

Appendix A

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

Product Name: Sport wireless earbuds

Trade Mark: N/A

Test Model: XO-9922-1

Environmental Conditions

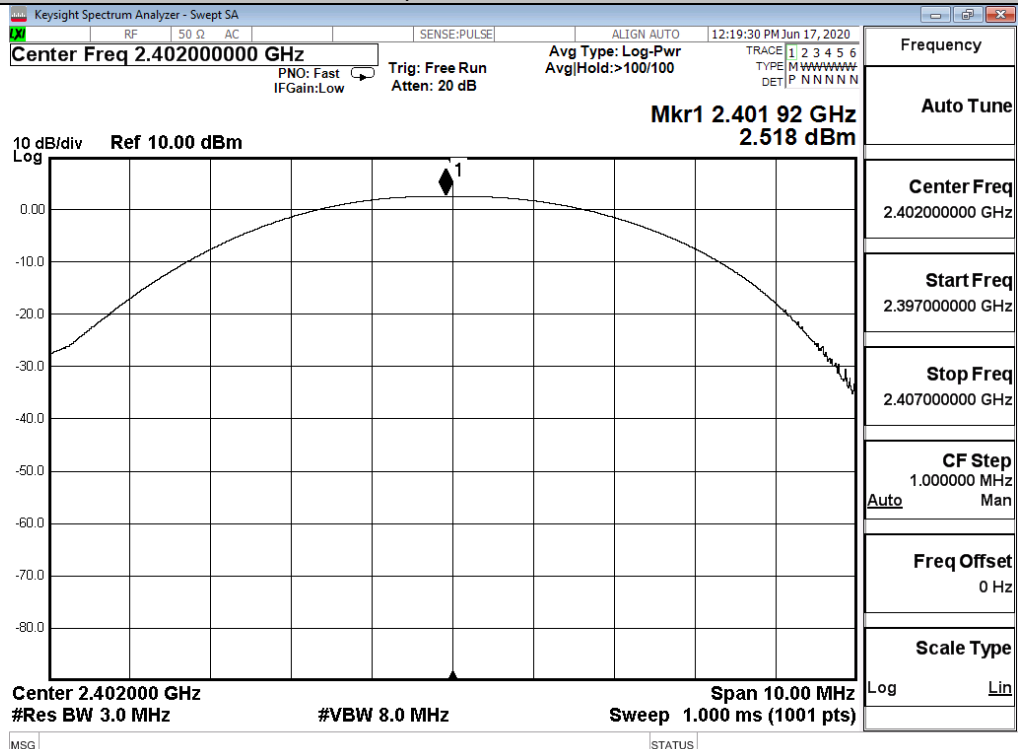
Temperature:	23.5 ° C
Relative Humidity:	54.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond Lu
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

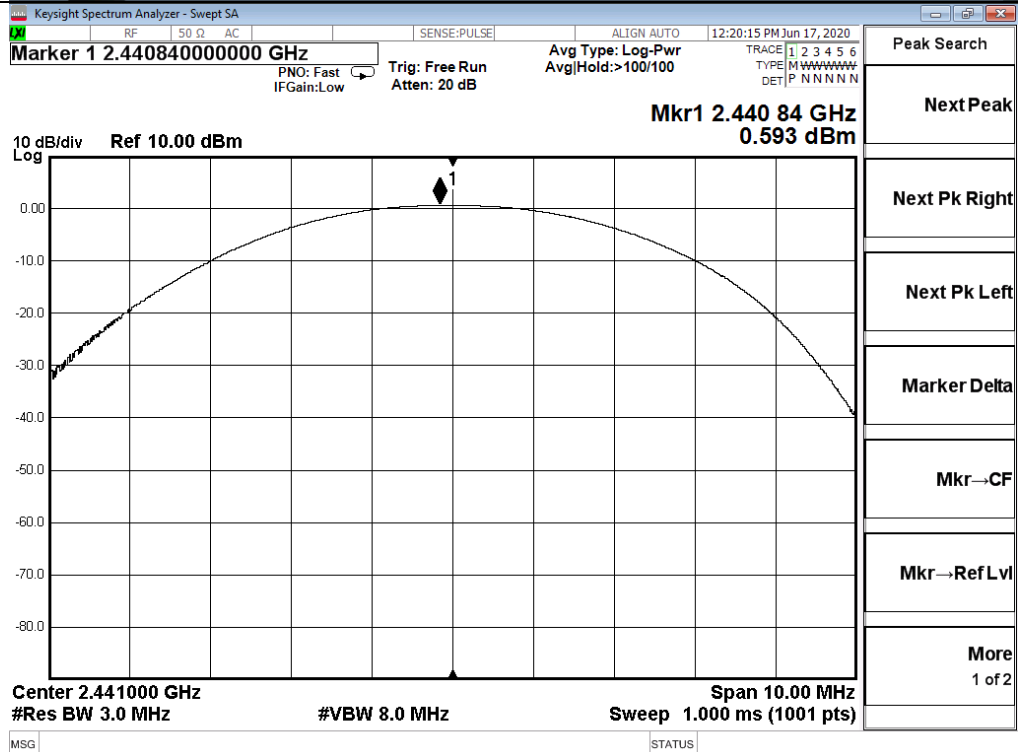
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.518	21	PASS
	MCH	0.593	21	PASS
	HCH	-1.594	21	PASS
π/4DQPSK	LCH	2.597	21	PASS
	MCH	0.816	21	PASS
	HCH	-1.172	21	PASS
8DPSK	LCH	2.687	21	PASS
	MCH	0.986	21	PASS
	HCH	-0.866	21	PASS

Test Graphs

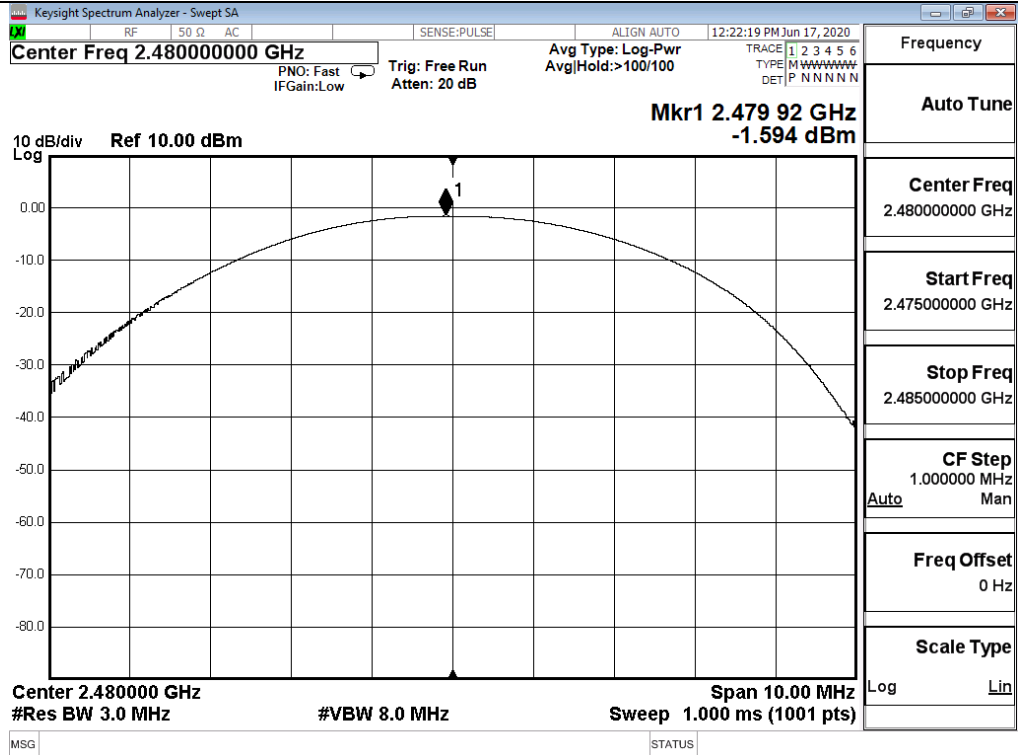
GFSK/LCH



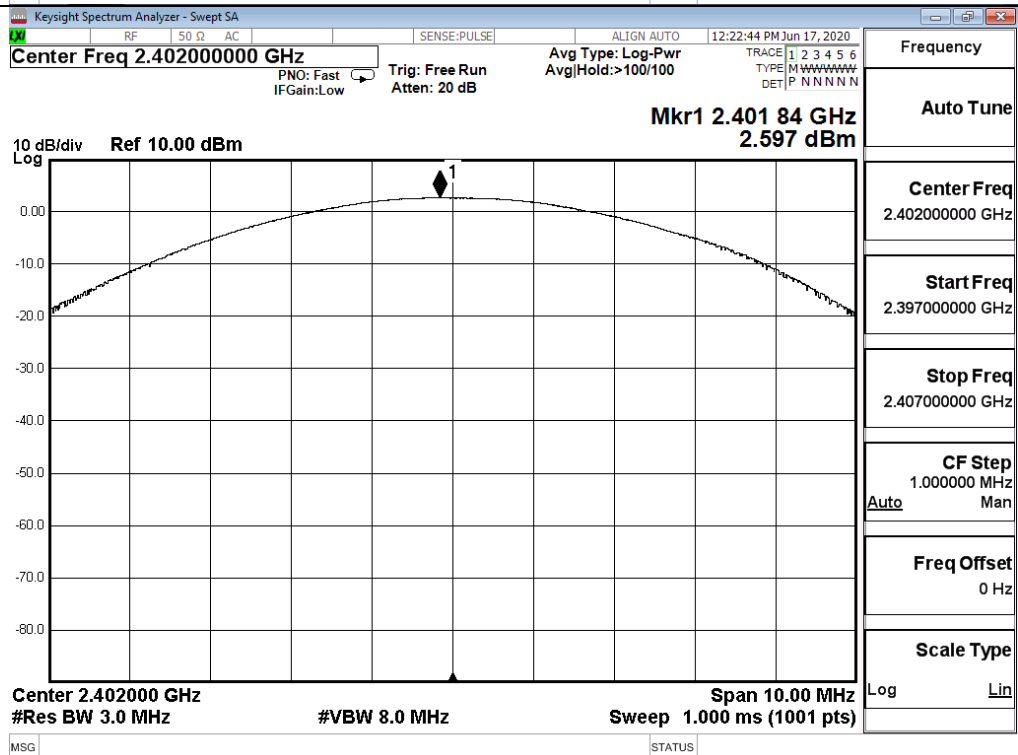
GFSK/MCH



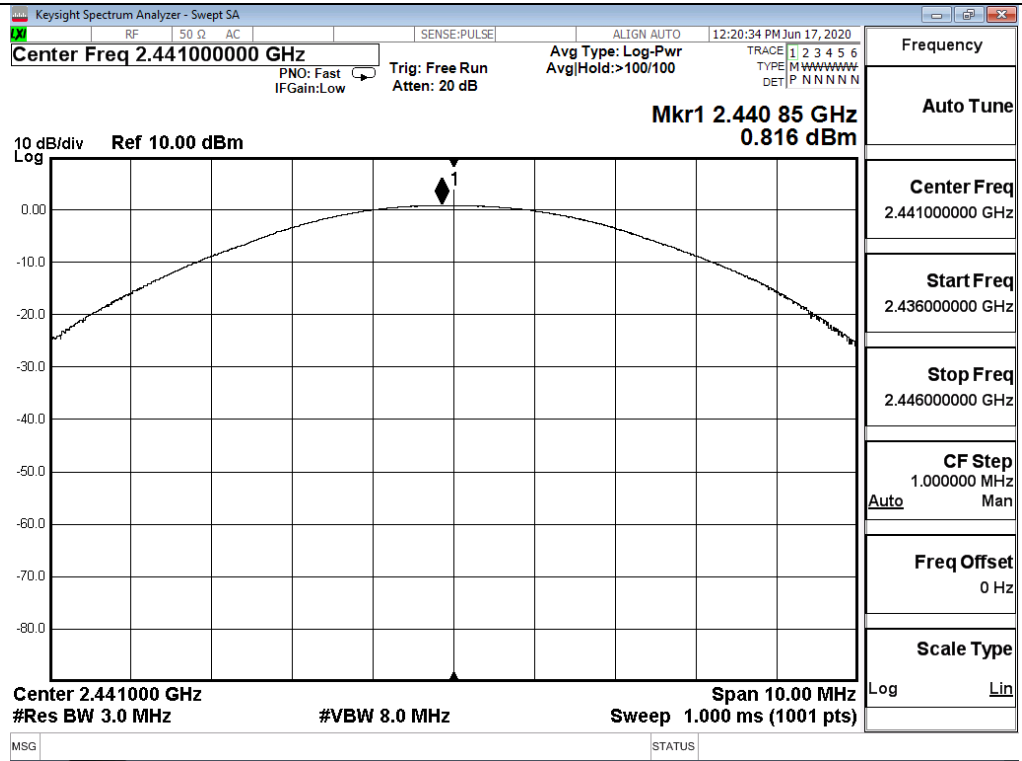
GFSK/HCH



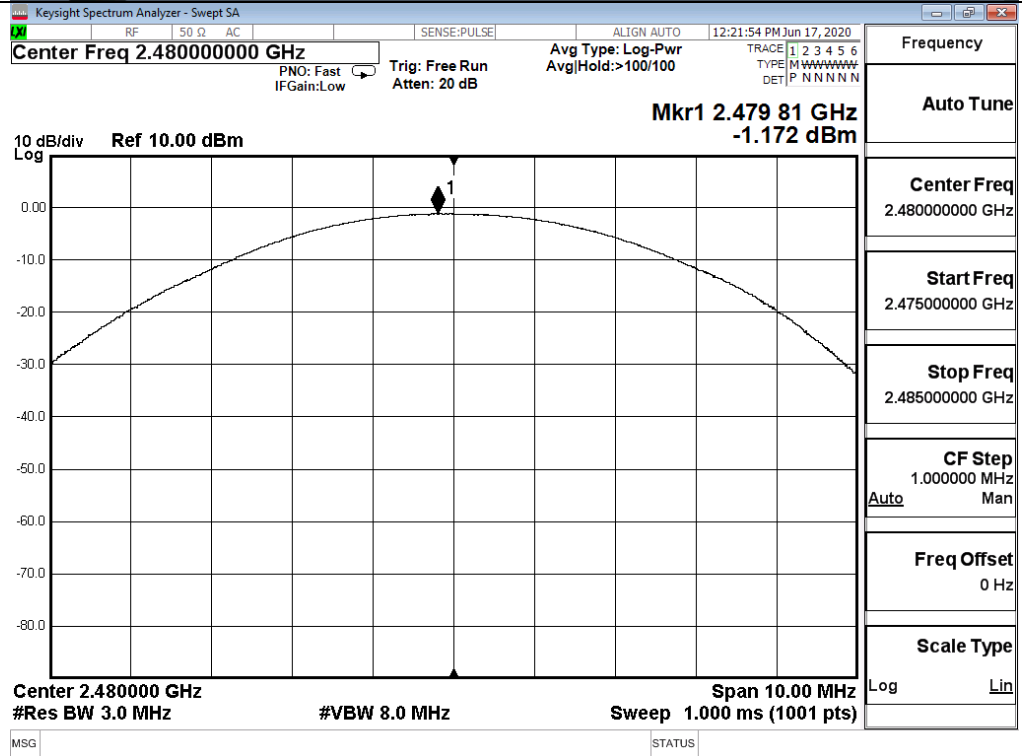
$\pi/4$ DQPSK/LCH



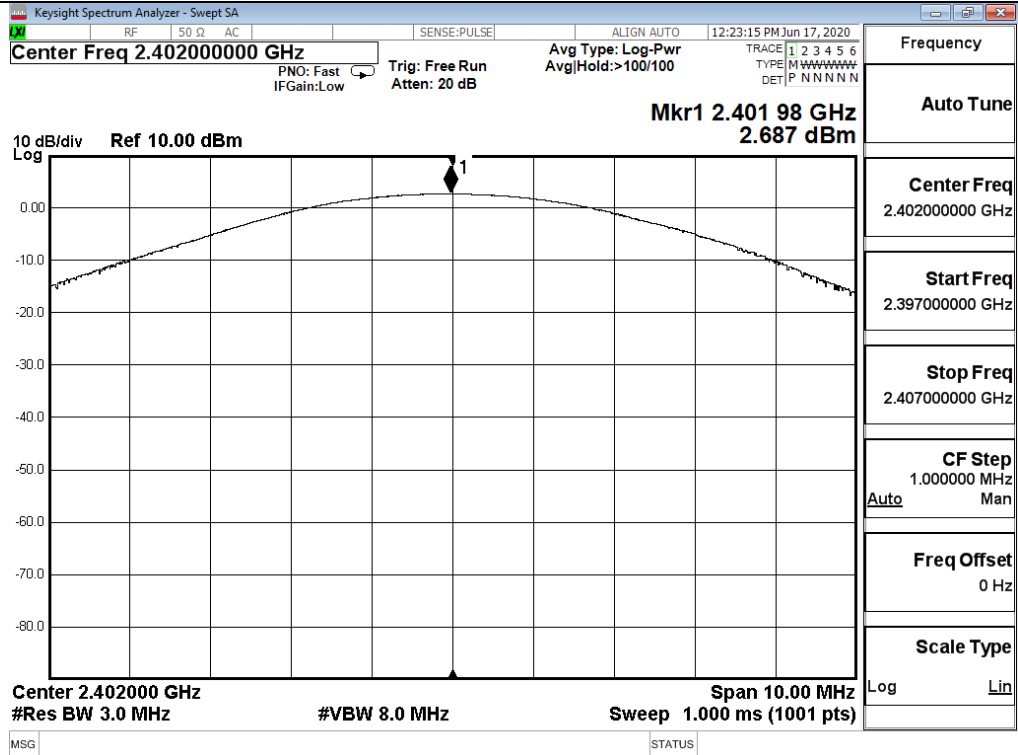
$\pi/4$ DQPSK/MCH



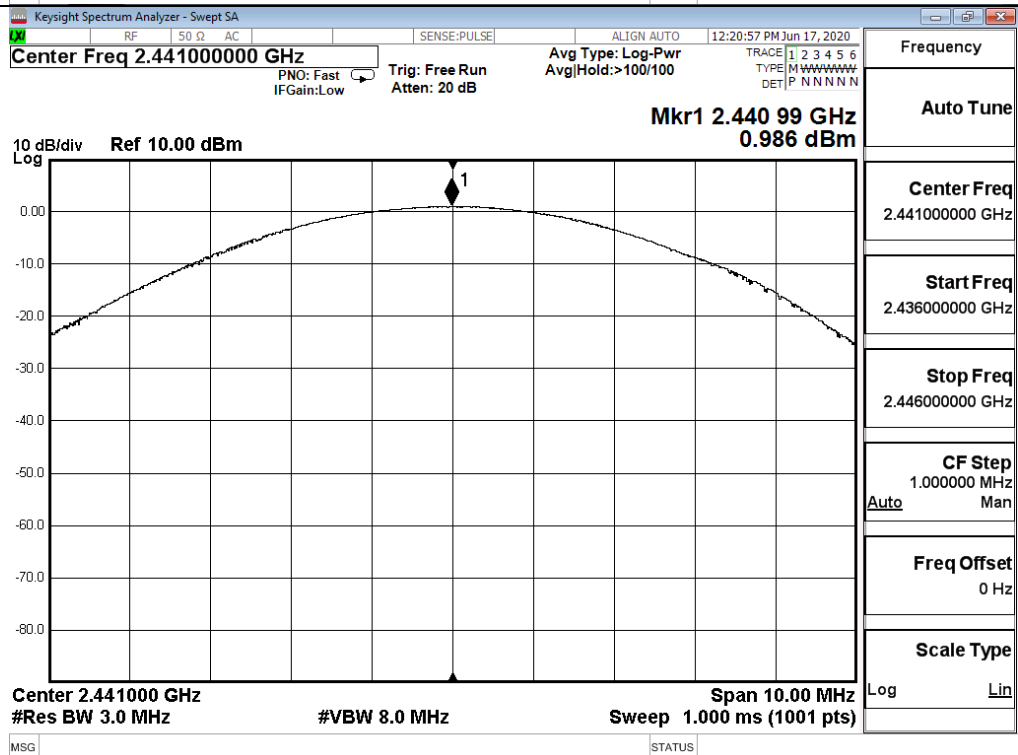
$\pi/4$ DQPSK/HCH

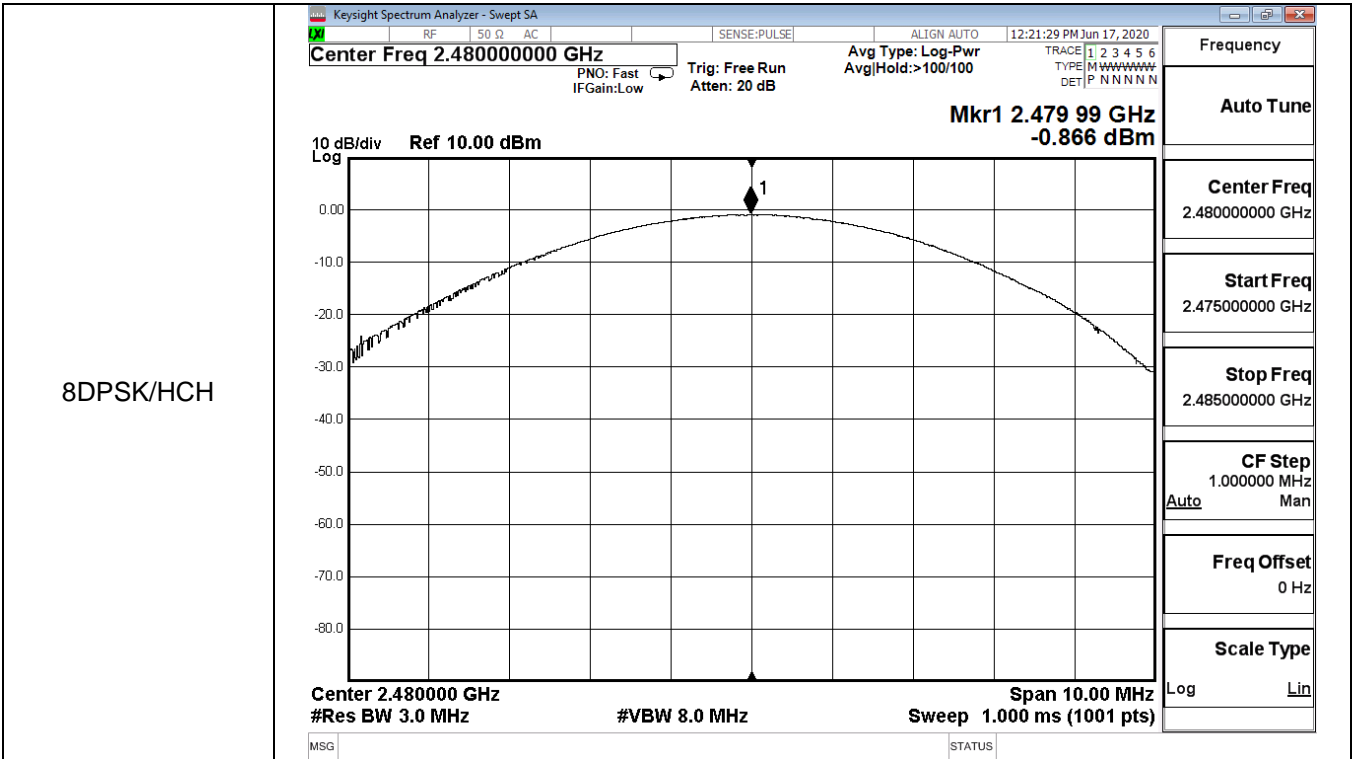


8DPSK/LCH



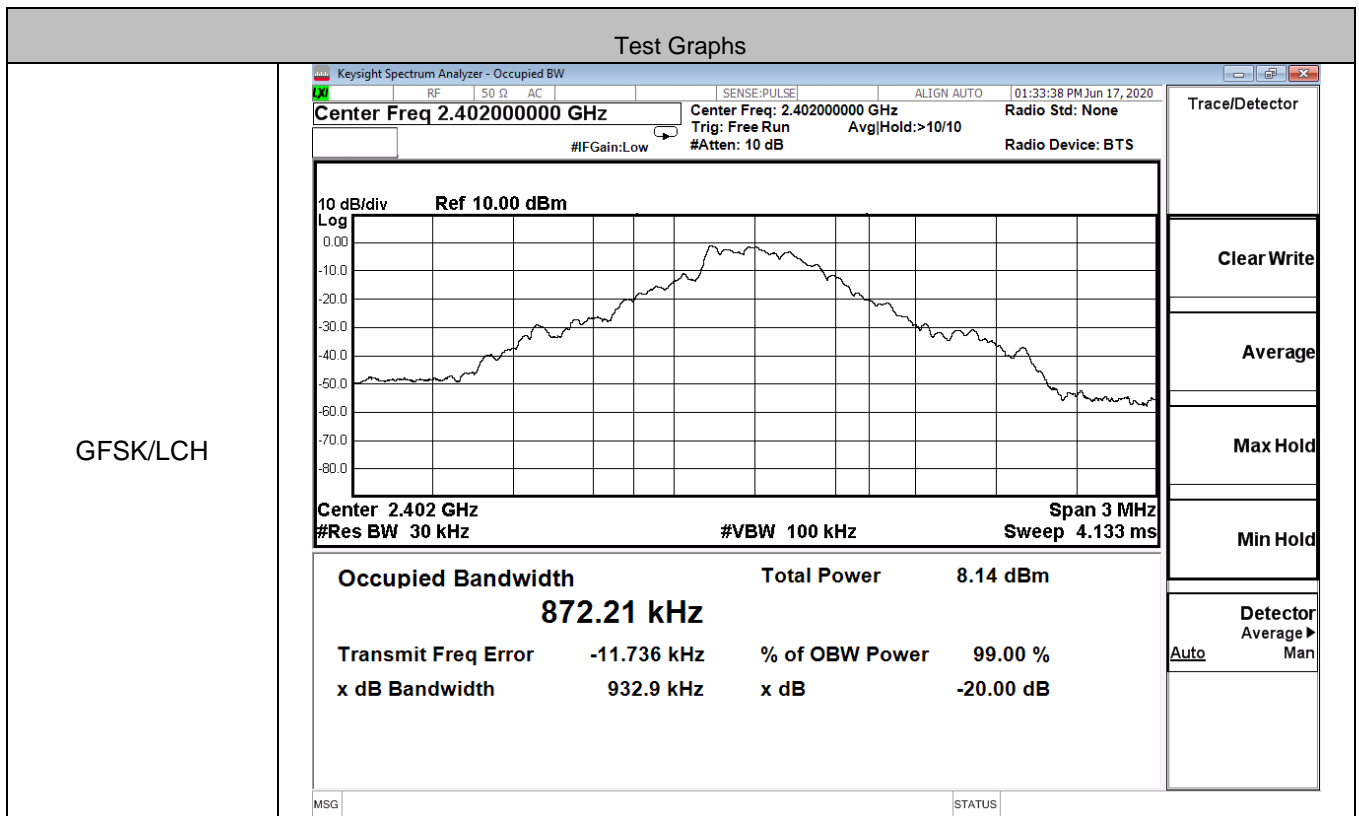
8DPSK/MCH



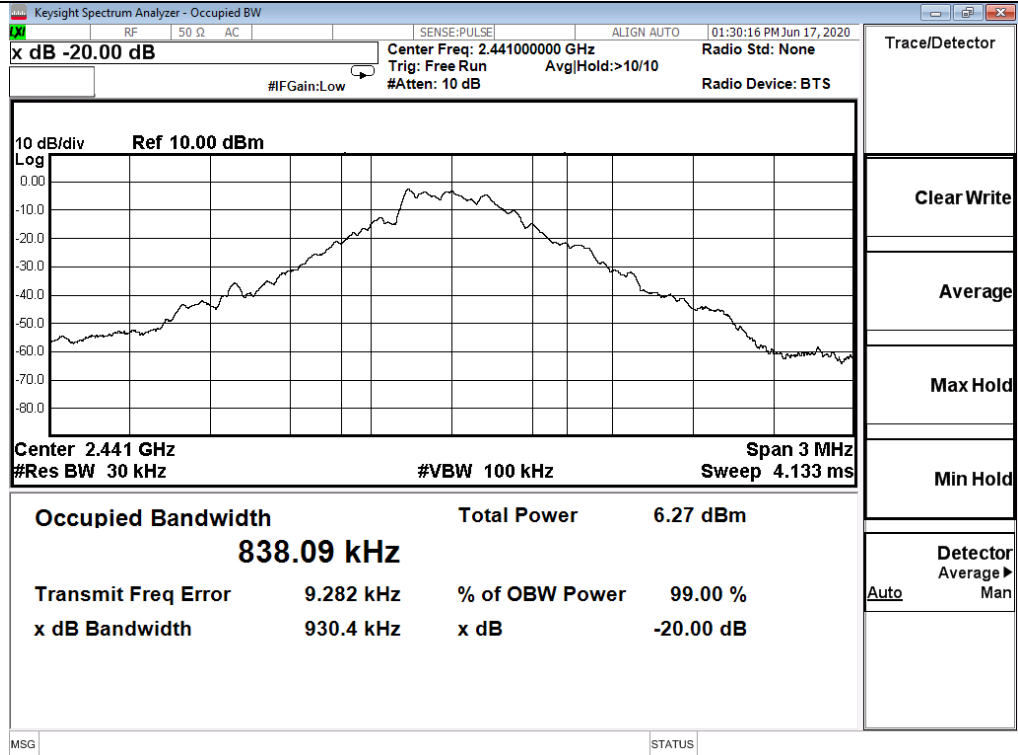


A.2 20dB Bandwidth

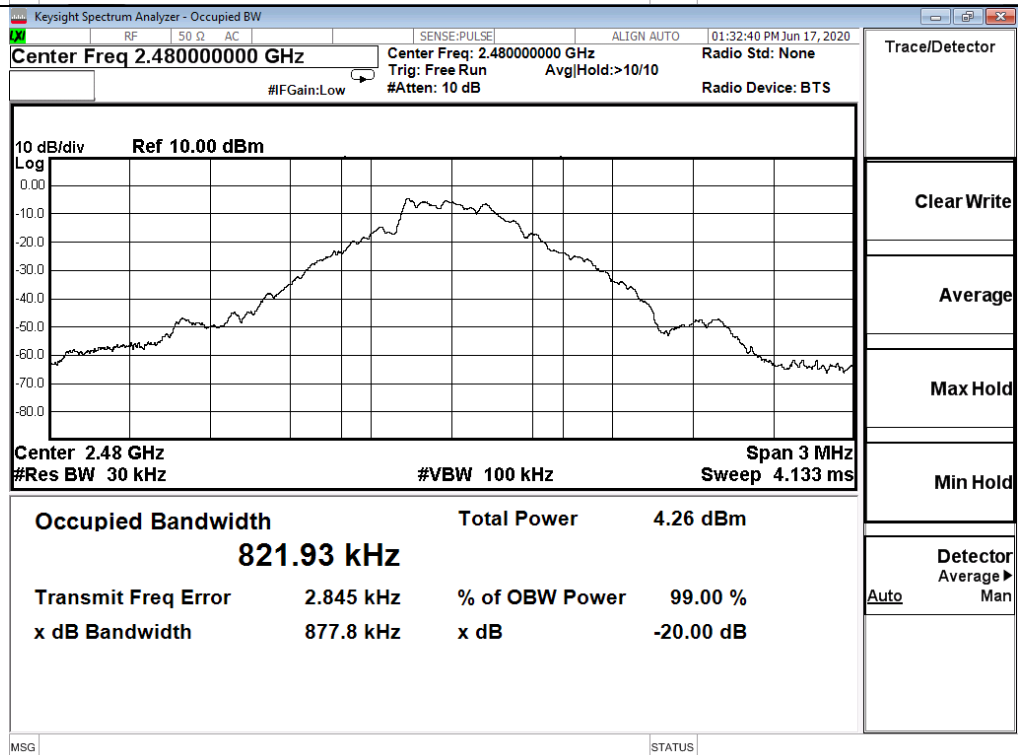
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9329	Not Specified	PASS
	MCH	0.9304	Not Specified	PASS
	HCH	0.8778	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.364	Not Specified	PASS
	MCH	1.326	Not Specified	PASS
	HCH	1.255	Not Specified	PASS
8DPSK	LCH	1.355	Not Specified	PASS
	MCH	1.226	Not Specified	PASS
	HCH	1.214	Not Specified	PASS



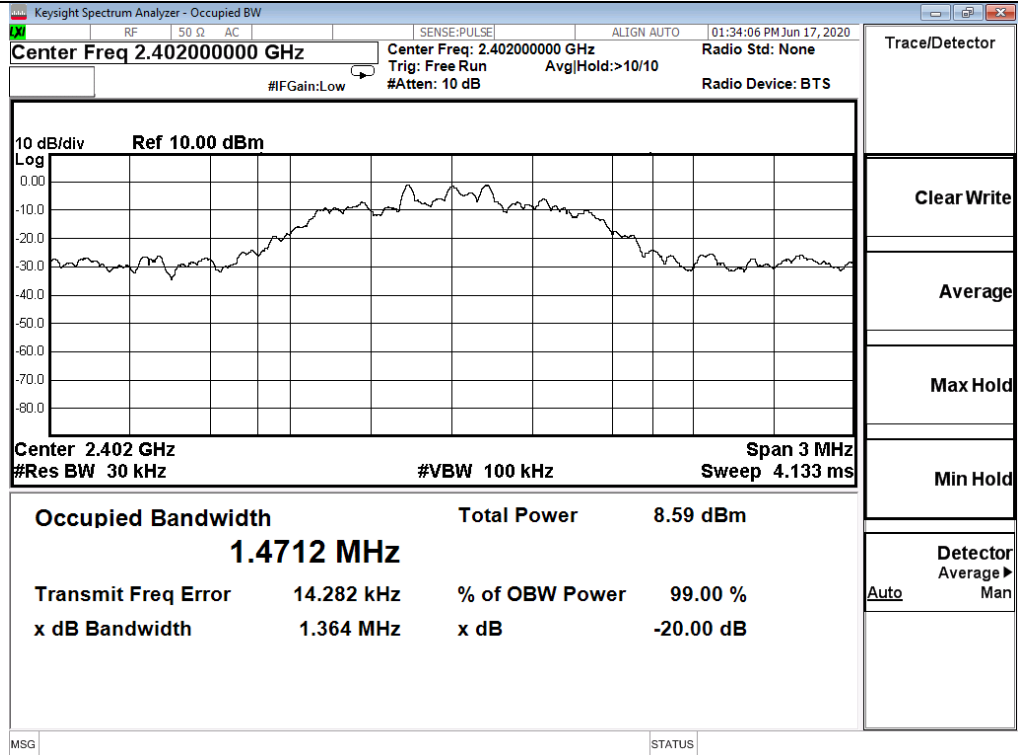
GFSK/MCH



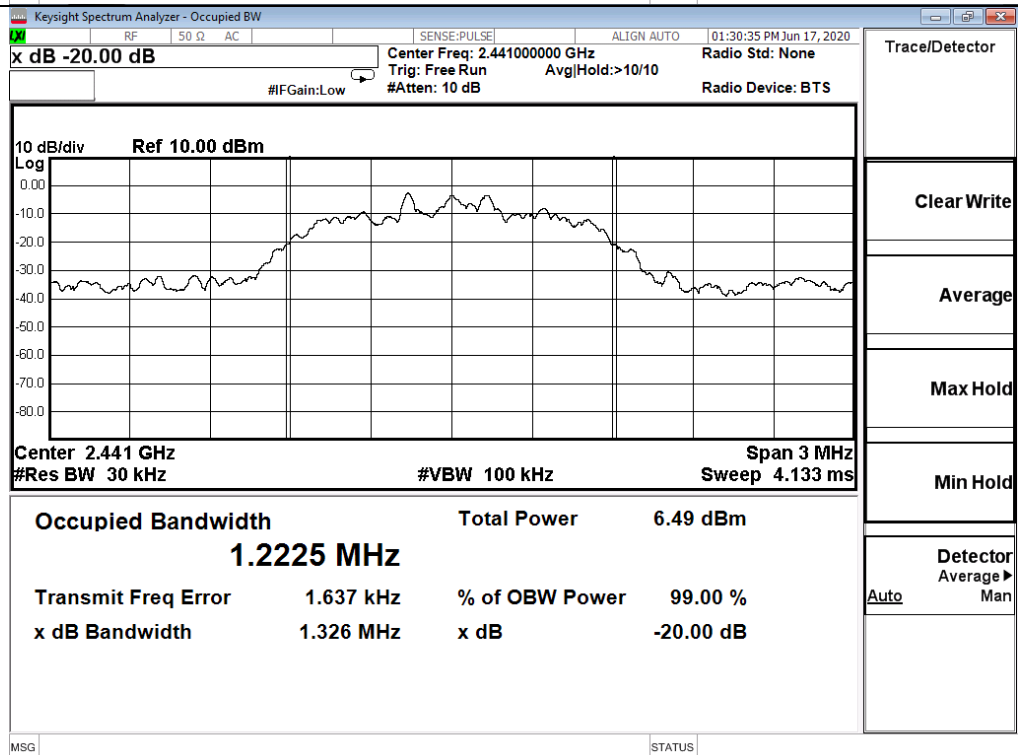
GFSK/HCH



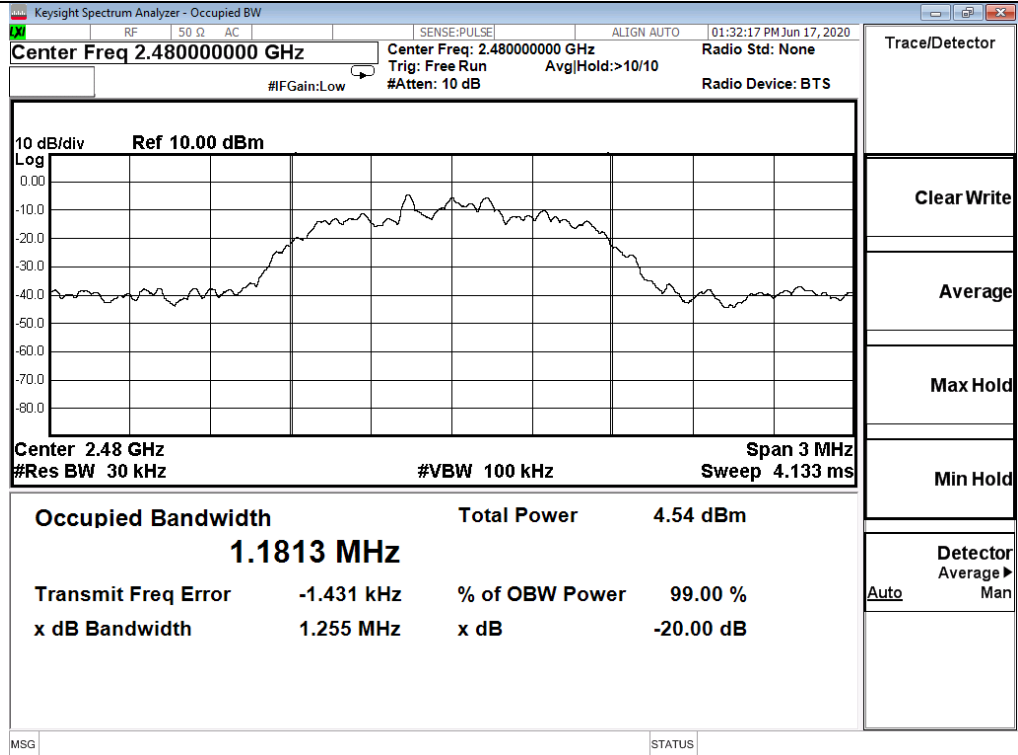
$\pi/4$ DQPSK/LCH



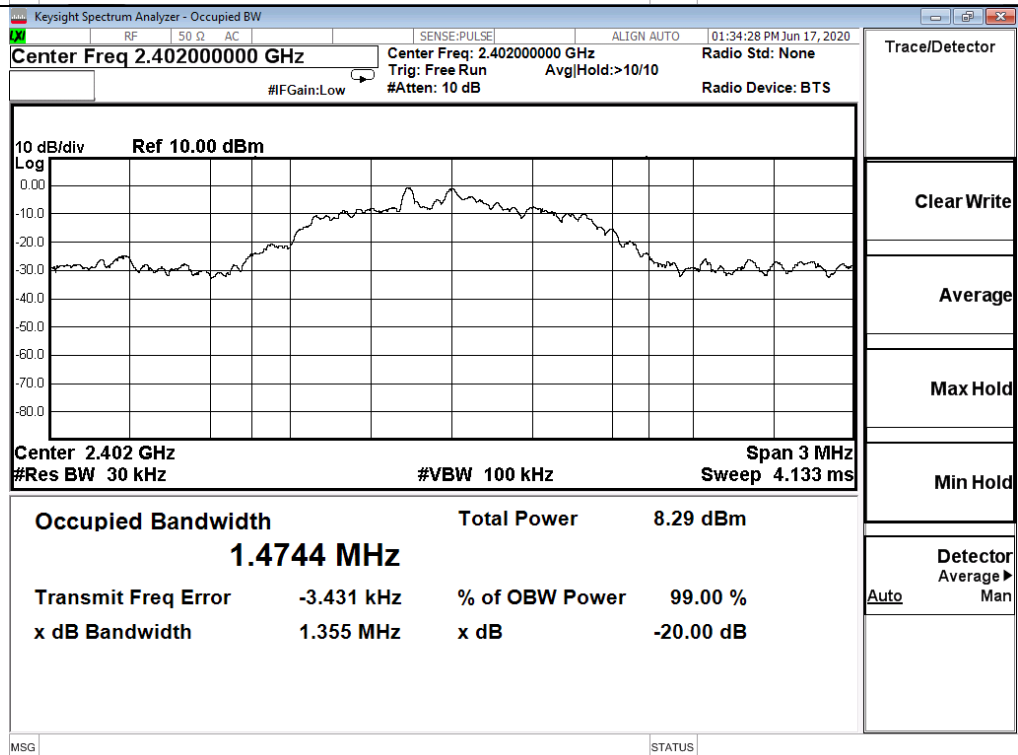
$\pi/4$ DQPSK/MCH



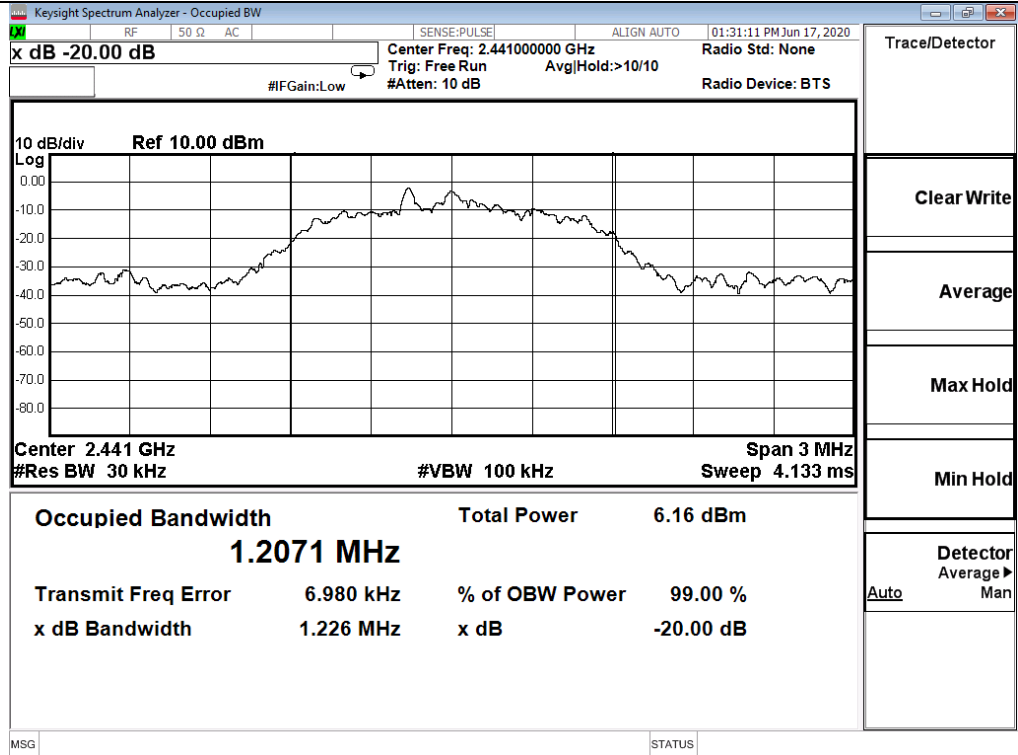
$\pi/4$ DQPSK/HCH



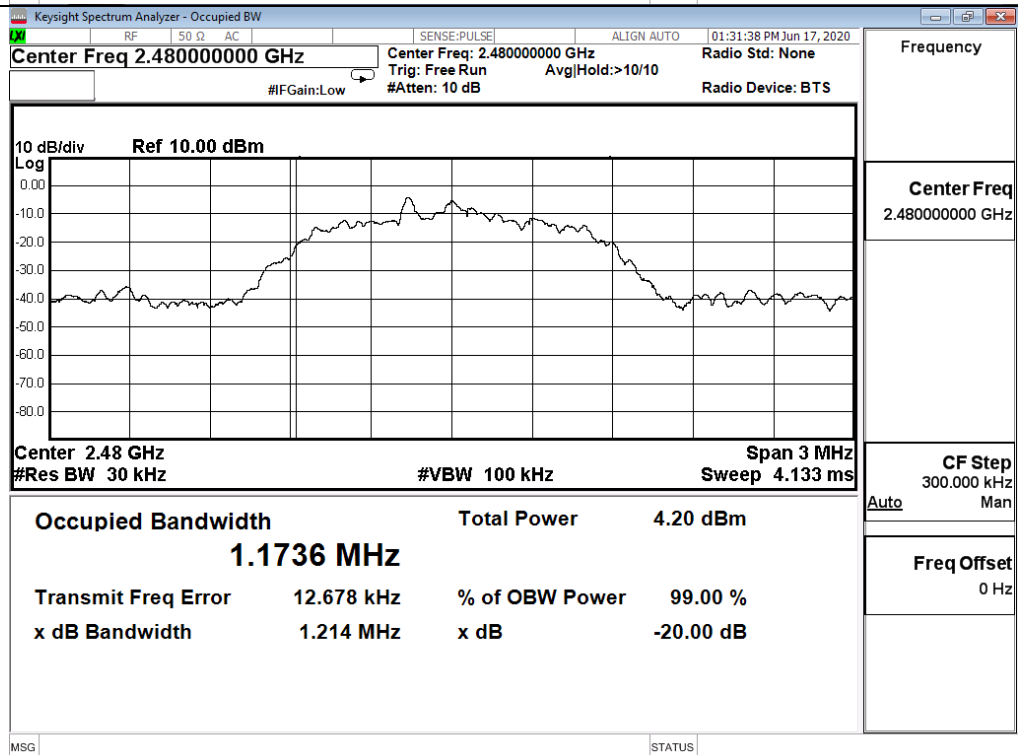
8DPSK/LCH



8DPSK/MCH

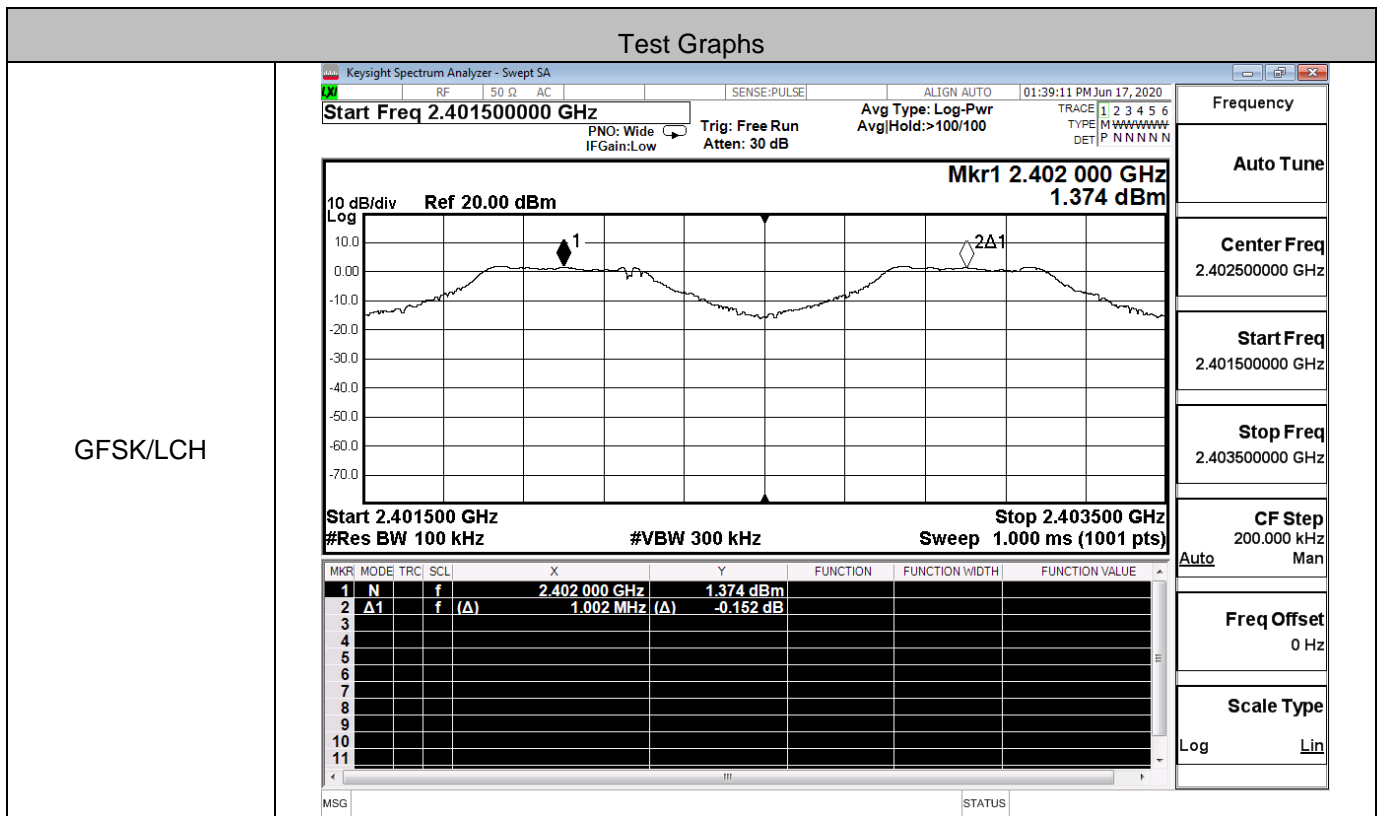


8DPSK/HCH

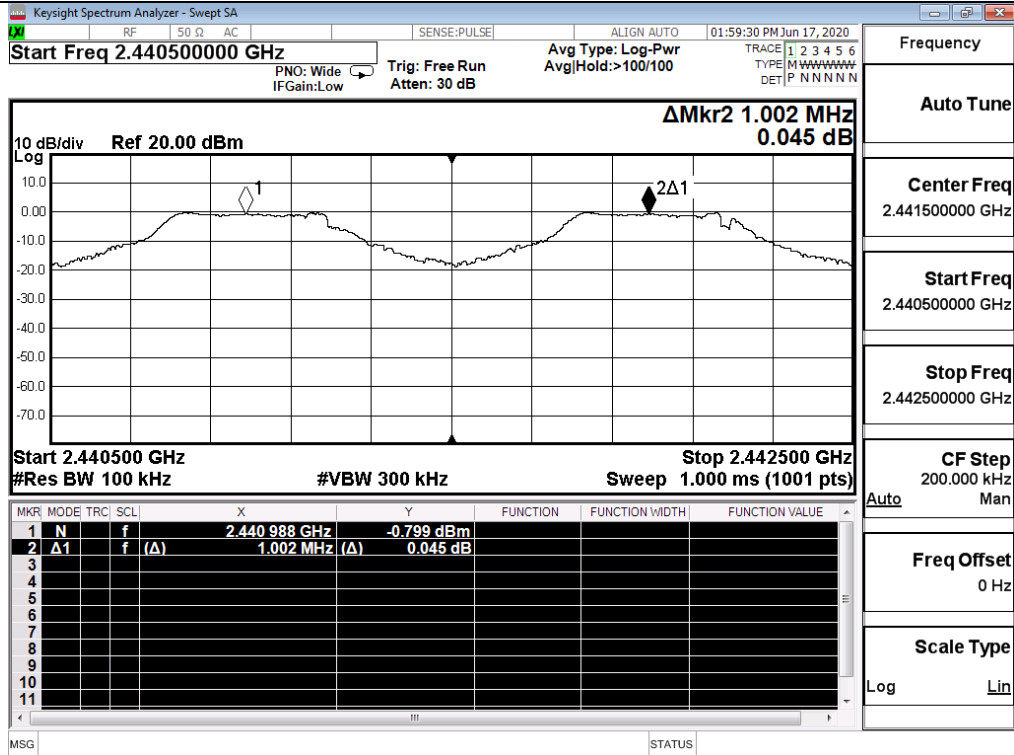


A.3 Carrier Frequency Separation

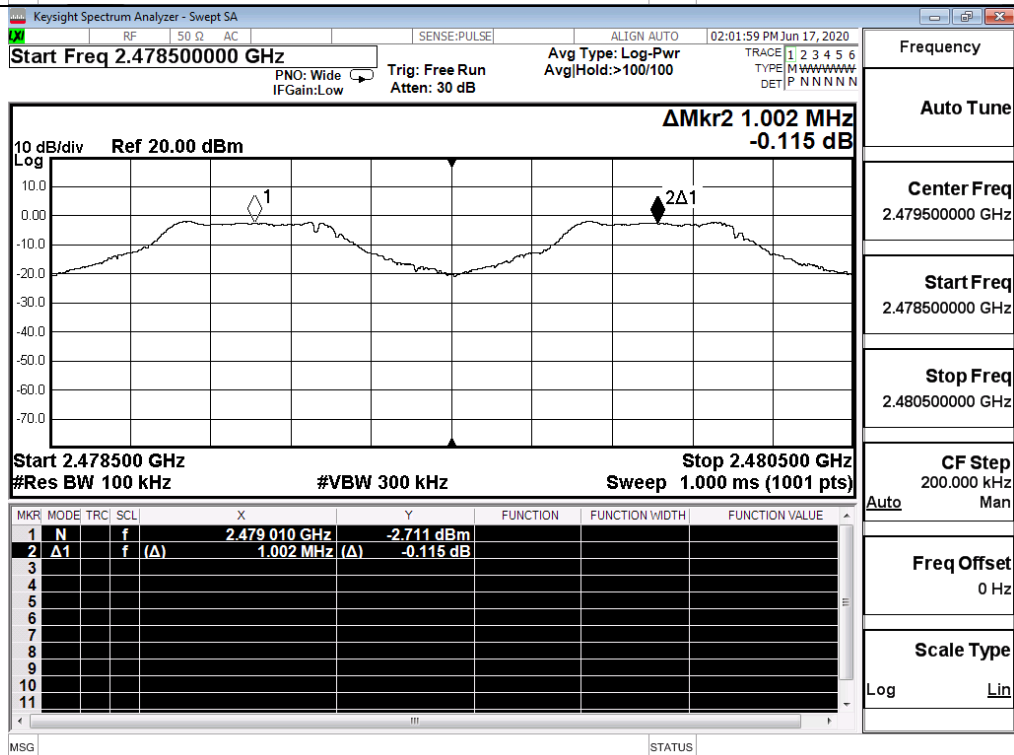
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.002	0.62	PASS
	MCH	1.002	0.62	PASS
	HCH	1.002	0.59	PASS
π/4DQPSK	LCH	1.000	0.91	PASS
	MCH	1.004	0.88	PASS
	HCH	1.000	0.84	PASS
8DPSK	LCH	1.000	0.90	PASS
	MCH	1.002	0.82	PASS
	HCH	1.002	0.81	PASS



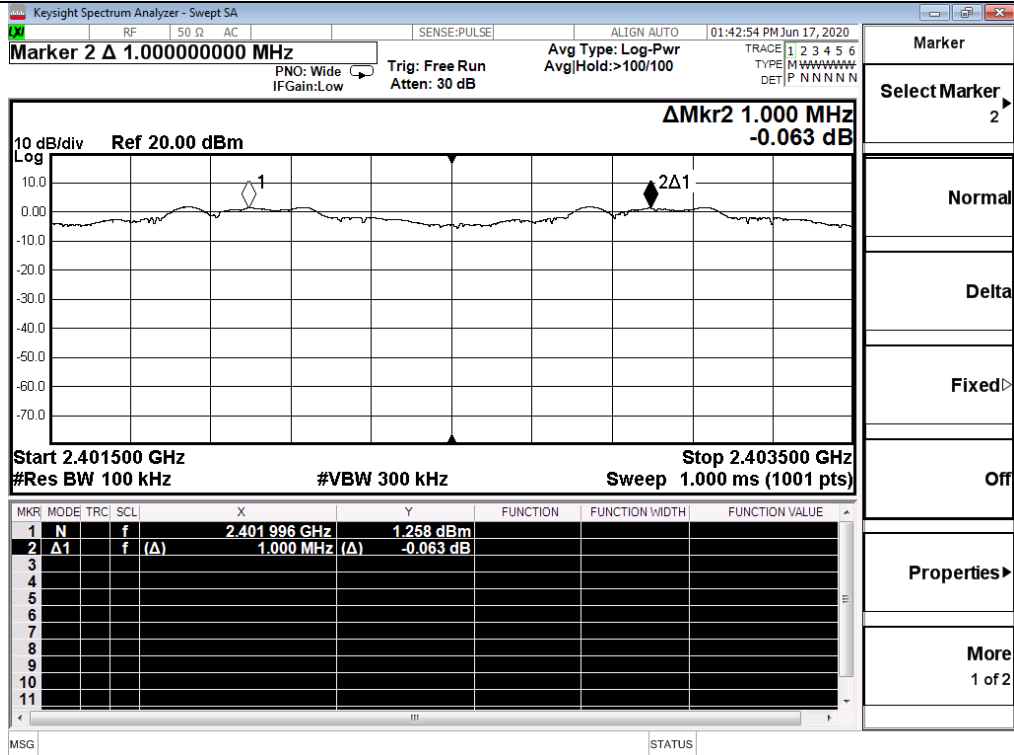
GFSK/MCH



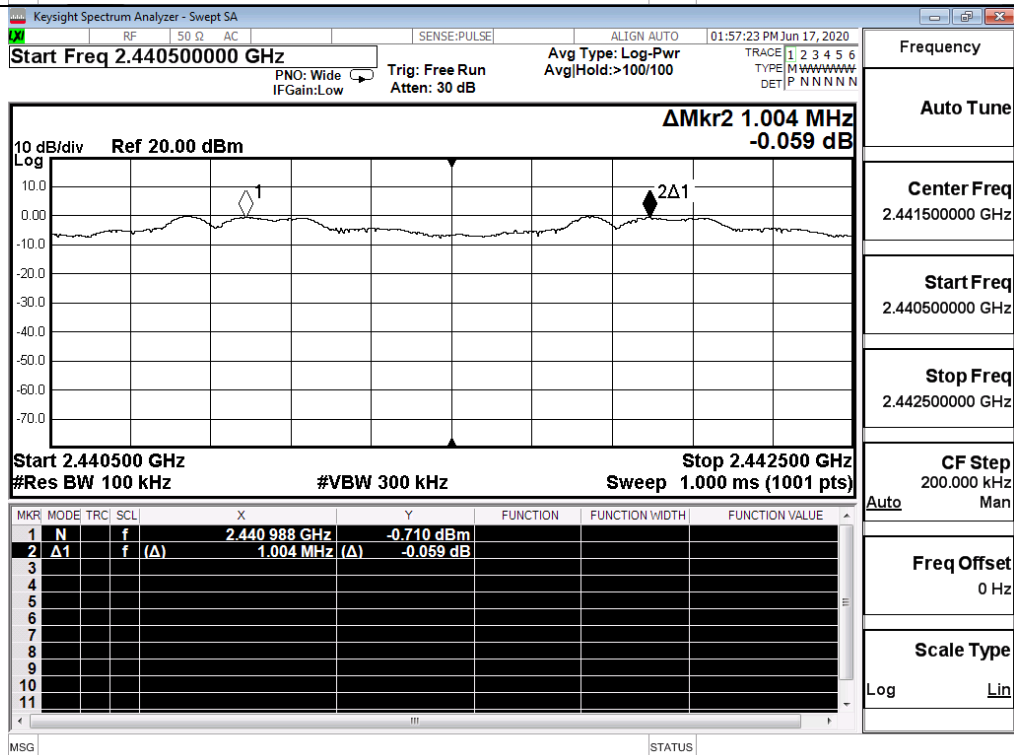
GFSK/HCH



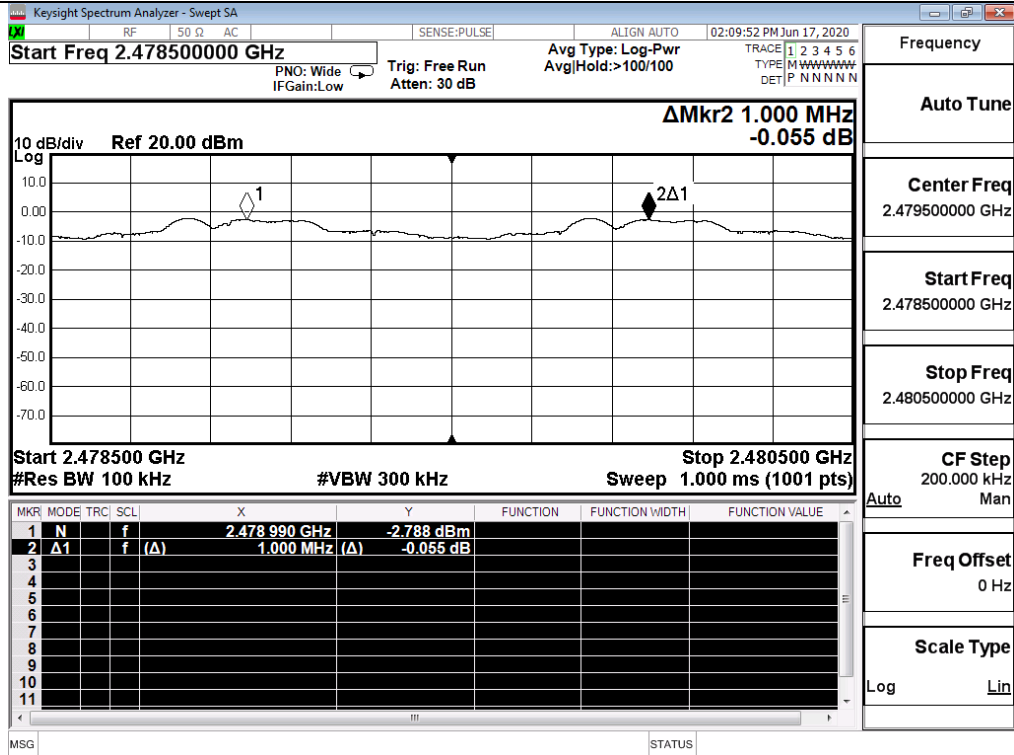
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

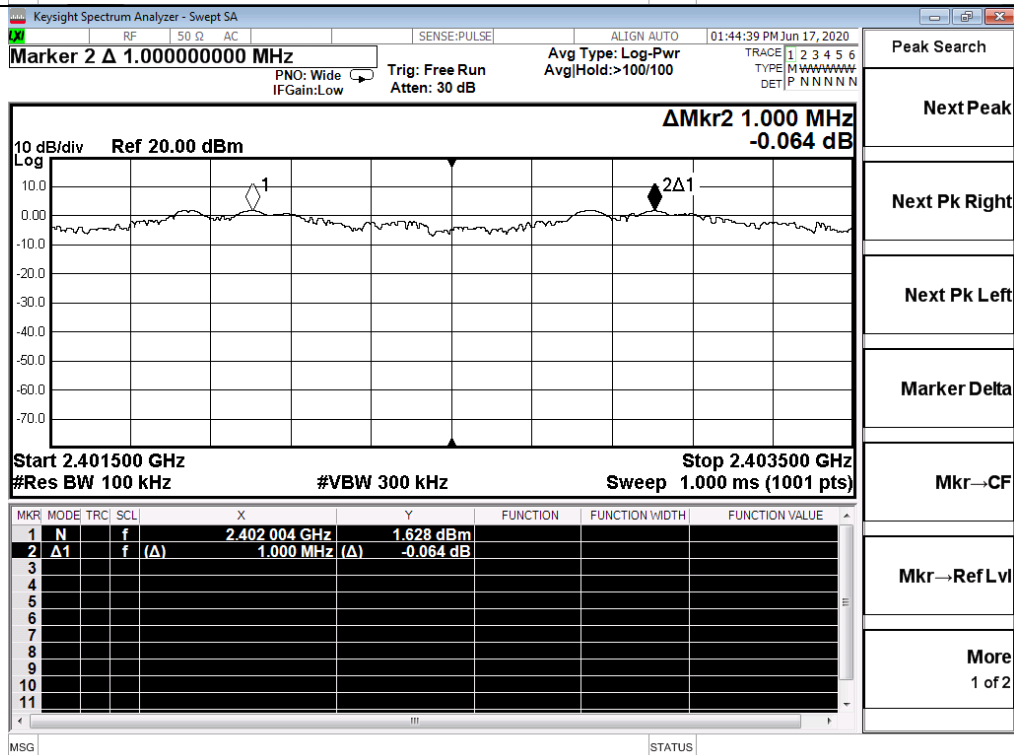


π/4DQPSK/HCH



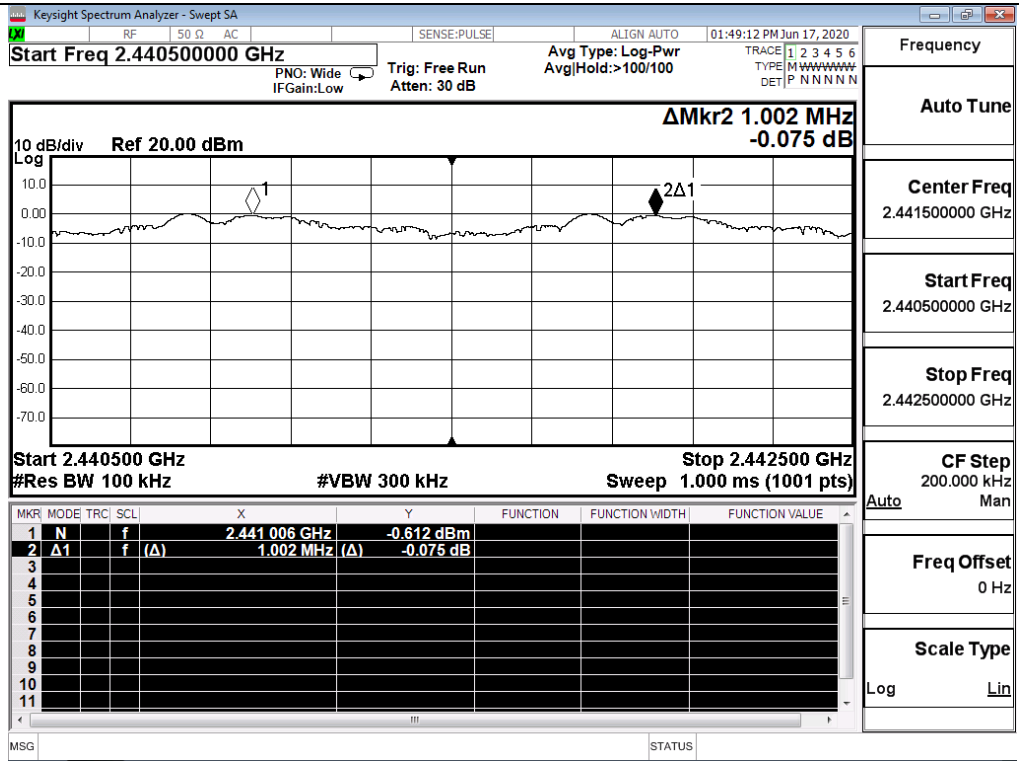
Frequency
Auto Tune
Center Freq
2.479500000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.480500000 GHz
CF Step
200.000 kHz
Auto Man
Freq Offset
0 Hz
Scale Type
Log Lin

8DPSK/LCH

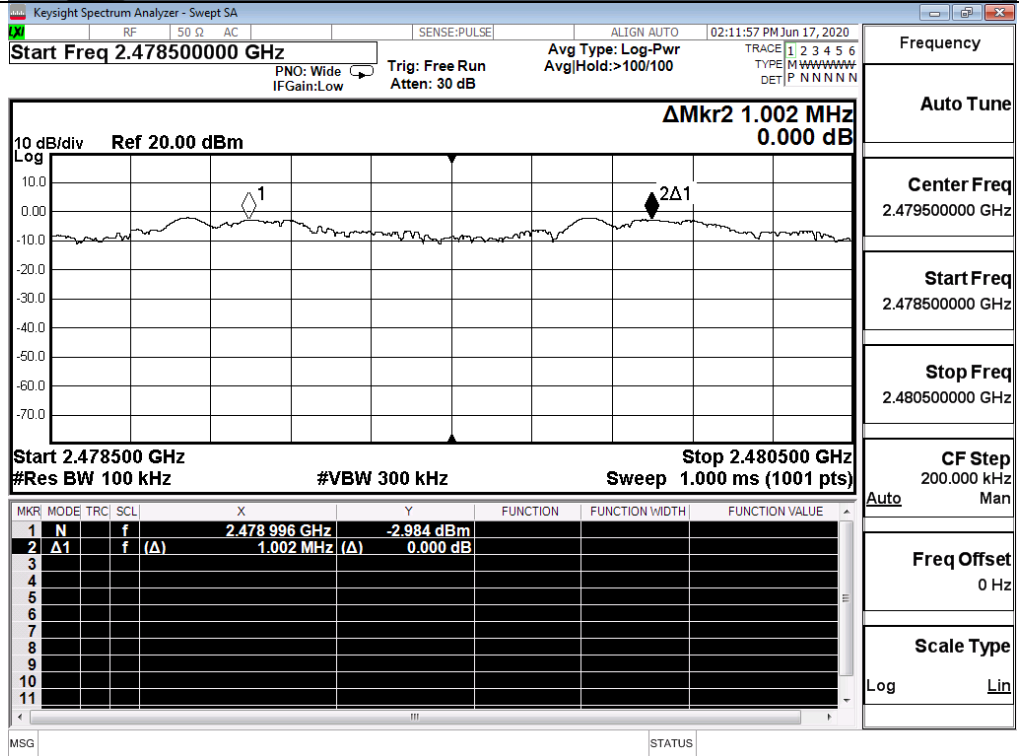


Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

8DPSK/MCH

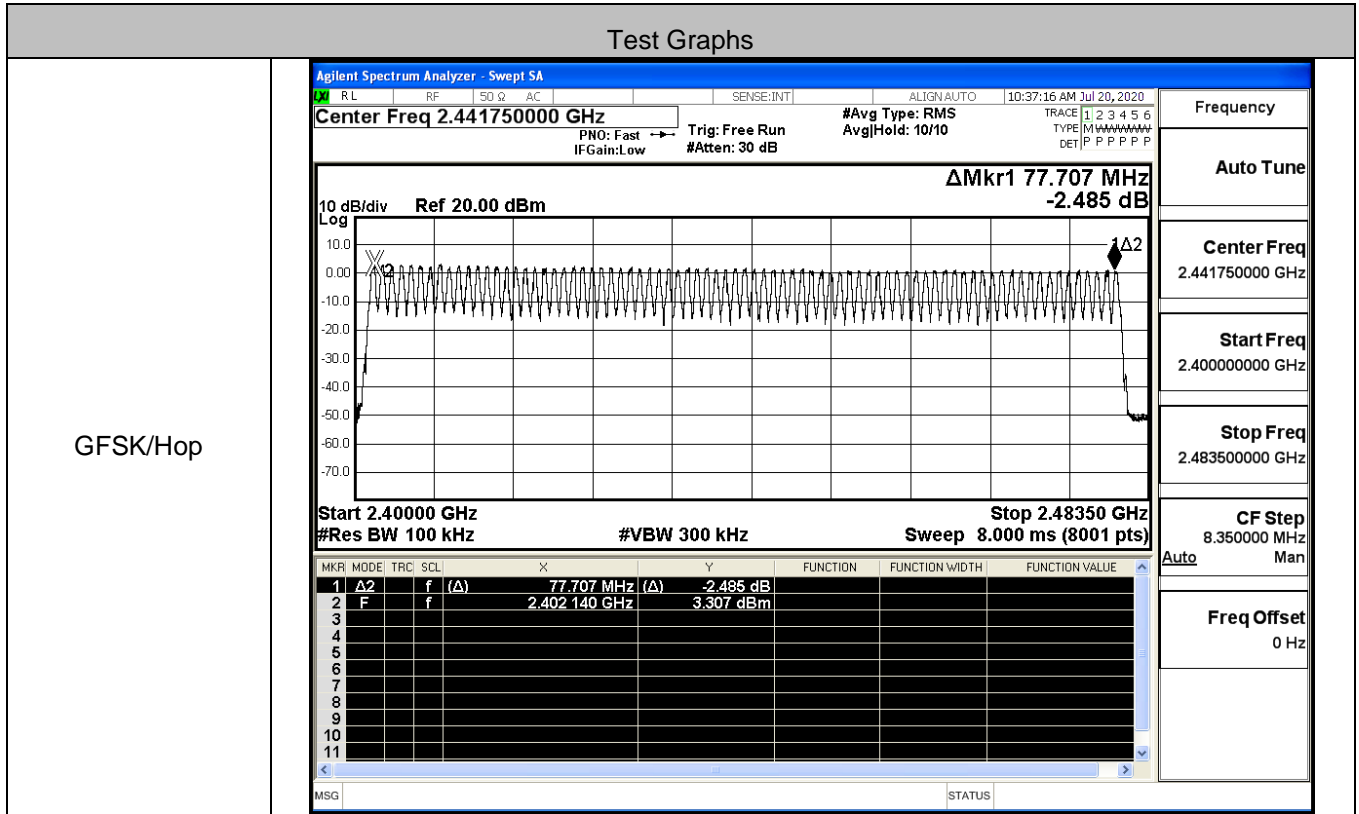


8DPSK/HCH

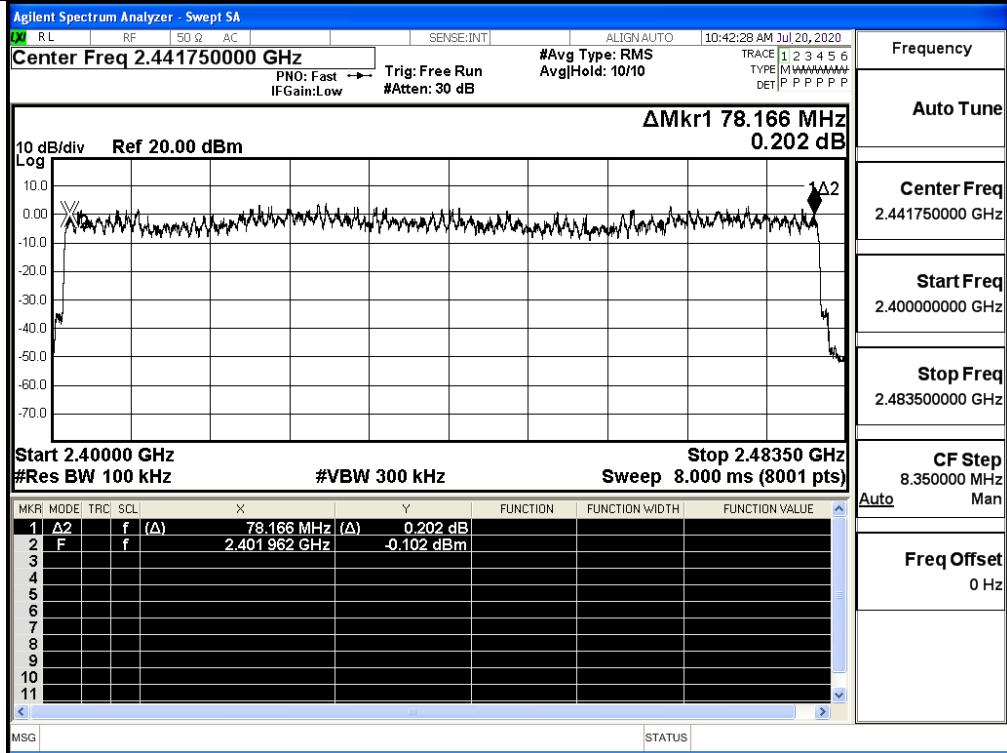


A.4 Hopping Channel Number

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



$\pi/4$ DQPSK/Hop



Frequency

Auto Tune

Center Freq
2.441750000 GHz

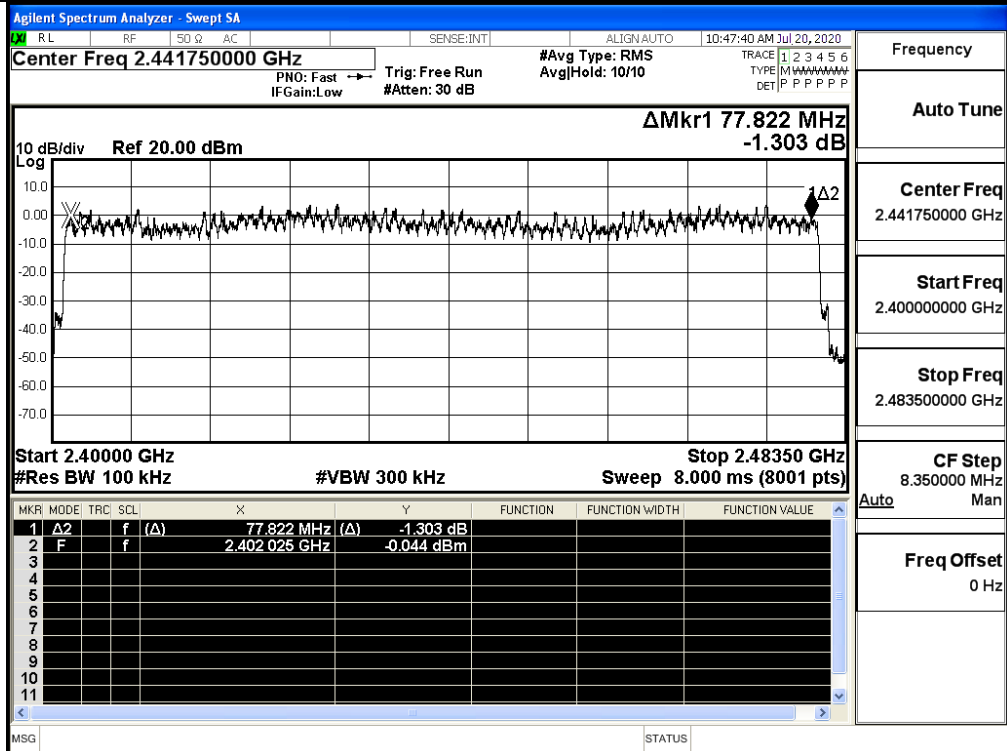
Start Freq
2.400000000 GHz

Stop Freq
2.483500000 GHz

CF Step
8.350000 MHz
Auto Man

Freq Offset
0 Hz

8DPSK/Hop



Frequency

Auto Tune

Center Freq
2.441750000 GHz

Start Freq
2.400000000 GHz

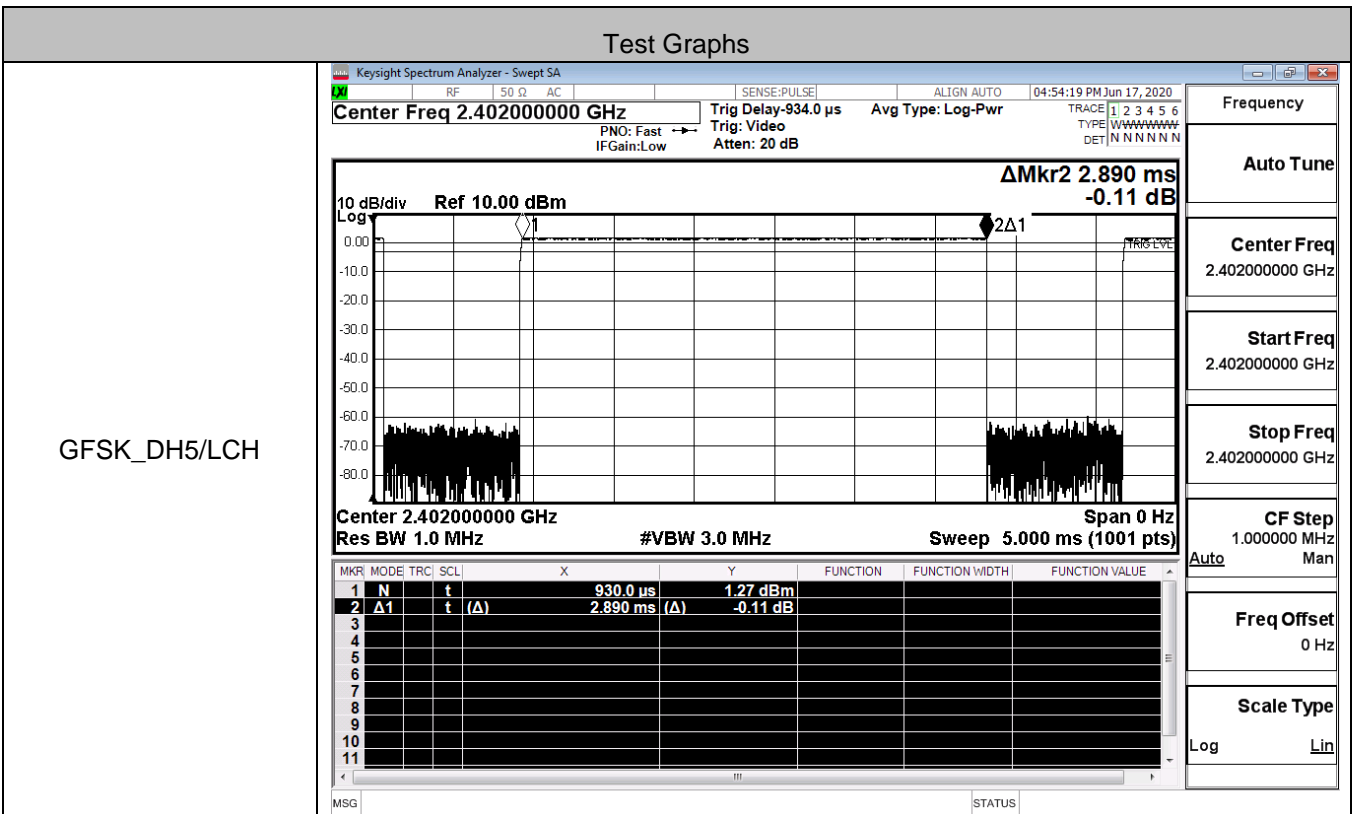
Stop Freq
2.483500000 GHz

CF Step
8.350000 MHz
Auto Man

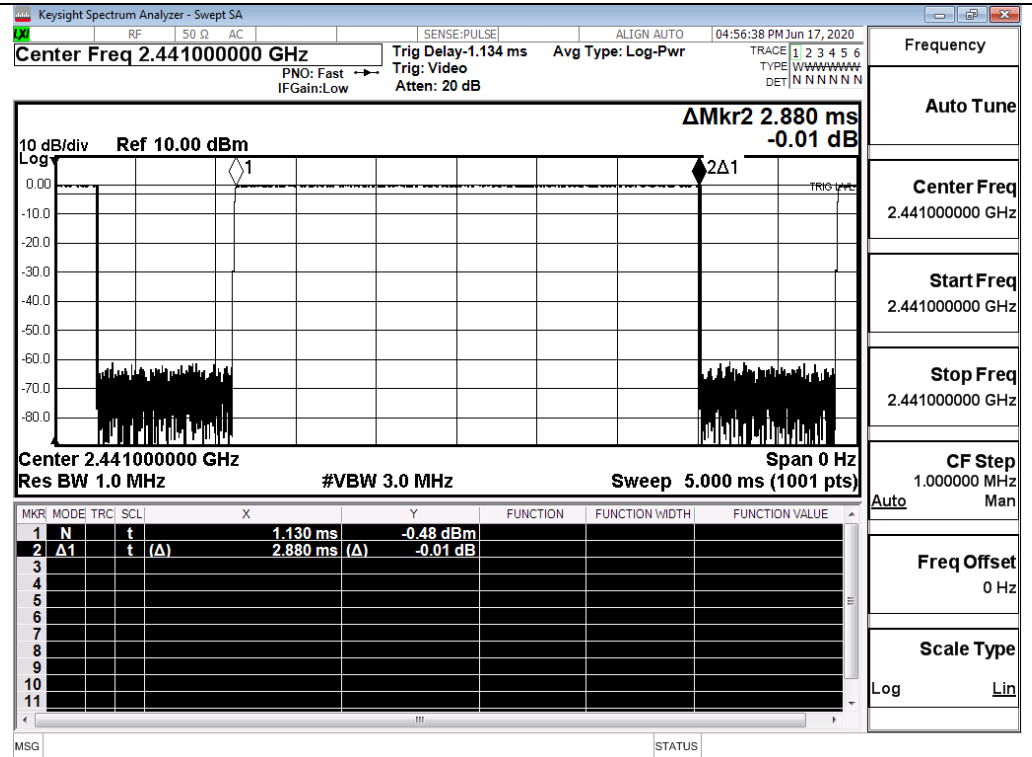
Freq Offset
0 Hz

A.5 Dwell Time

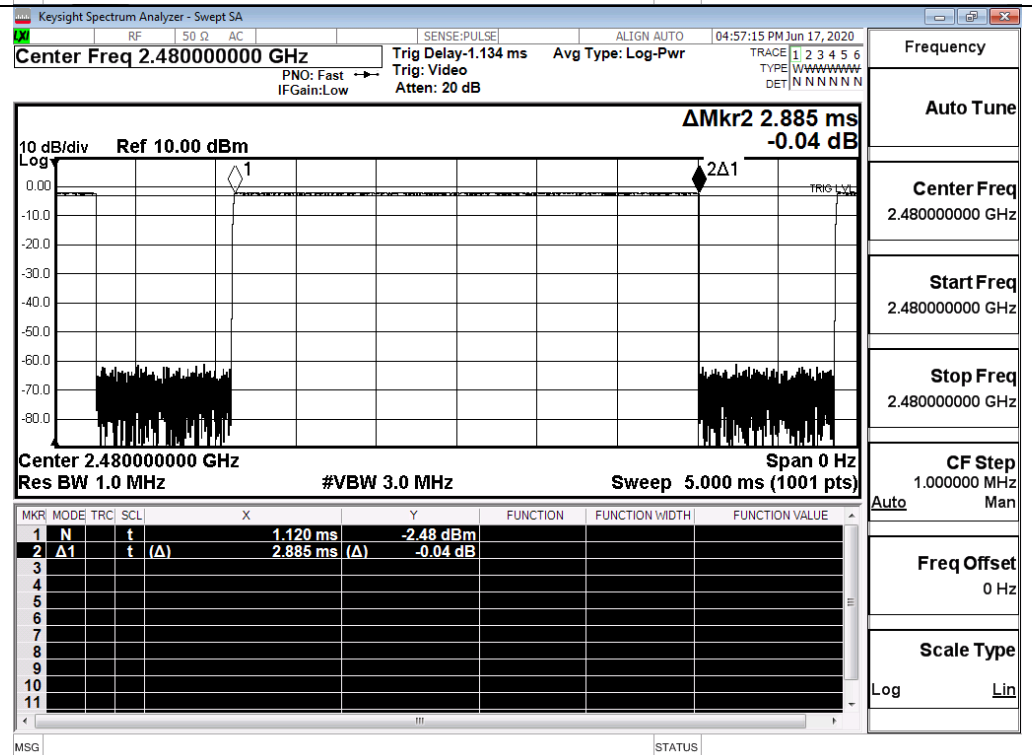
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.31	0.4	PASS
	DH5	MCH	2.88	106.7	0.31	0.4	PASS
	DH5	HCH	2.88	106.7	0.31	0.4	PASS
π/4DQPSK	2DH5	LCH	2.90	106.7	0.31	0.4	PASS
	2DH5	MCH	2.90	106.7	0.31	0.4	PASS
	2DH5	HCH	2.90	106.7	0.31	0.4	PASS
8DPSK	3DH5	LCH	2.90	106.7	0.31	0.4	PASS
	3DH5	MCH	2.91	106.7	0.31	0.4	PASS
	3DH5	HCH	2.90	106.7	0.31	0.4	PASS



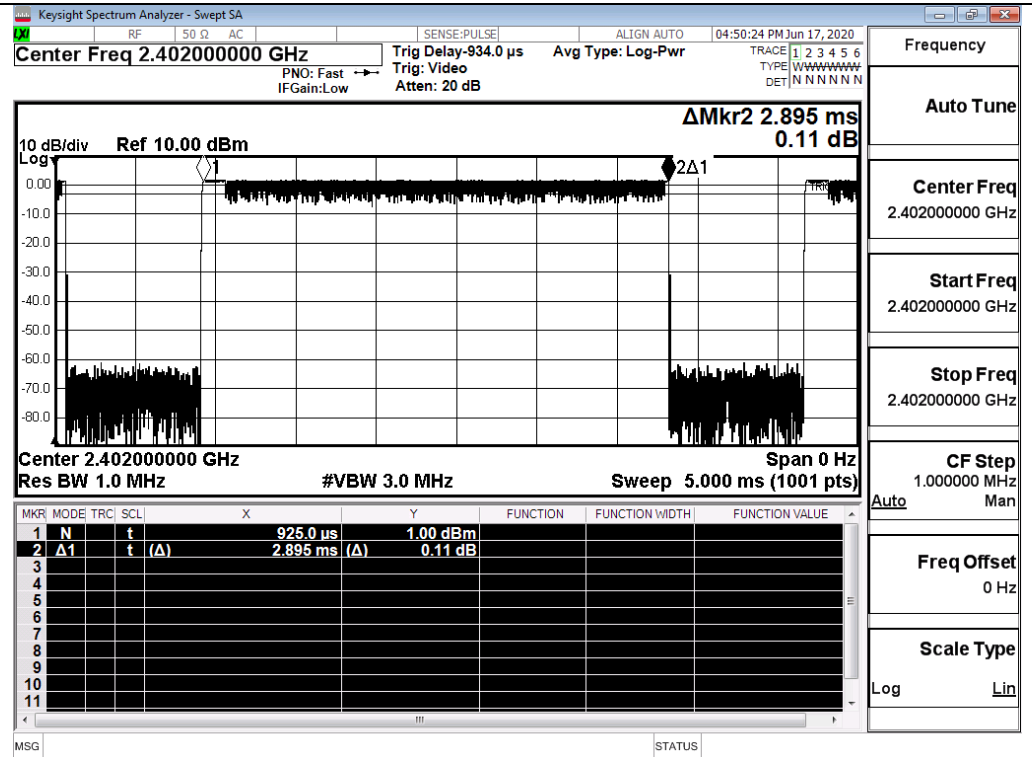
GFSK_DH5/MCH



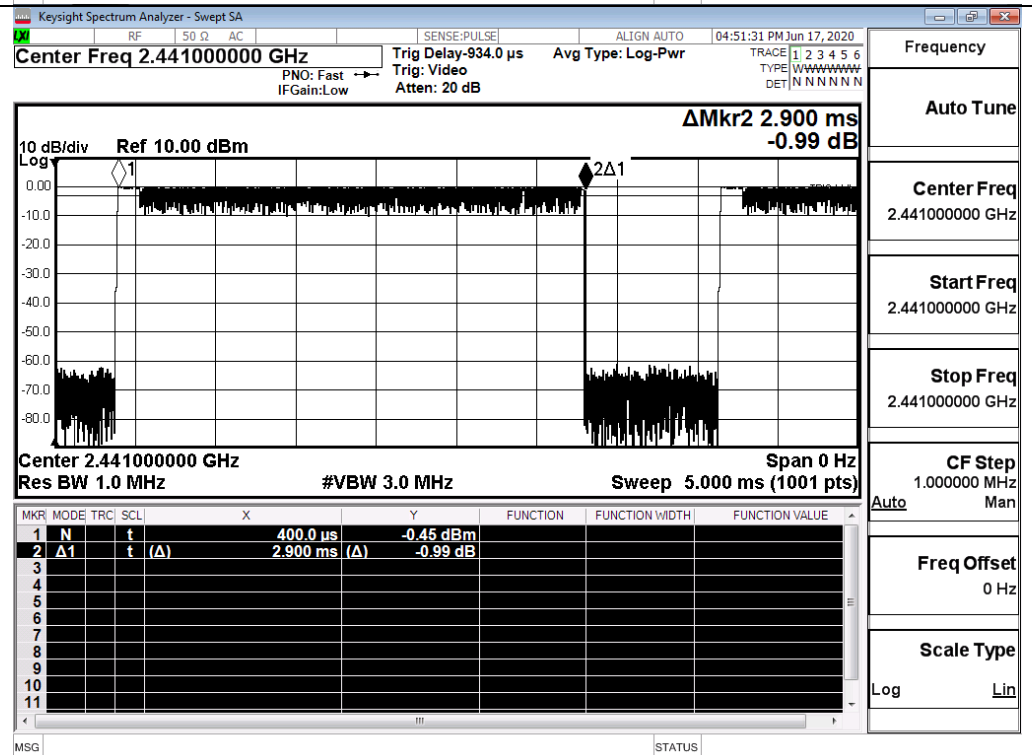
GFSK_DH5/HCH



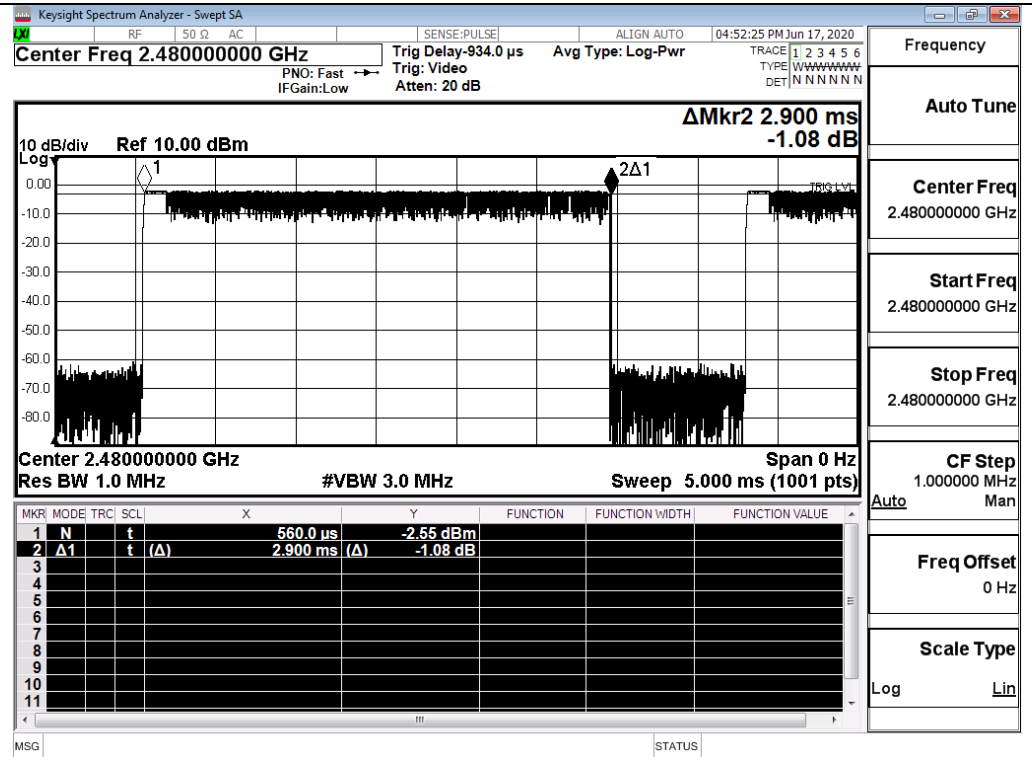
$\pi/4$ DQPSK
_2DH5/LCH



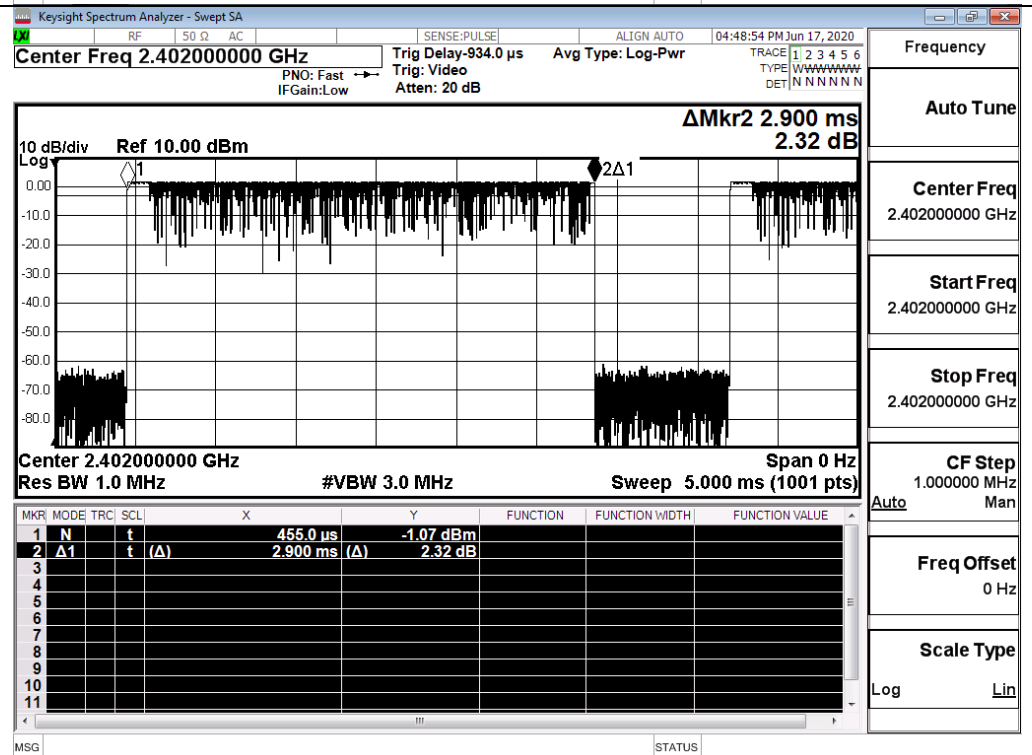
$\pi/4$ DQPSK
_2DH5/MCH



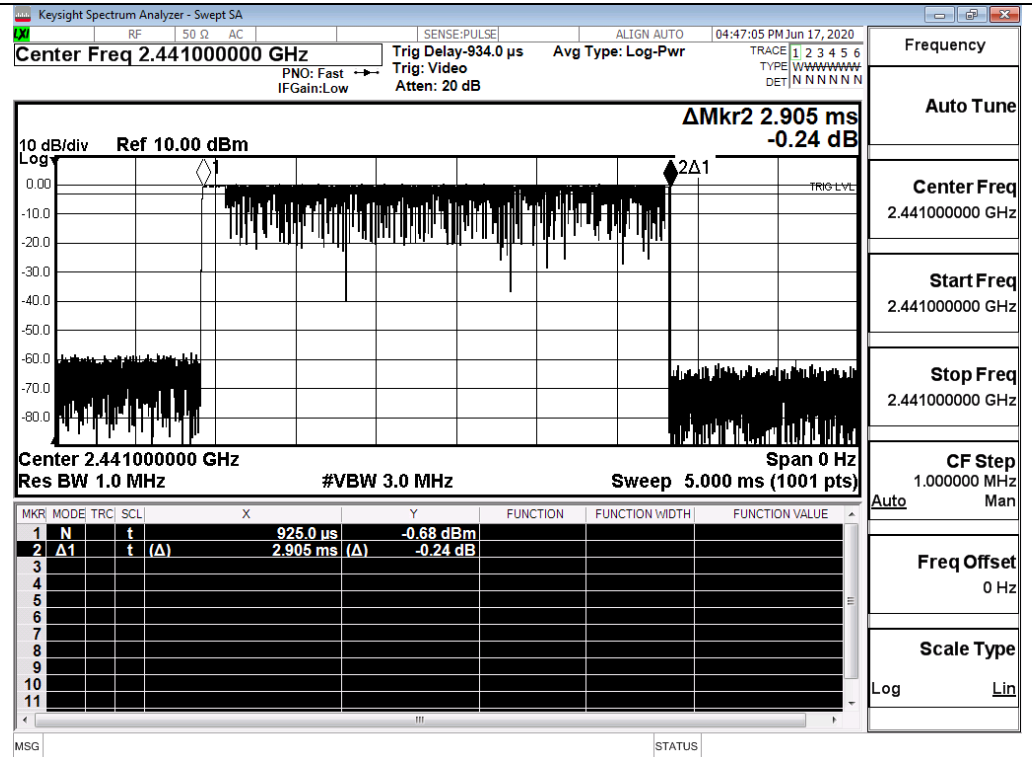
$\pi/4$ DQPSK
_2DH5/HCH



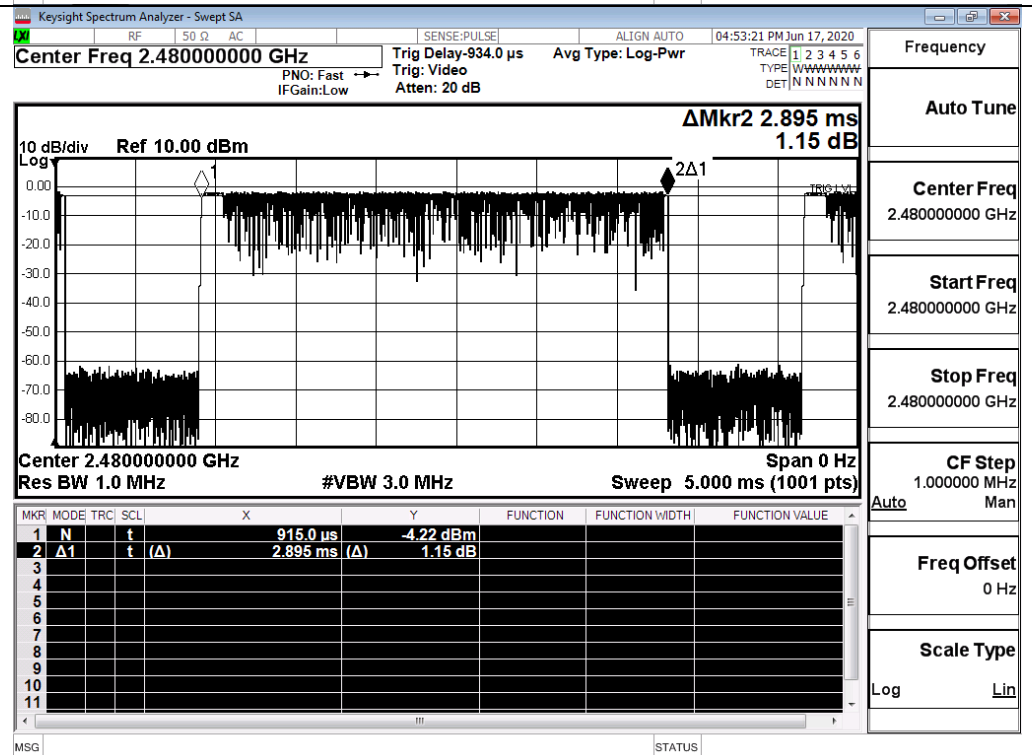
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

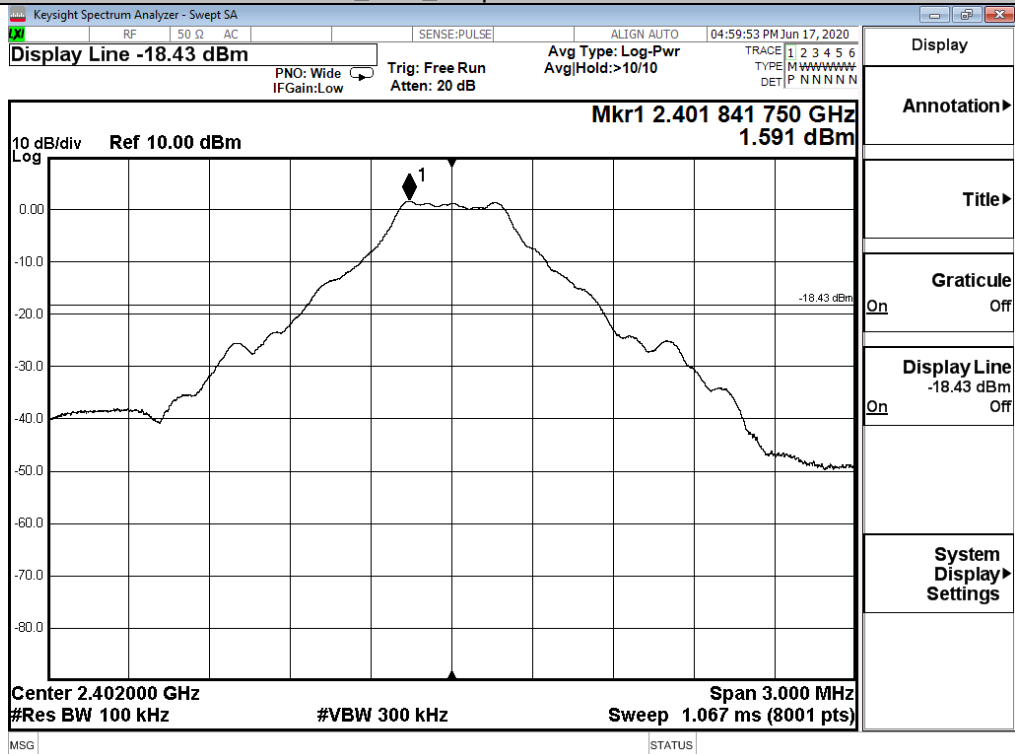


A.6 RF Conducted Spurious Emissions

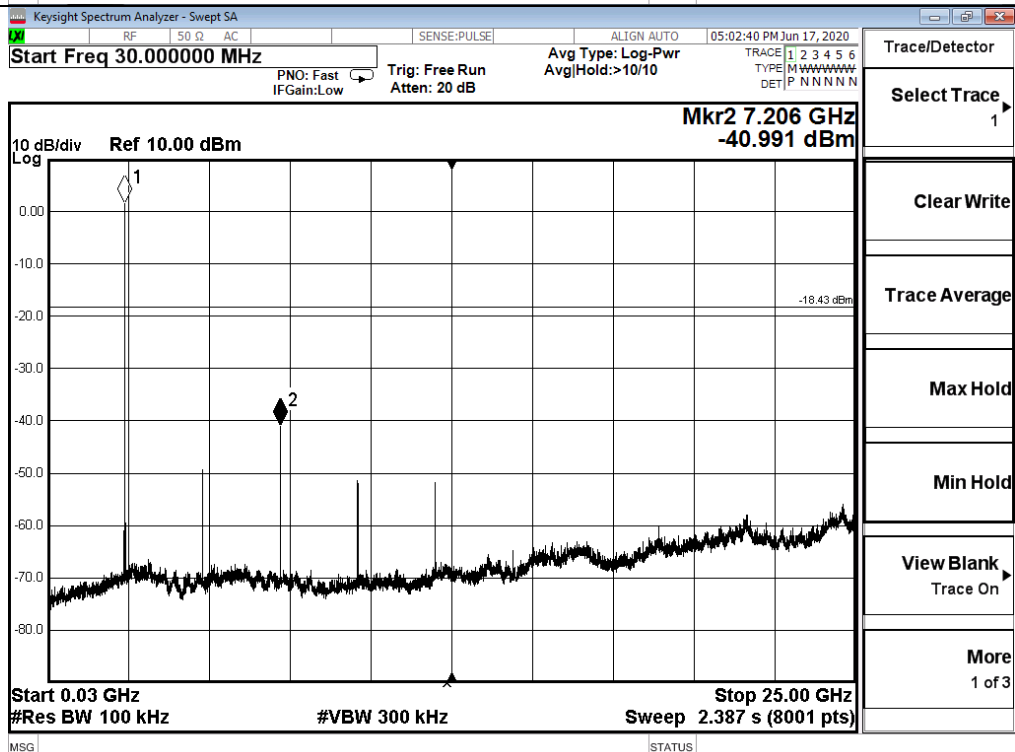
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.591	-40.991	-18.41	PASS
	MCH	-0.161	-47.806	-20.16	PASS
	HCH	-2.160	-50.766	-22.16	PASS
$\pi/4$ DQPSK	LCH	0.894	-40.039	-19.11	PASS
	MCH	1.734	-36.459	-18.27	PASS
	HCH	2.402	-36.130	-17.60	PASS
8DPSK	LCH	1.622	-44.710	-18.38	PASS
	MCH	-0.163	-44.386	-20.16	PASS
	HCH	-2.156	-52.970	-22.16	PASS

GFSK_LCH_Graphs

Pref

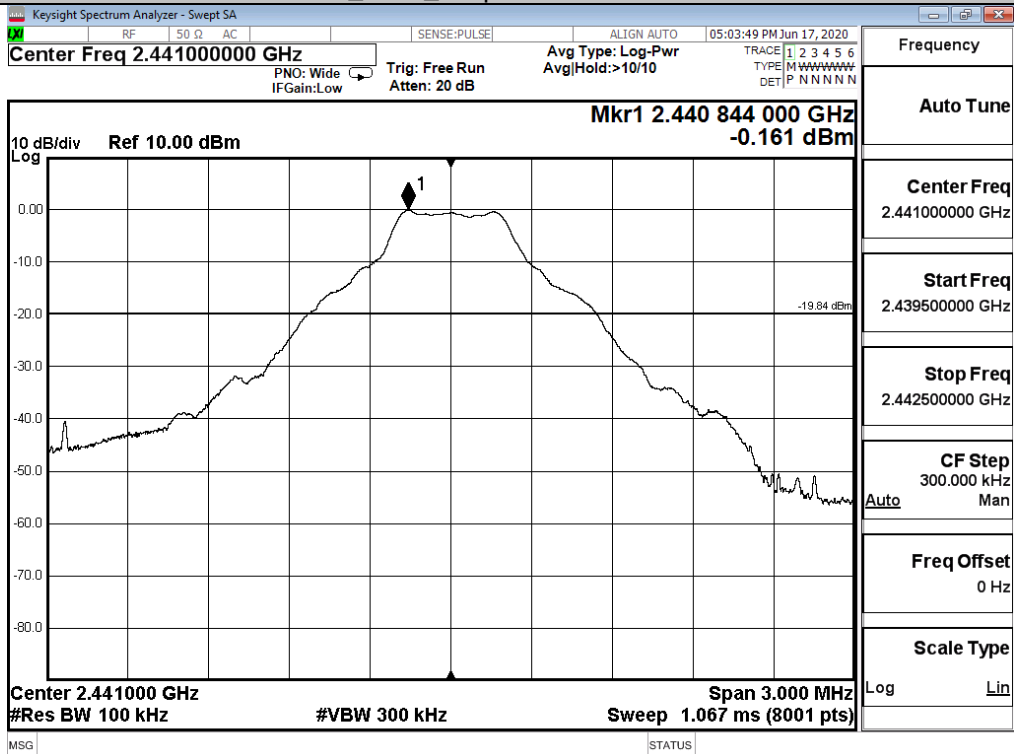


Puw

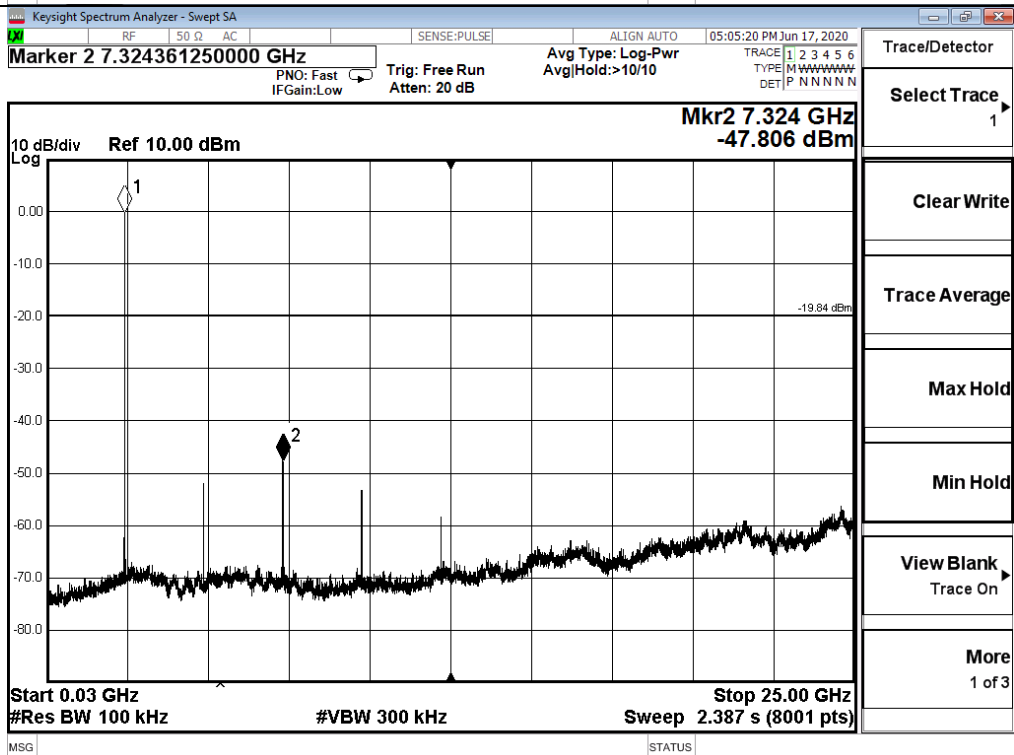


GFSK_MCH_Graphs

Pref

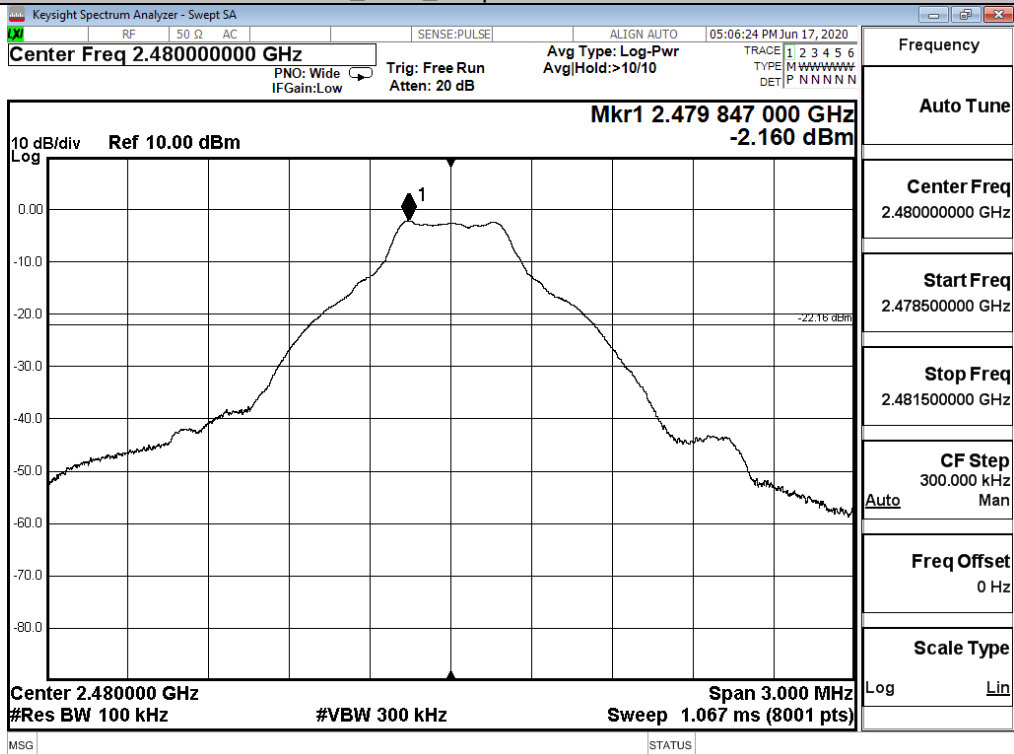


Puw

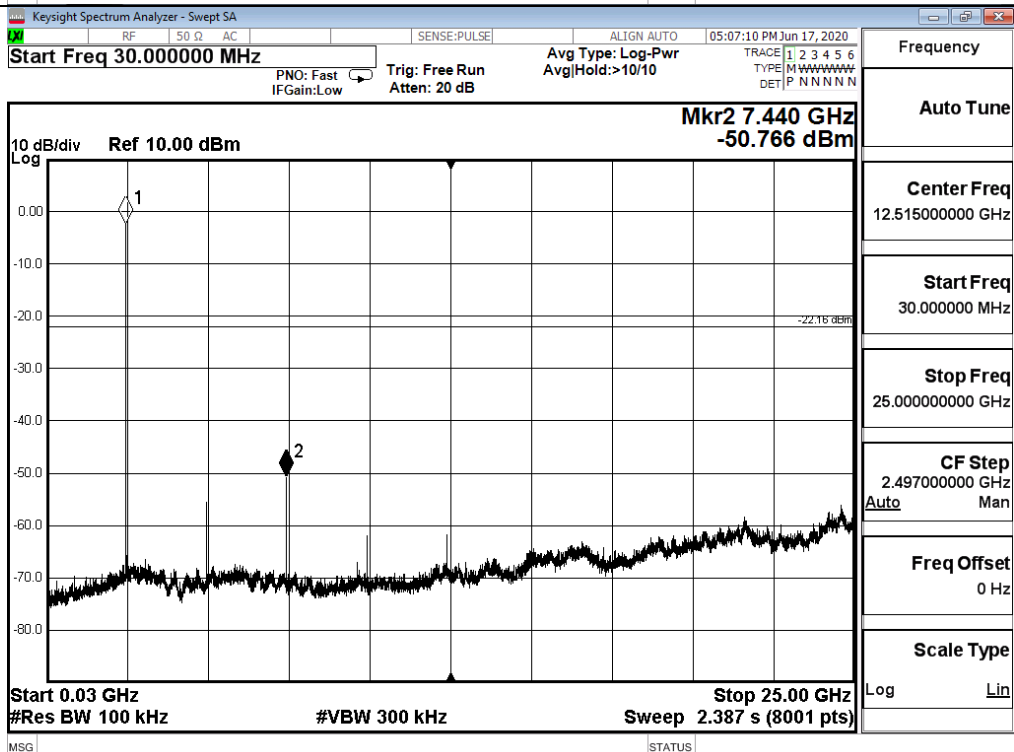


GFSK_HCH_Graphs

Pref

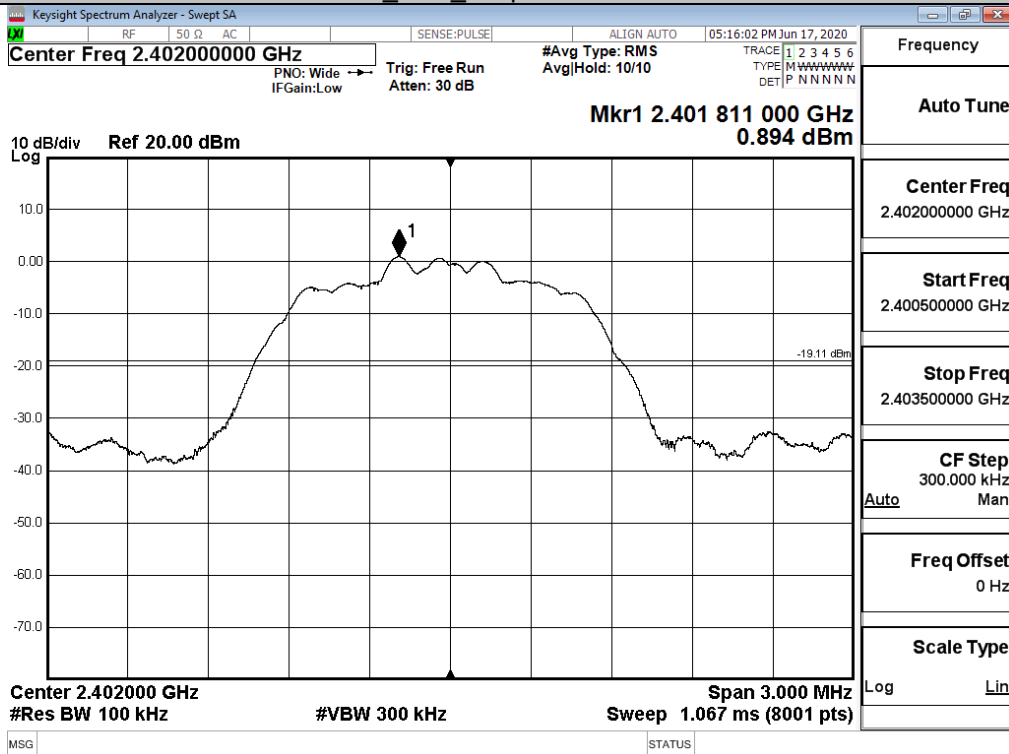


Puw

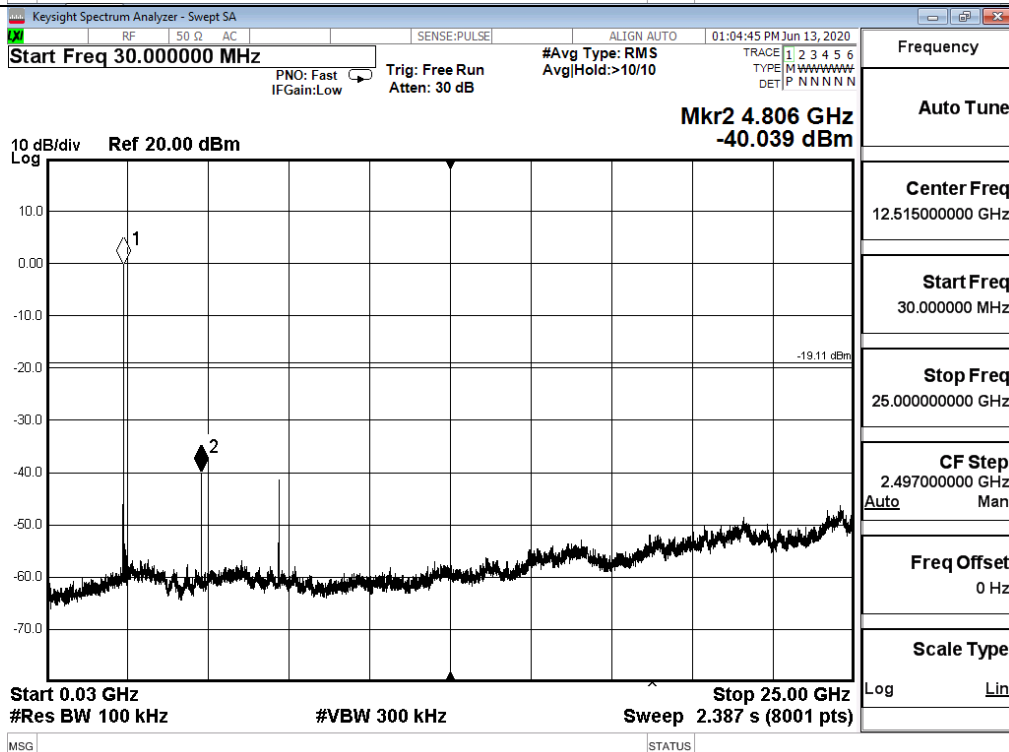


$\pi/4$ DQPSK_LCH_Graphs

Pref

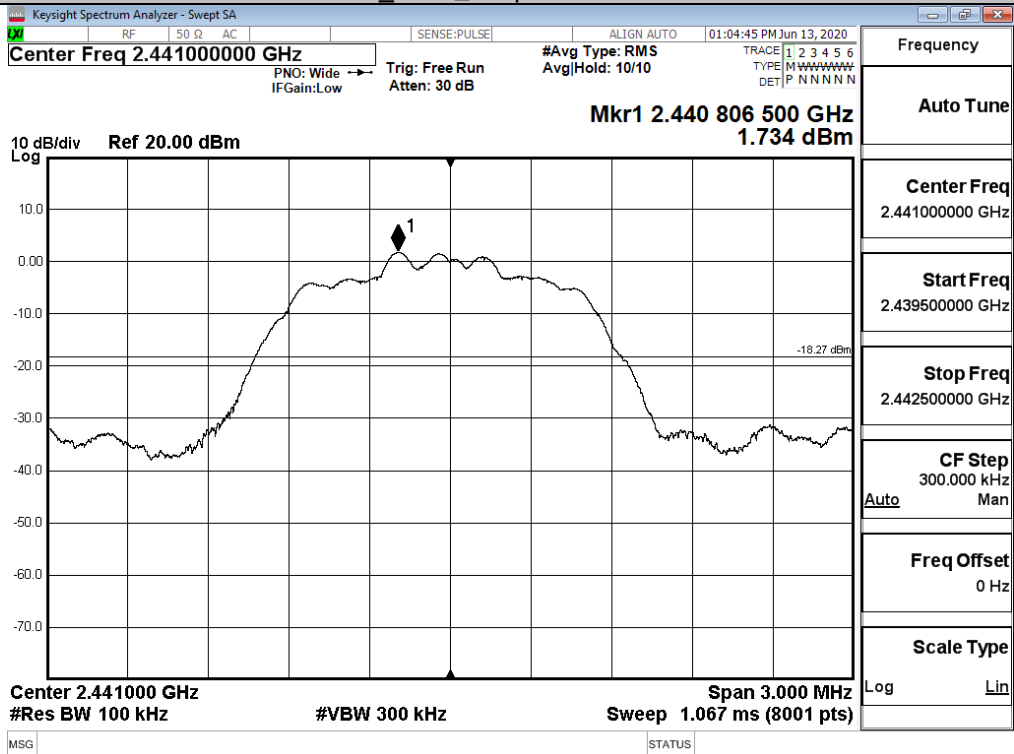


Puw

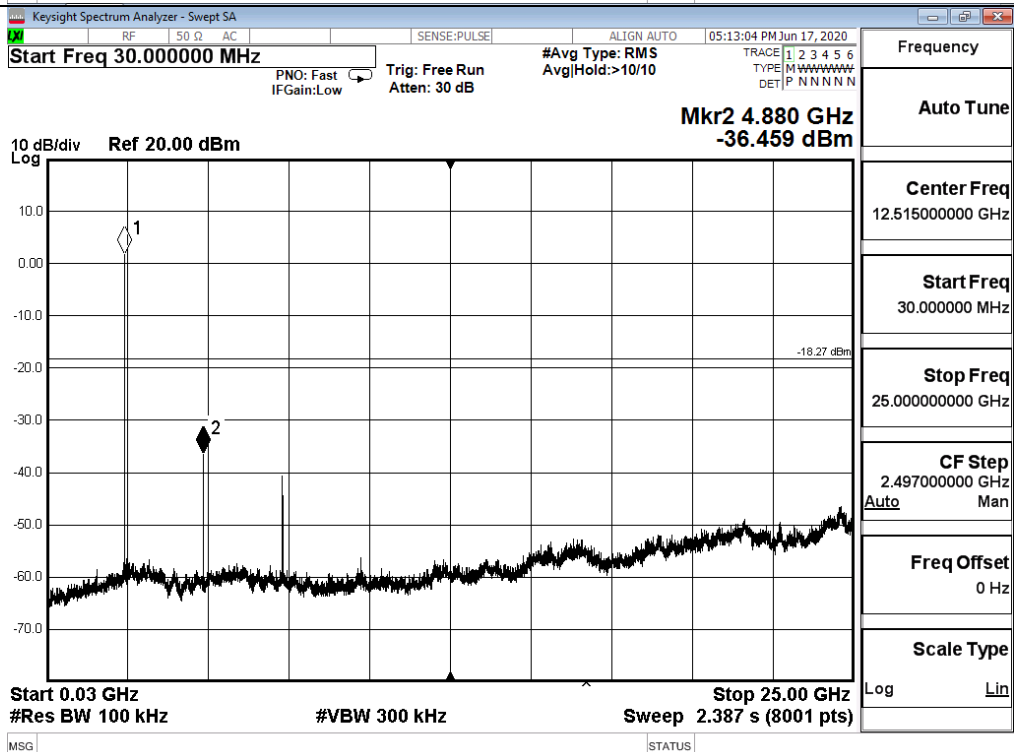


$\pi/4$ DQPSK_MCH_Graphs

Pref

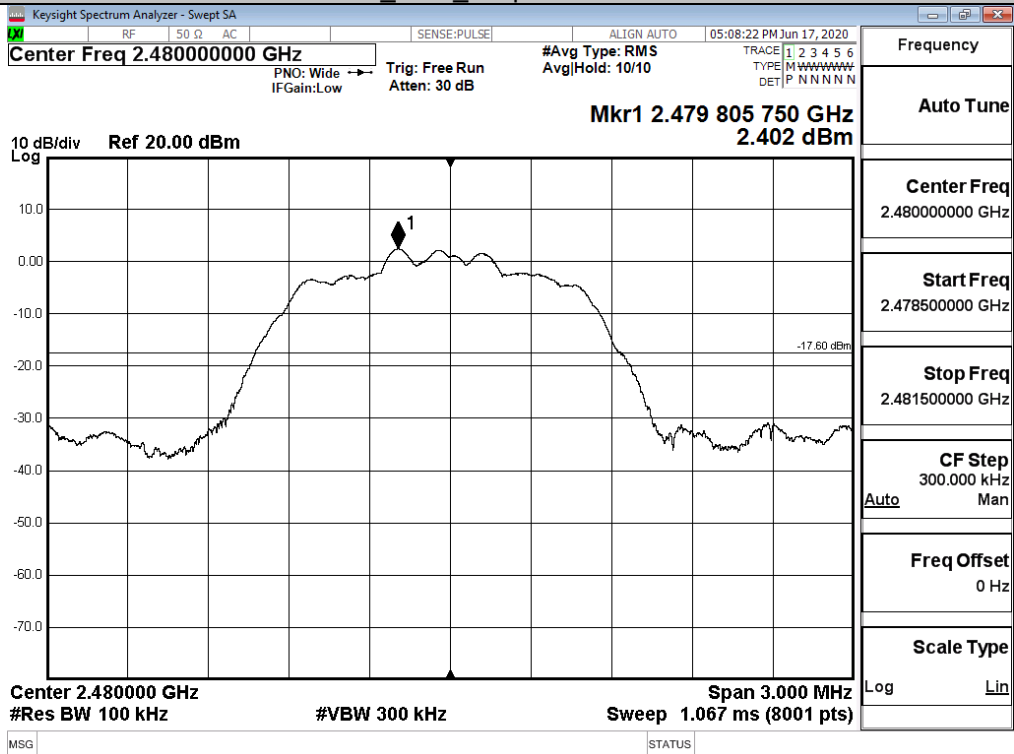


Puw

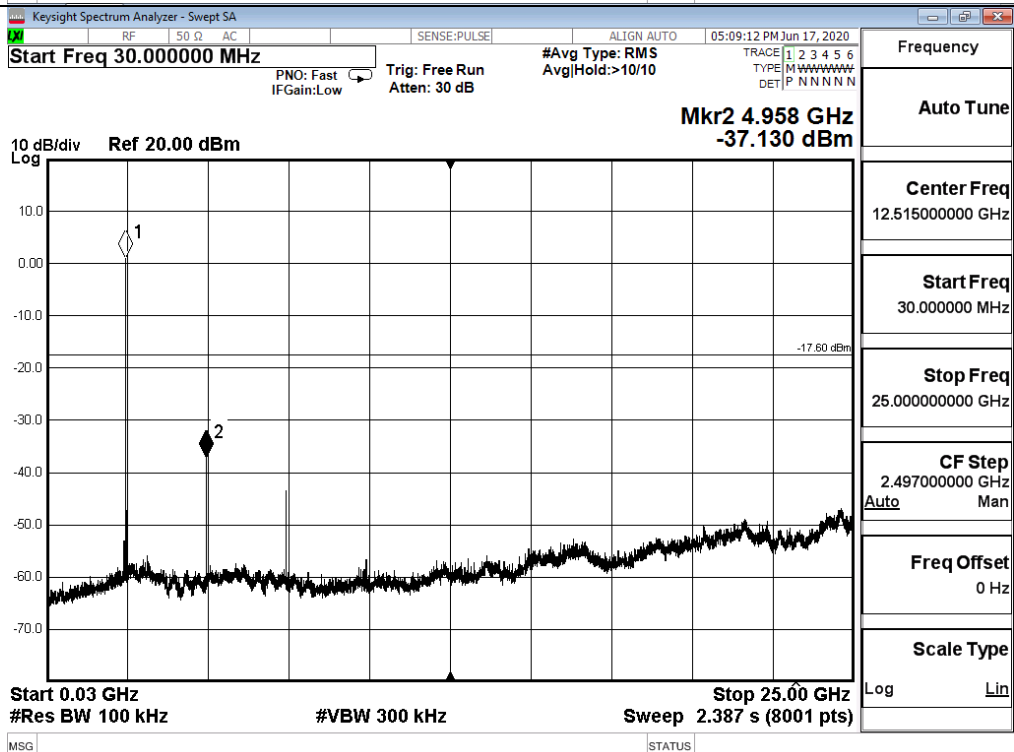


$\pi/4$ DQPSK_HCH_Graphs

Pref

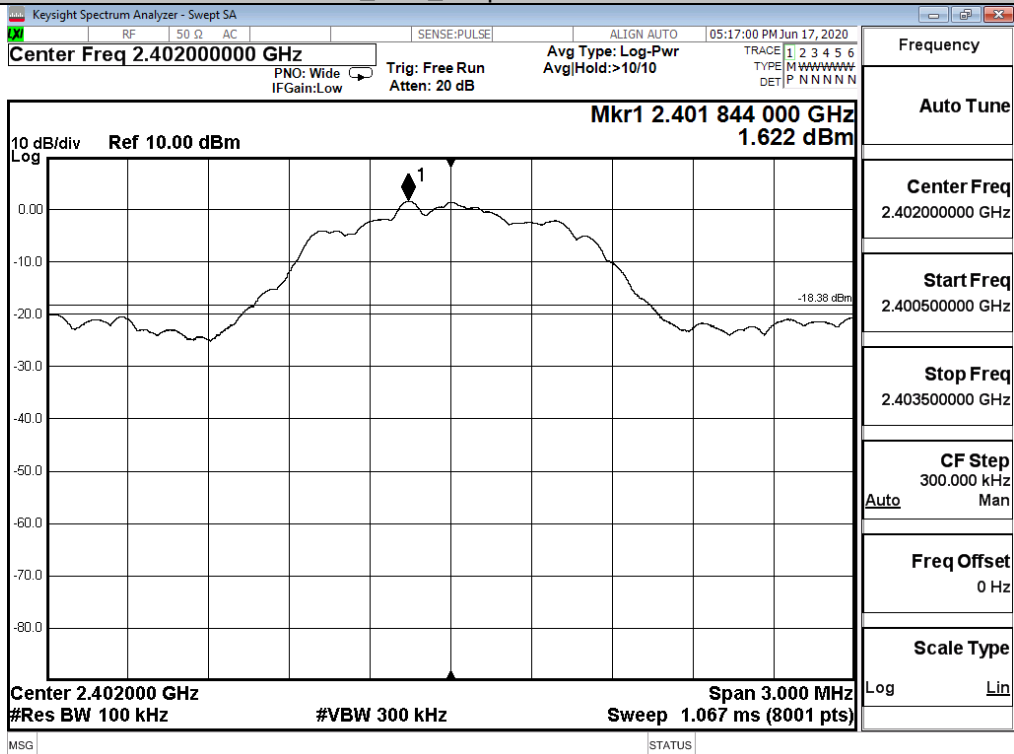


Puw

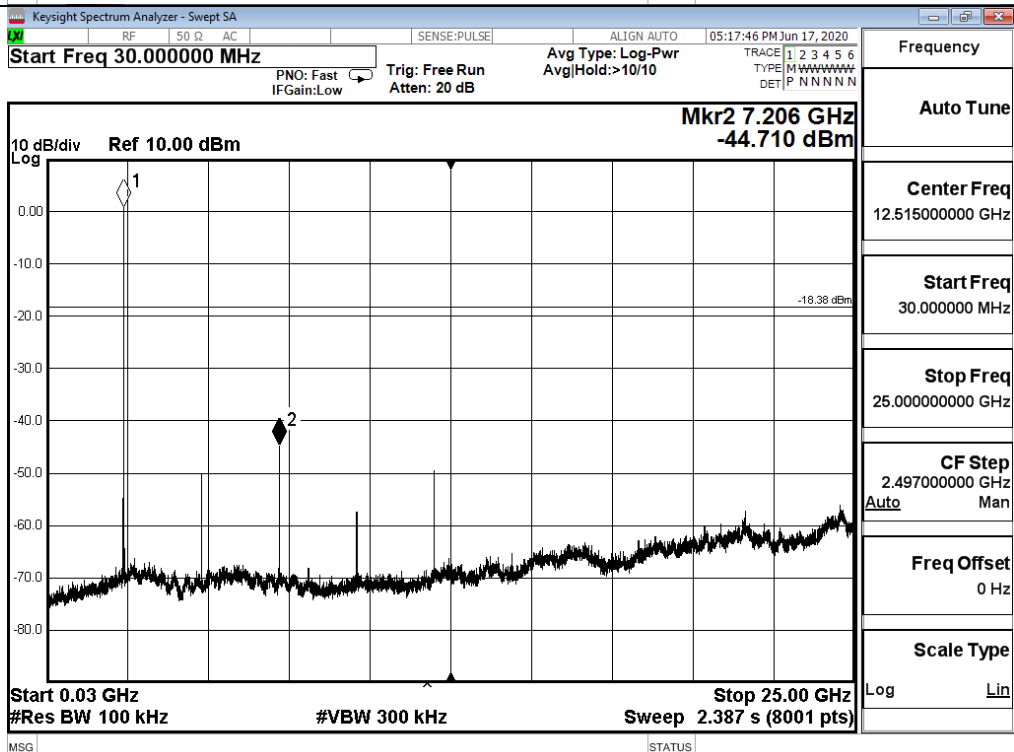


8DPSK_LCH_Graphs

Pref

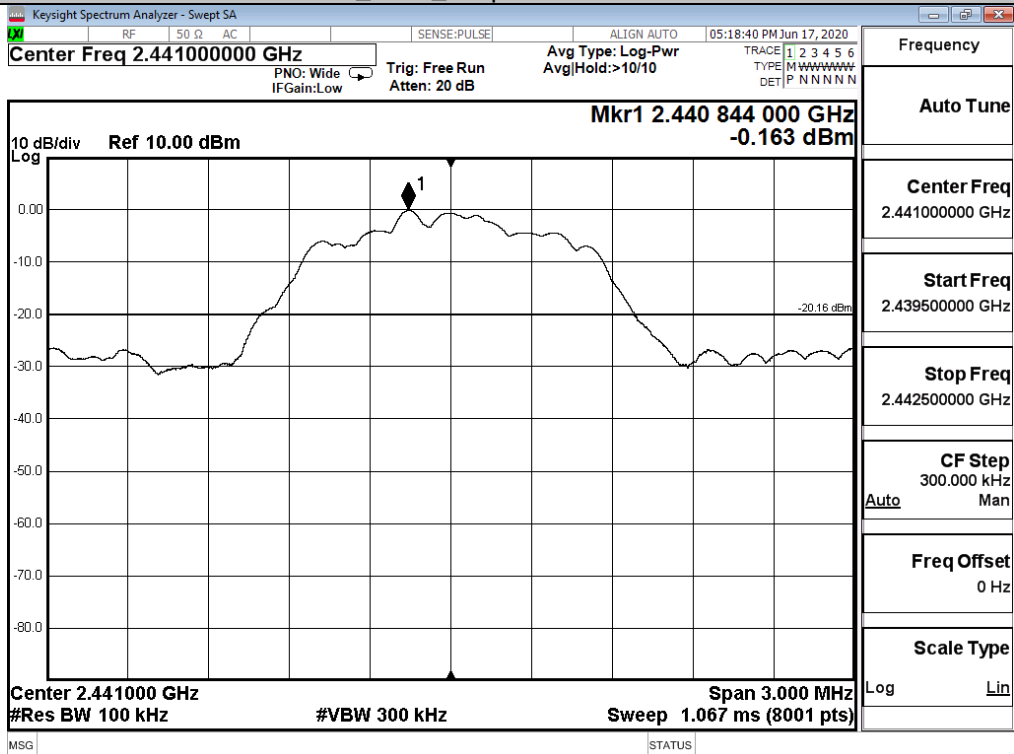


Puw

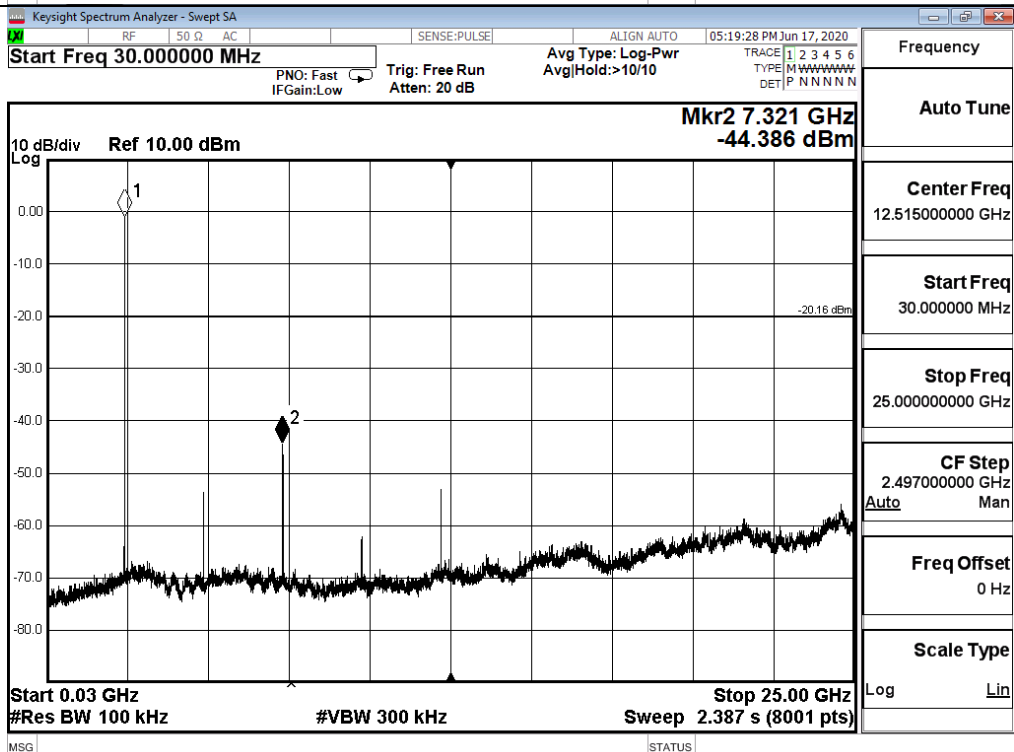


8DPSK_MCH_Graphs

Pref

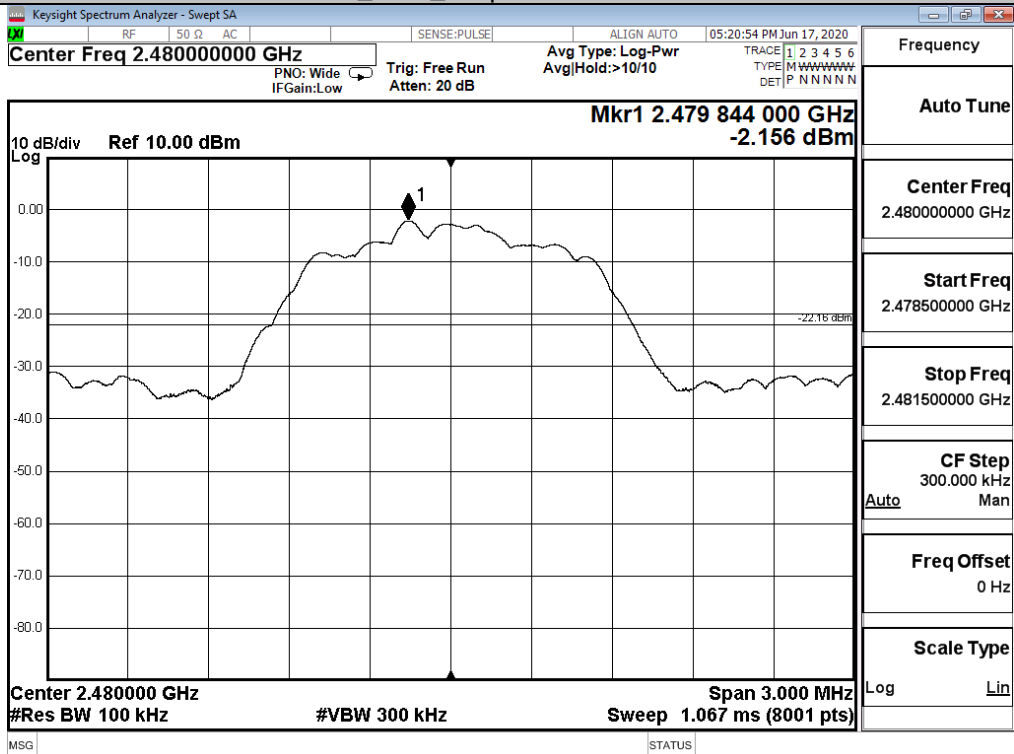


Puw

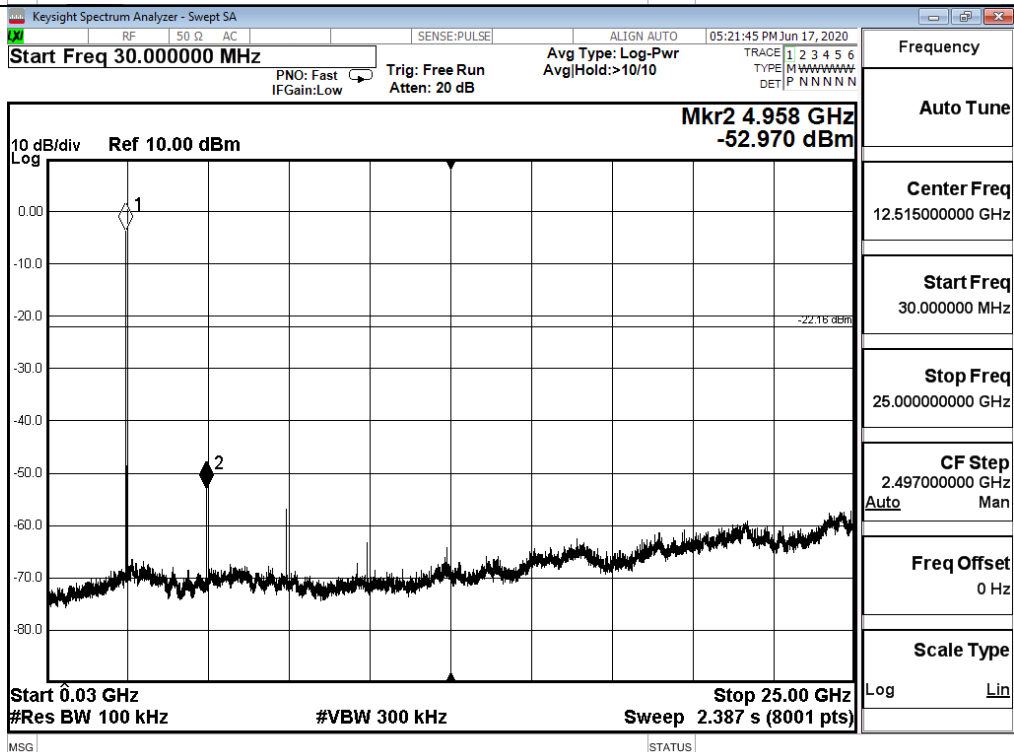


8DPSK_HCH_Graphs

Pref



Puw

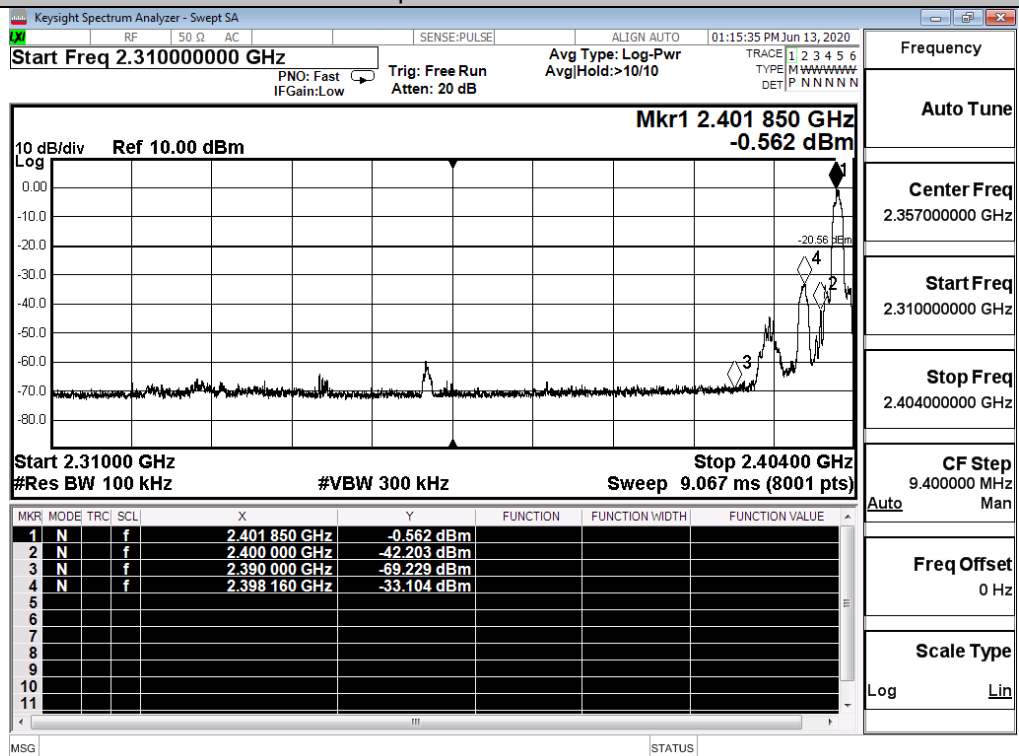


A.7 Band-edge for RF Conducted Emissions

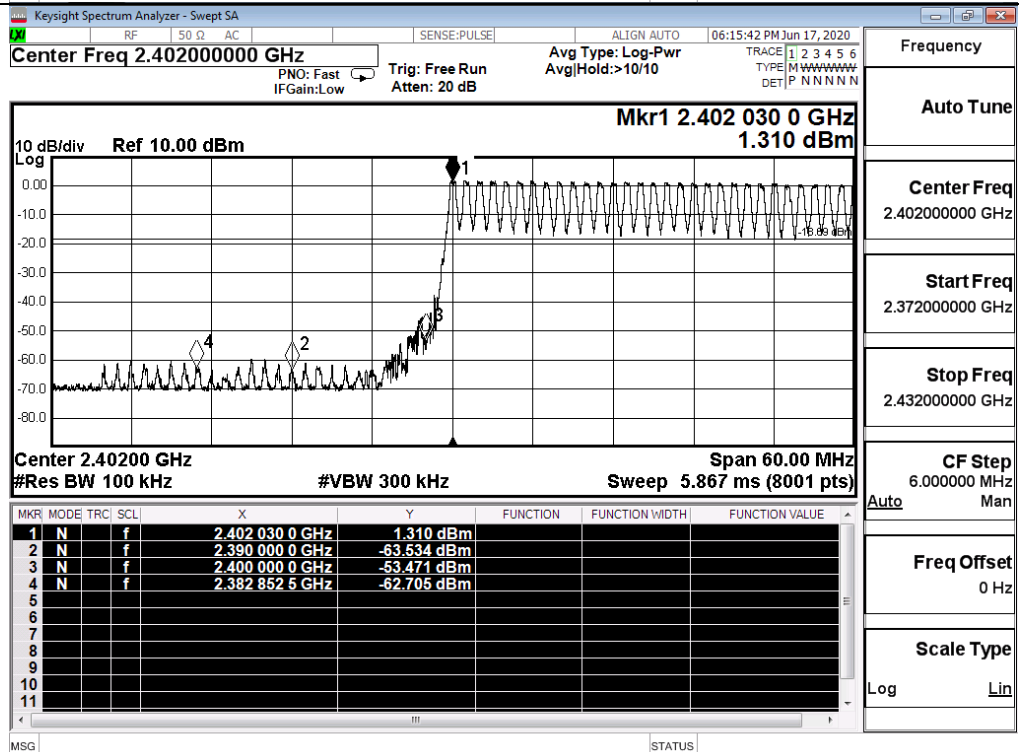
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.562	Off	-33.104	-20.56	PASS
			1.310	On	-62.705	-18.69	PASS
	HCH	2480	-2.067	Off	-58.001	-22.17	PASS
			-2.099	On	-58.339	-22.10	PASS
π/4DQPSK	LCH	2402	1.618	Off	-60.011	-18.38	PASS
			-0.548	On	-33.207	-20.55	PASS
	HCH	2480	-2.105	Off	-30.240	-22.11	PASS
			-2.277	On	-58.401	-22.28	PASS
8DPSK	LCH	2402	1.685	Off	-61.921	-18.32	PASS
			1.453	On	-61.562	-18.55	PASS
	HCH	2480	-2.090	Off	-31.077	-22.09	PASS
			-2.265	On	-43.538	-22.27	PASS

Test Graphs

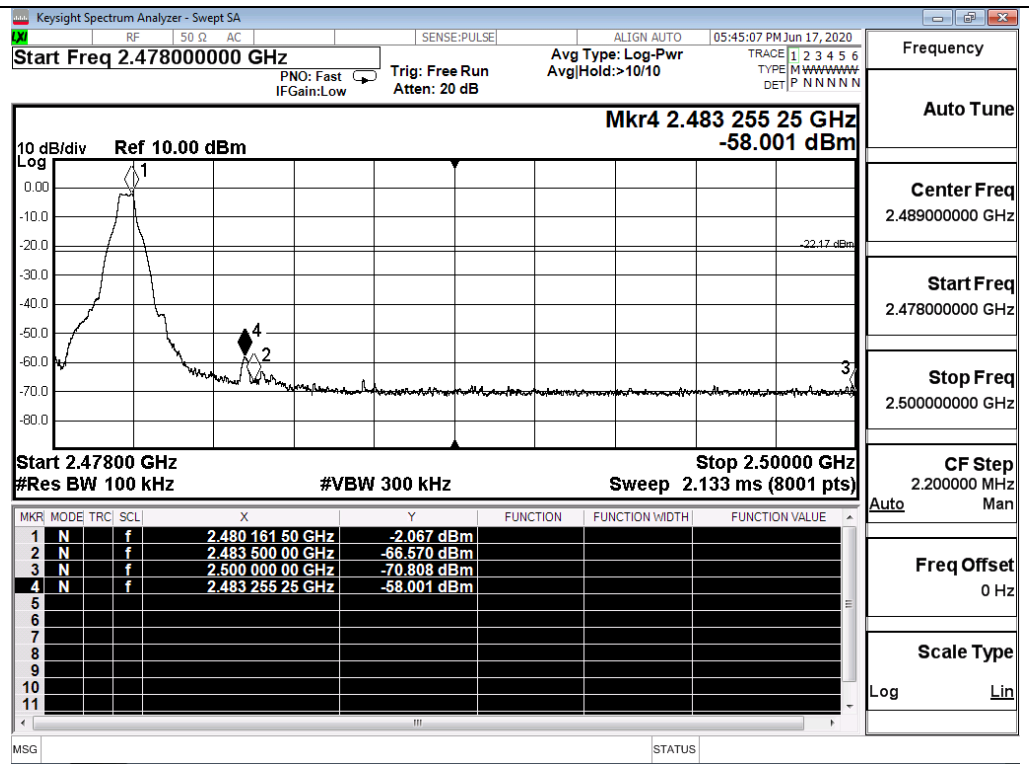
GFSK/LCH/No Hop



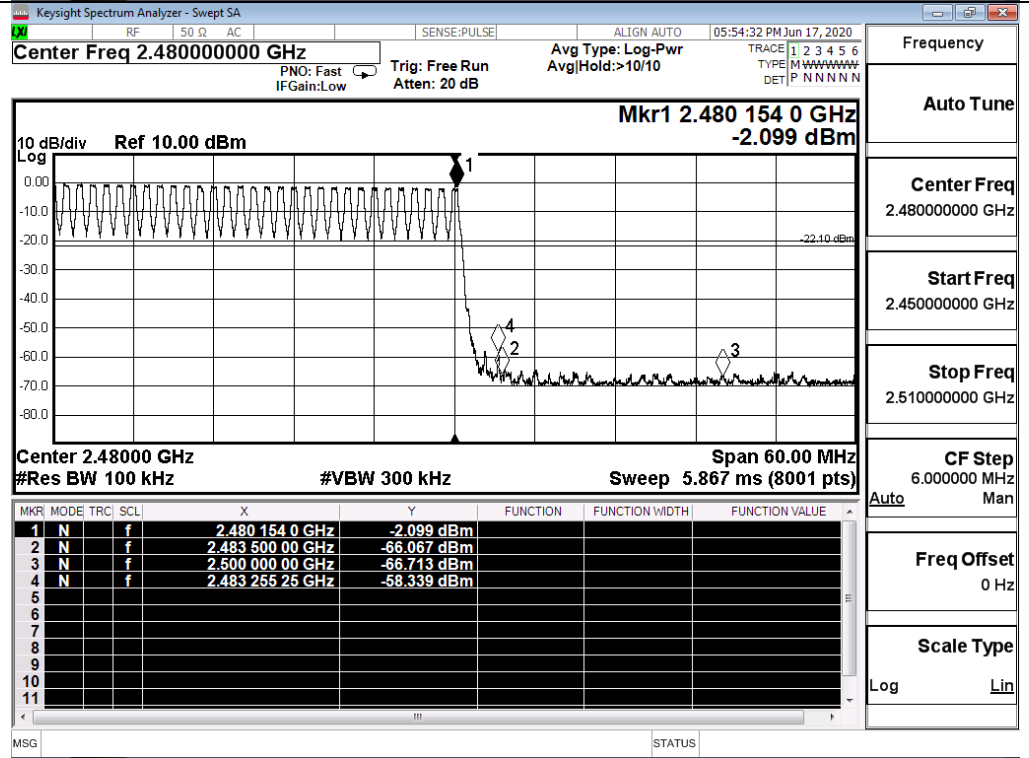
GFSK/LCH/Hop



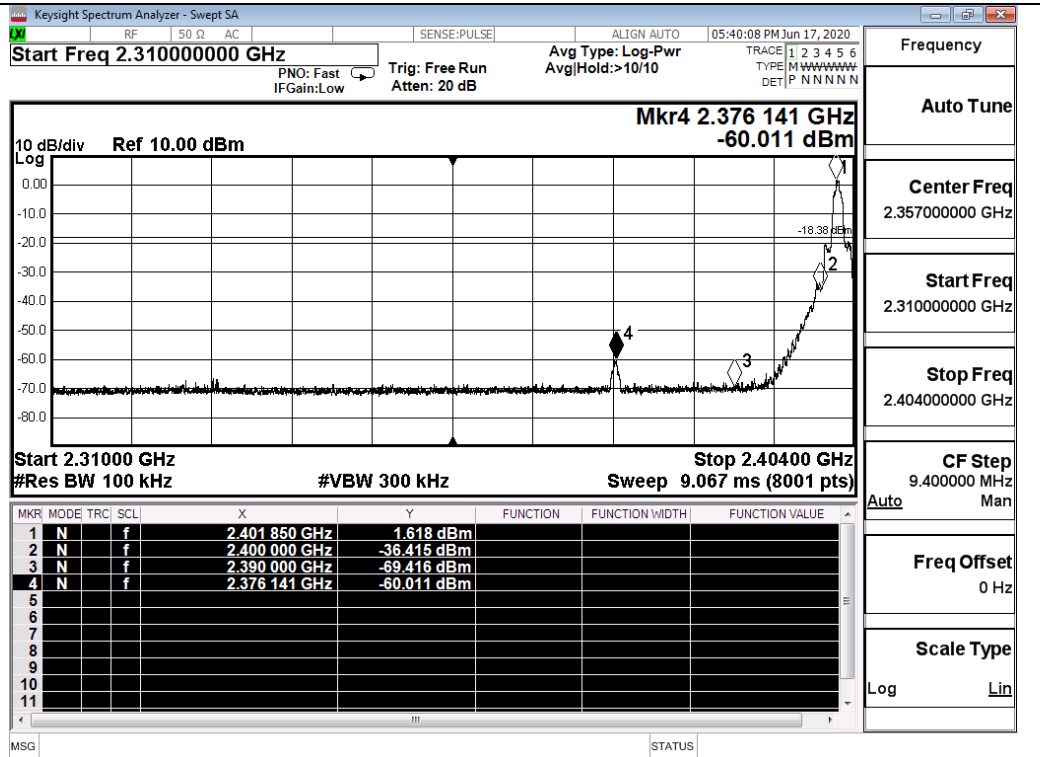
GFSK/HCH/No Hop



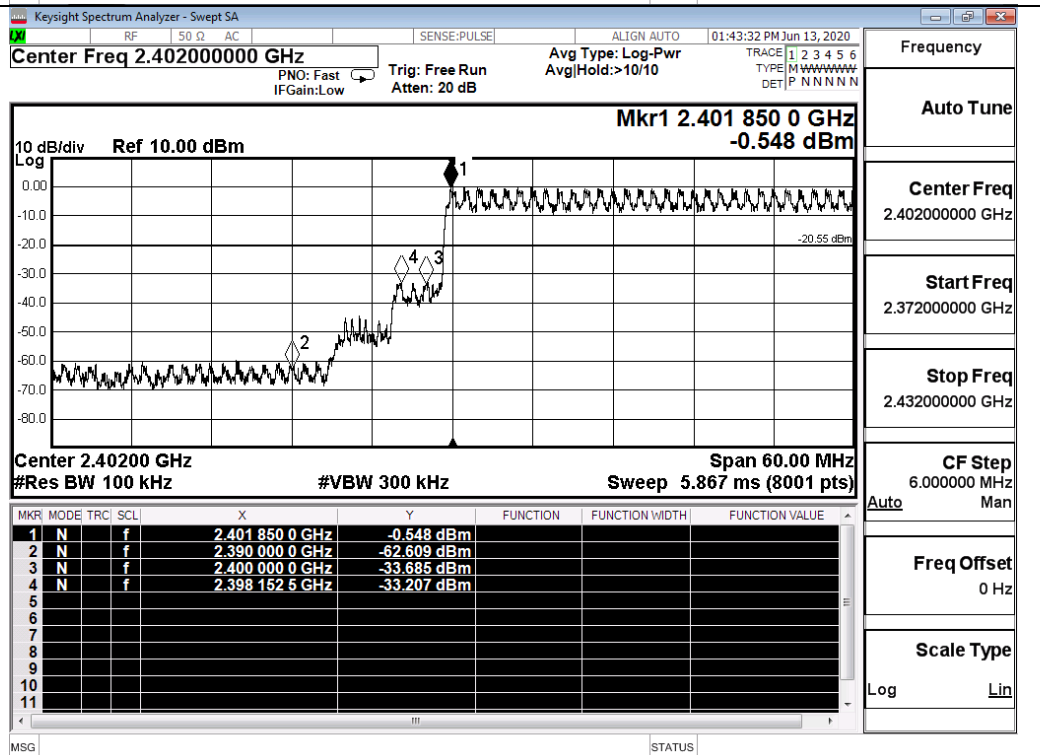
GFSK/HCH/Hop



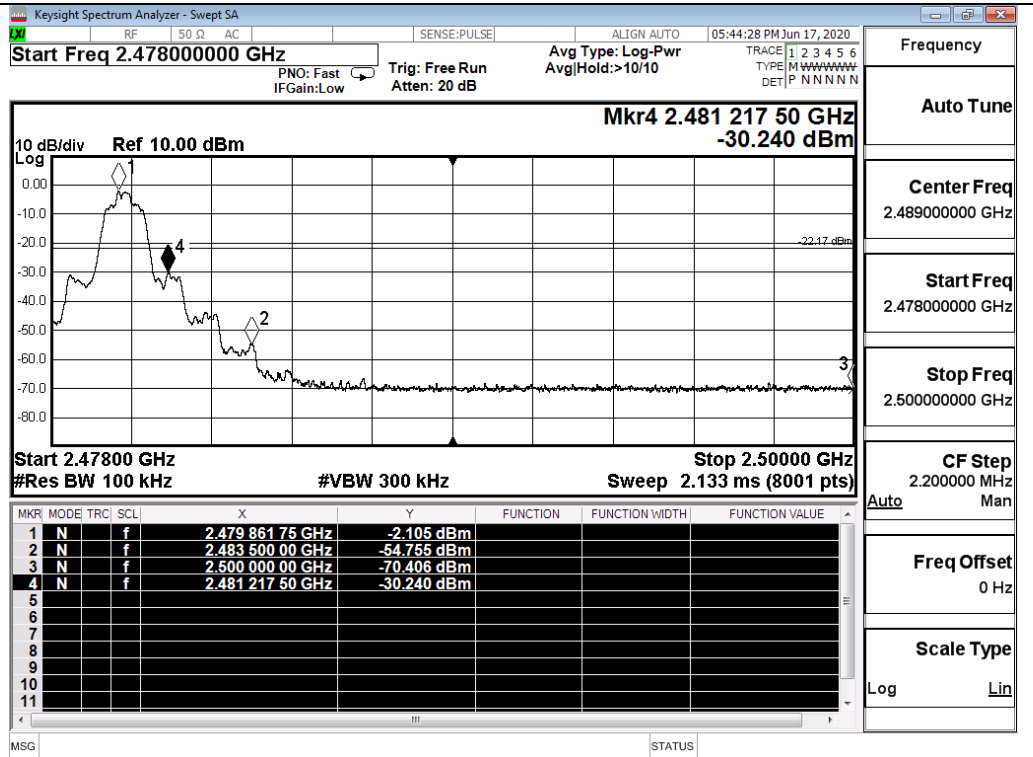
$\pi/4$ DQPSK/LCH/No
Hop



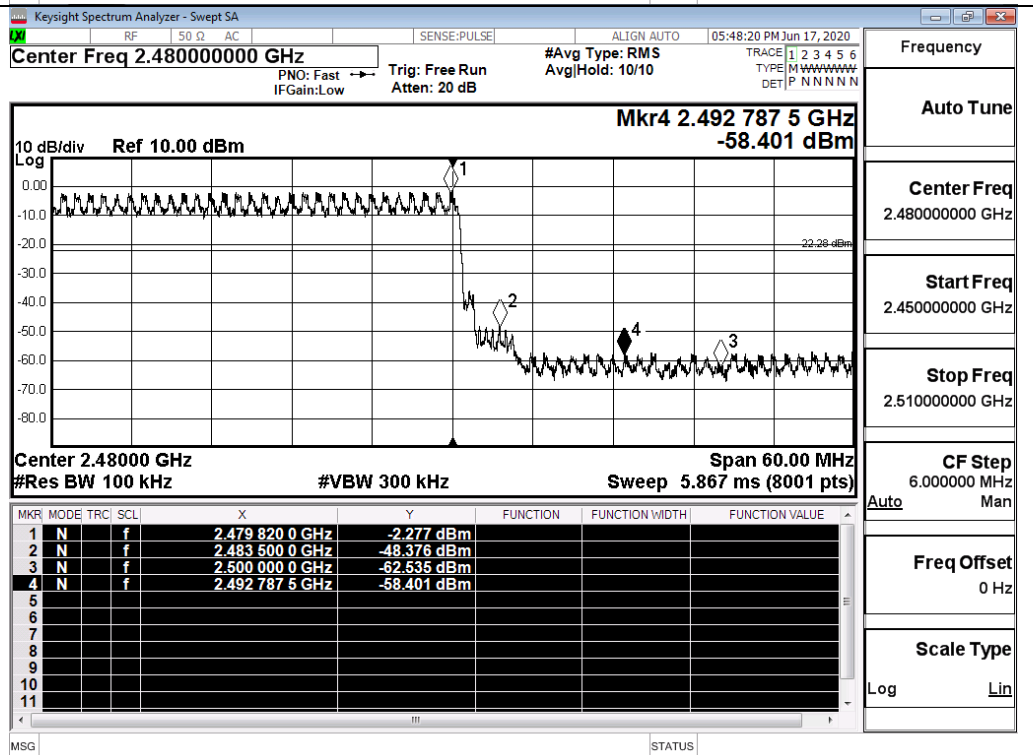
$\pi/4$ DQPSK/LCH/Hop



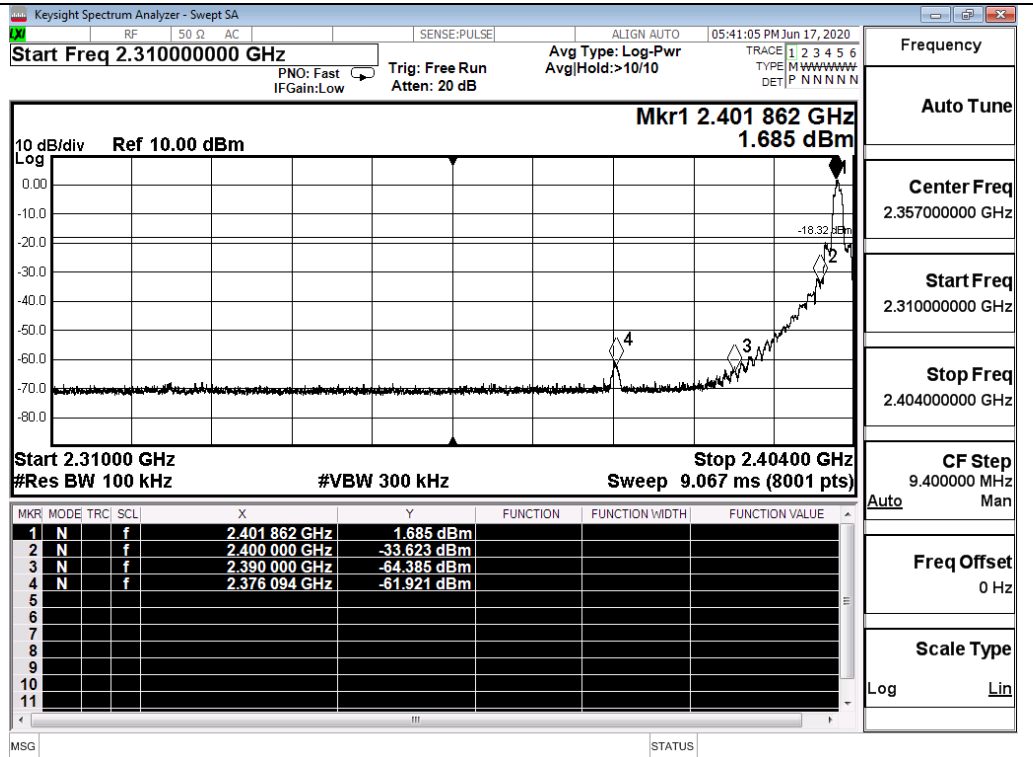
$\pi/4$ DQPSK/HCH/No
Hop



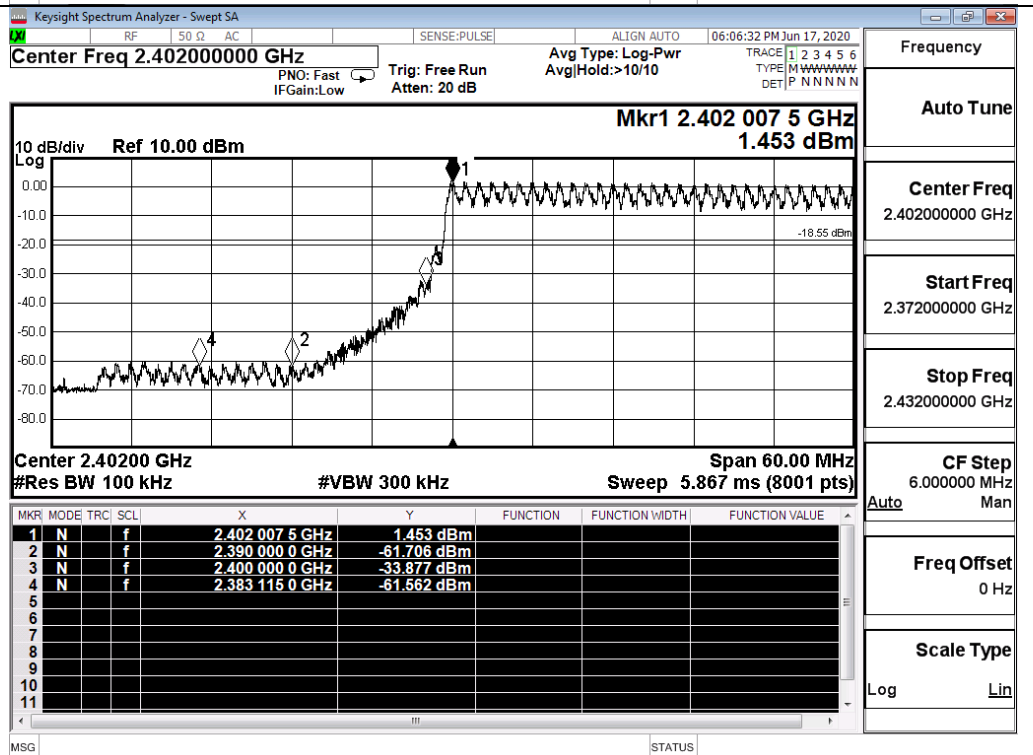
$\pi/4$ DQPSK/HCH/Hop



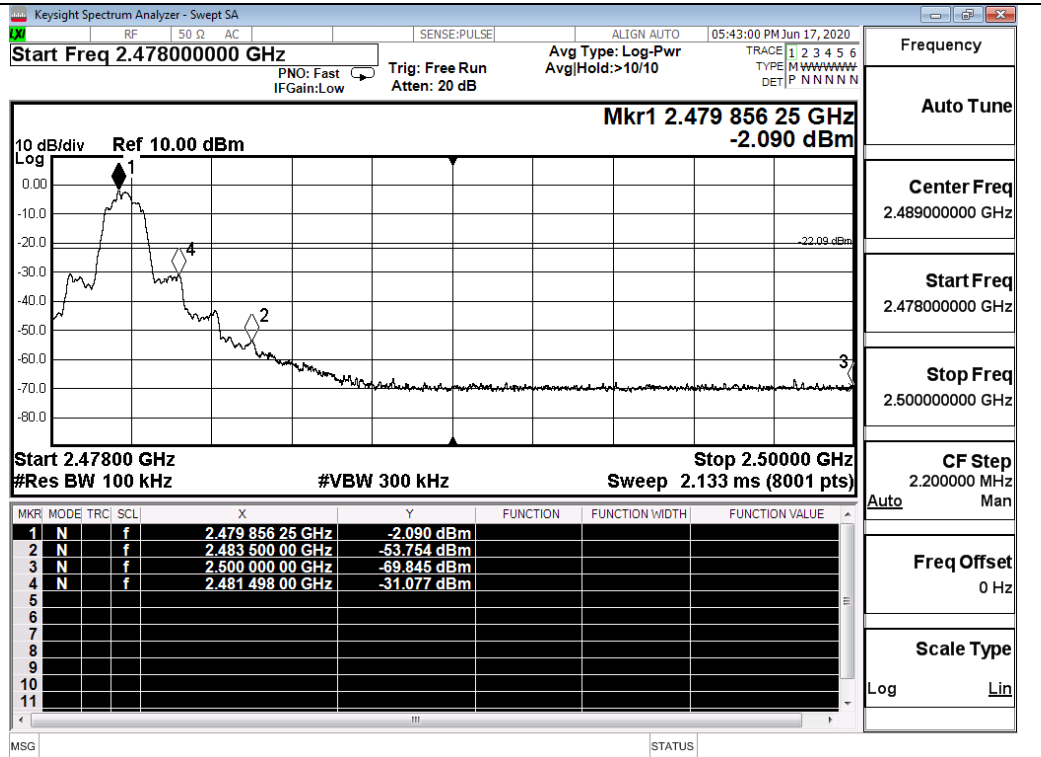
8DPSK/LCH/No Hop



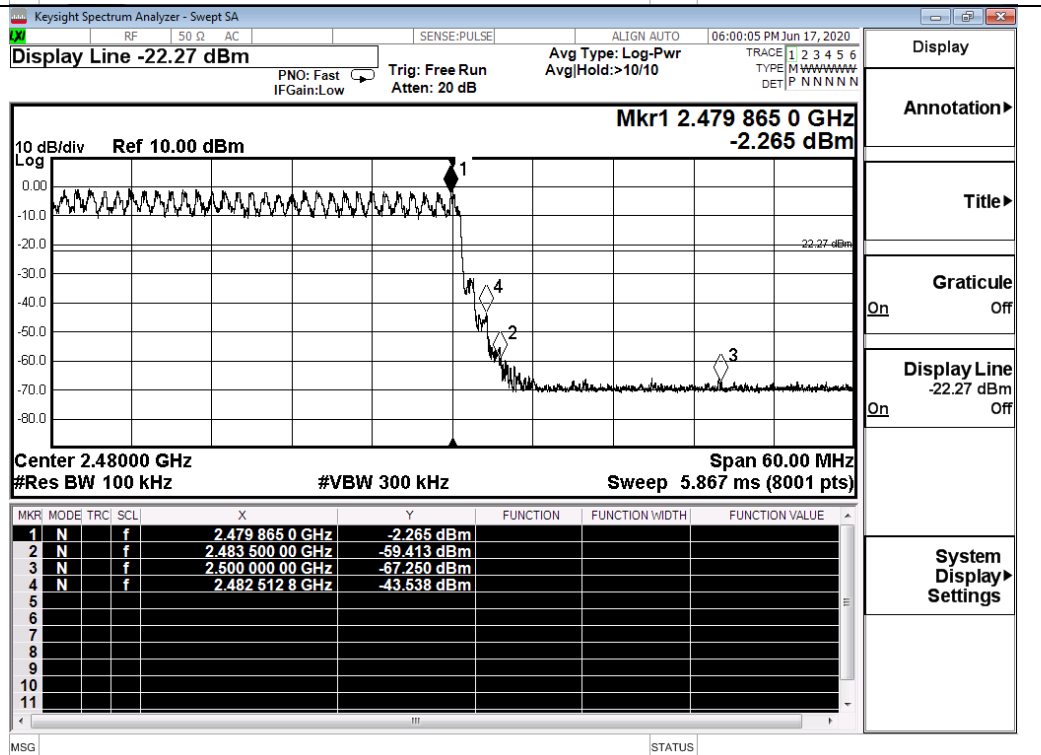
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



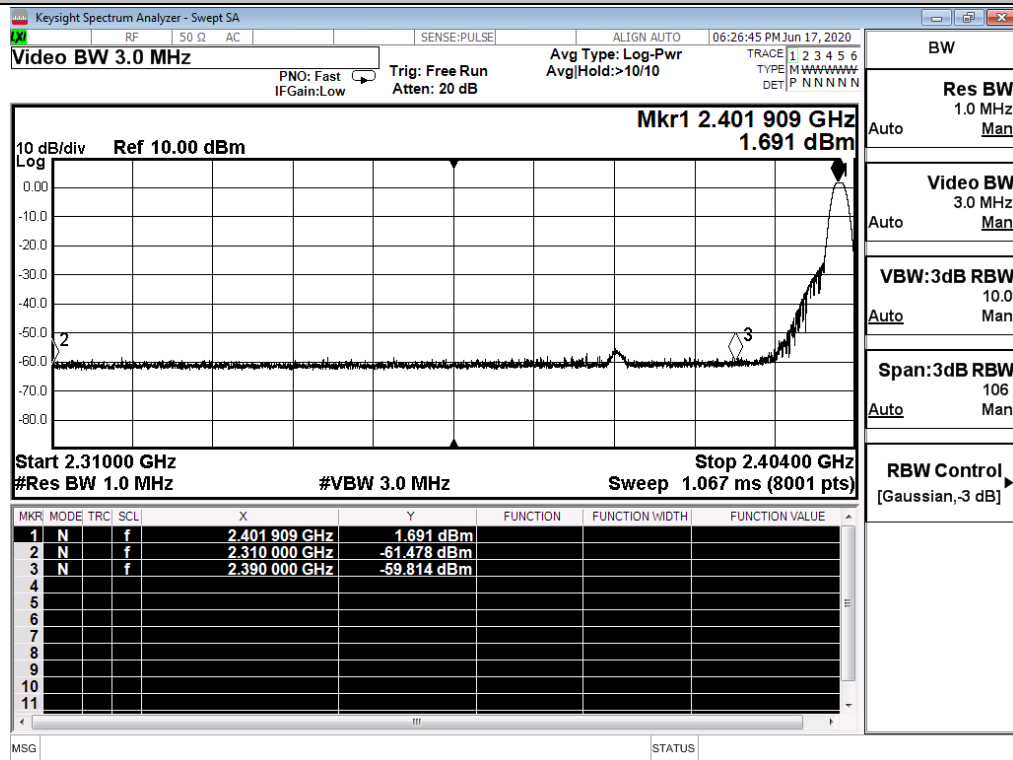
8DPSK/HCH/Hop



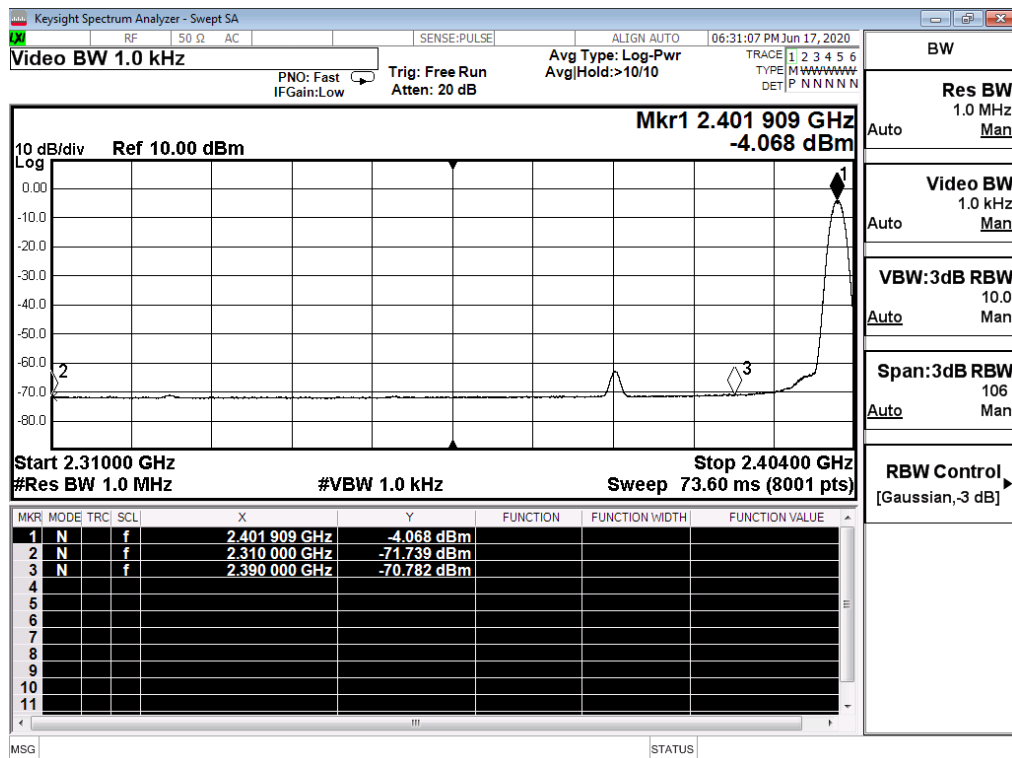
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-61.478	2.0	0	35.78	PEAK	74	PASS
	Off	2310.0	-71.739	2.0	0	25.52	AV	54	PASS
	Off	2390.0	-59.814	2.0	0	37.45	PEAK	74	PASS
	Off	2390.0	-70.782	2.0	0	26.48	AV	54	PASS
	Off	2483.5	-55.803	2.0	0	41.46	PEAK	74	PASS
	Off	2483.5	-67.110	2.0	0	30.15	AV	54	PASS
	Off	2500.0	-61.642	2.0	0	35.62	PEAK	74	PASS
	Off	2500.0	-71.398	2.0	0	25.86	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-62.213	2.0	0	35.05	PEAK	74	PASS
	Off	2310.0	-71.749	2.0	0	25.51	AV	54	PASS
	Off	2390.0	-61.205	2.0	0	36.06	PEAK	74	PASS
	Off	2390.0	-71.079	2.0	0	26.18	AV	54	PASS
	Off	2483.5	-45.993	2.0	0	51.27	PEAK	74	PASS
	Off	2483.5	-64.538	2.0	0	32.72	AV	54	PASS
	Off	2500.0	-60.602	2.0	0	36.66	PEAK	74	PASS
	Off	2500.0	-71.419	2.0	0	25.84	AV	54	PASS
8DPSK	Off	2310.0	-60.909	2.0	0	36.35	PEAK	74	PASS
	Off	2310.0	-72.042	2.0	0	25.22	AV	54	PASS
	Off	2390.0	-49.981	2.0	0	47.28	PEAK	74	PASS
	Off	2390.0	-69.968	2.0	0	27.29	AV	54	PASS
	Off	2483.5	-37.801	2.0	0	59.46	PEAK	74	PASS
	Off	2483.5	-64.785	2.0	0	32.48	AV	54	PASS
	Off	2500.0	-60.567	2.0	0	36.69	PEAK	74	PASS
	Off	2500.0	-71.234	2.0	0	26.03	AV	54	PASS

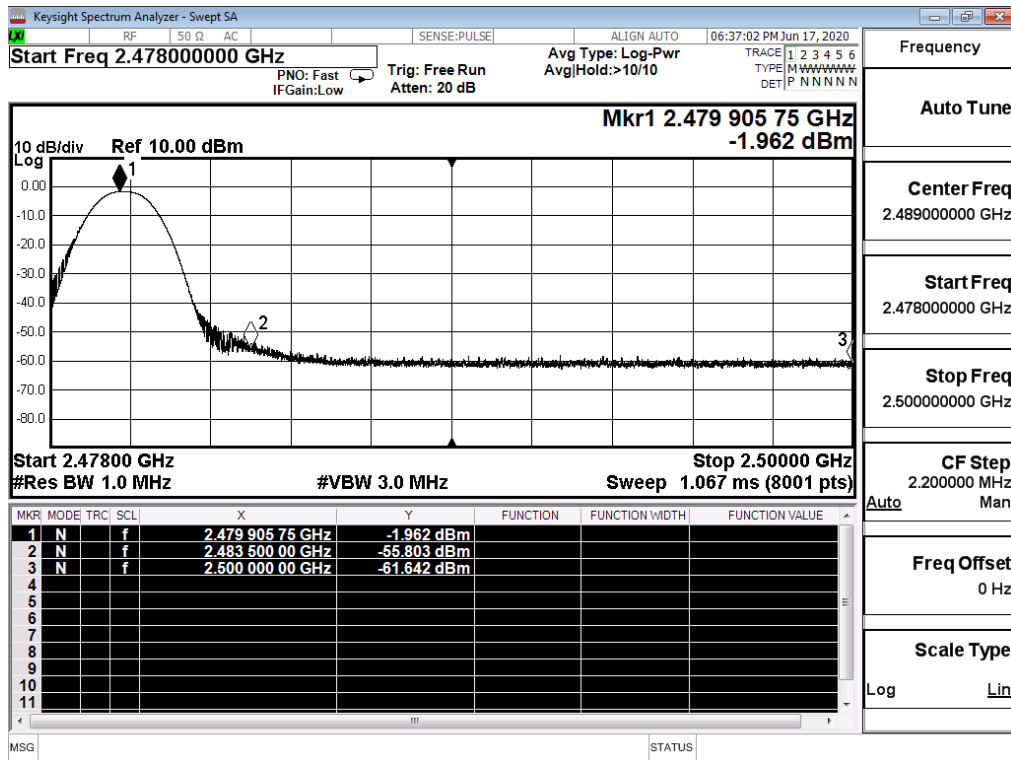
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



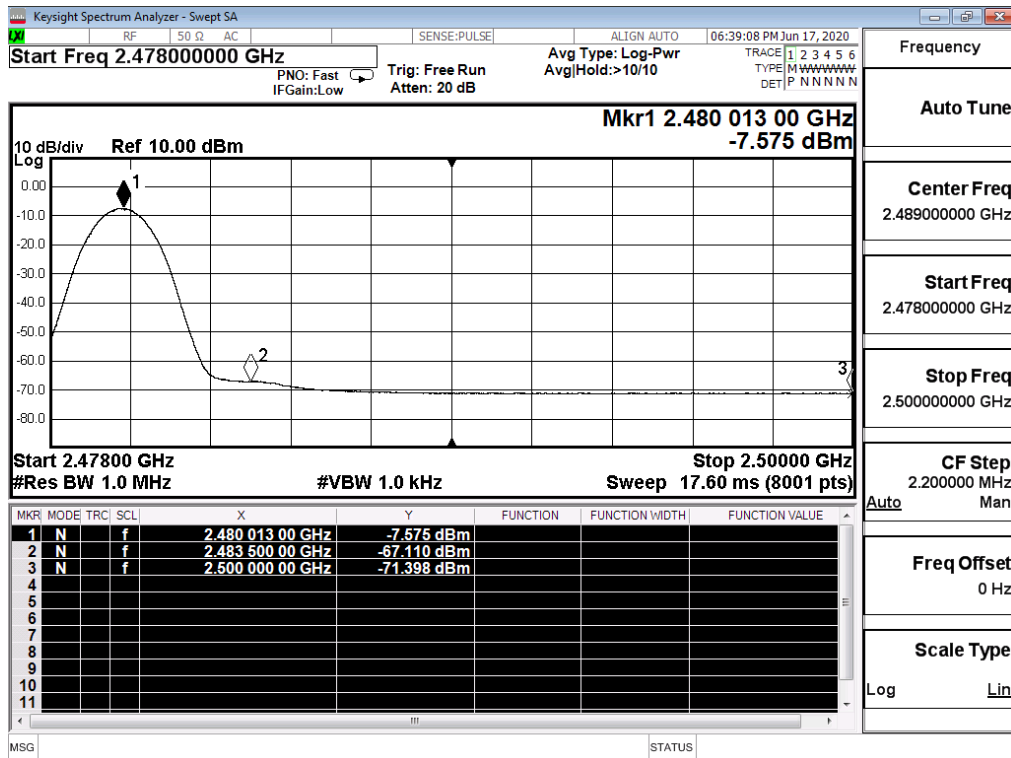
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



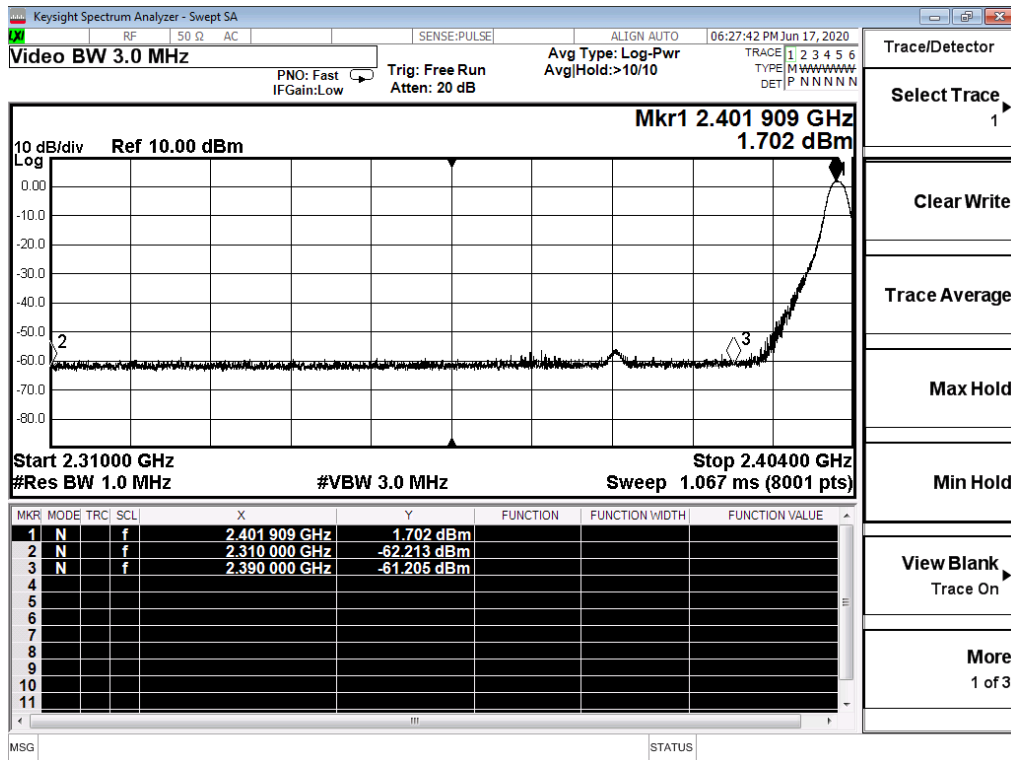
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



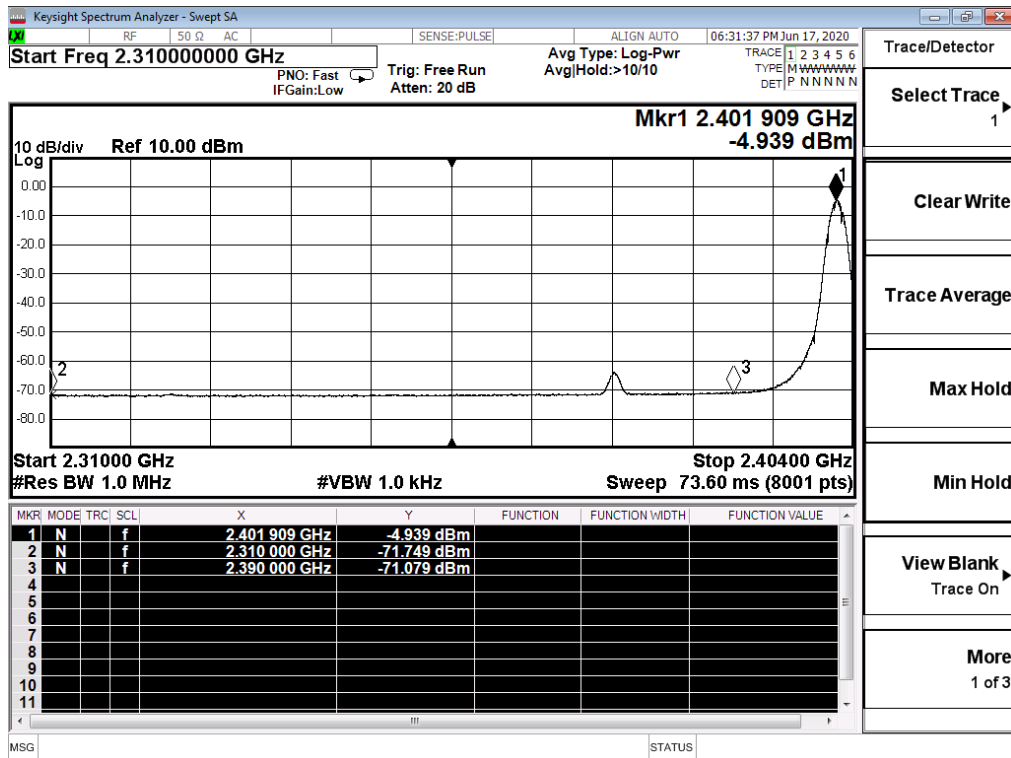
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



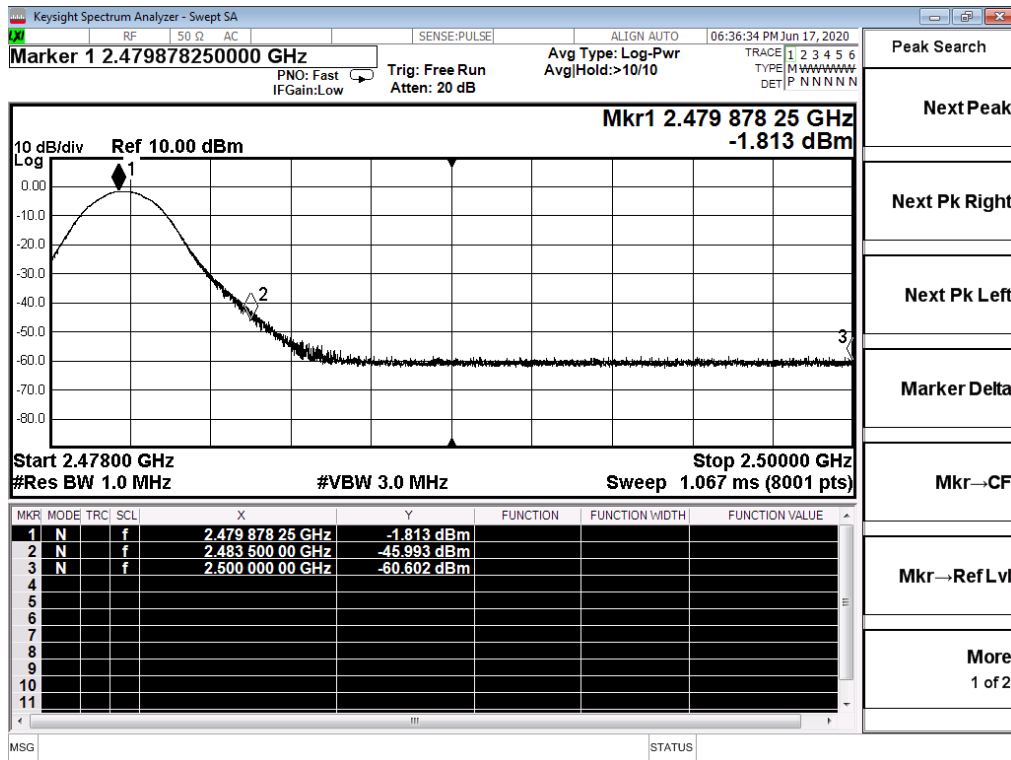
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



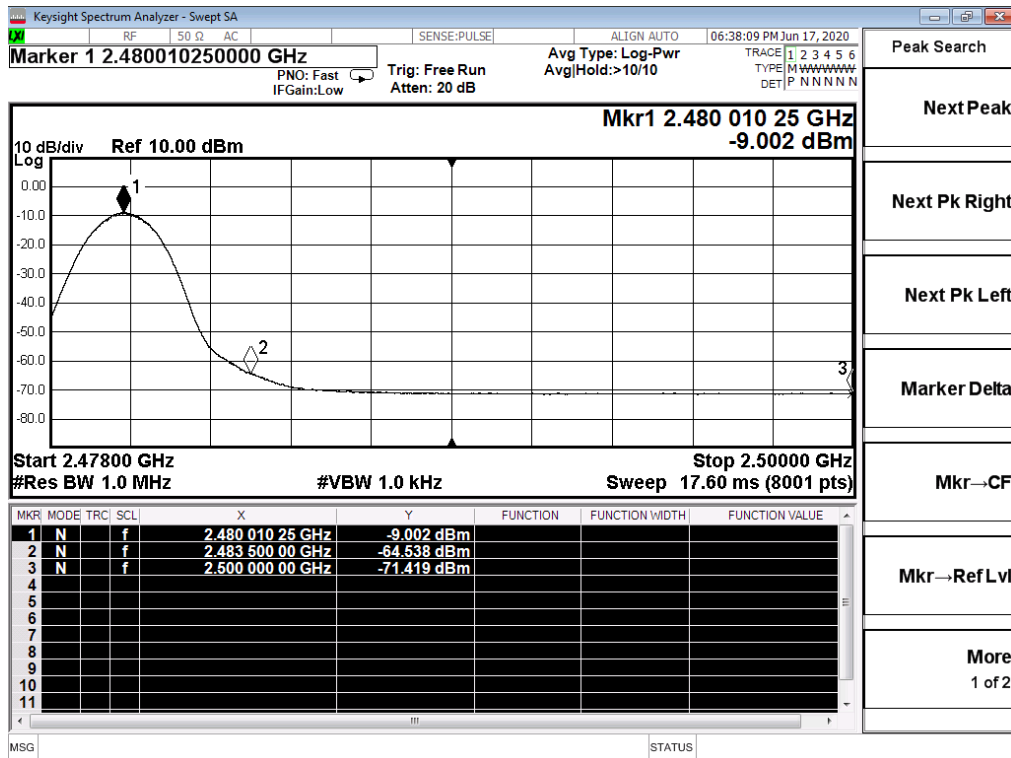
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



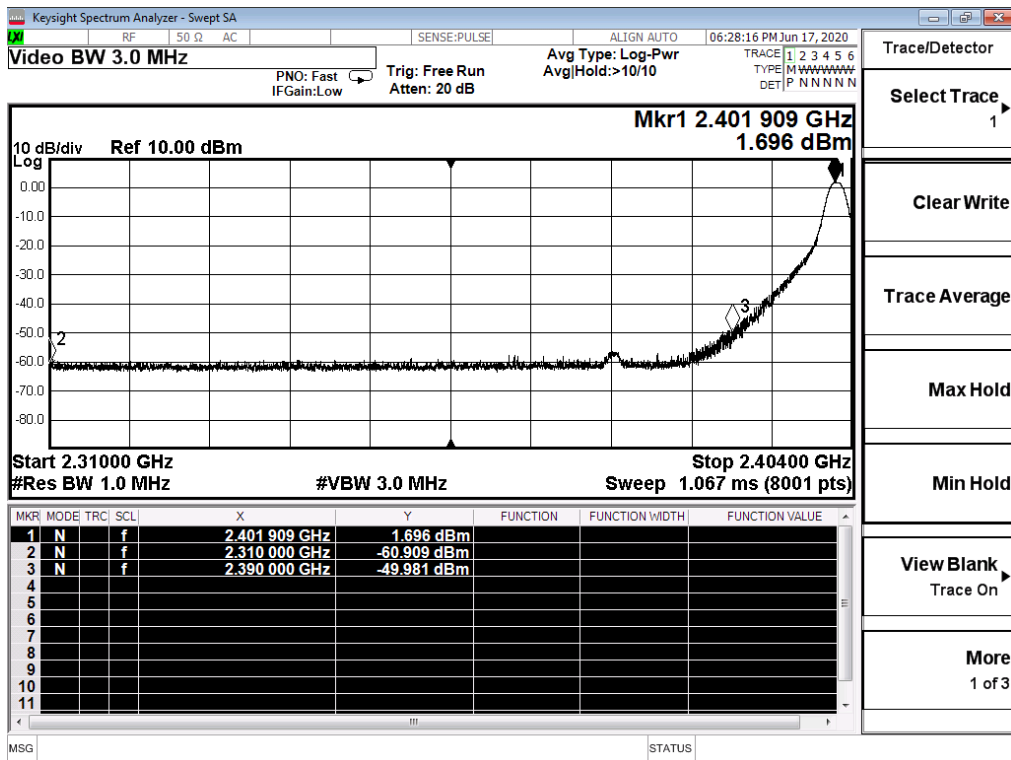
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



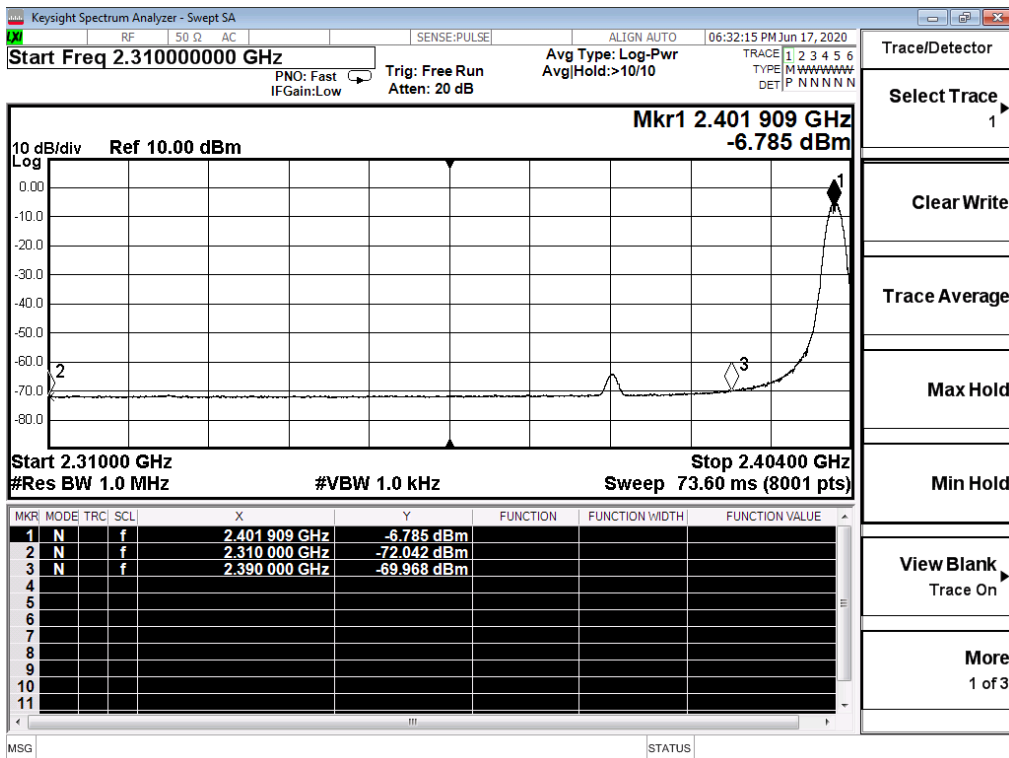
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



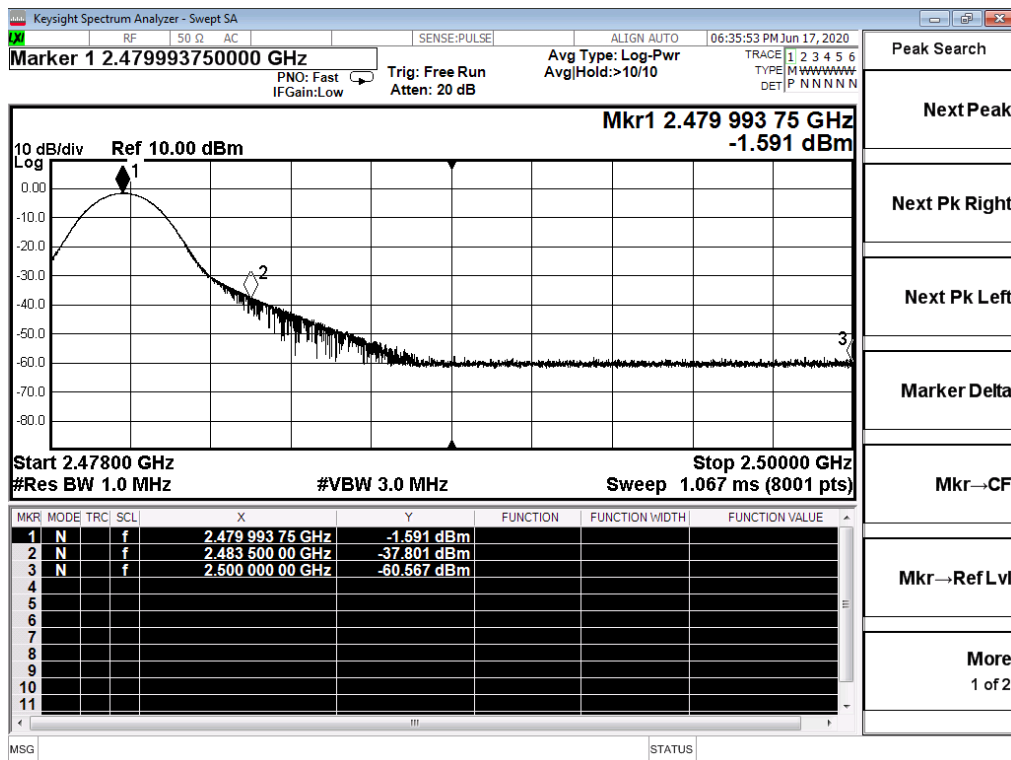
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

