

Appendix A

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

Product Name: LTE GSM/WCDMA Smartphone

Trade Mark: DOOGEE

Test Model: S90

Environmental Conditions

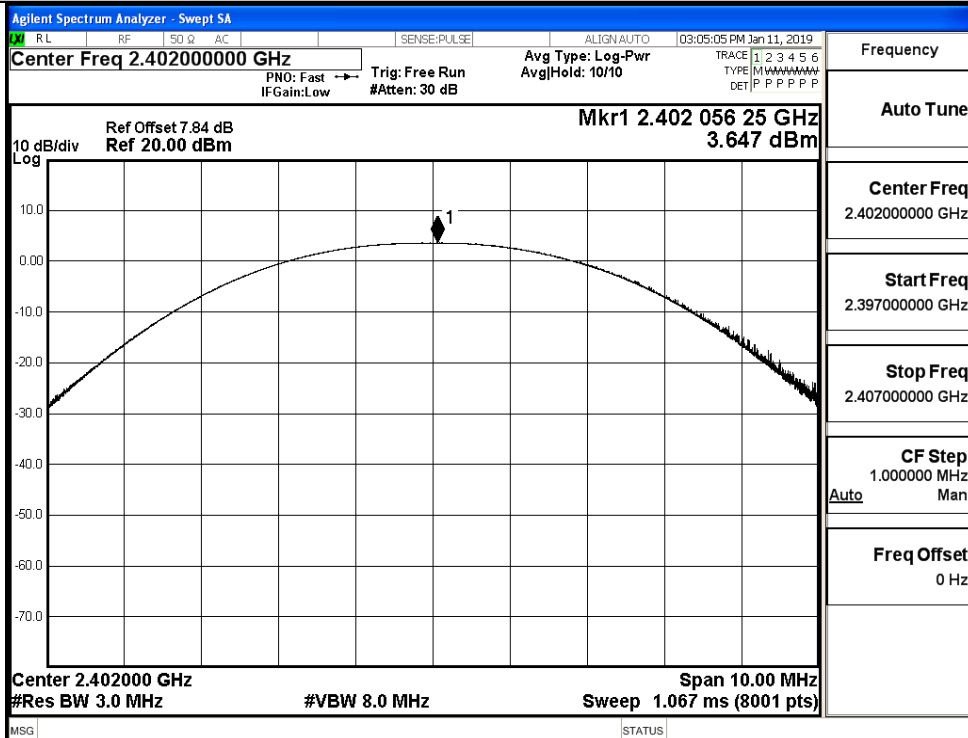
Temperature:	24.1 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

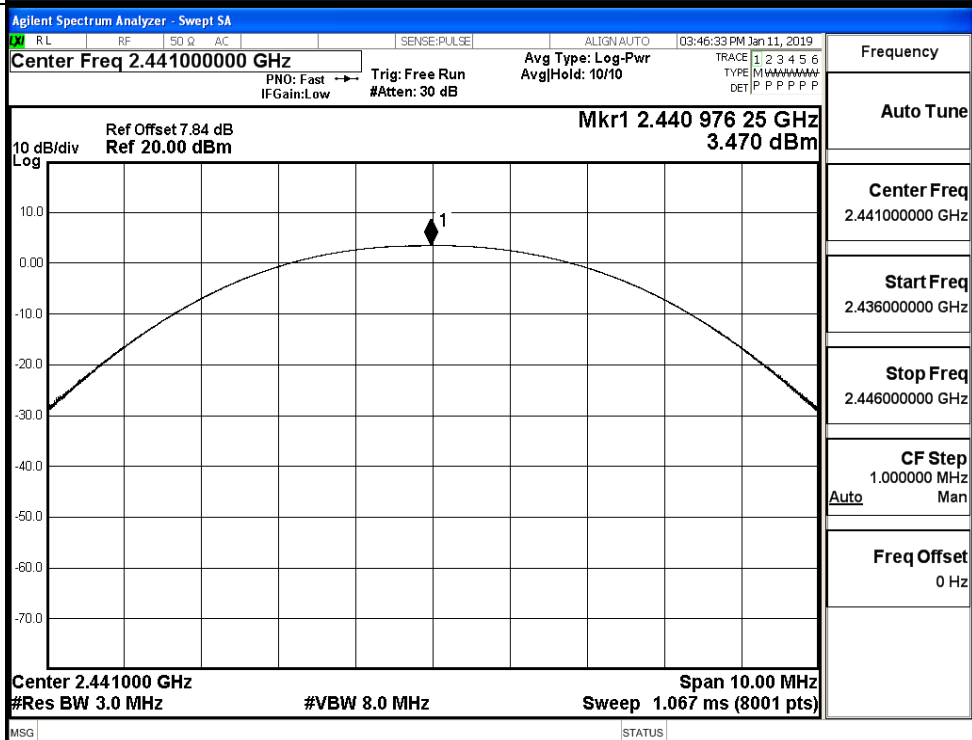
Mode	Channel.	Maximum Peak Output Power [dBm]	Maximum Average Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.647	2.326	30	PASS
	MCH	3.470	2.215	30	PASS
	HCH	5.770	4.256	30	PASS
$\pi/4$ DQPSK	LCH	3.013	2.053	21	PASS
	MCH	5.020	3.958	21	PASS
	HCH	5.209	4.152	21	PASS
8DPSK	LCH	3.237	2.514	21	PASS
	MCH	3.014	2.695	21	PASS
	HCH	5.432	4.289	21	PASS

Test Graphs

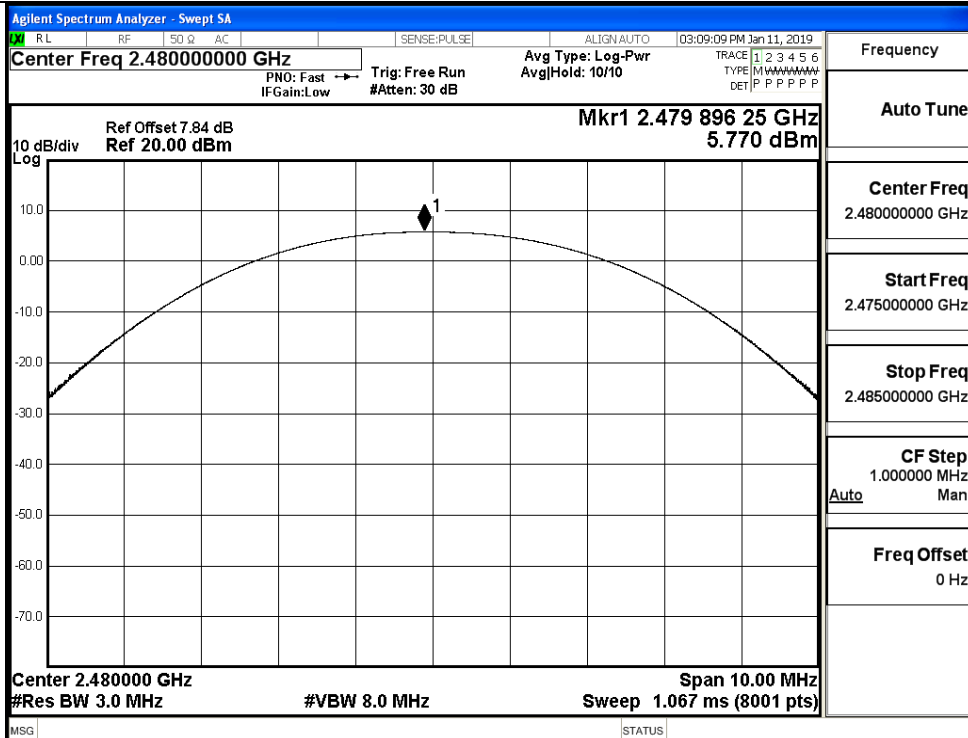
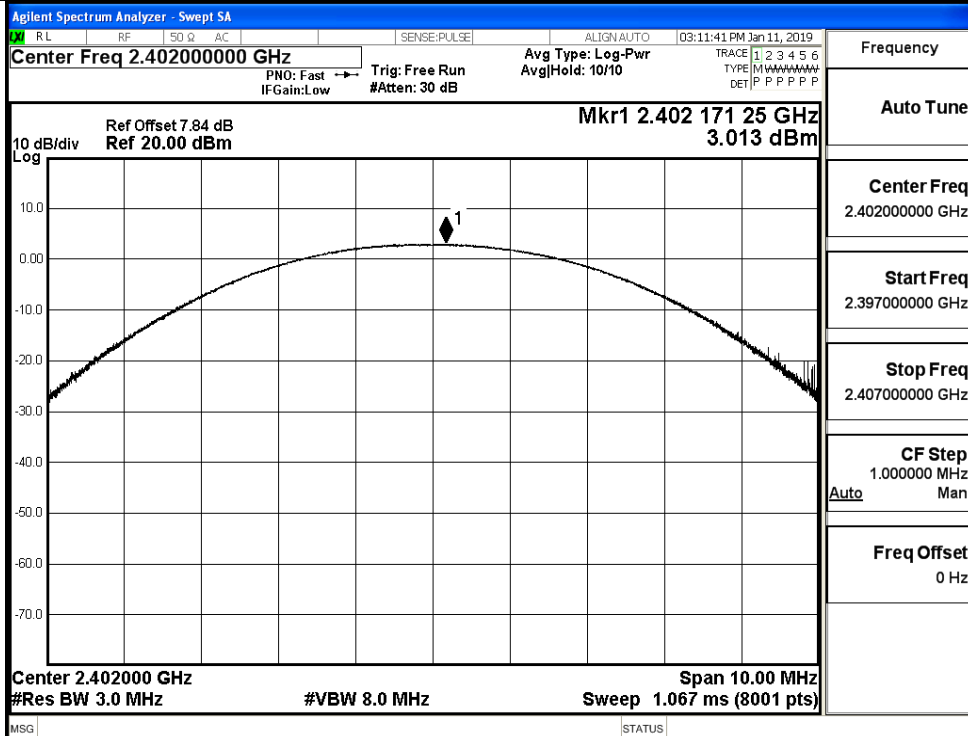
GFSK/LCH

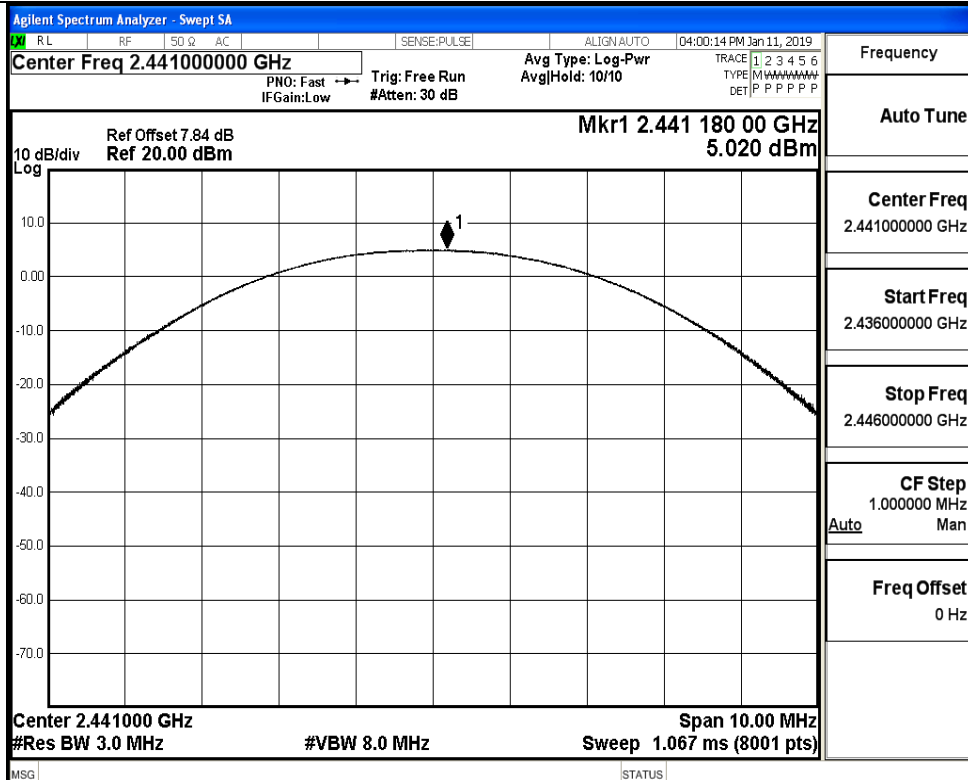
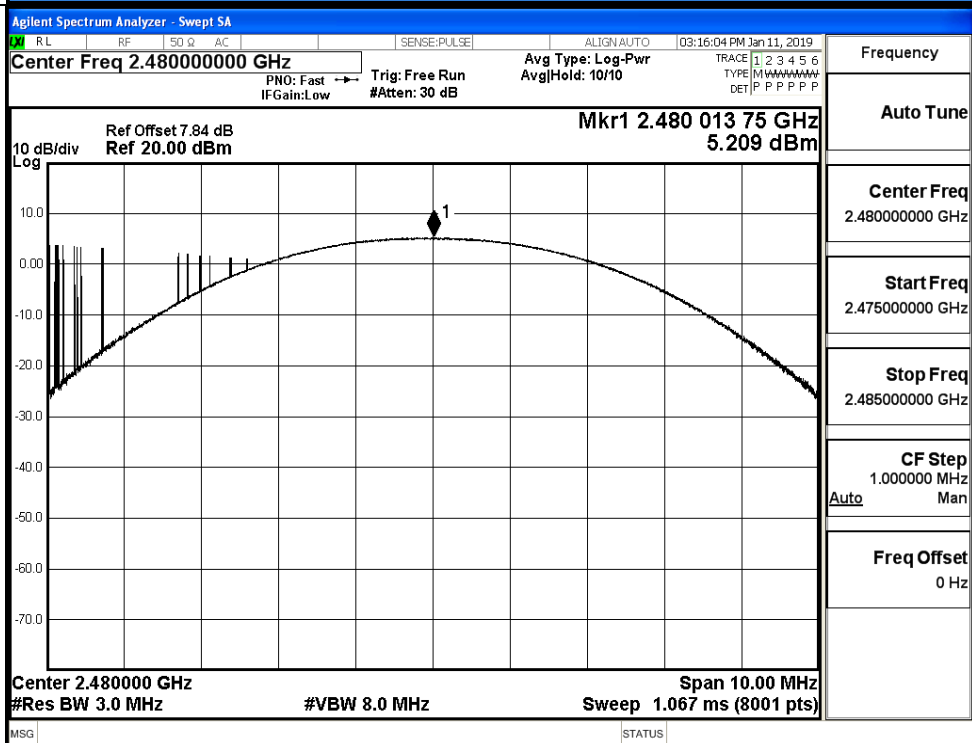


GFSK/MCH

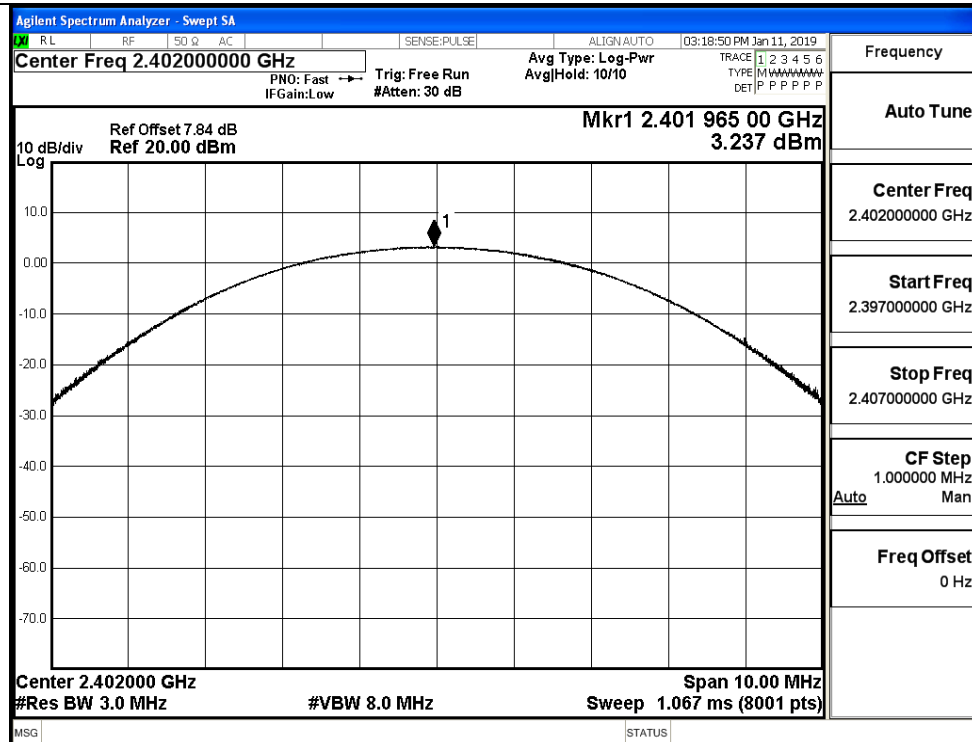


GFSK/HCH

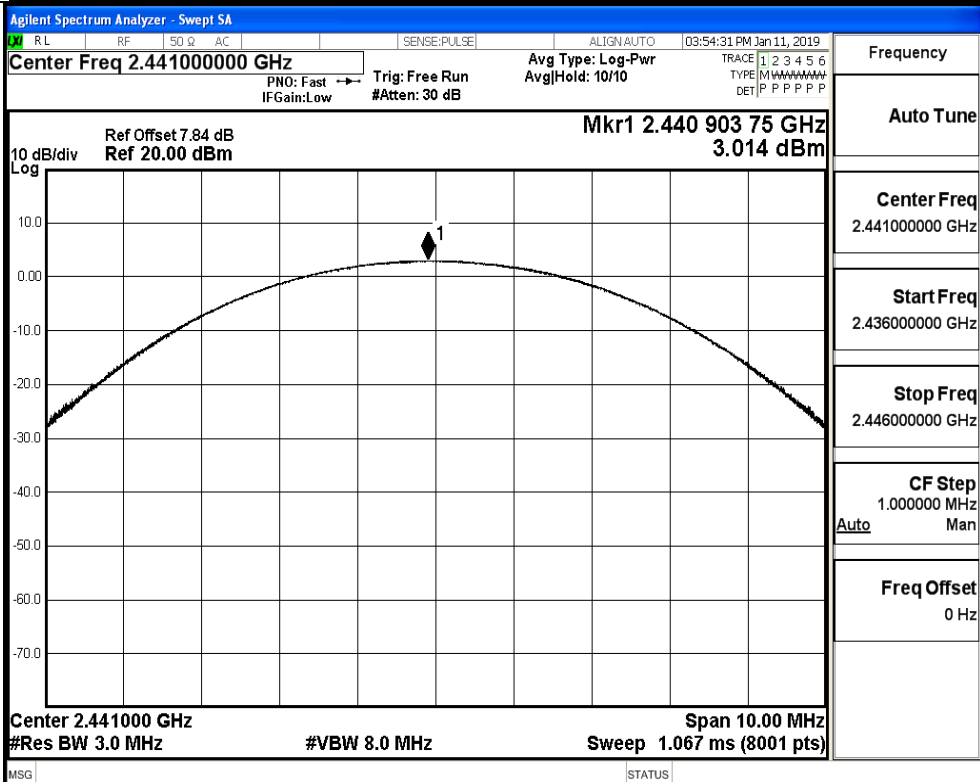
 π /4DQPSK/LCH

π /4DQPSK/MCH π /4DQPSK/HCH

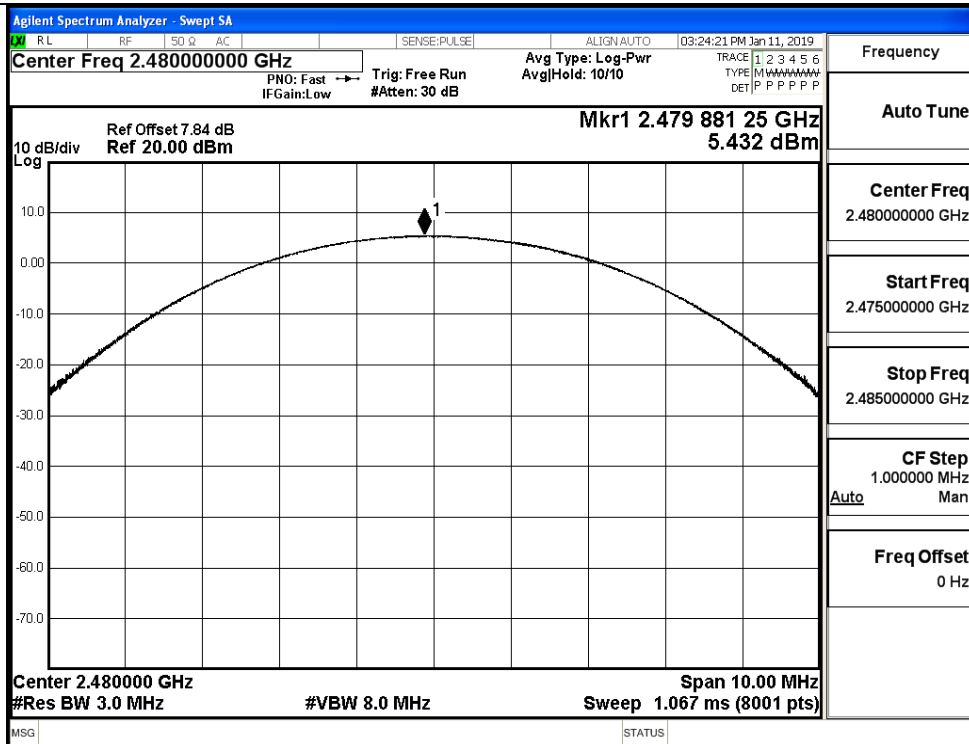
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

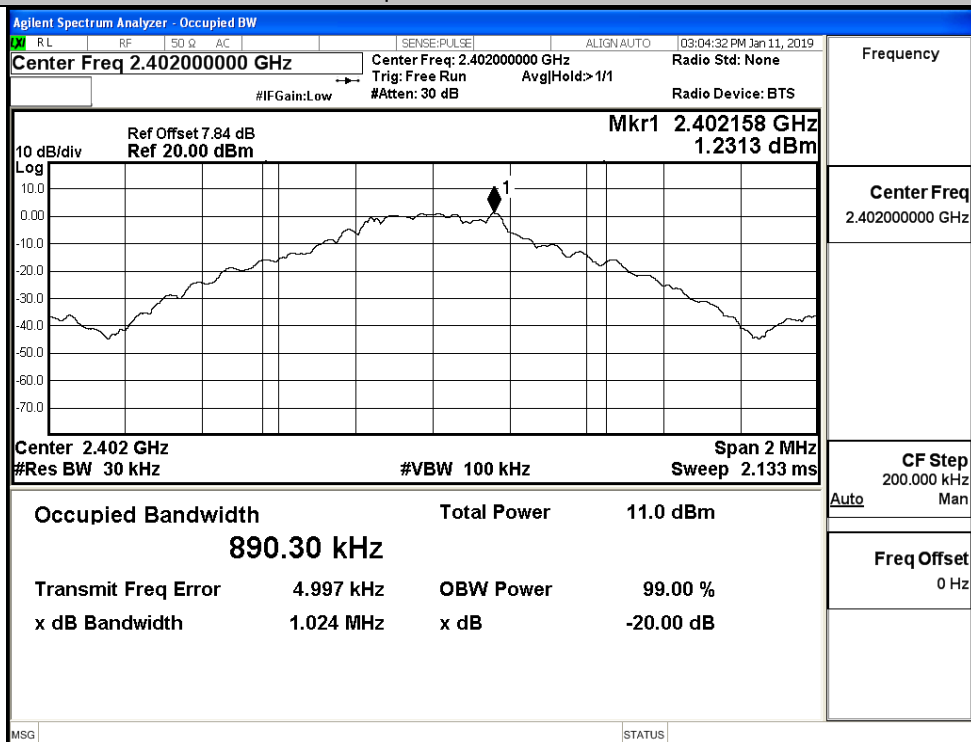


A.2 20dB Bandwidth

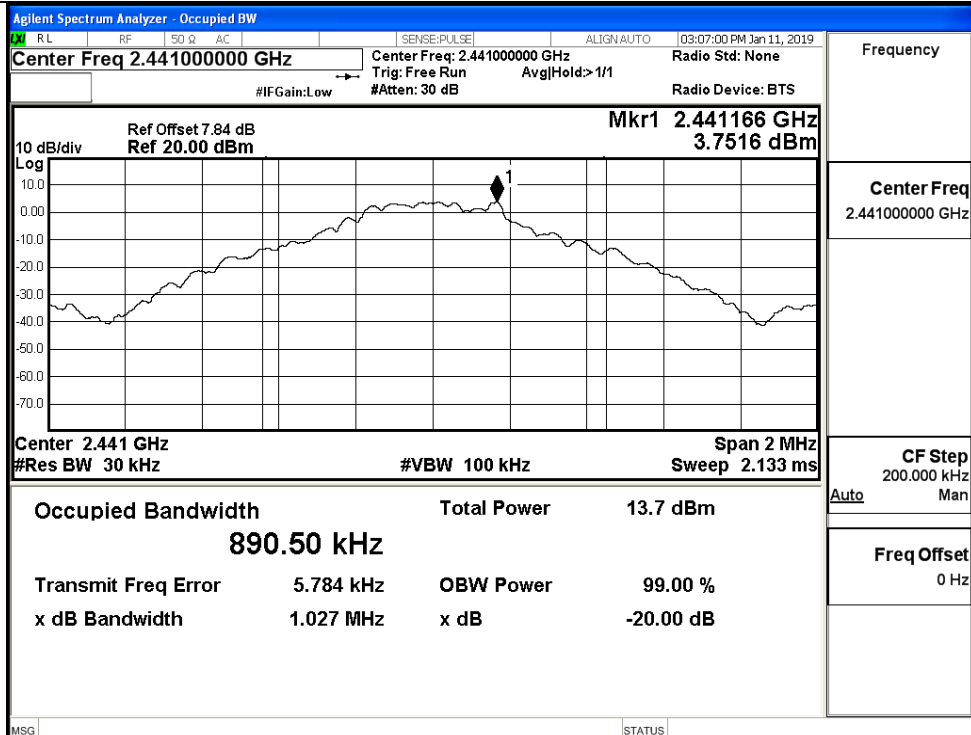
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.024	Not Specified	PASS
	MCH	1.027	Not Specified	PASS
	HCH	1.027	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.322	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.292	Not Specified	PASS
8DPSK	LCH	1.298	Not Specified	PASS
	MCH	1.299	Not Specified	PASS
	HCH	1.297	Not Specified	PASS

Test Graphs

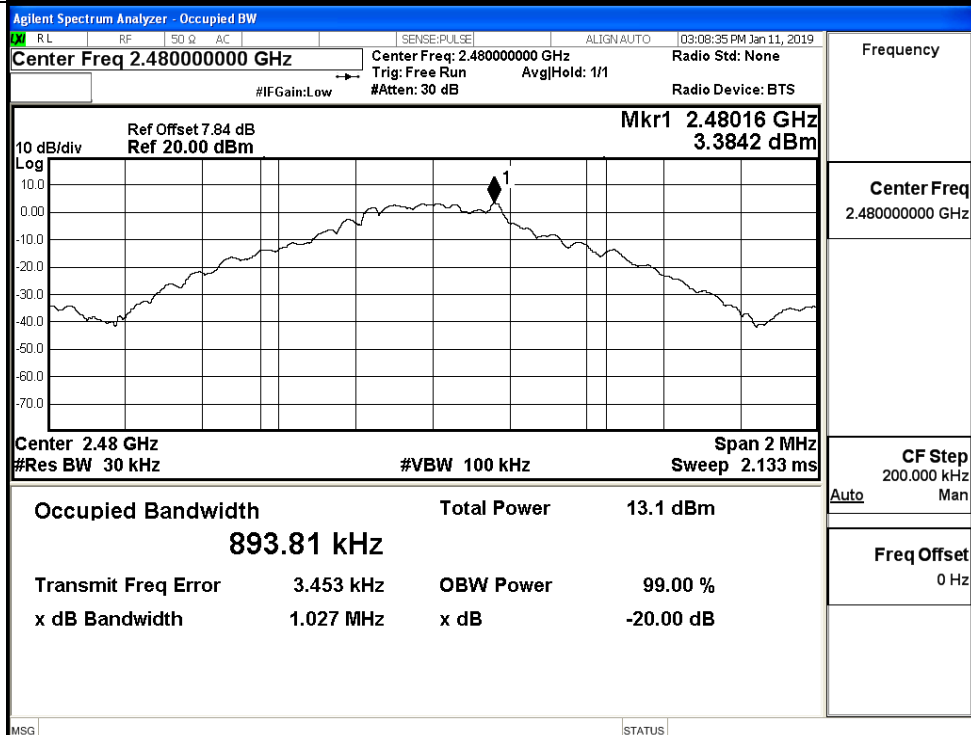
GFSK/LCH

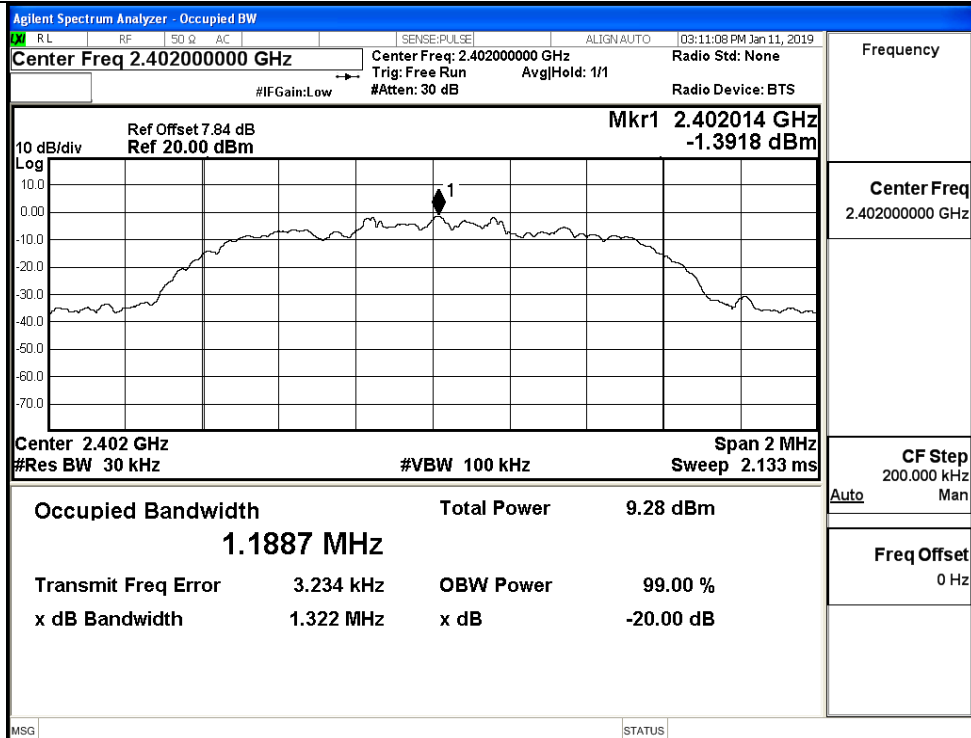
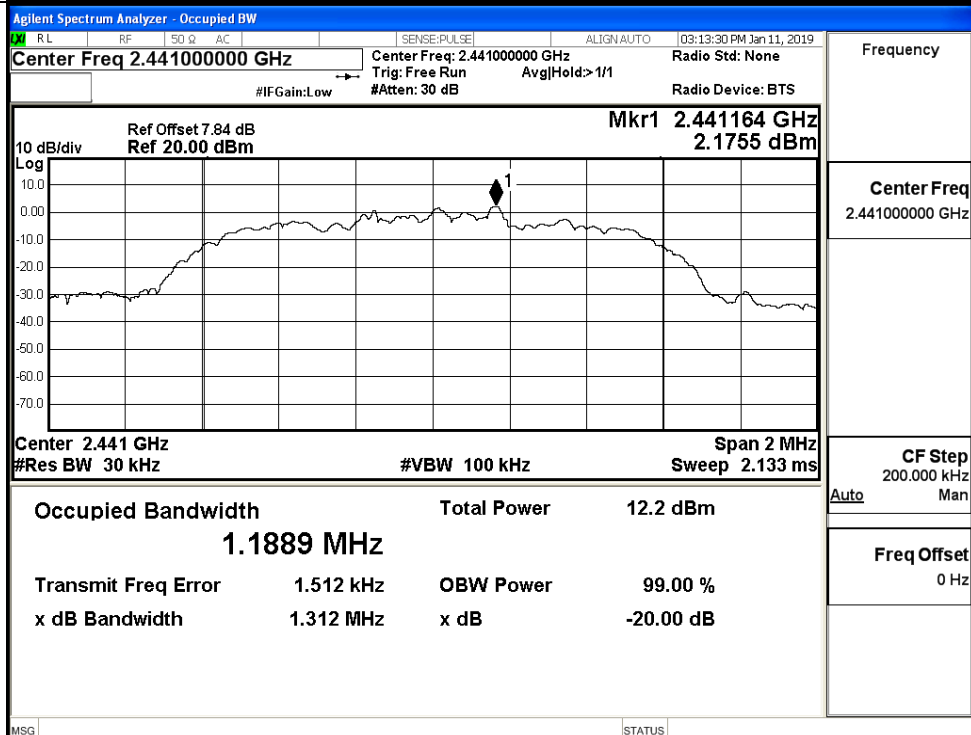


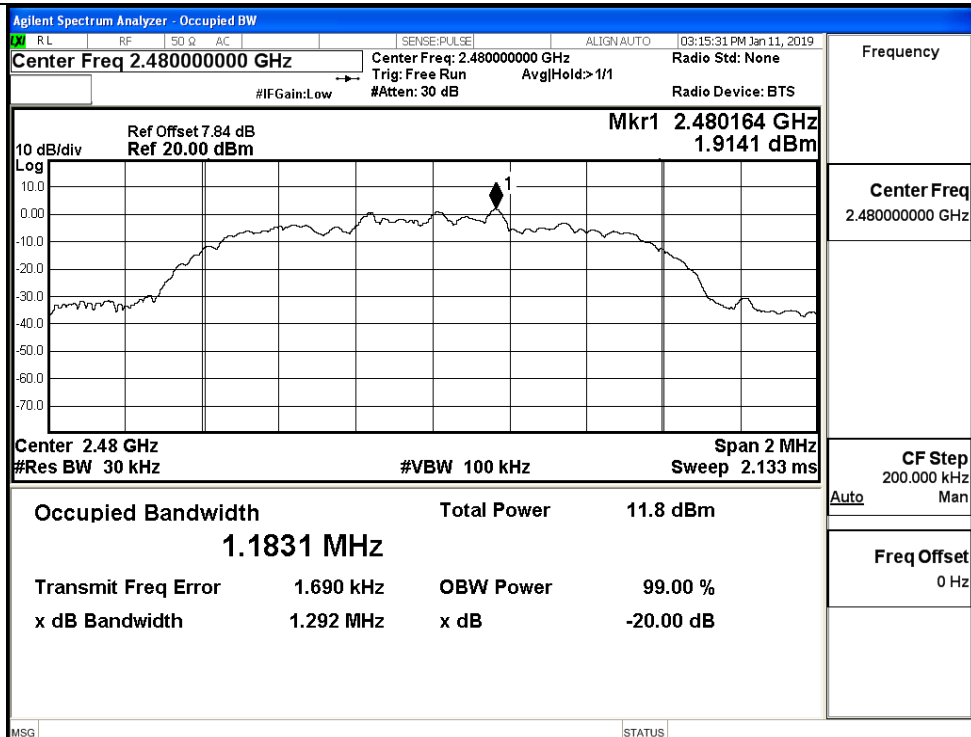
GFSK/MCH



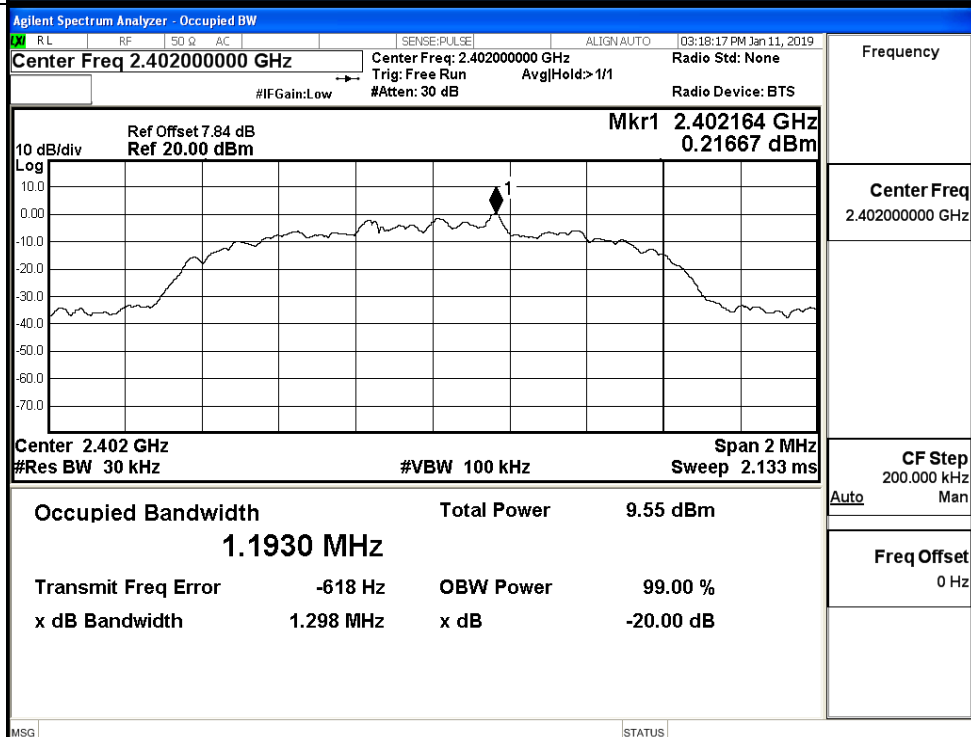
GFSK/HCH



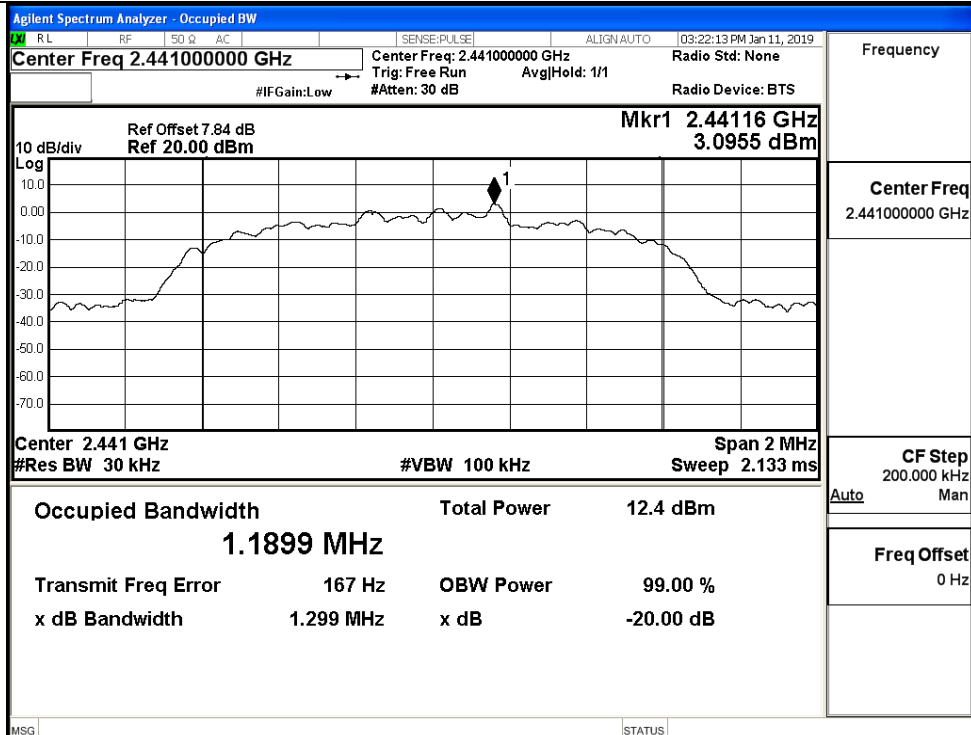
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

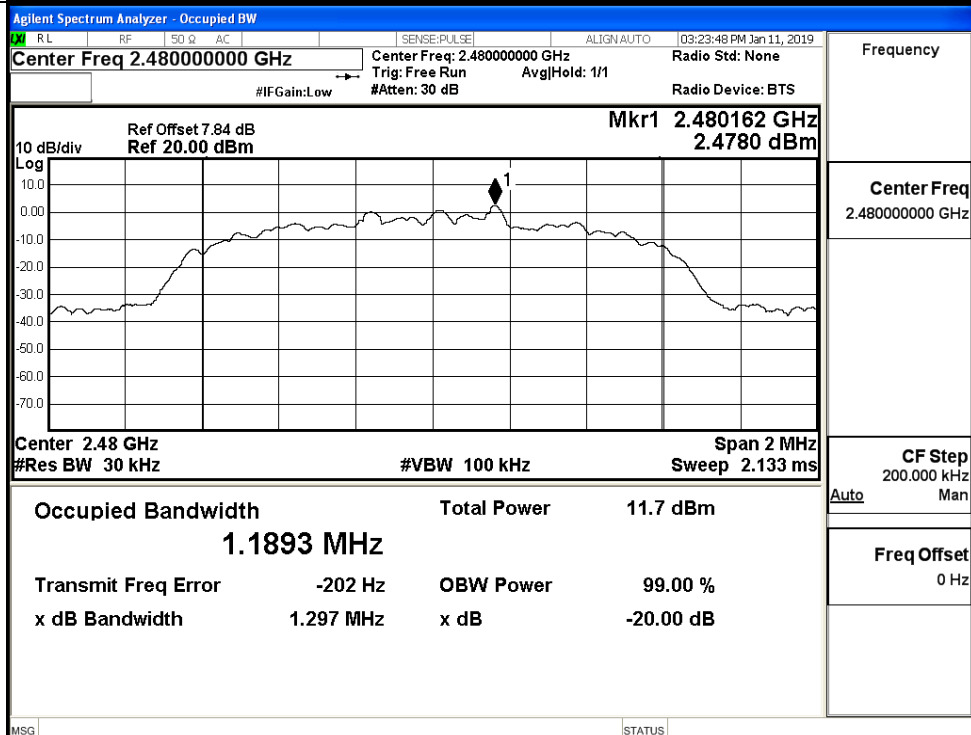
8DPSK/LCH



8DPSK/MCH



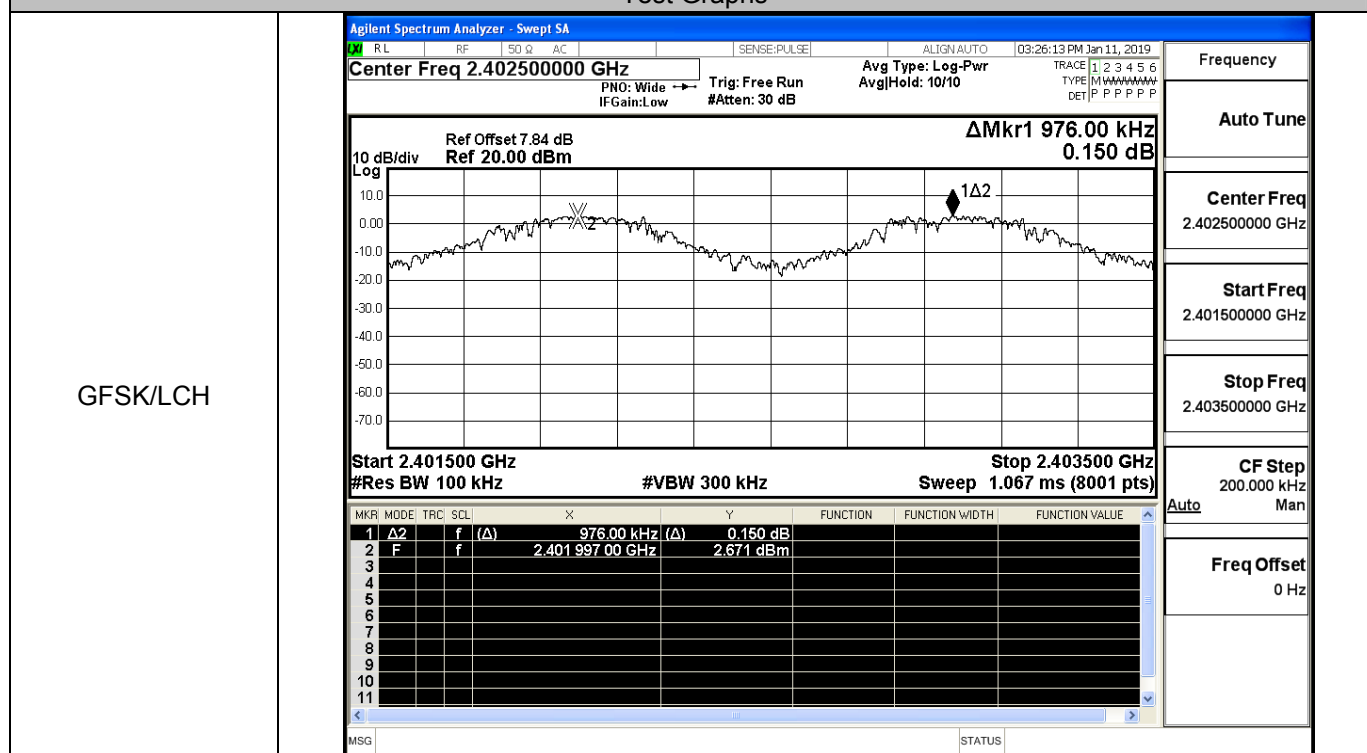
8DPSK/HCH



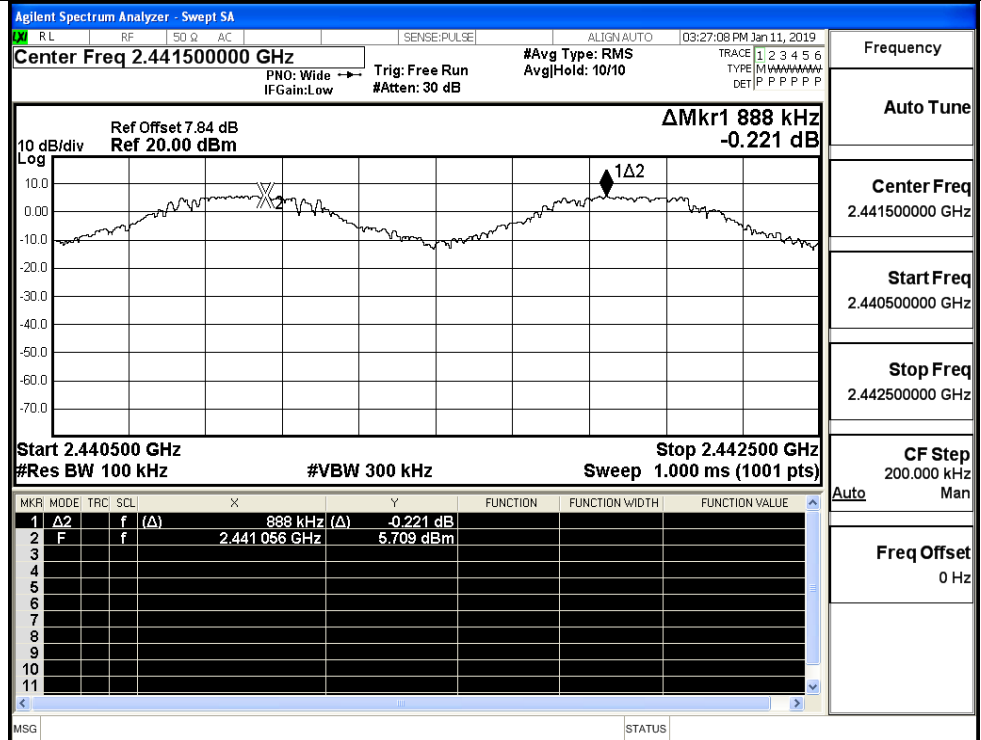
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.976	0.685	PASS
	MCH	0.888	0.685	PASS
	HCH	0.986	0.685	PASS
$\pi/4$ DQPSK	LCH	1.324	0.881	PASS
	MCH	1.290	0.881	PASS
	HCH	1.132	0.881	PASS
8DPSK	LCH	0.906	0.866	PASS
	MCH	1.286	0.866	PASS
	HCH	0.984	0.866	PASS

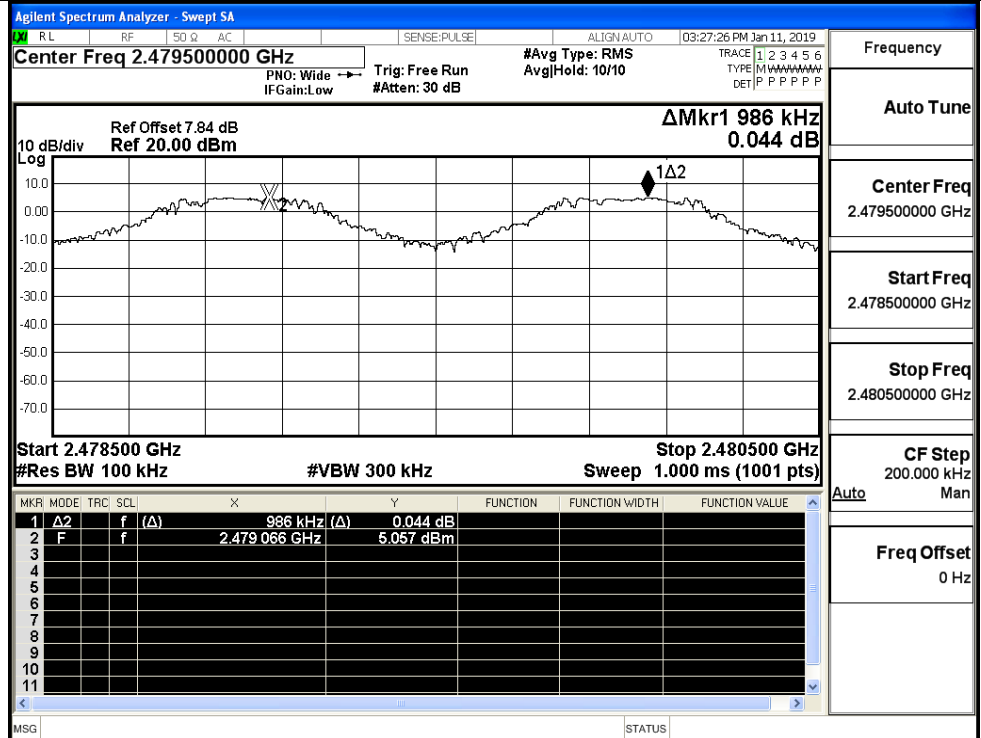
Test Graphs

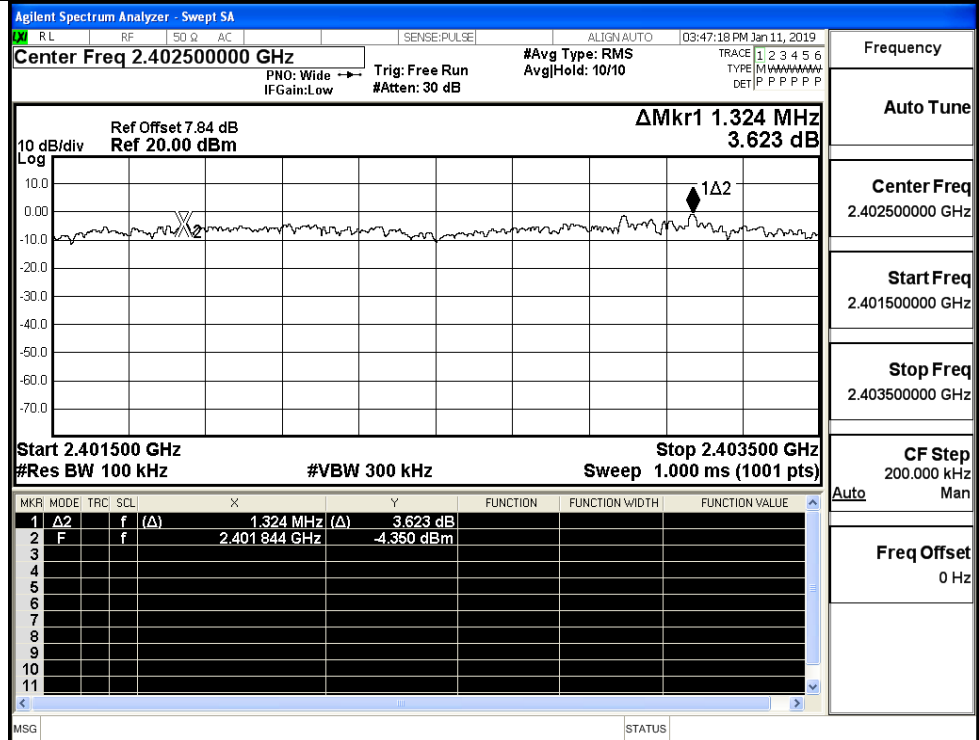
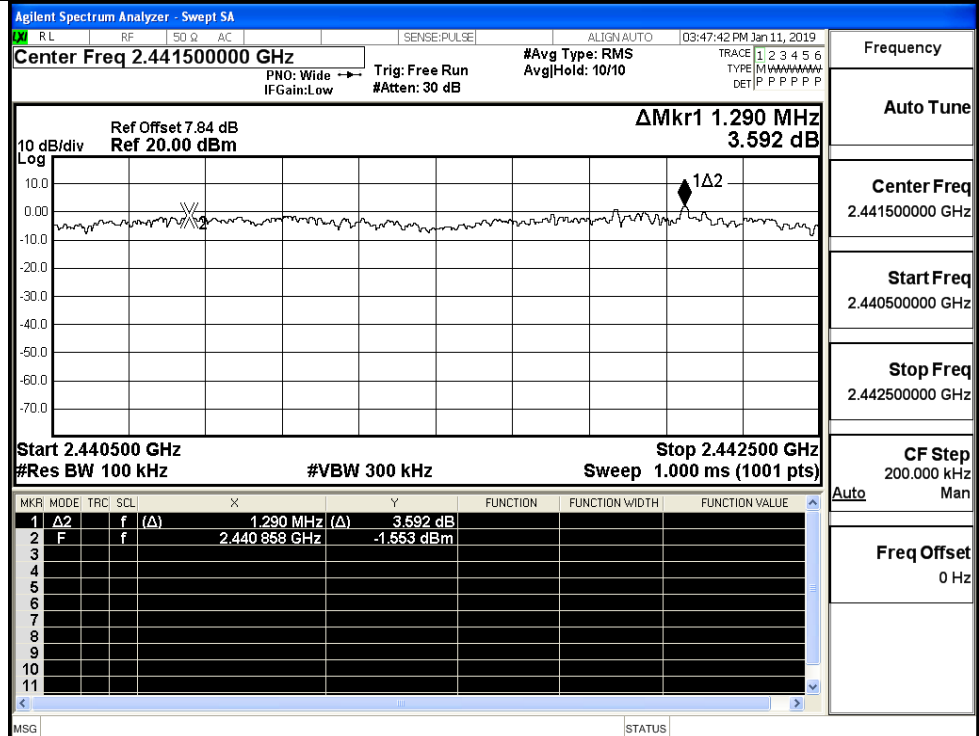


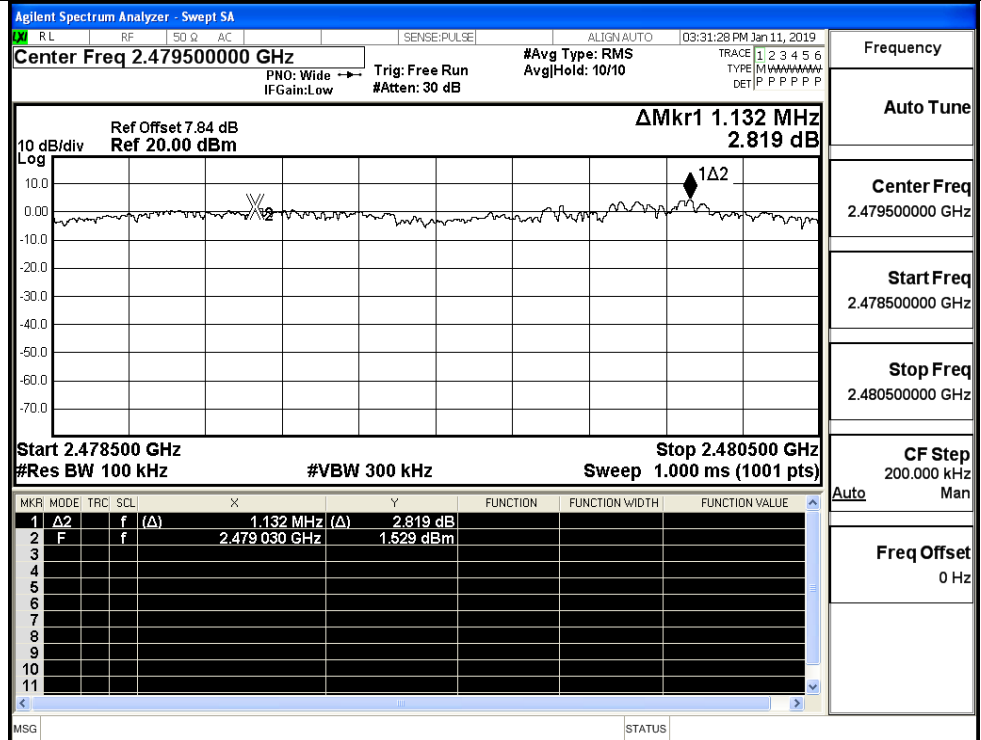
GFSK/MCH



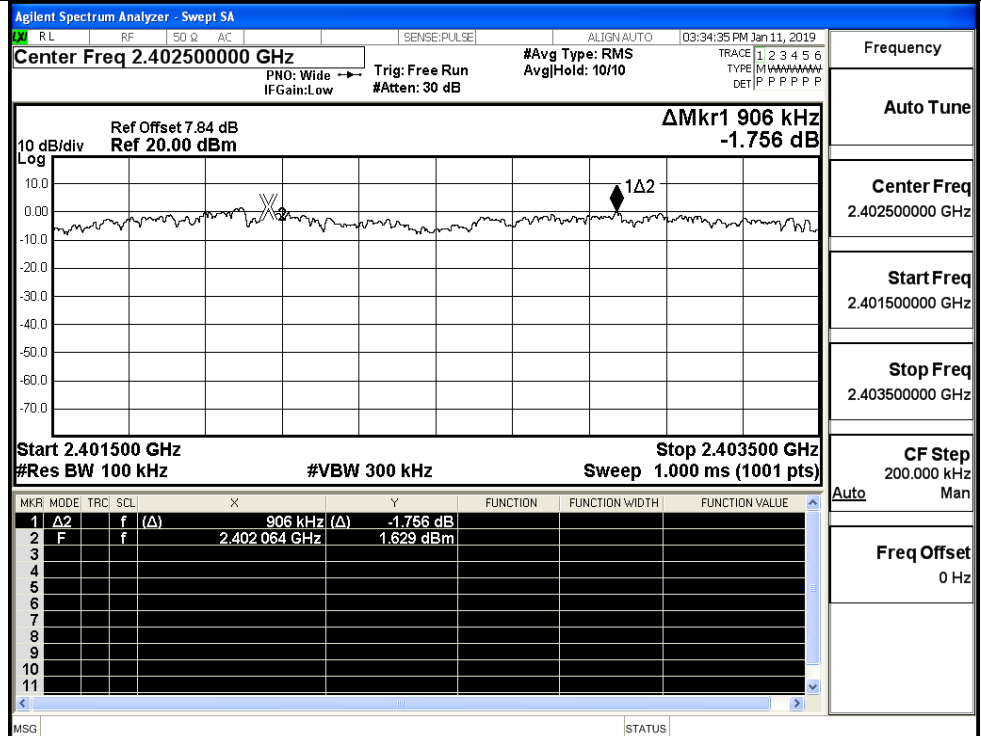
GFSK/HCH



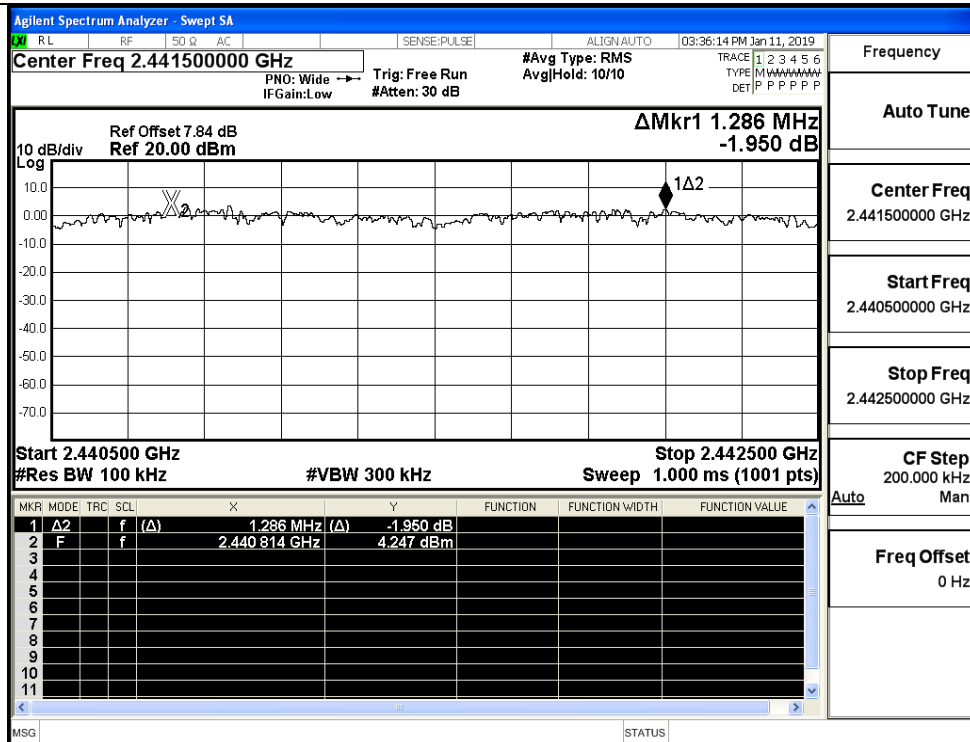
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

π /4DQPSK/HCH

8DPSK/LCH



8DPSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

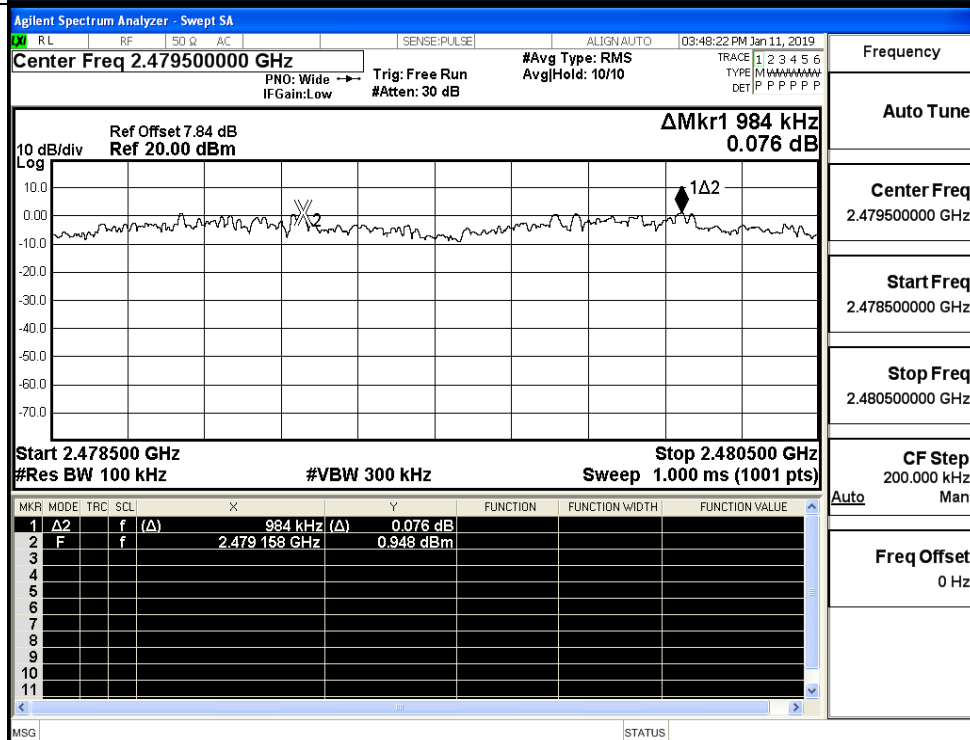
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

8DPSK/HCH



Frequency

Auto Tune

Center Freq
2.479500000 GHz

Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

CF Step
200.000 kHz
Man

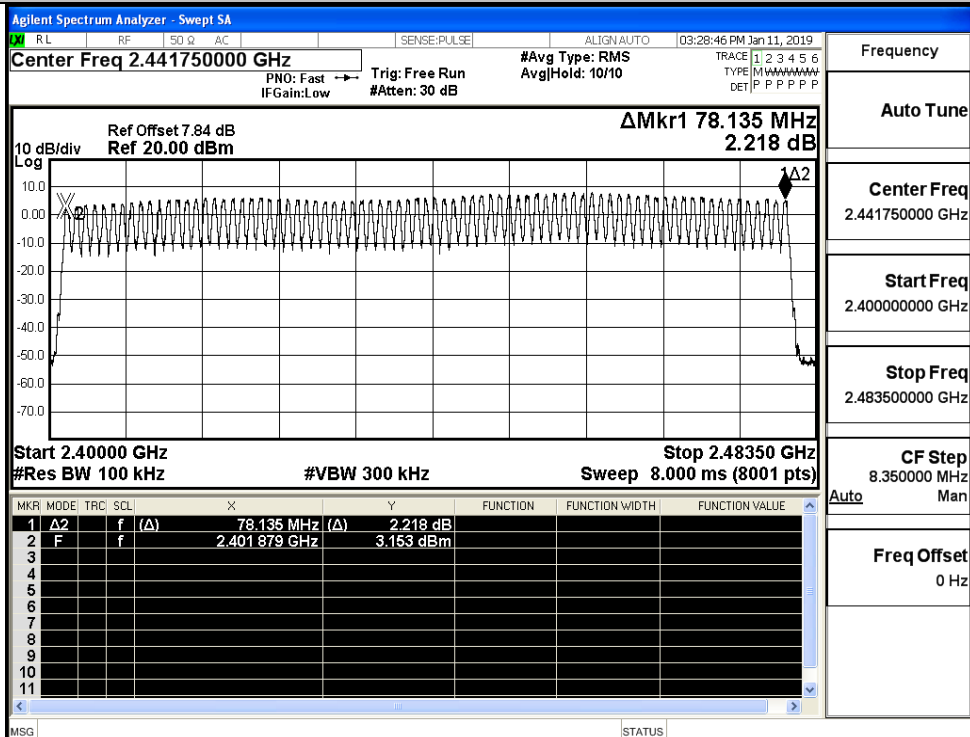
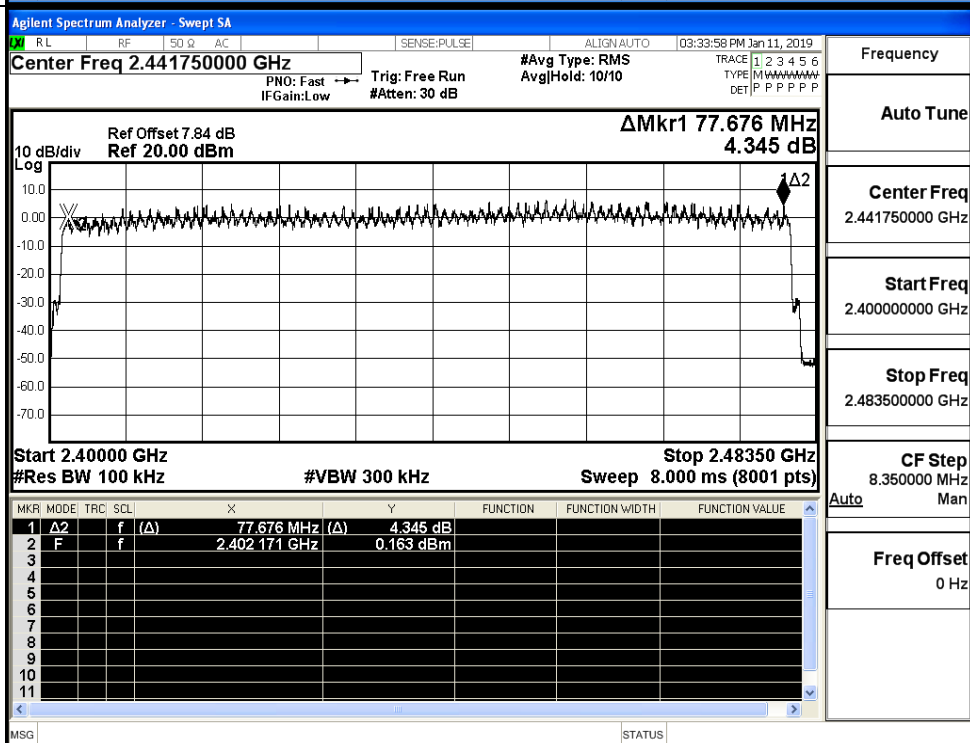
Freq Offset
0 Hz

A.4 Hopping Channel Number

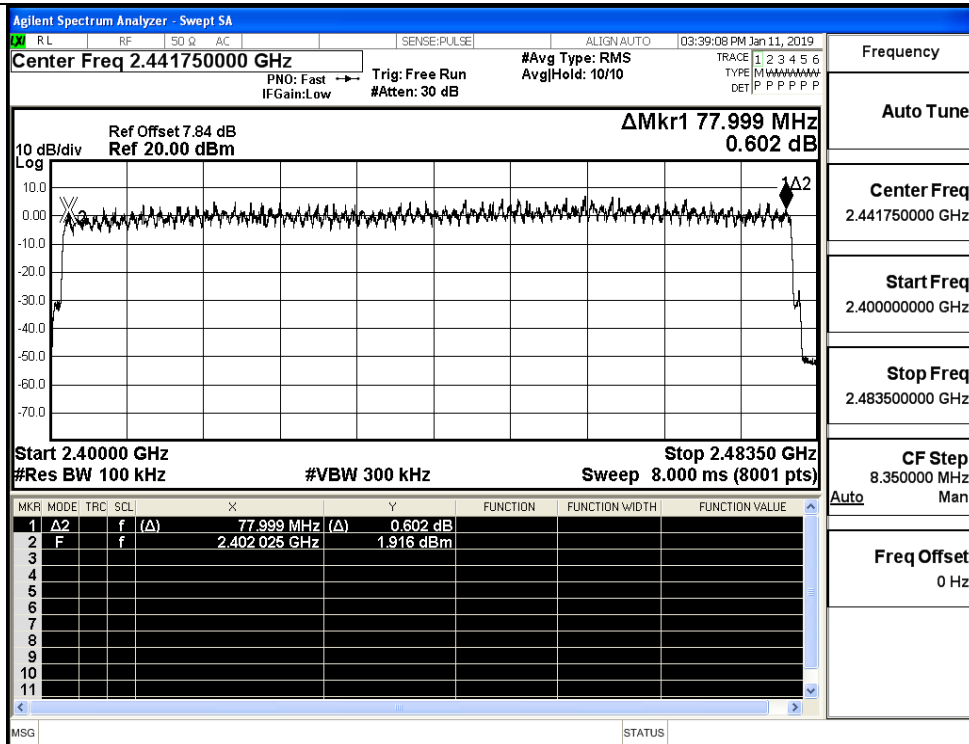
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
π/4DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

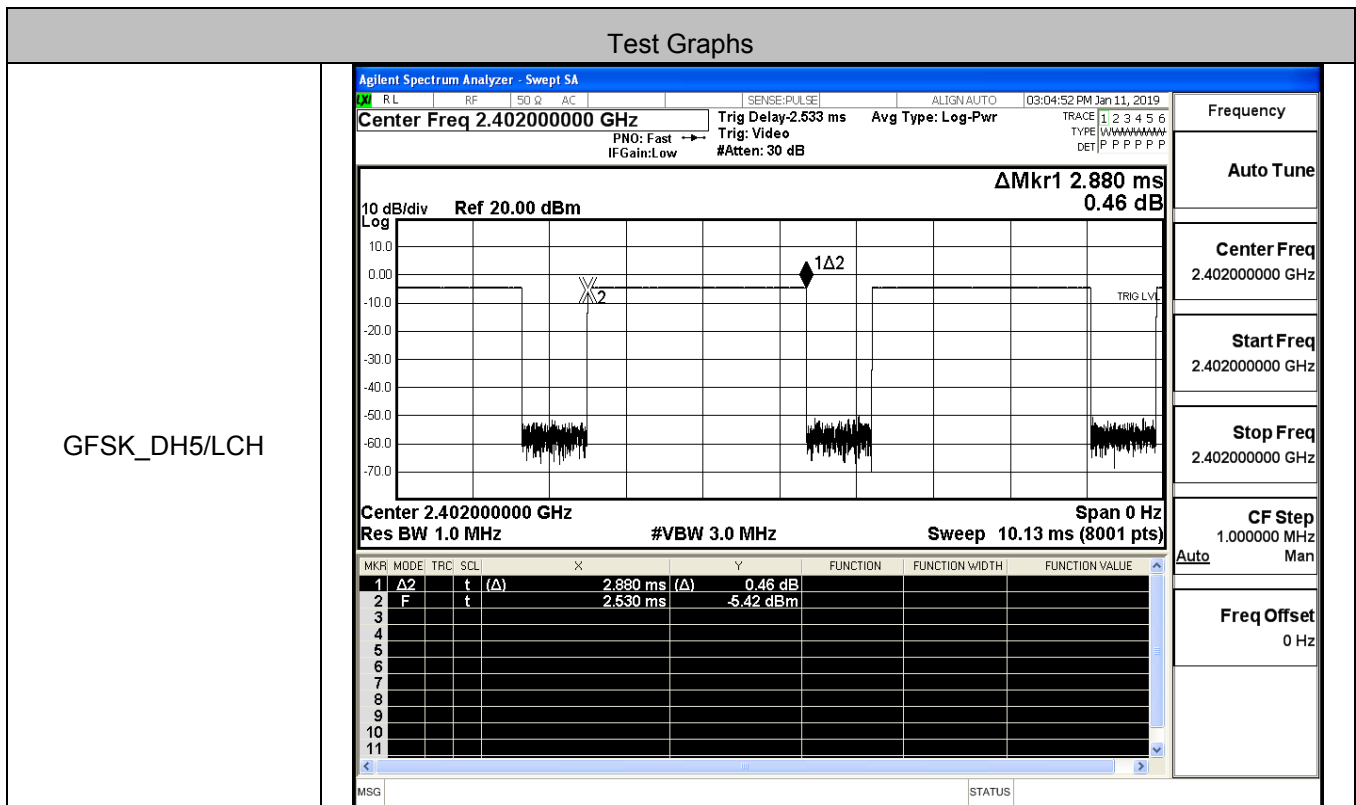
 $\pi/4$ DQPSK/Hop

8DPSK/Hop

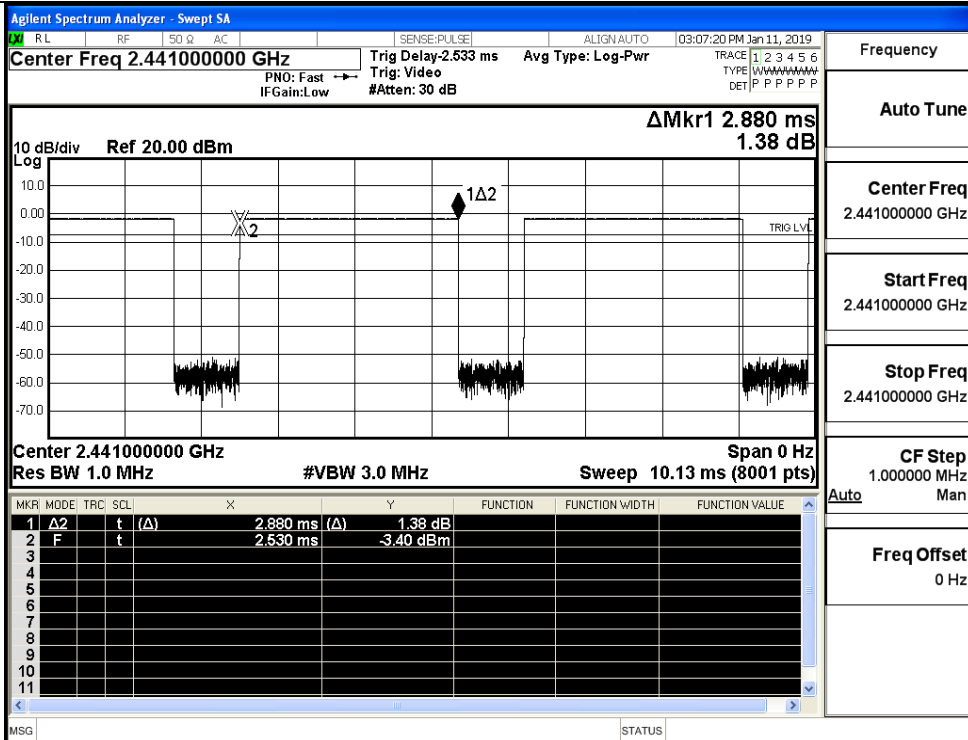


A.5 Dwell Time

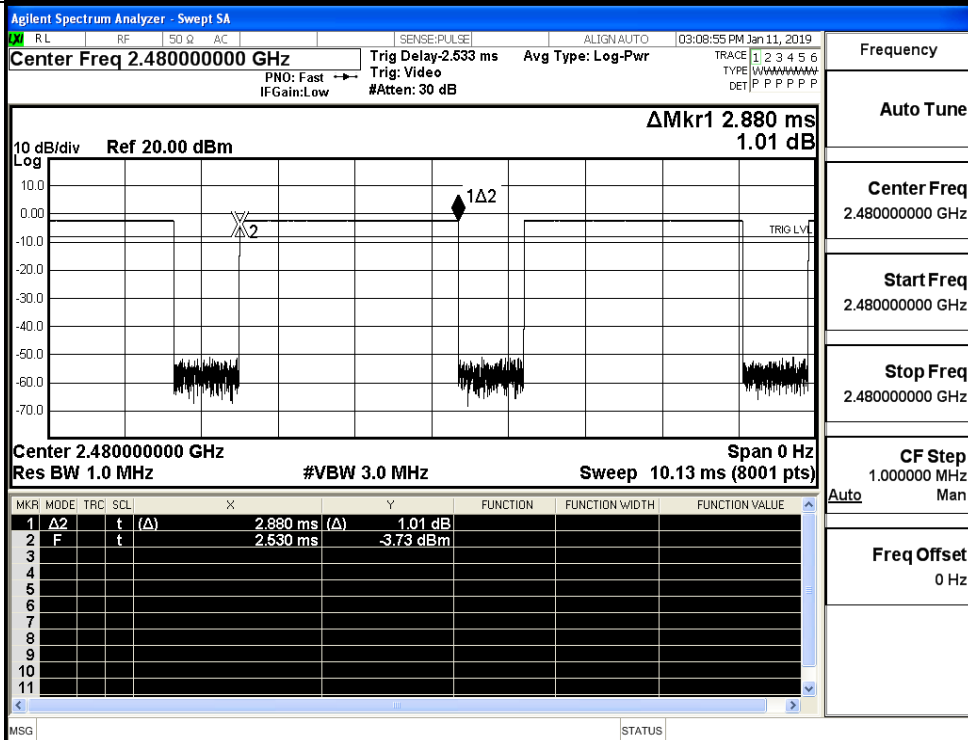
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



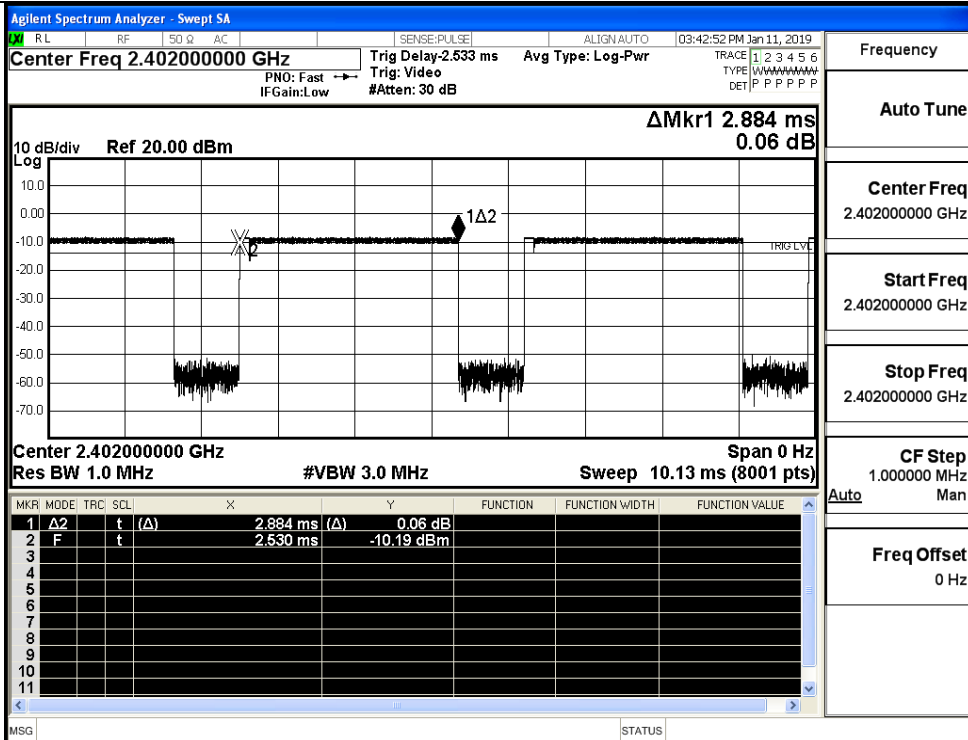
GFSK_DH5/MCH



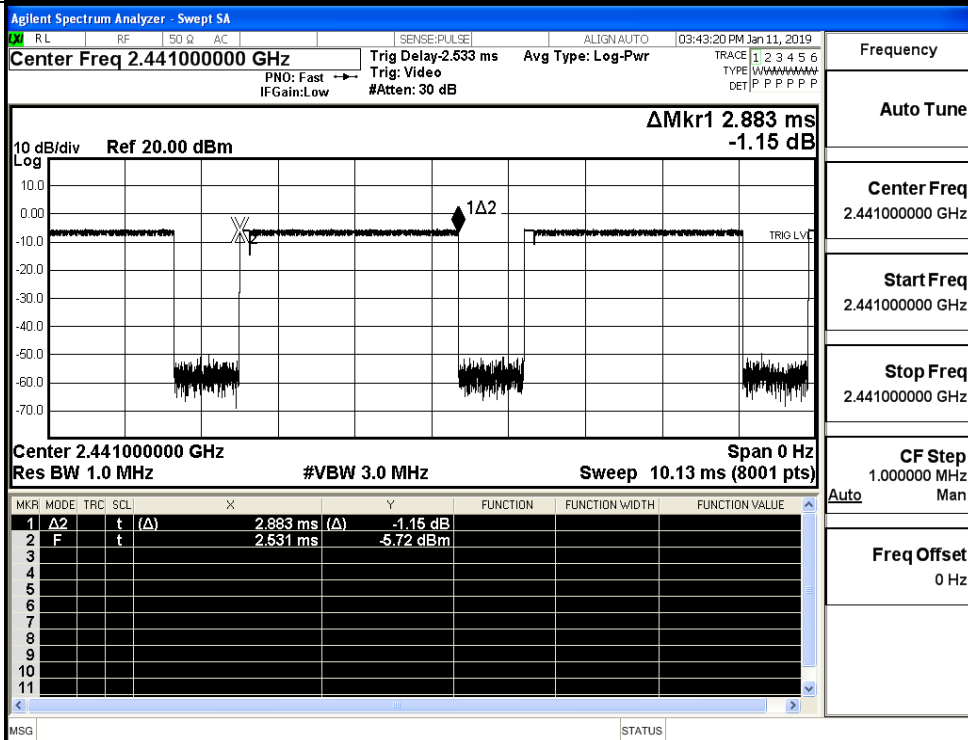
GFSK_DH5/HCH



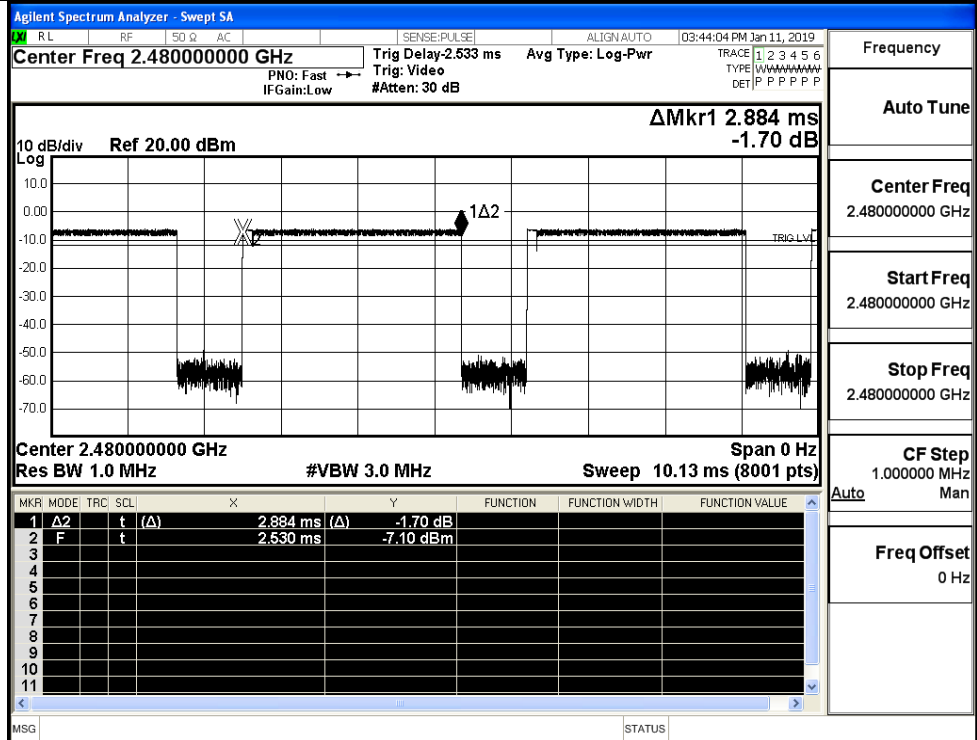
$\pi/4$ DQPSK
_2DH5/LCH



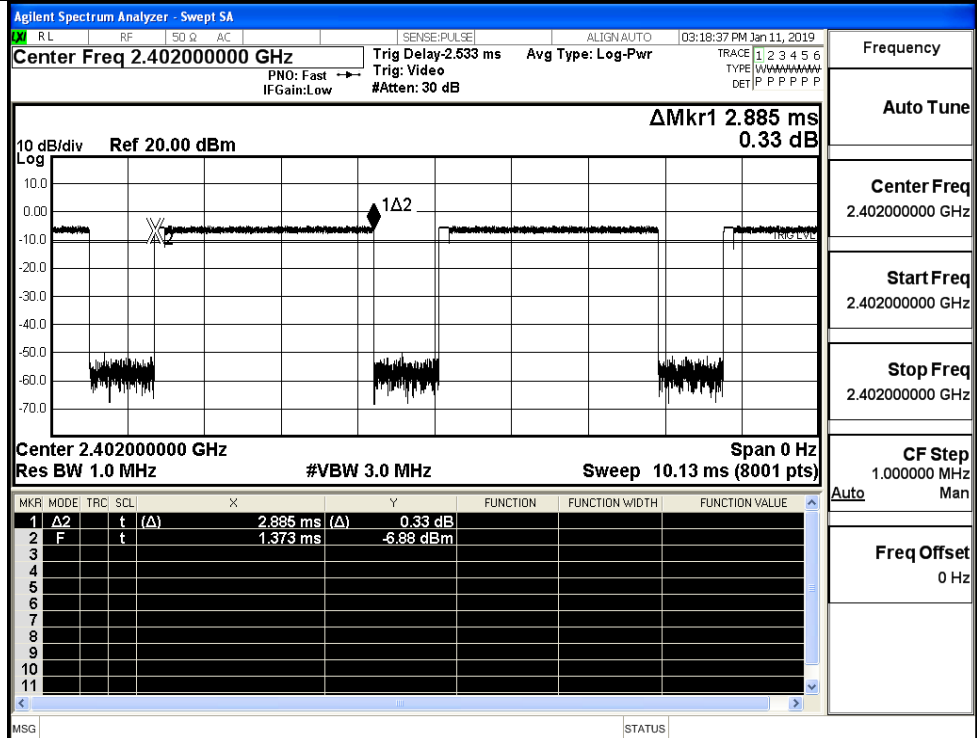
$\pi/4$ DQPSK
_2DH5/MCH



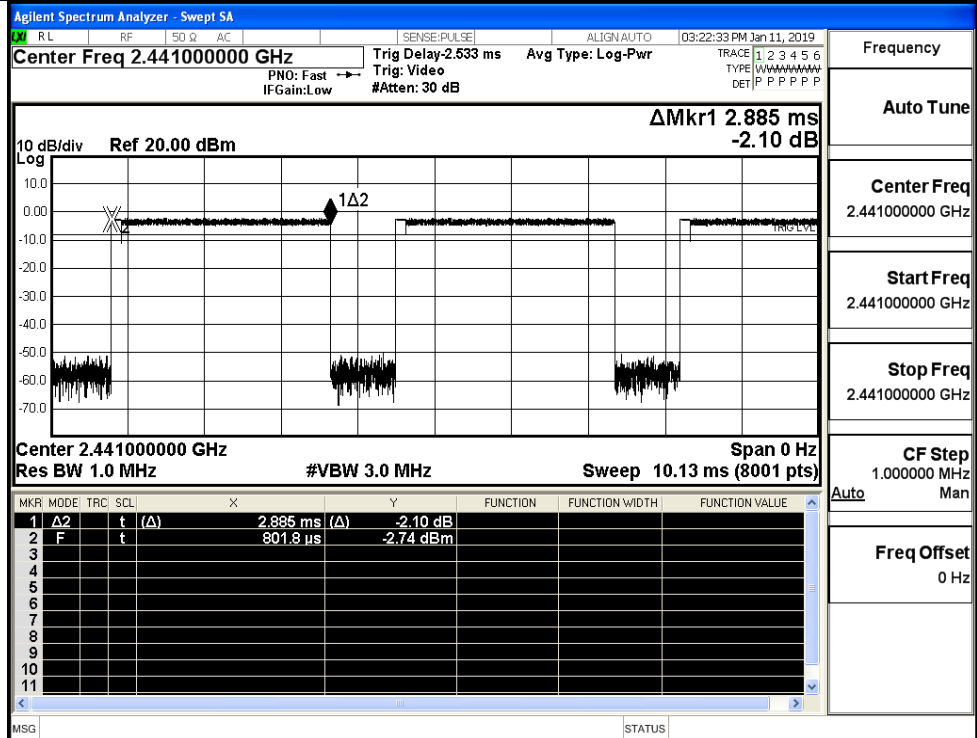
$\pi/4$ DQPSK
_2DH5/HCH



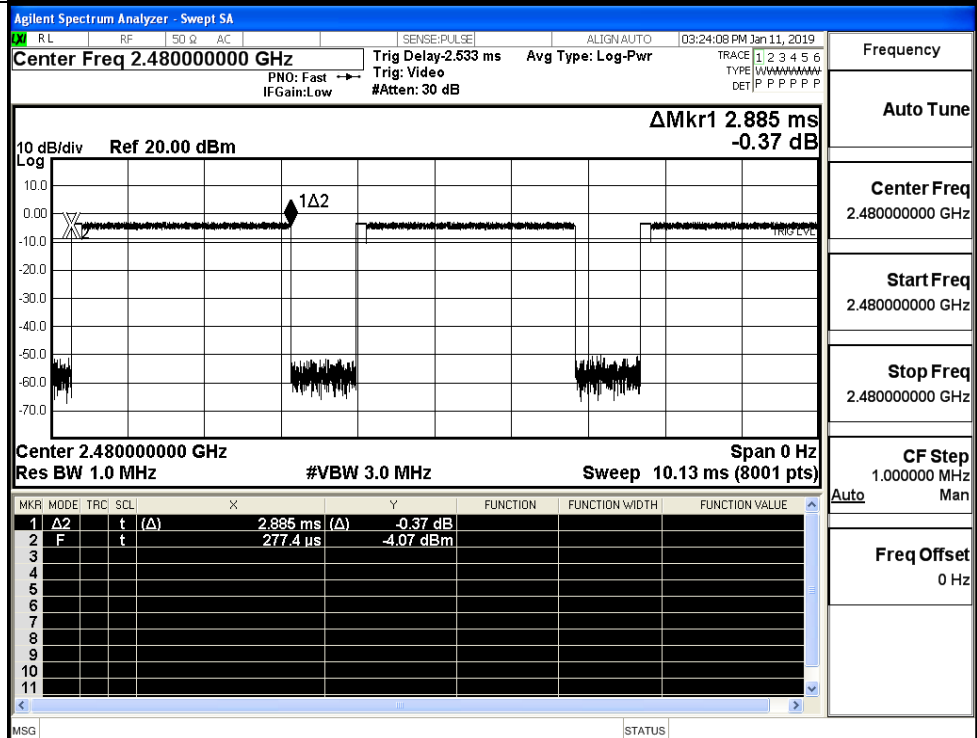
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



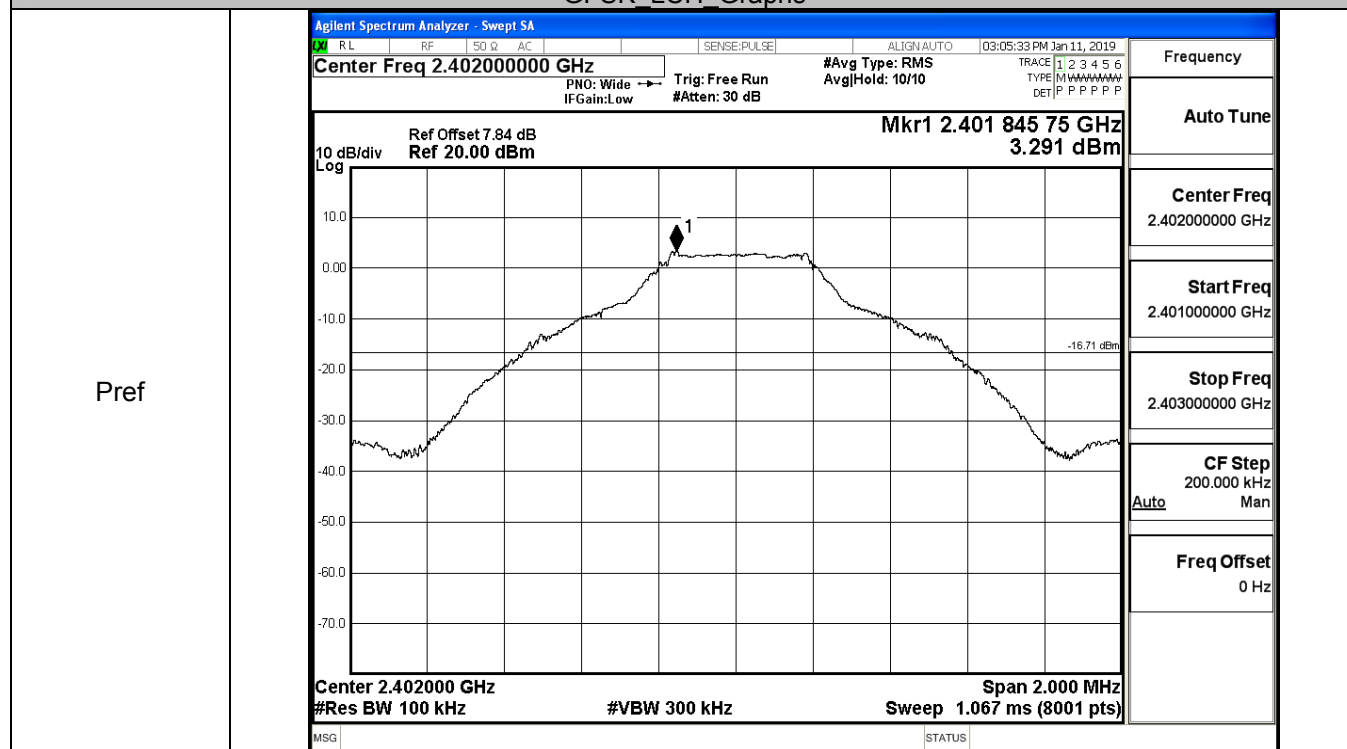
8DPSK_3DH5/HCH

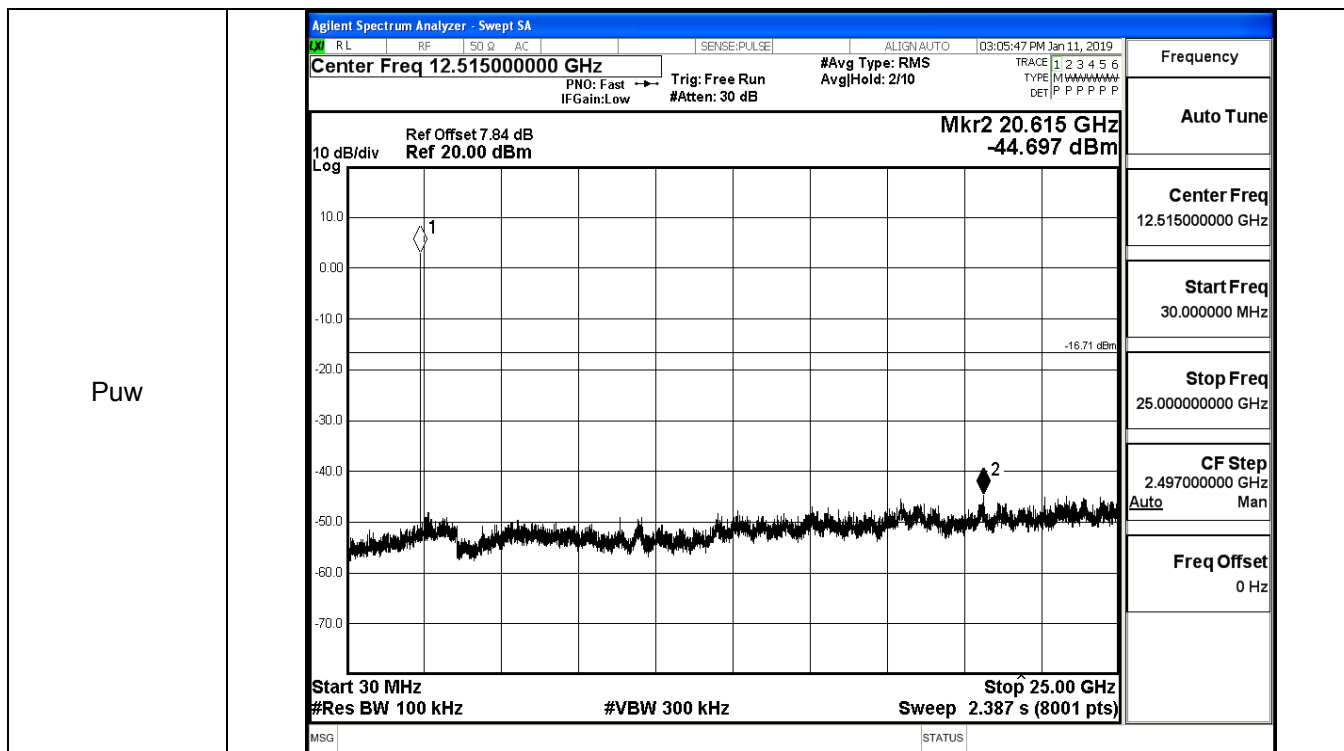


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.291	-44.697	-16.709	PASS
	MCH	6.131	-44.759	-13.869	PASS
	HCH	5.538	-43.424	-14.462	PASS
$\pi/4$ DQPSK	LCH	2.087	-43.944	-17.913	PASS
	MCH	5.008	-44.800	-14.992	PASS
	HCH	3.78	-44.593	-16.220	PASS
8DPSK	LCH	2.424	-44.304	-17.576	PASS
	MCH	5.076	-44.165	-14.924	PASS
	HCH	4.307	-44.903	-15.693	PASS

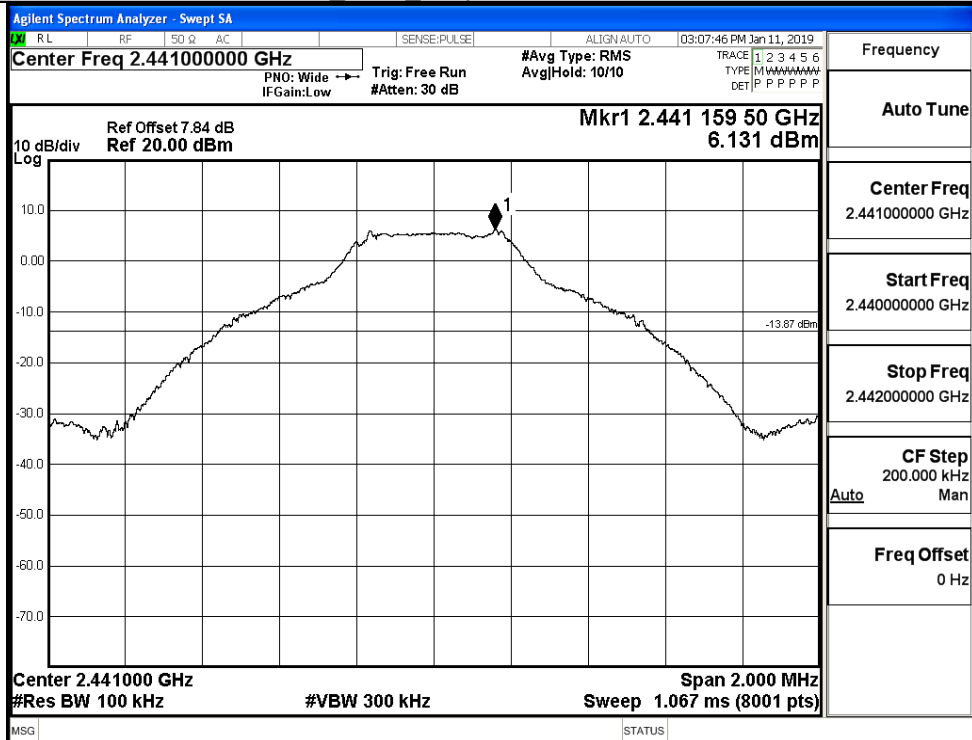
GFSK LCH Graphs



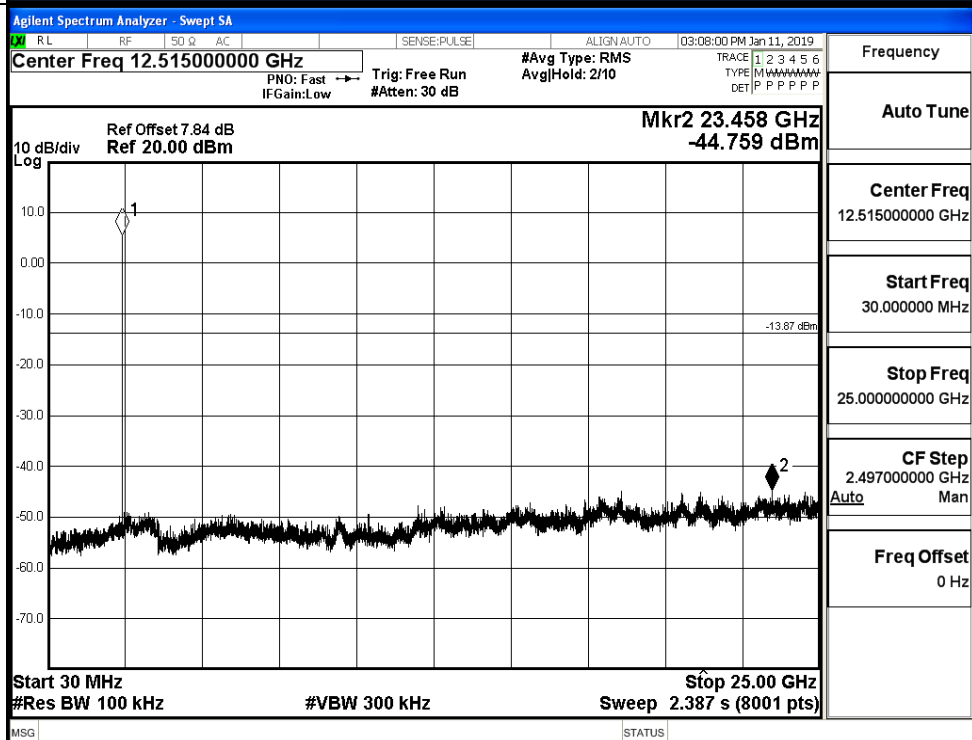


GFSK_MCH_Graphs

Pref

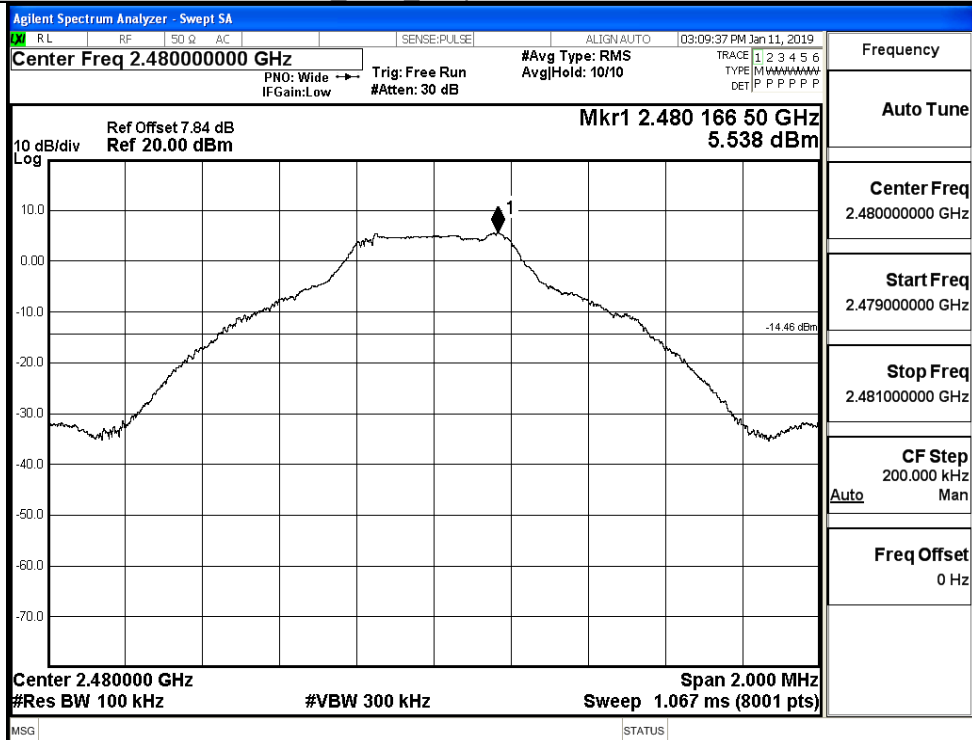


Puw

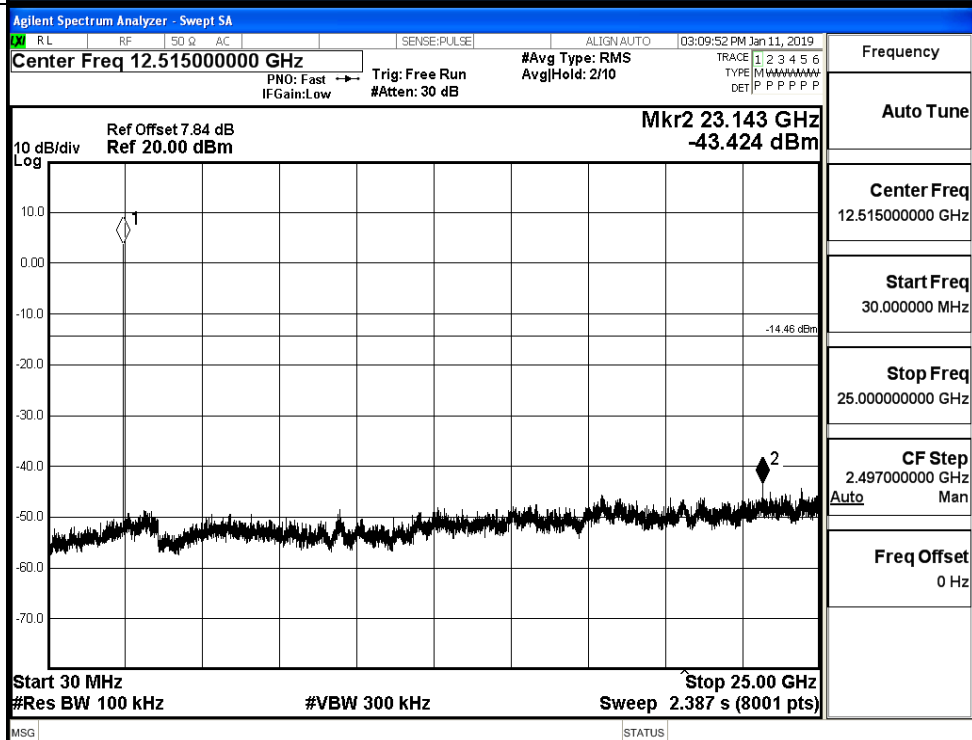


GFSK_HCH_Graphs

Pref

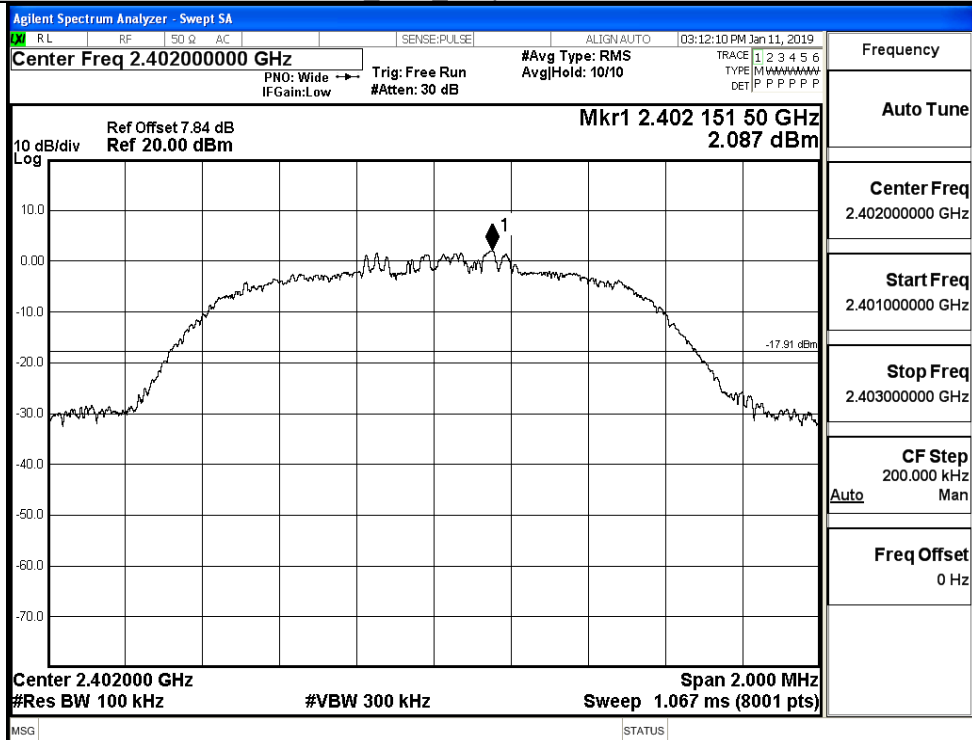


Puw

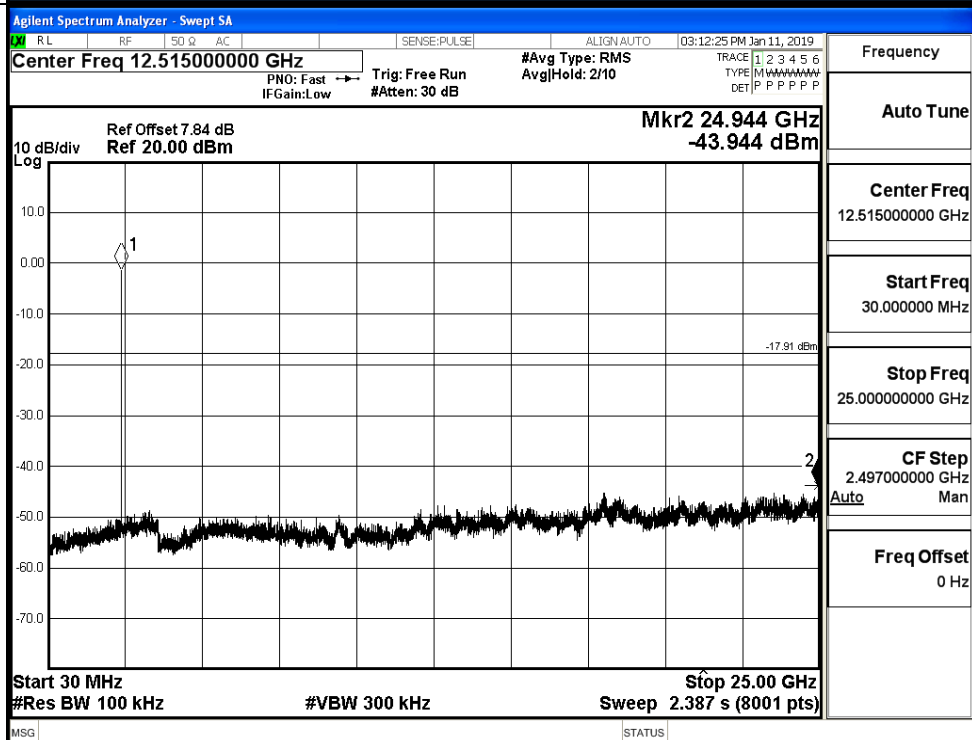


$\pi/4$ DQPSK_LCH_Graphs

Pref

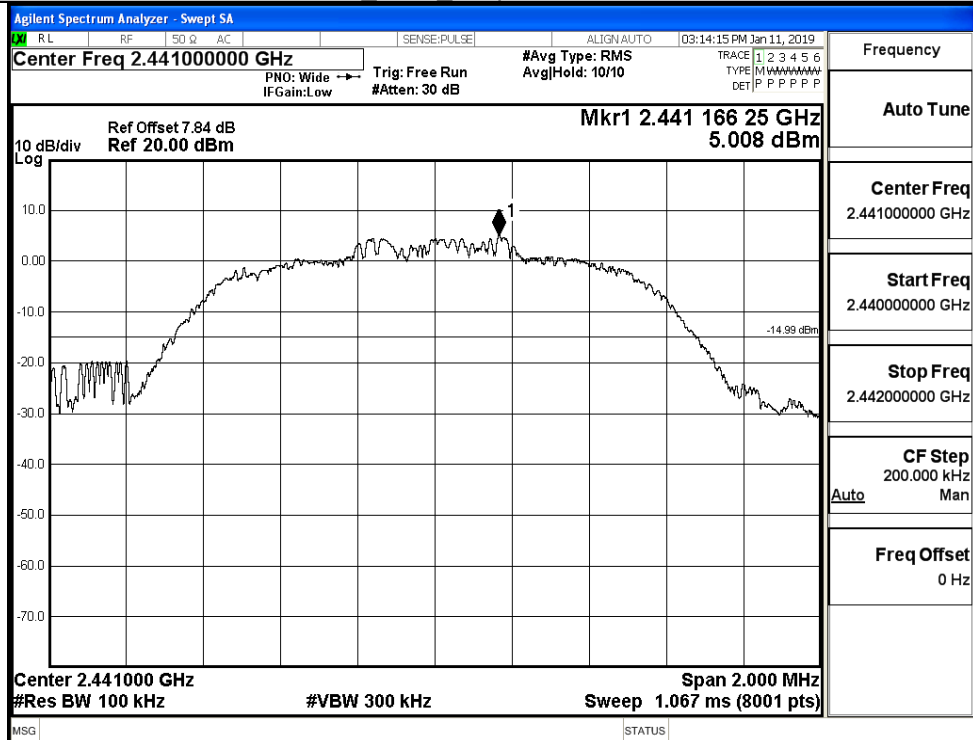


Puw

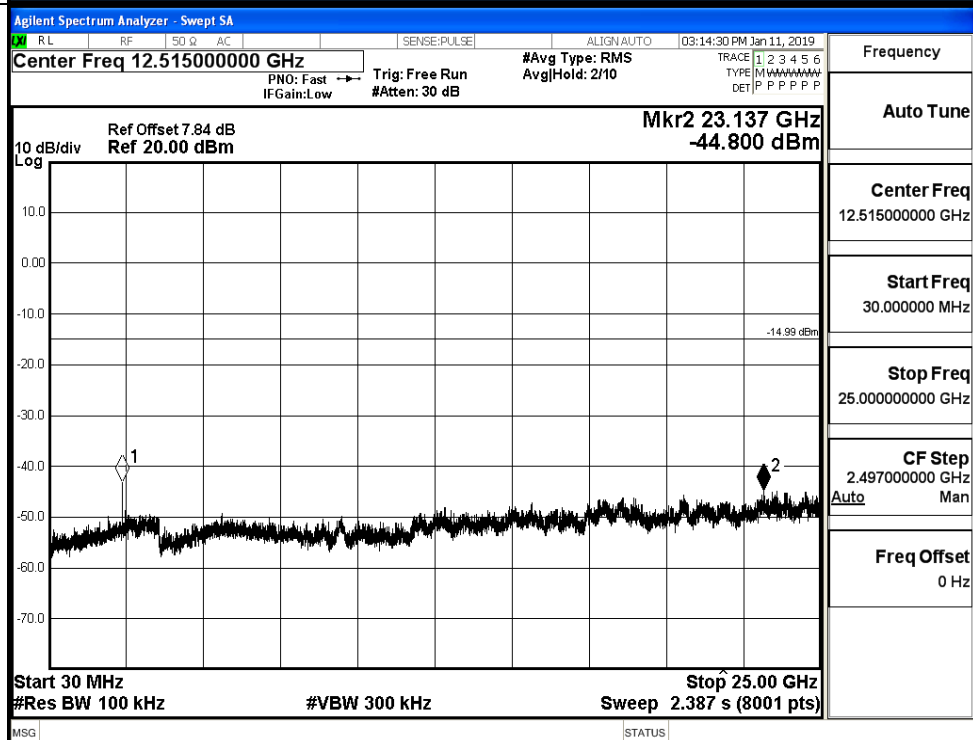


$\pi/4$ DQPSK_MCH_Graphs

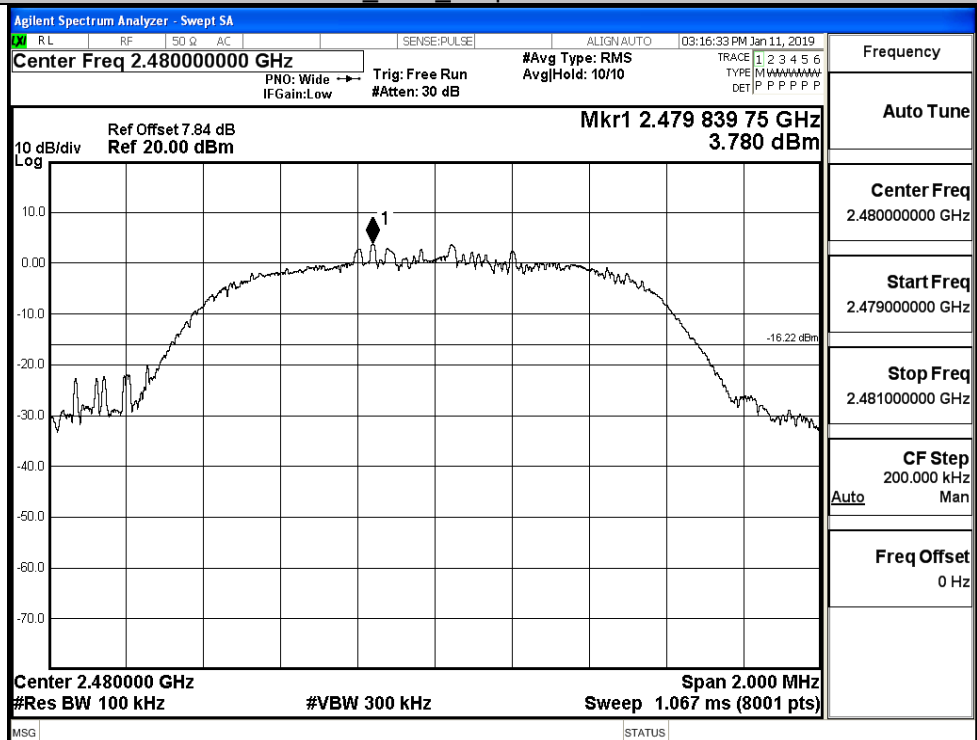
Pref



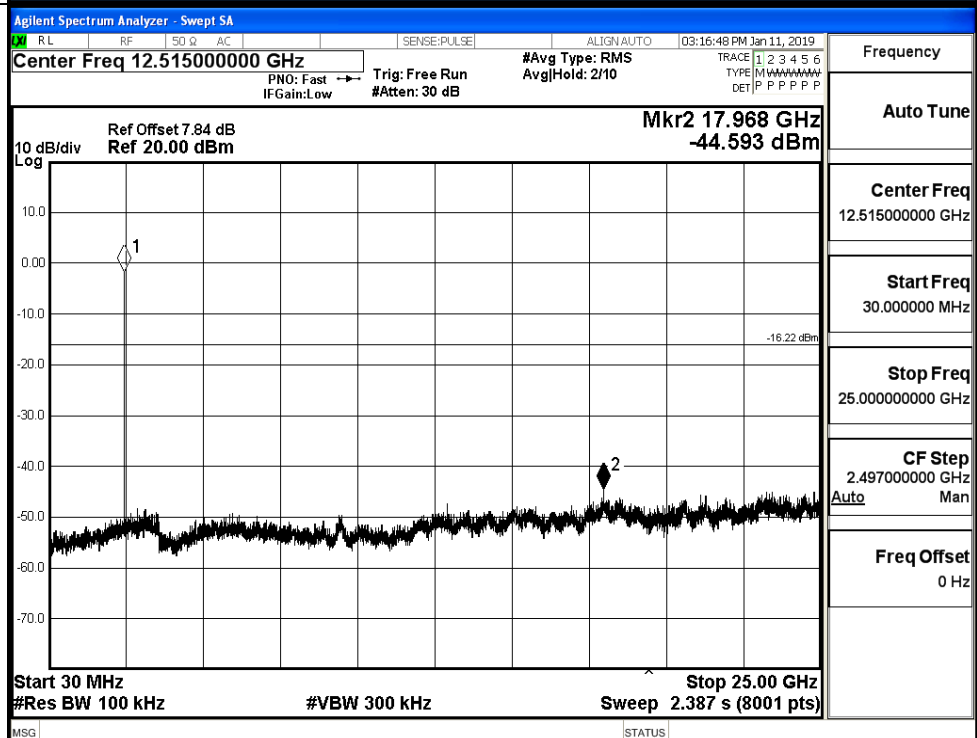
Puw



Pref

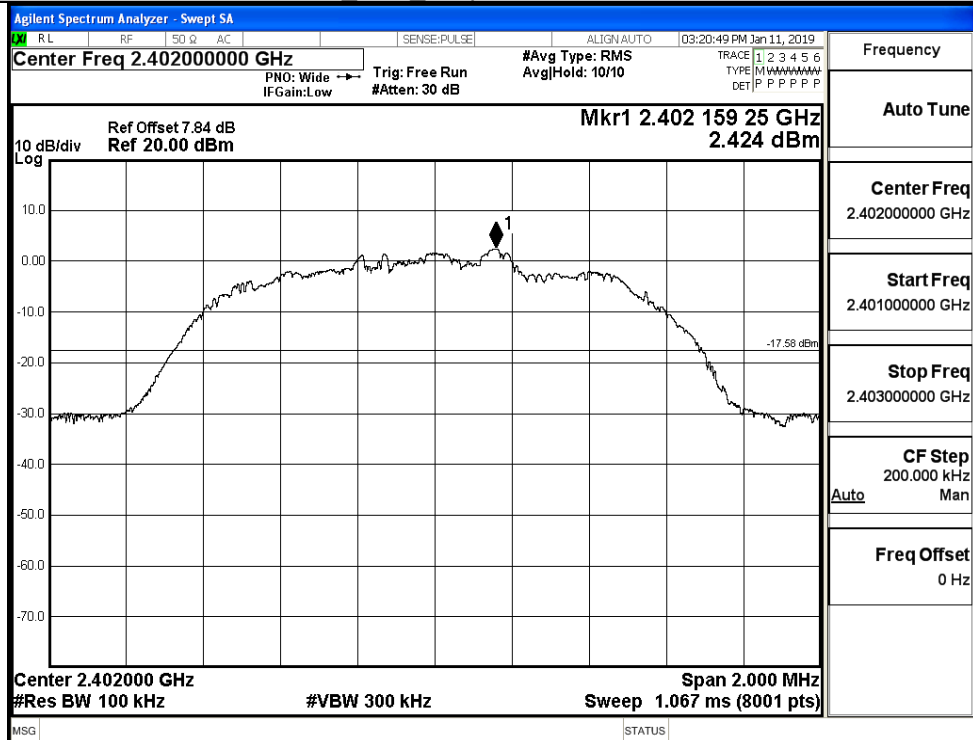


Puw

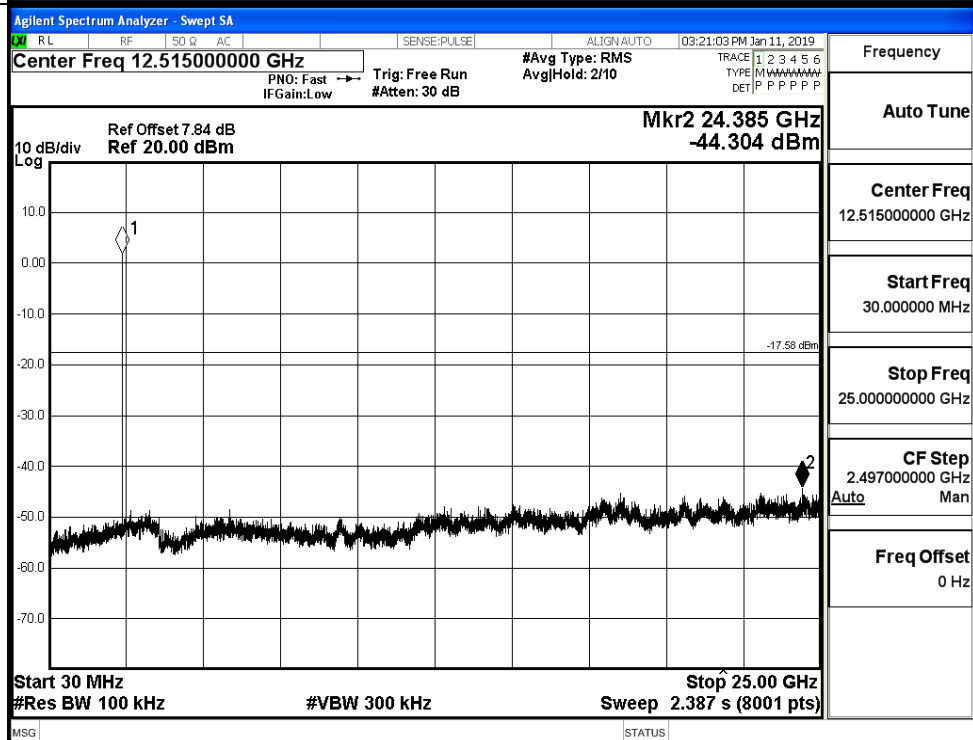


8DPSK_LCH_Graphs

Pref

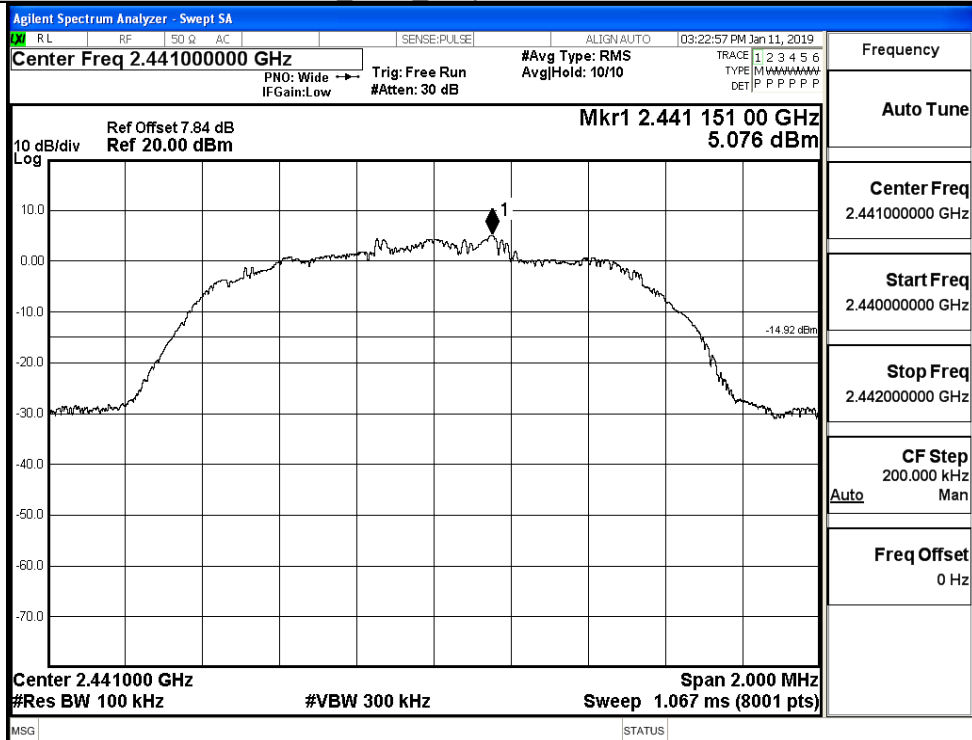


Puw

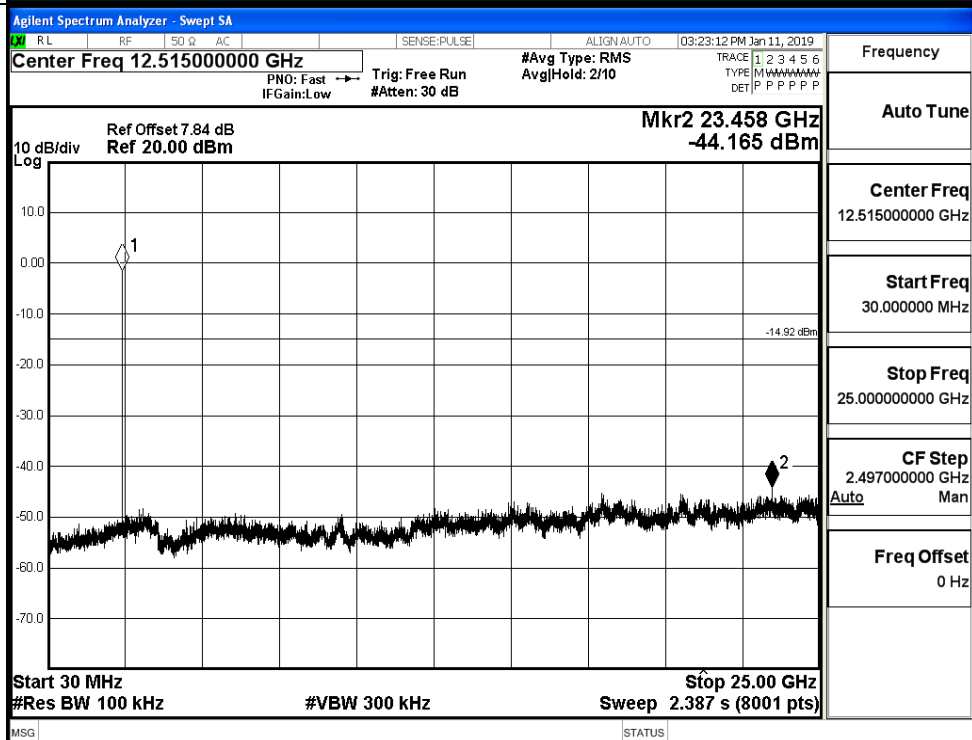


8DPSK_MCH_Graphs

Pref

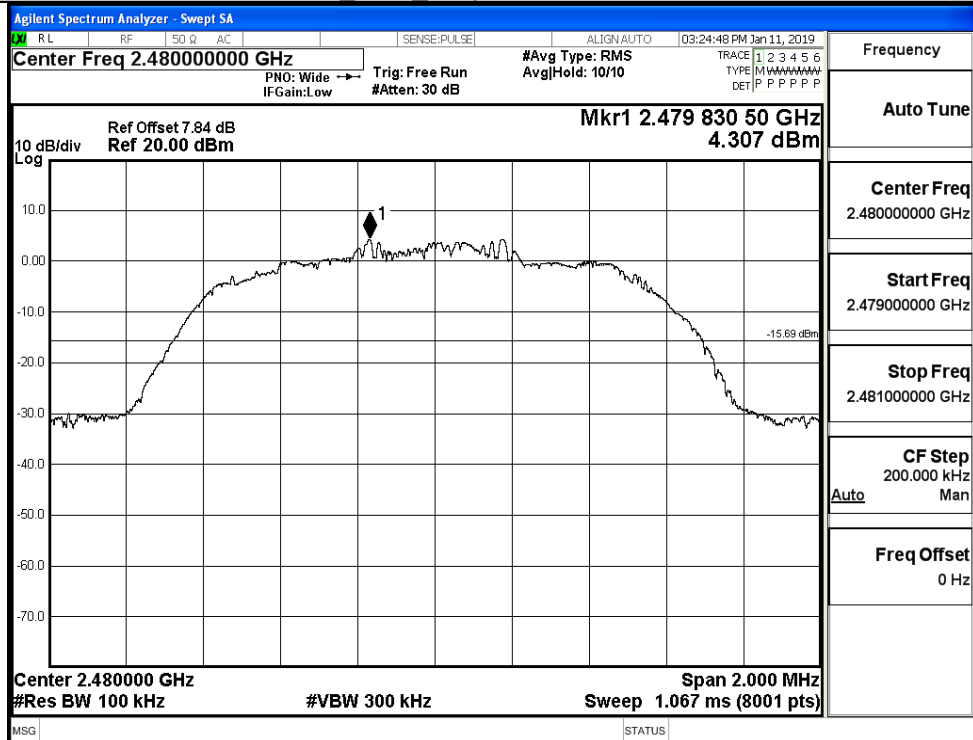


Puw

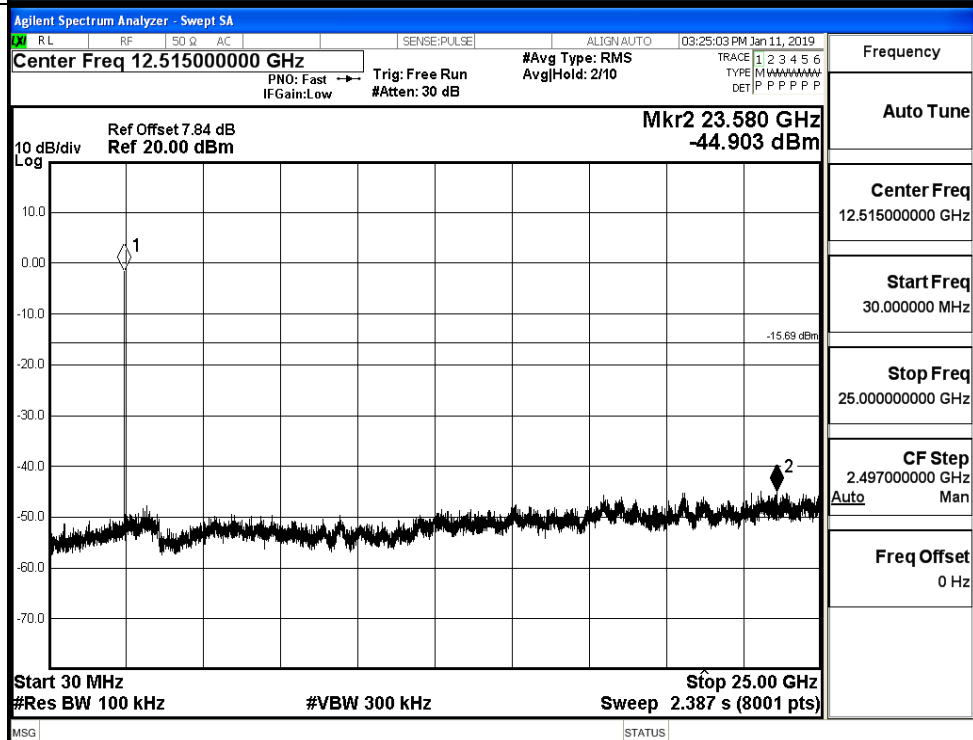


8DPSK_HCH_Graphs

Pref



Puw

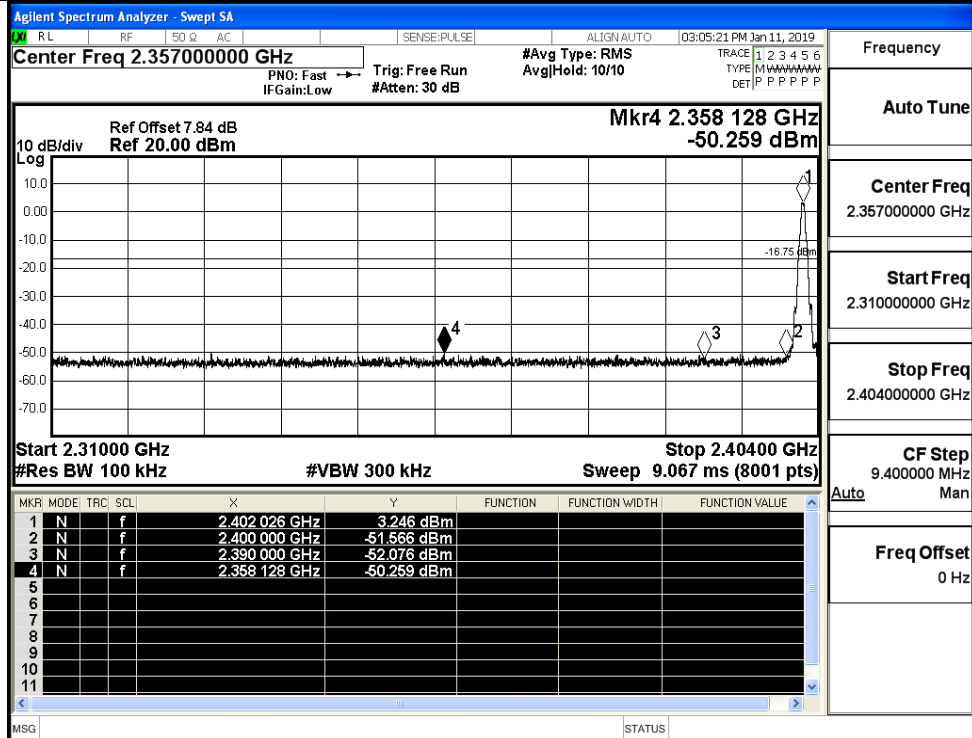


A.7 Band-edge for RF Conducted Emissions

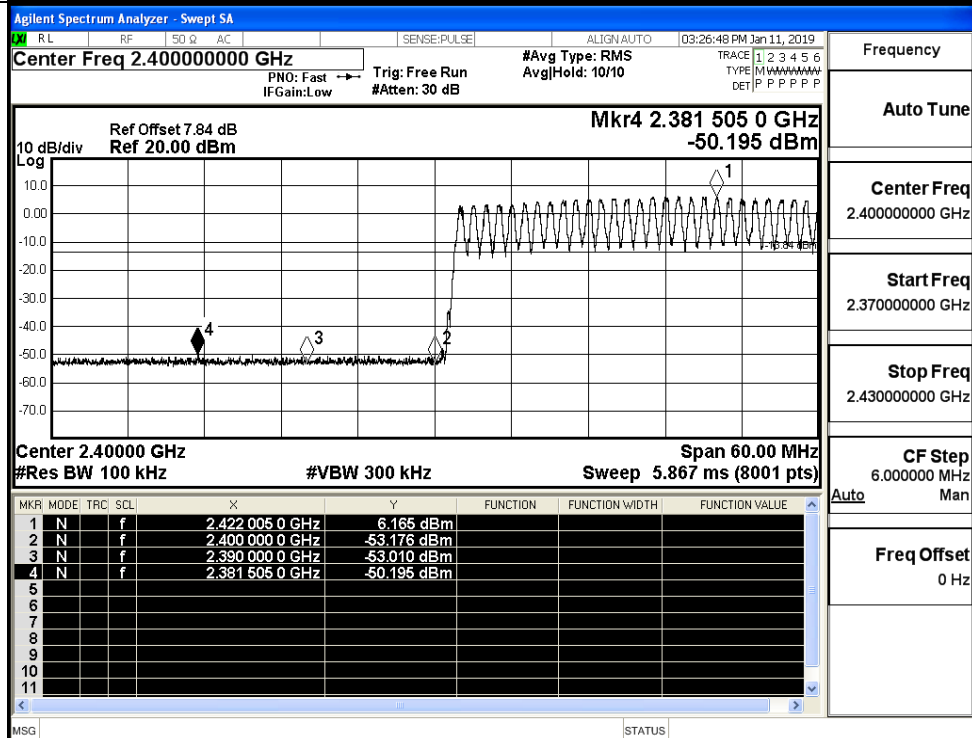
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.246	Off	-50.259	-16.75	PASS
			6.165	On	-50.195	-13.84	PASS
	HCH	2480	5.379	Off	-49.449	-14.62	PASS
			7.950	On	-49.766	-12.05	PASS
$\pi/4$ DQPSK	LCH	2402	-0.118	Off	-49.797	-20.12	PASS
			4.917	On	-49.614	-15.08	PASS
	HCH	2480	4.405	Off	-50.111	-15.6	PASS
			6.657	On	-49.256	-13.34	PASS
8DPSK	LCH	2402	2.017	Off	-49.745	-17.98	PASS
			5.180	On	-49.339	-14.82	PASS
	HCH	2480	4.606	Off	-50.098	-15.39	PASS
			6.771	On	-49.296	-13.23	PASS

Test Graphs

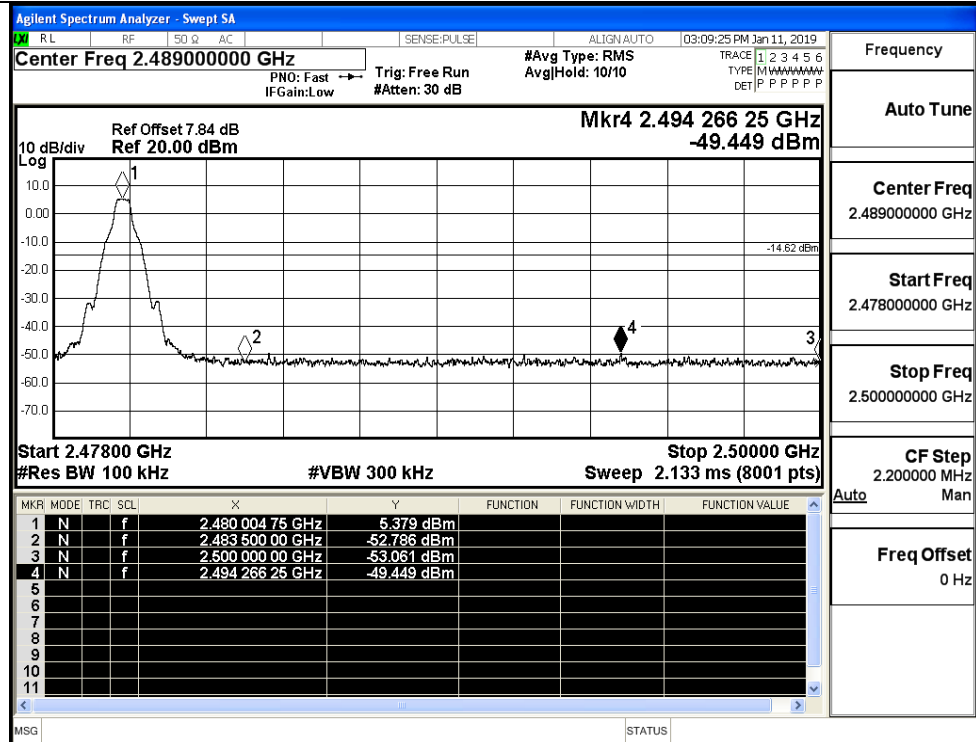
GFSK/LCH/No Hop



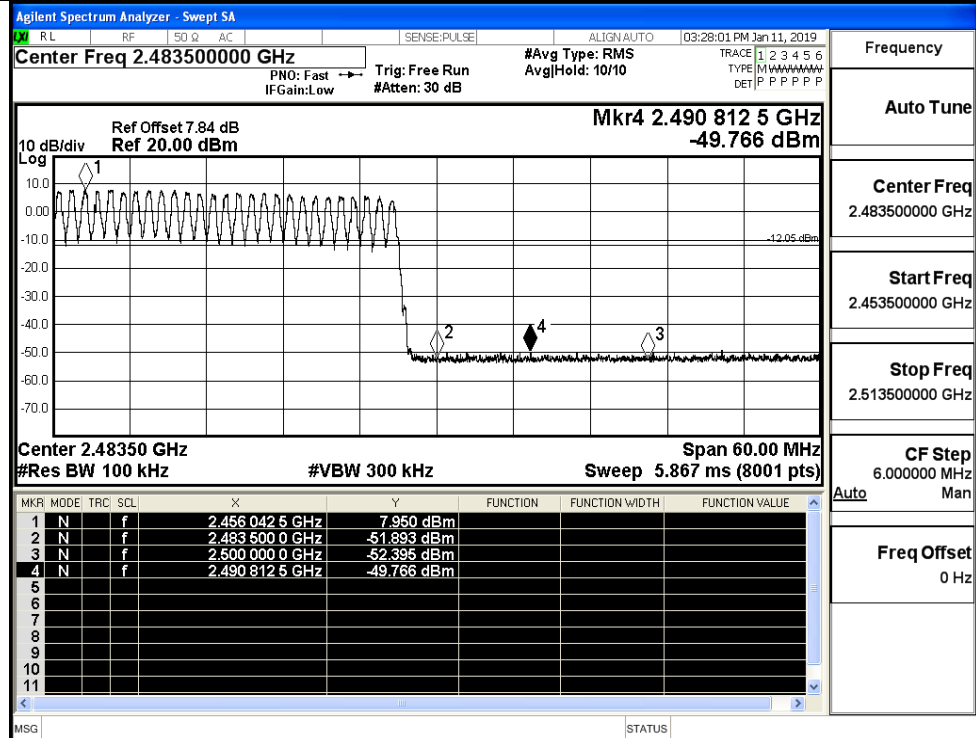
GFSK/LCH/Hop



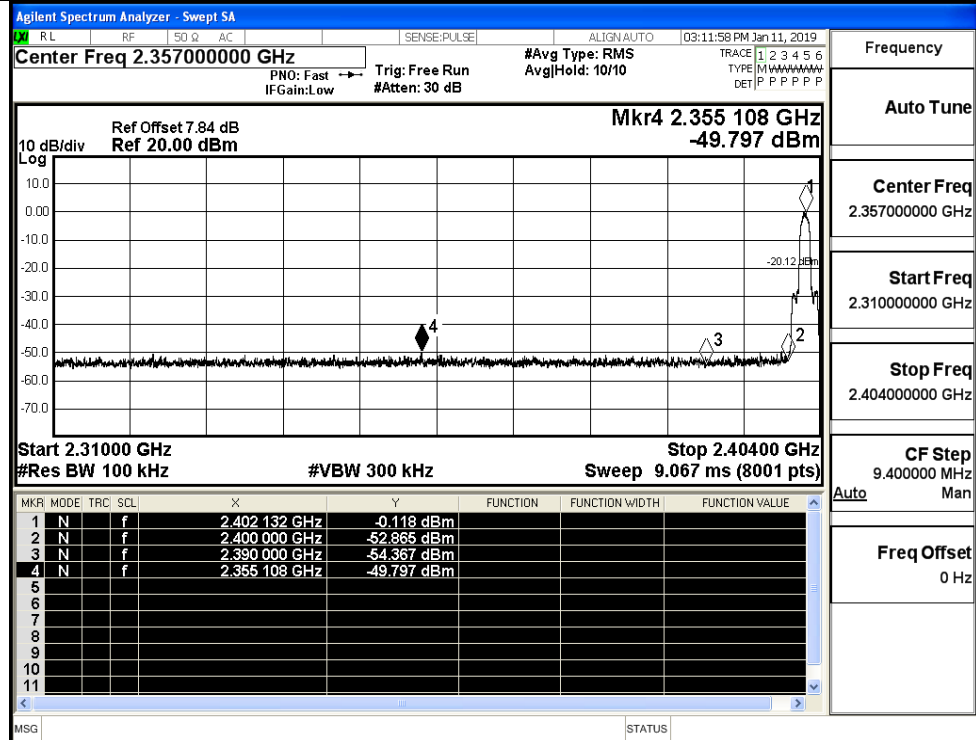
GFSK/HCH/No Hop



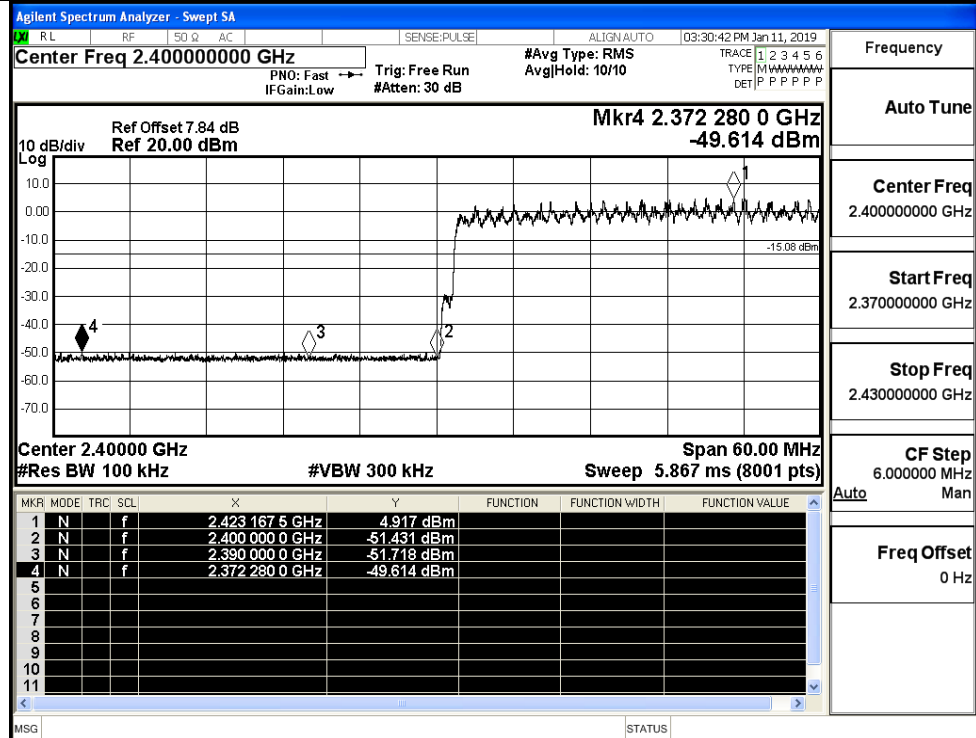
GFSK/HCH/Hop



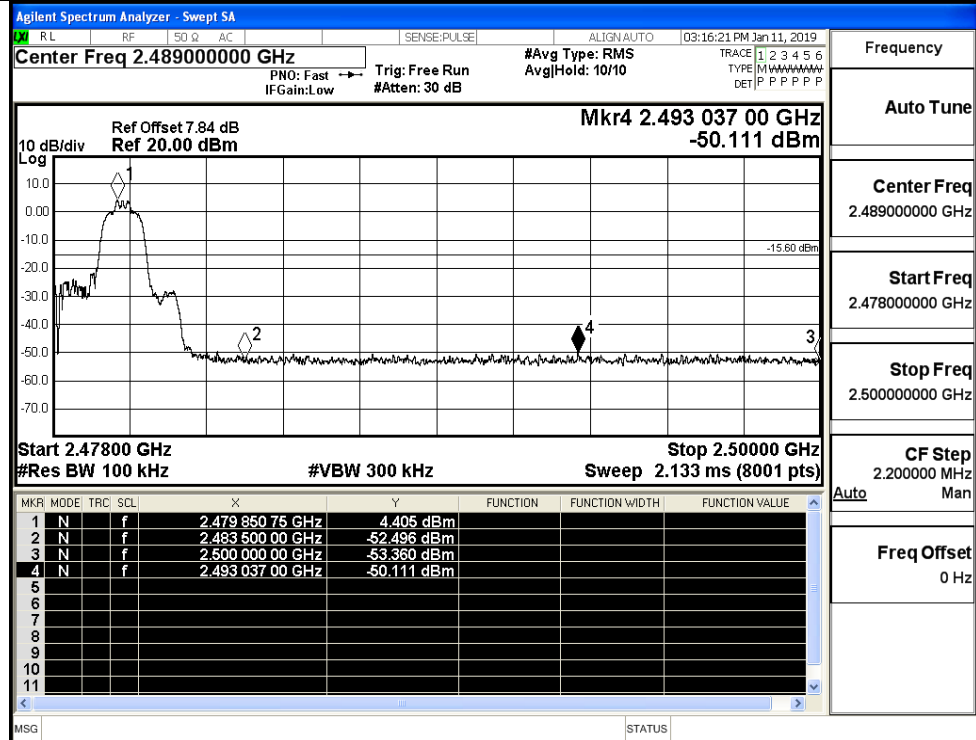
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

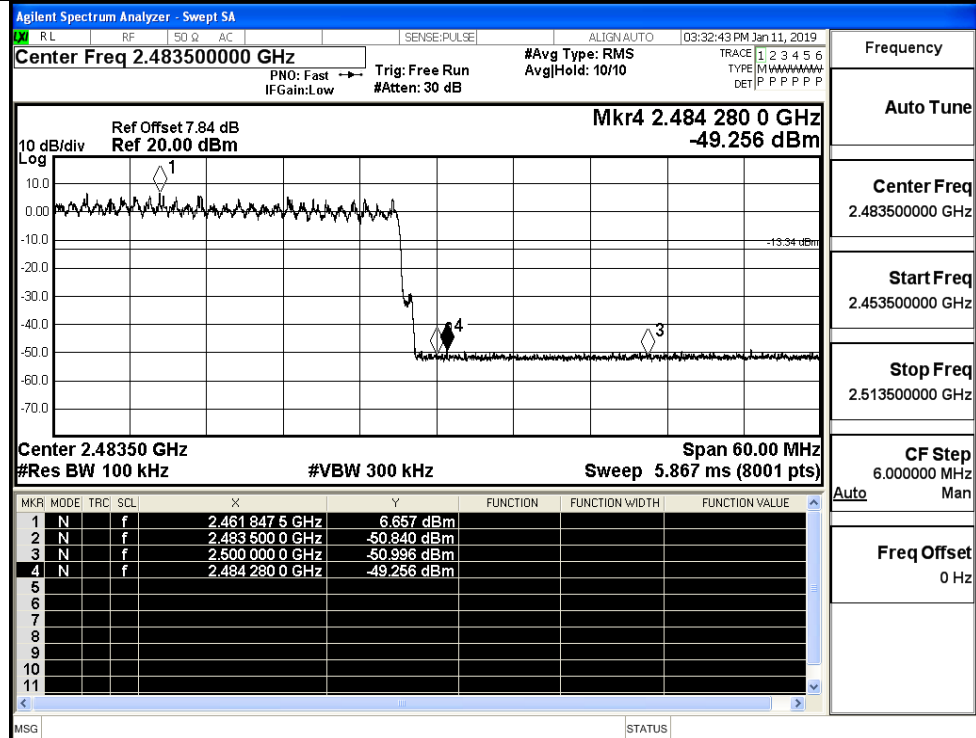
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

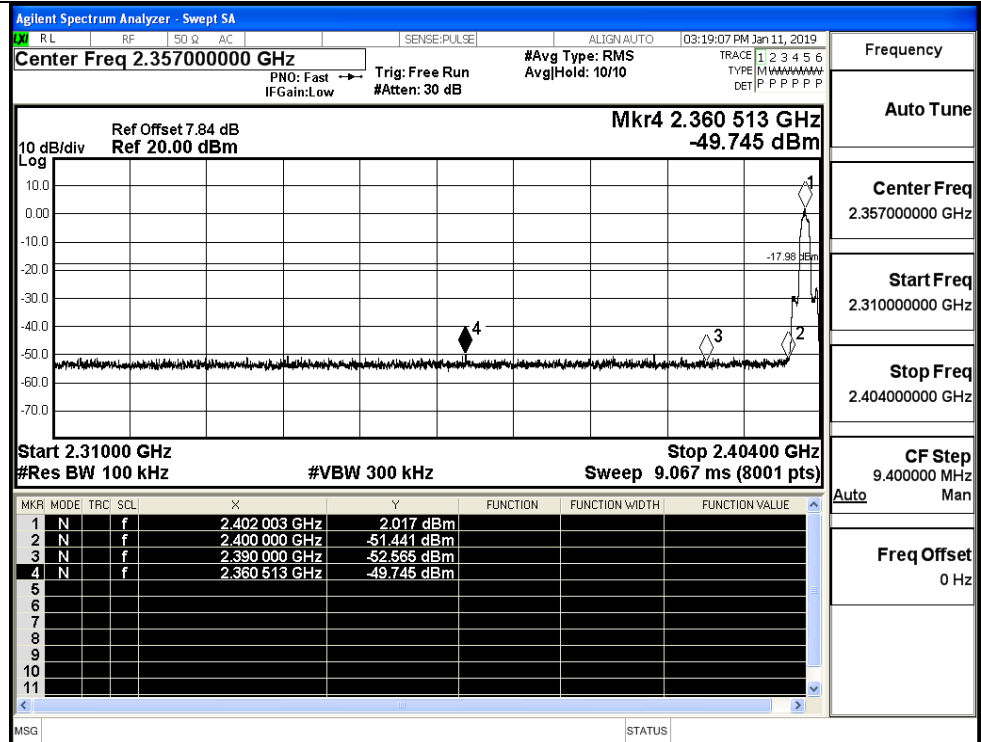
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

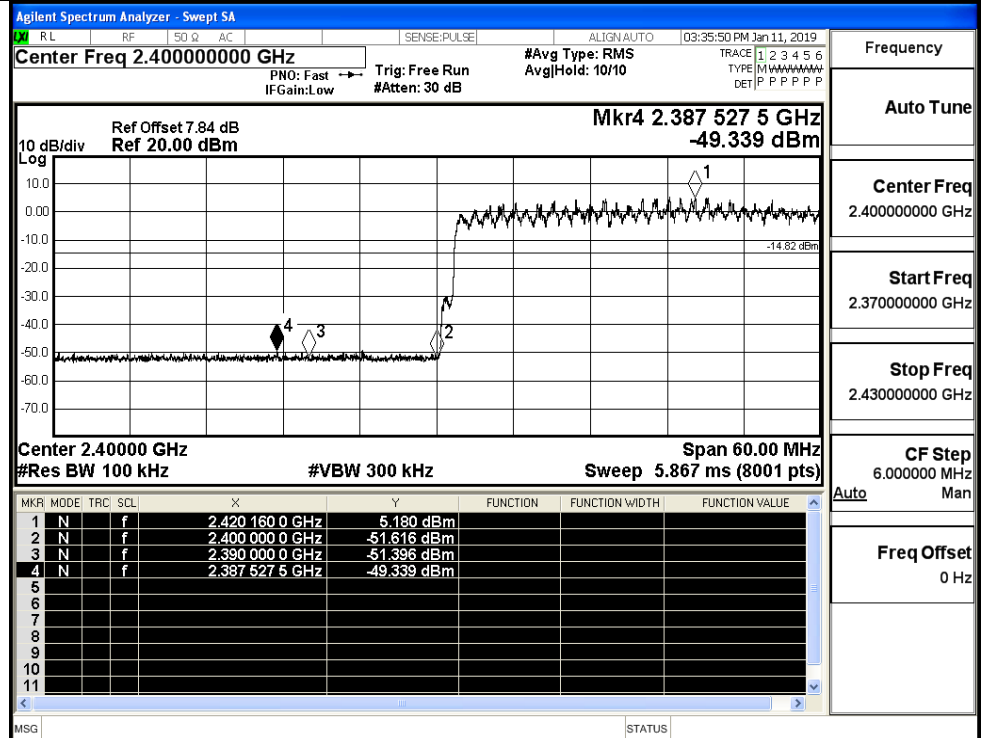
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

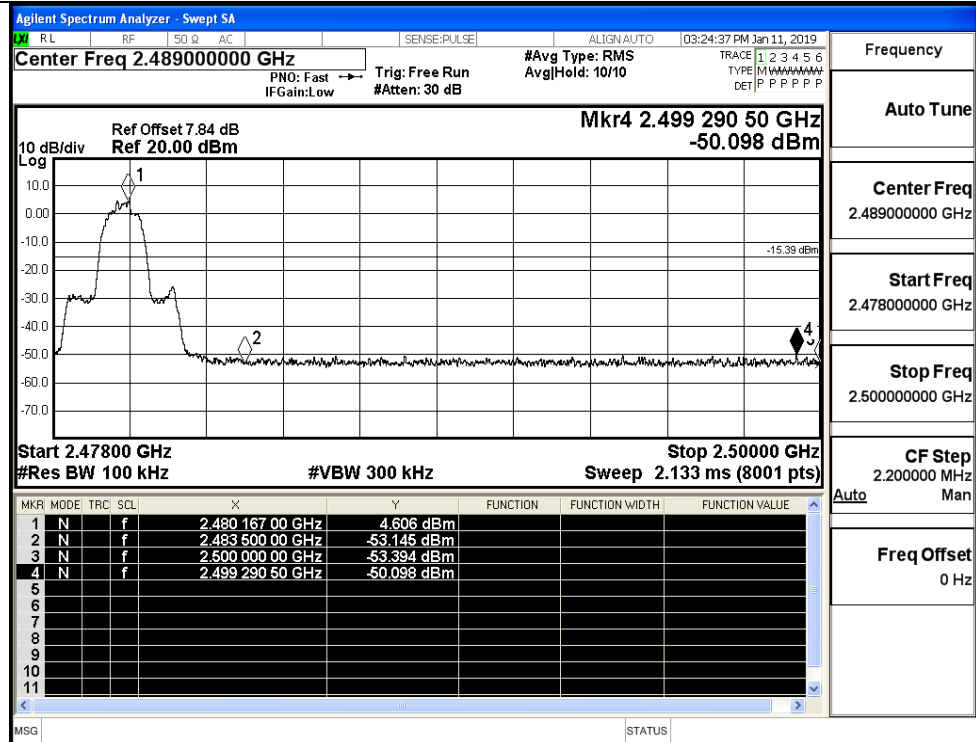
8DPSK/LCH/No Hop



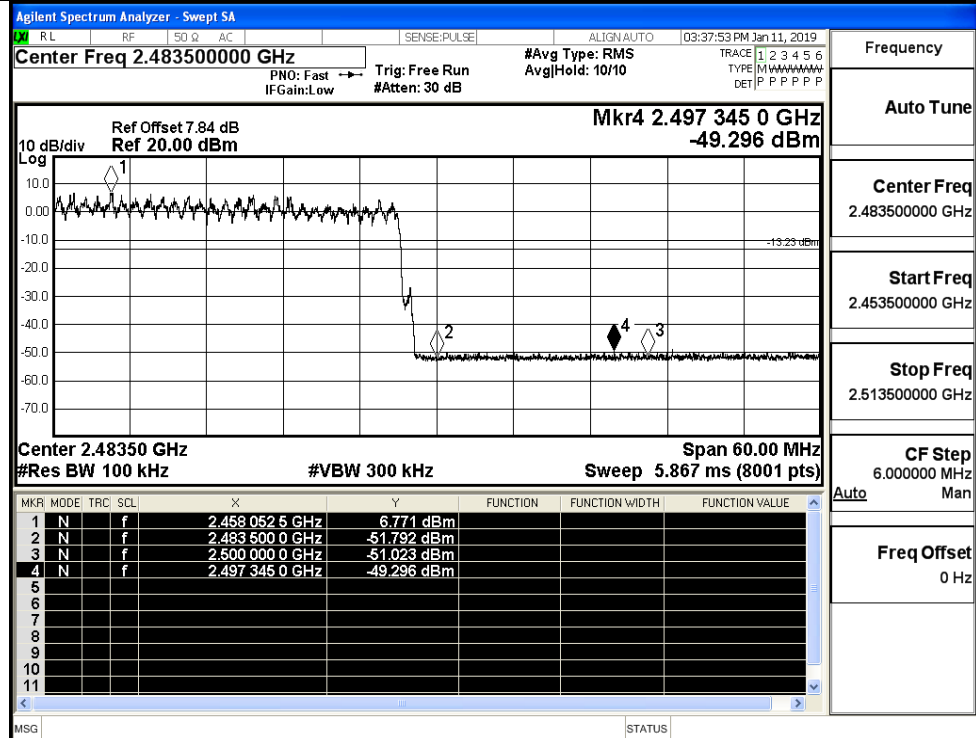
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



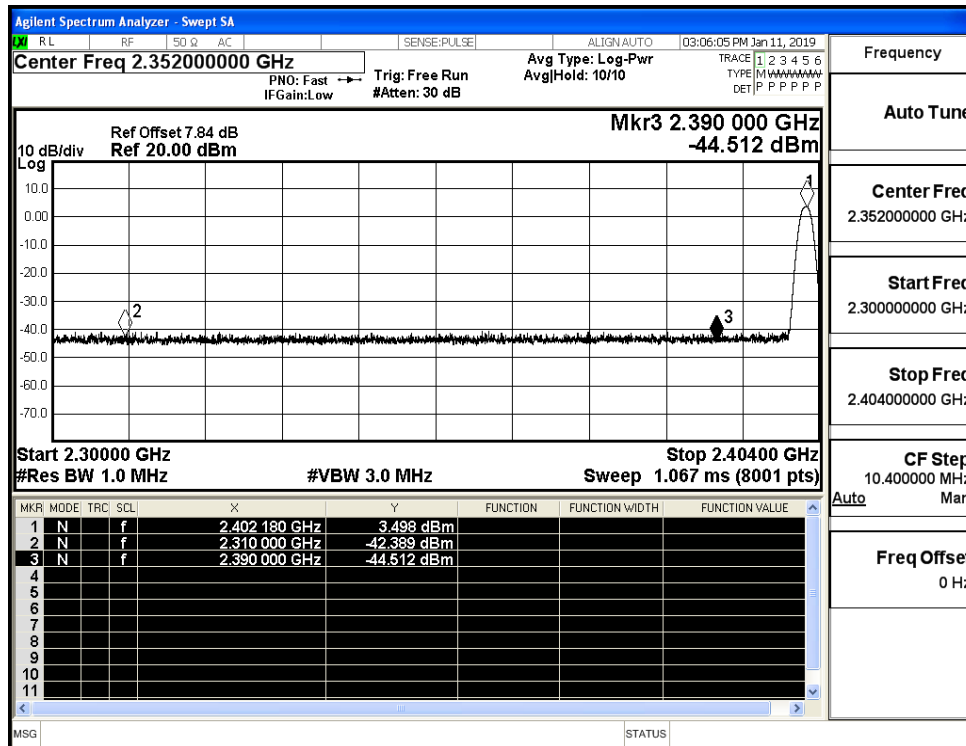
8DPSK/HCH/Hop



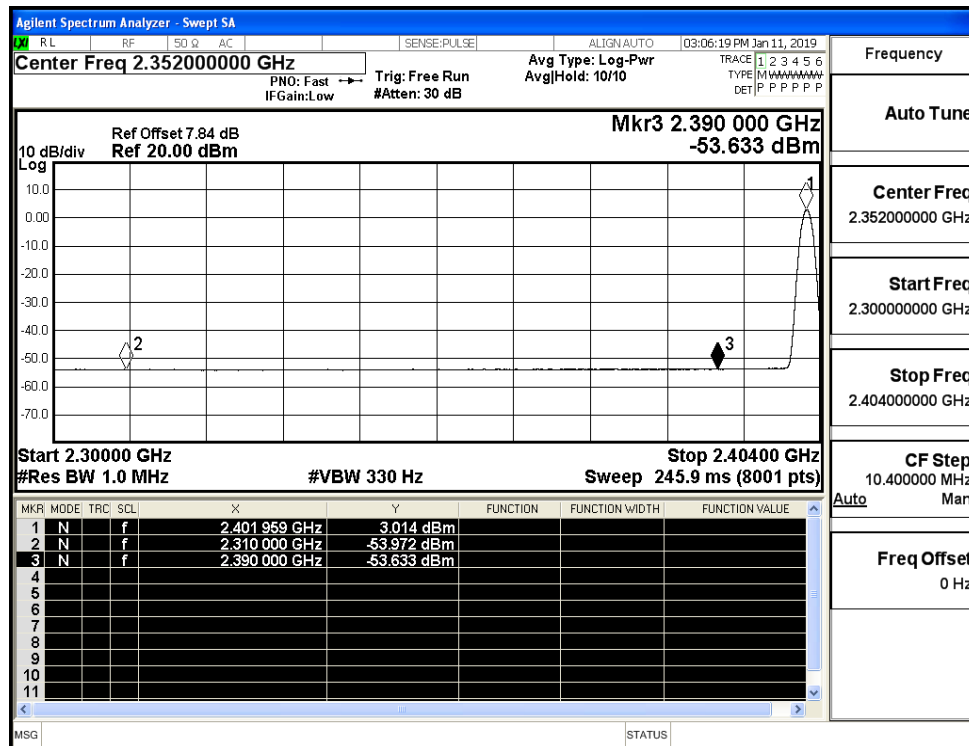
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.39	2.0	0	54.87	PEAK	74	PASS
	Off	2310.0	-53.97	2.0	0	43.29	AV	54	PASS
	Off	2390.0	-44.51	2.0	0	52.75	PEAK	74	PASS
	Off	2390.0	-53.63	2.0	0	43.62	AV	54	PASS
	Off	2483.5	-42.86	2.0	0	54.40	PEAK	74	PASS
	Off	2483.5	-53.16	2.0	0	44.10	AV	54	PASS
	Off	2500.0	-42.03	2.0	0	55.23	PEAK	74	PASS
	Off	2500.0	-53.29	2.0	0	43.97	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.42	2.0	0	53.84	PEAK	74	PASS
	Off	2310.0	-53.99	2.0	0	43.27	AV	54	PASS
	Off	2390.0	-42.45	2.0	0	54.81	PEAK	74	PASS
	Off	2390.0	-53.76	2.0	0	43.49	AV	54	PASS
	Off	2483.5	-44.58	2.0	0	52.68	PEAK	74	PASS
	Off	2483.5	-52.96	2.0	0	44.30	AV	54	PASS
	Off	2500.0	-43.59	2.0	0	53.67	PEAK	74	PASS
	Off	2500.0	-53.27	2.0	0	43.99	AV	54	PASS
8DPSK	Off	2310.0	-43.90	2.0	0	53.36	PEAK	74	PASS
	Off	2310.0	-54.02	2.0	0	43.24	AV	54	PASS
	Off	2390.0	-43.78	2.0	0	53.47	PEAK	74	PASS
	Off	2390.0	-53.67	2.0	0	43.59	AV	54	PASS
	Off	2483.5	-42.04	2.0	0	55.21	PEAK	74	PASS
	Off	2483.5	-52.88	2.0	0	44.38	AV	54	PASS
	Off	2500.0	-42.75	2.0	0	54.51	PEAK	74	PASS
	Off	2500.0	-53.26	2.0	0	43.99	AV	54	PASS

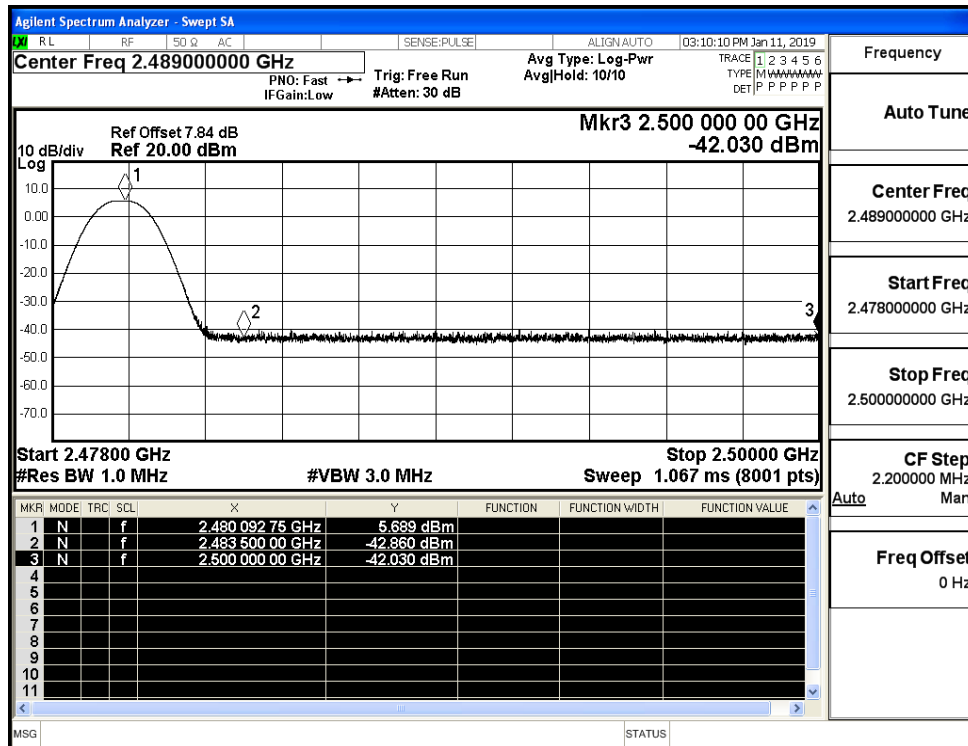
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



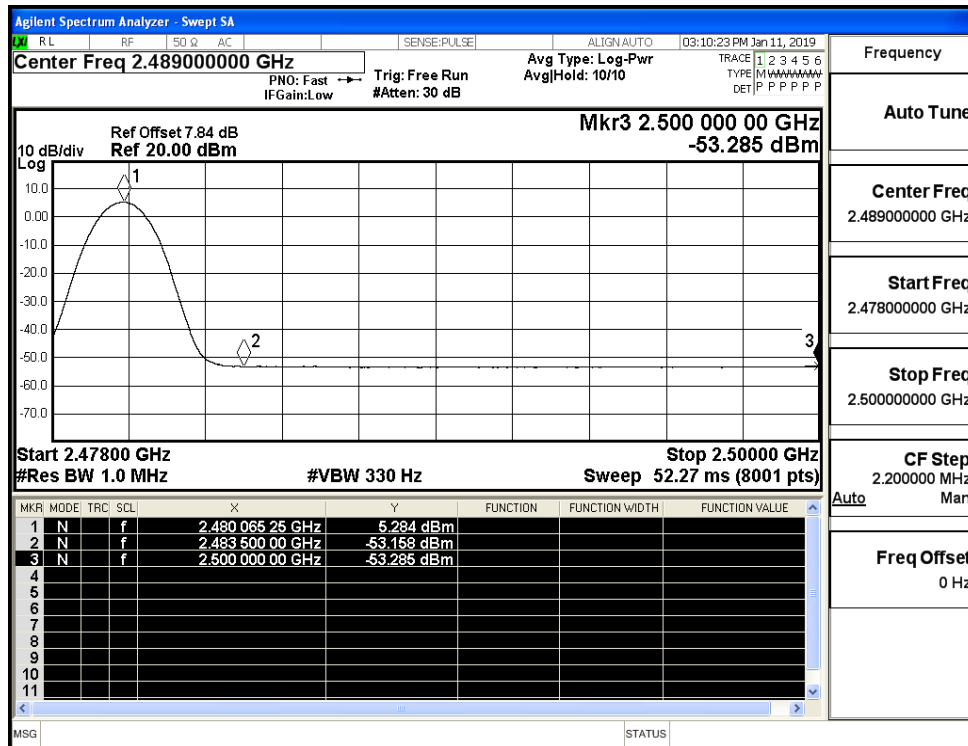
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

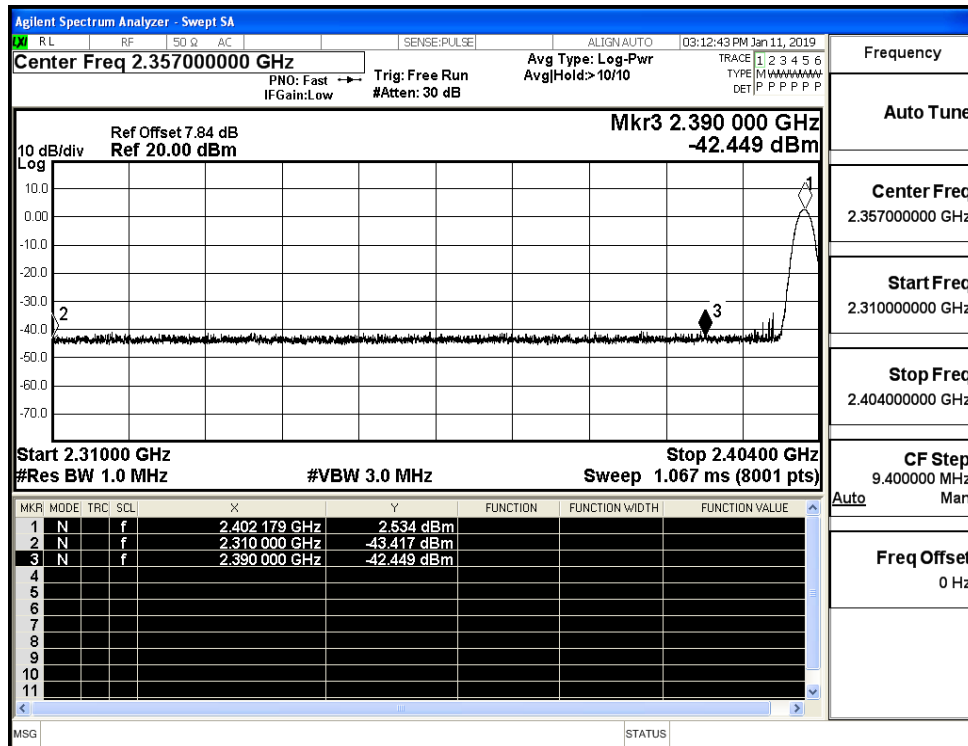
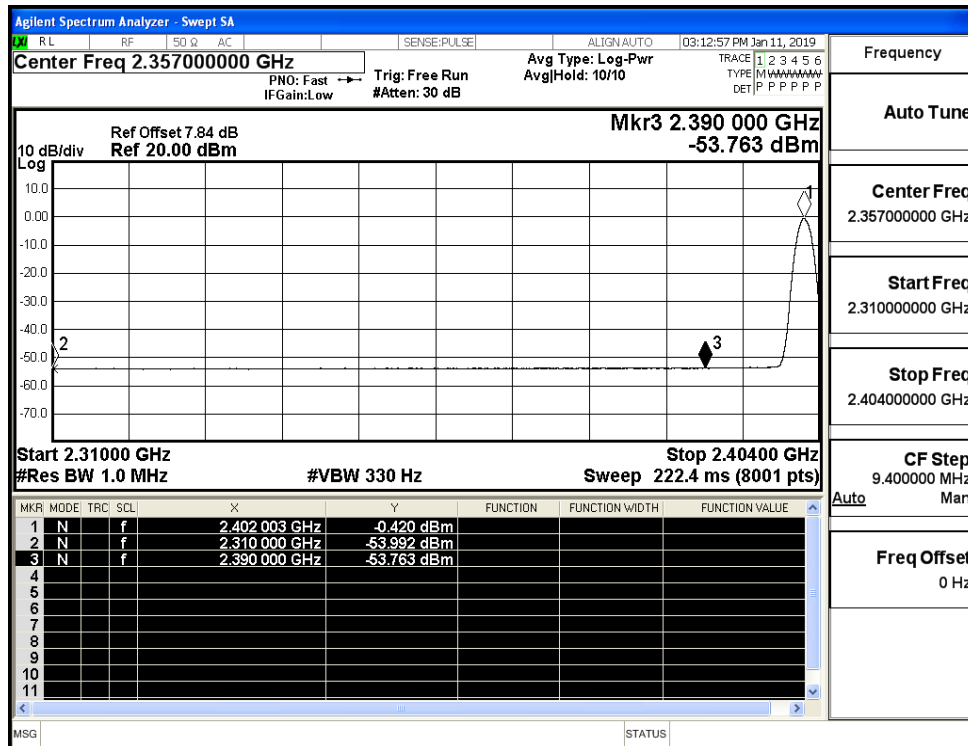


Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)

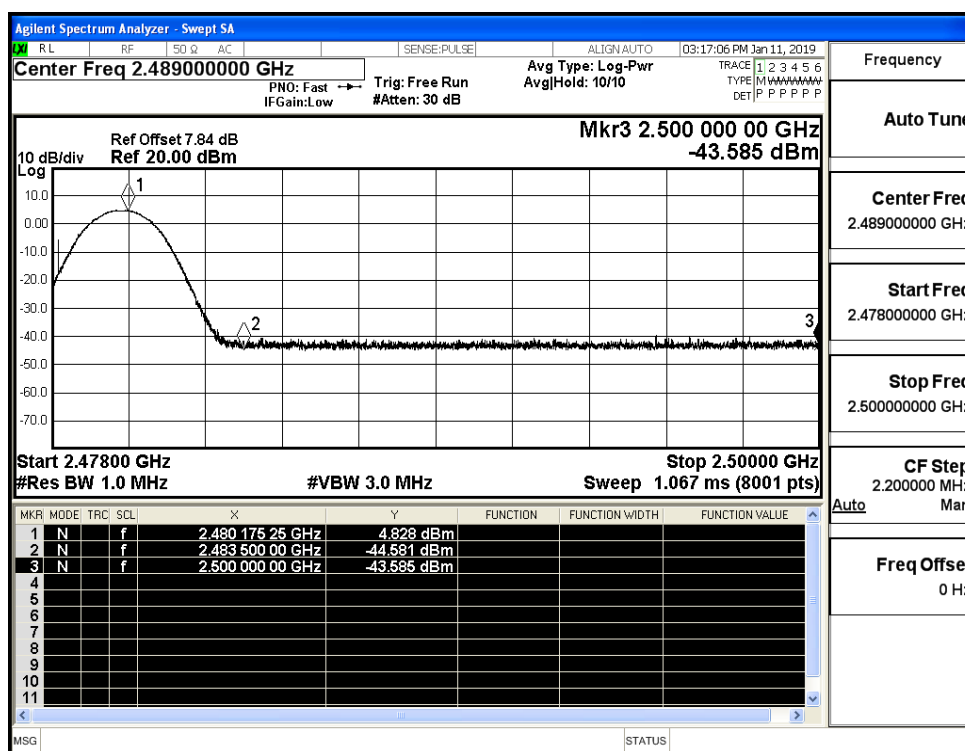


Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)

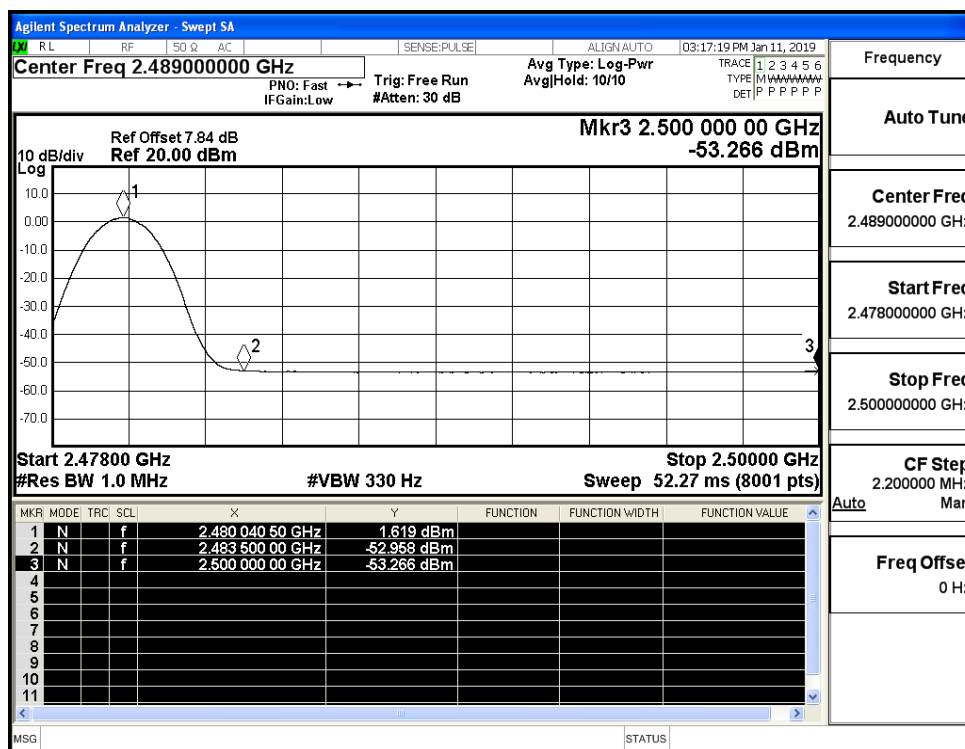


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

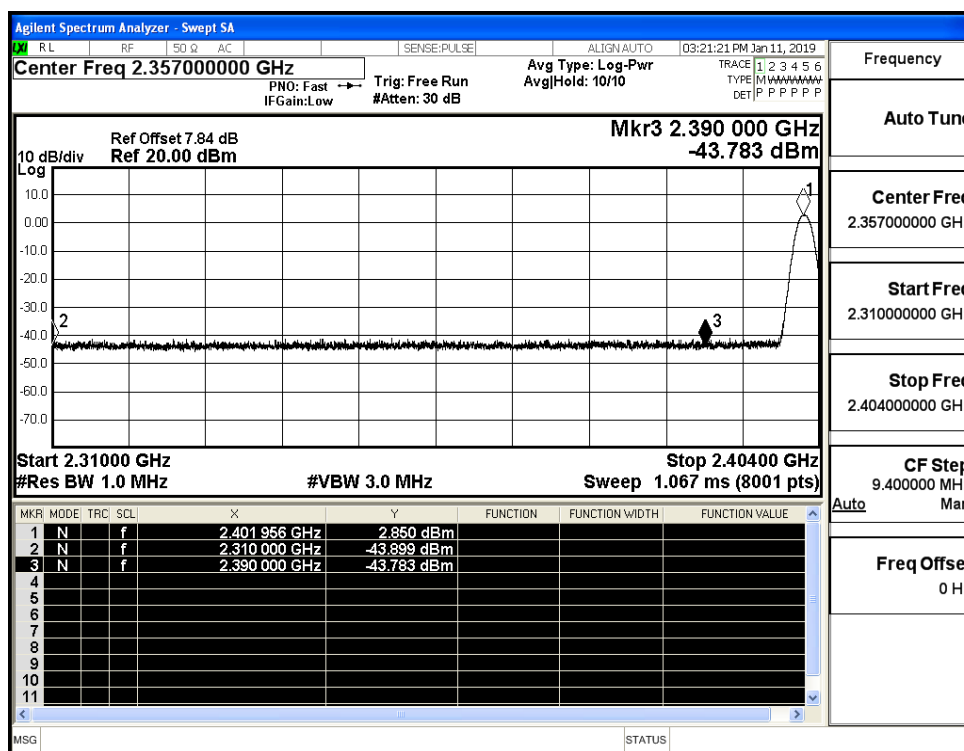
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



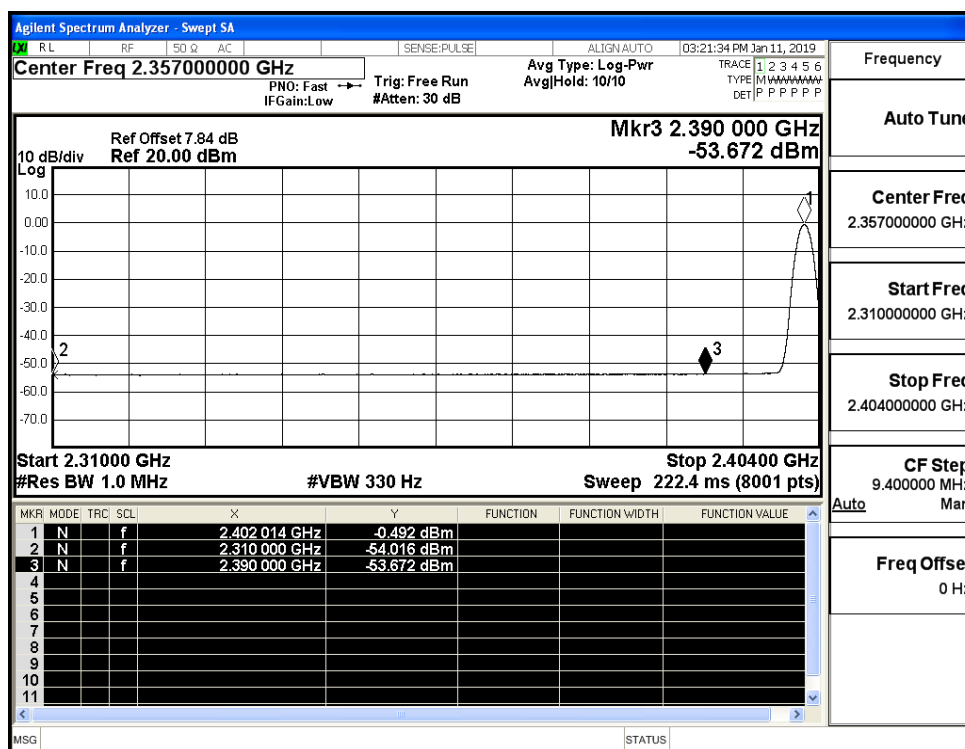
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



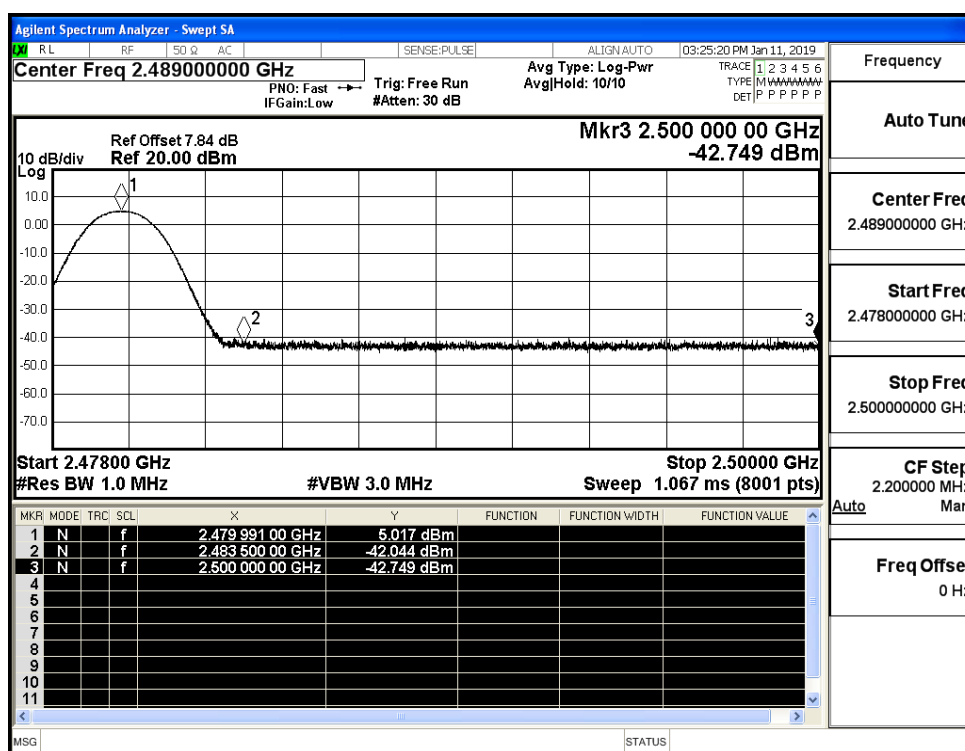
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

