

Appendix A

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

Product Name: Odyssey Bluetooth® Headphones

Trade Mark: Gemline

Test Model: 100252-001B

Environmental Conditions

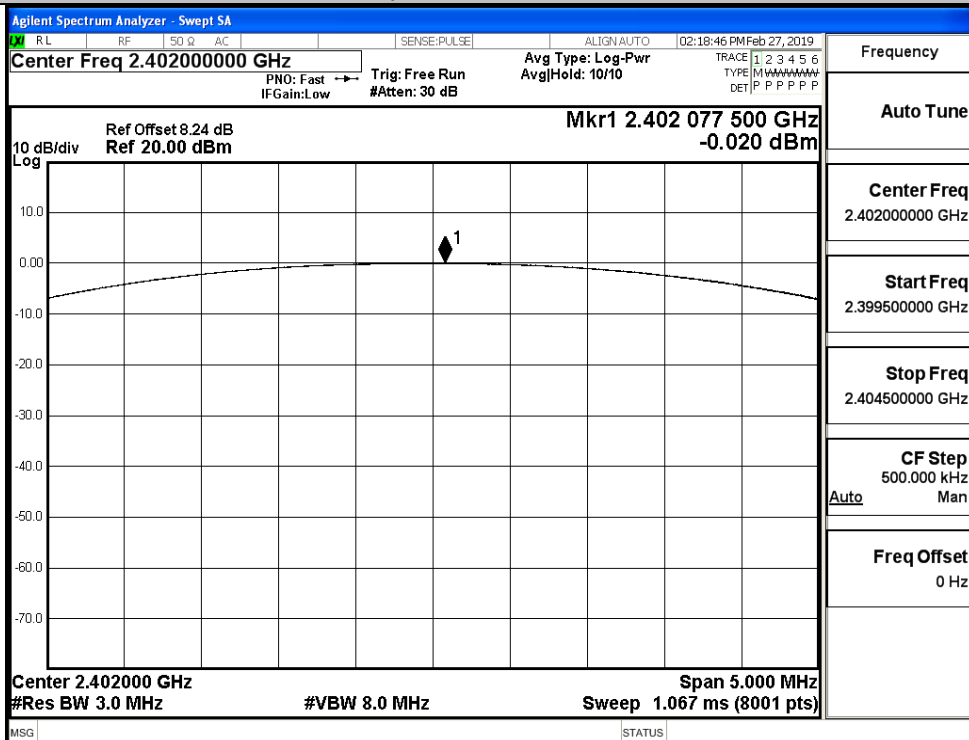
Temperature:	22.8 ° C
Relative Humidity:	53.3%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.Zeng
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

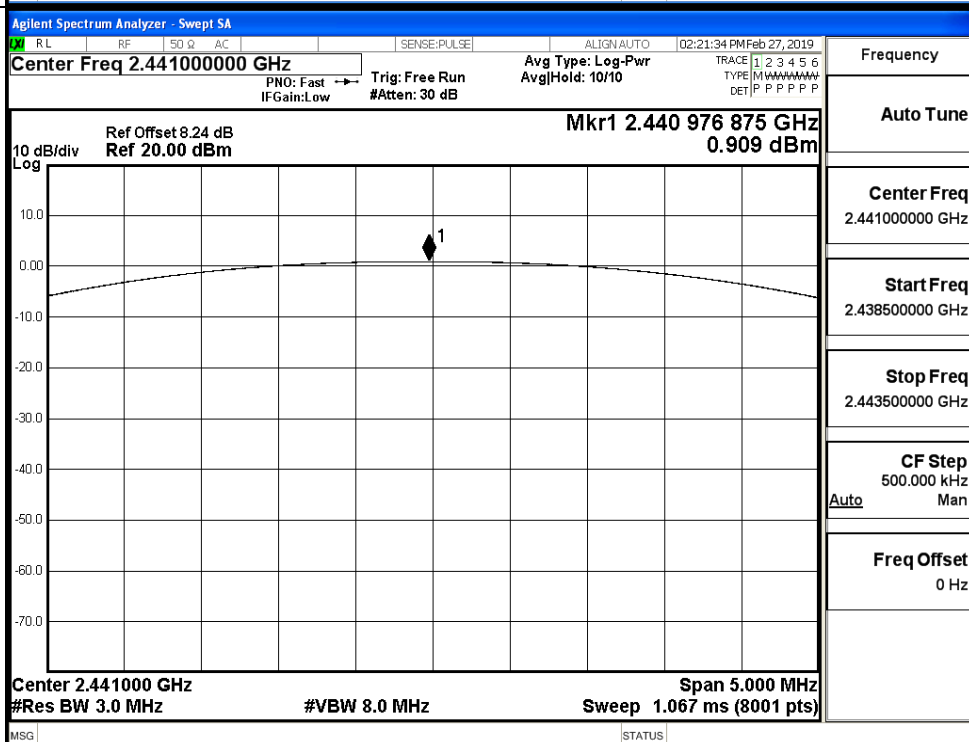
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.020	21	PASS
	MCH	0.909	21	PASS
	HCH	-0.414	21	PASS
$\pi/4$ DQPSK	LCH	-0.598	21	PASS
	MCH	0.361	21	PASS
	HCH	-1.062	21	PASS
8DPSK	LCH	-0.498	21	PASS
	MCH	0.456	21	PASS
	HCH	-0.915	21	PASS

Test Graphs

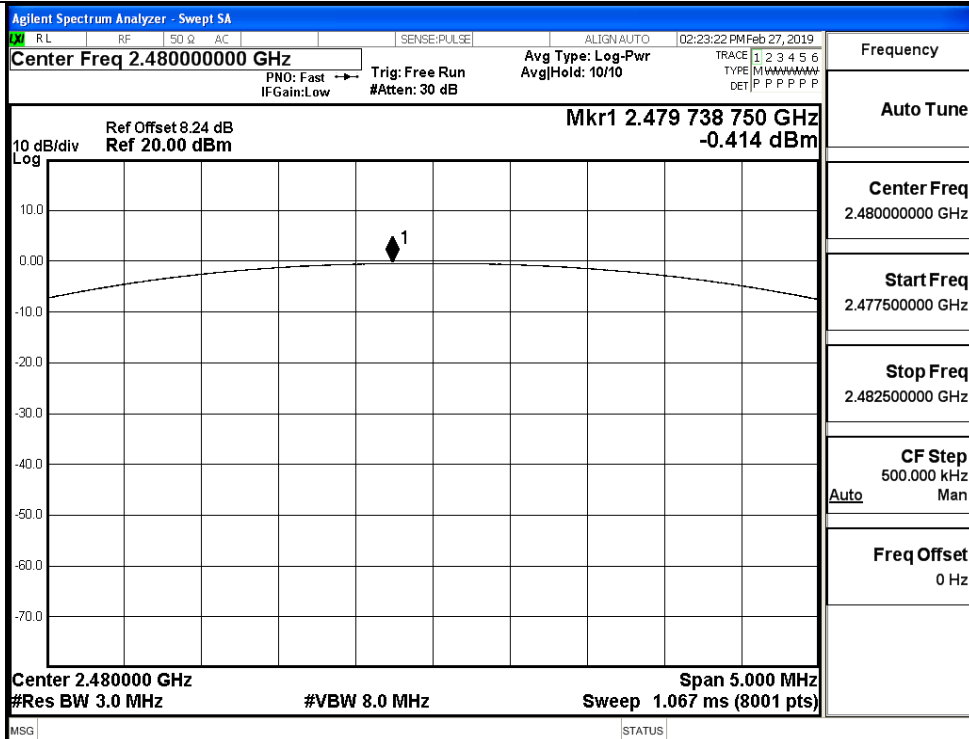
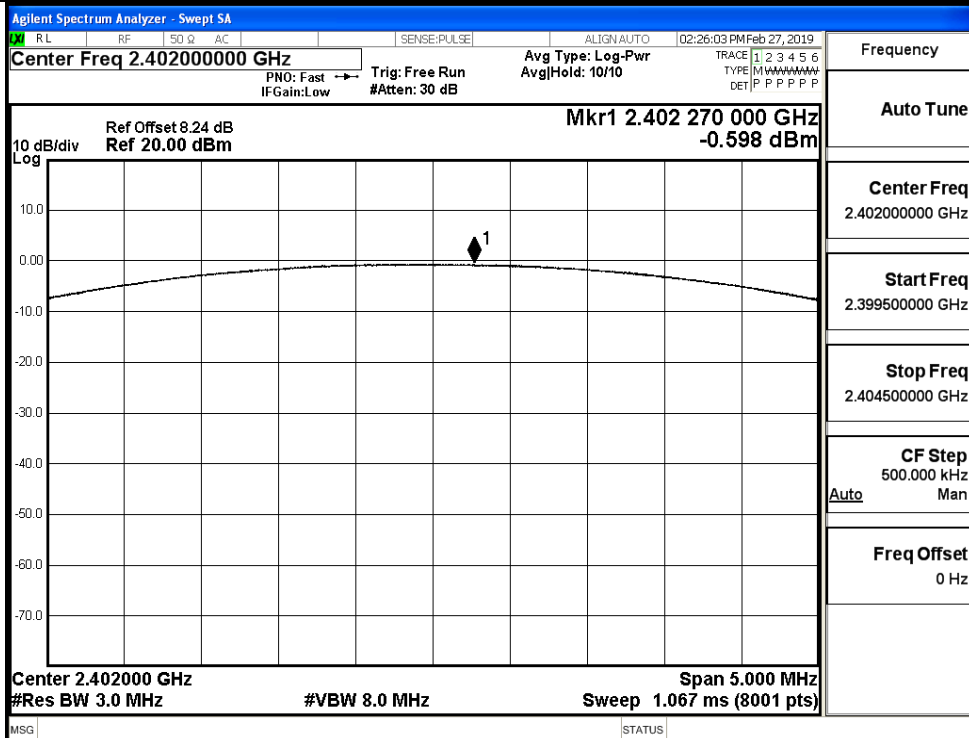
GFSK/LCH

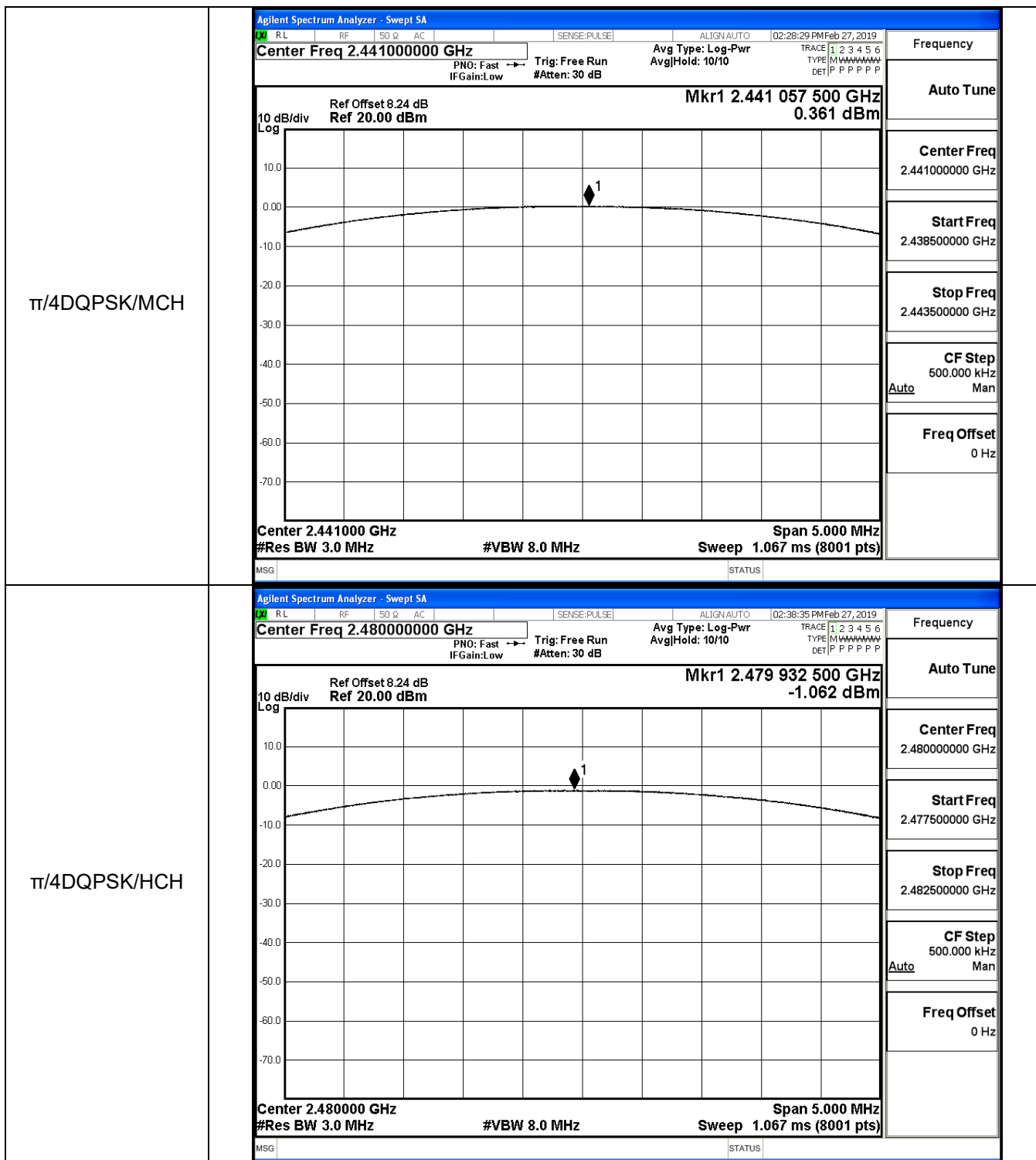


GFSK/MCH

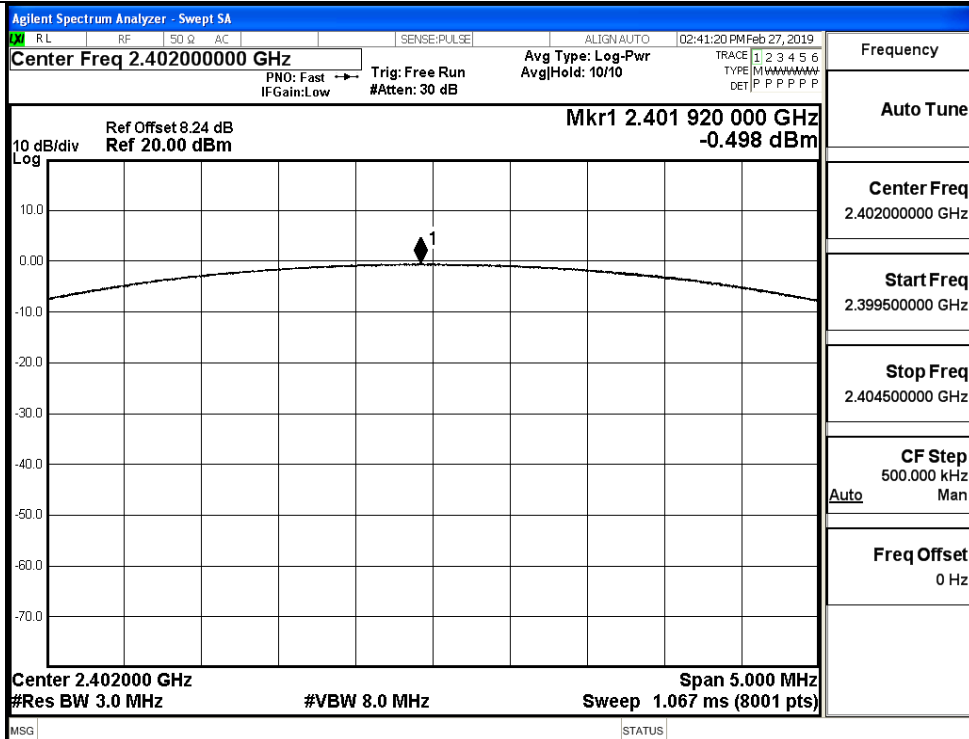


GFSK/HCH

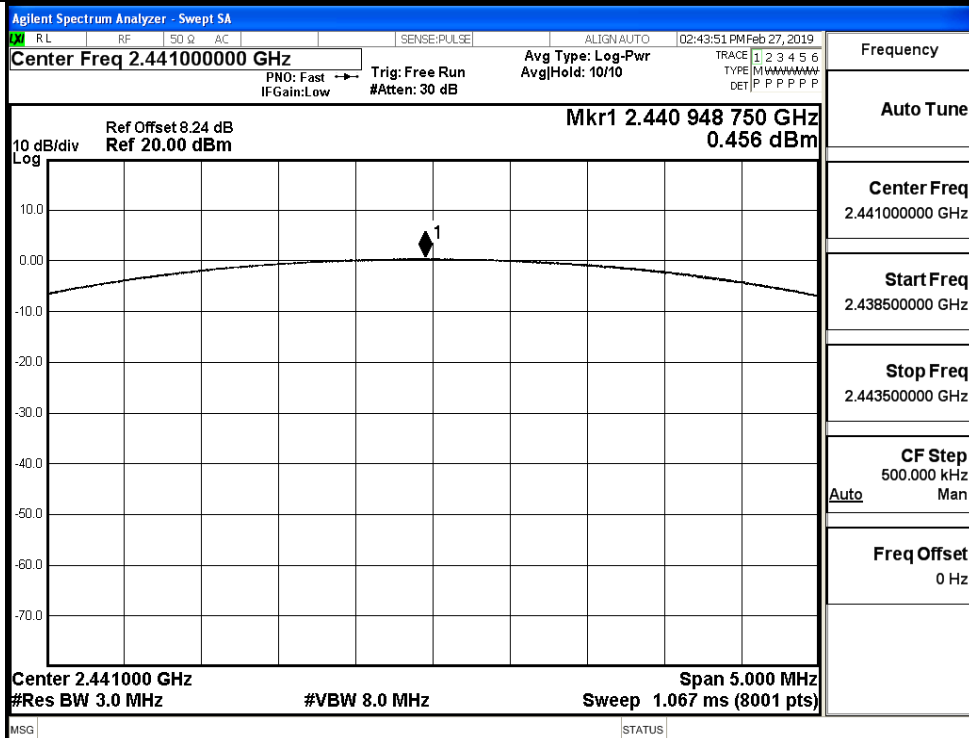
 π /4DQPSK/LCH



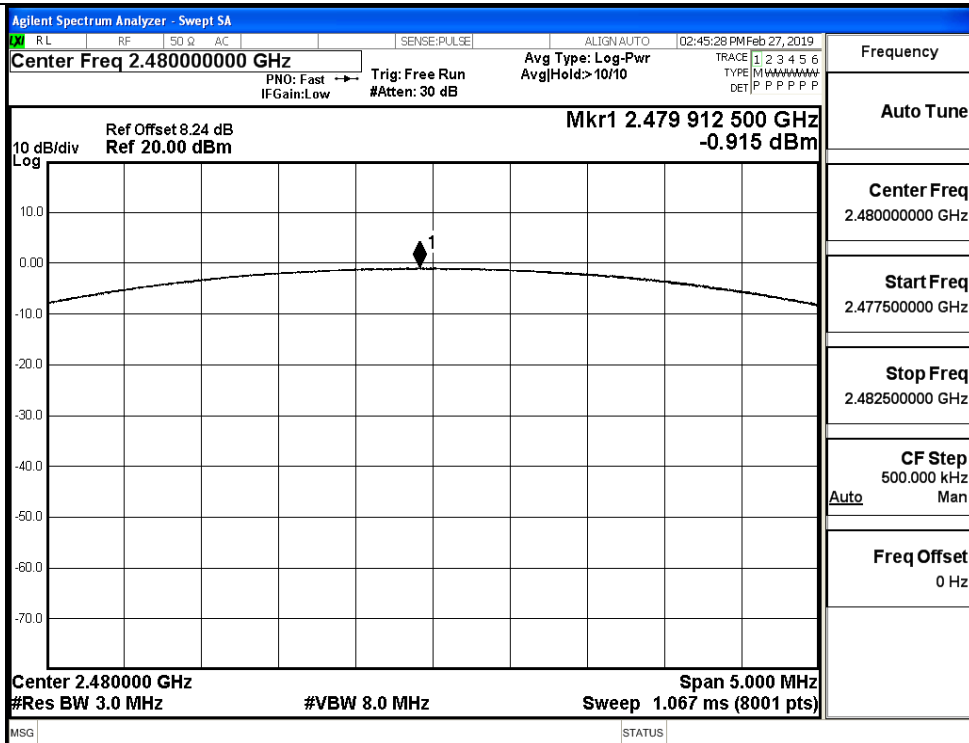
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

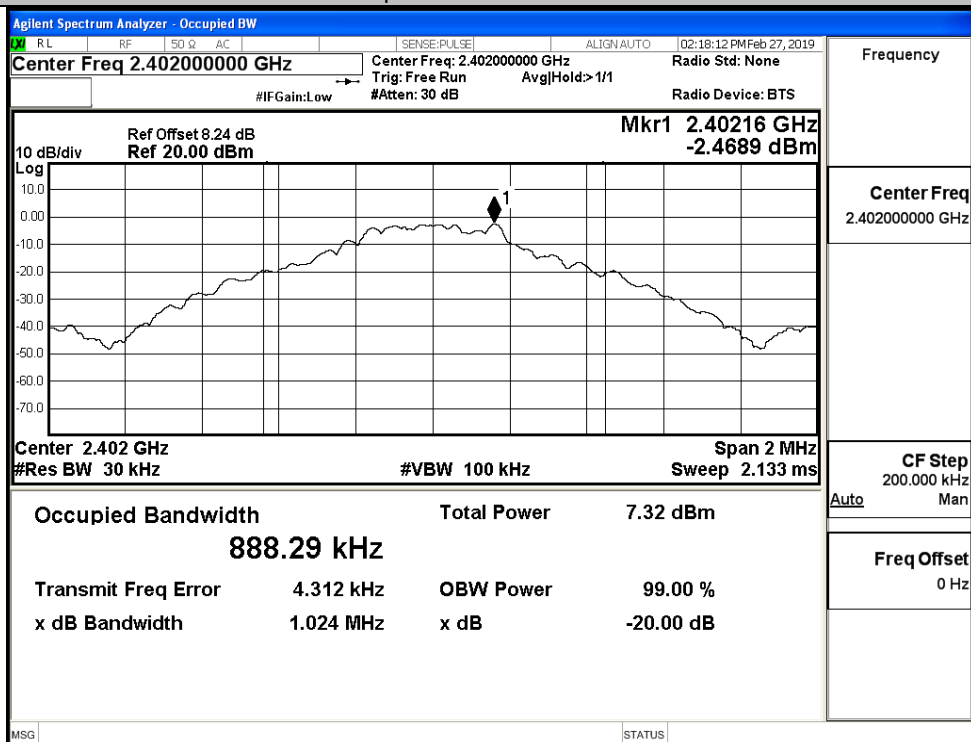


A.2 99% and 20dB Bandwidth

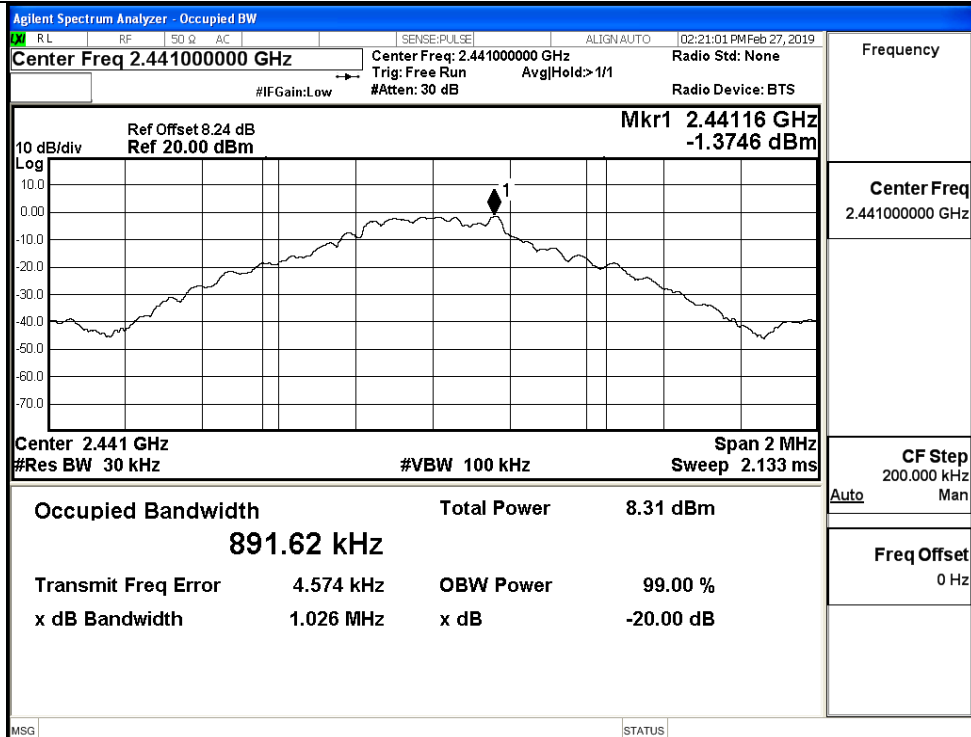
Mode	Channel.	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.88829	1.024	Not Specified	PASS
	MCH	0.89162	1.026	Not Specified	PASS
	HCH	0.89462	1.024	Not Specified	PASS
π /4DQPSK	LCH	1.1795	1.292	Not Specified	PASS
	MCH	1.1780	1.293	Not Specified	PASS
	HCH	1.1742	1.307	Not Specified	PASS
8DPSK	LCH	1.1912	1.298	Not Specified	PASS
	MCH	1.1893	1.298	Not Specified	PASS
	HCH	1.1892	1.298	Not Specified	PASS

Test Graphs

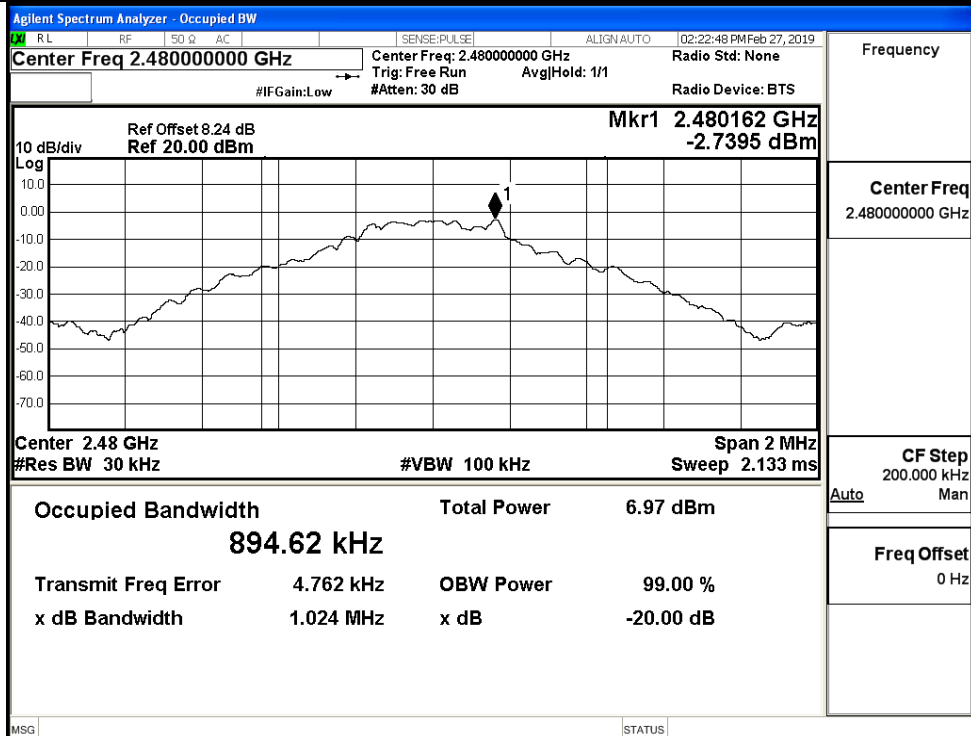
GFSK/LCH

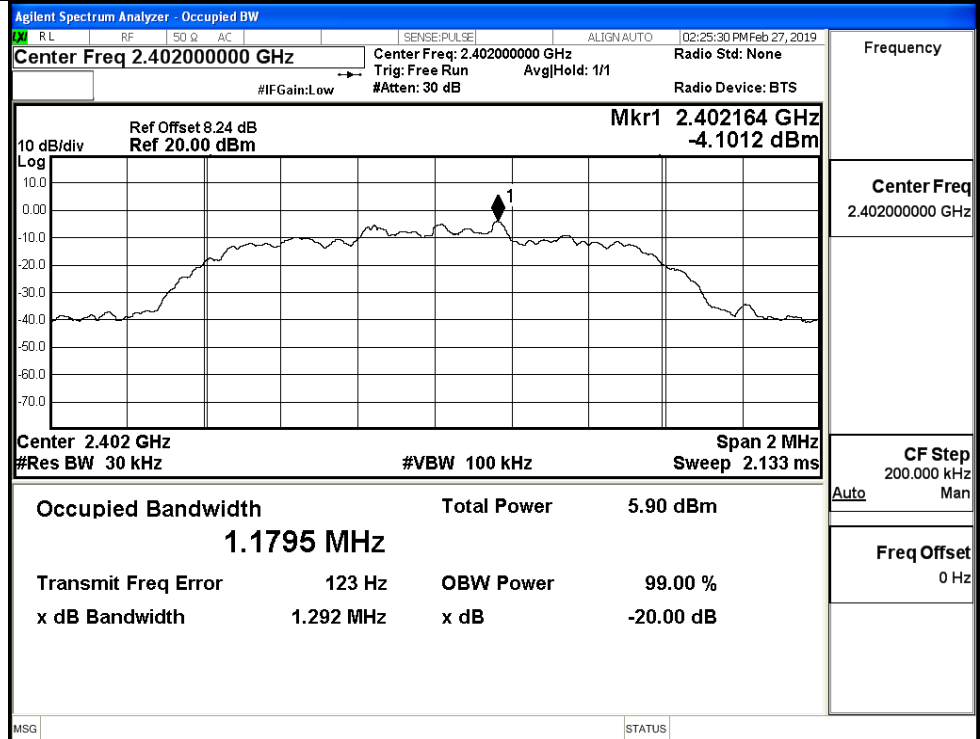
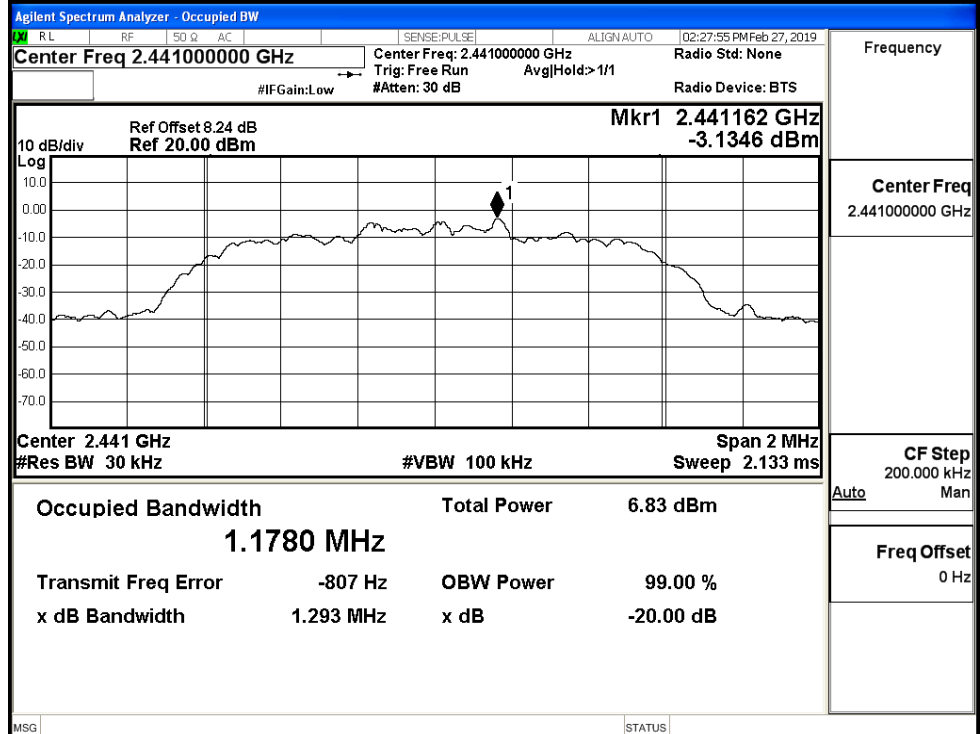


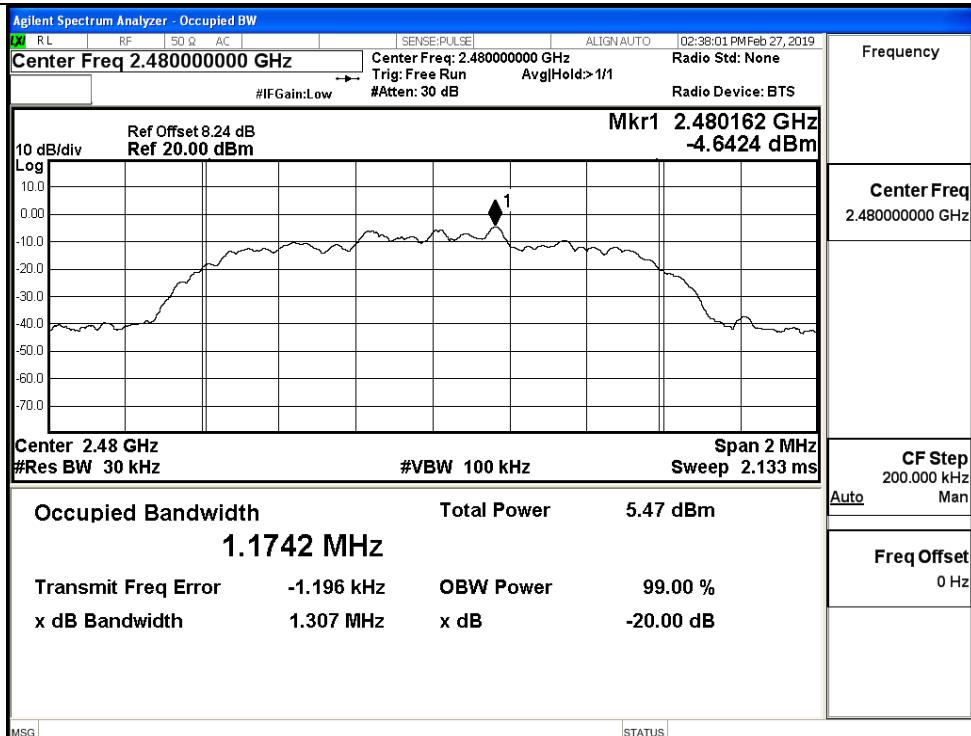
GFSK/MCH



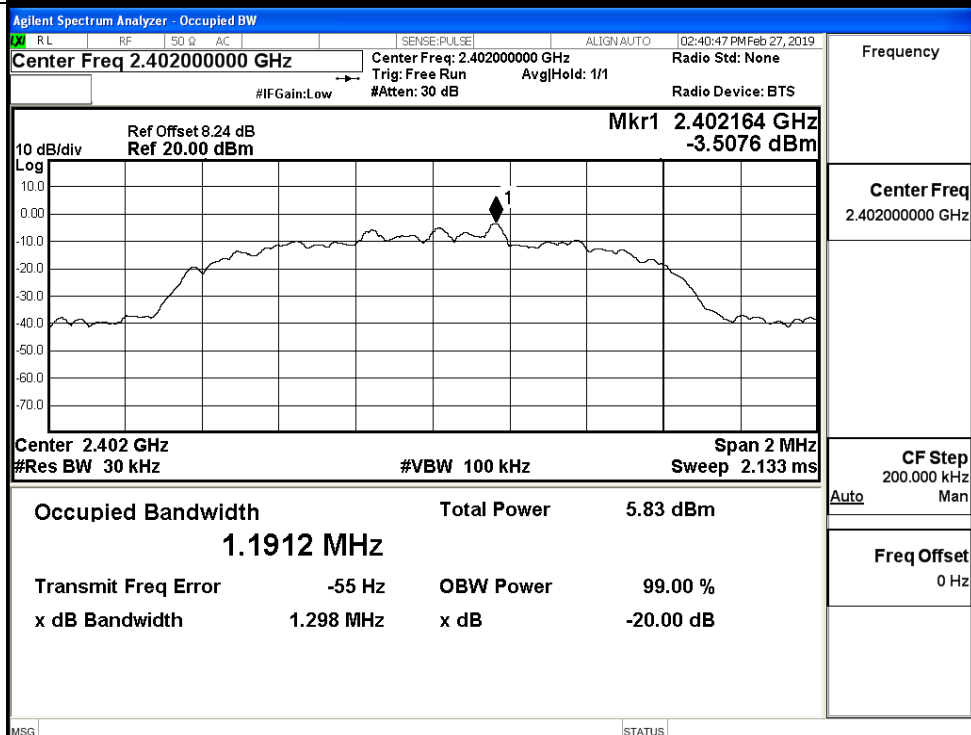
GFSK/HCH



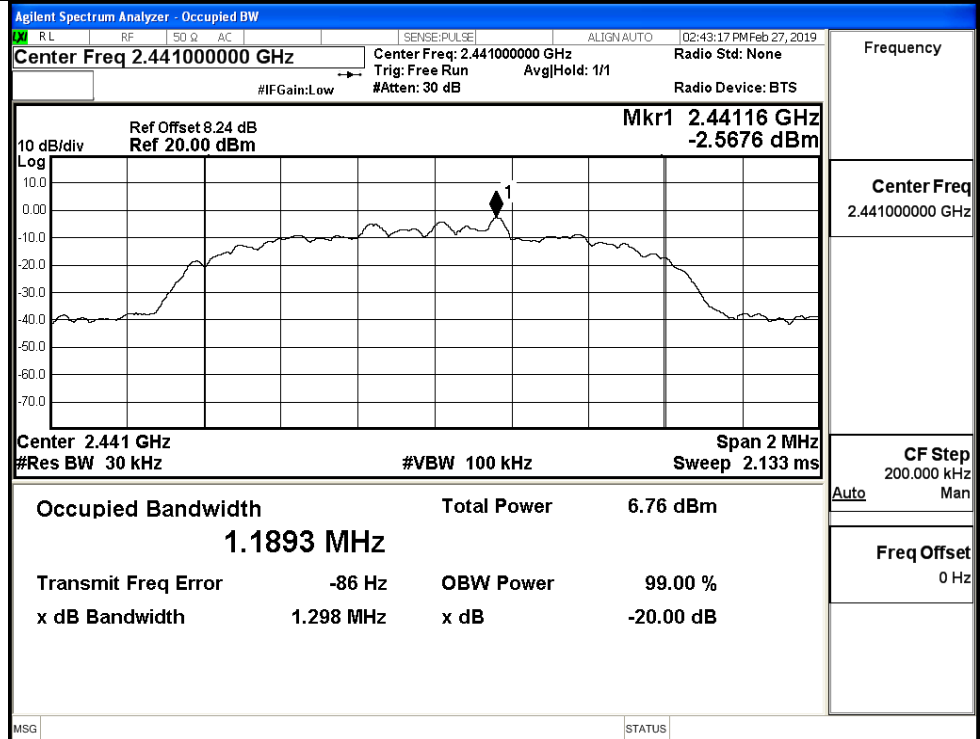
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

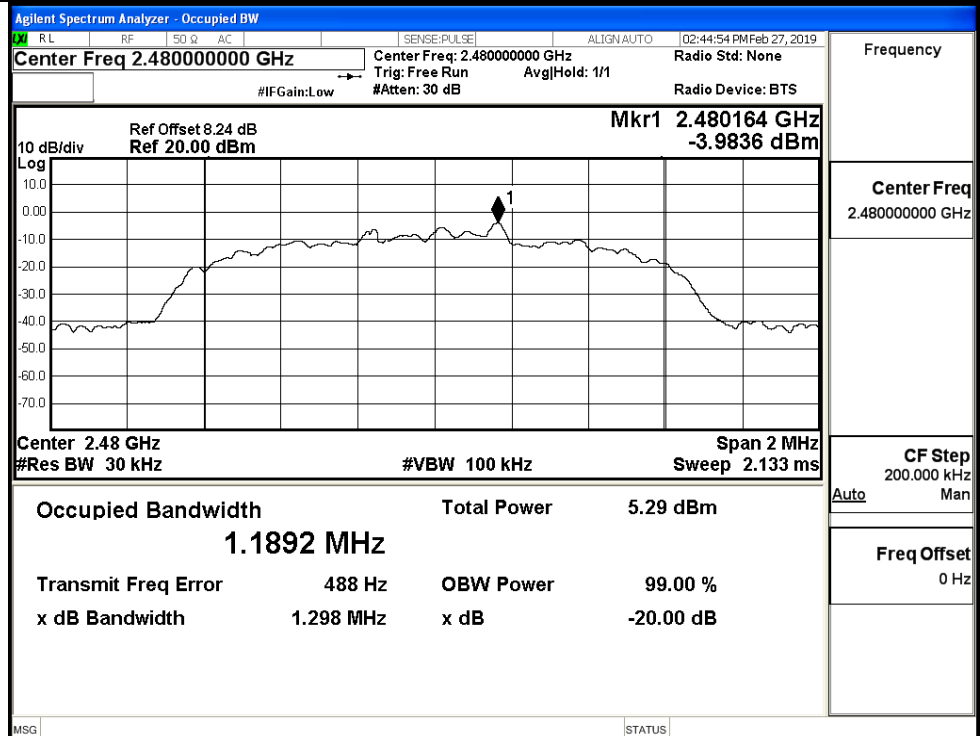
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

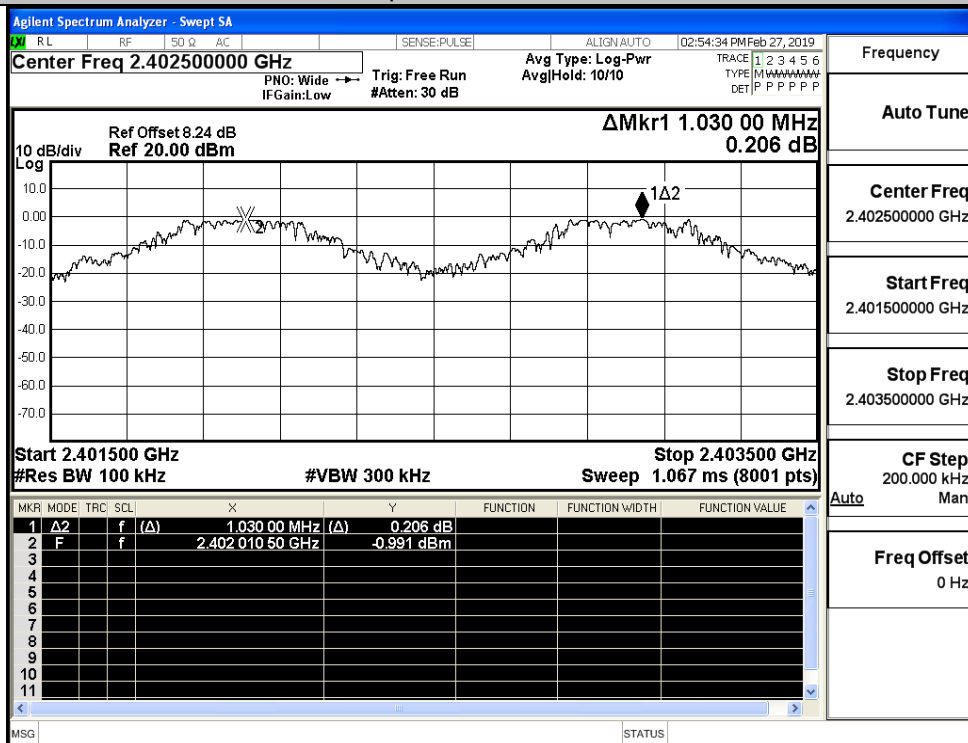


A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.030	0.684	PASS
	MCH	0.976	0.684	PASS
	HCH	0.858	0.684	PASS
π /4DQPSK	LCH	1.192	0.871	PASS
	MCH	1.050	0.871	PASS
	HCH	0.988	0.871	PASS
8DPSK	LCH	1.018	0.865	PASS
	MCH	1.090	0.865	PASS
	HCH	1.316	0.865	PASS

Test Graphs

GFSK/LCH



Frequency

Auto Tune

Center Freq

2.402500000 GHz

Start Freq

2.401500000 GHz

Stop Freq

2.403500000 GHz

CF Step

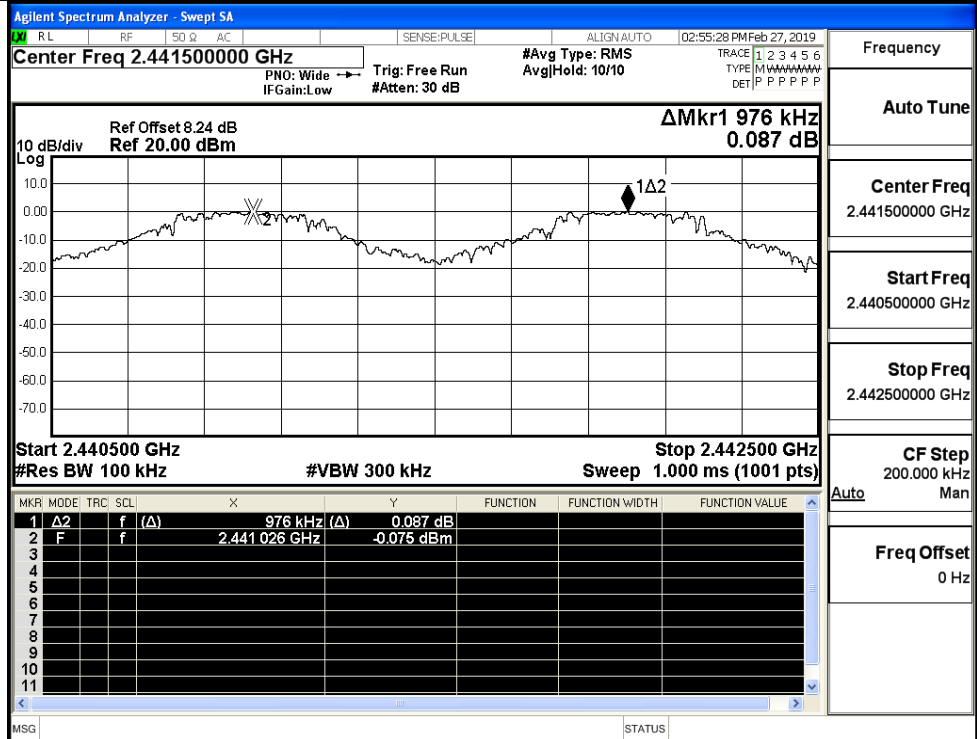
200.000 kHz

Man

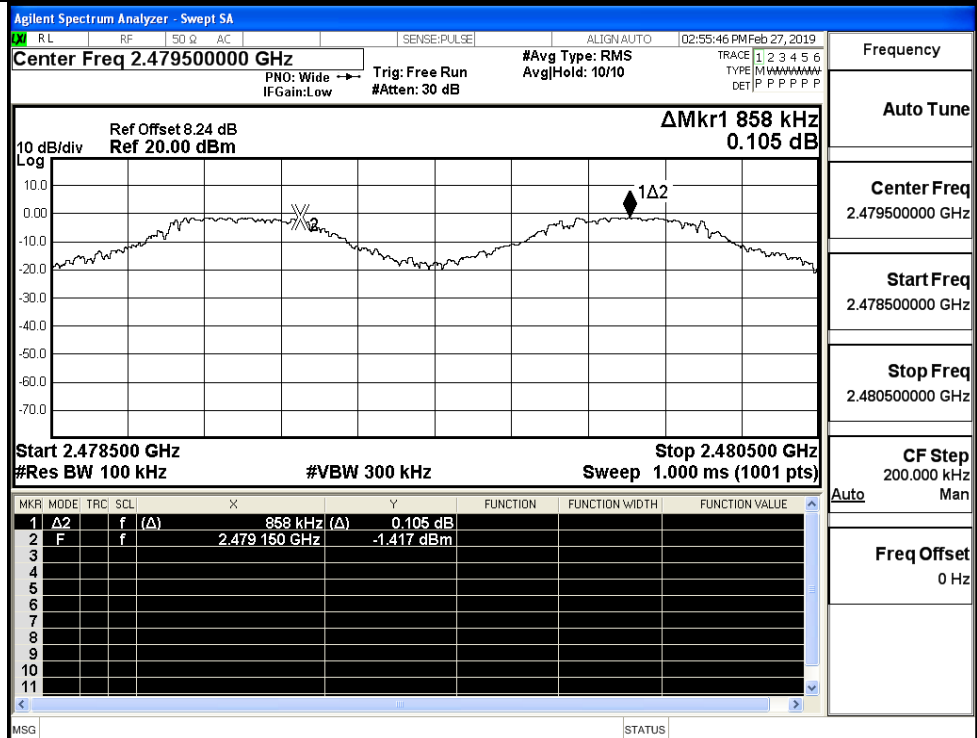
Freq Offset

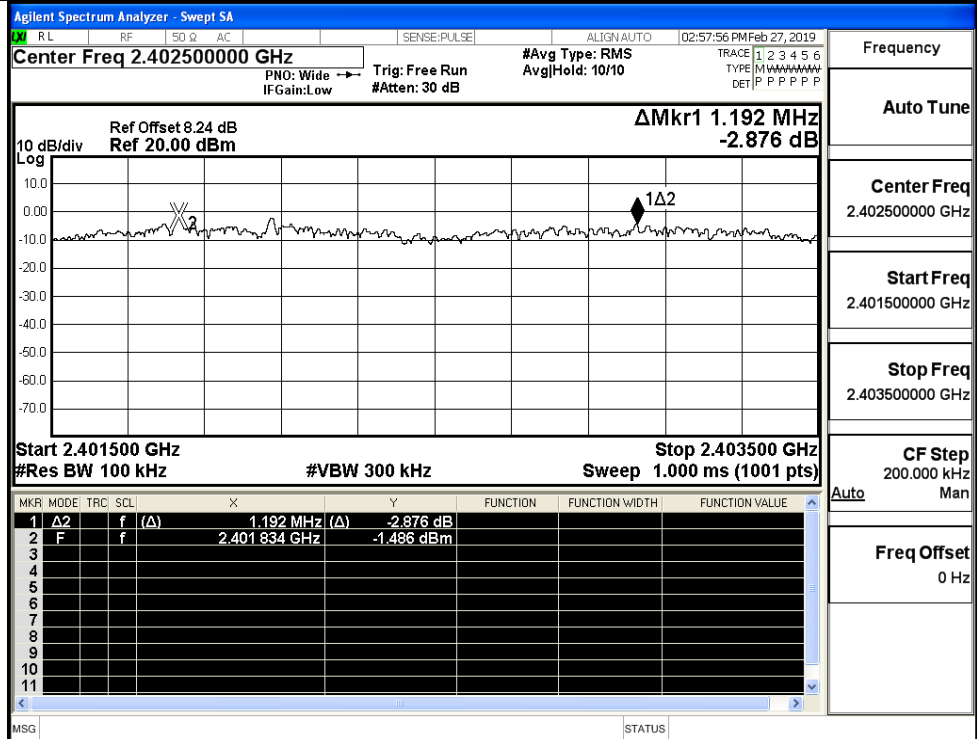
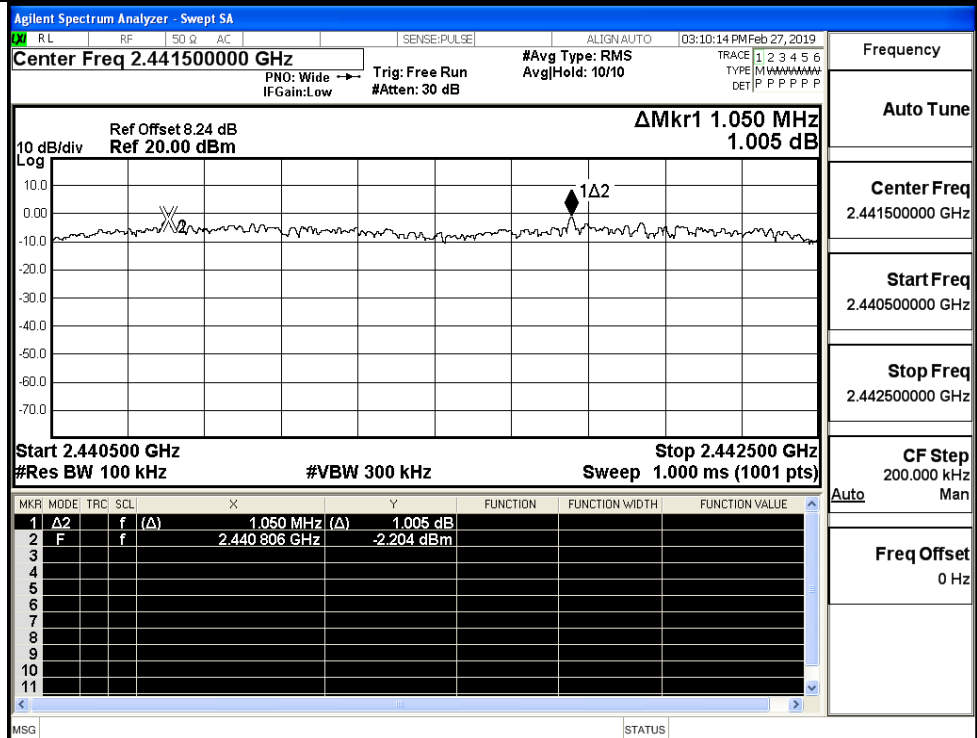
0 Hz

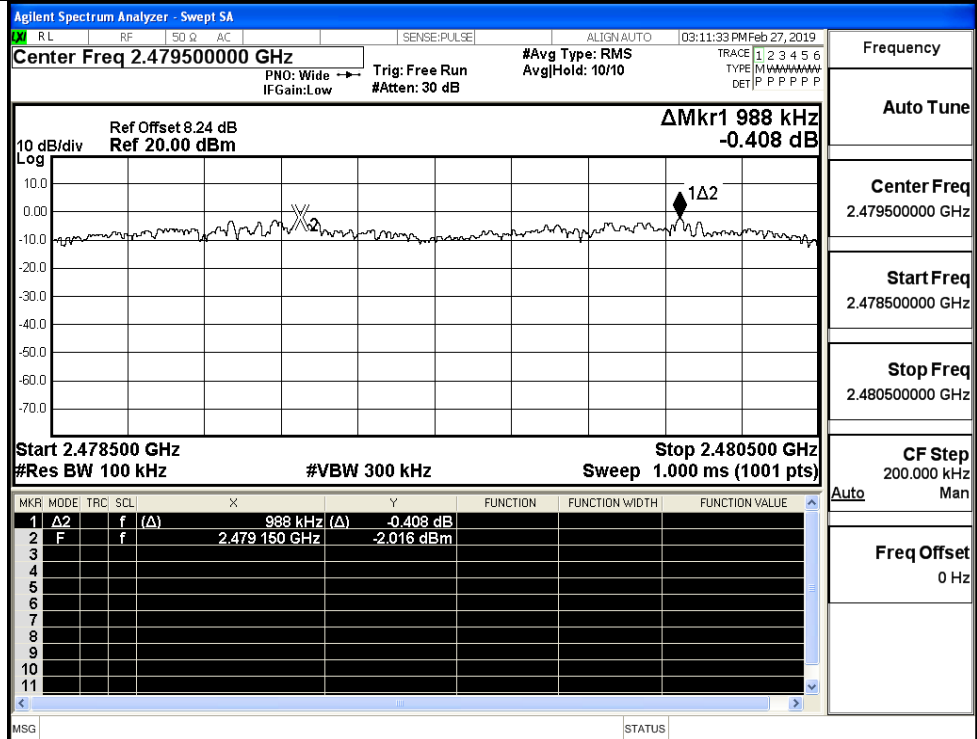
GFSK/MCH



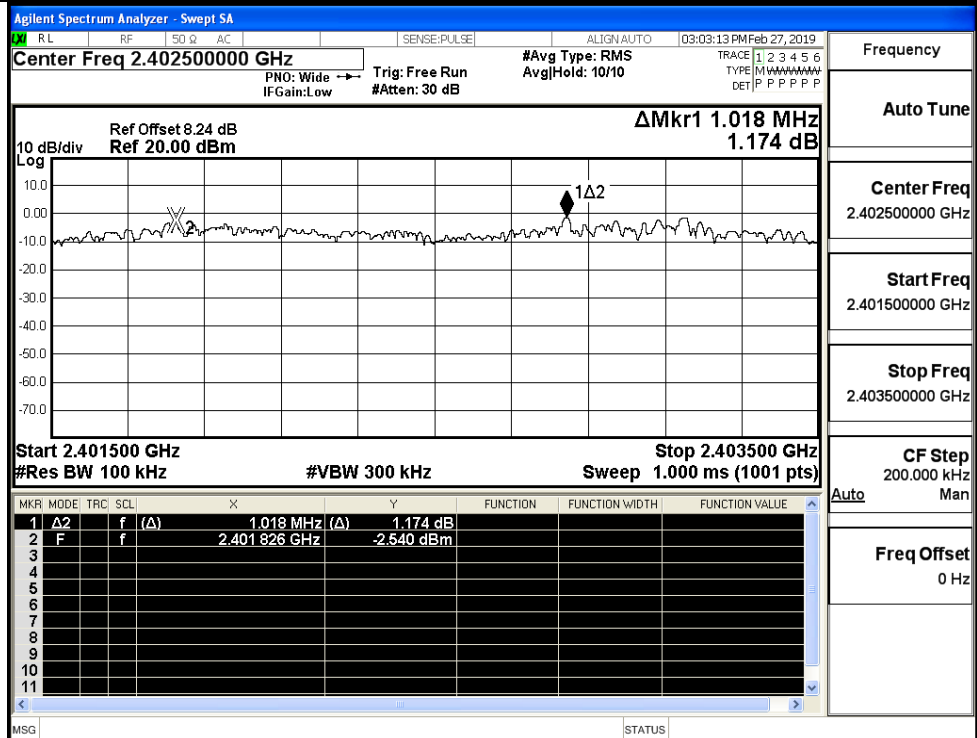
GFSK/HCH



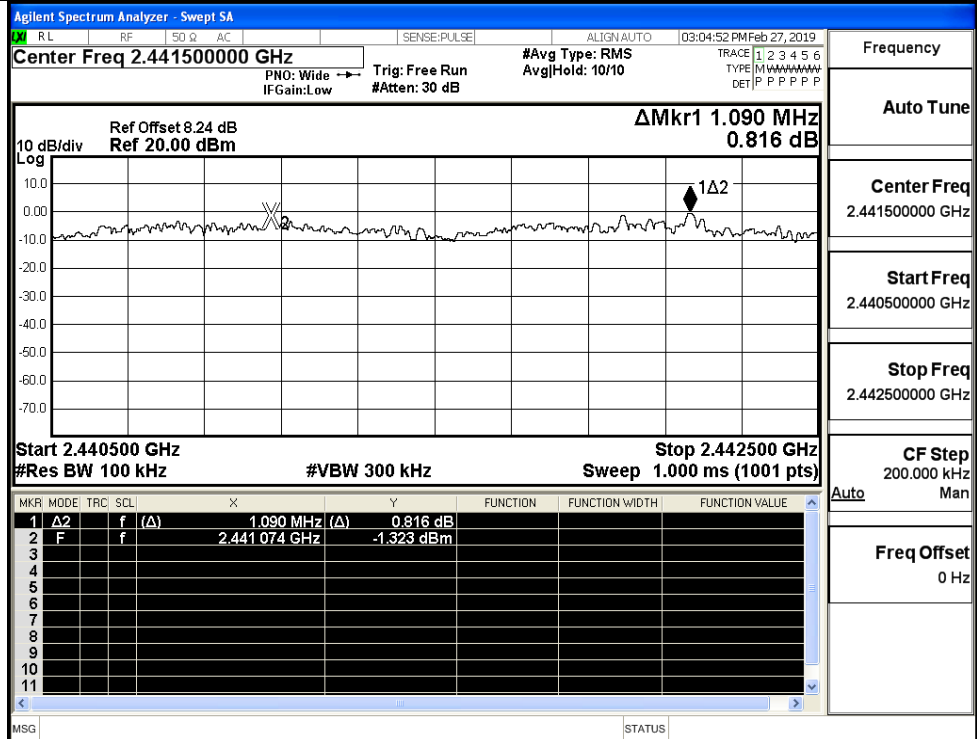
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

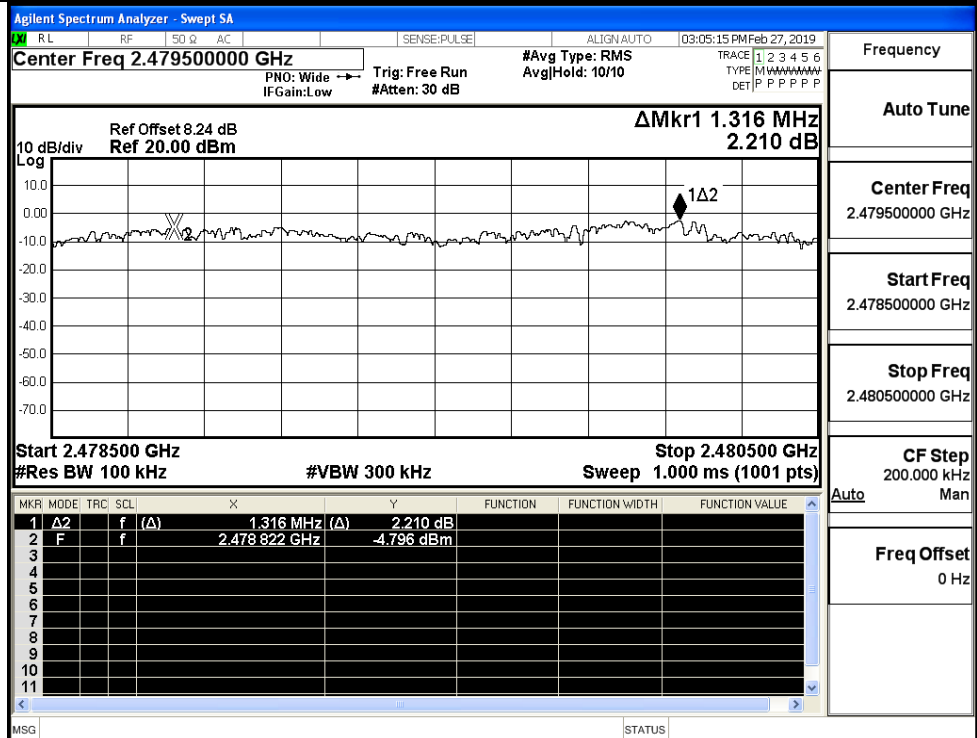
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

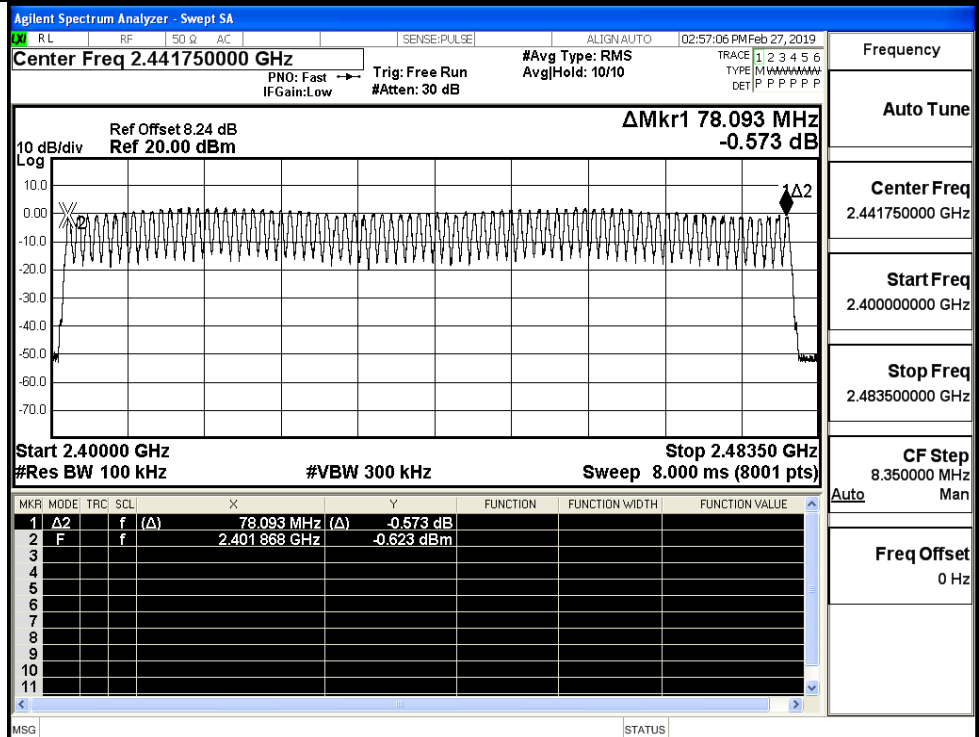
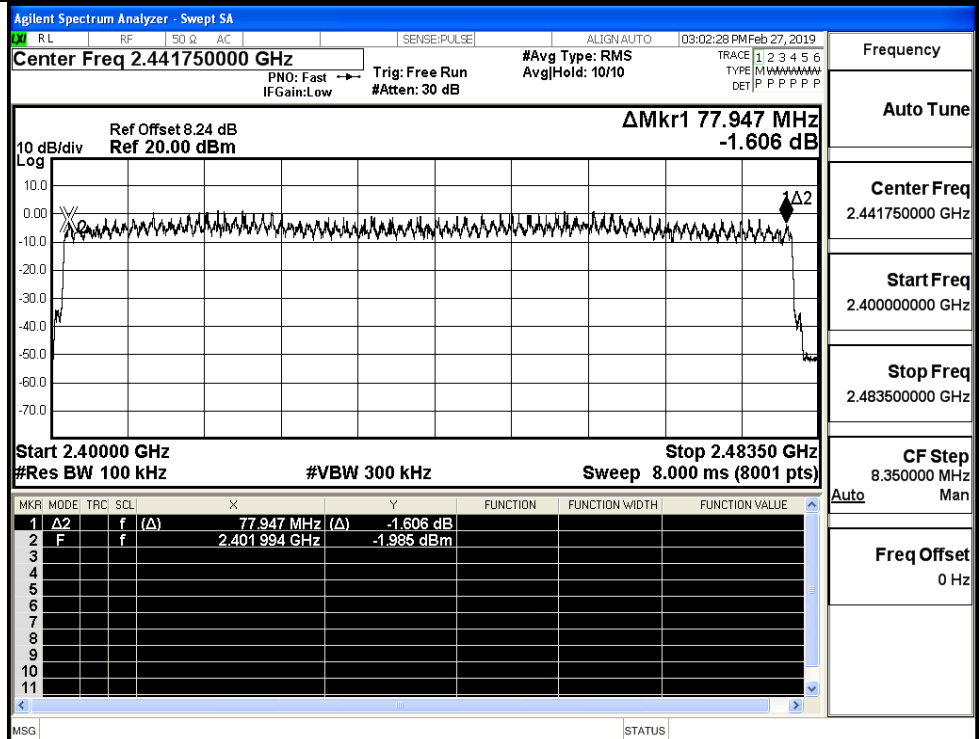


A.4 Hopping Channel Number

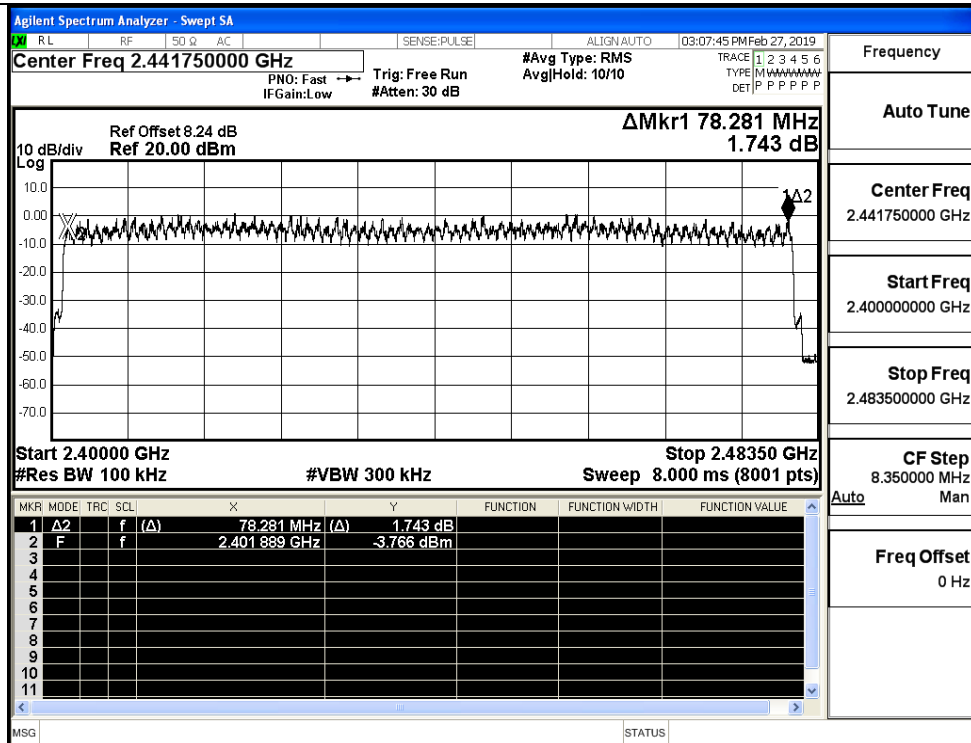
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

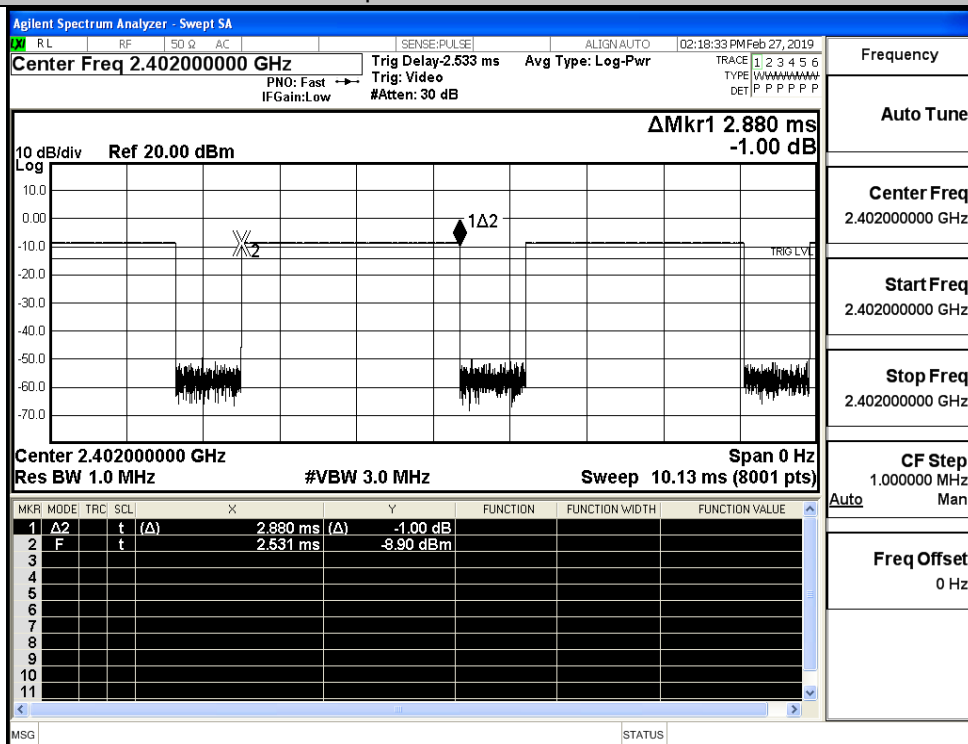


A.5 Dwell Time

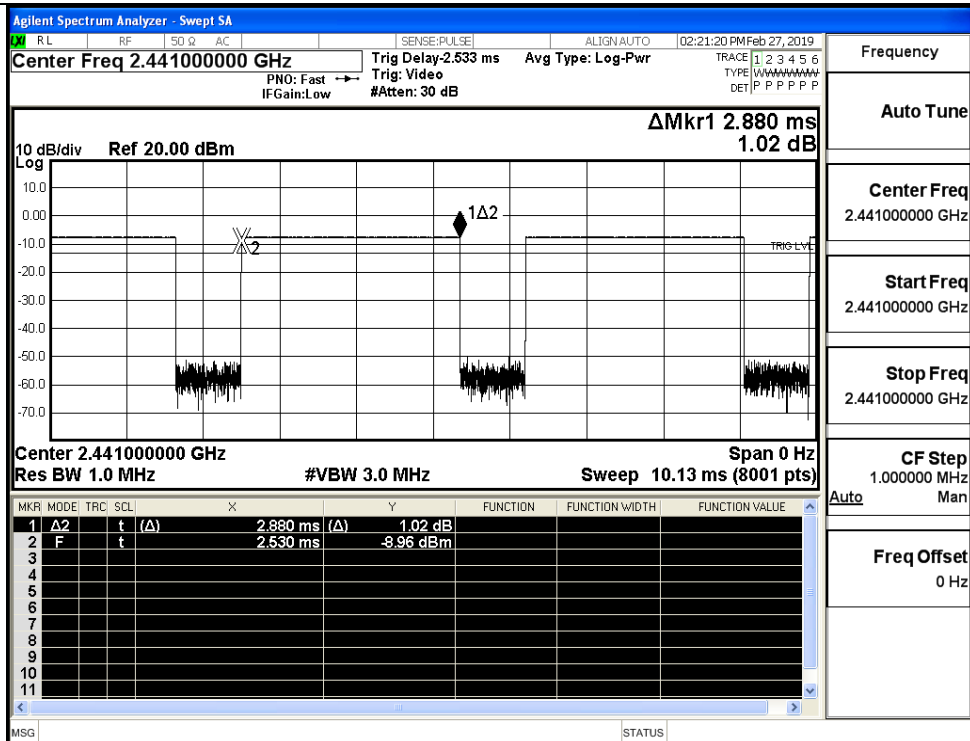
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

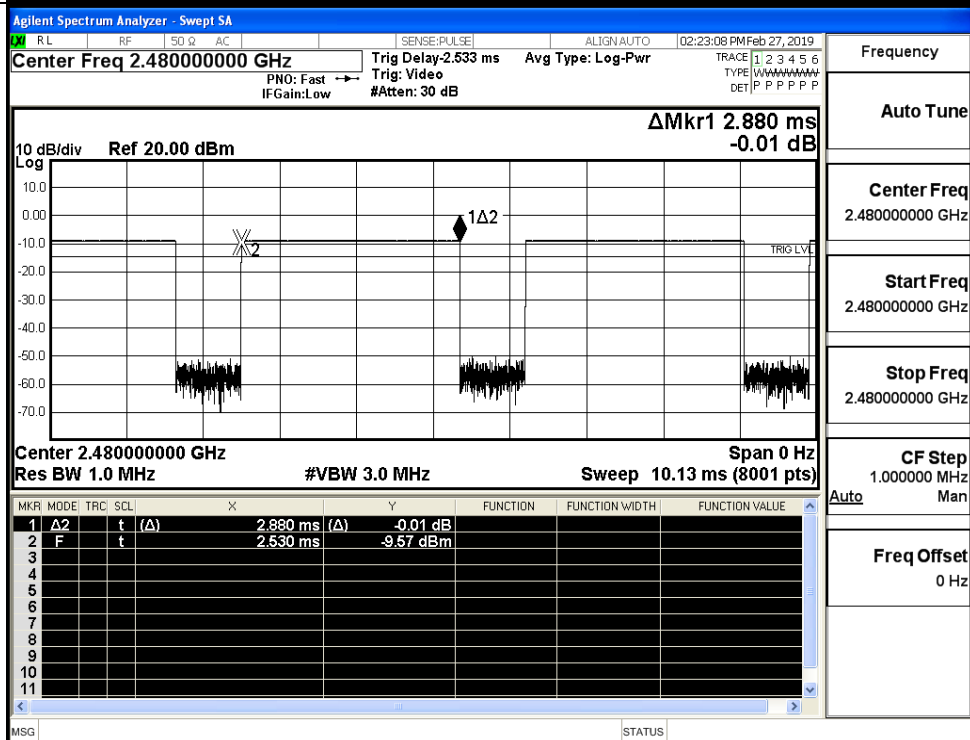
GFSK_DH5/LCH



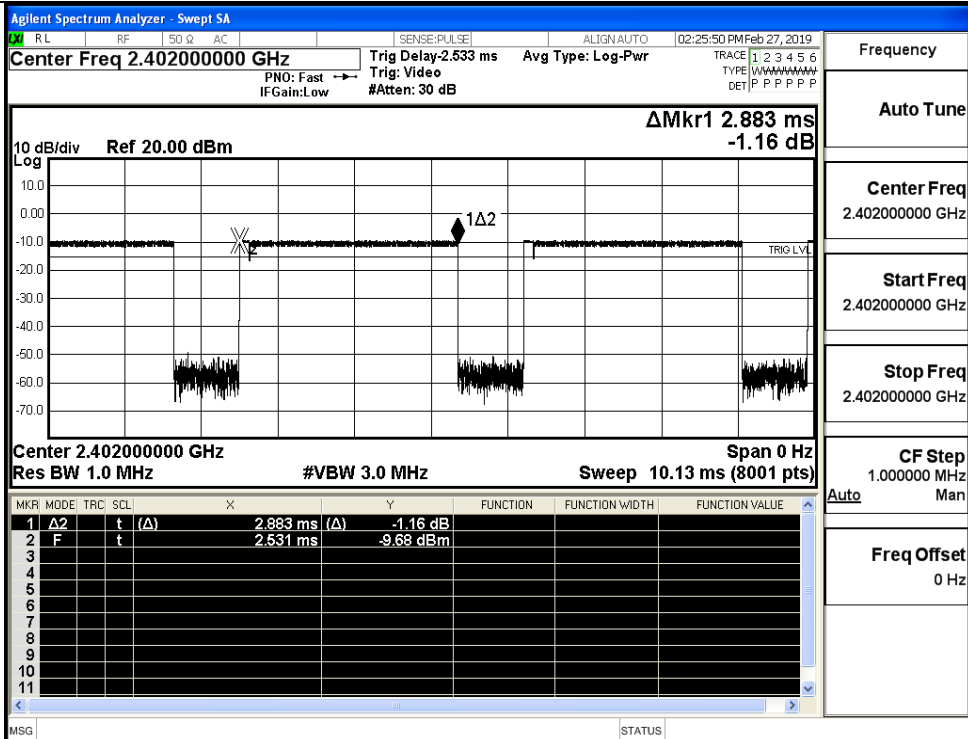
GFSK_DH5/MCH



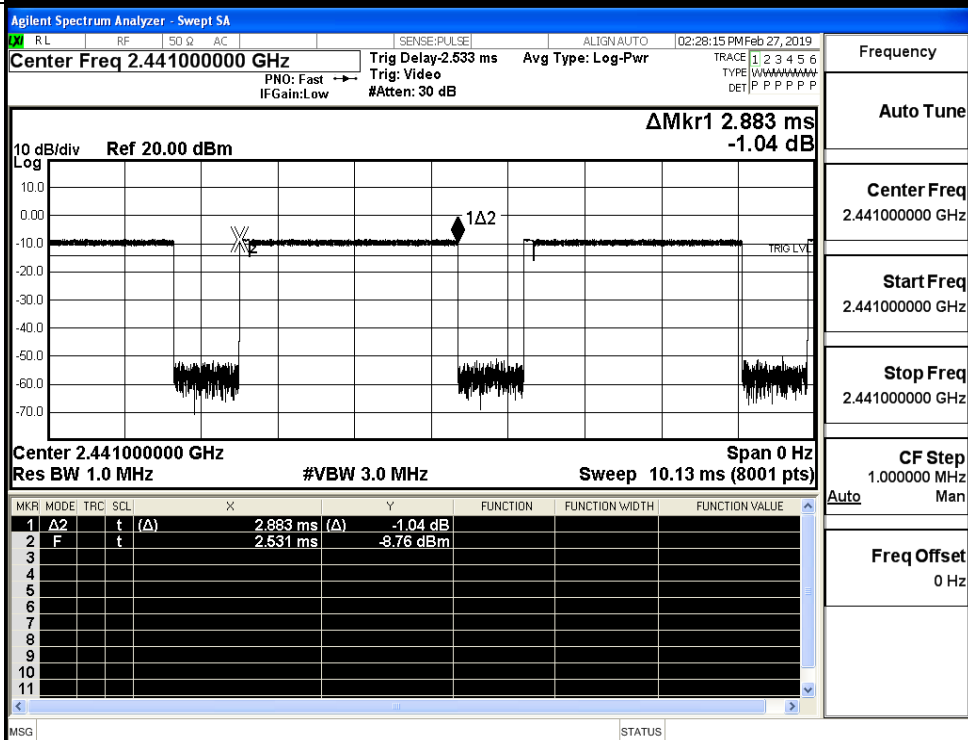
GFSK_DH5/HCH



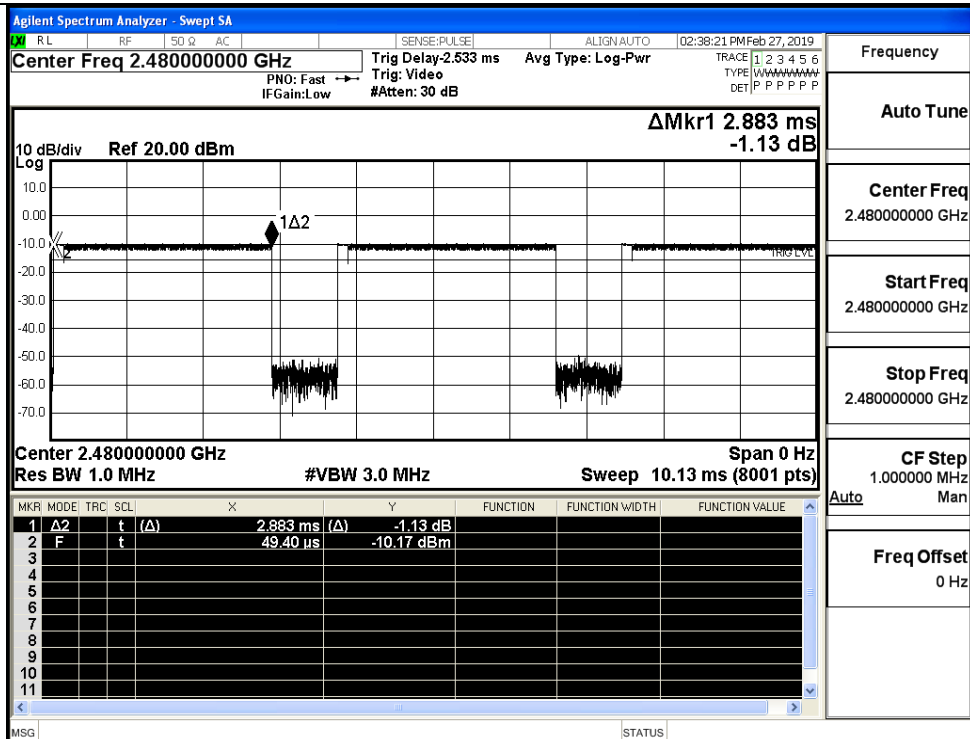
$\pi/4$ DQPSK
_2DH5/LCH



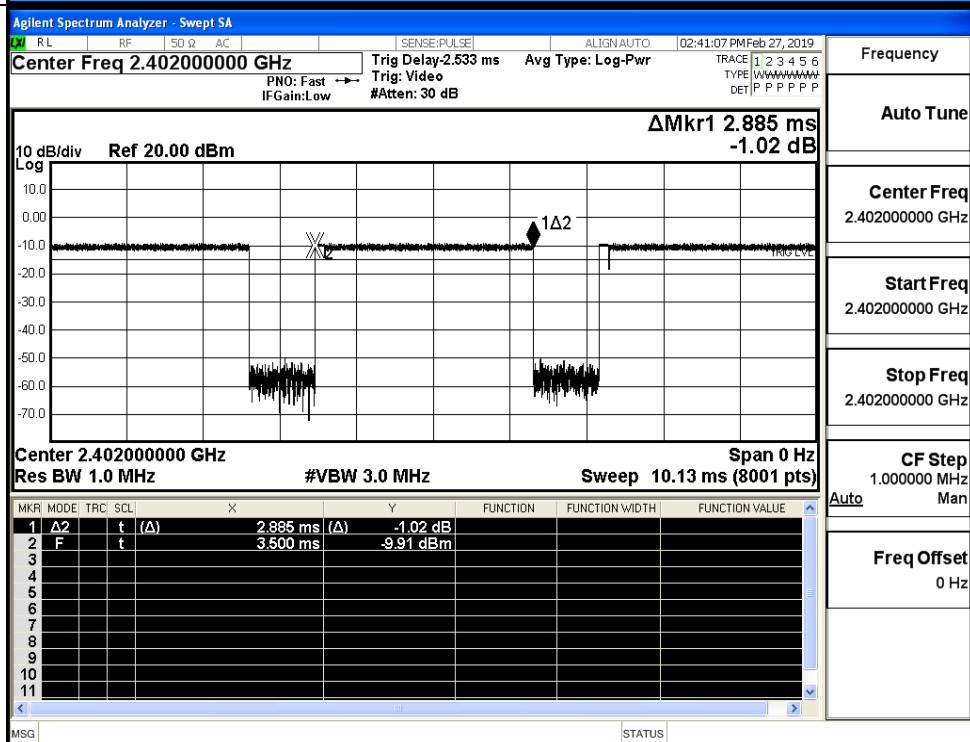
$\pi/4$ DQPSK
_2DH5/MCH



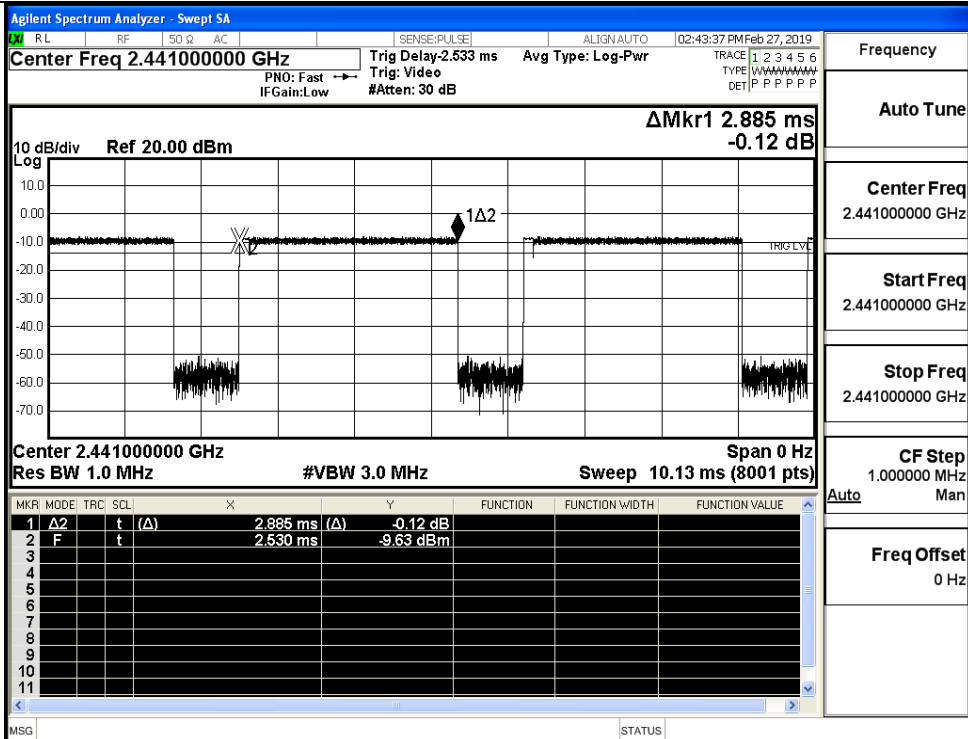
$\pi/4$ DQPSK
_2DH5/HCH



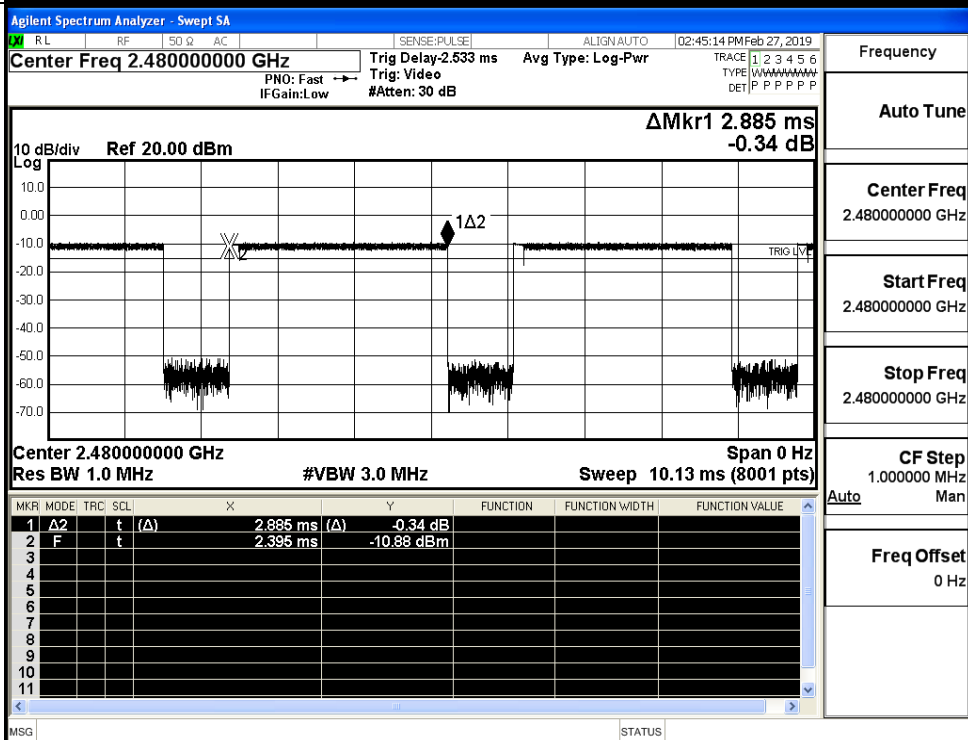
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

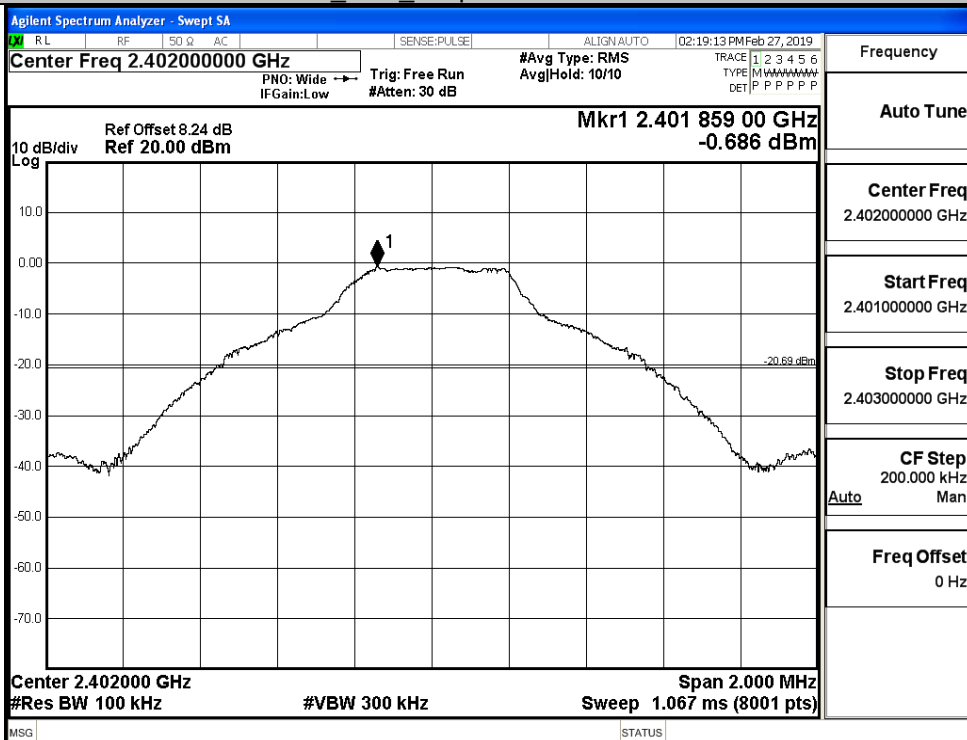


A.6 RF Conducted Spurious Emissions

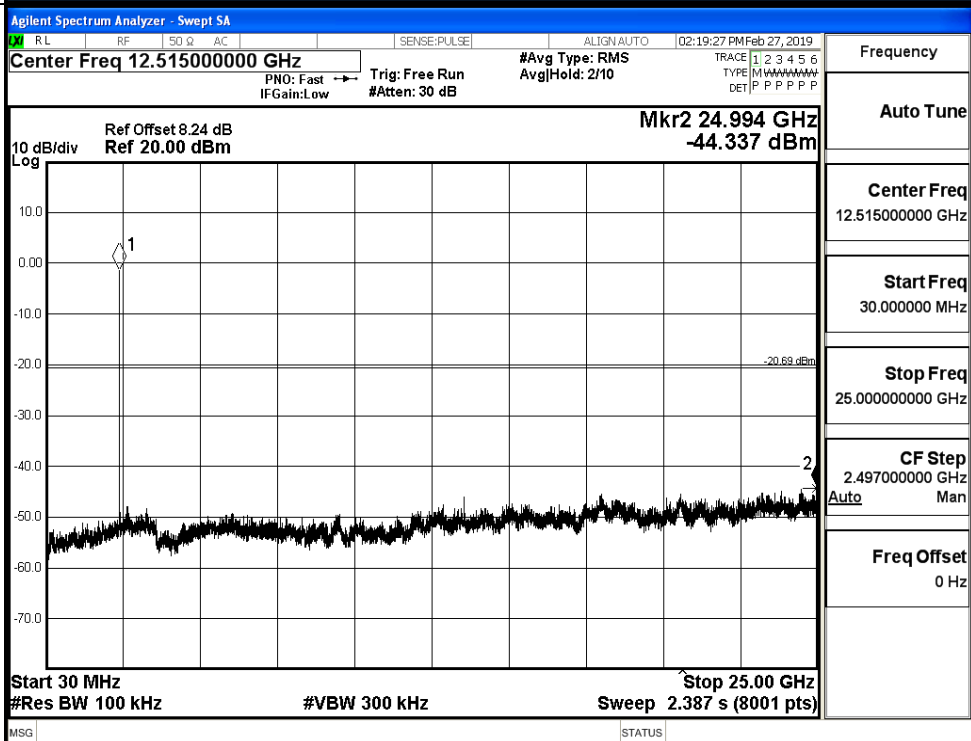
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.686	-44.337	-20.686	PASS
	MCH	0.627	-44.727	-19.373	PASS
	HCH	-0.699	-44.837	-20.699	PASS
$\pi/4$ DQPSK	LCH	-1.432	-44.643	-21.432	PASS
	MCH	-0.546	-44.406	-20.546	PASS
	HCH	-1.826	-44.909	-21.826	PASS
8DPSK	LCH	-1.365	-44.290	-21.365	PASS
	MCH	-0.443	-44.725	-20.443	PASS
	HCH	-2.532	-44.857	-22.532	PASS

GFSK LCH Graphs

Pref

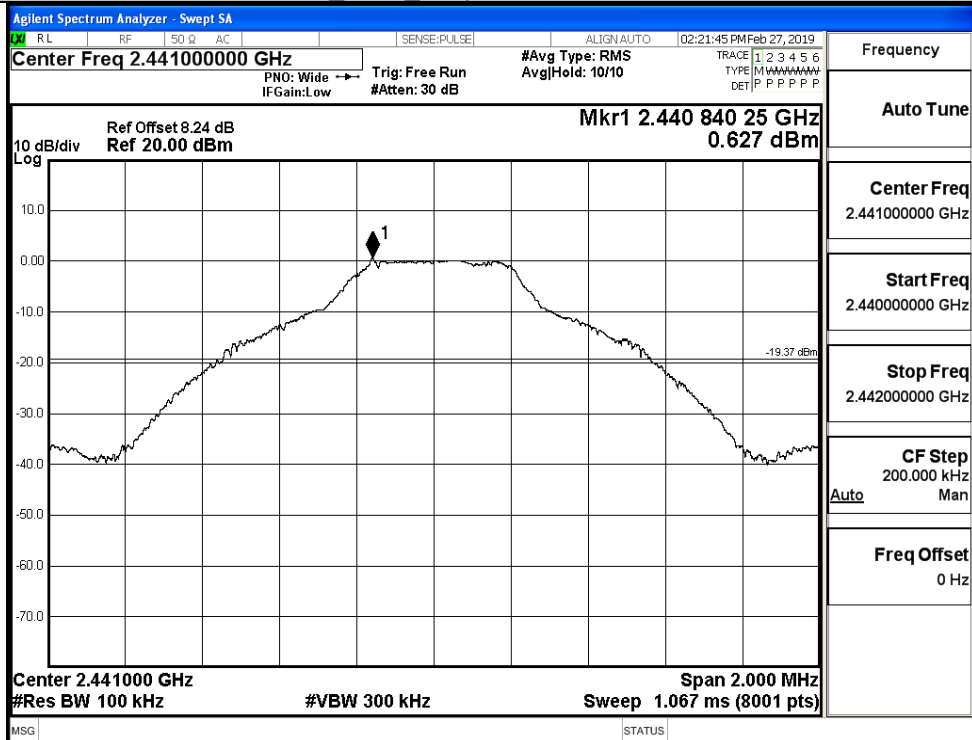


Puw

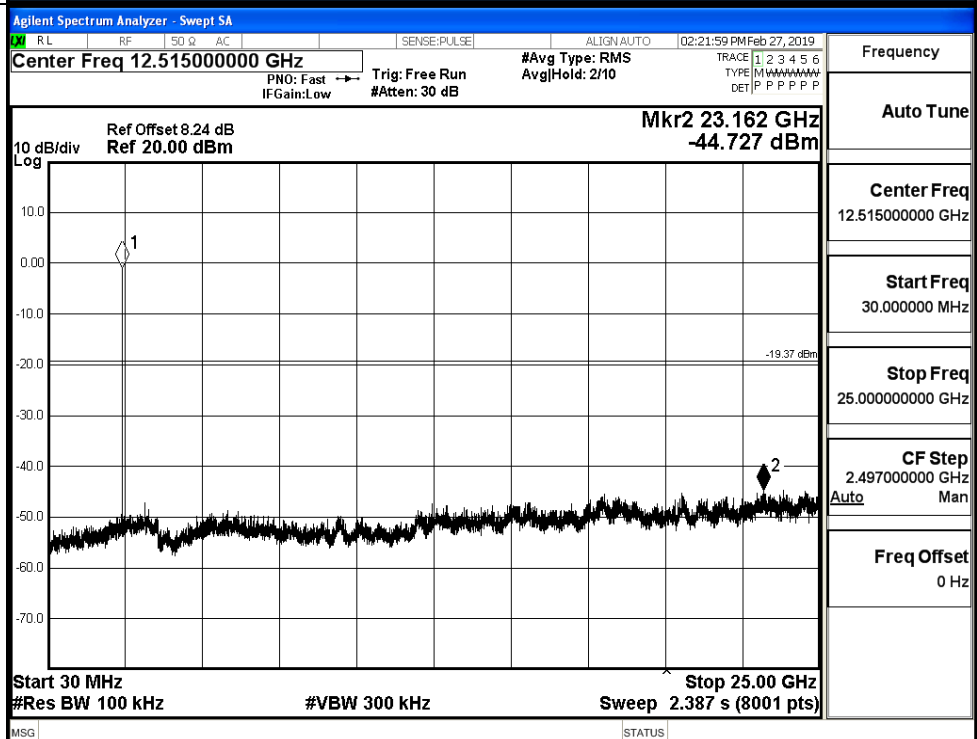


GFSK_MCH_Graphs

Pref

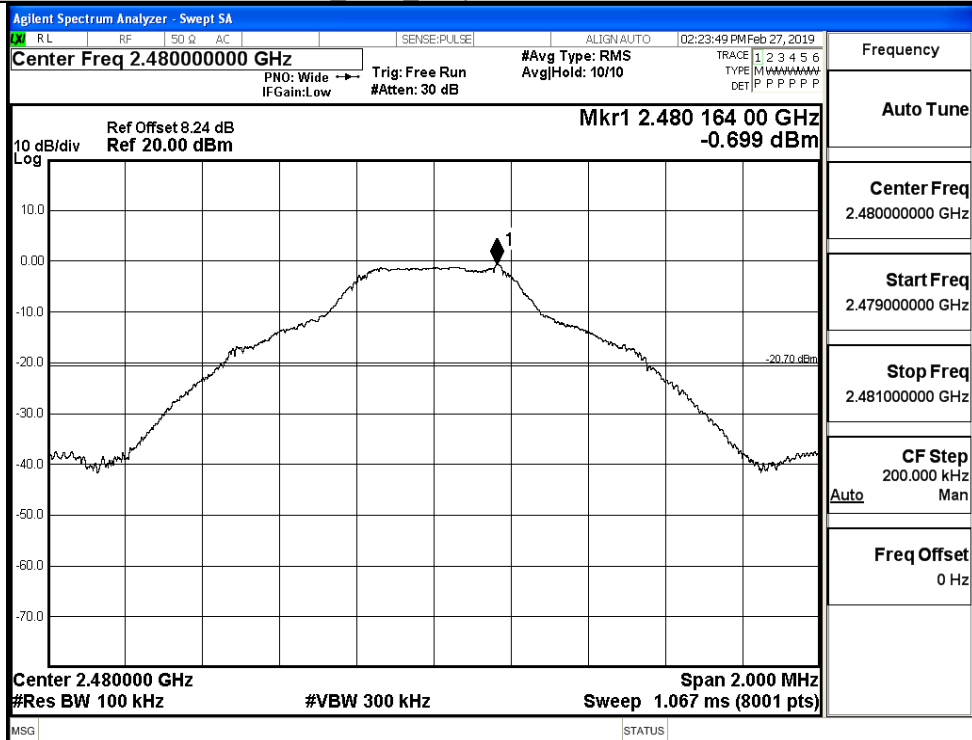


Puw

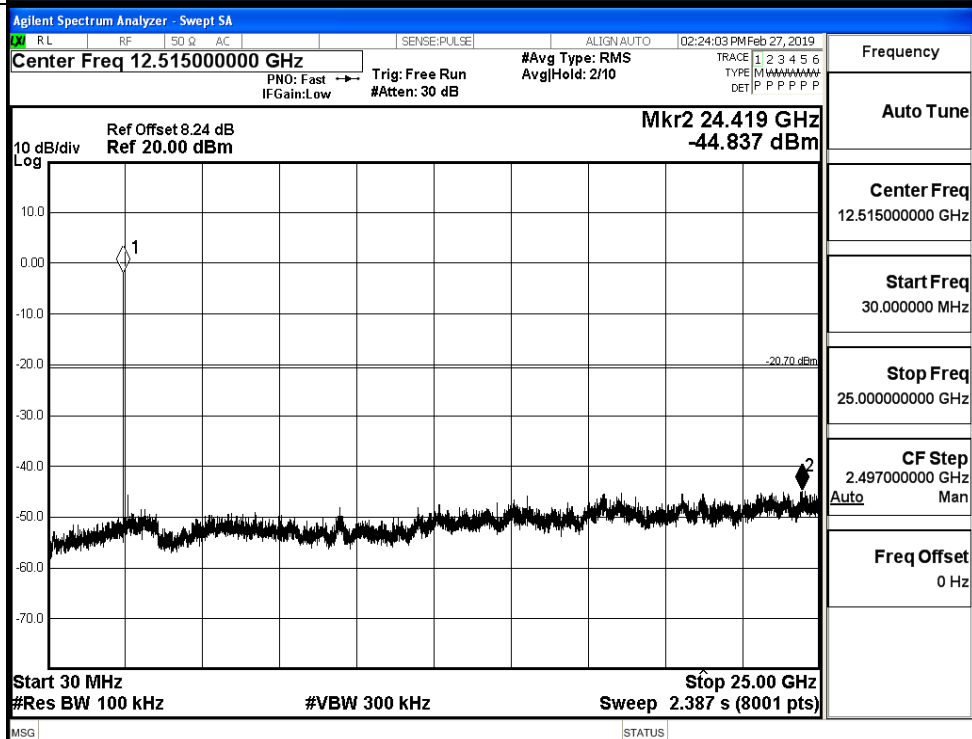


GFSK_HCH_Graphs

Pref

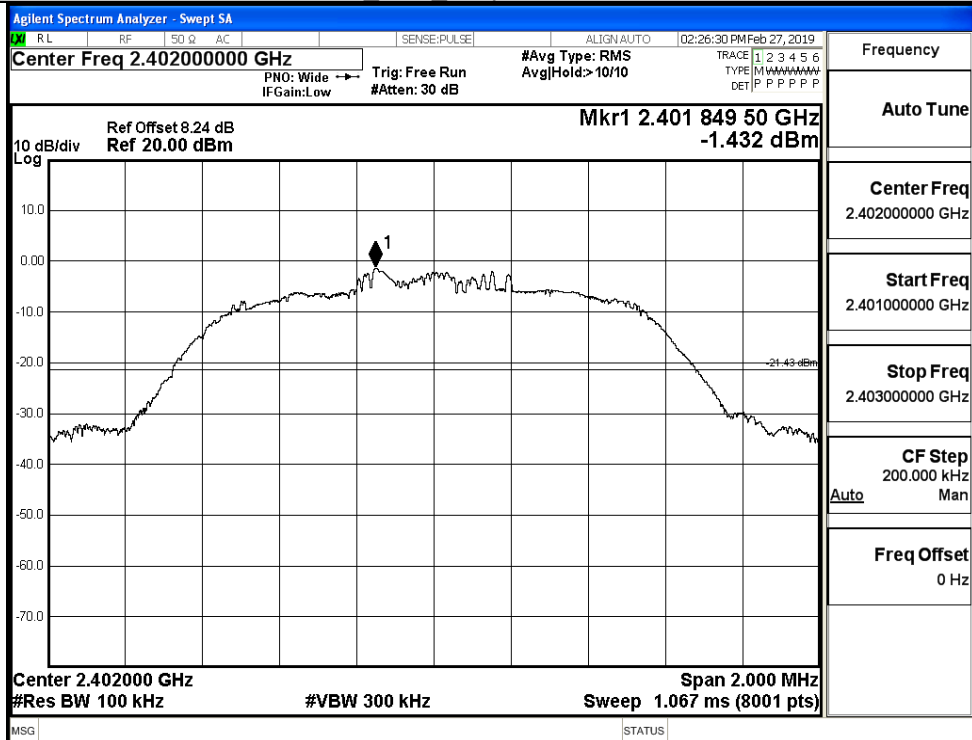


Puw

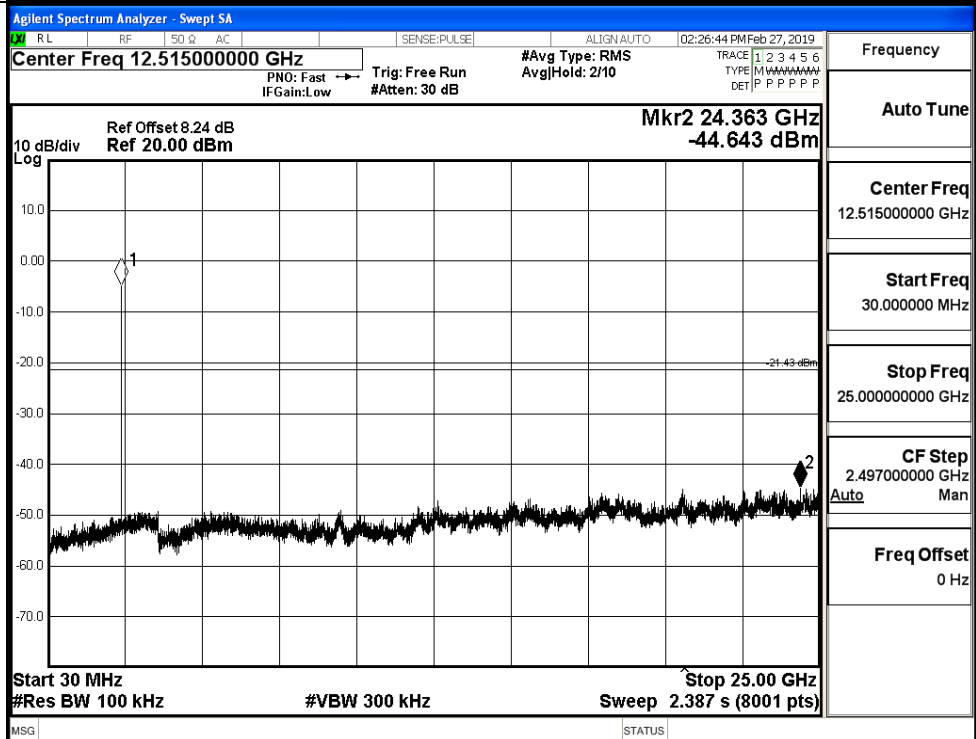


$\pi/4$ DQPSK LCH_Graphs

Pref

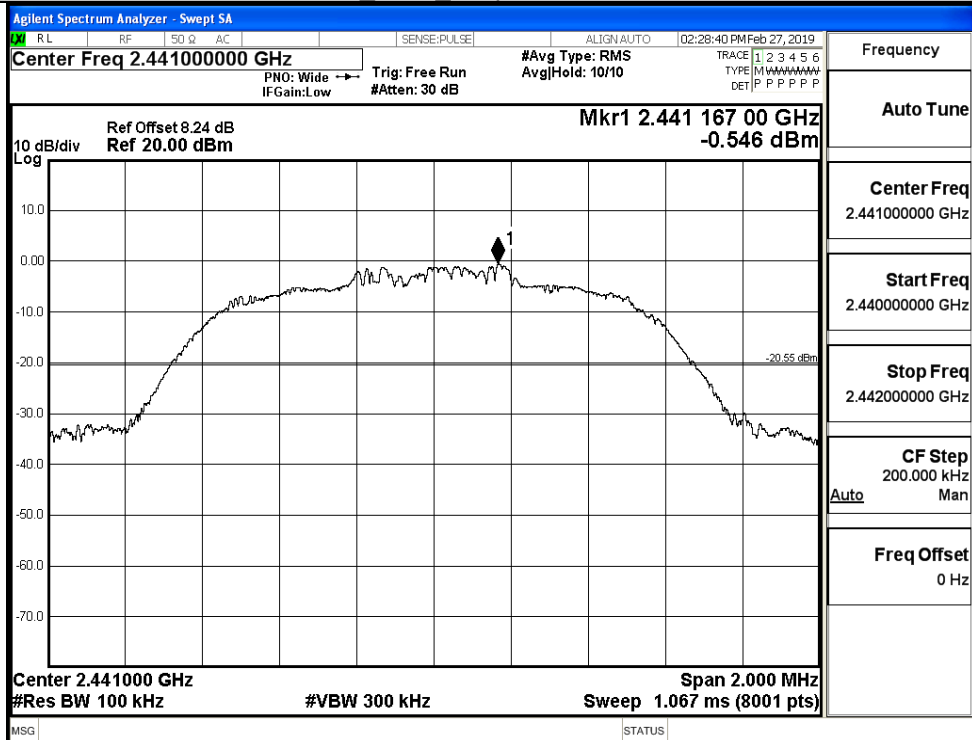


Puw

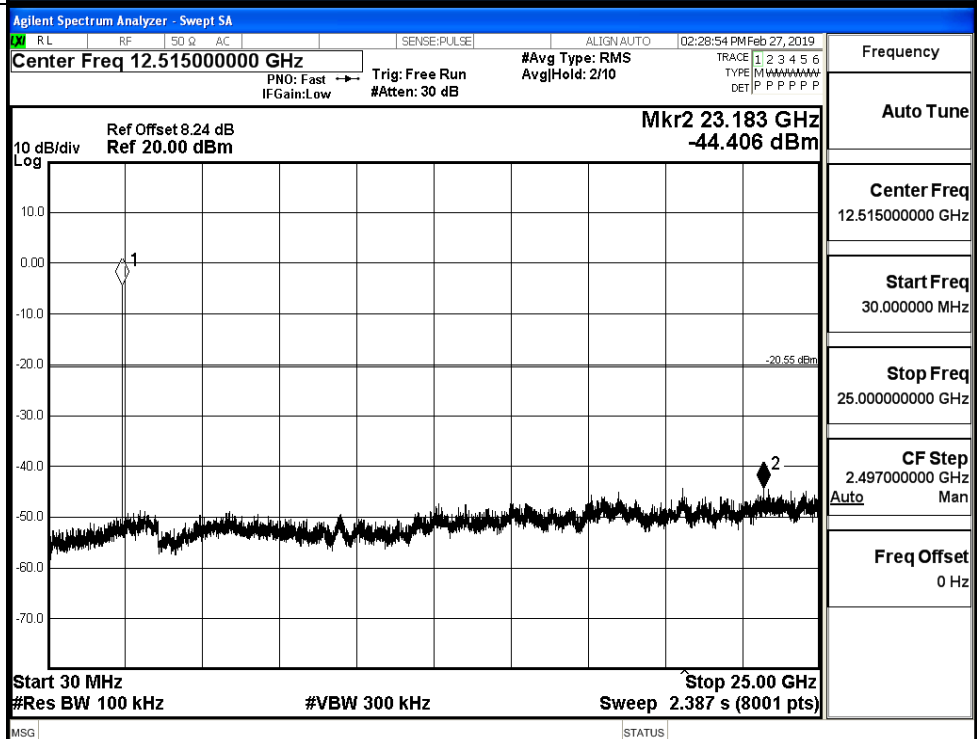


π /4DQPSK_MCH_Graphs

Pref

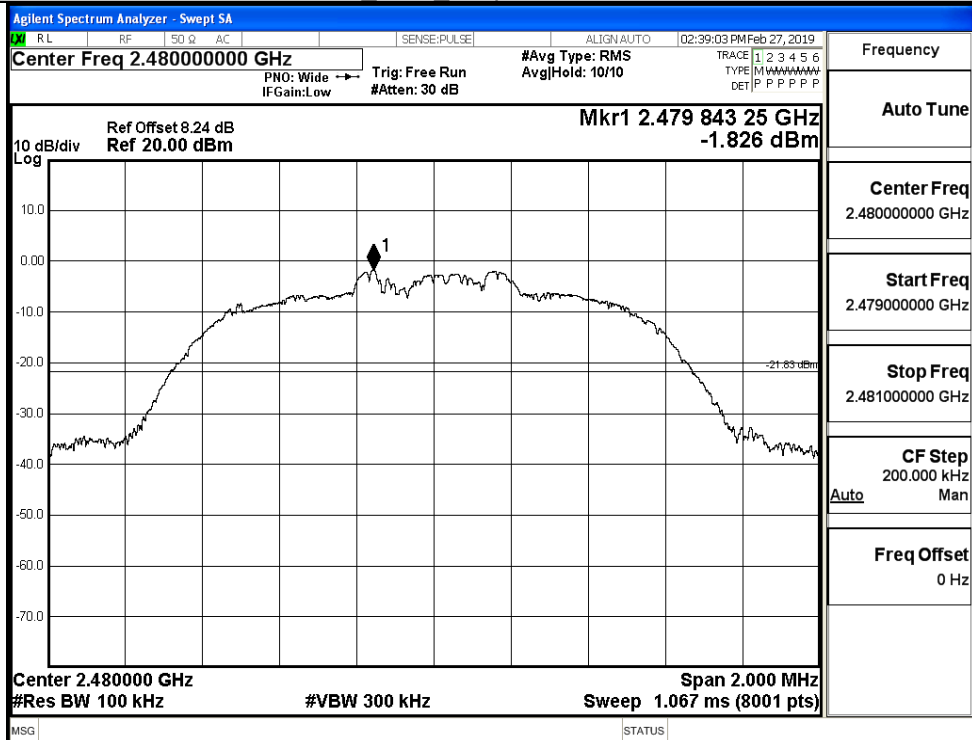


Puw

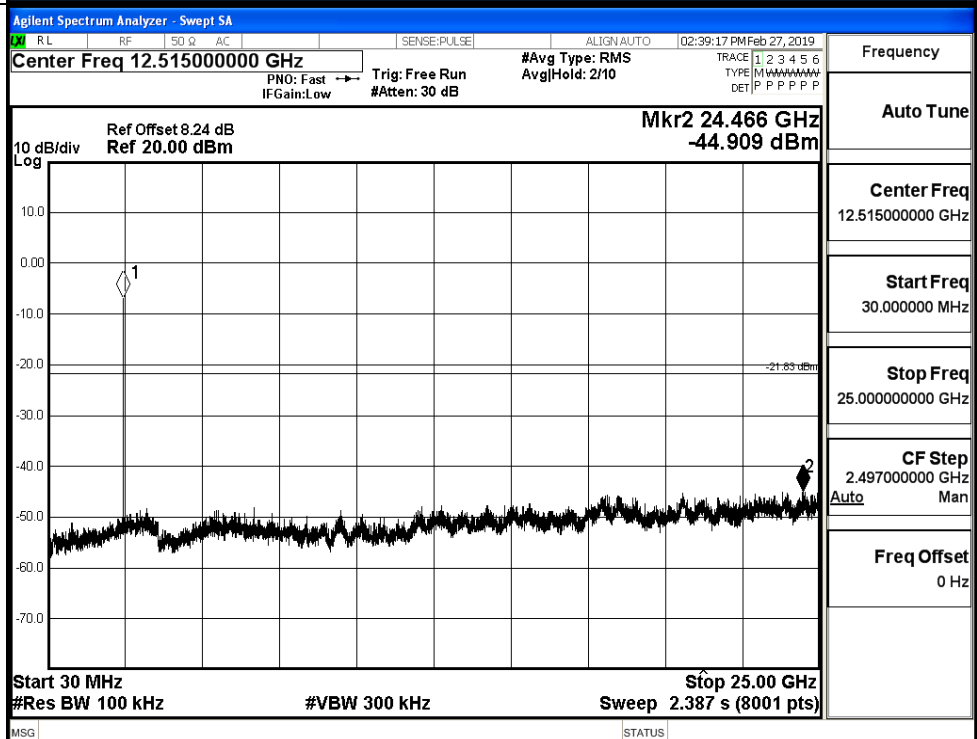


$\pi/4$ DQPSK_HCH_Graphs

Pref

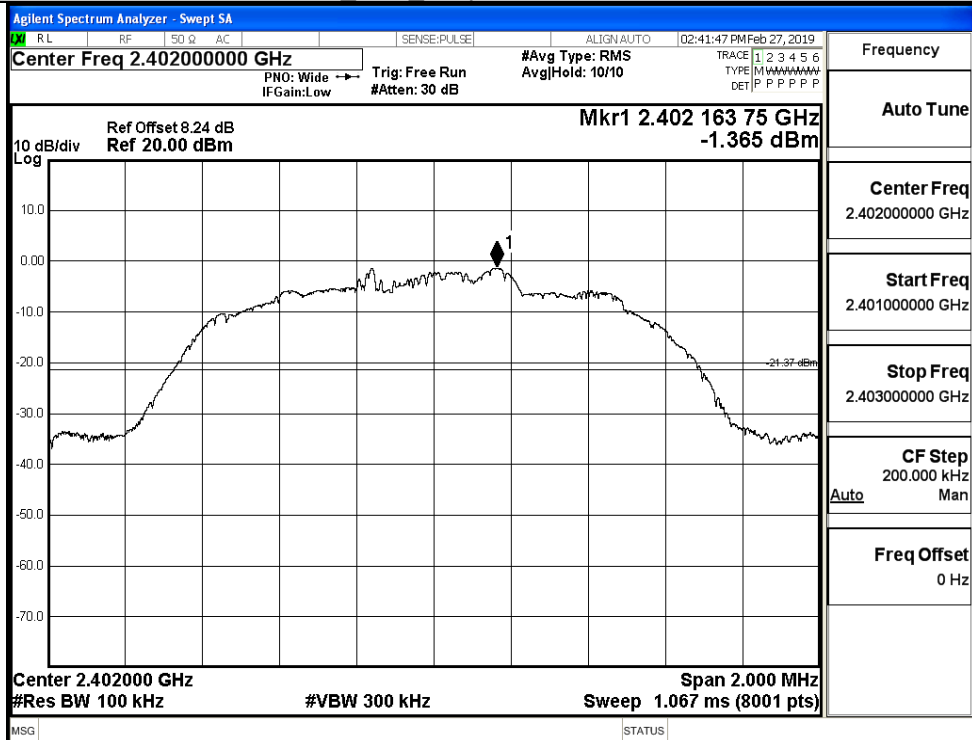


Puw

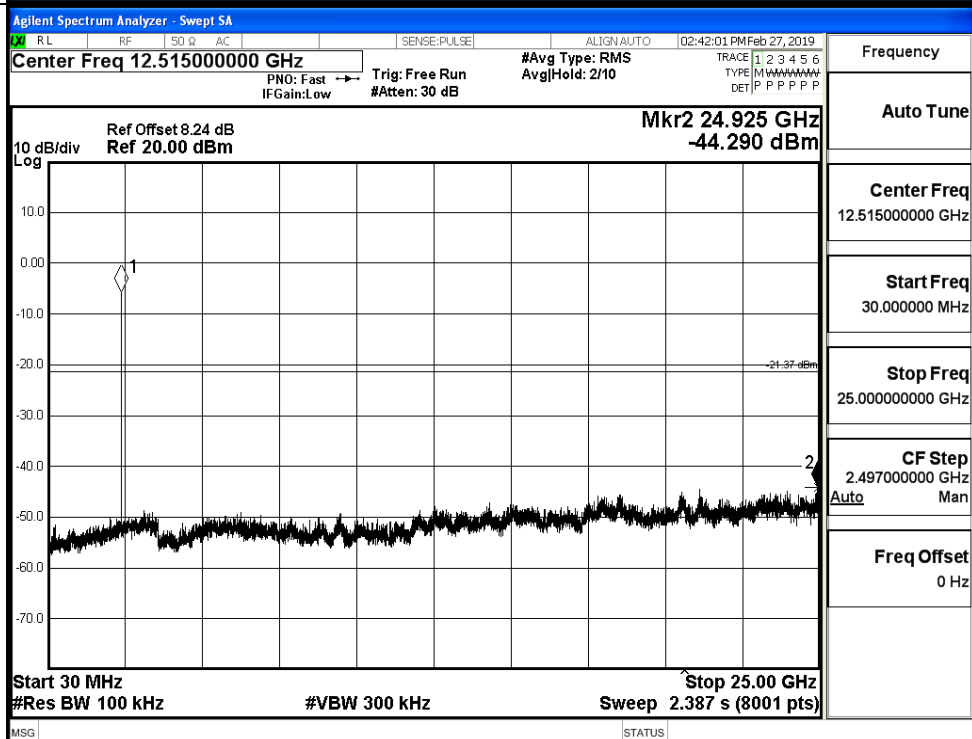


8DPSK_LCH_Graphs

Pref

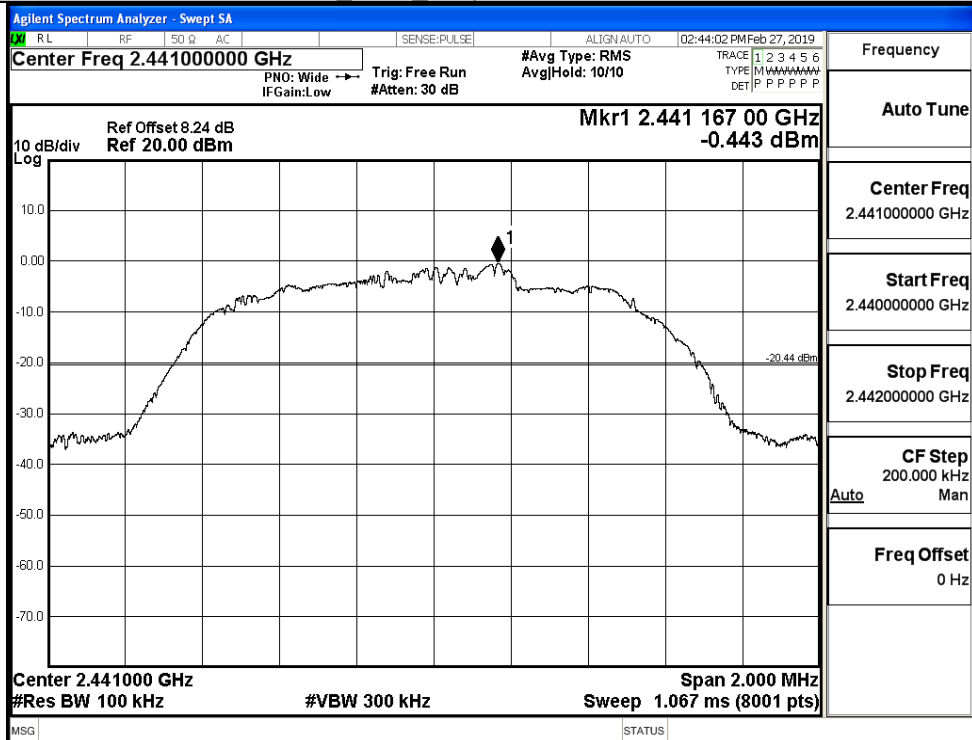


Puw

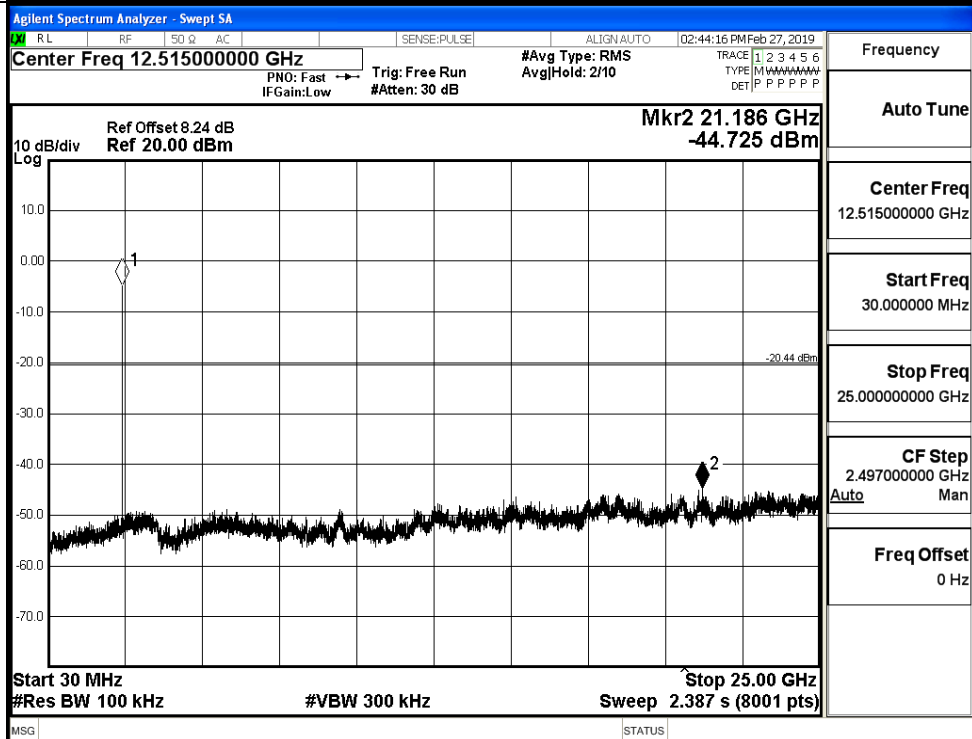


8DPSK_MCH_Graphs

Pref

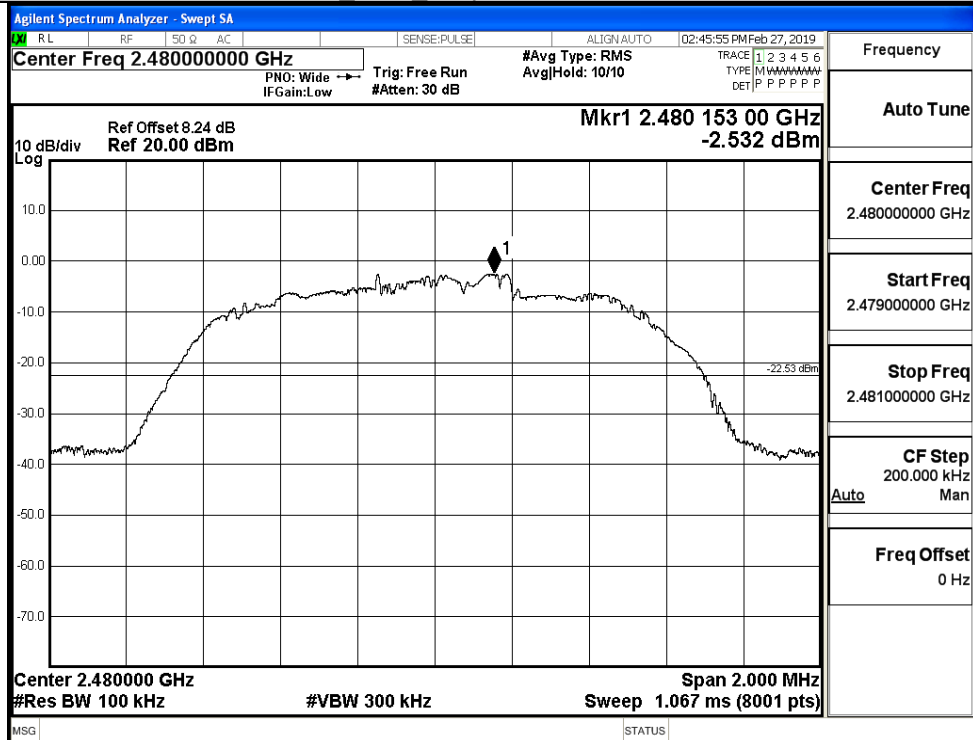


Puw

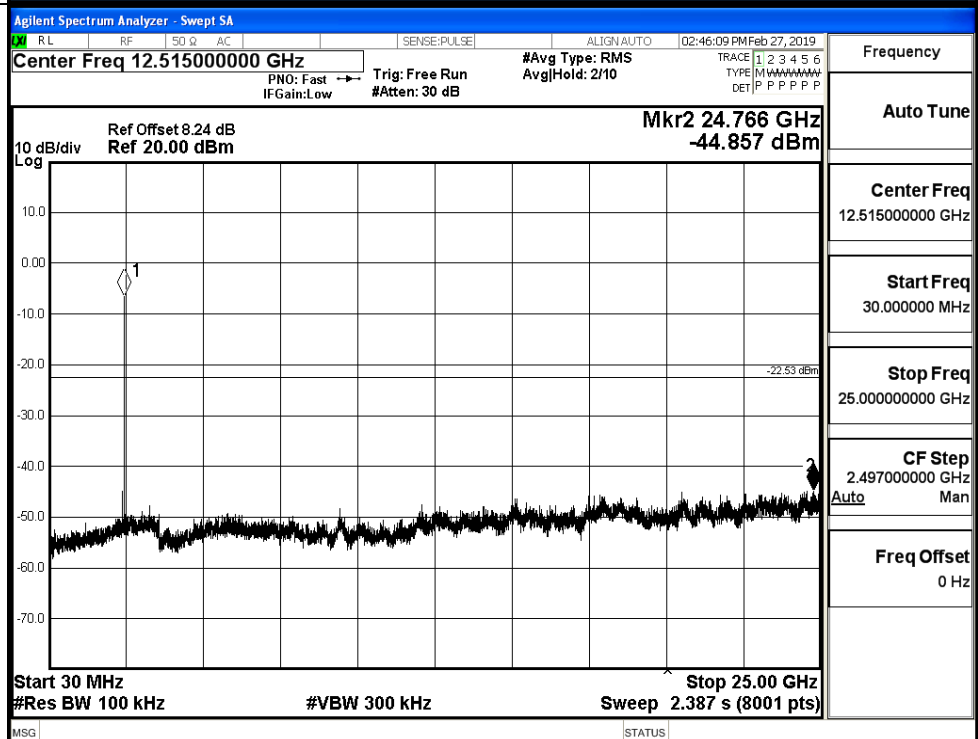


8DPSK_HCH_Graphs

Pref



Puw

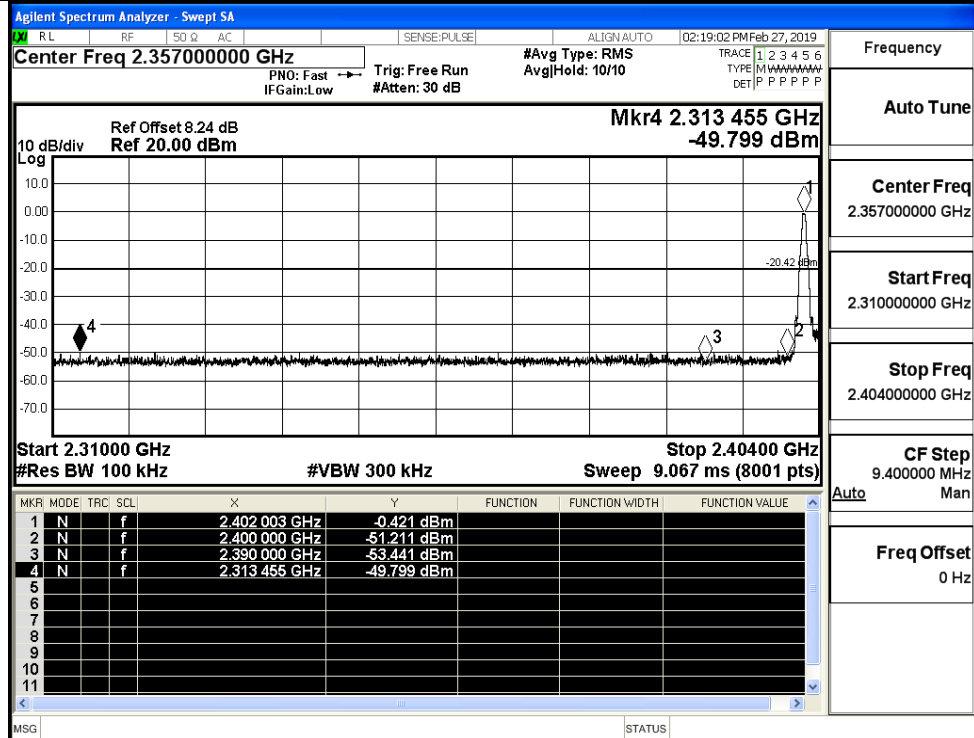


A.7 Band-edge for RF Conducted Emissions

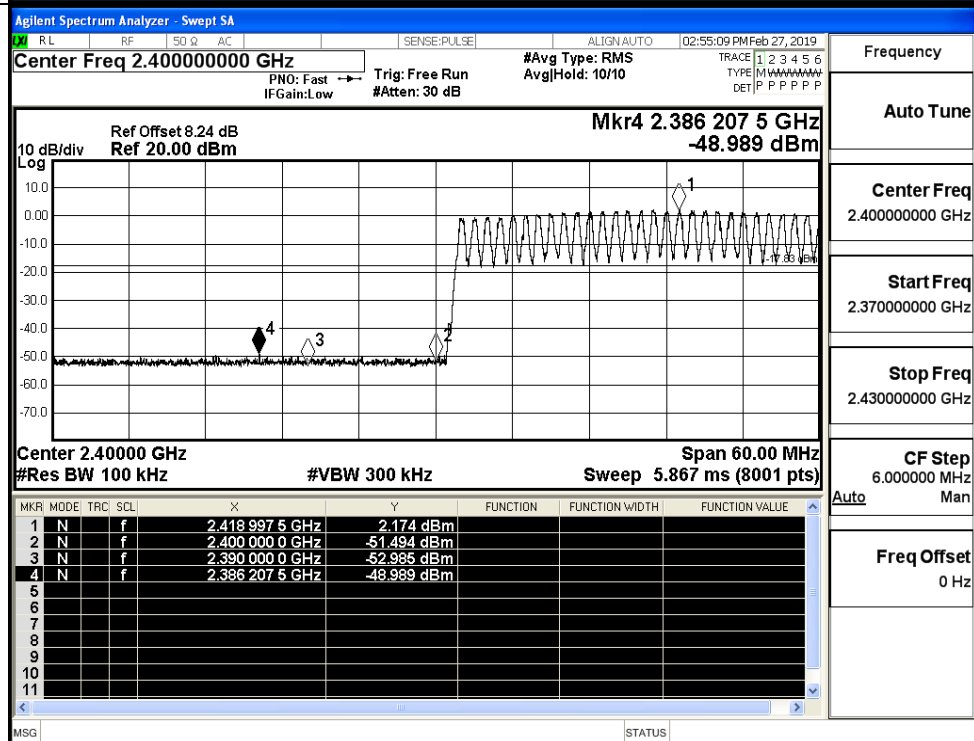
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.421	Off	-49.799	-20.42	PASS
			2.174	On	-48.989	-17.83	PASS
	HCH	2480	-0.550	Off	-49.685	-20.55	PASS
			2.124	On	-49.732	-17.88	PASS
$\pi/4$ DQPSK	LCH	2402	-3.021	Off	-50.227	-23.02	PASS
			1.114	On	-49.451	-18.89	PASS
	HCH	2480	-2.221	Off	-49.477	-22.22	PASS
			0.874	On	-49.094	-19.13	PASS
8DPSK	LCH	2402	-1.440	Off	-50.065	-21.44	PASS
			0.999	On	-48.929	-19.00	PASS
	HCH	2480	-1.736	Off	-49.193	-21.74	PASS
			0.840	On	-48.873	-19.16	PASS

Test Graphs

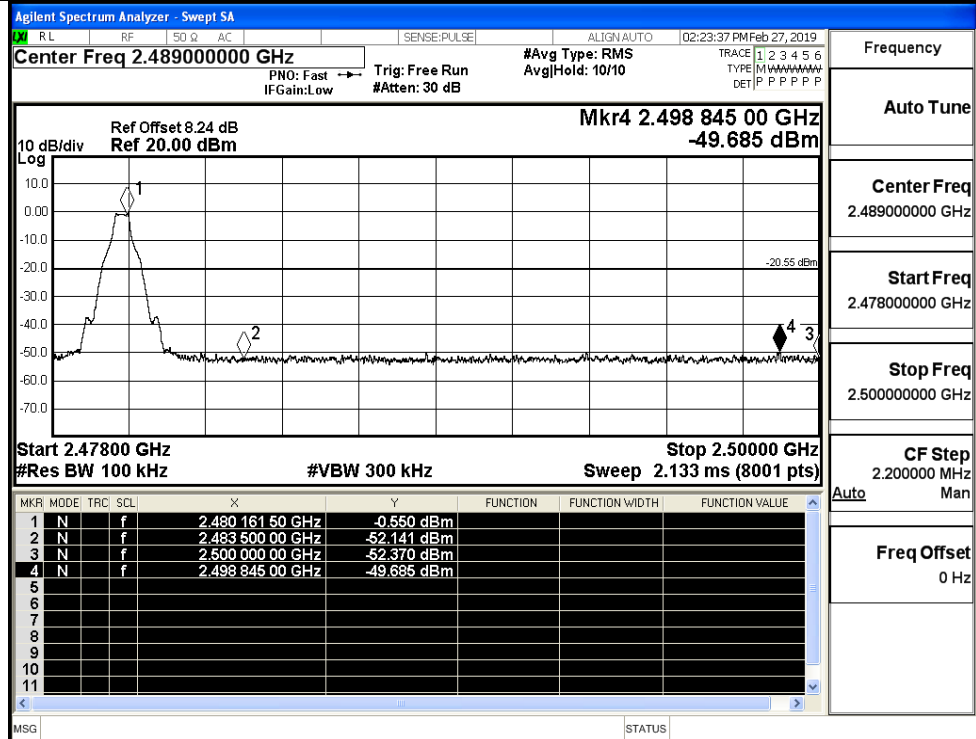
GFSK/LCH/No Hop



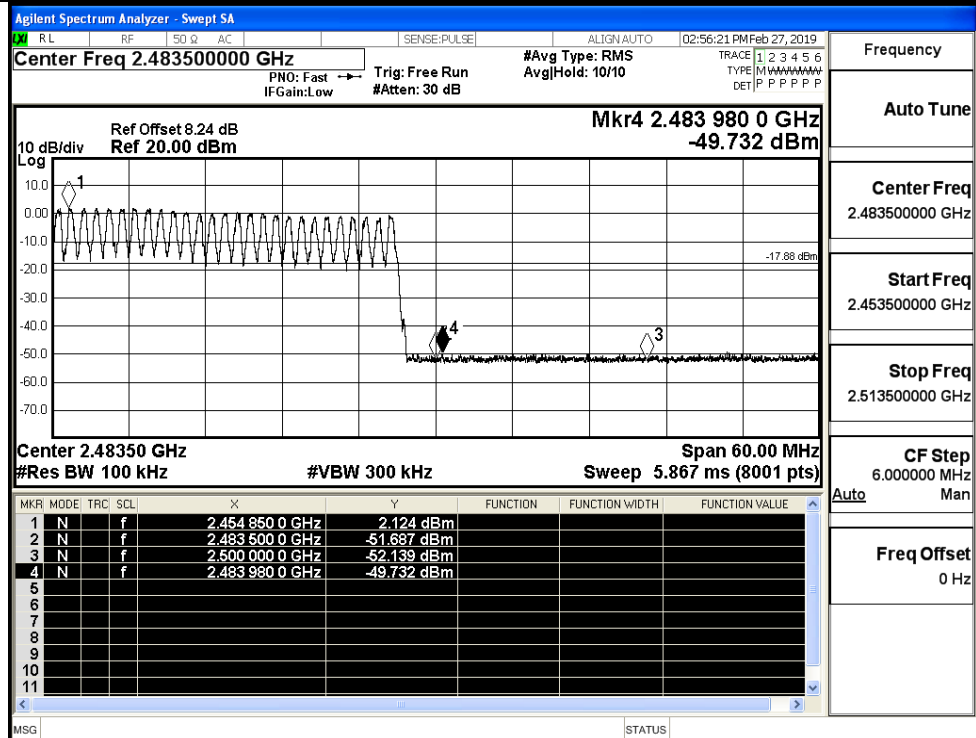
GFSK/LCH/Hop



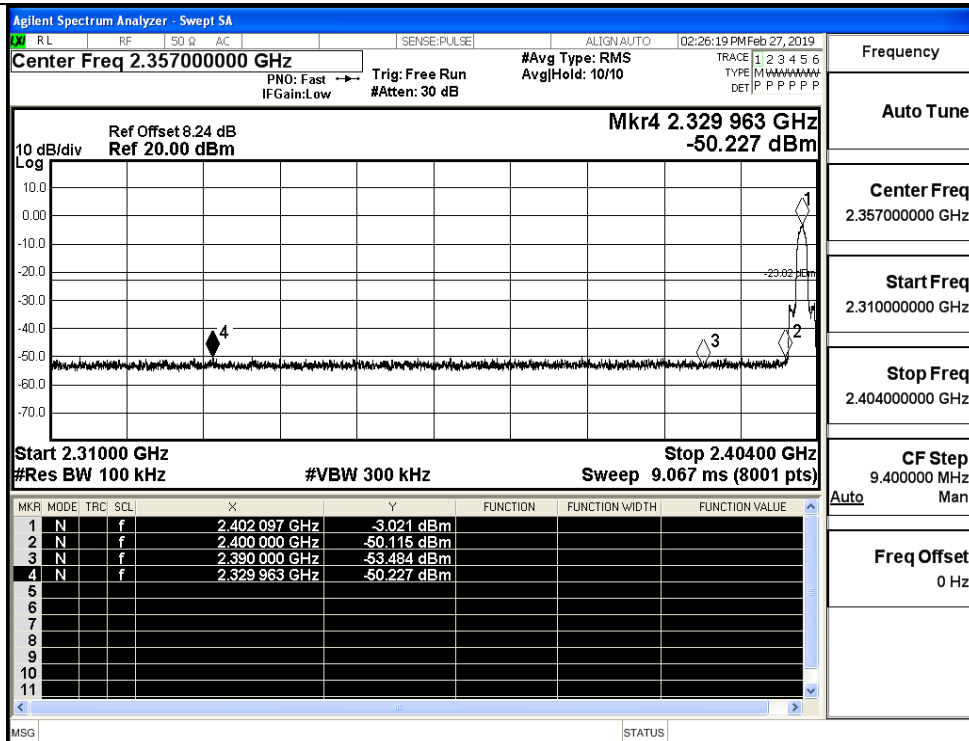
GFSK/HCH/No Hop



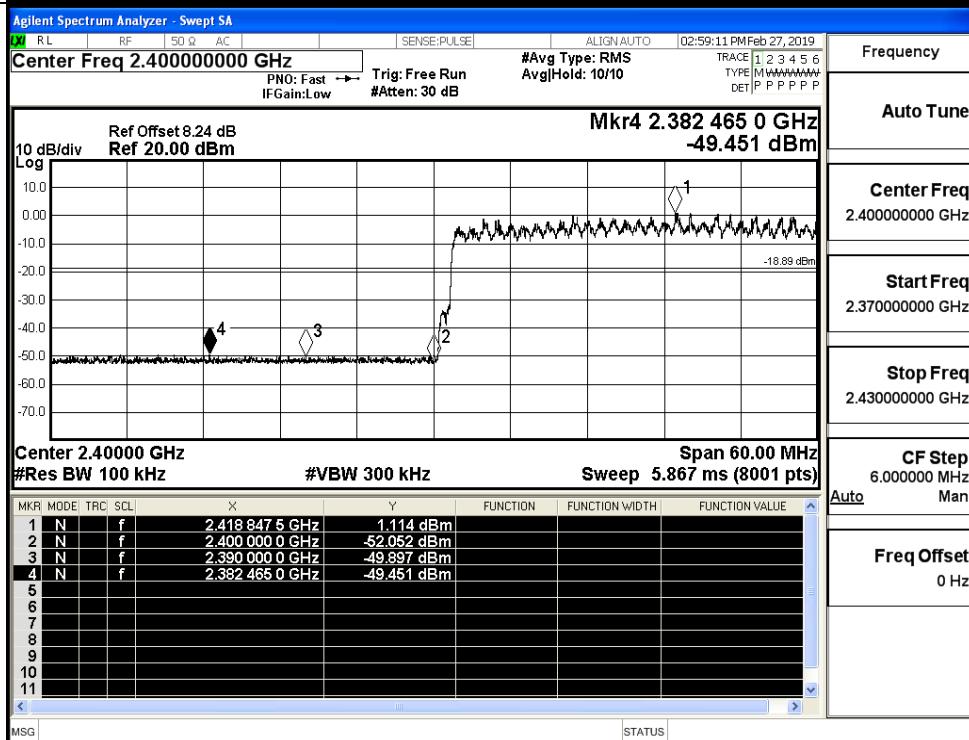
GFSK/HCH/Hop



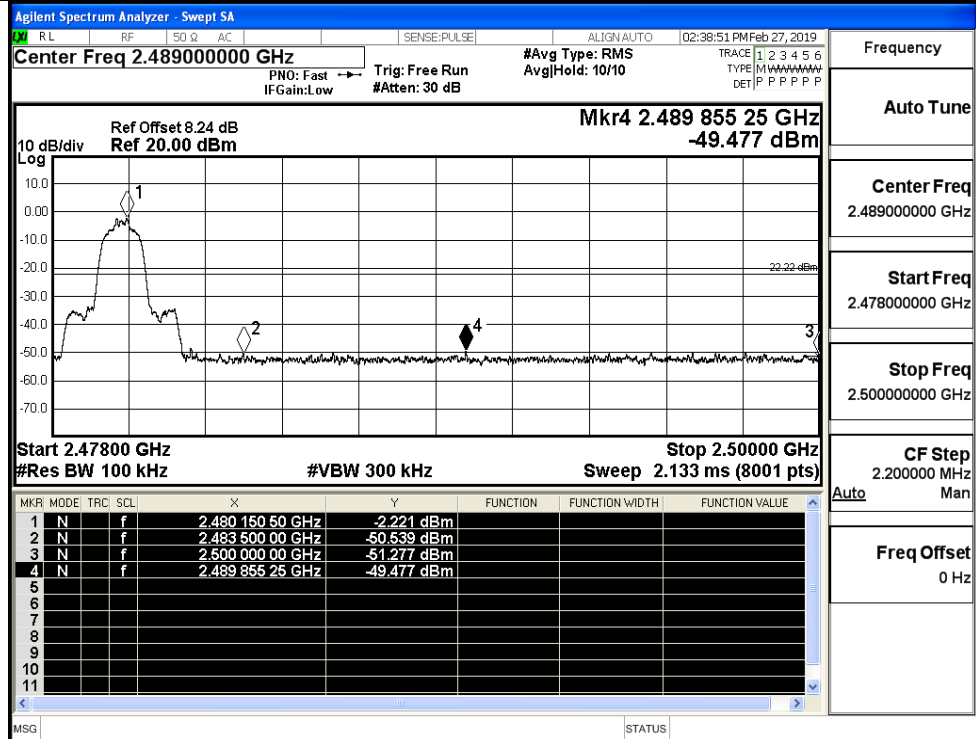
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

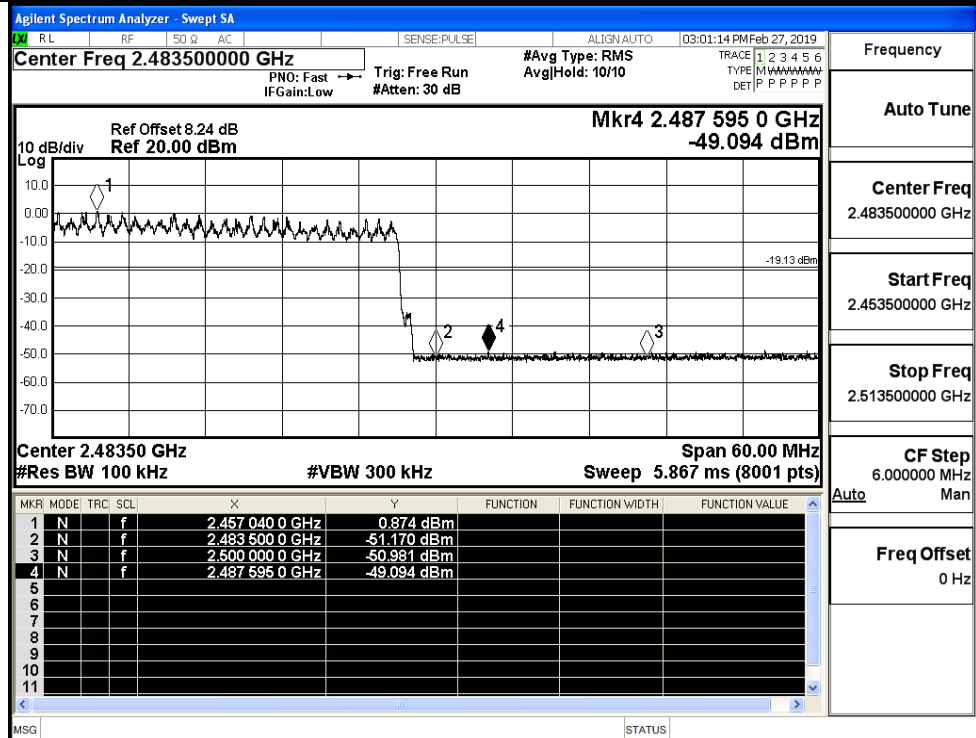


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

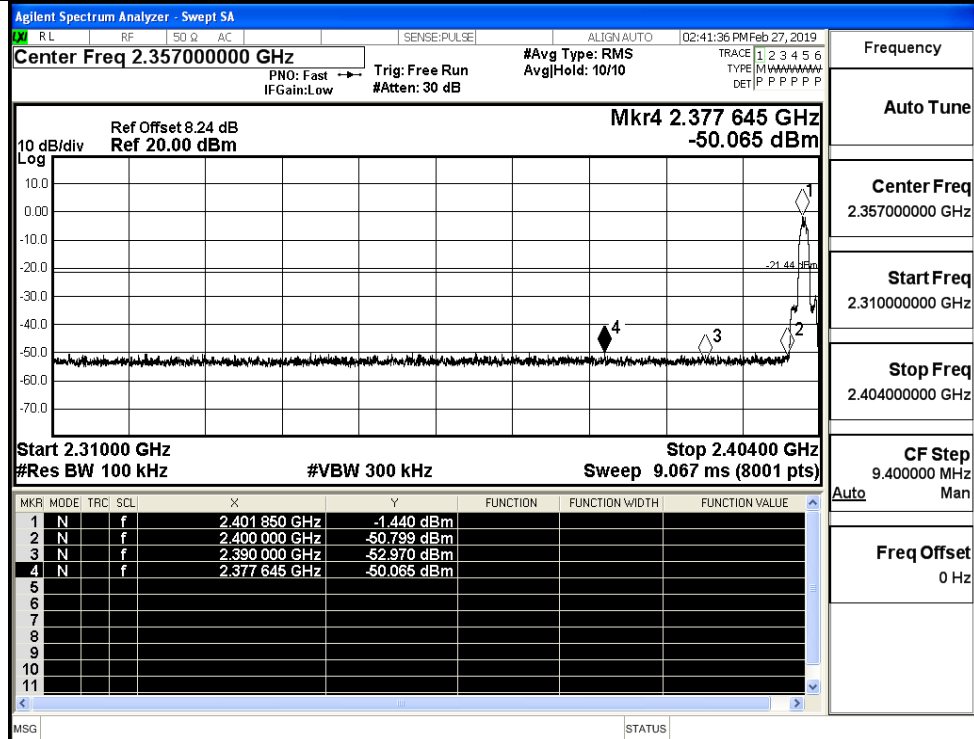


Frequency

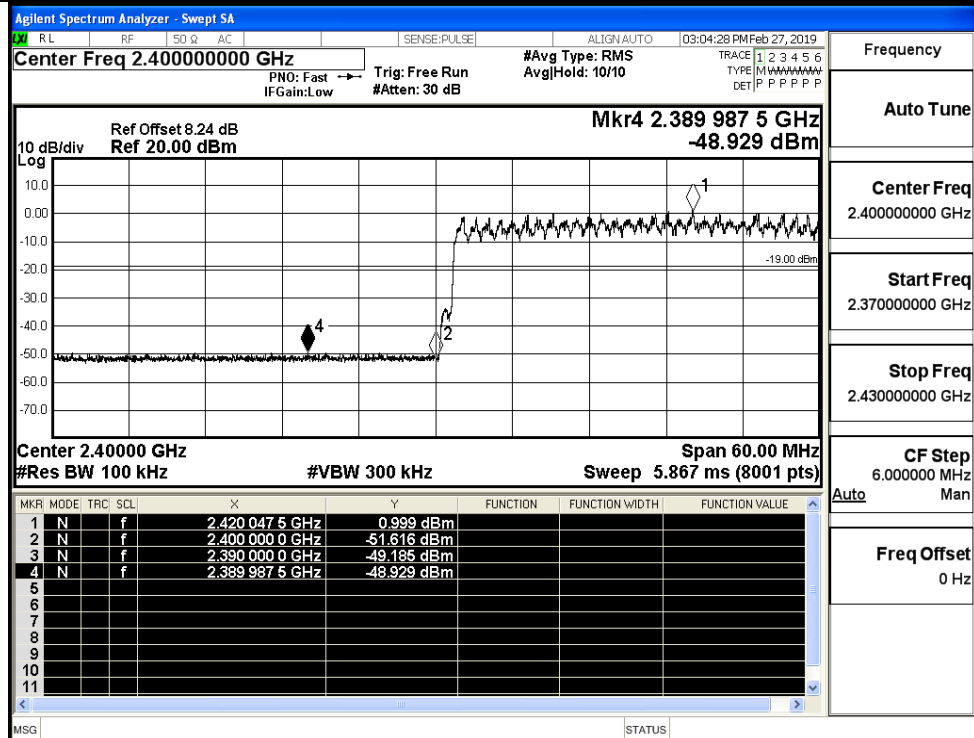
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

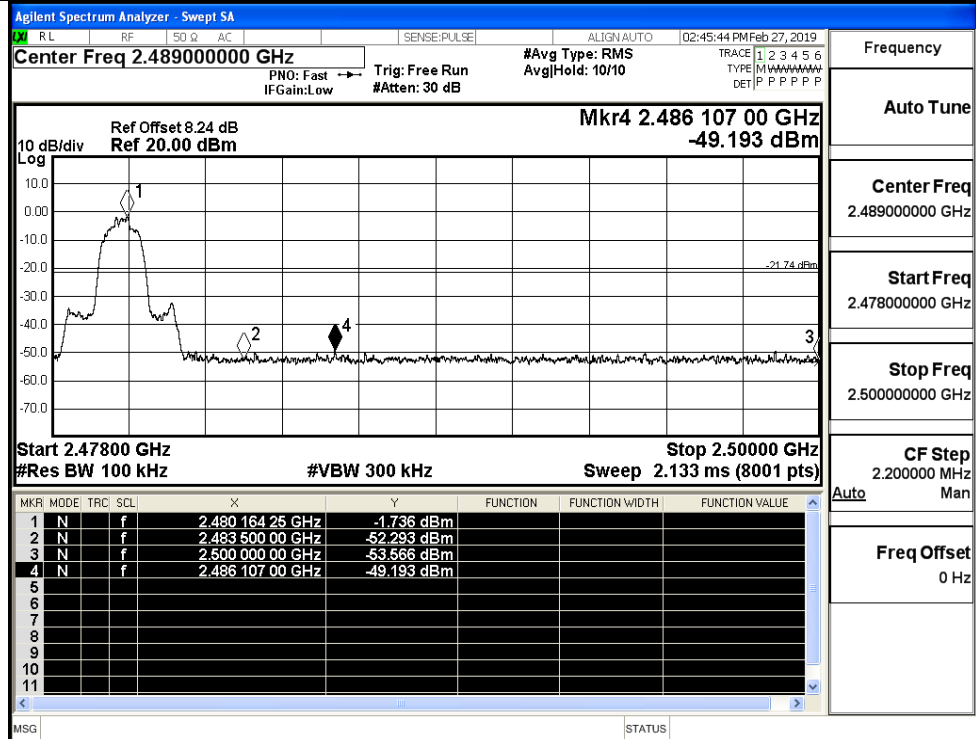
8DPSK/LCH/No Hop



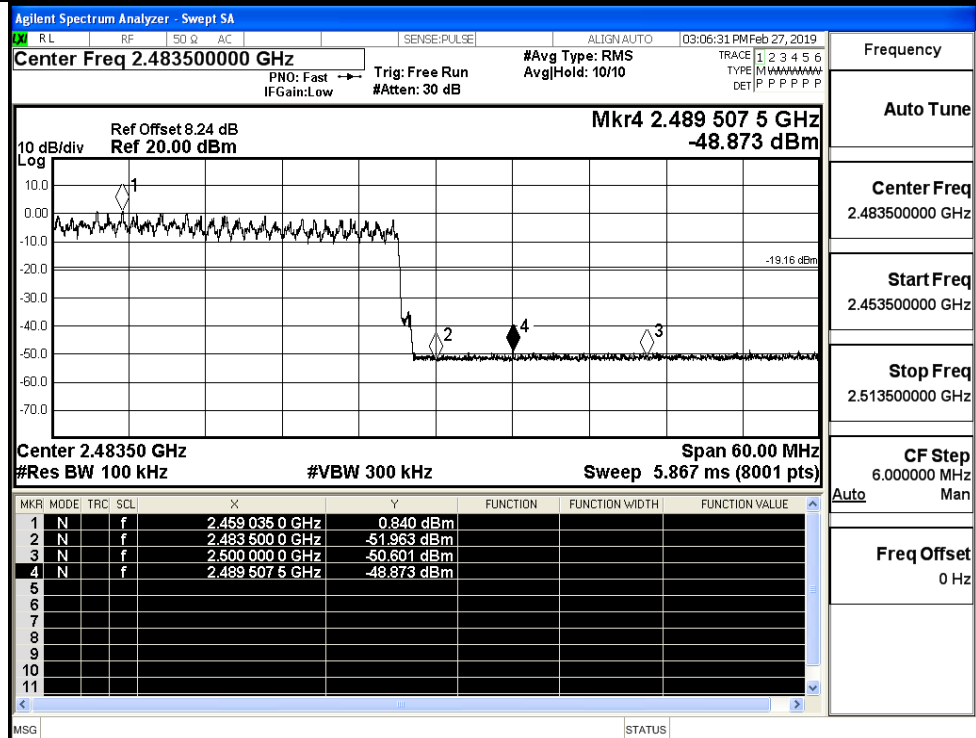
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



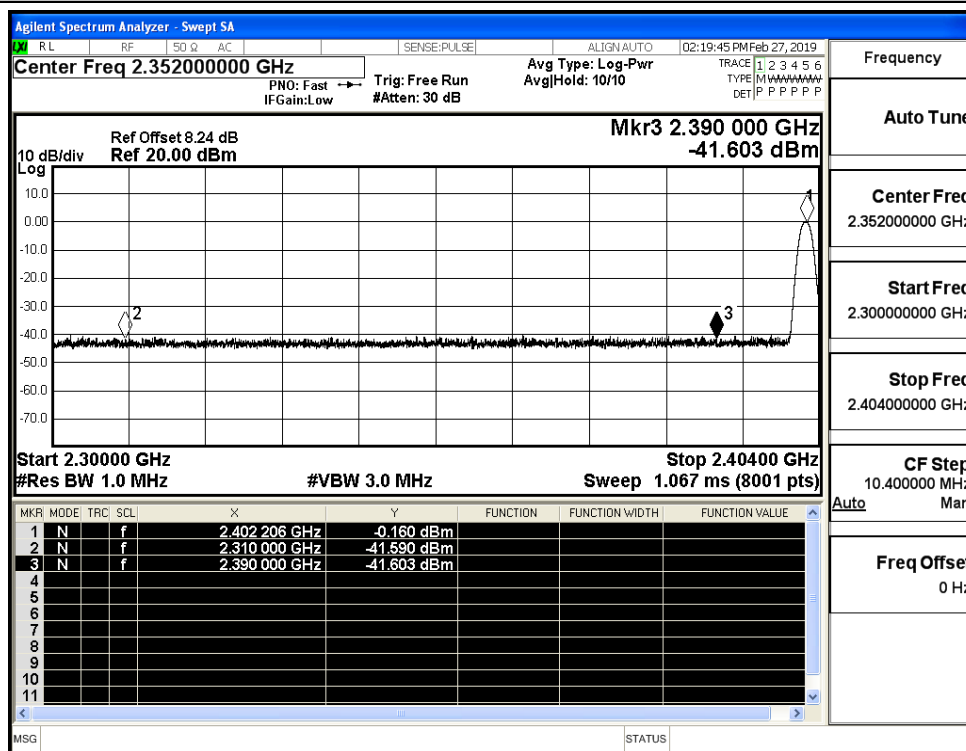
8DPSK/HCH/Hop



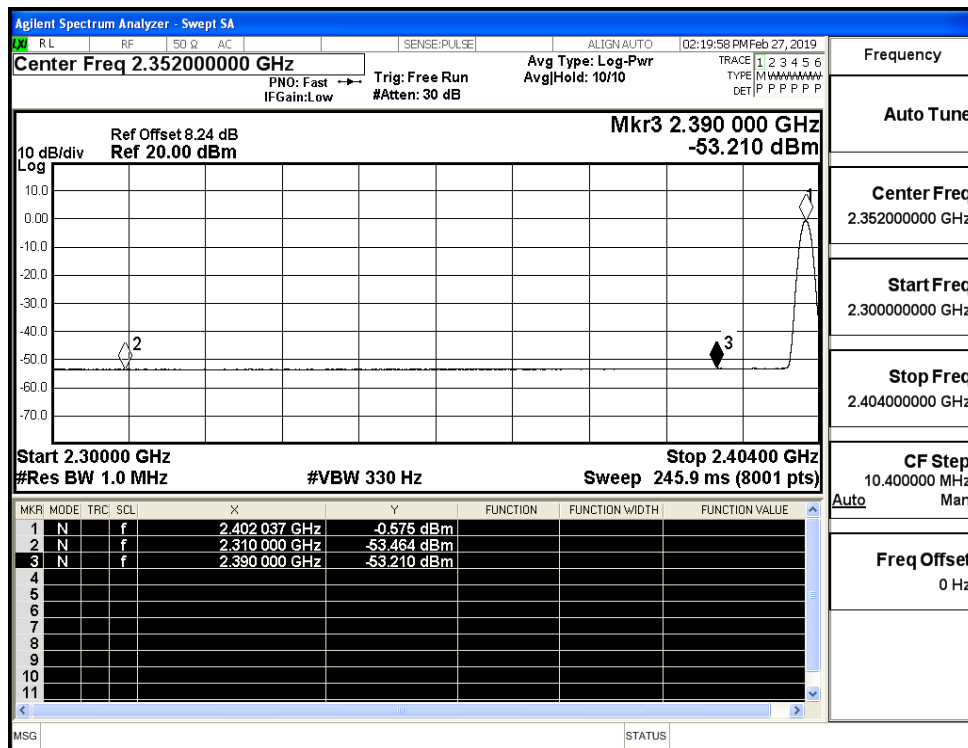
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.59	2.0	0	55.67	PEAK	74	PASS
	Off	2310.0	-53.46	2.0	0	43.79	AV	54	PASS
	Off	2390.0	-41.60	2.0	0	55.65	PEAK	74	PASS
	Off	2390.0	-53.21	2.0	0	44.05	AV	54	PASS
	Off	2483.5	-42.86	2.0	0	54.40	PEAK	74	PASS
	Off	2483.5	-53.01	2.0	0	44.25	AV	54	PASS
	Off	2500.0	-42.49	2.0	0	54.77	PEAK	74	PASS
	Off	2500.0	-52.86	2.0	0	44.40	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.79	2.0	0	53.46	PEAK	74	PASS
	Off	2310.0	-53.52	2.0	0	43.74	AV	54	PASS
	Off	2390.0	-42.57	2.0	0	54.69	PEAK	74	PASS
	Off	2390.0	-53.19	2.0	0	44.07	AV	54	PASS
	Off	2483.5	-43.07	2.0	0	54.19	PEAK	74	PASS
	Off	2483.5	-52.98	2.0	0	44.28	AV	54	PASS
	Off	2500.0	-42.65	2.0	0	54.61	PEAK	74	PASS
	Off	2500.0	-52.95	2.0	0	44.30	AV	54	PASS
8DPSK	Off	2310.0	-43.74	2.0	0	53.52	PEAK	74	PASS
	Off	2310.0	-53.45	2.0	0	43.81	AV	54	PASS
	Off	2390.0	-43.71	2.0	0	53.55	PEAK	74	PASS
	Off	2390.0	-53.36	2.0	0	43.90	AV	54	PASS
	Off	2483.5	-43.12	2.0	0	54.14	PEAK	74	PASS
	Off	2483.5	-52.96	2.0	0	44.30	AV	54	PASS
	Off	2500.0	-43.33	2.0	0	53.93	PEAK	74	PASS
	Off	2500.0	-52.95	2.0	0	44.30	AV	54	PASS

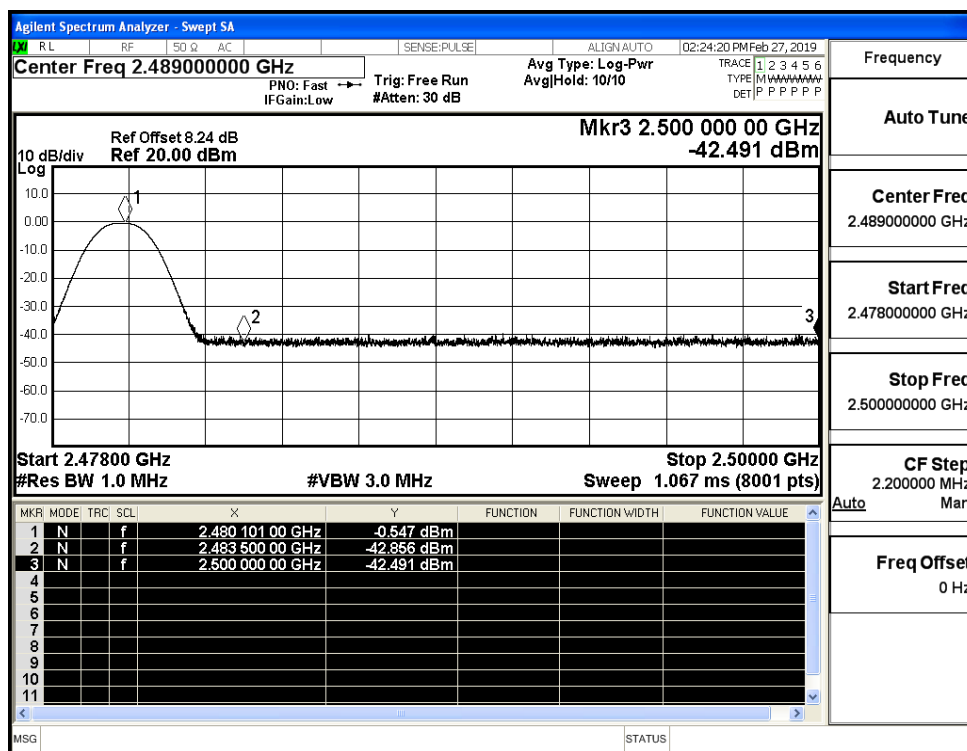
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



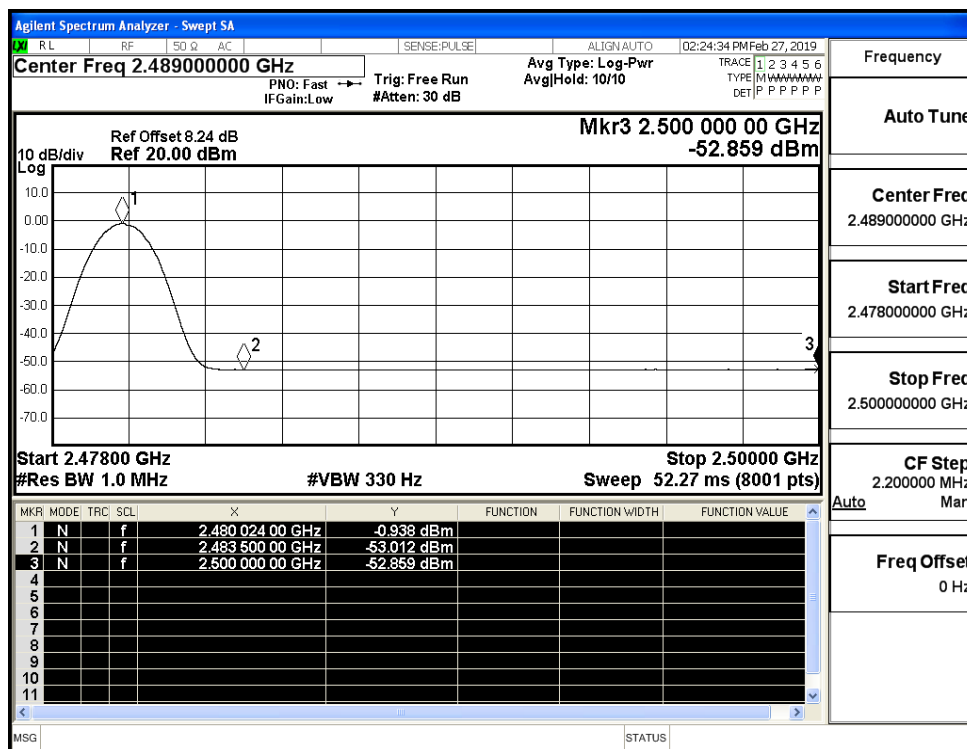
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

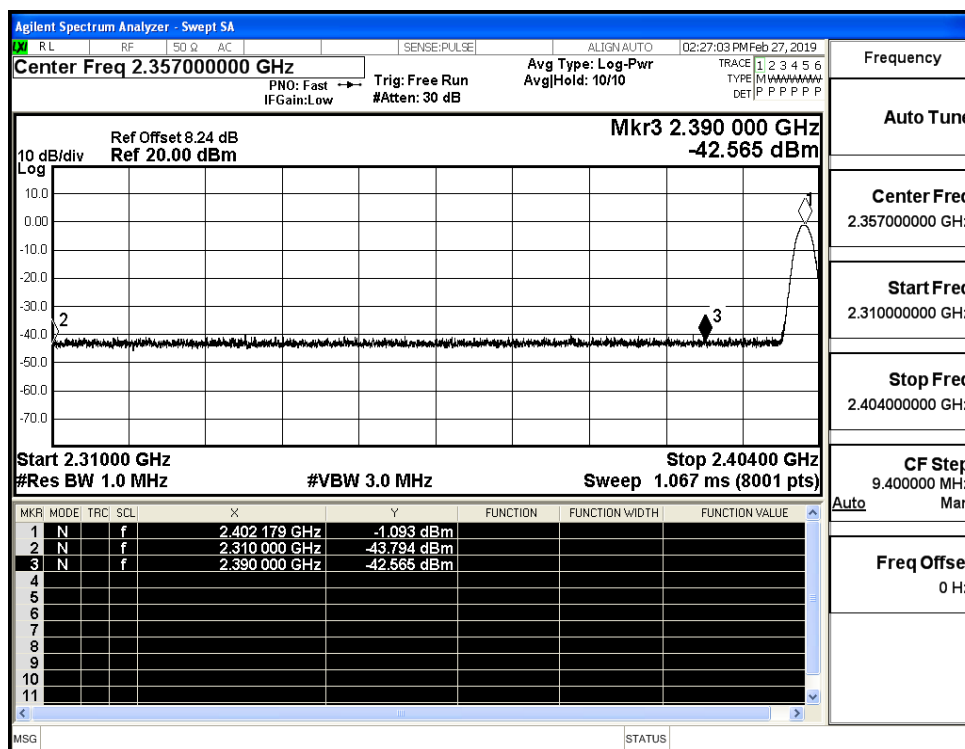
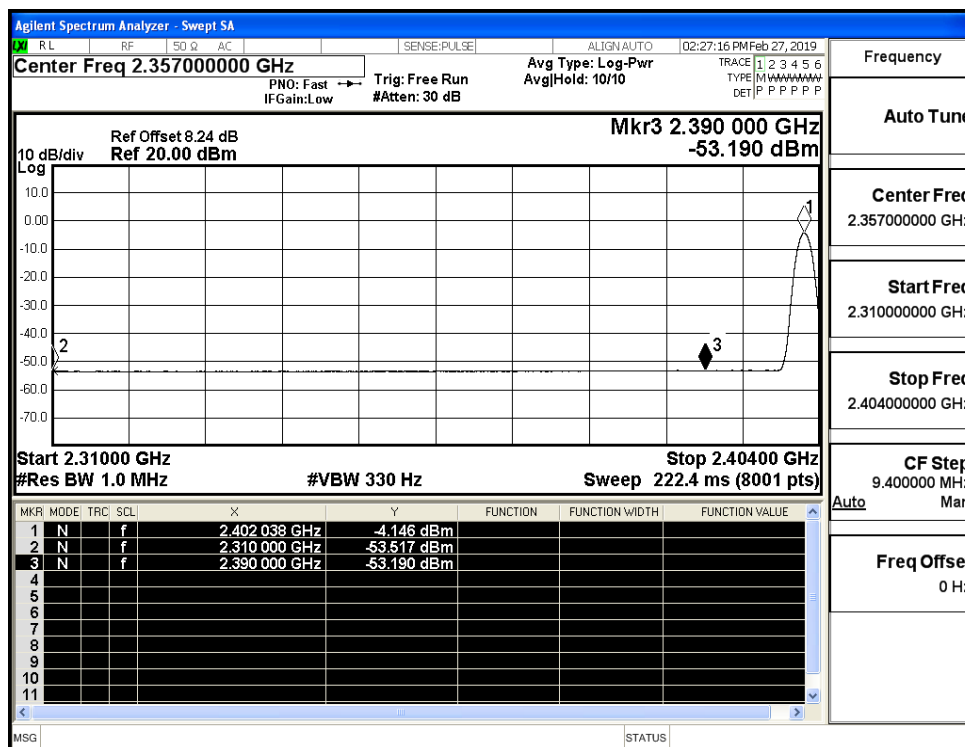


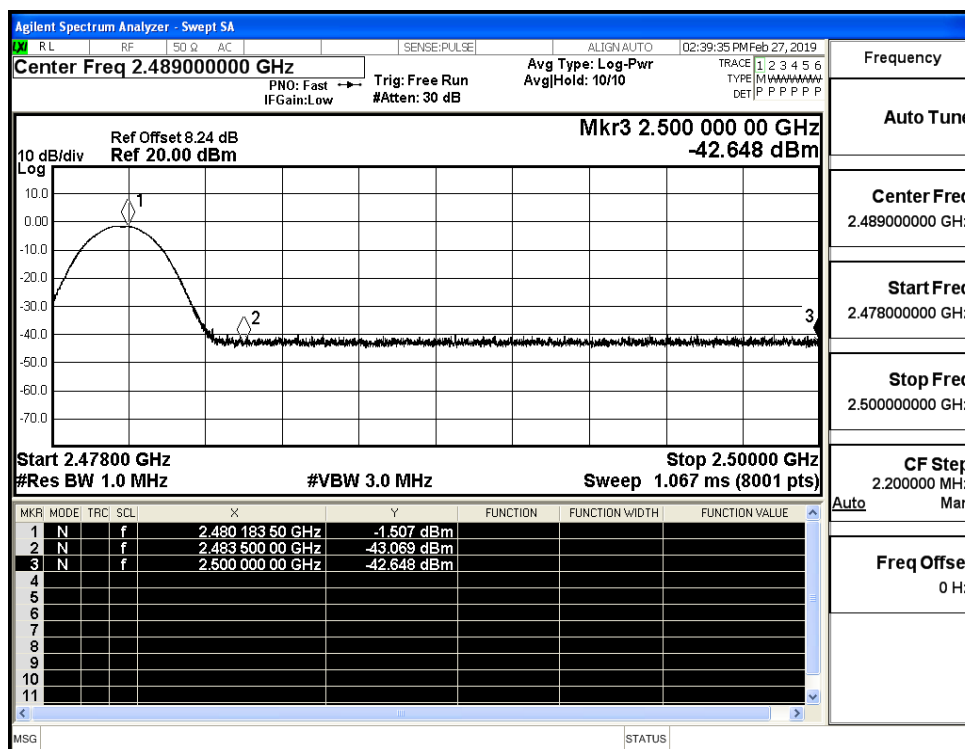
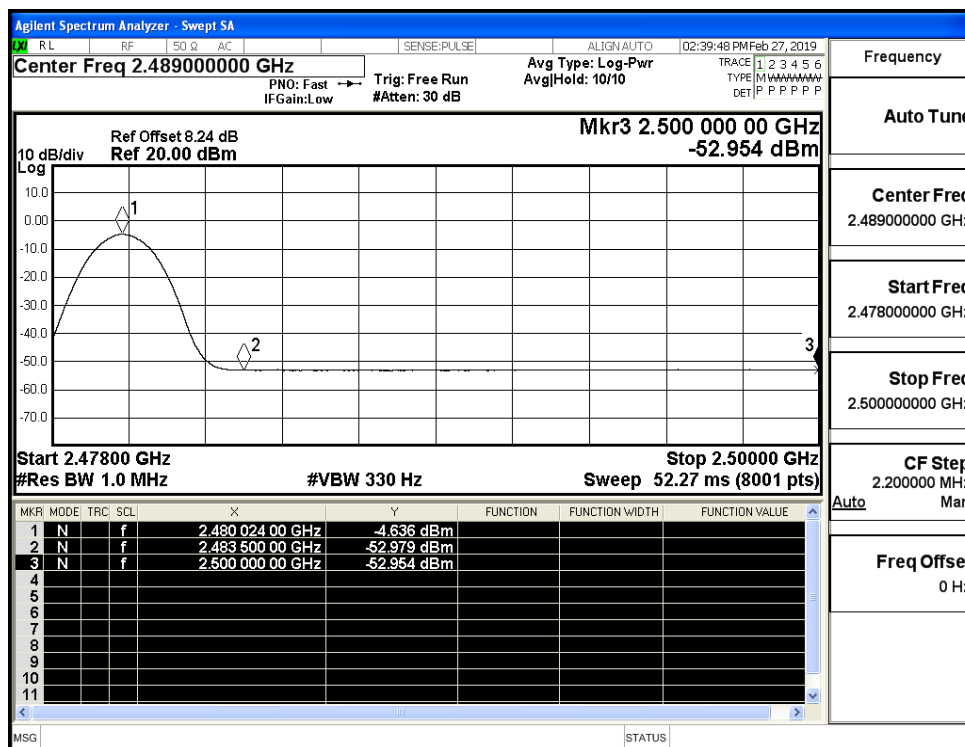
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



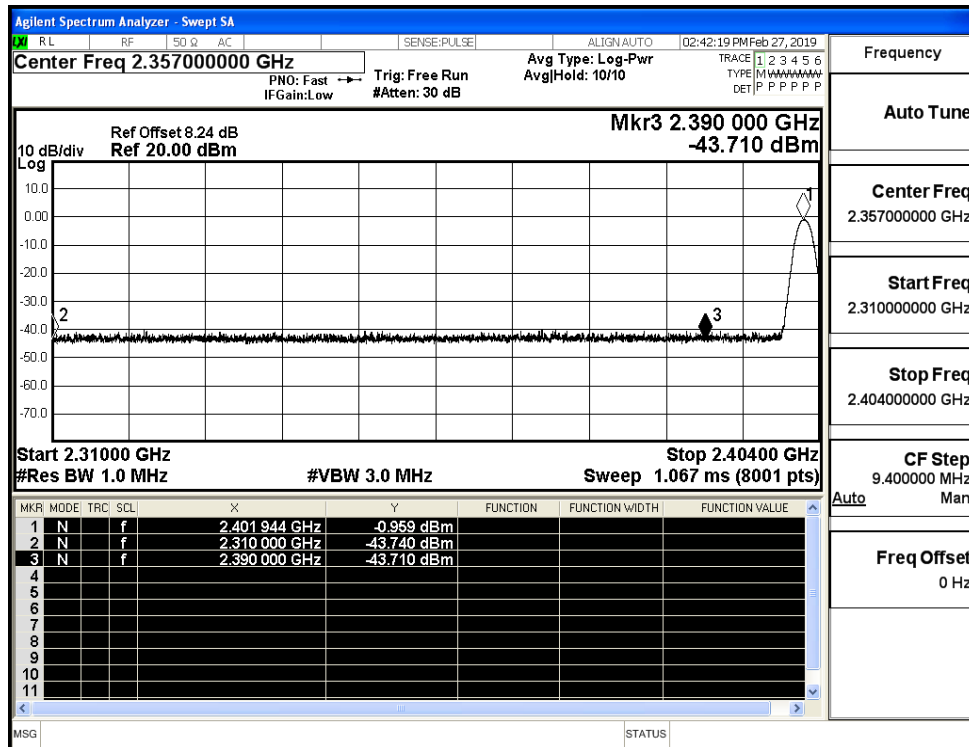
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



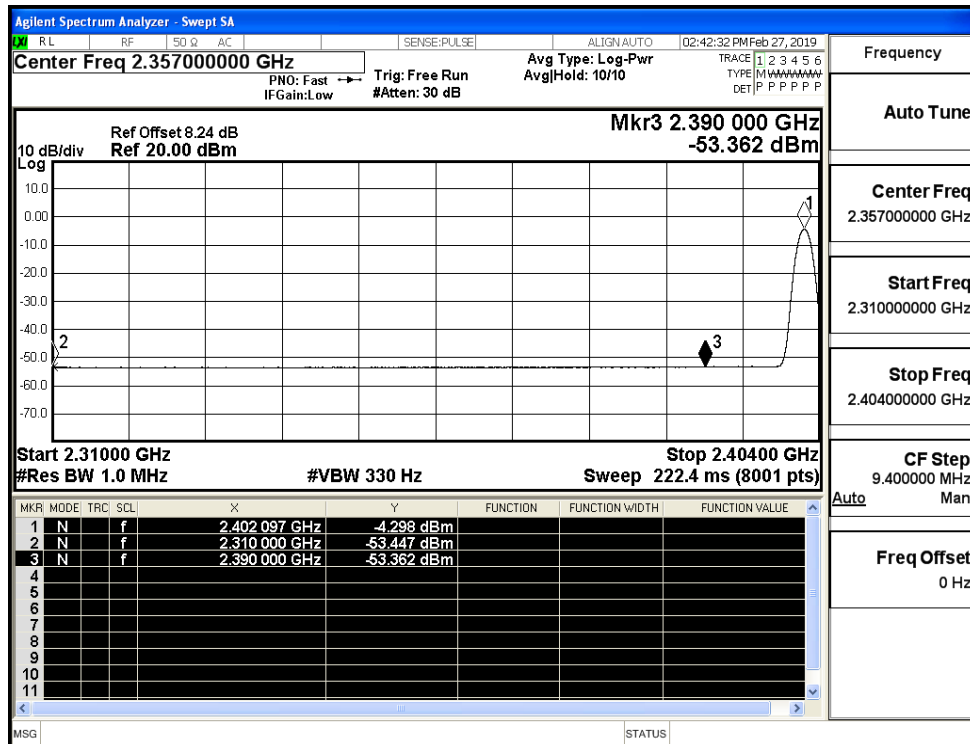
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

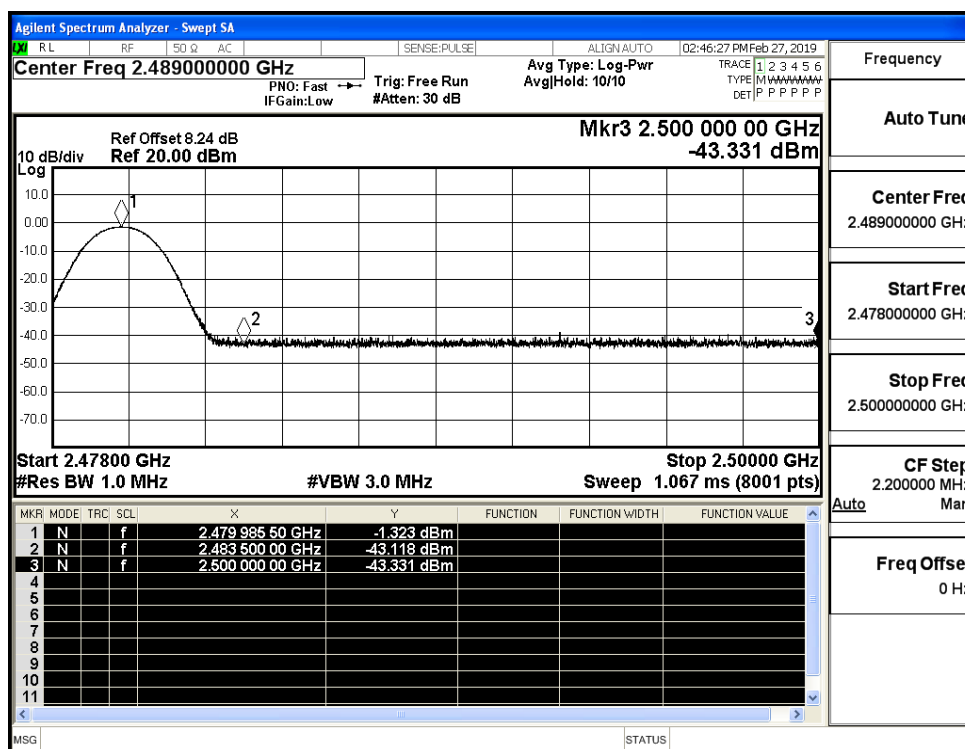
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

