

Appendix A

RF Test Data for BT V4.2(BDR/EDR) (Conducted Measurement)

Product Name: Arcos Bluetooth® Earbuds

Trade Mark: Gemline

Test Model: 100498-001B

Environmental Conditions

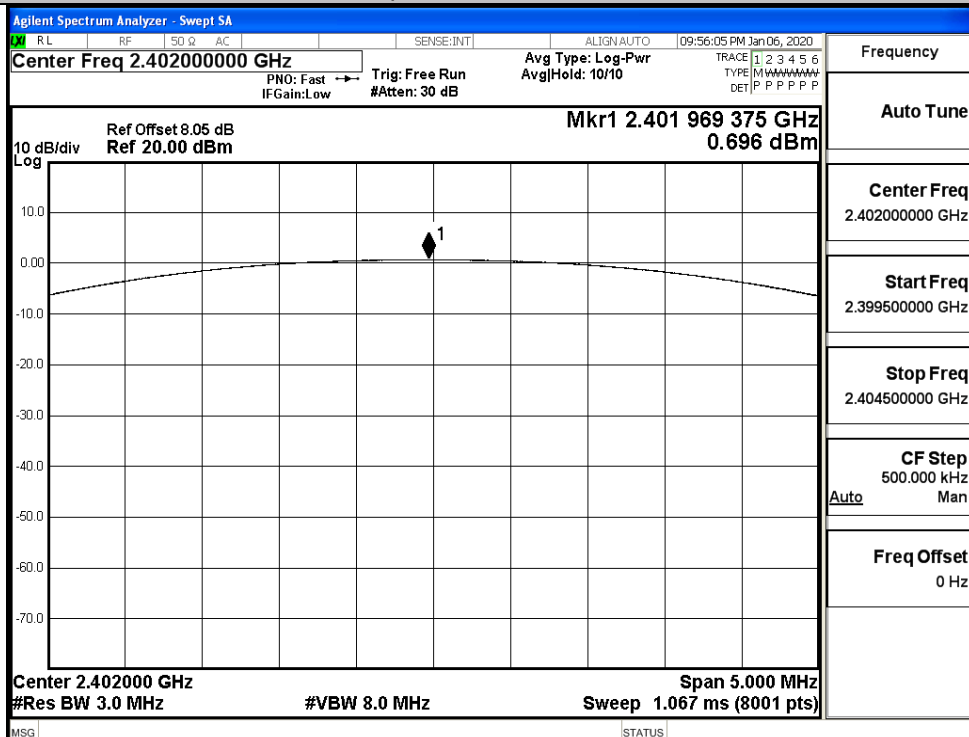
Temperature:	23.2 °C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	SCOUT WU
Supervised by:	Tom.Liu

A.1 Maxmum Conducted Peak Output Power

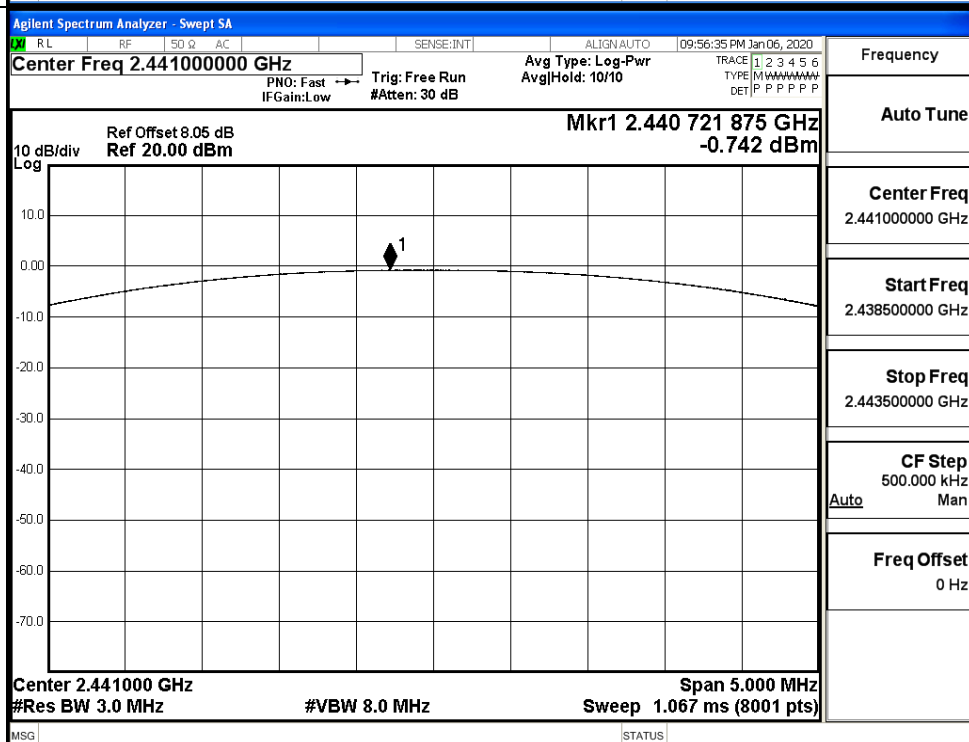
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.696	21	PASS
	MCH	-0.742	21	PASS
	HCH	-2.363	21	PASS
$\pi/4$ DQPSK	LCH	3.057	21	PASS
	MCH	1.589	21	PASS
	HCH	-0.107	21	PASS
8DPSK	LCH	3.477	21	PASS
	MCH	2.055	21	PASS
	HCH	0.322	21	PASS

Test Graphs

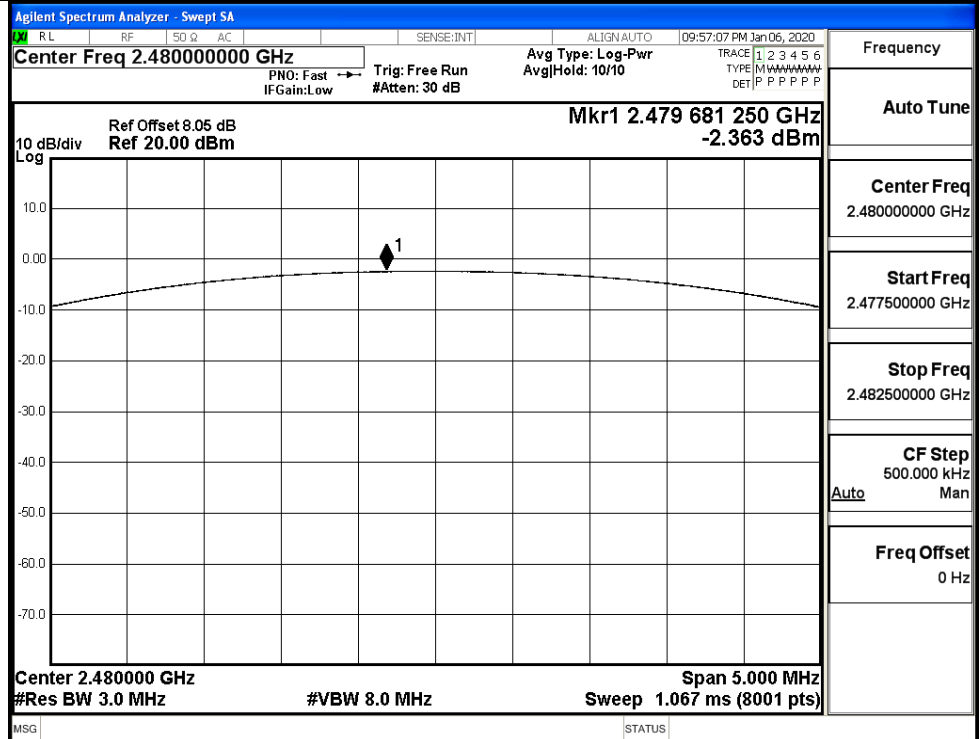
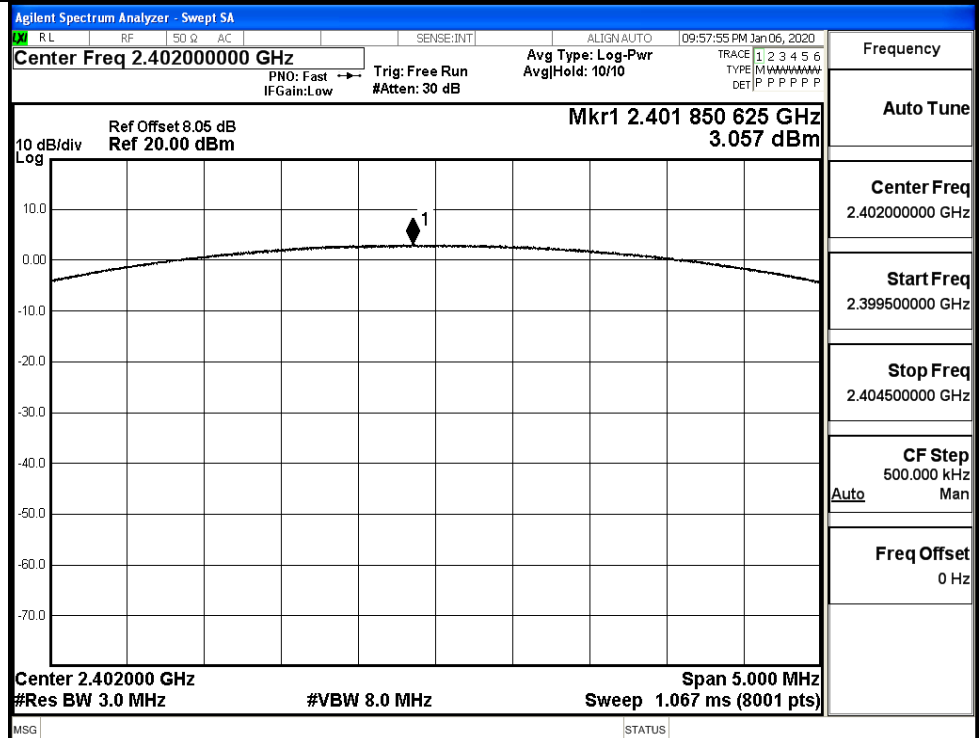
GFSK/LCH

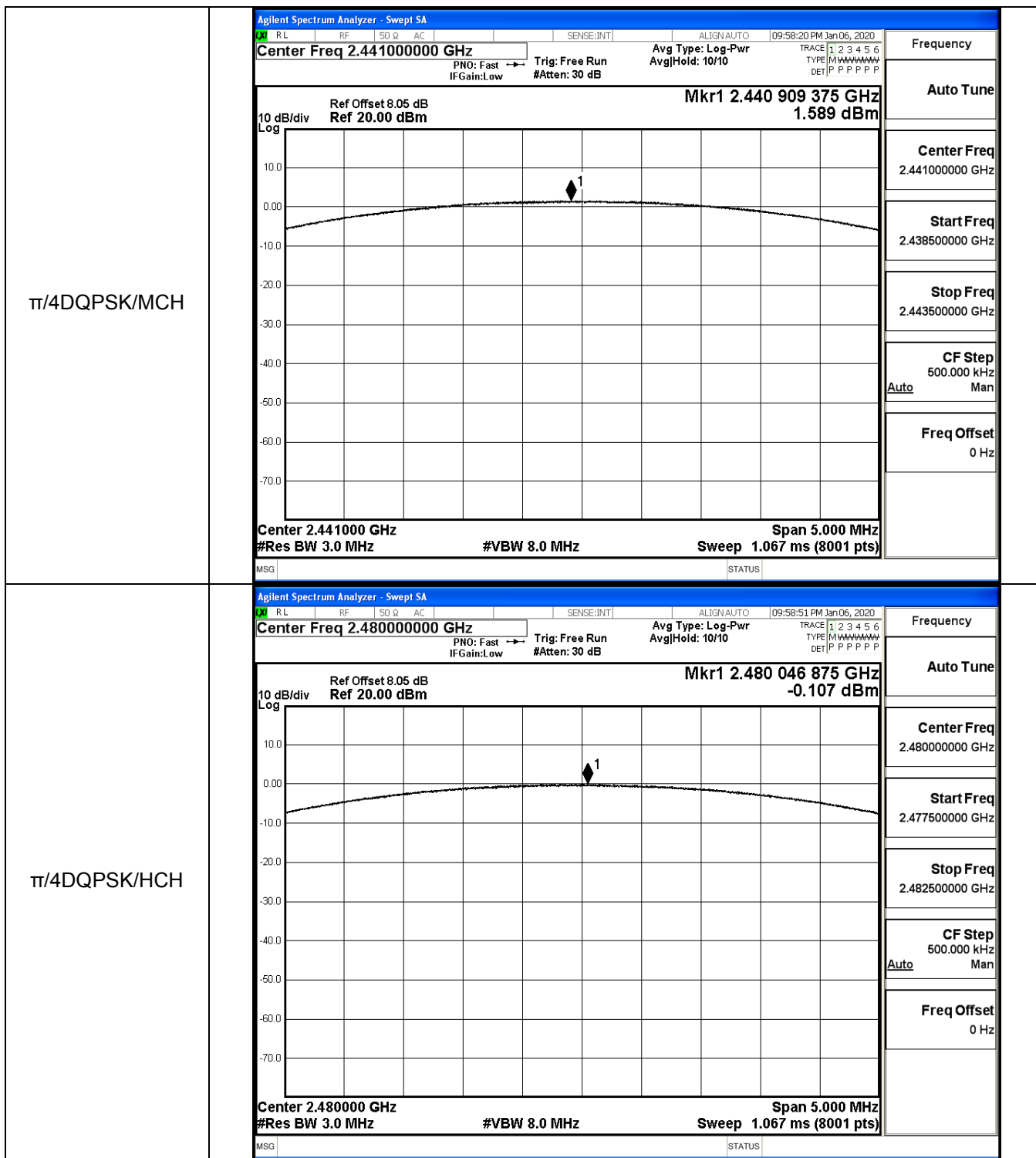


GFSK/MCH

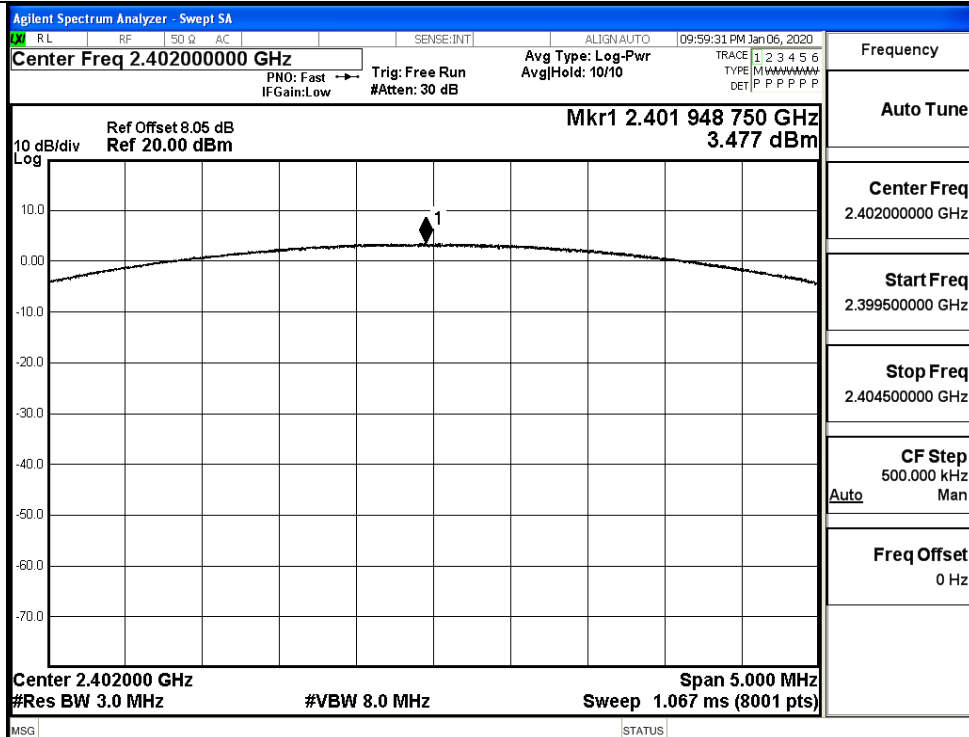


GFSK/HCH

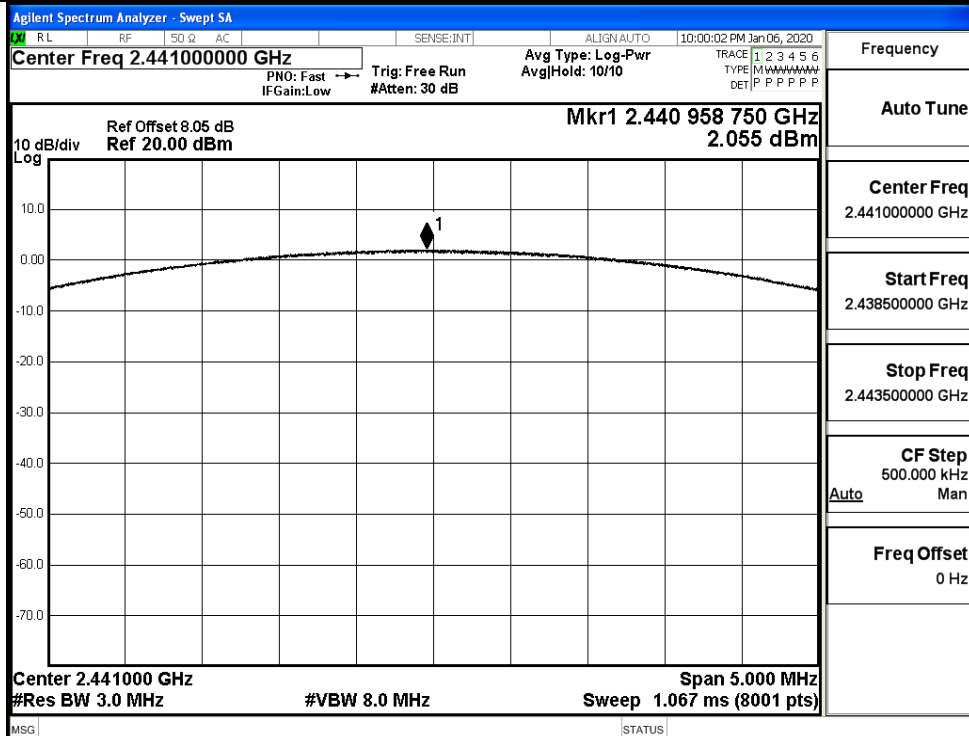
 $\pi/4$ DQPSK/LCH



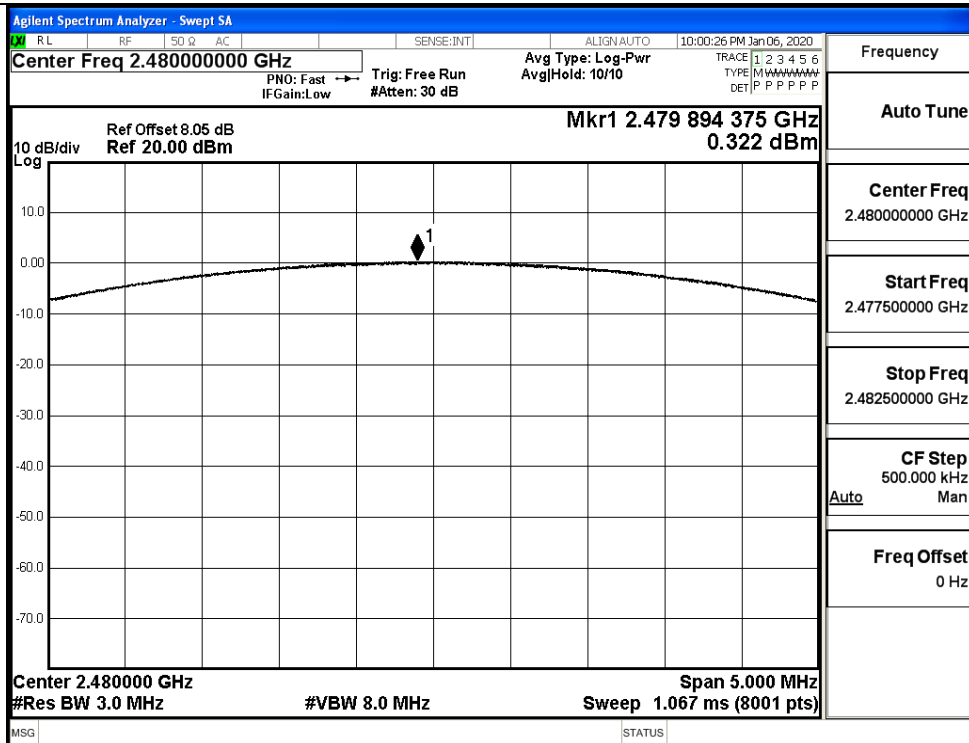
8DPSK/LCH



8DPSK/MCH



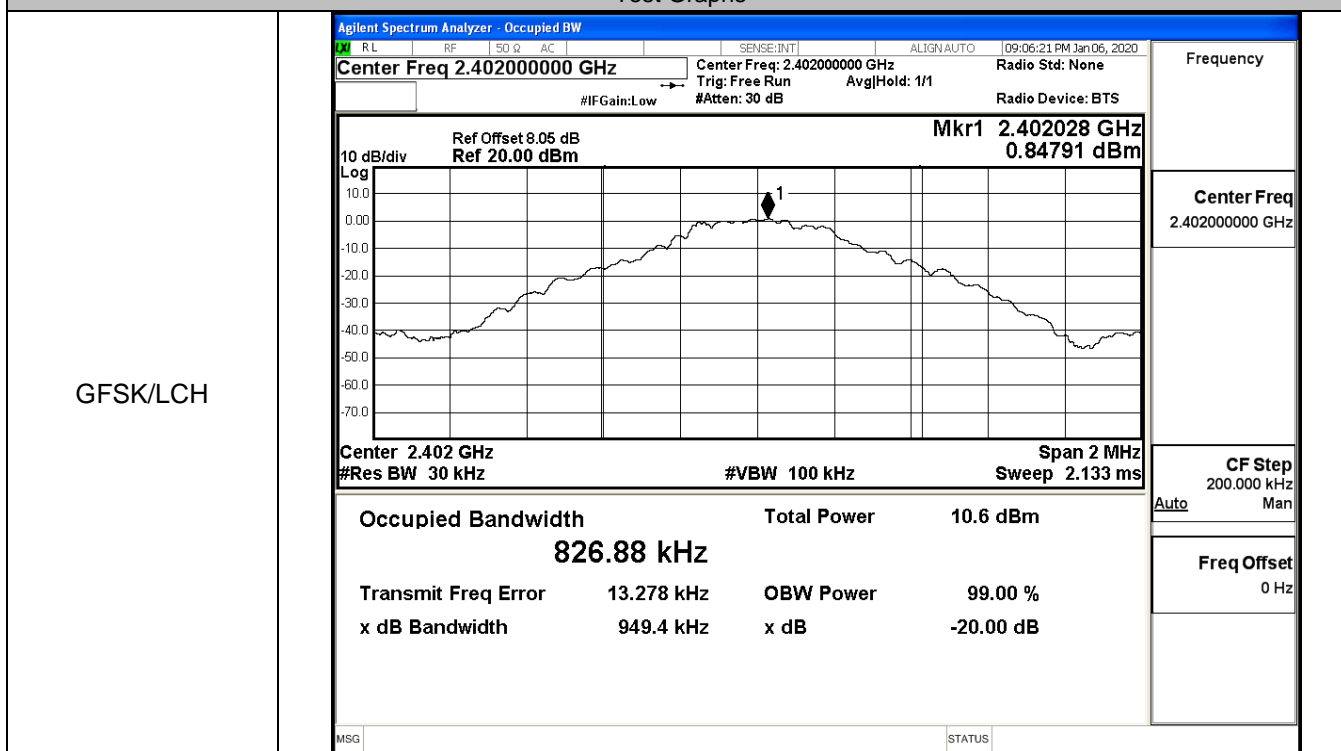
8DPSK/HCH



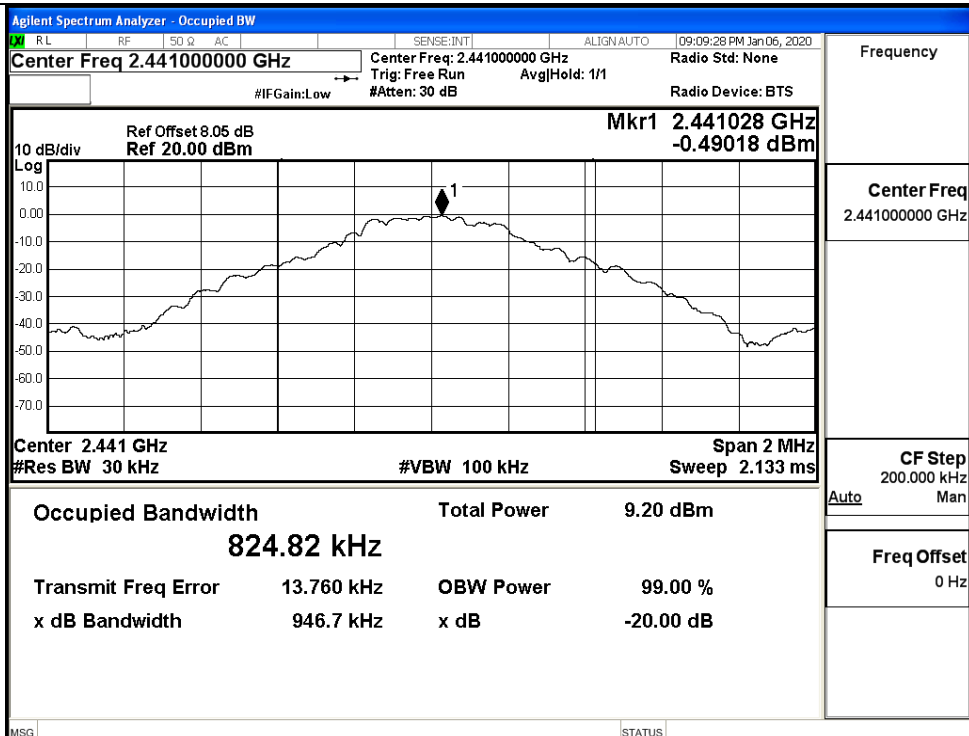
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.949	Not Specified	PASS
	MCH	0.947	Not Specified	PASS
	HCH	0.949	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.323	Not Specified	PASS
	MCH	1.324	Not Specified	PASS
	HCH	1.324	Not Specified	PASS
8DPSK	LCH	1.298	Not Specified	PASS
	MCH	1.296	Not Specified	PASS
	HCH	1.296	Not Specified	PASS

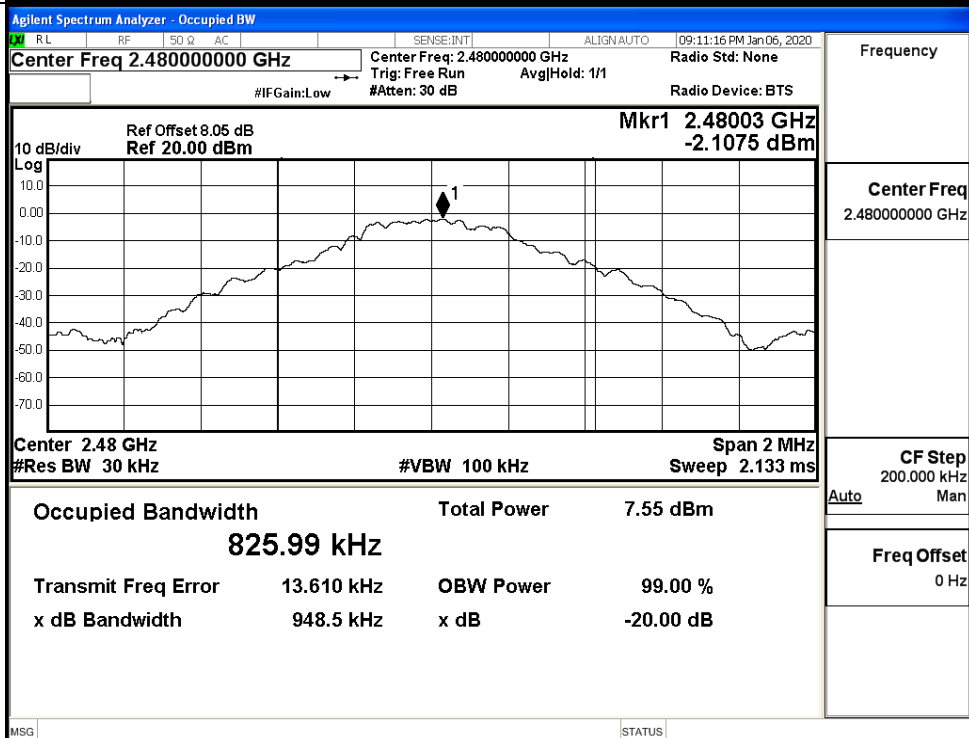
Test Graphs

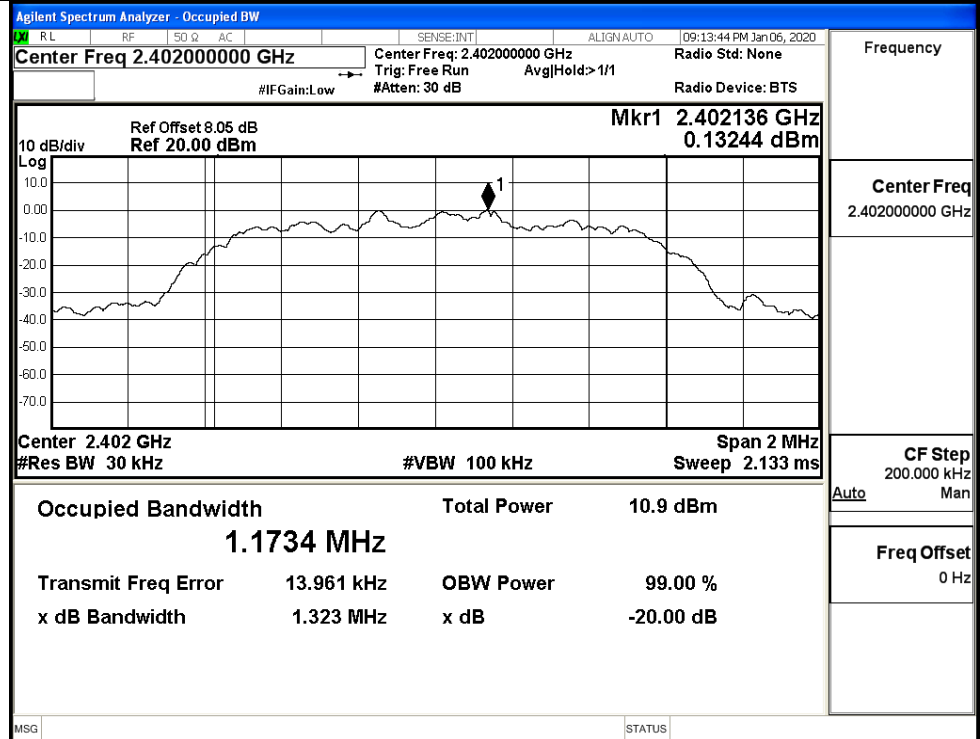
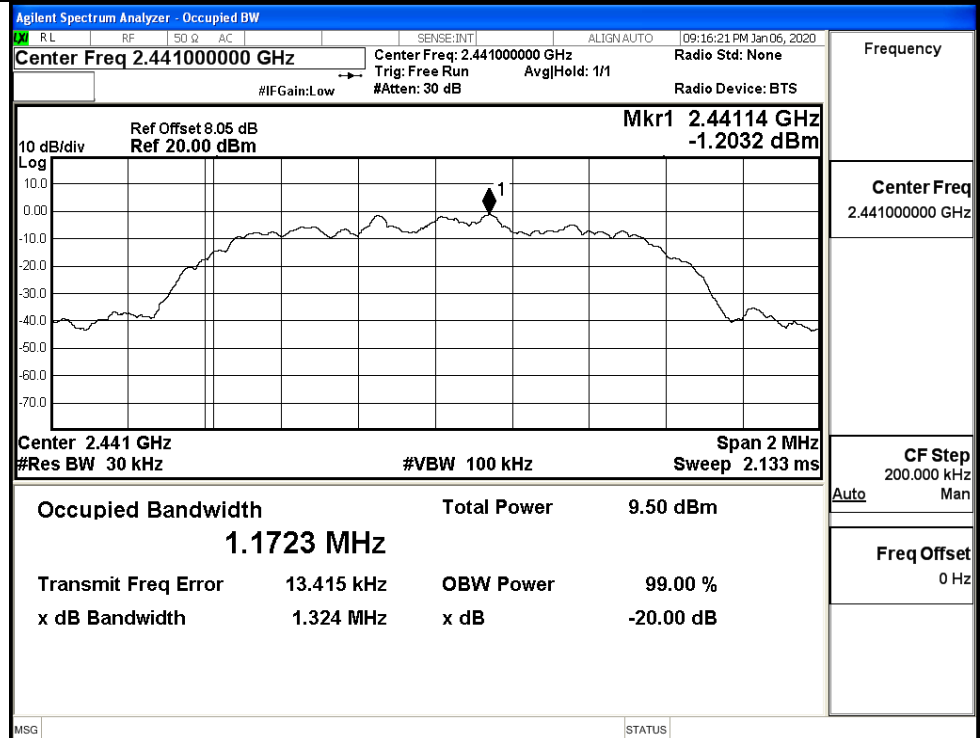


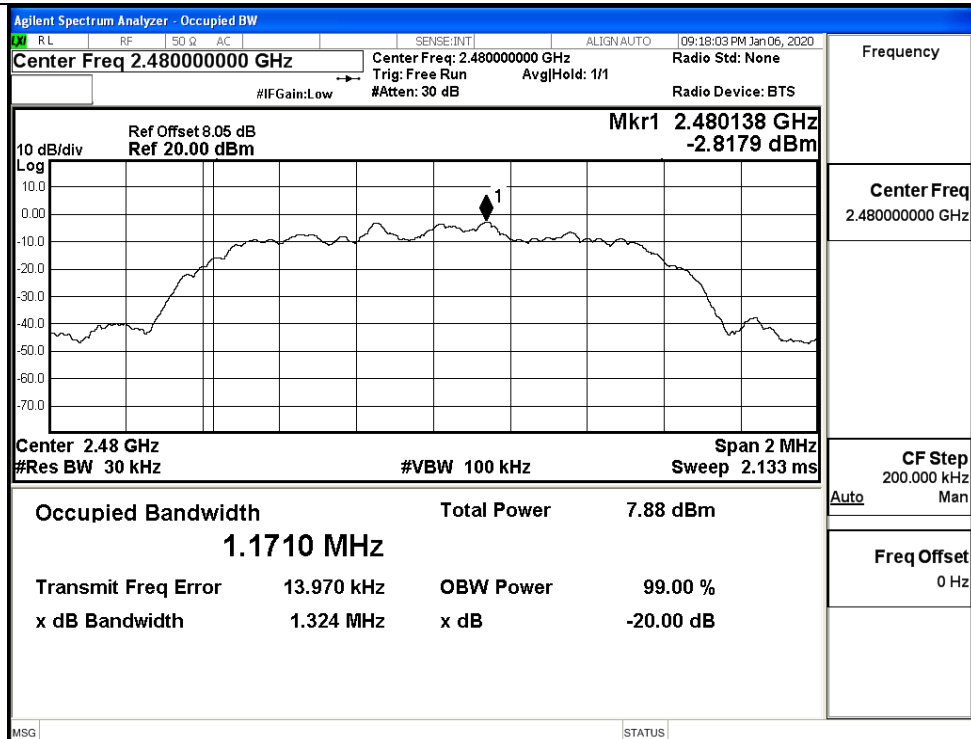
GFSK/MCH



GFSK/HCH



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

$\pi/4$ DQPSK/HCH

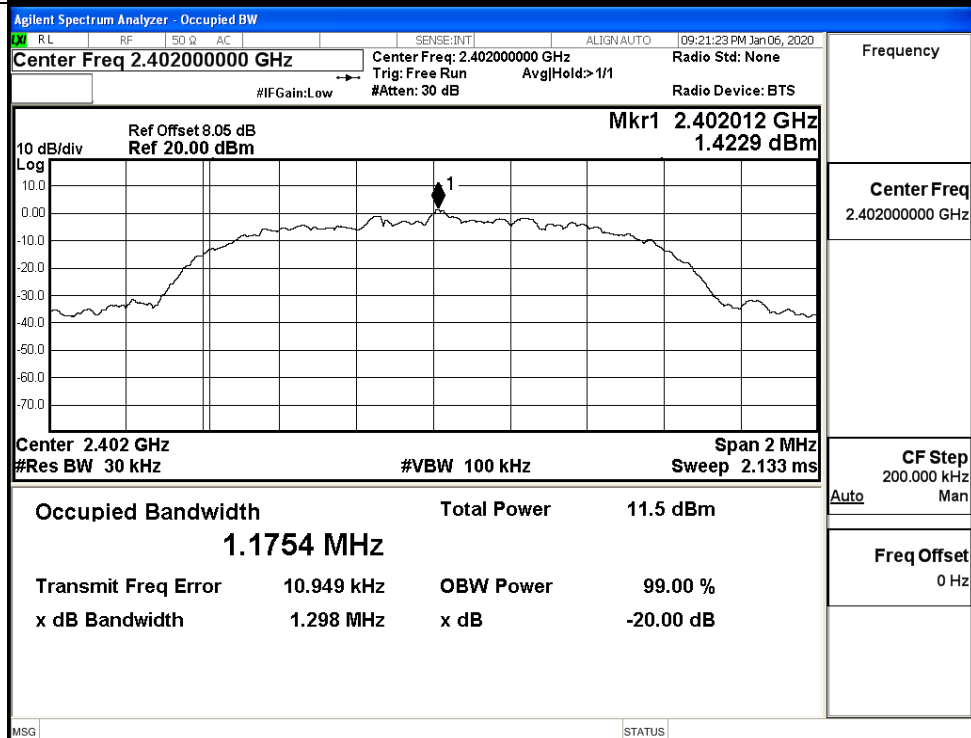
Frequency

Center Freq
2.480000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

8DPSK/LCH



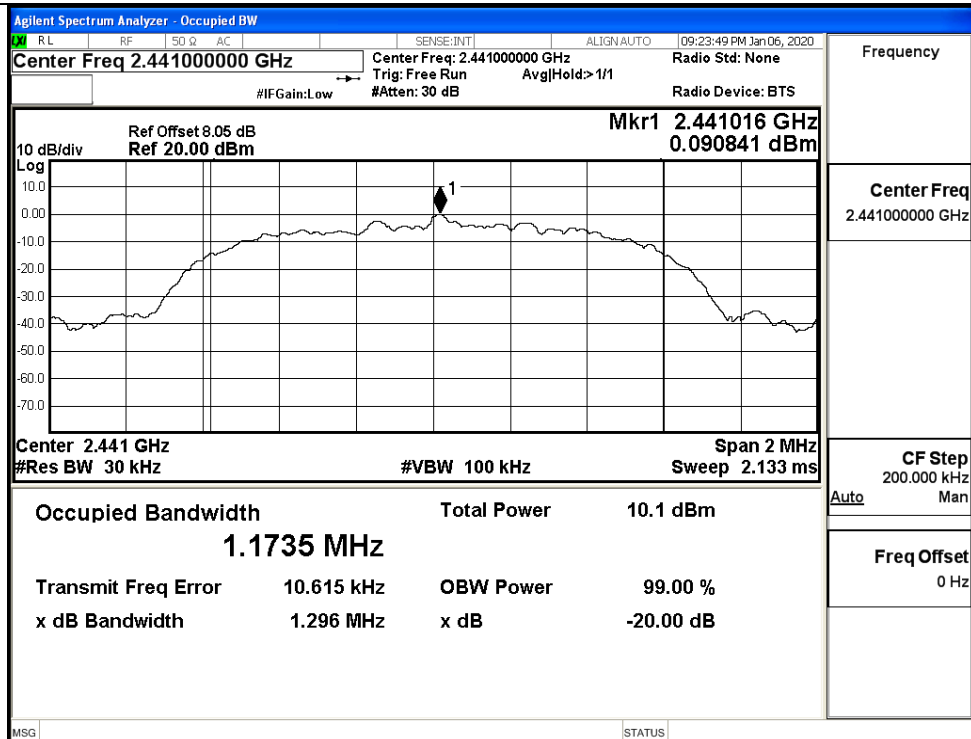
Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

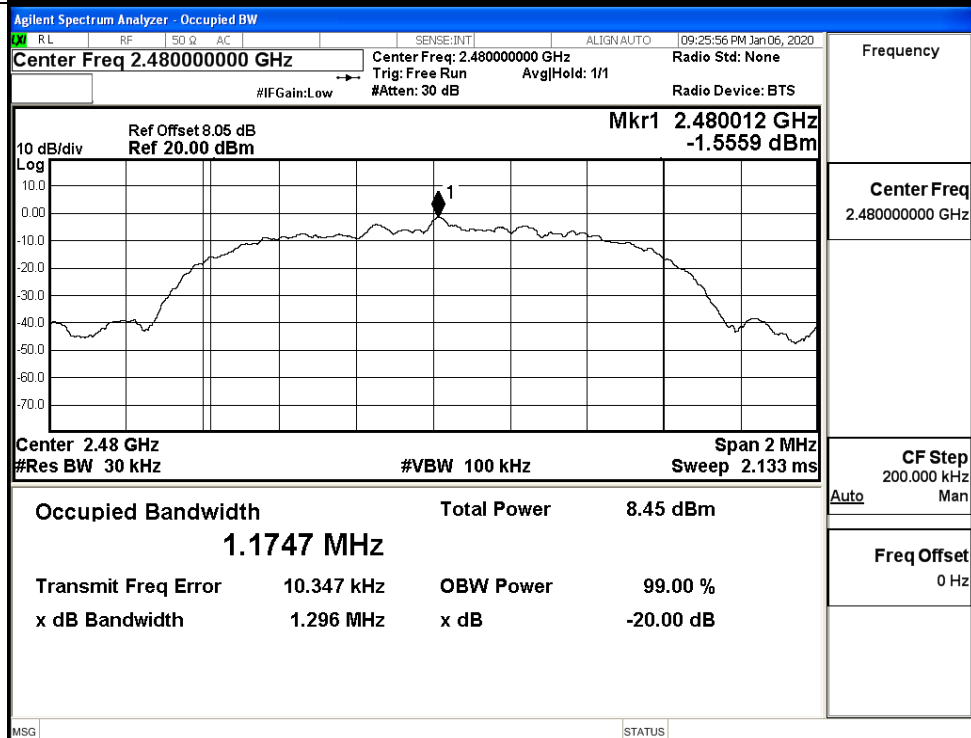
Auto

Freq Offset
0 Hz

8DPSK/MCH



8DPSK/HCH

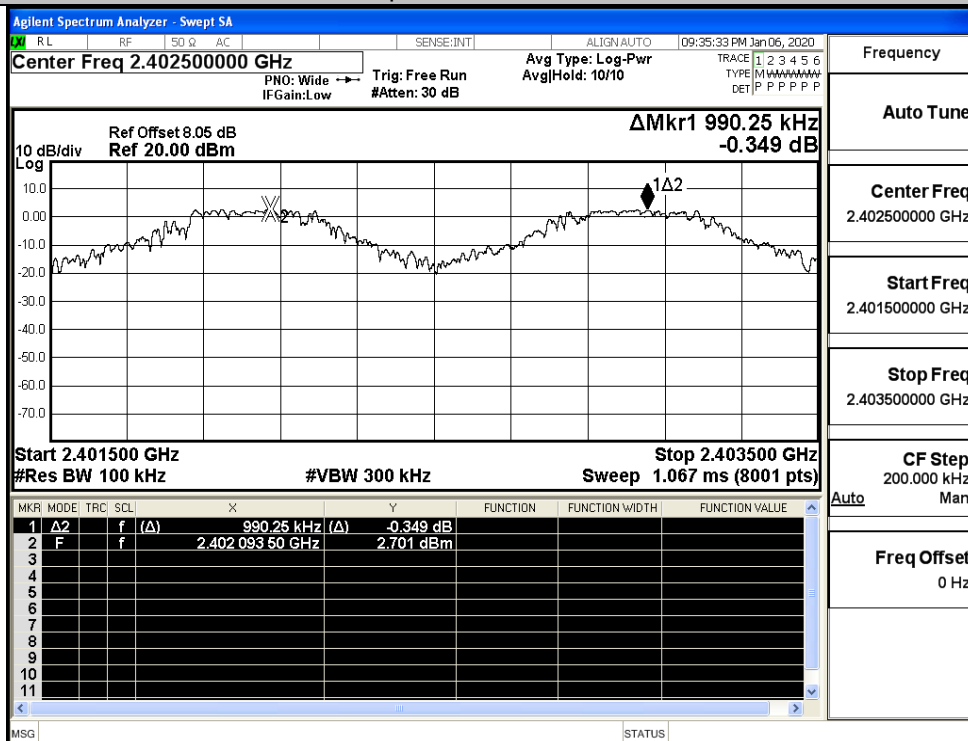


A.3 Carrier Frequency Separation

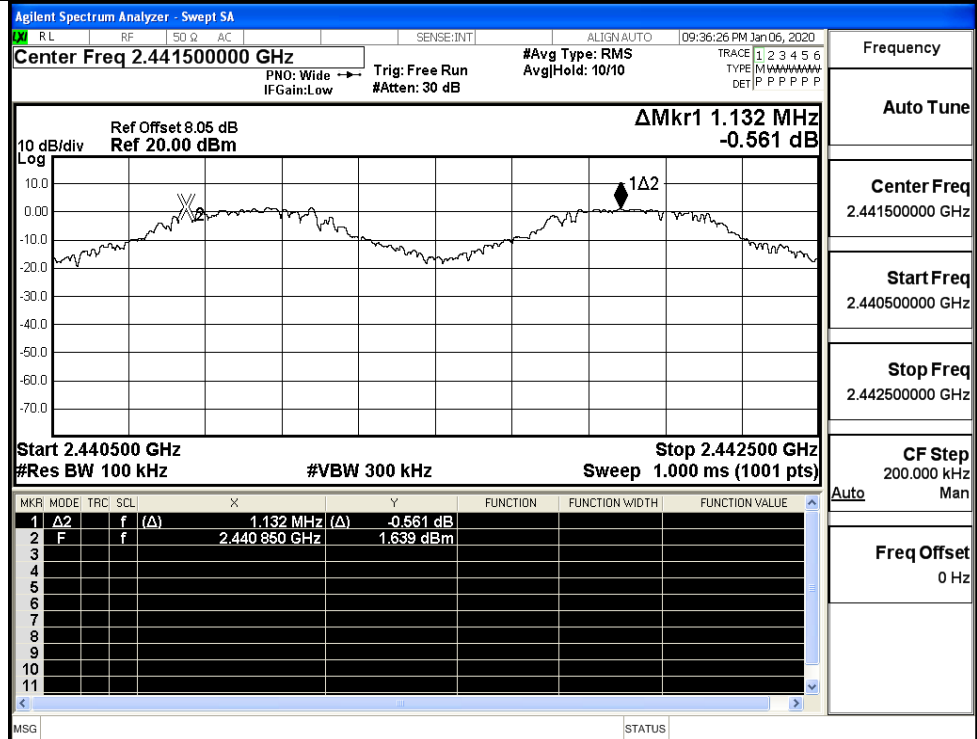
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.990	0.633	PASS
	MCH	1.132	0.631	PASS
	HCH	0.990	0.633	PASS
$\pi/4$ DQPSK	LCH	1.310	0.882	PASS
	MCH	1.202	0.883	PASS
	HCH	1.168	0.883	PASS
8DPSK	LCH	0.936	0.865	PASS
	MCH	1.148	0.864	PASS
	HCH	1.232	0.864	PASS

Test Graphs

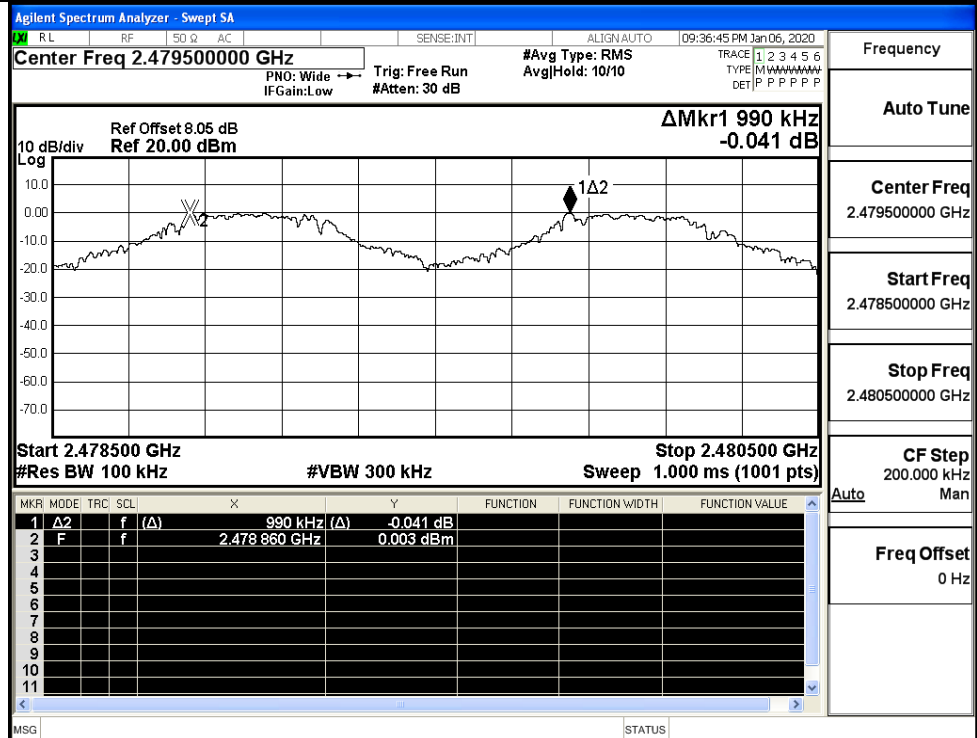
GFSK/LCH

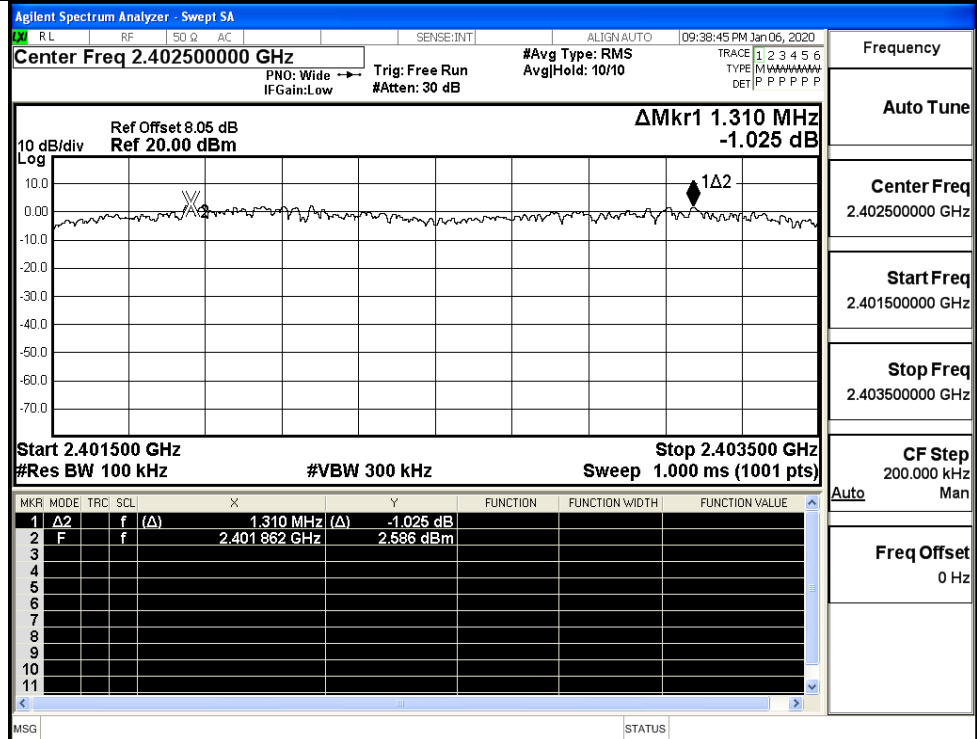
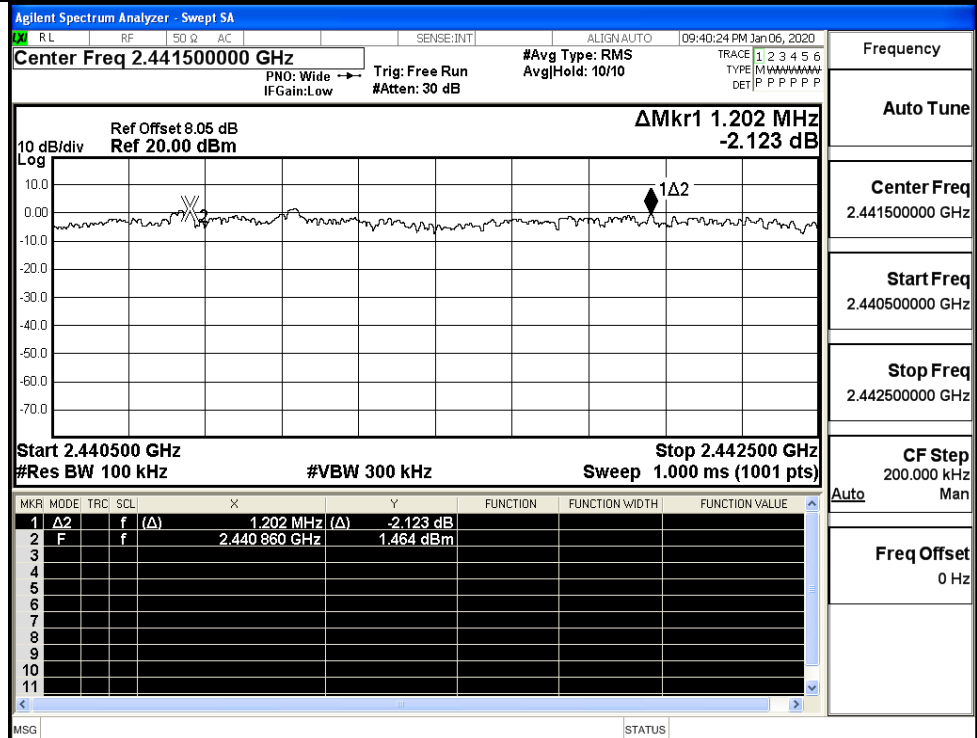


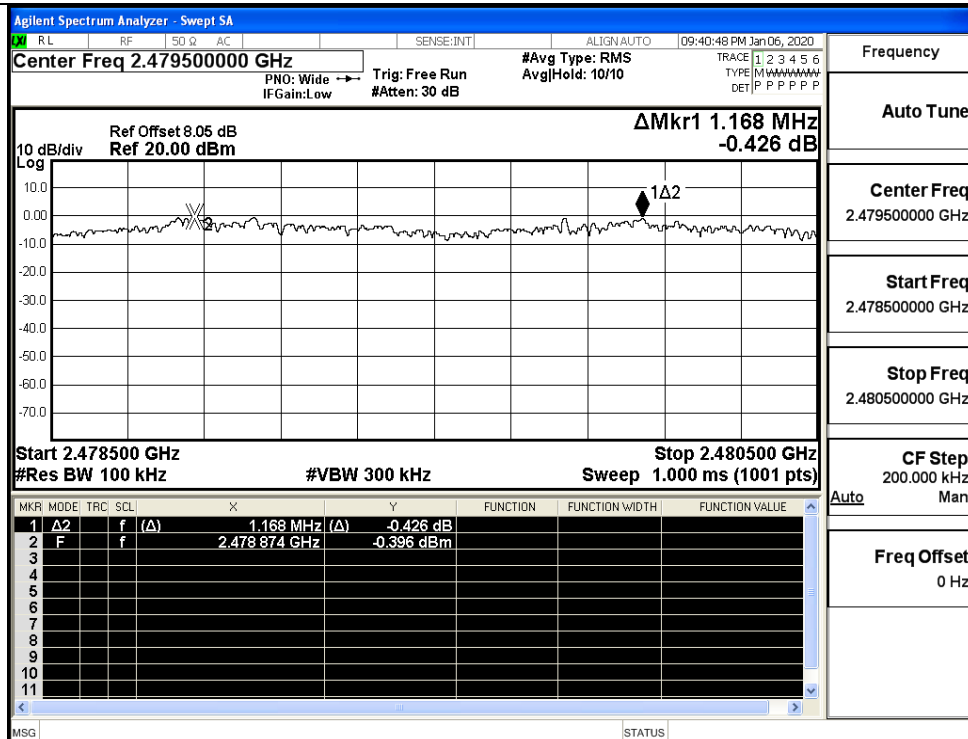
GFSK/MCH



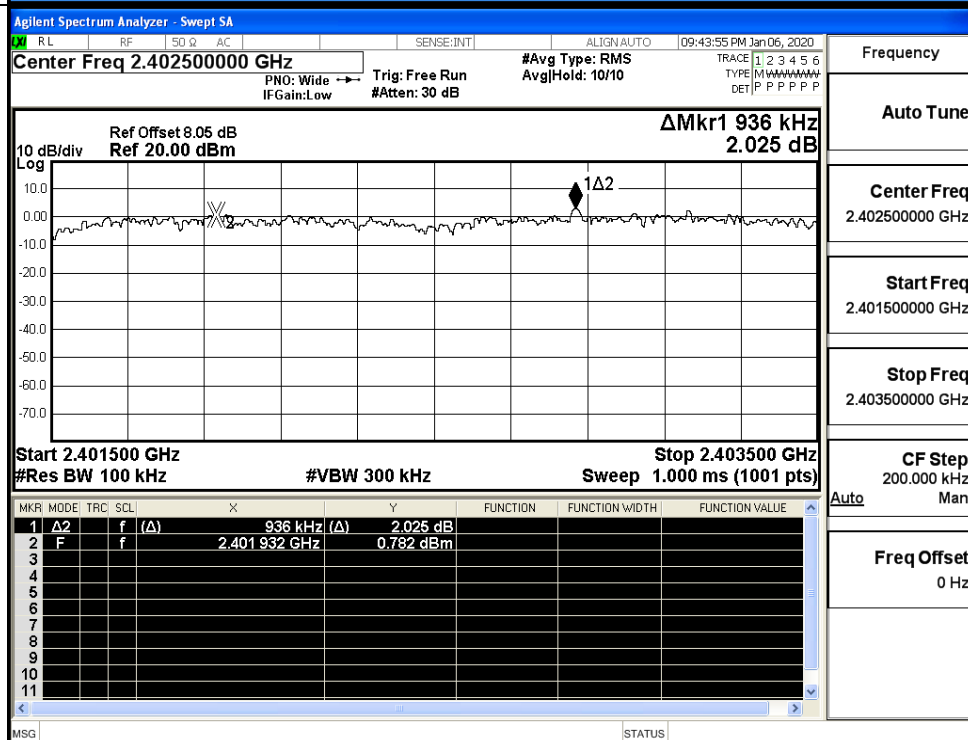
GFSK/HCH



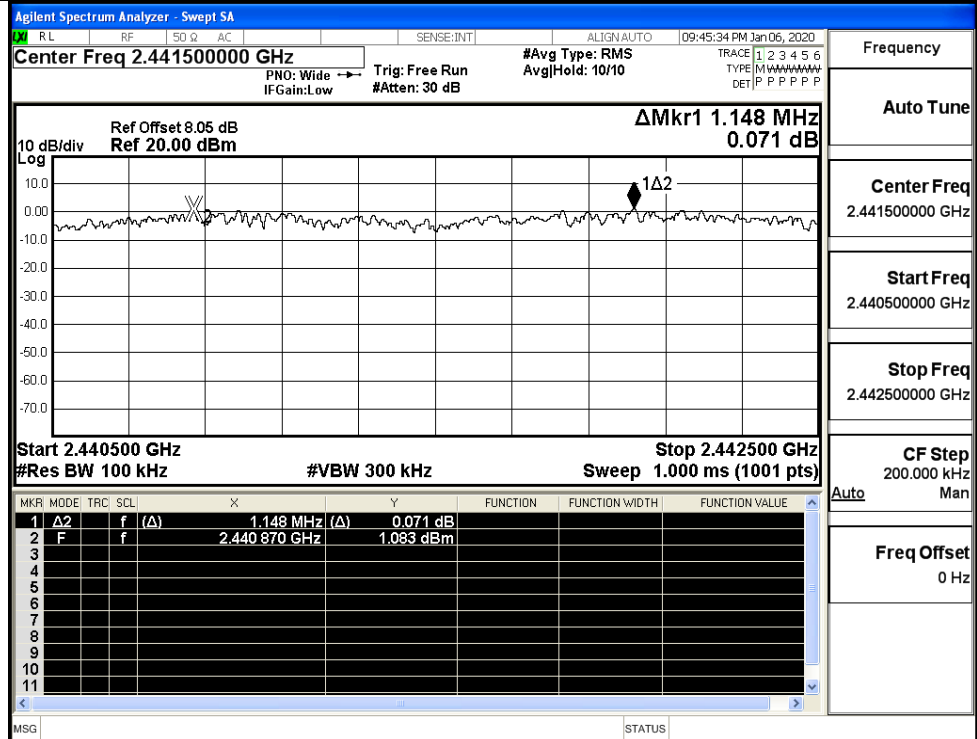
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

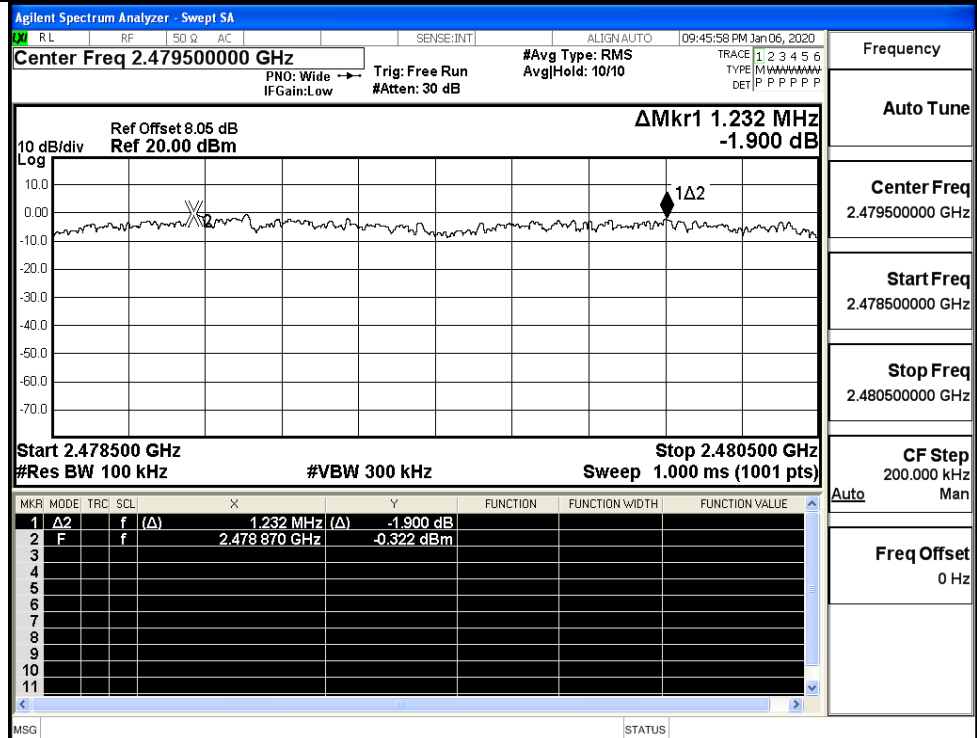
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

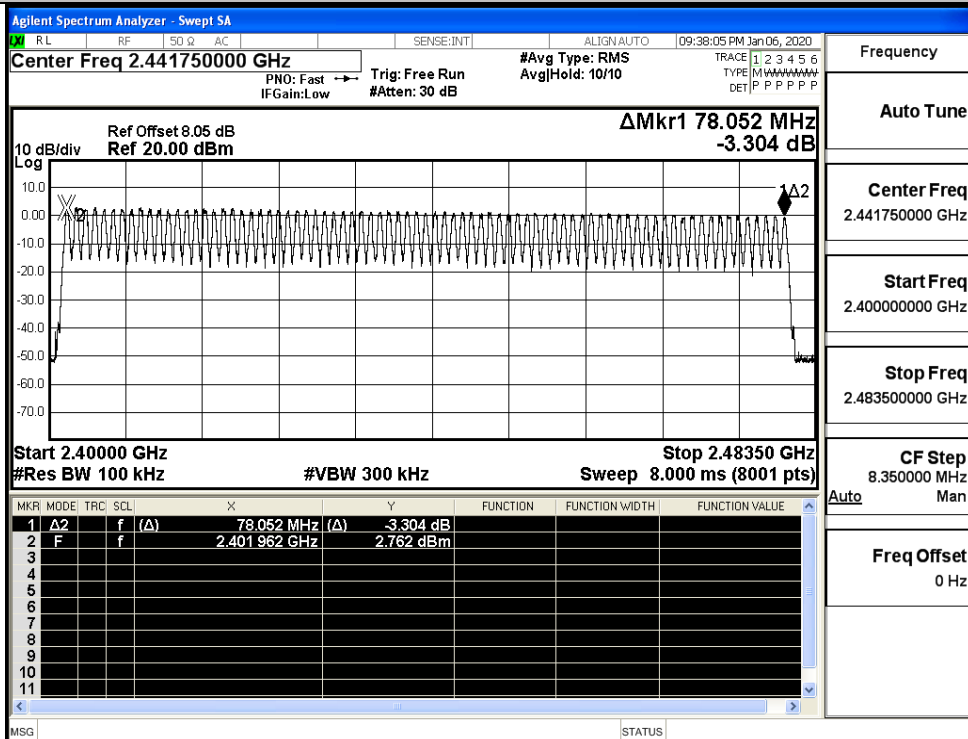


A.4 Hopping Channel Number

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

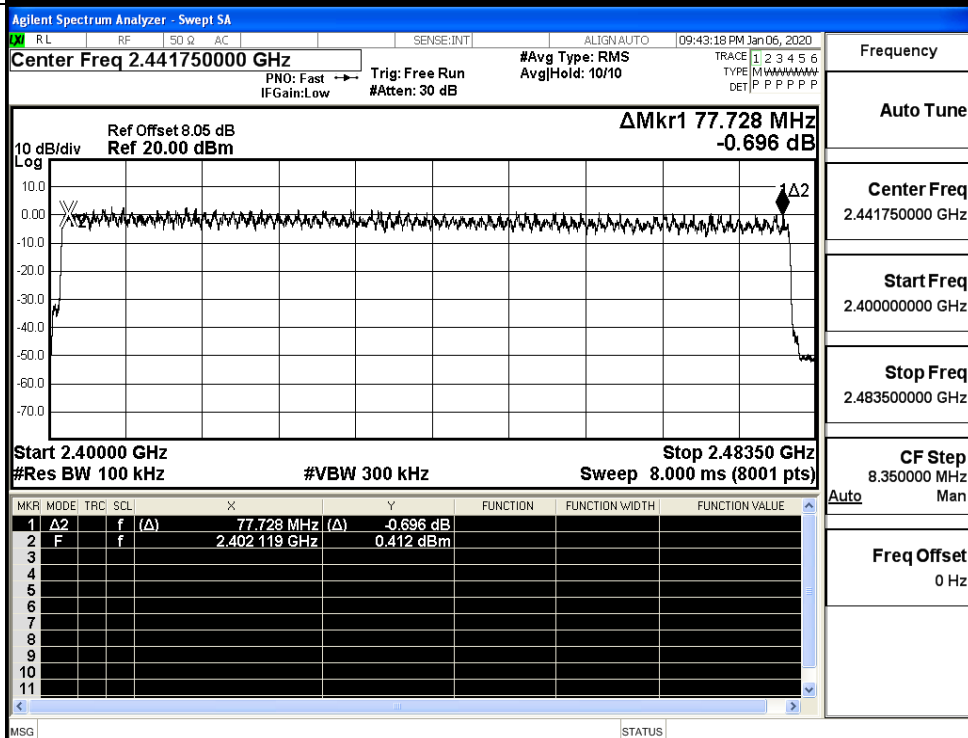
Test Graphs

GFSK/Hop



Frequency

Auto Tune

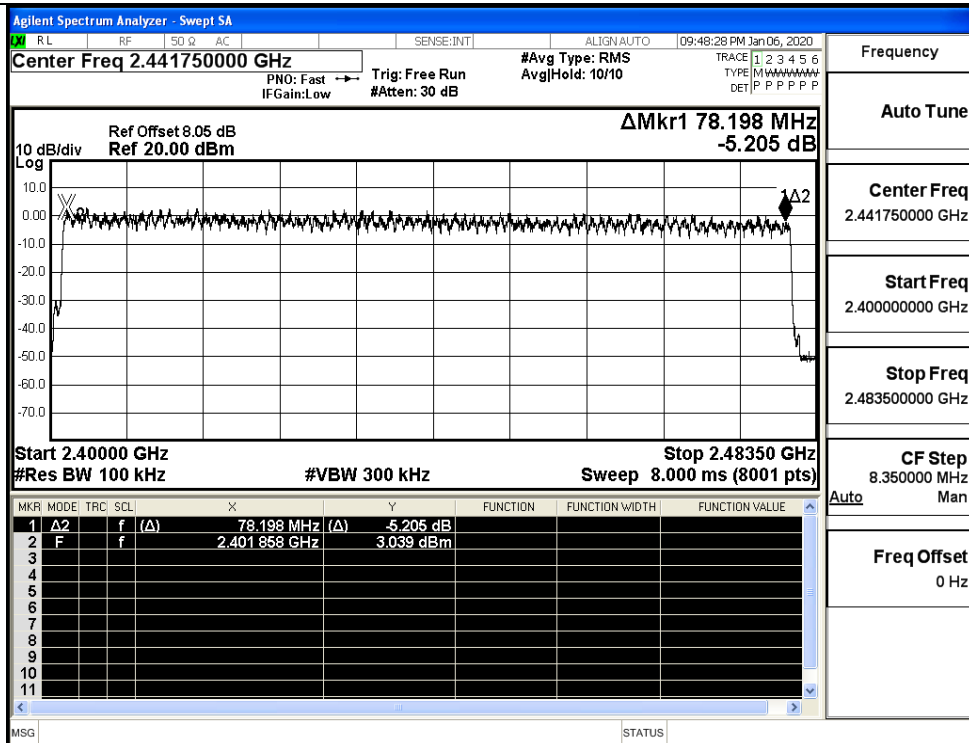
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz

8DPSK/Hop

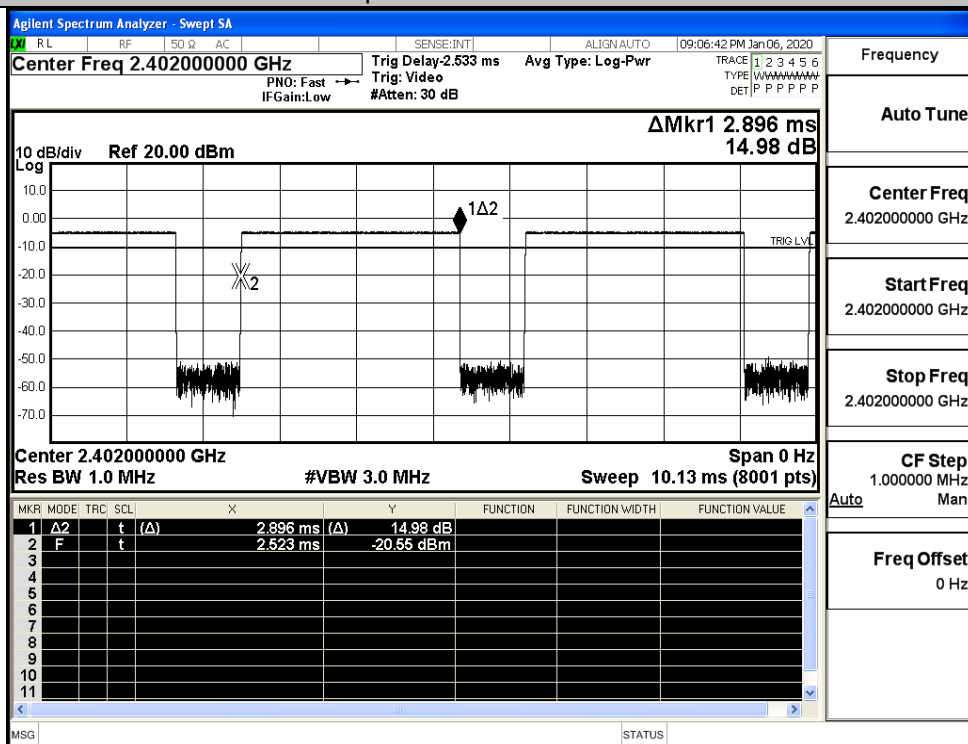


A.5 Dwell Time

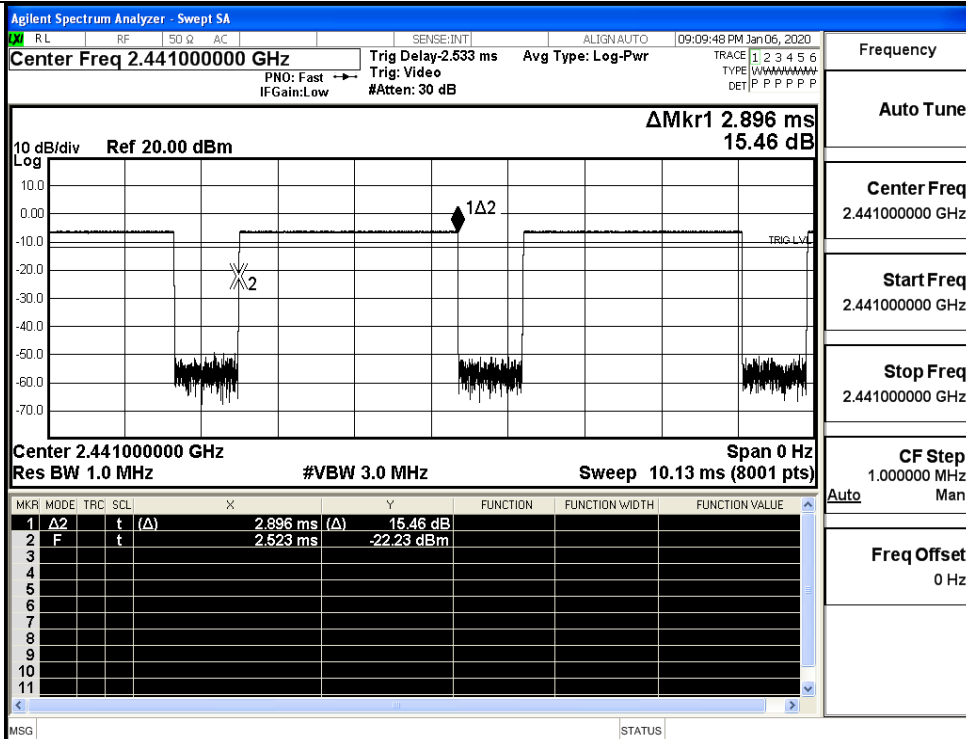
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7	0.309	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.309	0.4	PASS
	3DH5	MCH	2.9	106.7	0.309	0.4	PASS
	3DH5	HCH	2.9	106.7	0.309	0.4	PASS

Test Graphs

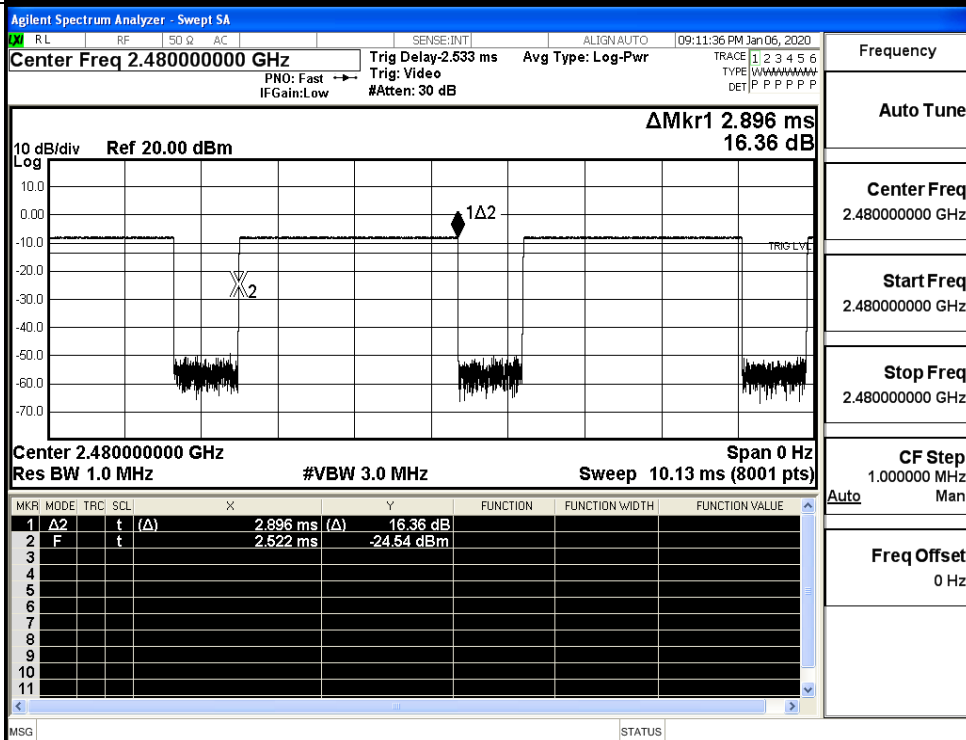
GFSK_DH5/LCH



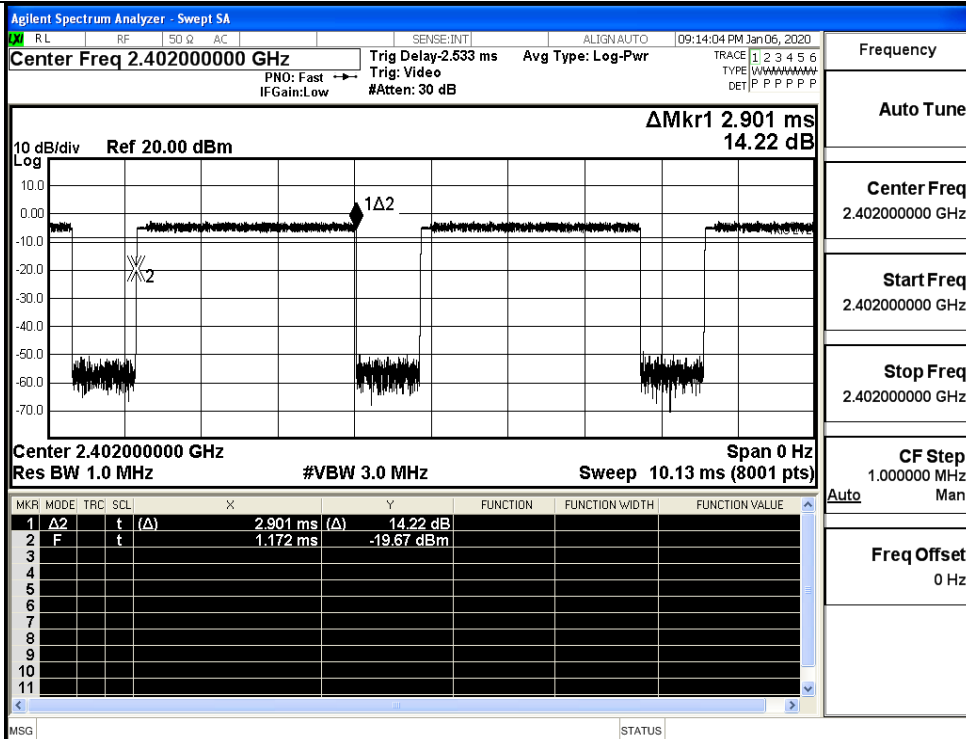
GFSK_DH5/MCH



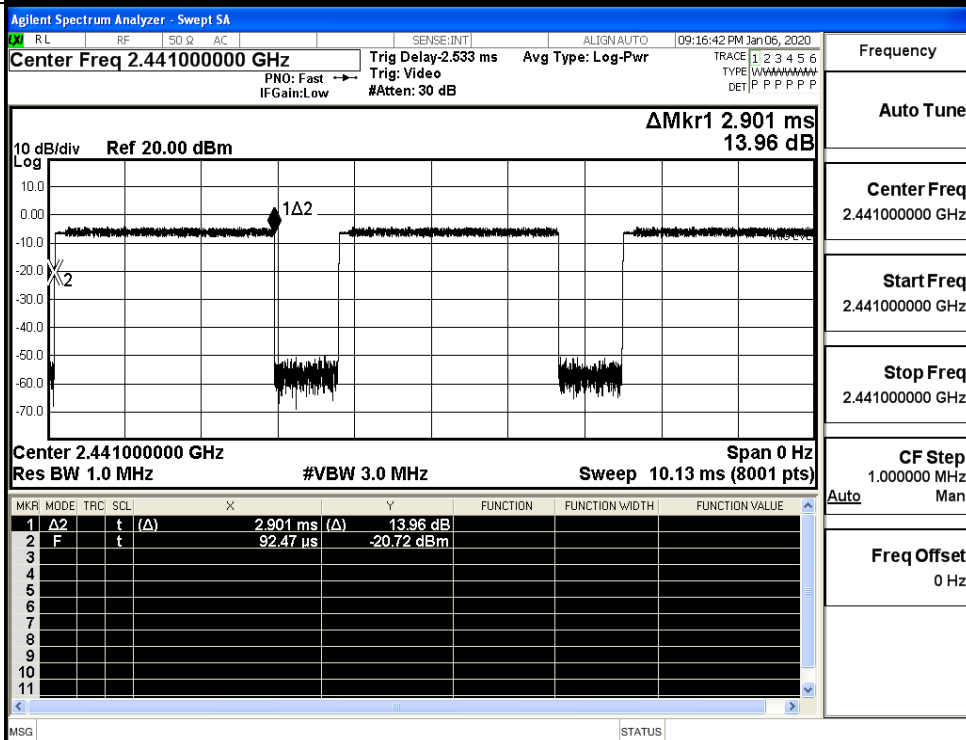
GFSK_DH5/HCH



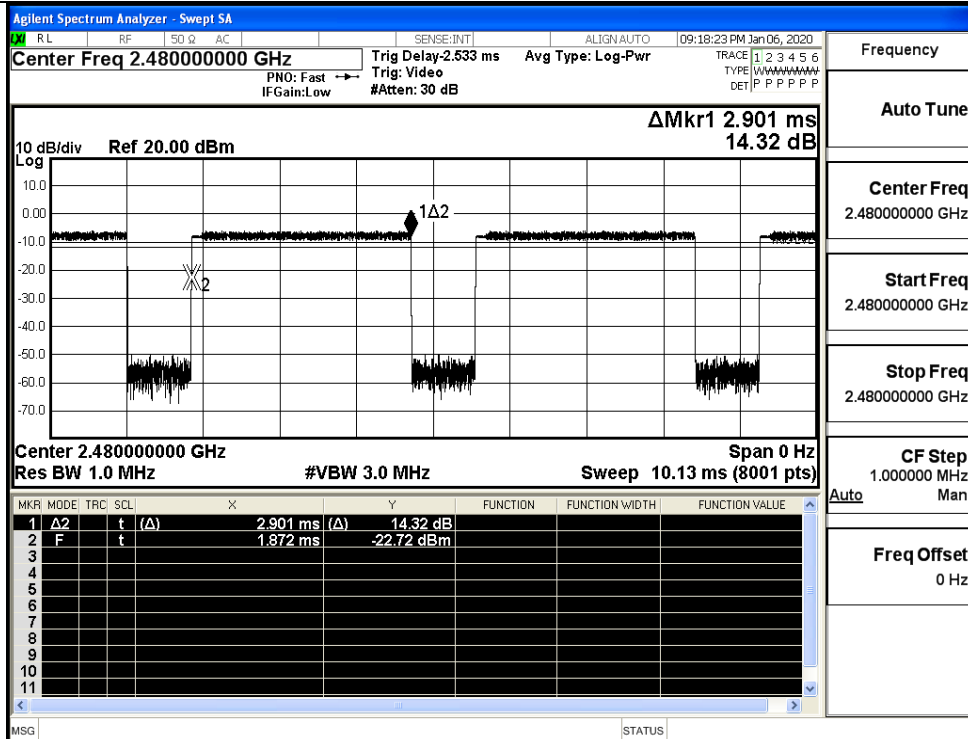
$\pi/4$ DQPSK
_2DH5/LCH



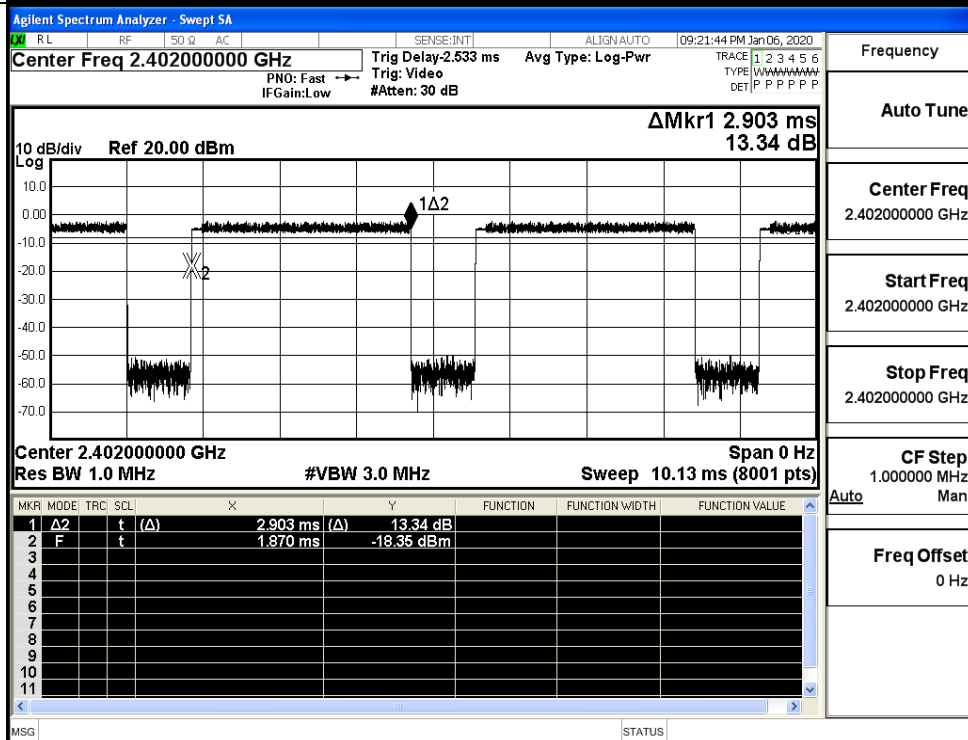
$\pi/4$ DQPSK
_2DH5/MCH



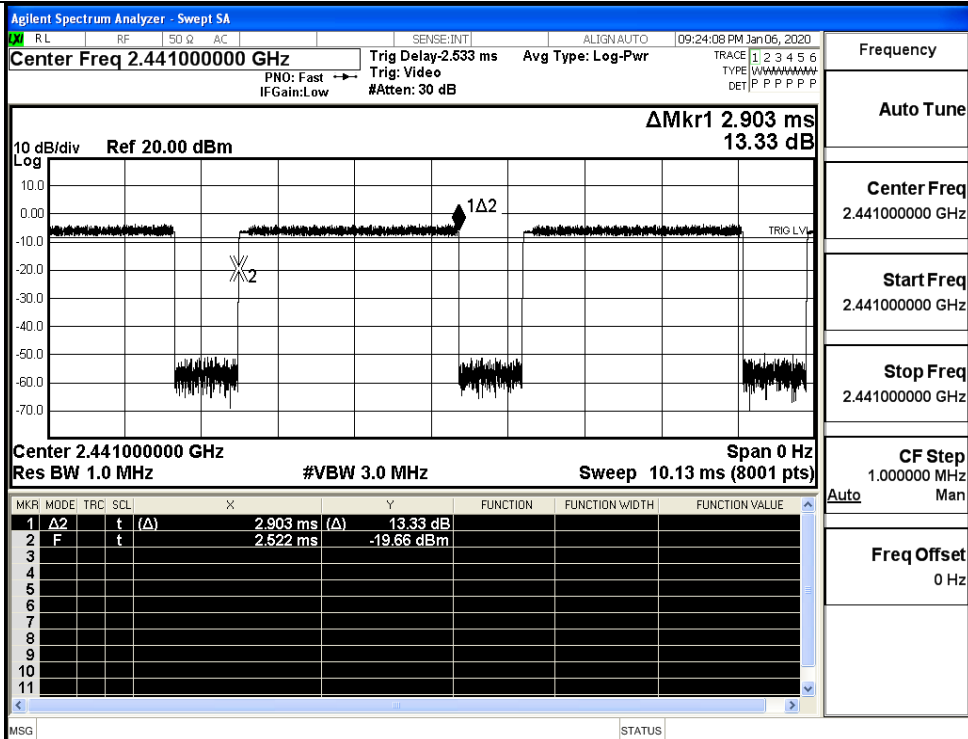
$\pi/4$ DQPSK
_2DH5/HCH



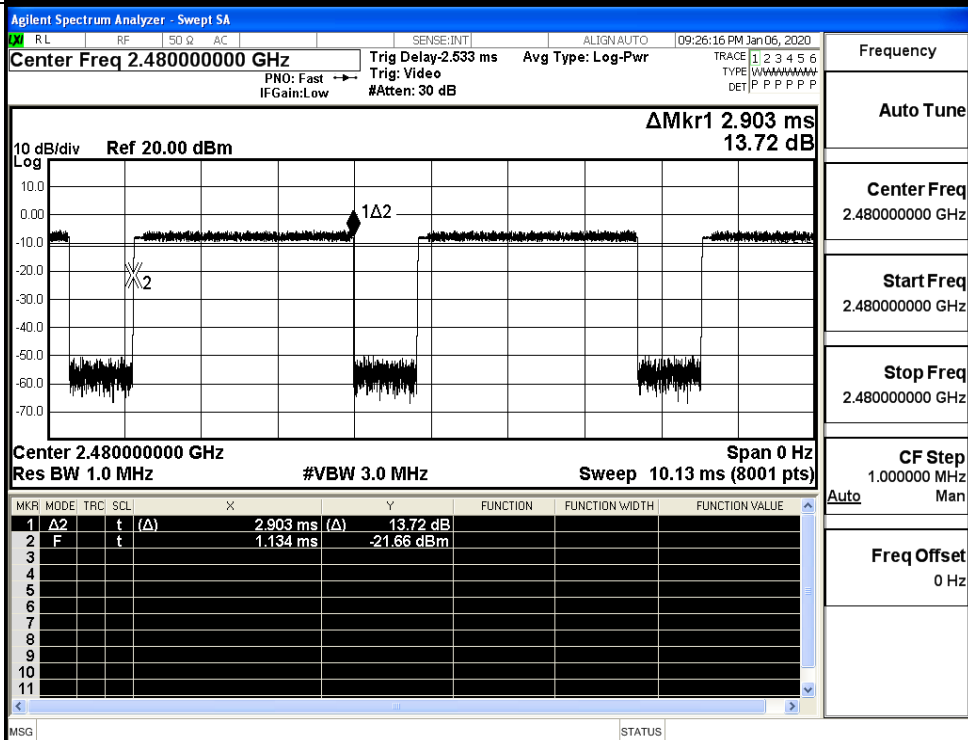
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



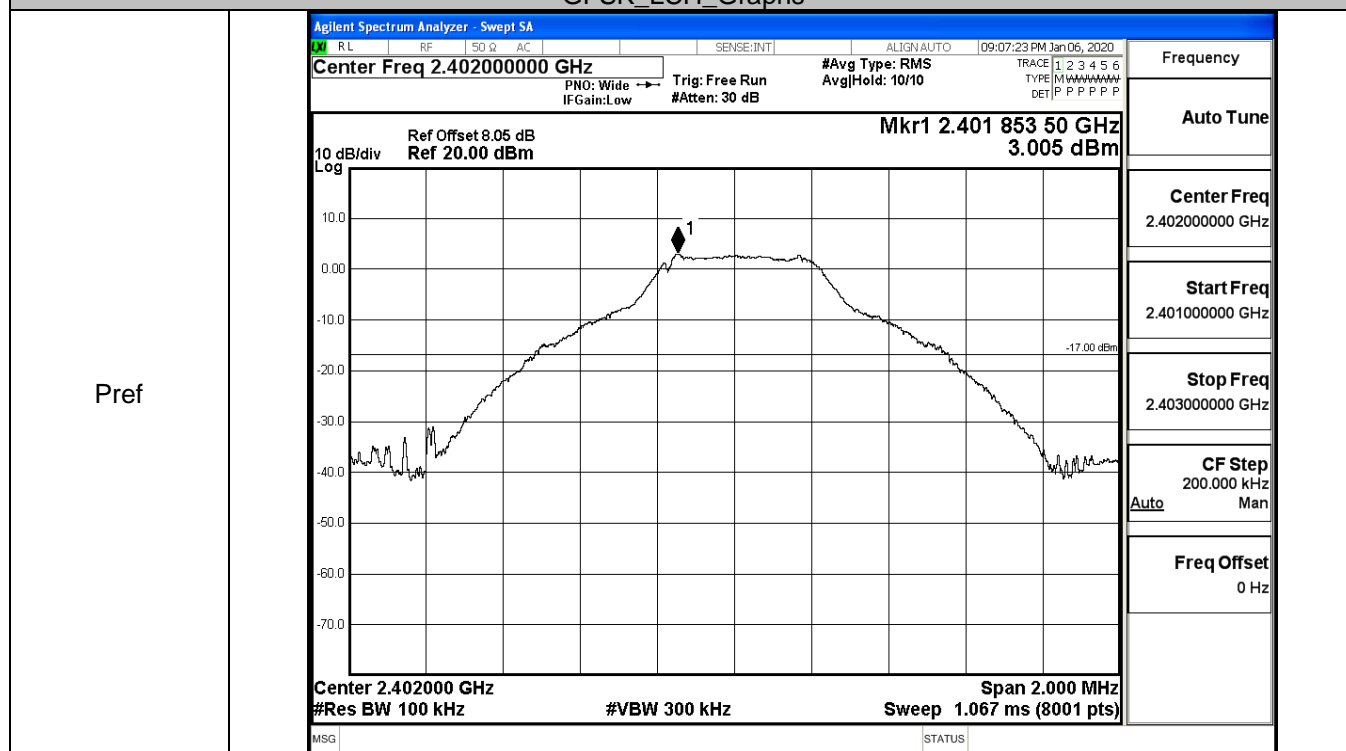
8DPSK_3DH5/HCH



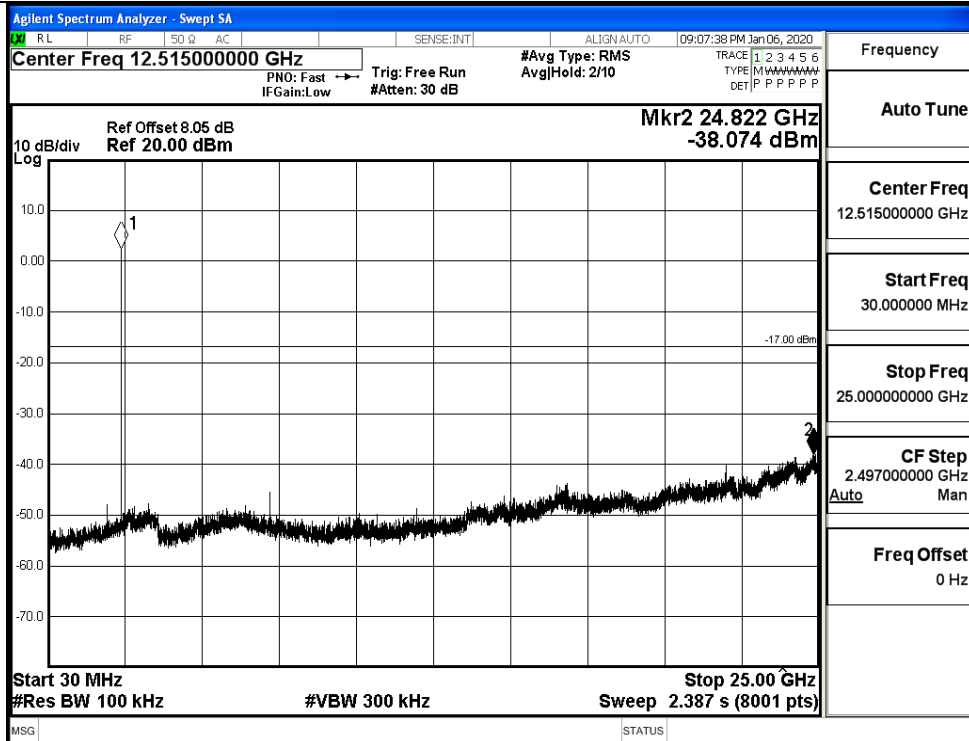
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.005	-38.074	-16.995	PASS
	MCH	-1.278	-37.224	-21.278	PASS
	HCH	-0.027	-37.022	-20.027	PASS
$\pi/4$ DQPSK	LCH	2.835	-37.608	-17.165	PASS
	MCH	1.441	-37.697	-18.559	PASS
	HCH	-0.181	-37.216	-20.181	PASS
8DPSK	LCH	3.068	-37.333	-16.932	PASS
	MCH	1.64	-37.245	-18.360	PASS
	HCH	0.081	-36.836	-19.919	PASS

GFSK_LCH_Graphs

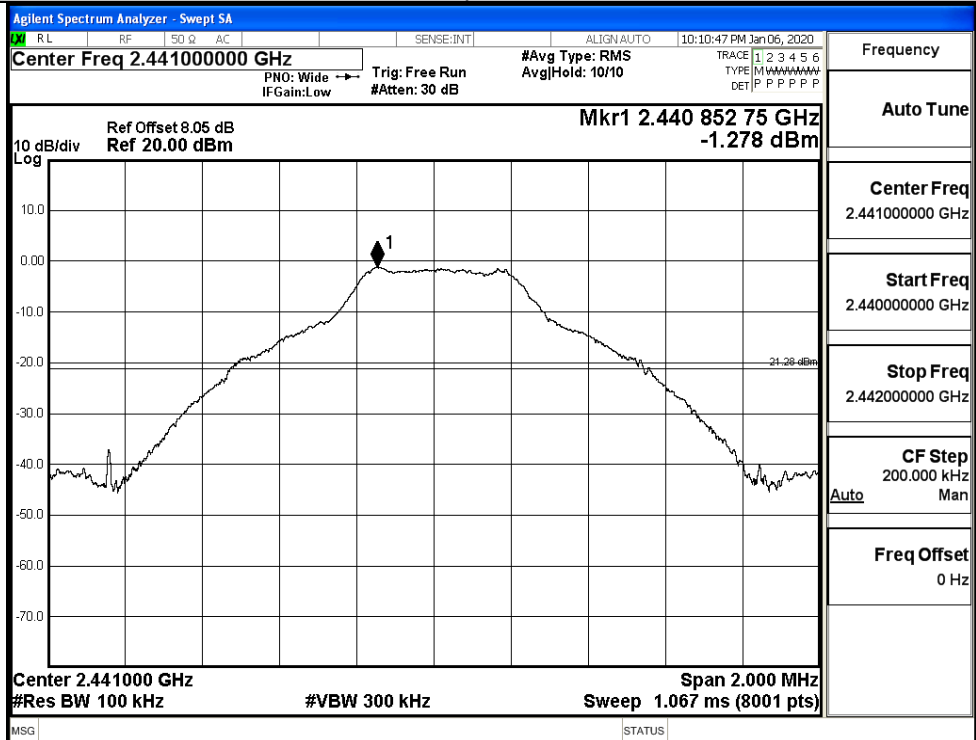


Puw

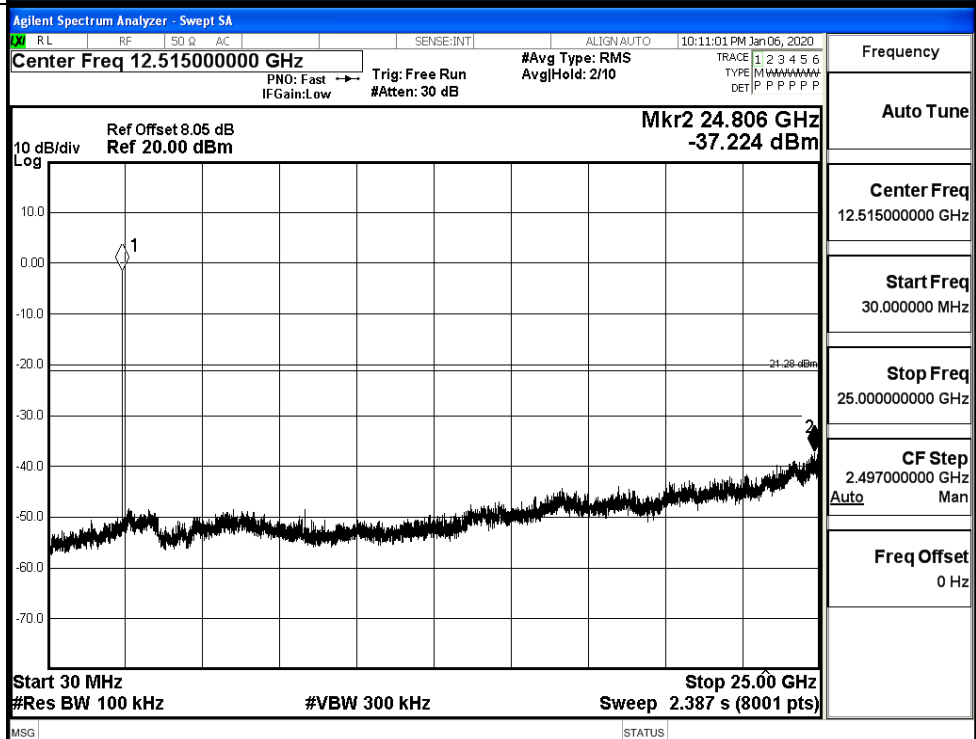


GFSK_MCH_Graphs

Pref

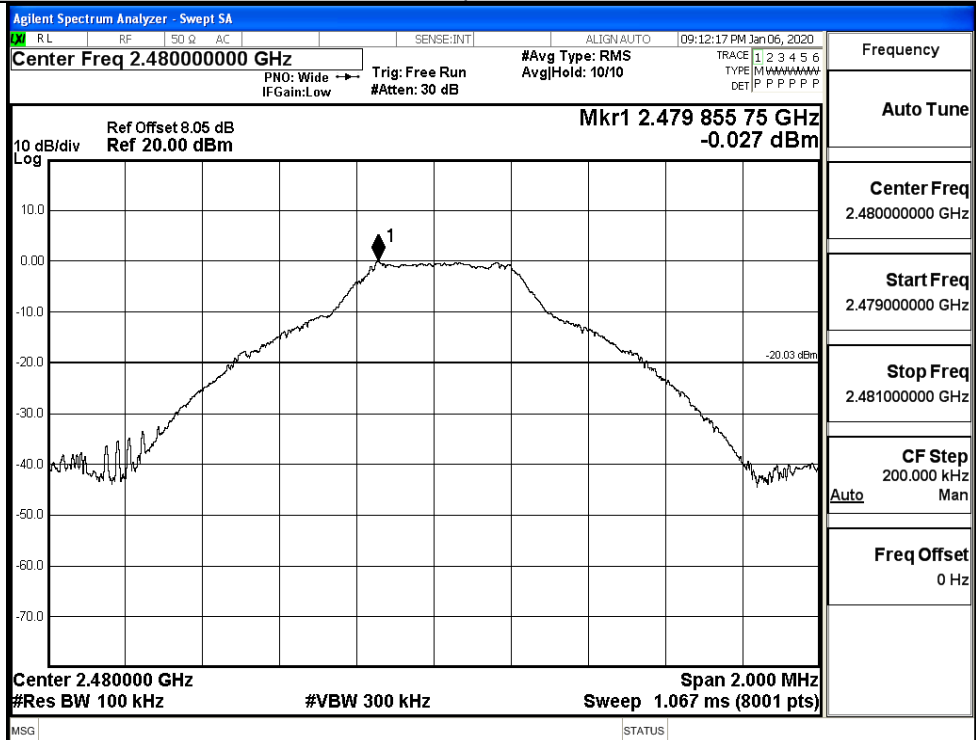


Puw

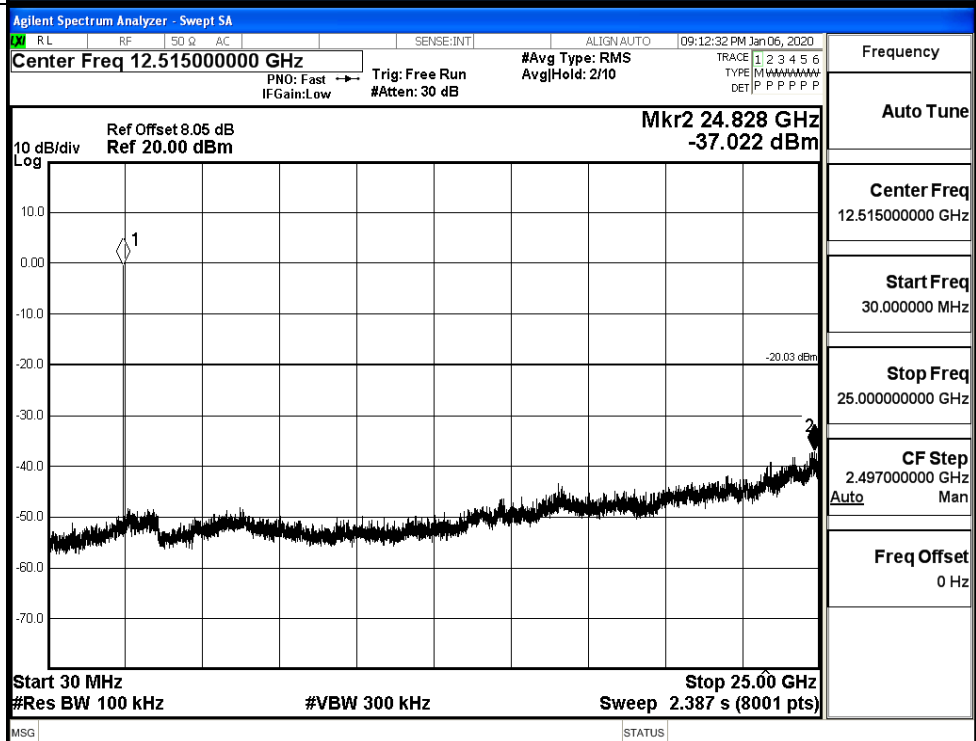


GFSK_HCH_Graphs

Pref

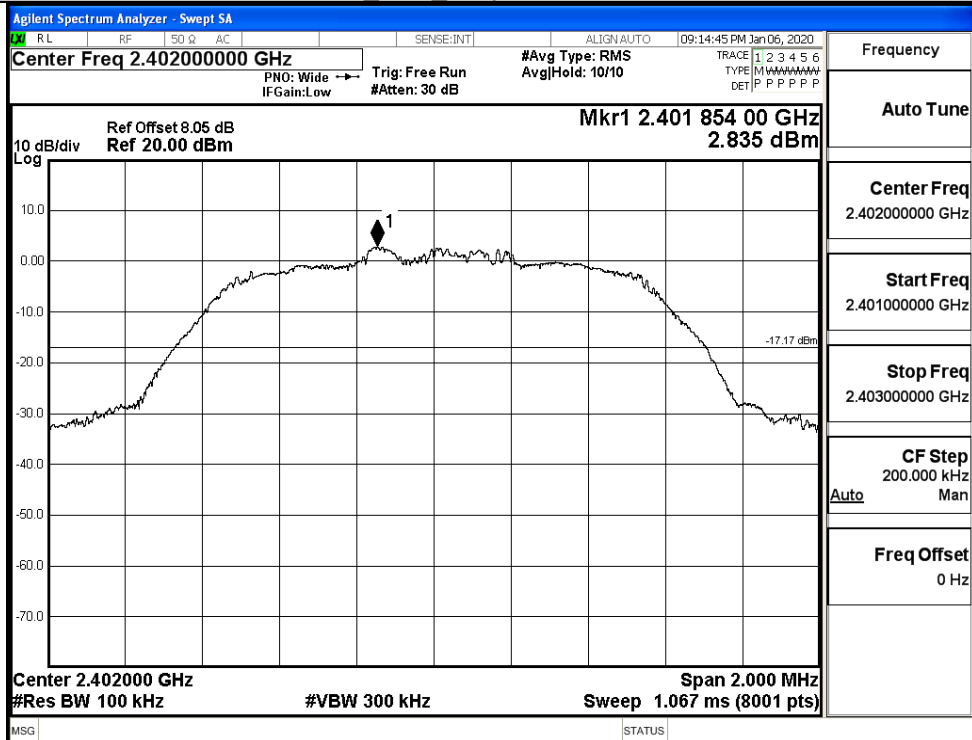


Puw

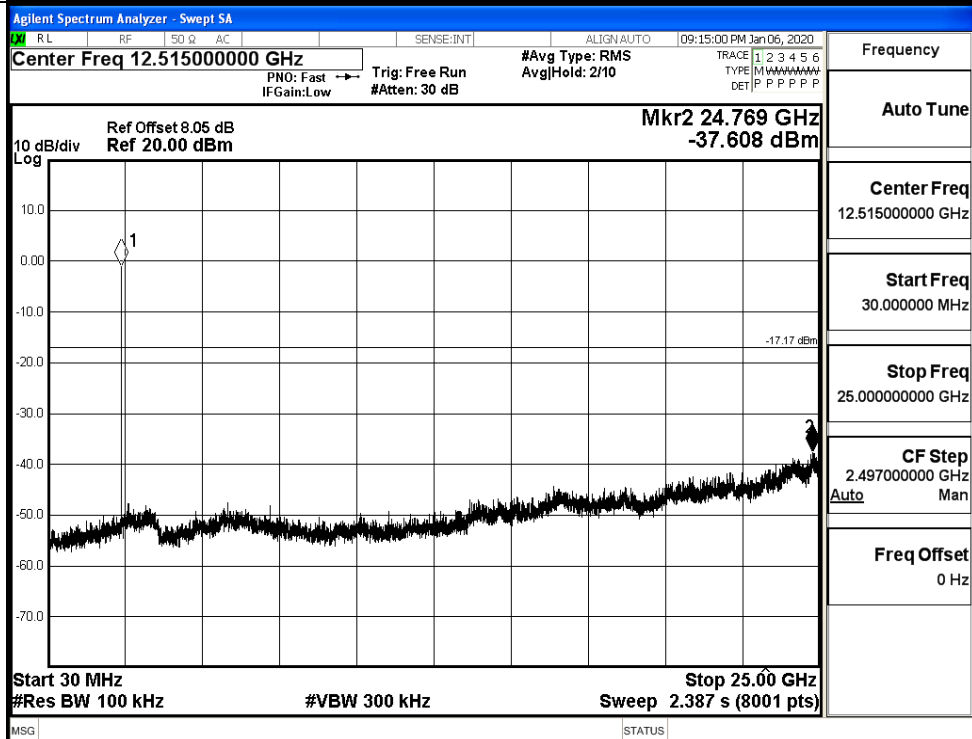


π /4DQPSK_LCH_Graphs

Pref

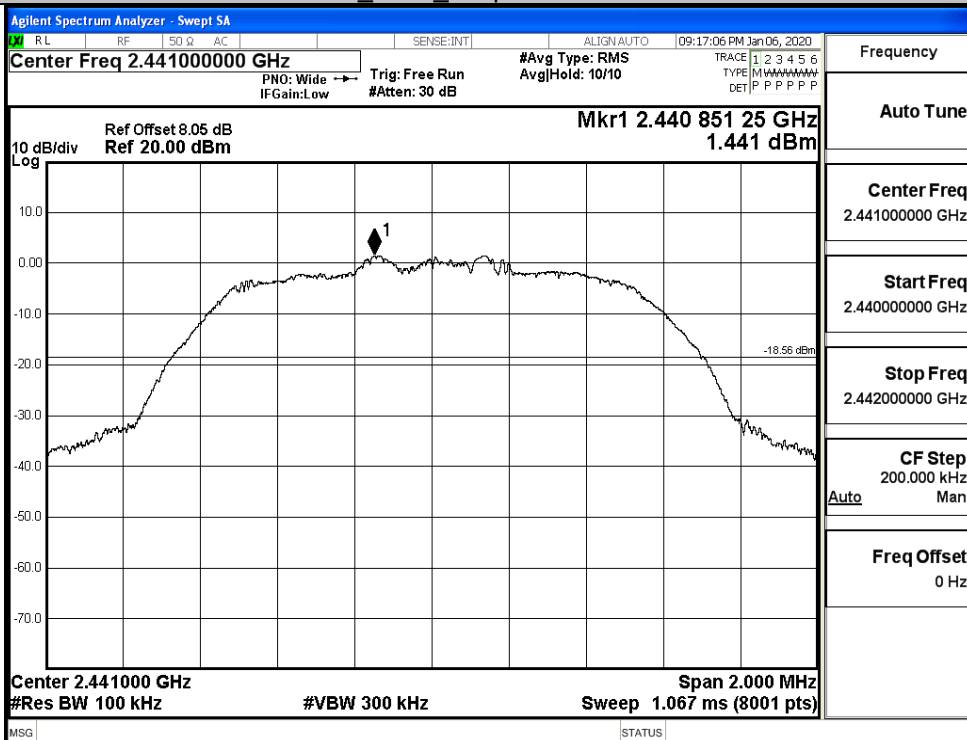


Puw

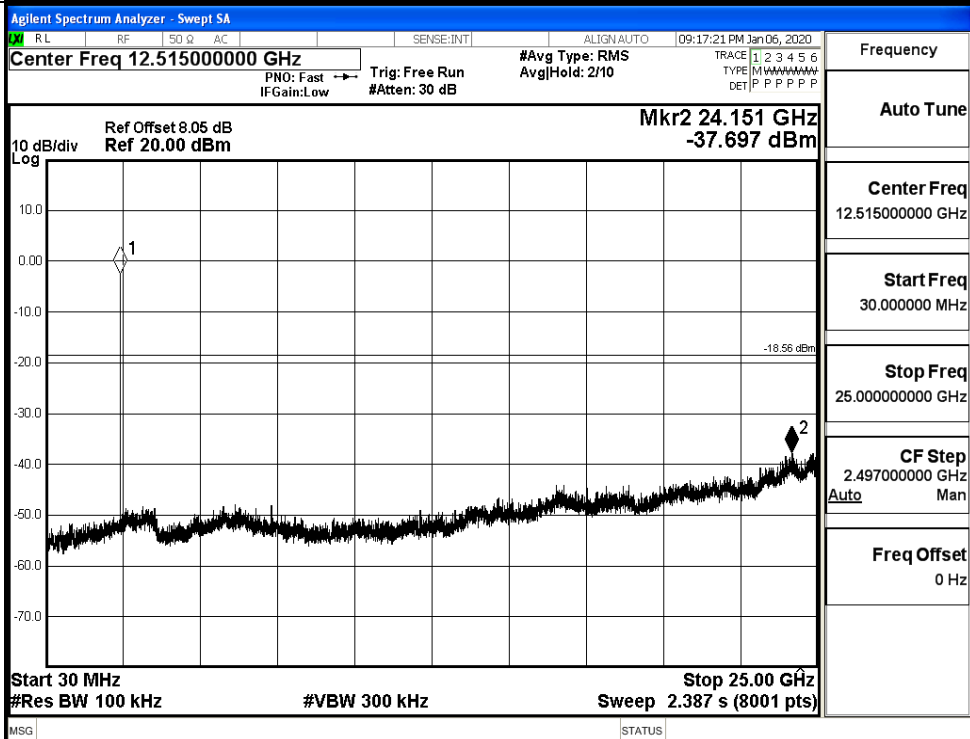


π /4DQPSK_MCH_Graphs

Pref

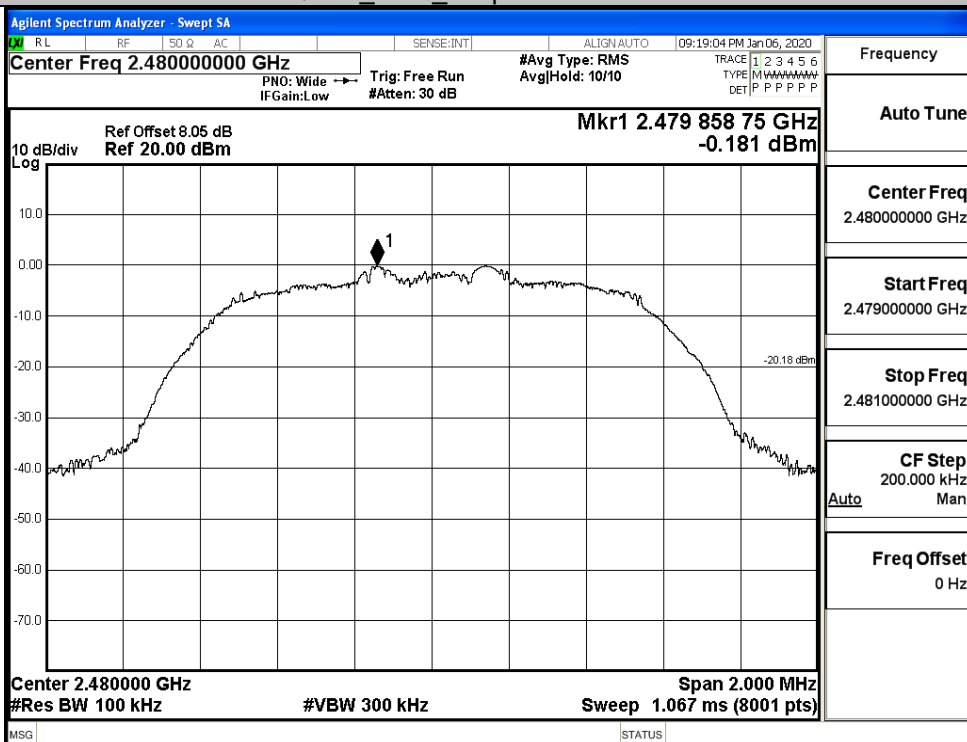


Puw

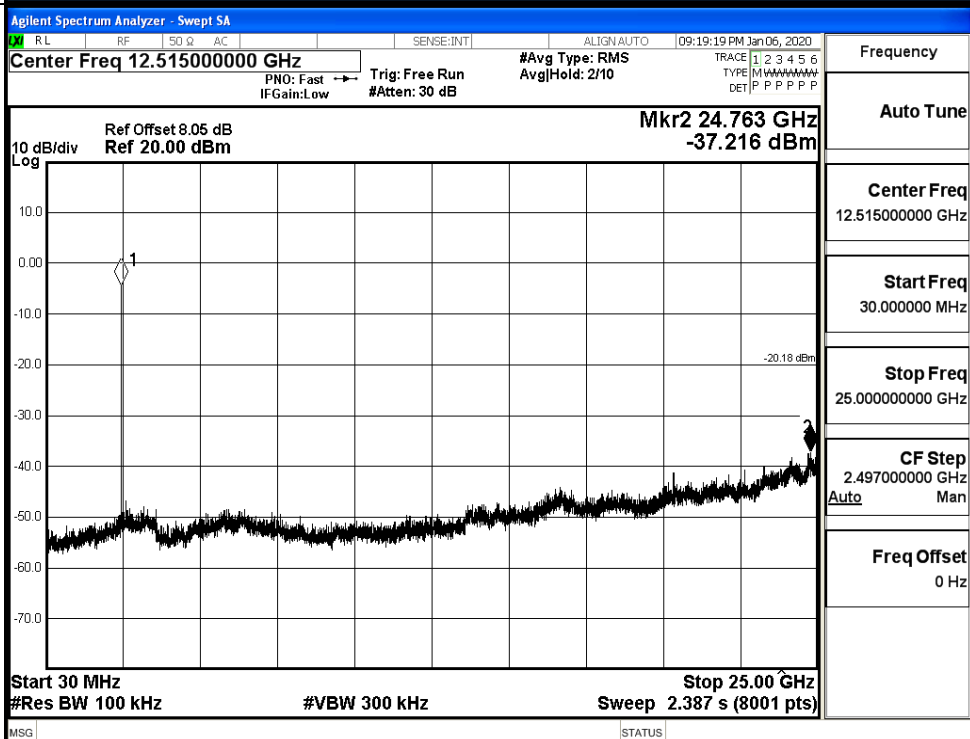


$\pi/4$ DQPSK_HCH_Graphs

Pref

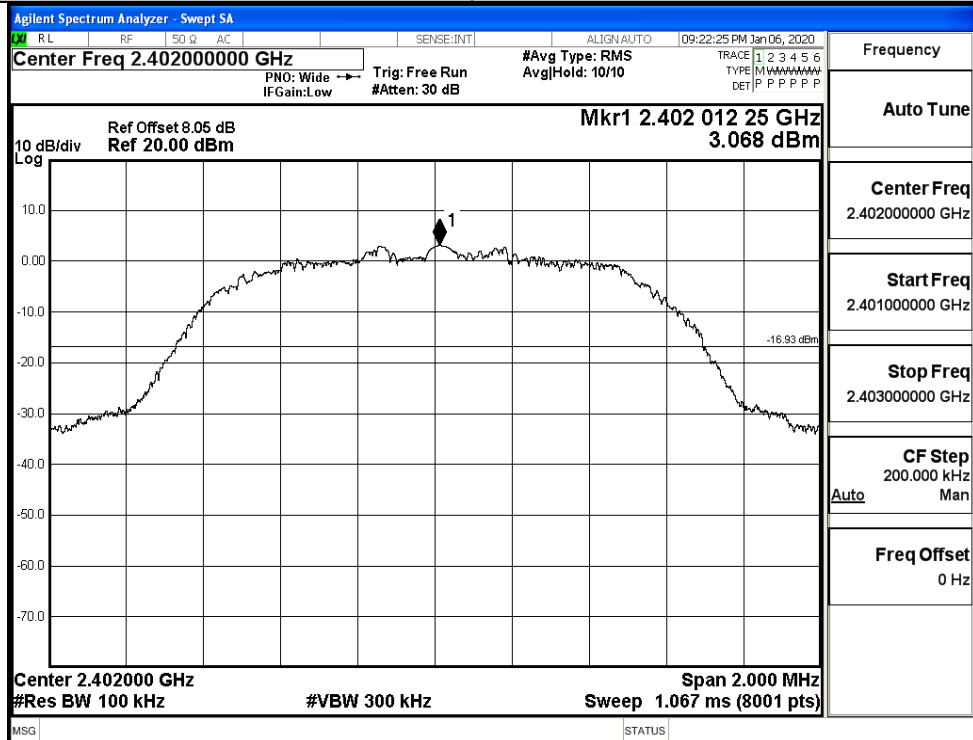


Puw

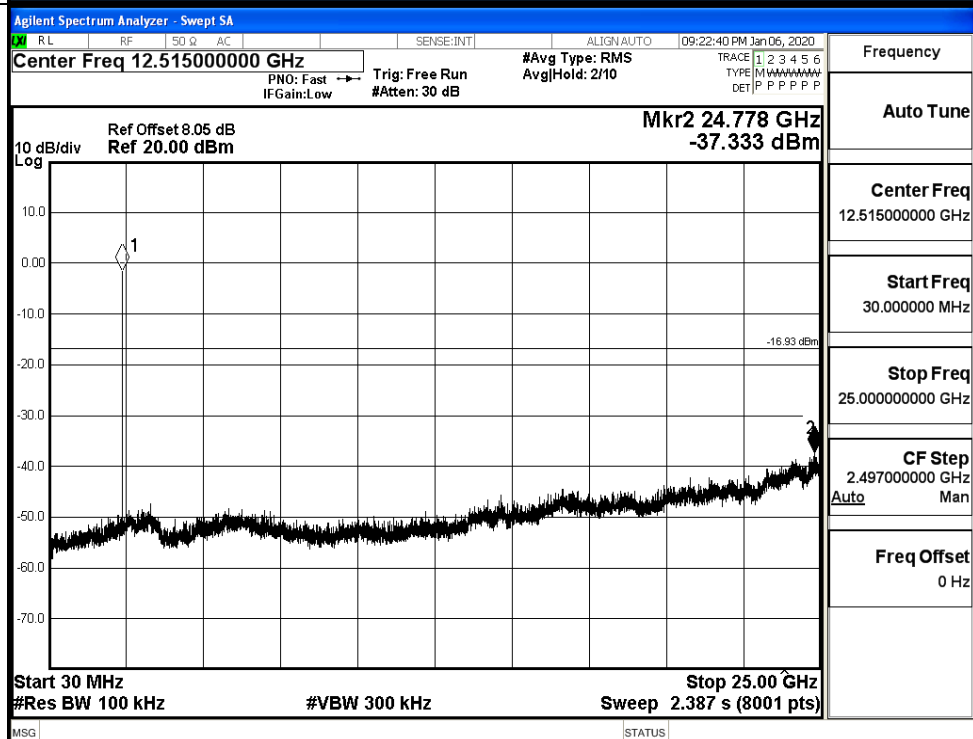


8DPSK_LCH_Graphs

Pref

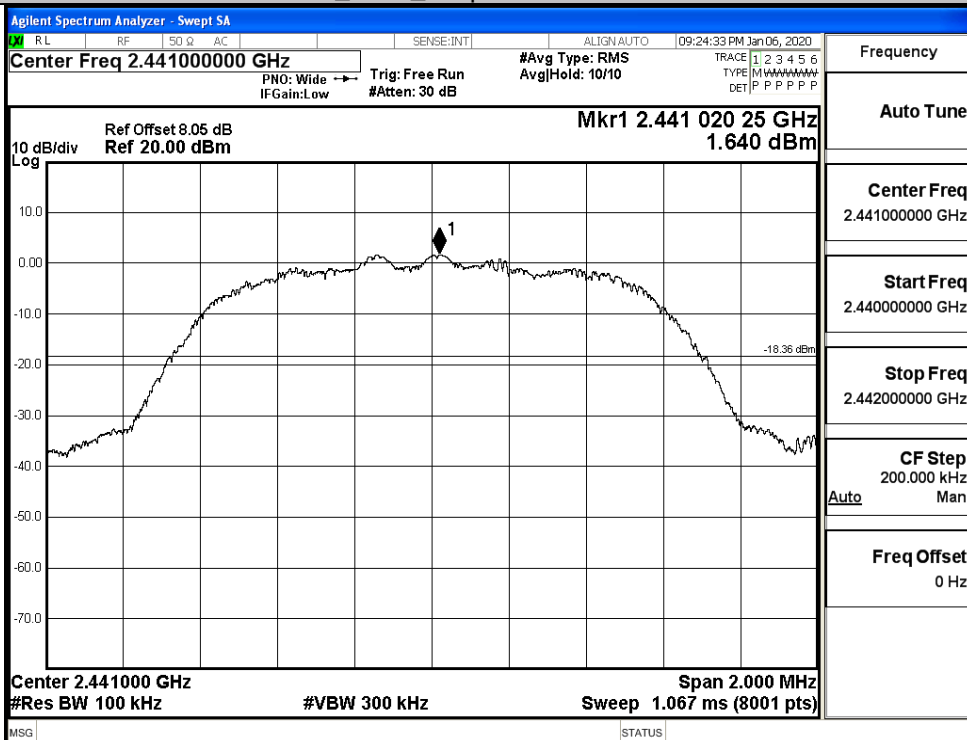


Puw

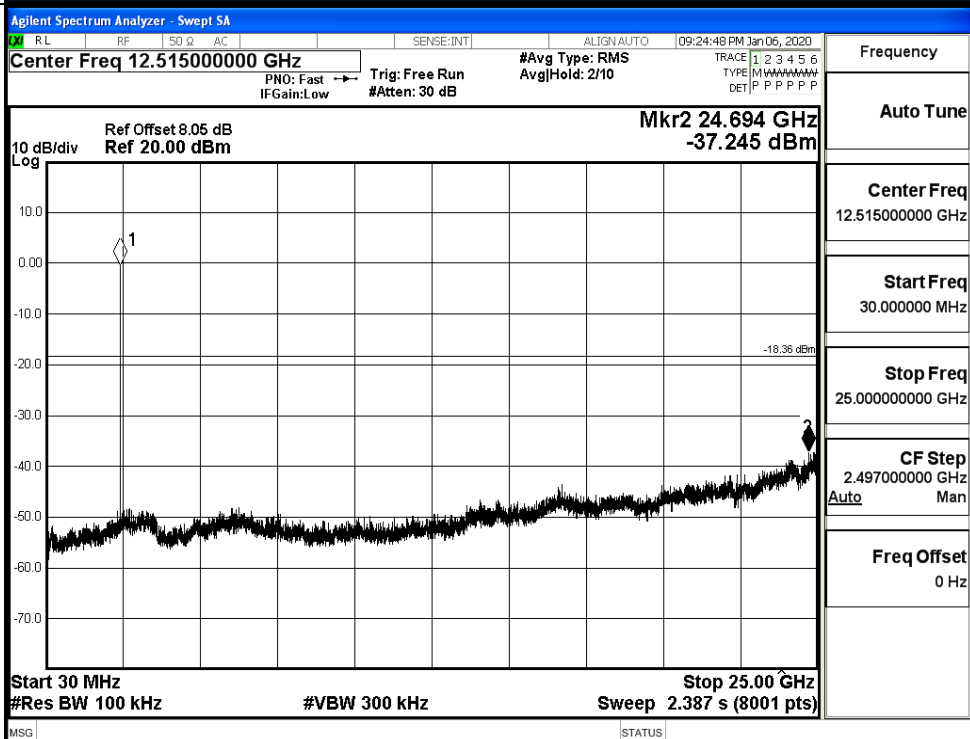


8DPSK_MCH_Graphs

Pref

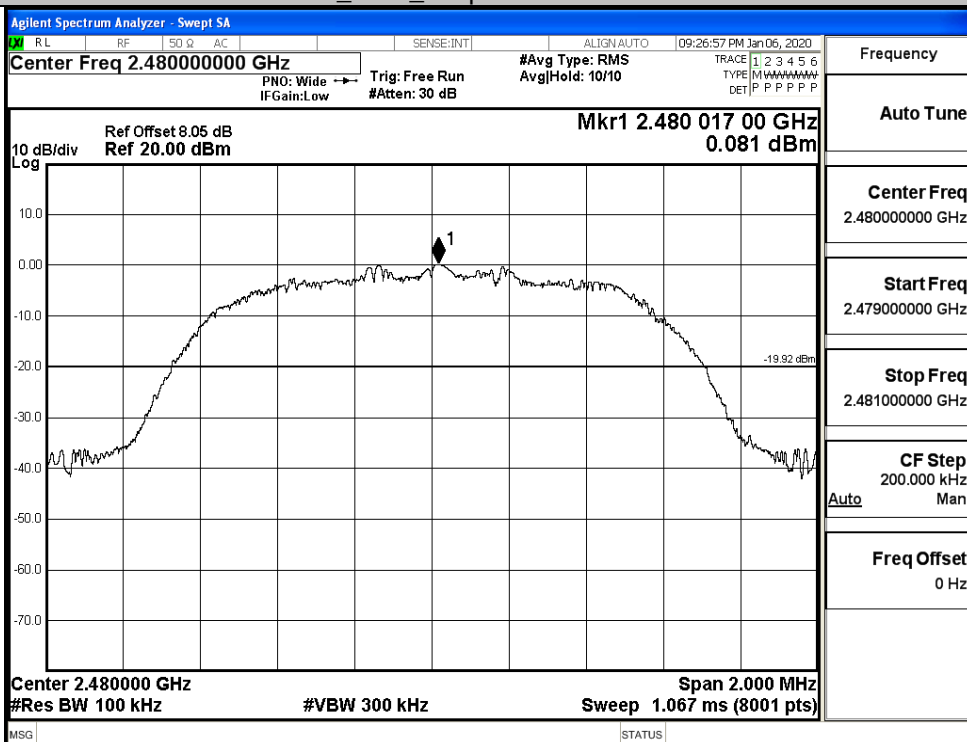


Puw

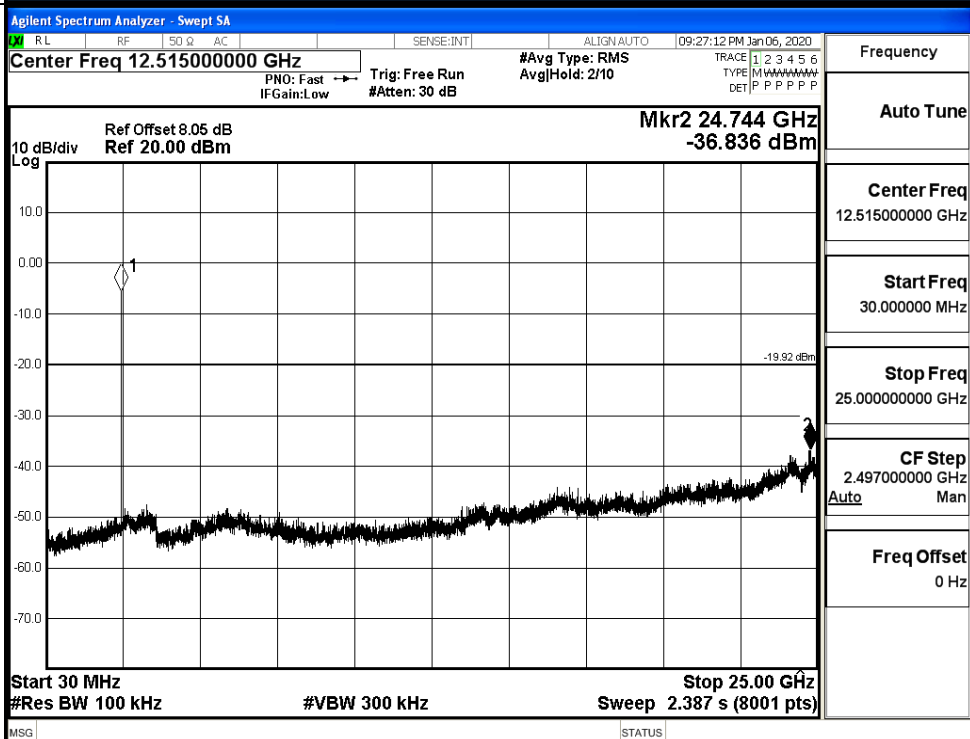


8DPSK_HCH_Graphs

Pref



Puw

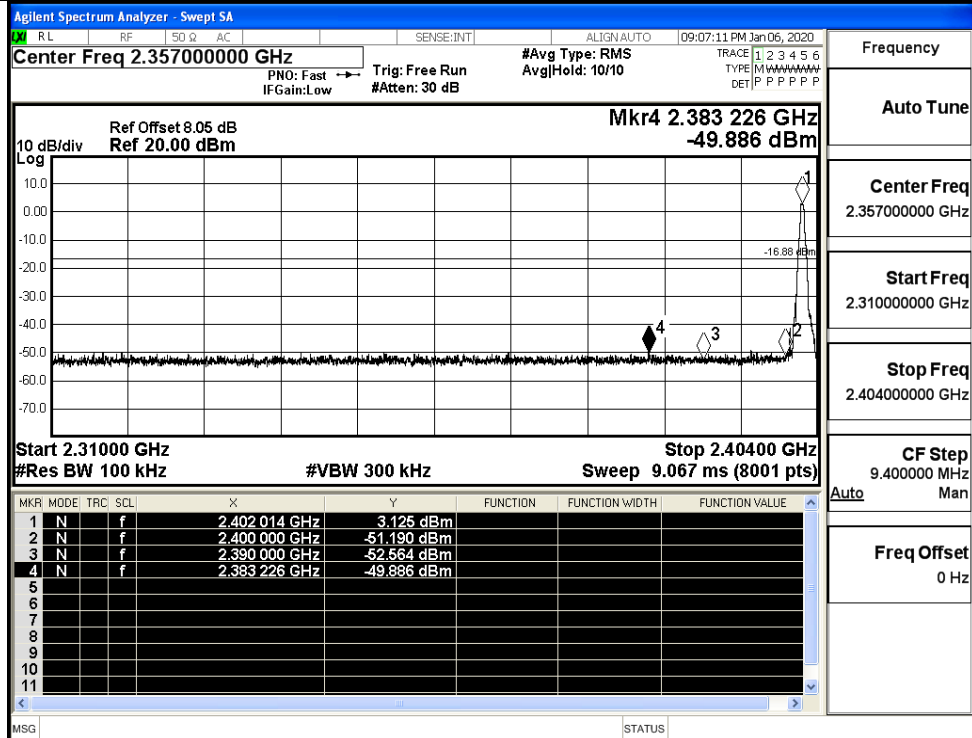


A.7 Band-edge for RF Conducted Emissions

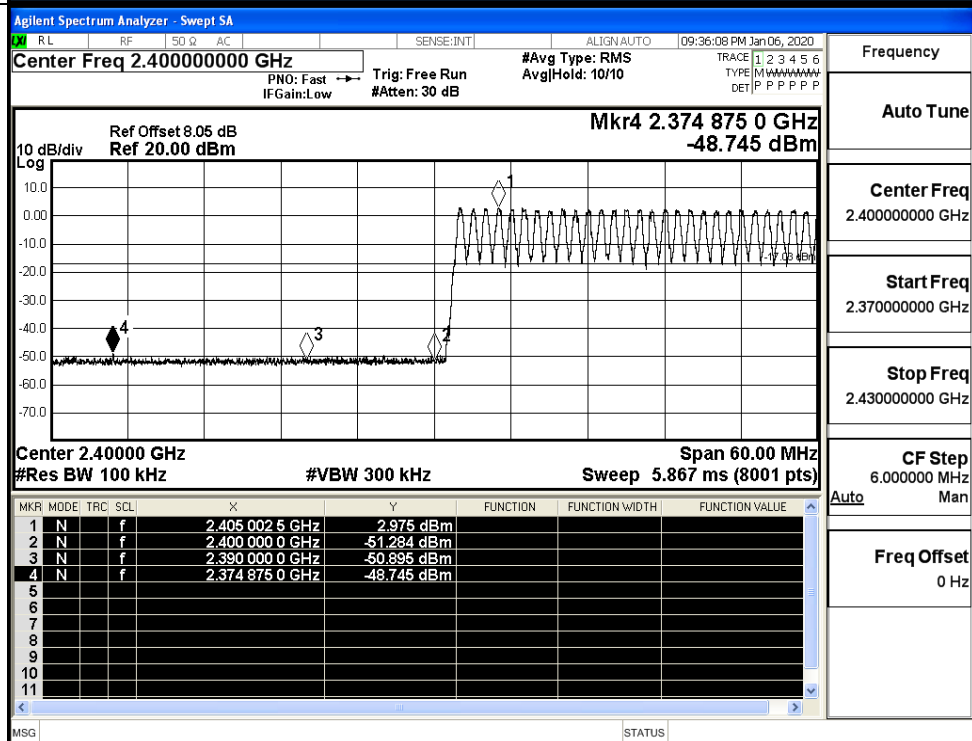
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.125	Off	-49.886	-16.88	PASS
			2.975	On	-48.745	-17.03	PASS
	HCH	2480	0.055	Off	-49.283	-19.95	PASS
			0.835	On	-49.082	-19.17	PASS
$\pi/4$ DQPSK	LCH	2402	2.489	Off	-49.558	-17.51	PASS
			2.981	On	-48.395	-17.02	PASS
	HCH	2480	0.062	Off	-48.392	-19.94	PASS
			1.056	On	-48.224	-18.94	PASS
8DPSK	LCH	2402	2.598	Off	-49.806	-17.4	PASS
			2.935	On	-49.093	-17.07	PASS
	HCH	2480	0.096	Off	-49.208	-19.9	PASS
			1.079	On	-48.116	-18.92	PASS

Test Graphs

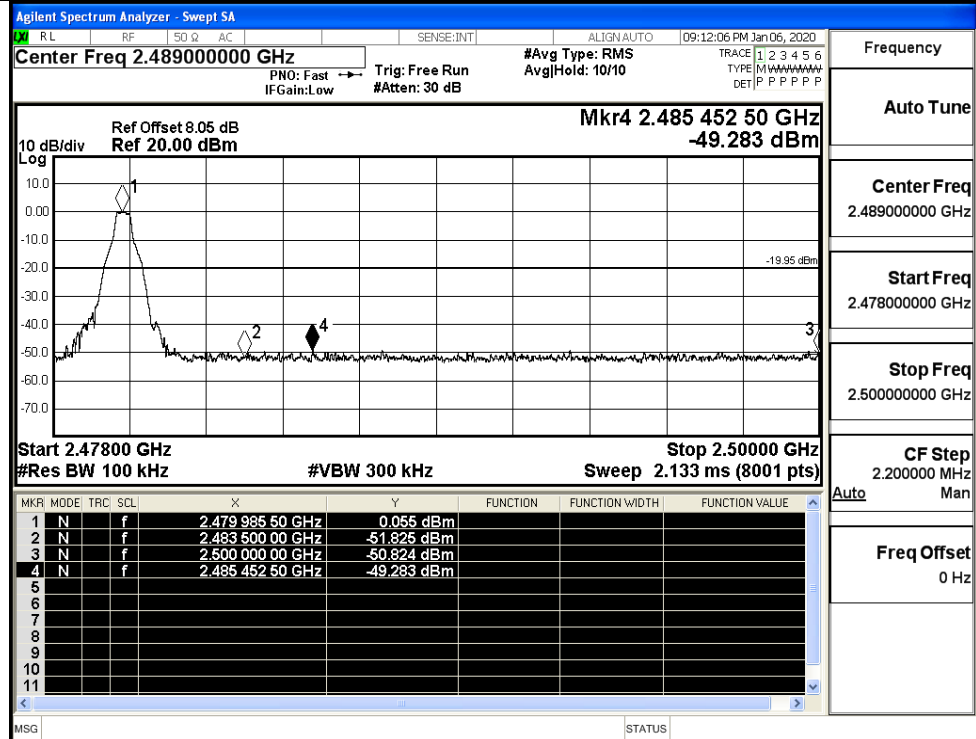
GFSK/LCH/No Hop



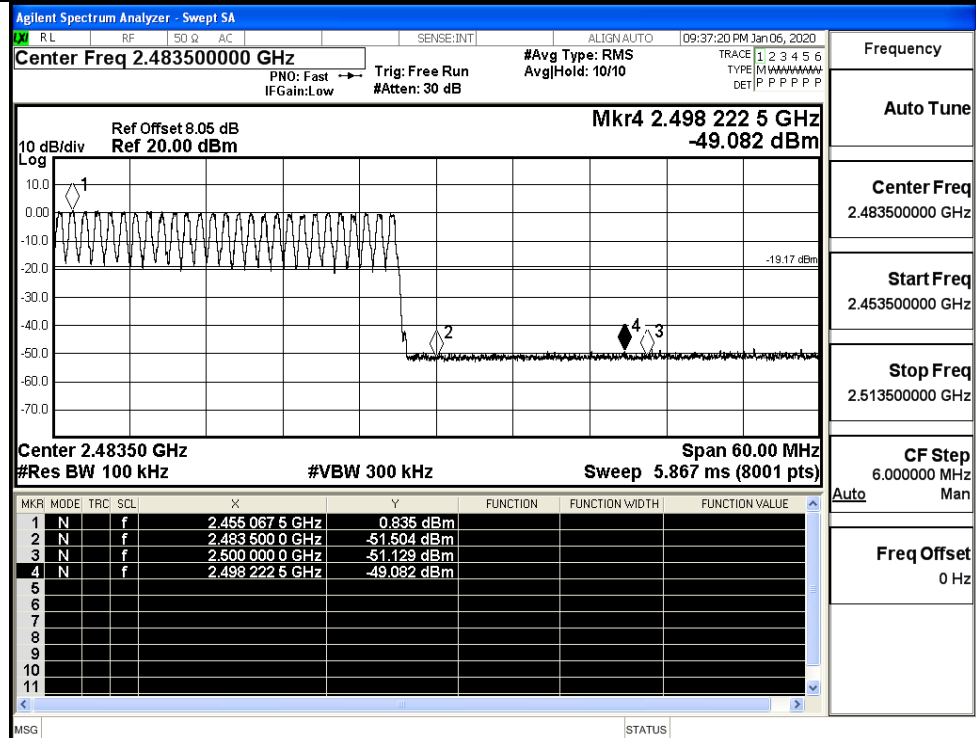
GFSK/LCH/Hop



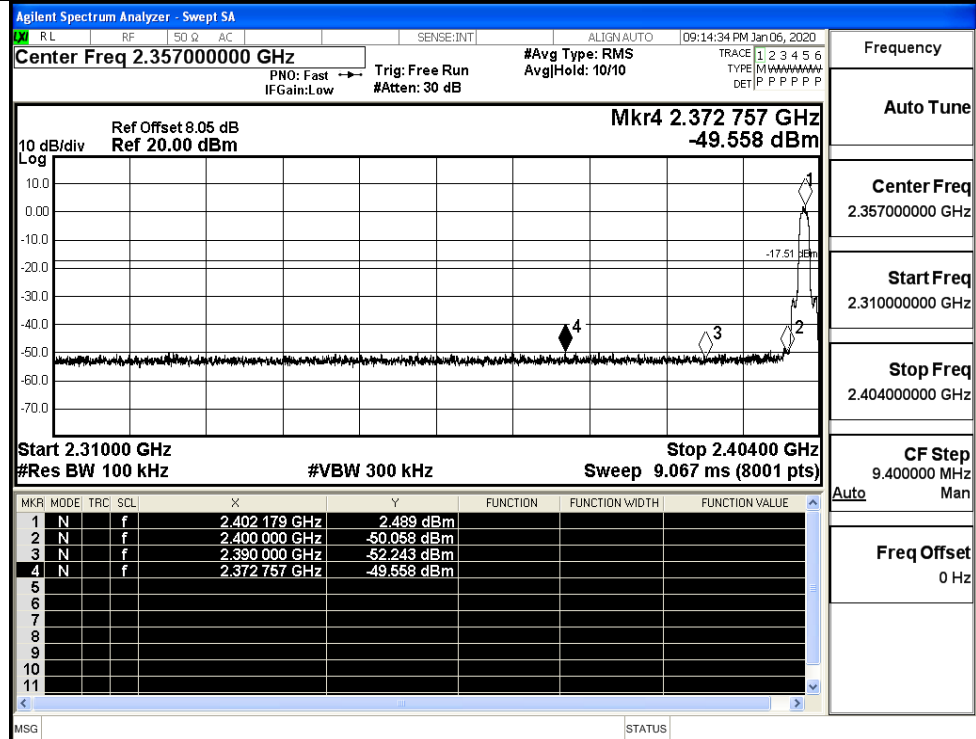
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

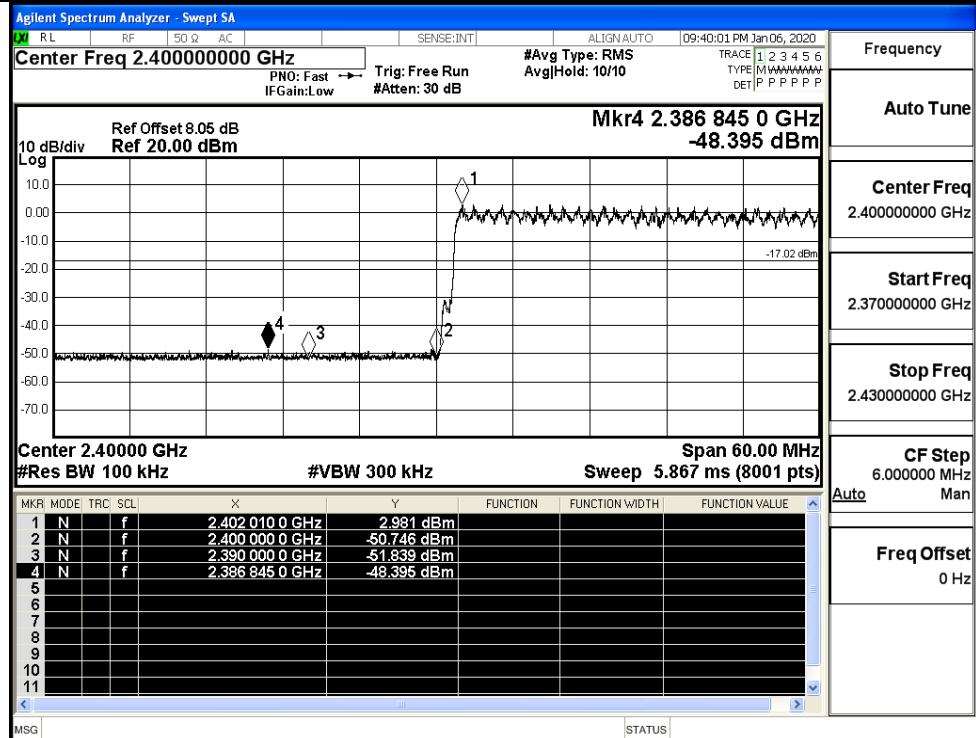
Stop Freq
2.404000000 GHz

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

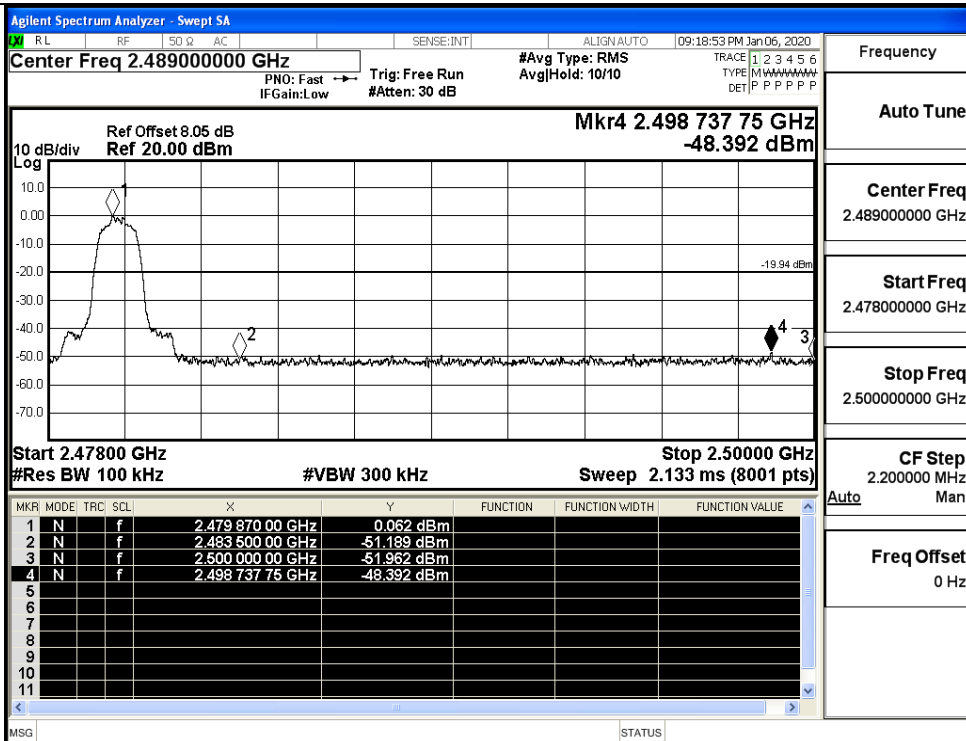
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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

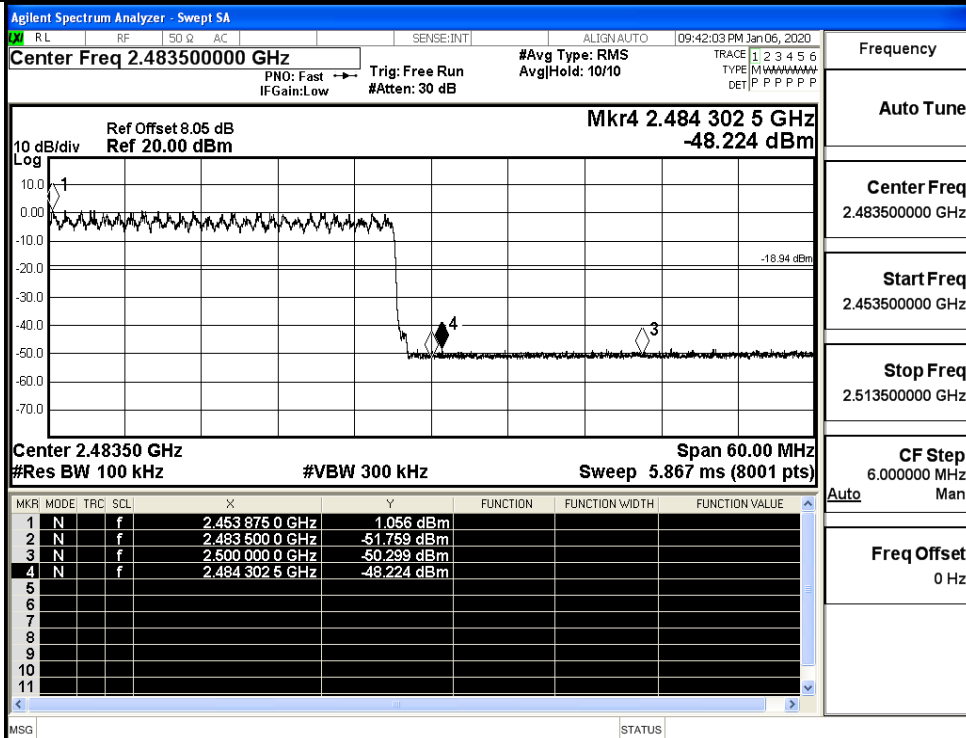


Frequency

Auto Tune

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

$\pi/4$ DQPSK/HCH/Hop

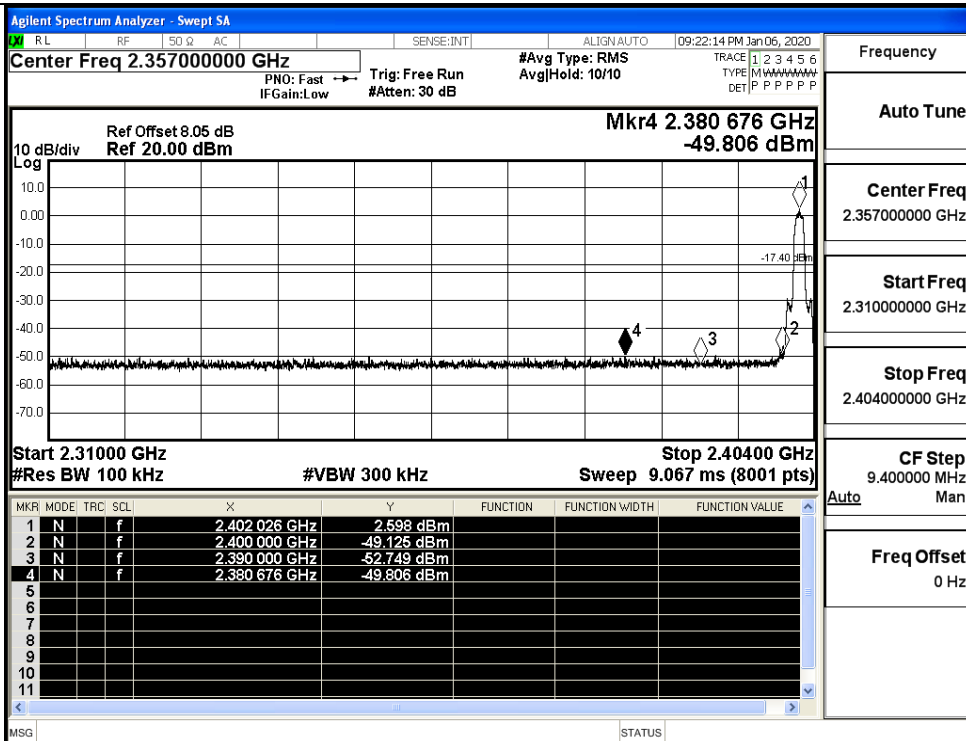


Frequency

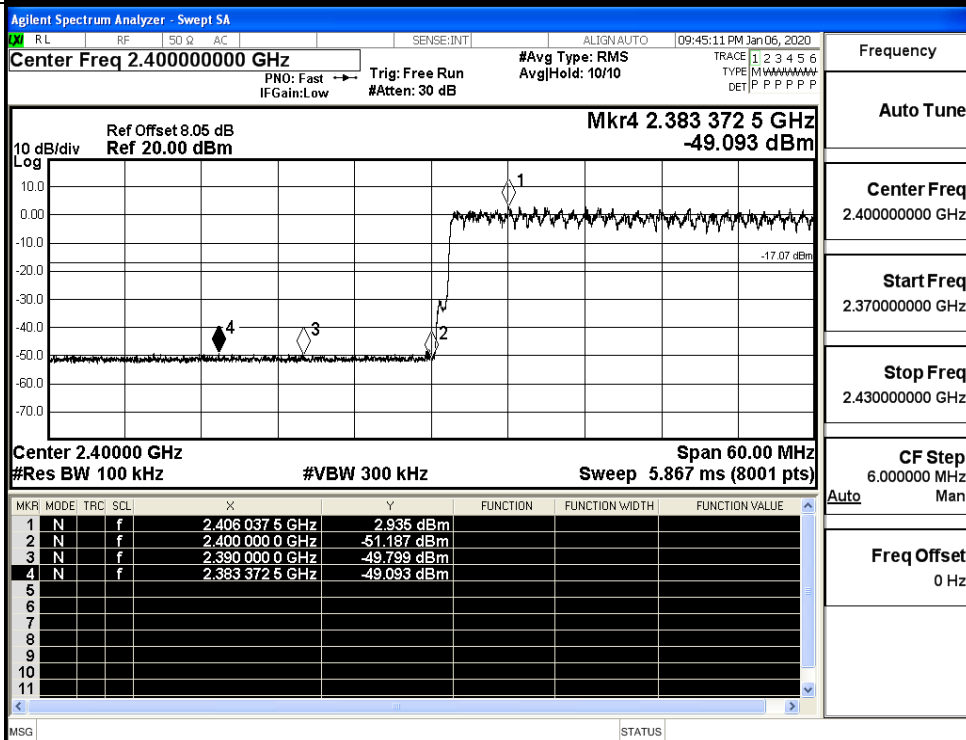
Auto Tune

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

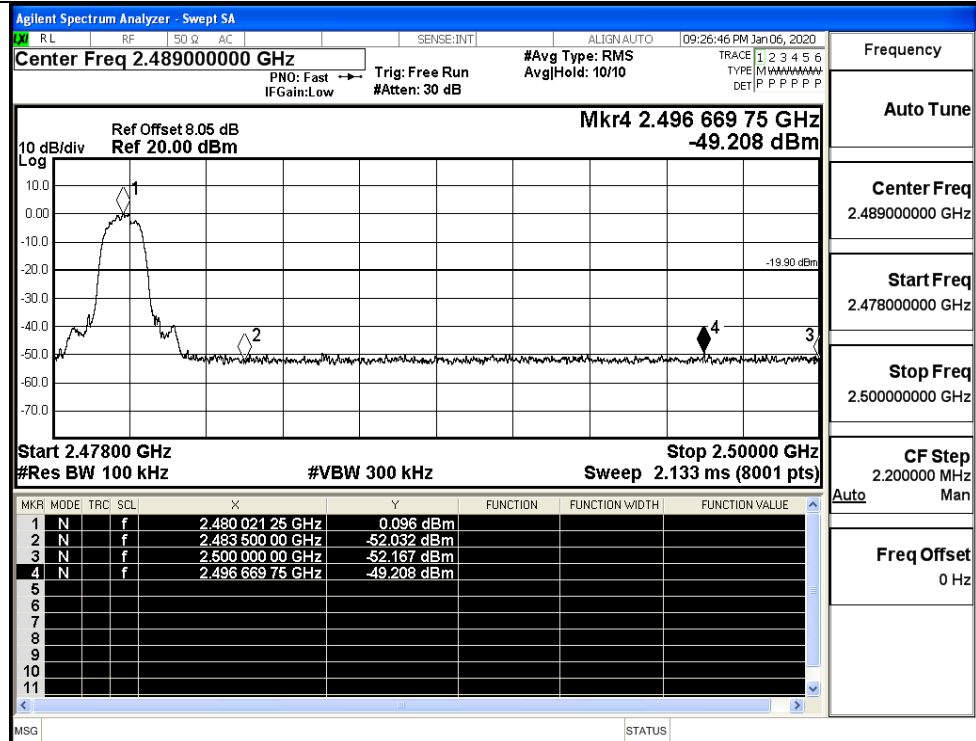
8DPSK/LCH/No Hop



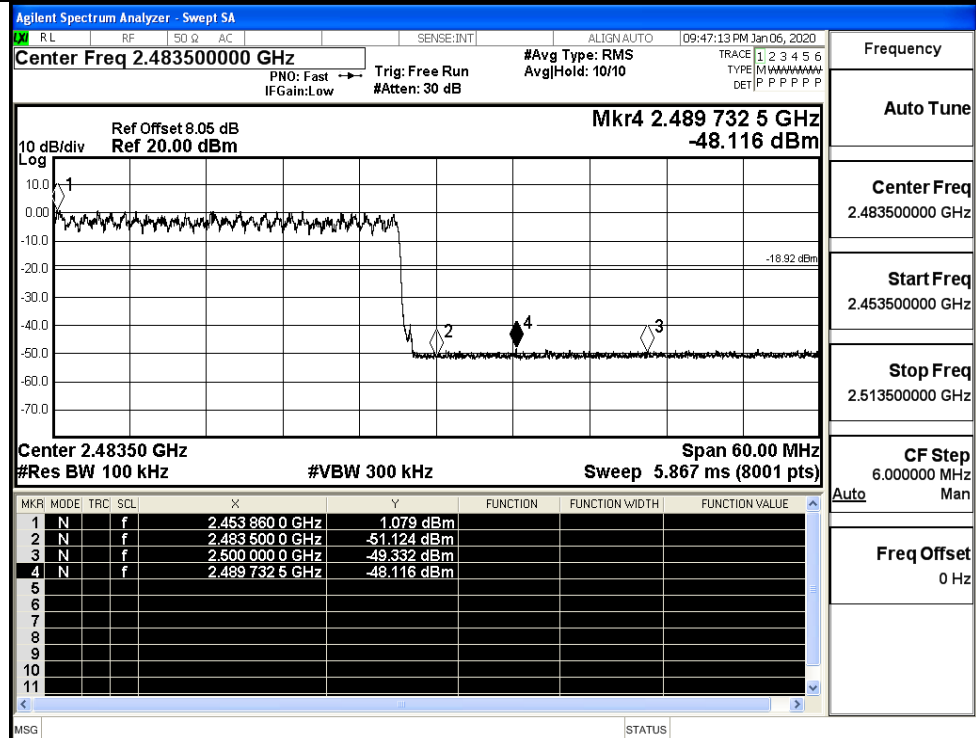
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



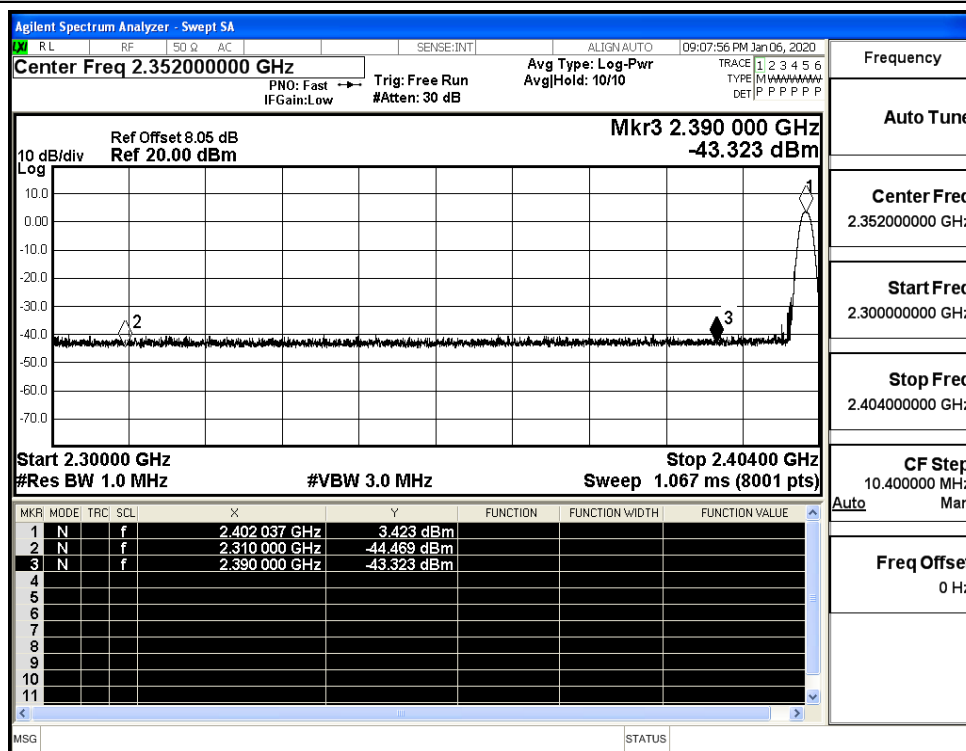
8DPSK/HCH/Hop



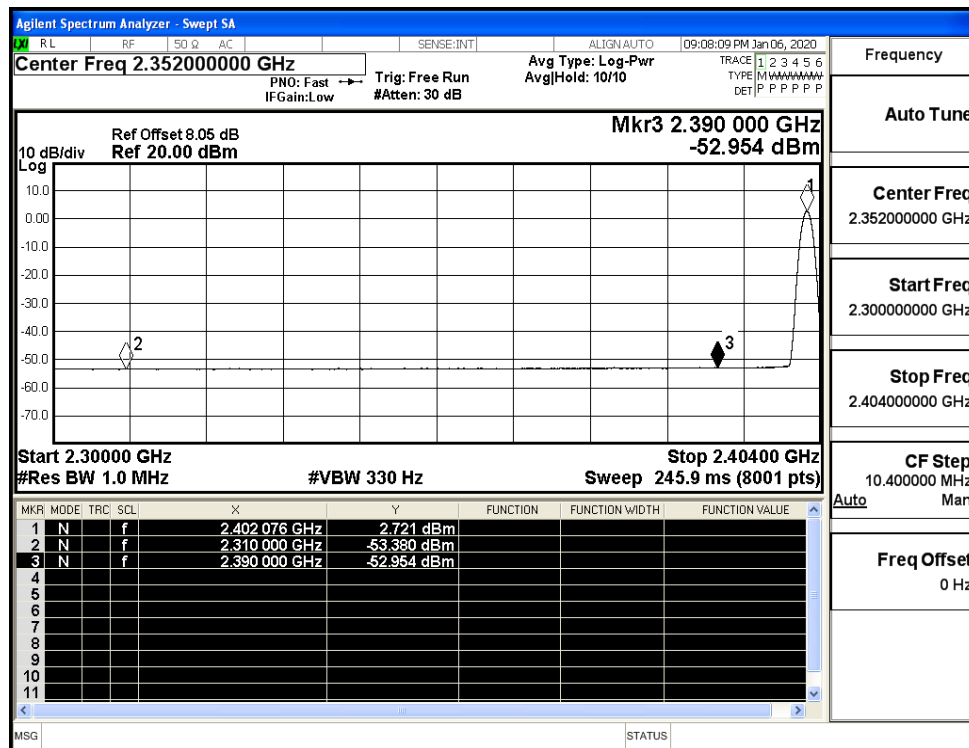
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.47	0	0	50.79	PEAK	74	PASS
	Off	2310.0	-53.38	0	0	41.88	AV	54	PASS
	Off	2390.0	-43.32	0	0	51.93	PEAK	74	PASS
	Off	2390.0	-52.95	0	0	42.30	AV	54	PASS
	Off	2483.5	-42.81	0	0	52.45	PEAK	74	PASS
	Off	2483.5	-52.41	0	0	42.85	AV	54	PASS
	Off	2500.0	-42.06	0	0	53.20	PEAK	74	PASS
	Off	2500.0	-52.38	0	0	42.88	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.02	0	0	51.24	PEAK	74	PASS
	Off	2310.0	-53.19	0	0	42.07	AV	54	PASS
	Off	2390.0	-43.84	0	0	51.42	PEAK	74	PASS
	Off	2390.0	-52.95	0	0	42.31	AV	54	PASS
	Off	2483.5	-42.24	0	0	53.01	PEAK	74	PASS
	Off	2483.5	-52.41	0	0	42.85	AV	54	PASS
	Off	2500.0	-41.53	0	0	53.73	PEAK	74	PASS
	Off	2500.0	-52.31	0	0	42.95	AV	54	PASS
8DPSK	Off	2310.0	-43.75	0	0	51.51	PEAK	74	PASS
	Off	2310.0	-53.29	0	0	41.97	AV	54	PASS
	Off	2390.0	-43.01	0	0	52.25	PEAK	74	PASS
	Off	2390.0	-53.01	0	0	42.25	AV	54	PASS
	Off	2483.5	-40.58	0	0	54.68	PEAK	74	PASS
	Off	2483.5	-52.49	0	0	42.77	AV	54	PASS
	Off	2500.0	-41.53	0	0	53.72	PEAK	74	PASS
	Off	2500.0	-52.30	0	0	42.96	AV	54	PASS

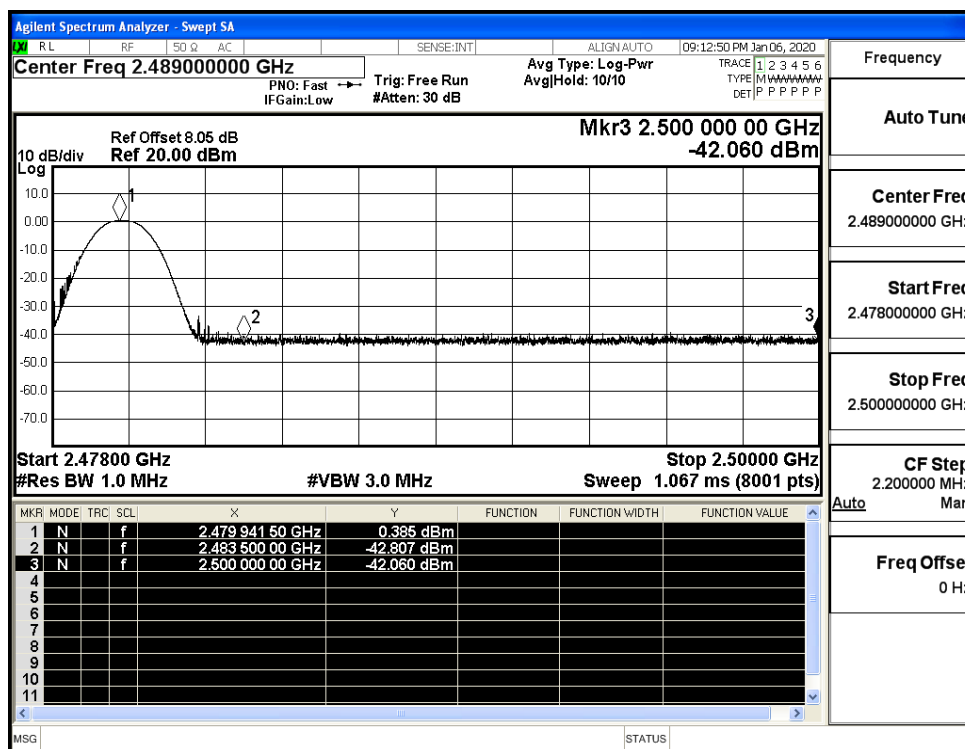
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



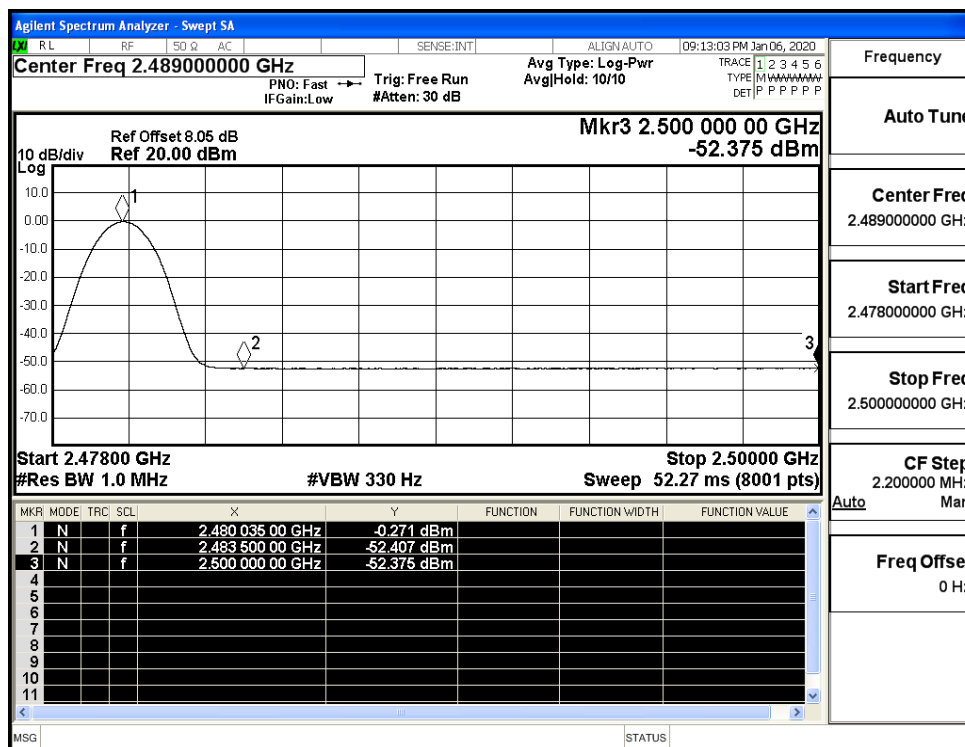
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

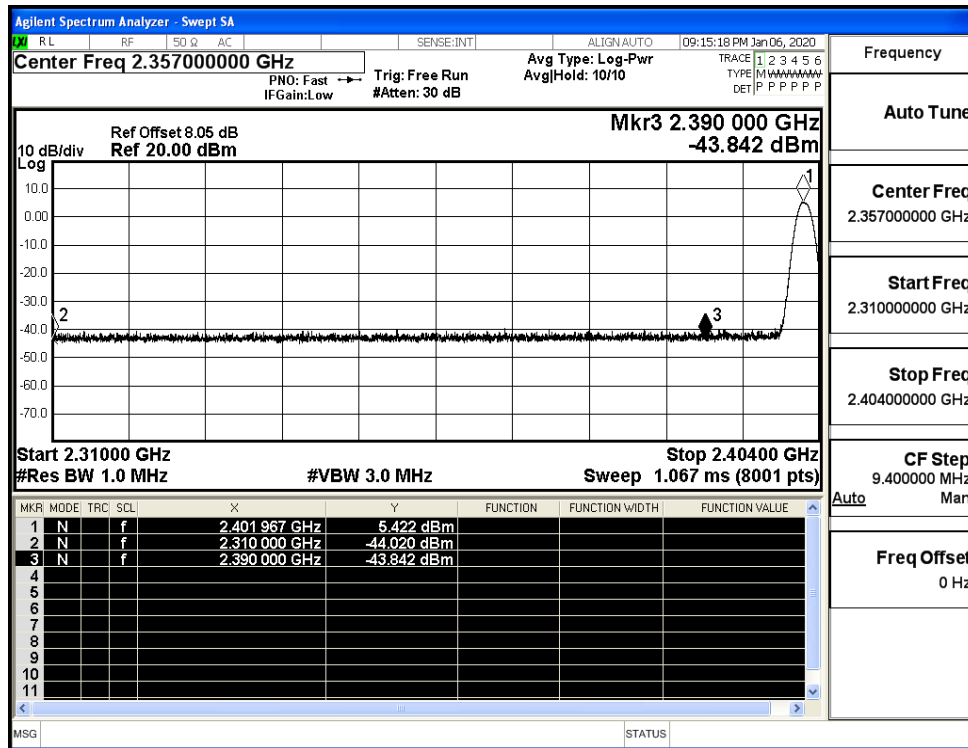
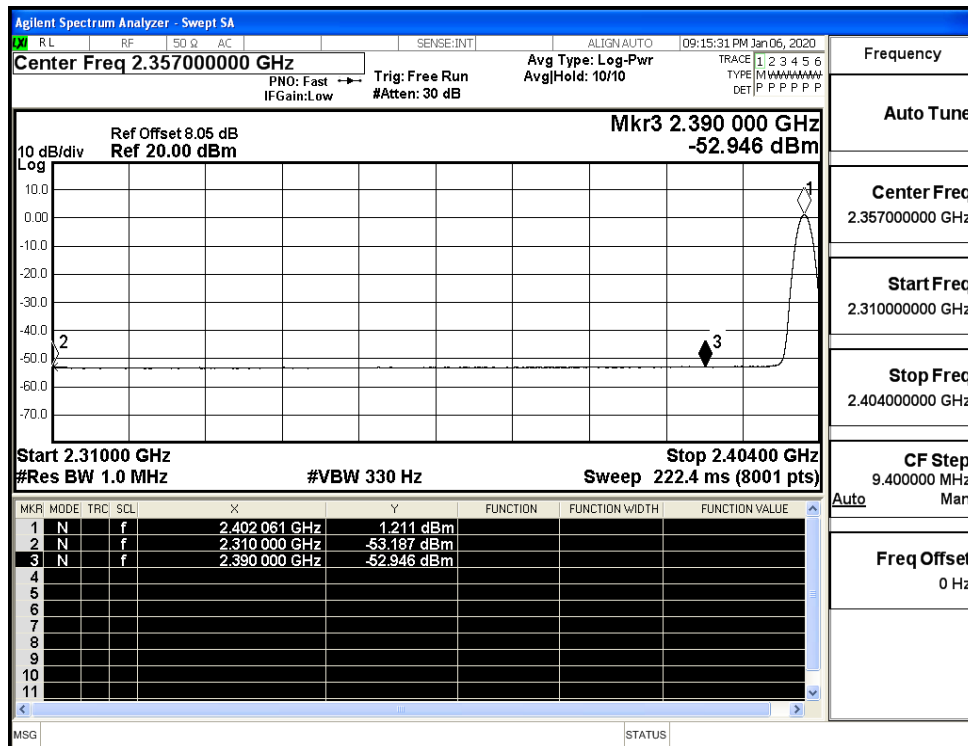


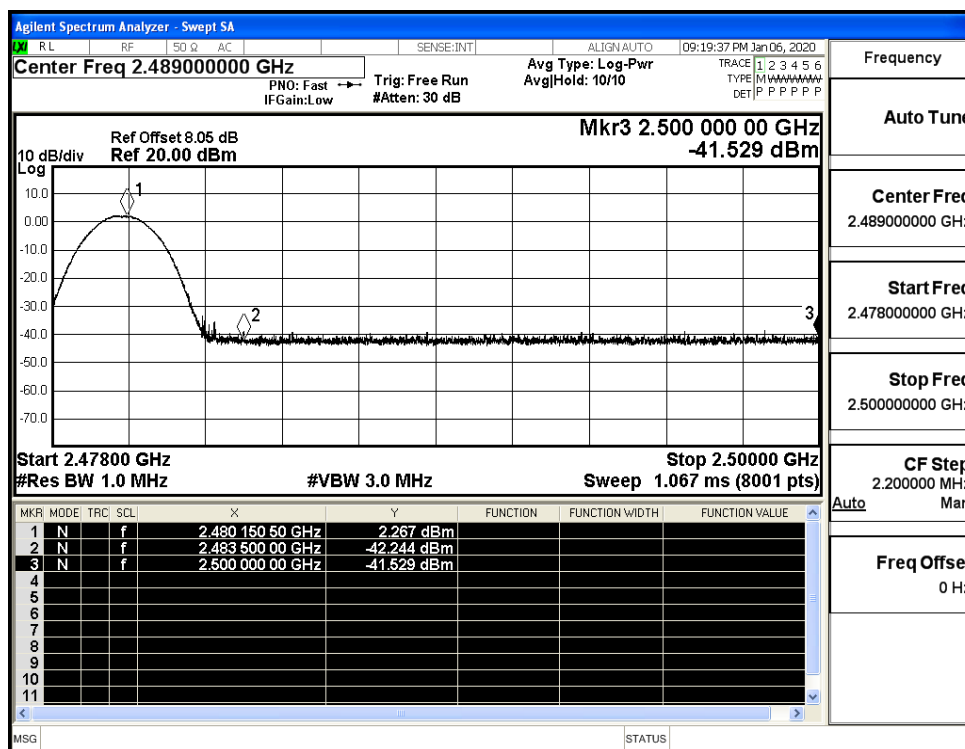
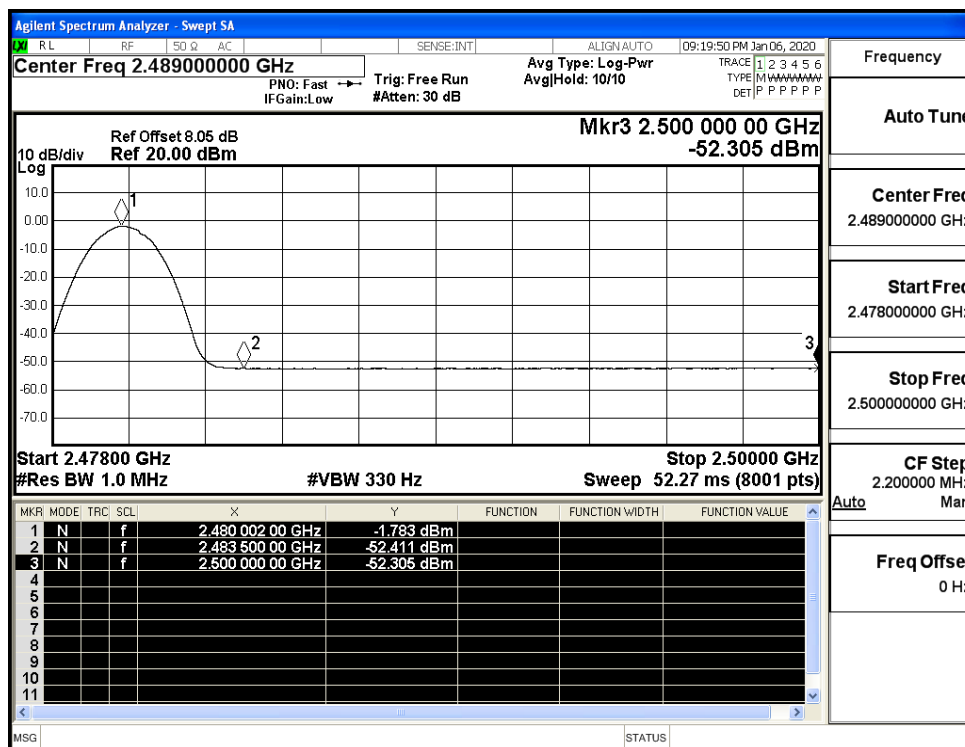
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



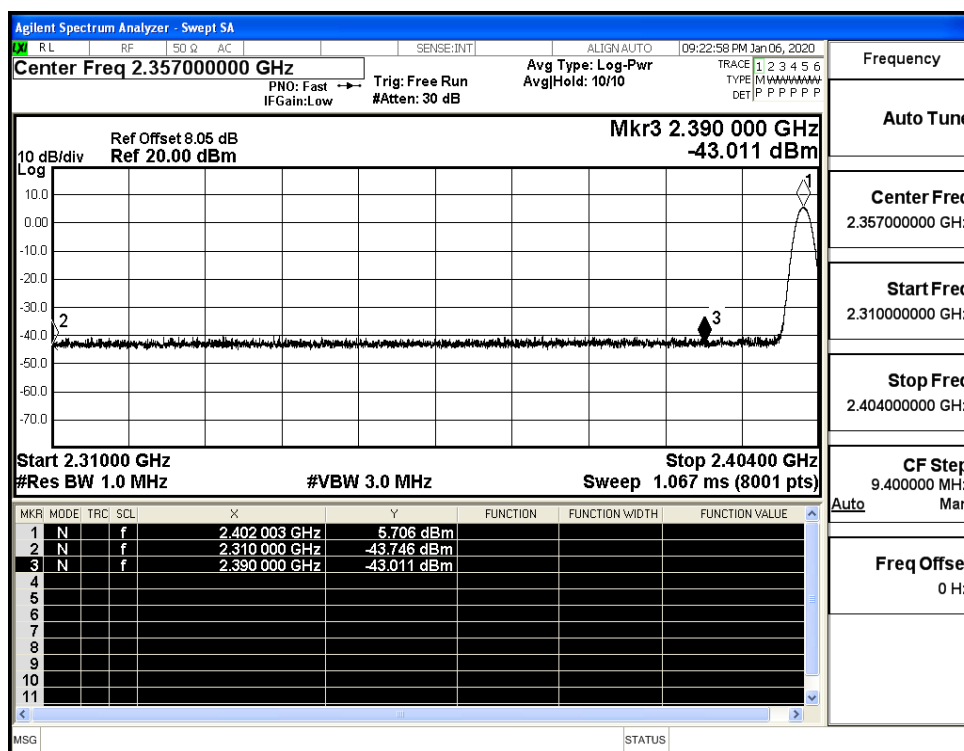
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



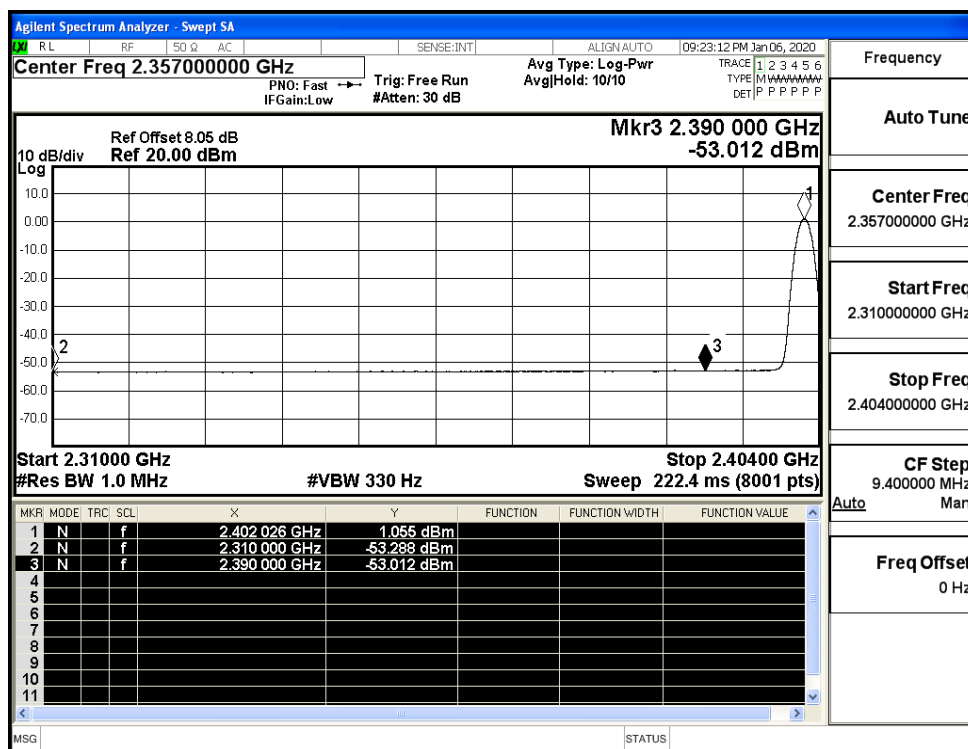
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

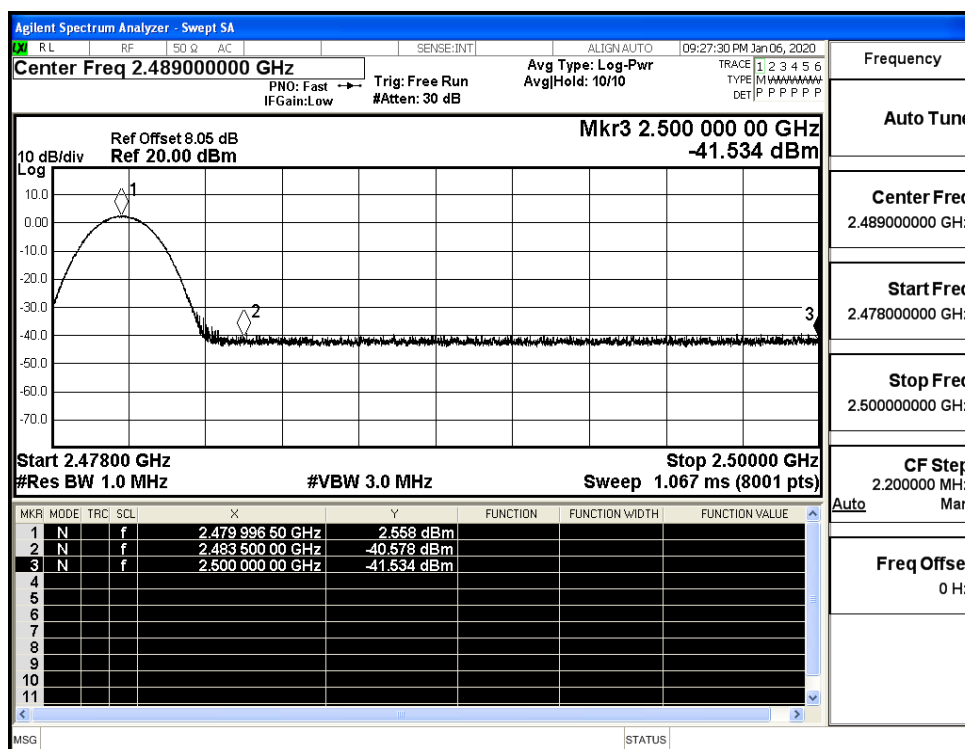
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

