

Appendix A

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

Product Name: Bluetooth headphones



Environmental Conditions

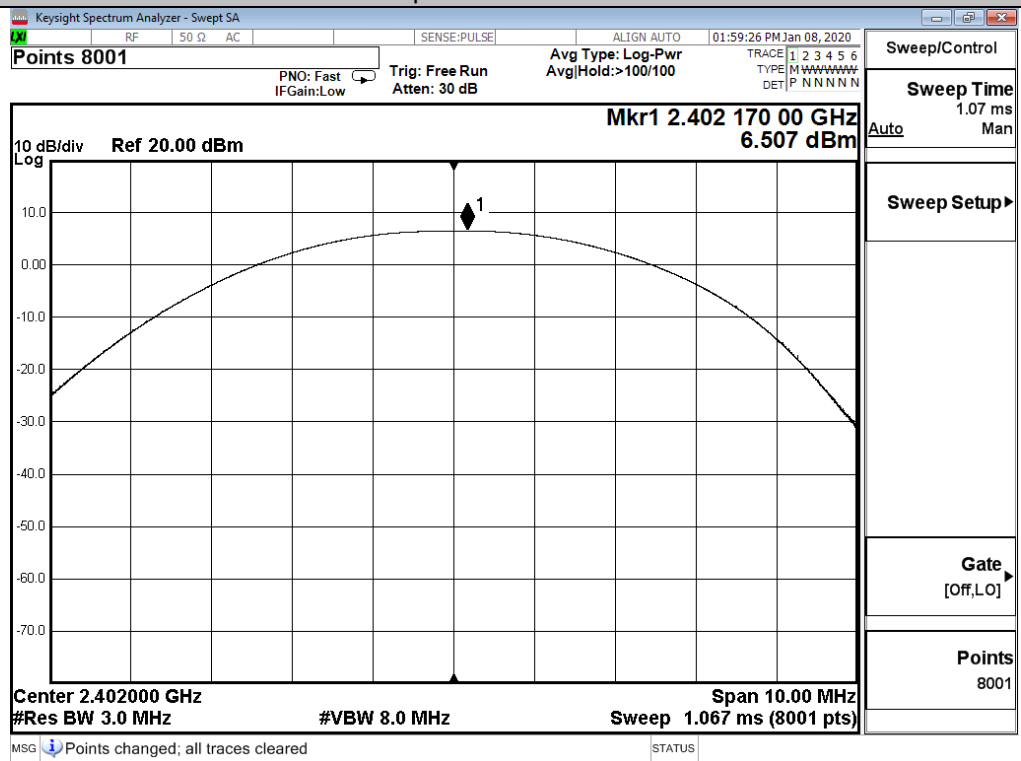
Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

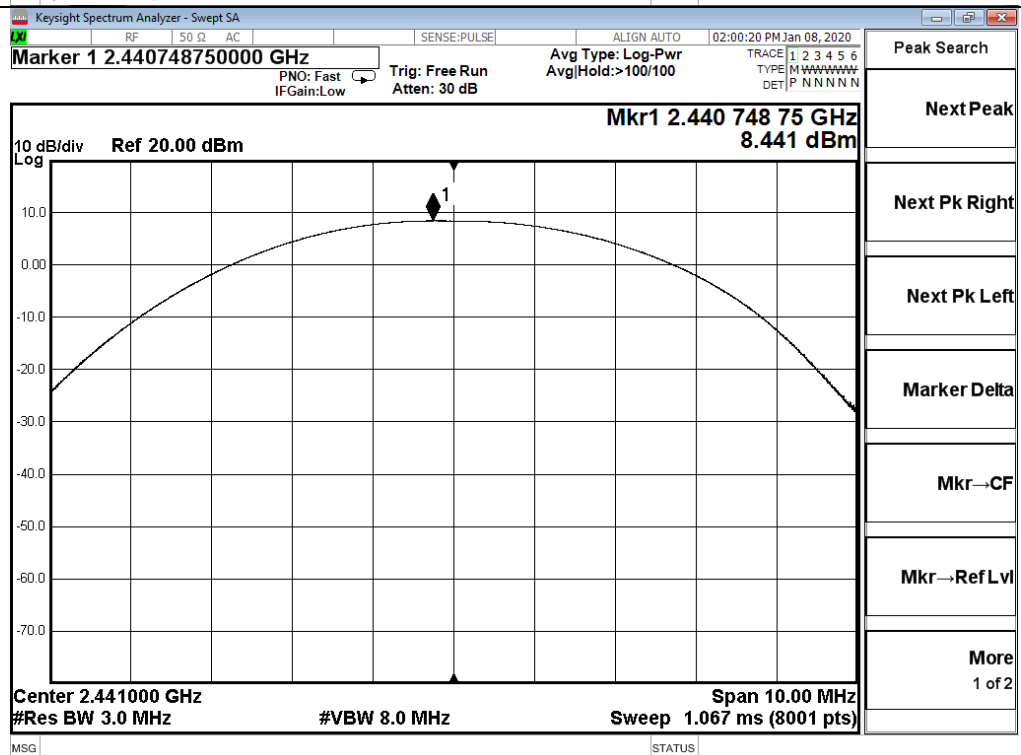
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.507	21	PASS
	MCH	8.441	21	PASS
	HCH	9.059	21	PASS
$\pi/4$ DQPSK	LCH	5.735	21	PASS
	MCH	7.646	21	PASS
	HCH	7.902	21	PASS
8DPSK	LCH	5.738	21	PASS
	MCH	7.758	21	PASS
	HCH	8.142	21	PASS

Test Graphs

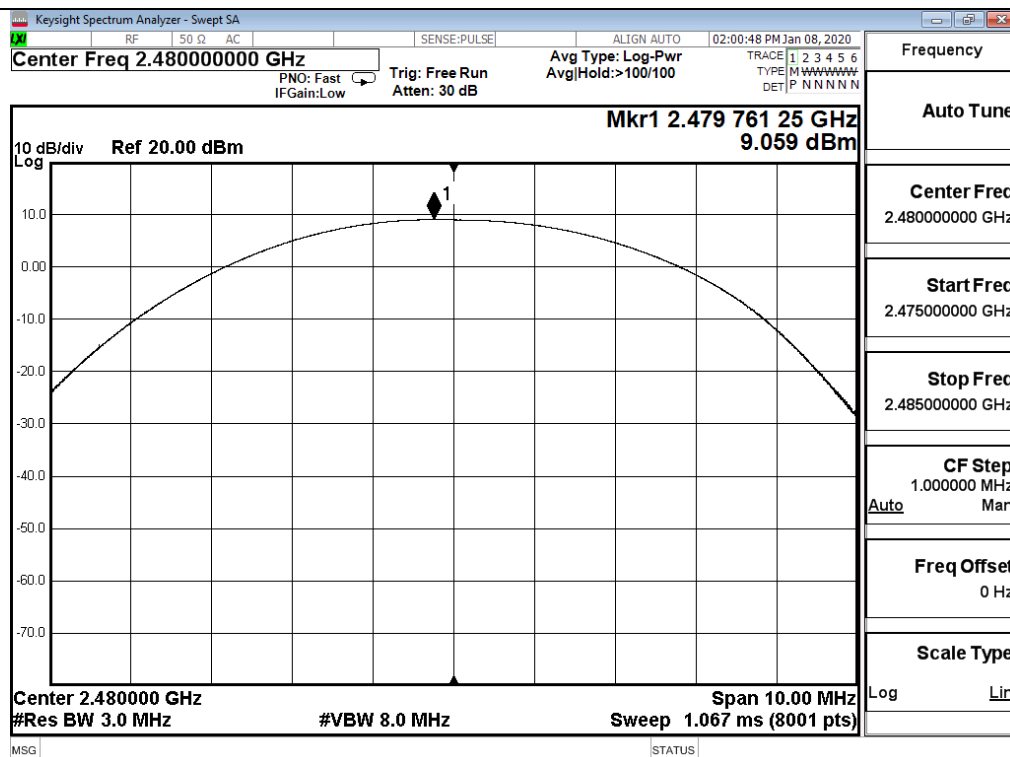
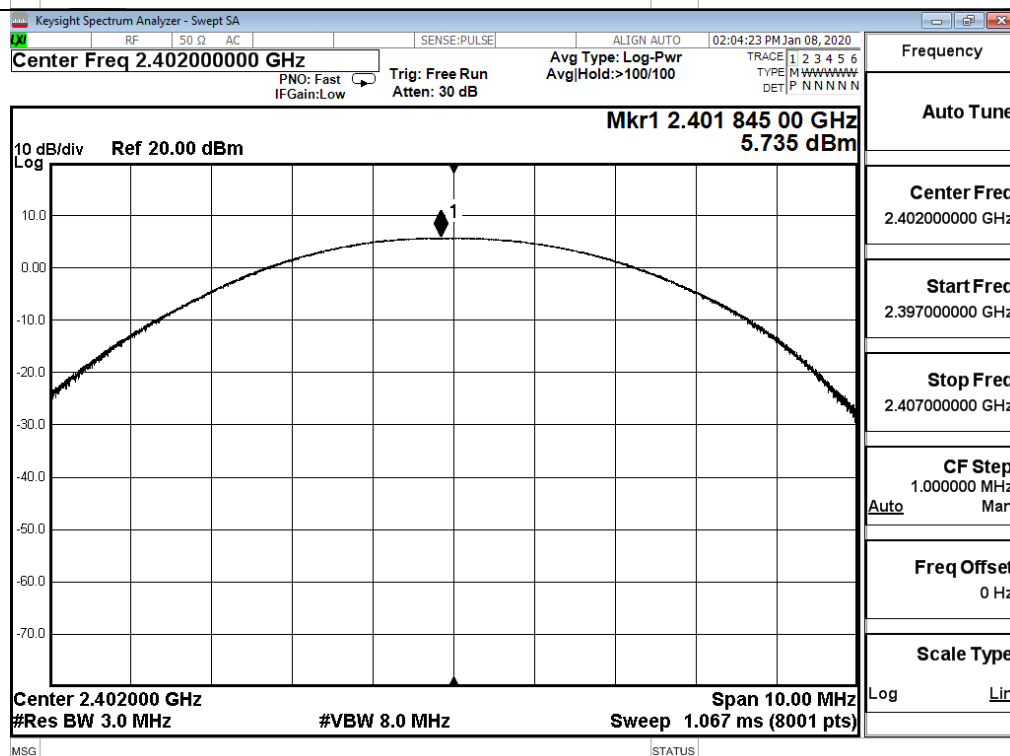
GFSK/LCH

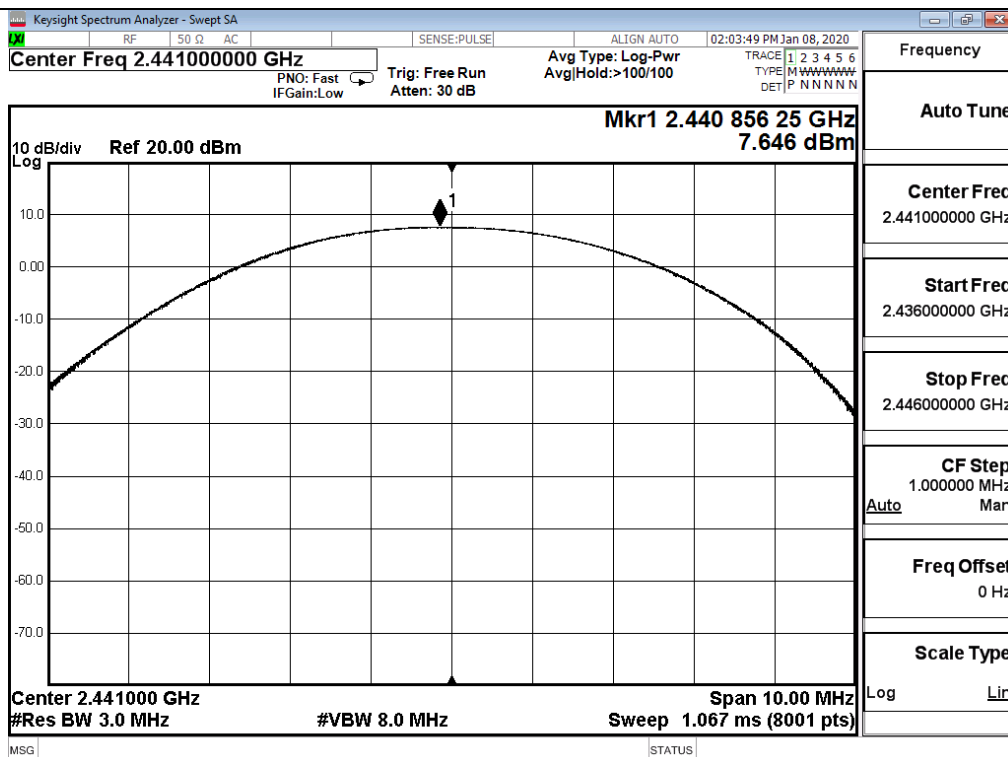
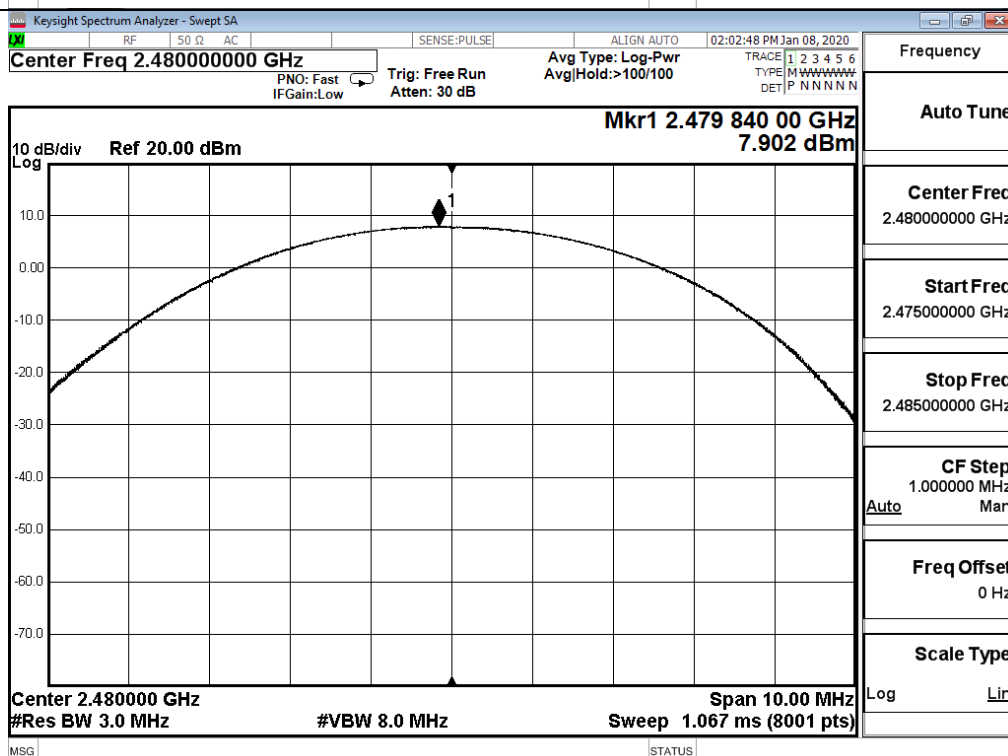


GFSK/MCH

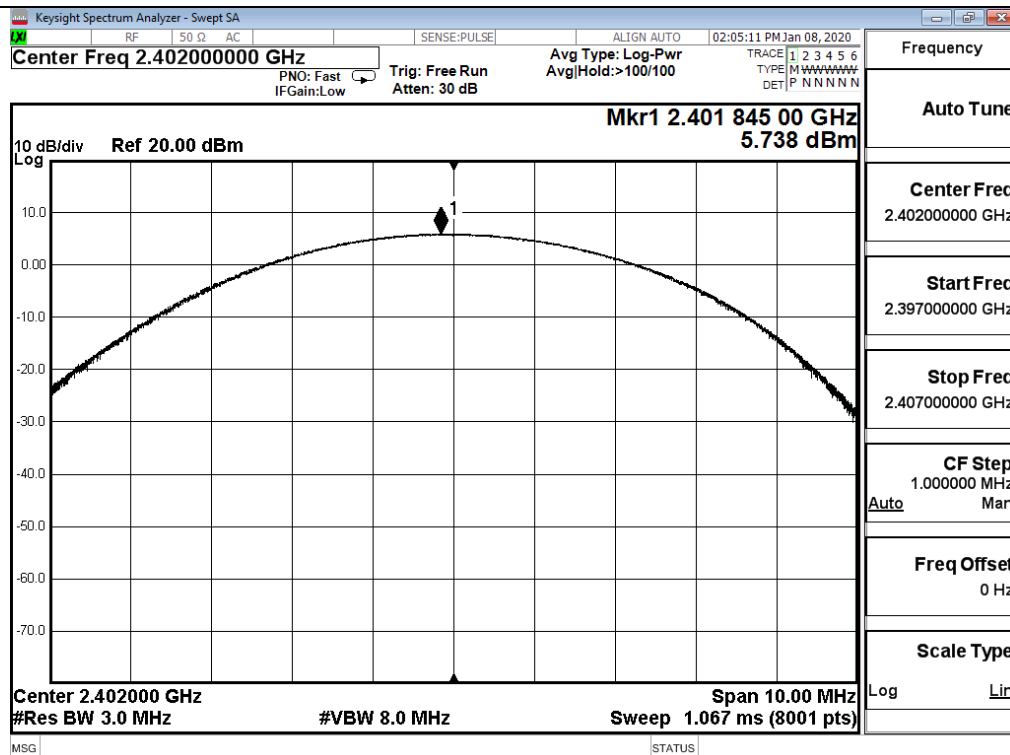


GFSK/HCH

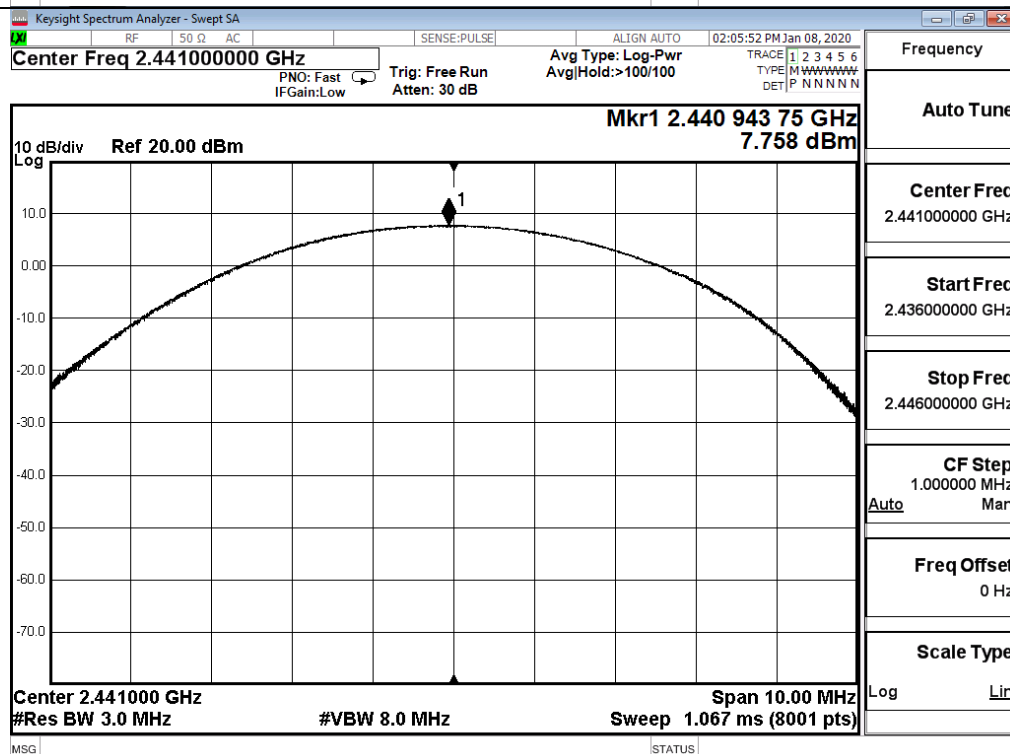
 π /4DQPSK/LCH

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

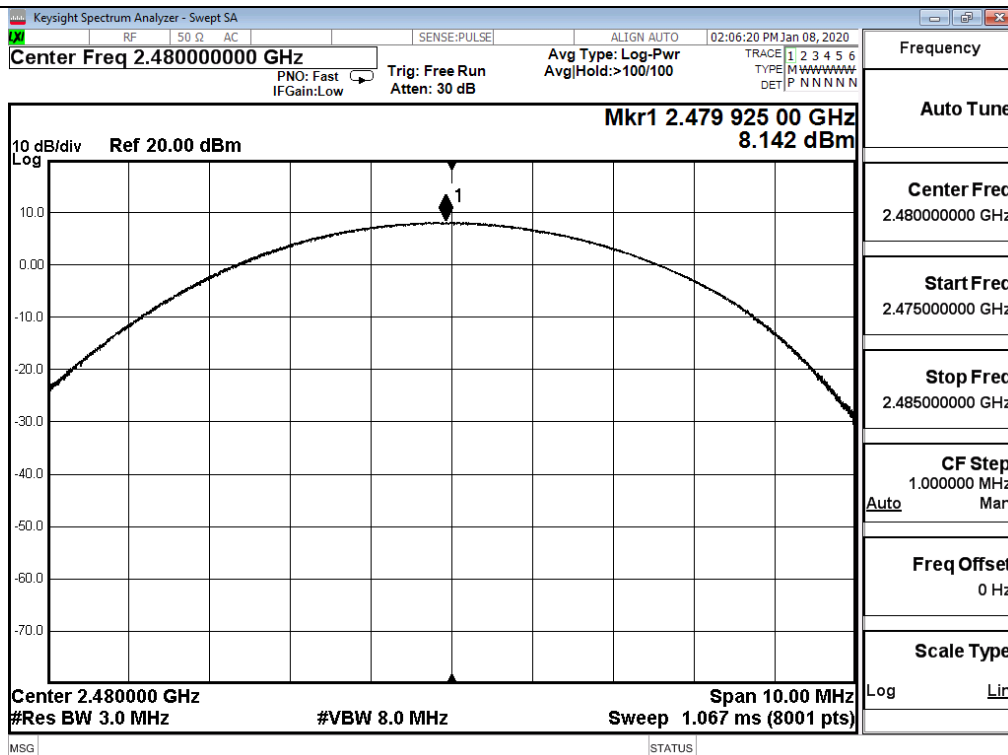
8DPSK/LCH



8DPSK/MCH

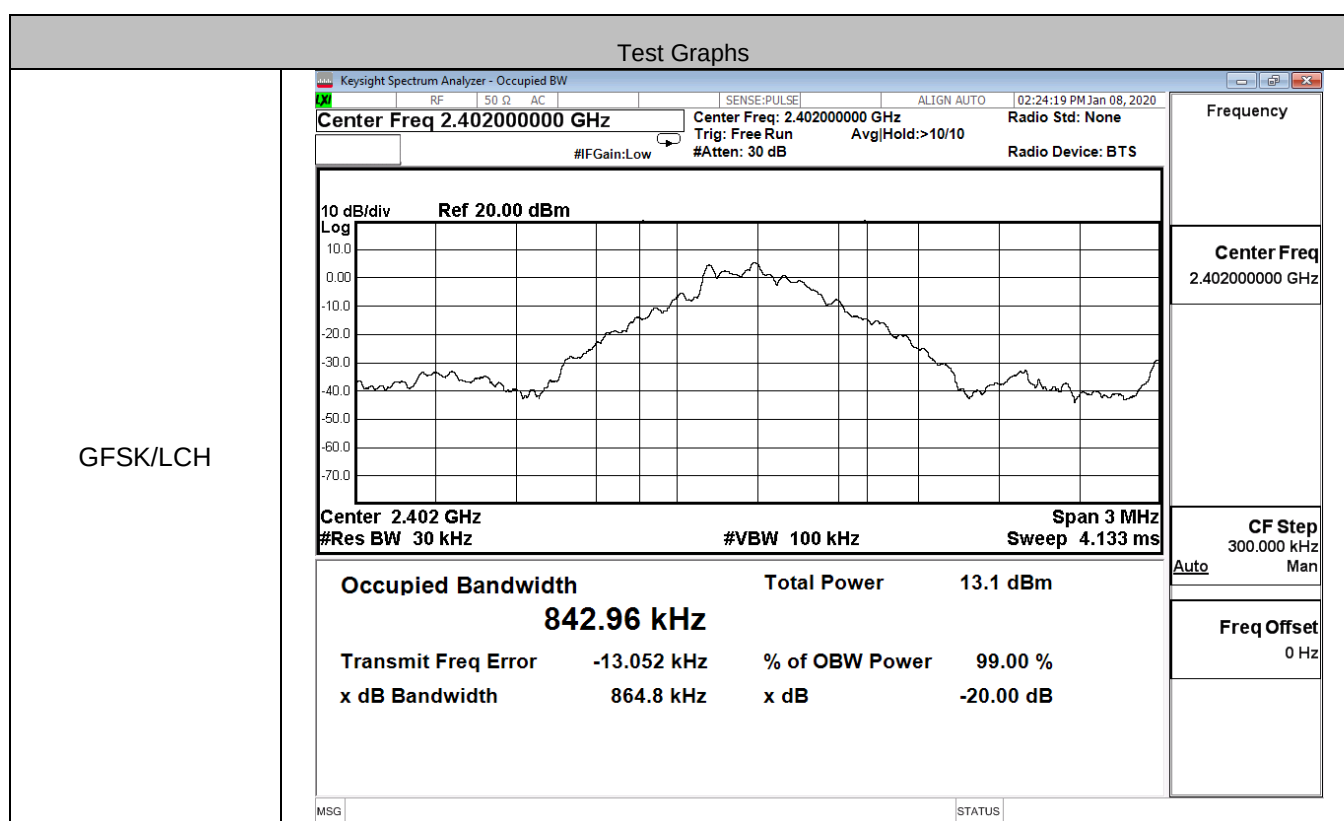


8DPSK/HCH

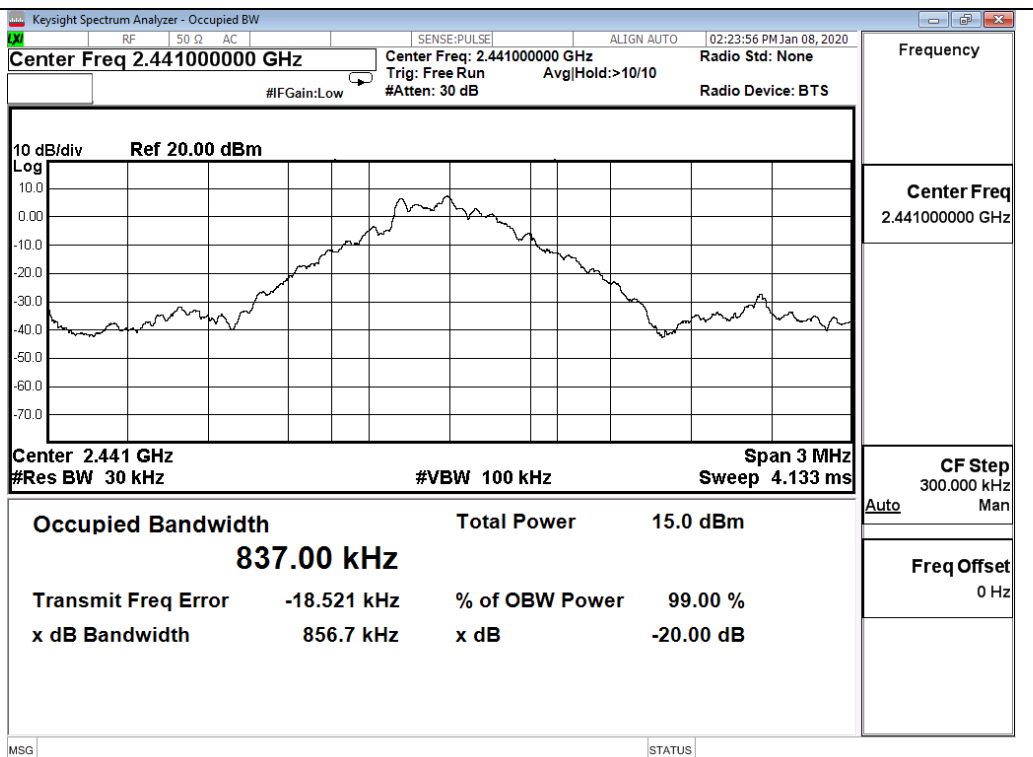


A.2 99% and 20dB Bandwidth

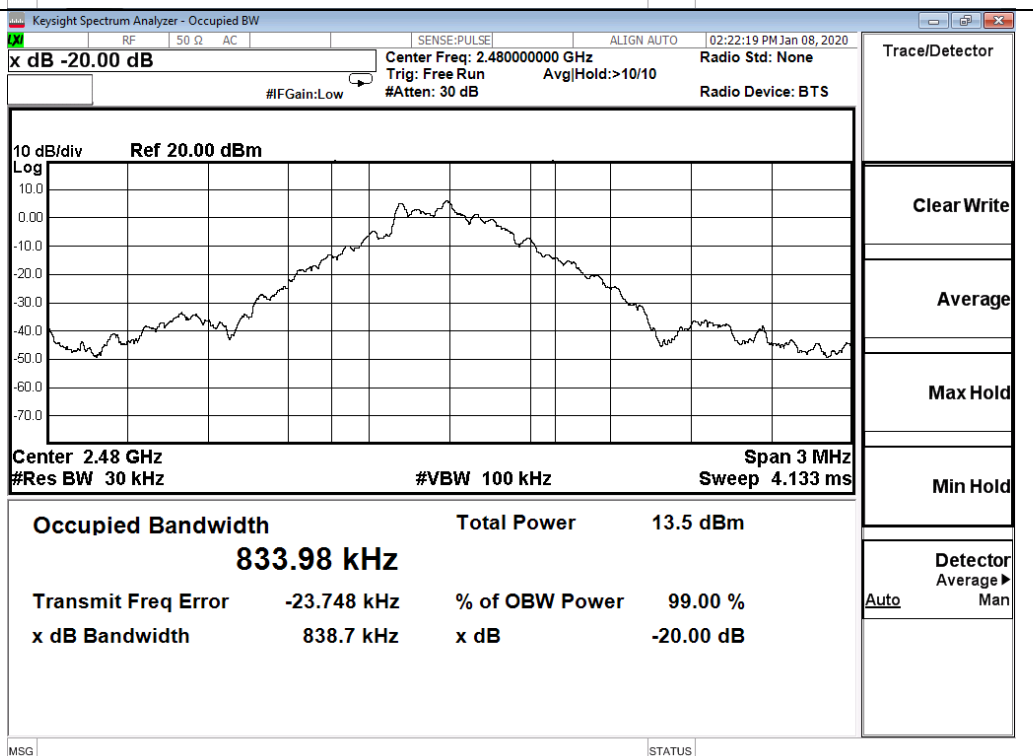
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.84296	0.8648	Not Specified	PASS
	MCH	0.83700	0.8567	Not Specified	PASS
	HCH	0.83398	0.8387	Not Specified	PASS
π /4DQPSK	LCH	1.1821	1.220	Not Specified	PASS
	MCH	1.1740	1.220	Not Specified	PASS
	HCH	1.1652	1.219	Not Specified	PASS
8DPSK	LCH	1.1661	1.208	Not Specified	PASS
	MCH	1.1562	1.206	Not Specified	PASS
	HCH	1.1462	1.208	Not Specified	PASS

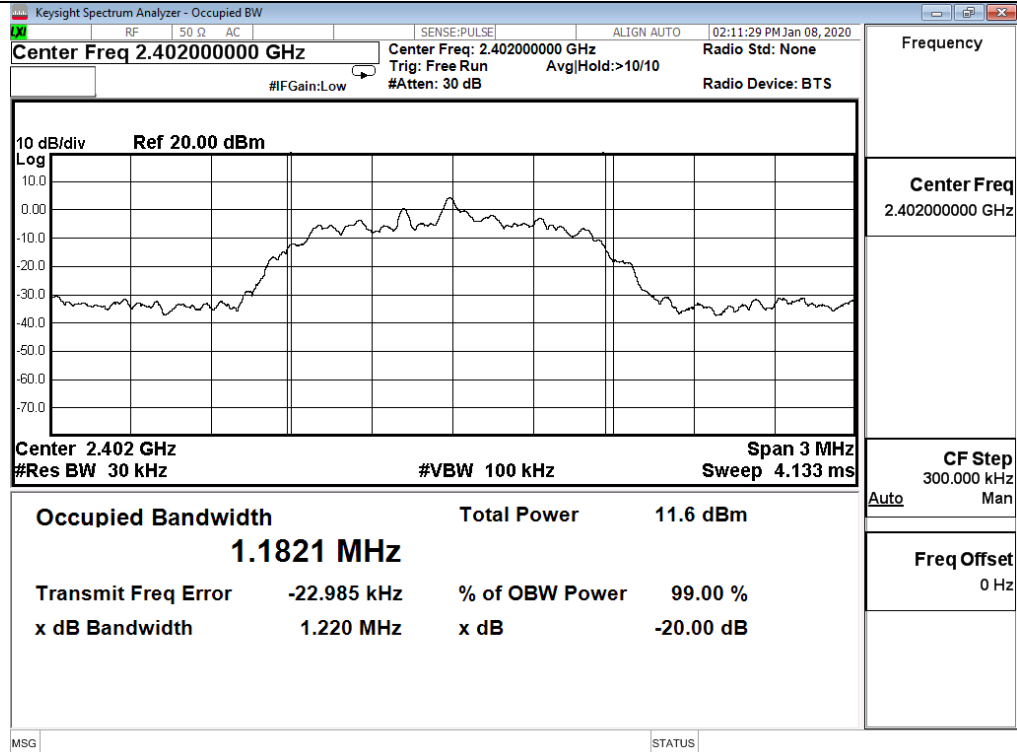
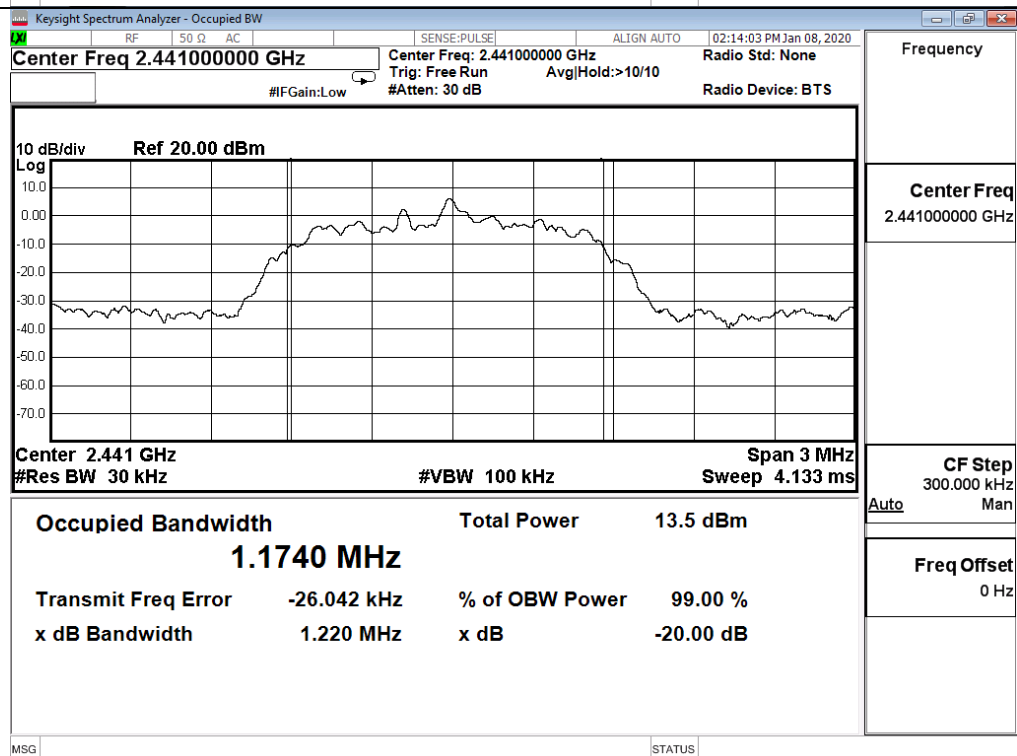


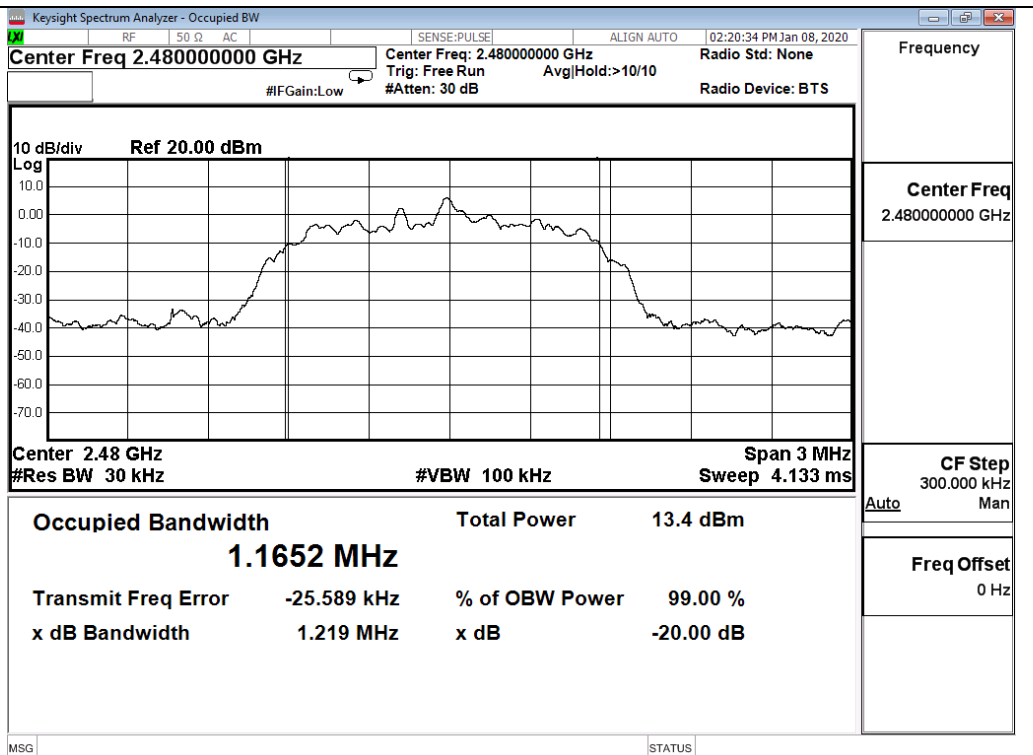
GFSK/MCH



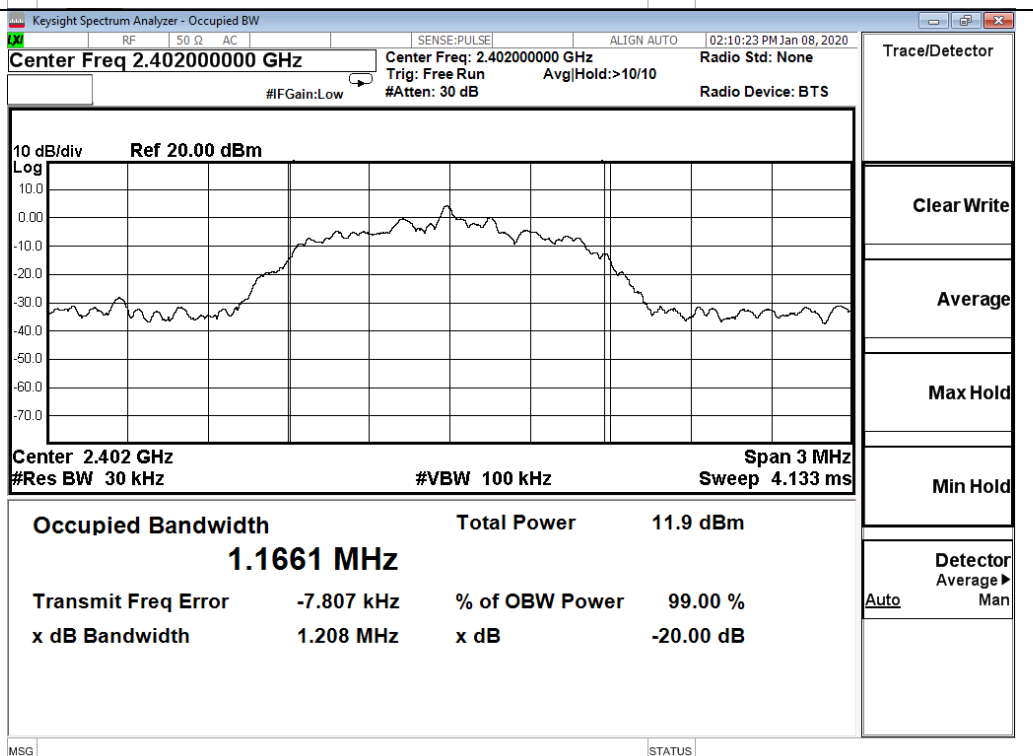
GFSK/HCH



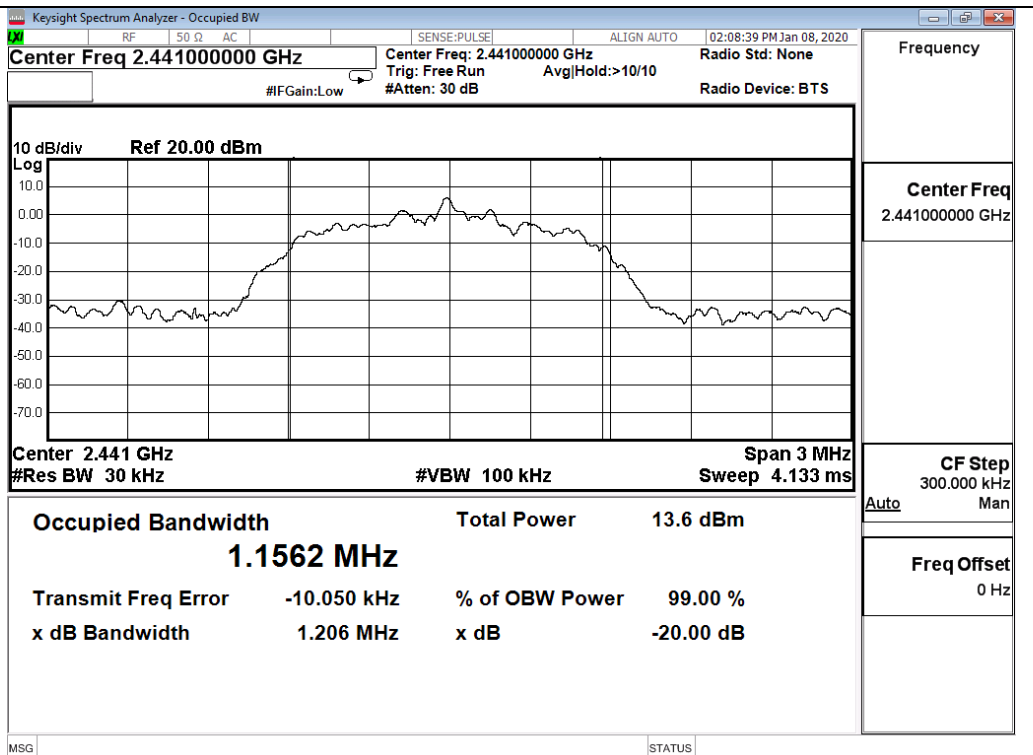
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

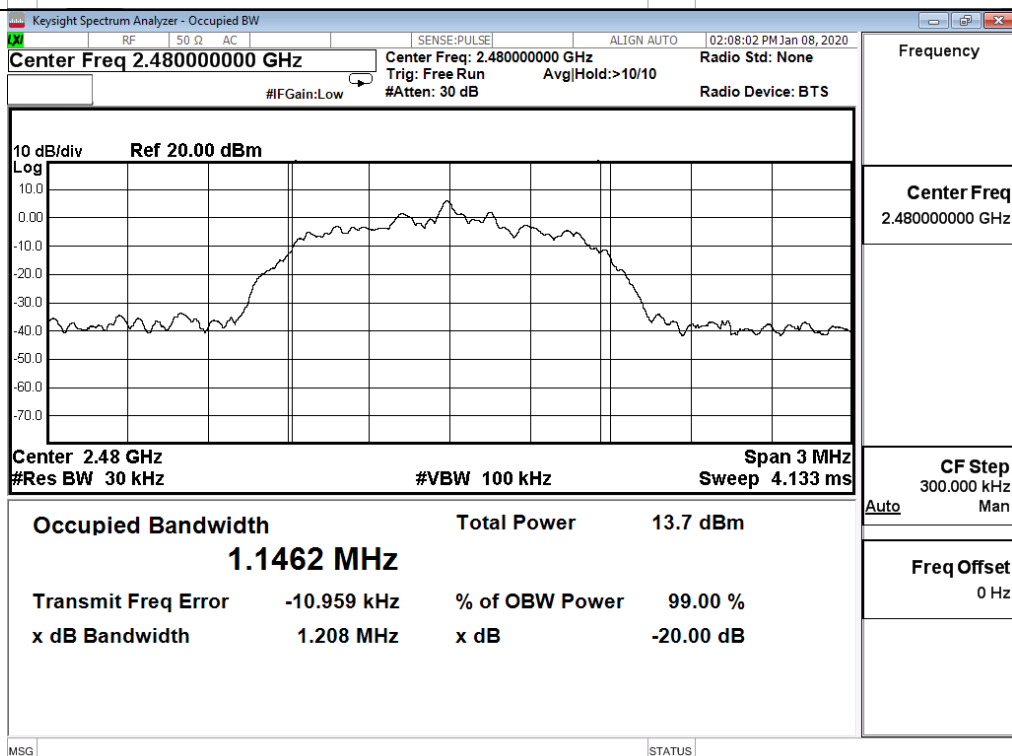
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

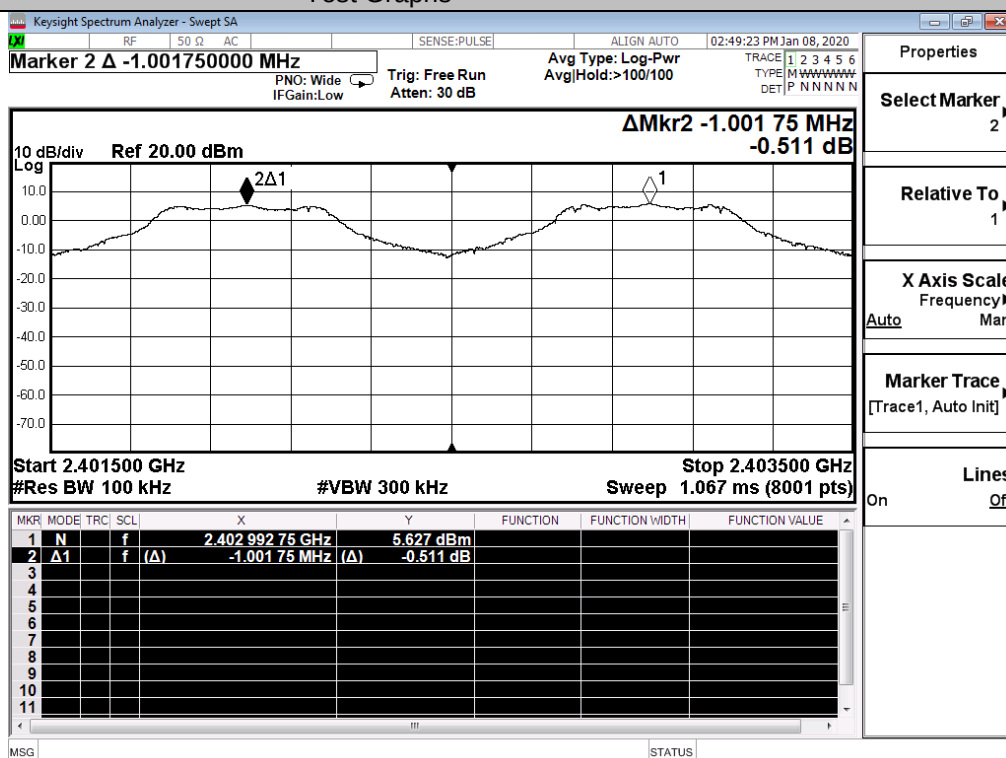


A.3 Carrier Frequency Separation

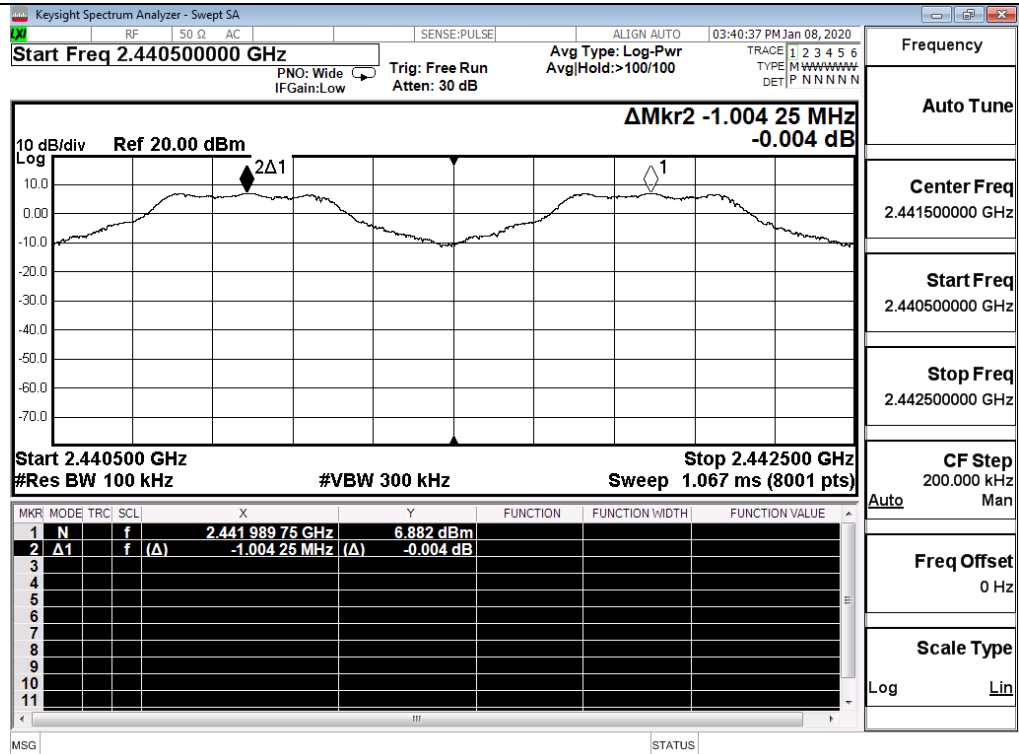
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.002	0.58	PASS
	MCH	1.004	0.57	PASS
	HCH	1.002	0.56	PASS
$\pi/4$ DQPSK	LCH	1.002	0.81	PASS
	MCH	1.005	0.81	PASS
	HCH	1.002	0.81	PASS
8DPSK	LCH	1.003	0.81	PASS
	MCH	0.993	0.80	PASS
	HCH	1.002	0.81	PASS

Test Graphs

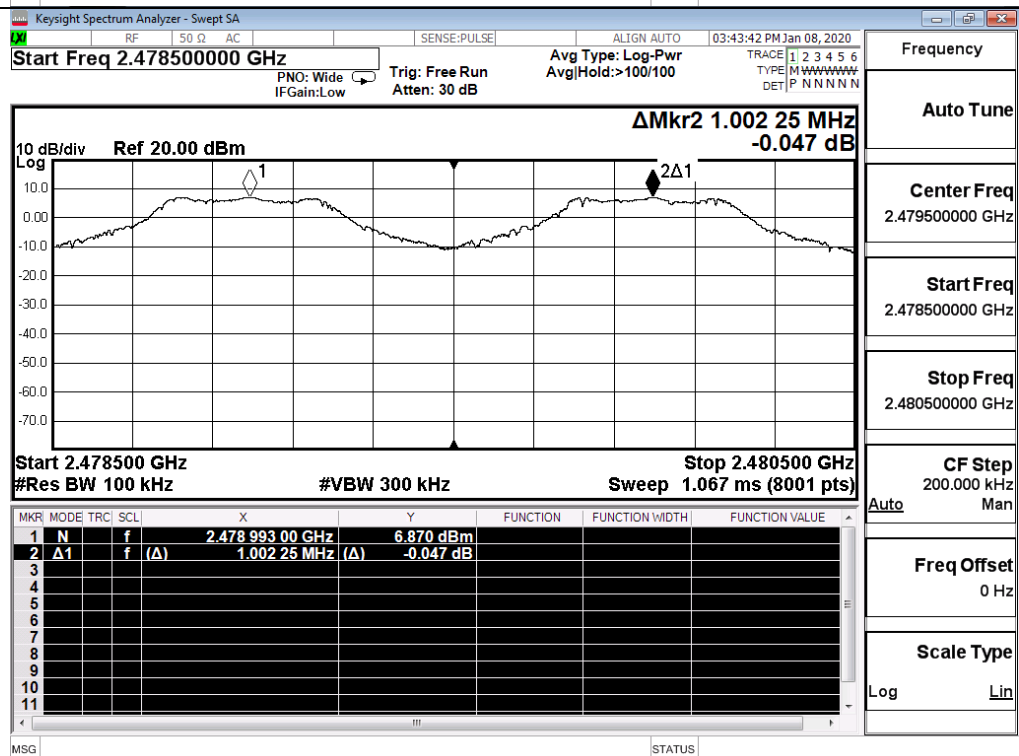
GFSK/LCH

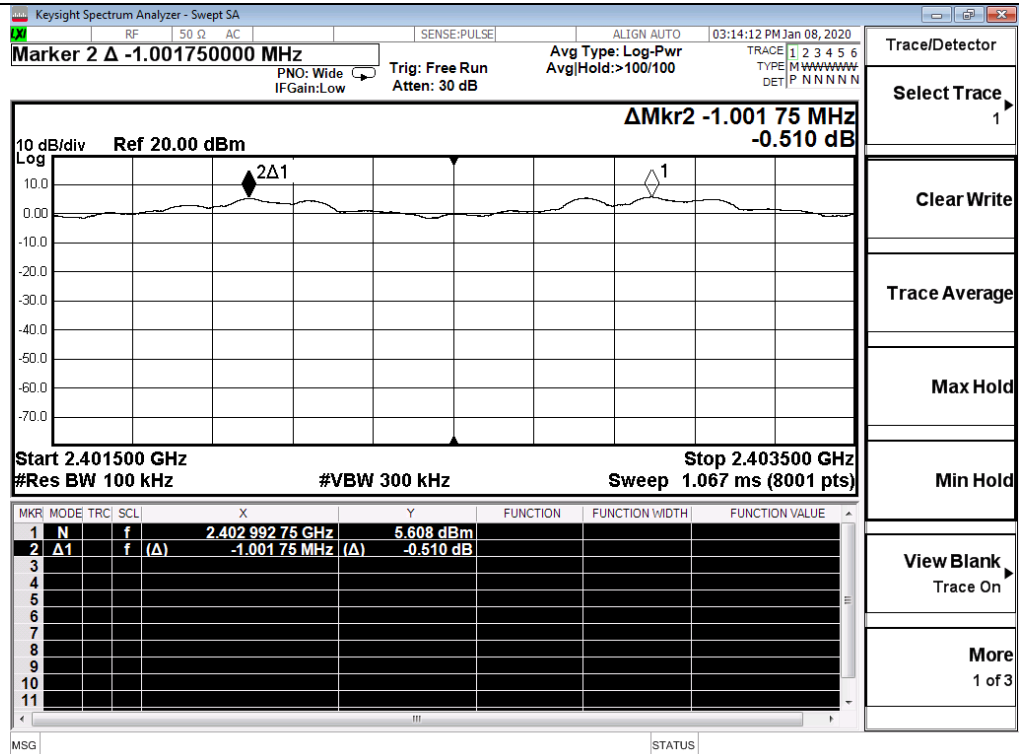
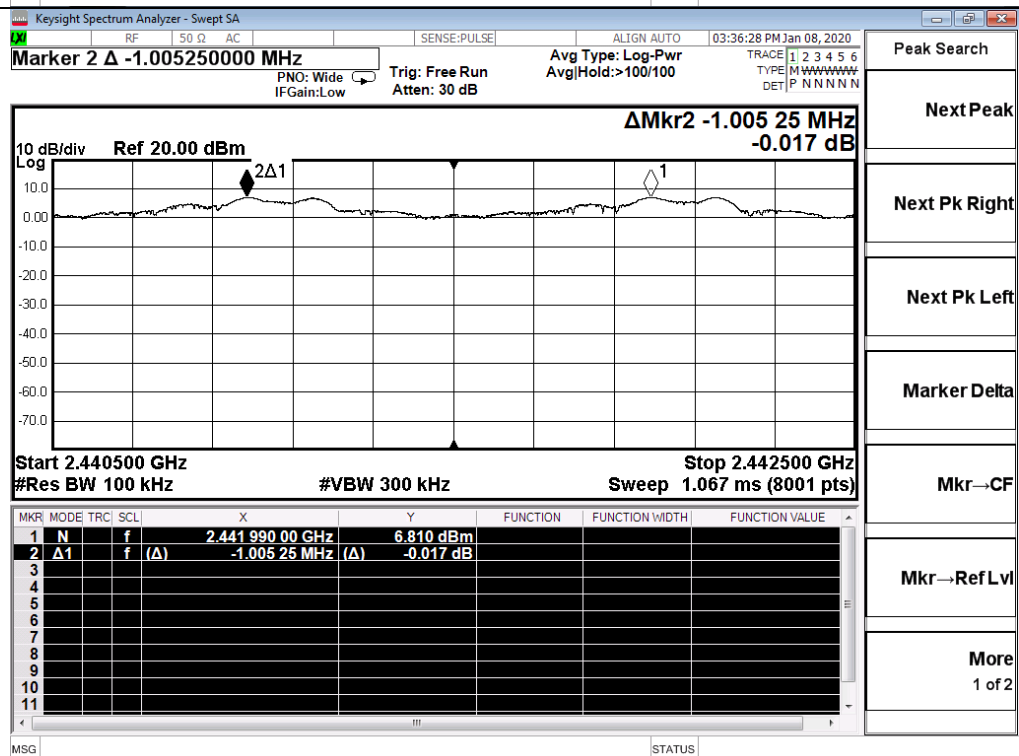


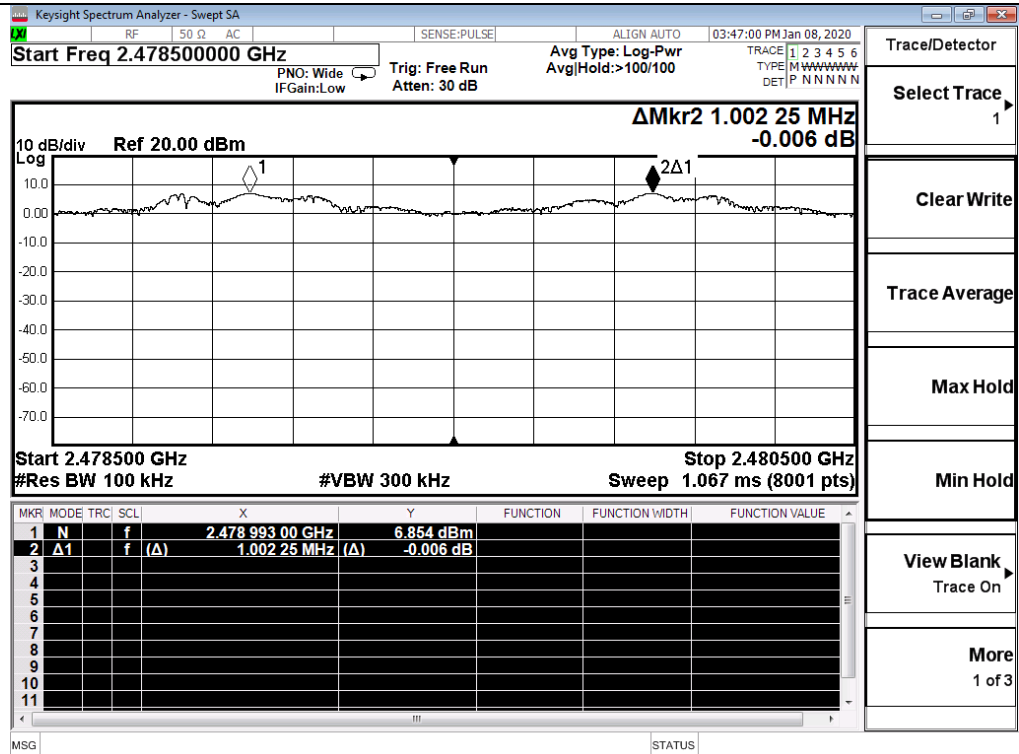
GFSK/MCH



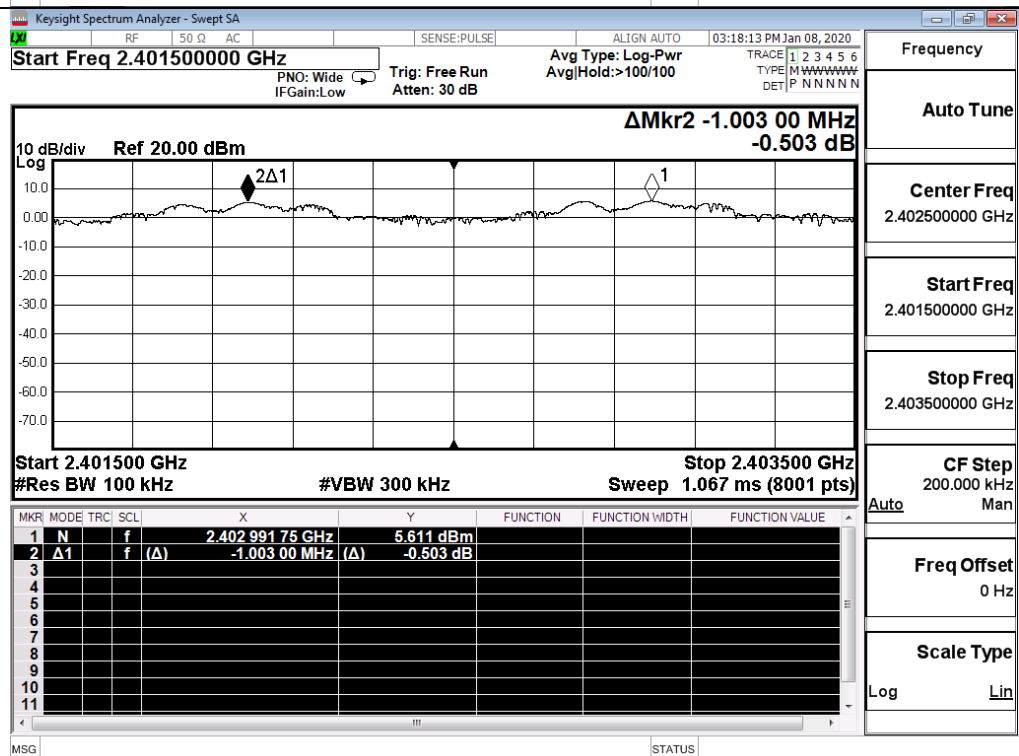
GFSK/HCH



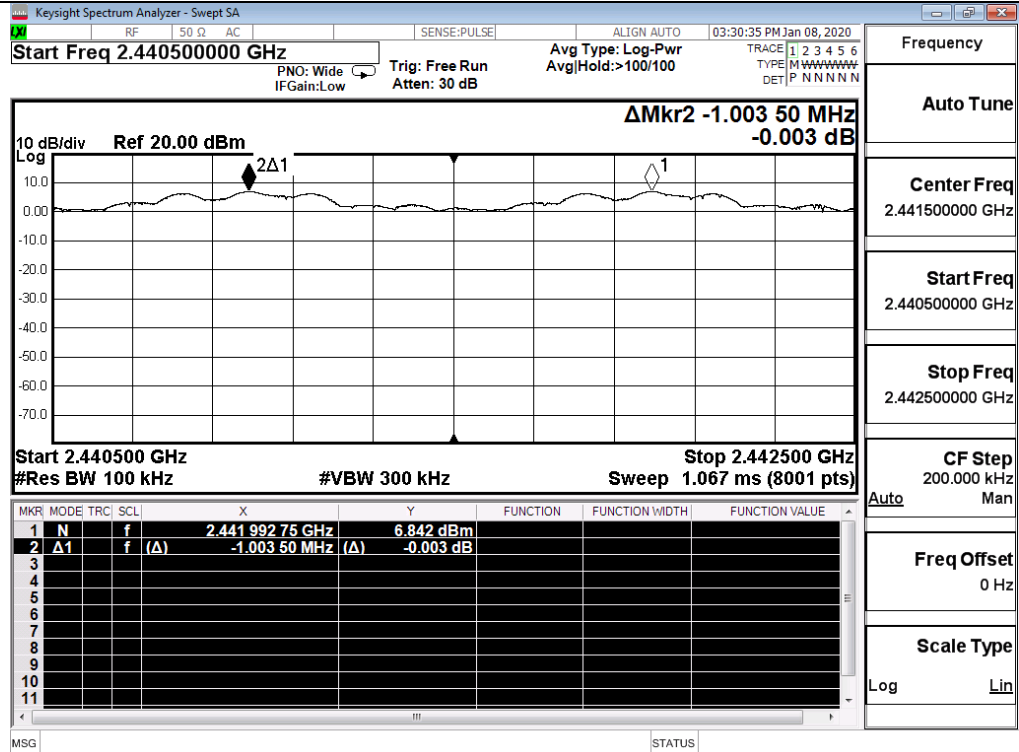
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

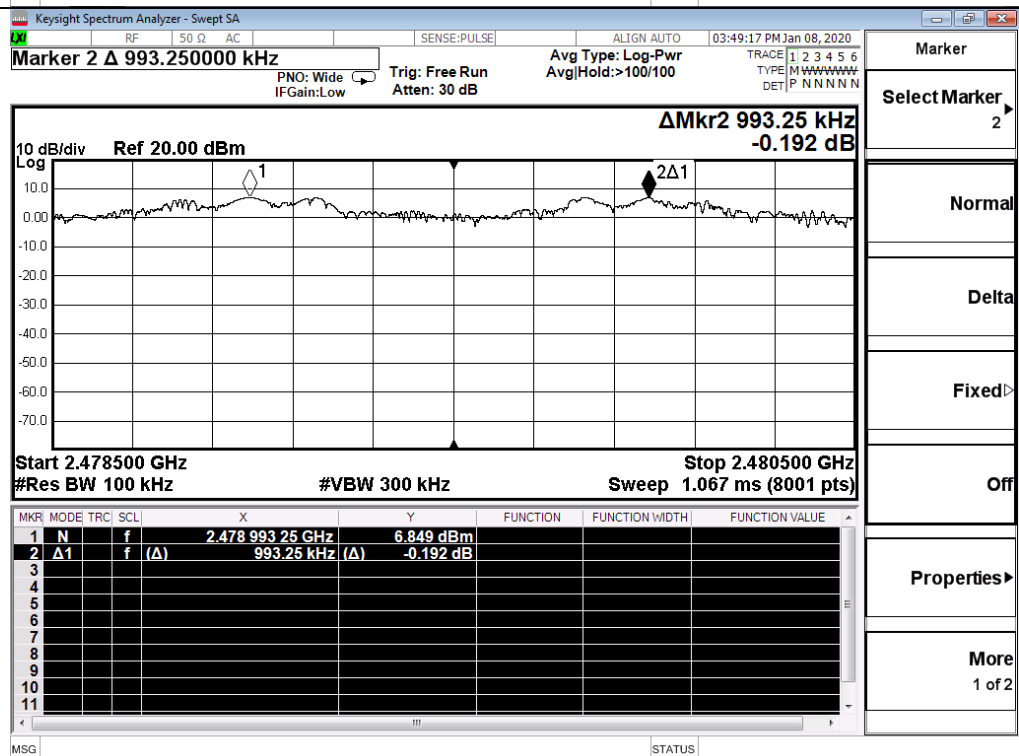
8DPSK/LCH



8DPSK/MCH

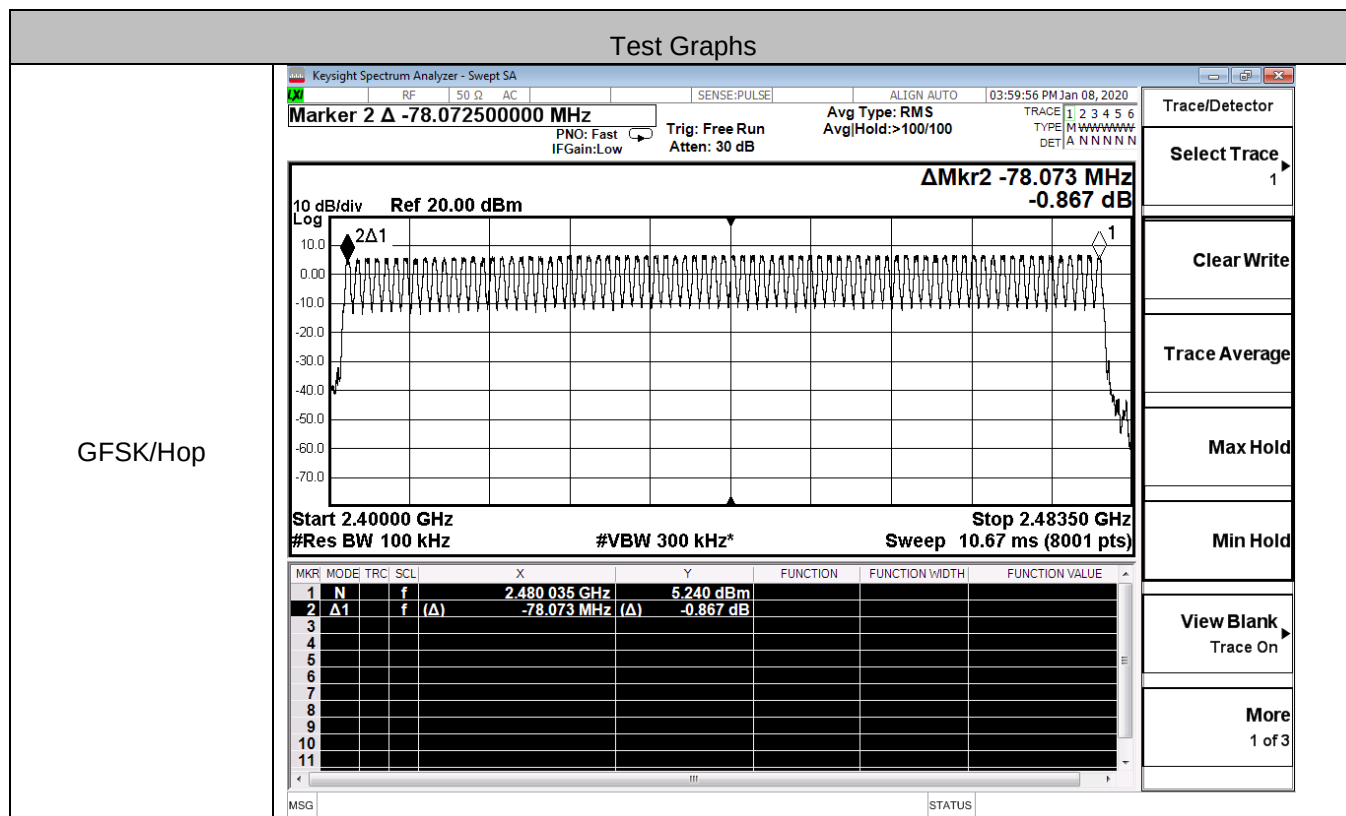


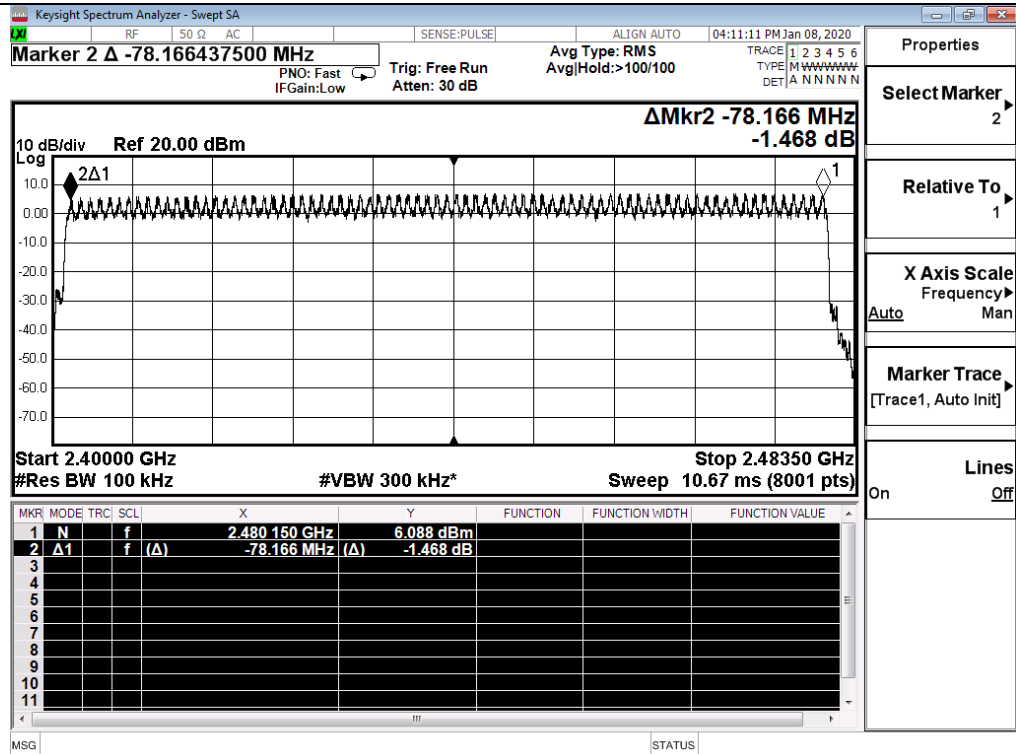
8DPSK/HCH



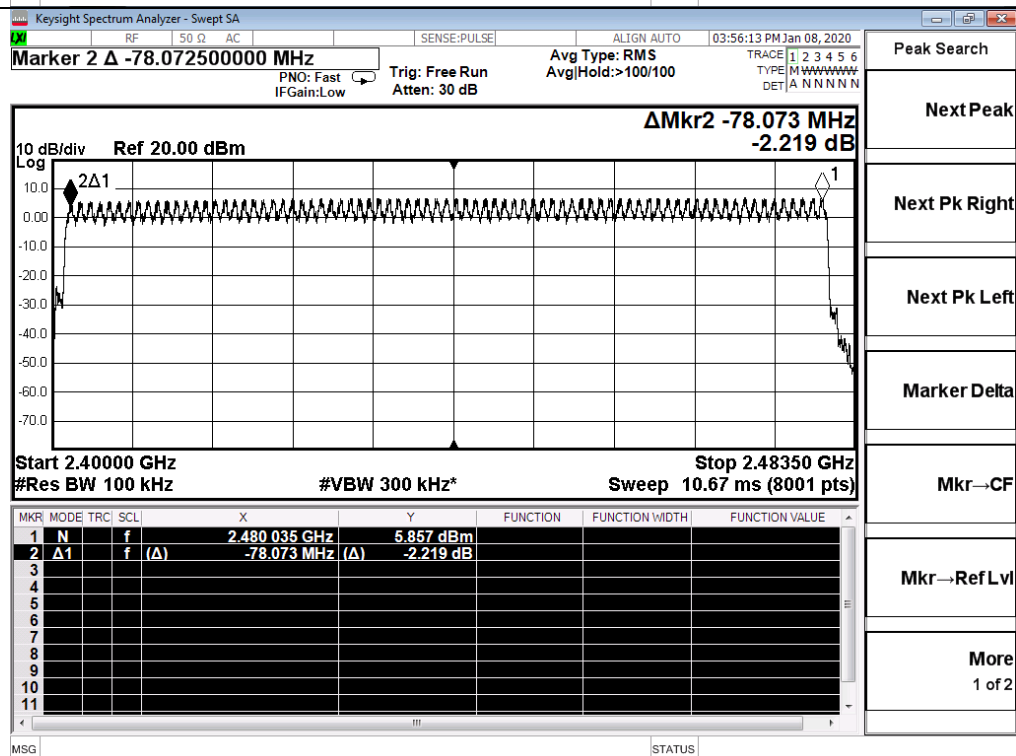
A.4 Hopping Channel Number

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



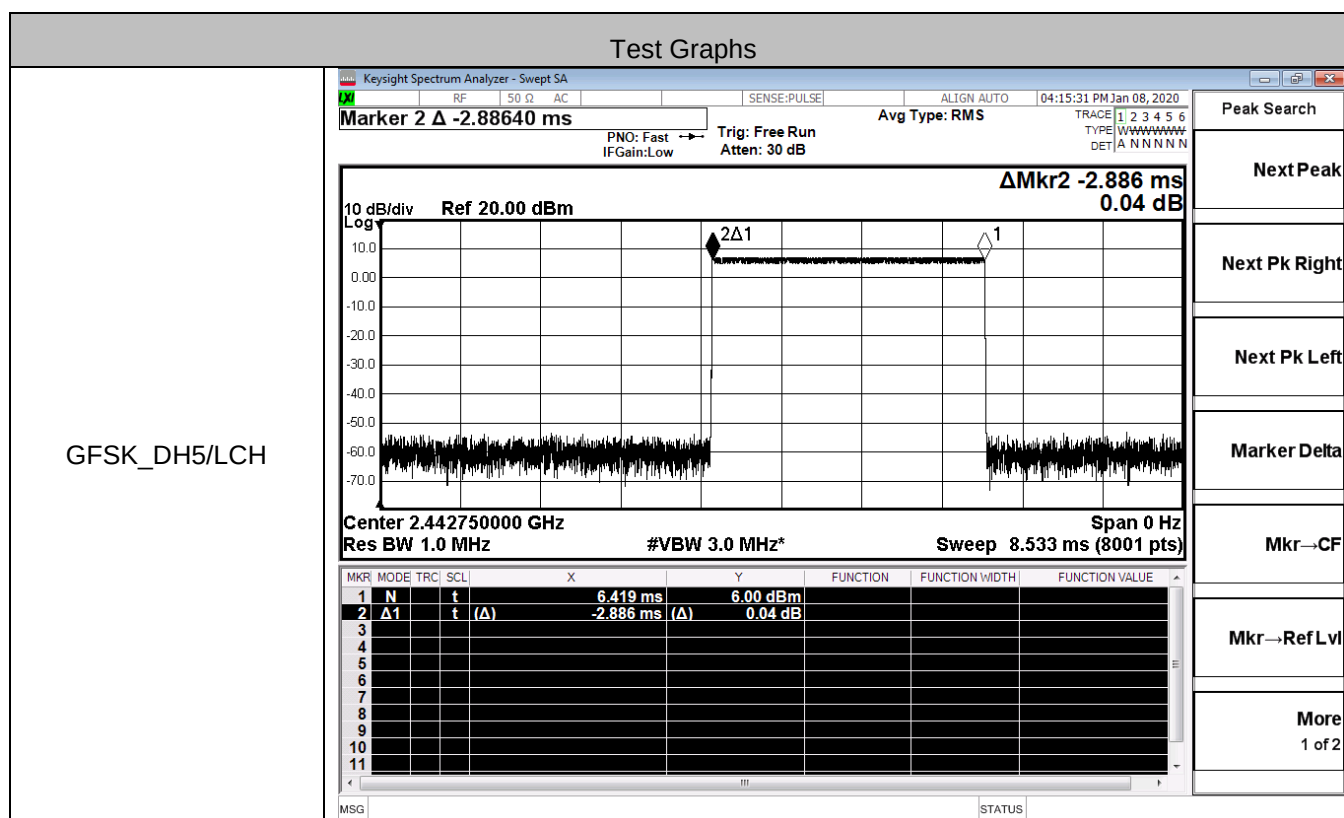
$\pi/4$ DQPSK/Hop

8DPSK/Hop

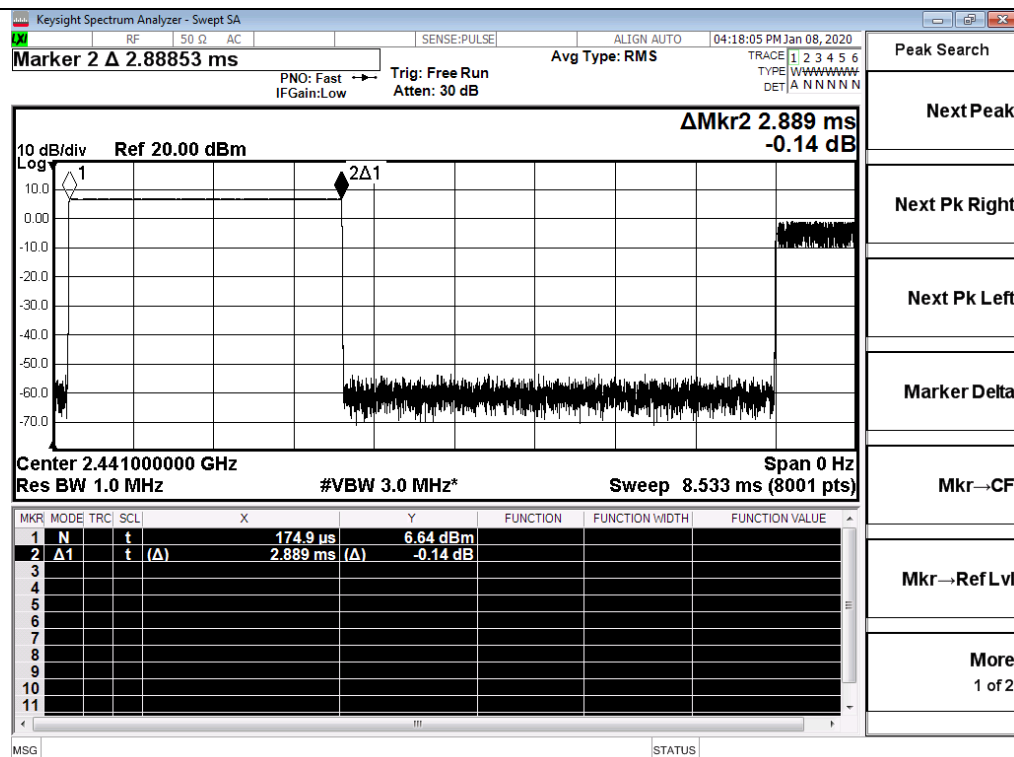


A.5 Dwell Time

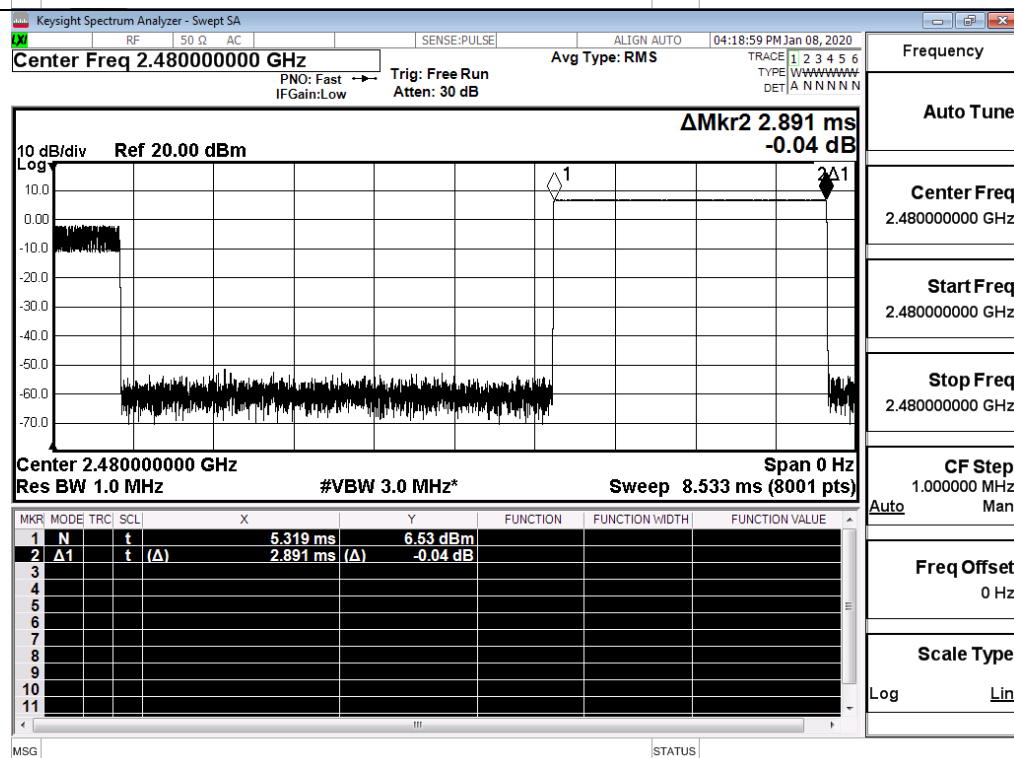
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.886	106.7	0.31	0.4	PASS
	DH5	MCH	2.889	106.7	0.31	0.4	PASS
	DH5	HCH	2.891	106.7	0.31	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.898	106.7	0.30	0.4	PASS
	2DH5	MCH	2.898	106.7	0.31	0.4	PASS
	2DH5	HCH	2.899	106.7	0.31	0.4	PASS
8DPSK	3DH5	LCH	2.898	106.7	0.31	0.4	PASS
	3DH5	MCH	2.901	106.7	0.31	0.4	PASS
	3DH5	HCH	2.895	106.7	0.31	0.4	PASS



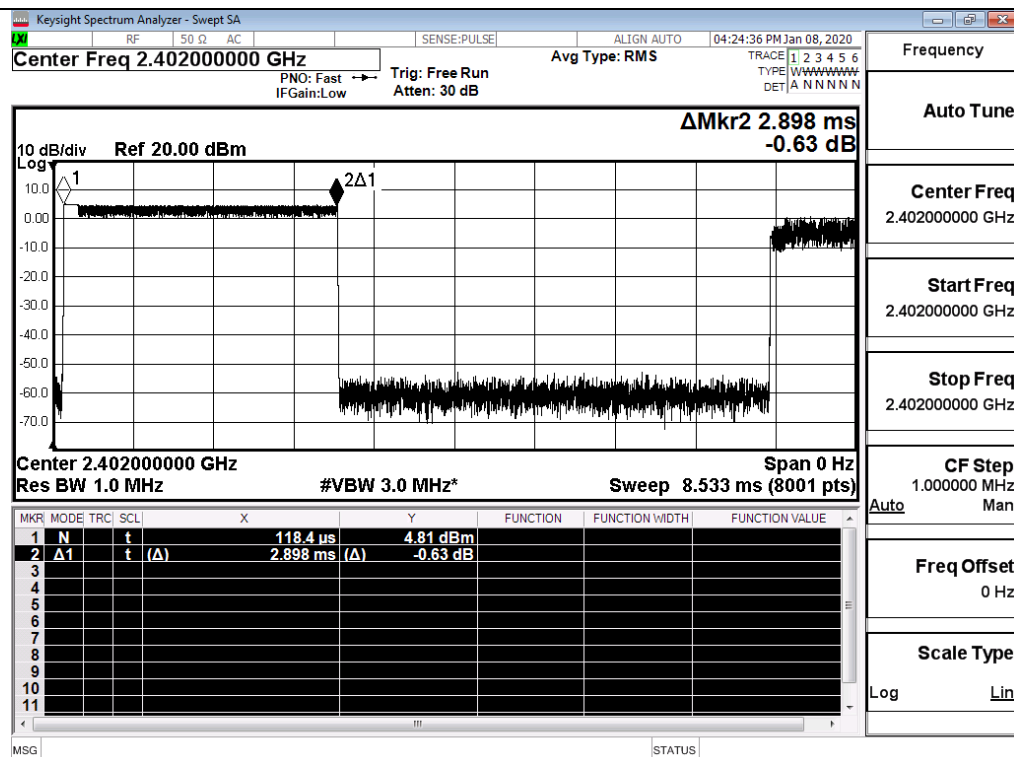
GFSK_DH5/MCH



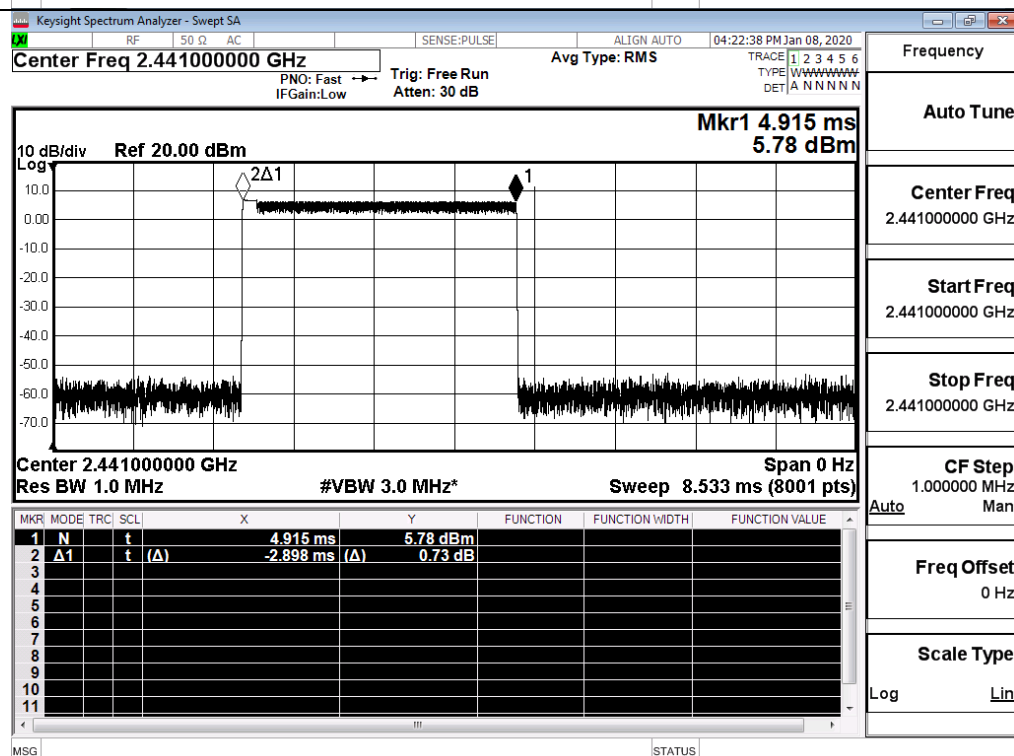
GFSK_DH5/HCH



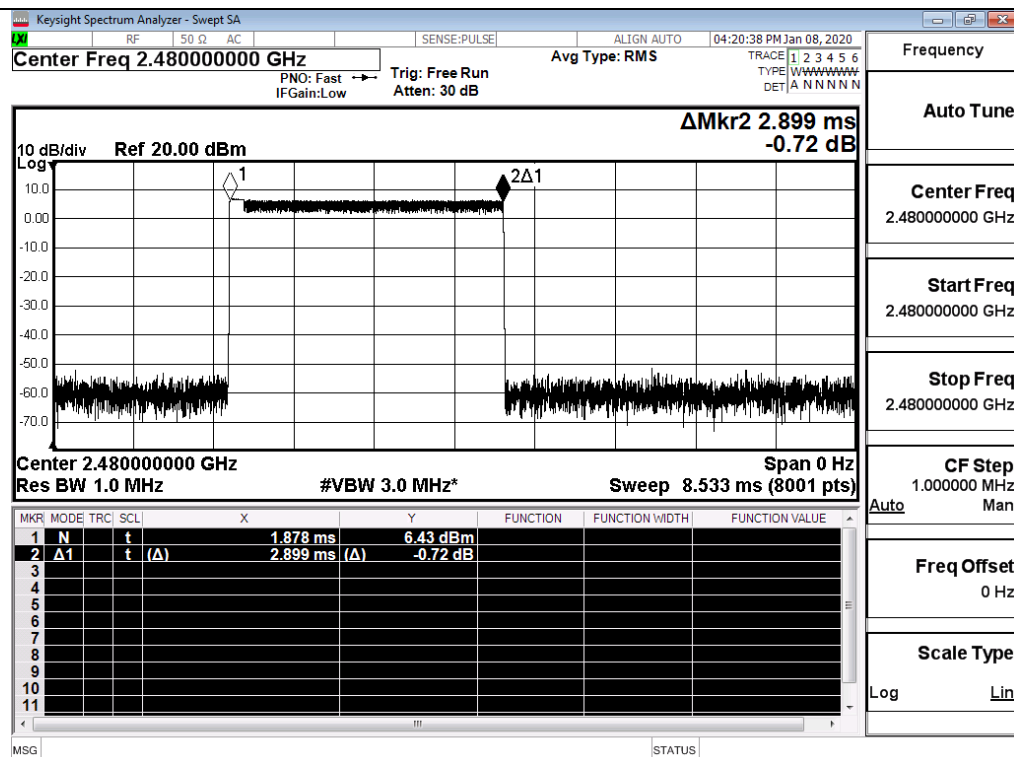
$\pi/4$ DQPSK
_2DH5/LCH



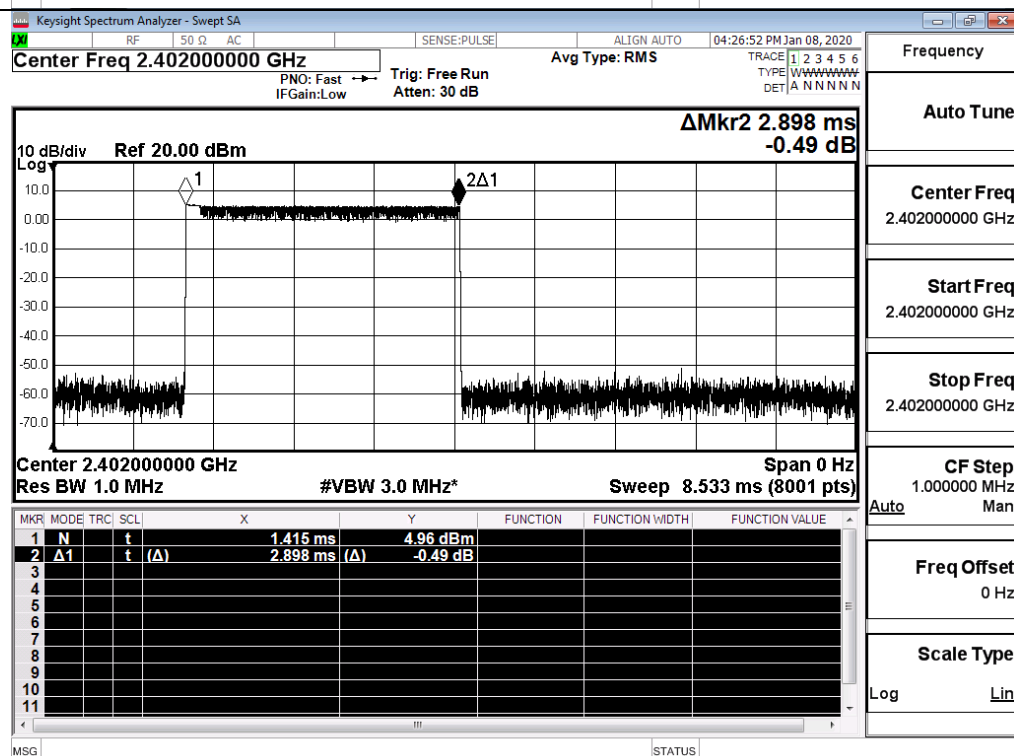
$\pi/4$ DQPSK
_2DH5/MCH



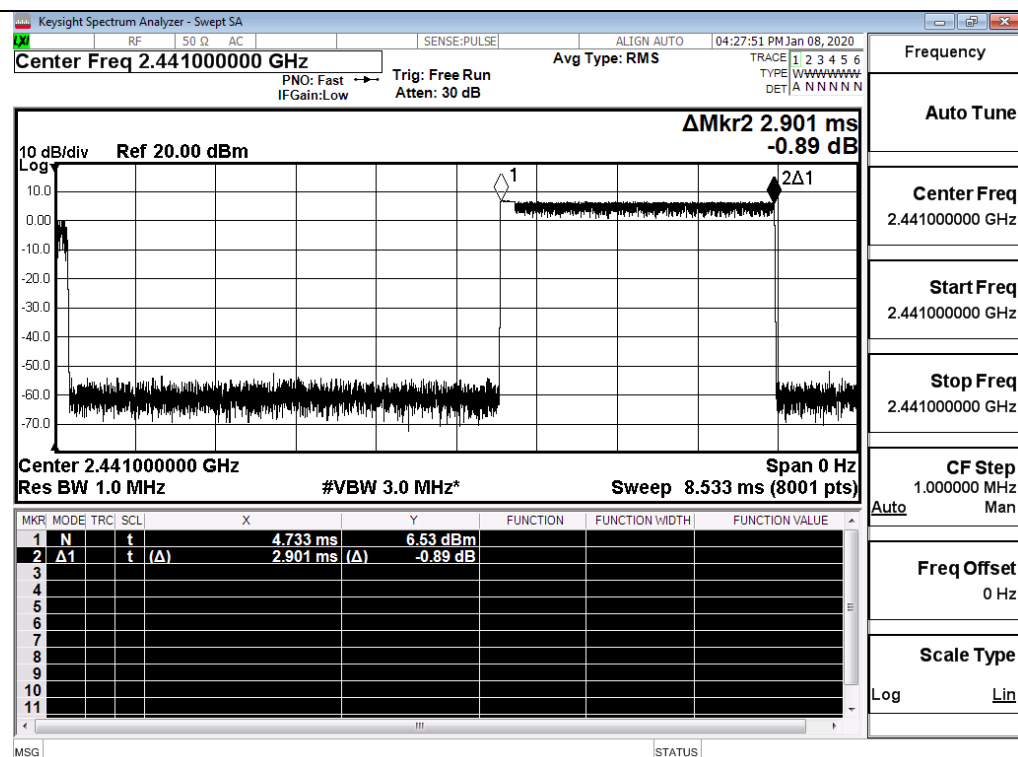
$\pi/4$ DQPSK
_2DH5/HCH



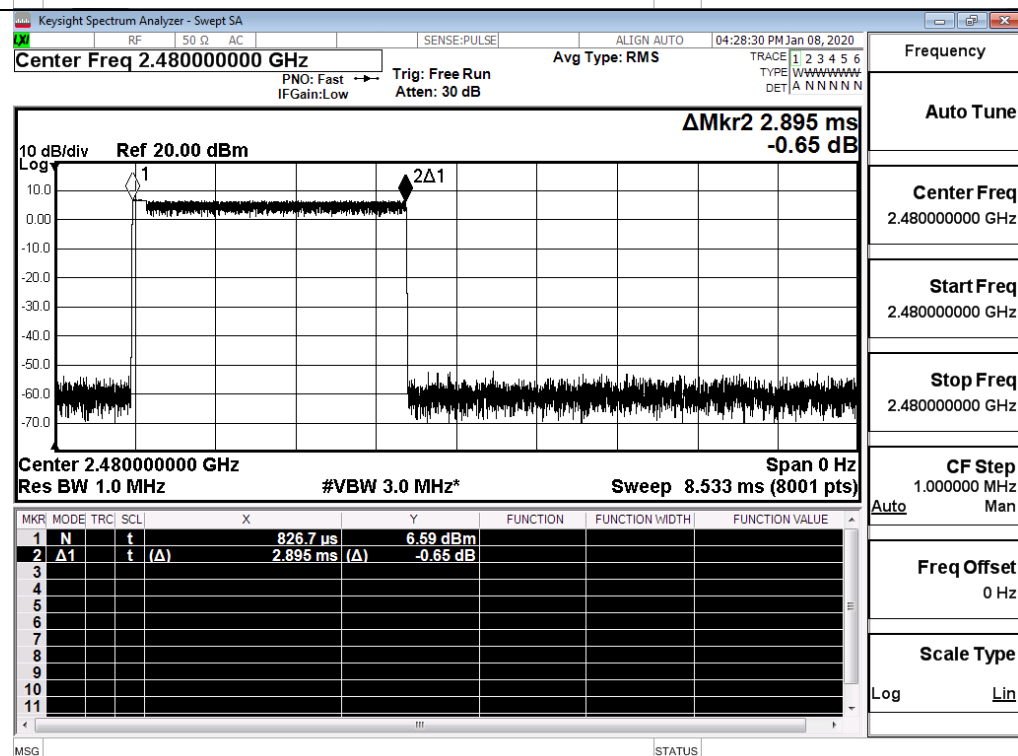
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

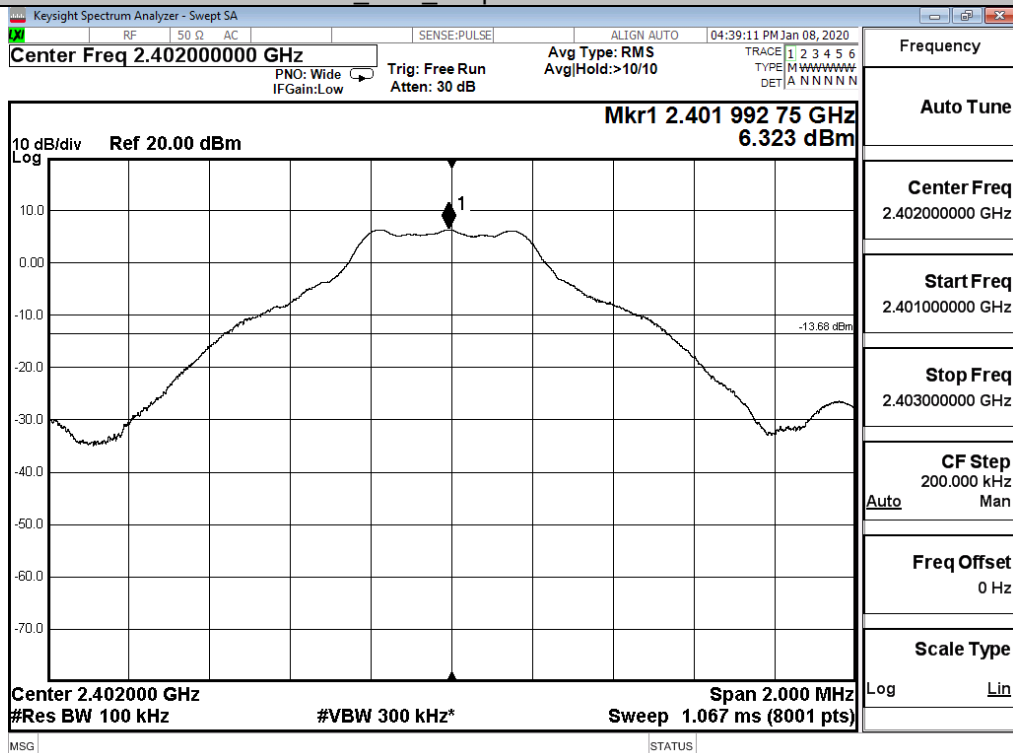


A.6 RF Conducted Spurious Emissions

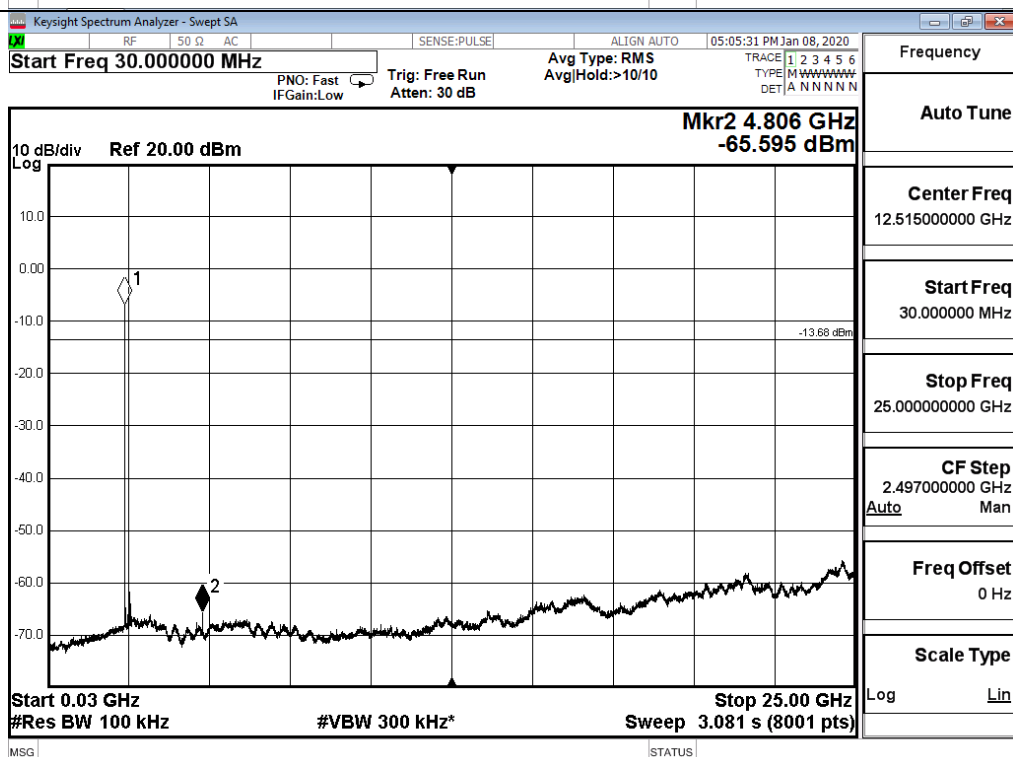
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.323	-65.595	-13.68	PASS
	MCH	8.328	-64.801	-11.87	PASS
	HCH	6.939	-65.180	-13.06	PASS
$\pi/4$ DQPSK	LCH	6.323	-66.321	-13.68	PASS
	MCH	8.396	-65.312	-11.60	PASS
	HCH	6.852	-63.244	-13.15	PASS
8DPSK	LCH	5.153	-64.151	-14.85	PASS
	MCH	6.826	-66.038	-13.17	PASS
	HCH	6.921	-66.331	-11.08	PASS

GFSK_LCH_Graphs

Pref

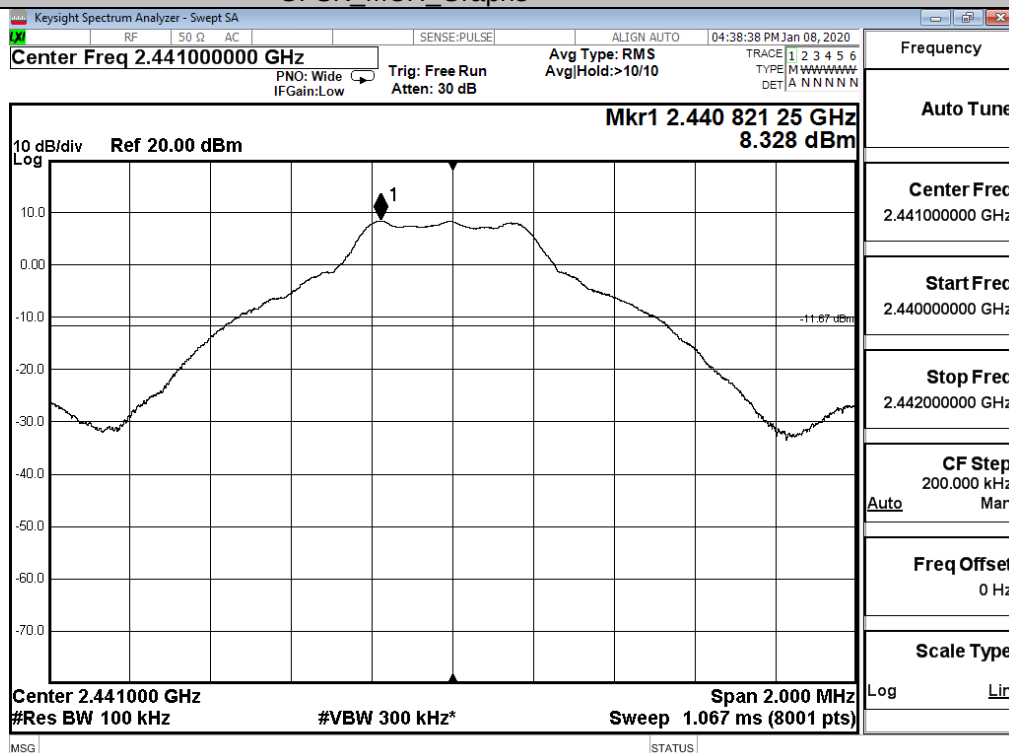


Puw

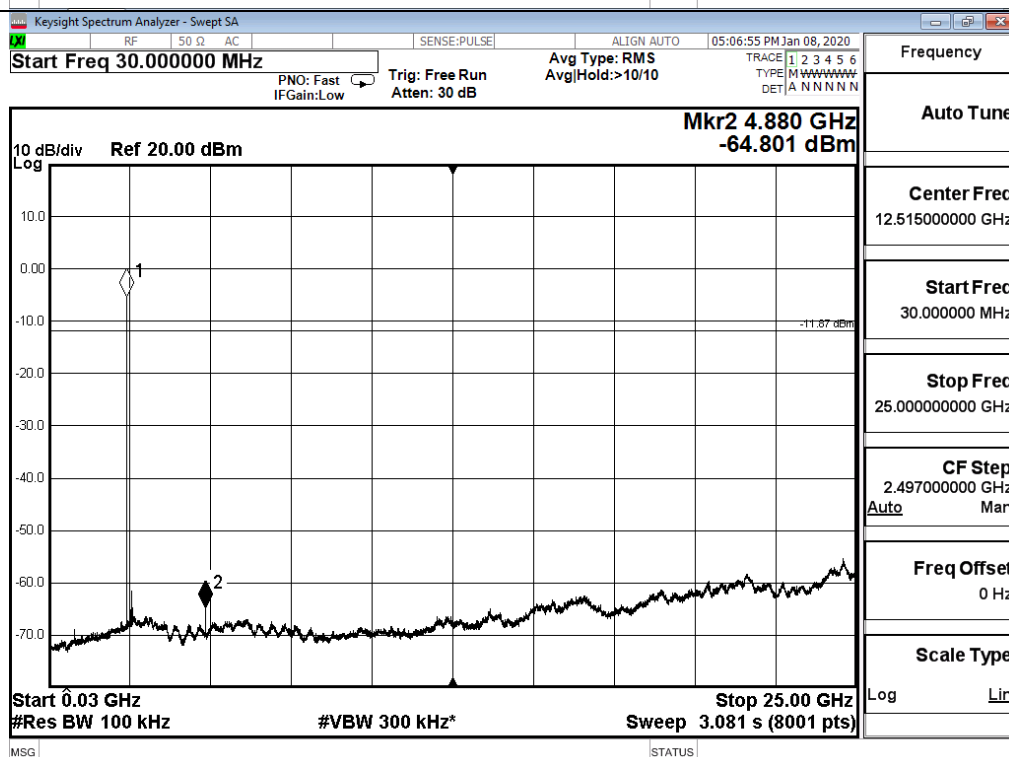


GFSK_MCH_Graphs

Pref

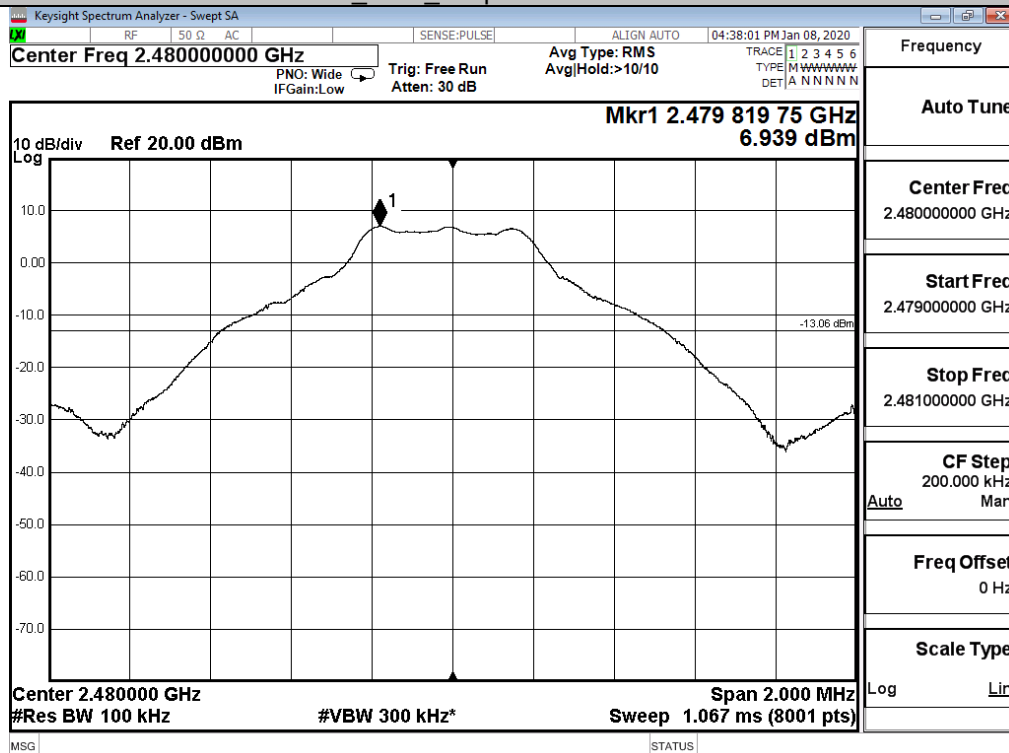


Puw

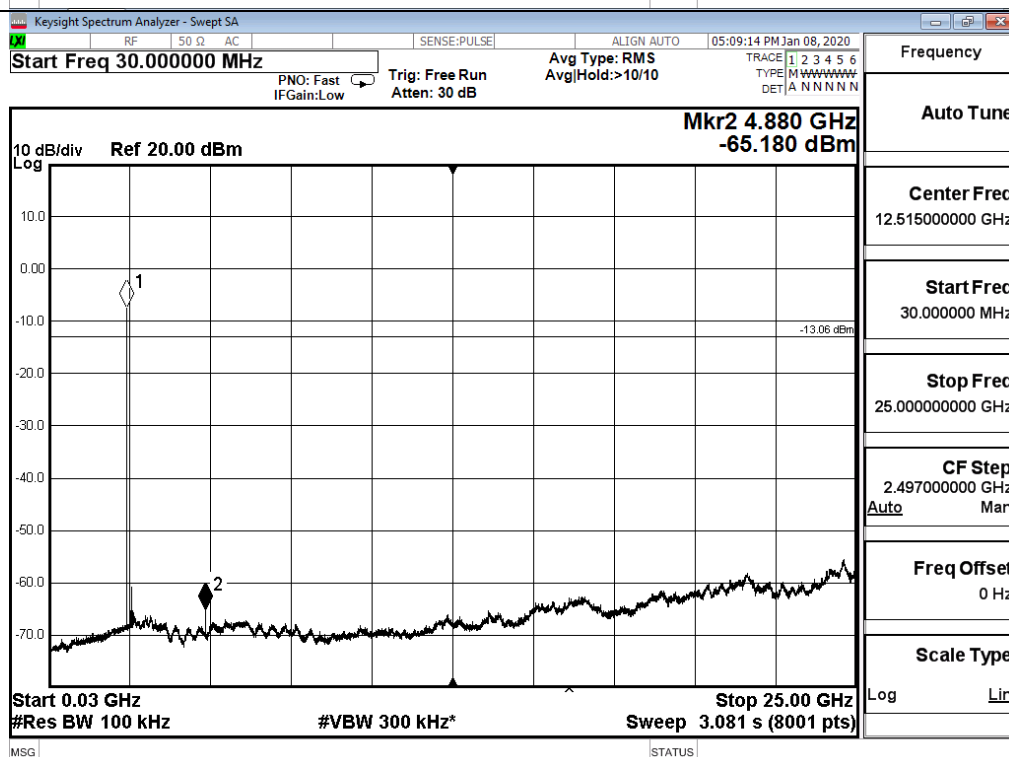


GFSK_HCH_Graphs

Pref

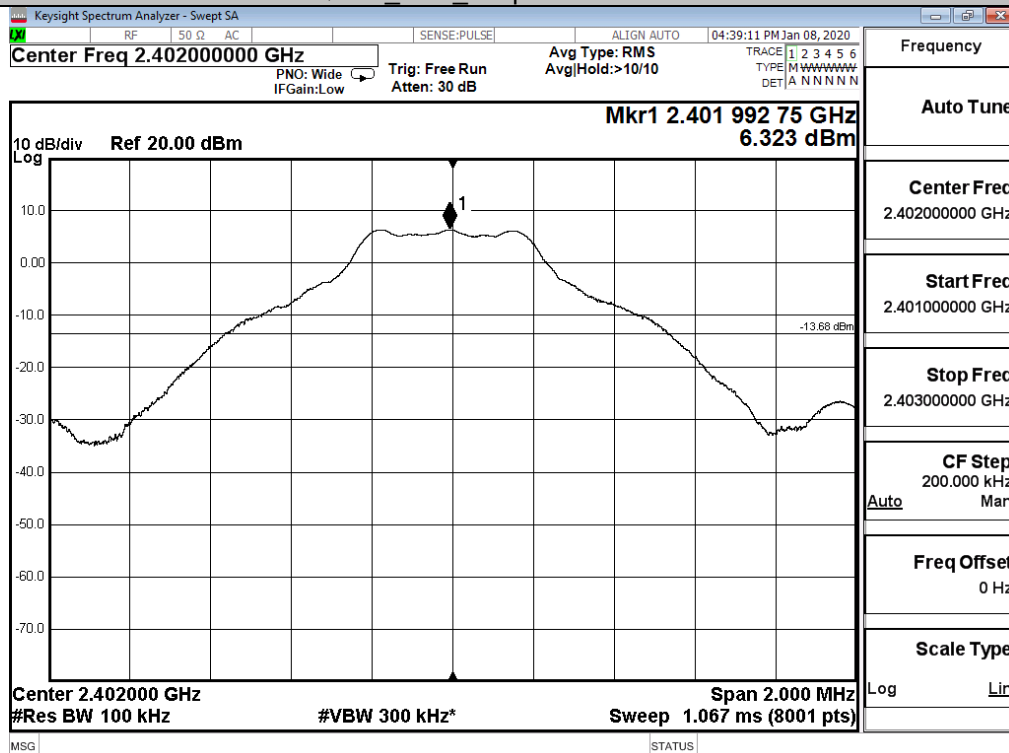


Puw

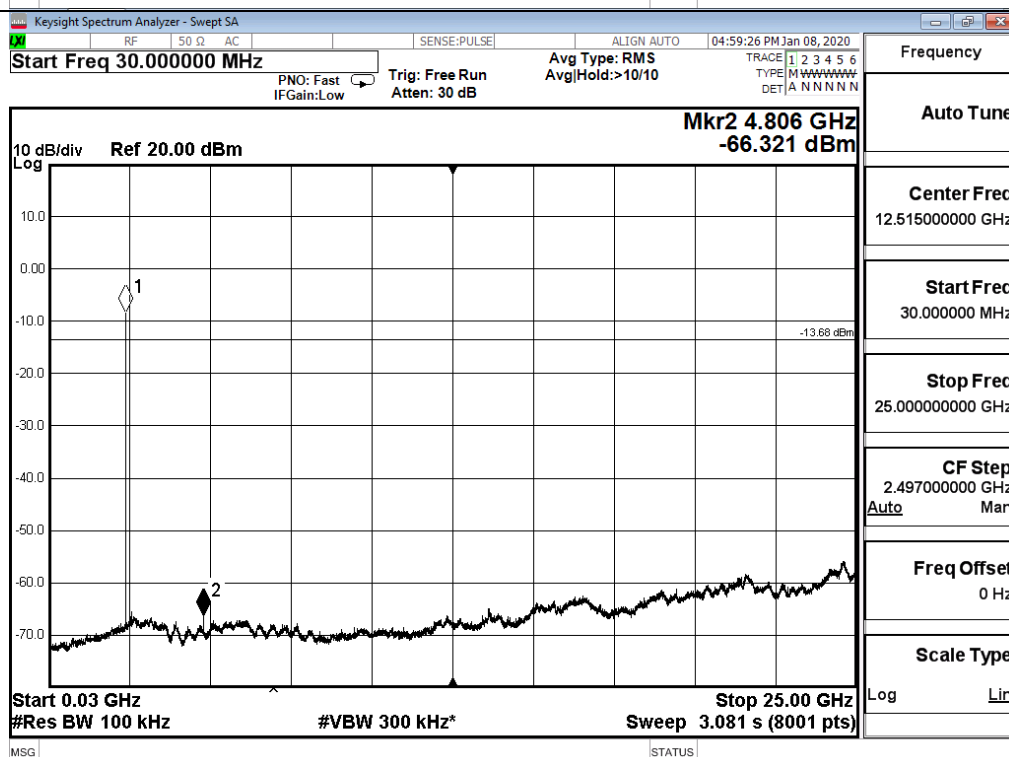


$\pi/4$ DQPSK_LCH_Graphs

Pref

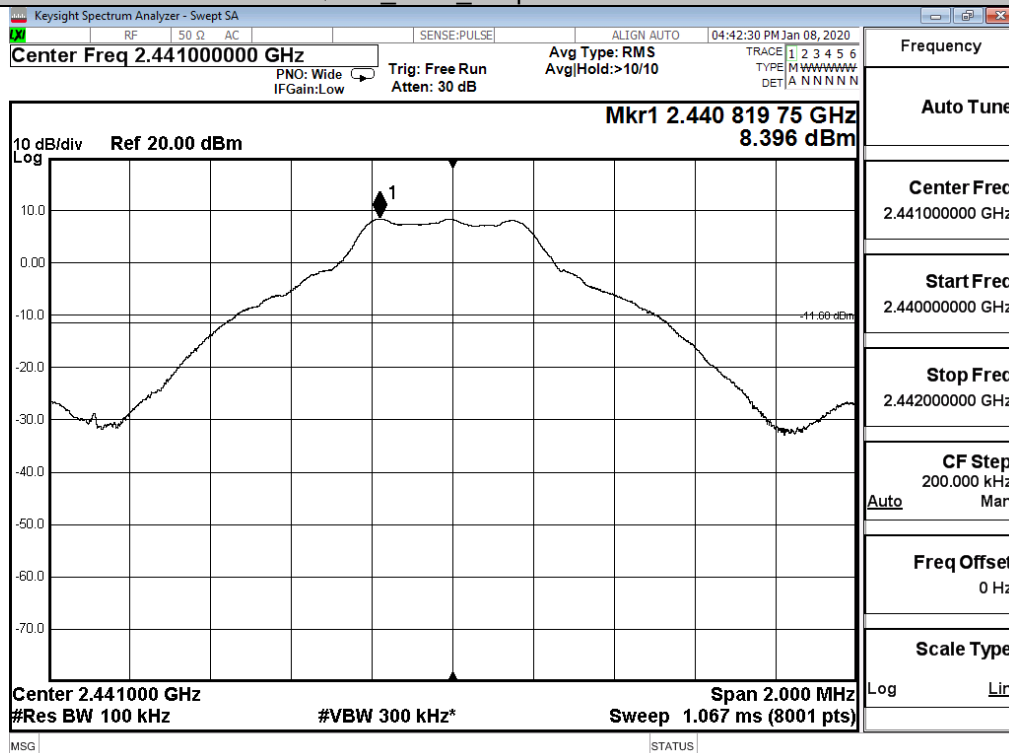


Puw

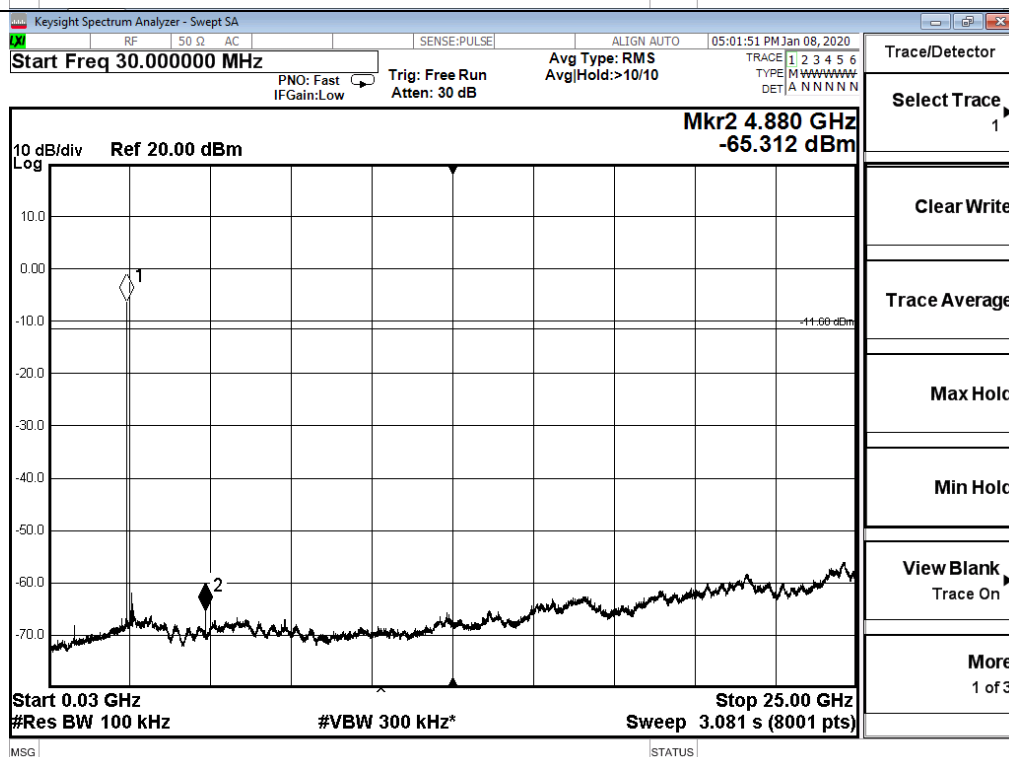


$\pi/4$ DQPSK_MCH_Graphs

Pref

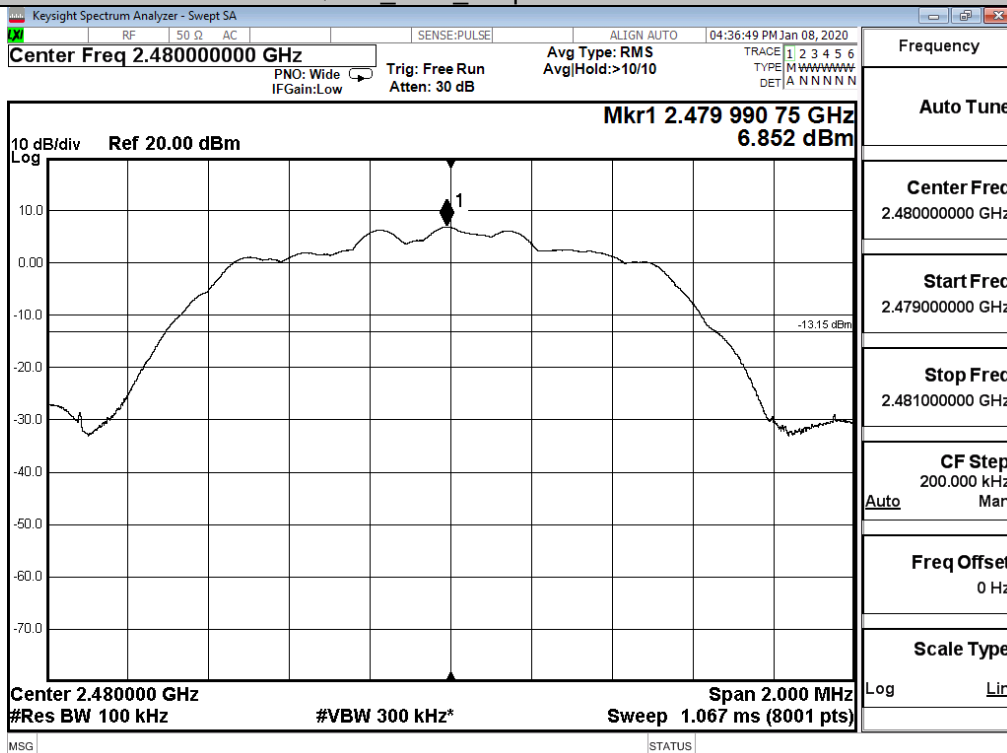


Puw

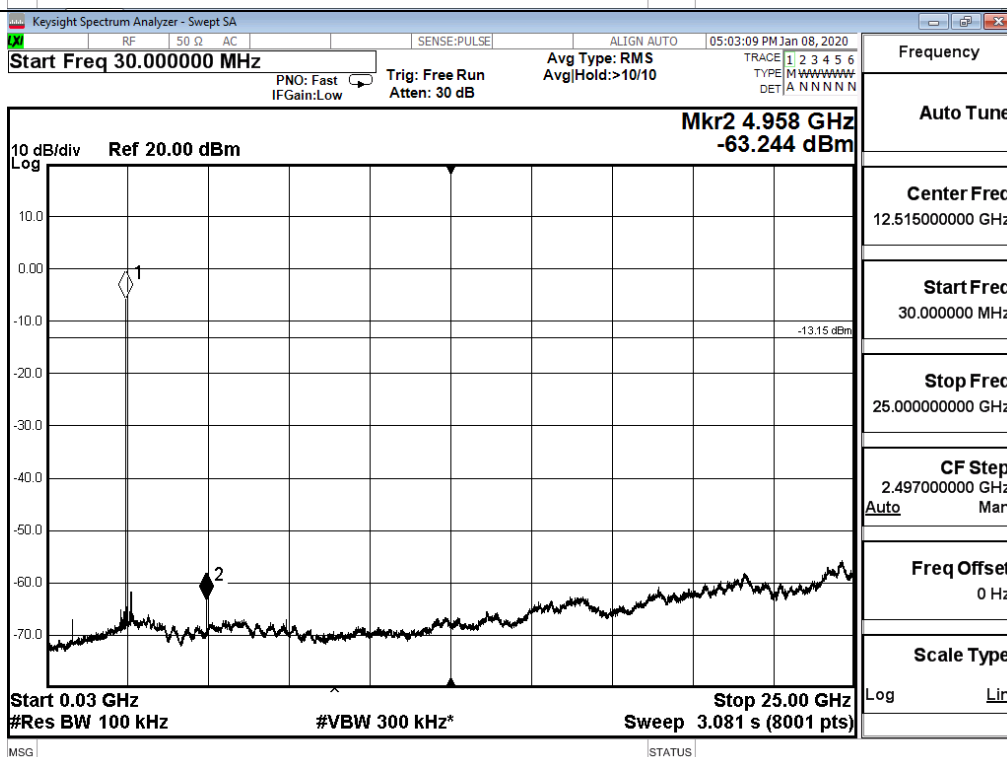


$\pi/4$ DQPSK_HCH_Graphs

Pref

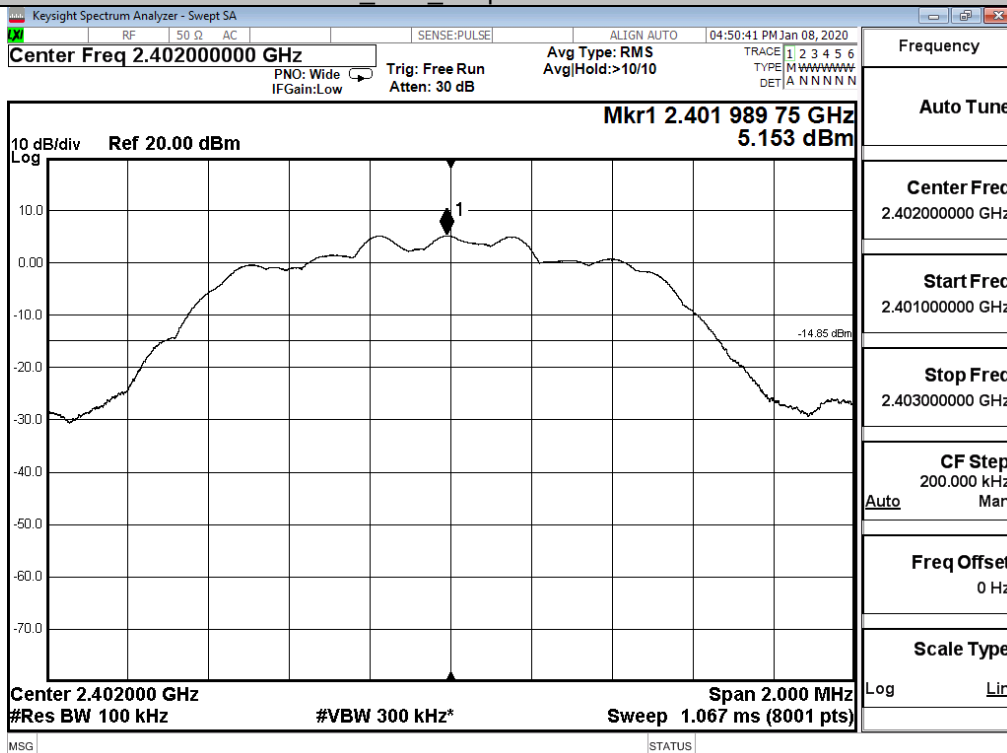


Puw

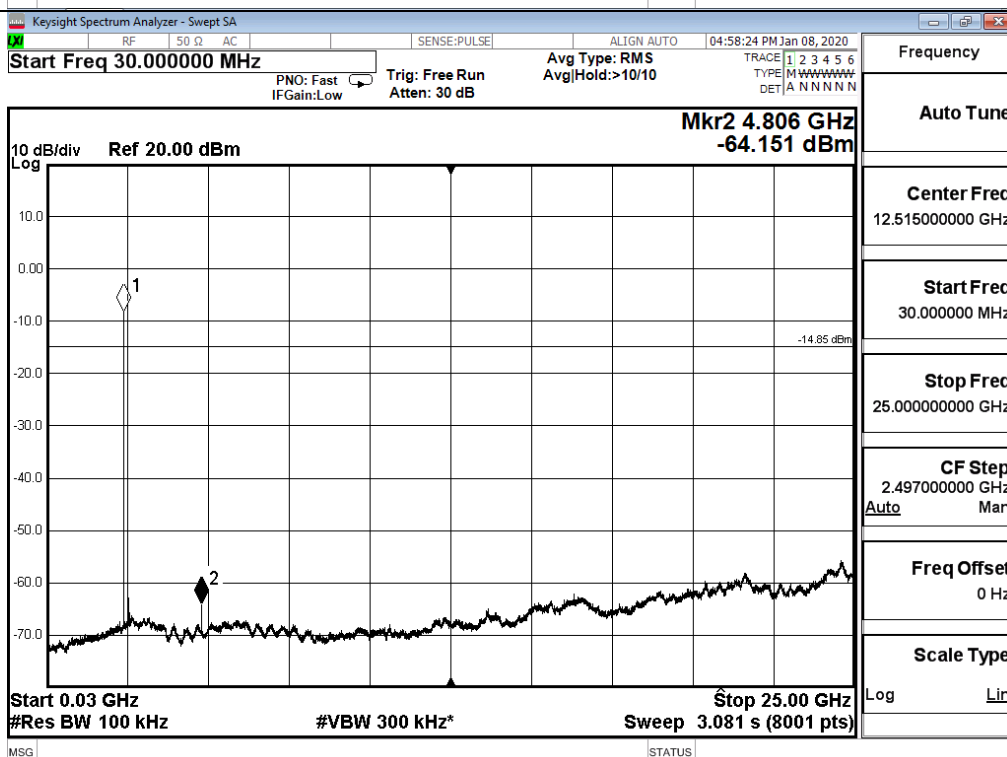


8DPSK_LCH_Graphs

Pref

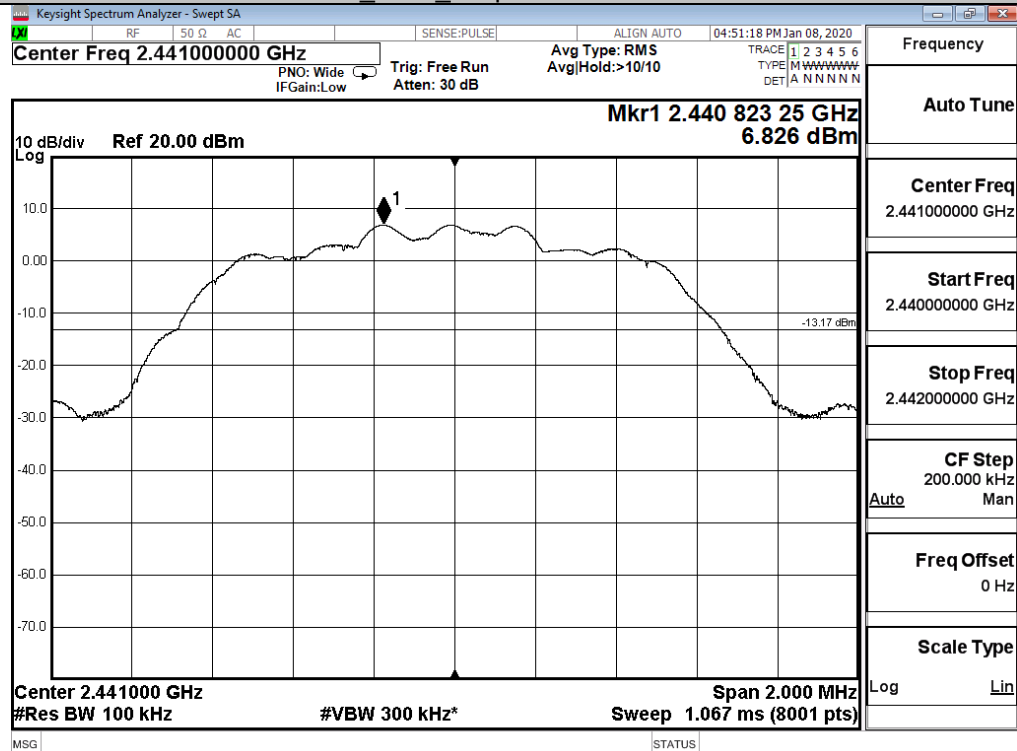


Puw

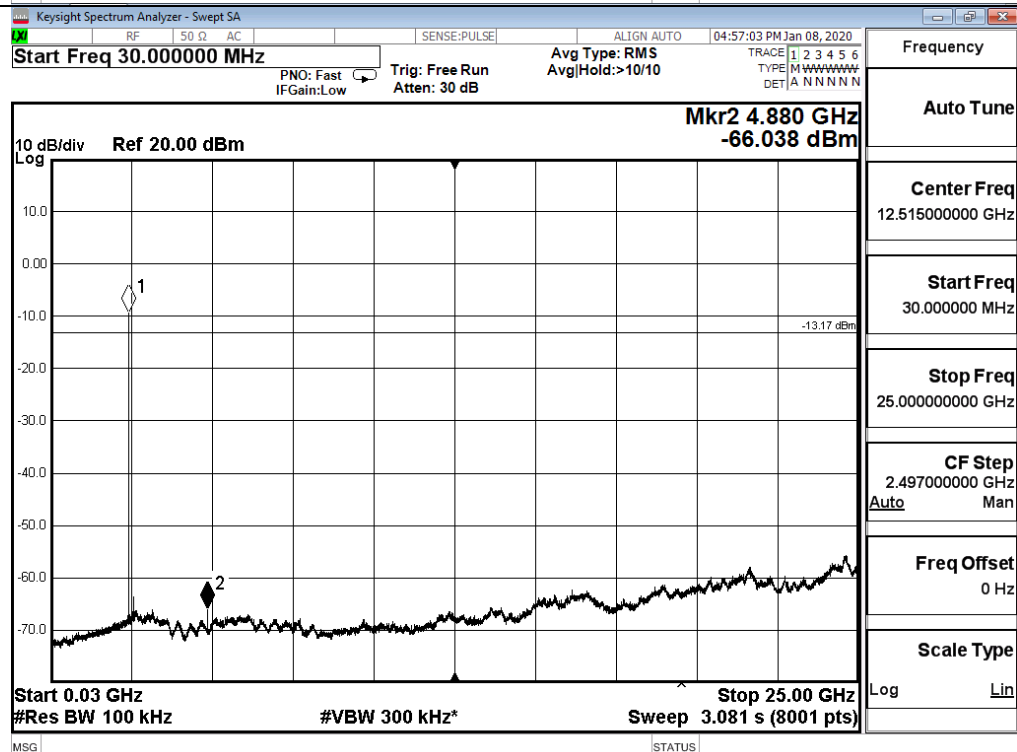


8DPSK_MCH_Graphs

Pref

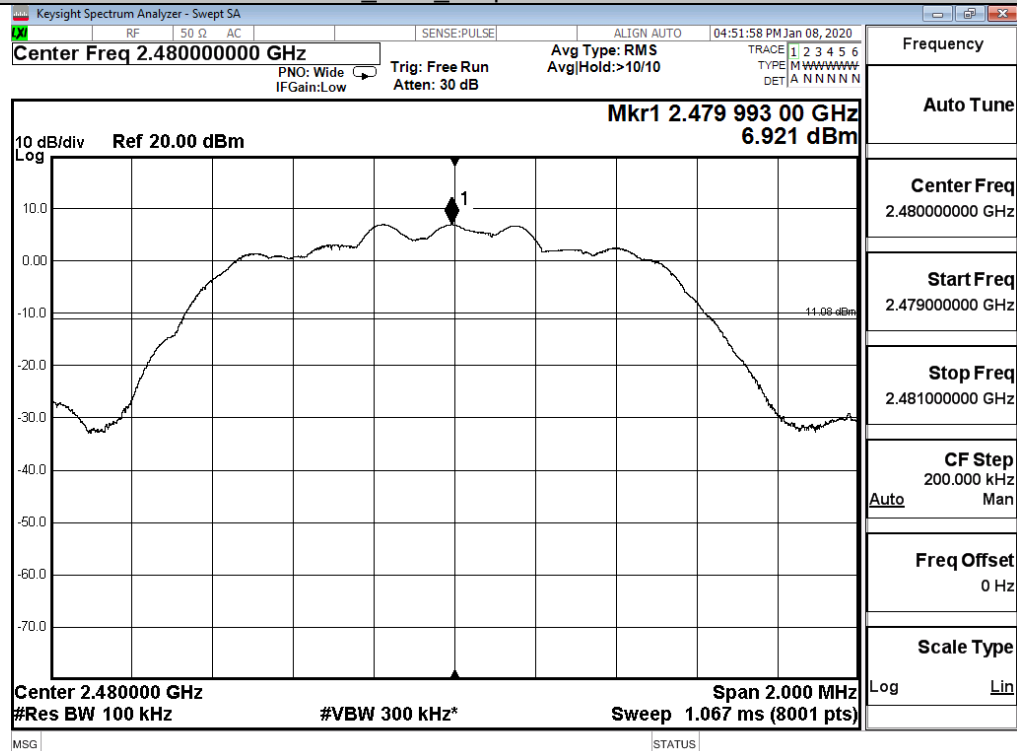


Puw

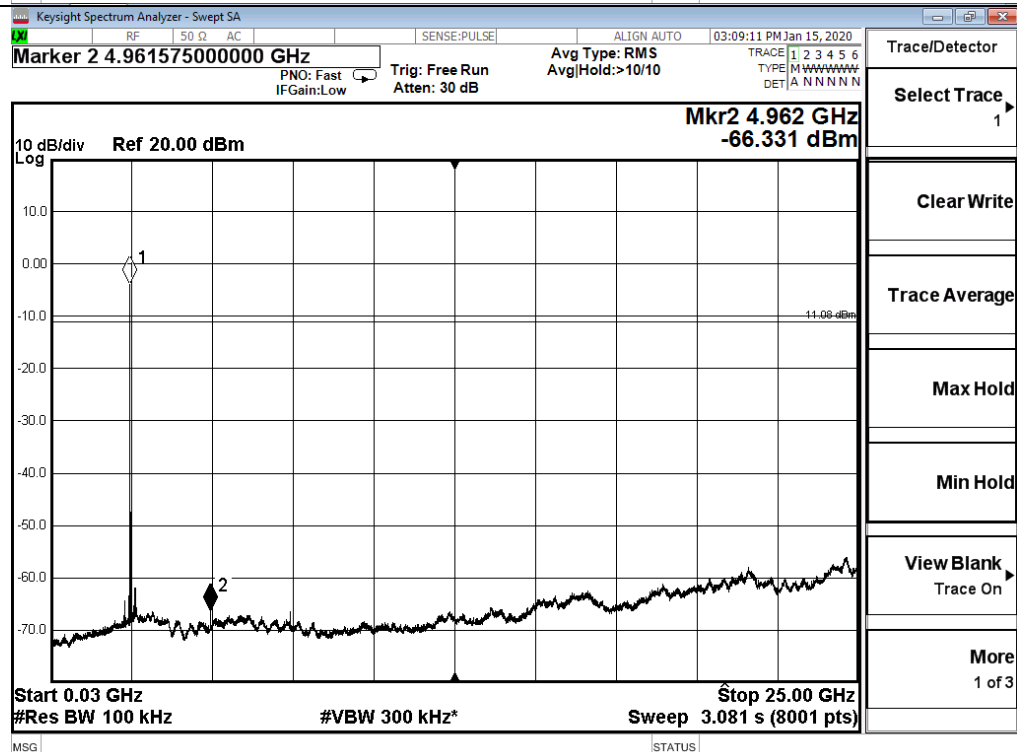


8DPSK_HCH_Graphs

Pref



Puw

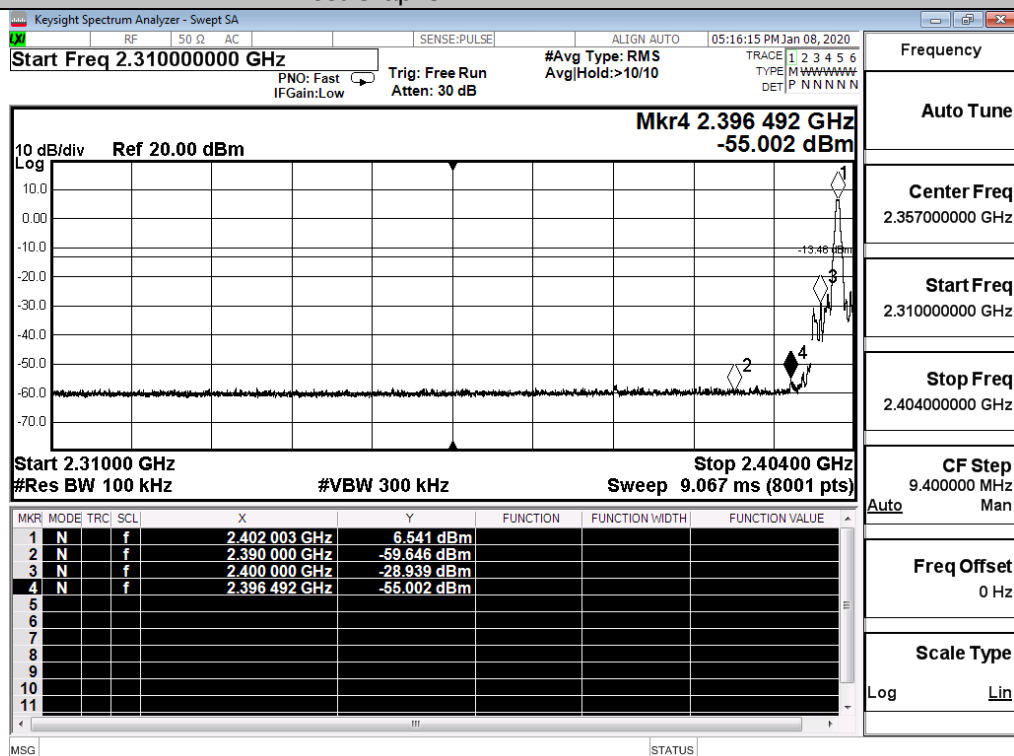


A.7 Band-edge for RF Conducted Emissions

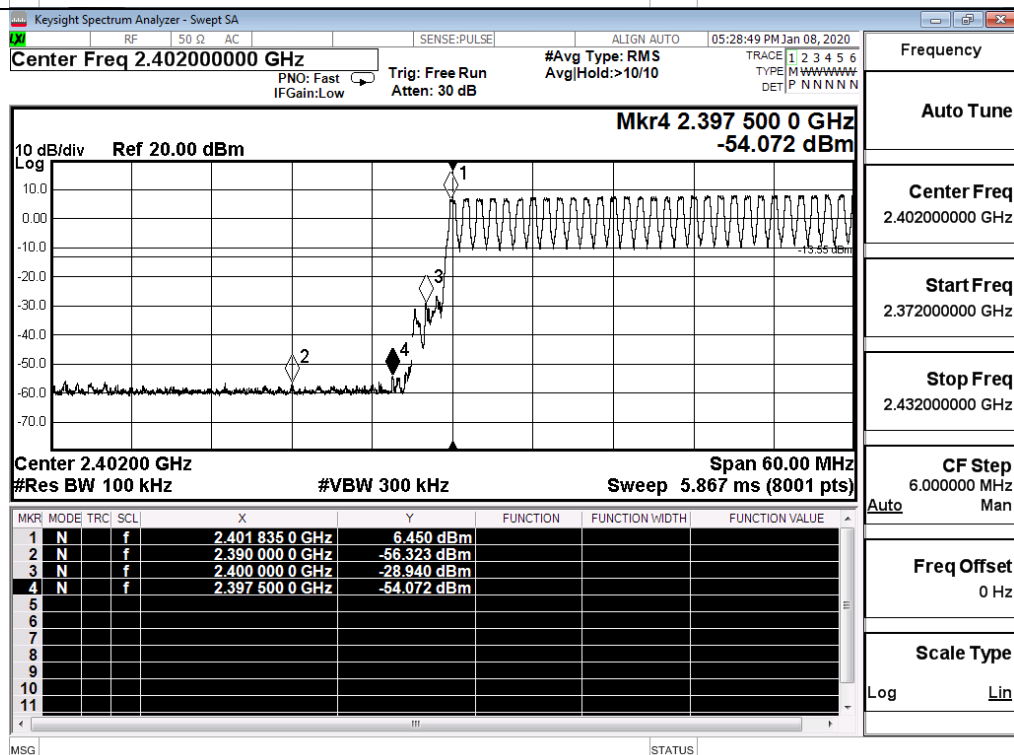
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	6.541	Off	-55.002	-13.46	PASS
			6.450	On	-54.072	-13.55	PASS
	HCH	2480	6.627	Off	-42.611	-13.37	PASS
			6.354	On	-55.644	-13.65	PASS
$\pi/4$ DQPSK	LCH	2402	5.257	Off	-54.257	-14.74	PASS
			5.315	On	-49.680	-14.68	PASS
	HCH	2480	6.569	Off	-32.541	-13.43	PASS
			6.505	On	-57.356	-13.49	PASS
8DPSK	LCH	2402	5.263	Off	-55.358	-14.74	PASS
			5.293	On	-46.182	-14.71	PASS
	HCH	2480	6.623	Off	-32.149	-13.38	PASS
			6.290	On	-56.940	-13.71	PASS

Test Graphs

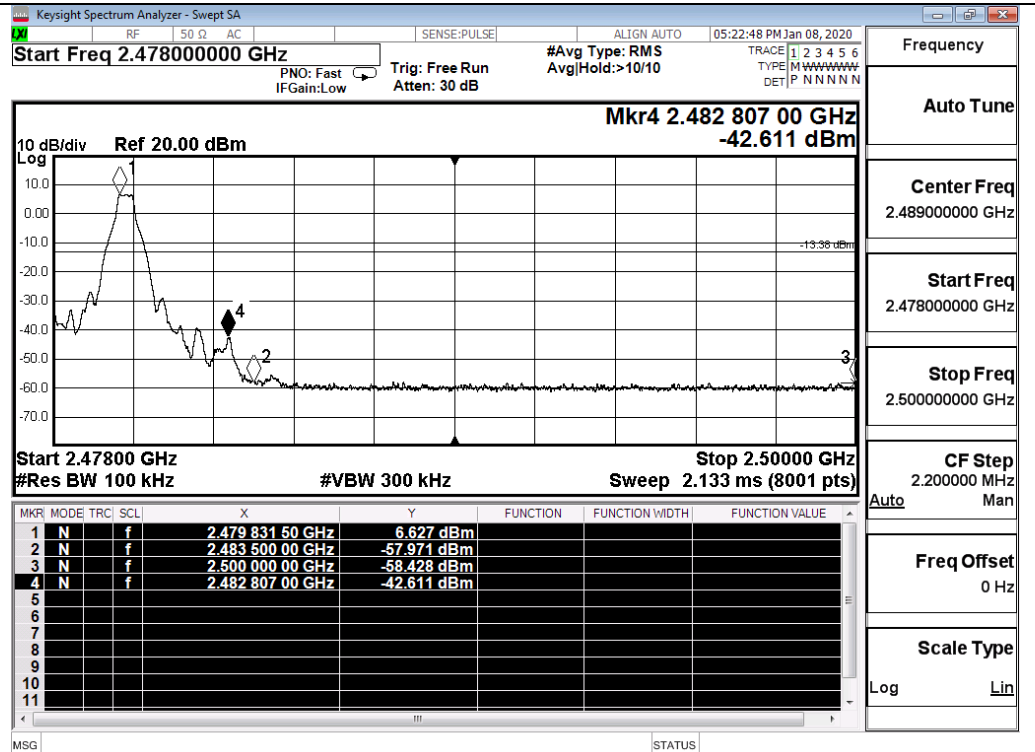
GFSK/LCH/No Hop



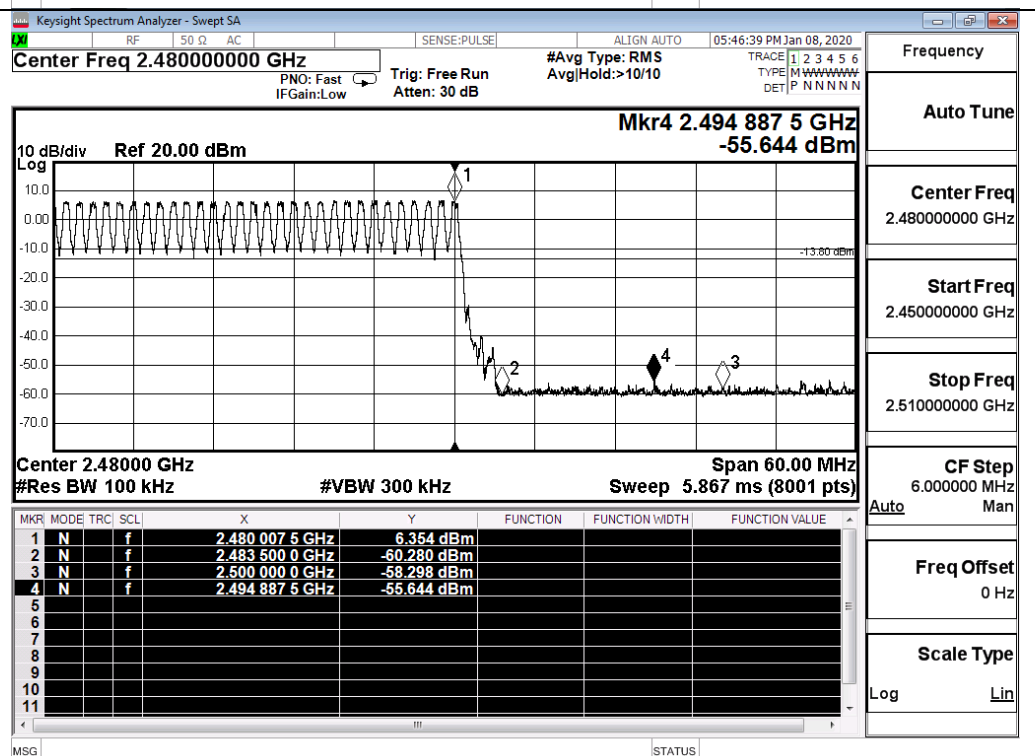
GFSK/LCH/Hop



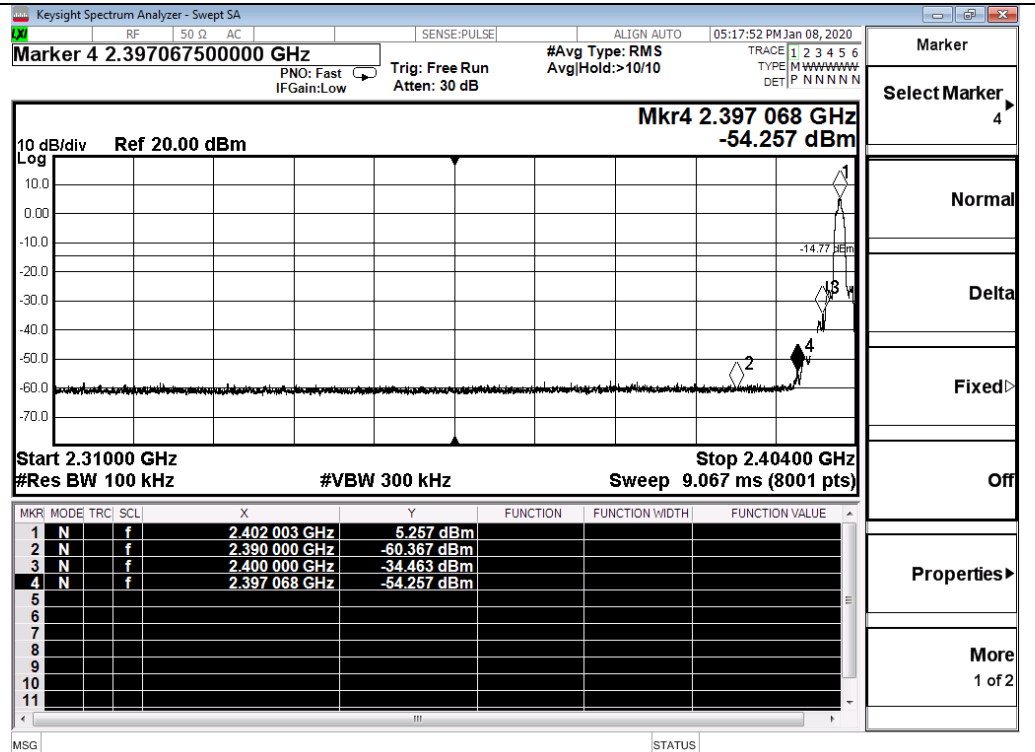
GFSK/HCH/No Hop



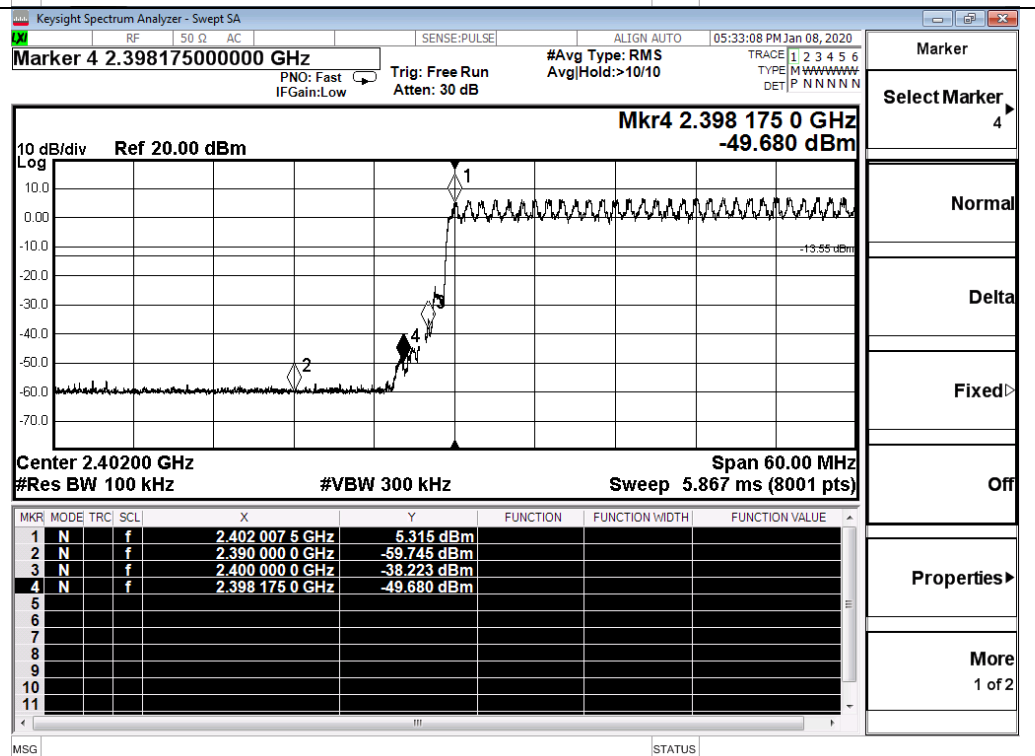
GFSK/HCH/Hop



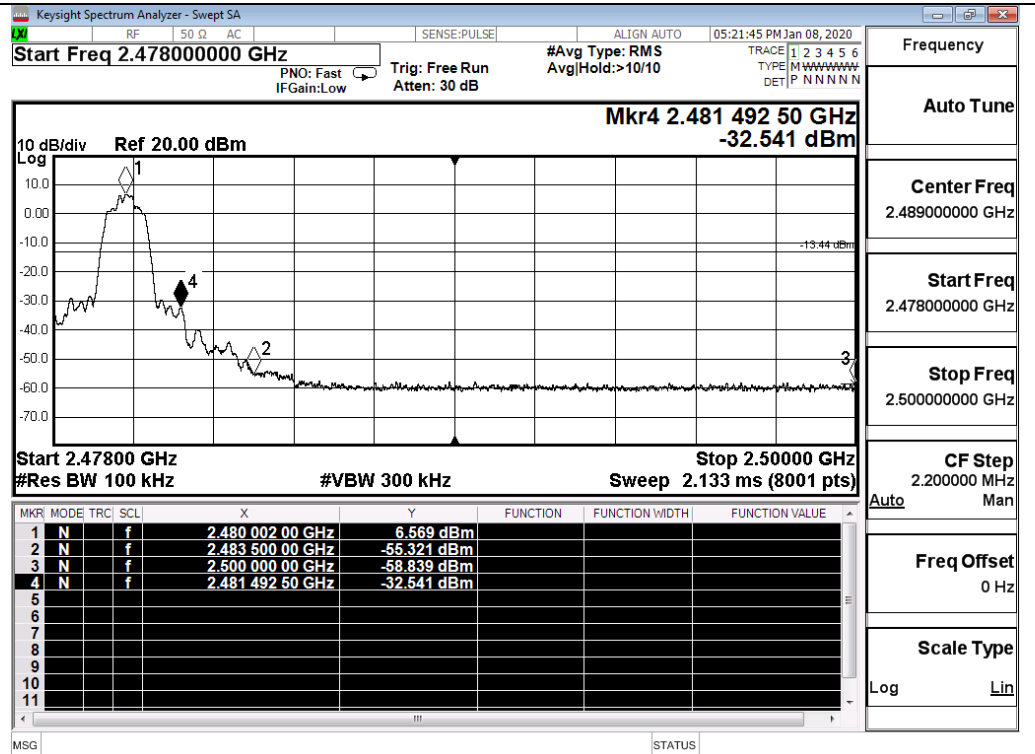
$\pi/4$ DQPSK/LCH/No
Hop



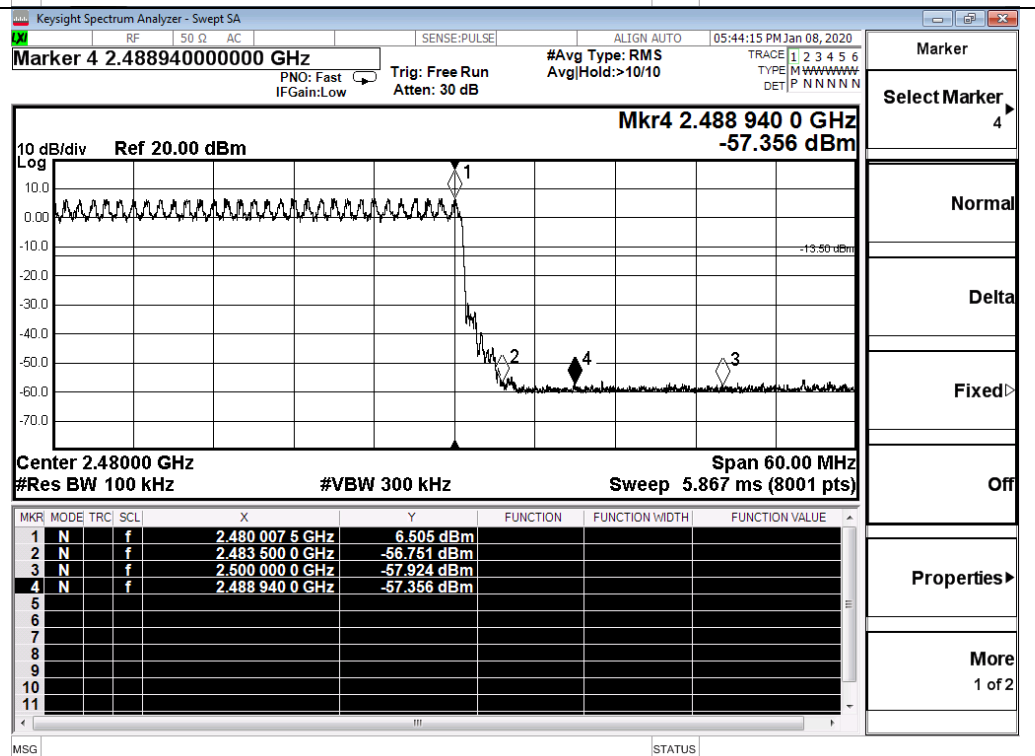
$\pi/4$ DQPSK/LCH/Hop



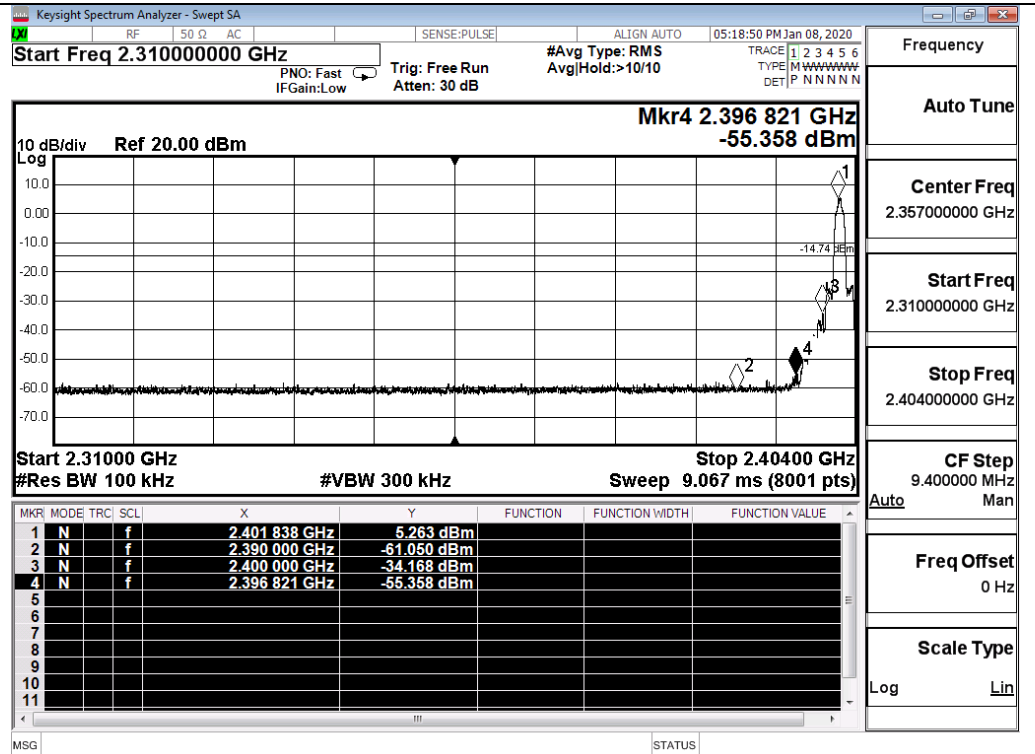
$\pi/4$ DQPSK/HCH/No
Hop



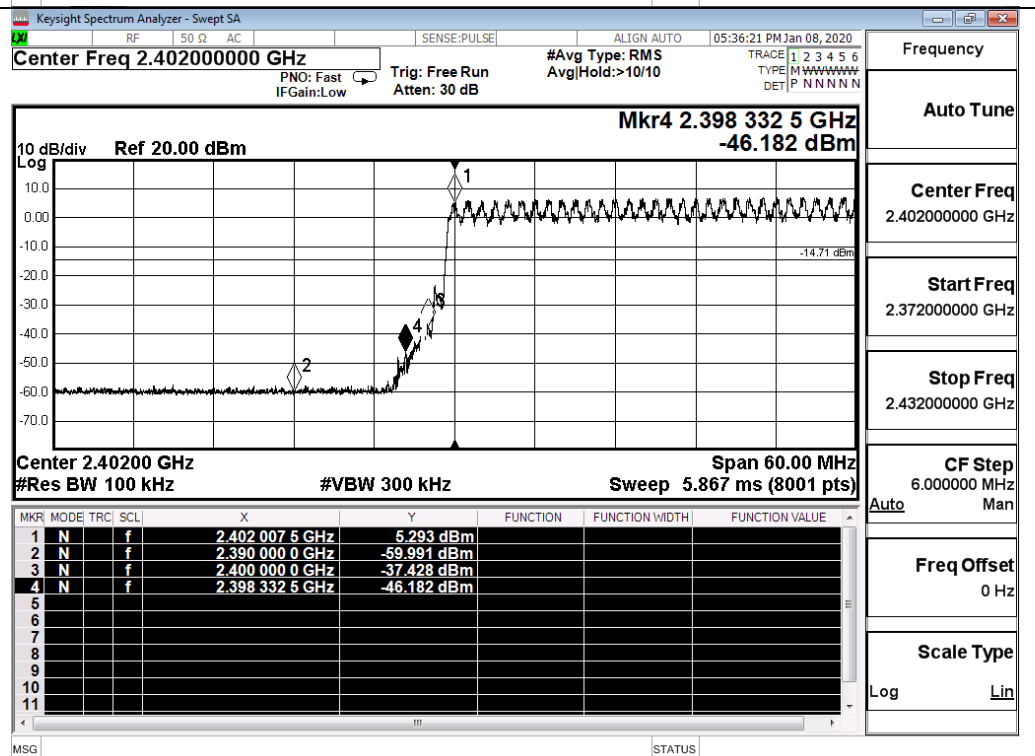
$\pi/4$ DQPSK/HCH/Hop



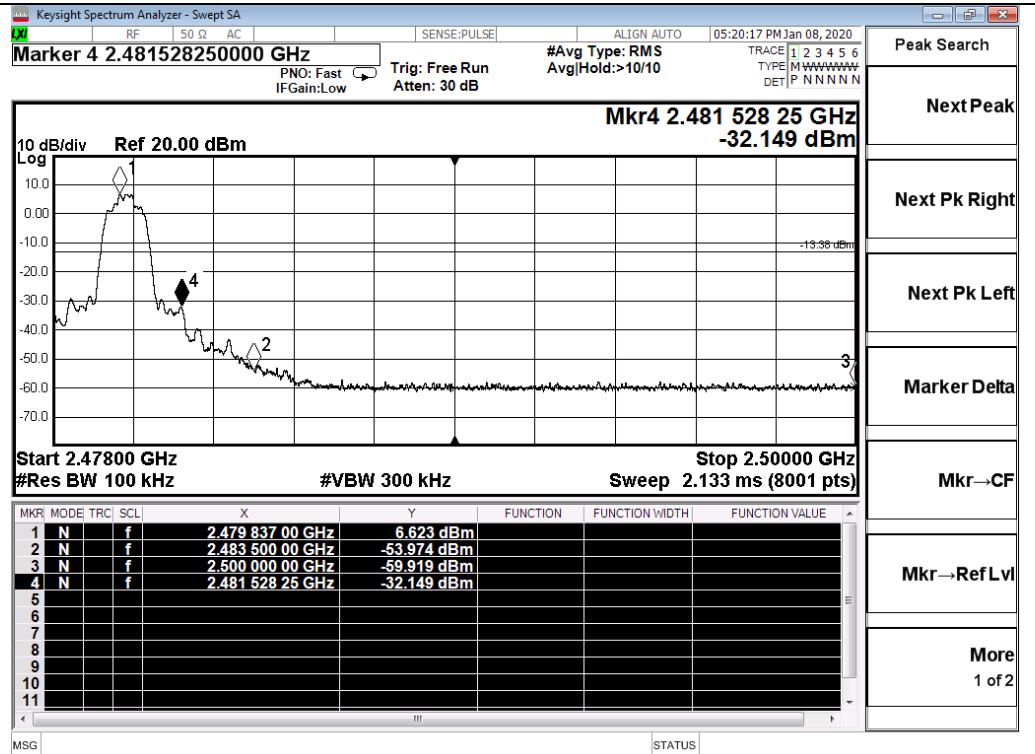
8DPSK/LCH/No Hop



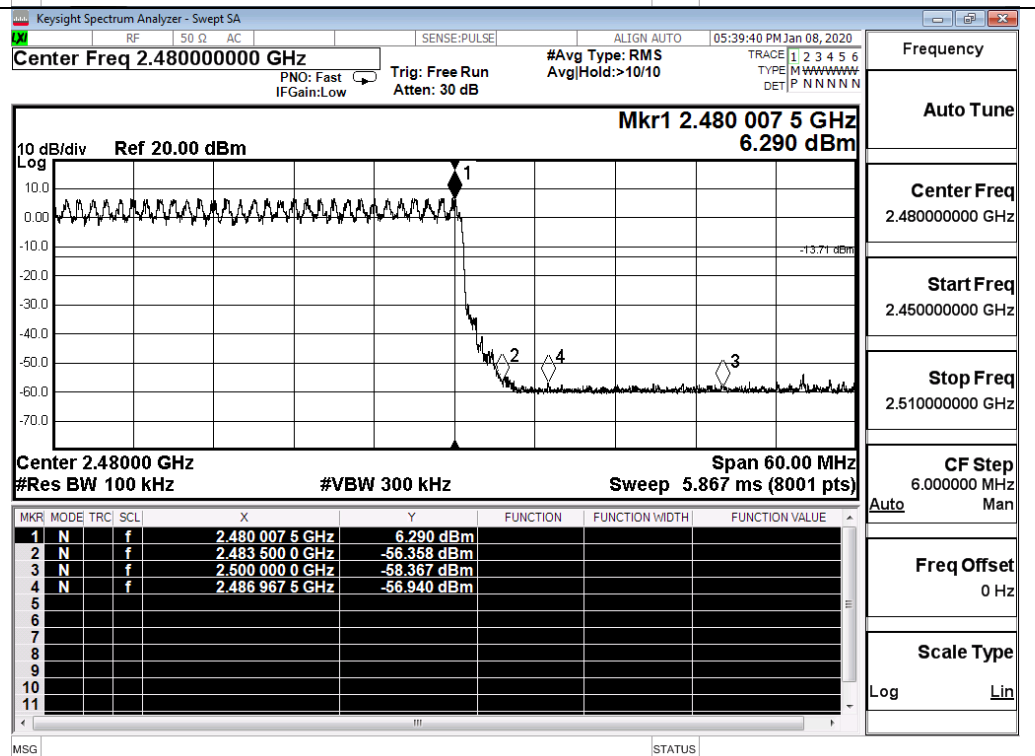
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



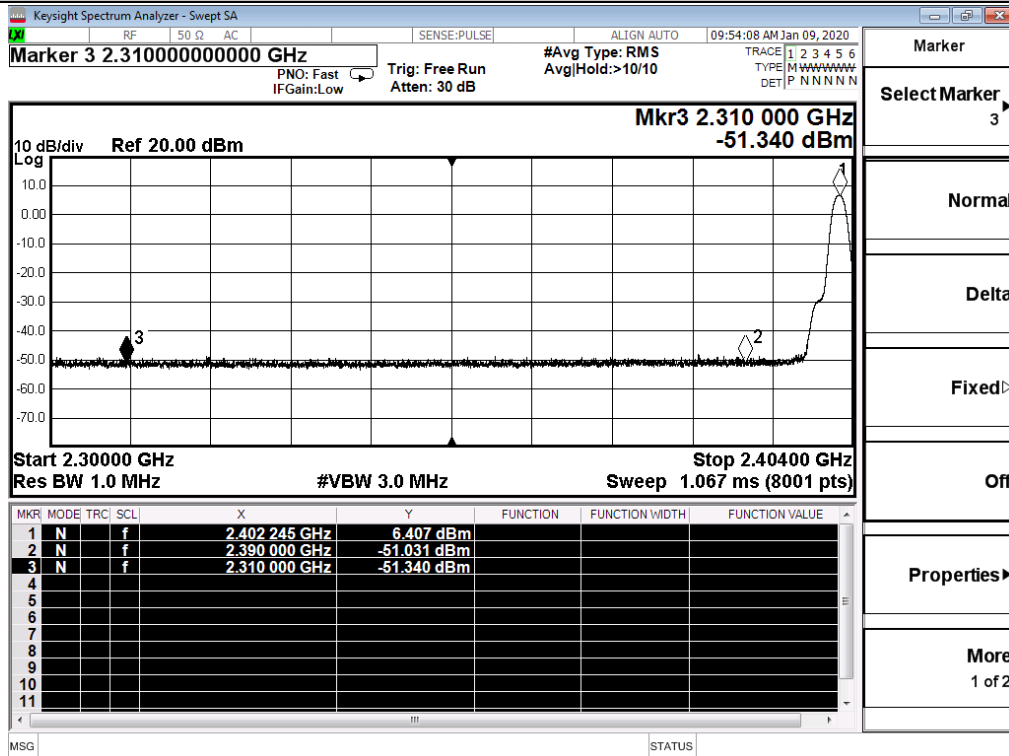
8DPSK/HCH/Hop



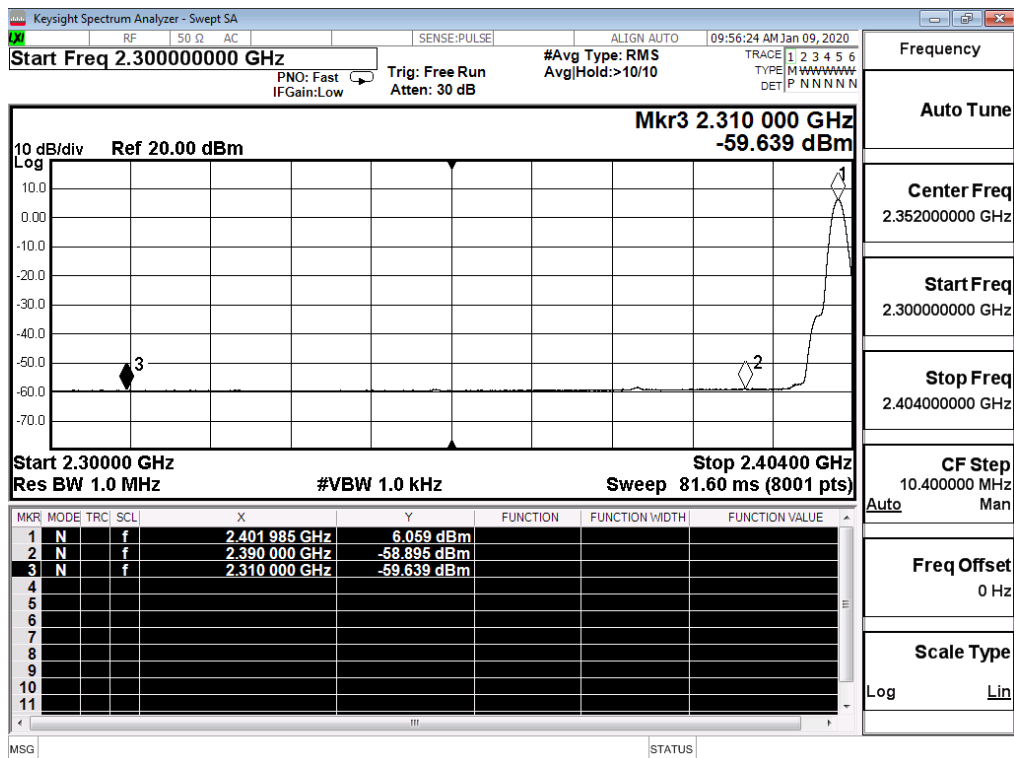
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.340	4	0	47.92	PEAK	74	PASS
	Off	2310.0	-59.639	4	0	39.62	AV	54	PASS
	Off	2390.0	-51.031	4	0	48.23	PEAK	74	PASS
	Off	2390.0	-58.895	4	0	40.37	AV	54	PASS
	Off	2483.5	-43.538	4	0	55.72	PEAK	74	PASS
	Off	2483.5	-55.706	4	0	43.55	AV	54	PASS
	Off	2500.0	-50.468	4	0	48.79	PEAK	74	PASS
	Off	2500.0	-60.848	4	0	38.41	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-54.155	4	0	45.11	PEAK	74	PASS
	Off	2310.0	-59.636	4	0	39.62	AV	54	PASS
	Off	2390.0	-53.138	4	0	46.12	PEAK	74	PASS
	Off	2390.0	-59.161	4	0	40.10	AV	54	PASS
	Off	2483.5	-42.118	4	0	57.14	PEAK	74	PASS
	Off	2483.5	-54.083	4	0	45.18	AV	54	PASS
	Off	2500.0	-49.783	4	0	49.48	PEAK	74	PASS
	Off	2500.0	-60.998	4	0	38.26	AV	54	PASS
8DPSK	Off	2310.0	-51.554	4	0	47.71	PEAK	74	PASS
	Off	2310.0	-61.885	4	0	37.38	AV	54	PASS
	Off	2390.0	-50.170	4	0	49.09	PEAK	74	PASS
	Off	2390.0	-61.610	4	0	37.65	AV	54	PASS
	Off	2483.5	-40.609	4	0	58.65	PEAK	74	PASS
	Off	2483.5	-54.006	4	0	45.25	AV	54	PASS
	Off	2500.0	-50.338	4	0	48.92	PEAK	74	PASS
	Off	2500.0	-60.862	4	0	38.40	AV	54	PASS

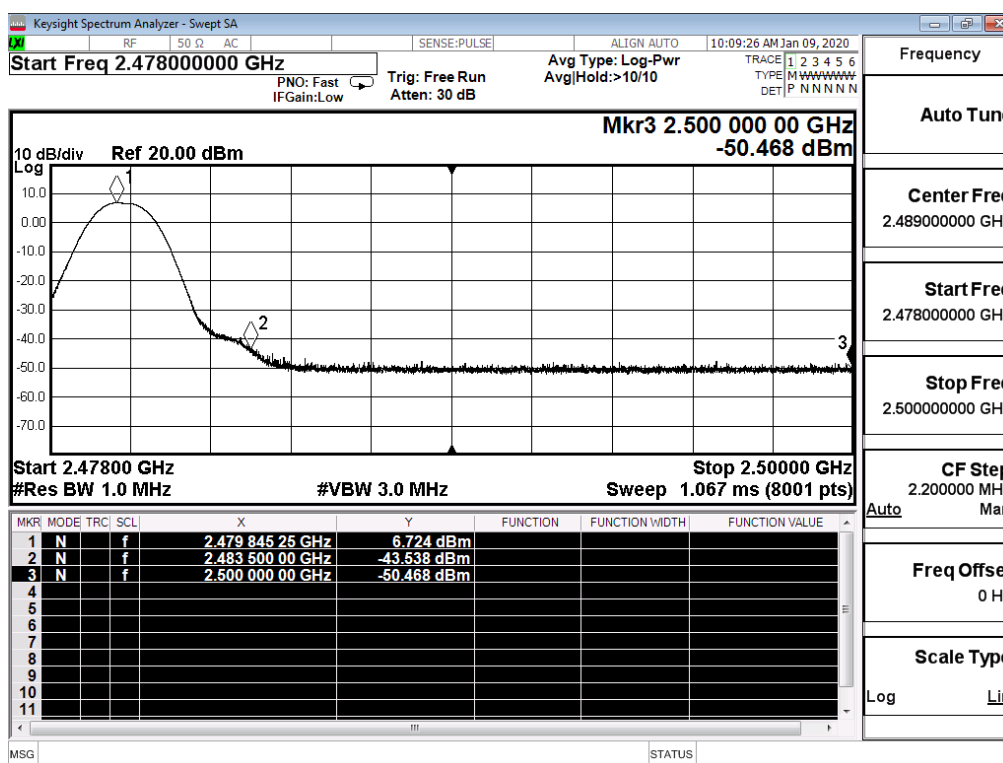
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



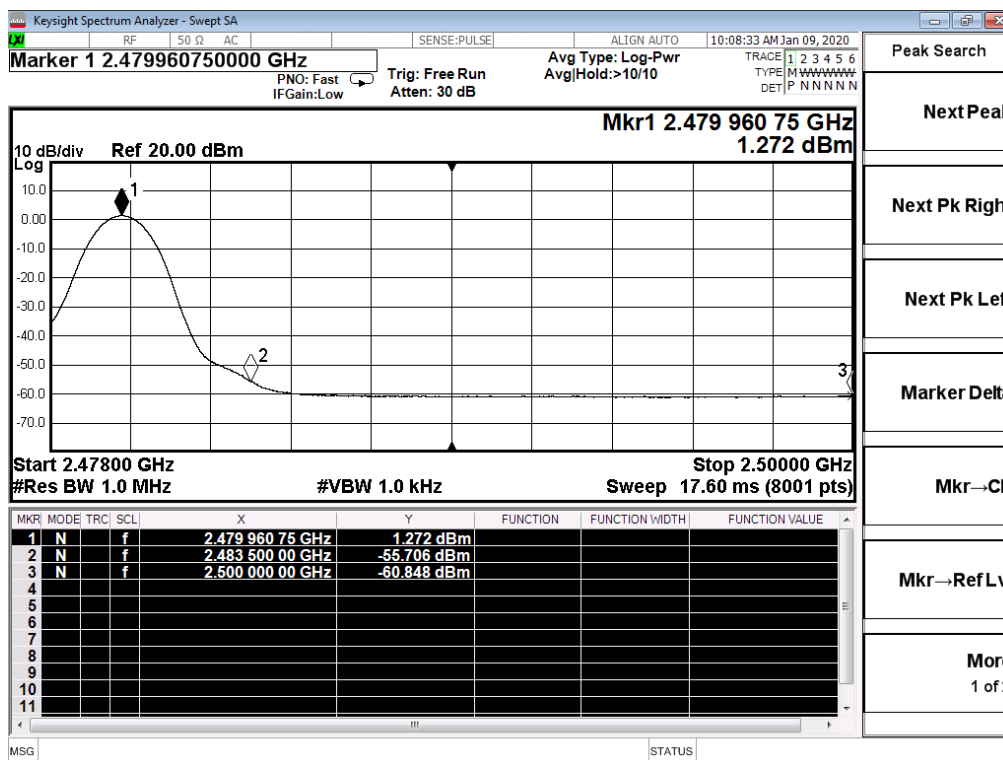
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

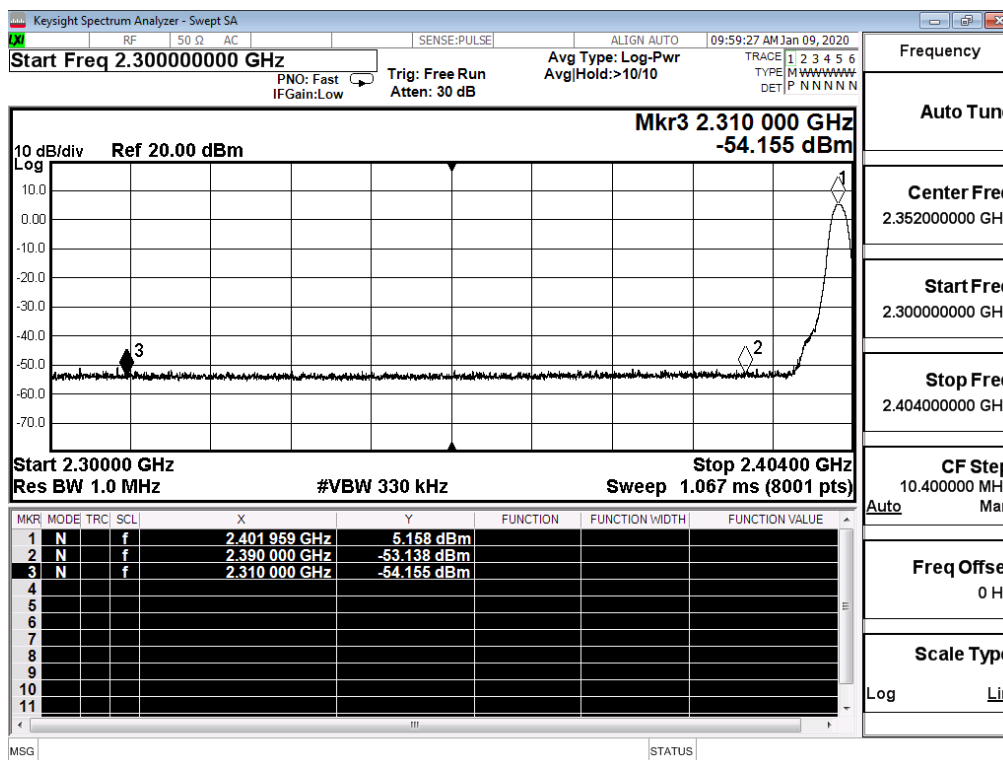
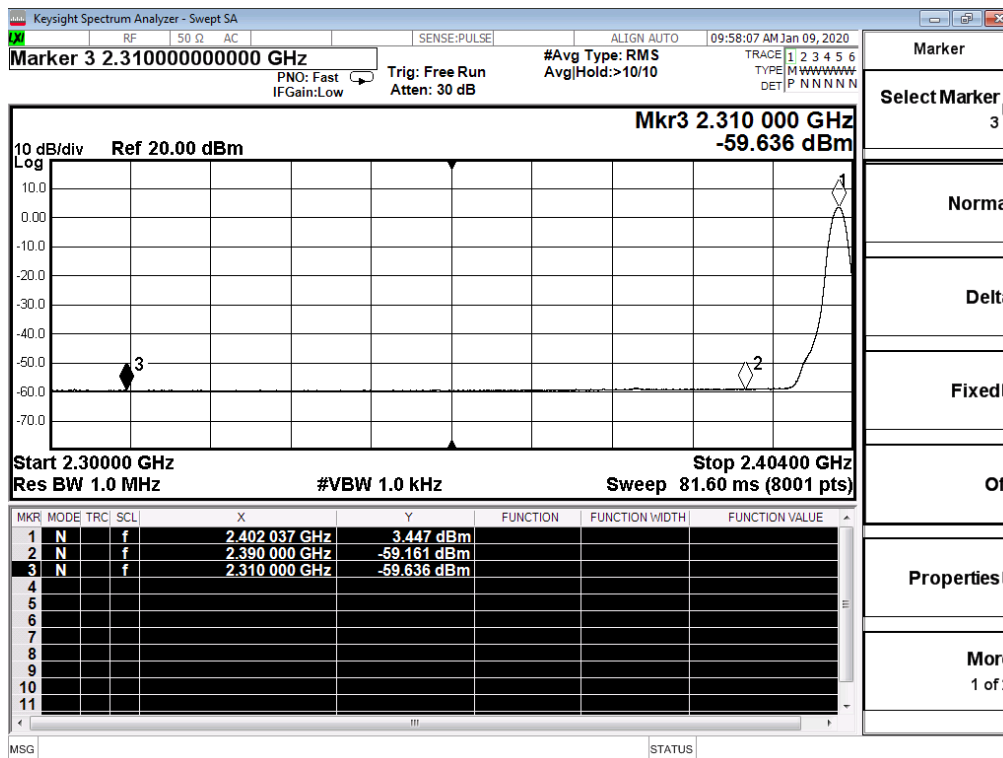


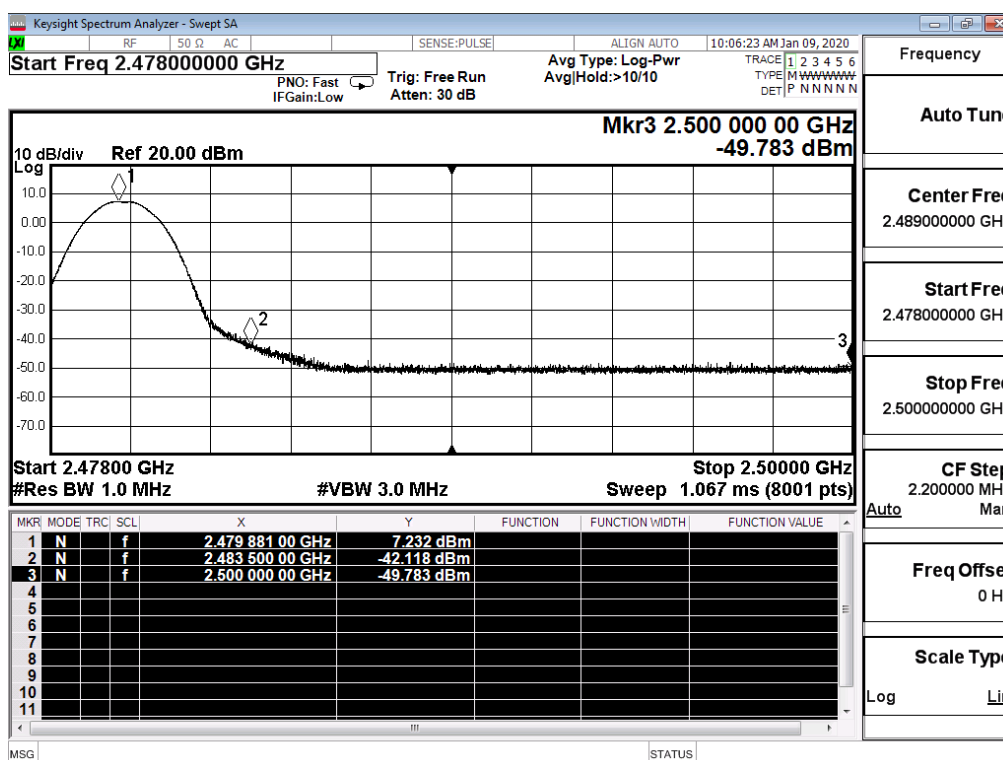
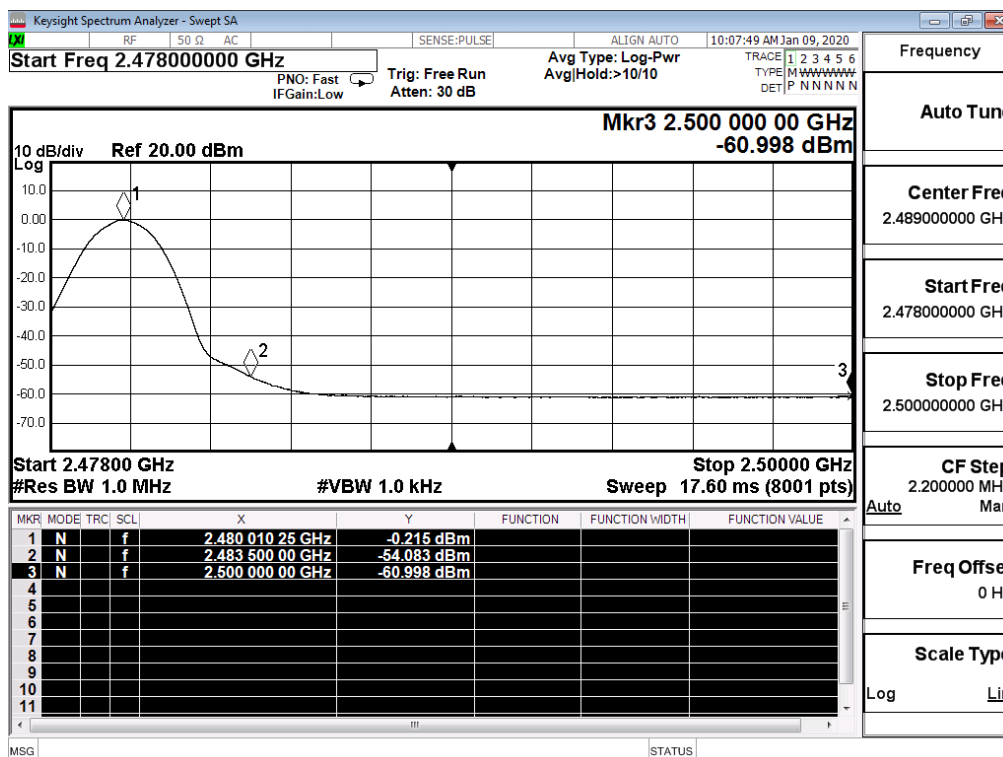
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



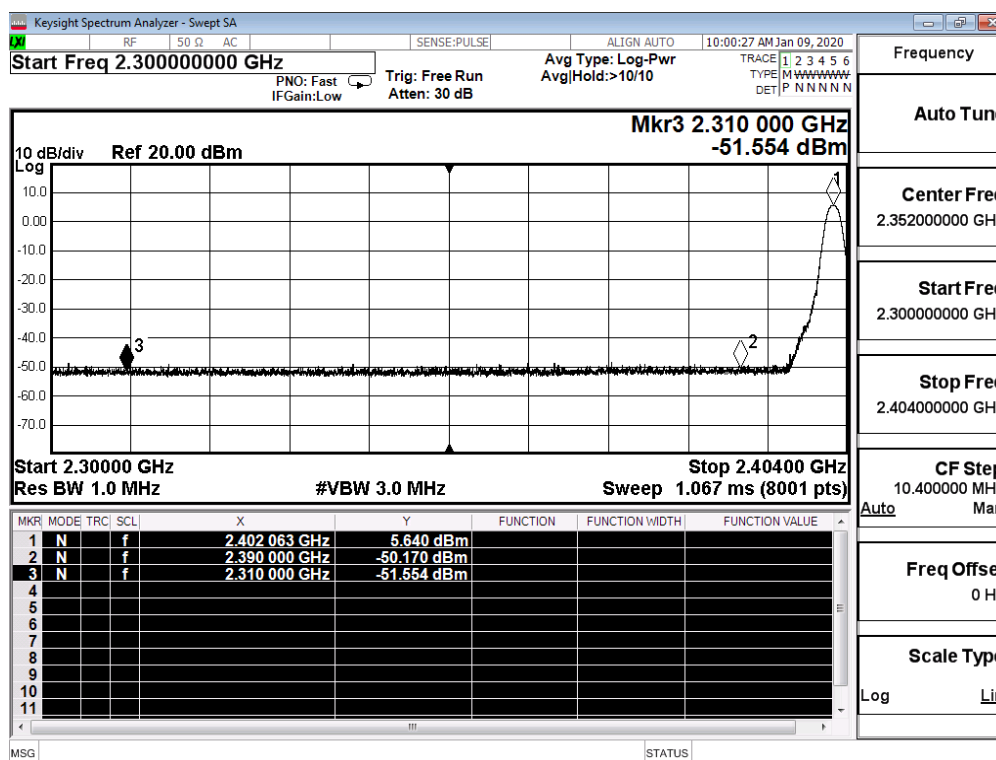
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



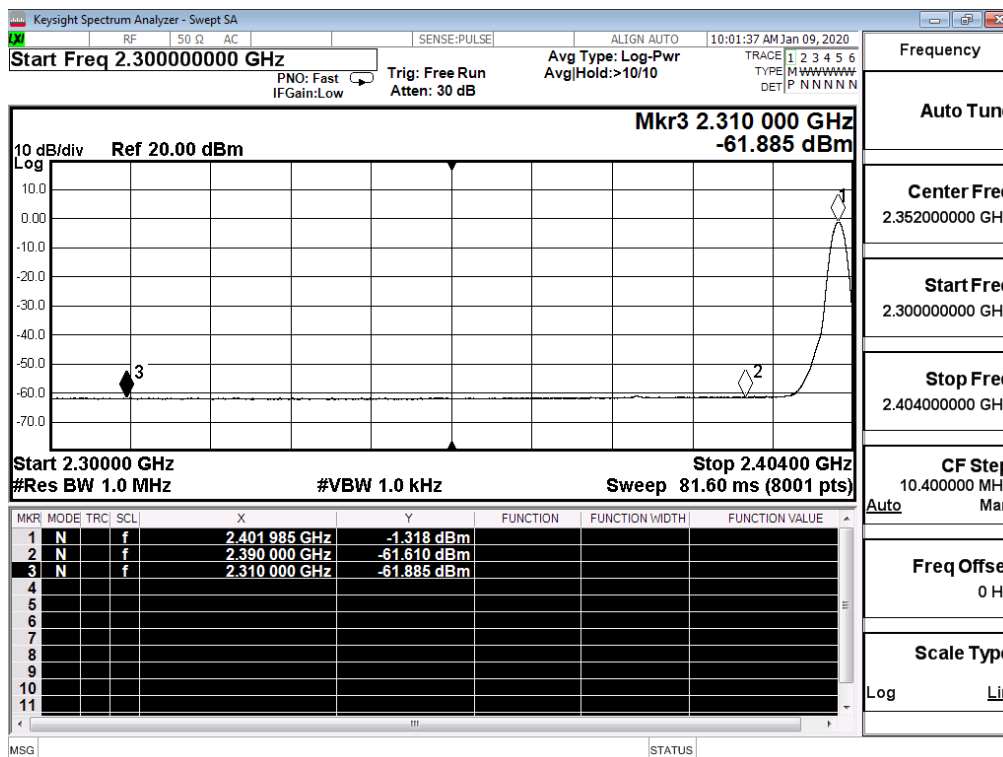
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

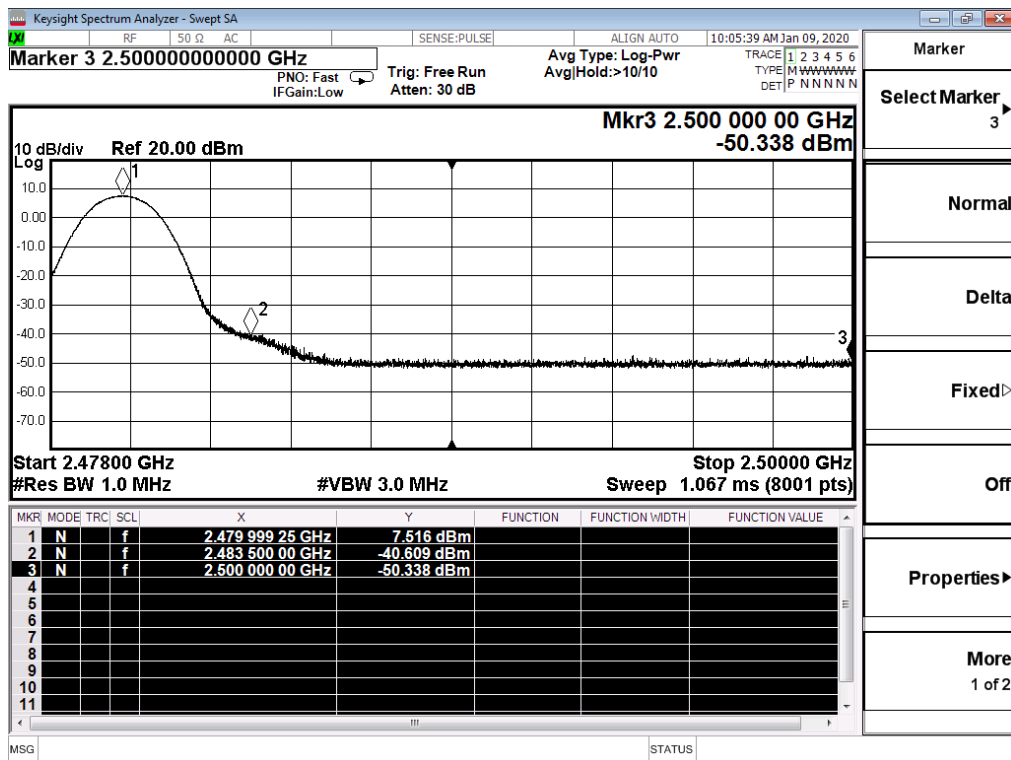
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

