

Appendix A

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

Product Name: Smartphone

Test Model: M12A

Environmental Conditions

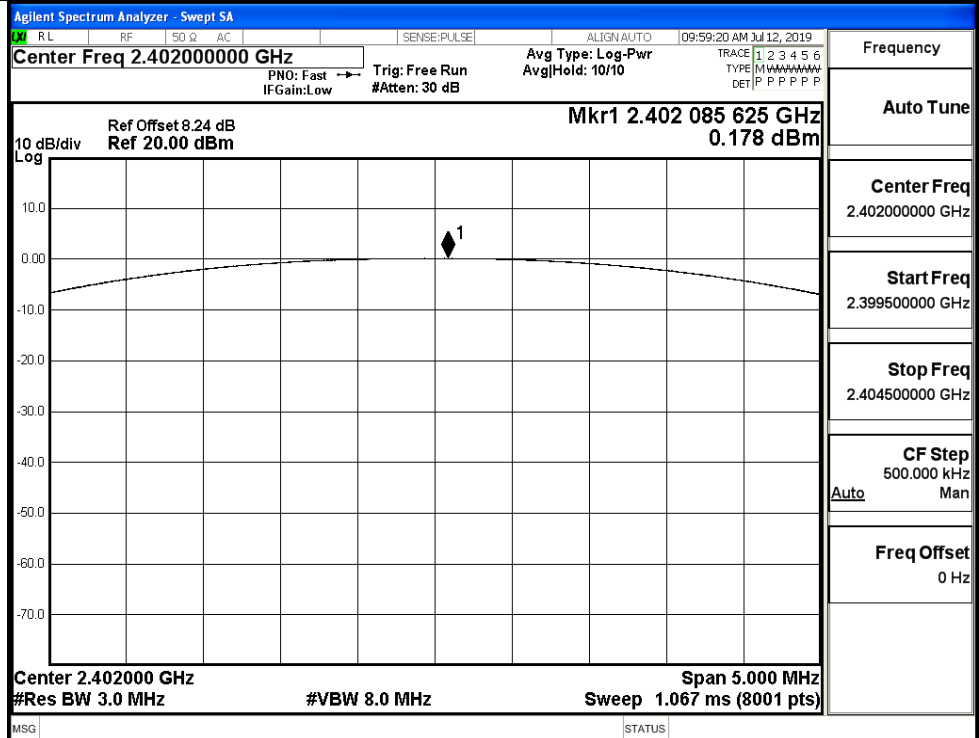
Temperature:	23.5 ° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Wang Chuang
Supervised by:	Tom Liu

A.1 Maxmum Conducted Peak Output Power

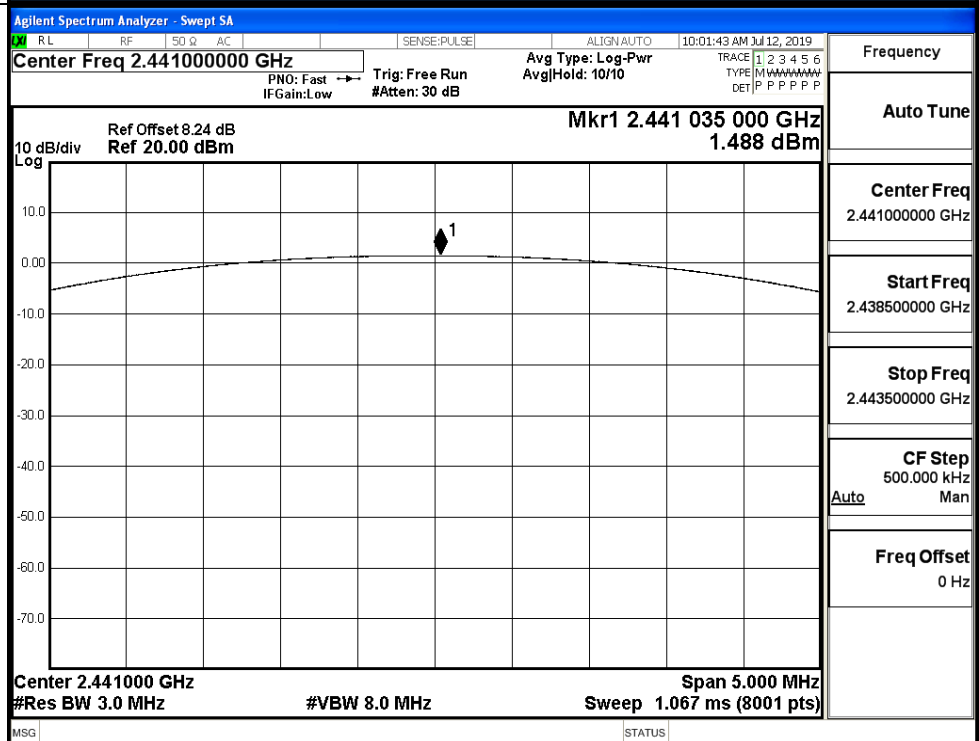
Mode	Channel.	Maximum Peak Output Power [dBm]	Maximum Average Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.178	0.037	21	PASS
	MCH	1.488	1.296	21	PASS
	HCH	0.771	0.567	21	PASS
$\pi/4$ DQPSK	LCH	-0.297	-0.480	21	PASS
	MCH	0.899	0.715	21	PASS
	HCH	0.100	-0.078	21	PASS
8DPSK	LCH	-0.137	-0.267	21	PASS
	MCH	0.961	0.791	21	PASS
	HCH	0.363	0.234	21	PASS

Test Graphs

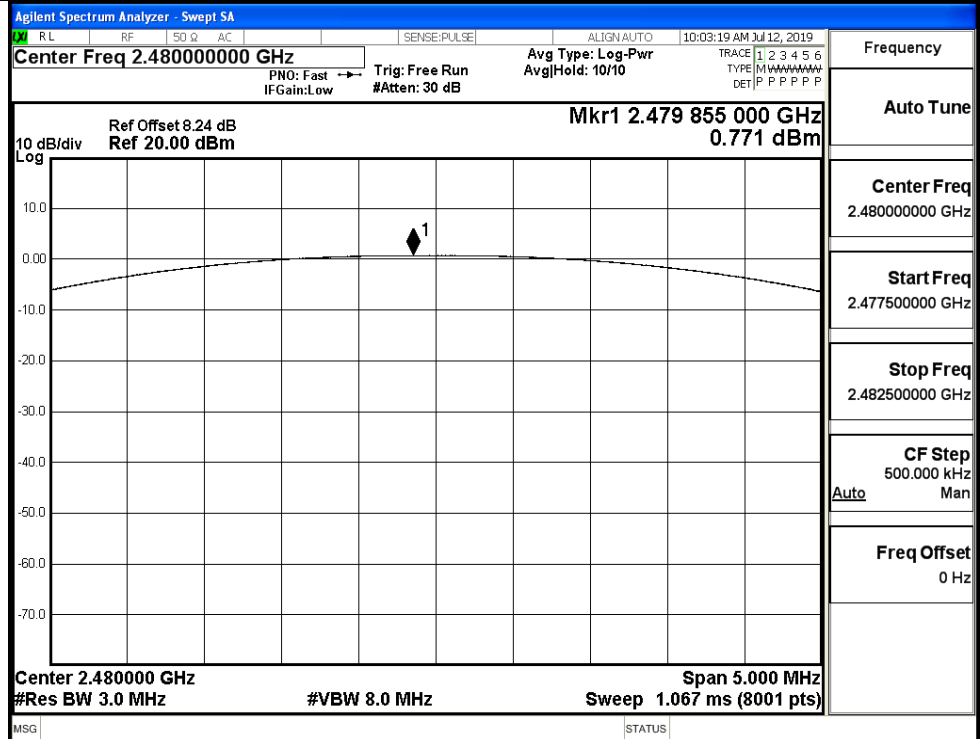
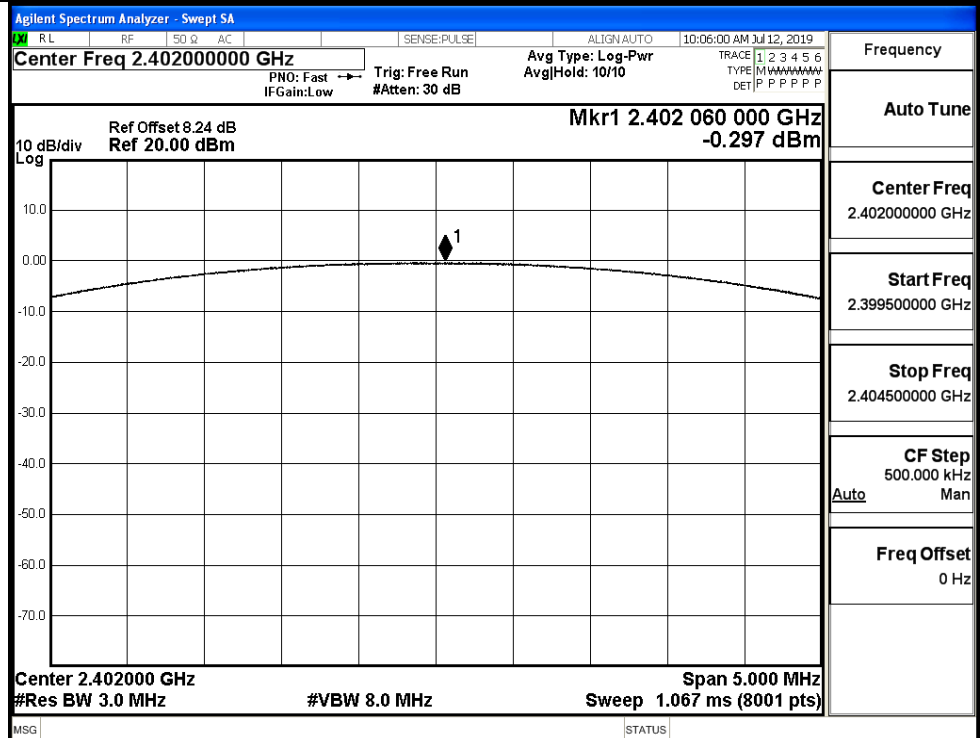
GFSK/LCH

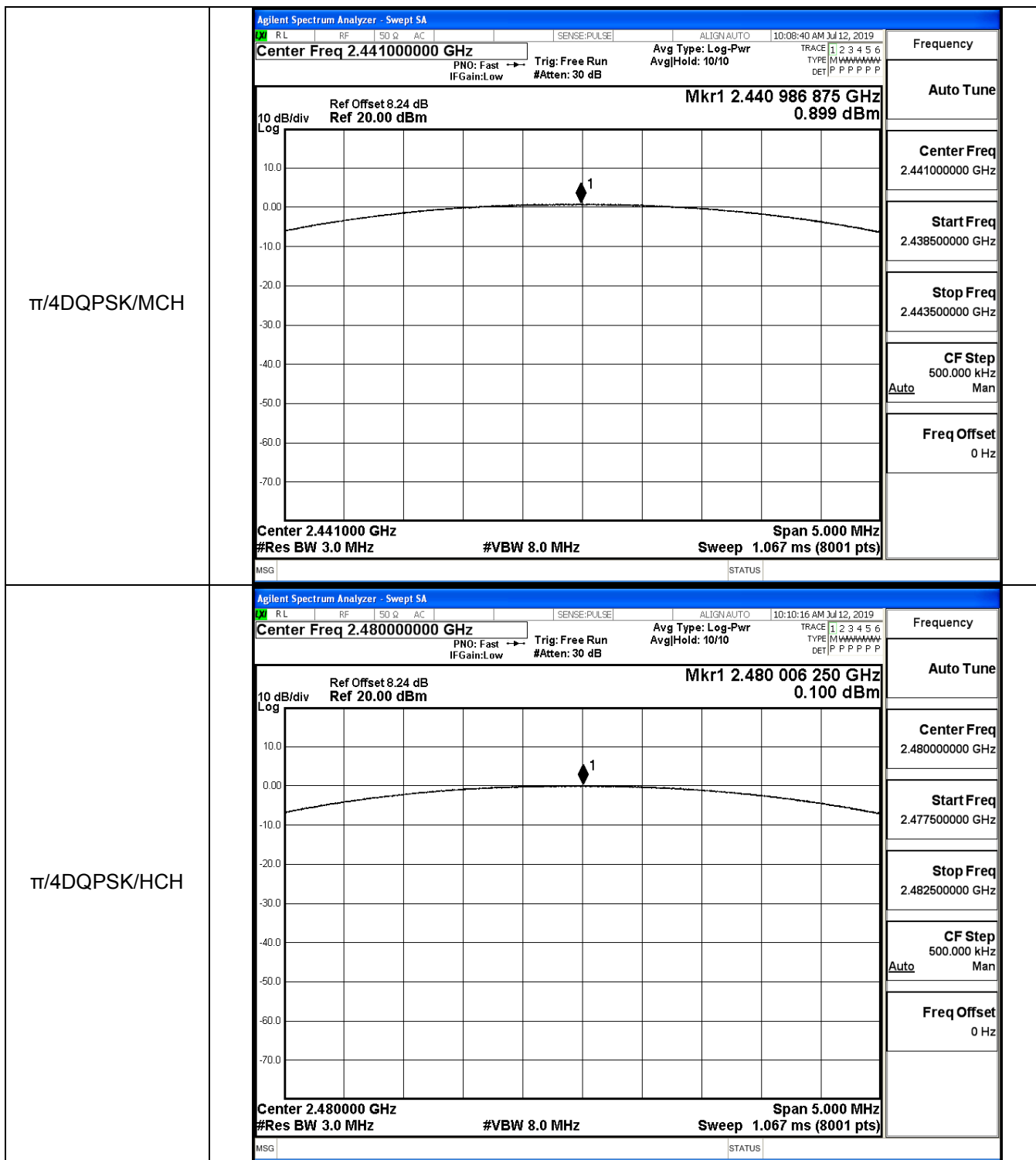


GFSK/MCH

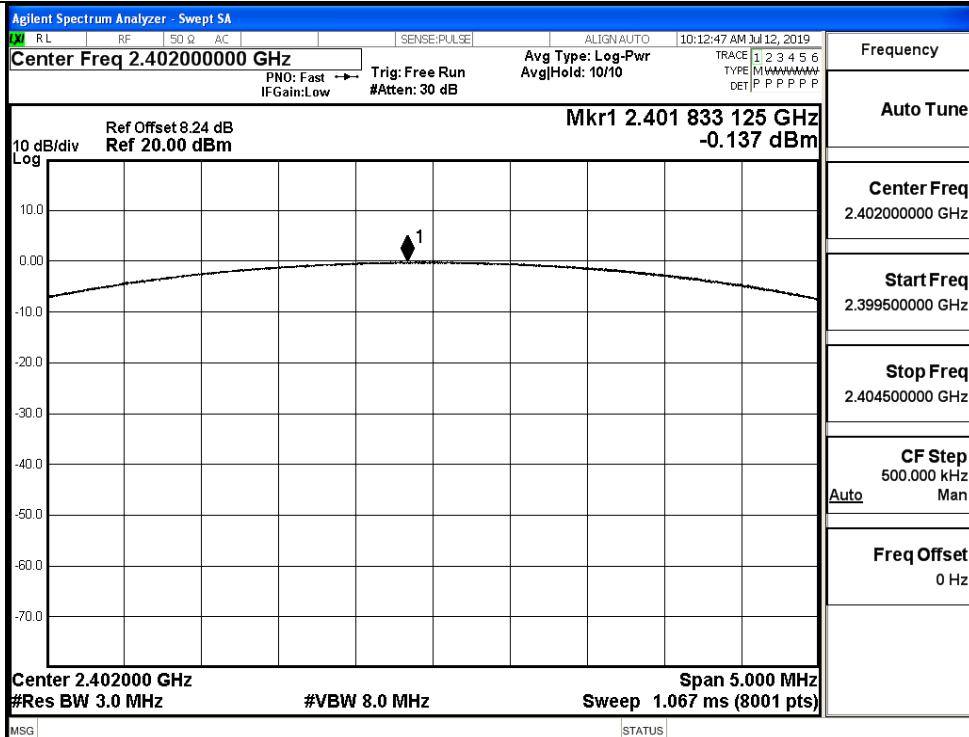


GFSK/HCH

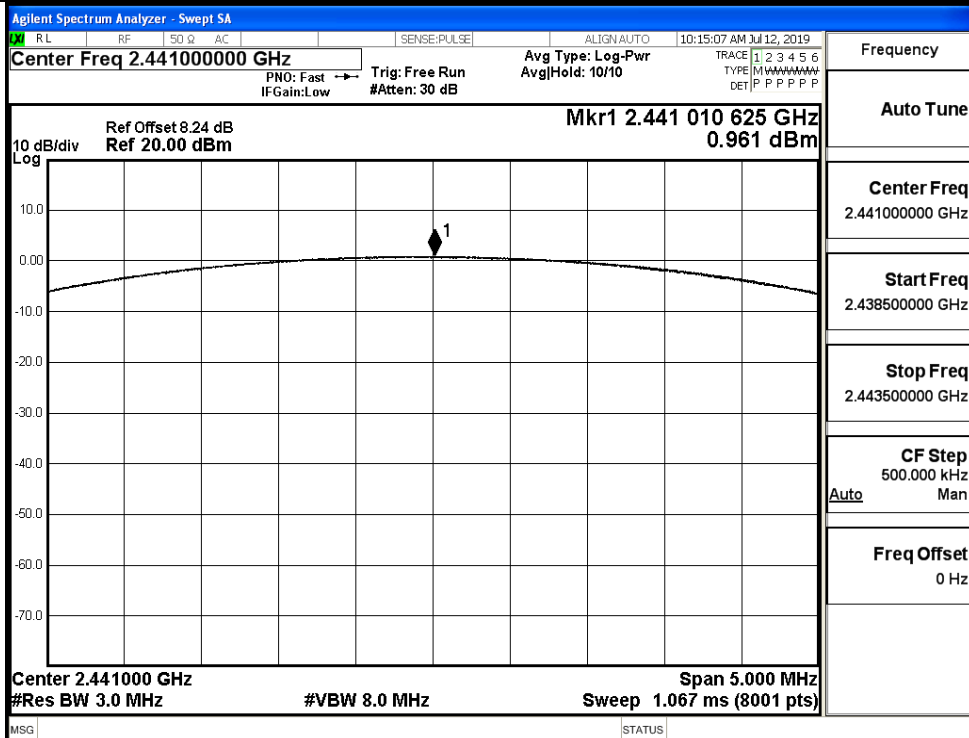
 $\pi/4$ DQPSK/LCH



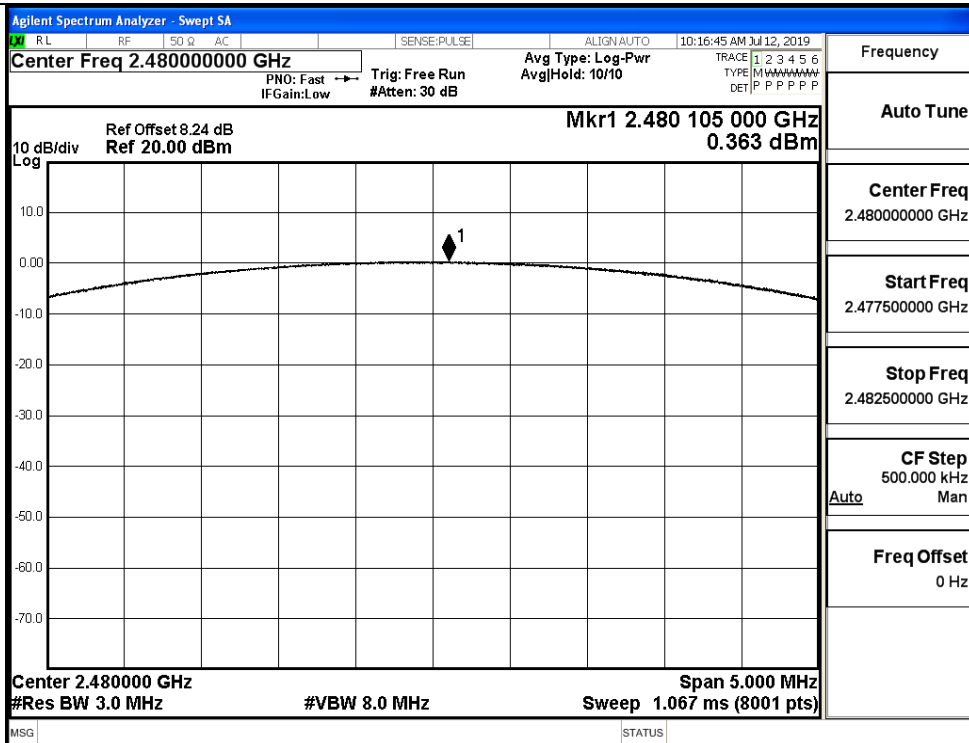
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

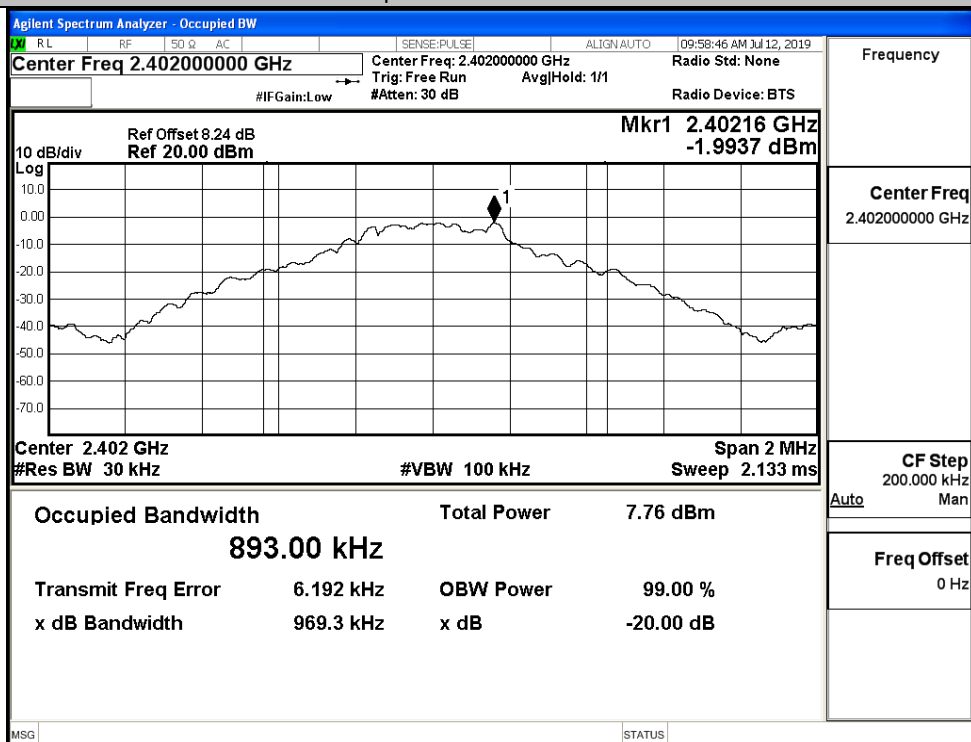


A.2 20dB Bandwidth

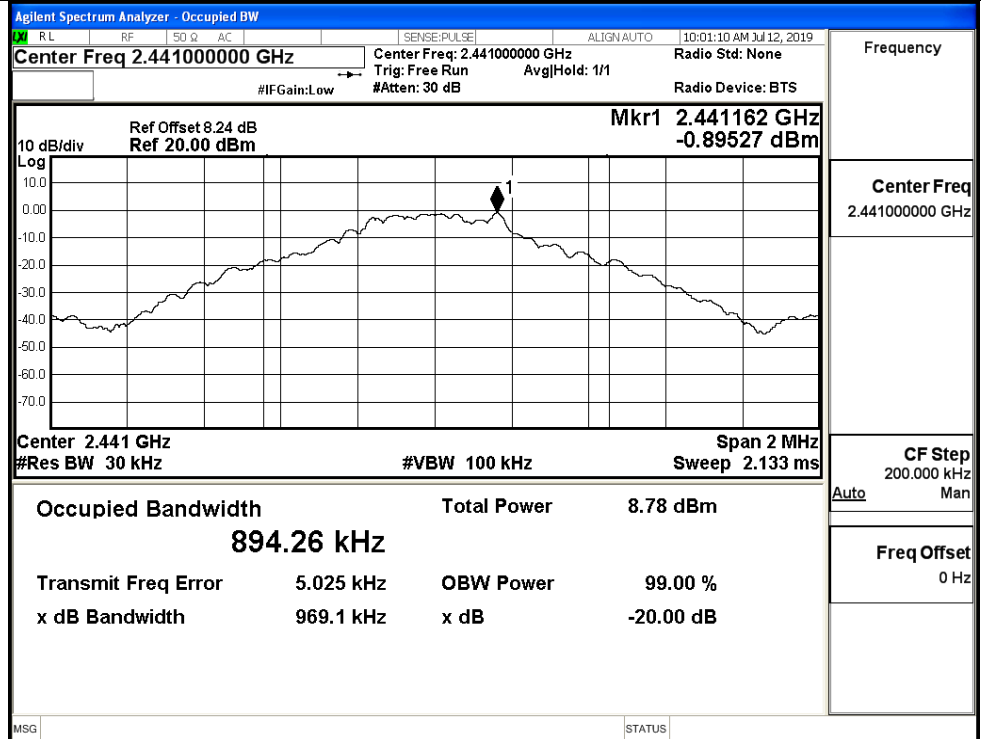
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9693	Not Specified	PASS
	MCH	0.9691	Not Specified	PASS
	HCH	1.029	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.312	Not Specified	PASS
	MCH	1.291	Not Specified	PASS
	HCH	1.307	Not Specified	PASS
8DPSK	LCH	1.298	Not Specified	PASS
	MCH	1.296	Not Specified	PASS
	HCH	1.297	Not Specified	PASS

Test Graphs

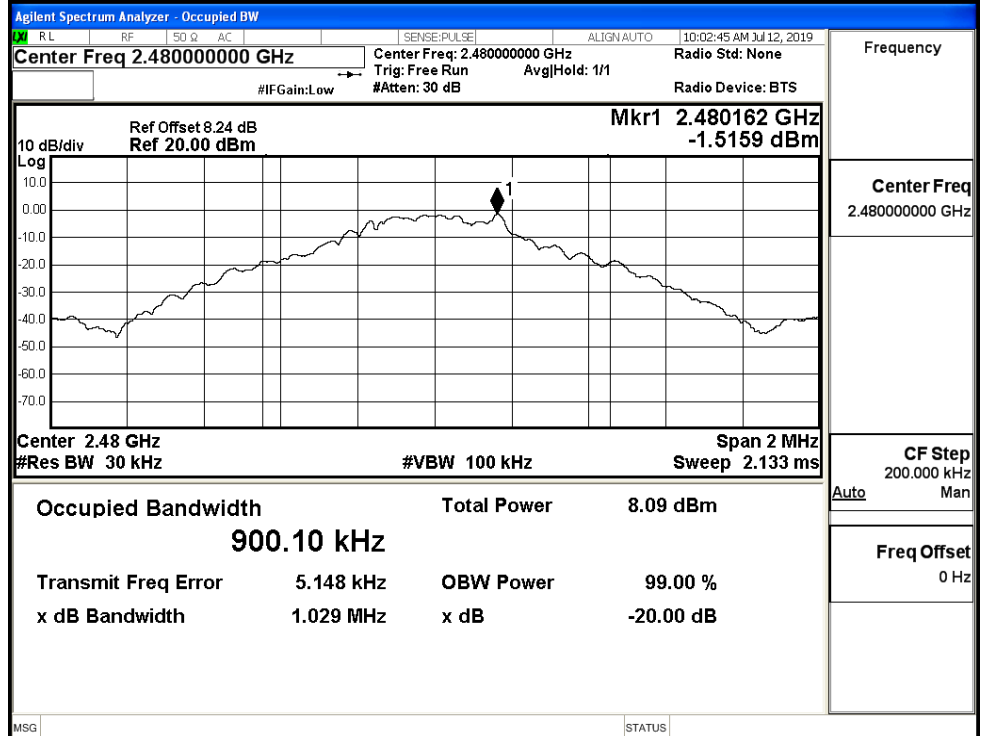
GFSK/LCH

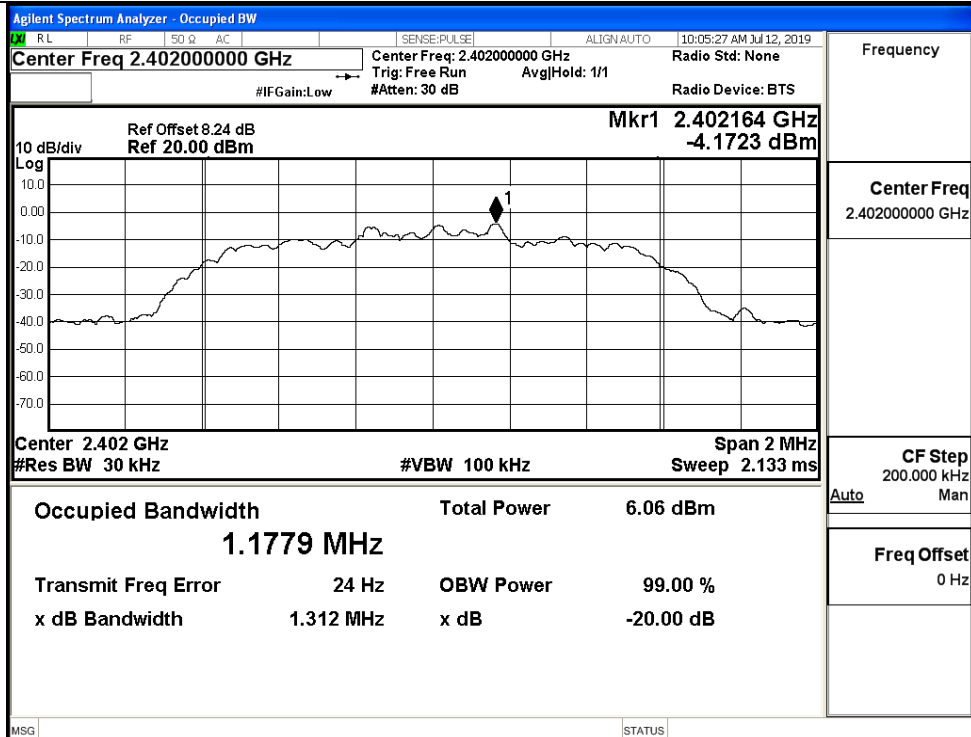
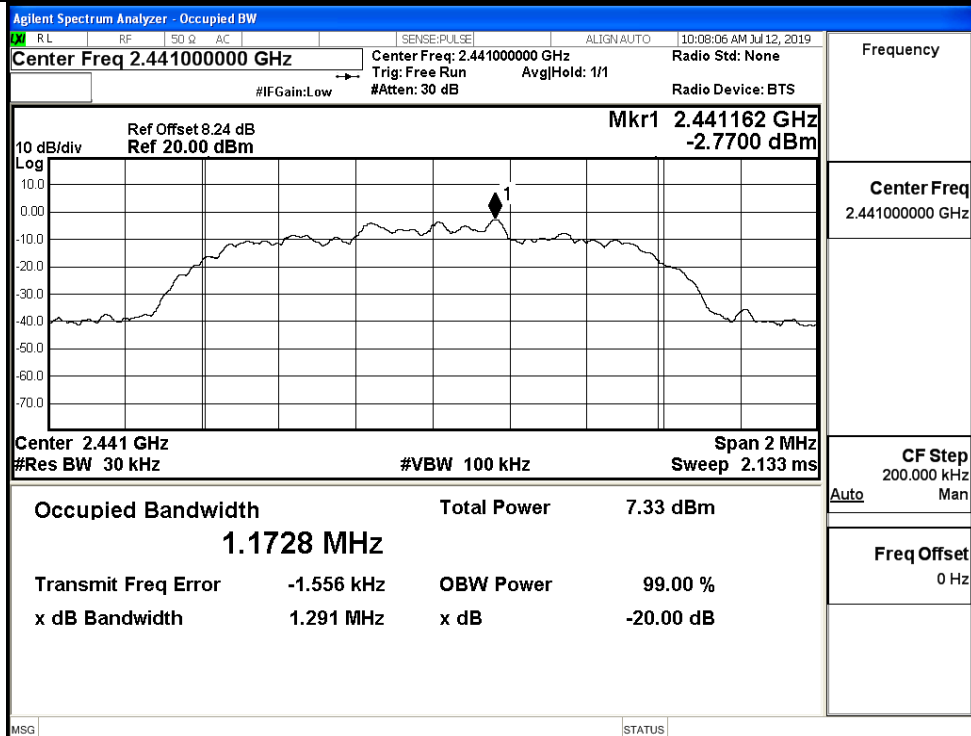


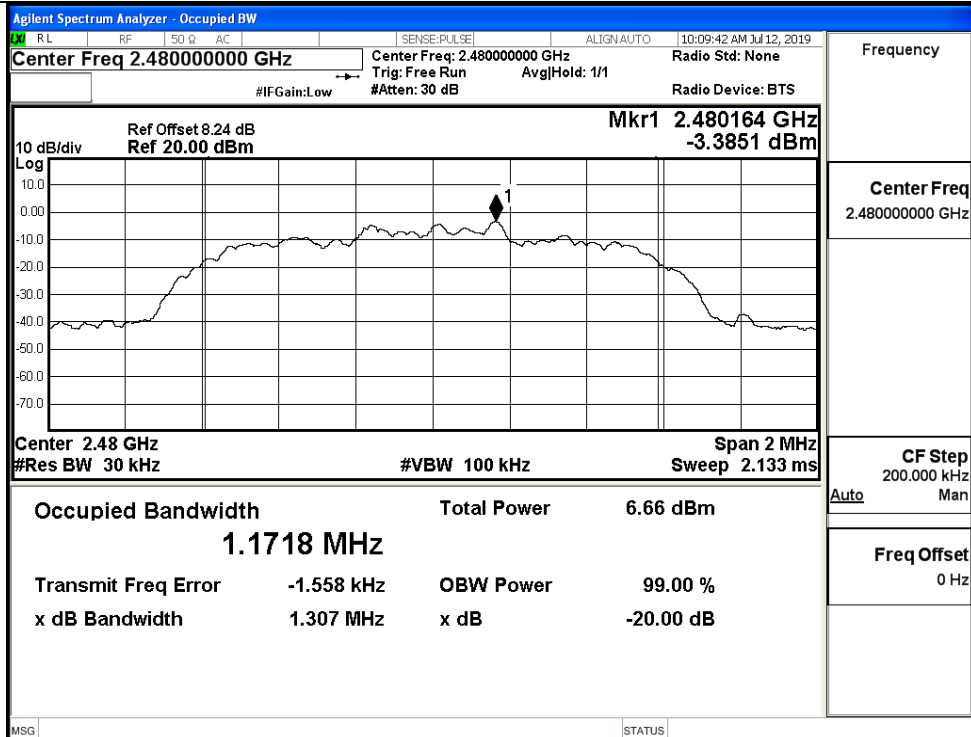
GFSK/MCH



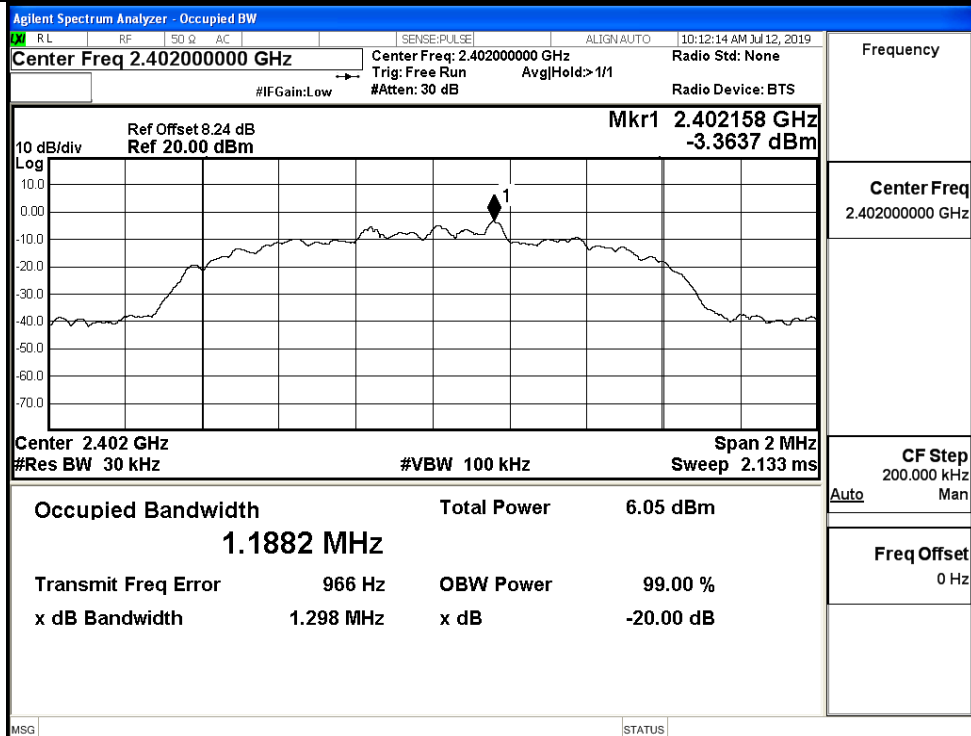
GFSK/HCH



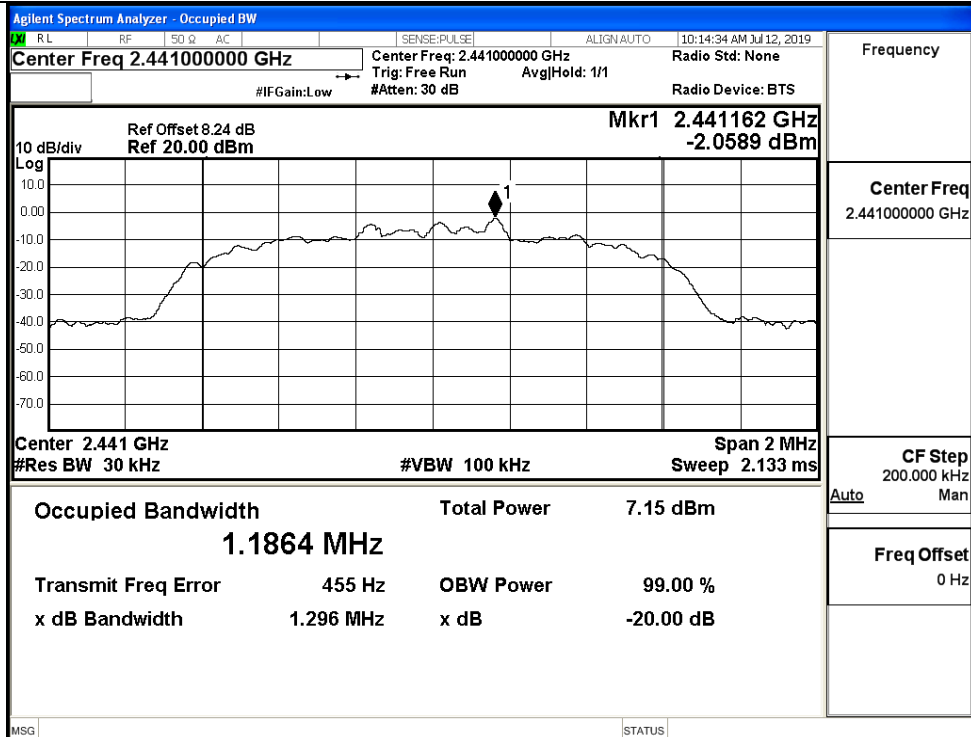
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

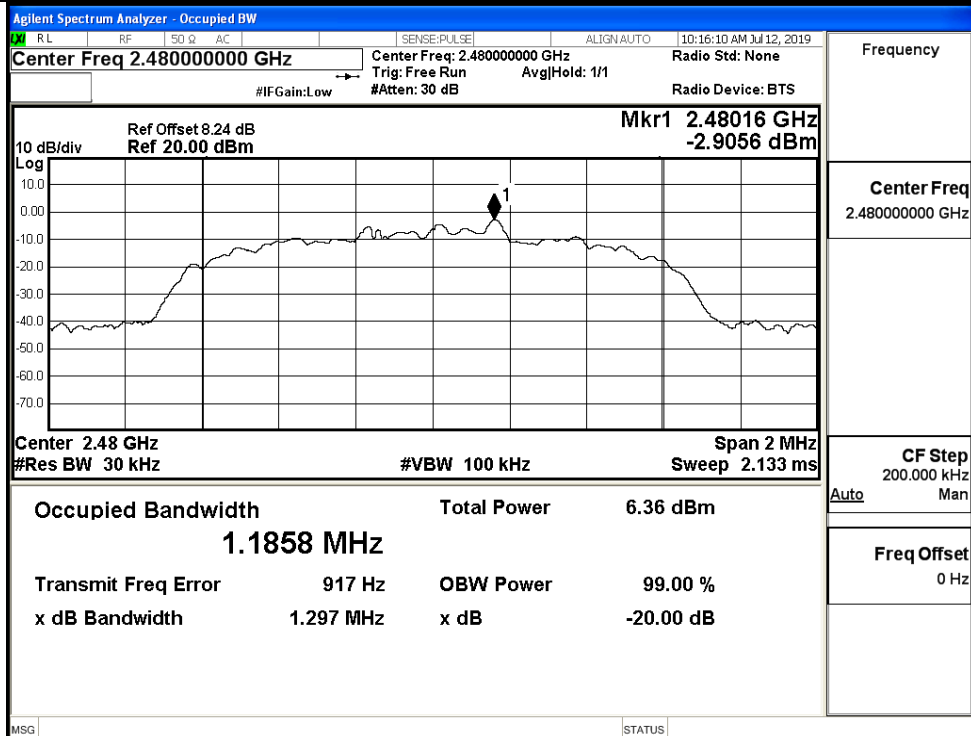
8DPSK/LCH



8DPSK/MCH



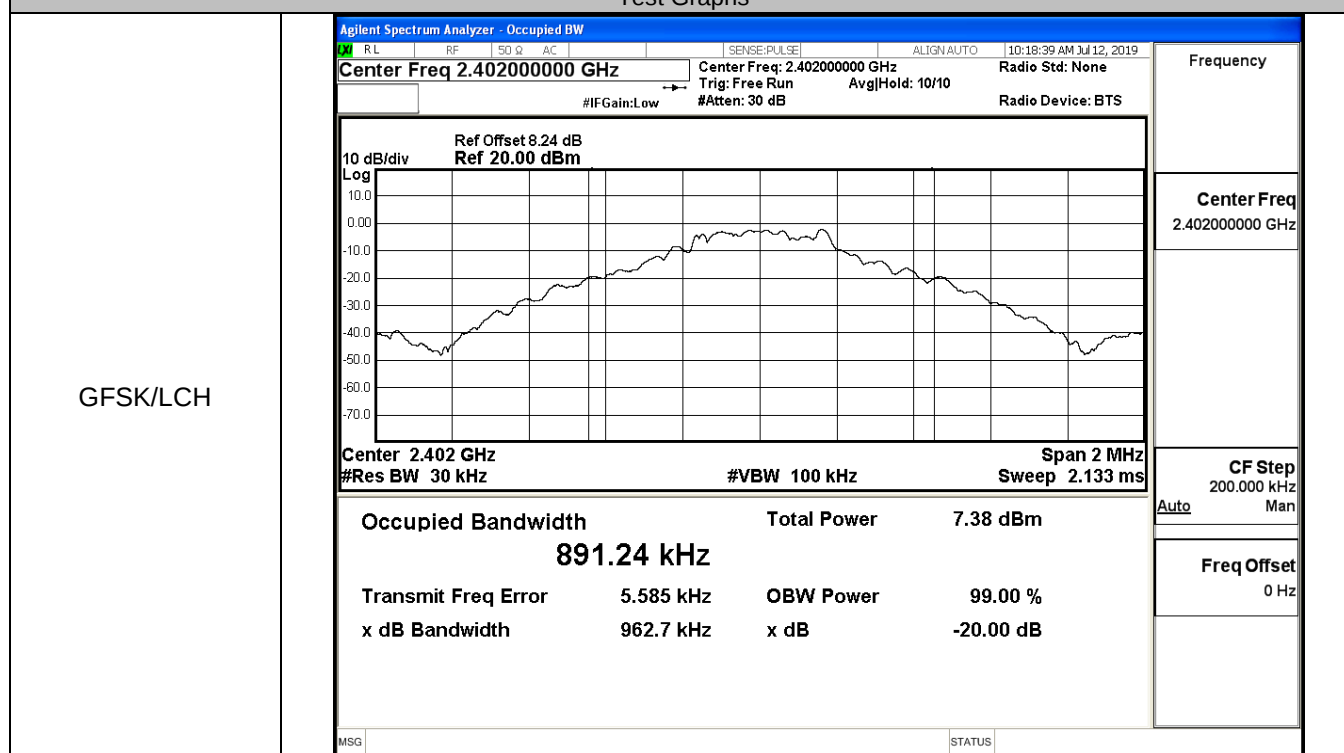
8DPSK/HCH



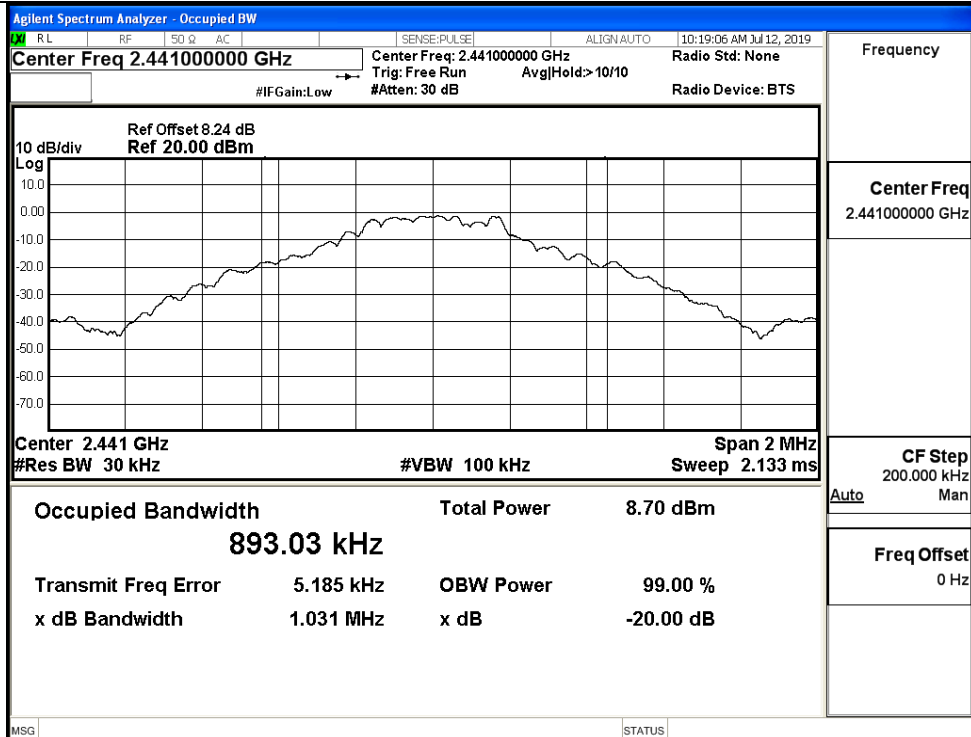
A.3 Occupied Bandwidth

Mode	Channel.	Occupied Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.89124	Not Specified	PASS
	MCH	0.89303	Not Specified	PASS
	HCH	0.89828	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.1782	Not Specified	PASS
	MCH	1.1740	Not Specified	PASS
	HCH	1.1746	Not Specified	PASS
8DPSK	LCH	1.1888	Not Specified	PASS
	MCH	1.1906	Not Specified	PASS
	HCH	1.1867	Not Specified	PASS

Test Graphs



GFSK/MCH



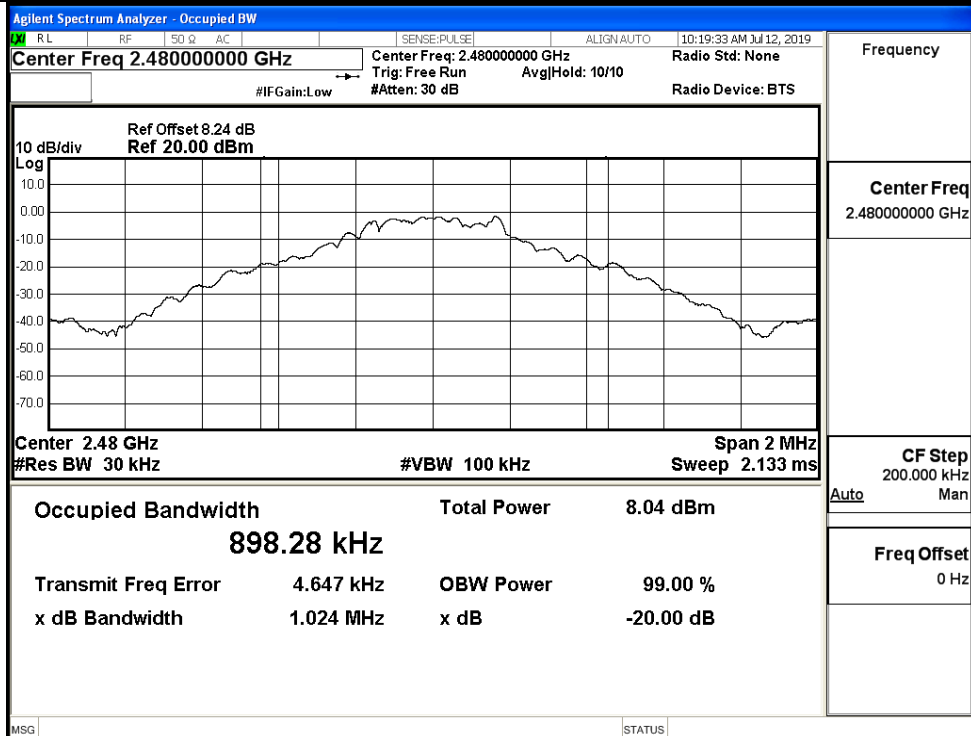
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz

Auto

Freq Offset
0 Hz

GFSK/HCH

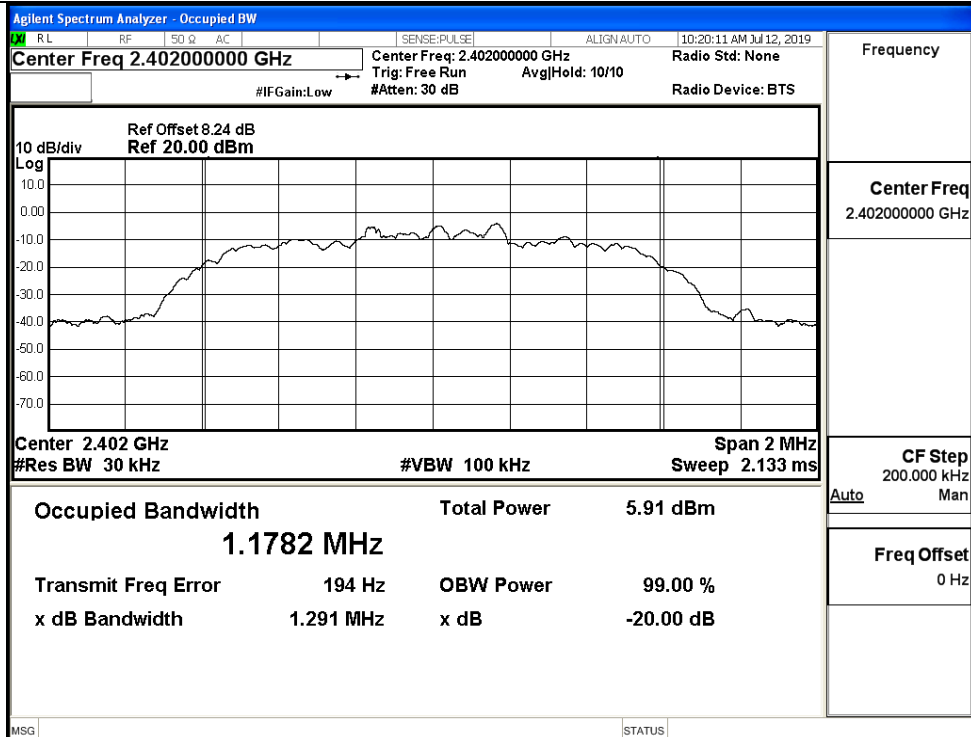
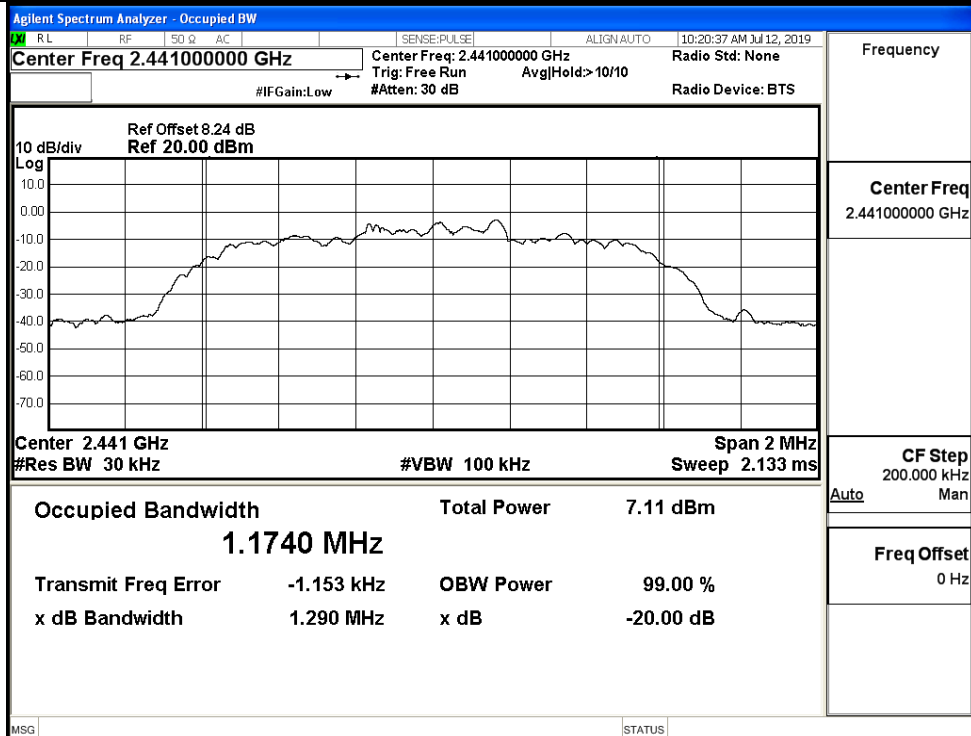


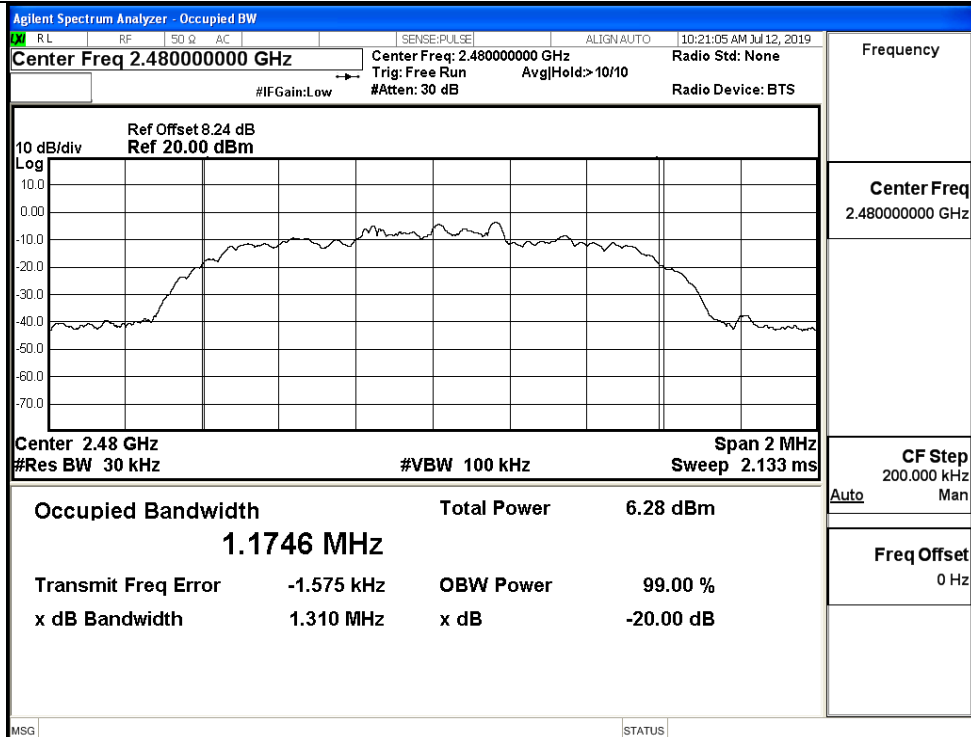
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz

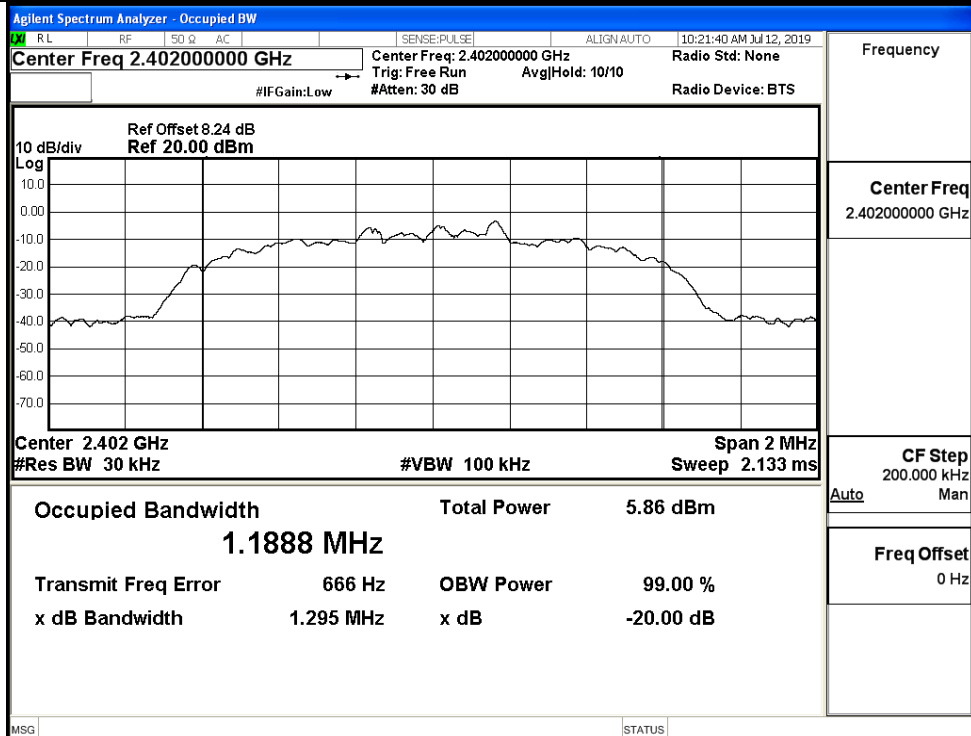
Auto

Freq Offset
0 Hz

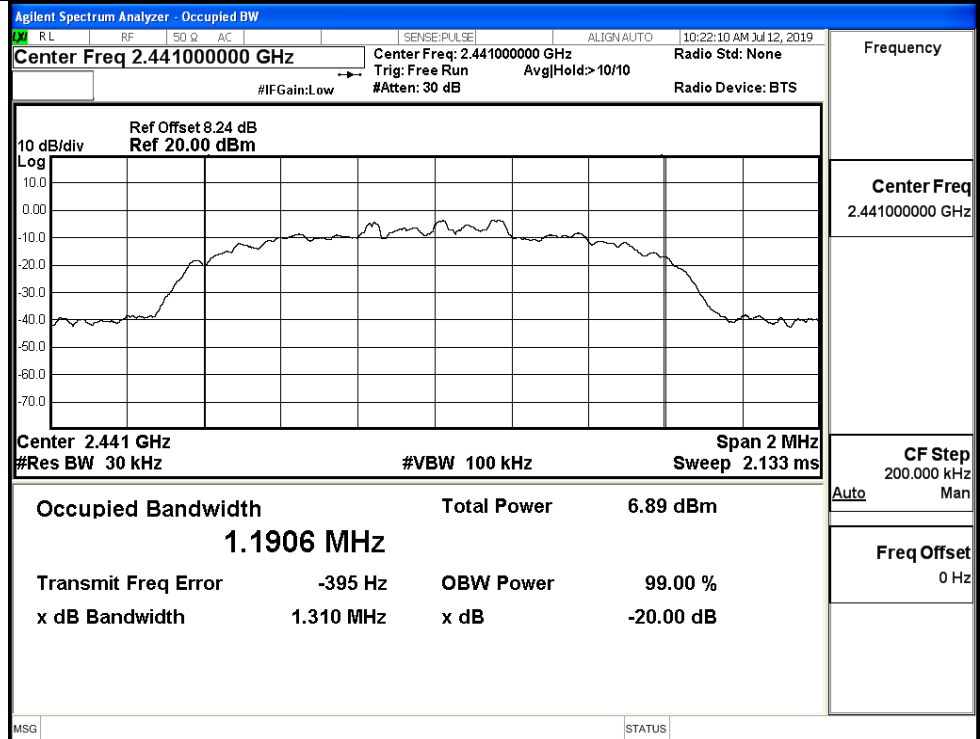
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

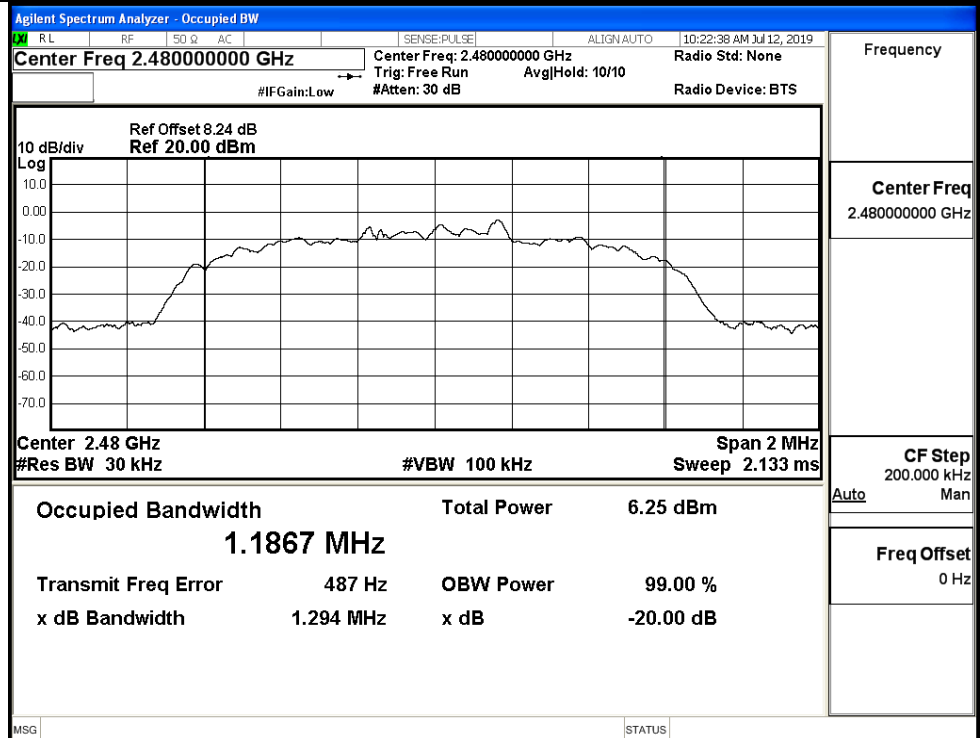
8DPSK/LCH



8DPSK/MCH



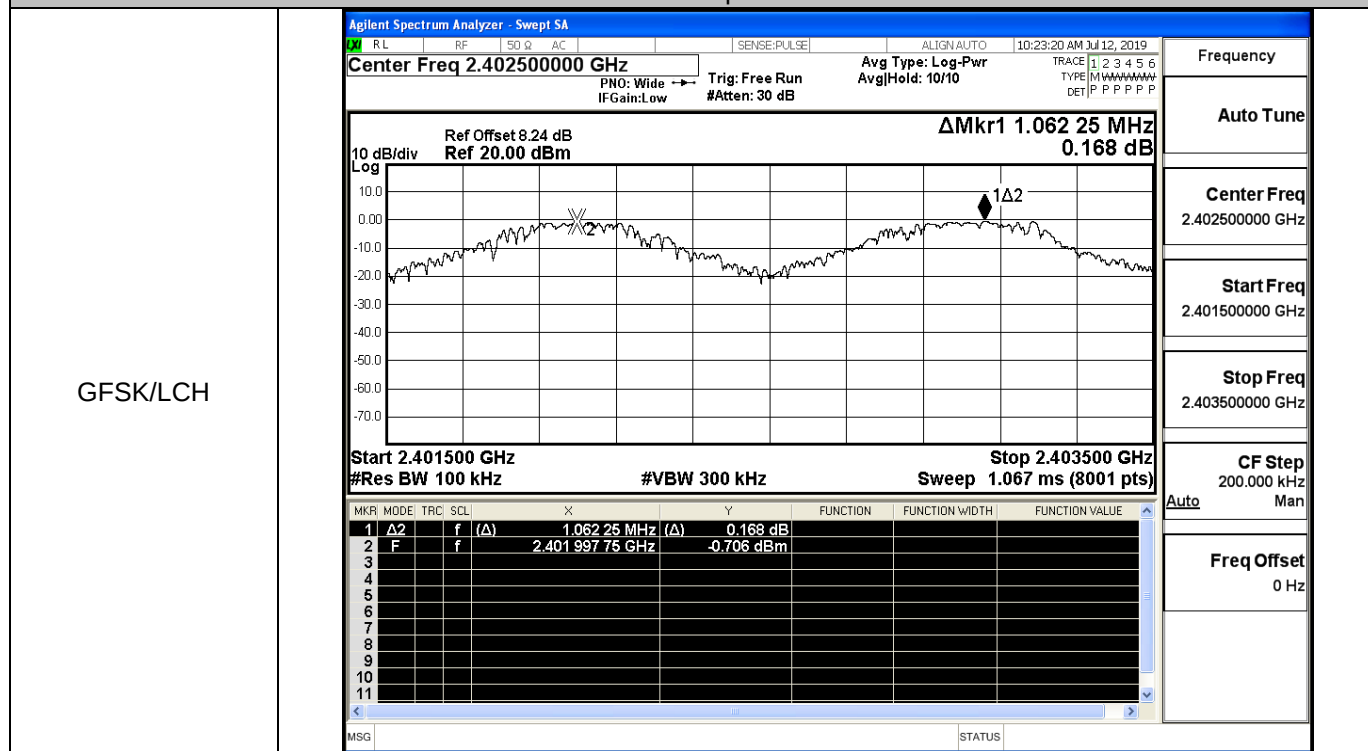
8DPSK/HCH



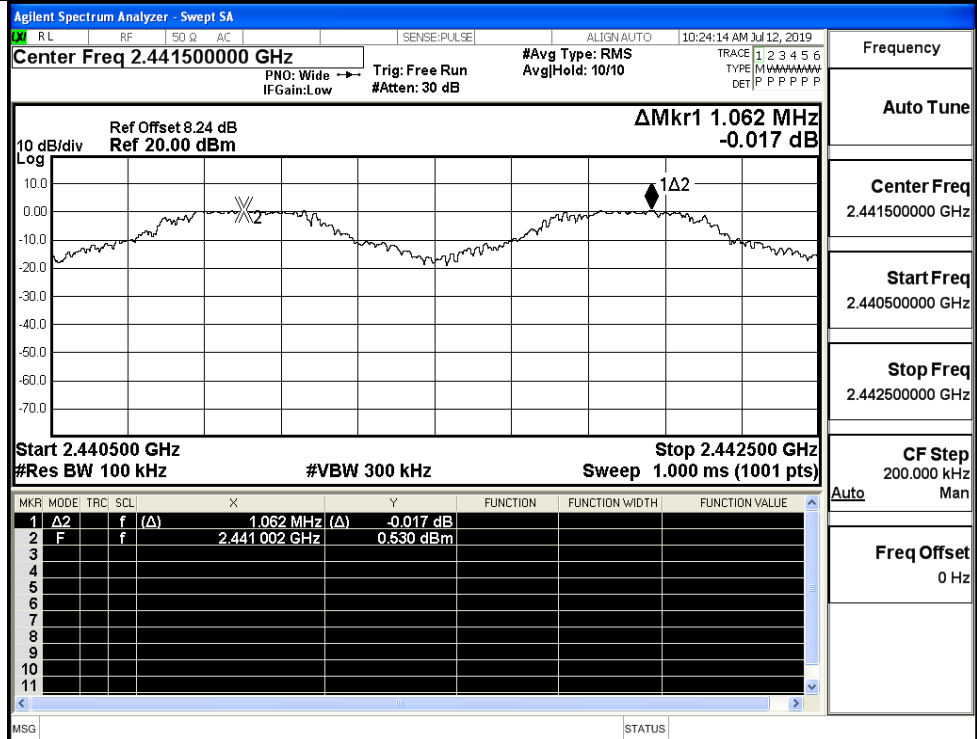
A.4 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.062	0.646	PASS
	MCH	1.062	0.646	PASS
	HCH	0.862	0.686	PASS
$\pi/4$ DQPSK	LCH	1.092	0.875	PASS
	MCH	1.066	0.875	PASS
	HCH	1.080	0.875	PASS
8DPSK	LCH	1.280	0.865	PASS
	MCH	1.130	0.865	PASS
	HCH	1.094	0.865	PASS

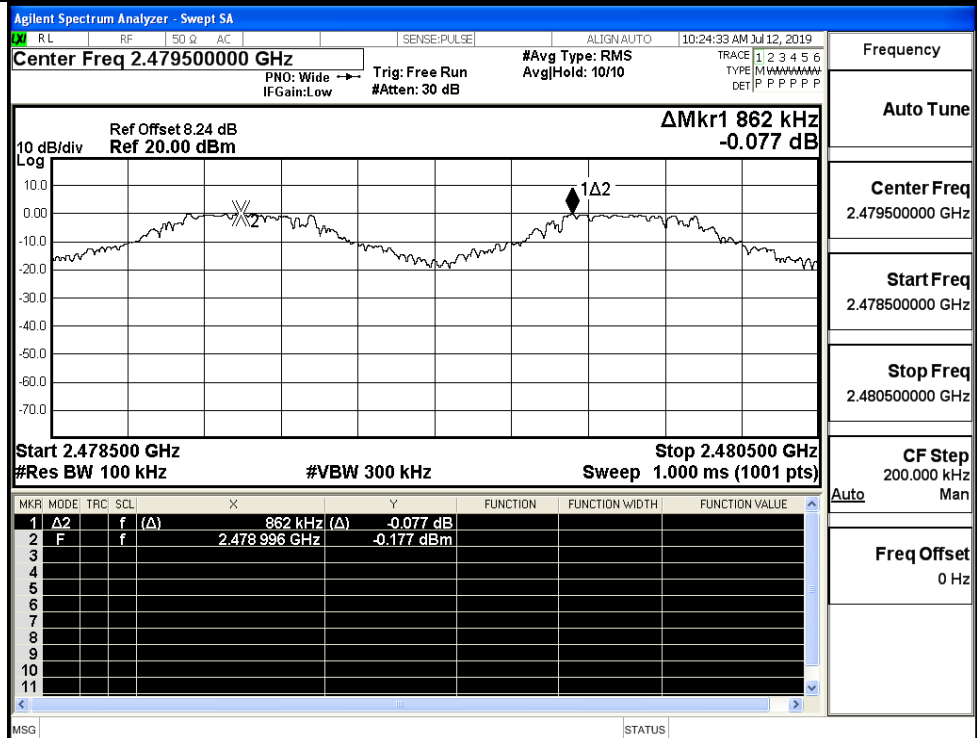
Test Graphs

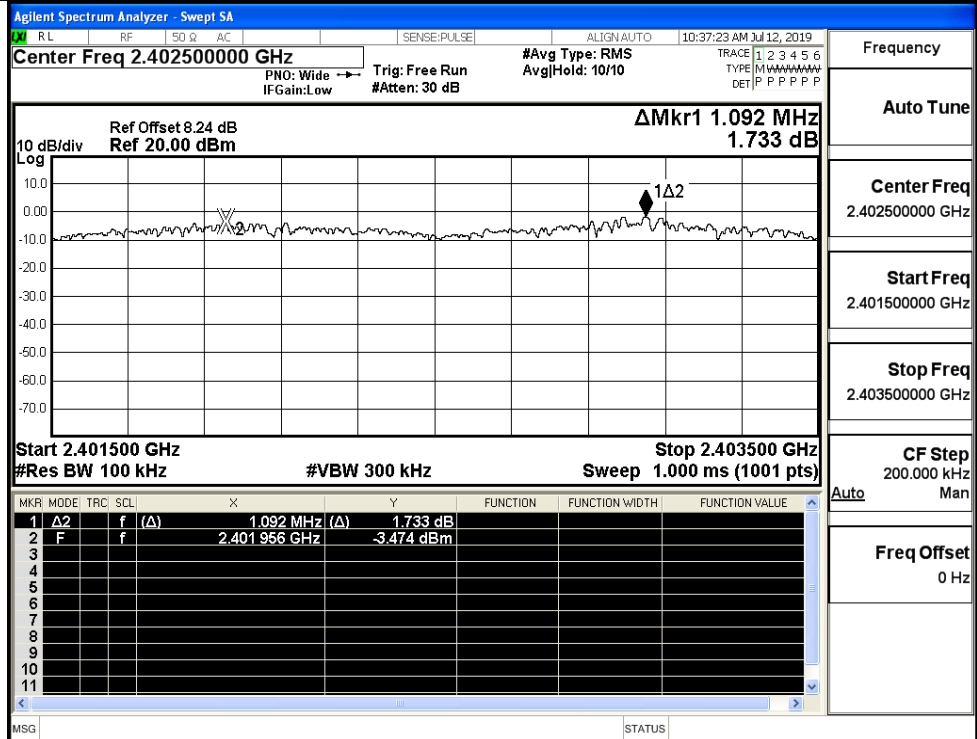
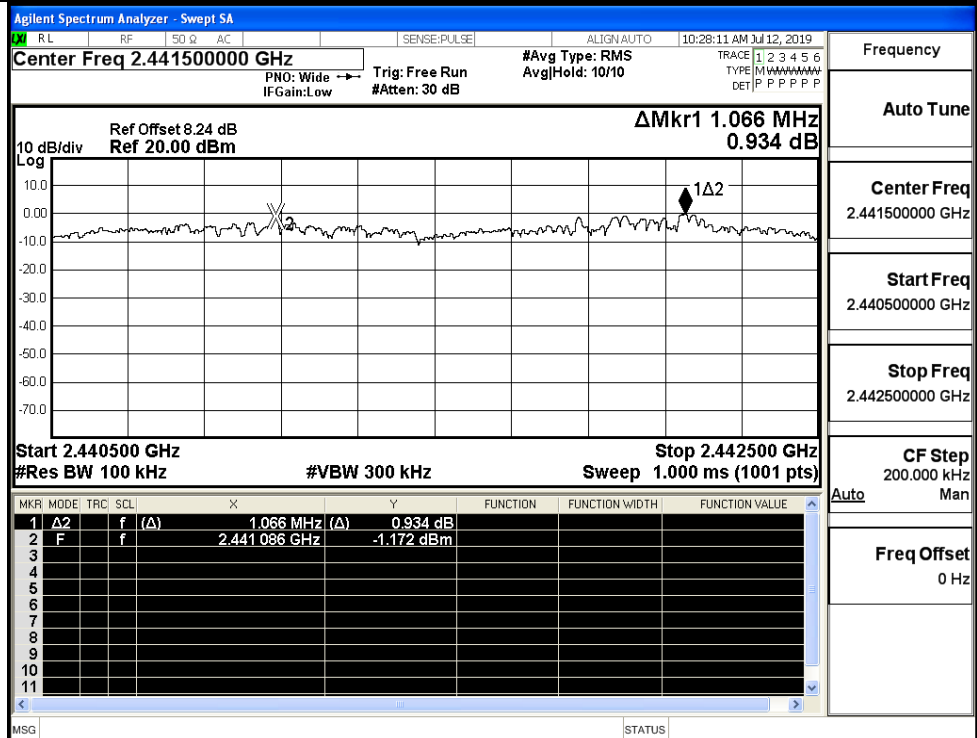


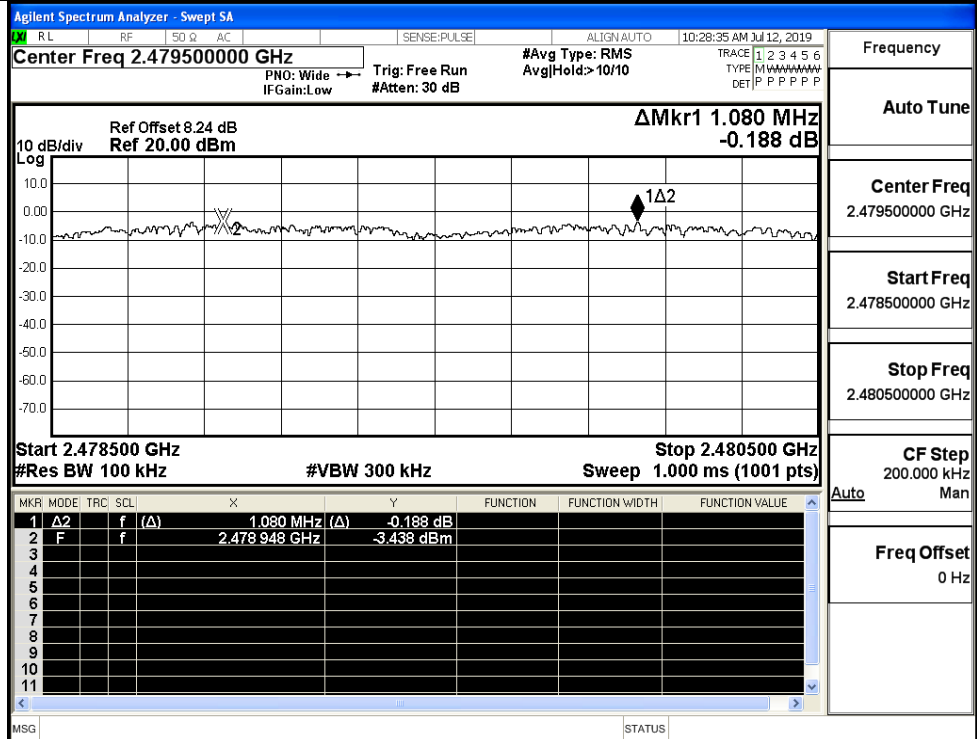
GFSK/MCH



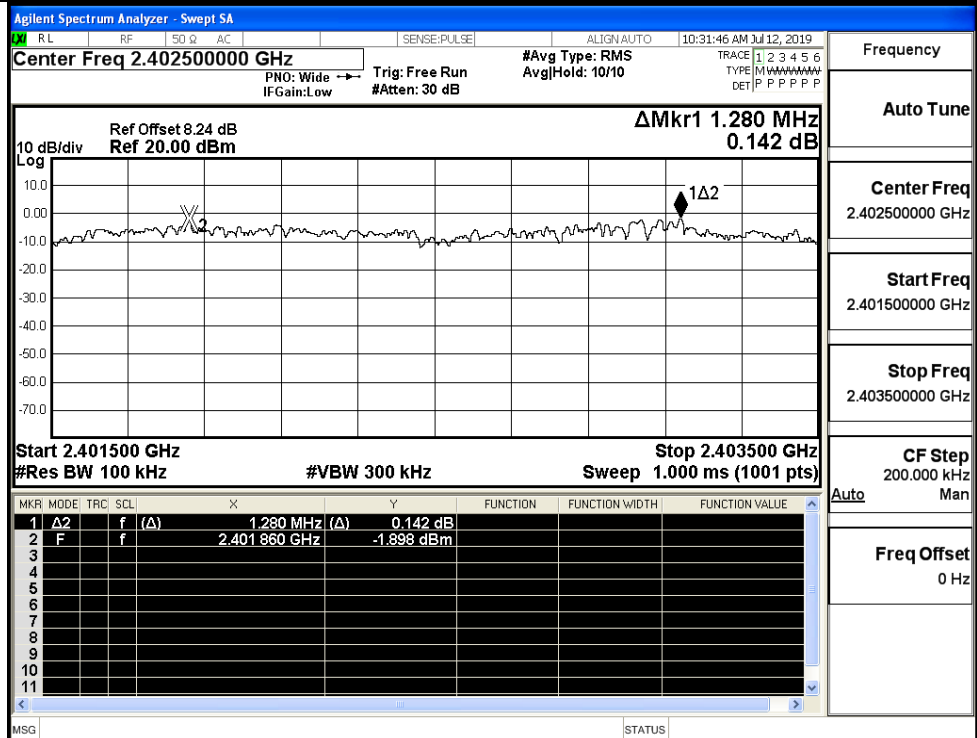
GFSK/HCH



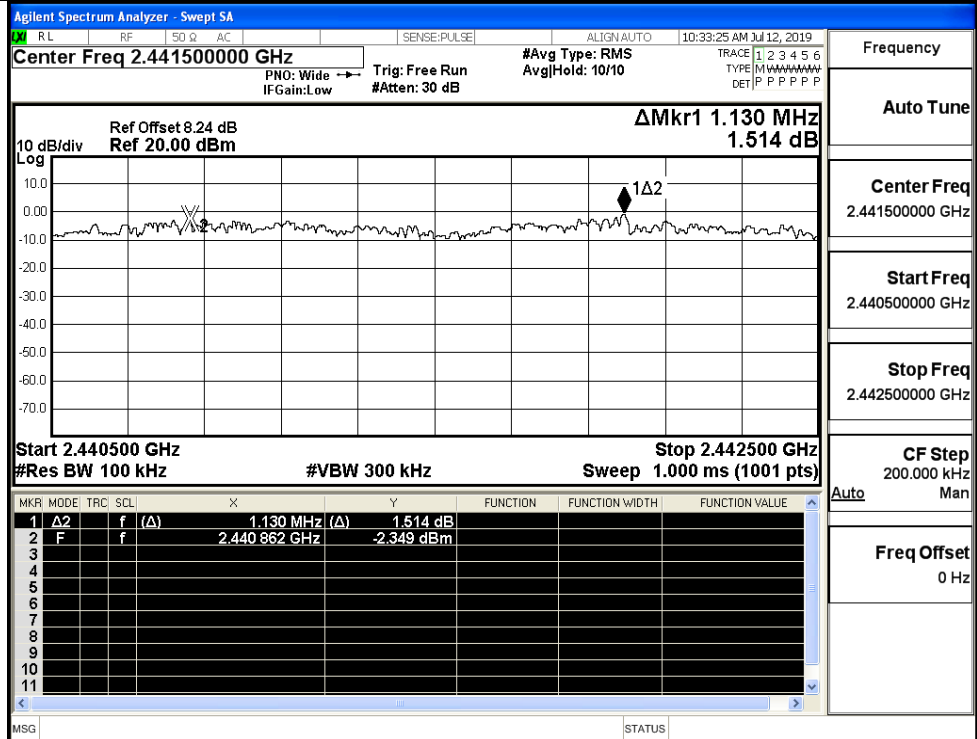
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

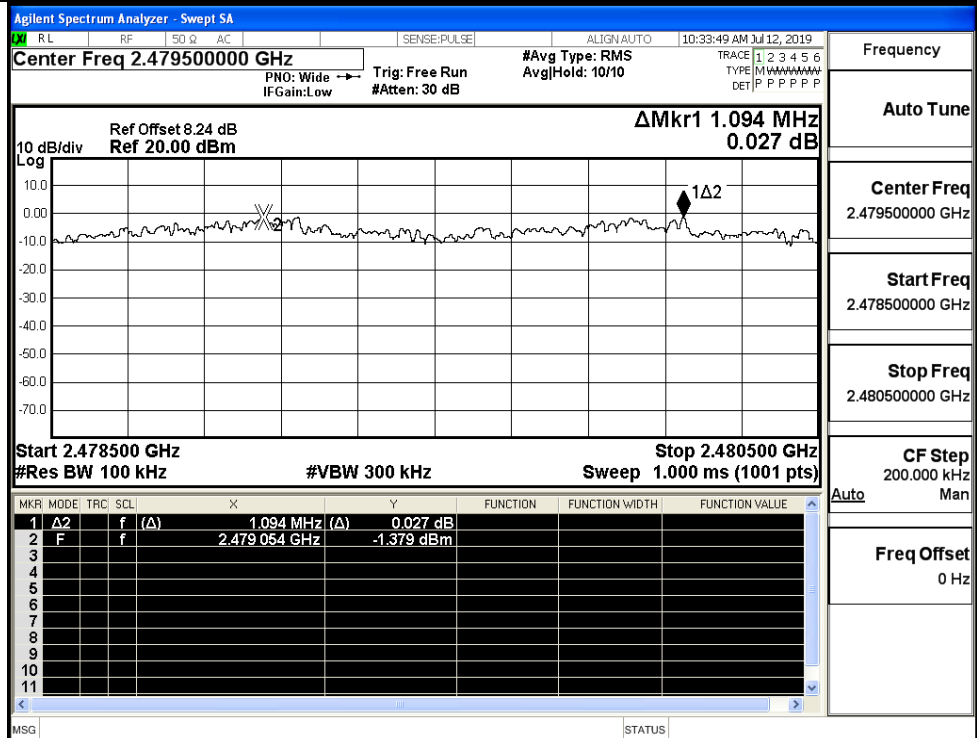
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

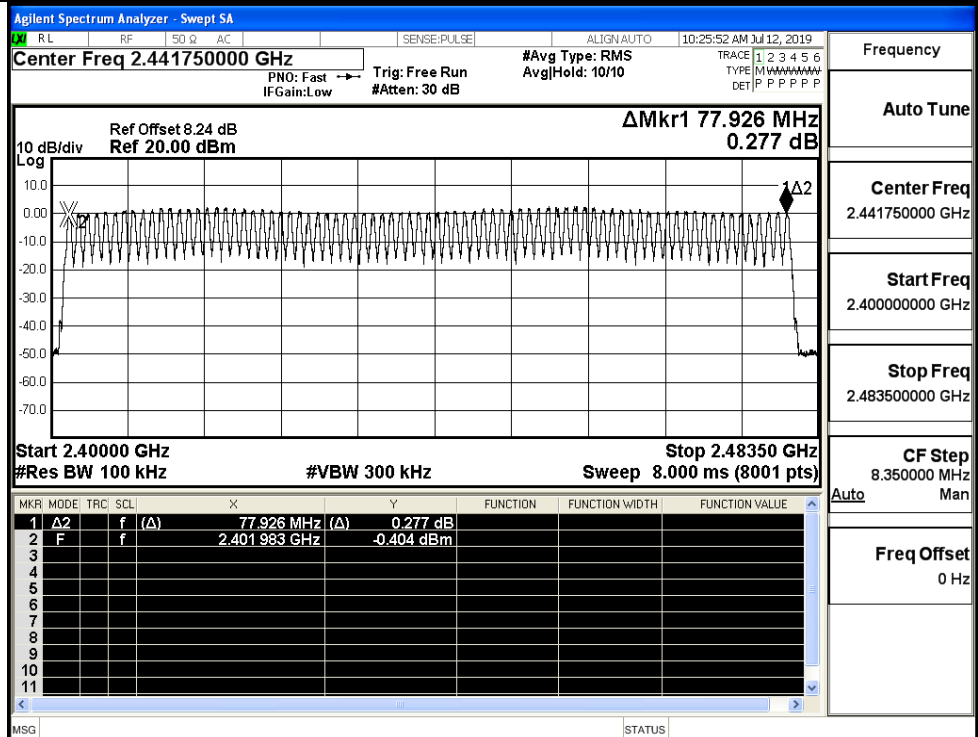
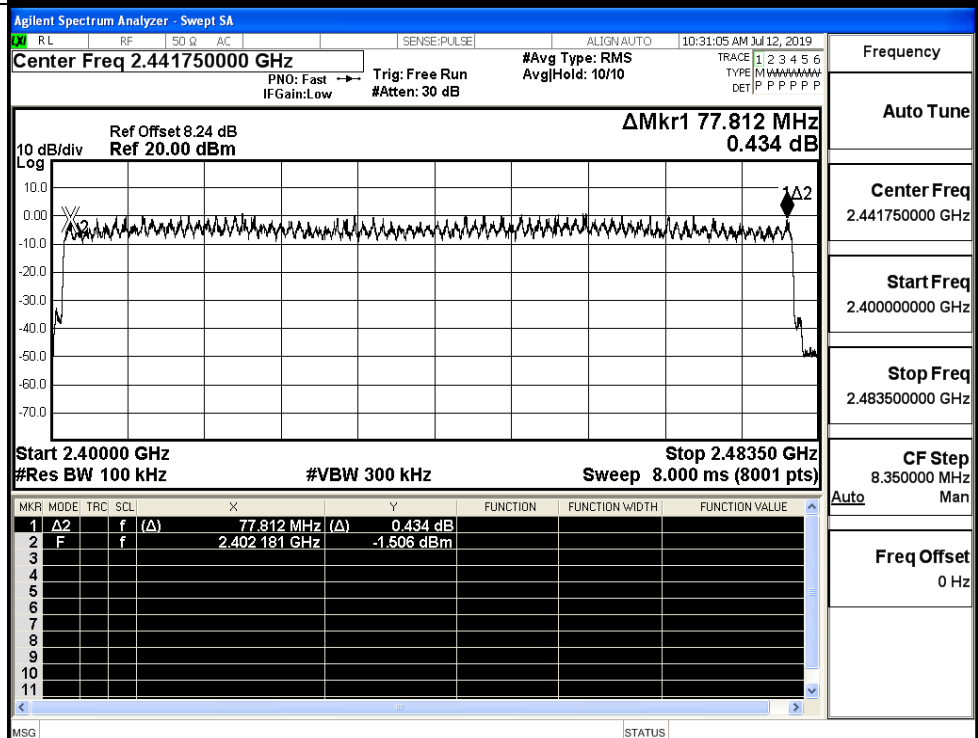


A.5 Hopping Channel Number

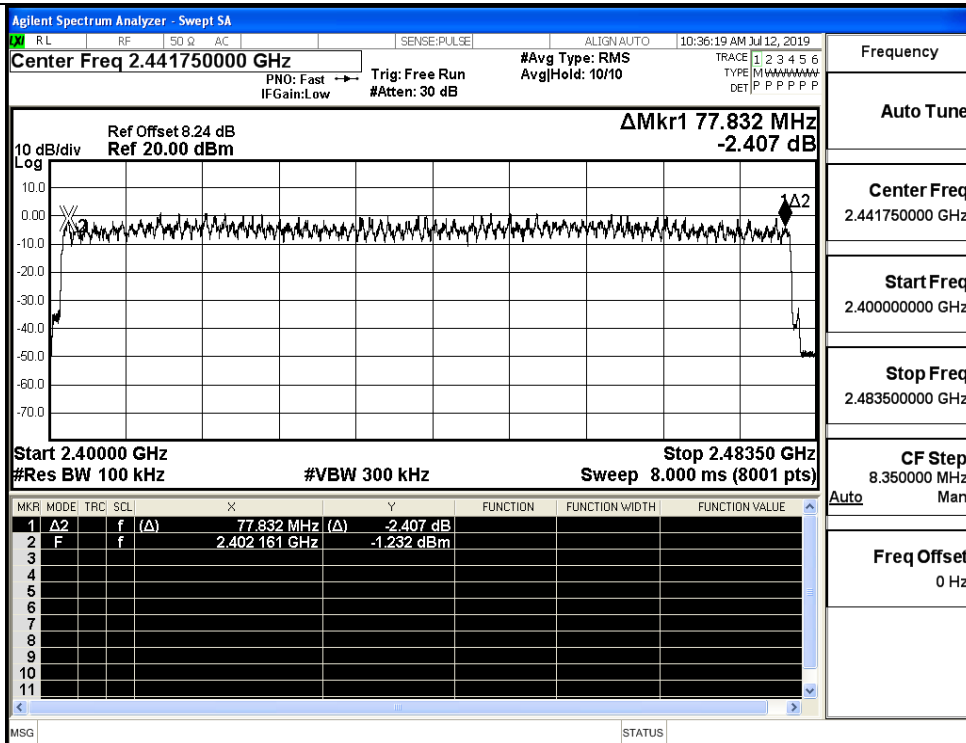
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

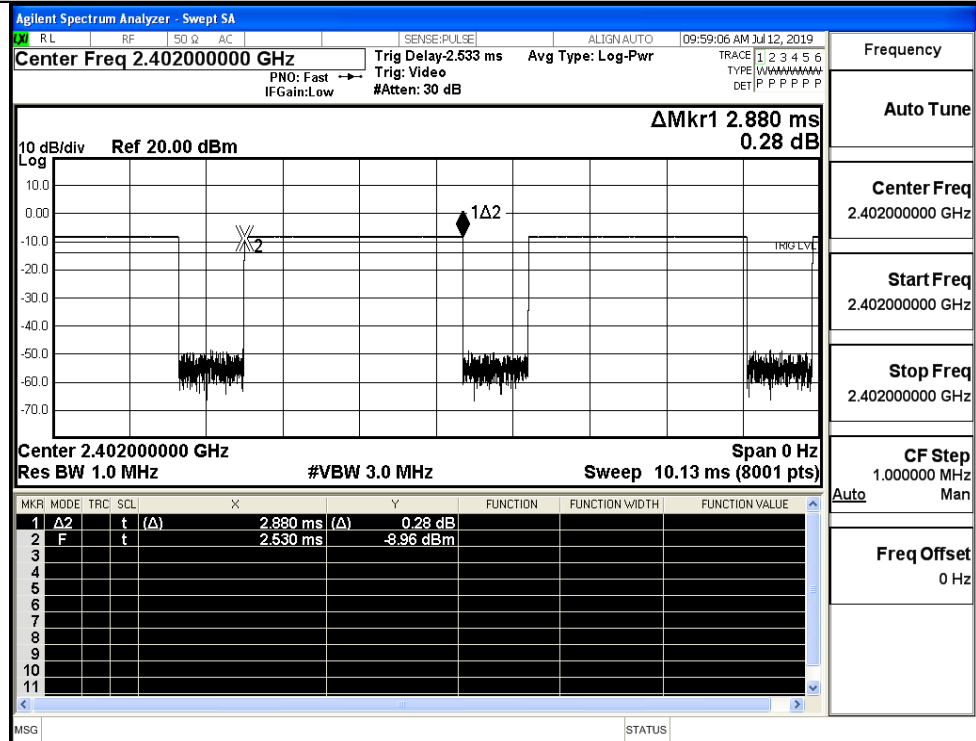


A.6 Dwell Time

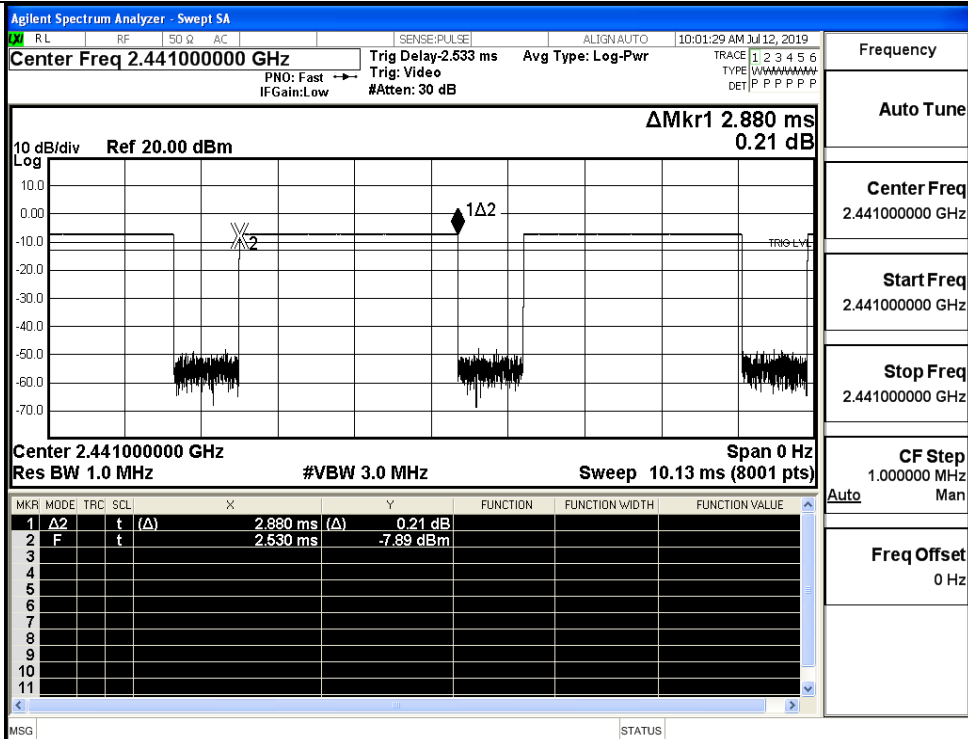
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

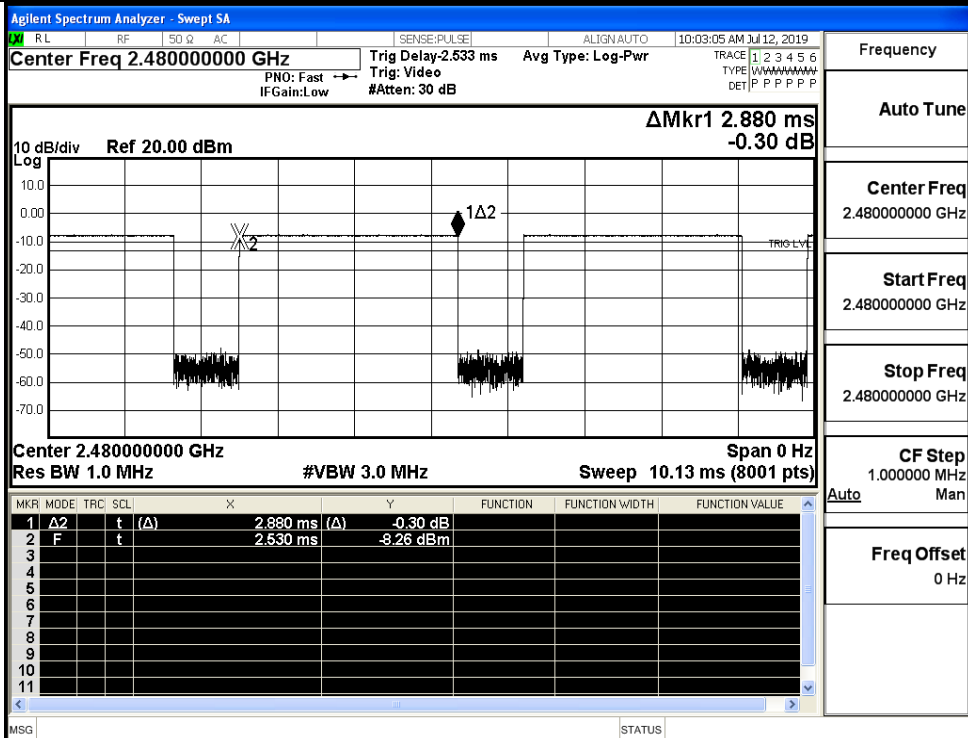
GFSK_DH5/LCH



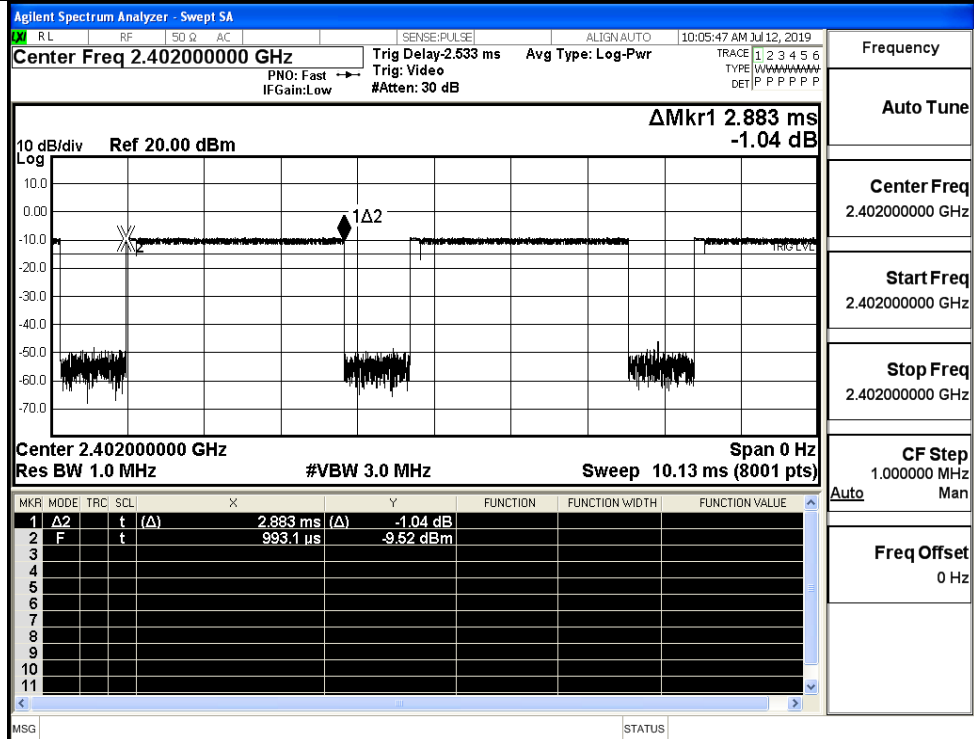
GFSK_DH5/MCH



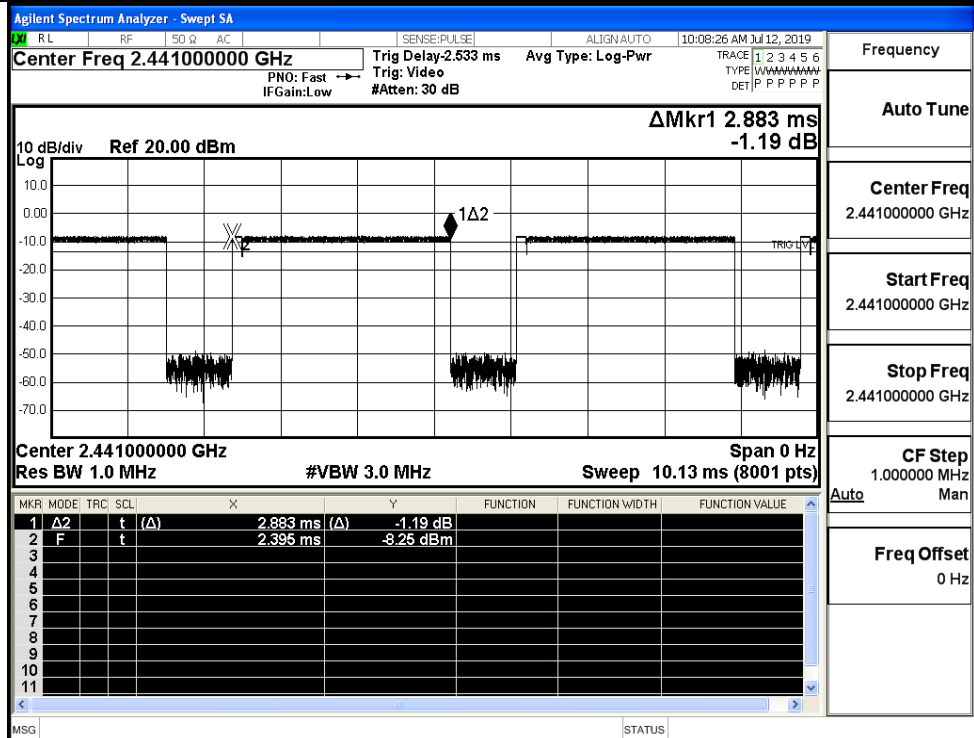
GFSK_DH5/HCH



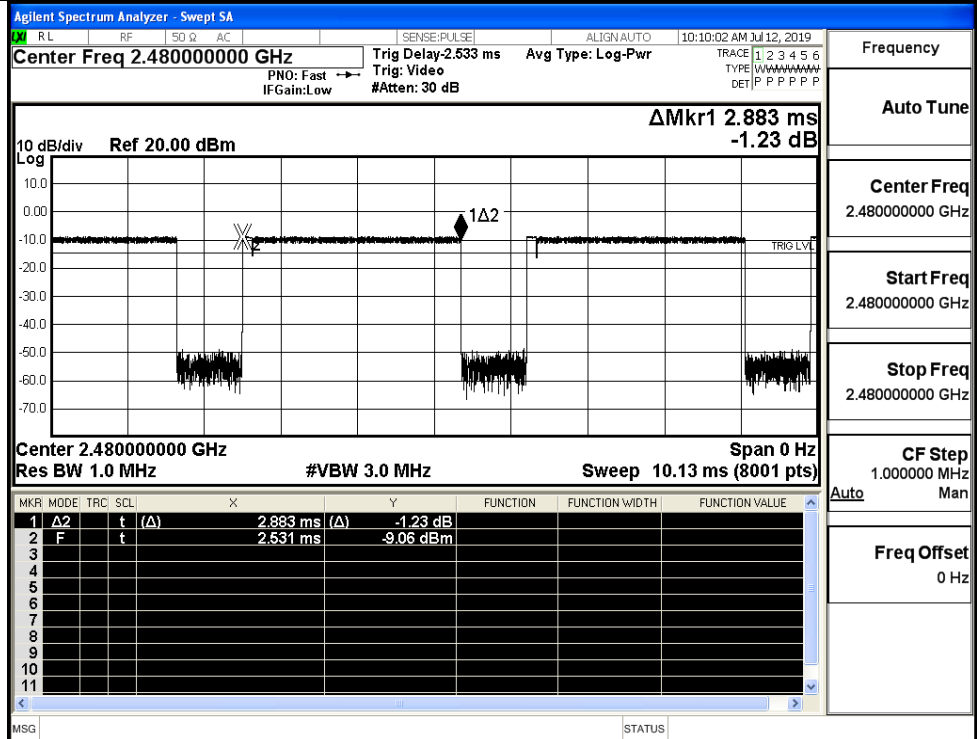
$\pi/4$ DQPSK
_2DH5/LCH



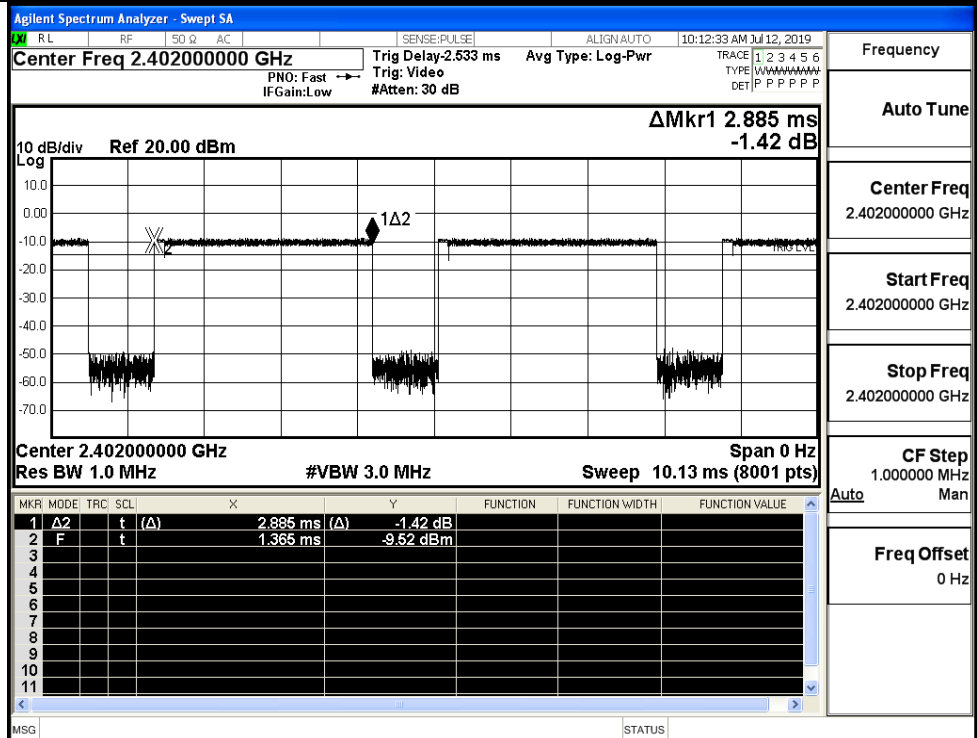
$\pi/4$ DQPSK
_2DH5/MCH



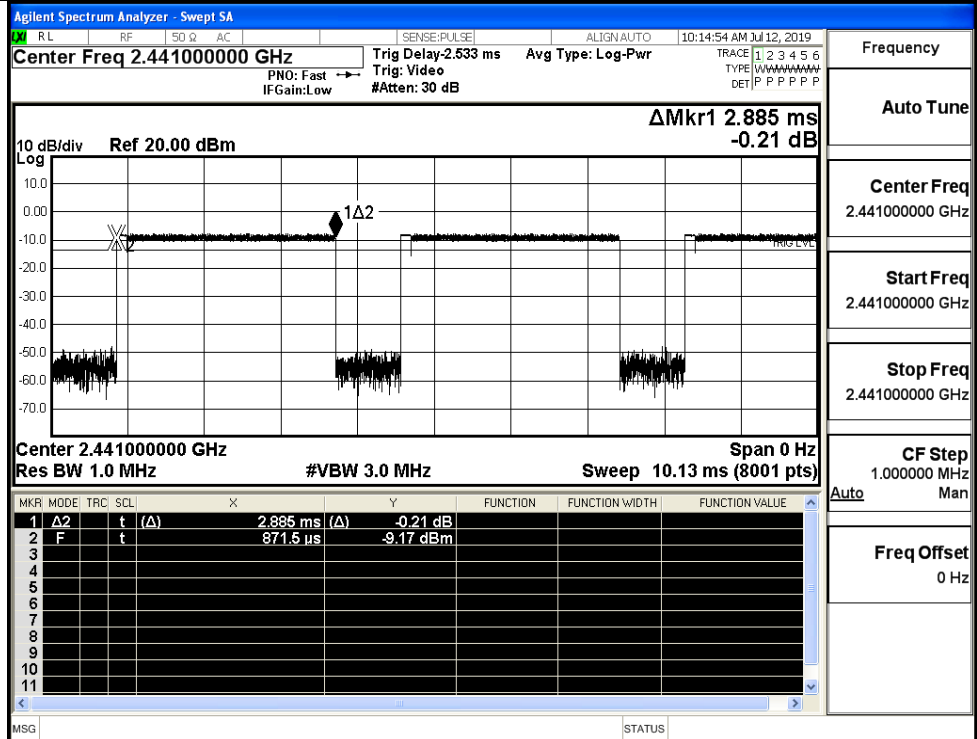
$\pi/4$ DQPSK
_2DH5/HCH



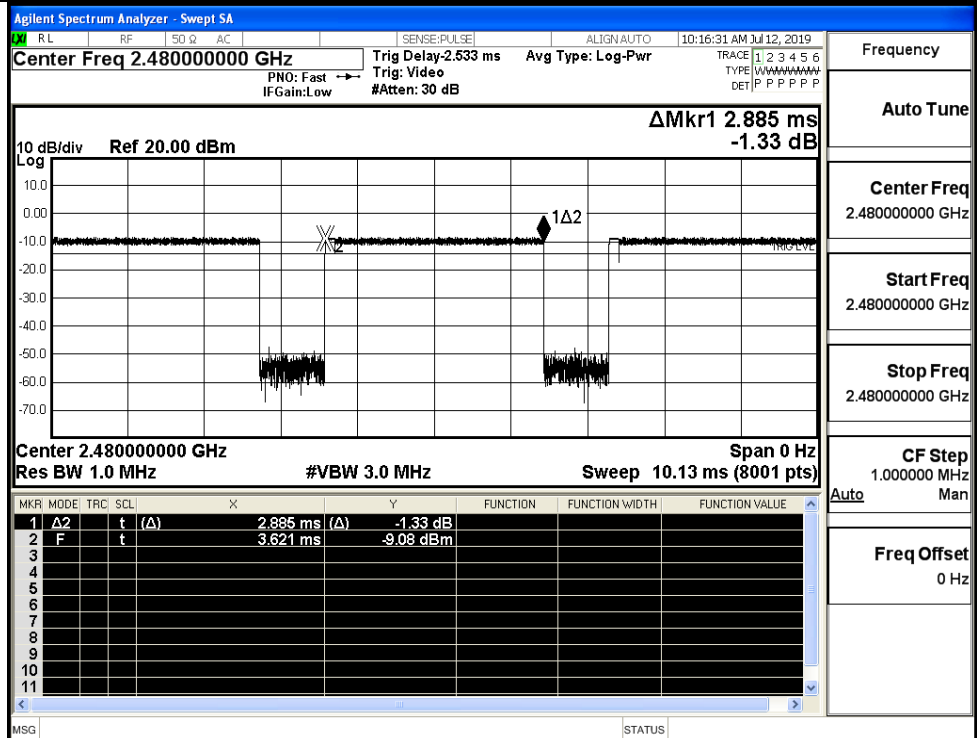
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



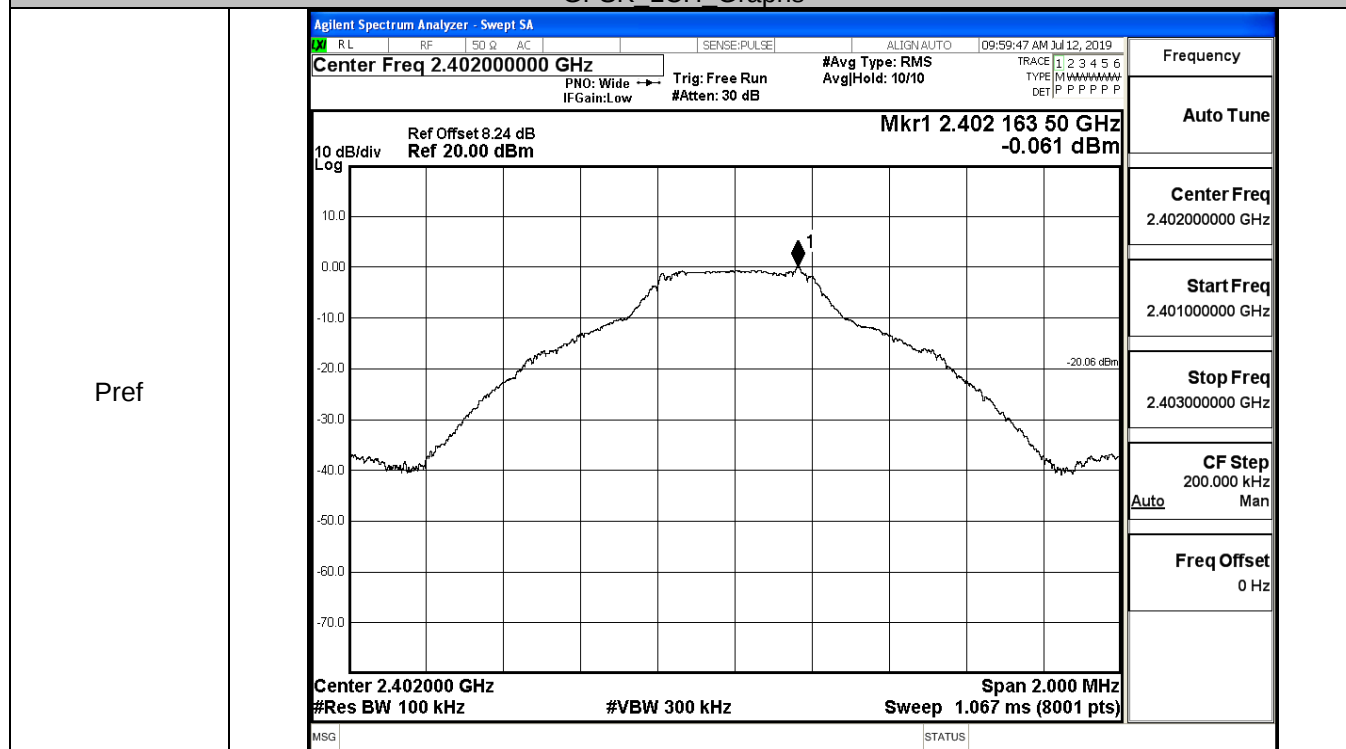
8DPSK_3DH5/HCH



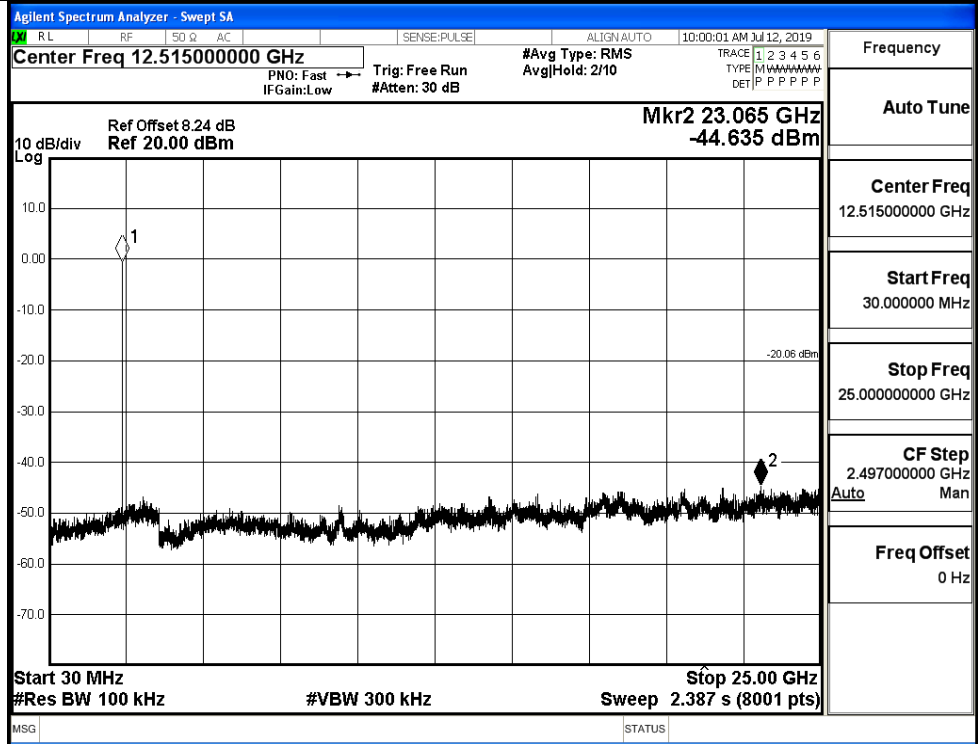
A.7 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.061	-44.635	-20.061	PASS
	MCH	0.593	-44.010	-19.407	PASS
	HCH	0.524	-44.062	-19.476	PASS
$\pi/4$ DQPSK	LCH	-1.249	-44.237	-21.249	PASS
	MCH	-0.02	-44.819	-20.020	PASS
	HCH	-0.627	-45.241	-20.627	PASS
8DPSK	LCH	-1.033	-43.527	-21.033	PASS
	MCH	-0.058	-44.091	-20.058	PASS
	HCH	-0.707	-44.230	-20.707	PASS

GFSK LCH Graphs

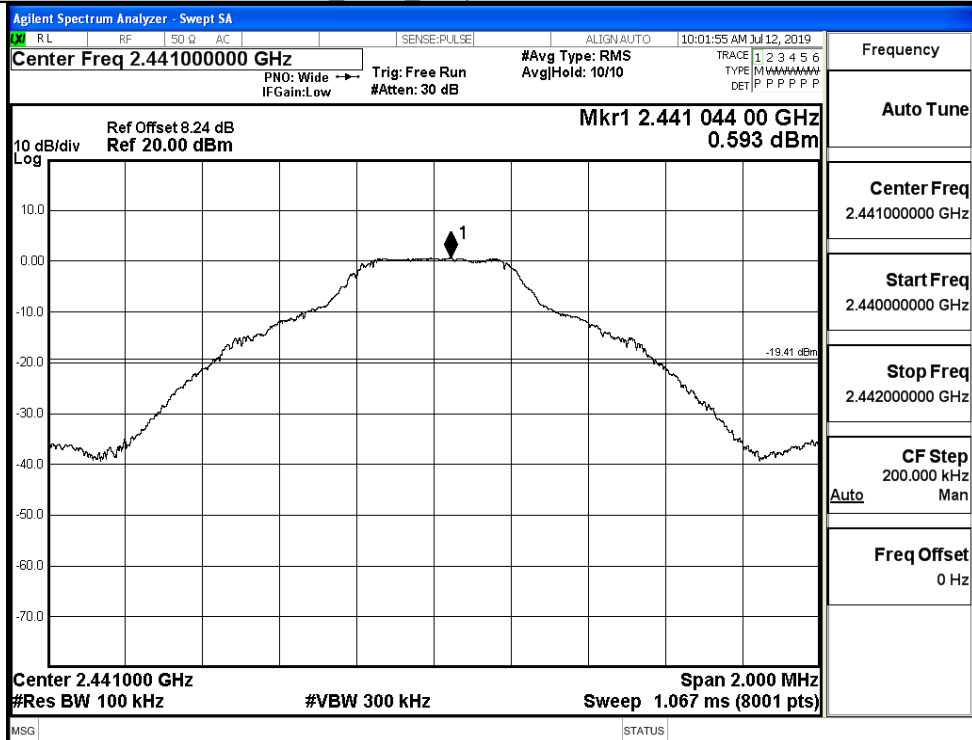


Puw

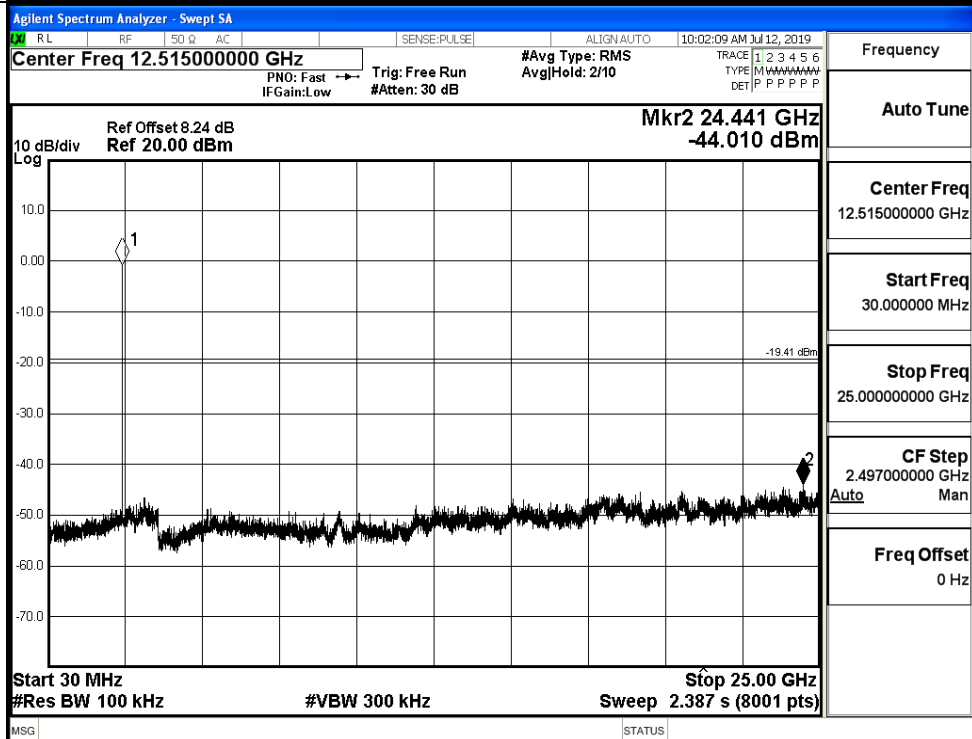


GFSK_MCH_Graphs

Pref

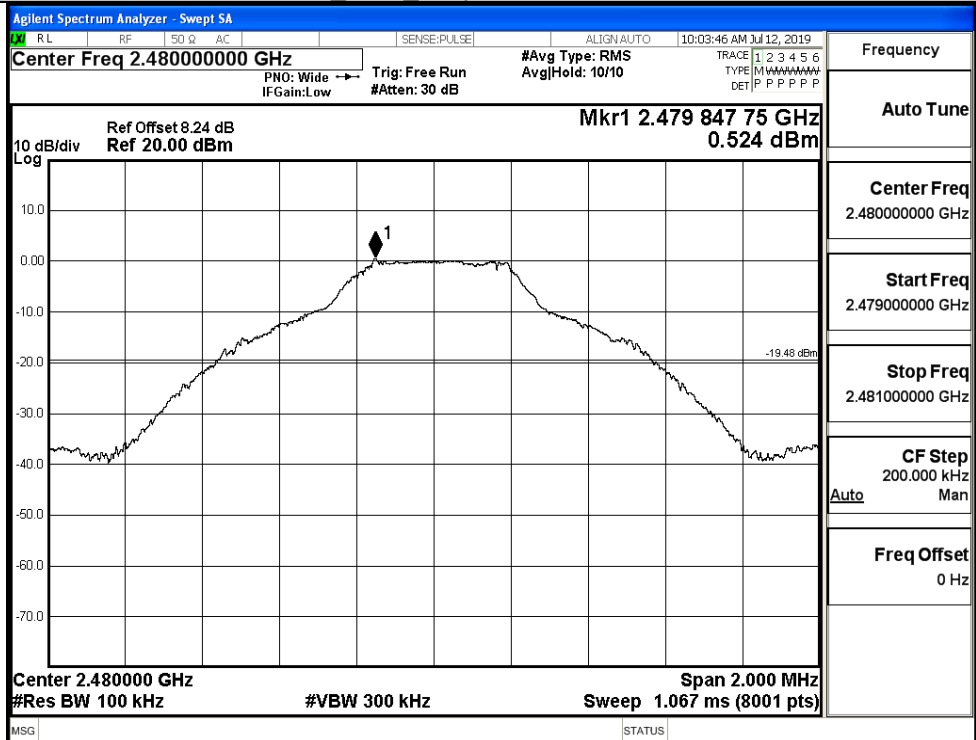


Puw

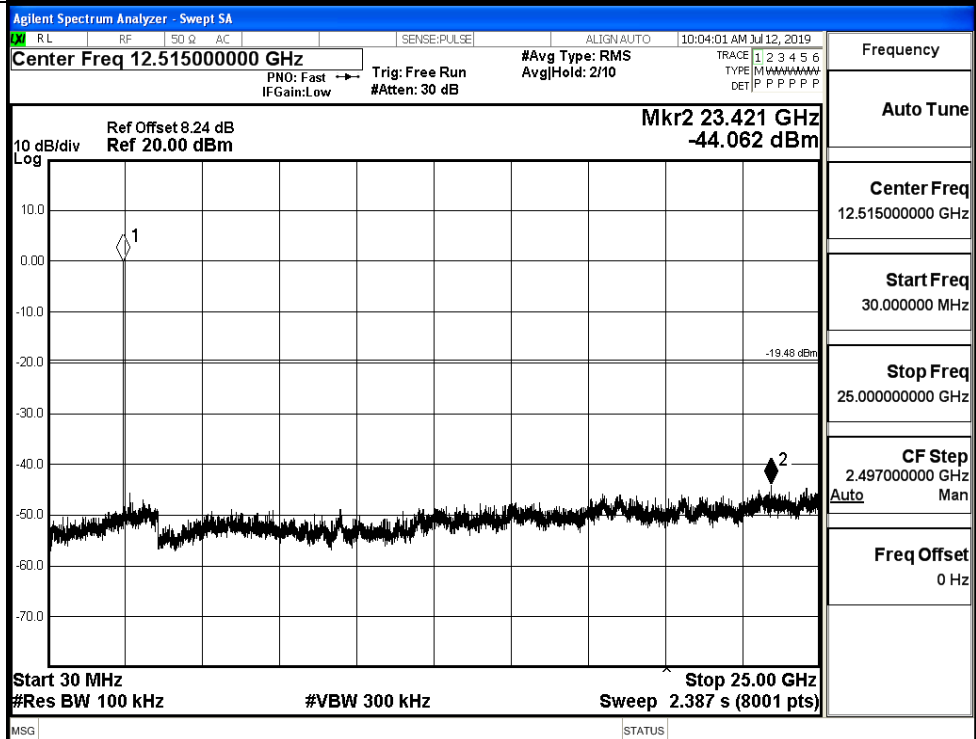


GFSK_HCH_Graphs

Pref

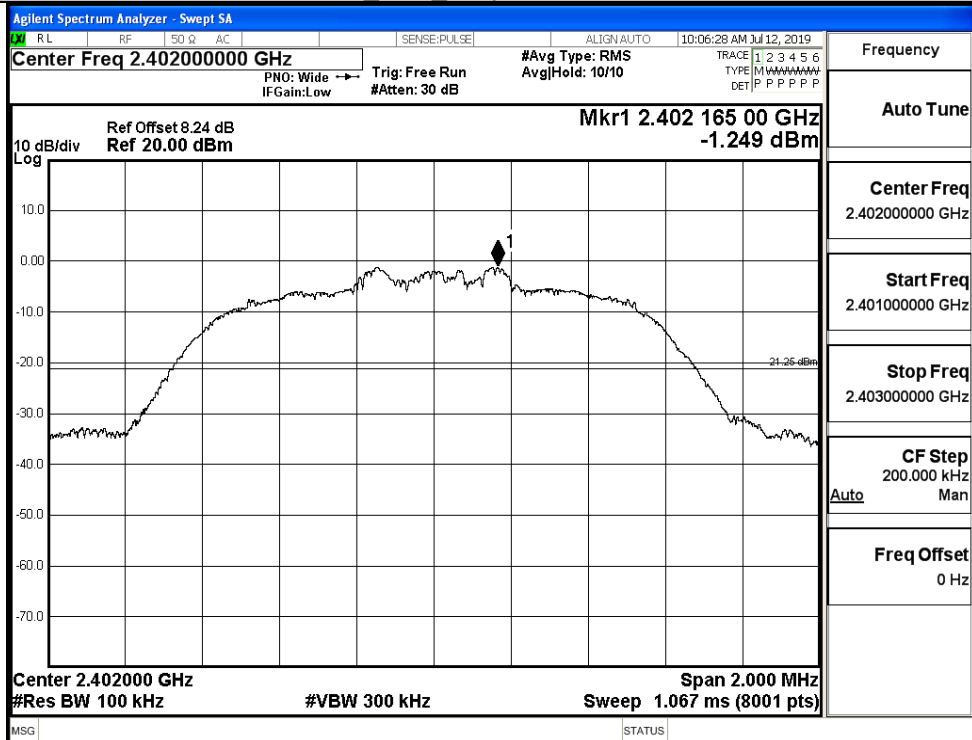


Puw

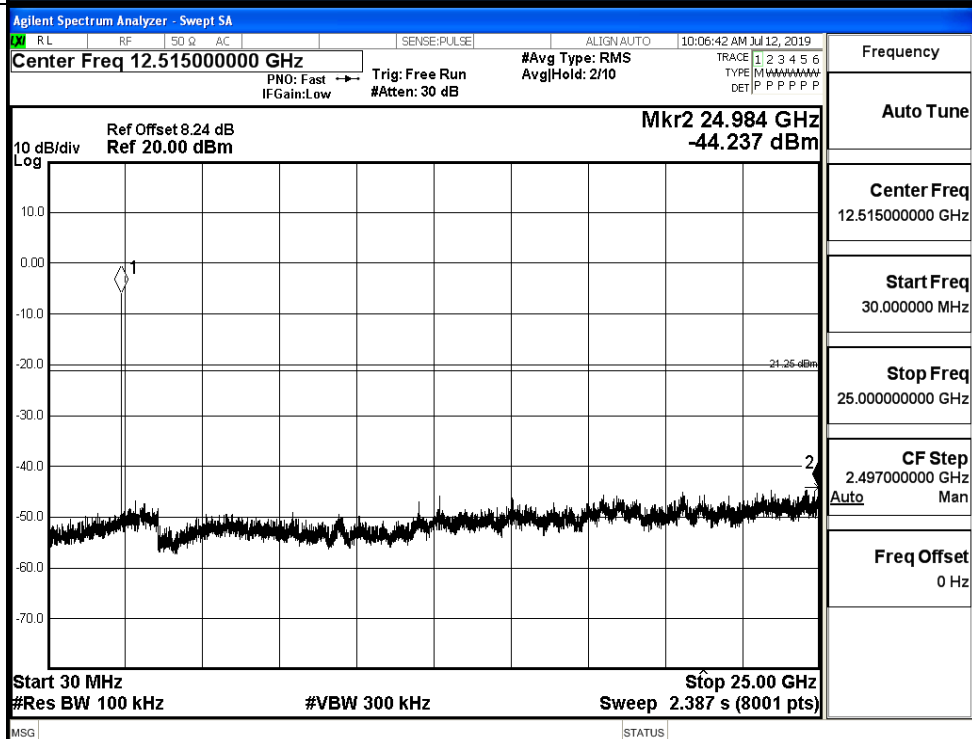


$\pi/4$ DQPSK_LCH_Graphs

Pref

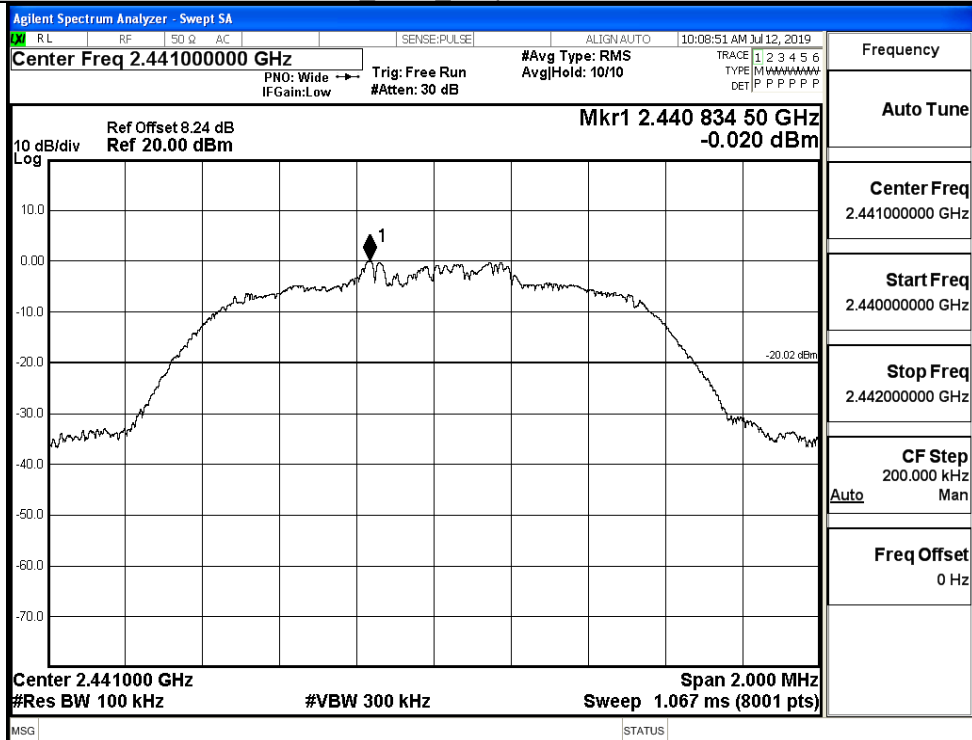


Puw

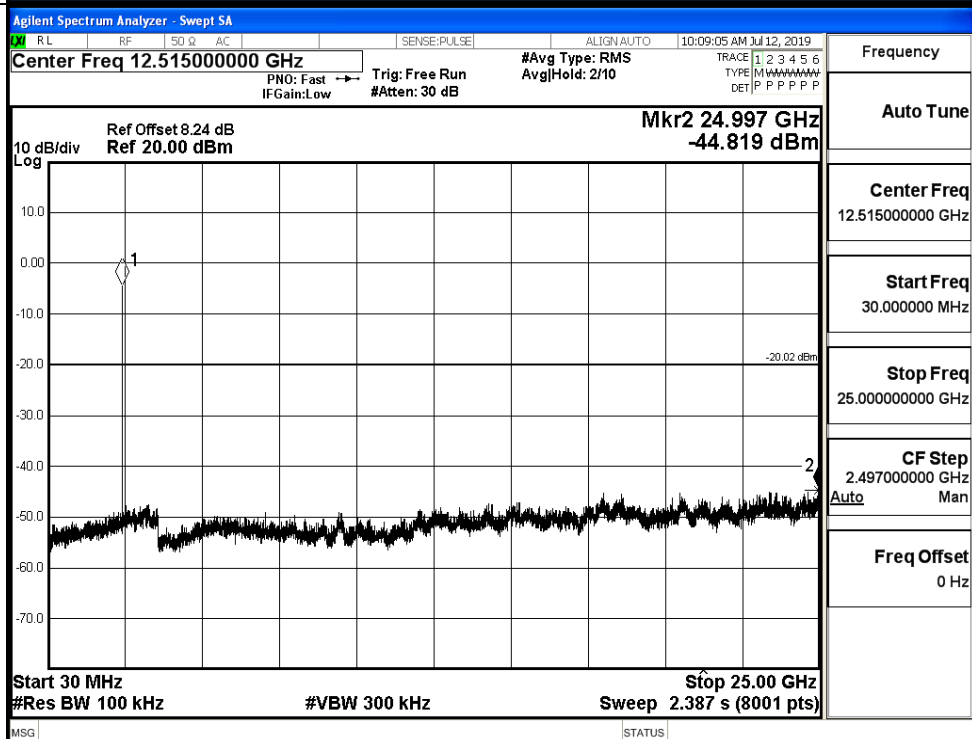


π /4DQPSK_MCH_Graphs

Pref

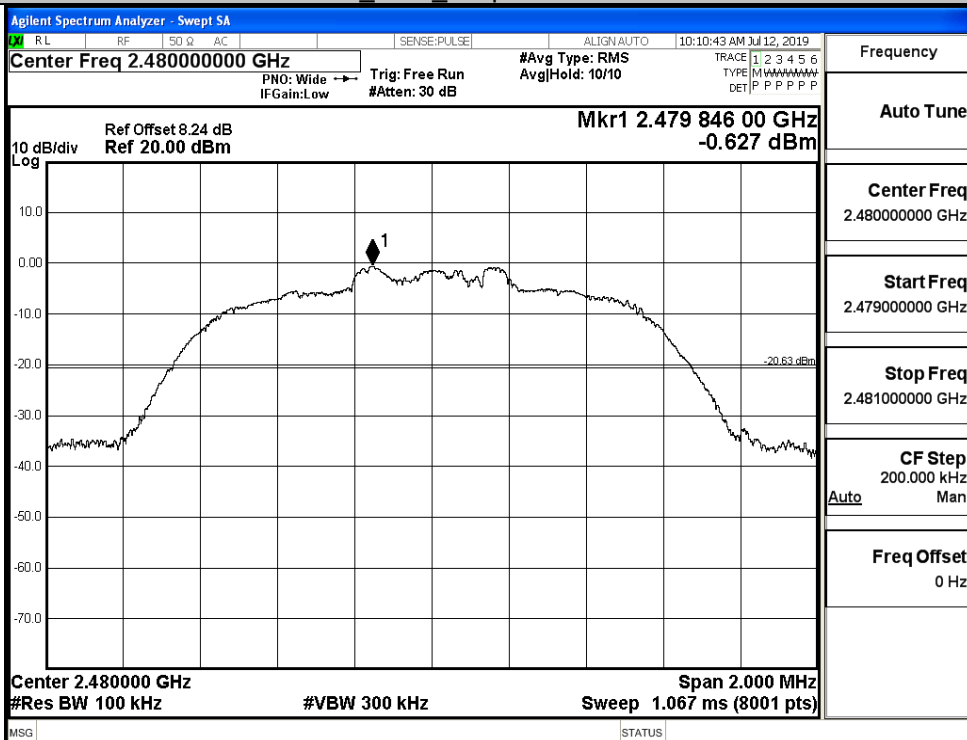


Puw

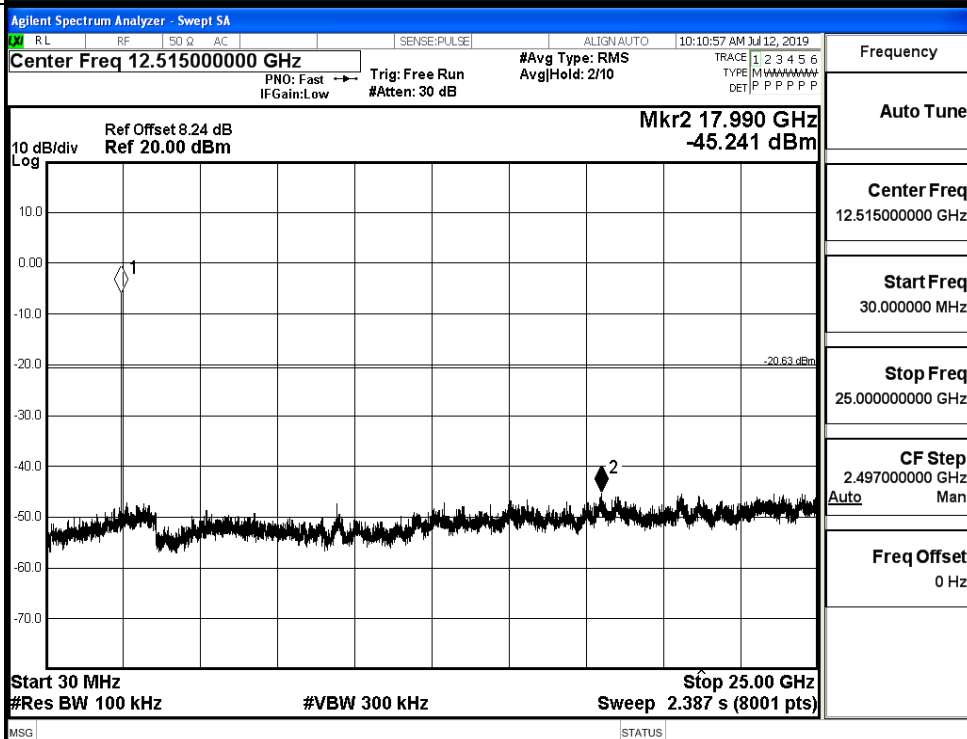


π /4DQPSK_HCH_Graphs

Pref

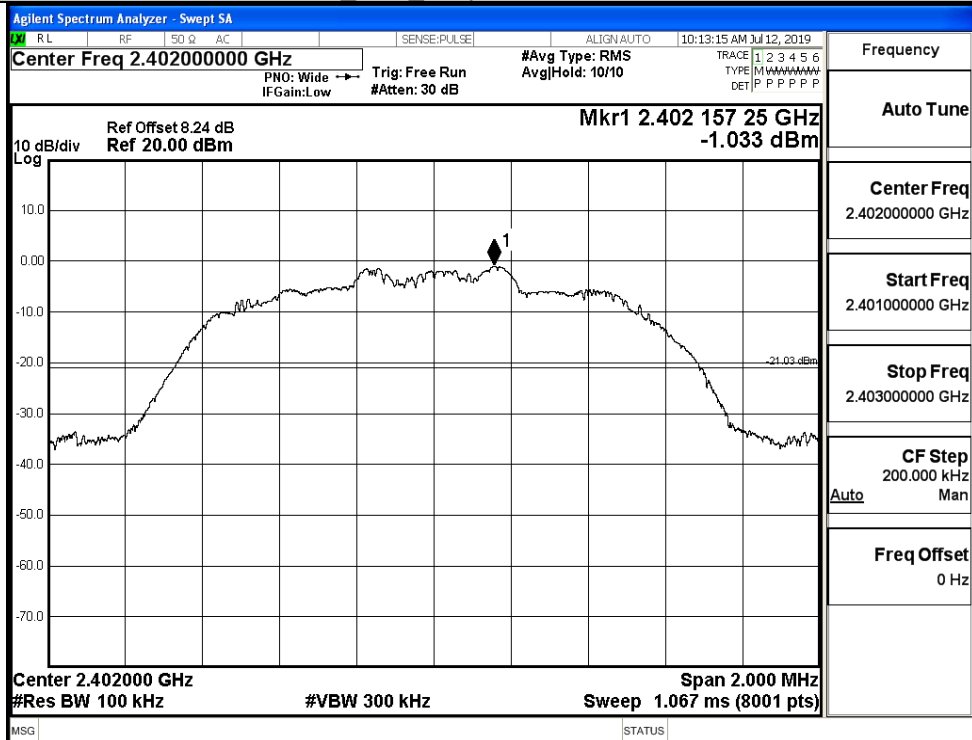


Puw

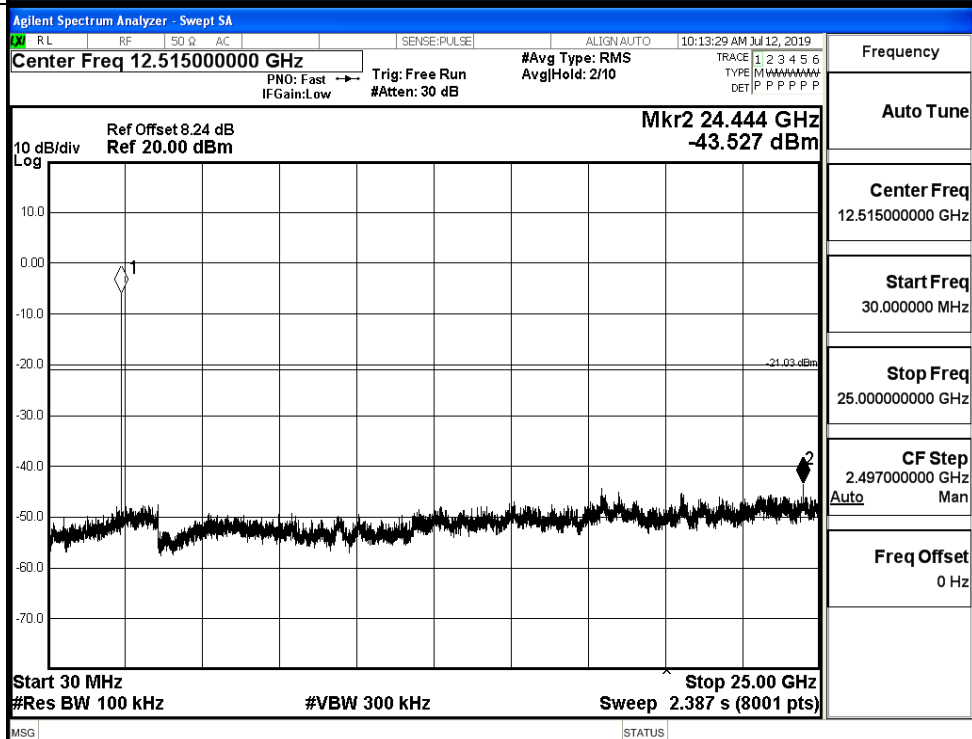


8DPSK_LCH_Graphs

Pref

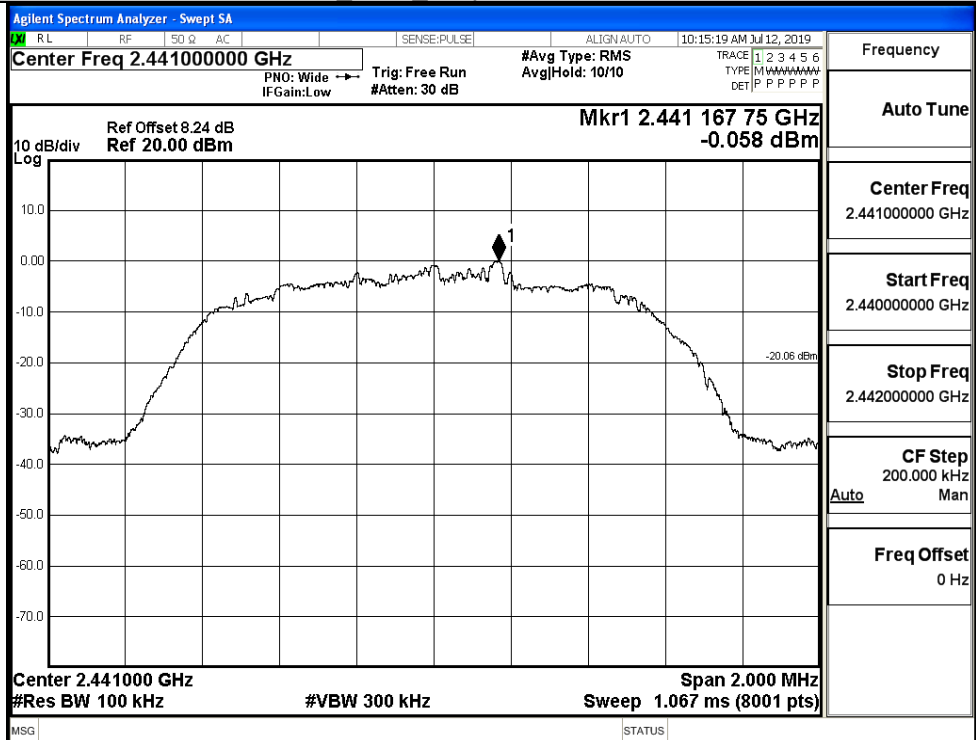


Puw

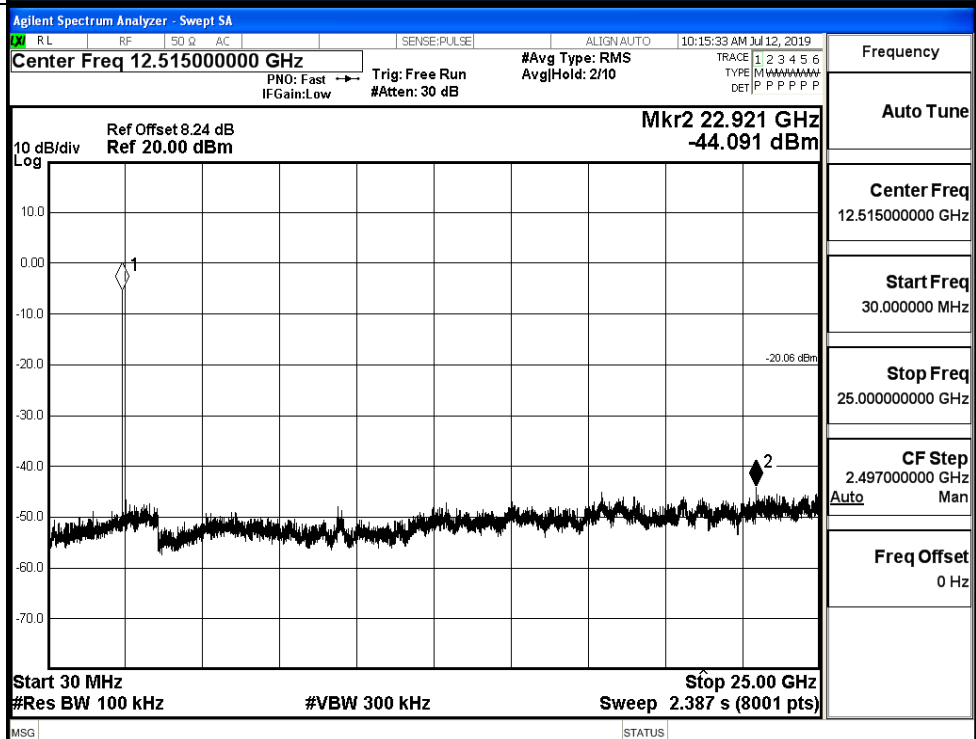


8DPSK_MCH_Graphs

Pref

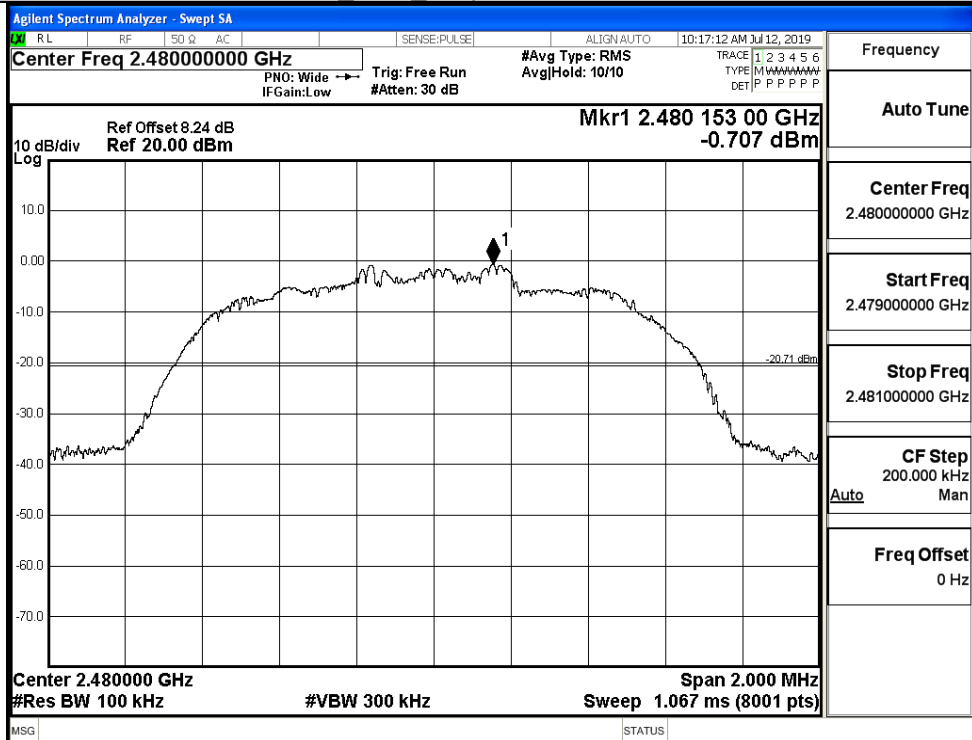


Puw

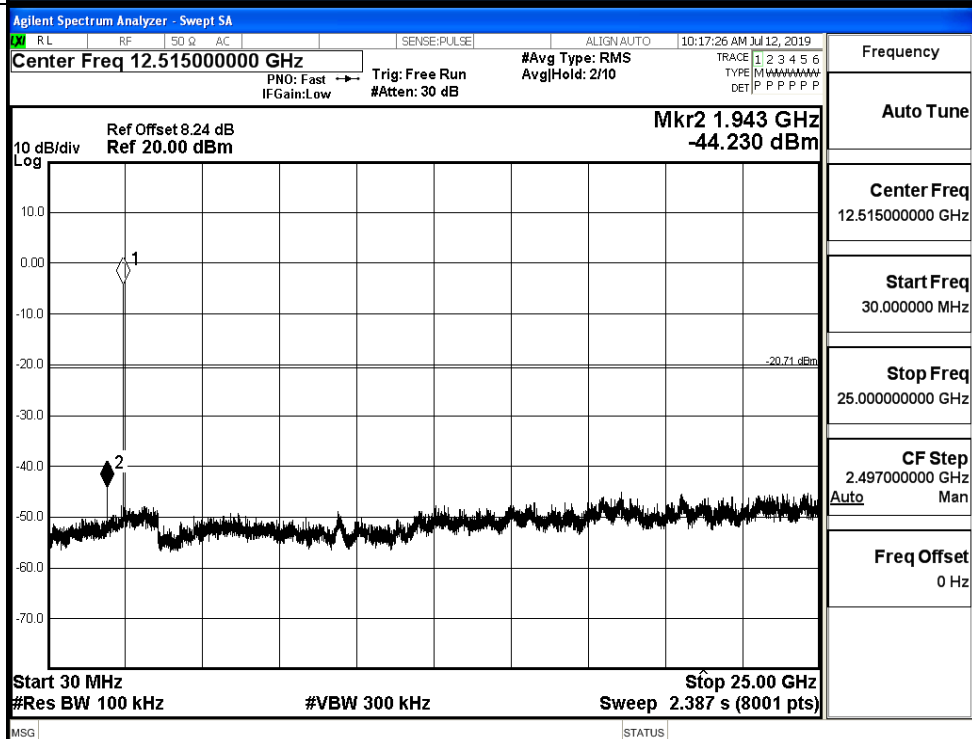


8DPSK_HCH_Graphs

Pref



Puw

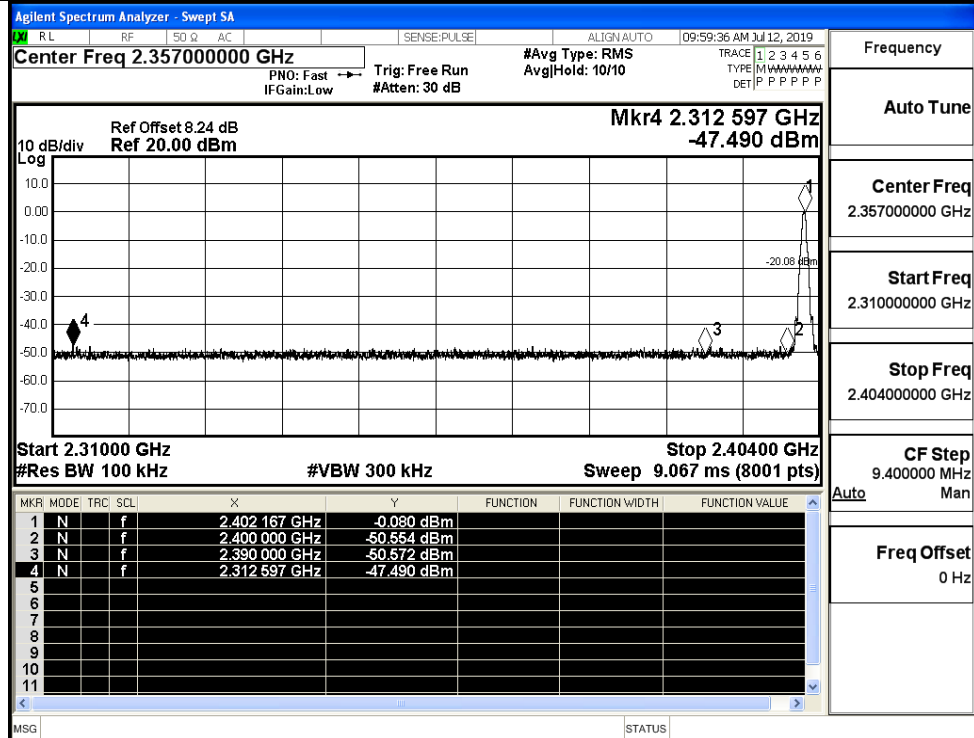


A.8 Band-edge for RF Conducted Emissions

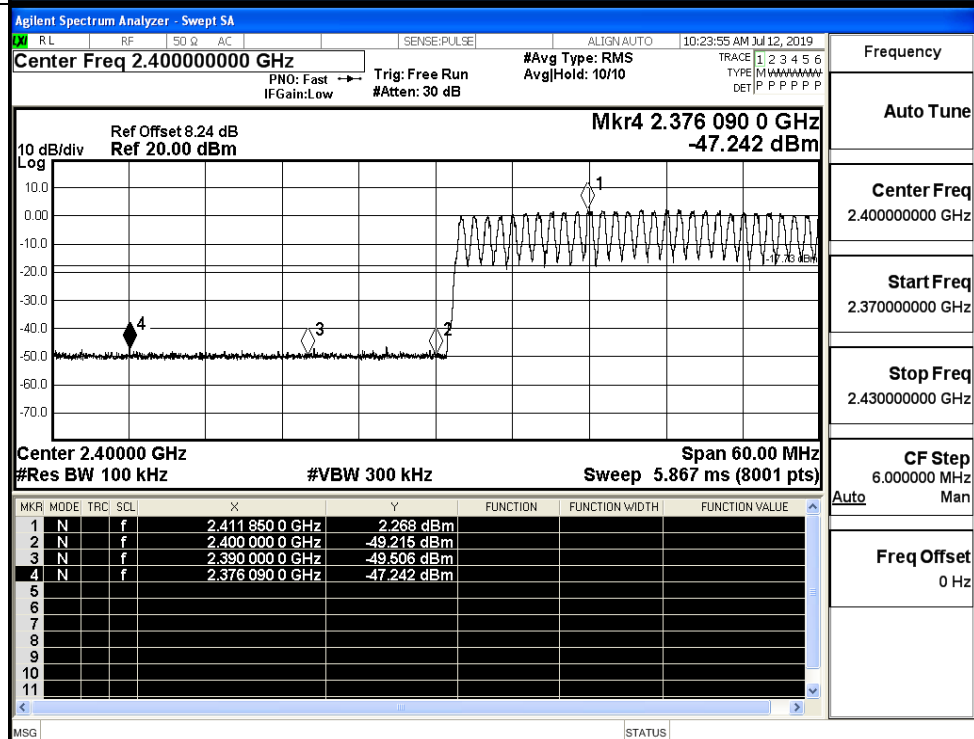
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.080	Off	-47.490	-20.08	PASS
			2.268	On	-47.242	-17.73	PASS
	HCH	2480	0.650	Off	-46.870	-19.35	PASS
			2.382	On	-47.204	-17.62	PASS
$\pi/4$ DQPSK	LCH	2402	-3.128	Off	-46.782	-23.13	PASS
			0.537	On	-46.822	-19.46	PASS
	HCH	2480	-0.578	Off	-47.759	-20.58	PASS
			1.089	On	-46.962	-18.91	PASS
8DPSK	LCH	2402	-1.730	Off	-47.325	-21.73	PASS
			0.854	On	-46.253	-19.15	PASS
	HCH	2480	-0.690	Off	-47.458	-20.69	PASS
			0.820	On	-46.697	-19.18	PASS

Test Graphs

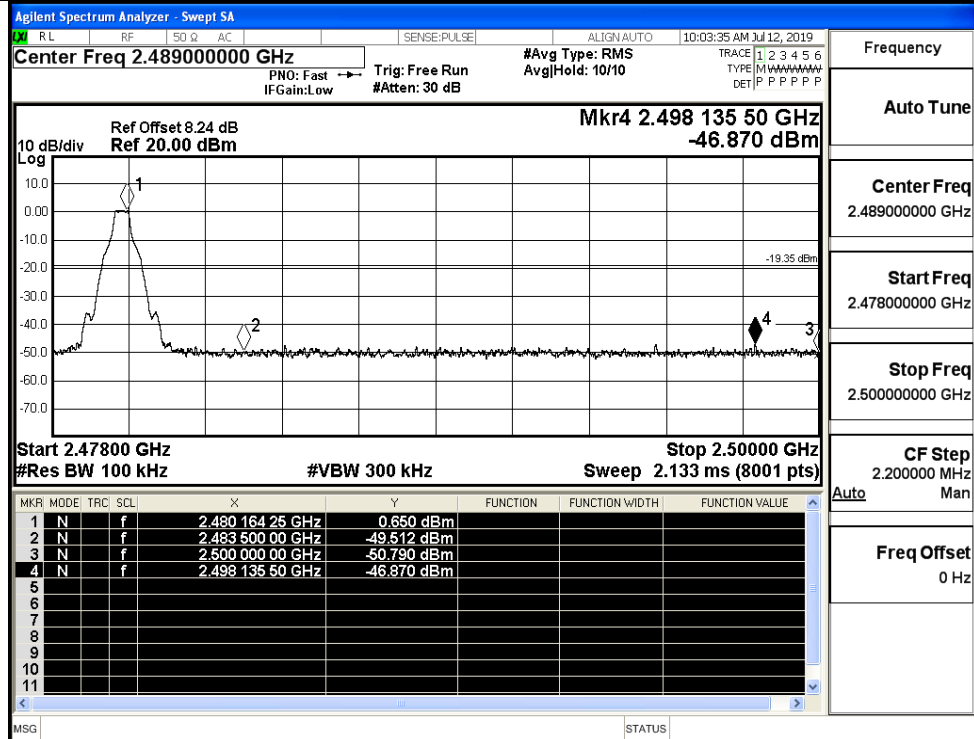
GFSK/LCH/No Hop



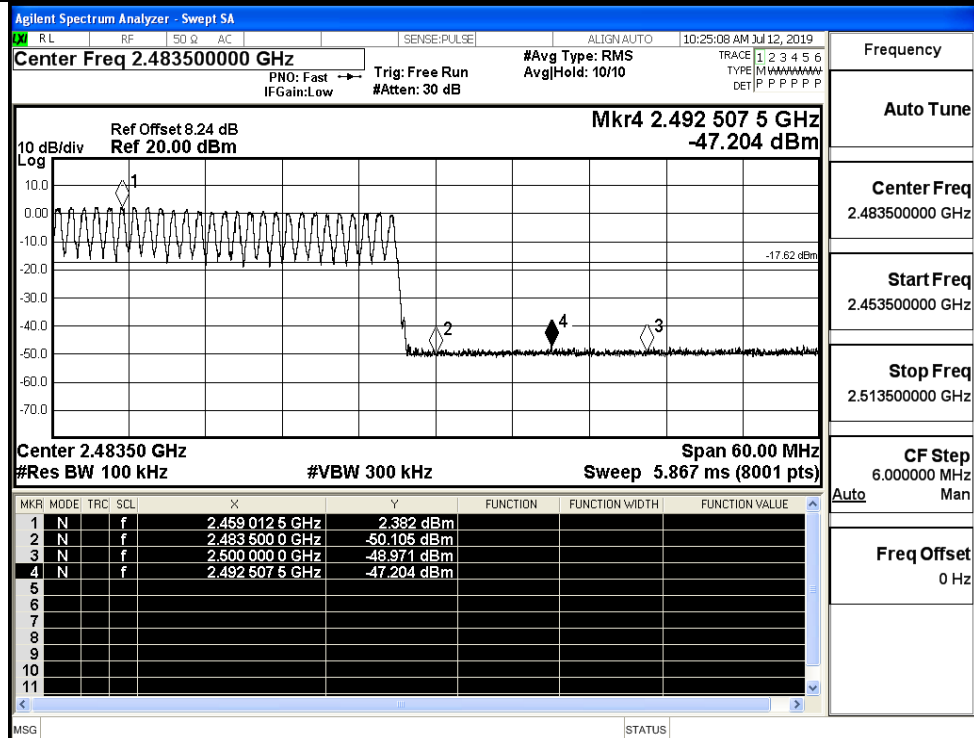
GFSK/LCH/Hop



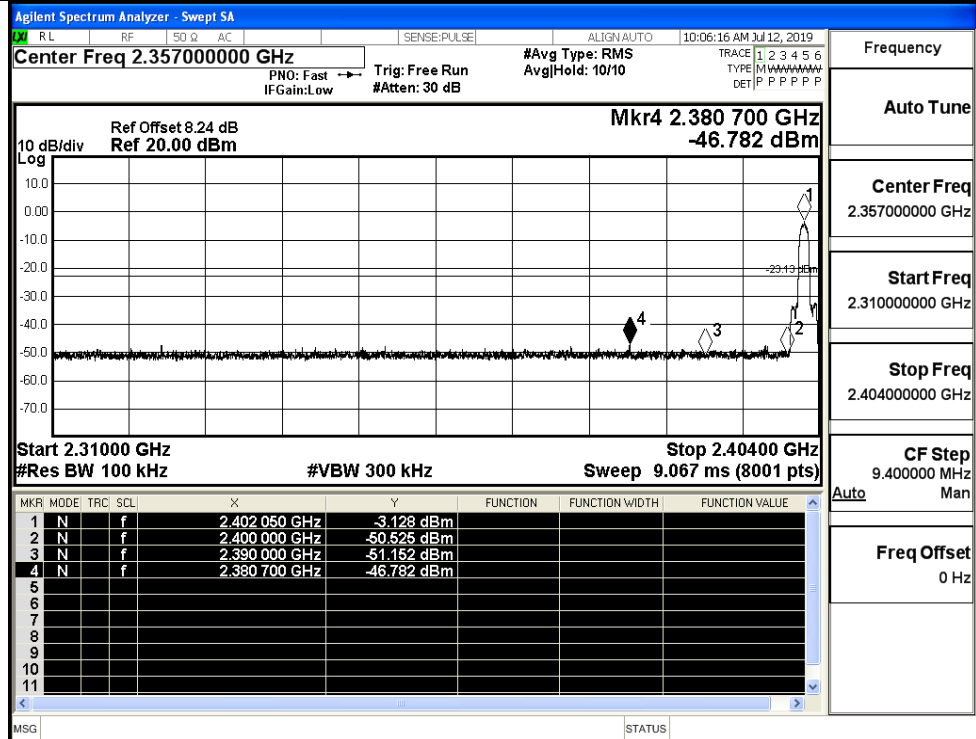
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

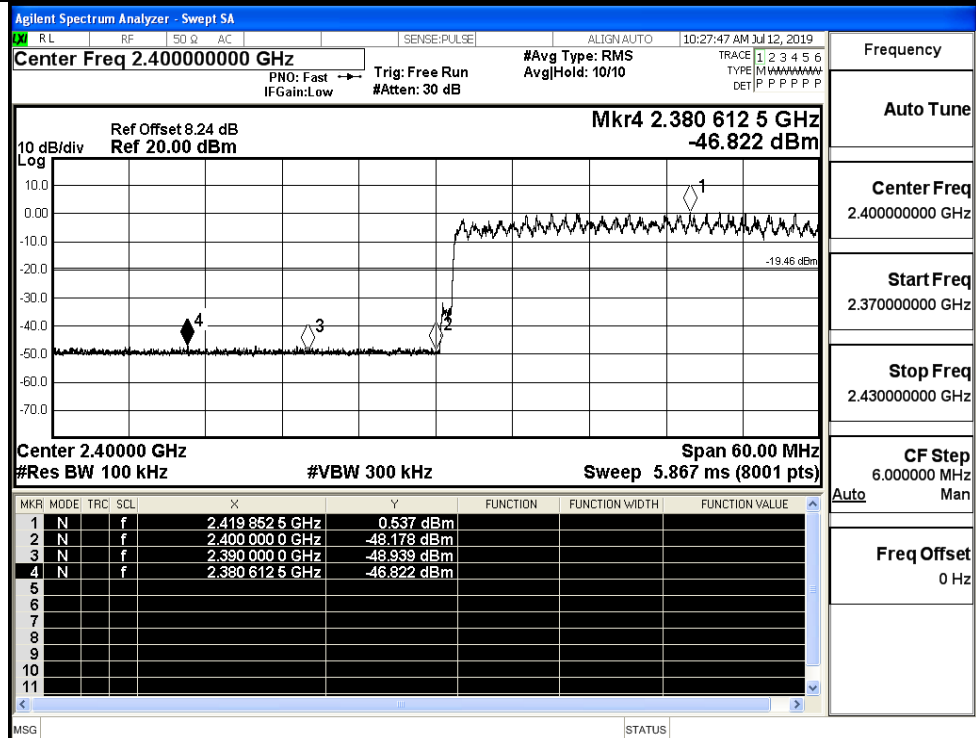
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

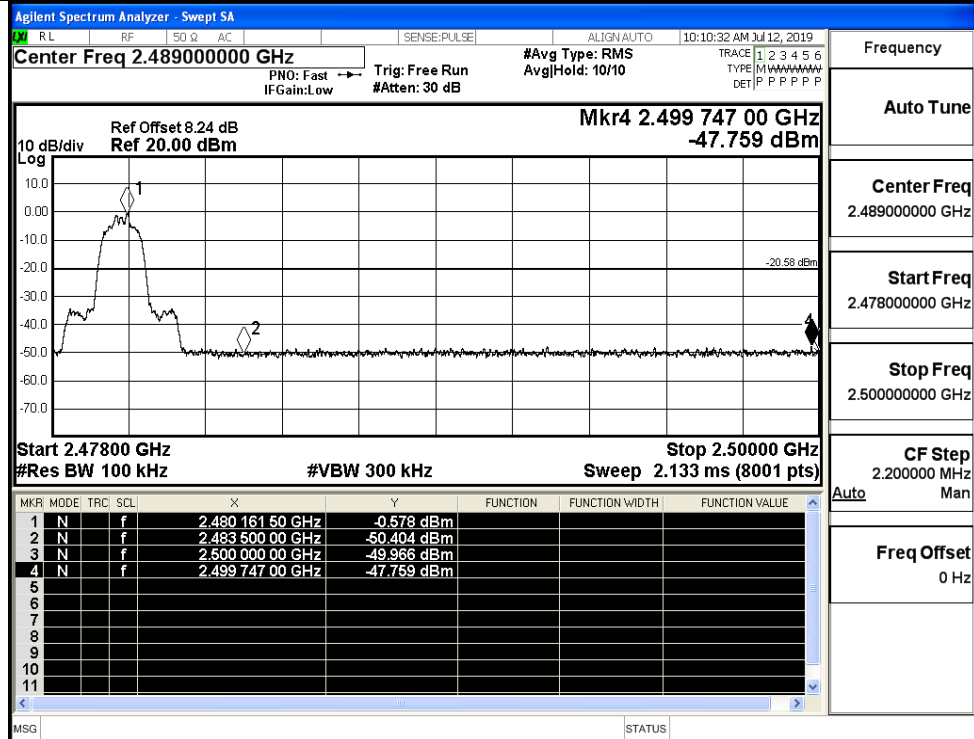
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

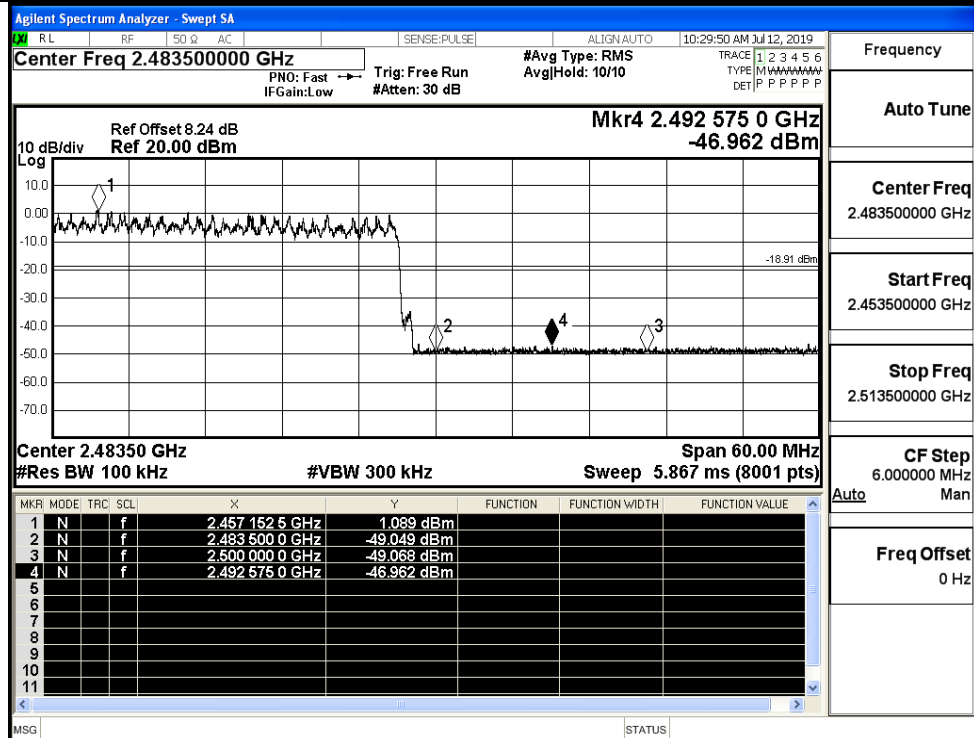
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

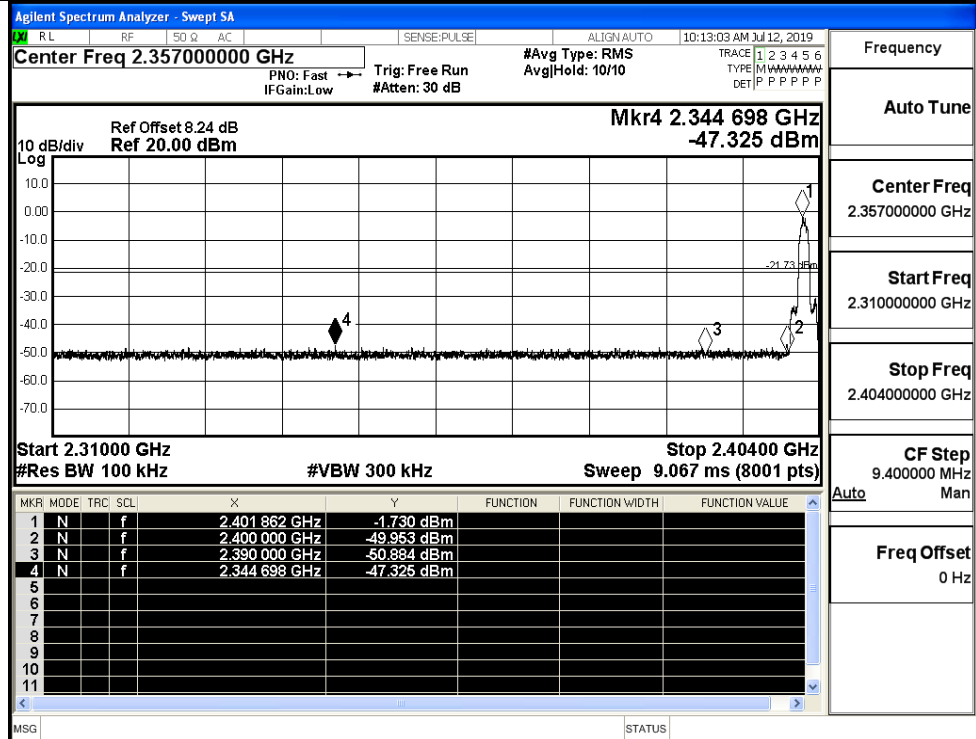
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

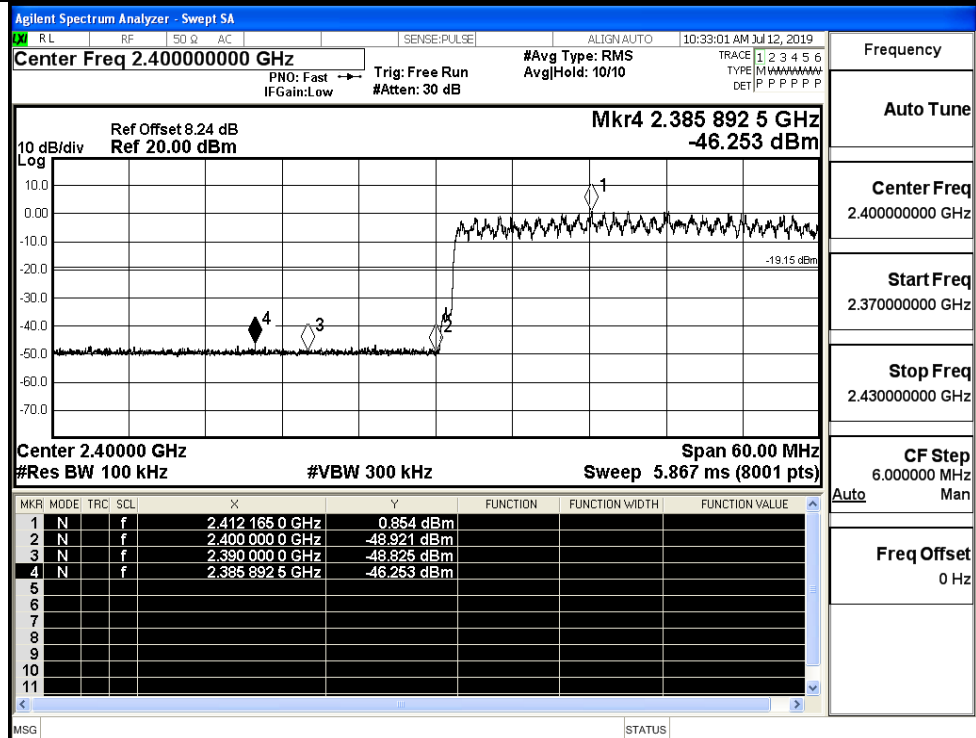
CF Step
6.000000 MHz

Freq Offset
0 Hz

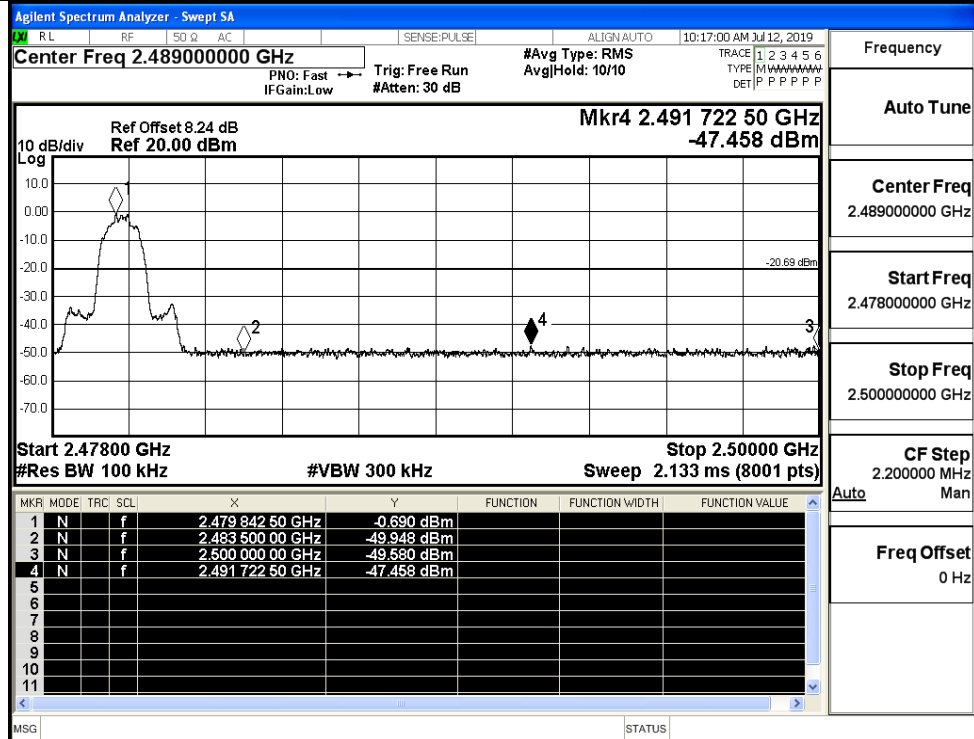
8DPSK/LCH/No Hop



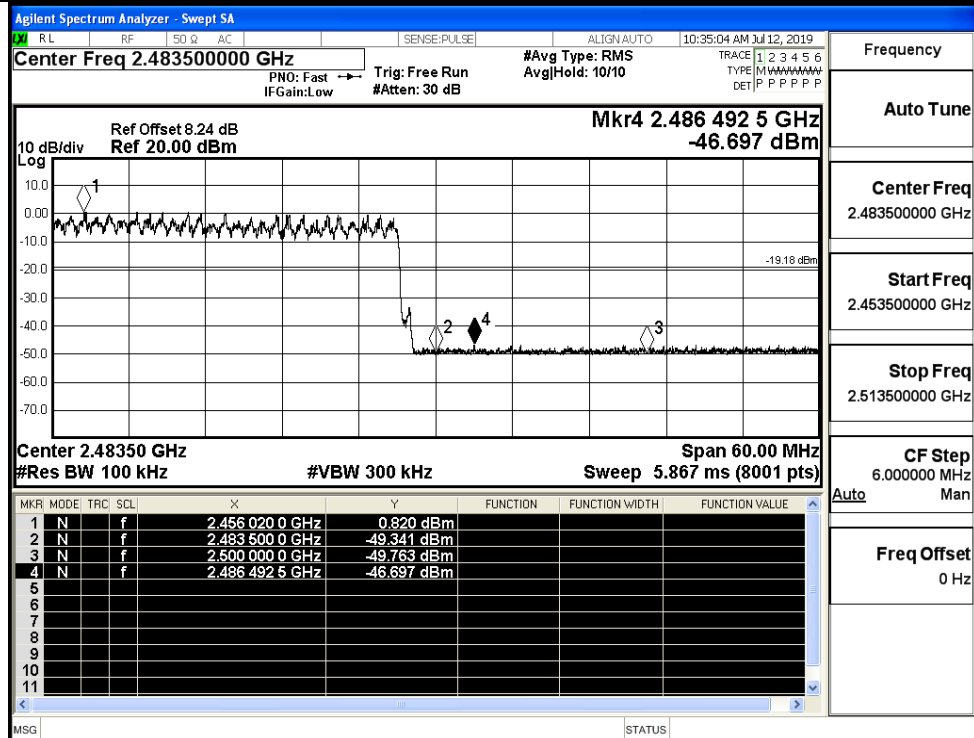
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



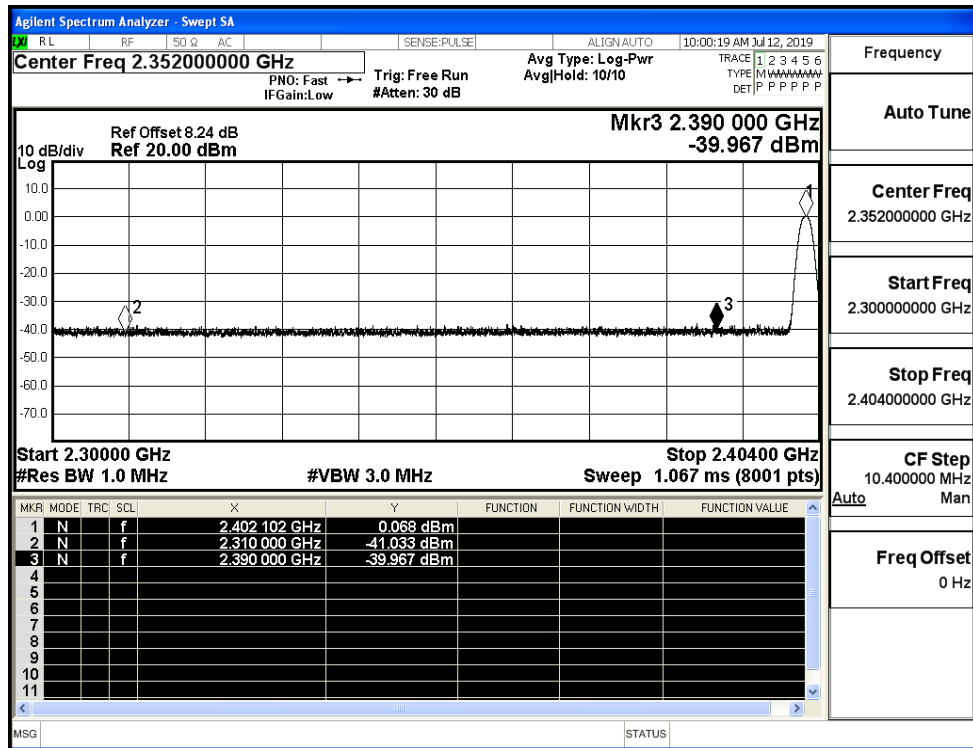
8DPSK/HCH/Hop



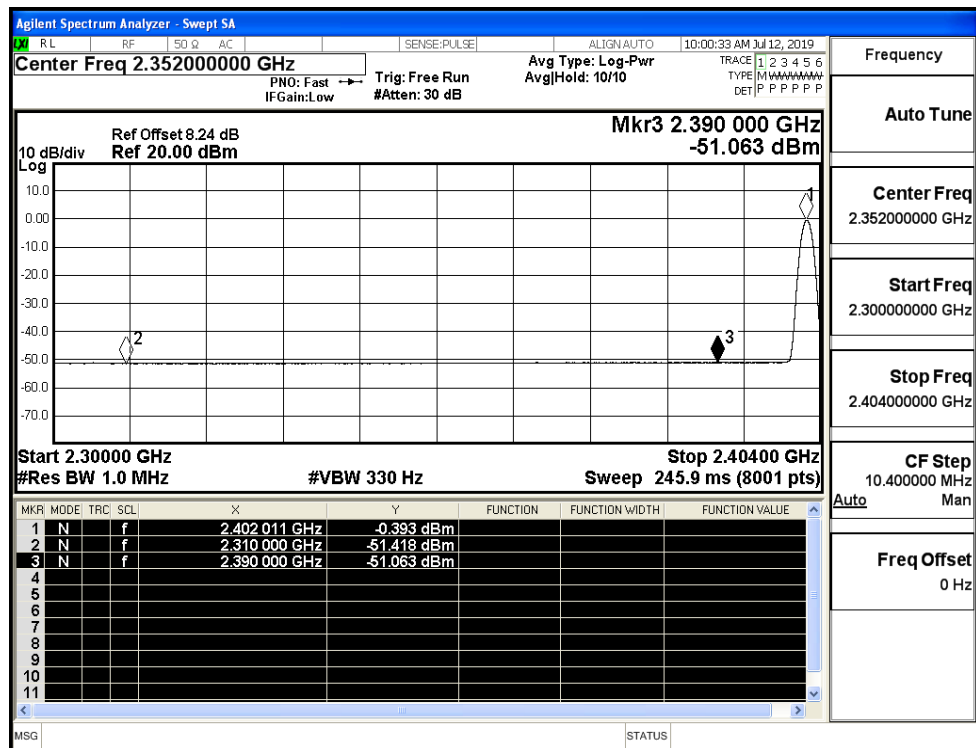
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.03	2.0	0	54.22	PEAK	74	PASS
	Off	2310.0	-51.42	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-39.97	2.0	0	55.29	PEAK	74	PASS
	Off	2390.0	-51.06	2.0	0	44.19	AV	54	PASS
	Off	2483.5	-39.93	2.0	0	55.32	PEAK	74	PASS
	Off	2483.5	-50.67	2.0	0	44.59	AV	54	PASS
	Off	2500.0	-41.42	2.0	0	53.84	PEAK	74	PASS
	Off	2500.0	-50.75	2.0	0	44.51	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-40.93	2.0	0	54.33	PEAK	74	PASS
	Off	2310.0	-51.30	2.0	0	43.96	AV	54	PASS
	Off	2390.0	-41.79	2.0	0	53.47	PEAK	74	PASS
	Off	2390.0	-51.11	2.0	0	44.15	AV	54	PASS
	Off	2483.5	-40.11	2.0	0	55.15	PEAK	74	PASS
	Off	2483.5	-50.76	2.0	0	44.50	AV	54	PASS
	Off	2500.0	-41.27	2.0	0	53.99	PEAK	74	PASS
	Off	2500.0	-50.72	2.0	0	44.54	AV	54	PASS
8DPSK	Off	2310.0	-42.59	2.0	0	52.66	PEAK	74	PASS
	Off	2310.0	-51.23	2.0	0	44.03	AV	54	PASS
	Off	2390.0	-40.37	2.0	0	54.89	PEAK	74	PASS
	Off	2390.0	-51.08	2.0	0	44.18	AV	54	PASS
	Off	2483.5	-41.01	2.0	0	54.25	PEAK	74	PASS
	Off	2483.5	-50.77	2.0	0	44.49	AV	54	PASS
	Off	2500.0	-40.46	2.0	0	54.80	PEAK	74	PASS
	Off	2500.0	-50.58	2.0	0	44.67	AV	54	PASS

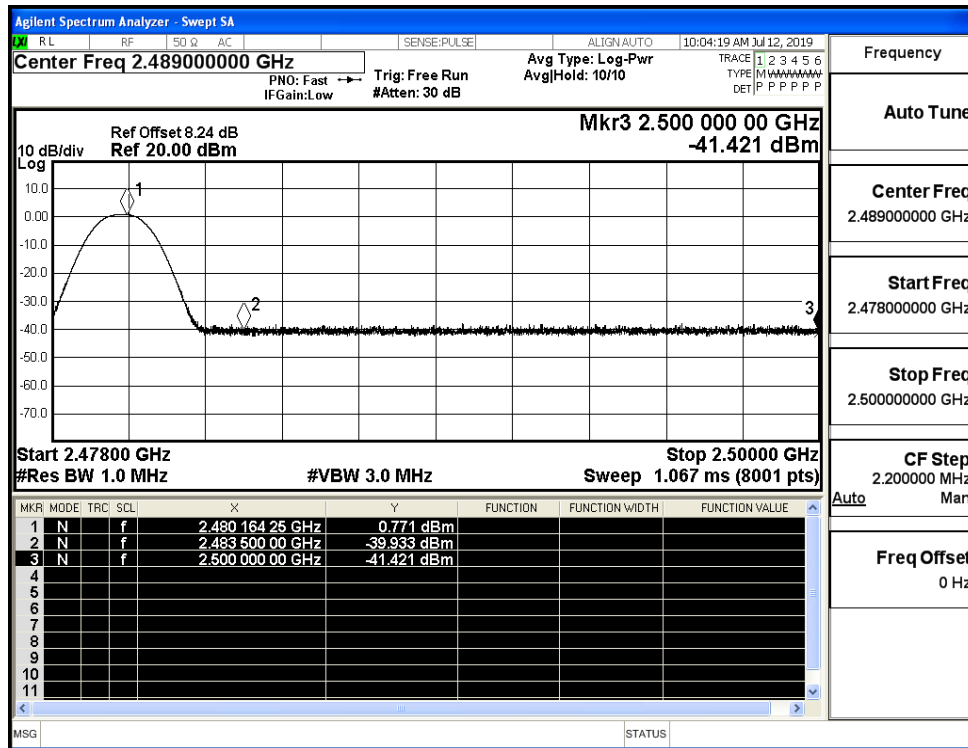
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



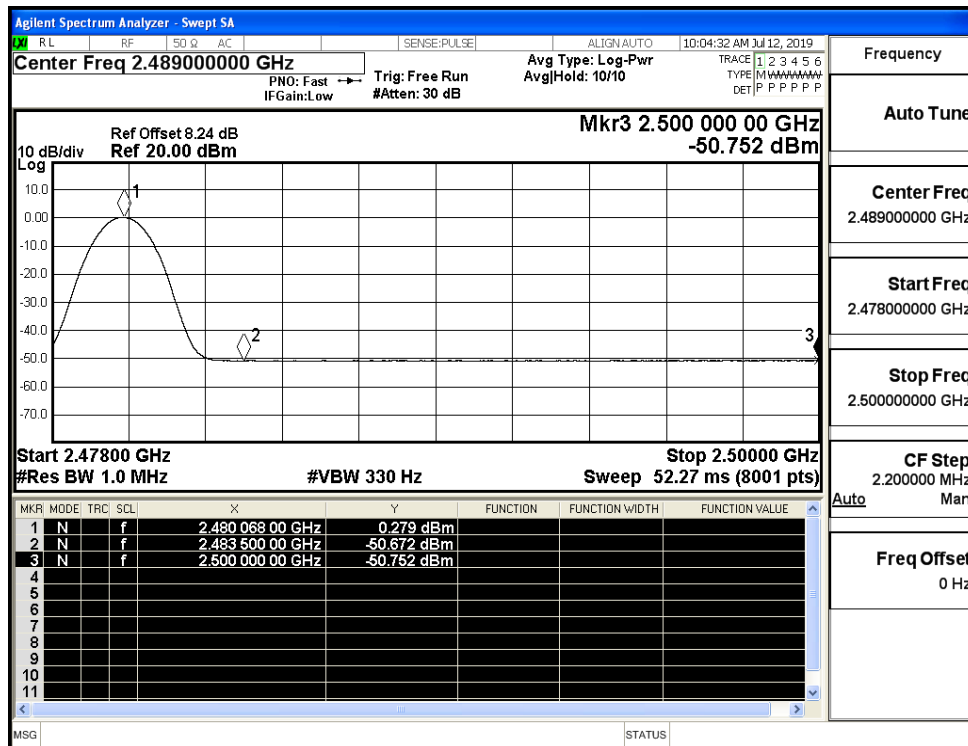
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

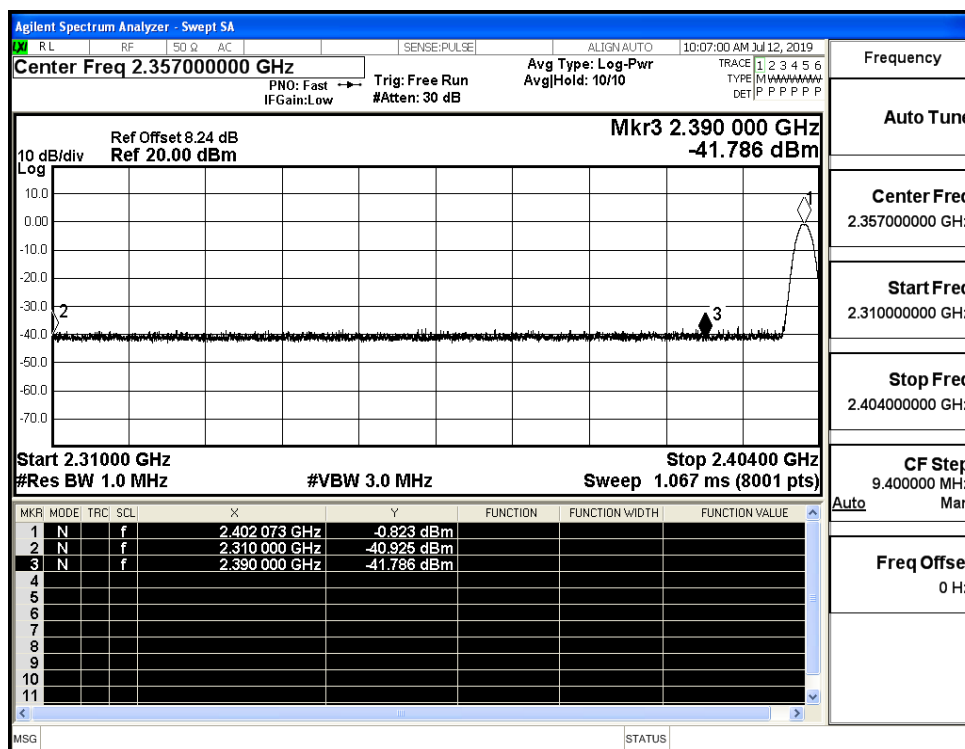
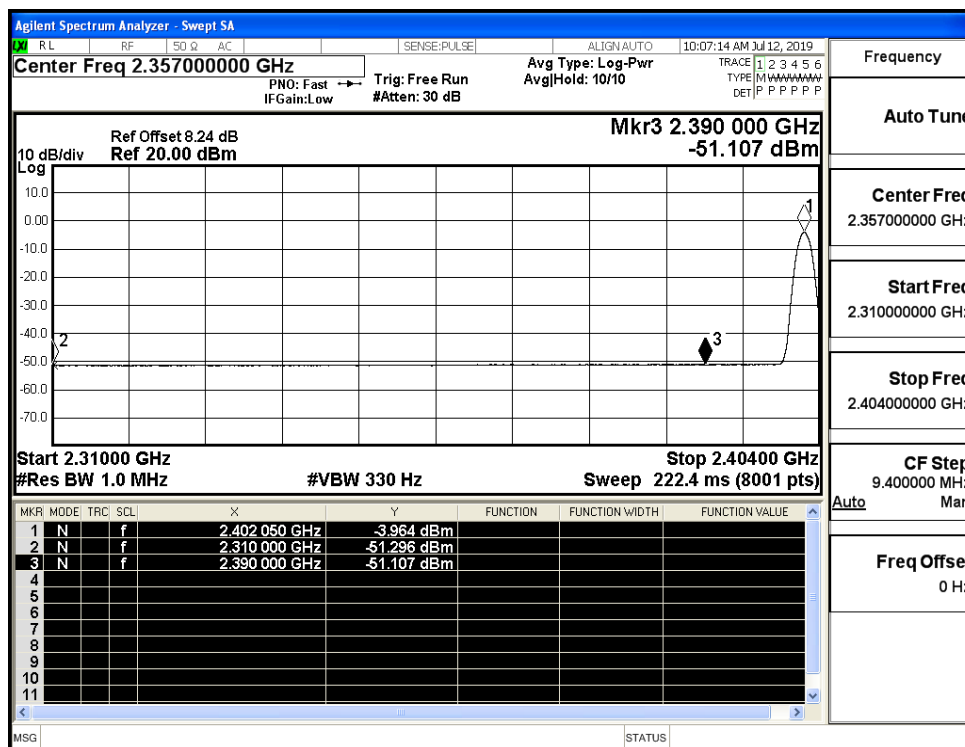


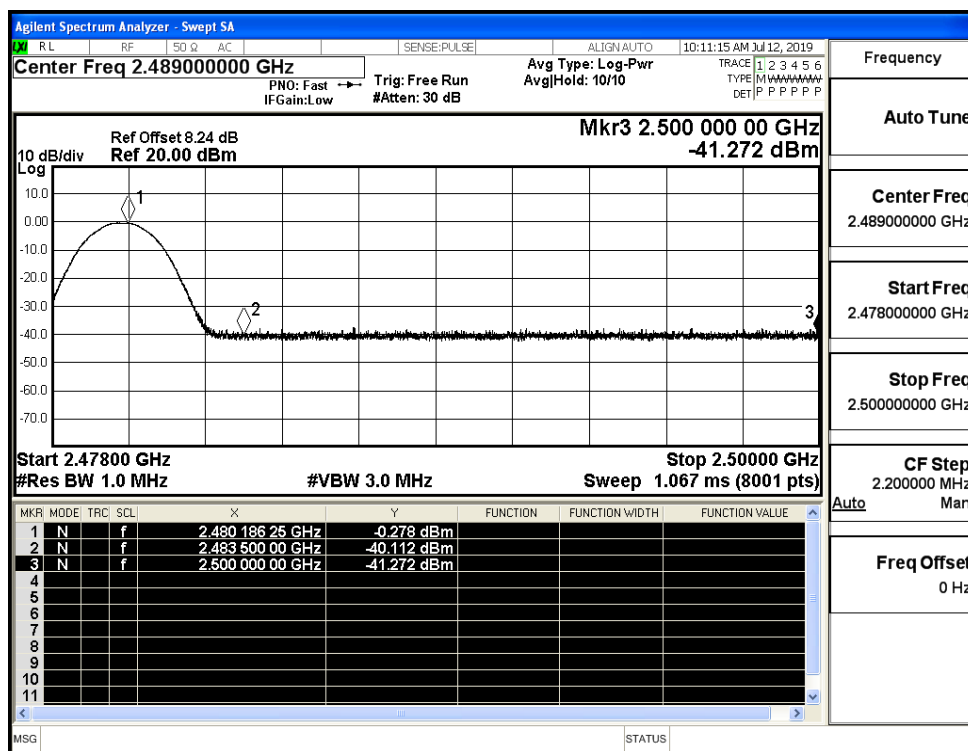
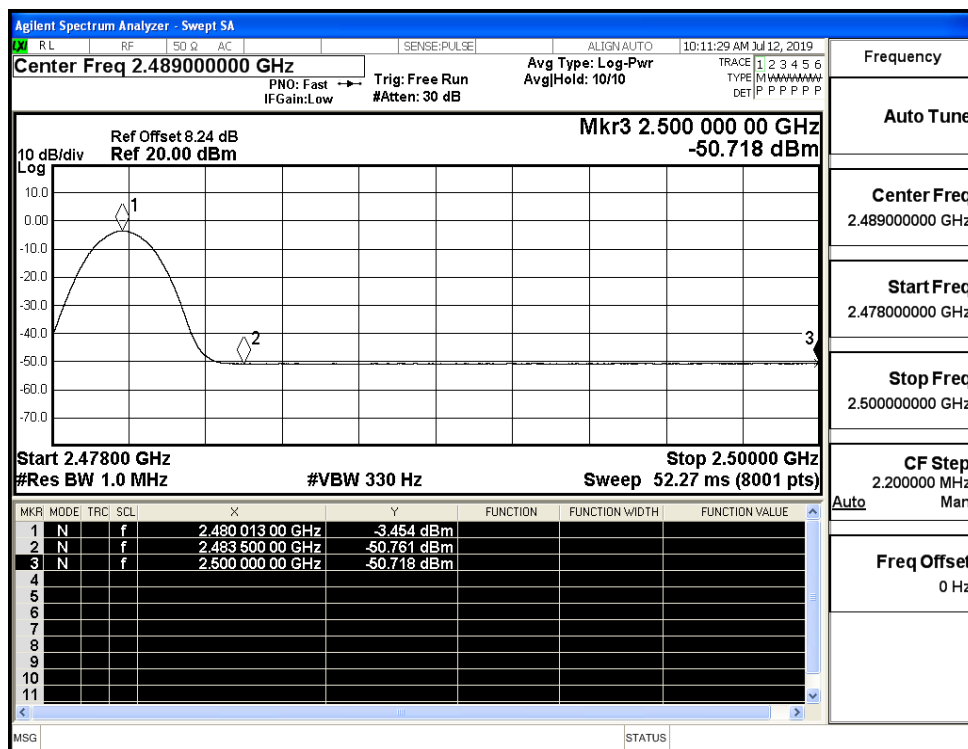
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



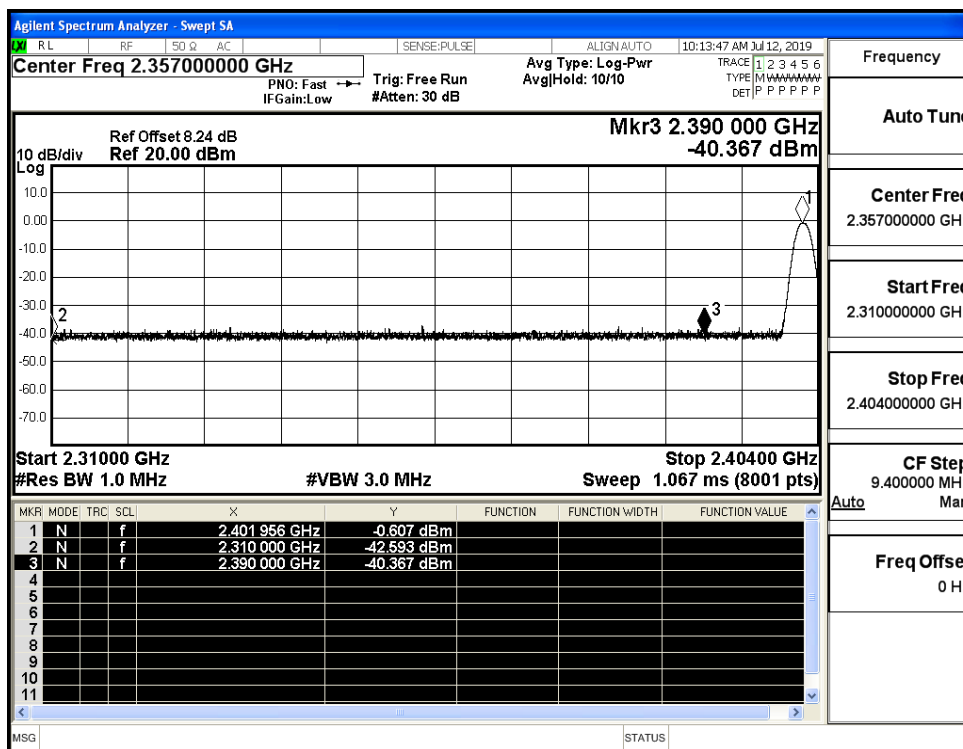
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



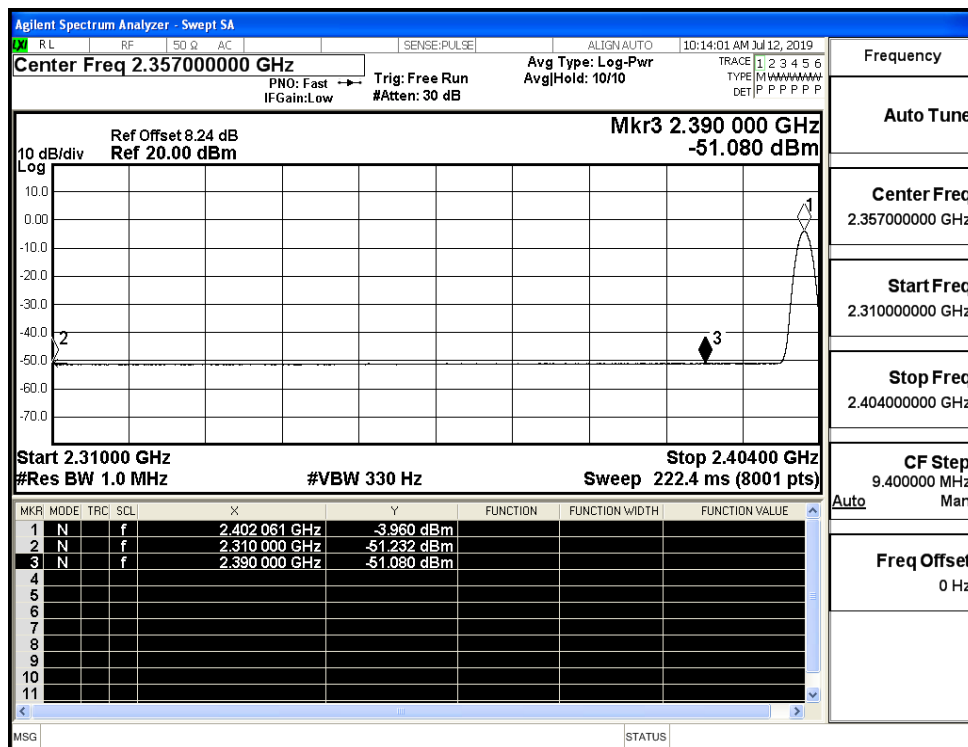
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

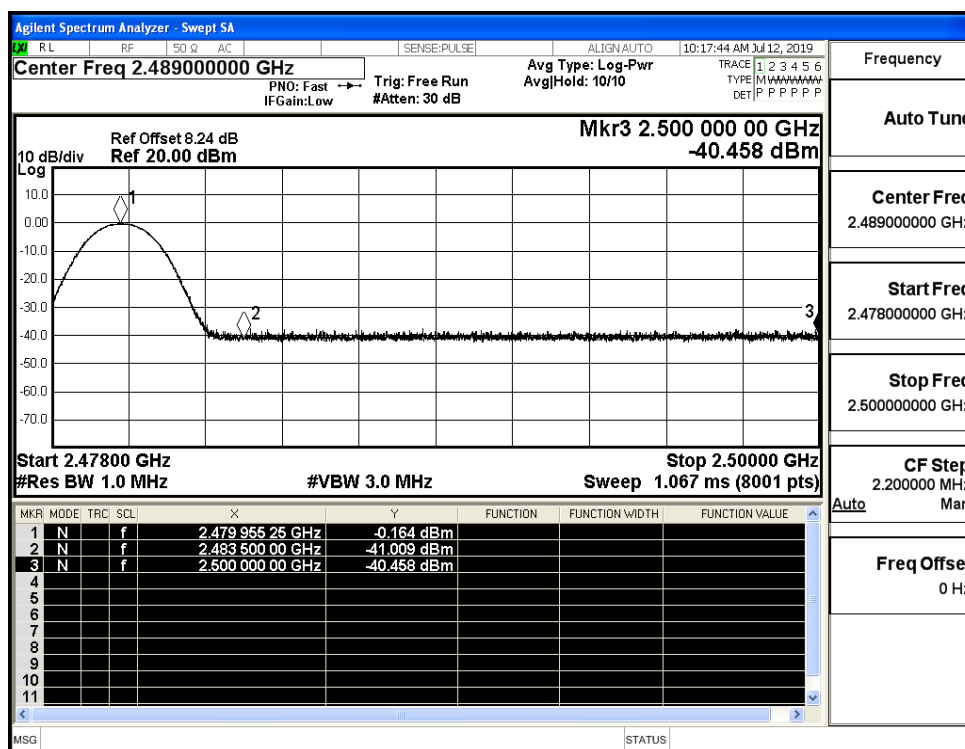
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

