

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: B102

Environmental Conditions

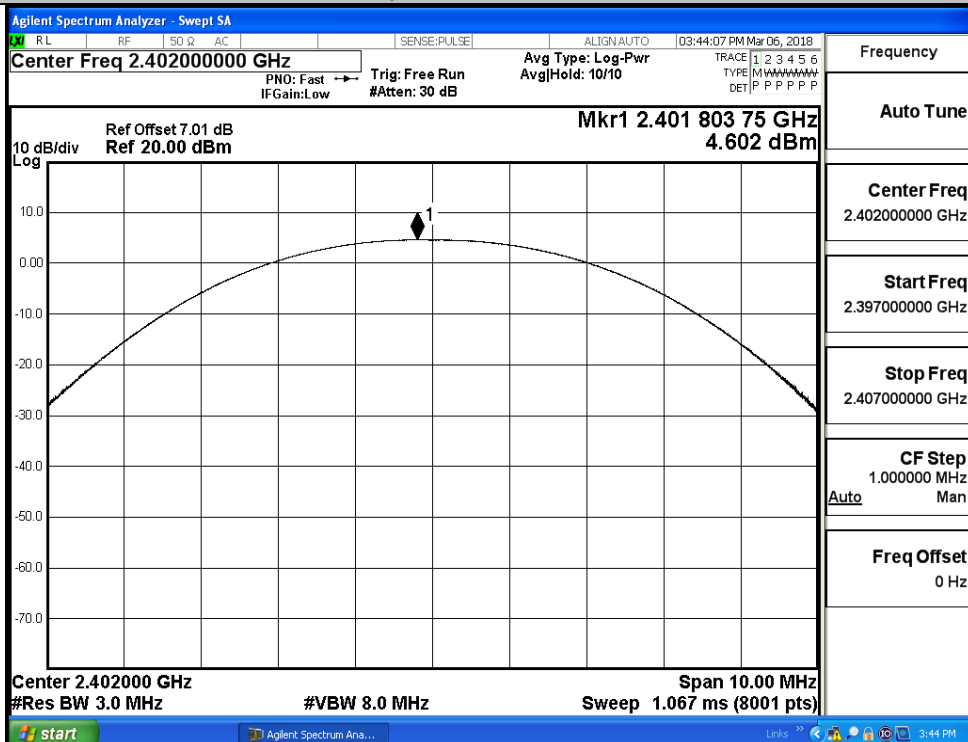
Temperature:	22.5 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Jayden Zhuo
Supervised by:	Tom.Liu

A.1 Maximum Conducted Peak Output Power

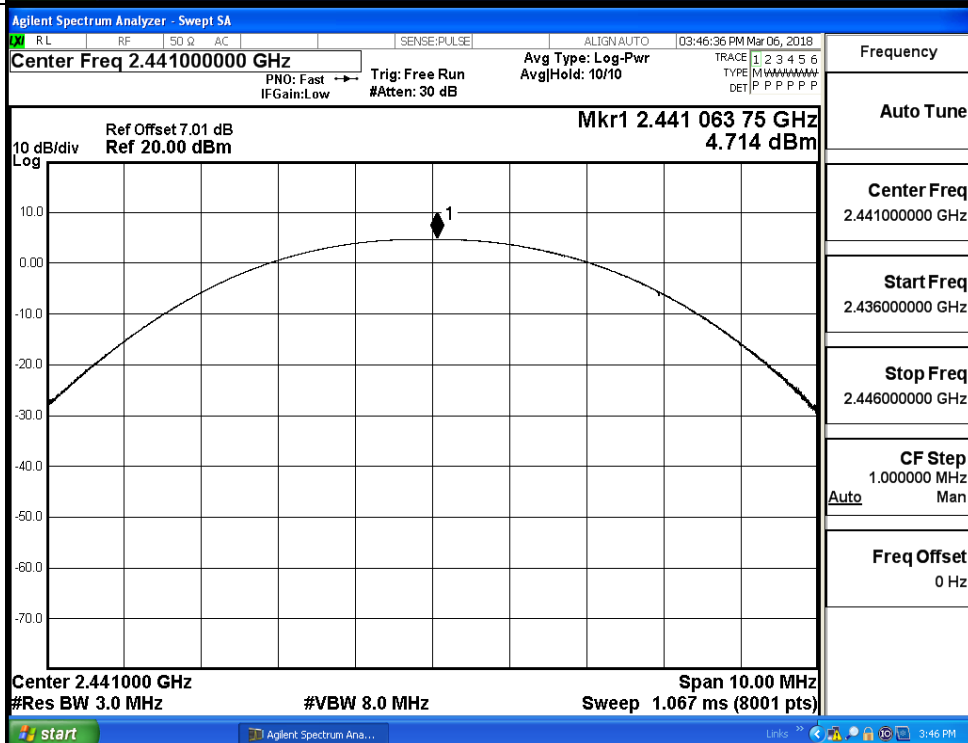
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.602	30	PASS
	MCH	4.714	30	PASS
	HCH	4.616	30	PASS
$\pi/4$ DQPSK	LCH	3.947	21	PASS
	MCH	4.478	21	PASS
	HCH	4.439	21	PASS
8DPSK	LCH	4.333	21	PASS
	MCH	4.446	21	PASS
	HCH	4.397	21	PASS

Test Graphs

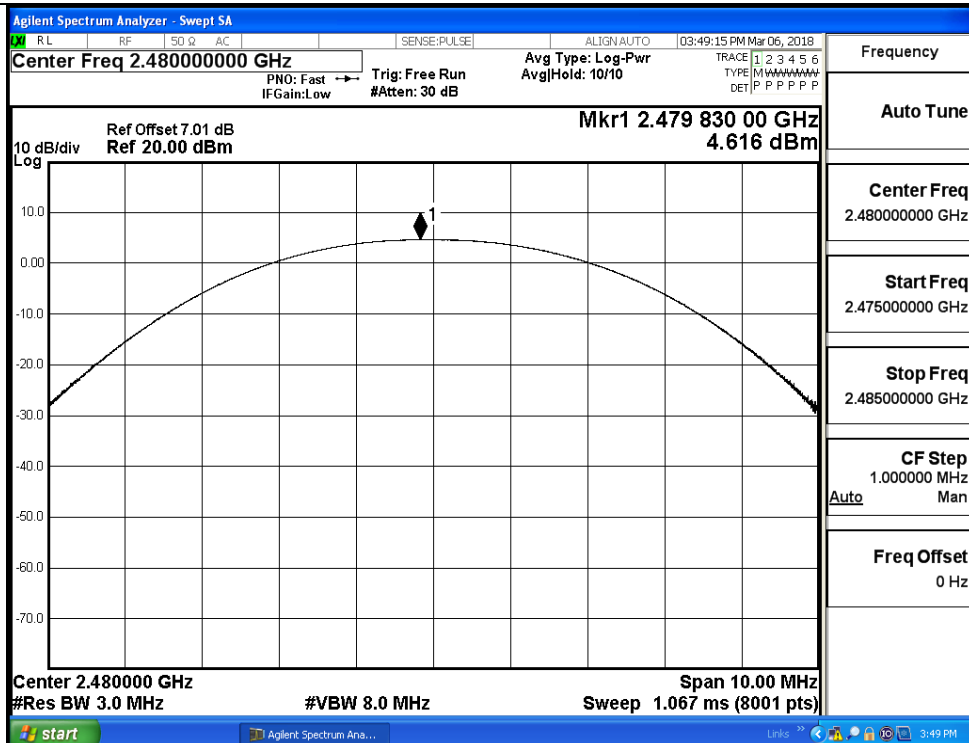
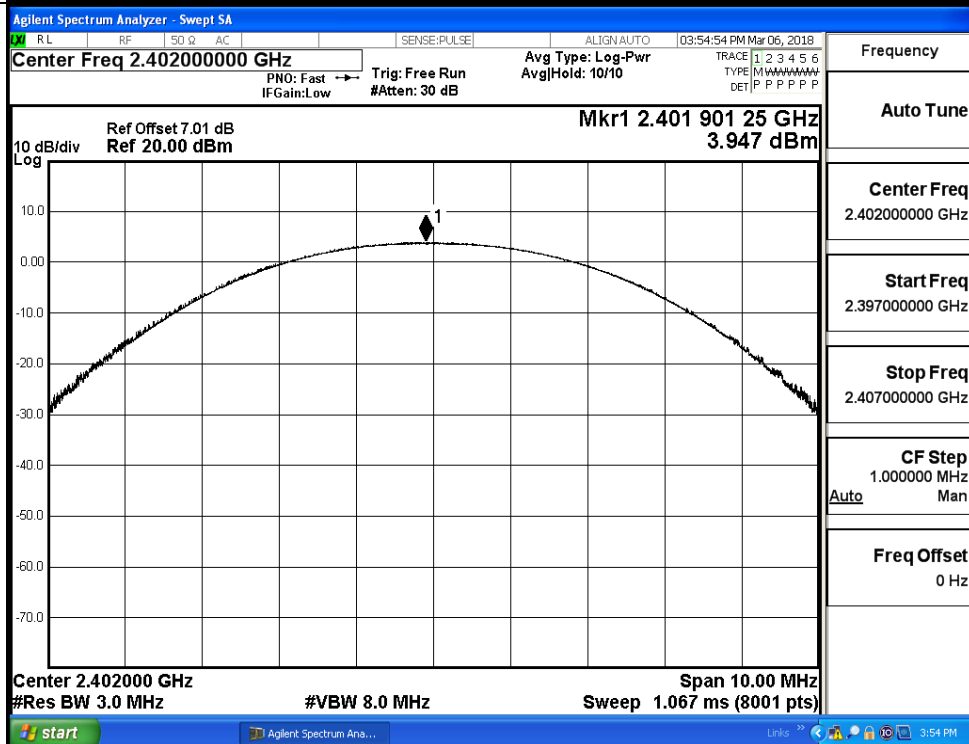
GFSK/LCH

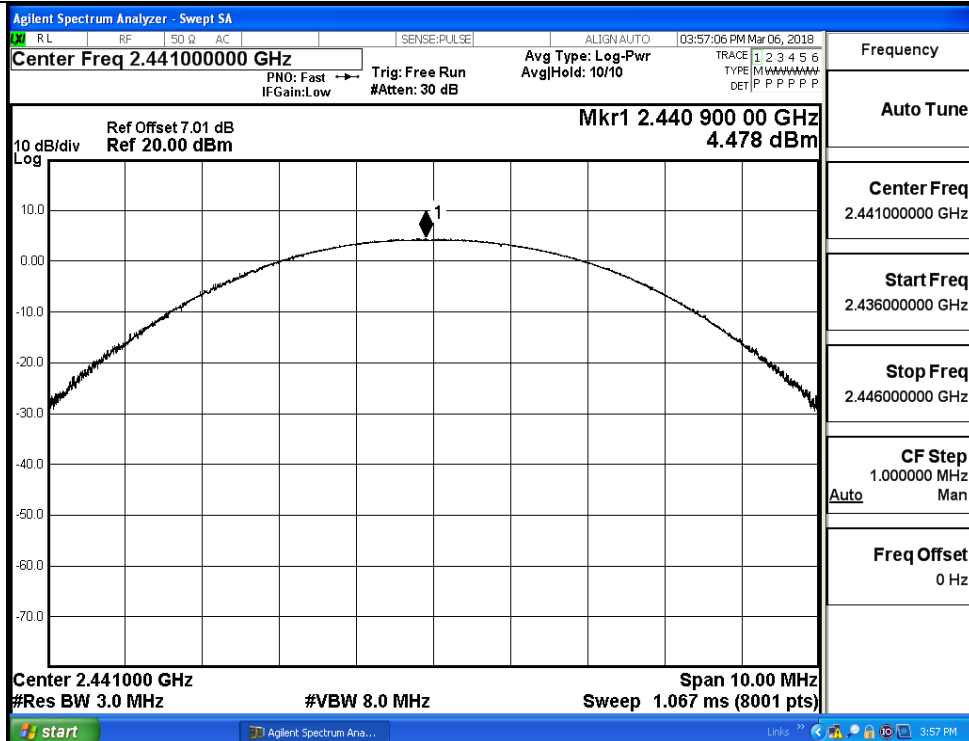
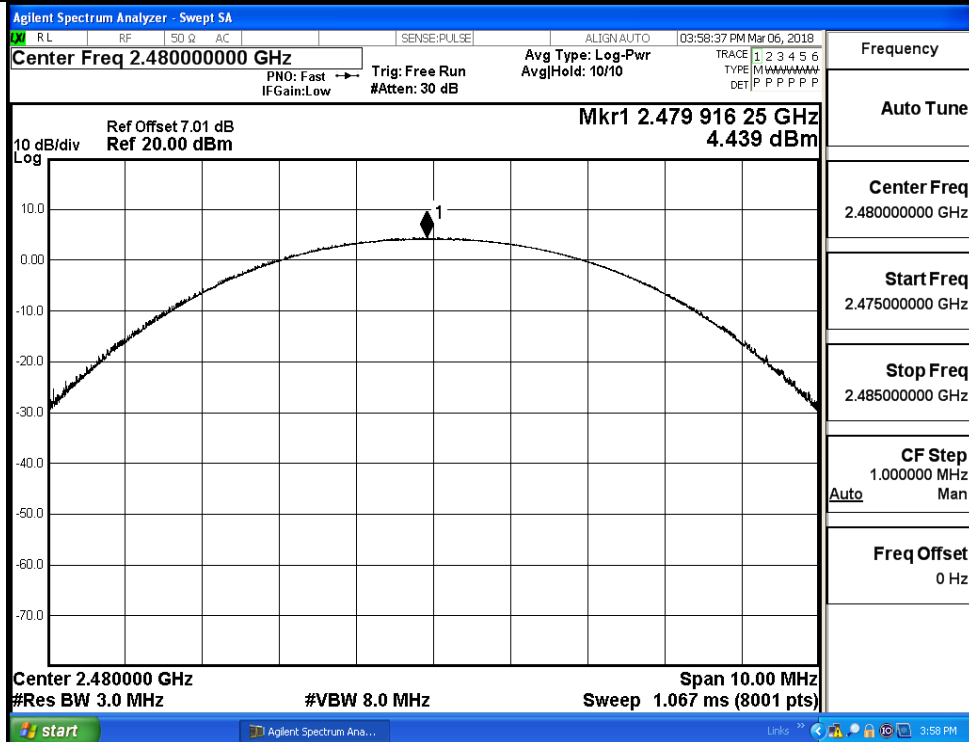


GFSK/MCH

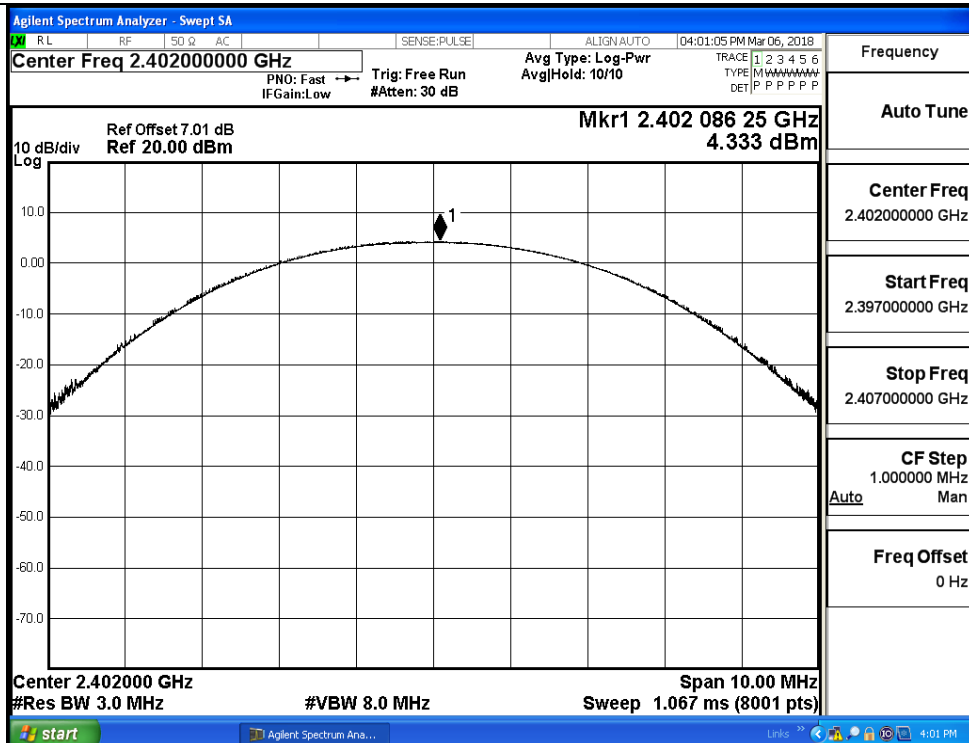


GFSK/HCH

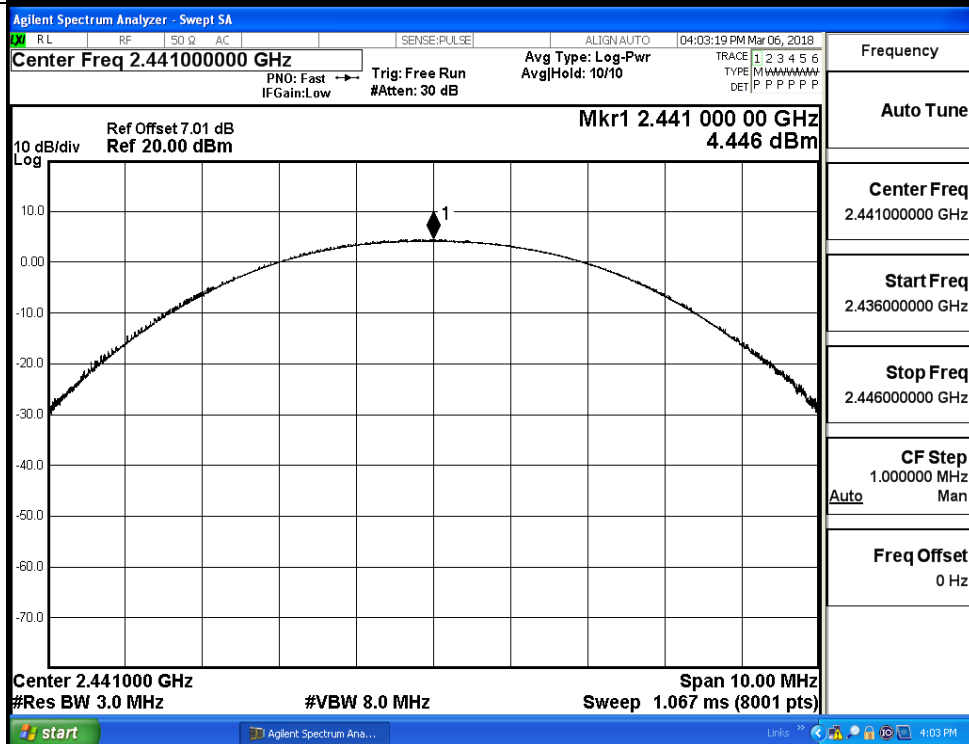
 $\pi/4$ DQPSK/LCH

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

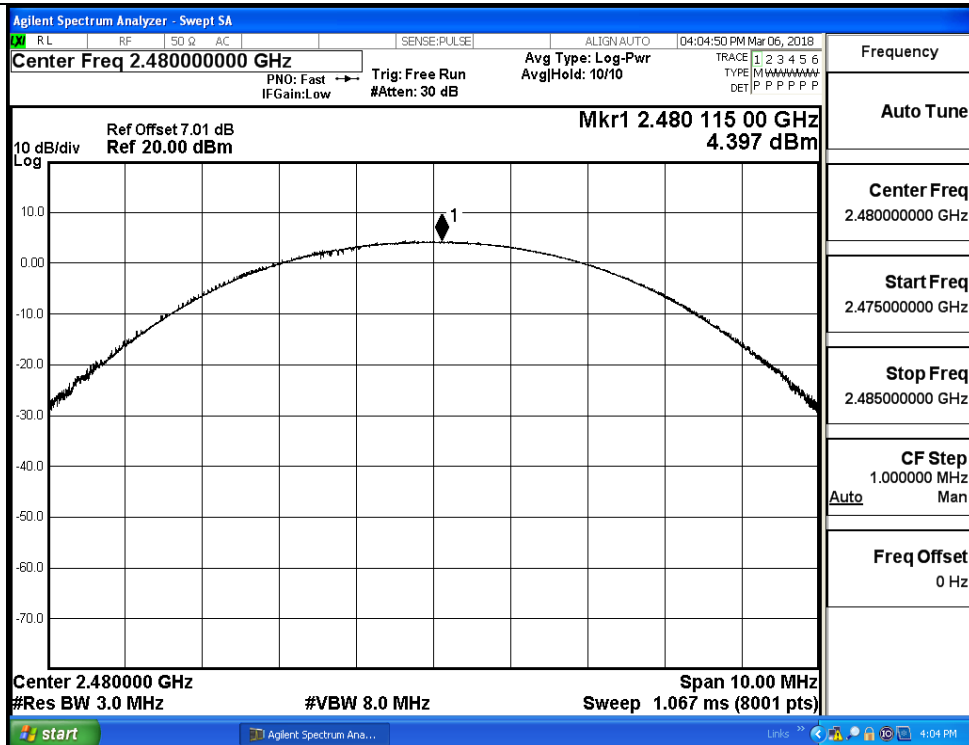
8DPSK/LCH



8DPSK/MCH



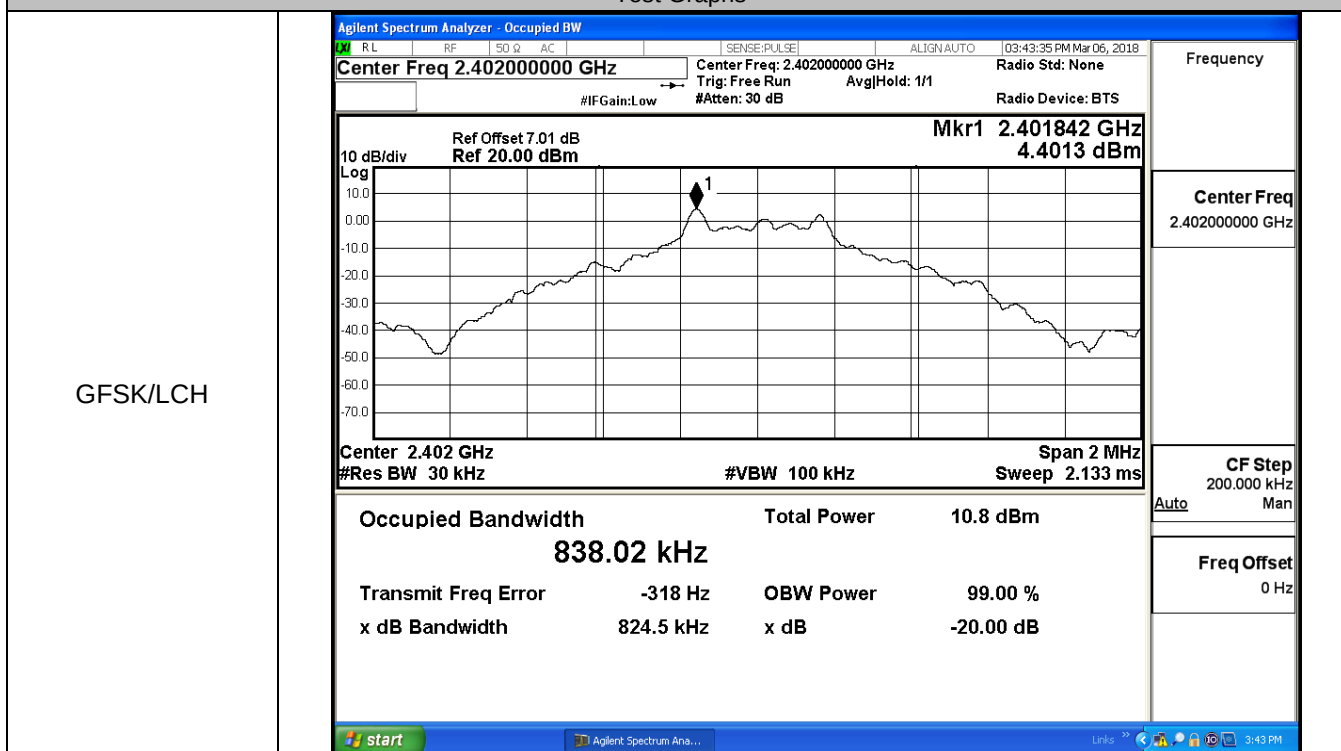
8DPSK/HCH



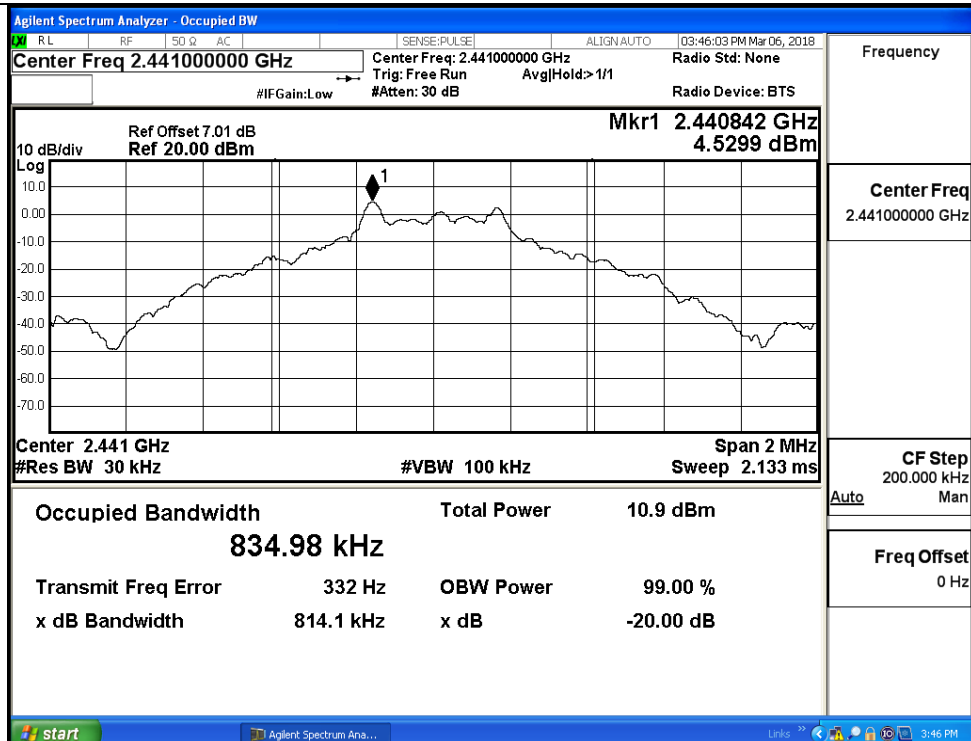
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8245	Not Specified	PASS
	MCH	0.8141	Not Specified	PASS
	HCH	0.8289	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.123	Not Specified	PASS
	MCH	1.120	Not Specified	PASS
	HCH	1.120	Not Specified	PASS
8DPSK	LCH	1.128	Not Specified	PASS
	MCH	1.122	Not Specified	PASS
	HCH	1.131	Not Specified	PASS

Test Graphs



GFSK/MCH



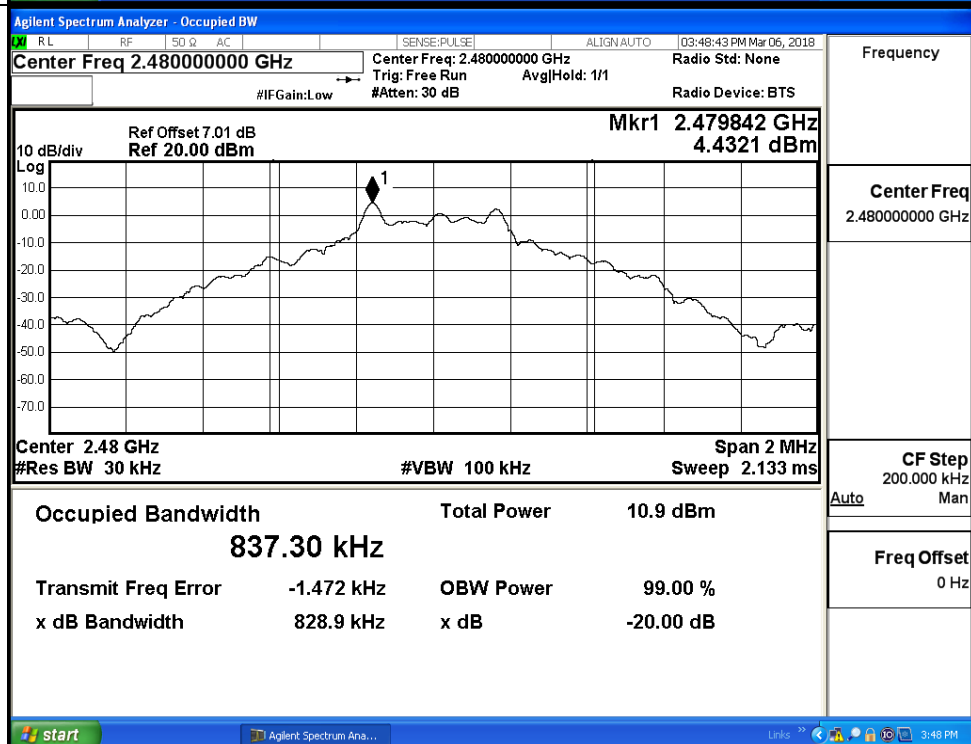
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

GFSK/HCH

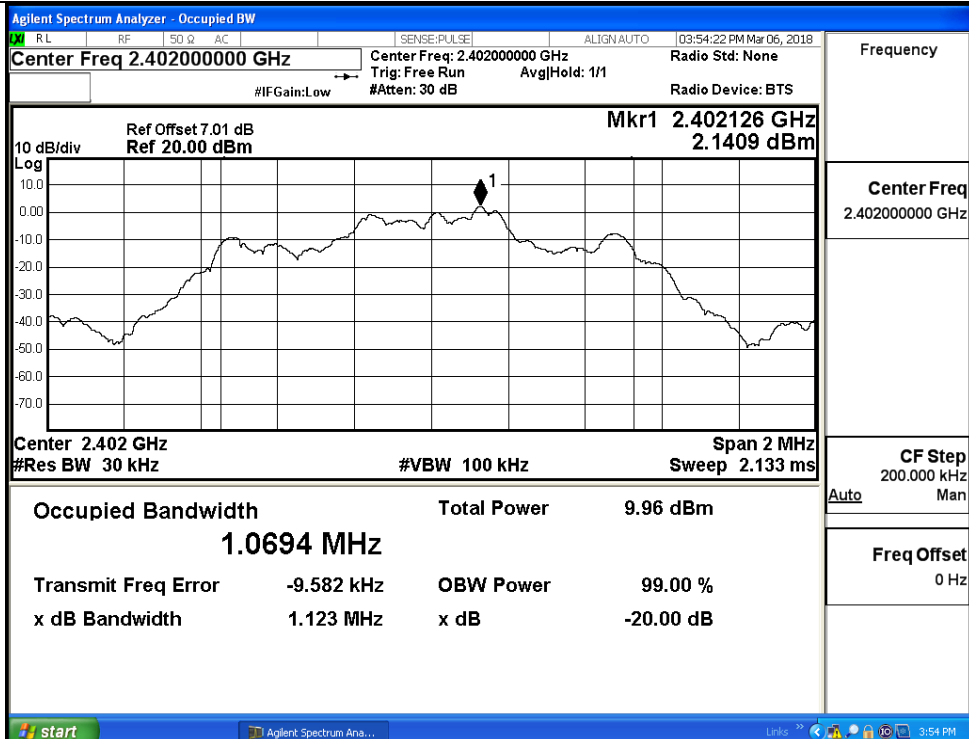
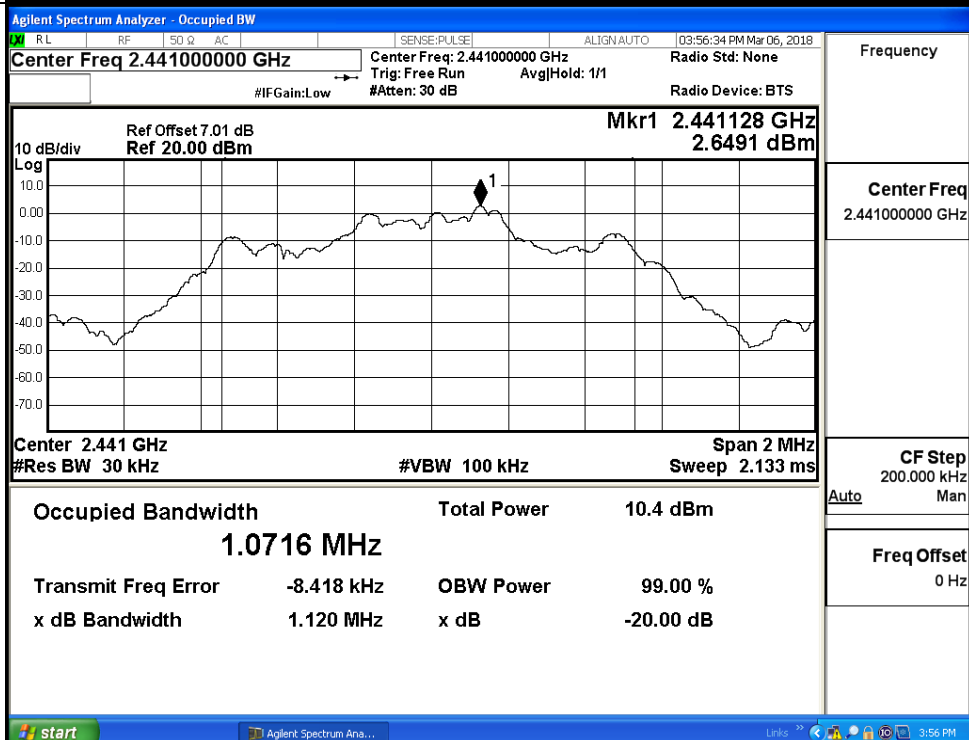


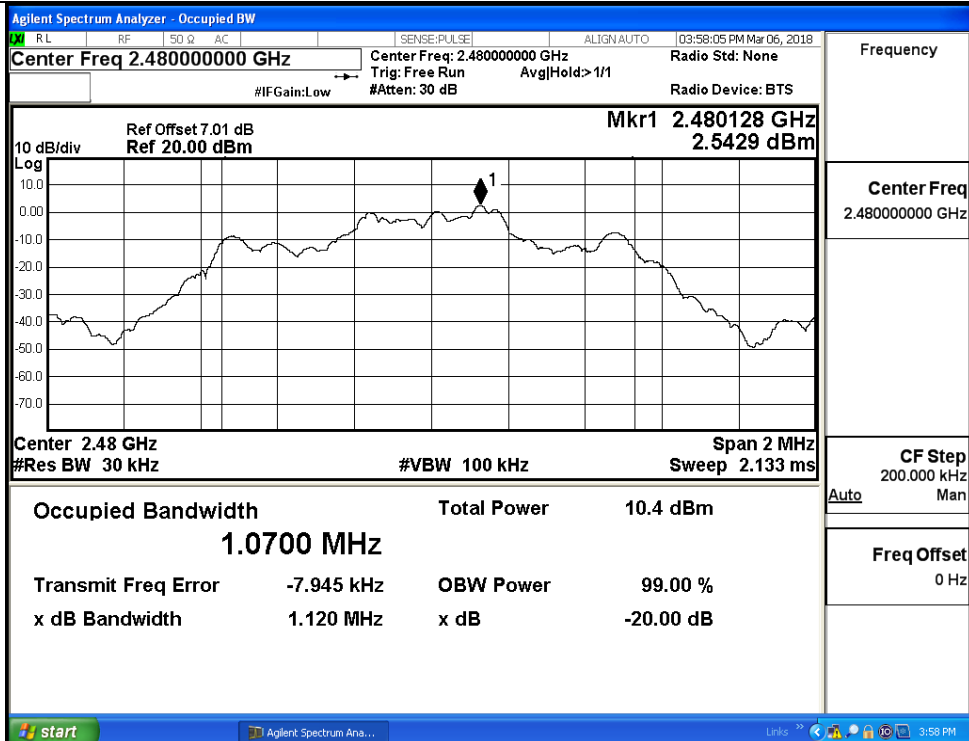
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

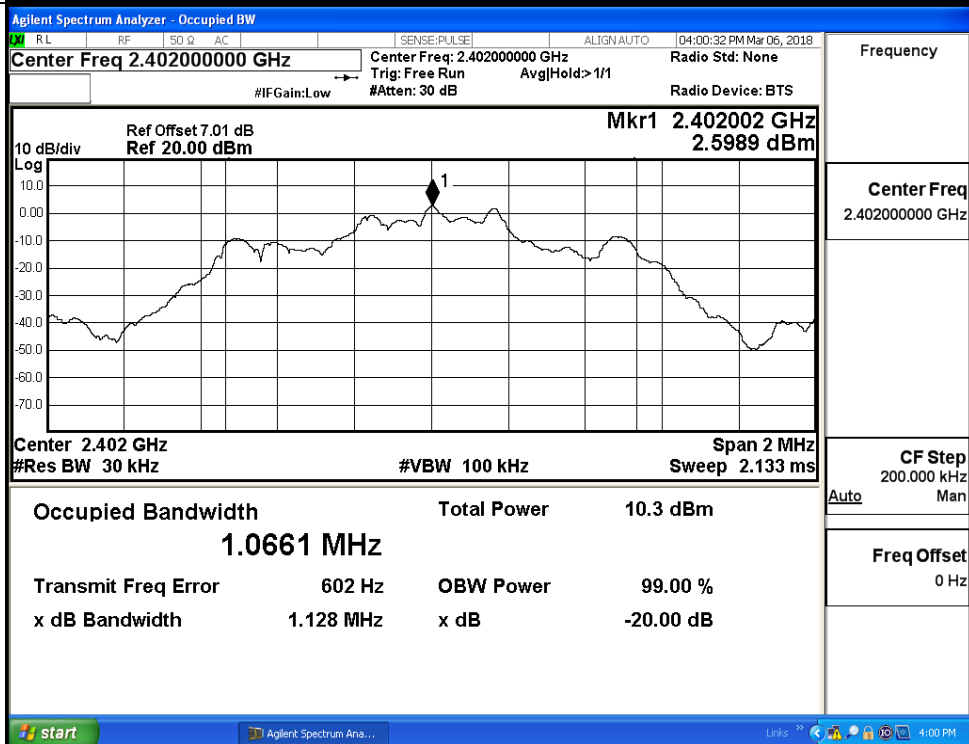
Auto

Freq Offset
0 Hz

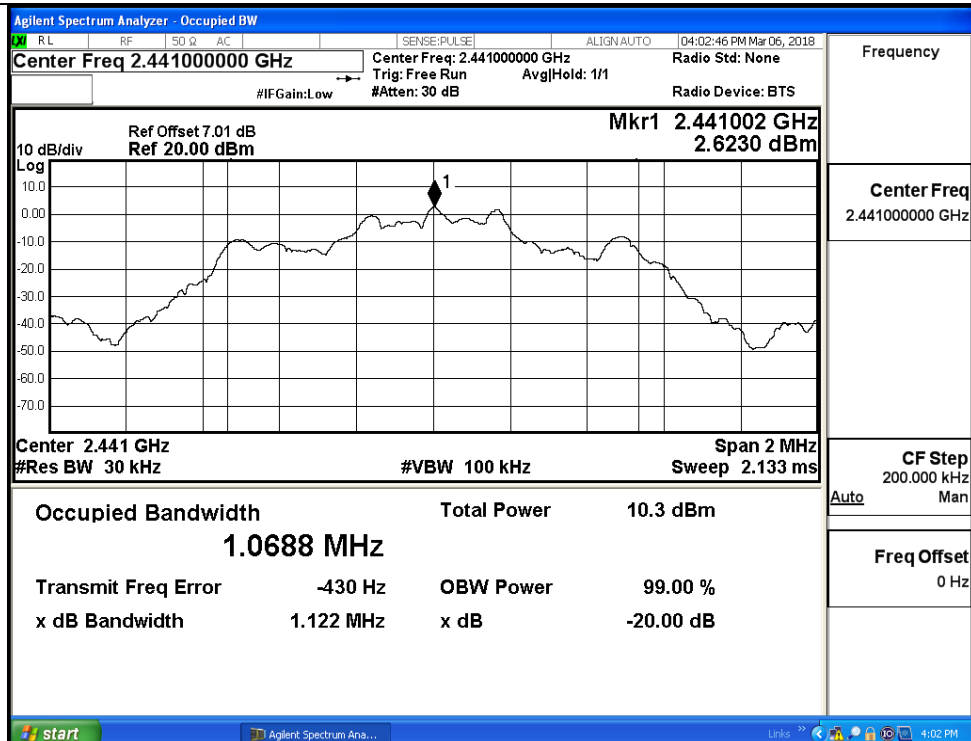
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

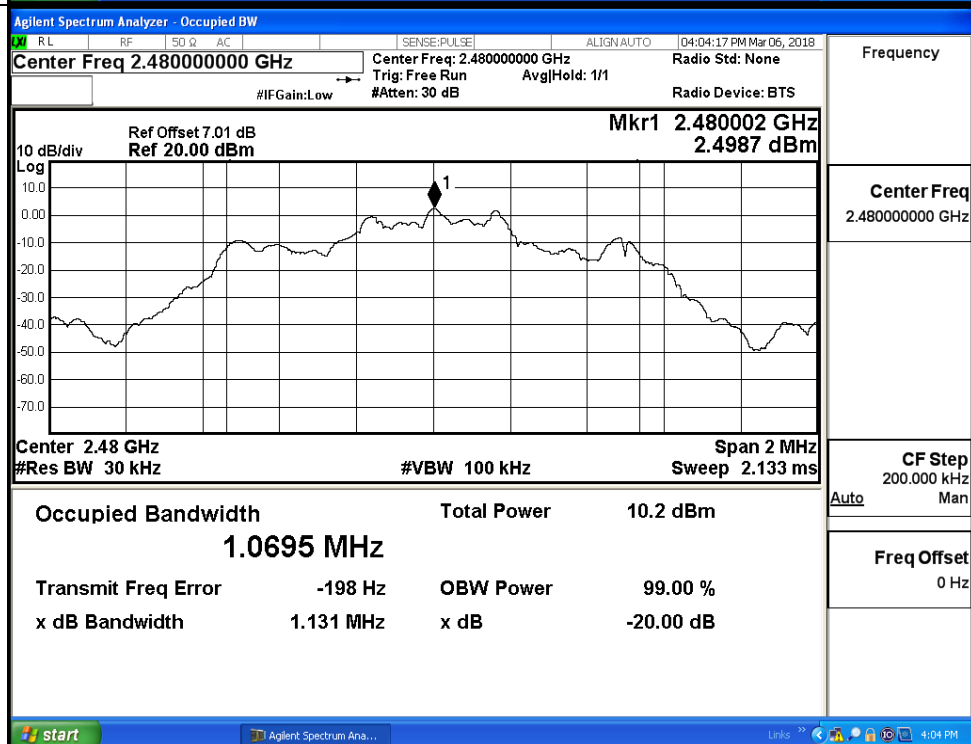
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

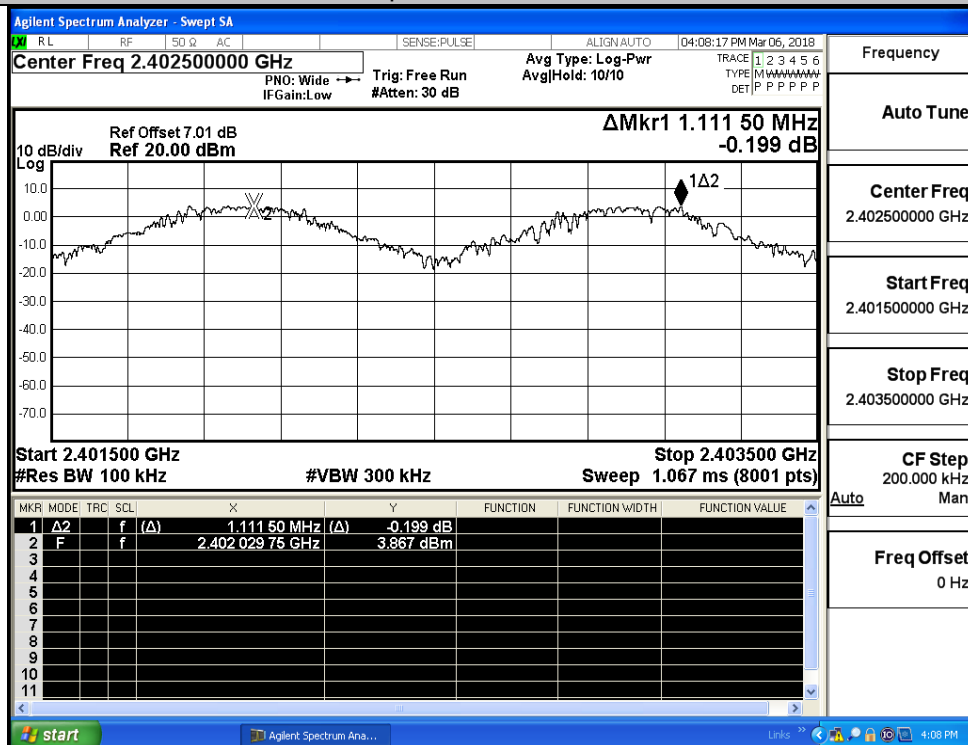


A.3 Carrier Frequency Separation

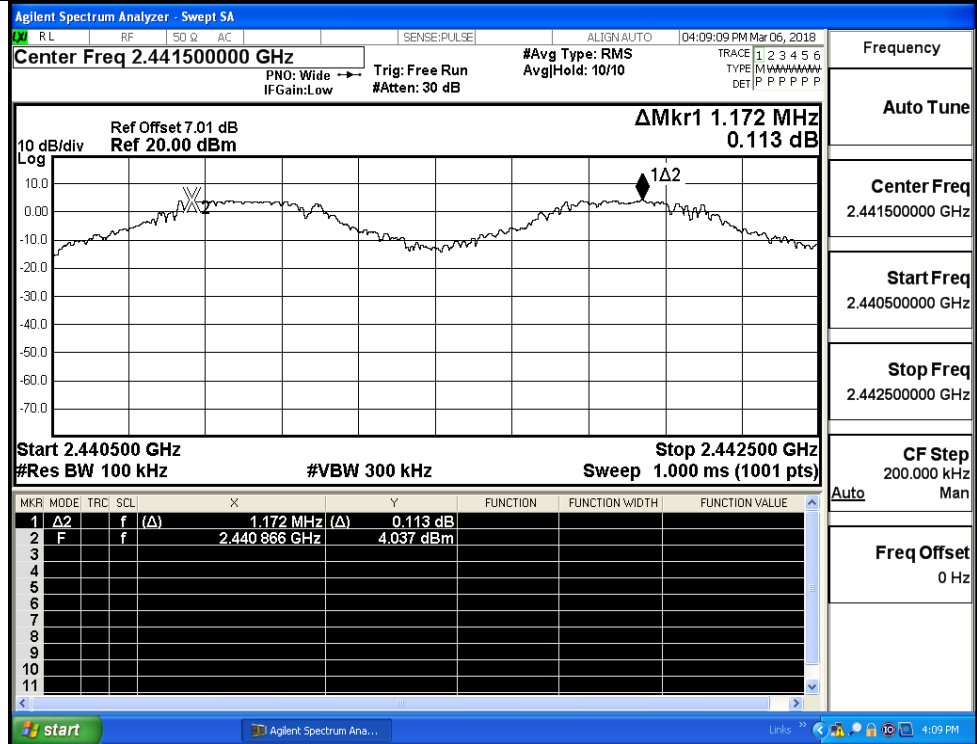
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.111	0.8245	PASS
	MCH	1.172	0.8141	PASS
	HCH	0.956	0.8289	PASS
$\pi/4$ DQPSK	LCH	0.972	0.749	PASS
	MCH	0.892	0.749	PASS
	HCH	1.056	0.749	PASS
8DPSK	LCH	0.838	0.754	PASS
	MCH	0.986	0.754	PASS
	HCH	1.344	0.754	PASS

Test Graphs

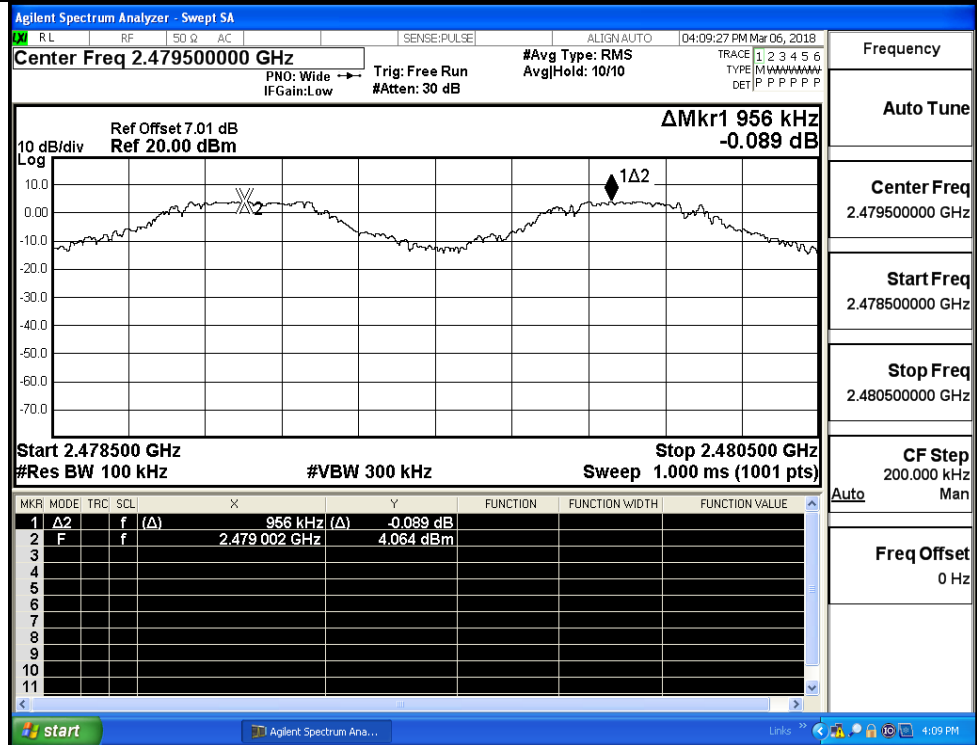
GFSK/LCH

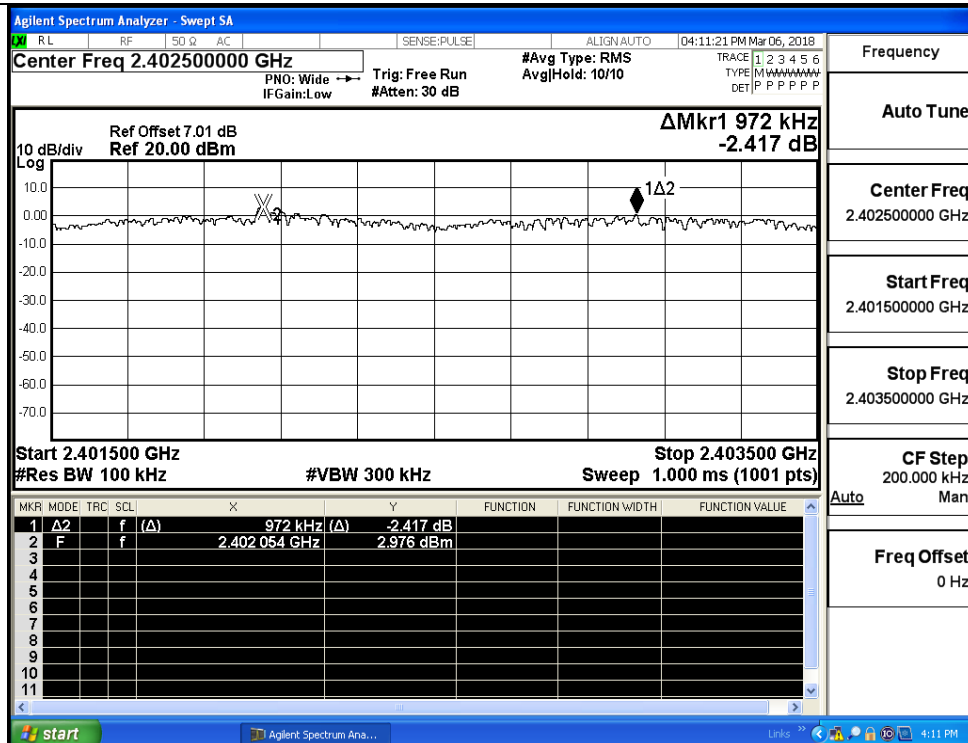
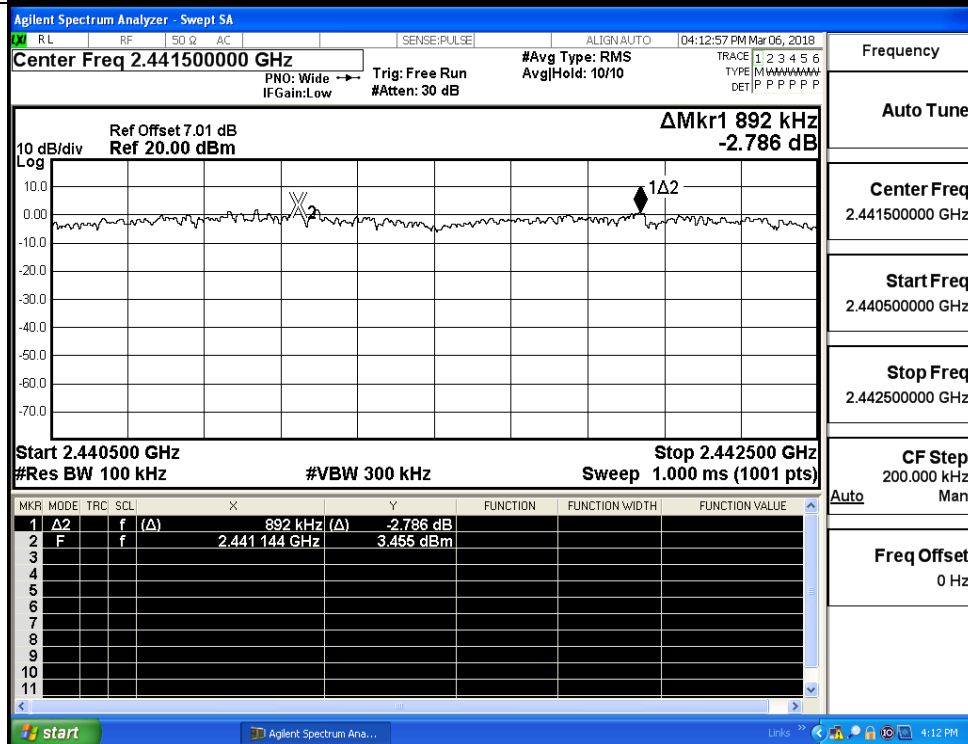


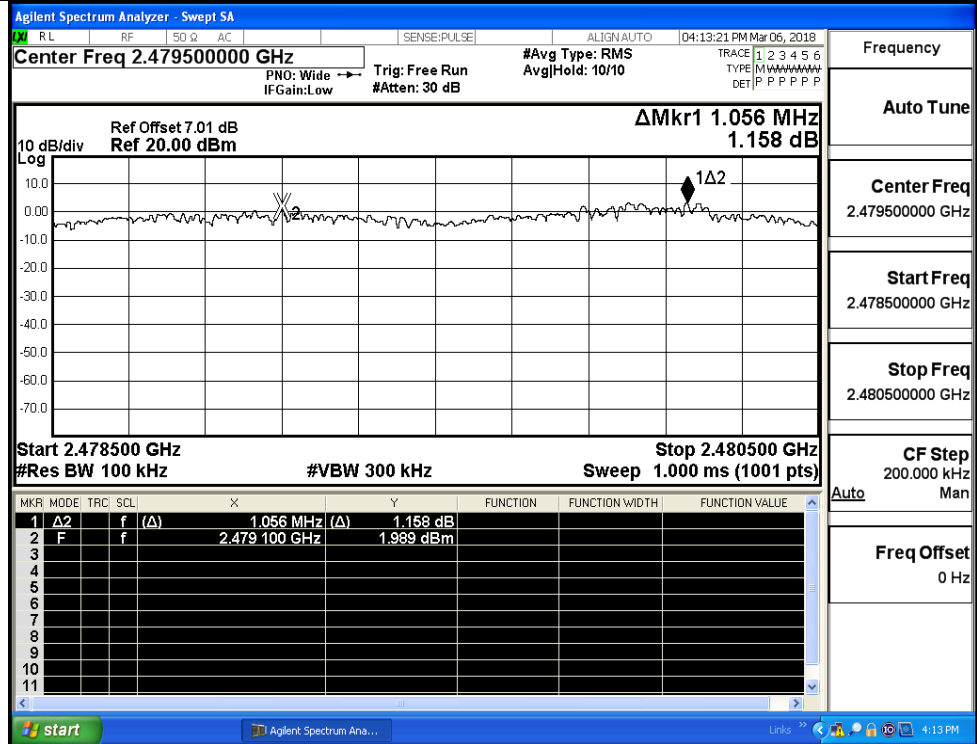
GFSK/MCH



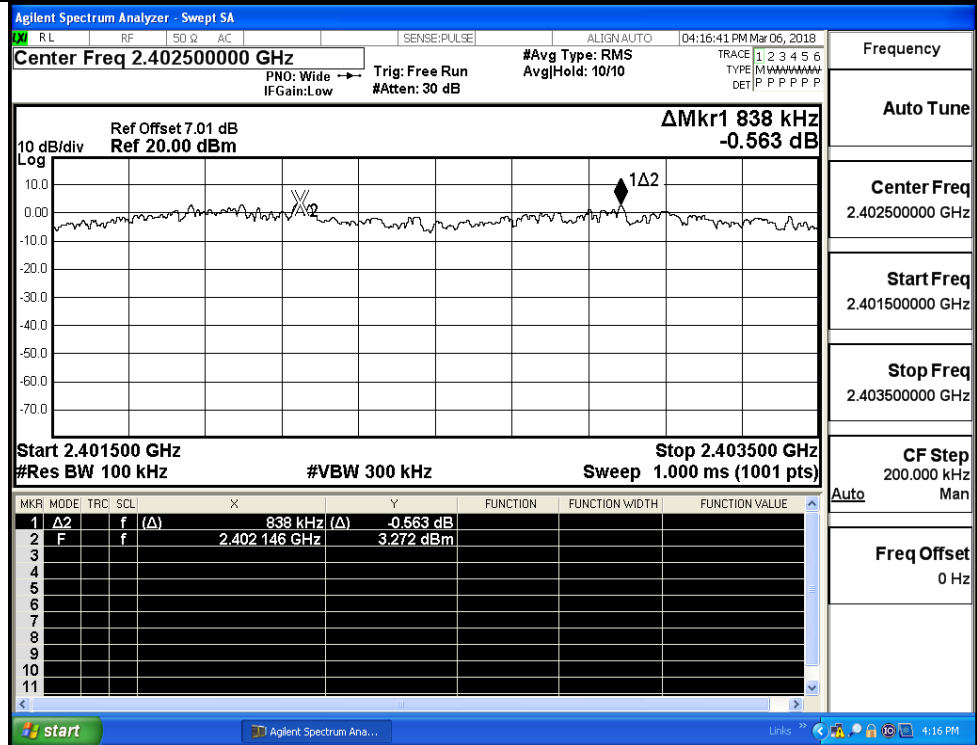
GFSK/HCH



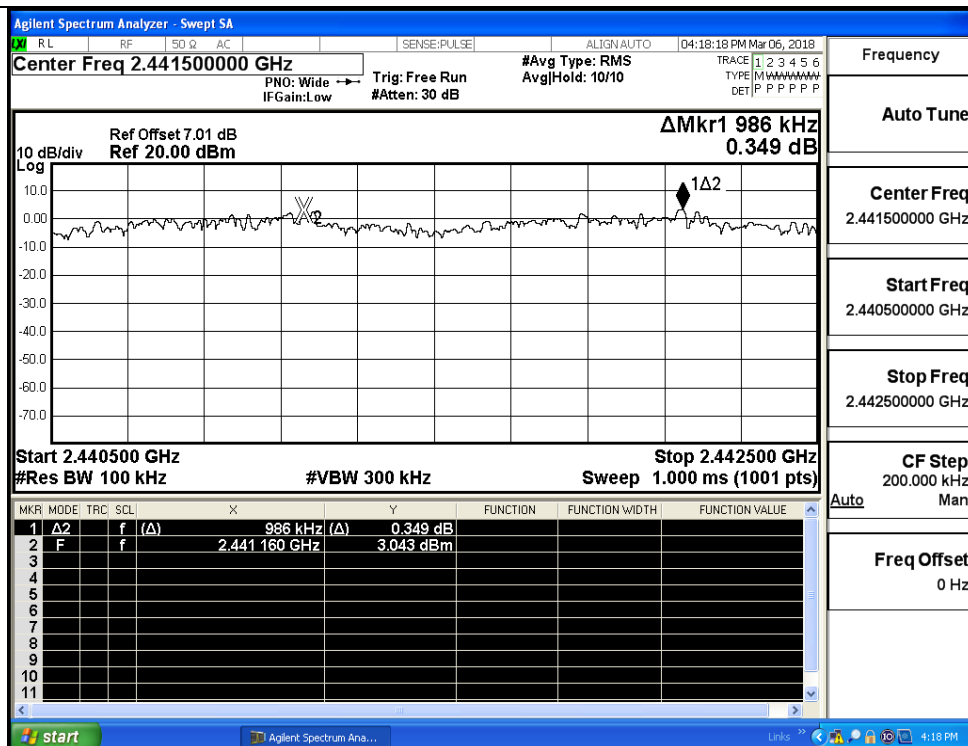
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

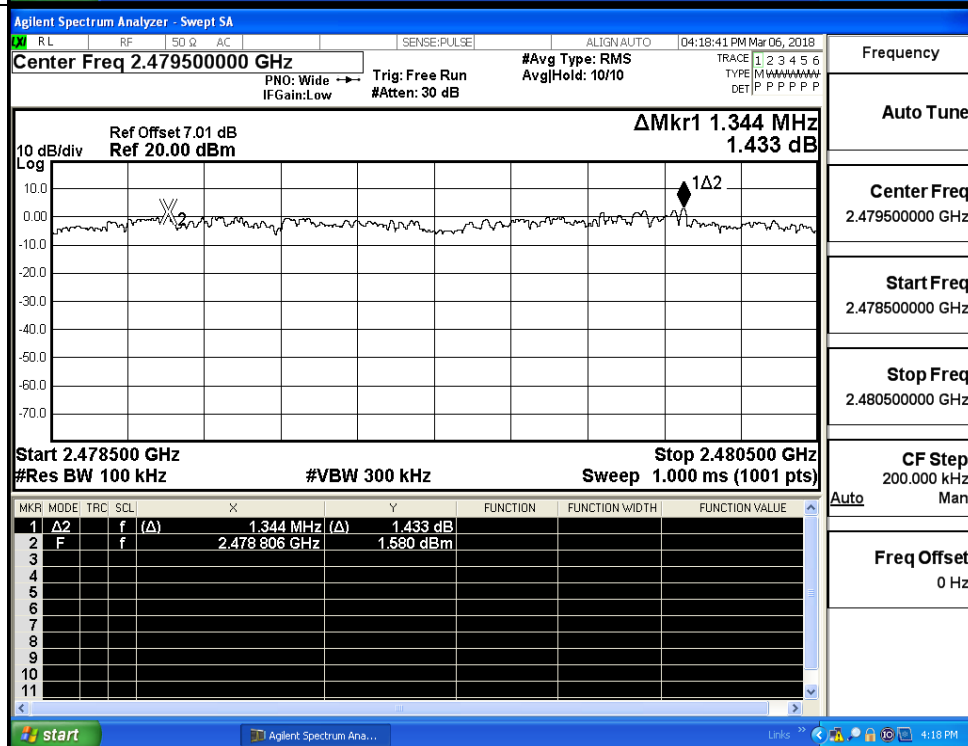
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

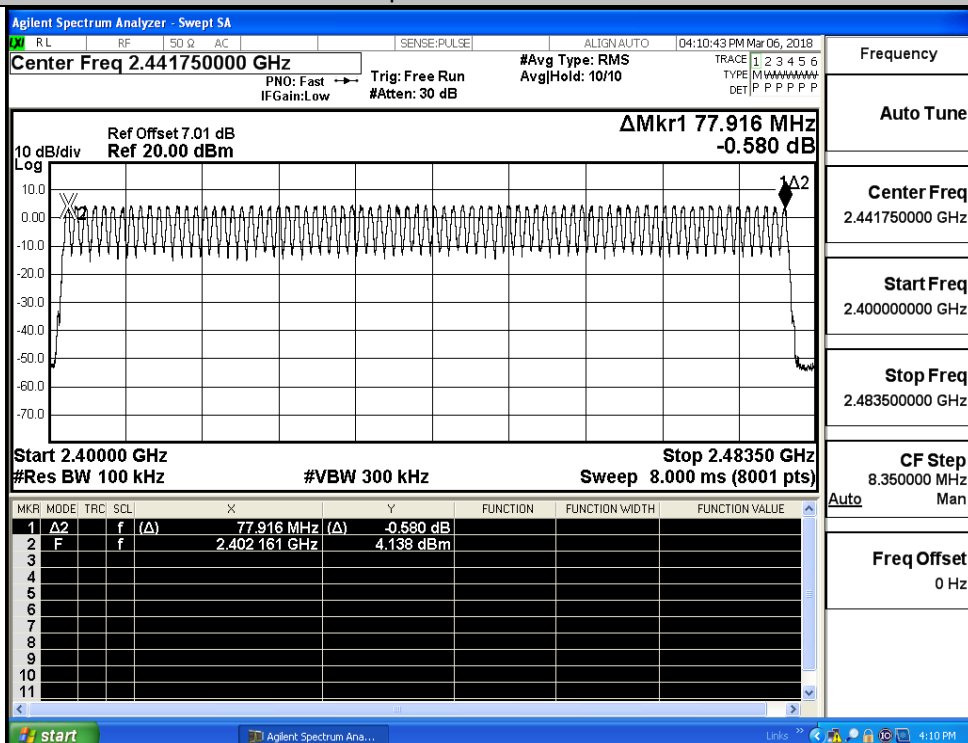
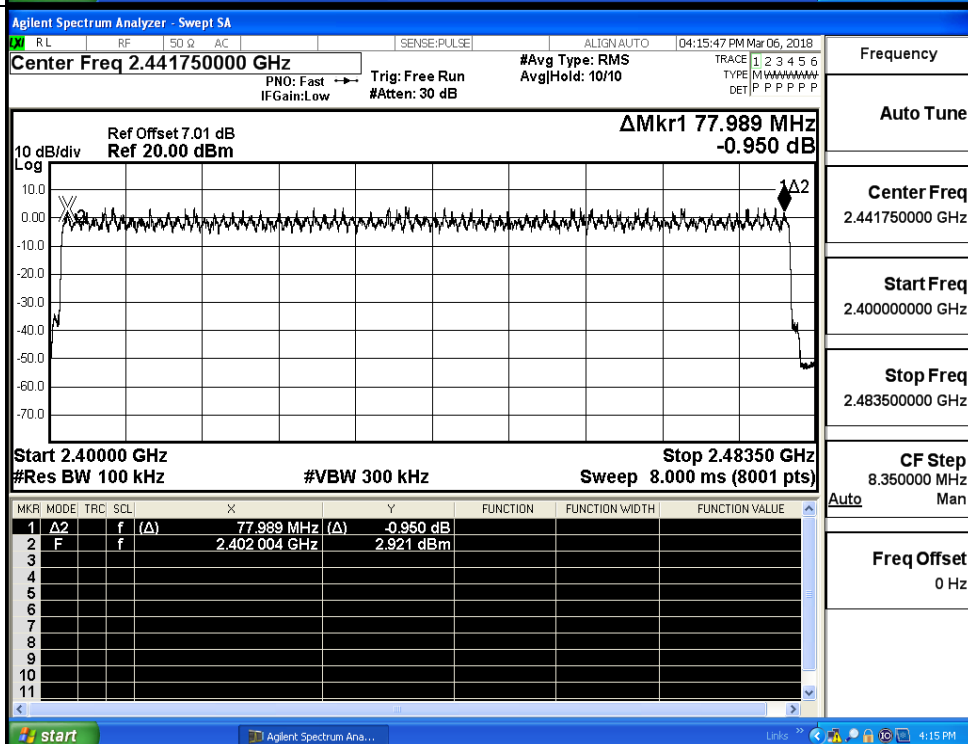


A.4 Hopping Channel Number

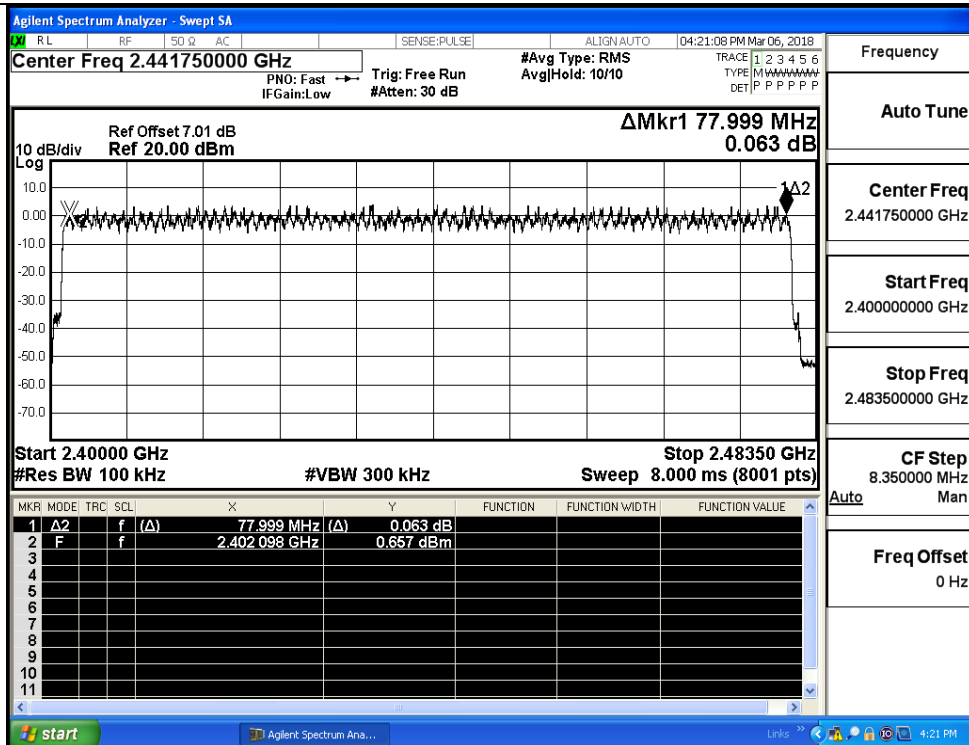
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

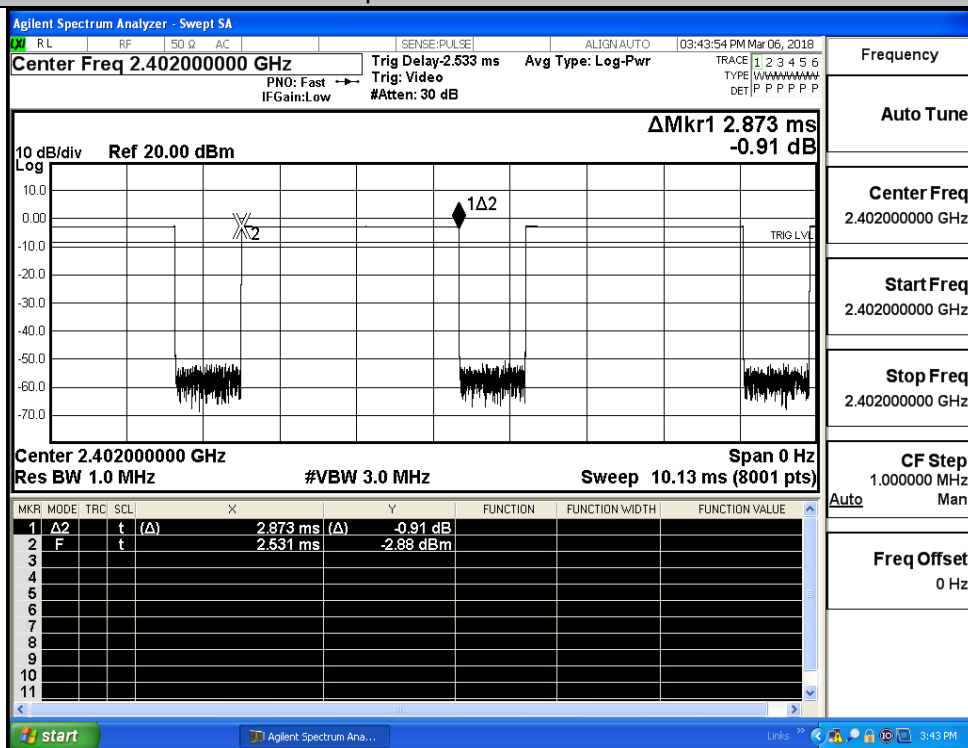


A.5 Dwell Time

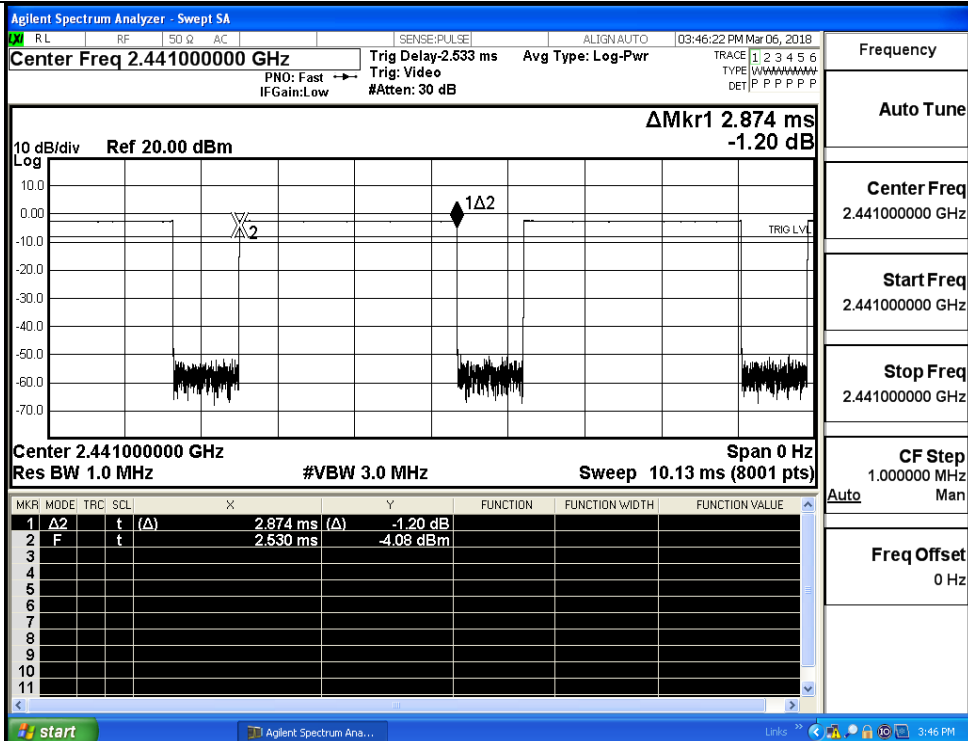
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
	2DH5	HCH	2.87	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	2.87	106.7	0.307	0.4	PASS
	3DH5	MCH	2.87	106.7	0.307	0.4	PASS
	3DH5	HCH	2.87	106.7	0.307	0.4	PASS

Test Graphs

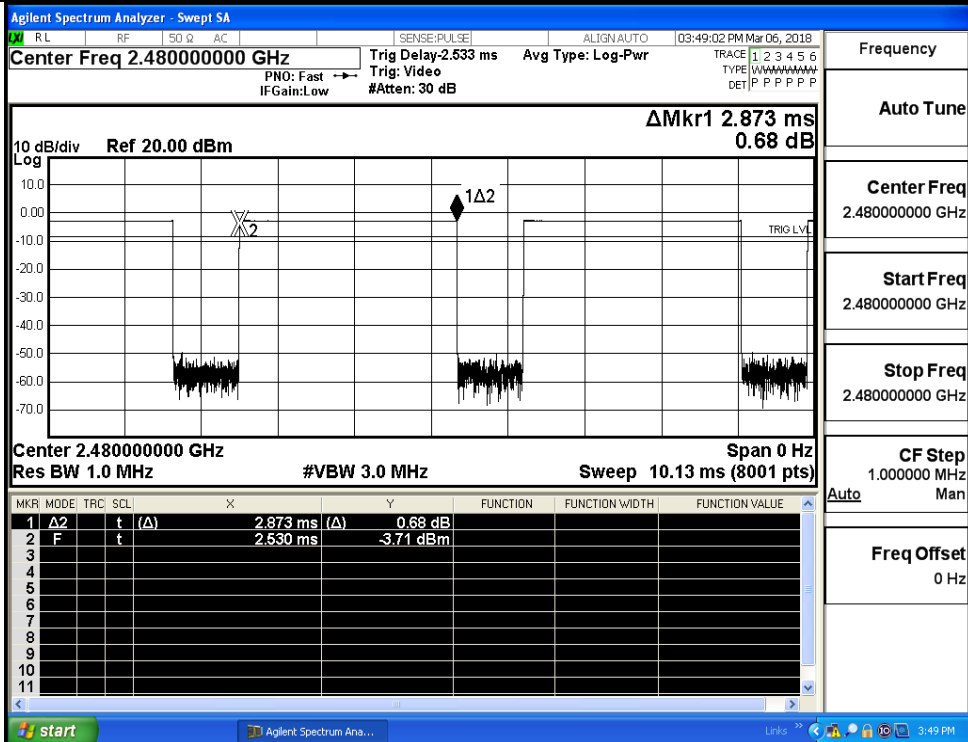
GFSK_DH5/LCH



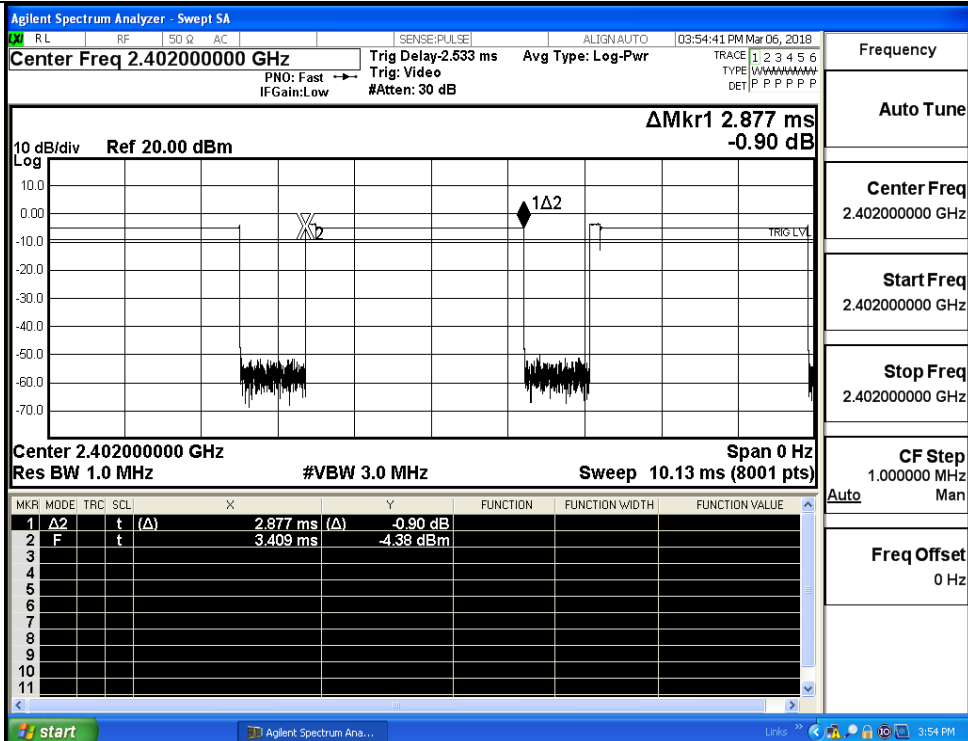
GFSK_DH5/MCH



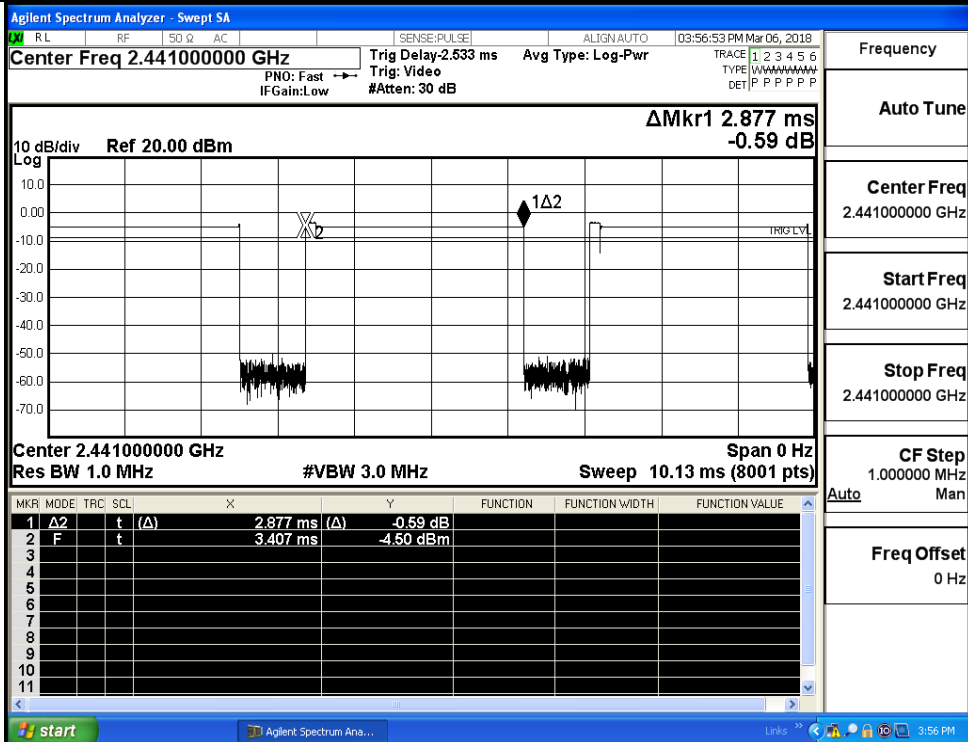
GFSK_DH5/HCH



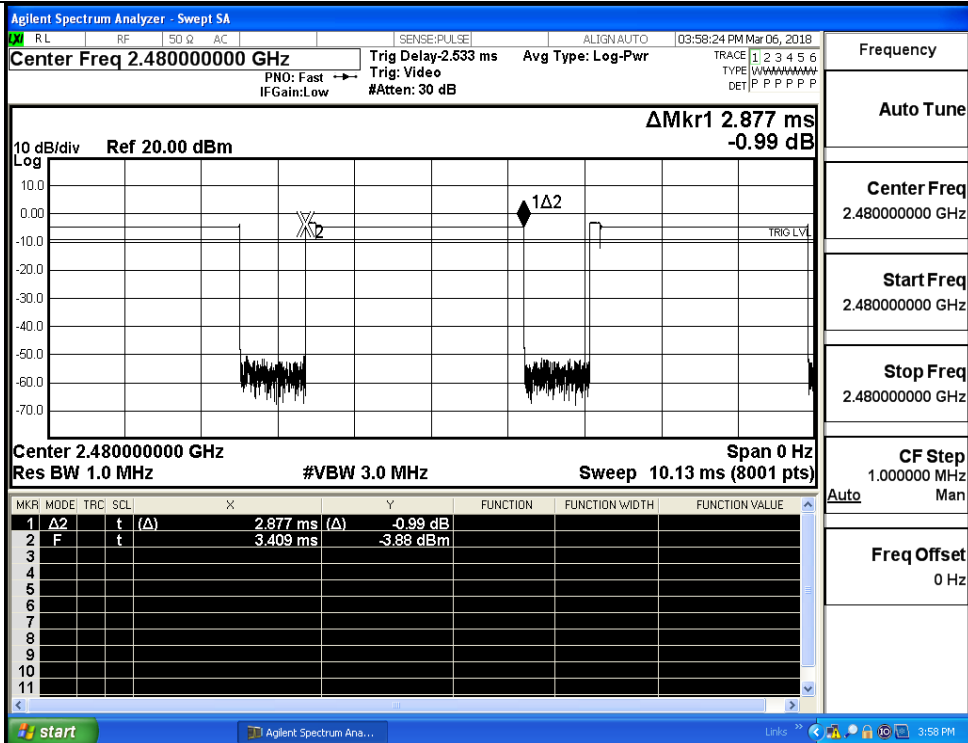
$\pi/4$ DQPSK
_2DH5/LCH



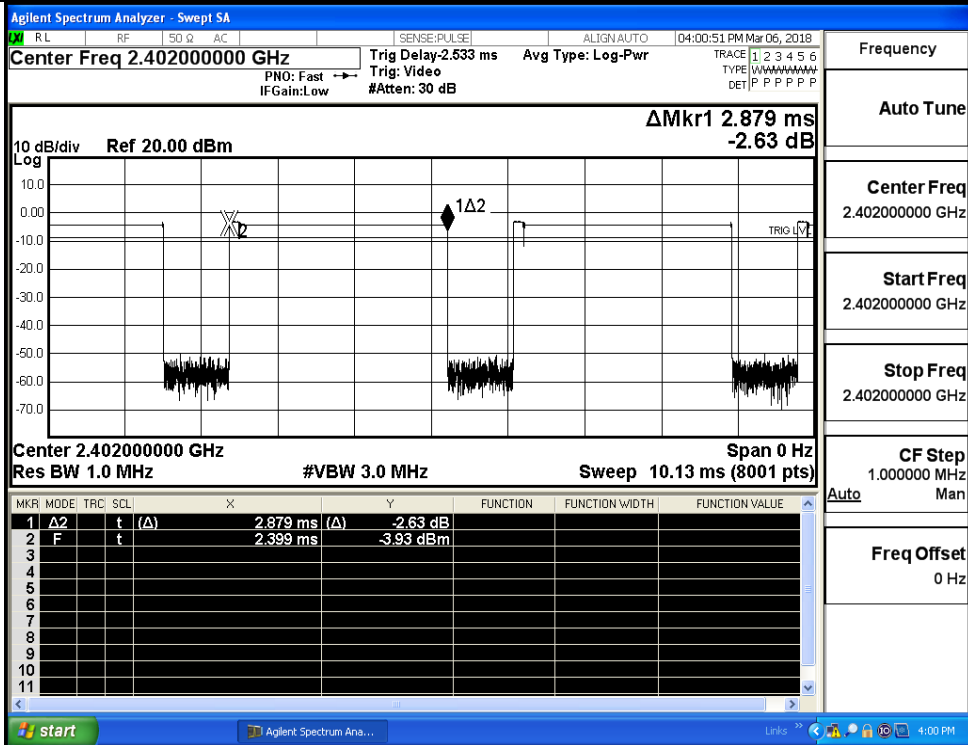
$\pi/4$ DQPSK
_2DH5/MCH



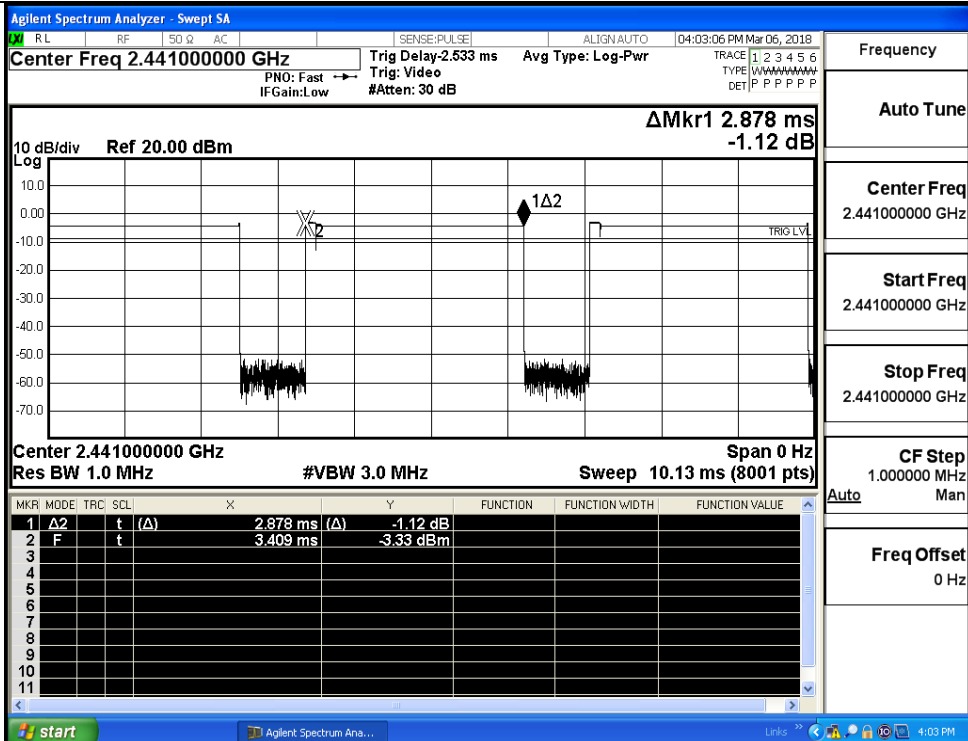
$\pi/4$ DQPSK
_2DH5/HCH



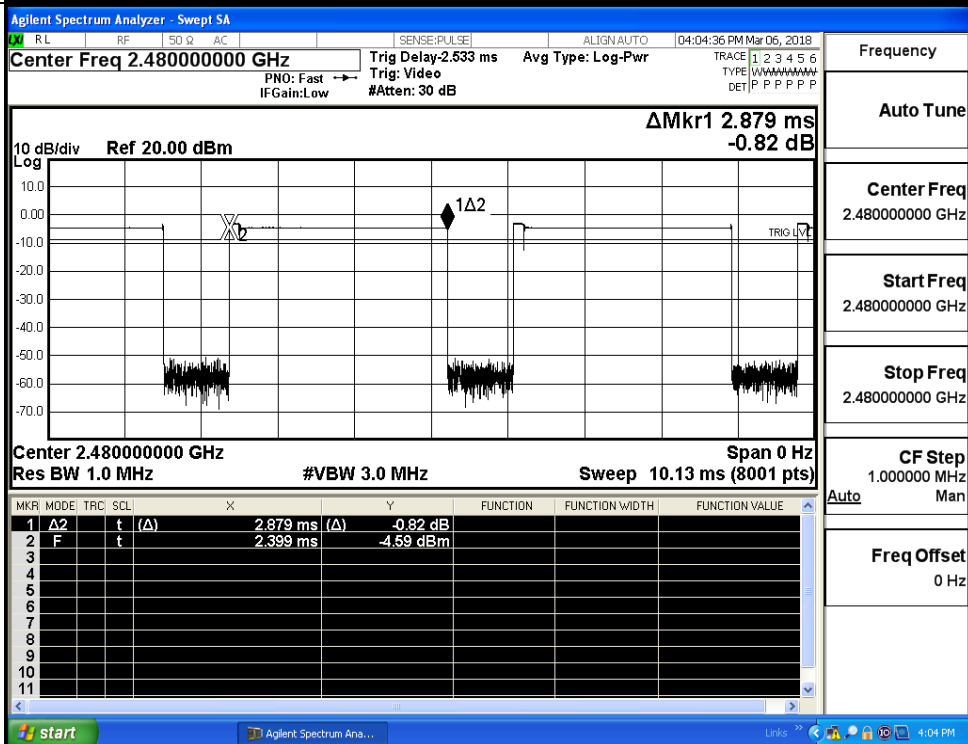
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



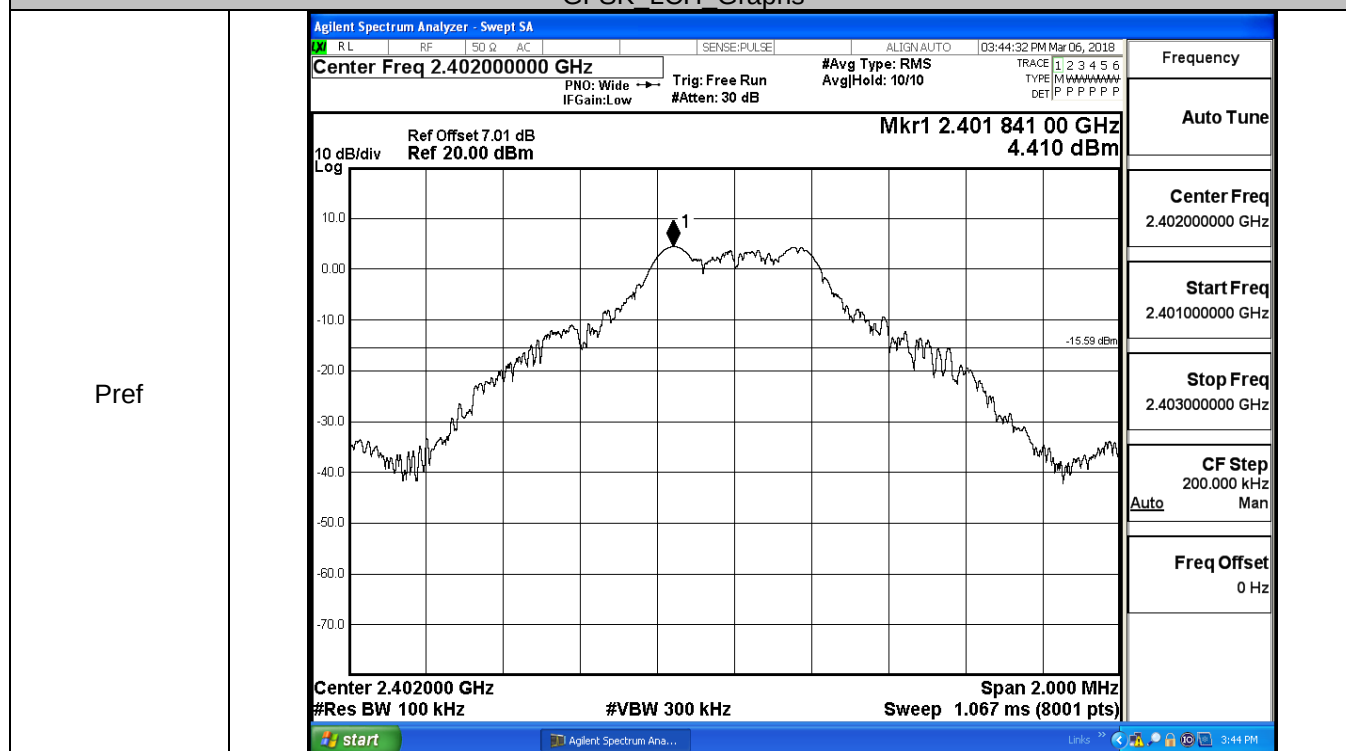
8DPSK_3DH5/HCH

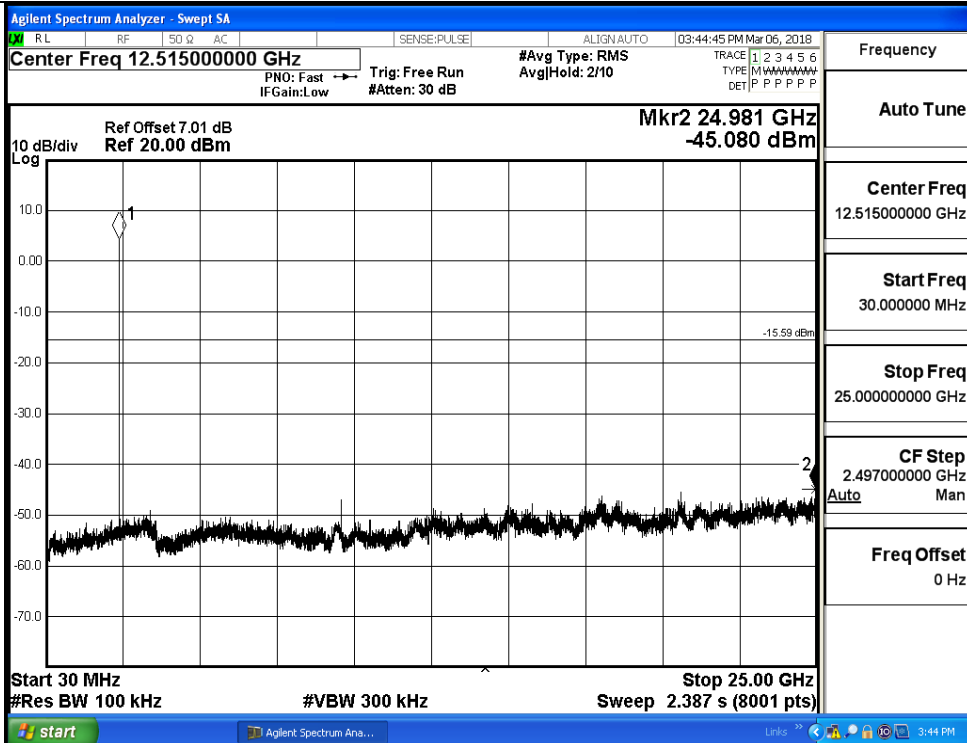


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.41	-45.080	-15.590	PASS
	MCH	4.512	-46.103	-15.488	PASS
	HCH	4.418	-44.683	-15.582	PASS
$\pi/4$ DQPSK	LCH	3.287	-45.007	-16.713	PASS
	MCH	3.403	-45.894	-16.597	PASS
	HCH	3.658	-45.860	-16.342	PASS
8DPSK	LCH	3.549	-45.388	-16.451	PASS
	MCH	3.791	-45.090	-16.209	PASS
	HCH	3.855	-45.339	-16.145	PASS

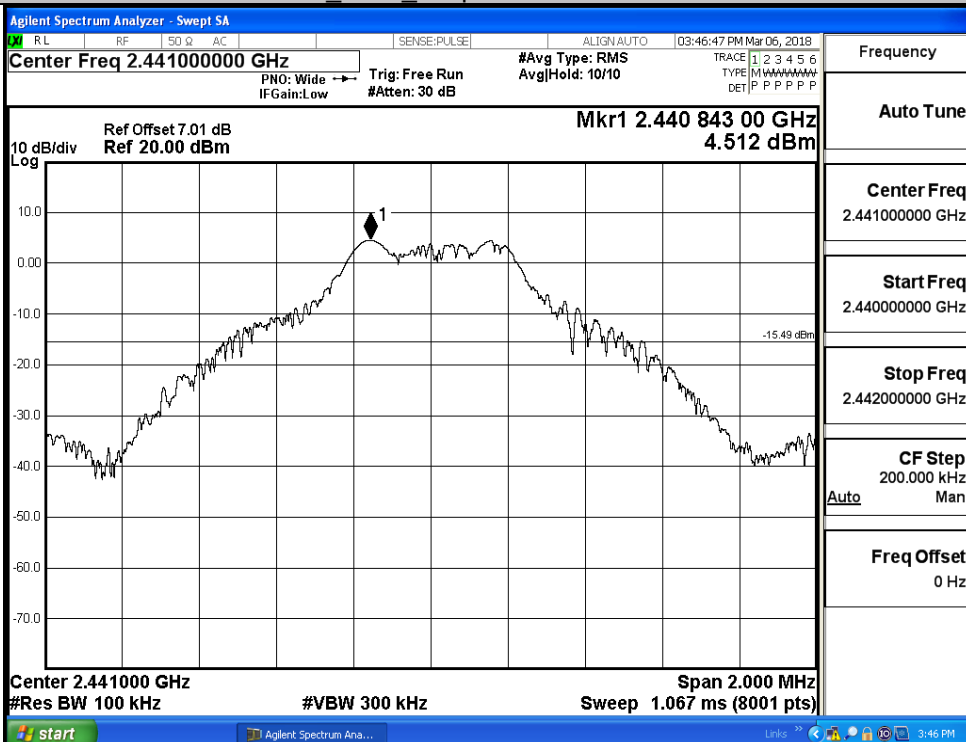
GFSK LCH Graphs



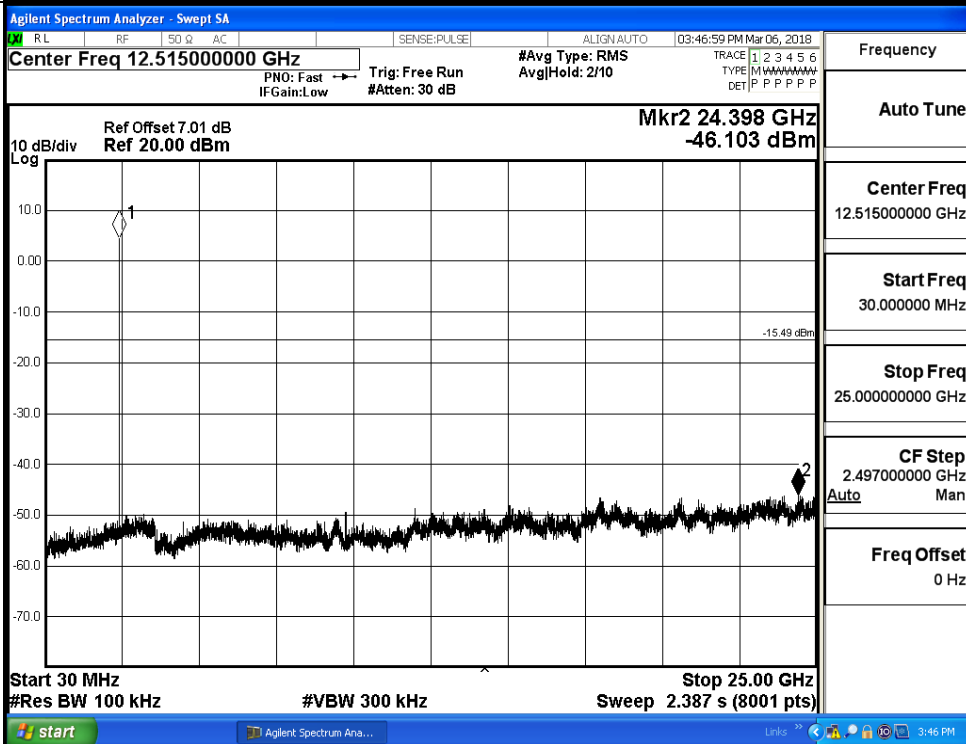
P_{uw}

GFSK_MCH_Graphs

Pref

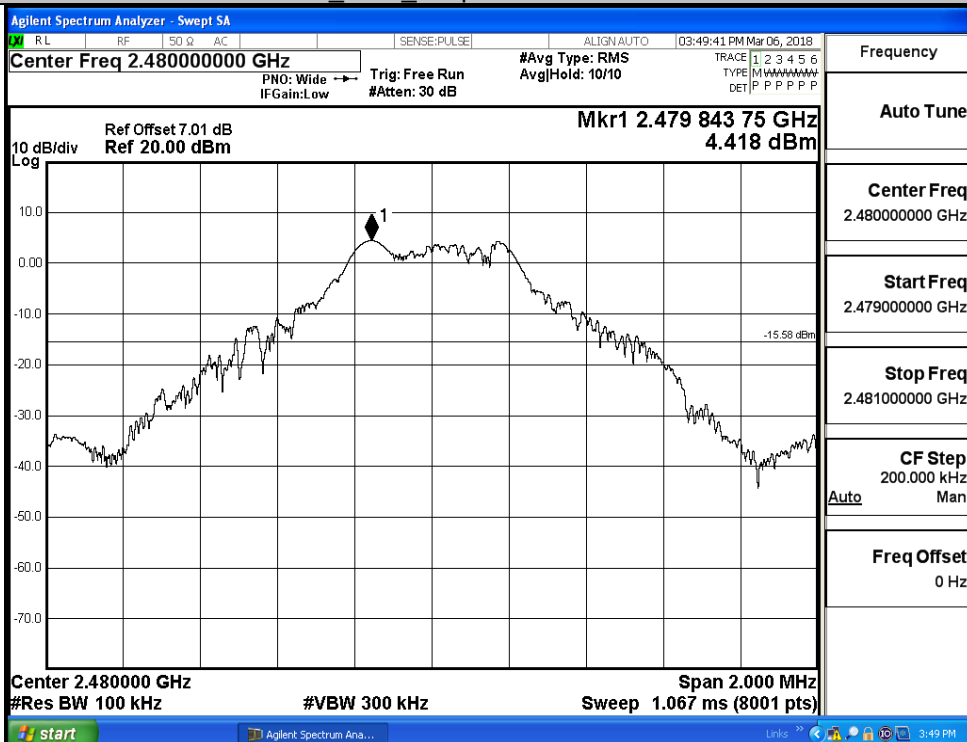


Puw

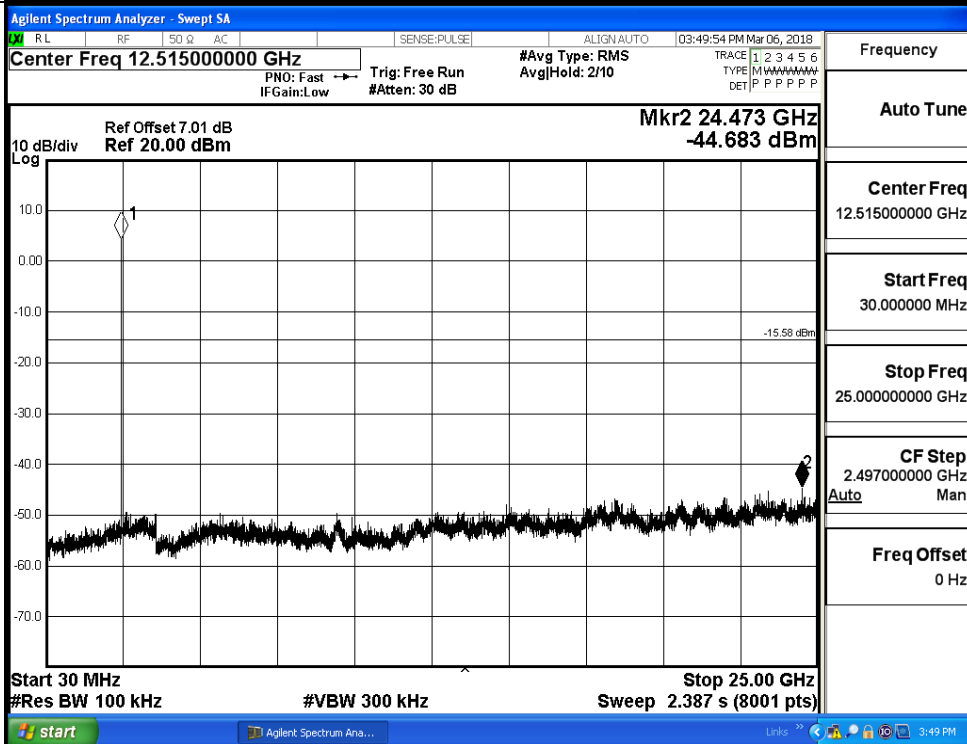


GFSK_HCH_Graphs

Pref

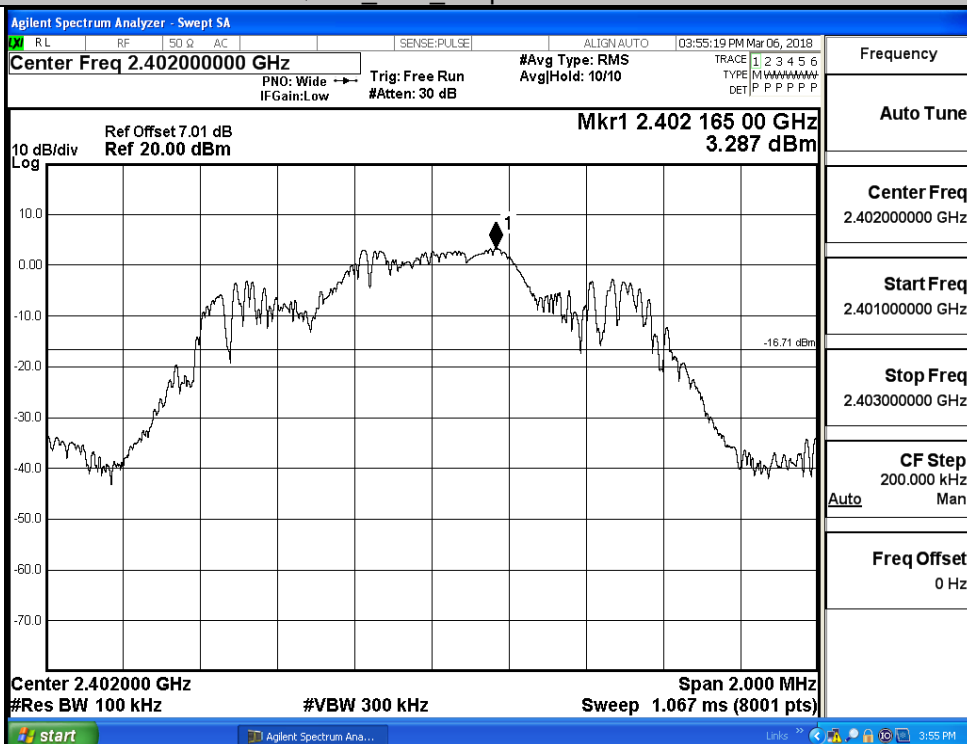


Puw

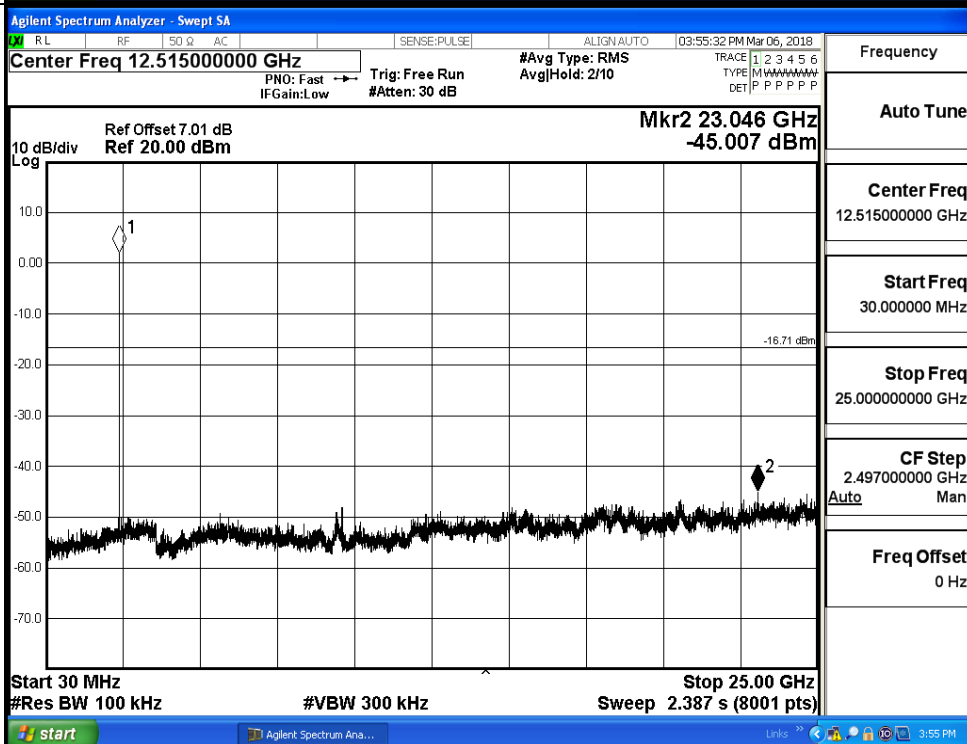


$\pi/4$ DQPSK LCH_Graphs

Pref



Puw

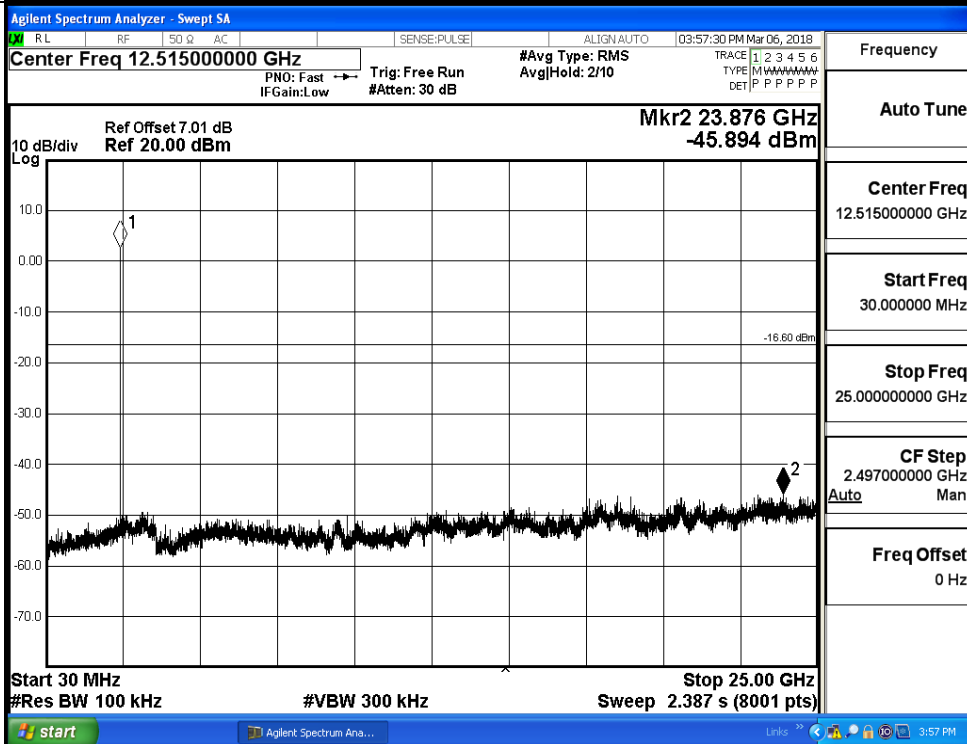


π /4DQPSK_MCH_Graphs

Pref

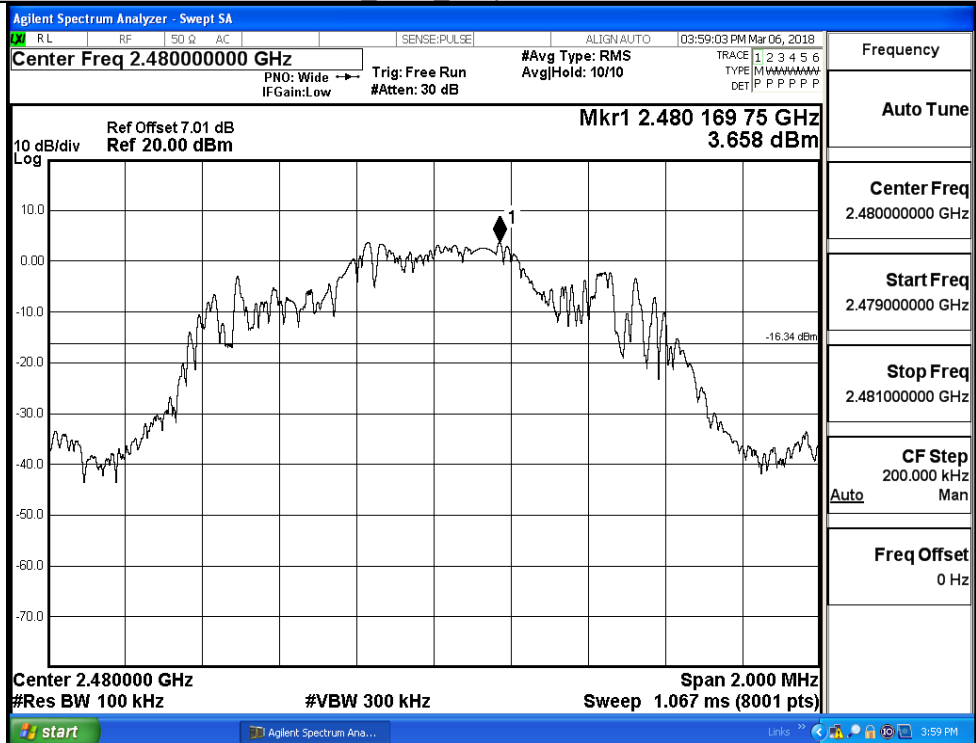


Puw

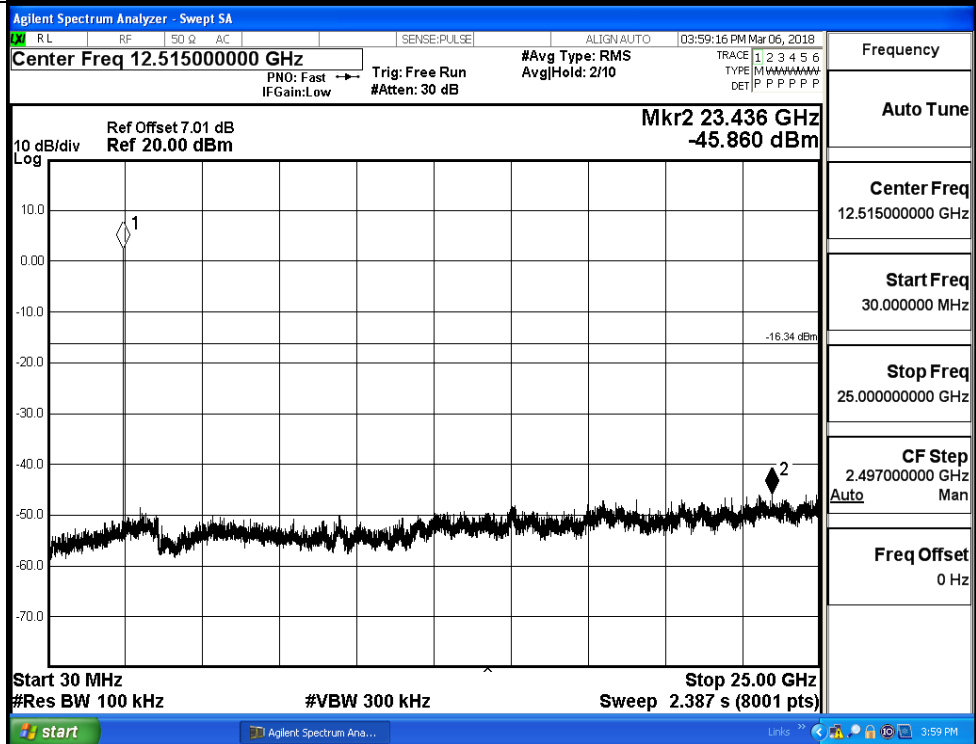


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

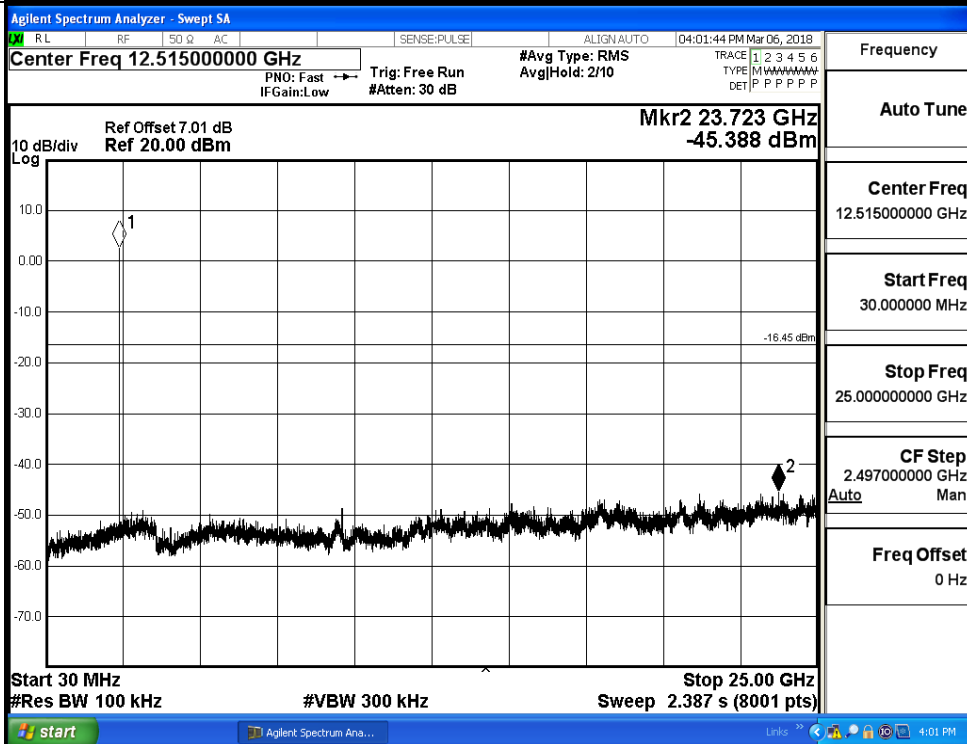


8DPSK_LCH_Graphs

Pref

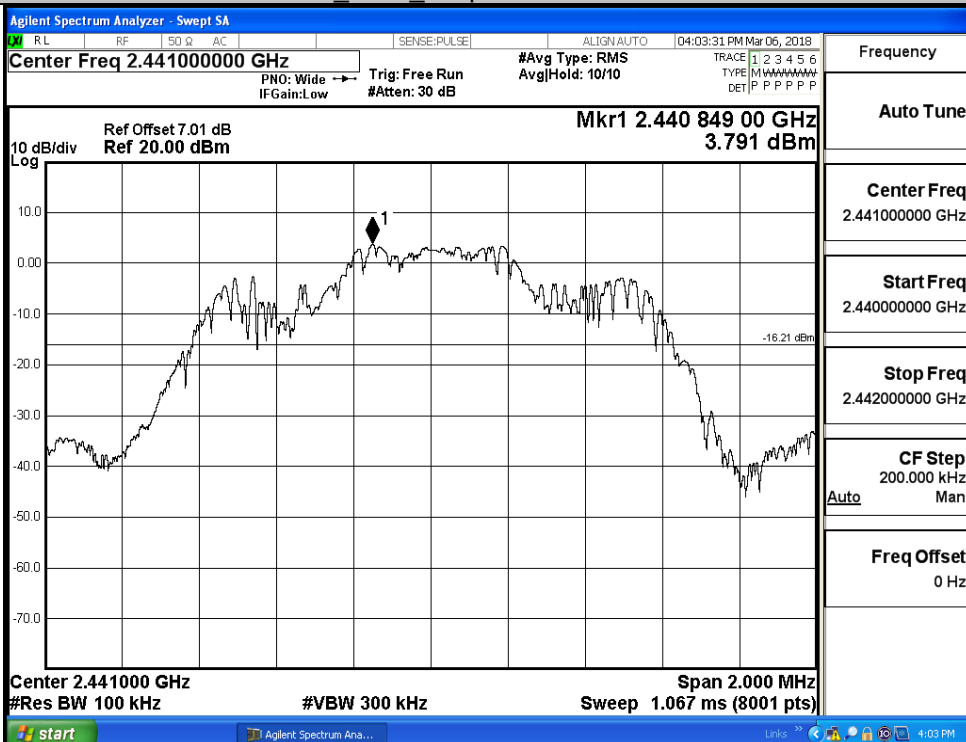


Puw

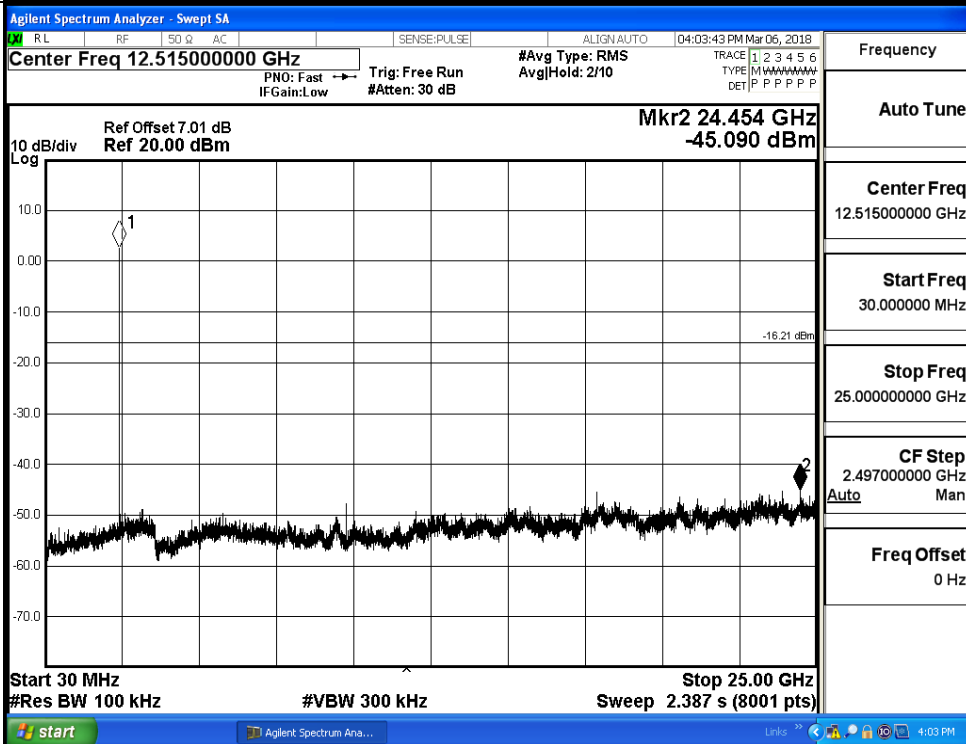


8DPSK_MCH_Graphs

Pref



Puw

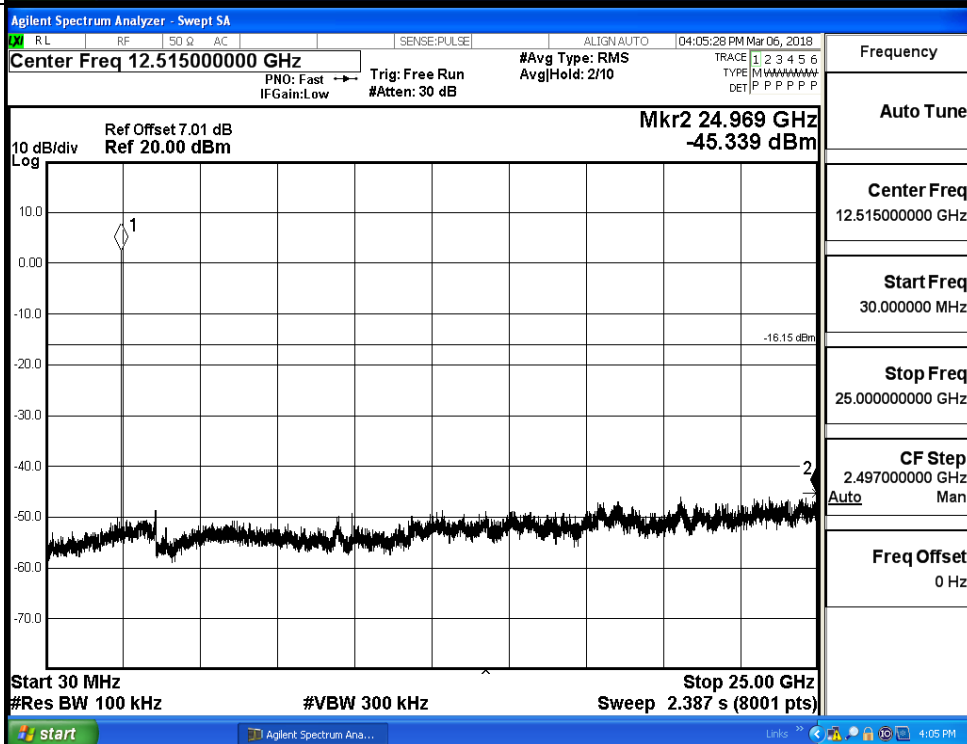


8DPSK_HCH_Graphs

Pref



Puw

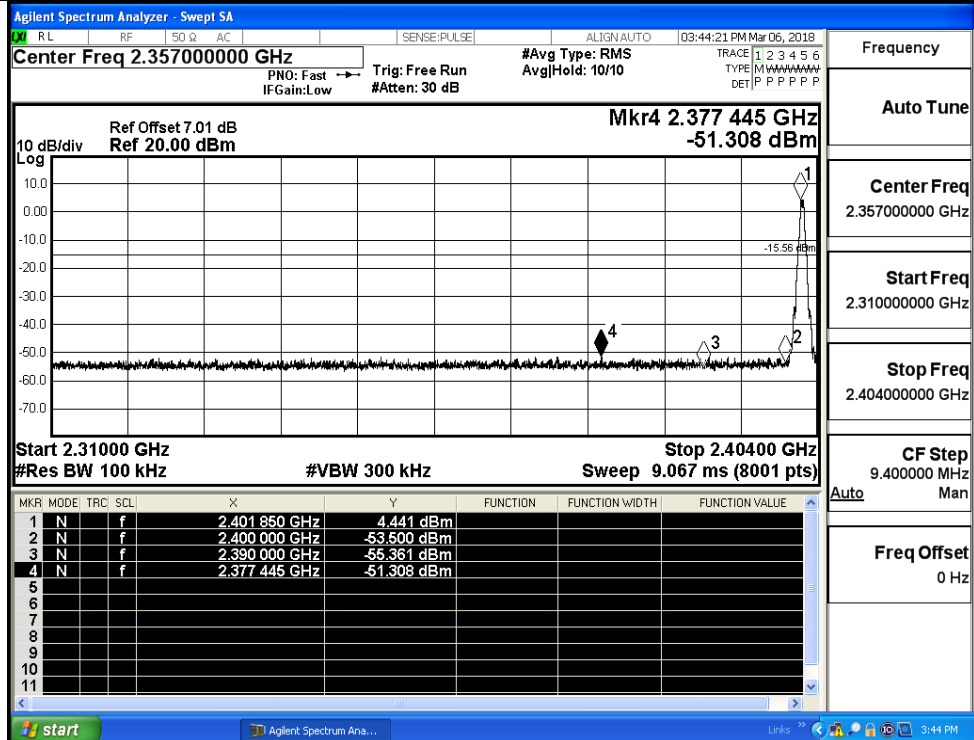


A.7 Band-edge for RF Conducted Emissions

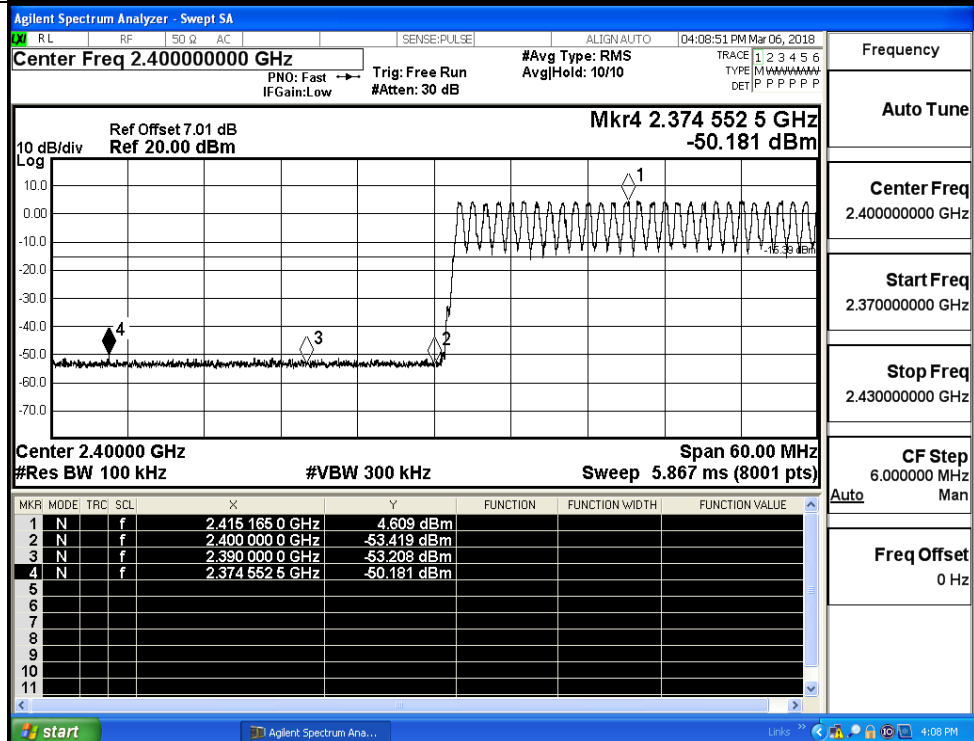
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.441	Off	-51.308	-15.56	PASS
			4.609	On	-50.181	-15.39	PASS
	HCH	2480	4.450	Off	-50.476	-15.55	PASS
			4.675	On	-50.760	-15.33	PASS
$\pi/4$ DQPSK	LCH	2402	2.161	Off	-50.615	-17.84	PASS
			3.683	On	-50.634	-16.32	PASS
	HCH	2480	3.717	Off	-50.705	-16.28	PASS
			3.921	On	-50.361	-16.08	PASS
8DPSK	LCH	2402	3.888	Off	-50.397	-16.11	PASS
			3.675	On	-50.087	-16.33	PASS
	HCH	2480	3.925	Off	-50.477	-16.08	PASS
			3.803	On	-50.229	-16.2	PASS

Test Graphs

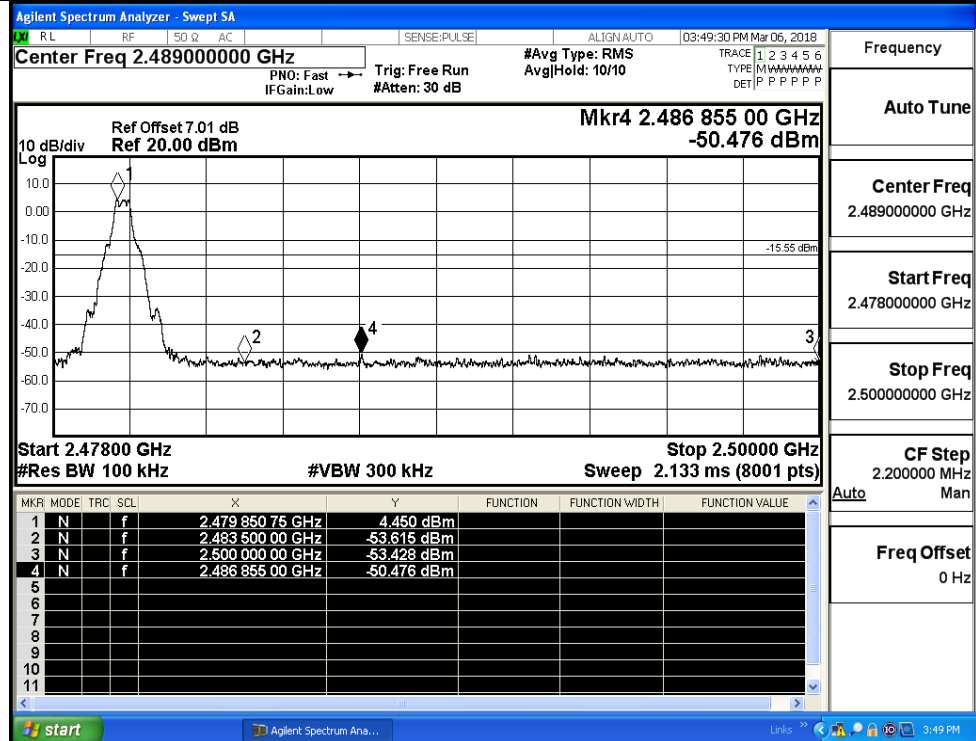
GFSK/LCH/No Hop



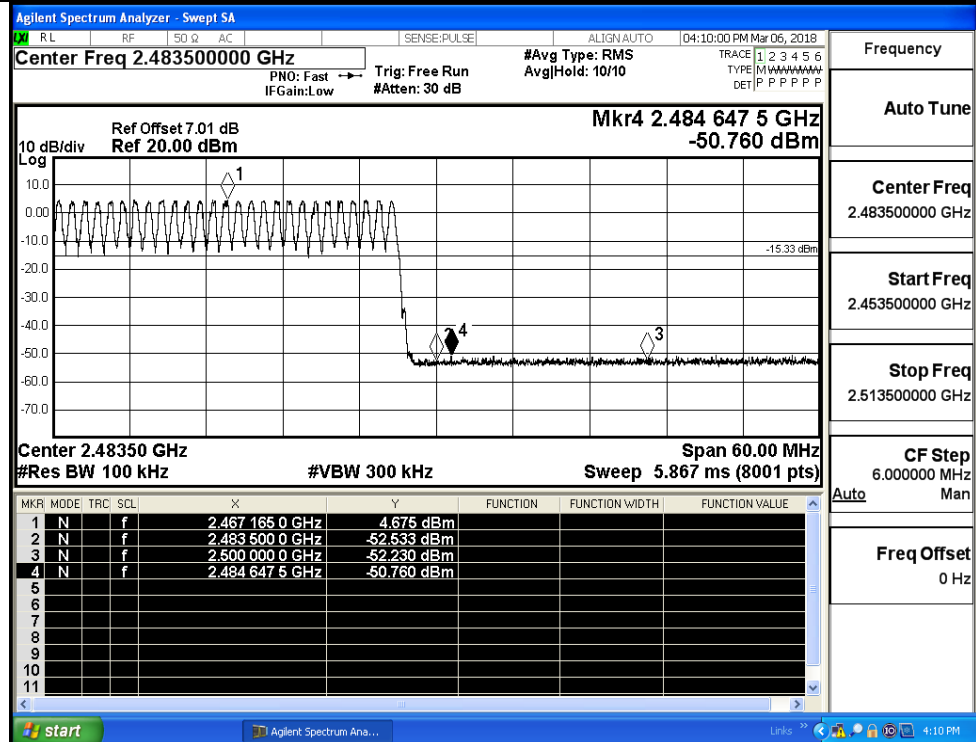
GFSK/LCH/Hop



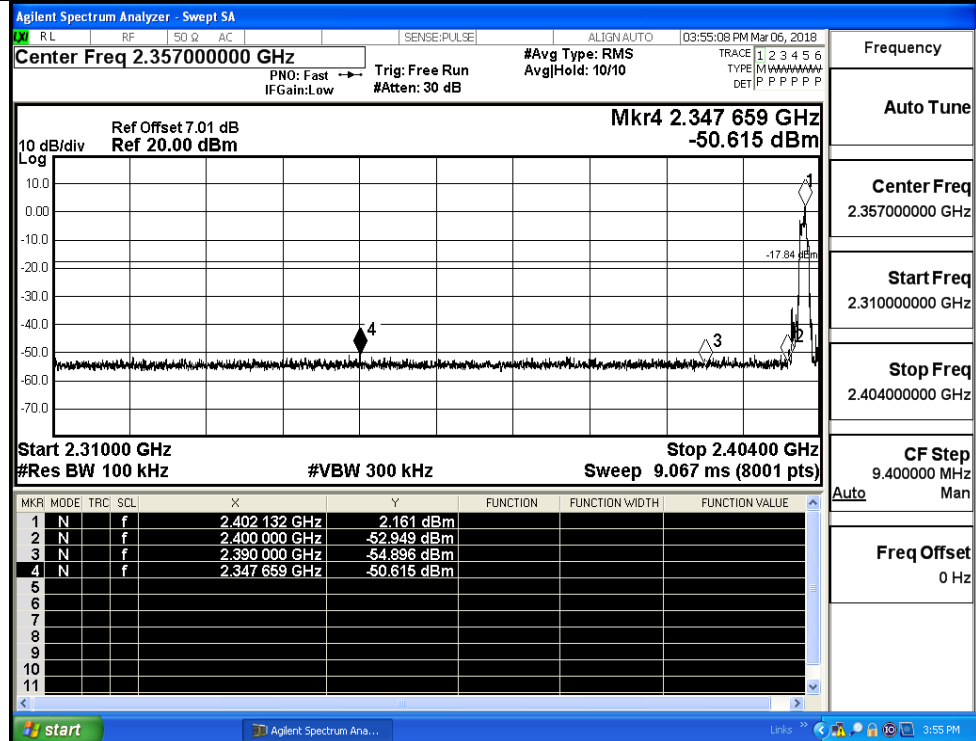
GFSK/HCH/No Hop



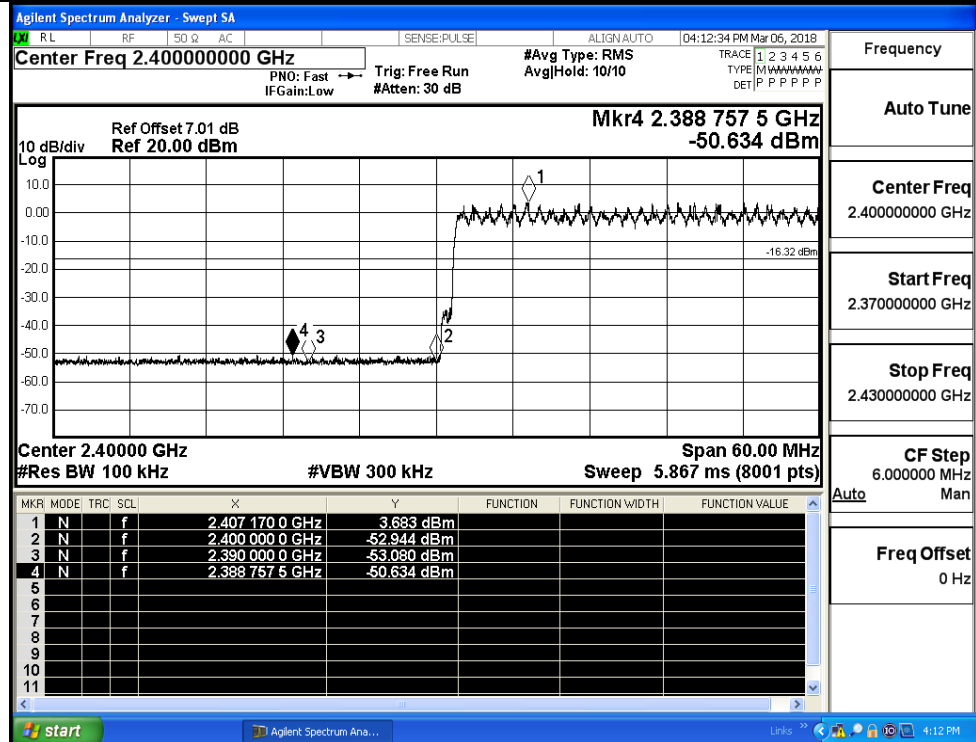
GFSK/HCH/Hop



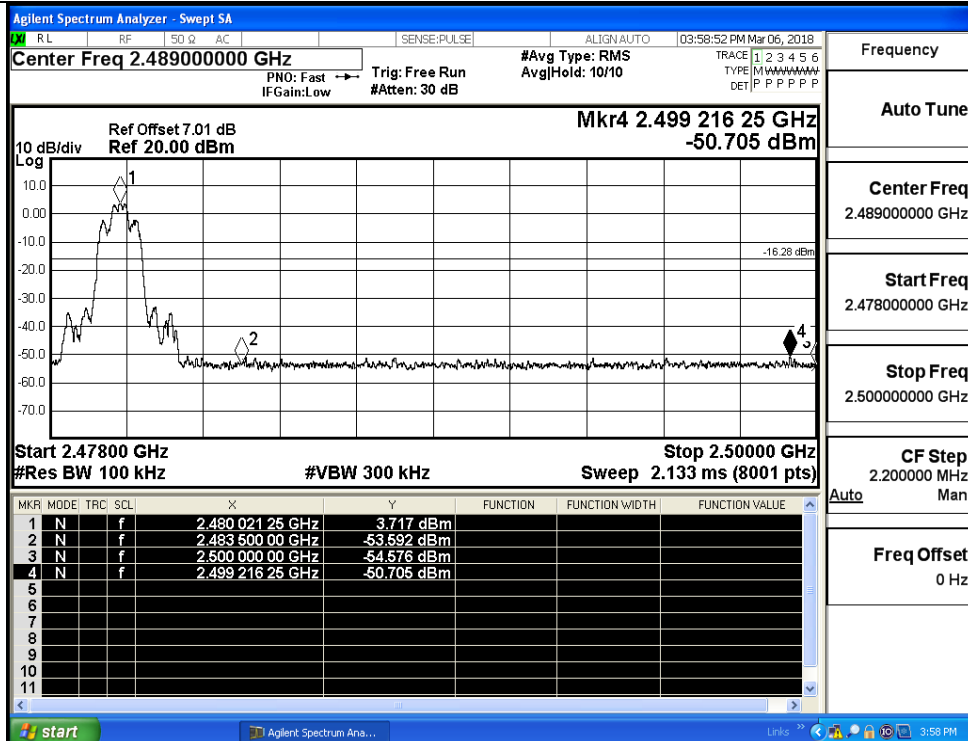
$\pi/4$ DQPSK/LCH/No
Hop



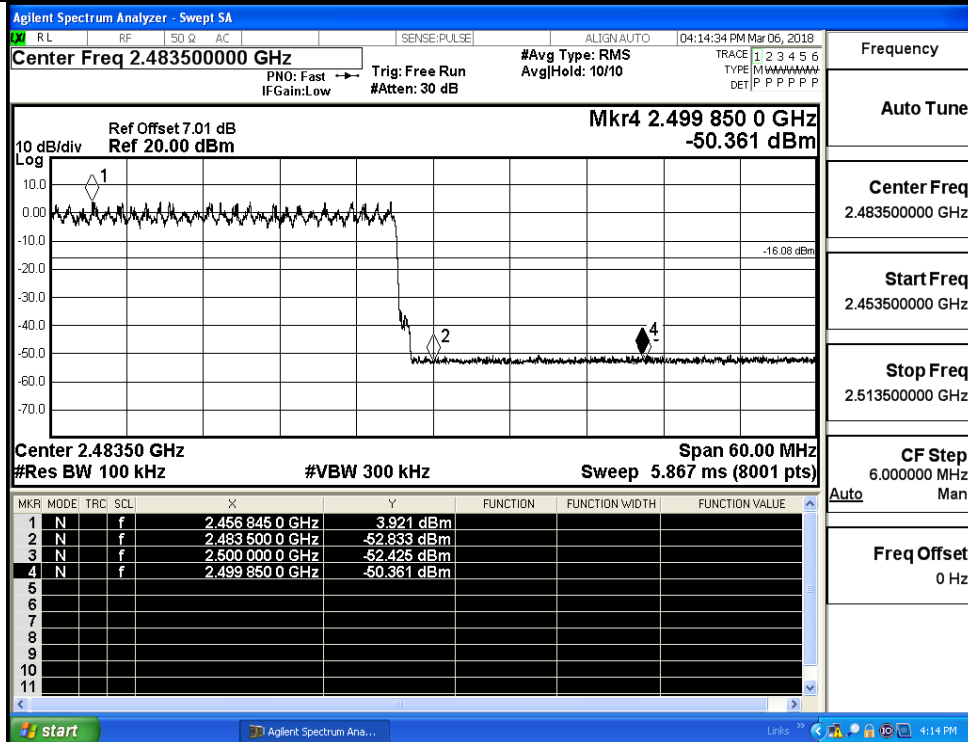
$\pi/4$ DQPSK/LCH/Hop



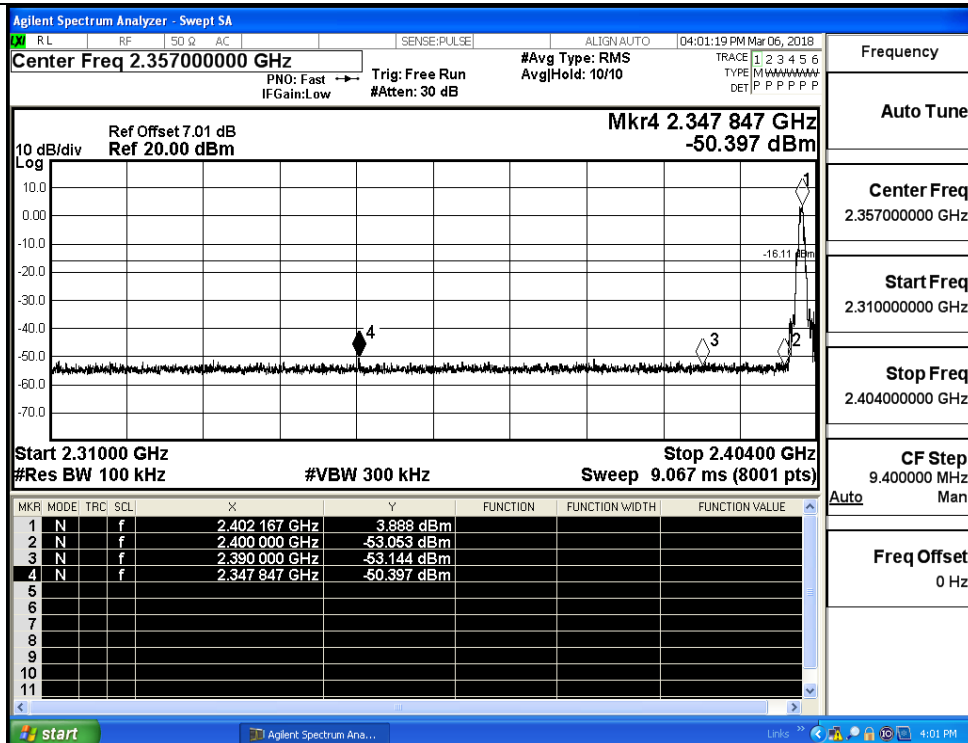
$\pi/4$ DQPSK/HCH/No
Hop



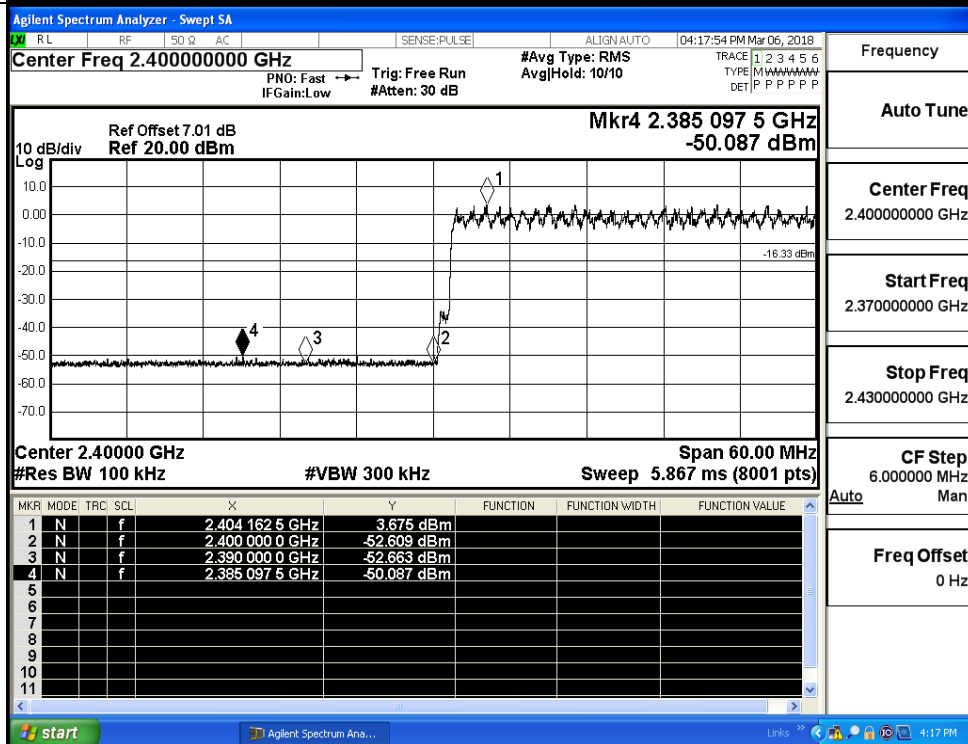
$\pi/4$ DQPSK/HCH/Hop



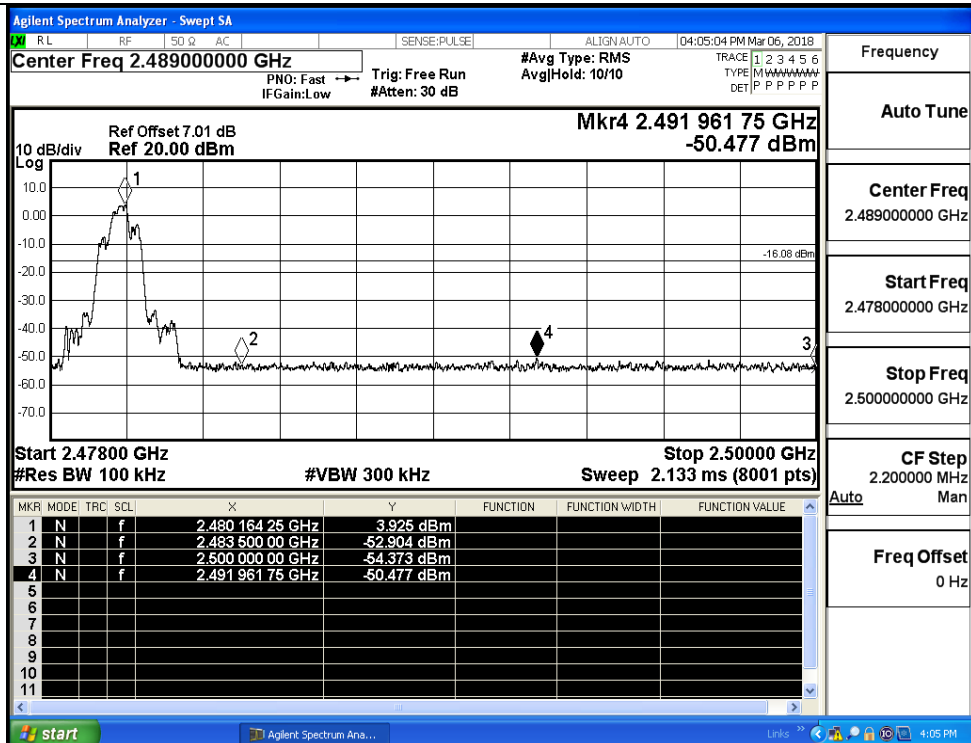
8DPSK/LCH/No Hop



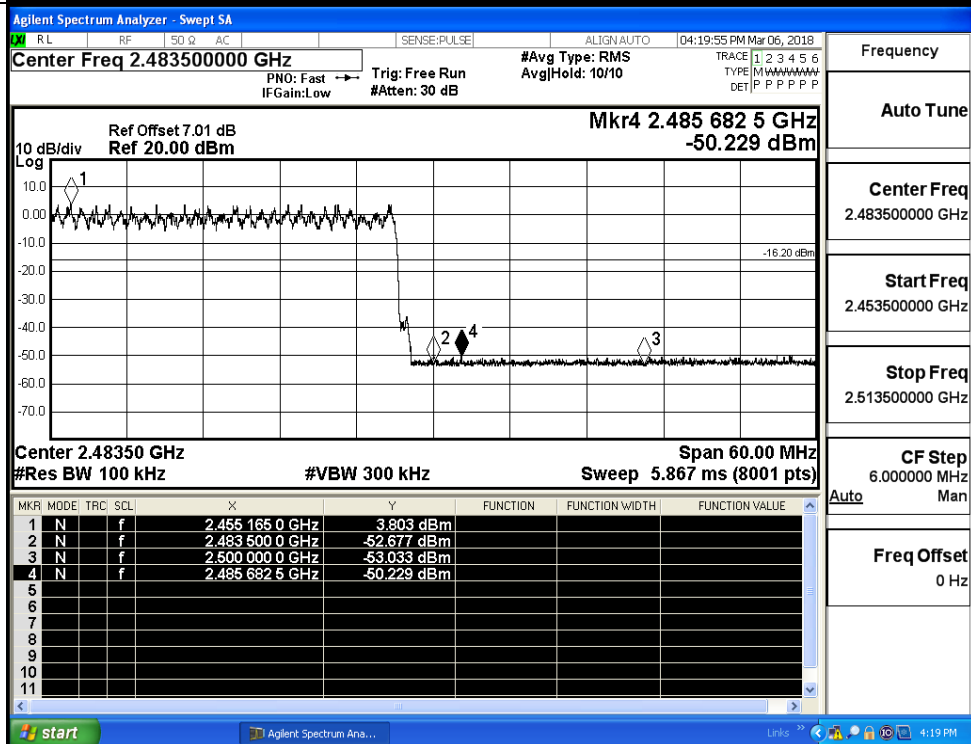
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



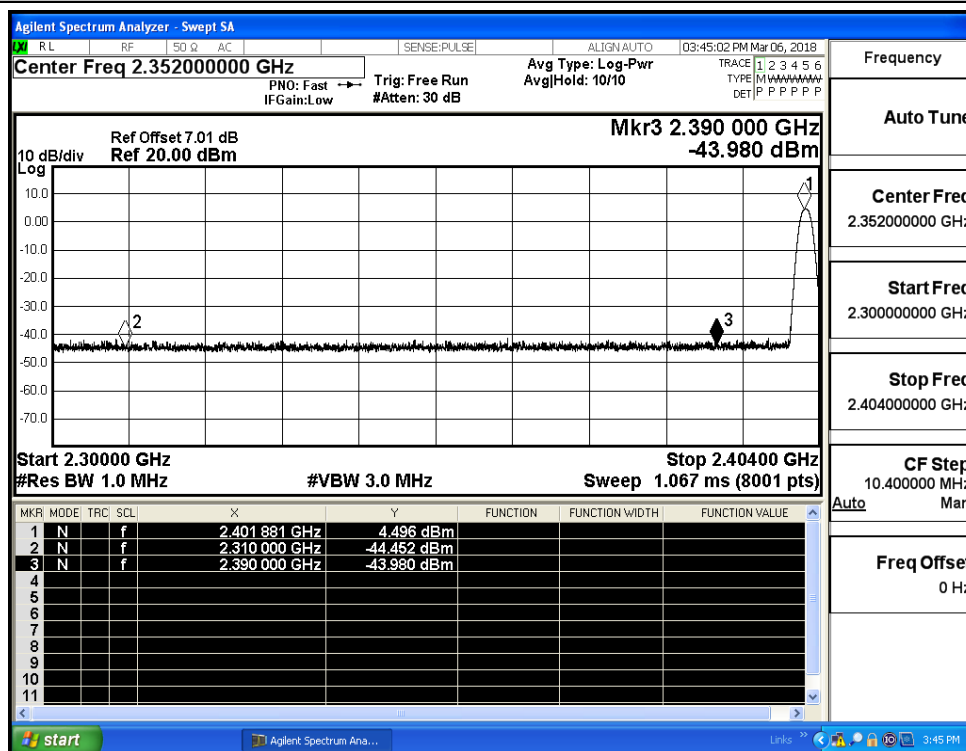
8DPSK/HCH/Hop



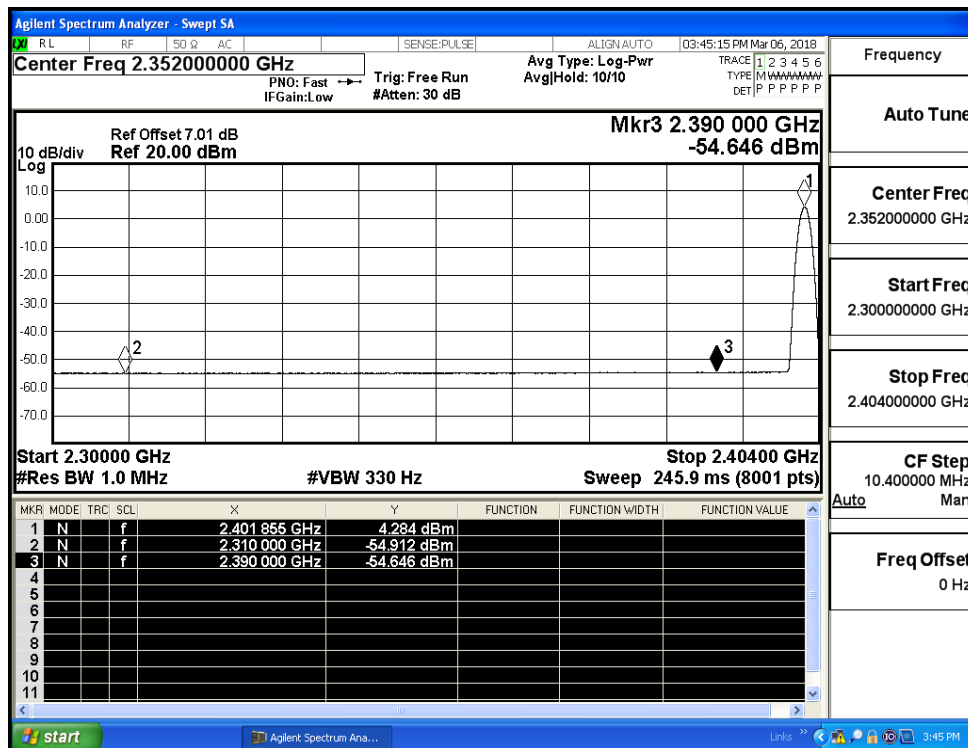
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.45	2.0	0	50.81	PEAK	74	PASS
	Off	2310.0	-54.91	2.0	0	40.35	AV	54	PASS
	Off	2390.0	-43.98	2.0	0	51.28	PEAK	74	PASS
	Off	2390.0	-54.65	2.0	0	40.61	AV	54	PASS
	Off	2483.5	-44.51	2.0	0	50.75	PEAK	74	PASS
	Off	2483.5	-53.99	2.0	0	41.27	AV	54	PASS
	Off	2500.0	-44.15	2.0	0	51.10	PEAK	74	PASS
	Off	2500.0	-54.26	2.0	0	41.00	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.53	2.0	0	50.73	PEAK	74	PASS
	Off	2310.0	-54.85	2.0	0	40.41	AV	54	PASS
	Off	2390.0	-44.08	2.0	0	51.18	PEAK	74	PASS
	Off	2390.0	-54.53	2.0	0	40.72	AV	54	PASS
	Off	2483.5	-43.41	2.0	0	51.85	PEAK	74	PASS
	Off	2483.5	-54.15	2.0	0	41.10	AV	54	PASS
	Off	2500.0	-45.37	2.0	0	49.89	PEAK	74	PASS
	Off	2500.0	-54.22	2.0	0	41.04	AV	54	PASS
8DPSK	Off	2310.0	-44.09	2.0	0	51.16	PEAK	74	PASS
	Off	2310.0	-54.96	2.0	0	40.30	AV	54	PASS
	Off	2390.0	-45.12	2.0	0	50.14	PEAK	74	PASS
	Off	2390.0	-54.50	2.0	0	40.76	AV	54	PASS
	Off	2483.5	-44.04	2.0	0	51.22	PEAK	74	PASS
	Off	2483.5	-54.33	2.0	0	40.93	AV	54	PASS
	Off	2500.0	-43.31	2.0	0	51.95	PEAK	74	PASS
	Off	2500.0	-54.24	2.0	0	41.02	AV	54	PASS

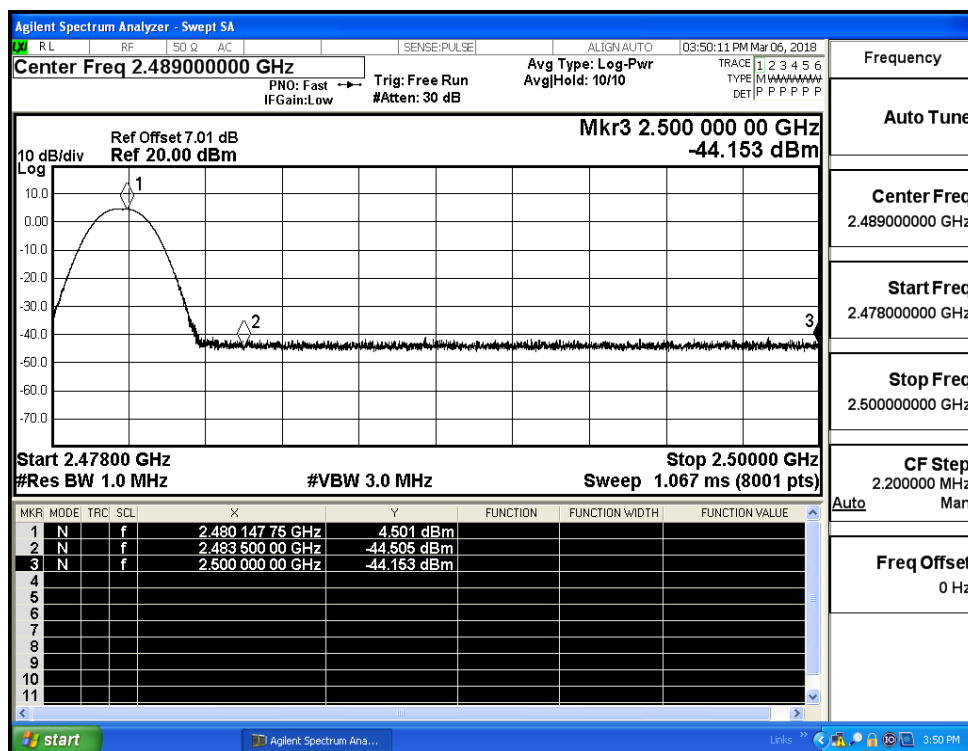
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



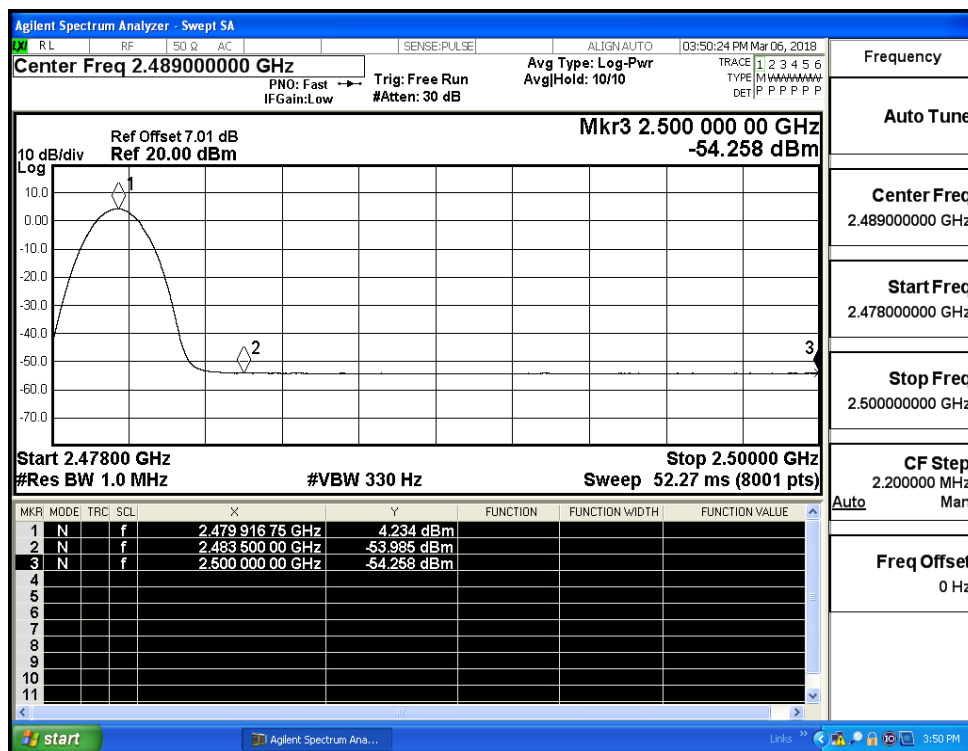
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

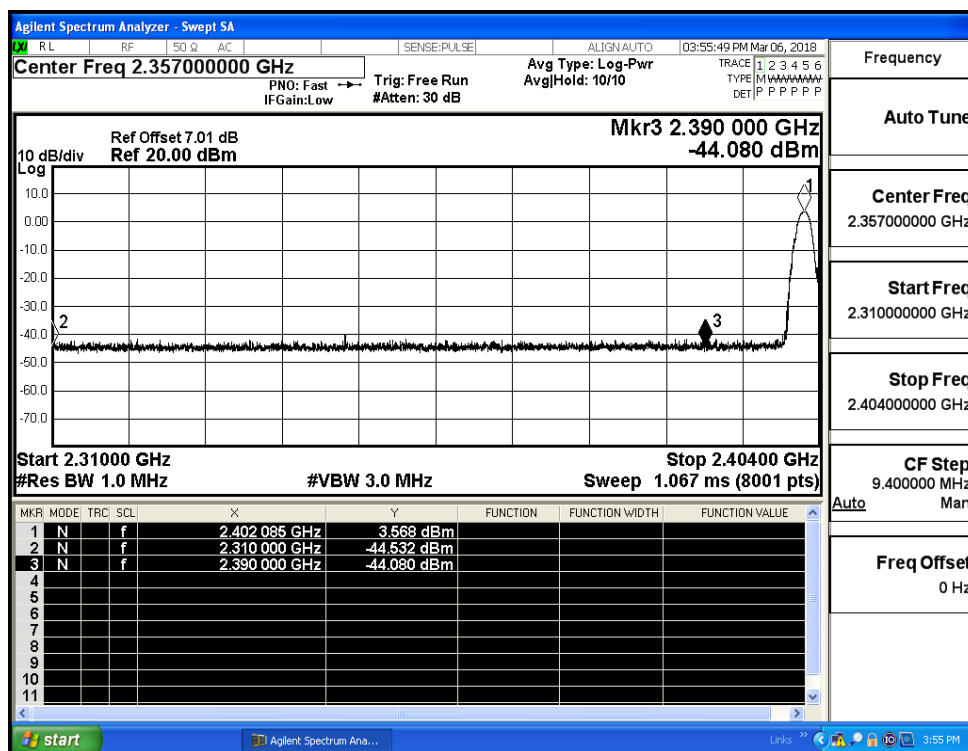
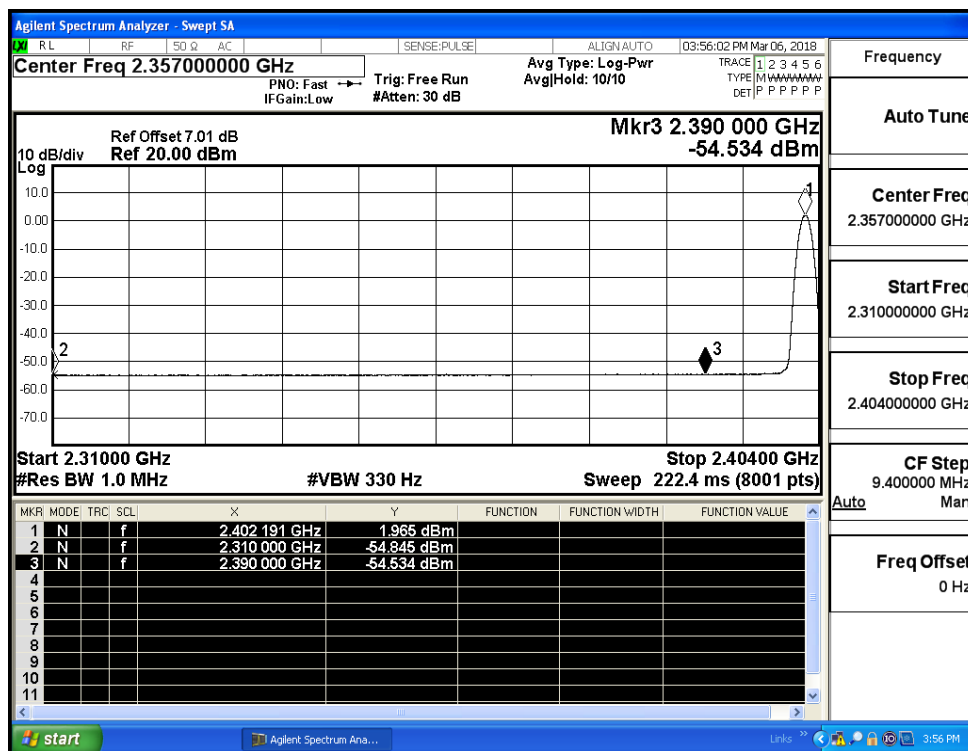


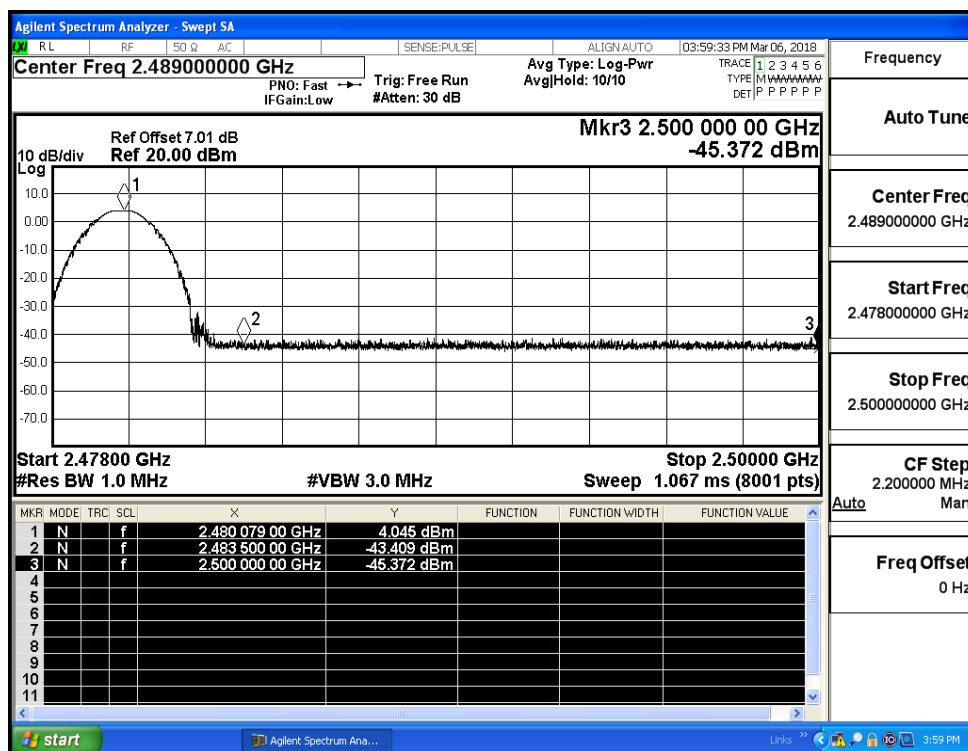
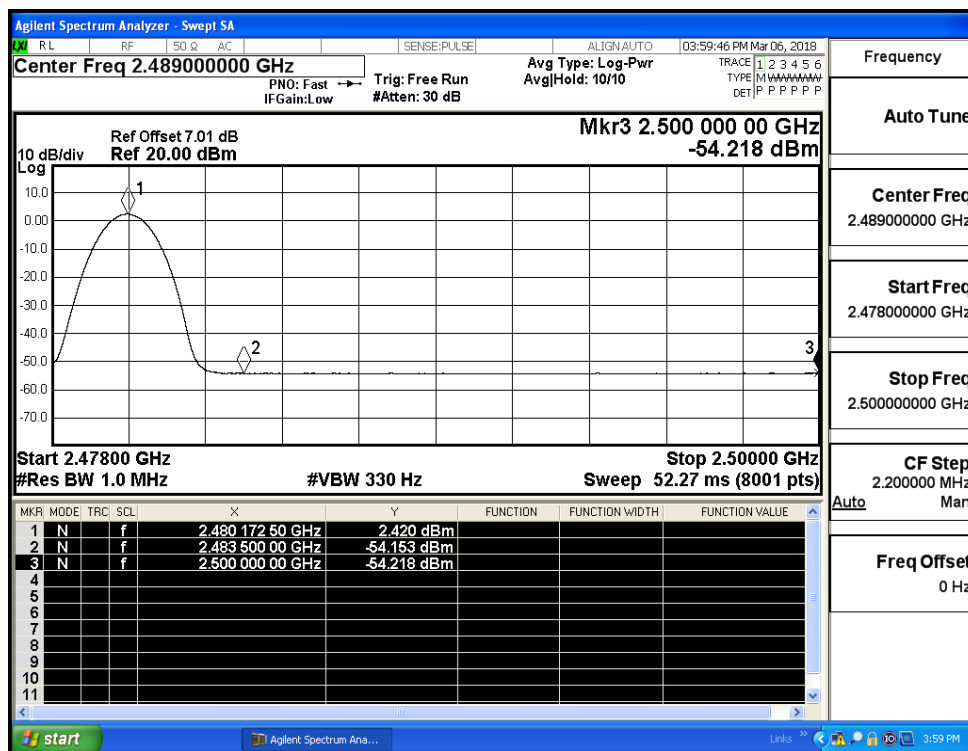
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



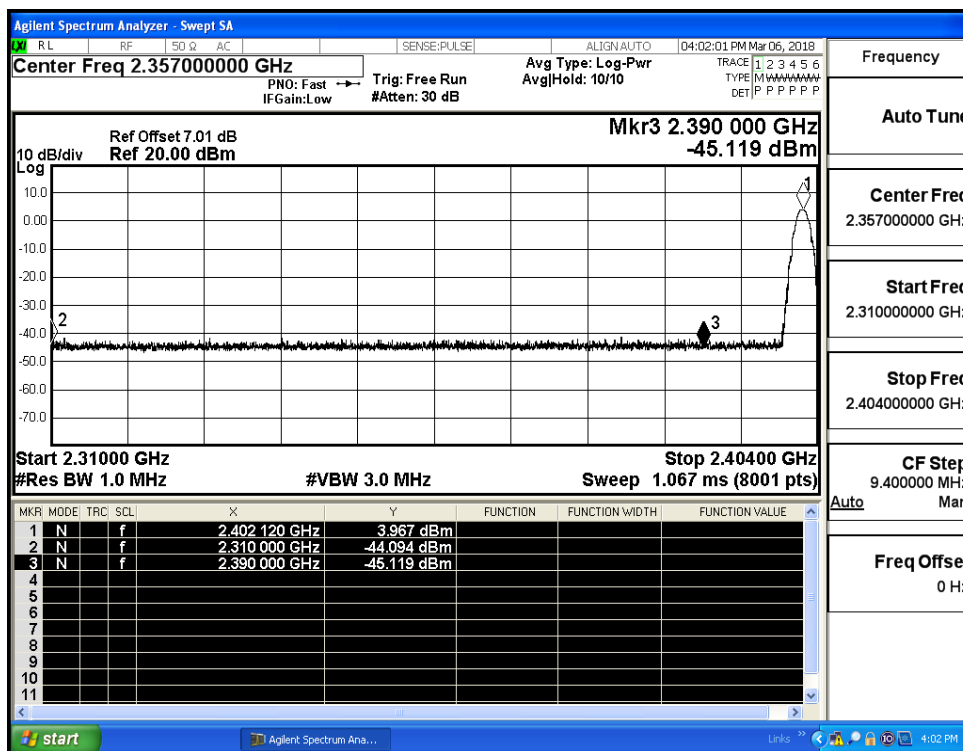
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



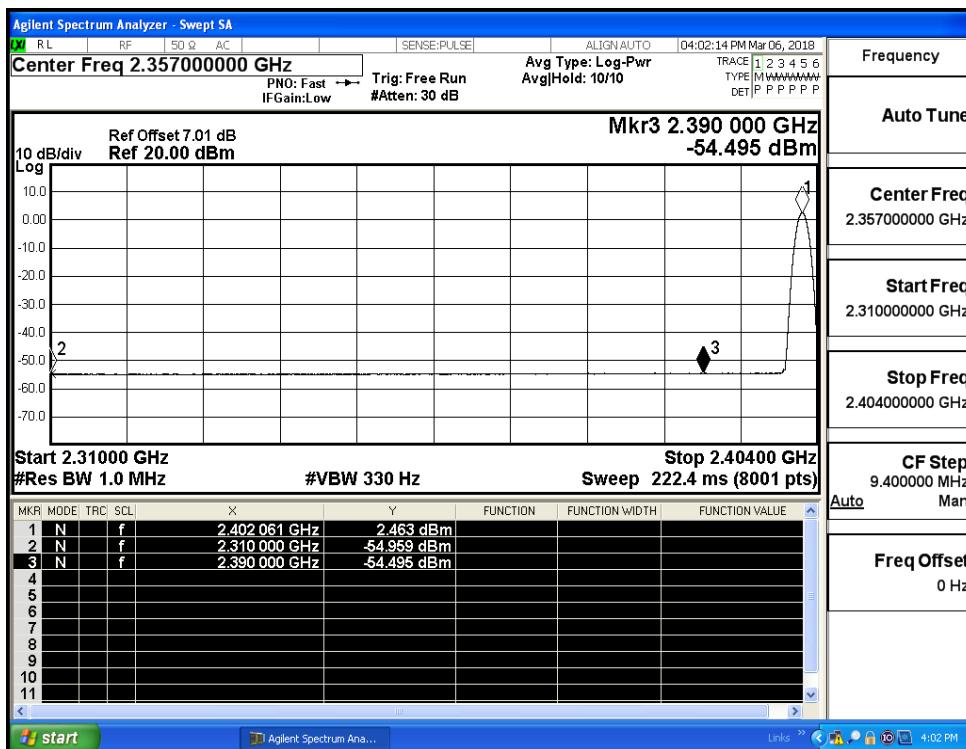
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

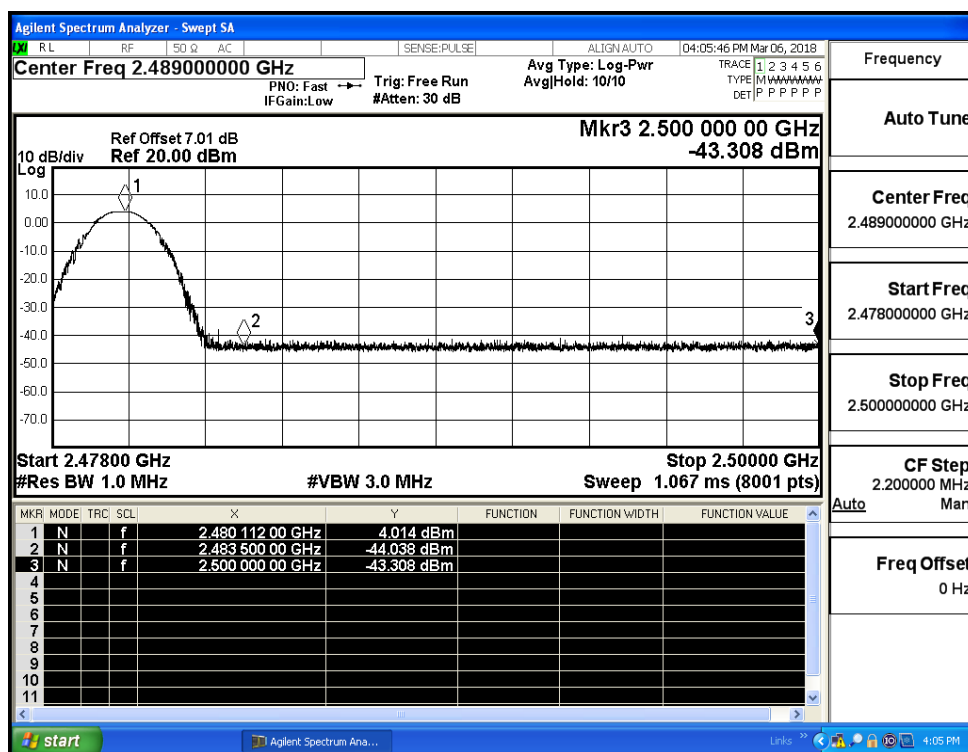
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

