

Appendix A

RF Test Data for BT V4.1 (BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth Earphone

Trade Mark: Lectronic

Test Model: S901

Environmental Conditions

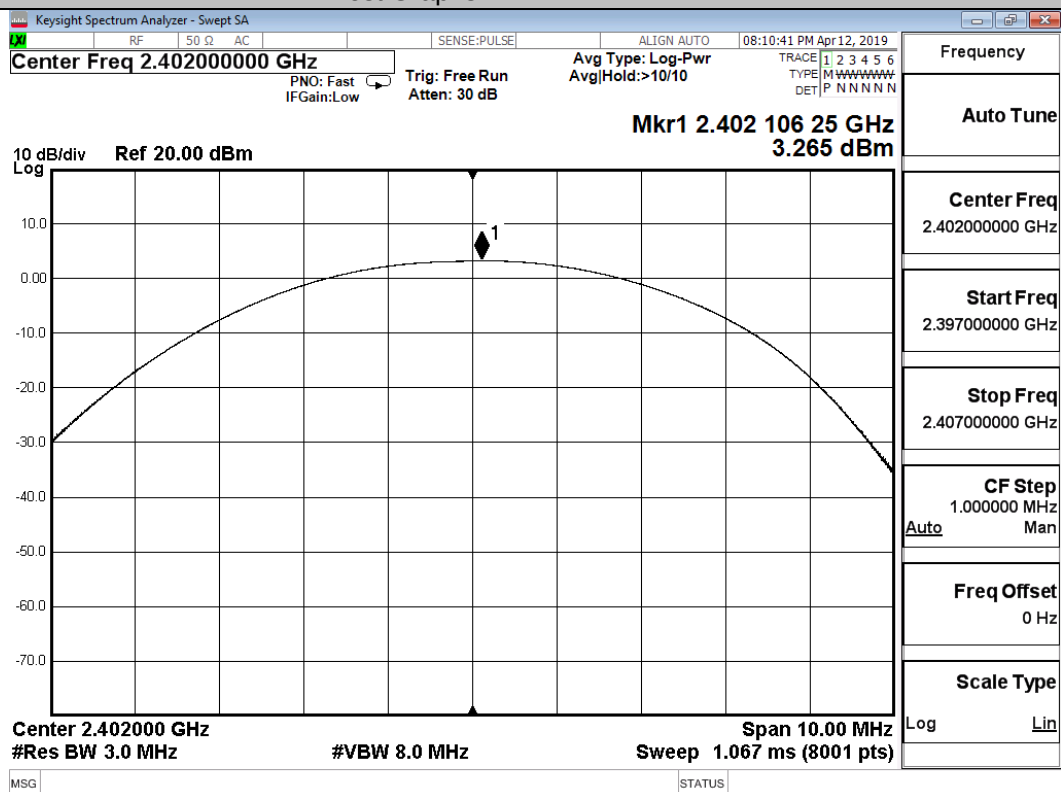
Temperature:	23.5 ° C
Relative Humidity:	65%
ATM Pressure:	100.0 kPa
Test Engineer:	CHUANG WANG
Supervised by:	JAYDEN ZHUO

A.1 Maximum Conducted Peak Output Power

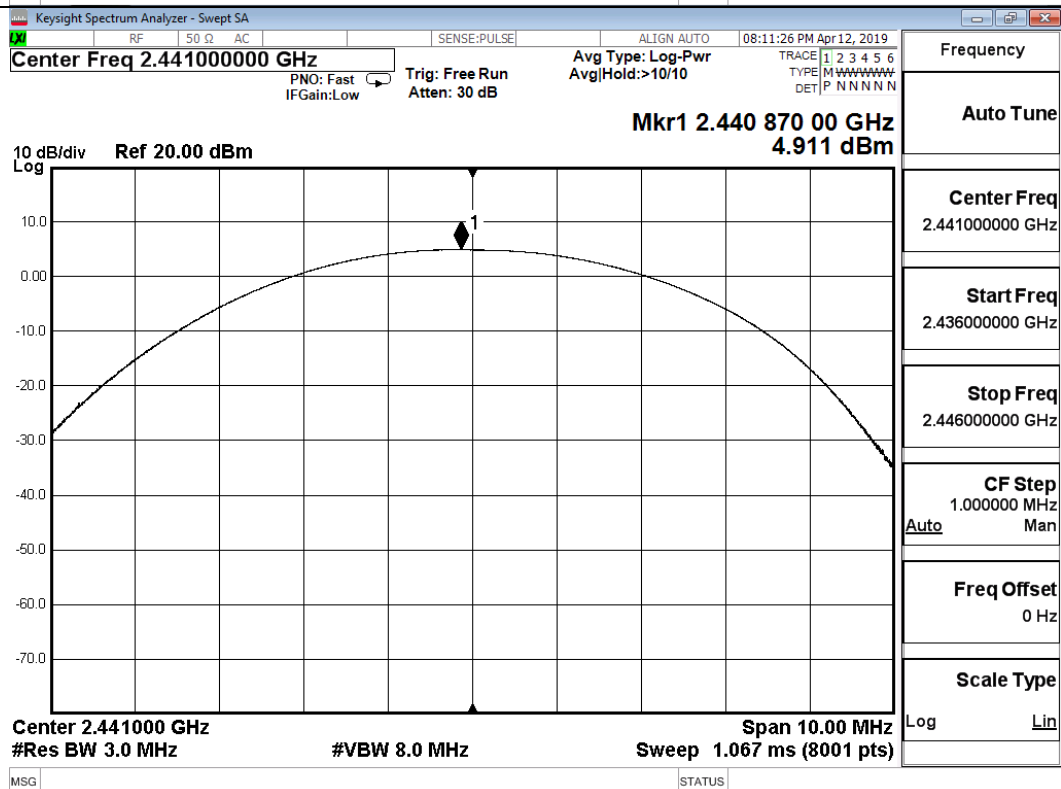
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.265	21	PASS
	MCH	4.911	21	PASS
	HCH	5.025	21	PASS
$\pi/4$ DQPSK	LCH	1.824	21	PASS
	MCH	3.837	21	PASS
	HCH	3.984	21	PASS
8DPSK	LCH	2.065	21	PASS
	MCH	4.036	21	PASS
	HCH	4.120	21	PASS

Test Graphs

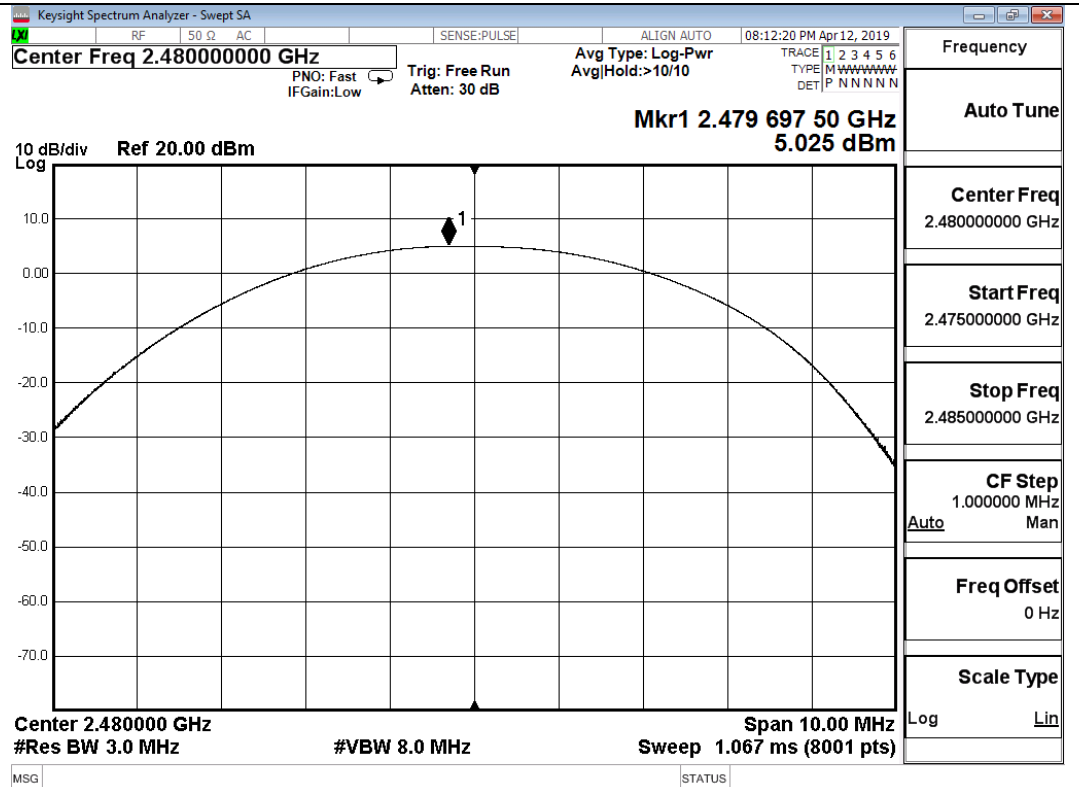
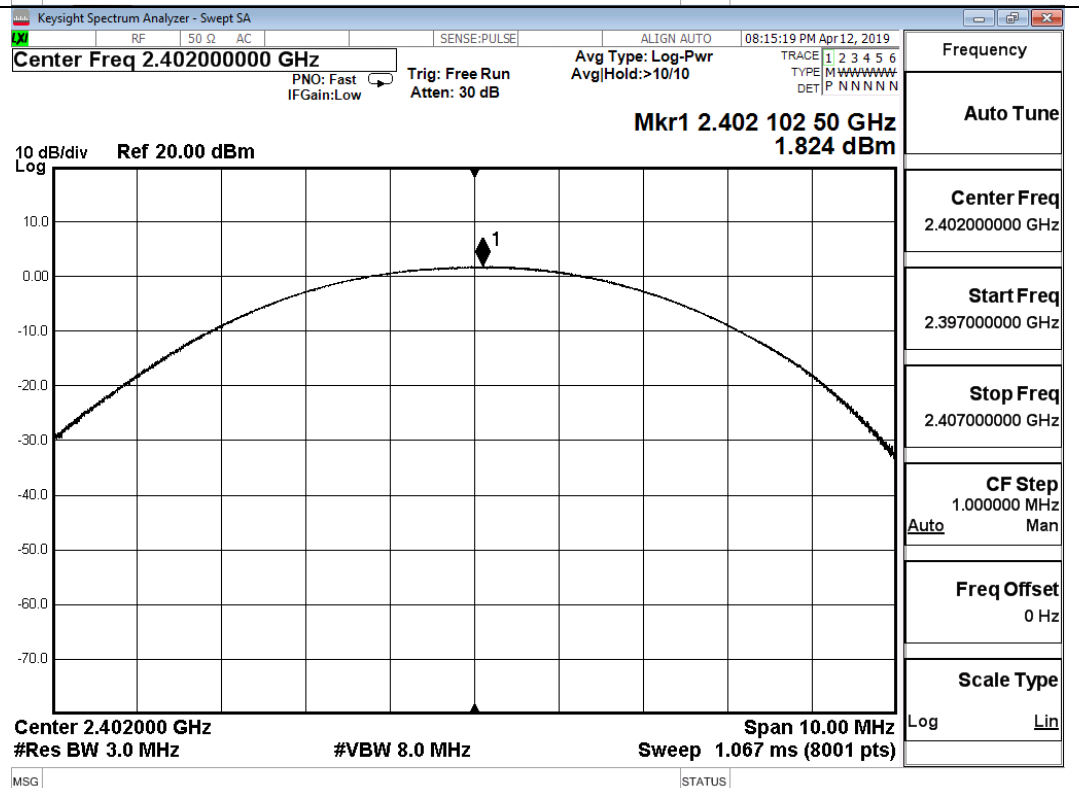
GFSK/LCH

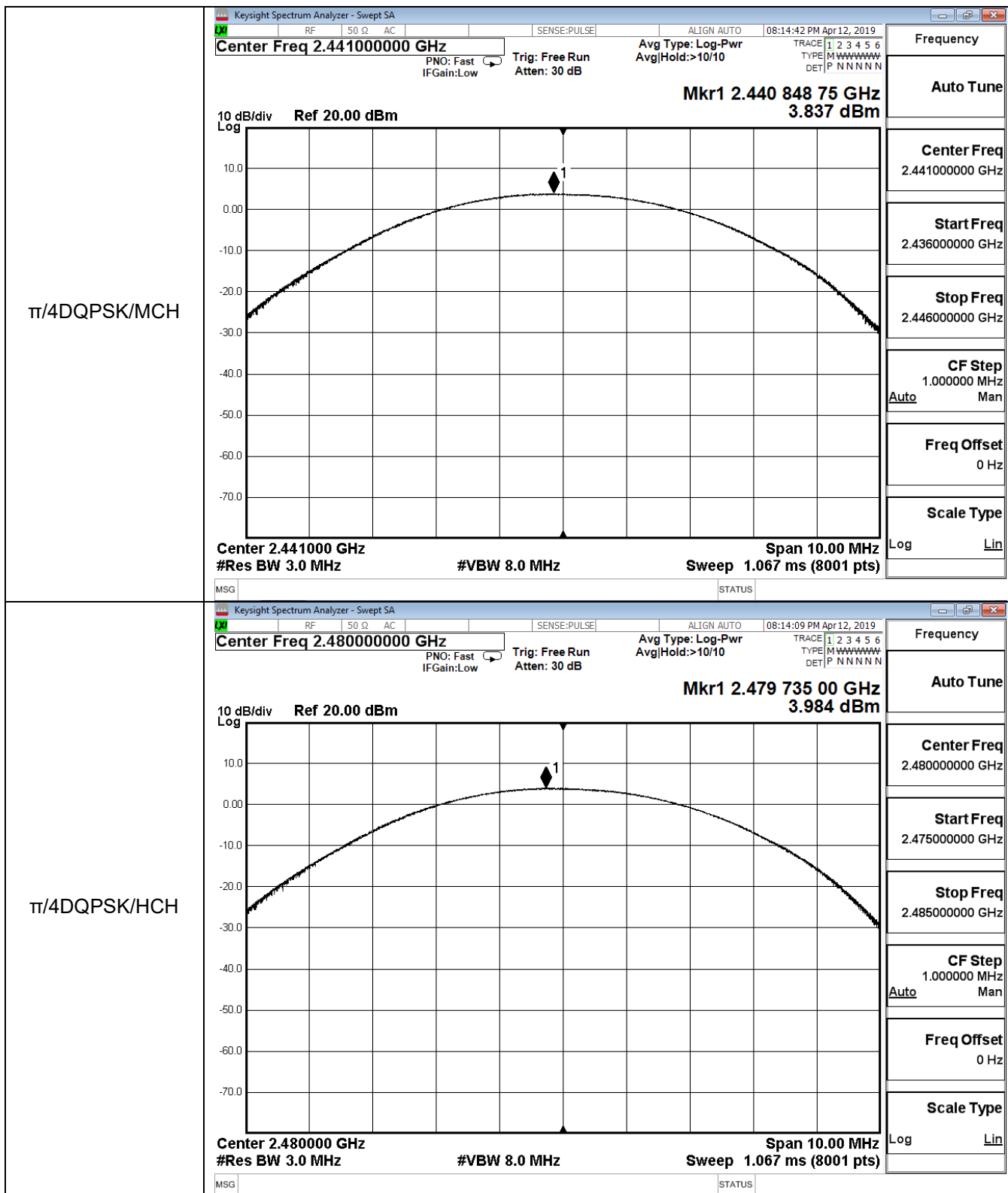


GFSK/MCH

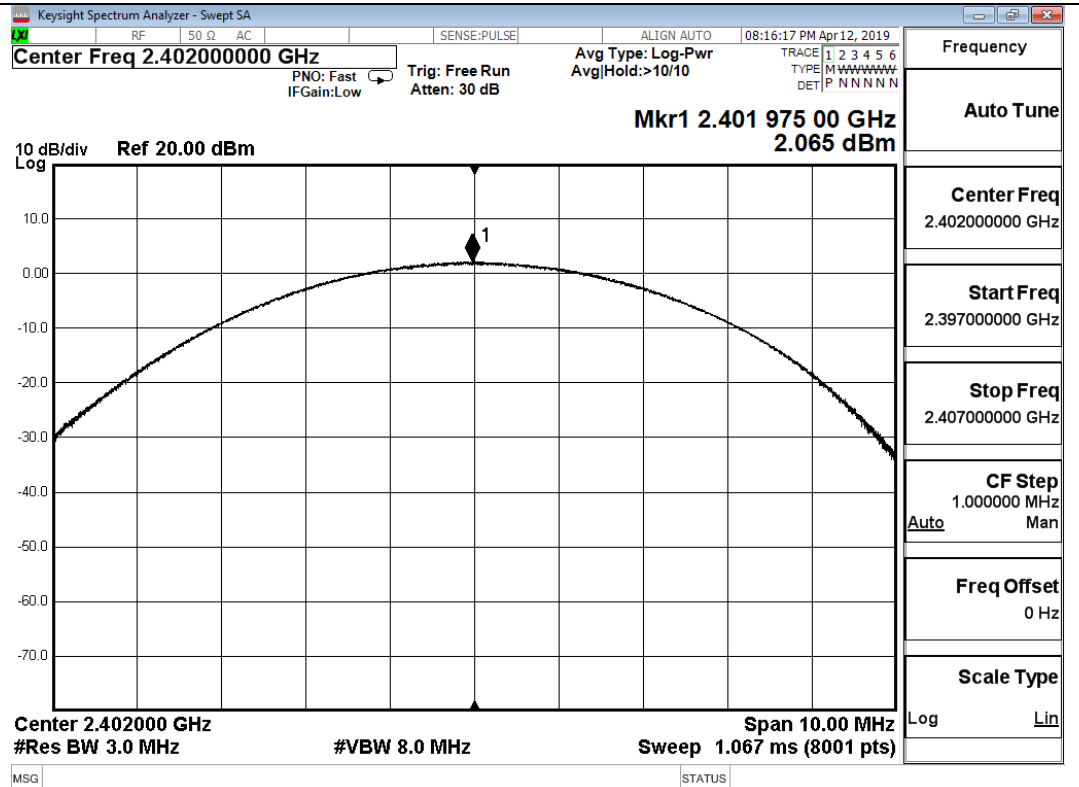


GFSK/HCH

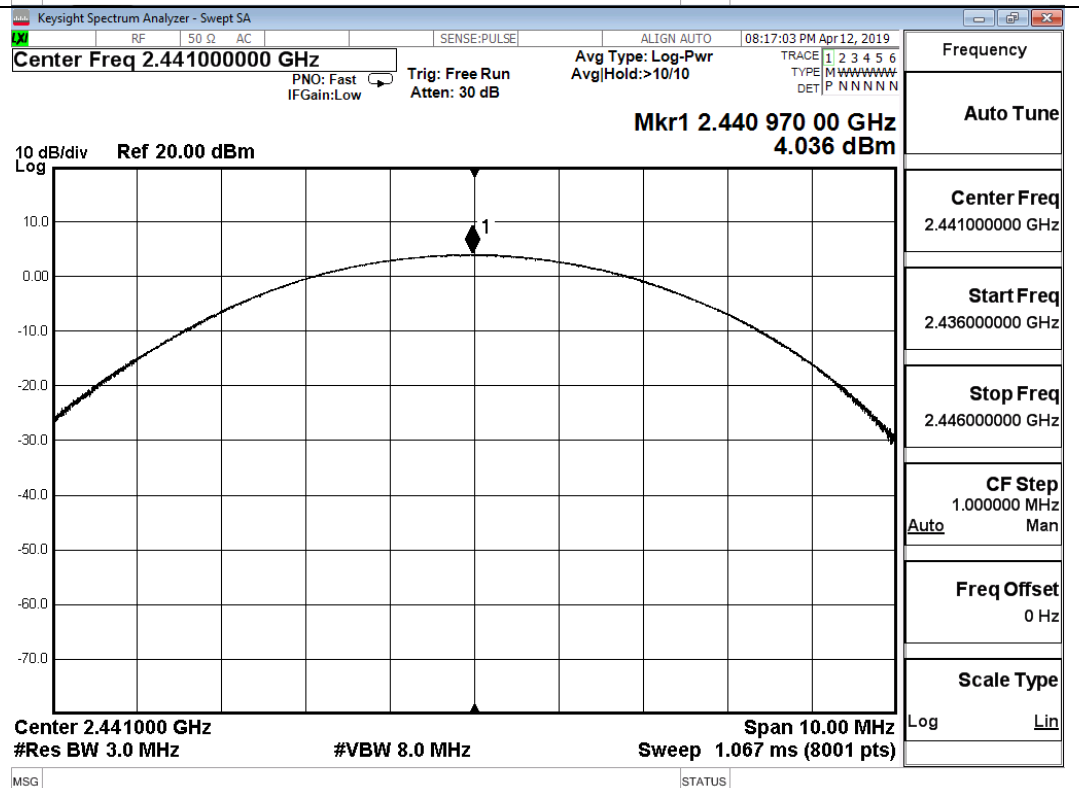
 π /4DQPSK/LCH



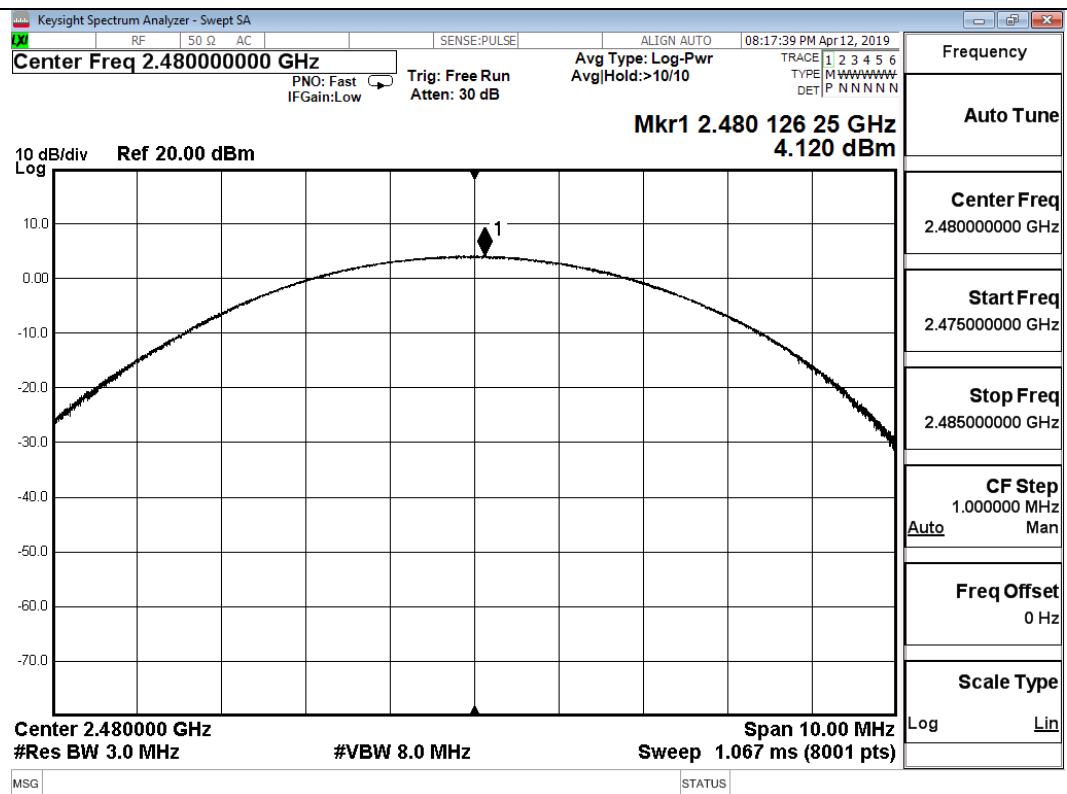
8DPSK/LCH



8DPSK/MCH

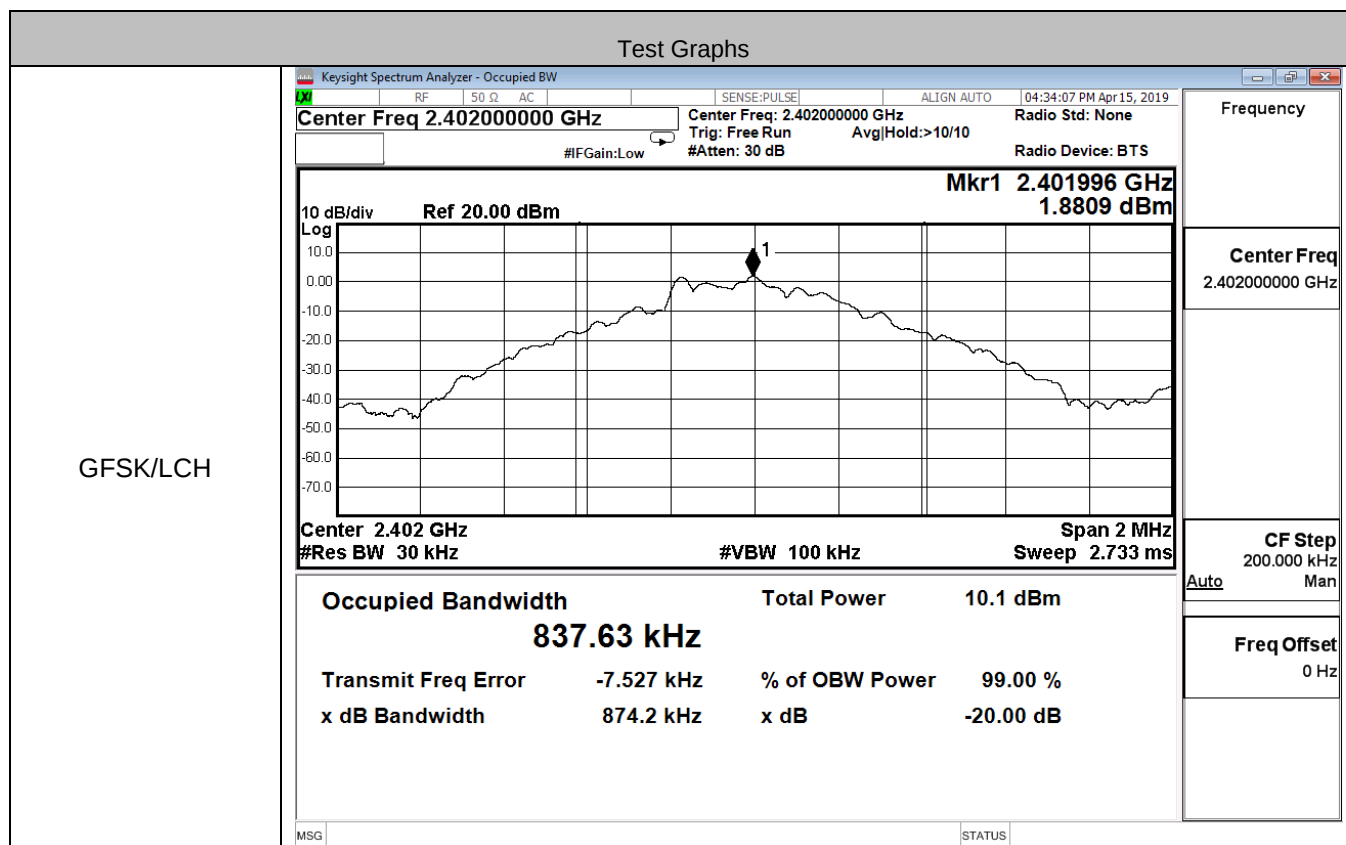


8DPSK/HCH

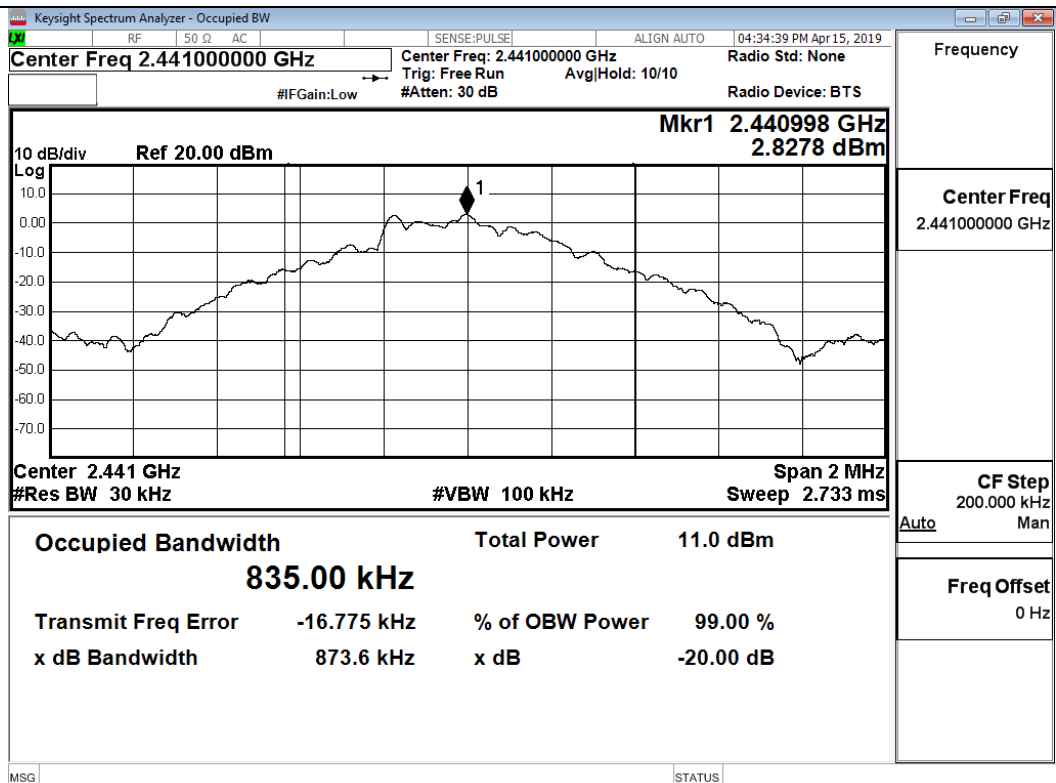


A.2 99% and 20dB Bandwidth

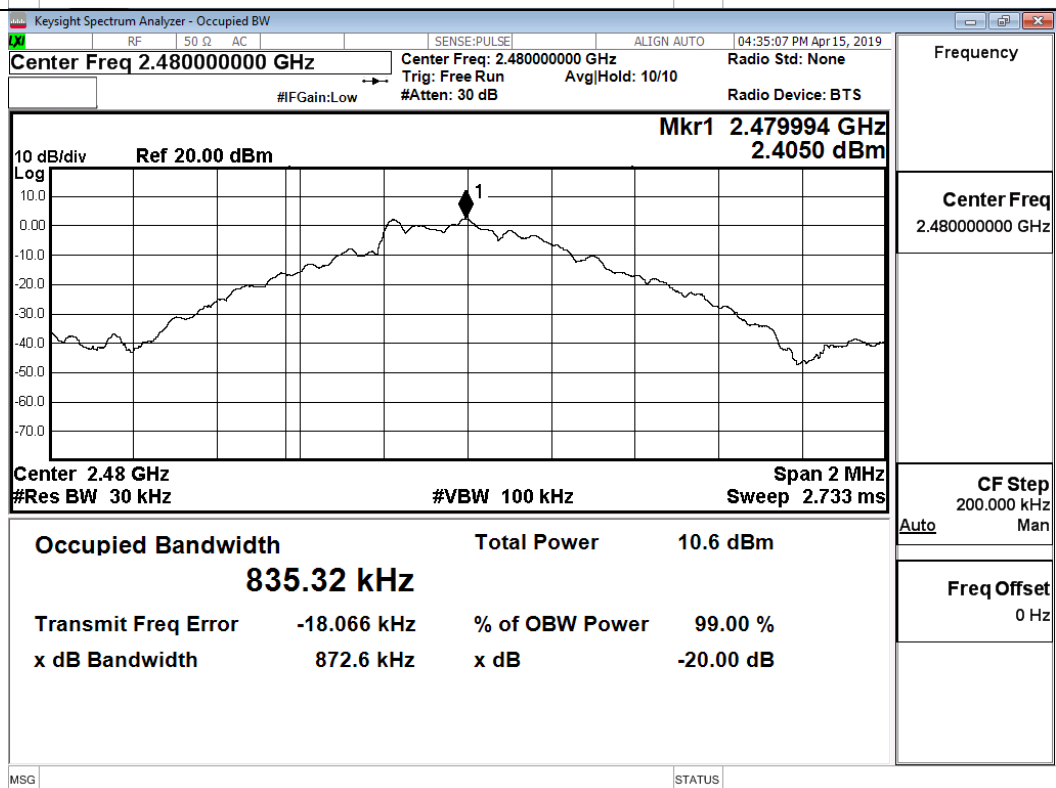
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83763	0.8742	Not Specified	PASS
	MCH	0.83500	0.8736	Not Specified	PASS
	HCH	0.83532	0.8726	Not Specified	PASS
π /4DQPSK	LCH	1.1647	1.216	Not Specified	PASS
	MCH	1.1689	1.221	Not Specified	PASS
	HCH	1.1692	1.221	Not Specified	PASS
8DPSK	LCH	1.1499	1.208	Not Specified	PASS
	MCH	1.1526	1.209	Not Specified	PASS
	HCH	1.1524	1.210	Not Specified	PASS

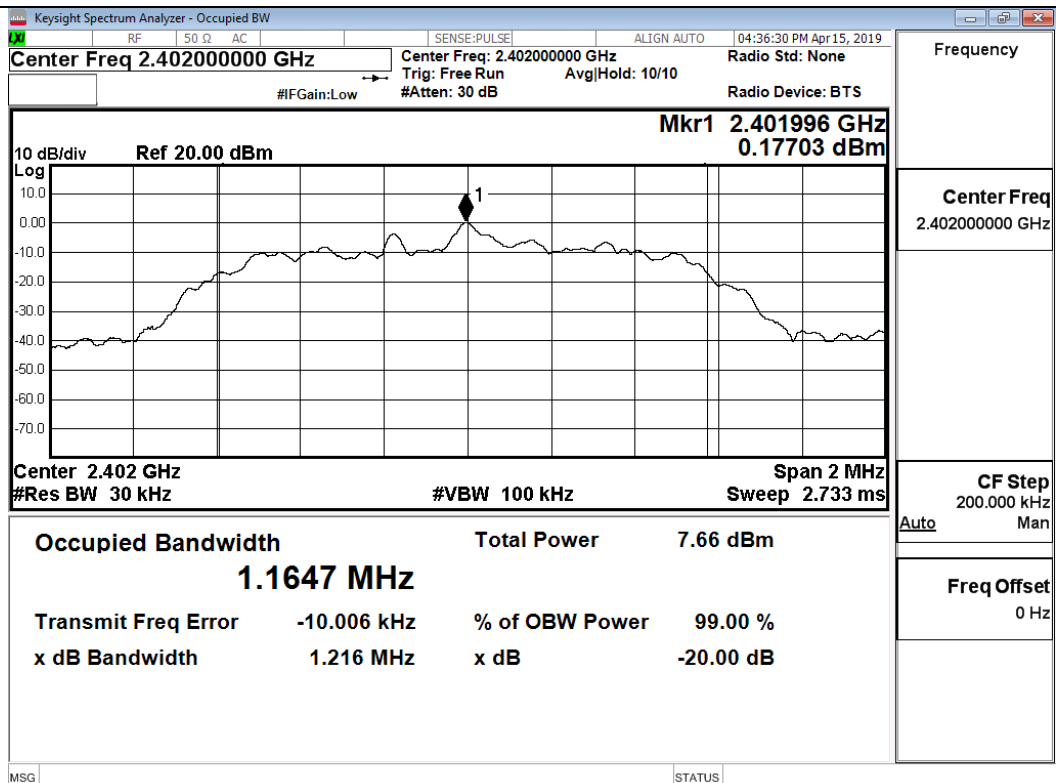
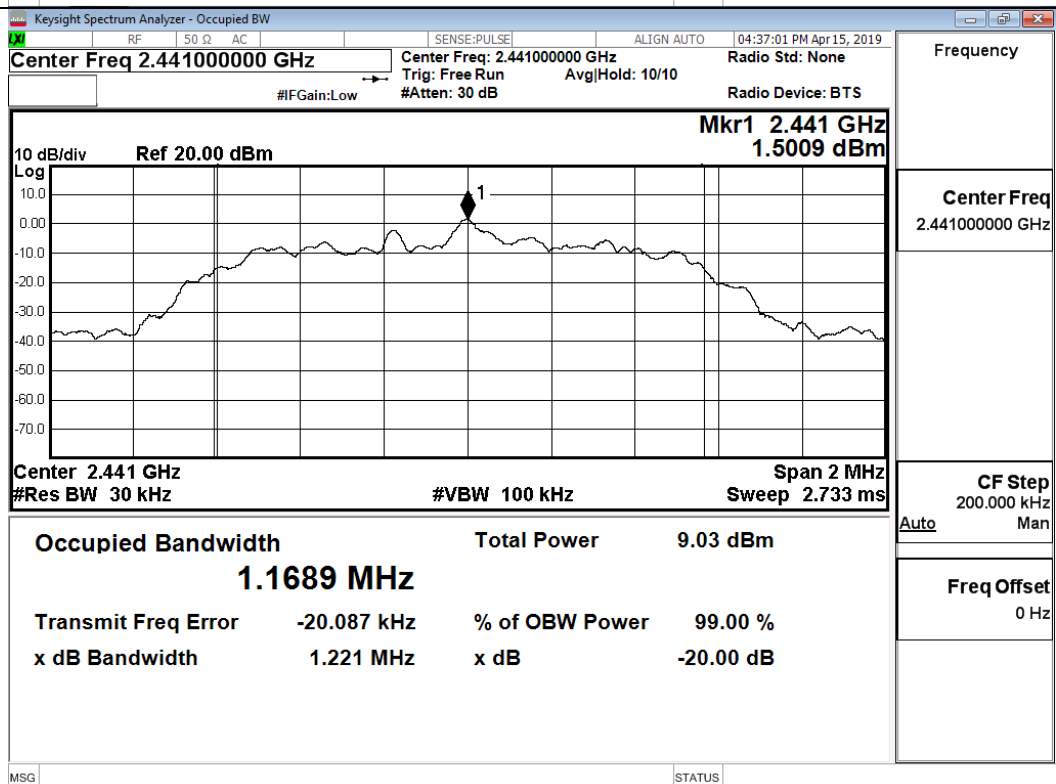


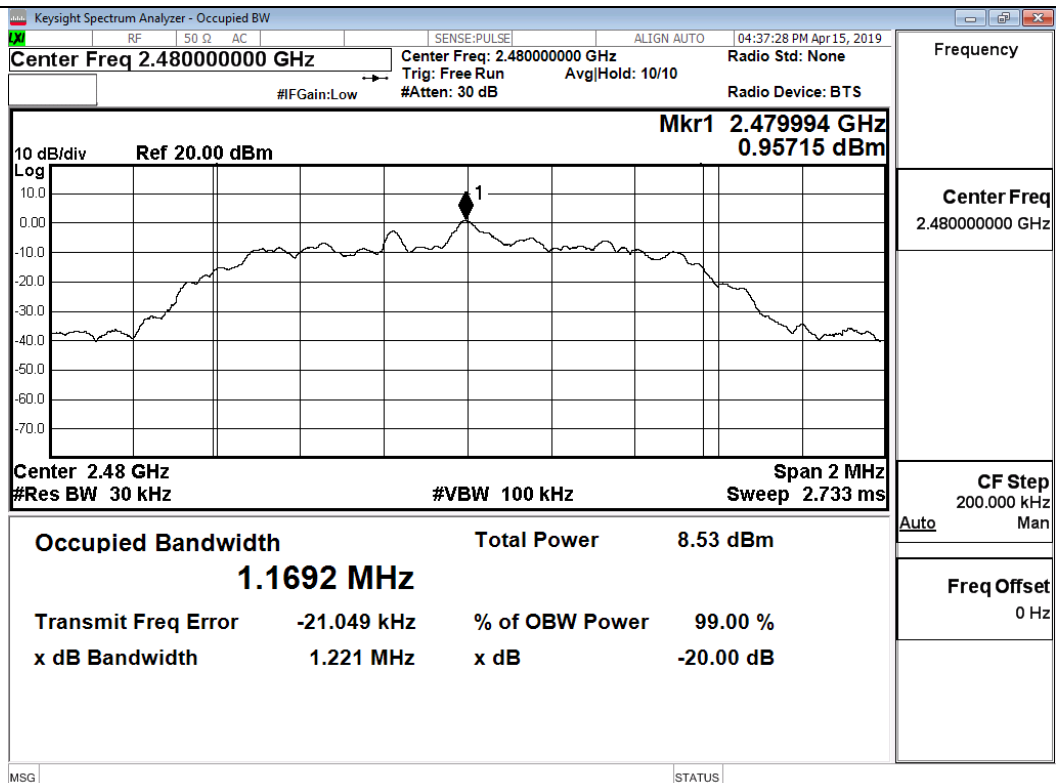
GFSK/MCH



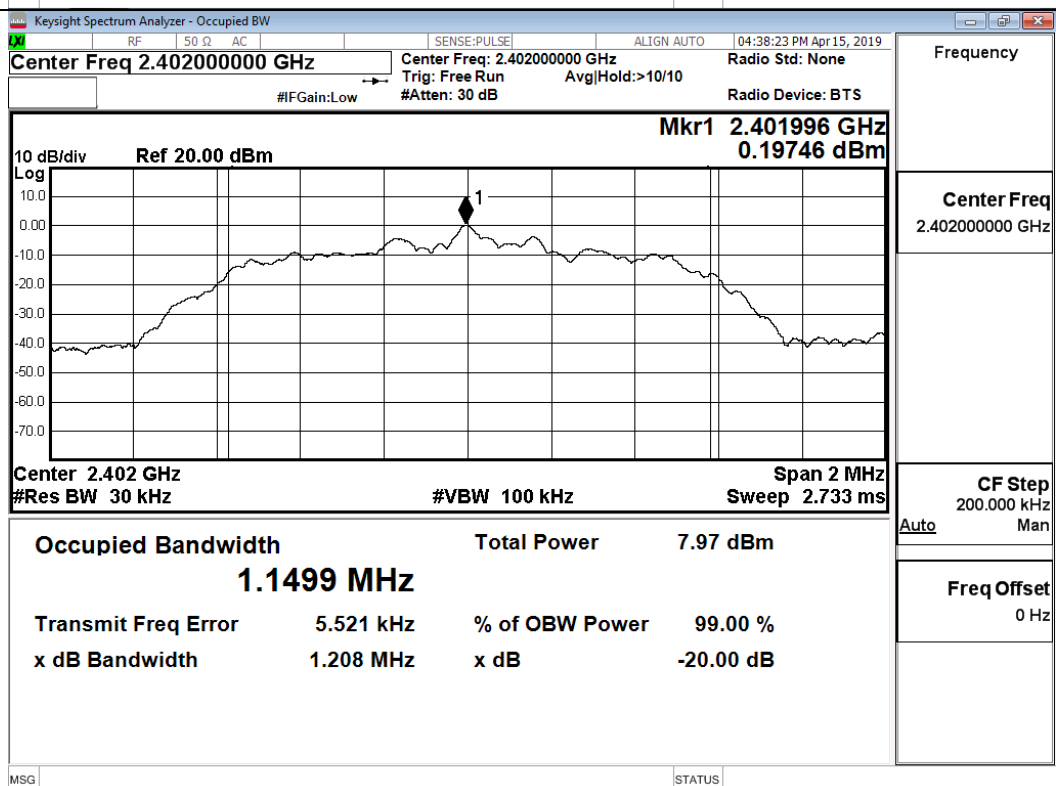
GFSK/HCH



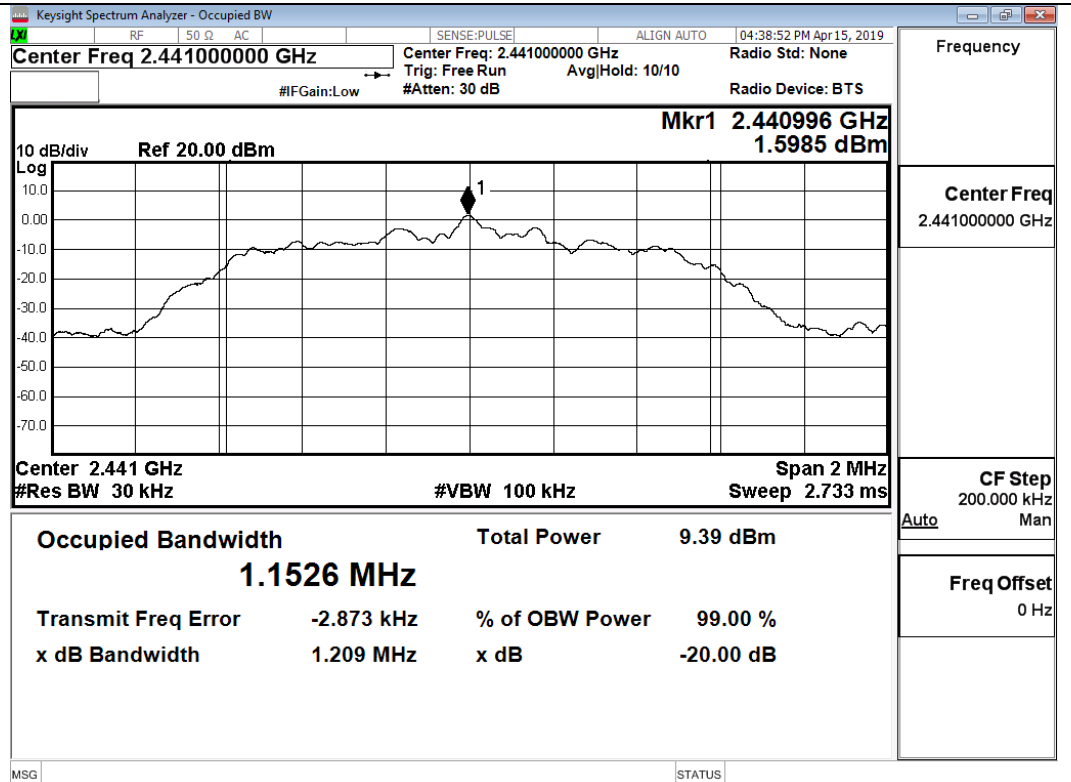
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

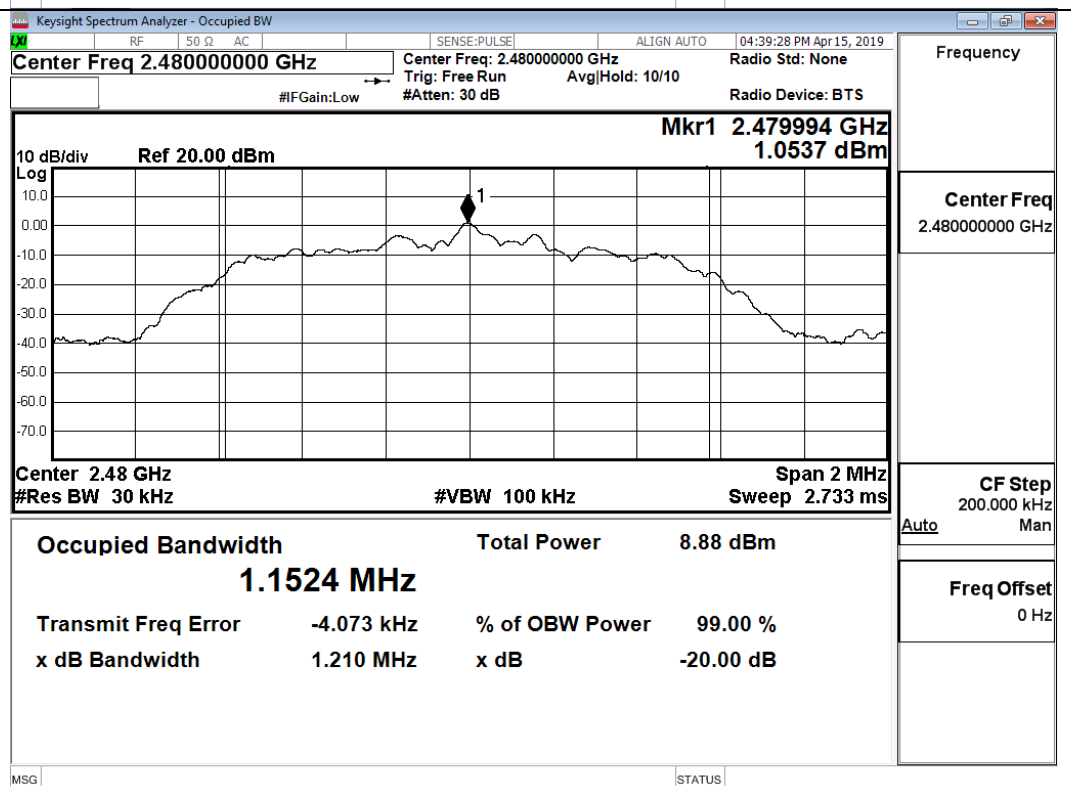
8DPSK/LCH



8DPSK/MCH



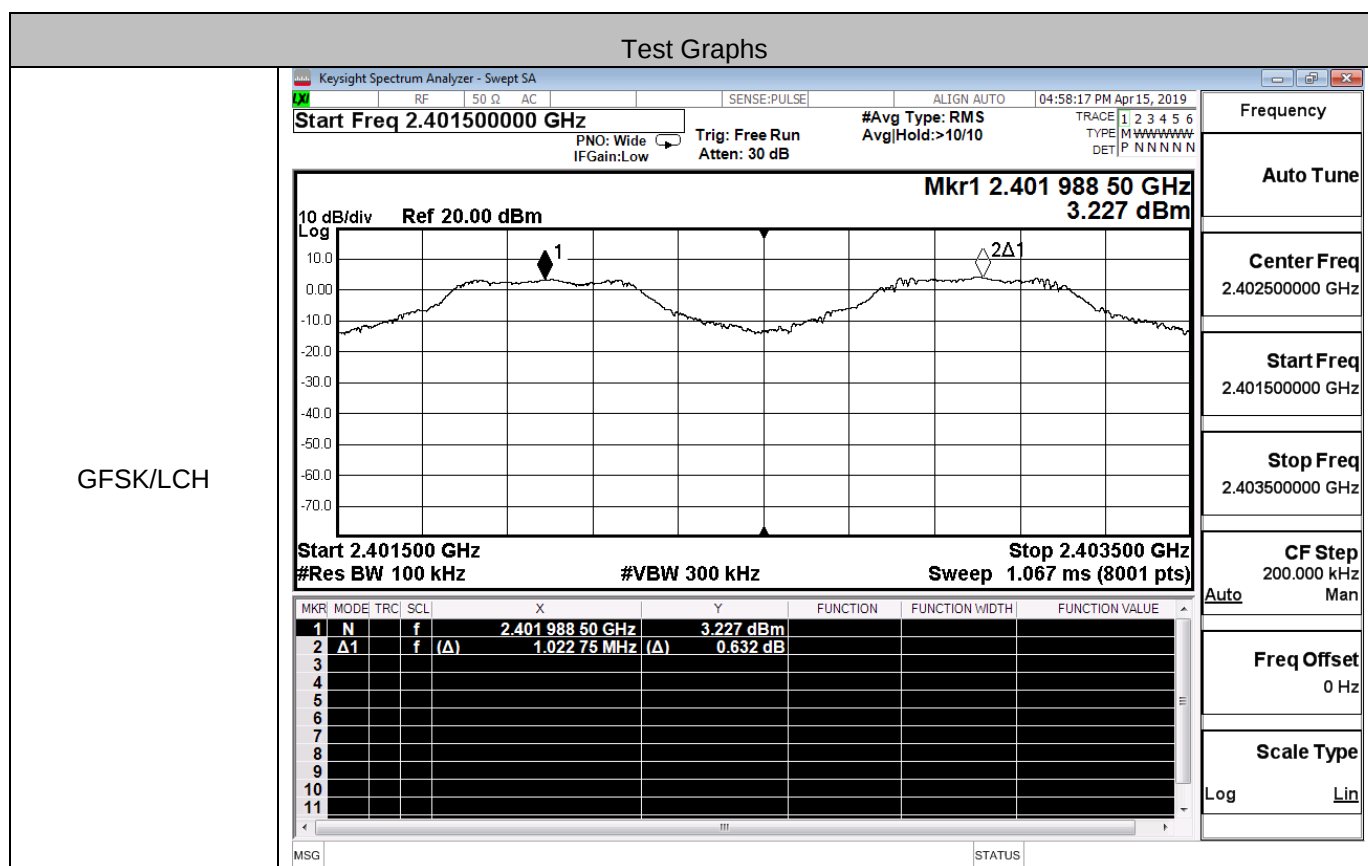
8DPSK/HCH



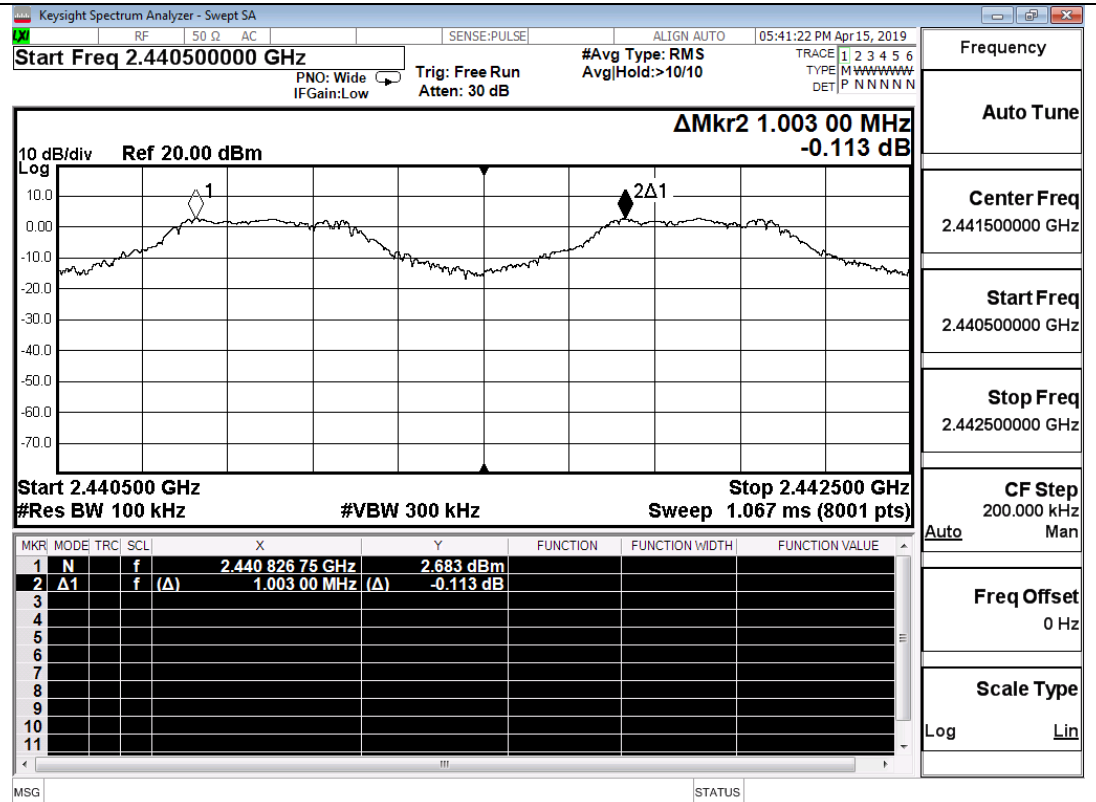
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	1.023	0.583	PASS
	MCH	1.003	0.582	PASS
	HCH	1.012	0.582	PASS
$\pi/4$ DQPSK	LCH	0.997	0.811	PASS
	MCH	1.157	0.814	PASS
	HCH	1.001	0.814	PASS
8DPSK	LCH	1.156	0.805	PASS
	MCH	1.001	0.806	PASS
	HCH	0.831	0.807	PASS

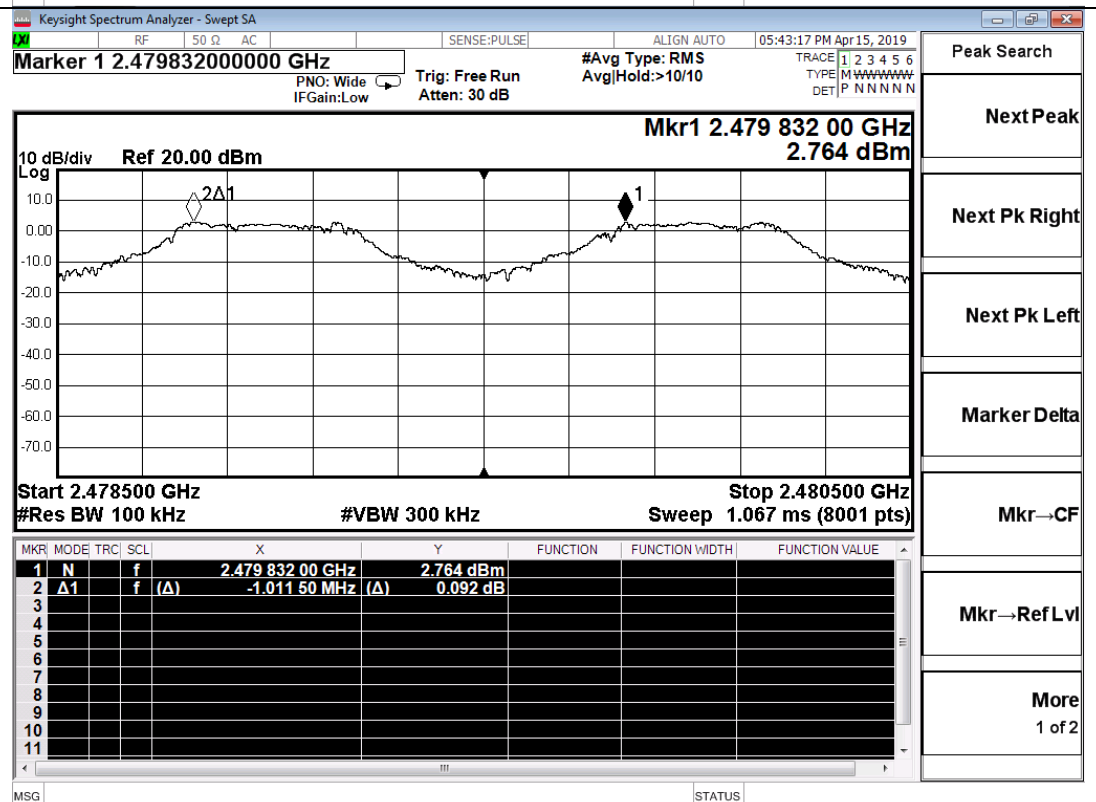
Test Graphs

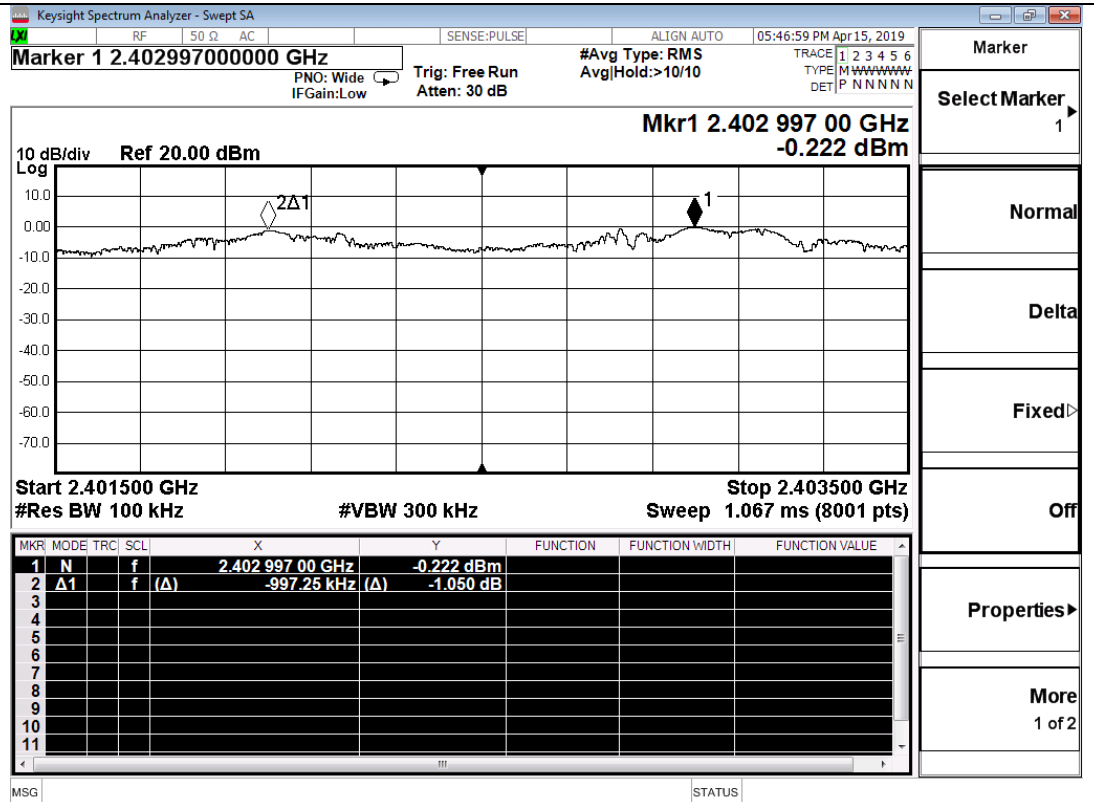
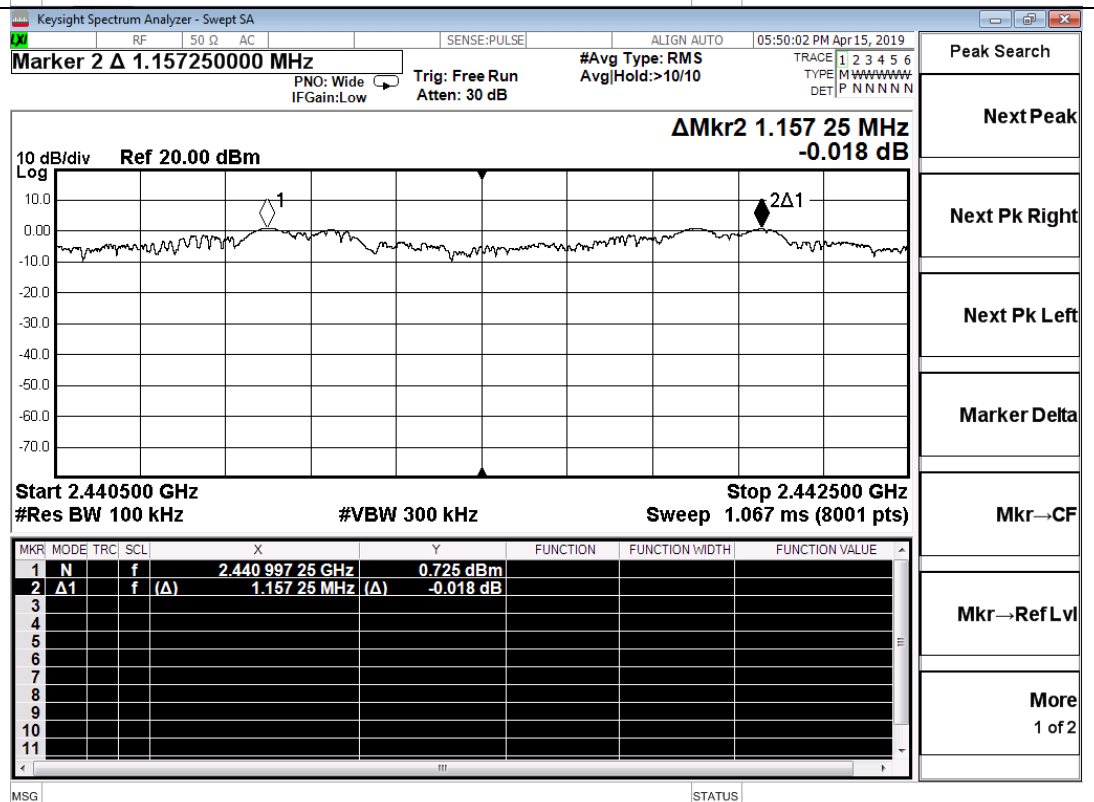


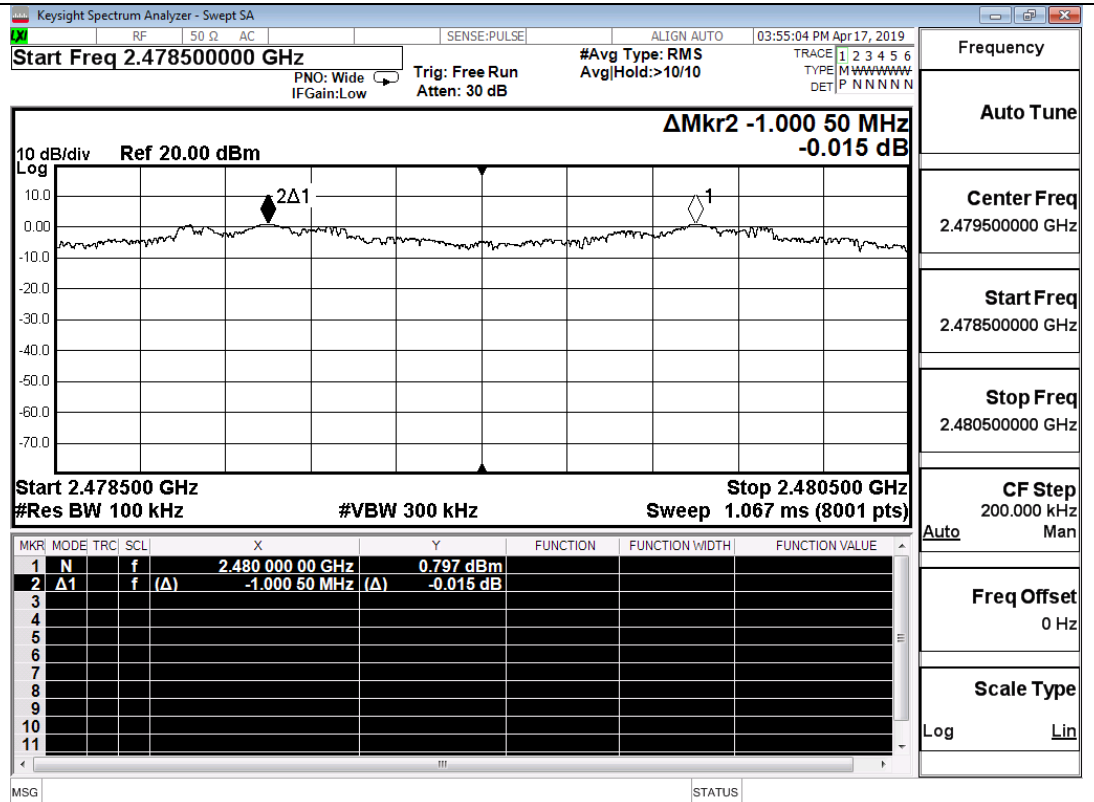
GFSK/MCH



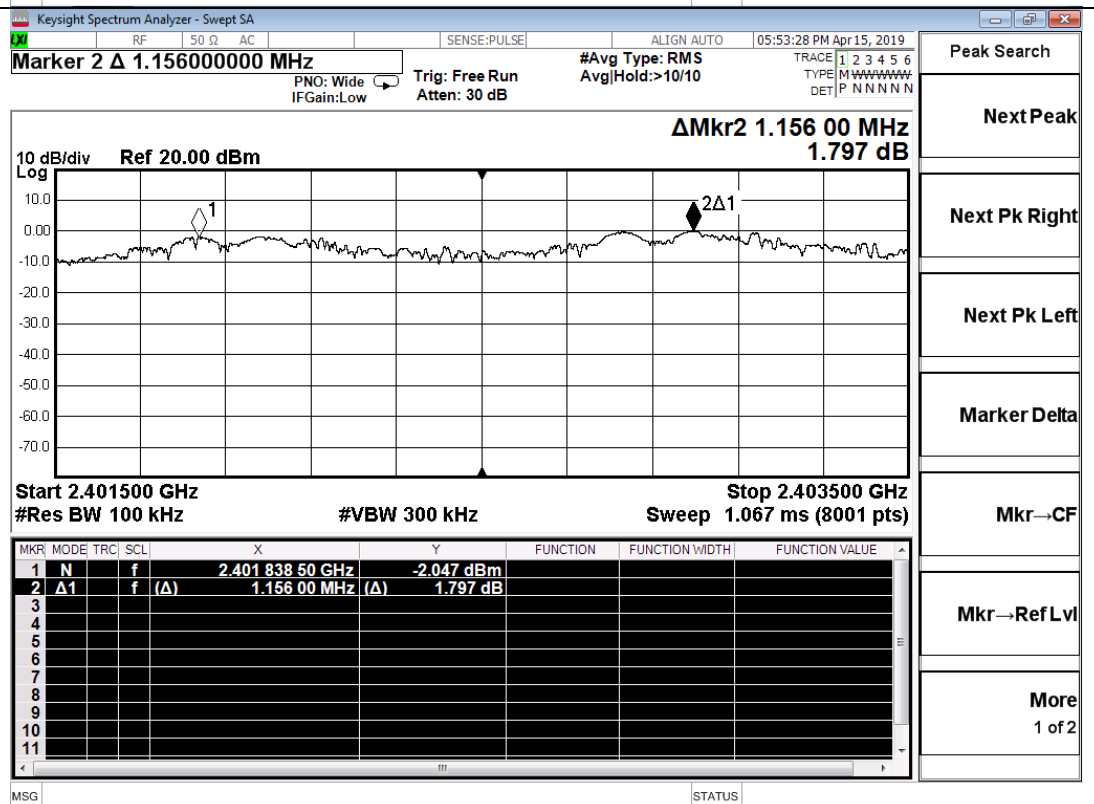
GFSK/HCH



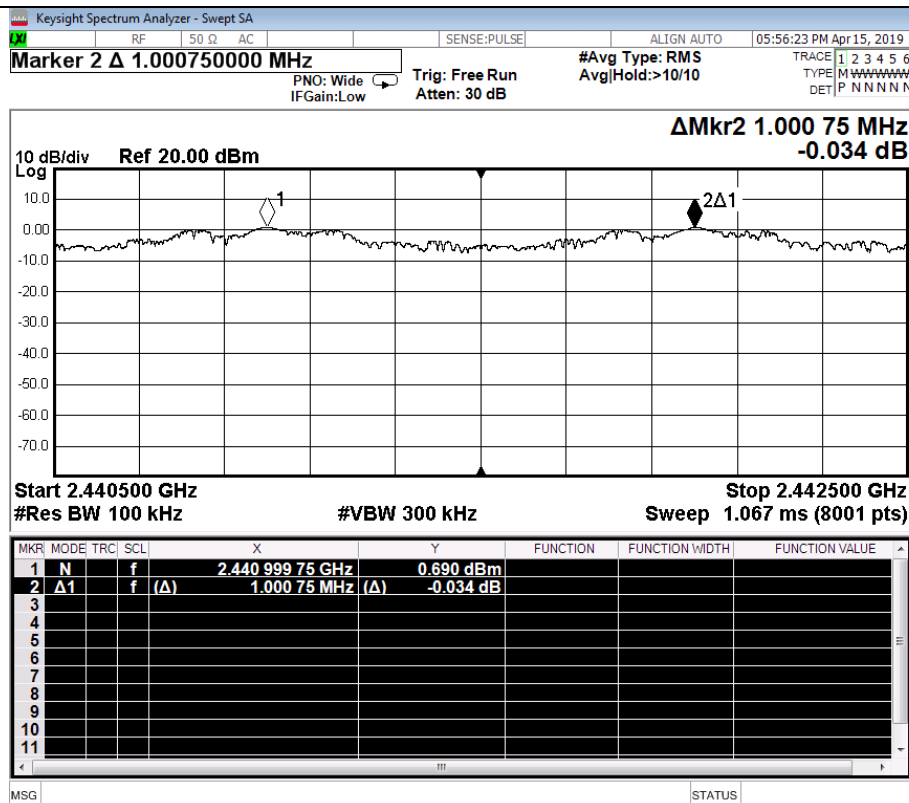
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

8DPSK/LCH



8DPSK/MCH



Peak Search

Next Peak

Next Pk Right

Next Pk Left

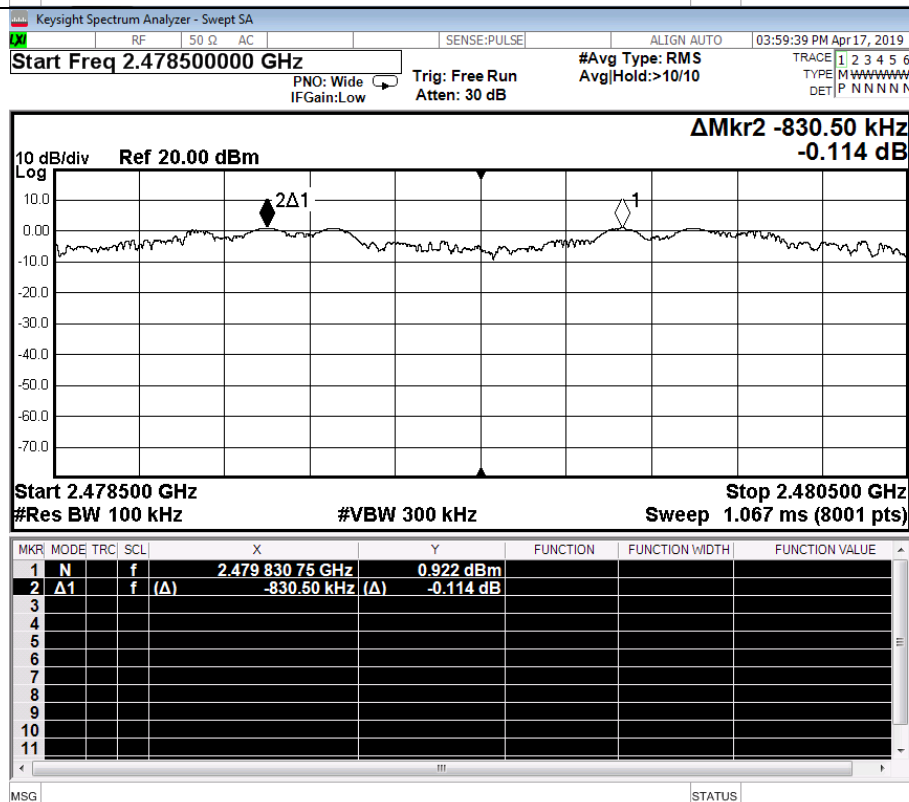
Marker Delta

Mkr→CF

Mkr→Ref Lvl

More
1 of 2

8DPSK/HCH



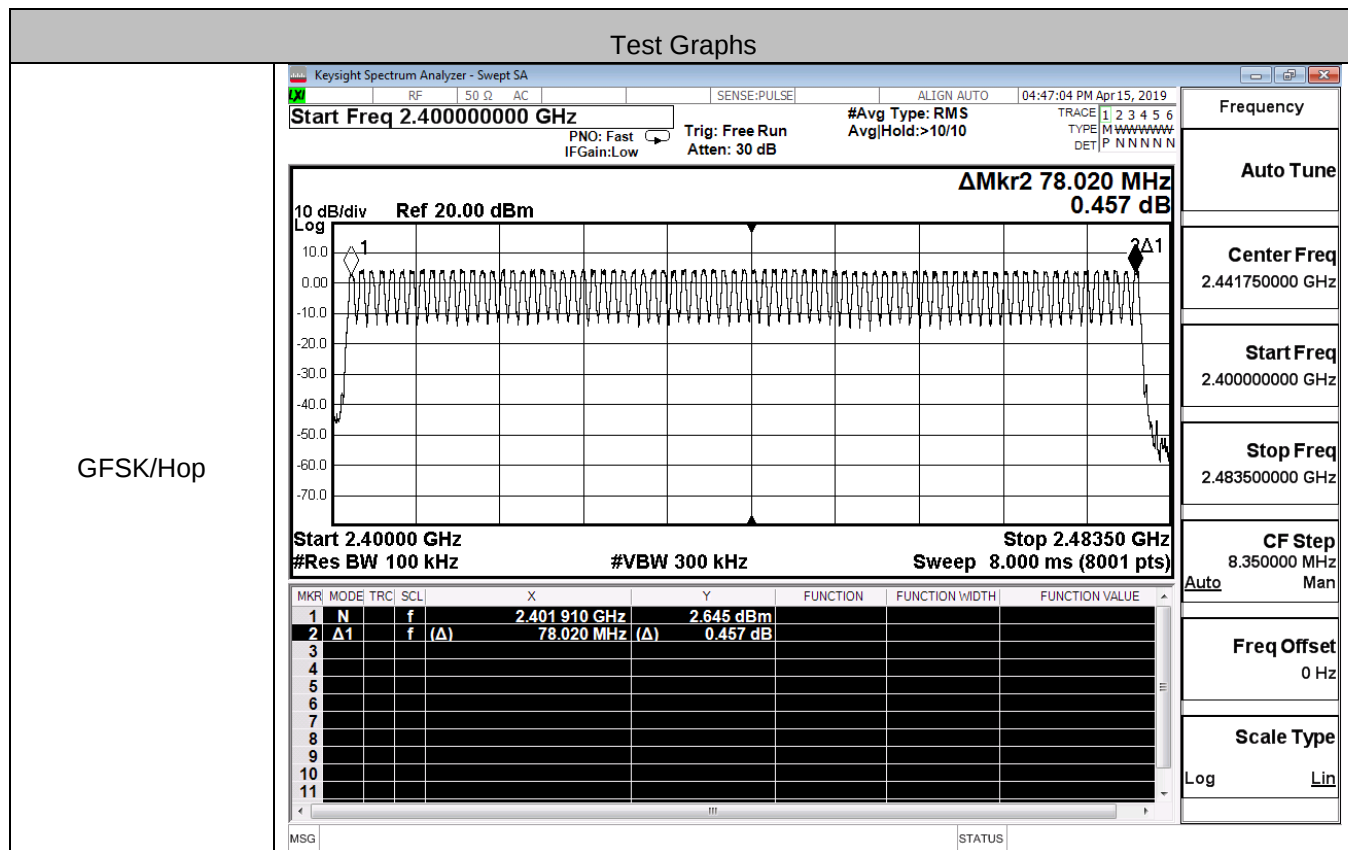
Frequency

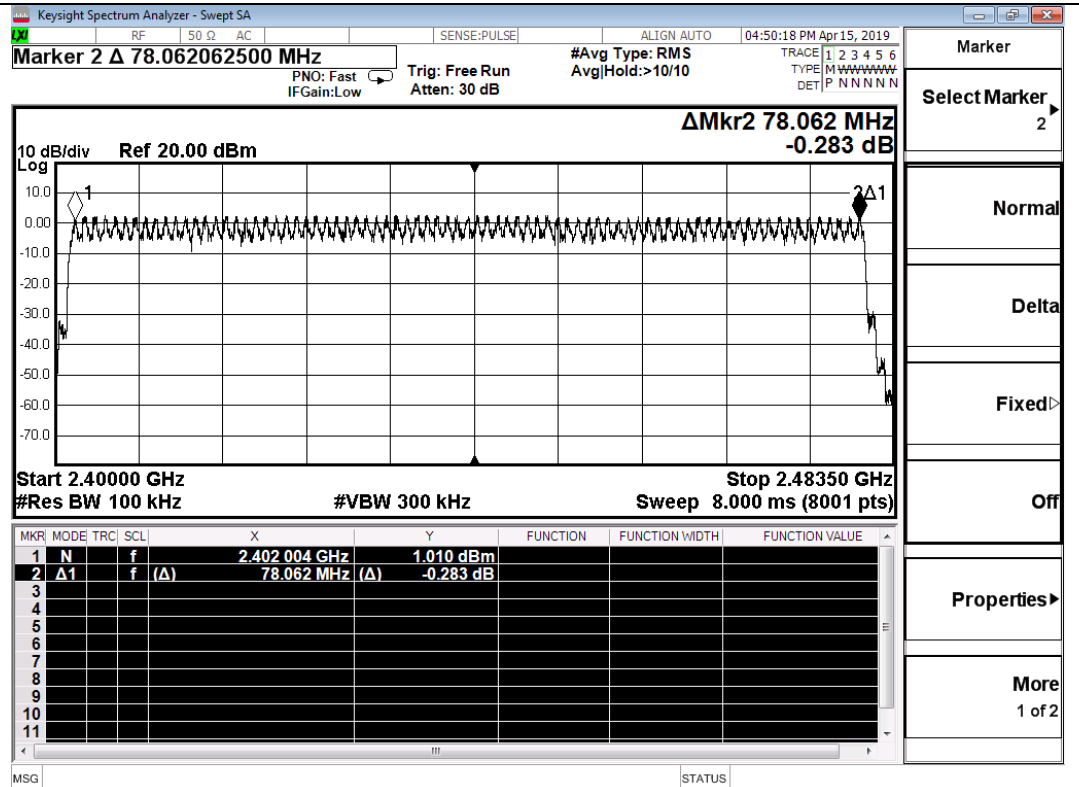
Auto Tune

Center Freq
2.479500000 GHzStart Freq
2.478500000 GHzStop Freq
2.480500000 GHzCF Step
200.000 kHz
Auto ManFreq Offset
0 HzScale Type
Log Lin

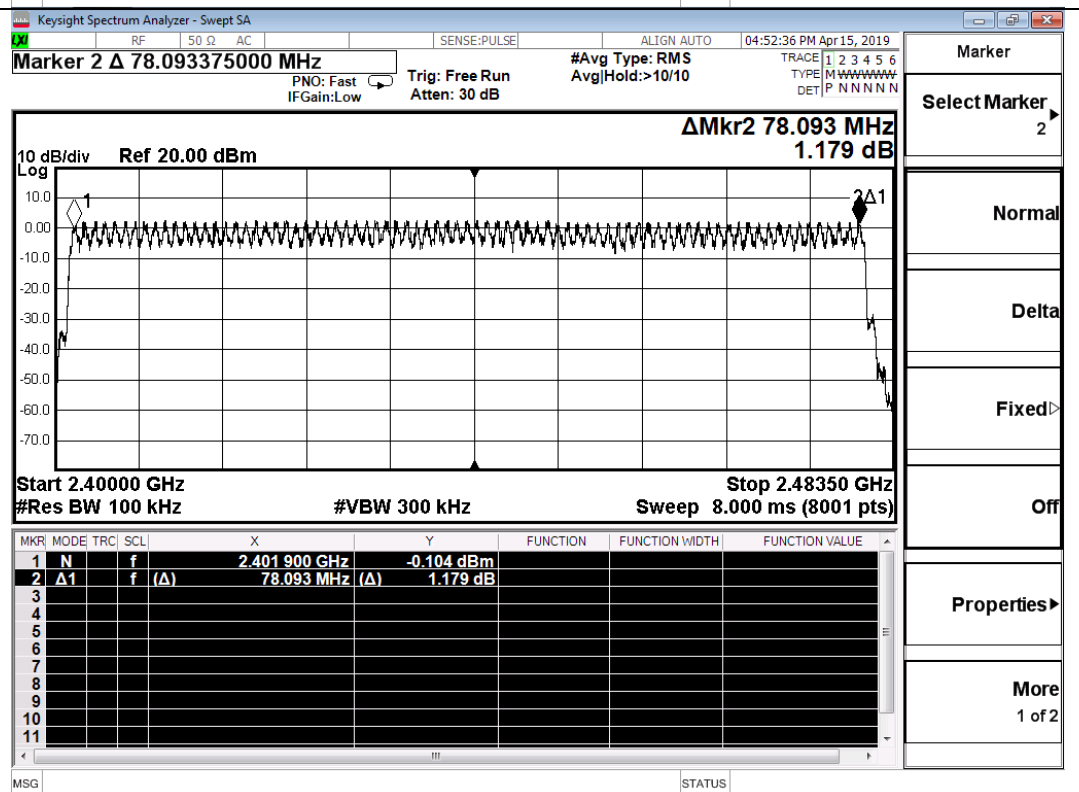
A.4 Hopping Channel Number

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

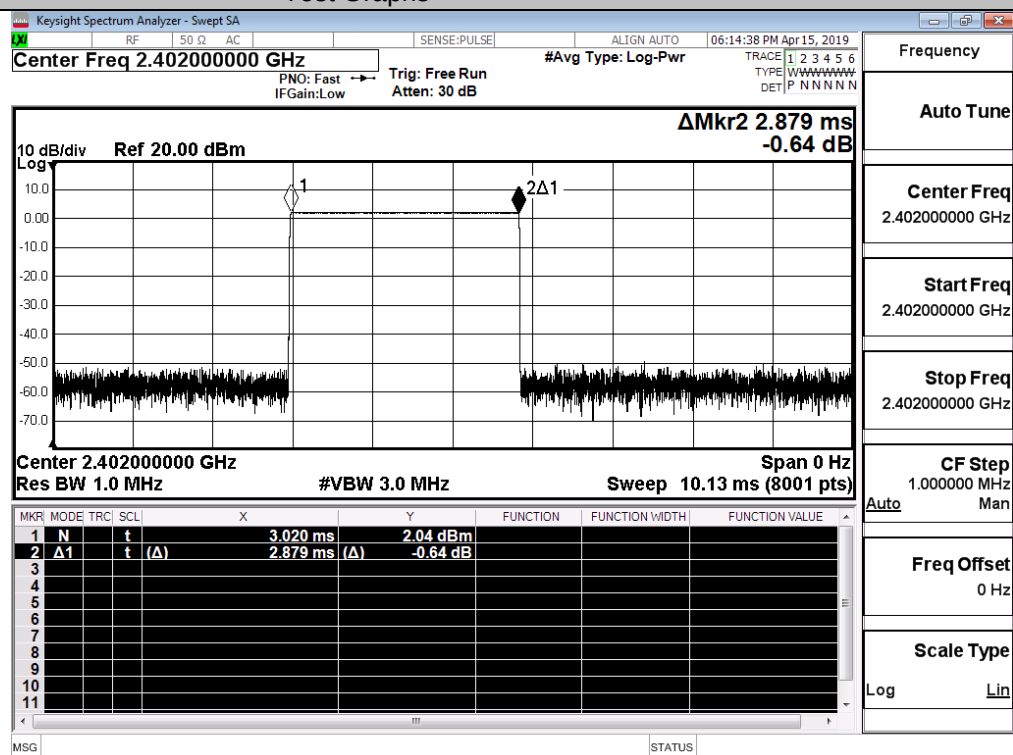


A.5 Dwell Time

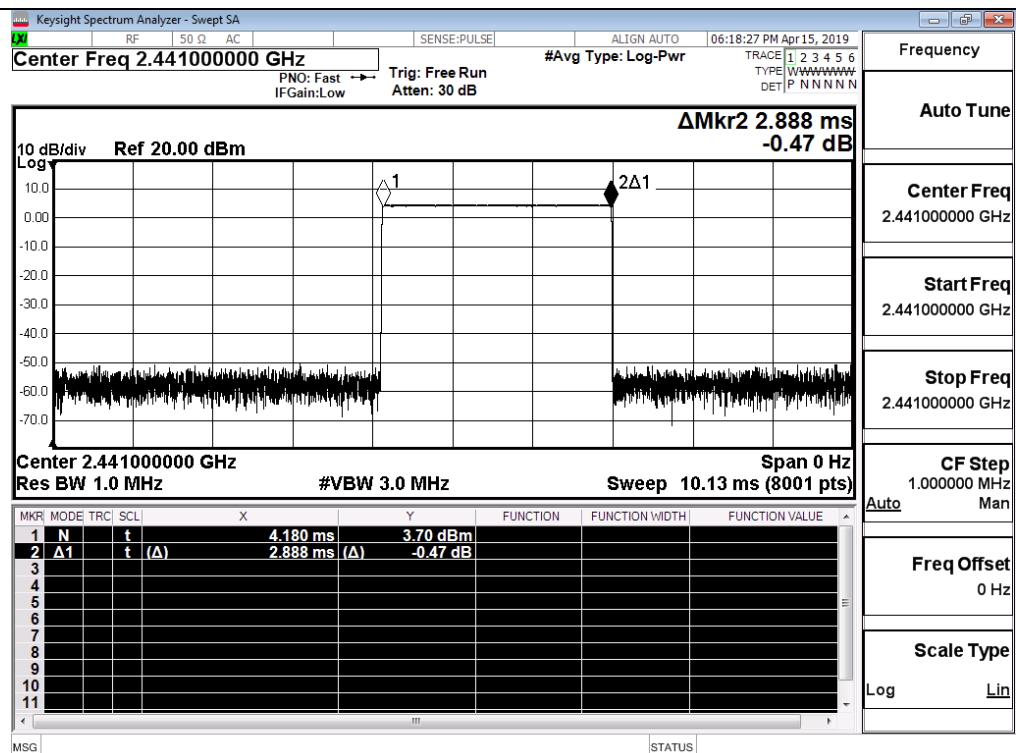
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.90	106.7	0.309	0.4	PASS
	2DH5	MCH	2.90	106.7	0.309	0.4	PASS
	2DH5	HCH	2.90	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.90	106.7	0.309	0.4	PASS
	3DH5	MCH	2.90	106.7	0.309	0.4	PASS
	3DH5	HCH	2.90	106.7	0.309	0.4	PASS

Test Graphs

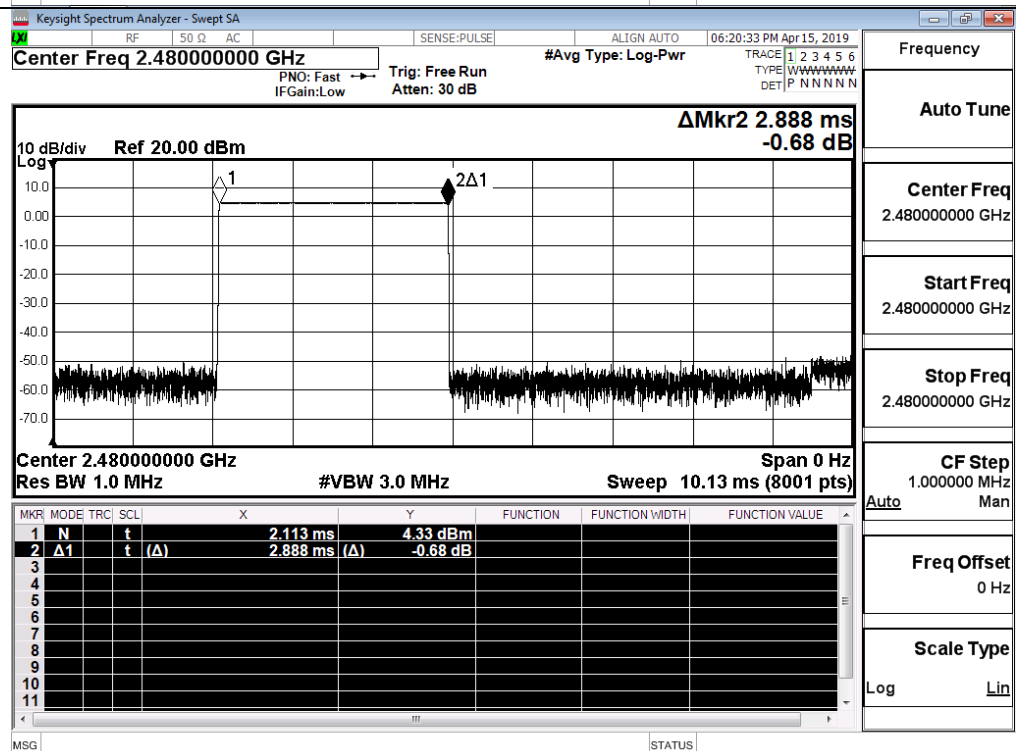
GFSK_DH5/LCH

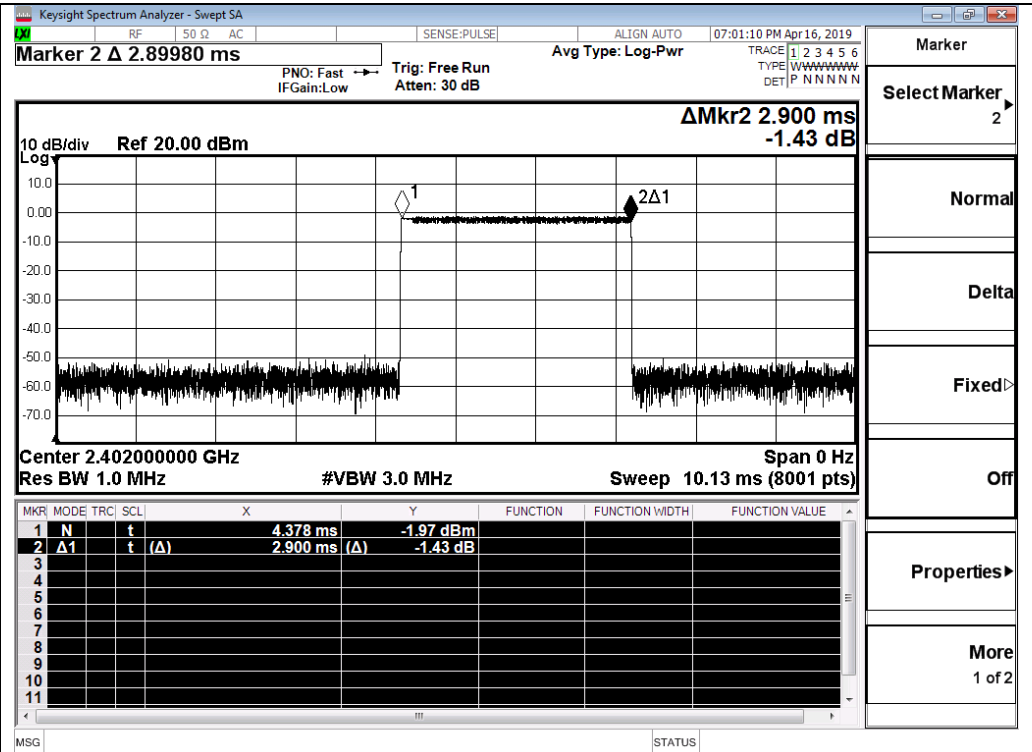
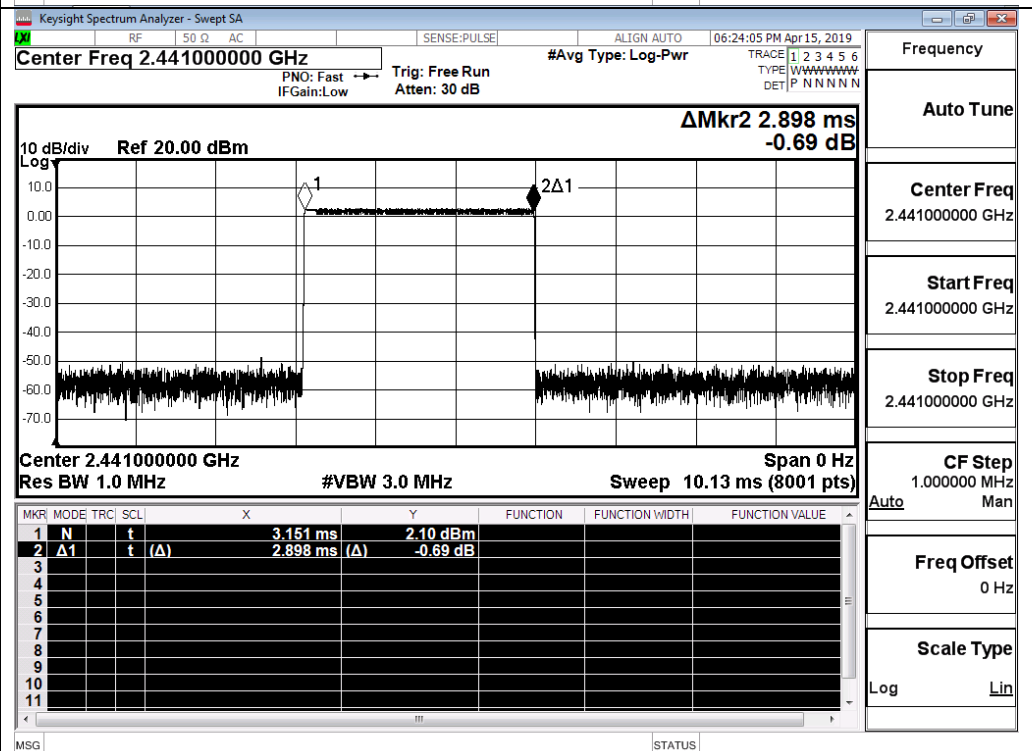


GFSK_DH5/MCH

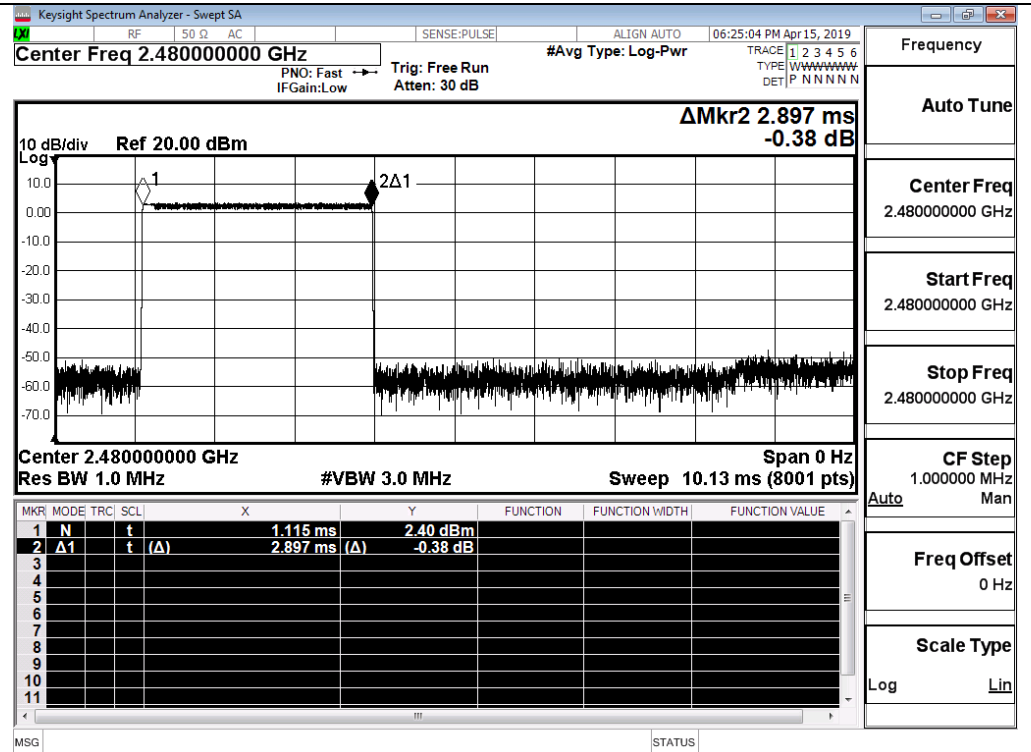


GFSK_DH5/HCH

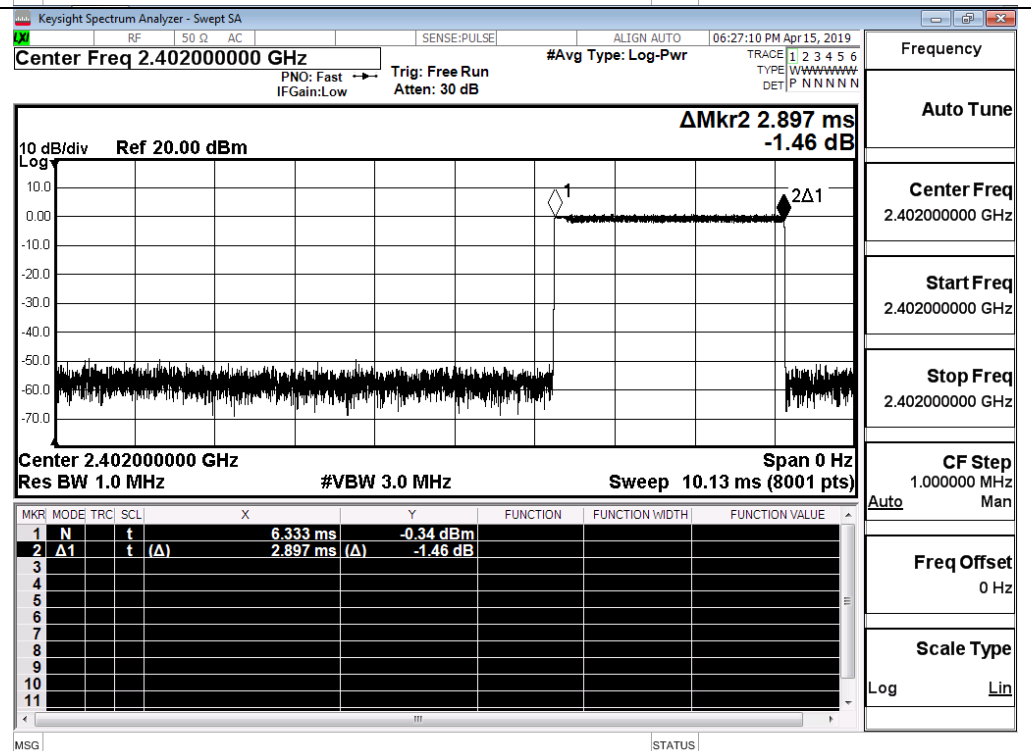


$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

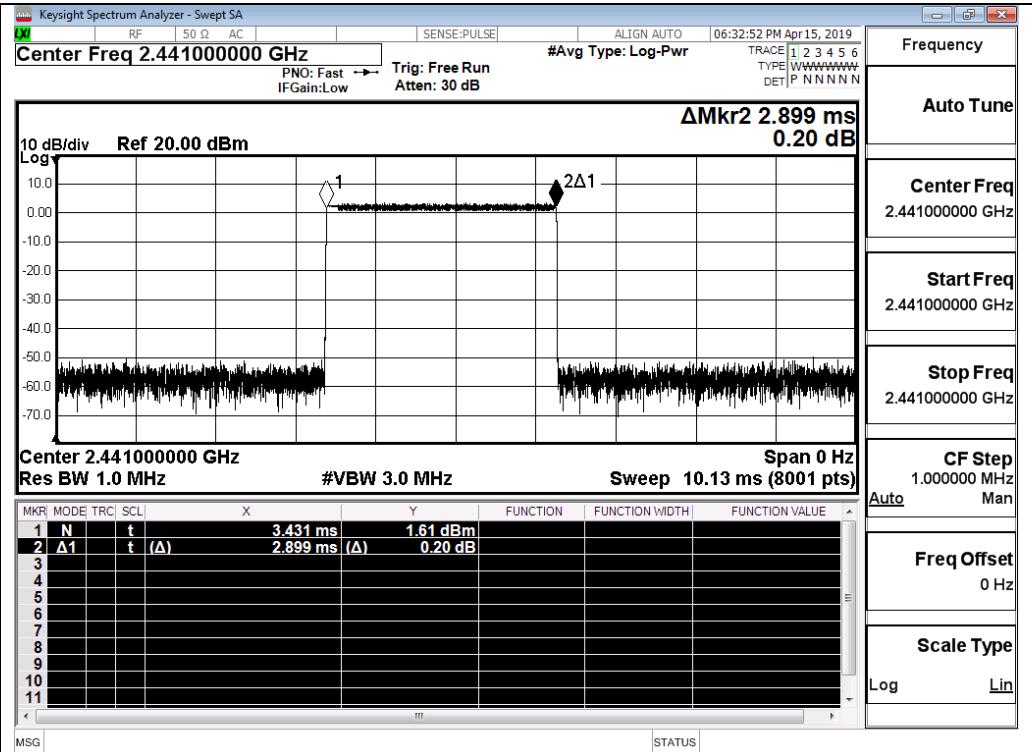
$\pi/4$ DQPSK
_2DH5/HCH



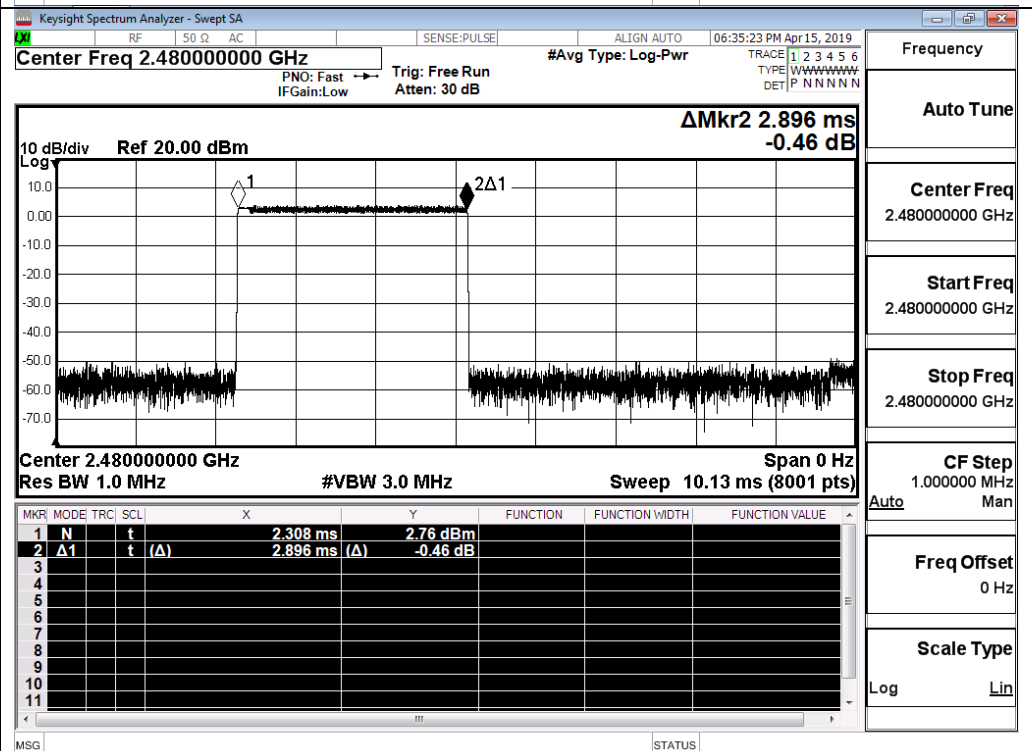
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

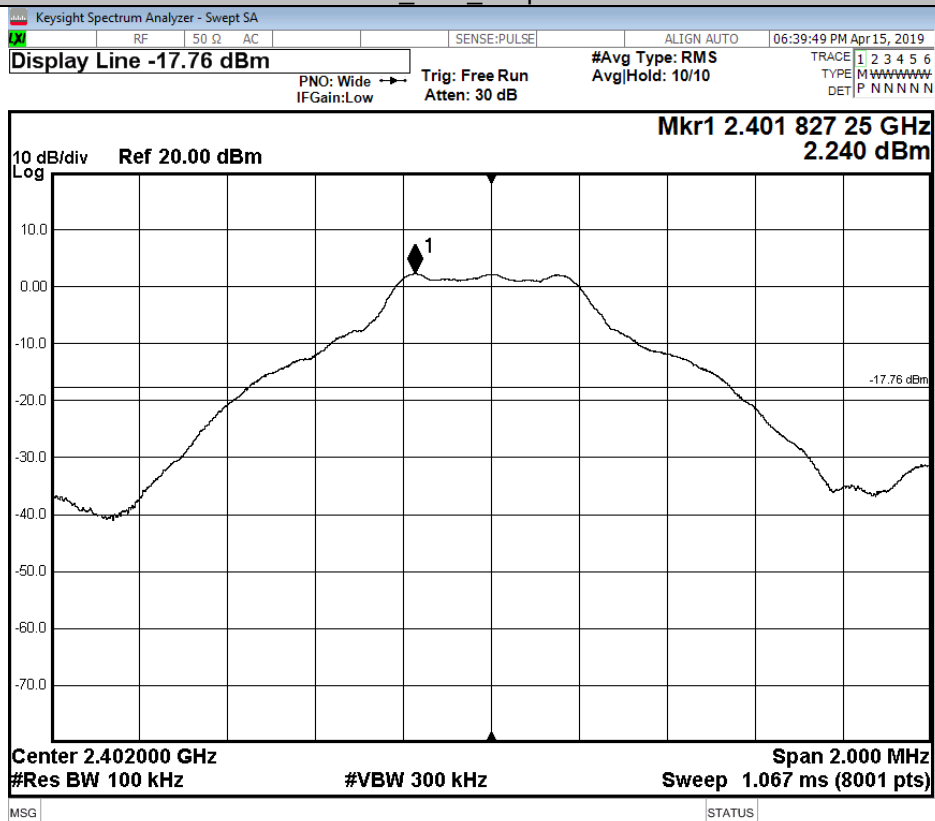


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.240	-44.512	-17.76	PASS
	MCH	4.462	-41.864	-15.54	PASS
	HCH	4.986	-41.036	-15.01	PASS
$\pi/4$ DQPSK	LCH	0.556	-45.400	-19.44	PASS
	MCH	2.507	-44.898	-17.49	PASS
	HCH	2.566	-43.080	-17.43	PASS
8DPSK	LCH	0.817	-44.198	-19.18	PASS
	MCH	2.828	-41.928	-17.17	PASS
	HCH	2.649	-43.137	-17.35	PASS

GFSK_LCH_Graphs

Pref



Display

Annotation▶

Title▶

Graticule

On

Off

Display Line

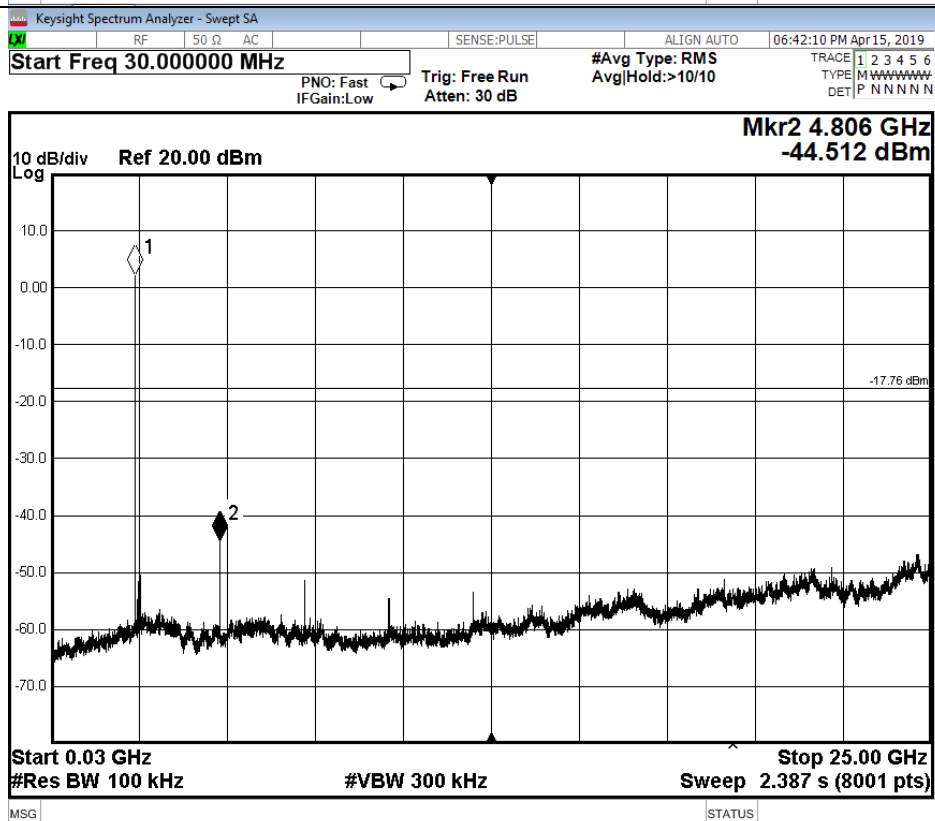
On

-17.76 dBm

Off

System
Display▶
Settings

Puw



Frequency

Auto Tune

Center Freq

12.515000000 GHz

Start Freq

30.000000 MHz

Stop Freq

25.000000000 GHz

CF Step

2.497000000 GHz

Auto Man

Freq Offset

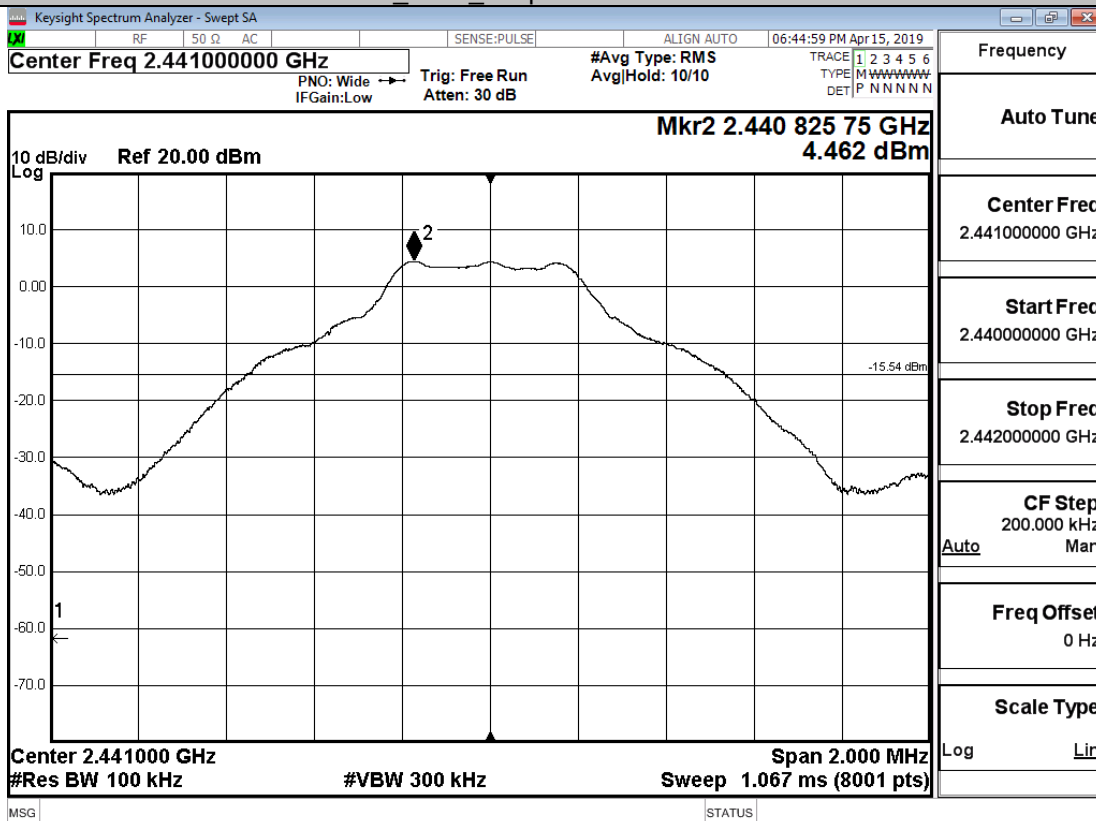
0 Hz

Scale Type

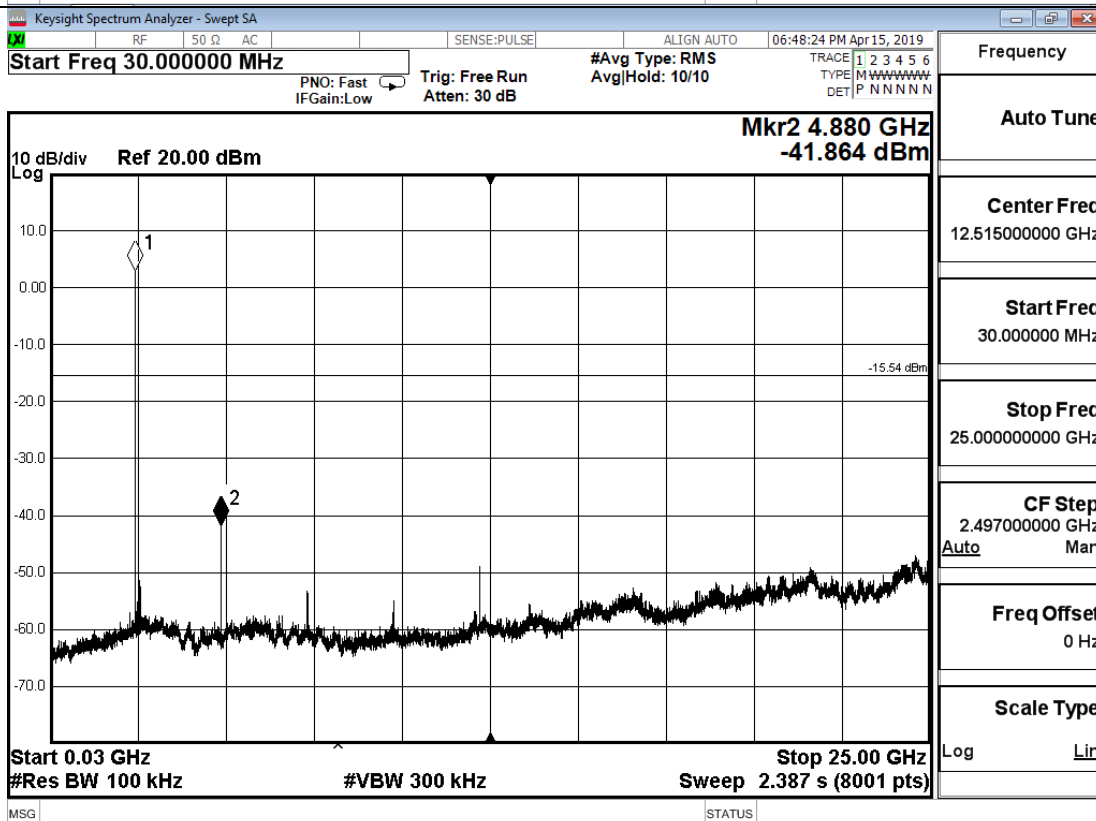
Log Lin

GFSK_MCH_Graphs

Pref

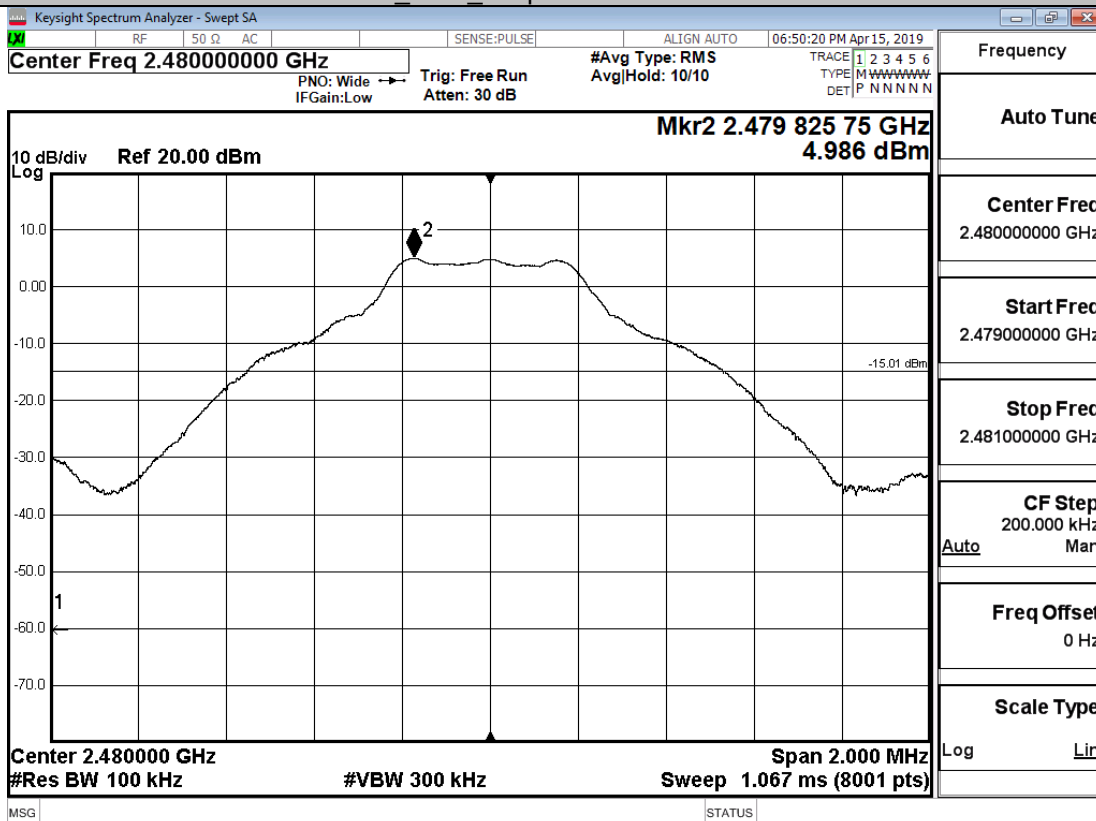


Puw

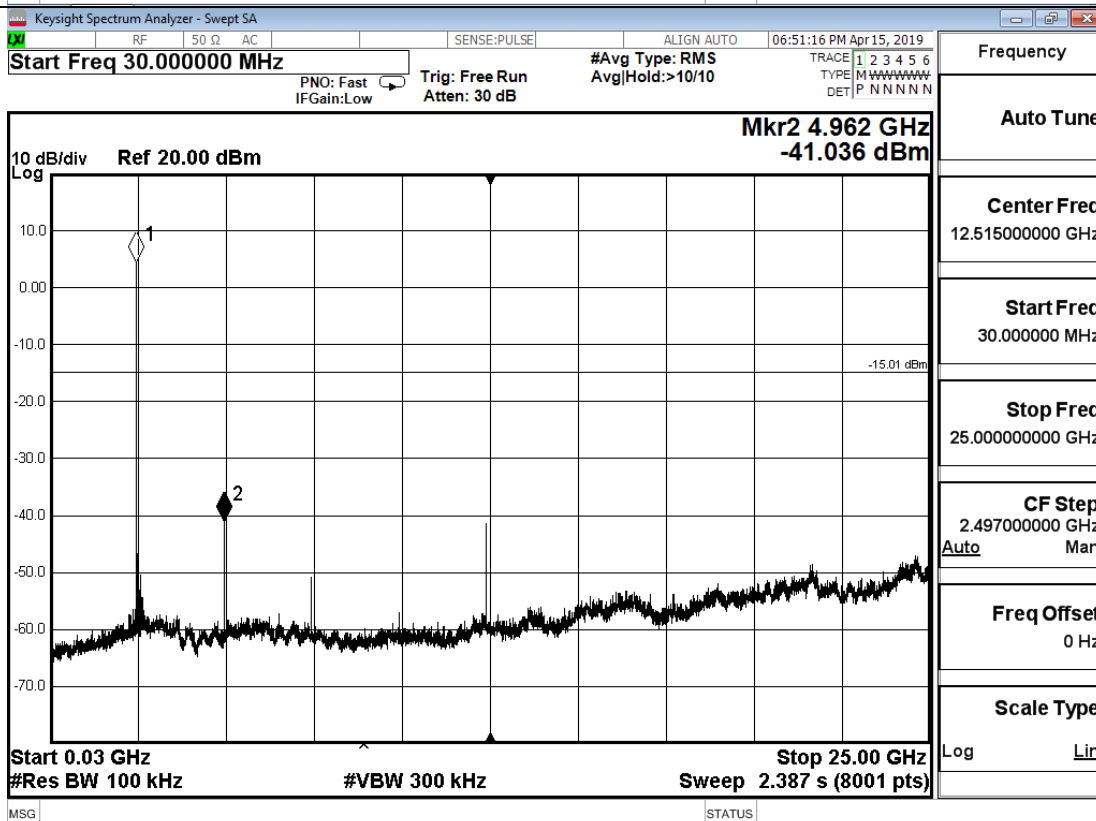


GFSK_HCH_Graphs

Pref

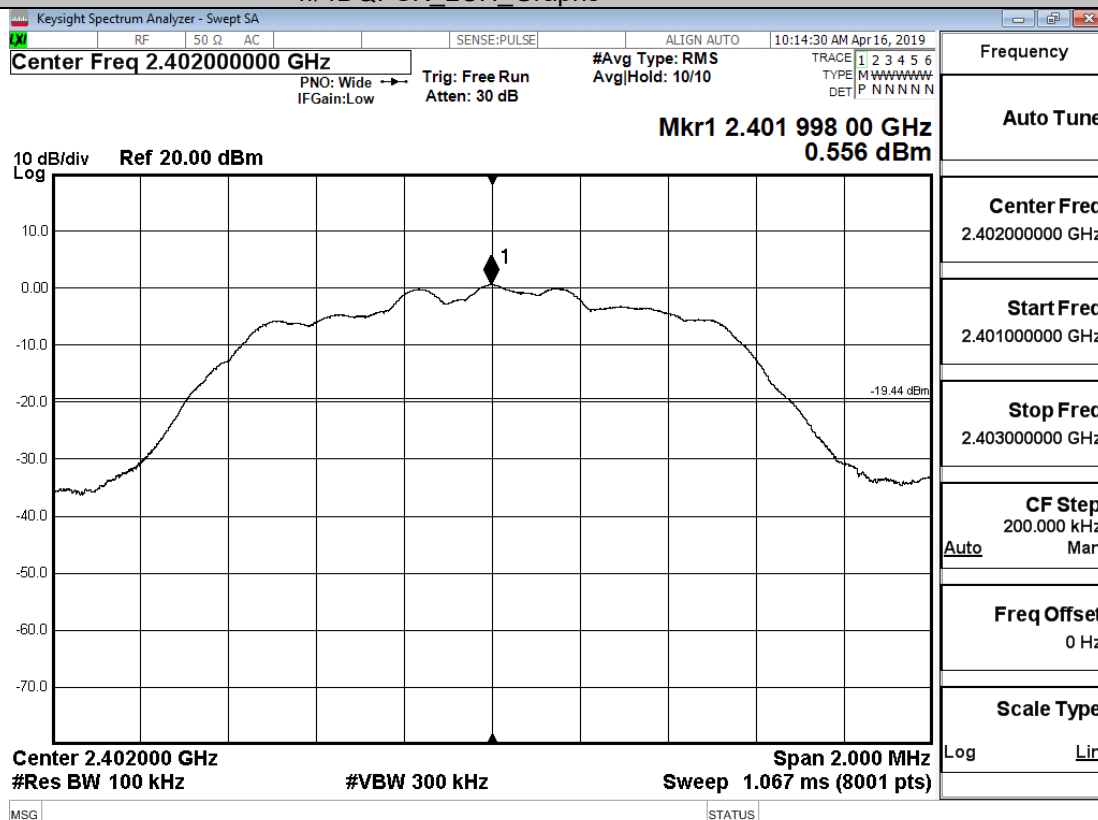


Puw

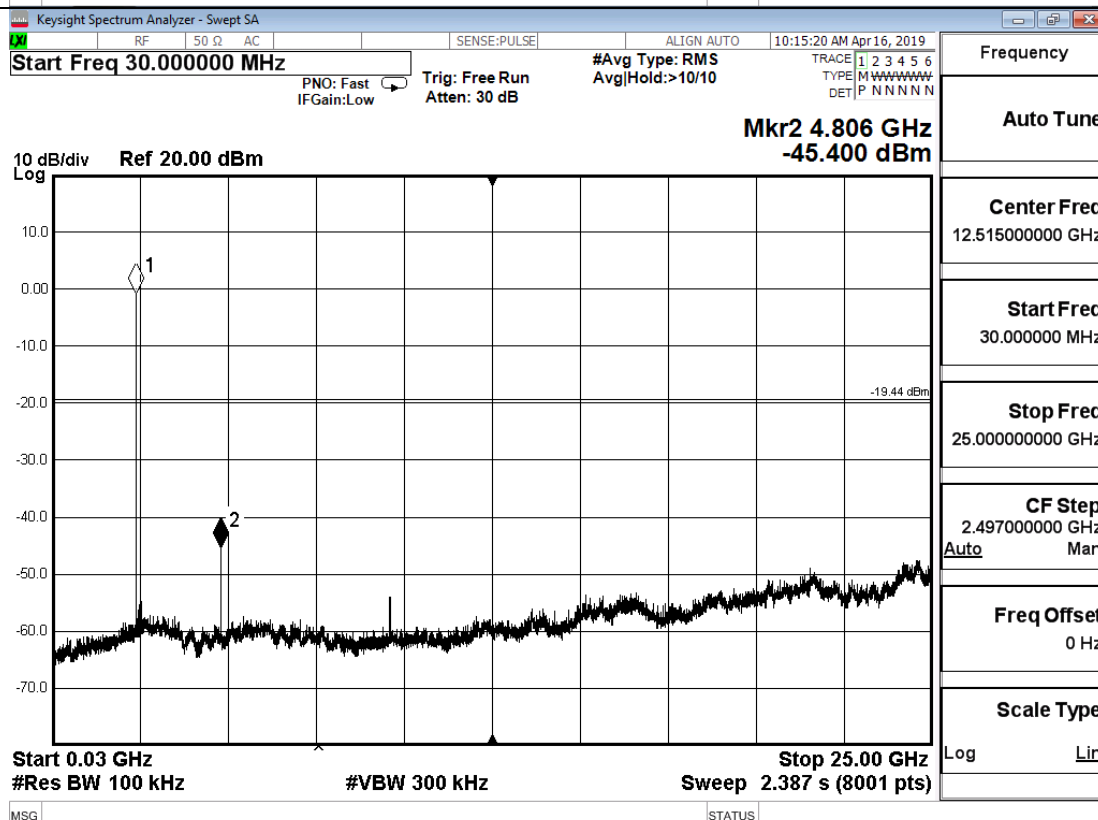


$\pi/4$ DQPSK LCH_Graphs

Pref

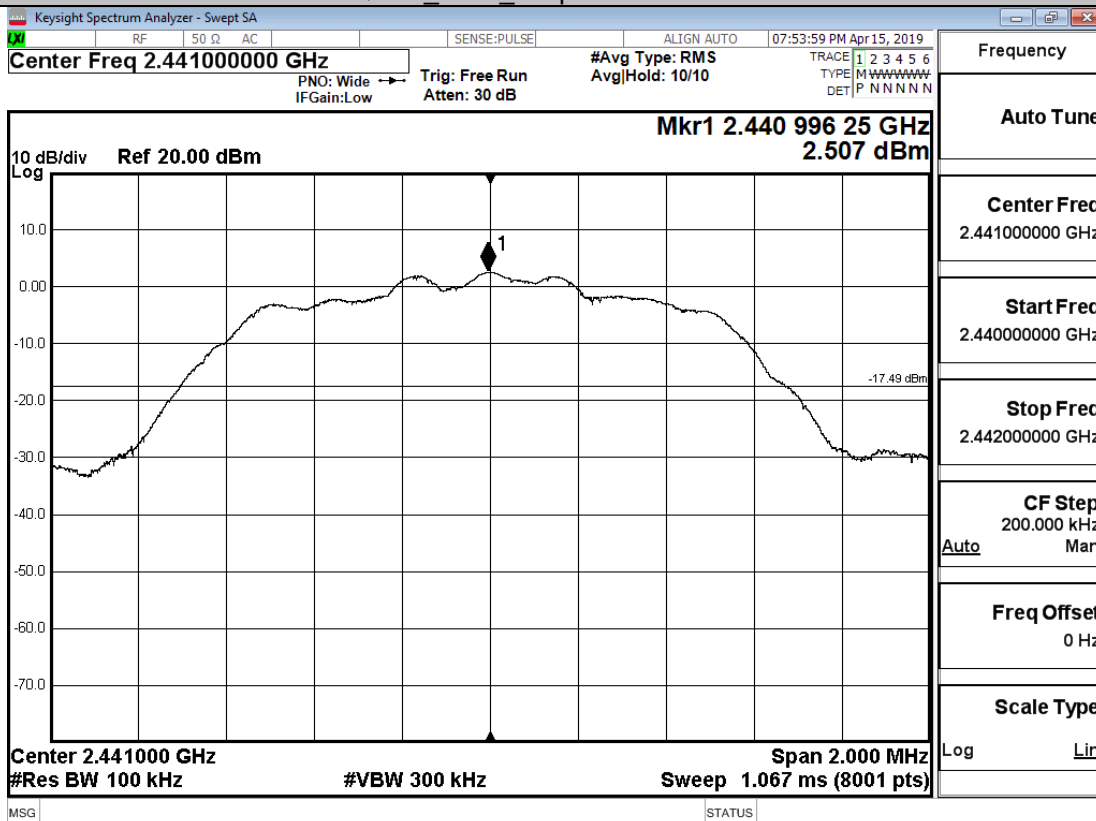


Puw

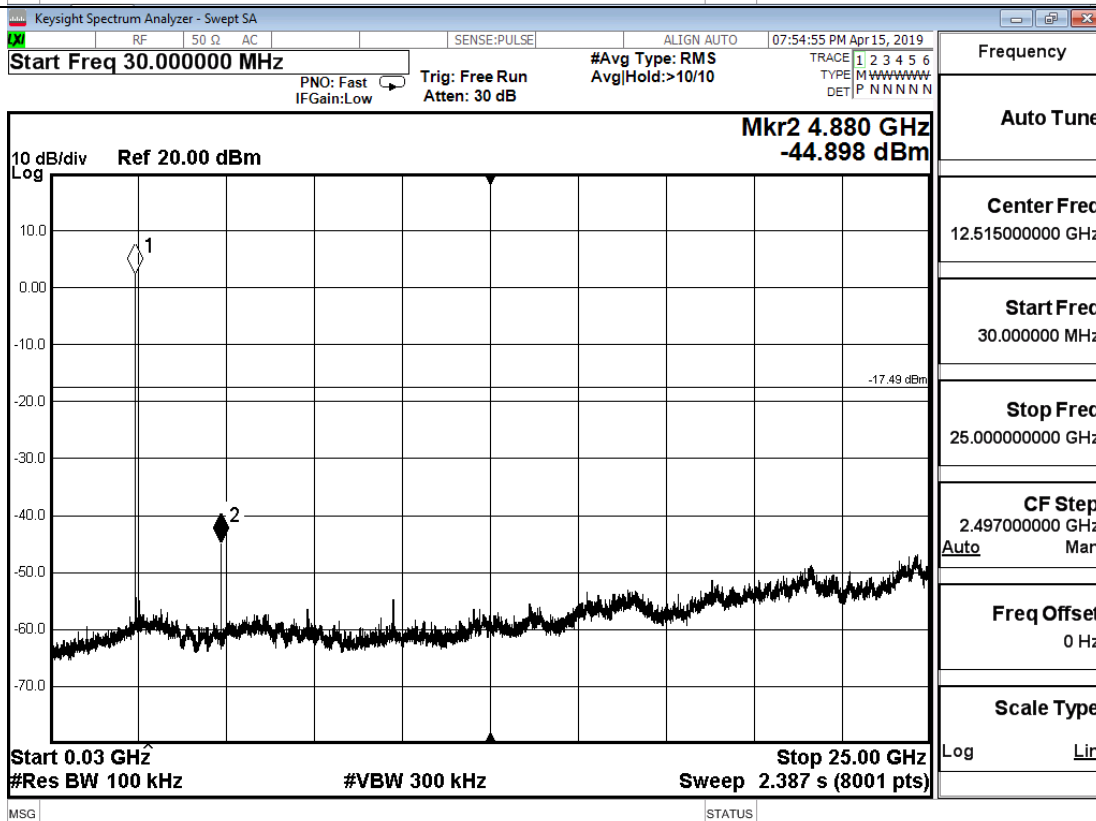


π /4DQPSK_MCH_Graphs

Pref

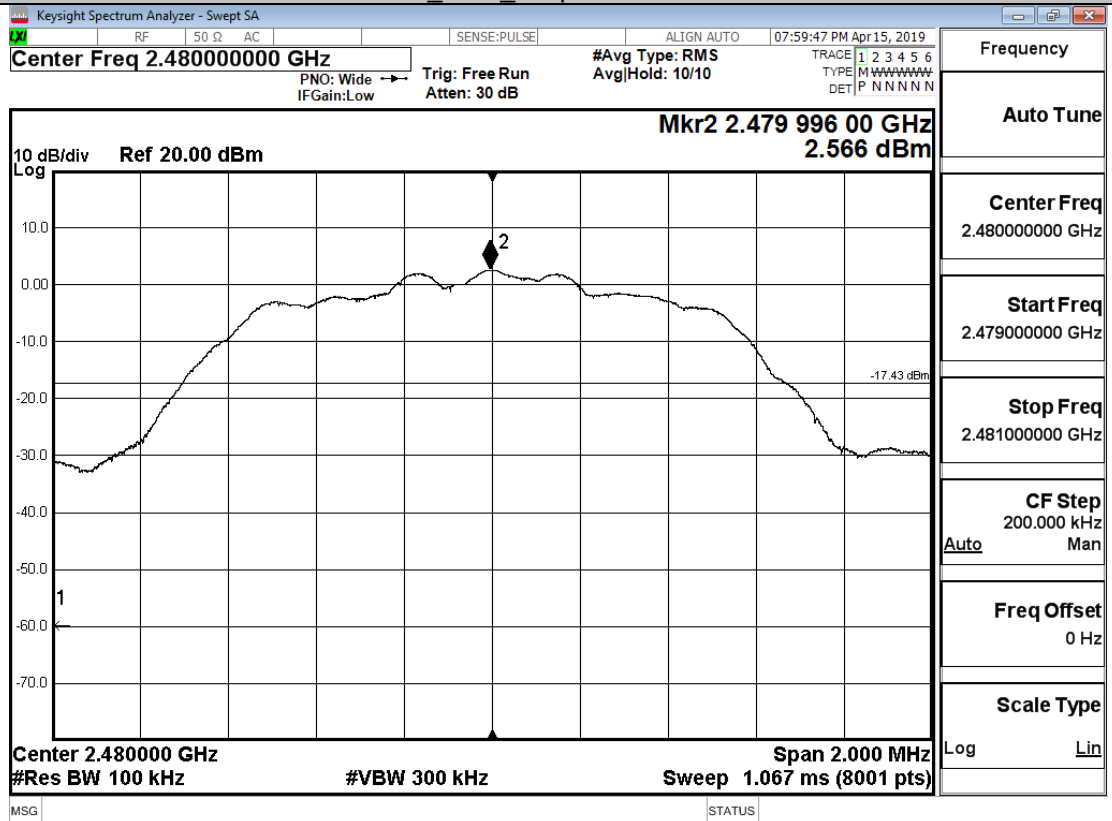


Puw

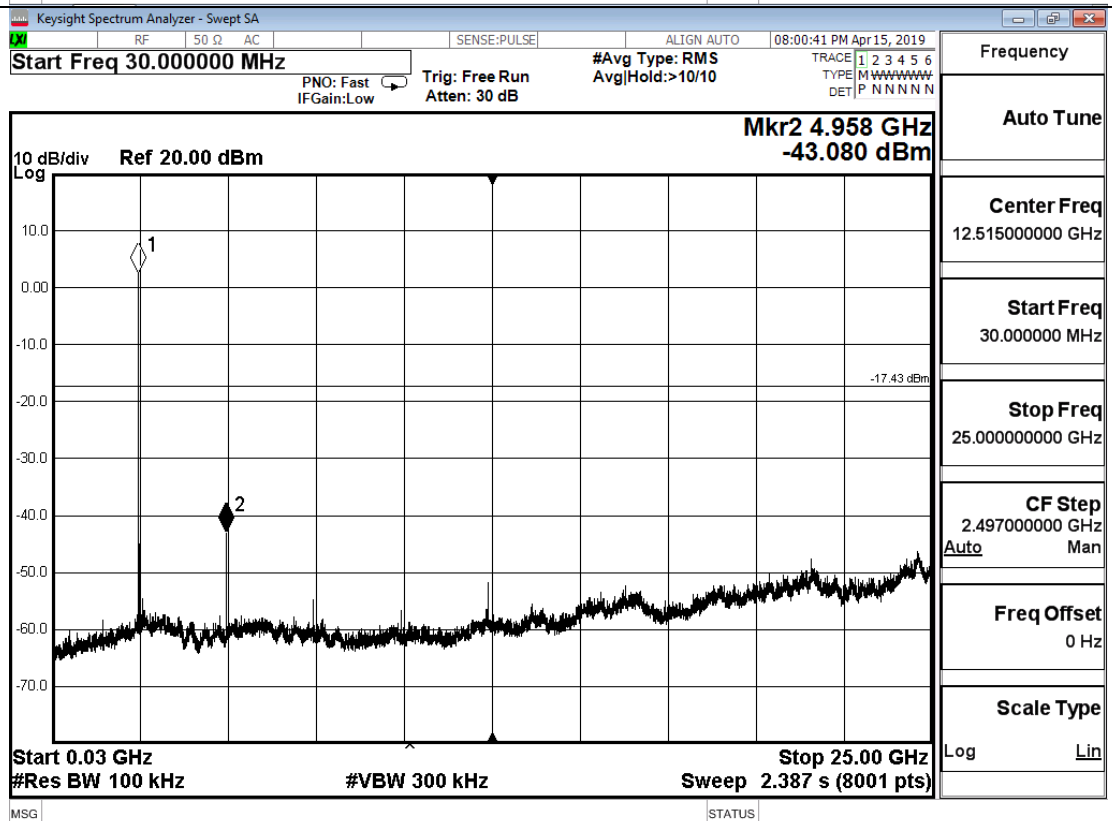


$\pi/4$ DQPSK_HCH_Graphs

Pref

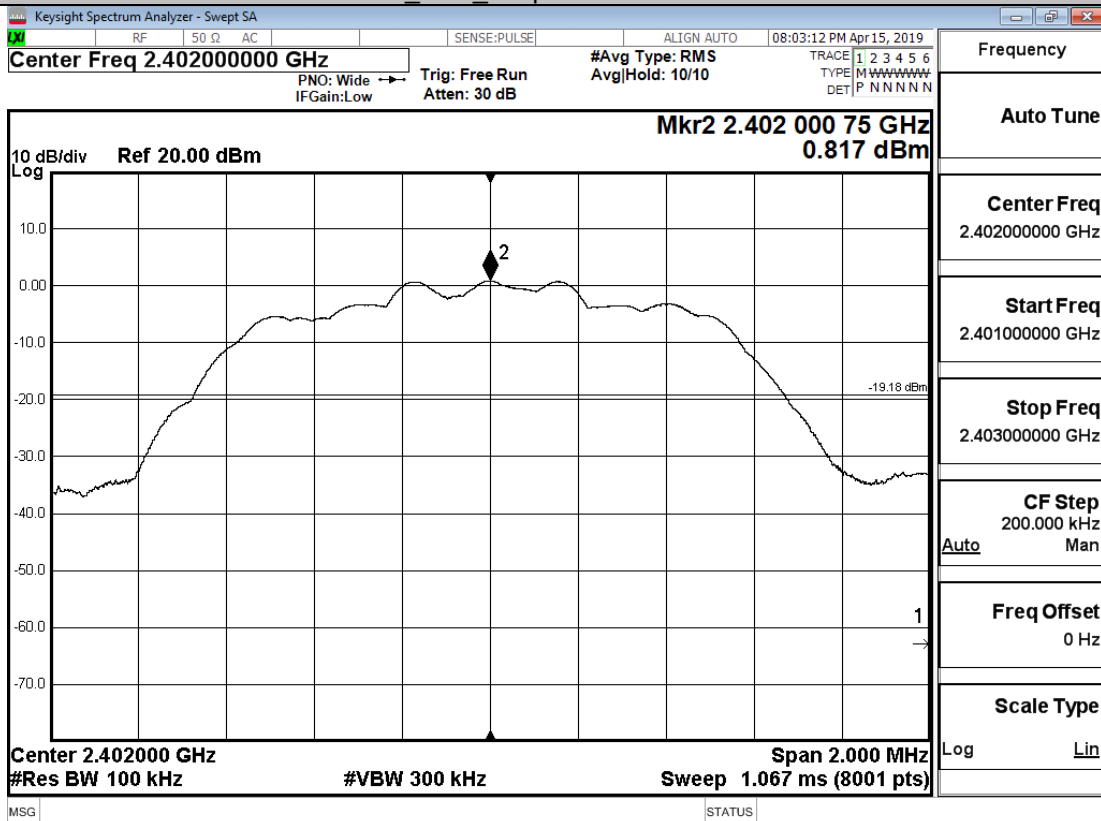


Puw

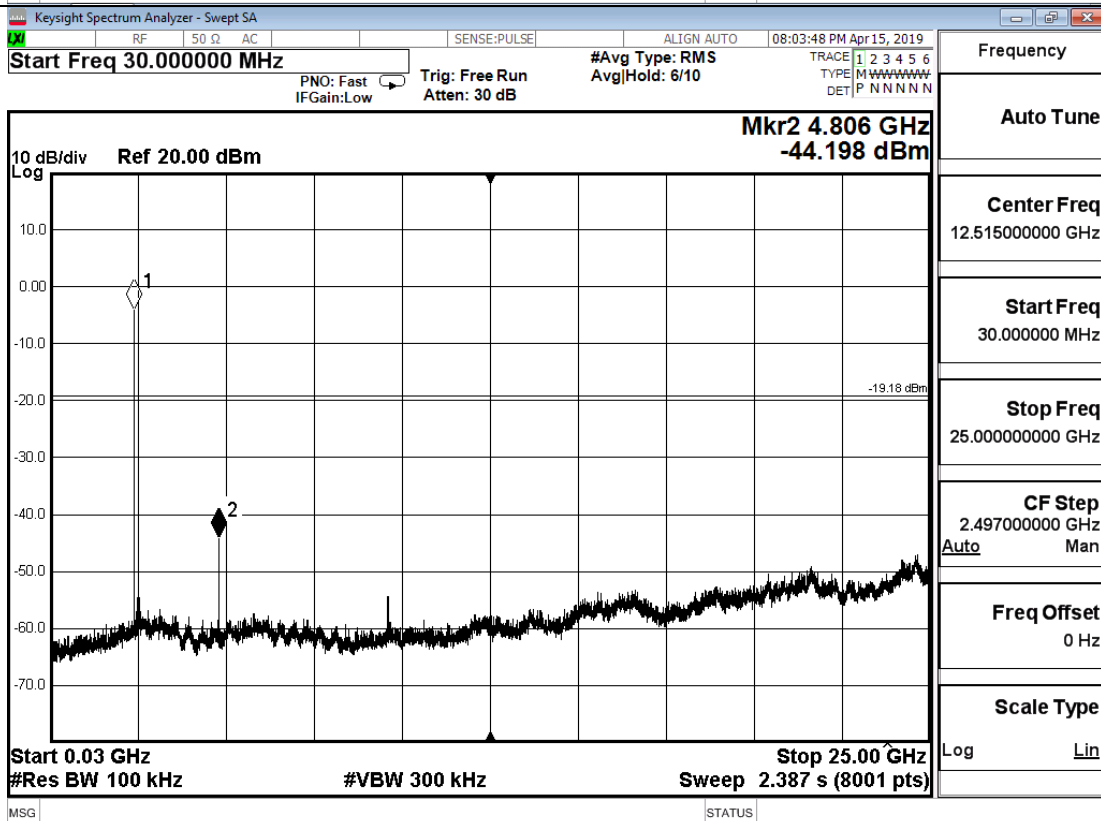


8DPSK_LCH_Graphs

Pref

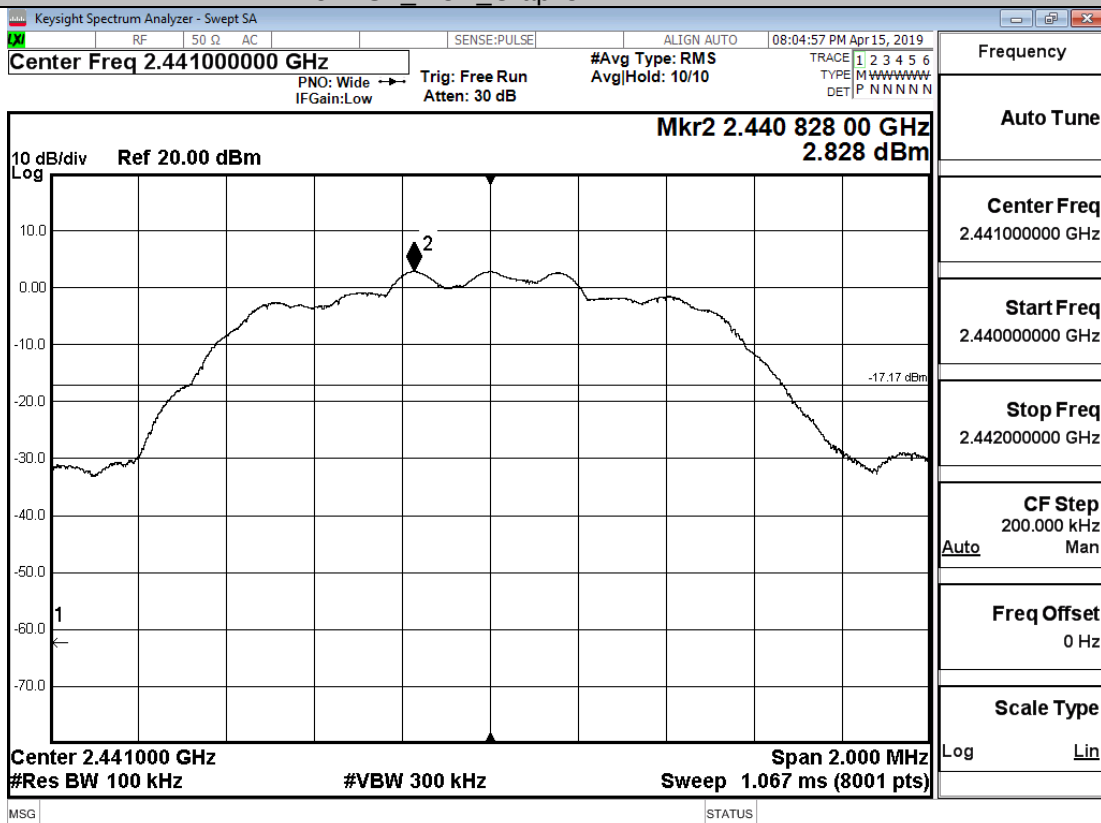


Puw

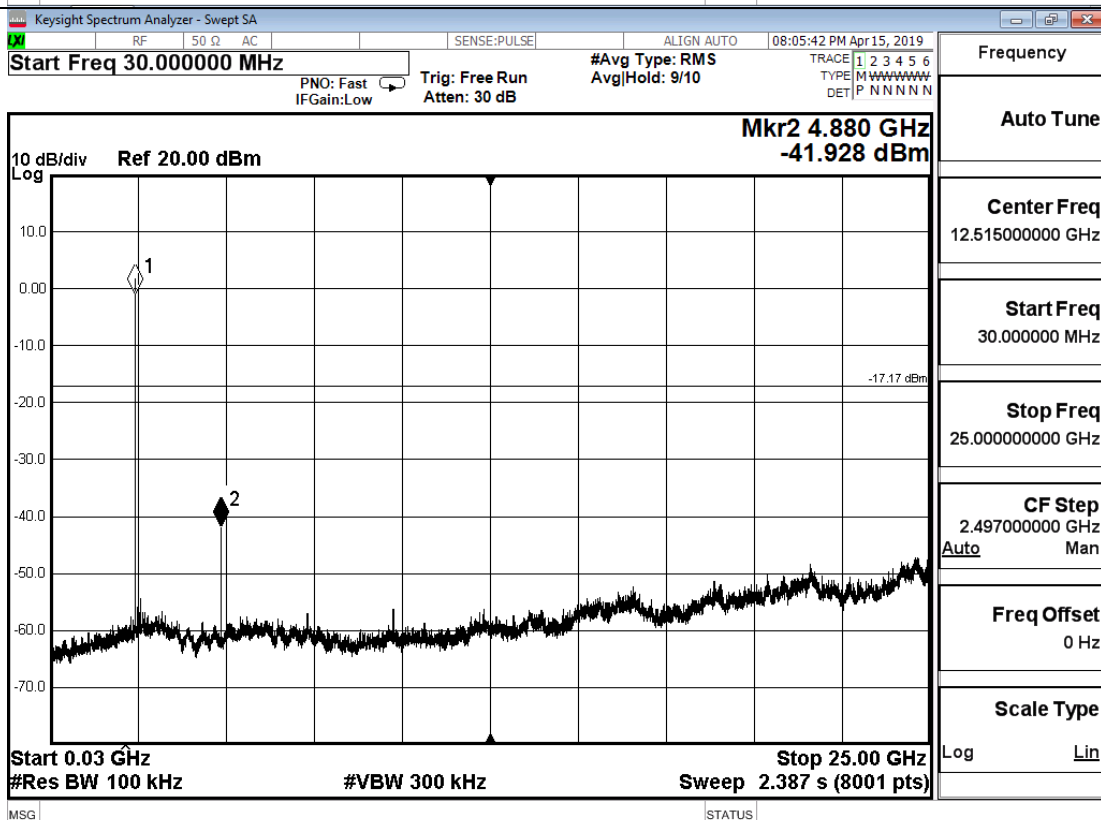


8DPSK_MCH_Graphs

Pref

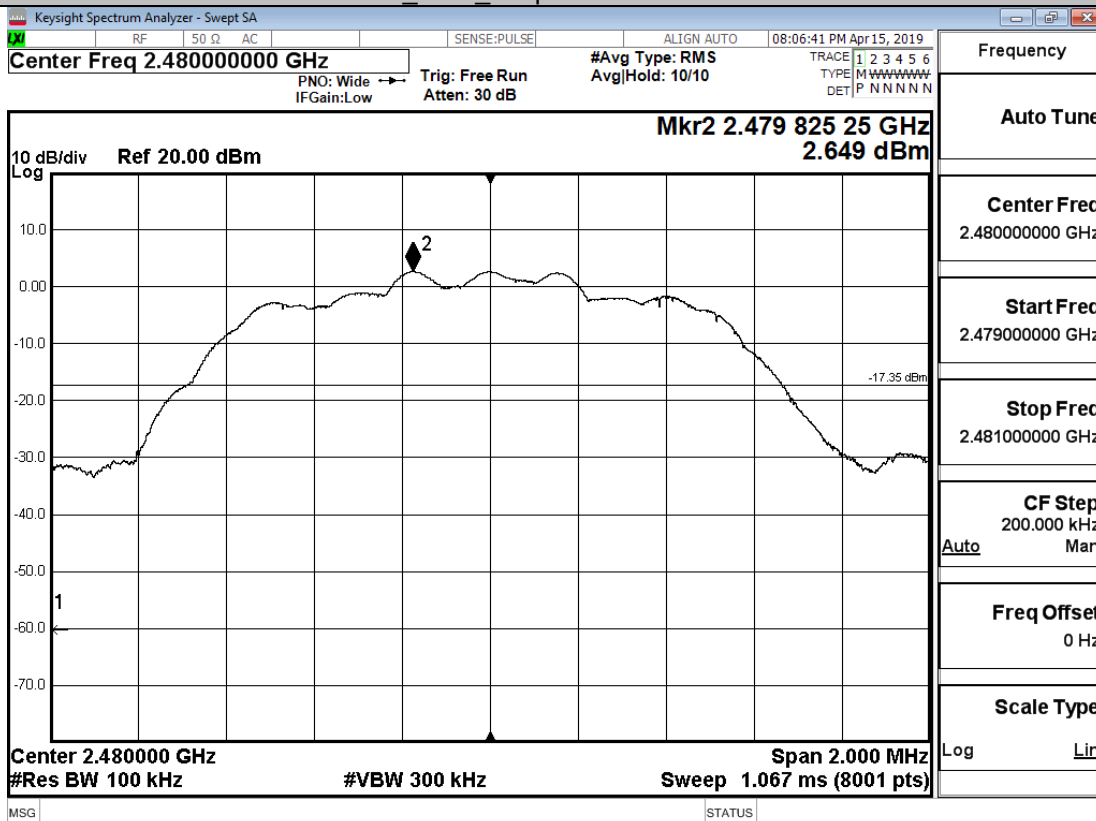


Puw

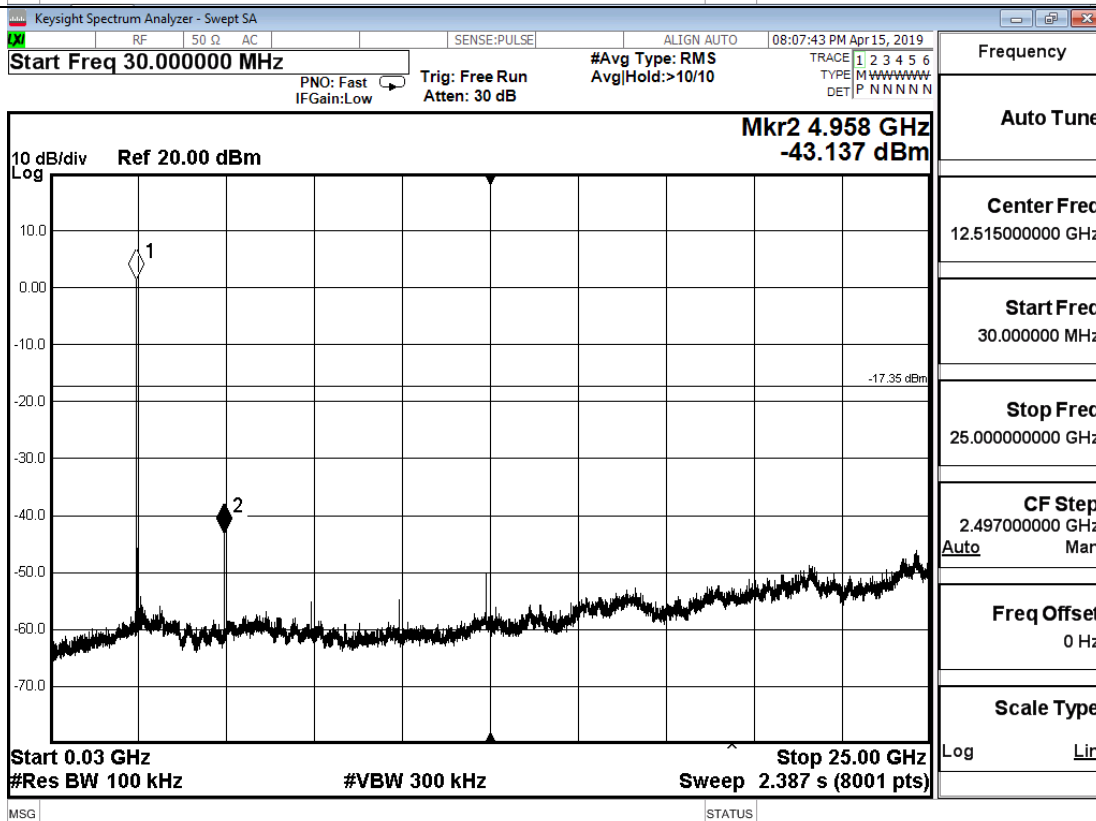


8DPSK_HCH_Graphs

Pref



Puw

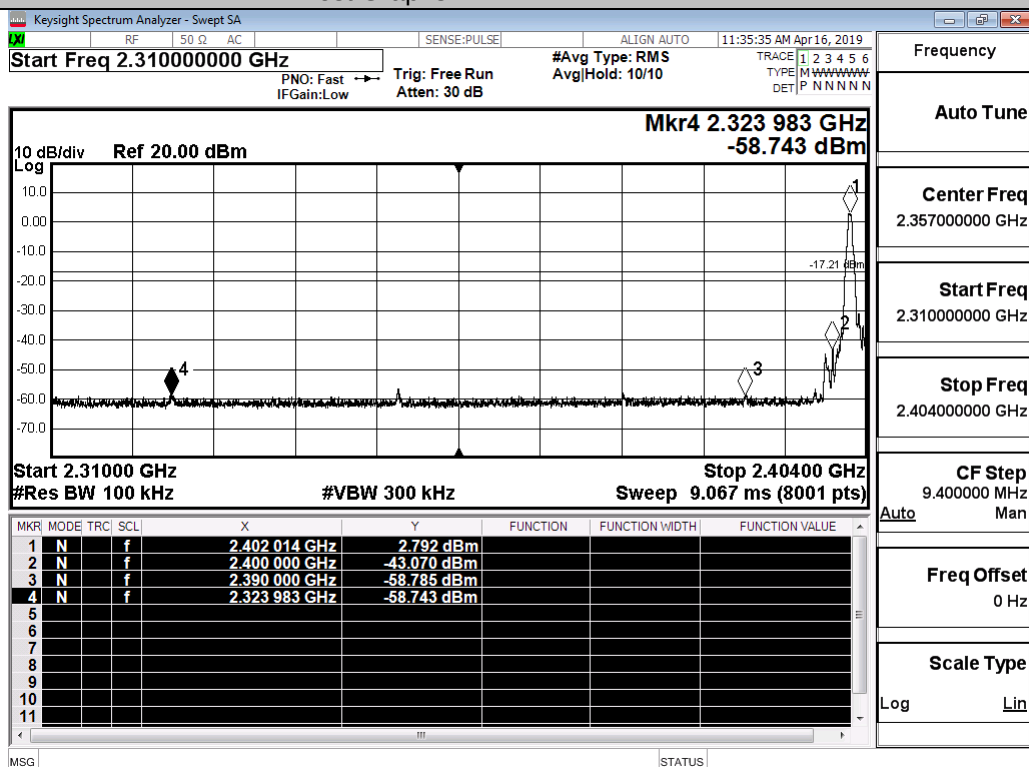


A.7 Band-edge for RF Conducted Emissions

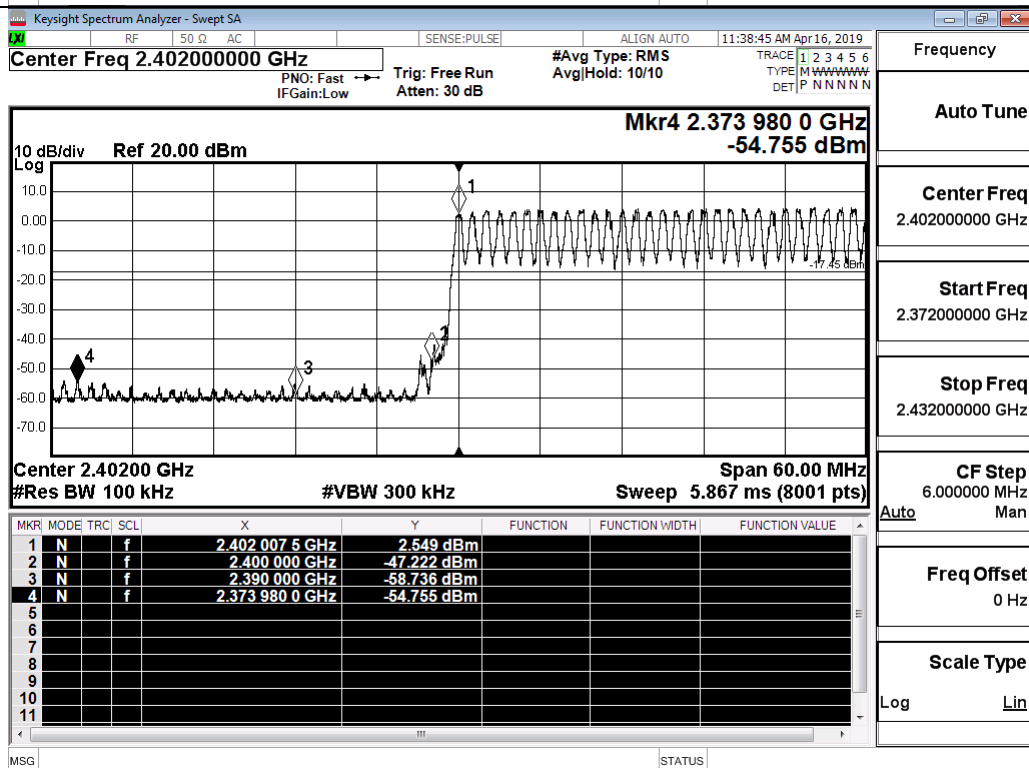
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.792	Off	-43.070	-17.21	PASS
			2.549	On	-47.222	-17.45	PASS
	HCH	2480	4.778	Off	-57.349	-15.22	PASS
			4.654	On	-49.781	-15.35	PASS
$\pi/4$ DQPSK	LCH	2402	0.286	Off	-49.277	-19.71	PASS
			-1.216	On	-51.812	-21.22	PASS
	HCH	2480	0.755	Off	-58.224	-19.25	PASS
			0.542	On	-50.494	-19.46	PASS
8DPSK	LCH	2402	0.429	Off	-49.070	-19.57	PASS
			-1.188	On	-54.046	-21.19	PASS
	HCH	2480	0.823	Off	-54.610	-19.18	PASS
			0.707	On	-52.308	-19.29	PASS

Test Graphs

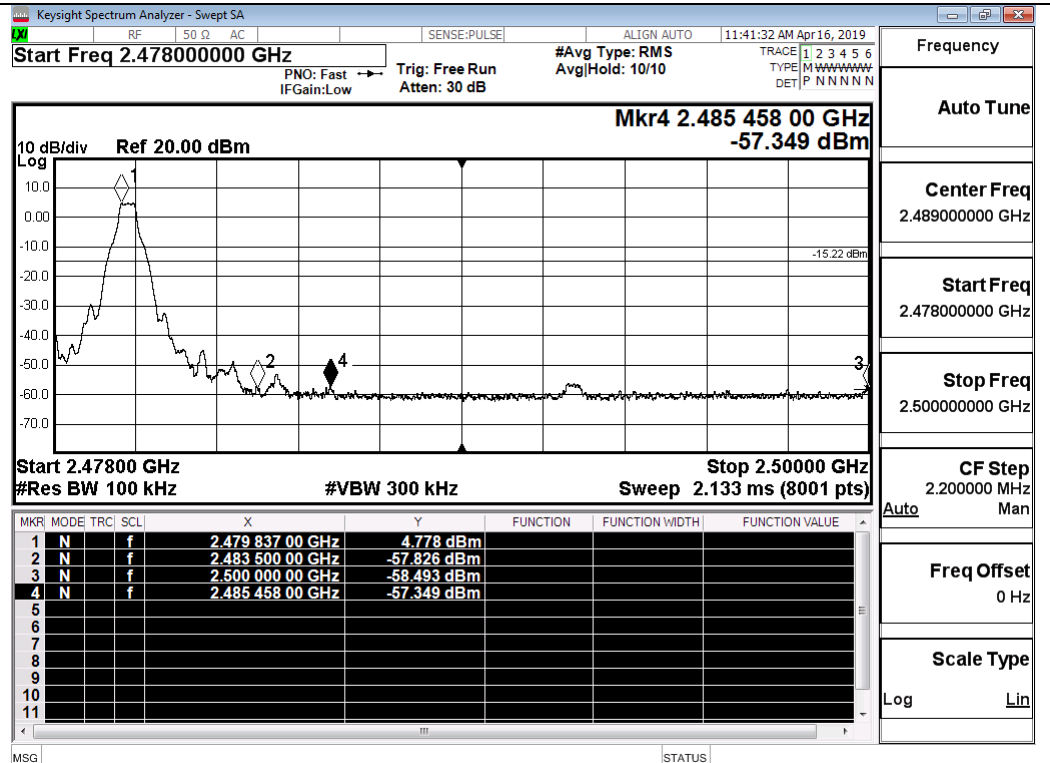
GFSK/LCH/No Hop



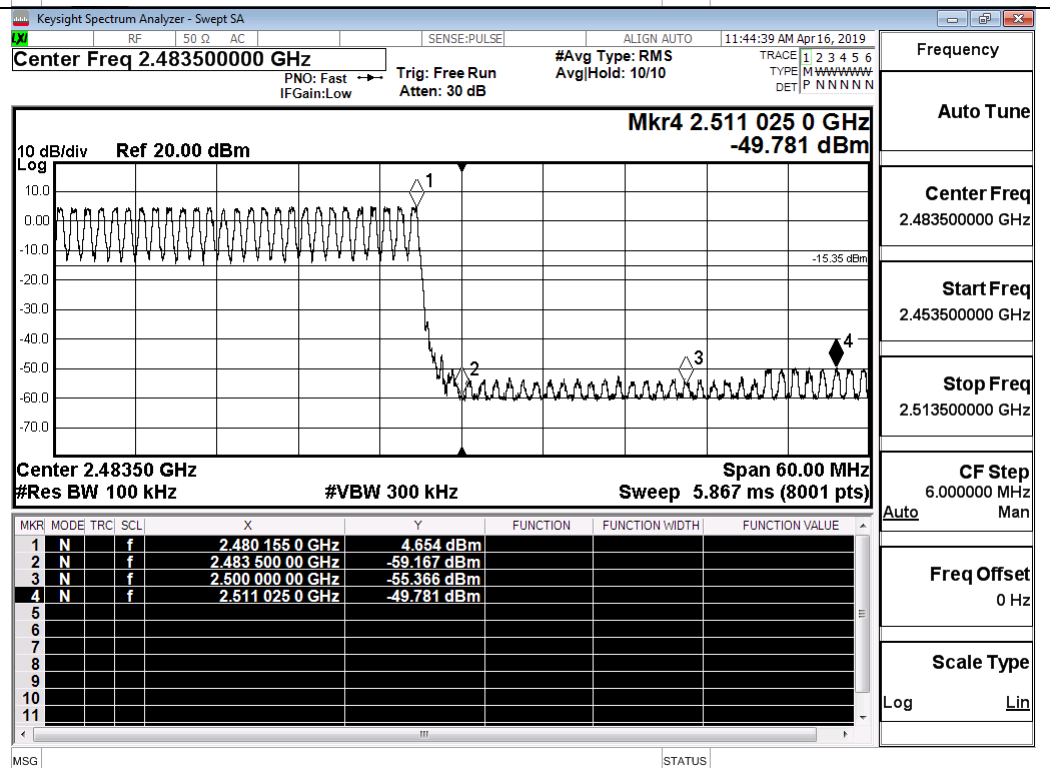
GFSK/LCH/Hop



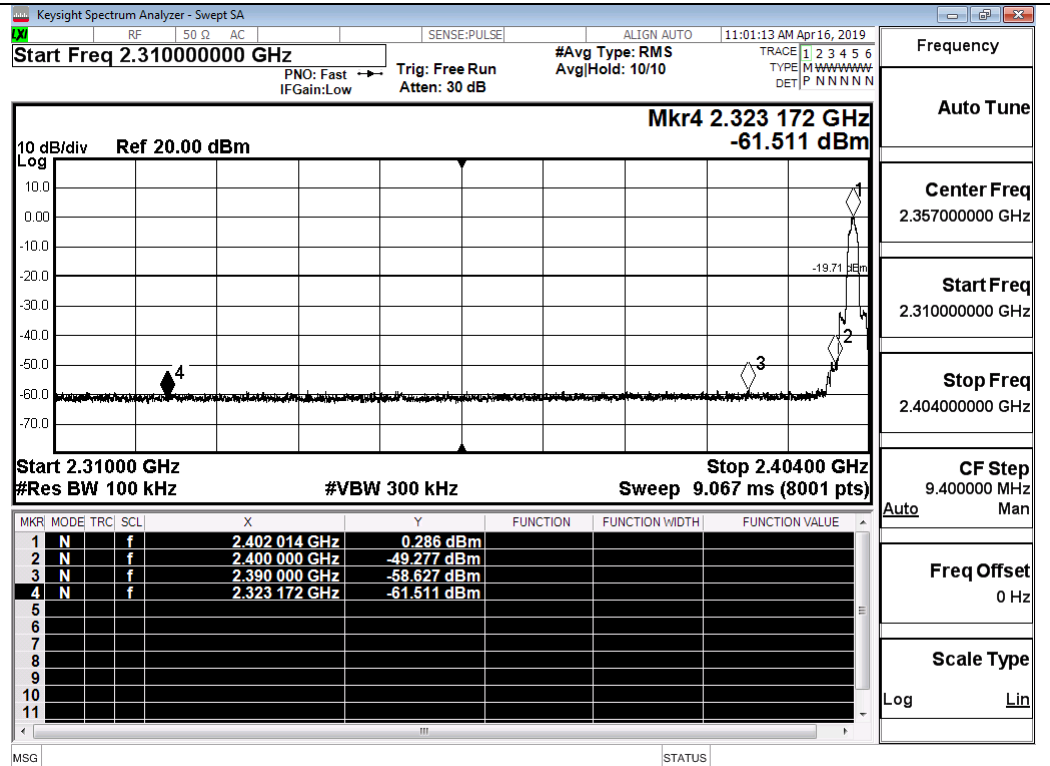
GFSK/HCH/No Hop



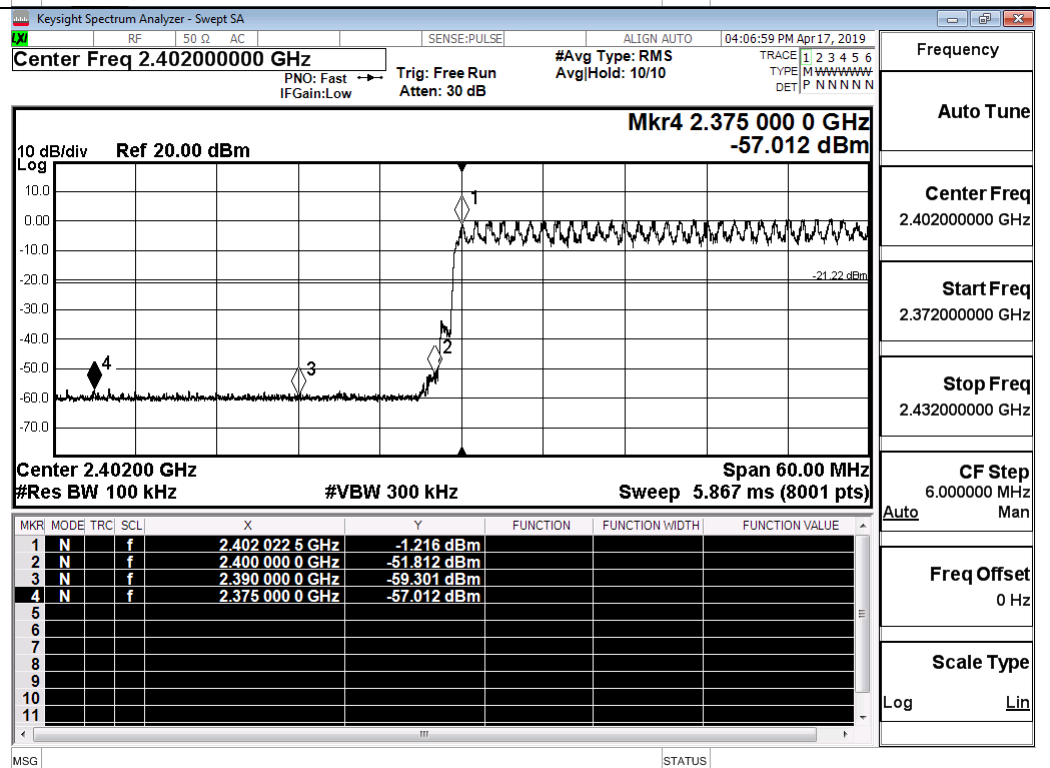
GFSK/HCH/Hop



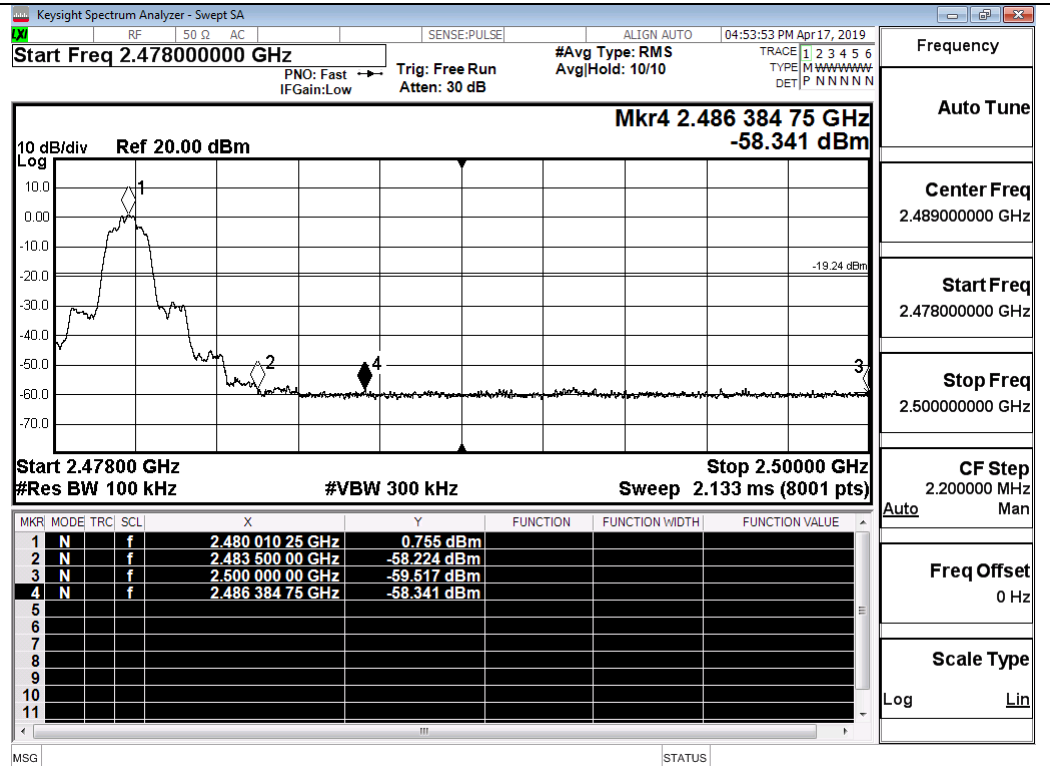
$\pi/4$ DQPSK/LCH/No
Hop



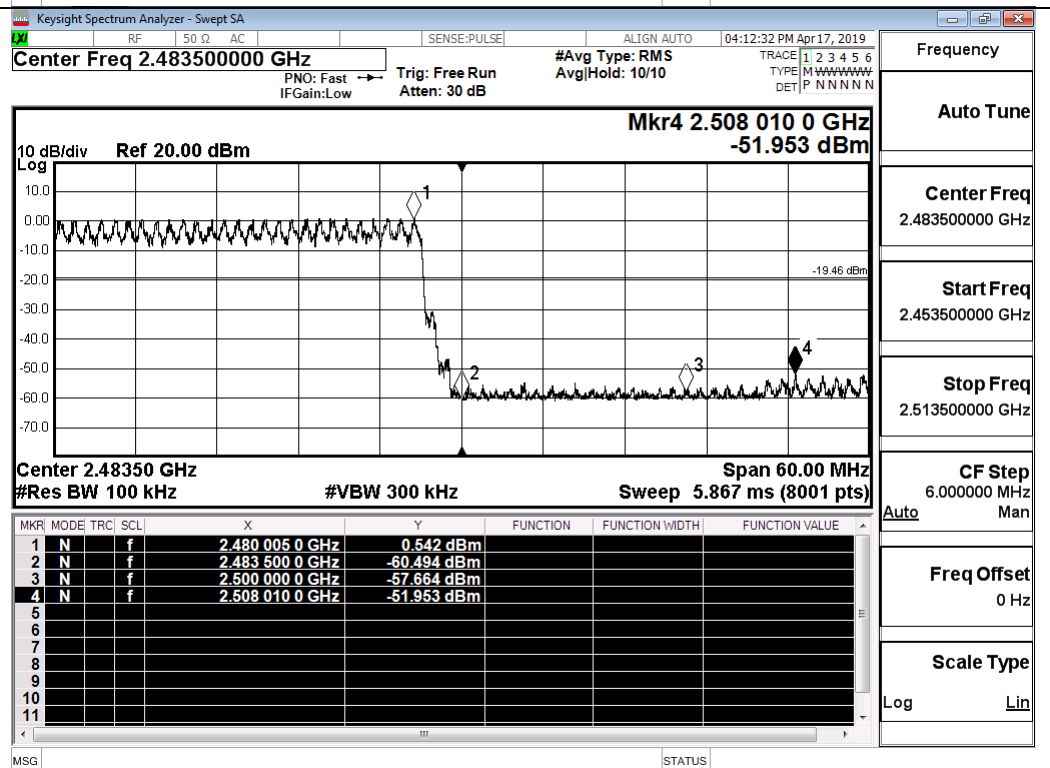
$\pi/4$ DQPSK/LCH/Hop



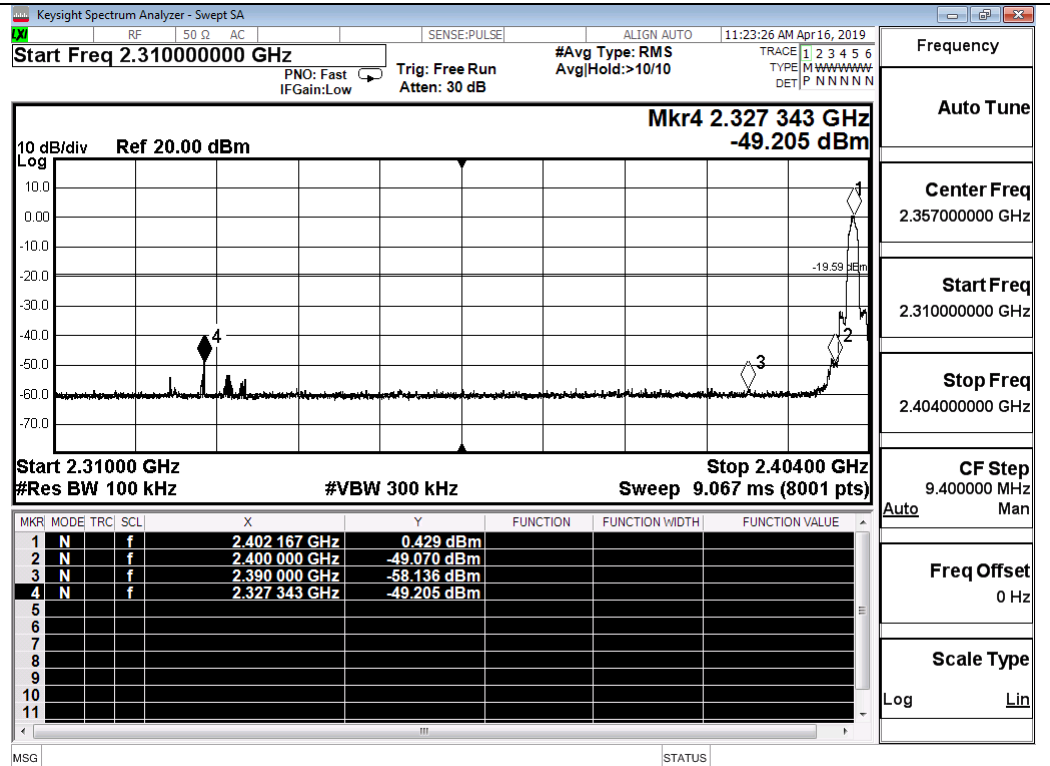
$\pi/4$ DQPSK/HCH/No
Hop



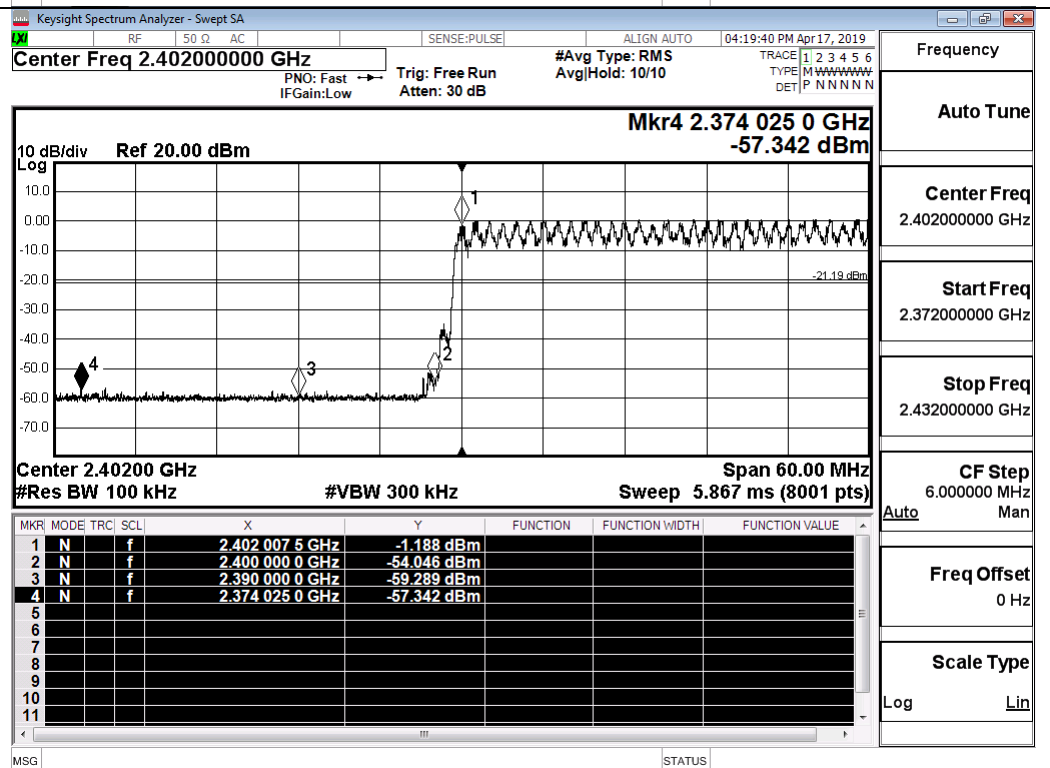
$\pi/4$ DQPSK/HCH/Hop



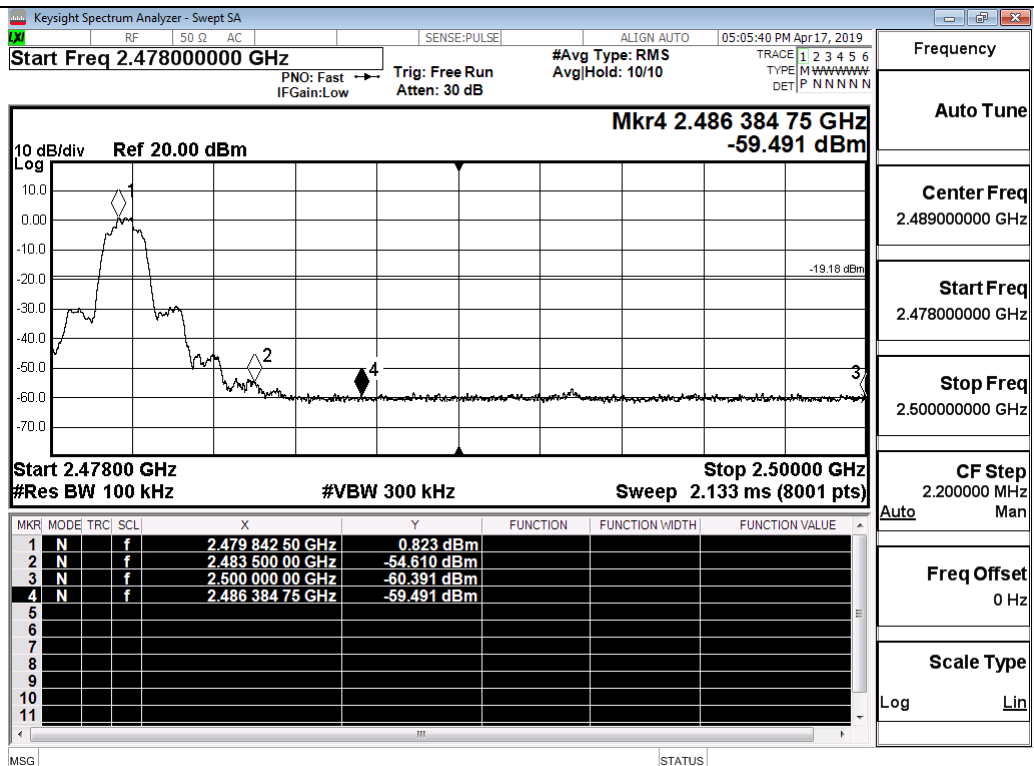
8DPSK/LCH/No Hop



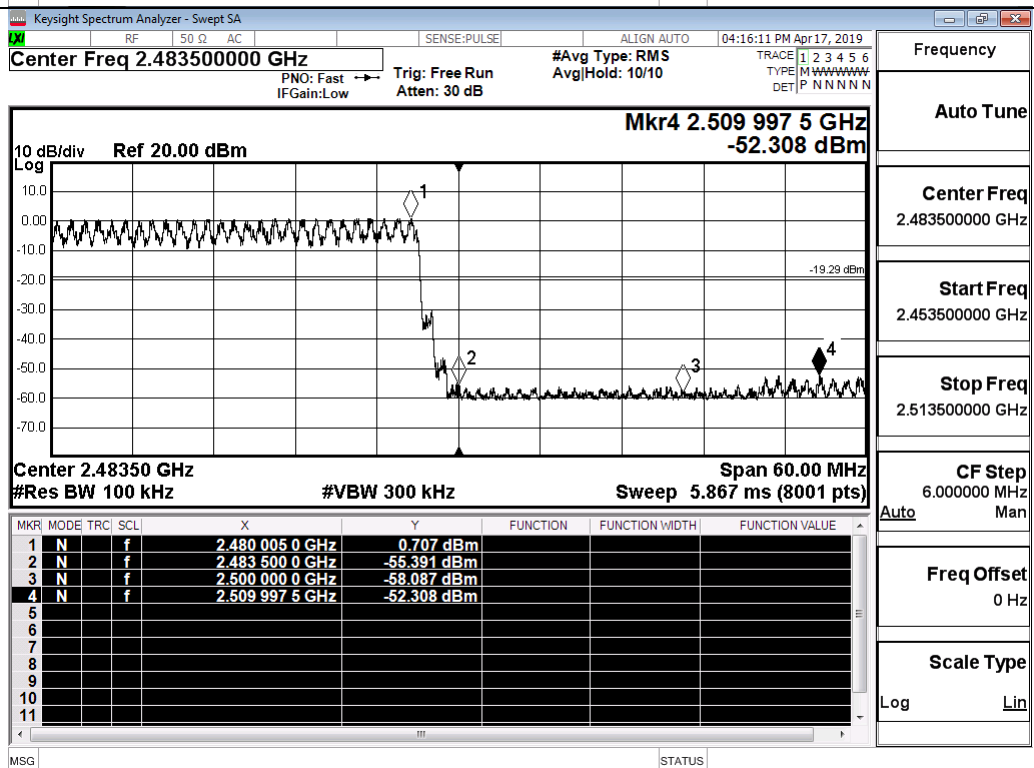
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



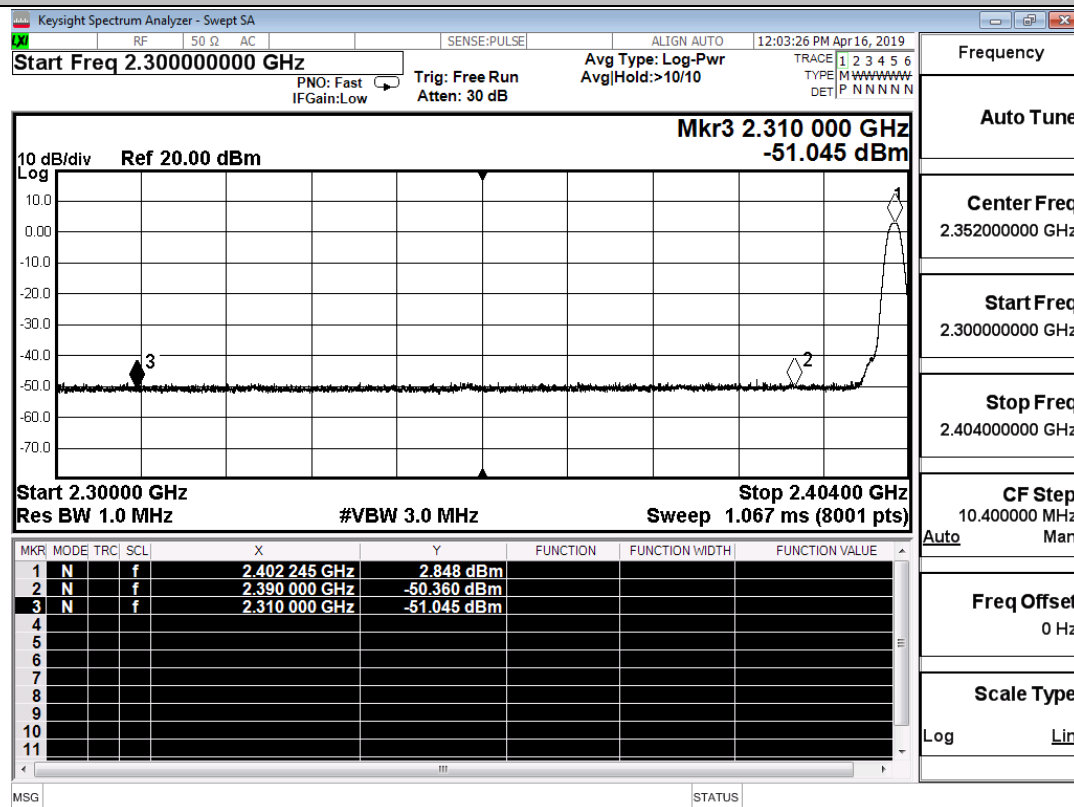
8DPSK/HCH/Hop



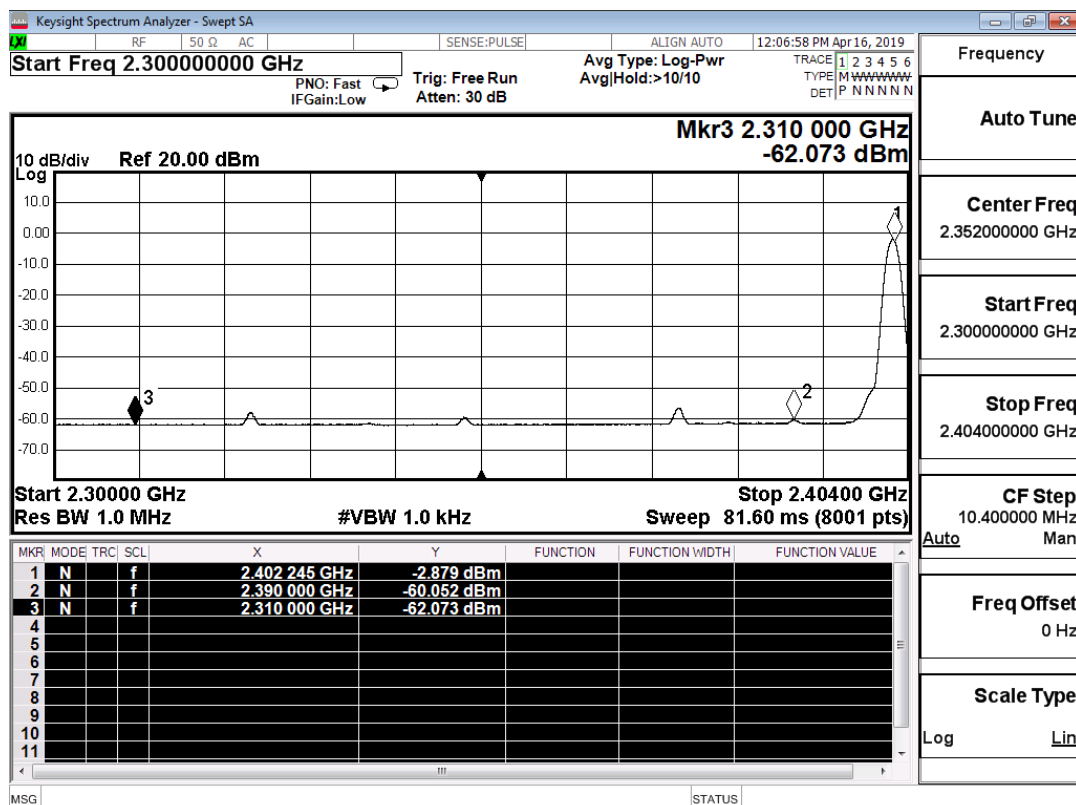
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.045	3.0	0	47.19	PEAK	74	PASS
	Off	2310.0	-62.073	3.0	0	36.16	AV	54	PASS
	Off	2390.0	-50.360	3.0	0	47.87	PEAK	74	PASS
	Off	2390.0	-60.052	3.0	0	38.18	AV	54	PASS
	Off	2483.5	-46.535	3.0	0	51.70	PEAK	74	PASS
	Off	2483.5	-57.106	3.0	0	41.12	AV	54	PASS
	Off	2500.0	-50.298	3.0	0	47.93	PEAK	74	PASS
	Off	2500.0	-59.831	3.0	0	38.40	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-50.187	3.0	0	48.04	PEAK	74	PASS
	Off	2310.0	-62.135	3.0	0	36.10	AV	54	PASS
	Off	2390.0	-49.913	3.0	0	48.32	PEAK	74	PASS
	Off	2390.0	-60.875	3.0	0	37.36	AV	54	PASS
	Off	2483.5	-43.969	3.0	0	54.26	PEAK	74	PASS
	Off	2483.5	-58.079	3.0	0	40.15	AV	54	PASS
	Off	2500.0	-50.374	3.0	0	47.86	PEAK	74	PASS
	Off	2500.0	-60.499	3.0	0	37.73	AV	54	PASS
8DPSK	Off	2310.0	-51.350	3.0	0	46.88	PEAK	74	PASS
	Off	2310.0	-62.272	3.0	0	35.96	AV	54	PASS
	Off	2390.0	-48.963	3.0	0	49.27	PEAK	74	PASS
	Off	2390.0	-61.229	3.0	0	37.00	AV	54	PASS
	Off	2483.5	-42.965	3.0	0	55.27	PEAK	74	PASS
	Off	2483.5	-58.403	3.0	0	39.83	AV	54	PASS
	Off	2500.0	-49.982	3.0	0	48.25	PEAK	74	PASS
	Off	2500.0	-60.726	3.0	0	37.50	AV	54	PASS

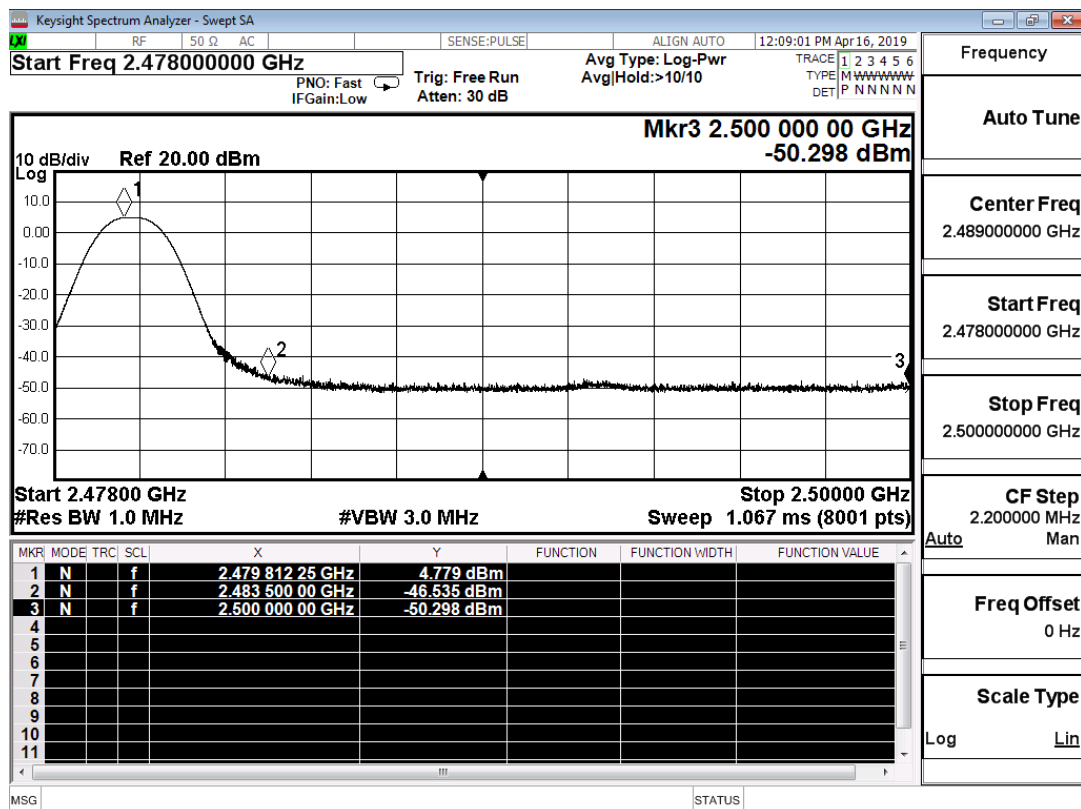
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



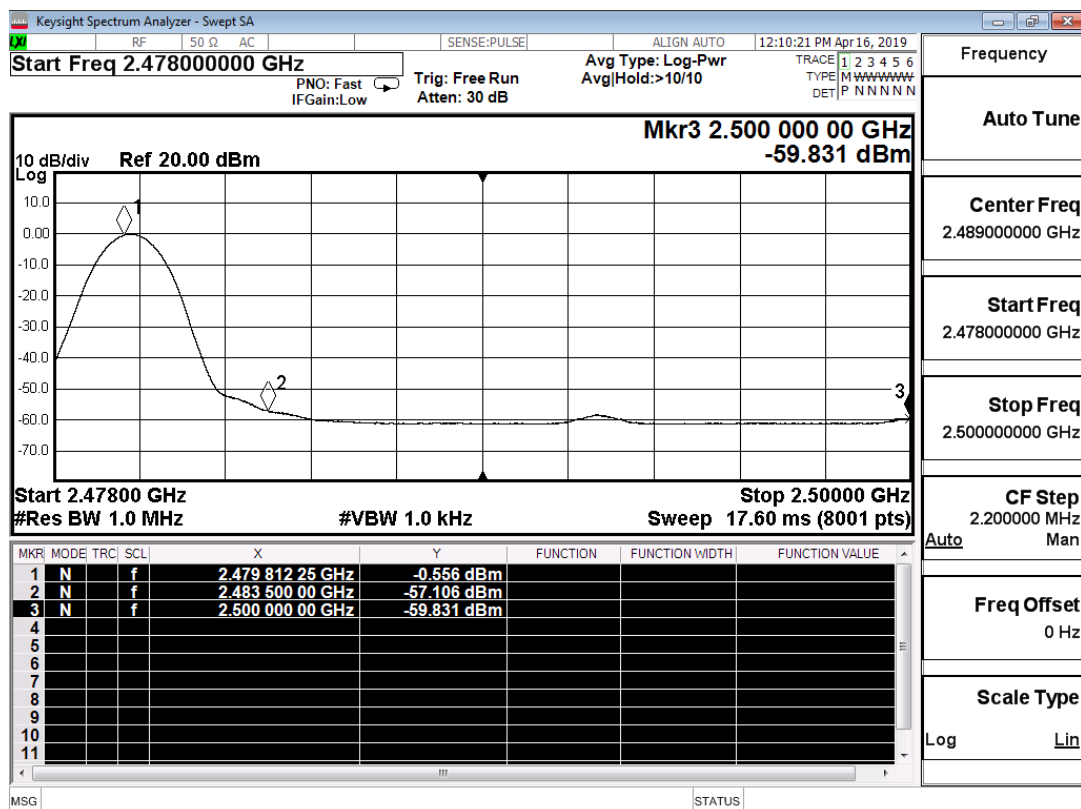
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



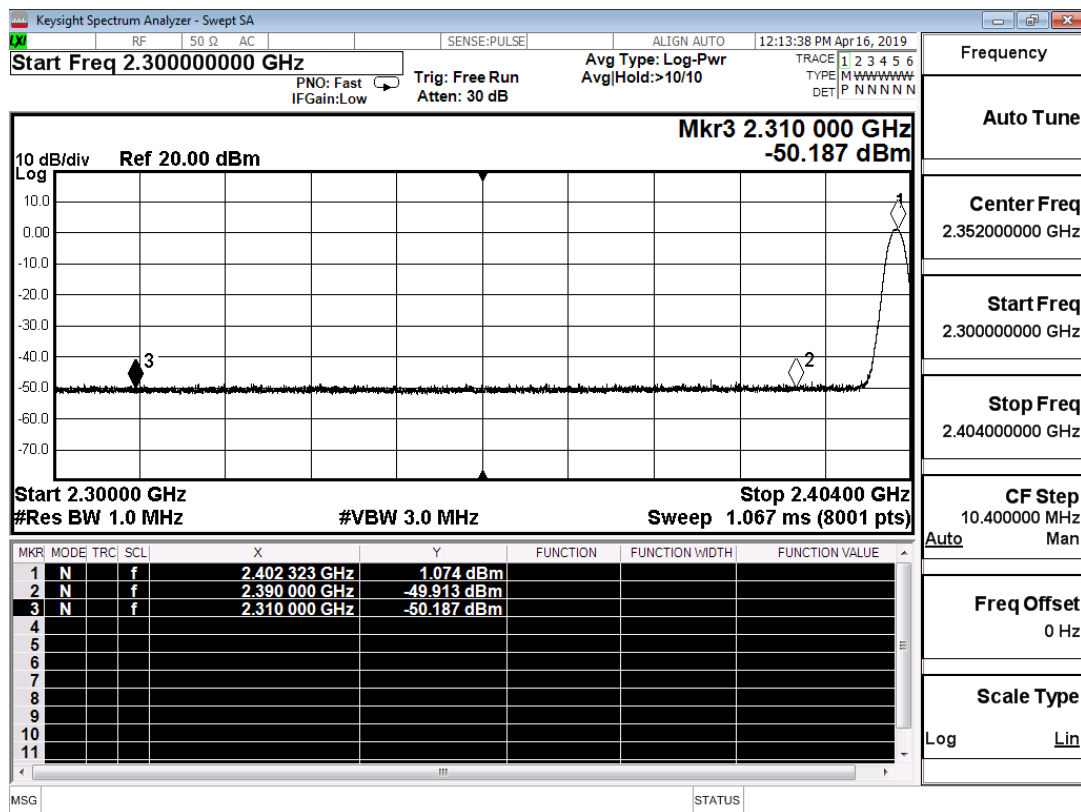
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



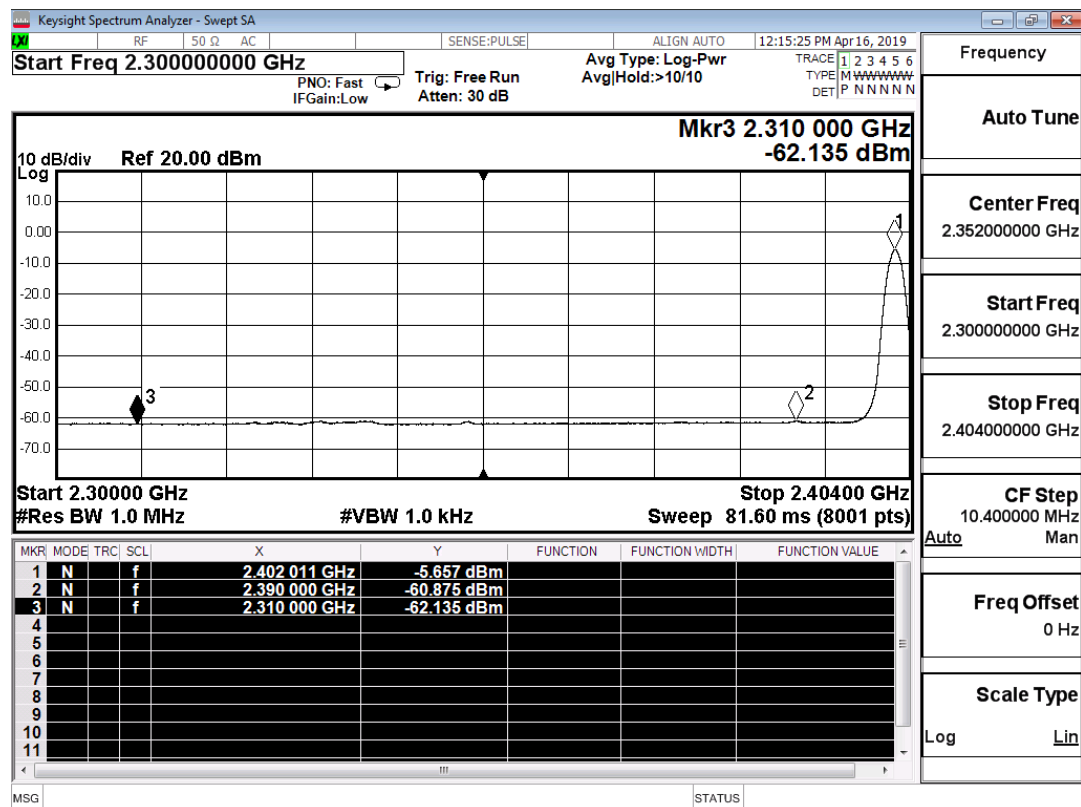
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



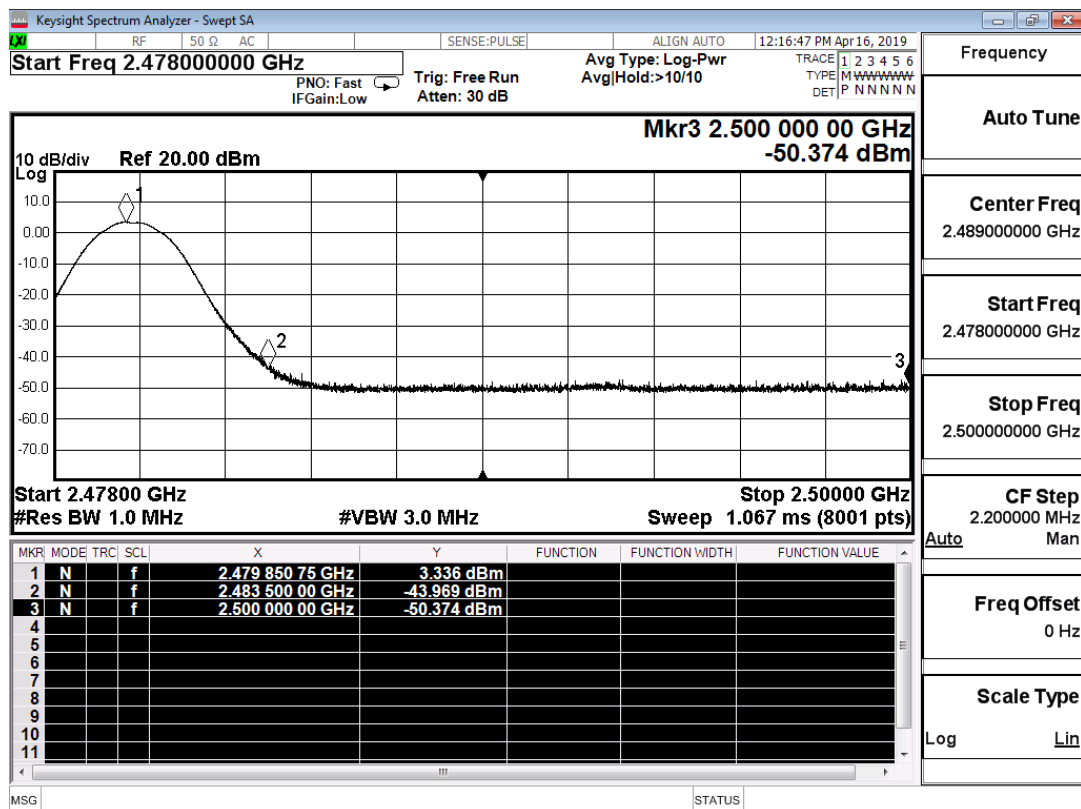
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



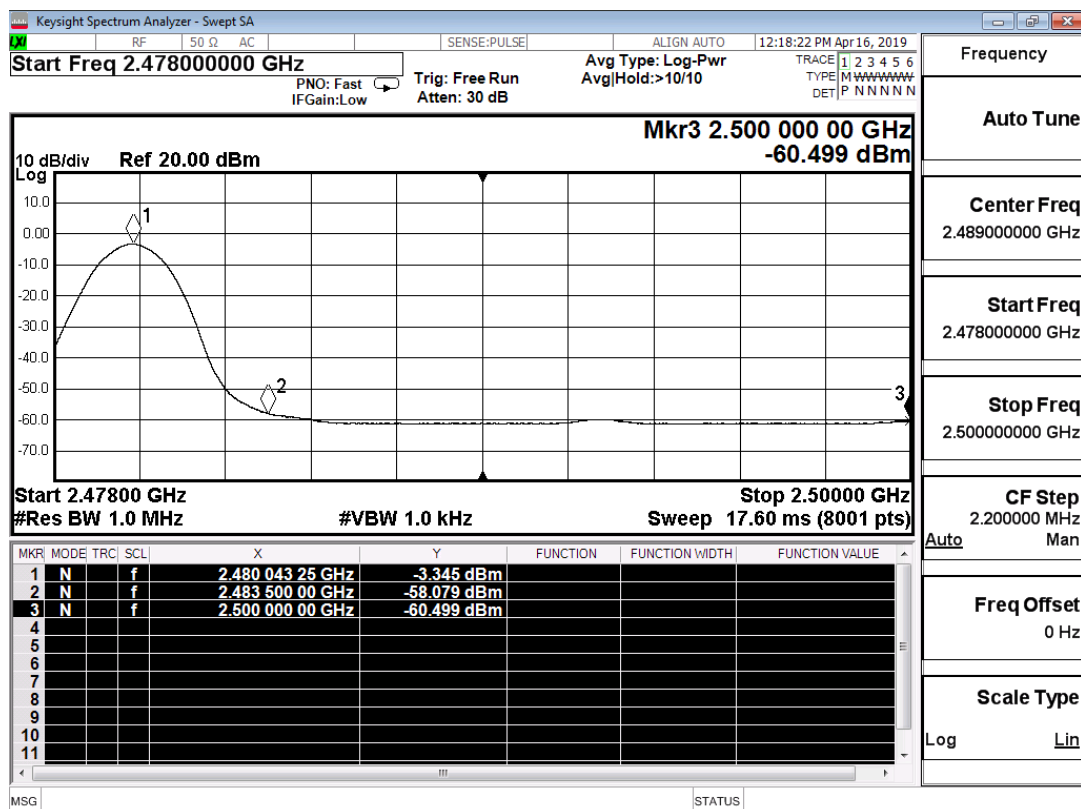
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (Low Channel)



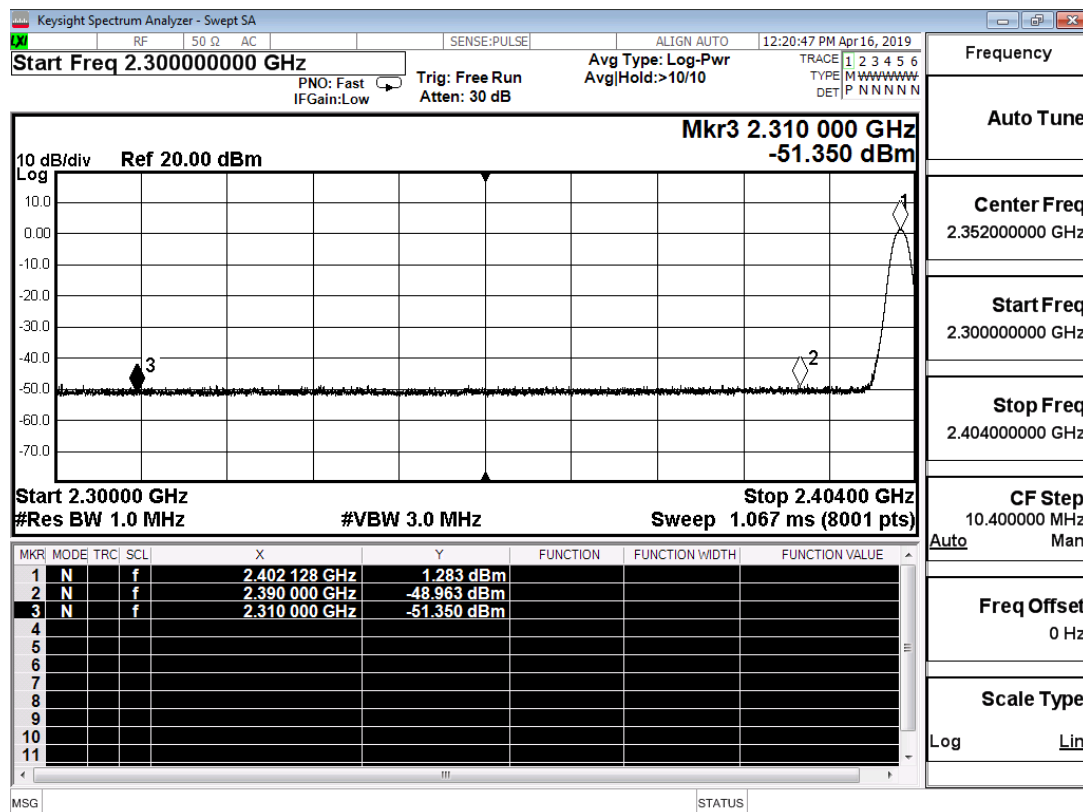
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



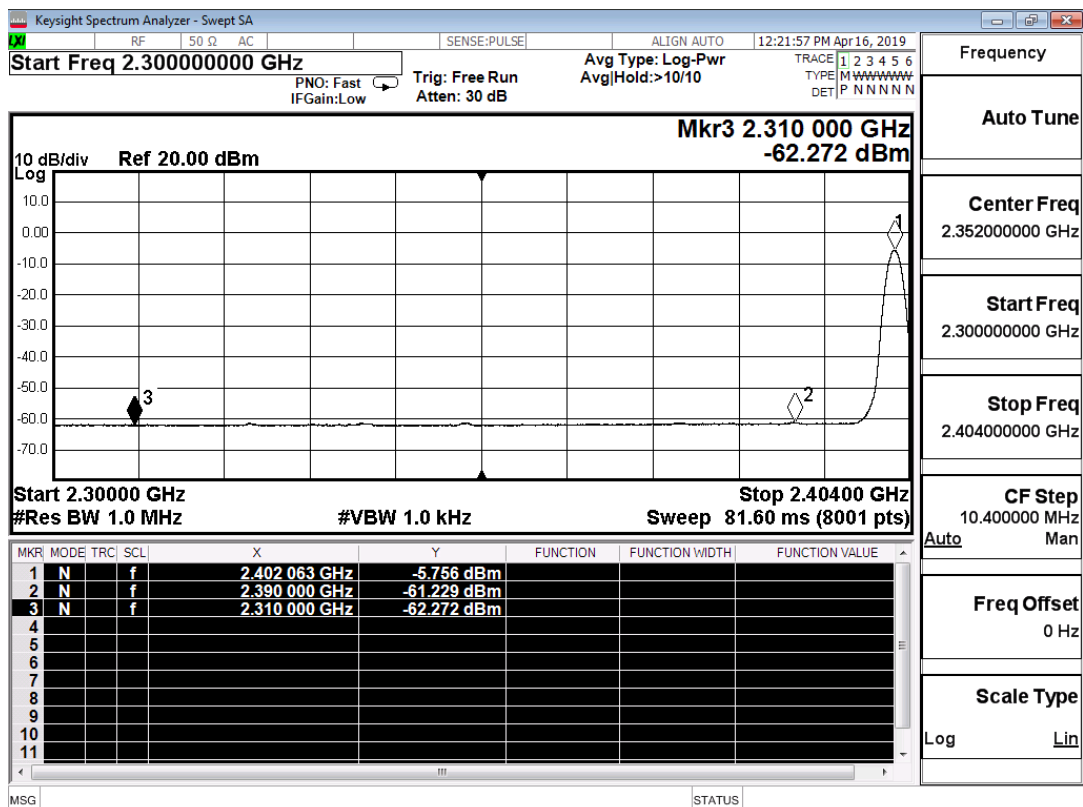
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



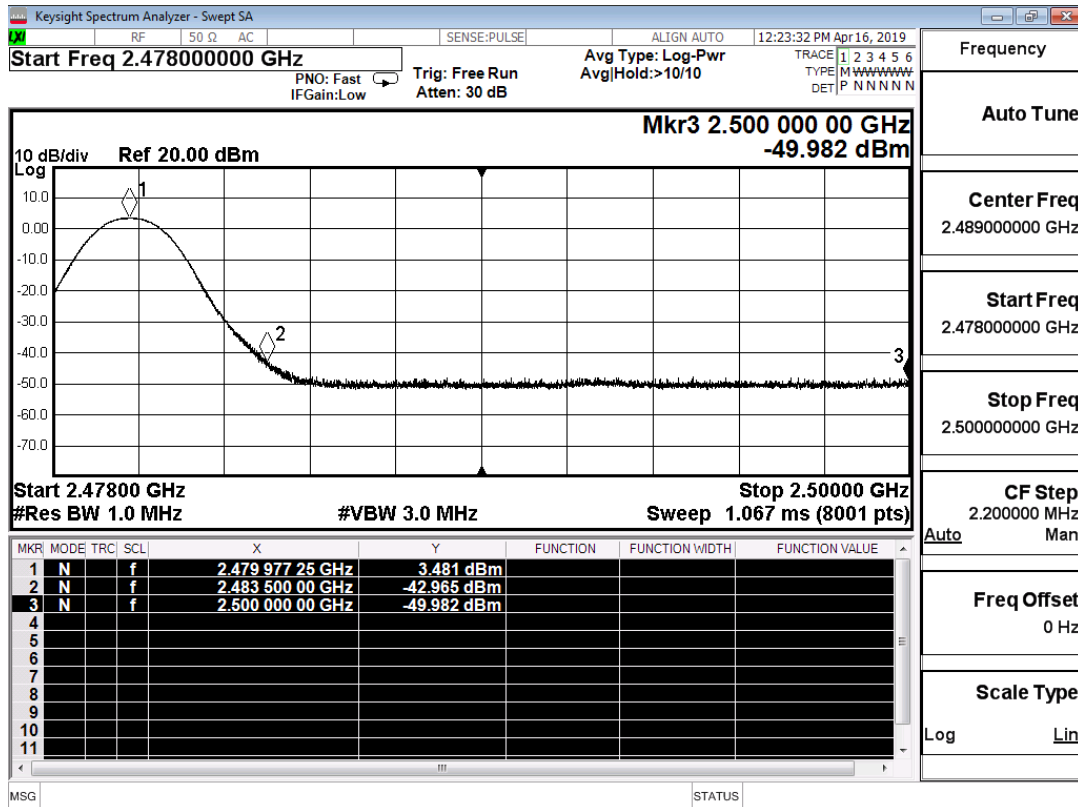
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

