

Appendix A

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

Product Name: 15" Screen Bluetooth PA speaker

Trade Mark: billboard

Test Model: BB2713

Environmental Conditions

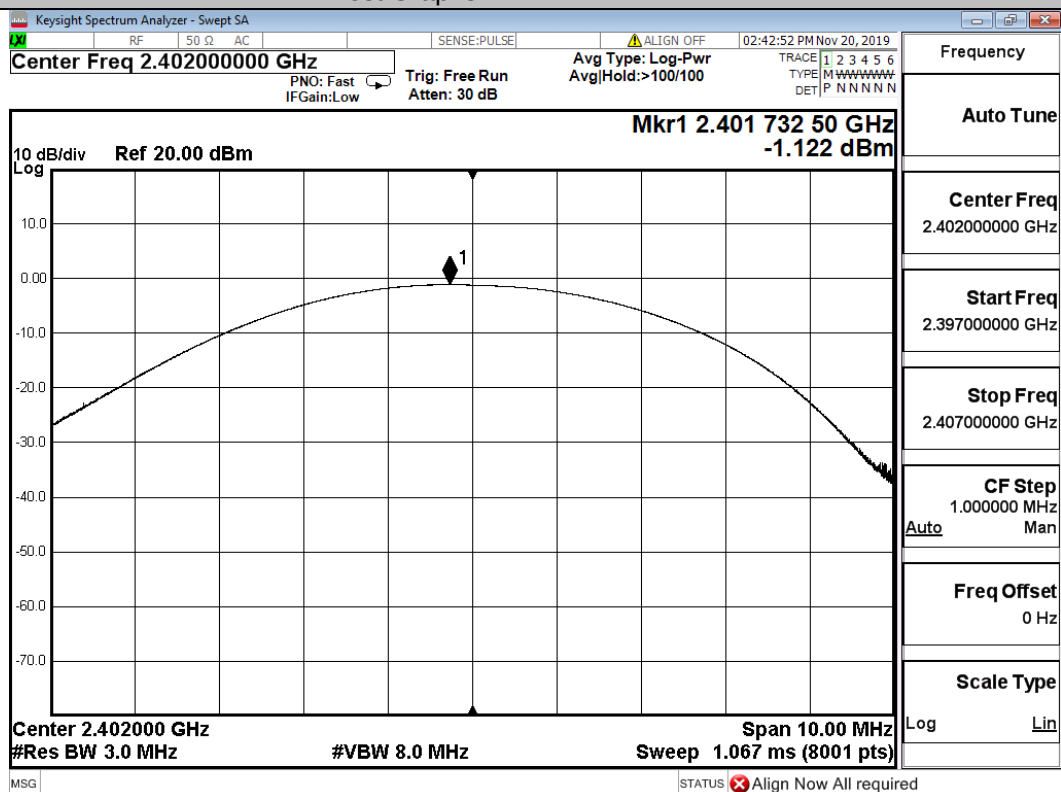
Temperature:	23.4 ° C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	CHUANG WANG
Supervised by:	JAYDEN ZHUO

A.1 Maximum Conducted Peak Output Power

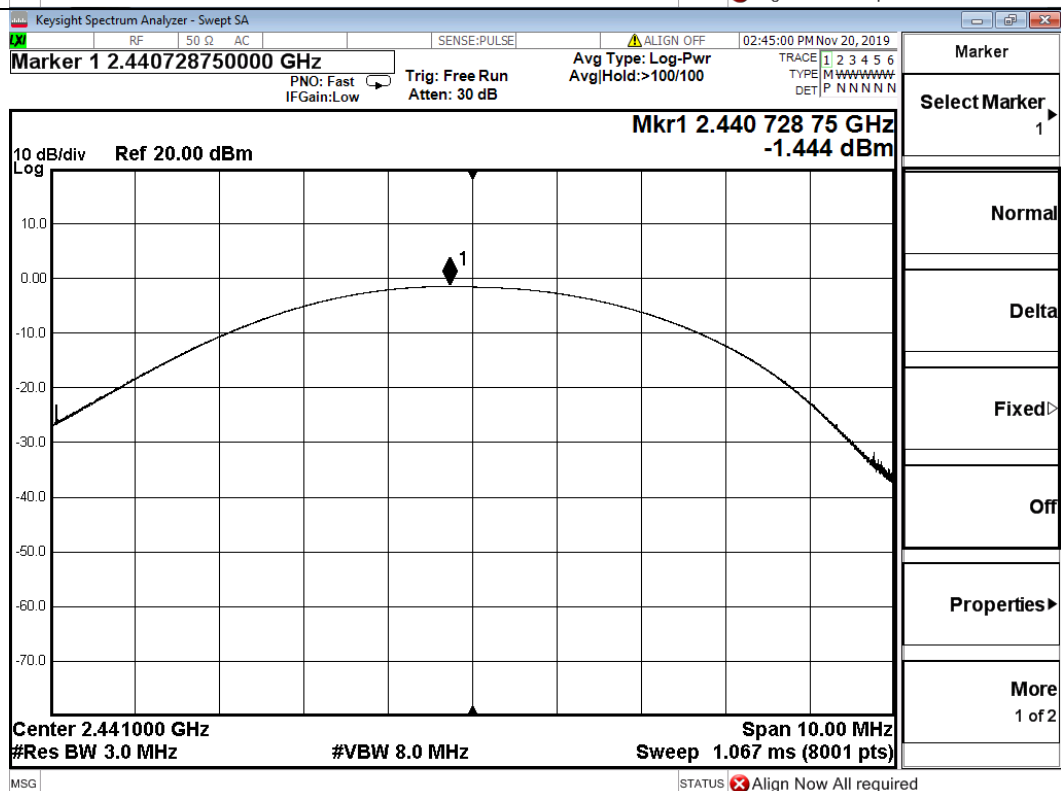
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.122	21	PASS
	MCH	-1.444	21	PASS
	HCH	-1.818	21	PASS
$\pi/4$ DQPSK	LCH	-0.417	21	PASS
	MCH	-0.815	21	PASS
	HCH	-1.171	21	PASS

Test Graphs

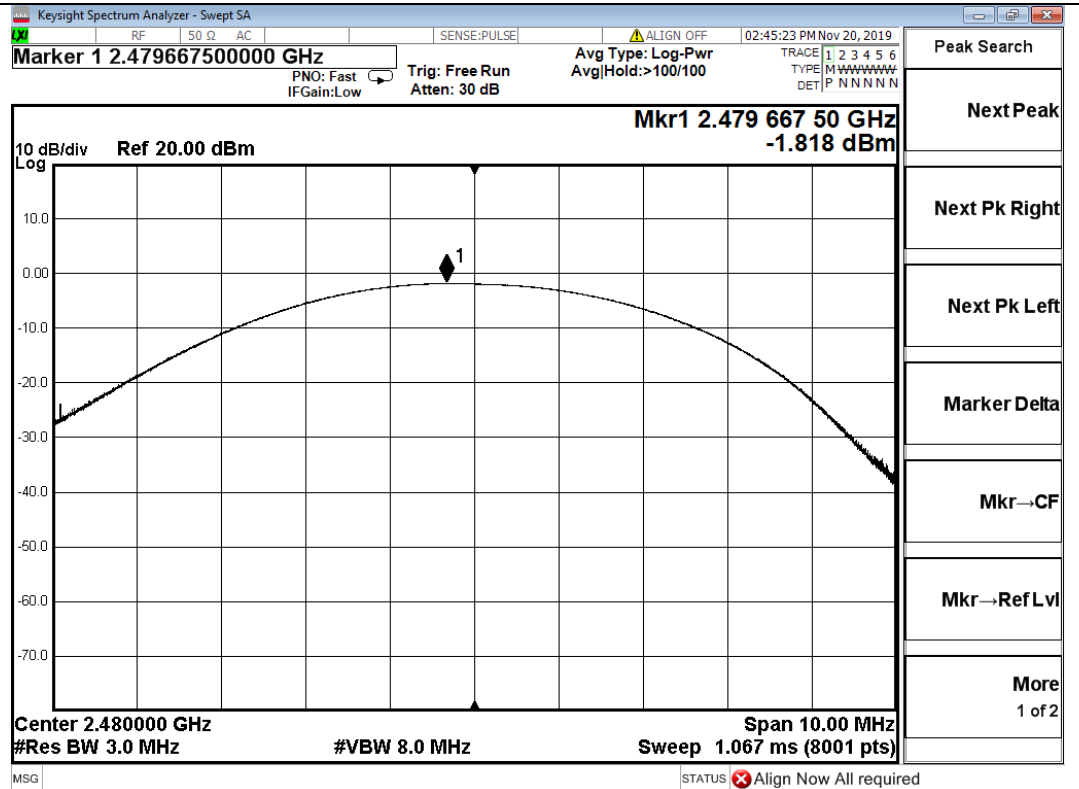
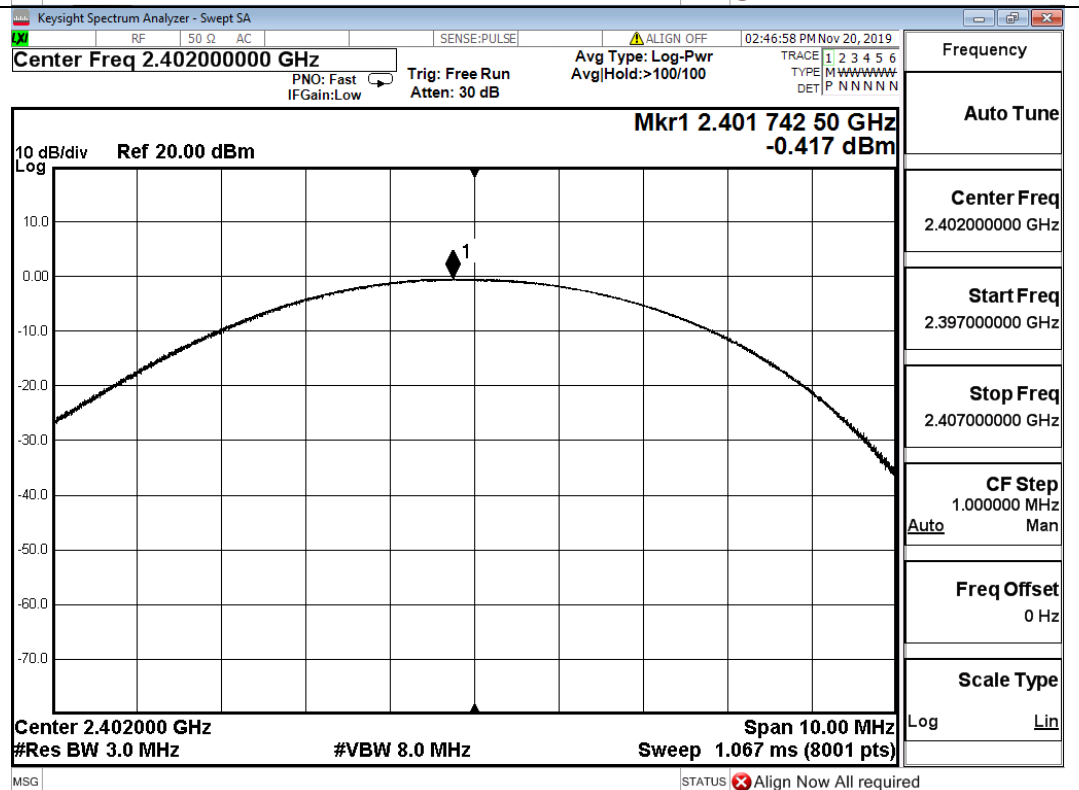
GFSK/LCH

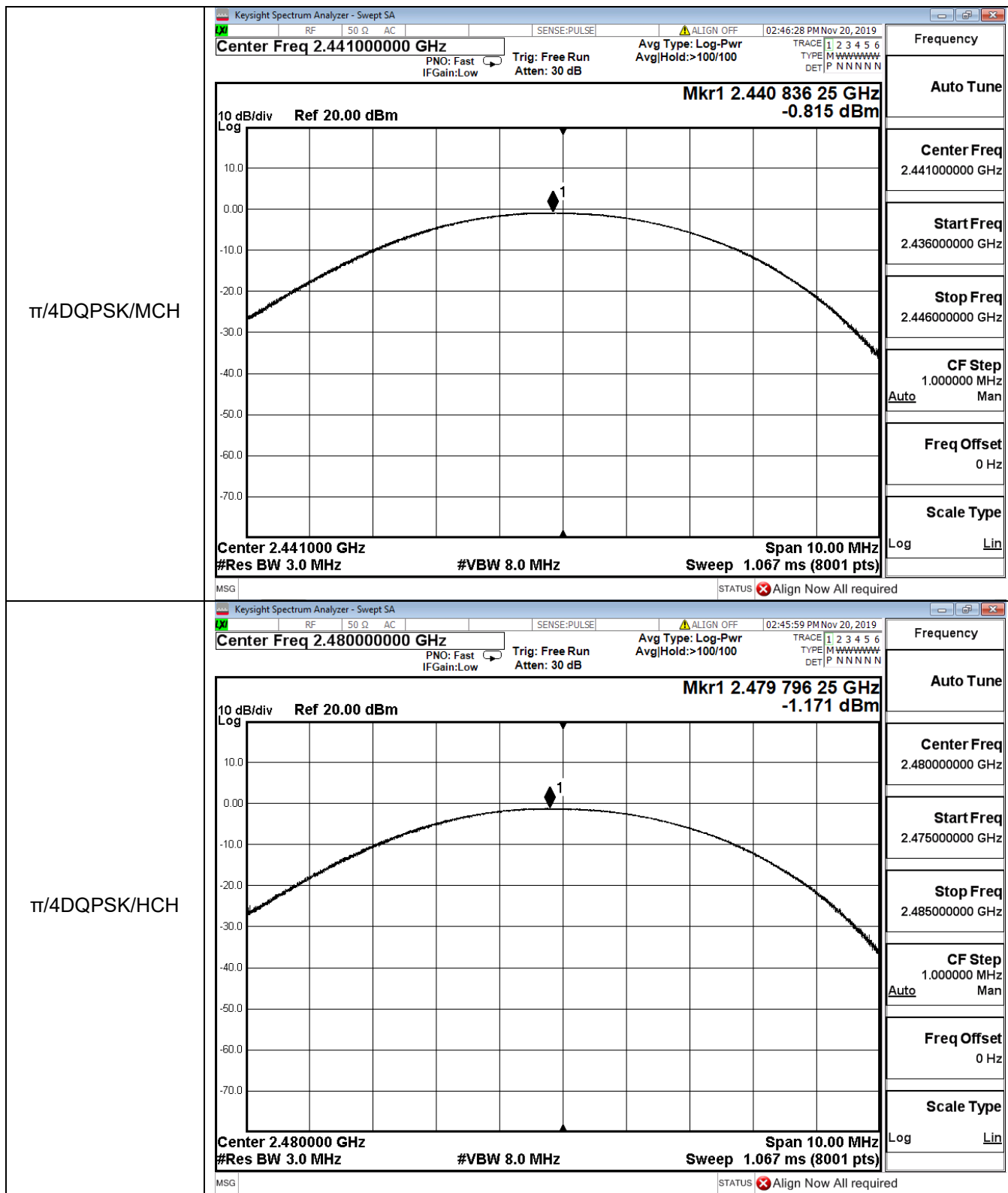


GFSK/MCH



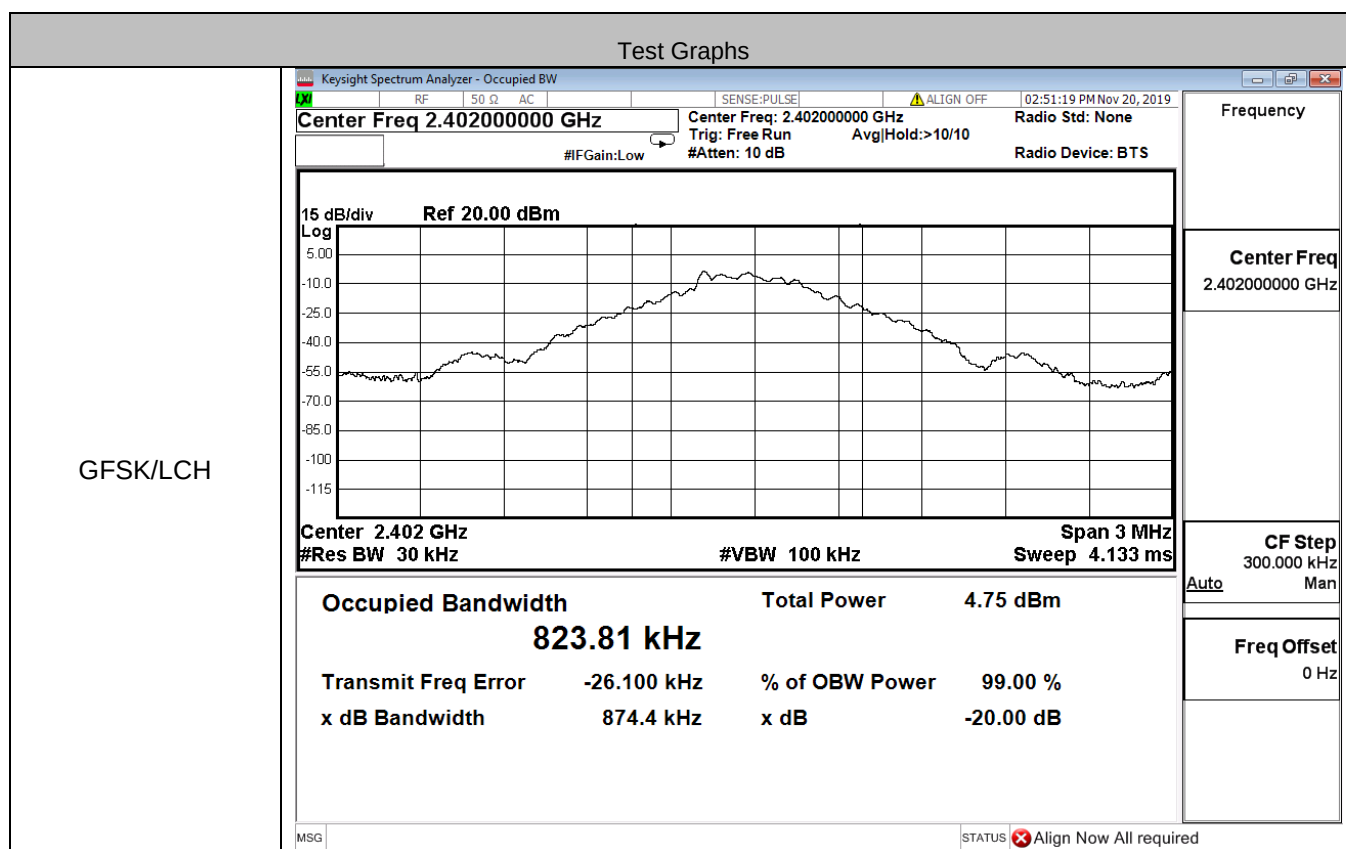
GFSK/HCH

 π /4DQPSK/LCH

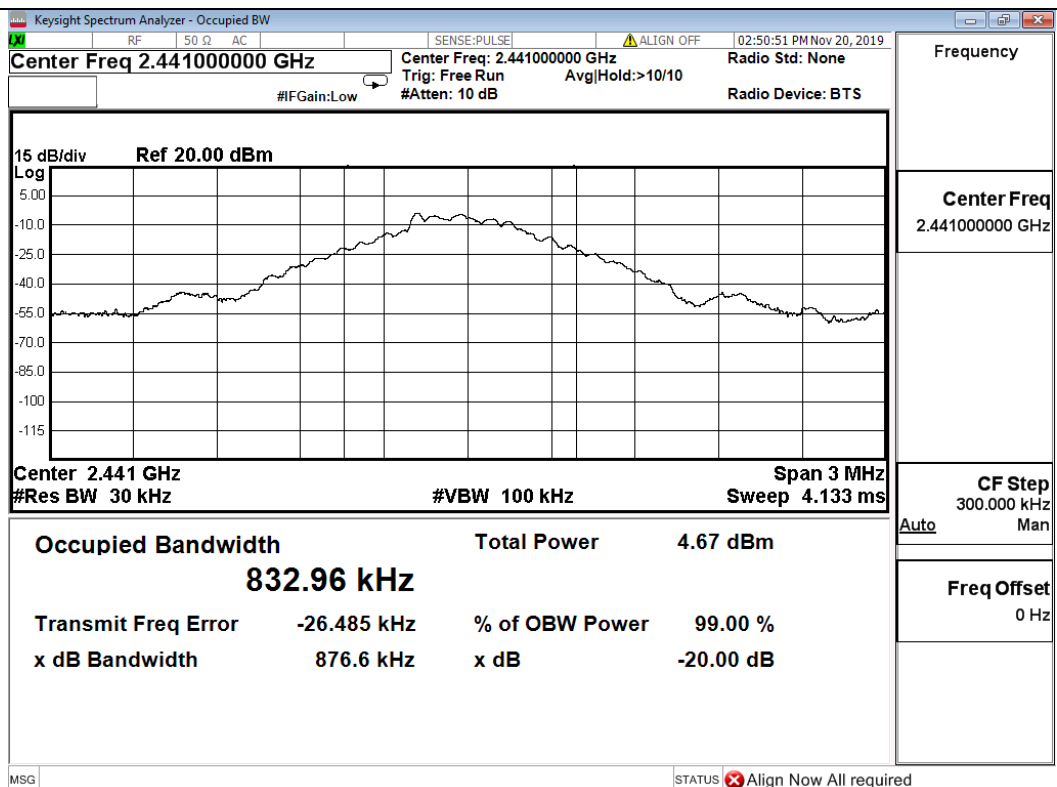


A.2 99% and 20dB Bandwidth

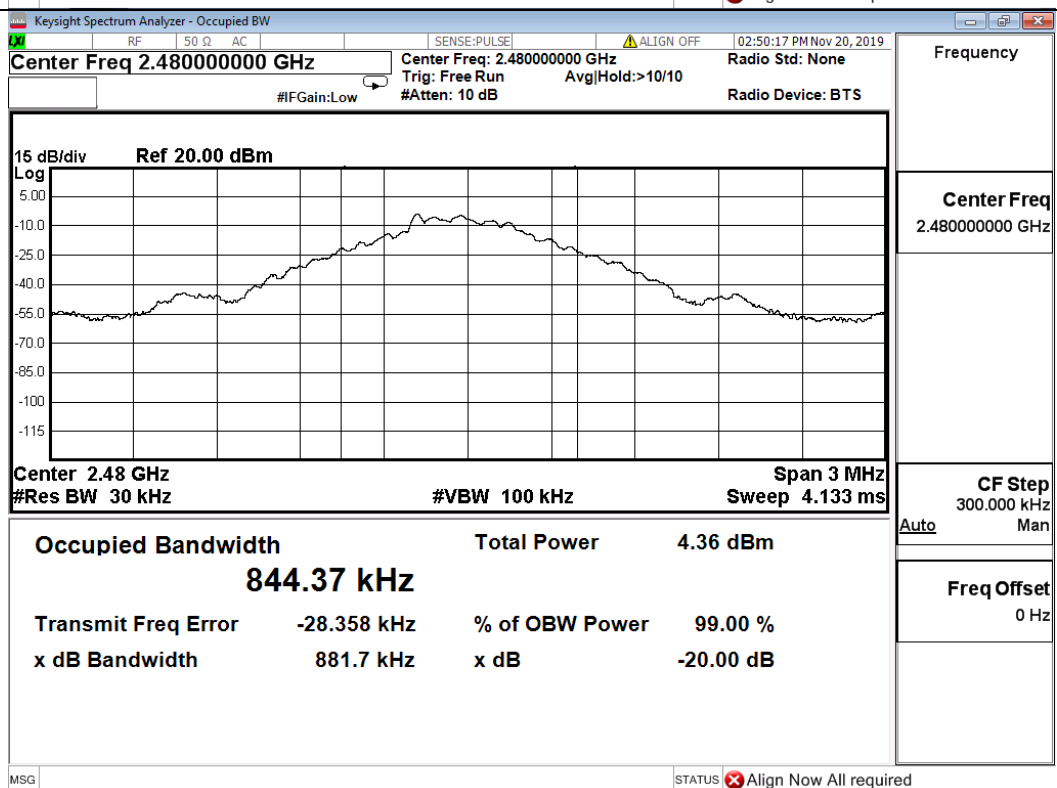
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.82381	0.8744	Not Specified	PASS
	MCH	0.83296	0.8766	Not Specified	PASS
	HCH	0.84437	0.8817	Not Specified	PASS
π /4DQPSK	LCH	1.1720	1.232	Not Specified	PASS
	MCH	1.1734	1.253	Not Specified	PASS
	HCH	1.1816	1.259	Not Specified	PASS

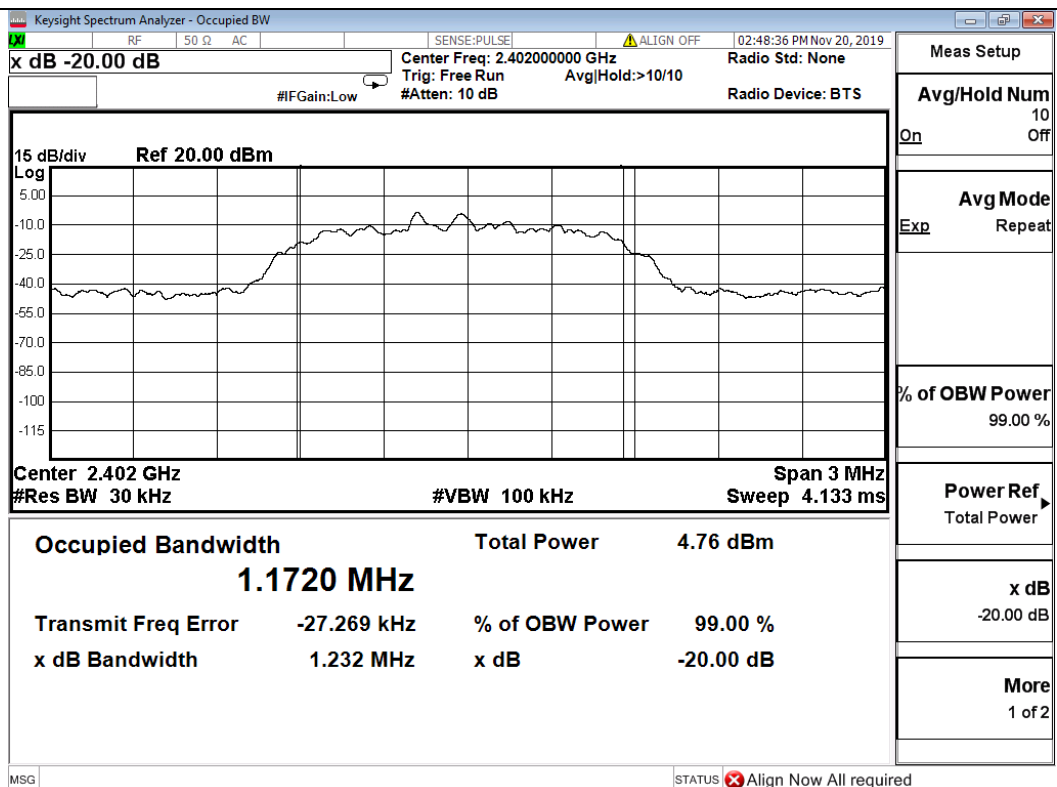
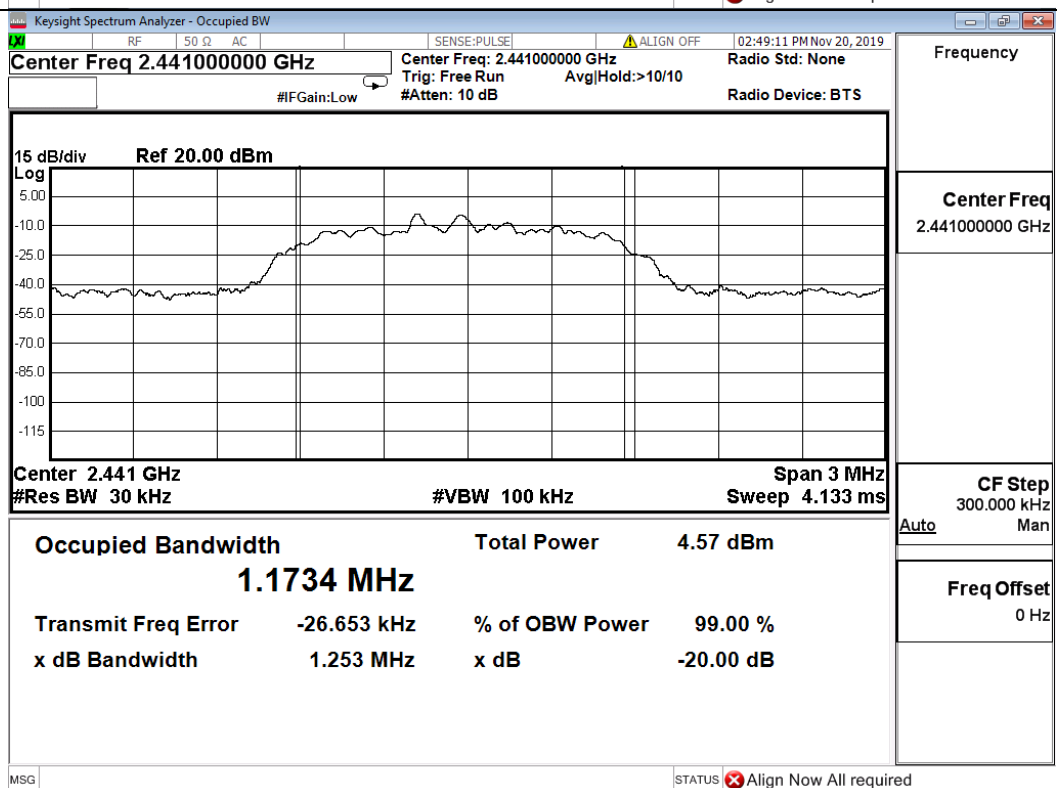


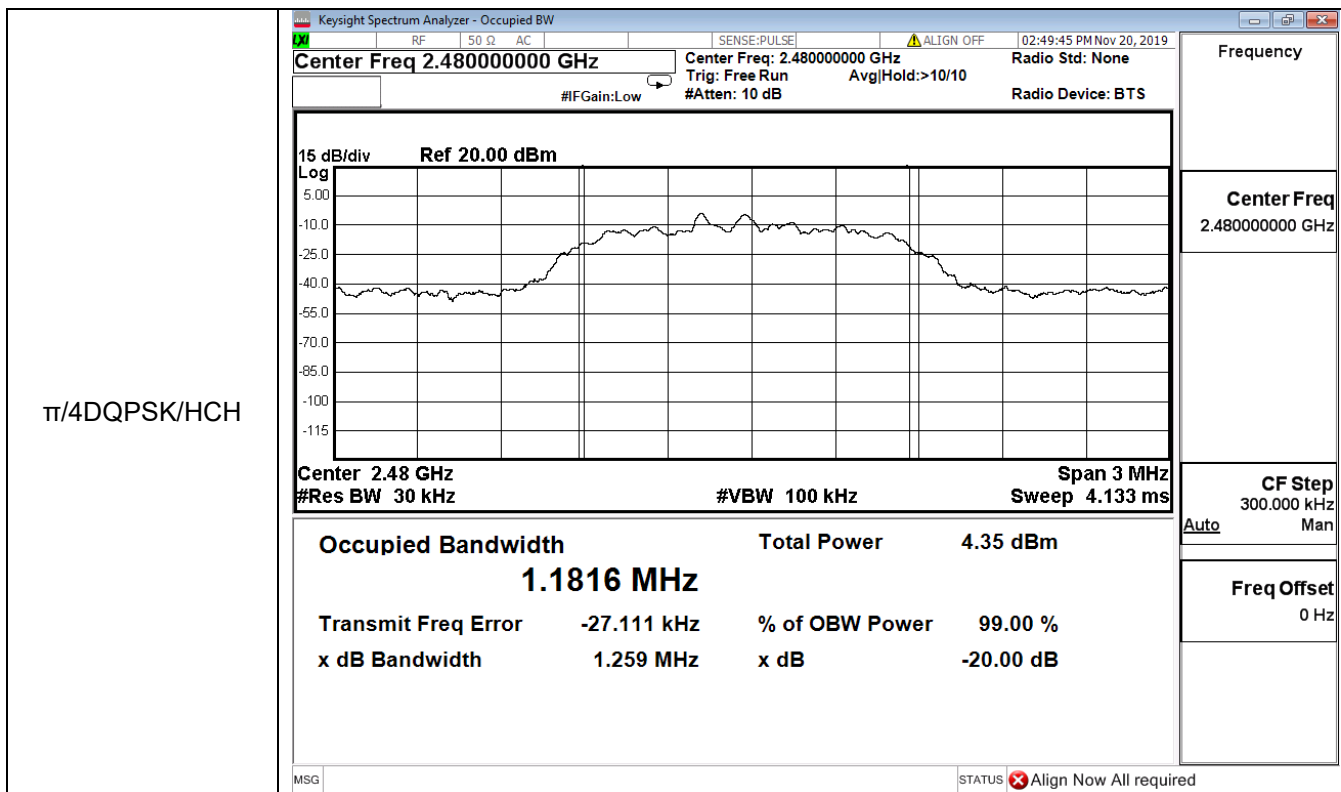
GFSK/MCH



GFSK/HCH



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

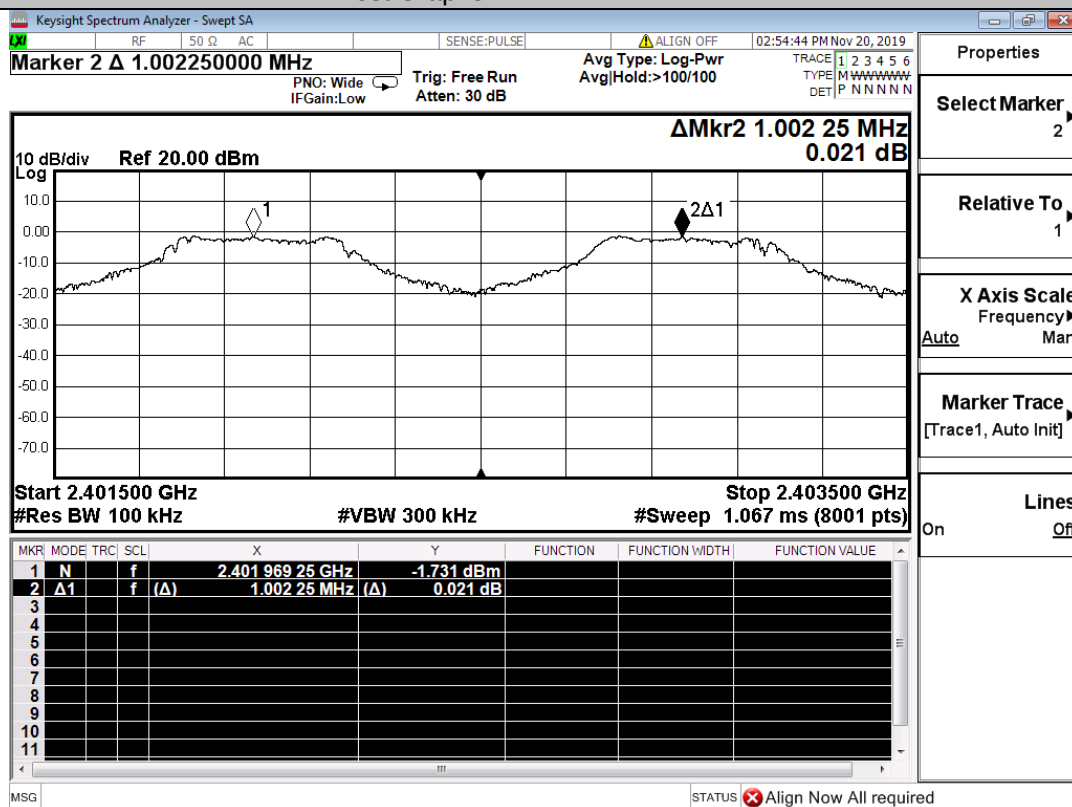


A.3 Carrier Frequency Separation

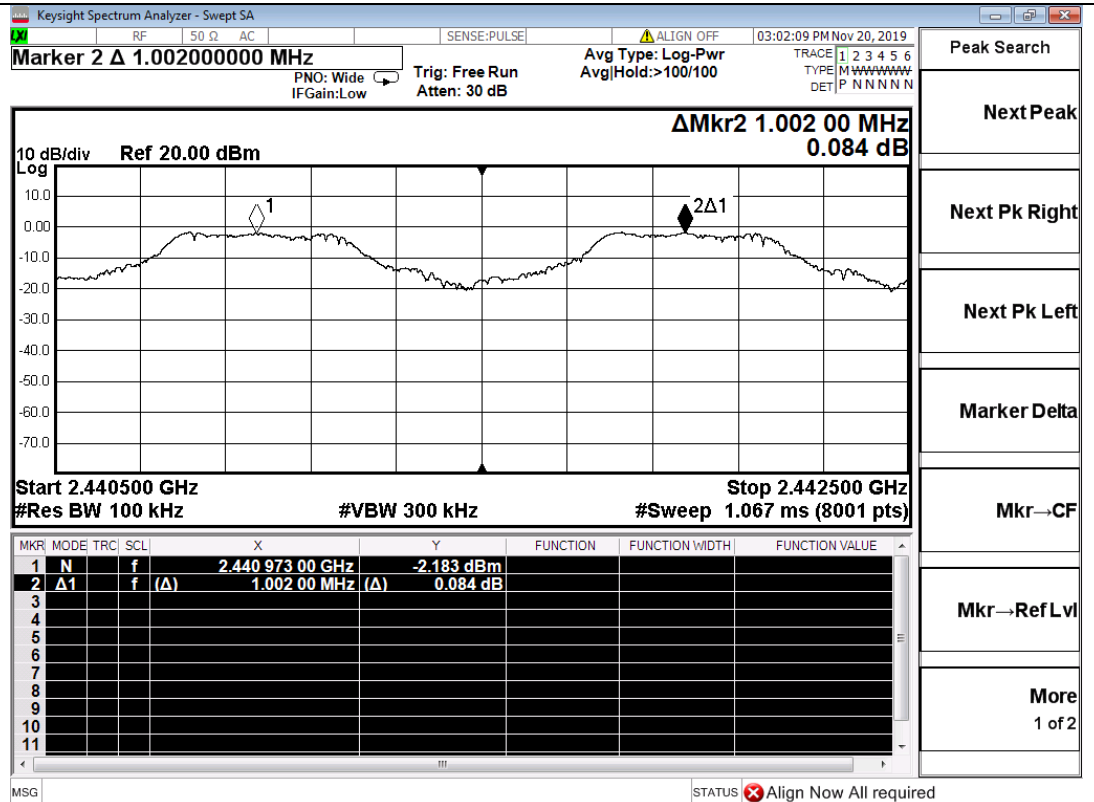
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz] 2/3*20dB Bandwidth	Verdict
GFSK	LCH	1.002	0.583	PASS
	MCH	1.002	0.584	PASS
	HCH	1.001	0.588	PASS
$\pi/4$ DQPSK	LCH	1.008	0.821	PASS
	MCH	1.000	0.835	PASS
	HCH	1.019	0.839	PASS

Test Graphs

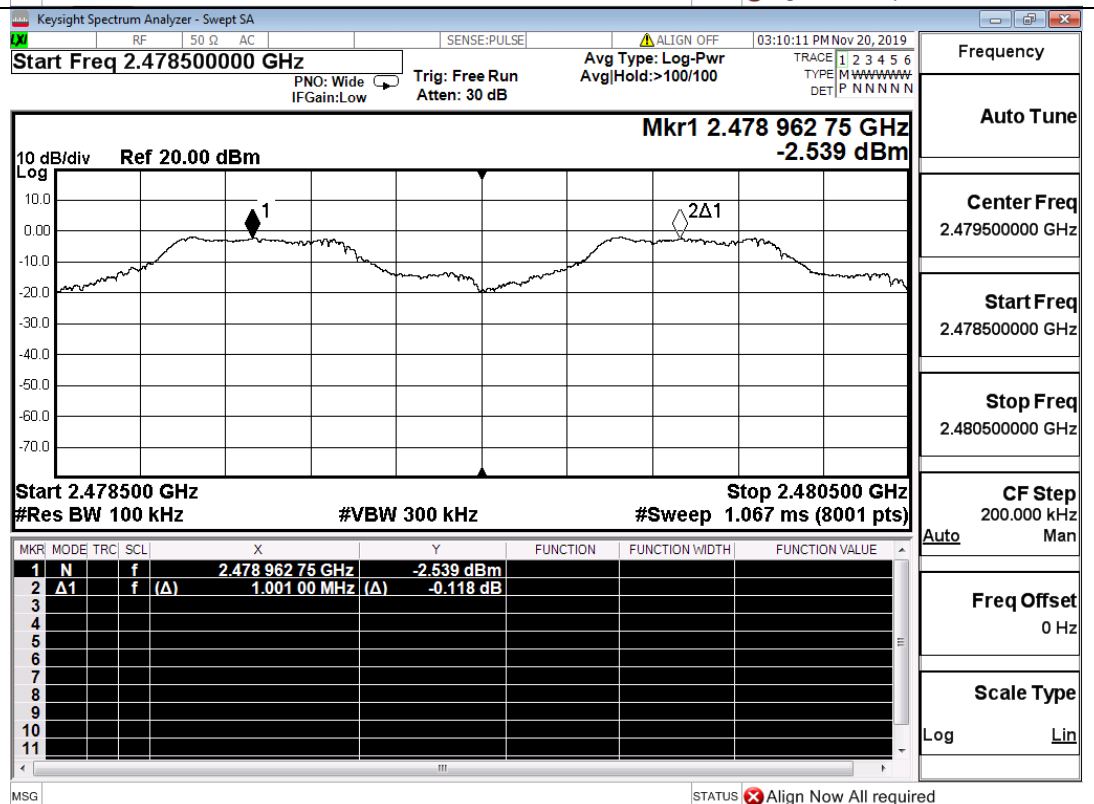
GFSK/LCH

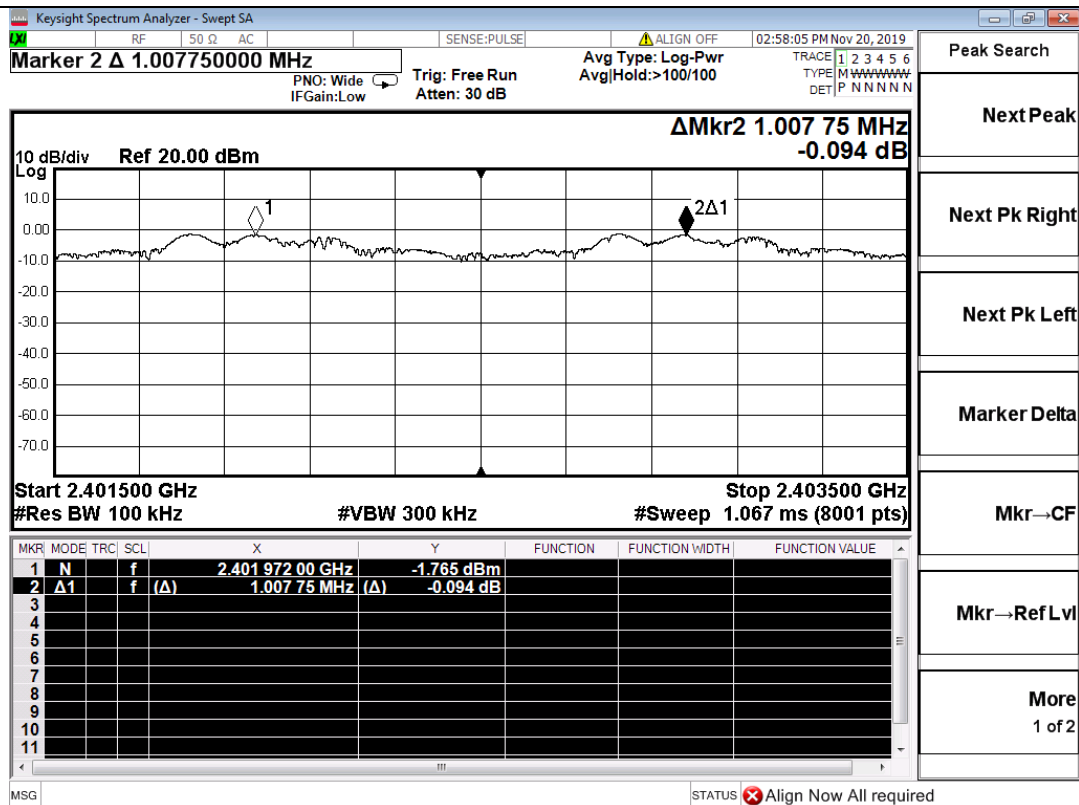
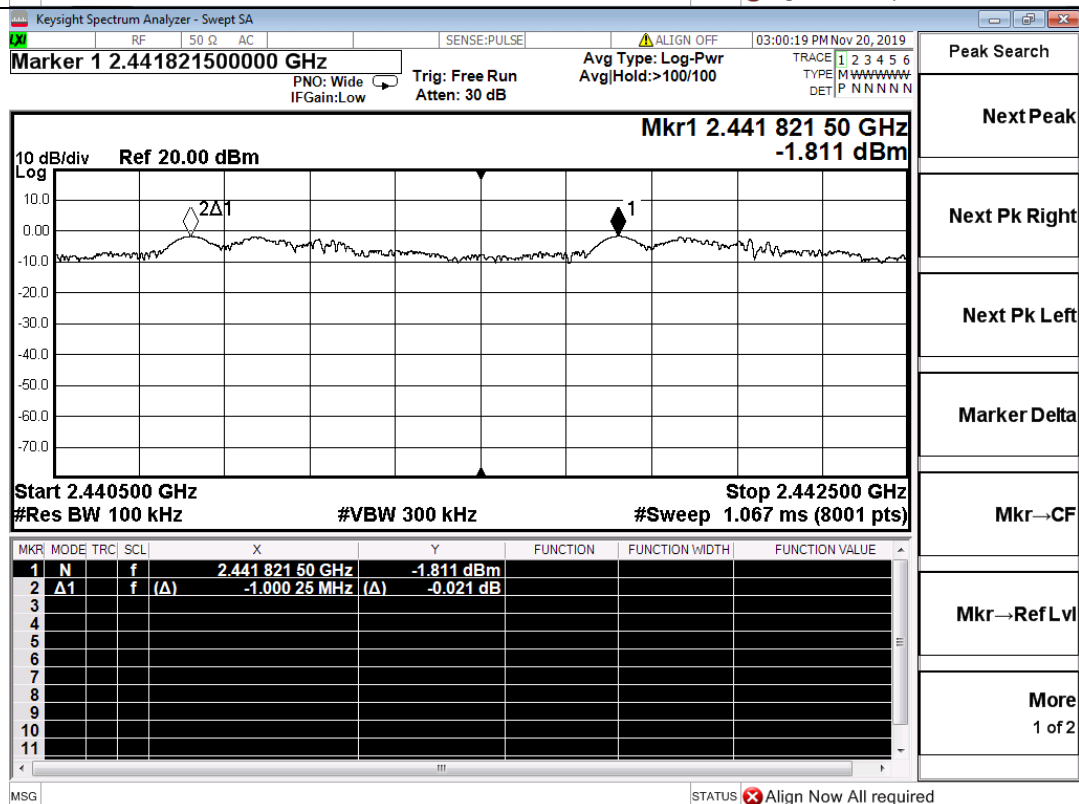


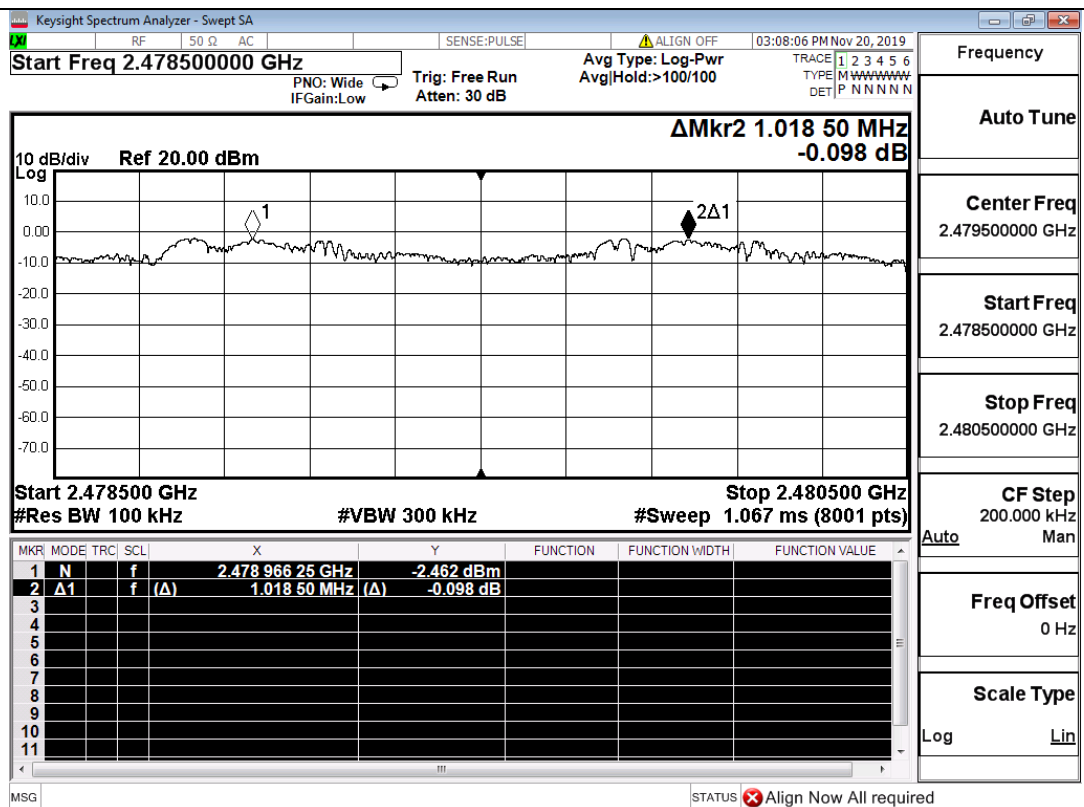
GFSK/MCH



GFSK/HCH

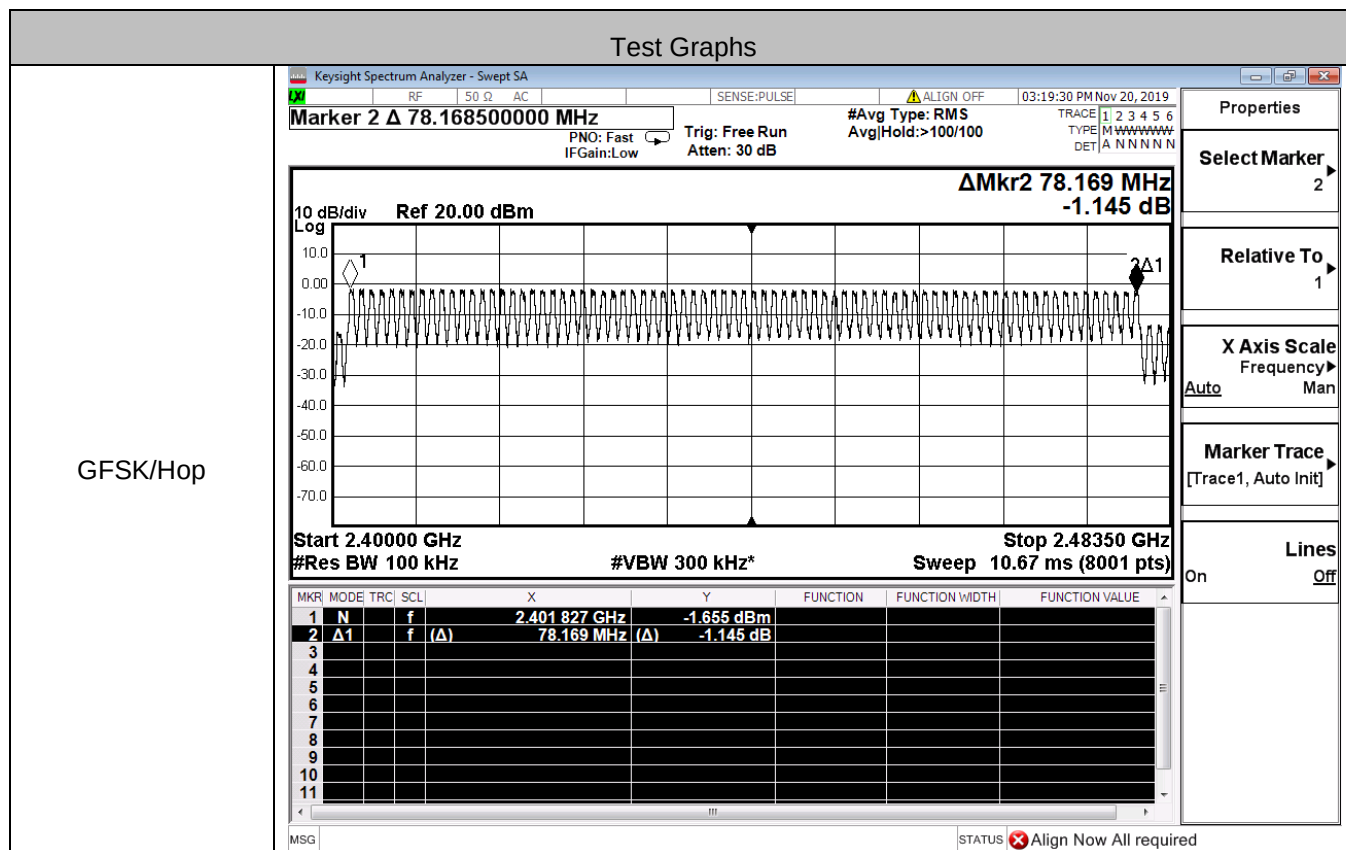


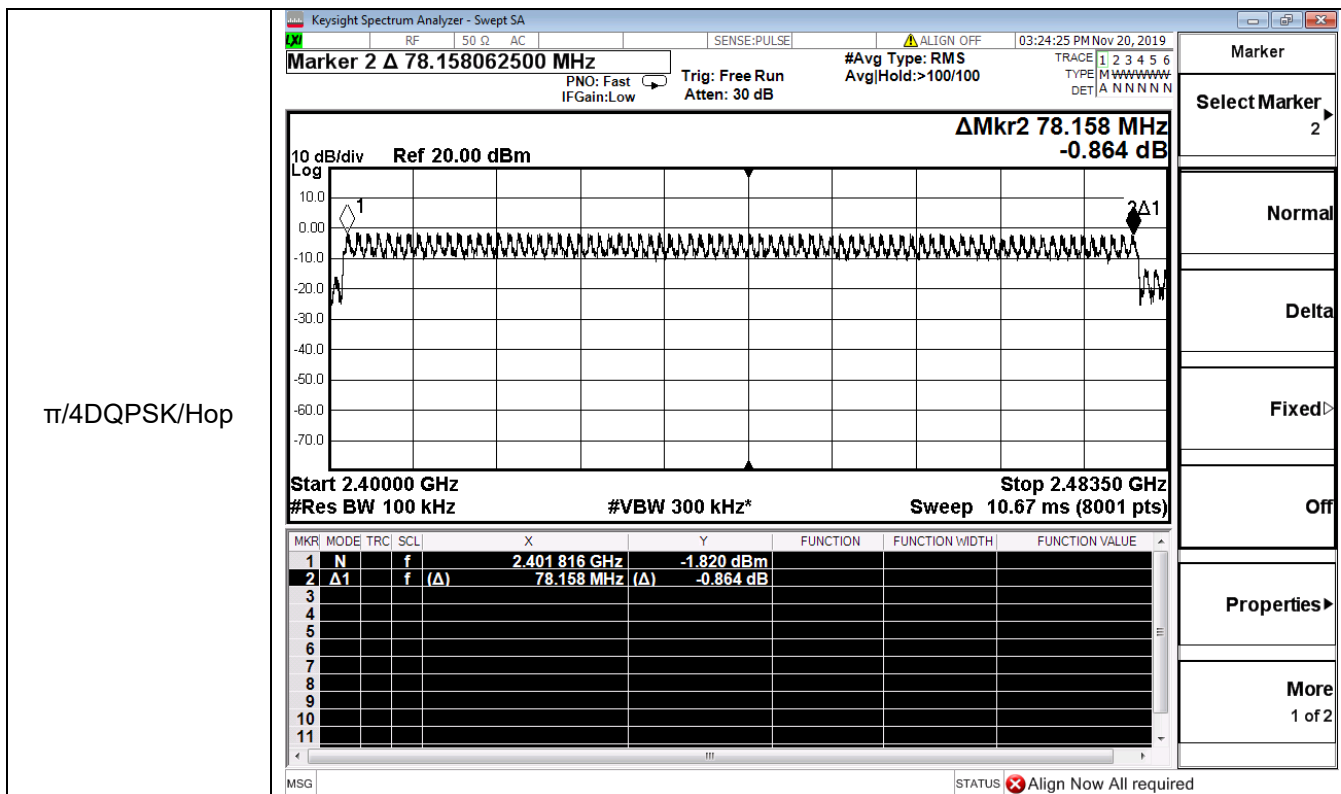
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

A.4 Hopping Channel Number

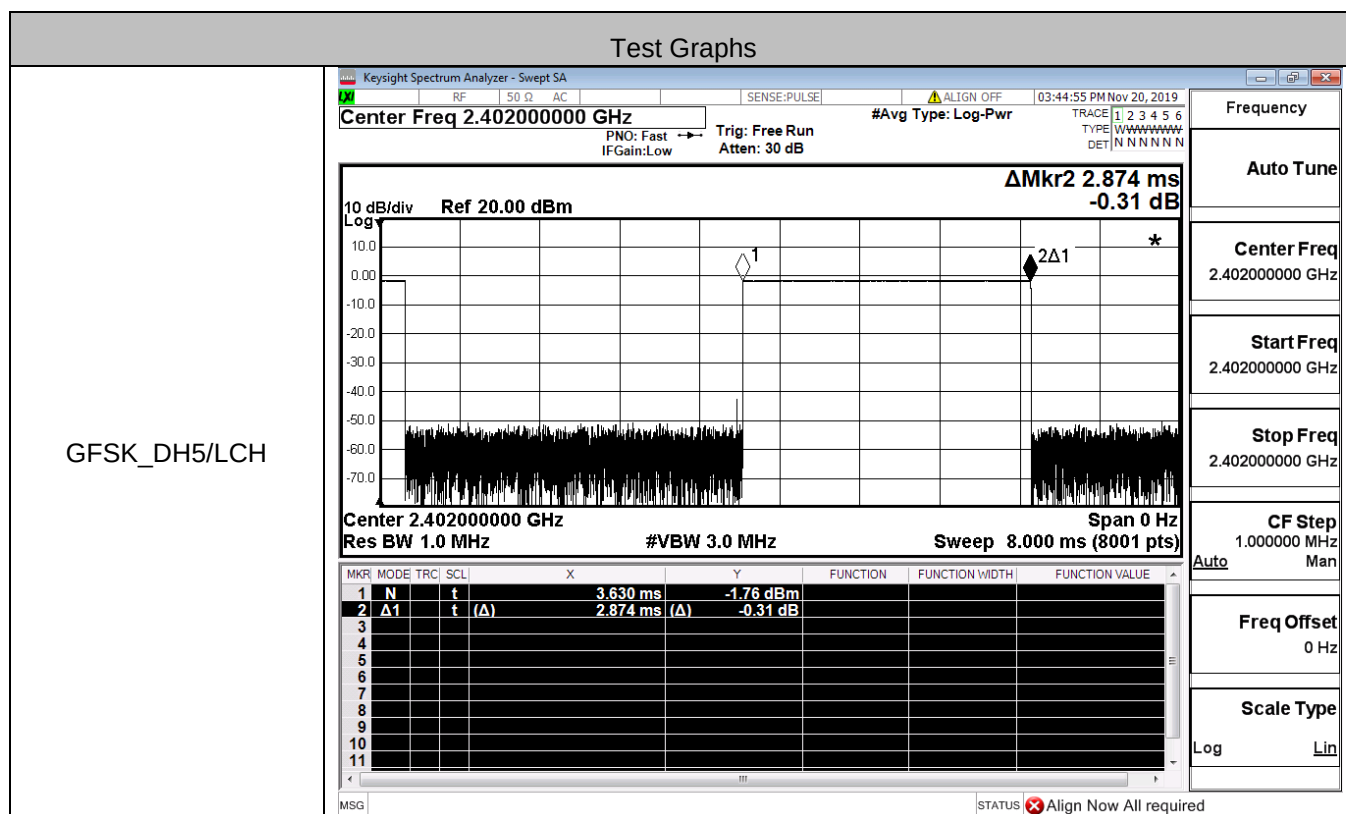
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS



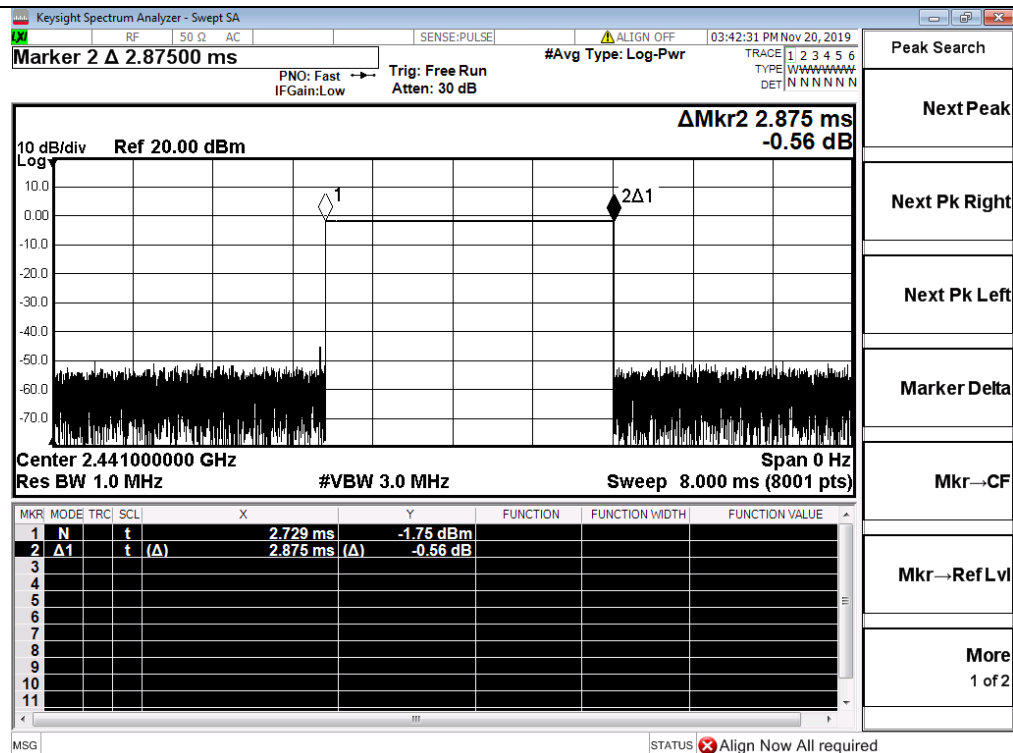


A.5 Dwell Time

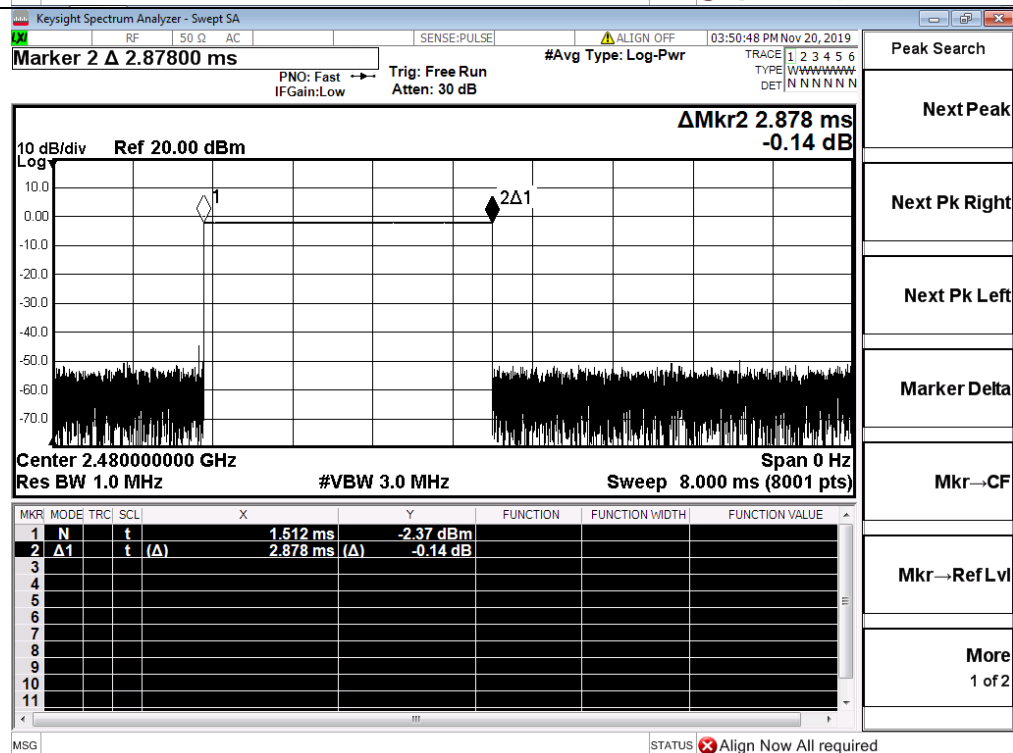
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.306	0.4	PASS
	2DH5	HCH	2.88	106.7	0.307	0.4	PASS



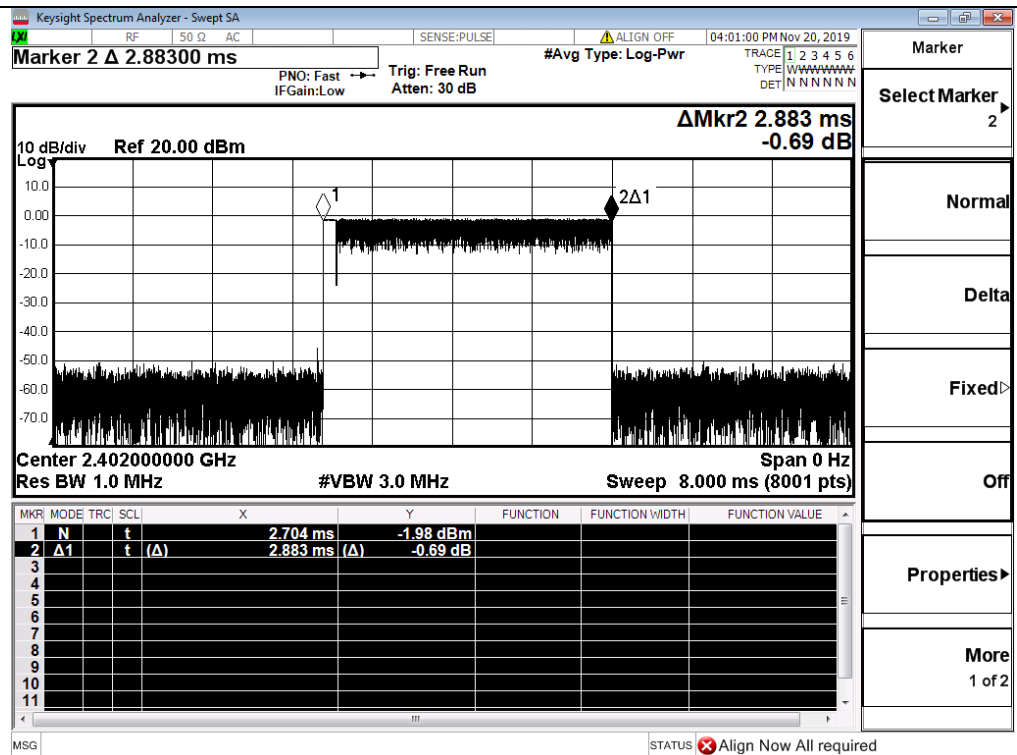
GFSK_DH5/MCH



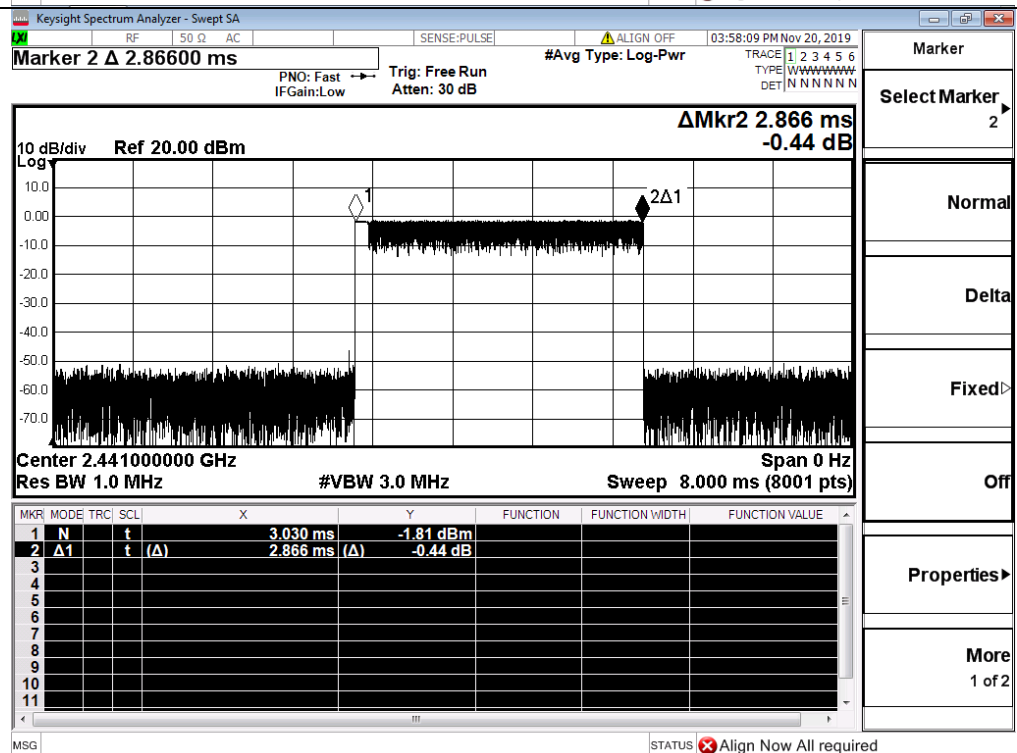
GFSK_DH5/HCH



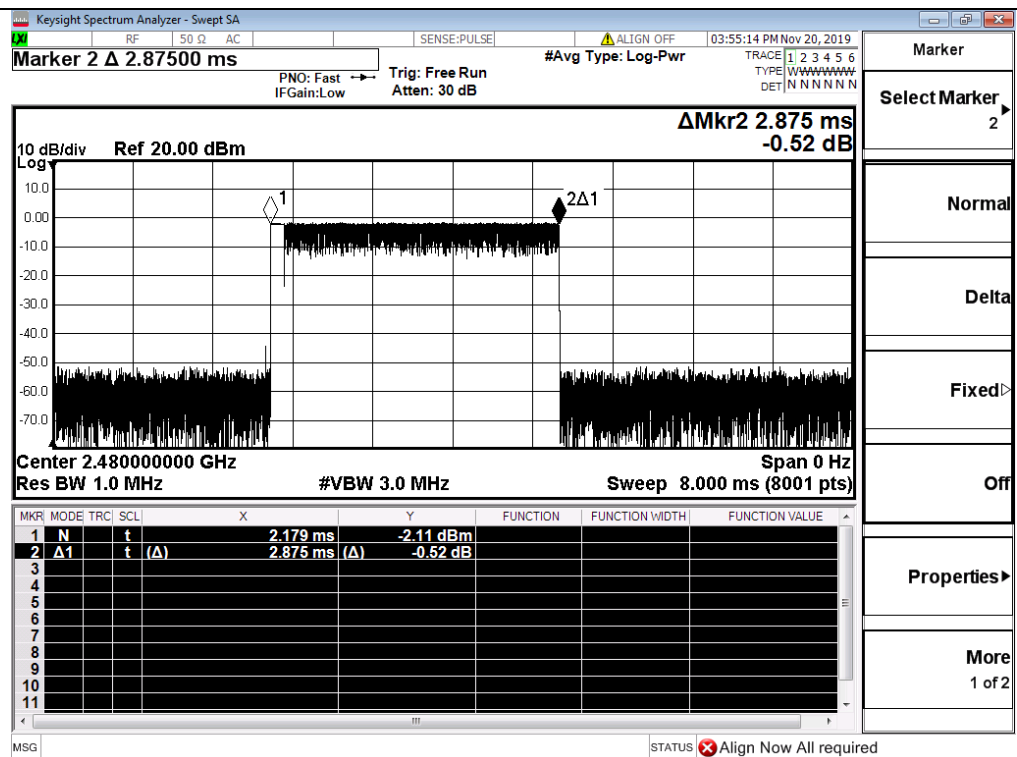
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



$\pi/4$ DQPSK
_2DH5/HCH

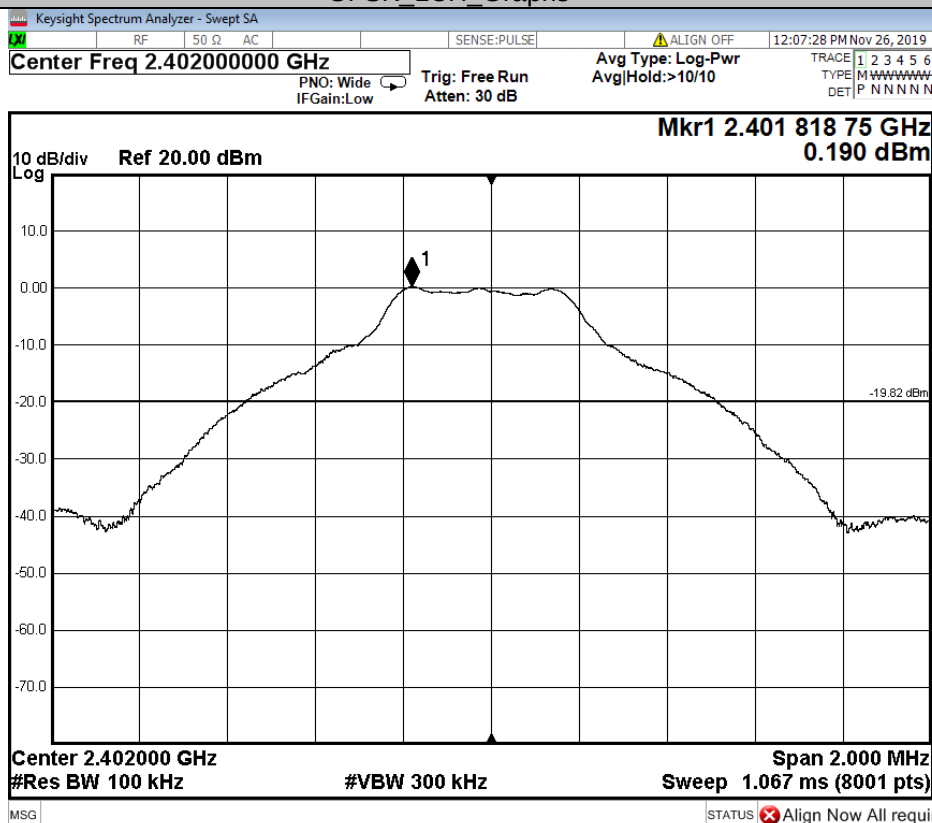


A.6 RF Conducted Spurious Emissions

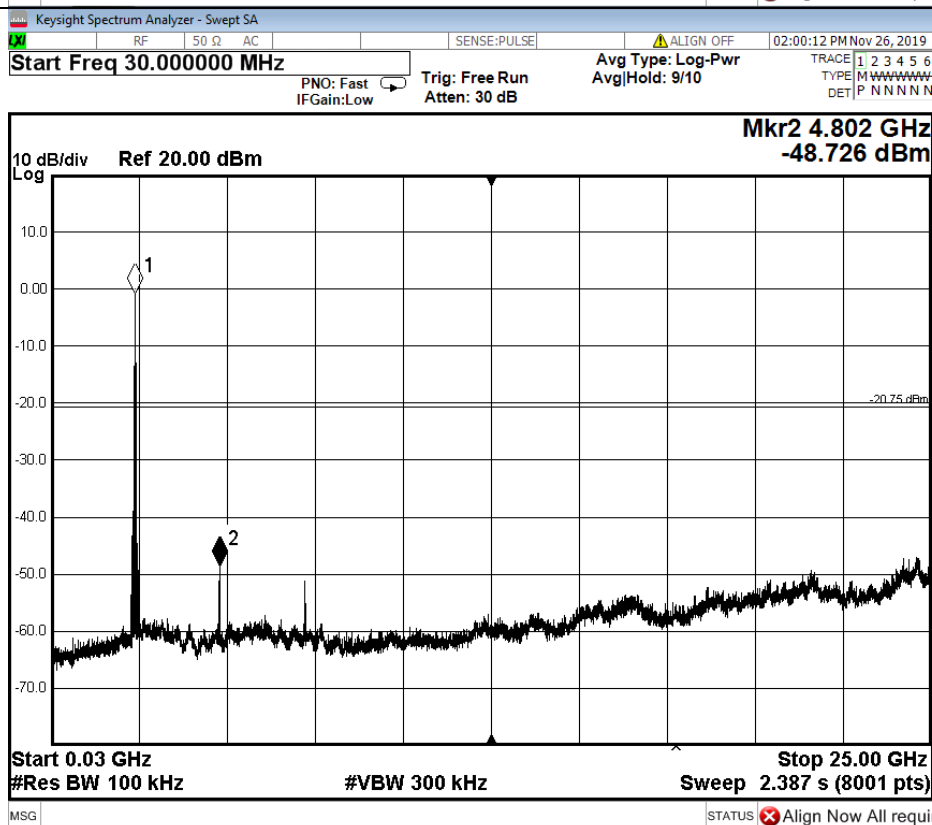
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.190	-48.726	-19.81	PASS
	MCH	-0.449	-47.097	-20.45	PASS
	HCH	-1.369	-46.807	-21.37	PASS
$\pi/4$ DQPSK	LCH	0.268	-46.041	-19.73	PASS
	MCH	-0.344	-44.725	-20.34	PASS
	HCH	-1.307	-50.776	-21.31	PASS

GFSK_LCH_Graphs

Pref

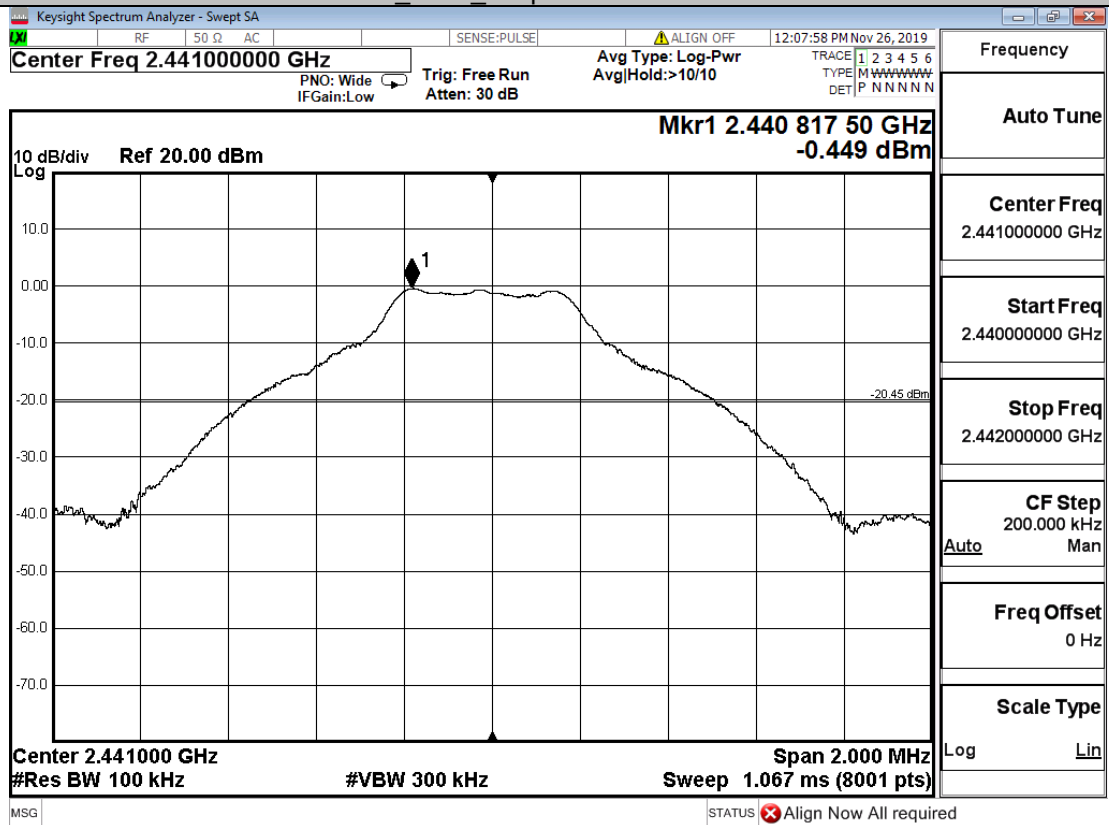


Puw

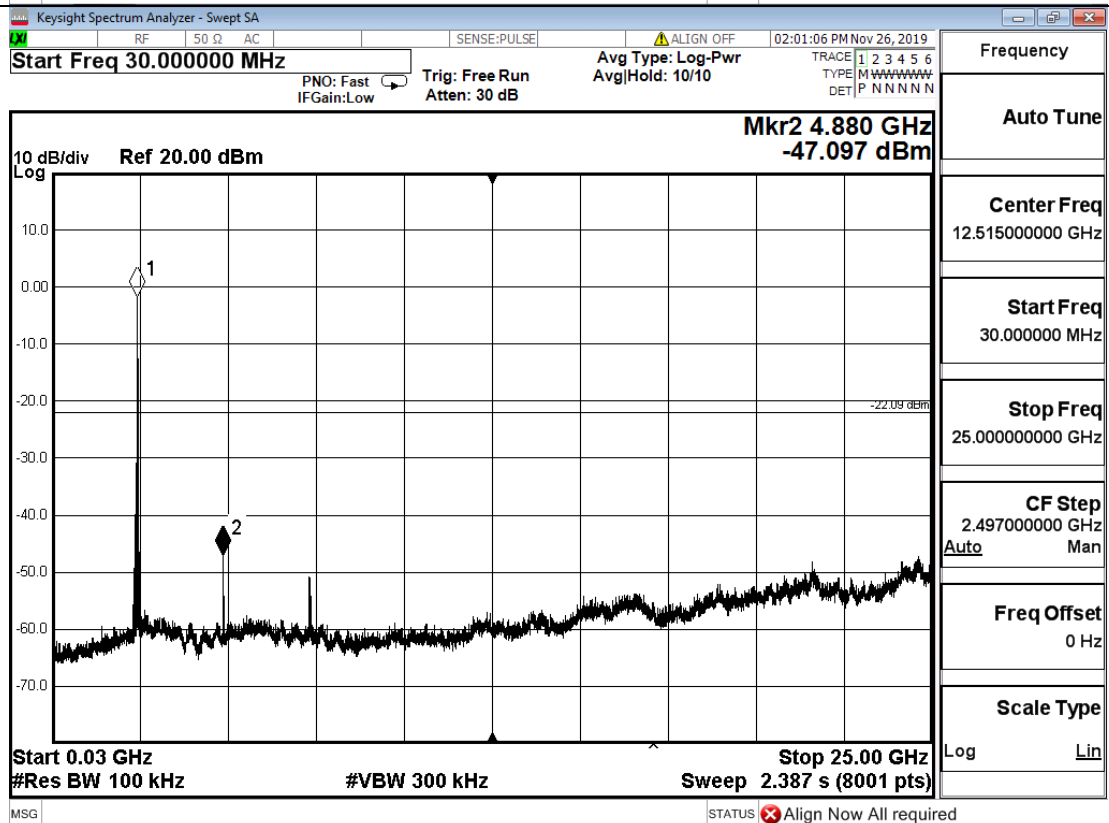


GFSK_MCH_Graphs

Pref

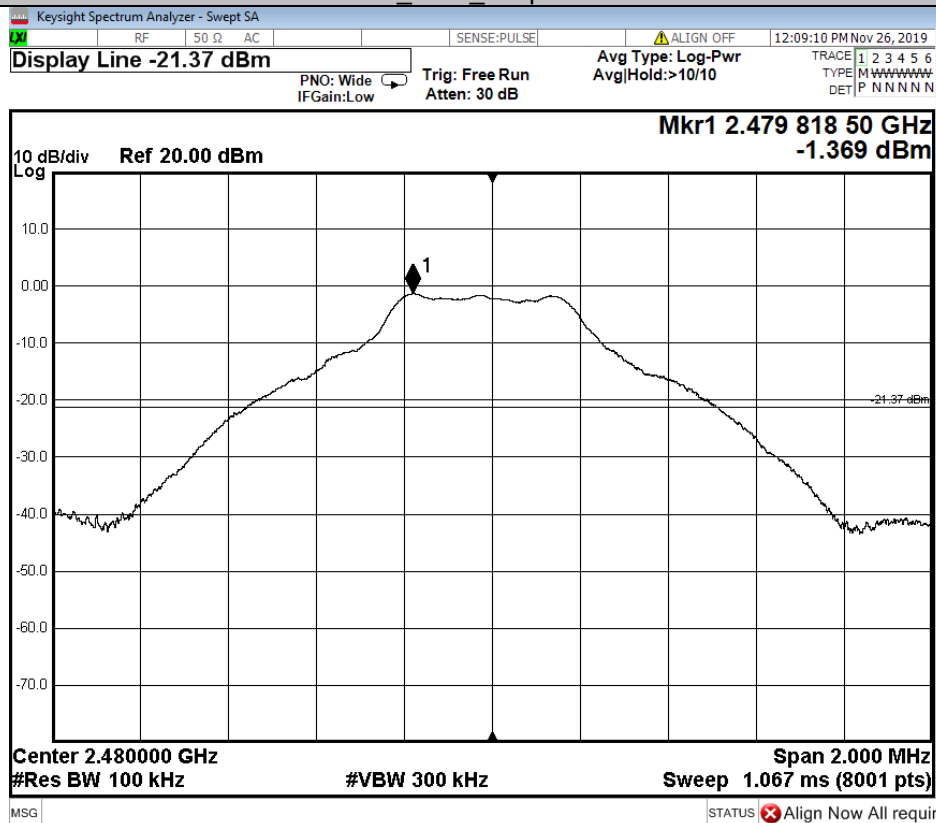


Puw



GFSK_HCH_Graphs

Pref



Display

Annotation►

Title►

Graticule

On

Off

Display Line

On

-21.37 dBm

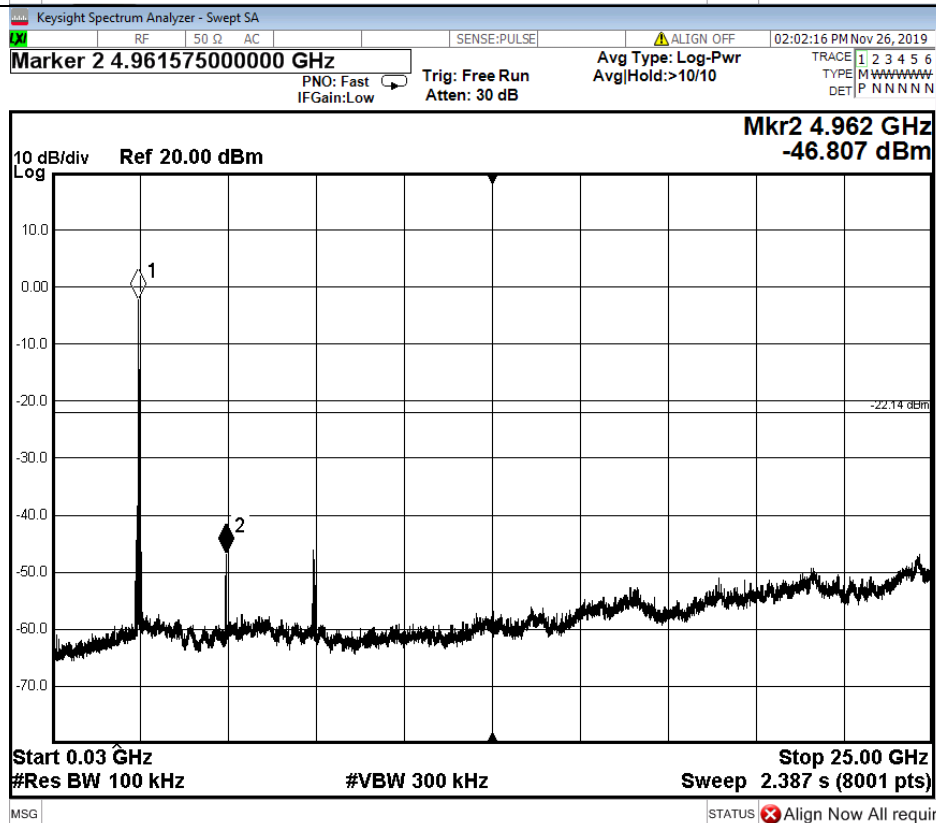
Off

System

Display►

Settings

Puw



Select Marker

Marker 1

Marker 2

Marker 3

Marker 4

Marker 5

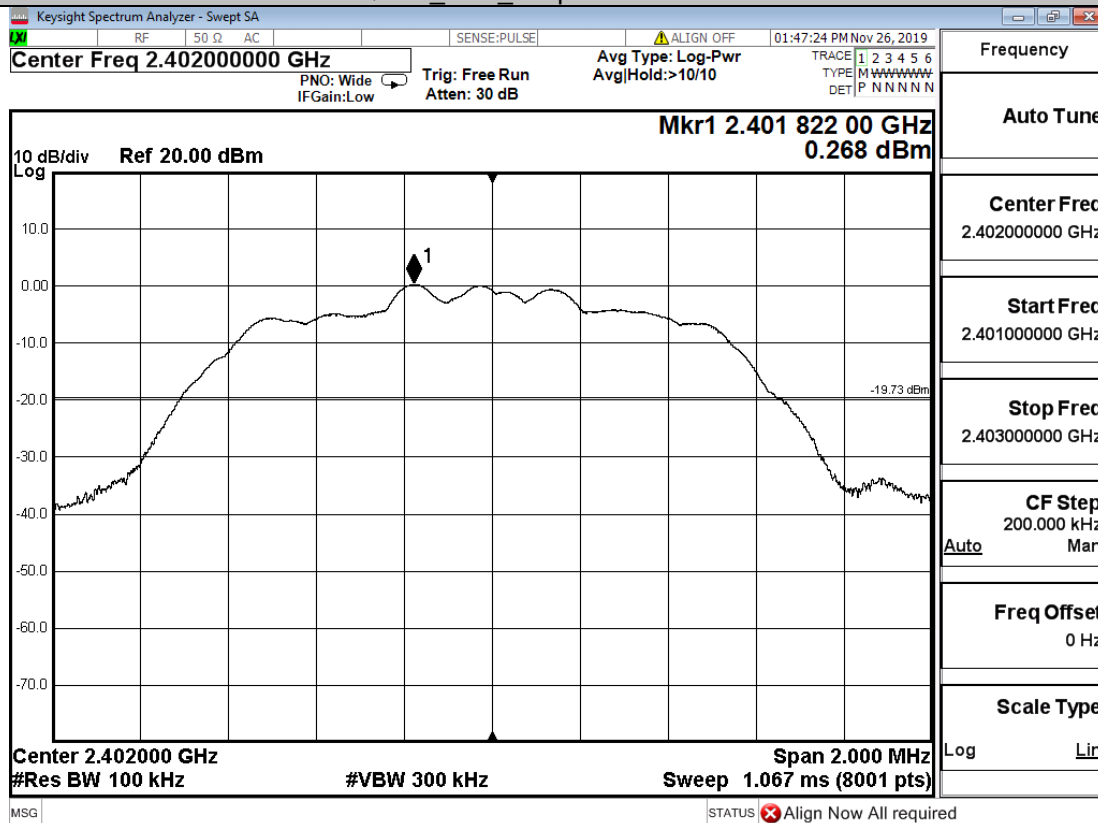
Marker 6

More

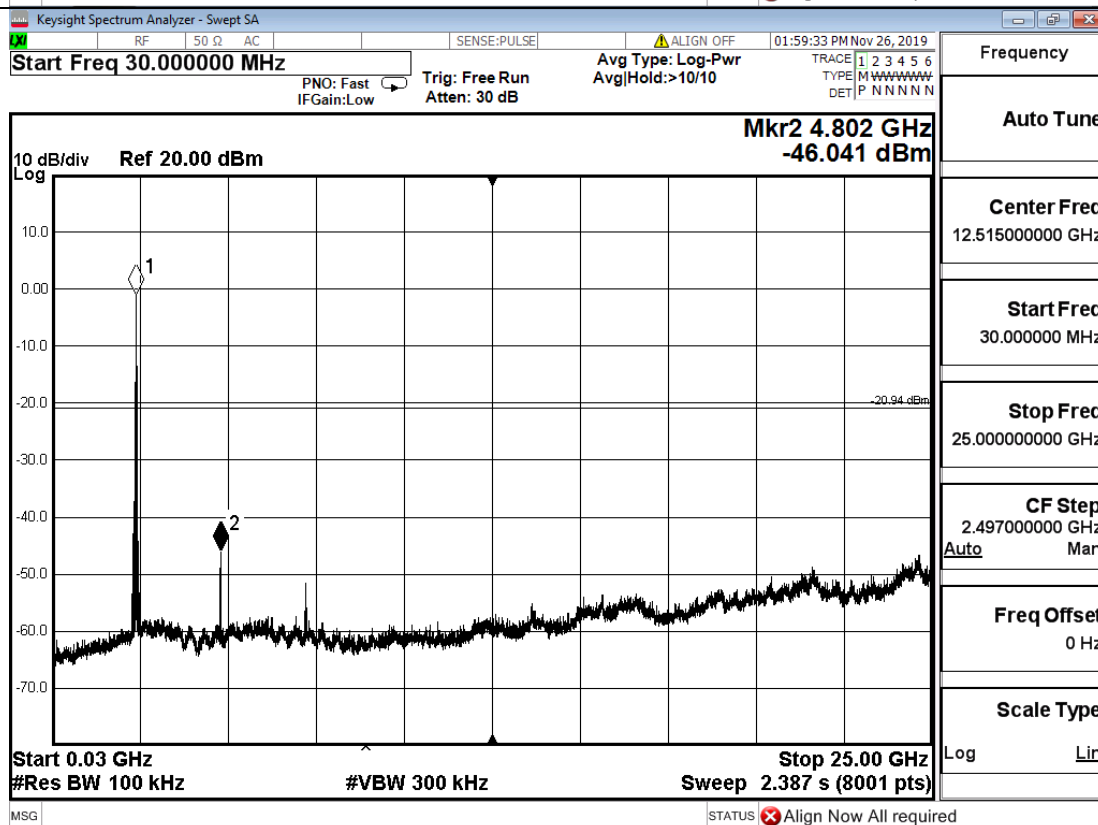
1 of 2

$\pi/4$ DQPSK LCH_Graphs

Pref

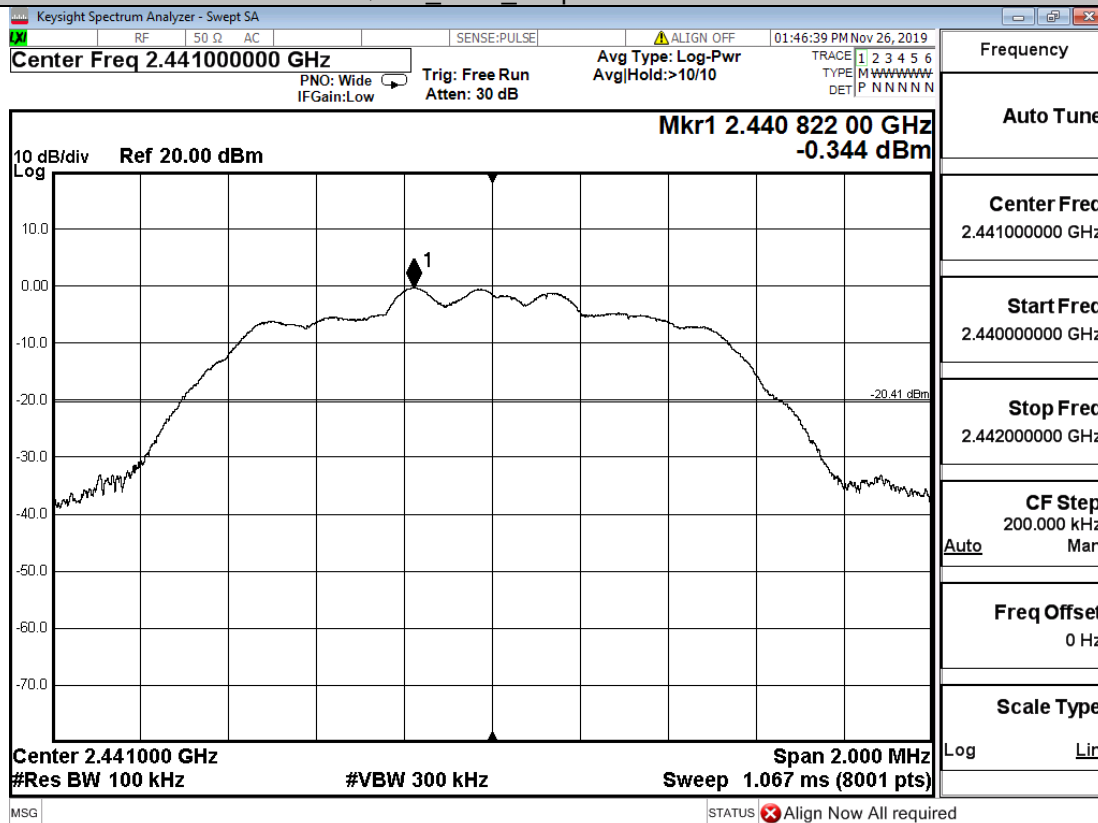


Puw

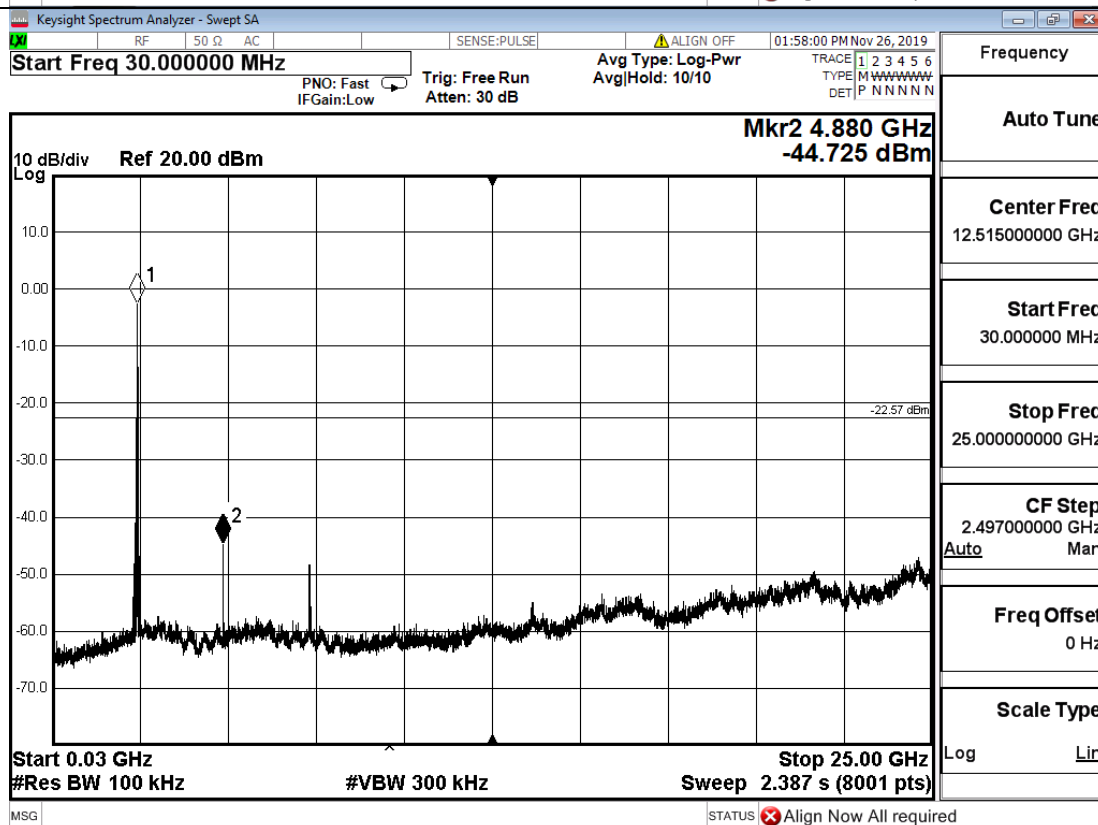


π /4DQPSK_MCH_Graphs

Pref

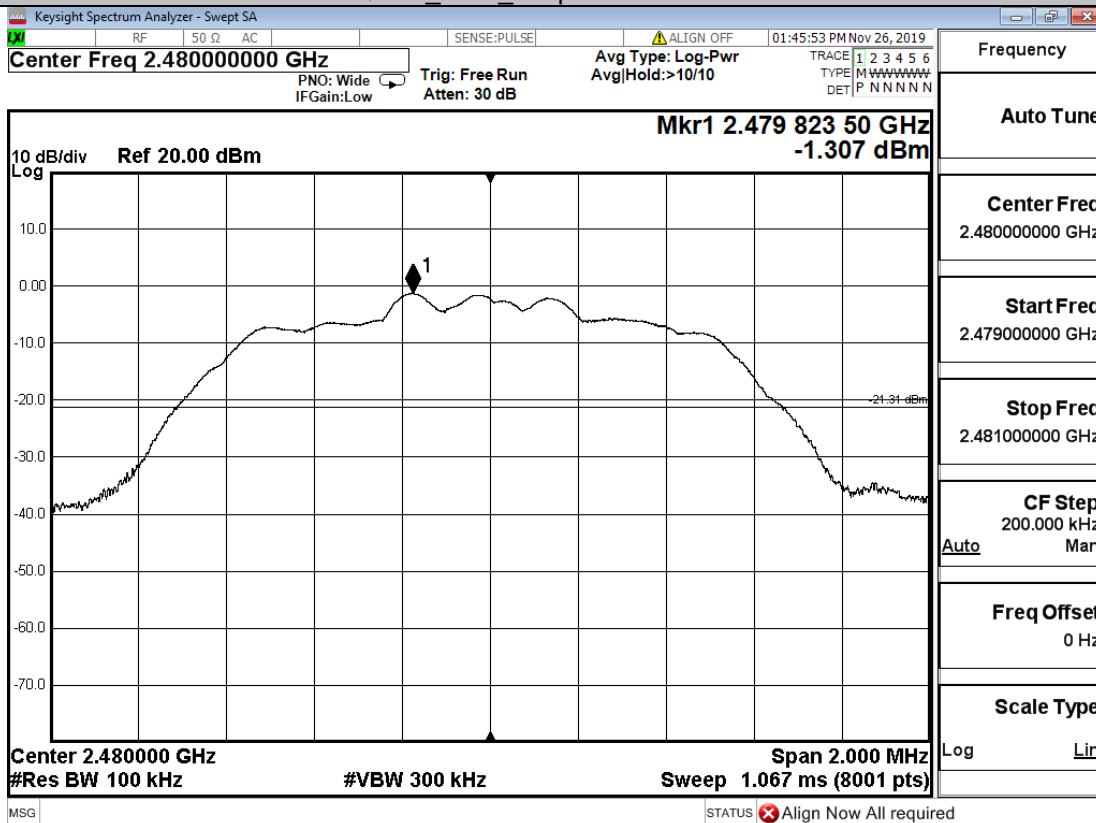


Puw

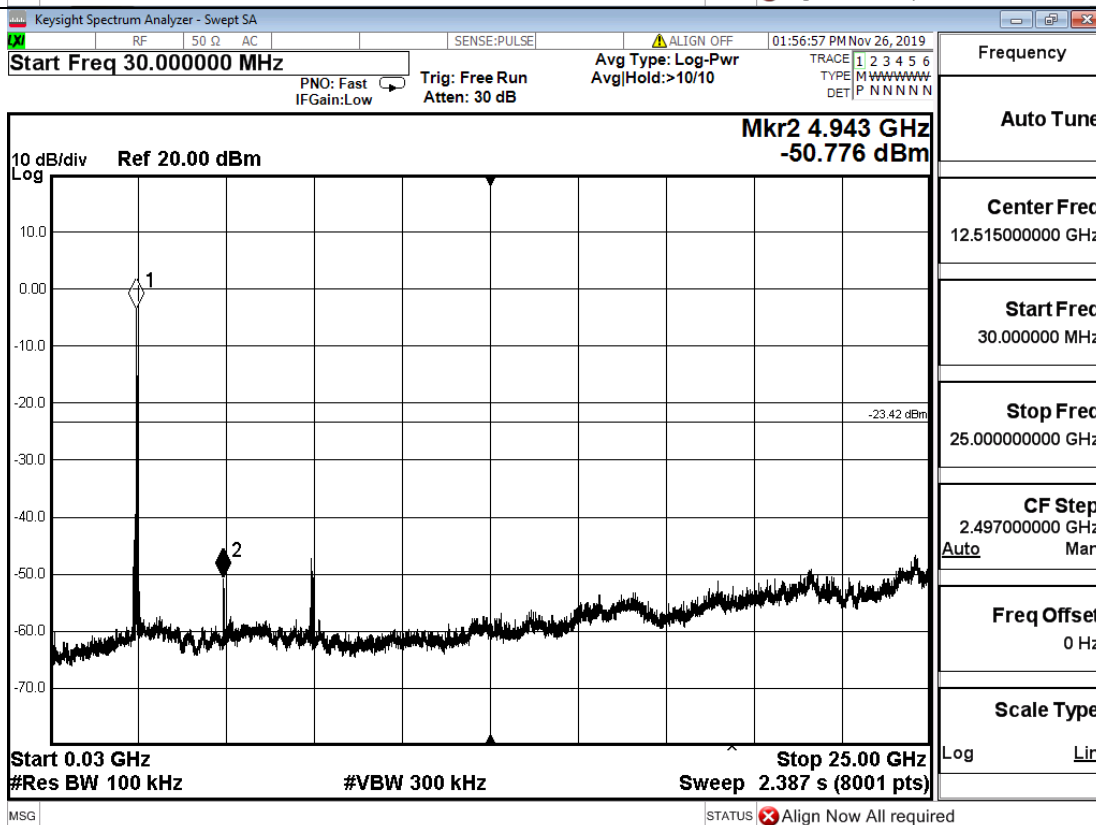


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

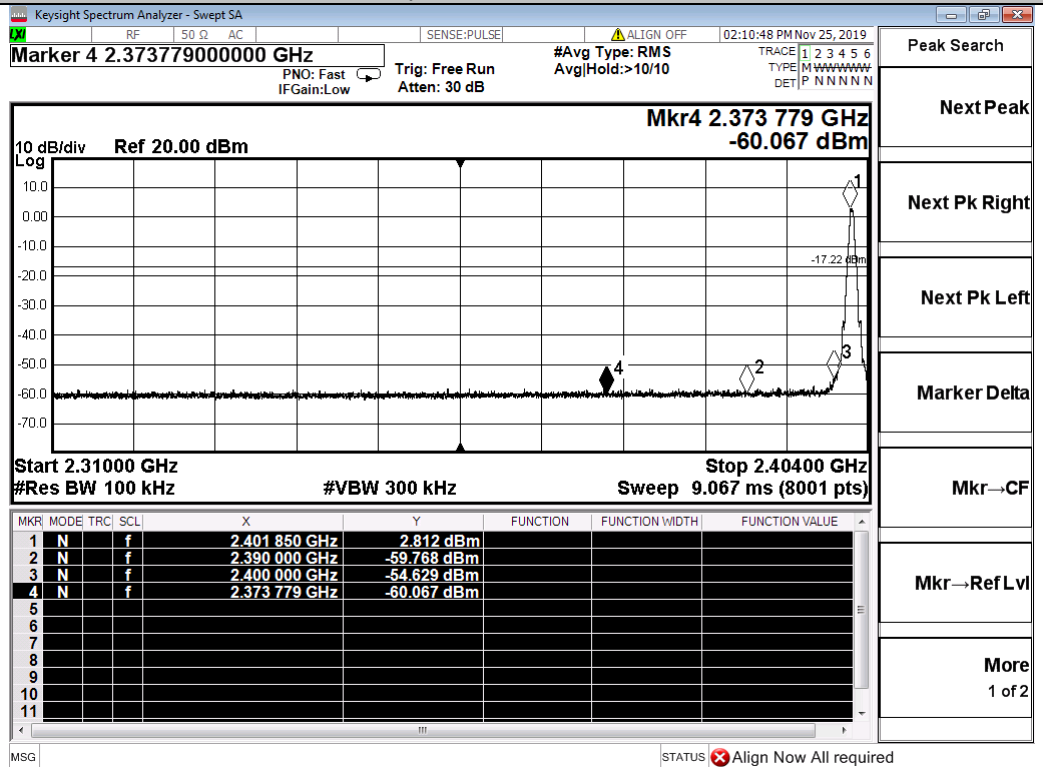


A.7 Band-edge for RF Conducted Emissions

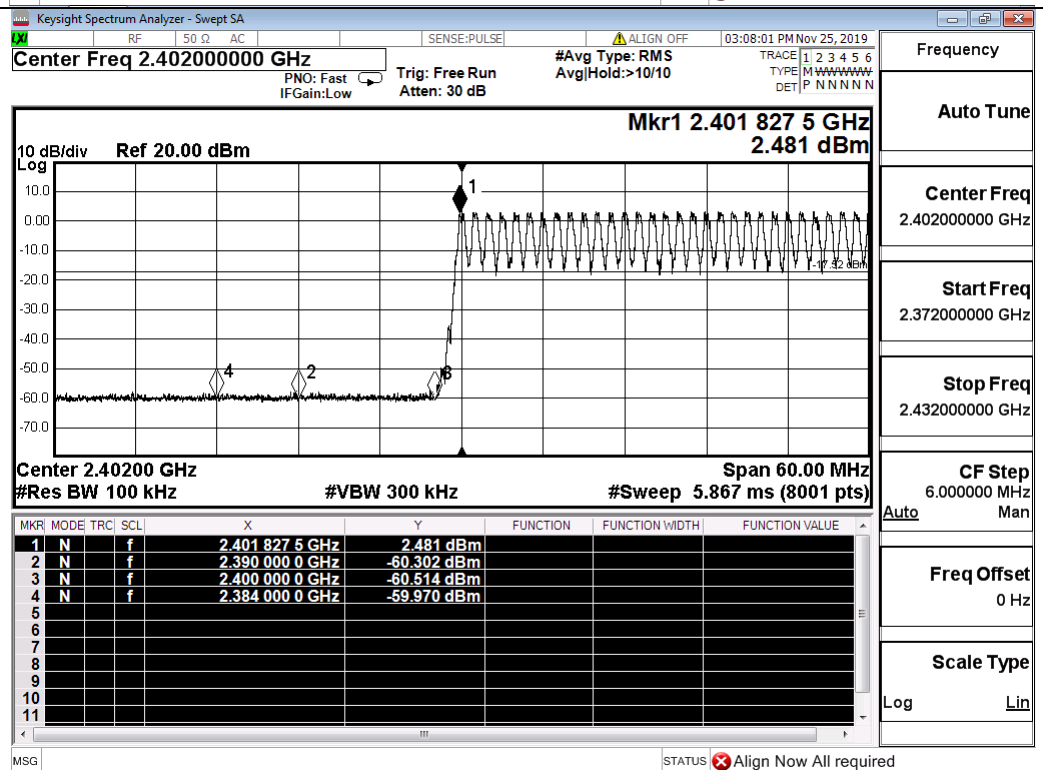
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	2.812	Off	-54.629	-17.19	PASS
			2.481	On	-59.970	-17.52	PASS
	HCH	2480	2.363	Off	-59.494	-17.64	PASS
			2.620	On	-59.076	-17.38	PASS
$\pi/4$ DQPSK	LCH	2402	1.321	Off	-55.505	-18.68	PASS
			1.224	On	-56.892	-18.78	PASS
	HCH	2480	1.140	Off	-57.956	-18.86	PASS
			0.655	On	-59.056	-19.35	PASS

Test Graphs

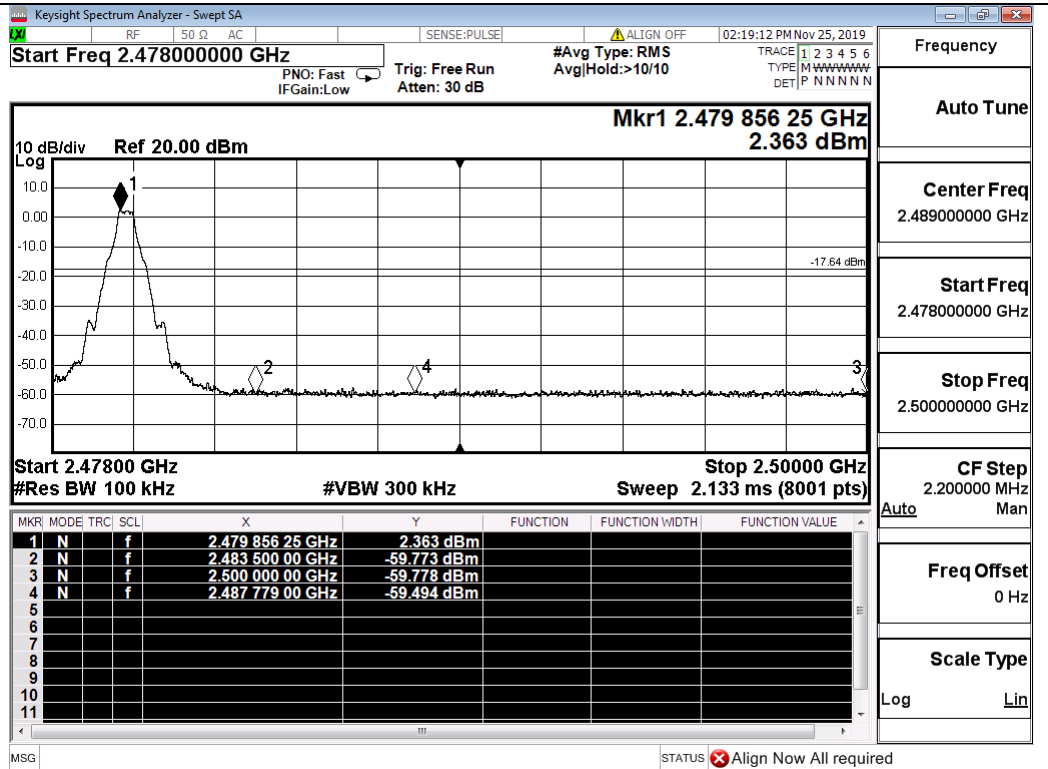
GFSK/LCH/No Hop



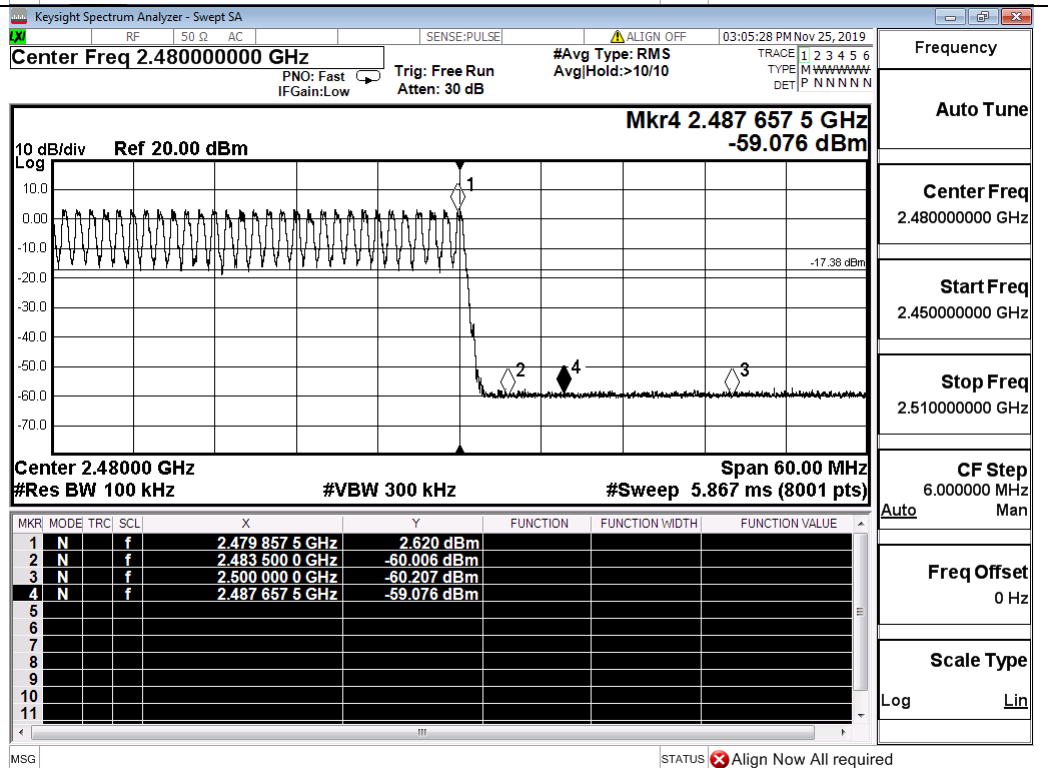
GFSK/LCH/Hop



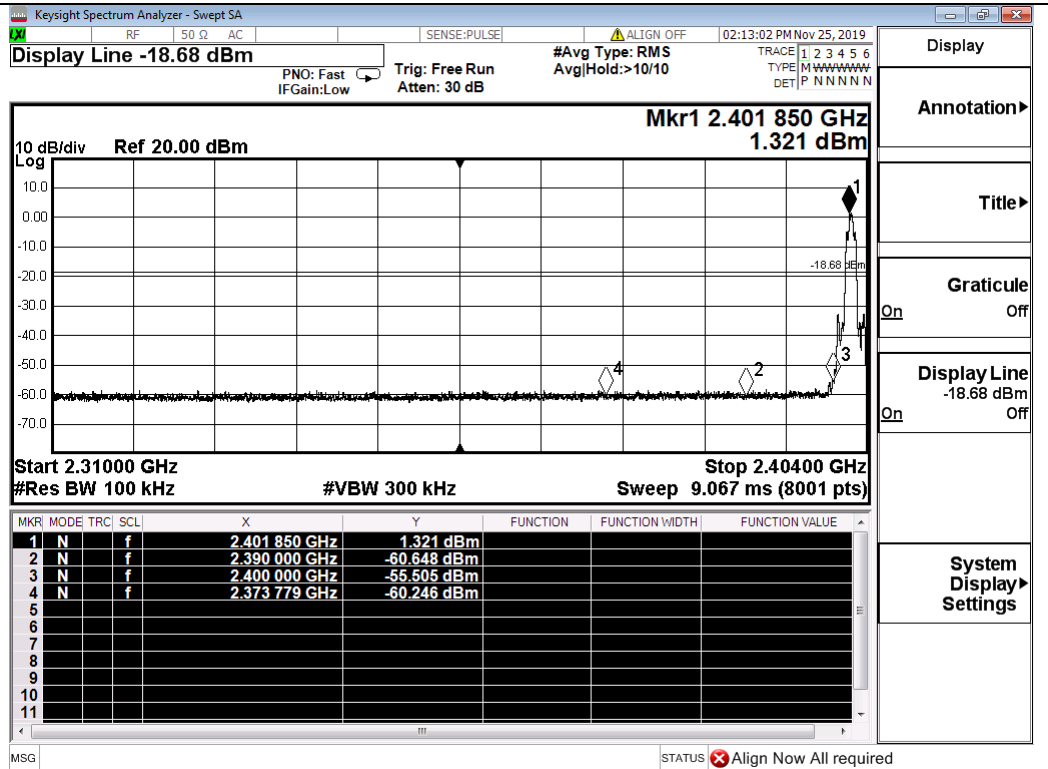
GFSK/HCH/No Hop



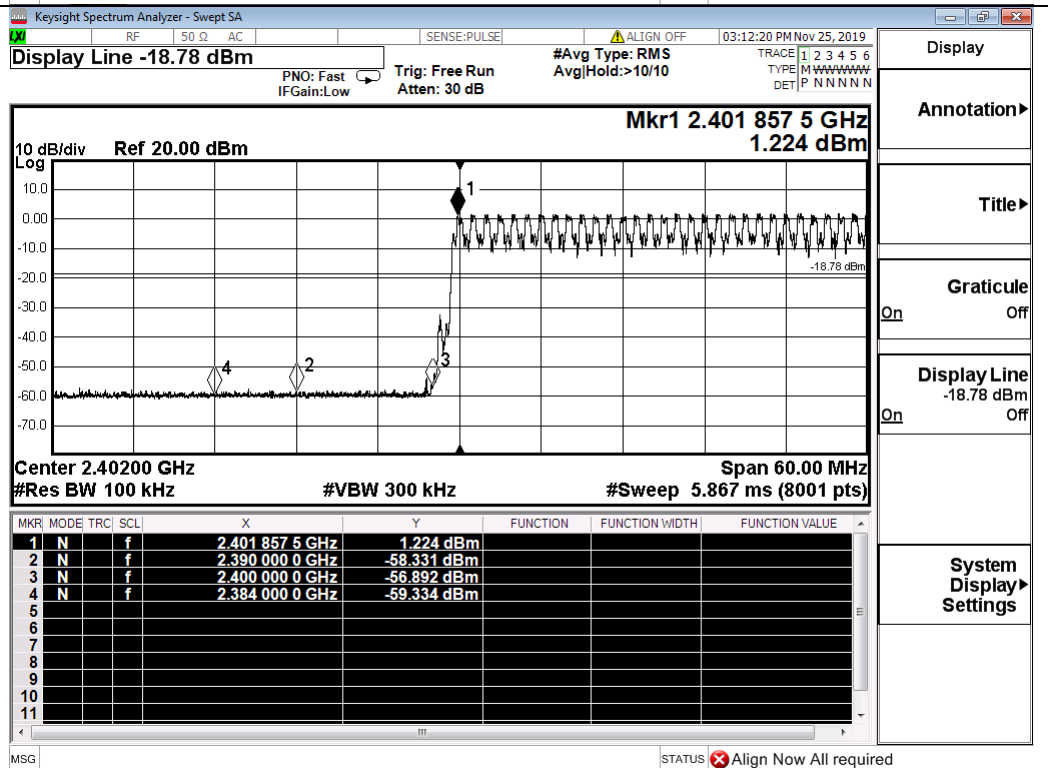
GFSK/HCH/Hop



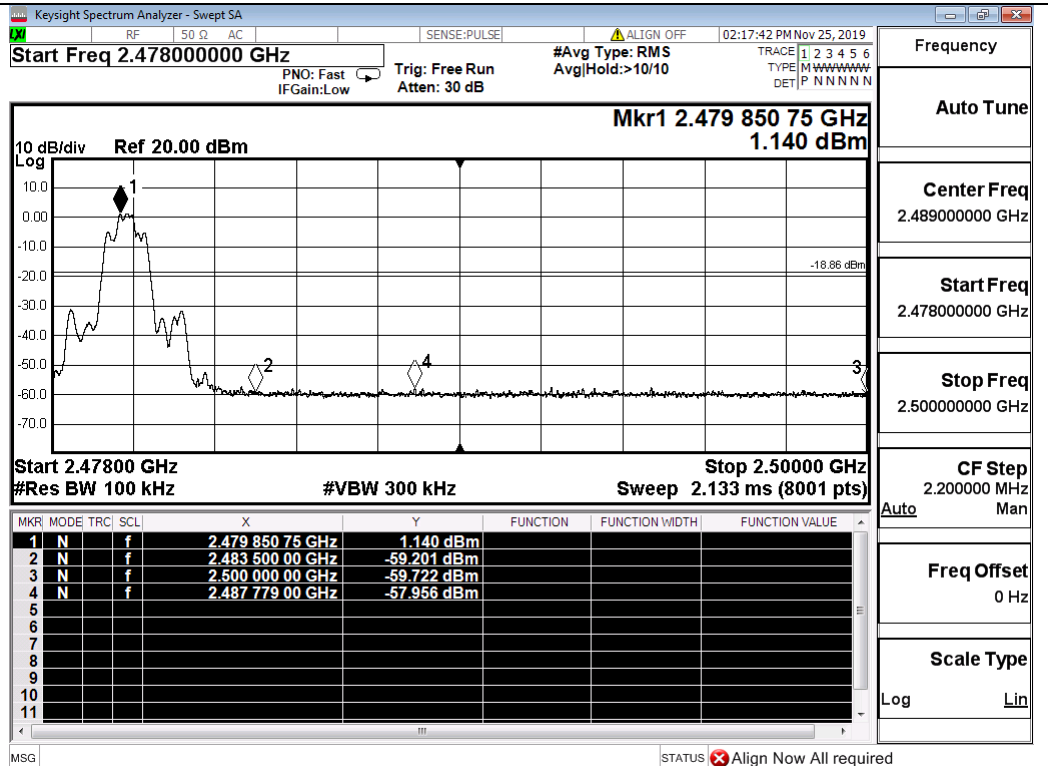
$\pi/4$ DQPSK/LCH/No
Hop



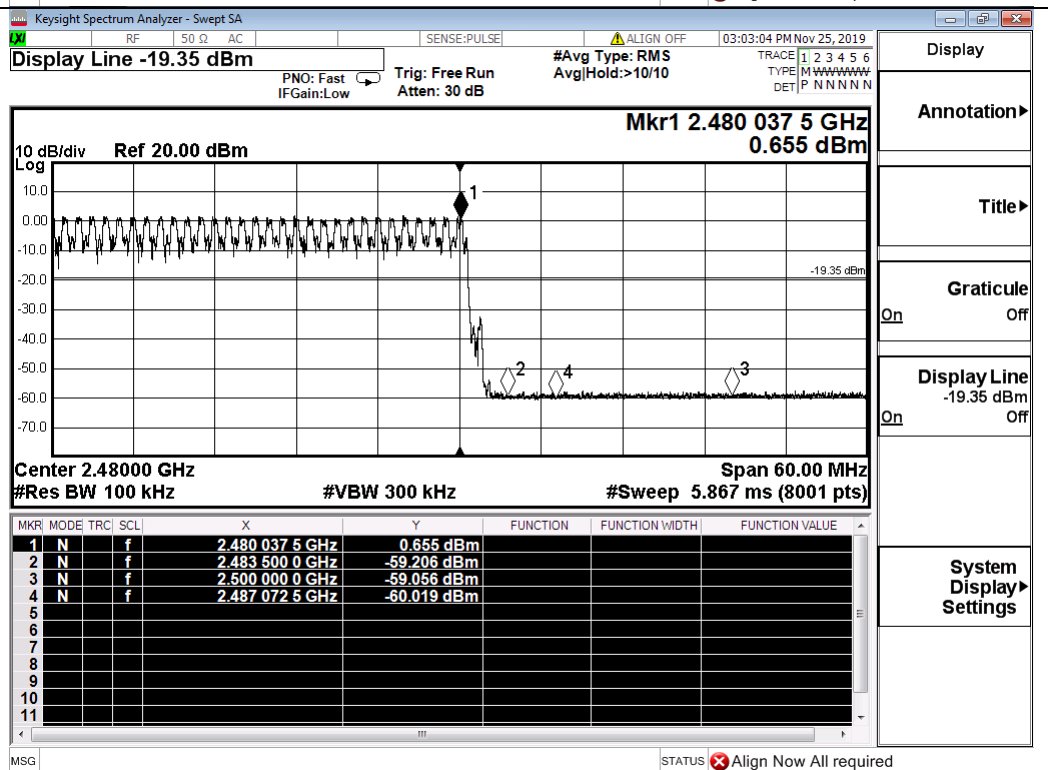
$\pi/4$ DQPSK/LCH/Hop



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



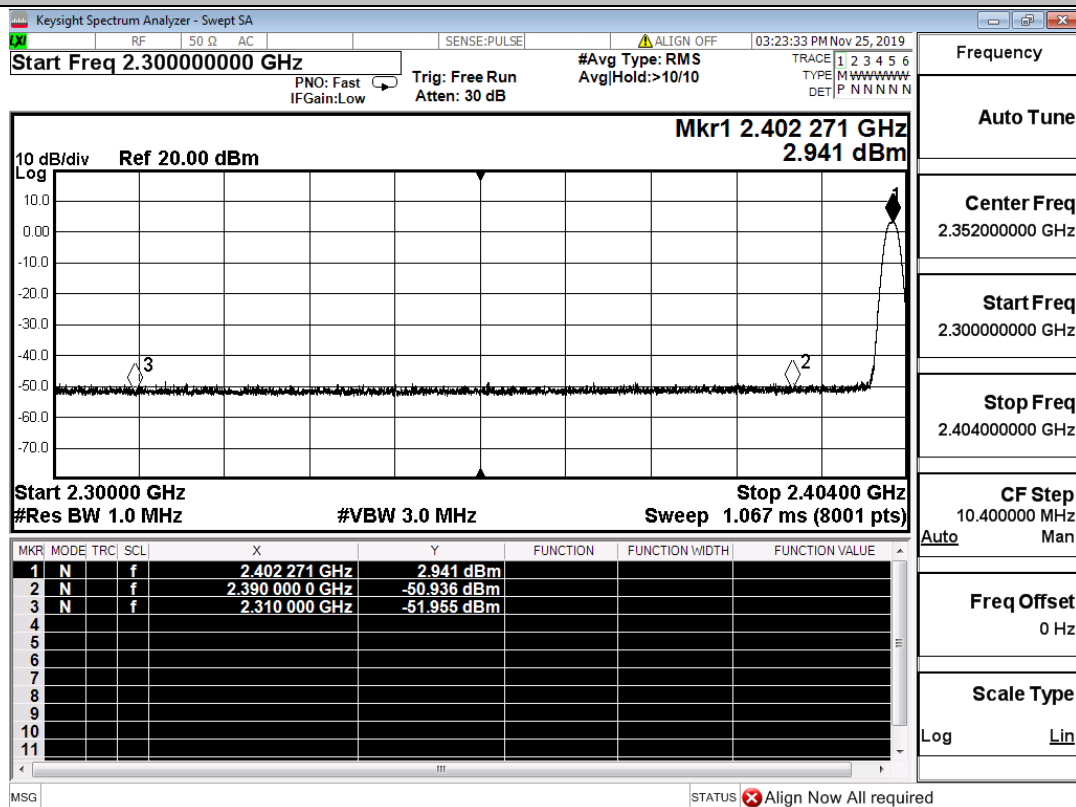
$\pi/4$ DQPSK/HCH/Hop



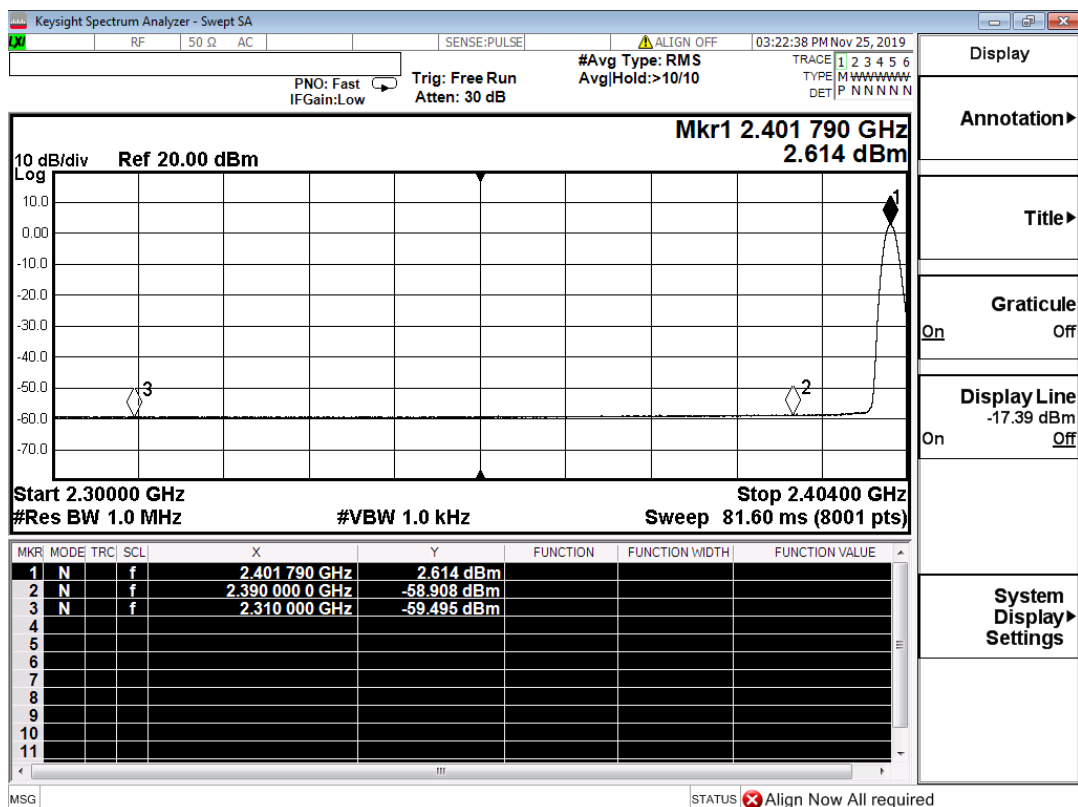
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.955	2.000	0	45.28	PEAK	74	PASS
	Off	2310.0	-59.495	2.000	0	37.74	AV	54	PASS
	Off	2390.0	-50.936	2.000	0	46.29	PEAK	74	PASS
	Off	2390.0	-58.908	2.000	0	38.32	AV	54	PASS
	Off	2483.5	-49.654	2.000	0	47.58	PEAK	74	PASS
	Off	2483.5	-57.518	2.000	0	39.71	AV	54	PASS
	Off	2500.0	-46.064	2.000	0	51.17	PEAK	74	PASS
	Off	2500.0	-58.688	2.000	0	38.54	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-51.381	2.000	0	45.85	PEAK	74	PASS
	Off	2310.0	-59.613	2.000	0	37.62	AV	54	PASS
	Off	2390.0	-50.216	2.000	0	47.01	PEAK	74	PASS
	Off	2390.0	-58.985	2.000	0	38.25	AV	54	PASS
	Off	2483.5	-50.523	2.000	0	46.71	PEAK	74	PASS
	Off	2483.5	-57.859	2.000	0	39.37	AV	54	PASS
	Off	2500.0	-51.050	2.000	0	46.18	PEAK	74	PASS
	Off	2500.0	-58.689	2.000	0	38.54	AV	54	PASS

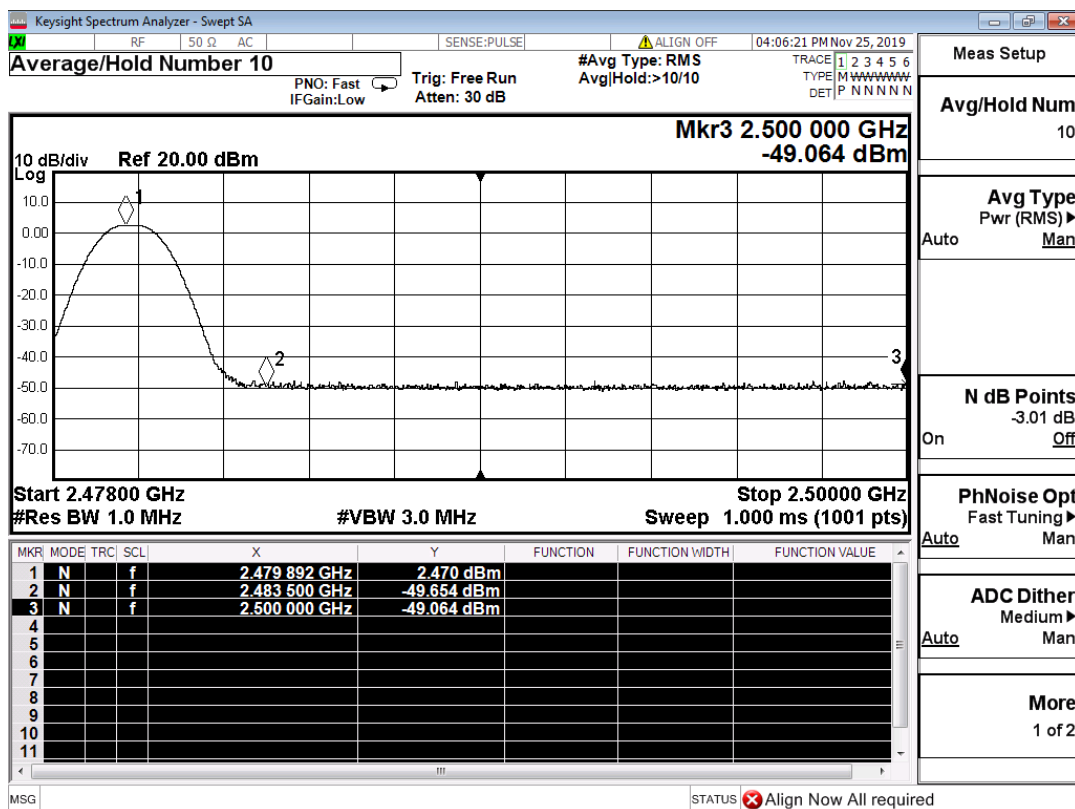
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



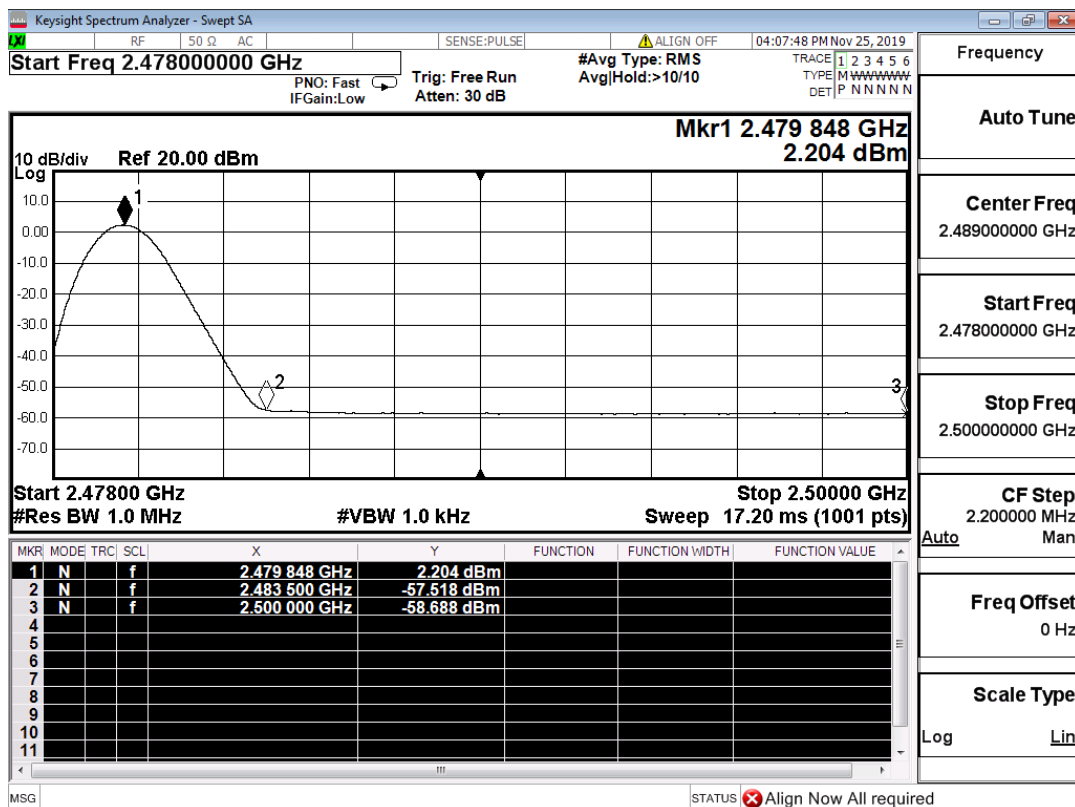
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

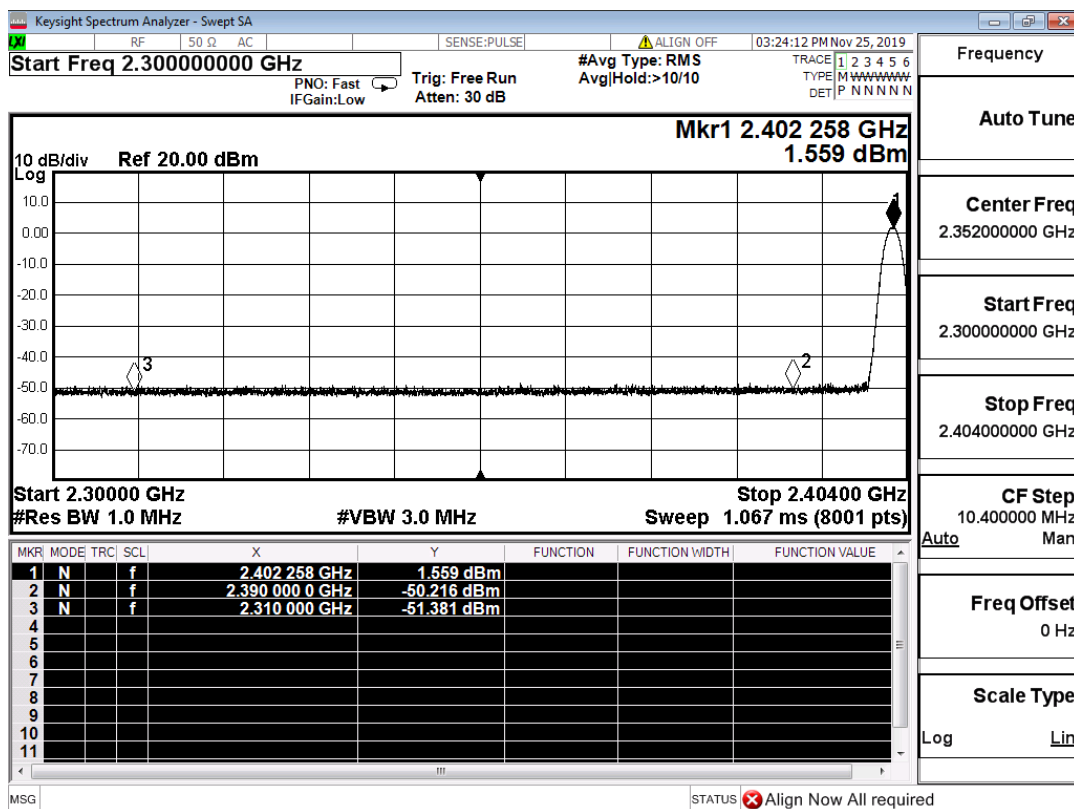
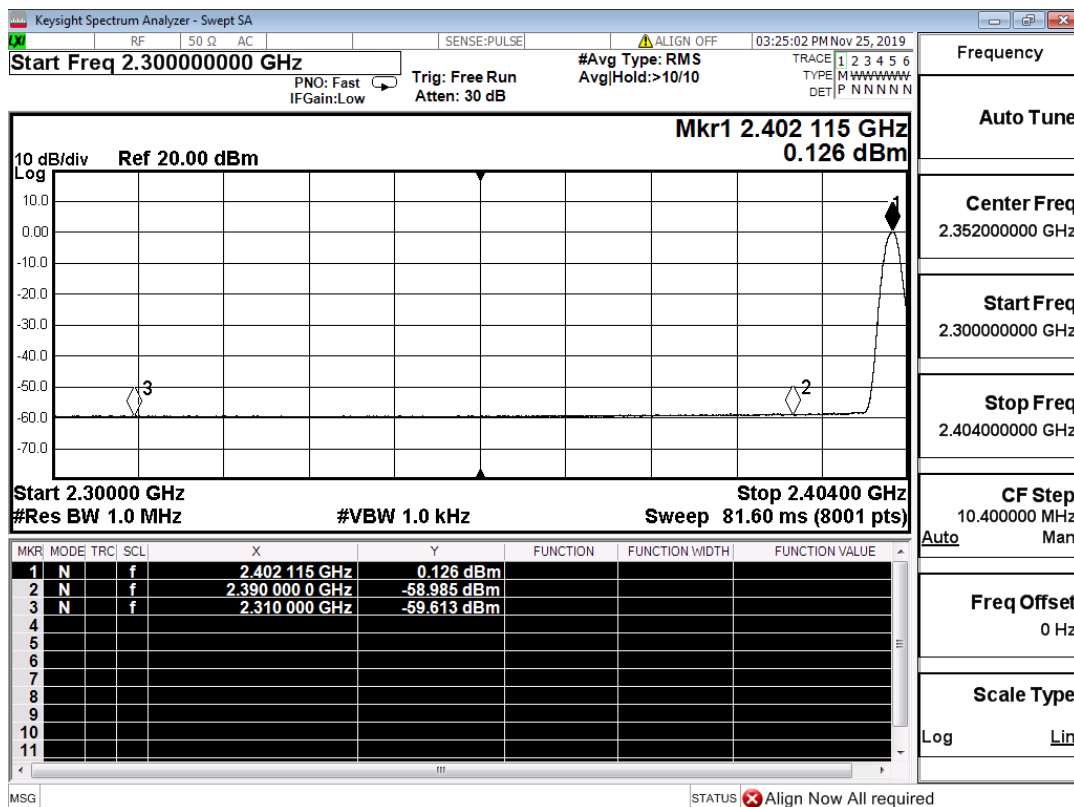


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

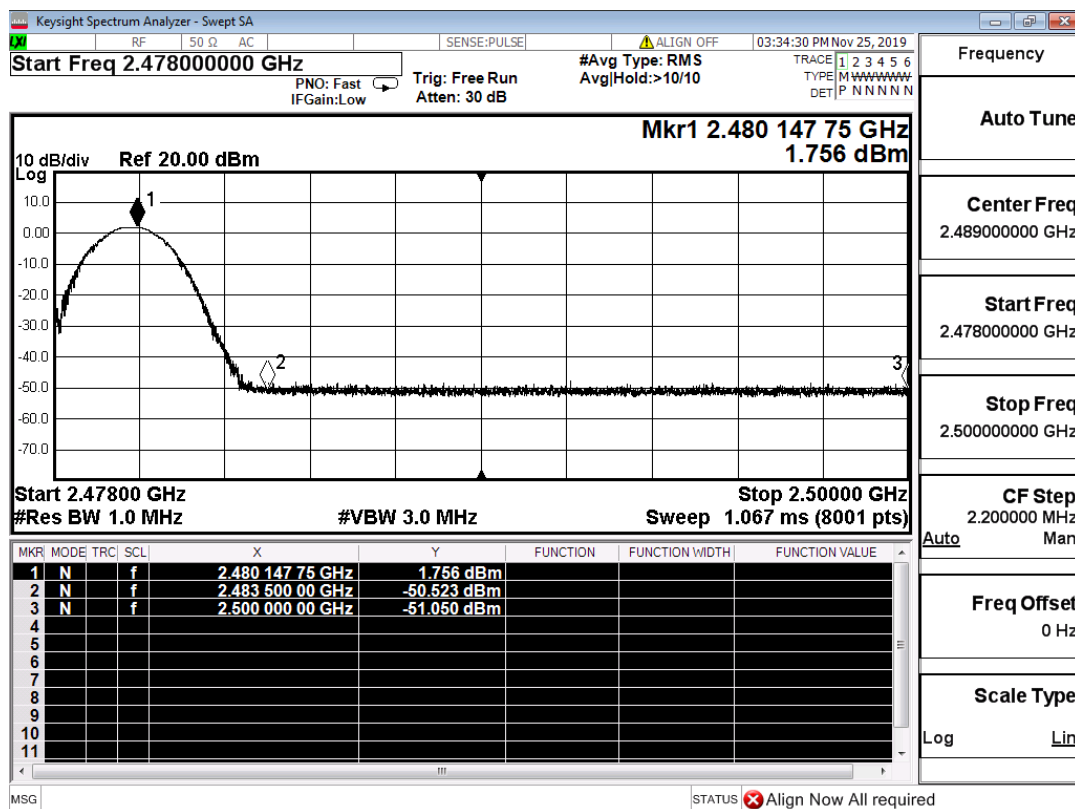


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

