

Appendix A

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

Product Name: BrainLink Dual

Trade Mark: BrainLink

Test Model: BL002D

Environmental Conditions

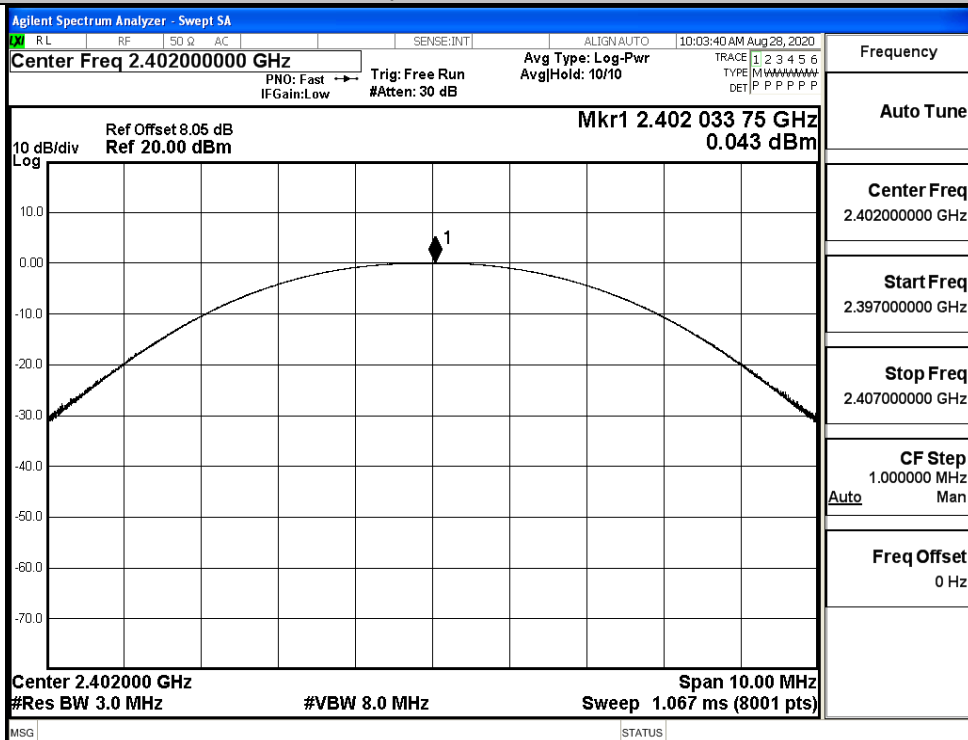
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	CARL FU
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

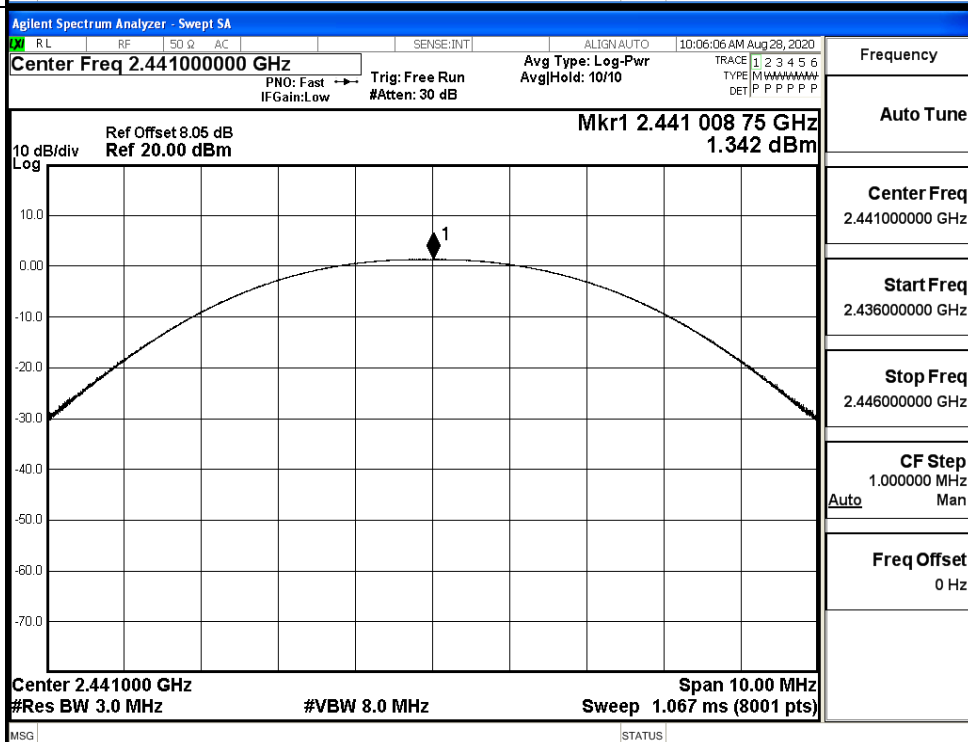
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.043	21	PASS
	MCH	1.342	21	PASS
	HCH	0.002	21	PASS
$\pi/4$ DQPSK	LCH	-0.741	21	PASS
	MCH	0.526	21	PASS
	HCH	-0.835	21	PASS
8DPSK	LCH	-0.739	21	PASS
	MCH	0.625	21	PASS
	HCH	-0.679	21	PASS

Test Graphs

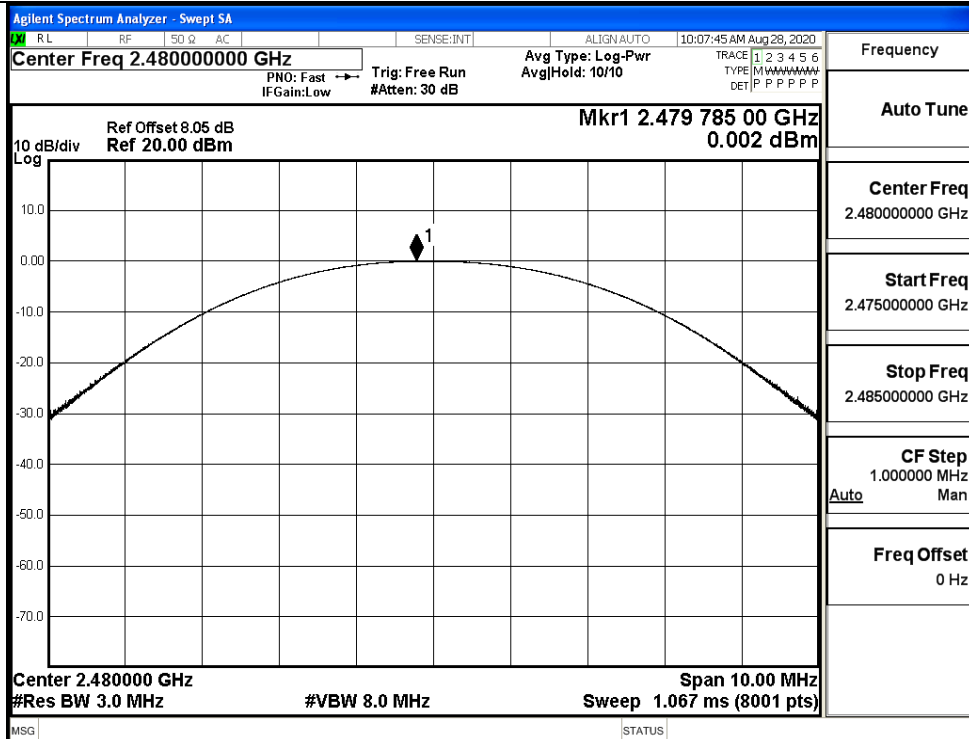
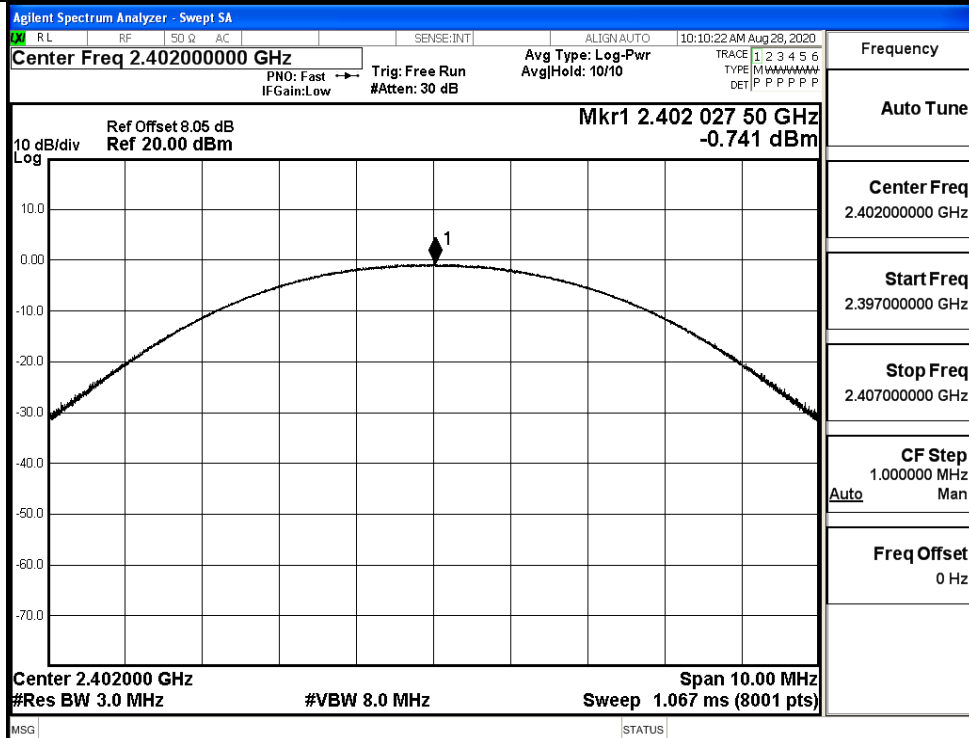
GFSK/LCH

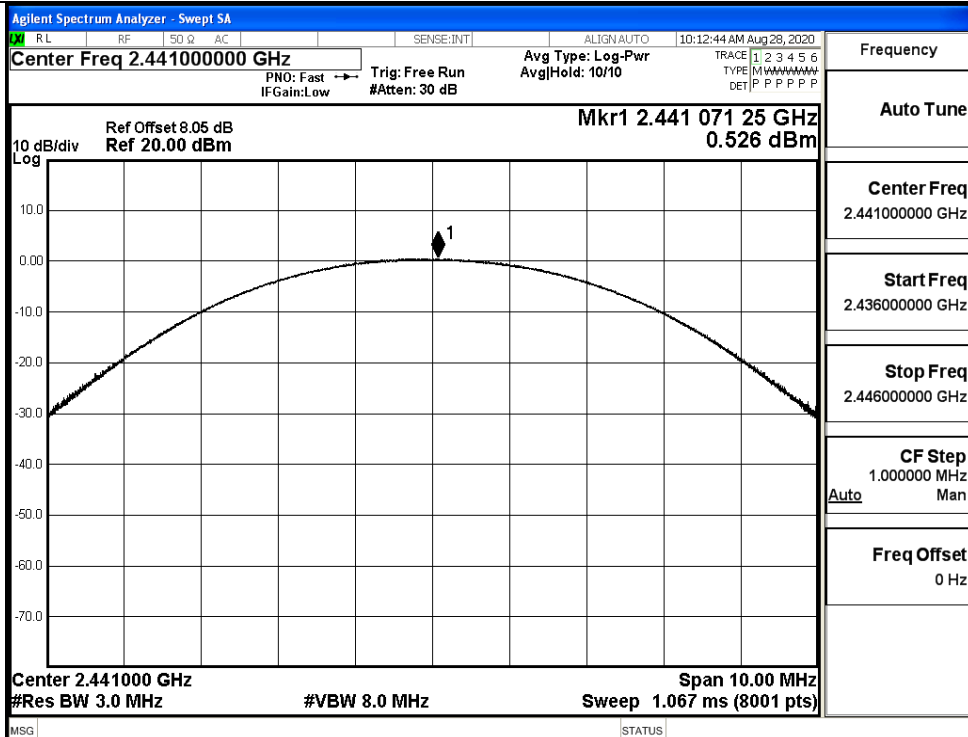
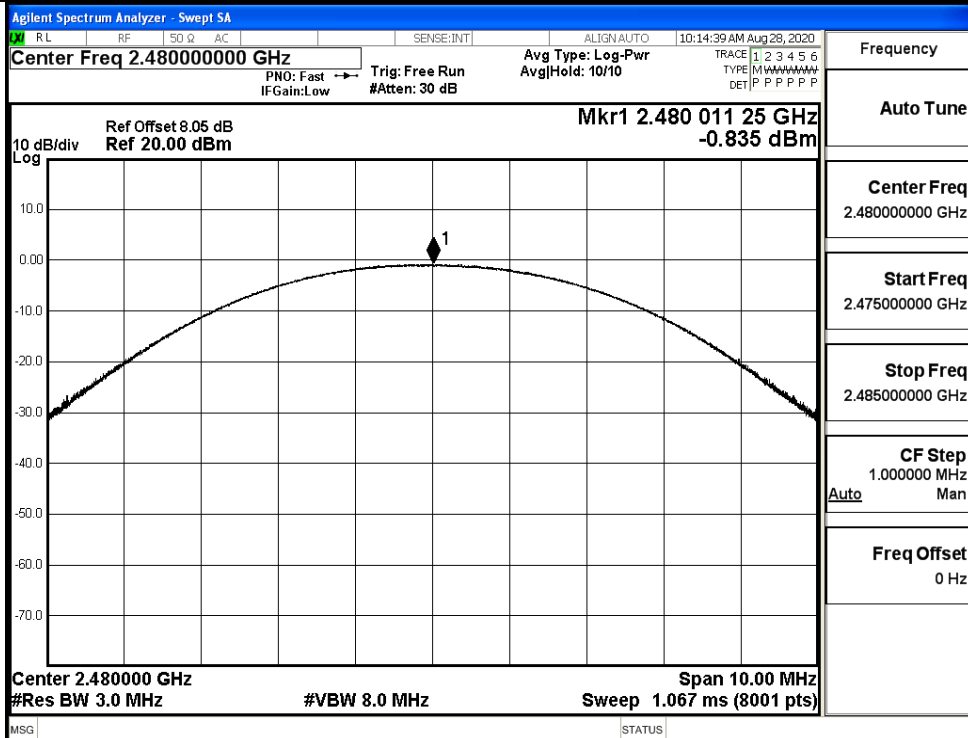


GFSK/MCH

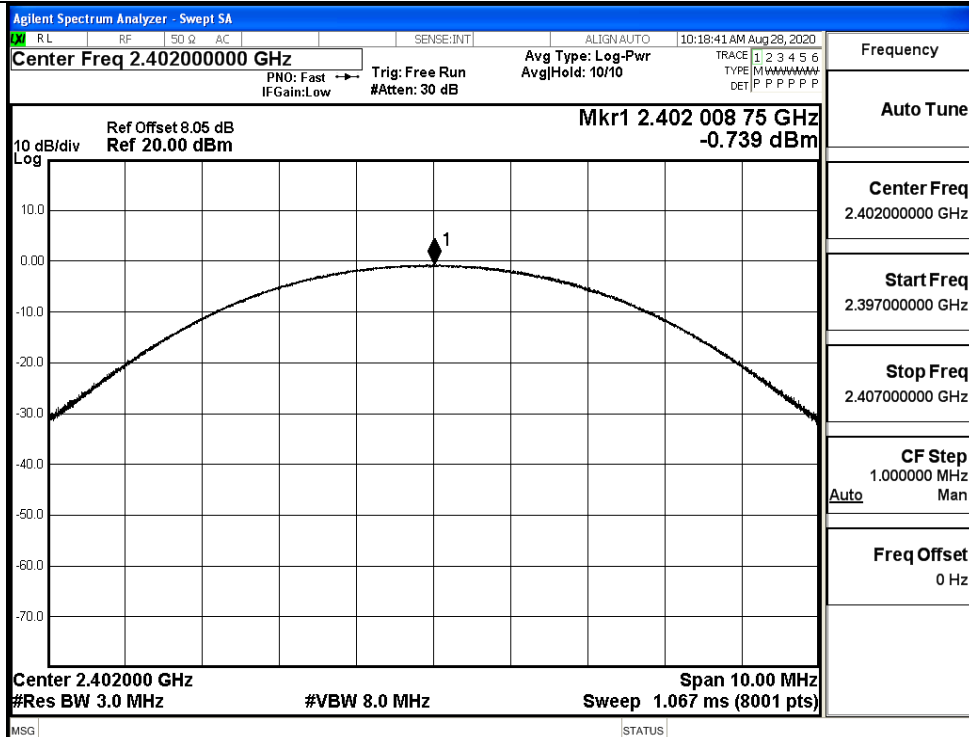


GFSK/HCH

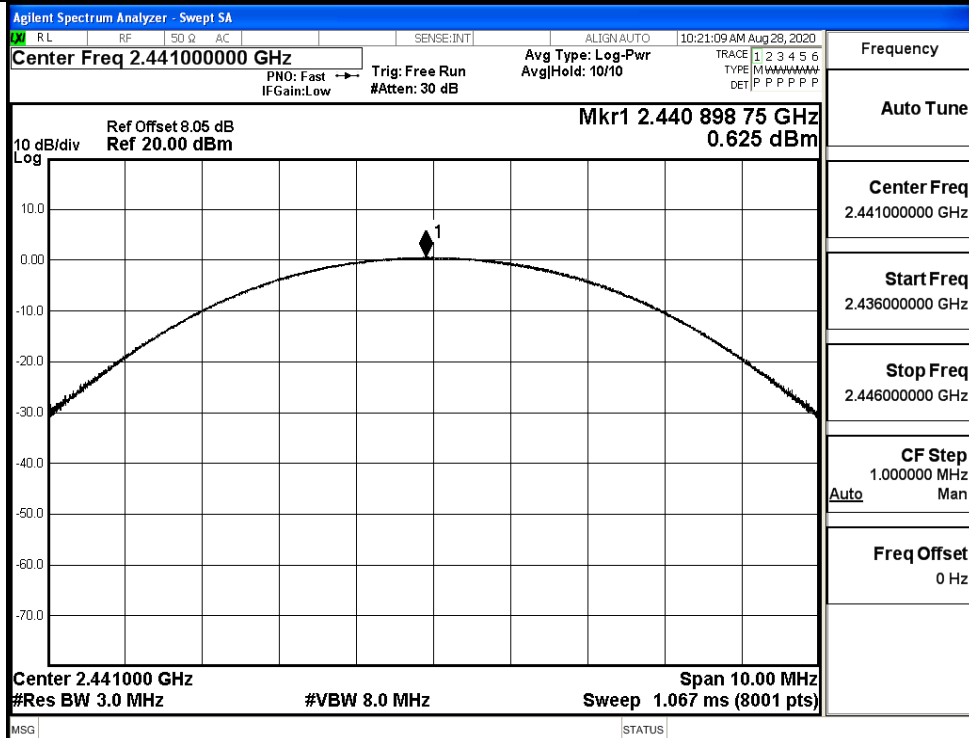
 π /4DQPSK/LCH

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

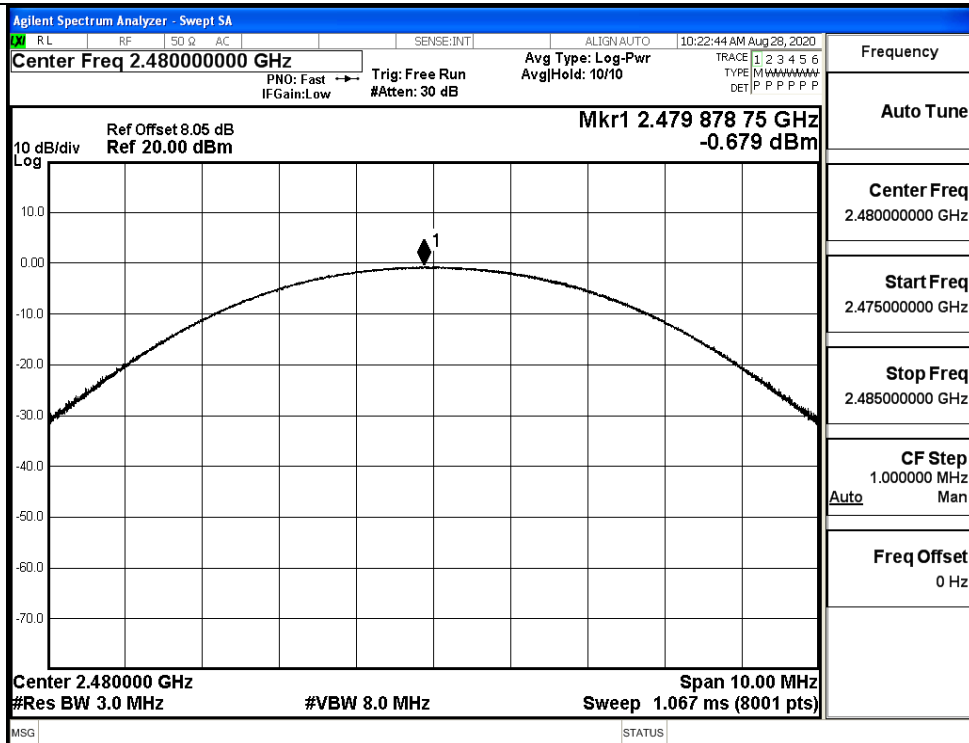
8DPSK/LCH



8DPSK/MCH



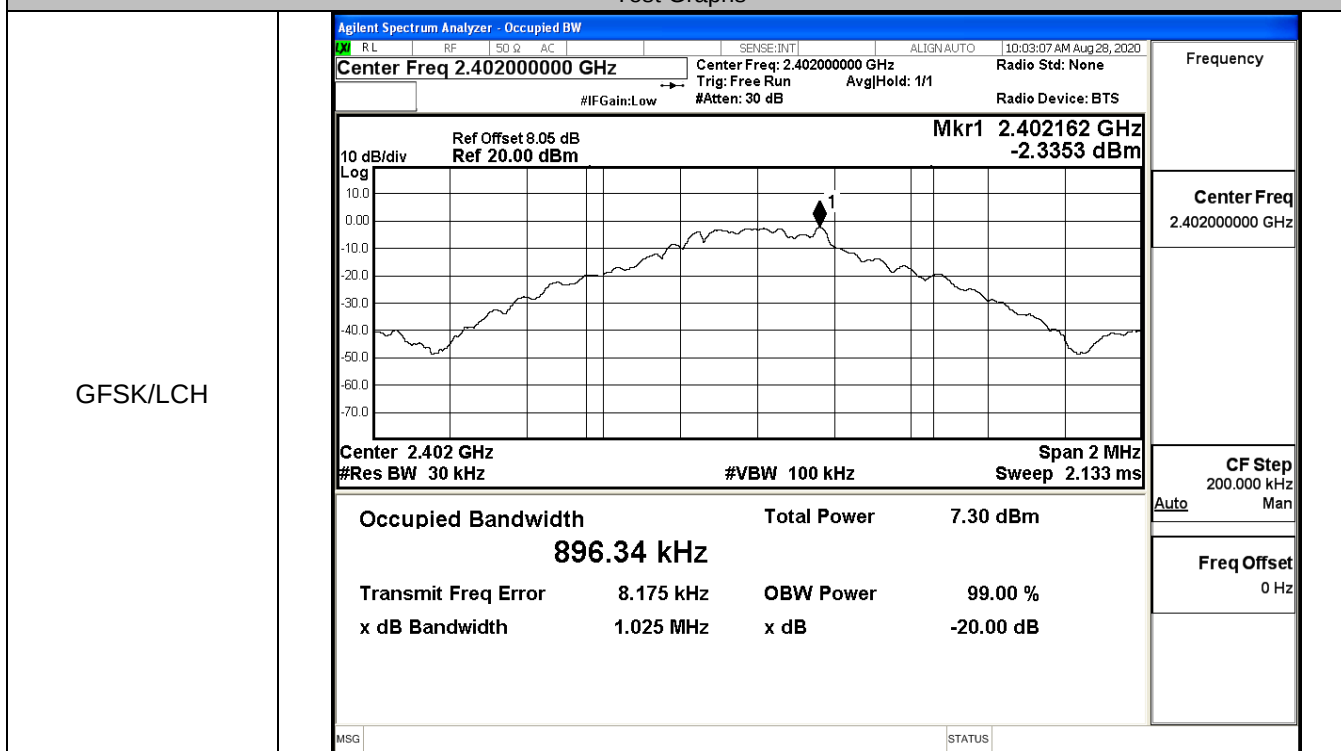
8DPSK/HCH



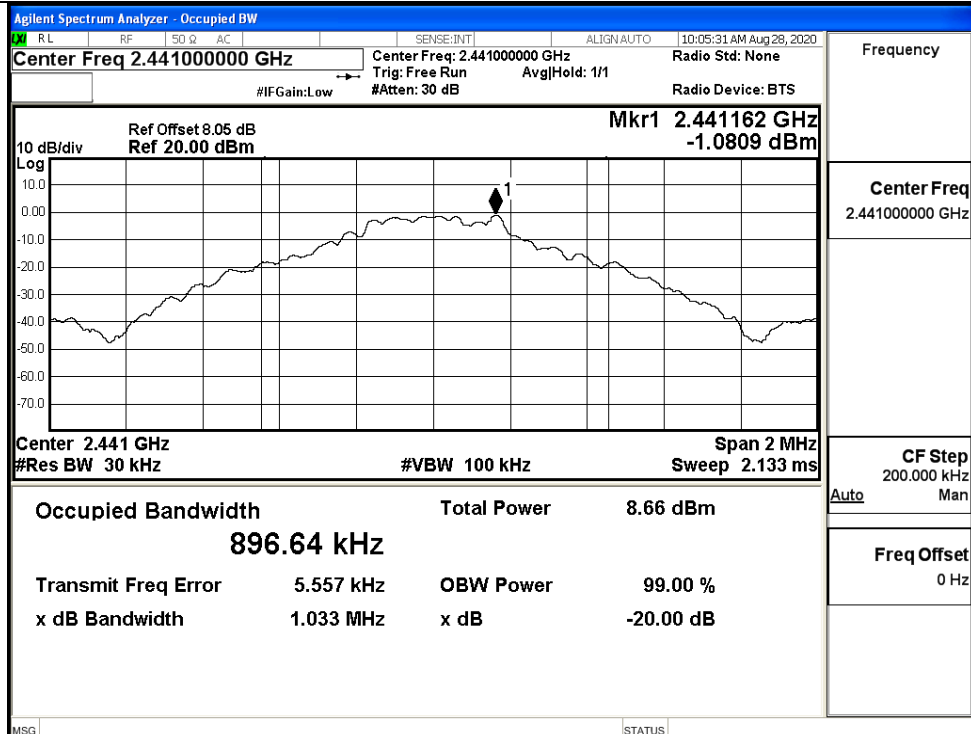
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.025	Not Specified	PASS
	MCH	1.033	Not Specified	PASS
	HCH	1.029	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.294	Not Specified	PASS
	MCH	1.288	Not Specified	PASS
	HCH	1.287	Not Specified	PASS
8DPSK	LCH	1.293	Not Specified	PASS
	MCH	1.291	Not Specified	PASS
	HCH	1.294	Not Specified	PASS

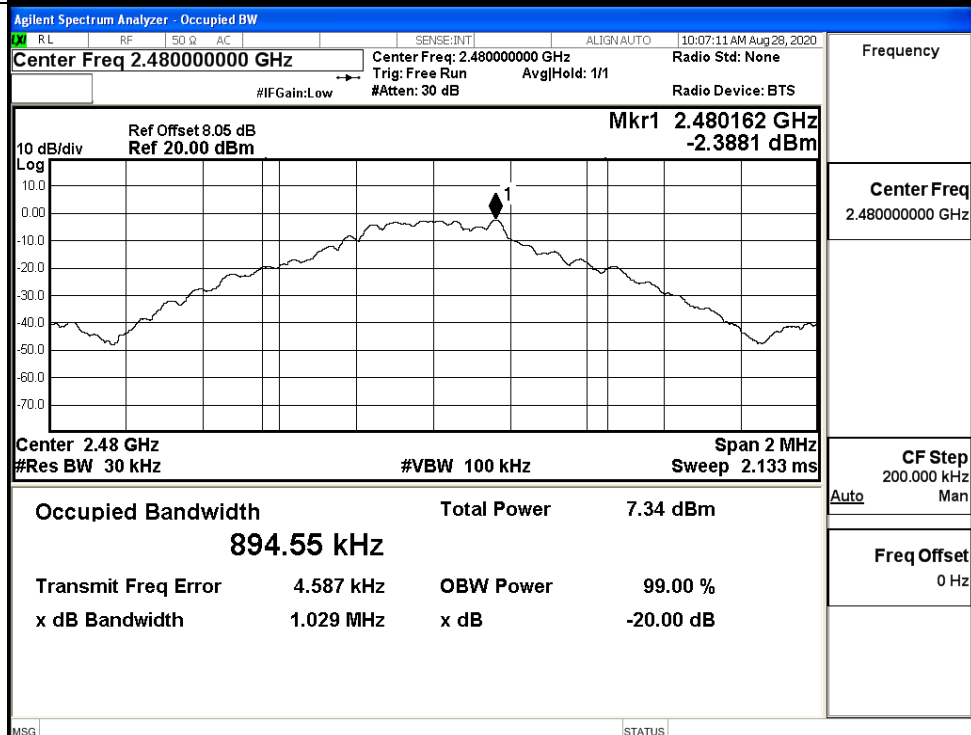
Test Graphs

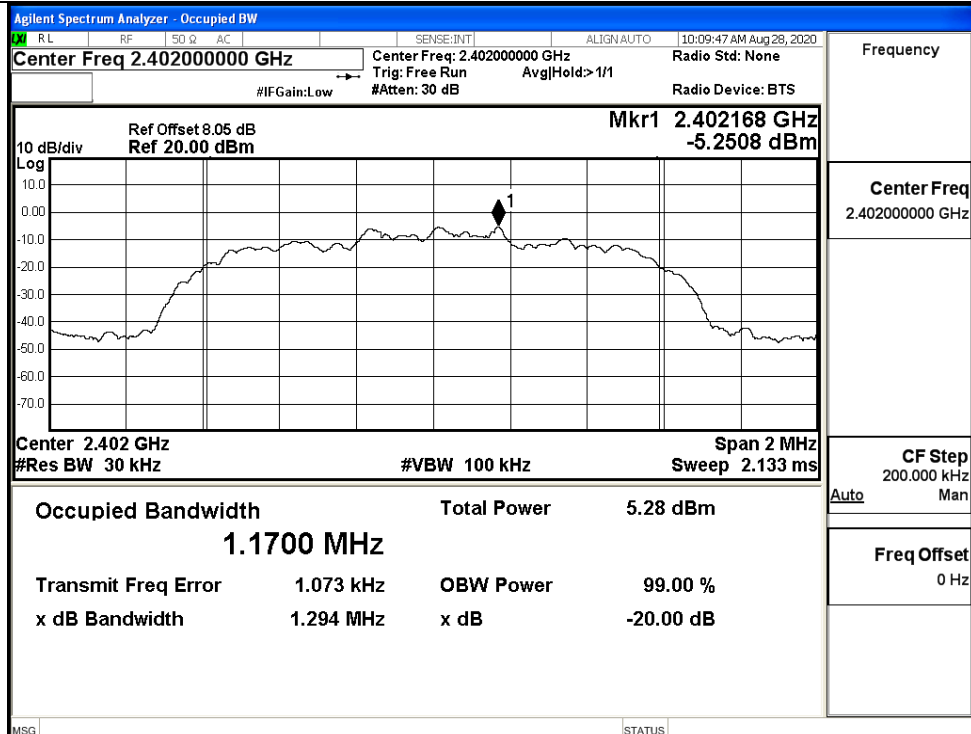
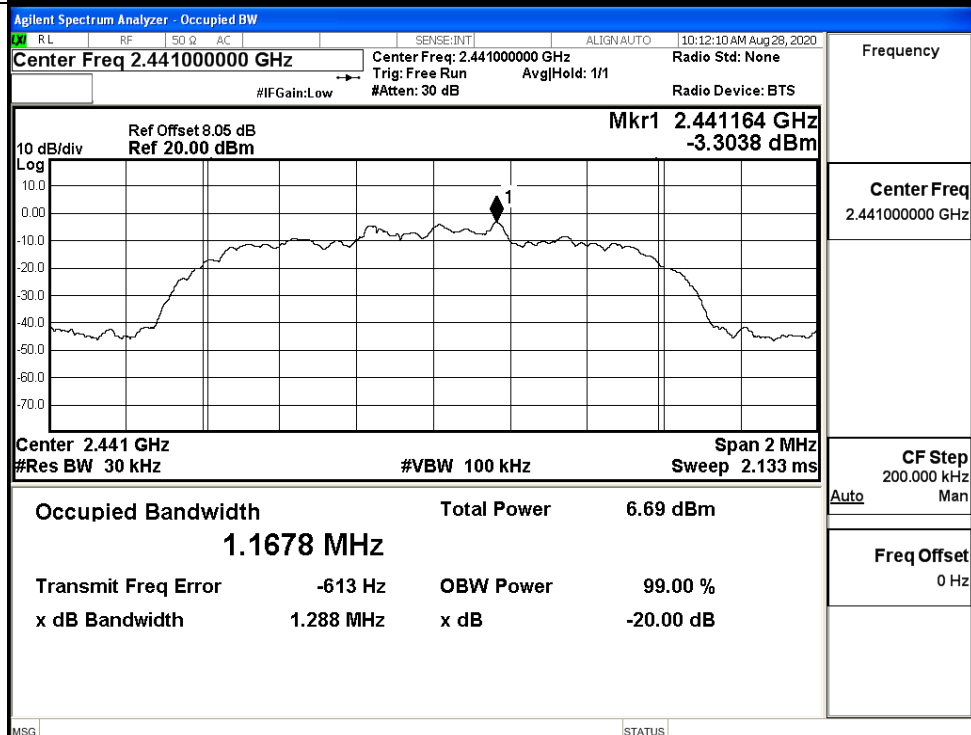


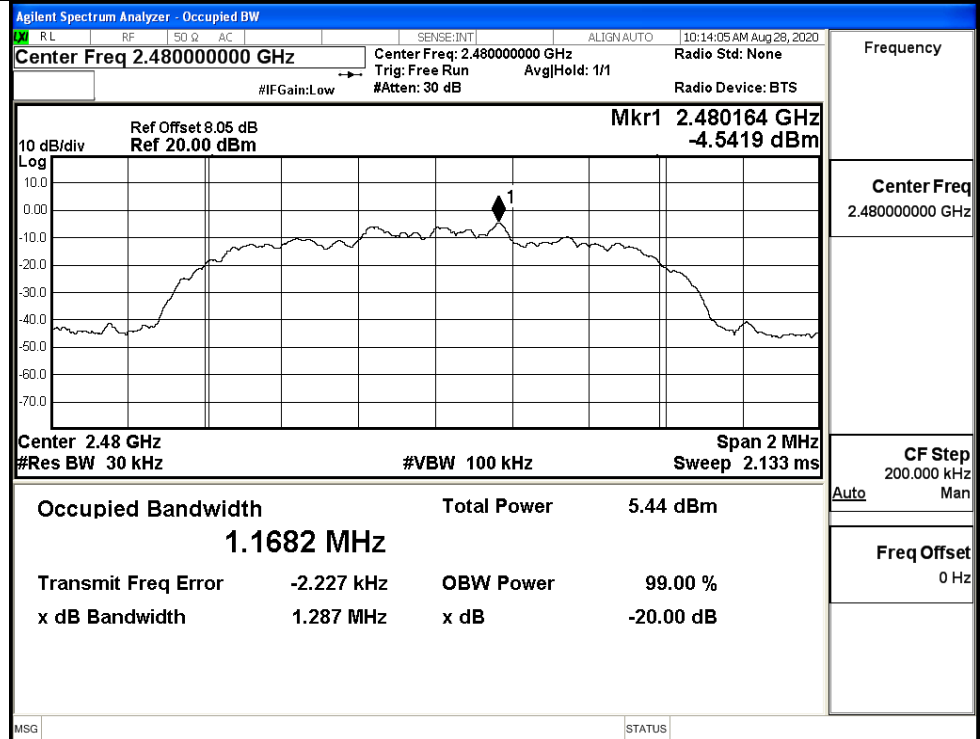
GFSK/MCH



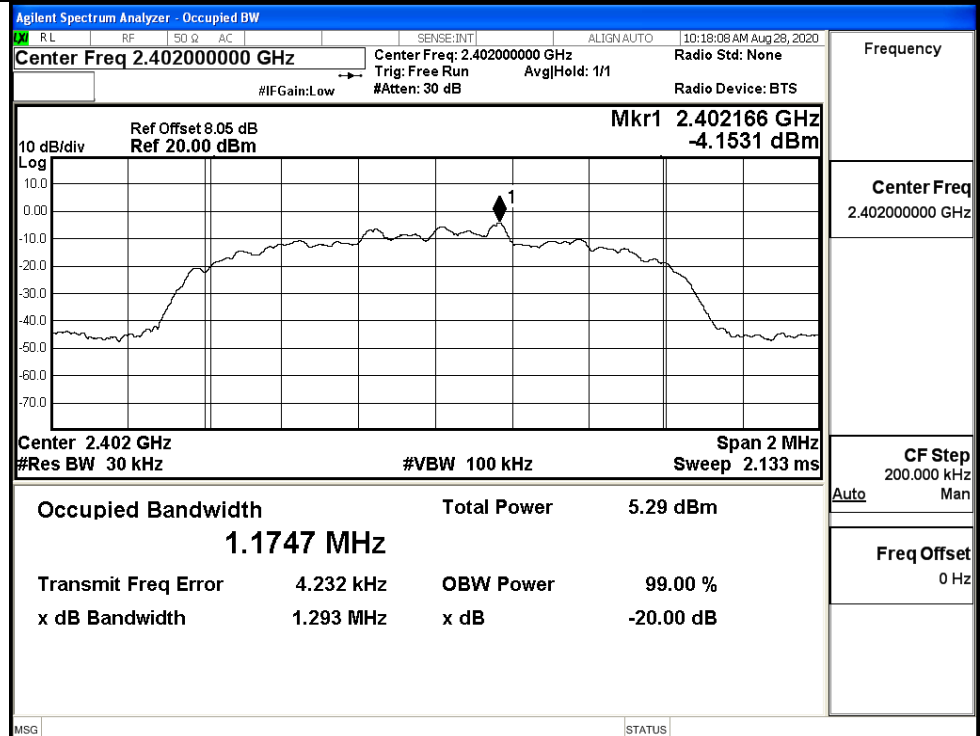
GFSK/HCH



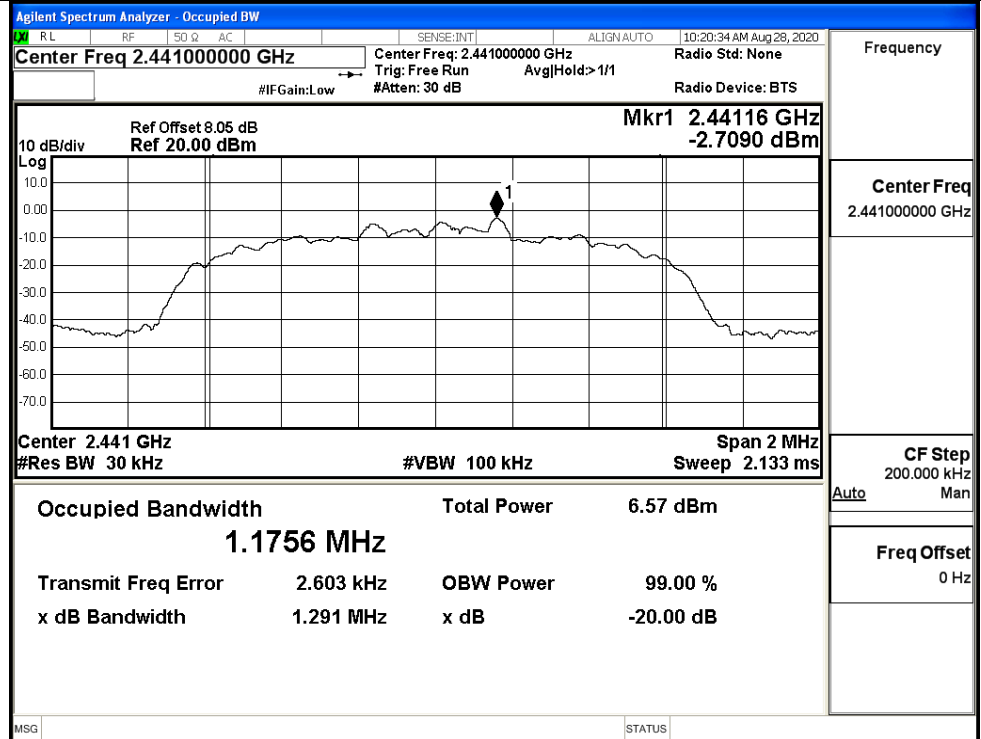
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

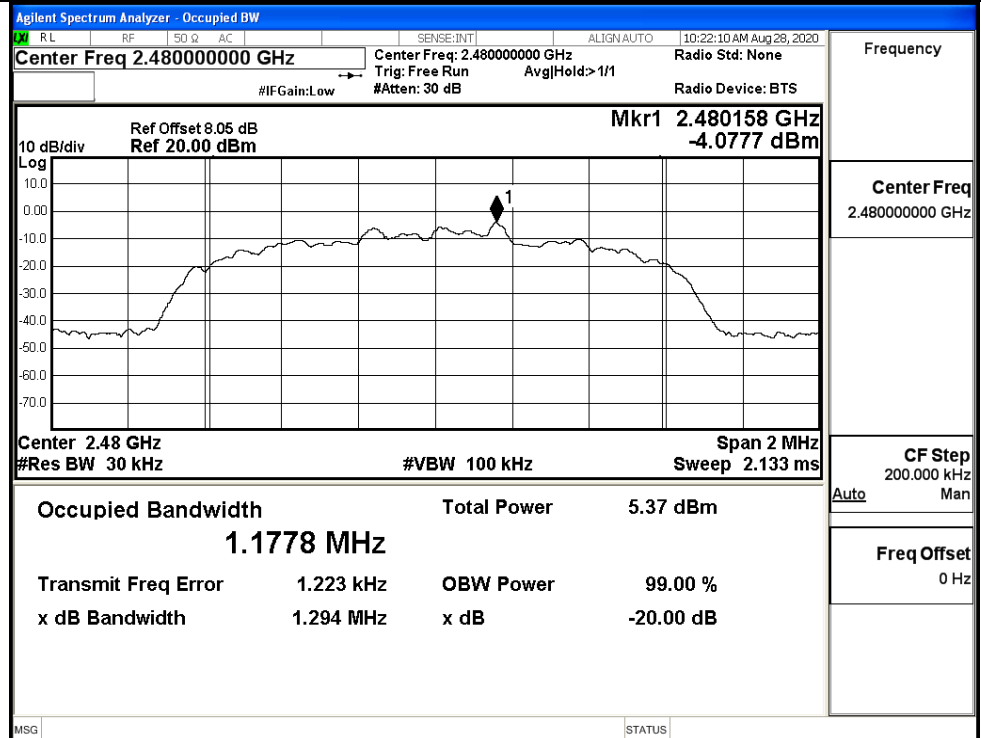
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

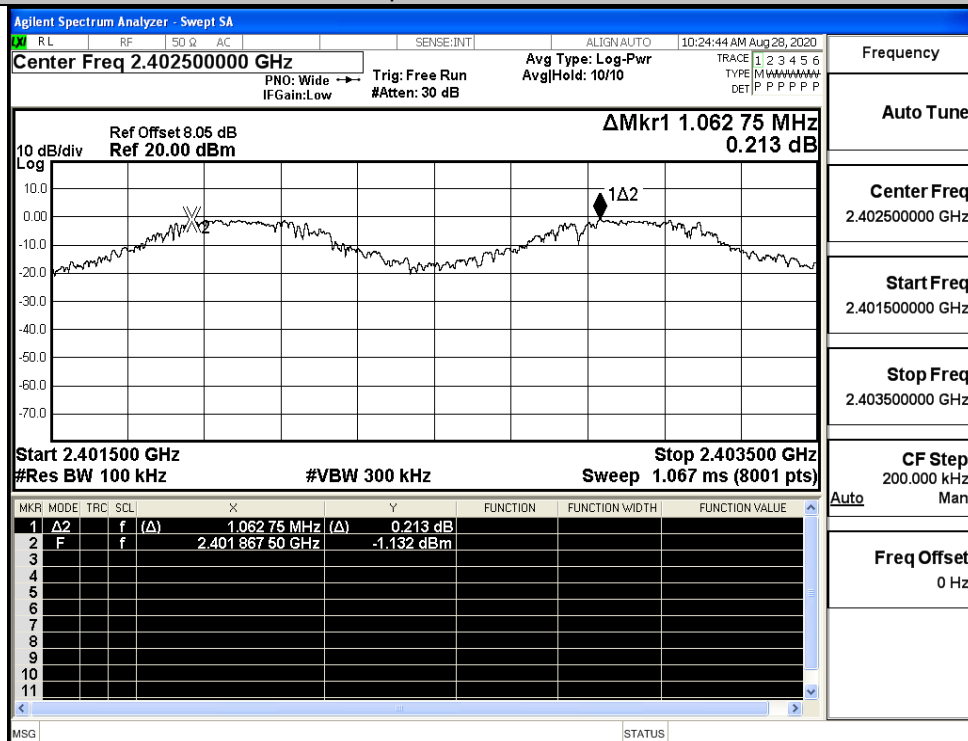


A.3 Carrier Frequency Separation

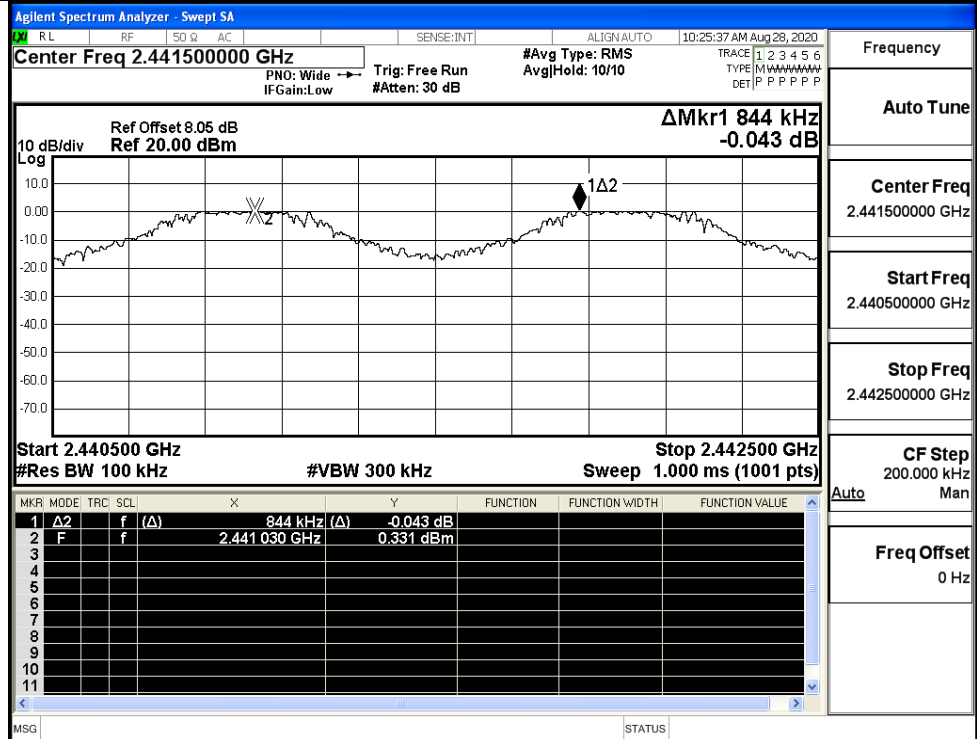
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.063	0.689	PASS
	MCH	0.844	0.689	PASS
	HCH	0.862	0.689	PASS
$\pi/4$ DQPSK	LCH	1.170	0.863	PASS
	MCH	1.058	0.863	PASS
	HCH	0.954	0.863	PASS
8DPSK	LCH	0.966	0.863	PASS
	MCH	1.286	0.863	PASS
	HCH	1.102	0.863	PASS

Test Graphs

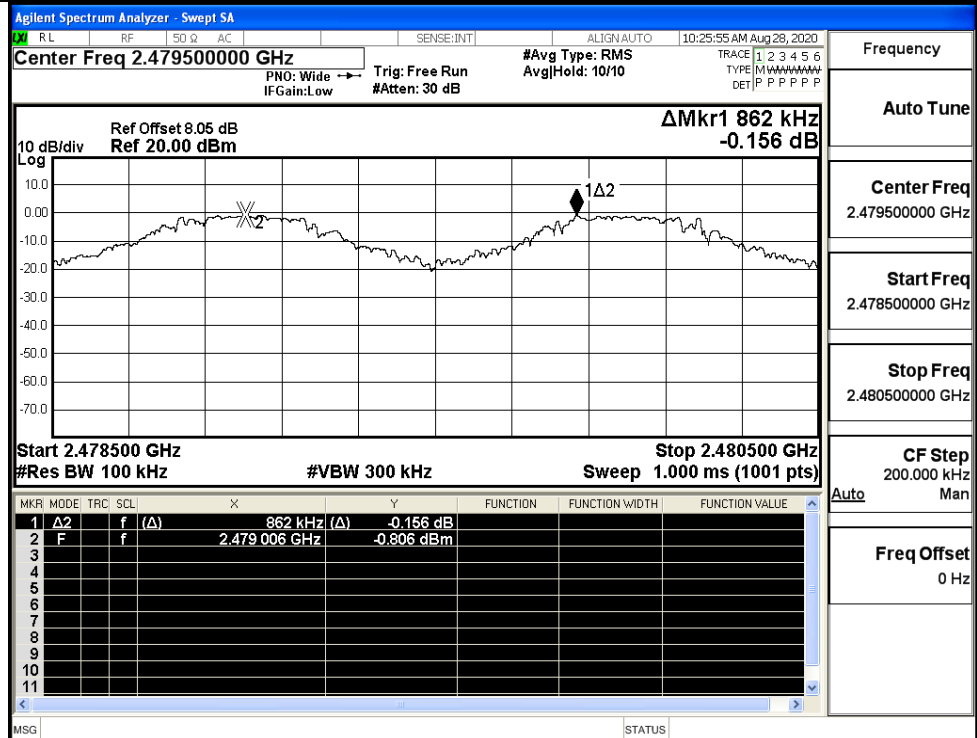
GFSK/LCH

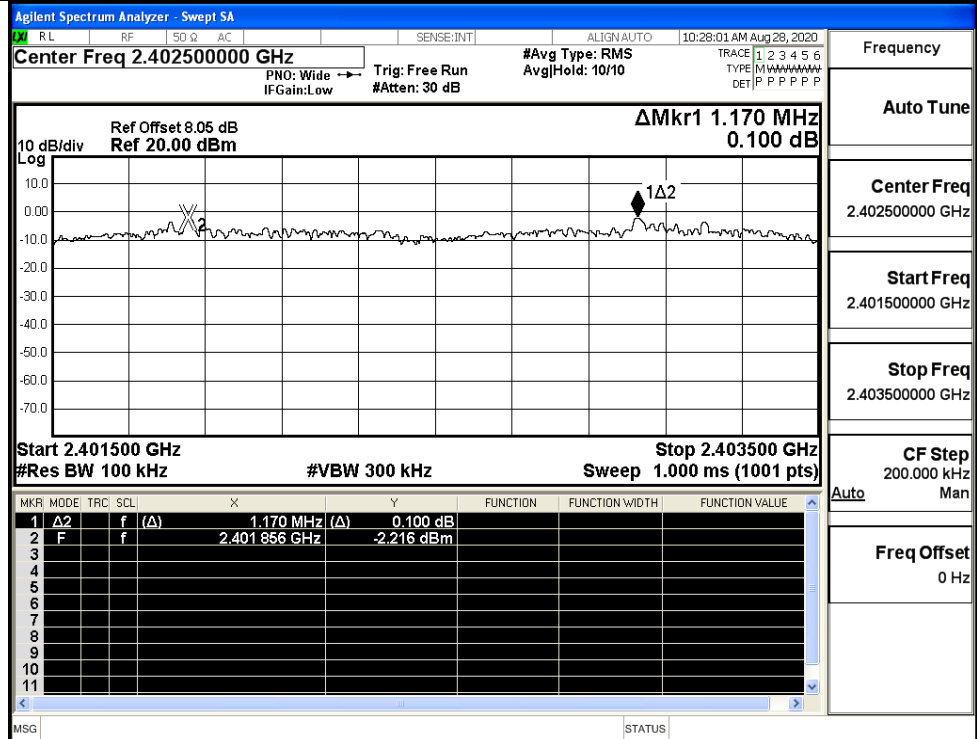
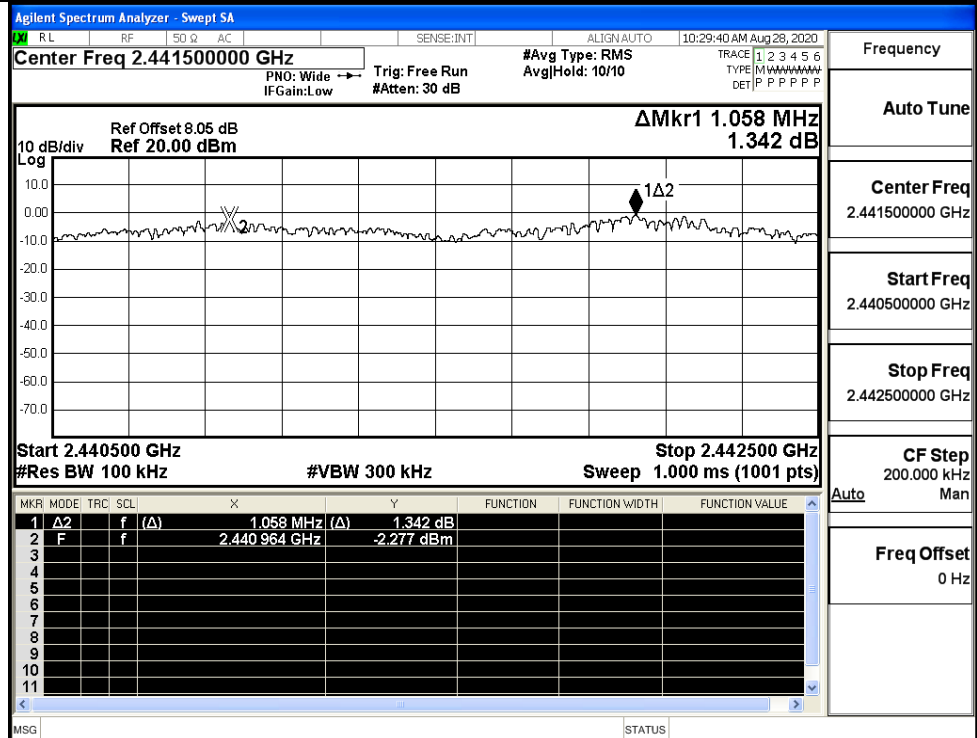


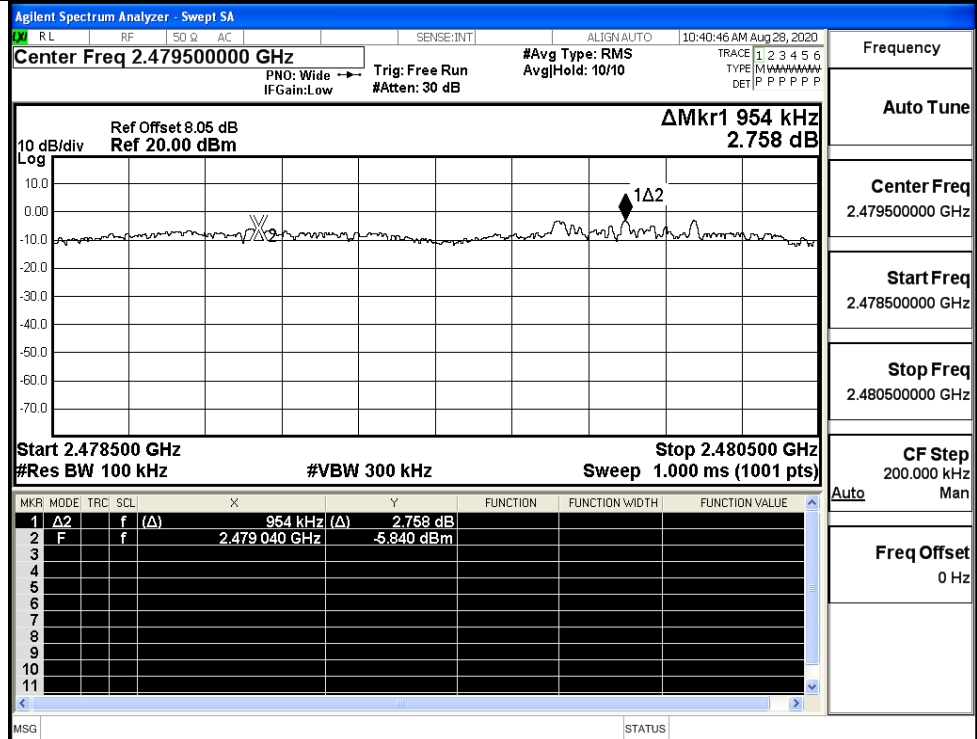
GFSK/MCH



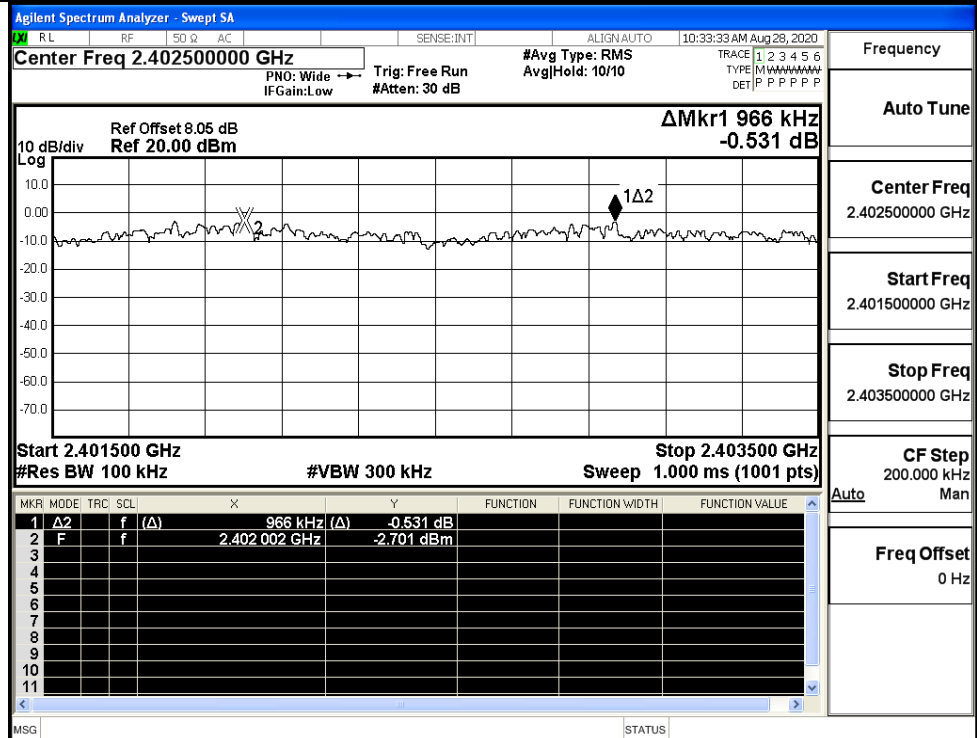
GFSK/HCH



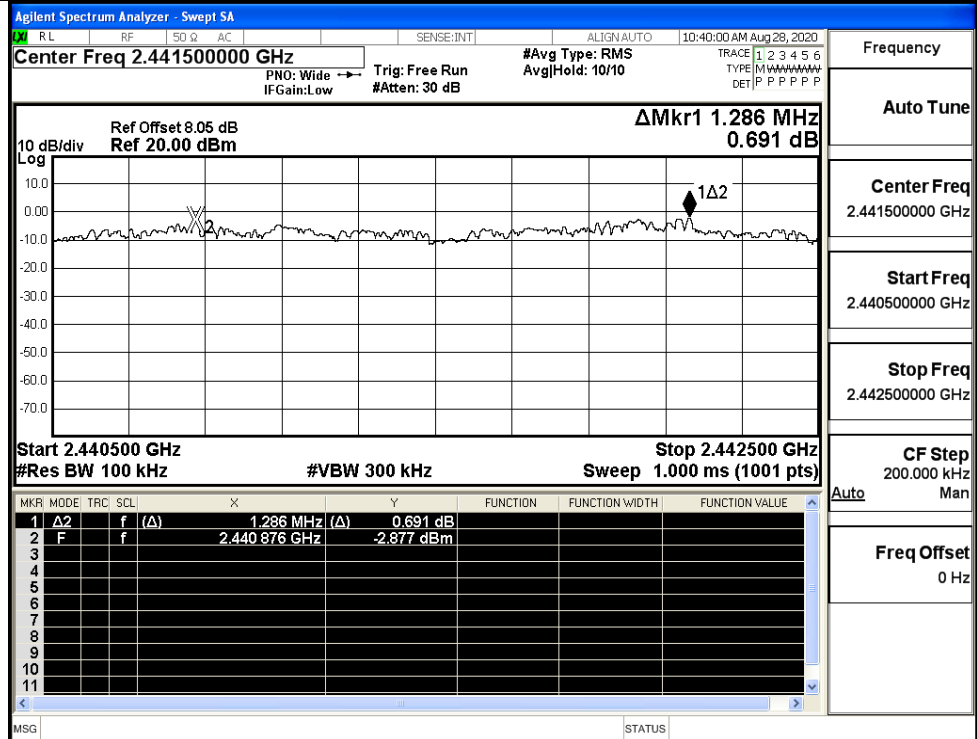
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

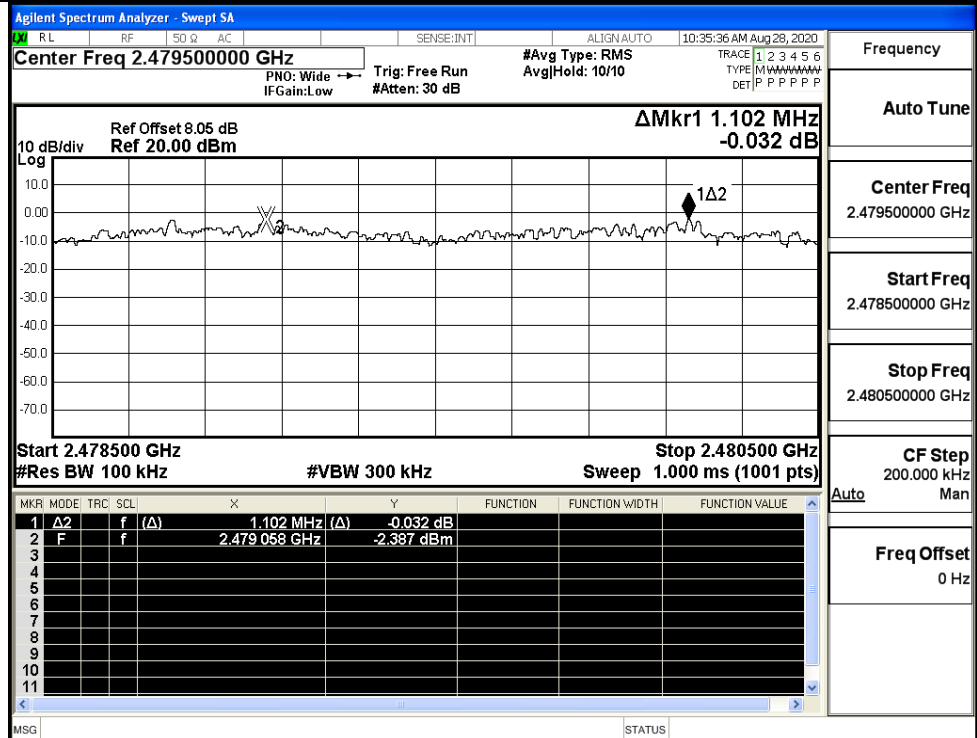
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

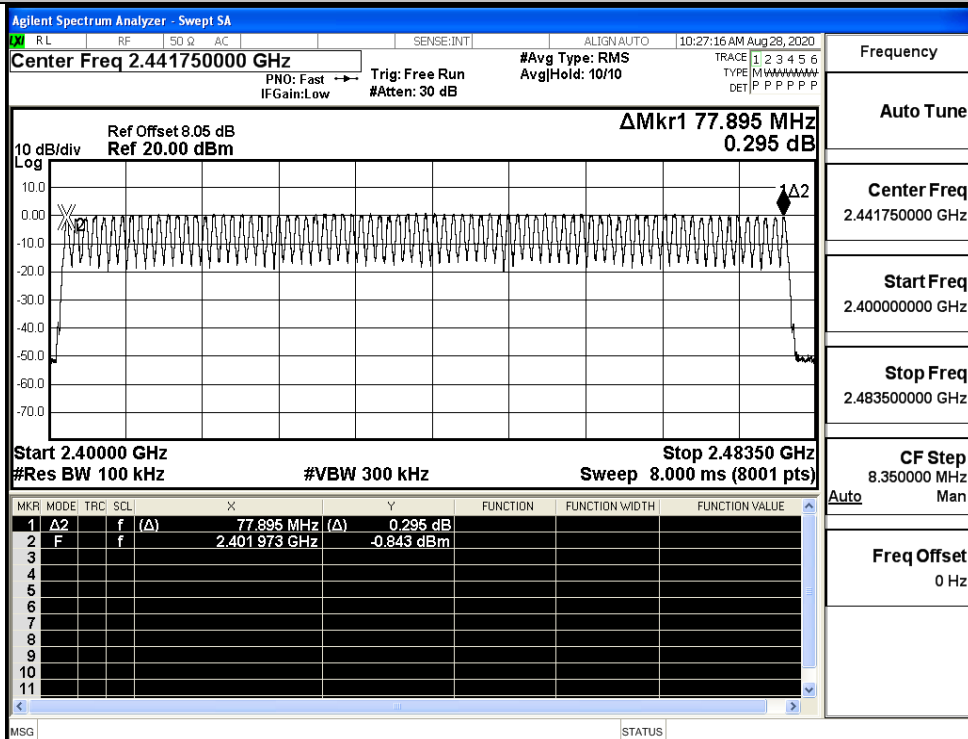
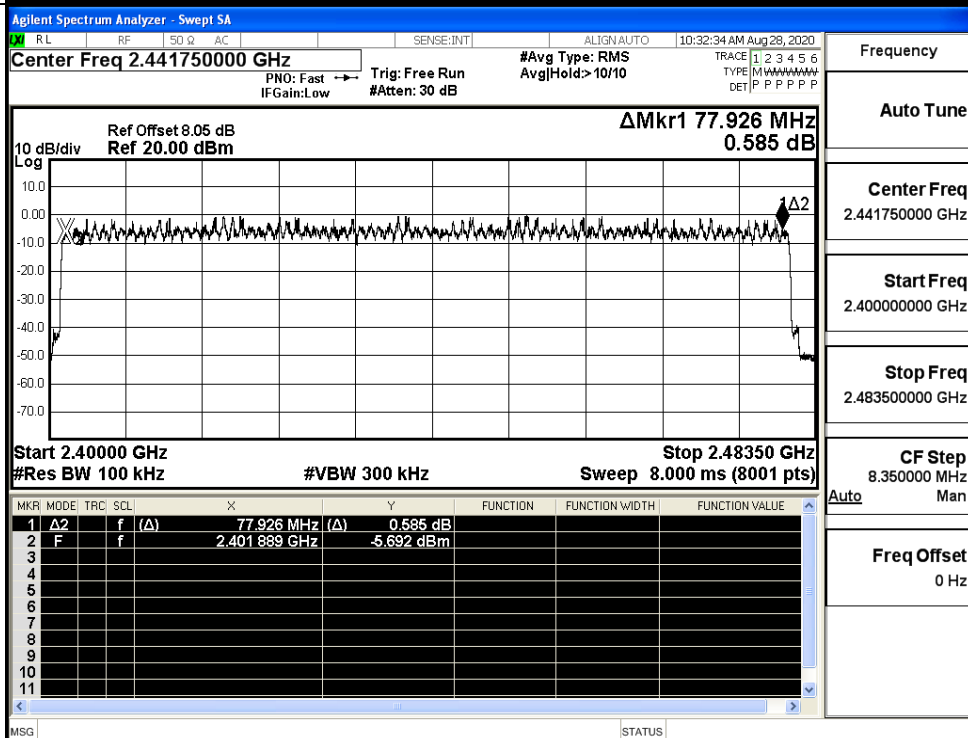


A.4 Hopping Channel Number

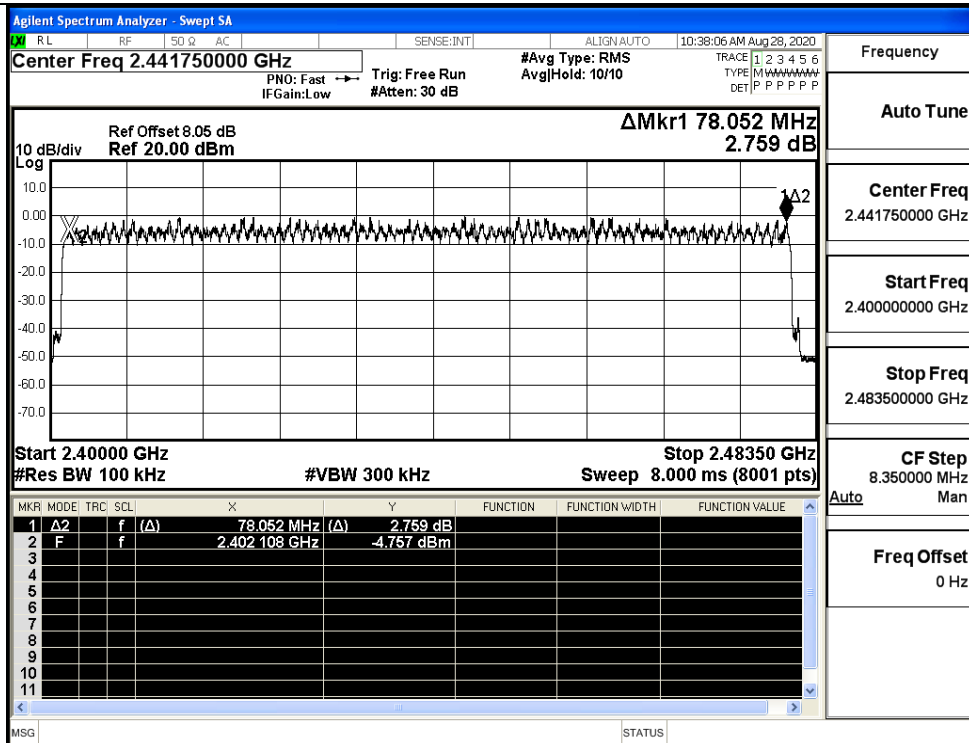
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

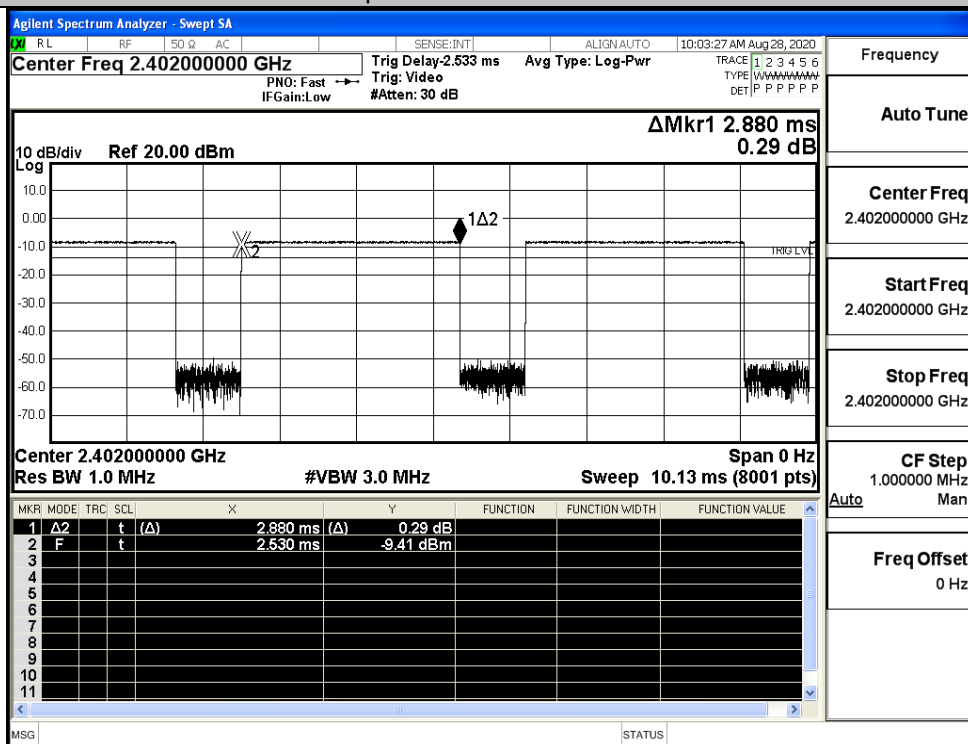


A.5 Dwell Time

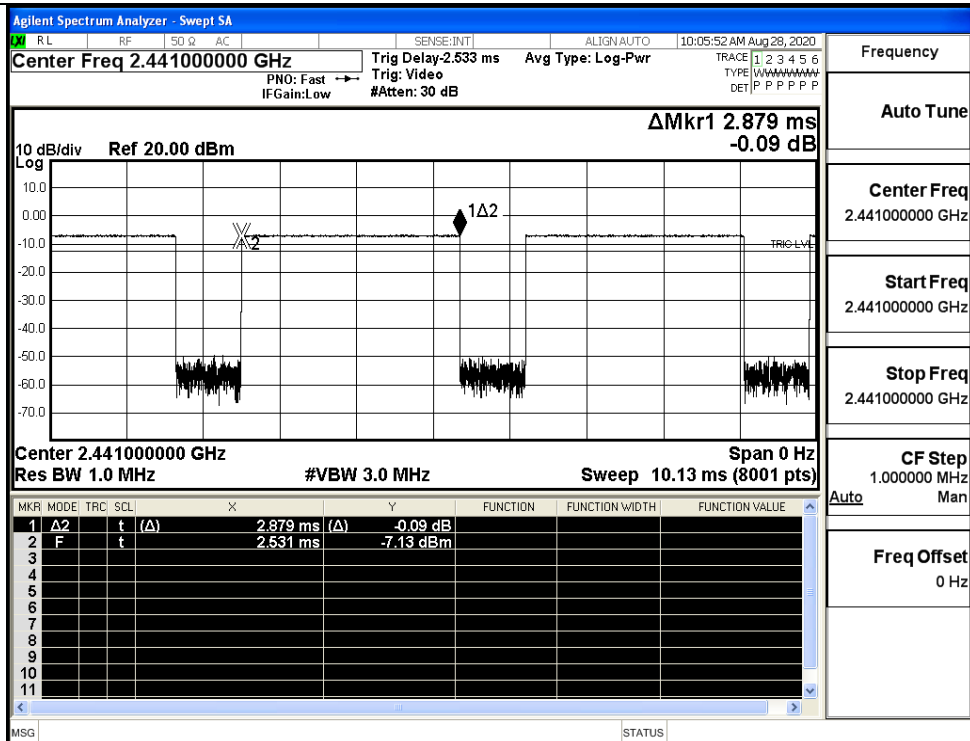
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

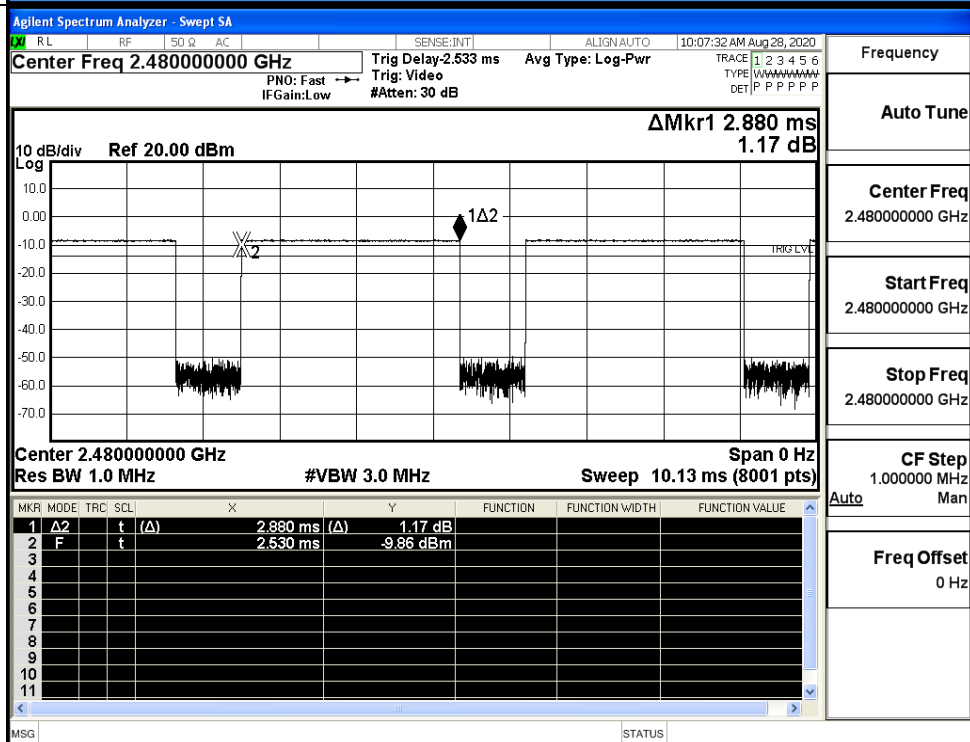
GFSK_DH5/LCH



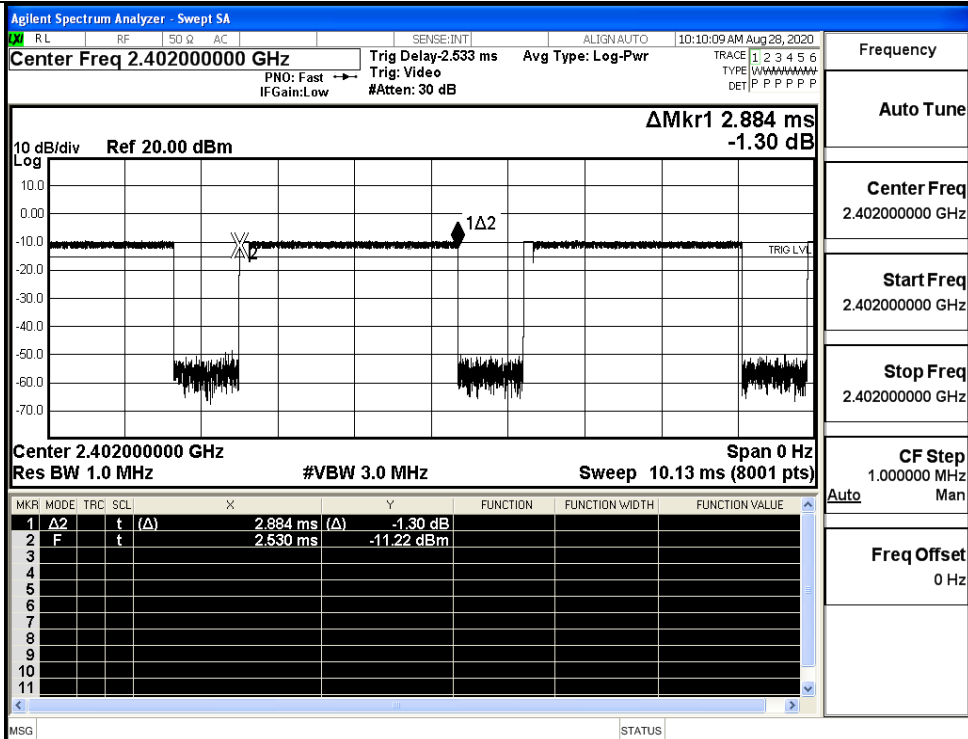
GFSK_DH5/MCH



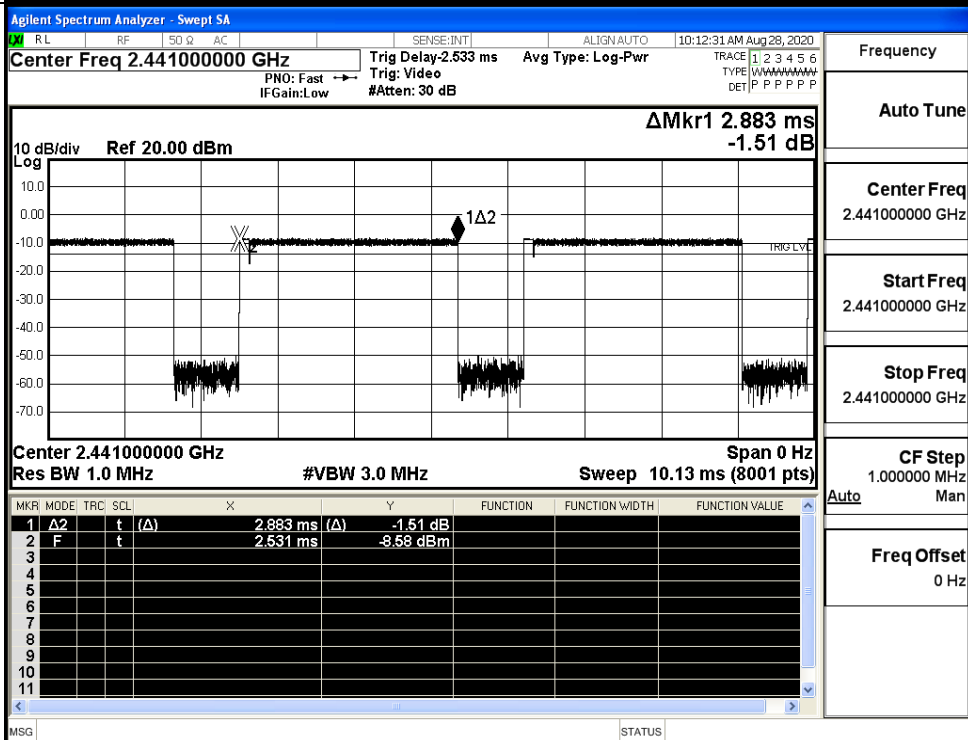
GFSK_DH5/HCH



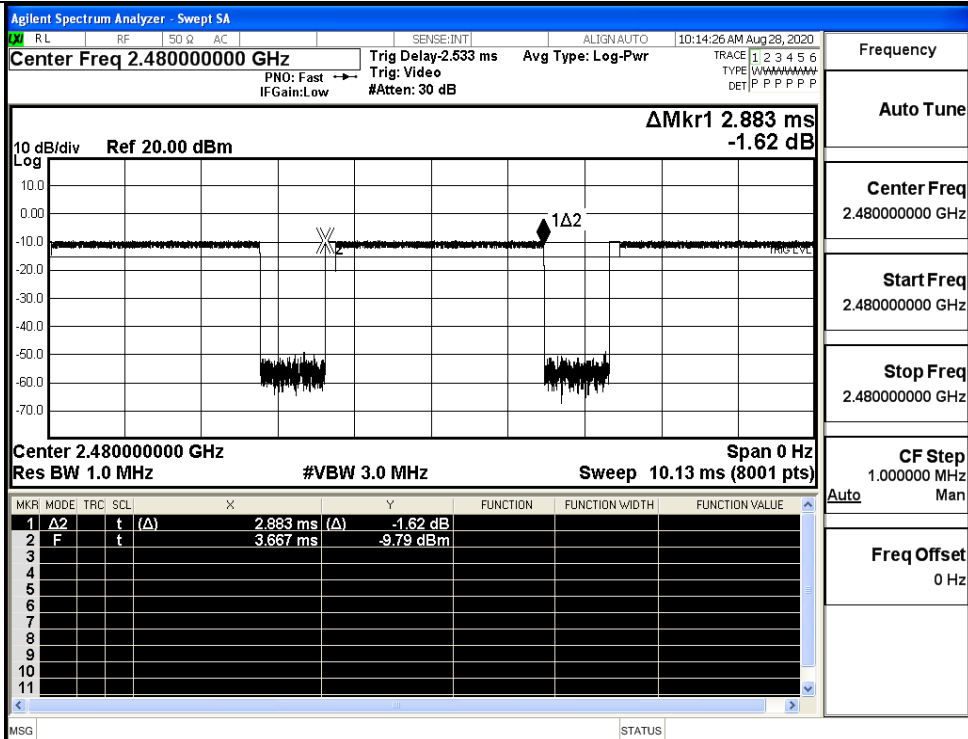
$\pi/4$ DQPSK
_2DH5/LCH



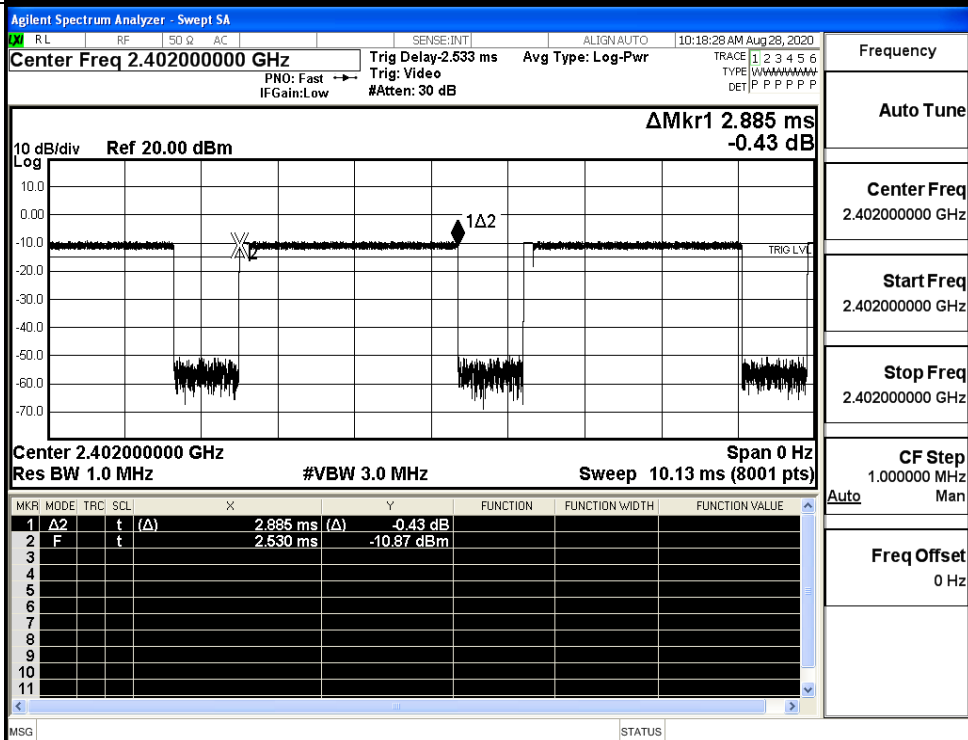
$\pi/4$ DQPSK
_2DH5/MCH



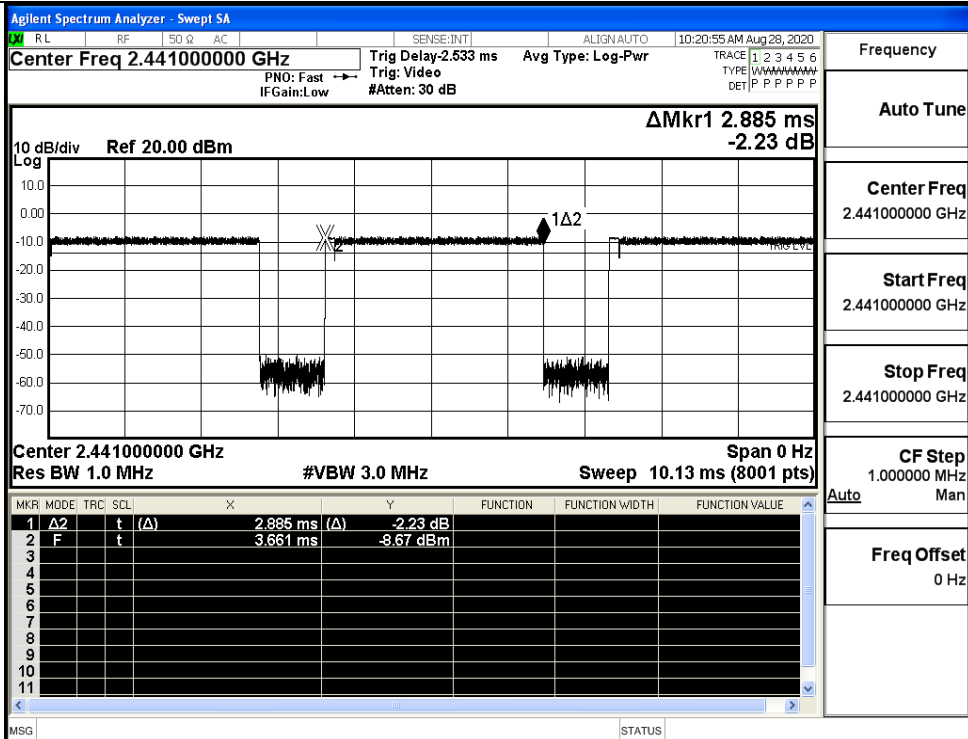
$\pi/4$ DQPSK
_2DH5/HCH



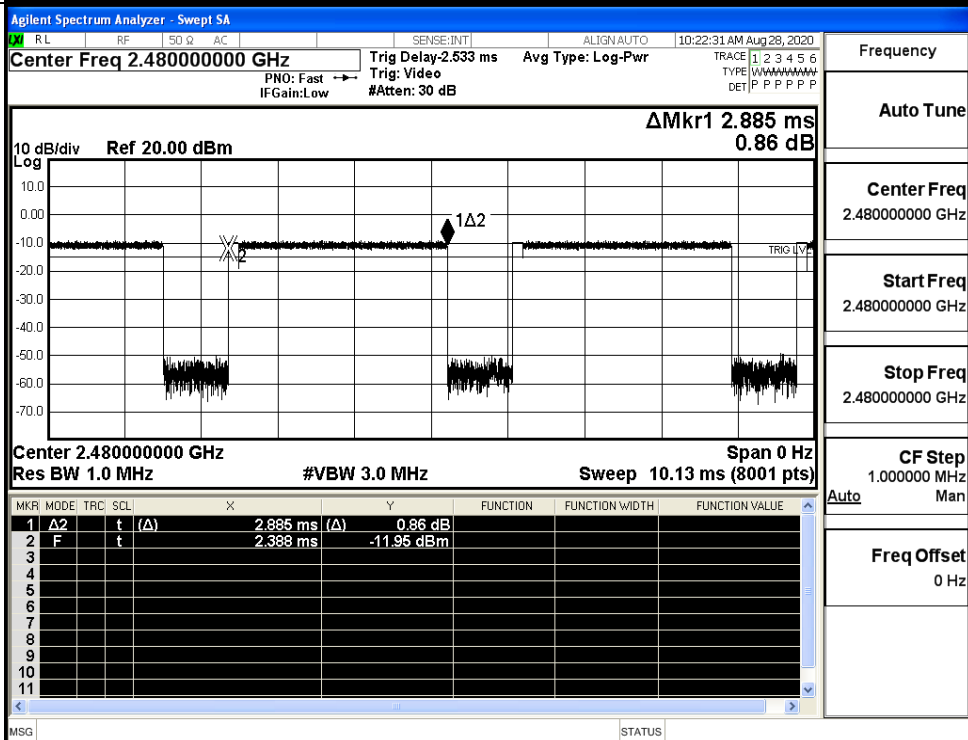
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



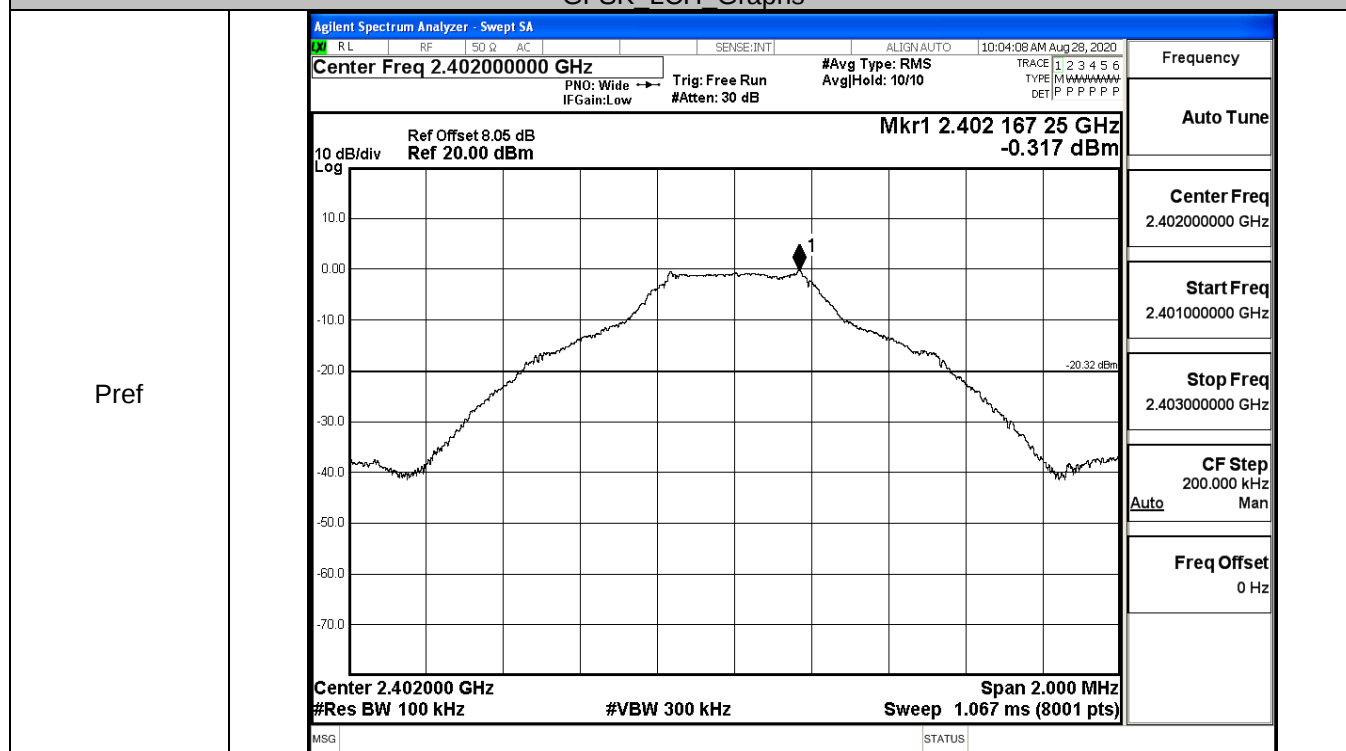
8DPSK_3DH5/HCH



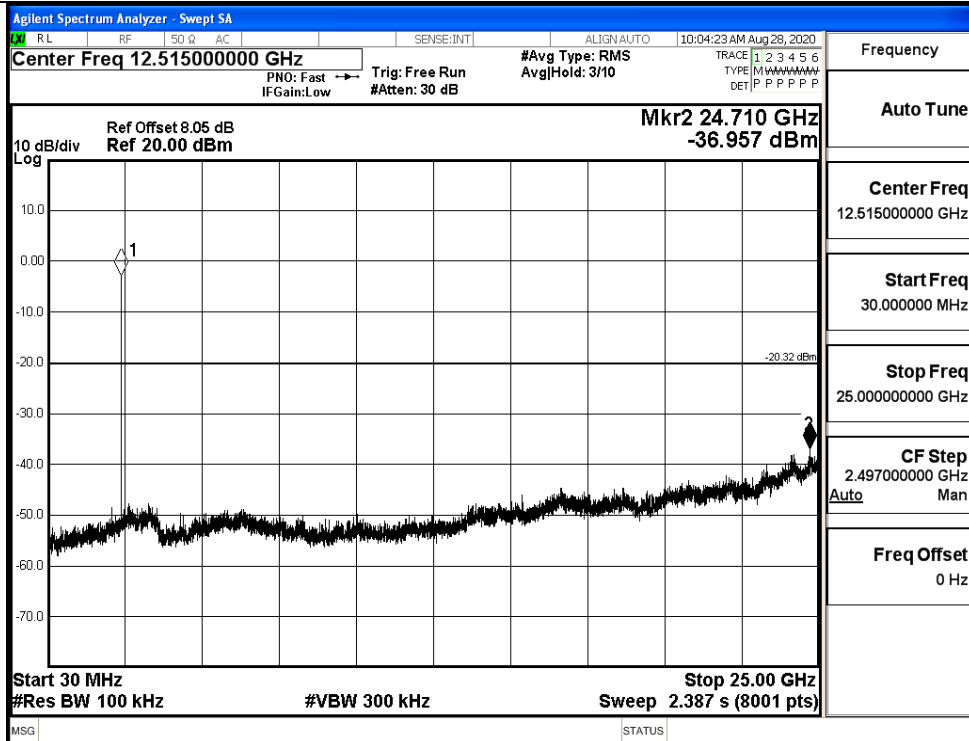
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.317	-36.957	-20.317	PASS
	MCH	0.920	-37.592	-19.080	PASS
	HCH	-0.418	-38.287	-20.418	PASS
$\pi/4$ DQPSK	LCH	-1.936	-37.216	-21.936	PASS
	MCH	-0.650	-38.050	-20.650	PASS
	HCH	-1.766	-37.448	-21.766	PASS
8DPSK	LCH	-2.006	-38.443	-22.006	PASS
	MCH	-1.010	-38.429	-21.010	PASS
	HCH	-1.794	-37.637	-21.794	PASS

GFSK LCH Graphs

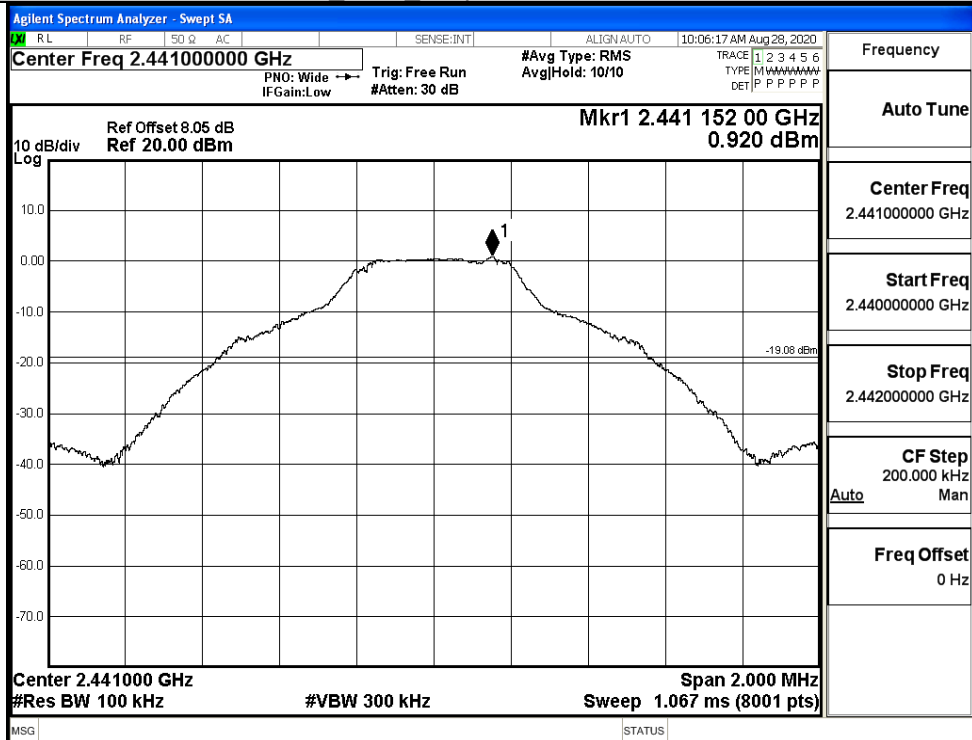


Puw

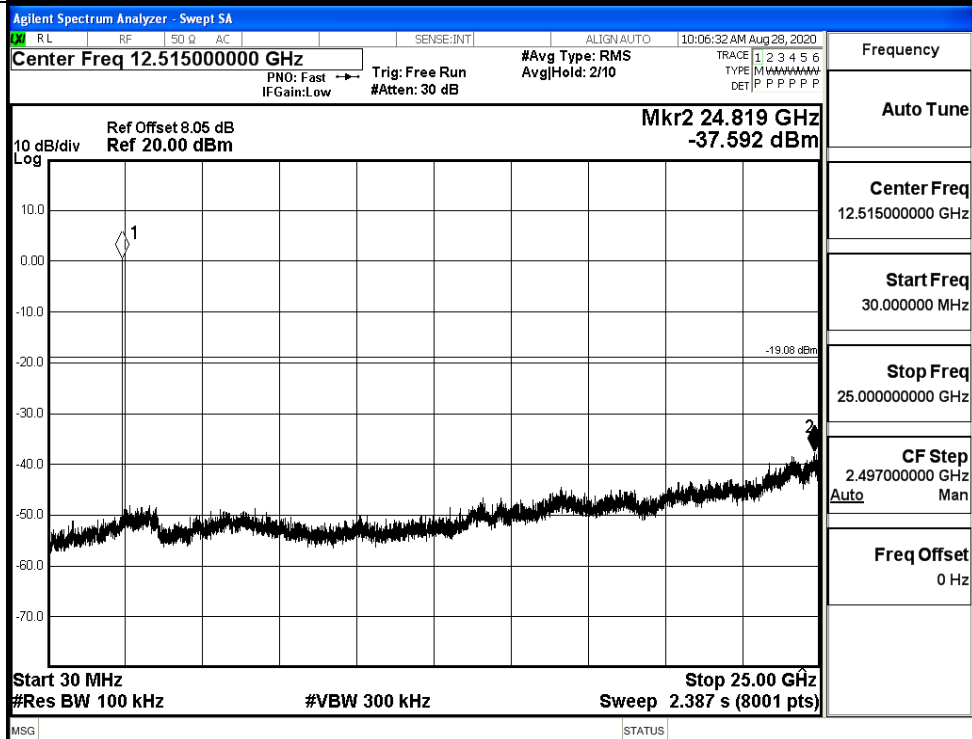


GFSK_MCH_Graphs

Pref

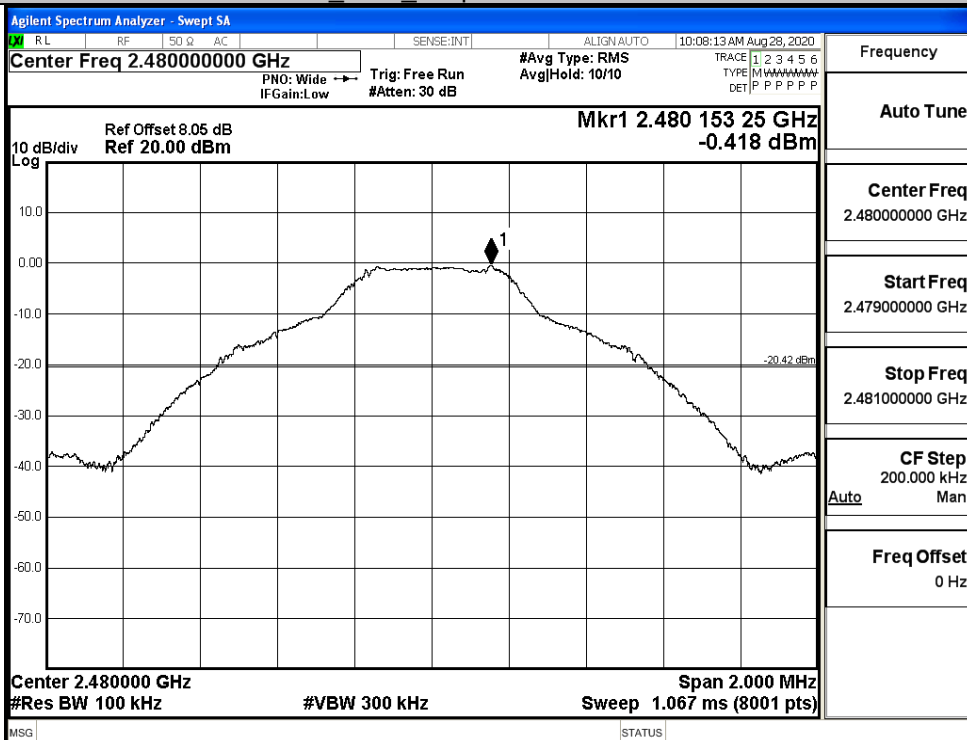


Puw

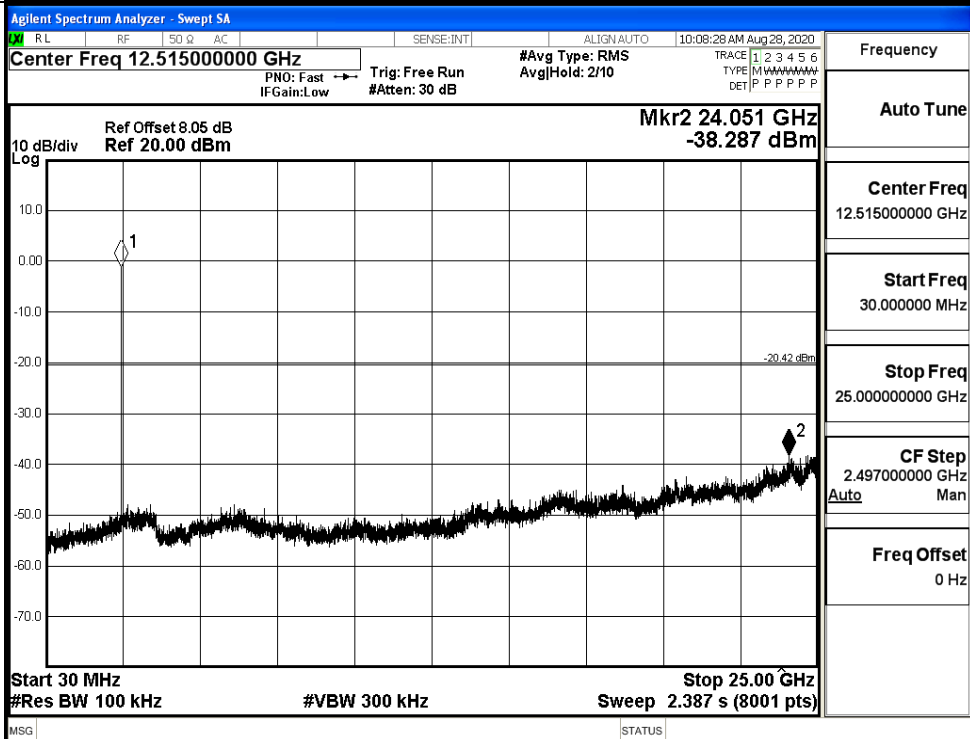


GFSK HCH Graphs

Pref

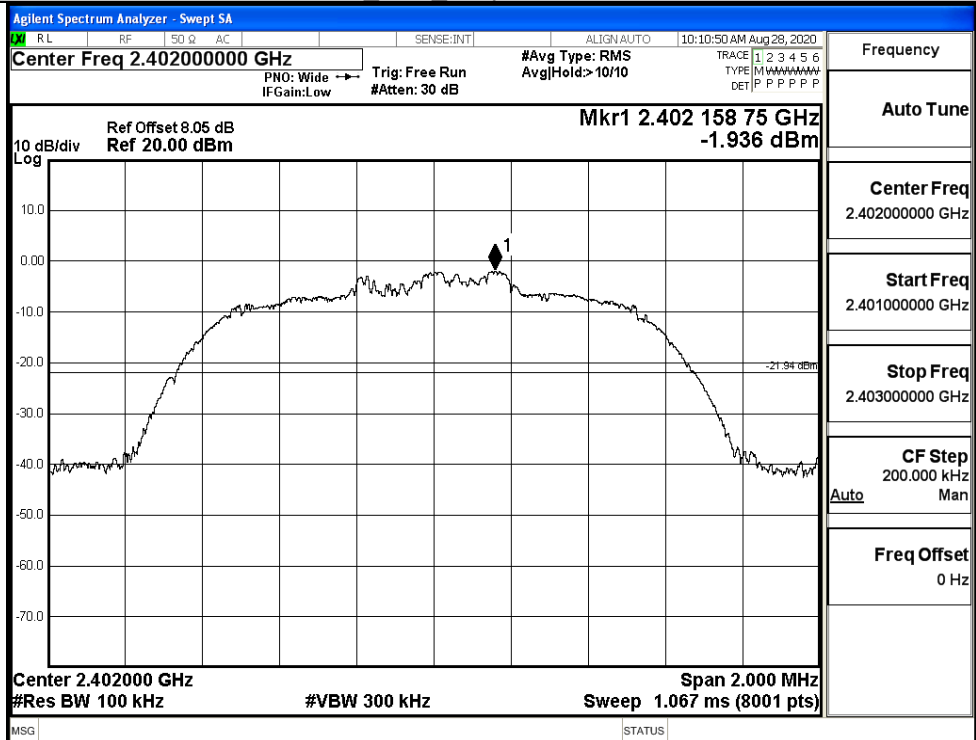


Puw

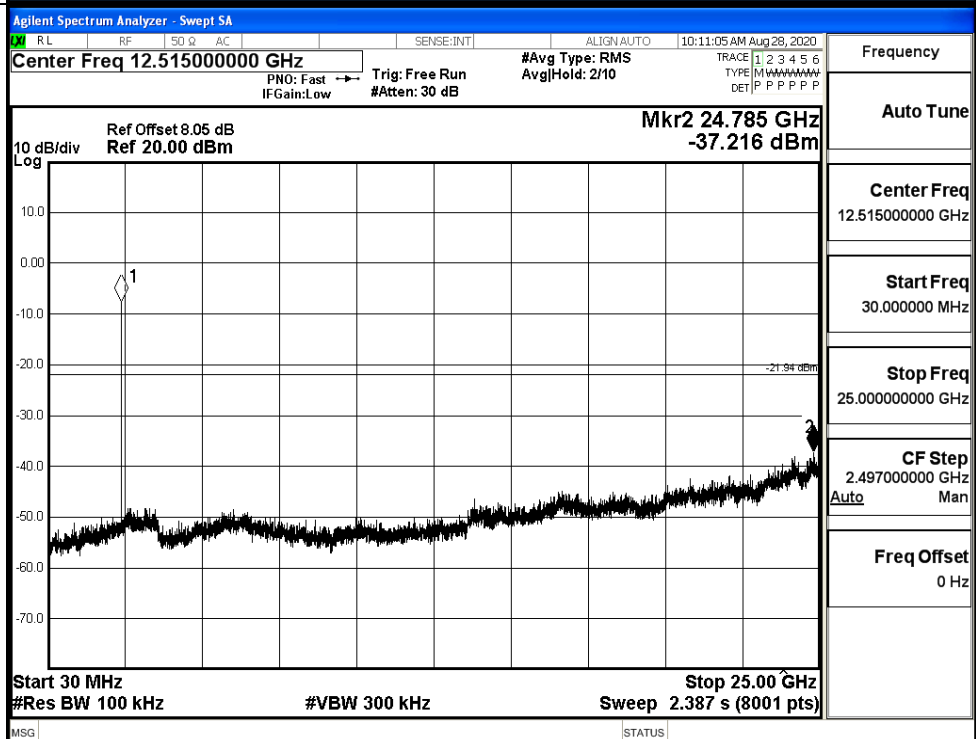


$\pi/4$ DQPSK_LCH_Graphs

Pref

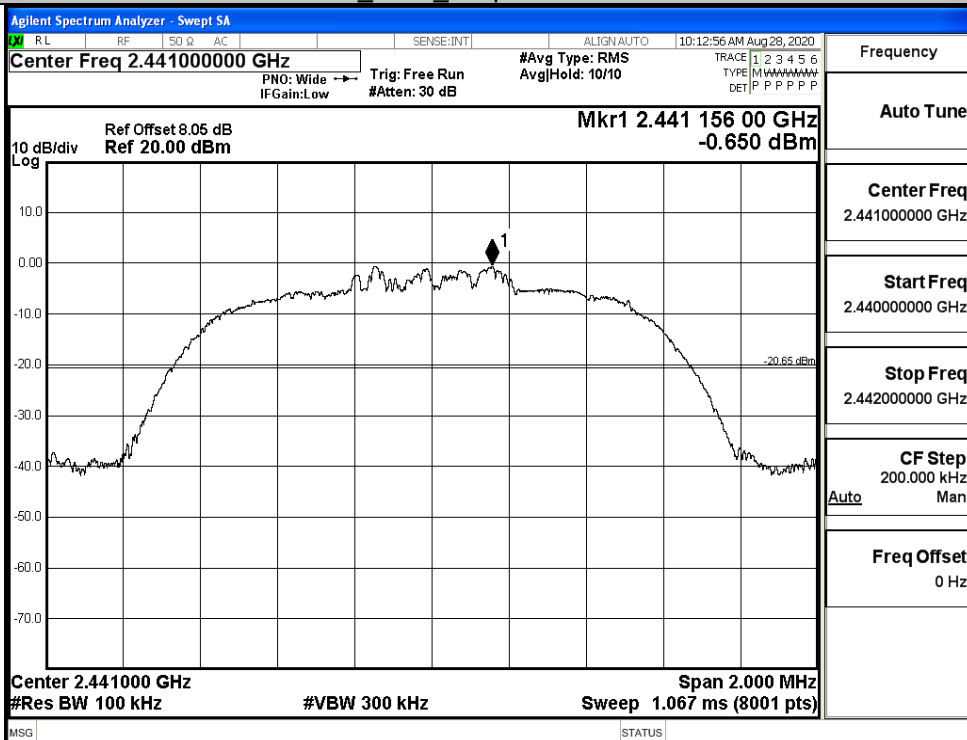


Puw

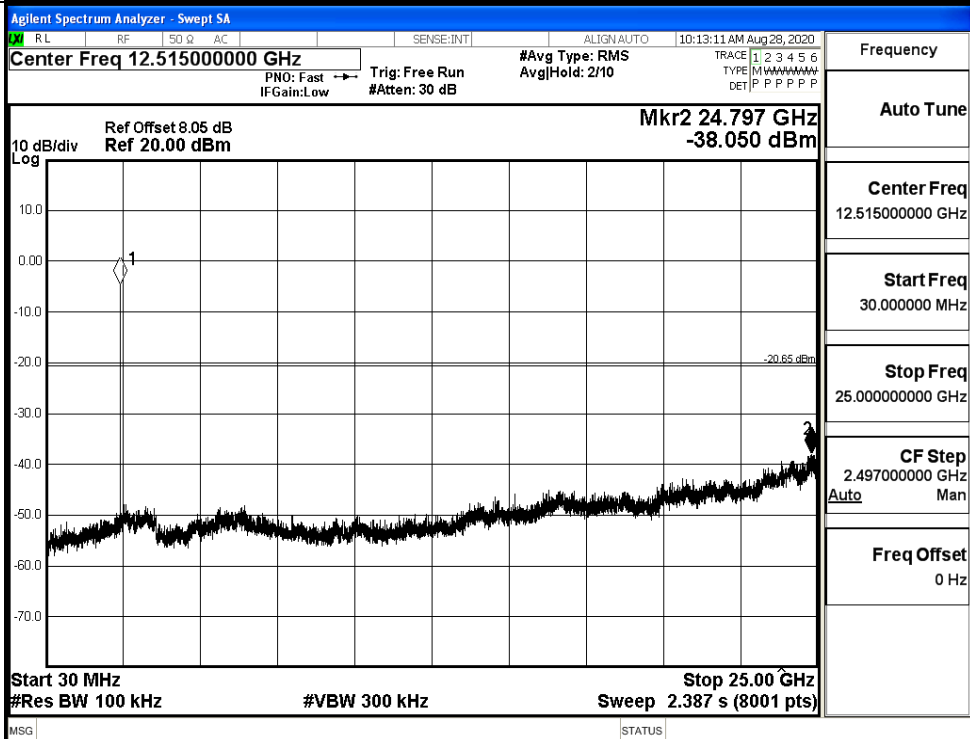


π /4DQPSK_MCH_Graphs

Pref

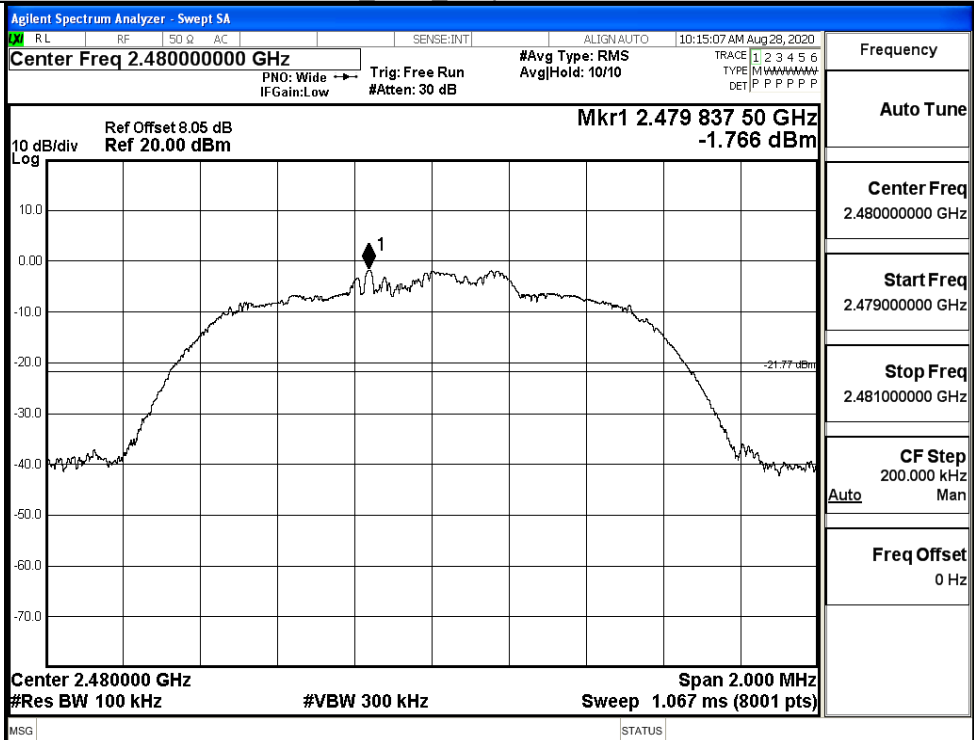


Puw

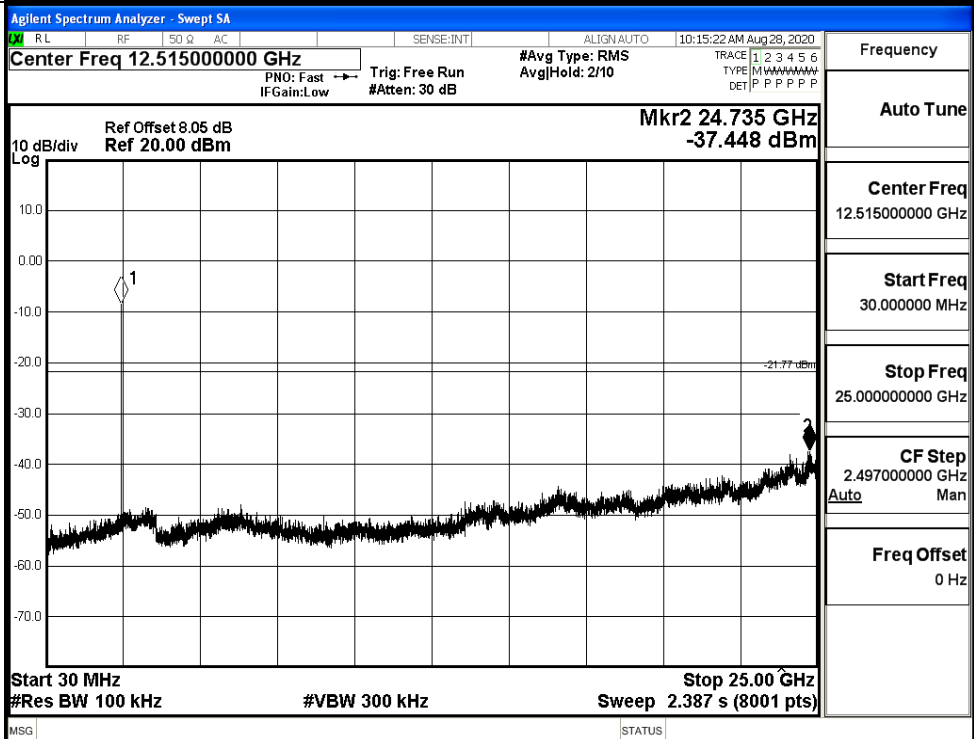


π /4DQPSK_HCH_Graphs

Pref

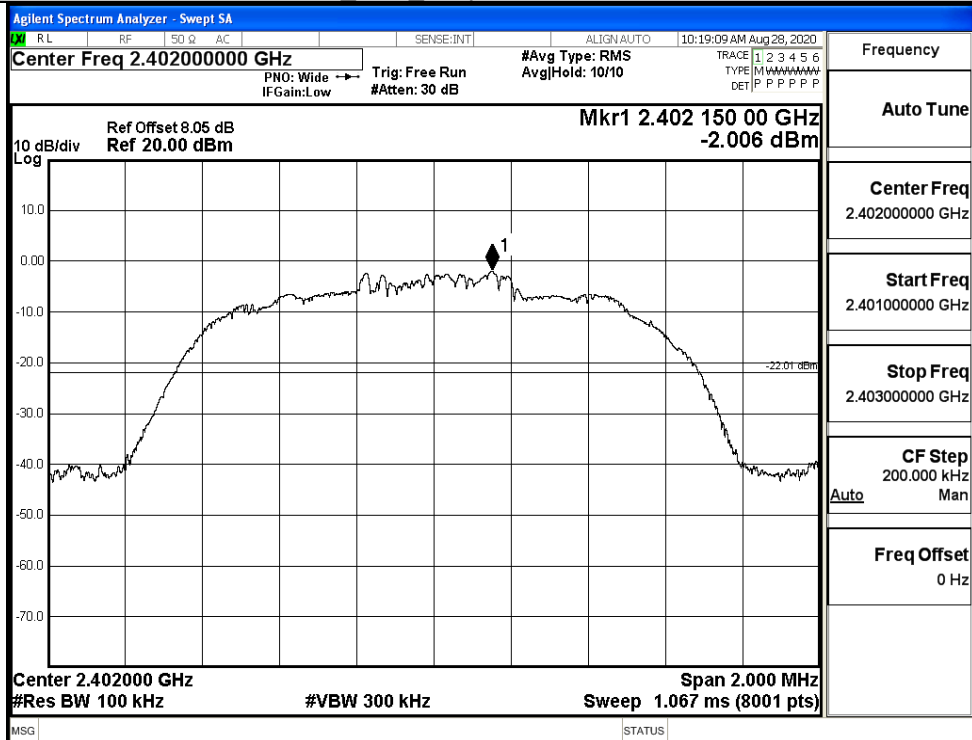


Puw

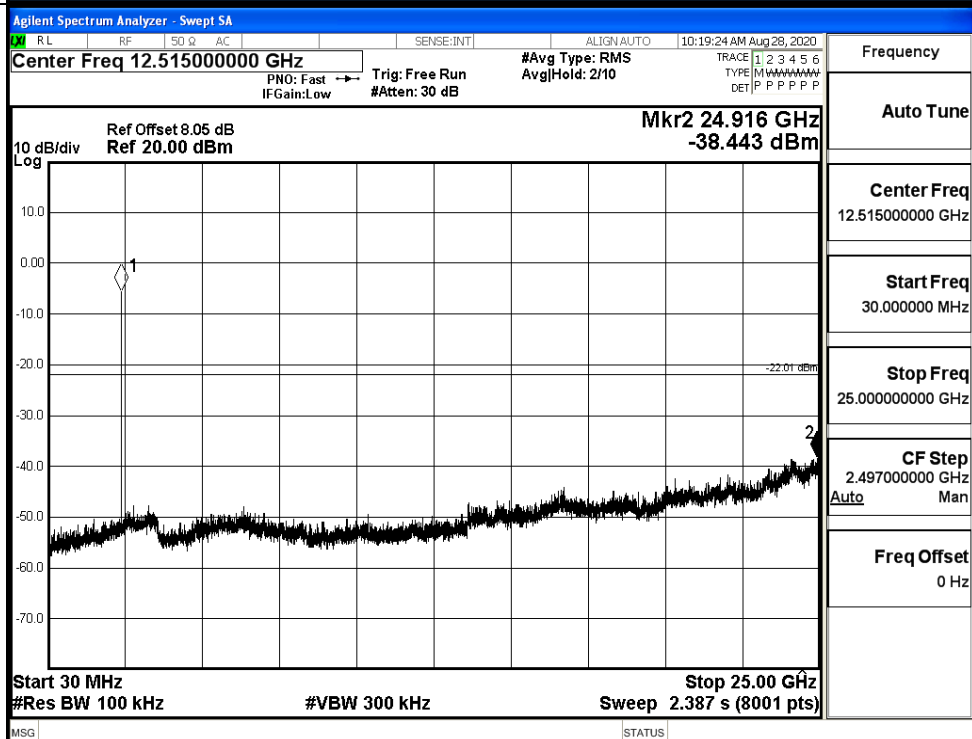


8DPSK_LCH_Graphs

Pref

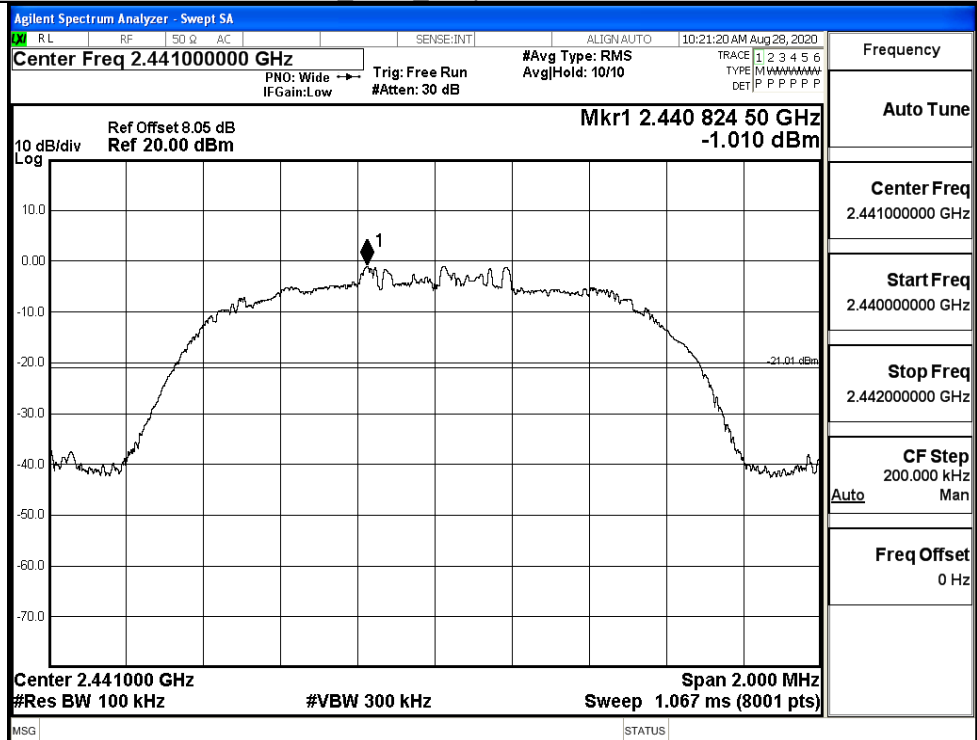


Puw

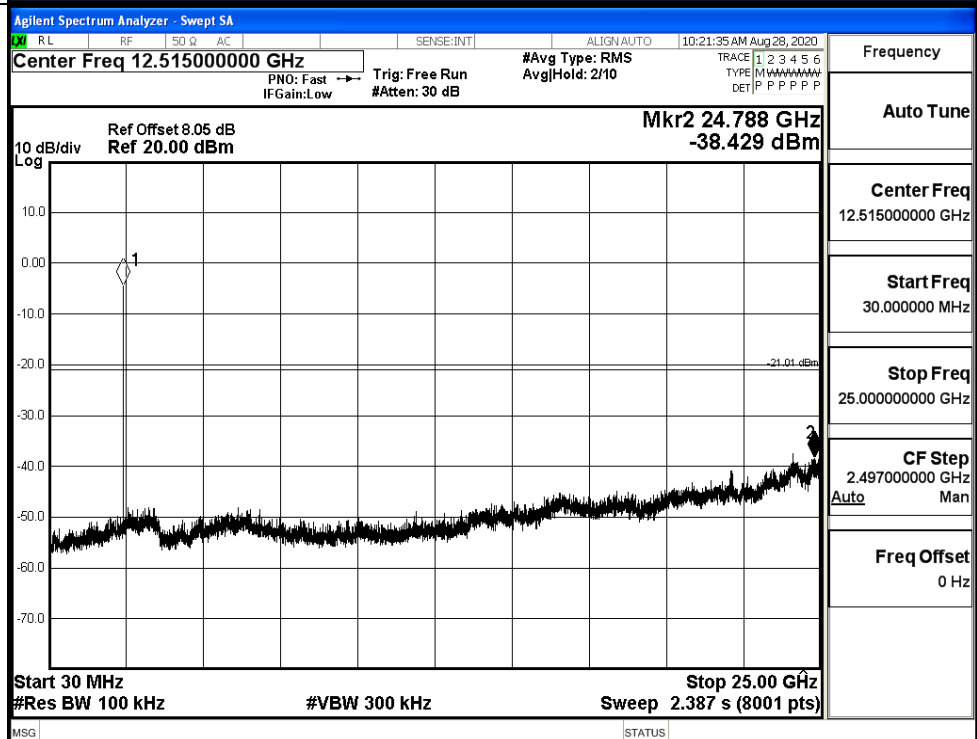


8DPSK_MCH_Graphs

Pref

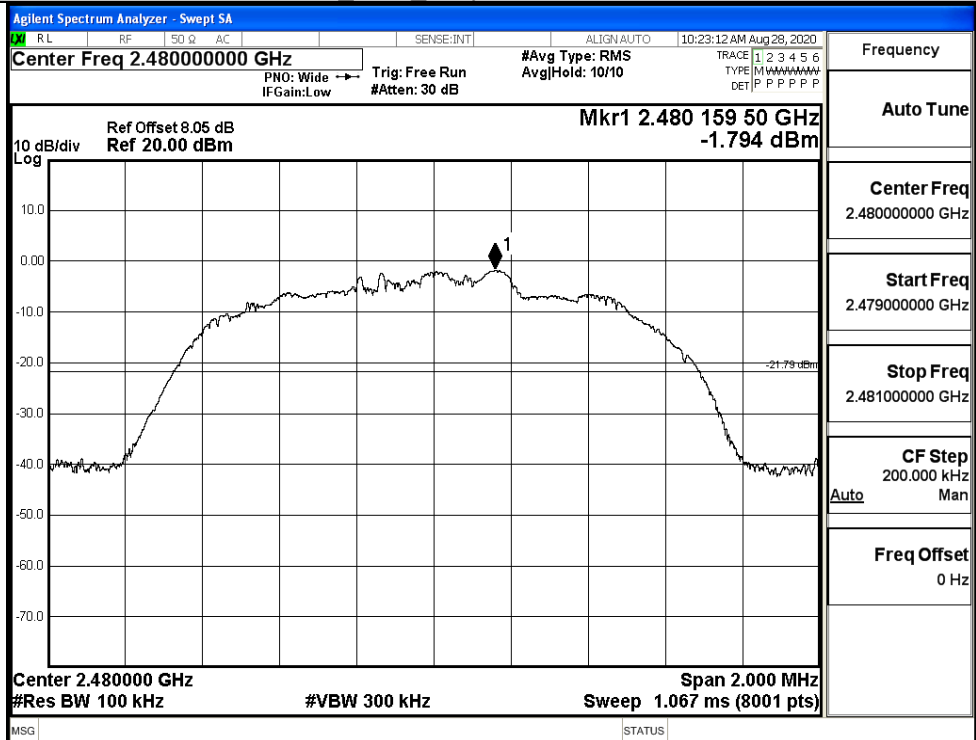


Puw

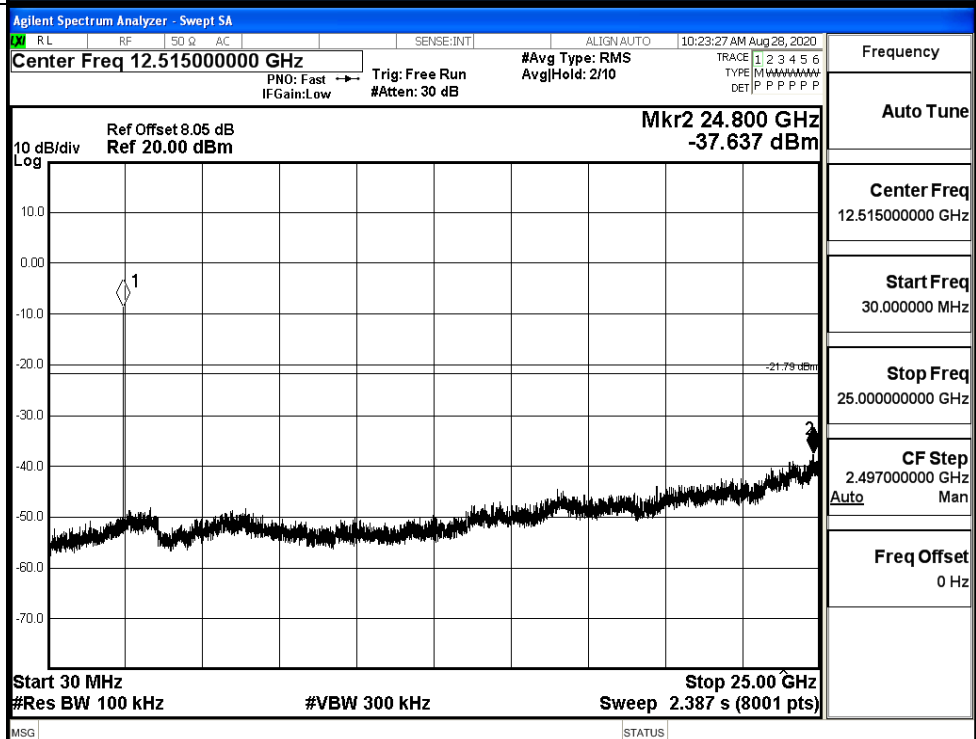


8DPSK_HCH_Graphs

Pref



Puw

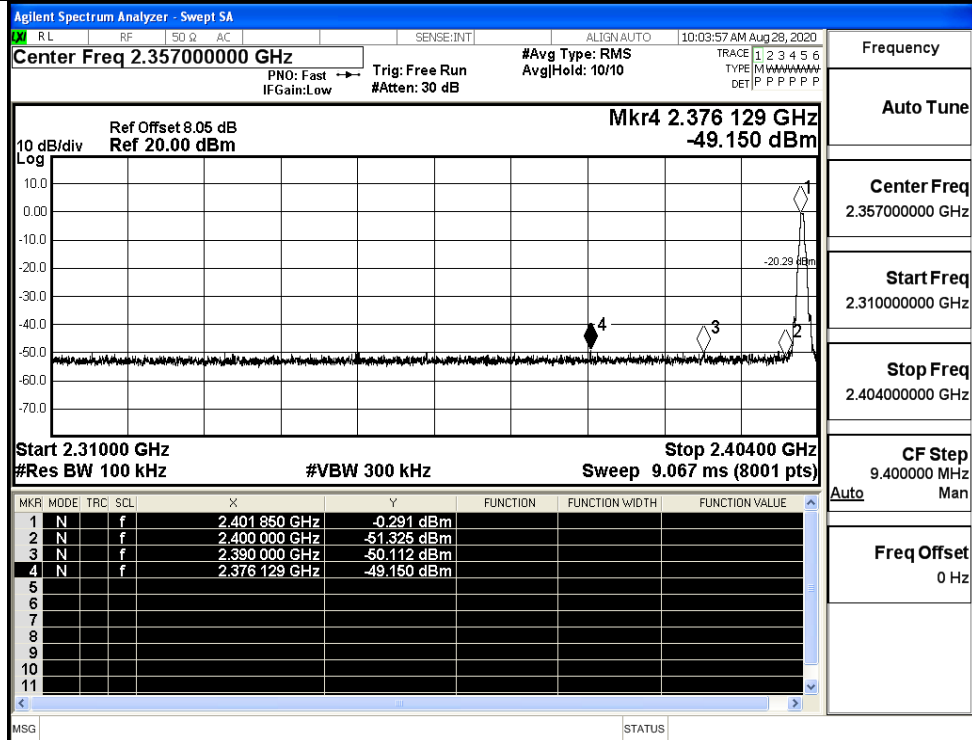


A.7 Band-edge for RF Conducted Emissions

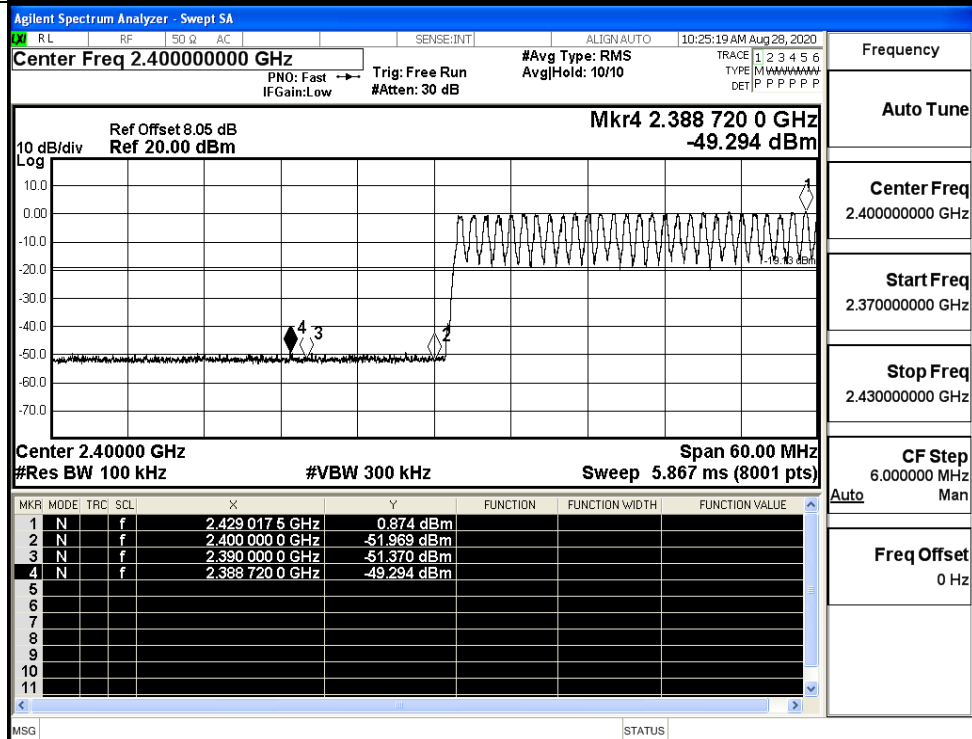
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.291	Off	-49.150	-20.29	PASS
			0.874	On	-49.294	-19.13	PASS
	HCH	2480	-0.342	Off	-49.321	-20.34	PASS
			0.540	On	-48.025	-19.46	PASS
$\pi/4$ DQPSK	LCH	2402	-2.351	Off	-48.770	-22.35	PASS
			-0.643	On	-48.515	-20.64	PASS
	HCH	2480	-2.847	Off	-49.188	-22.85	PASS
			-0.551	On	-48.577	-20.55	PASS
8DPSK	LCH	2402	-1.762	Off	-49.697	-21.76	PASS
			-0.456	On	-48.490	-20.46	PASS
	HCH	2480	-1.721	Off	-48.808	-21.72	PASS
			-0.755	On	-48.810	-20.76	PASS

Test Graphs

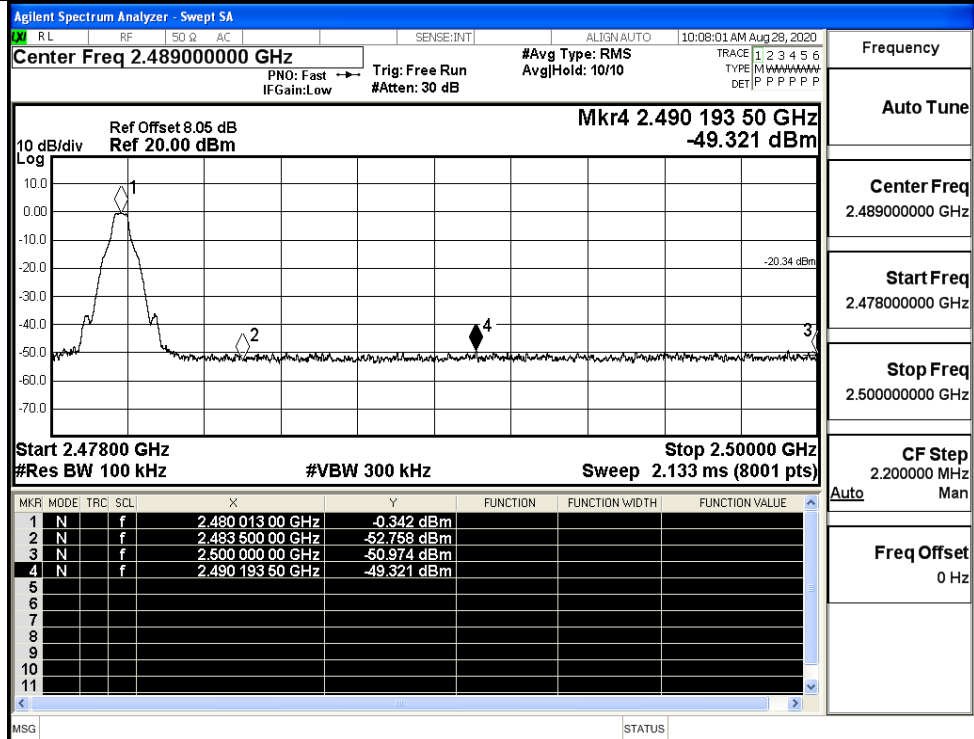
GFSK/LCH/No Hop



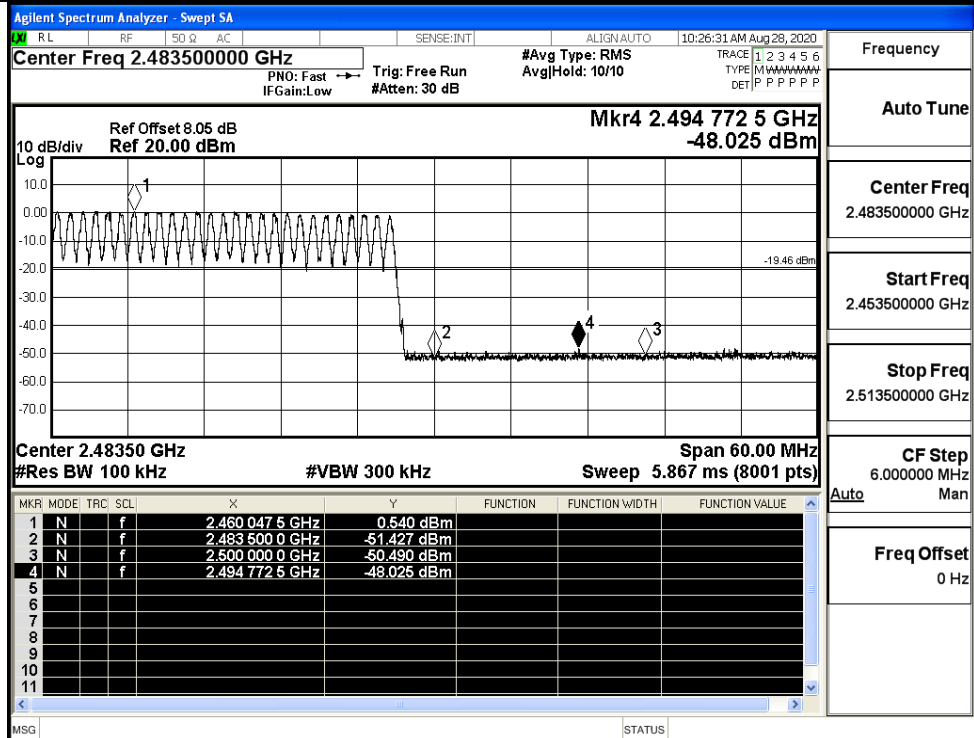
GFSK/LCH/Hop



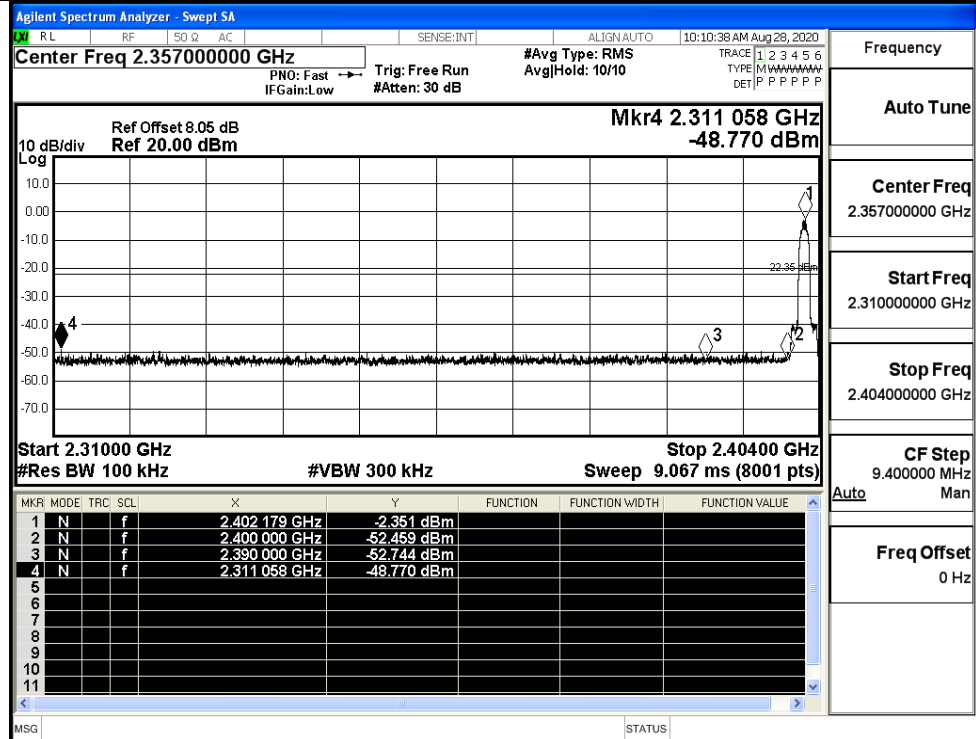
GFSK/HCH/No Hop



GFSK/HCH/Hop



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

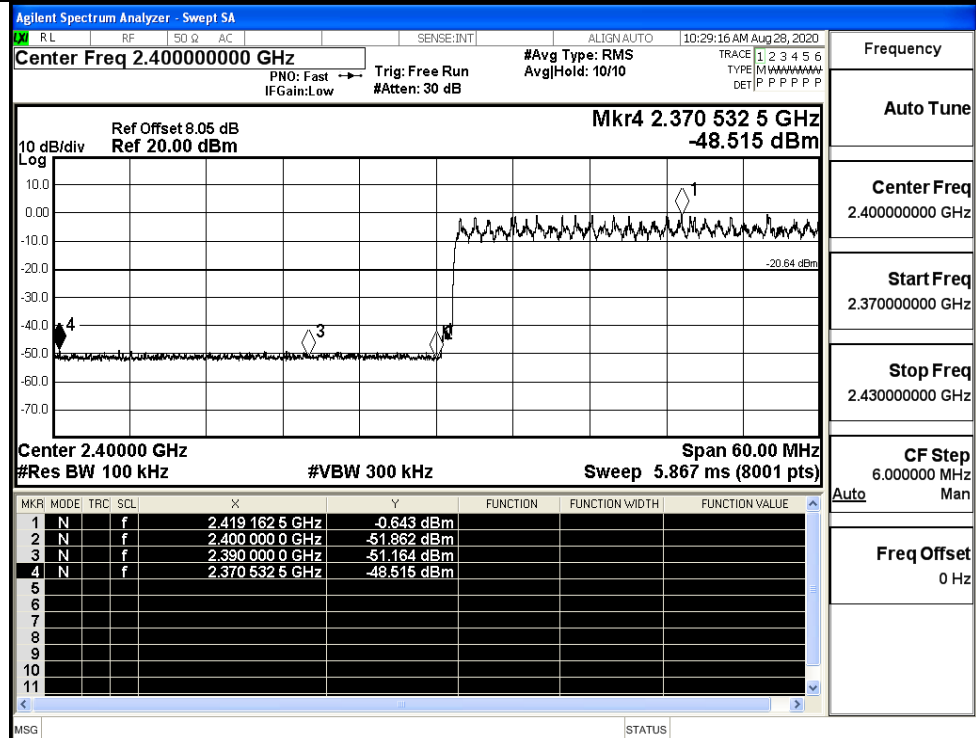


Frequency

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



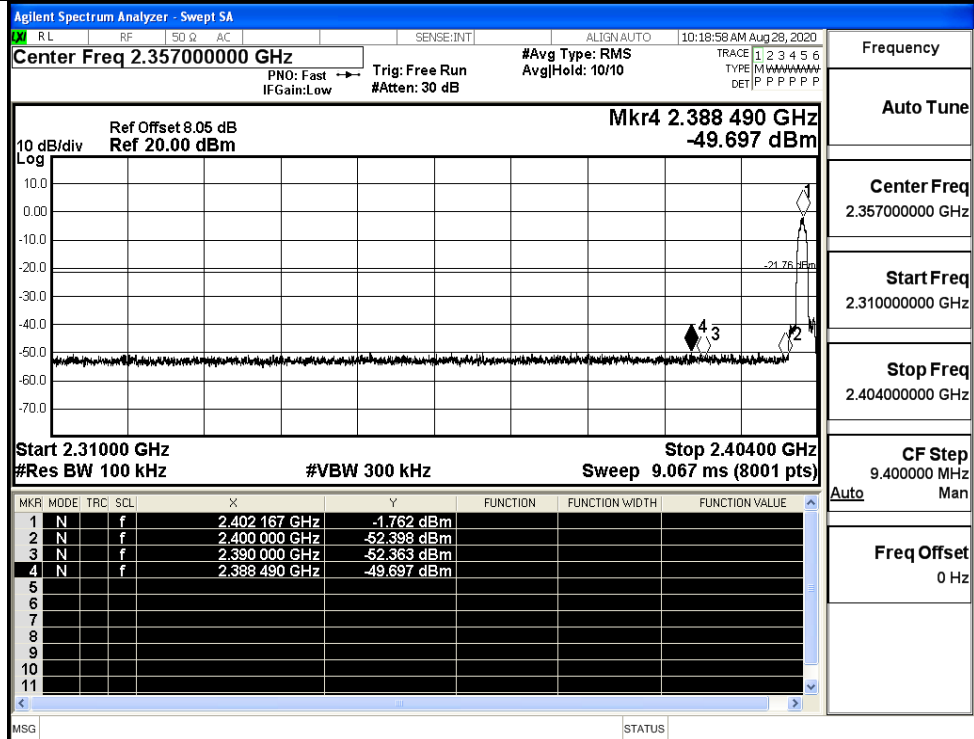
Frequency

Auto Tune

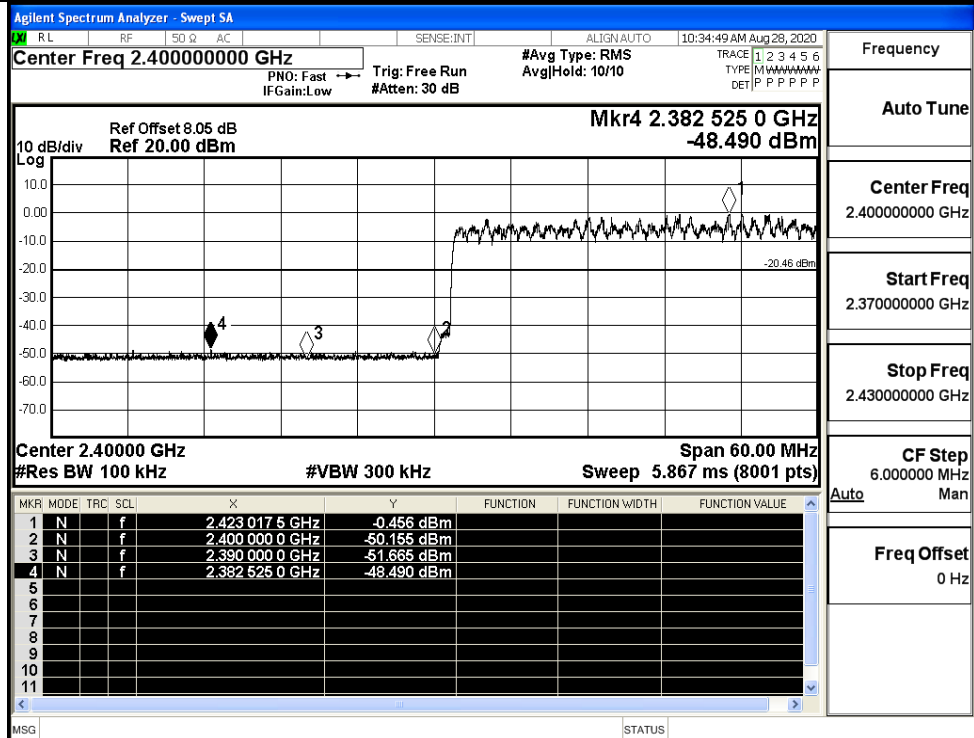
Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

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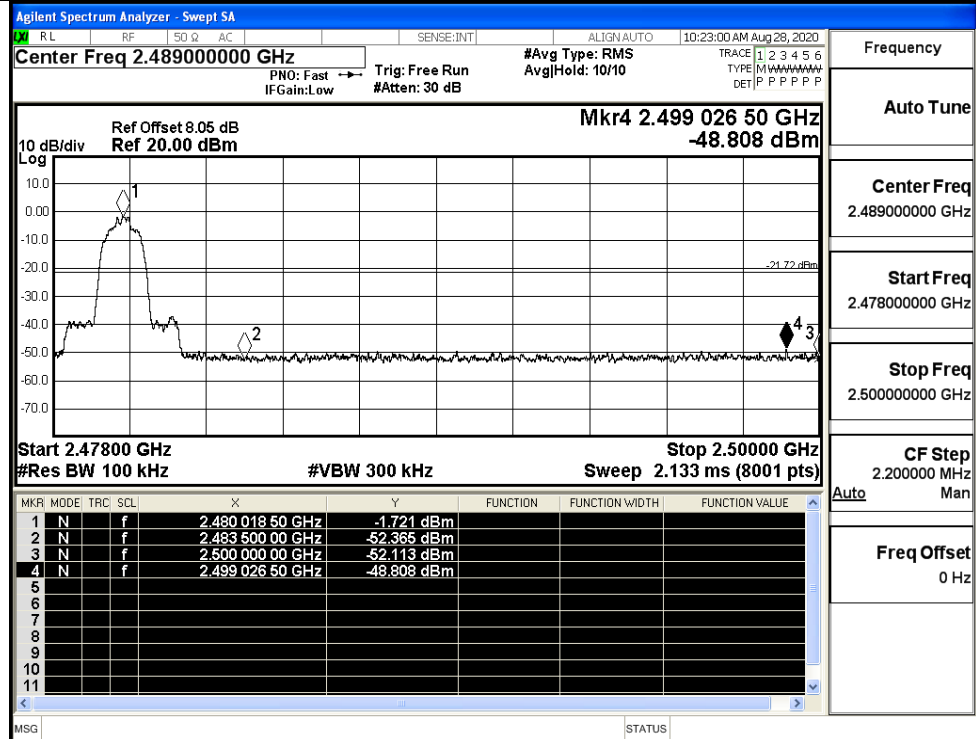
8DPSK/LCH/No Hop



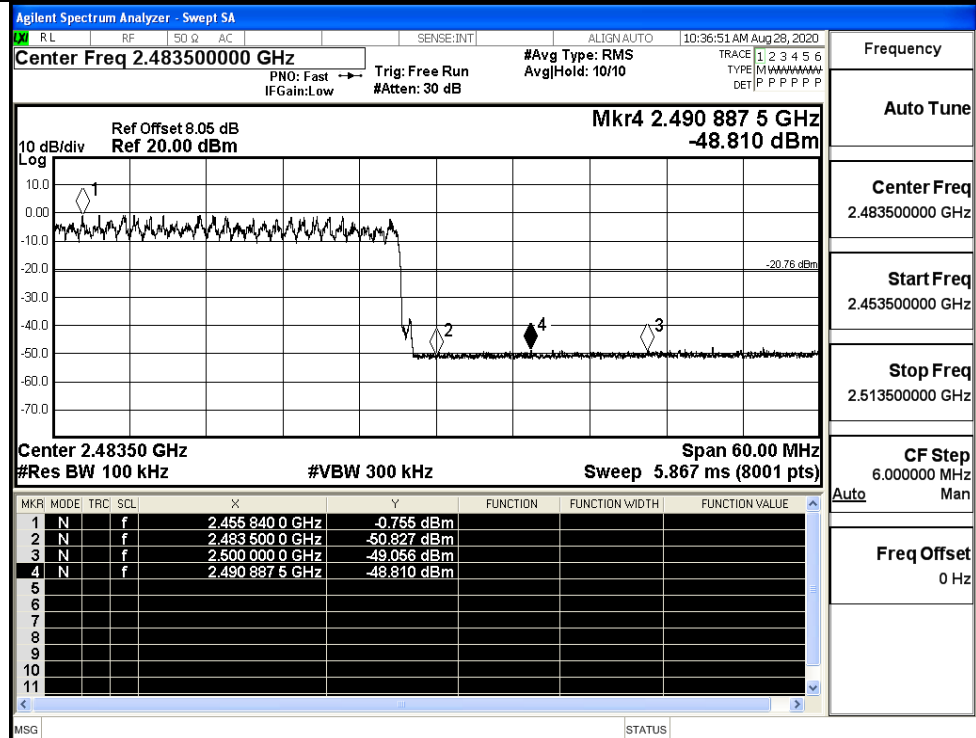
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



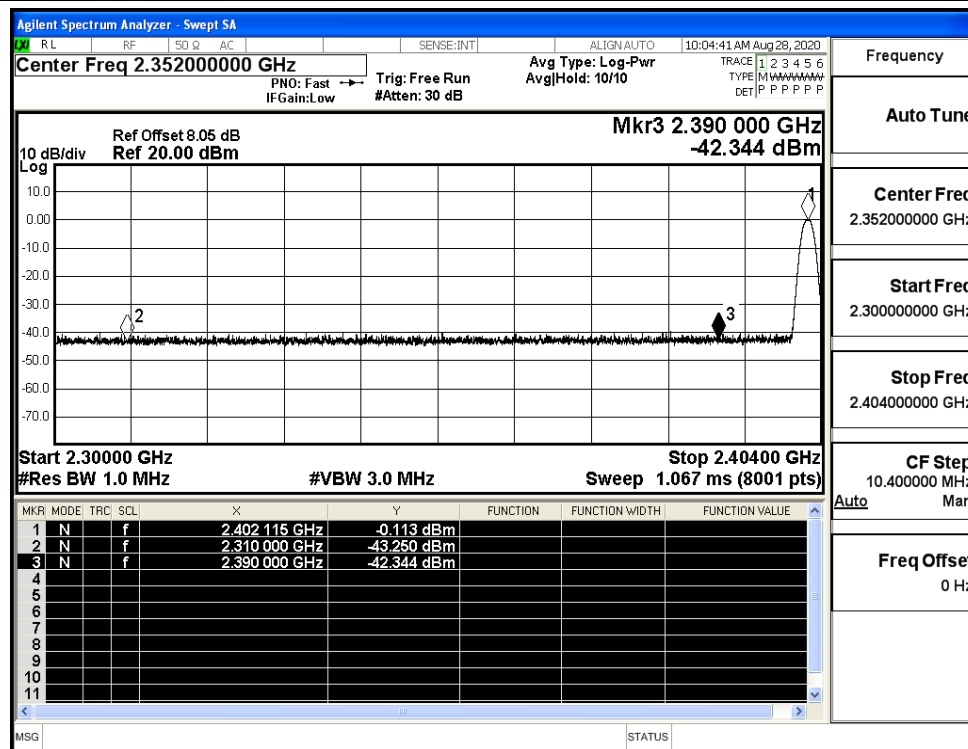
8DPSK/HCH/Hop



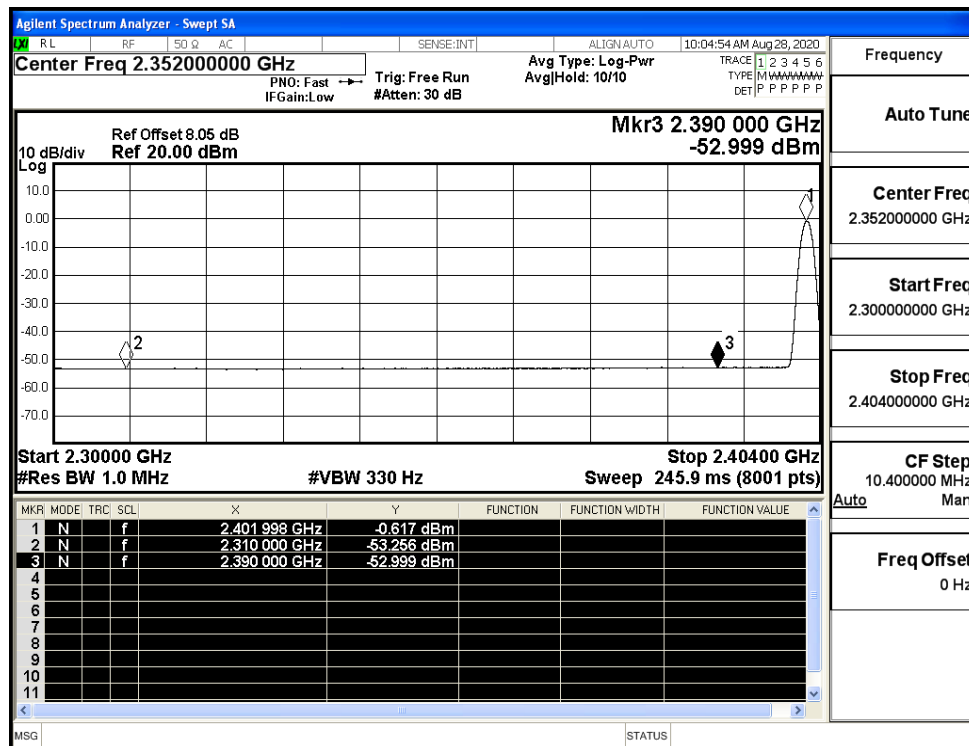
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.25	2.0	0	52.01	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	42.00	AV	54	PASS
	Off	2390.0	-42.34	2.0	0	52.91	PEAK	74	PASS
	Off	2390.0	-53.00	2.0	0	42.26	AV	54	PASS
	Off	2483.5	-43.16	2.0	0	52.10	PEAK	74	PASS
	Off	2483.5	-52.47	2.0	0	42.79	AV	54	PASS
	Off	2500.0	-43.45	2.0	0	51.81	PEAK	74	PASS
	Off	2500.0	-52.31	2.0	0	42.95	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.08	2.0	0	51.18	PEAK	74	PASS
	Off	2310.0	-53.20	2.0	0	42.06	AV	54	PASS
	Off	2390.0	-41.49	2.0	0	53.77	PEAK	74	PASS
	Off	2390.0	-52.85	2.0	0	42.41	AV	54	PASS
	Off	2483.5	-42.78	2.0	0	52.48	PEAK	74	PASS
	Off	2483.5	-52.35	2.0	0	42.90	AV	54	PASS
	Off	2500.0	-42.10	2.0	0	53.15	PEAK	74	PASS
	Off	2500.0	-52.31	2.0	0	42.95	AV	54	PASS
8DPSK	Off	2310.0	-43.56	2.0	0	51.70	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	41.94	AV	54	PASS
	Off	2390.0	-43.03	2.0	0	52.23	PEAK	74	PASS
	Off	2390.0	-52.91	2.0	0	42.35	AV	54	PASS
	Off	2483.5	-42.00	2.0	0	53.26	PEAK	74	PASS
	Off	2483.5	-52.46	2.0	0	42.79	AV	54	PASS
	Off	2500.0	-42.21	2.0	0	53.05	PEAK	74	PASS
	Off	2500.0	-52.23	2.0	0	43.03	AV	54	PASS

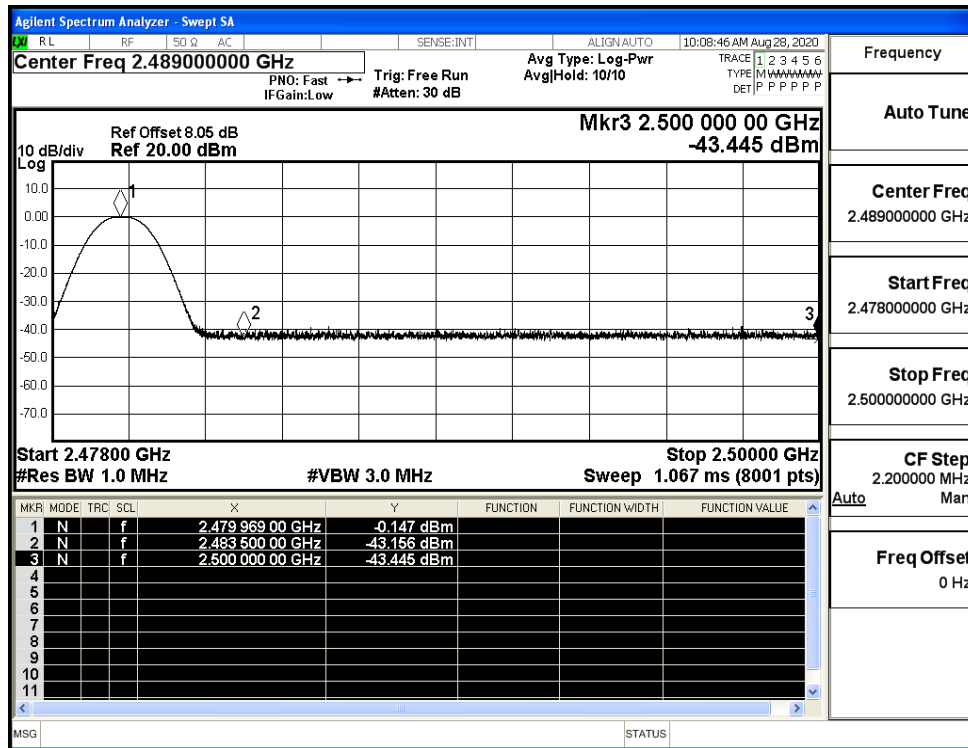
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



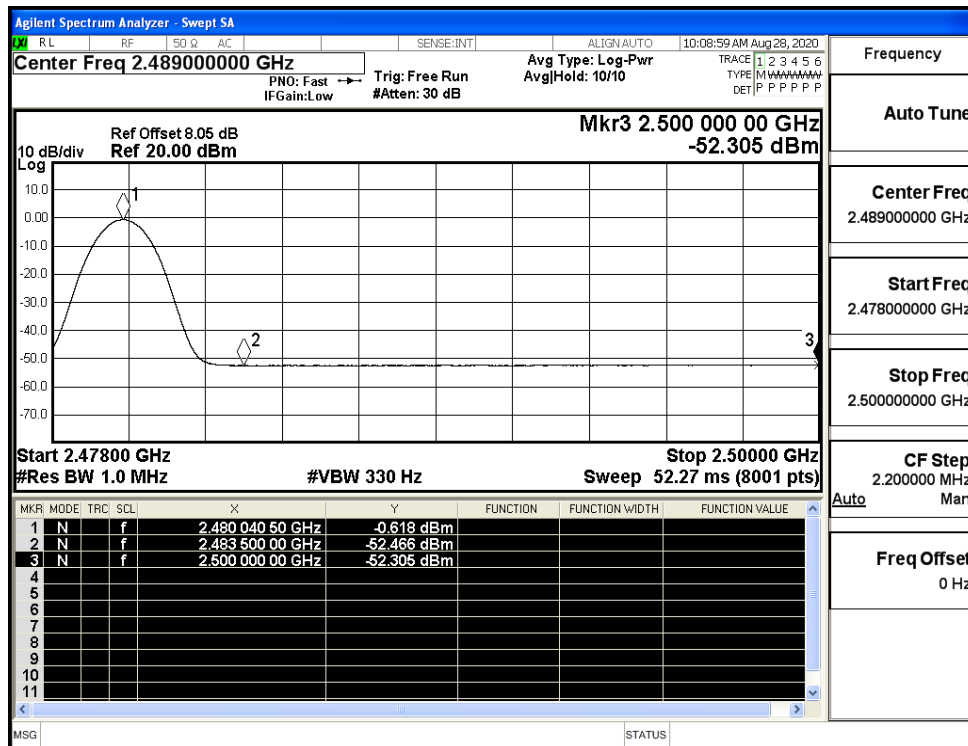
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

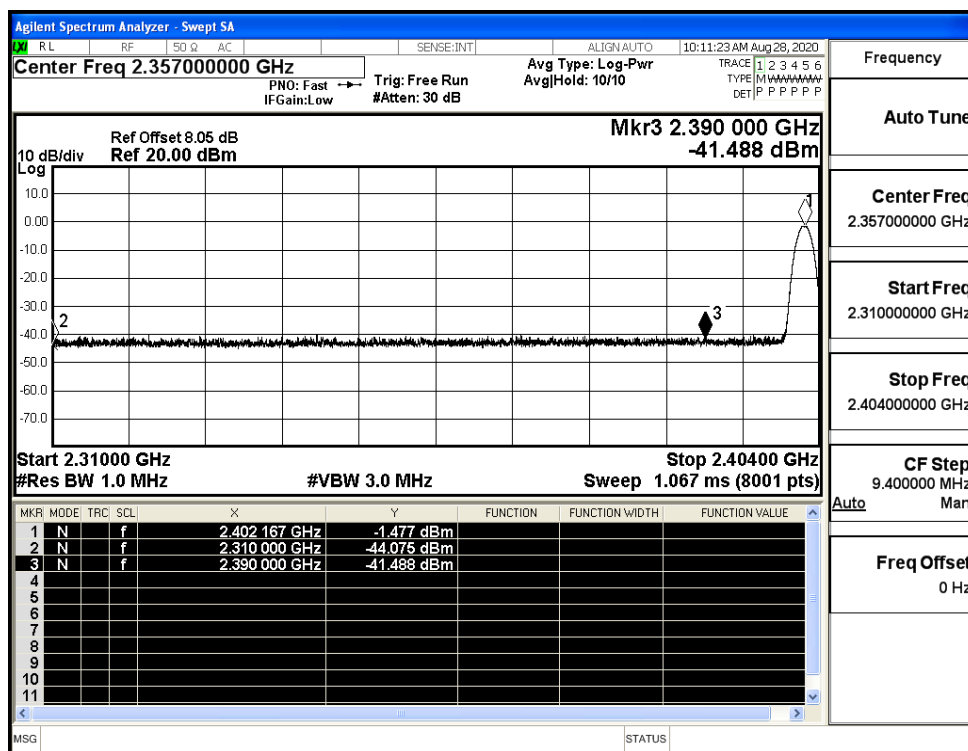
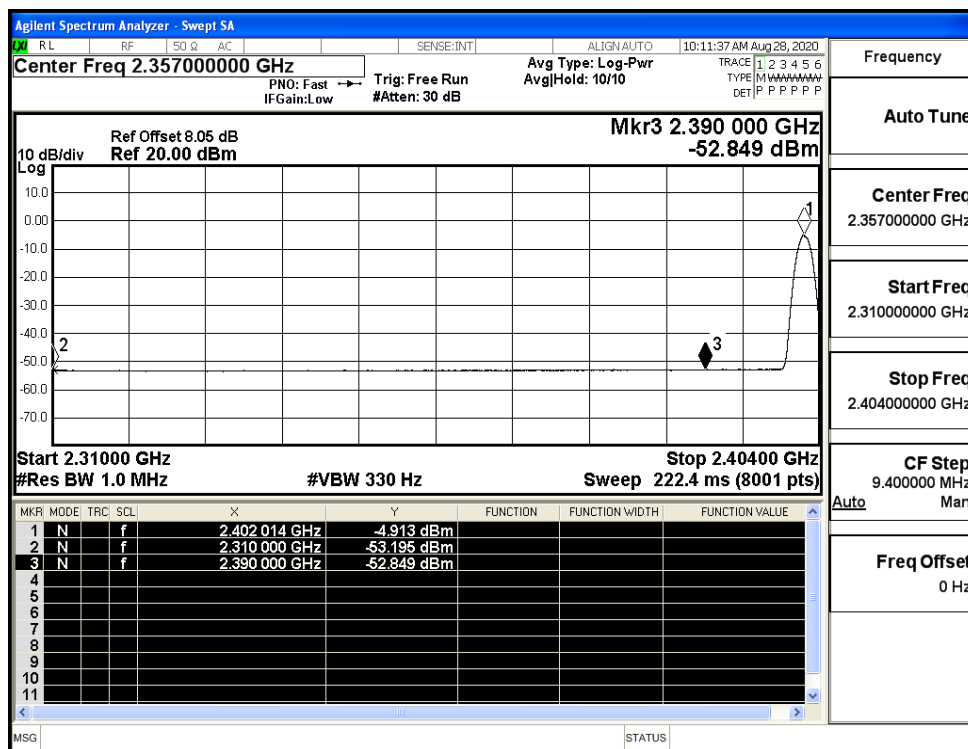


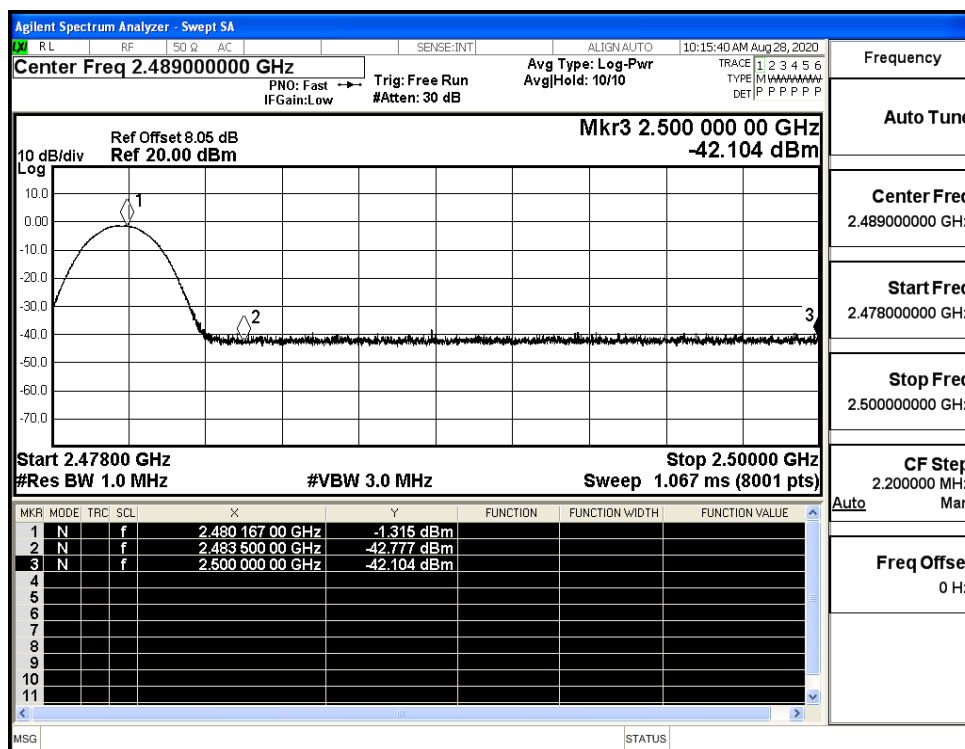
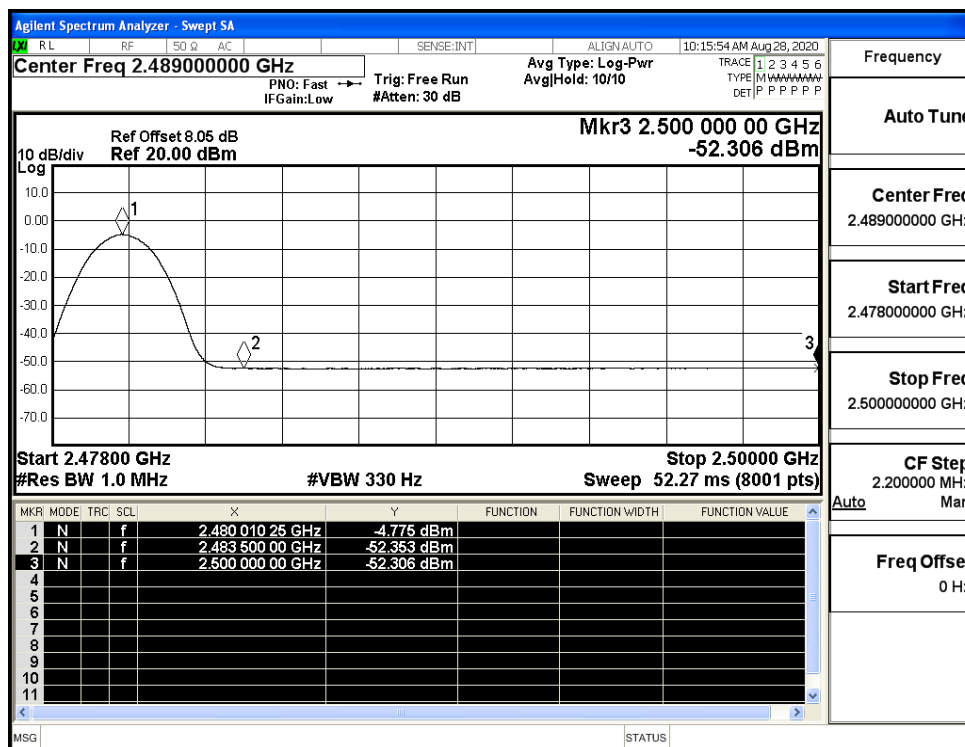
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



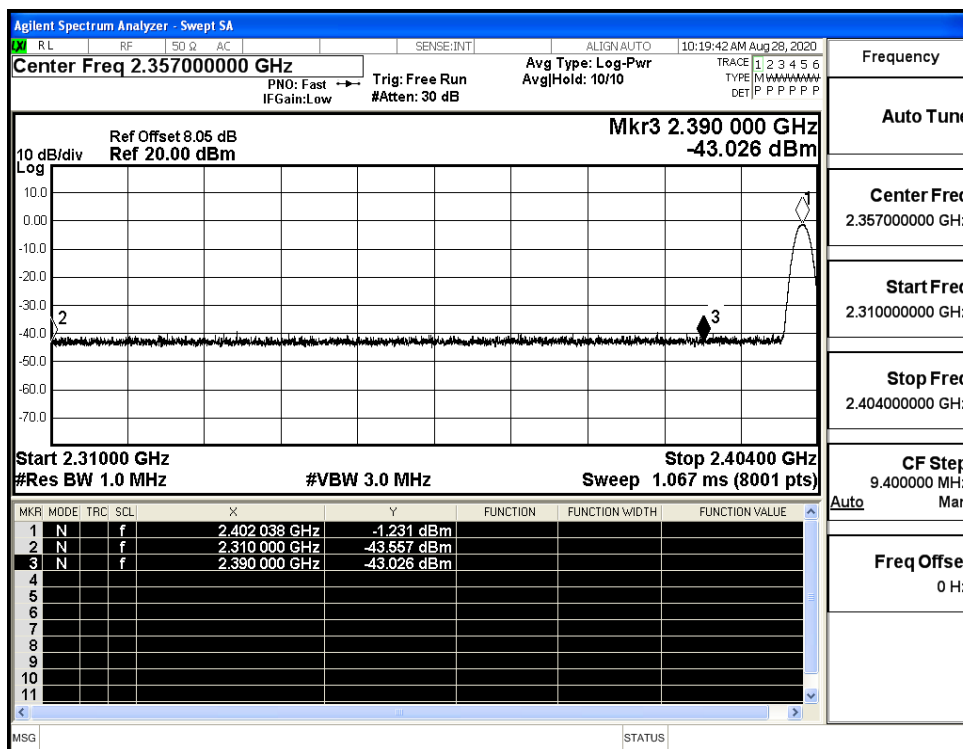
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



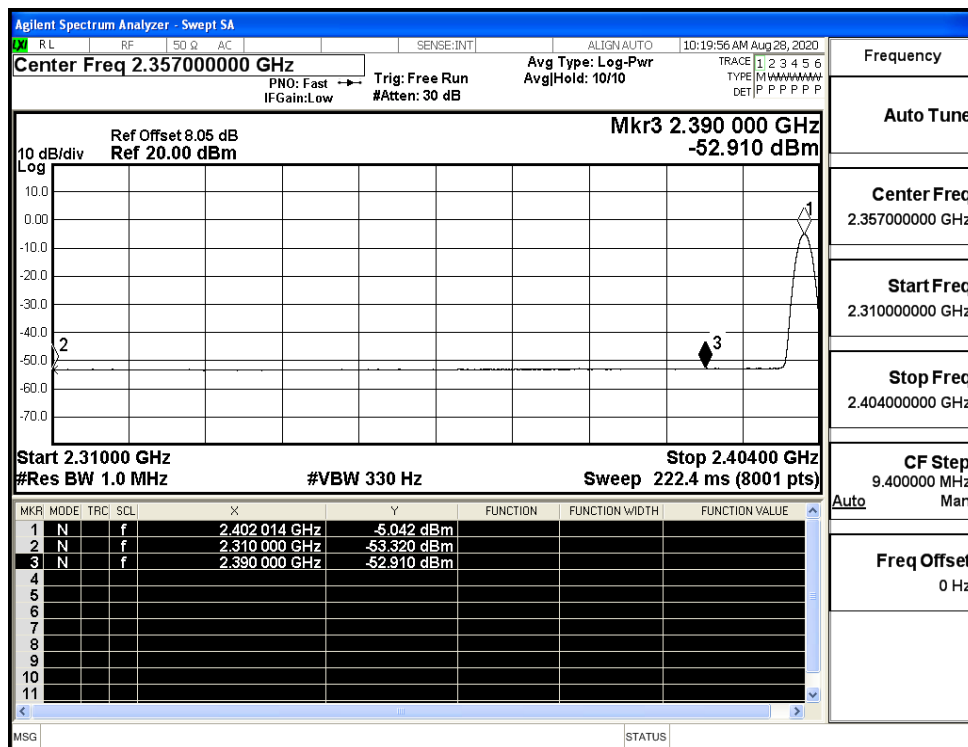
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

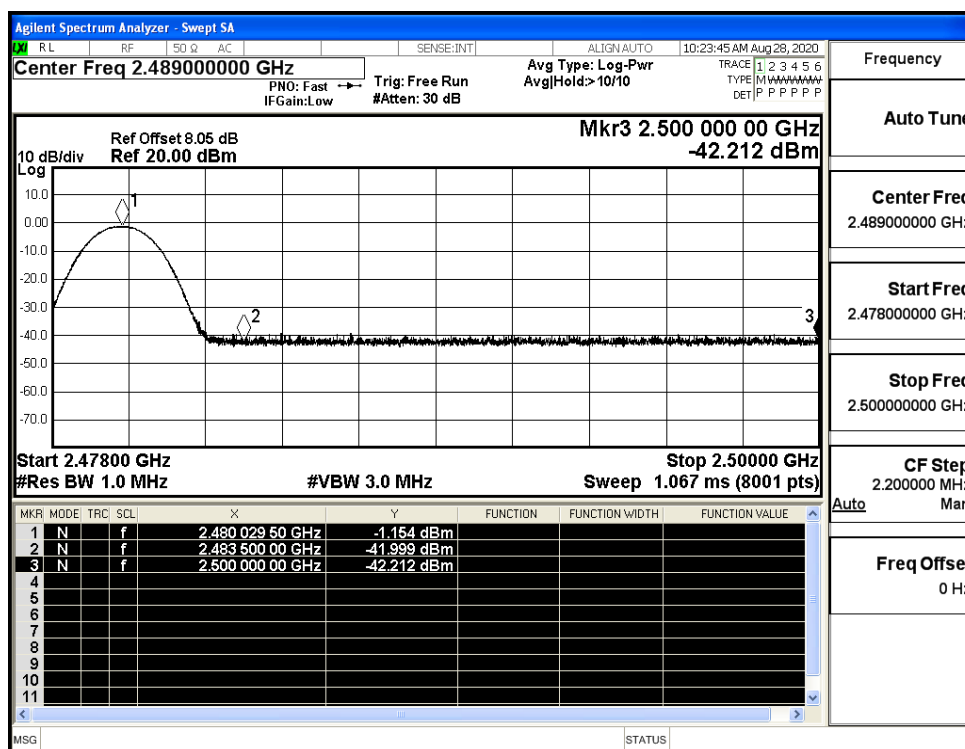
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

