

Appendix A

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

Product Name: Bluetooth Earphones

Trade Mark: Fricon

Test Model: Fricon T13

Environmental Conditions

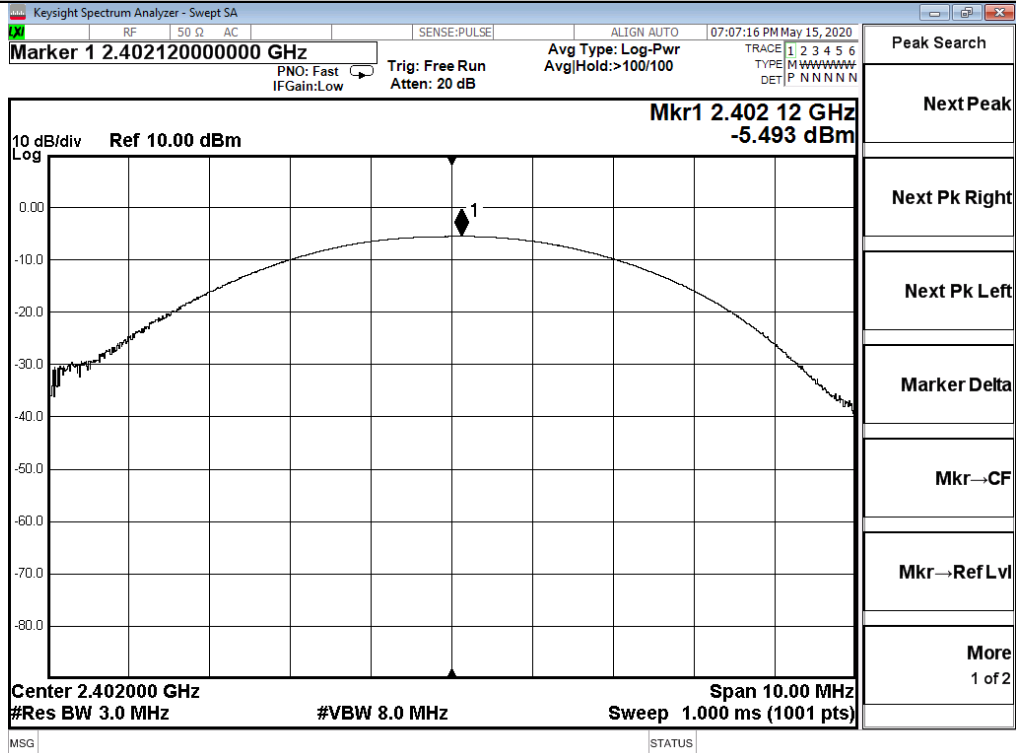
Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Tom Liu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

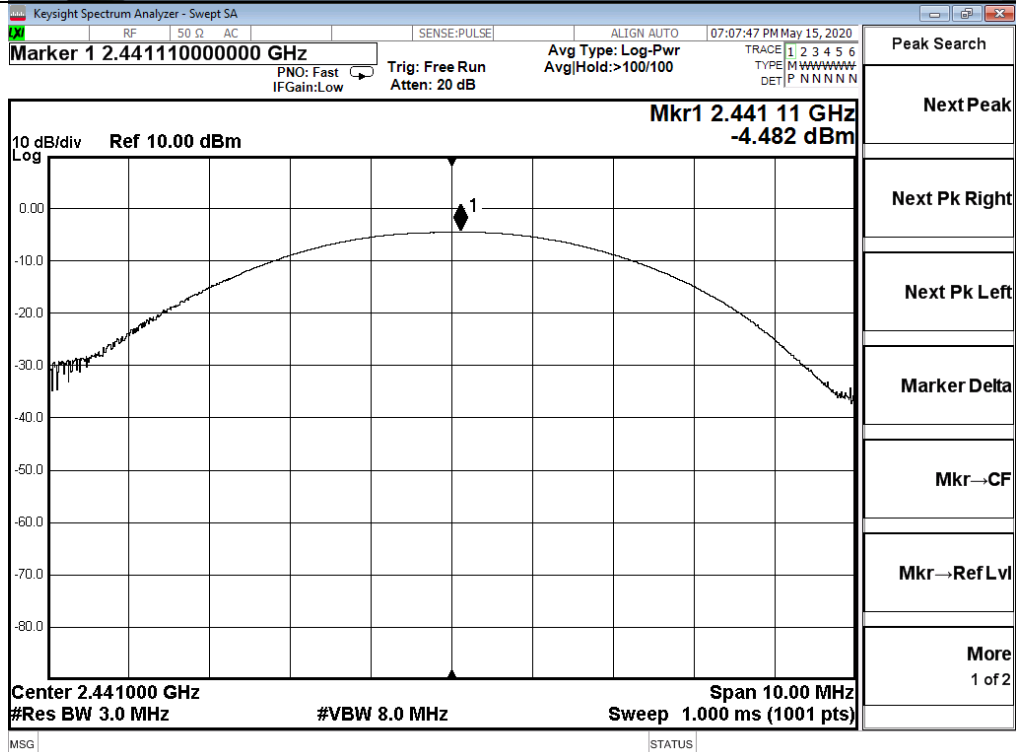
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-5.493	21	PASS
	MCH	-4.482	21	PASS
	HCH	-4.324	21	PASS
$\pi/4$ DQPSK	LCH	-4.561	21	PASS
	MCH	-3.540	21	PASS
	HCH	-3.391	21	PASS

Test Graphs

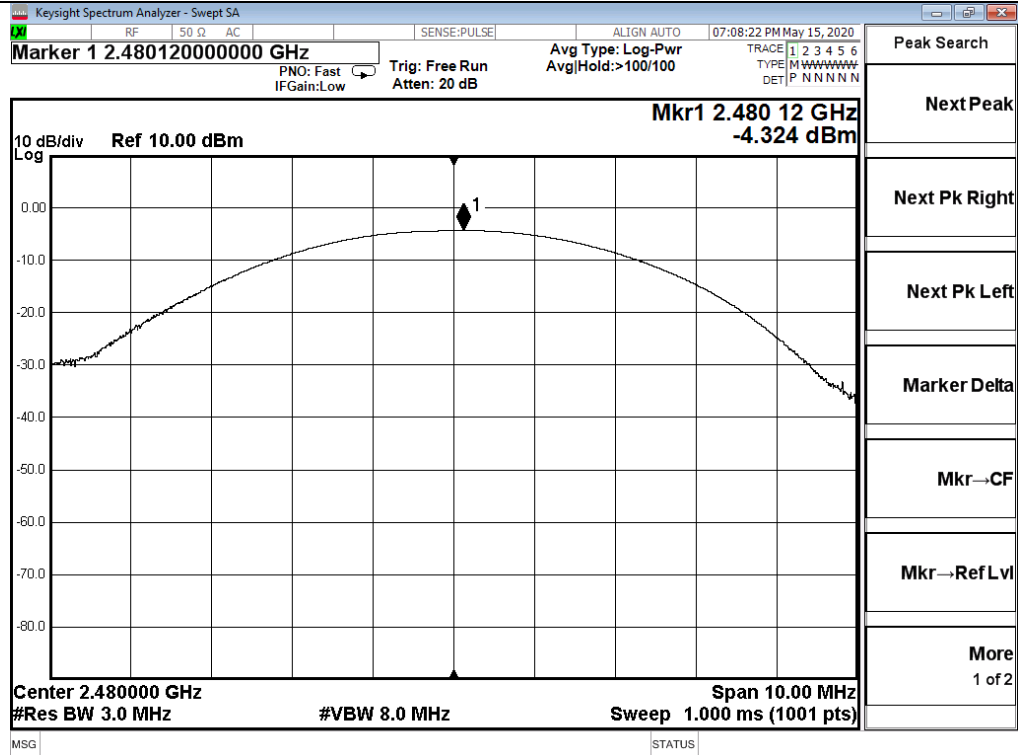
GFSK/LCH



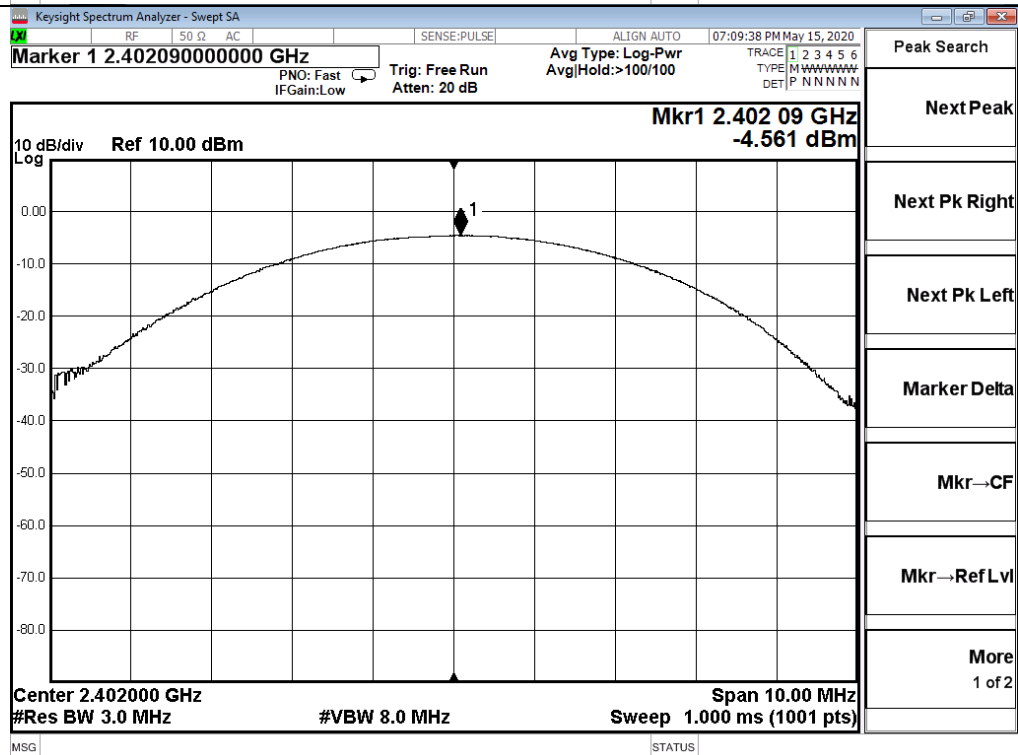
GFSK/MCH



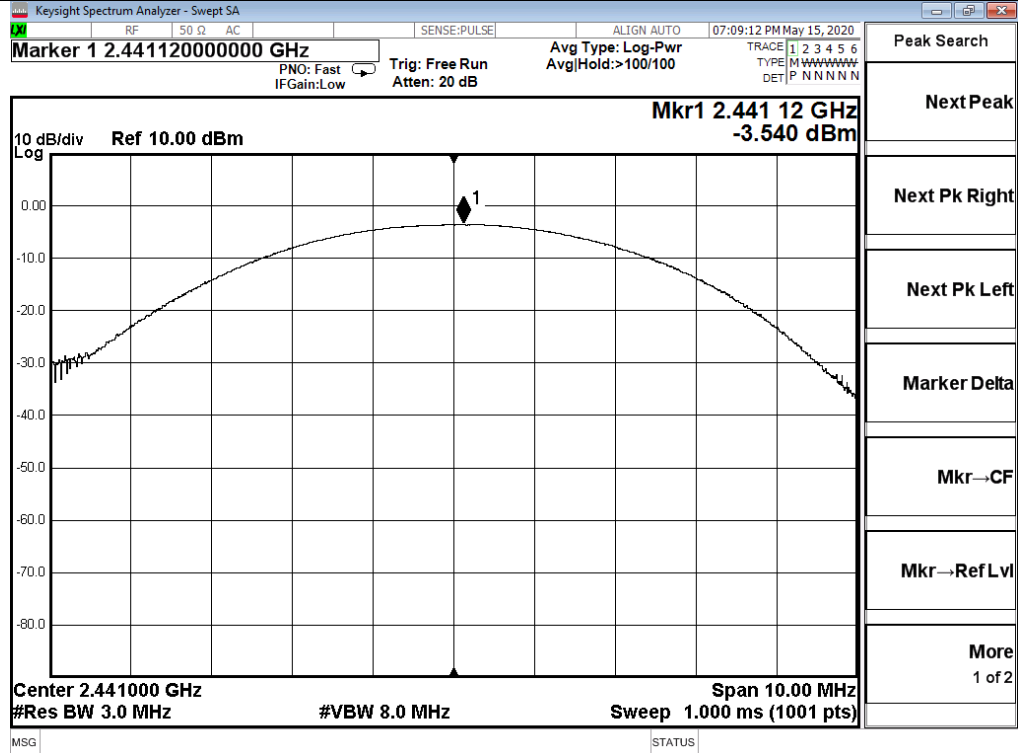
GFSK/HCH



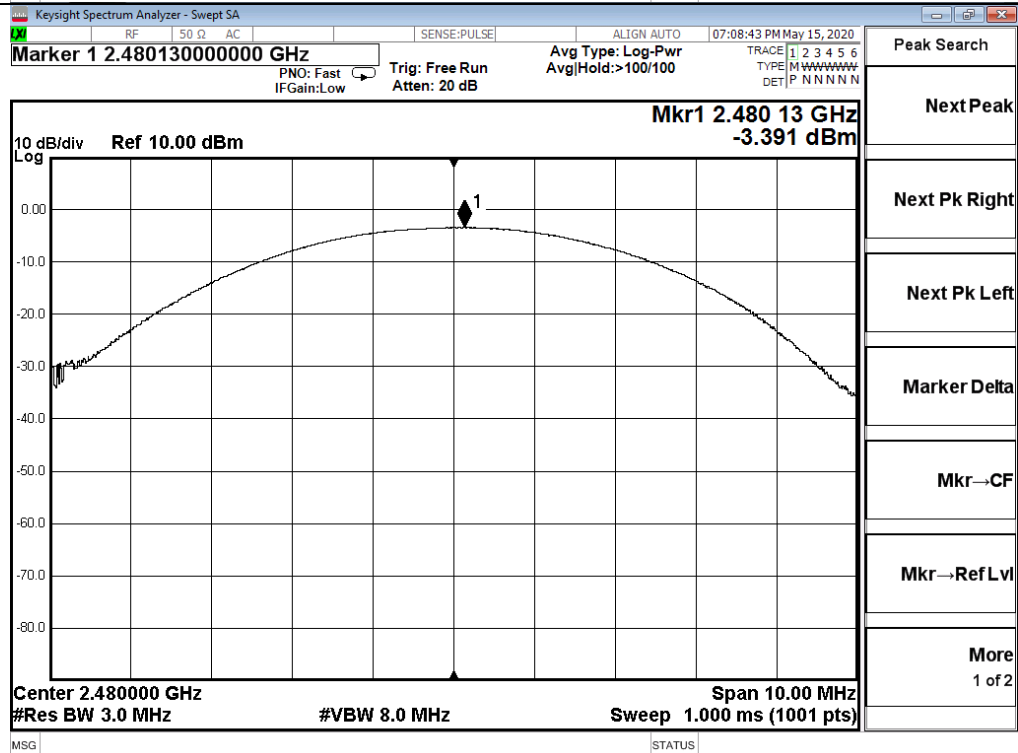
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

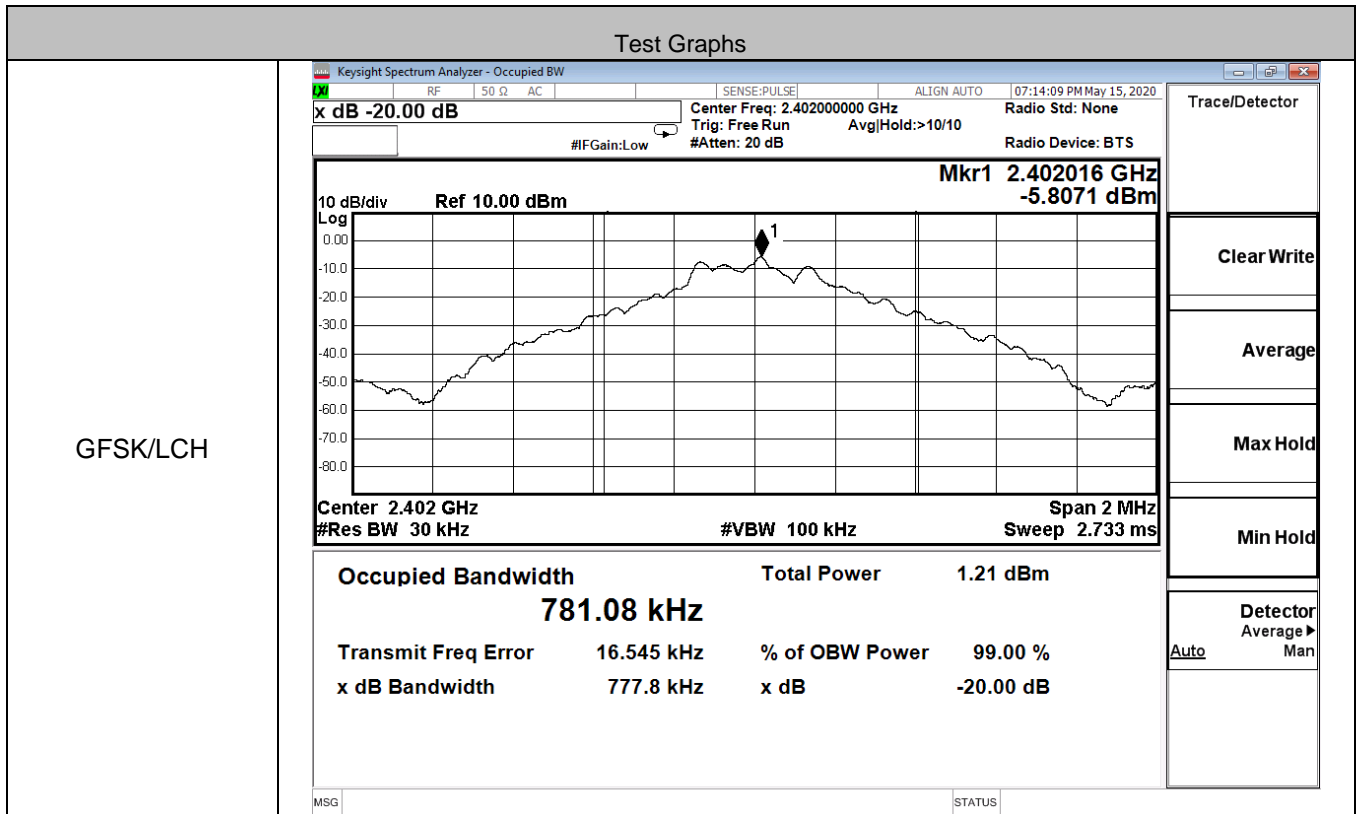


$\pi/4$ DQPSK/HCH

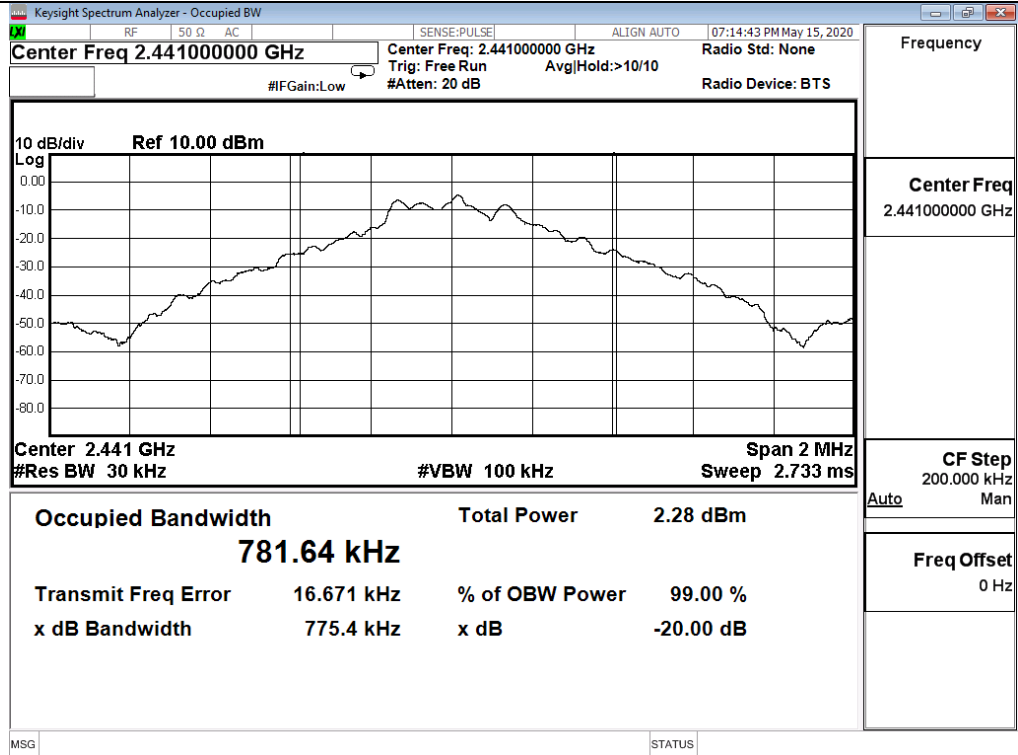


A.2 99% and 20dB Bandwidth

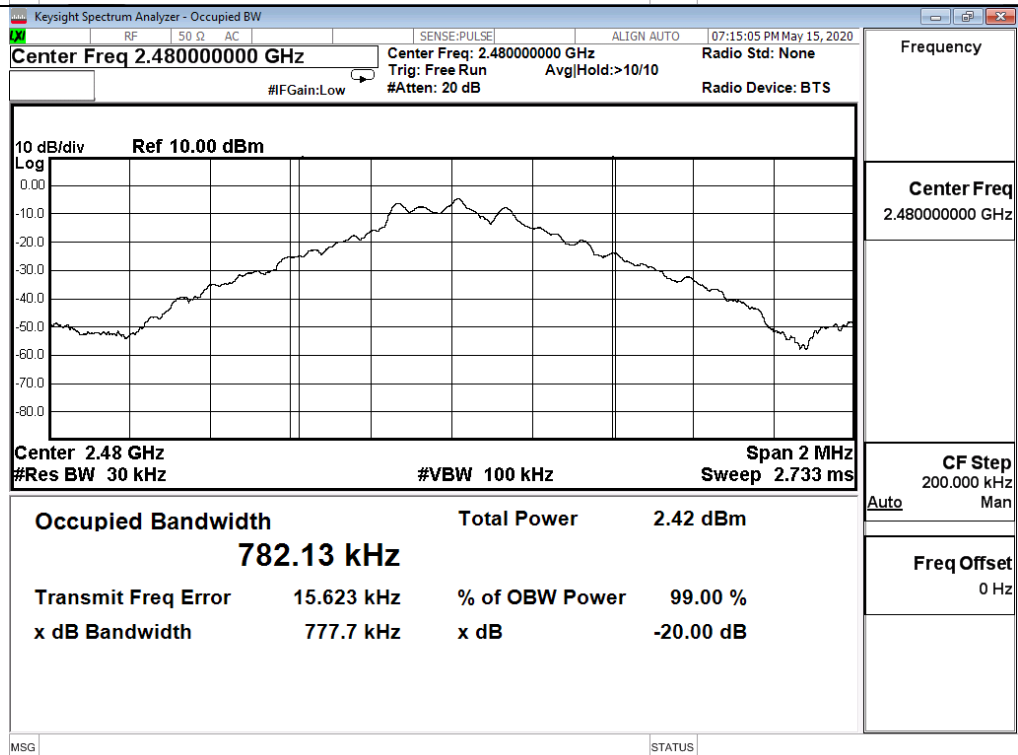
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.78108	0.7778	Not Specified	PASS
	MCH	0.78164	0.7754	Not Specified	PASS
	HCH	0.78213	0.7777	Not Specified	PASS
π/4DQPSK	LCH	1.1606	1.209	Not Specified	PASS
	MCH	1.1606	1.193	Not Specified	PASS
	HCH	1.1591	1.211	Not Specified	PASS



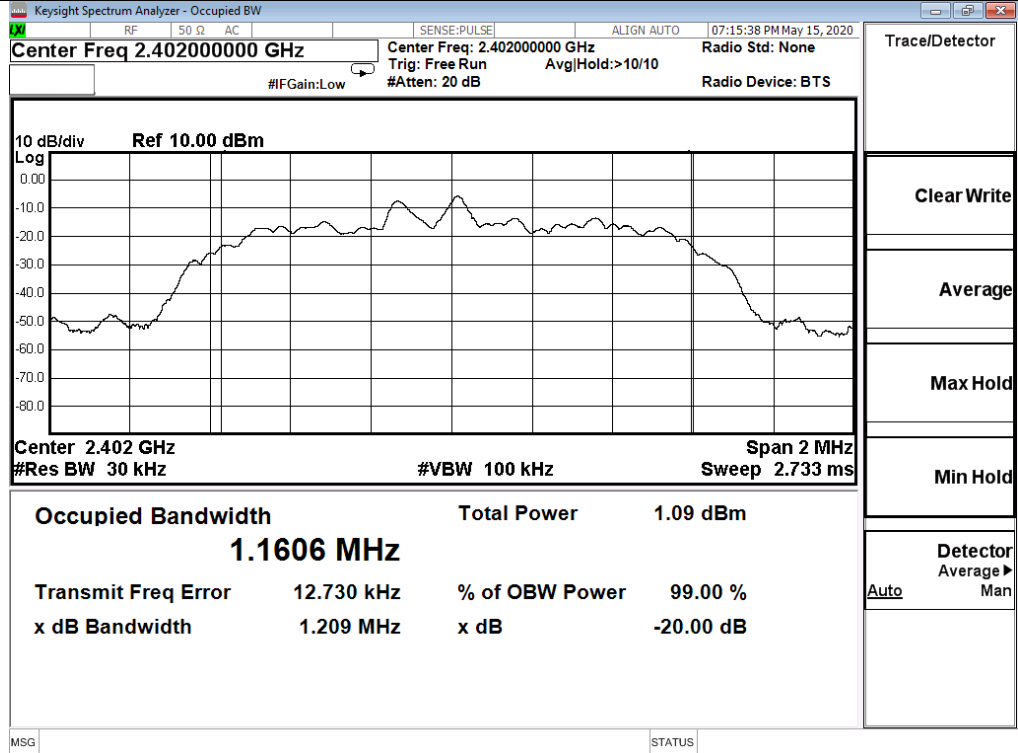
GFSK/MCH



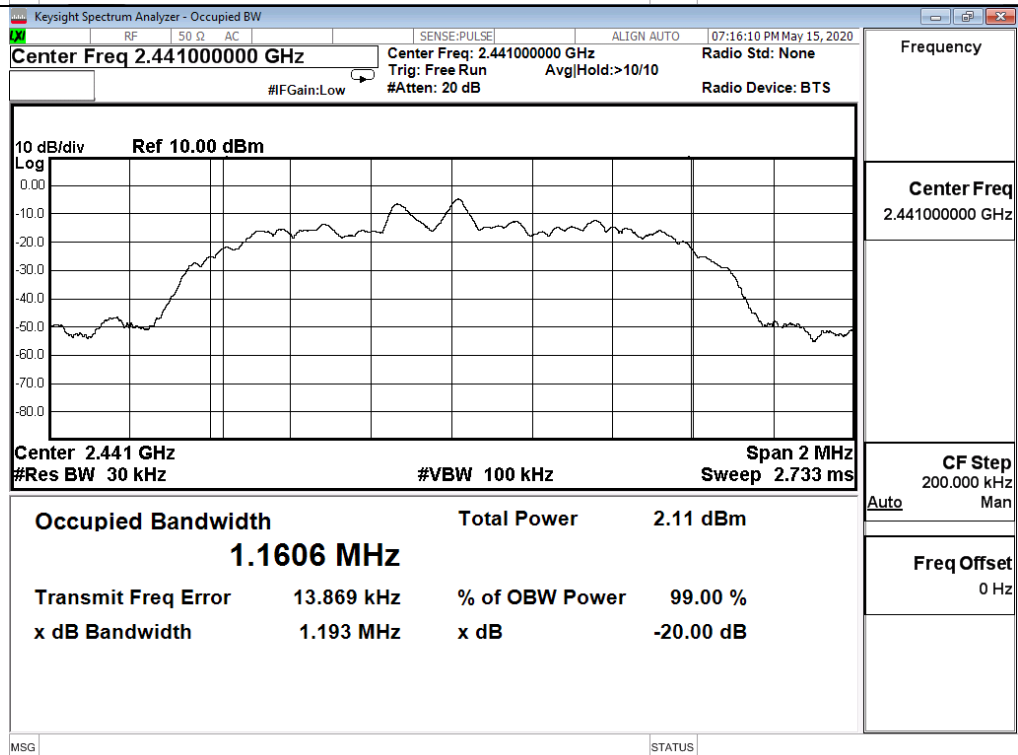
GFSK/HCH



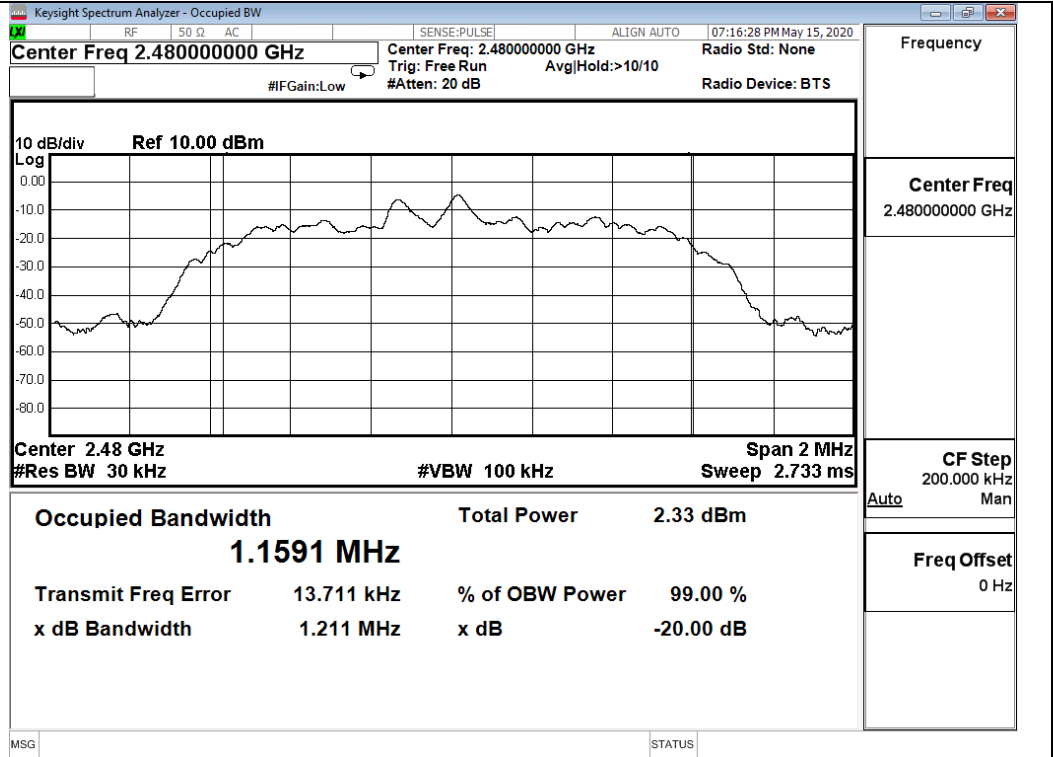
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

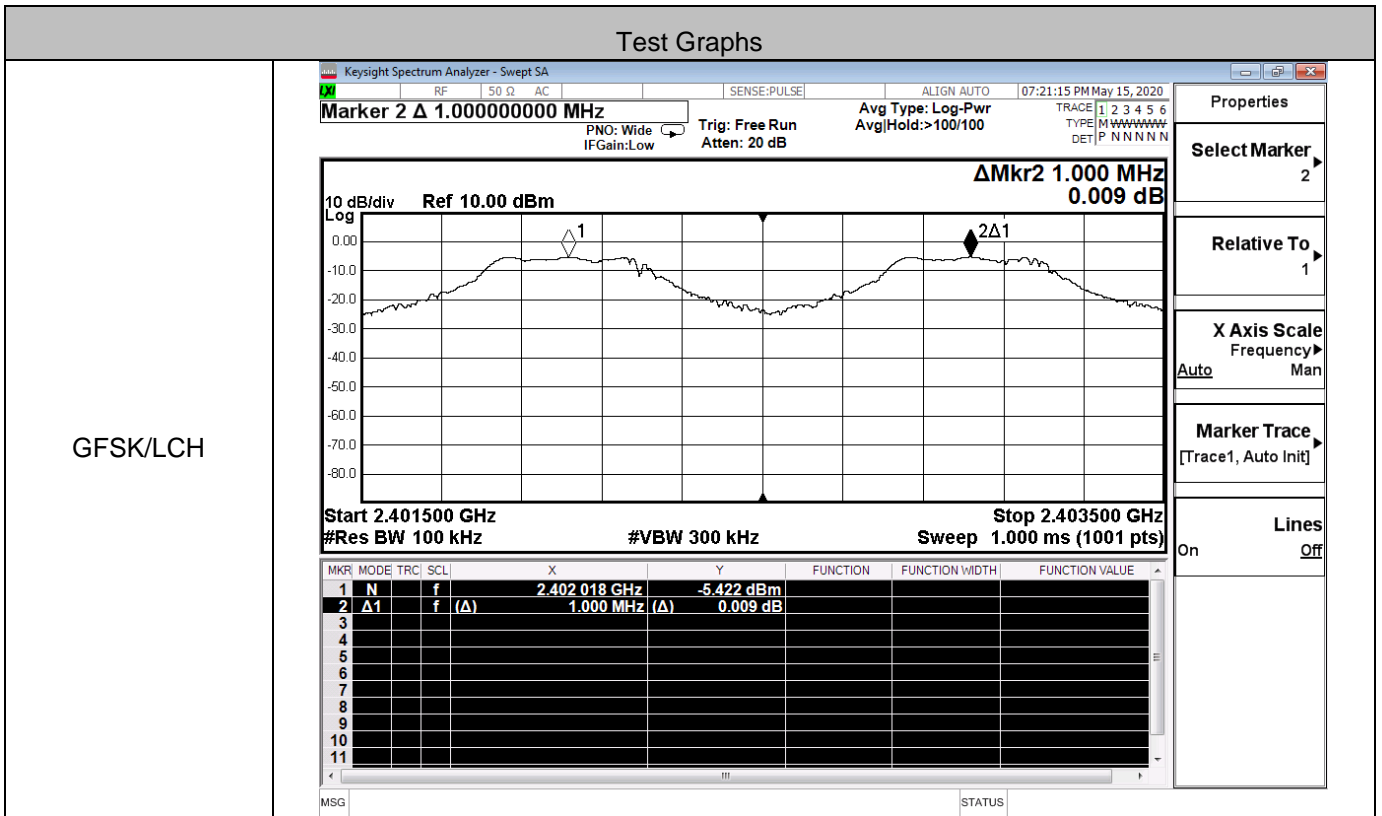


$\pi/4$ DQPSK/HCH

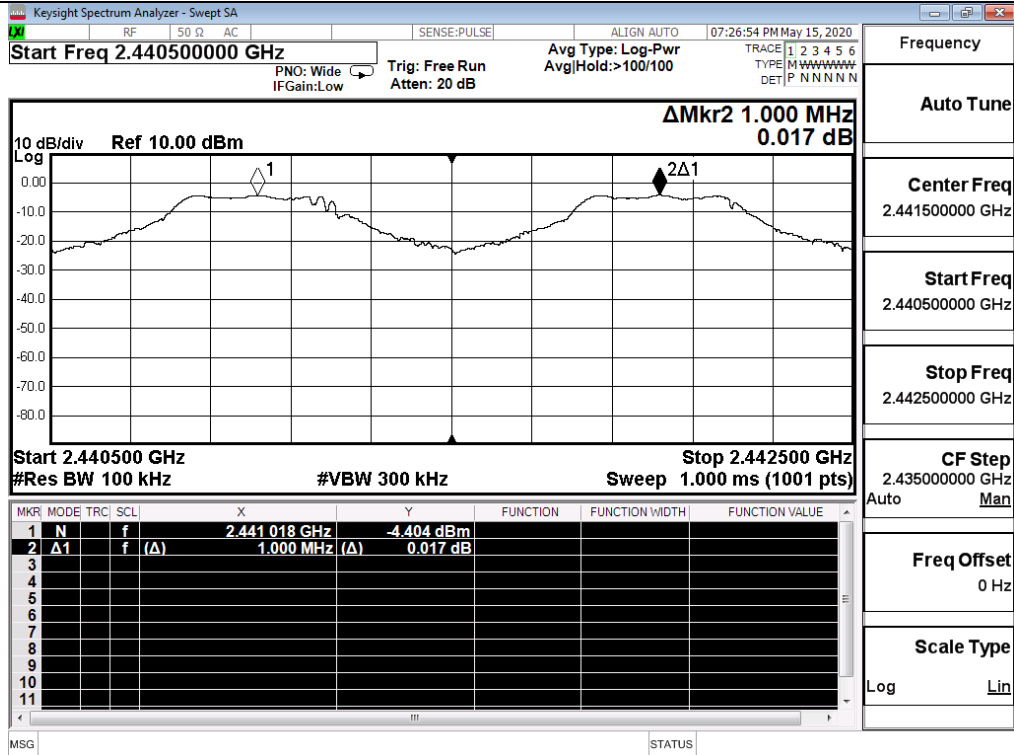


A.3 Carrier Frequency Separation

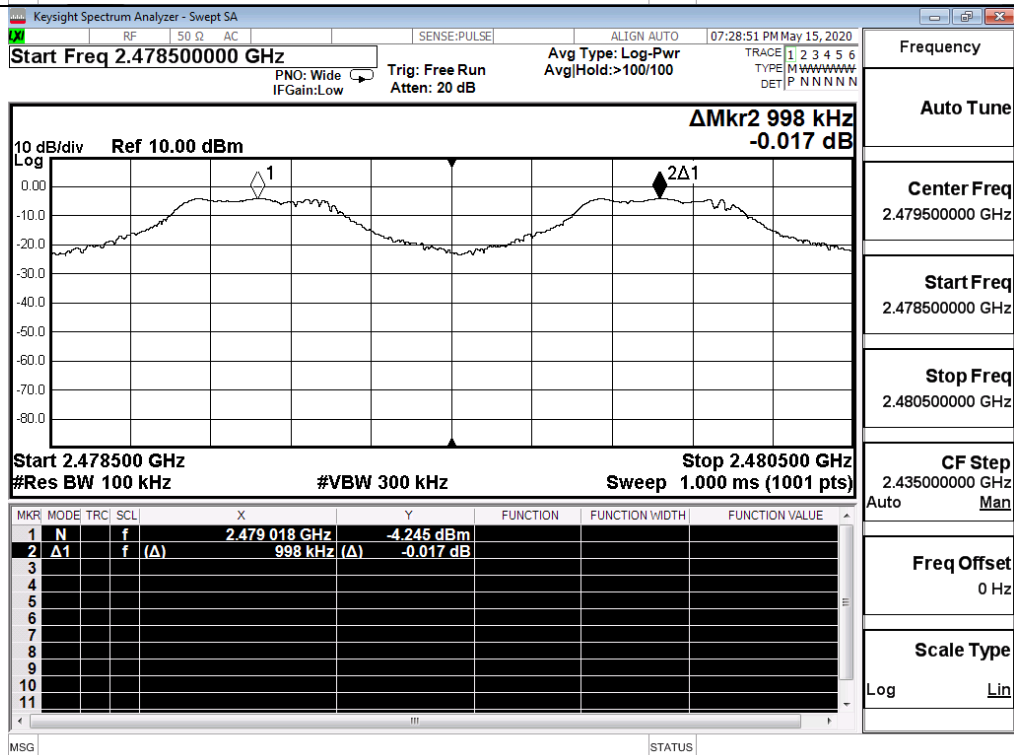
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.000	0.52	PASS
	MCH	1.000	0.52	PASS
	HCH	0.998	0.52	PASS
π/4DQPSK	LCH	1.000	0.81	PASS
	MCH	1.002	0.80	PASS
	HCH	1.000	0.81	PASS



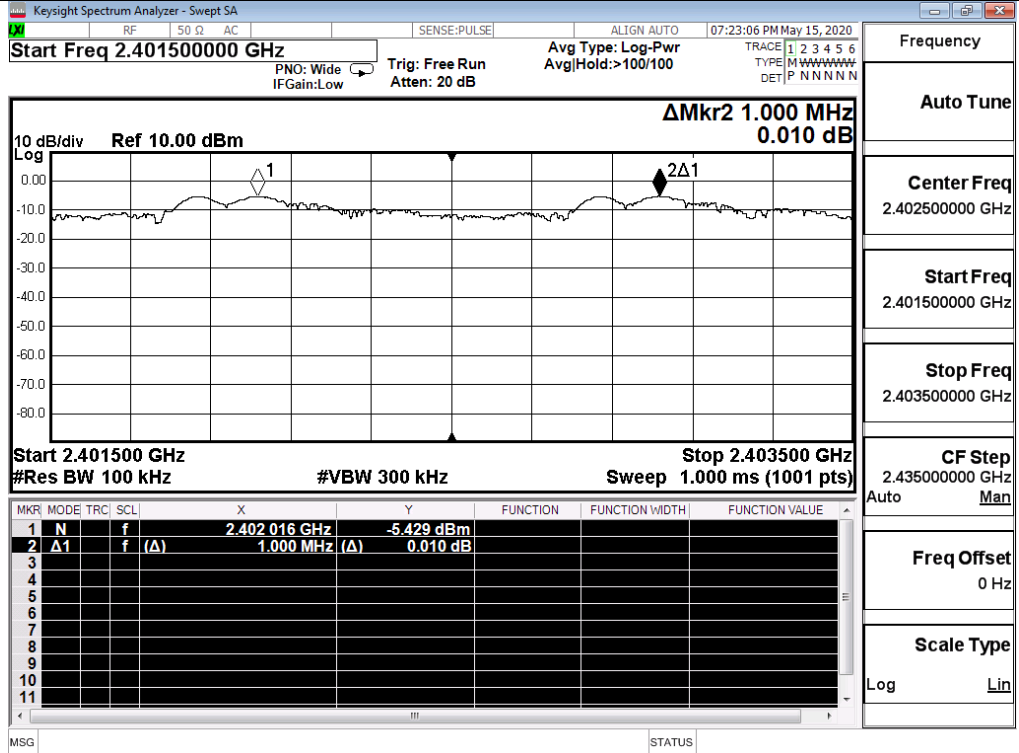
GFSK/MCH



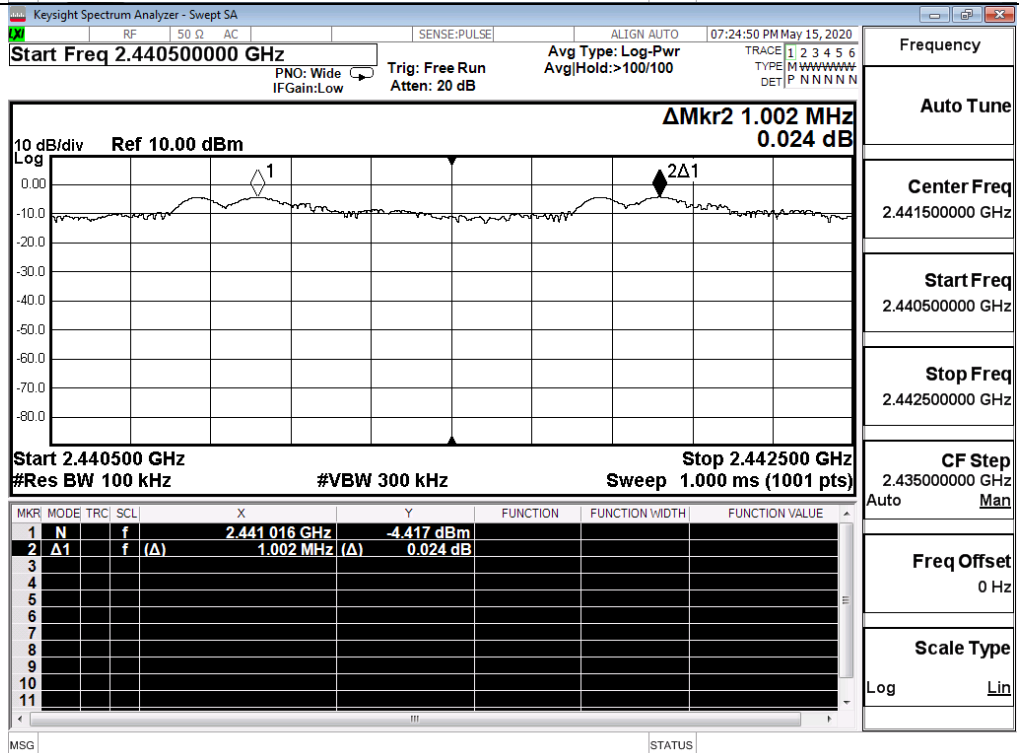
GFSK/HCH



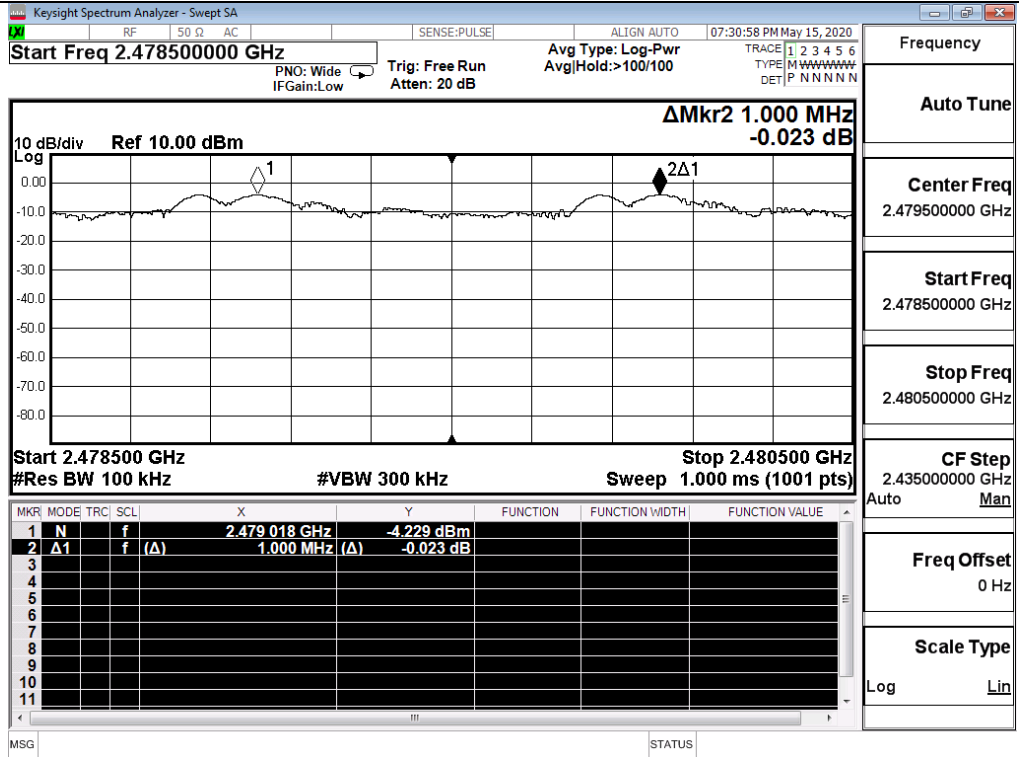
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH



π/4DQPSK/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

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.401 833 0 GHz	-5.871 dBm			
2	Δ		f (Δ)	78.243 5 MHz (Δ)	0.699 dB			

Properties

Select Marker 2

Relative To 1

X Axis Scale
Frequency
Auto Man

Marker Trace
[Trace1, Auto Init]

Lines
On Off

$\pi/4$ DQPSK/Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N		f	2.401 833 0 GHz	-6.024 dBm			
2	Δ		f (Δ)	78.243 5 MHz (Δ)	0.913 dB			

Frequency

Auto Tune

Center Freq
2.441750000 GHz

Start Freq
2.400000000 GHz

Stop Freq
2.483500000 GHz

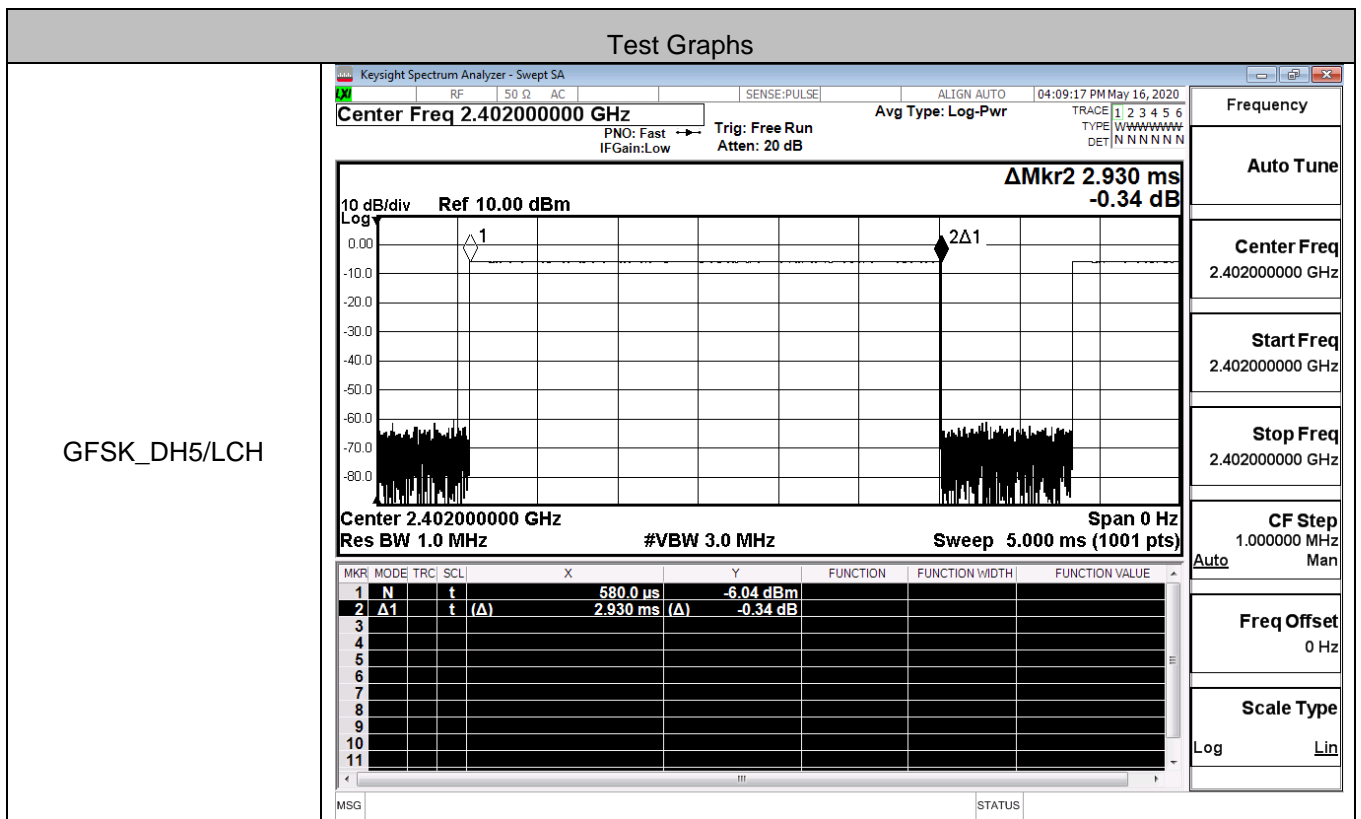
CF Step
8.350000 MHz
Auto Man

Freq Offset
0 Hz

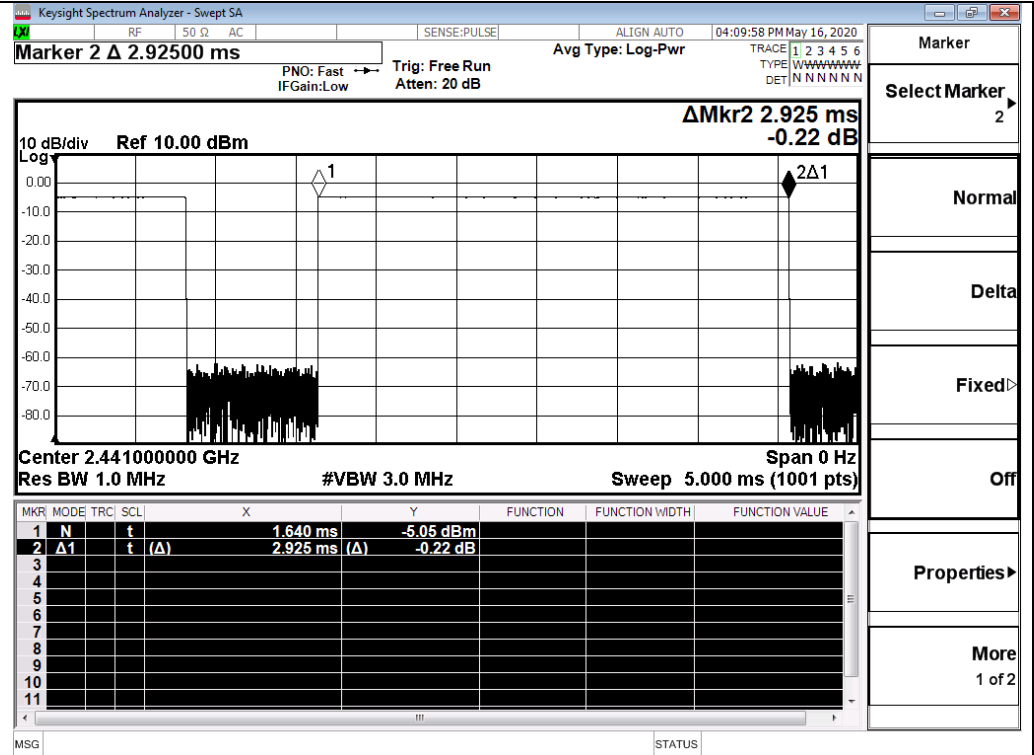
Scale Type
Log Lin

A.5 Dwell Time

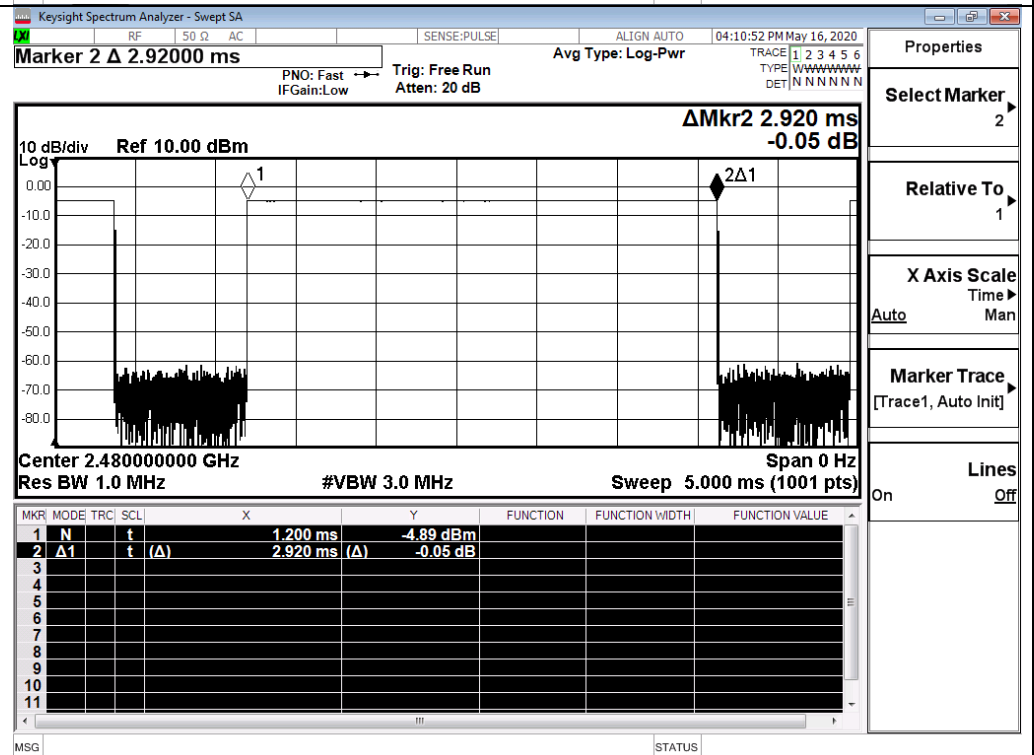
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.930	106.7	0.31	0.4	PASS
	DH5	MCH	2.925	106.7	0.31	0.4	PASS
	DH5	HCH	2.920	106.7	0.31	0.4	PASS
π/4DQPSK	2DH5	LCH	2.930	106.7	0.31	0.4	PASS
	2DH5	MCH	2.930	106.7	0.31	0.4	PASS
	2DH5	HCH	2.930	106.7	0.31	0.4	PASS



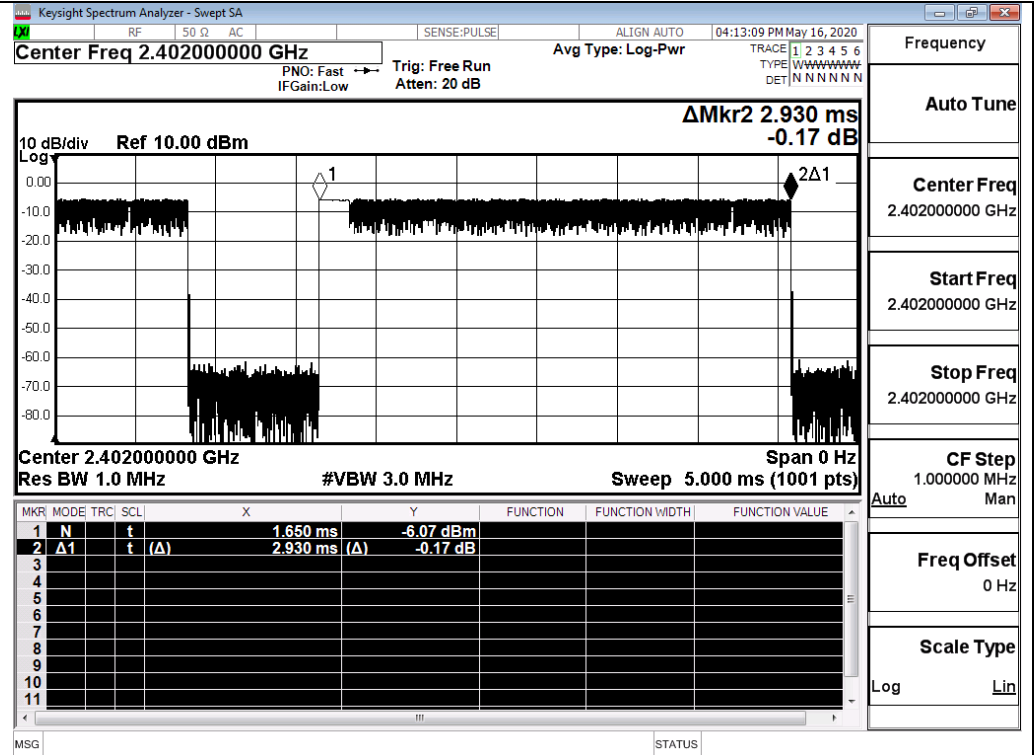
GFSK_DH5/MCH



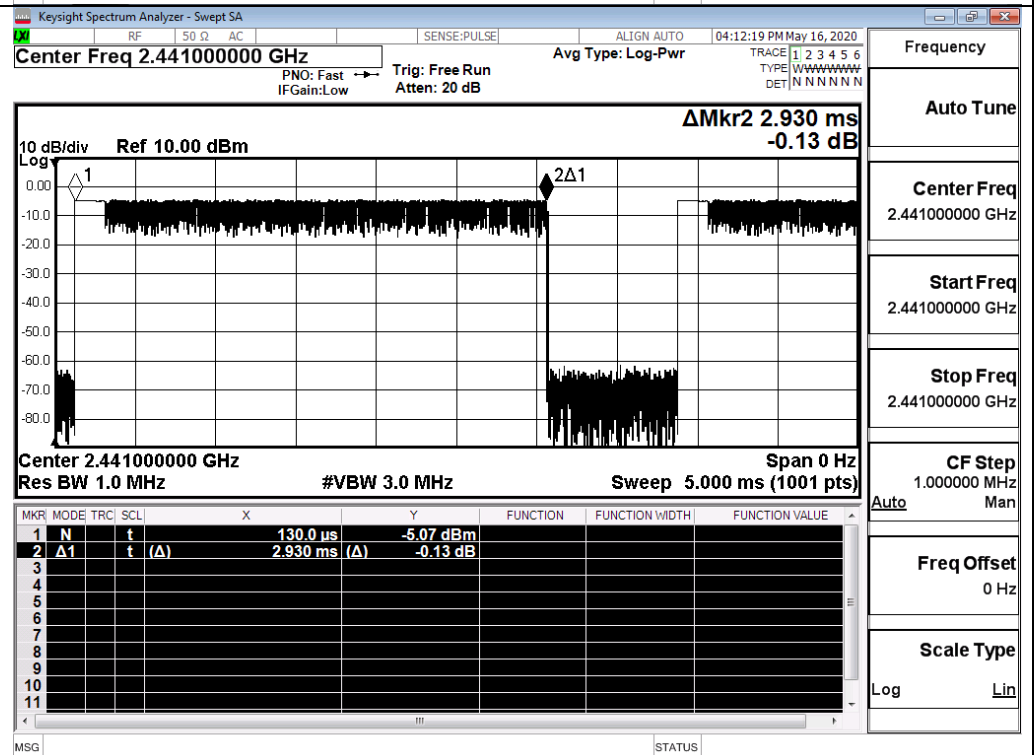
GFSK_DH5/HCH



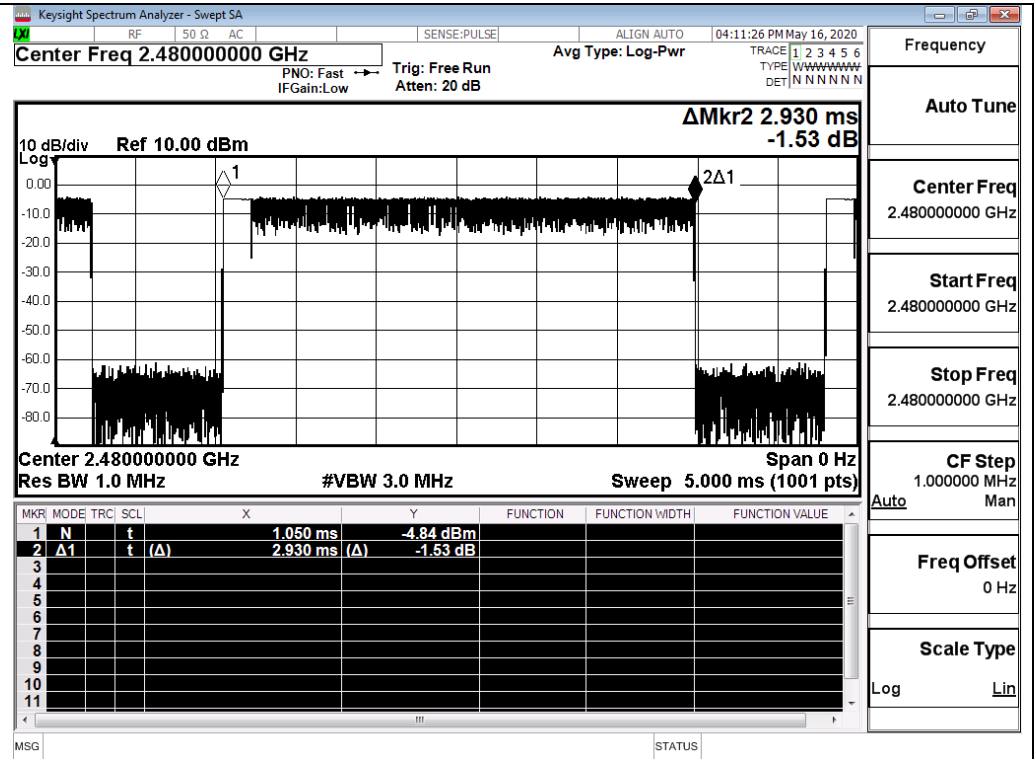
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

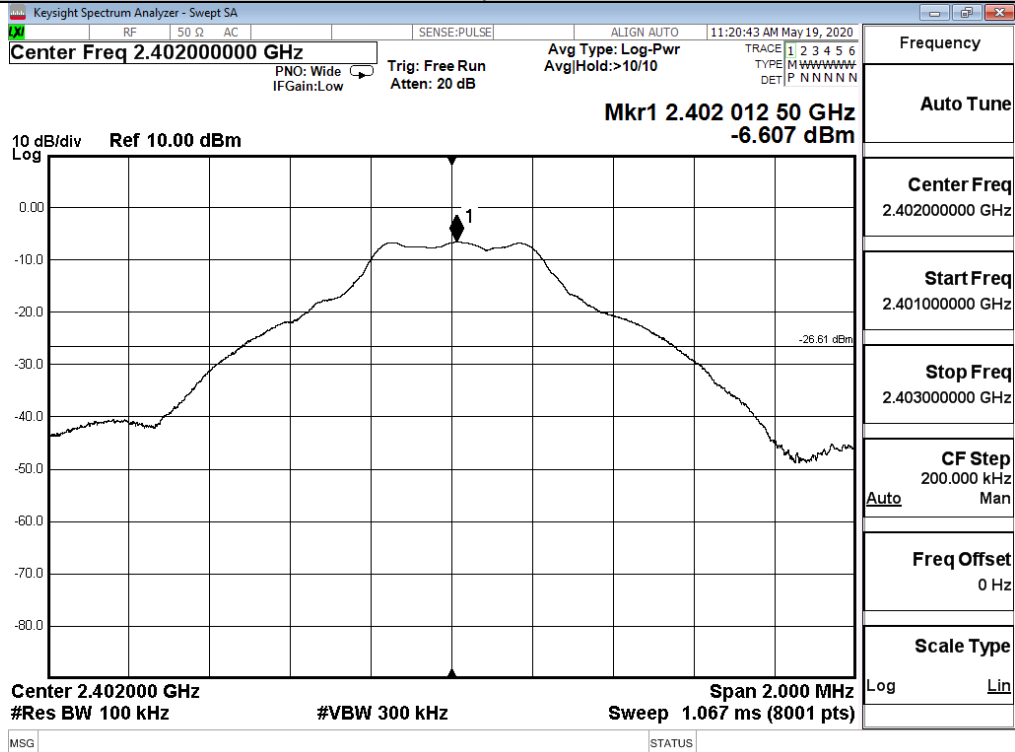


A.6 RF Conducted Spurious Emissions

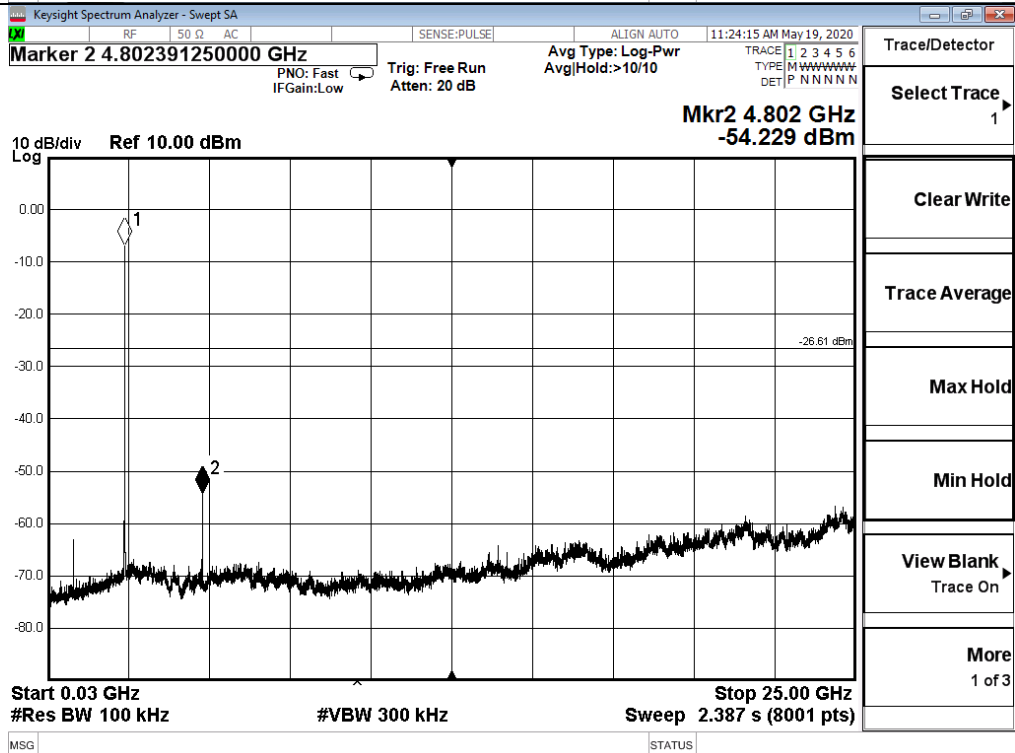
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-6.607	-54.229	-26.61	PASS
	MCH	-5.736	-57.403	-25.74	PASS
	HCH	-5.543	-56.296	-25.54	PASS
$\pi/4$ DQPSK	LCH	-6.599	-58.214	-26.60	PASS
	MCH	-5.722	-53.769	-25.72	PASS
	HCH	-5.532	-54.084	-25.53	PASS

GFSK_LCH_Graphs

Pref

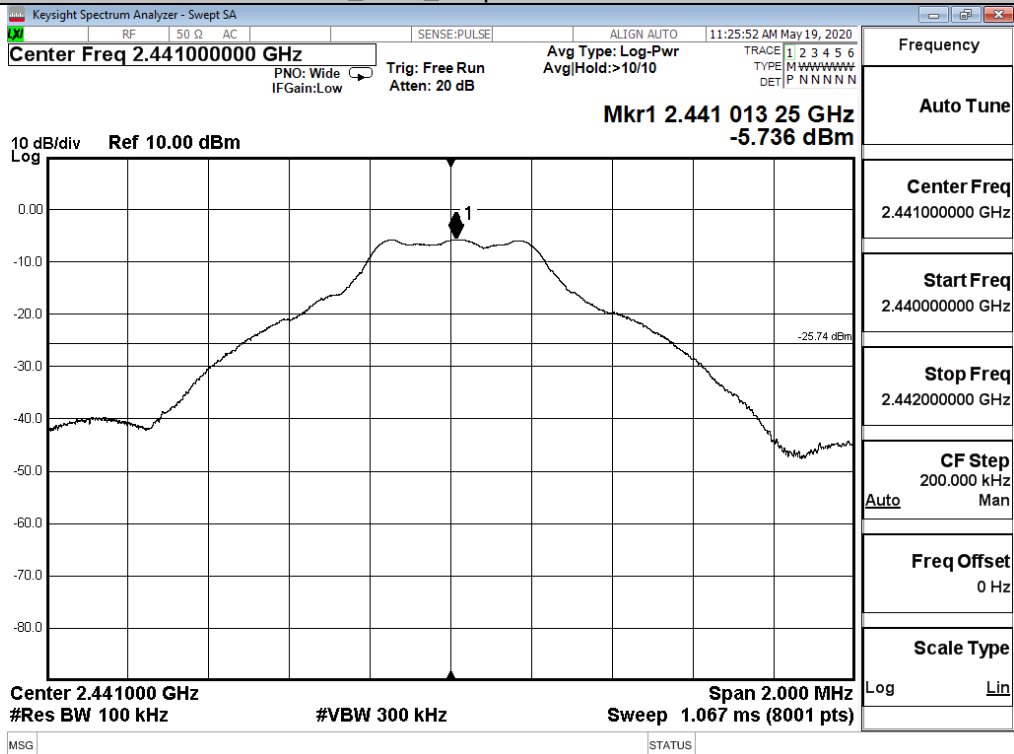


Puw

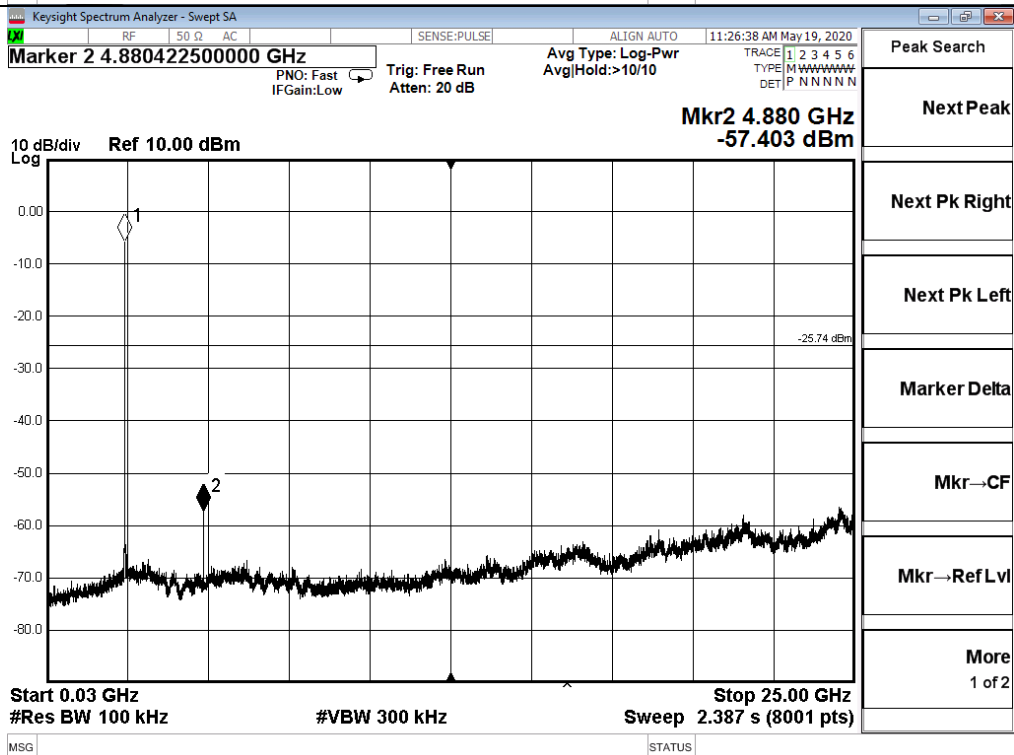


GFSK_MCH_Graphs

Pref

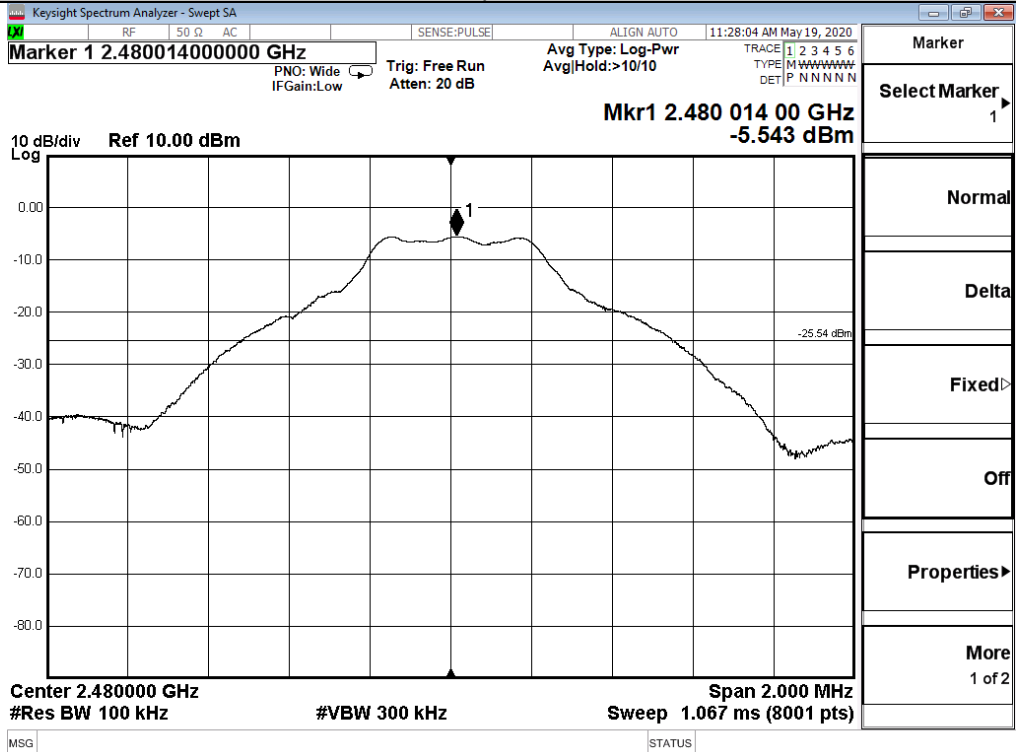


Puw

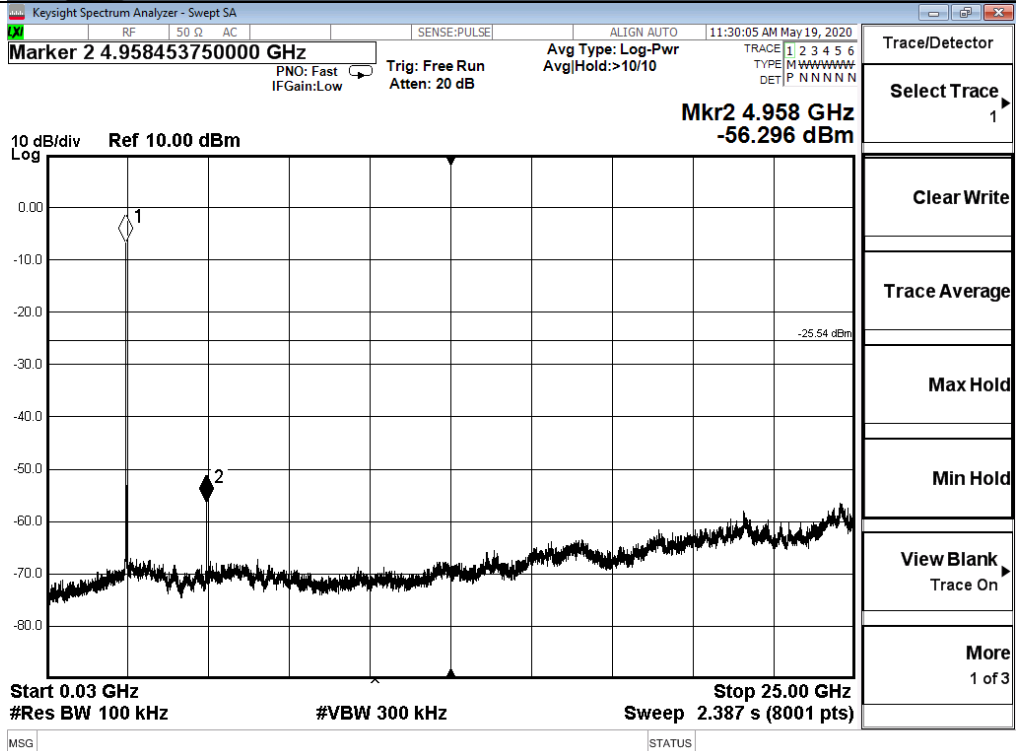


GFSK_HCH_Graphs

Pref

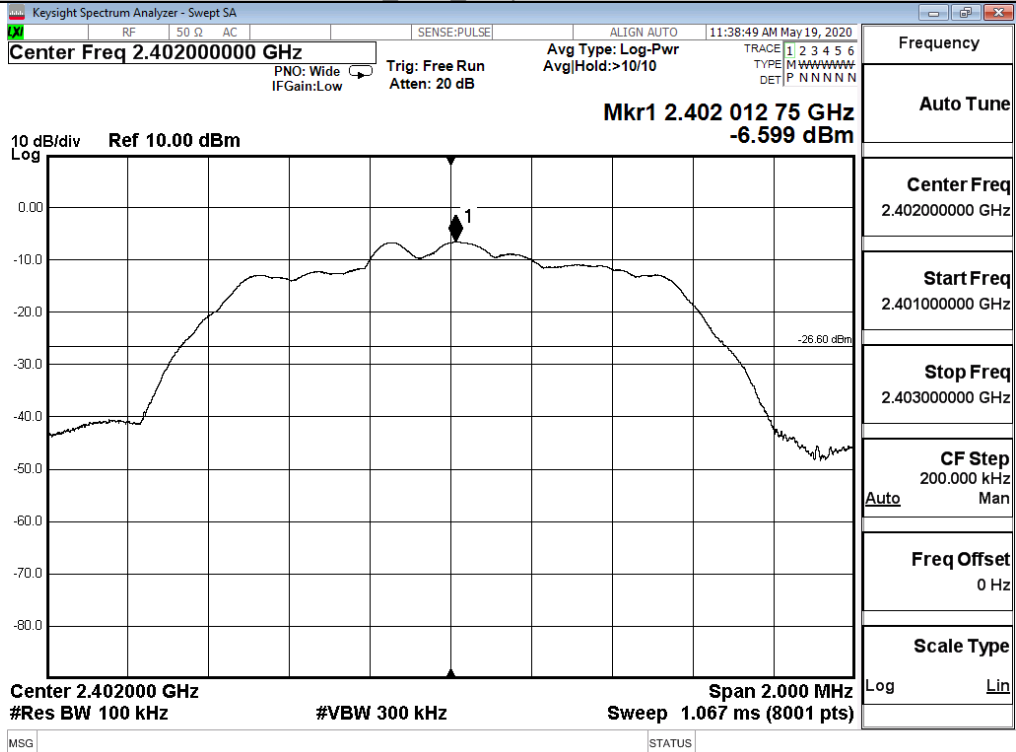


Puw

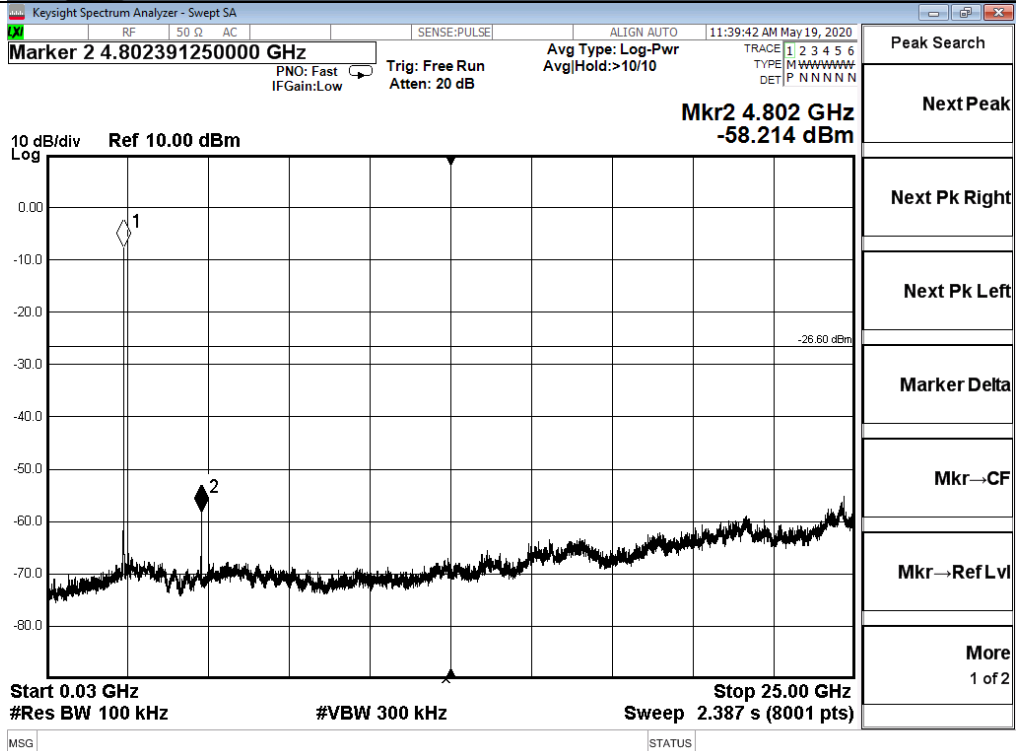


$\pi/4$ DQPSK_LCH_Graphs

Pref

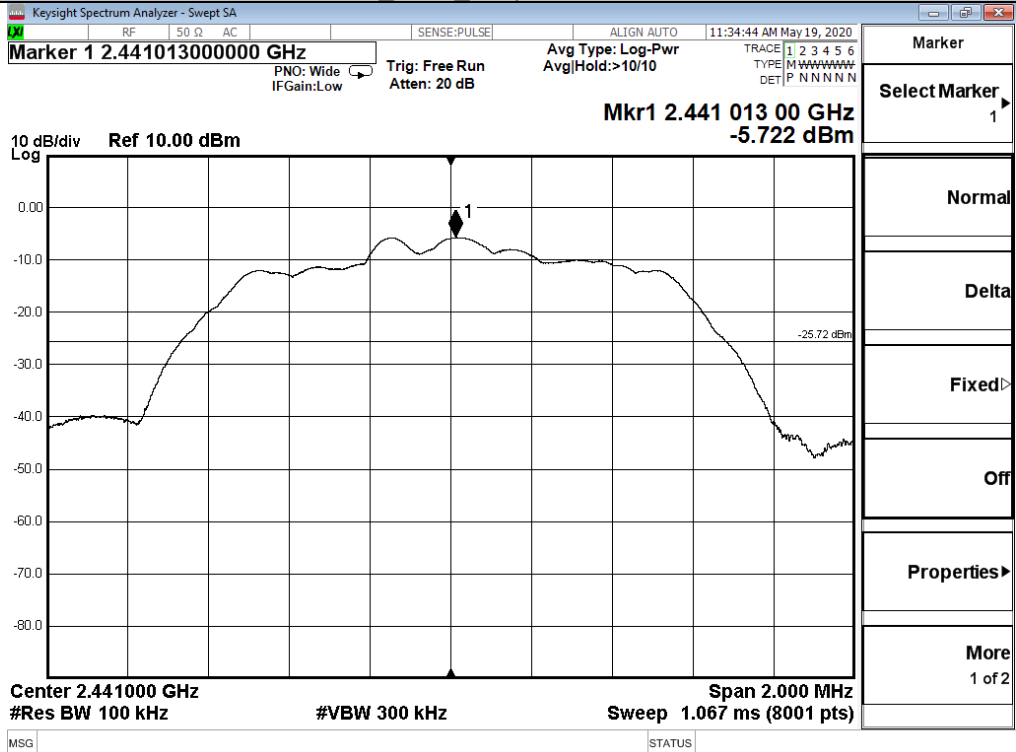


Puw

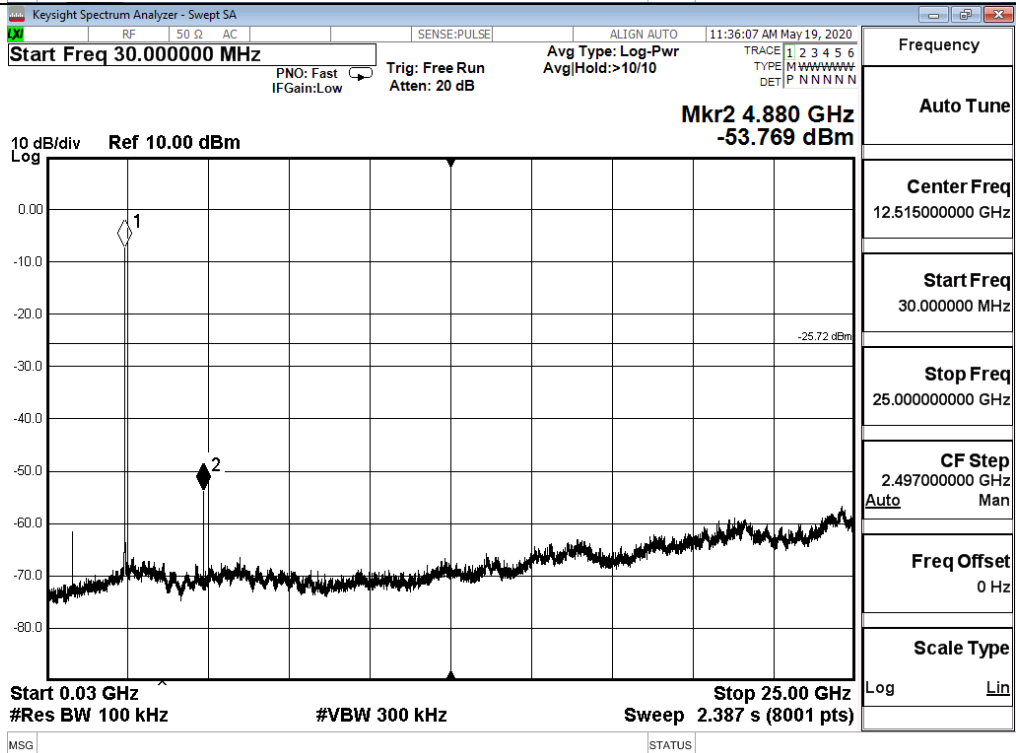


$\pi/4$ DQPSK_MCH_Graphs

Pref

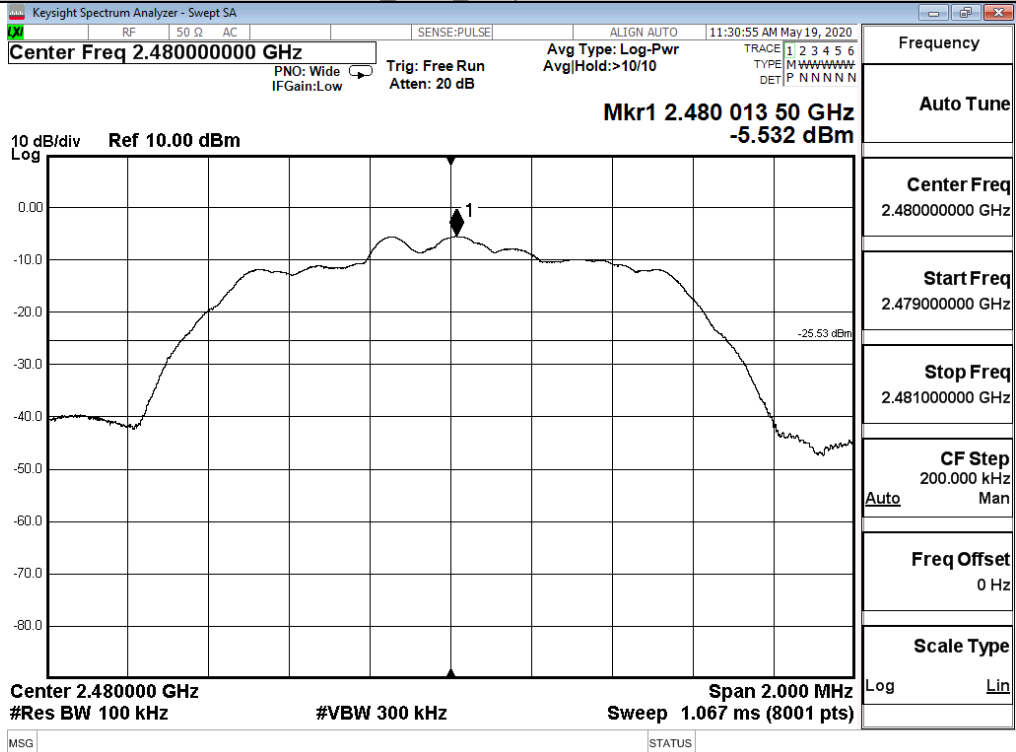


Puw

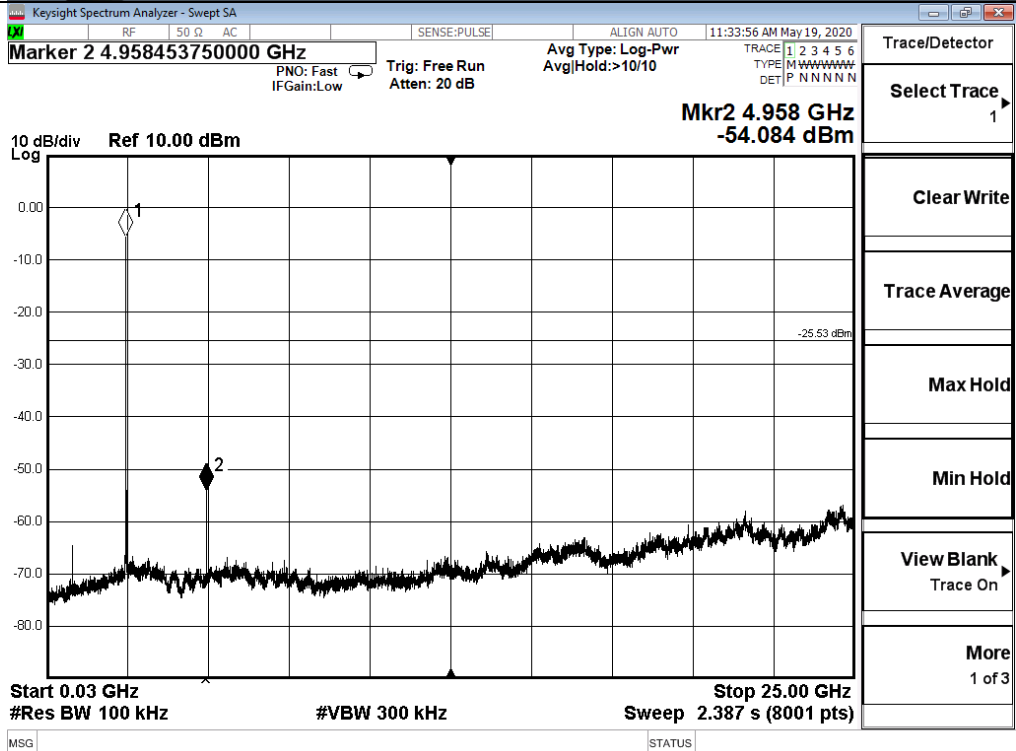


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

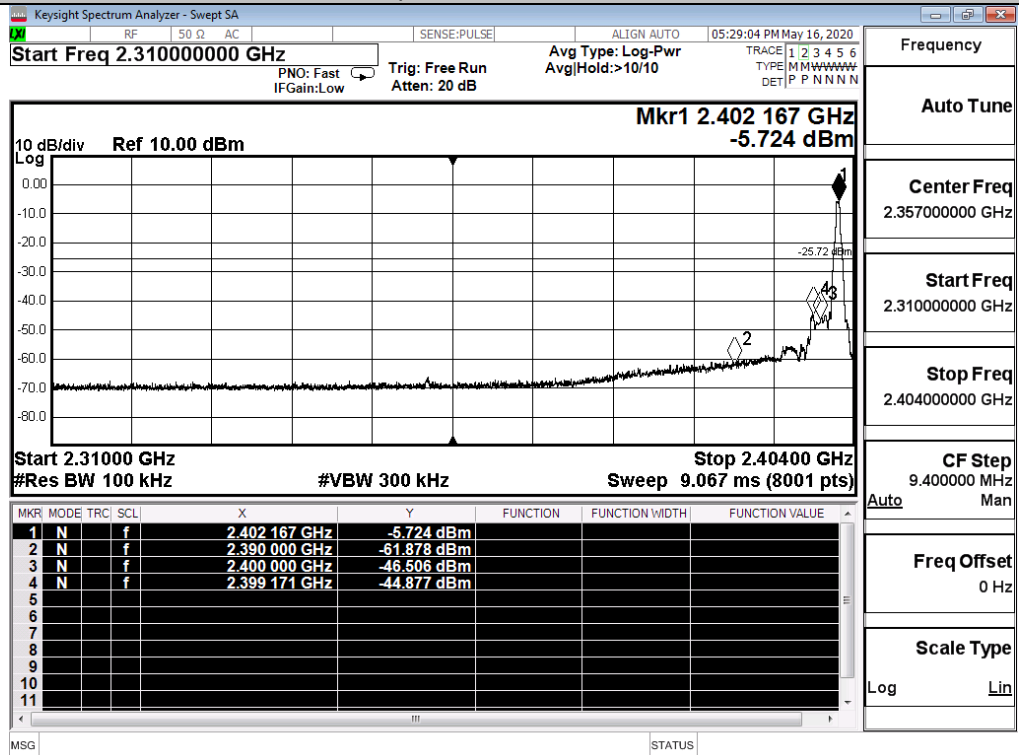


A.7 Band-edge for RF Conducted Emissions

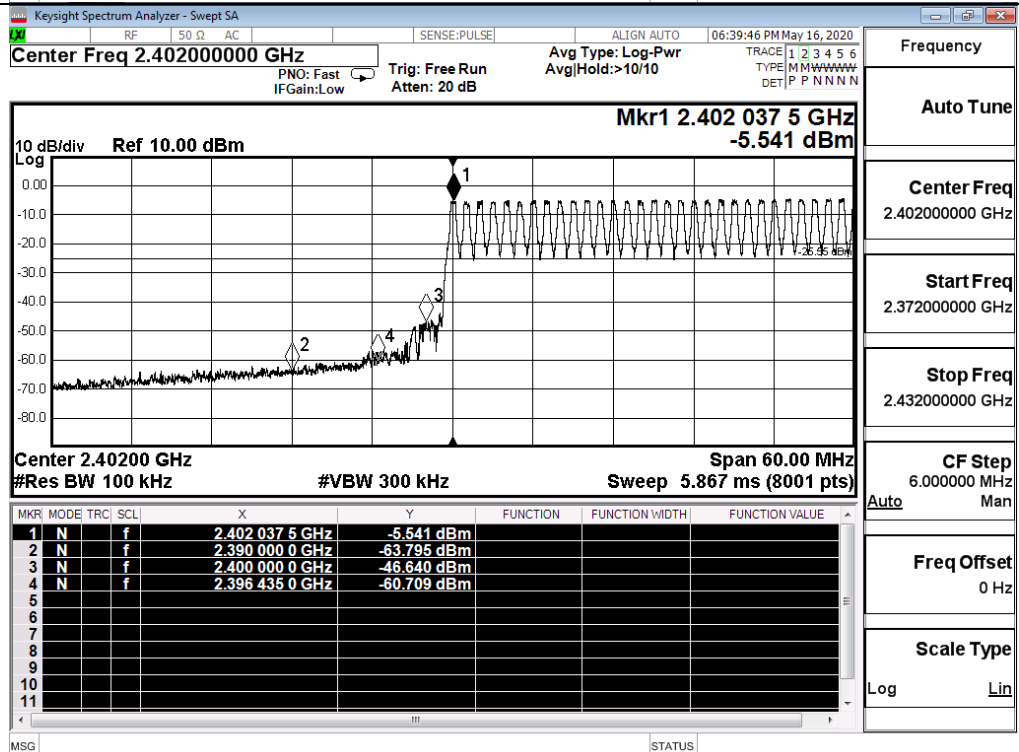
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-5.724	Off	-44.877	-25.72	PASS
			-5.541	On	-60.709	-25.54	PASS
	HCH	2480	-4.746	Off	-42.839	-24.75	PASS
			-4.878	On	-43.181	-24.88	PASS
$\pi/4$ DQPSK	LCH	2402	-5.902	Off	-45.388	-25.93	PASS
			-5.580	On	-58.003	-25.58	PASS
	HCH	2480	-4.736	Off	-43.032	-24.75	PASS
			-4.485	On	-43.156	-24.49	PASS

Test Graphs

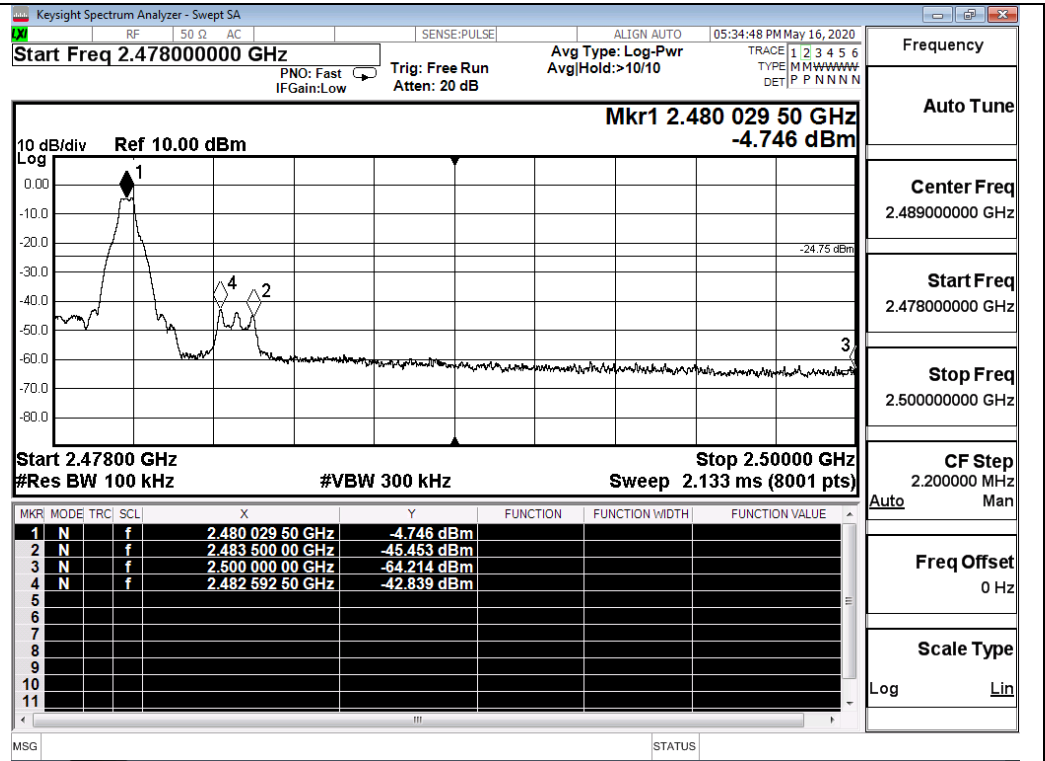
GFSK/LCH/No Hop



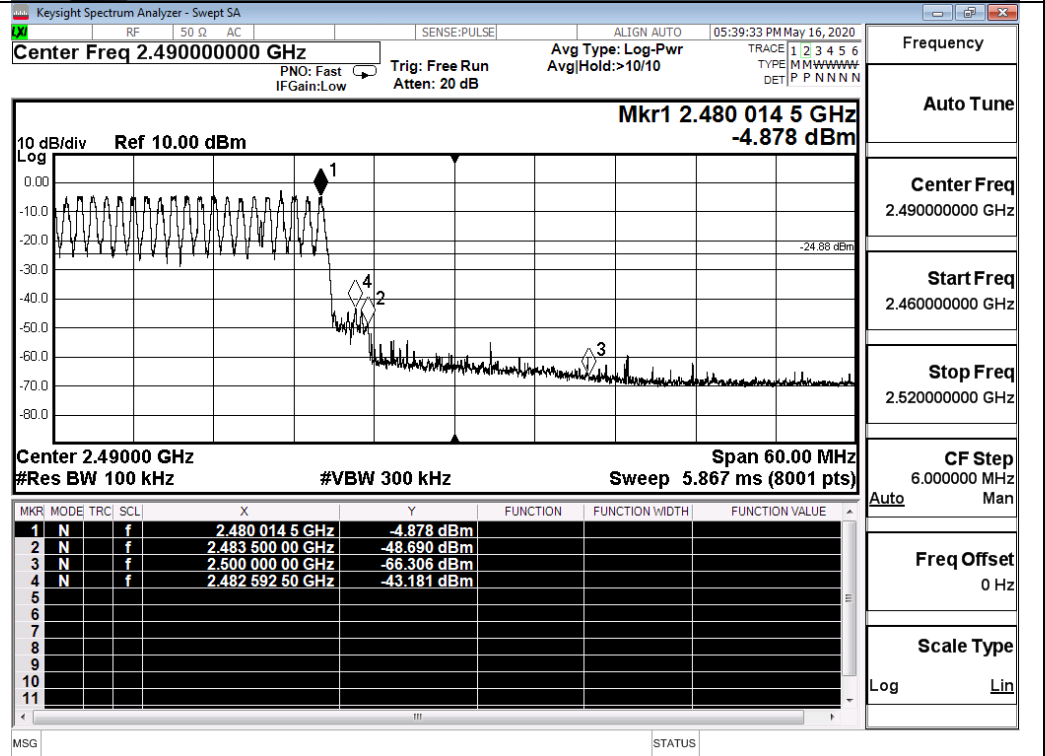
GFSK/LCH/Hop



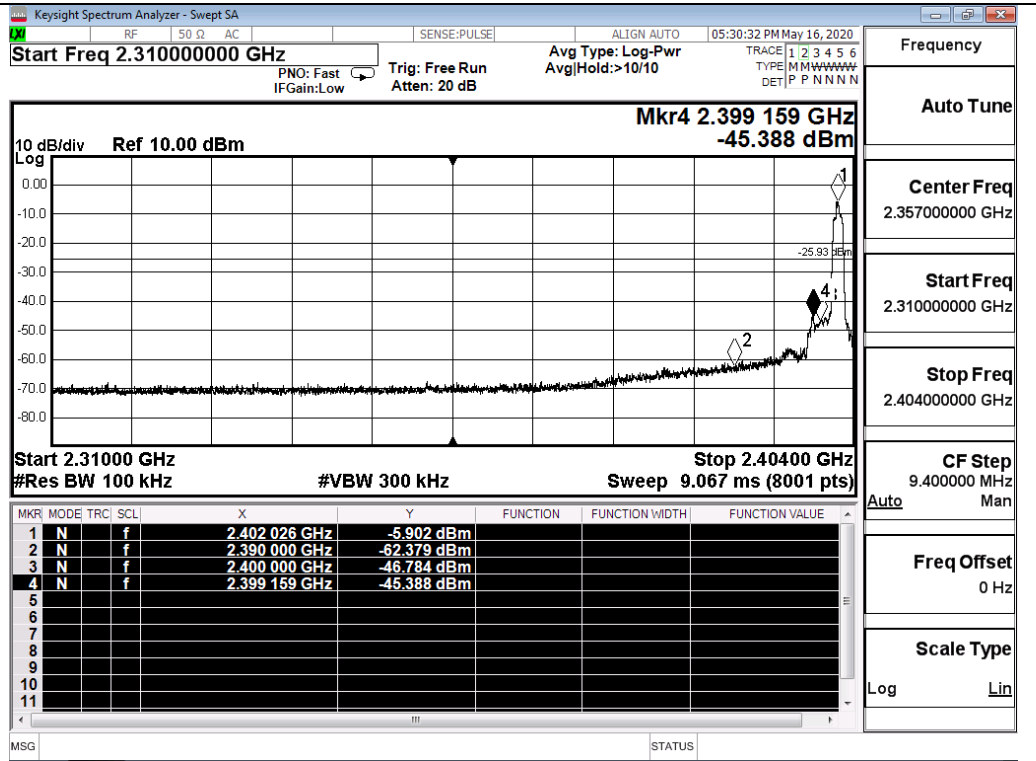
GFSK/HCH/No Hop



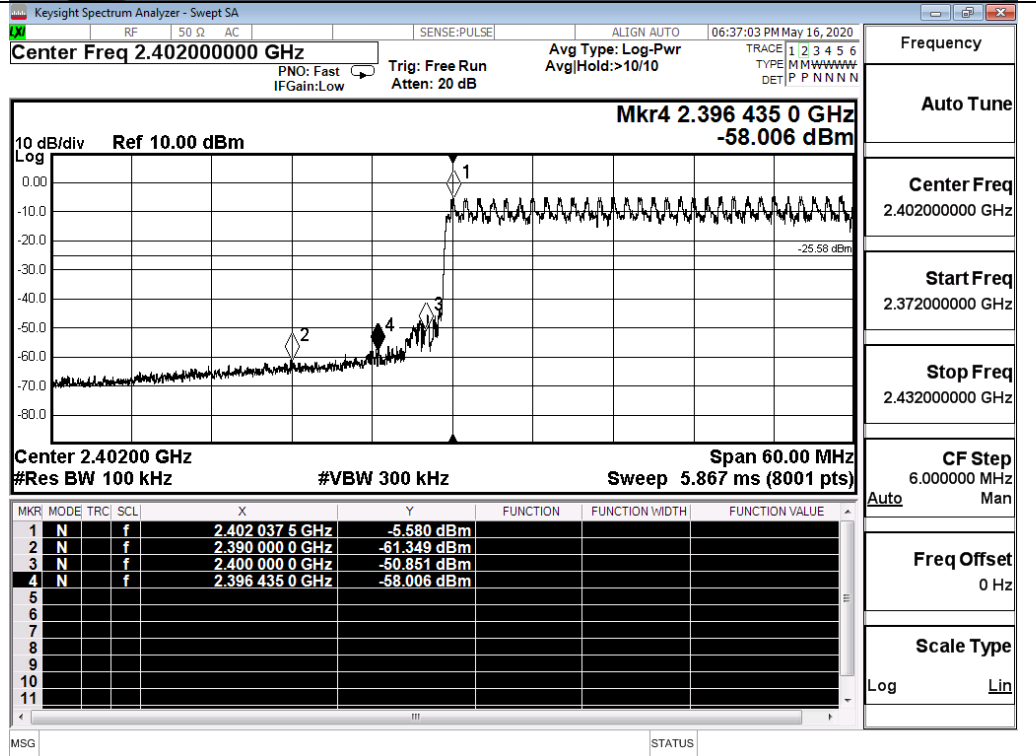
GFSK/HCH/Hop



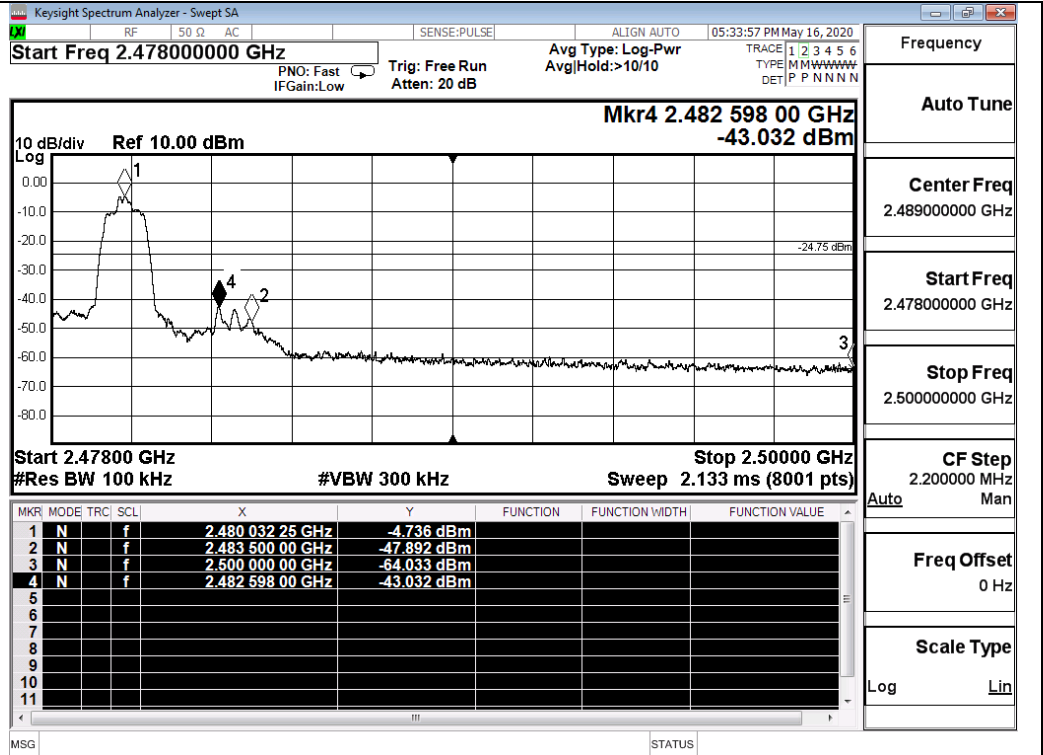
$\pi/4$ DQPSK/LCH/No
Hop



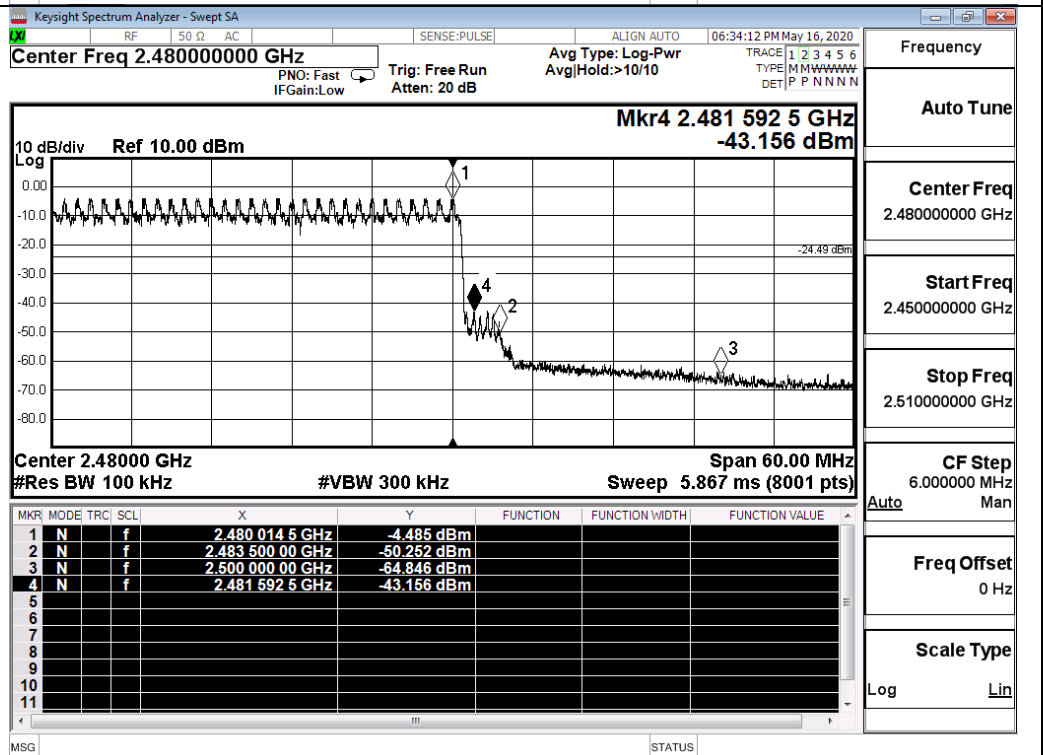
$\pi/4$ DQPSK/LCH/Hop



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



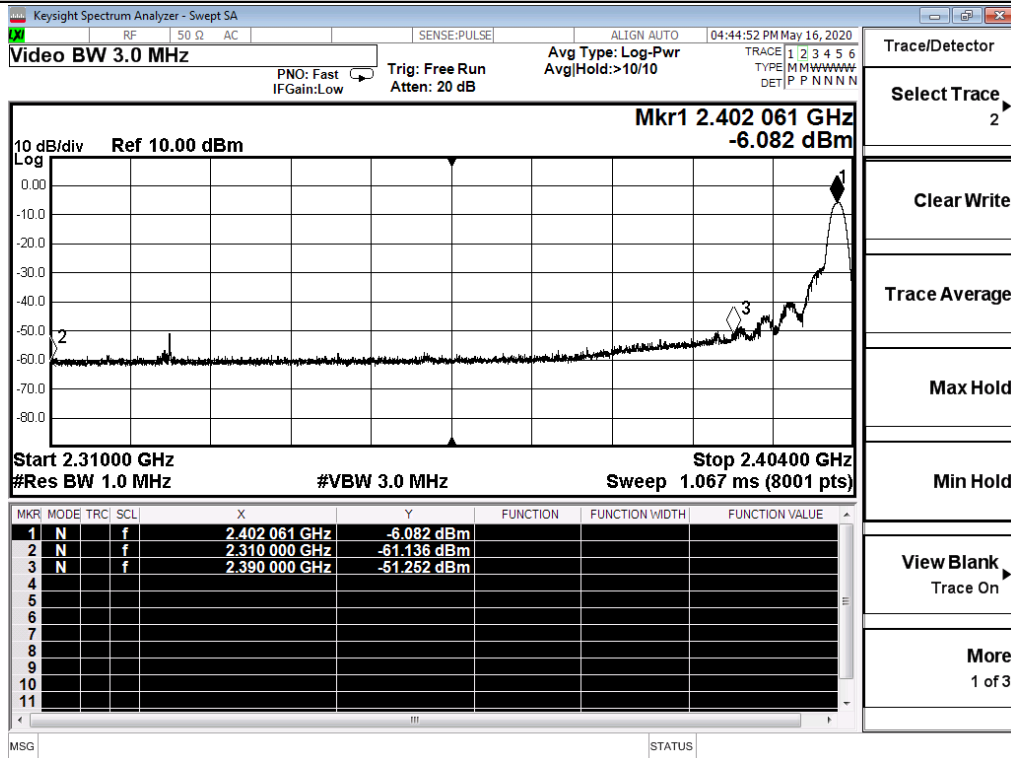
$\pi/4$ DQPSK/HCH/Hop



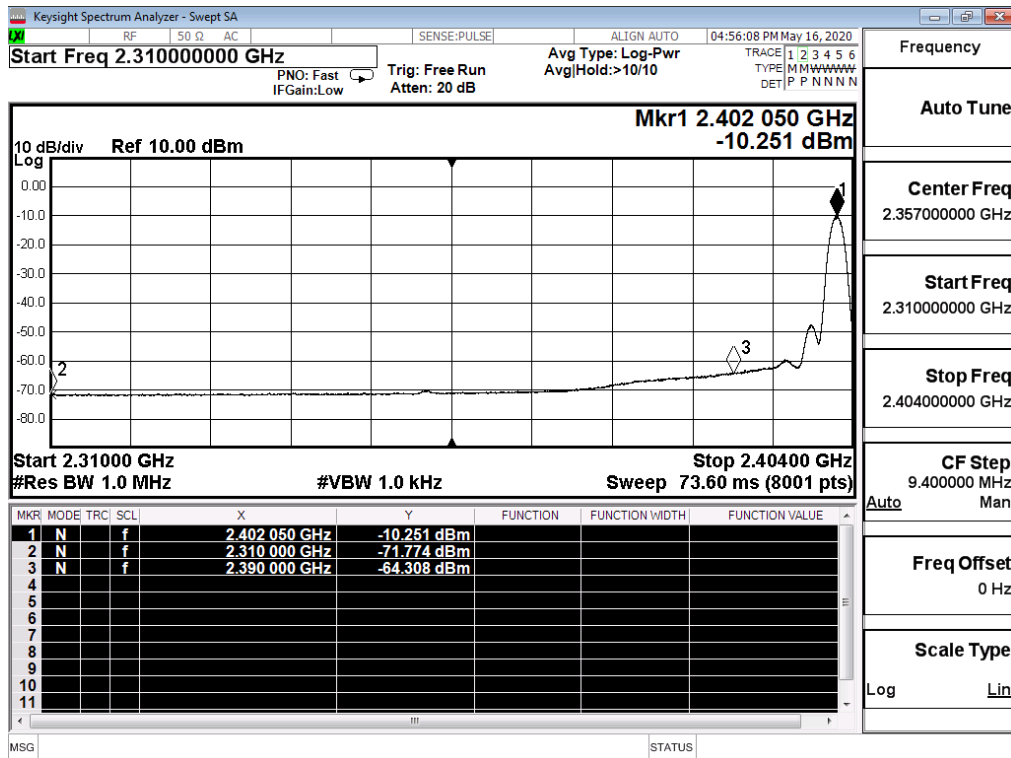
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-61.136	2	0	36.12	PEAK	74	PASS
	Off	2310.0	-71.774	2	0	25.49	AV	54	PASS
	Off	2390.0	-51.252	2	0	46.01	PEAK	74	PASS
	Off	2390.0	-64.308	2	0	32.95	AV	54	PASS
	Off	2483.5	-40.000	2	0	57.26	PEAK	74	PASS
	Off	2483.5	-50.504	2	0	46.76	AV	54	PASS
	Off	2500.0	-55.174	2	0	42.09	PEAK	74	PASS
	Off	2500.0	-66.089	2	0	31.17	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-61.264	2	0	36.00	PEAK	74	PASS
	Off	2310.0	-71.854	2	0	25.41	AV	54	PASS
	Off	2390.0	-51.948	2	0	45.31	PEAK	74	PASS
	Off	2390.0	-64.324	2	0	32.94	AV	54	PASS
	Off	2483.5	-41.566	2	0	55.69	PEAK	74	PASS
	Off	2483.5	-52.342	2	0	44.92	AV	54	PASS
	Off	2500.0	-54.334	2	0	42.93	PEAK	74	PASS
	Off	2500.0	-66.174	2	0	31.09	AV	54	PASS

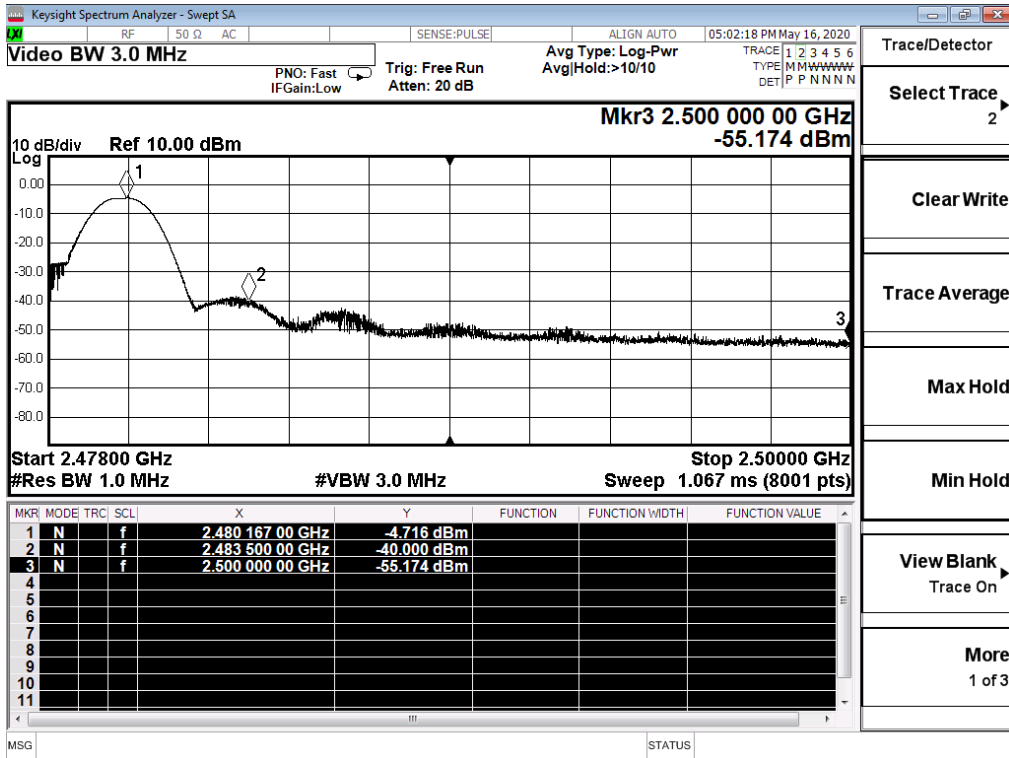
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



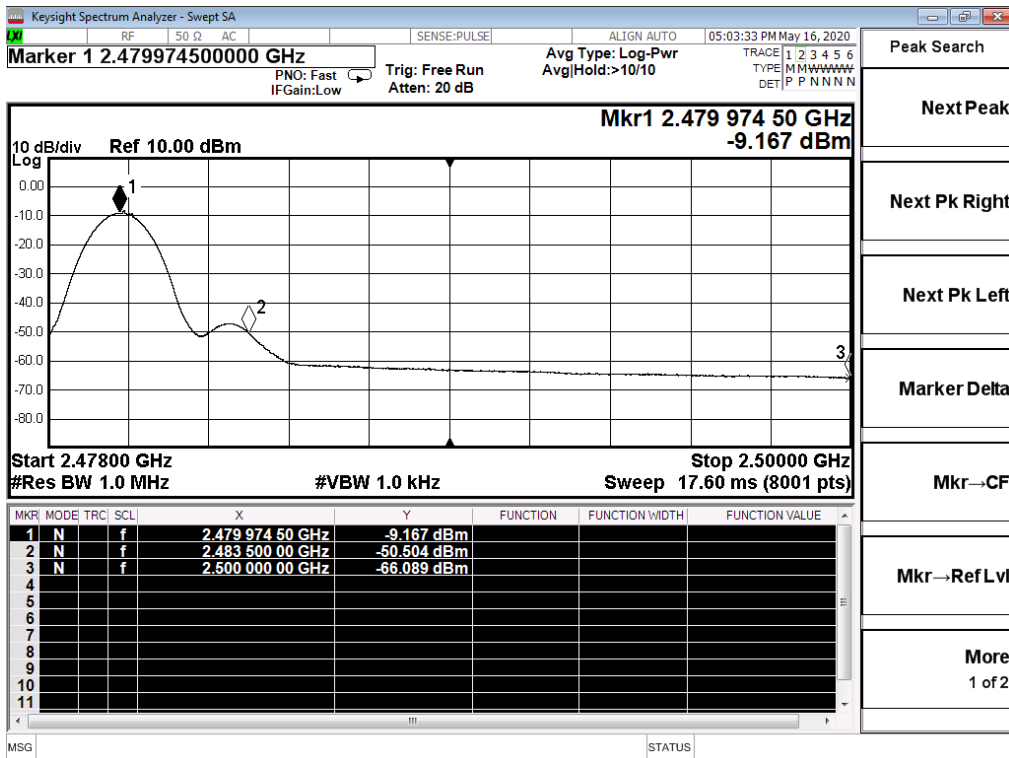
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



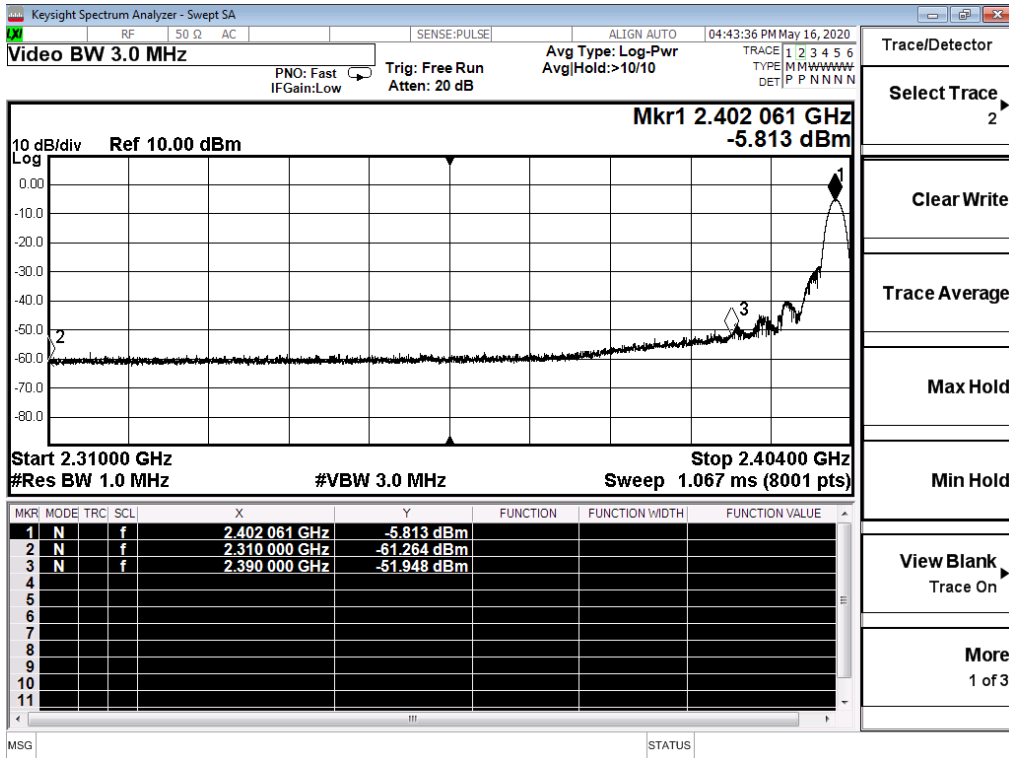
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



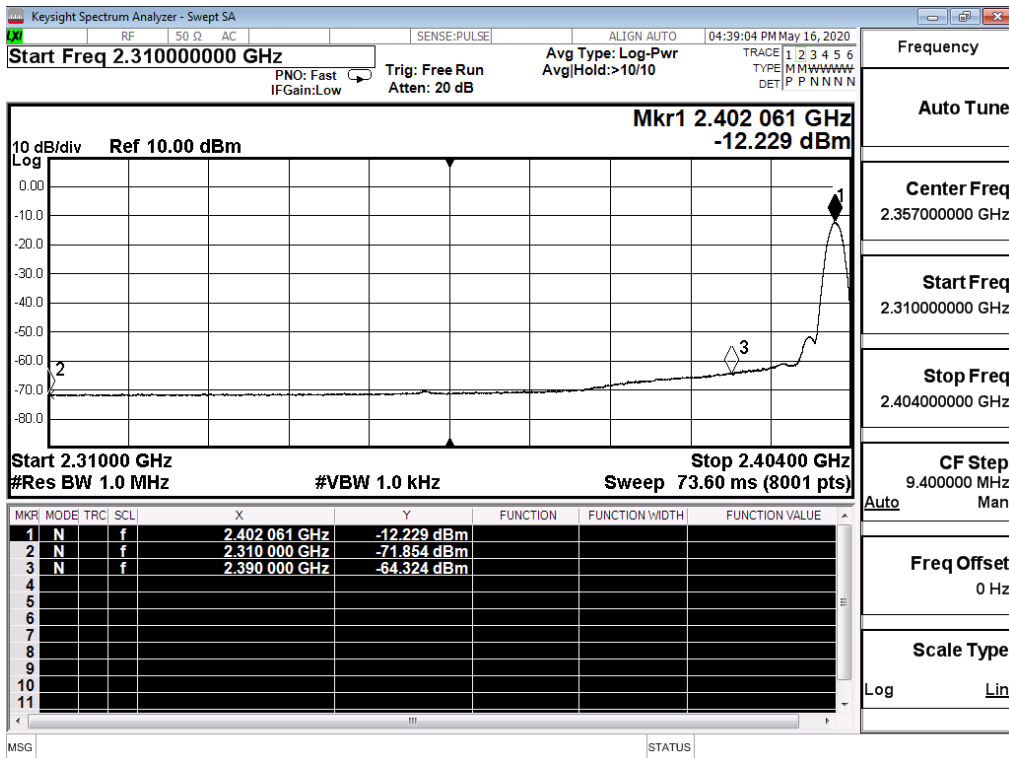
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



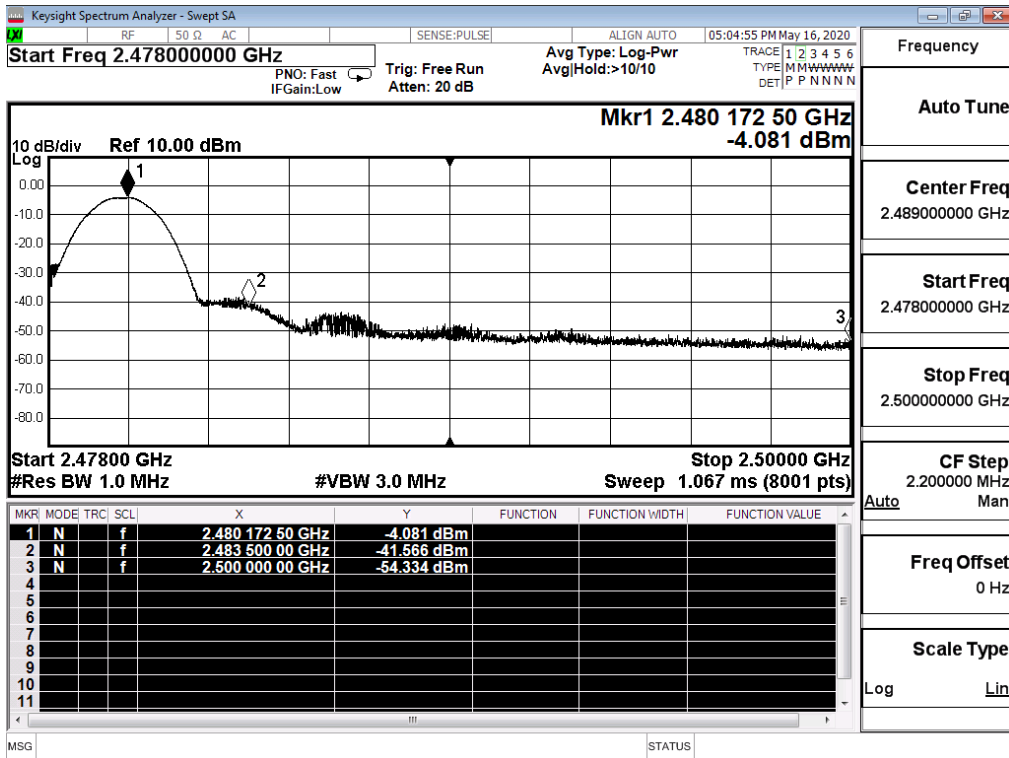
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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)

