

Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Wireless Sports Earphones

Trade Mark: AWEI

Test Model: X680BL

Environmental Conditions

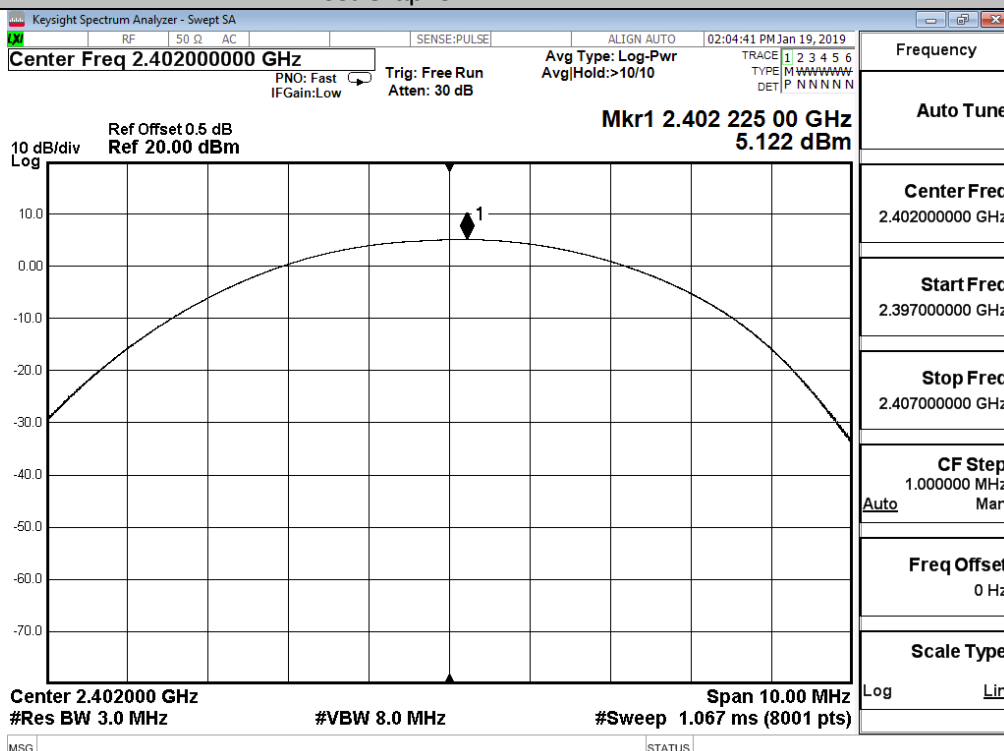
Temperature:	23.5 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

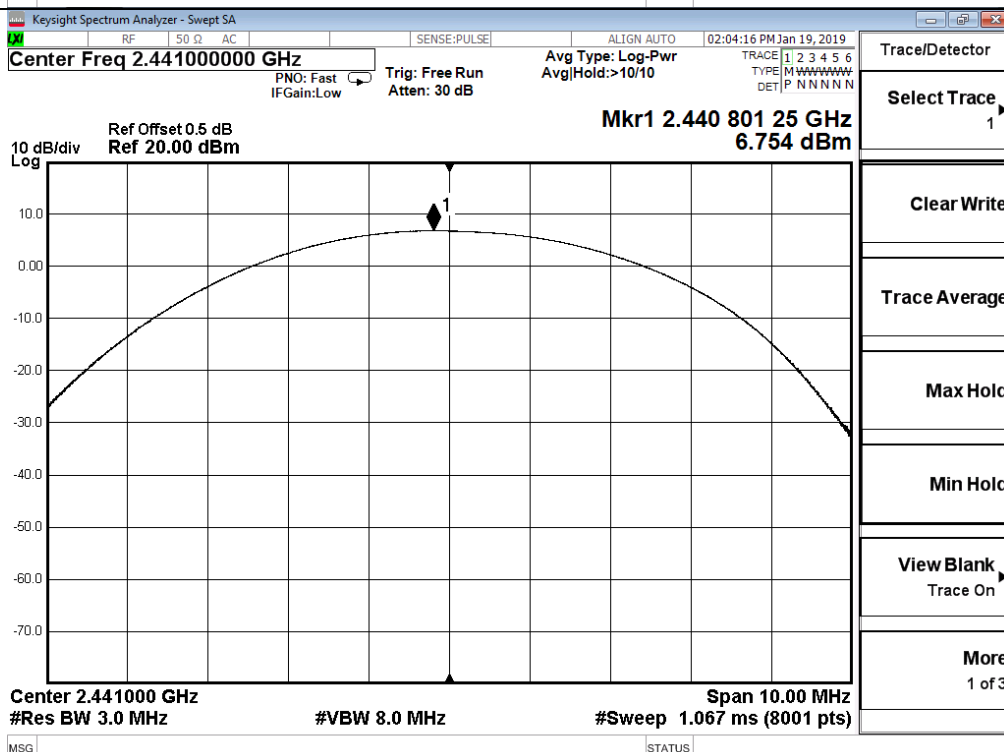
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.504	21	PASS
	MCH	6.754	21	PASS
	HCH	6.416	21	PASS
$\pi/4$ DQPSK	LCH	2.823	21	PASS
	MCH	4.883	21	PASS
	HCH	4.340	21	PASS
8DPSK	LCH	3.433	21	PASS
	MCH	5.188	21	PASS
	HCH	4.752	21	PASS

Test Graphs

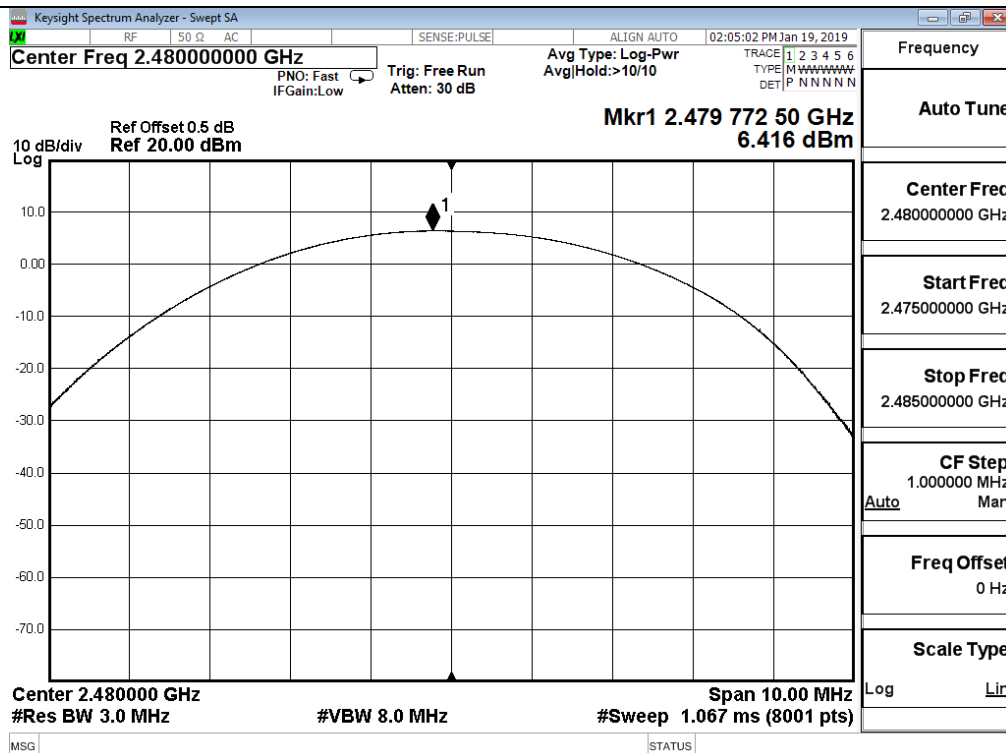
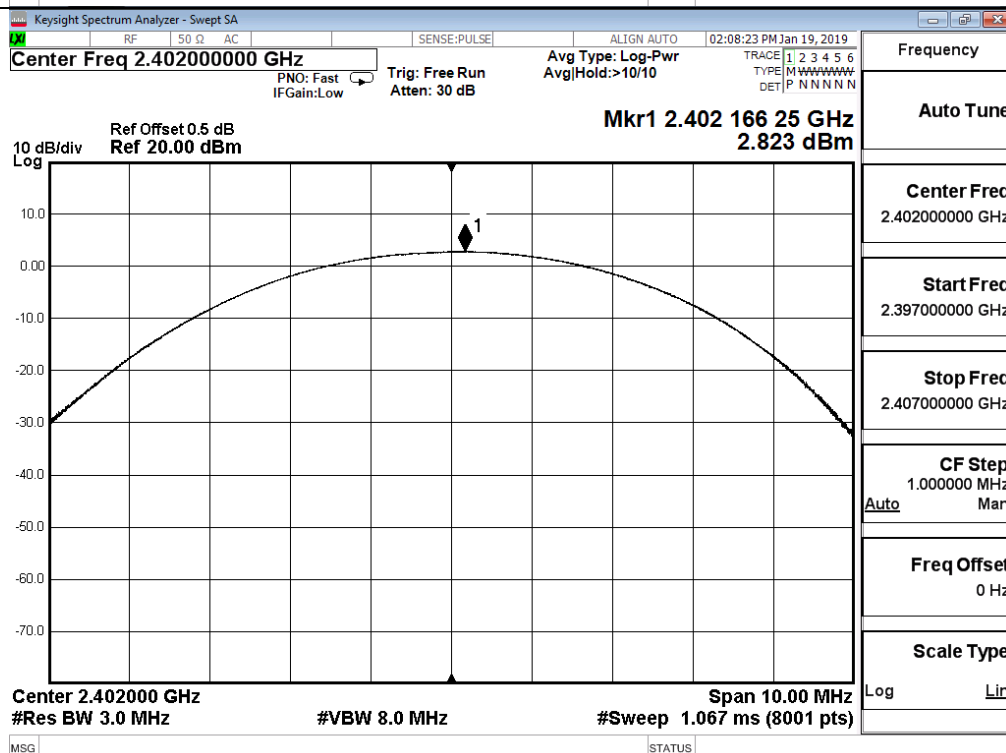
GFSK/LCH

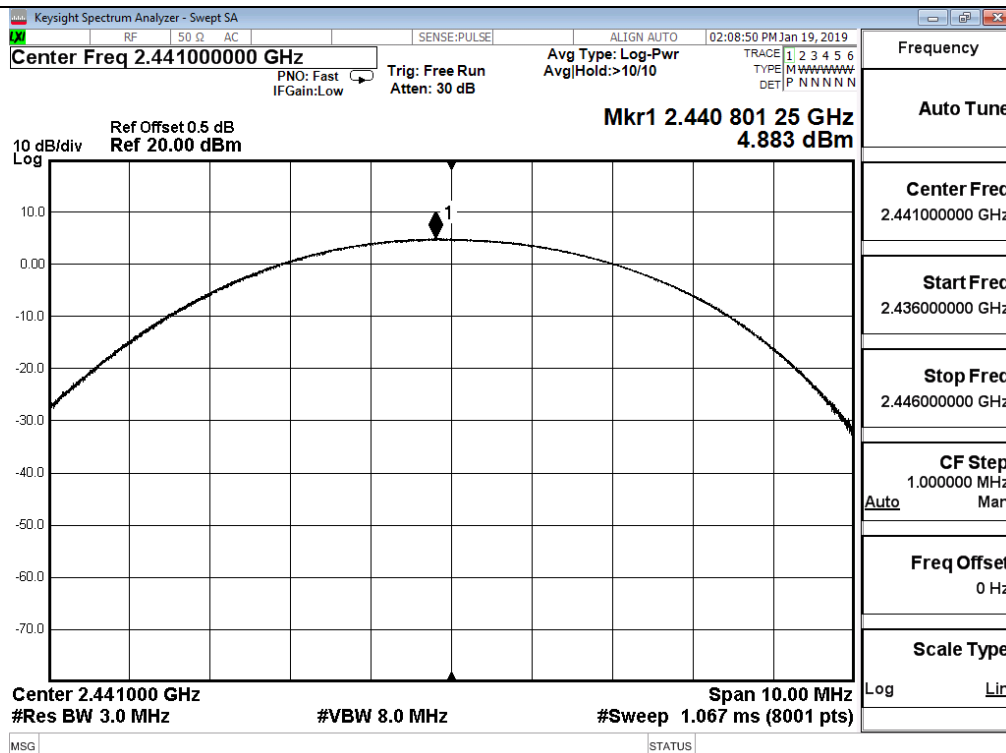
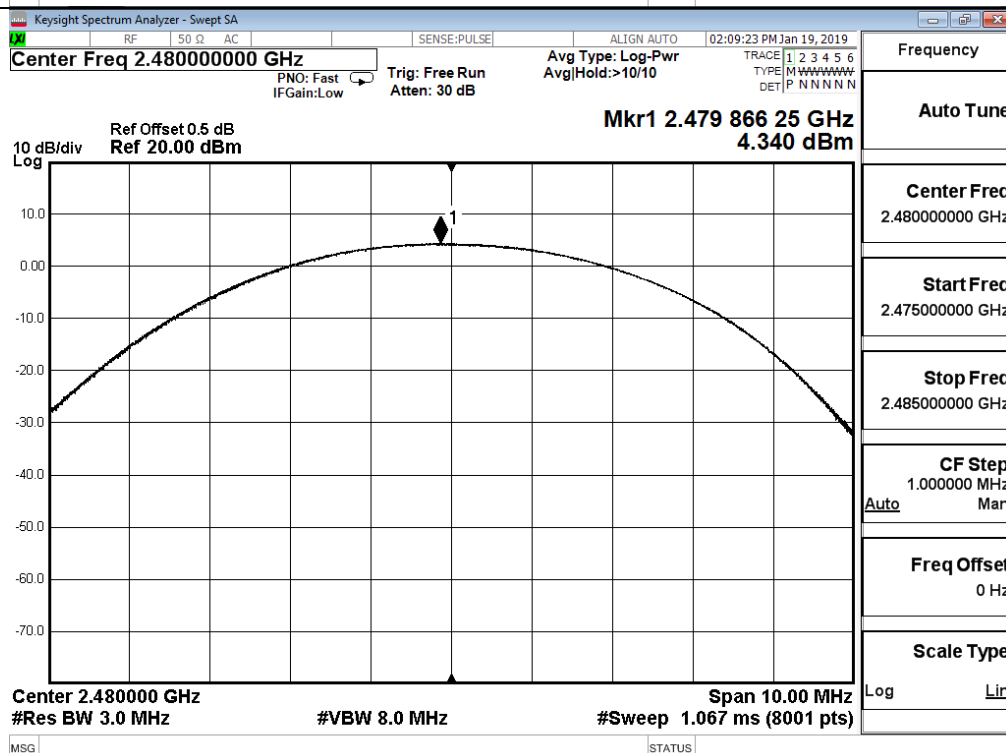


GFSK/MCH

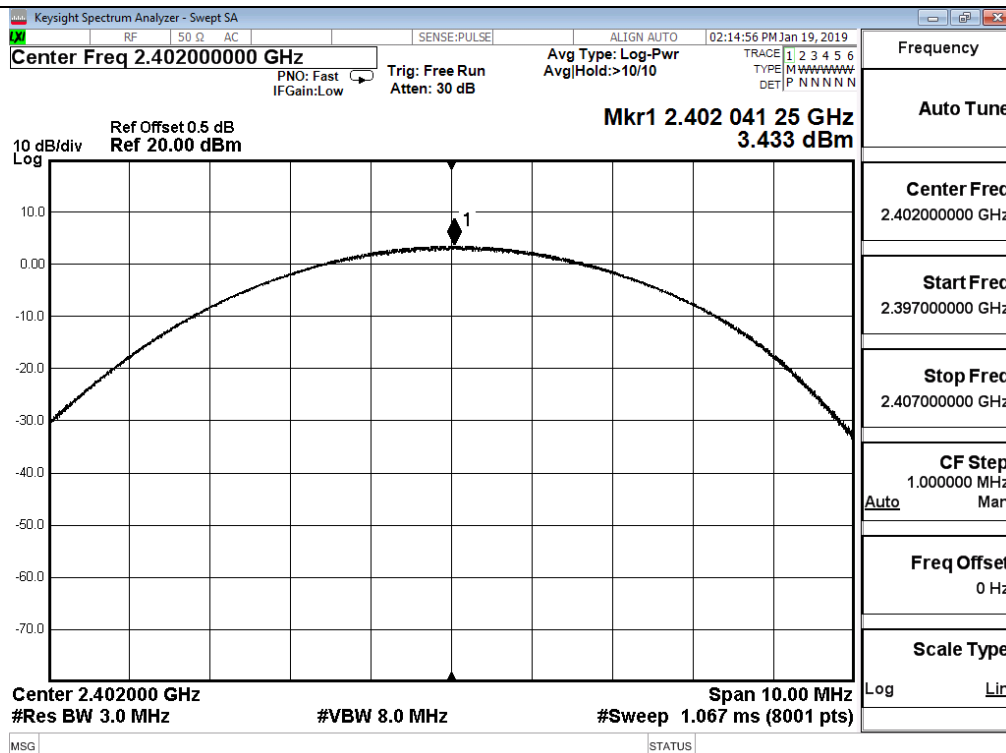


GFSK/HCH

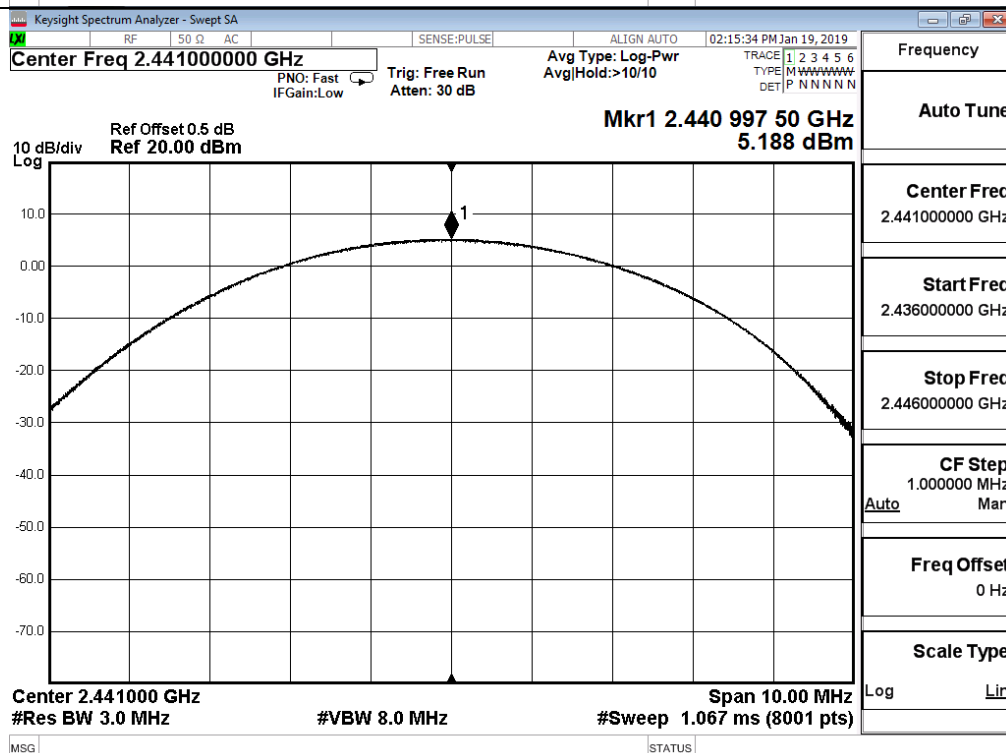
 $\pi/4$ DQPSK/LCH

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

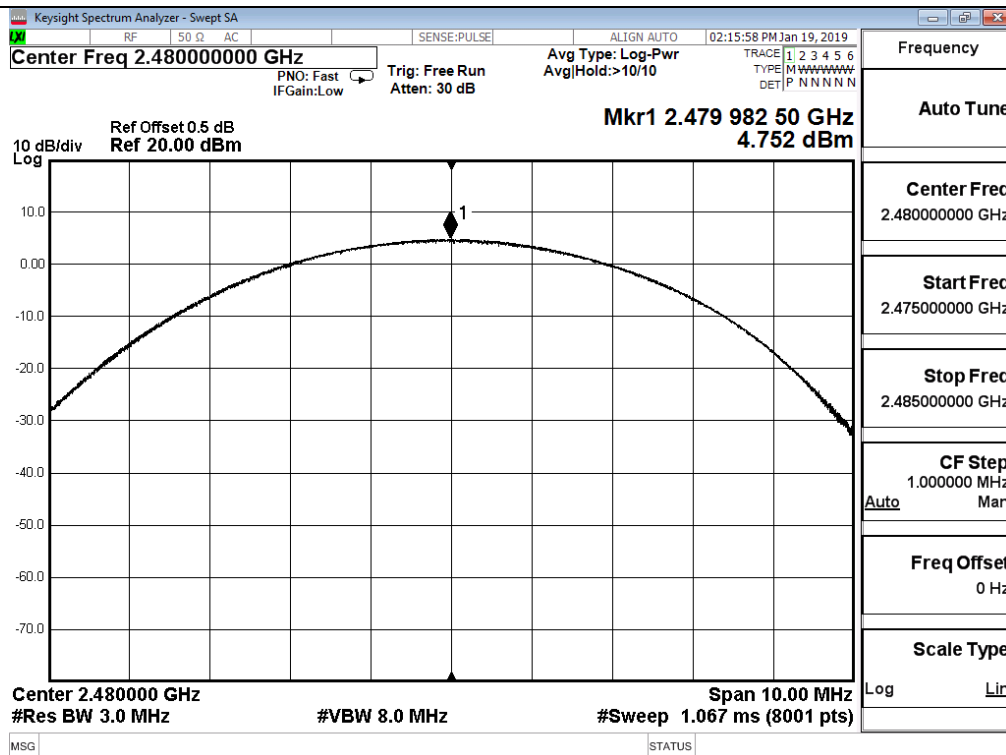
8DPSK/LCH



8DPSK/MCH

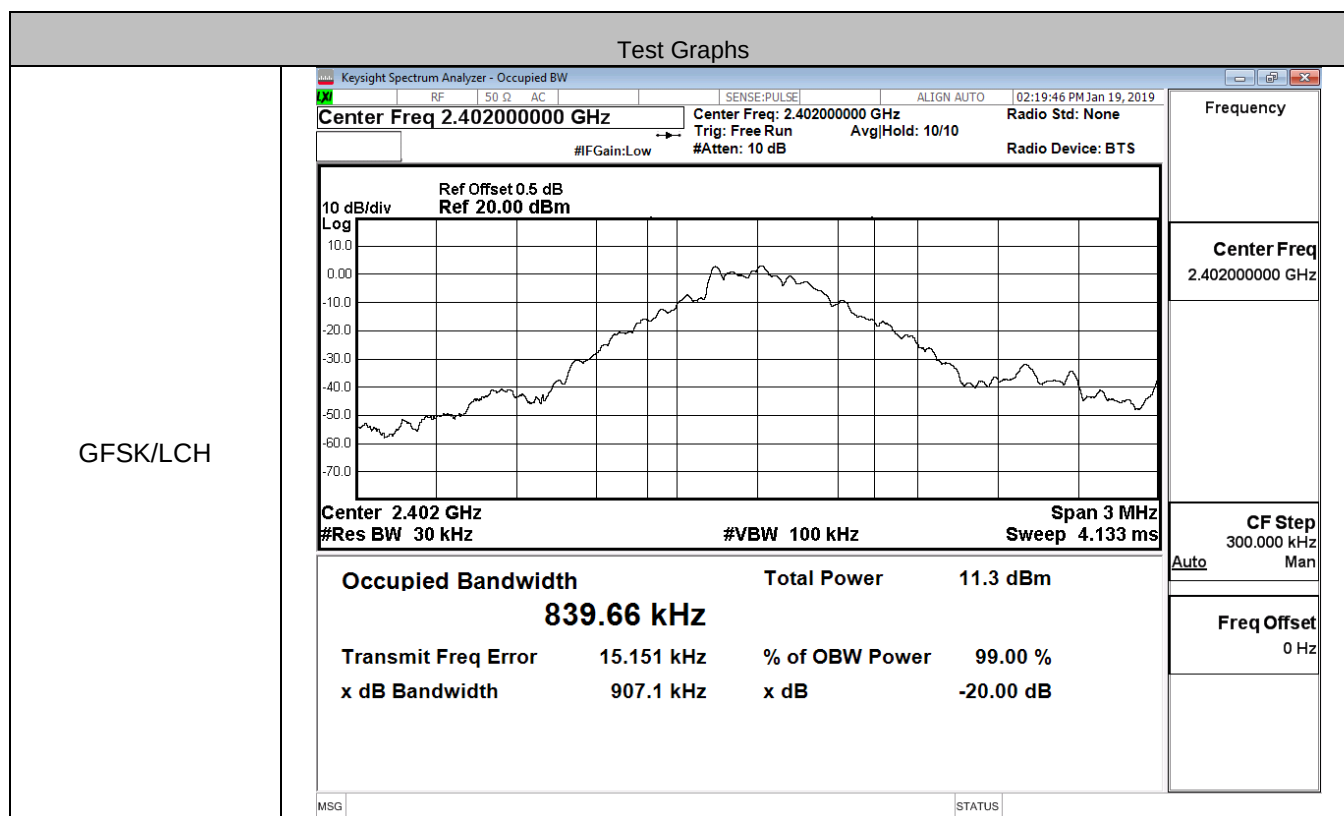


8DPSK/HCH

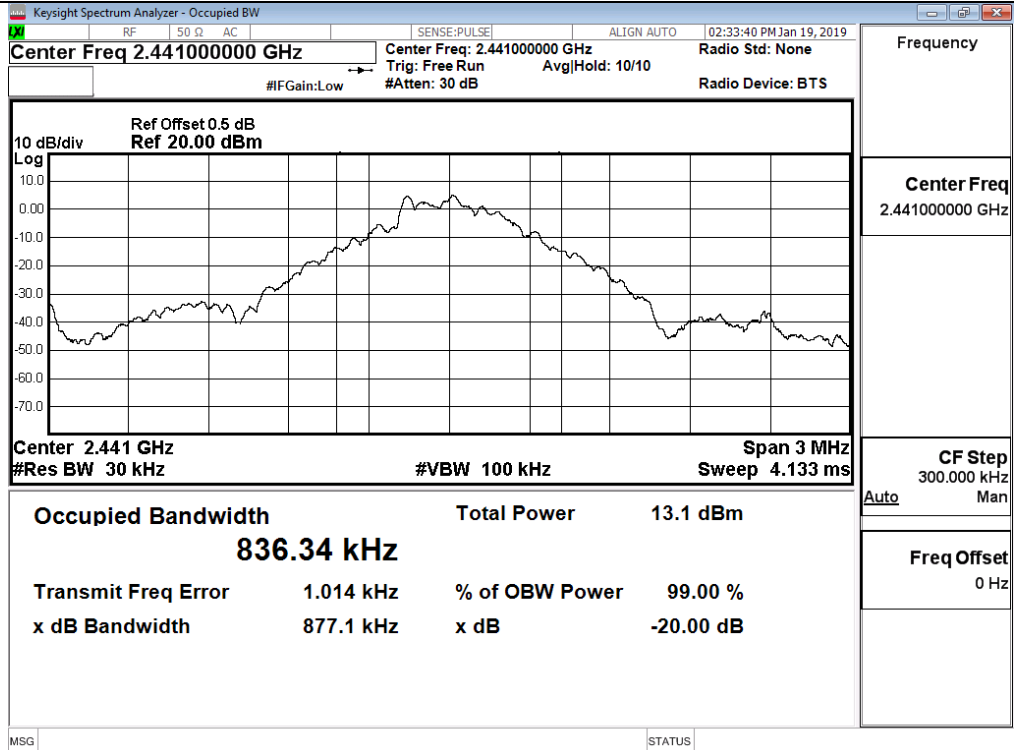


A.2 99% and 20dB Bandwidth

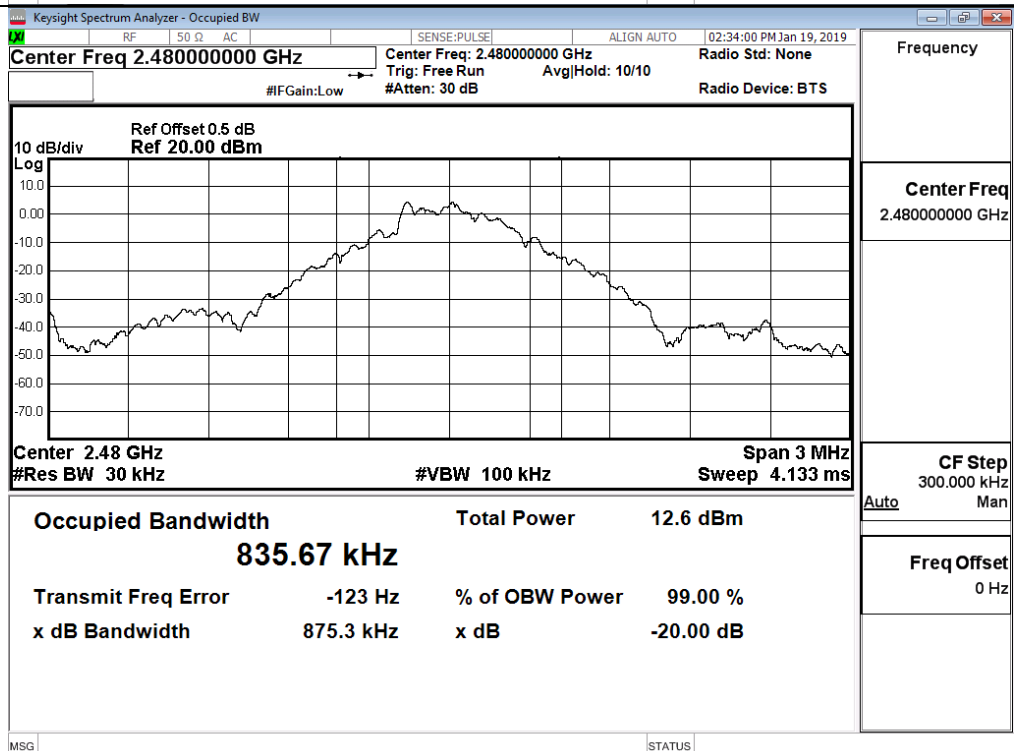
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83966	0.9071	Not Specified	PASS
	MCH	0.83634	0.8771	Not Specified	PASS
	HCH	0.83567	0.8753	Not Specified	PASS
π /4DQPSK	LCH	1.1562	1.198	Not Specified	PASS
	MCH	1.1601	1.215	Not Specified	PASS
	HCH	1.1609	1.214	Not Specified	PASS
8DPSK	LCH	1.1449	1.207	Not Specified	PASS
	MCH	1.1429	1.207	Not Specified	PASS
	HCH	1.1390	1.207	Not Specified	PASS

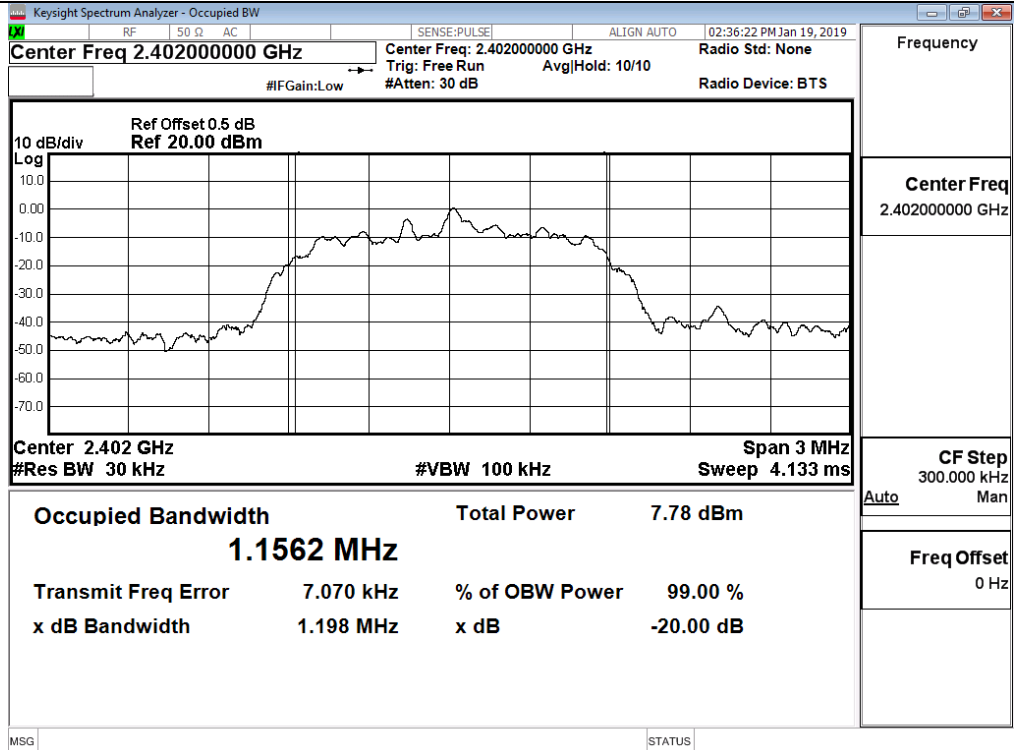
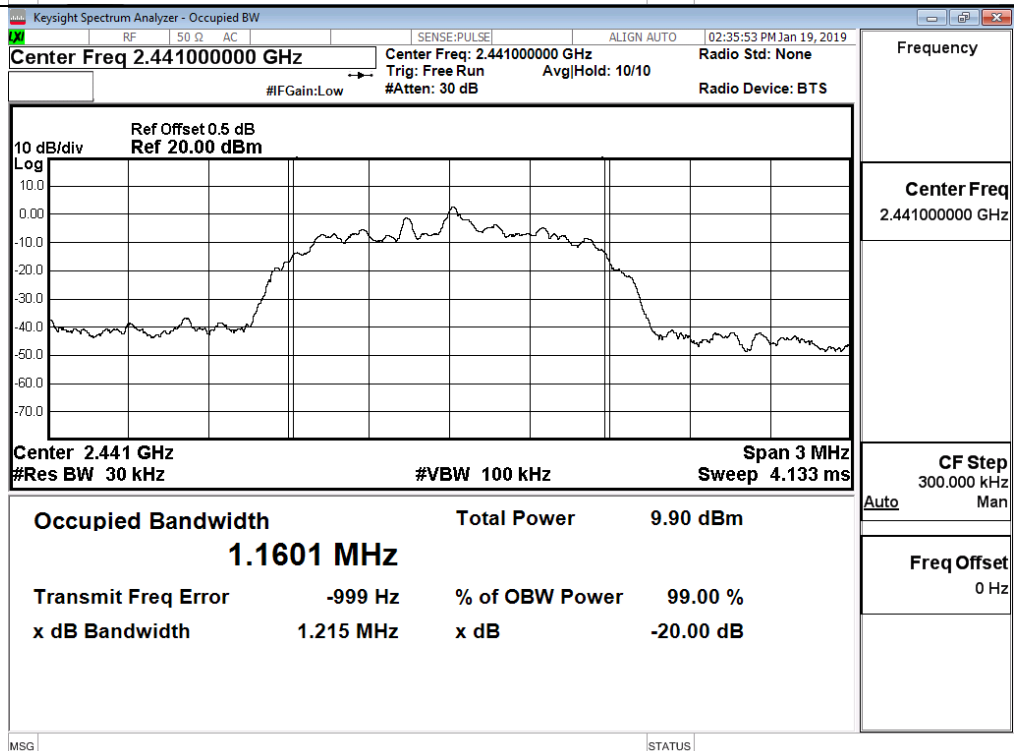


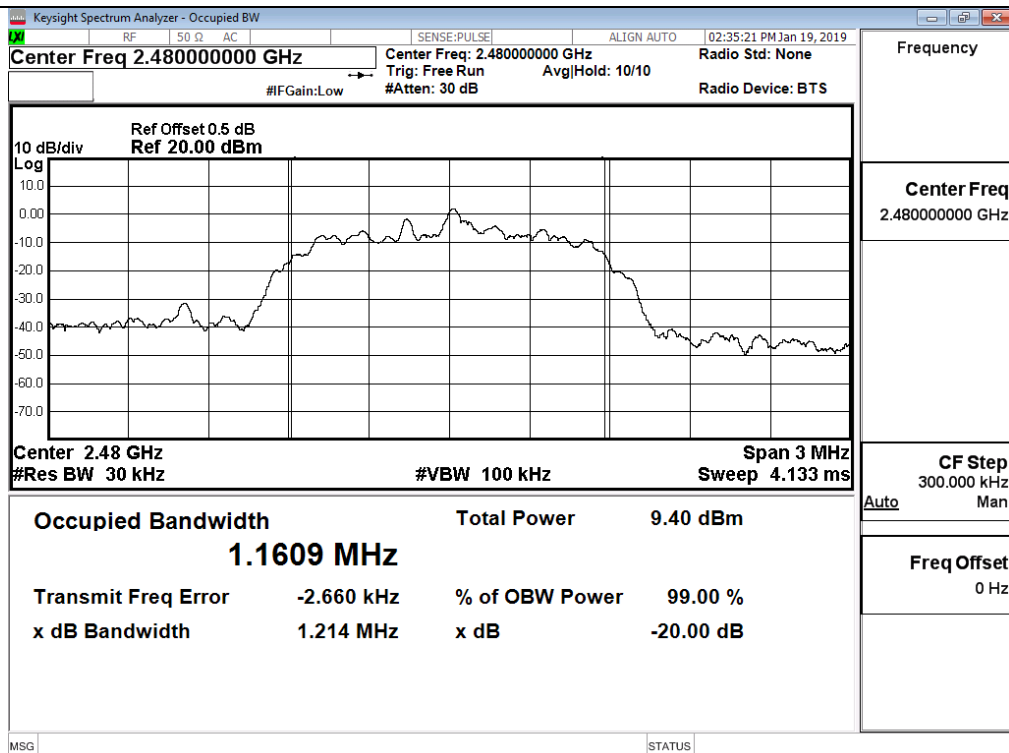
GFSK/MCH



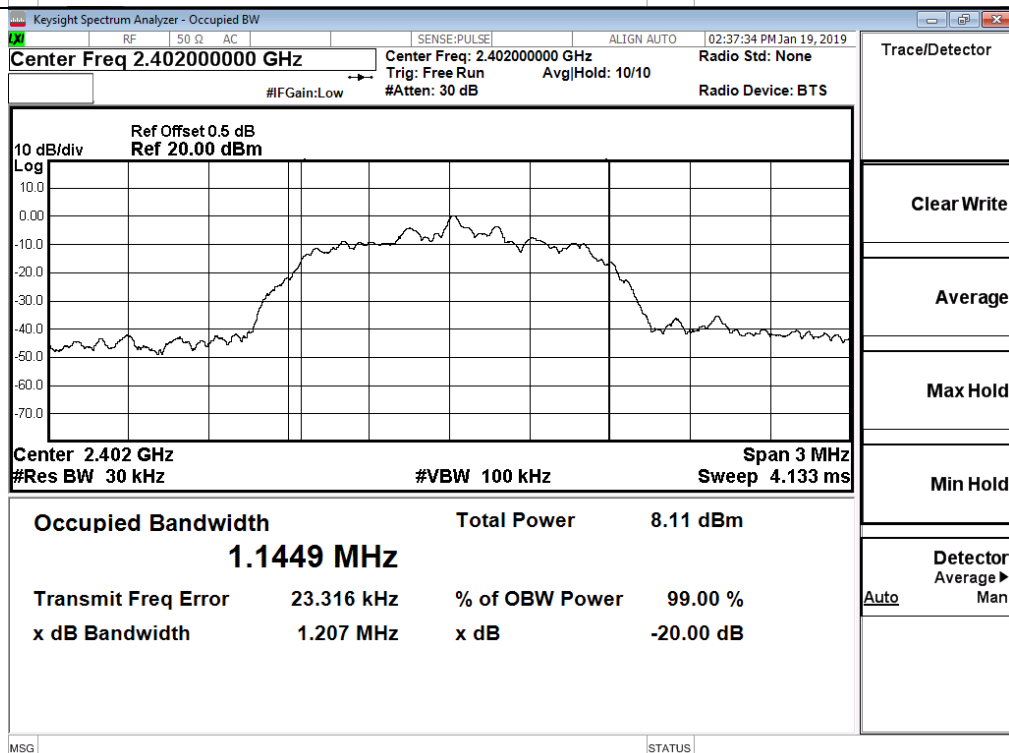
GFSK/HCH



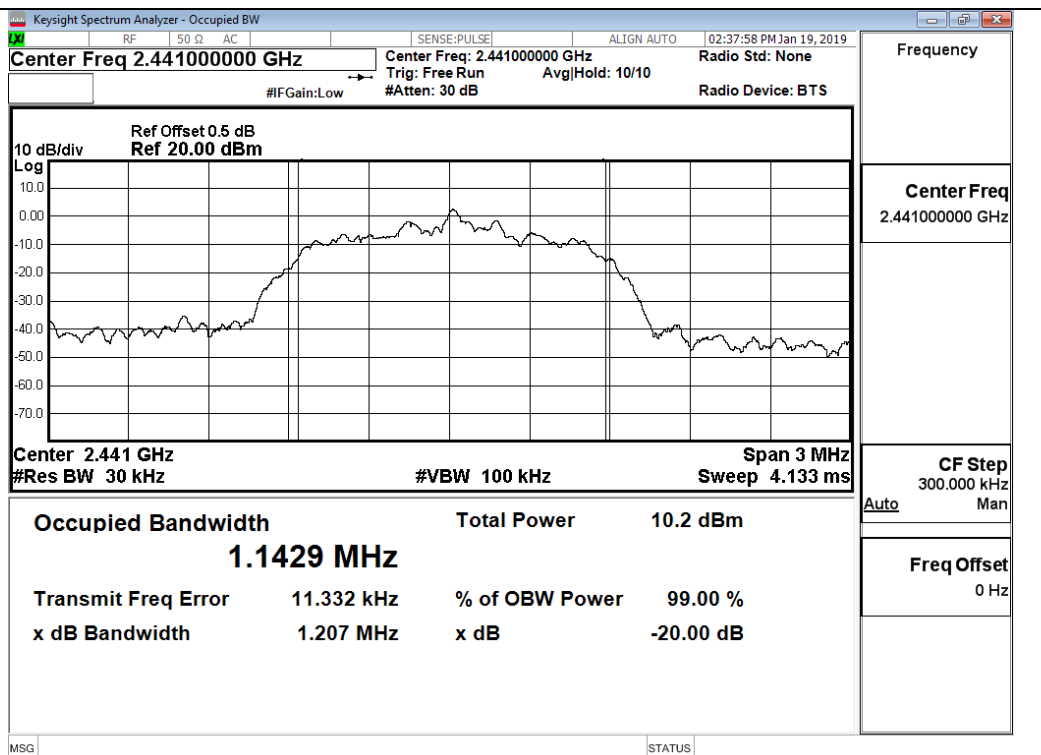
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

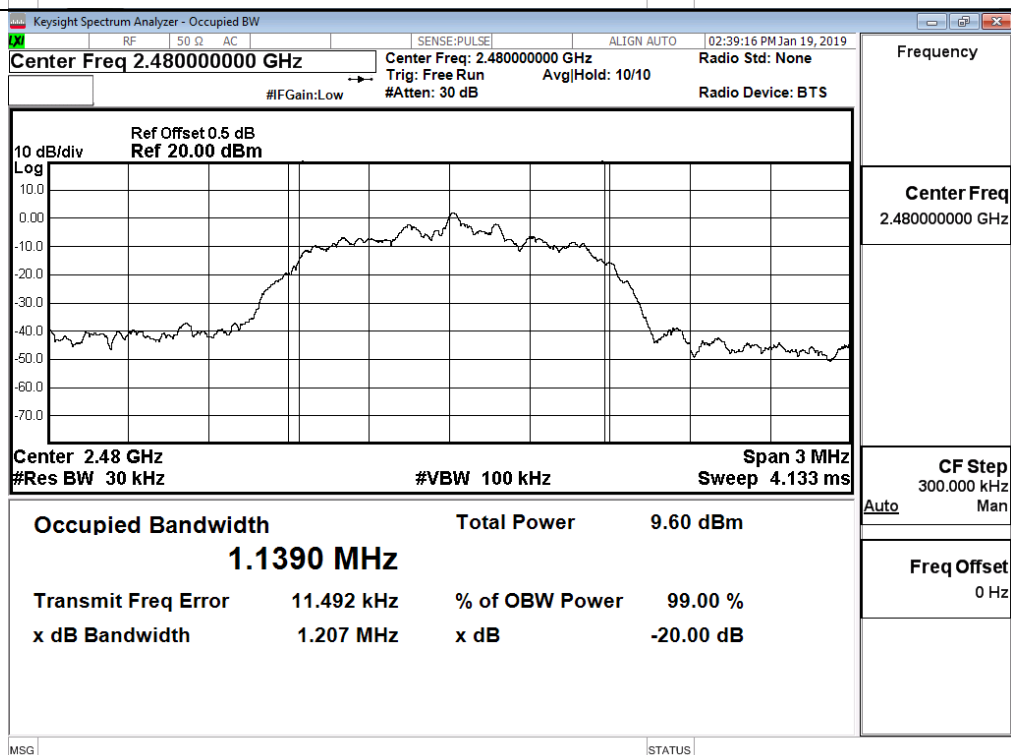
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

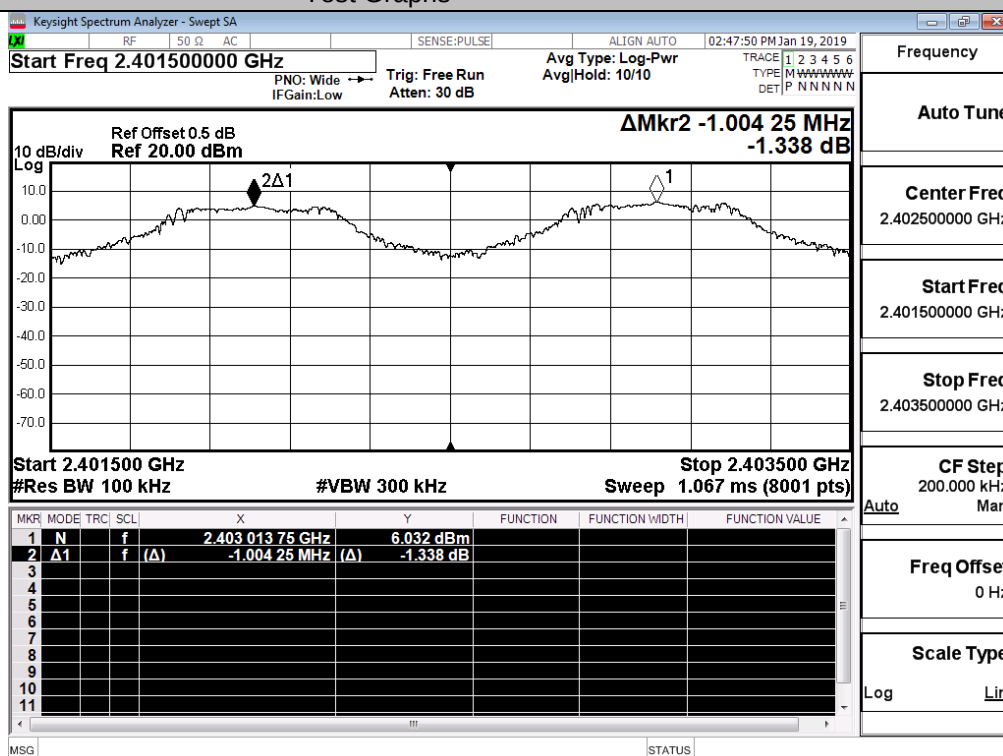


A.3 Carrier Frequency Separation

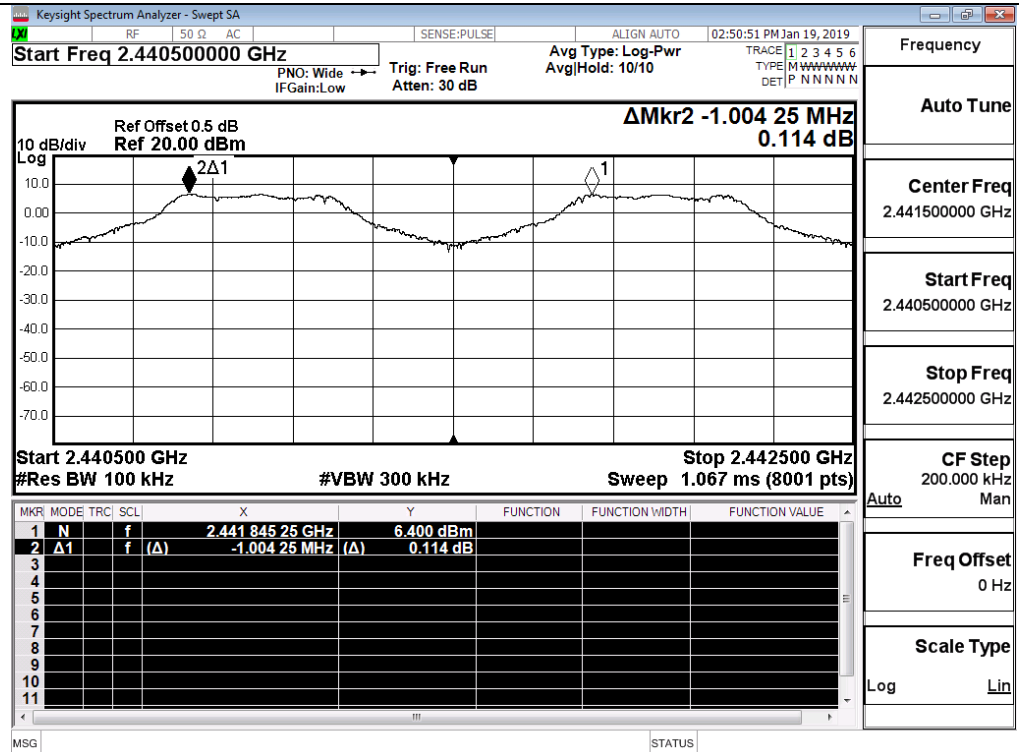
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.004	0.6047	PASS
	MCH	1.004	0.6047	PASS
	HCH	1.010	0.6047	PASS
$\pi/4$ DQPSK	LCH	1.001	0.810	PASS
	MCH	1.002	0.810	PASS
	HCH	1.002	0.810	PASS
8DPSK	LCH	1.001	0.805	PASS
	MCH	1.007	0.805	PASS
	HCH	0.997	0.805	PASS

Test Graphs

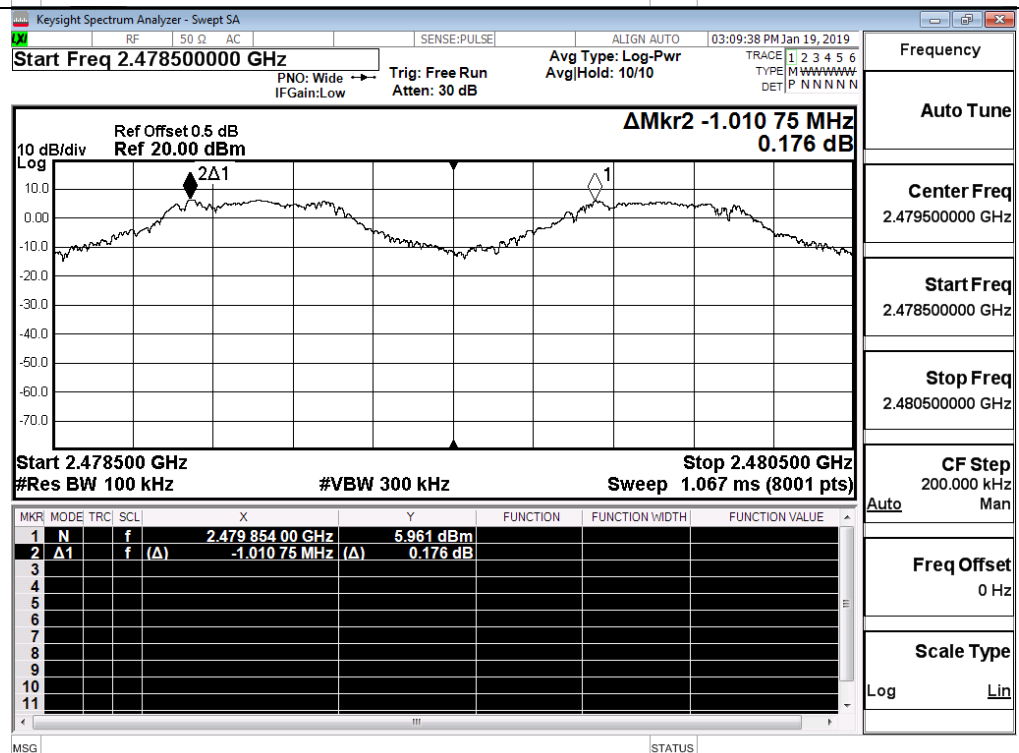
GFSK/LCH

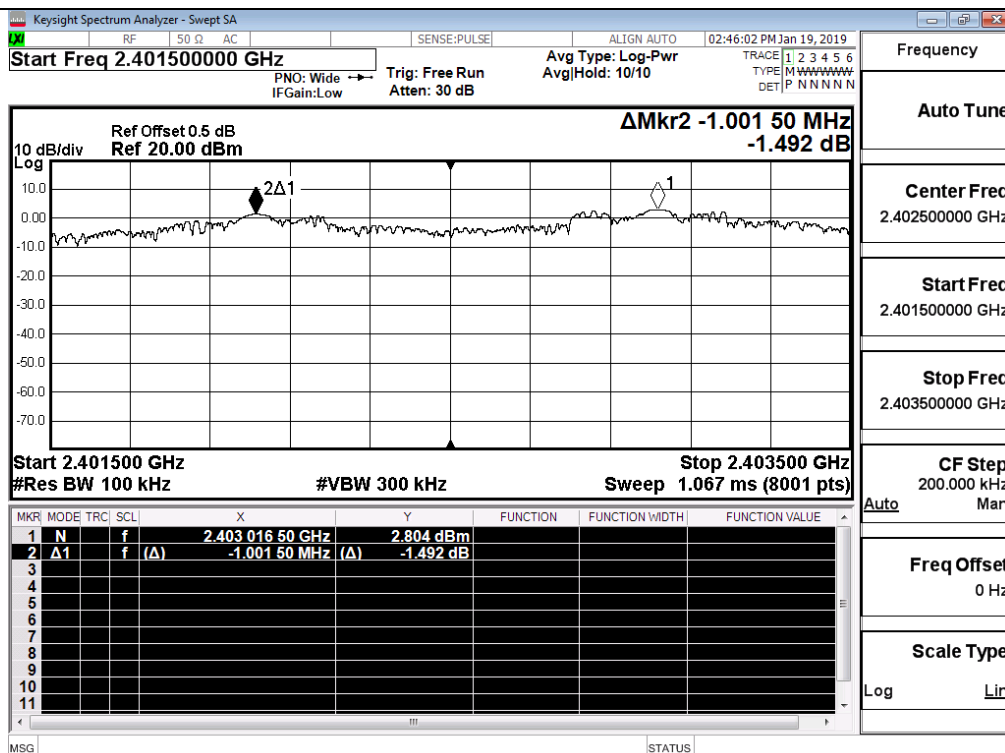


GFSK/MCH



GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

Auto Tune

Center Freq
2.402500000 GHz

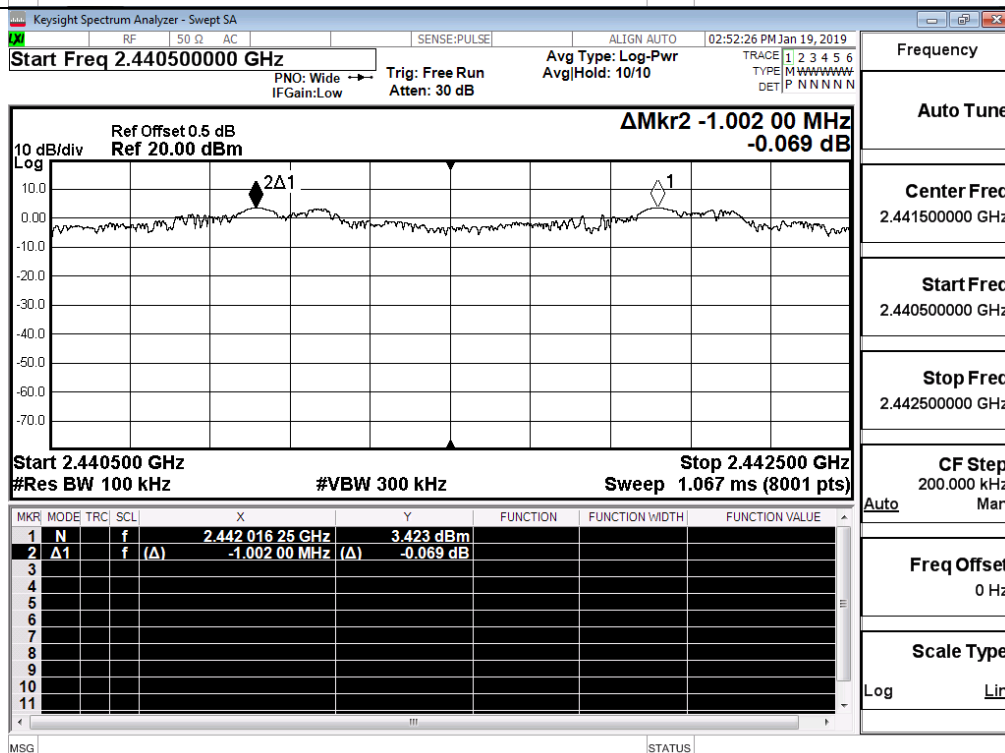
Start Freq
2.401500000 GHz

Stop Freq
2.403500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

Scale Type
Log Lin

 $\pi/4$ DQPSK/MCH

Frequency

Auto Tune

Center Freq
2.441500000 GHz

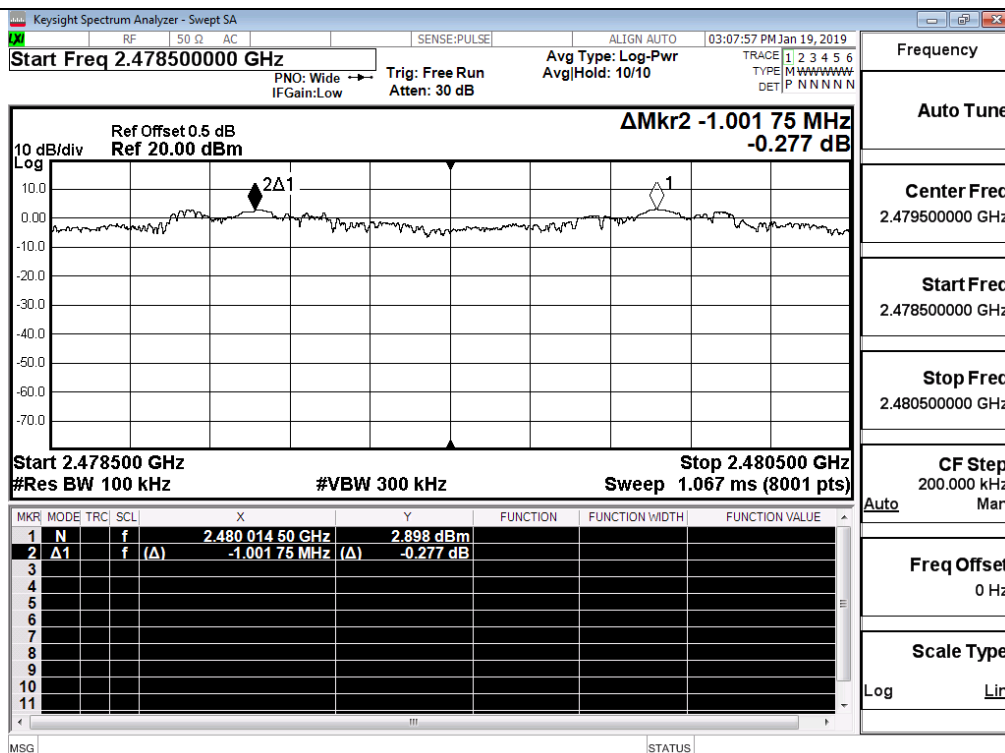
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

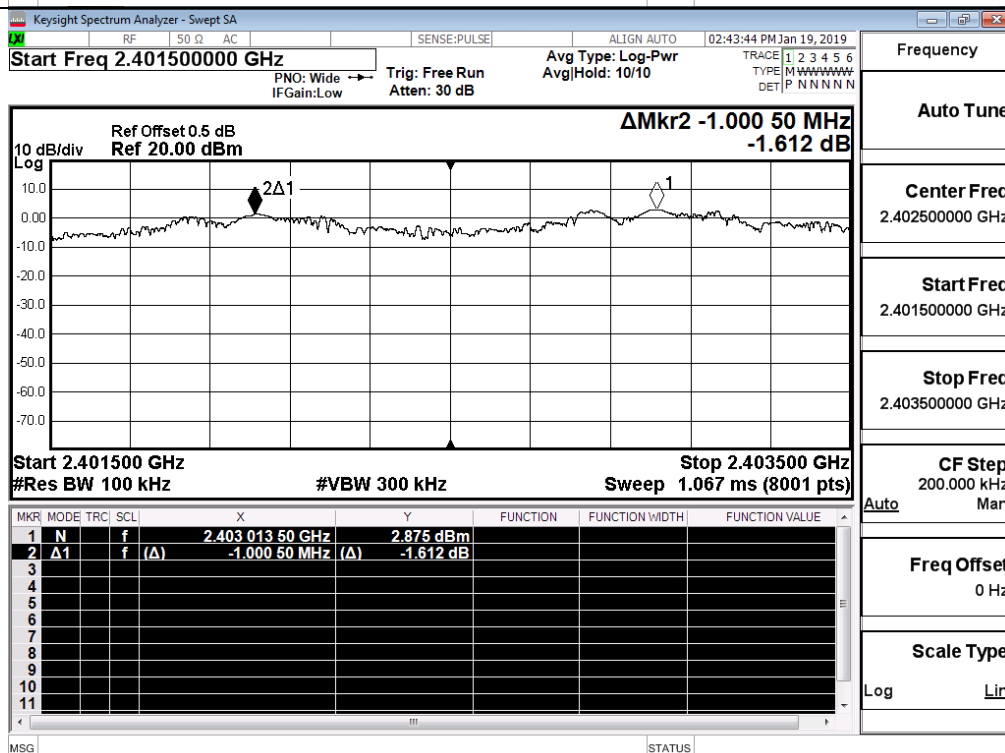
CF Step
200.000 kHz
Man

Freq Offset
0 Hz

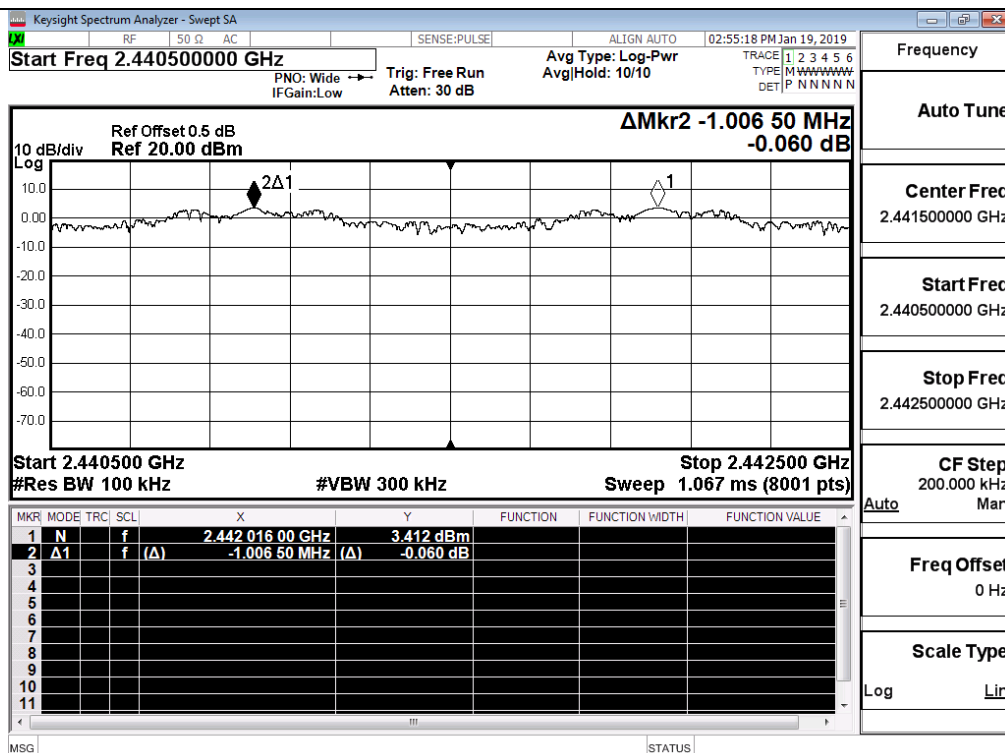
Scale Type
Log Lin

$\pi/4$ DQPSK/HCH

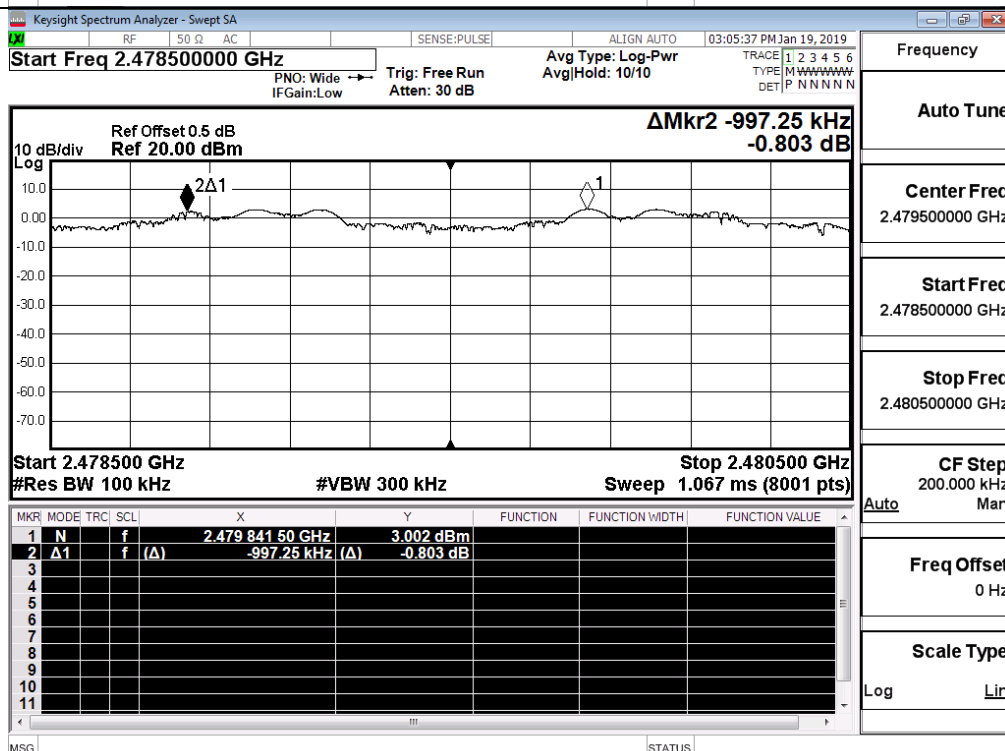
8DPSK/LCH



8DPSK/MCH

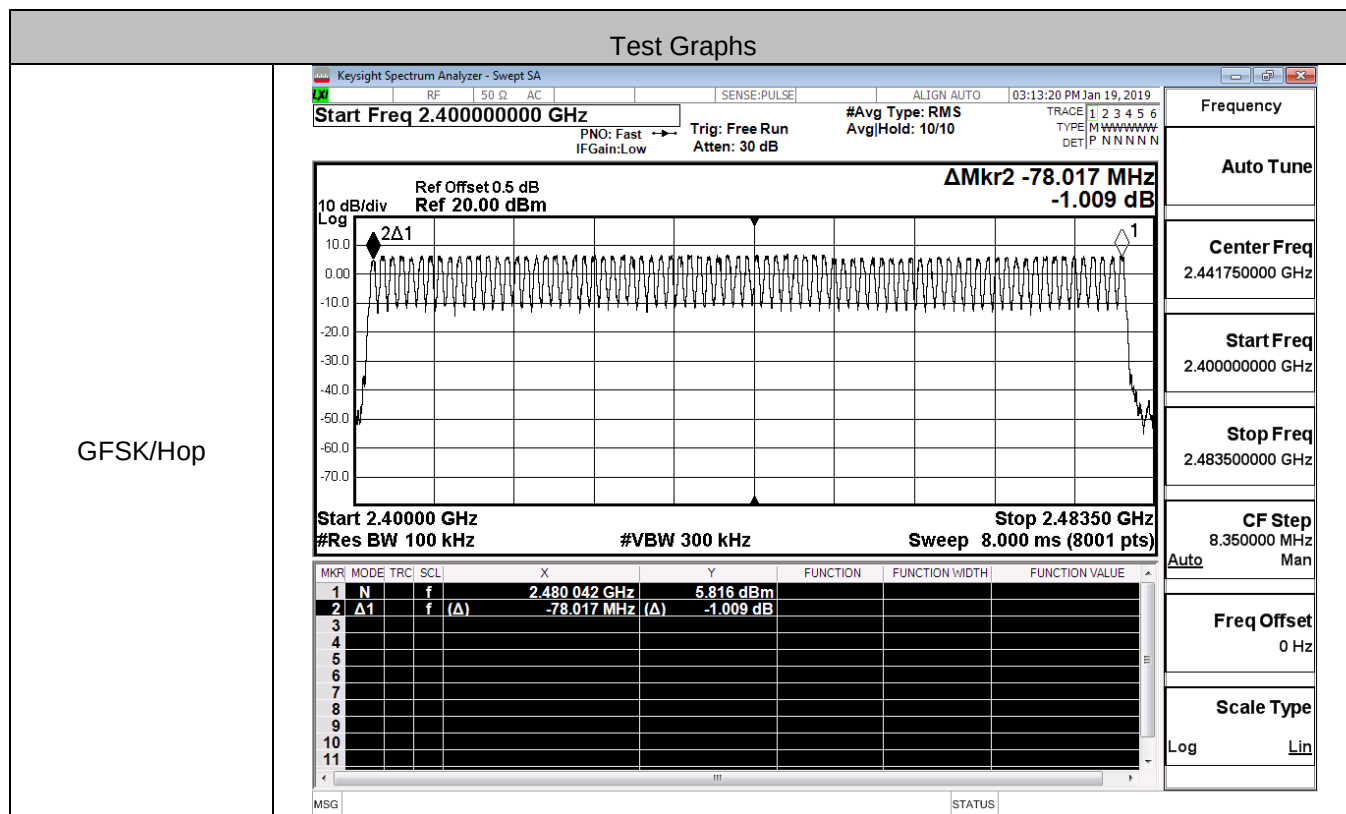


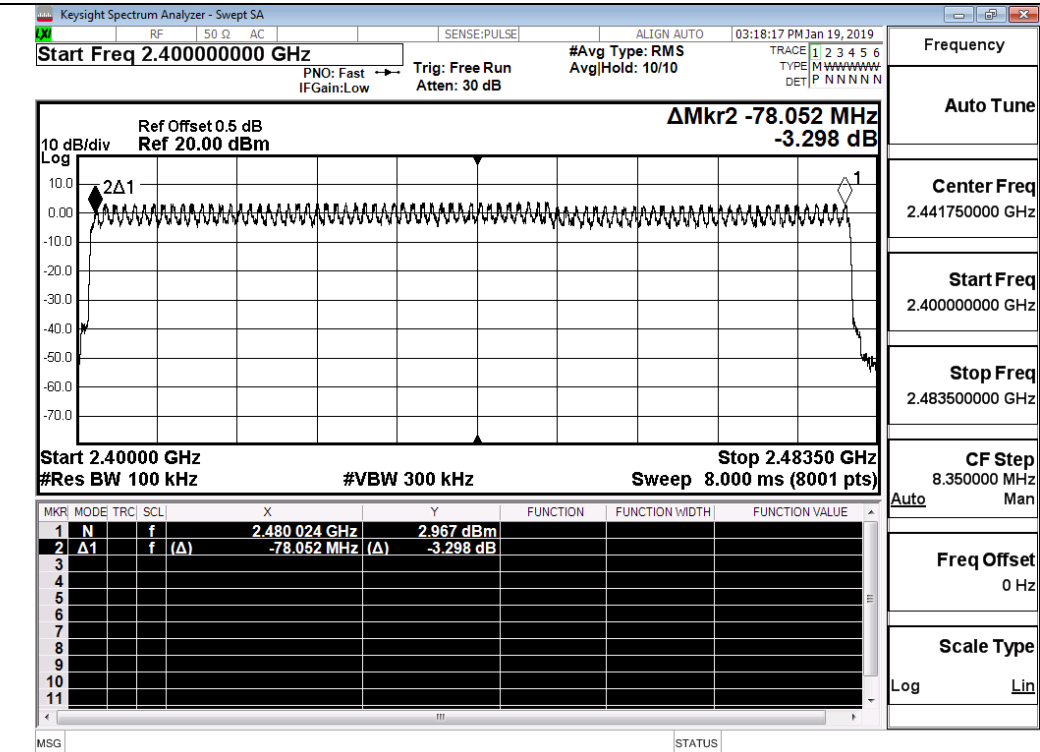
8DPSK/HCH



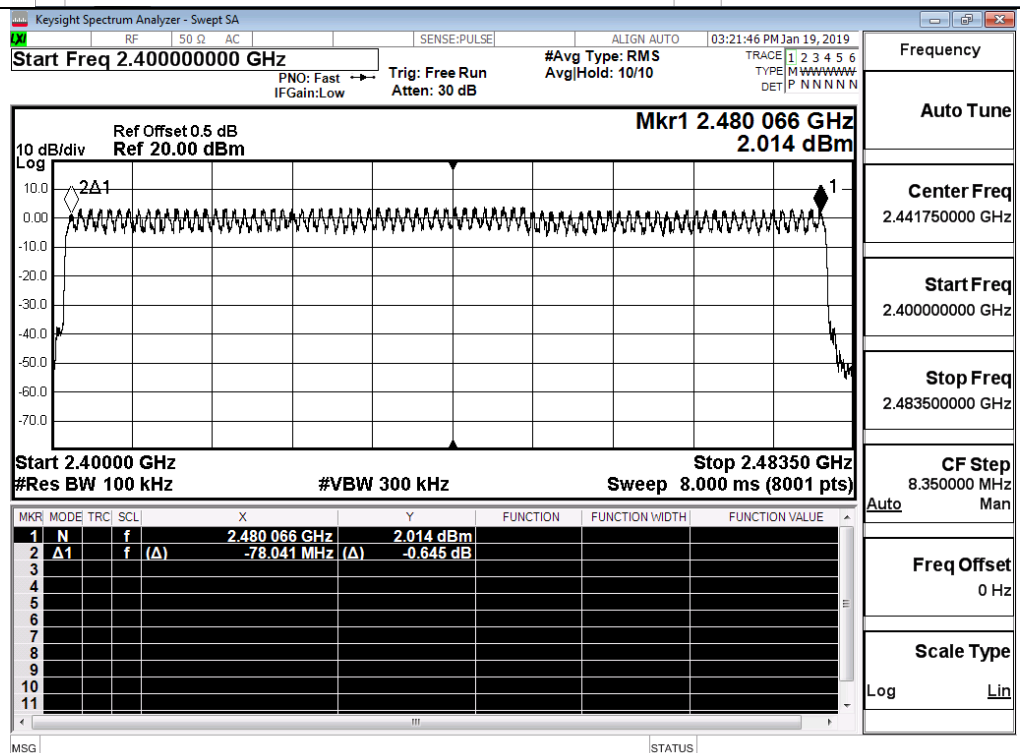
A.4 Hopping Channel Number

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



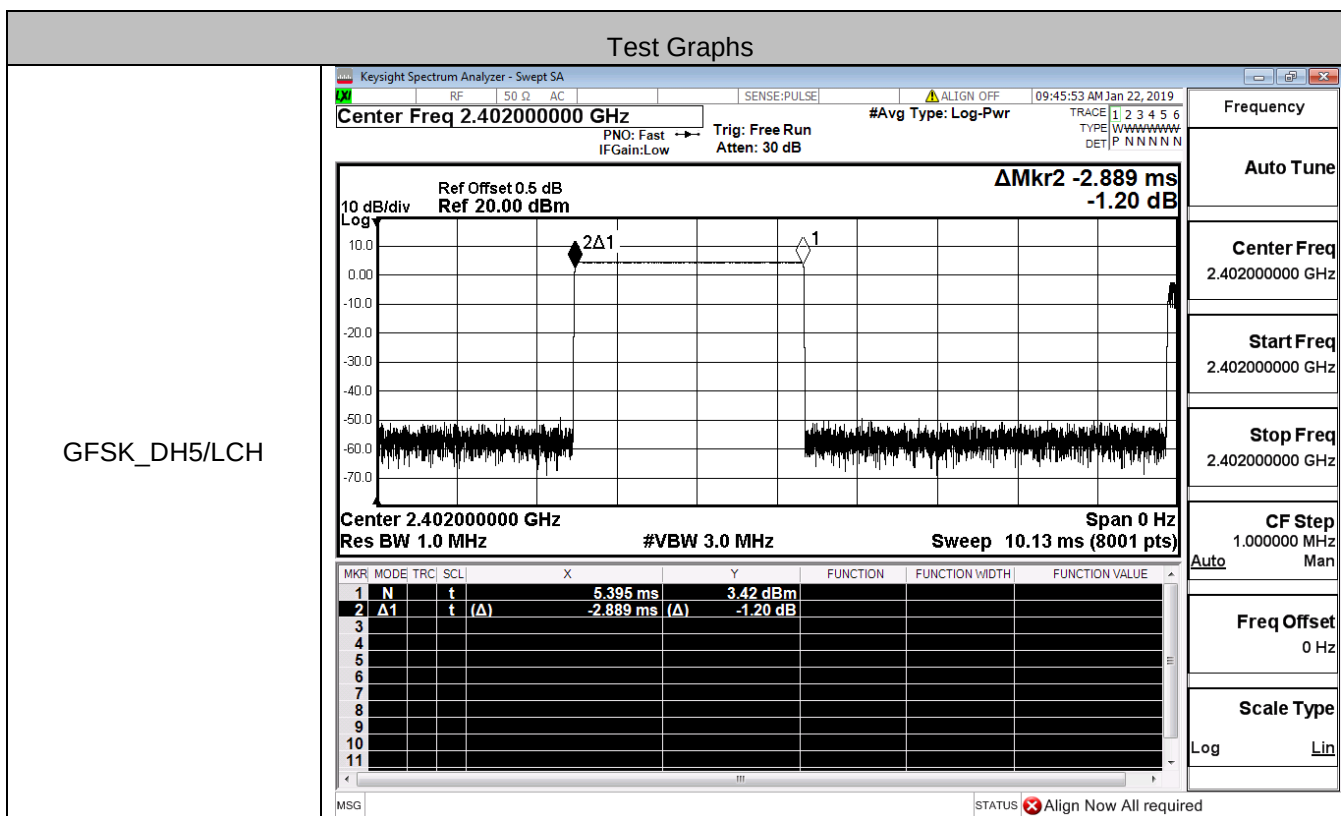
$\pi/4$ DQPSK/Hop

8DPSK/Hop

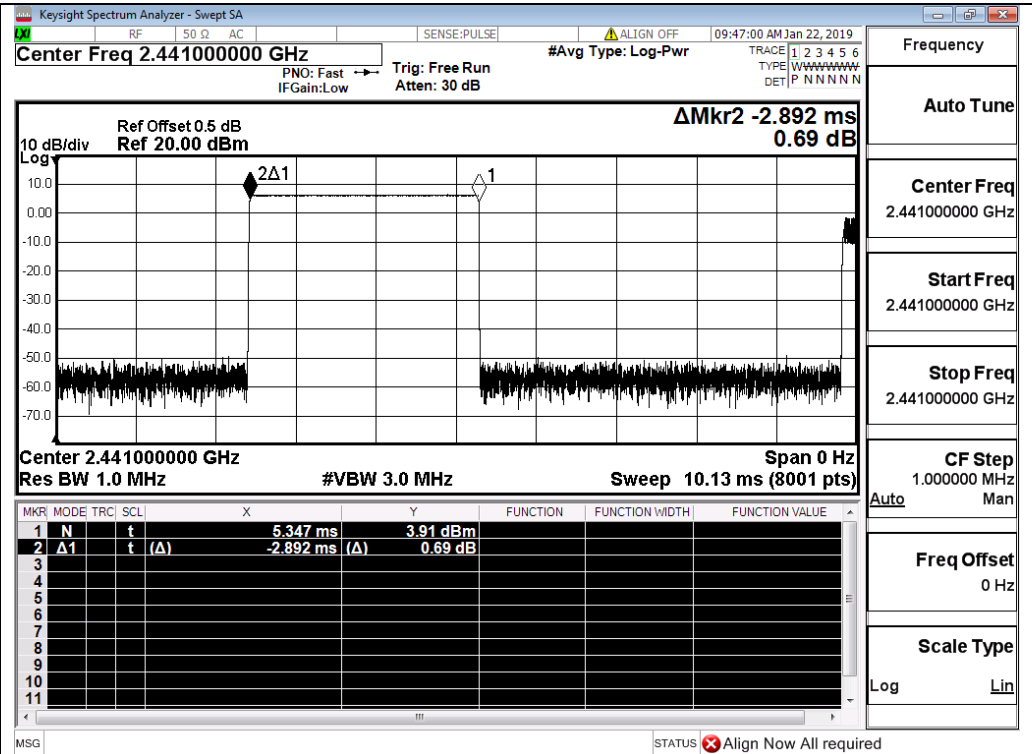


A.5 Dwell Time

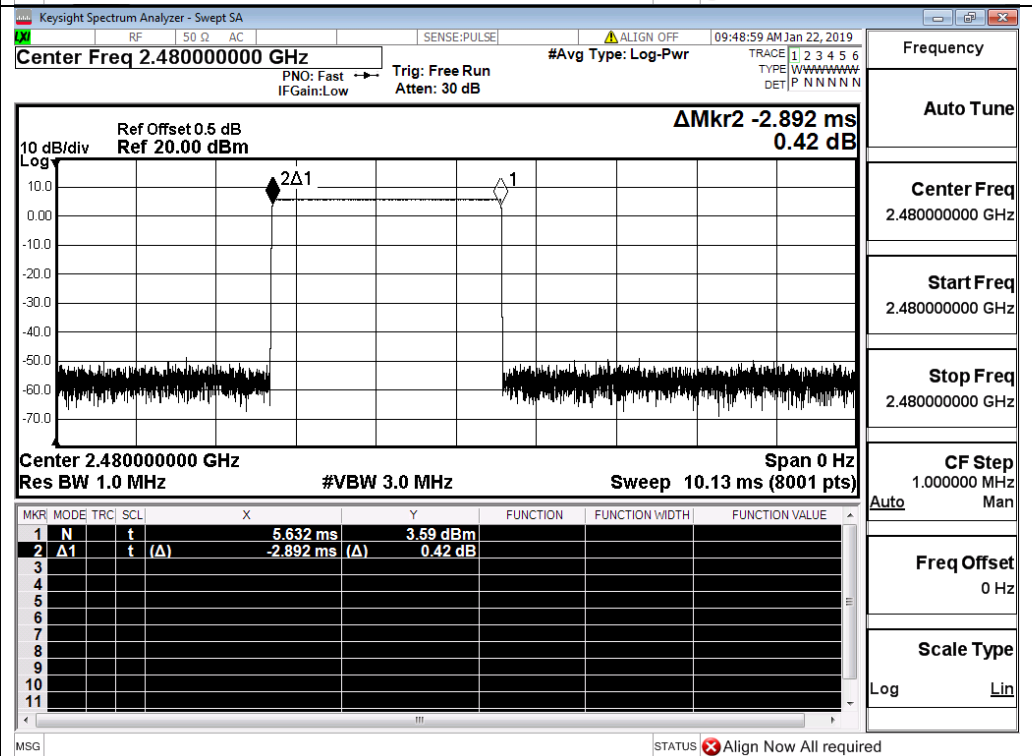
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.889	106.7	0.308	0.4	PASS
	DH5	MCH	2.892	106.7	0.308	0.4	PASS
	DH5	HCH	2.892	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.897	106.7	0.309	0.4	PASS
	2DH5	MCH	2.896	106.7	0.309	0.4	PASS
	2DH5	HCH	2.902	106.7	0.310	0.4	PASS
8DPSK	3DH5	LCH	2.899	106.7	0.309	0.4	PASS
	3DH5	MCH	2.901	106.7	0.309	0.4	PASS
	3DH5	HCH	2.901	106.7	0.309	0.4	PASS

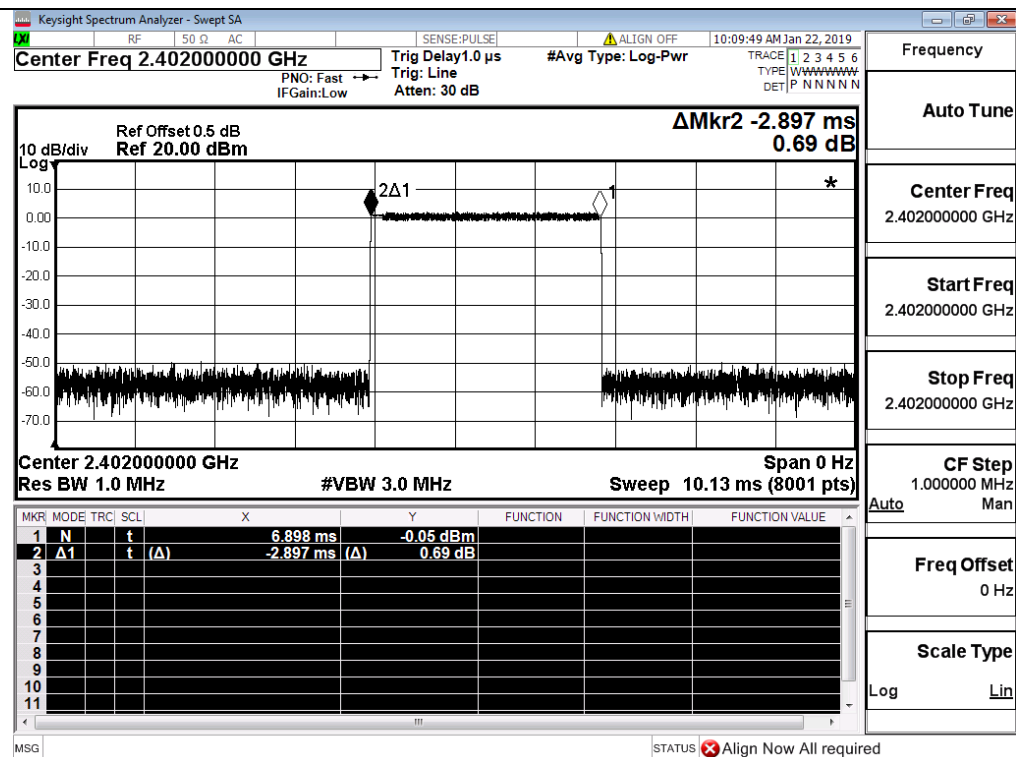
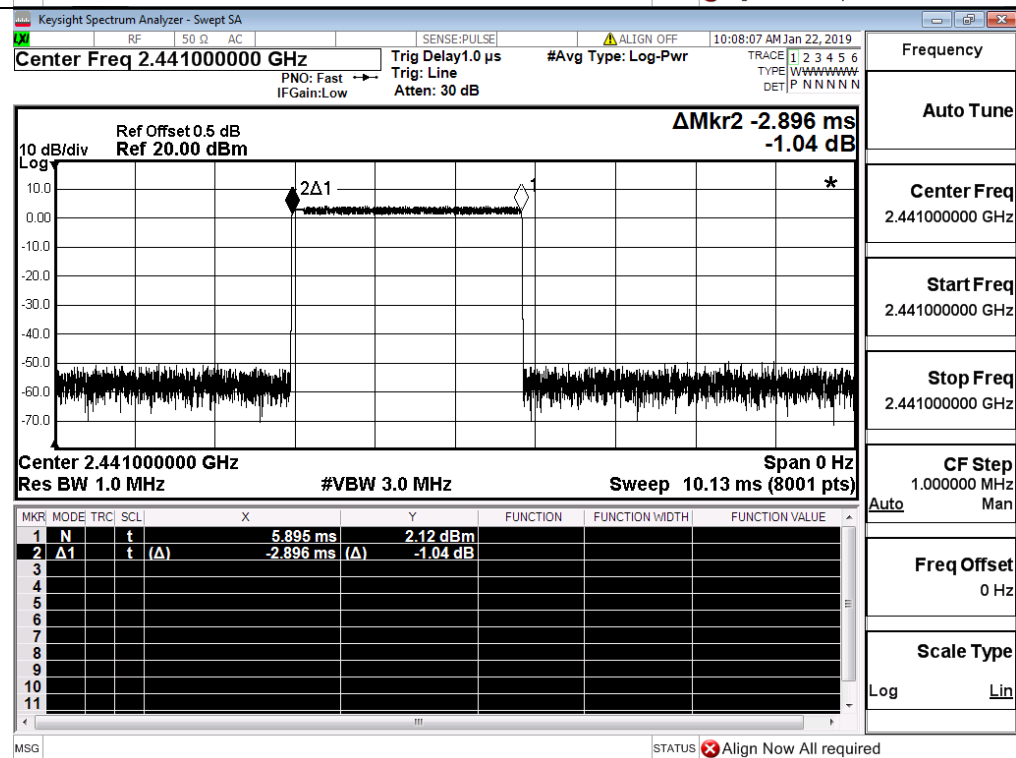


GFSK_DH5/MCH

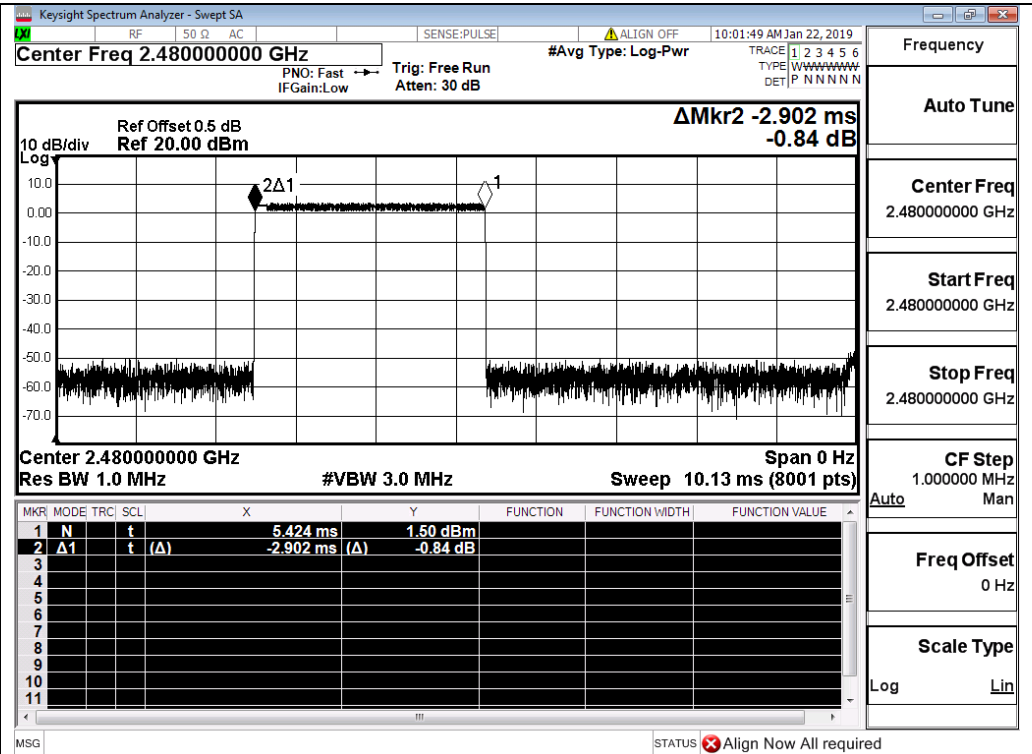


GFSK_DH5/HCH

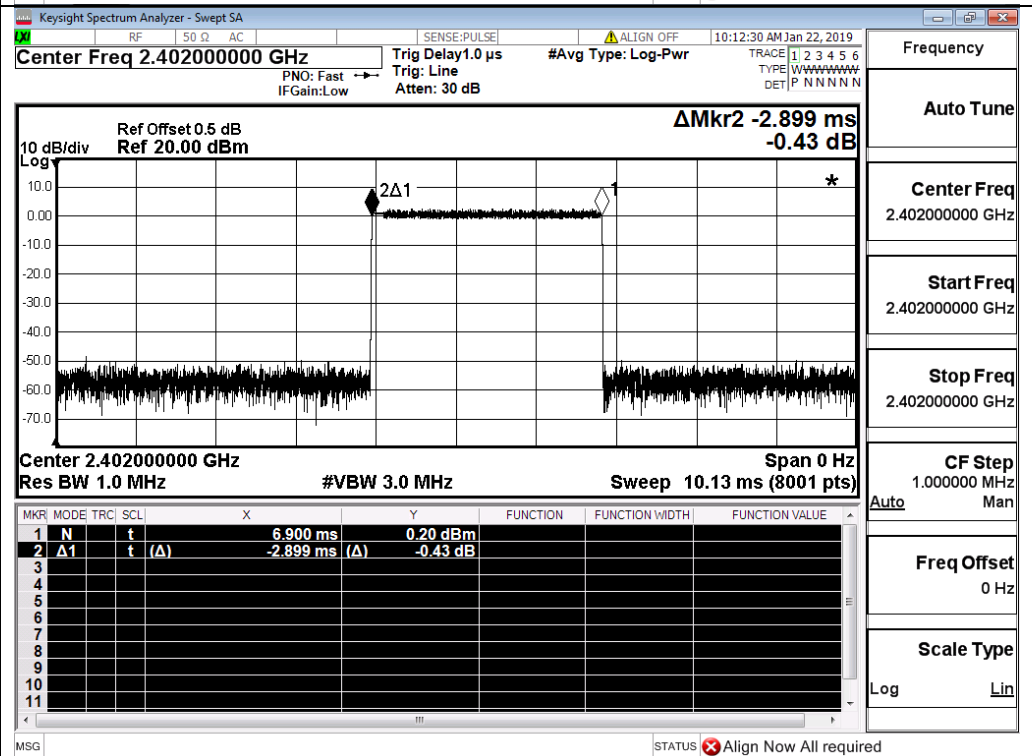


$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

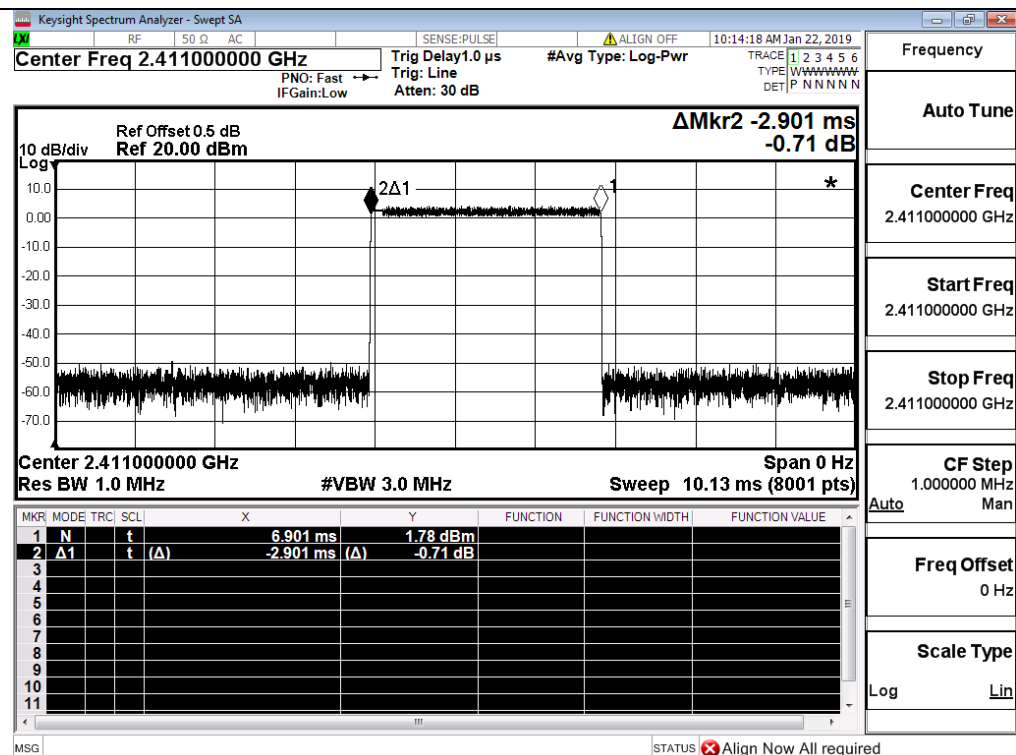
$\pi/4$ DQPSK
_2DH5/HCH



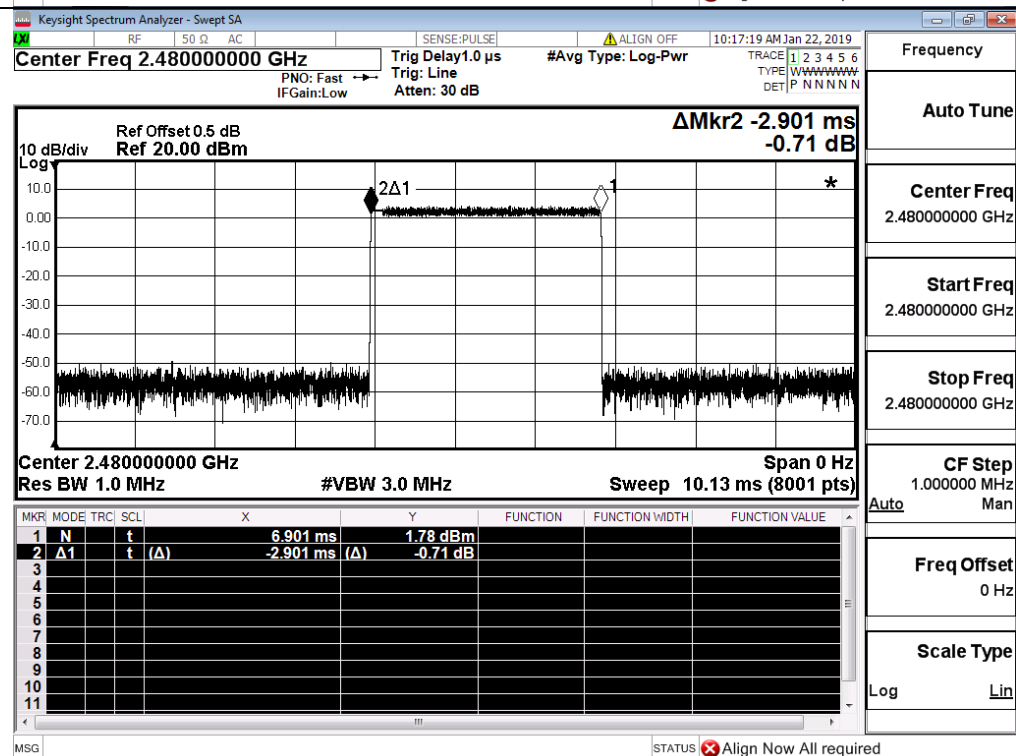
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

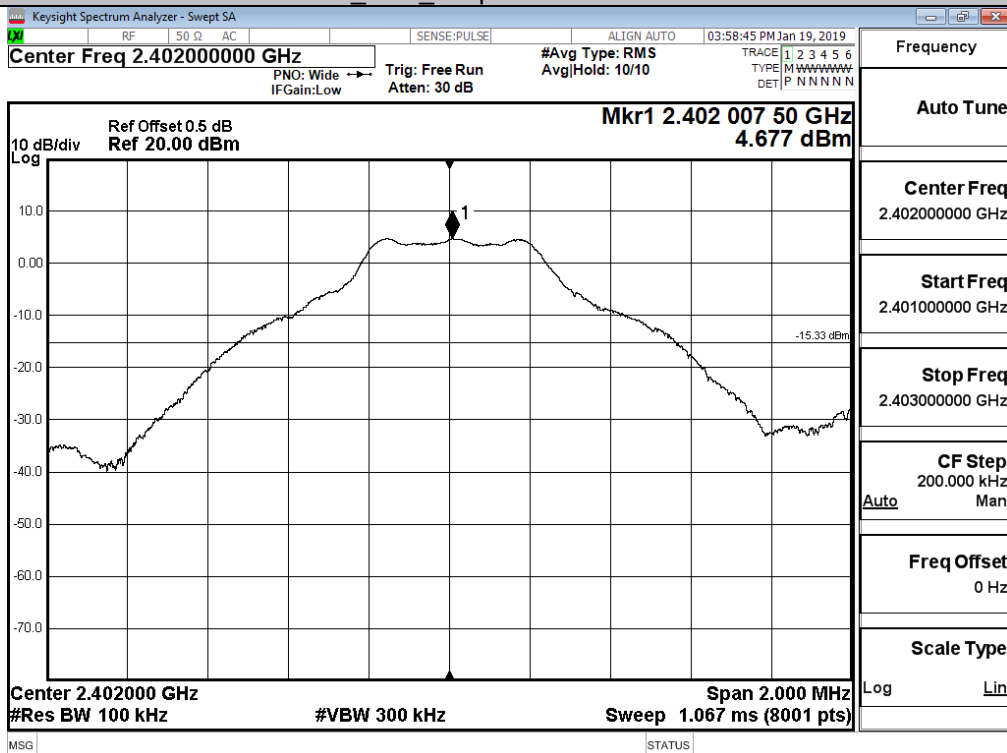


A.6 RF Conducted Spurious Emissions

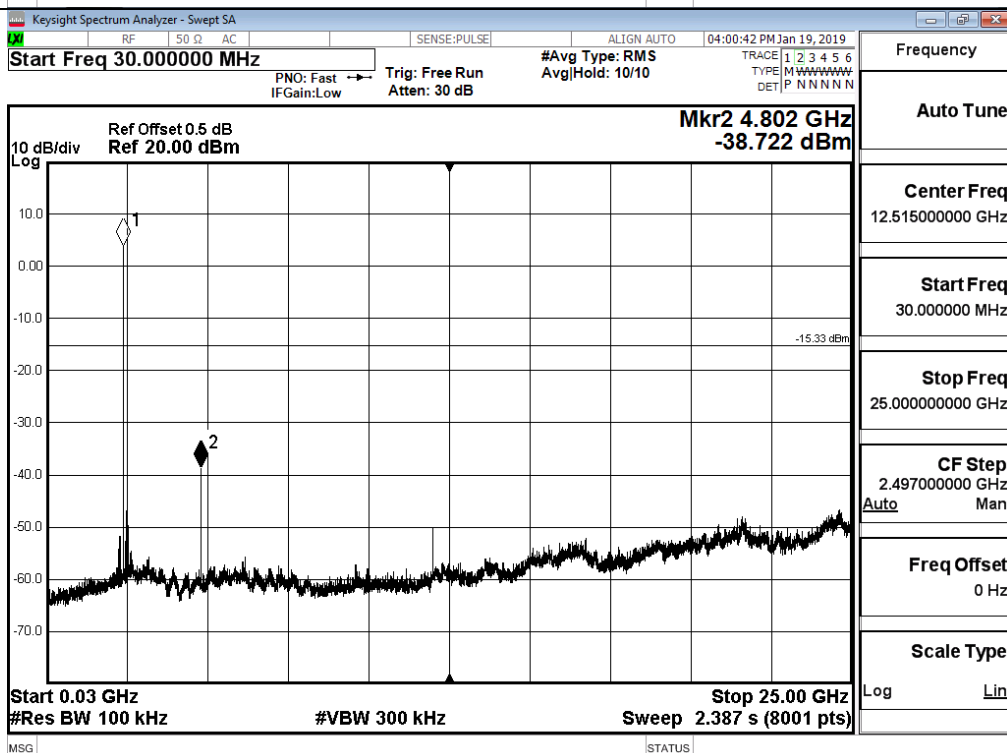
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.677	-38.722	-15.323	PASS
	MCH	6.529	-34.582	-13.471	PASS
	HCH	6.116	-35.861	-13.884	PASS
$\pi/4$ DQPSK	LCH	1.286	-45.274	-18.714	PASS
	MCH	3.386	-39.517	-16.614	PASS
	HCH	2.865	-35.271	-17.135	PASS
8DPSK	LCH	1.288	-40.593	-18.712	PASS
	MCH	3.448	-37.587	-16.552	PASS
	HCH	2.946	-36.970	-17.054	PASS

GFSK_LCH_Graphs

Pref

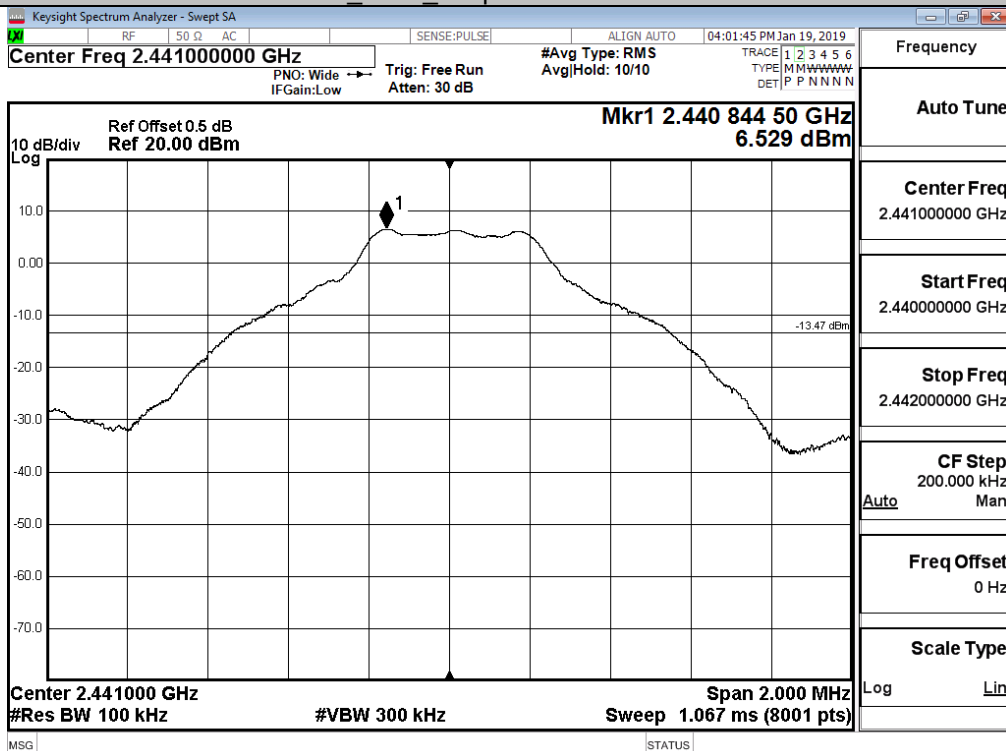


Puw

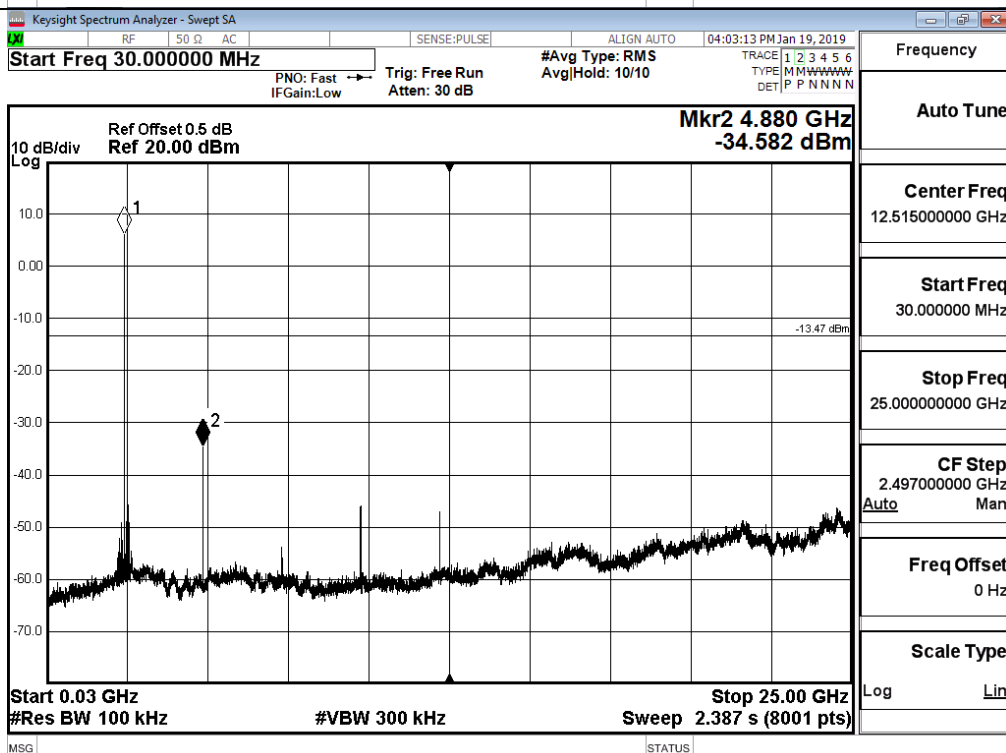


GFSK_MCH_Graphs

Pref

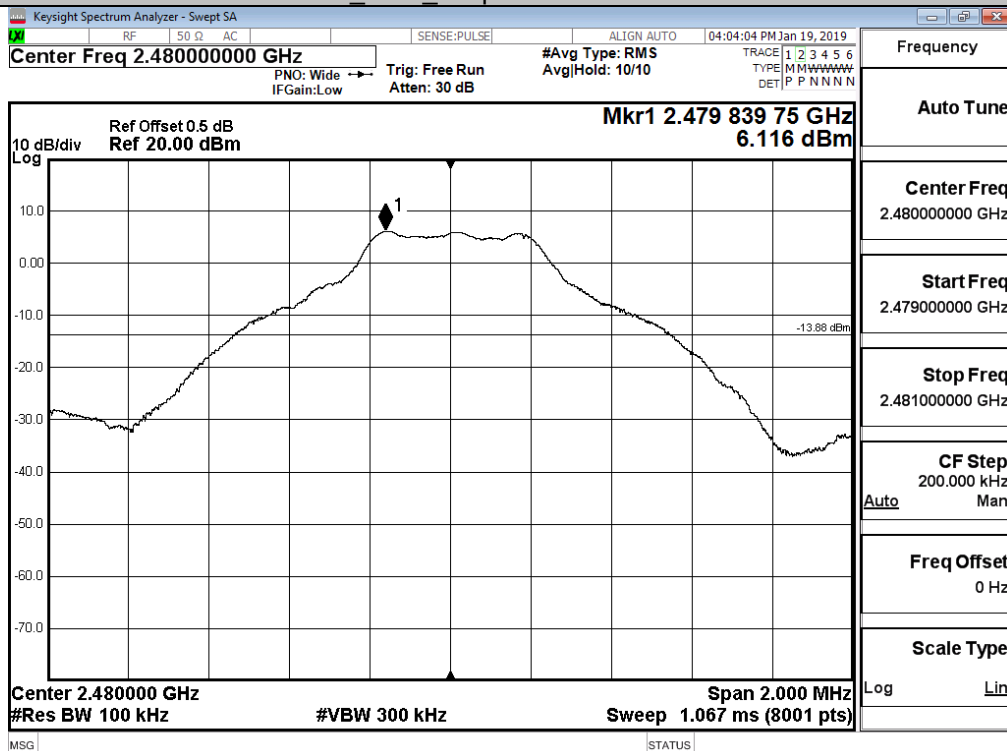


Puw

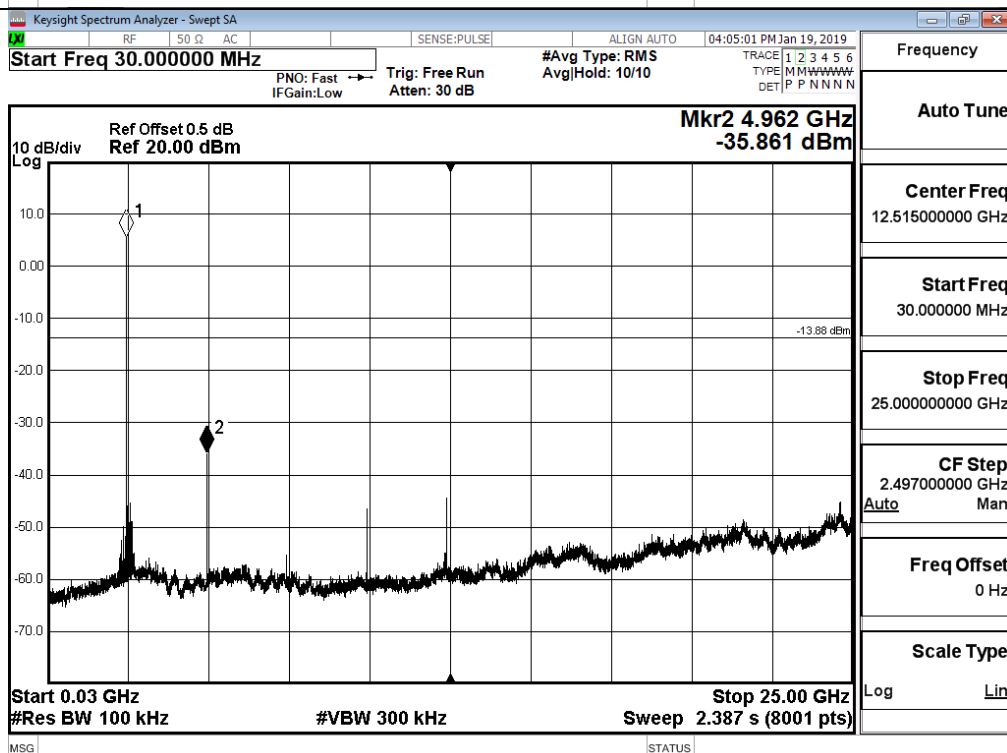


GFSK_HCH_Graphs

Pref

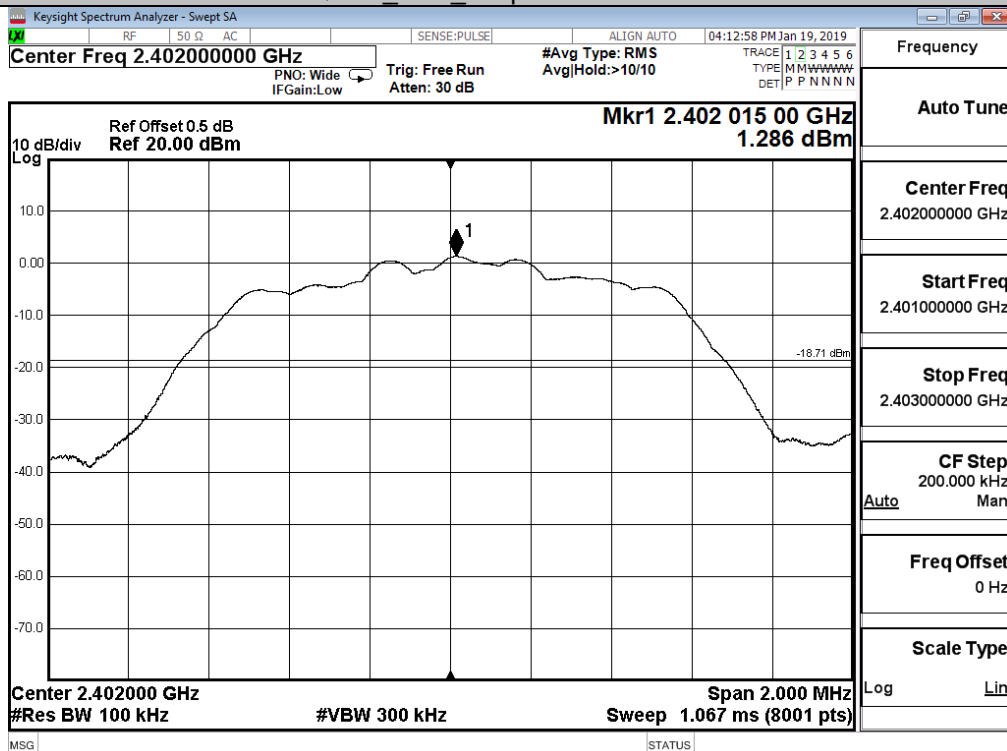


Puw

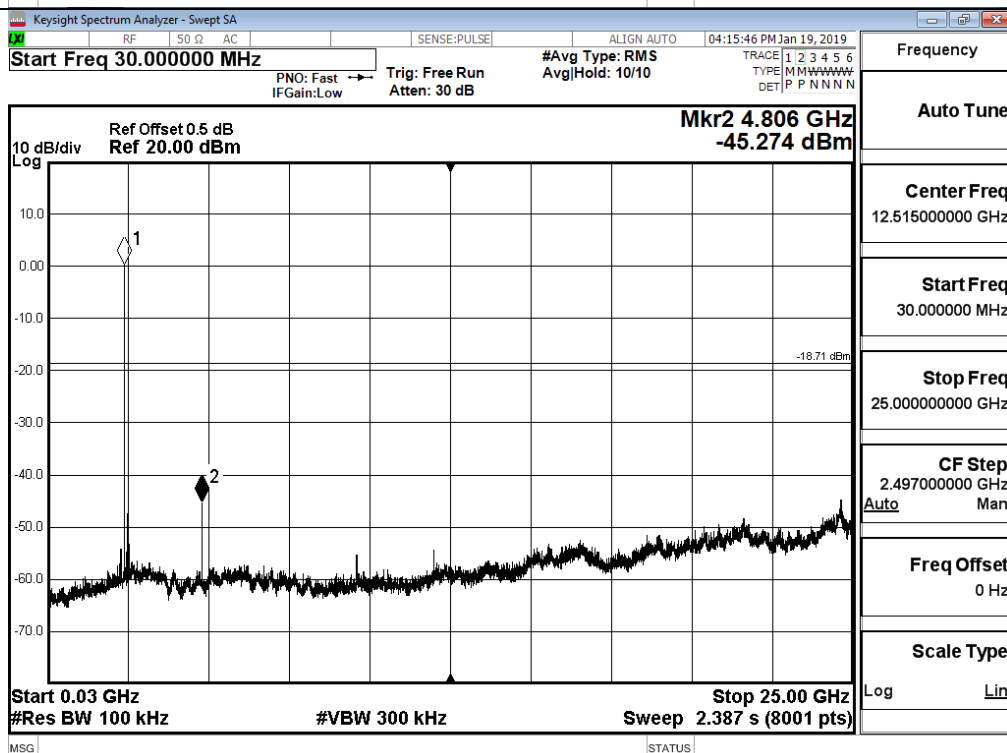


$\pi/4$ DQPSK_LCH_Graphs

Pref

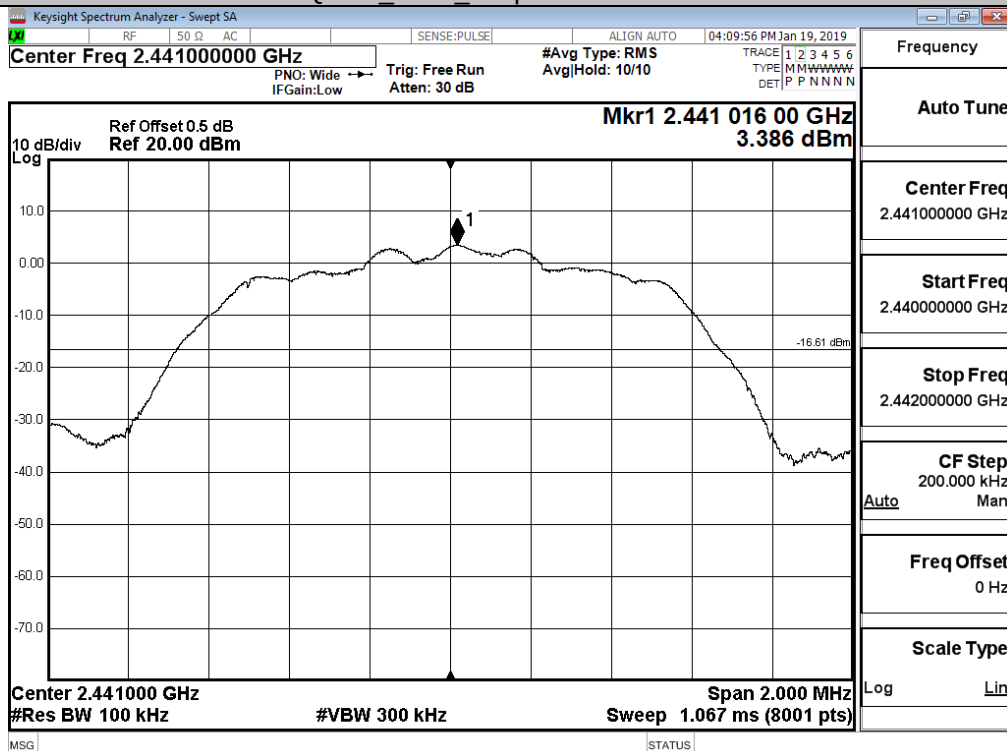


Puw

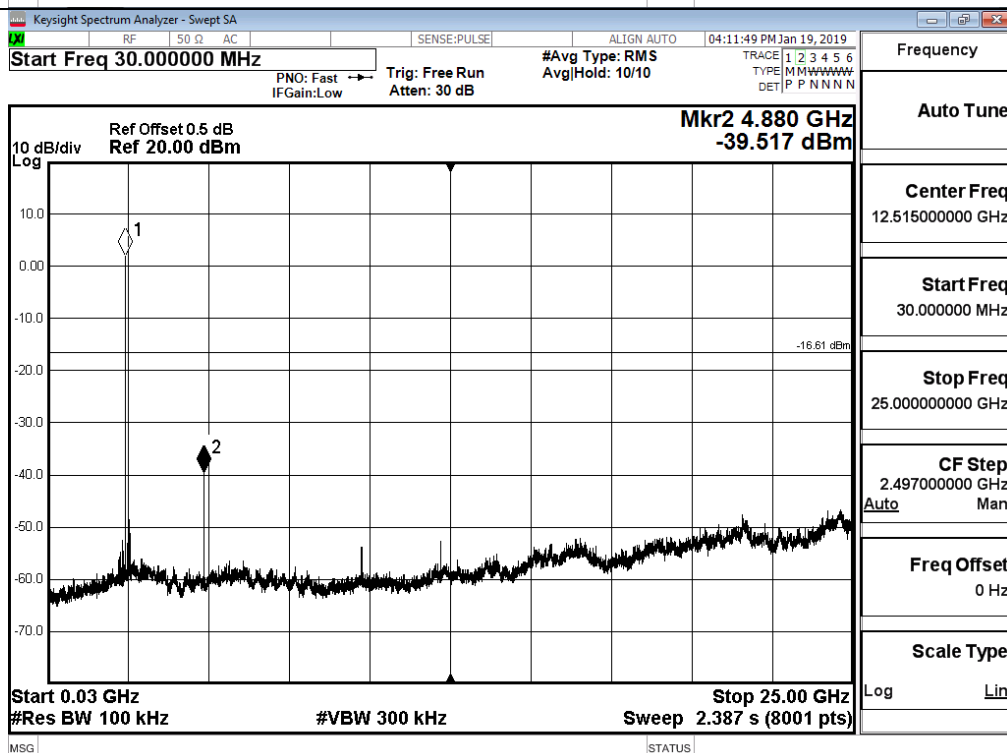


$\pi/4$ DQPSK_MCH_Graphs

Pref

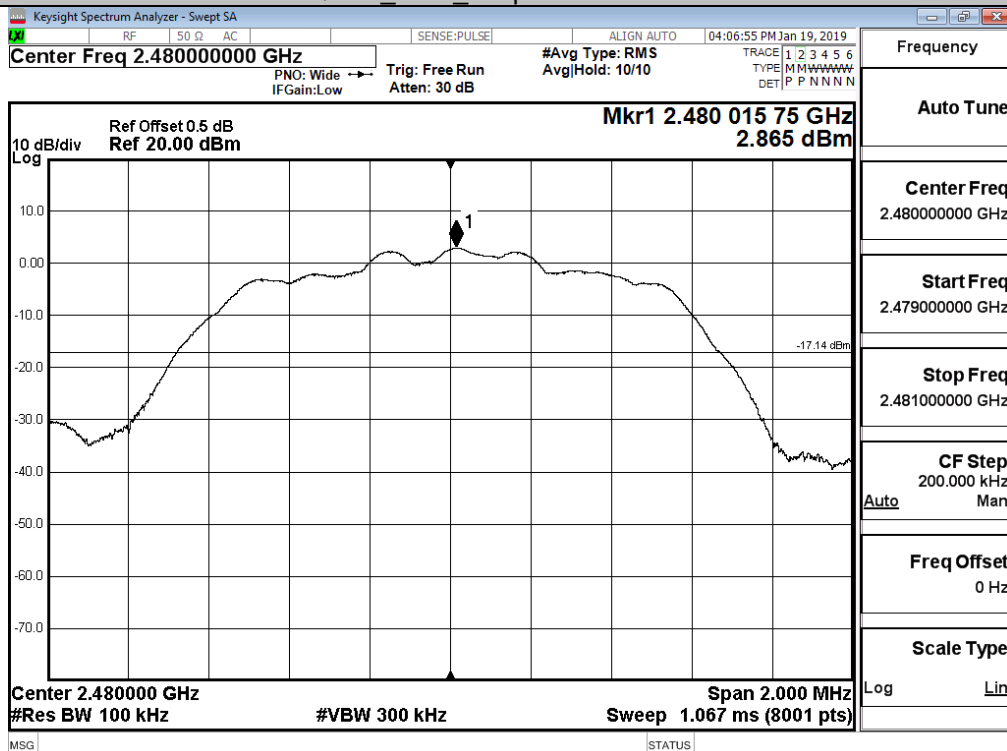


Puw

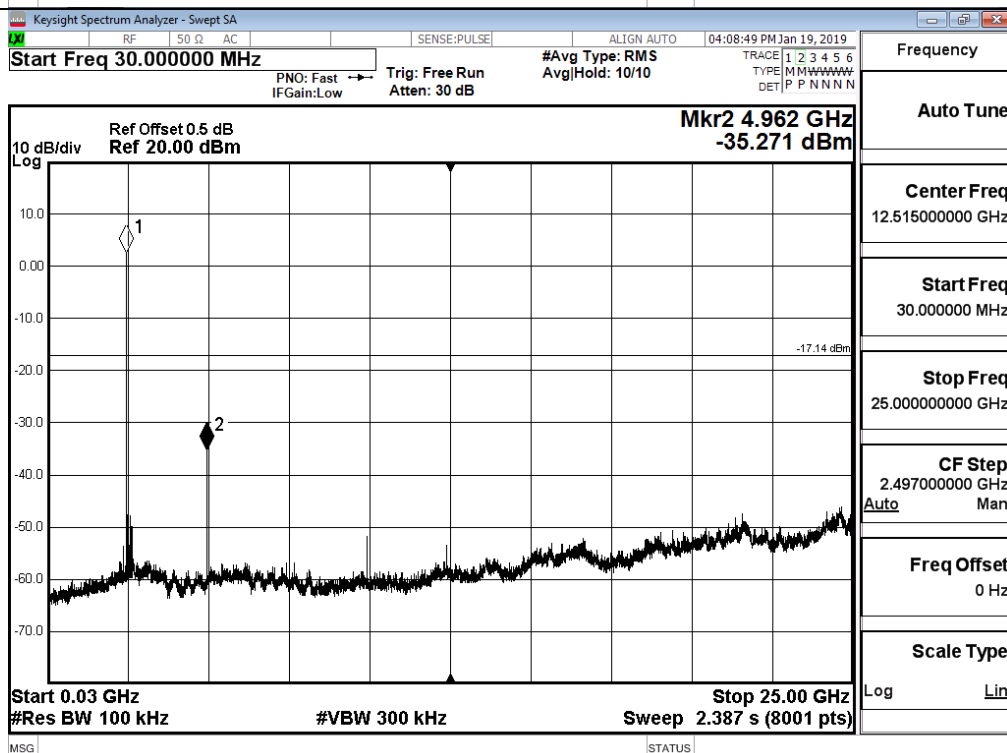


$\pi/4$ DQPSK_HCH_Graphs

Pref

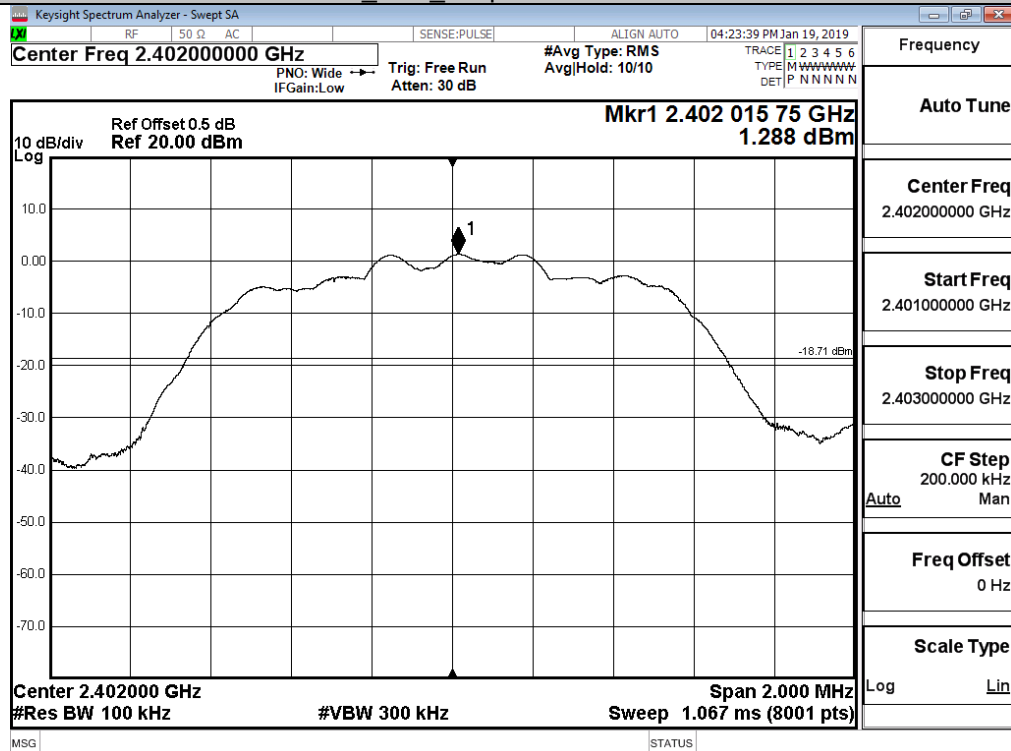


Puw

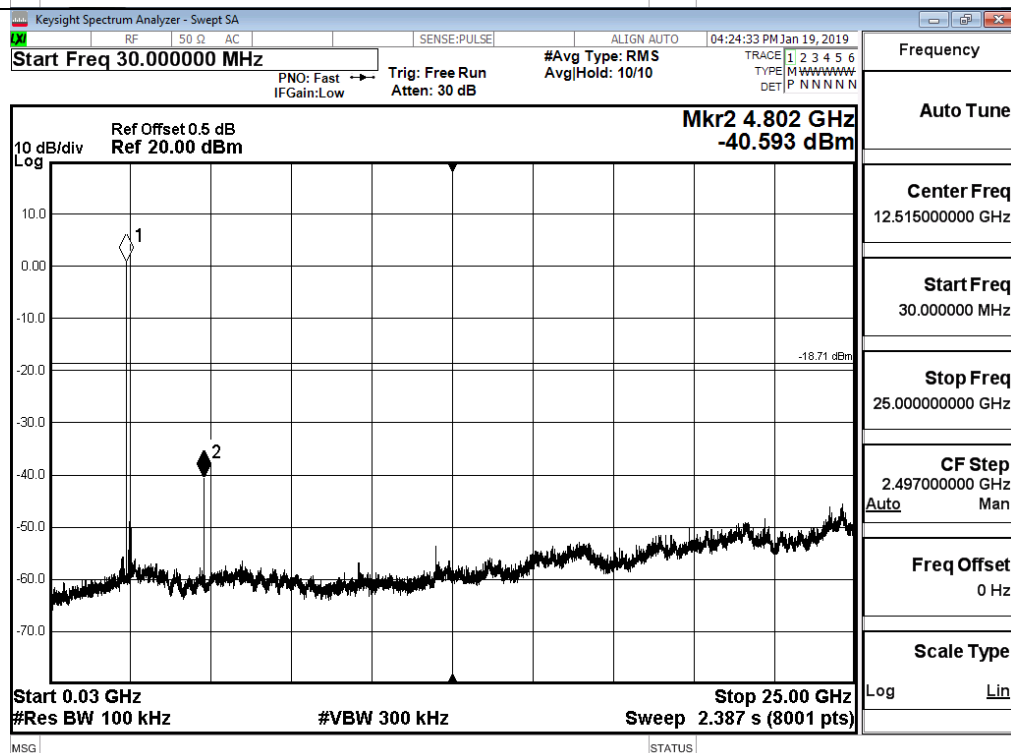


8DPSK_LCH_Graphs

Pref

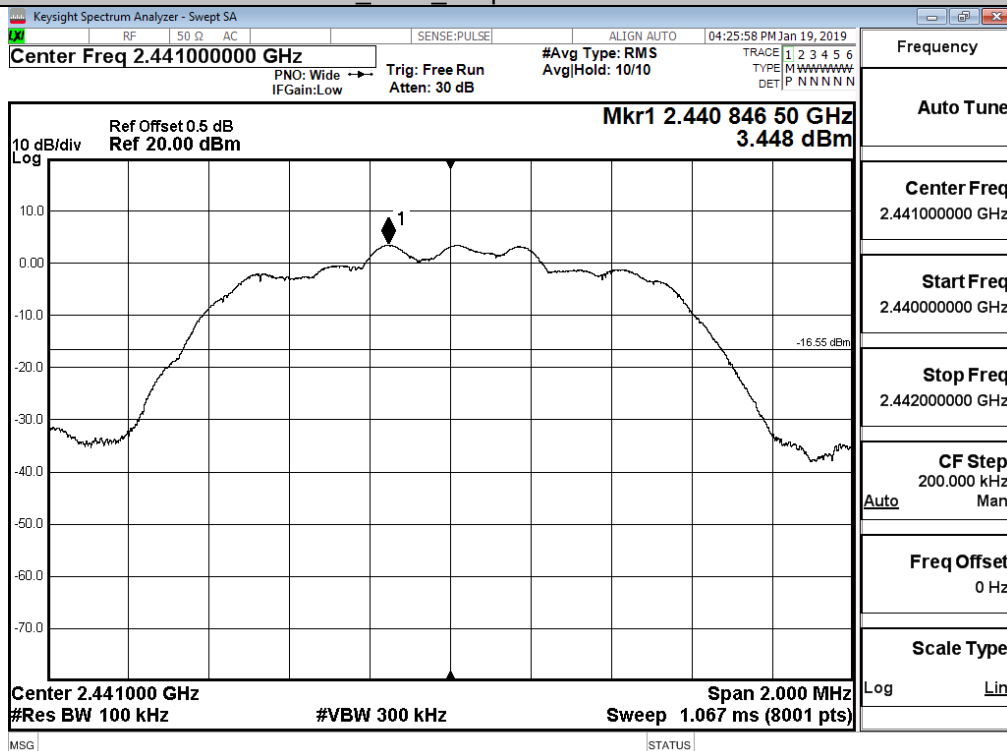


Puw

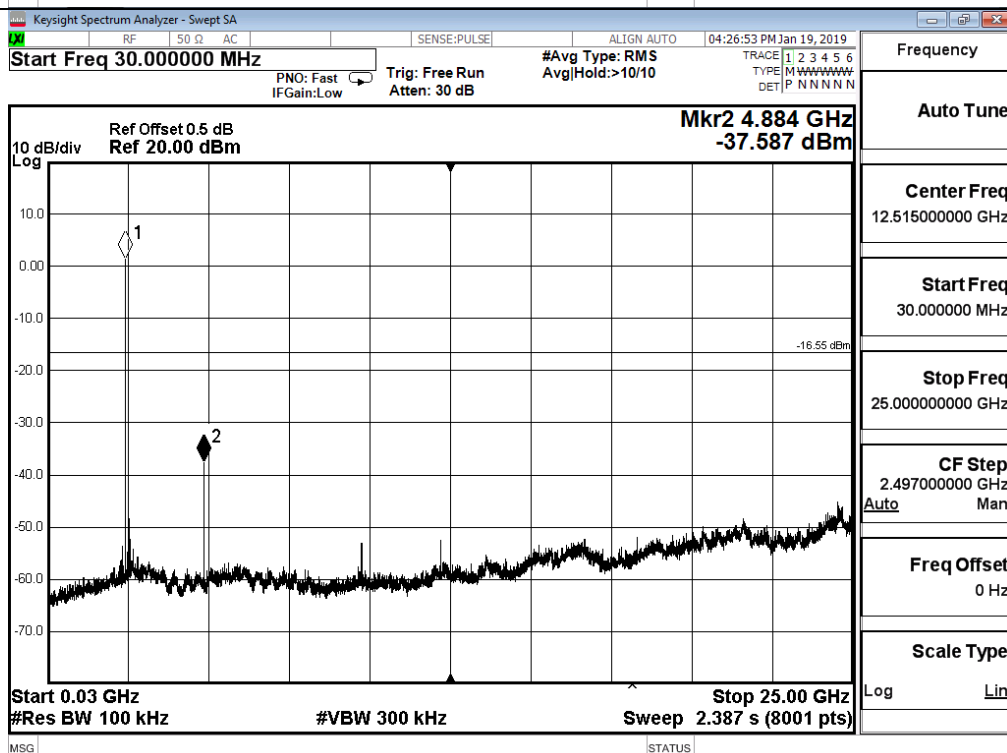


8DPSK_MCH_Graphs

Pref

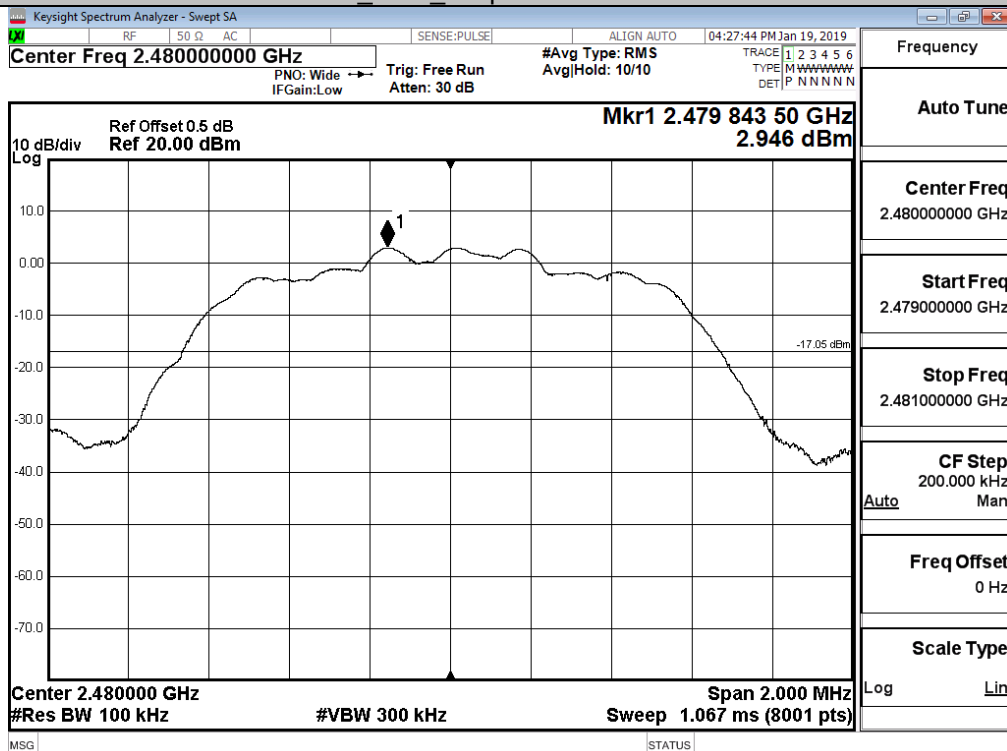


Puw

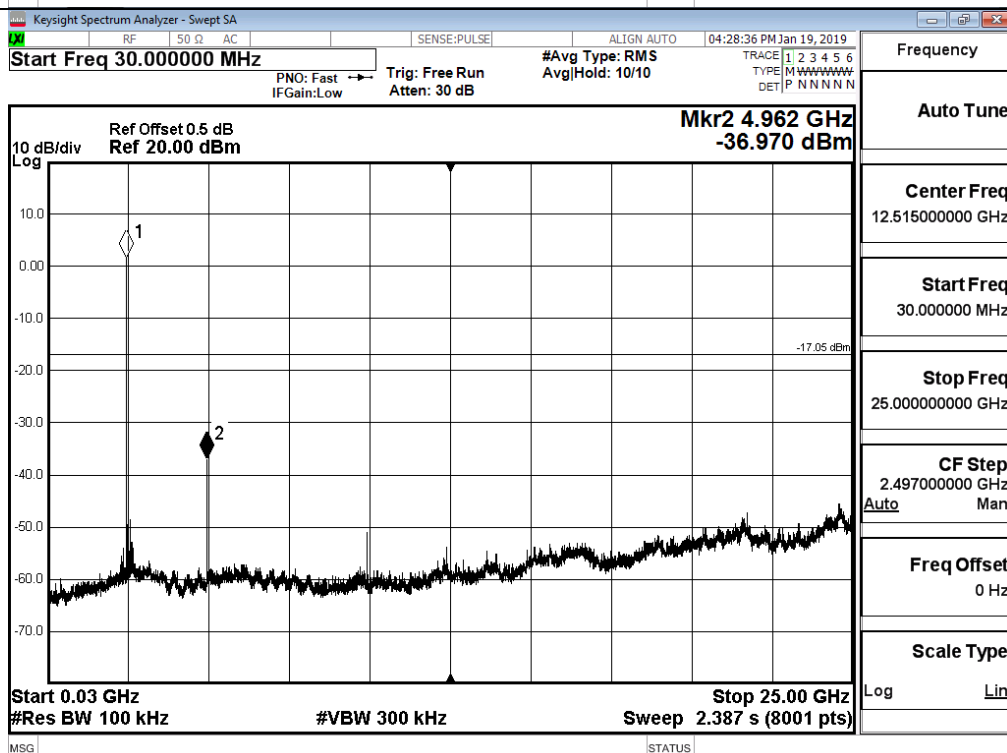


8DPSK_HCH_Graphs

Pref



Puw

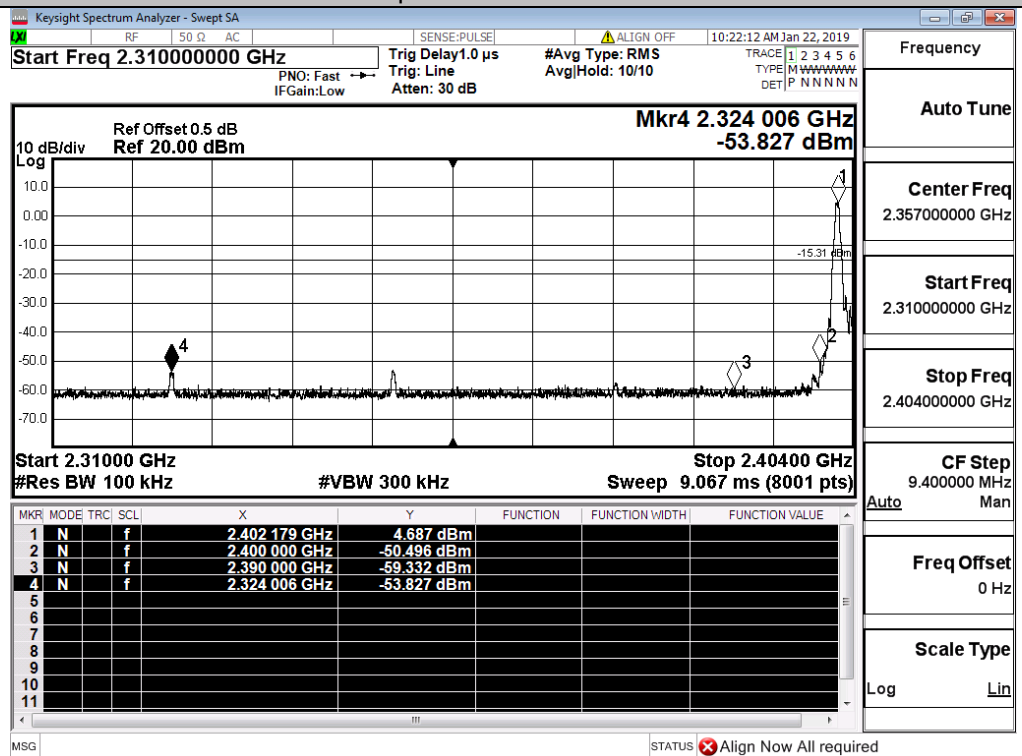


A.7 Band-edge for RF Conducted Emissions

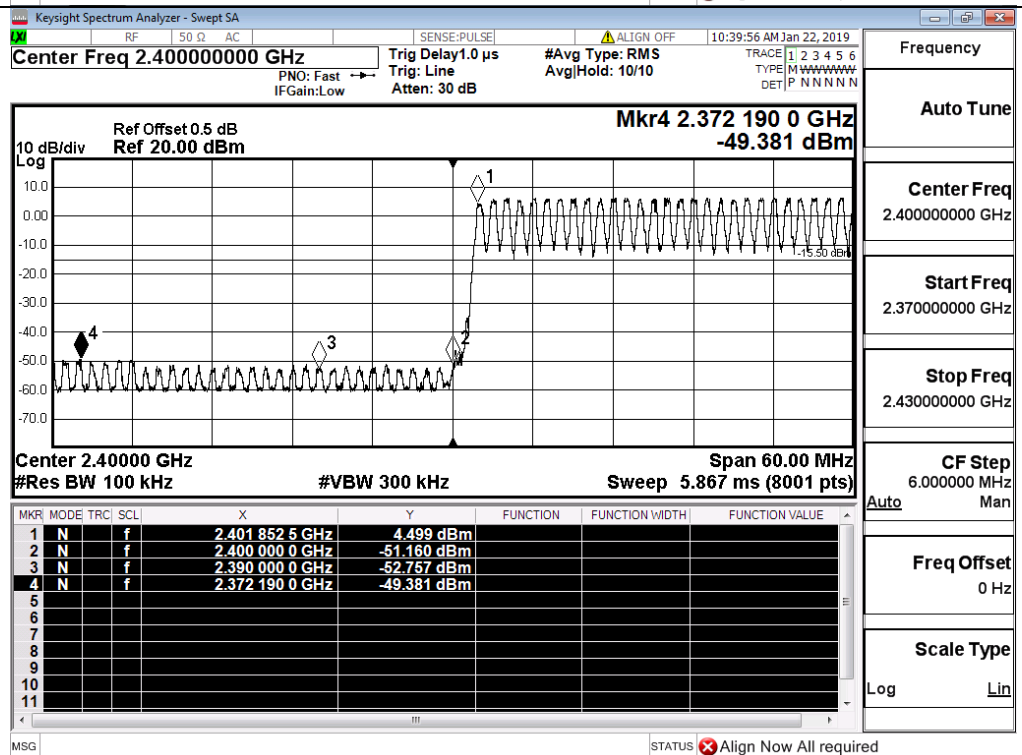
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.687	Off	-50.332	-15.313	PASS
			4.499	On	-49.381	-15.501	PASS
	HCH	2480	6.102	Off	-55.078	-13.898	PASS
			5.806	On	-45.654	-14.194	PASS
$\pi/4$ DQPSK	LCH	2402	1.186	Off	-53.245	-18.814	PASS
			1.157	On	-52.729	-18.843	PASS
	HCH	2480	2.891	Off	-54.420	-17.109	PASS
			2.782	On	-47.857	-17.218	PASS
8DPSK	LCH	2402	1.179	Off	-50.393	-18.821	PASS
			1.064	On	-52.645	-18.936	PASS
	HCH	2480	2.925	Off	-56.872	-17.075	PASS
			2.855	On	-46.771	-17.145	PASS

Test Graphs

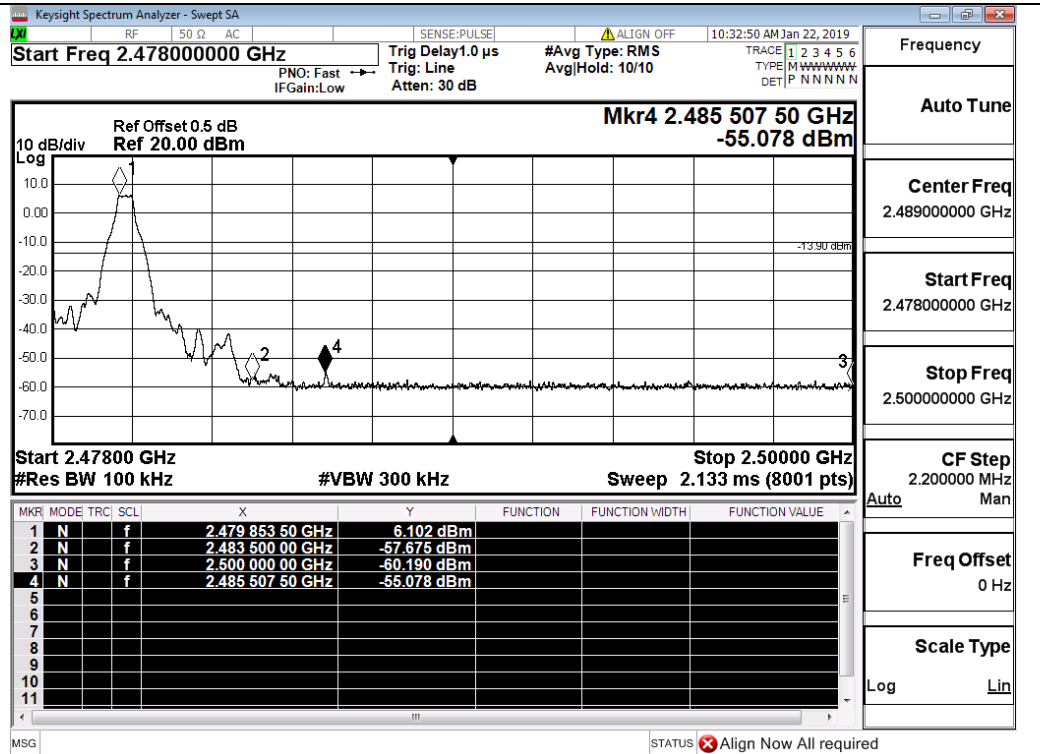
GFSK/LCH/No Hop



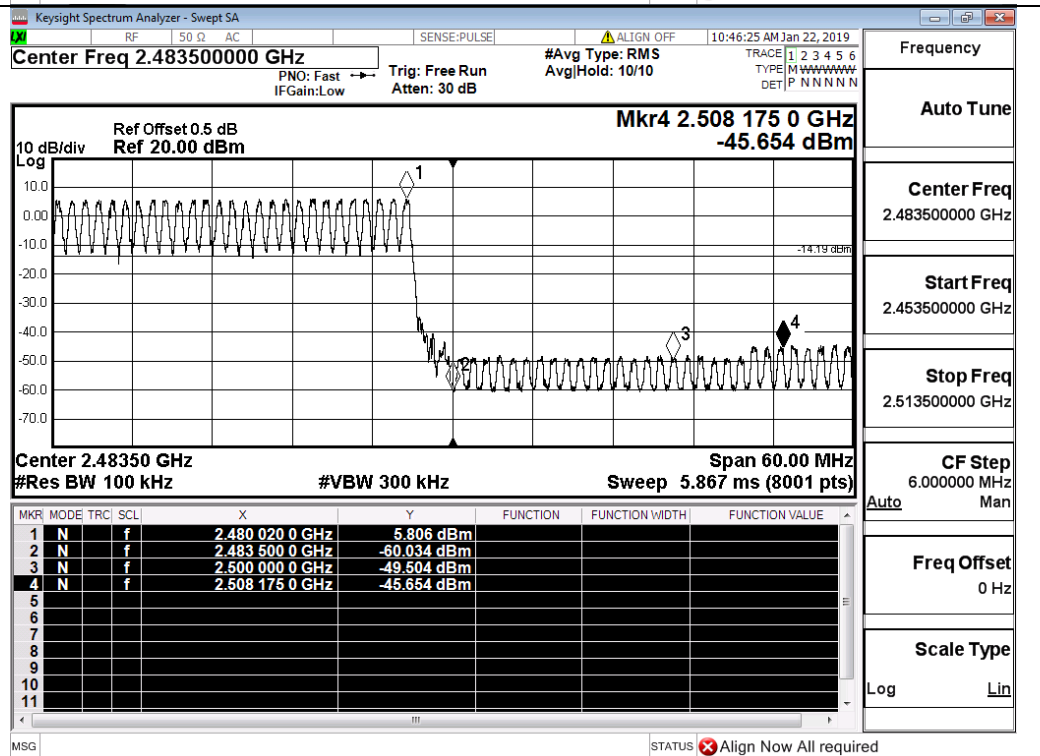
GFSK/LCH/Hop



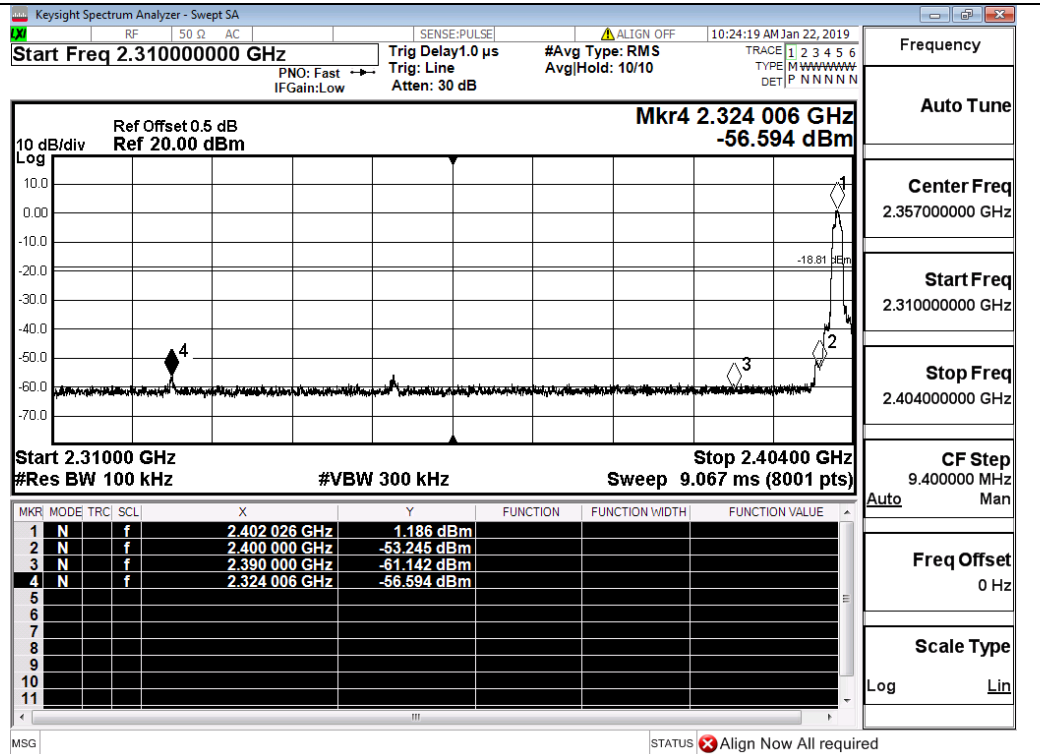
GFSK/HCH/No Hop



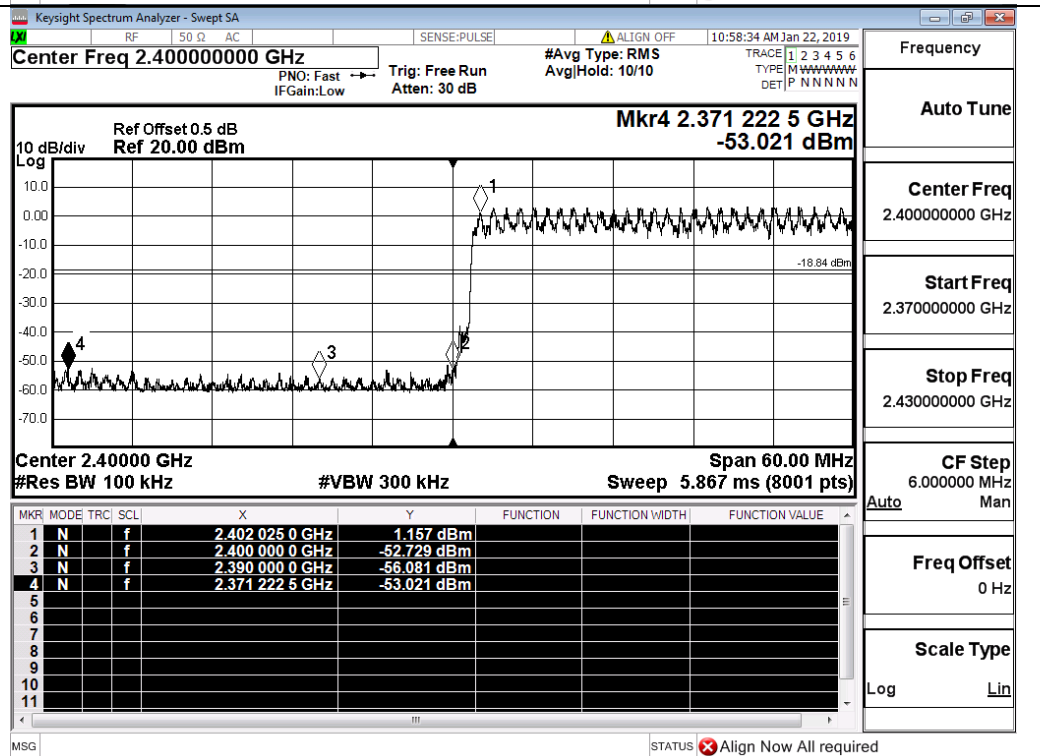
GFSK/HCH/Hop



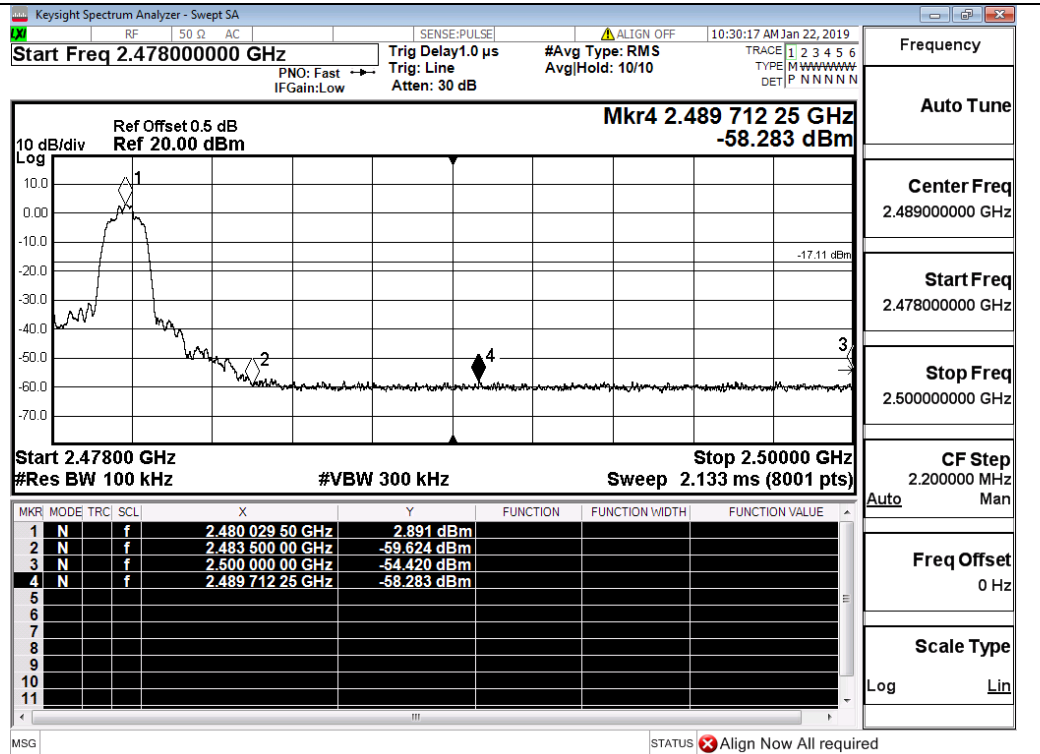
$\pi/4$ DQPSK/LCH/No
Hop



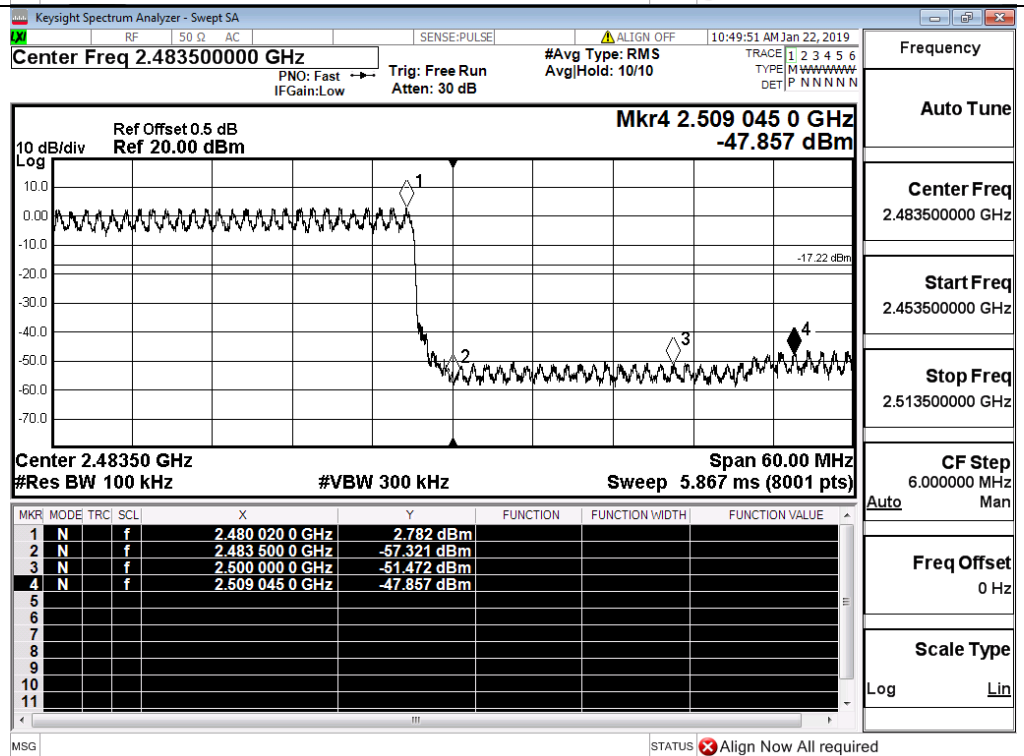
$\pi/4$ DQPSK/LCH/Hop



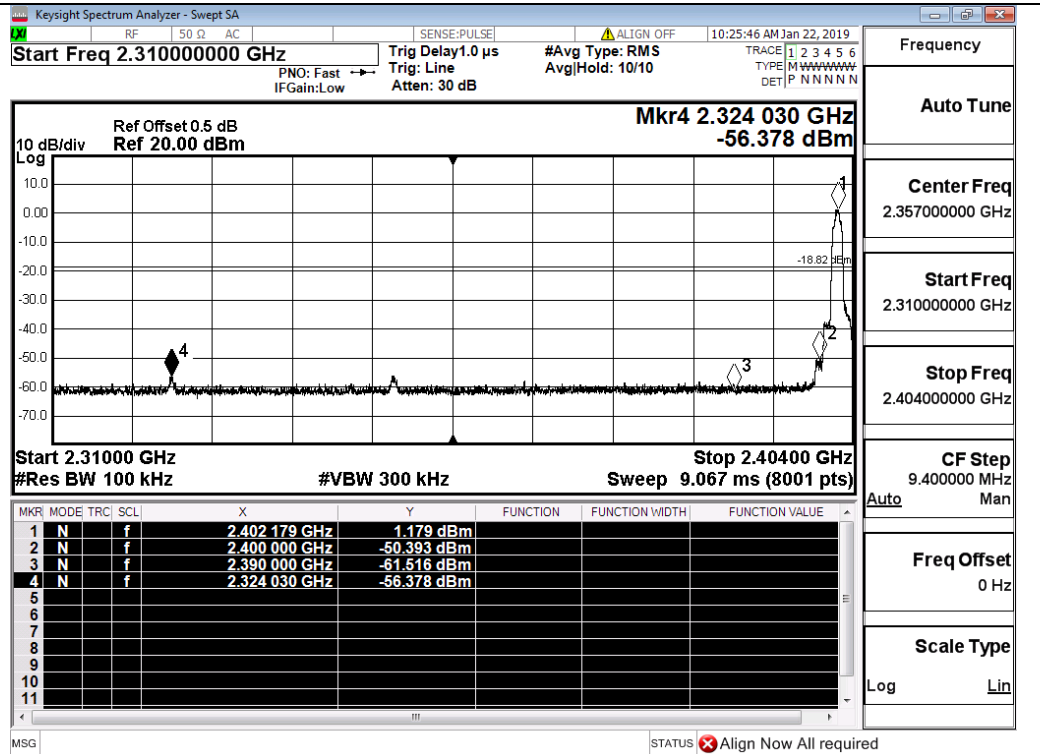
$\pi/4$ DQPSK/HCH/No
Hop



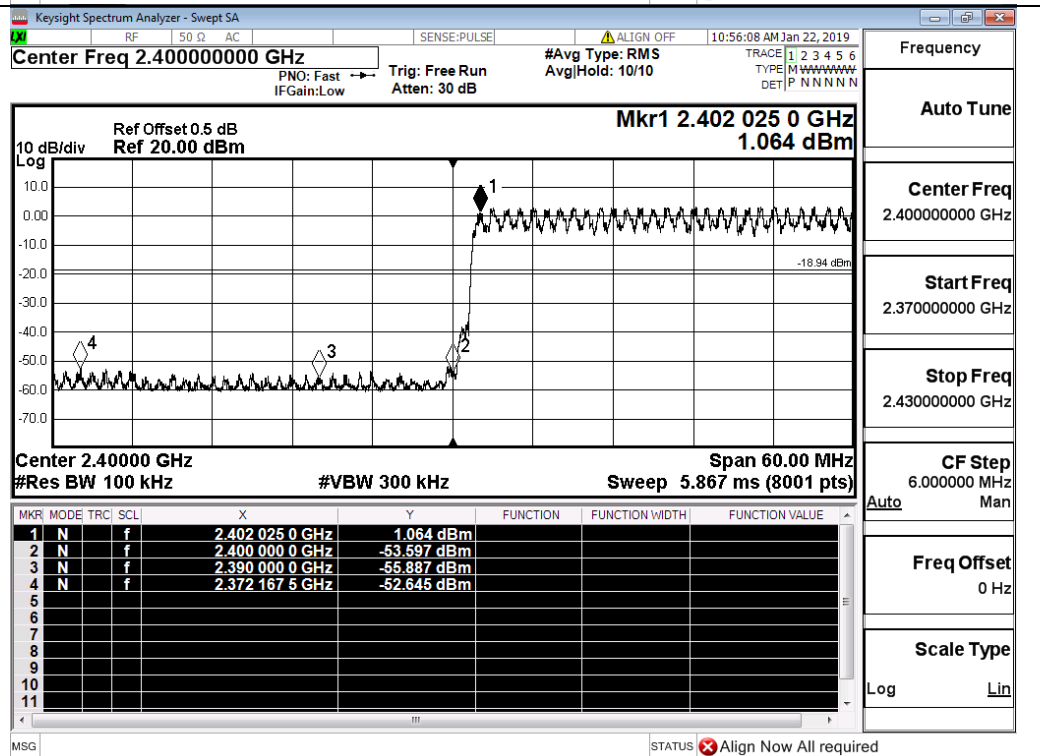
$\pi/4$ DQPSK/HCH/Hop



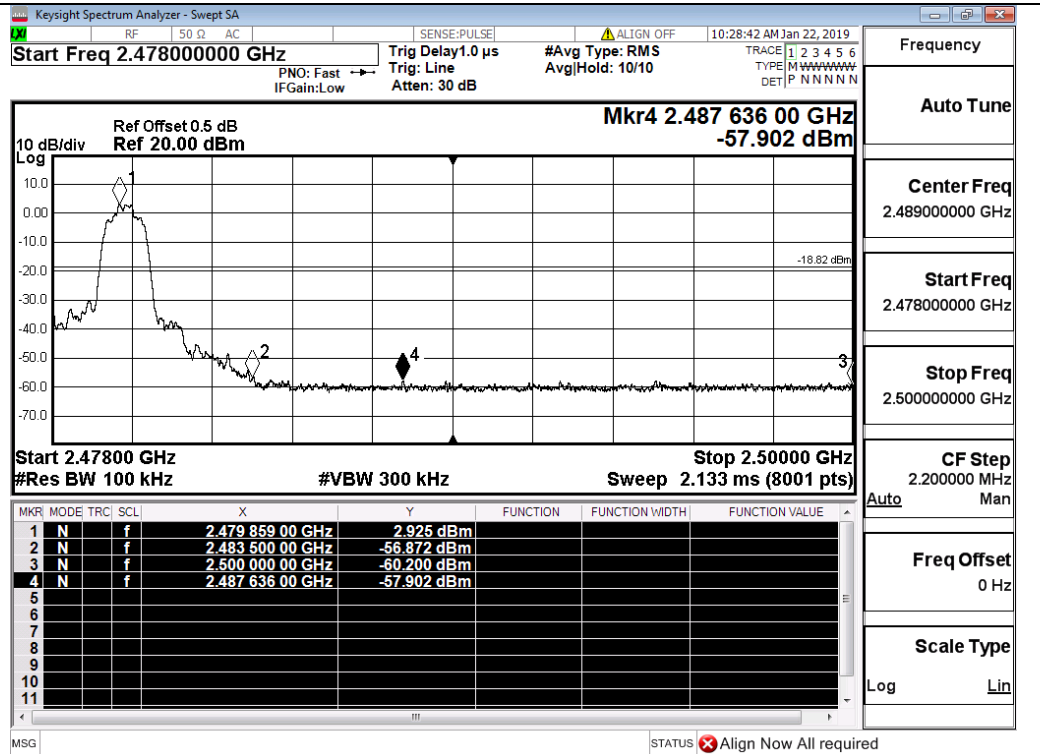
8DPSK/LCH/No Hop



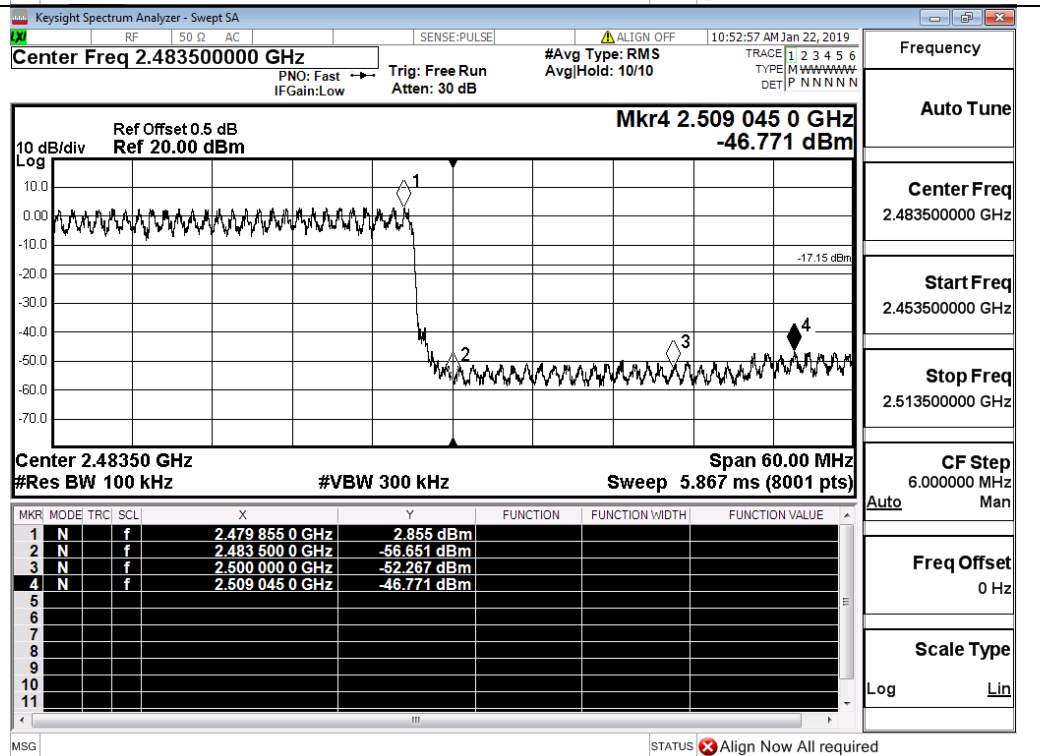
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



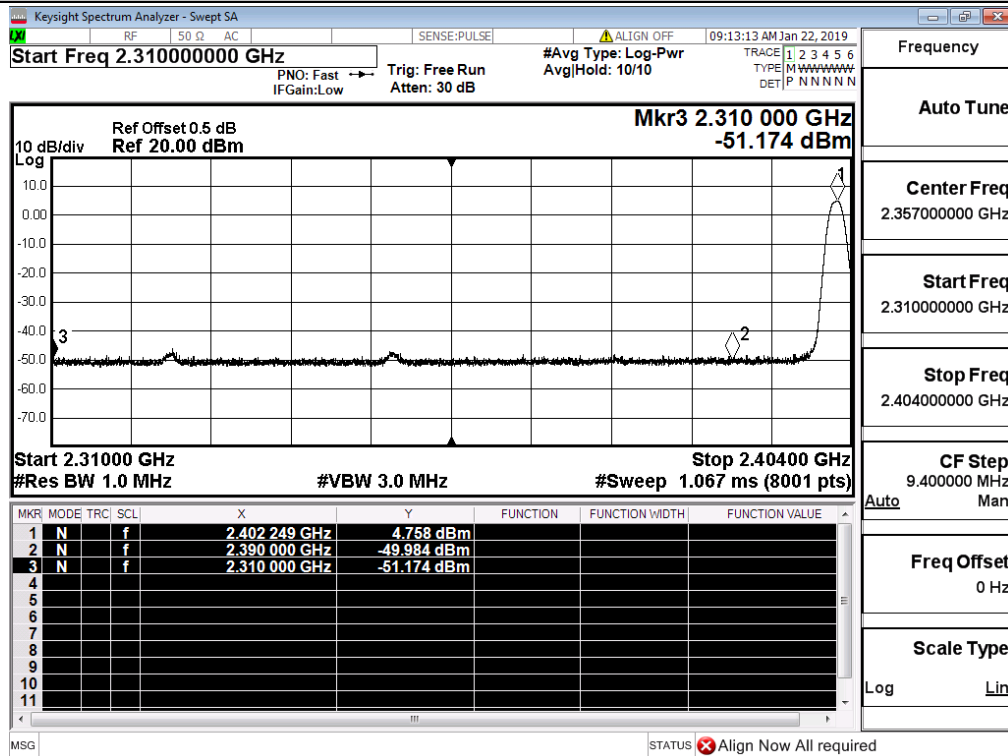
8DPSK/HCH/Hop



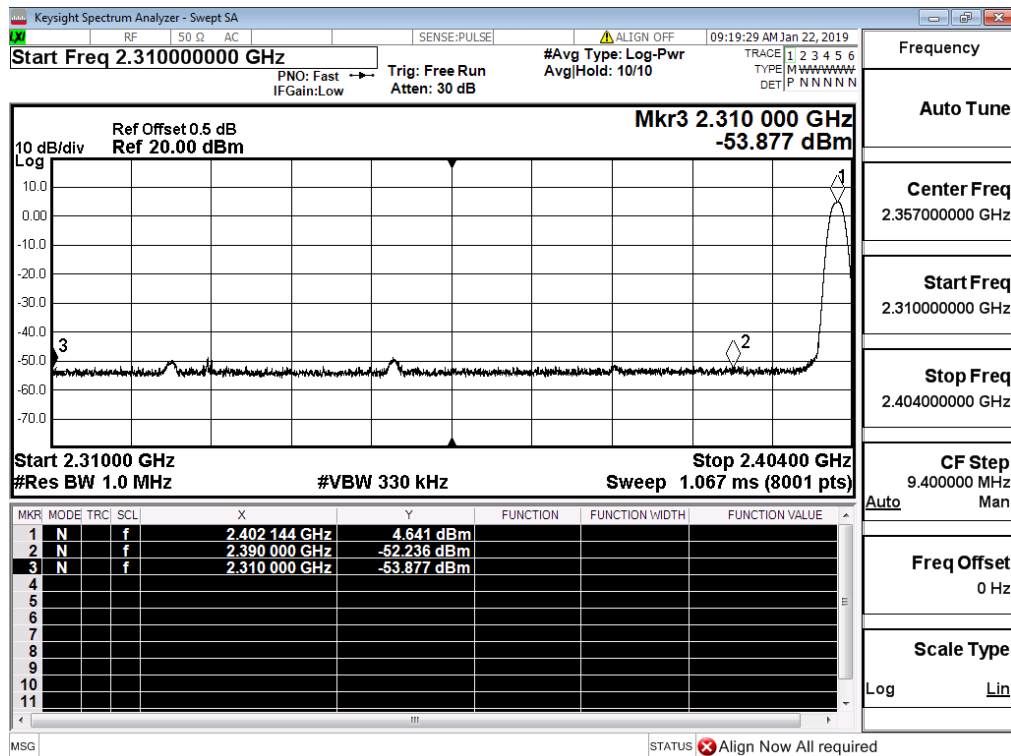
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-51.174	2.0	0	46.054	PEAK	74	PASS
	Off	2310.0	-53.877	2.0	0	43.351	AV	54	PASS
	Off	2390.0	-49.984	2.0	0	47.244	PEAK	74	PASS
	Off	2390.0	-52.236	2.0	0	44.992	AV	54	PASS
	Off	2483.5	-42.868	2.0	0	54.360	PEAK	74	PASS
	Off	2483.5	-44.634	2.0	0	52.594	AV	54	PASS
	Off	2500.0	-50.521	2.0	0	46.707	PEAK	74	PASS
	Off	2500.0	-52.291	2.0	0	44.937	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-51.169	2.0	0	46.059	PEAK	74	PASS
	Off	2310.0	-53.968	2.0	0	43.260	AV	54	PASS
	Off	2390.0	-50.537	2.0	0	46.691	PEAK	74	PASS
	Off	2390.0	-54.028	2.0	0	43.200	AV	54	PASS
	Off	2483.5	-44.966	2.0	0	52.262	PEAK	74	PASS
	Off	2483.5	-47.349	2.0	0	49.879	AV	54	PASS
	Off	2500.0	-50.430	2.0	0	46.798	PEAK	74	PASS
	Off	2500.0	-53.252	2.0	0	43.976	AV	54	PASS
8DPSK	Off	2310.0	-52.144	2.0	0	45.084	PEAK	74	PASS
	Off	2310.0	-52.529	2.0	0	44.699	AV	54	PASS
	Off	2390.0	-50.279	2.0	0	46.949	PEAK	74	PASS
	Off	2390.0	-52.465	2.0	0	44.763	AV	54	PASS
	Off	2483.5	-45.198	2.0	0	52.030	PEAK	74	PASS
	Off	2483.5	-46.388	2.0	0	50.840	AV	54	PASS
	Off	2500.0	-49.967	2.0	0	47.261	PEAK	74	PASS
	Off	2500.0	-53.463	2.0	0	43.765	AV	54	PASS

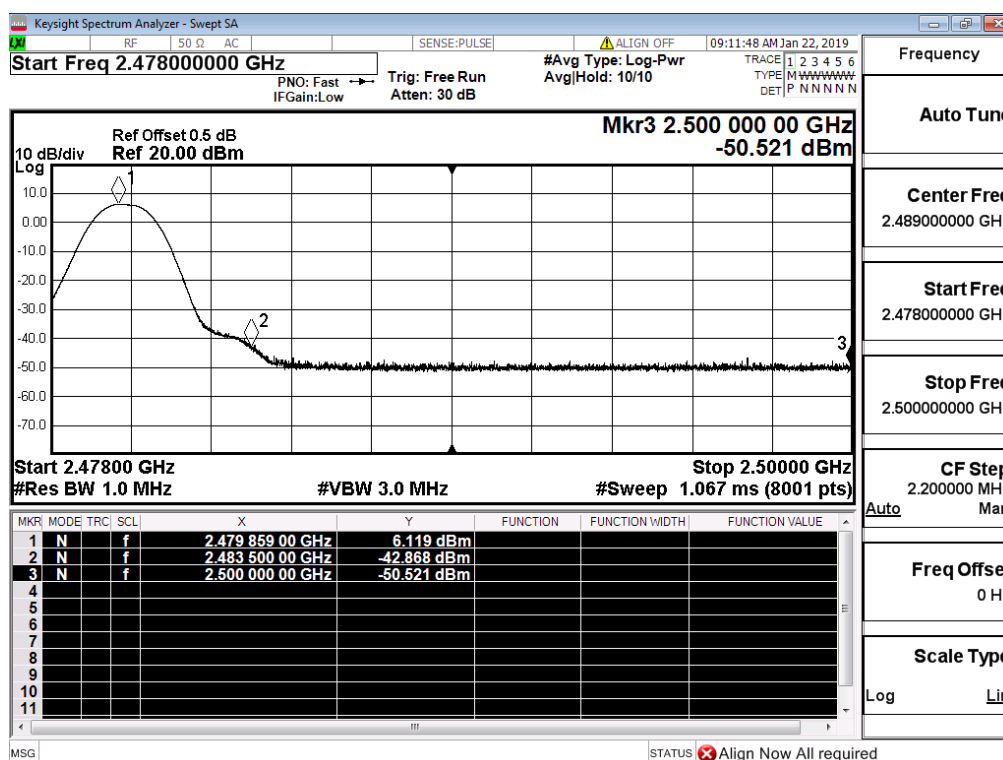
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



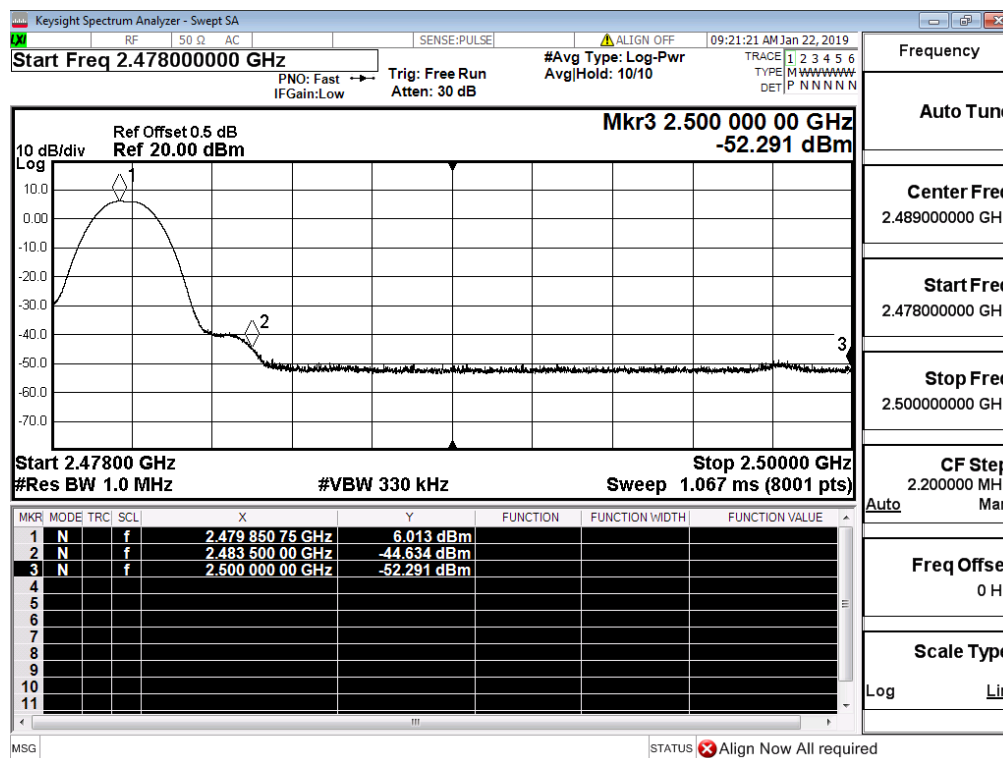
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

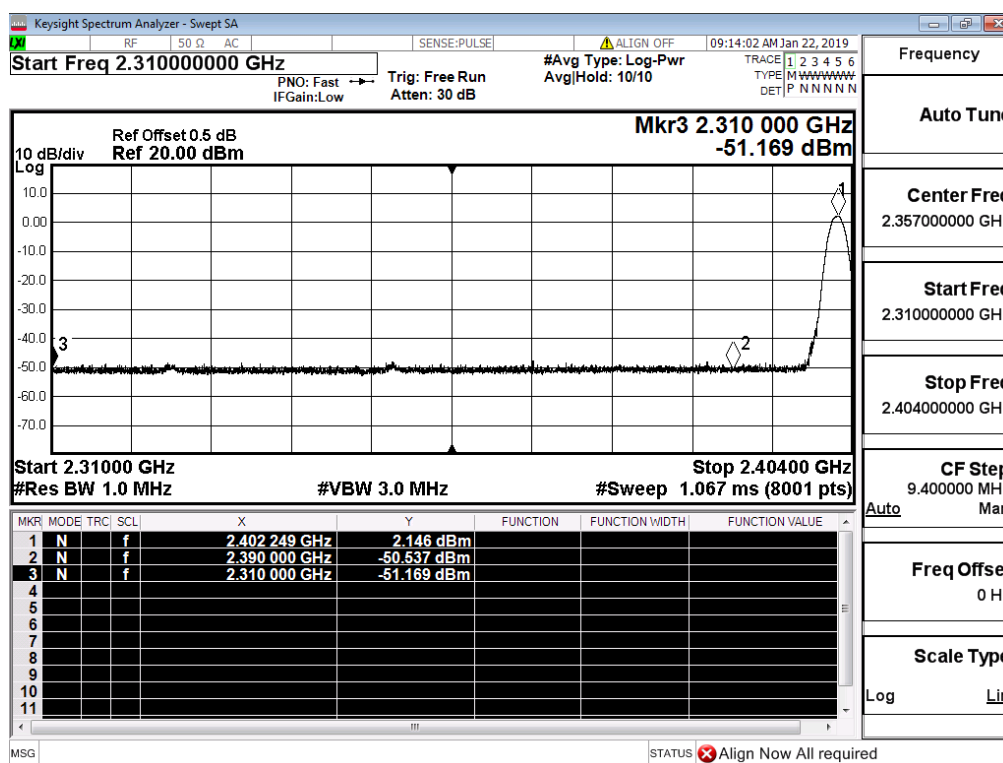
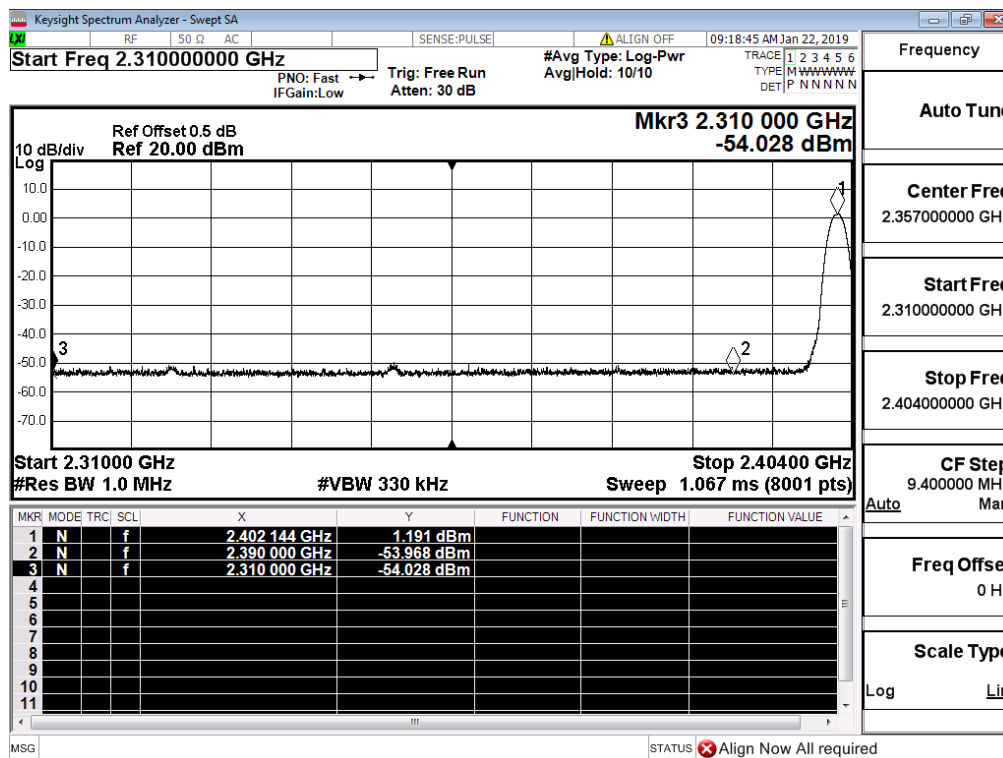


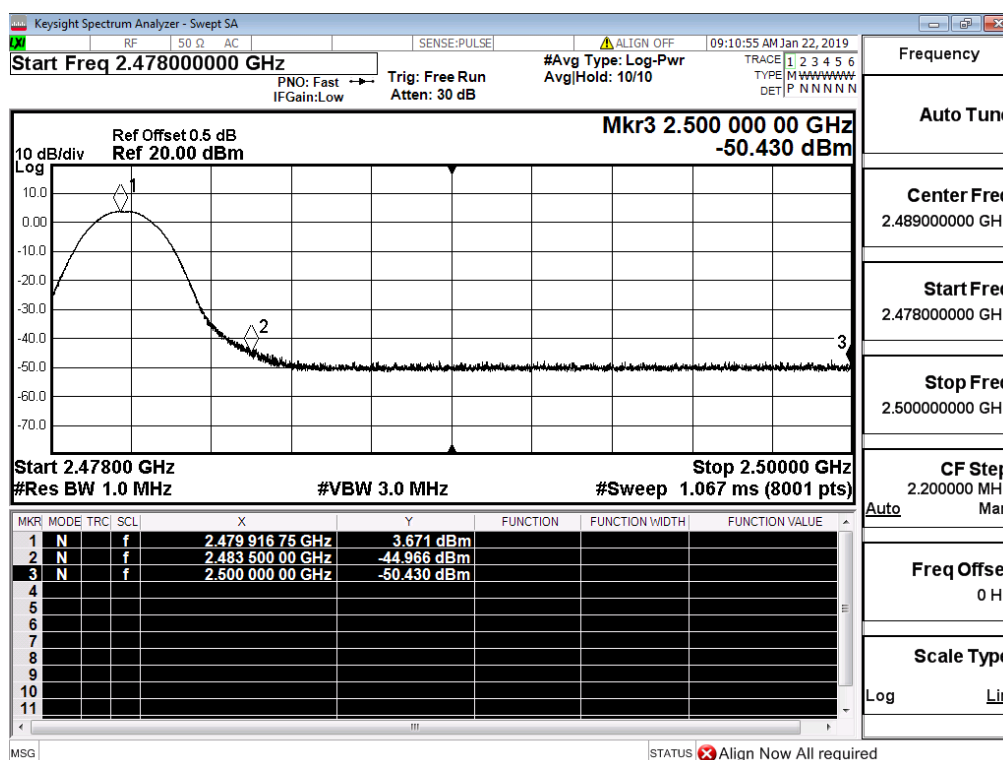
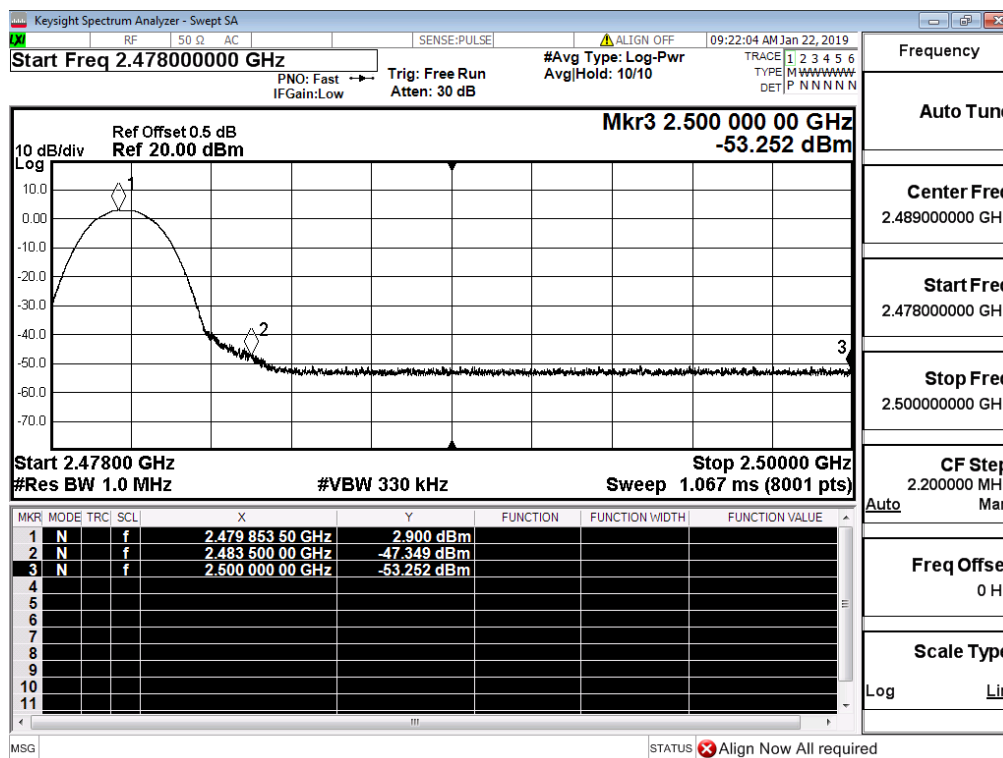
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



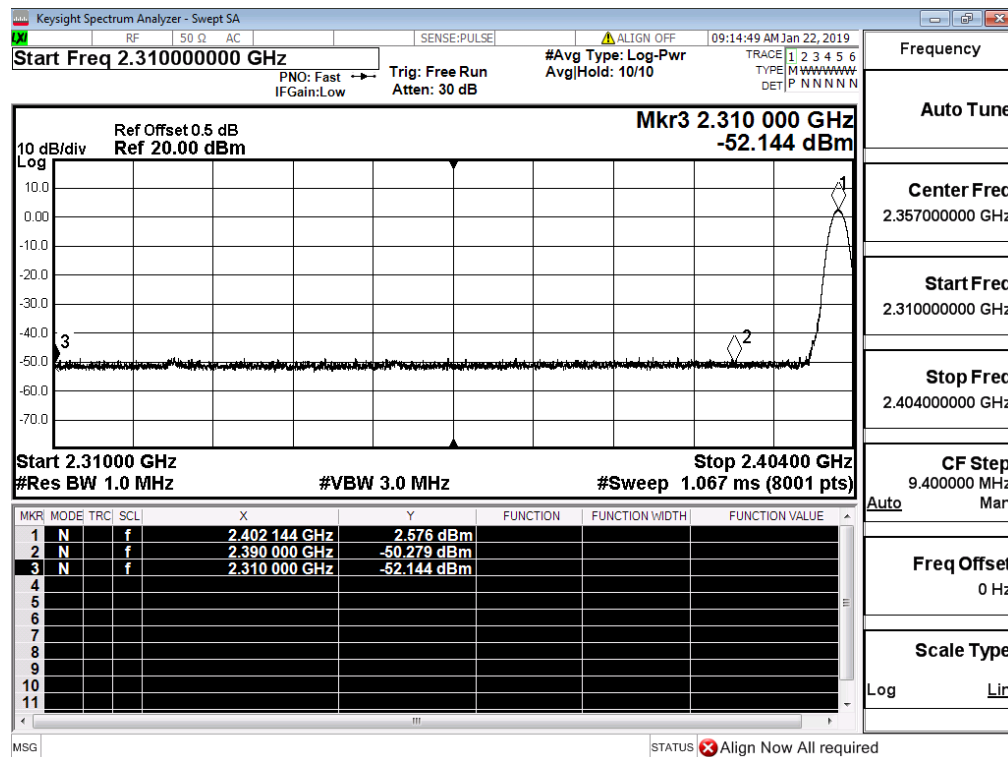
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



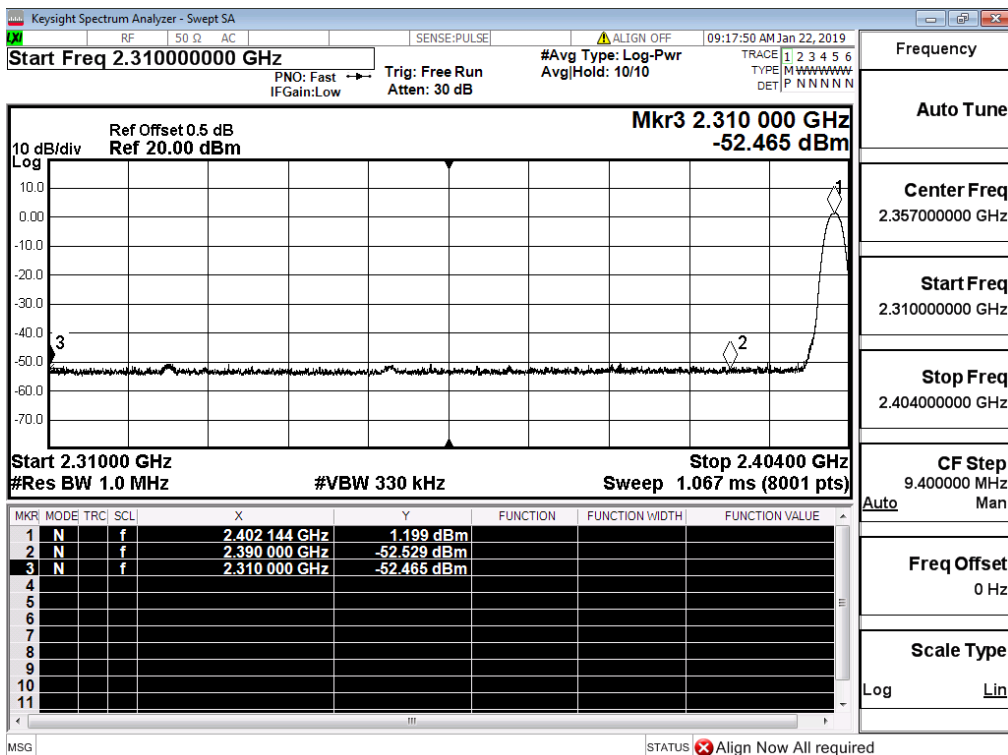
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

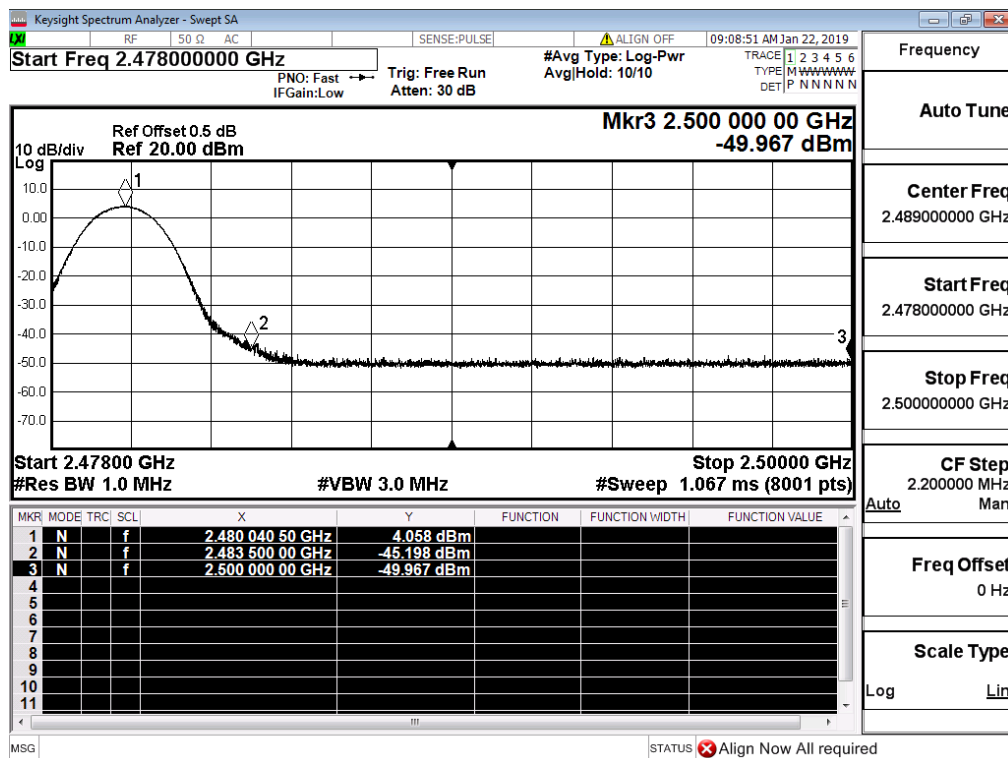
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

