

Appendix A

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

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: BS-621

Environmental Conditions

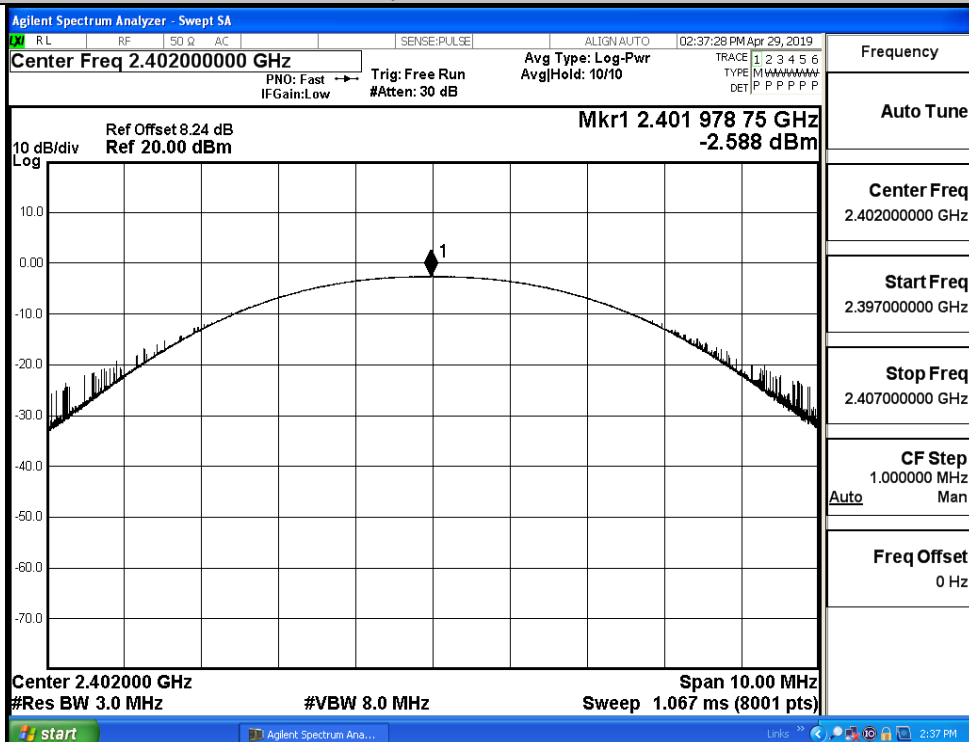
Temperature:	24.8 ° C
Relative Humidity:	52.9%
ATM Pressure:	100.0 kPa
Test Engineer:	JERRY.ZENG
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

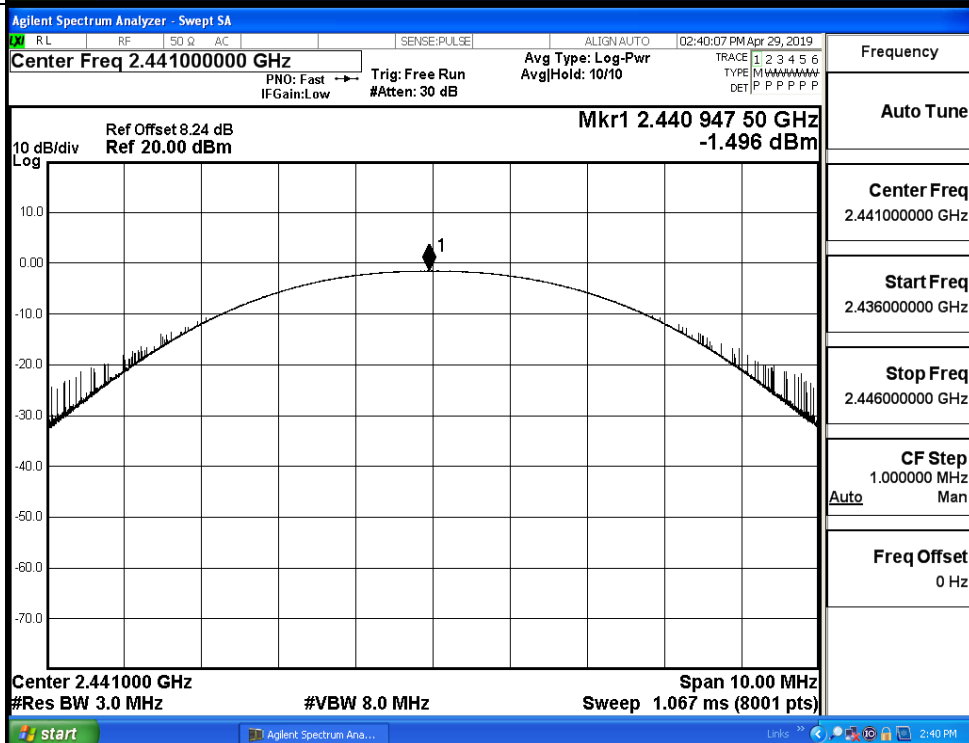
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.588	21	PASS
	MCH	-1.496	21	PASS
	HCH	-0.811	21	PASS
$\pi/4$ DQPSK	LCH	0.358	21	PASS
	MCH	1.940	21	PASS
	HCH	2.646	21	PASS
8DPSK	LCH	1.094	21	PASS
	MCH	2.288	21	PASS
	HCH	3.024	21	PASS

Test Graphs

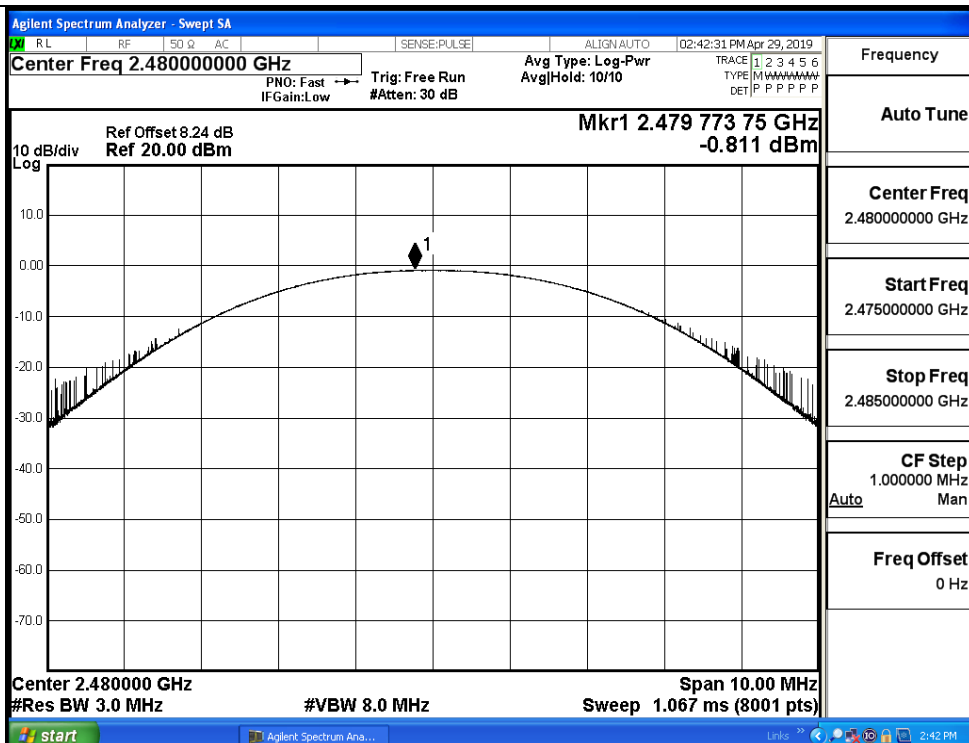
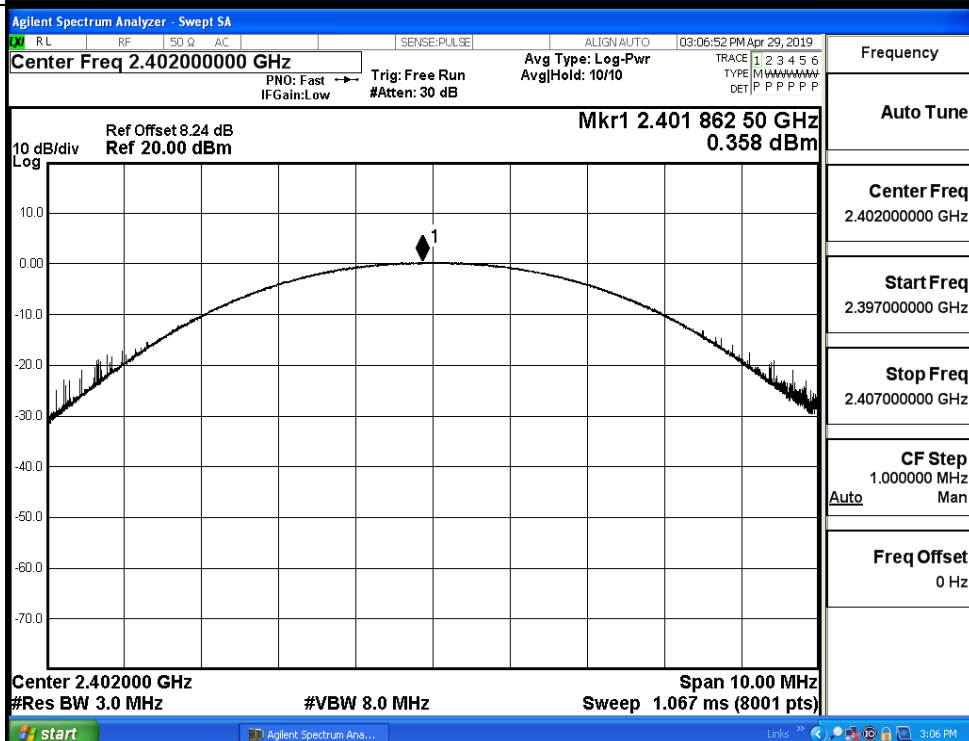
GFSK/LCH

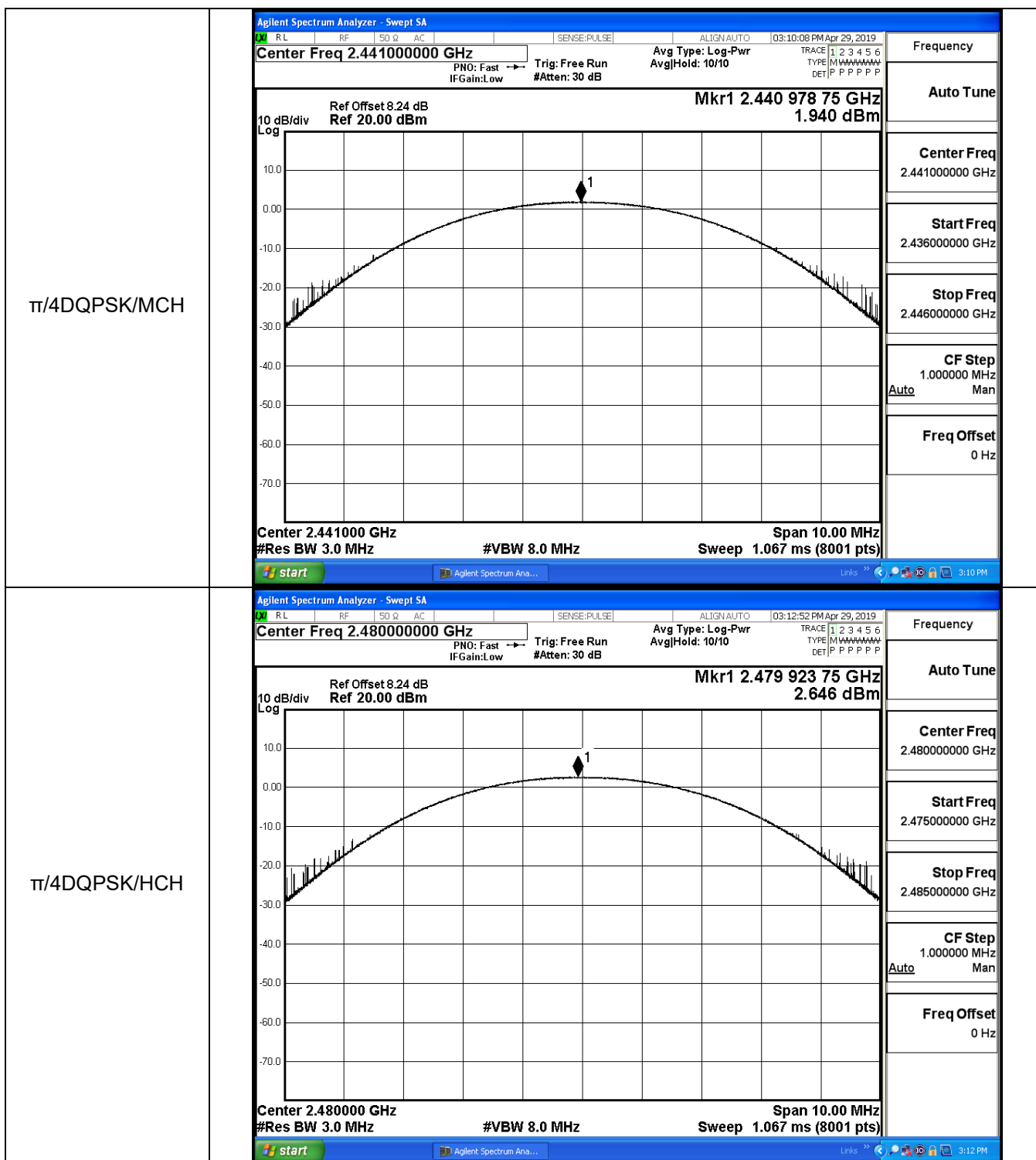


GFSK/MCH

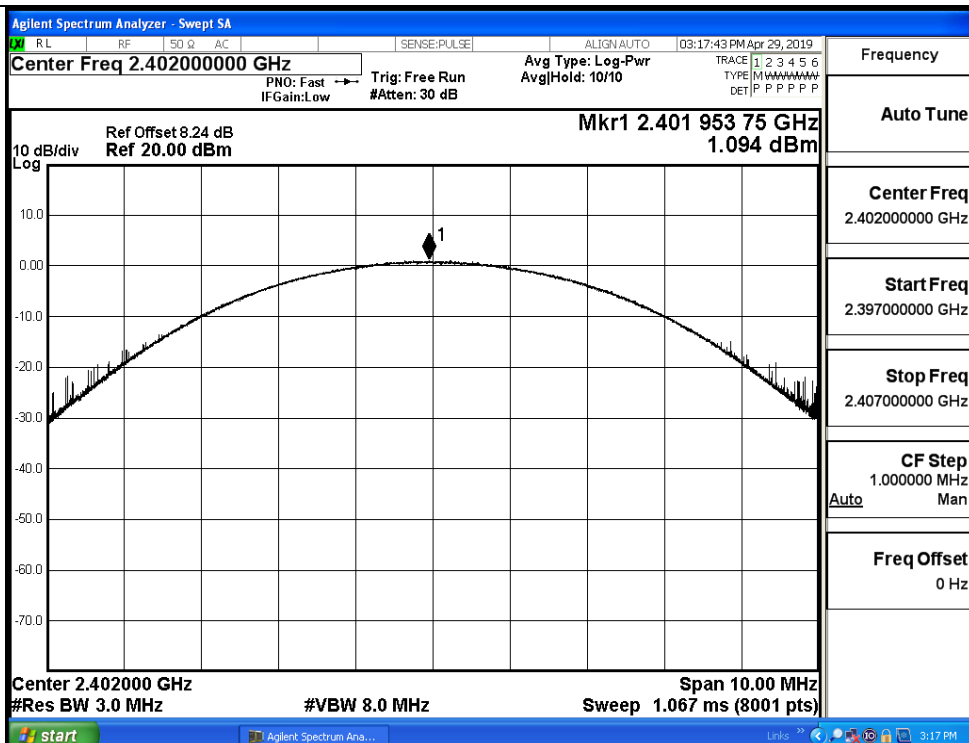


GFSK/HCH

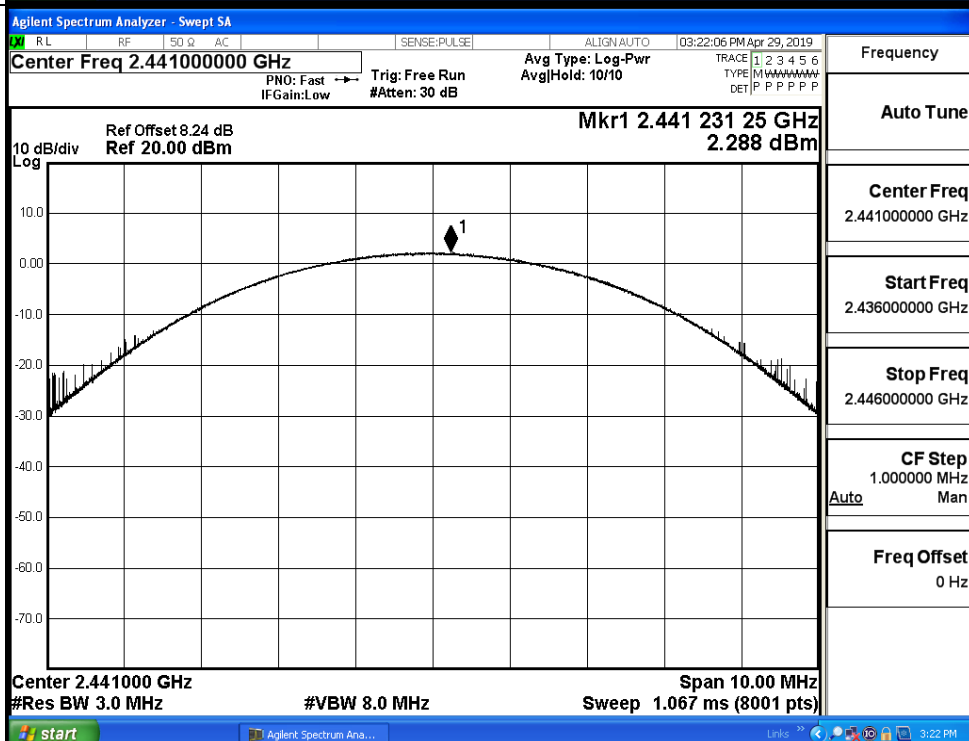
 π /4DQPSK/LCH



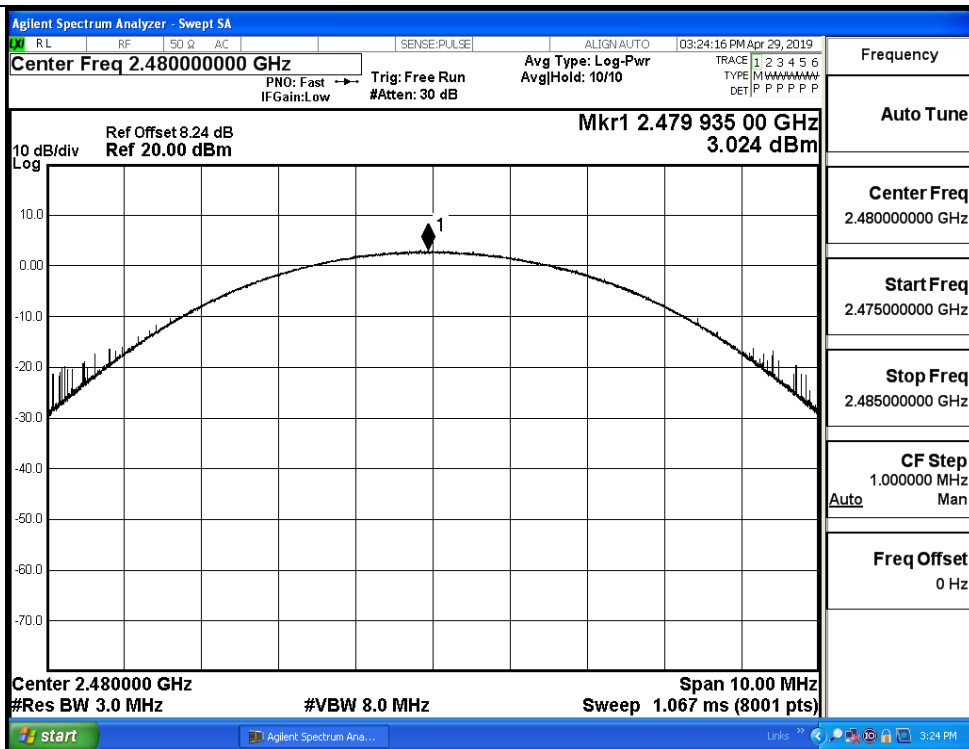
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

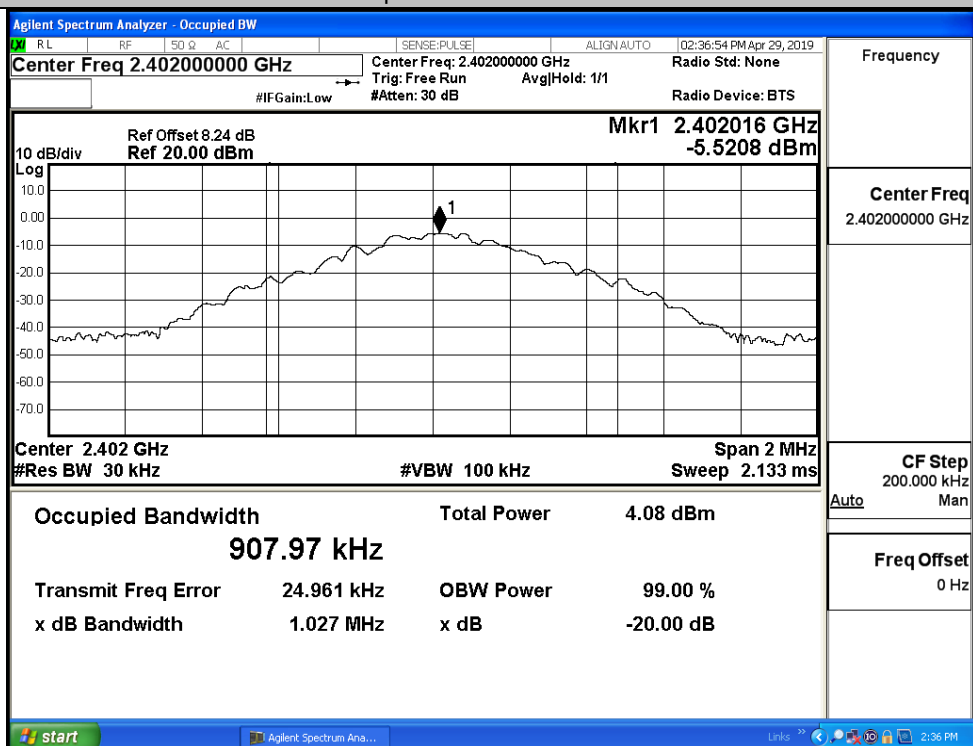


A.2 20dB Bandwidth

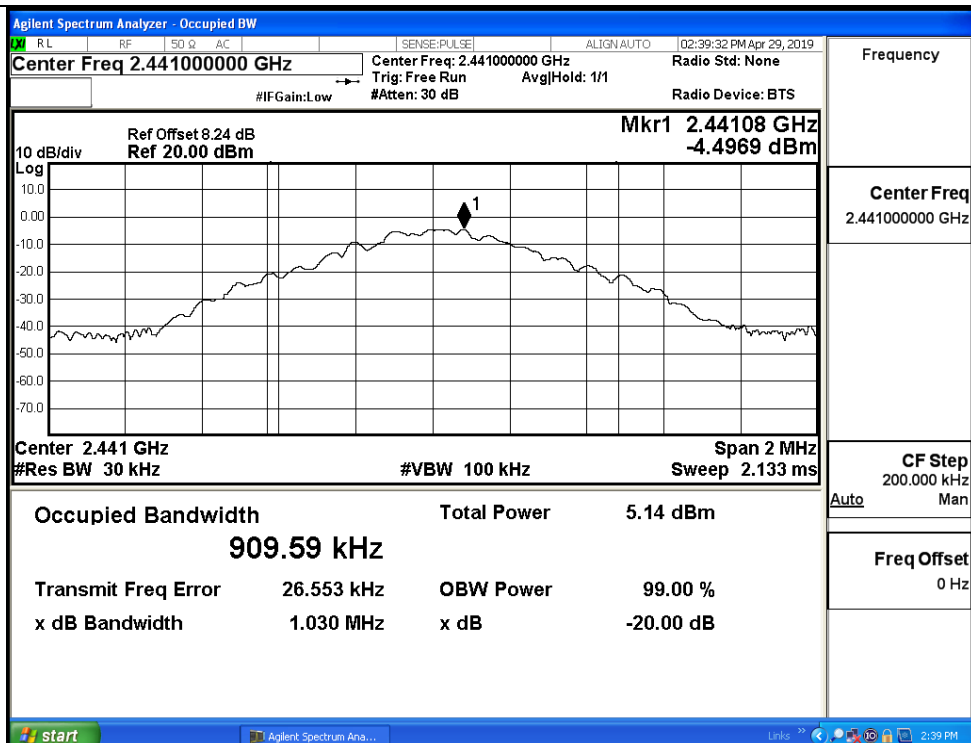
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.027	Not Specified	PASS
	MCH	1.030	Not Specified	PASS
	HCH	1.024	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.360	Not Specified	PASS
	MCH	1.363	Not Specified	PASS
	HCH	1.366	Not Specified	PASS
8DPSK	LCH	1.345	Not Specified	PASS
	MCH	1.345	Not Specified	PASS
	HCH	1.348	Not Specified	PASS

Test Graphs

GFSK/LCH

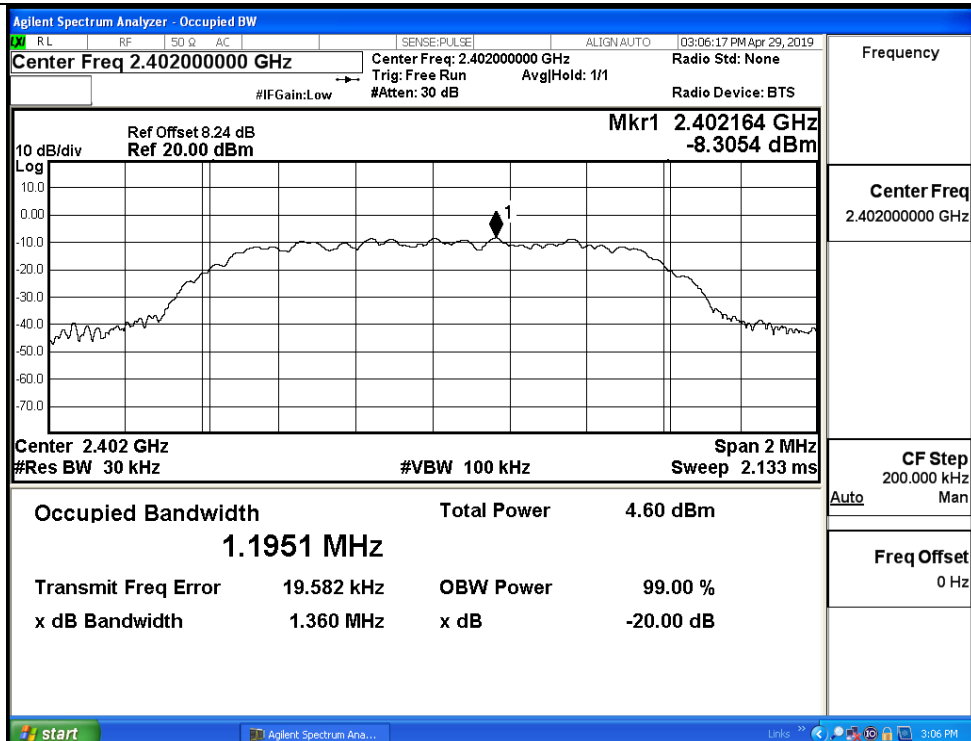


GFSK/MCH



GFSK/HCH

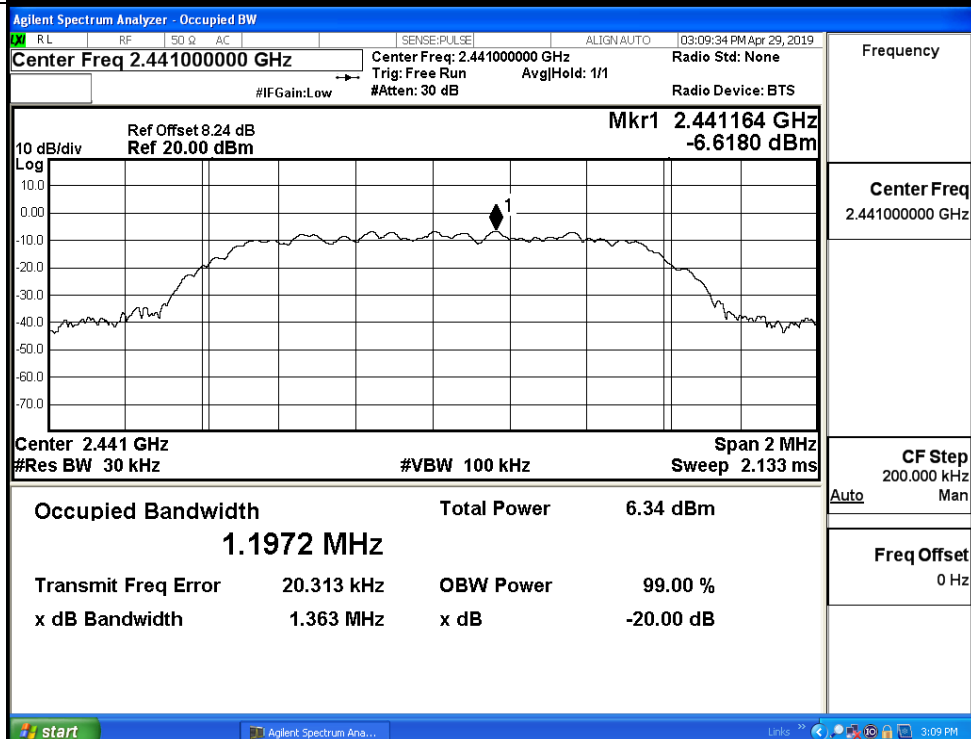


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

Auto

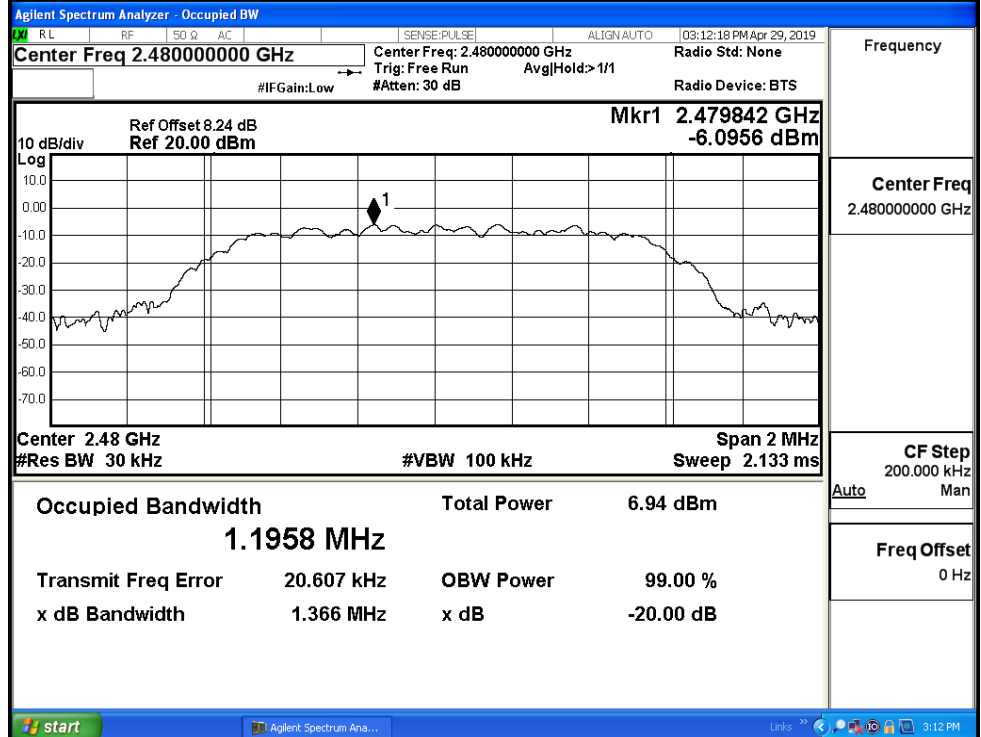
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

Center Freq
2.441000000 GHz

Auto

CF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

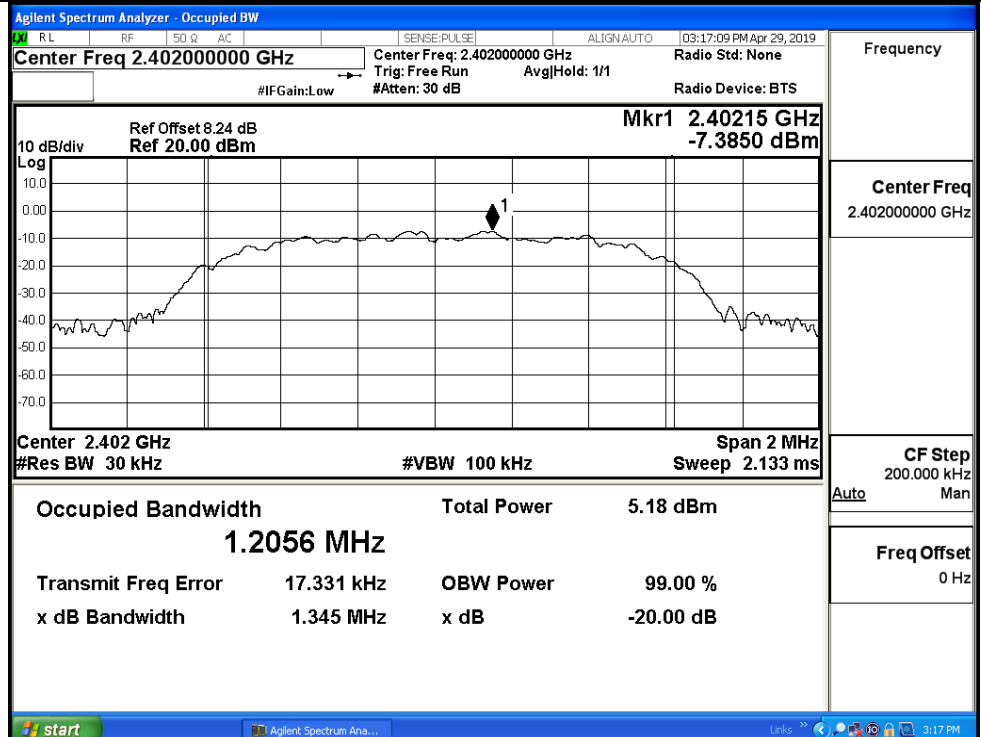
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/LCH



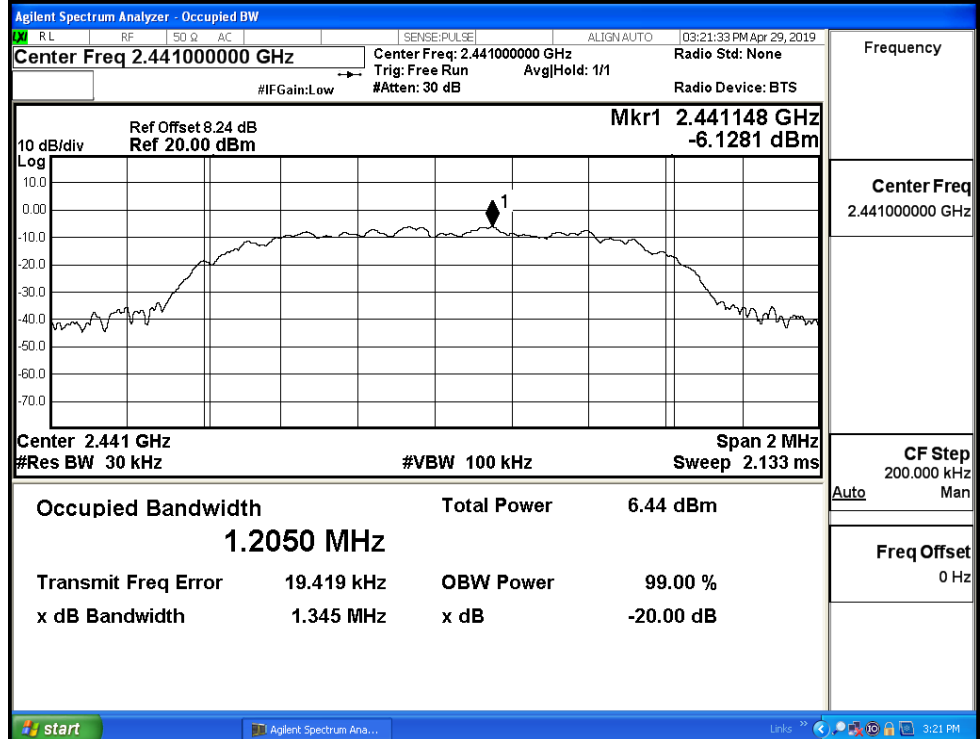
Frequency

Center Freq
2.402000000 GHz

Auto

CF Step
200.000 kHz
ManFreq Offset
0 Hz

8DPSK/MCH



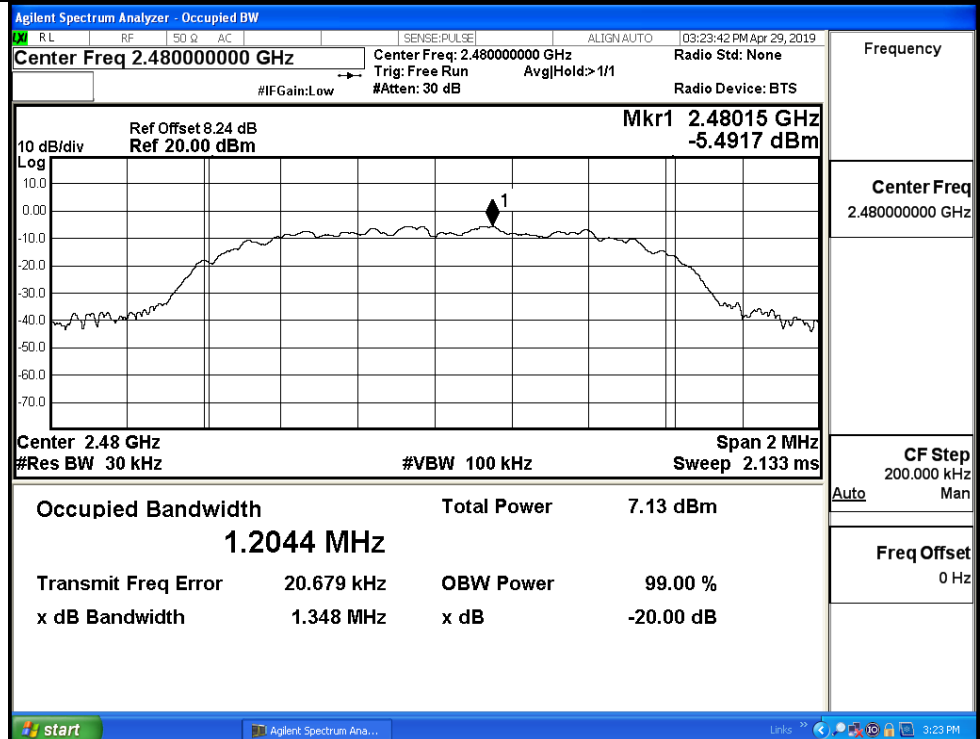
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/HCH



Frequency

Center Freq
2.480000000 GHz

Auto

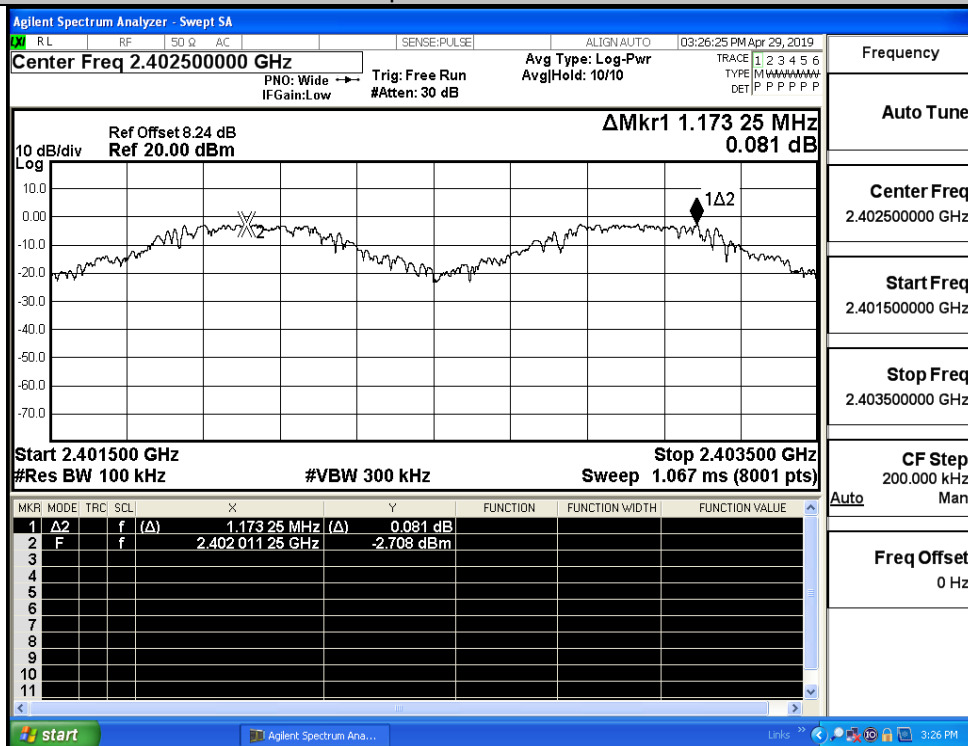
CF Step
200.000 kHz
ManFreq Offset
0 Hz

A.3 Carrier Frequency Separation

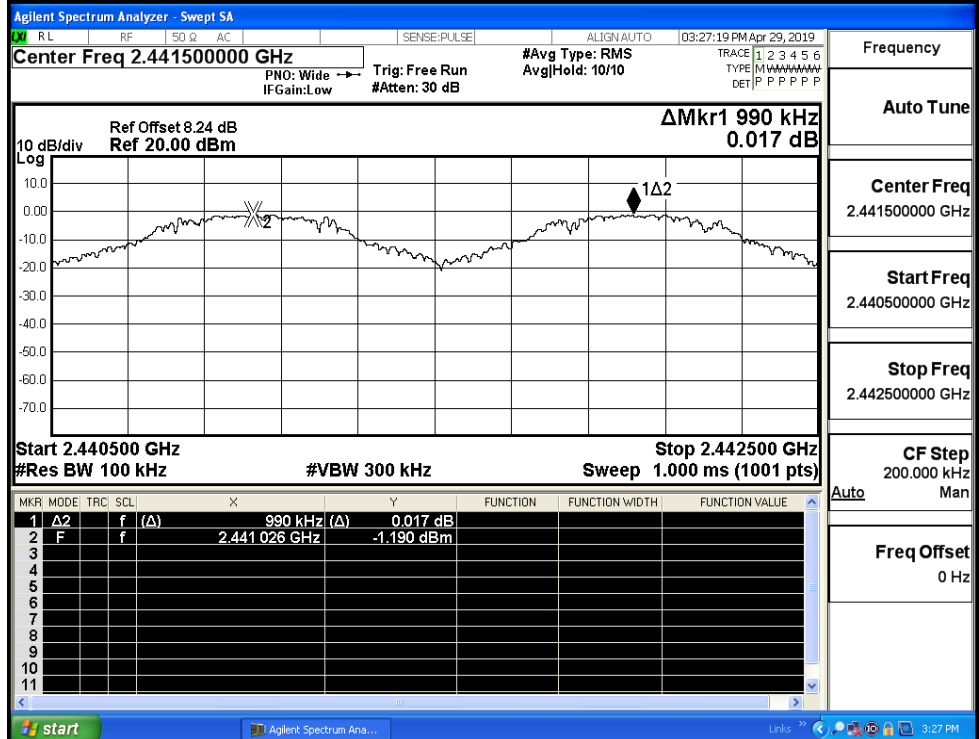
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.173	0.687	PASS
	MCH	0.990	0.687	PASS
	HCH	1.016	0.687	PASS
$\pi/4$ DQPSK	LCH	0.984	0.911	PASS
	MCH	0.964	0.911	PASS
	HCH	0.932	0.911	PASS
8DPSK	LCH	0.992	0.899	PASS
	MCH	1.186	0.899	PASS
	HCH	1.134	0.899	PASS

Test Graphs

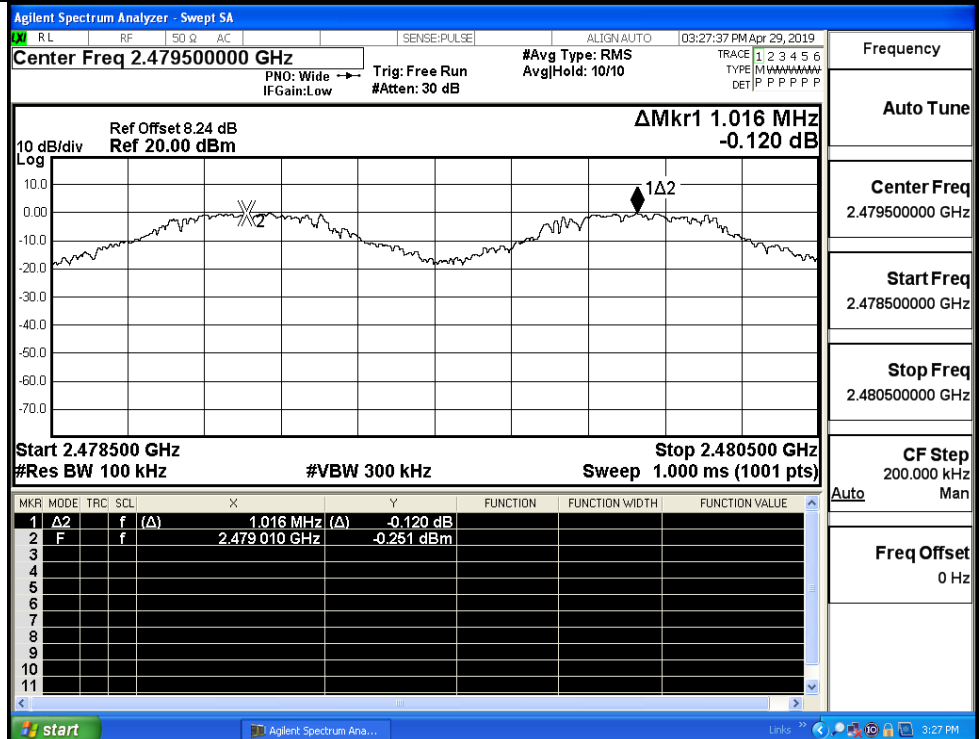
GFSK/LCH

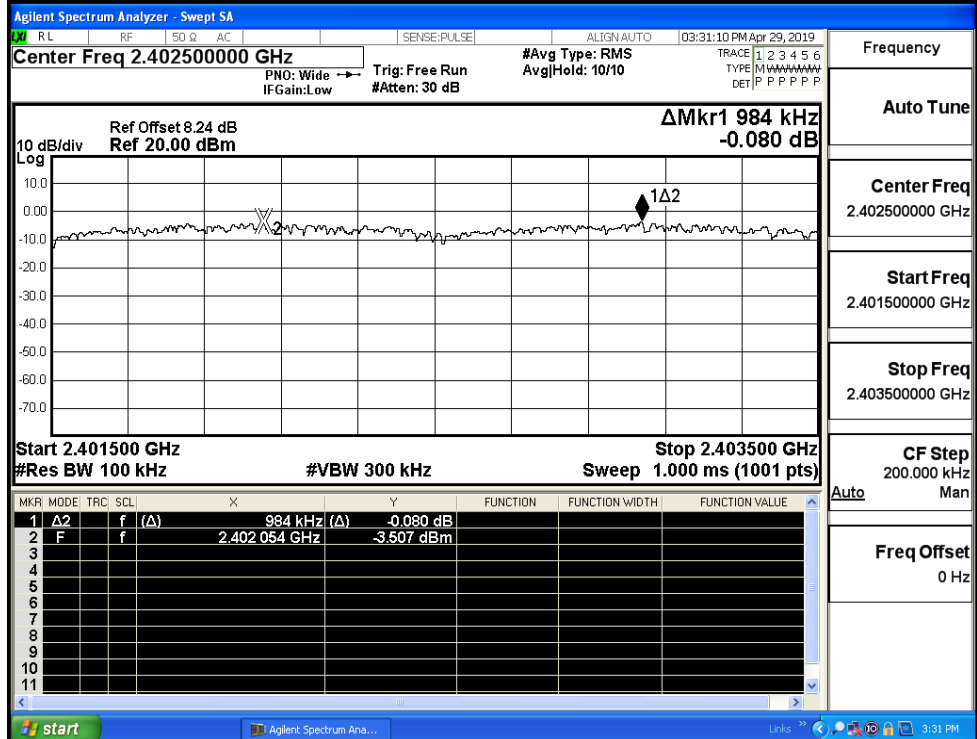
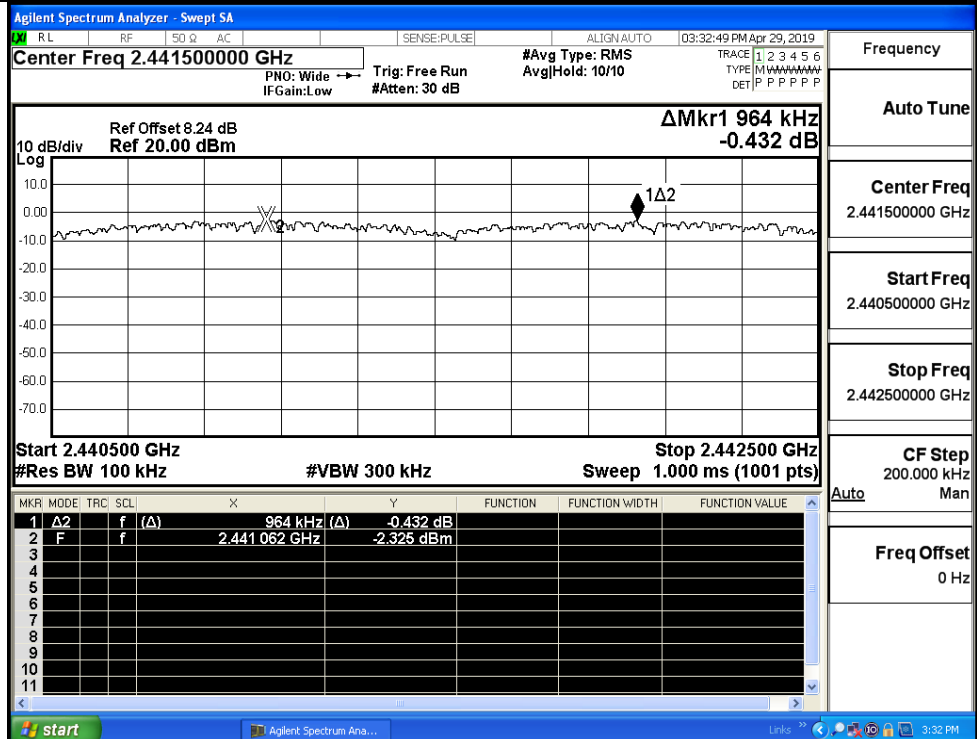


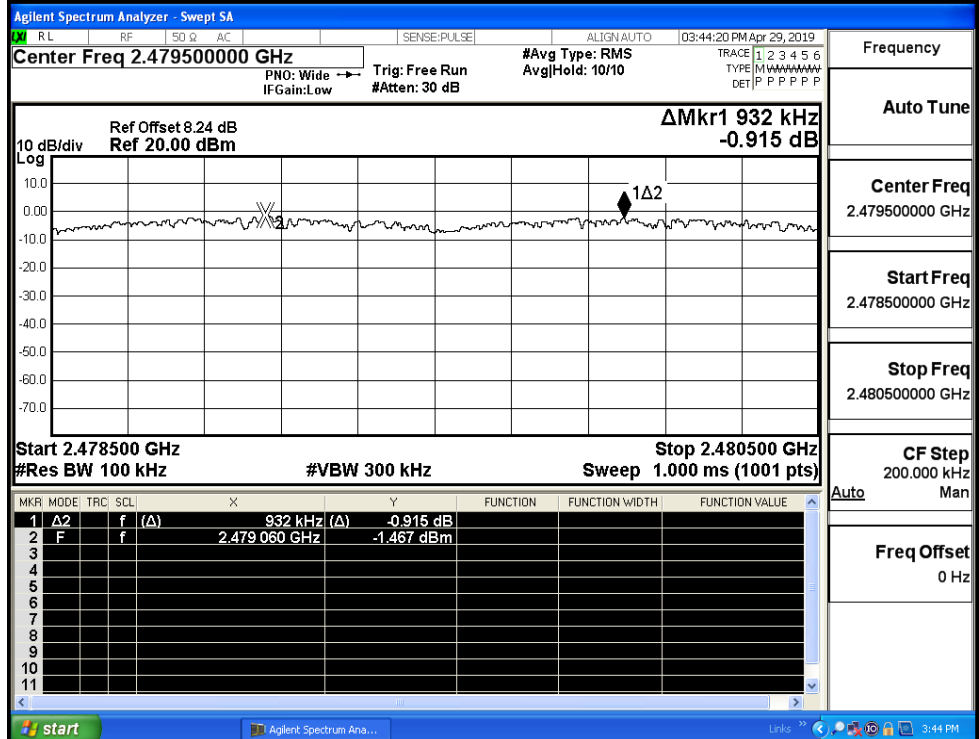
GFSK/MCH



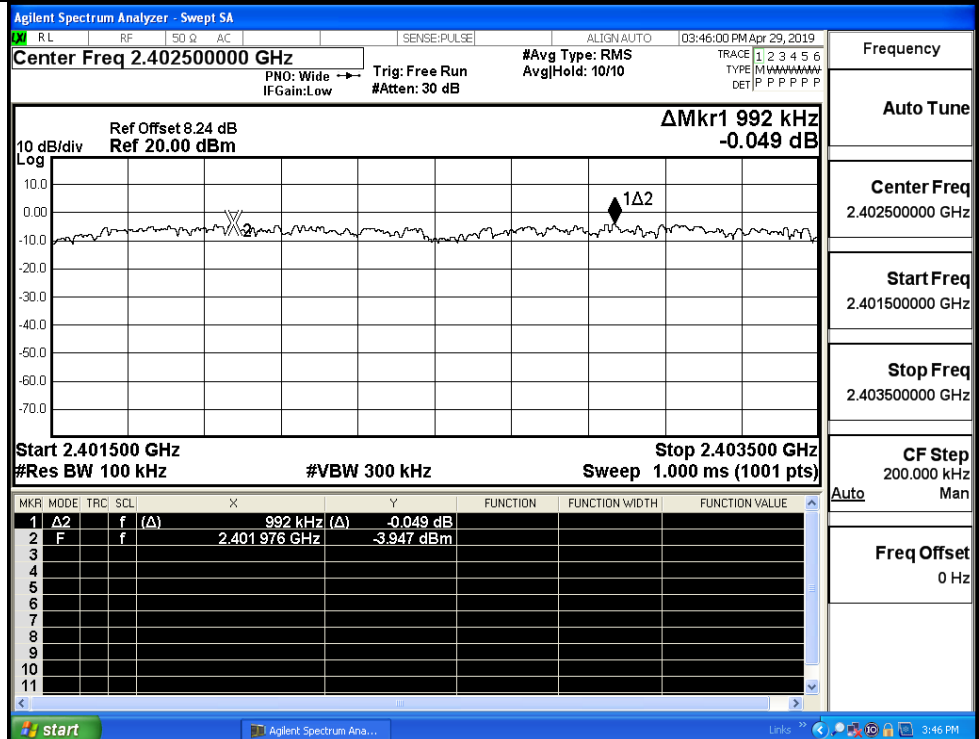
GFSK/HCH

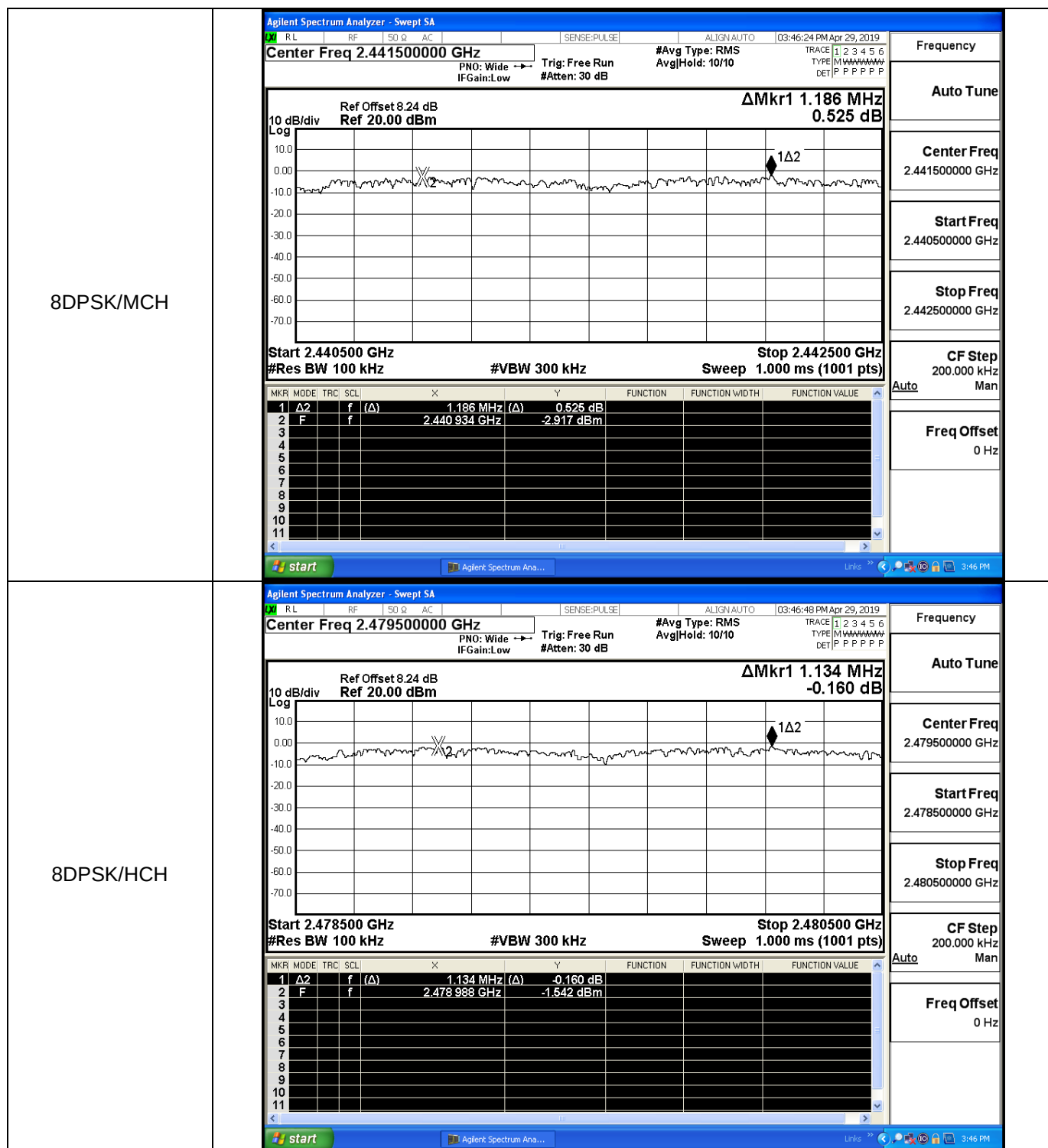


$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

8DPSK/LCH



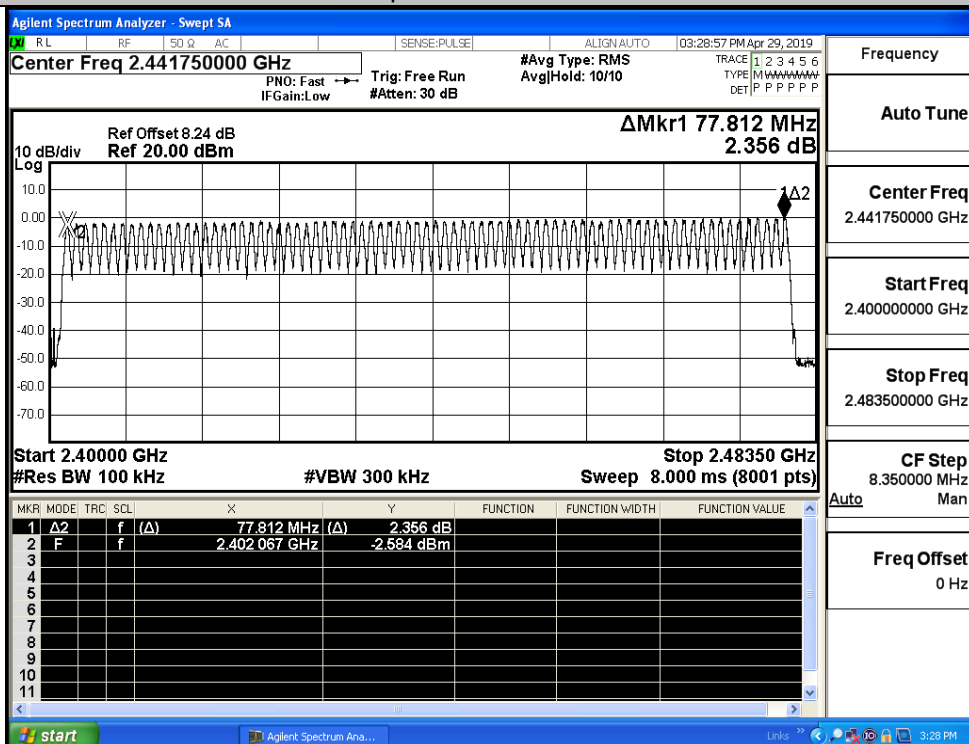


A.4 Hopping Channel Number

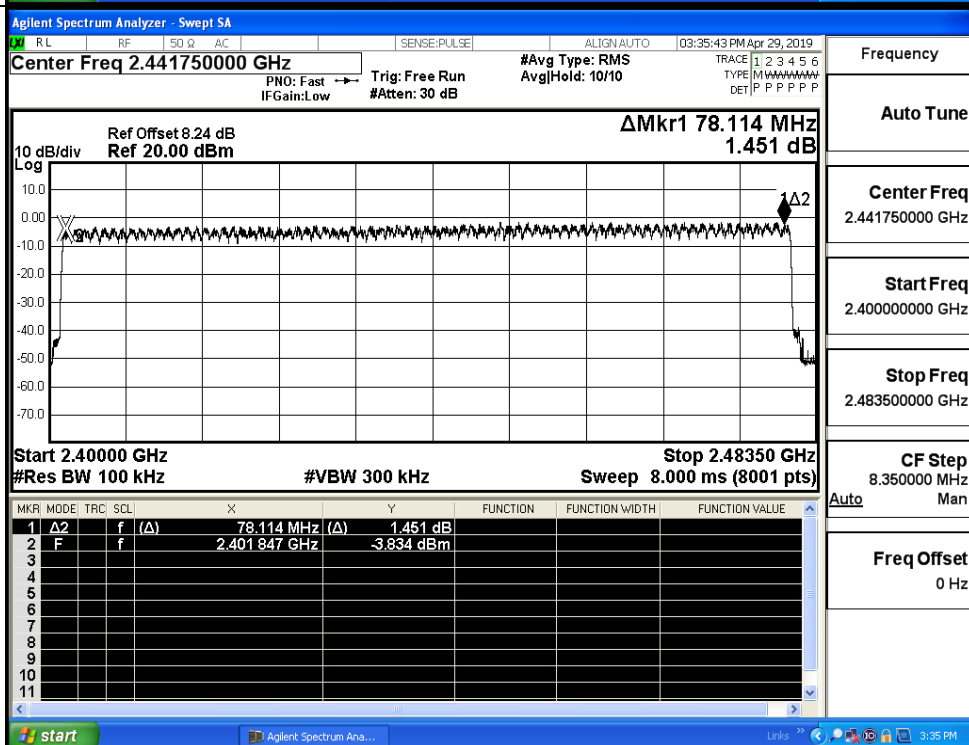
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

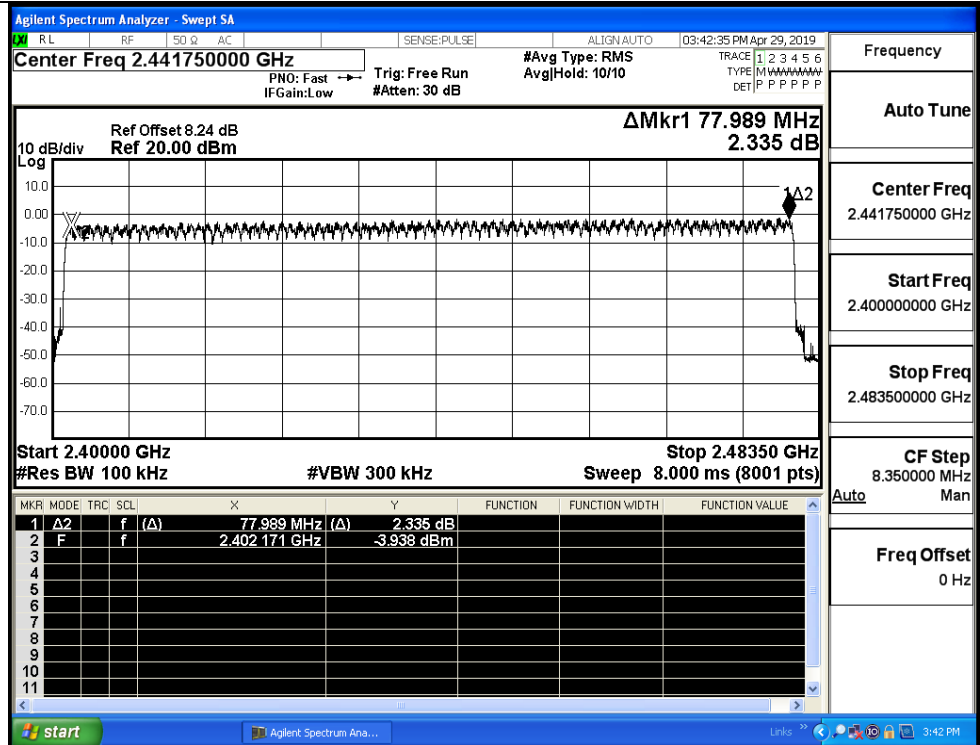
GFSK/Hop



π/4DQPSK/Hop



8DPSK/Hop

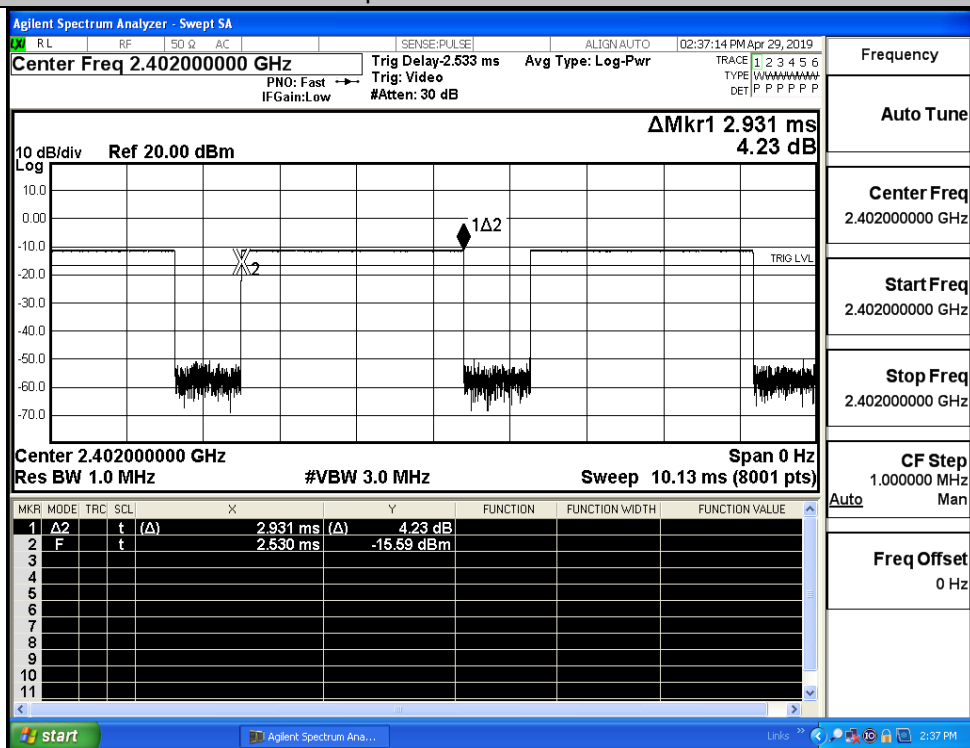


A.5 Dwell Time

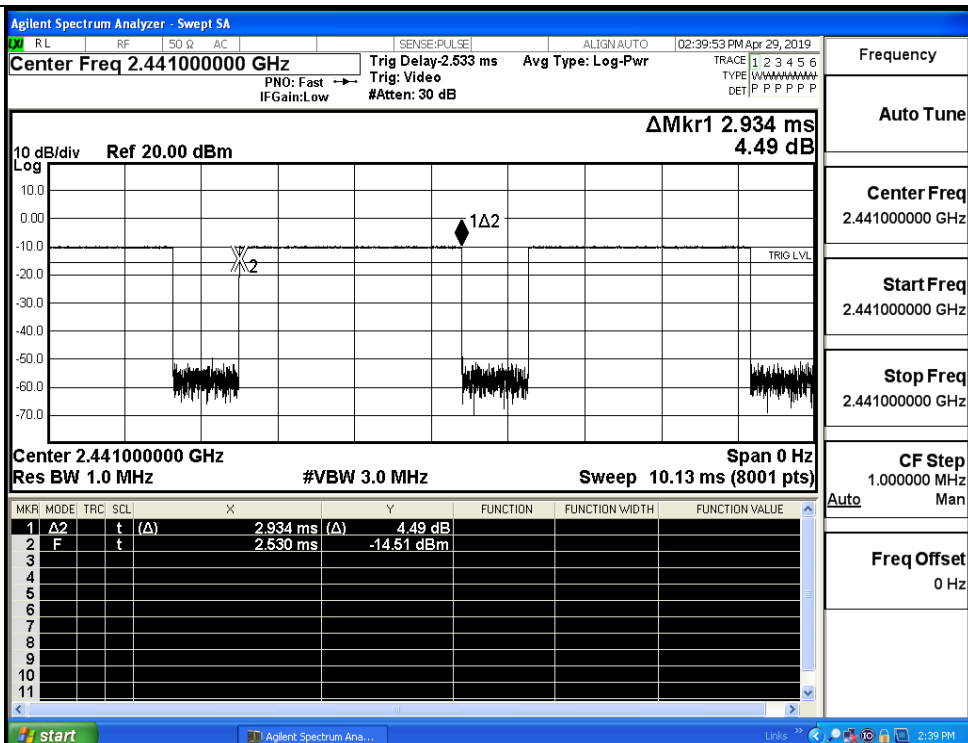
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.93	106.7	0.313	0.4	PASS
	DH5	MCH	2.93	106.7	0.313	0.4	PASS
	DH5	HCH	2.93	106.7	0.313	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.93	106.7	0.312	0.4	PASS
	2DH5	MCH	2.93	106.7	0.31	0.4	PASS
	2DH5	HCH	2.93	106.7	0.313	0.4	PASS
8DPSK	3DH5	LCH	2.93	106.7	0.312	0.4	PASS
	3DH5	MCH	2.93	106.7	0.313	0.4	PASS
	3DH5	HCH	2.93	106.7	0.312	0.4	PASS

Test Graphs

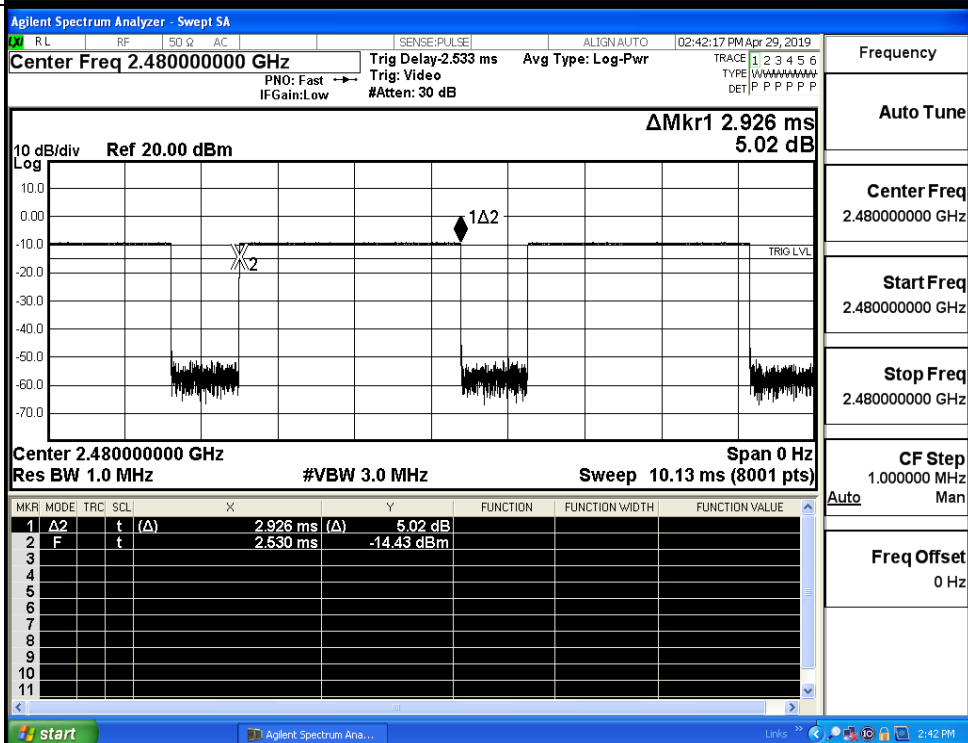
GFSK_DH5/LCH

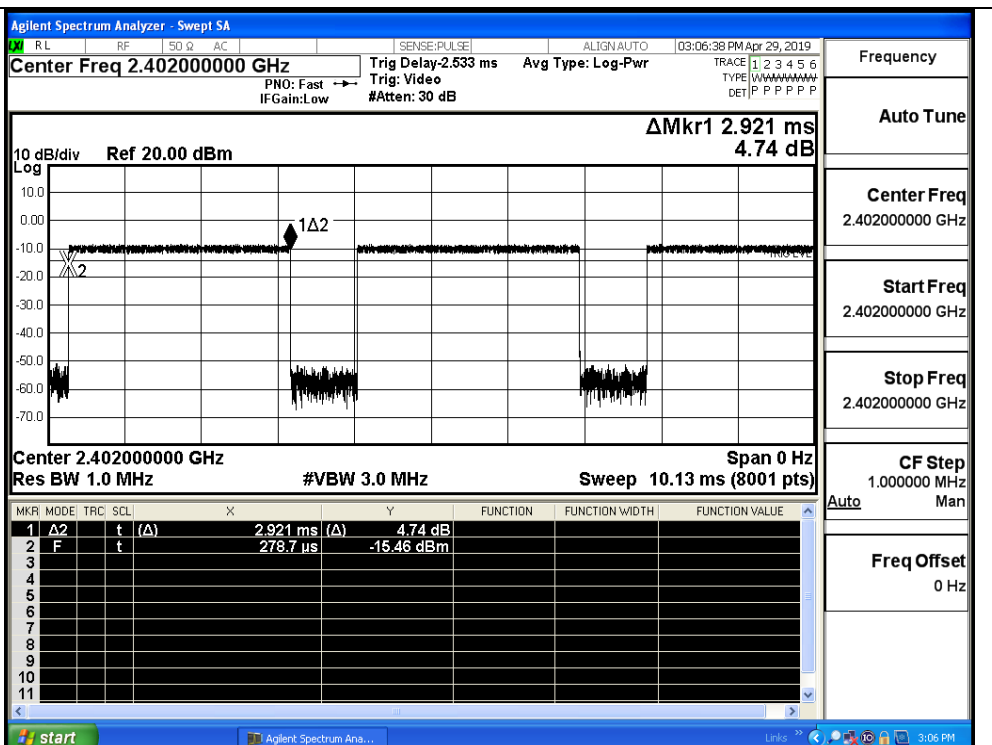
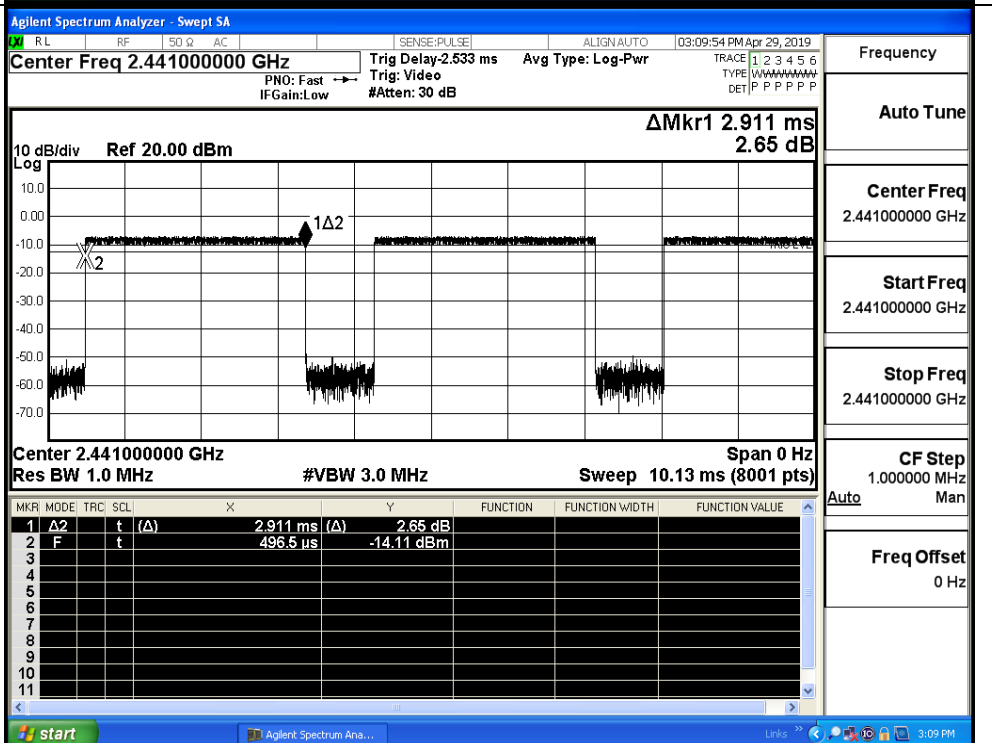


GFSK_DH5/MCH

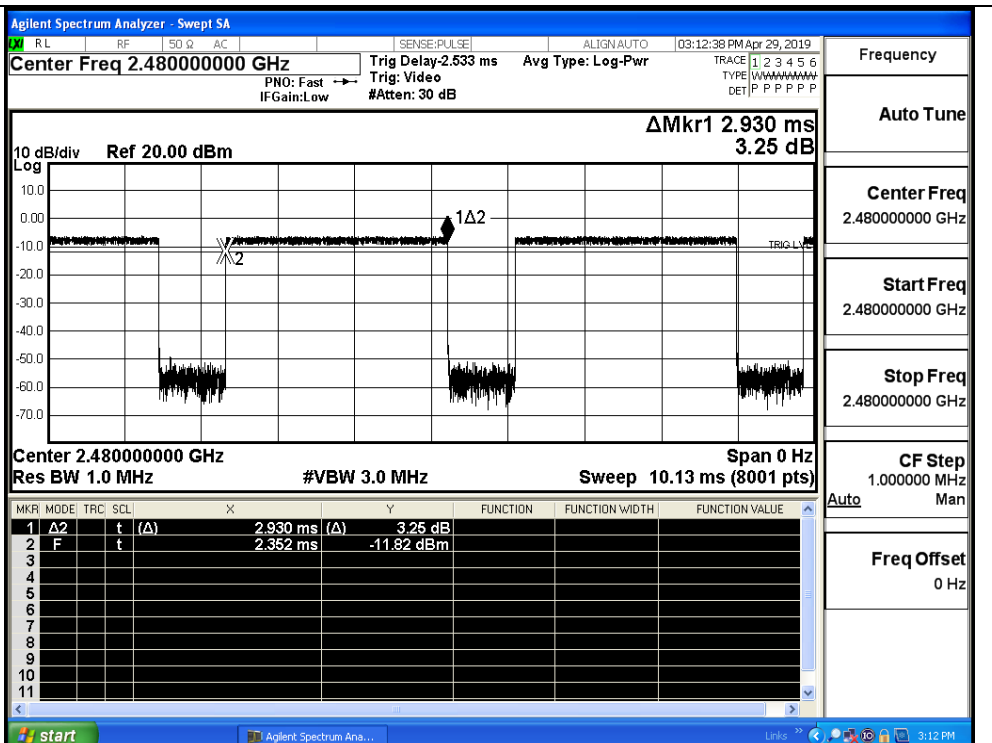


GFSK_DH5/HCH

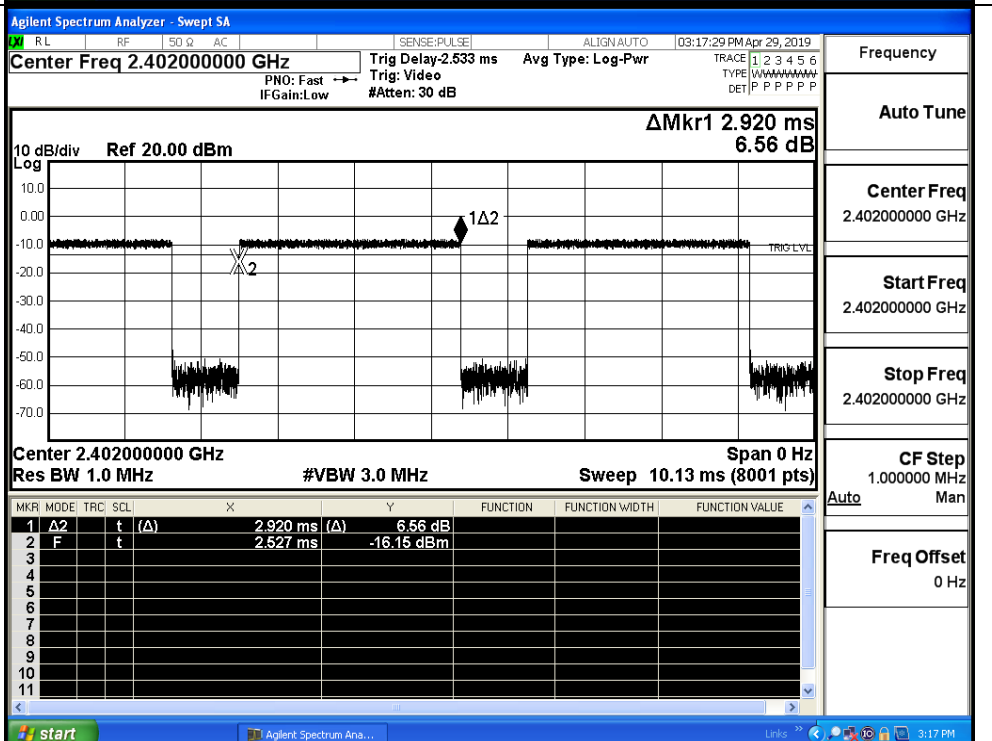


$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

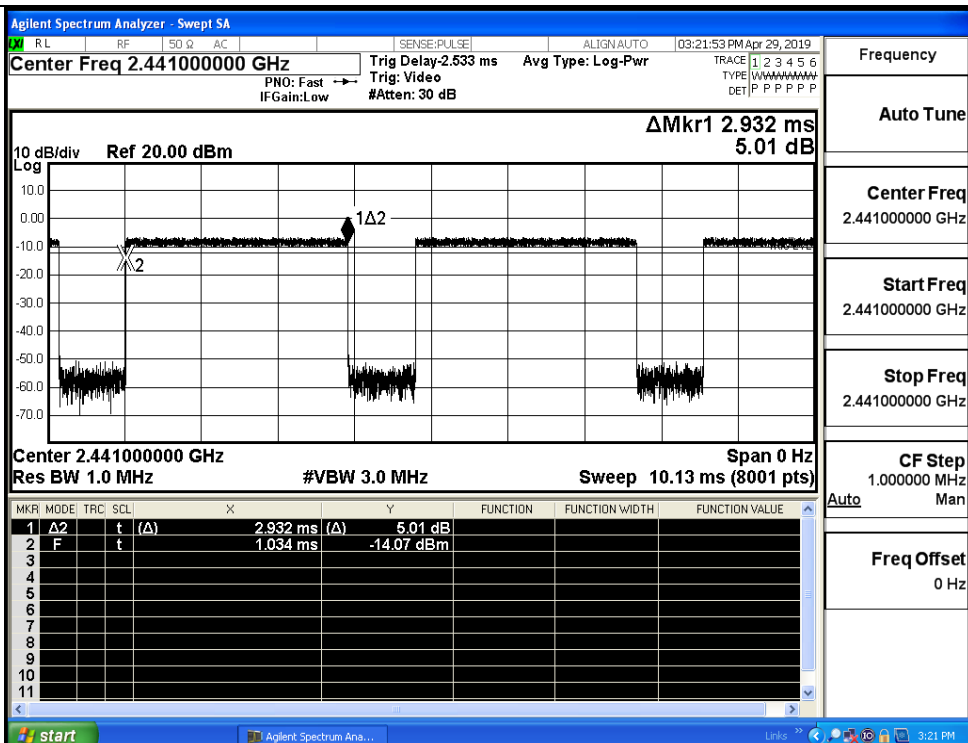
$\pi/4$ DQPSK
_2DH5/HCH



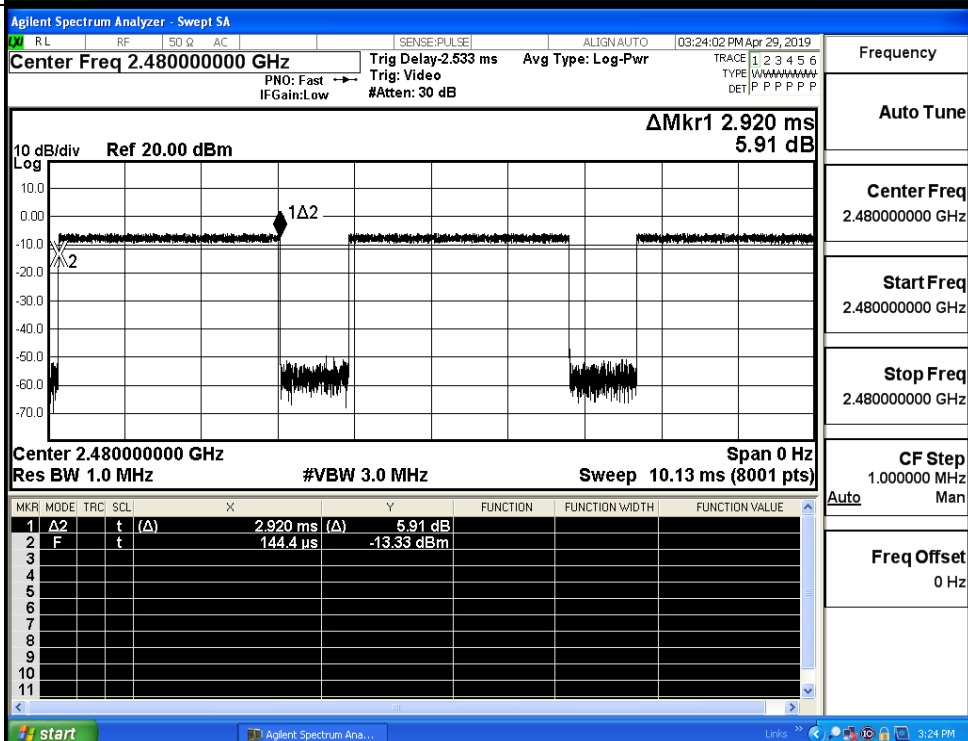
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH



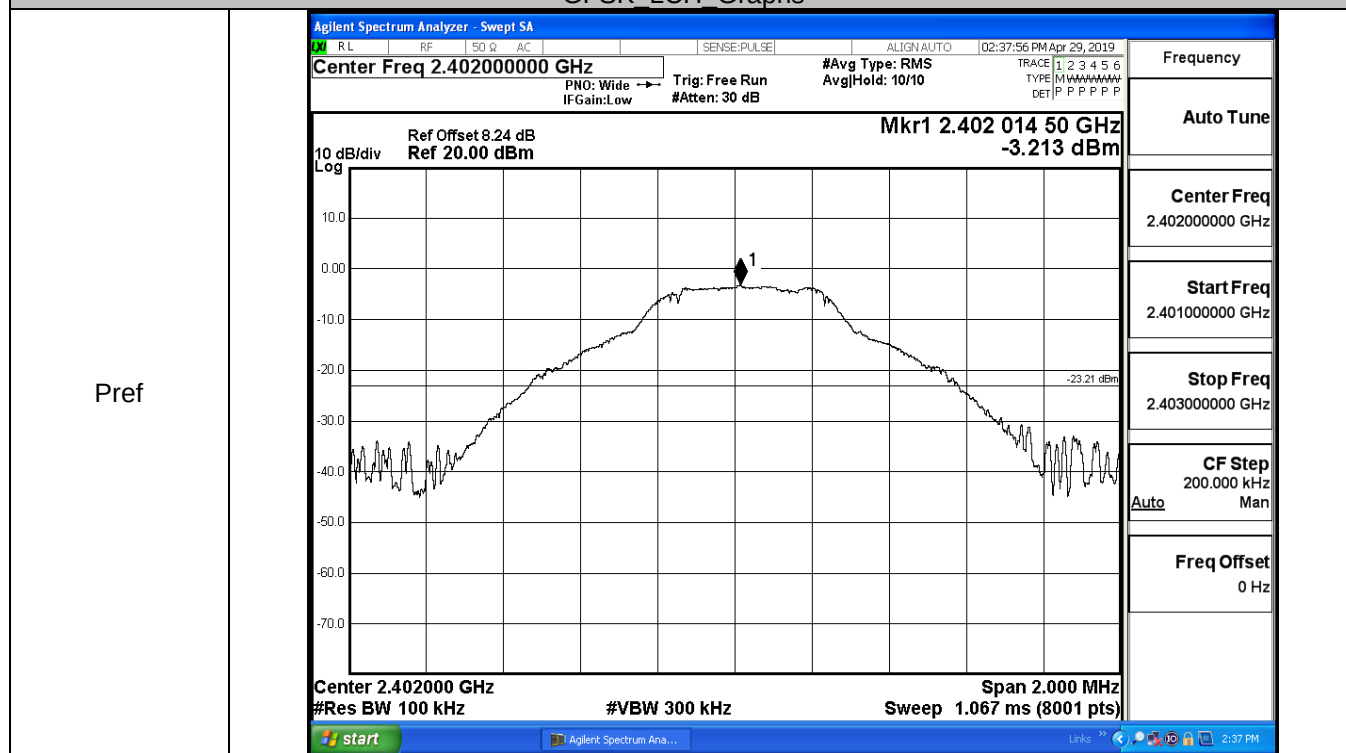
8DPSK_3DH5/HCH



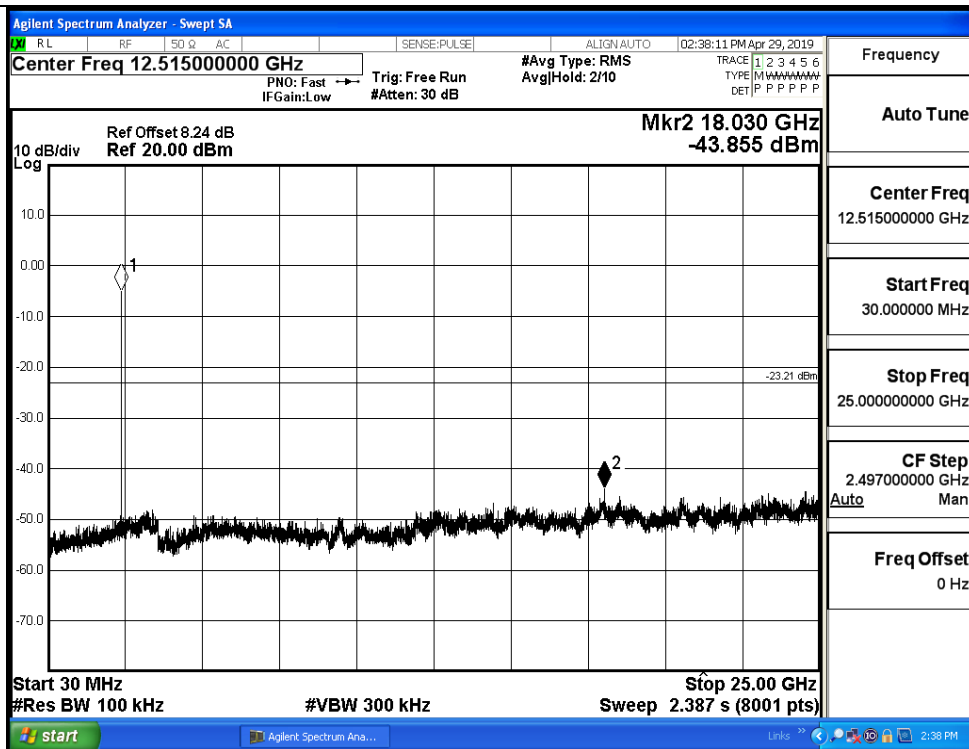
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-3.213	-43.855	-23.213	PASS
	MCH	-2.119	-44.541	-22.119	PASS
	HCH	-1.661	-44.769	-21.661	PASS
$\pi/4$ DQPSK	LCH	-3.817	-44.548	-23.817	PASS
	MCH	-2.103	-43.634	-22.103	PASS
	HCH	-1.432	-44.264	-21.432	PASS
8DPSK	LCH	-3.606	-44.814	-23.606	PASS
	MCH	-2.305	-44.448	-22.305	PASS
	HCH	-1.526	-45.109	-21.526	PASS

GFSK LCH Graphs

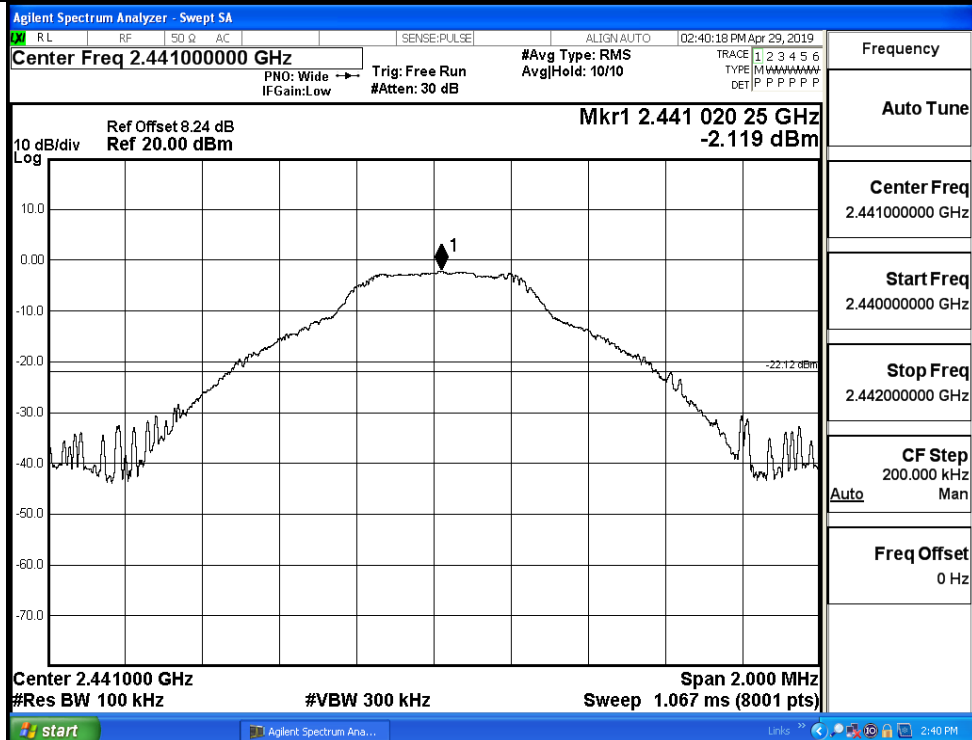


Puw

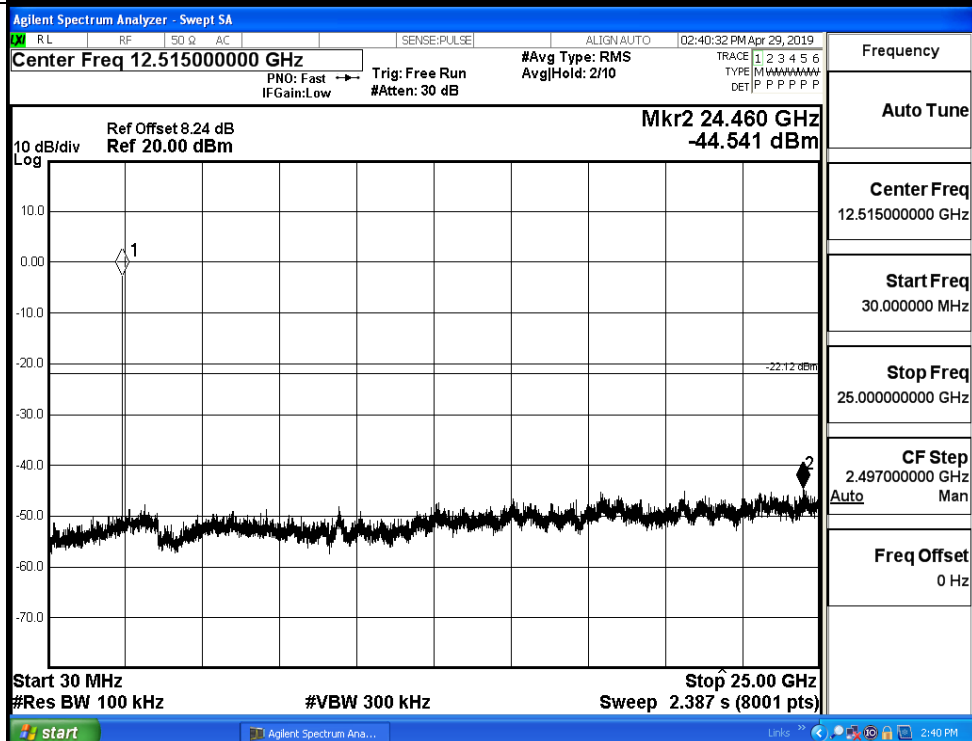


GFSK MCH_Graphs

Pref

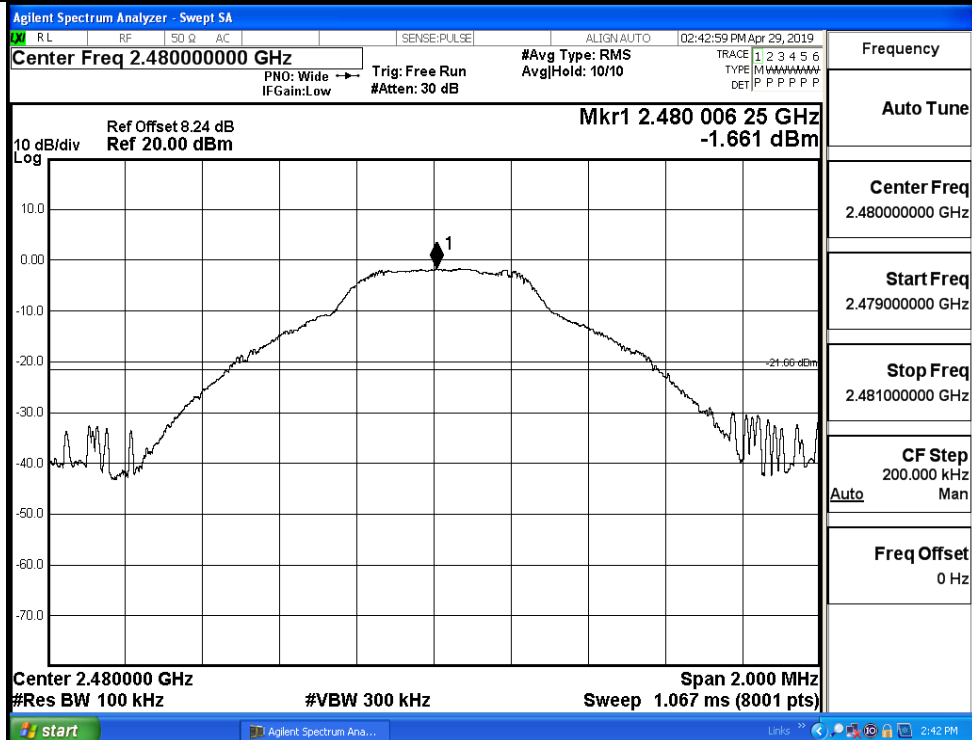


Puw

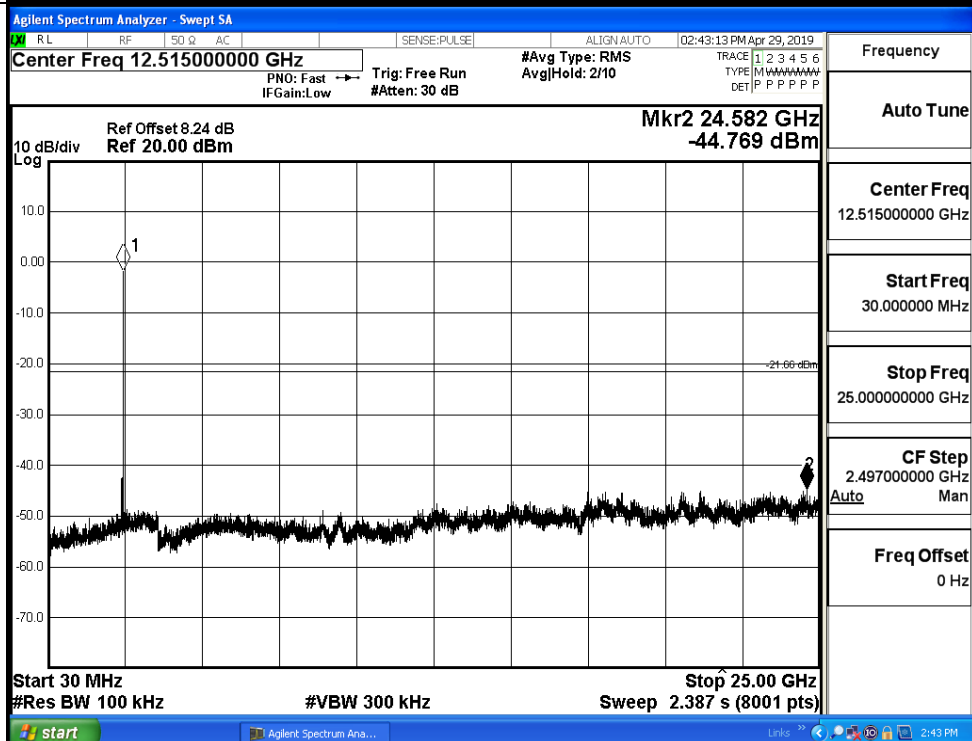


GFSK HCH Graphs

Pref

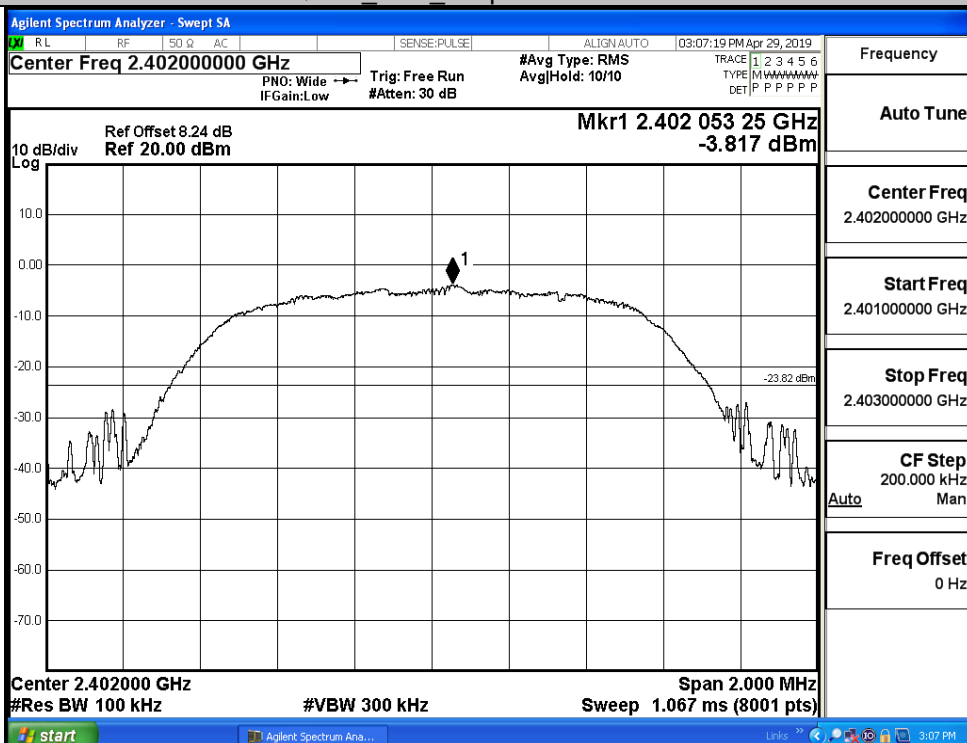


Puw

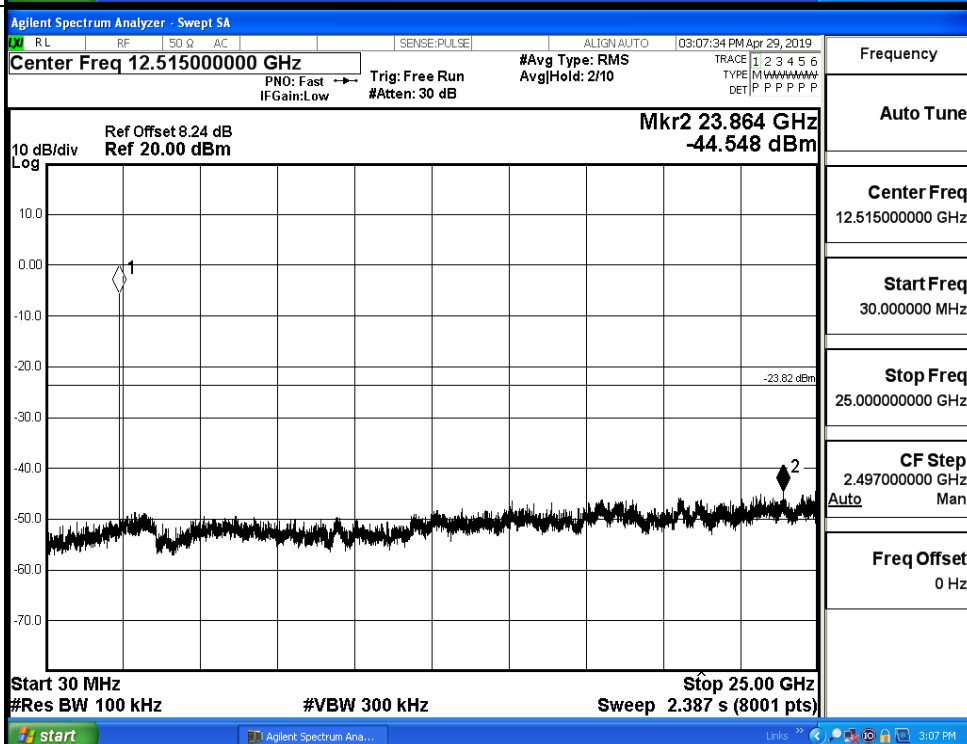


$\pi/4$ DQPSK LCH_Graphs

Pref

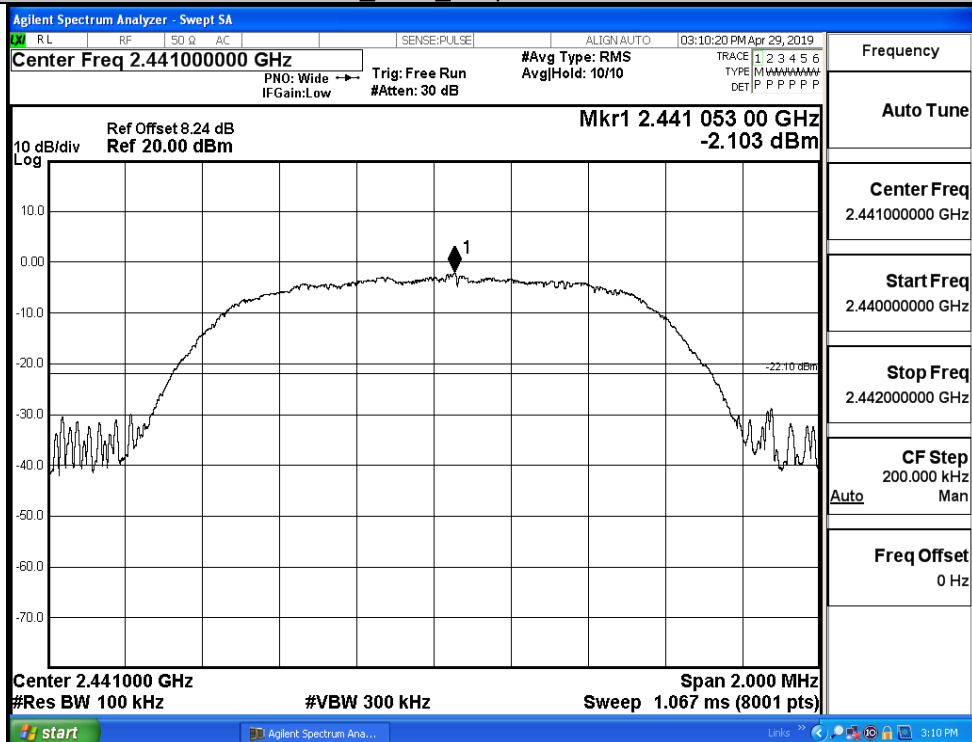


Puw

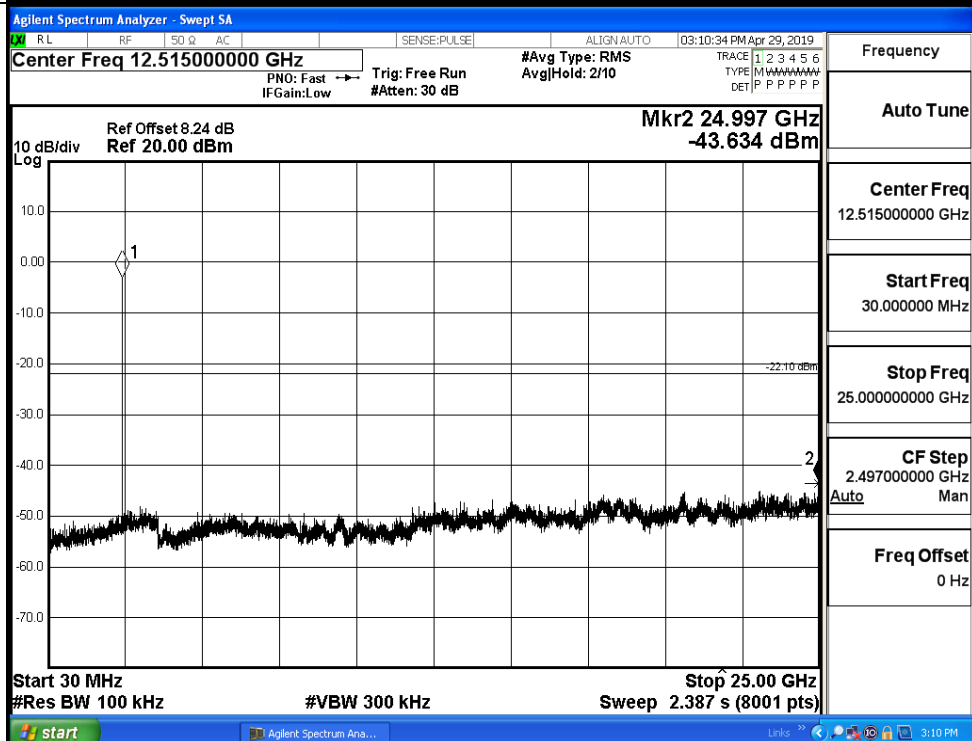


$\pi/4$ DQPSK MCH Graphs

Pref

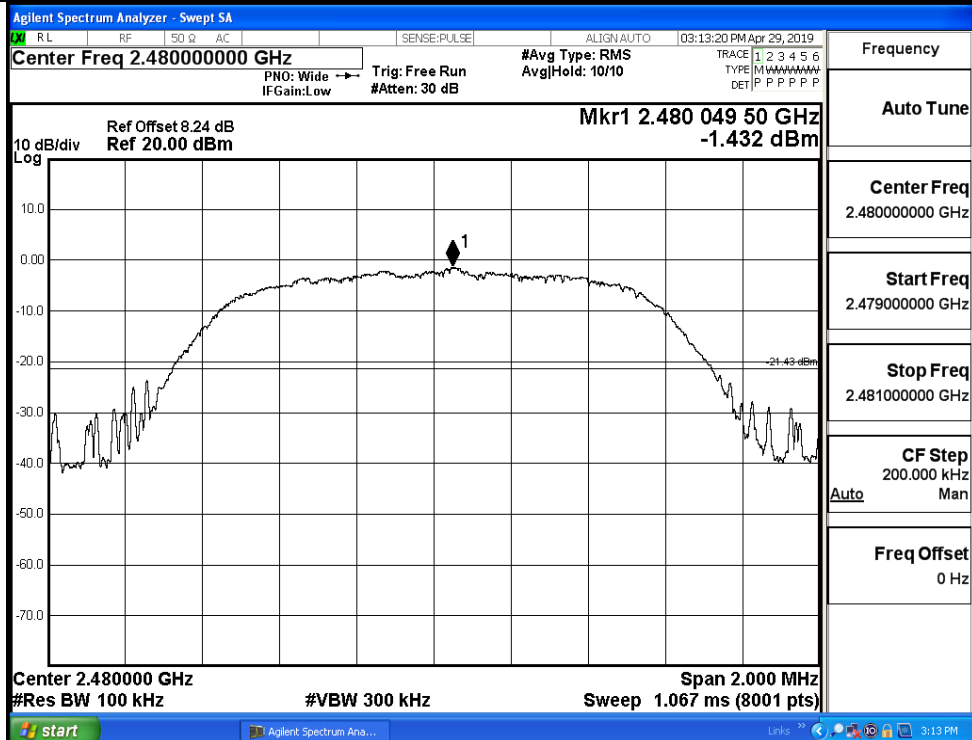


Puw

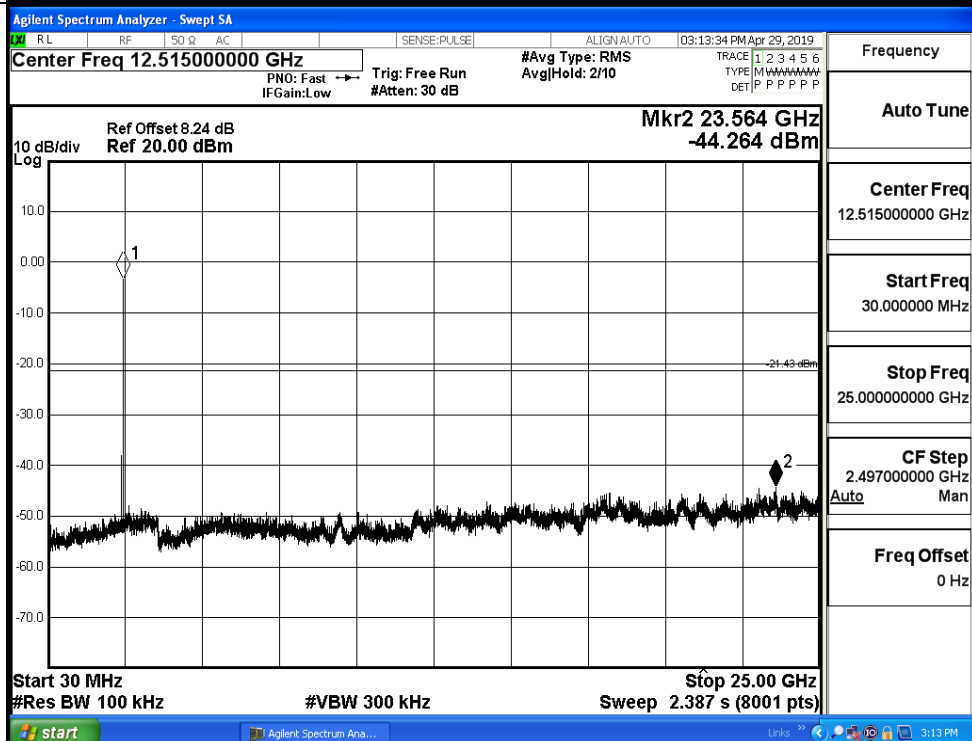


$\pi/4$ DQPSK HCH Graphs

Pref

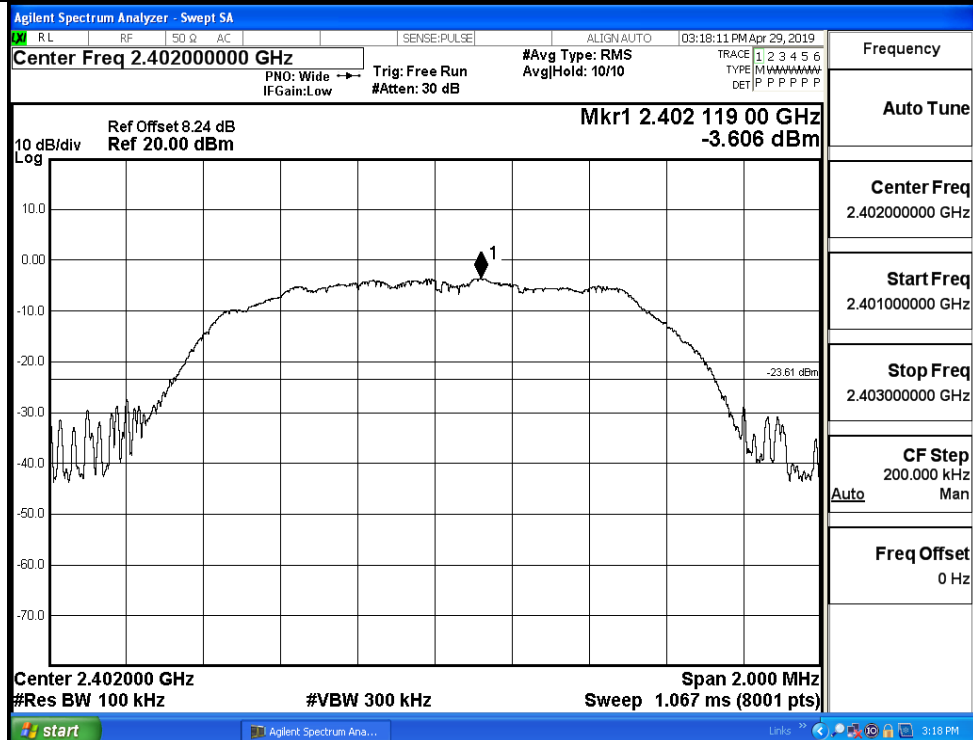


Puw

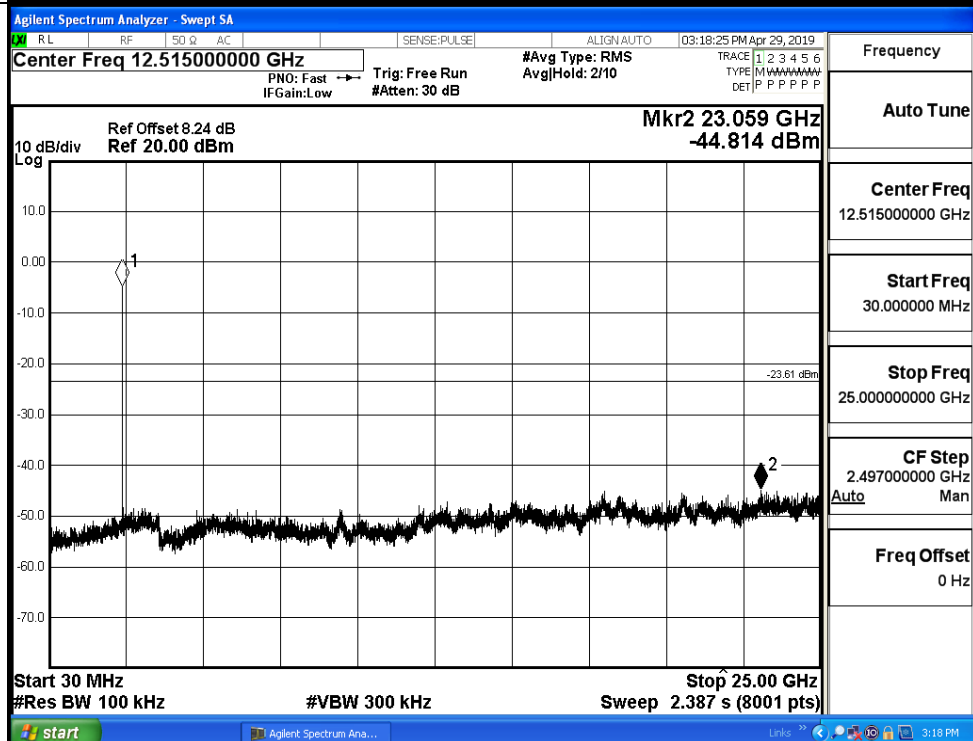


8DPSK_LCH_Graphs

Pref

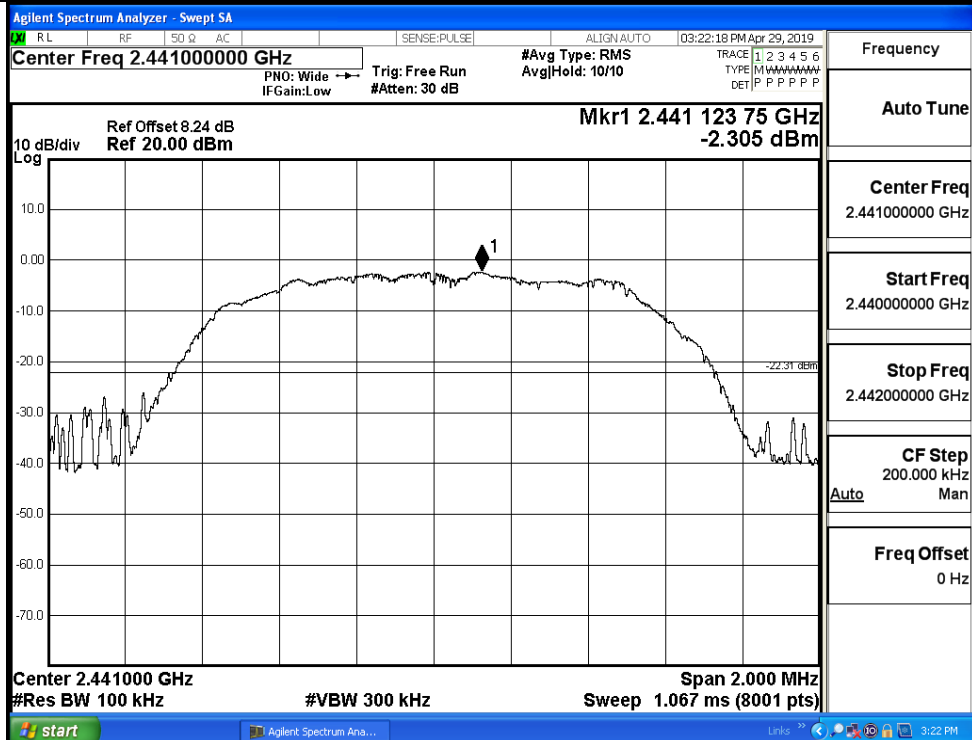


Puw

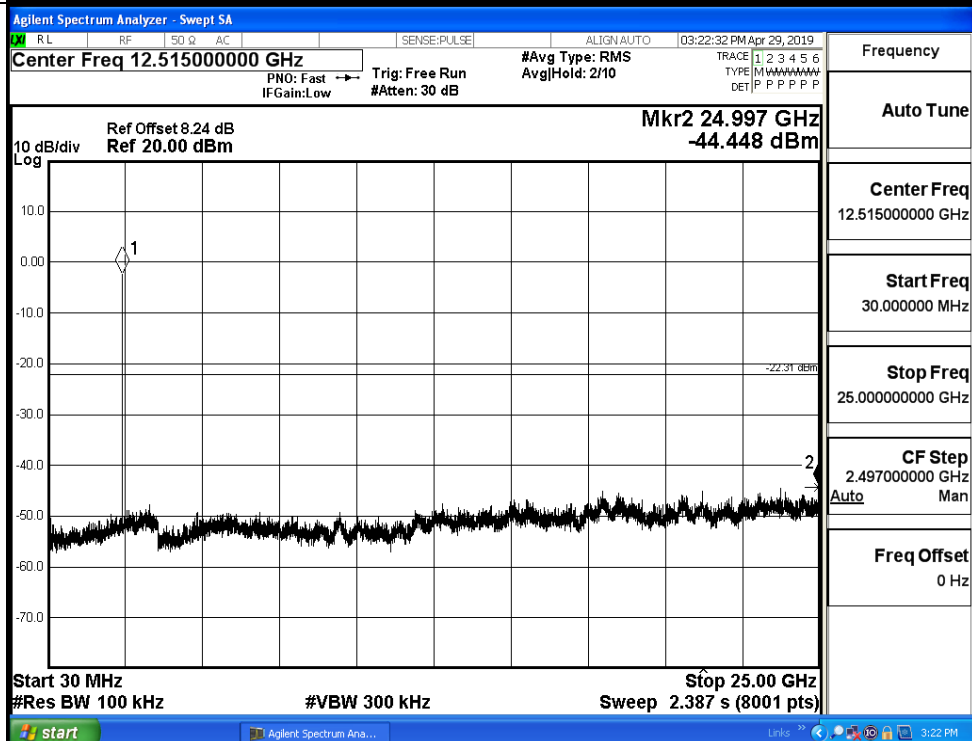


8DPSK MCH_Graphs

Pref

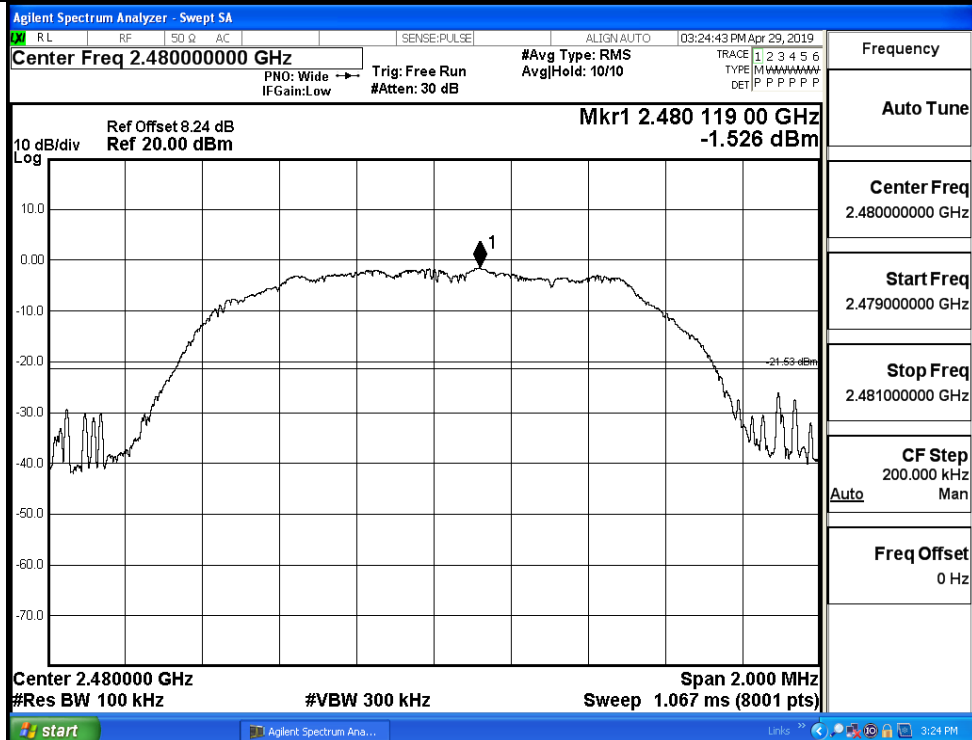


Puw

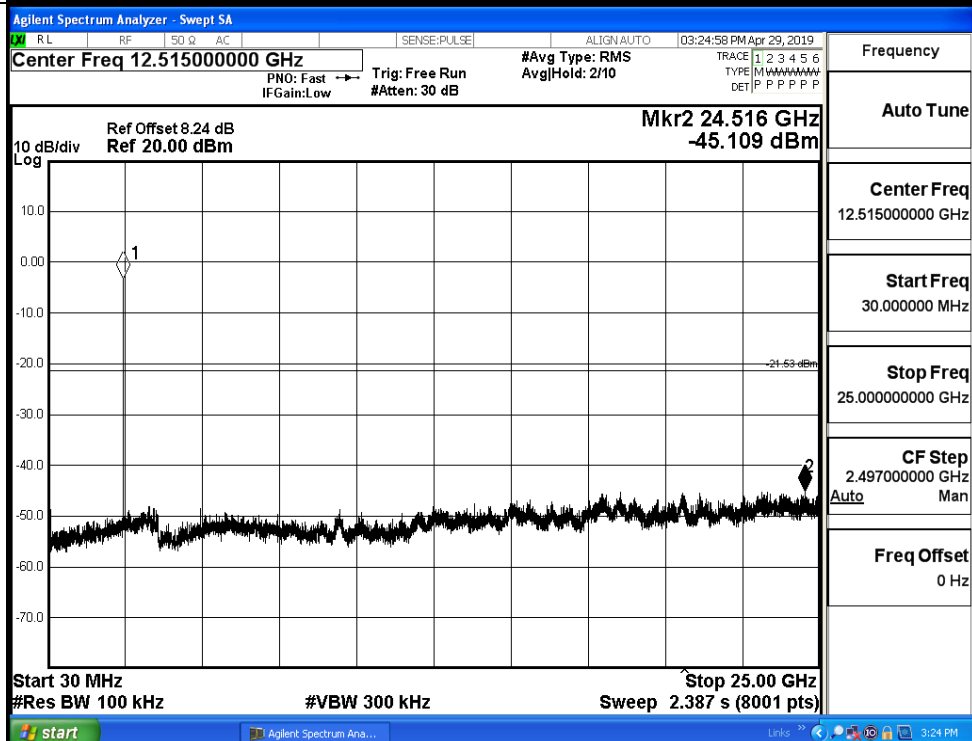


8DPSK_HCH_Graphs

Pref



Puw

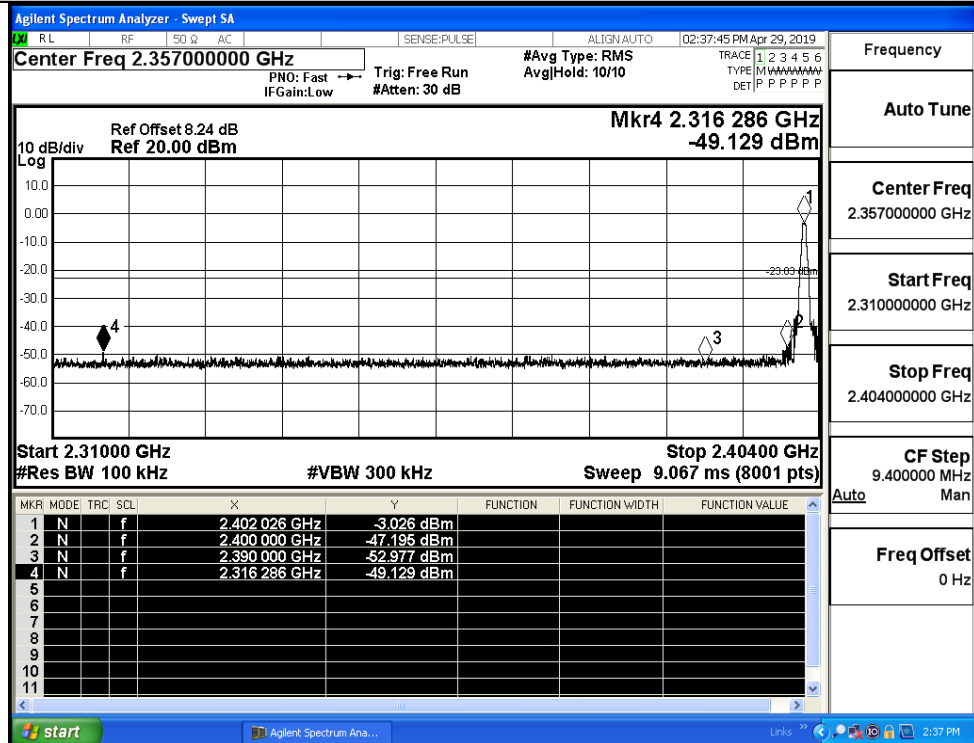


A.7 Band-edge for RF Conducted Emissions

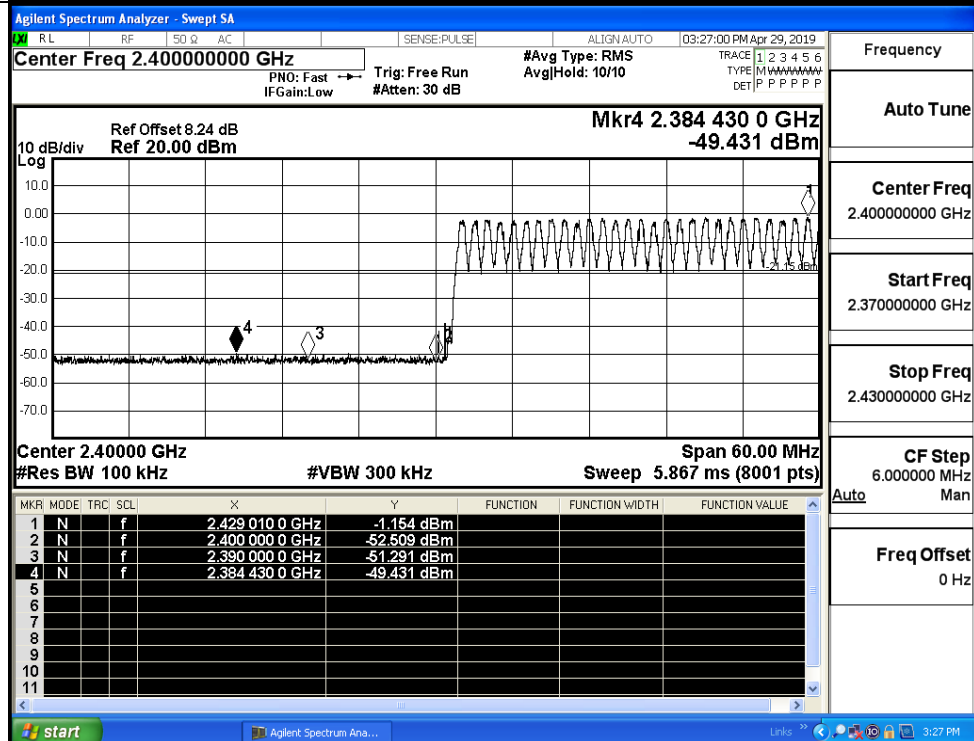
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-3.026	Off	-49.129	-23.03	PASS
			-1.154	On	-49.431	-21.15	PASS
	HCH	2480	-1.277	Off	-49.783	-21.28	PASS
			-0.090	On	-49.086	-20.09	PASS
$\pi/4$ DQPSK	LCH	2402	-3.563	Off	-50.391	-23.56	PASS
			-2.408	On	-49.147	-22.41	PASS
	HCH	2480	-1.139	Off	-48.968	-21.14	PASS
			-1.107	On	-49.318	-21.11	PASS
8DPSK	LCH	2402	-3.296	Off	-49.977	-23.3	PASS
			-2.261	On	-49.352	-22.26	PASS
	HCH	2480	-1.131	Off	-49.177	-21.13	PASS
			-1.032	On	-49.181	-21.03	PASS

Test Graphs

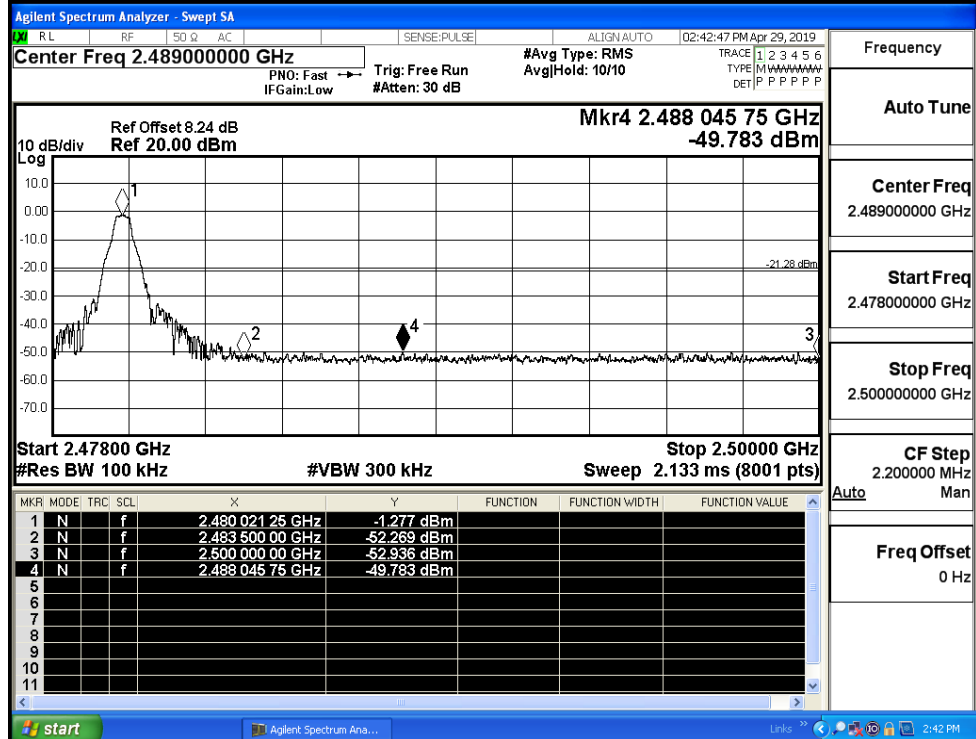
GFSK/LCH/No Hop



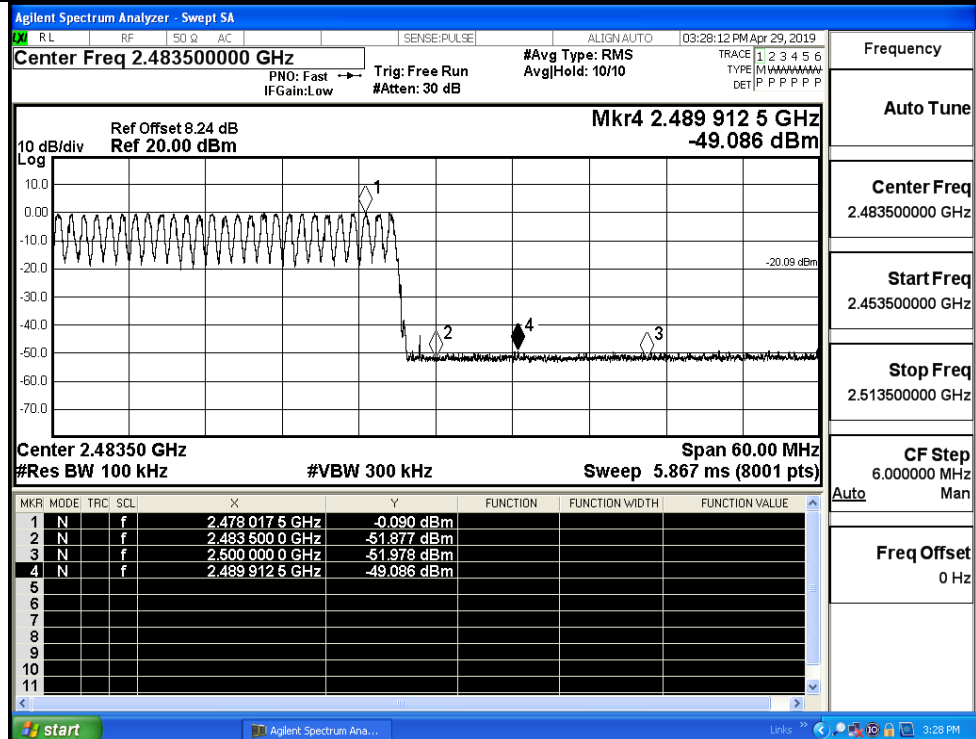
GFSK/LCH/Hop



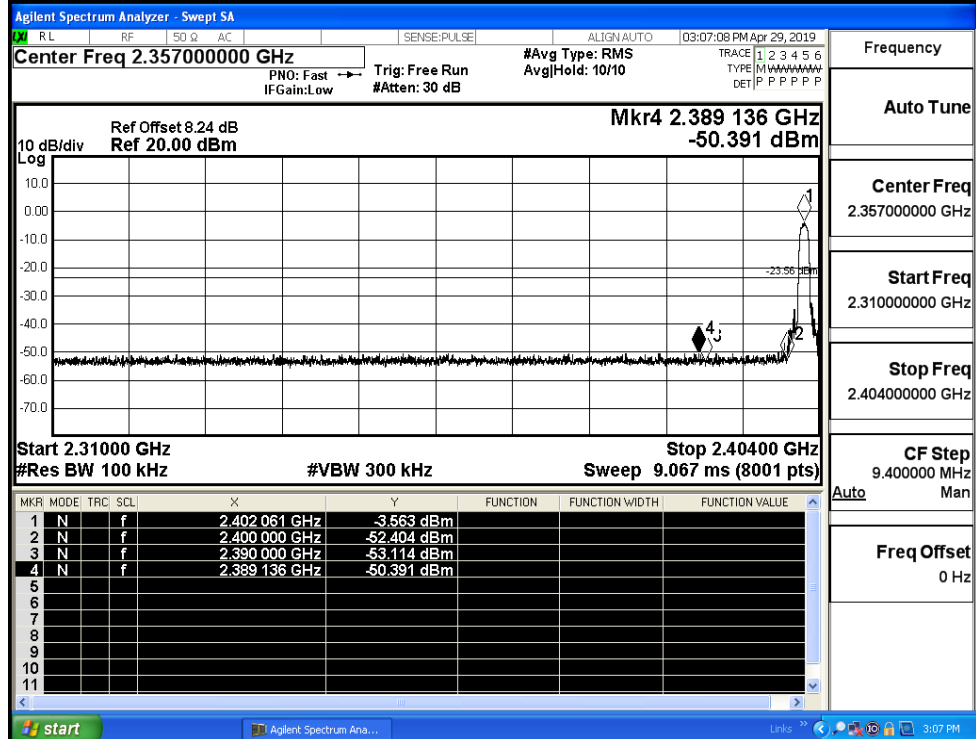
GFSK/HCH/No Hop



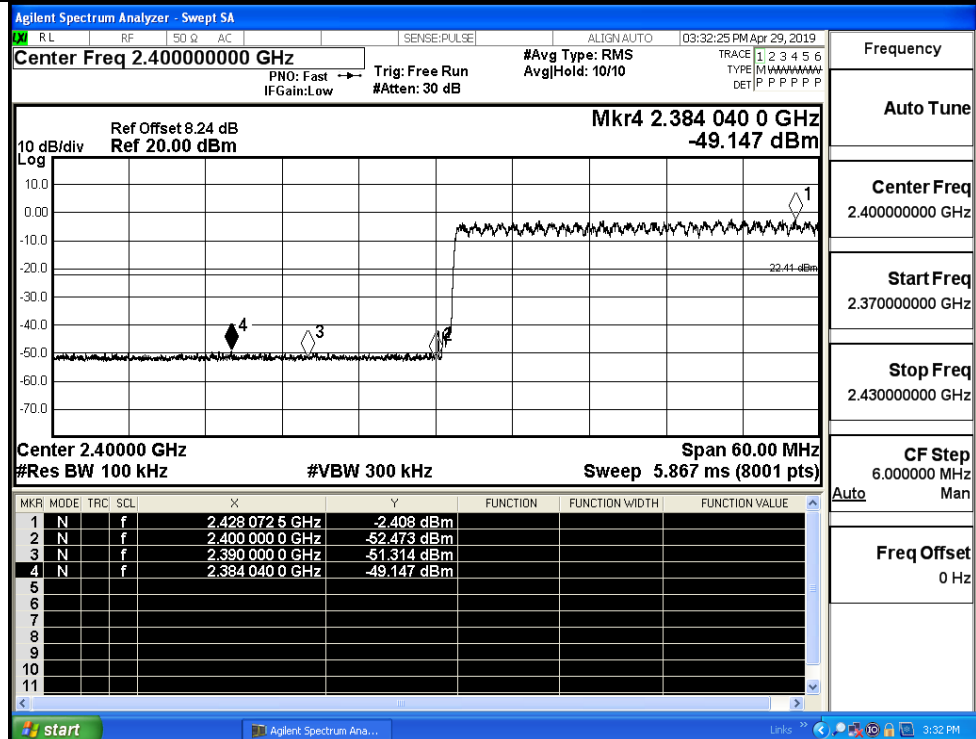
GFSK/HCH/Hop



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



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

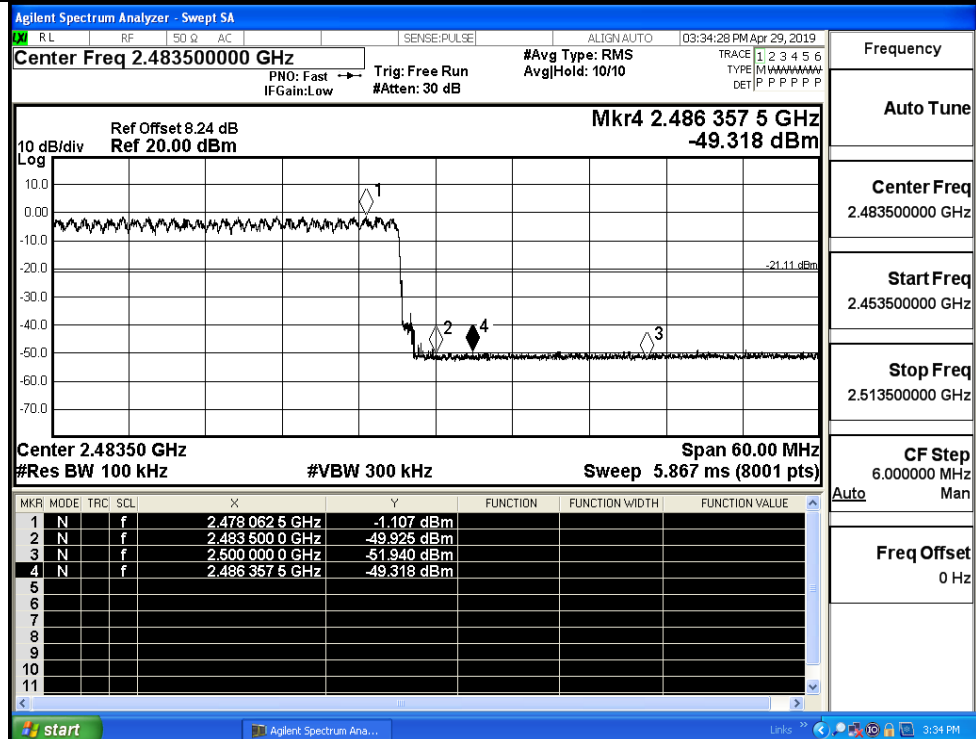
Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz

Auto

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

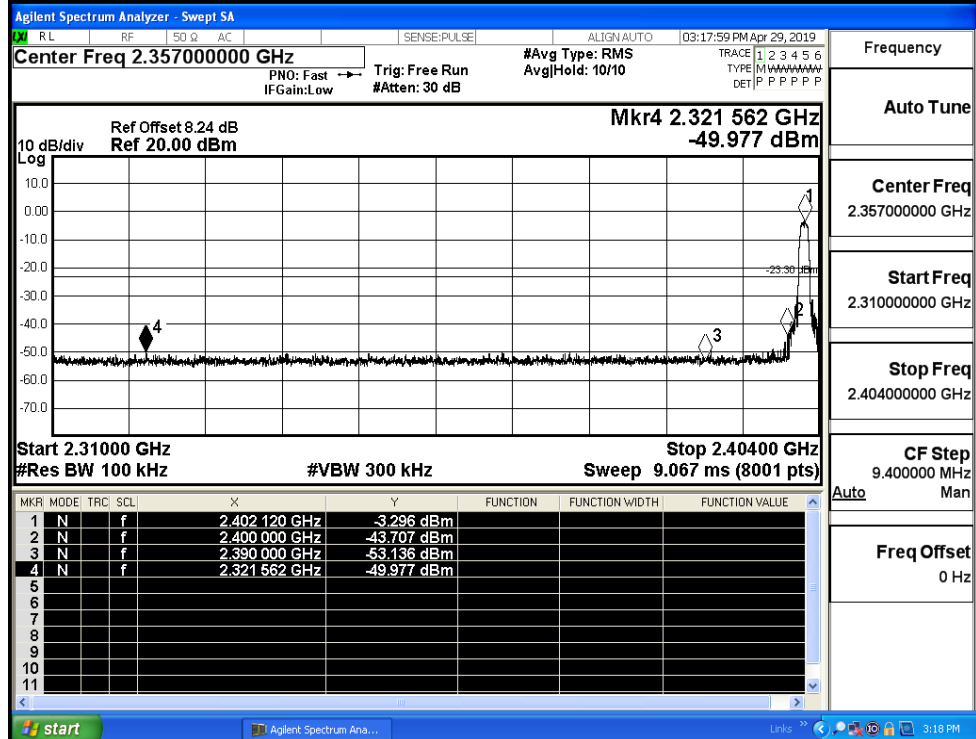
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz

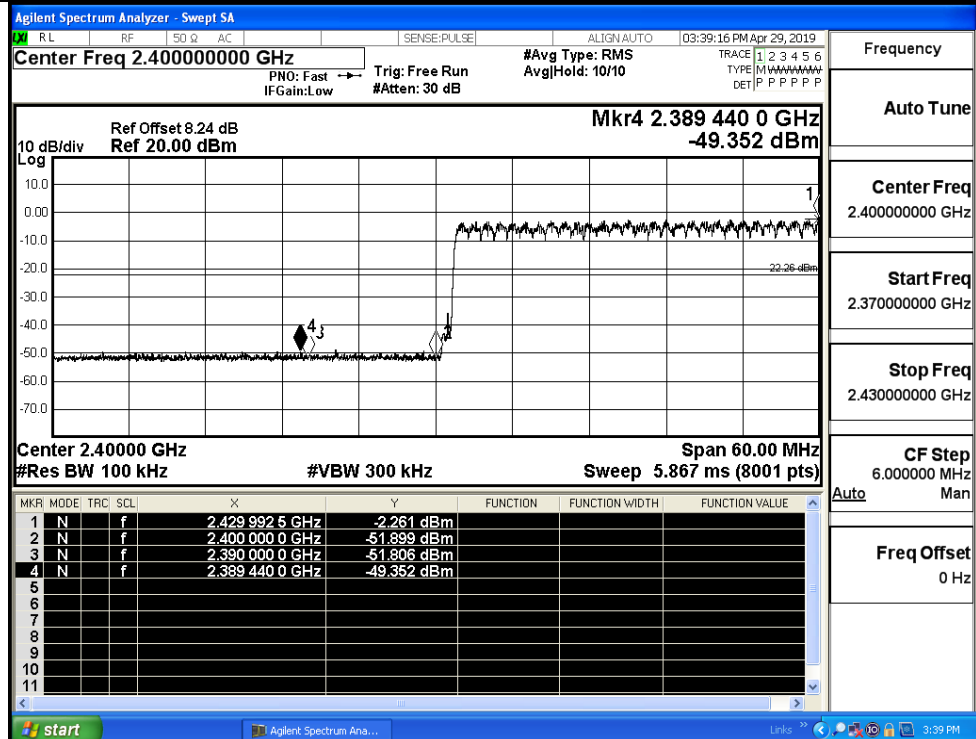
Auto

Freq Offset
0 Hz

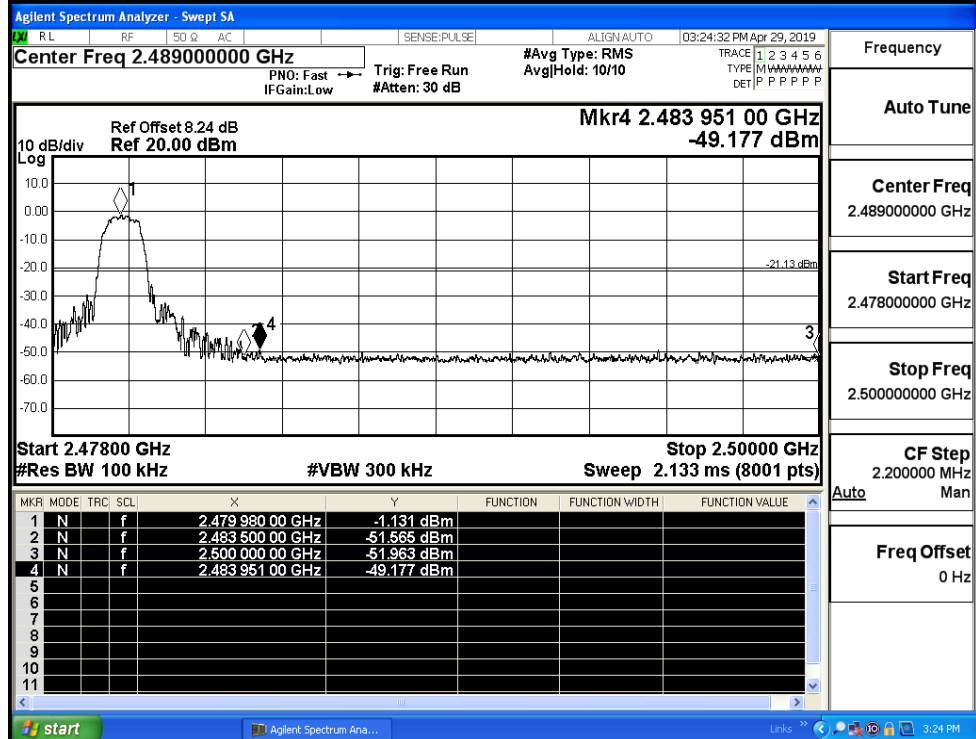
8DPSK/LCH/No Hop



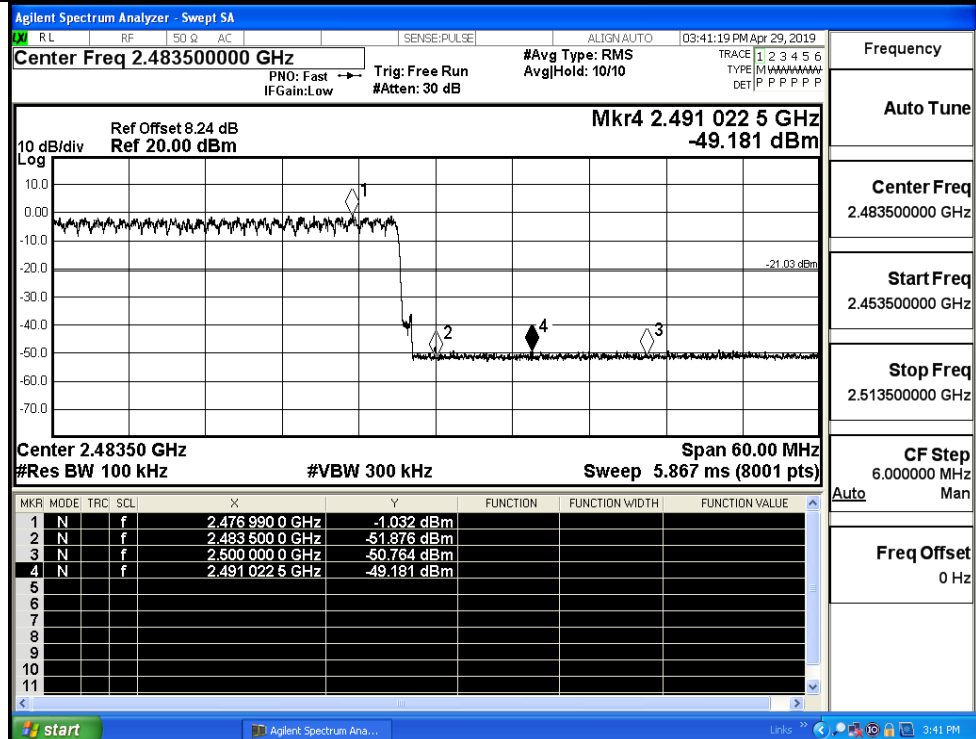
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



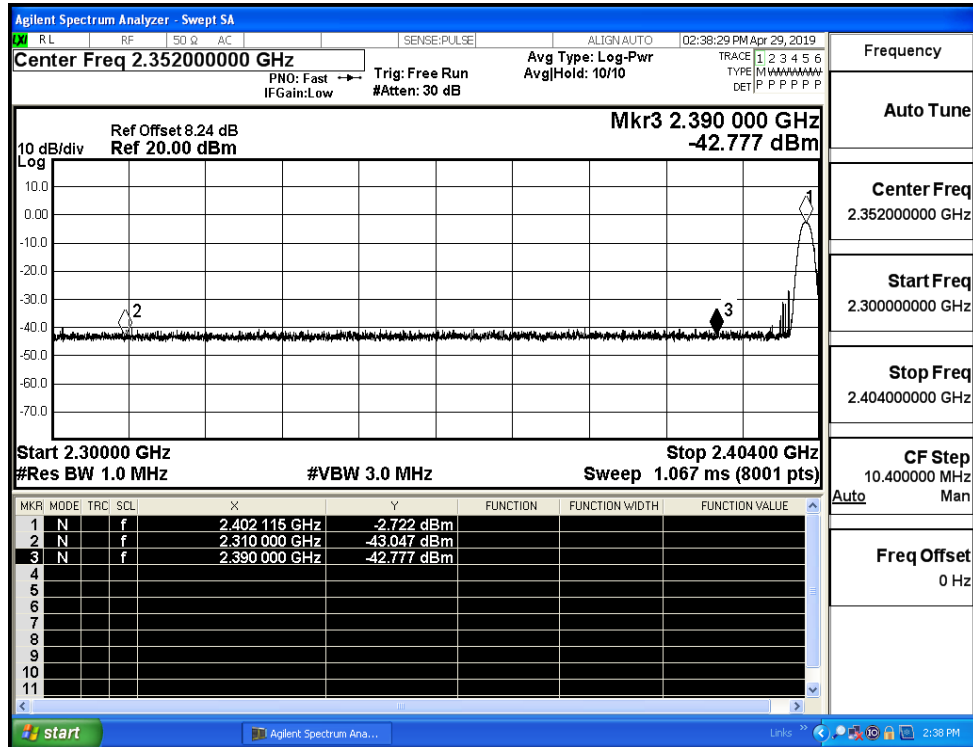
8DPSK/HCH/Hop



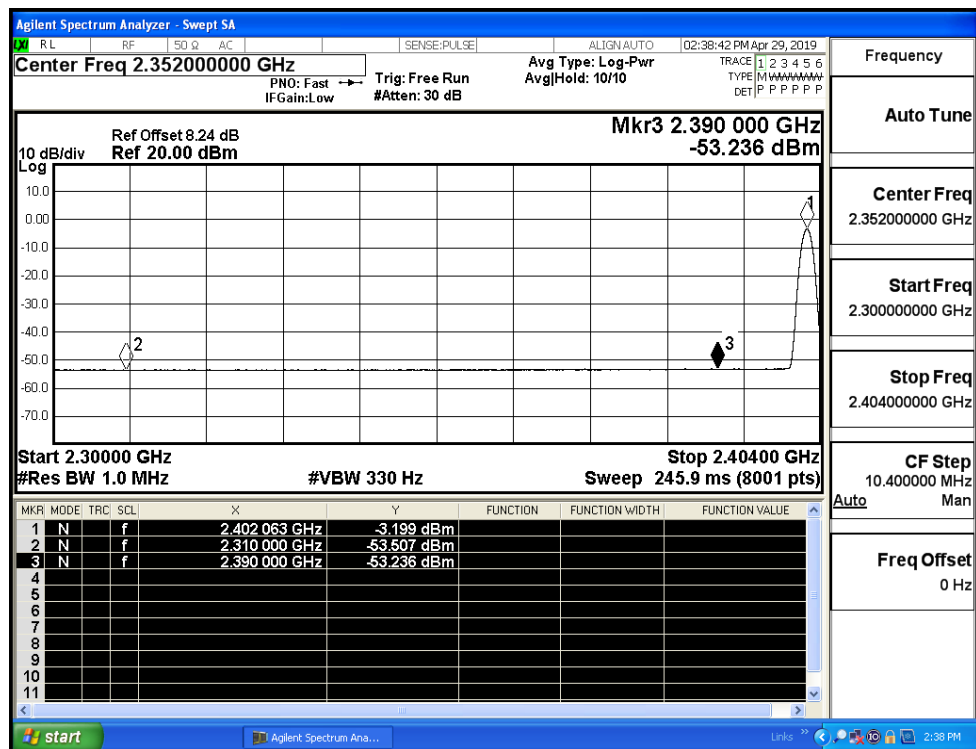
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.05	2.0	0	54.21	PEAK	74	PASS
	Off	2310.0	-53.51	2.0	0	43.75	AV	54	PASS
	Off	2390.0	-42.78	2.0	0	54.48	PEAK	74	PASS
	Off	2390.0	-53.24	2.0	0	44.02	AV	54	PASS
	Off	2483.5	-37.32	2.0	0	59.93	PEAK	74	PASS
	Off	2483.5	-52.83	2.0	0	44.43	AV	54	PASS
	Off	2500.0	-42.34	2.0	0	54.92	PEAK	74	PASS
	Off	2500.0	-52.96	2.0	0	44.30	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-41.87	2.0	0	55.39	PEAK	74	PASS
	Off	2310.0	-53.49	2.0	0	43.76	AV	54	PASS
	Off	2390.0	-43.16	2.0	0	54.10	PEAK	74	PASS
	Off	2390.0	-53.28	2.0	0	43.98	AV	54	PASS
	Off	2483.5	-42.77	2.0	0	54.49	PEAK	74	PASS
	Off	2483.5	-52.54	2.0	0	44.72	AV	54	PASS
	Off	2500.0	-42.67	2.0	0	54.59	PEAK	74	PASS
	Off	2500.0	-52.88	2.0	0	44.38	AV	54	PASS
8DPSK	Off	2310.0	-44.23	2.0	0	53.03	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-43.43	2.0	0	53.82	PEAK	74	PASS
	Off	2390.0	-53.25	2.0	0	44.01	AV	54	PASS
	Off	2483.5	-42.51	2.0	0	54.75	PEAK	74	PASS
	Off	2483.5	-52.54	2.0	0	44.72	AV	54	PASS
	Off	2500.0	-41.33	2.0	0	55.92	PEAK	74	PASS
	Off	2500.0	-52.85	2.0	0	44.41	AV	54	PASS

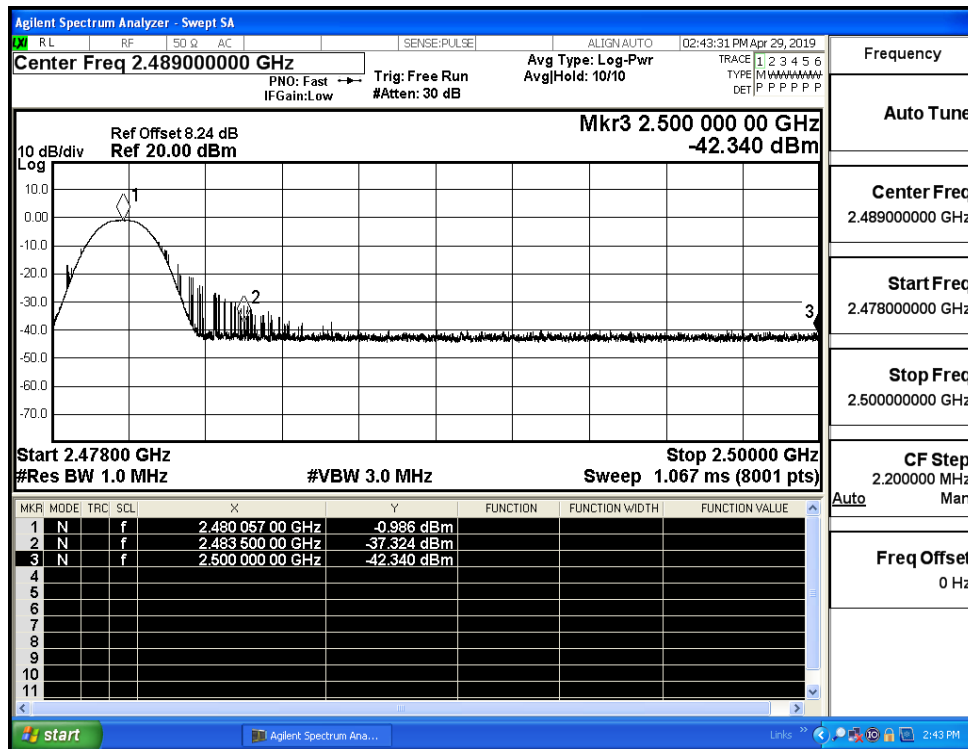
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



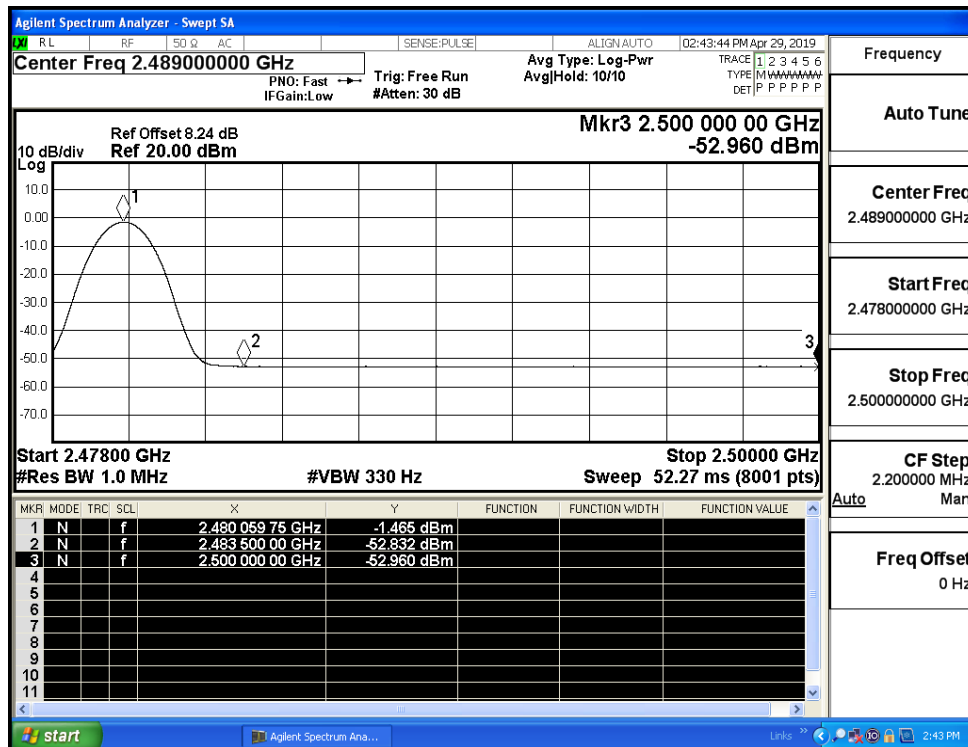
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

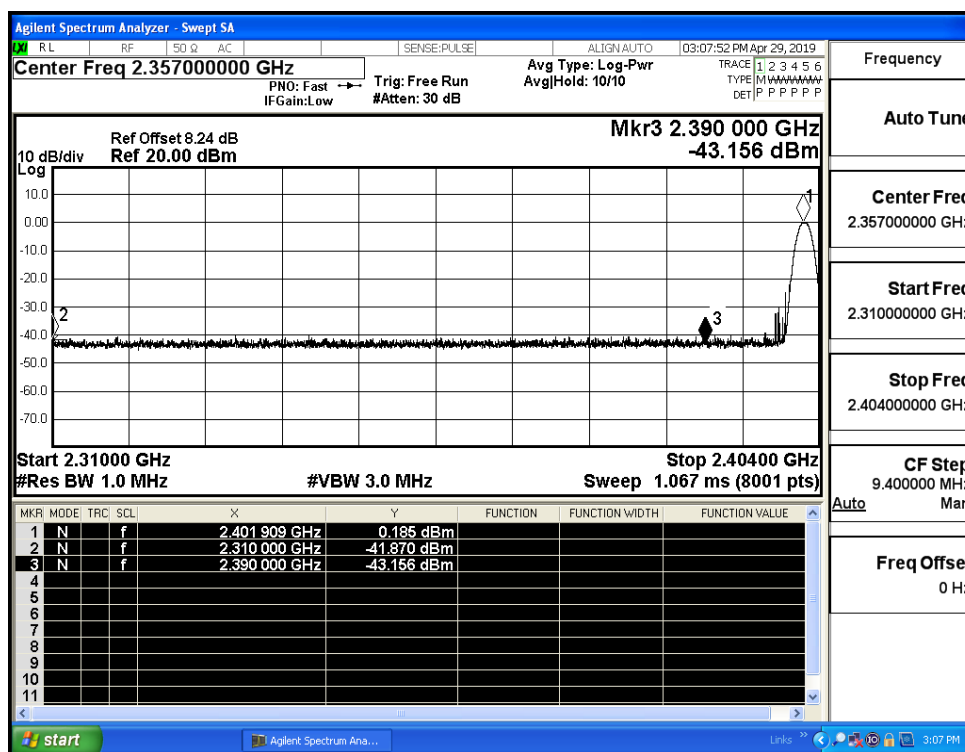
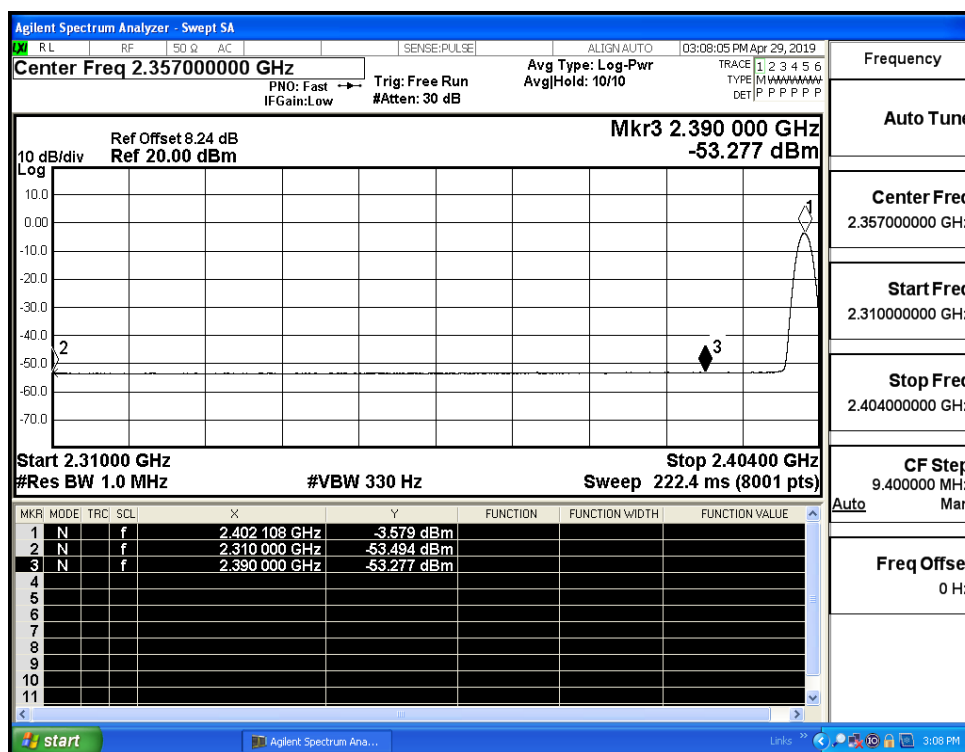


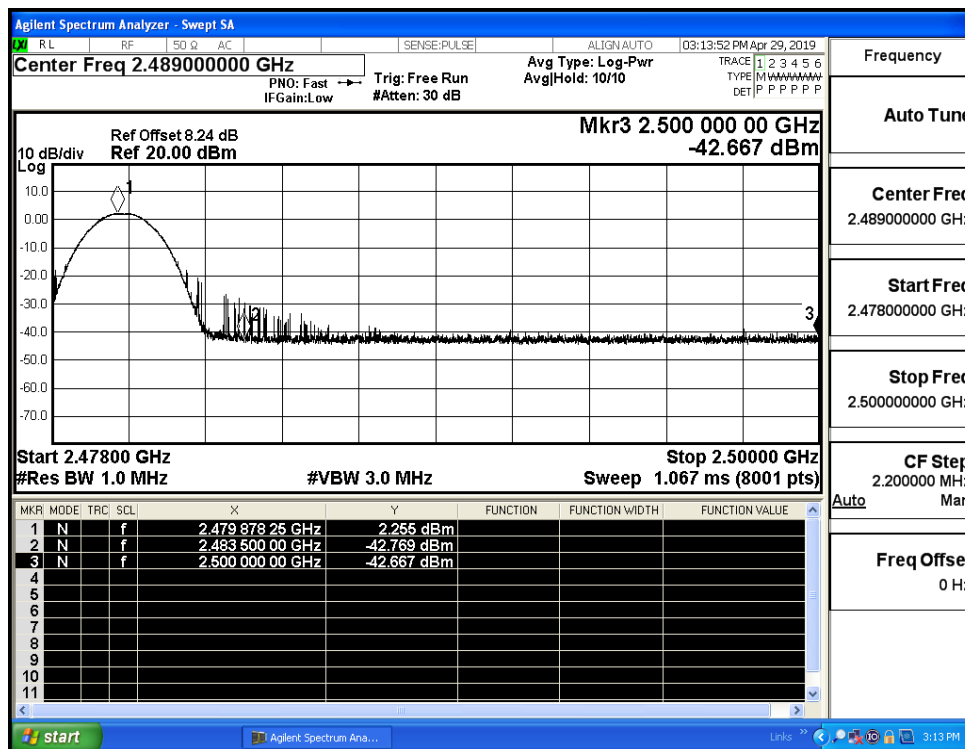
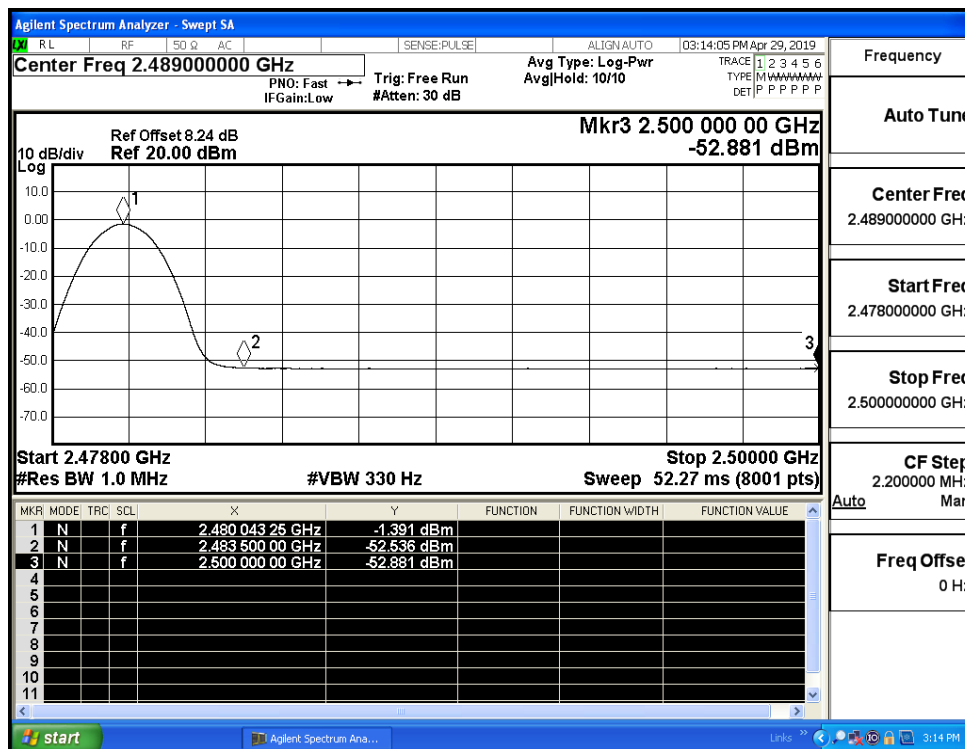
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



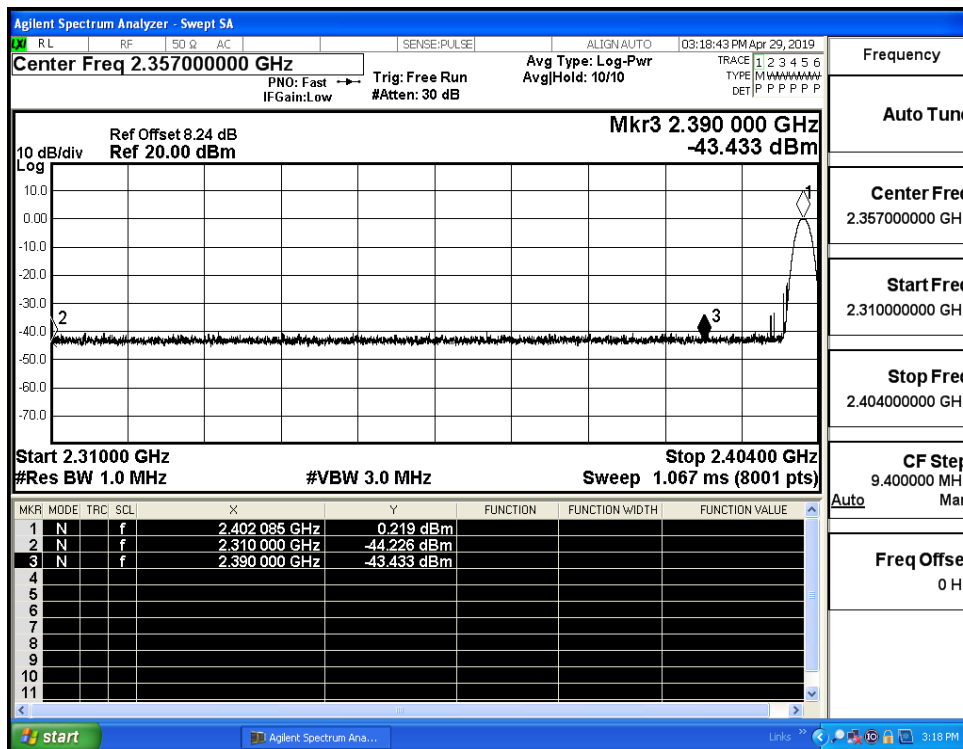
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



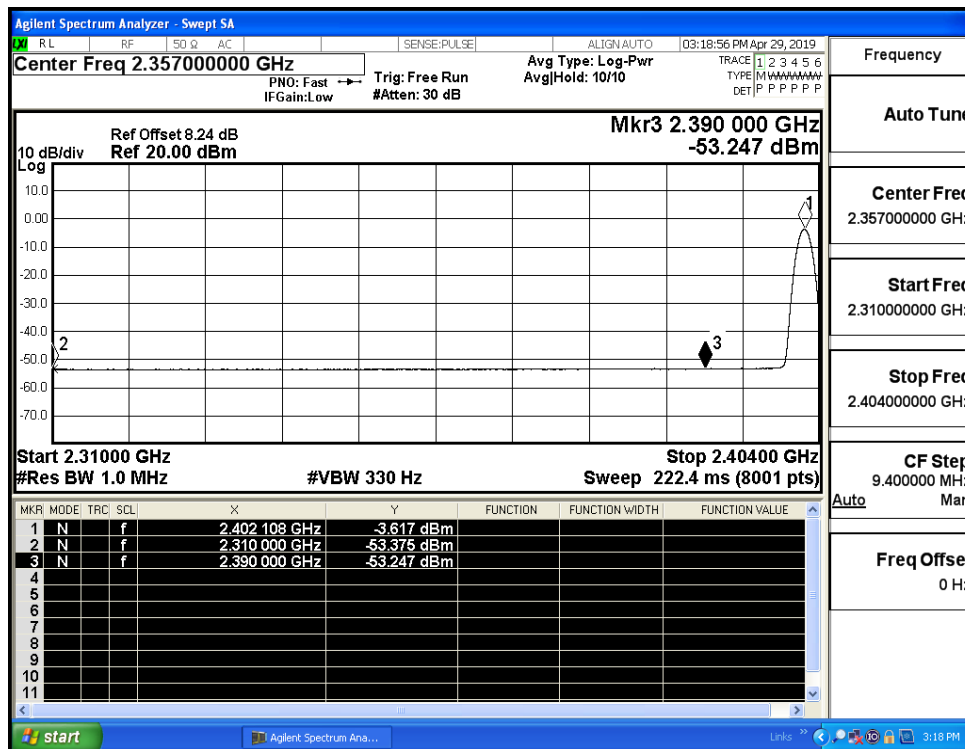
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

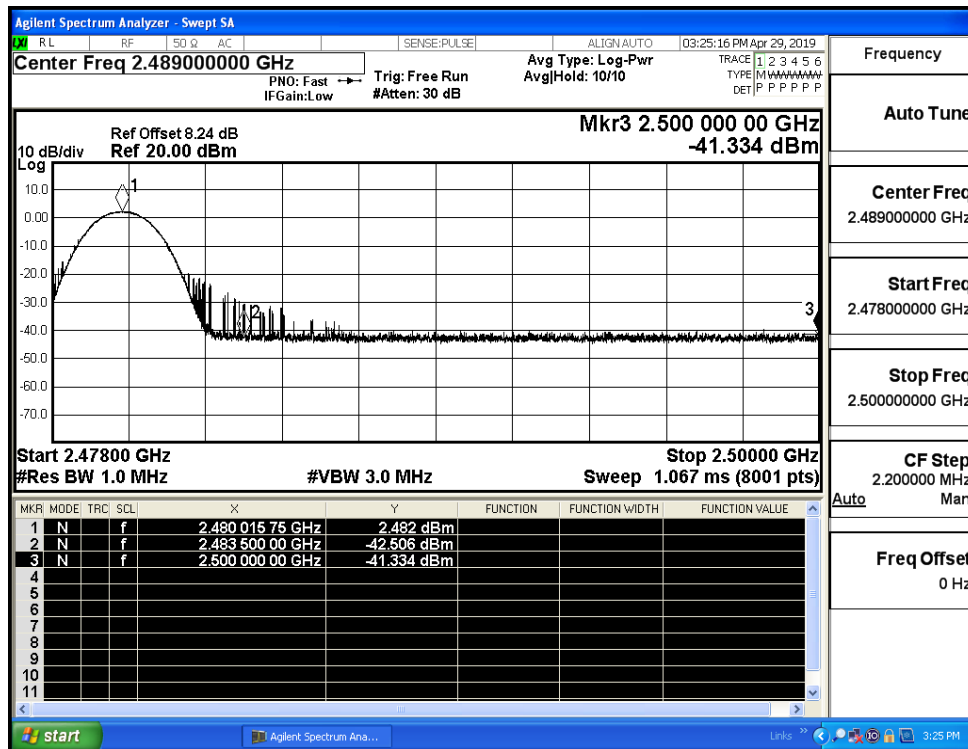
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

