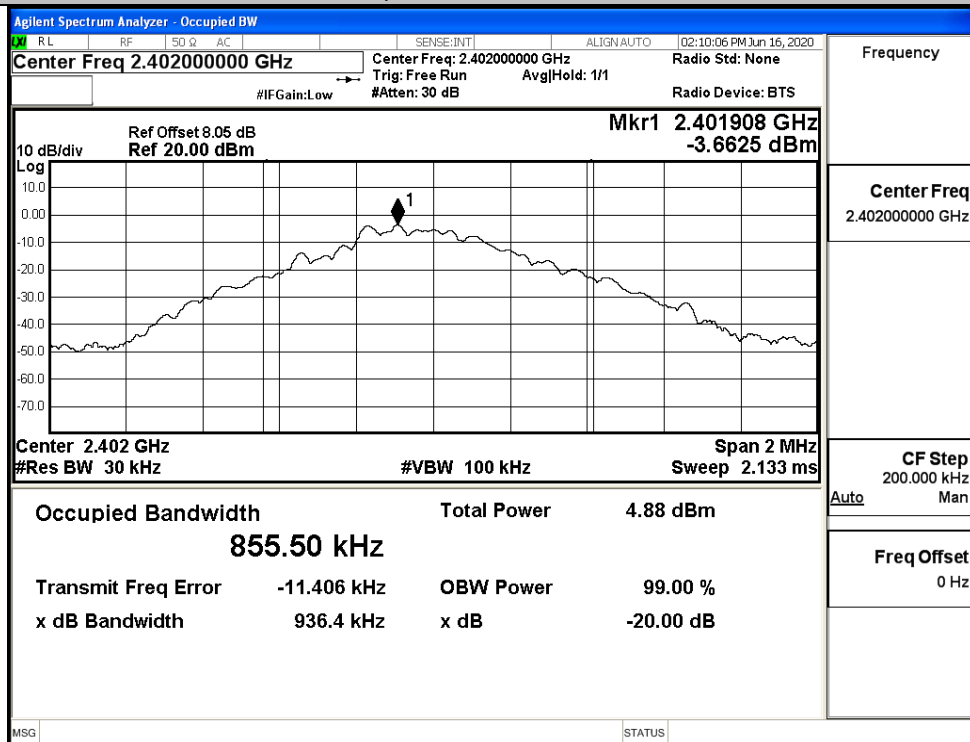


A.2 20dB Bandwidth&99% Bandwidth

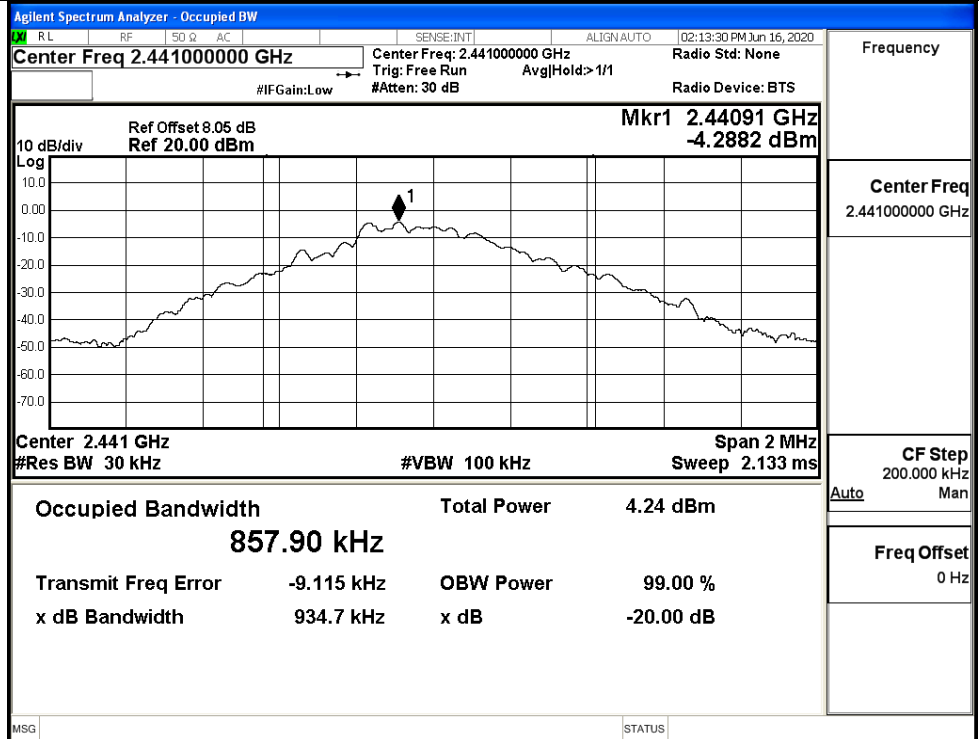
Mode	Channel.	20dB Bandwidth [MHz]	99% Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9364	0.8555	Not Specified	PASS
	MCH	0.9347	0.8579	Not Specified	PASS
	HCH	0.9377	0.8575	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.285	1.1944	Not Specified	PASS
	MCH	1.287	1.1926	Not Specified	PASS
	HCH	1.285	1.1918	Not Specified	PASS
8DPSK	LCH	1.294	1.1952	Not Specified	PASS
	MCH	1.295	1.1872	Not Specified	PASS
	HCH	1.294	1.1883	Not Specified	PASS

Test Graphs

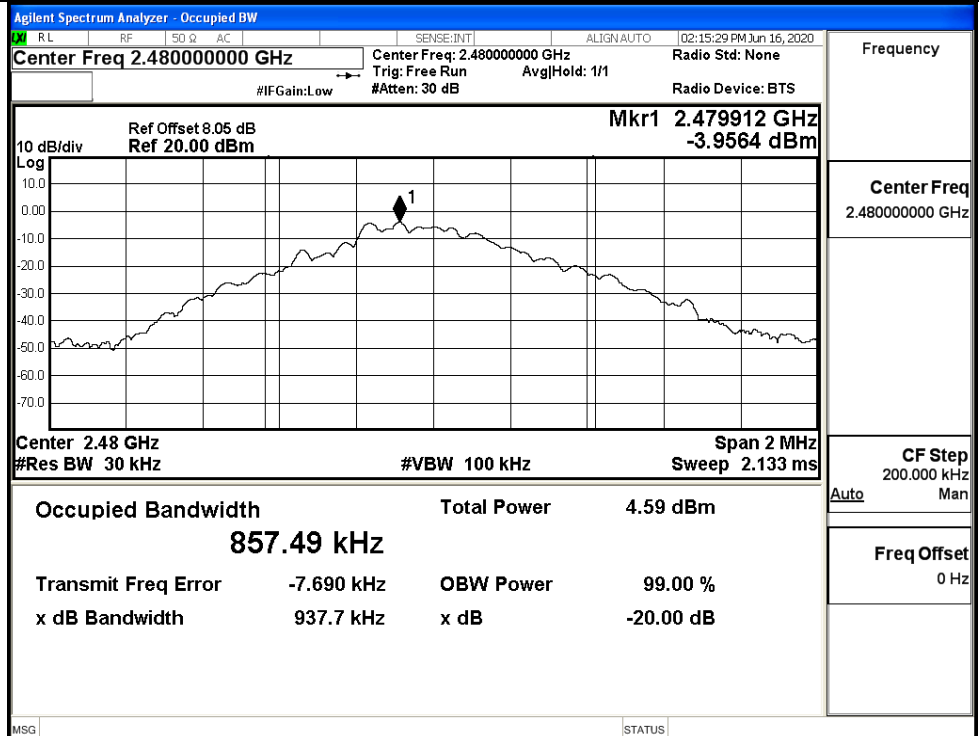
GFSK/LCH

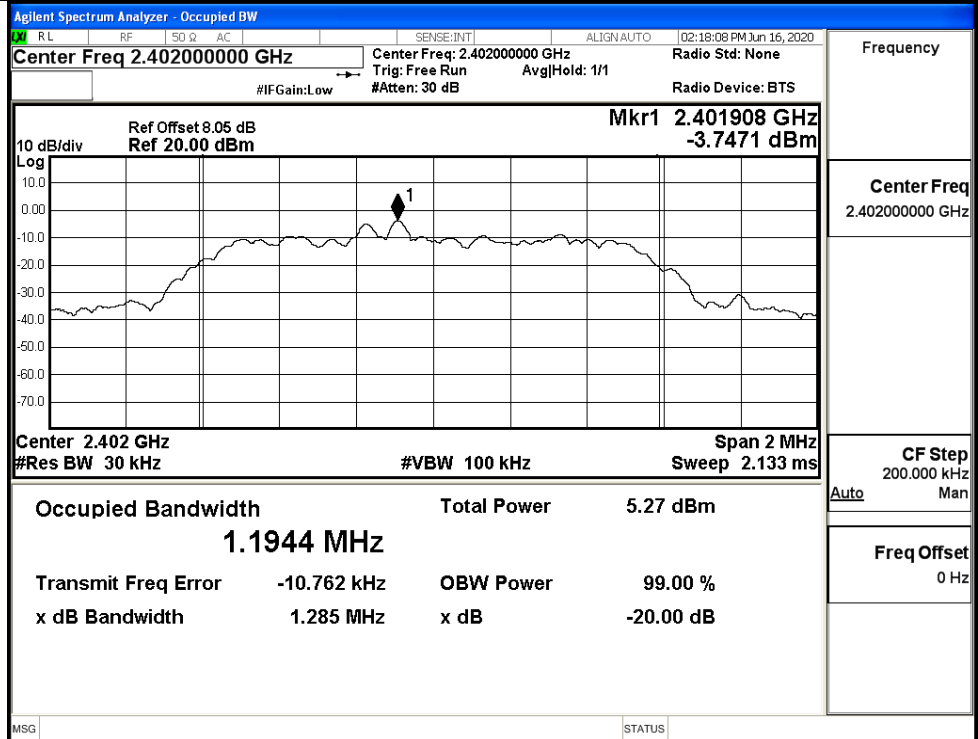
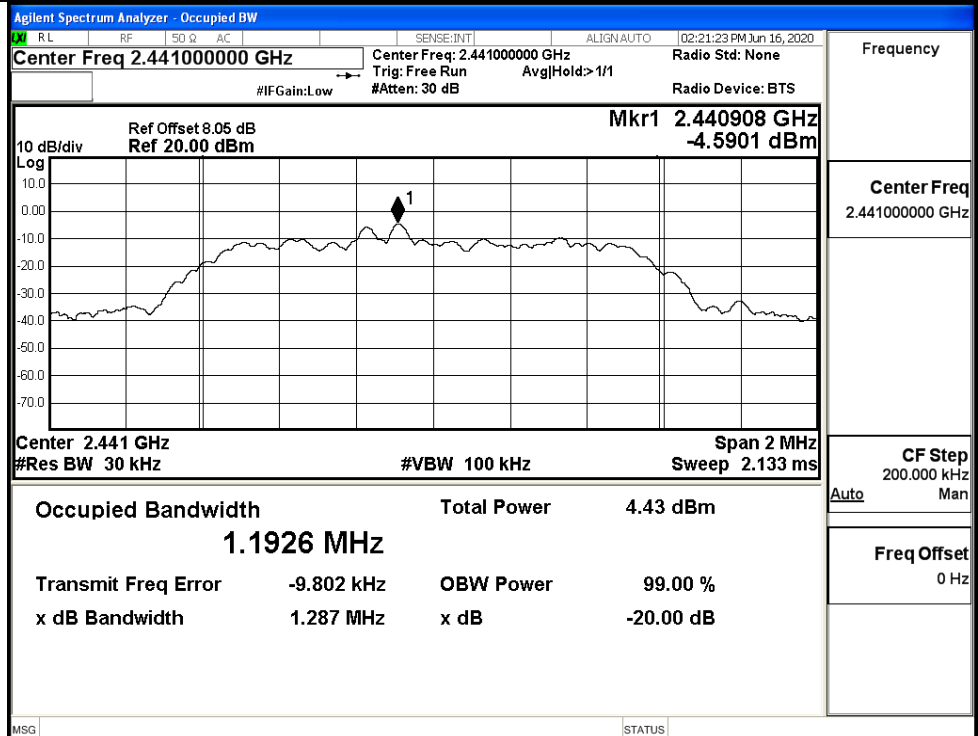


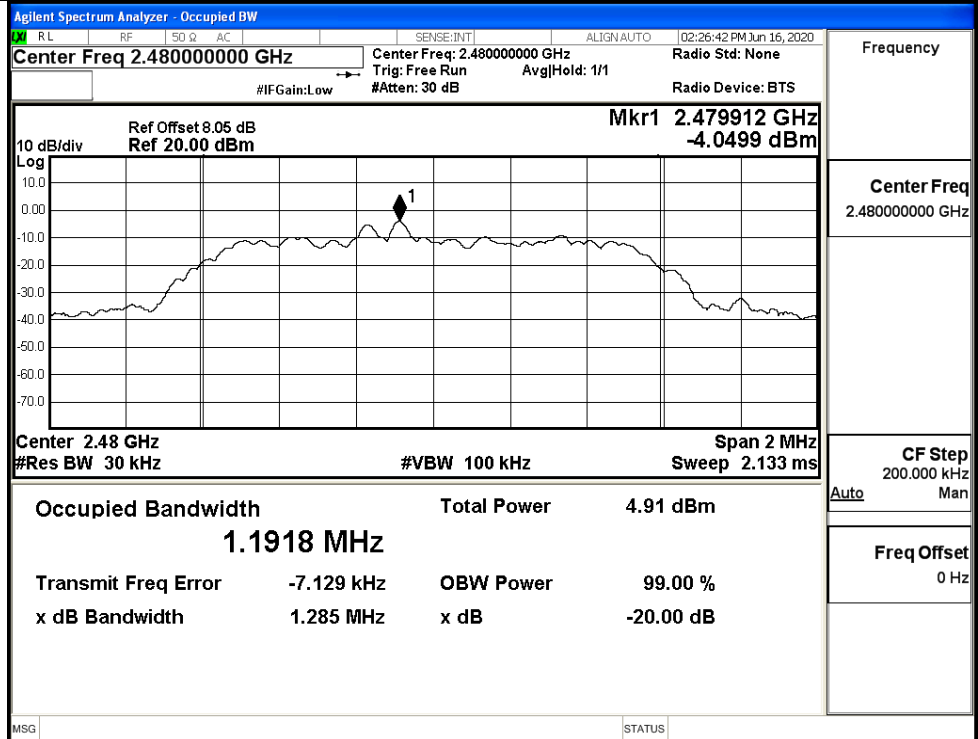
GFSK/MCH



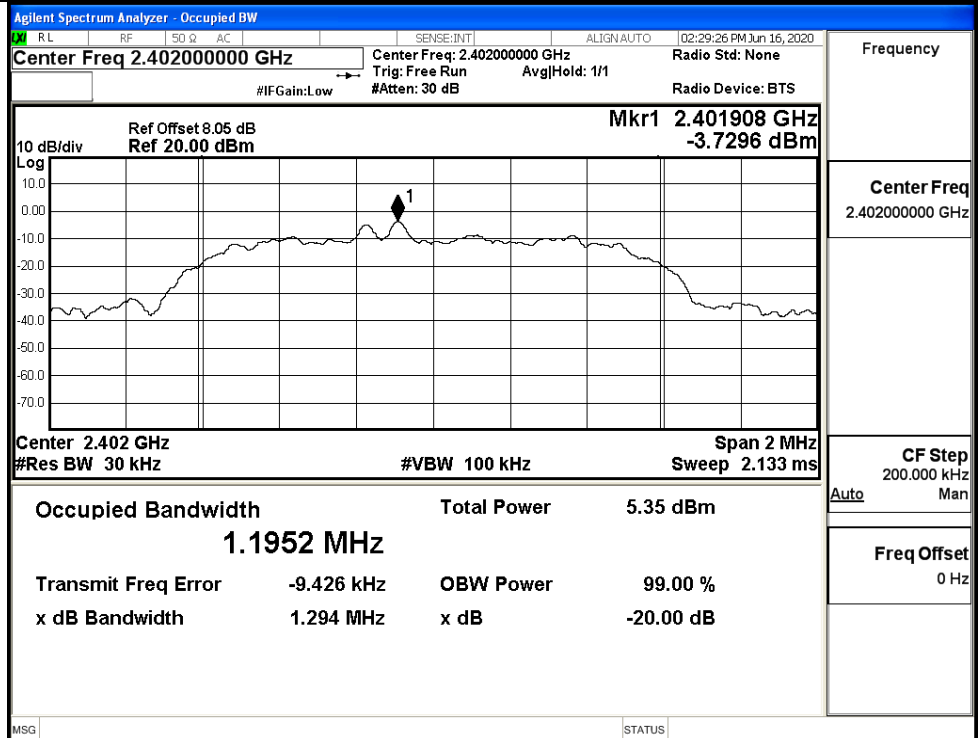
GFSK/HCH



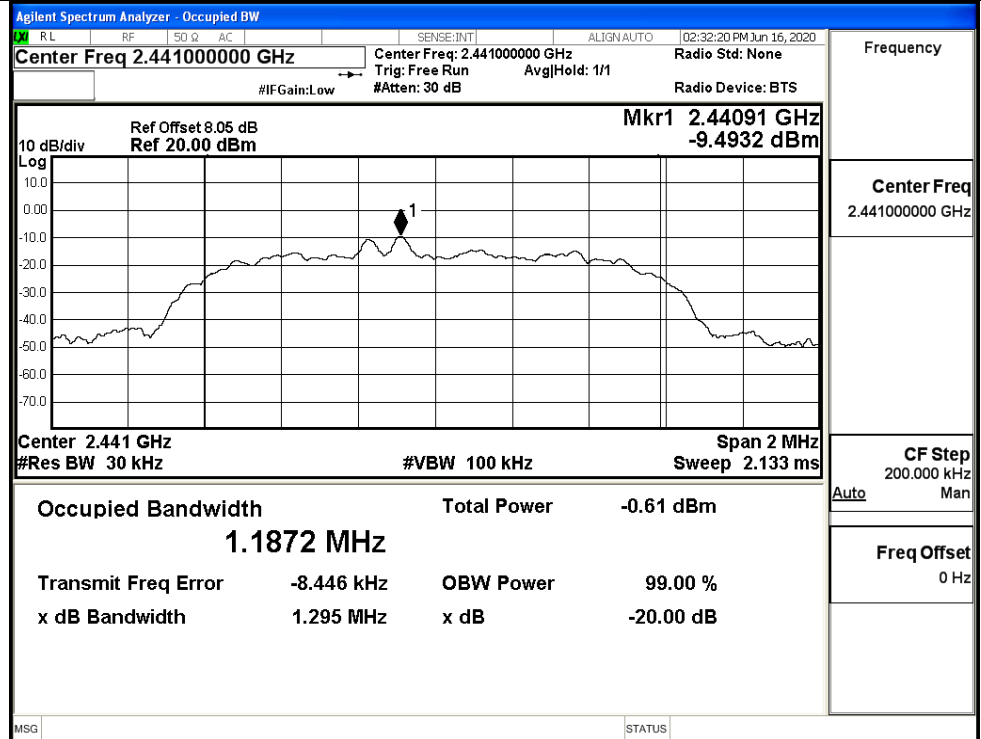
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

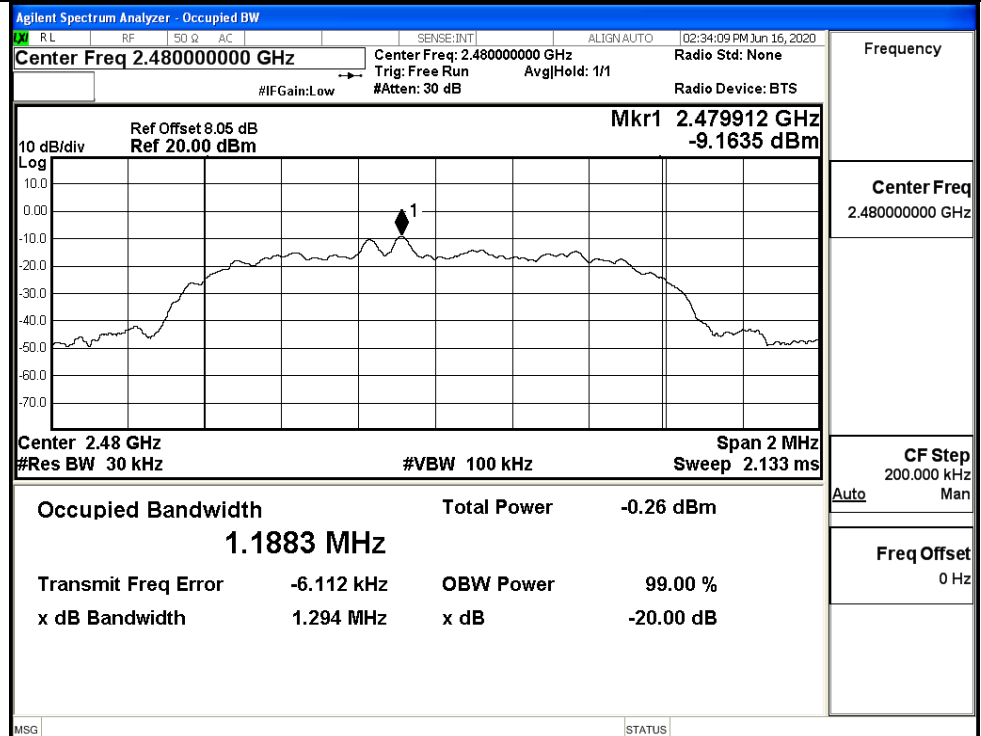
8DPSK/LCH



8DPSK/MCH



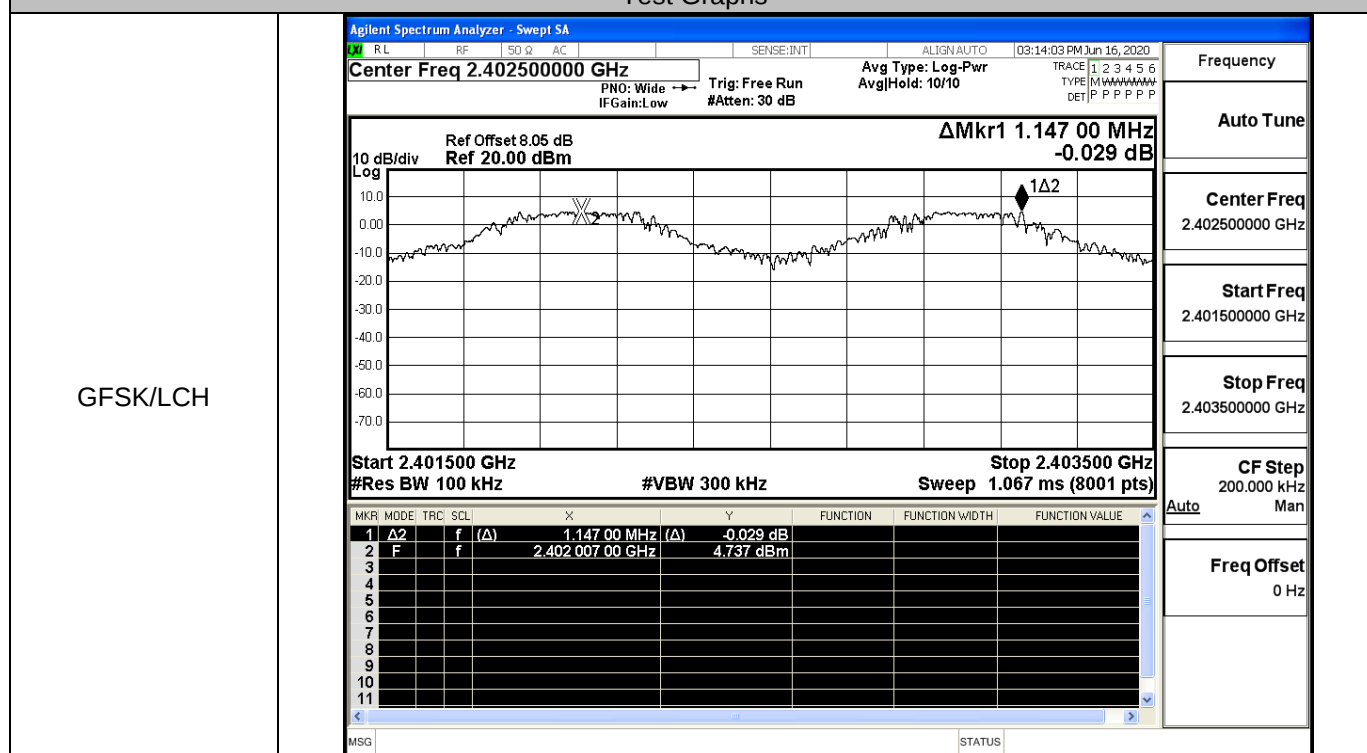
8DPSK/HCH



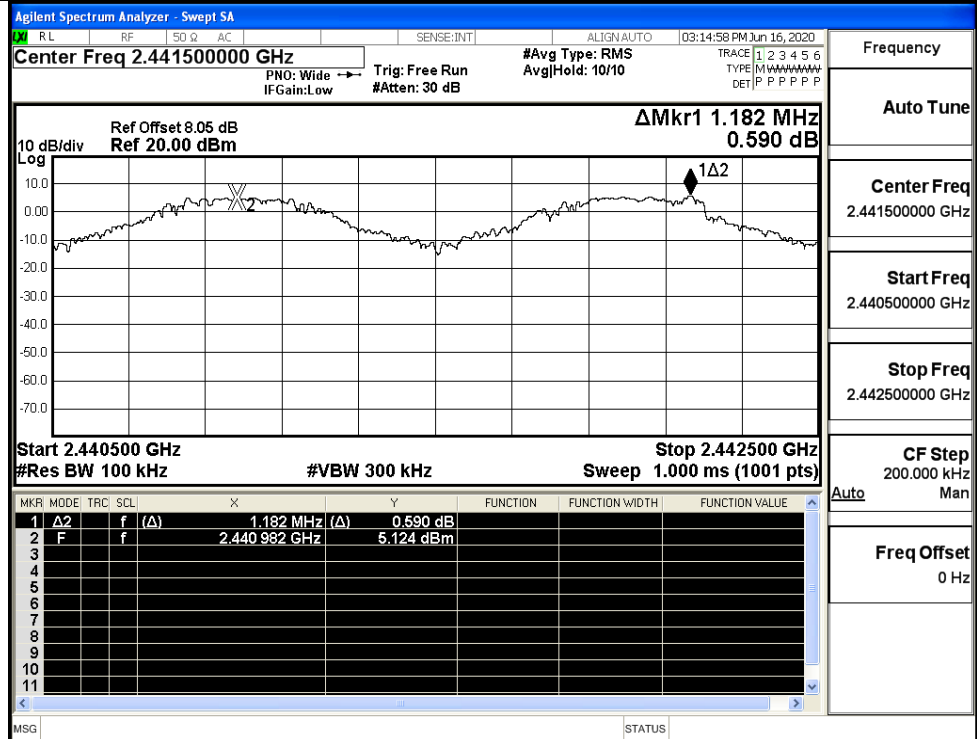
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.147	0.625	PASS
	MCH	1.182	0.625	PASS
	HCH	1.002	0.625	PASS
$\pi/4$ DQPSK	LCH	1.160	0.858	PASS
	MCH	0.998	0.858	PASS
	HCH	0.872	0.858	PASS
8DPSK	LCH	1.008	0.863	PASS
	MCH	0.878	0.863	PASS
	HCH	1.004	0.863	PASS

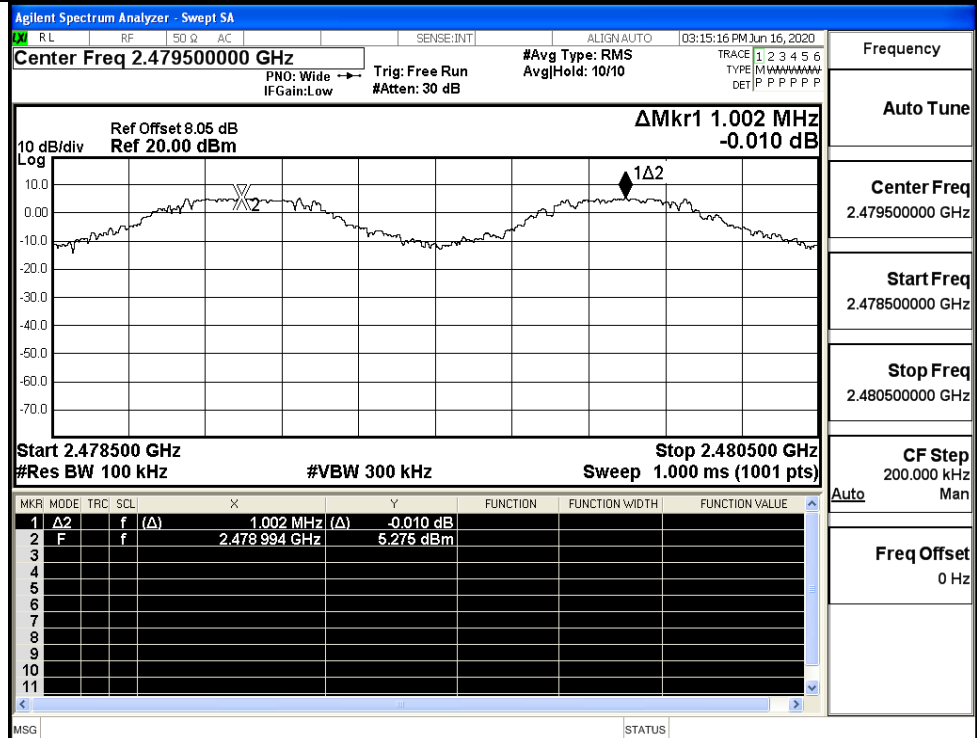
Test Graphs

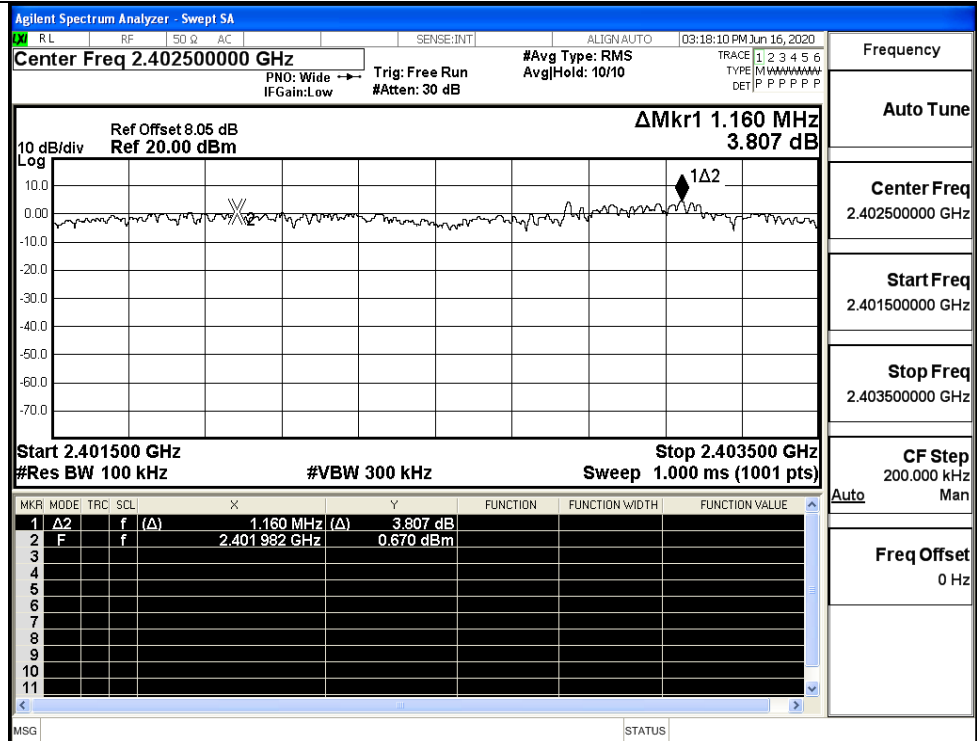
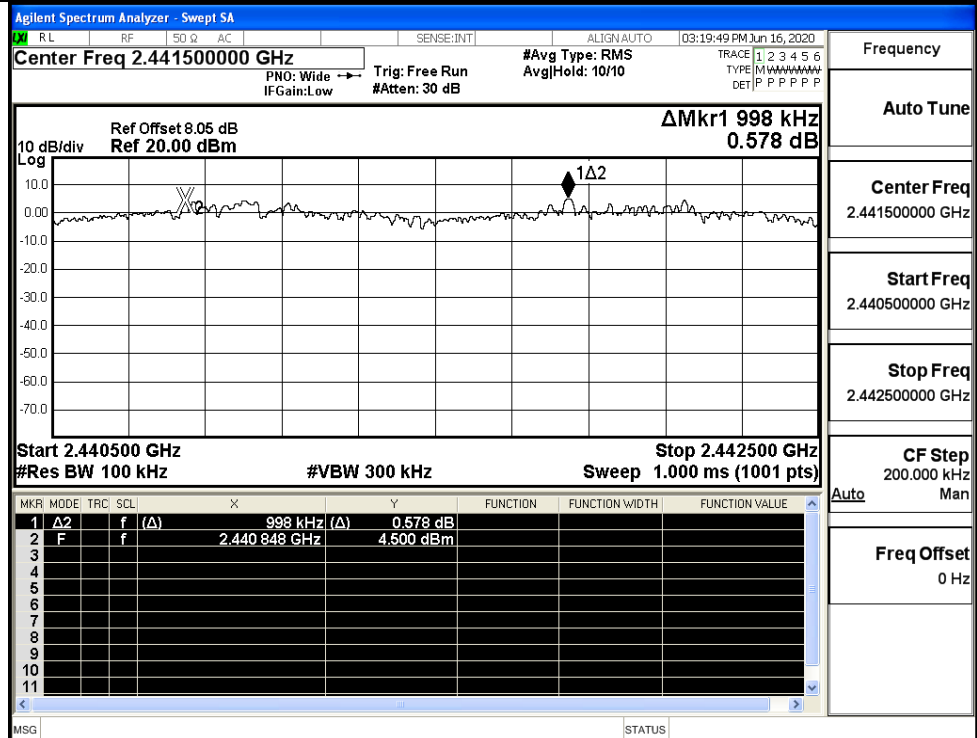


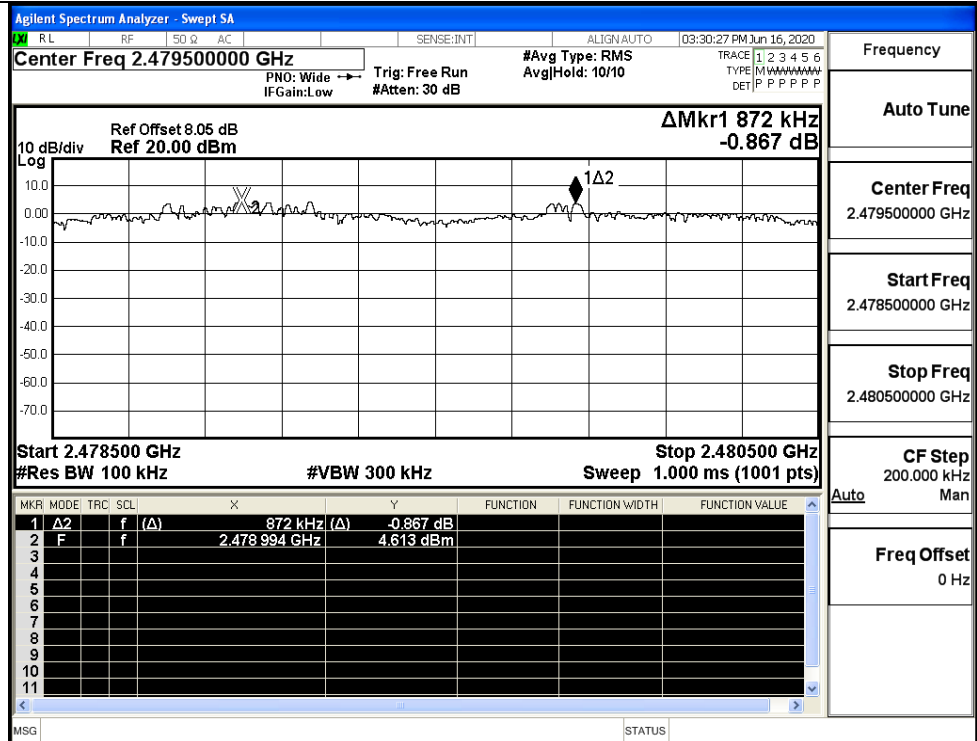
GFSK/MCH



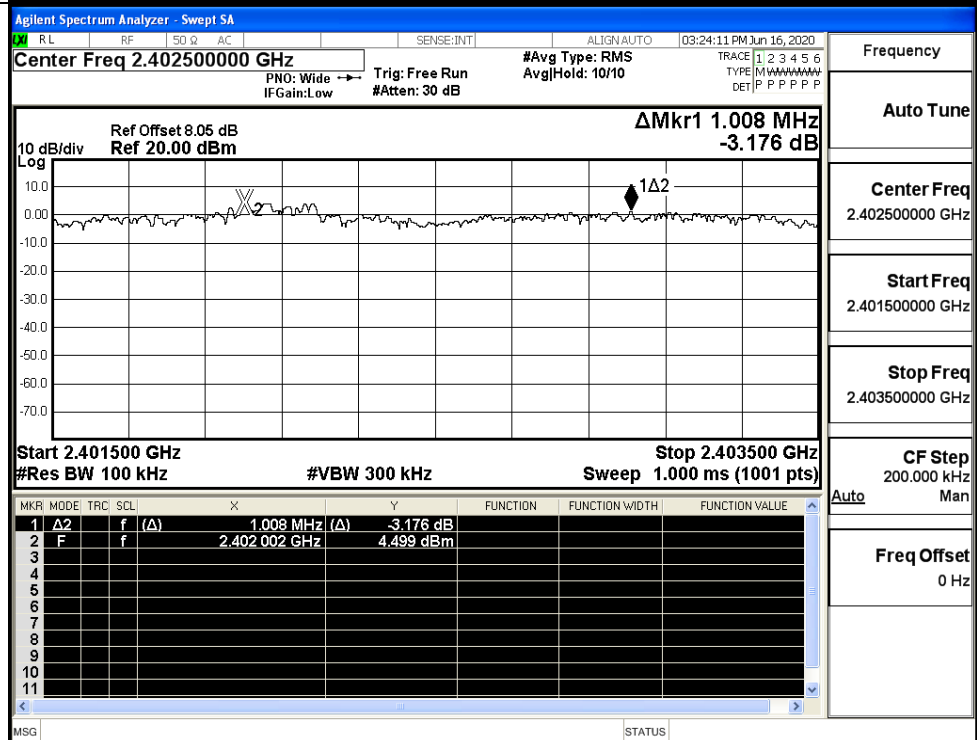
GFSK/HCH



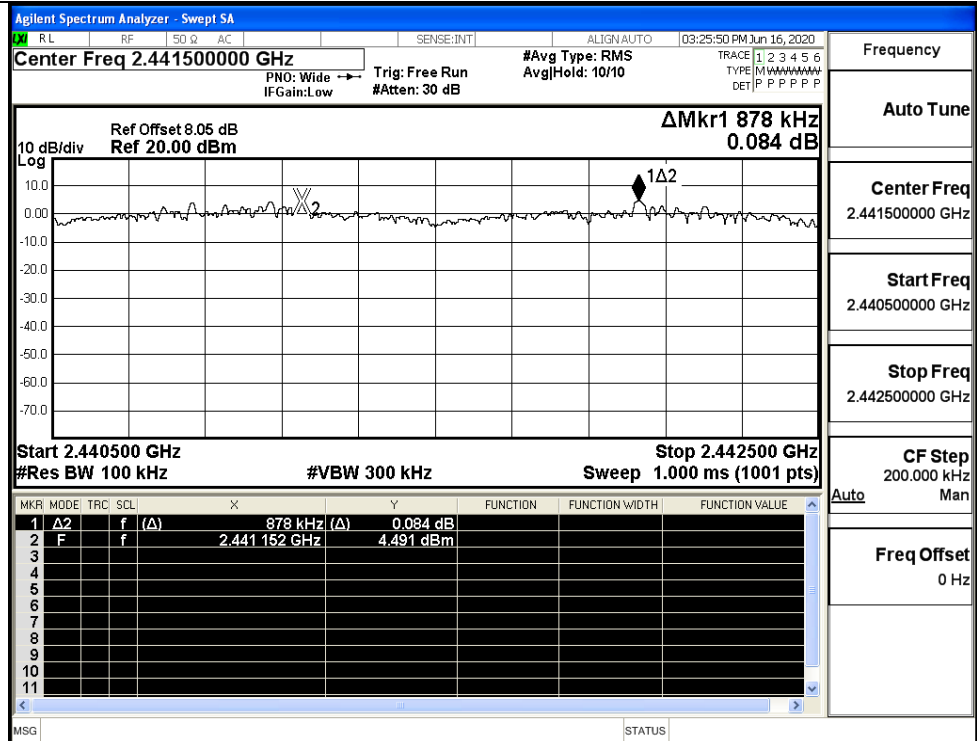
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

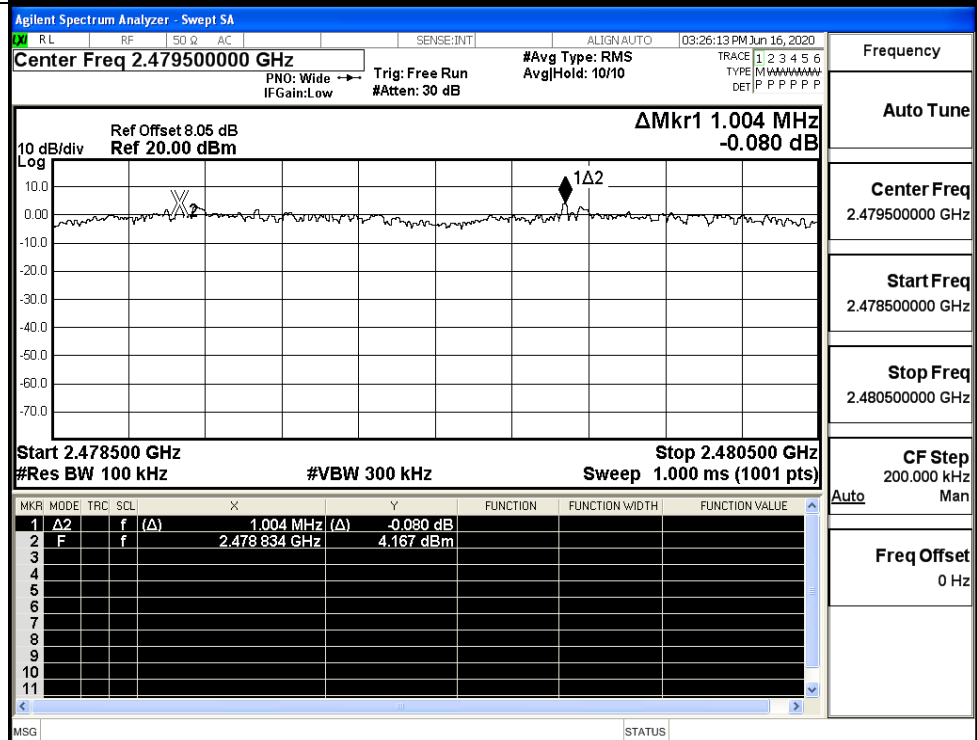
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

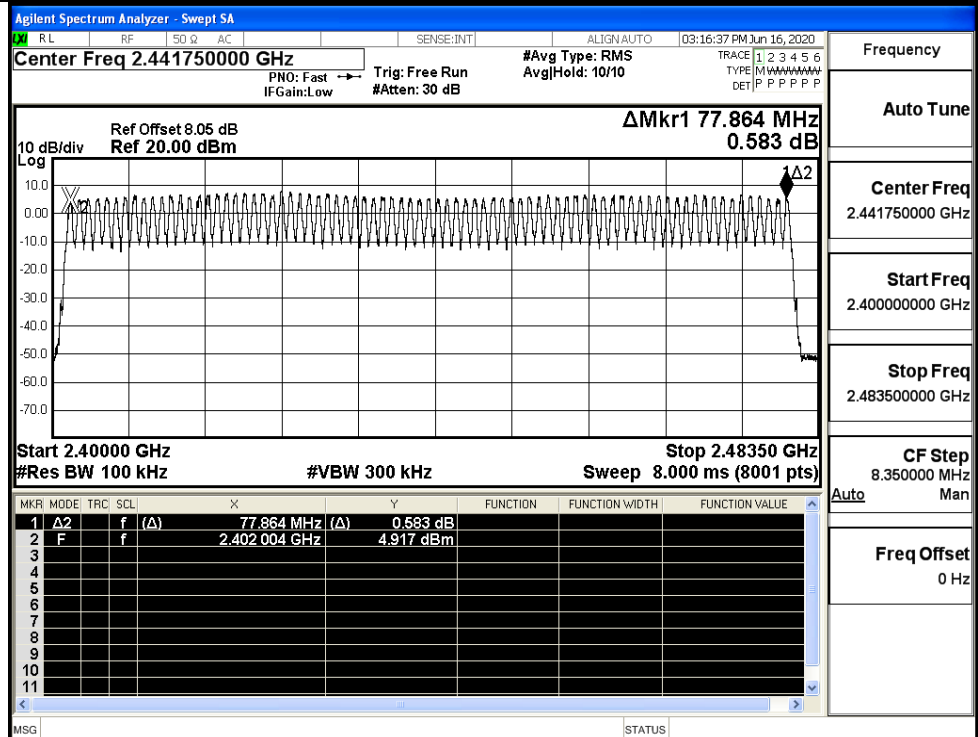
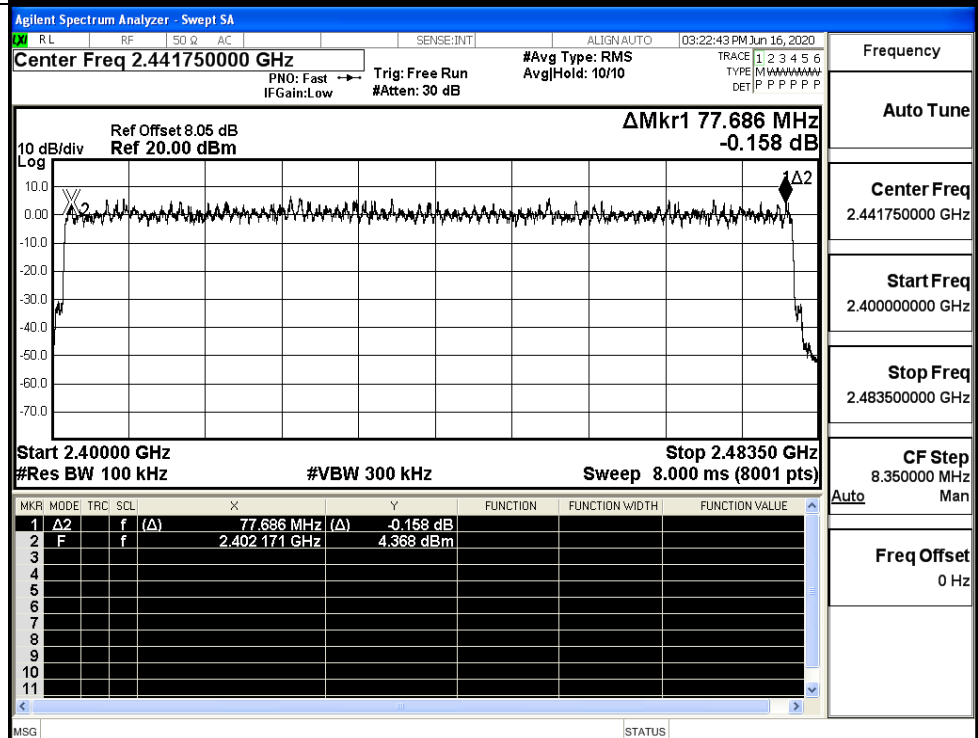


A.4 Hopping Channel Number

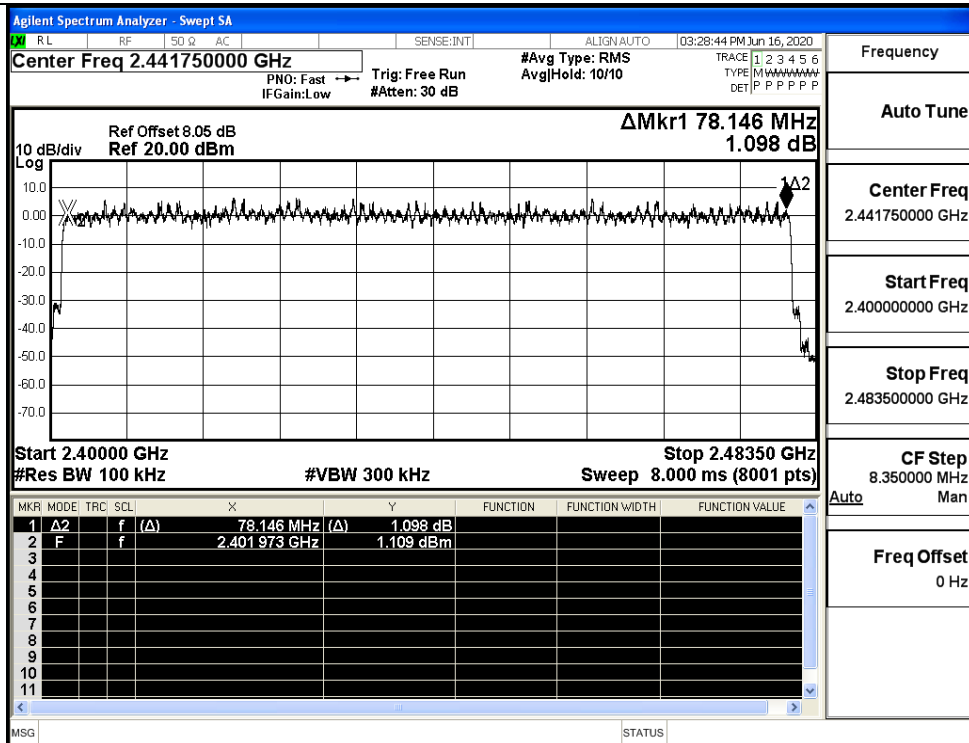
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

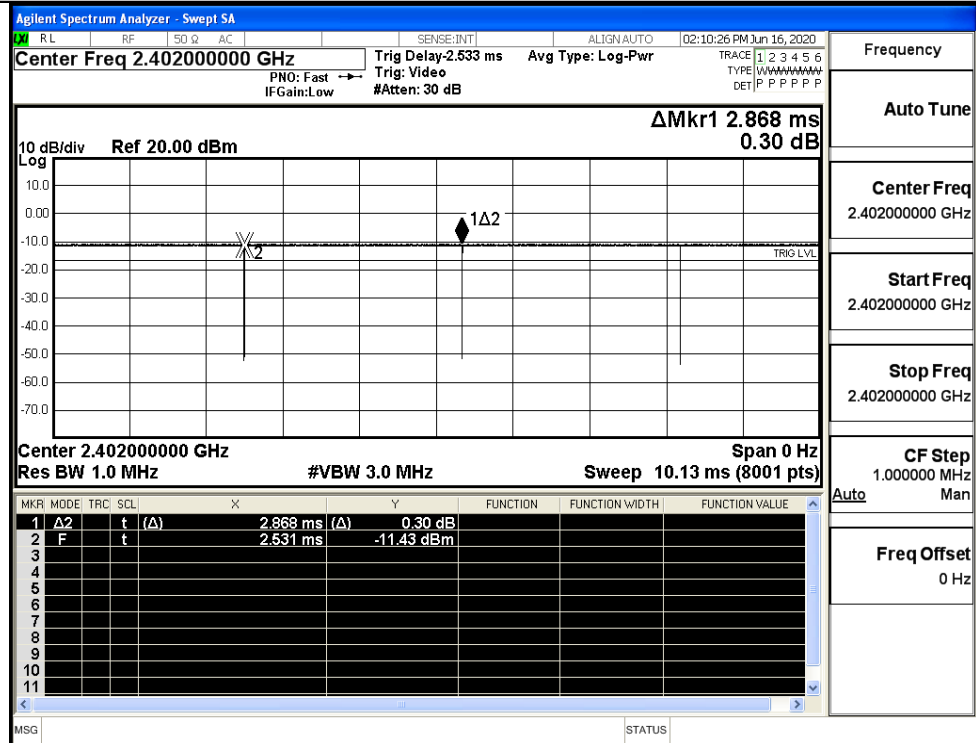


A.5 Dwell Time

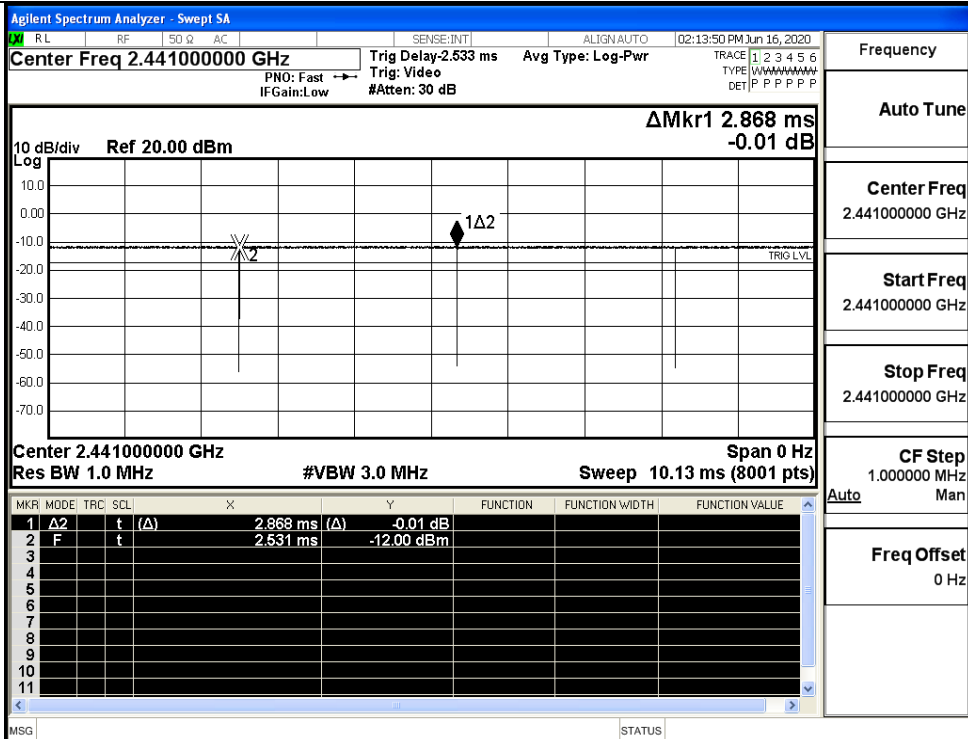
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.87	106.7	0.306	0.4	PASS
	2DH5	MCH	2.87	106.7	0.306	0.4	PASS
	2DH5	HCH	2.87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

Test Graphs

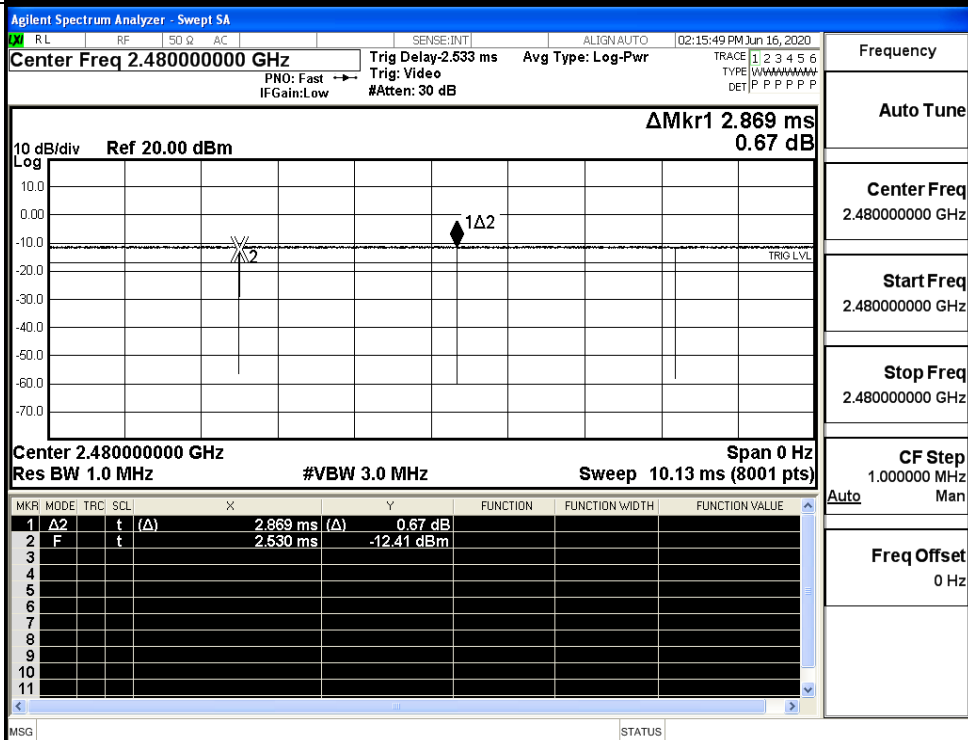
GFSK_DH5/LCH



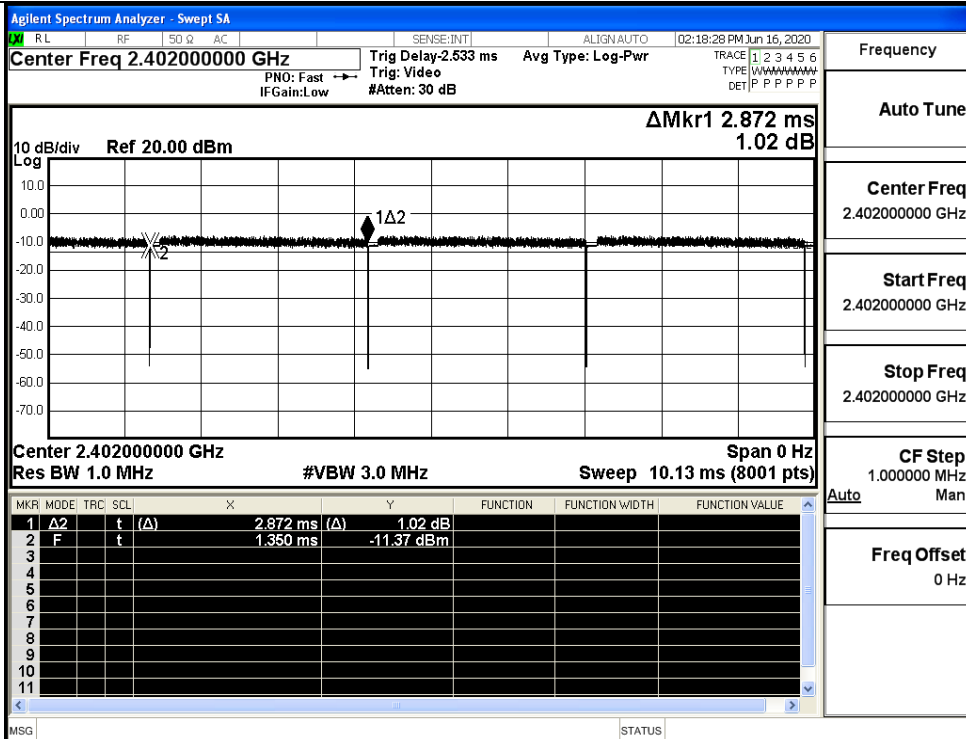
GFSK_DH5/MCH



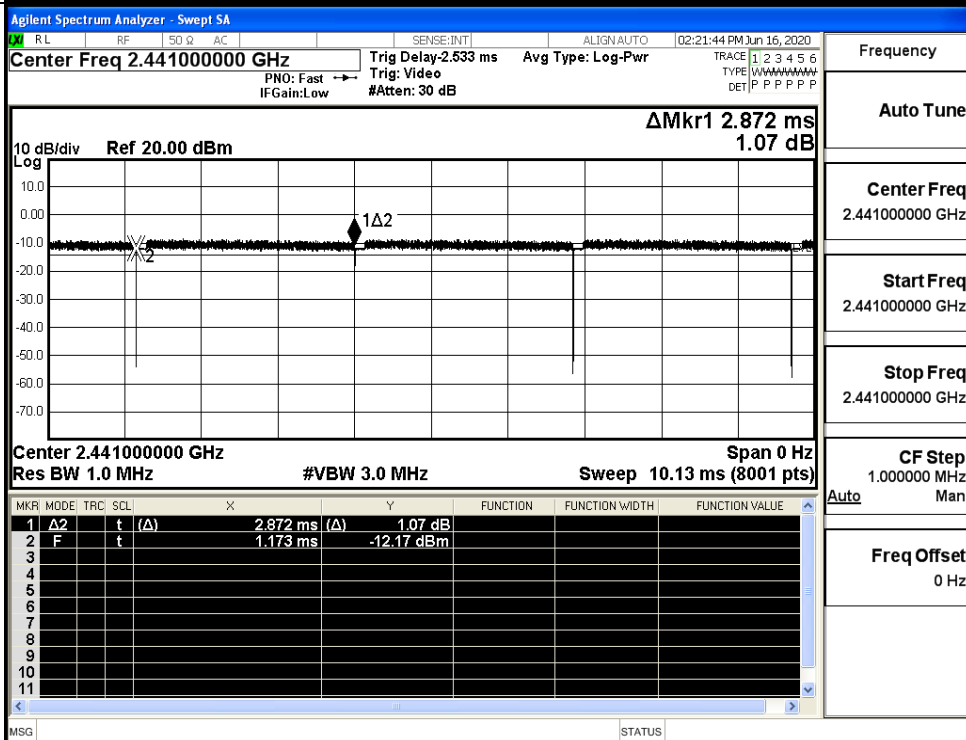
GFSK_DH5/HCH



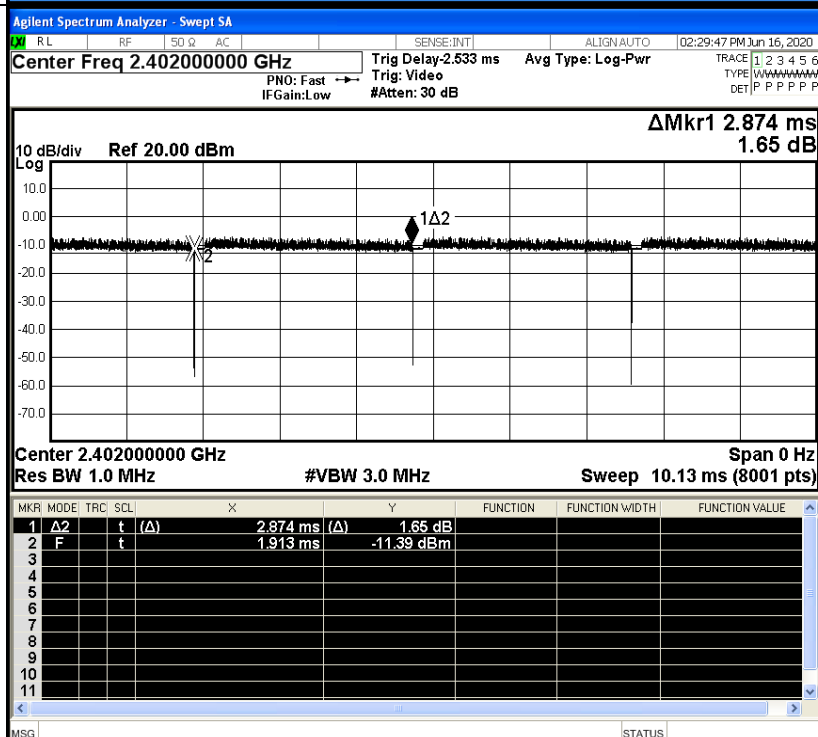
π /4DQPSK
_2DH5/LCH



π /4DQPSK
_2DH5/MCH

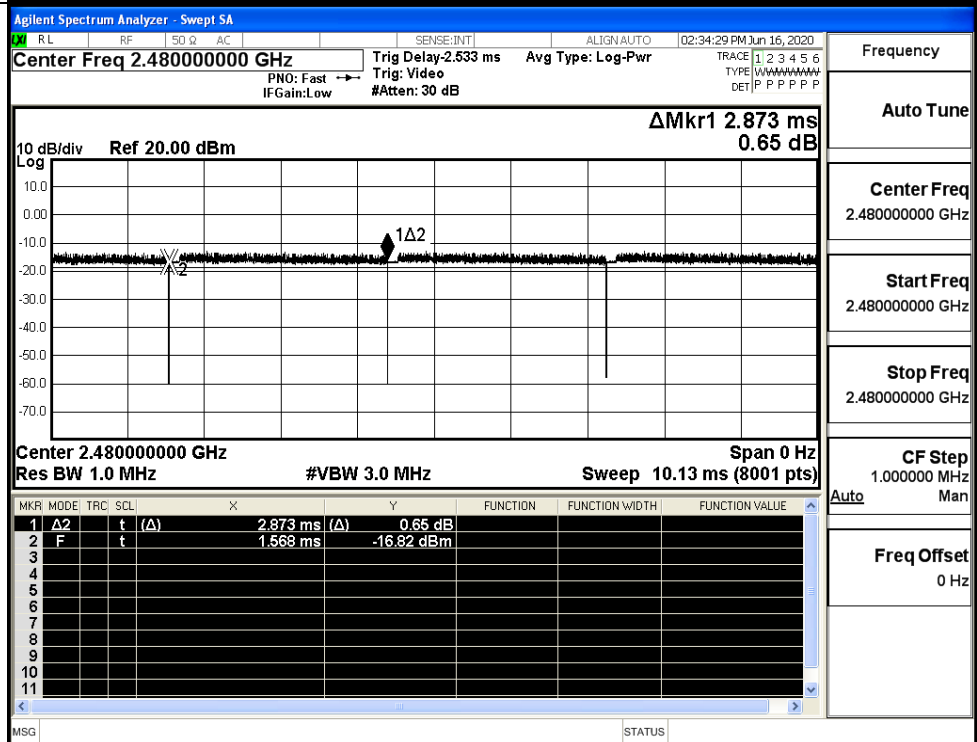


8DPSK 3DH5/LCH



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

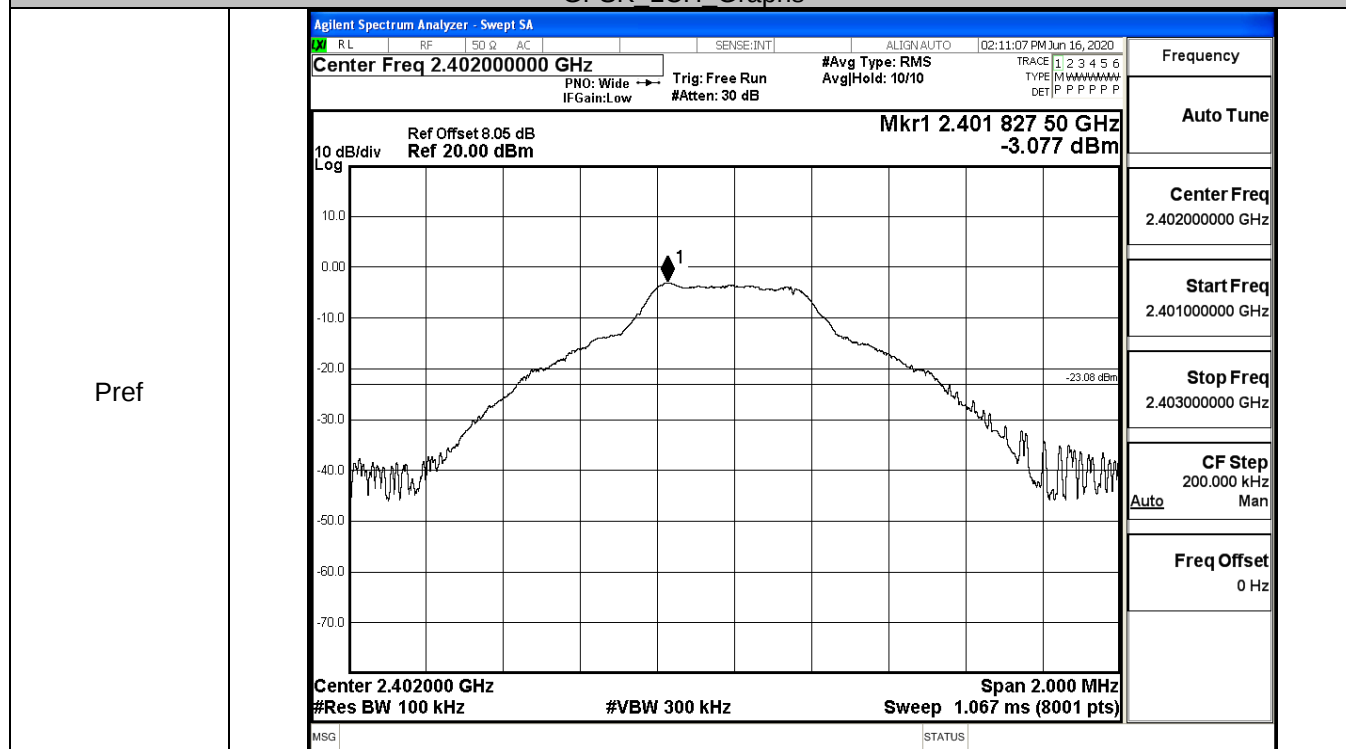
8DPSK_3DH5/HCH



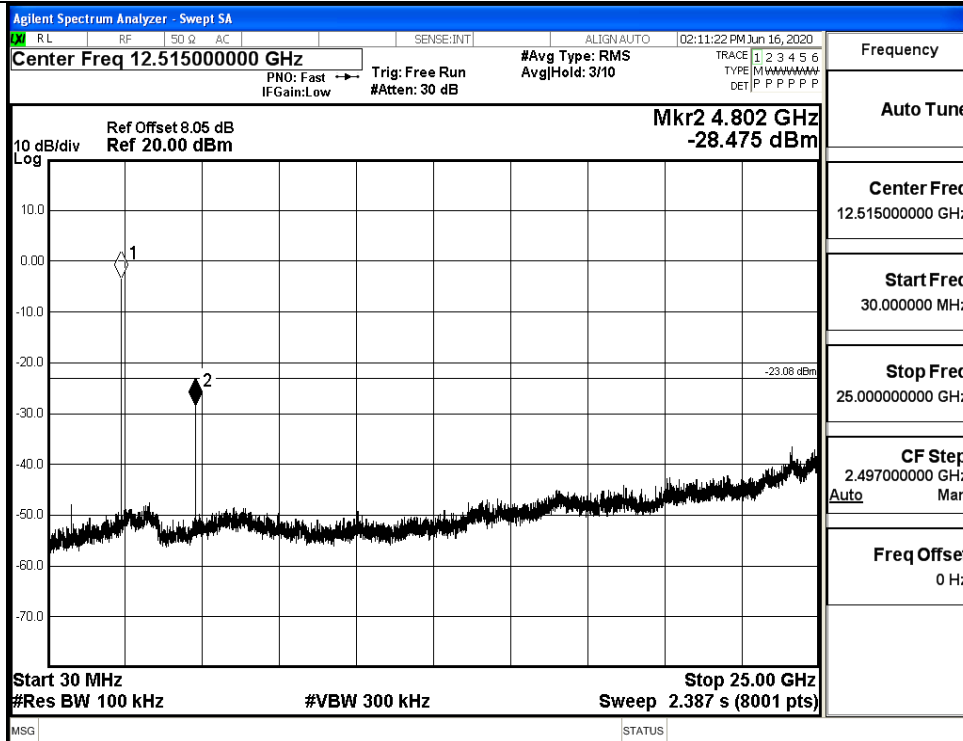
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.077	-28.475	-23.077	PASS
	MCH	-3.895	-30.082	-23.895	PASS
	HCH	-3.351	-28.723	-23.351	PASS
$\pi/4$ DQPSK	LCH	-3.23	-28.381	-23.230	PASS
	MCH	-3.916	-28.712	-23.916	PASS
	HCH	-3.523	-28.213	-23.523	PASS
8DPSK	LCH	-3.123	-28.873	-23.123	PASS
	MCH	-8.957	-38.321	-28.957	PASS
	HCH	-8.521	-35.993	-28.521	PASS

GFSK LCH Graphs

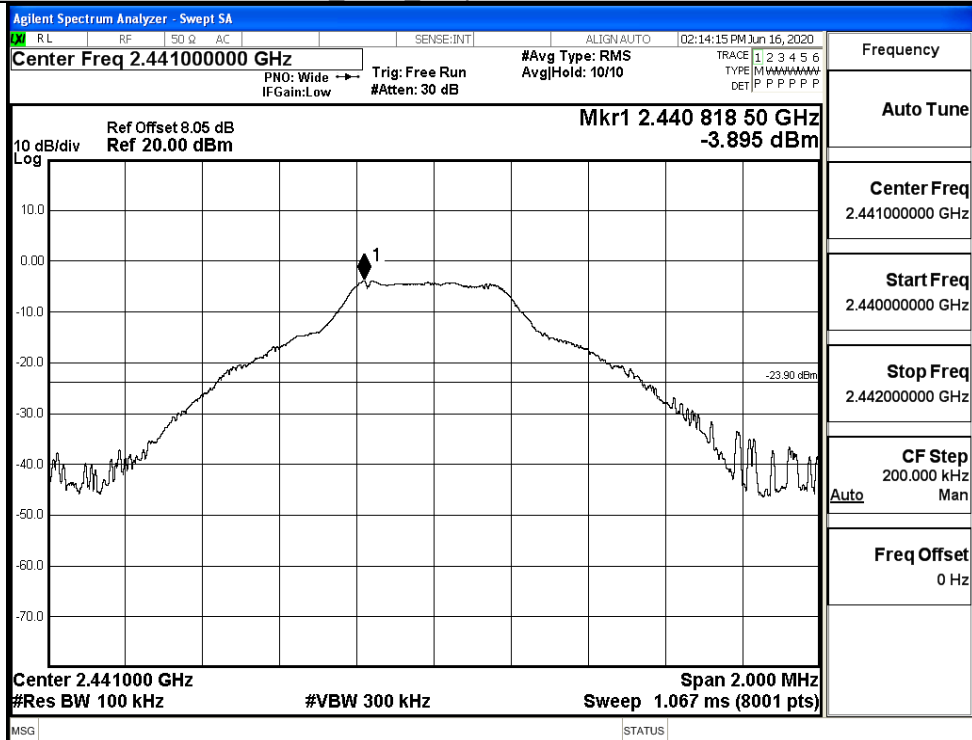


Puw

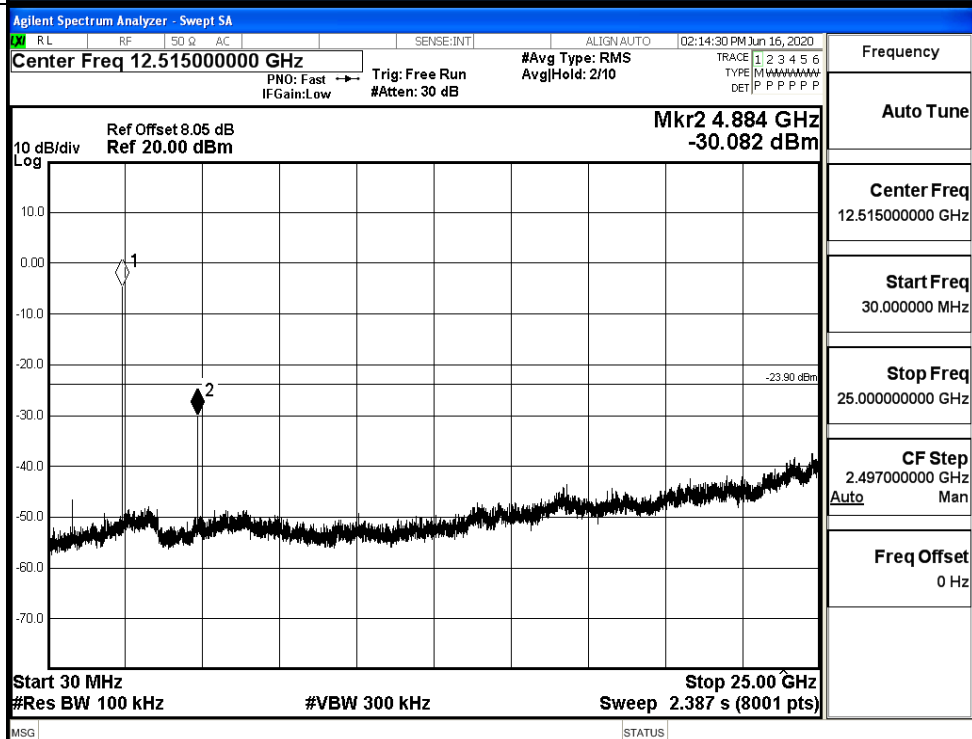


GFSK_MCH_Graphs

Pref

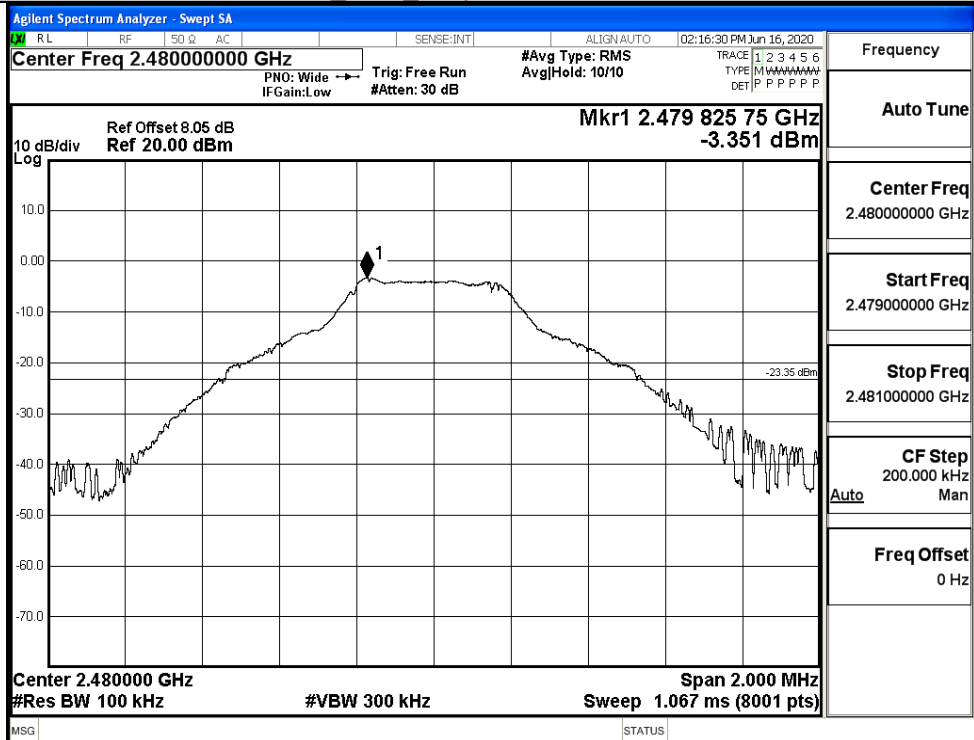


Puw

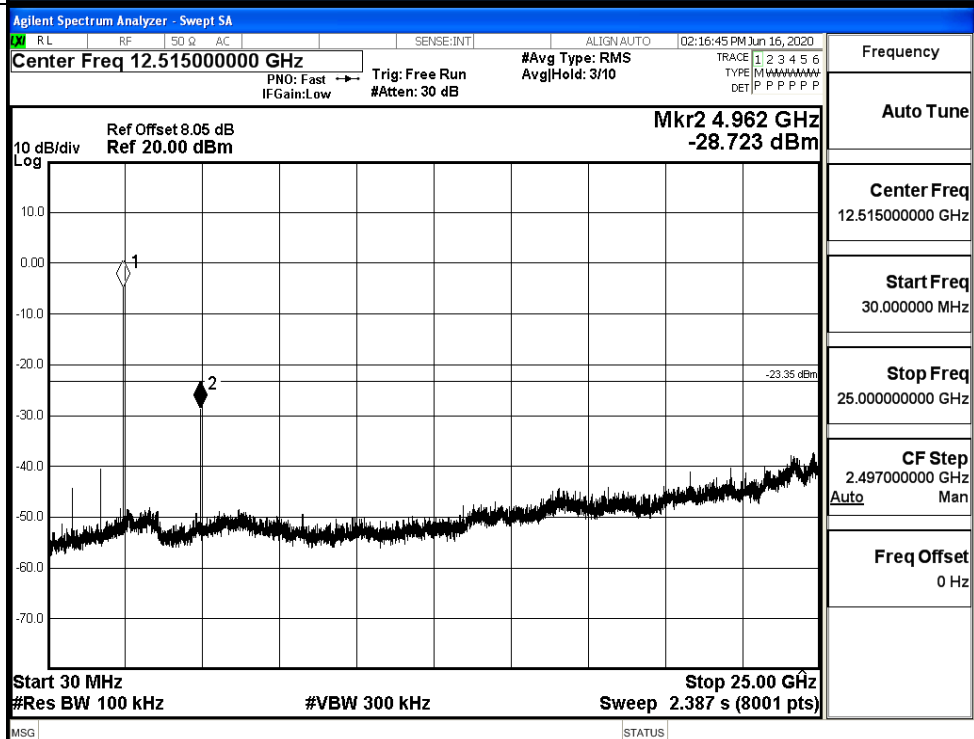


GFSK HCH_Graphs

Pref

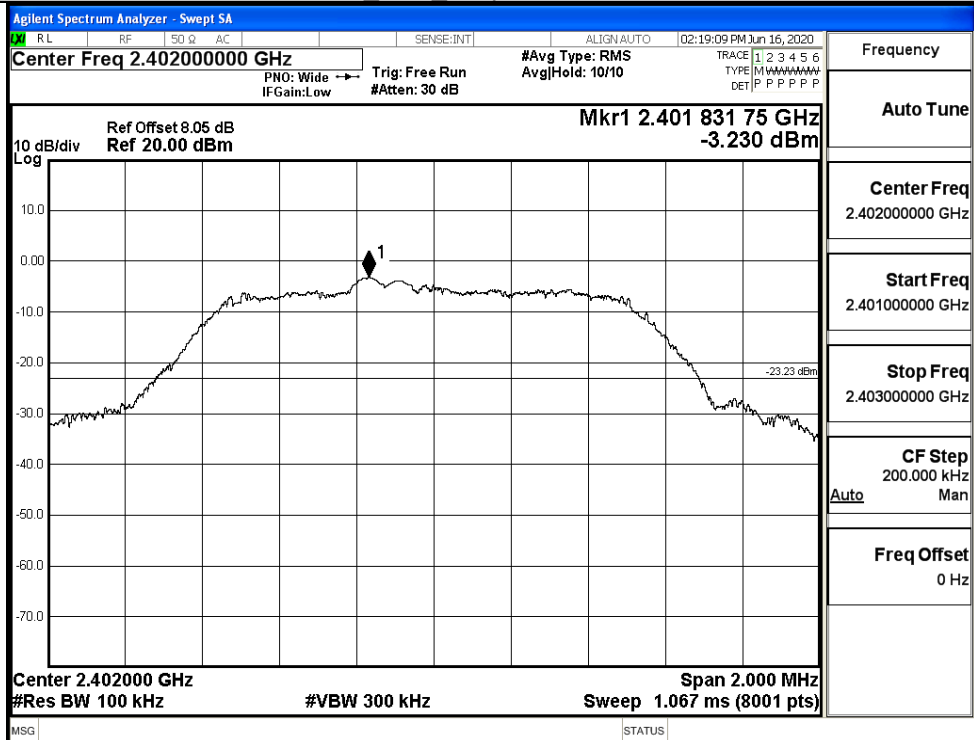


Puw

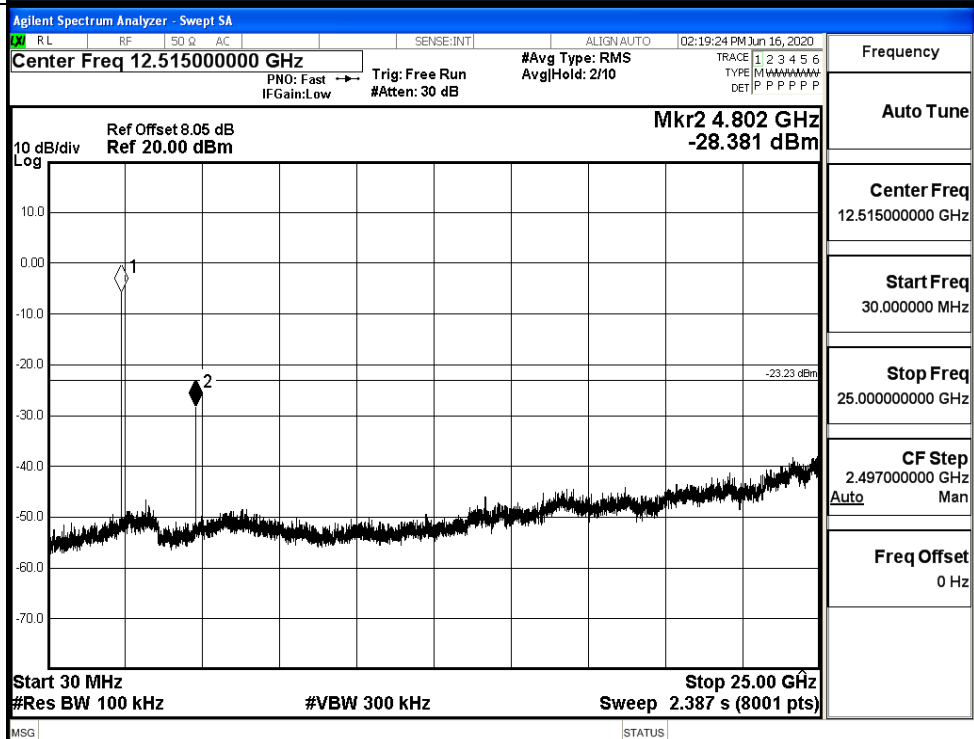


$\pi/4$ DQPSK_LCH_Graphs

Pref

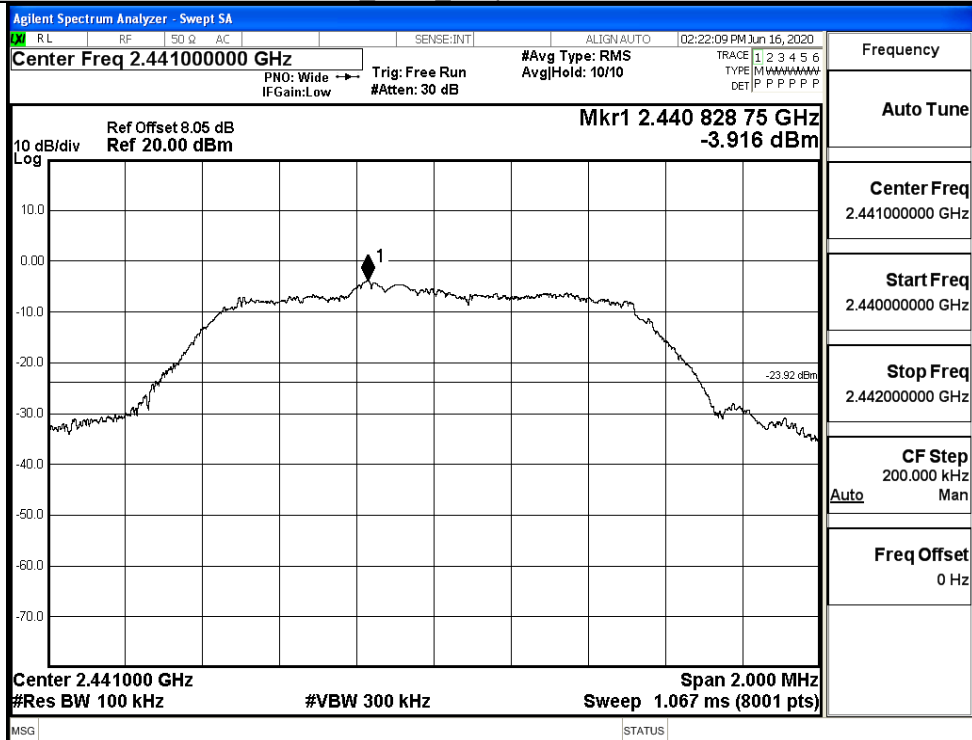


Puw

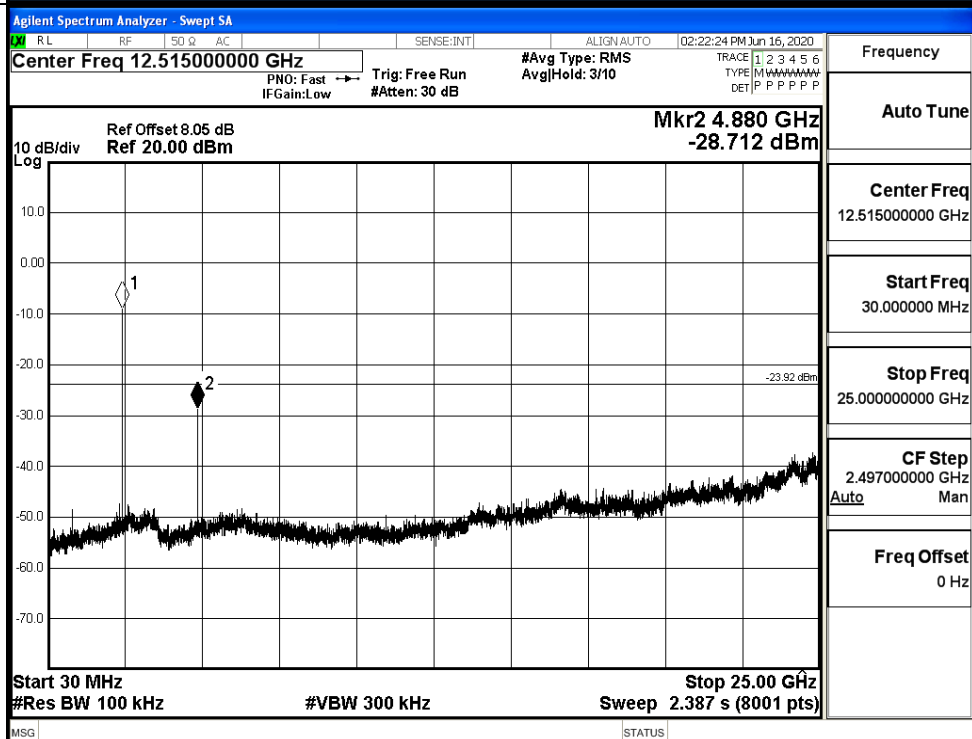


π /4DQPSK_MCH_Graphs

Pref

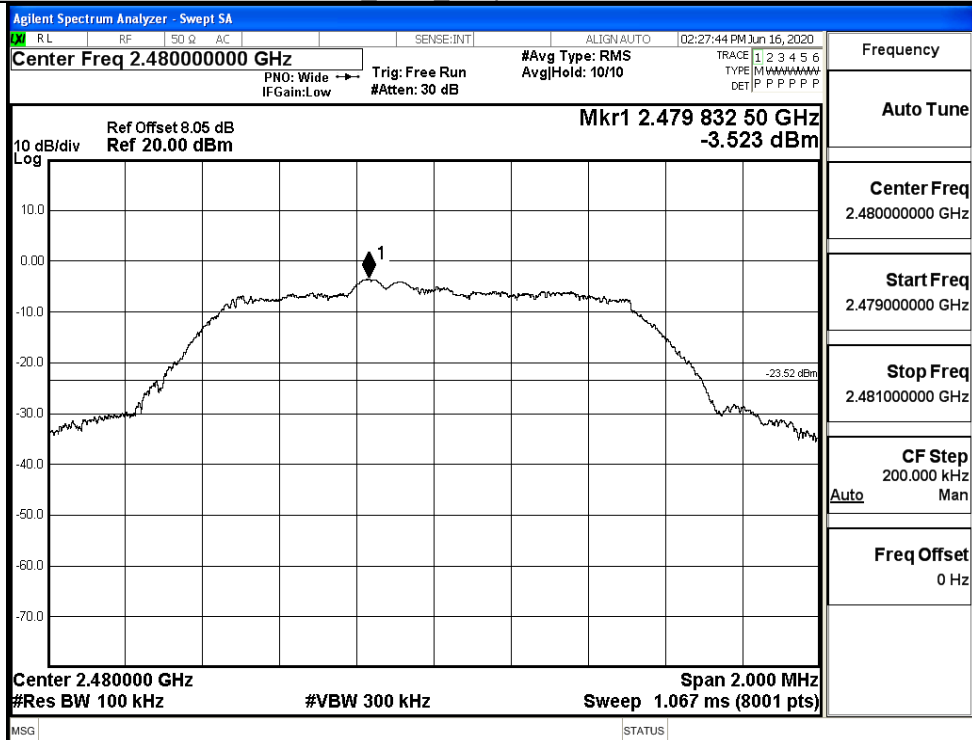


Puw

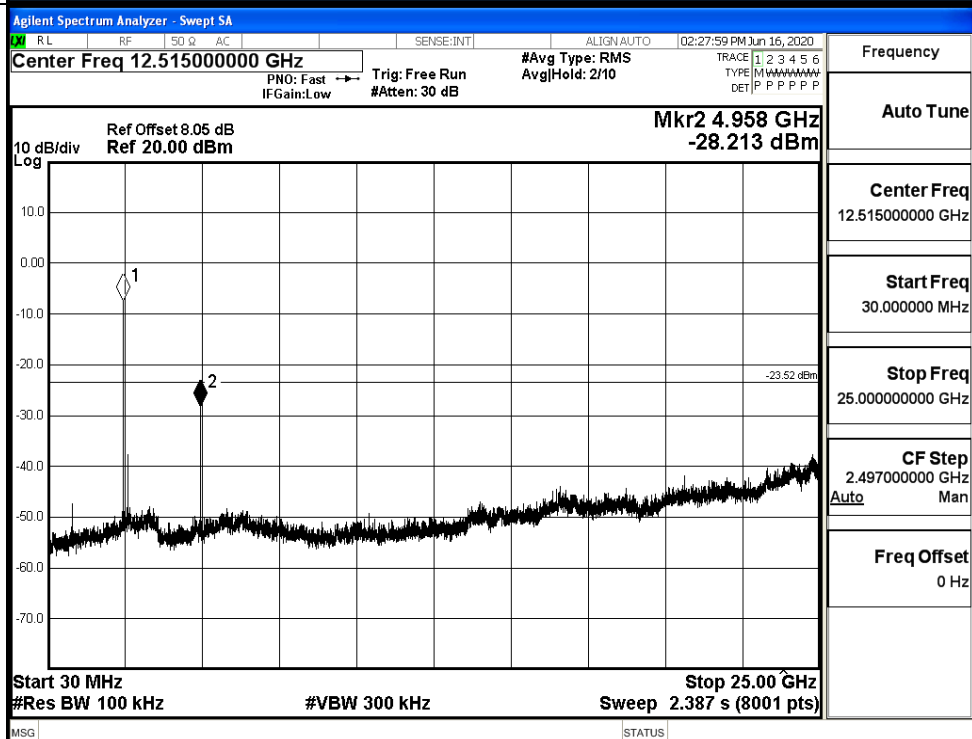


π /4DQPSK_HCH_Graphs

Pref

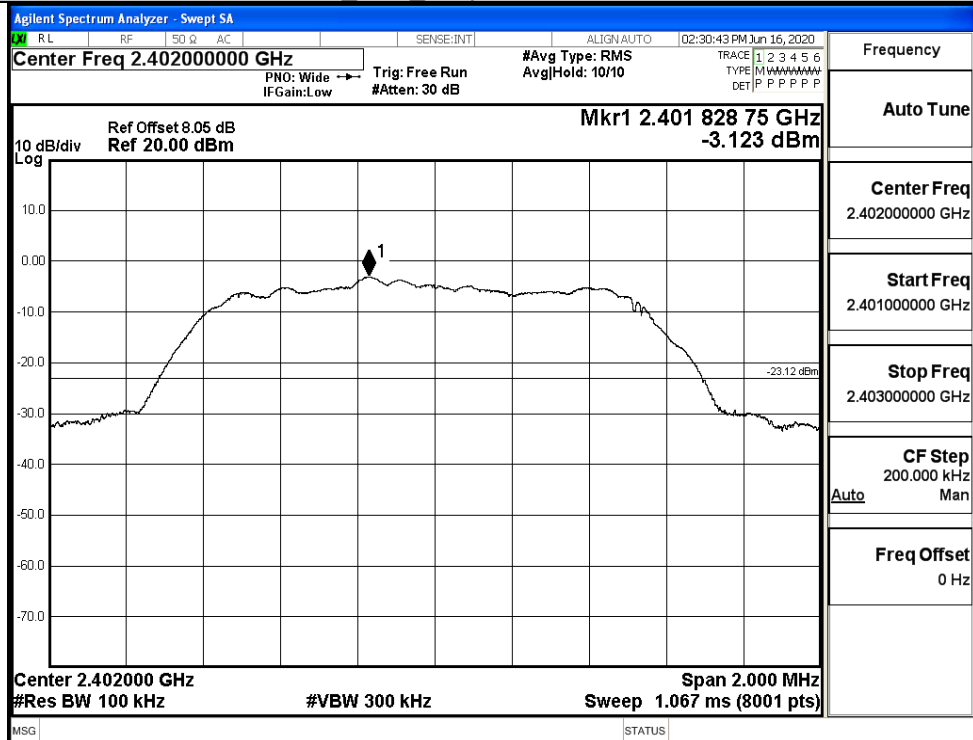


Puw

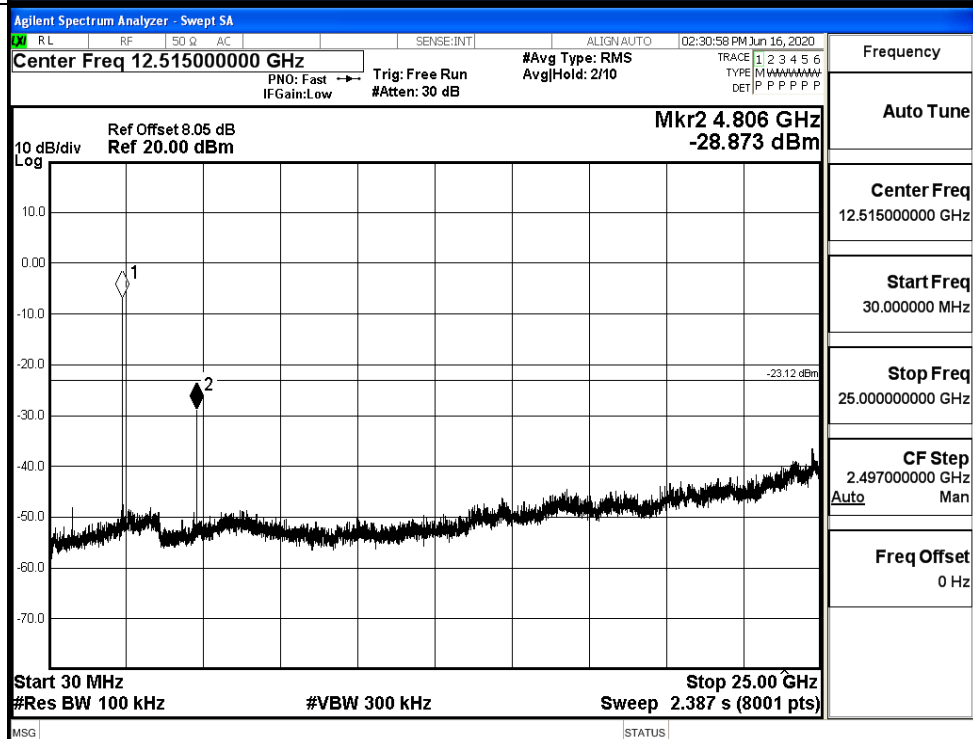


8DPSK_LCH_Graphs

Pref

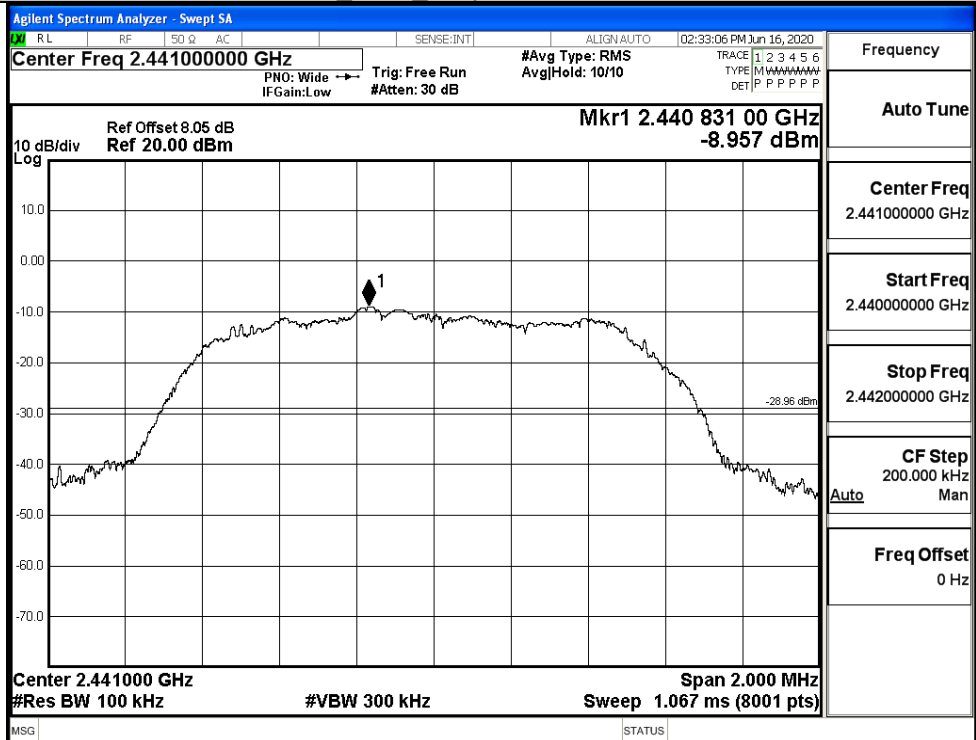


Puw



8DPSK_MCH_Graphs

Pref

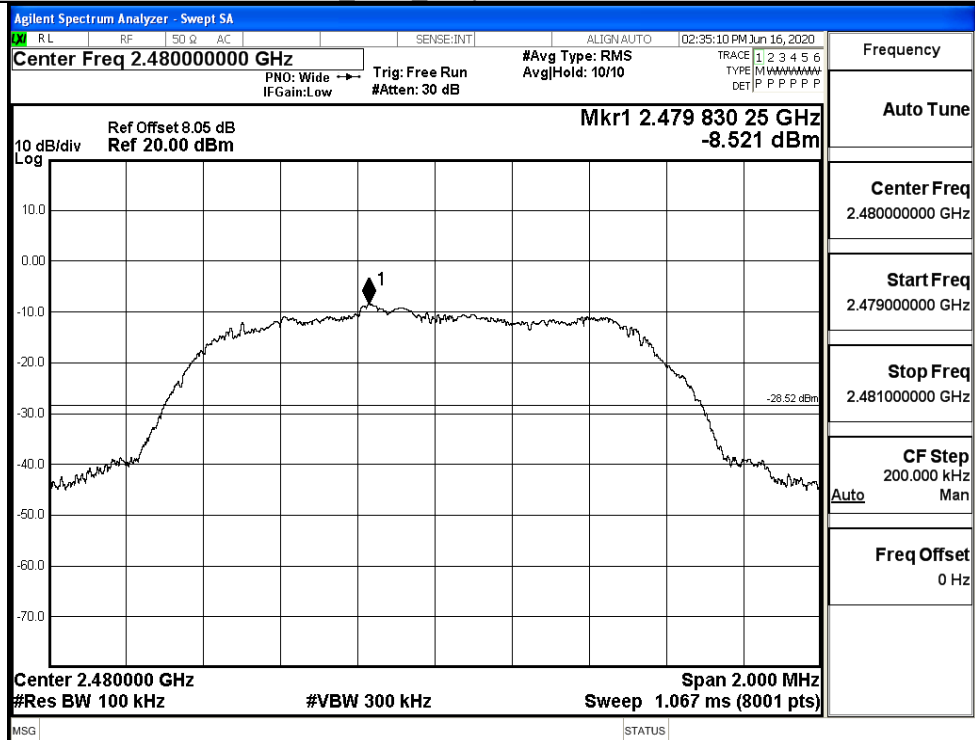


Puw

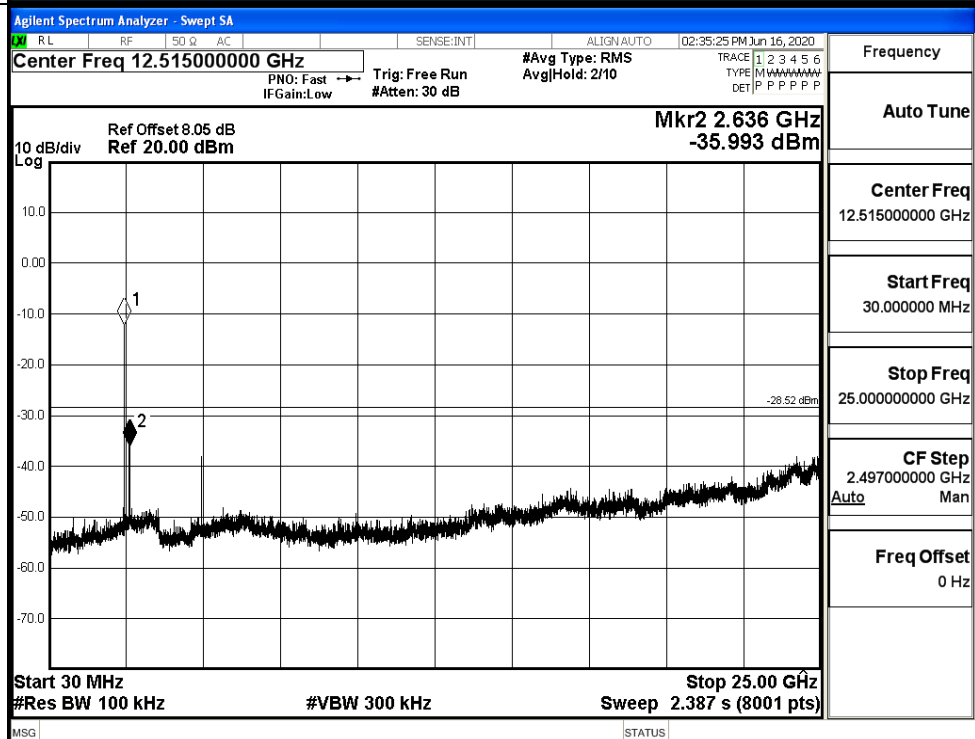


8DPSK_HCH_Graphs

Pref



Puw

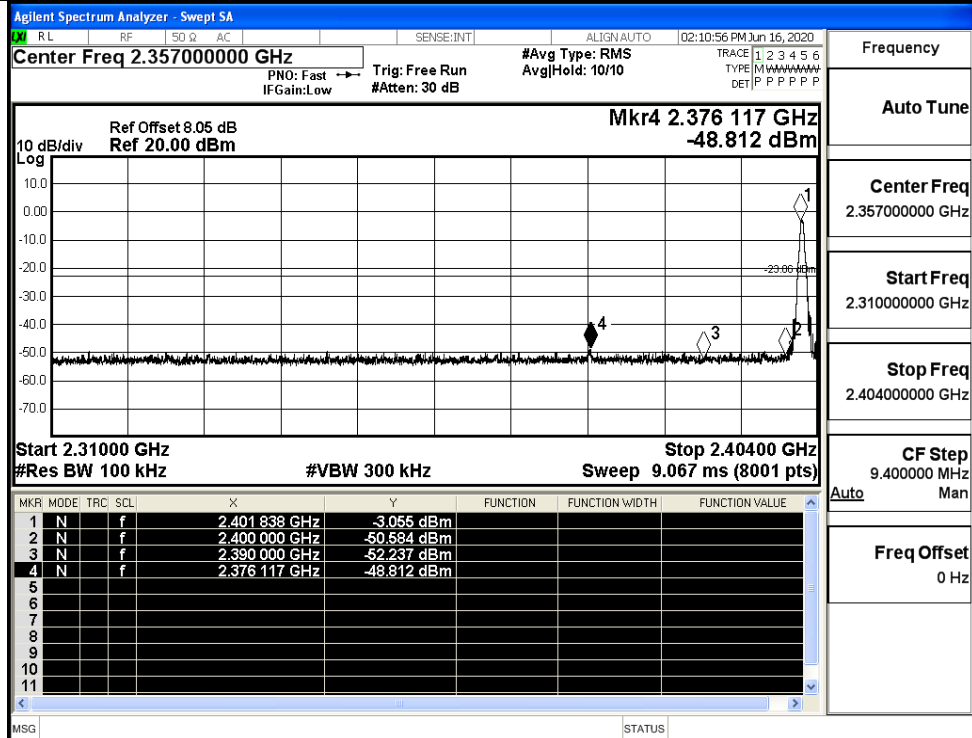


A.7 Band-edge for RF Conducted Emissions

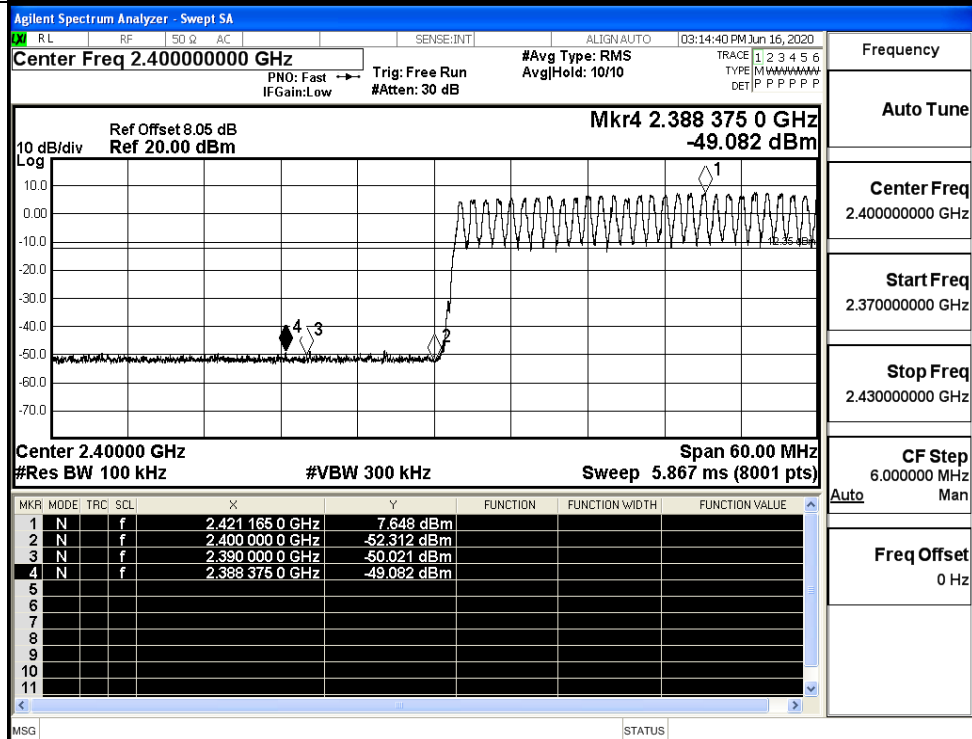
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-3.055	Off	-48.812	-23.06	PASS
			7.648	On	-49.082	-12.35	PASS
	HCH	2480	-3.293	Off	-48.447	-23.29	PASS
			7.054	On	-48.463	-12.95	PASS
$\pi/4$ DQPSK	LCH	2402	-3.119	Off	-48.946	-23.12	PASS
			6.654	On	-48.584	-13.35	PASS
	HCH	2480	-3.402	Off	-48.814	-23.4	PASS
			6.057	On	-48.251	-13.94	PASS
8DPSK	LCH	2402	-3.773	Off	-48.374	-23.77	PASS
			6.578	On	-48.398	-13.42	PASS
	HCH	2480	-8.464	Off	-48.725	-28.46	PASS
			5.806	On	-47.796	-14.19	PASS

Test Graphs

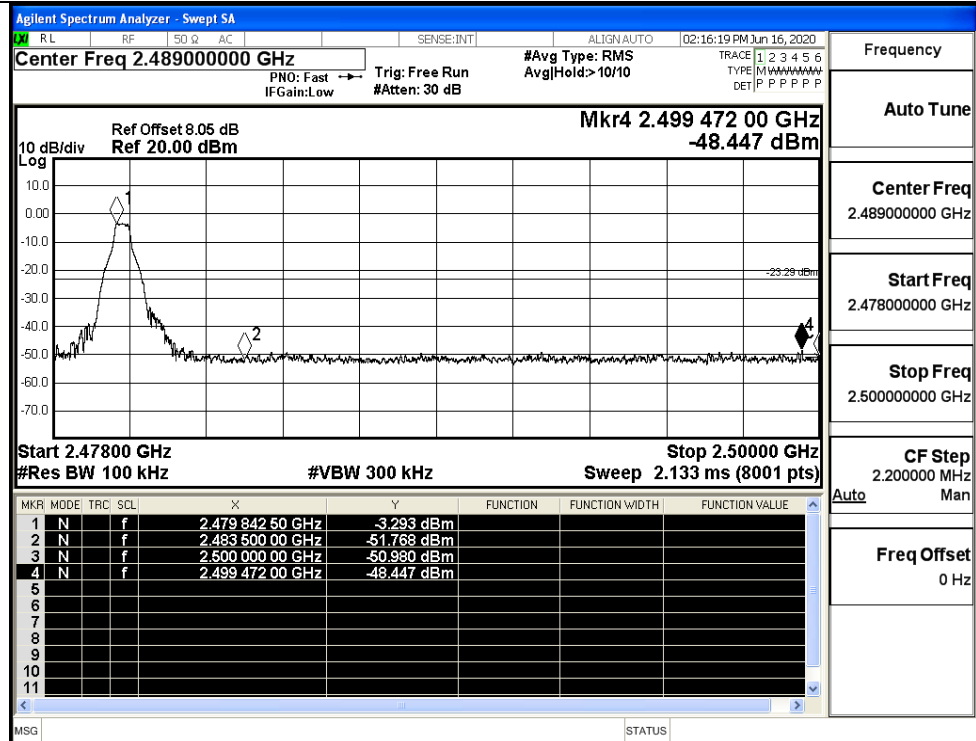
GFSK/LCH/No Hop



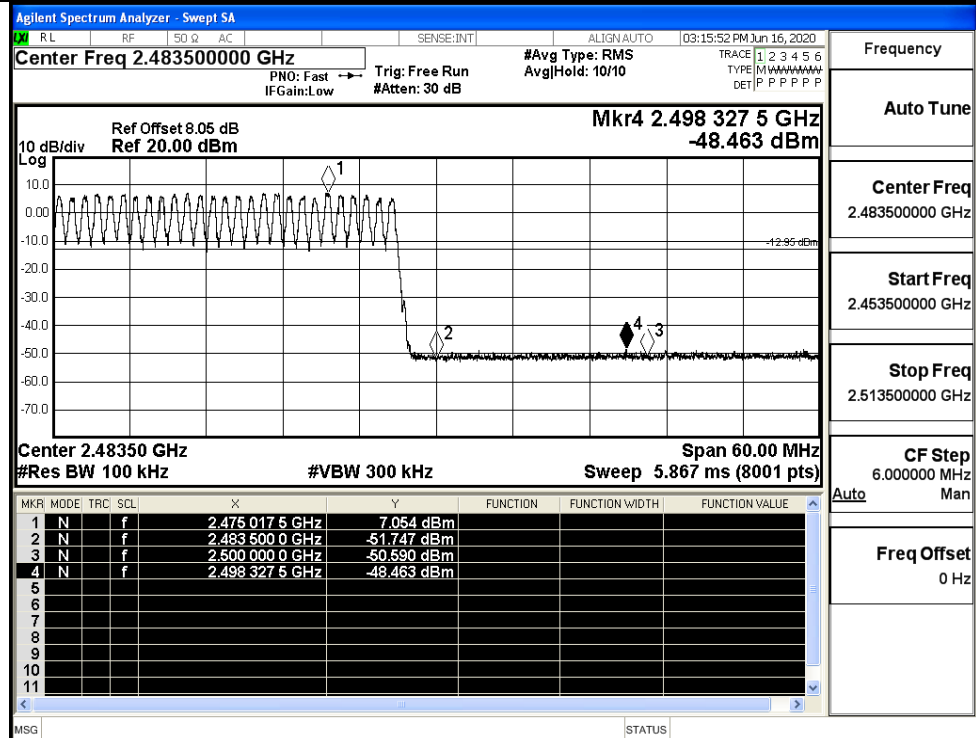
GFSK/LCH/Hop



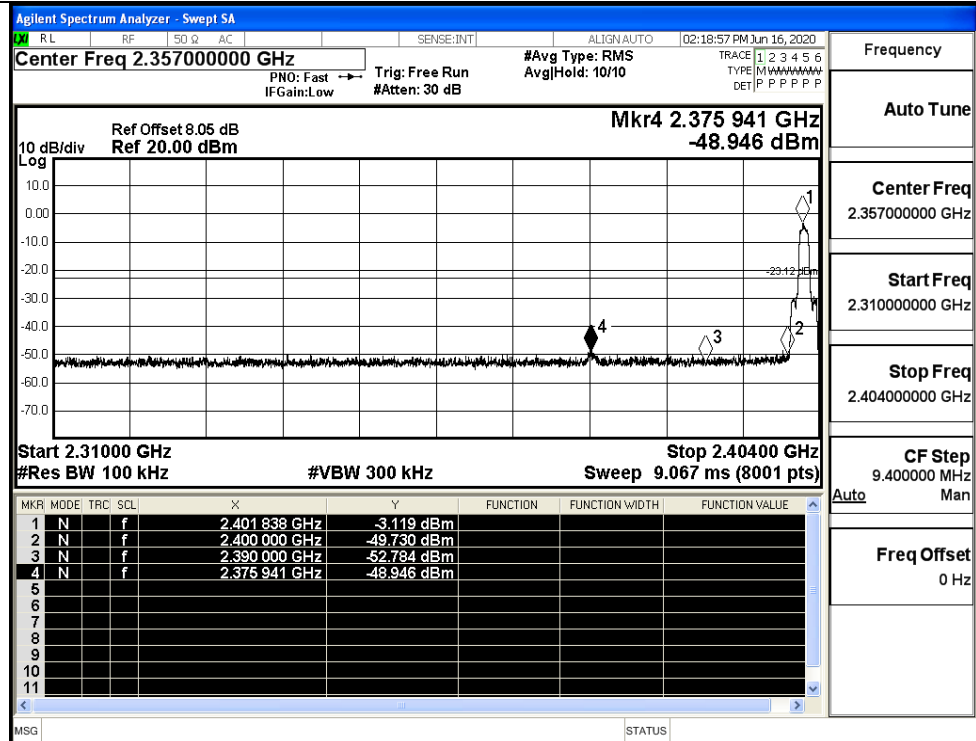
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

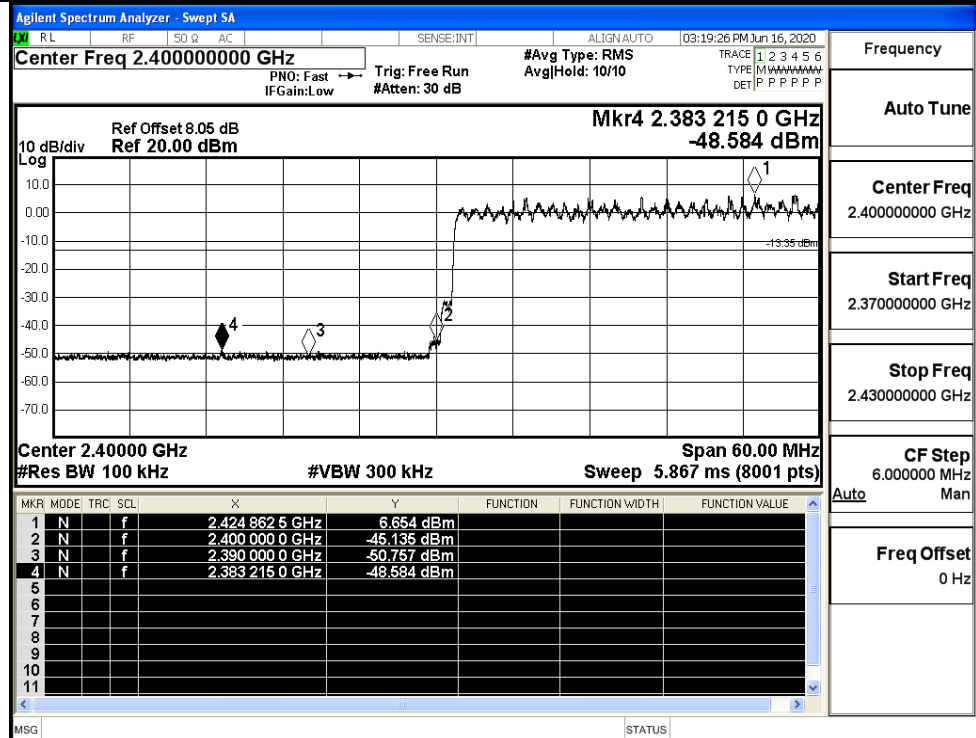


Frequency

Auto Tune

Center Freq
2.357000000 GHzStart Freq
2.310000000 GHzStop Freq
2.404000000 GHzCF Step
9.400000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop

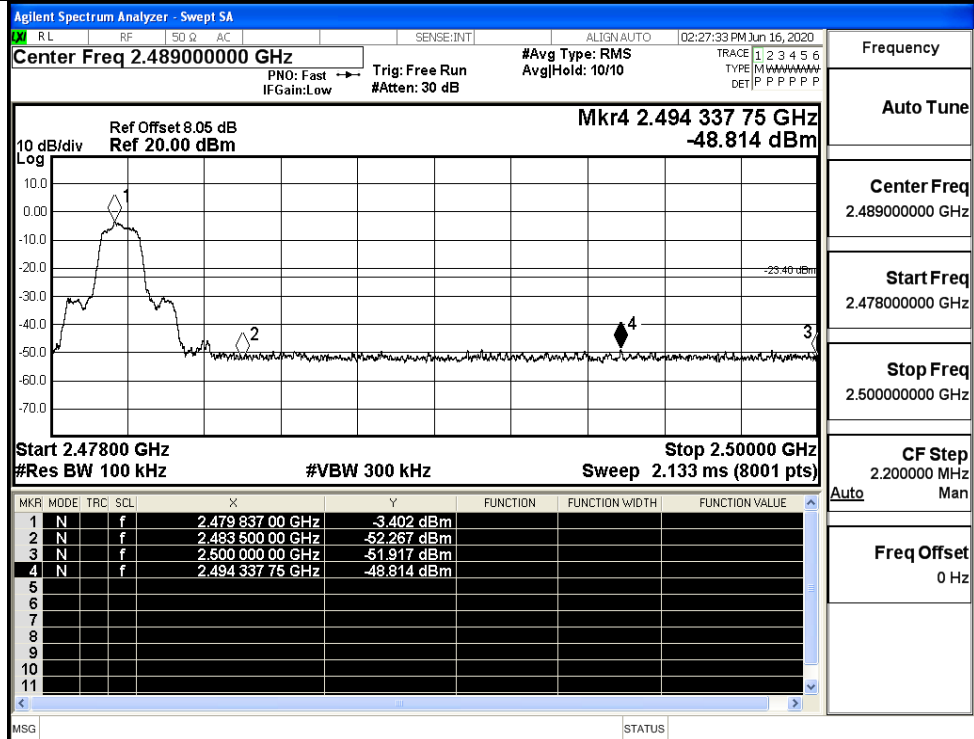


Frequency

Auto Tune

Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

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

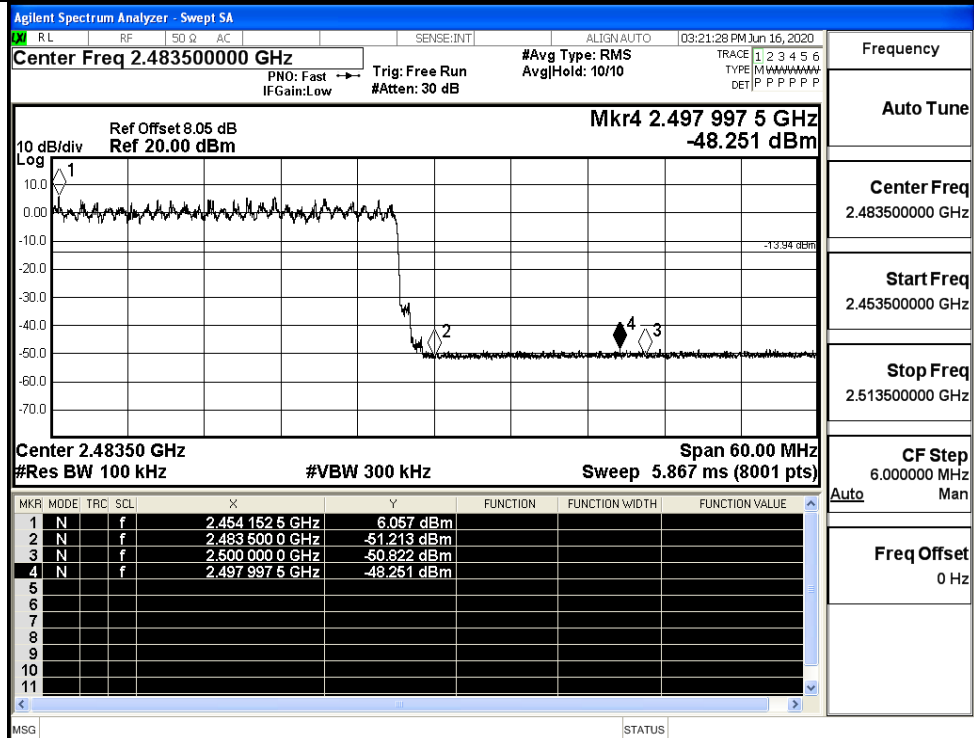


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

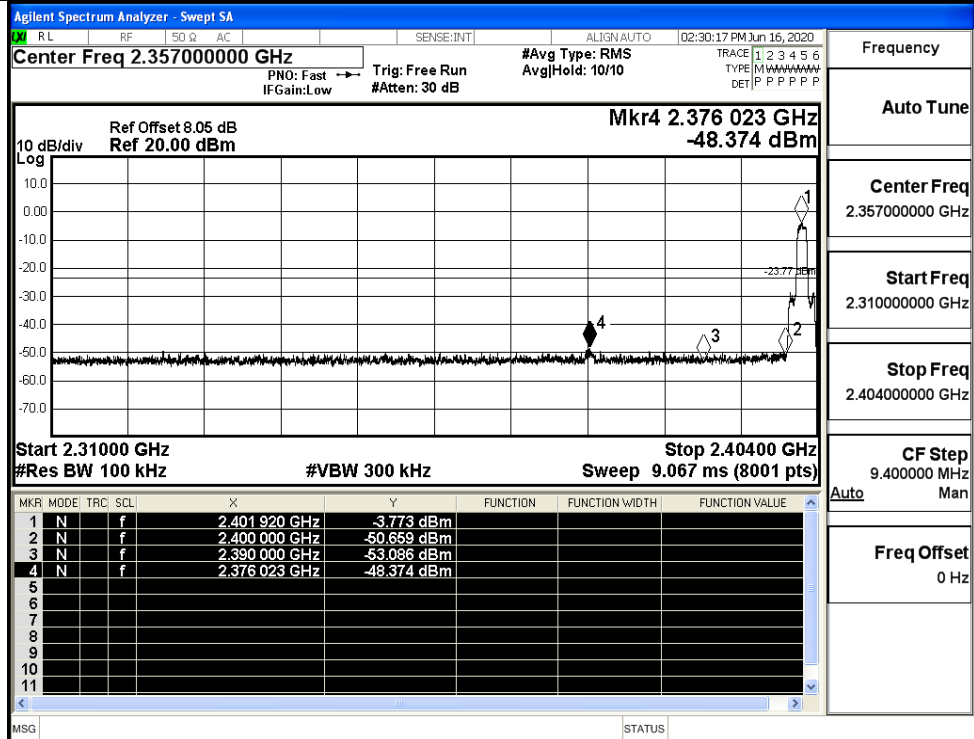


Frequency

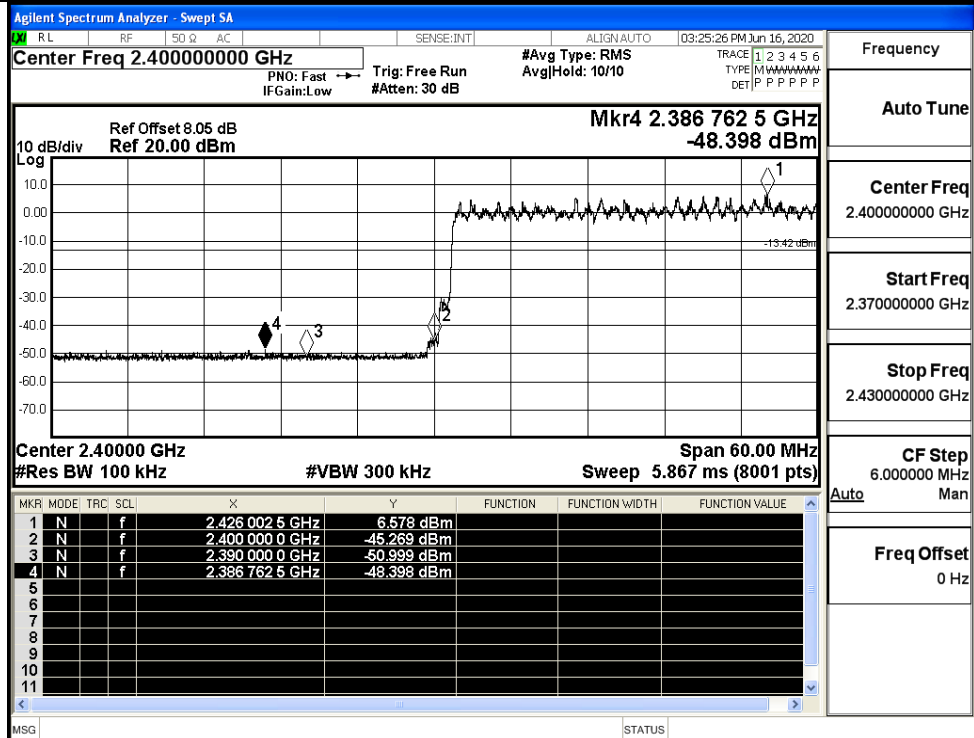
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

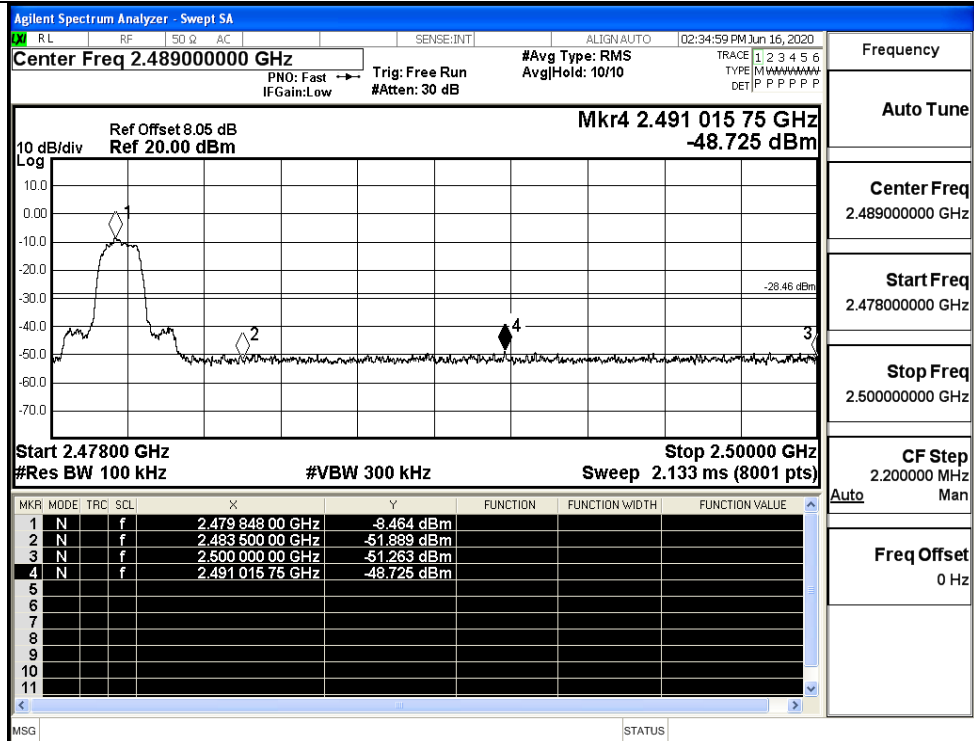
8DPSK/LCH/No Hop



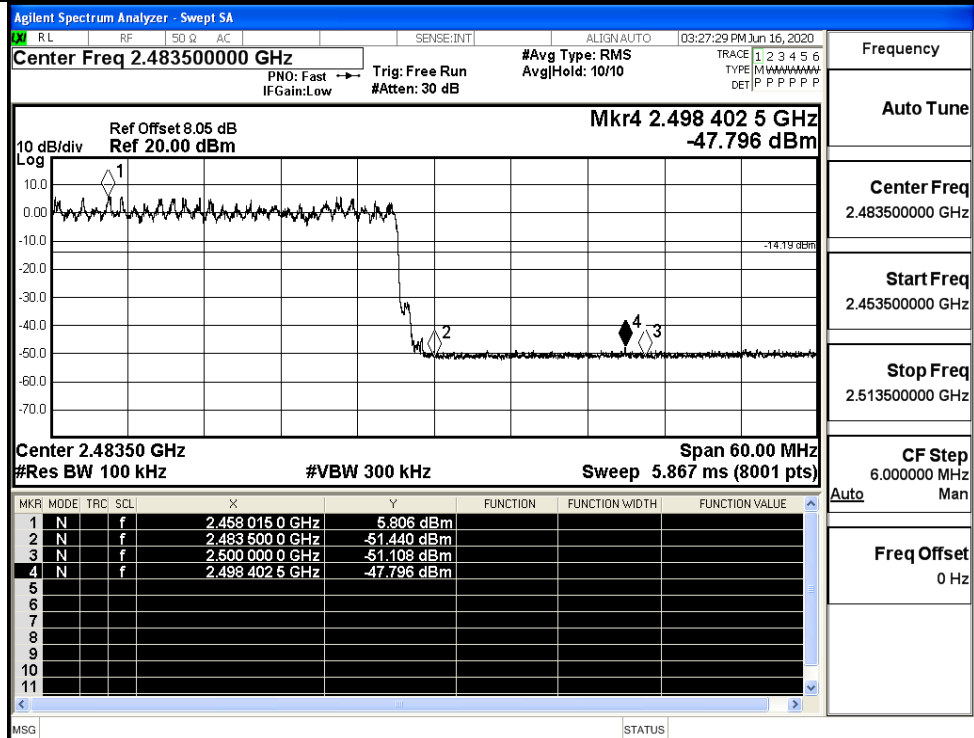
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



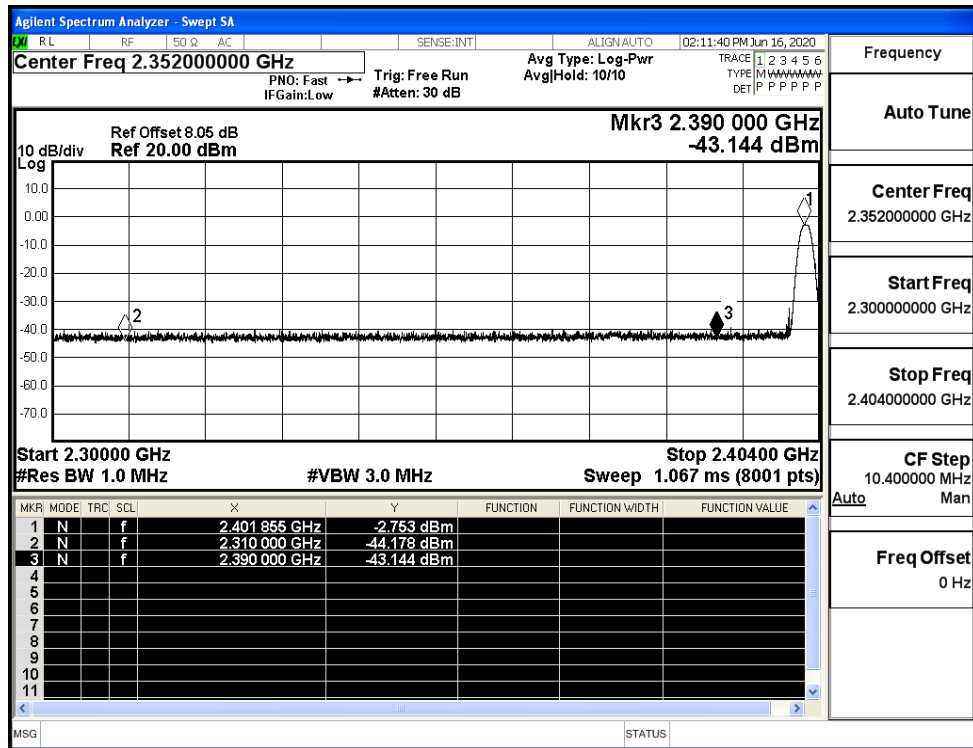
8DPSK/HCH/Hop



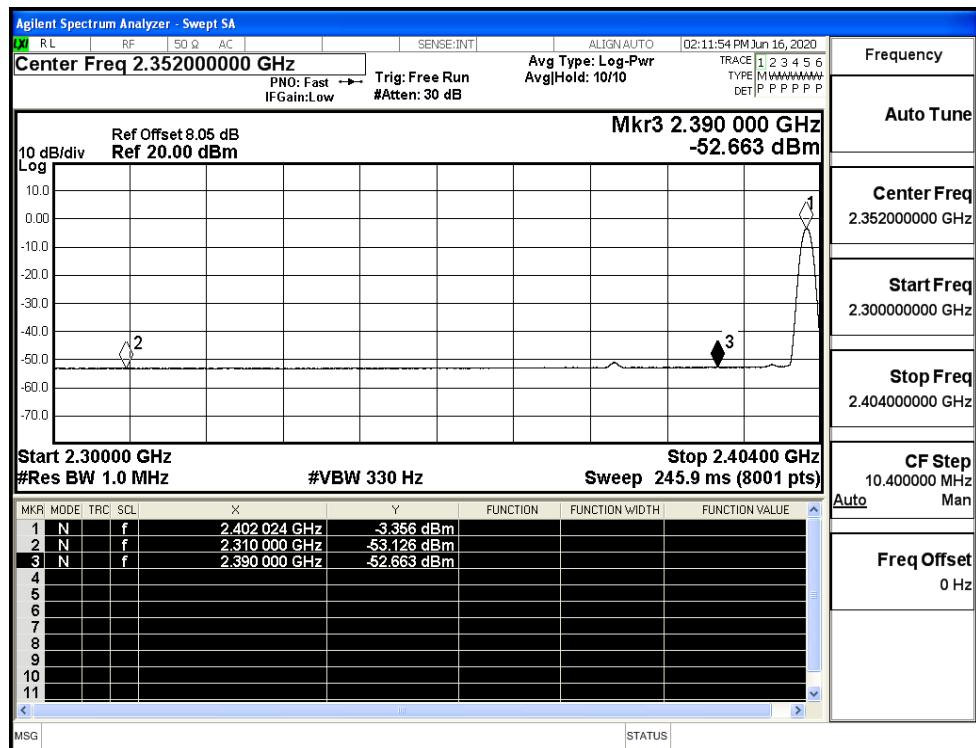
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.18	2.0	0	53.08	PEAK	74	PASS
	Off	2310.0	-53.13	2.0	0	44.13	AV	54	PASS
	Off	2390.0	-43.14	2.0	0	54.12	PEAK	74	PASS
	Off	2390.0	-52.66	2.0	0	44.60	AV	54	PASS
	Off	2483.5	-41.77	2.0	0	55.49	PEAK	74	PASS
	Off	2483.5	-52.35	2.0	0	44.91	AV	54	PASS
	Off	2500.0	-40.99	2.0	0	56.27	PEAK	74	PASS
	Off	2500.0	-52.25	2.0	0	45.01	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.34	2.0	0	54.92	PEAK	74	PASS
	Off	2310.0	-53.08	2.0	0	44.18	AV	54	PASS
	Off	2390.0	-42.37	2.0	0	54.89	PEAK	74	PASS
	Off	2390.0	-52.77	2.0	0	44.49	AV	54	PASS
	Off	2483.5	-41.69	2.0	0	55.57	PEAK	74	PASS
	Off	2483.5	-51.95	2.0	0	45.31	AV	54	PASS
	Off	2500.0	-40.57	2.0	0	56.69	PEAK	74	PASS
	Off	2500.0	-52.20	2.0	0	45.06	AV	54	PASS
8DPSK	Off	2310.0	-43.13	2.0	0	54.13	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	44.00	AV	54	PASS
	Off	2390.0	-42.15	2.0	0	55.11	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	44.38	AV	54	PASS
	Off	2483.5	-41.25	2.0	0	56.01	PEAK	74	PASS
	Off	2483.5	-52.24	2.0	0	45.02	AV	54	PASS
	Off	2500.0	-41.94	2.0	0	55.32	PEAK	74	PASS
	Off	2500.0	-52.28	2.0	0	44.98	AV	54	PASS

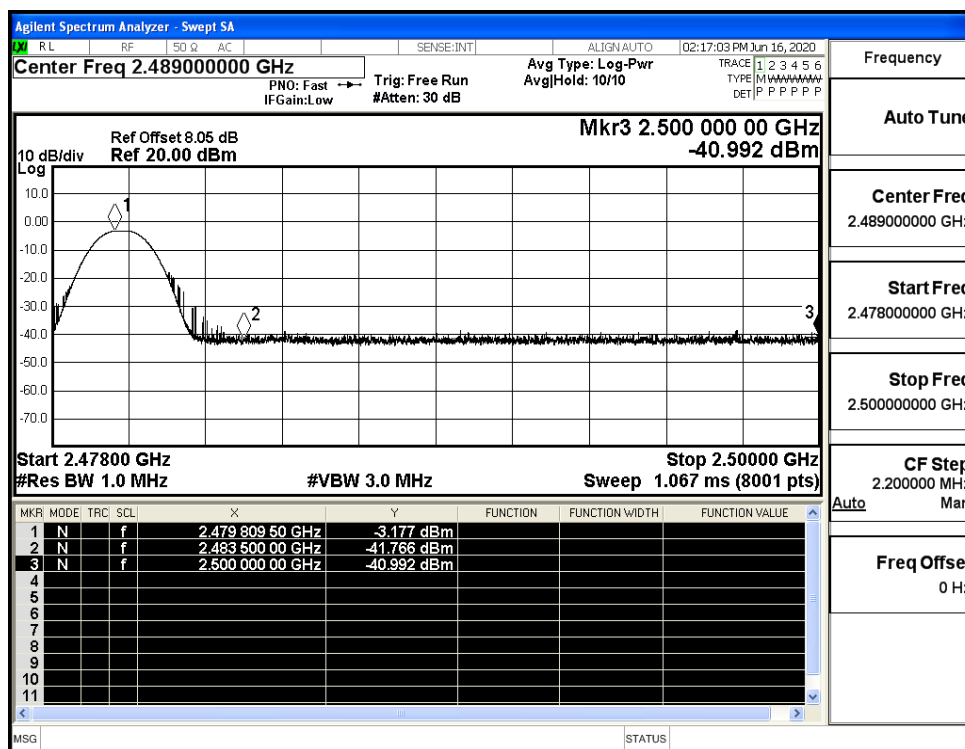
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



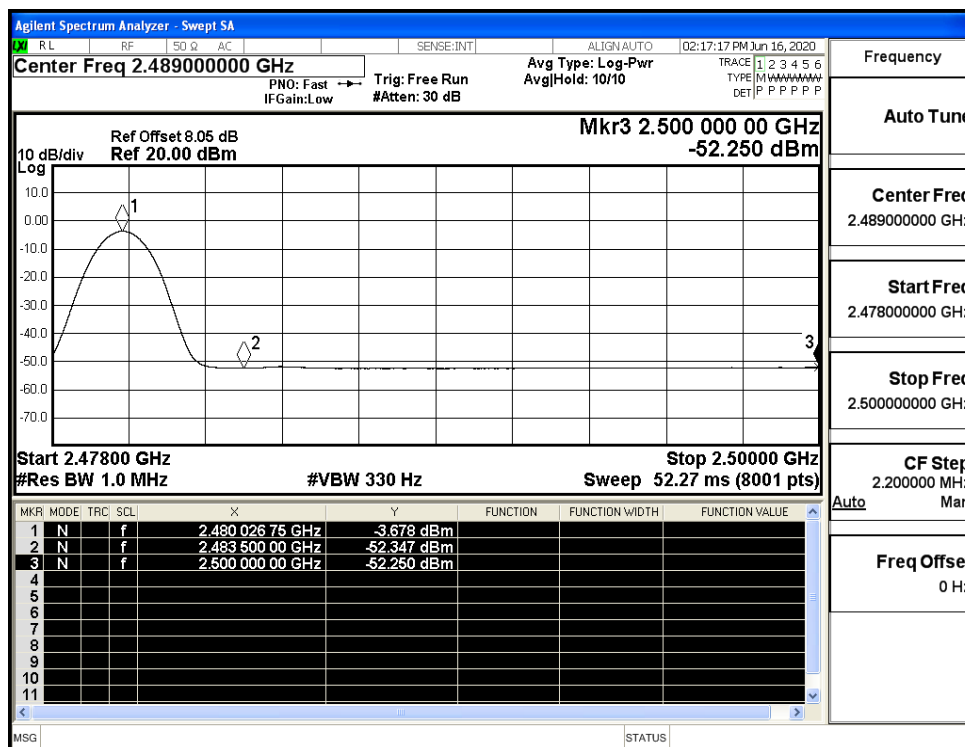
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

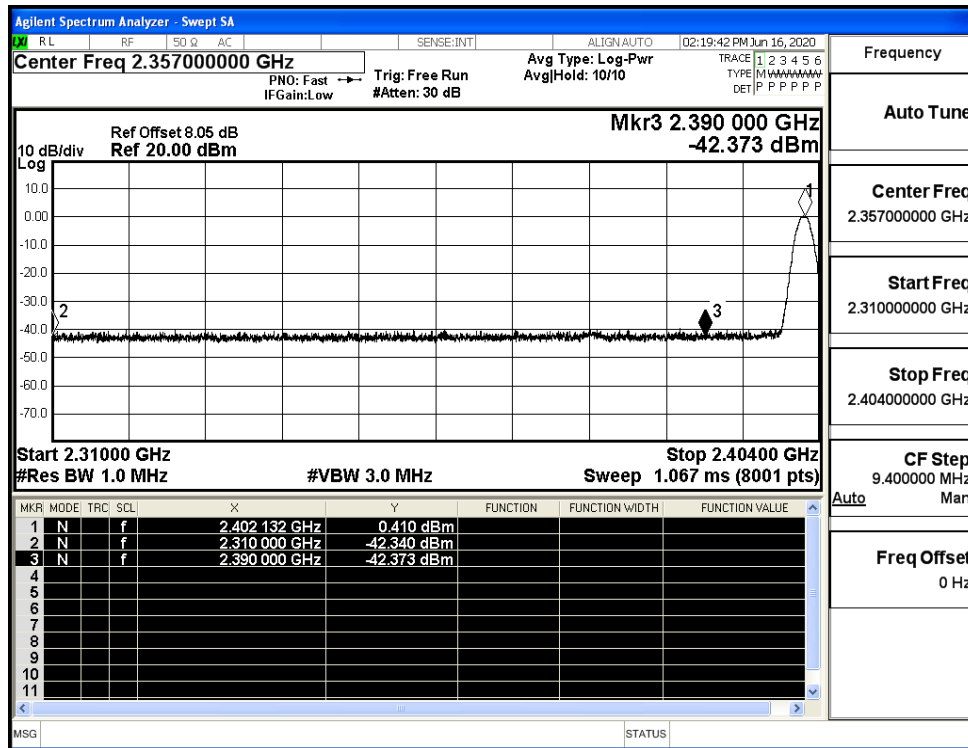
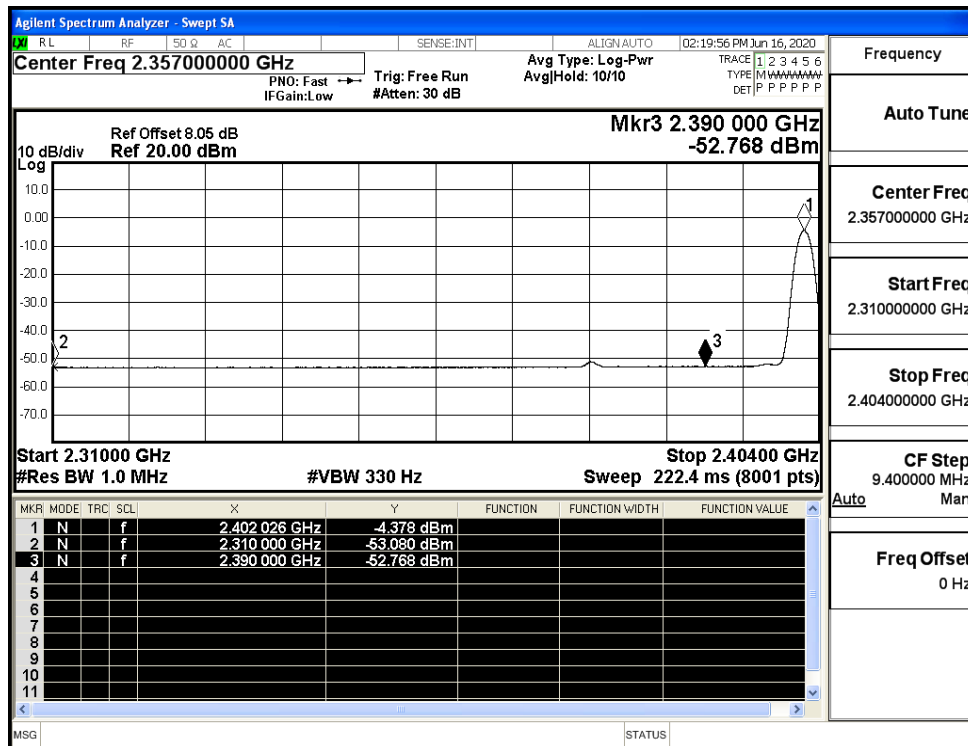


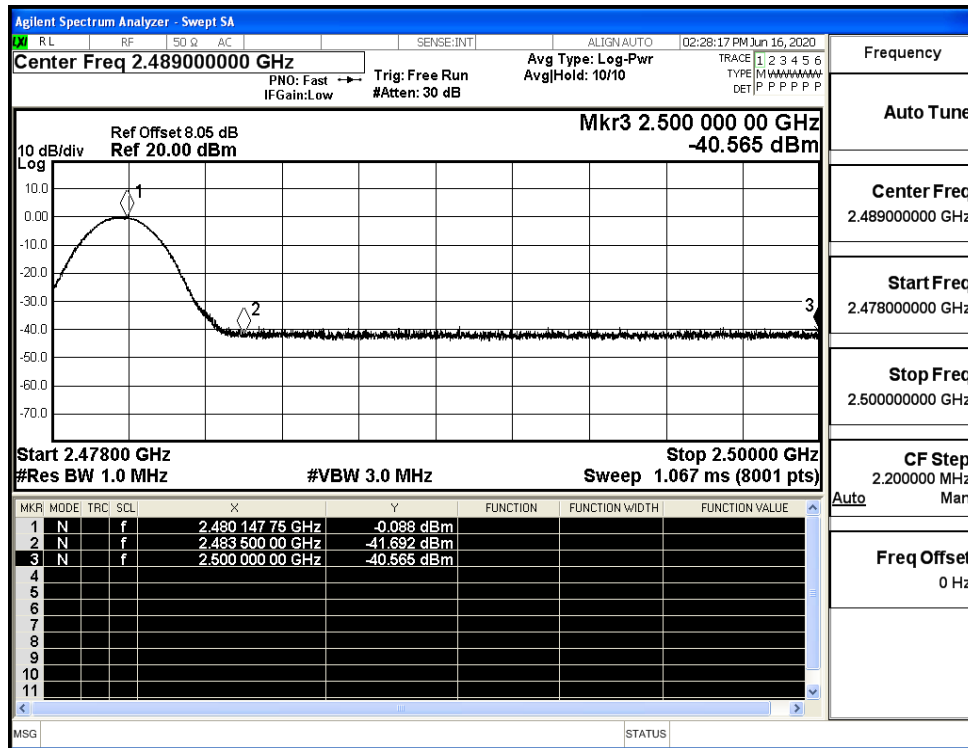
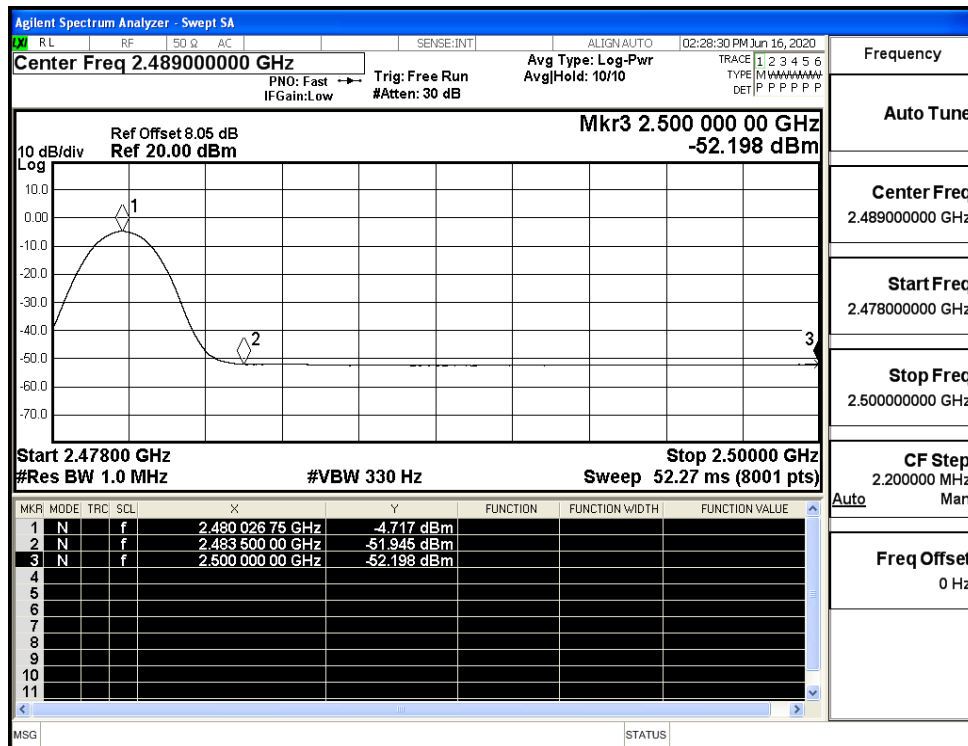
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



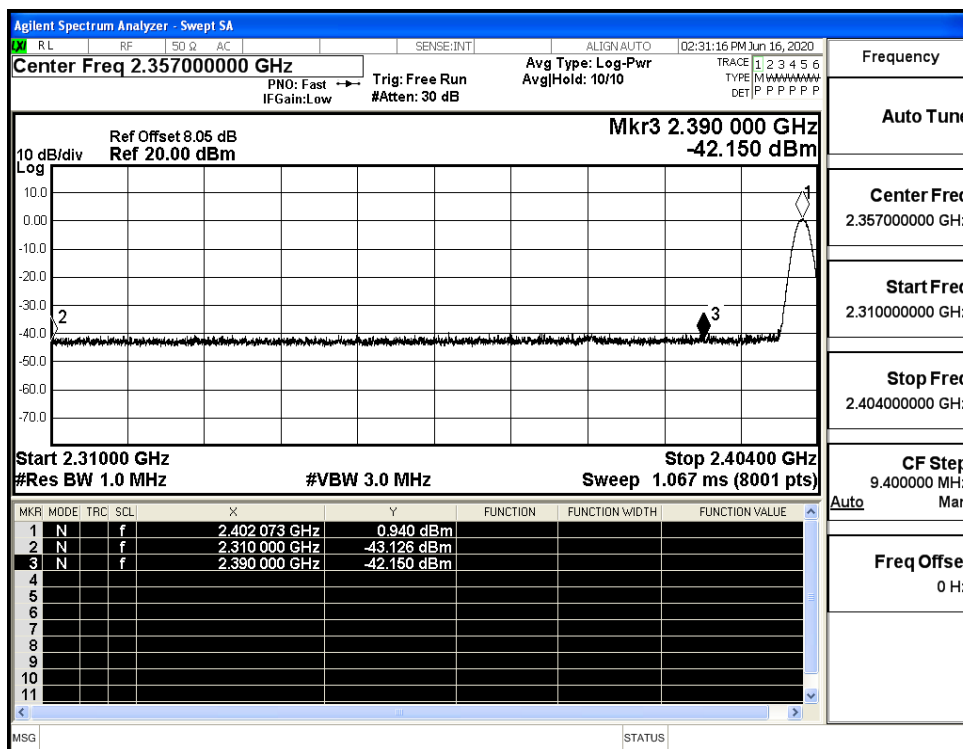
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



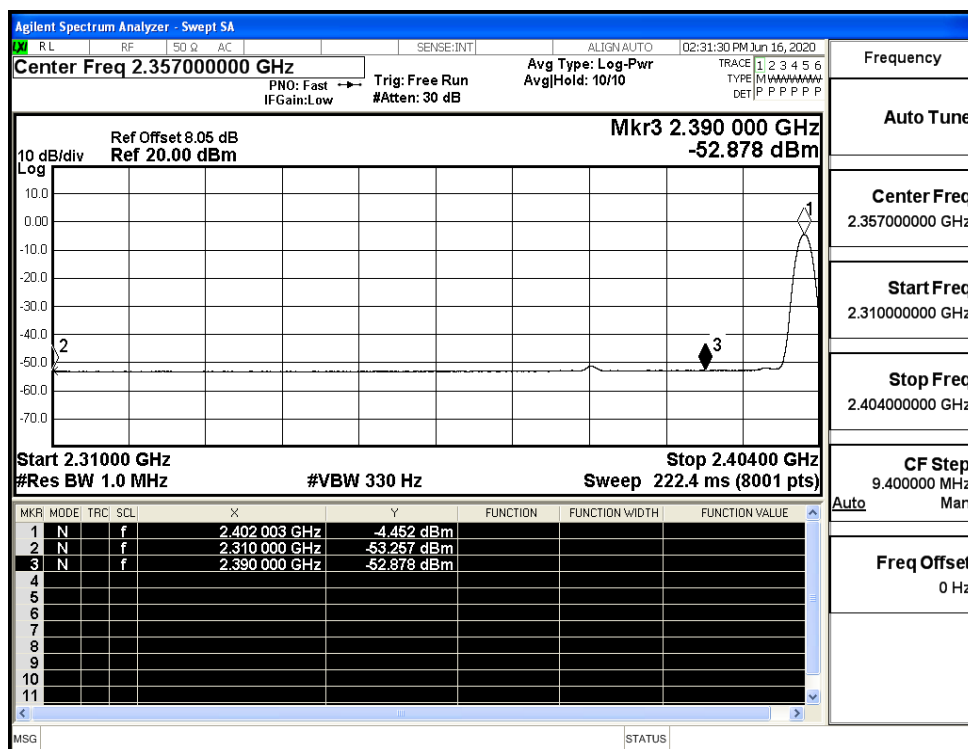
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

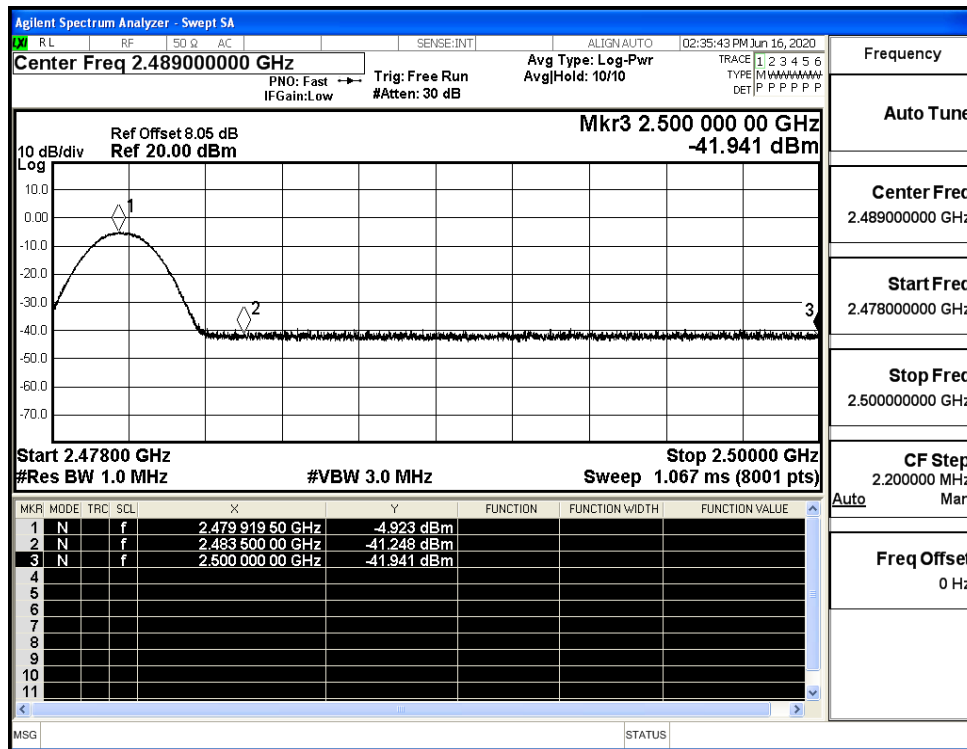
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

