

Appendix A

RF Test Data for BT V4.0 (BDR/EDR) (Conducted Measurement)

Product Name: goHeart

Trade Mark: N/A

Test Model: XL-02

Environmental Conditions

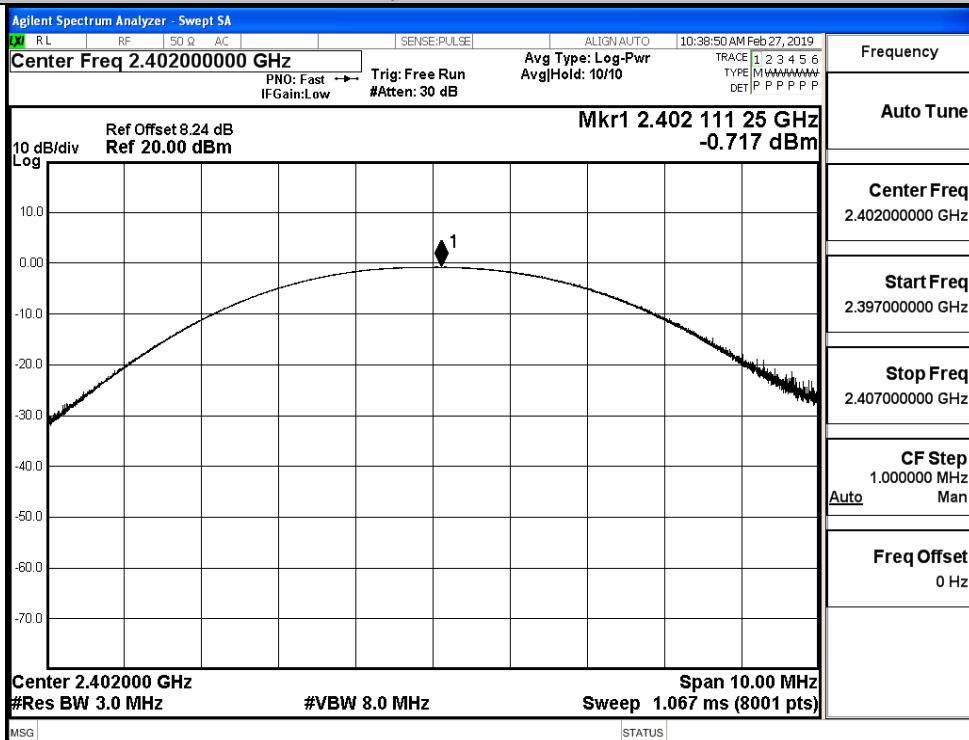
Temperature:	22.8 ° C
Relative Humidity:	53.3%
ATM Pressure:	100.0 kPa
Test Engineer:	Diamond.Lu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

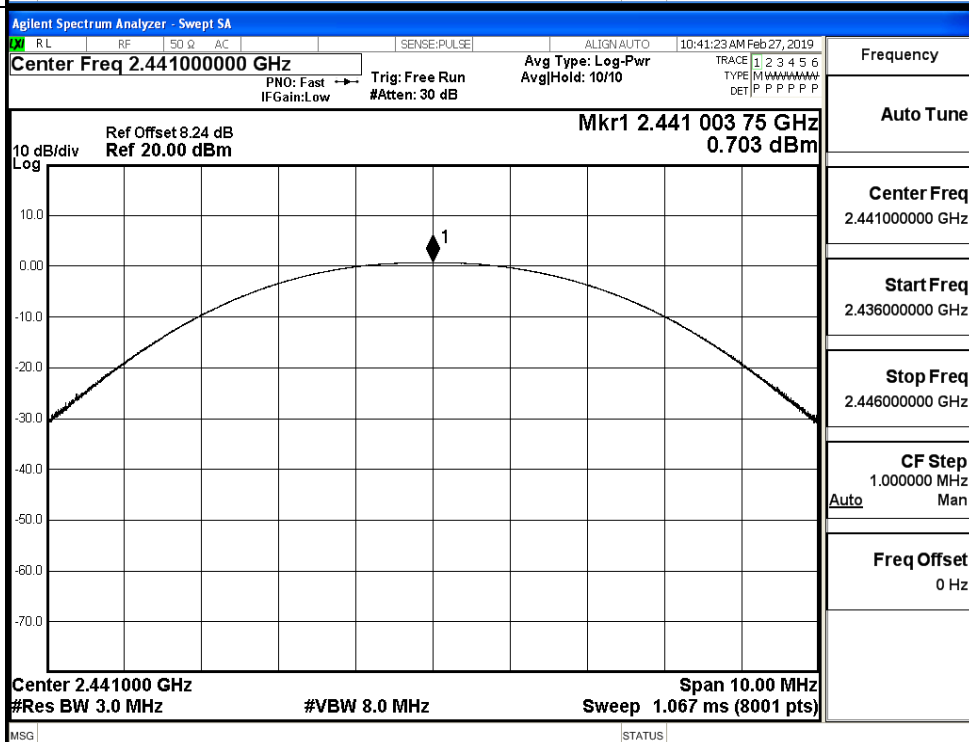
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.717	21	PASS
	MCH	0.703	21	PASS
	HCH	-0.299	21	PASS
$\pi/4$ DQPSK	LCH	-0.926	21	PASS
	MCH	0.126	21	PASS
	HCH	-0.914	21	PASS
8DPSK	LCH	-0.855	21	PASS
	MCH	0.245	21	PASS
	HCH	-0.784	21	PASS

Test Graphs

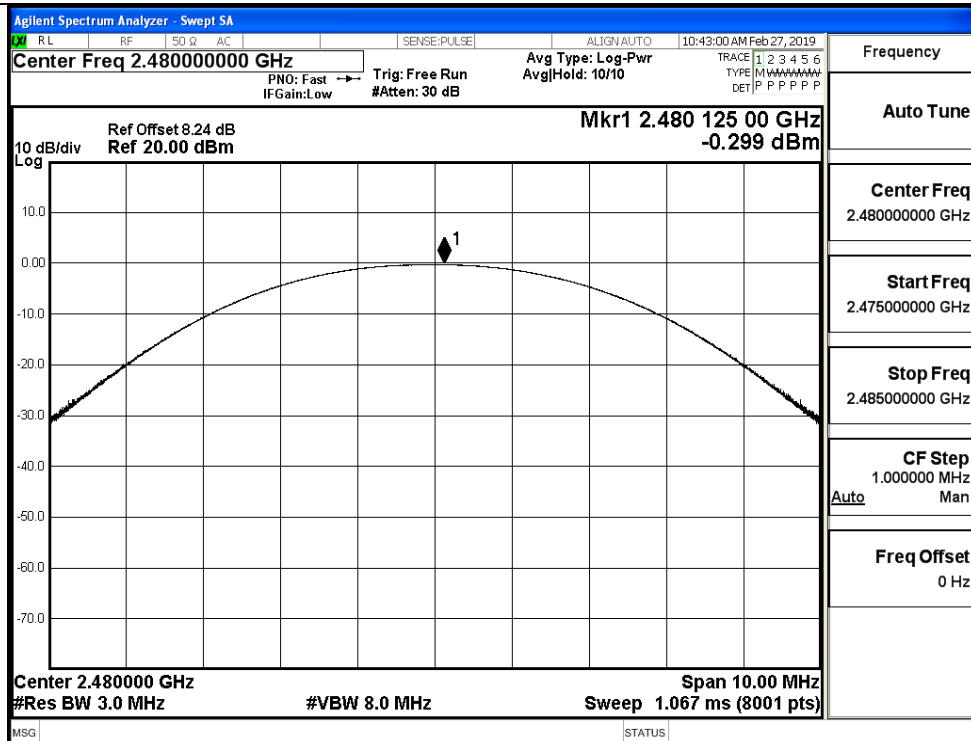
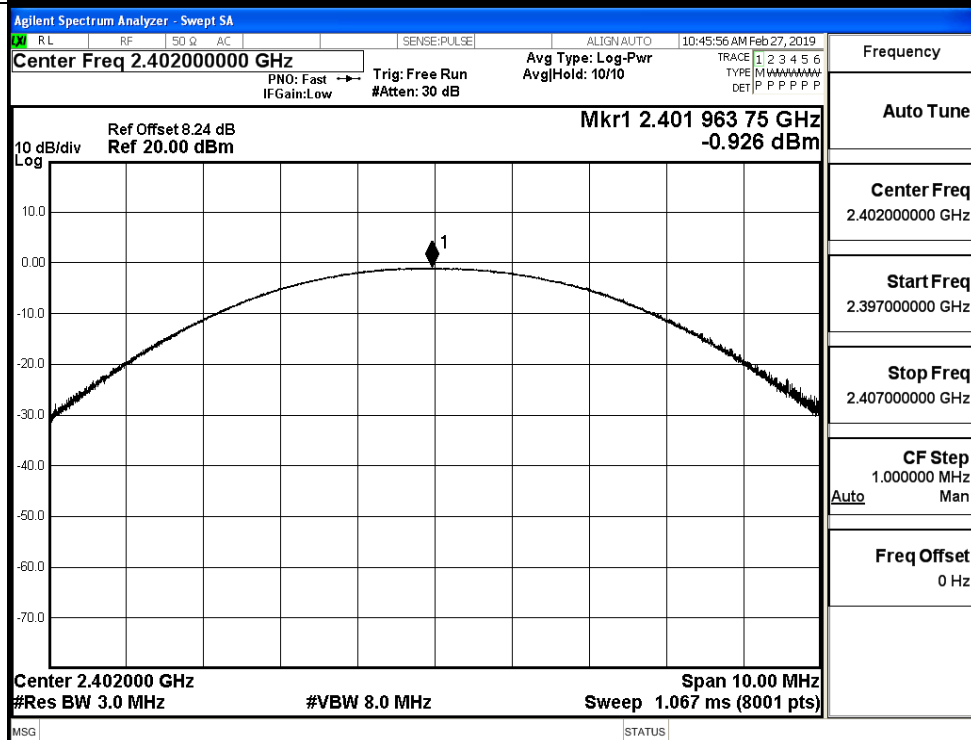
GFSK/LCH

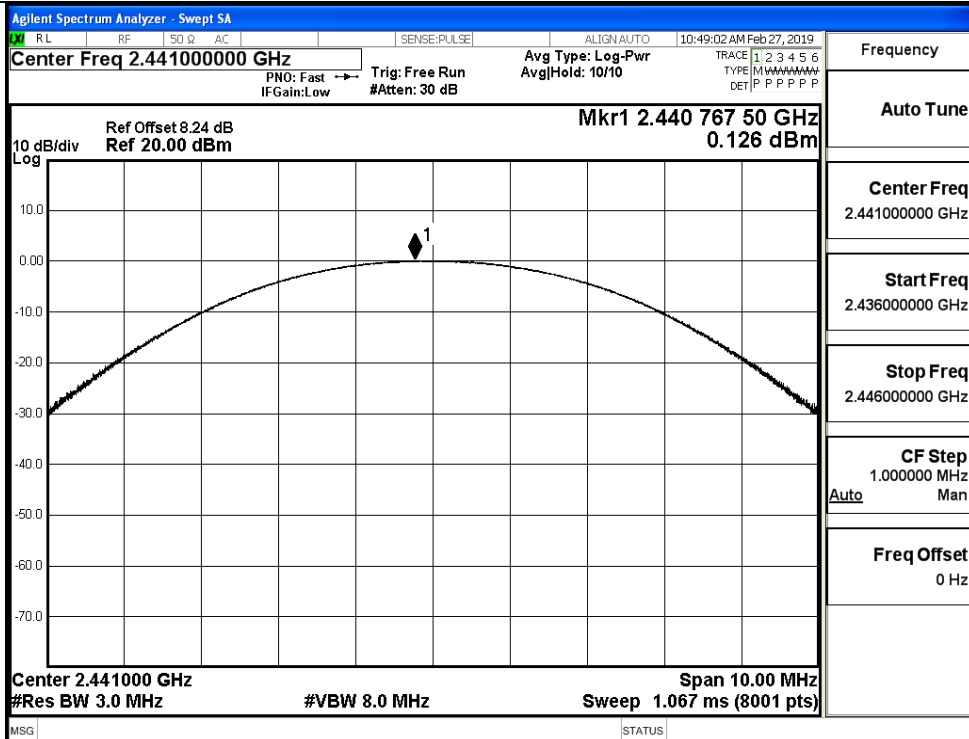
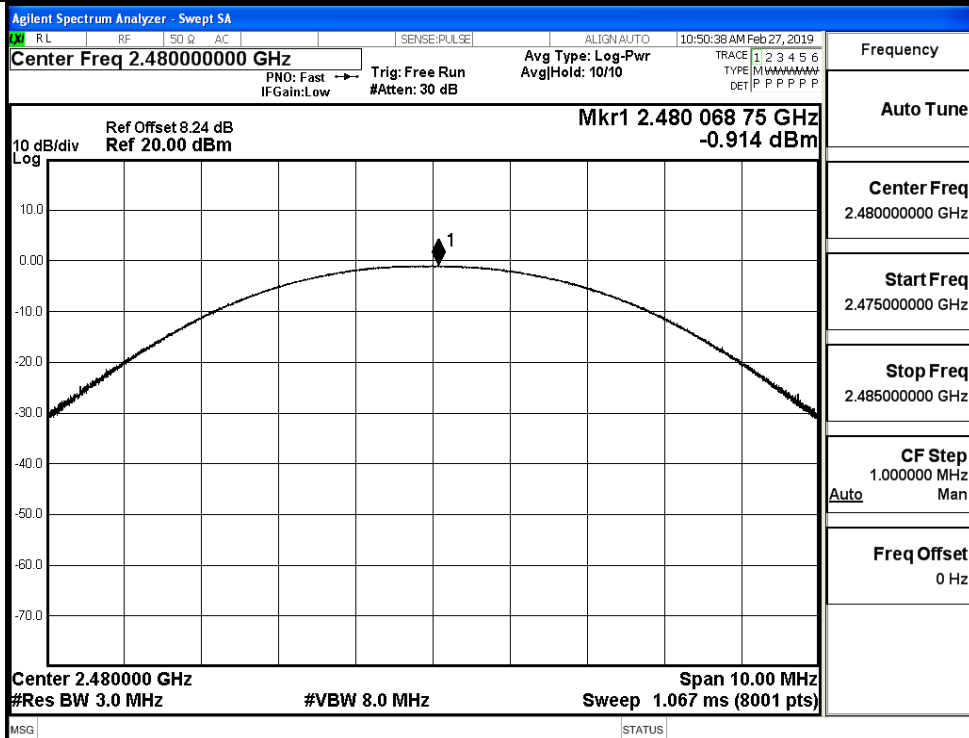


GFSK/MCH

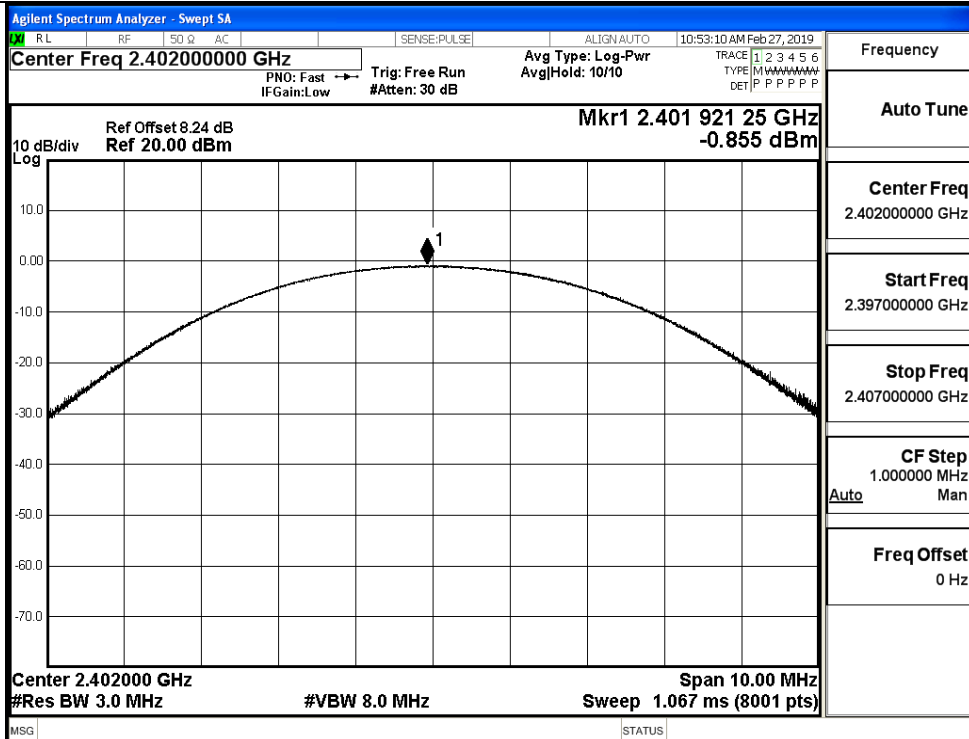


GFSK/HCH

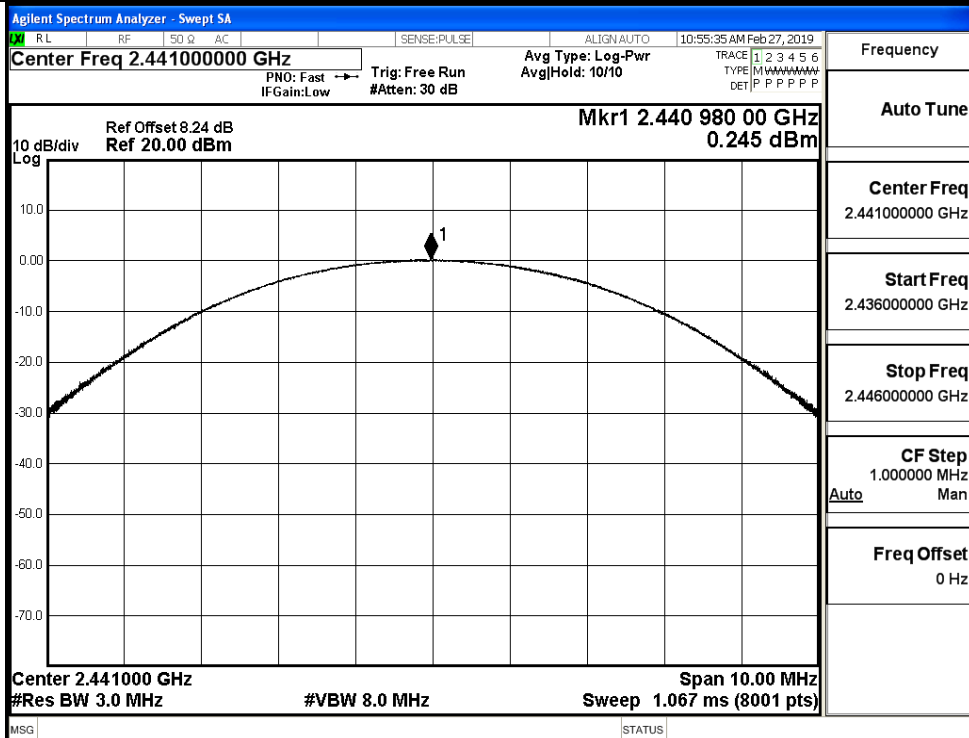
 π /4DQPSK/LCH

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

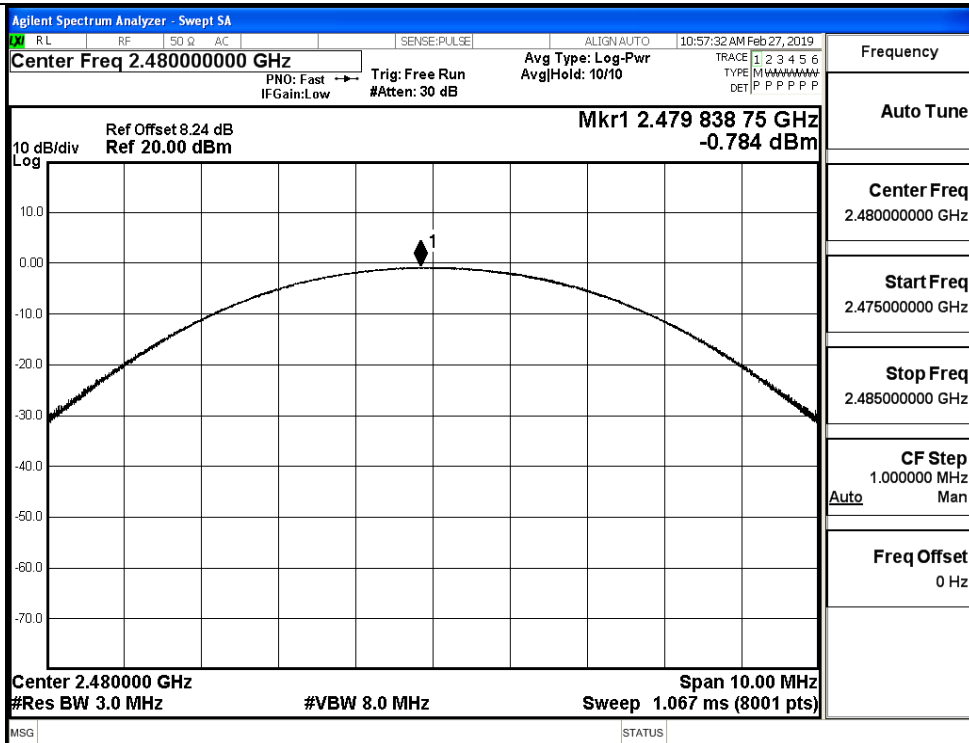
8DPSK/LCH



8DPSK/MCH



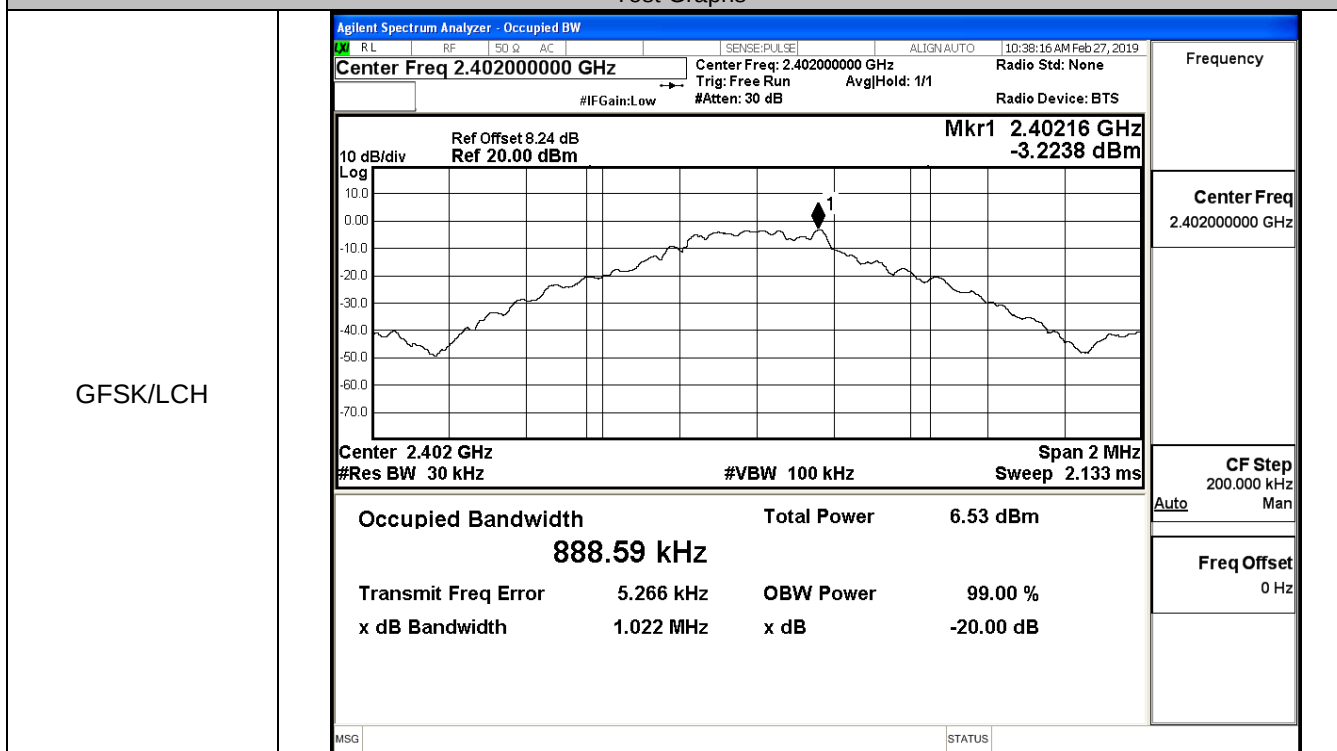
8DPSK/HCH



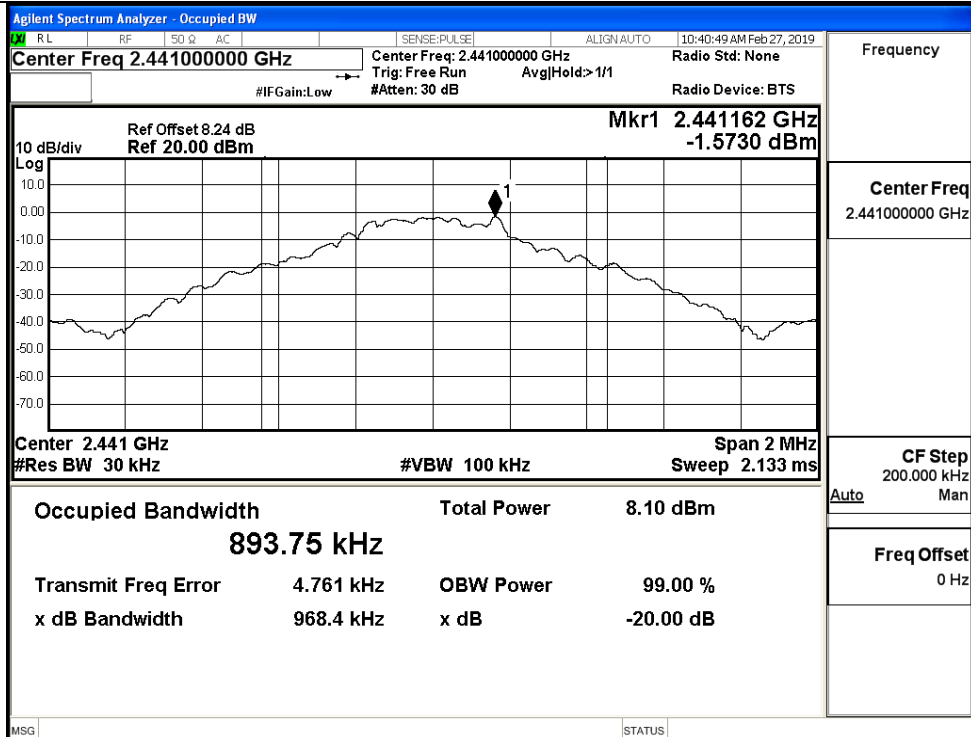
A.2 20dB Bandwidth

Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.88859	1.022	Not Specified	PASS
	MCH	0.89375	0.9684	Not Specified	PASS
	HCH	0.89525	1.022	Not Specified	PASS
π /4DQPSK	LCH	1.1789	1.291	Not Specified	PASS
	MCH	1.1764	1.306	Not Specified	PASS
	HCH	1.1740	1.291	Not Specified	PASS
8DPSK	LCH	1.1903	1.297	Not Specified	PASS
	MCH	1.1890	1.299	Not Specified	PASS
	HCH	1.1875	1.297	Not Specified	PASS

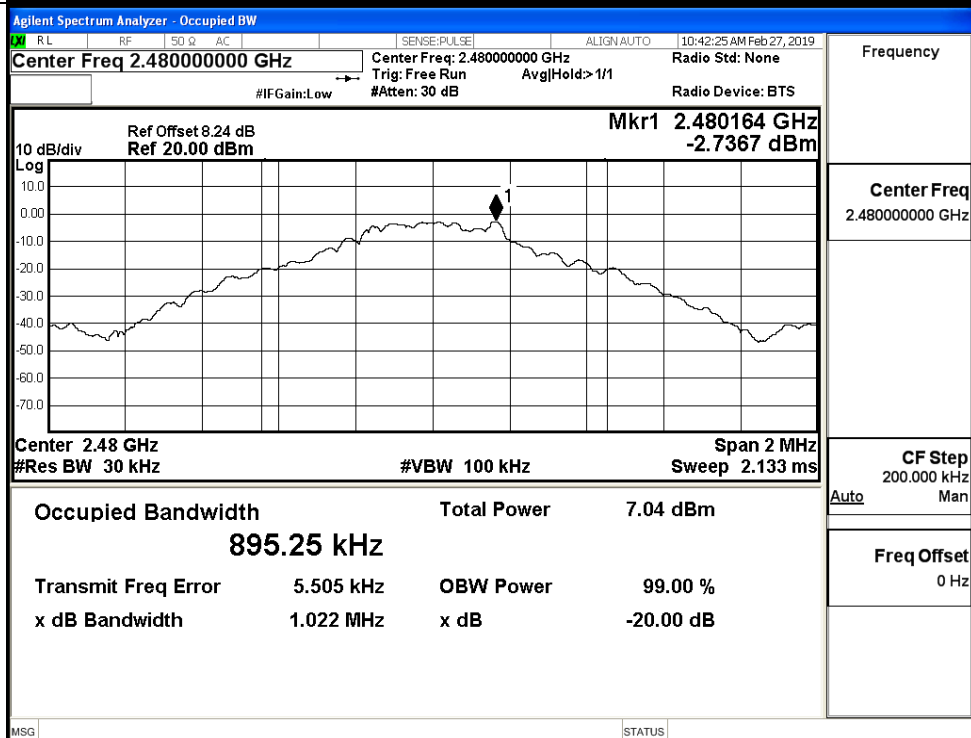
Test Graphs

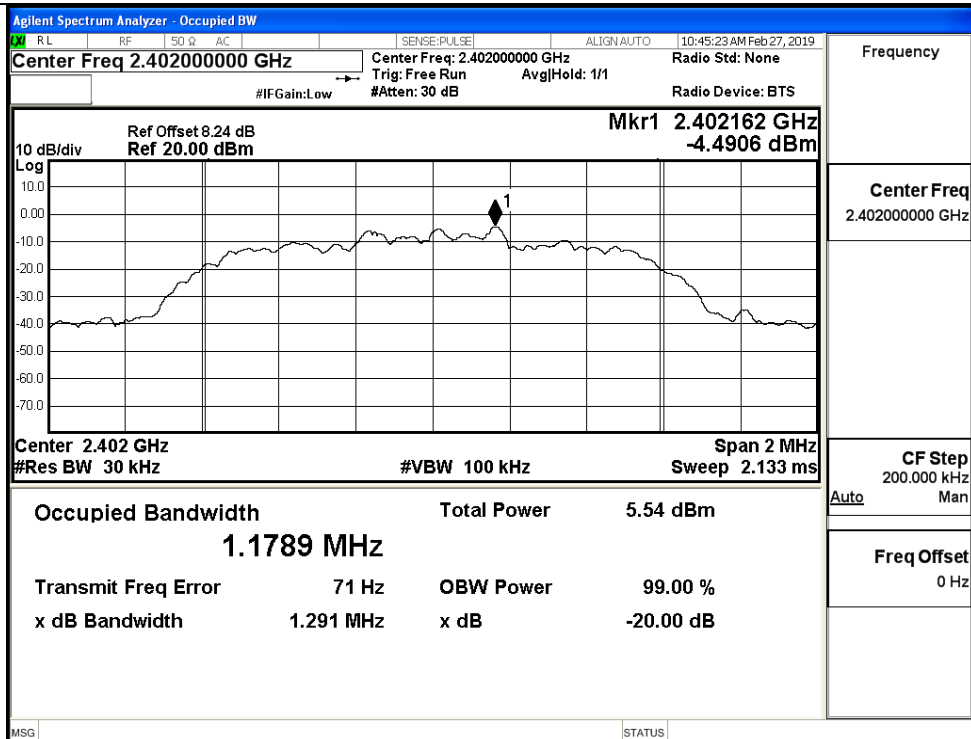
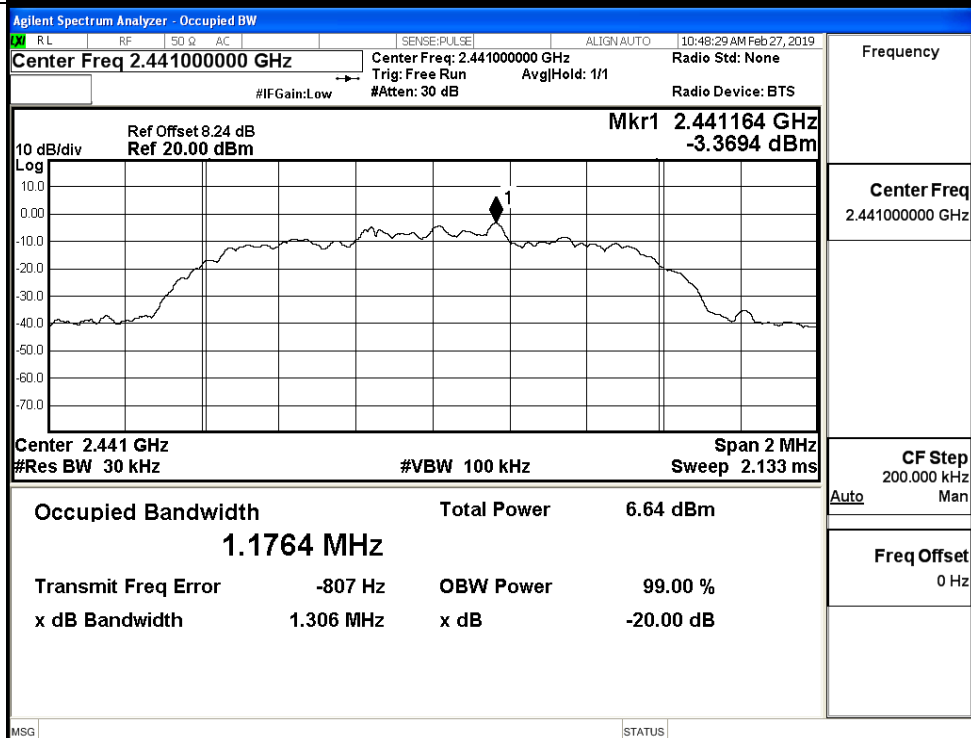


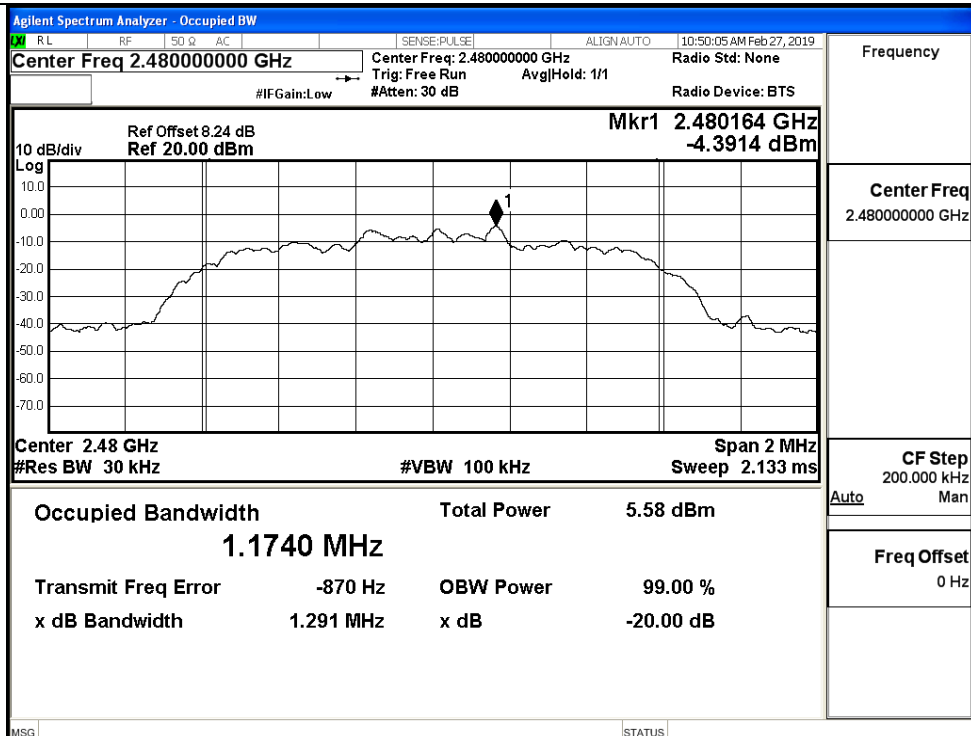
GFSK/MCH



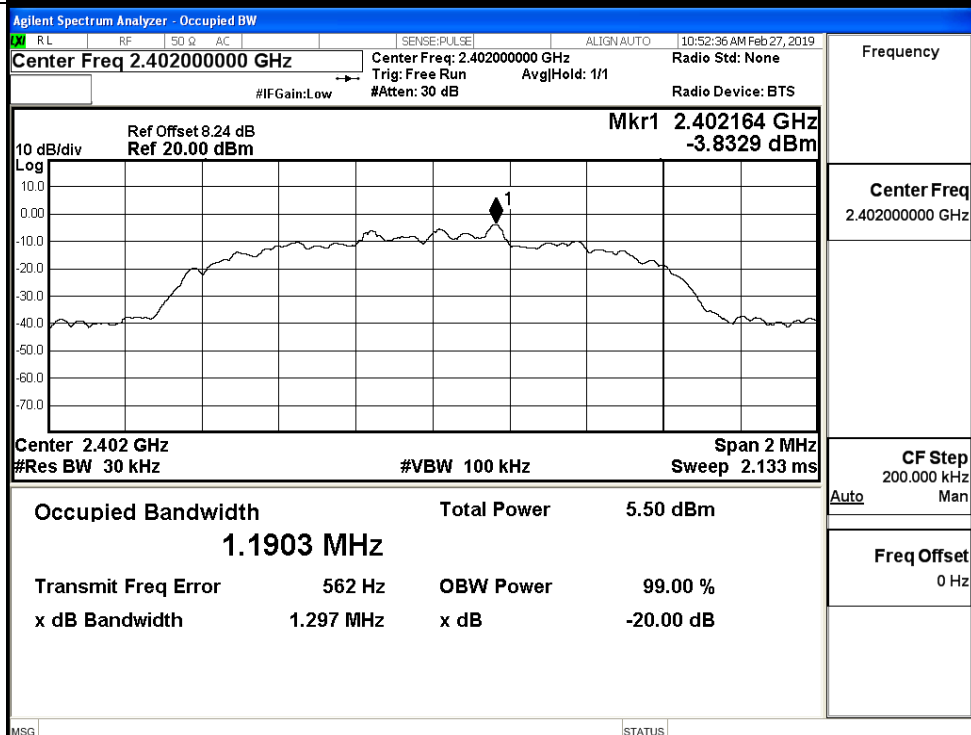
GFSK/HCH



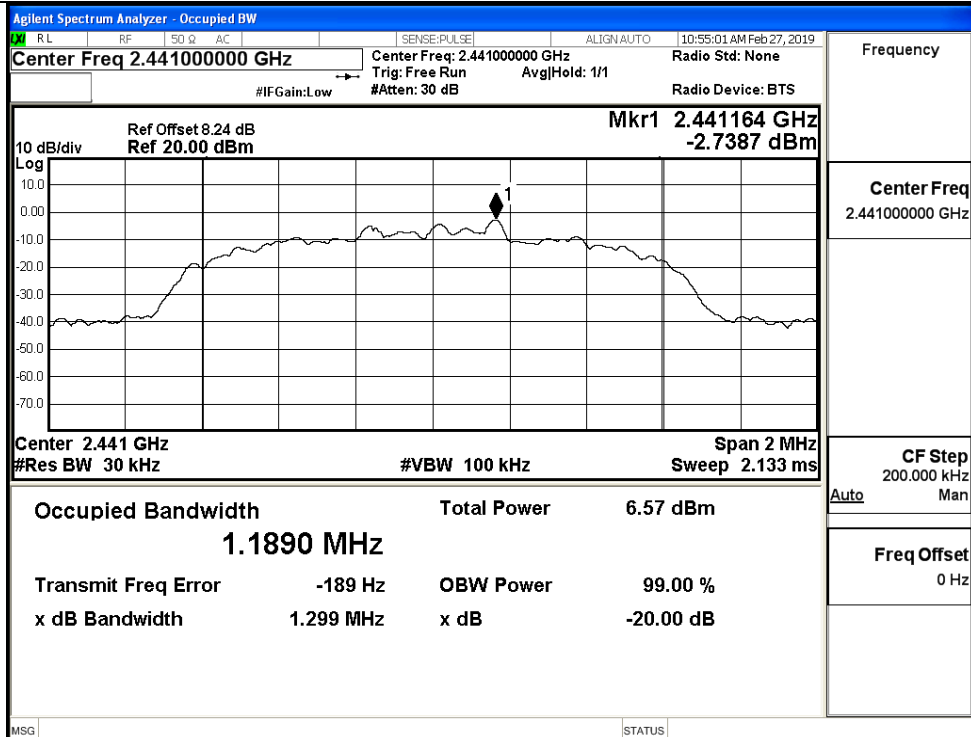
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

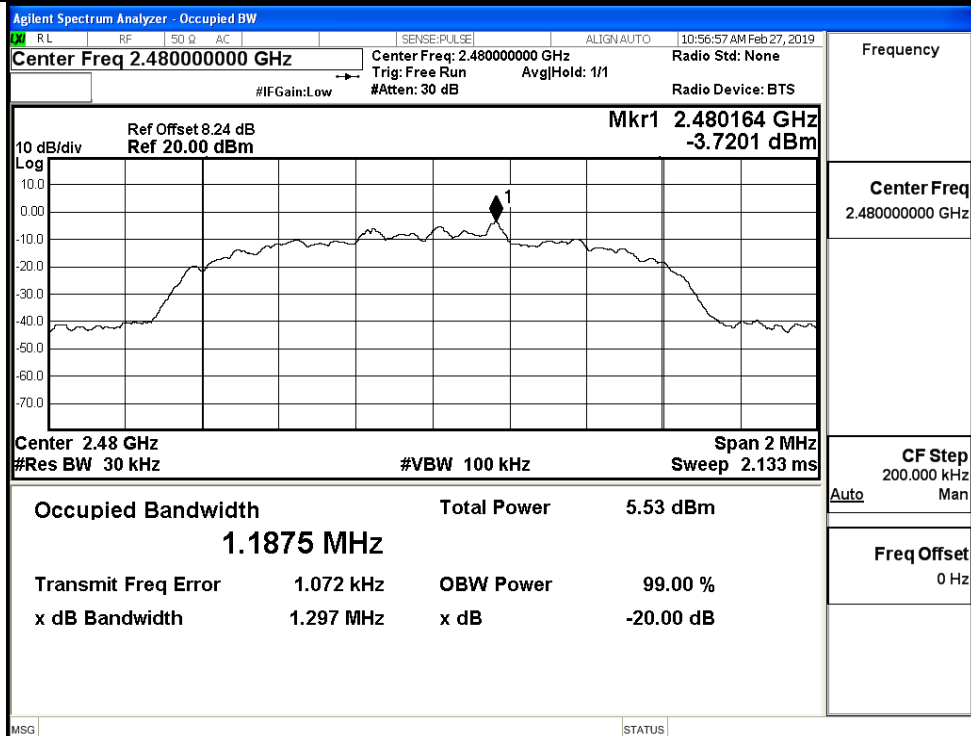
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

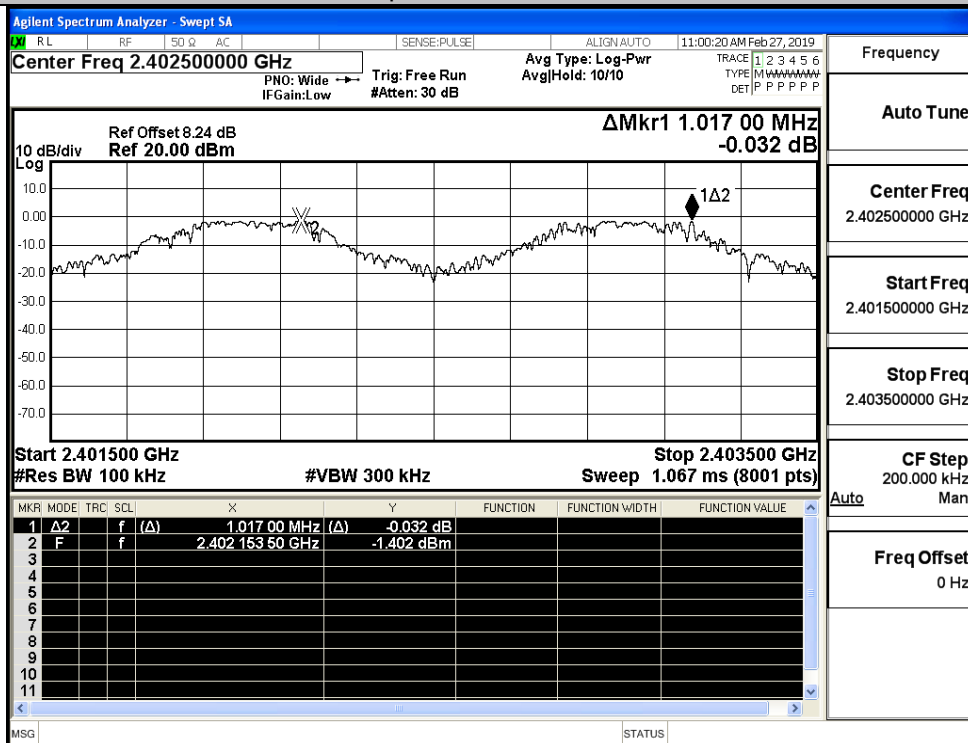


A.3 Carrier Frequency Separation

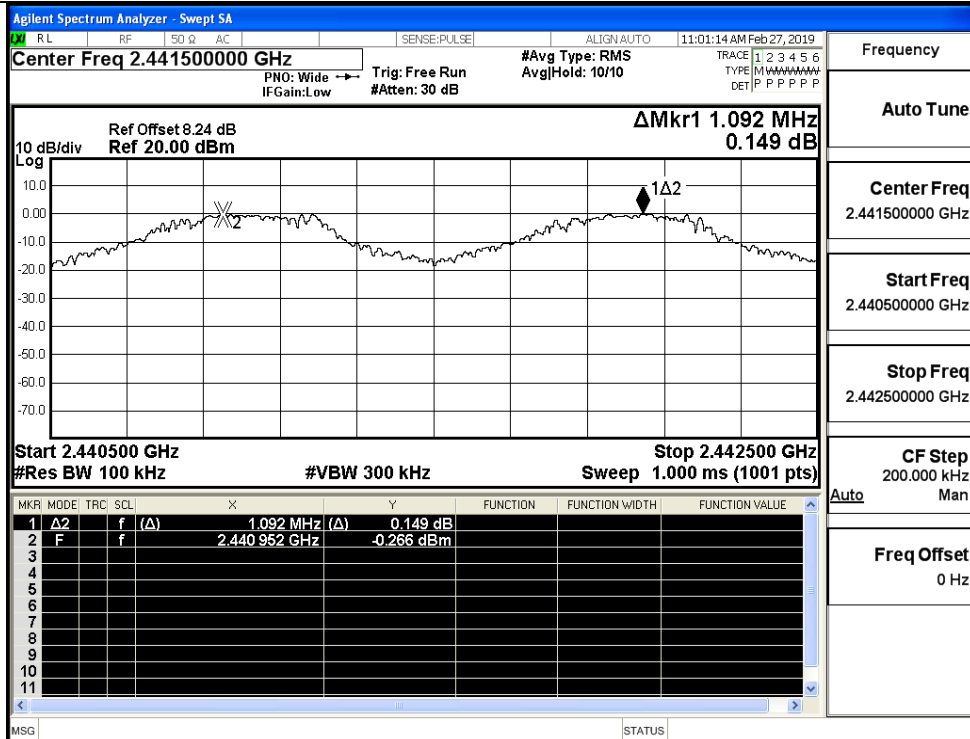
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.017	0.681	PASS
	MCH	1.092	0.681	PASS
	HCH	0.946	0.681	PASS
π /4DQPSK	LCH	1.004	0.871	PASS
	MCH	1.026	0.871	PASS
	HCH	1.200	0.871	PASS
8DPSK	LCH	0.984	0.866	PASS
	MCH	0.910	0.866	PASS
	HCH	0.986	0.866	PASS

Test Graphs

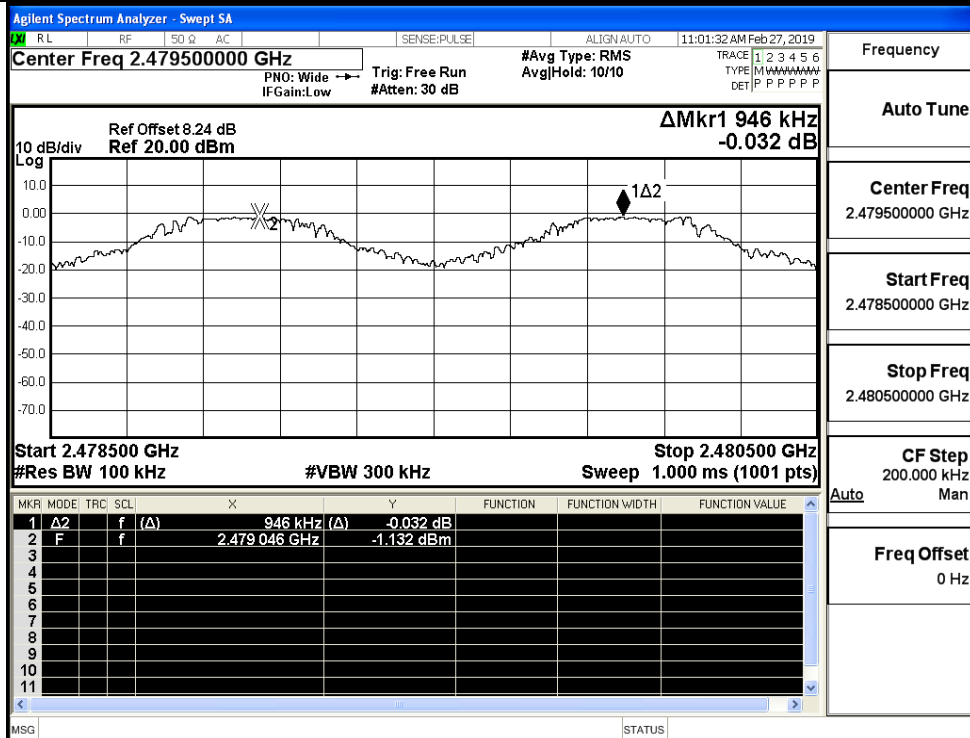
GFSK/LCH

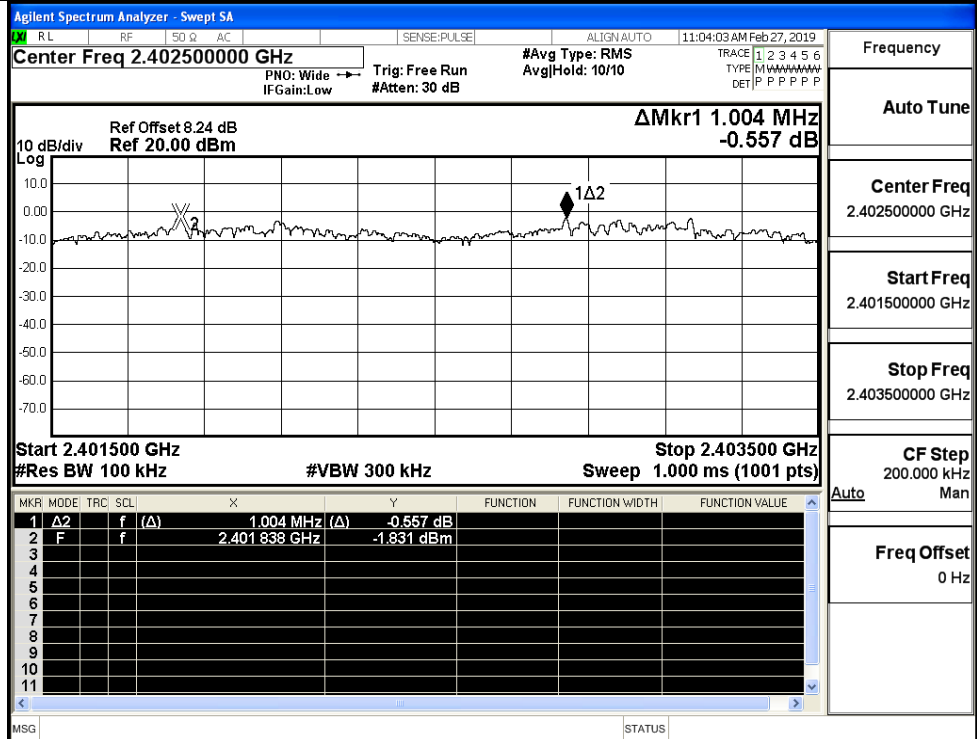
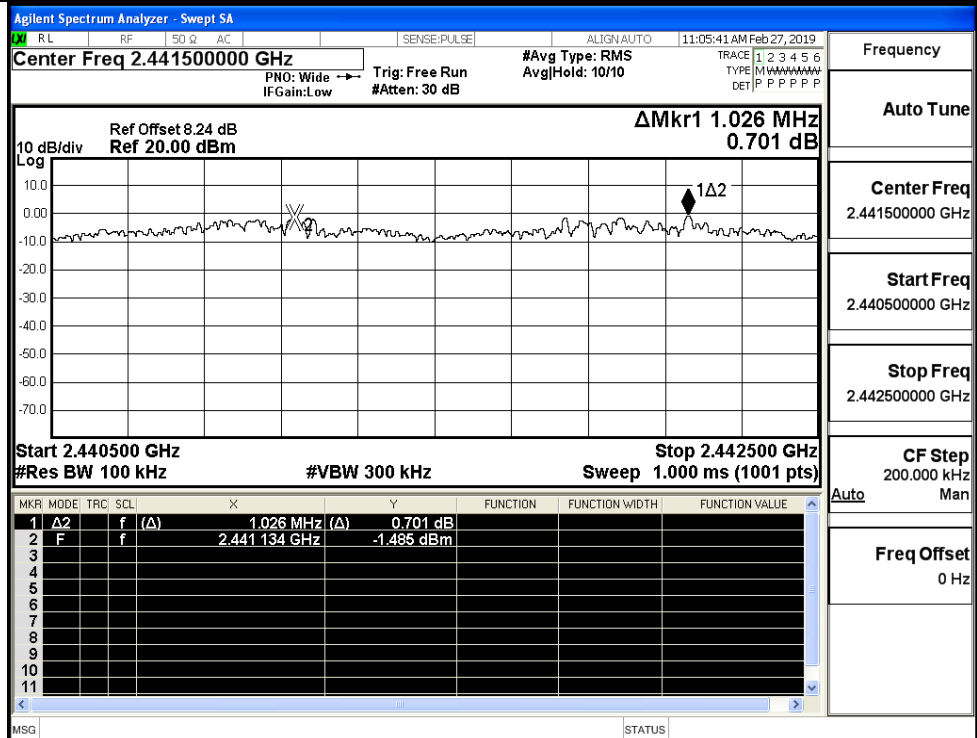


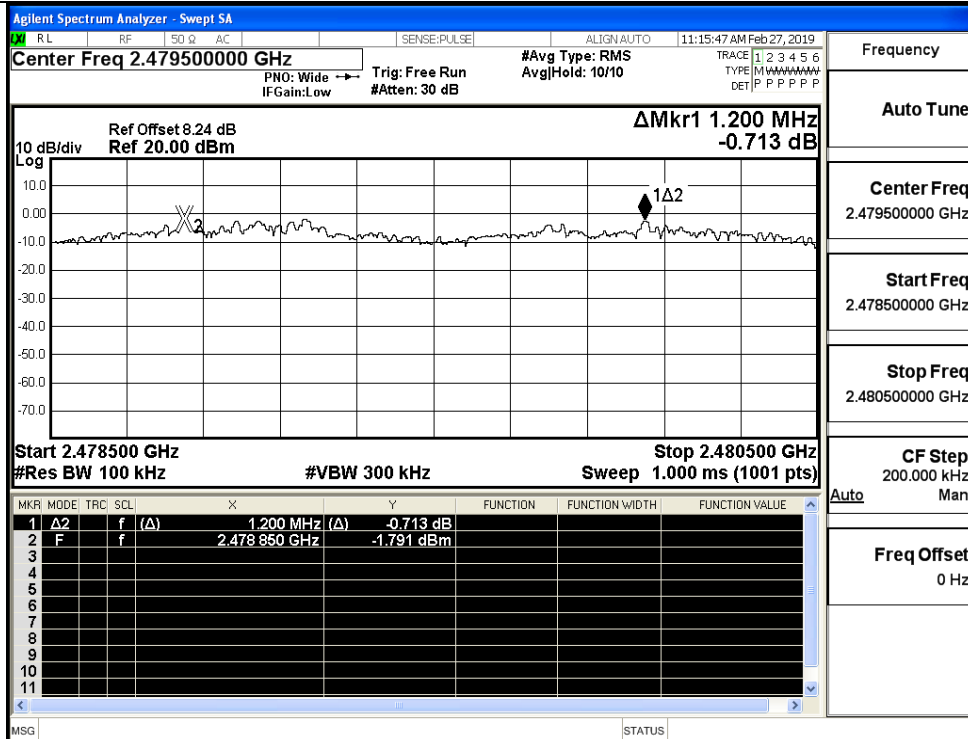
GFSK/MCH



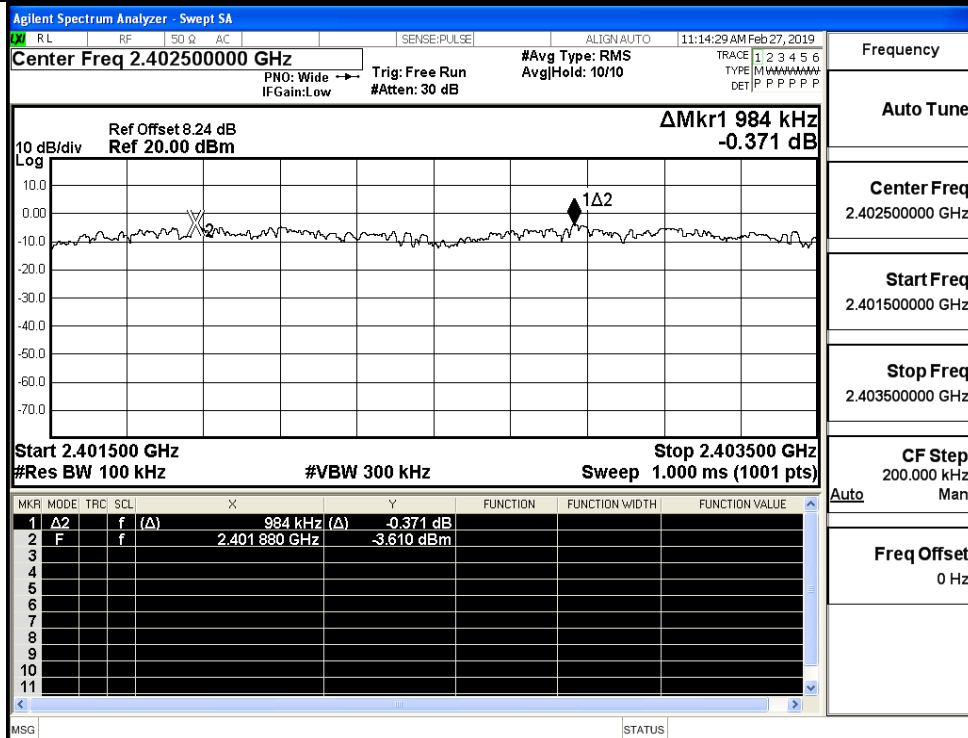
GFSK/HCH



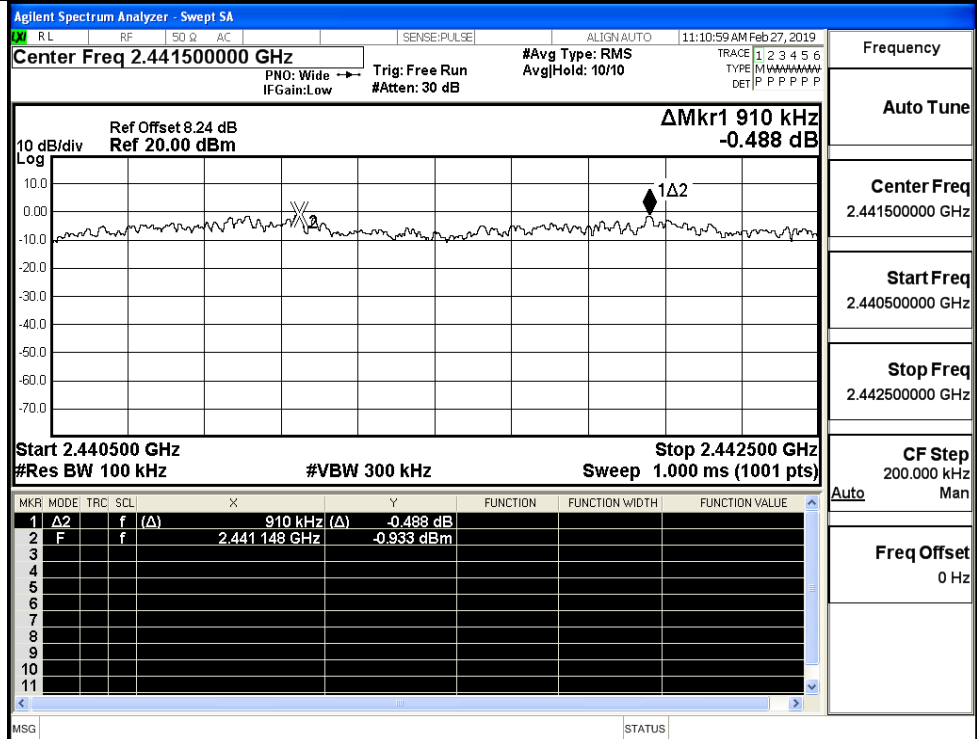
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

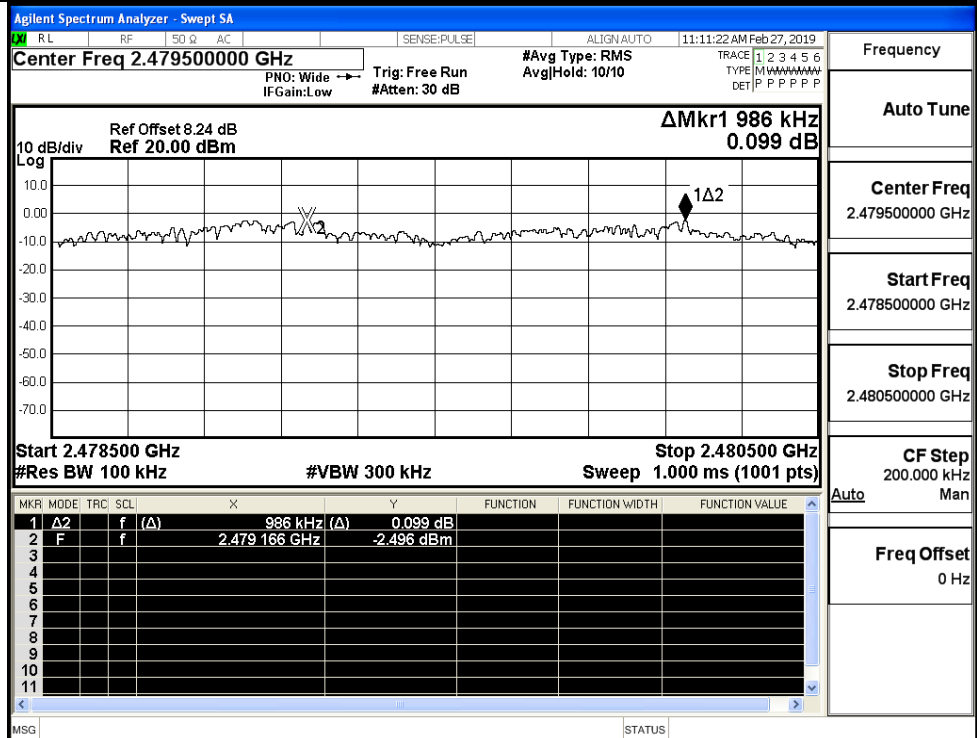
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

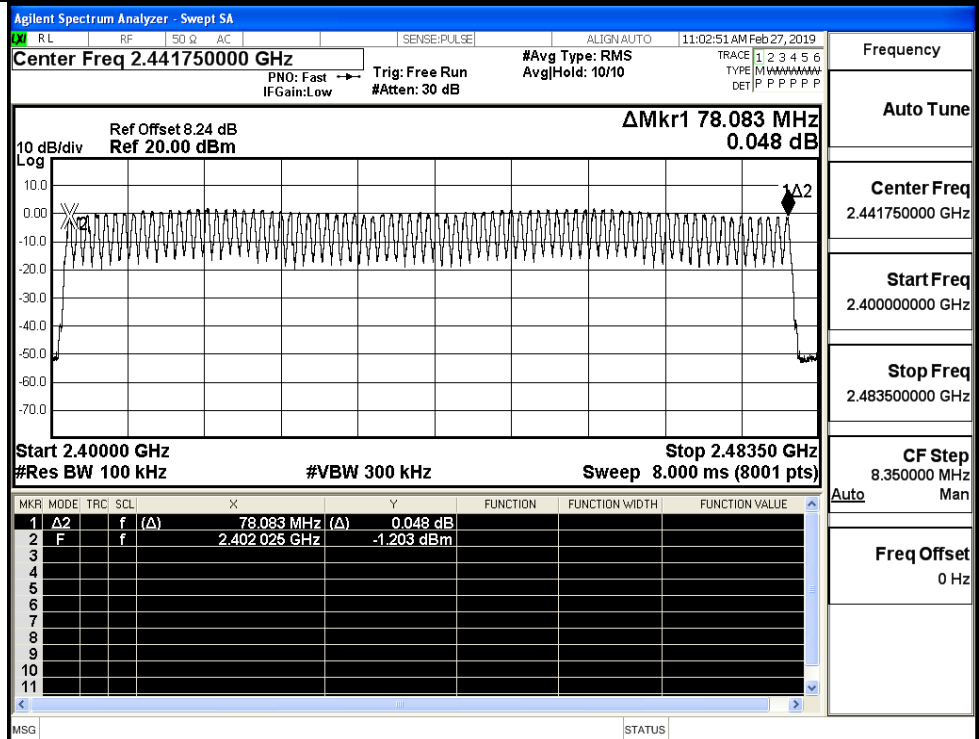
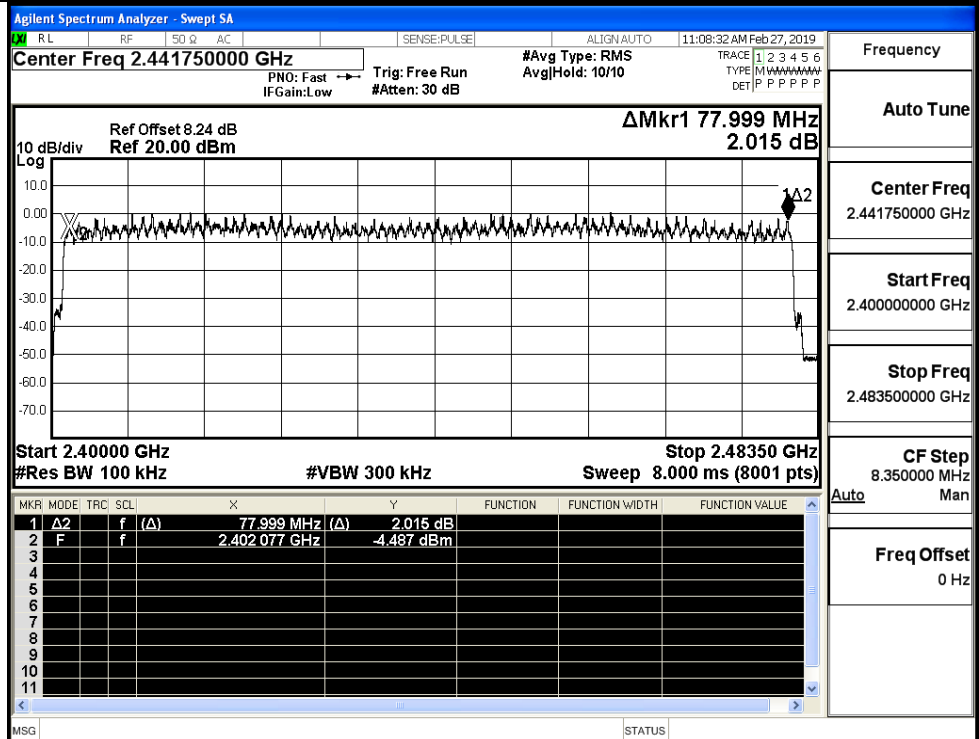


A.4 Hopping Channel Number

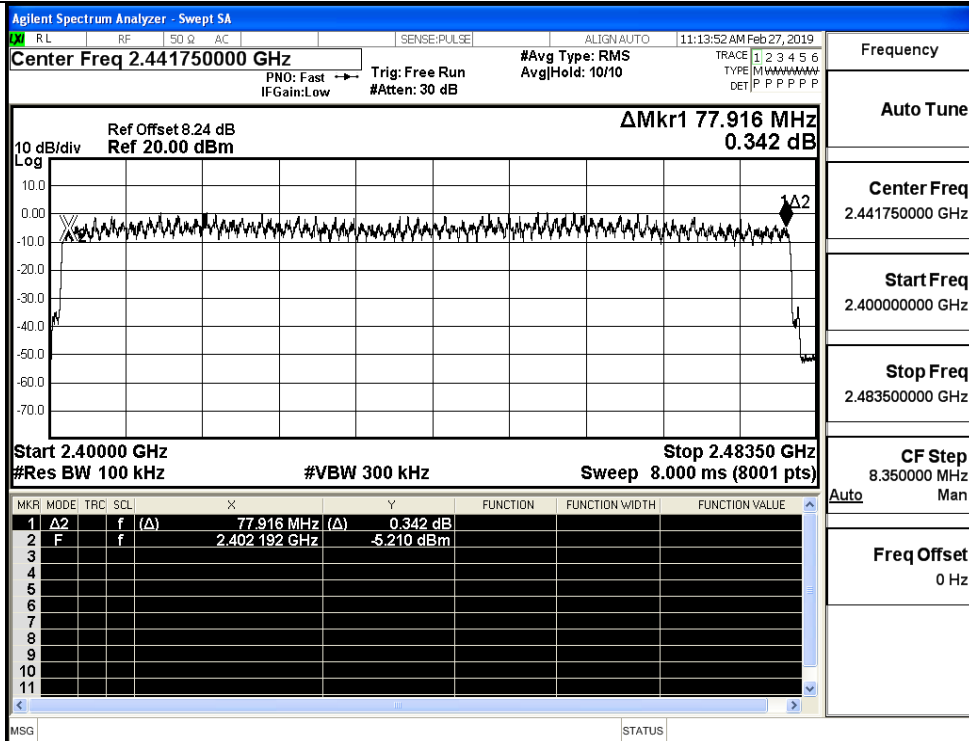
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

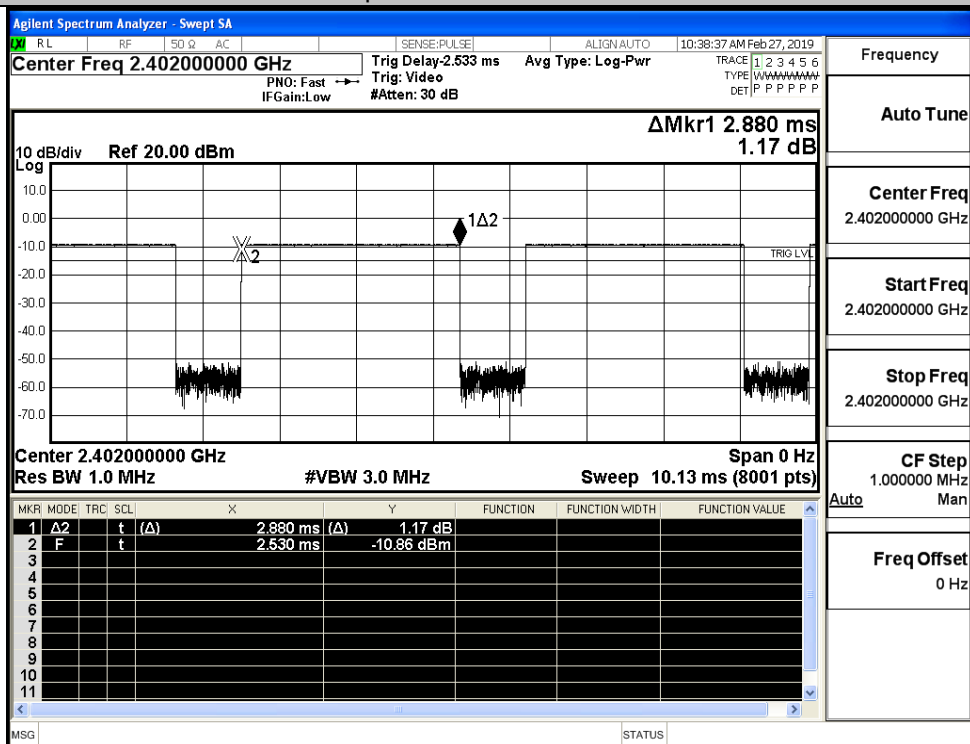


A.5 Dwell Time

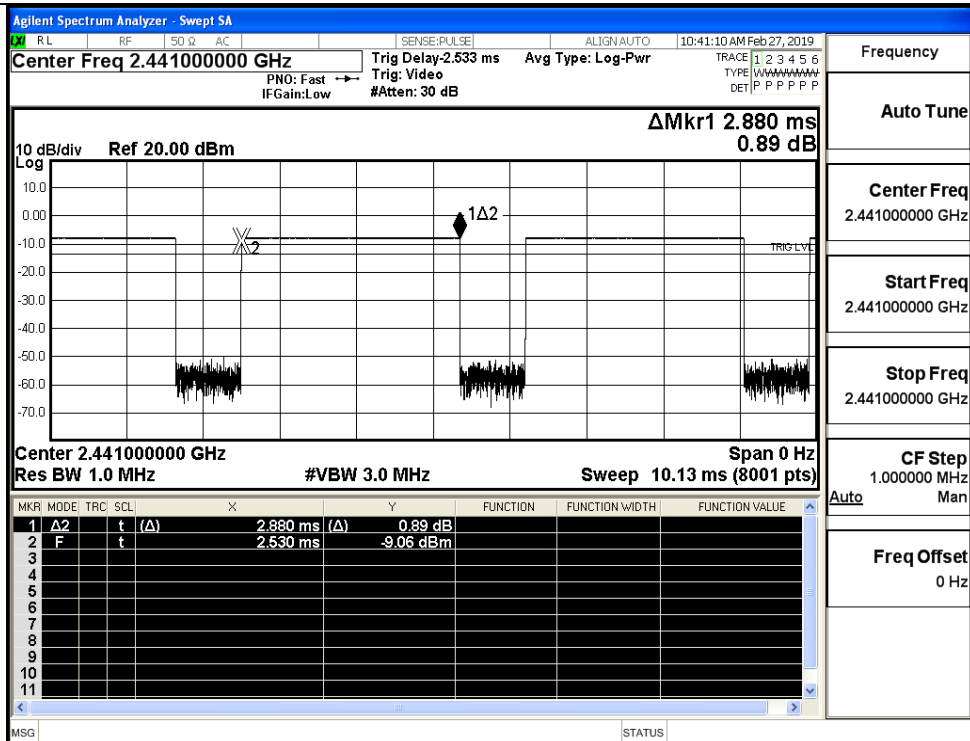
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

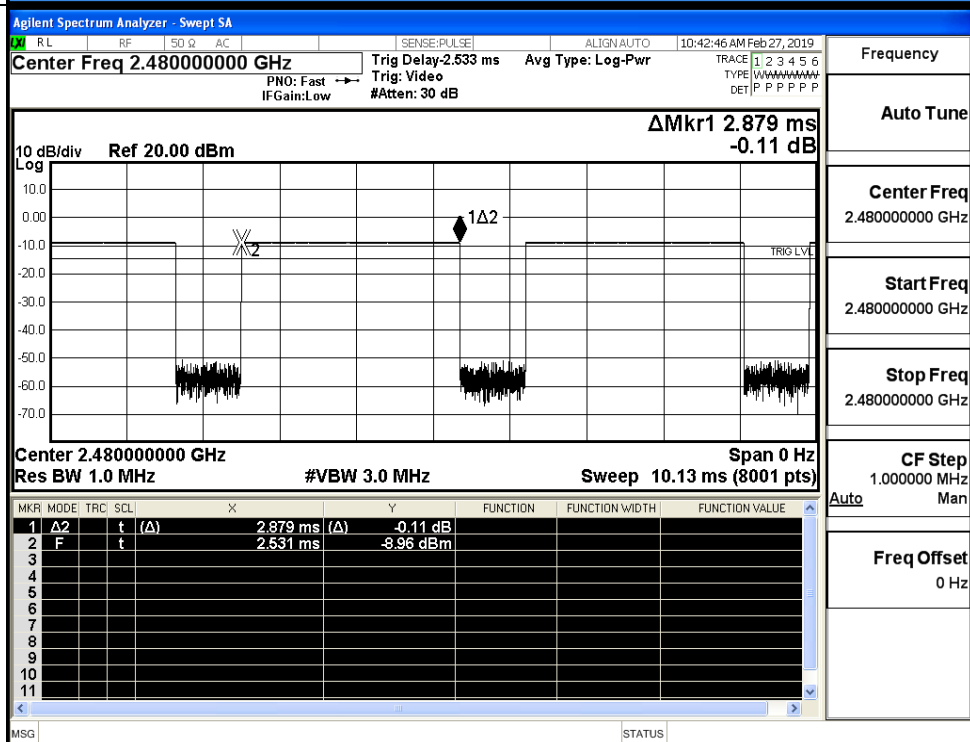
GFSK_DH5/LCH



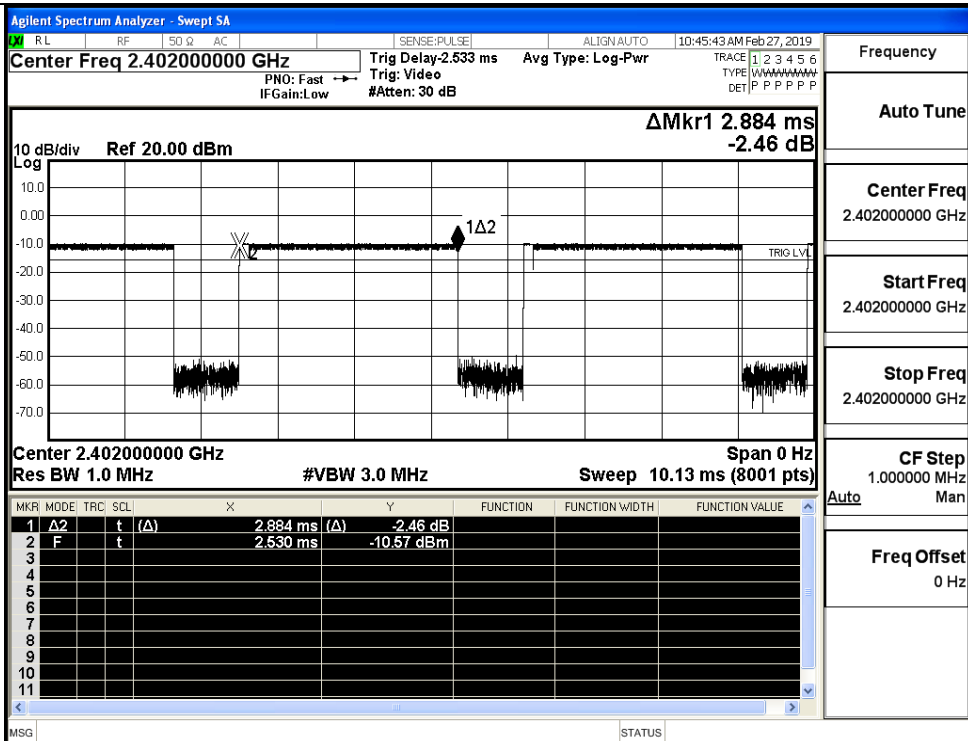
GFSK_DH5/MCH



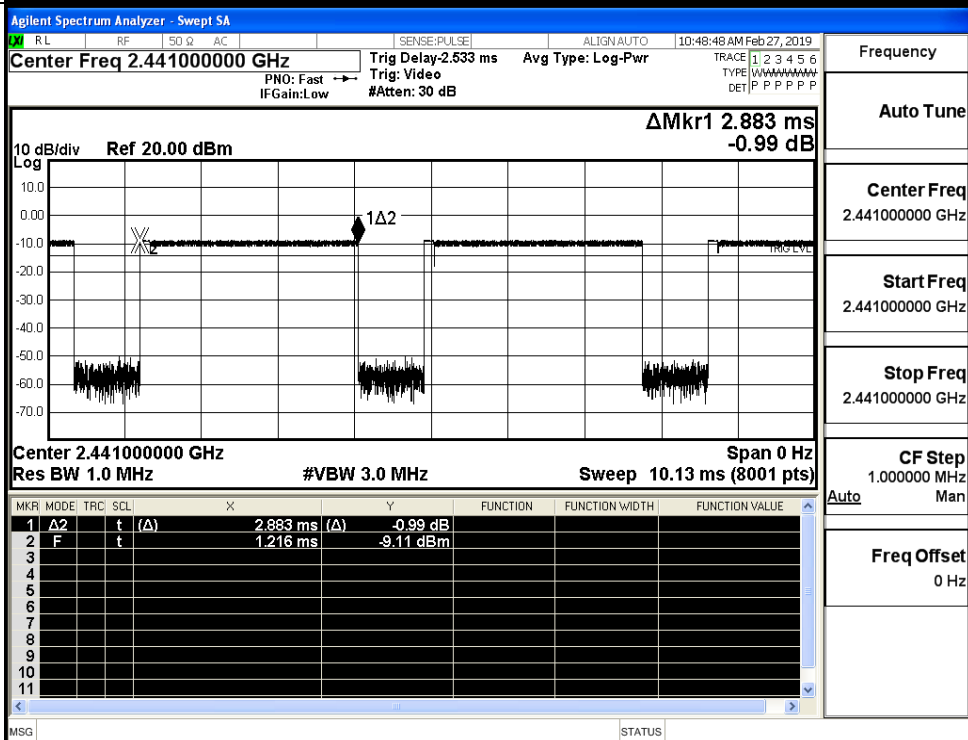
GFSK_DH5/HCH



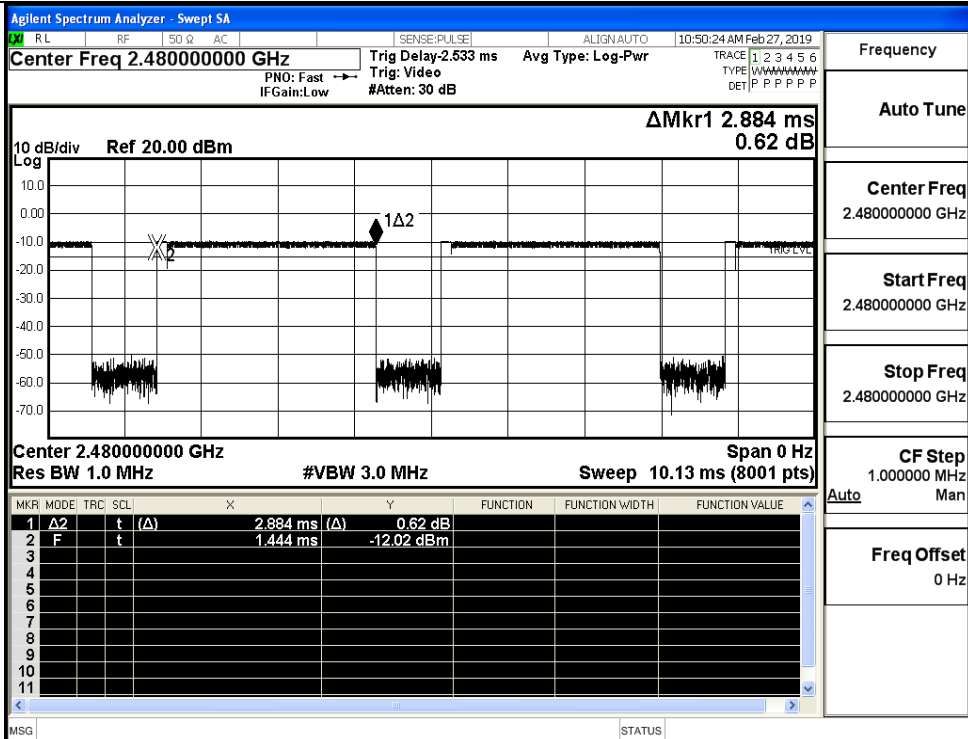
$\pi/4$ DQPSK
_2DH5/LCH



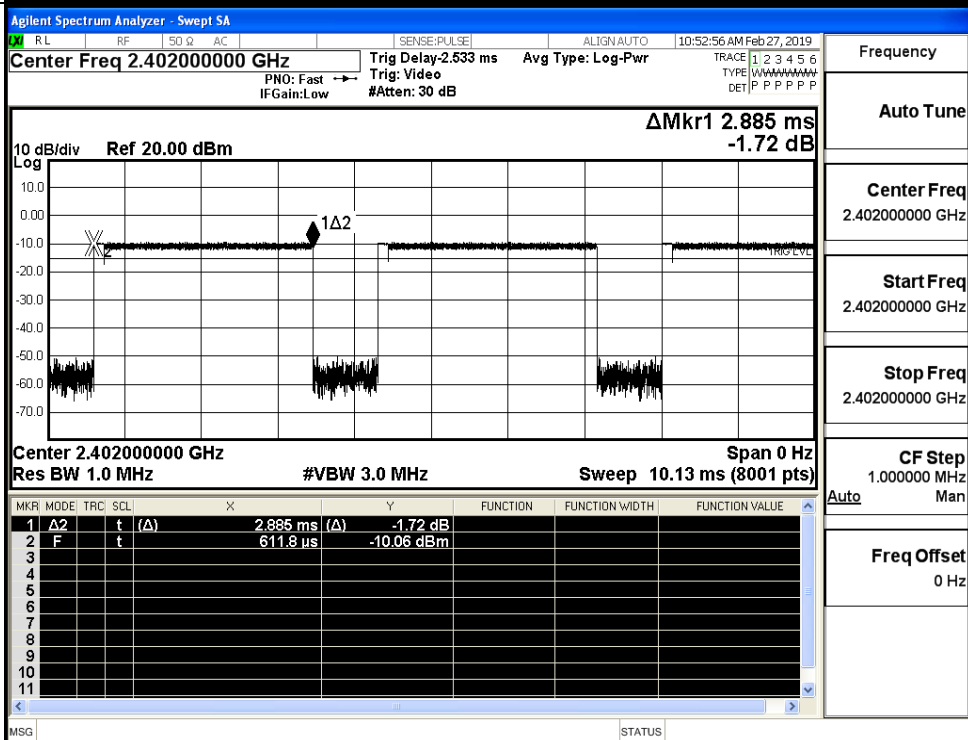
$\pi/4$ DQPSK
_2DH5/MCH



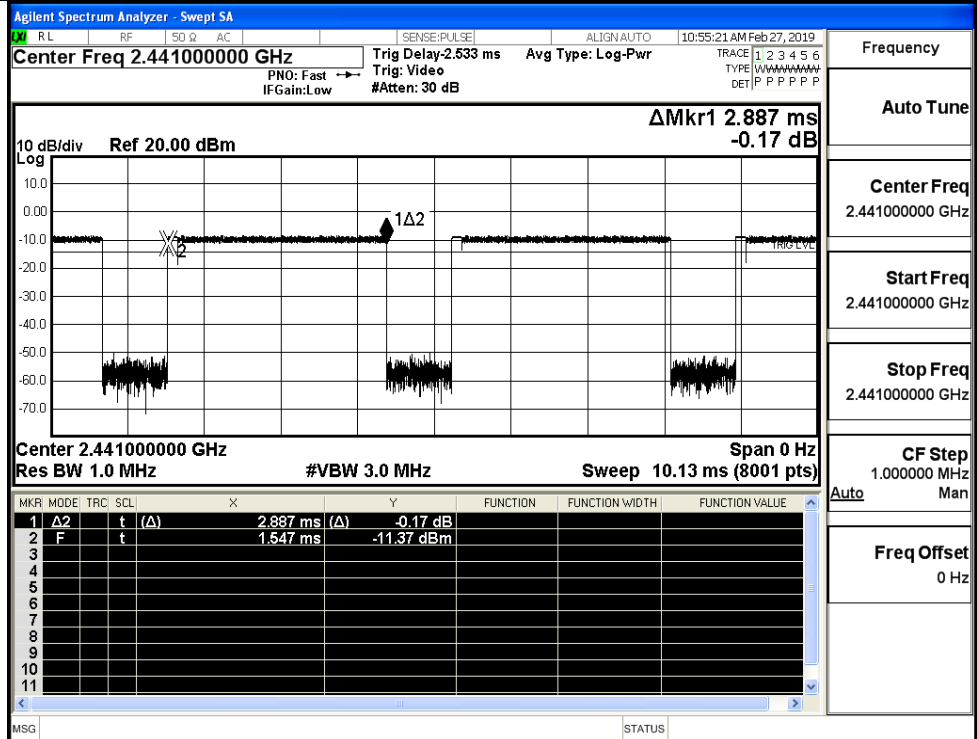
$\pi/4$ DQPSK
_2DH5/HCH



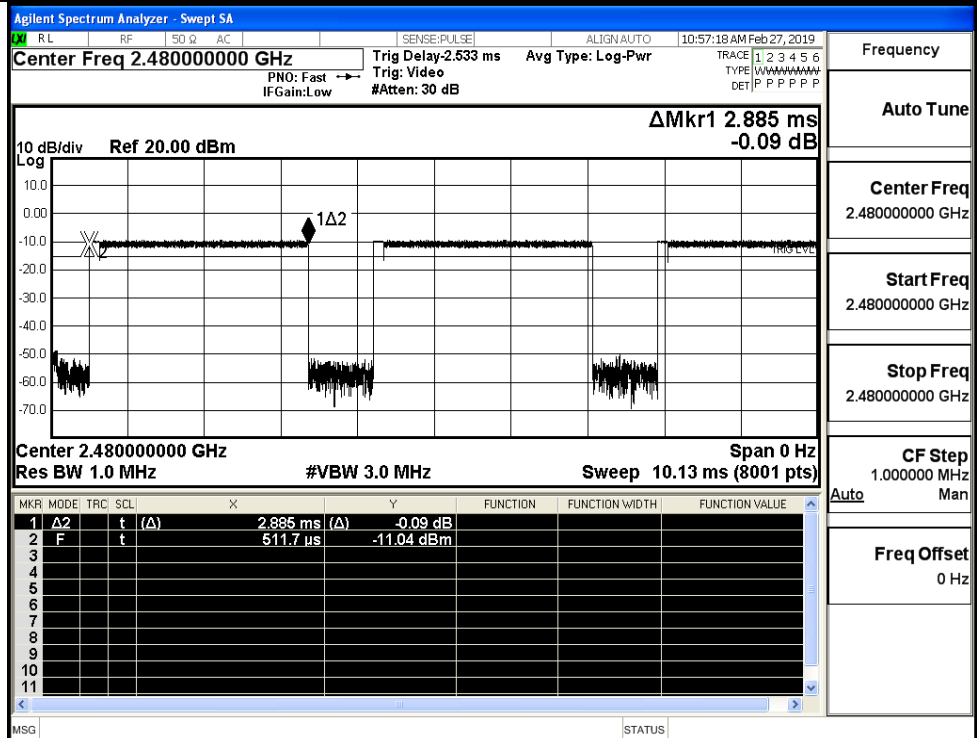
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

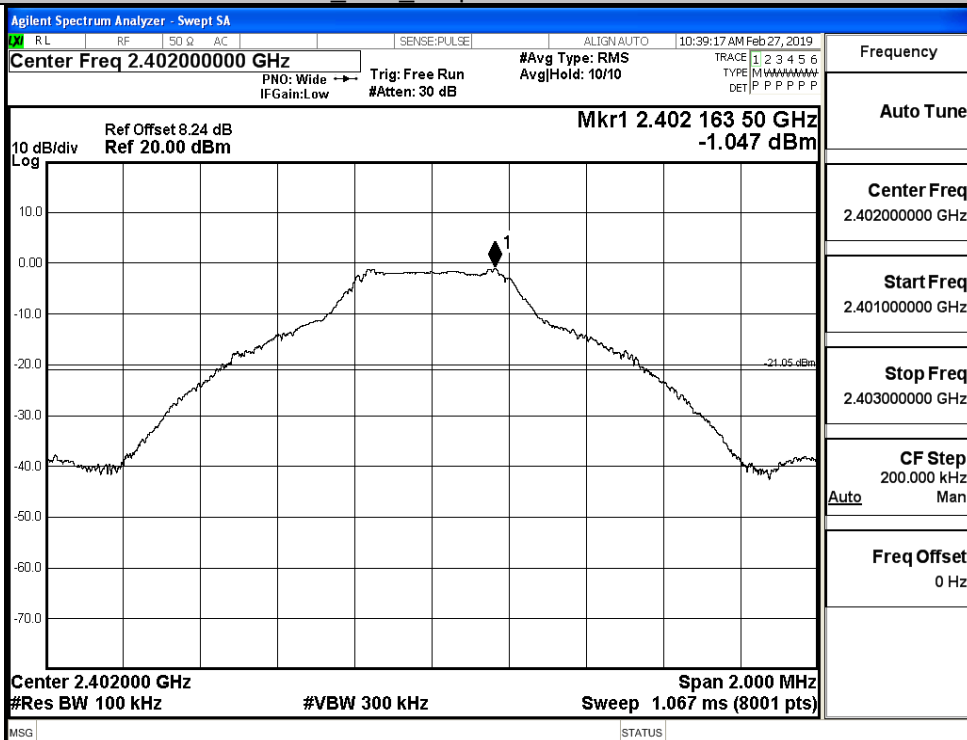


A.6 RF Conducted Spurious Emissions

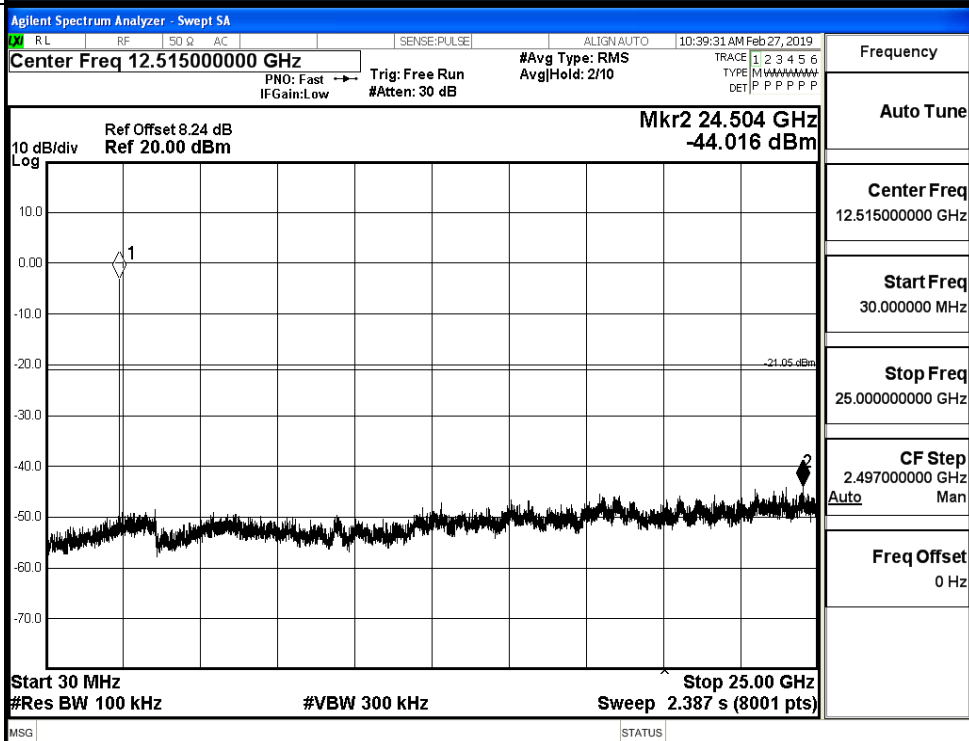
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.047	-44.016	-21.047	PASS
	MCH	0.403	-44.346	-19.597	PASS
	HCH	-0.619	-44.685	-20.619	PASS
$\pi/4$ DQPSK	LCH	-1.937	-44.449	-21.937	PASS
	MCH	-0.635	-44.653	-20.635	PASS
	HCH	-1.817	-45.099	-21.817	PASS
8DPSK	LCH	-2.366	-44.327	-22.366	PASS
	MCH	-0.732	-44.772	-20.732	PASS
	HCH	-1.644	-44.225	-21.644	PASS

GFSK LCH Graphs

Pref

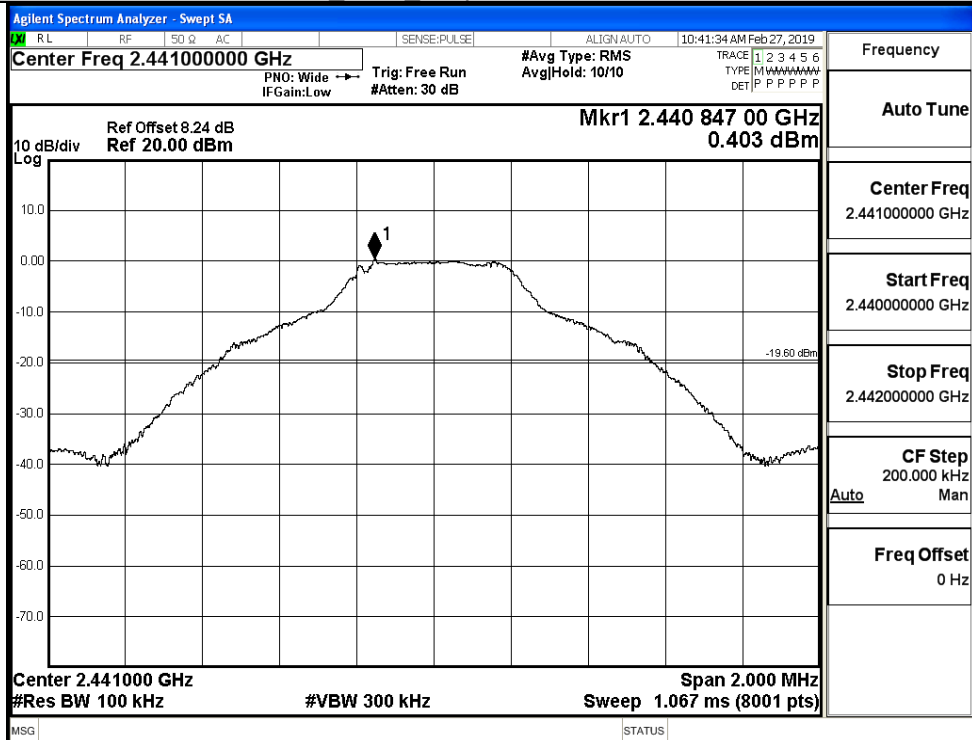


Puw

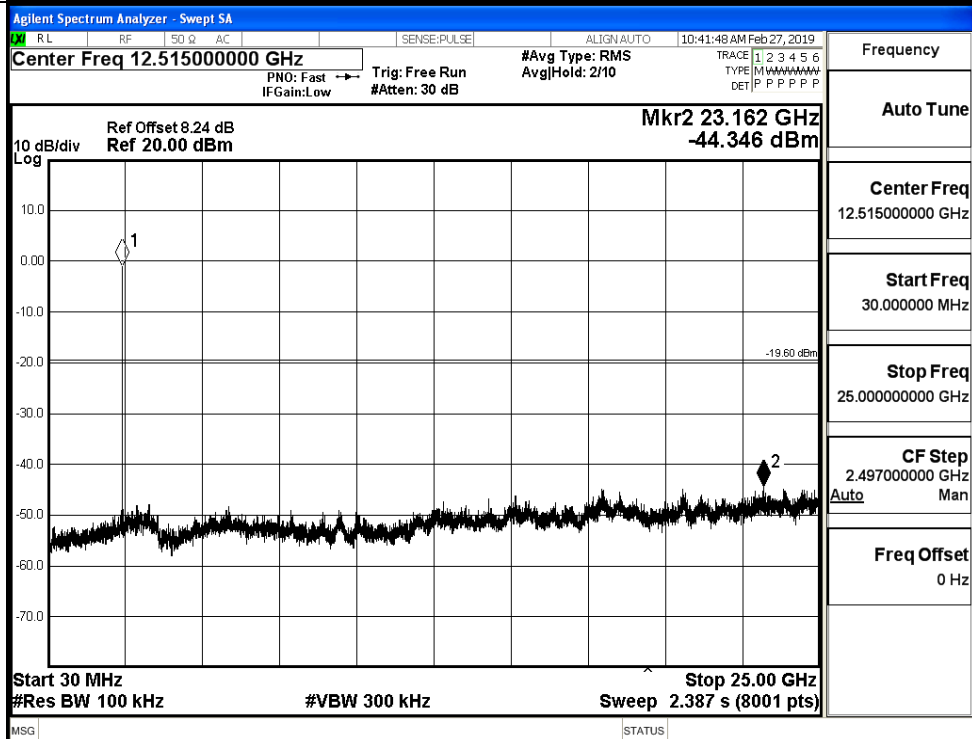


GFSK_MCH_Graphs

Pref

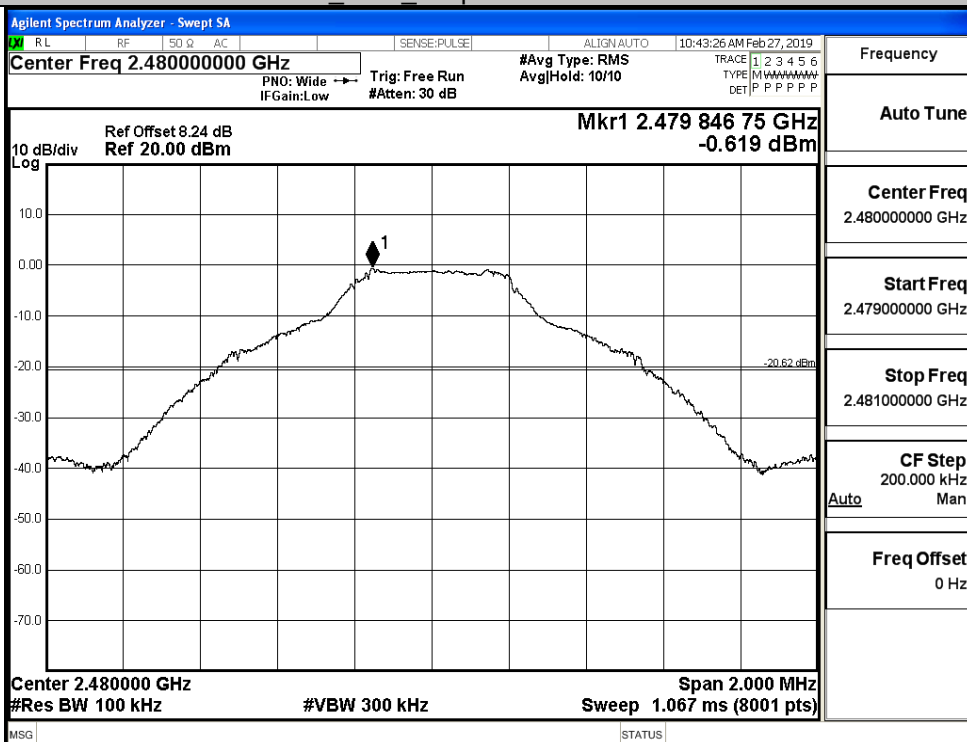


Puw

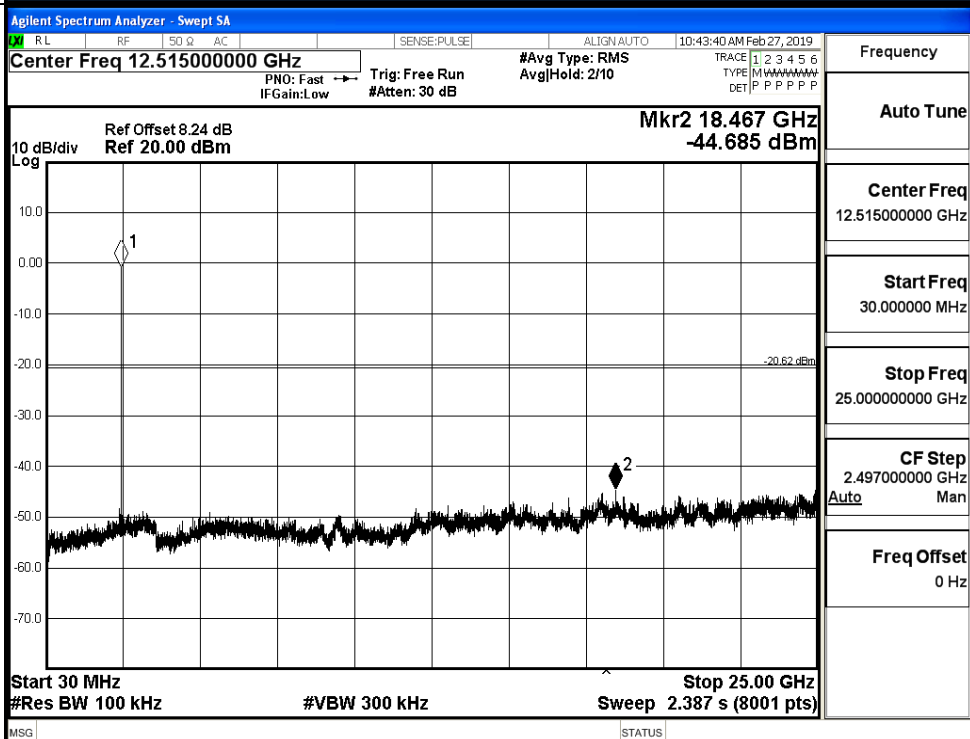


GFSK_HCH_Graphs

Pref

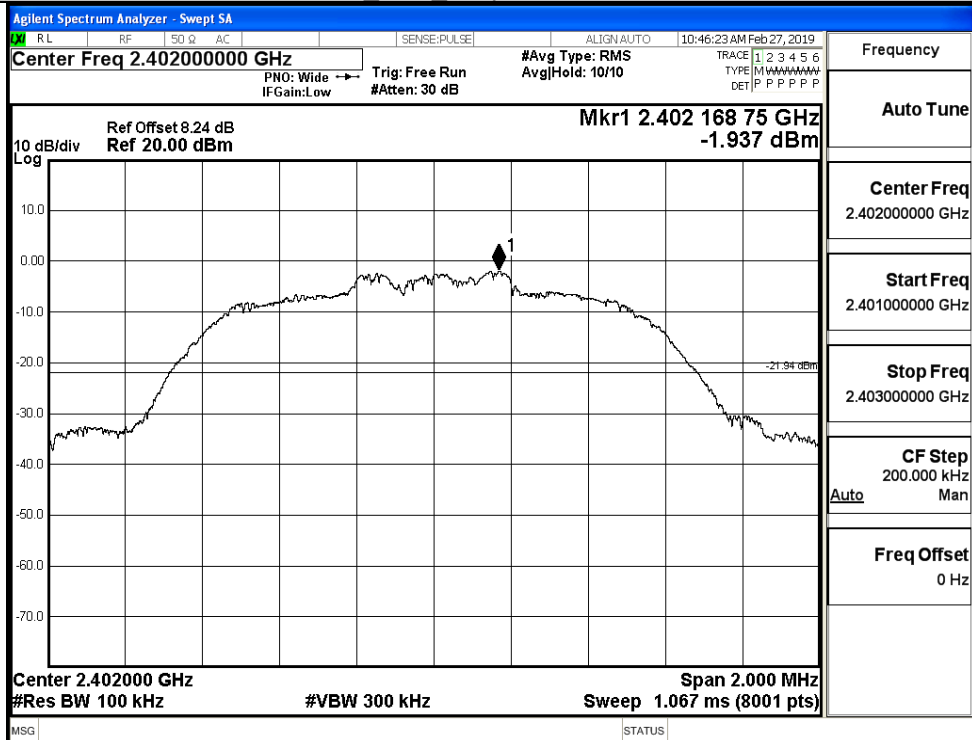


Puw

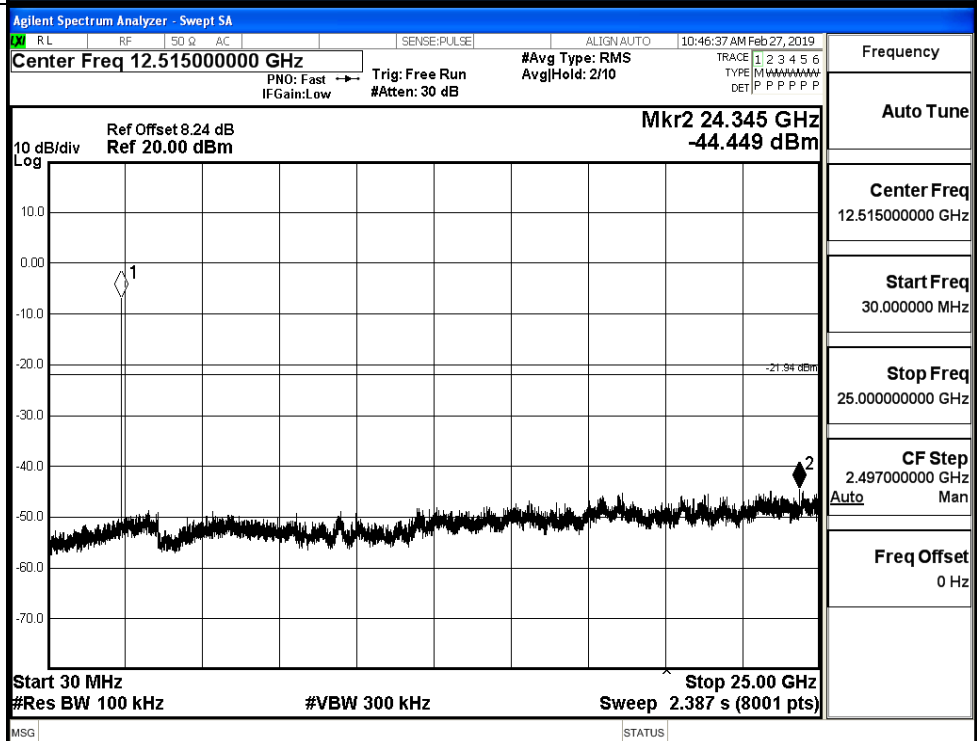


$\pi/4$ DQPSK LCH_Graphs

Pref

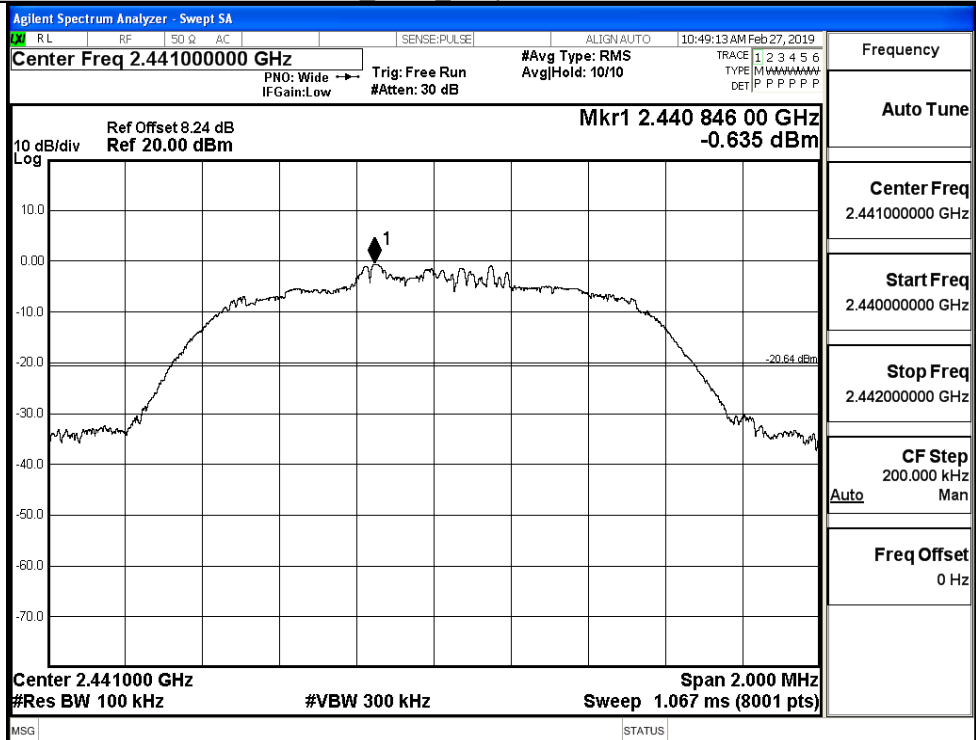


Puw

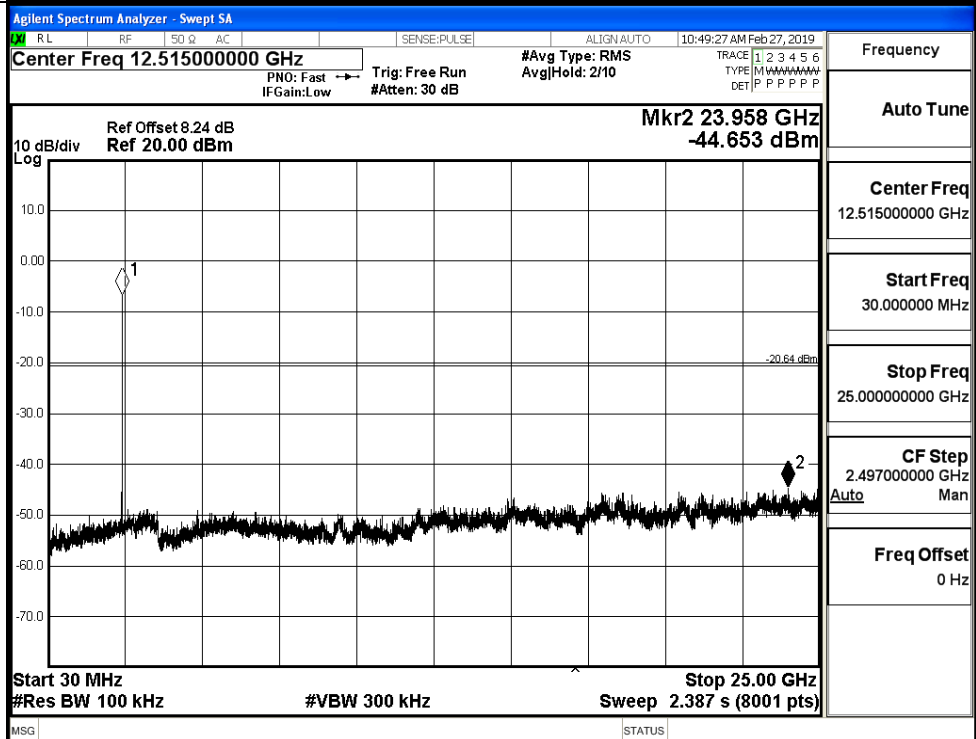


π /4DQPSK_MCH_Graphs

Pref

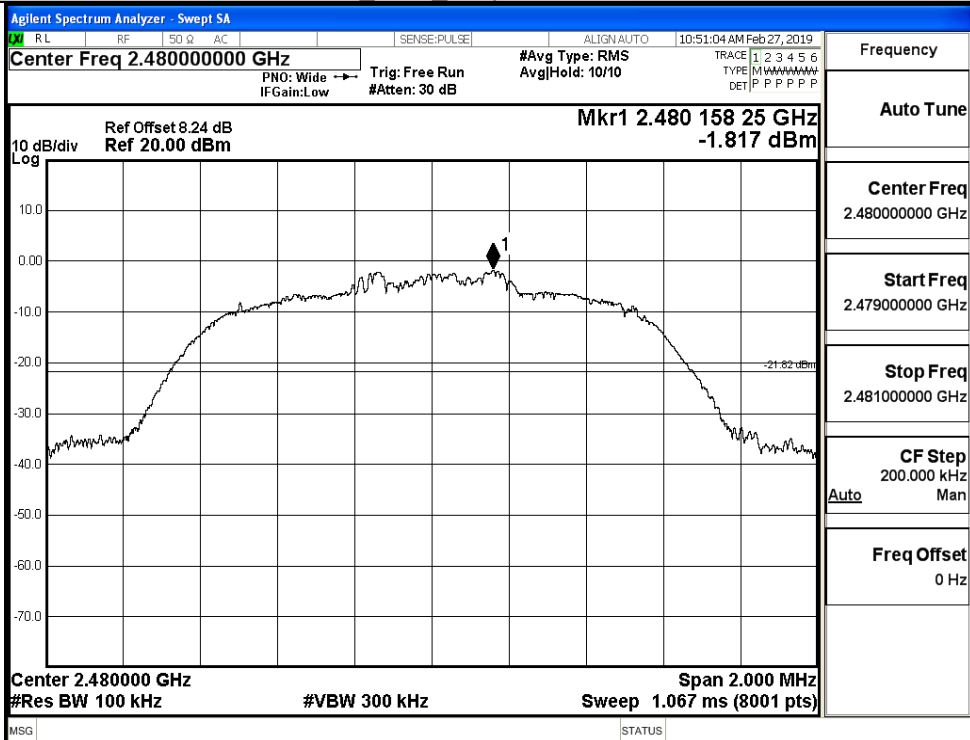


Puw

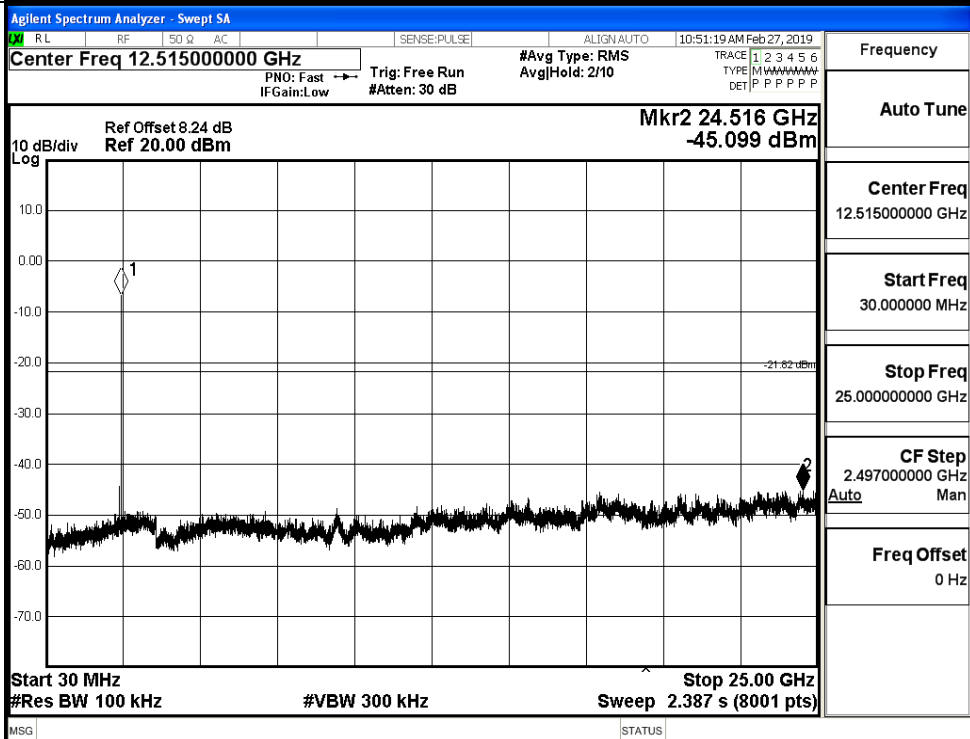


π /4DQPSK_HCH_Graphs

Pref

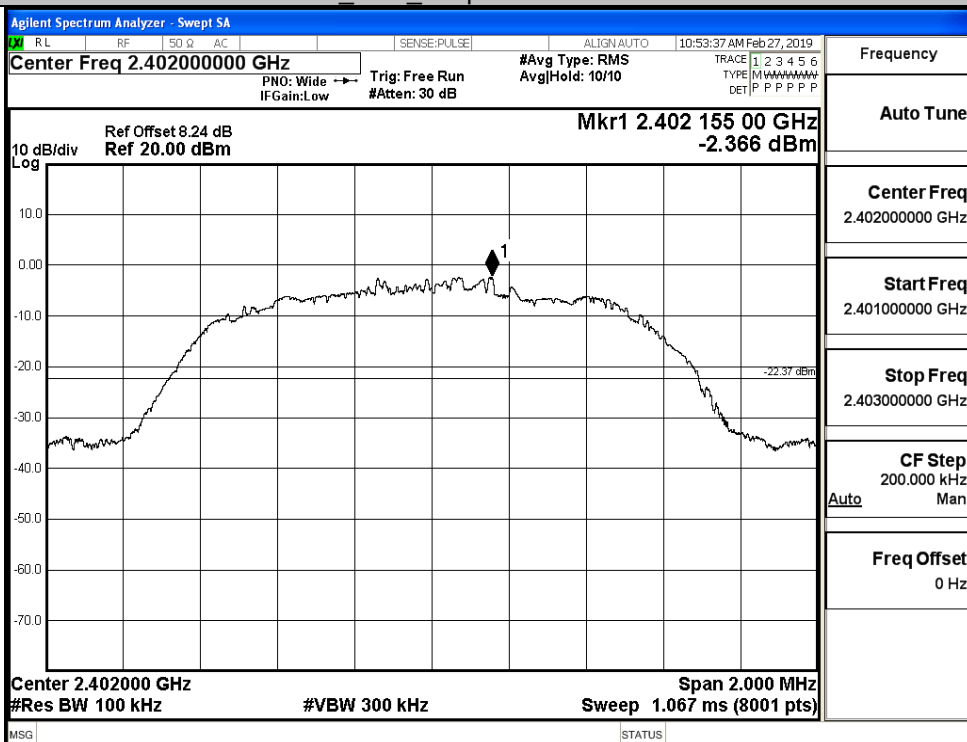


Puw

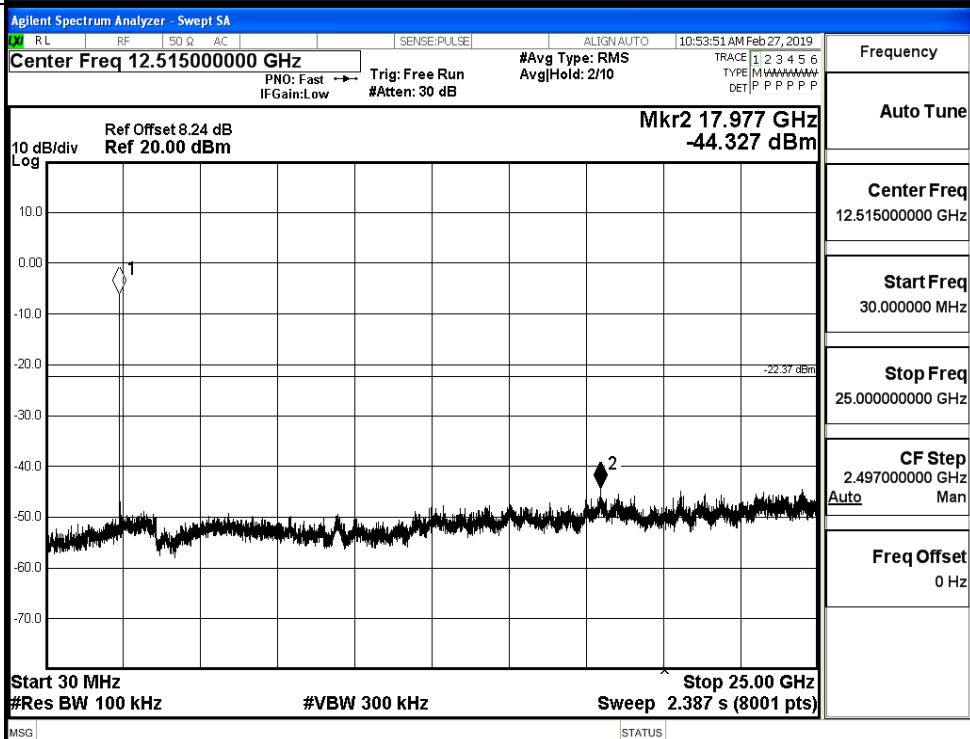


8DPSK_LCH_Graphs

Pref

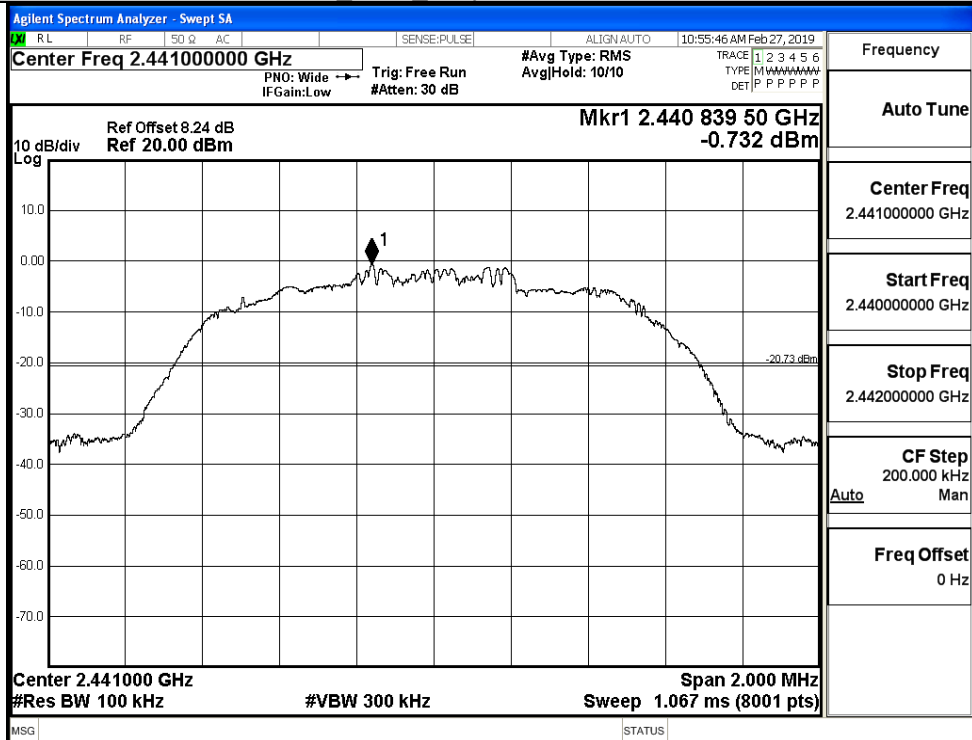


Puw

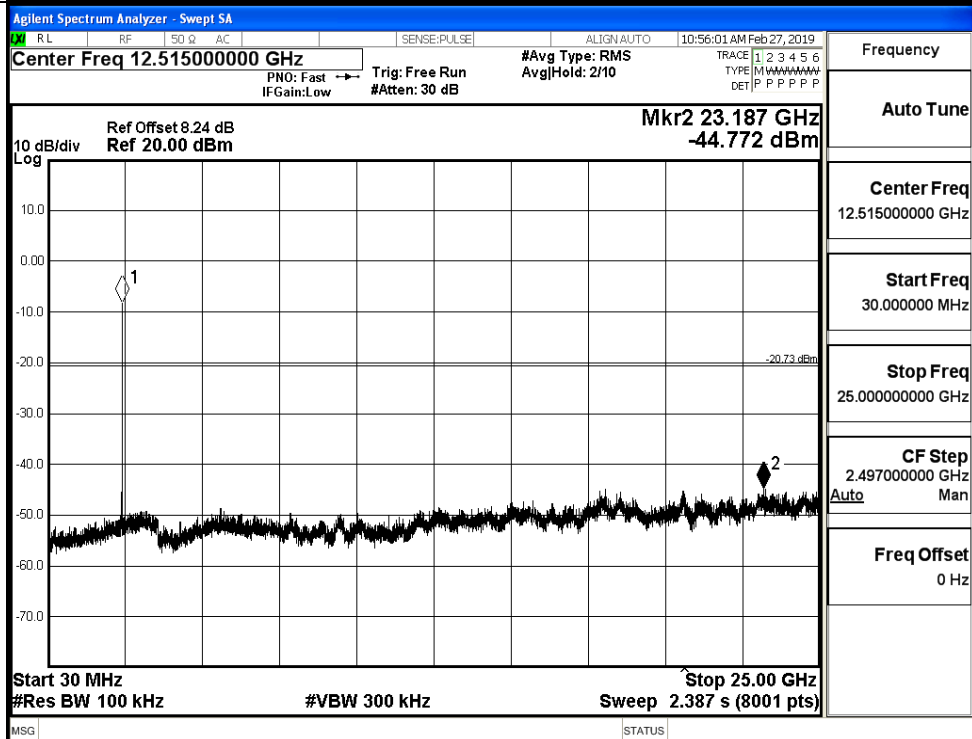


8DPSK_MCH_Graphs

Pref

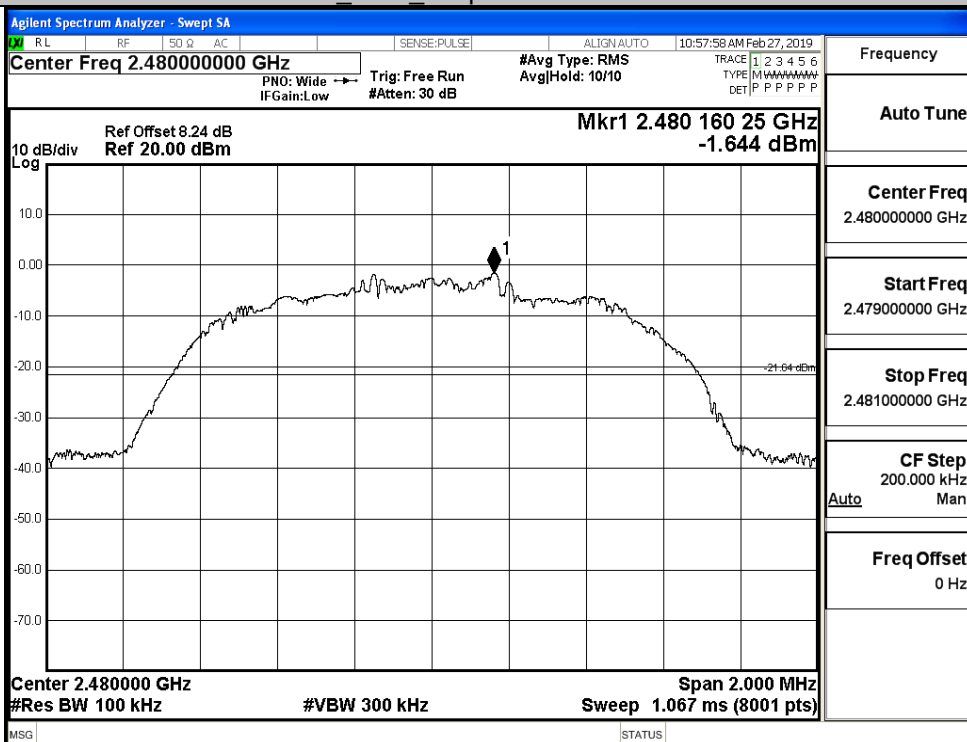


Puw

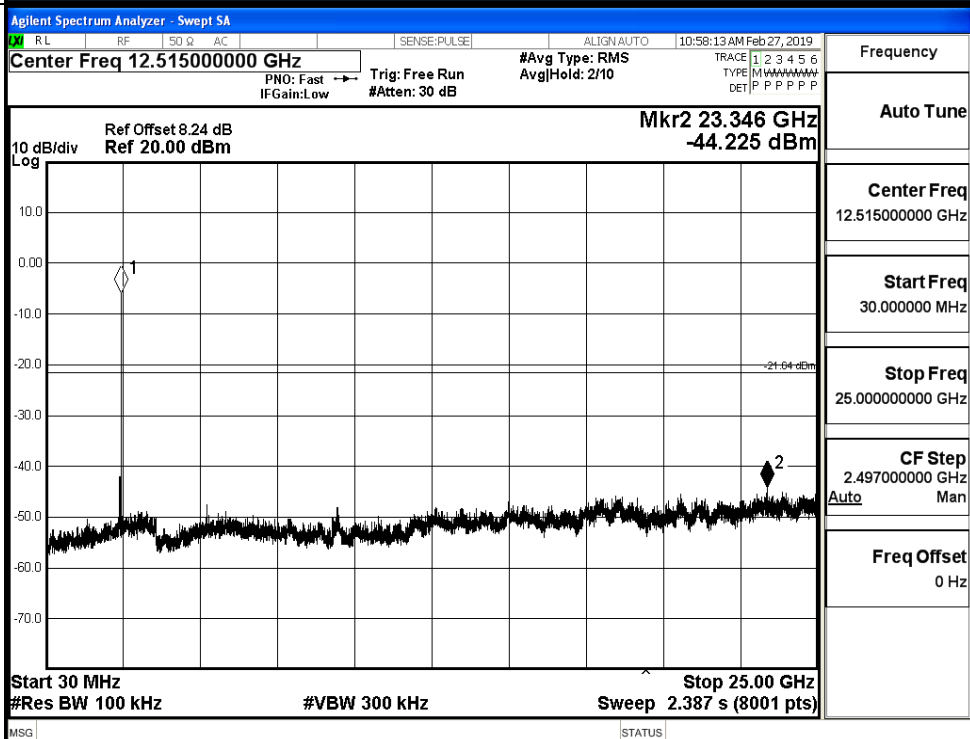


8DPSK_HCH_Graphs

Pref



Puw

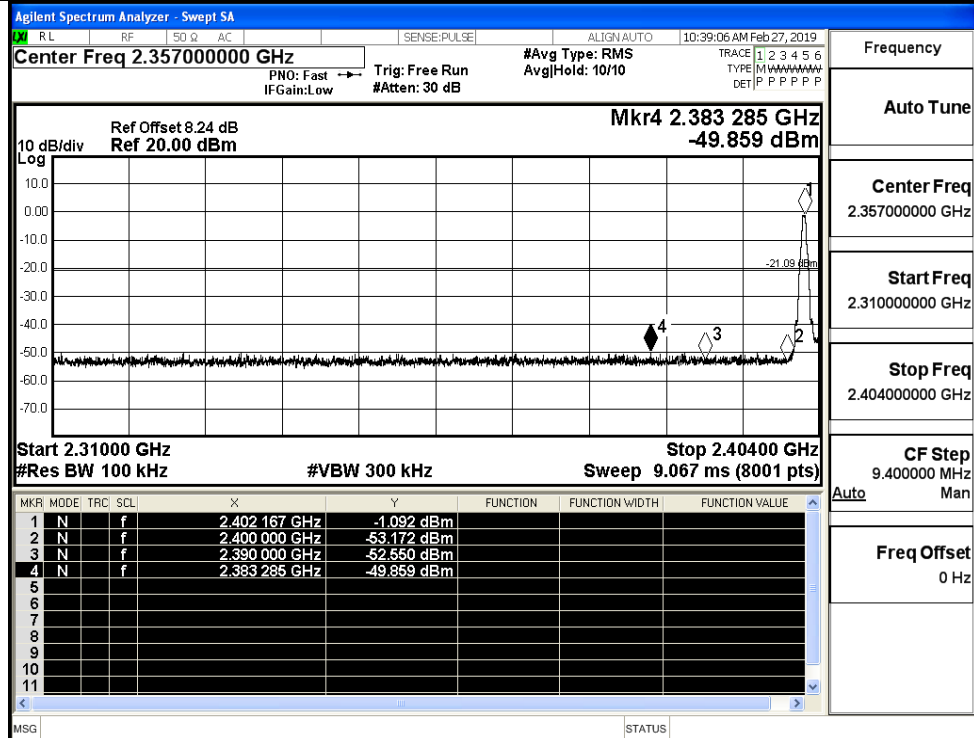


A.7 Band-edge for RF Conducted Emissions

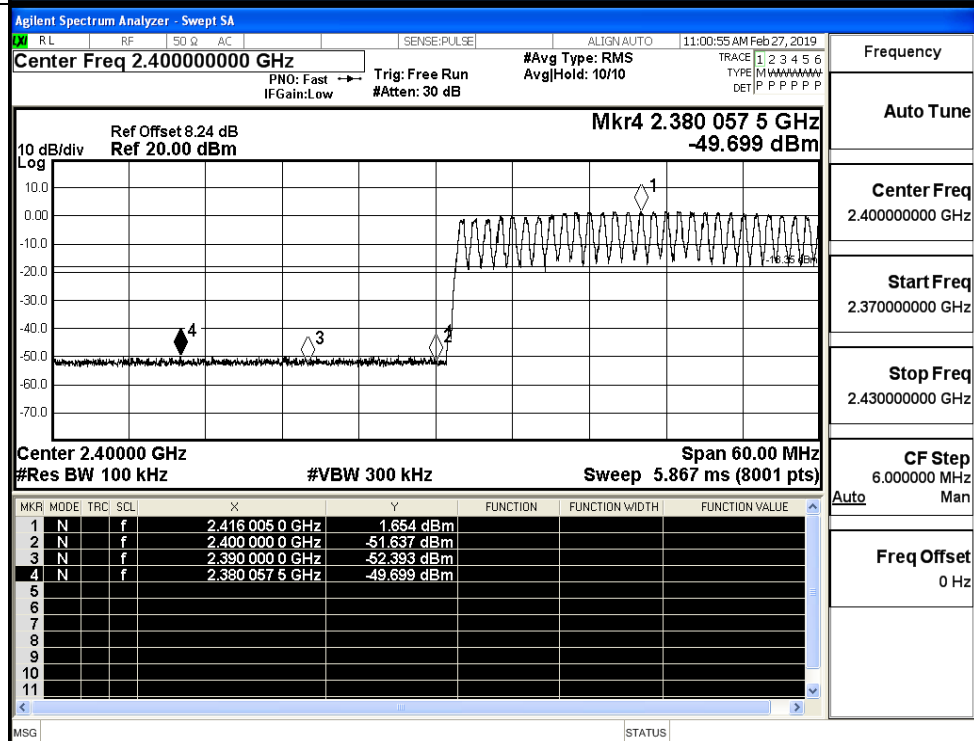
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.092	Off	-49.859	-21.09	PASS
			1.654	On	-49.699	-18.35	PASS
	HCH	2480	-0.466	Off	-49.495	-20.47	PASS
			1.801	On	-49.189	-18.2	PASS
$\pi/4$ DQPSK	LCH	2402	-1.680	Off	-49.723	-21.68	PASS
			0.428	On	-49.281	-19.57	PASS
	HCH	2480	-2.008	Off	-49.970	-22.01	PASS
			0.153	On	-49.124	-19.85	PASS
8DPSK	LCH	2402	-2.206	Off	-50.137	-22.21	PASS
			0.034	On	-49.144	-19.97	PASS
	HCH	2480	-1.785	Off	-49.029	-21.79	PASS
			0.743	On	-49.171	-19.26	PASS

Test Graphs

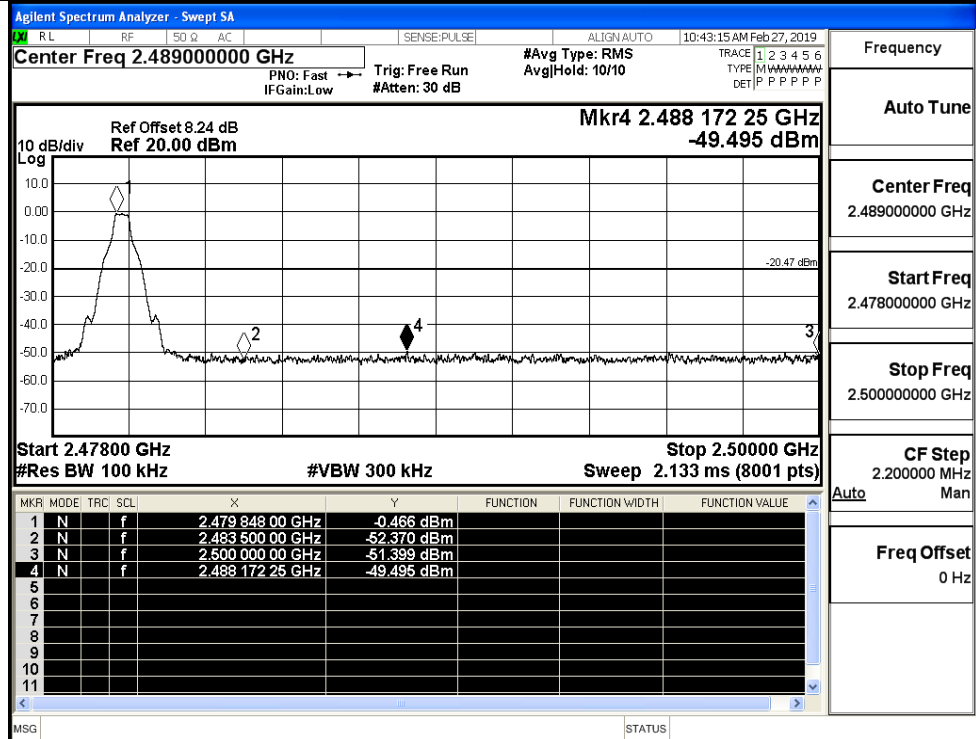
GFSK/LCH/No Hop



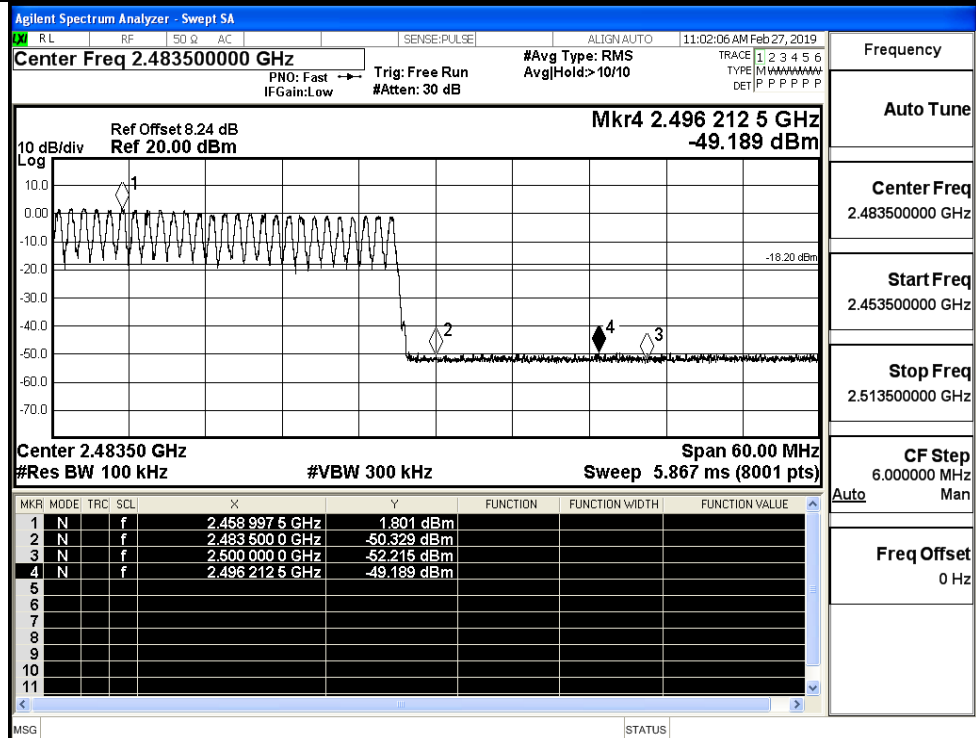
GFSK/LCH/Hop



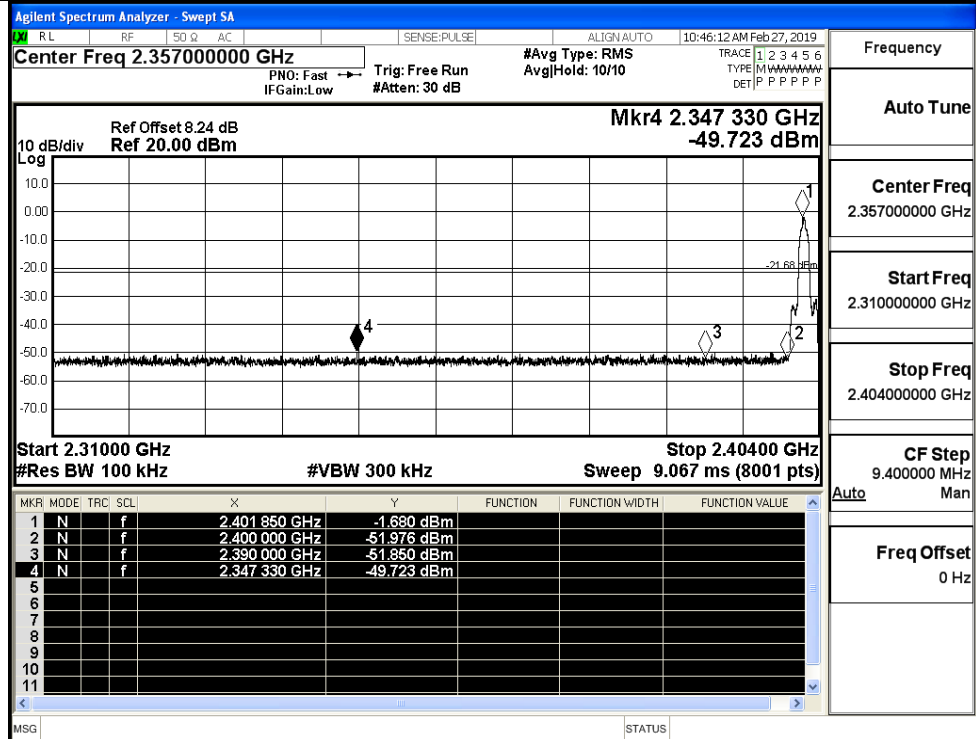
GFSK/HCH/No Hop



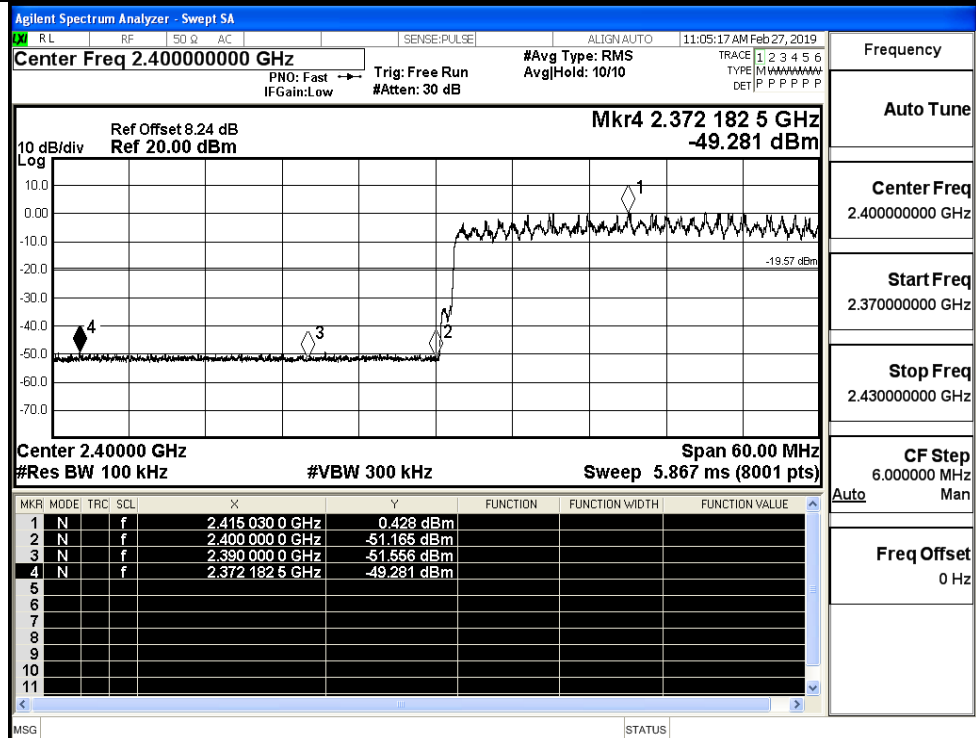
GFSK/HCH/Hop



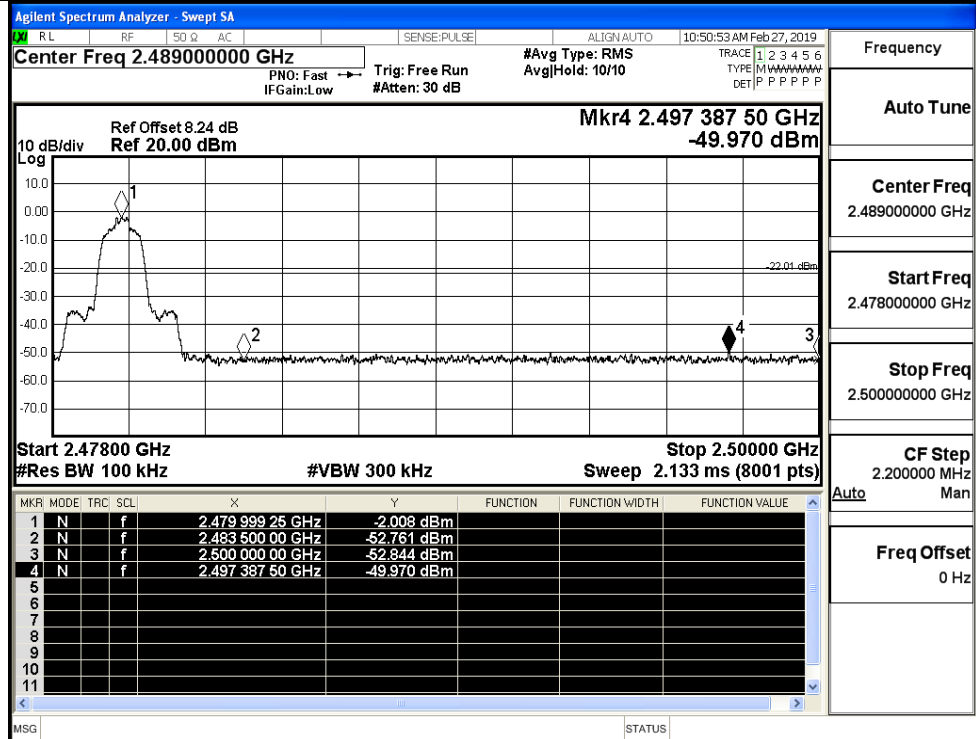
$\pi/4$ DQPSK/LCH/No
Hop



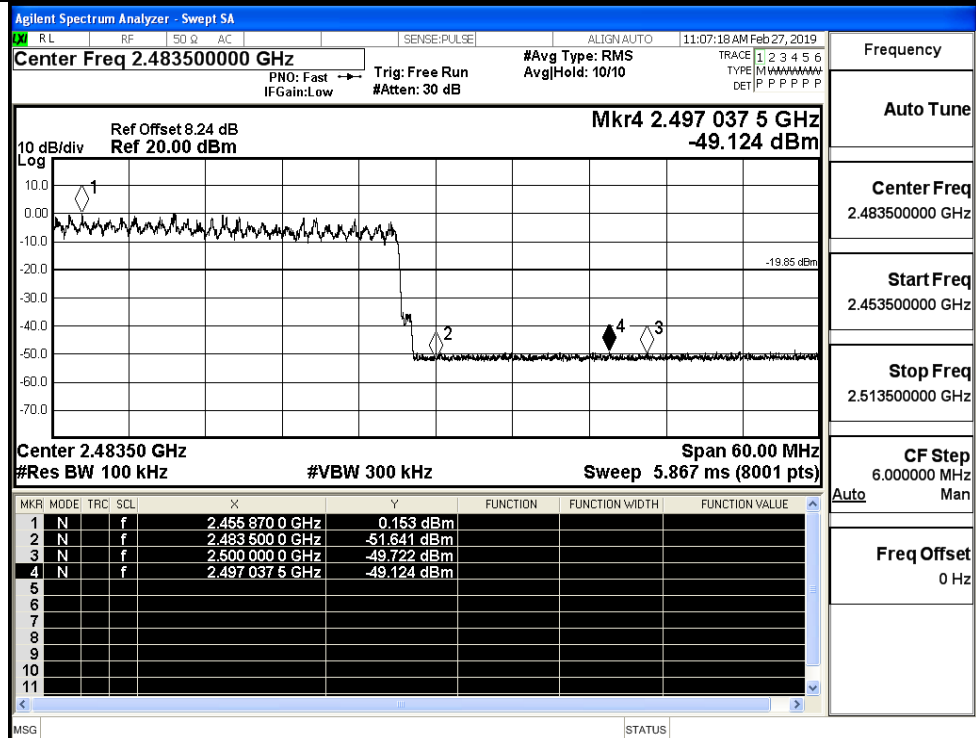
$\pi/4$ DQPSK/LCH/Hop



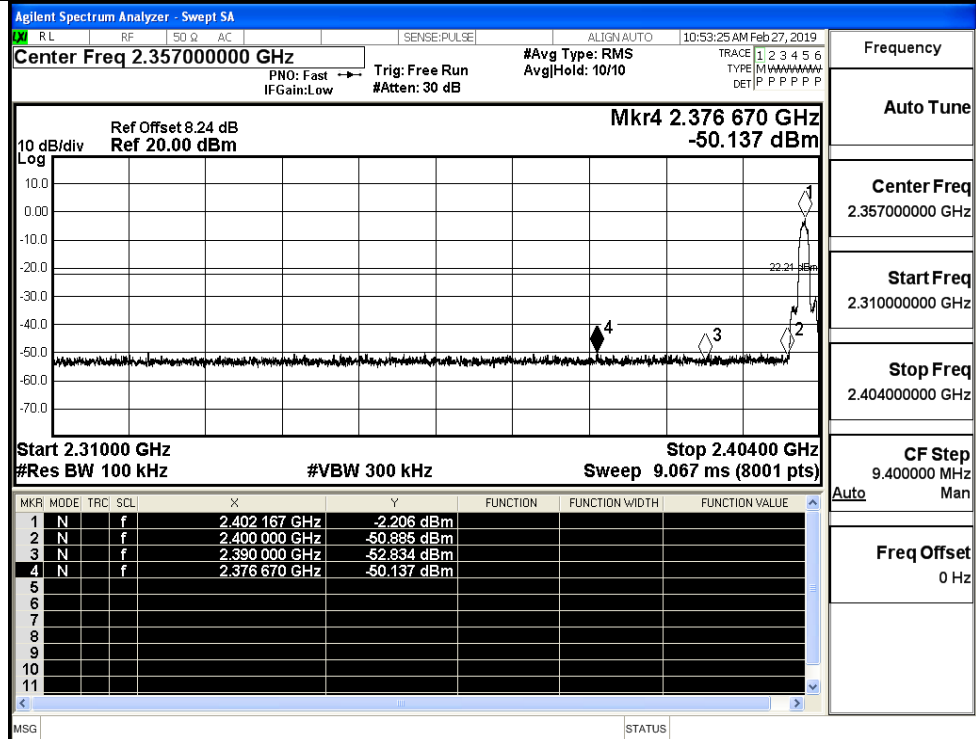
$\pi/4$ DQPSK/HCH/No
Hop



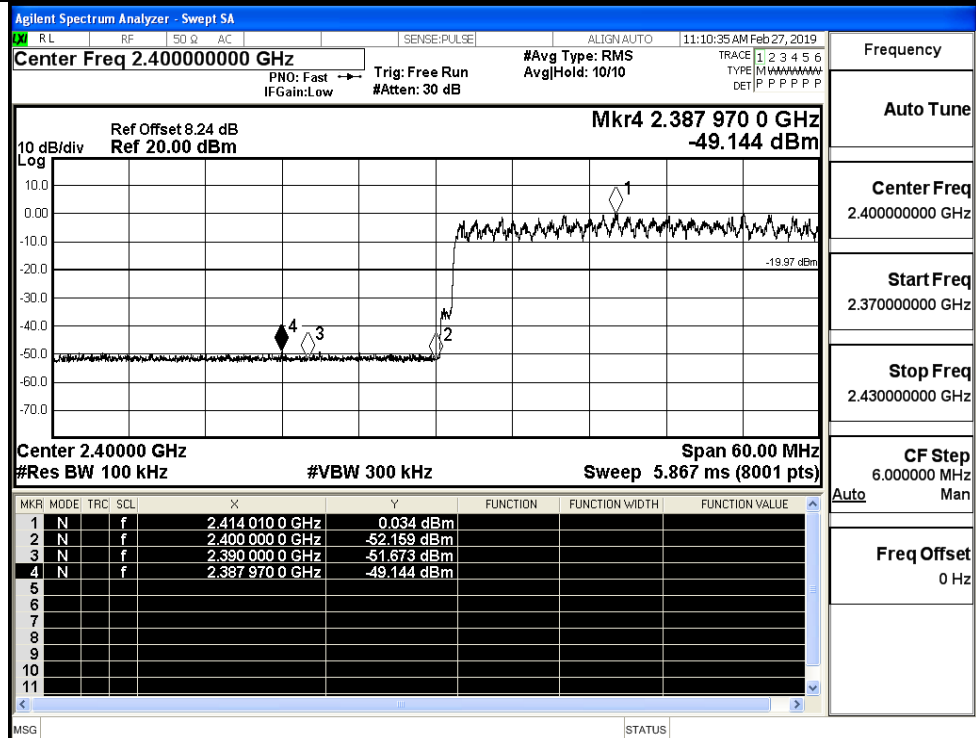
$\pi/4$ DQPSK/HCH/Hop



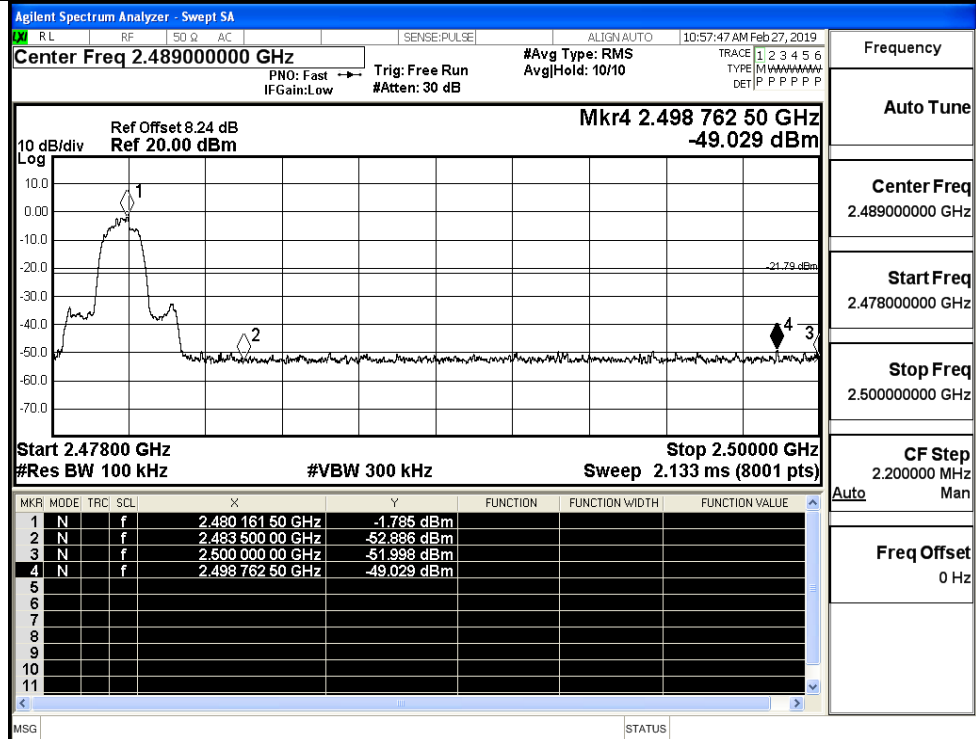
8DPSK/LCH/No Hop



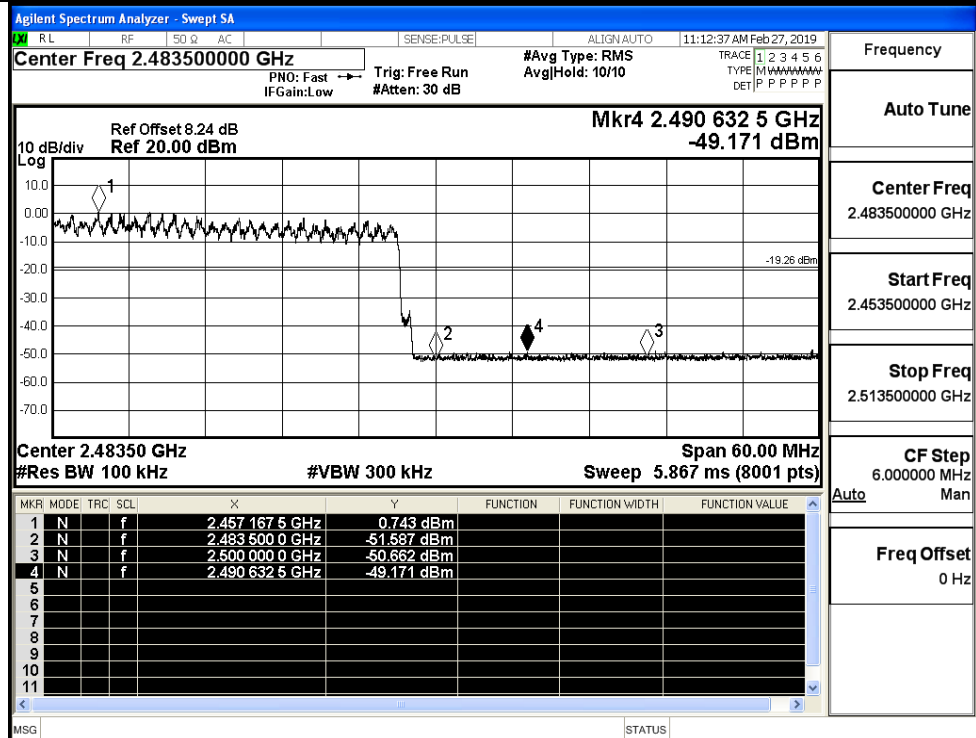
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



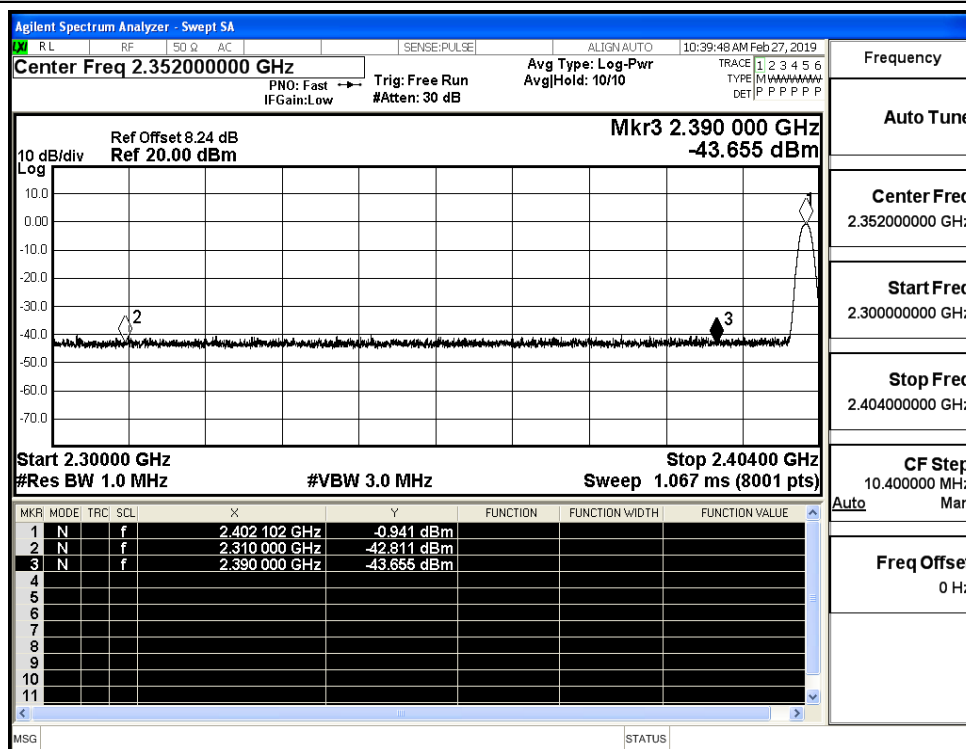
8DPSK/HCH/Hop



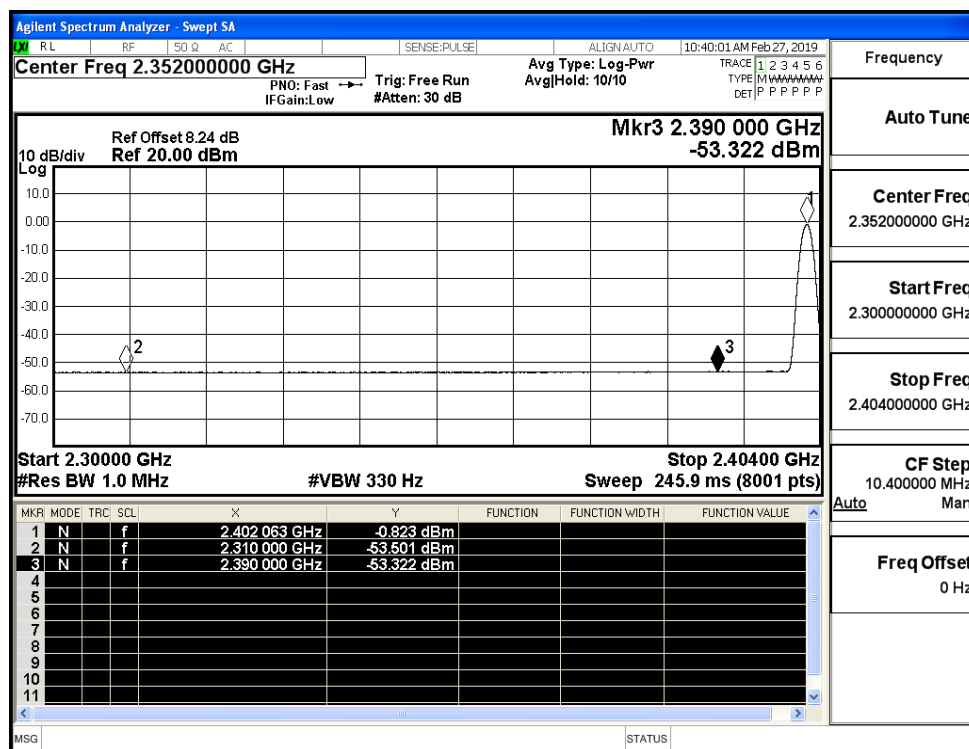
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.81	2.0	0	52.45	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	41.76	AV	54	PASS
	Off	2390.0	-43.66	2.0	0	51.60	PEAK	74	PASS
	Off	2390.0	-53.32	2.0	0	41.94	AV	54	PASS
	Off	2483.5	-43.35	2.0	0	51.91	PEAK	74	PASS
	Off	2483.5	-52.94	2.0	0	42.31	AV	54	PASS
	Off	2500.0	-43.18	2.0	0	52.07	PEAK	74	PASS
	Off	2500.0	-52.94	2.0	0	42.32	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.99	2.0	0	51.27	PEAK	74	PASS
	Off	2310.0	-53.51	2.0	0	41.75	AV	54	PASS
	Off	2390.0	-44.21	2.0	0	51.05	PEAK	74	PASS
	Off	2390.0	-53.16	2.0	0	42.10	AV	54	PASS
	Off	2483.5	-42.08	2.0	0	53.18	PEAK	74	PASS
	Off	2483.5	-52.89	2.0	0	42.37	AV	54	PASS
	Off	2500.0	-41.82	2.0	0	53.44	PEAK	74	PASS
	Off	2500.0	-52.77	2.0	0	42.49	AV	54	PASS
8DPSK	Off	2310.0	-44.40	2.0	0	50.86	PEAK	74	PASS
	Off	2310.0	-53.33	2.0	0	41.93	AV	54	PASS
	Off	2390.0	-41.36	2.0	0	53.90	PEAK	74	PASS
	Off	2390.0	-53.38	2.0	0	41.88	AV	54	PASS
	Off	2483.5	-42.95	2.0	0	52.31	PEAK	74	PASS
	Off	2483.5	-53.00	2.0	0	42.26	AV	54	PASS
	Off	2500.0	-40.75	2.0	0	54.51	PEAK	74	PASS
	Off	2500.0	-52.83	2.0	0	42.43	AV	54	PASS

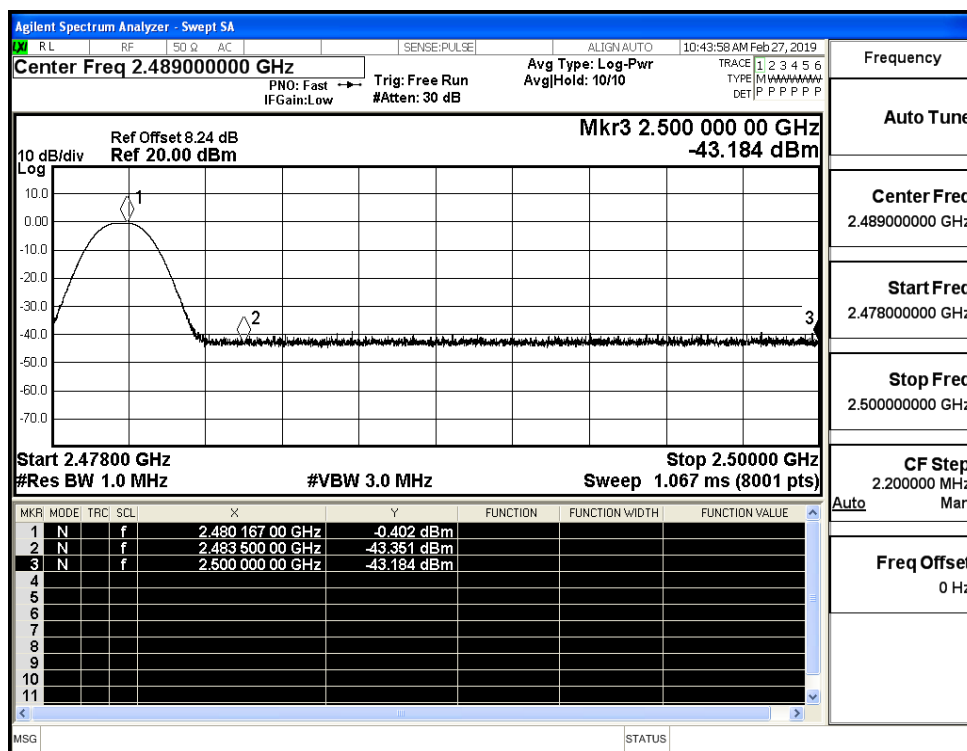
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



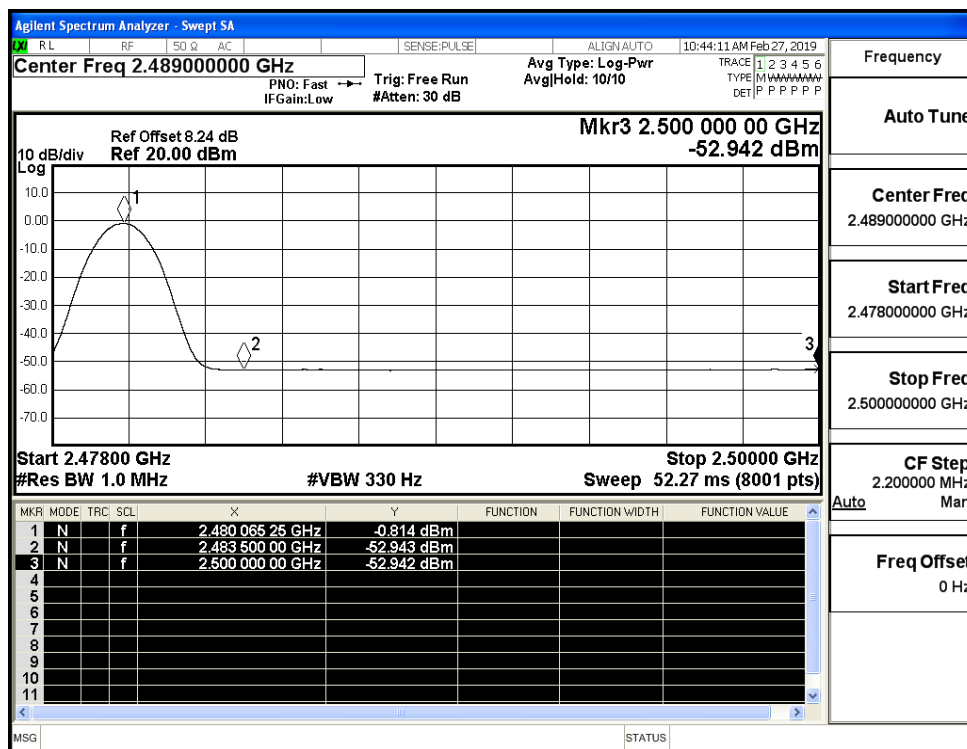
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

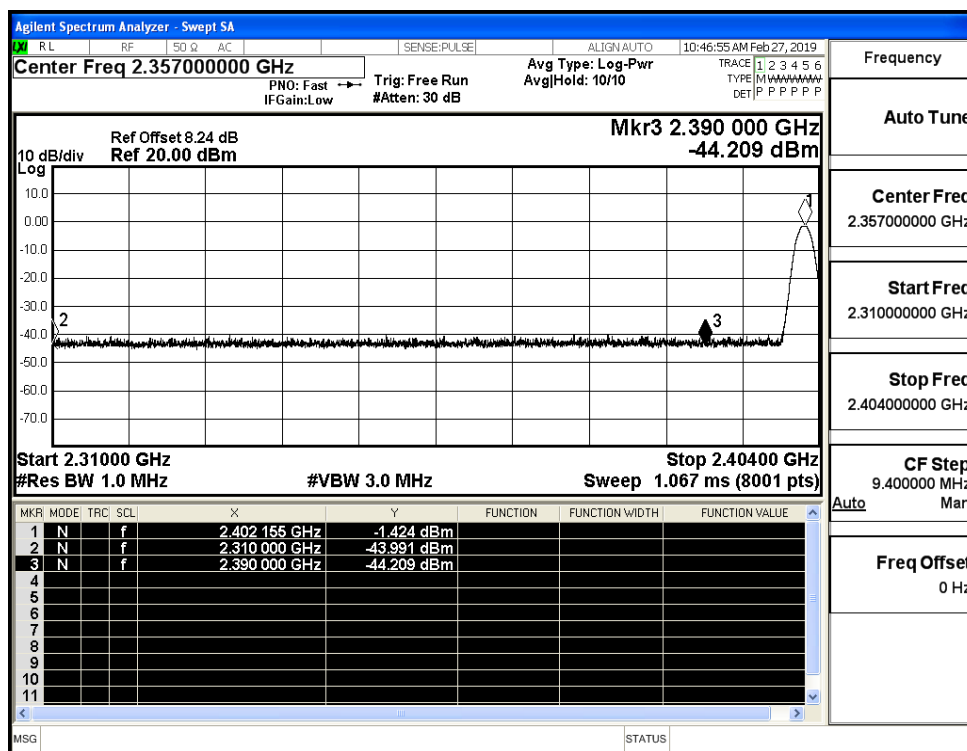
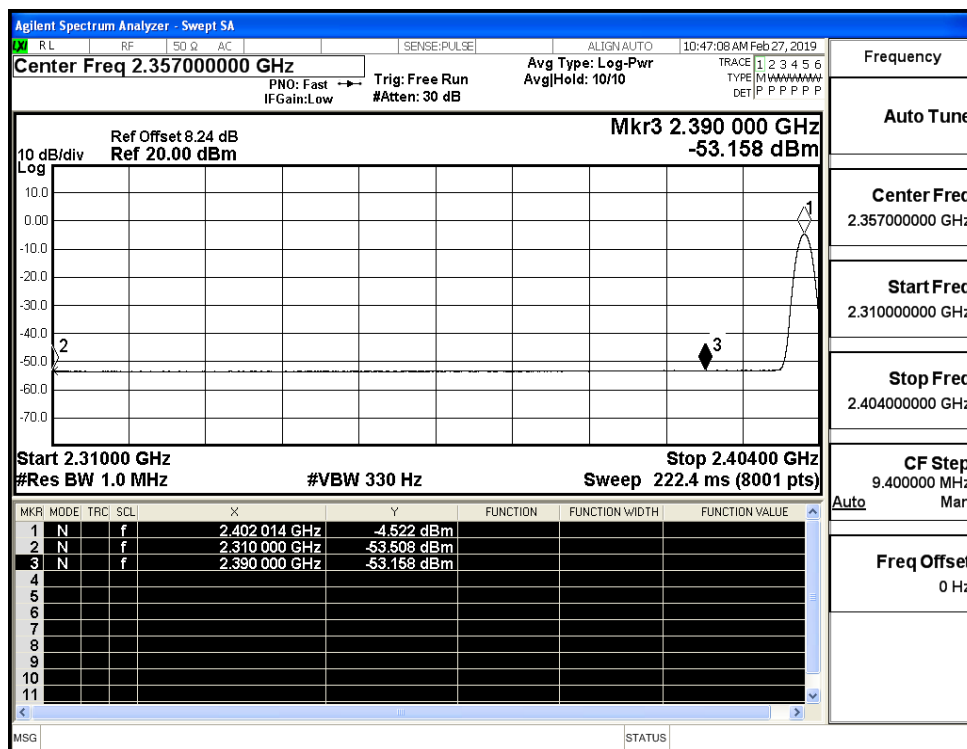


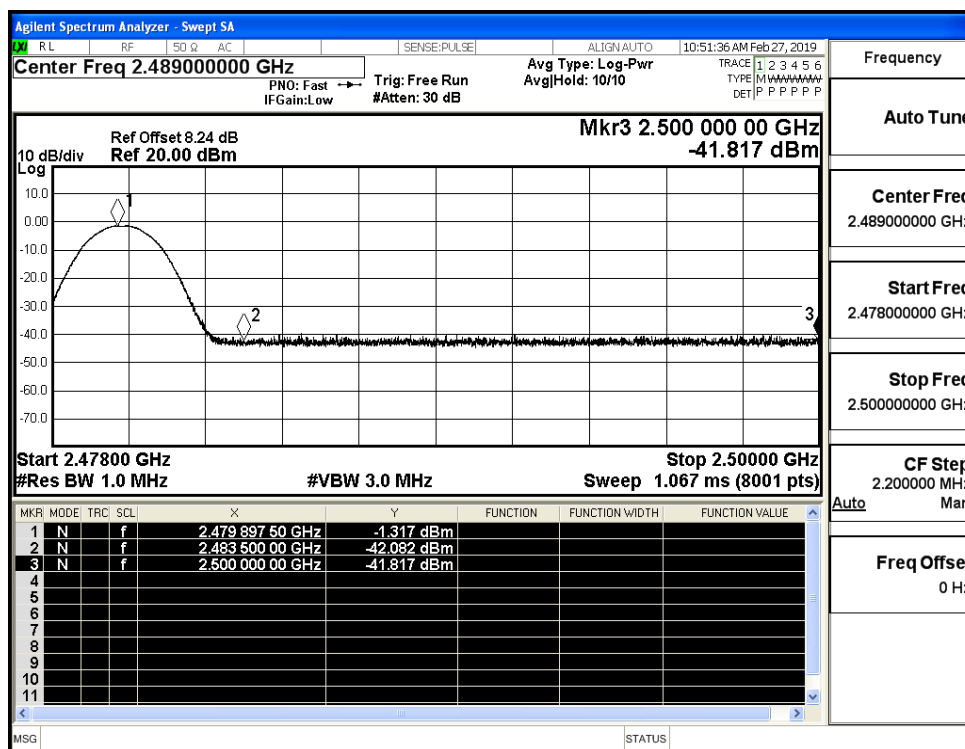
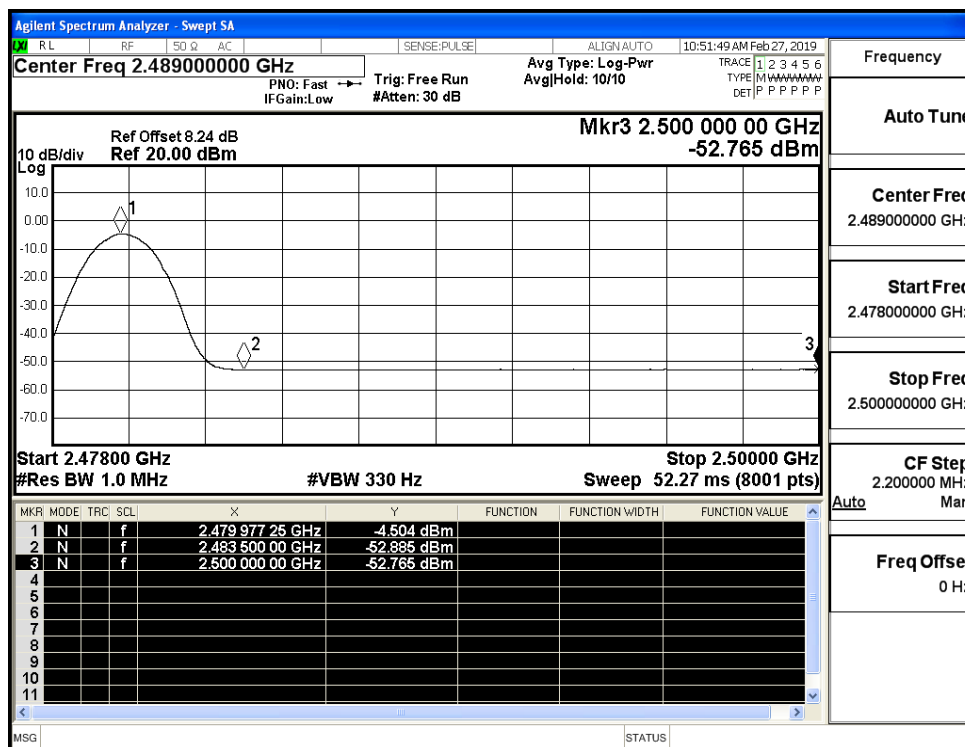
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



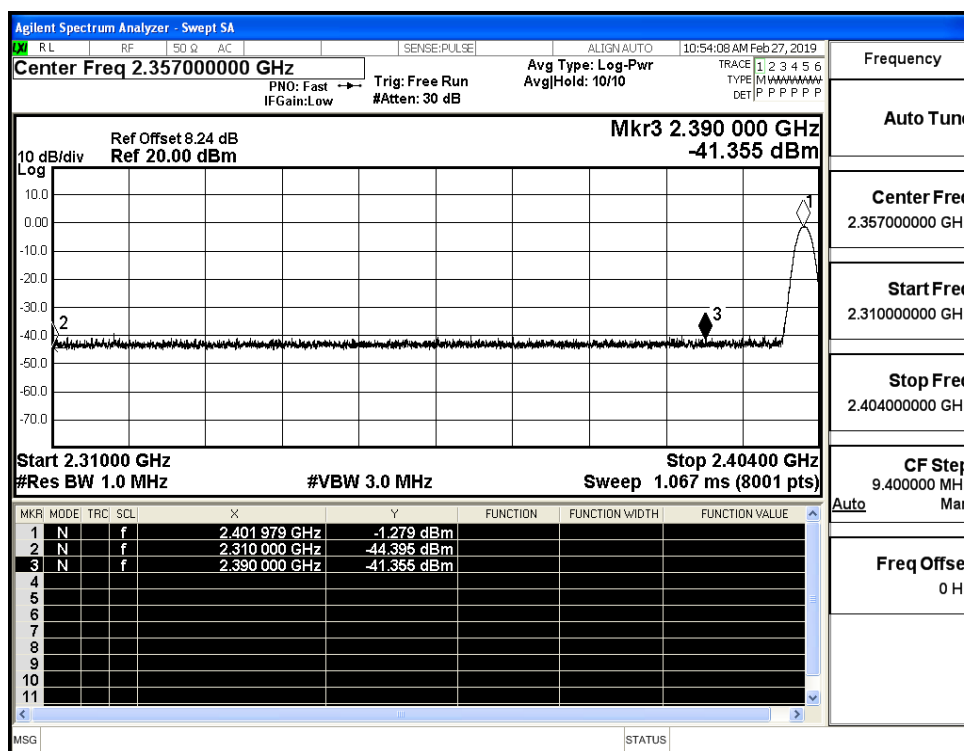
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



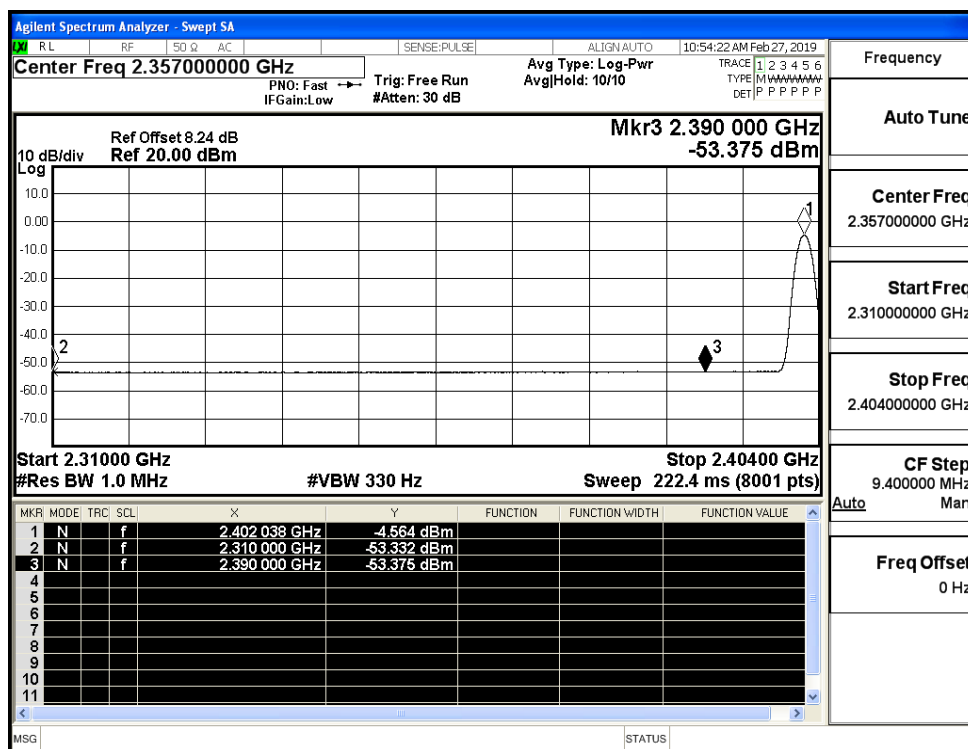
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

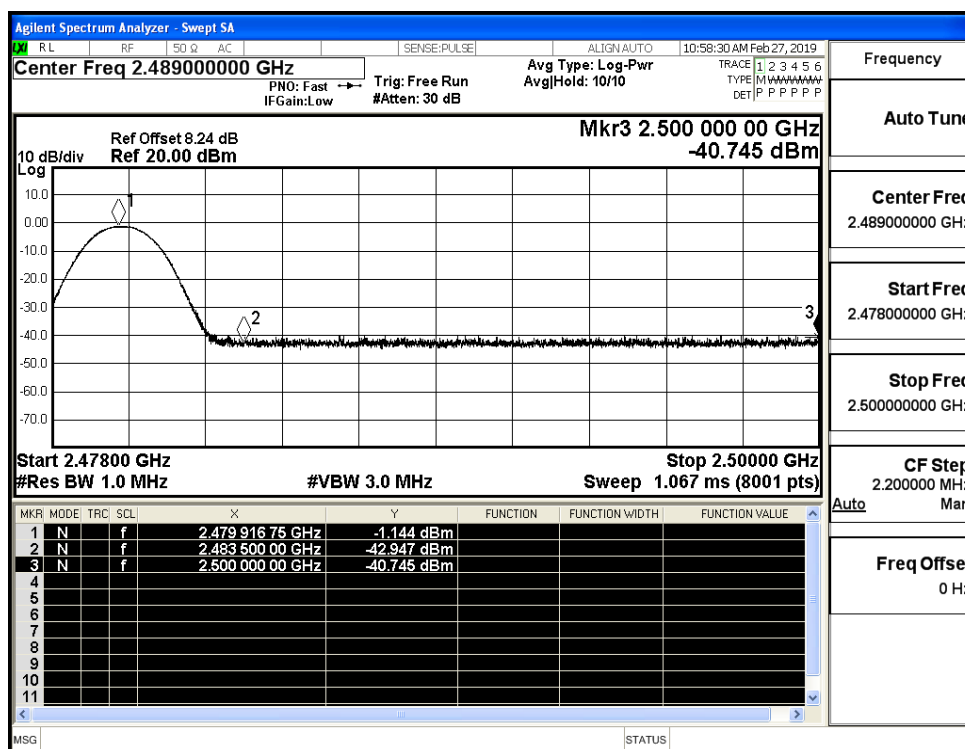
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

