

Appendix A

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

Product Name: Womb Music Bluetooth Controller by Wusic

Trade Mark: WUSIC

Test Model: WMBTCTL

Environmental Conditions

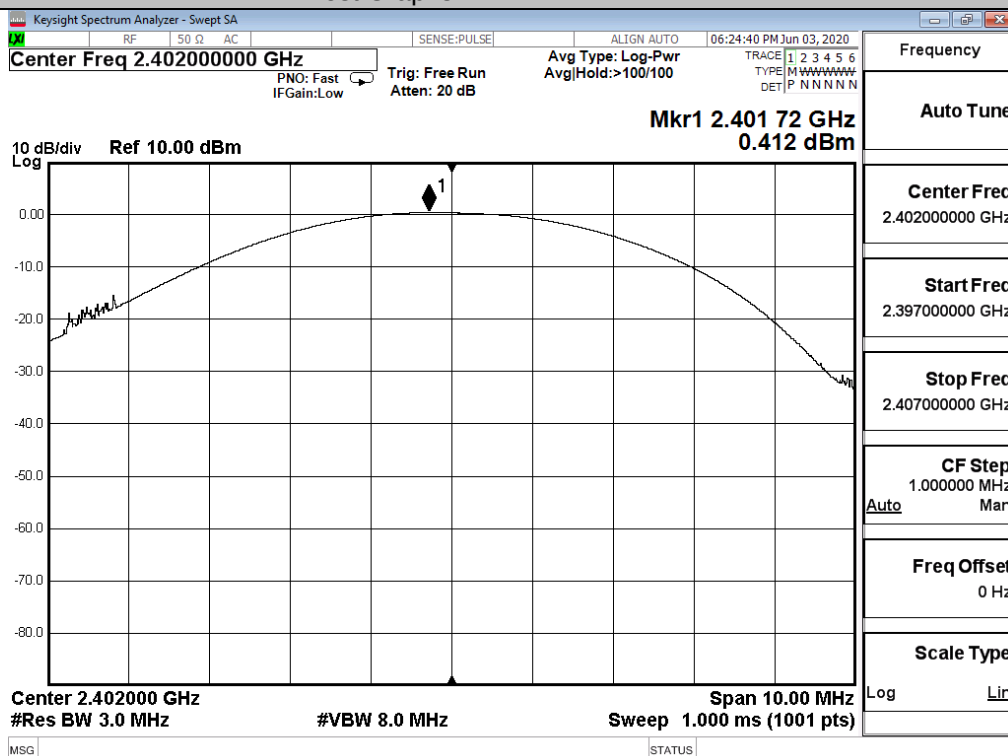
Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

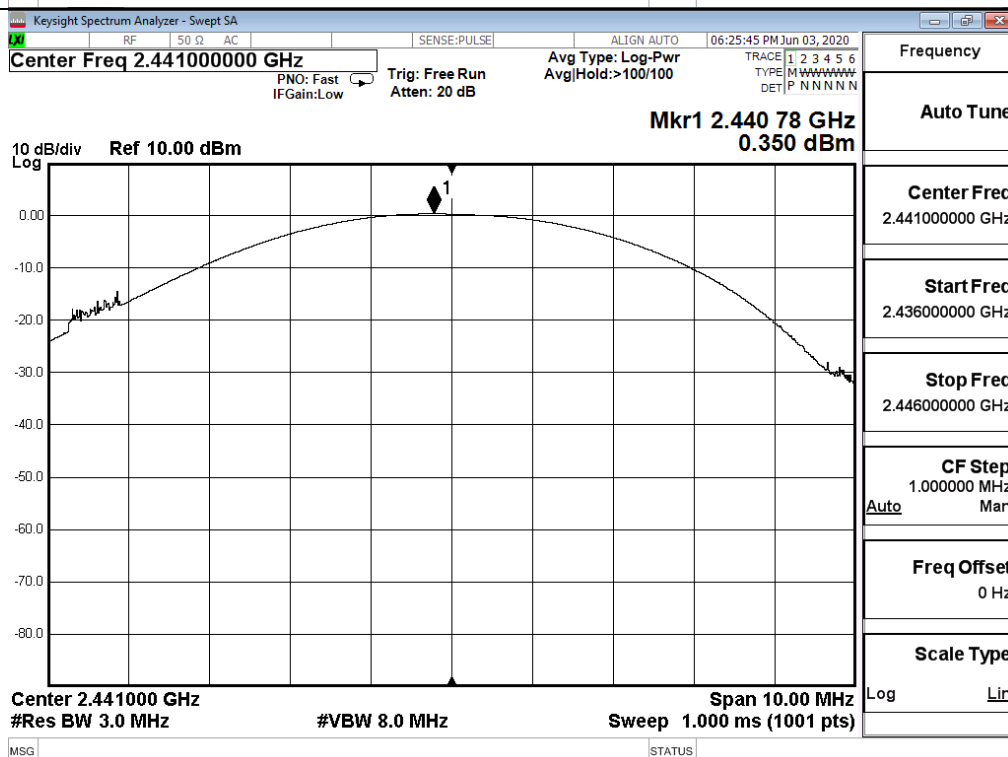
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.412	21	PASS
	MCH	0.350	21	PASS
	HCH	0.220	21	PASS
$\pi/4$ DQPSK	LCH	0.976	21	PASS
	MCH	0.914	21	PASS
	HCH	0.813	21	PASS

Test Graphs

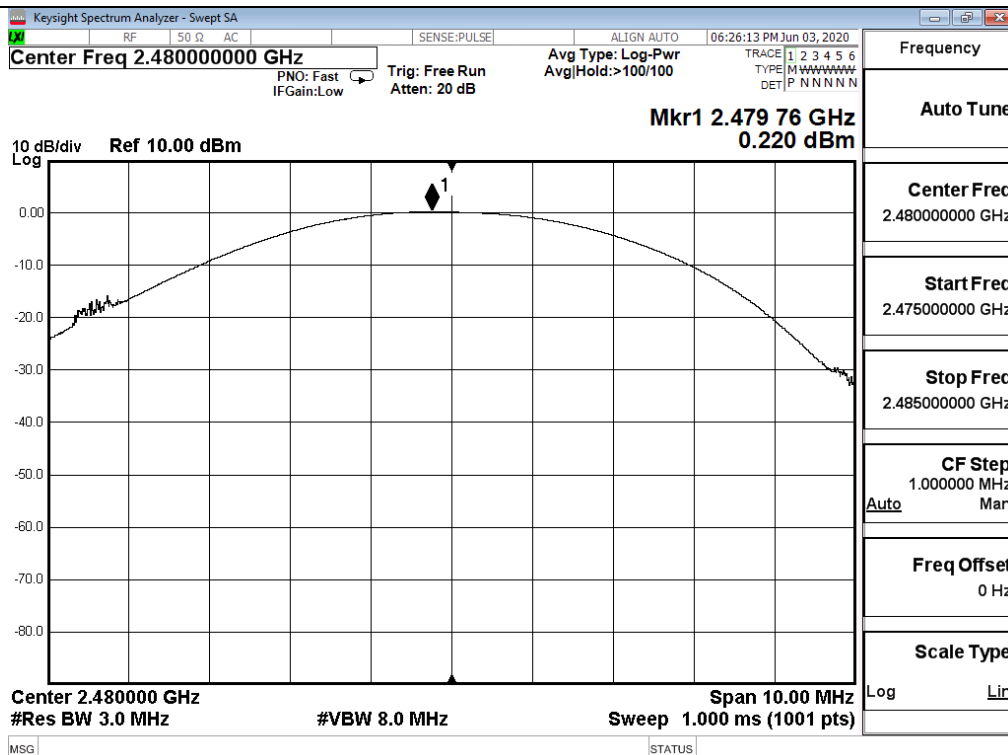
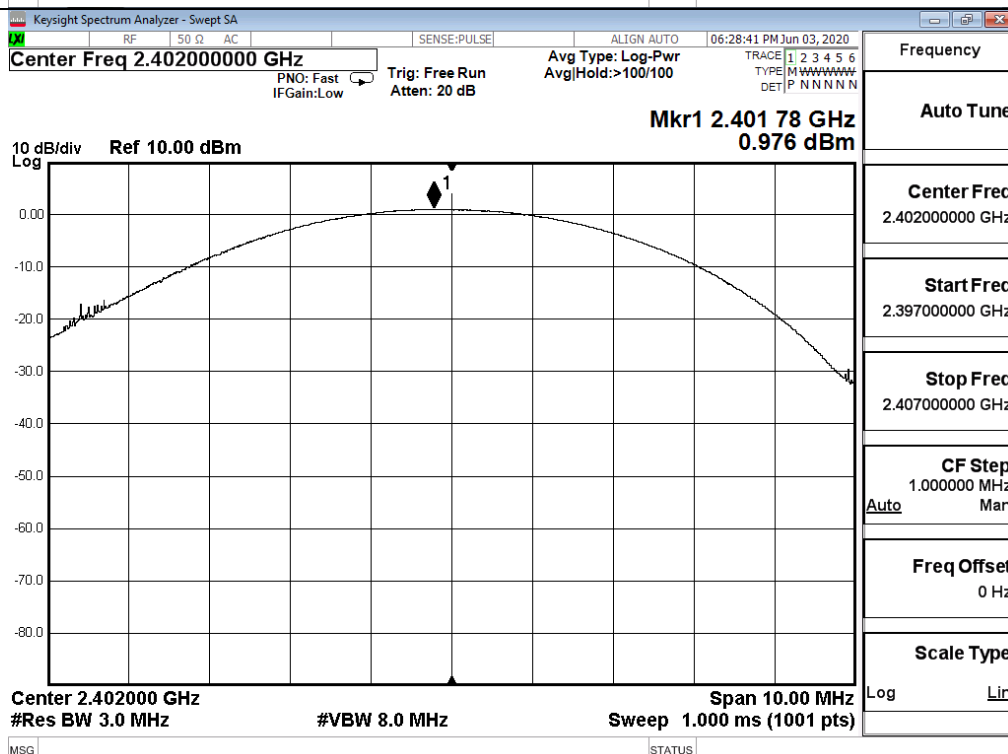
GFSK/LCH

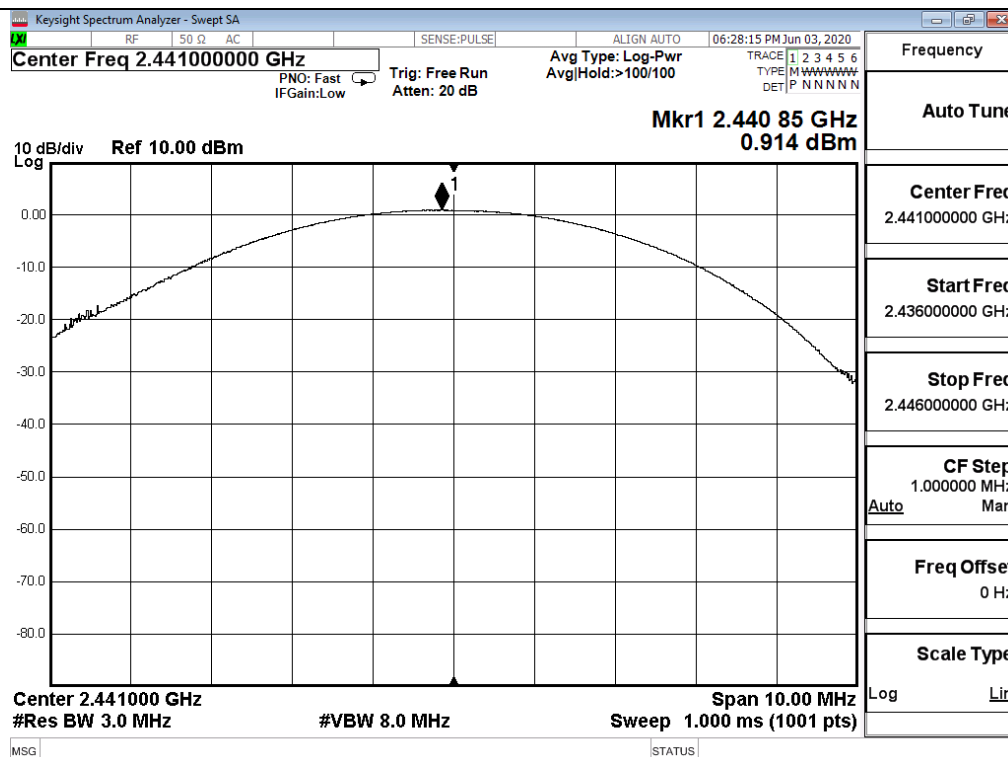
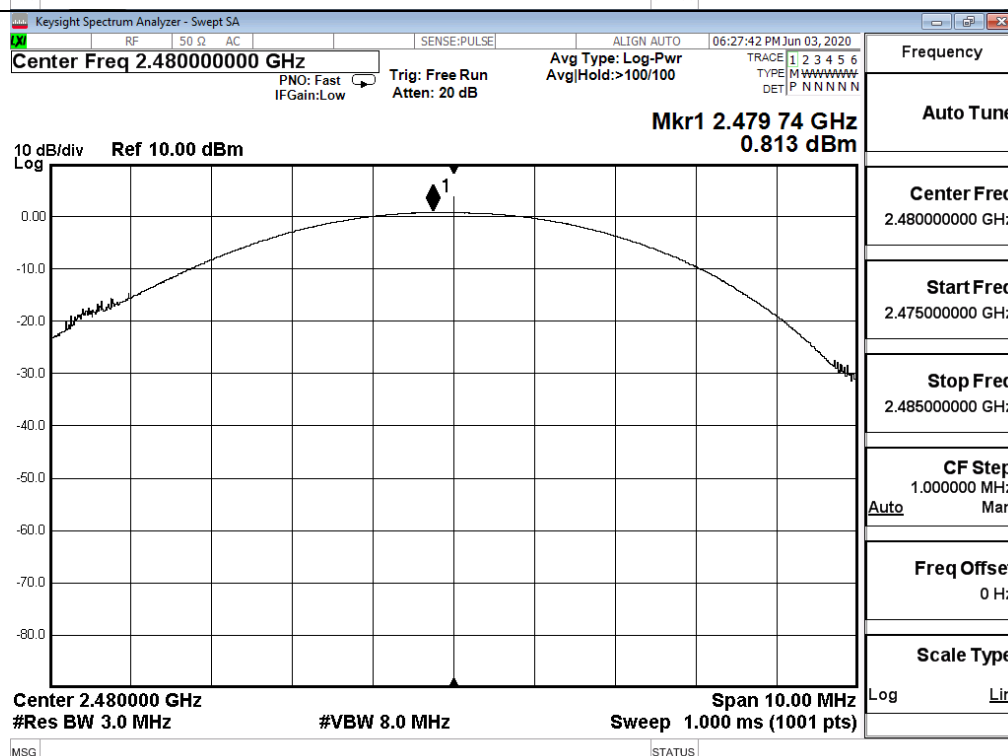


GFSK/MCH



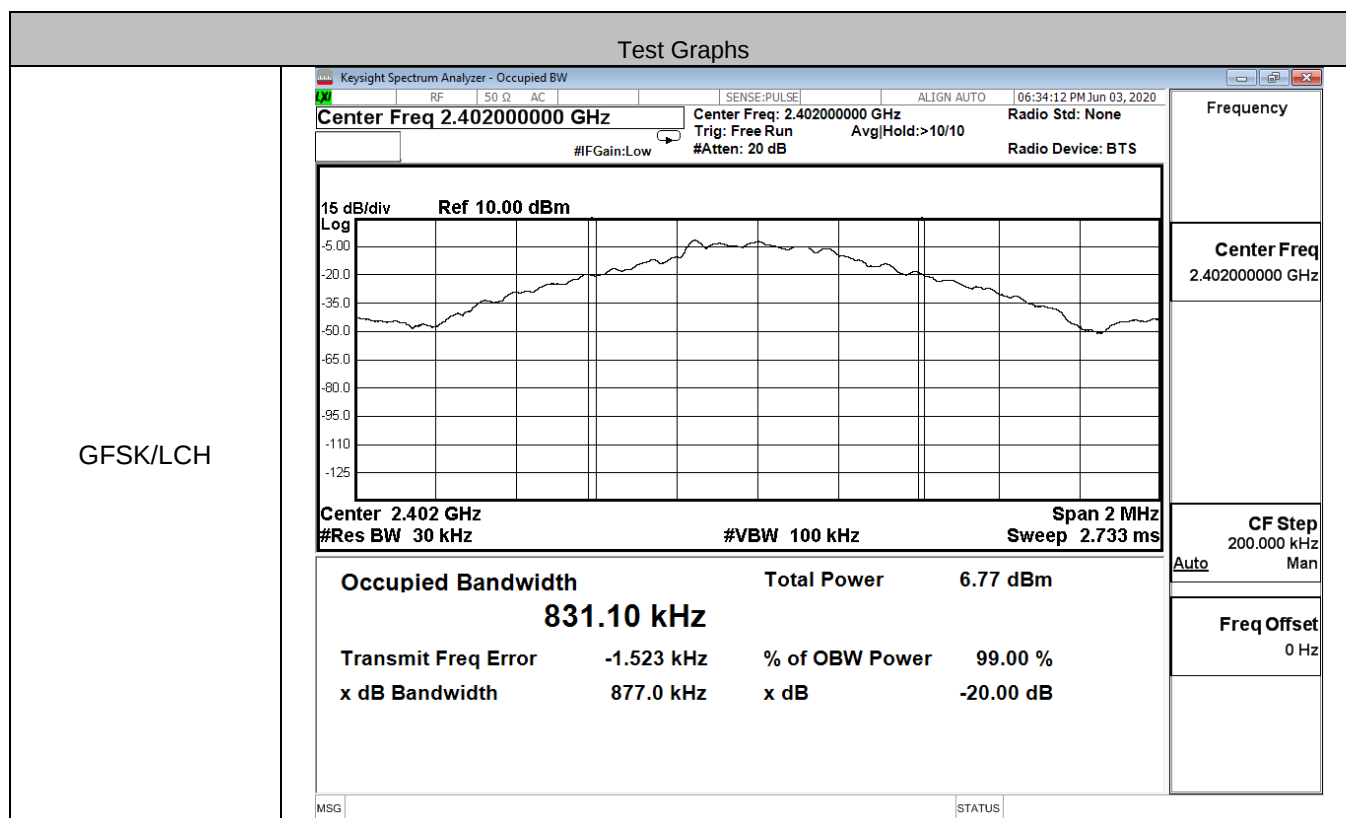
GFSK/HCH

 π /4DQPSK/LCH

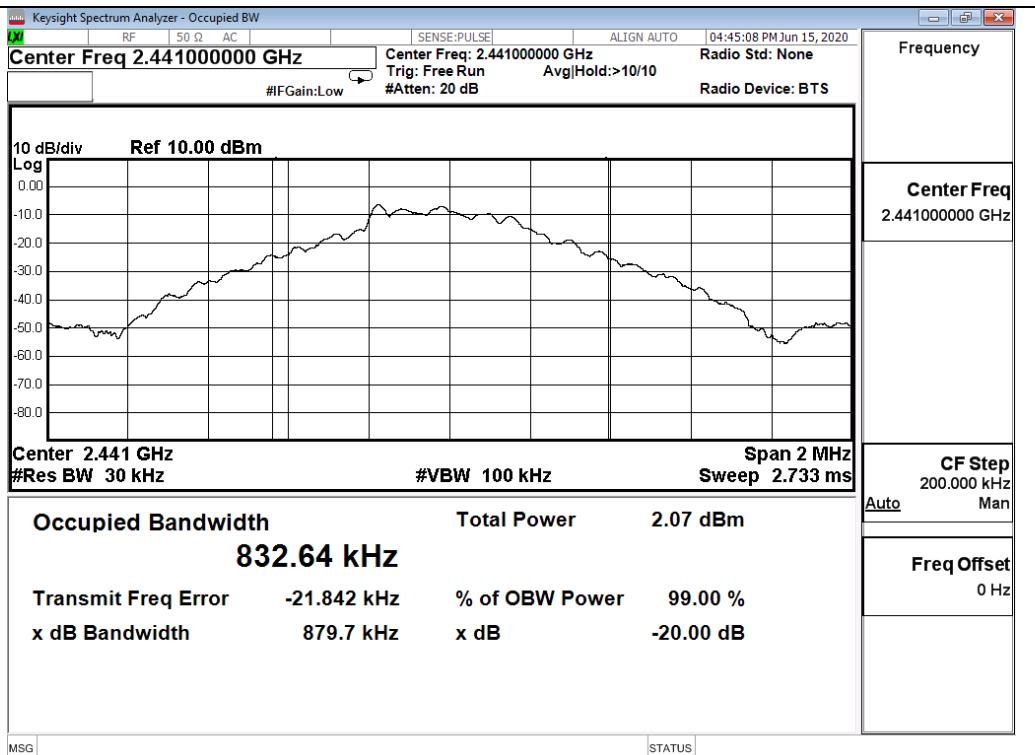
$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

A.2 99% and 20dB Bandwidth

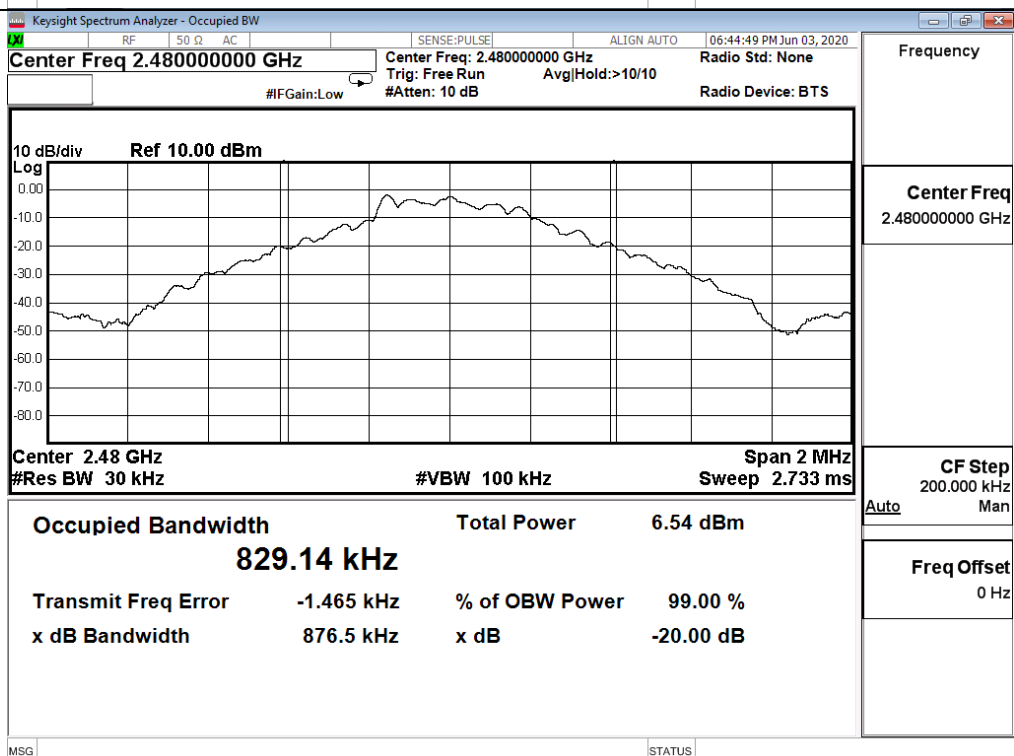
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83110	0.8770	Not Specified	PASS
	MCH	0.83264	0.8797	Not Specified	PASS
	HCH	0.82914	0.8765	Not Specified	PASS
π /4DQPSK	LCH	1.1697	1.256	Not Specified	PASS
	MCH	1.1712	1.257	Not Specified	PASS
	HCH	1.1728	1.260	Not Specified	PASS

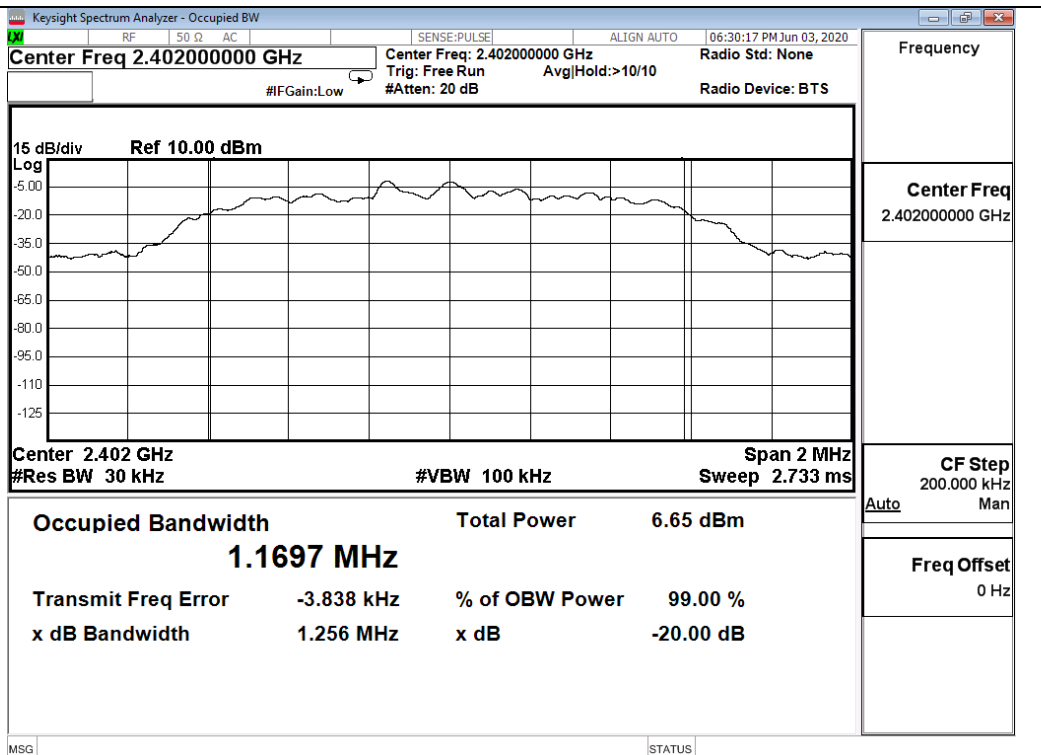
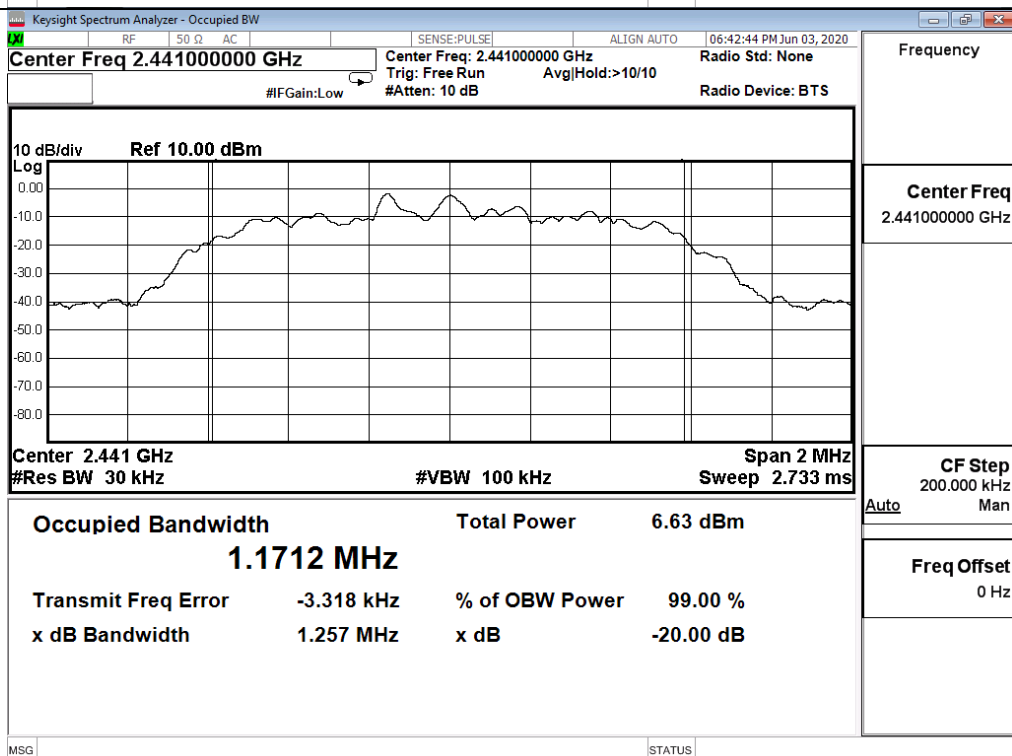


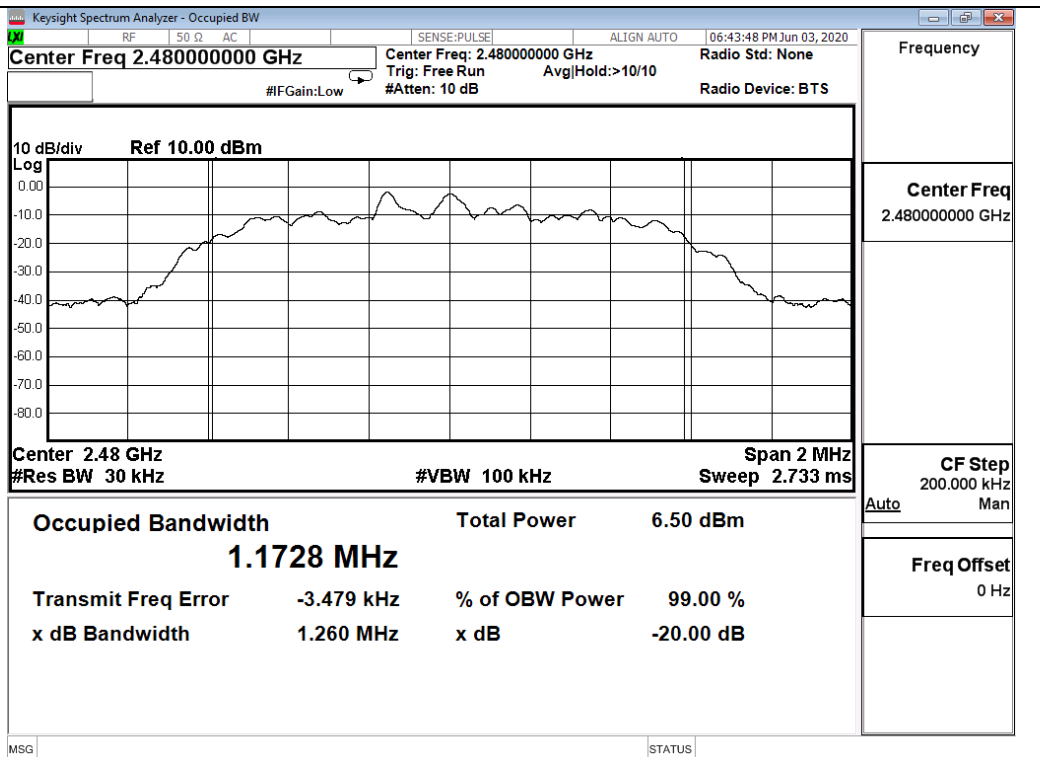
GFSK/MCH



GFSK/HCH



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

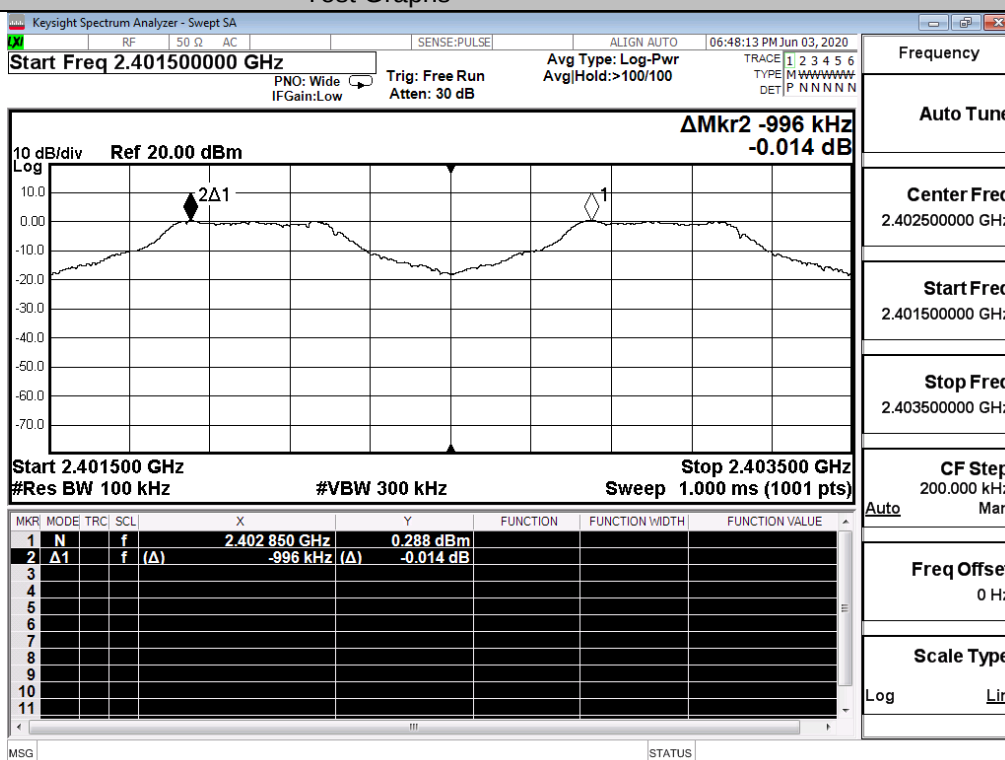
$\pi/4$ DQPSK/HCH

A.3 Carrier Frequency Separation

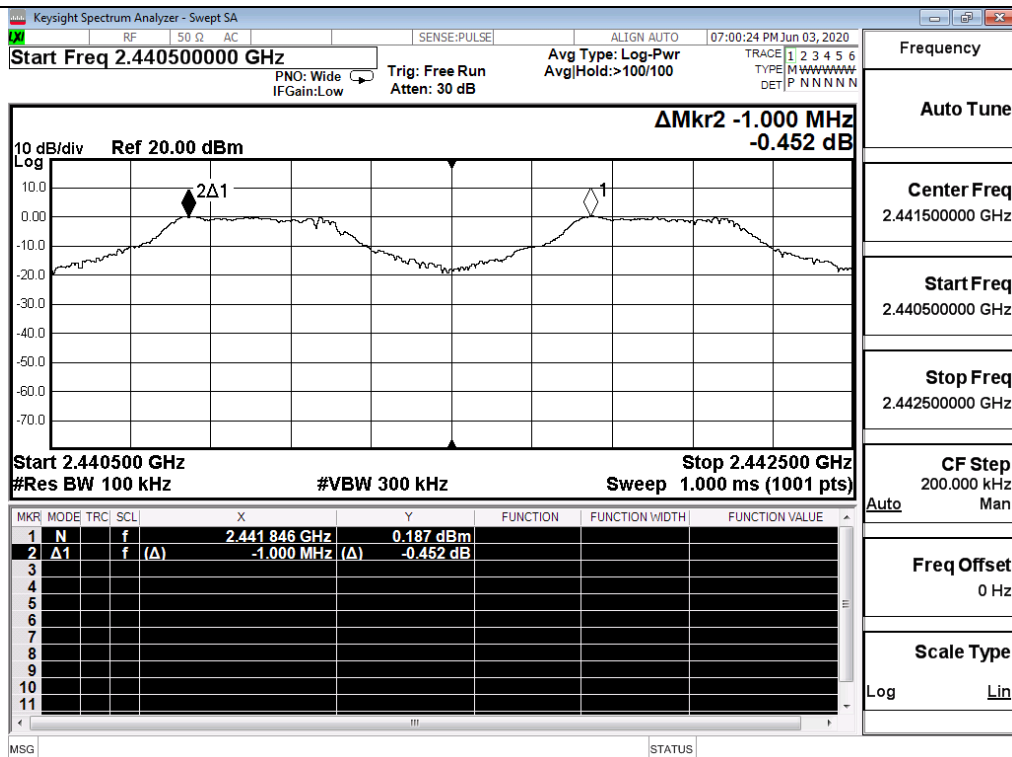
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.996	0.58	PASS
	MCH	1.000	0.59	PASS
	HCH	1.002	0.58	PASS
π /4DQPSK	LCH	1.000	0.84	PASS
	MCH	1.000	0.84	PASS
	HCH	1.000	0.84	PASS

Test Graphs

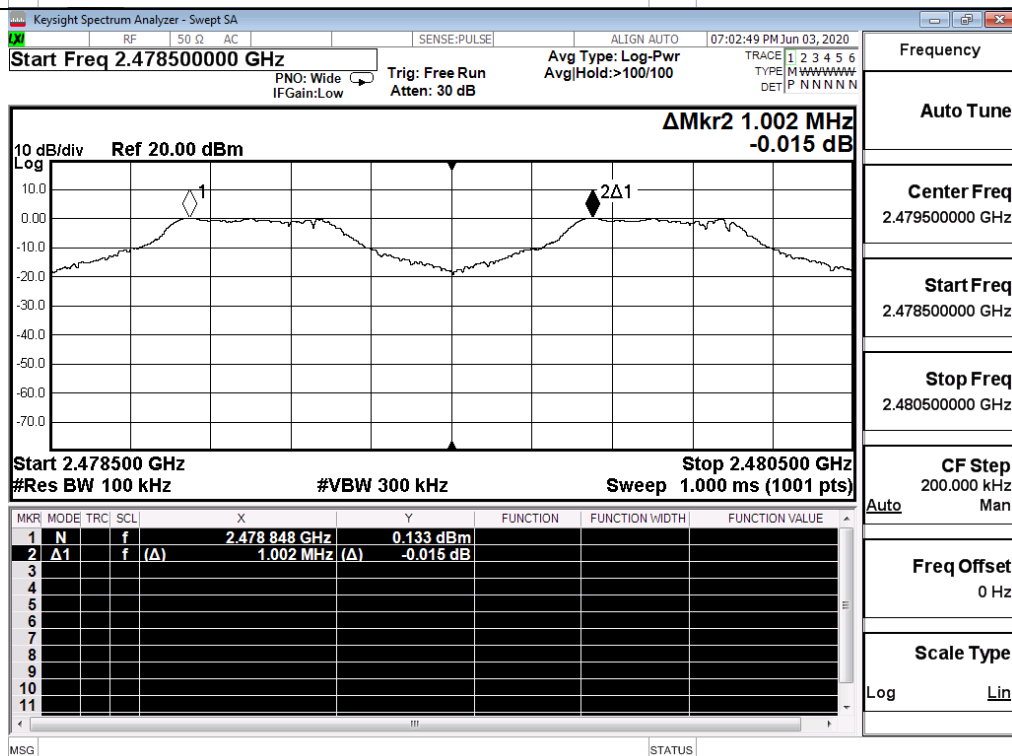
GFSK/LCH

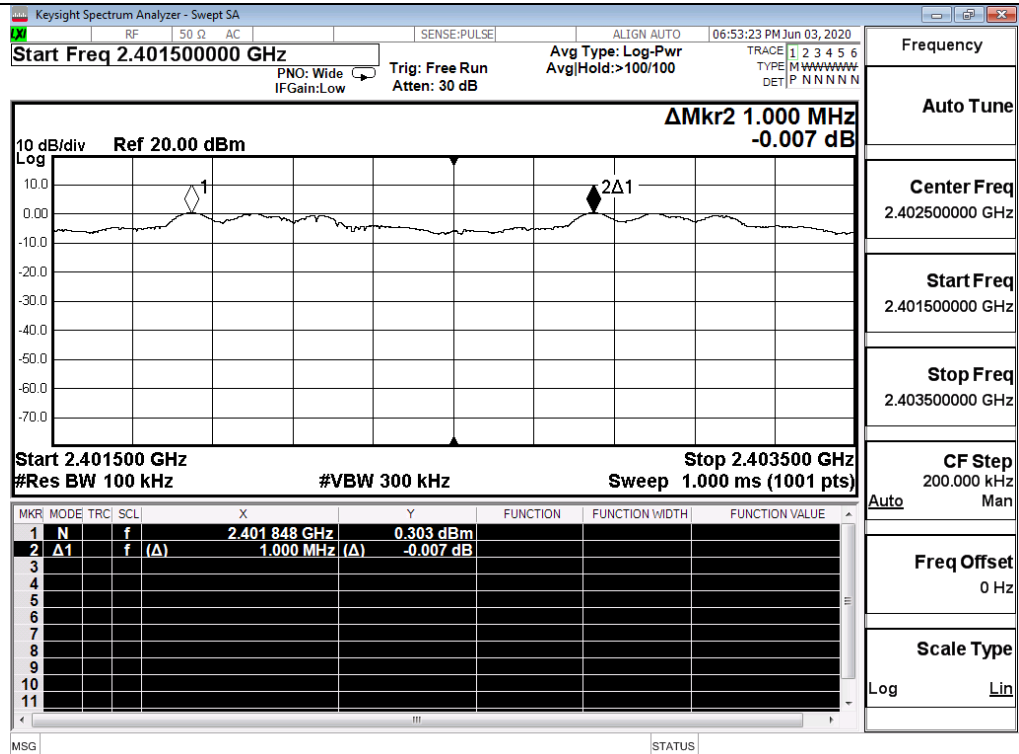
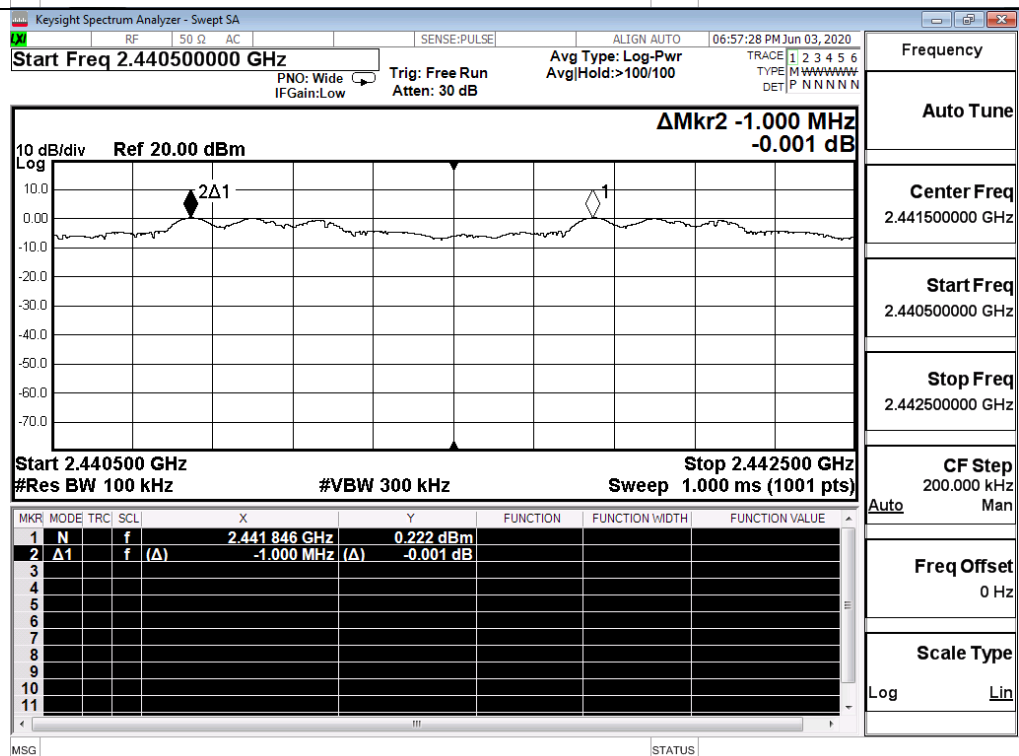


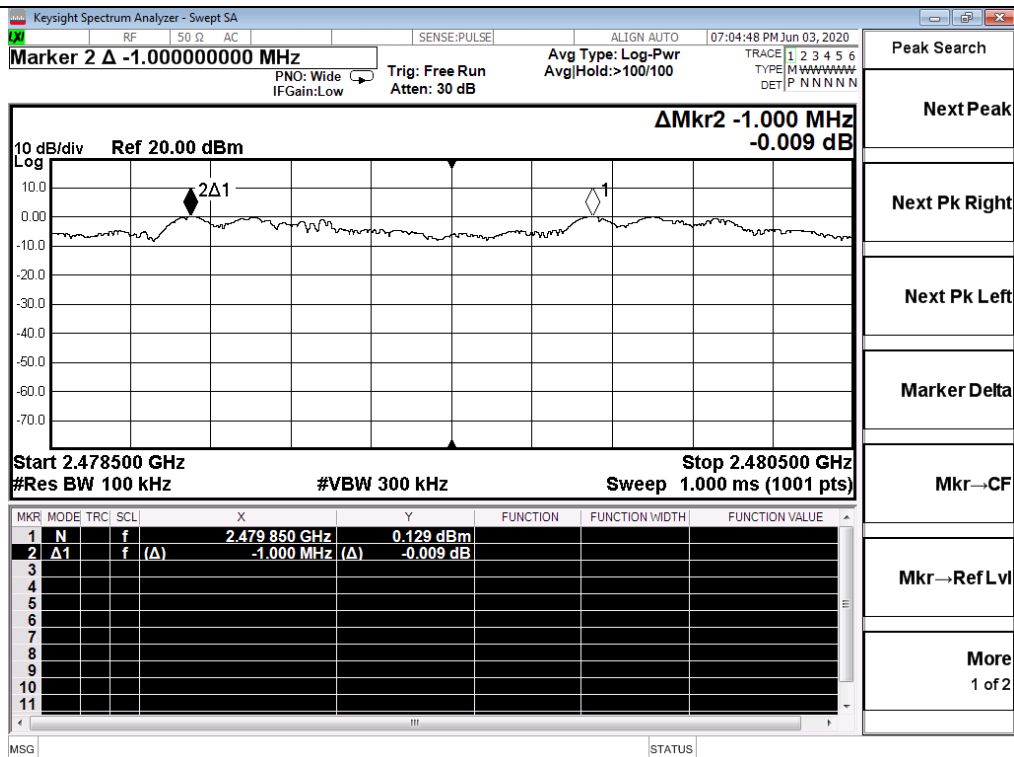
GFSK/MCH



GFSK/HCH



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

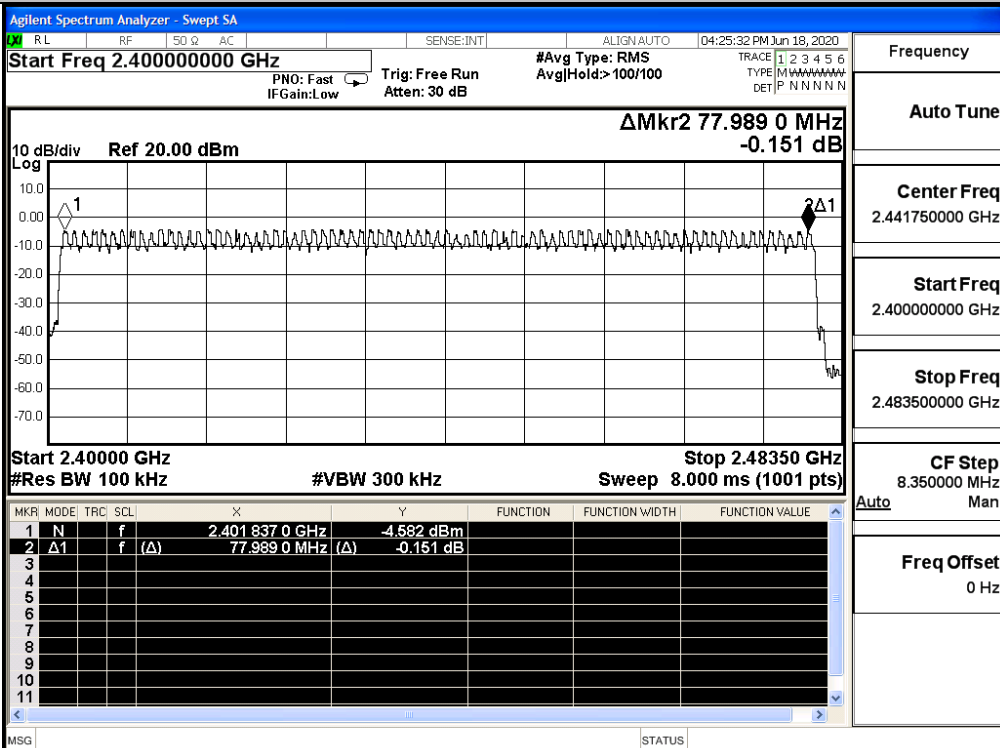
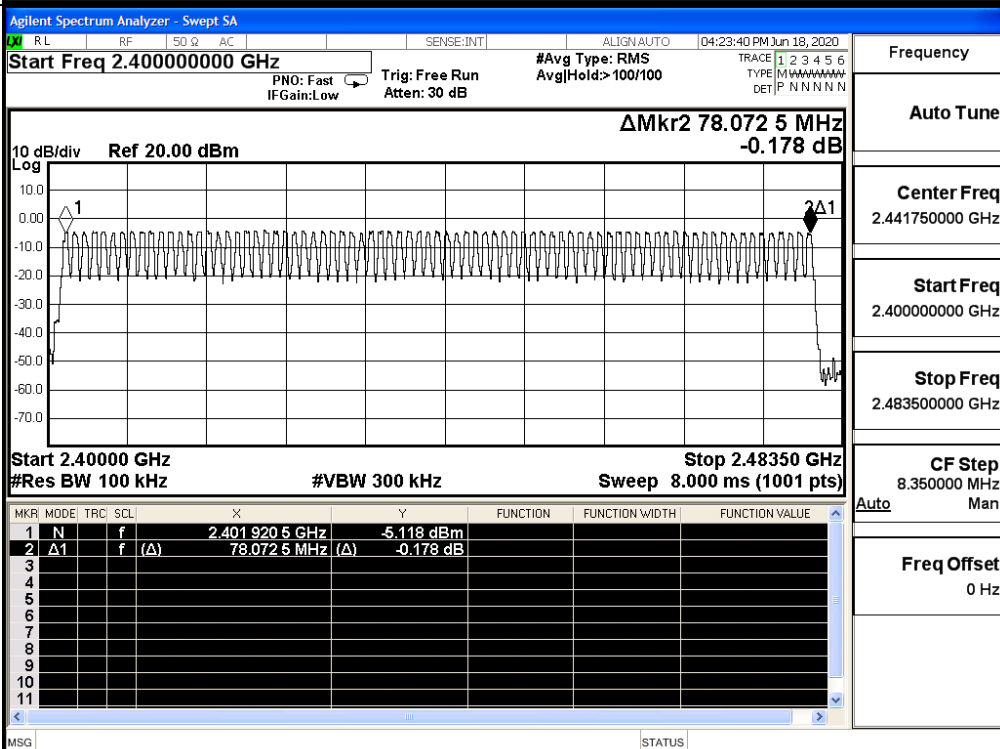
$\pi/4$ DQPSK/HCH

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

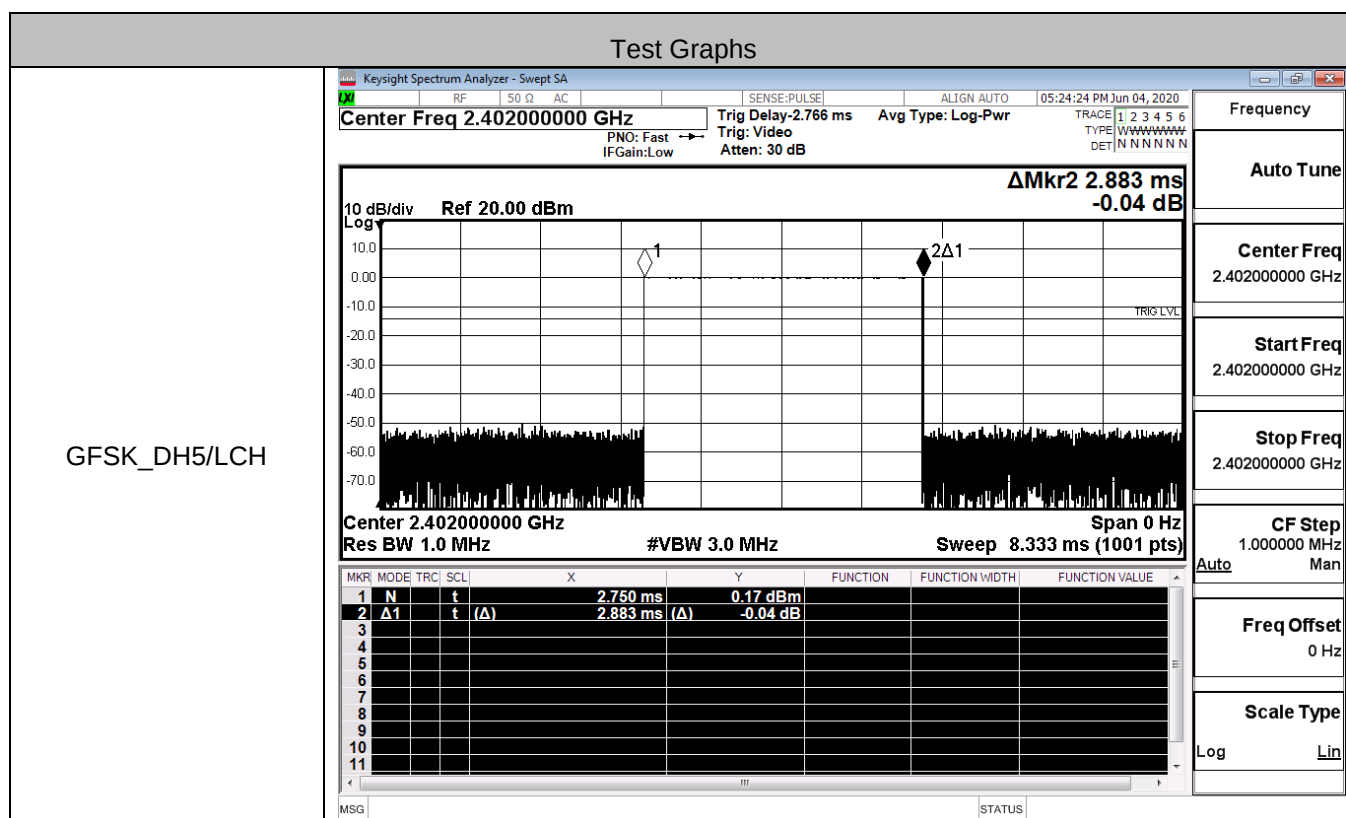
Test Graphs

GFSK/Hop

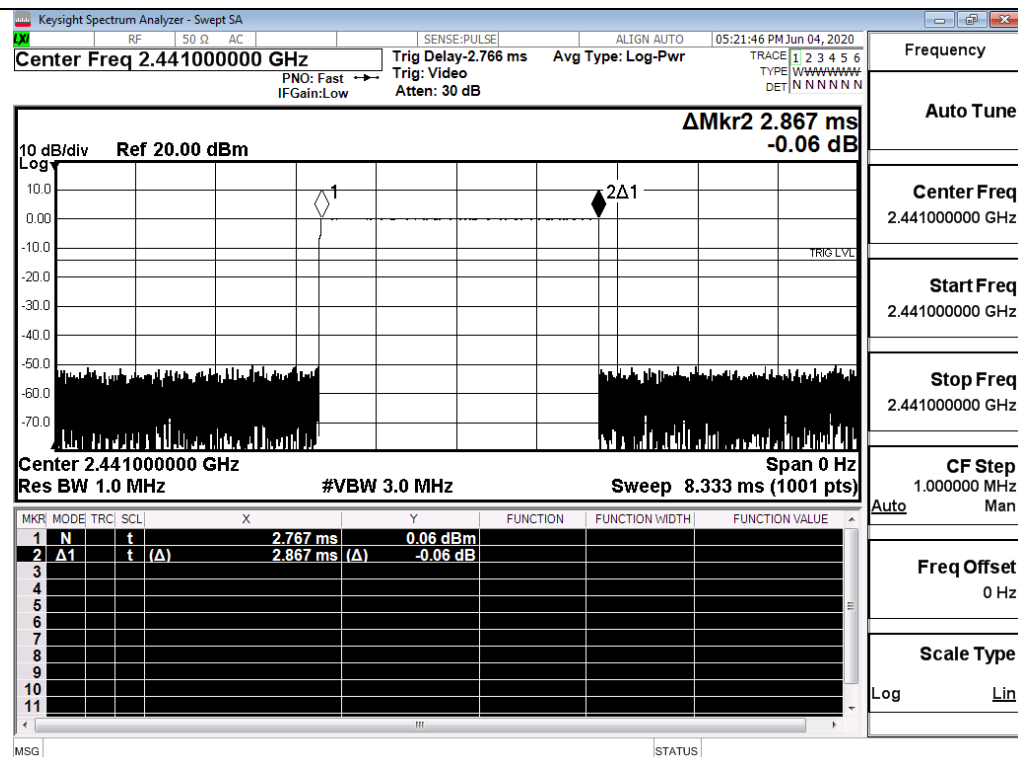
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

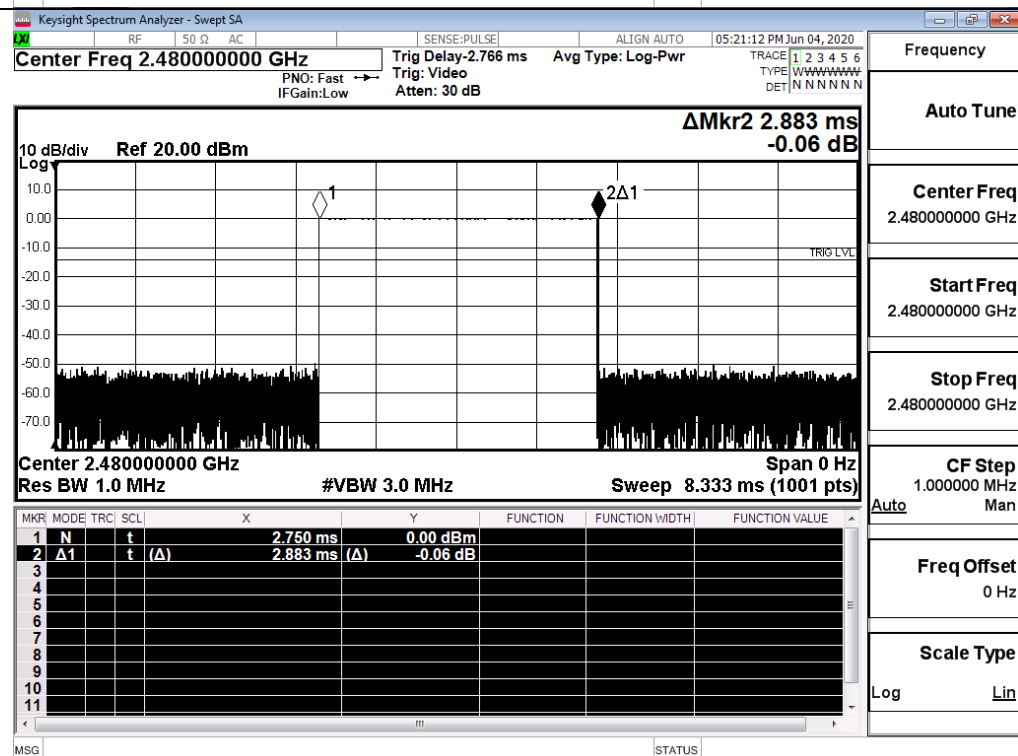
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.883	106.7	0.31	0.4	PASS
	DH5	MCH	2.867	106.7	0.31	0.4	PASS
	DH5	HCH	2.883	106.7	0.31	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.883	106.7	0.31	0.4	PASS
	2DH5	MCH	2.883	106.7	0.31	0.4	PASS
	2DH5	HCH	2.883	106.7	0.31	0.4	PASS



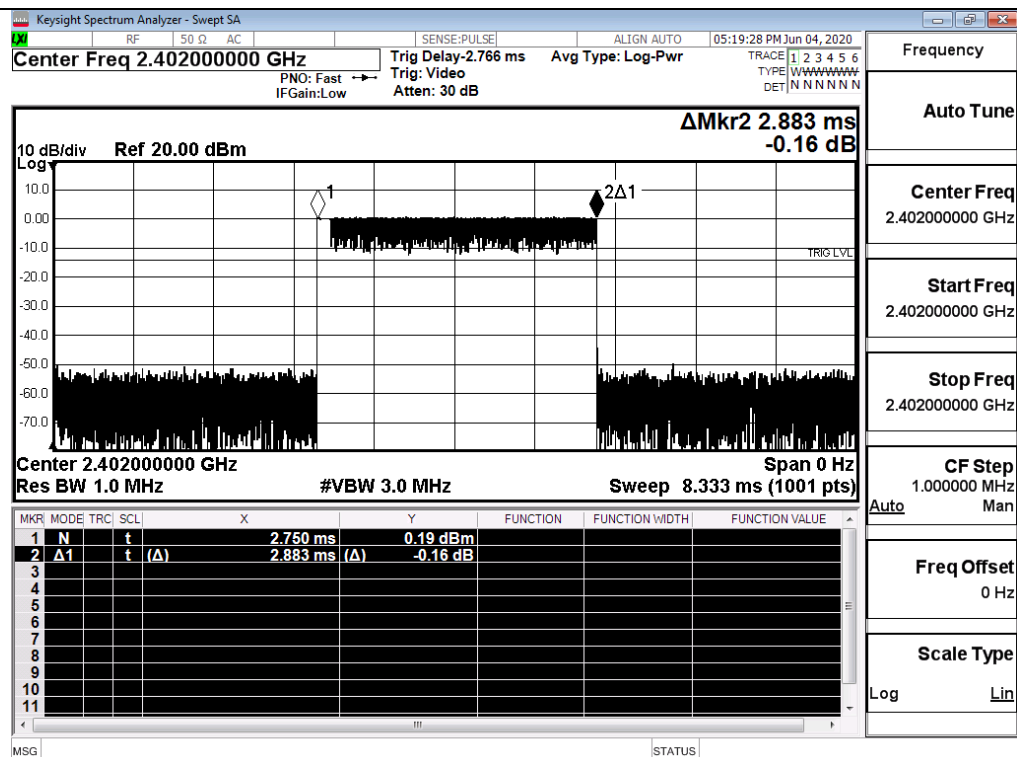
GFSK_DH5/MCH



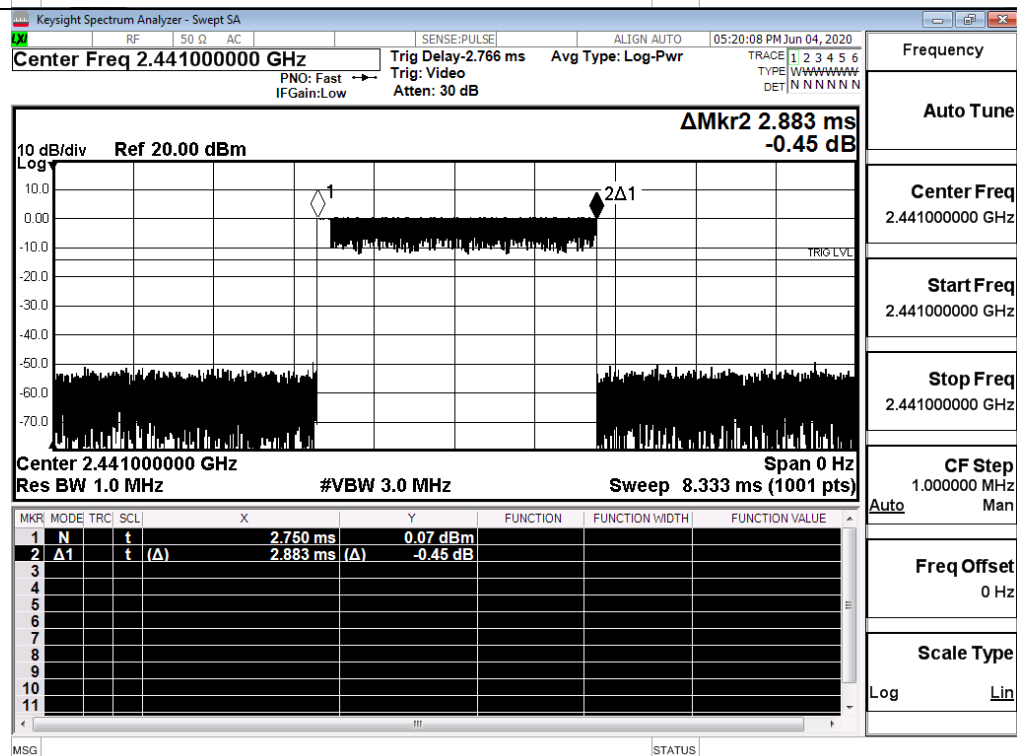
GFSK_DH5/HCH



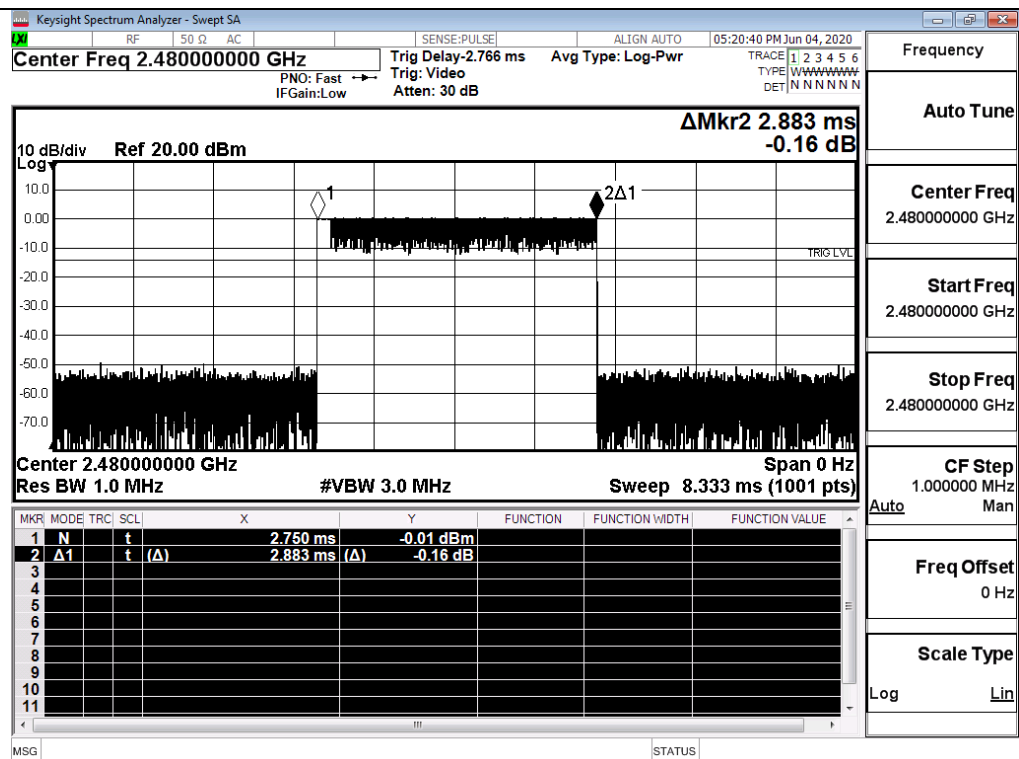
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

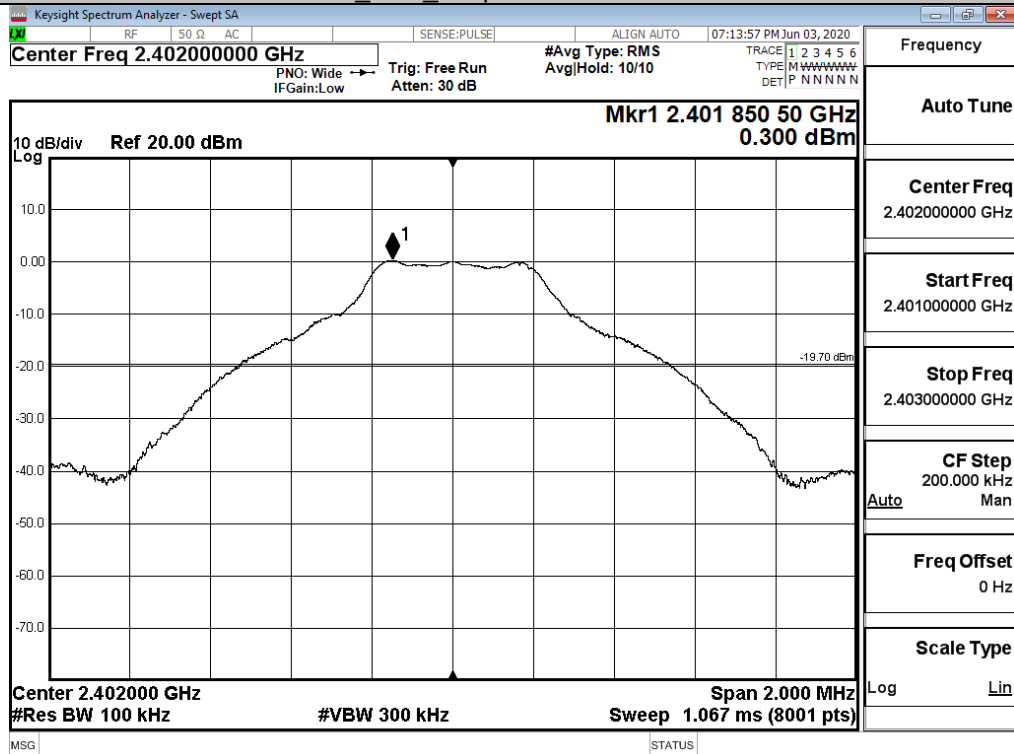


A.6 RF Conducted Spurious Emissions

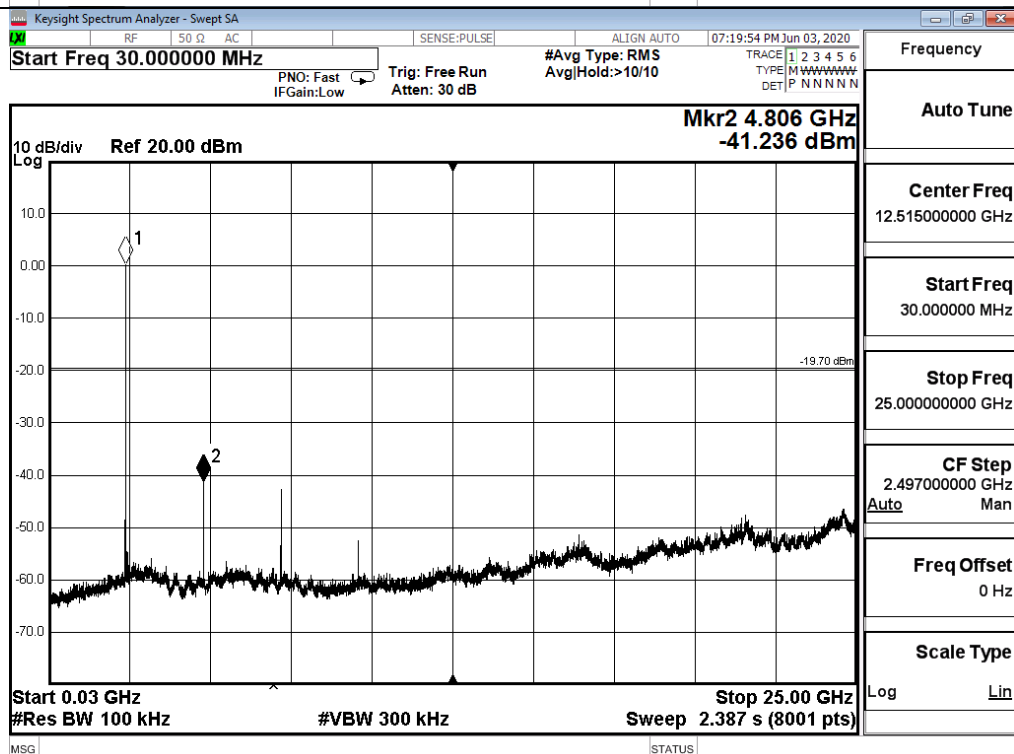
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.300	-41.236	-19.70	PASS
	MCH	0.226	-42.516	-19.77	PASS
	HCH	0.154	-40.556	-19.85	PASS
$\pi/4$ DQPSK	LCH	0.258	-41.598	-19.74	PASS
	MCH	0.158	-44.572	-19.84	PASS
	HCH	0.155	-39.612	-19.84	PASS

GFSK_LCH_Graphs

Pref

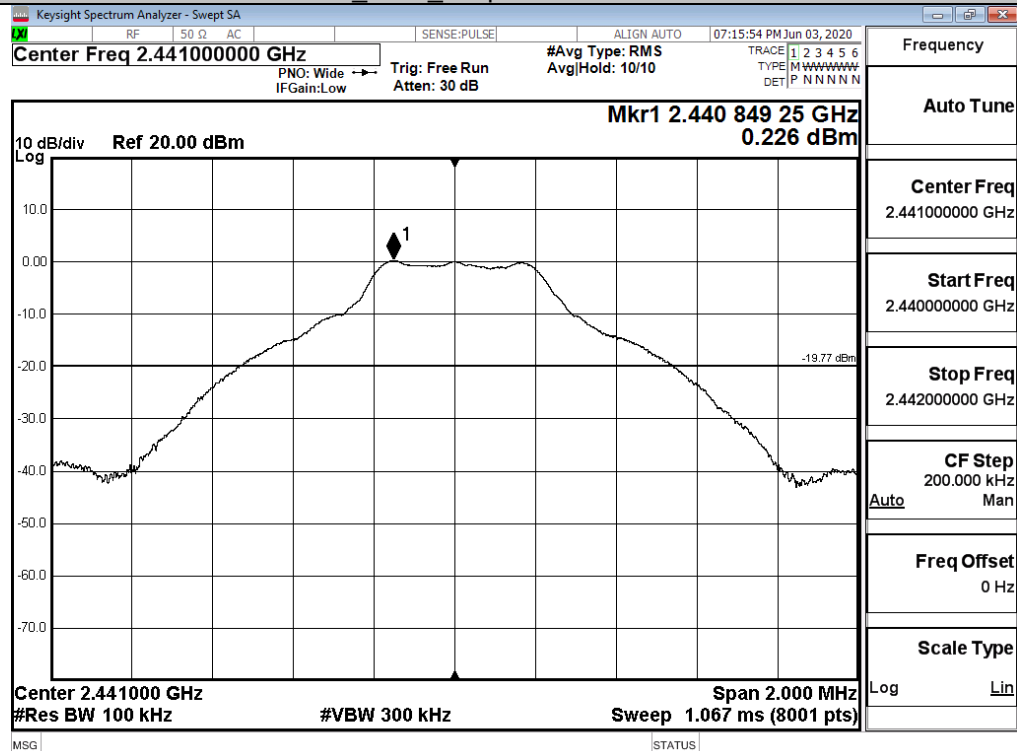


Puw

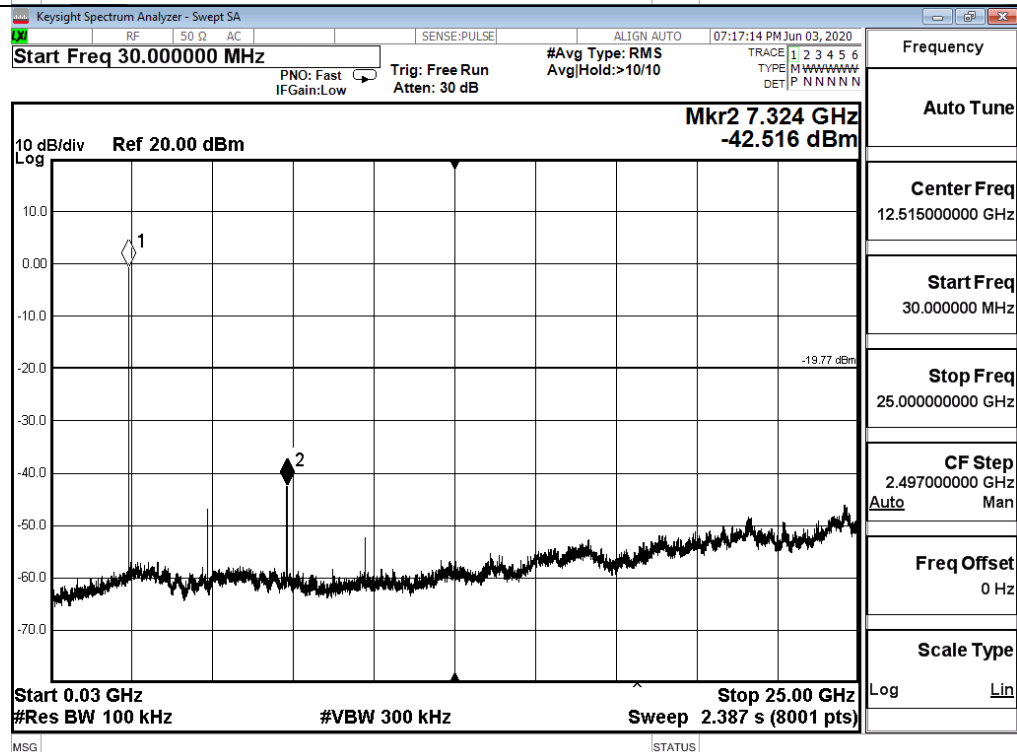


GFSK_MCH_Graphs

Pref

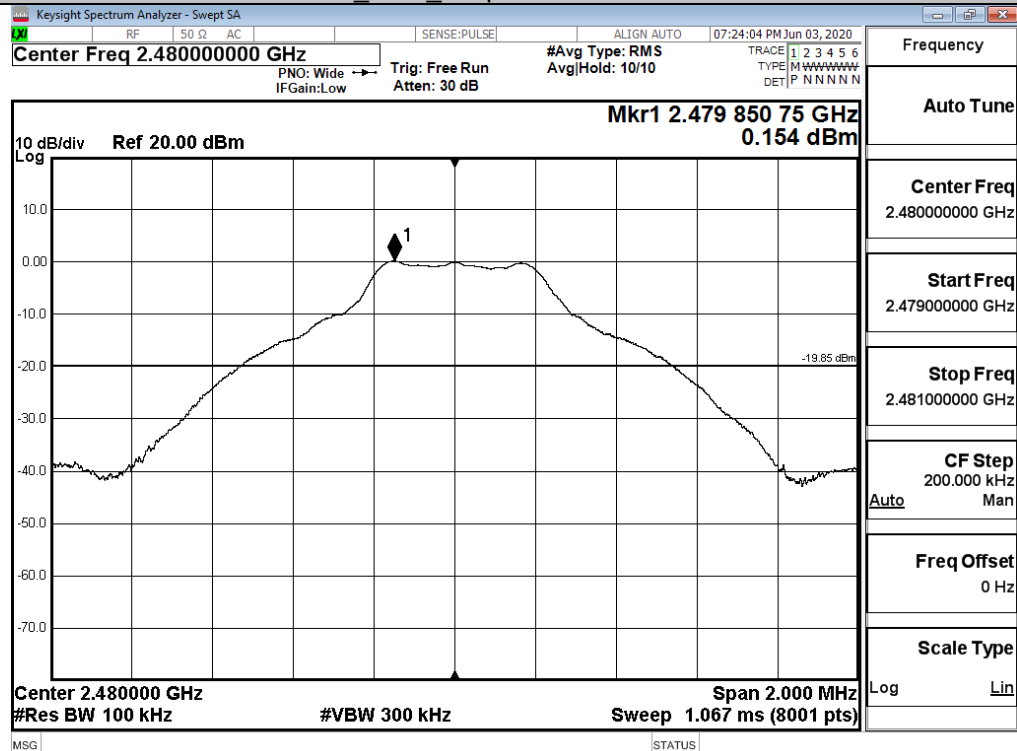


Puw

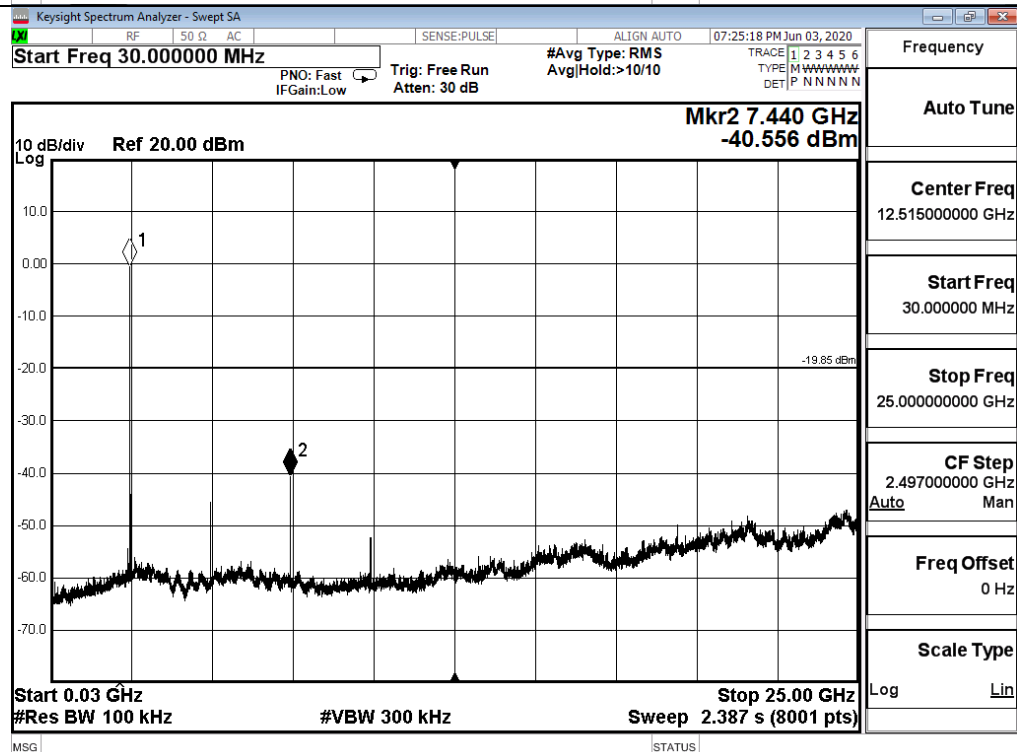


GFSK_HCH_Graphs

Pref

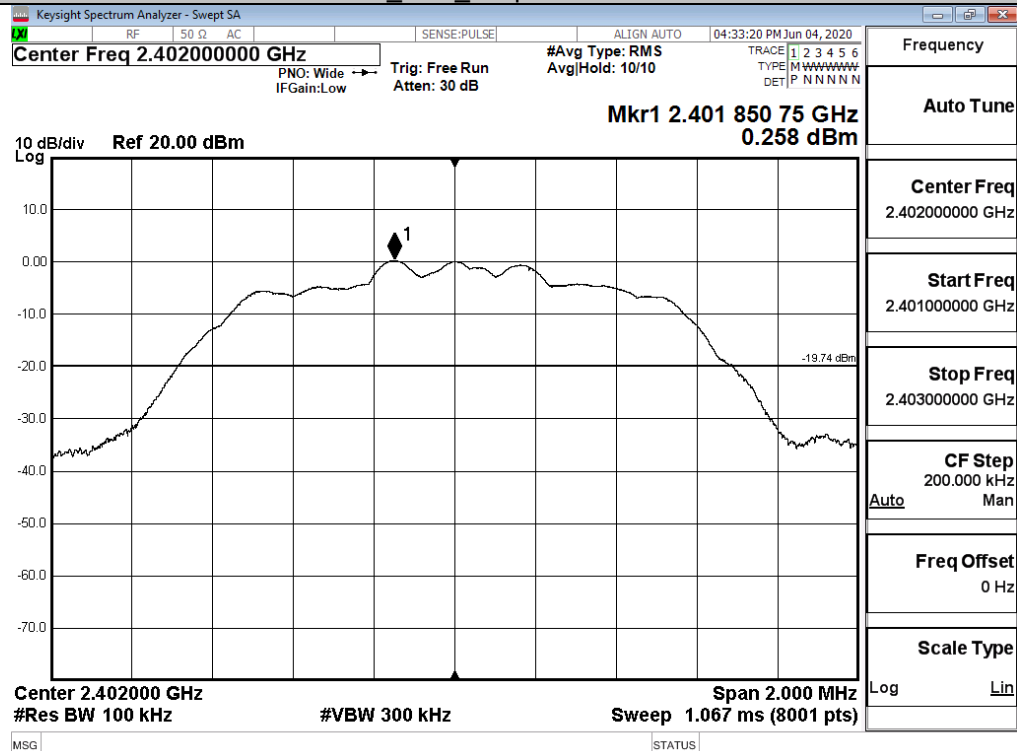


Puw

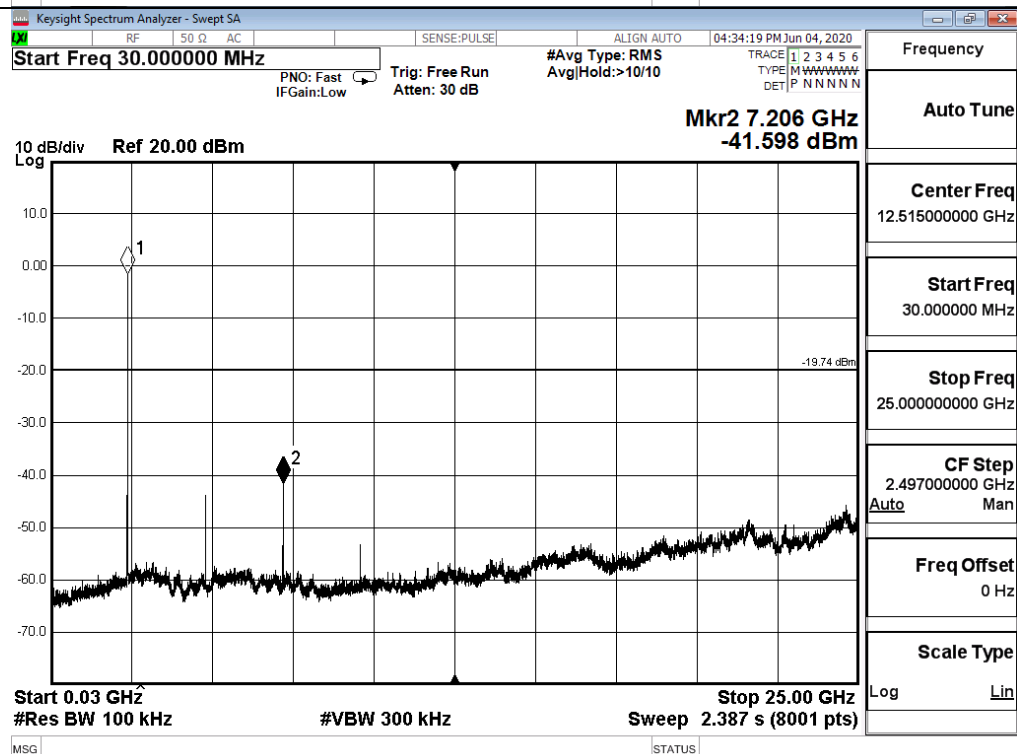


$\pi/4$ DQPSK_LCH_Graphs

Pref

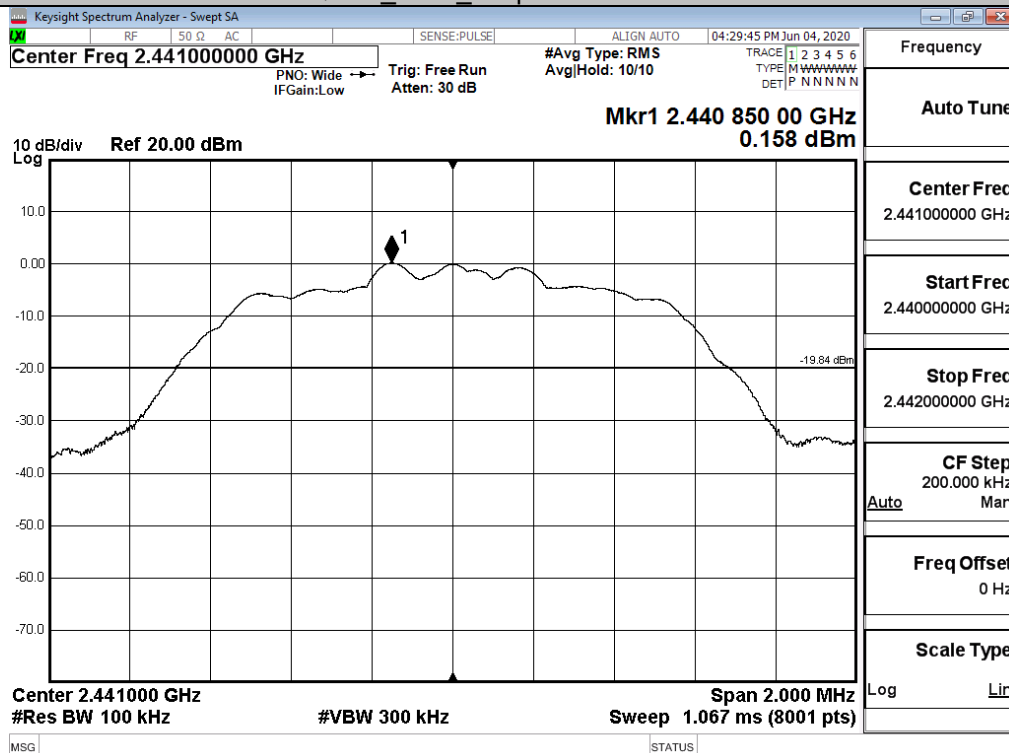


Puw

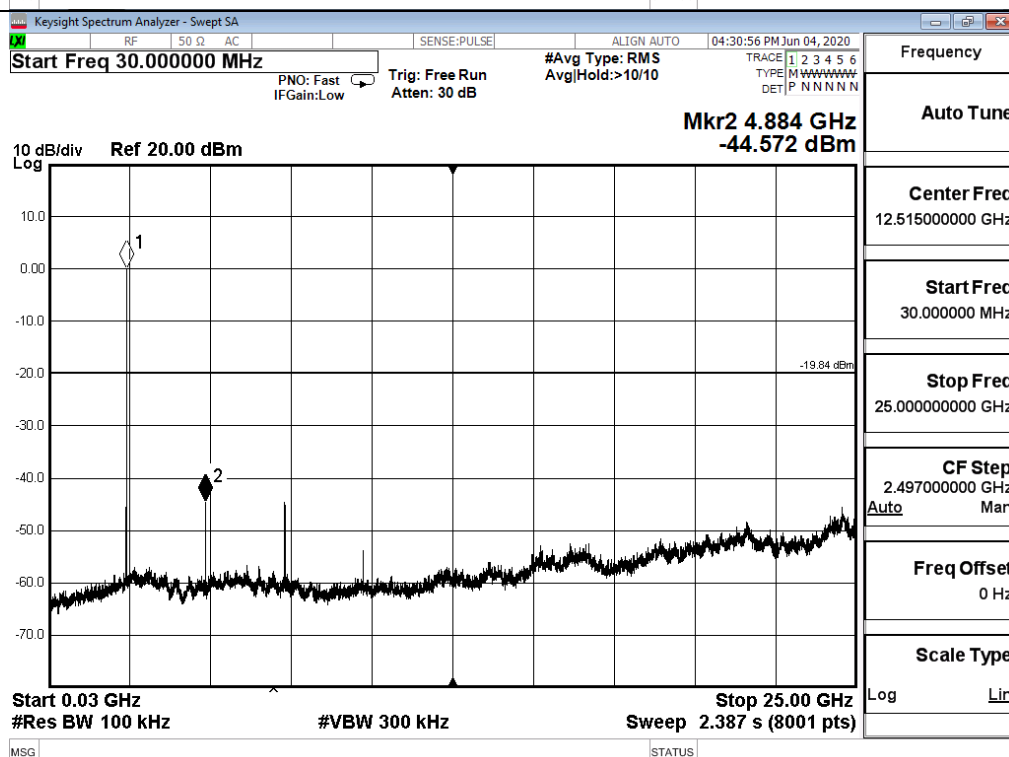


$\pi/4$ DQPSK_MCH_Graphs

Pref

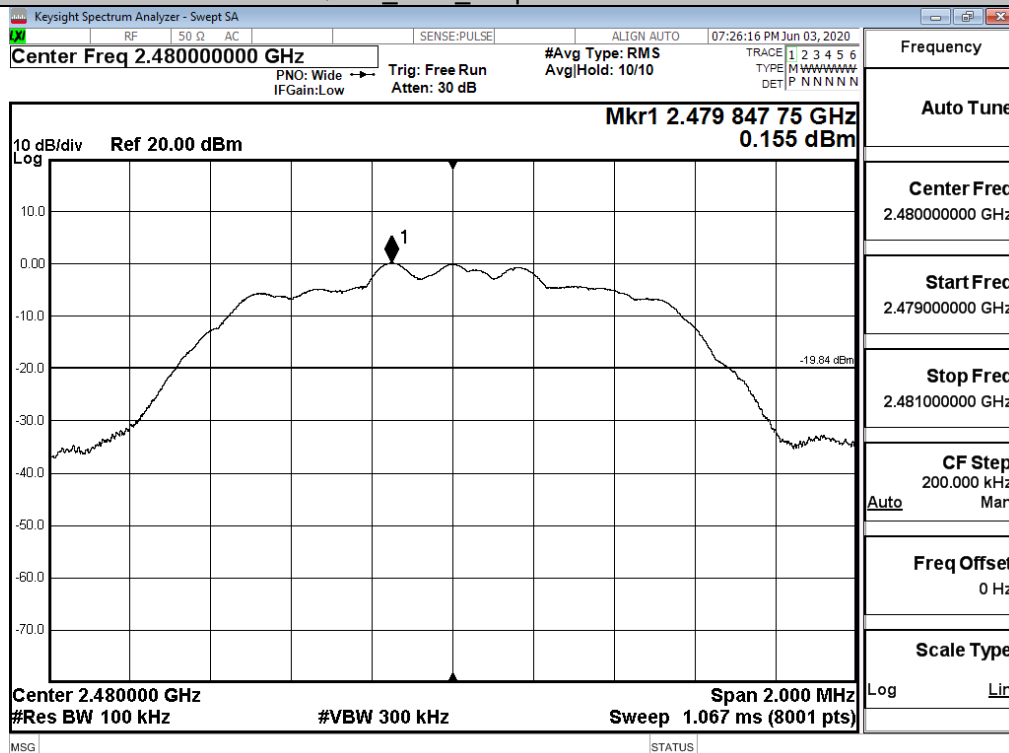


Puw

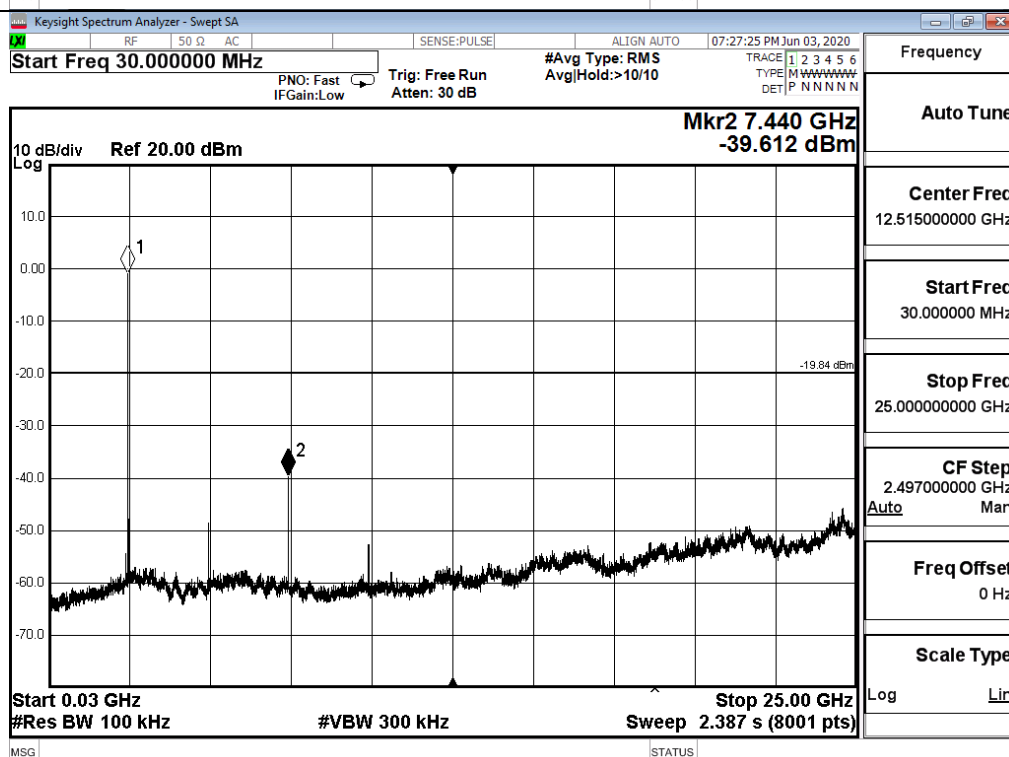


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

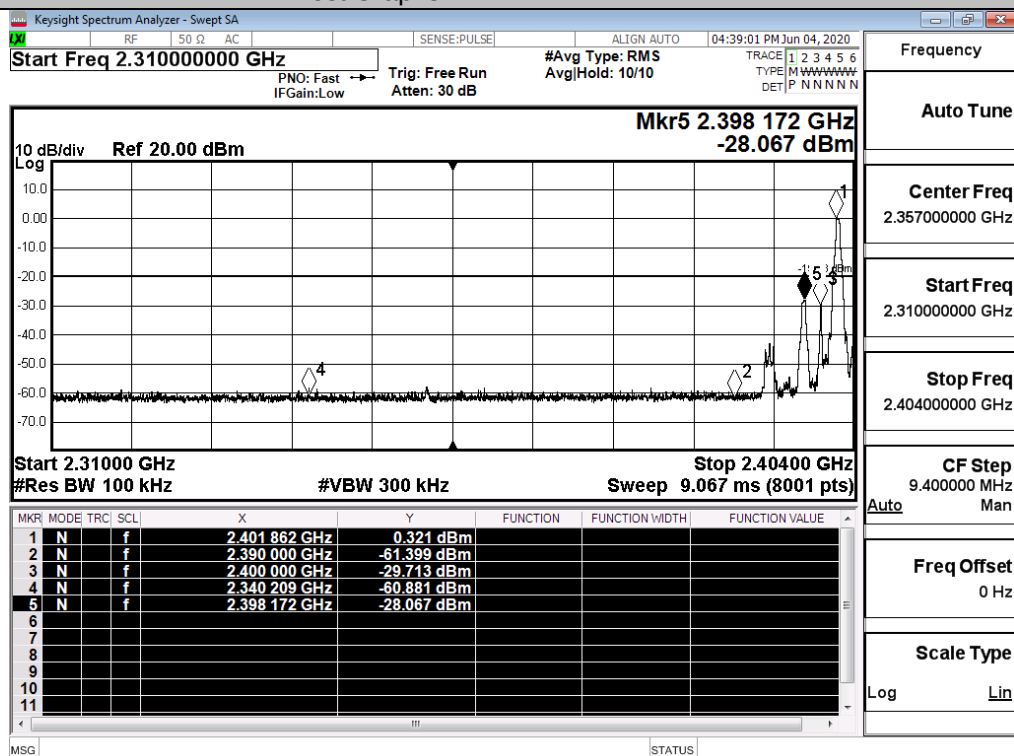


A.7 Band-edge for RF Conducted Emissions

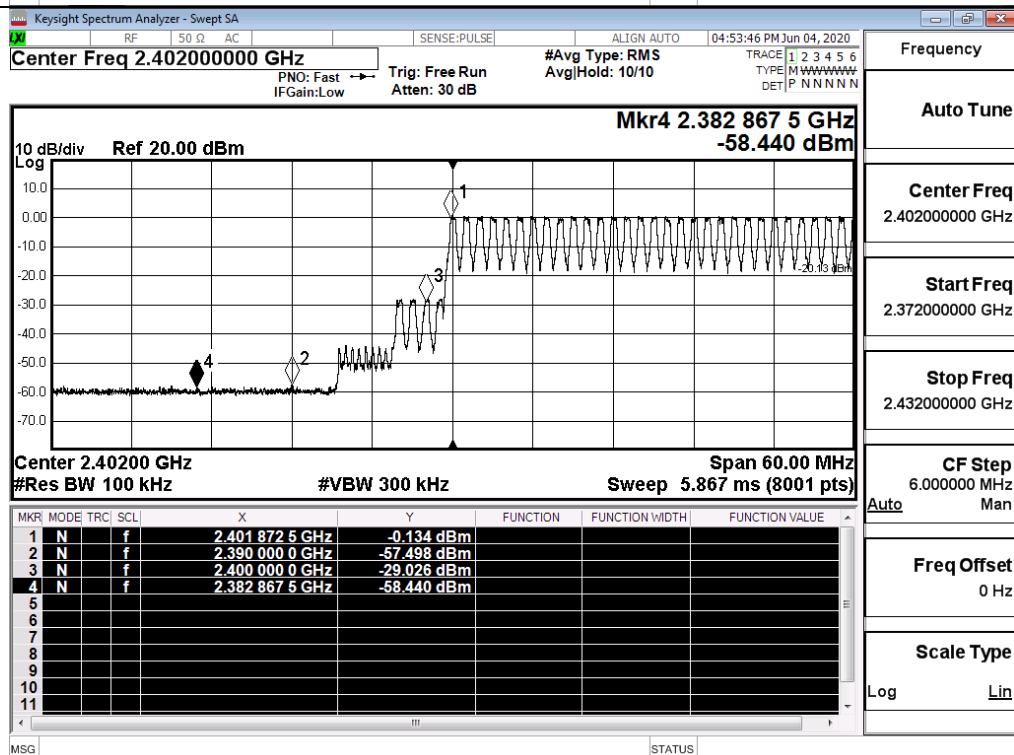
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.321	Off	-28.067	-19.78	PASS
			-0.134	On	-58.440	-20.13	PASS
	HCH	2480	0.128	Off	-40.483	-19.88	PASS
			0.036	On	-41.485	-19.96	PASS
$\pi/4$ DQPSK	LCH	2402	0.328	Off	-27.961	-19.67	PASS
			0.353	On	-57.517	-19.65	PASS
	HCH	2480	0.135	Off	-40.509	-19.86	PASS
			0.094	On	-41.516	-19.91	PASS

Test Graphs

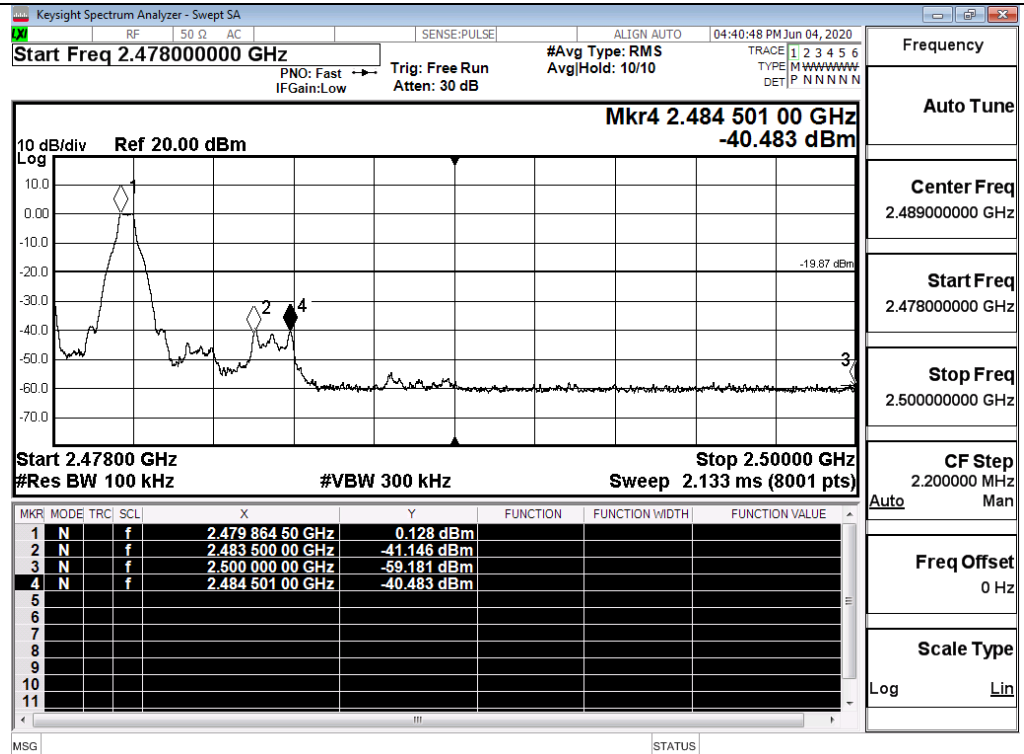
GFSK/LCH/No Hop



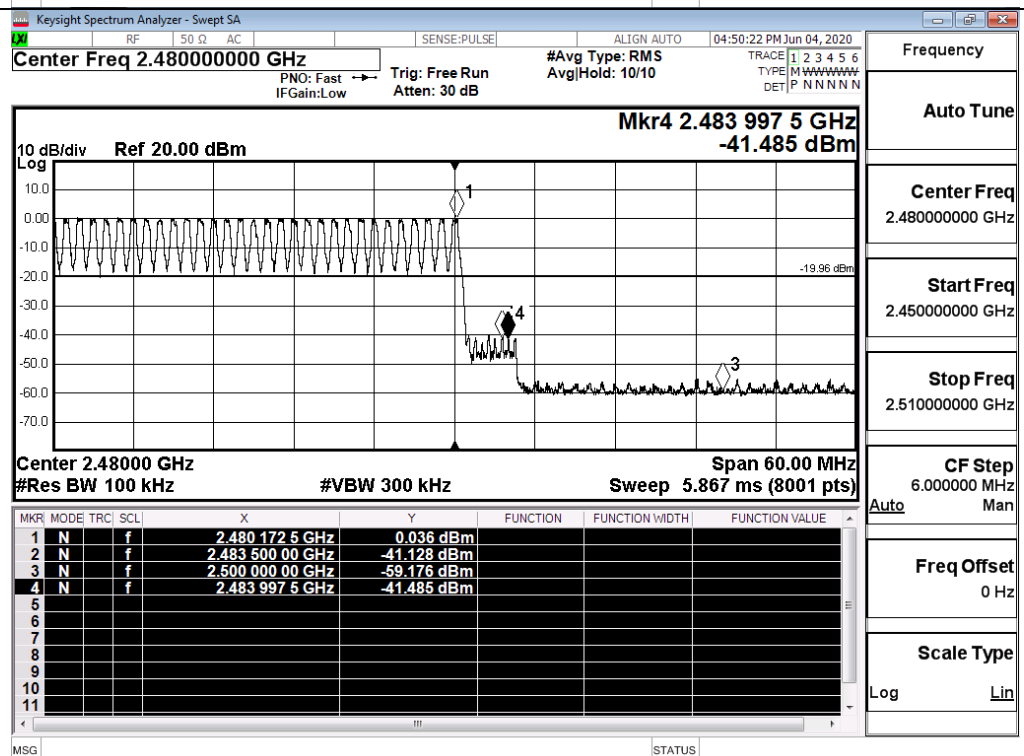
GFSK/LCH/Hop



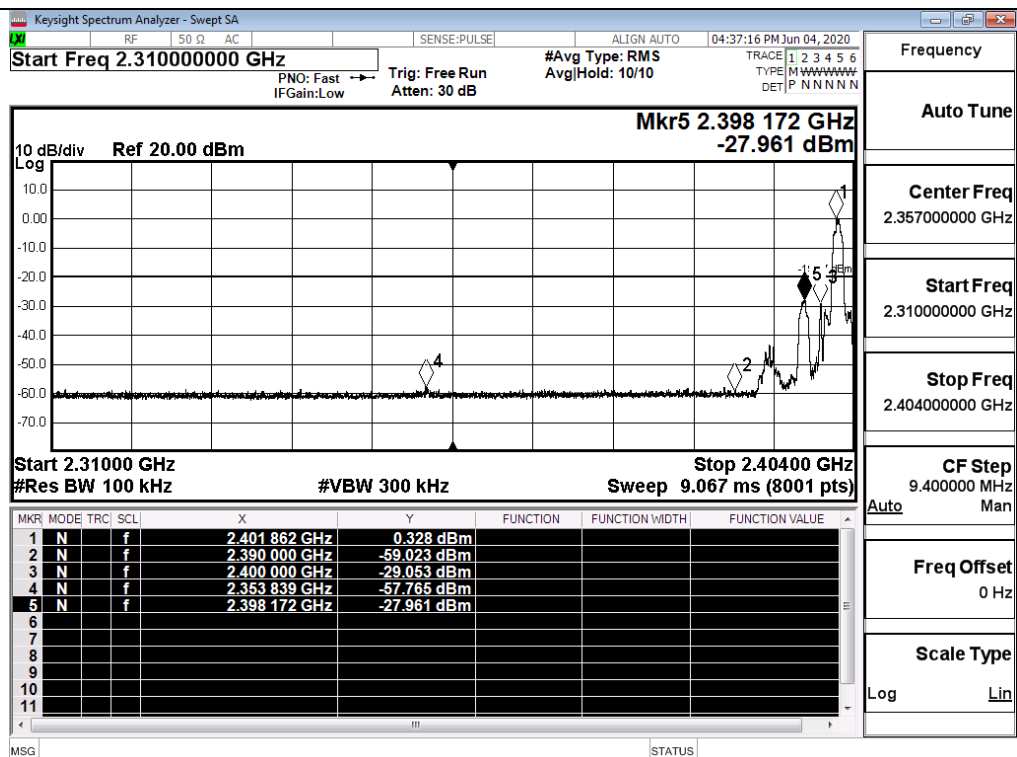
GFSK/HCH/No Hop



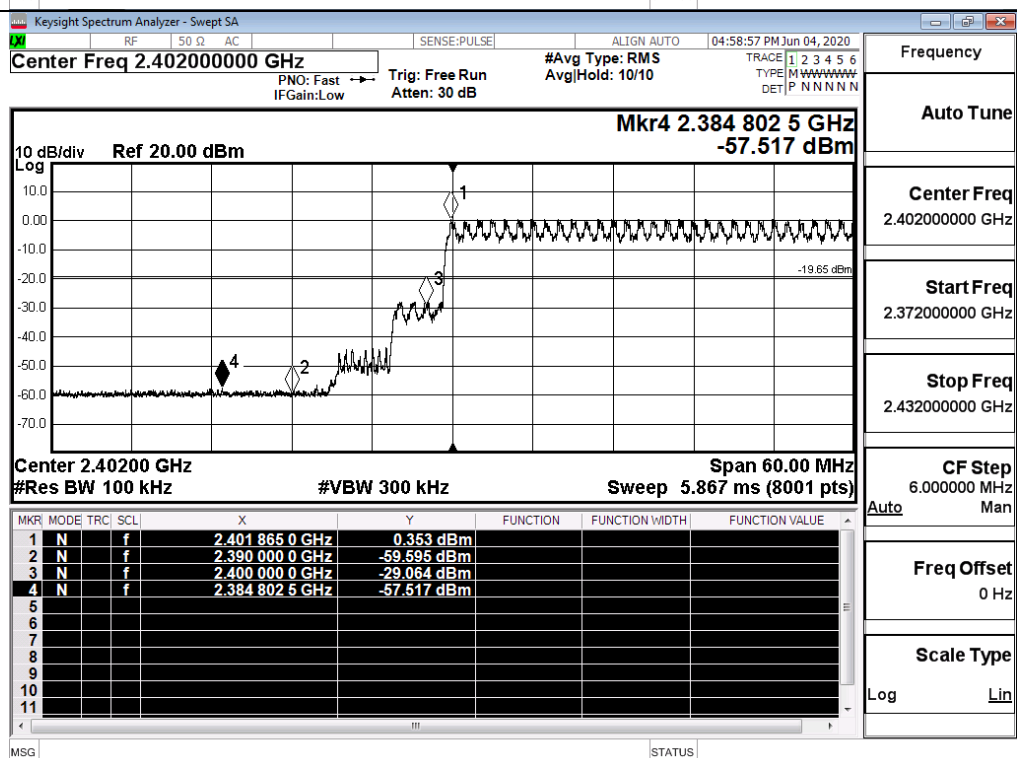
GFSK/HCH/Hop



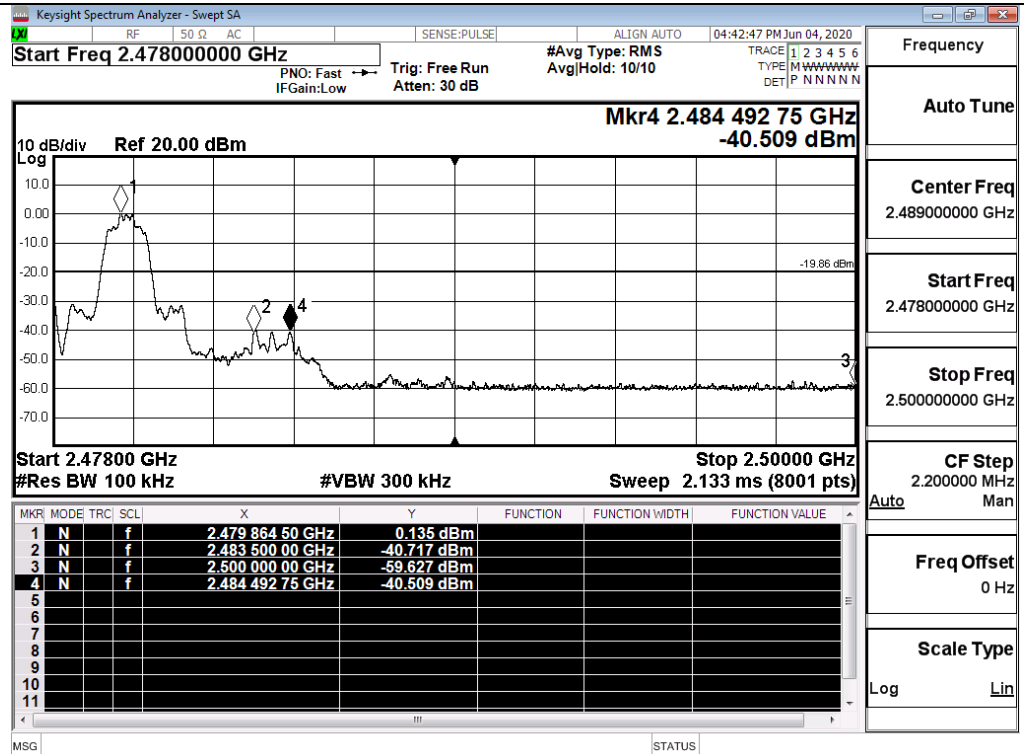
$\pi/4$ DQPSK/LCH/No
Hop



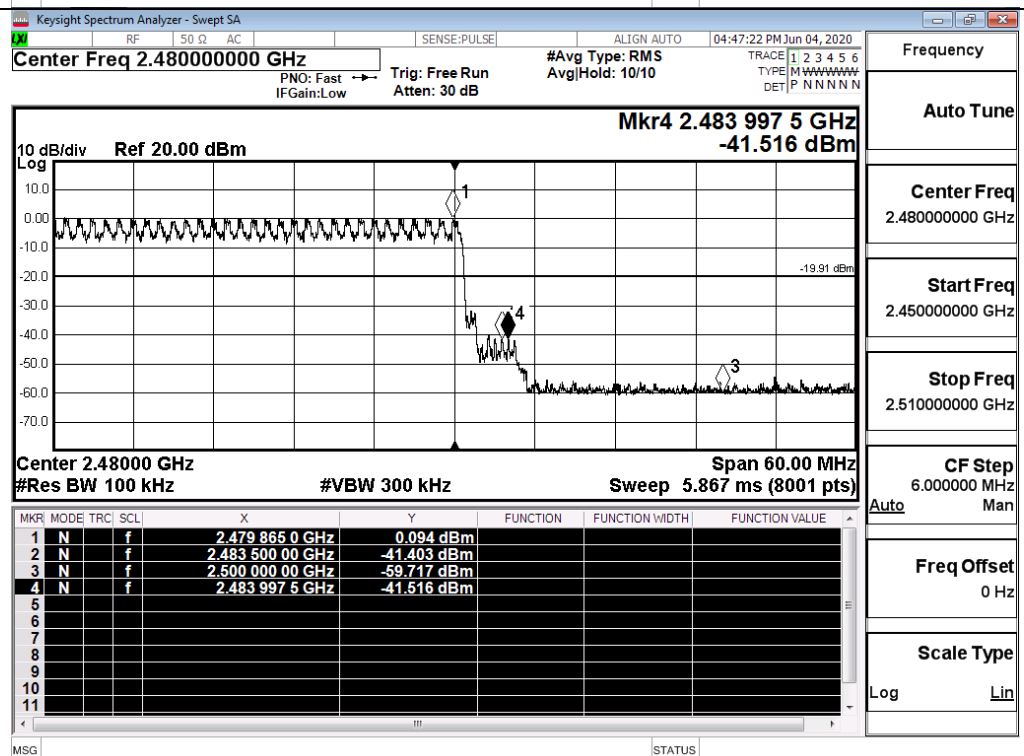
$\pi/4$ DQPSK/LCH/Hop



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



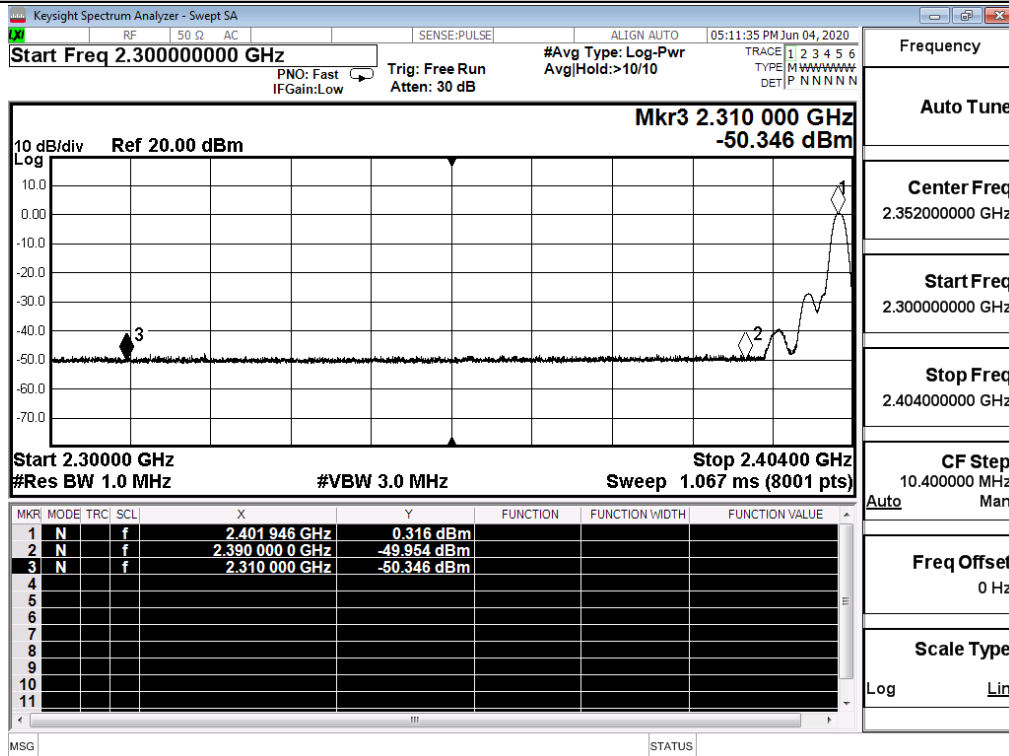
$\pi/4$ DQPSK/HCH/Hop



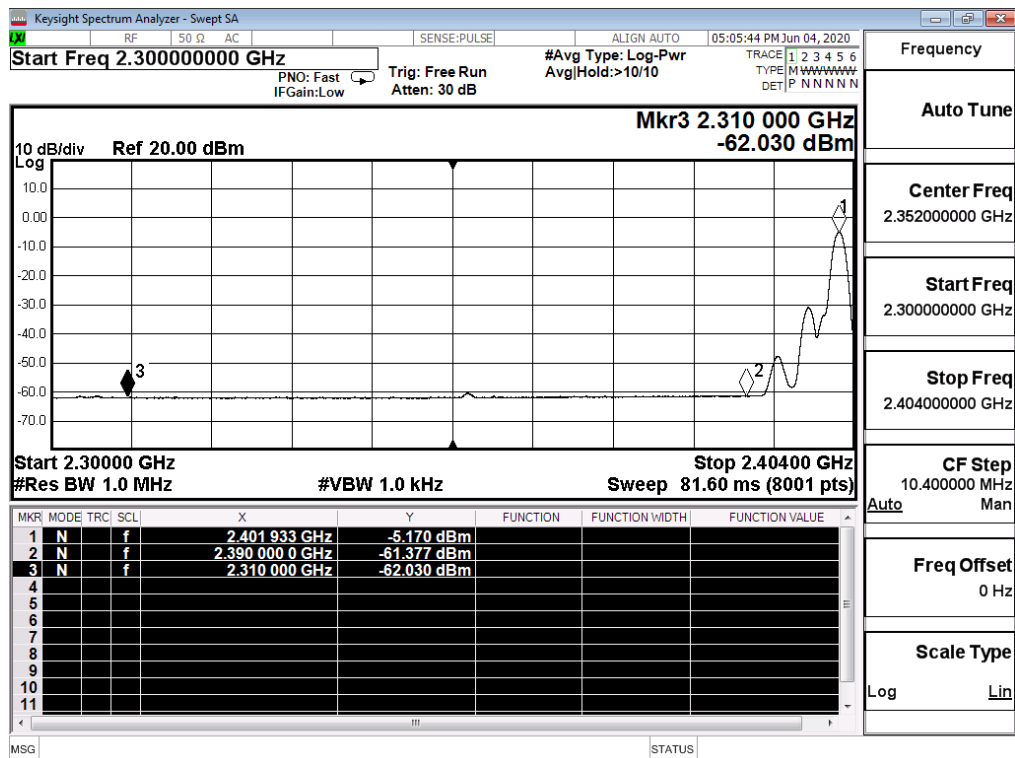
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-50.346	2	0	46.91	PEAK	74	PASS
	Off	2310.0	-62.030	2	0	35.23	AV	54	PASS
	Off	2390.0	-49.954	2	0	47.31	PEAK	74	PASS
	Off	2390.0	-61.377	2	0	35.88	AV	54	PASS
	Off	2483.5	-37.653	2	0	59.61	PEAK	74	PASS
	Off	2483.5	-45.745	2	0	51.52	AV	54	PASS
	Off	2500.0	-50.090	2	0	47.17	PEAK	74	PASS
	Off	2500.0	-61.128	2	0	36.13	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-50.757	2	0	46.50	PEAK	74	PASS
	Off	2310.0	-61.969	2	0	35.29	AV	54	PASS
	Off	2390.0	-51.354	2	0	45.91	PEAK	74	PASS
	Off	2390.0	-61.353	2	0	35.91	AV	54	PASS
	Off	2483.5	-37.422	2	0	59.84	PEAK	74	PASS
	Off	2483.5	-48.510	2	0	48.75	AV	54	PASS
	Off	2500.0	-50.706	2	0	46.55	PEAK	74	PASS
	Off	2500.0	-61.208	2	0	36.05	AV	54	PASS

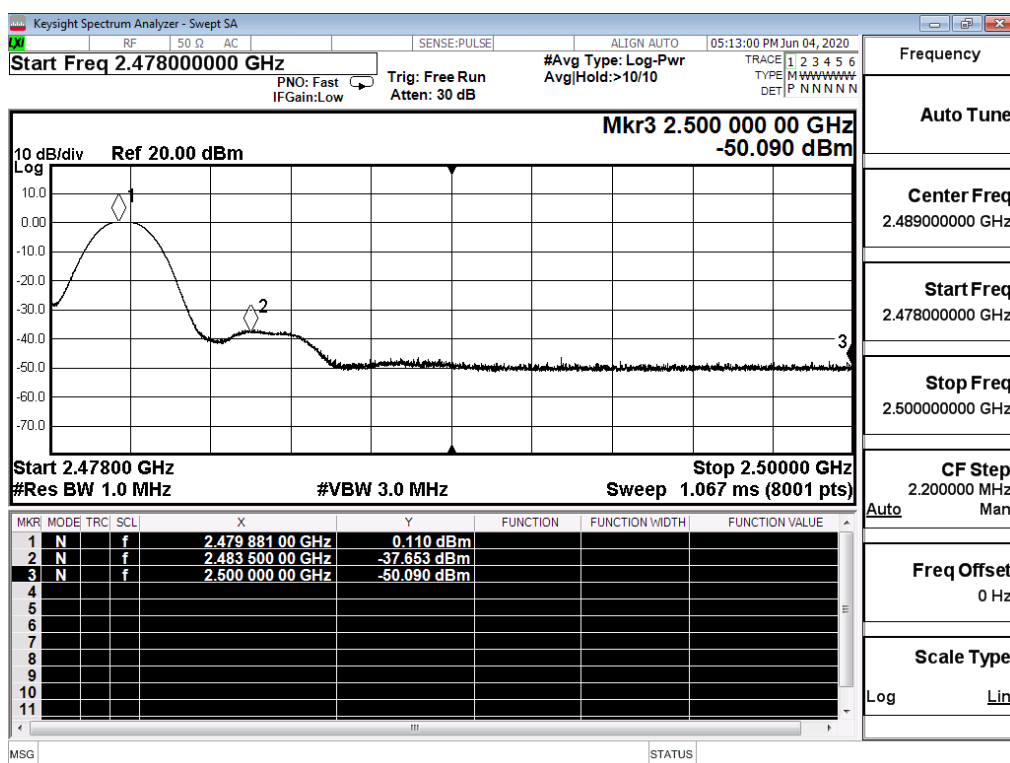
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



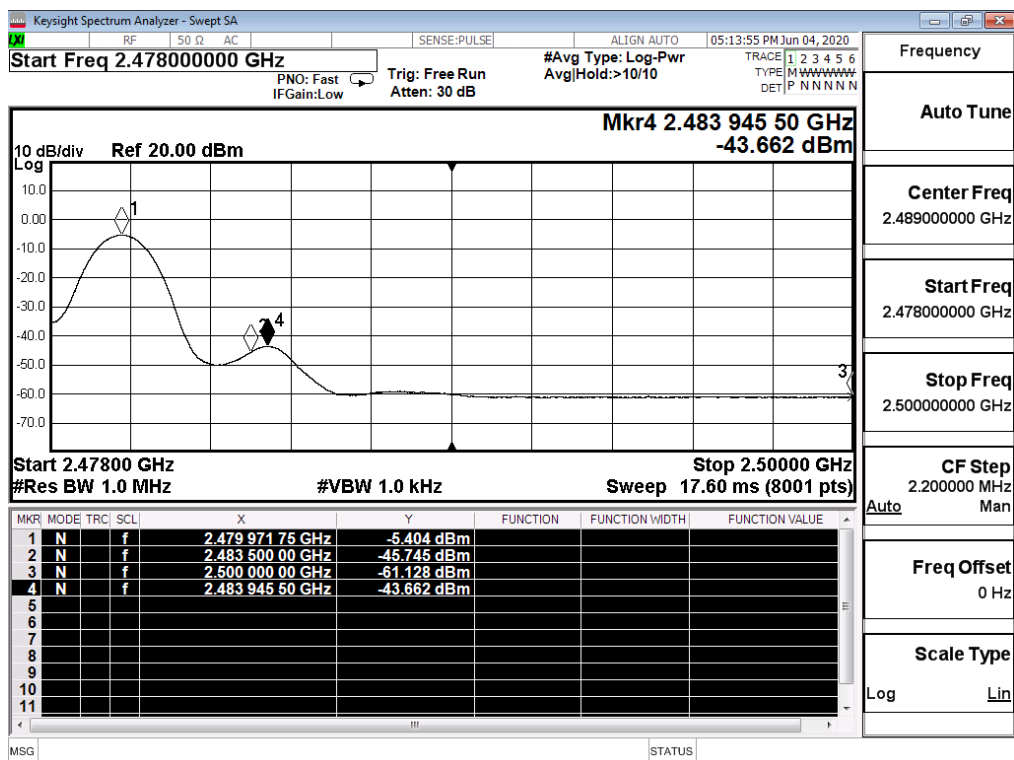
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

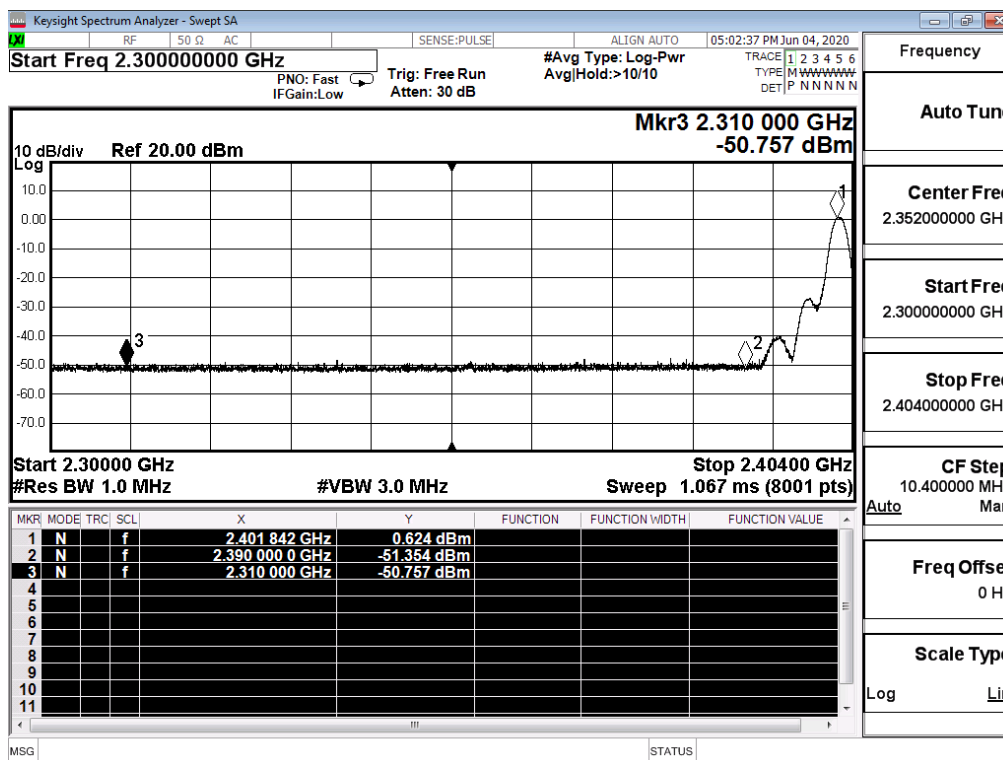
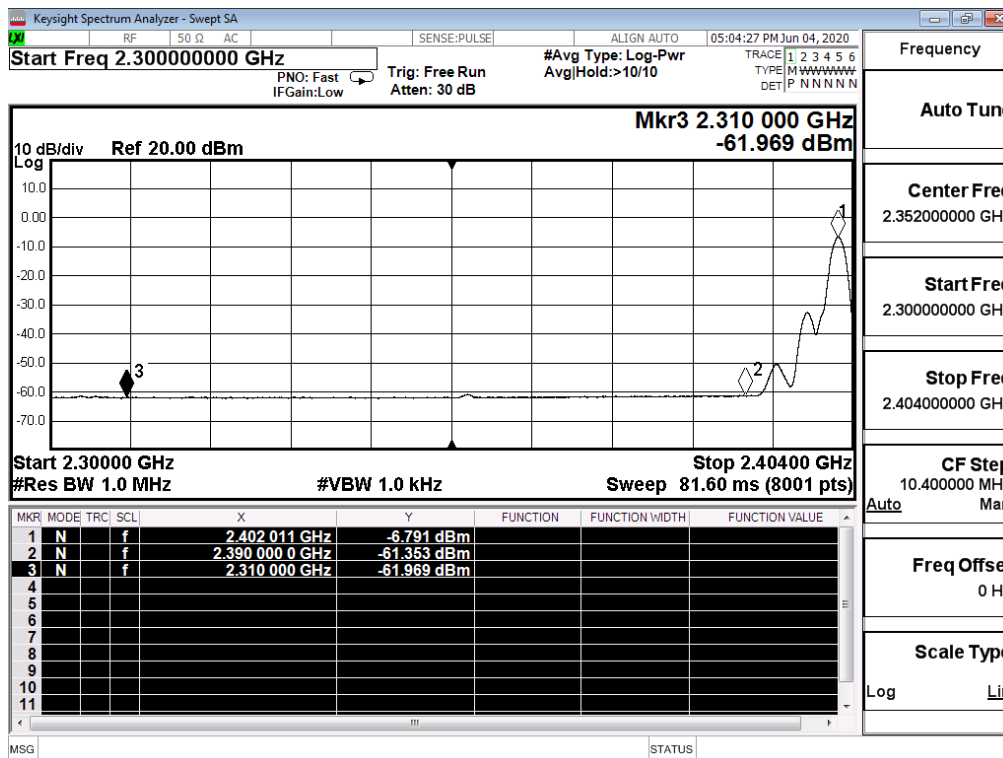


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

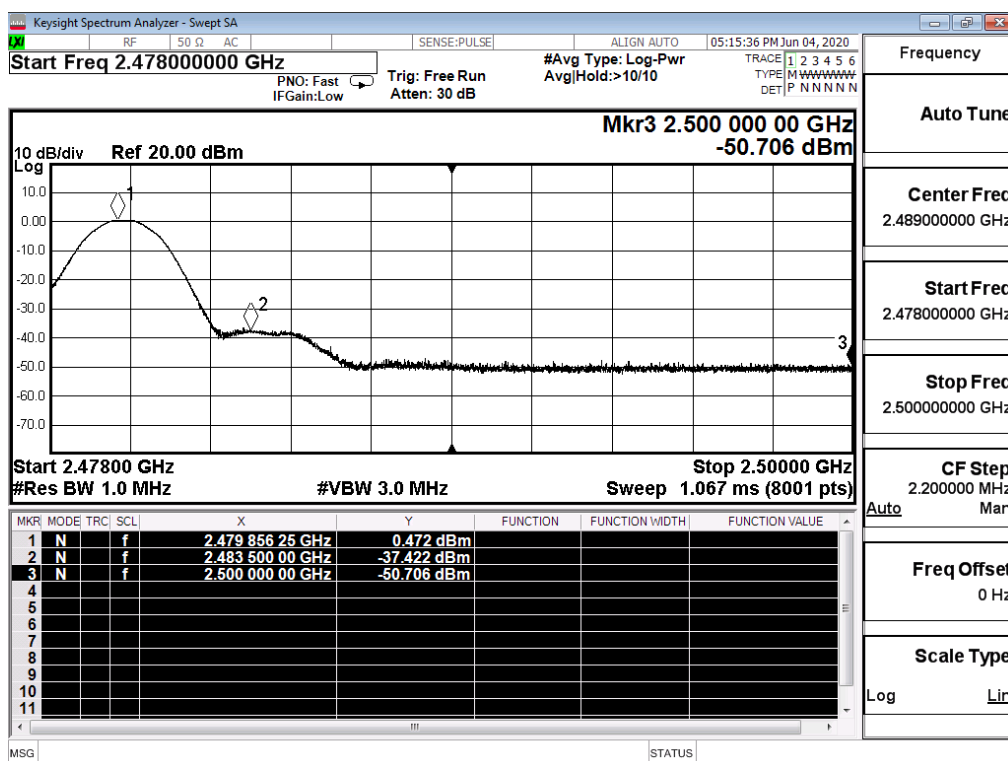


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

