

Appendix A

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

Product Name: Bone Conduction Headphone

Trade Mark: QueBeck

Test Model: A9

Environmental Conditions

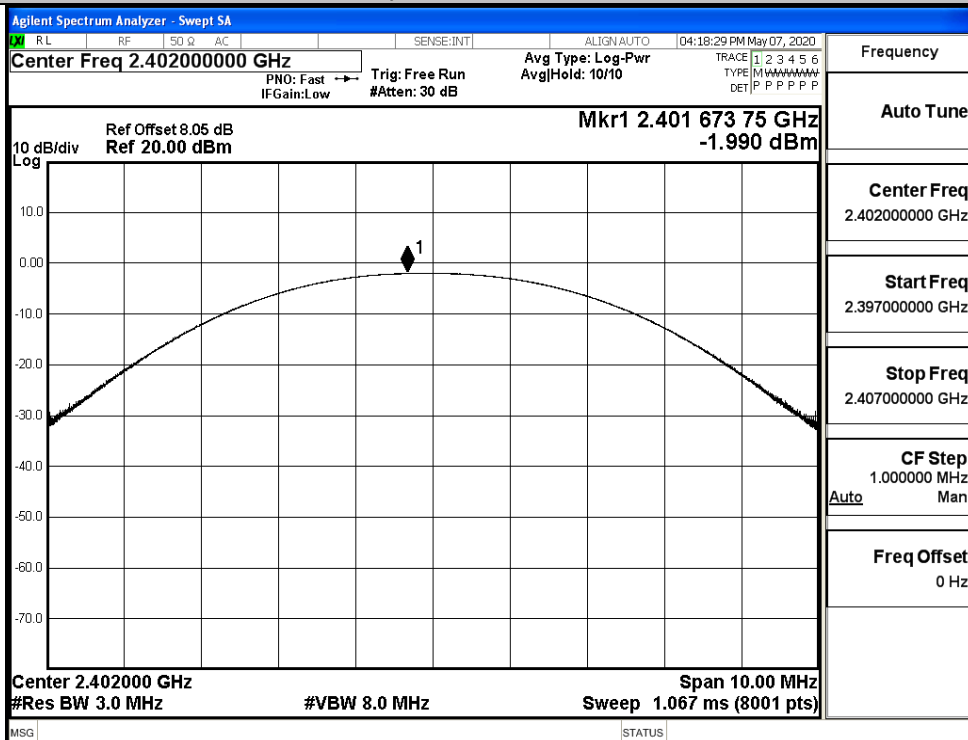
Temperature:	23.5 ° C
Relative Humidity:	52.9%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

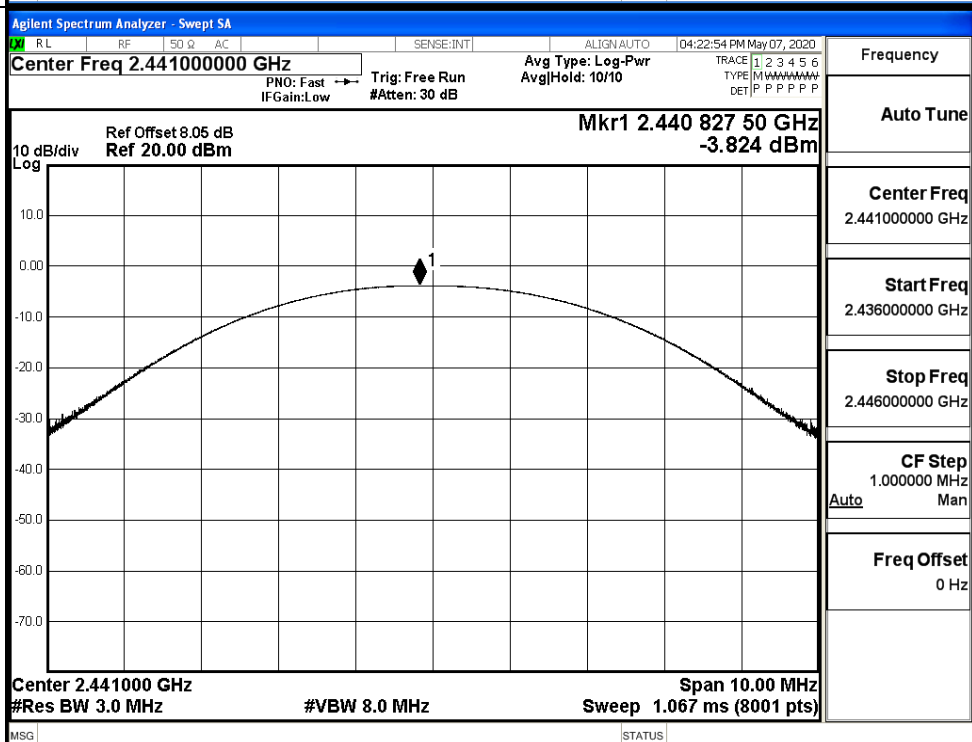
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.990	21	PASS
	MCH	-3.824	21	PASS
	HCH	-4.290	21	PASS
$\pi/4$ DQPSK	LCH	-4.898	21	PASS
	MCH	-6.115	21	PASS
	HCH	-7.085	21	PASS
8DPSK	LCH	-4.421	21	PASS
	MCH	-5.766	21	PASS
	HCH	-6.753	21	PASS

Test Graphs

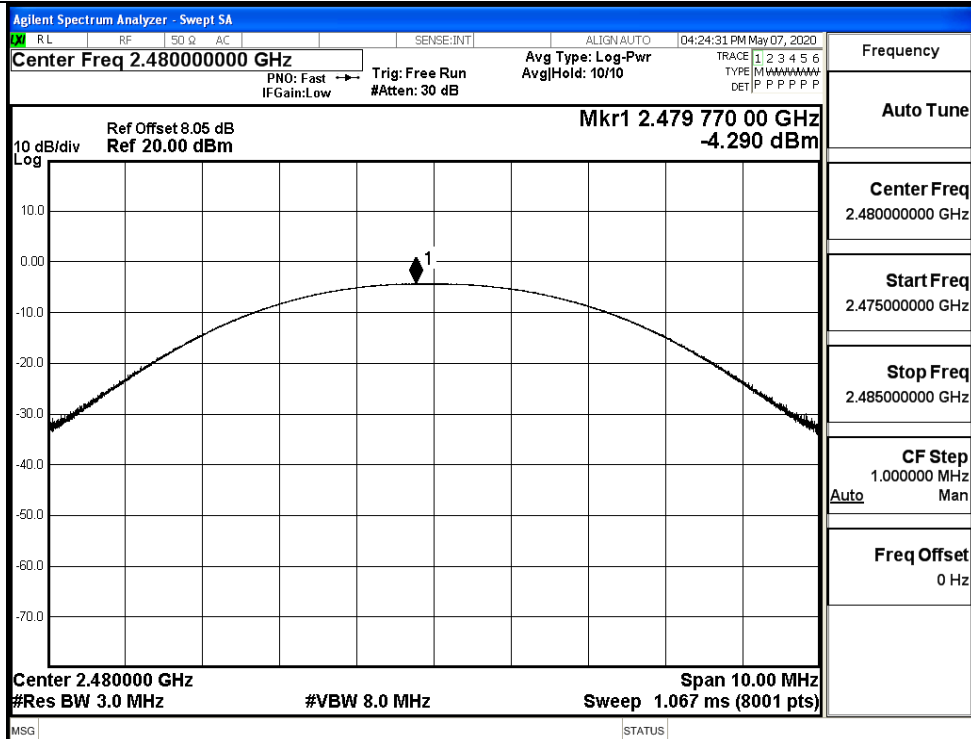
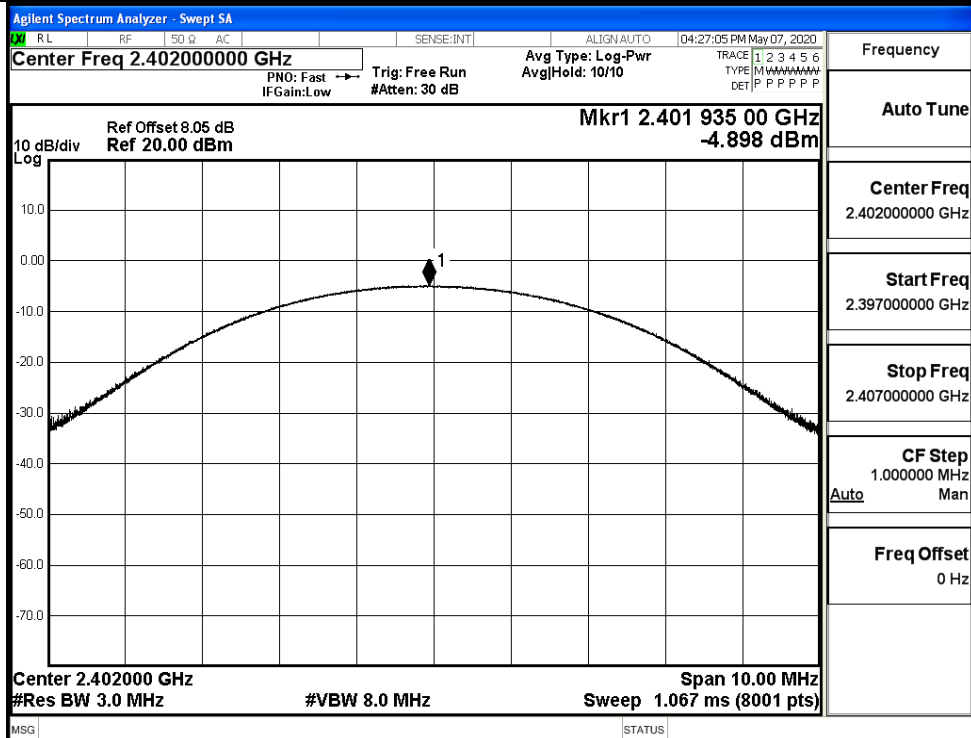
GFSK/LCH

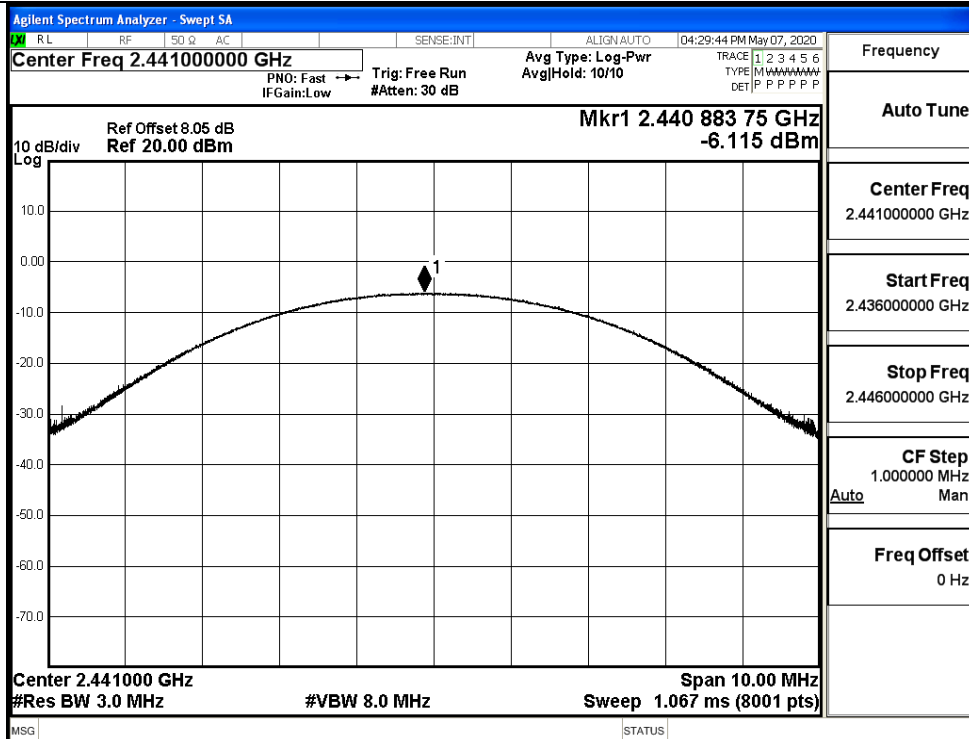
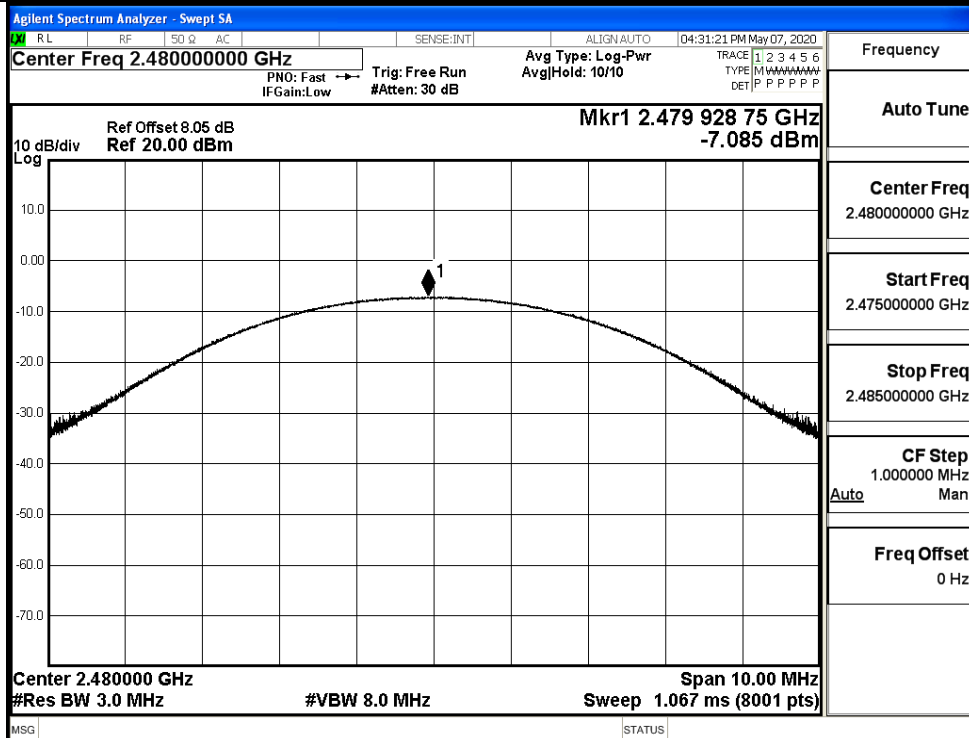


GFSK/MCH

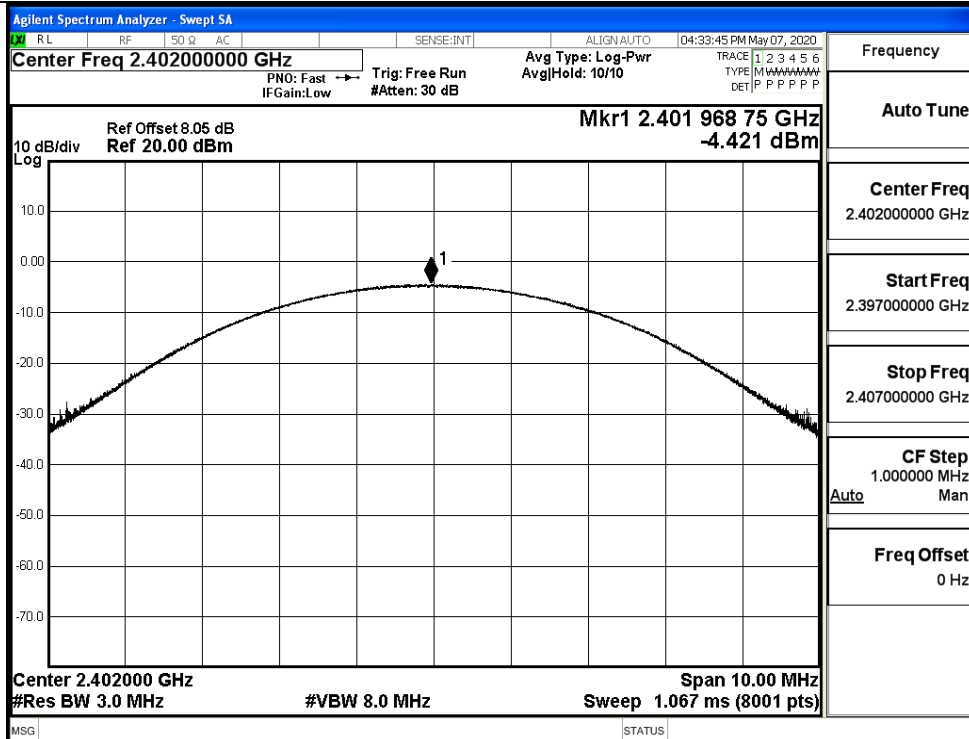


GFSK/HCH

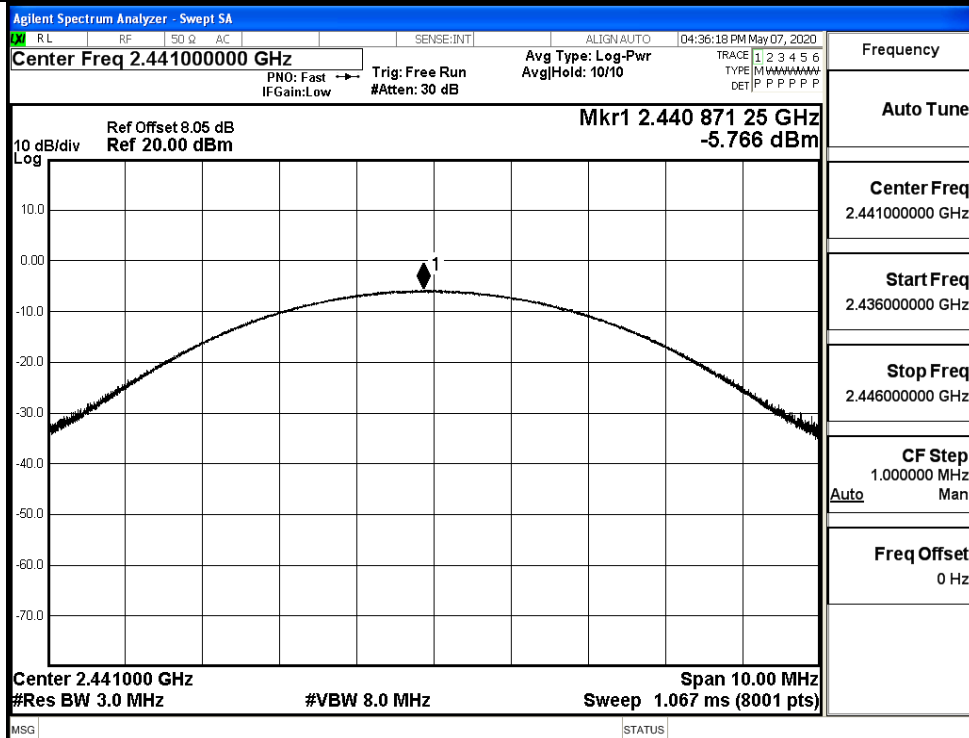
 π /4DQPSK/LCH

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

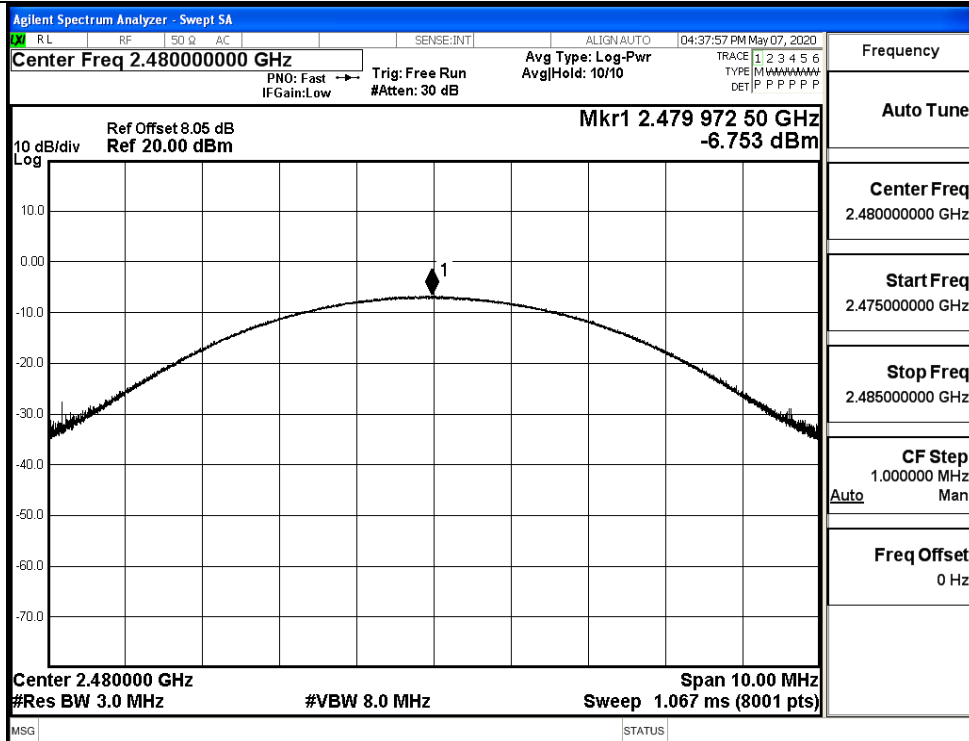
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

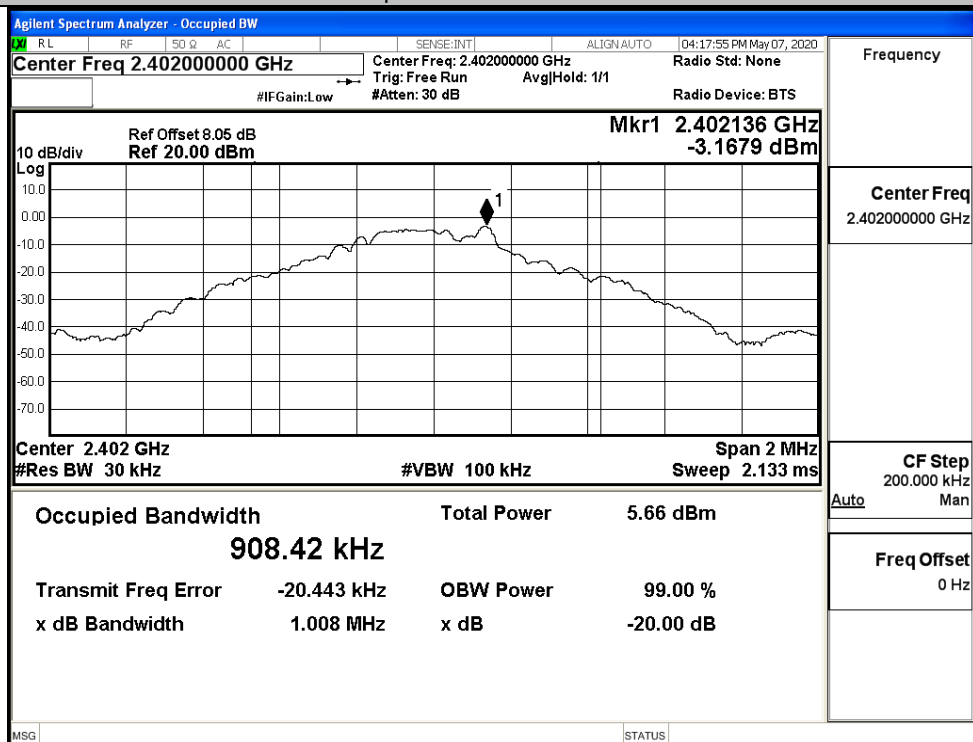


A.2 20dB Bandwidth

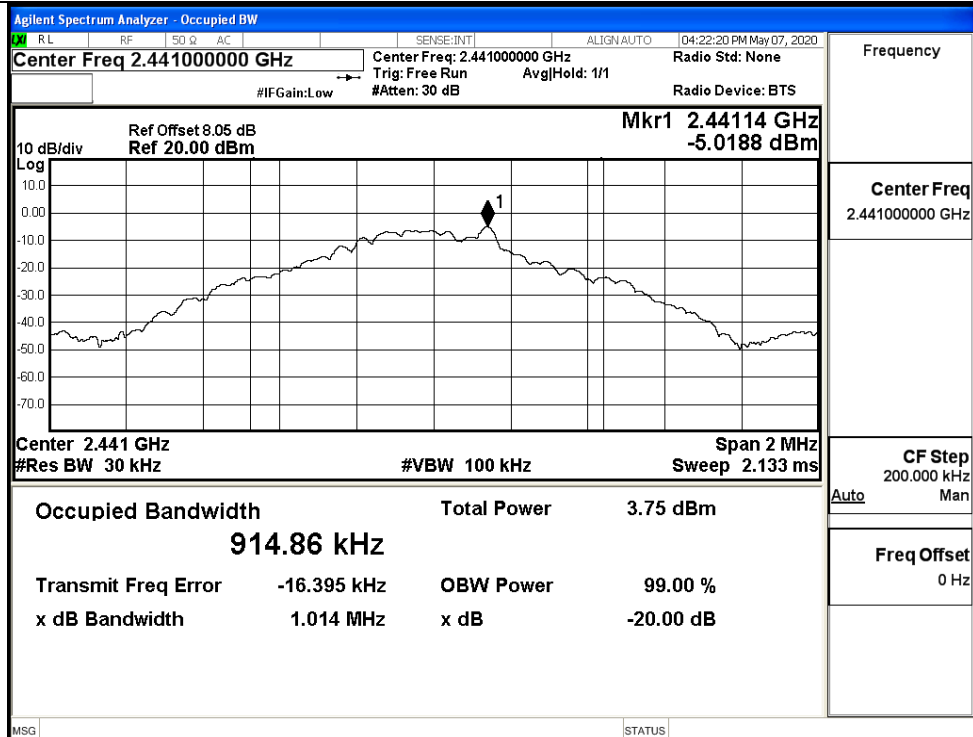
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.008	Not Specified	PASS
	MCH	1.014	Not Specified	PASS
	HCH	1.011	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.359	Not Specified	PASS
	MCH	1.360	Not Specified	PASS
	HCH	1.360	Not Specified	PASS
8DPSK	LCH	1.316	Not Specified	PASS
	MCH	1.316	Not Specified	PASS
	HCH	1.317	Not Specified	PASS

Test Graphs

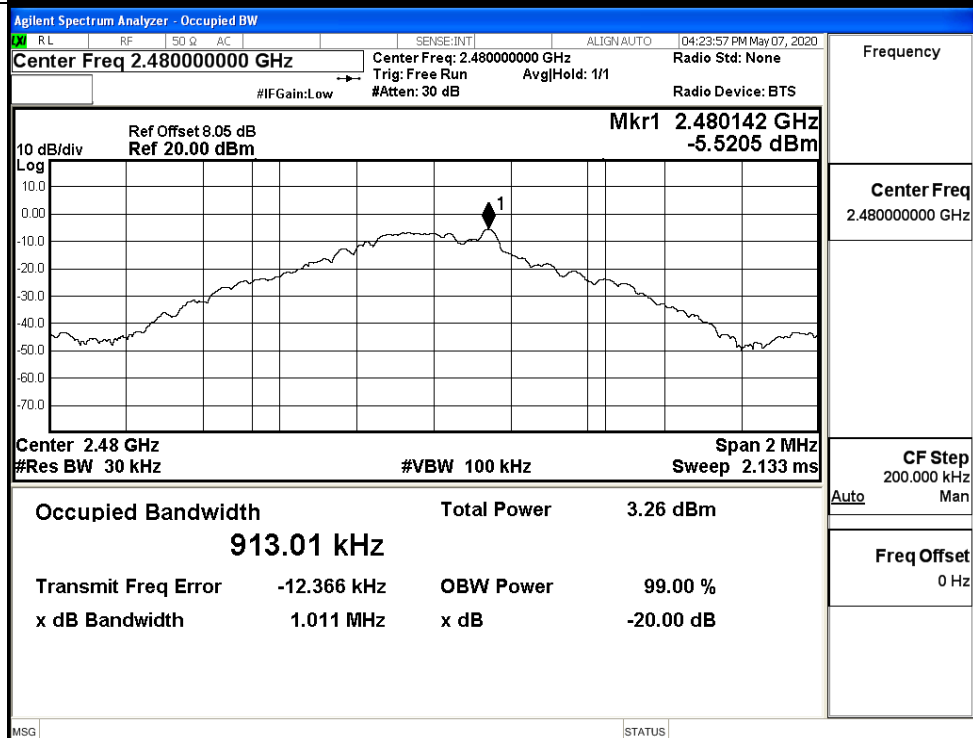
GFSK/LCH

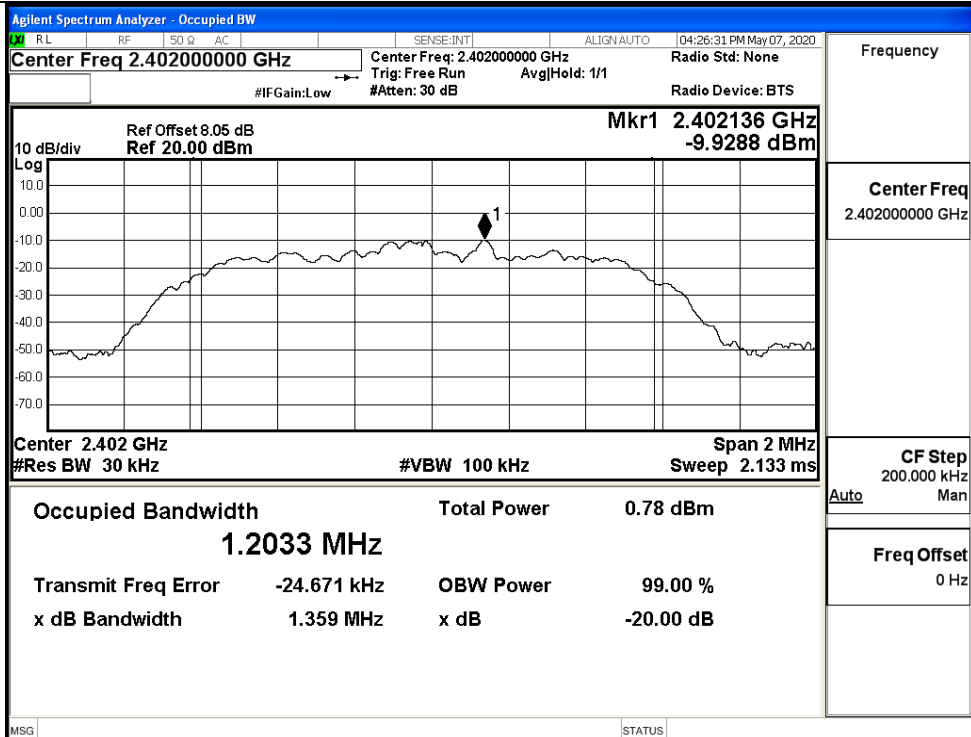
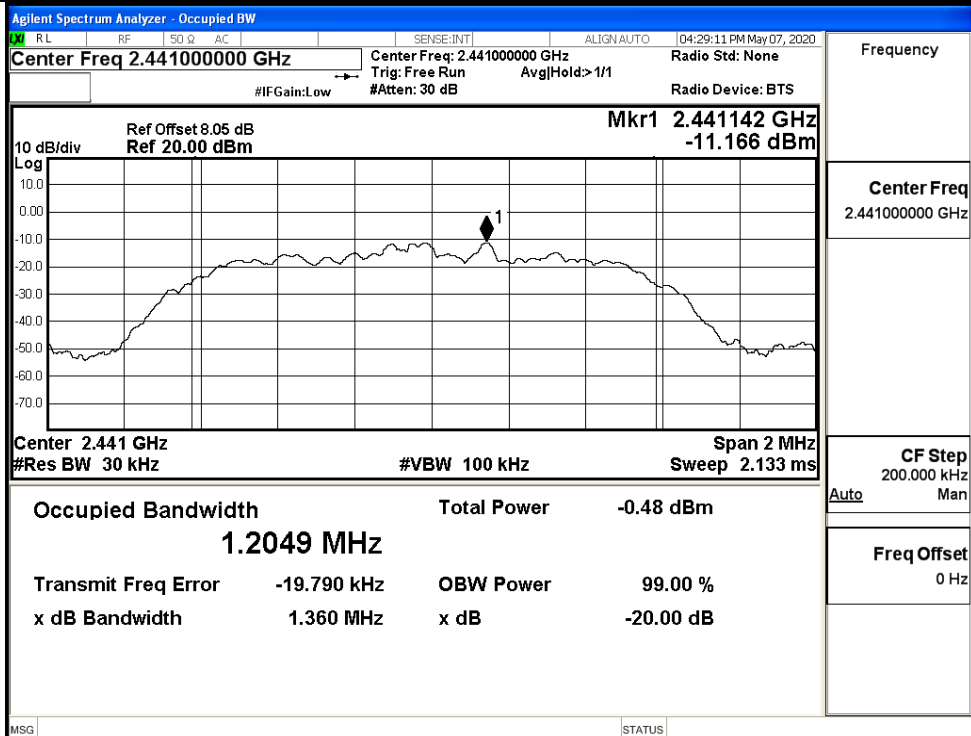


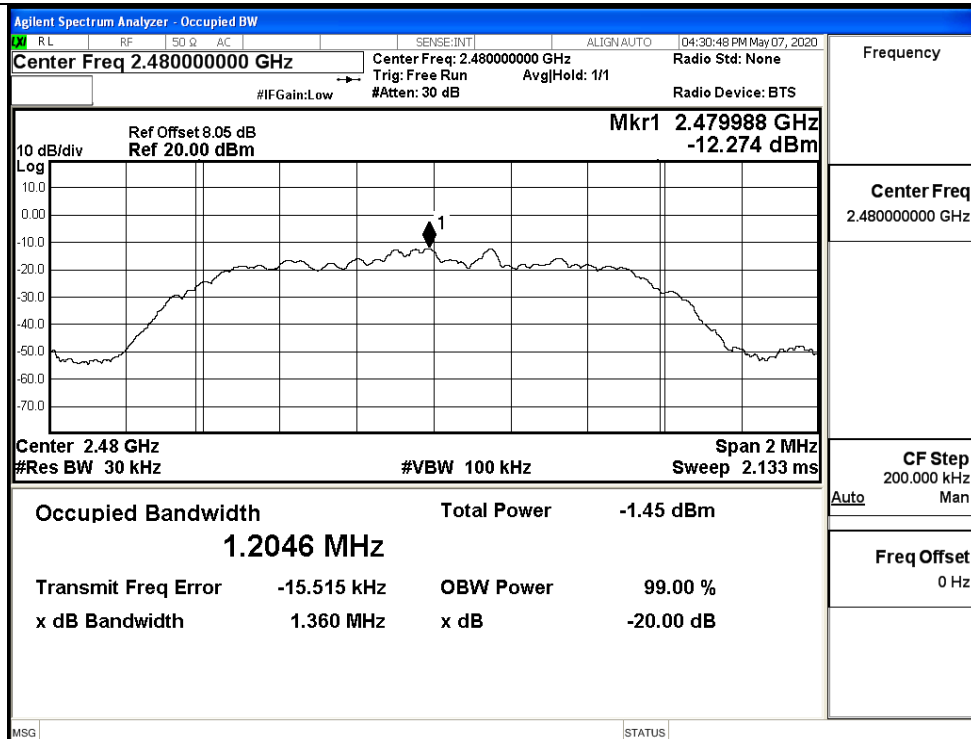
GFSK/MCH



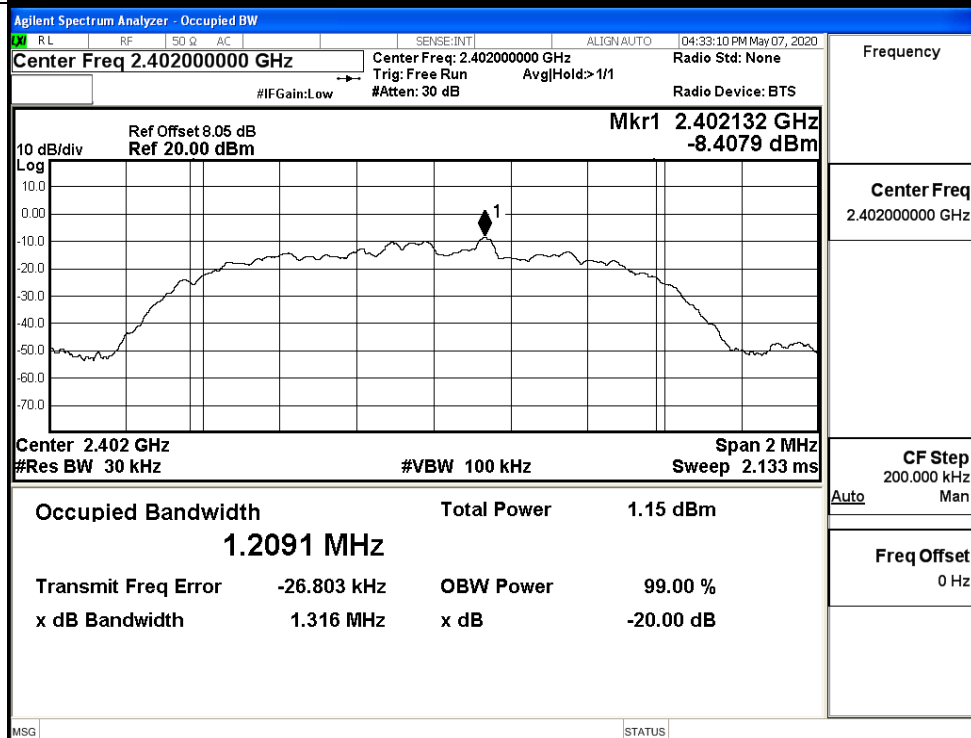
GFSK/HCH



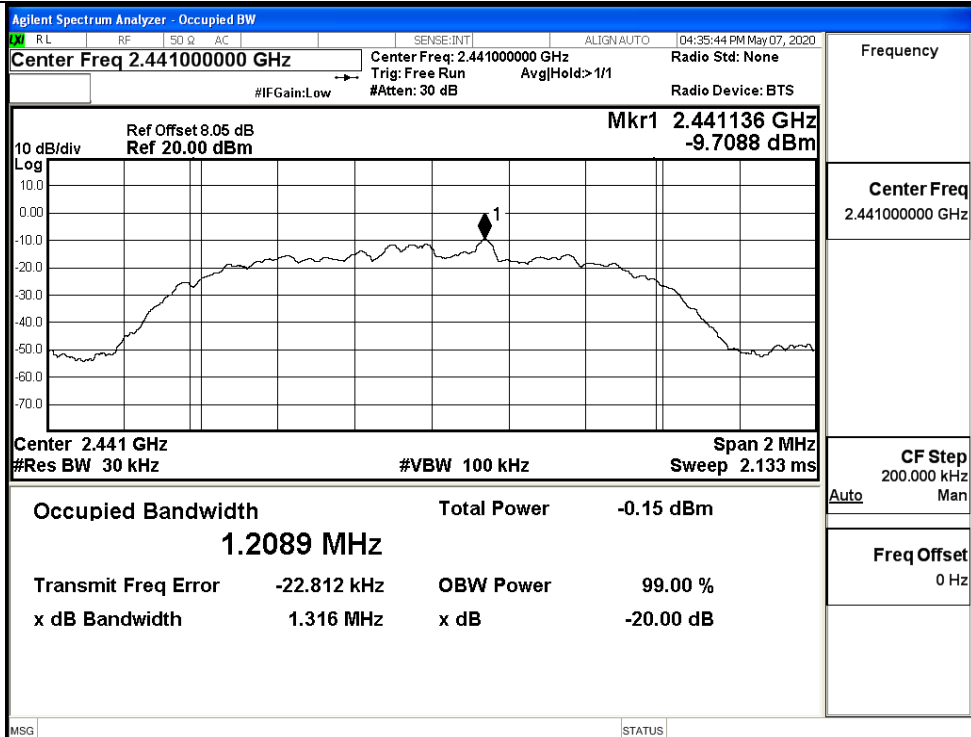
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

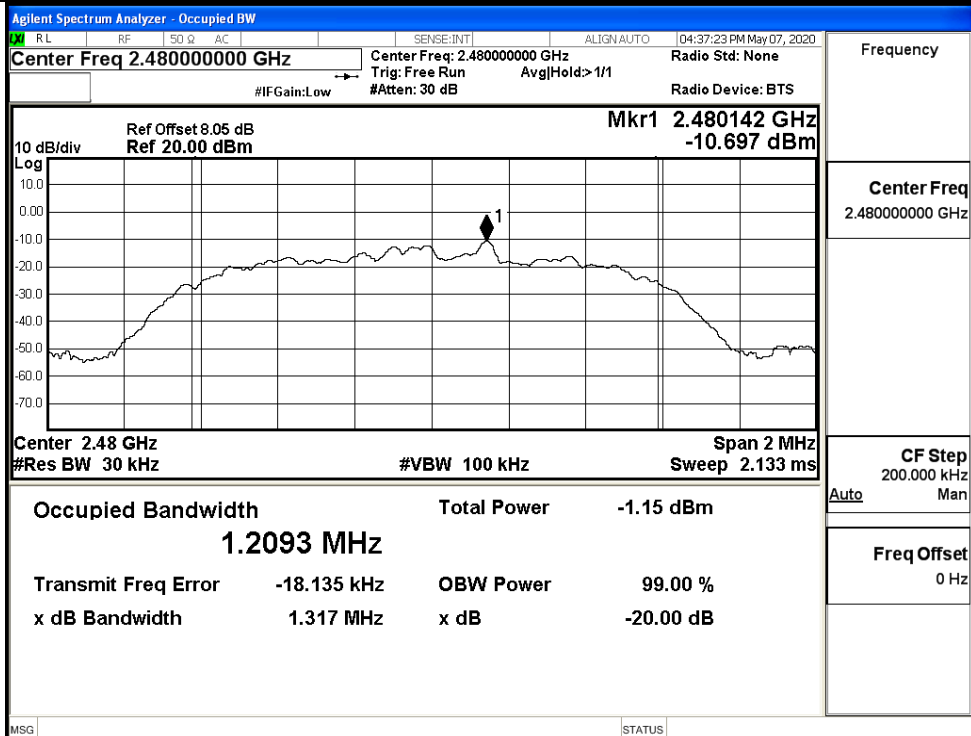
8DPSK/LCH



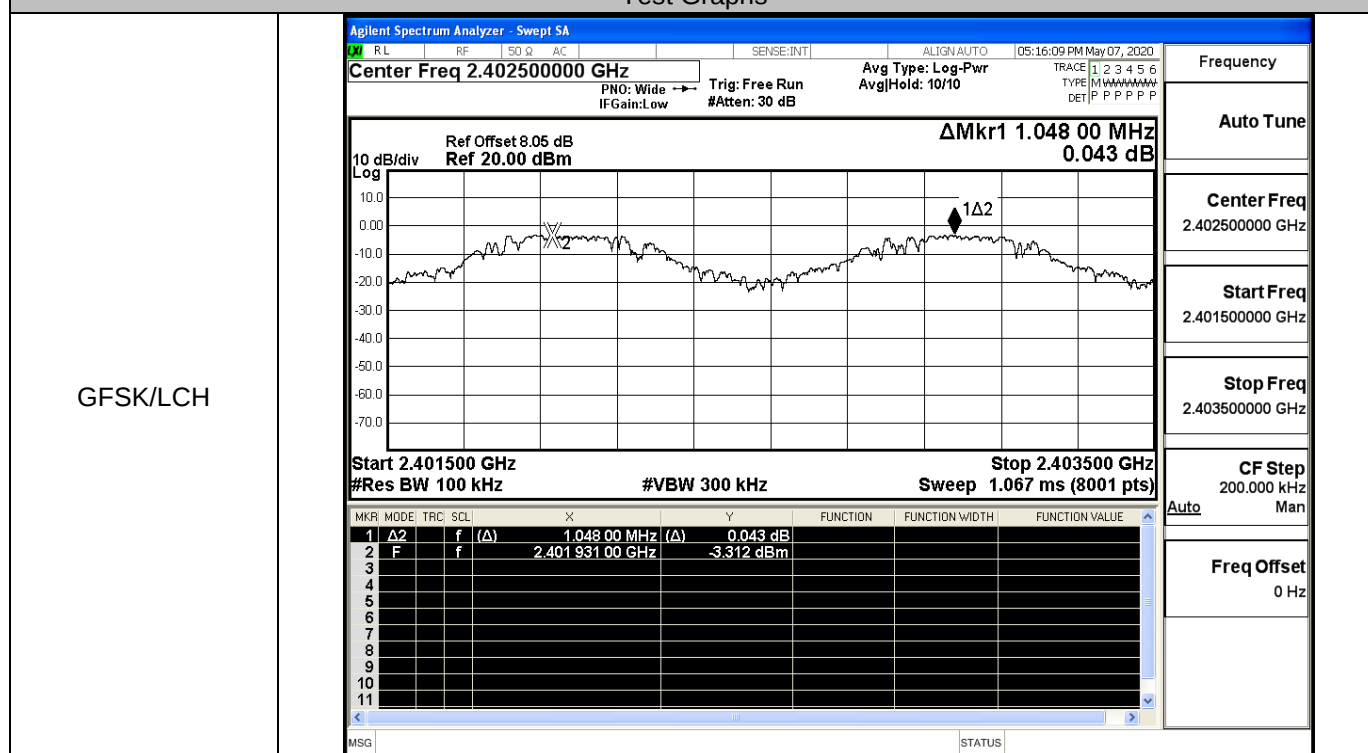
8DPSK/MCH



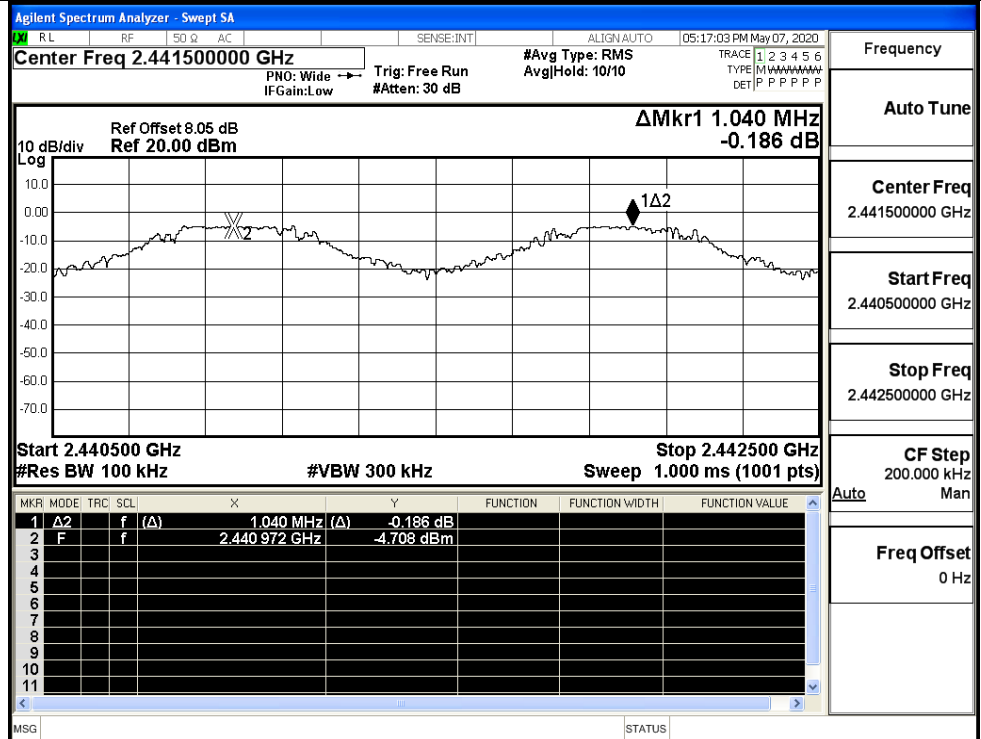
8DPSK/HCH



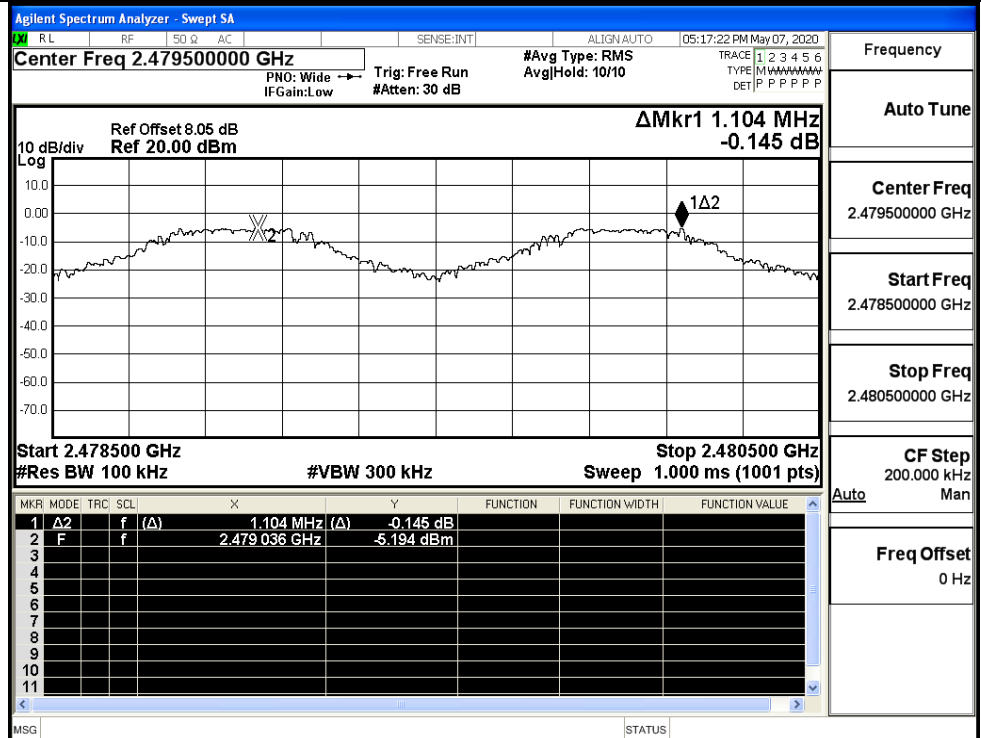
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.048	0.676	PASS
	MCH	1.040	0.676	PASS
	HCH	1.104	0.676	PASS
$\pi/4$ DQPSK	LCH	1.044	0.907	PASS
	MCH	1.006	0.907	PASS
	HCH	1.046	0.907	PASS
8DPSK	LCH	0.886	0.878	PASS
	MCH	1.220	0.878	PASS
	HCH	1.108	0.878	PASS

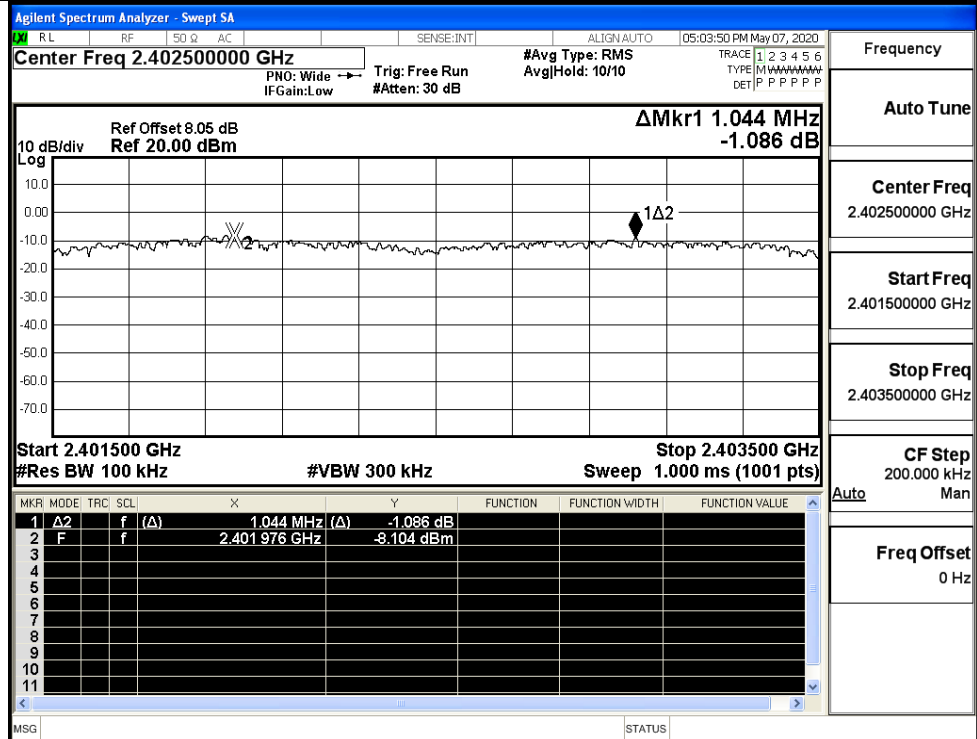
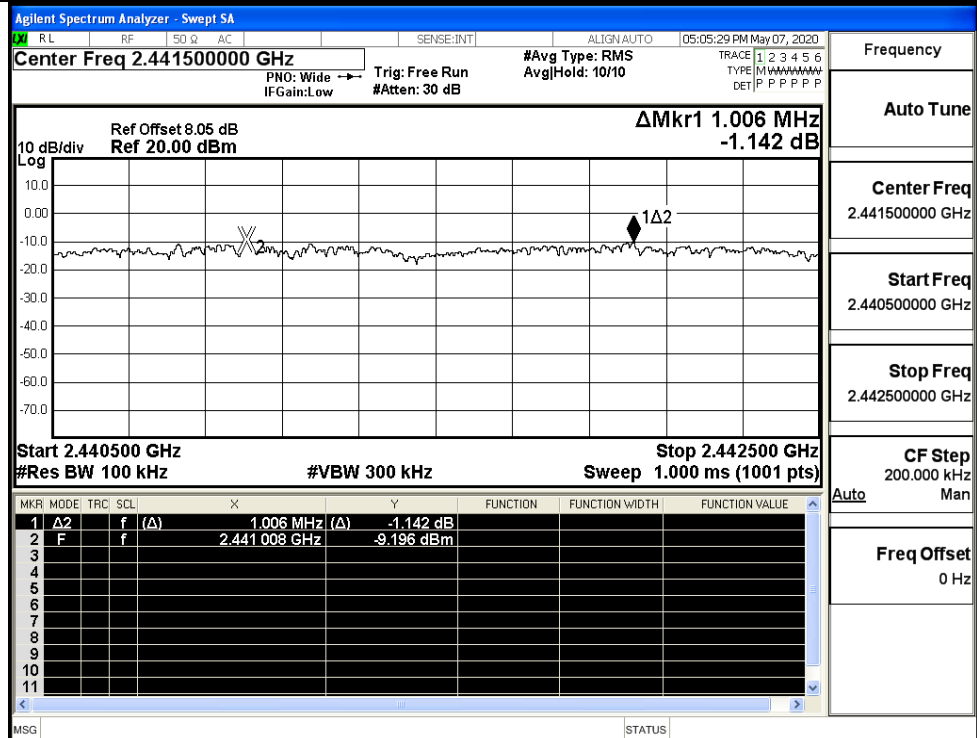


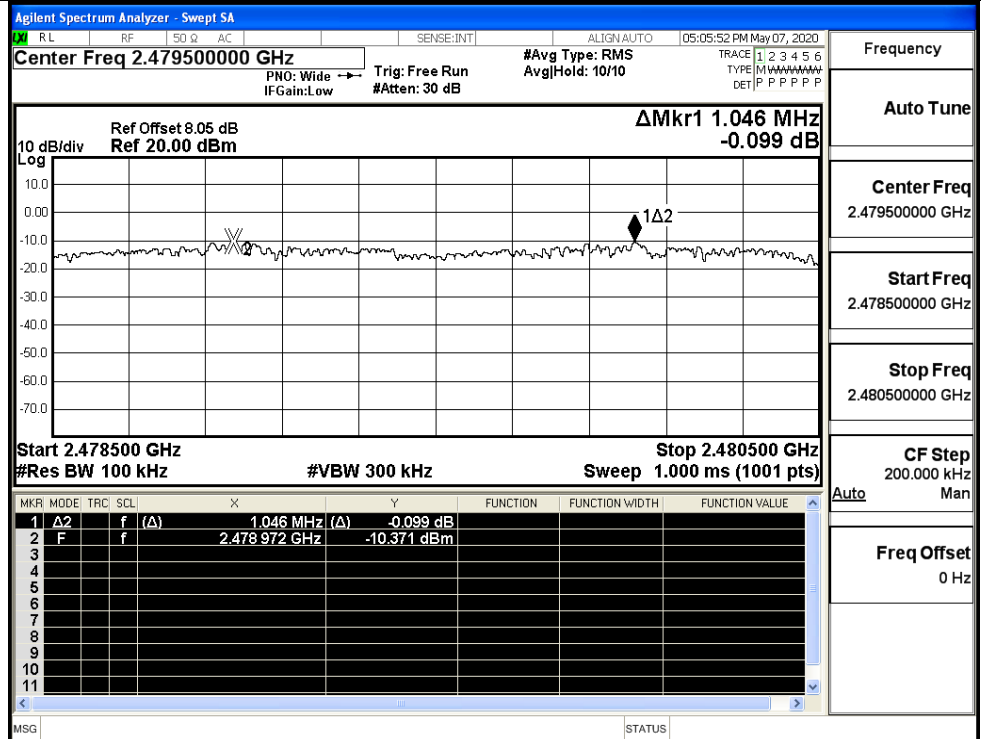
GFSK/MCH



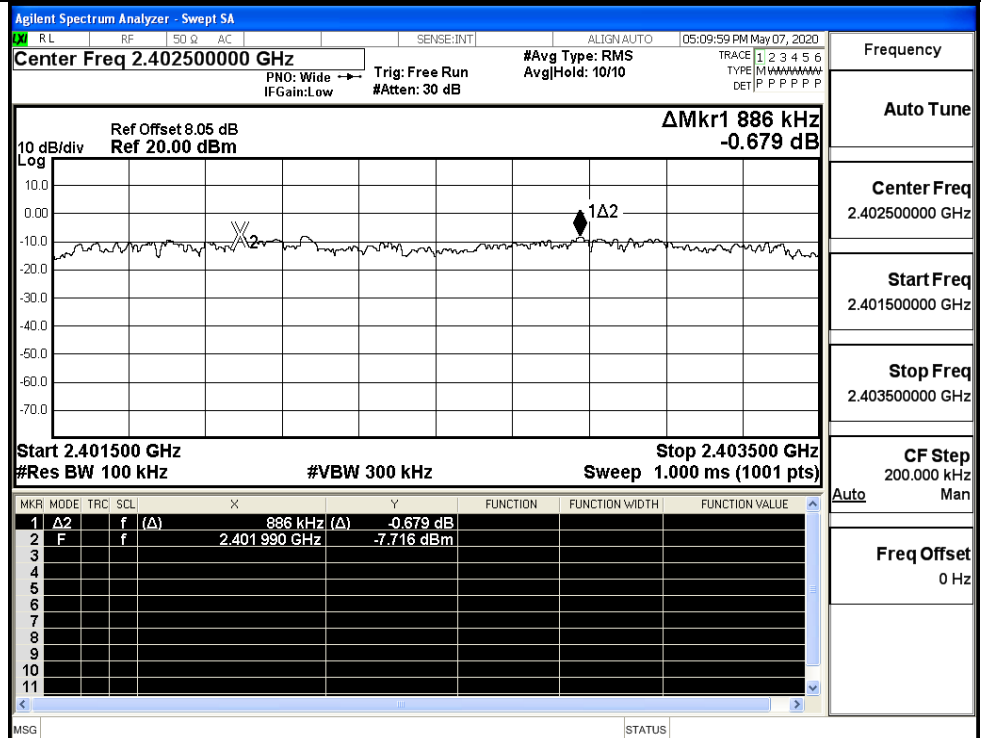
GFSK/HCH



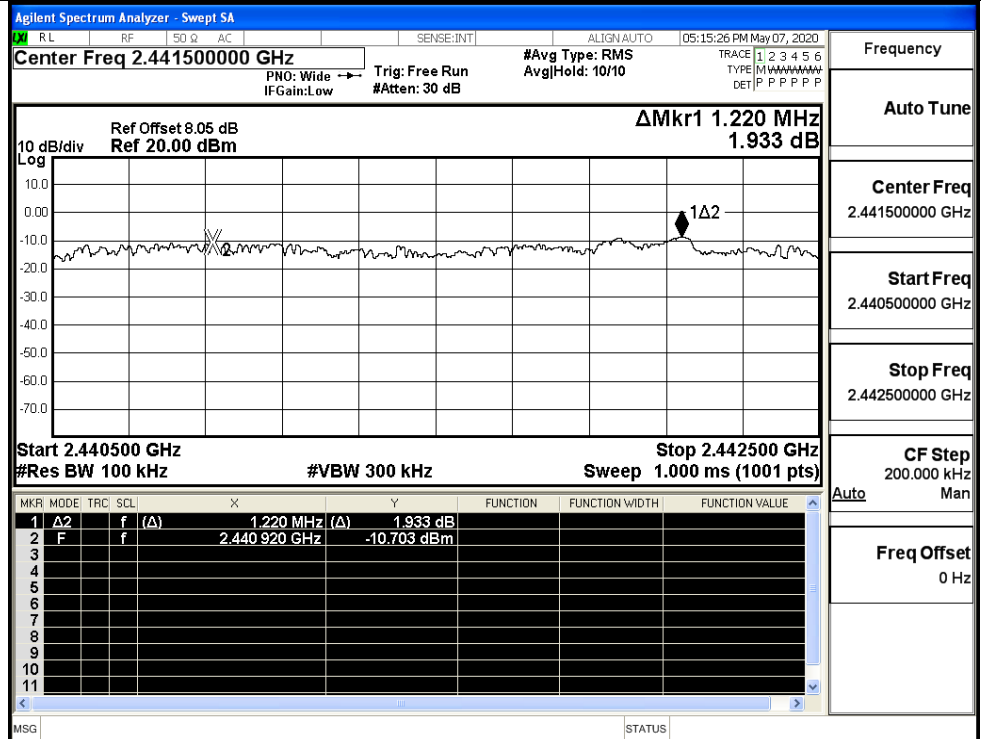
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

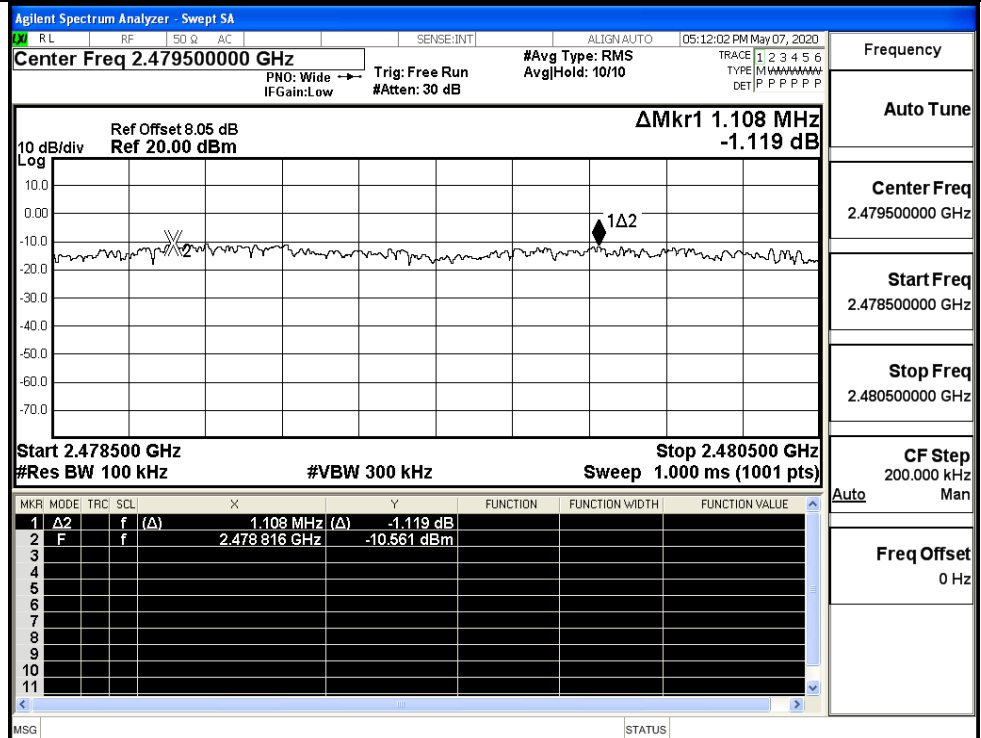
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

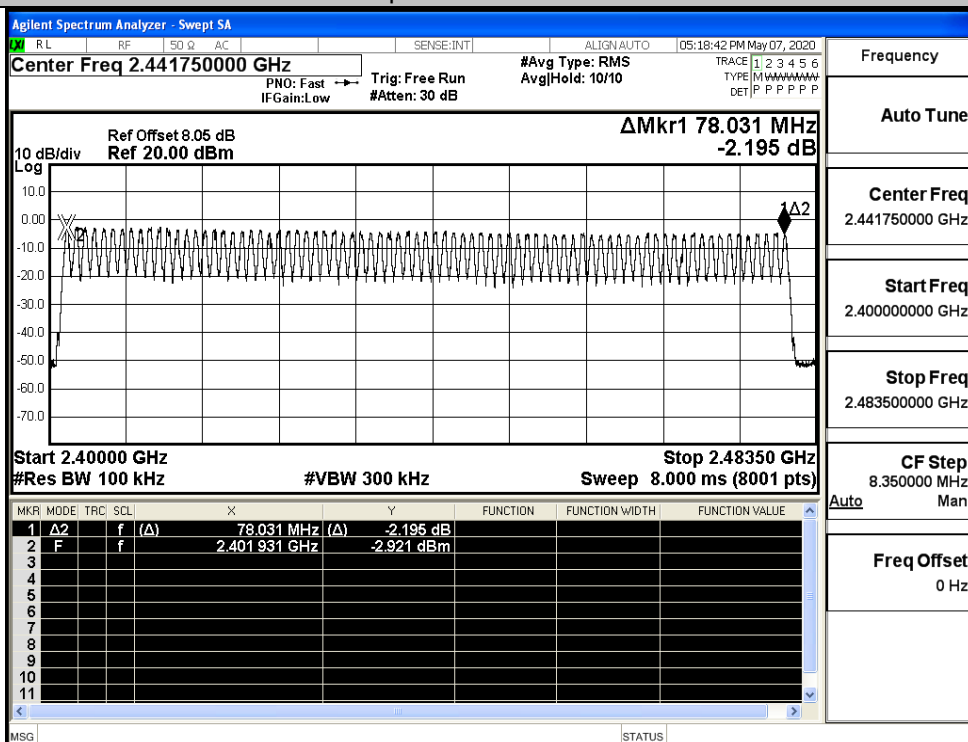


A.4 Hopping Channel Number

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

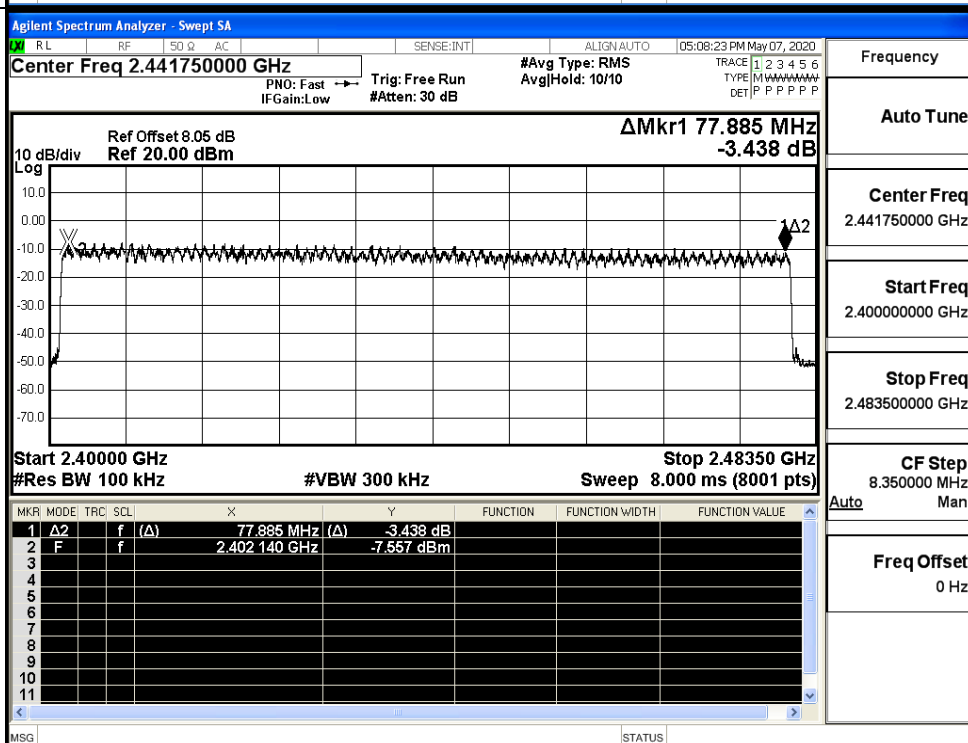
Test Graphs

GFSK/Hop



Frequency

Auto Tune

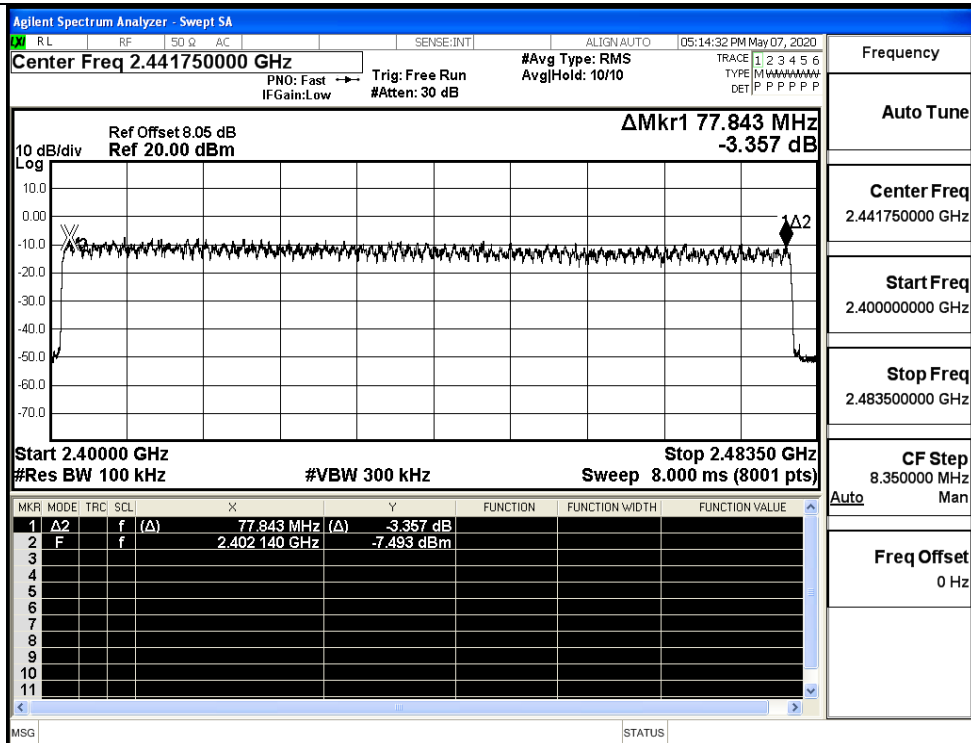
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

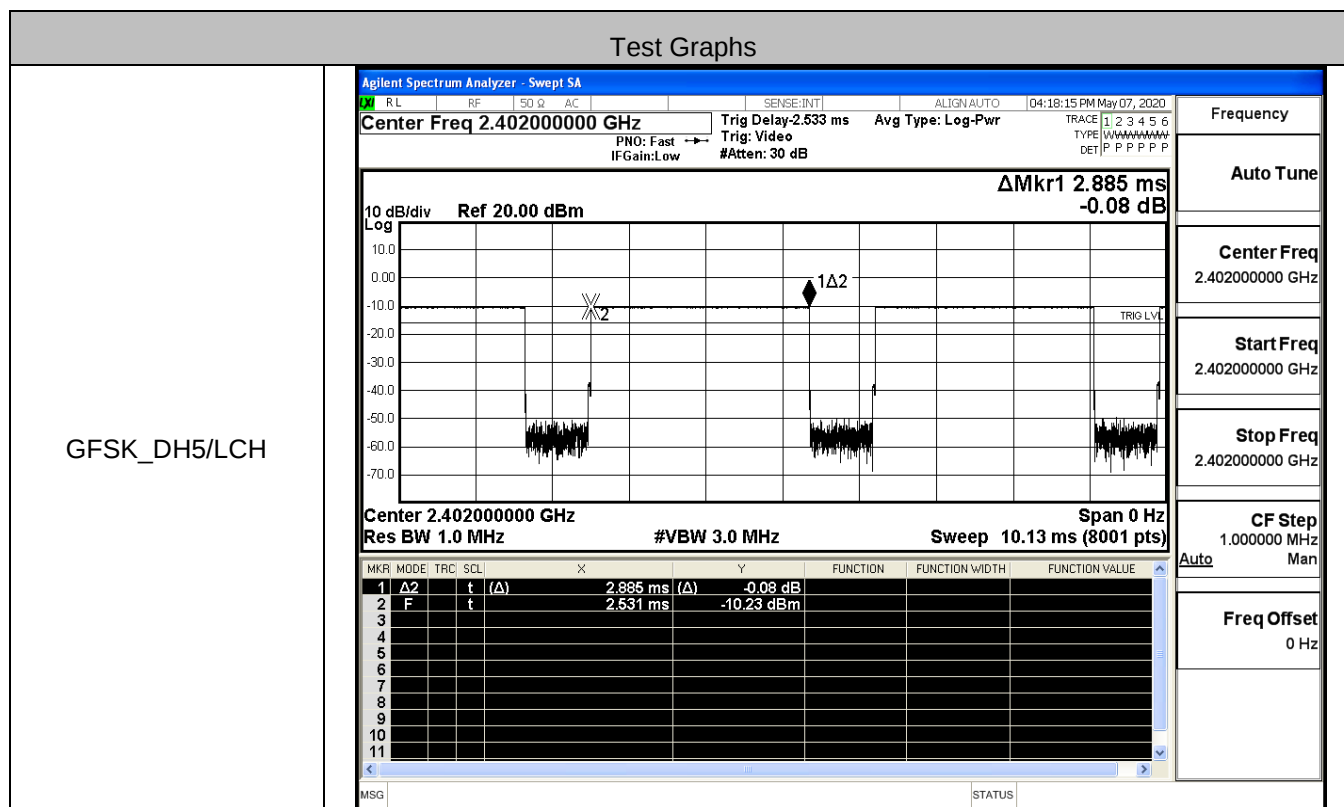
Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz

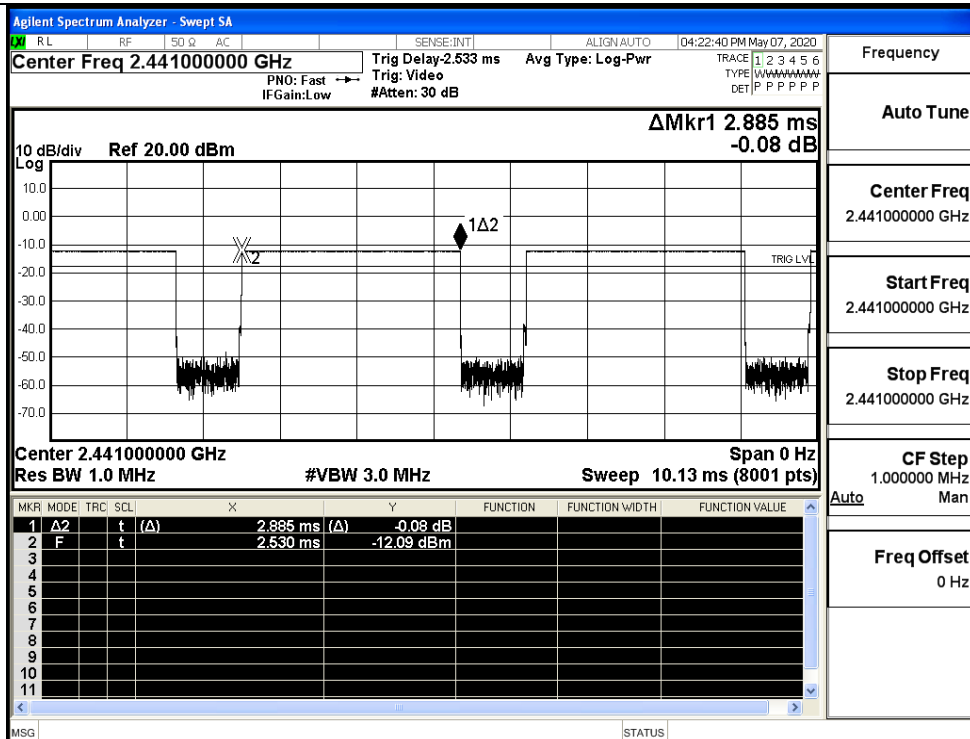
8DPSK/Hop



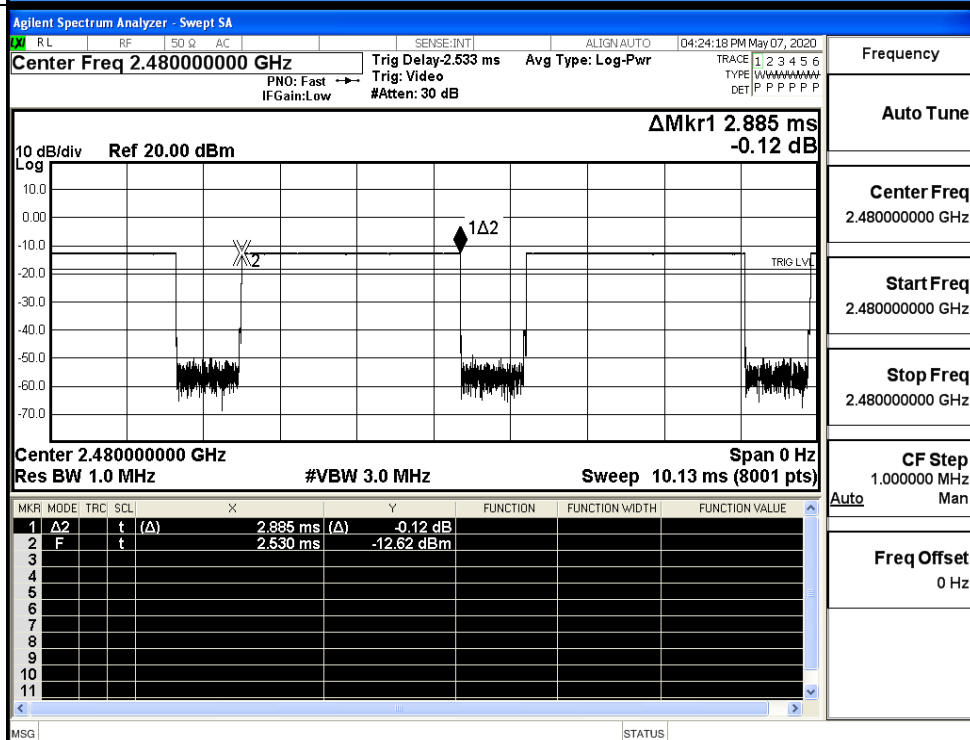
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.308	0.4	PASS
	2DH5	MCH	2.89	106.7	0.308	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS
8DPSK	3DH5	LCH	2.89	106.7	0.308	0.4	PASS
	3DH5	MCH	2.89	106.7	0.308	0.4	PASS
	3DH5	HCH	2.89	106.7	0.308	0.4	PASS



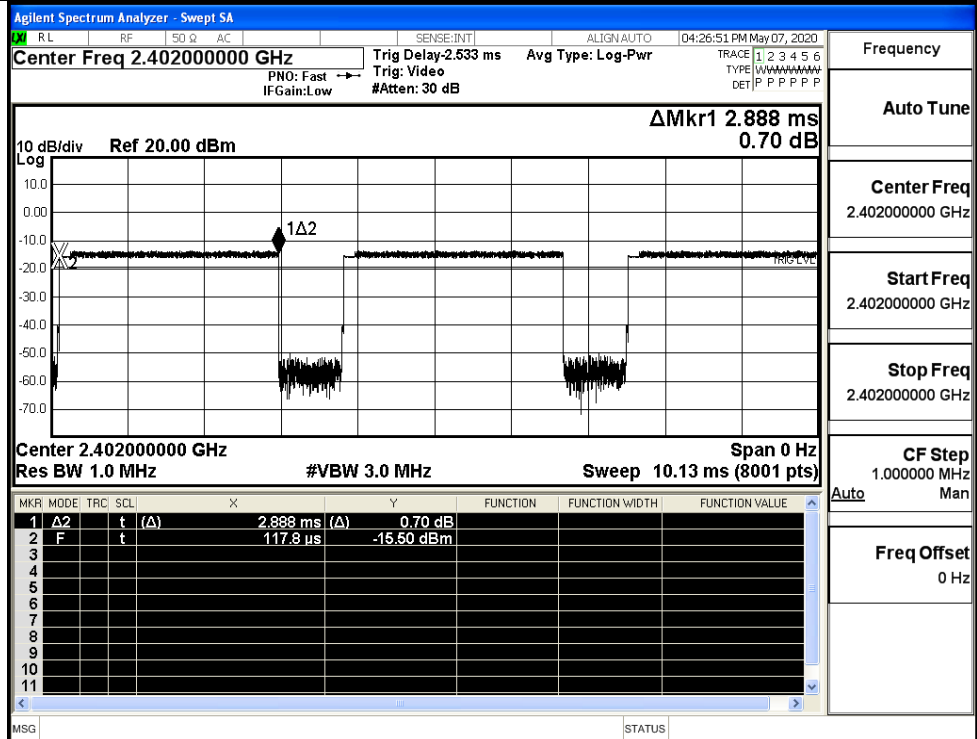
GFSK_DH5/MCH



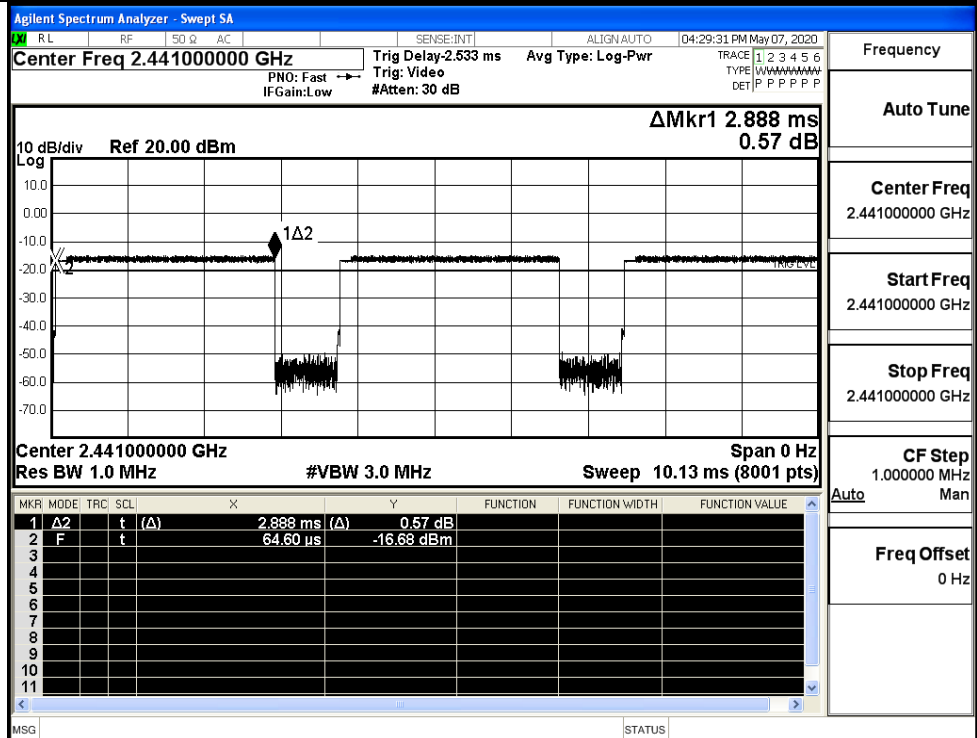
GFSK_DH5/HCH



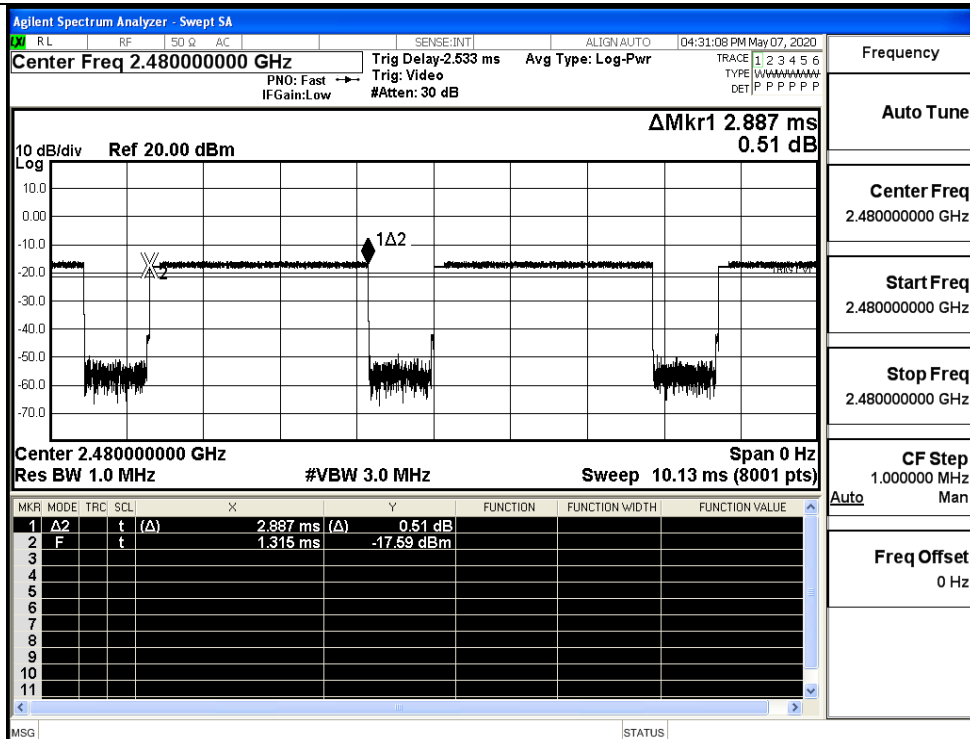
$\pi/4$ DQPSK
_2DH5/LCH



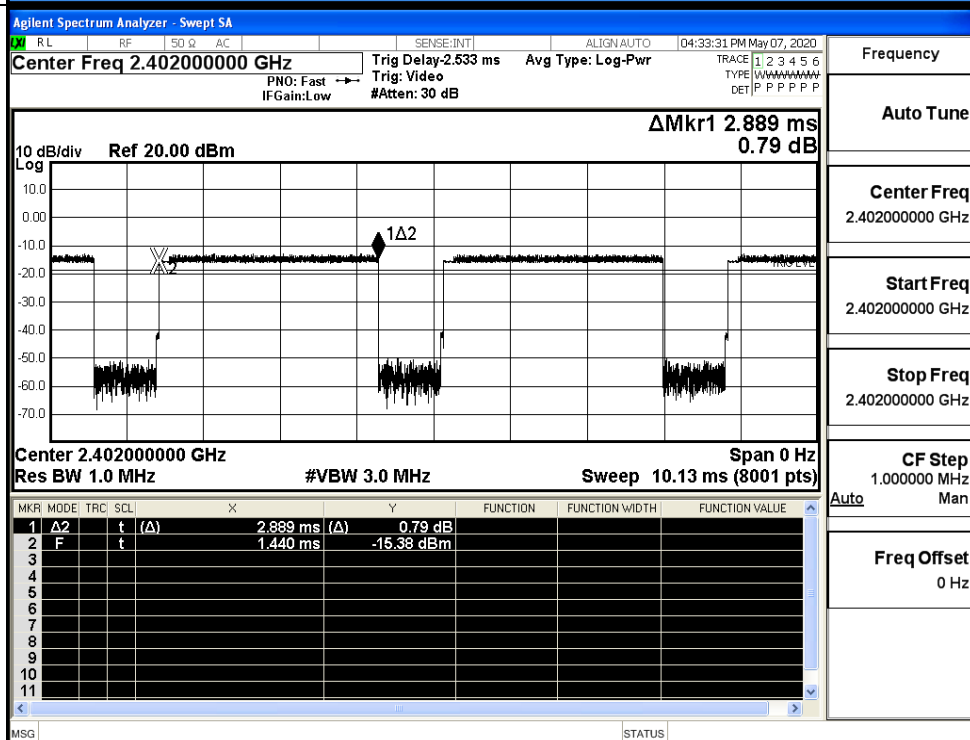
$\pi/4$ DQPSK
_2DH5/MCH



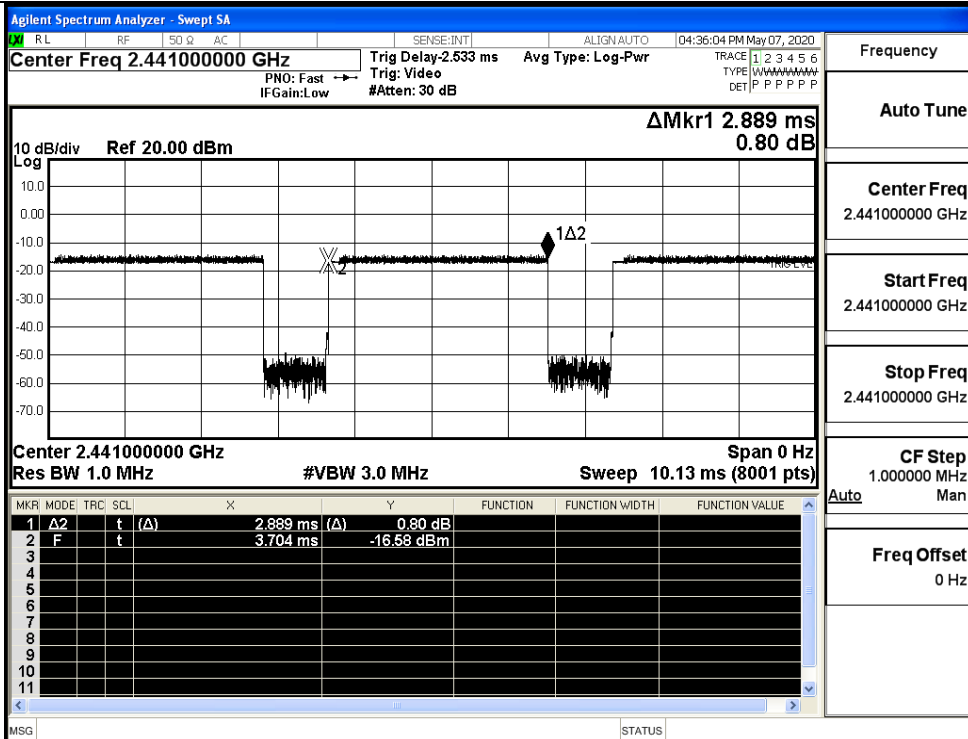
$\pi/4$ DQPSK
_2DH5/HCH



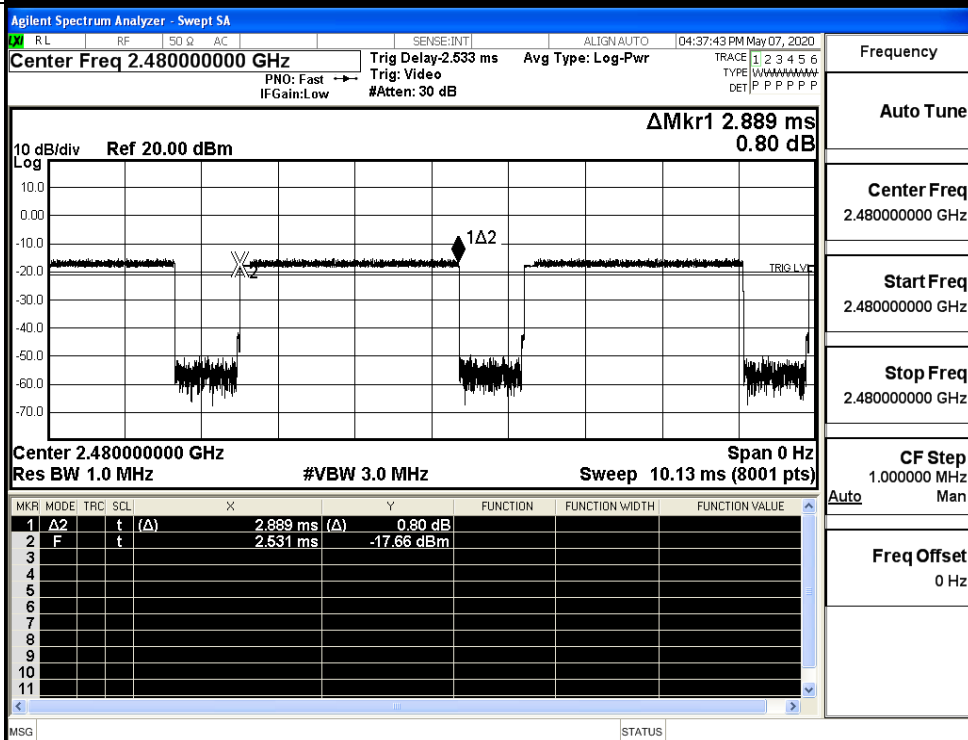
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



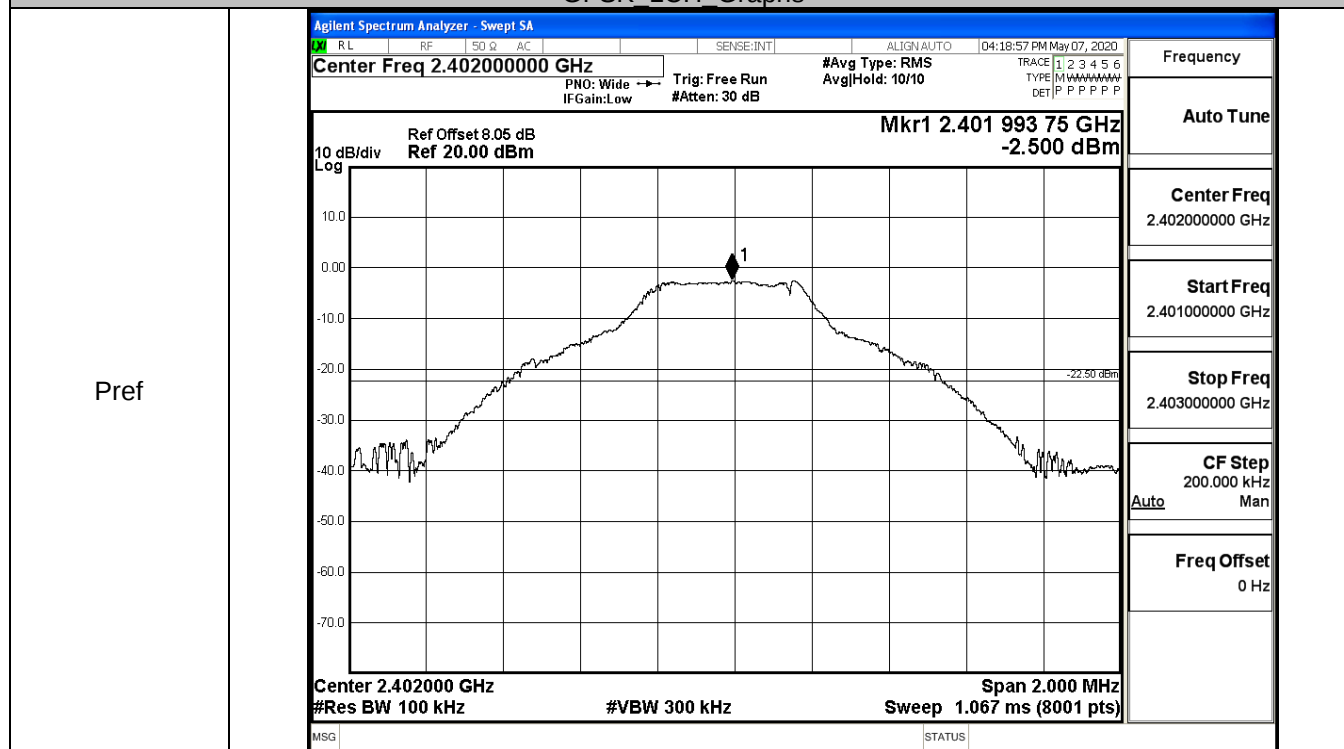
8DPSK_3DH5/HCH

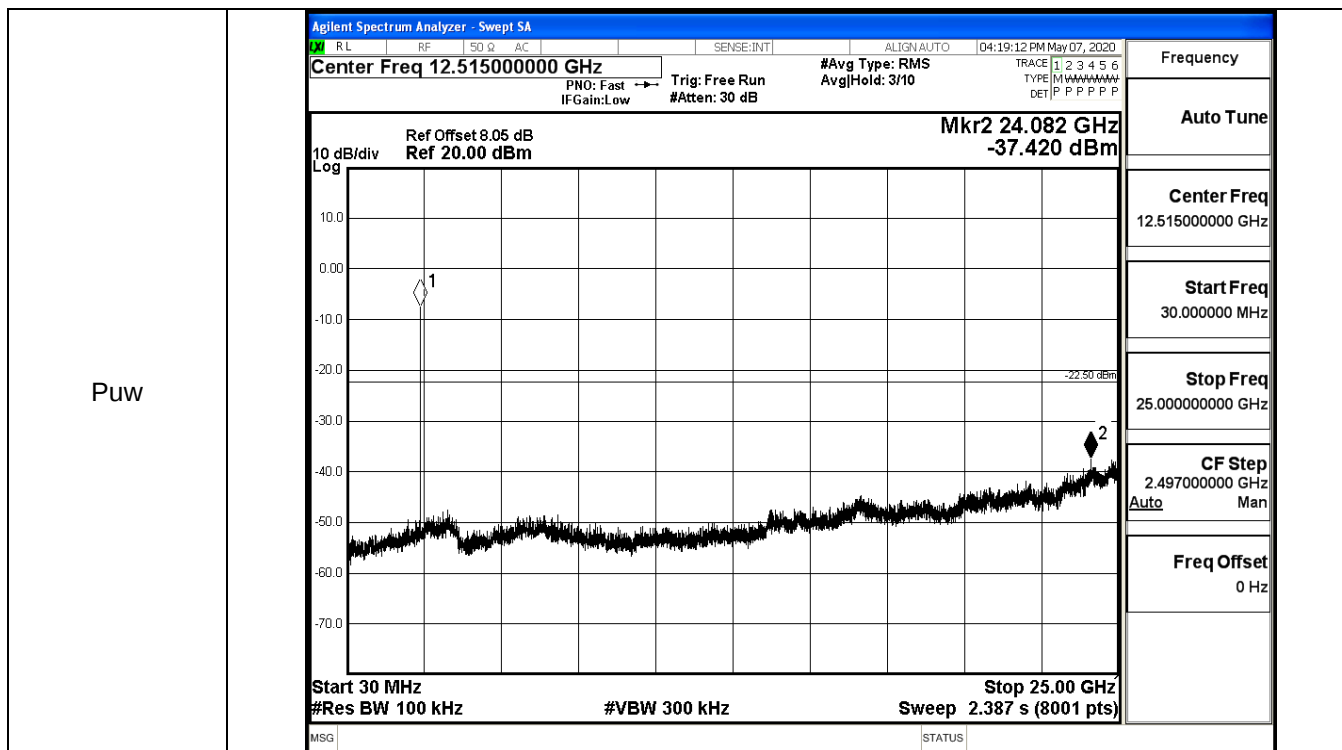


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.5	-37.420	-22.500	PASS
	MCH	-4.174	-37.683	-24.174	PASS
	HCH	-4.573	-38.255	-24.573	PASS
$\pi/4$ DQPSK	LCH	-7.921	-37.933	-27.921	PASS
	MCH	-8.916	-37.181	-28.916	PASS
	HCH	-9.93	-37.305	-29.930	PASS
8DPSK	LCH	-7.423	-36.943	-27.423	PASS
	MCH	-8.714	-37.641	-28.714	PASS
	HCH	-9.788	-37.731	-29.788	PASS

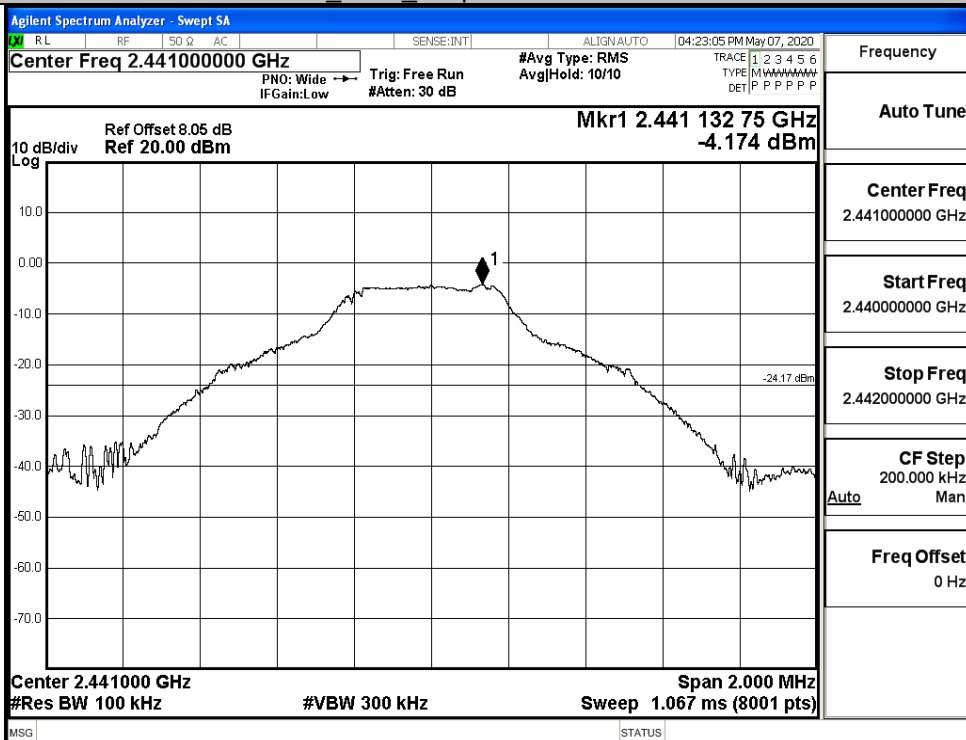
GFSK LCH Graphs



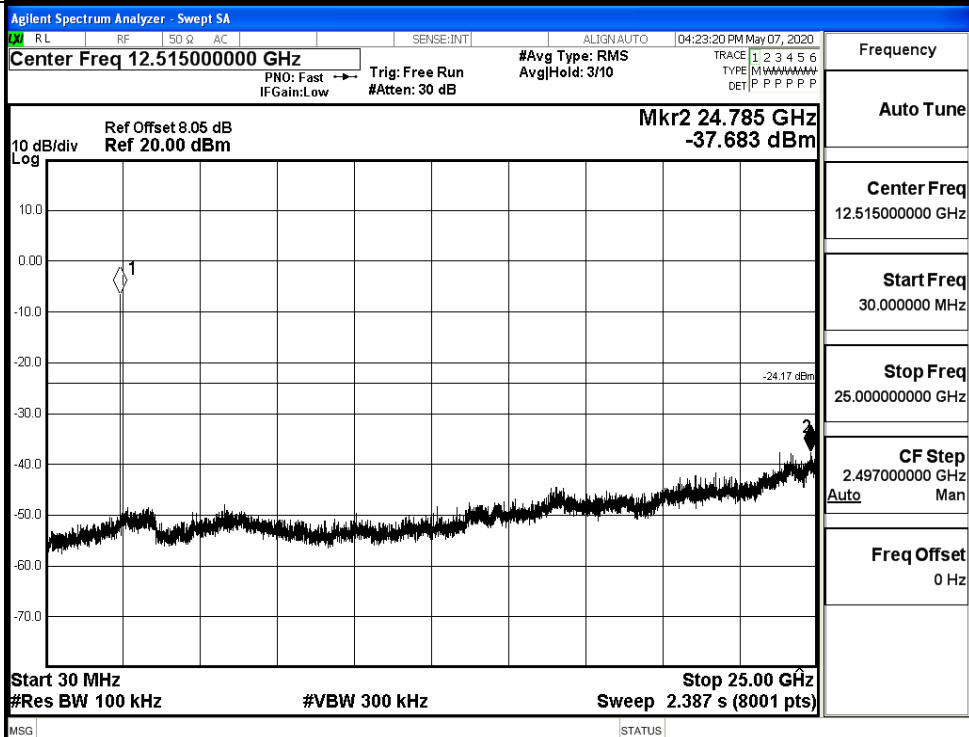


GFSK_MCH_Graphs

Pref

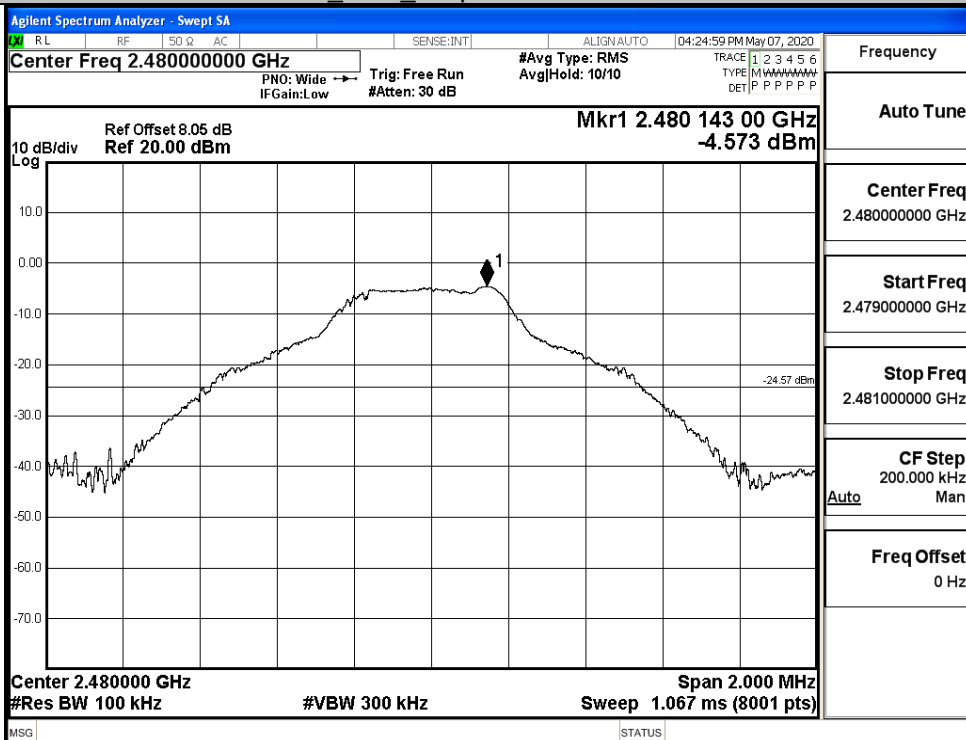


Puw

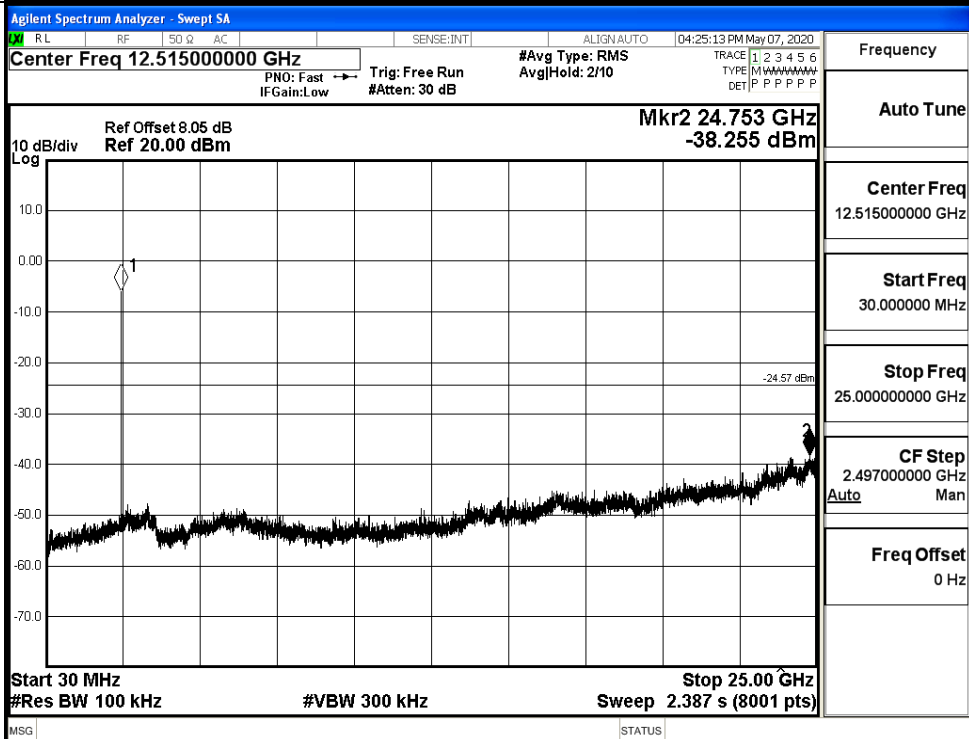


GFSK HCH_Graphs

Pref

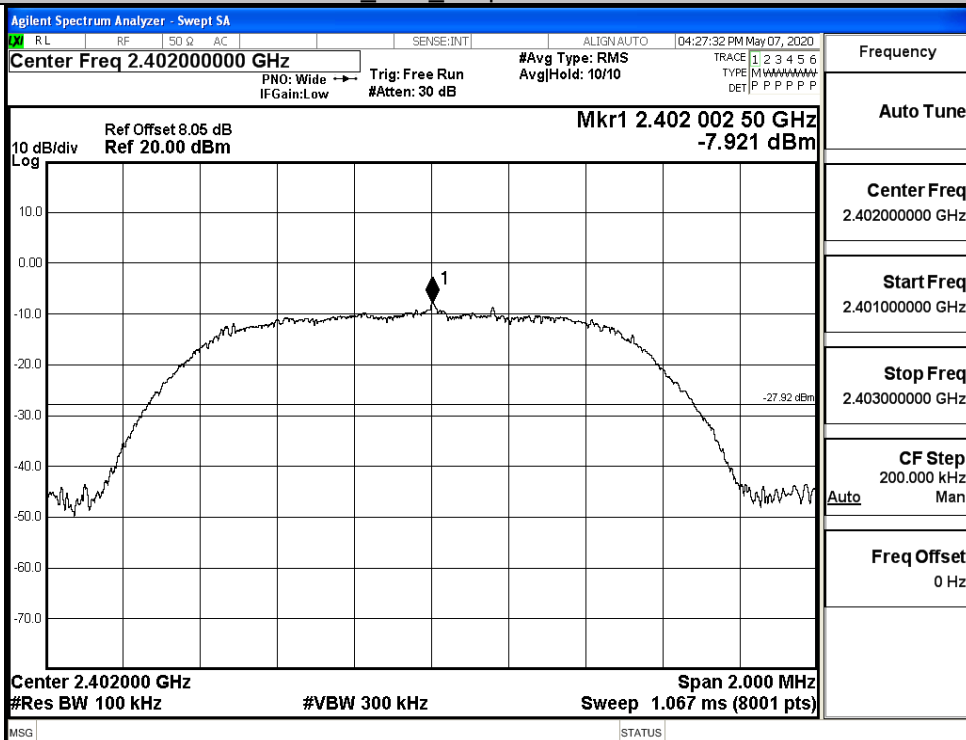


Puw

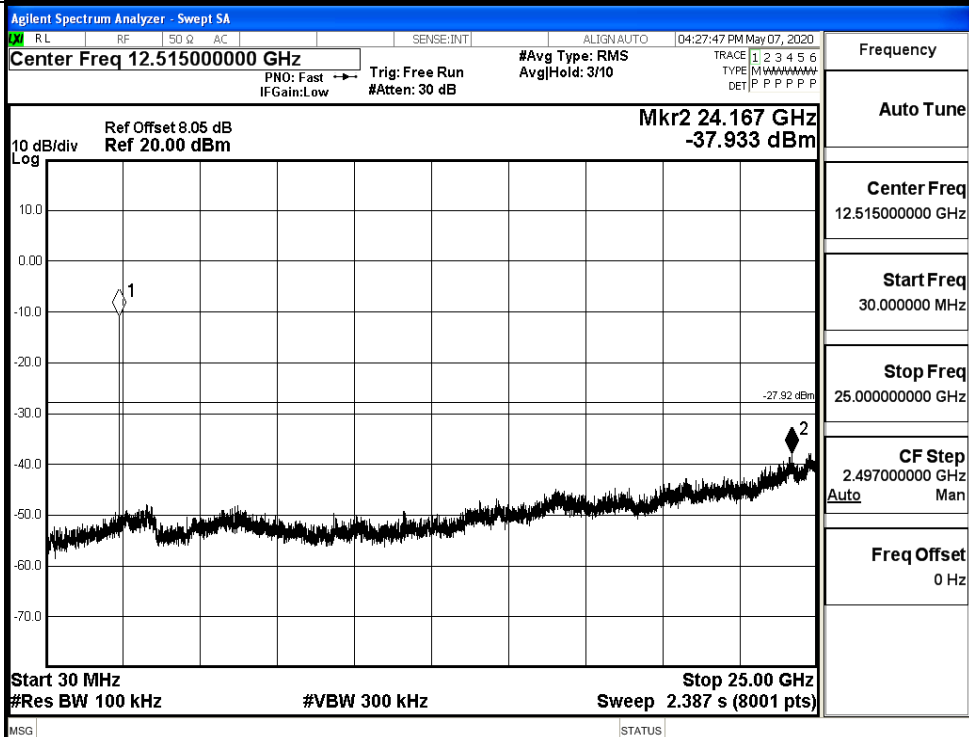


$\pi/4$ DQPSK_LCH_Graphs

Pref

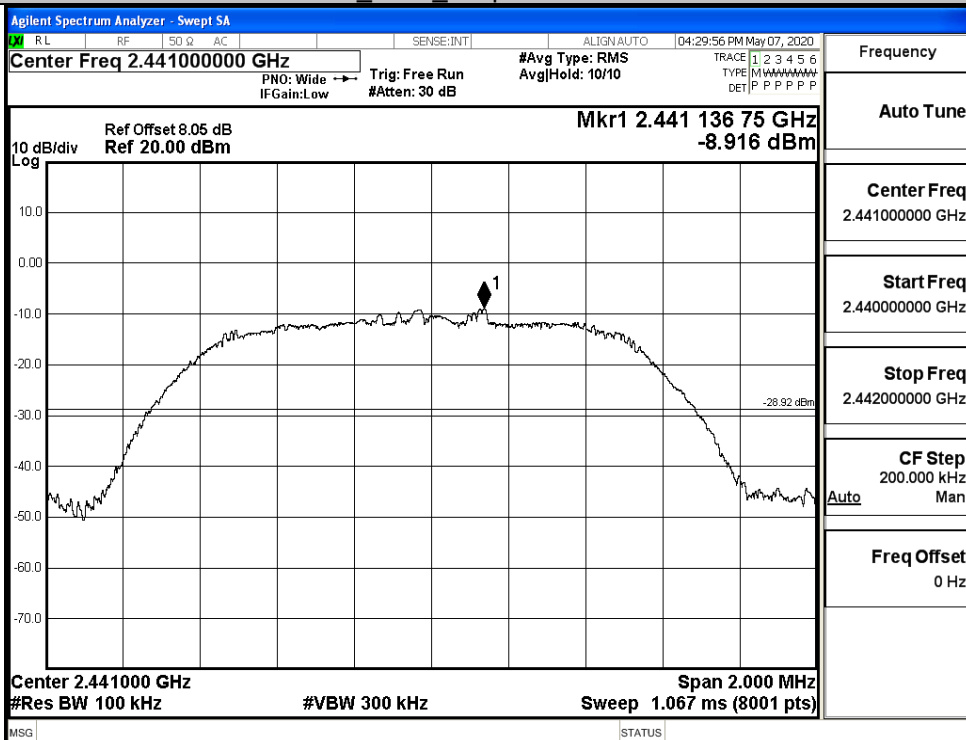


Puw

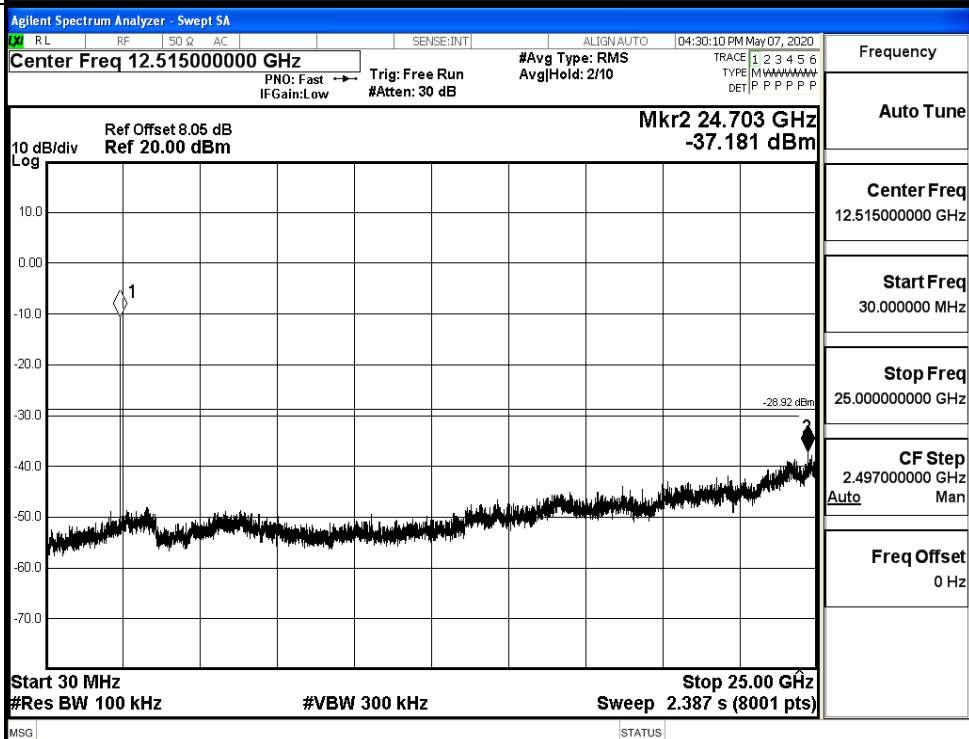


π /4DQPSK_MCH_Graphs

Pref

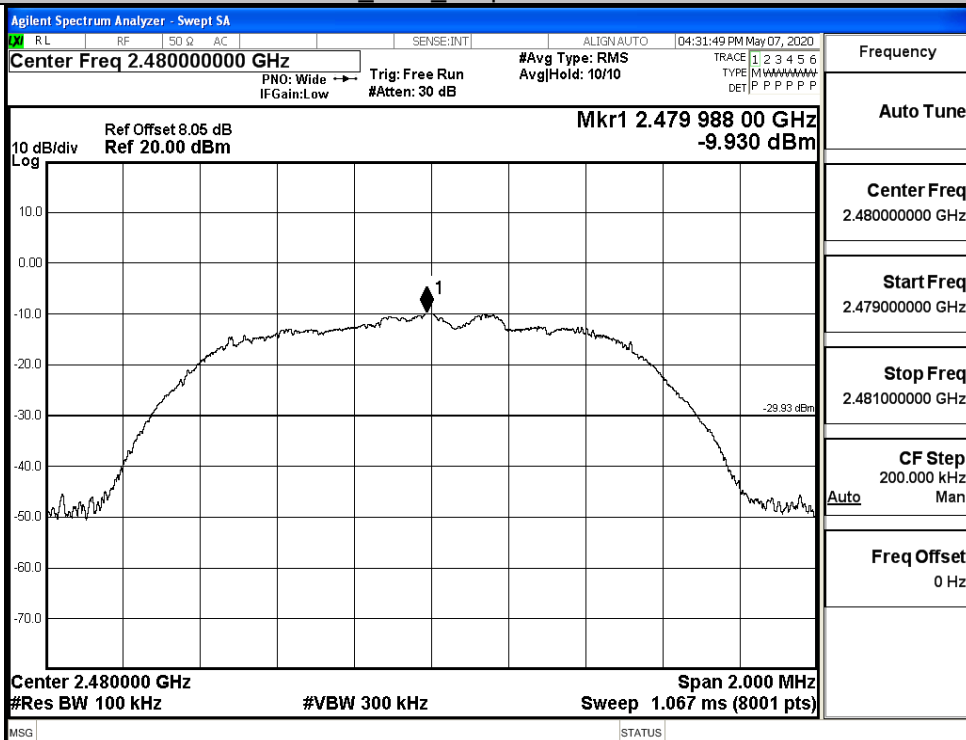


Puw

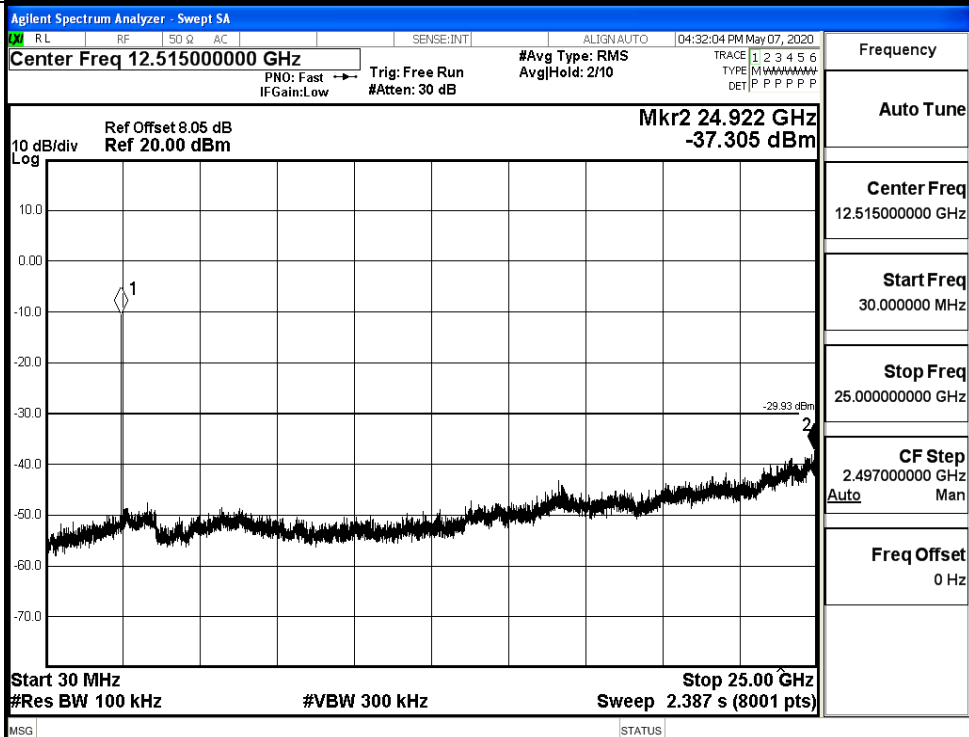


$\pi/4$ DQPSK_HCH_Graphs

Pref

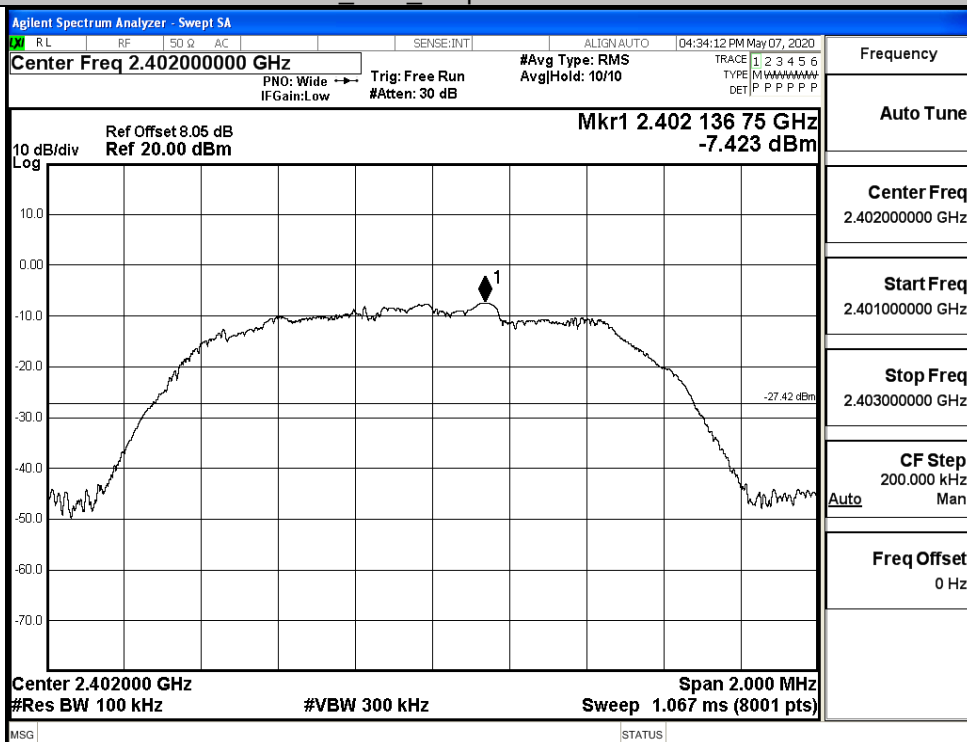


Puw

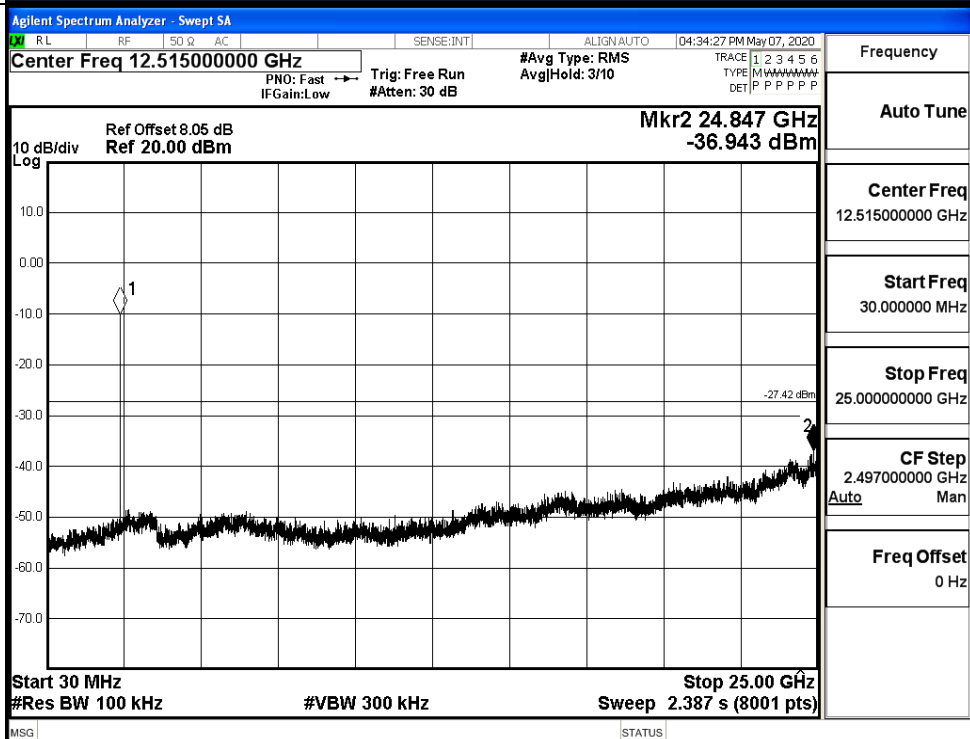


8DPSK_LCH_Graphs

Pref

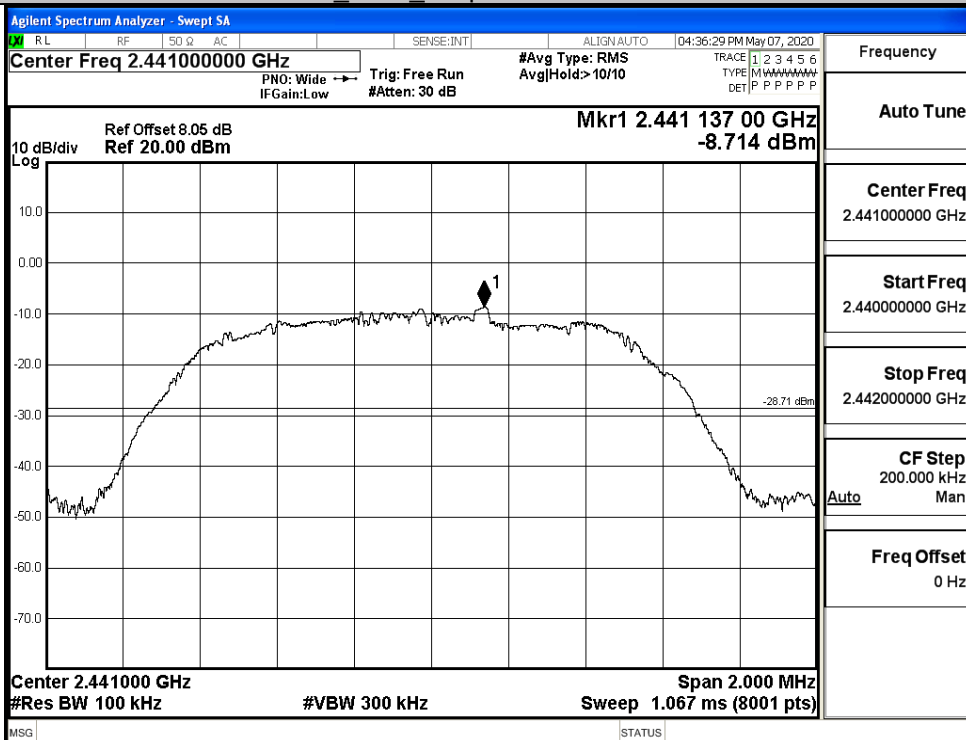


Puw

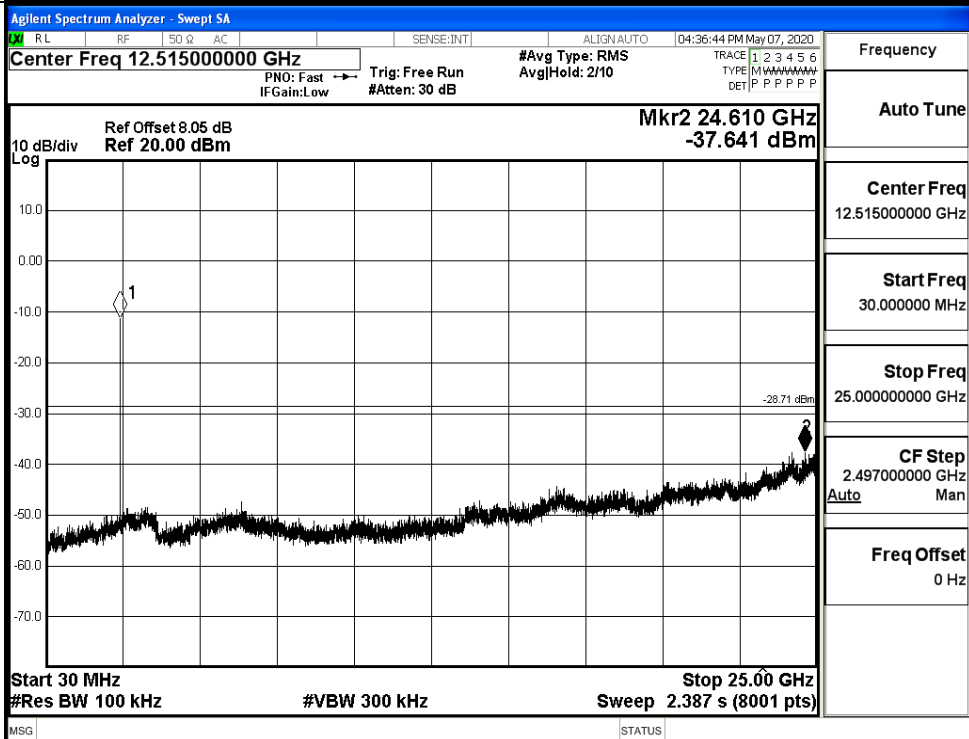


8DPSK_MCH_Graphs

Pref

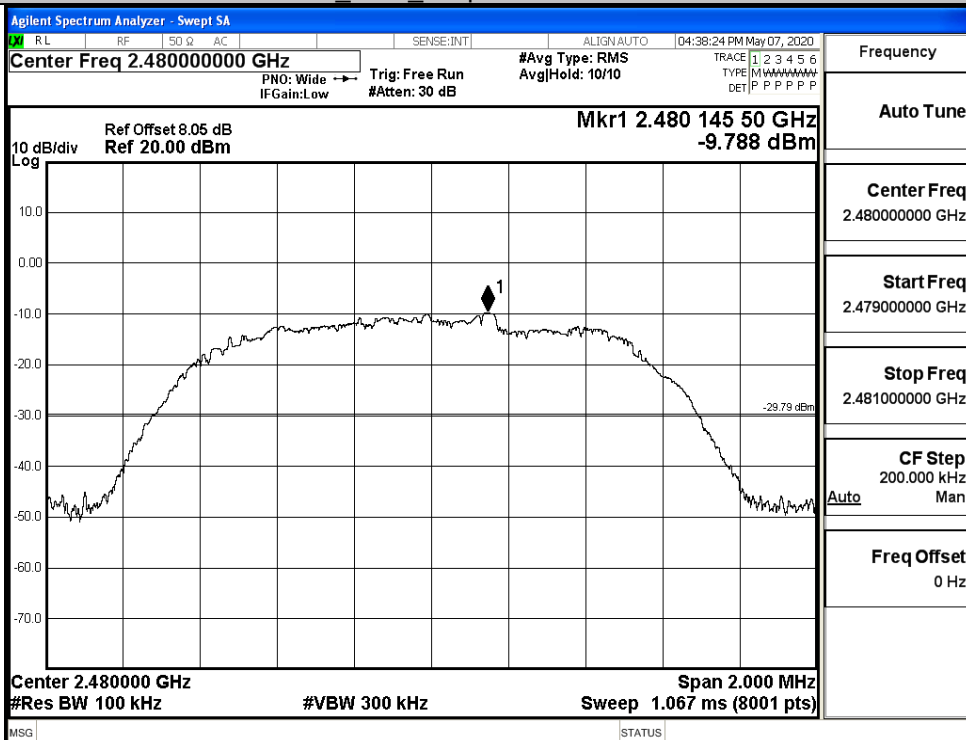


Puw

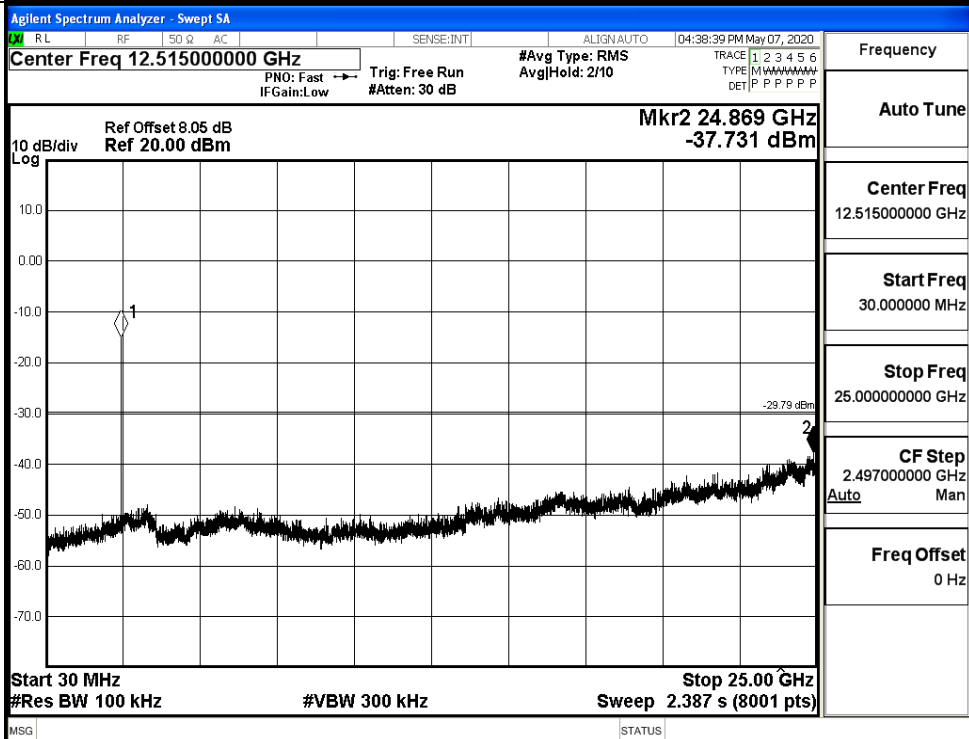


8DPSK_HCH_Graphs

Pref



Puw

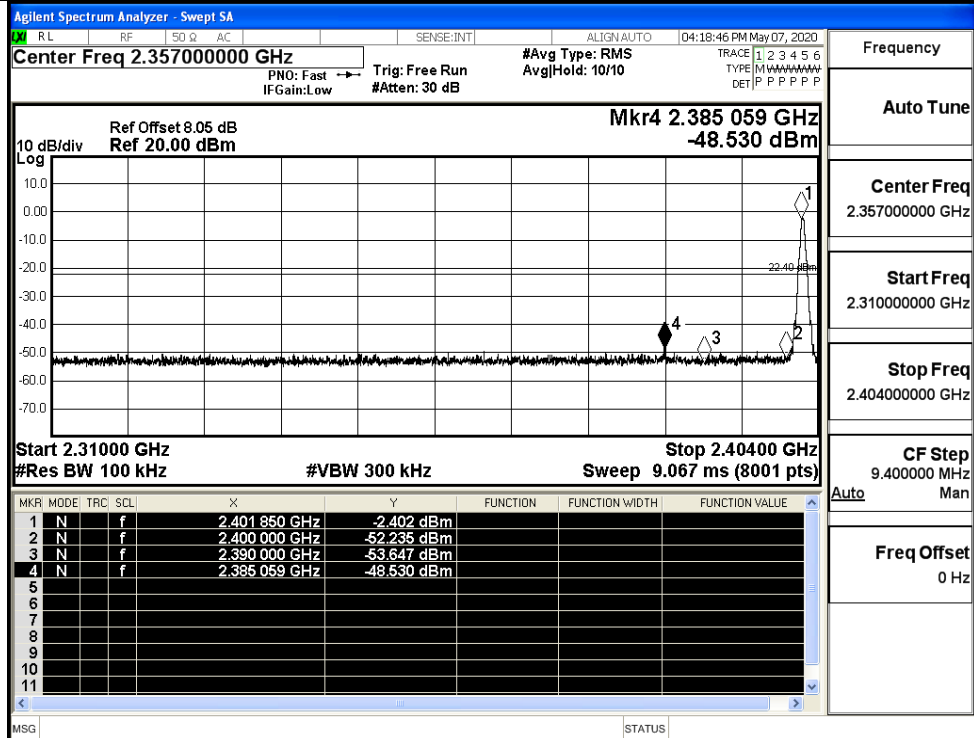


A.7 Band-edge for RF Conducted Emissions

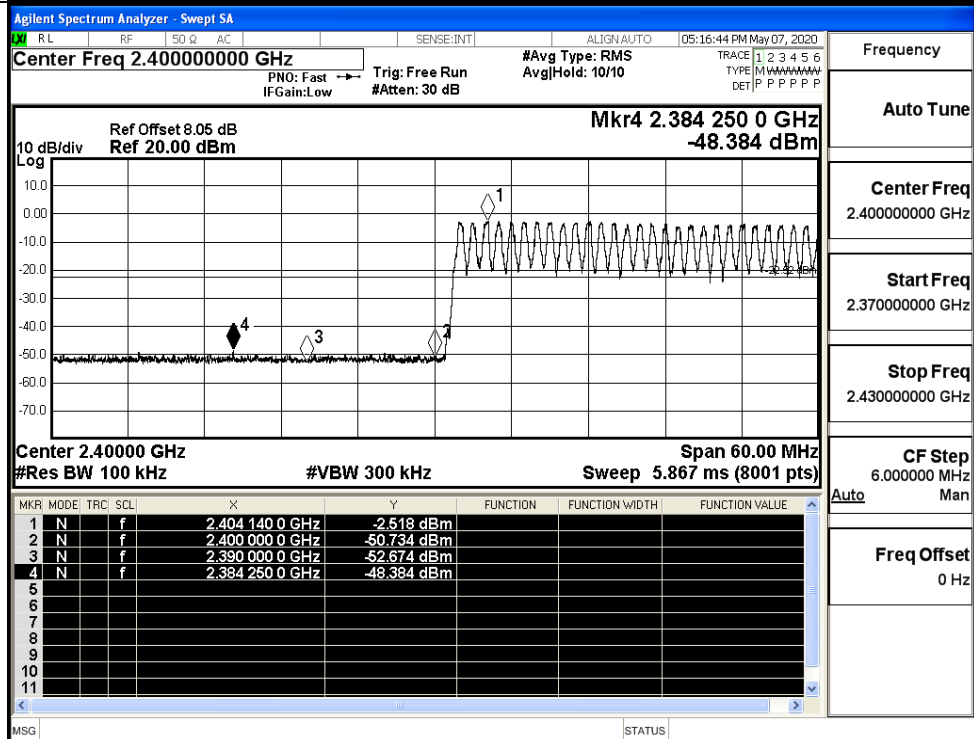
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.402	Off	-48.530	-22.4	PASS
			-2.518	On	-48.384	-22.52	PASS
	HCH	2480	-4.582	Off	-49.138	-24.58	PASS
			-4.606	On	-48.682	-24.61	PASS
$\pi/4$ DQPSK	LCH	2402	-7.826	Off	-49.680	-27.83	PASS
			-7.472	On	-49.152	-27.47	PASS
	HCH	2480	-9.837	Off	-49.566	-29.84	PASS
			-9.686	On	-48.098	-29.69	PASS
8DPSK	LCH	2402	-8.418	Off	-48.569	-28.42	PASS
			-7.410	On	-49.191	-27.41	PASS
	HCH	2480	-9.697	Off	-48.494	-29.7	PASS
			-9.642	On	-48.836	-29.64	PASS

Test Graphs

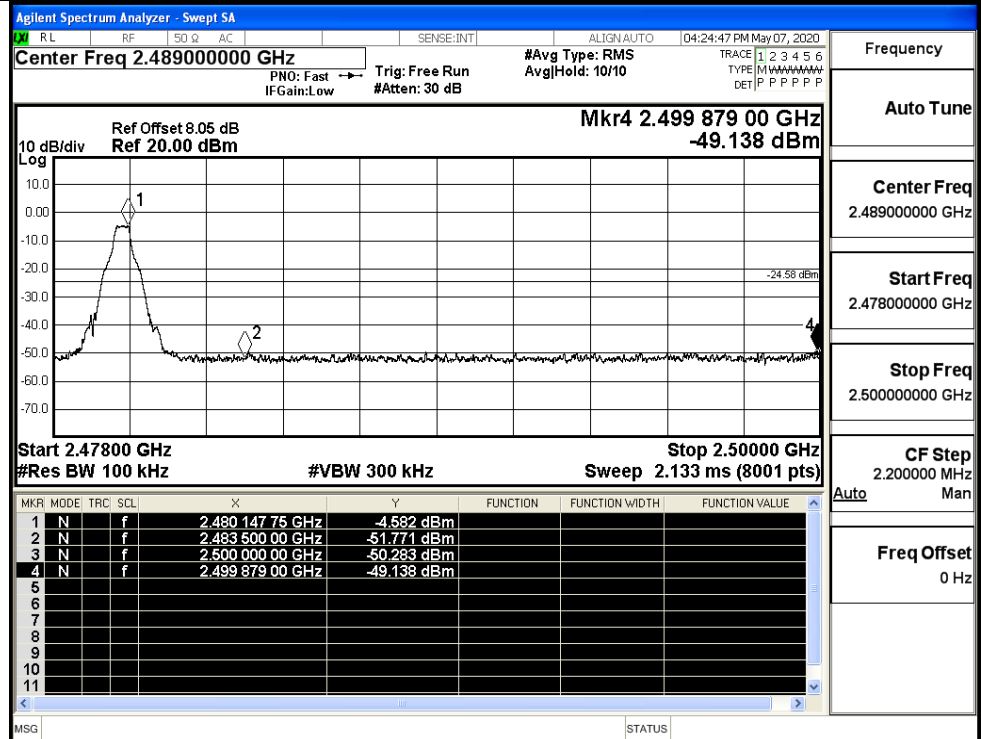
GFSK/LCH/No Hop



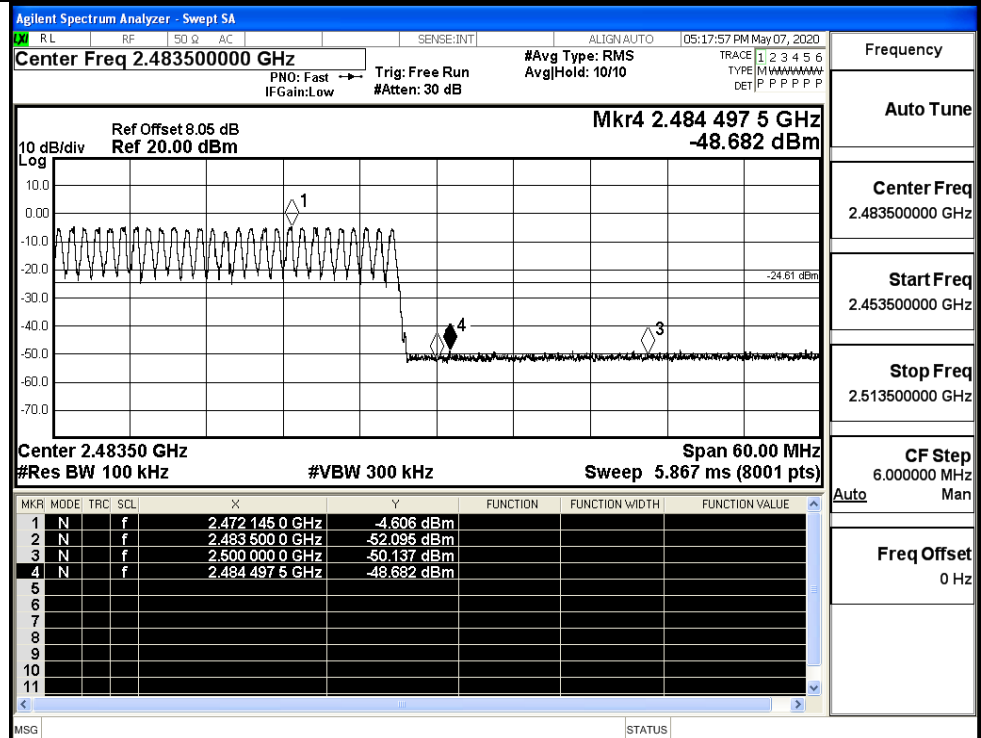
GFSK/LCH/Hop



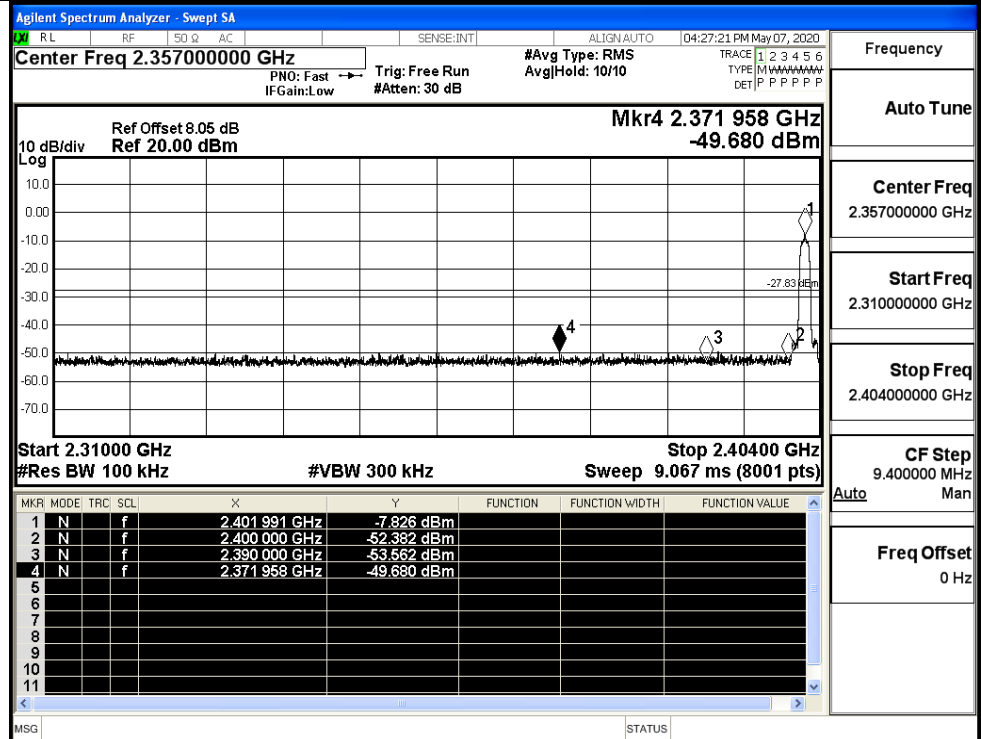
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

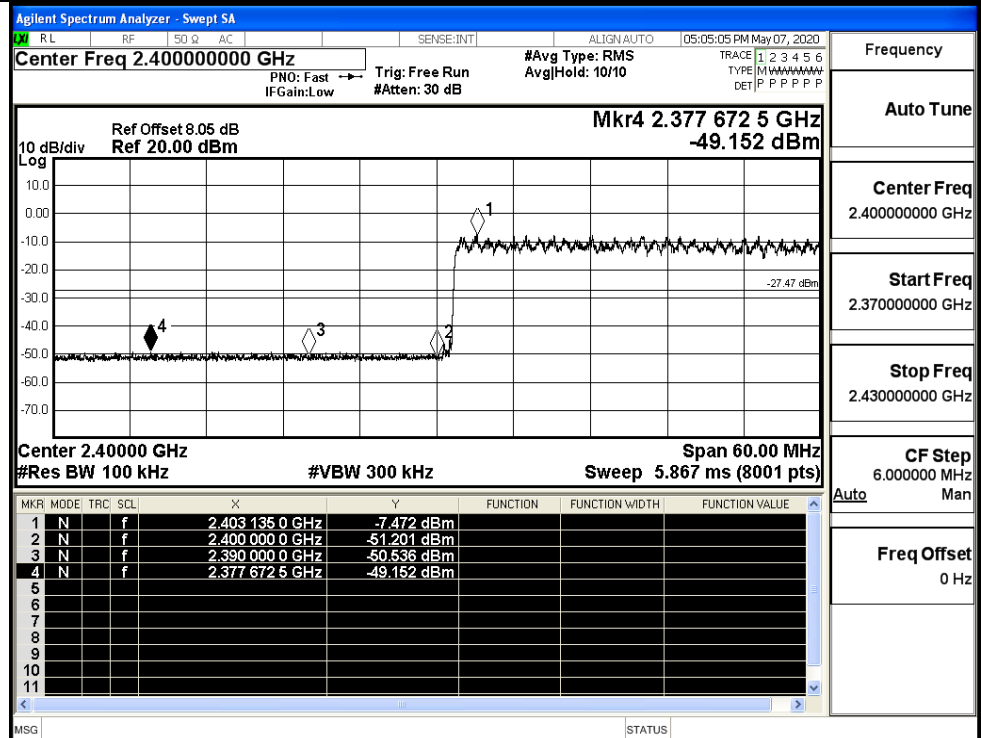


Frequency

Auto Tune

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

$\pi/4$ DQPSK/LCH/Hop

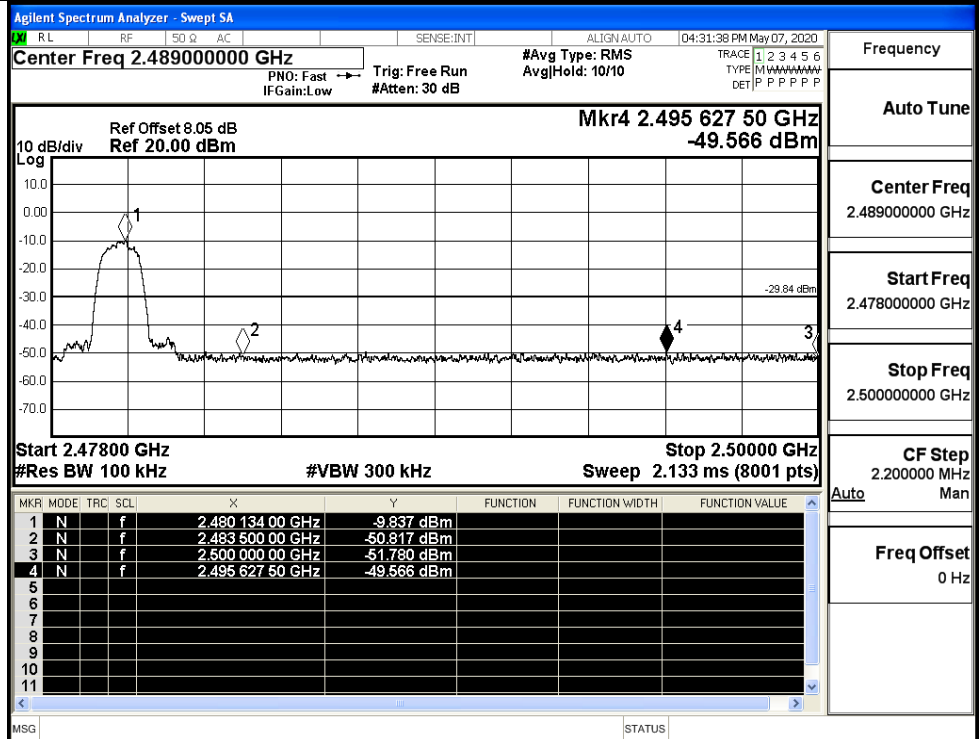


Frequency

Auto Tune

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

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

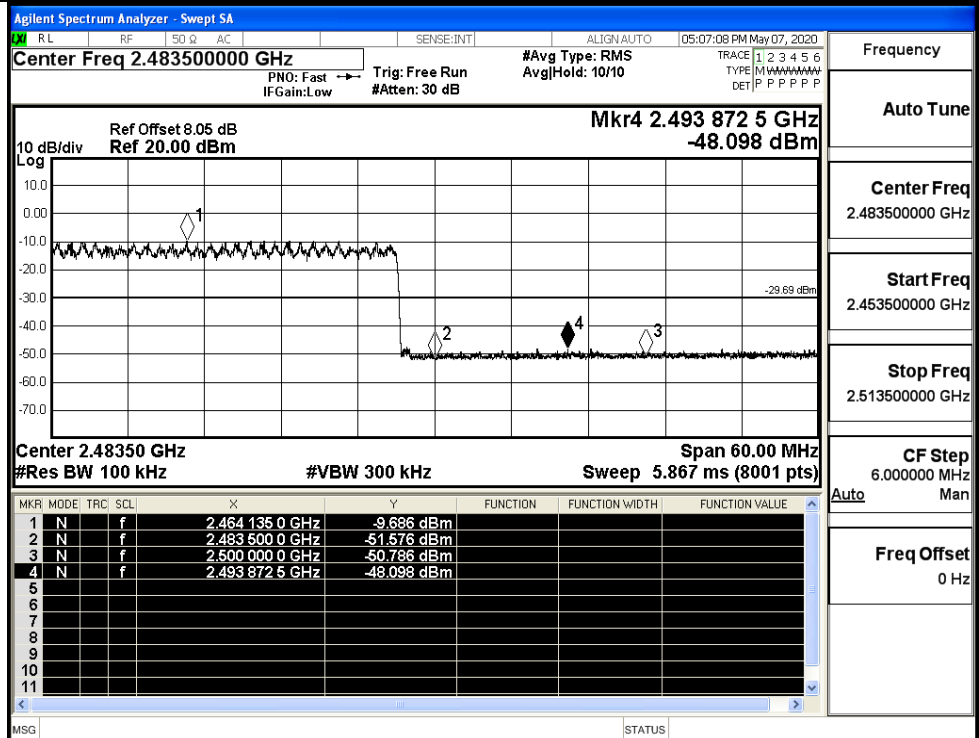


Frequency

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

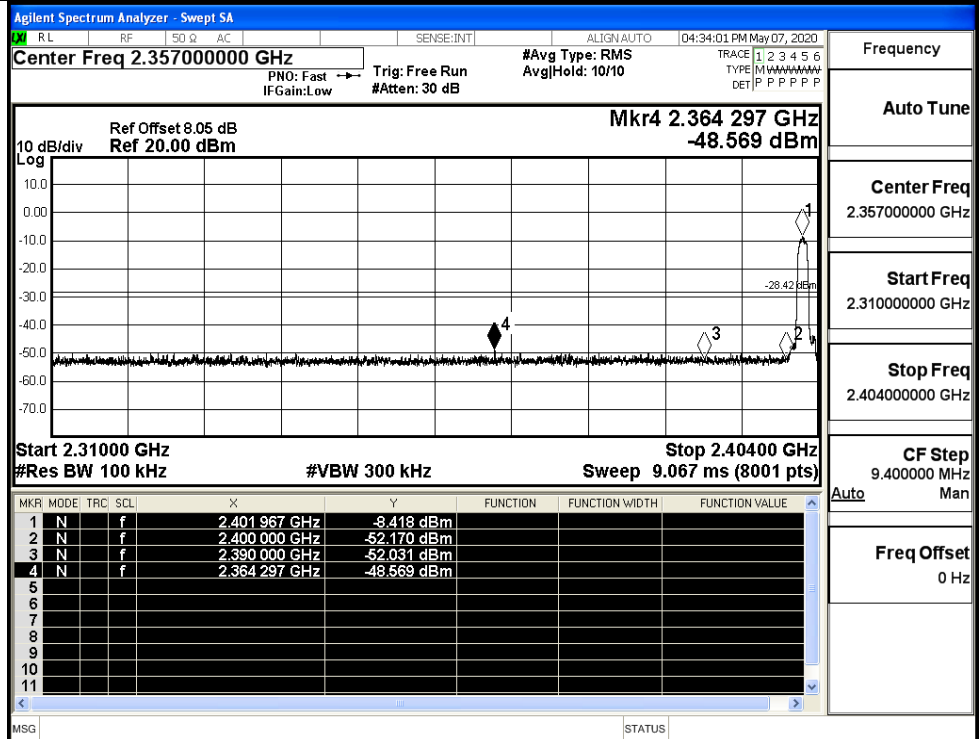


Frequency

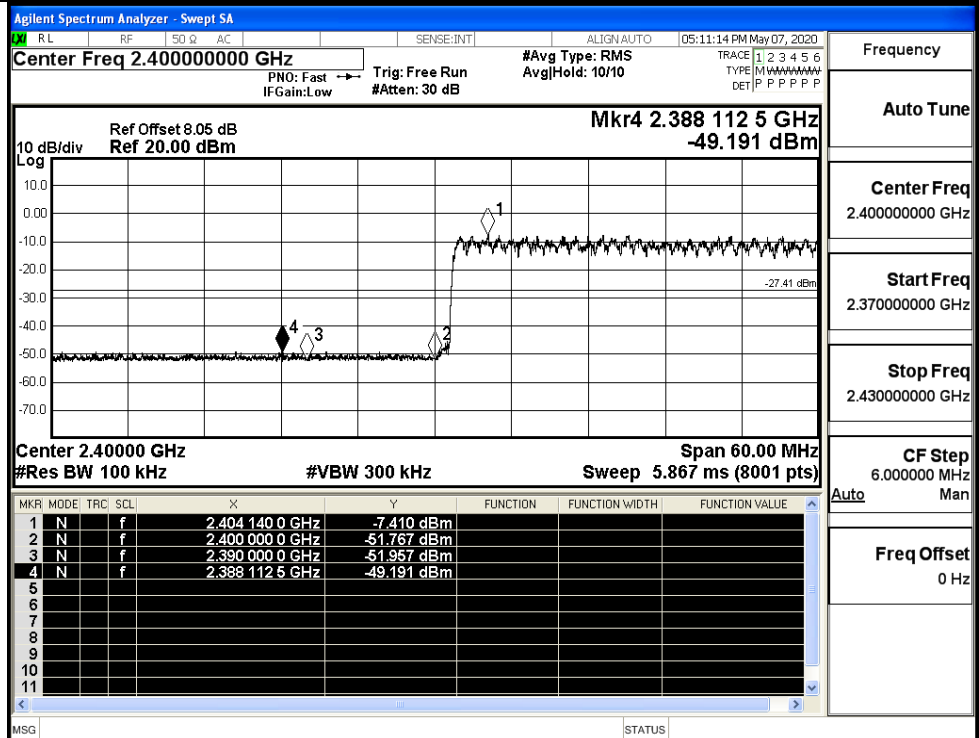
Auto Tune

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

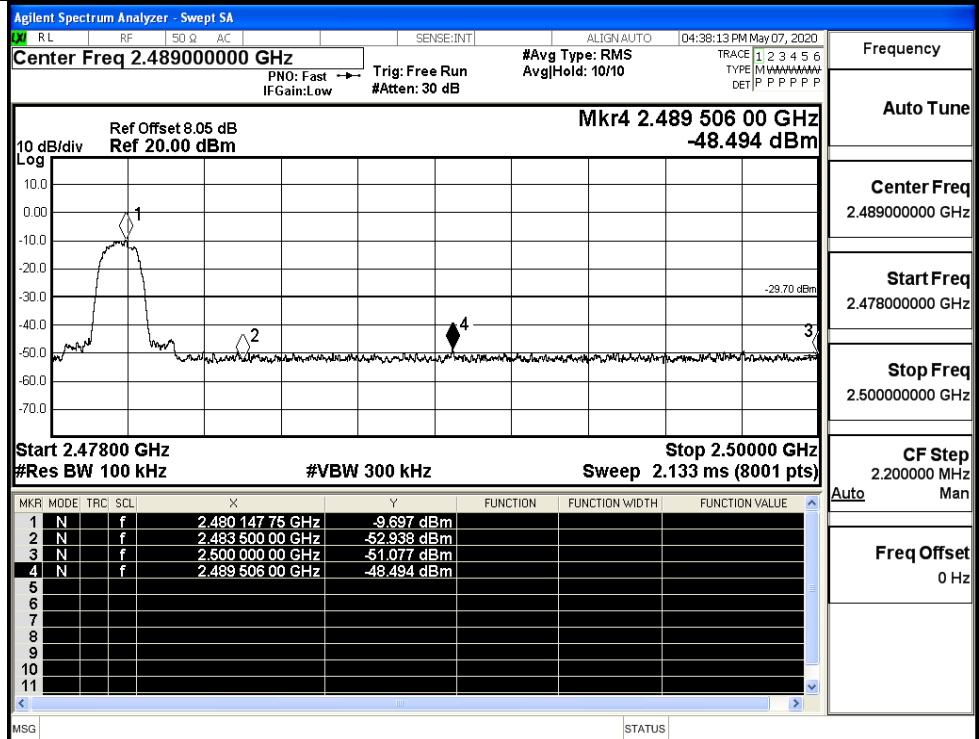
8DPSK/LCH/No Hop



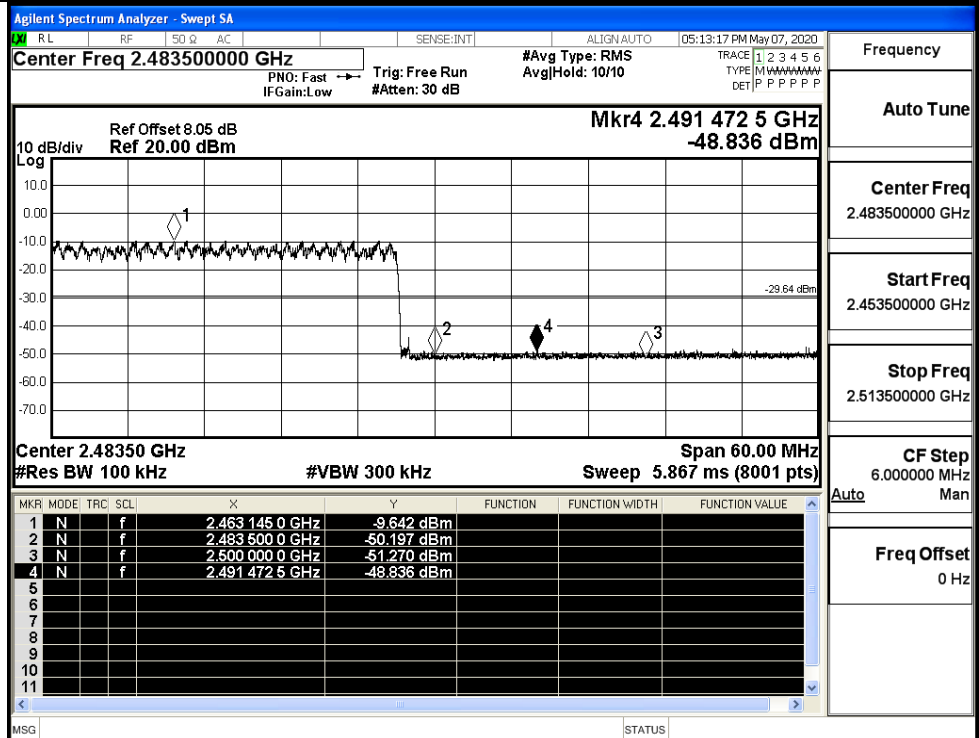
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



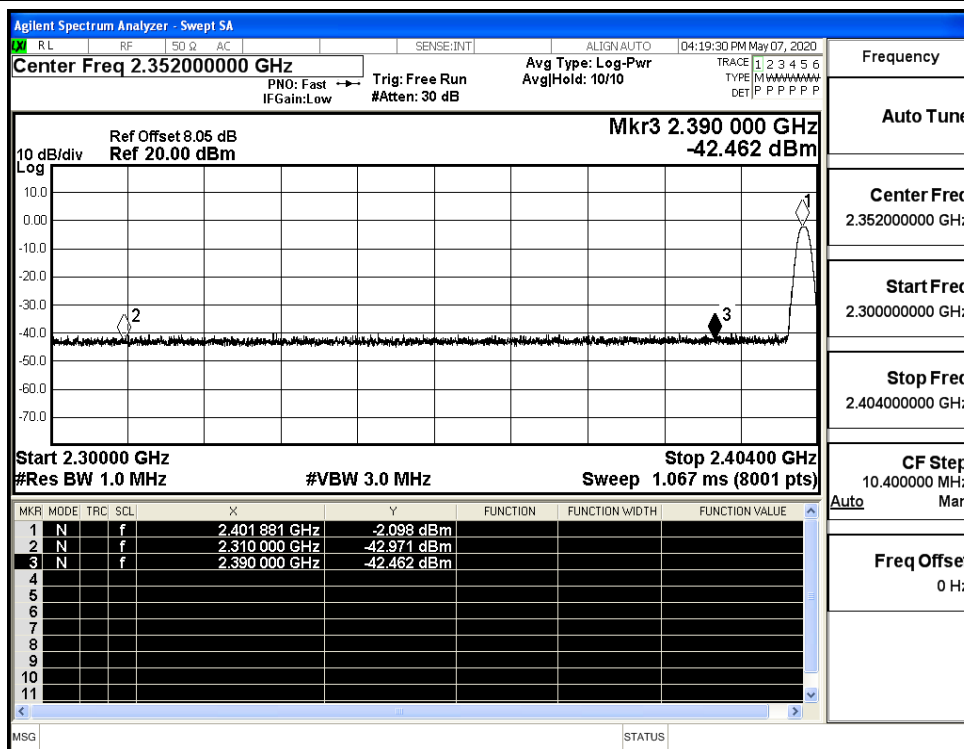
8DPSK/HCH/Hop



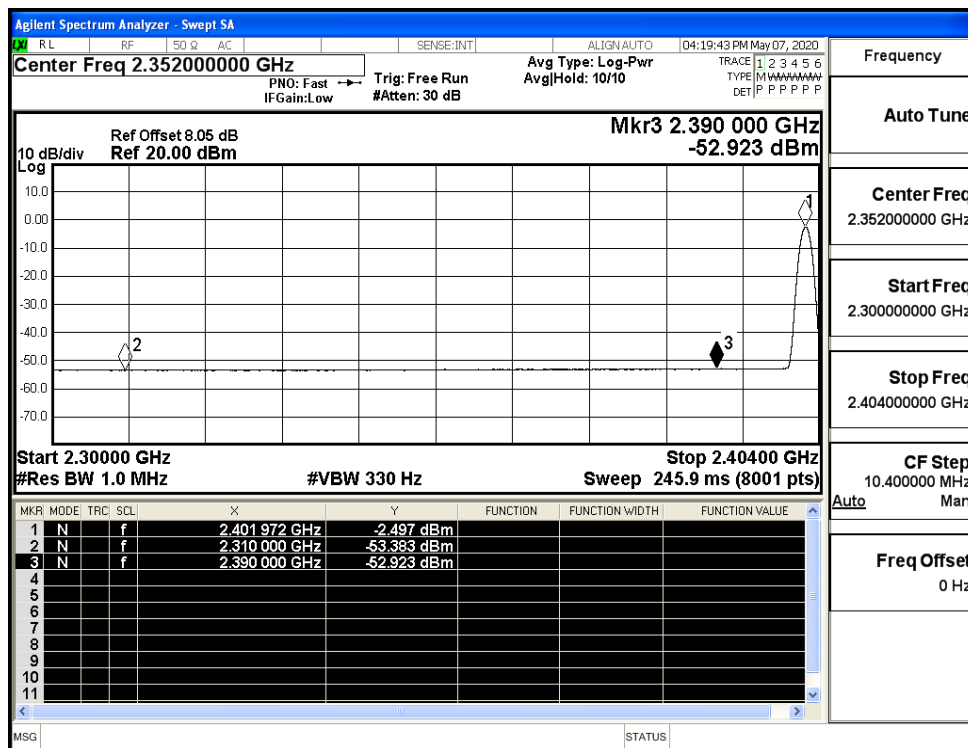
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.97	2.0	0	54.29	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.87	AV	54	PASS
	Off	2390.0	-42.46	2.0	0	54.80	PEAK	74	PASS
	Off	2390.0	-52.92	2.0	0	44.33	AV	54	PASS
	Off	2483.5	-42.77	2.0	0	54.48	PEAK	74	PASS
	Off	2483.5	-52.54	2.0	0	44.72	AV	54	PASS
	Off	2500.0	-42.48	2.0	0	54.78	PEAK	74	PASS
	Off	2500.0	-52.39	2.0	0	44.86	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.30	2.0	0	53.95	PEAK	74	PASS
	Off	2310.0	-53.39	2.0	0	43.87	AV	54	PASS
	Off	2390.0	-42.86	2.0	0	54.40	PEAK	74	PASS
	Off	2390.0	-52.97	2.0	0	44.29	AV	54	PASS
	Off	2483.5	-41.55	2.0	0	55.71	PEAK	74	PASS
	Off	2483.5	-52.52	2.0	0	44.74	AV	54	PASS
	Off	2500.0	-42.75	2.0	0	54.51	PEAK	74	PASS
	Off	2500.0	-52.24	2.0	0	45.02	AV	54	PASS
8DPSK	Off	2310.0	-43.23	2.0	0	54.03	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-42.99	2.0	0	54.27	PEAK	74	PASS
	Off	2390.0	-52.96	2.0	0	44.30	AV	54	PASS
	Off	2483.5	-42.30	2.0	0	54.96	PEAK	74	PASS
	Off	2483.5	-52.50	2.0	0	44.76	AV	54	PASS
	Off	2500.0	-42.02	2.0	0	55.24	PEAK	74	PASS
	Off	2500.0	-52.32	2.0	0	44.94	AV	54	PASS

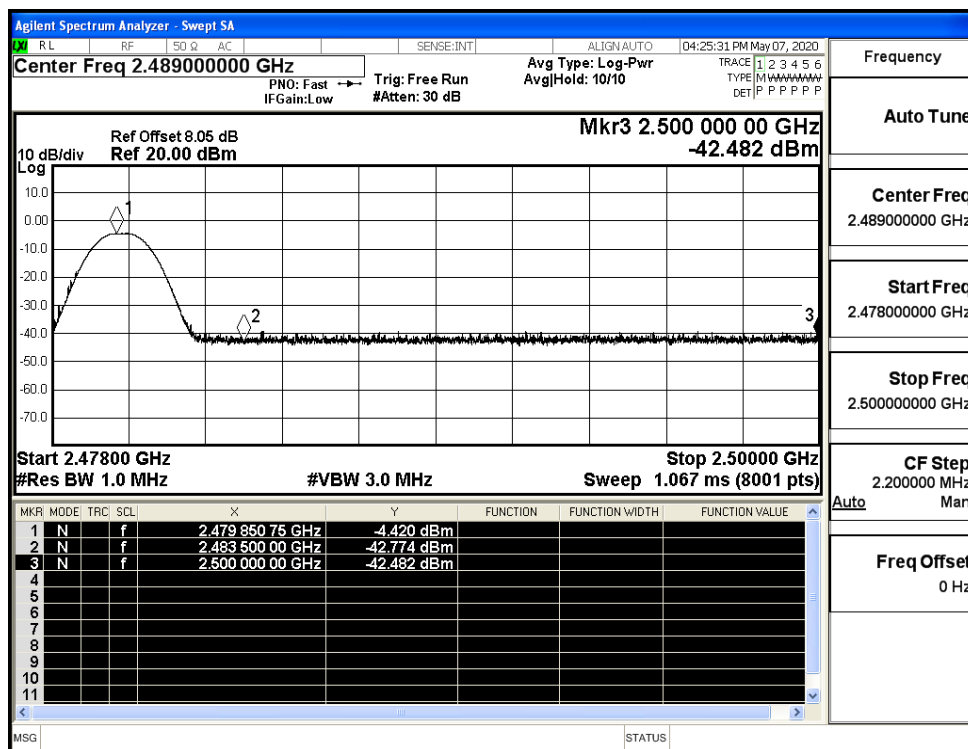
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



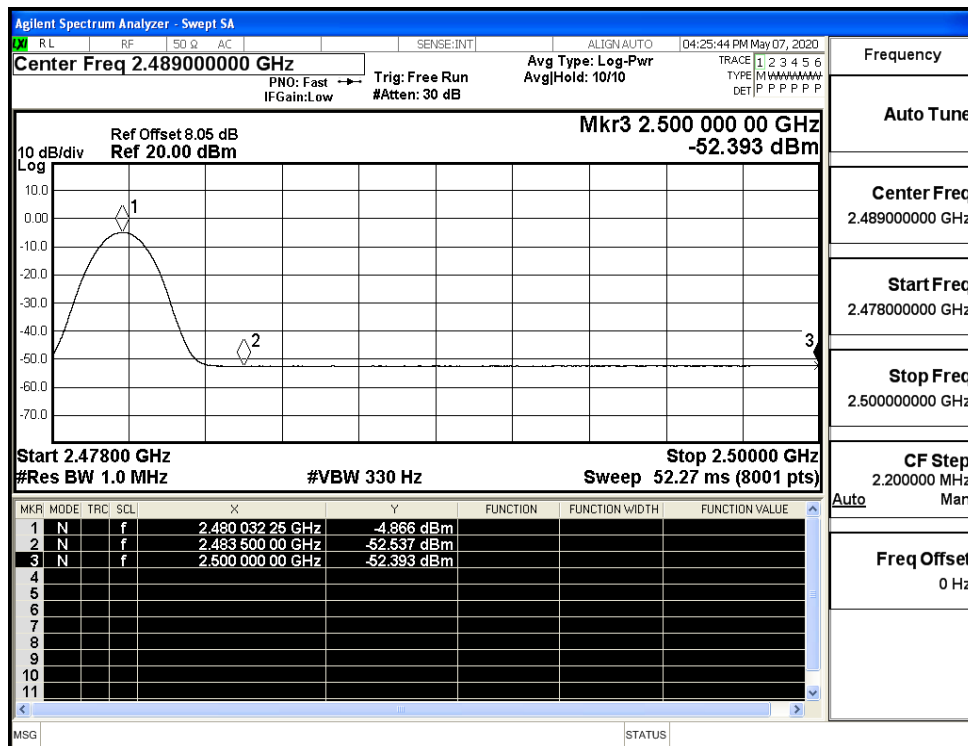
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

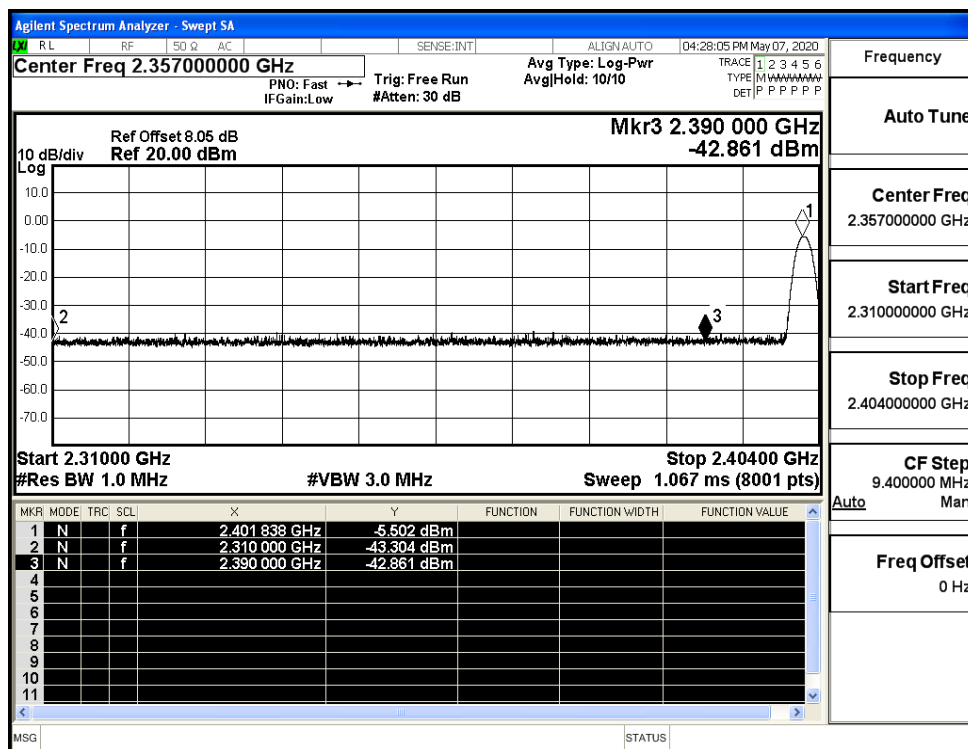
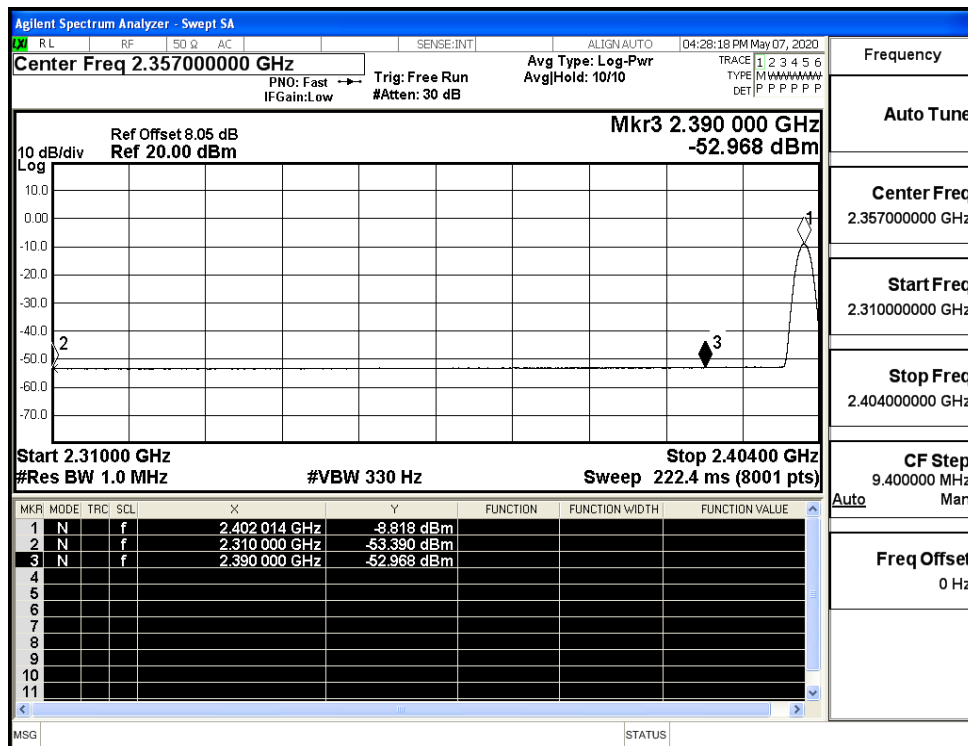


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

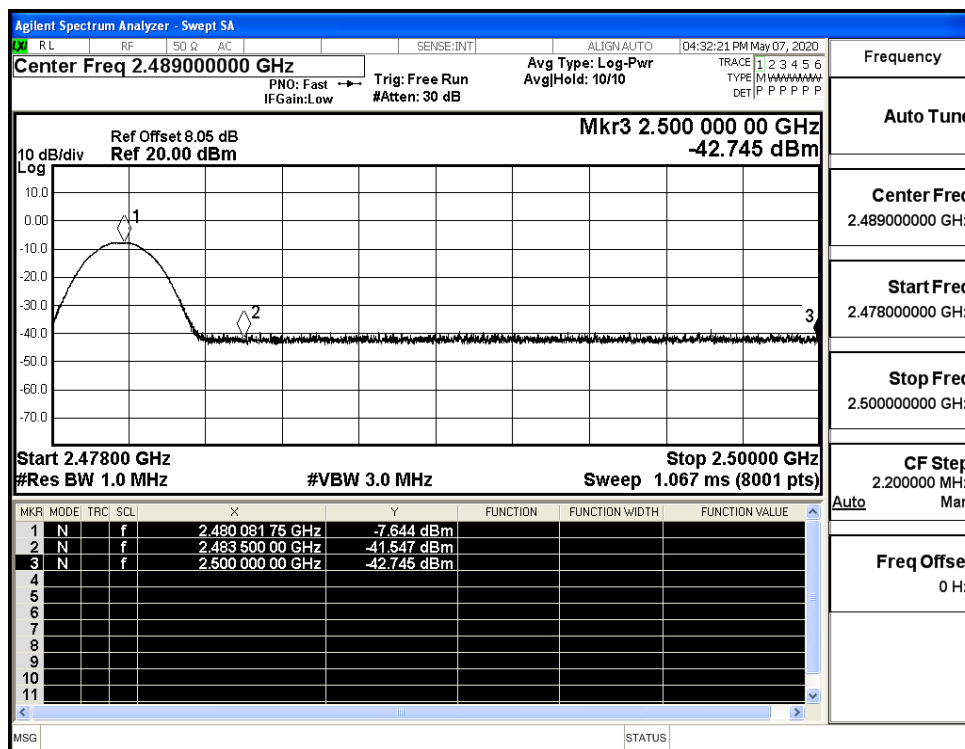


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

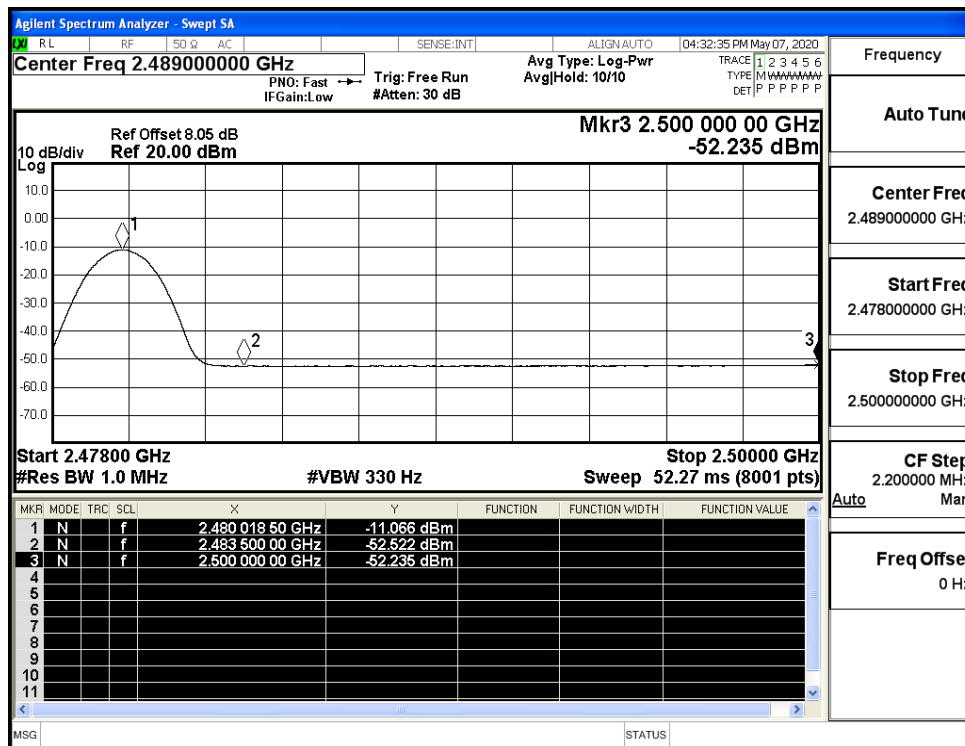


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

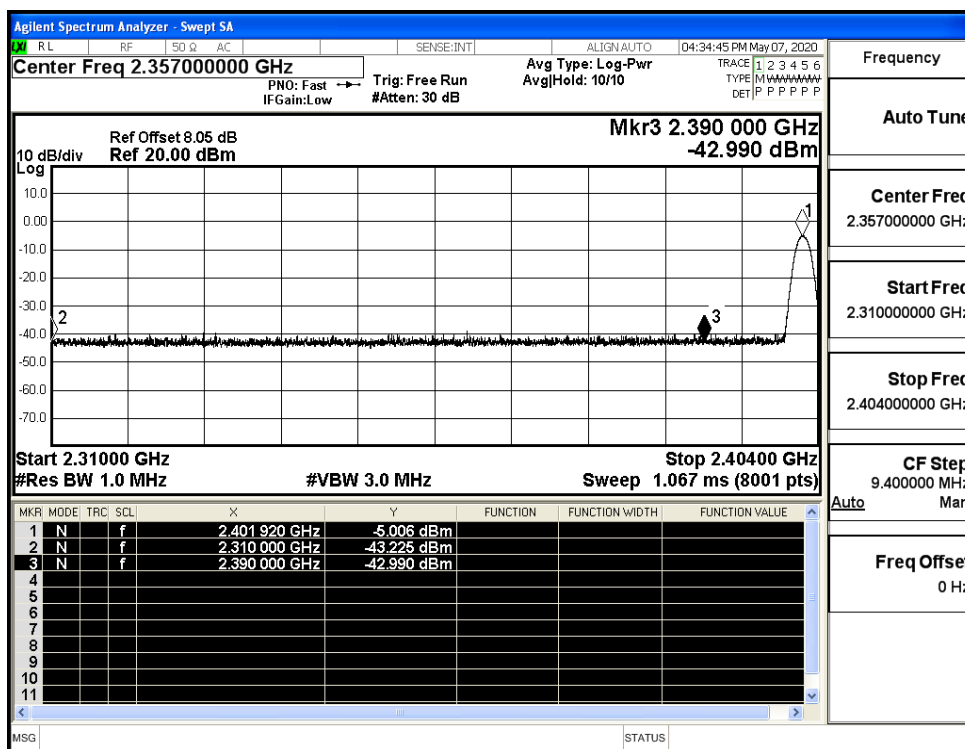
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



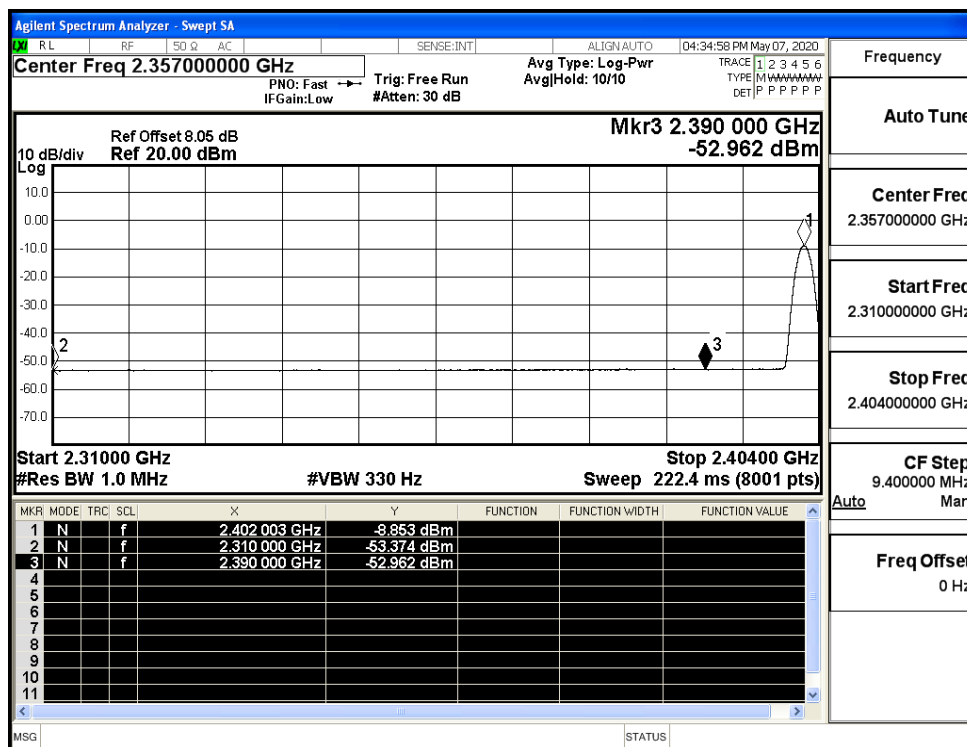
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



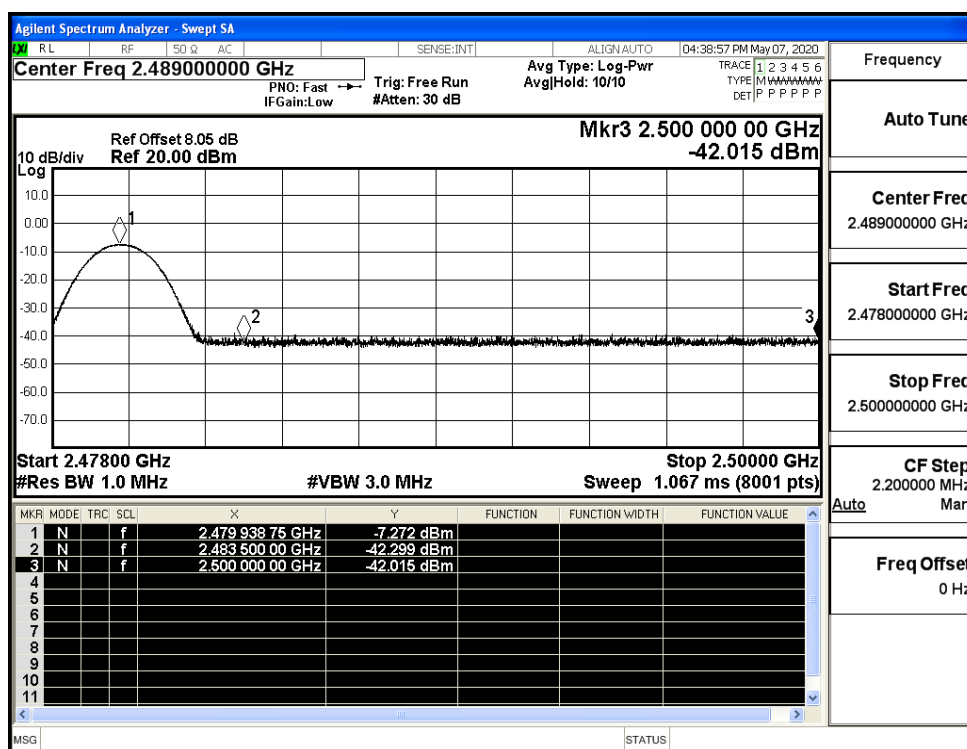
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

