

Appendix A

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

Product Name: ANC earbuds

Trade Mark: DangoBuds

Test Model: 30426 ANC earbuds (Black)

Environmental Conditions

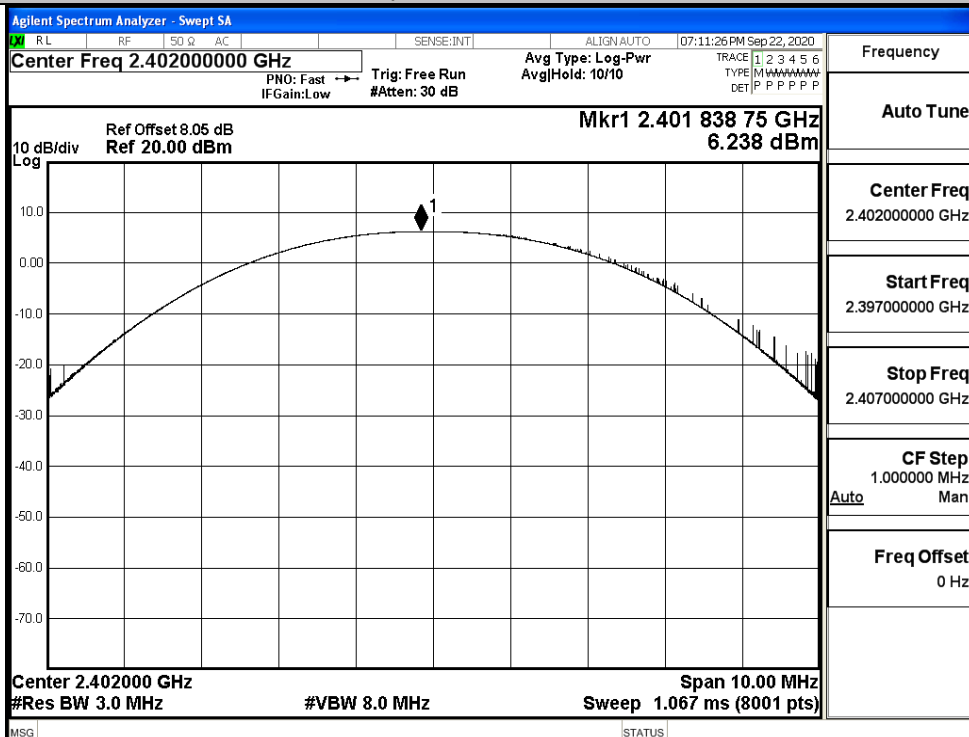
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Carl Fu
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

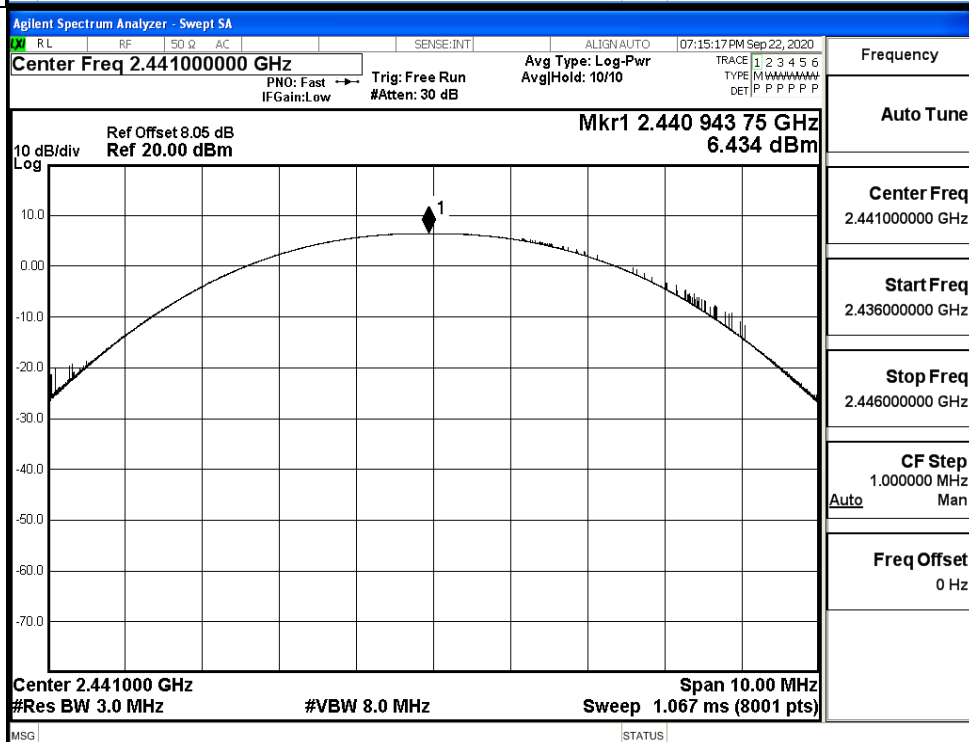
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.238	21	PASS
	MCH	6.434	21	PASS
	HCH	6.779	21	PASS
$\pi/4$ DQPSK	LCH	6.305	21	PASS
	MCH	6.475	21	PASS
	HCH	6.823	21	PASS
8DPSK	LCH	6.338	21	PASS
	MCH	6.528	21	PASS
	HCH	6.867	21	PASS

Test Graphs

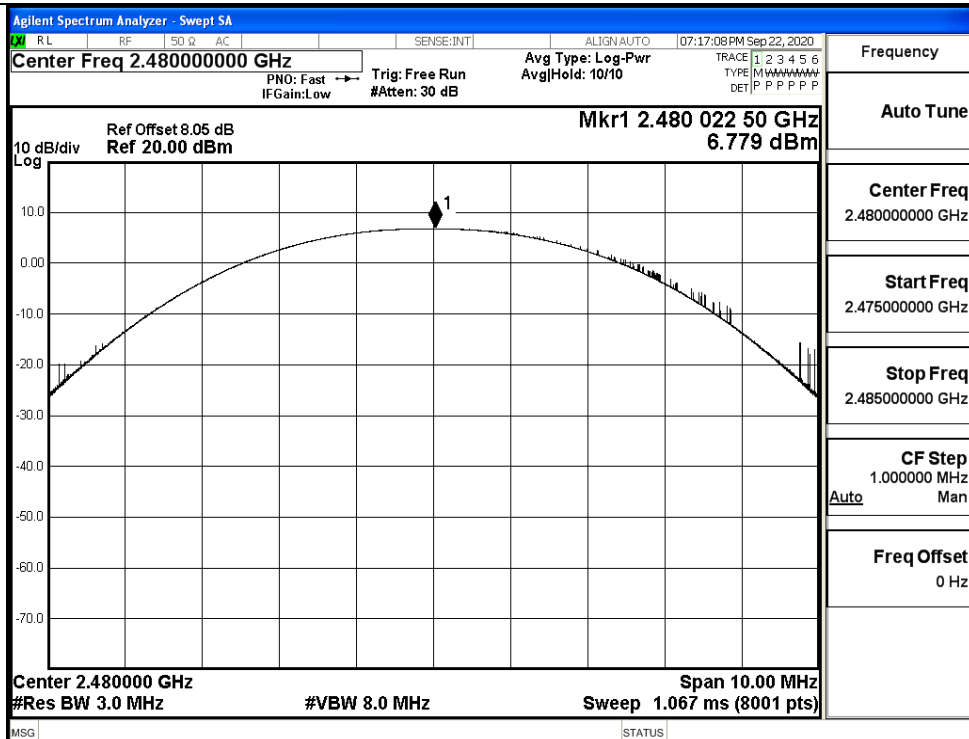
GFSK/LCH



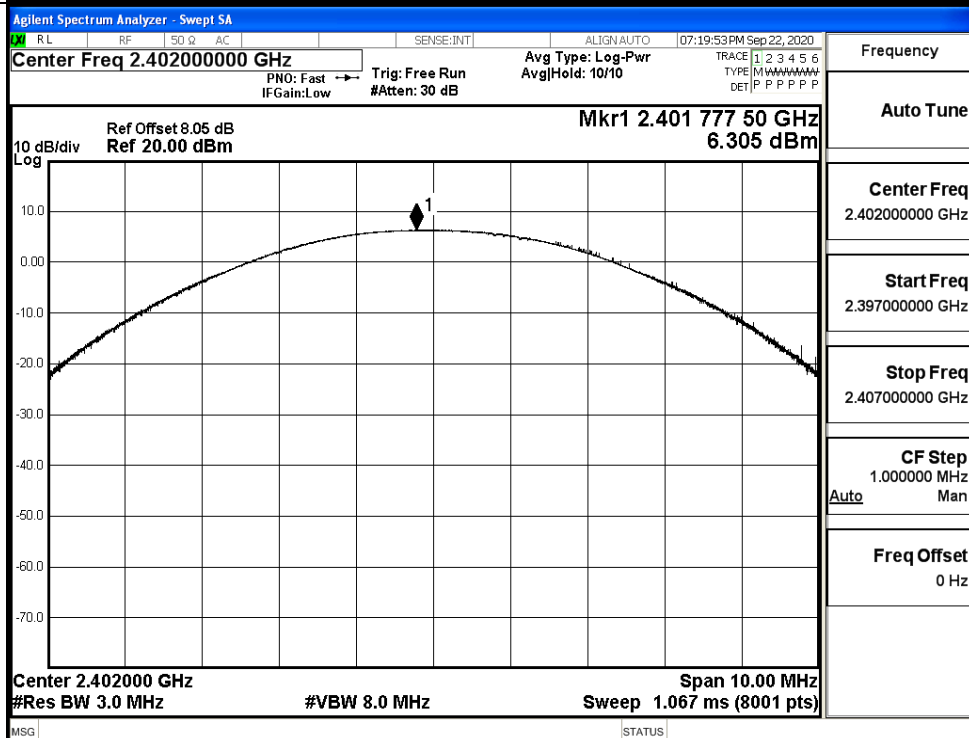
GFSK/MCH

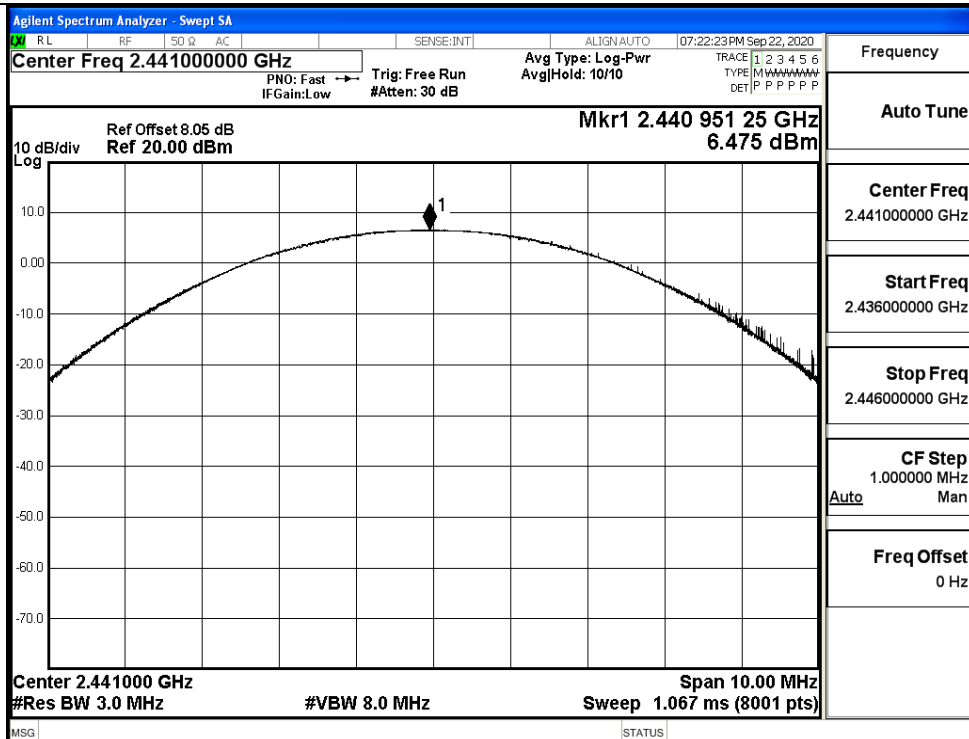
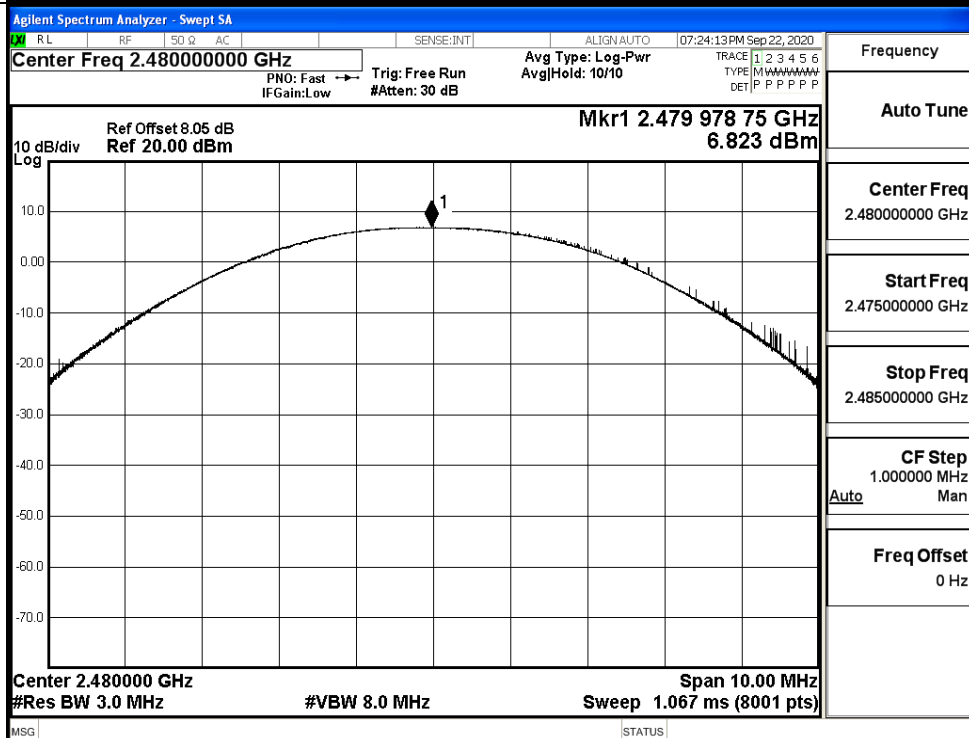


GFSK/HCH

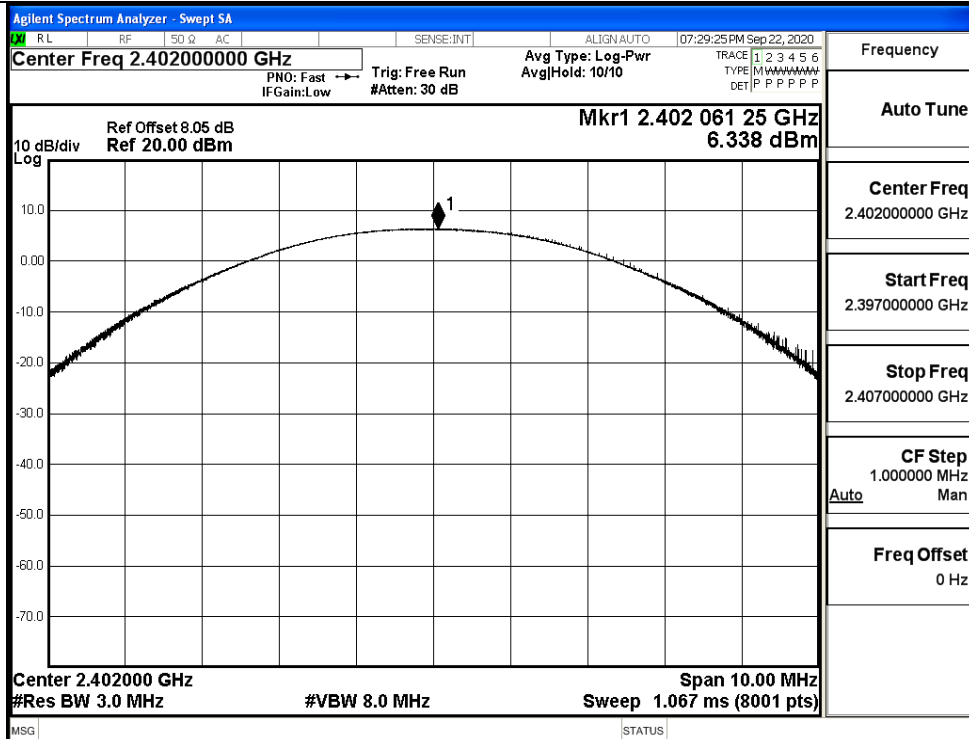


$\pi/4$ DQPSK/LCH

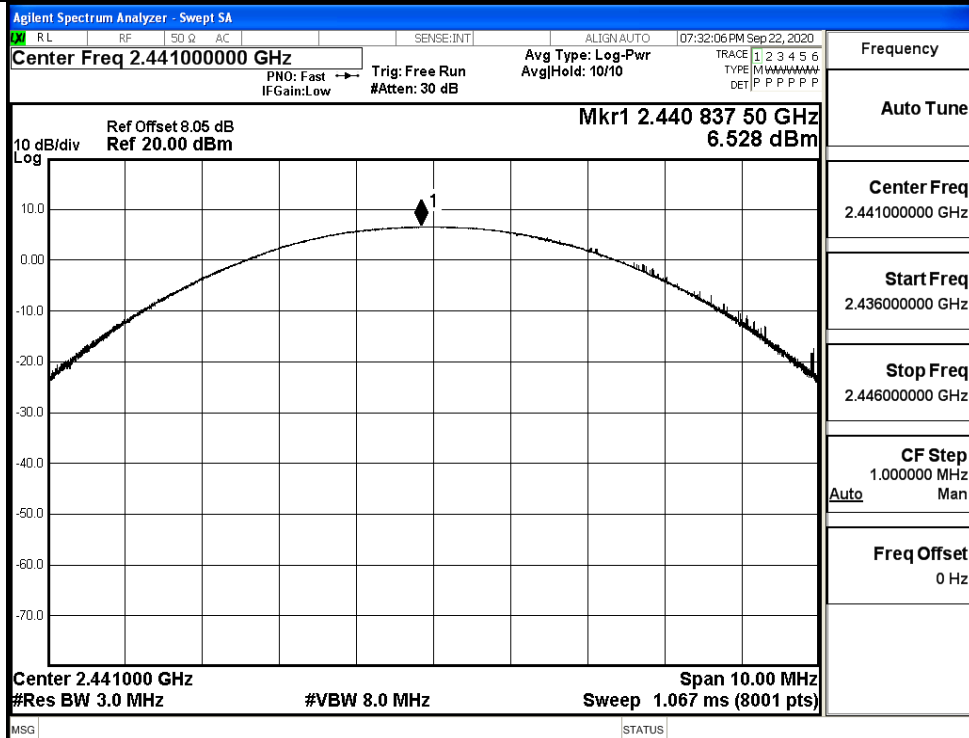


$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

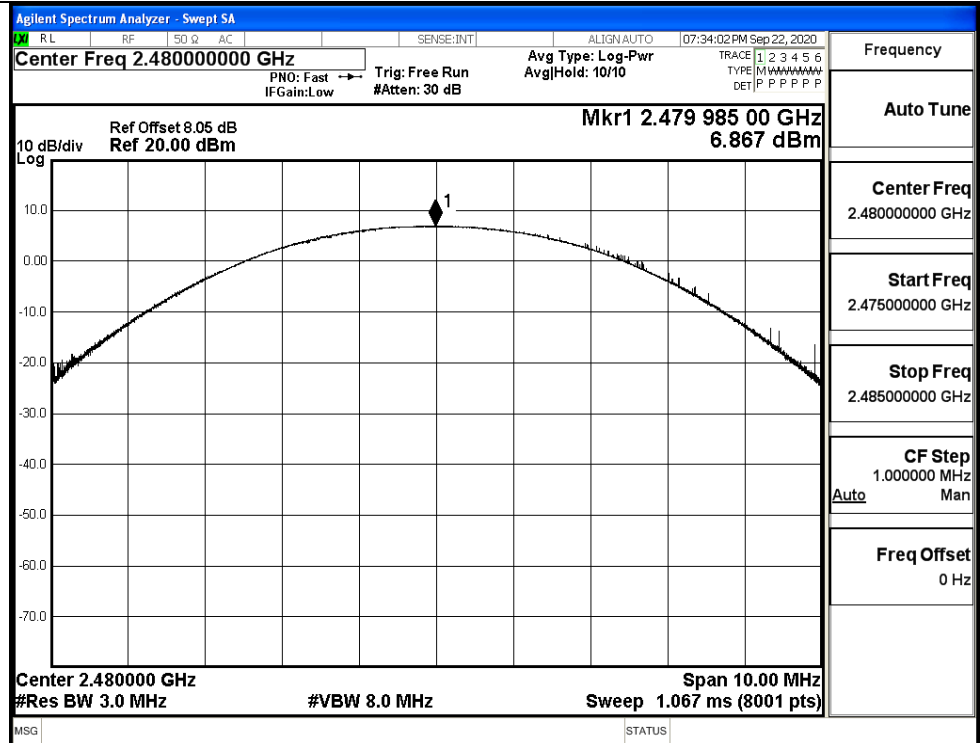
8DPSK/LCH



8DPSK/MCH



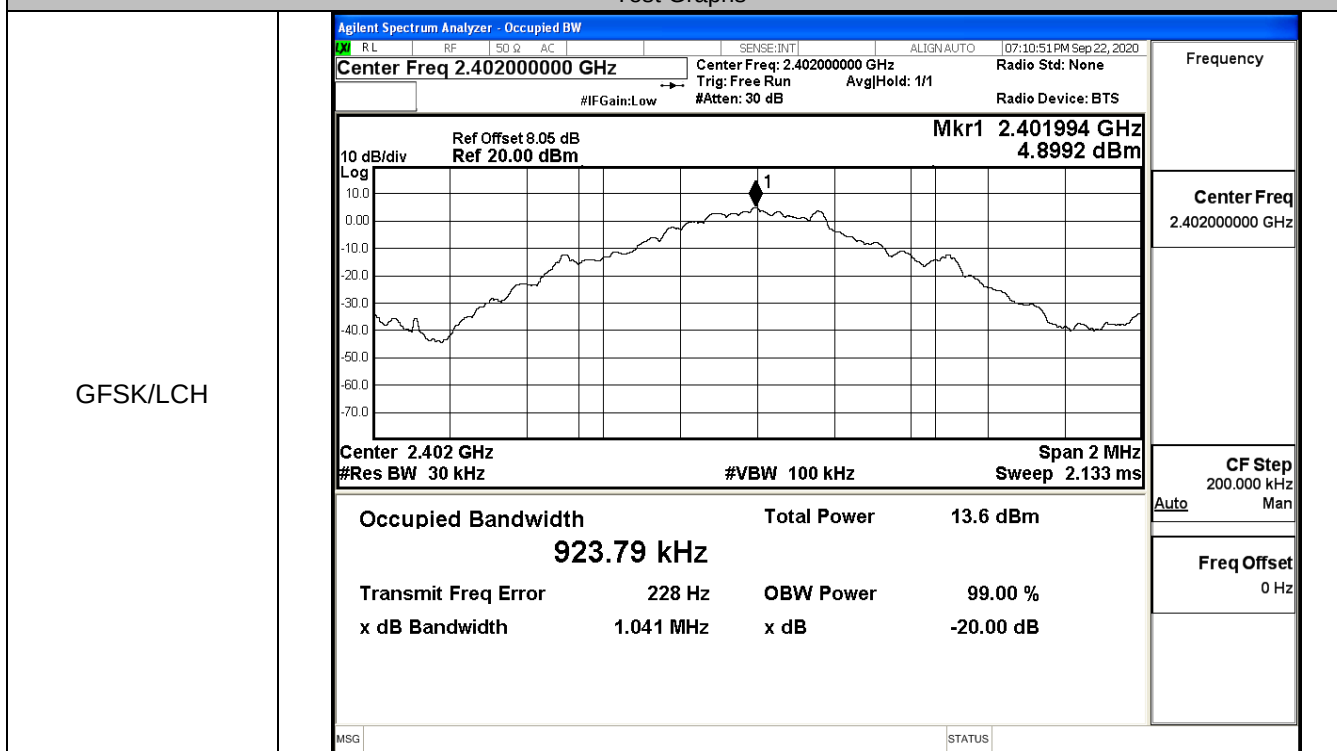
8DPSK/HCH



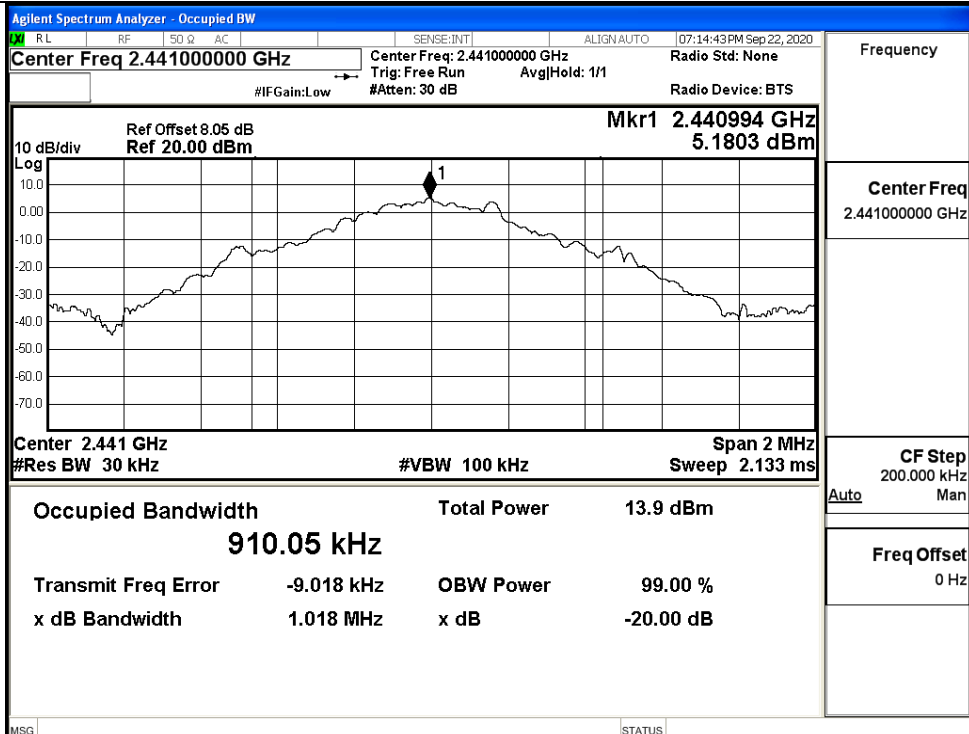
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.041	Not Specified	PASS
	MCH	1.018	Not Specified	PASS
	HCH	1.040	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.267	Not Specified	PASS
	MCH	1.239	Not Specified	PASS
	HCH	1.230	Not Specified	PASS
8DPSK	LCH	1.283	Not Specified	PASS
	MCH	1.275	Not Specified	PASS
	HCH	1.261	Not Specified	PASS

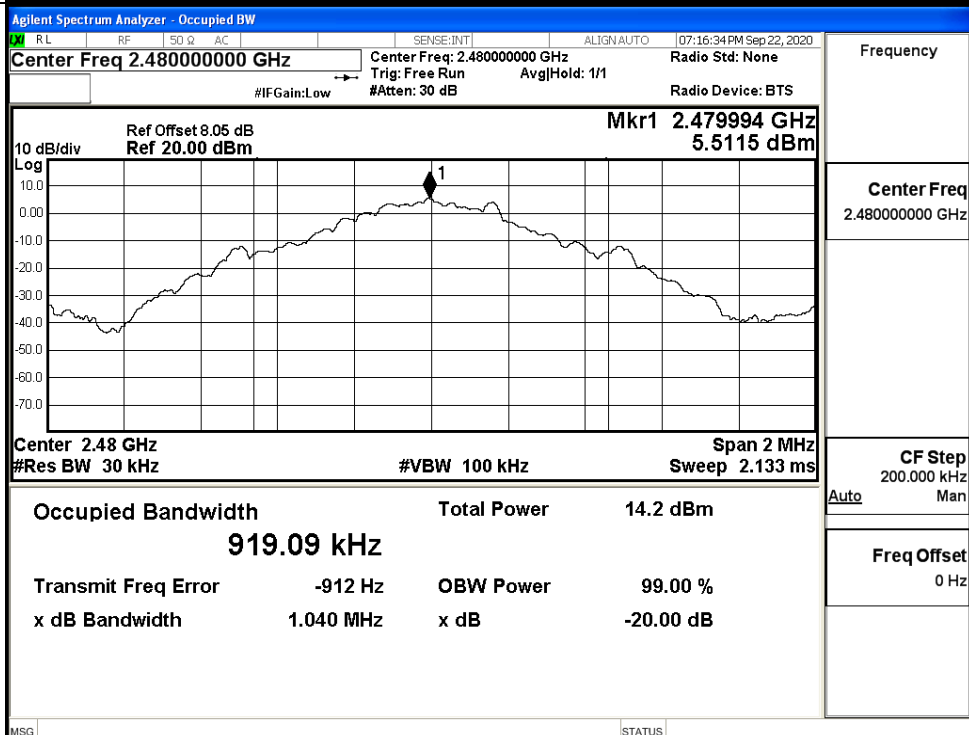
Test Graphs

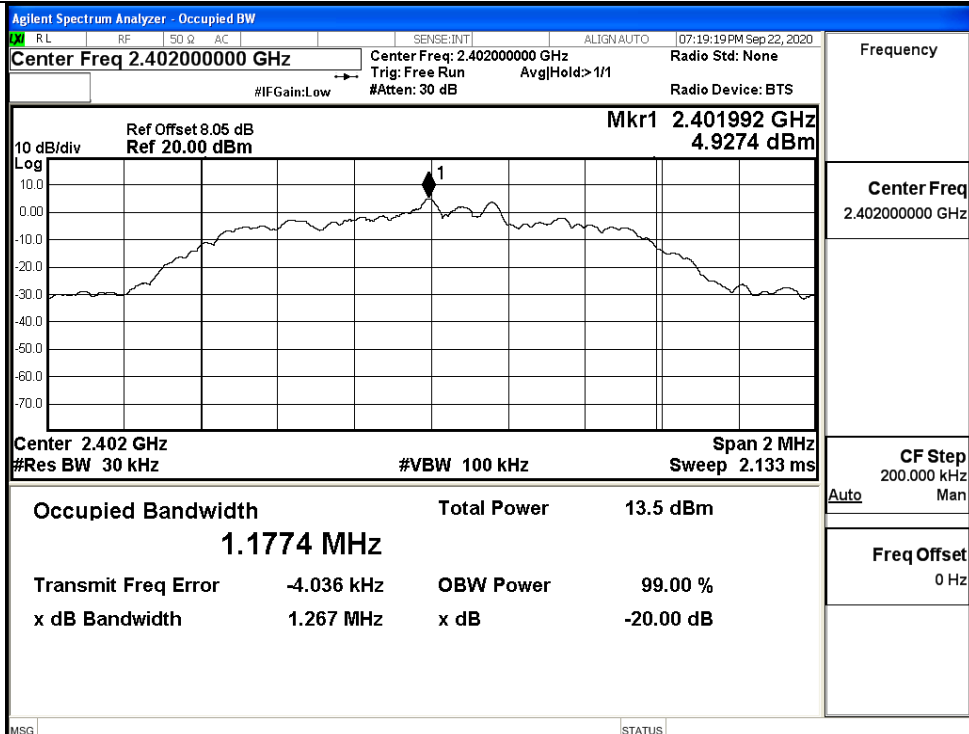
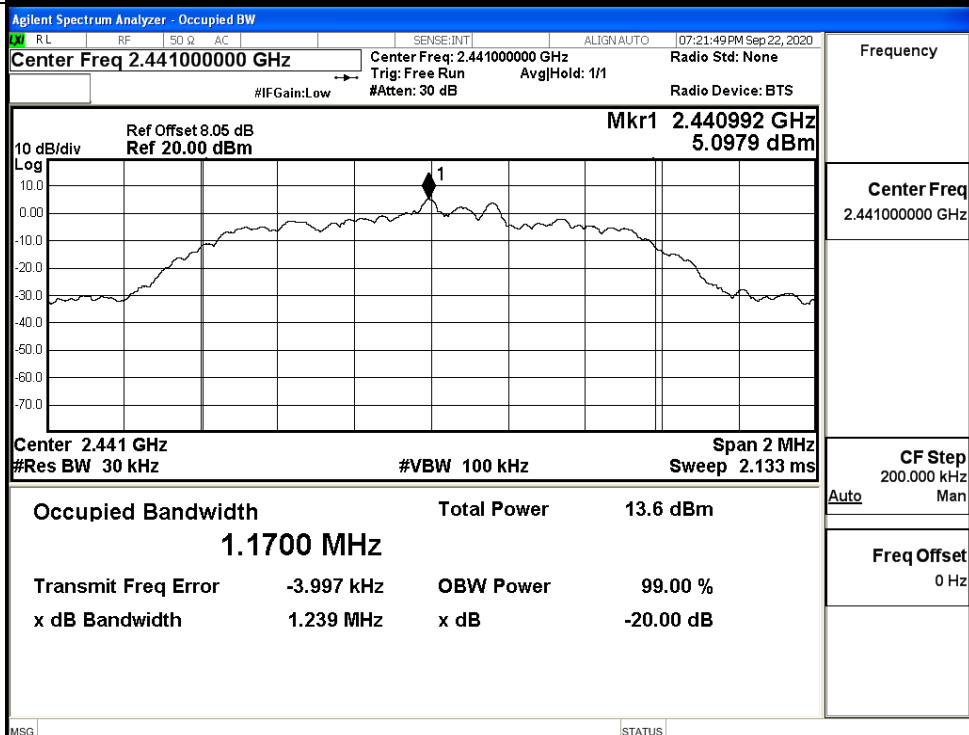


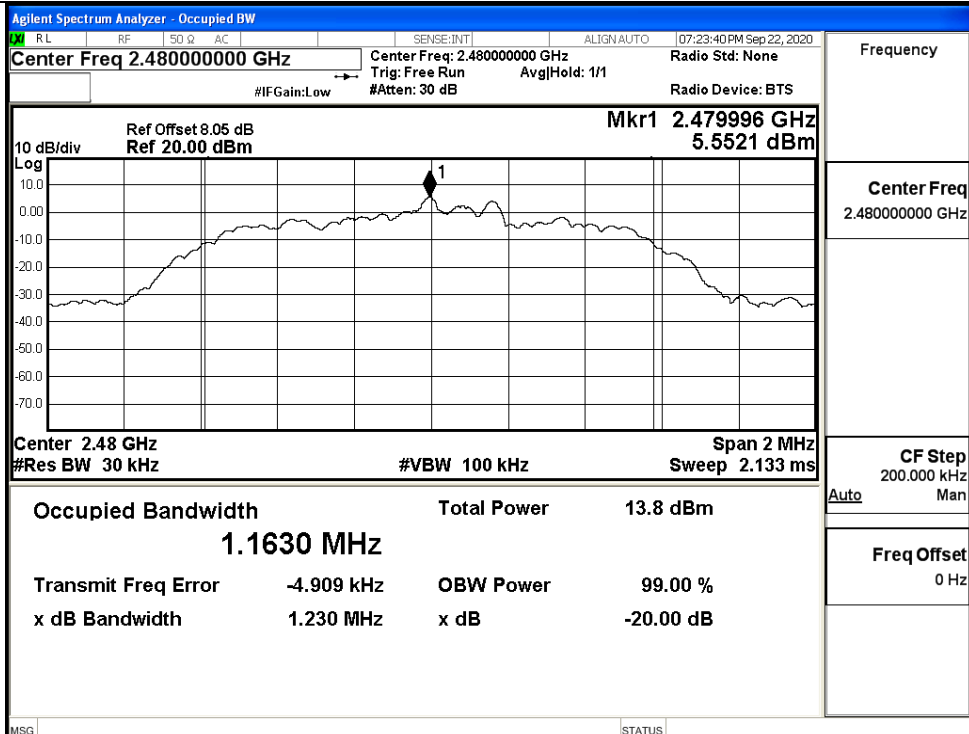
GFSK/MCH



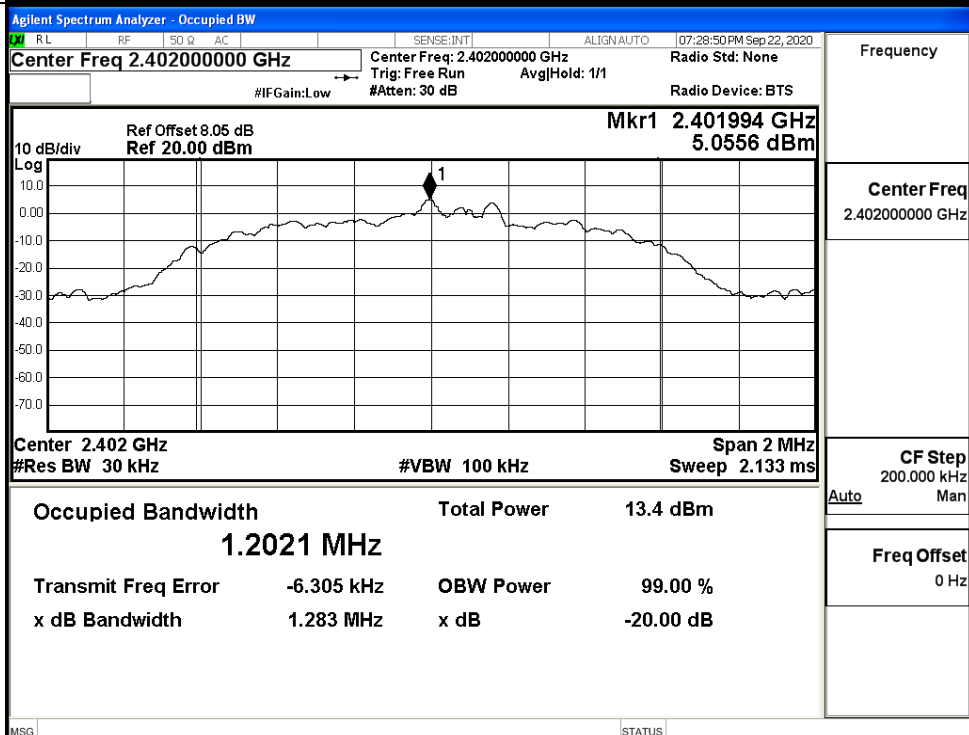
GFSK/HCH



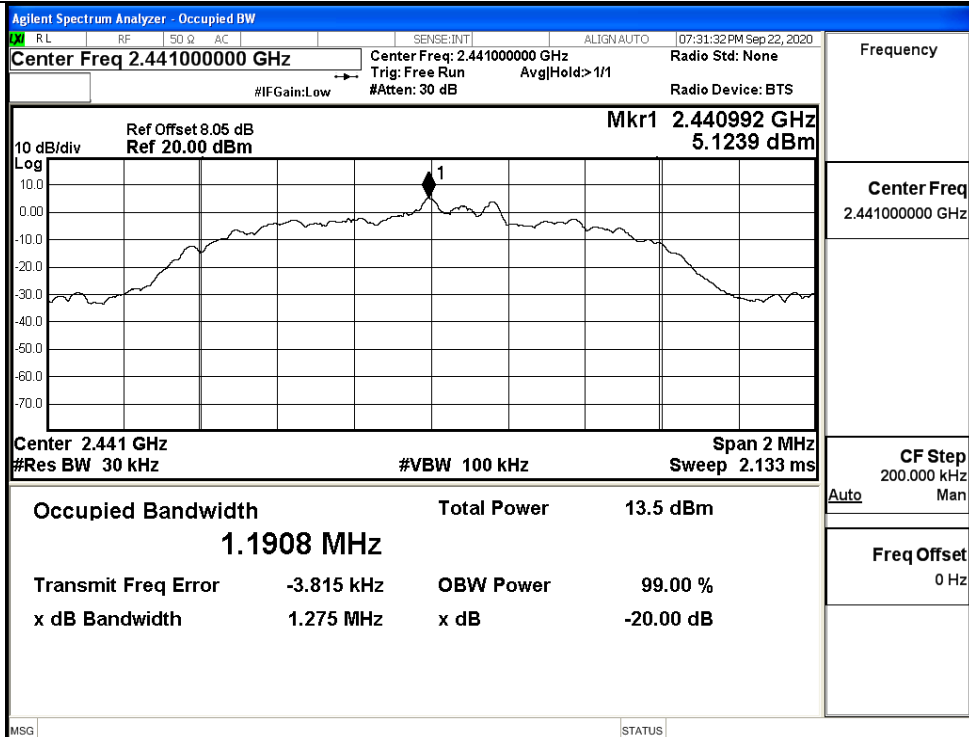
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

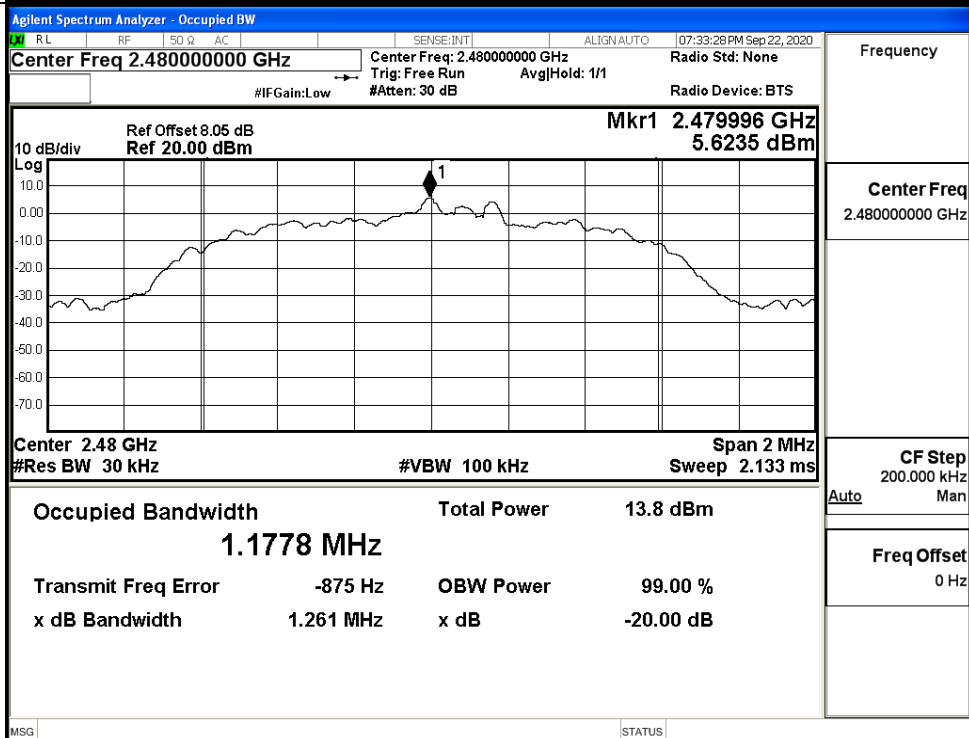
8DPSK/LCH



8DPSK/MCH



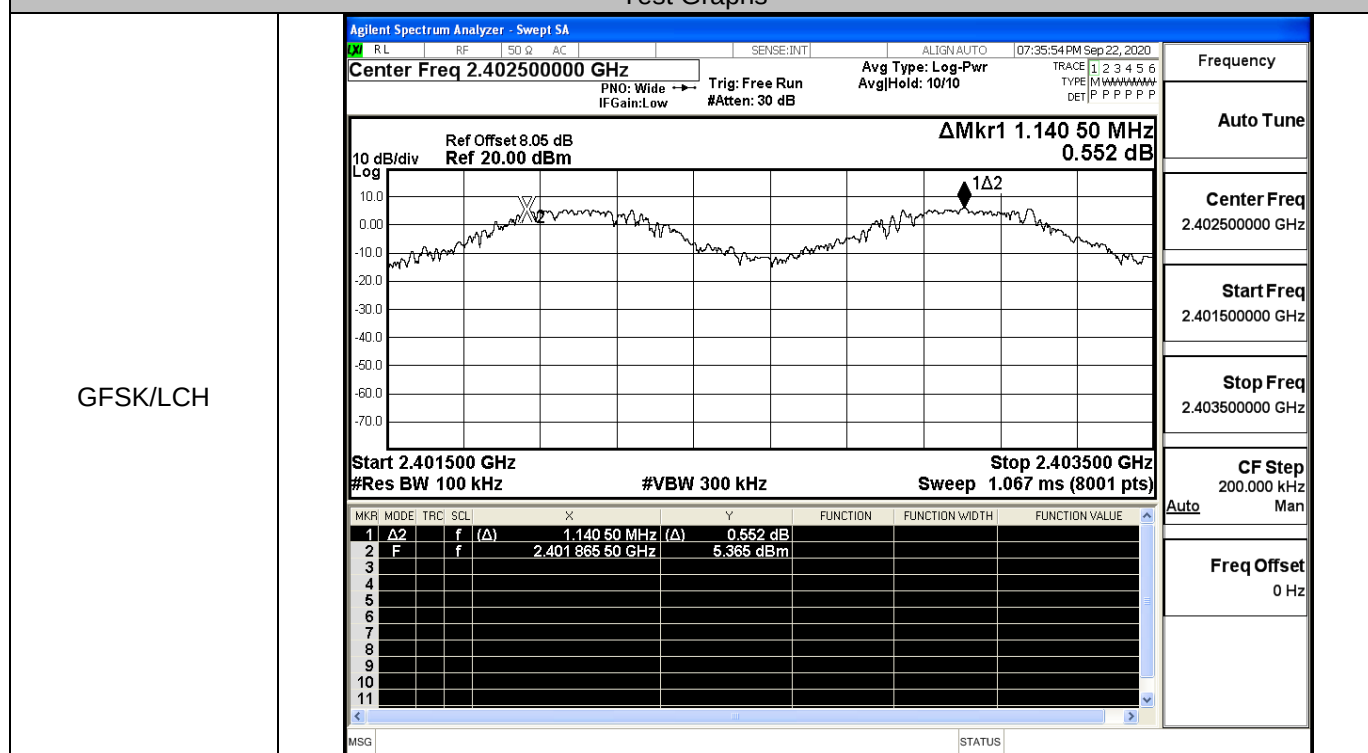
8DPSK/HCH



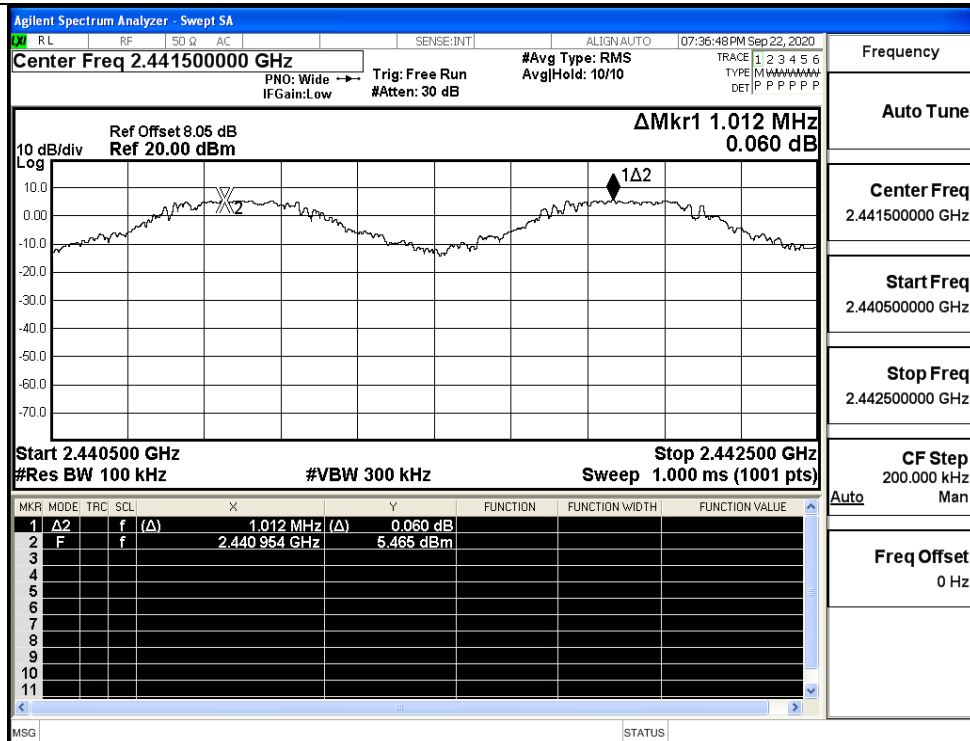
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.140	0.694	PASS
	MCH	1.012	0.694	PASS
	HCH	1.148	0.694	PASS
$\pi/4$ DQPSK	LCH	0.968	0.845	PASS
	MCH	0.966	0.845	PASS
	HCH	1.104	0.845	PASS
8DPSK	LCH	0.928	0.855	PASS
	MCH	0.920	0.855	PASS
	HCH	0.998	0.855	PASS

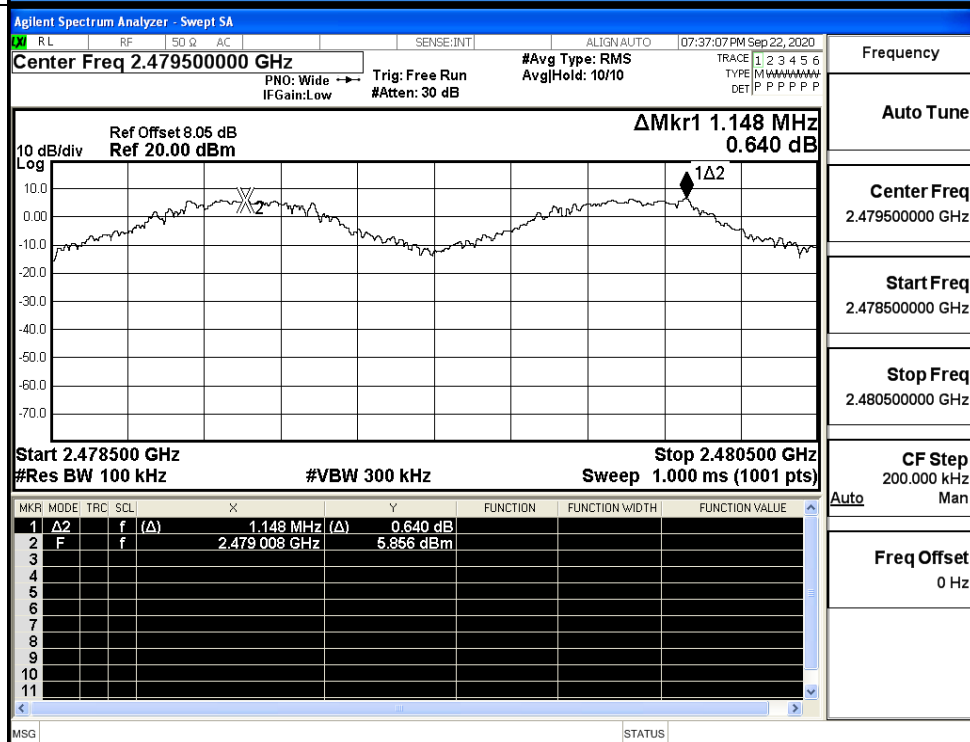
Test Graphs

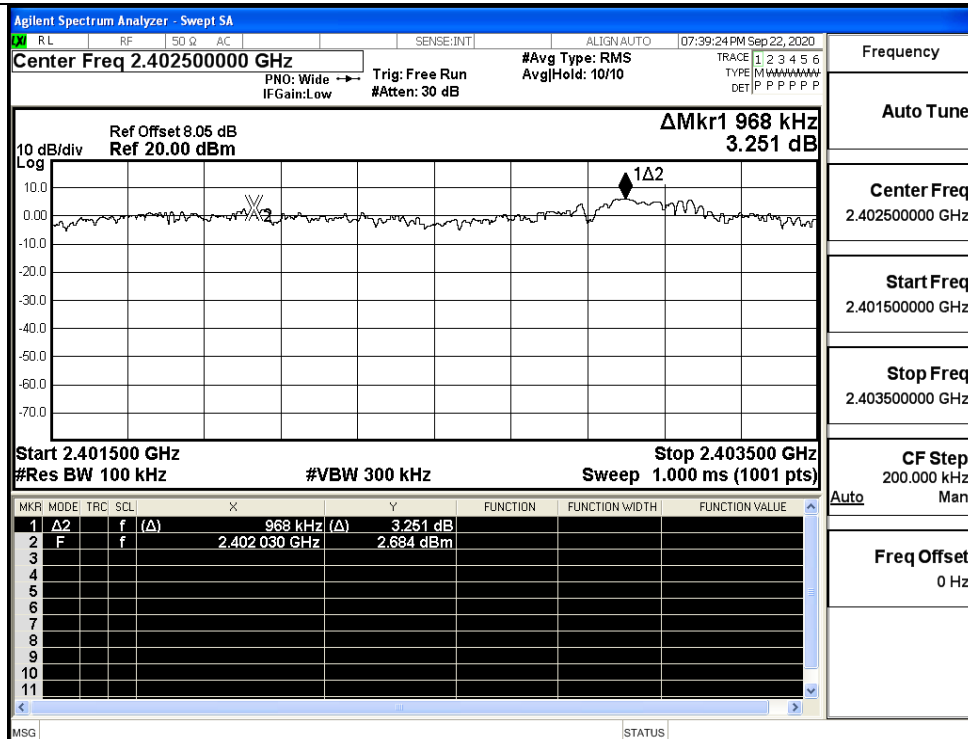
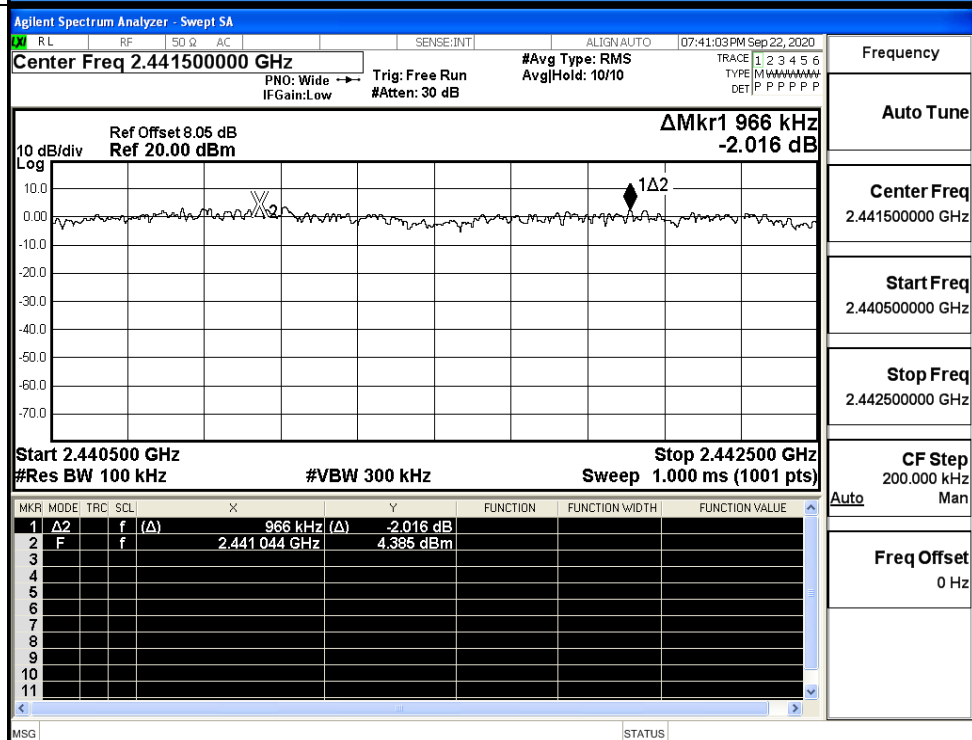


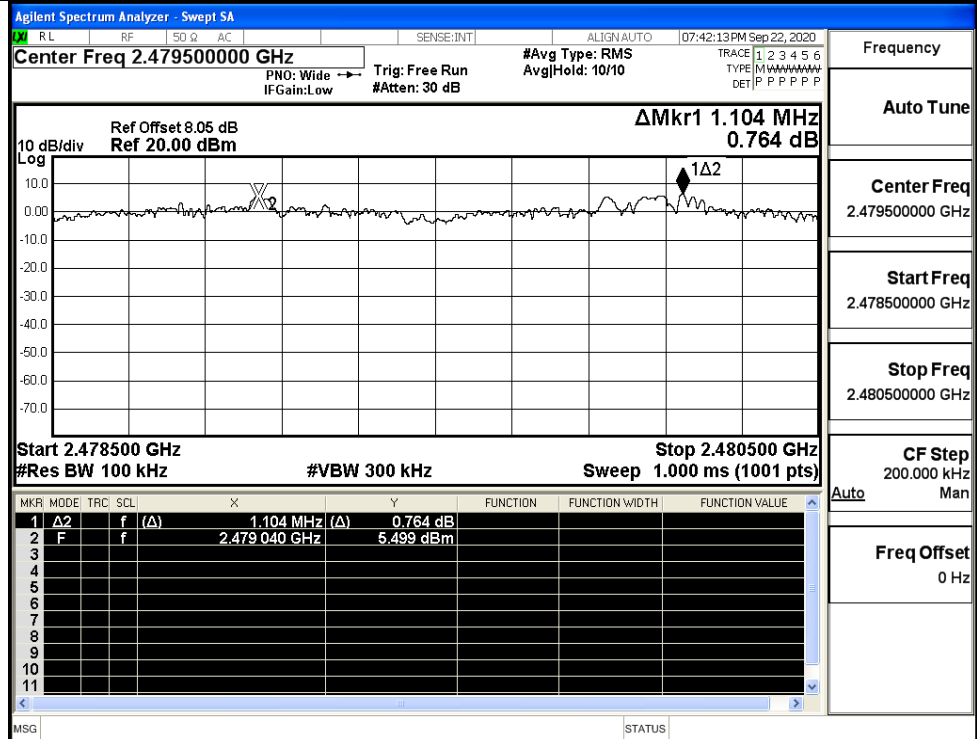
GFSK/MCH



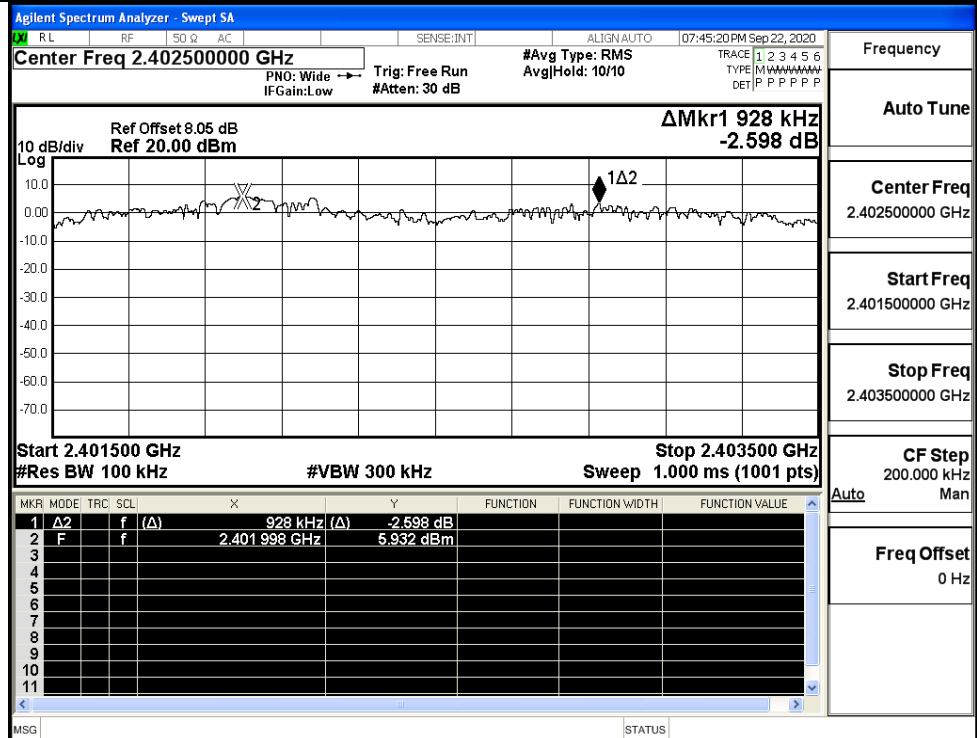
GFSK/HCH



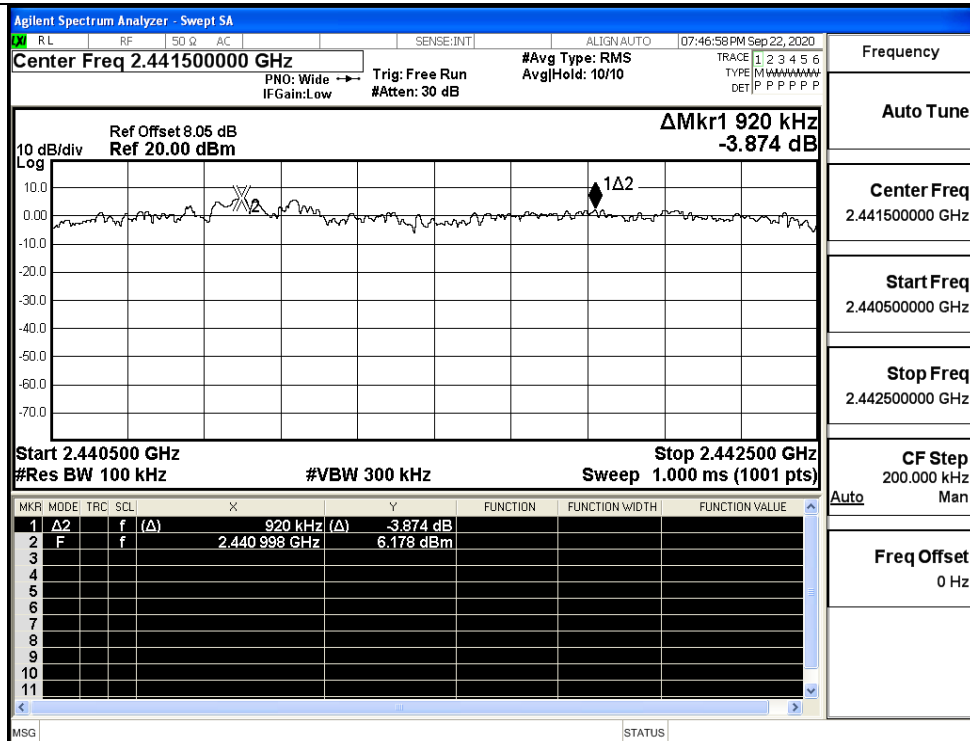
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

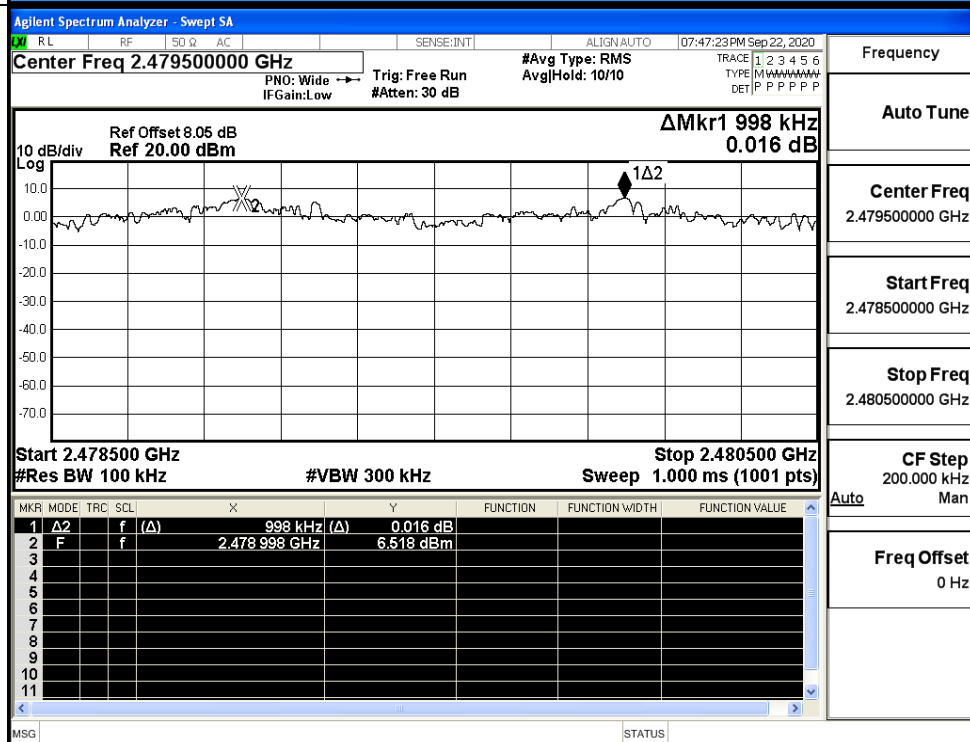
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

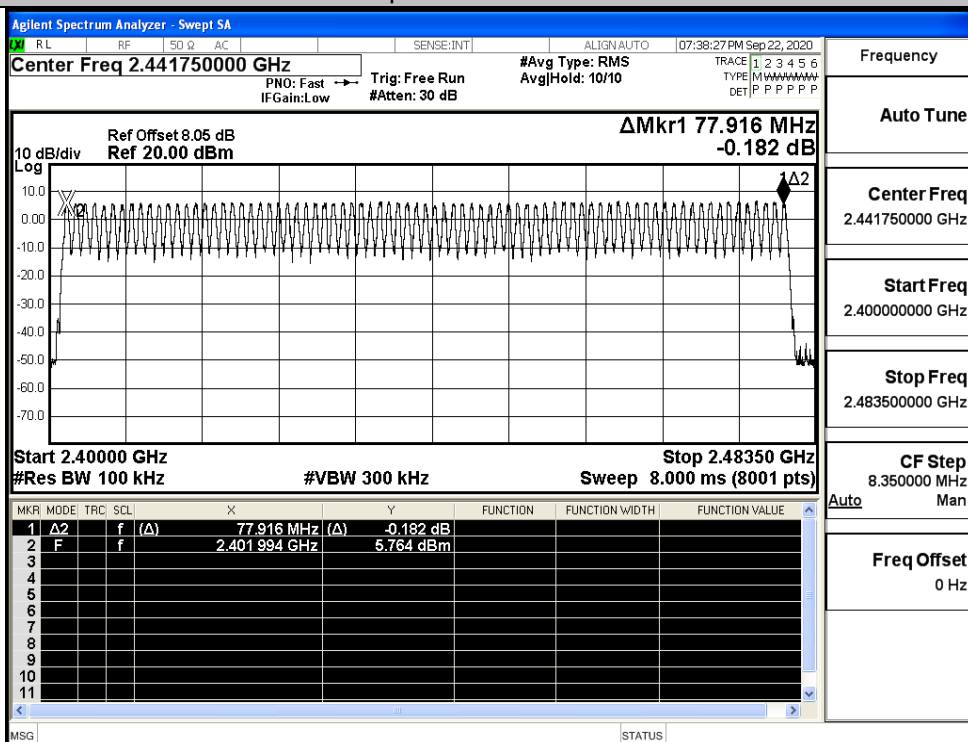


A.4 Hopping Channel Number

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

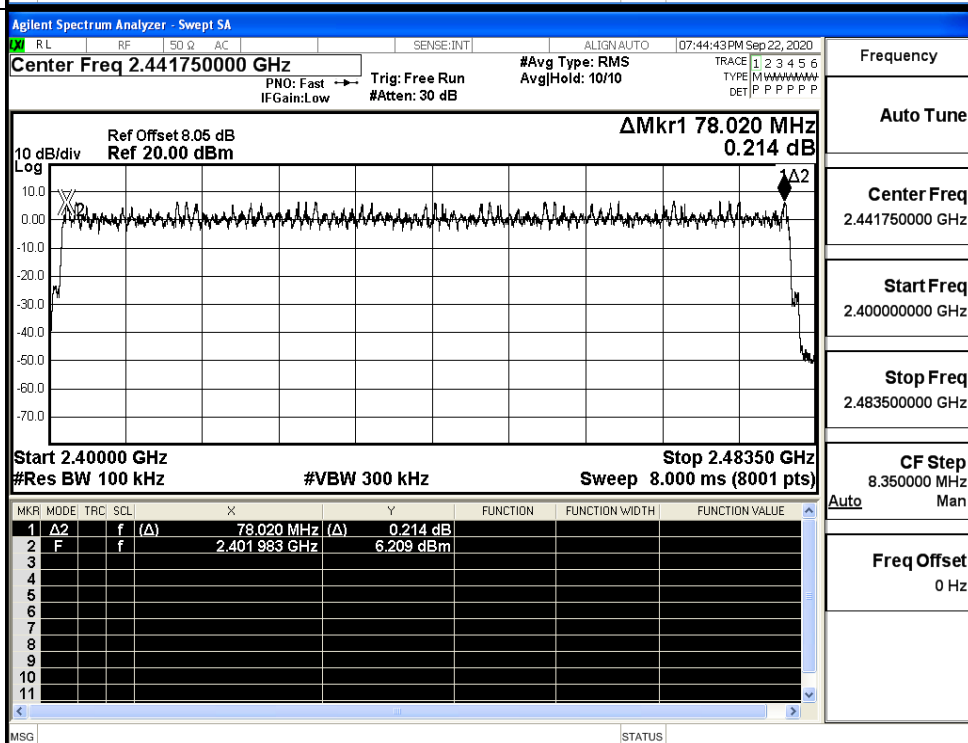
Test Graphs

GFSK/Hop



Frequency

Auto Tune

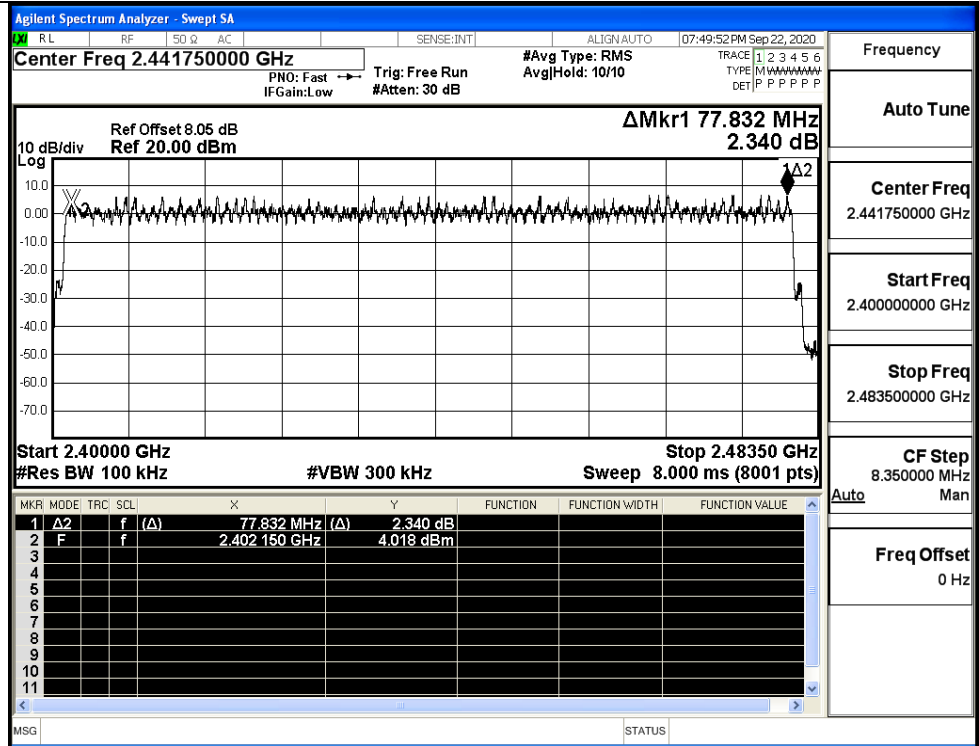
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

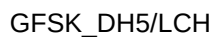
Auto Tune

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

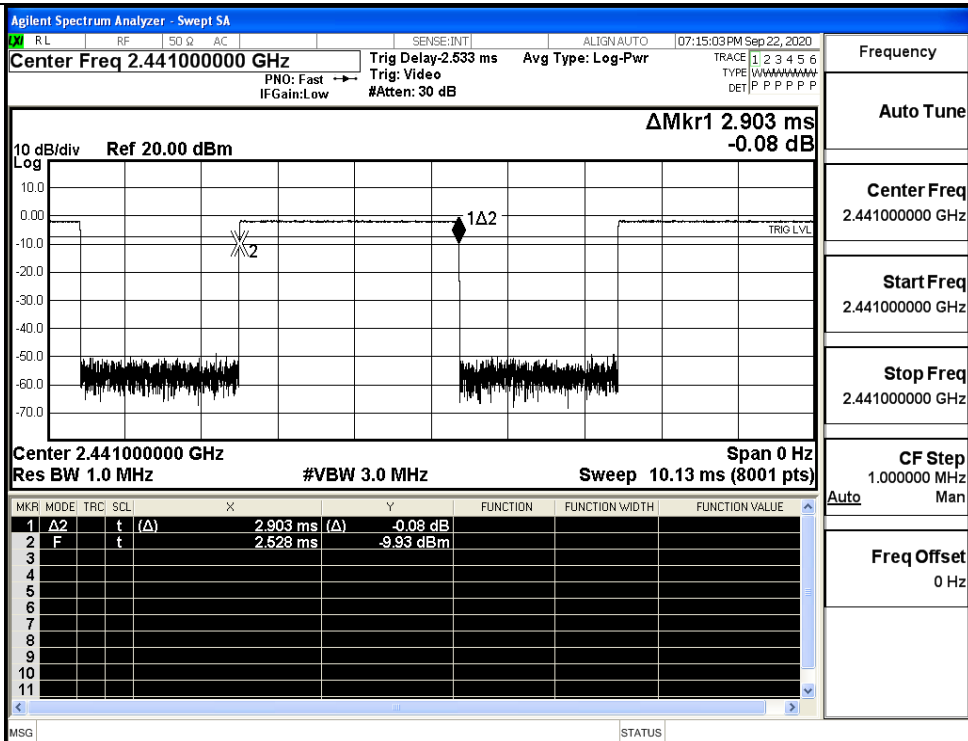
8DPSK/Hop



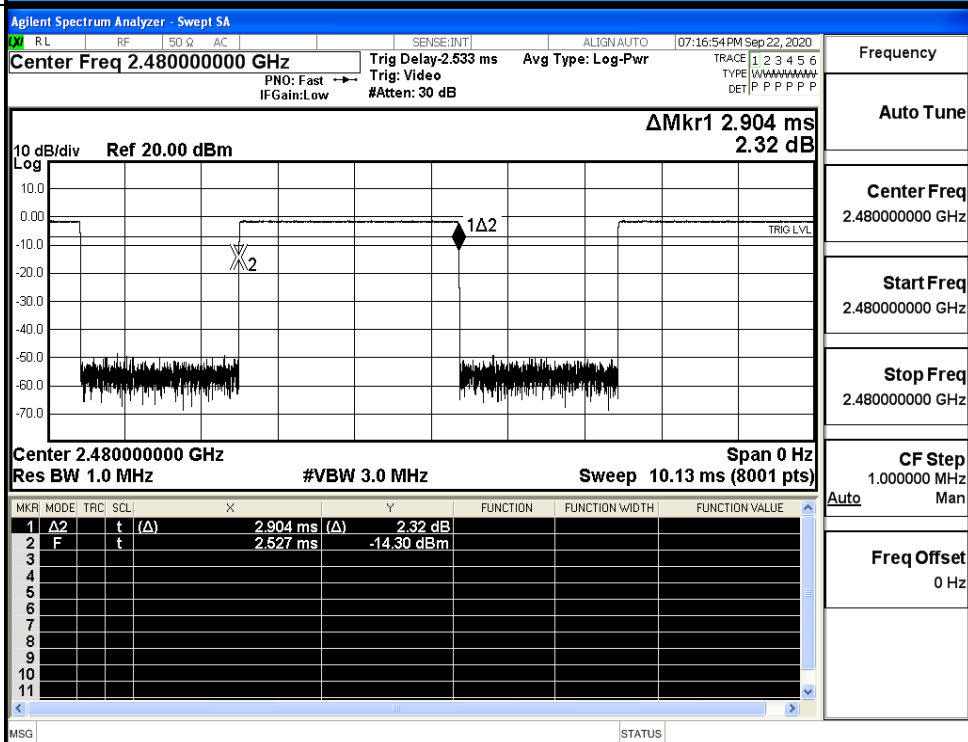
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.31	0.4	PASS
	2DH5	MCH	2.9	106.7	0.31	0.4	PASS
	2DH5	HCH	2.9	106.7	0.31	0.4	PASS
8DPSK	3DH5	LCH	2.9	106.7	0.31	0.4	PASS
	3DH5	MCH	2.9	106.7	0.31	0.4	PASS
	3DH5	HCH	2.9	106.7	0.31	0.4	PASS



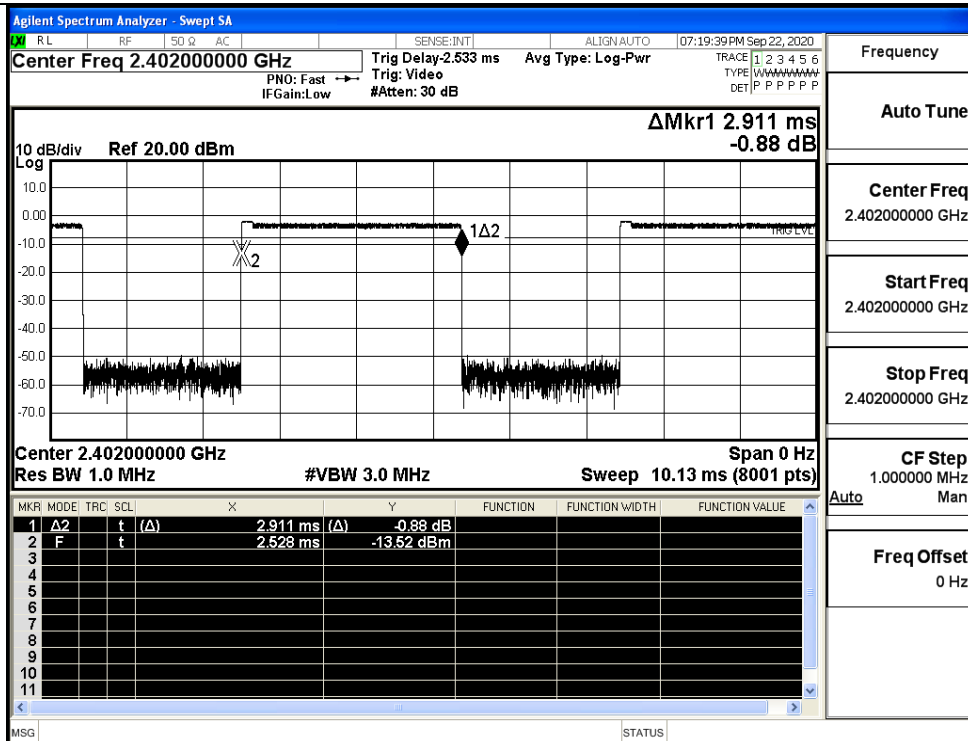
GFSK_DH5/MCH



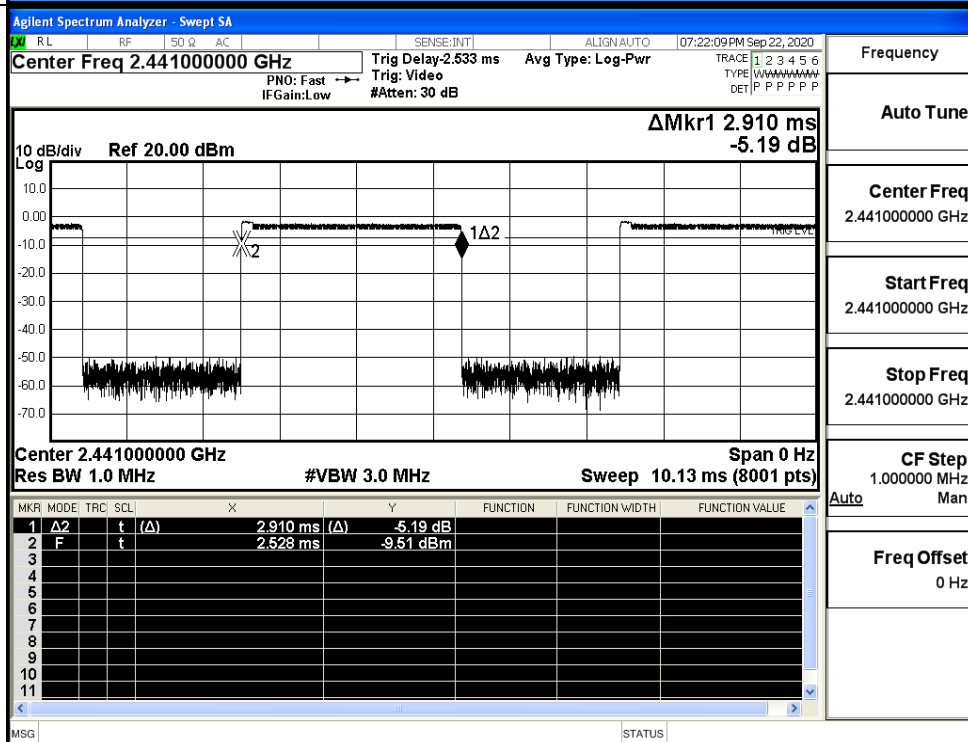
GFSK_DH5/HCH



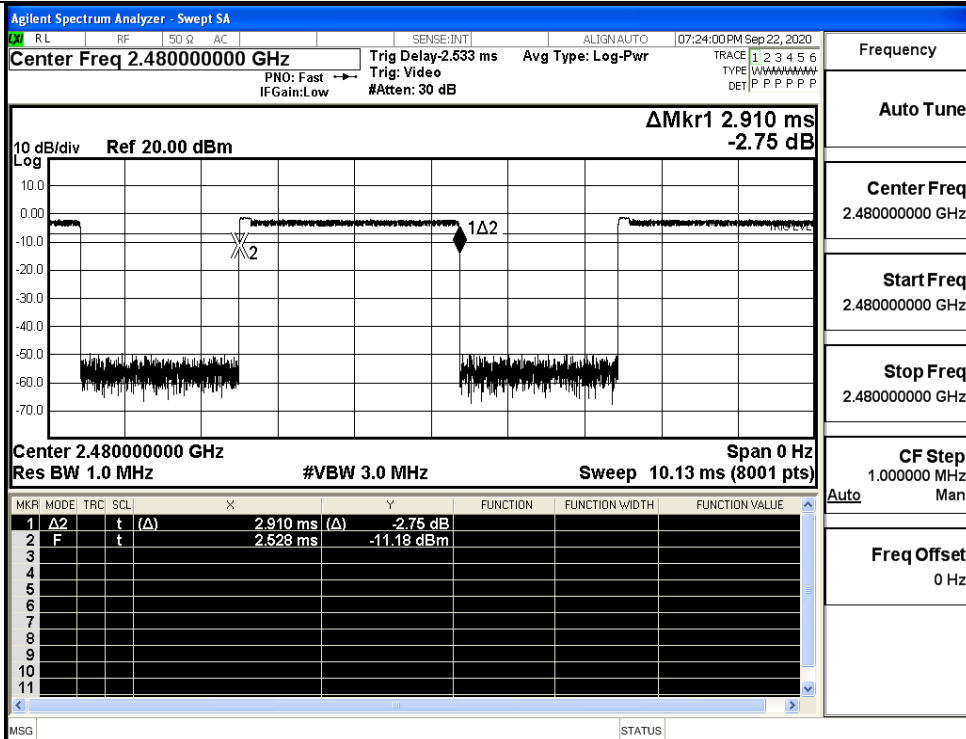
$\pi/4$ DQPSK
_2DH5/LCH



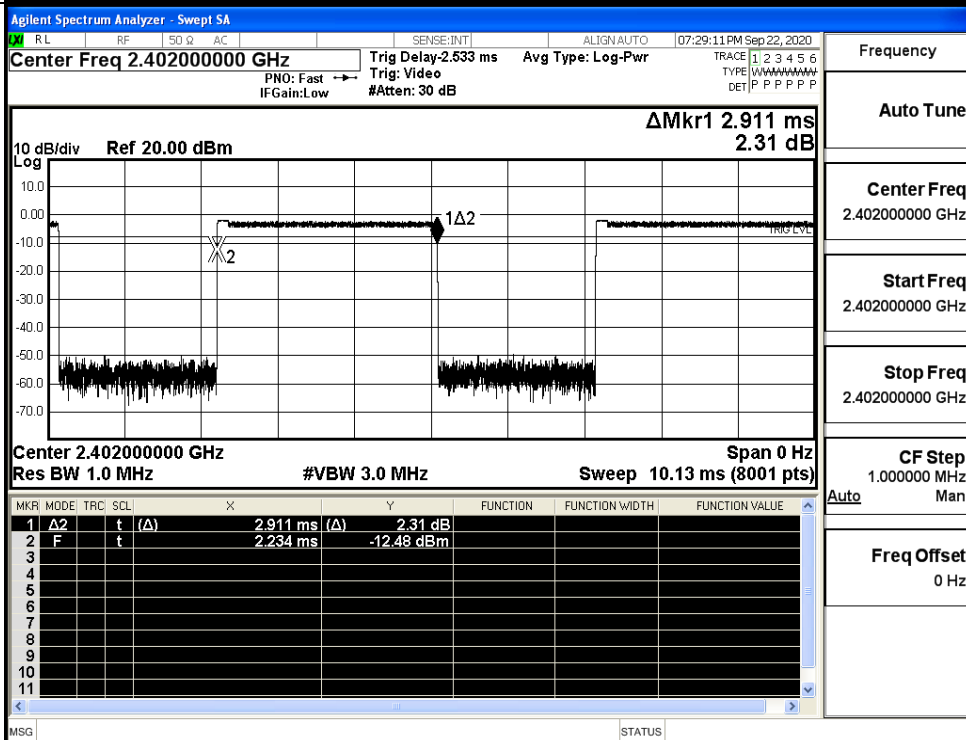
$\pi/4$ DQPSK
_2DH5/MCH



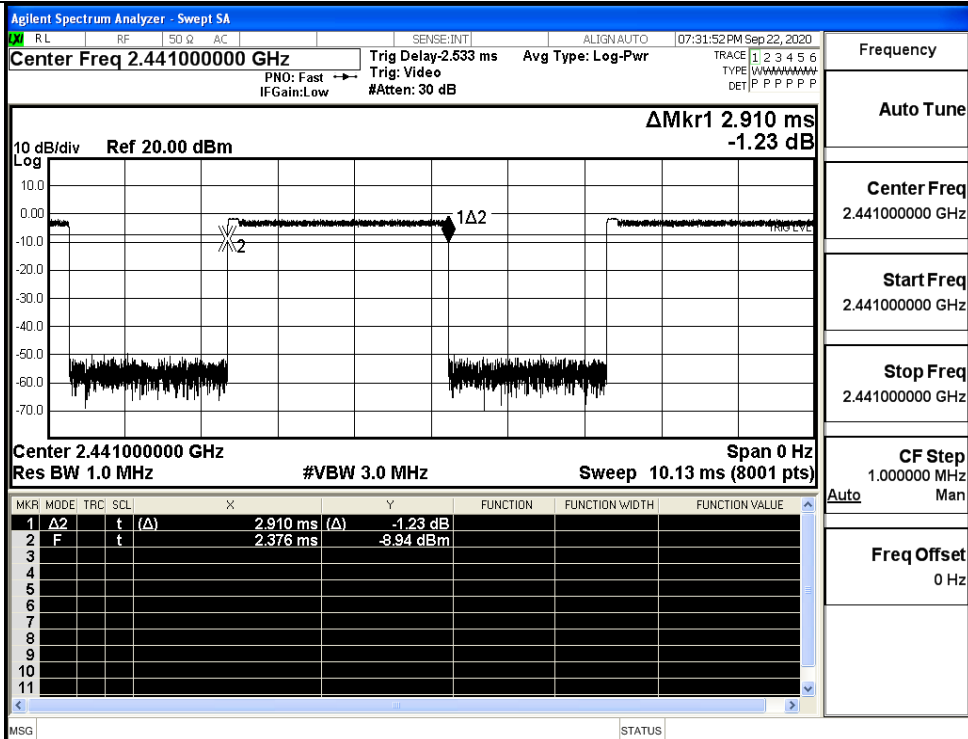
$\pi/4$ DQPSK
_2DH5/HCH



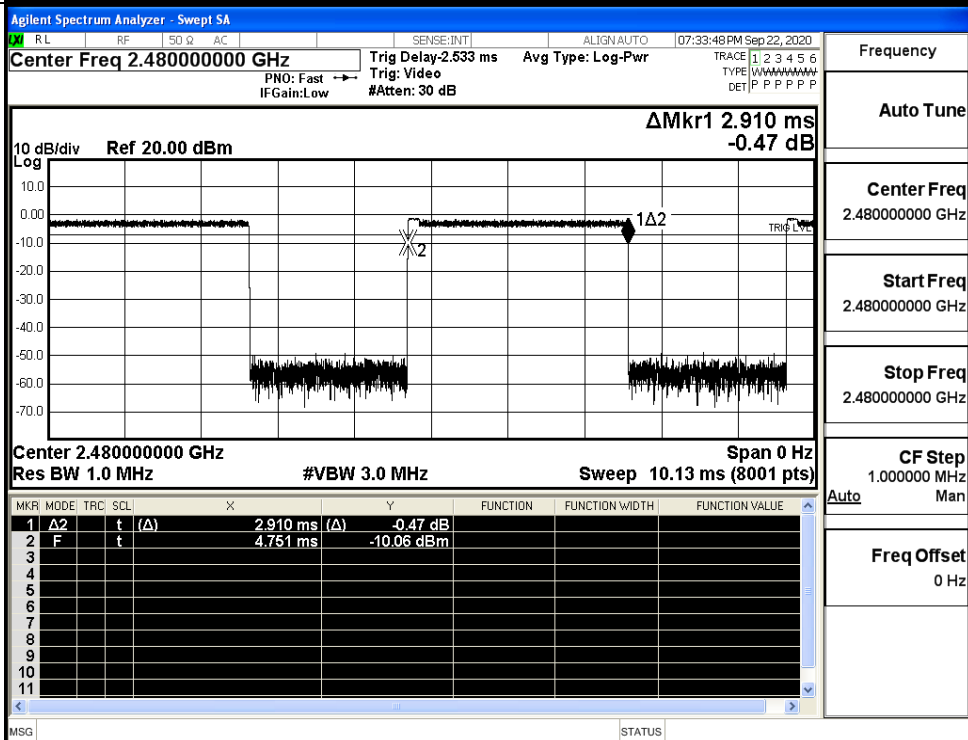
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH

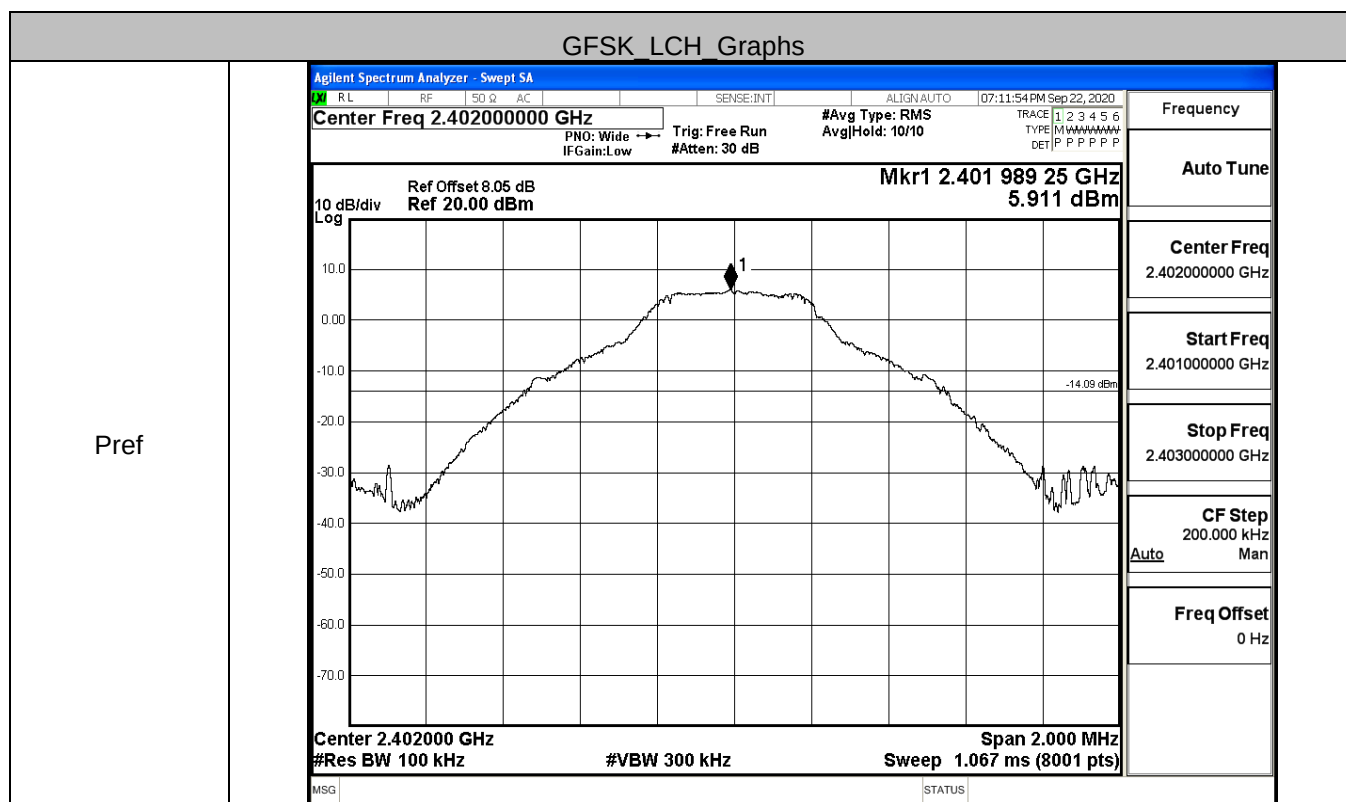


8DPSK_3DH5/HCH

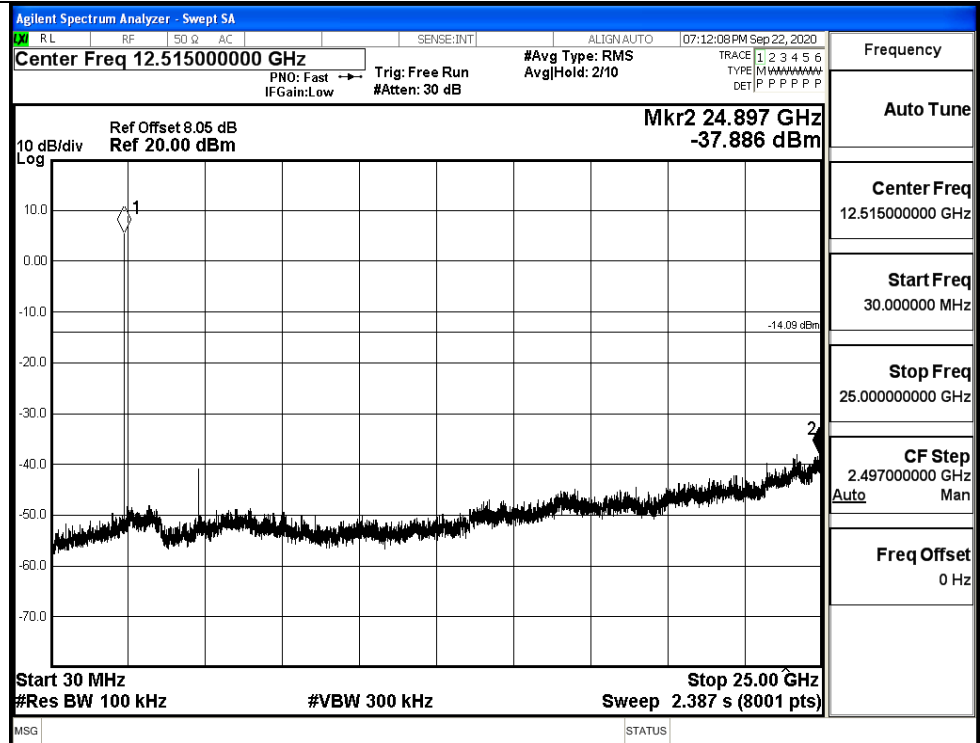


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	5.911	-37.886	-14.089	PASS
	MCH	6.114	-37.117	-13.886	PASS
	HCH	6.529	-37.003	-13.471	PASS
$\pi/4$ DQPSK	LCH	5.98	-37.755	-14.020	PASS
	MCH	6.17	-37.508	-13.830	PASS
	HCH	6.543	-37.530	-13.457	PASS
8DPSK	LCH	6.109	-38.545	-13.891	PASS
	MCH	6.226	-37.305	-13.774	PASS
	HCH	6.572	-37.796	-13.428	PASS

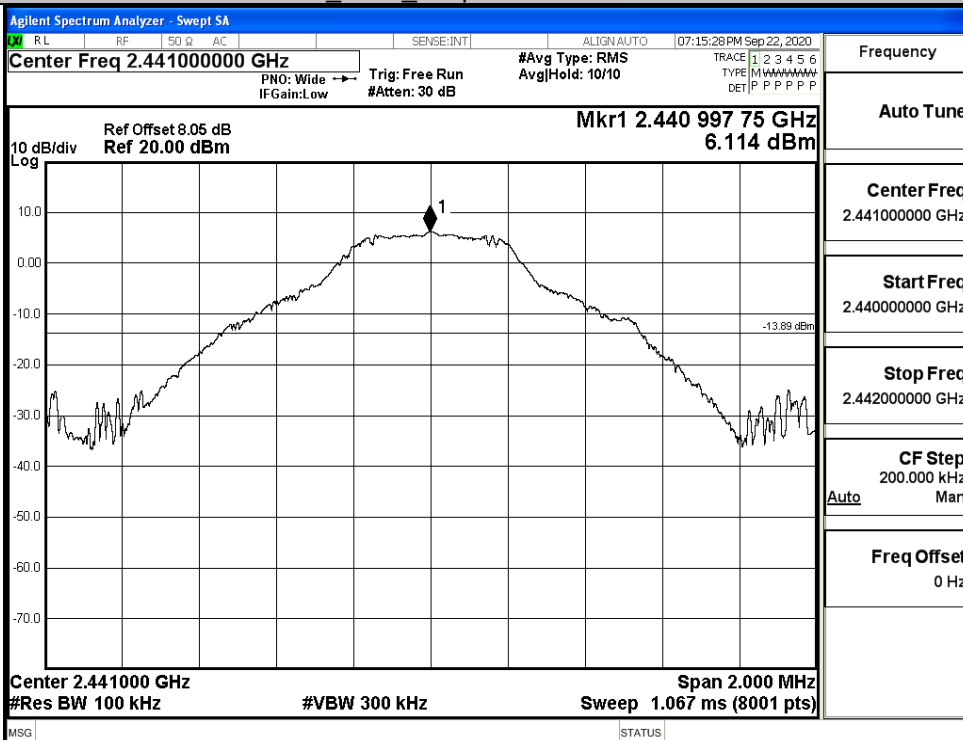


Puw

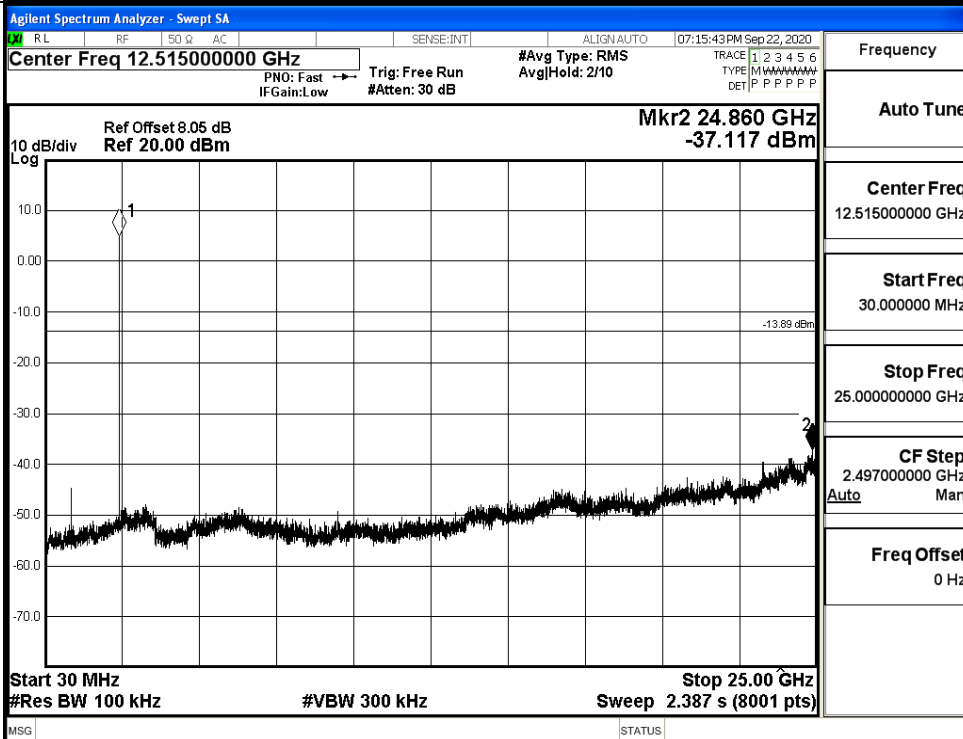


GFSK_MCH_Graphs

Pref

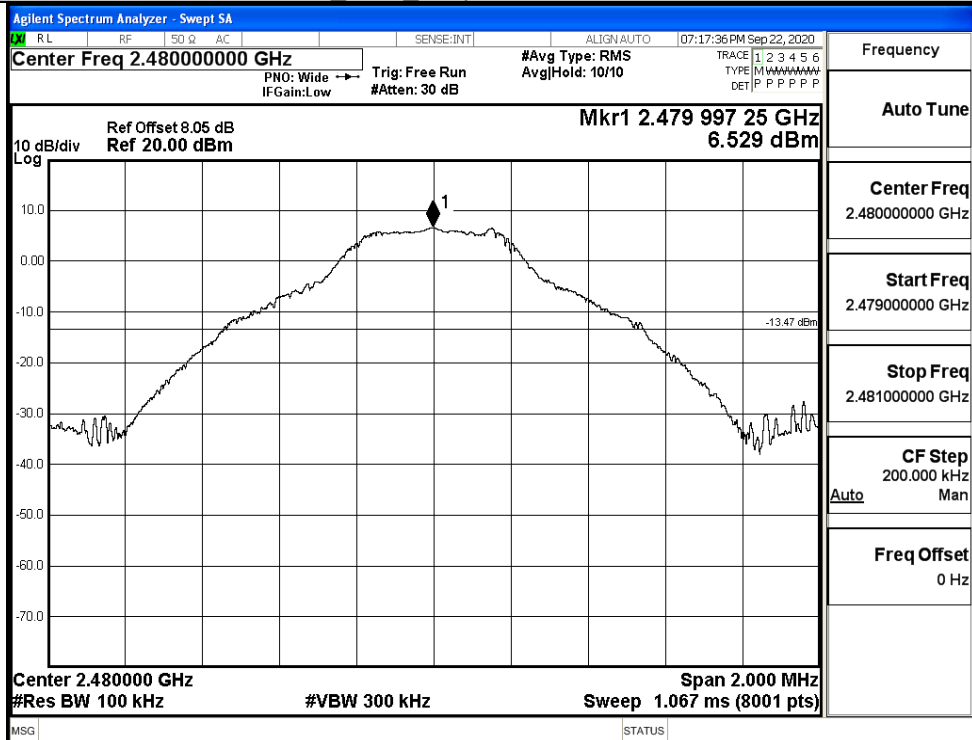


Puw

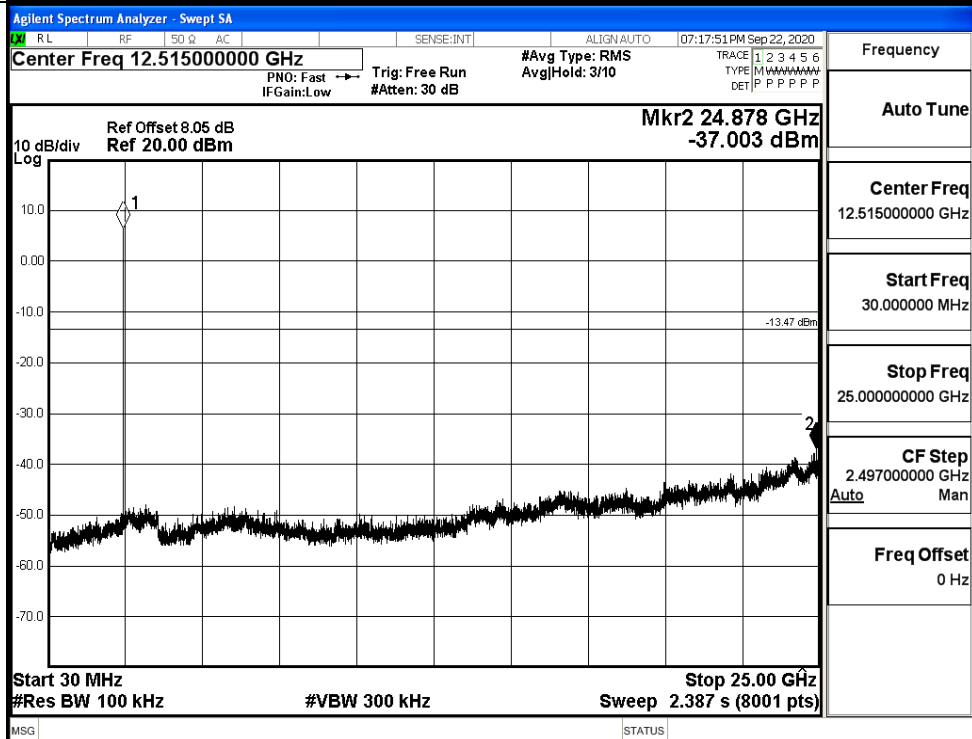


GFSK HCH Graphs

Pref

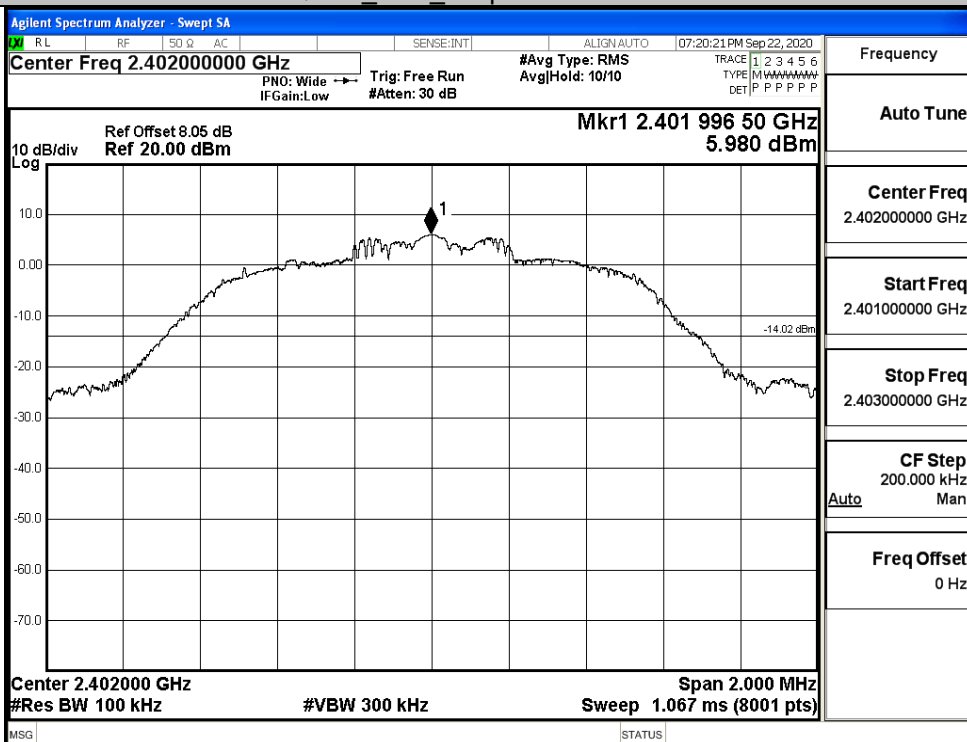


Puw

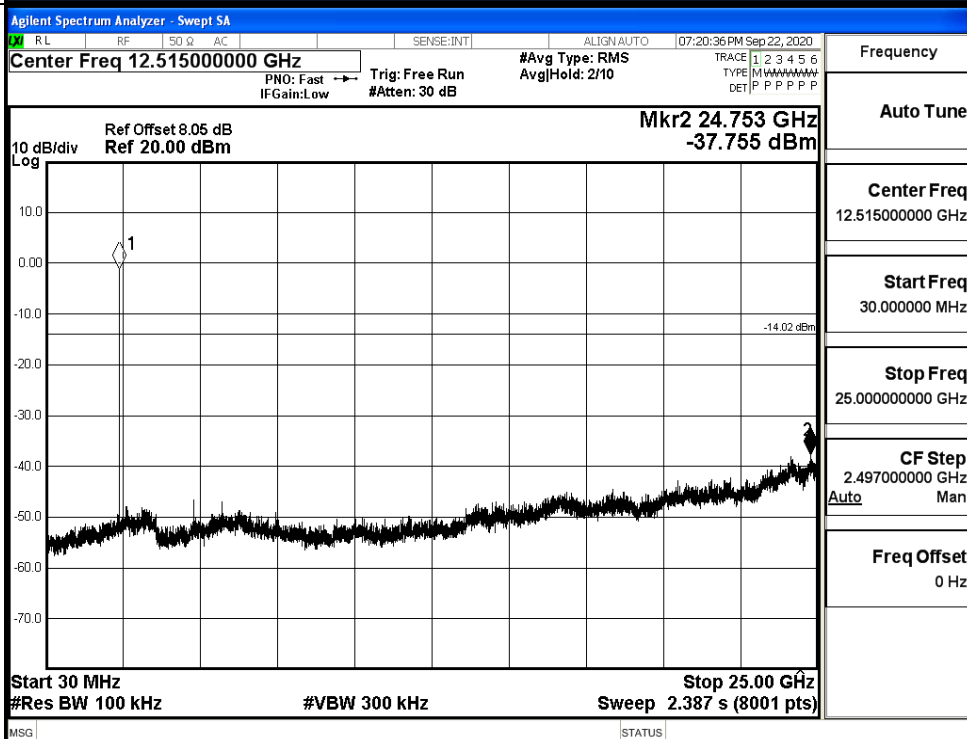


$\pi/4$ DQPSK_LCH_Graphs

Pref

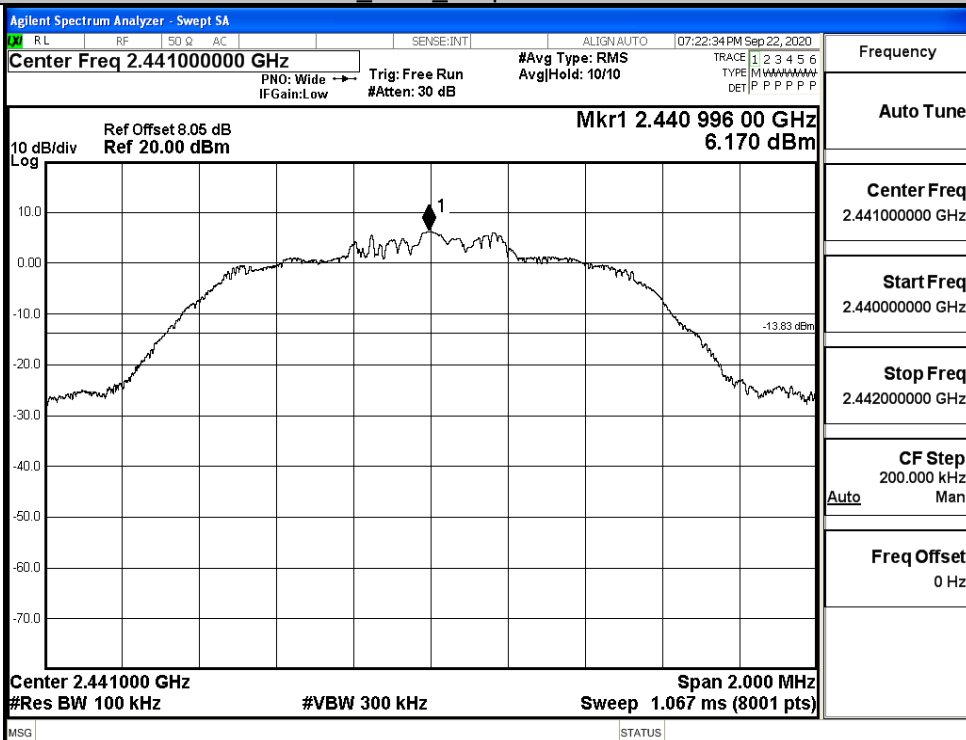


Puw

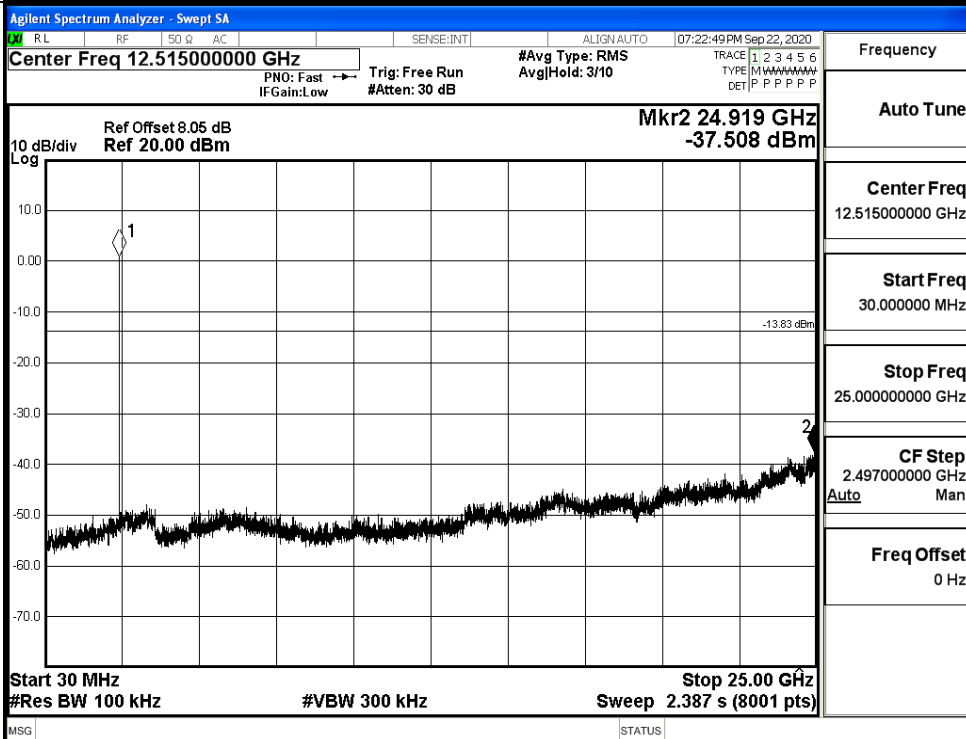


$\pi/4$ DQPSK_MCH_Graphs

Pref

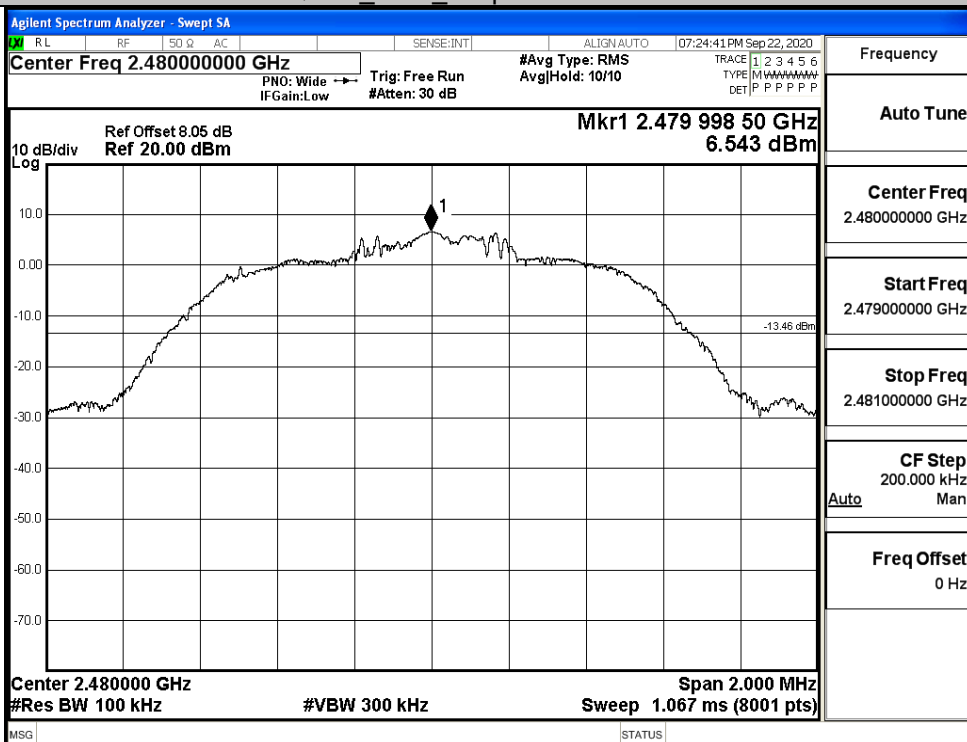


Puw

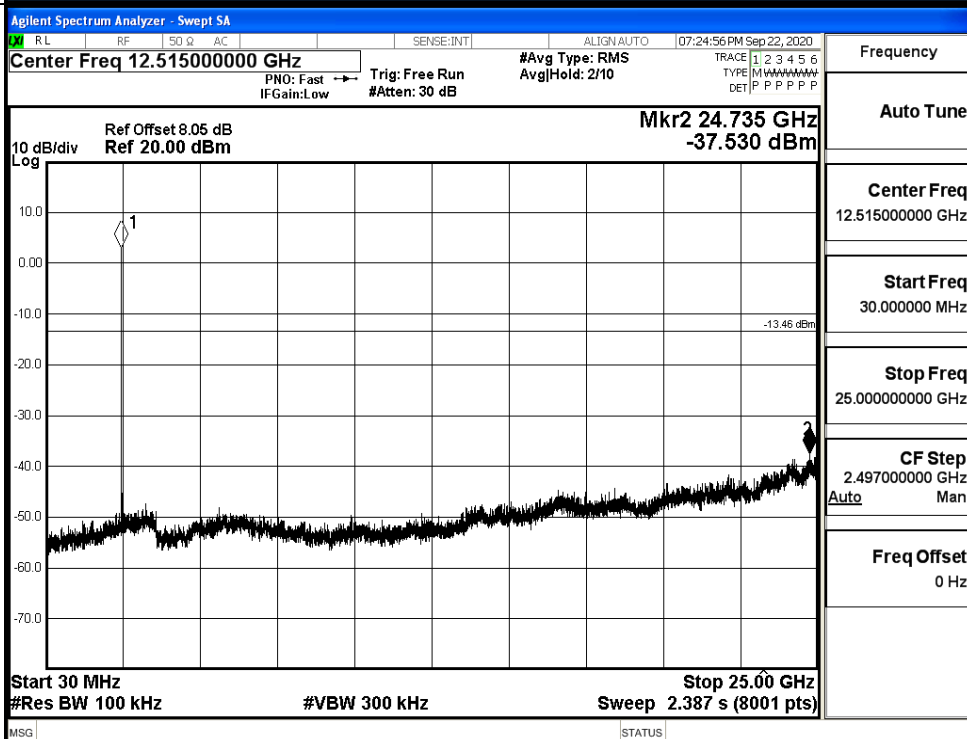


$\pi/4$ DQPSK_HCH_Graphs

Pref

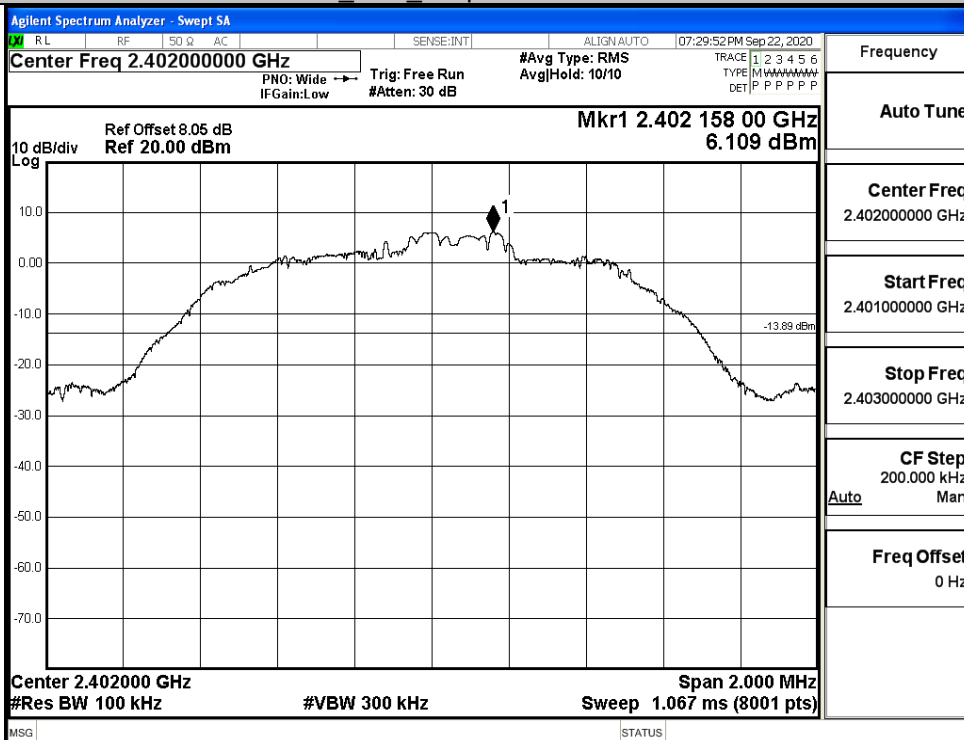


Puw

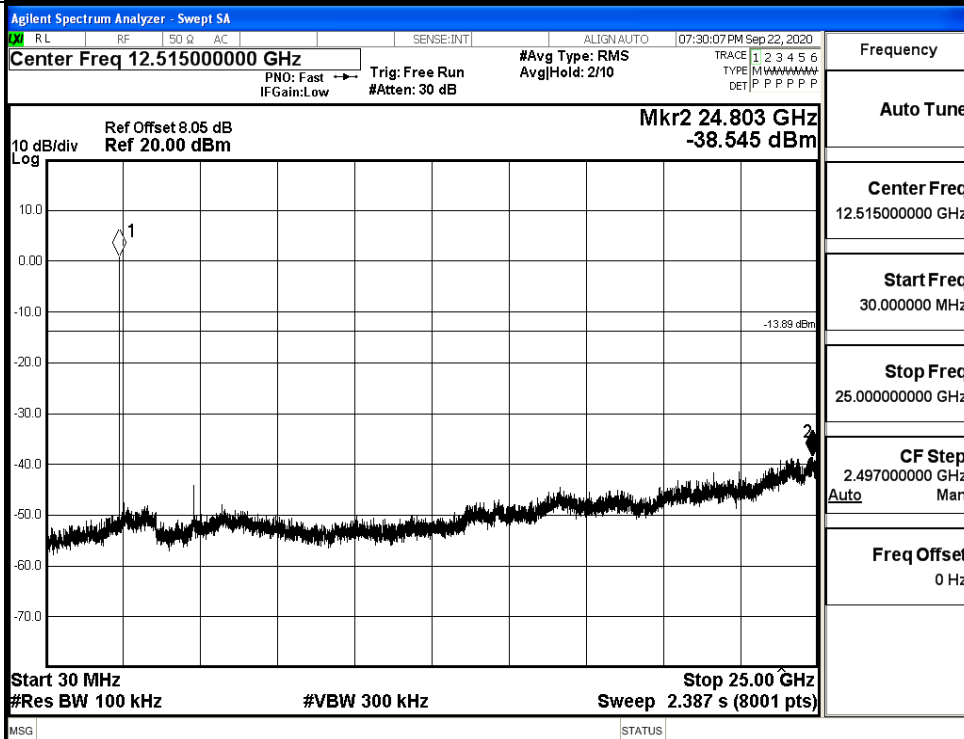


8DPSK_LCH_Graphs

Pref

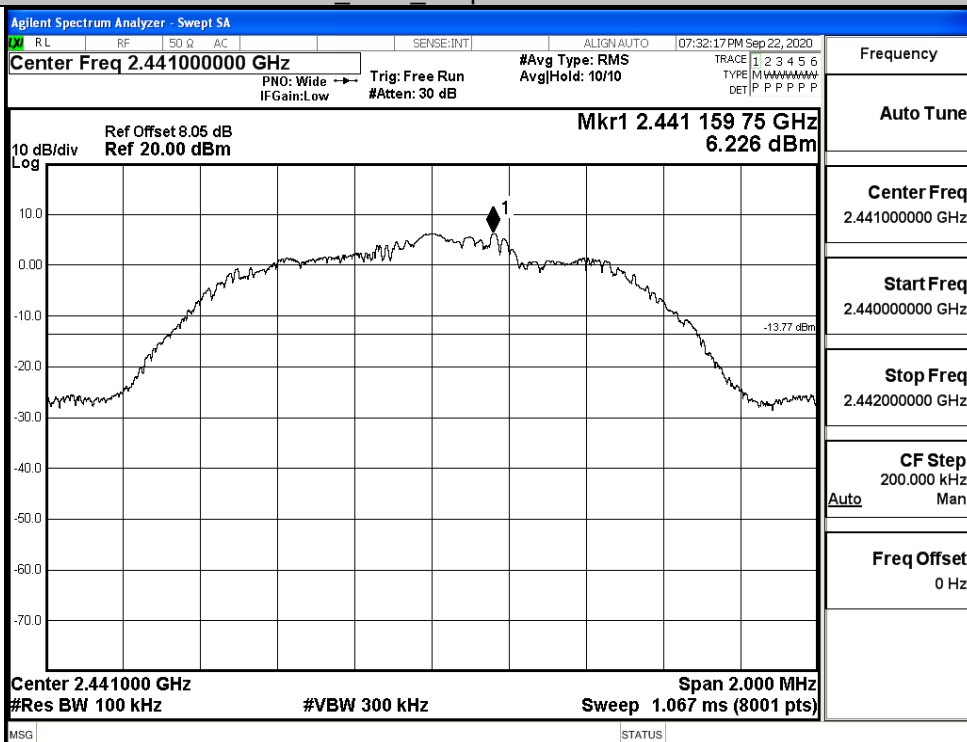


Puw

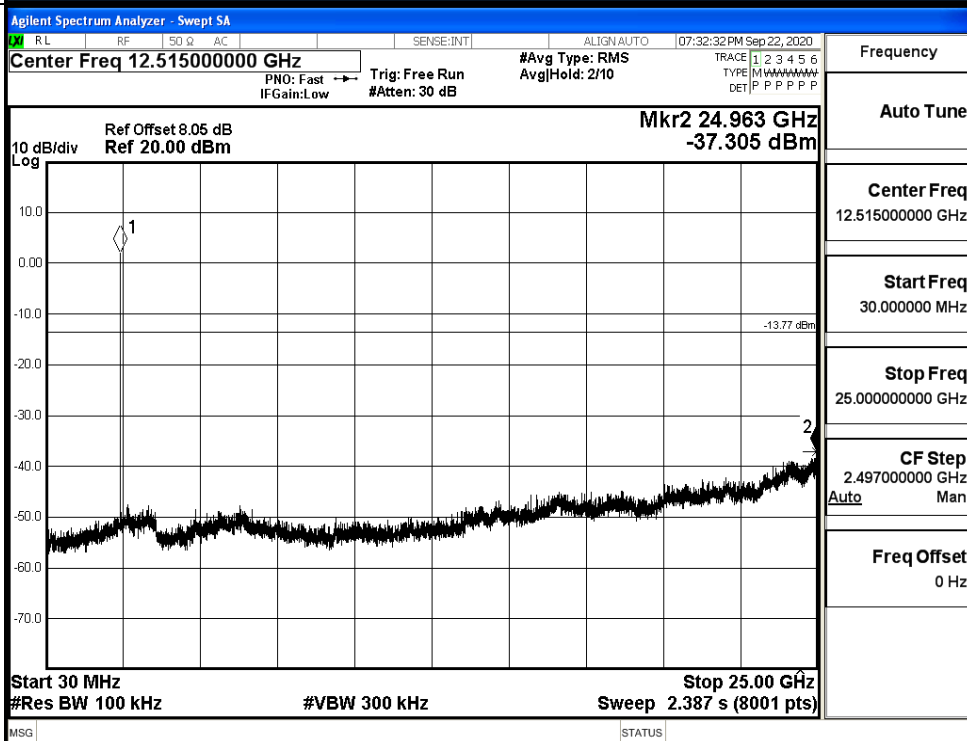


8DPSK_MCH_Graphs

Pref

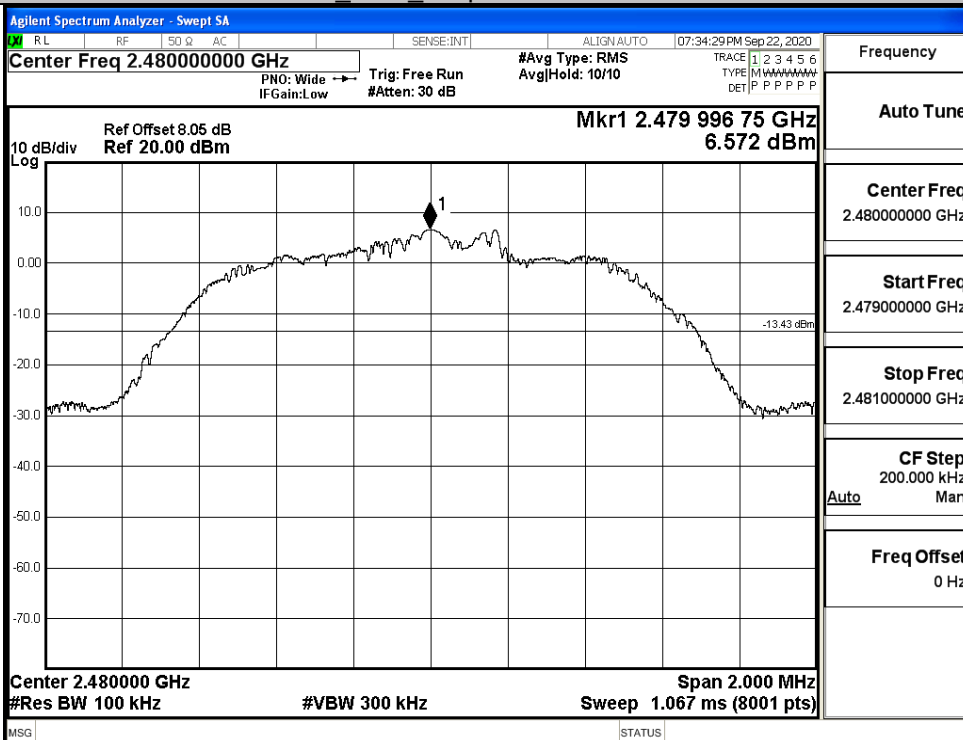


Puw

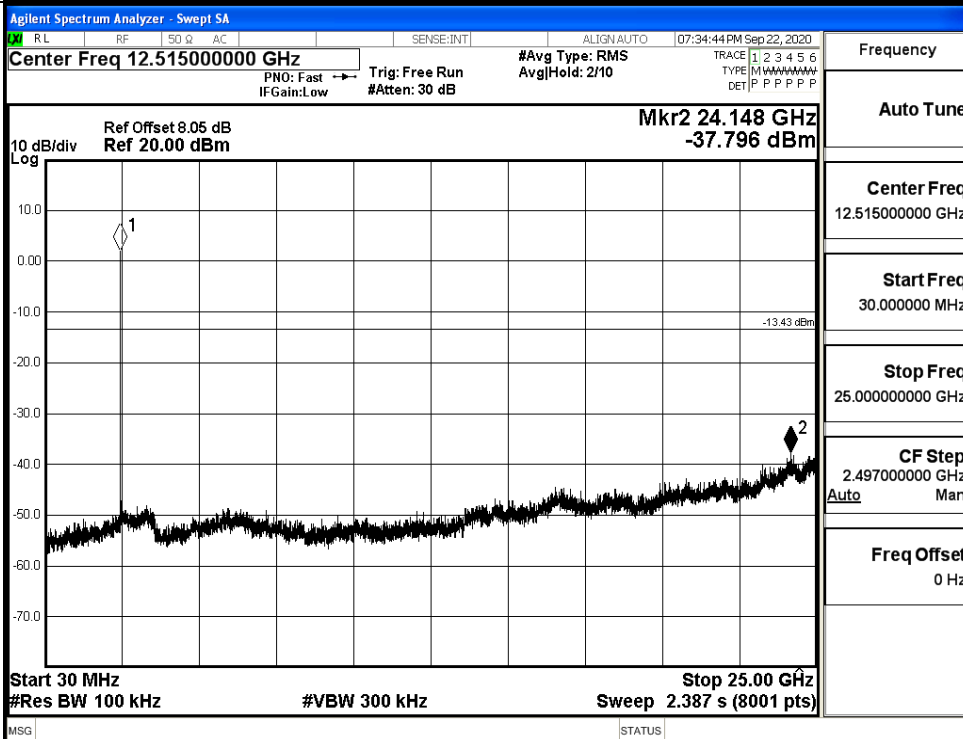


8DPSK_HCH_Graphs

Pref



Puw

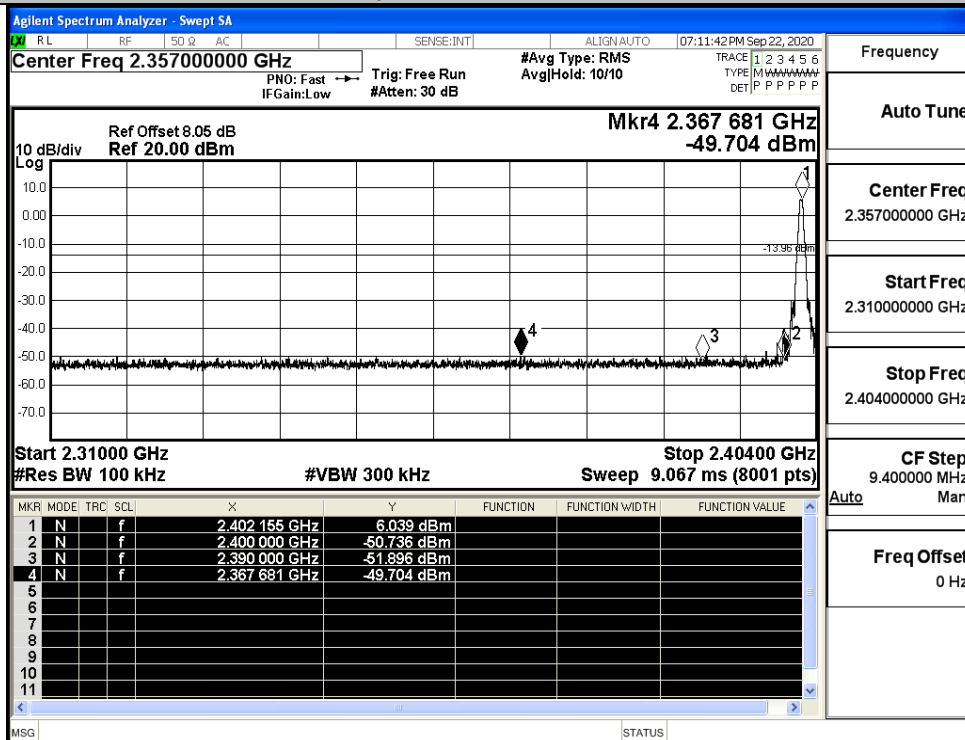


A.7 Band-edge for RF Conducted Emissions

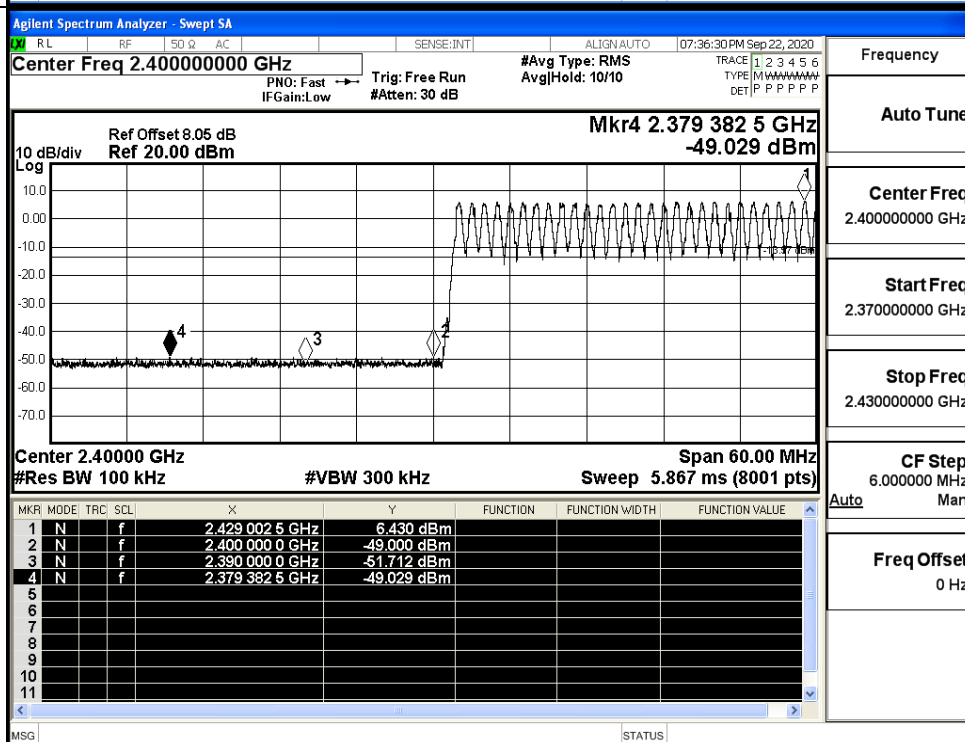
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	6.039	Off	-49.704	-13.96	PASS
			6.430	On	-49.029	-13.57	PASS
	HCH	2480	6.562	Off	-46.484	-13.44	PASS
			6.521	On	-48.686	-13.48	PASS
$\pi/4$ DQPSK	LCH	2402	6.070	Off	-49.572	-13.93	PASS
			6.377	On	-49.071	-13.62	PASS
	HCH	2480	6.549	Off	-46.818	-13.45	PASS
			6.595	On	-47.764	-13.41	PASS
8DPSK	LCH	2402	5.955	Off	-49.294	-14.05	PASS
			6.287	On	-48.873	-13.71	PASS
	HCH	2480	6.609	Off	-47.162	-13.39	PASS
			6.594	On	-47.036	-13.41	PASS

Test Graphs

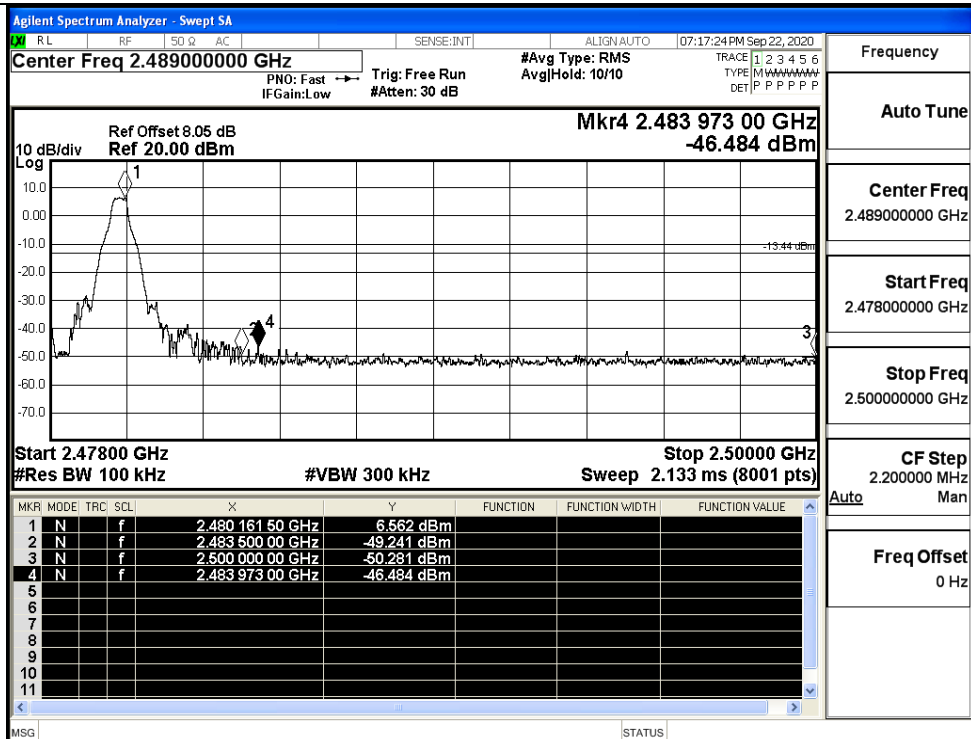
GFSK/LCH/No Hop



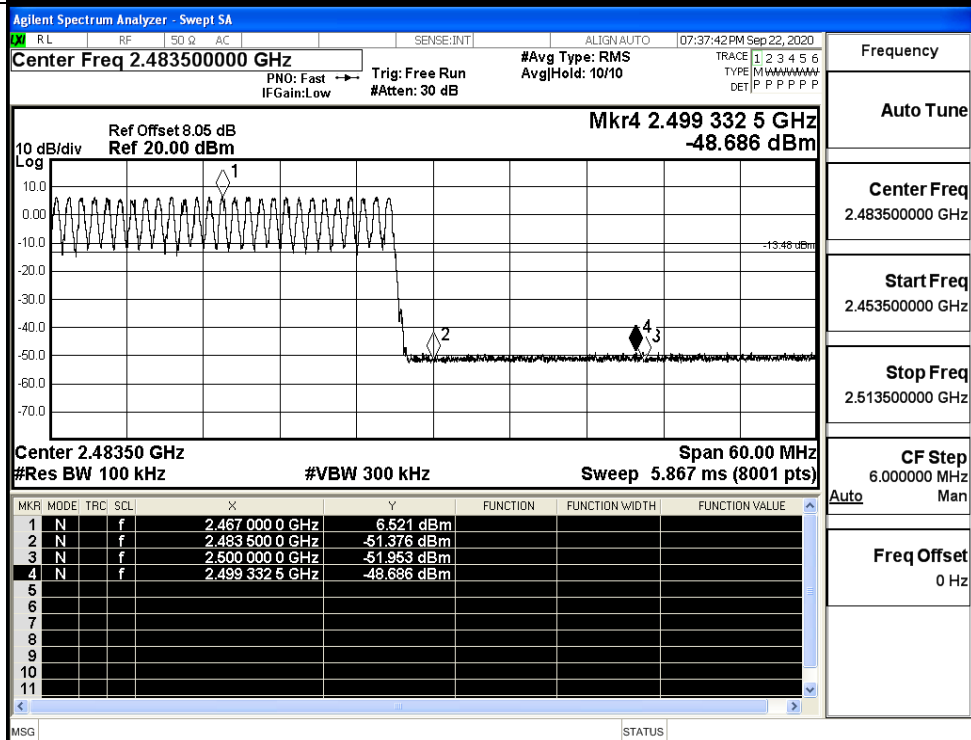
GFSK/LCH/Hop



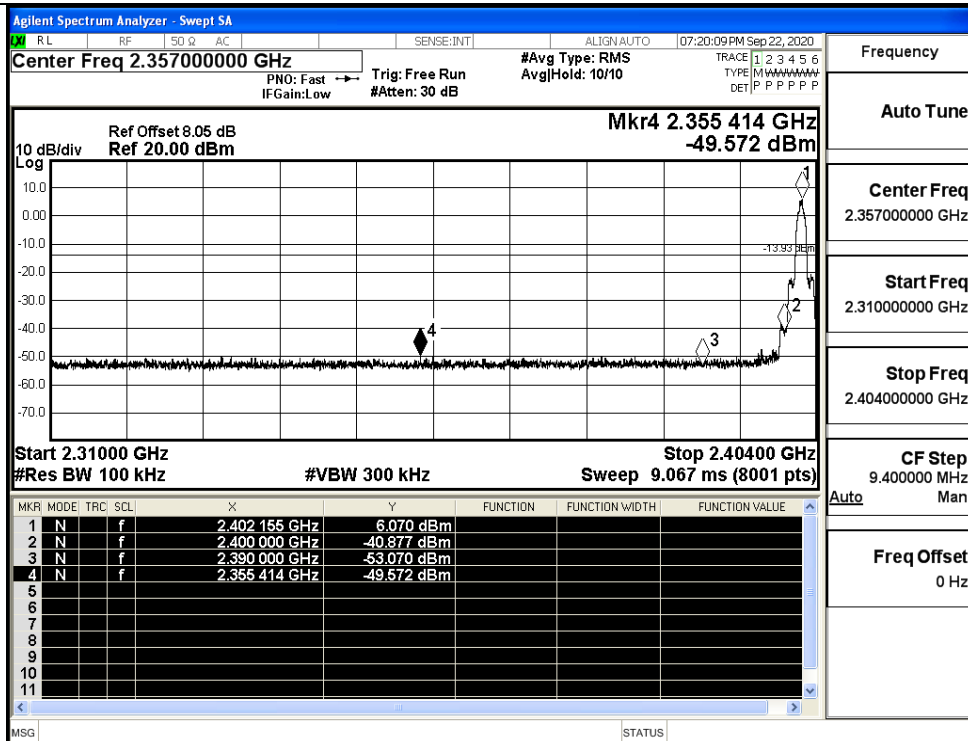
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

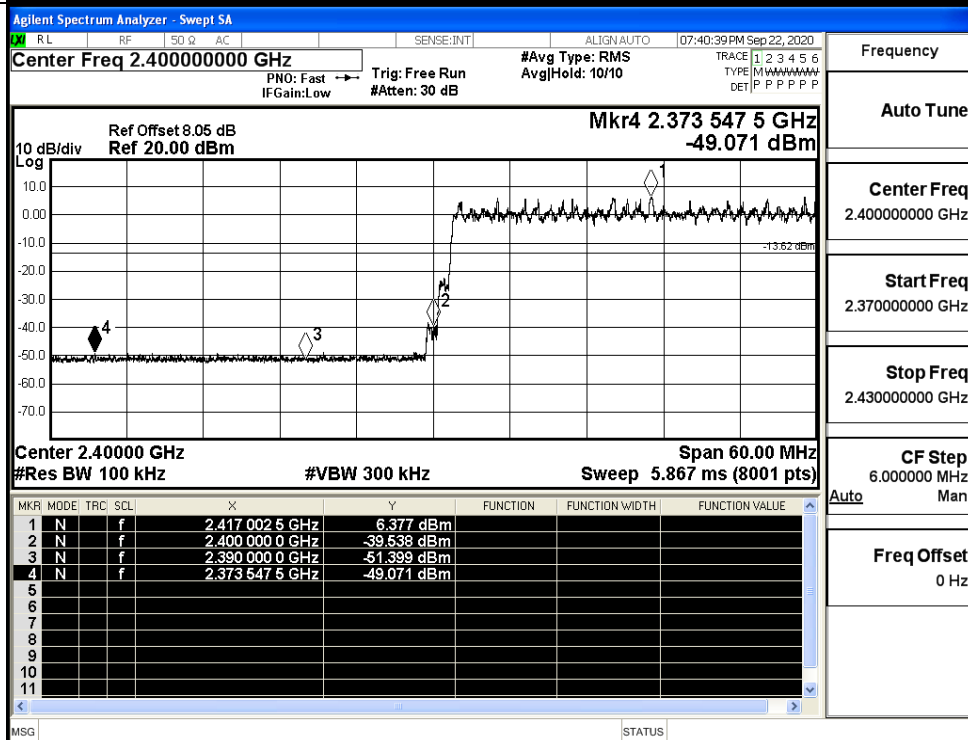
Start Freq
2.310000000 GHz

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

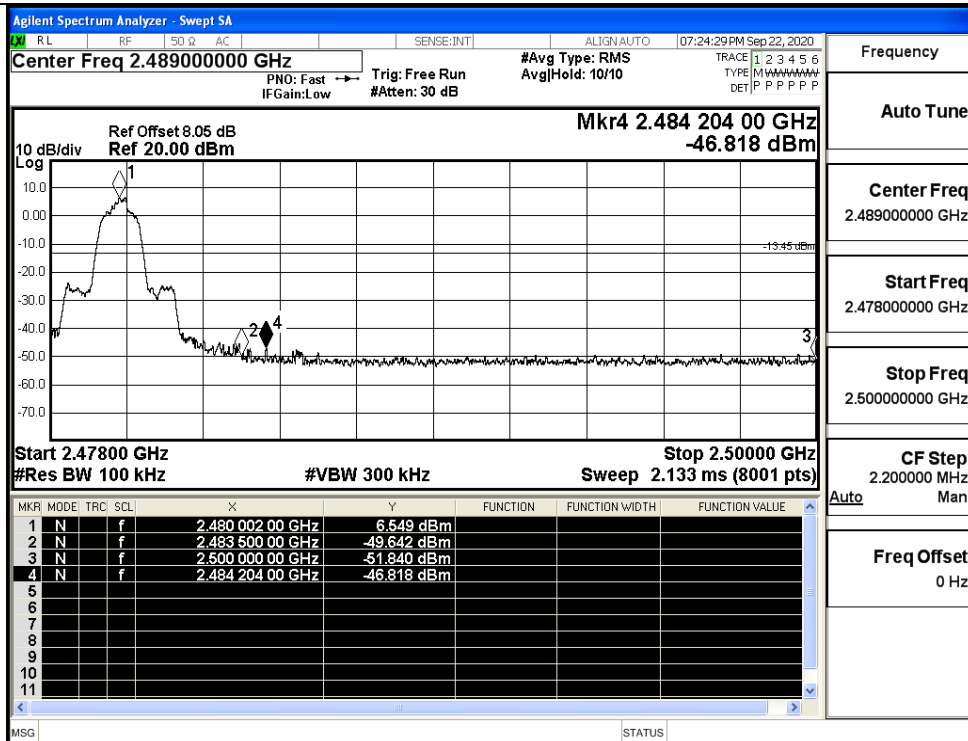
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

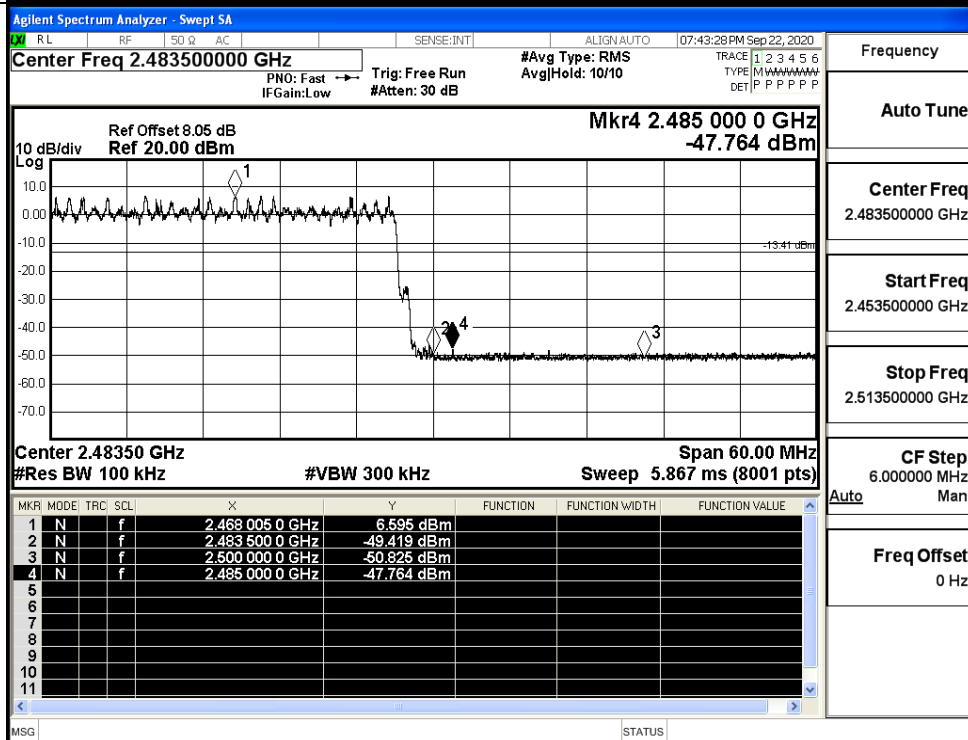


Frequency

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

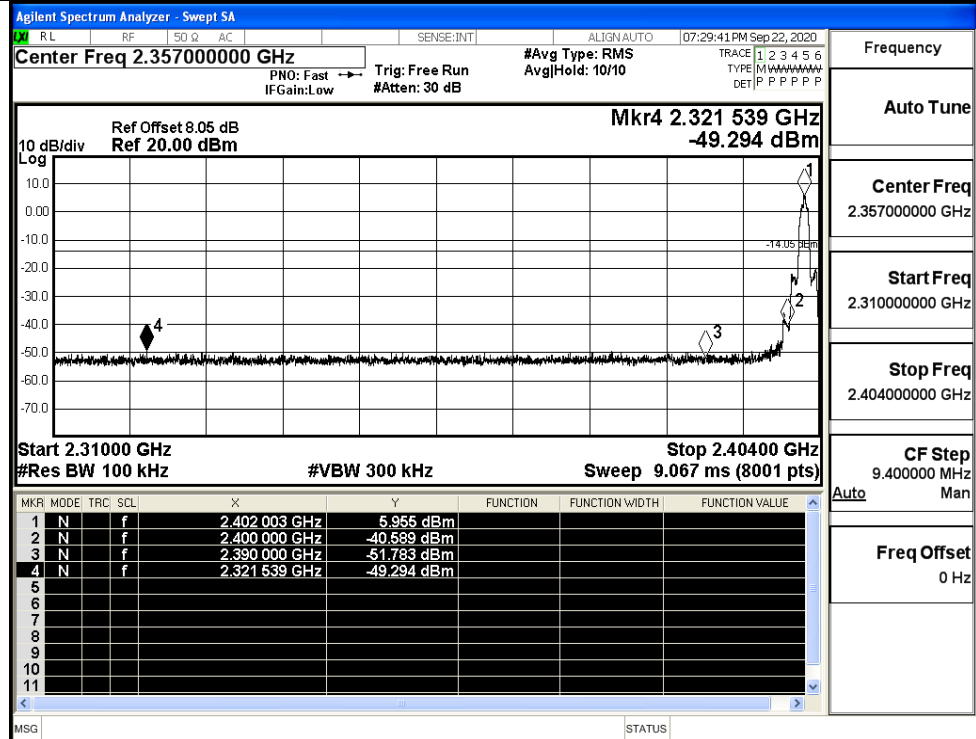


Frequency

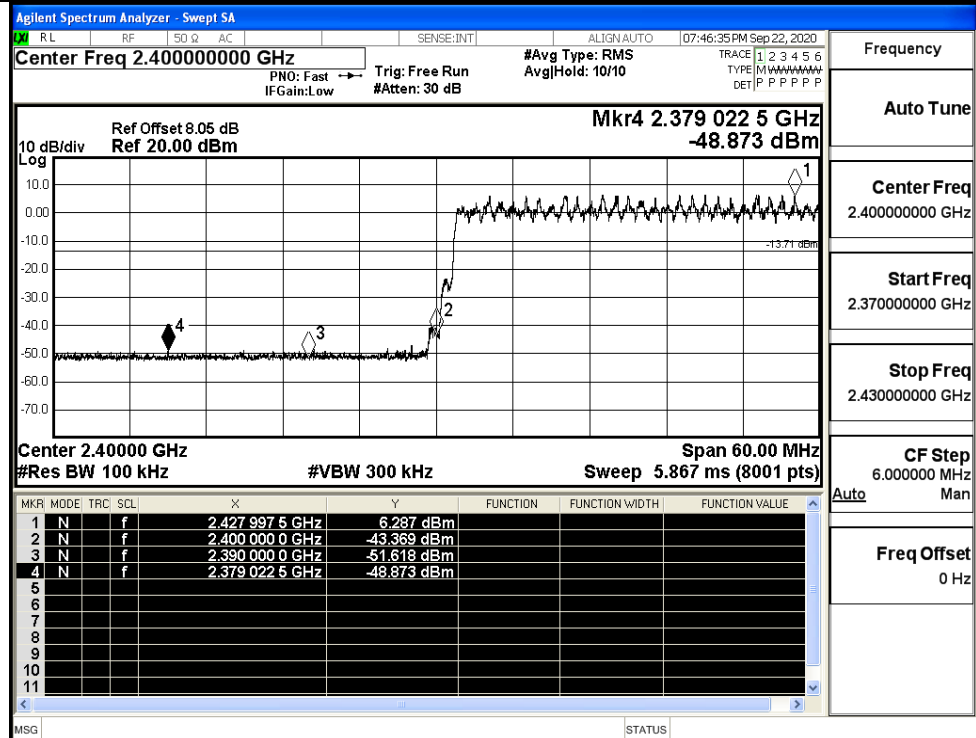
Auto Tune

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

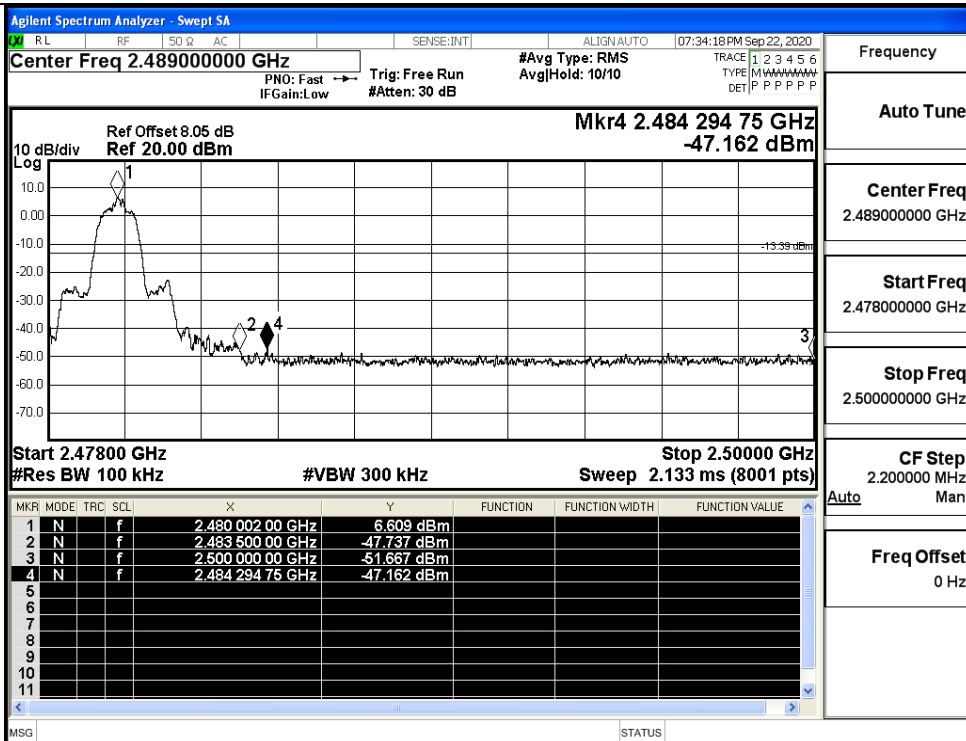
8DPSK/LCH/No Hop



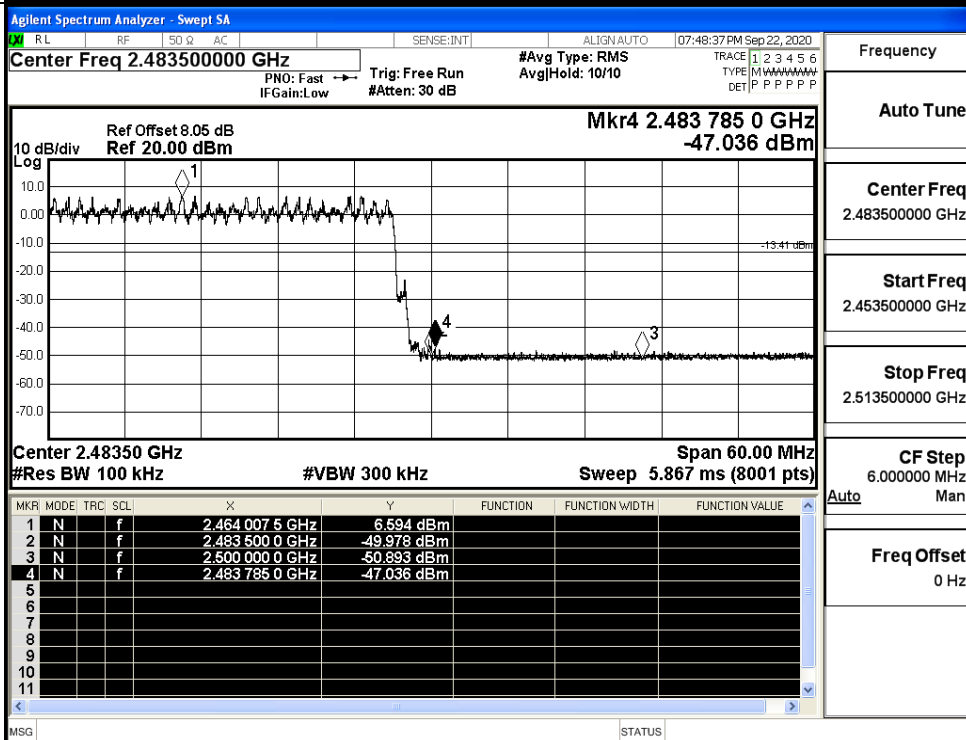
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



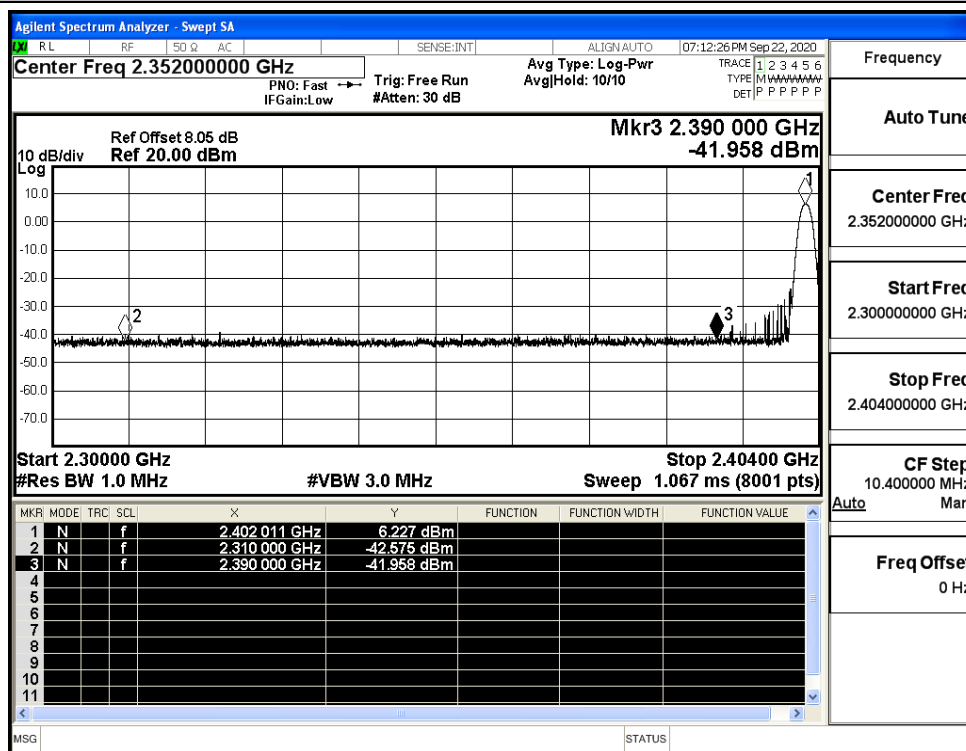
8DPSK/HCH/Hop



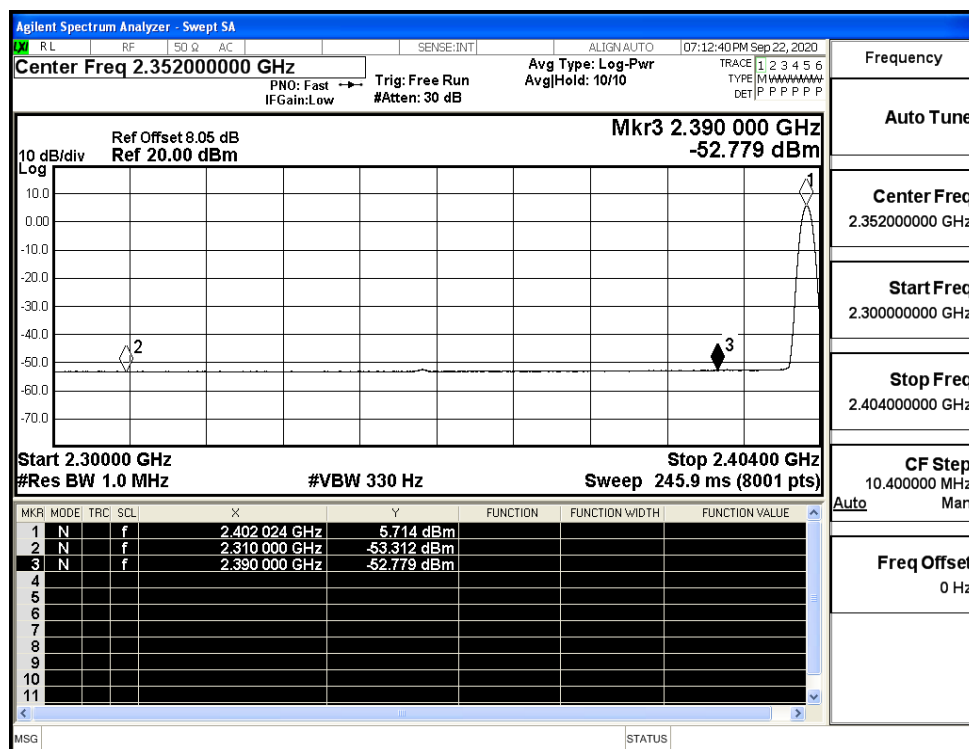
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.58	2.0	0	52.68	PEAK	74	PASS
	Off	2310.0	-53.31	2.0	0	41.95	AV	54	PASS
	Off	2390.0	-41.96	2.0	0	53.30	PEAK	74	PASS
	Off	2390.0	-52.78	2.0	0	42.48	AV	54	PASS
	Off	2483.5	-42.37	2.0	0	52.89	PEAK	74	PASS
	Off	2483.5	-52.14	2.0	0	43.12	AV	54	PASS
	Off	2500.0	-41.04	2.0	0	54.22	PEAK	74	PASS
	Off	2500.0	-52.19	2.0	0	43.07	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.02	2.0	0	52.24	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	42.00	AV	54	PASS
	Off	2390.0	-43.55	2.0	0	51.71	PEAK	74	PASS
	Off	2390.0	-52.85	2.0	0	42.41	AV	54	PASS
	Off	2483.5	-38.02	2.0	0	57.24	PEAK	74	PASS
	Off	2483.5	-50.37	2.0	0	44.89	AV	54	PASS
	Off	2500.0	-42.15	2.0	0	53.11	PEAK	74	PASS
	Off	2500.0	-52.25	2.0	0	43.00	AV	54	PASS
8DPSK	Off	2310.0	-43.67	2.0	0	51.58	PEAK	74	PASS
	Off	2310.0	-53.30	2.0	0	41.96	AV	54	PASS
	Off	2390.0	-42.27	2.0	0	52.99	PEAK	74	PASS
	Off	2390.0	-52.81	2.0	0	42.45	AV	54	PASS
	Off	2483.5	-37.06	2.0	0	58.20	PEAK	74	PASS
	Off	2483.5	-50.33	2.0	0	44.93	AV	54	PASS
	Off	2500.0	-43.08	2.0	0	52.18	PEAK	74	PASS
	Off	2500.0	-52.22	2.0	0	43.04	AV	54	PASS

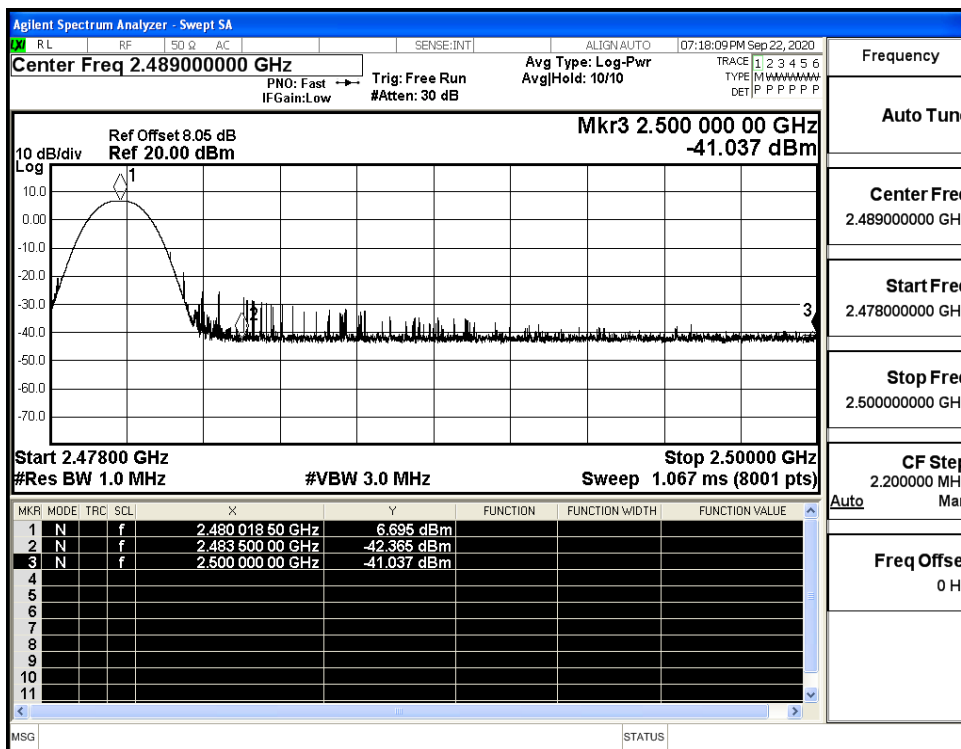
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



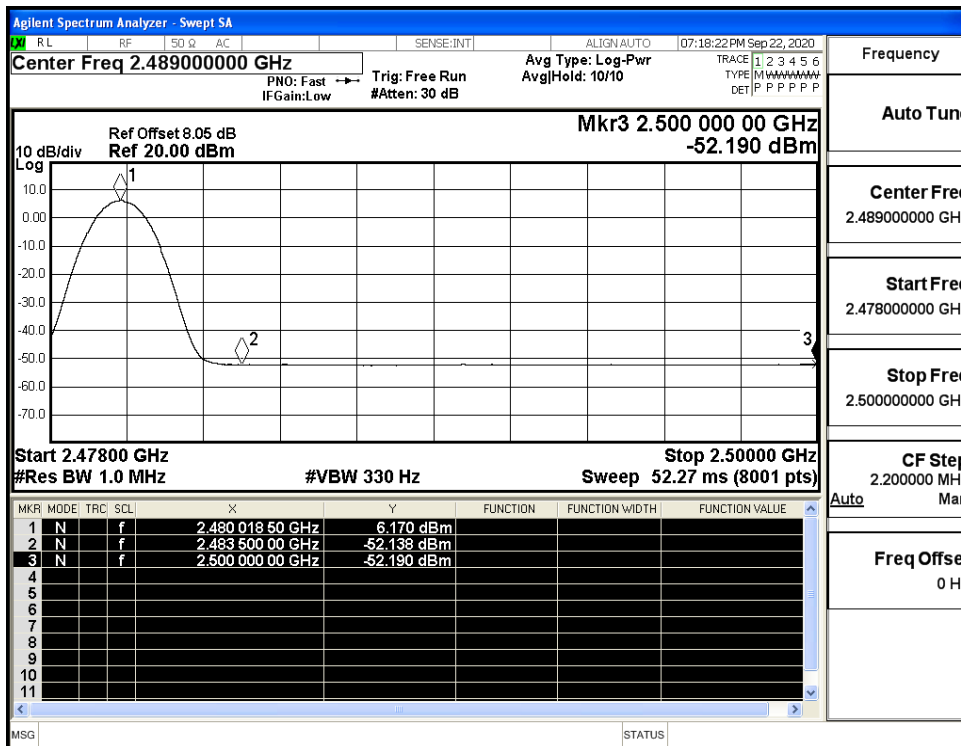
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



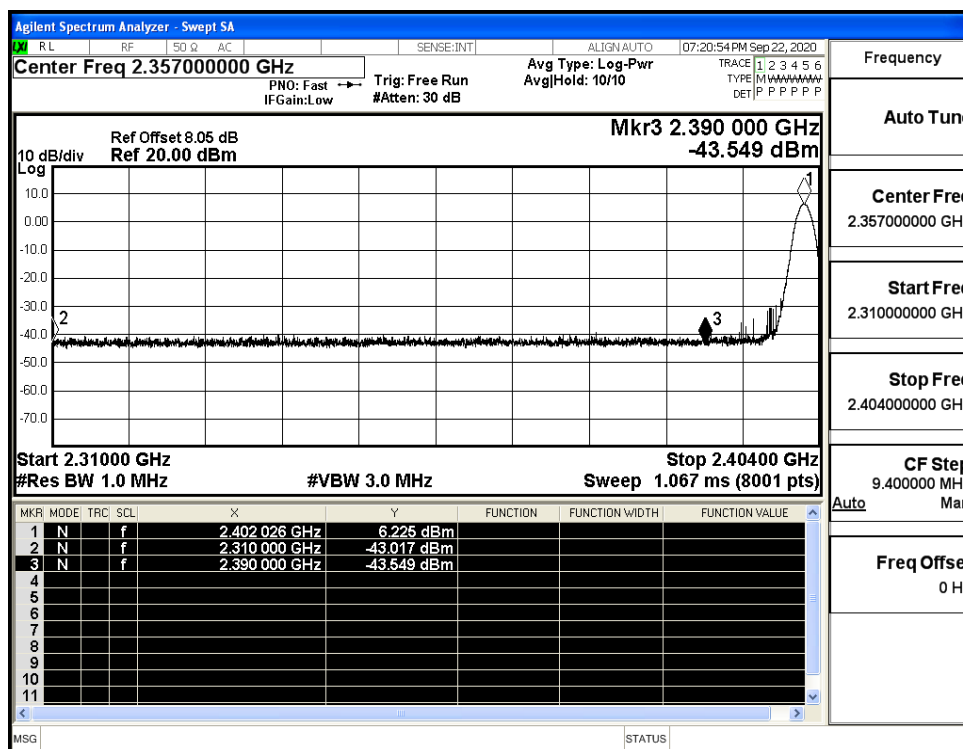
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



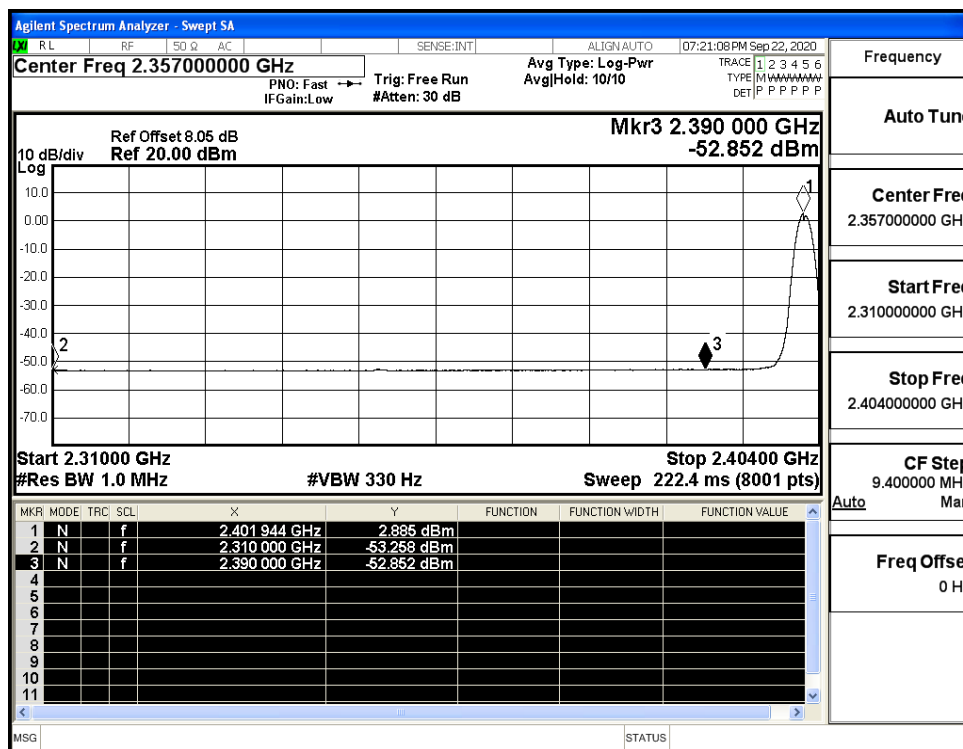
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



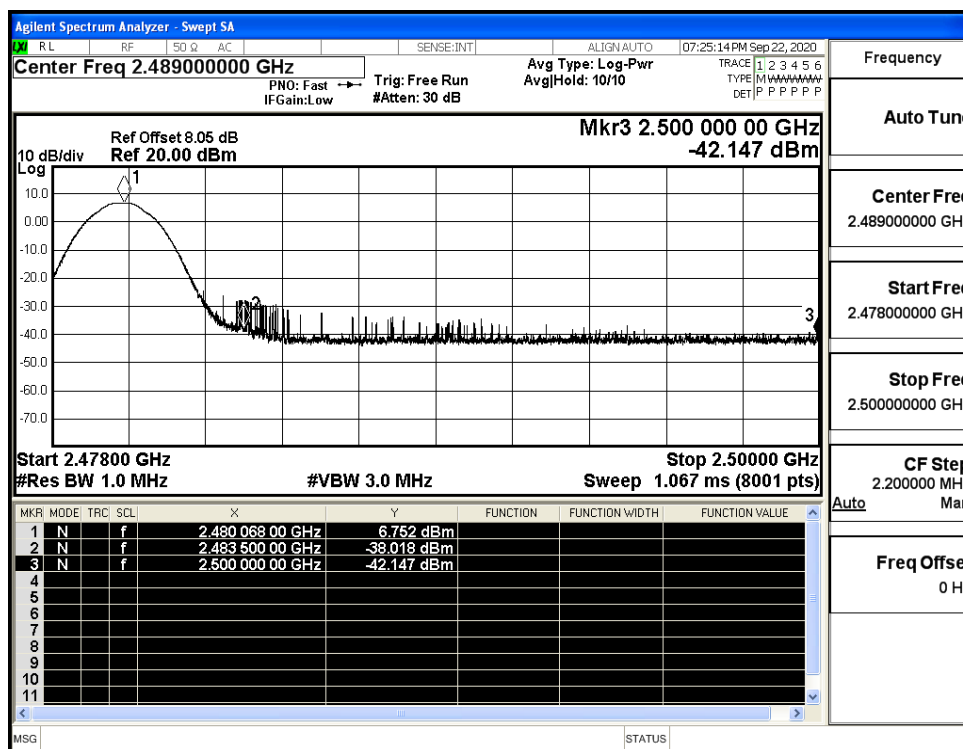
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



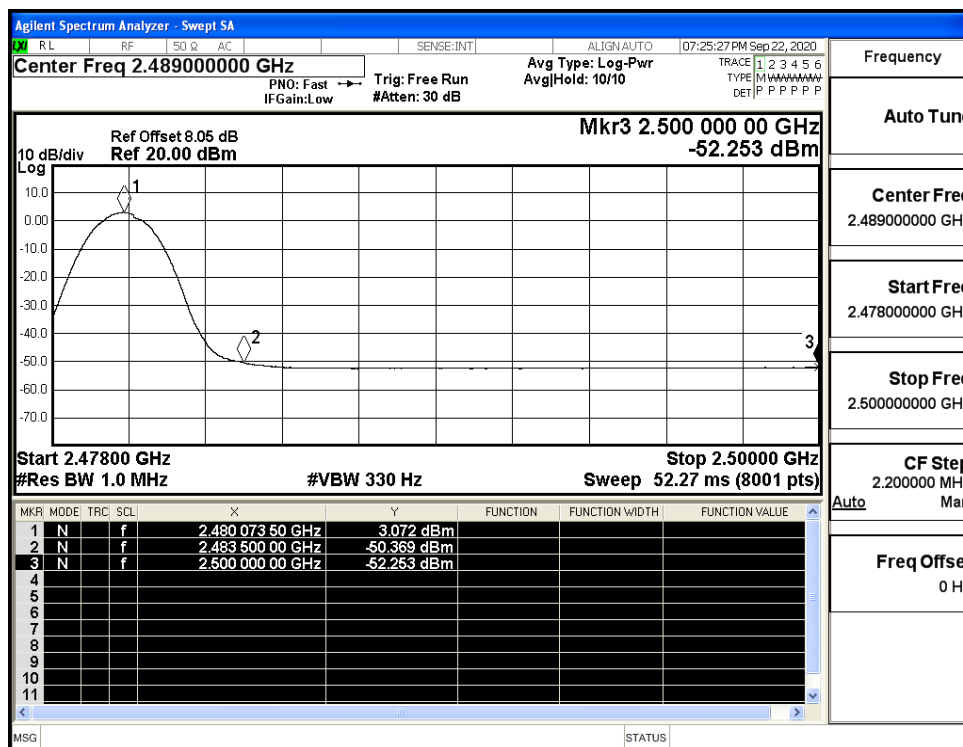
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



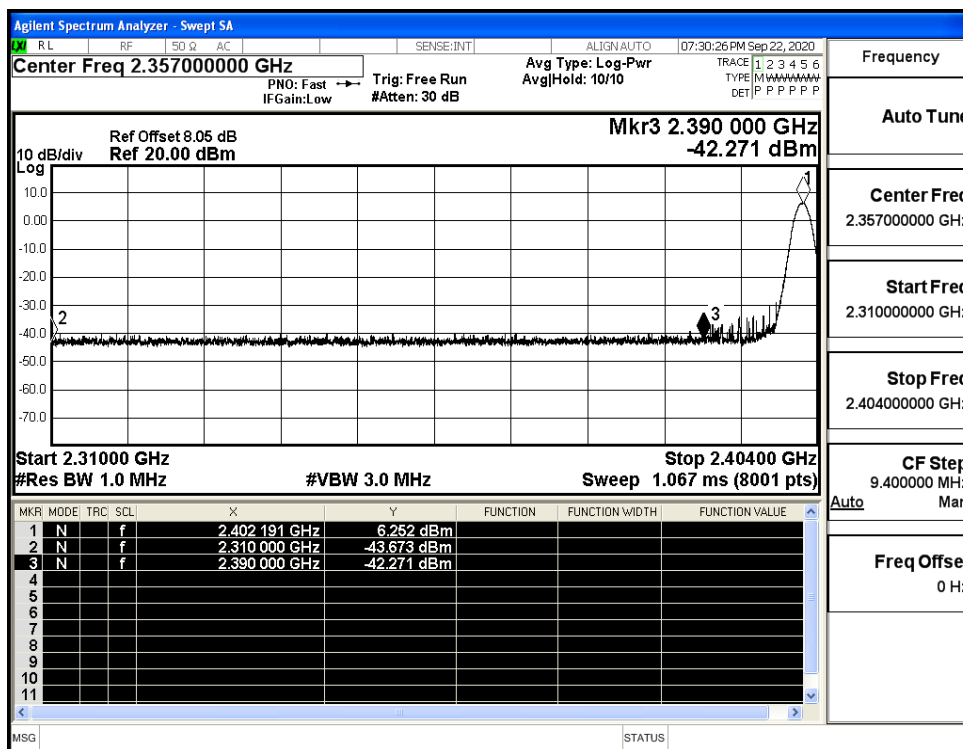
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



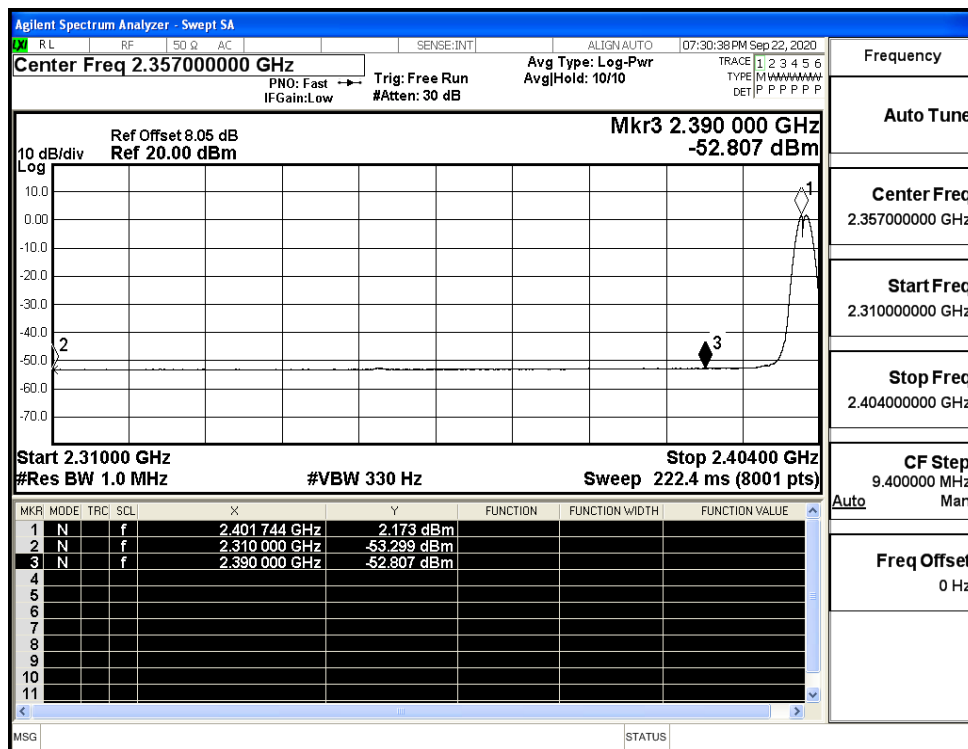
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



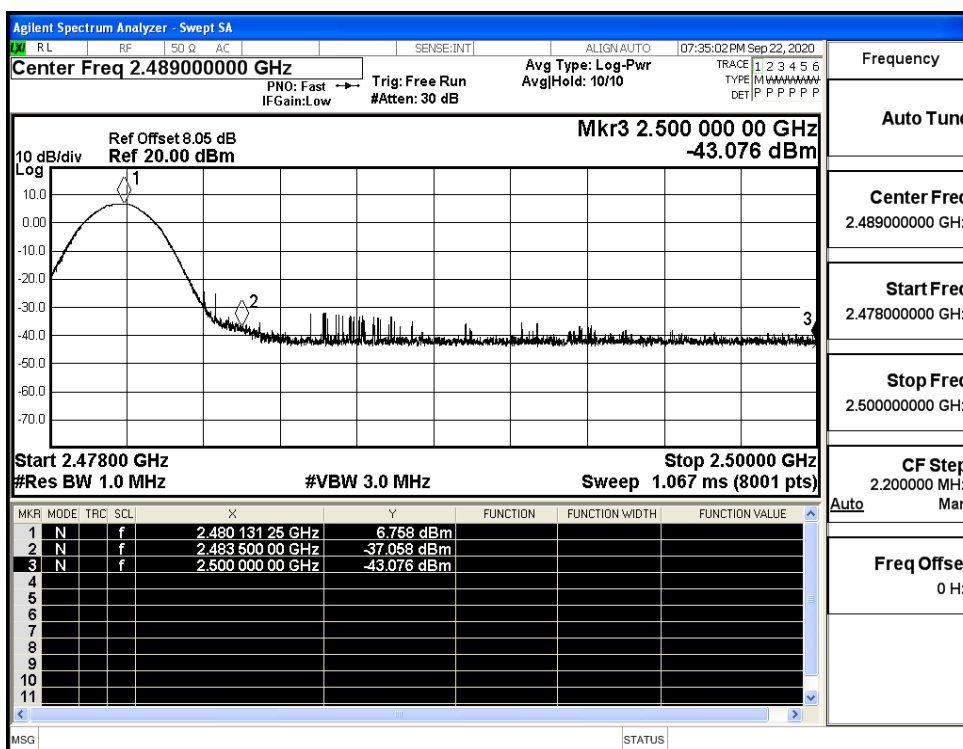
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

