

Appendix A

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

Product Name: Multi-function projector

Trade Mark: PHILIPS

Test Model: NeoPix Prime 2

Environmental Conditions

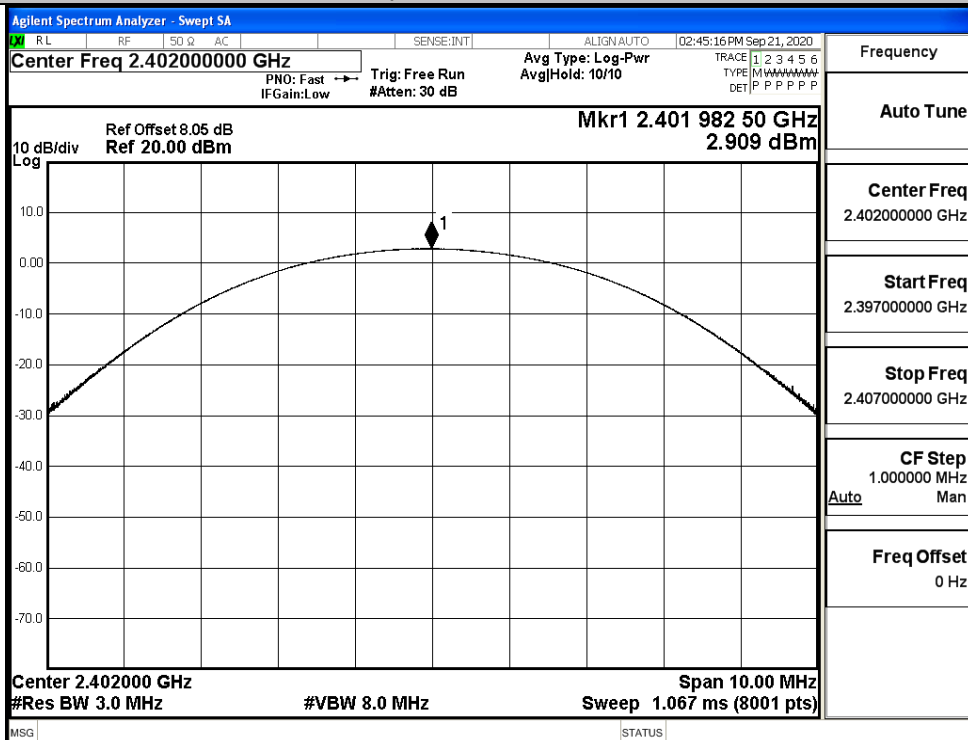
Temperature:	23.5 ° C
Relative Humidity:	54.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

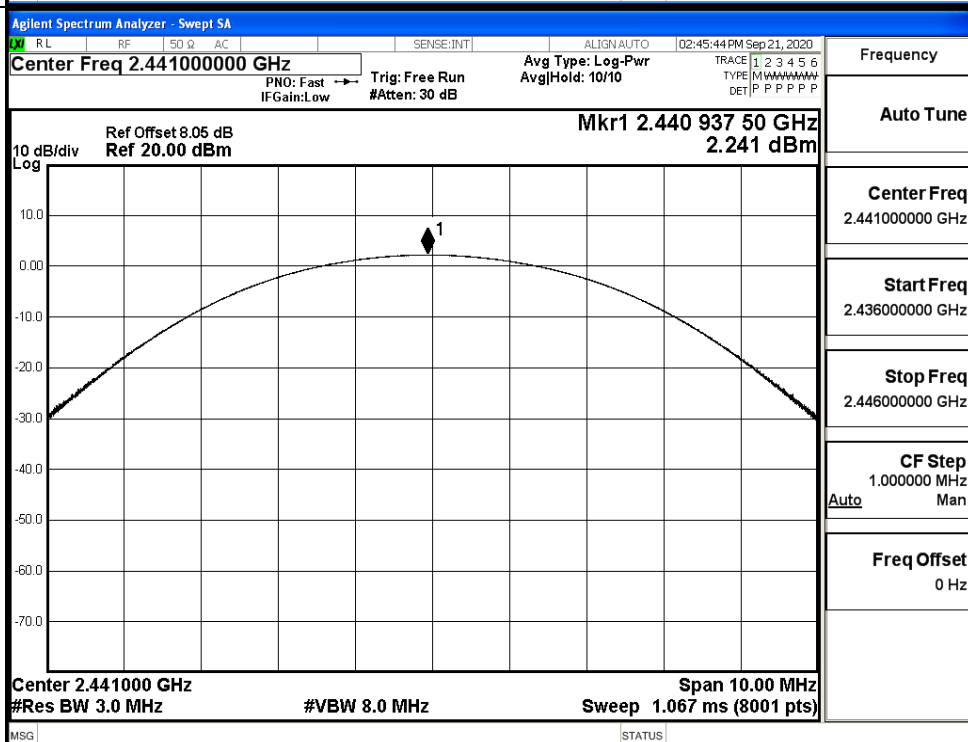
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2.909	21	PASS
	MCH	2.241	21	PASS
	HCH	2.605	21	PASS
$\pi/4$ DQPSK	LCH	2.083	21	PASS
	MCH	1.377	21	PASS
	HCH	1.799	21	PASS
8DPSK	LCH	2.015	21	PASS
	MCH	1.397	21	PASS
	HCH	1.803	21	PASS

Test Graphs

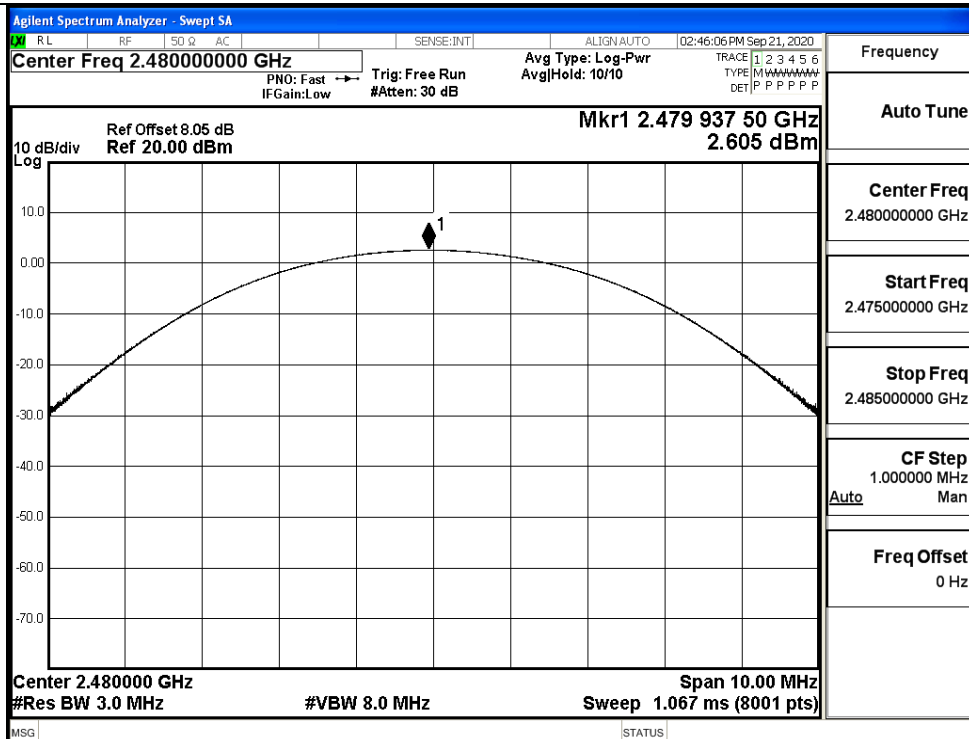
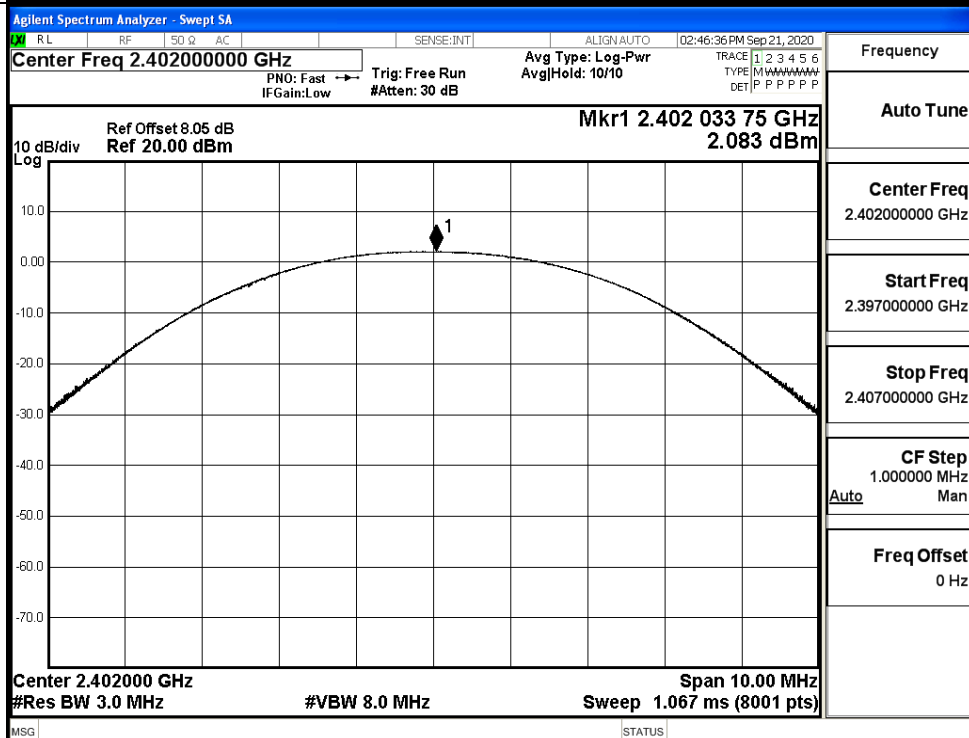
GFSK/LCH

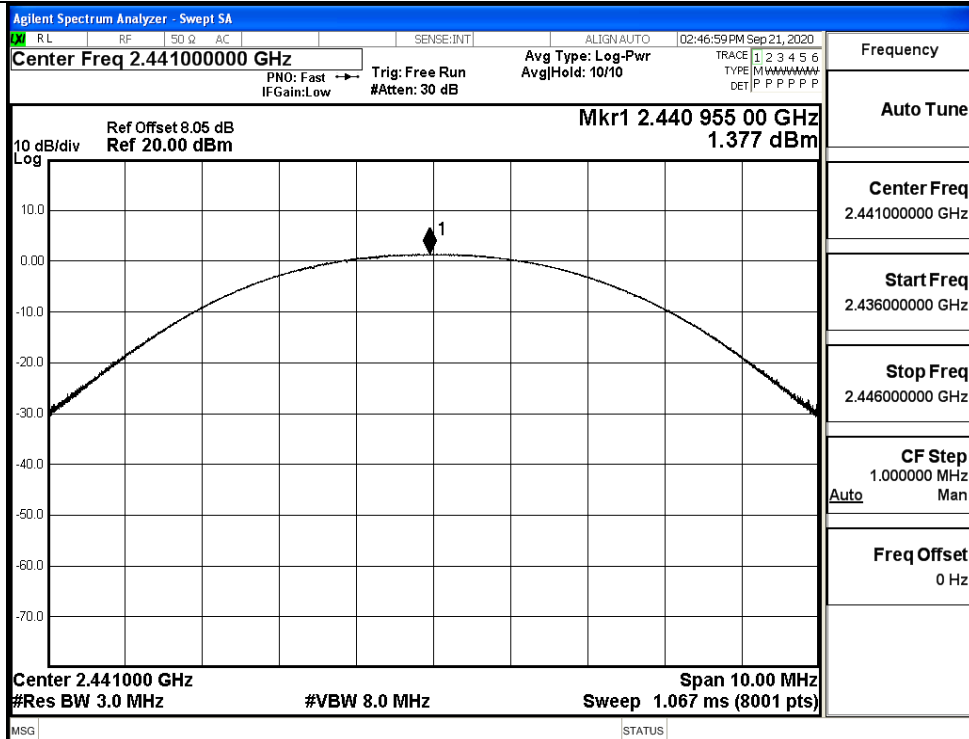
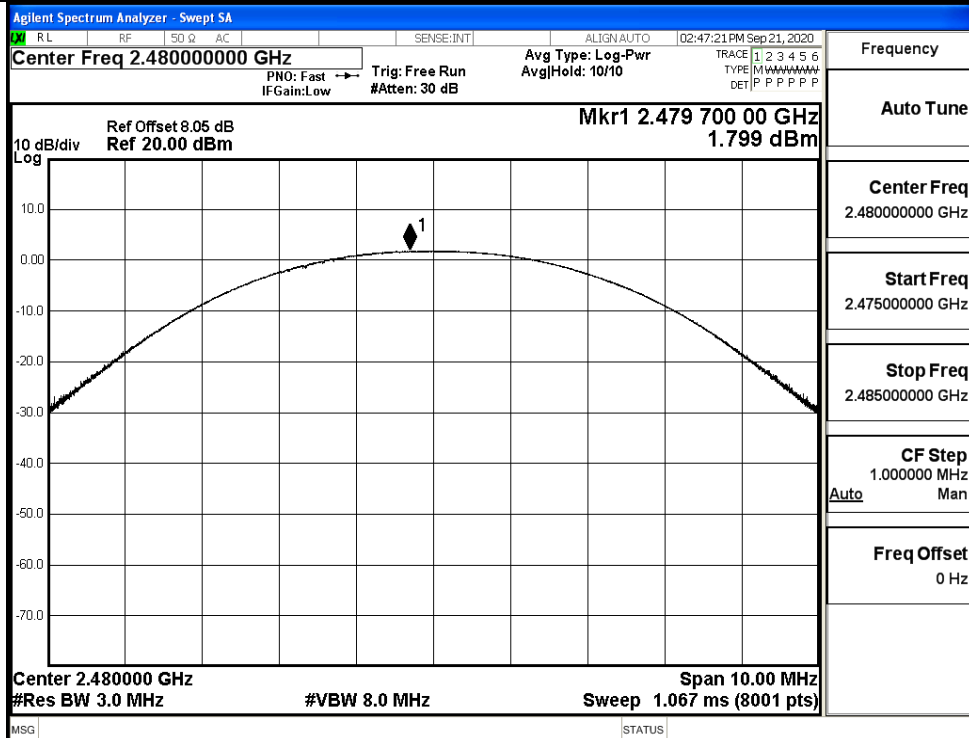


GFSK/MCH

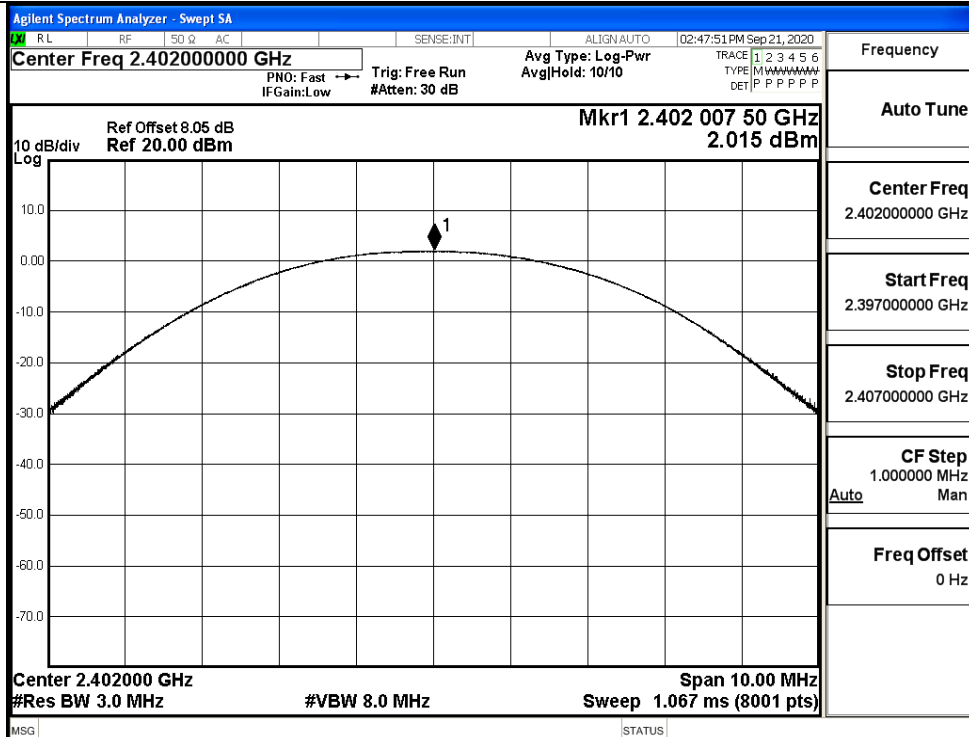


GFSK/HCH

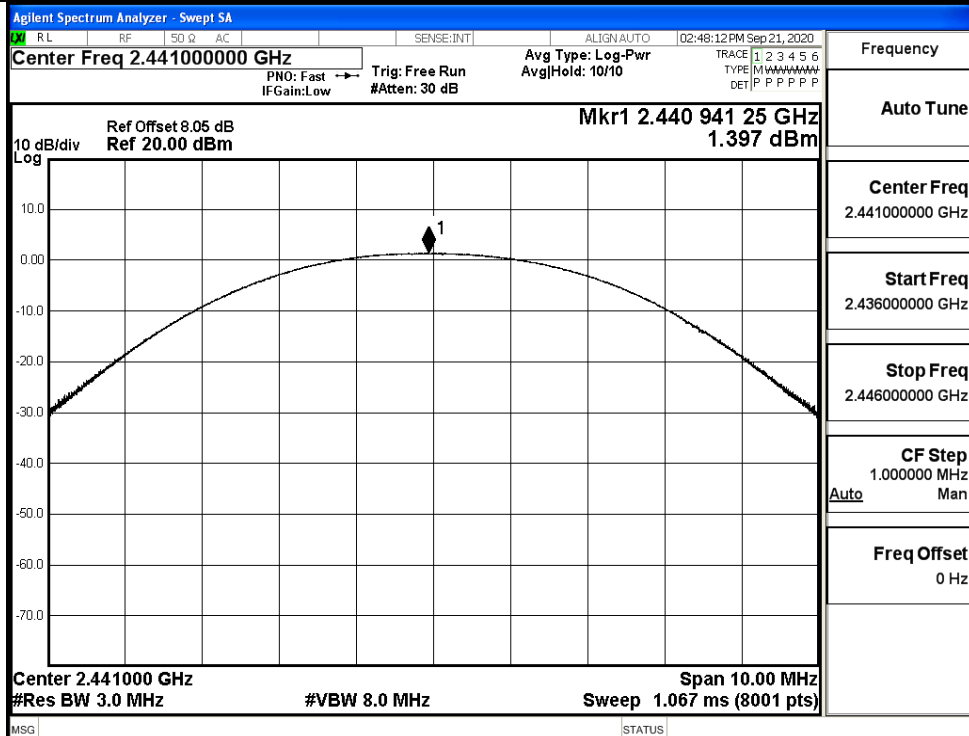
 $\pi/4$ DQPSK/LCH

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

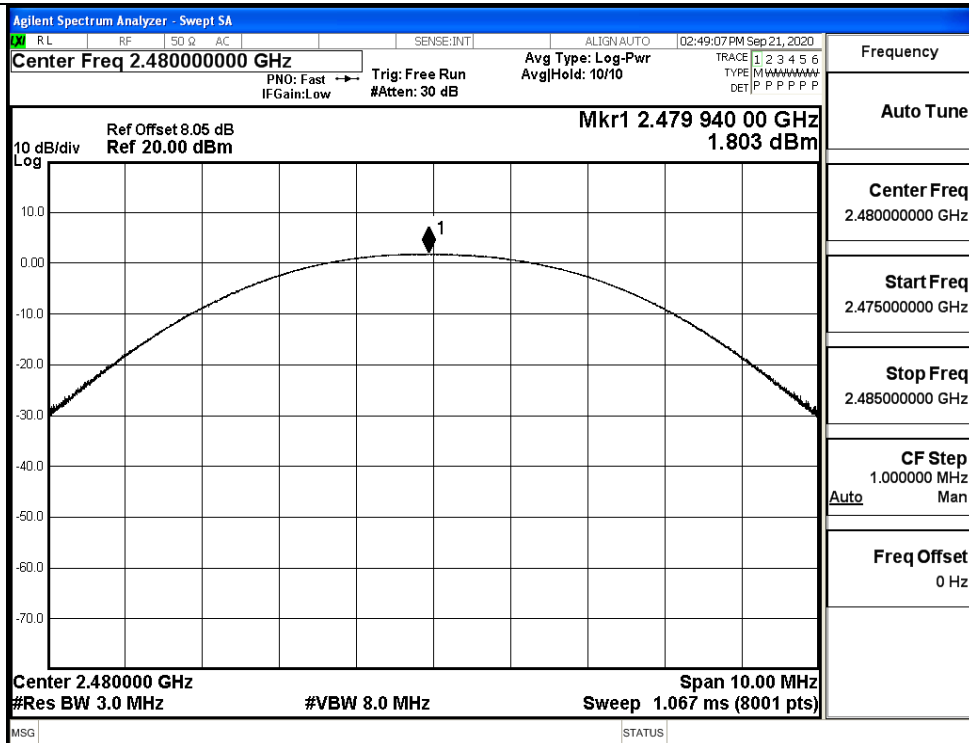
8DPSK/LCH



8DPSK/MCH



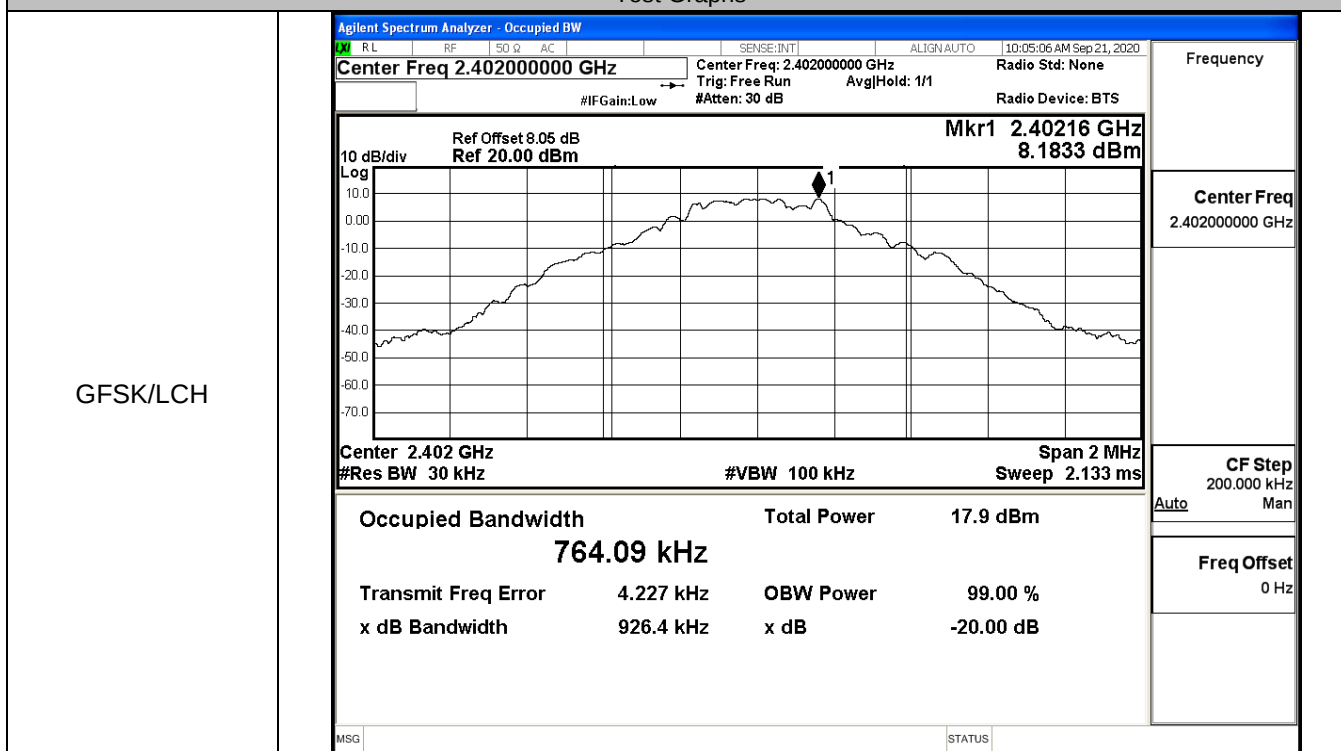
8DPSK/HCH



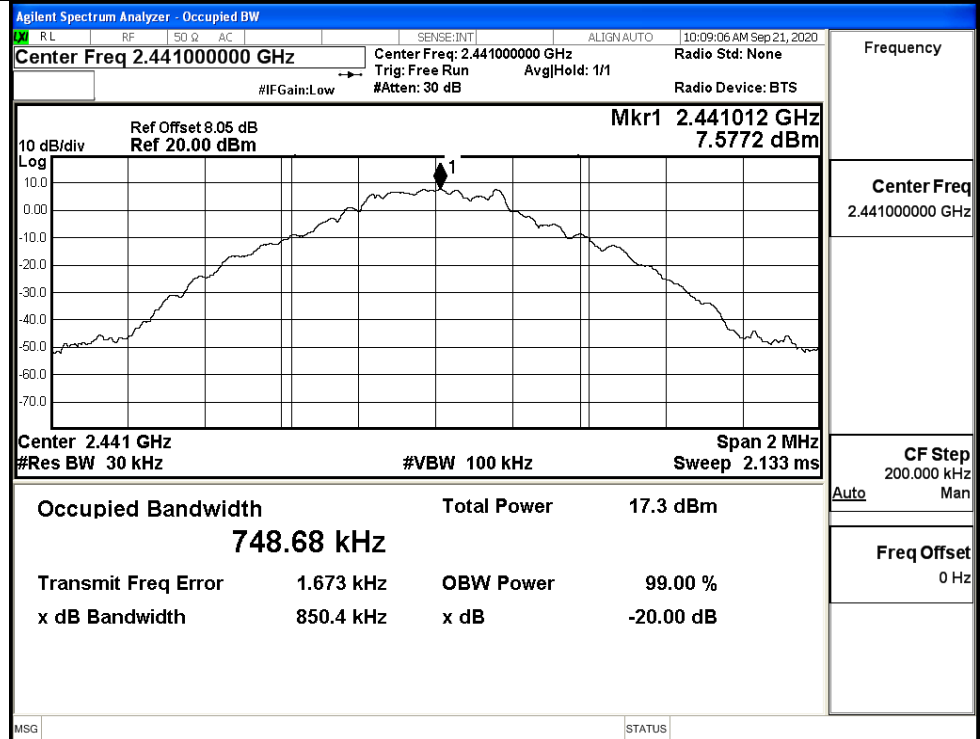
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9264	Not Specified	PASS
	MCH	0.8504	Not Specified	PASS
	HCH	0.8446	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.286	Not Specified	PASS
	MCH	1.268	Not Specified	PASS
	HCH	1.271	Not Specified	PASS
8DPSK	LCH	1.285	Not Specified	PASS
	MCH	1.268	Not Specified	PASS
	HCH	1.264	Not Specified	PASS

Test Graphs



GFSK/MCH



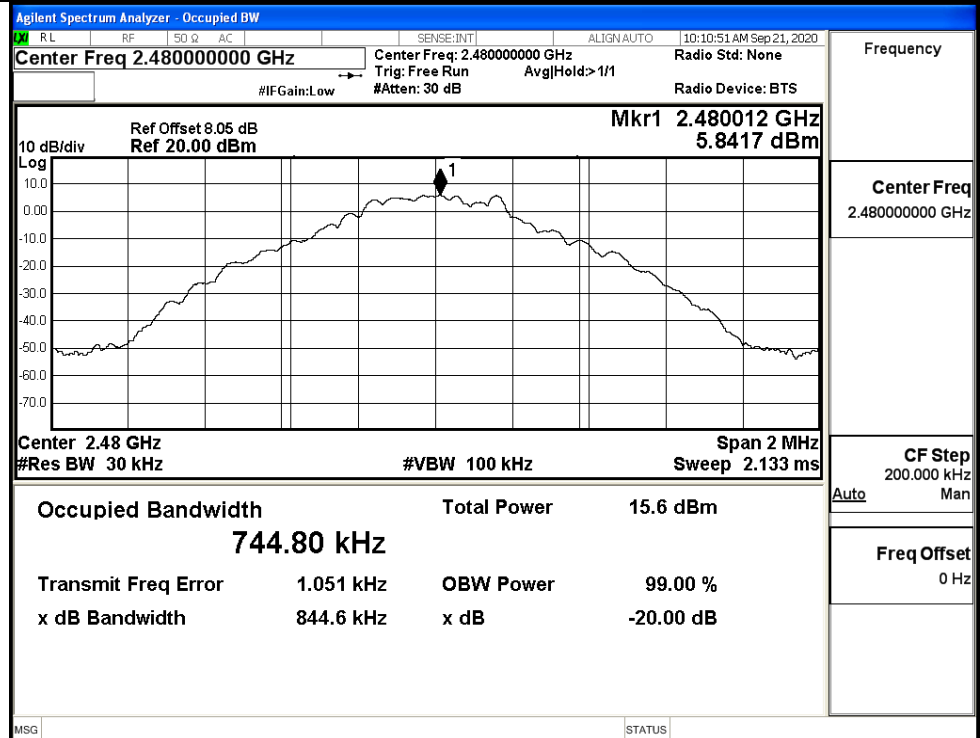
Frequency

Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

Freq Offset
0 Hz

GFSK/HCH

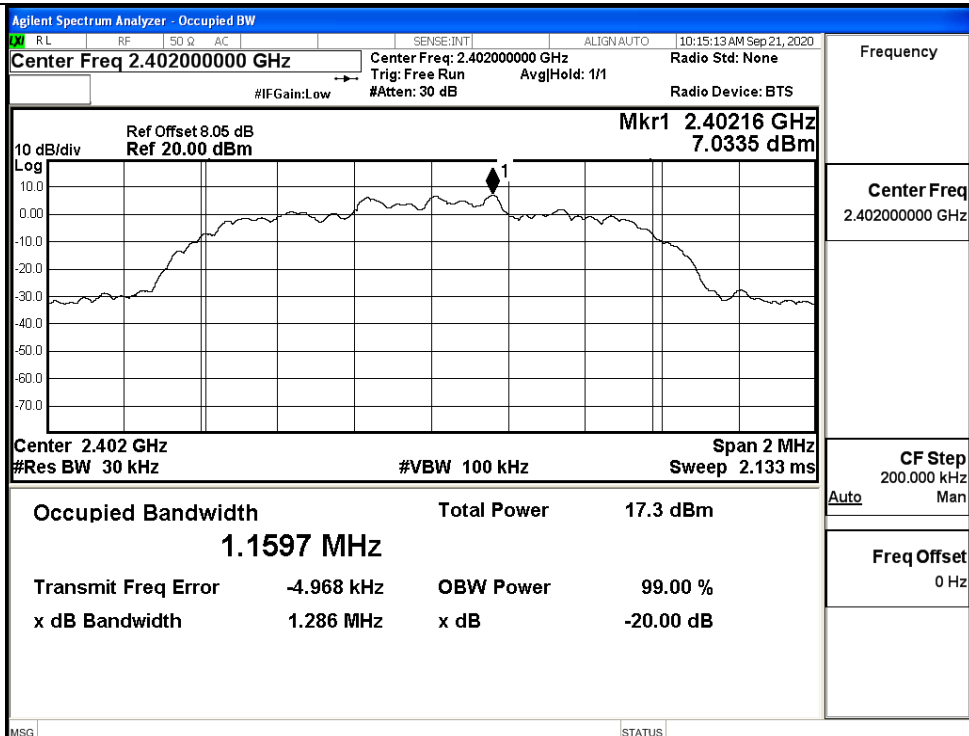
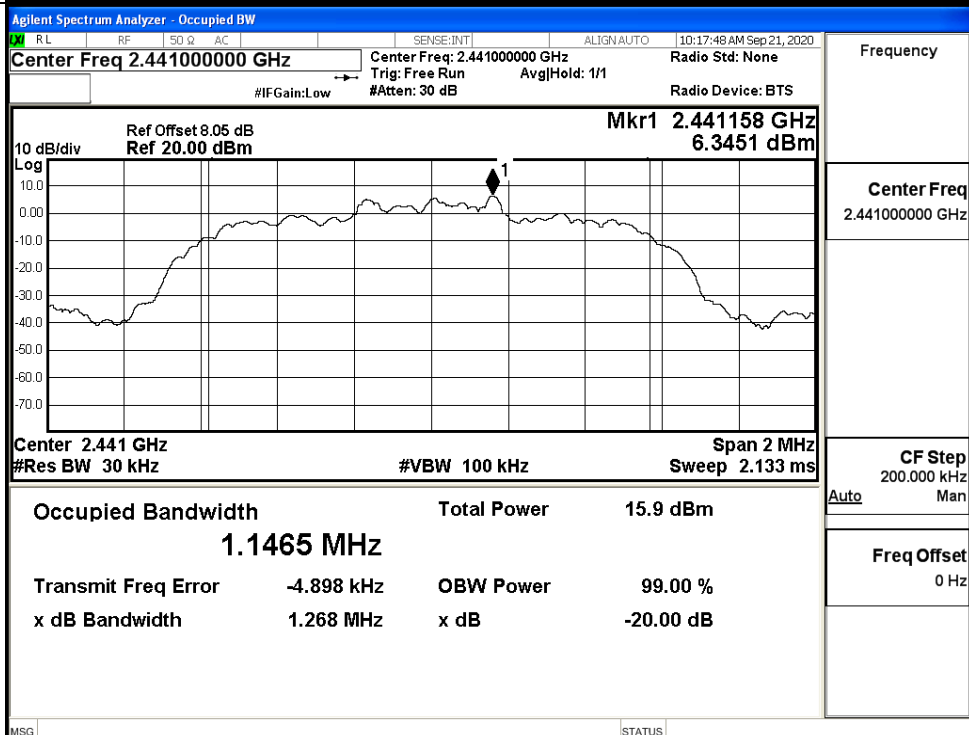


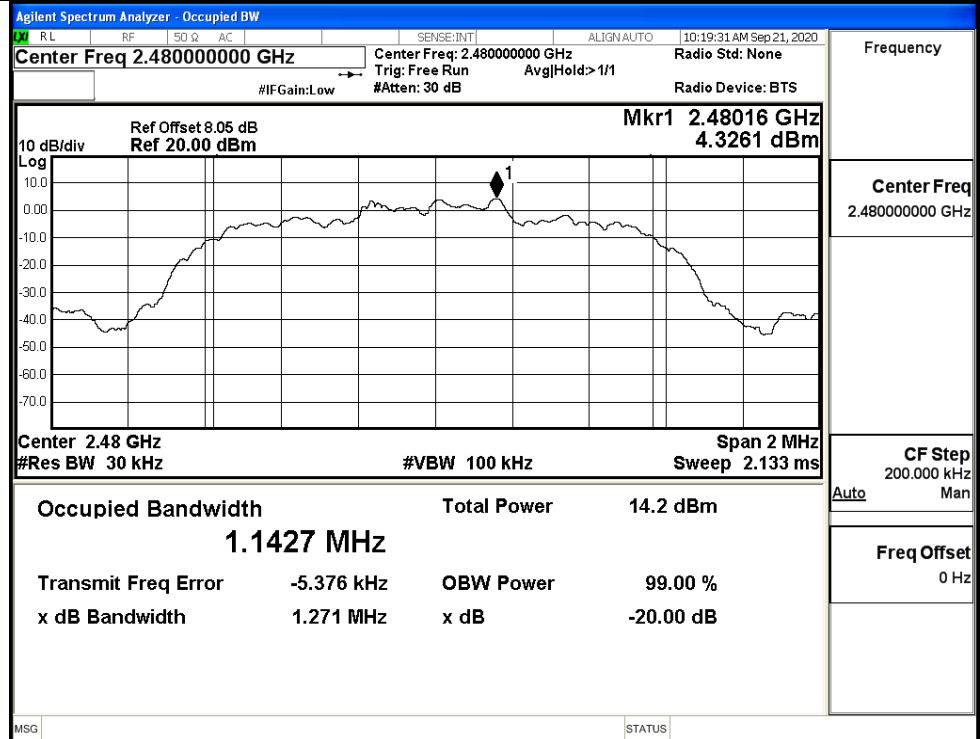
Frequency

Center Freq
2.480000000 GHz

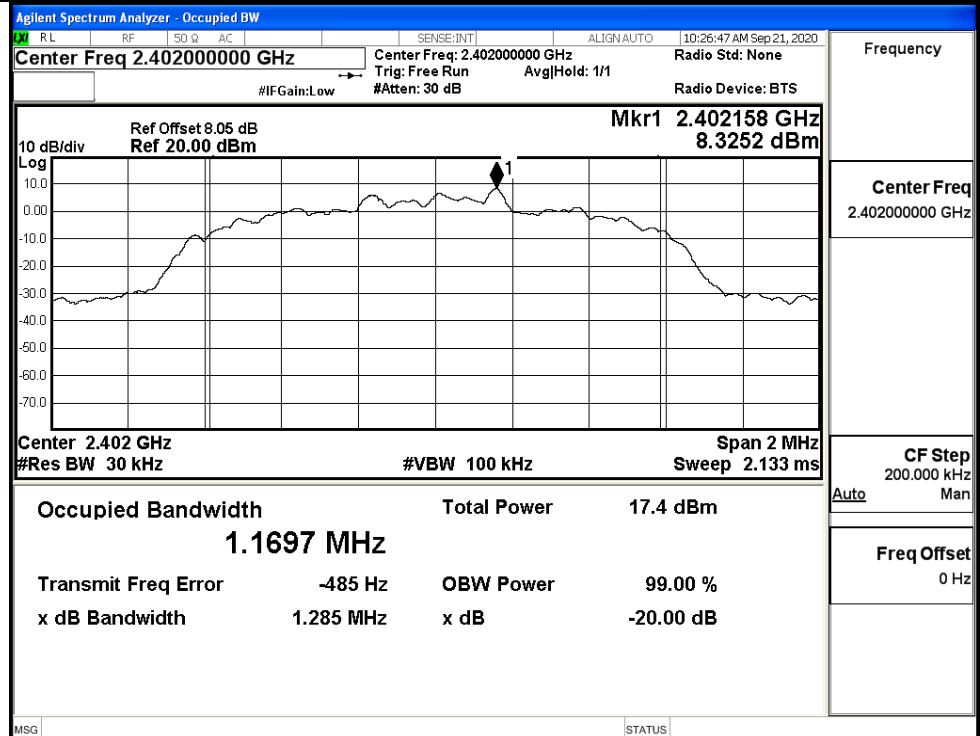
Auto

CF Step
200.000 kHz
ManFreq Offset
0 Hz

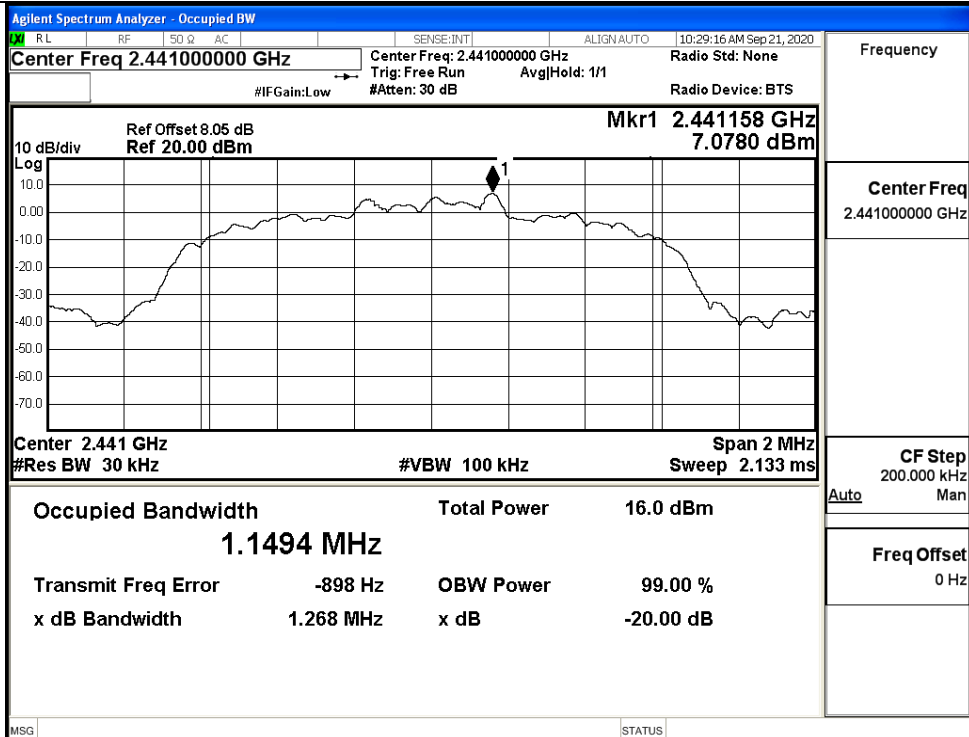
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

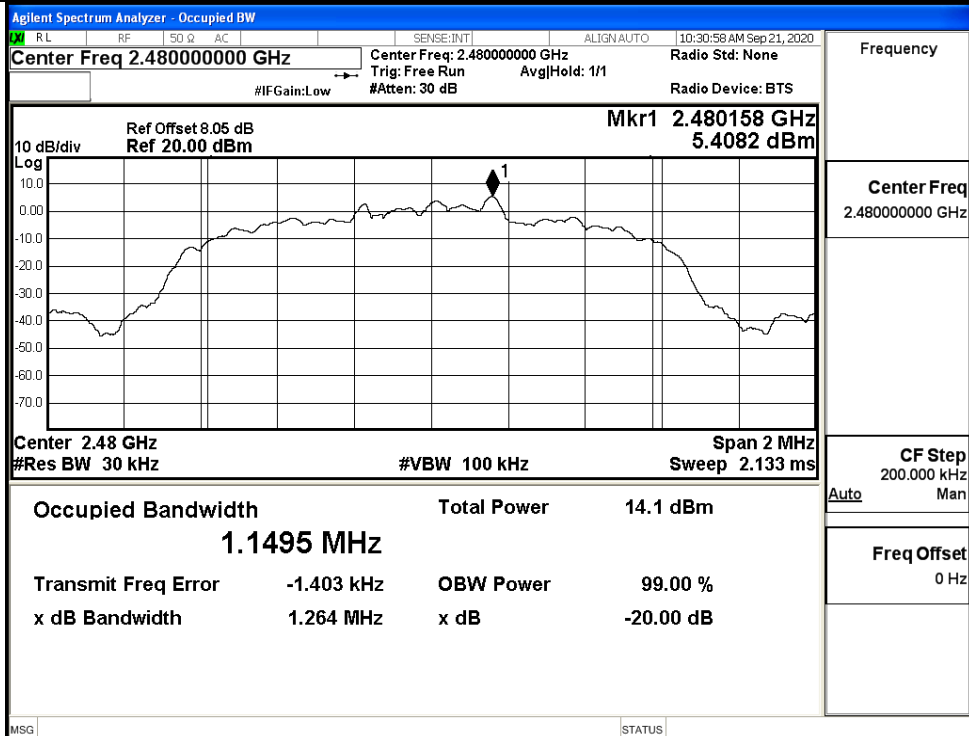
8DPSK/LCH



8DPSK/MCH



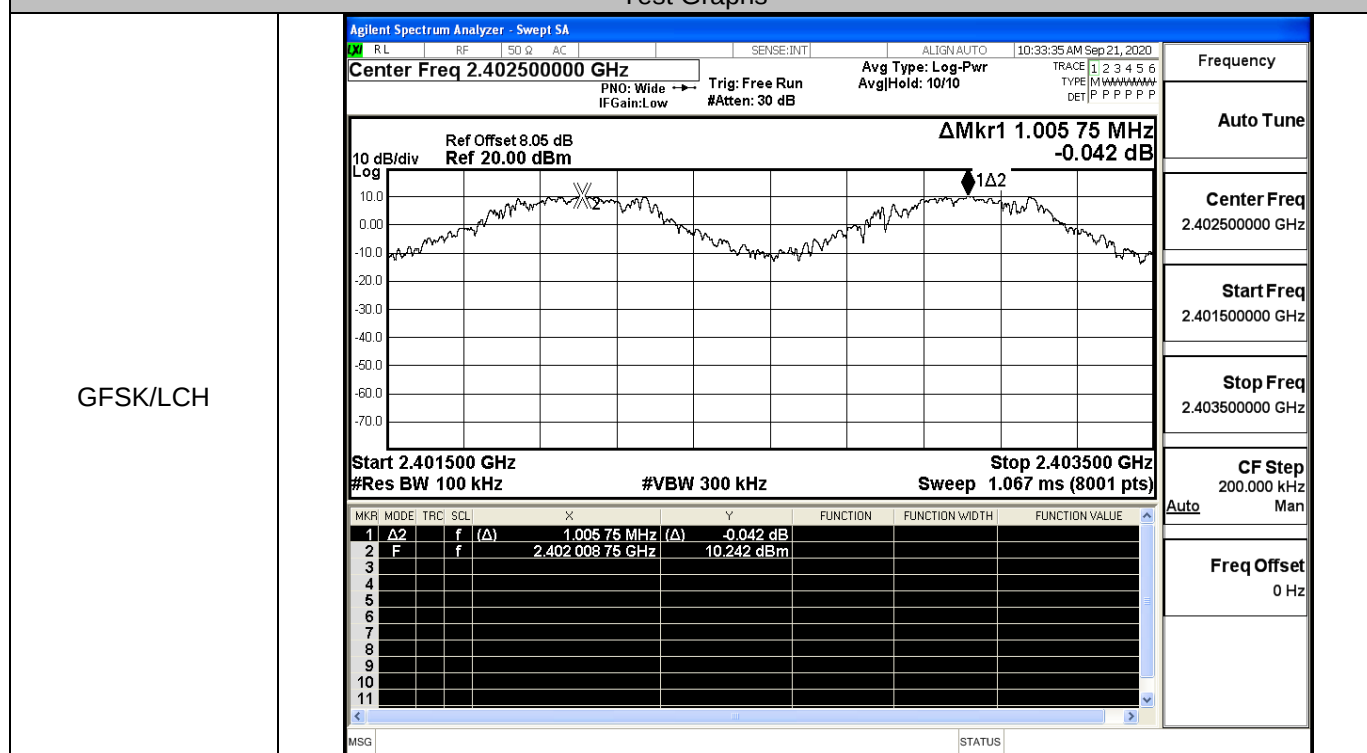
8DPSK/HCH



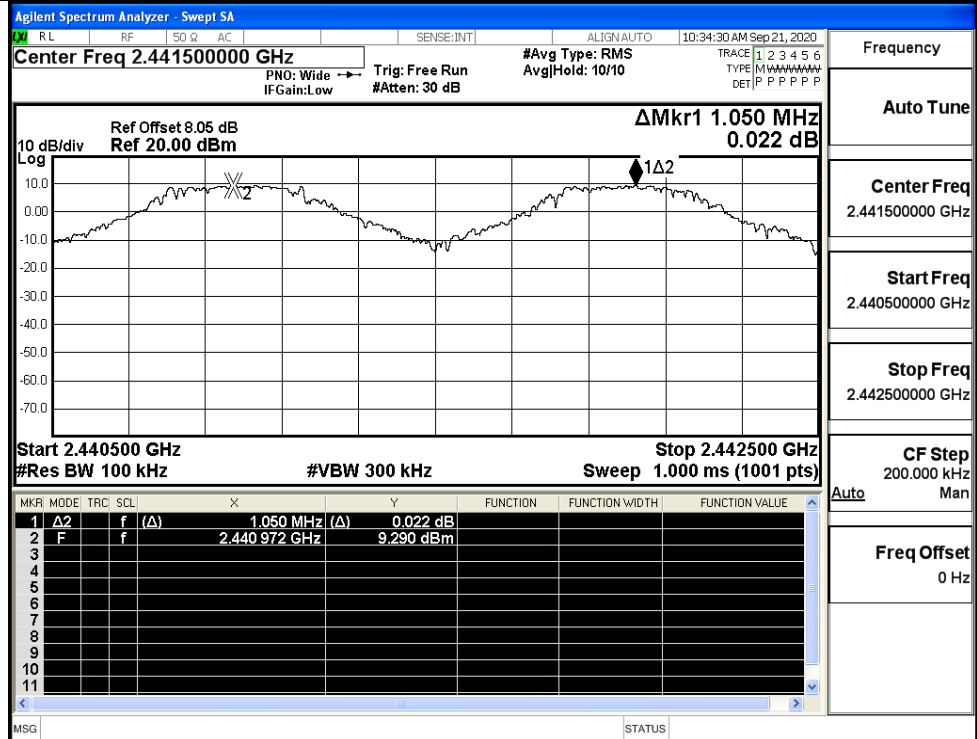
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.006	0.618	PASS
	MCH	1.050	0.618	PASS
	HCH	0.834	0.618	PASS
$\pi/4$ DQPSK	LCH	0.980	0.857	PASS
	MCH	0.858	0.857	PASS
	HCH	1.304	0.857	PASS
8DPSK	LCH	1.036	0.857	PASS
	MCH	0.998	0.857	PASS
	HCH	0.868	0.857	PASS

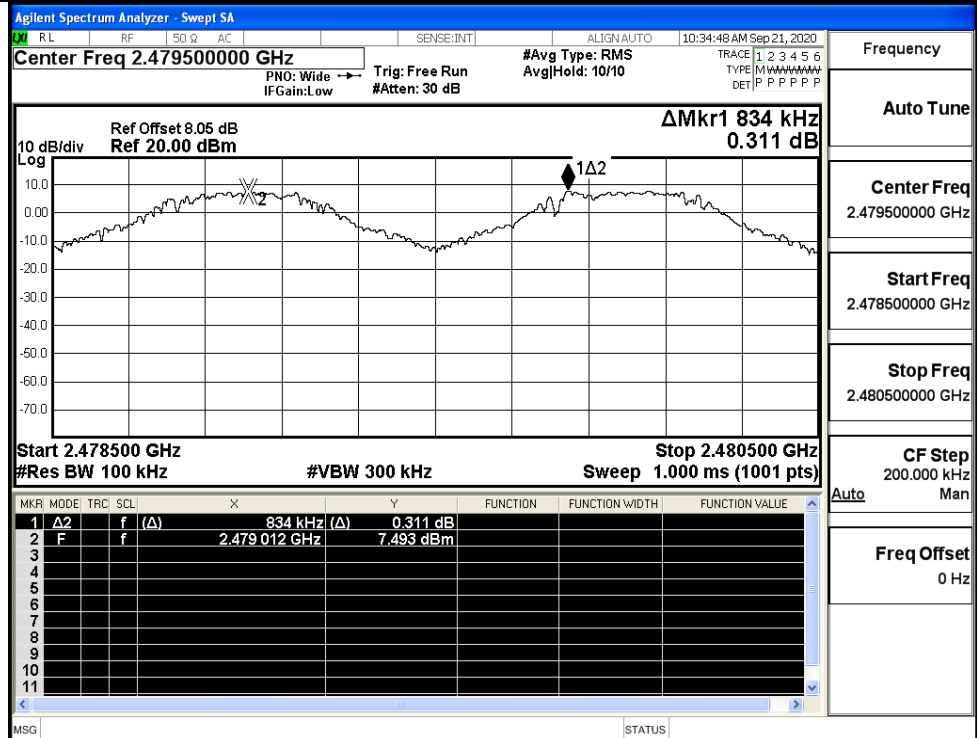
Test Graphs

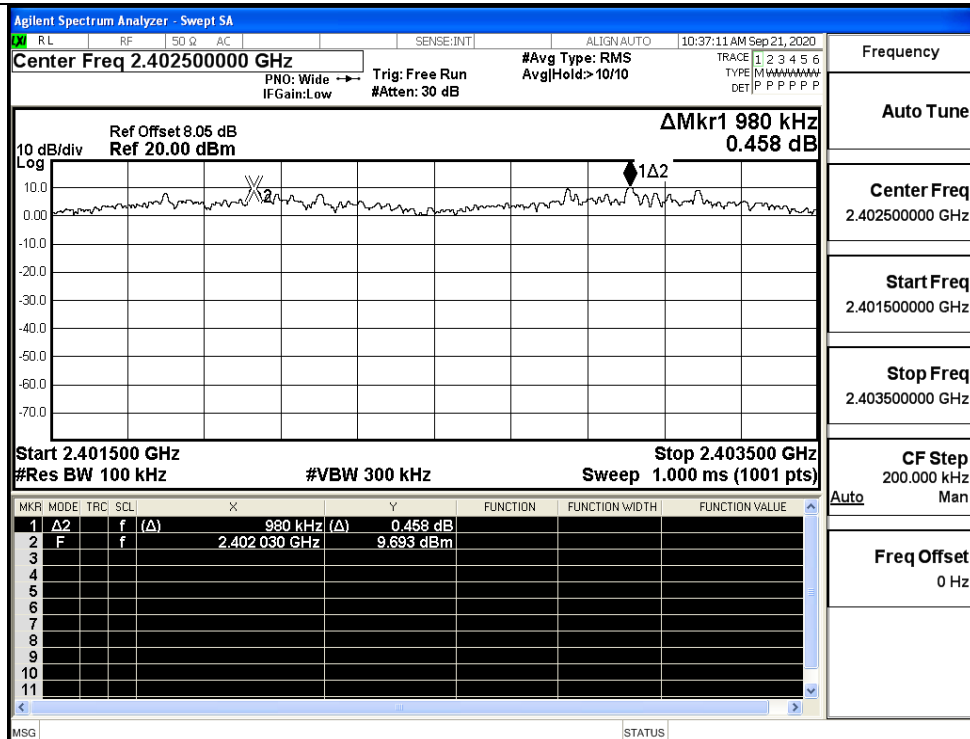


GFSK/MCH



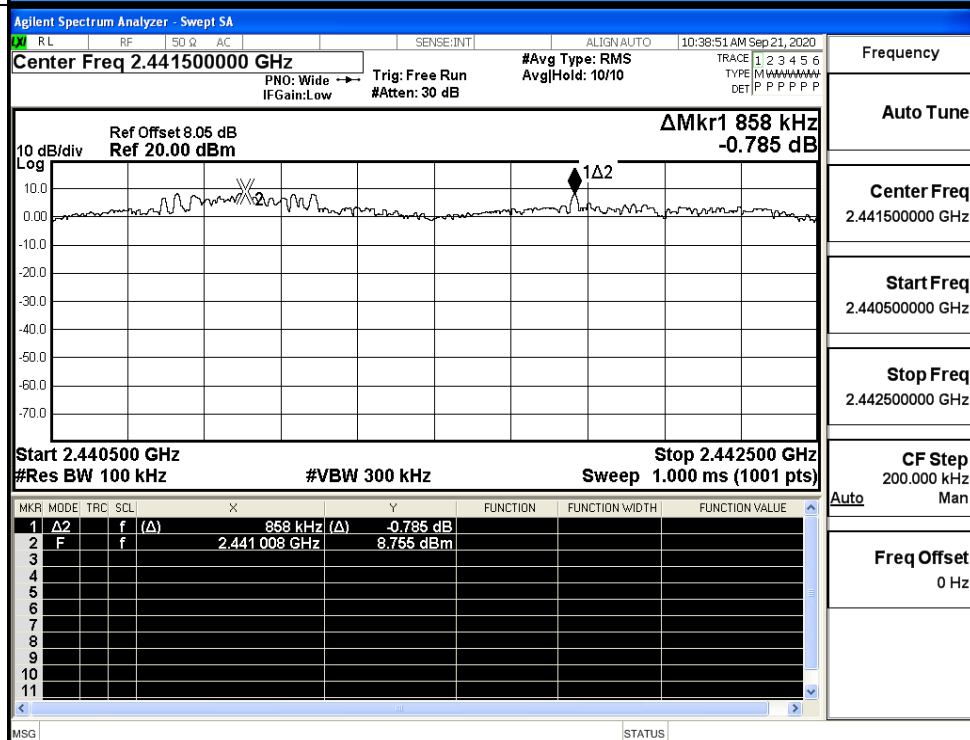
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

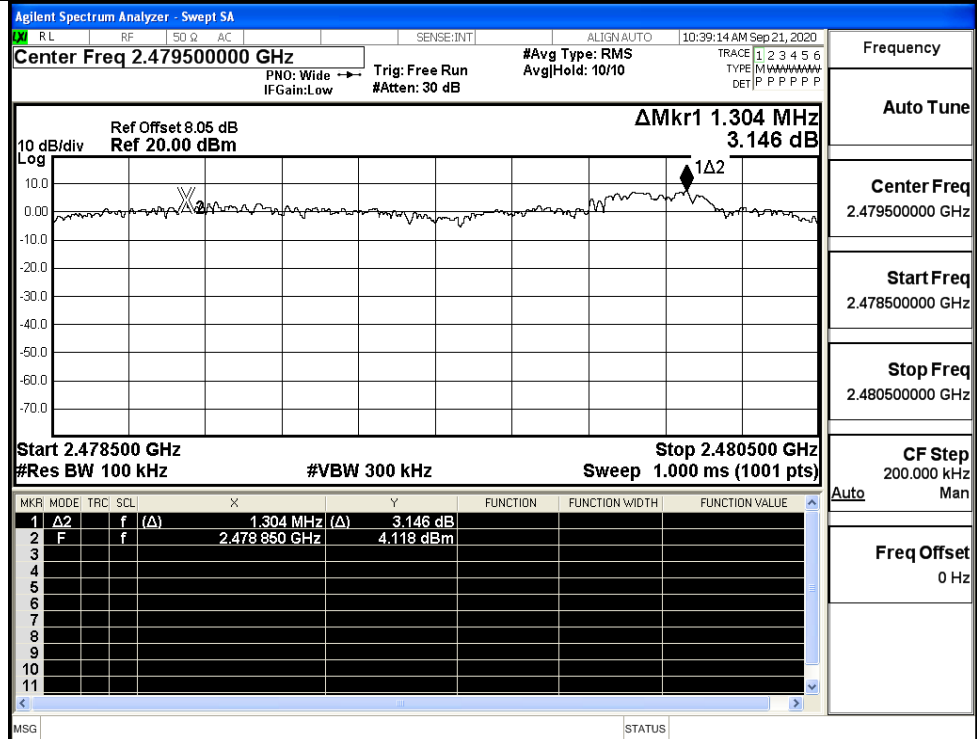
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

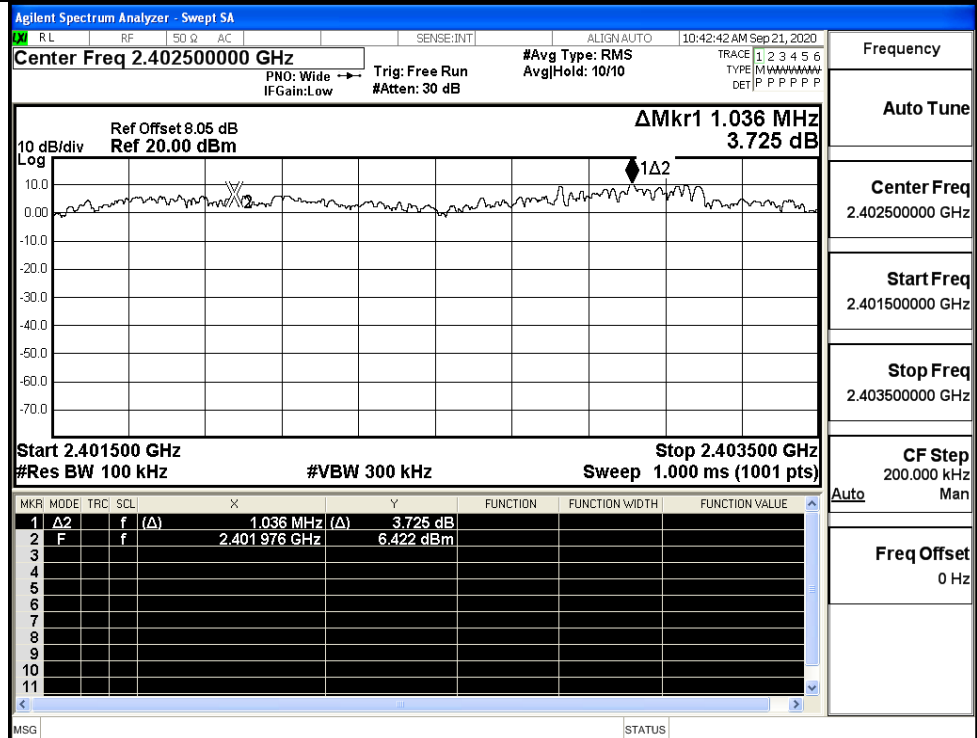
Frequency

Auto Tune

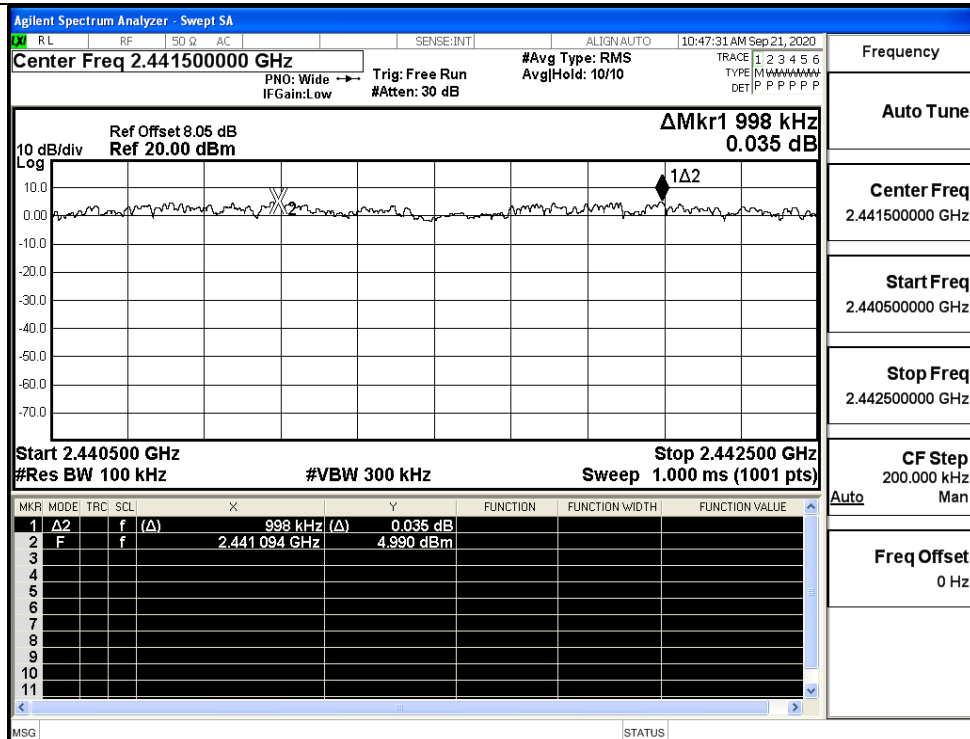
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

8DPSK/LCH



8DPSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

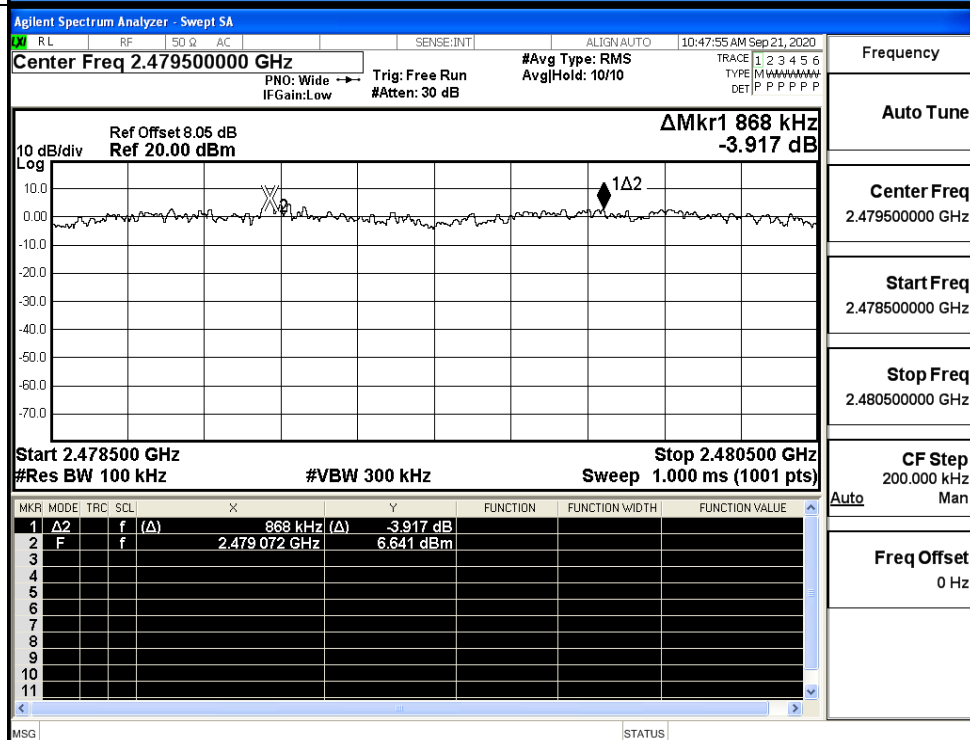
Start Freq
2.440500000 GHz

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

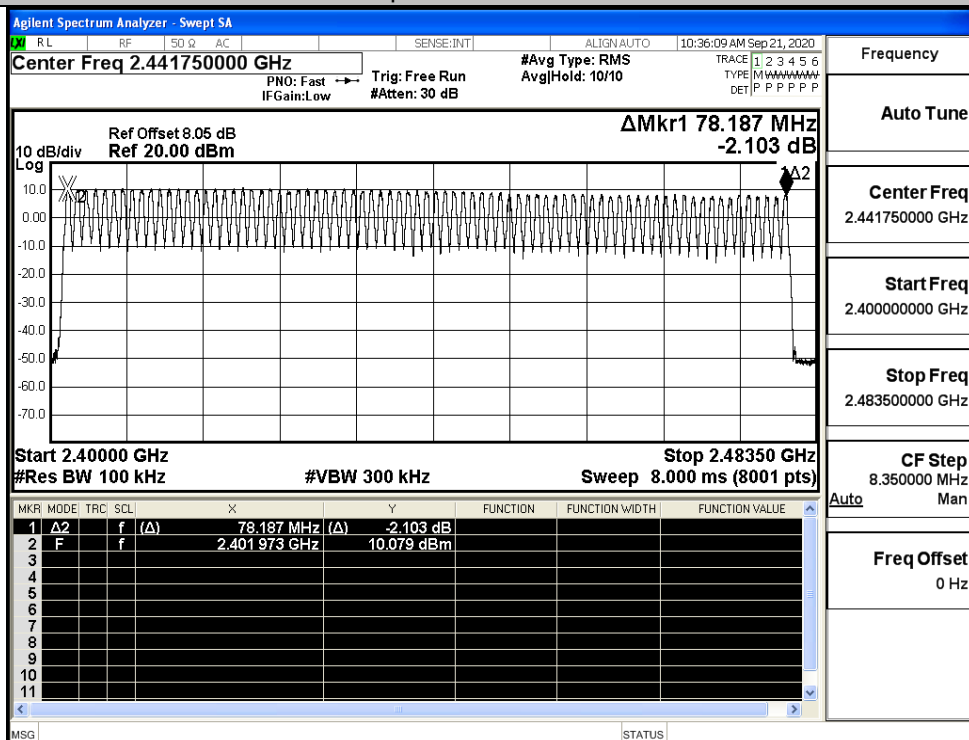
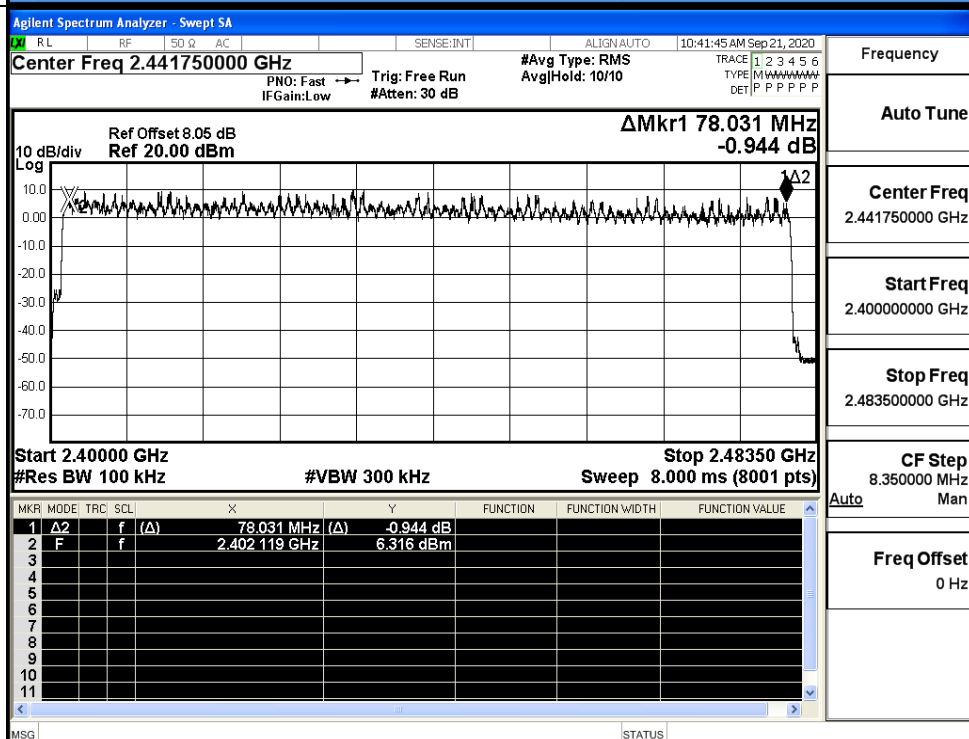
Freq Offset
0 Hz

A.4 Hopping Channel Number

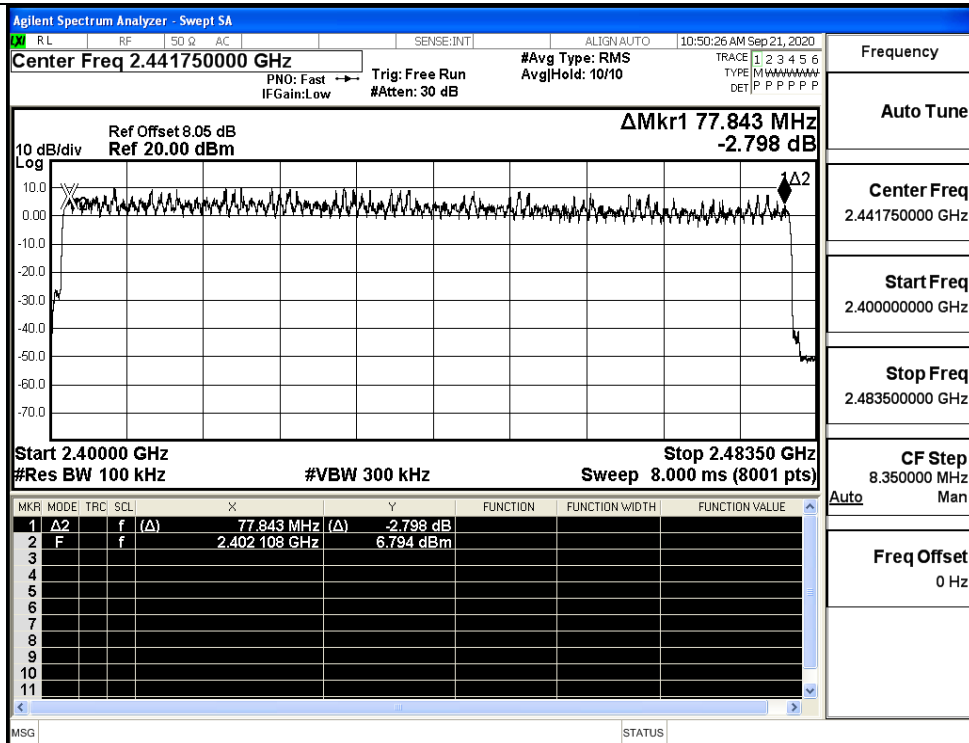
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

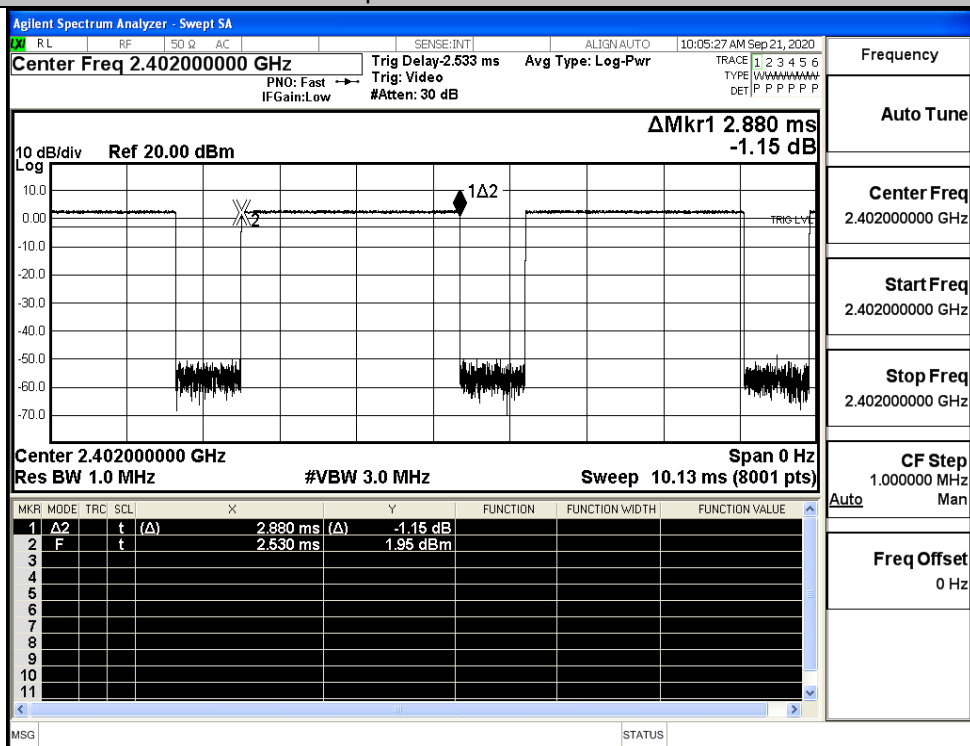


A.5 Dwell Time

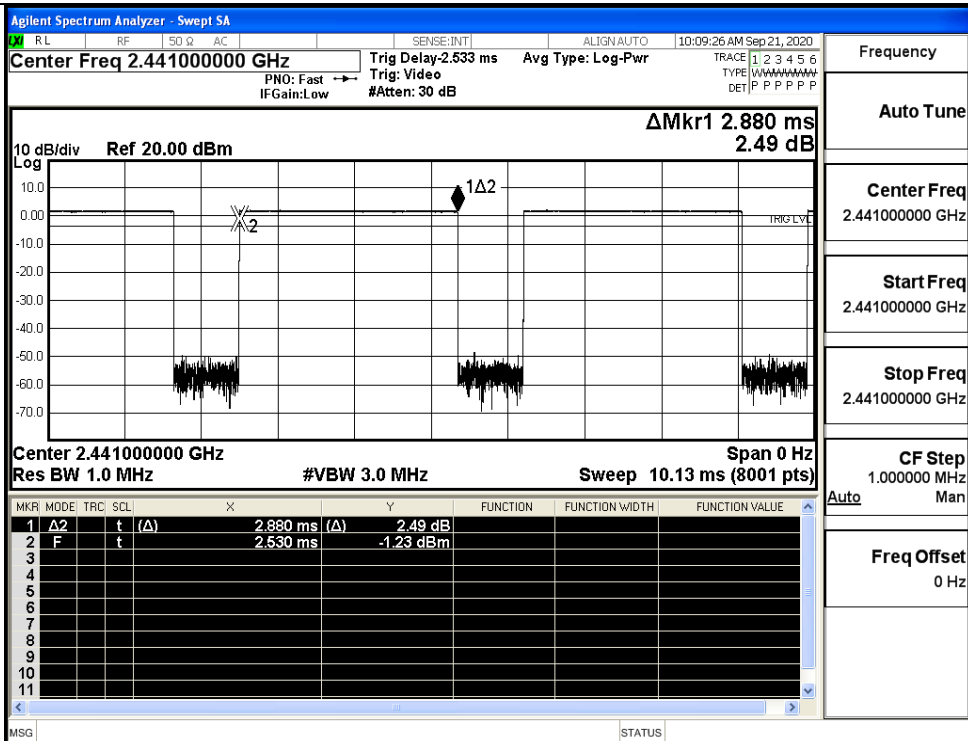
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

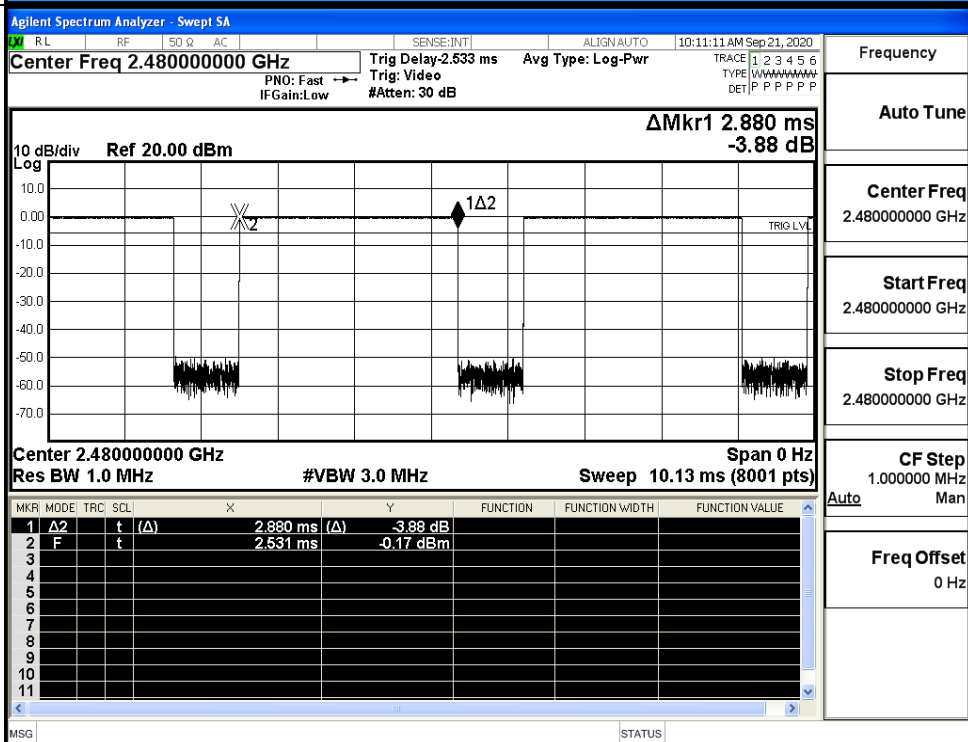
GFSK_DH5/LCH



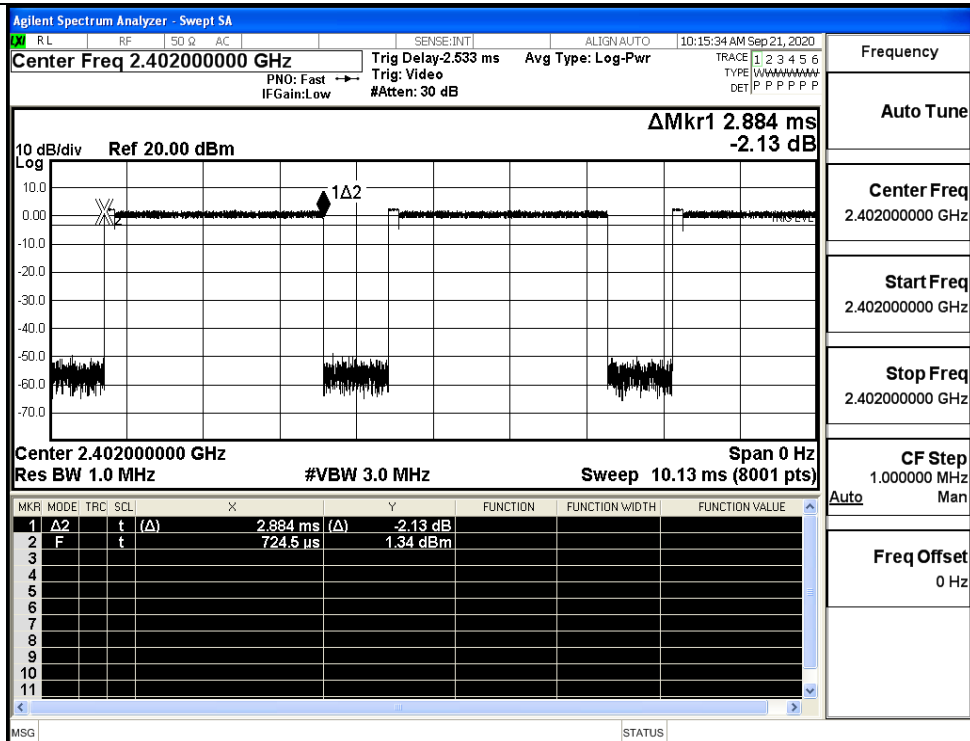
GFSK_DH5/MCH



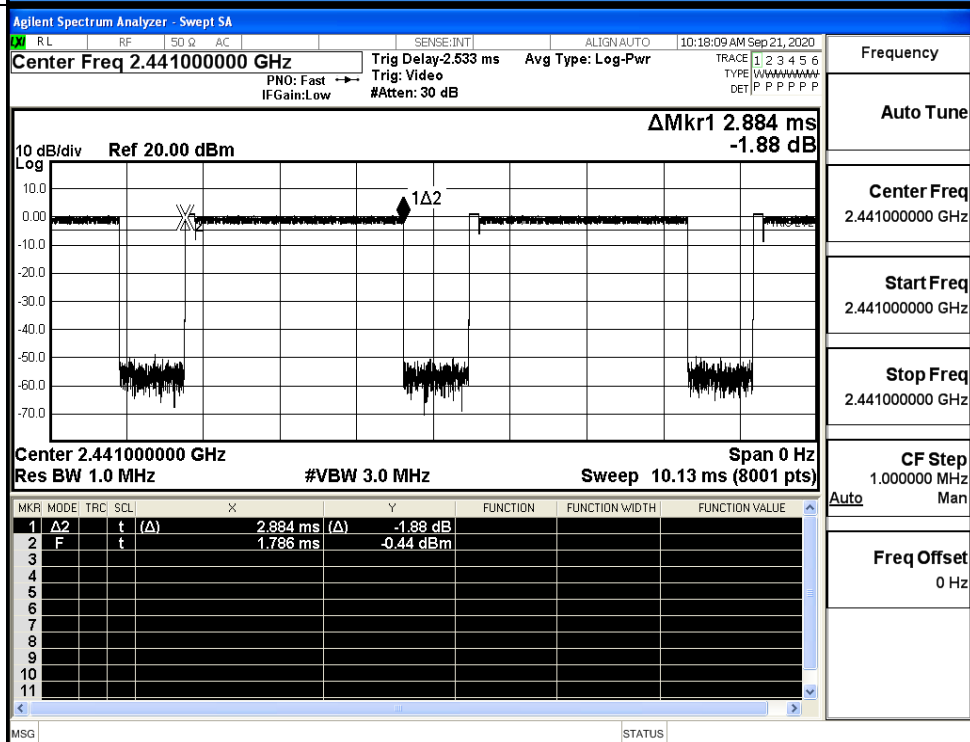
GFSK_DH5/HCH



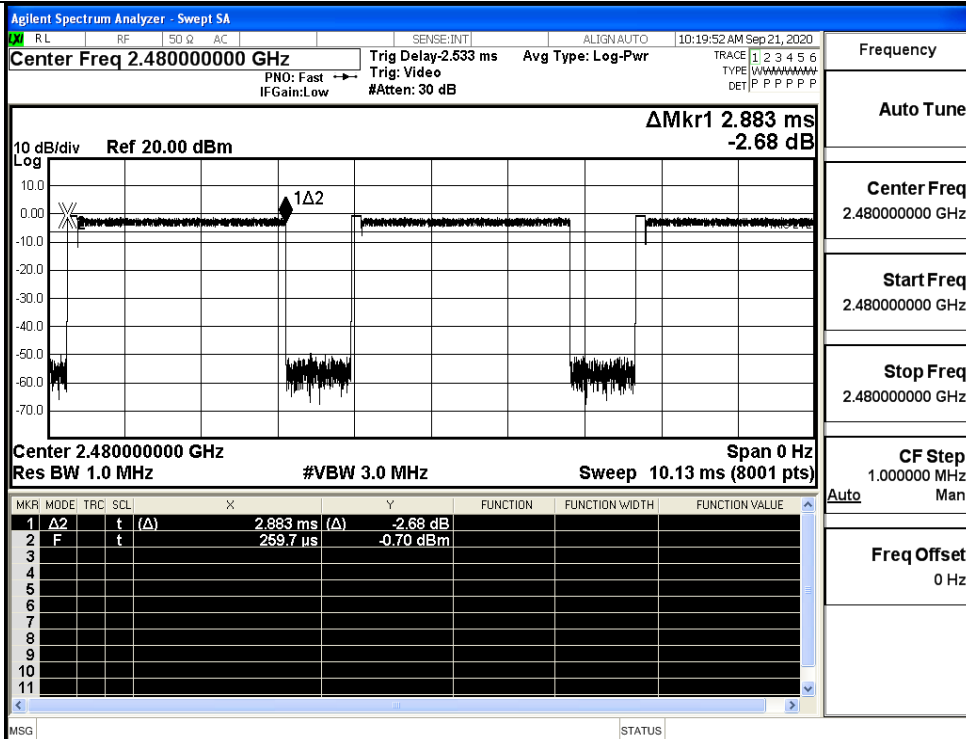
$\pi/4$ DQPSK
_2DH5/LCH



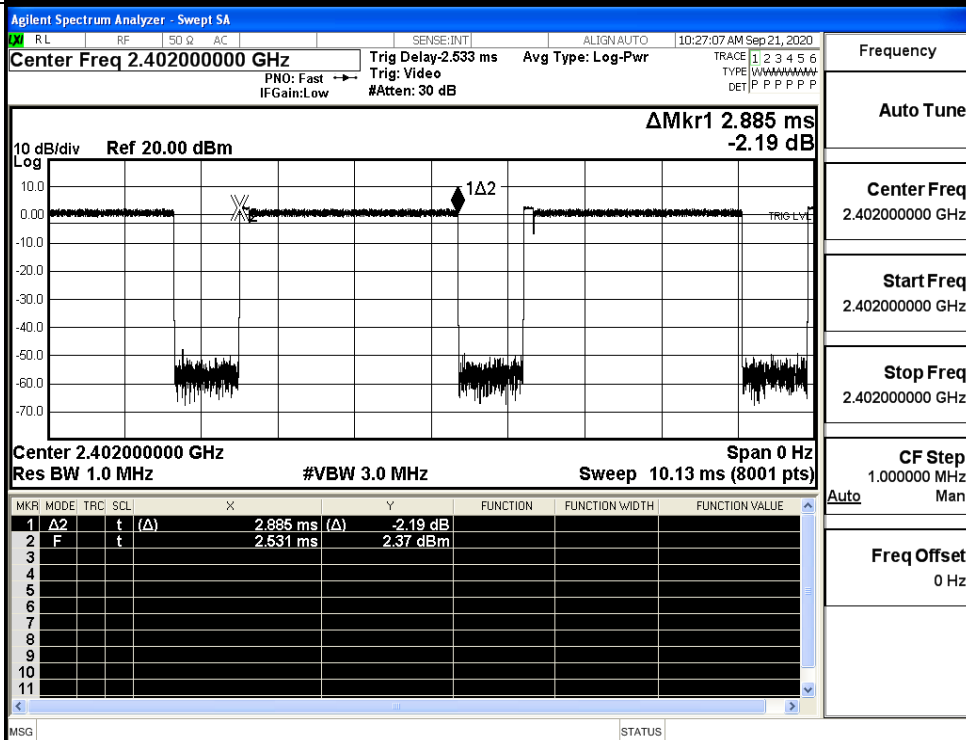
$\pi/4$ DQPSK
_2DH5/MCH



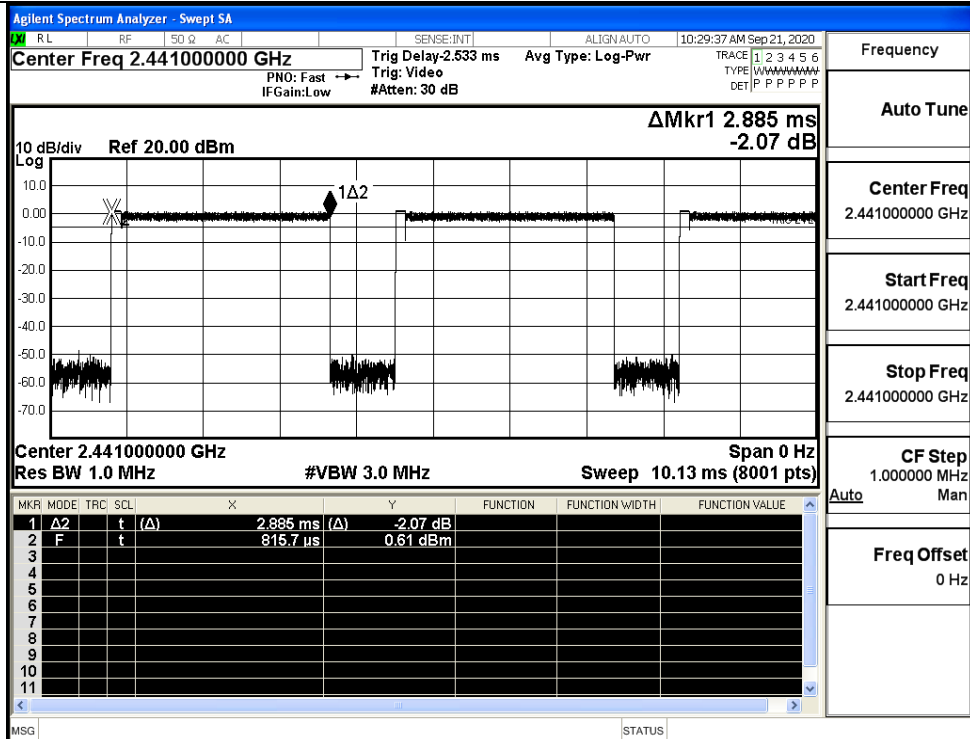
$\pi/4$ DQPSK
_2DH5/HCH



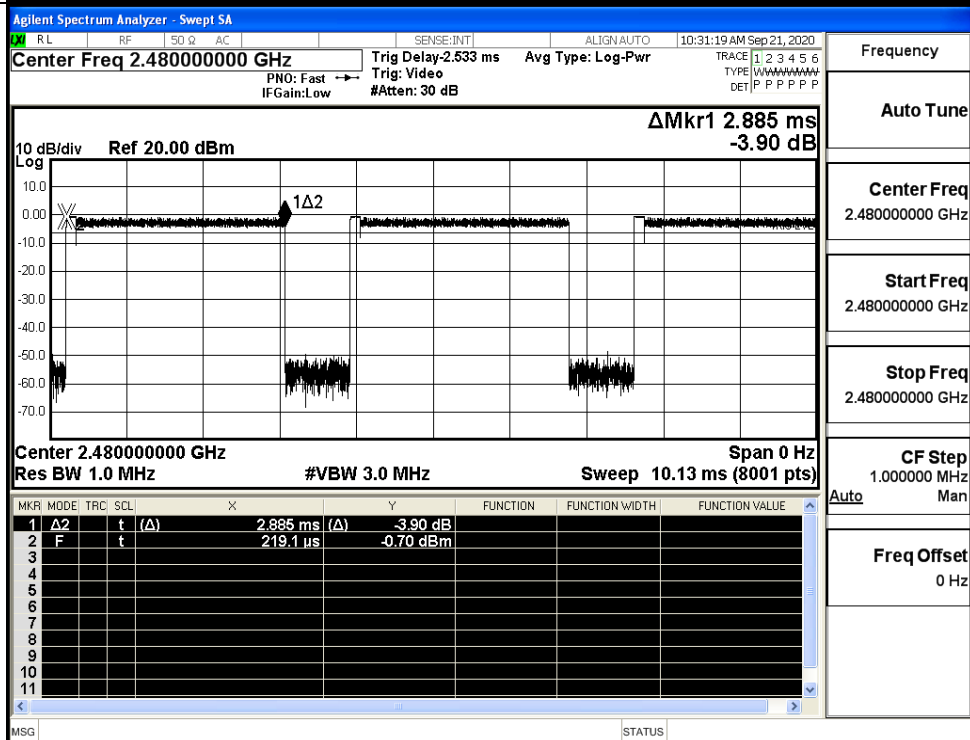
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



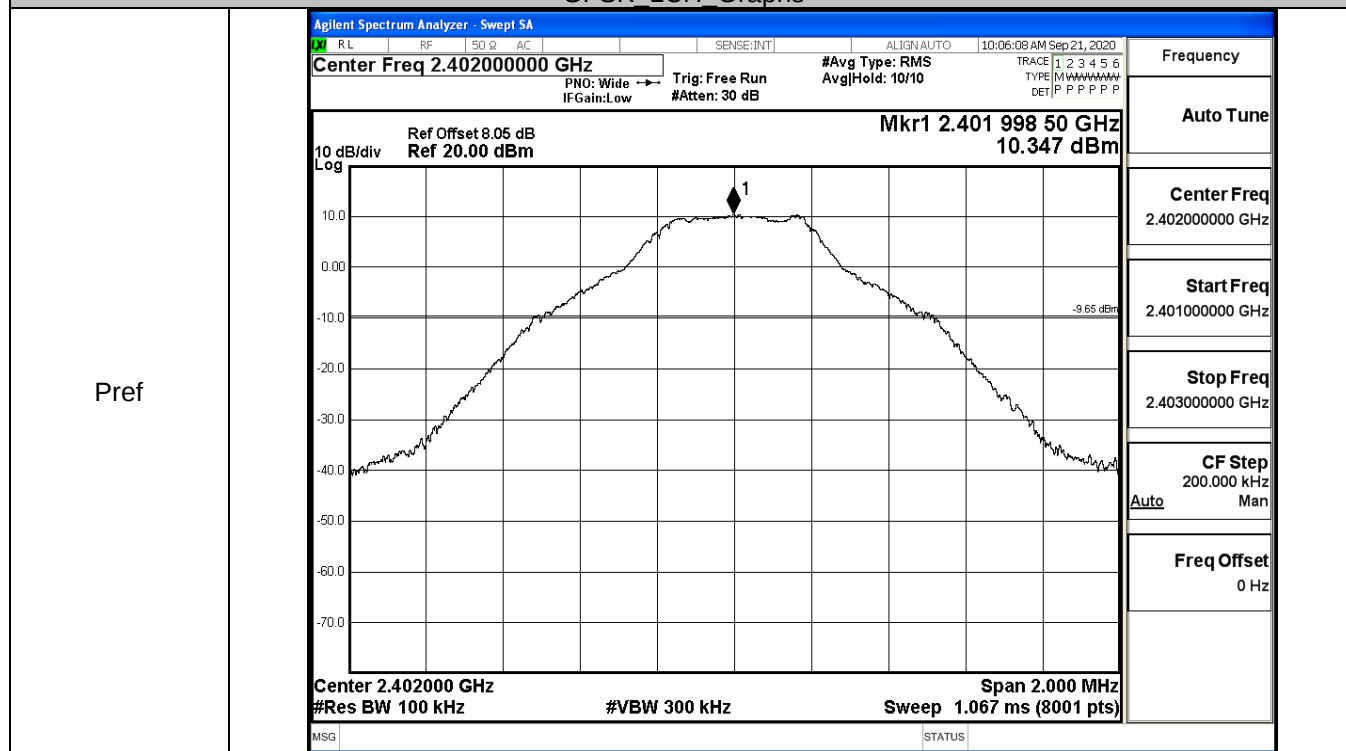
8DPSK_3DH5/HCH



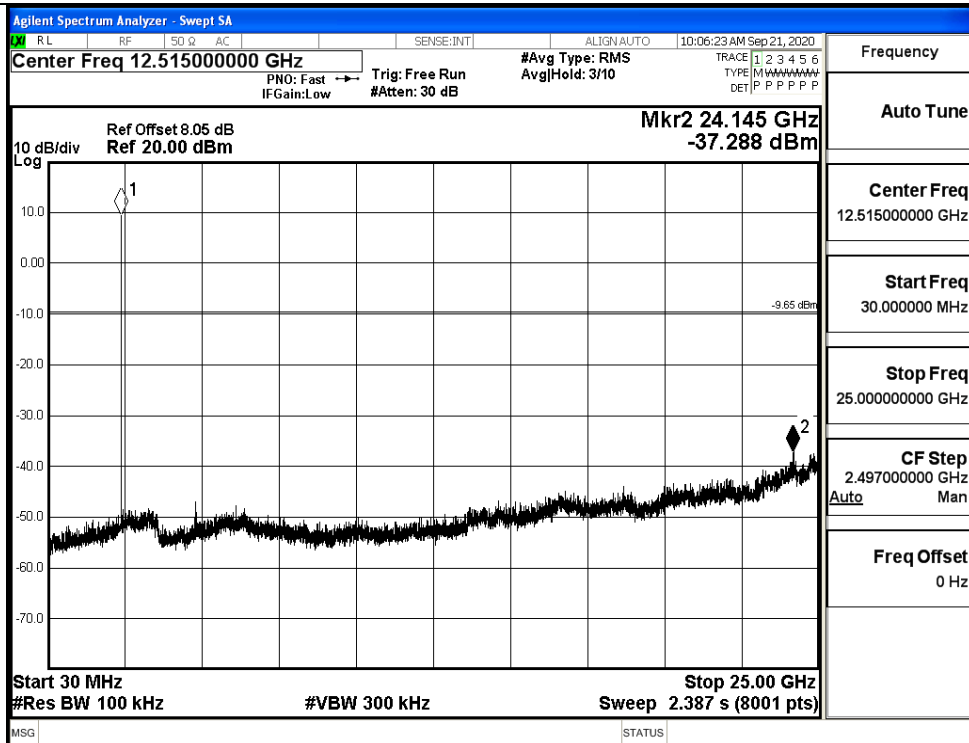
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	10.347	-37.288	-9.653	PASS
	MCH	9.658	-37.141	-10.342	PASS
	HCH	7.864	-37.561	-12.136	PASS
$\pi/4$ DQPSK	LCH	10.113	-37.974	-9.887	PASS
	MCH	8.999	-37.888	-11.001	PASS
	HCH	7.314	-37.249	-12.686	PASS
8DPSK	LCH	9.914	-37.265	-10.086	PASS
	MCH	8.972	-37.798	-11.028	PASS
	HCH	7.317	-37.582	-12.683	PASS

GFSK LCH Graphs

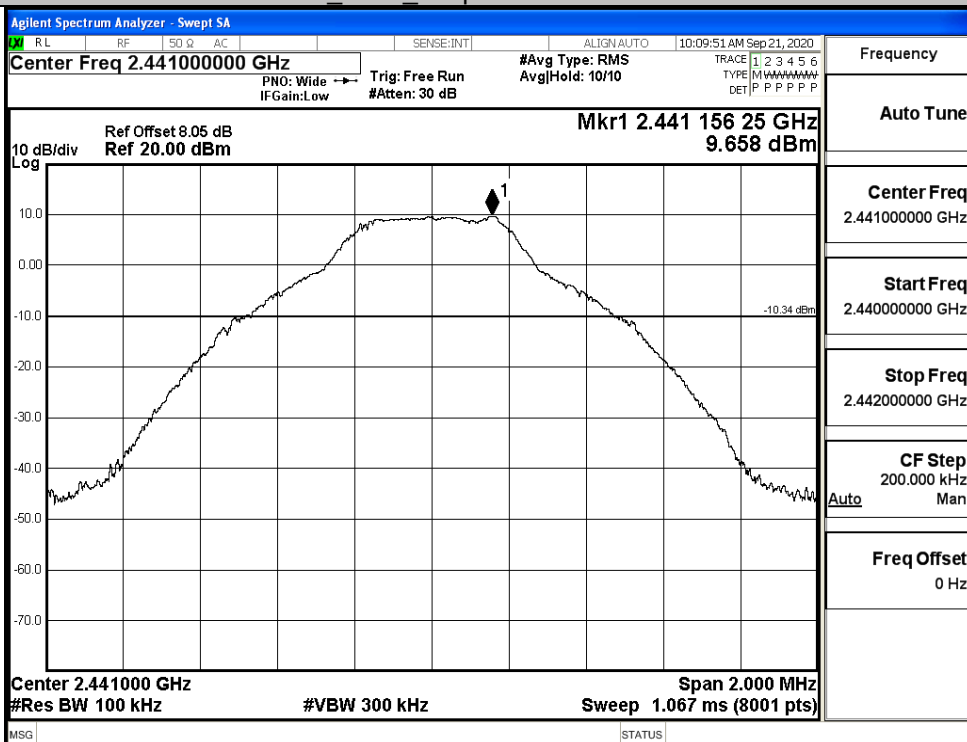


Puw

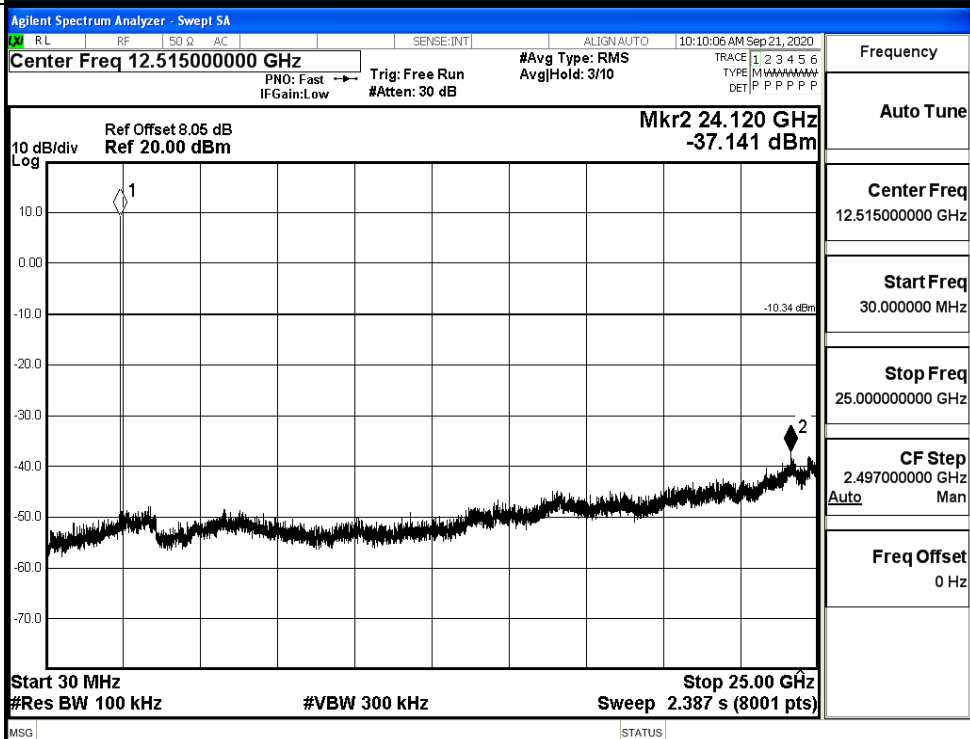


GFSK_MCH_Graphs

Pref

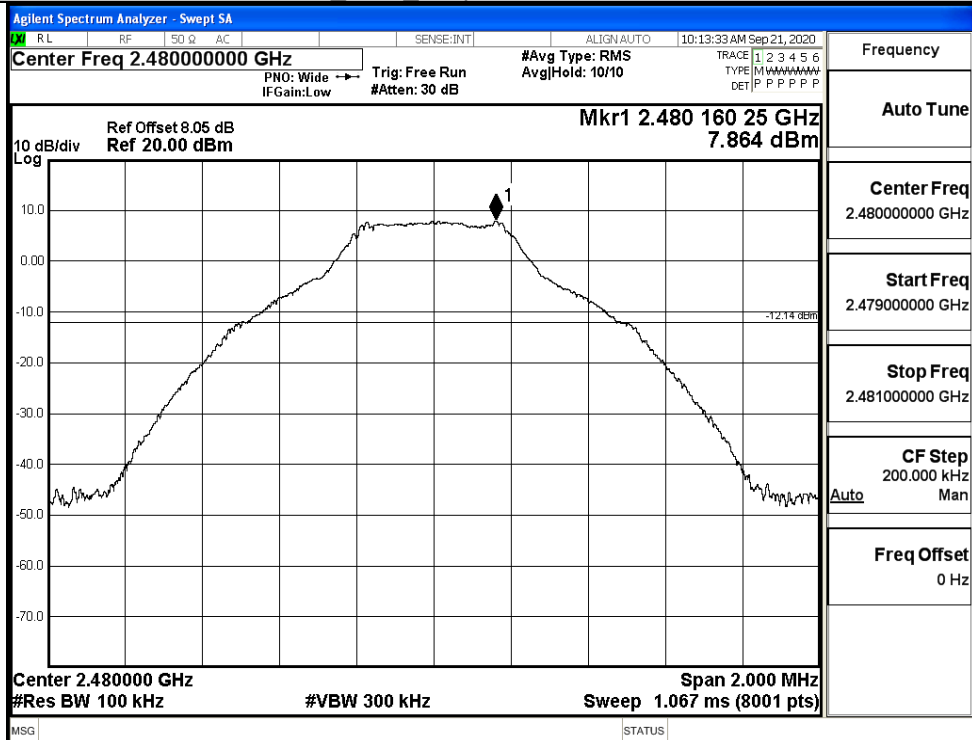


Puw

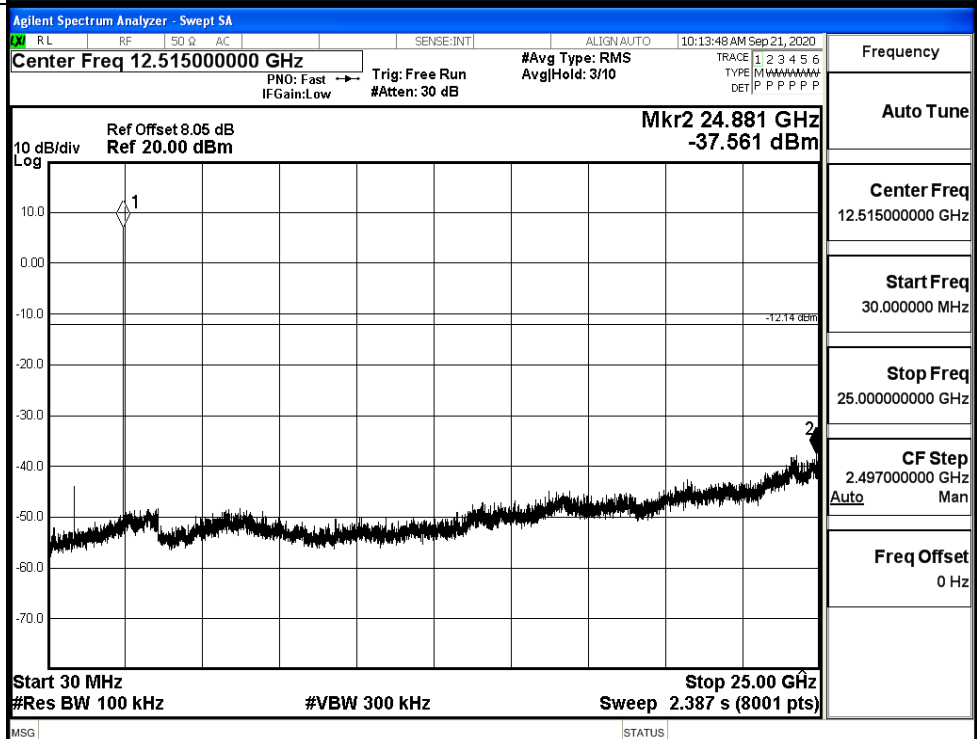


GFSK HCH_Graphs

Pref

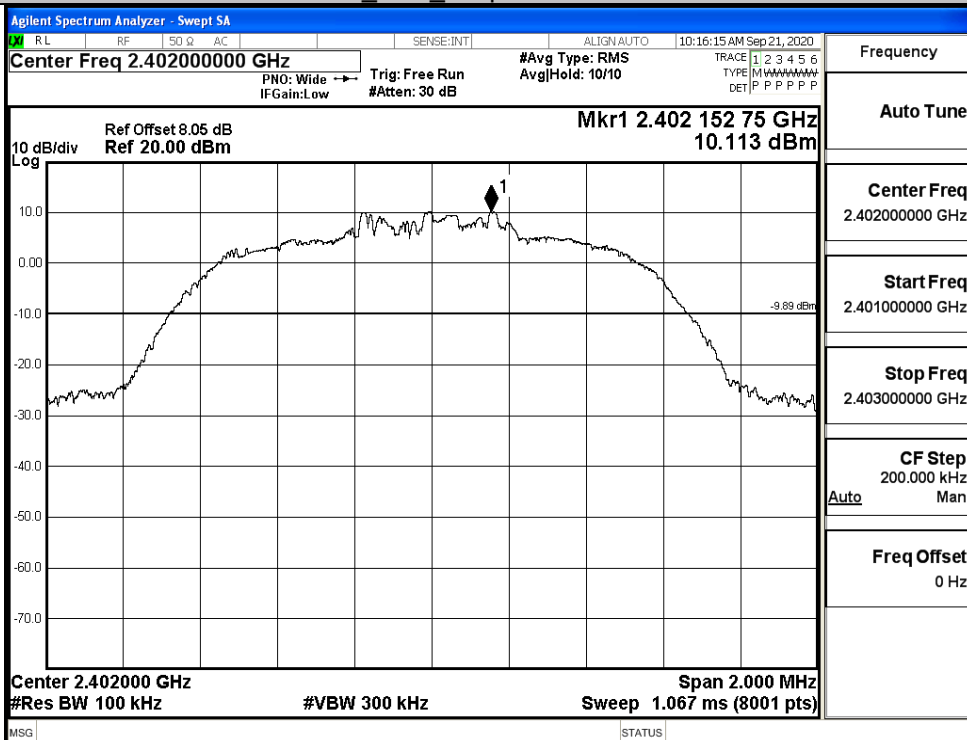


Puw

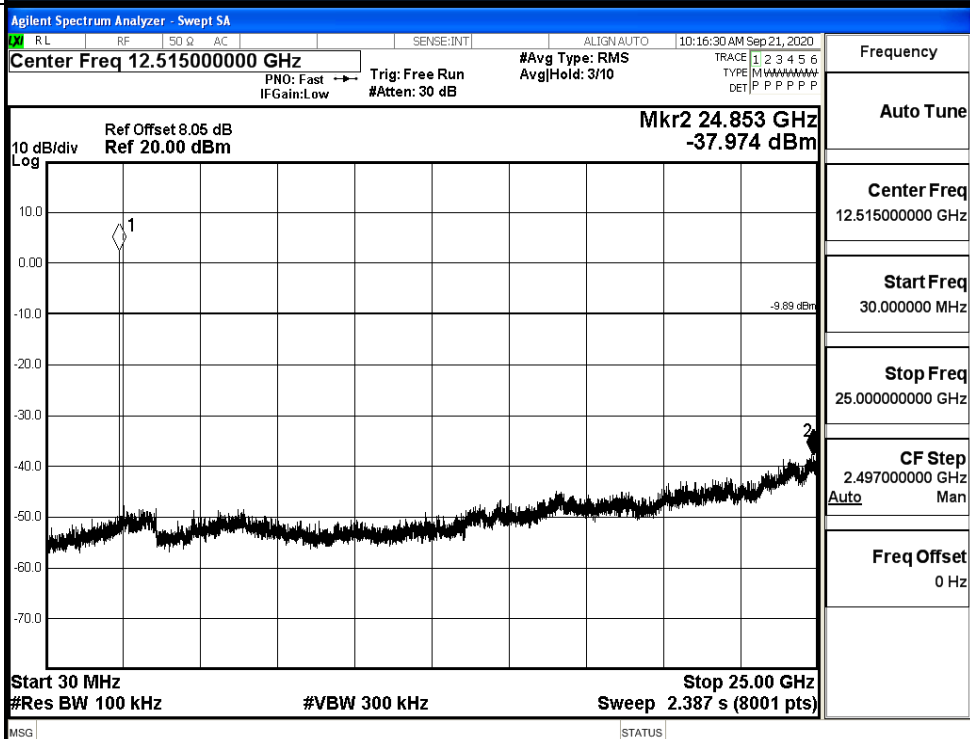


$\pi/4$ DQPSK_LCH_Graphs

Pref

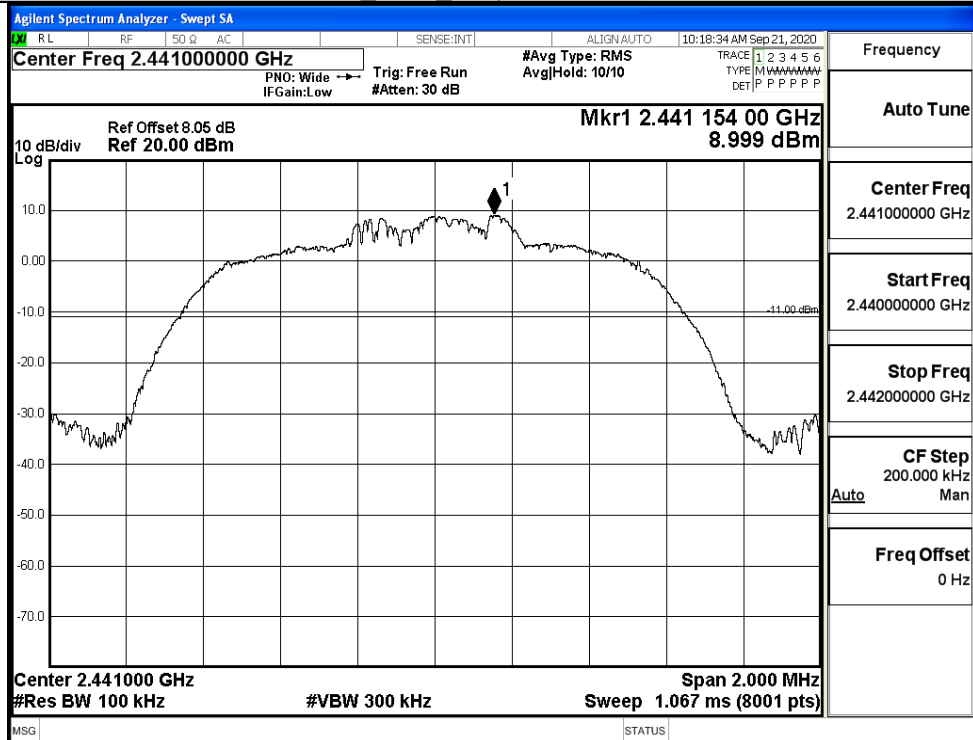


Puw

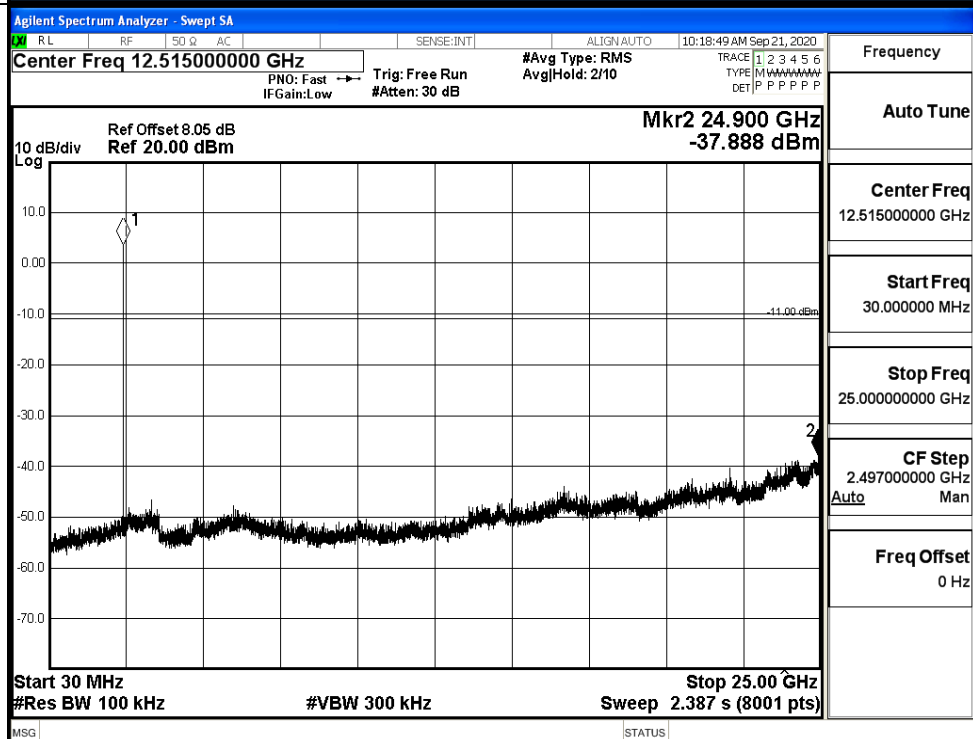


π /4DQPSK_MCH_Graphs

Pref

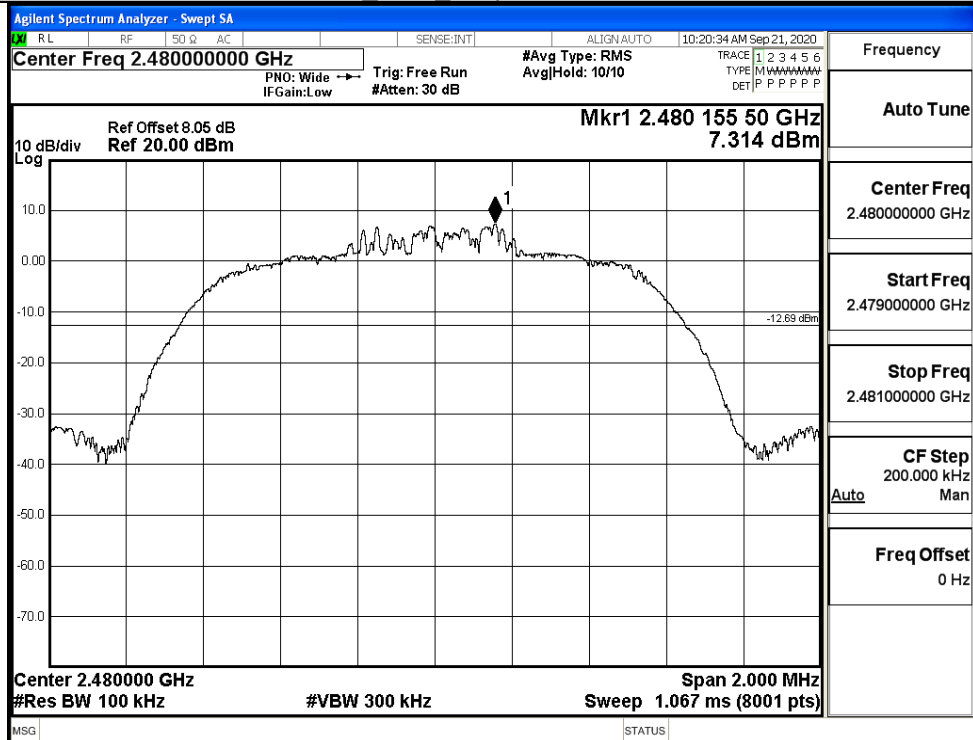


Puw

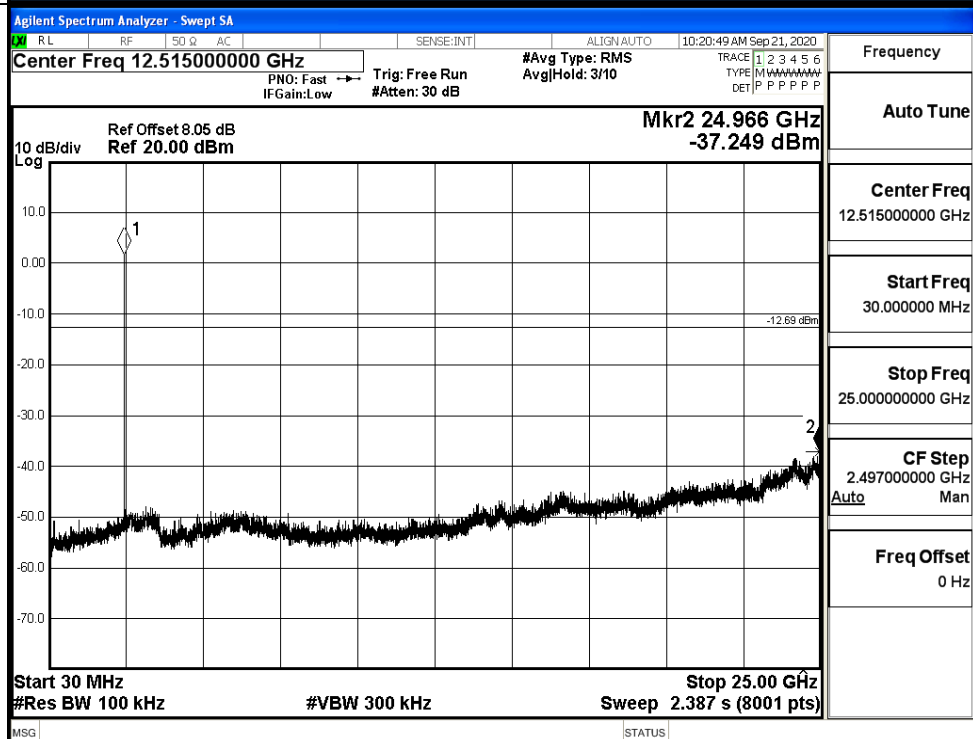


π /4DQPSK_HCH_Graphs

Pref

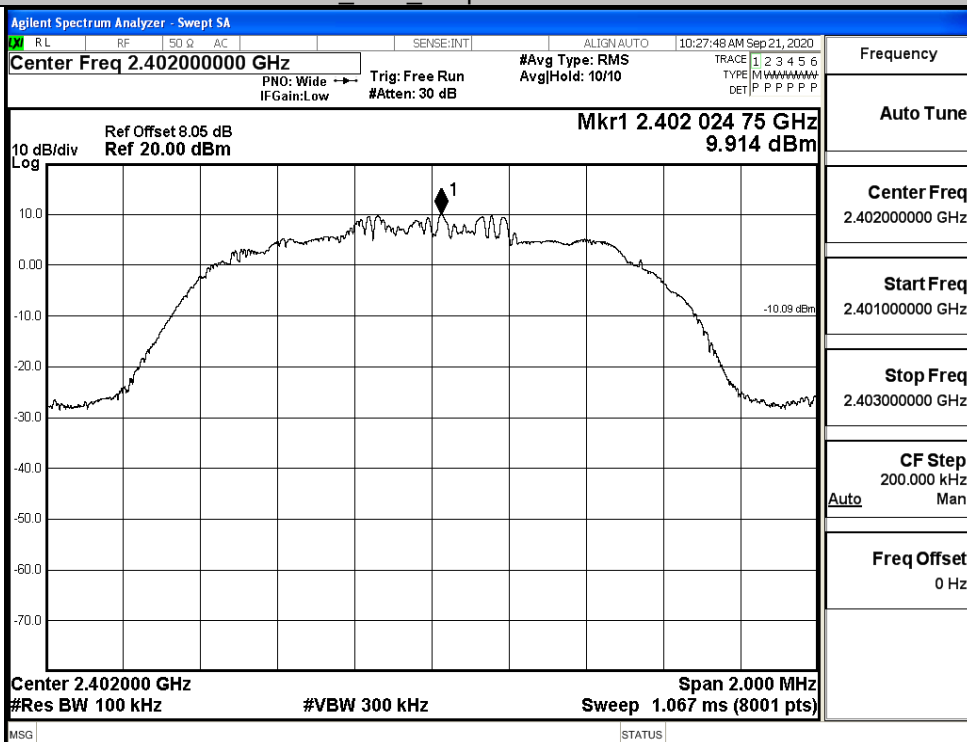


Puw

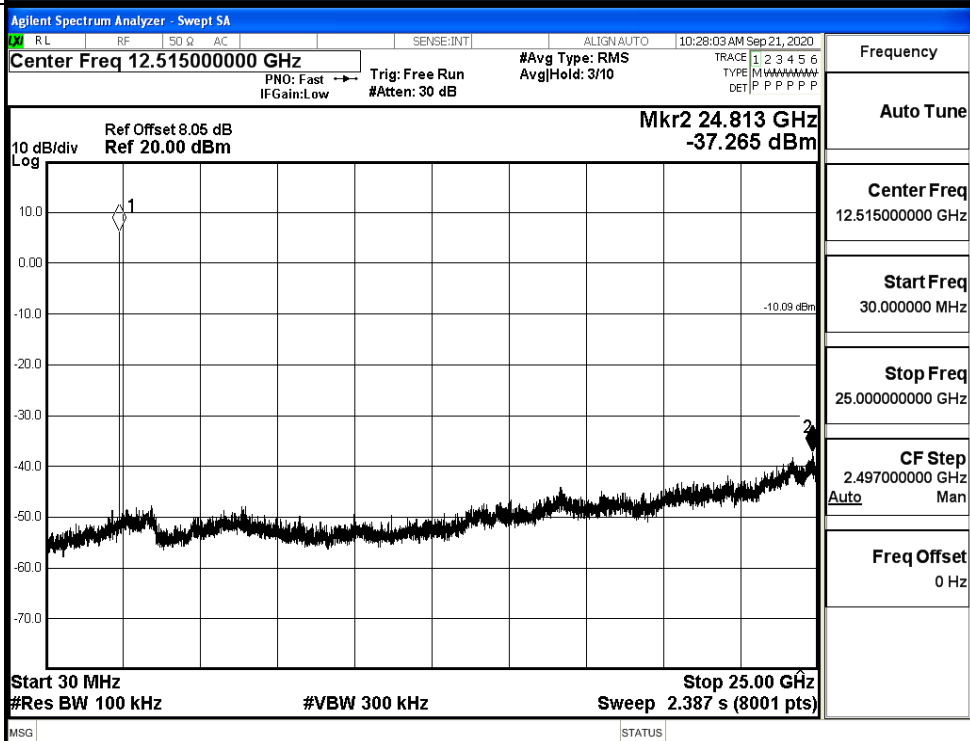


8DPSK_LCH_Graphs

Pref

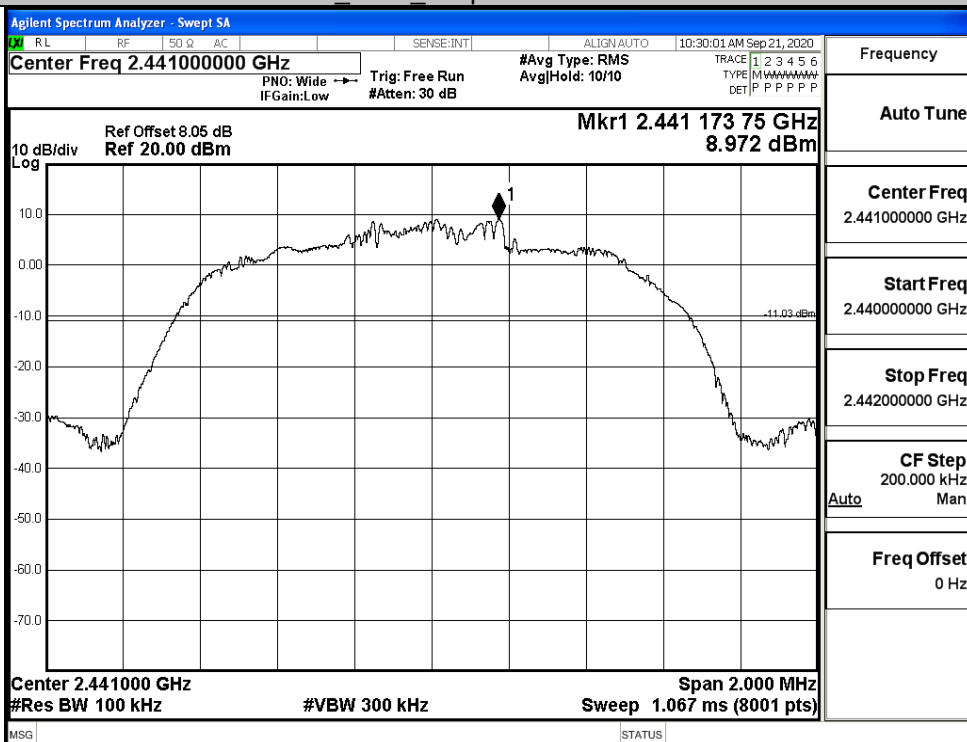


Puw

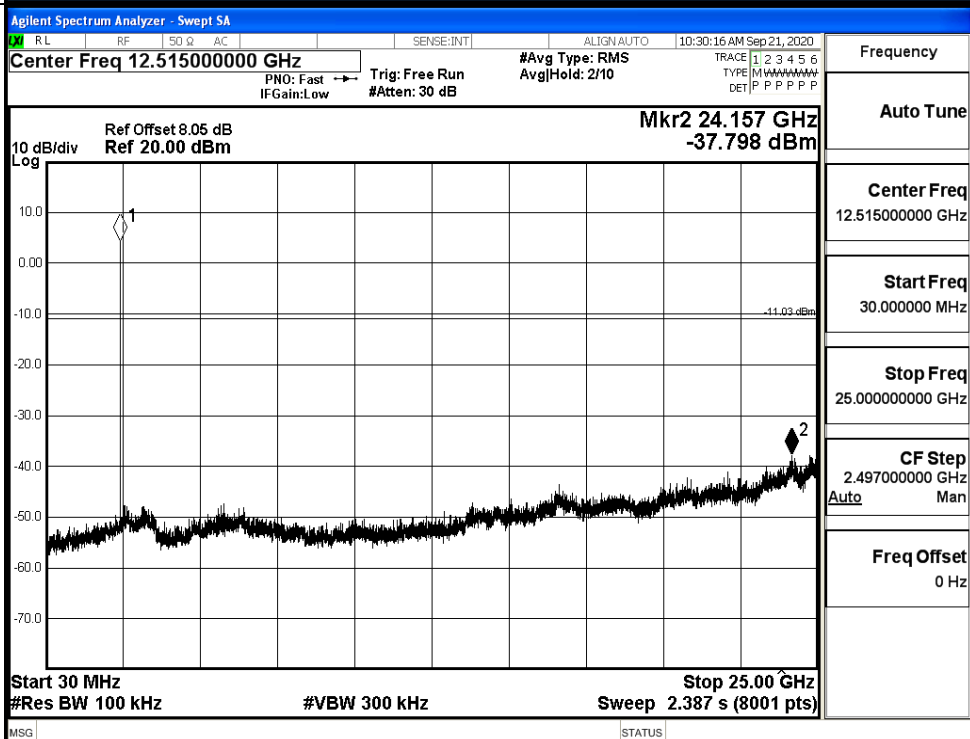


8DPSK_MCH_Graphs

Pref

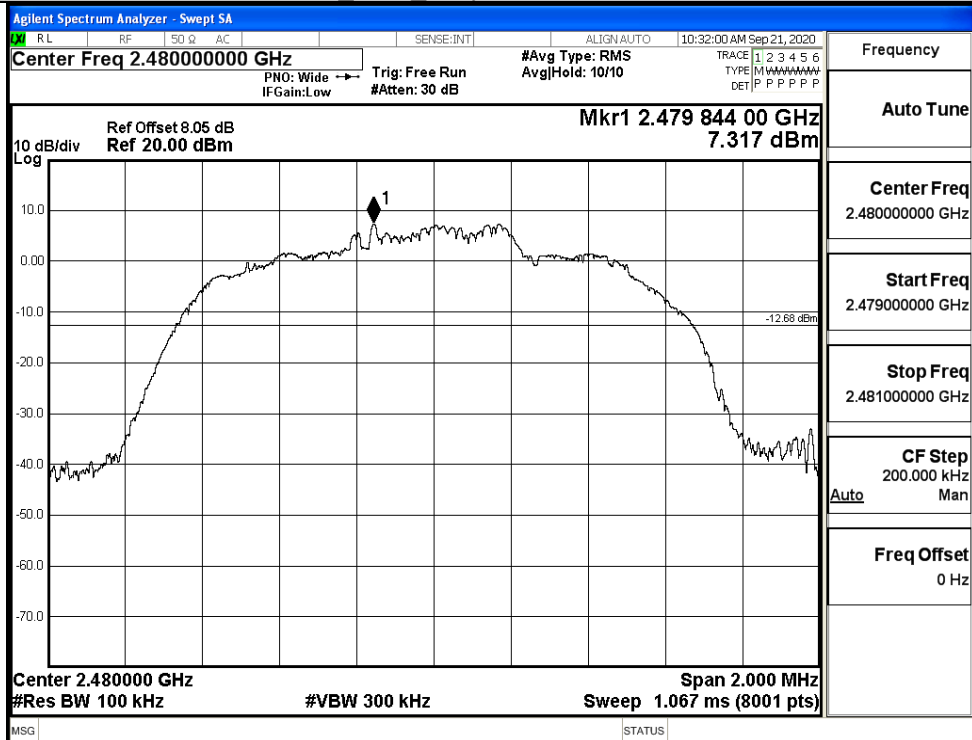


Puw

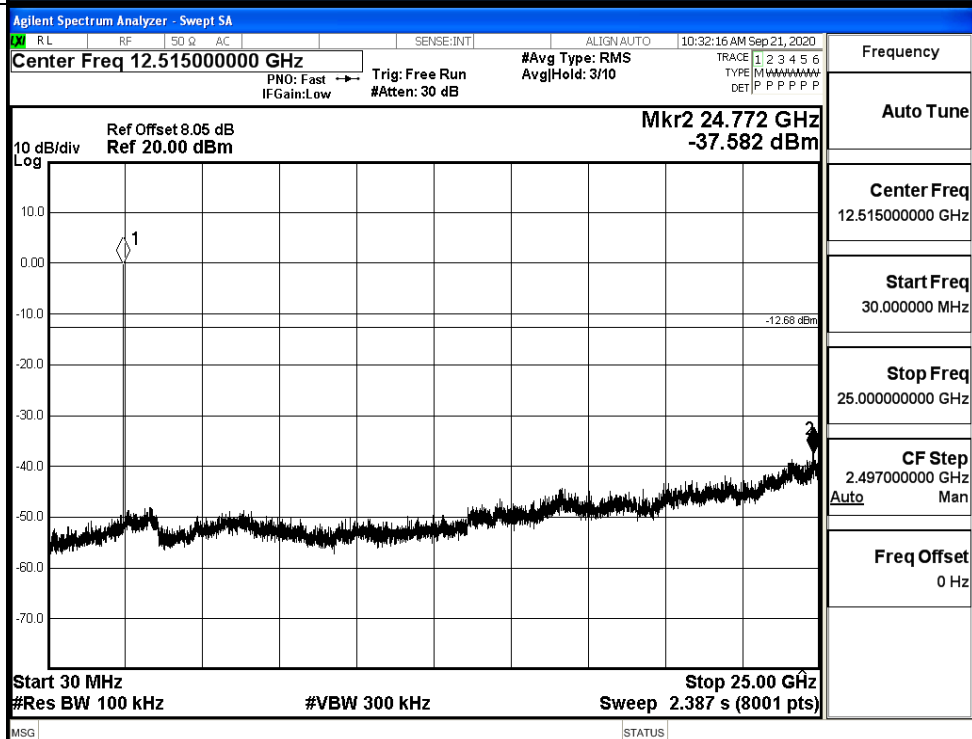


8DPSK_HCH_Graphs

Pref



Puw

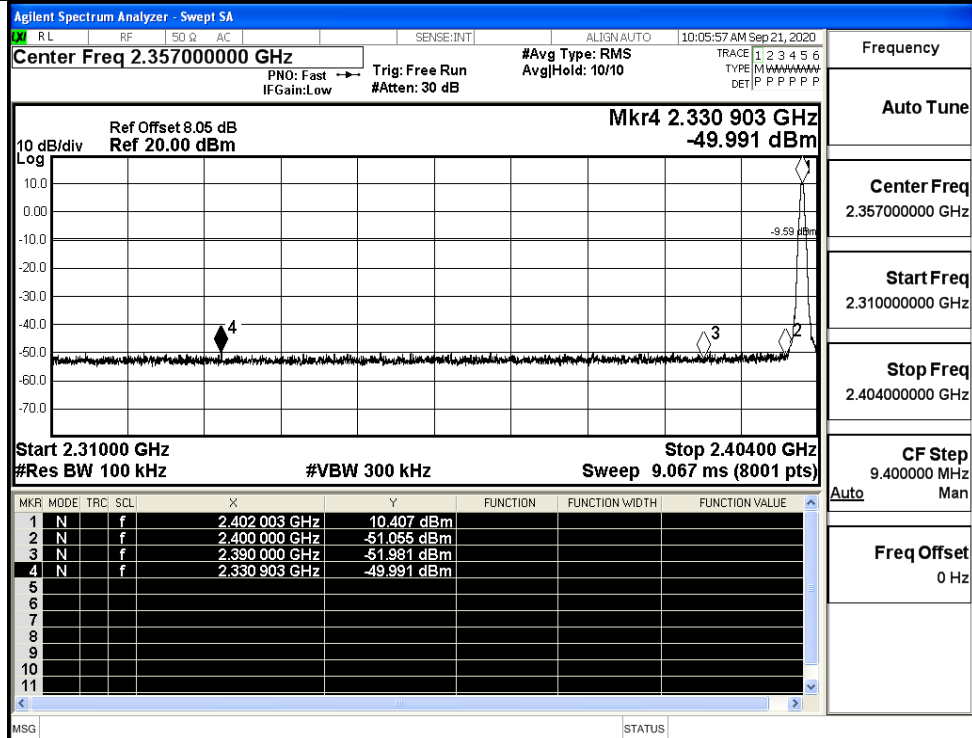


A.7 Band-edge for RF Conducted Emissions

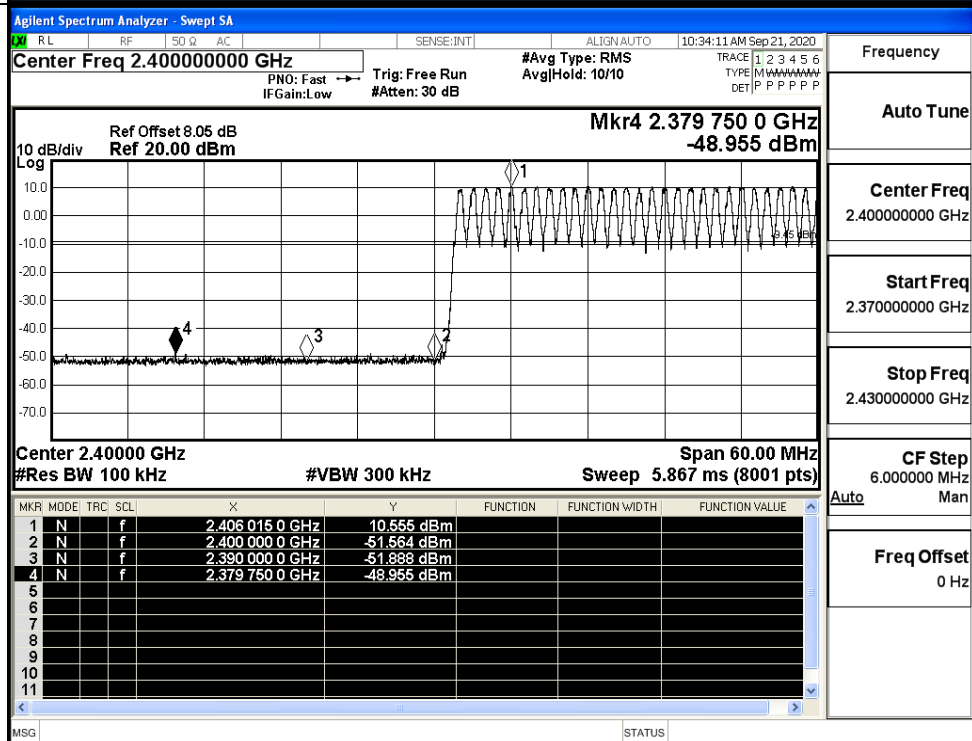
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	10.407	Off	-49.991	-9.59	PASS
			10.555	On	-48.955	-9.45	PASS
	HCH	2480	8.198	Off	-48.670	-11.8	PASS
			8.283	On	-48.206	-11.72	PASS
$\pi/4$ DQPSK	LCH	2402	10.256	Off	-48.729	-9.74	PASS
			10.437	On	-48.355	-9.56	PASS
	HCH	2480	6.931	Off	-48.989	-13.07	PASS
			7.960	On	-48.404	-12.04	PASS
8DPSK	LCH	2402	10.487	Off	-47.723	-9.51	PASS
			10.415	On	-48.985	-9.59	PASS
	HCH	2480	7.298	Off	-49.325	-12.7	PASS
			8.277	On	-48.585	-11.72	PASS

Test Graphs

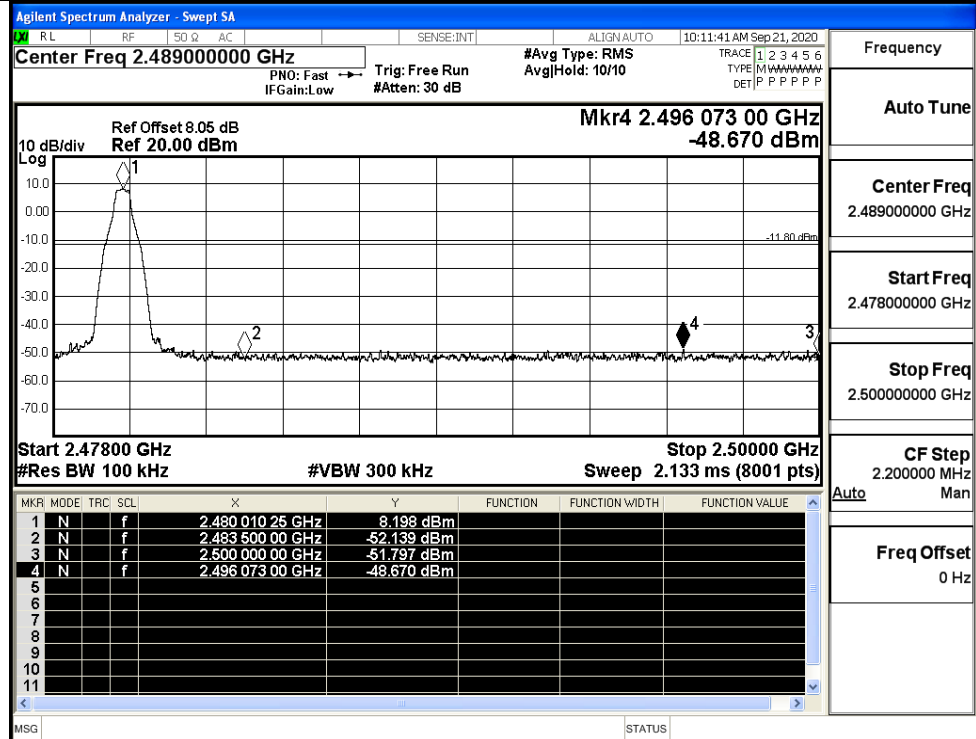
GFSK/LCH/No Hop



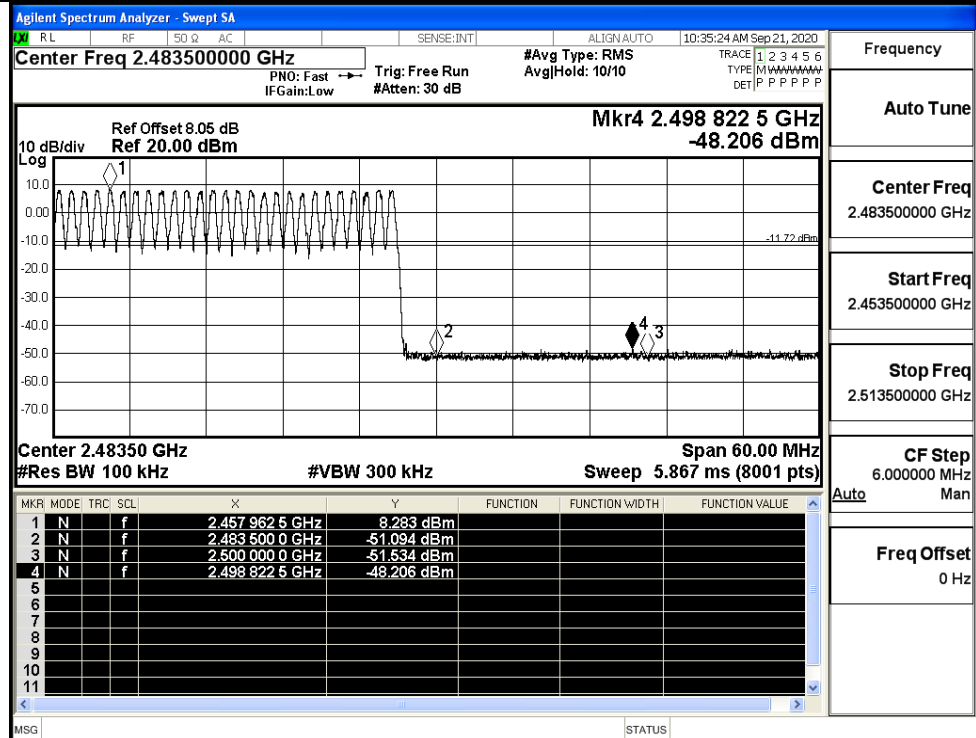
GFSK/LCH/Hop



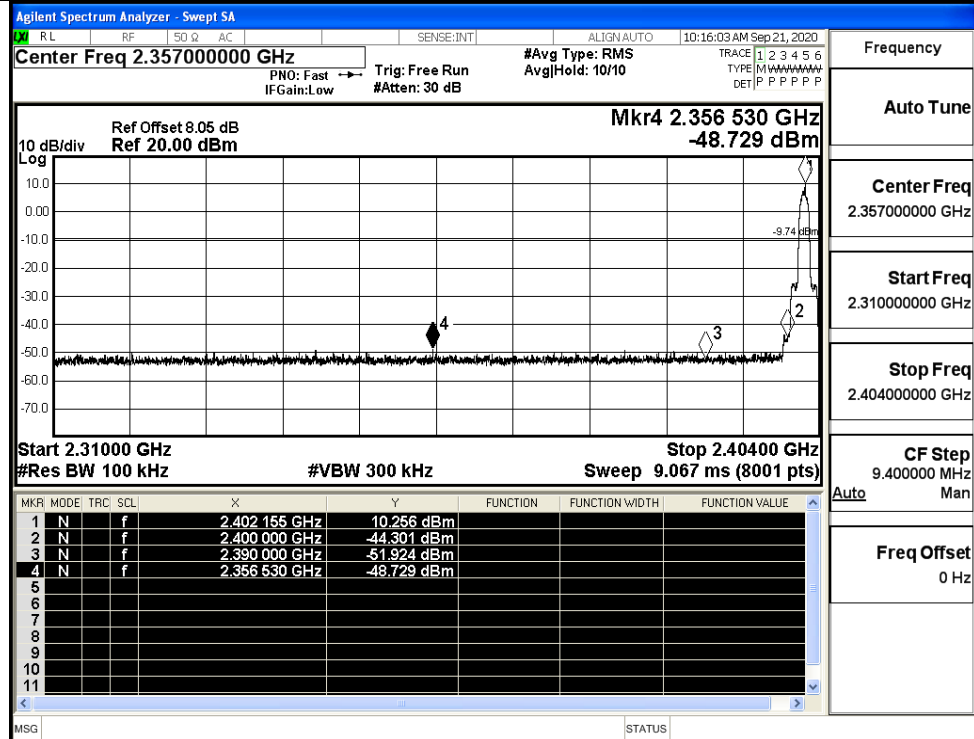
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

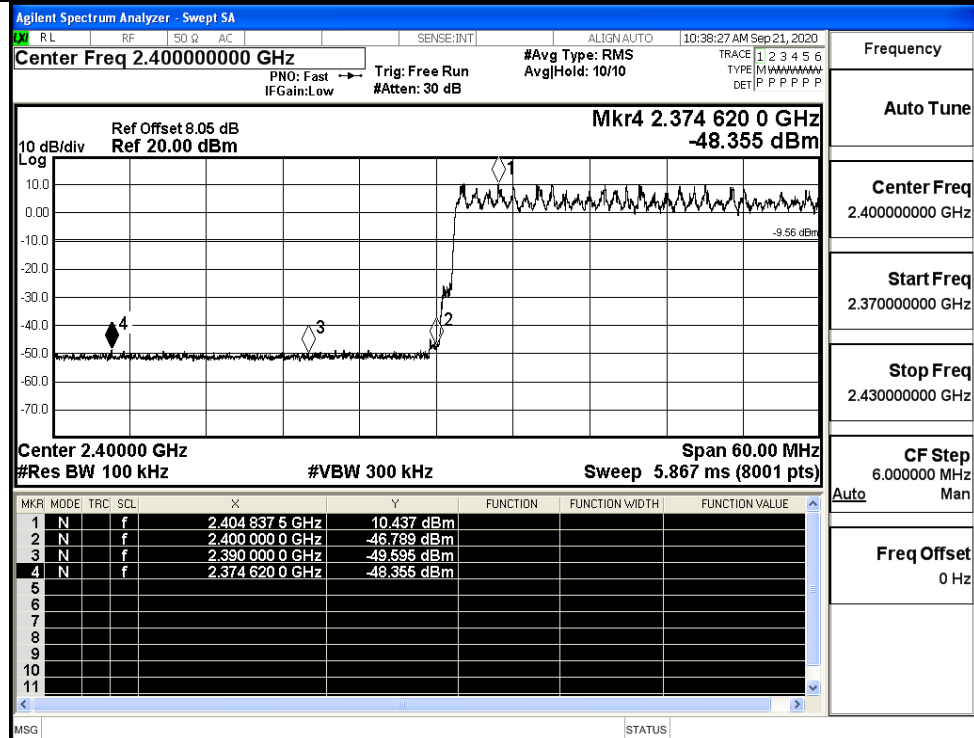
Start Freq
2.310000000 GHz

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

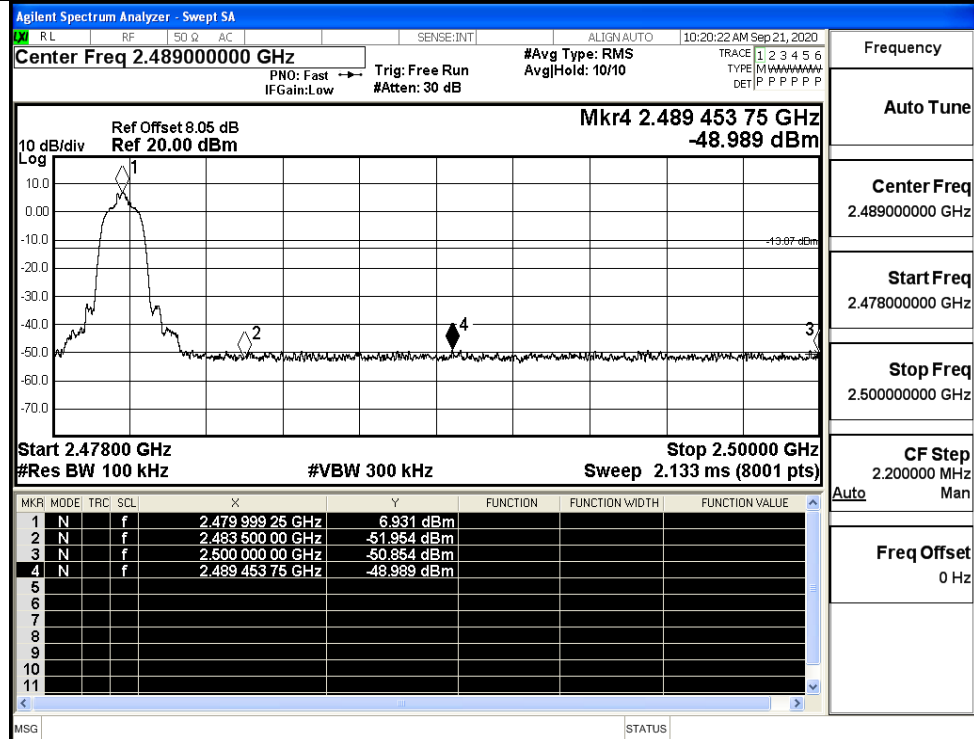
Start Freq
2.370000000 GHz

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

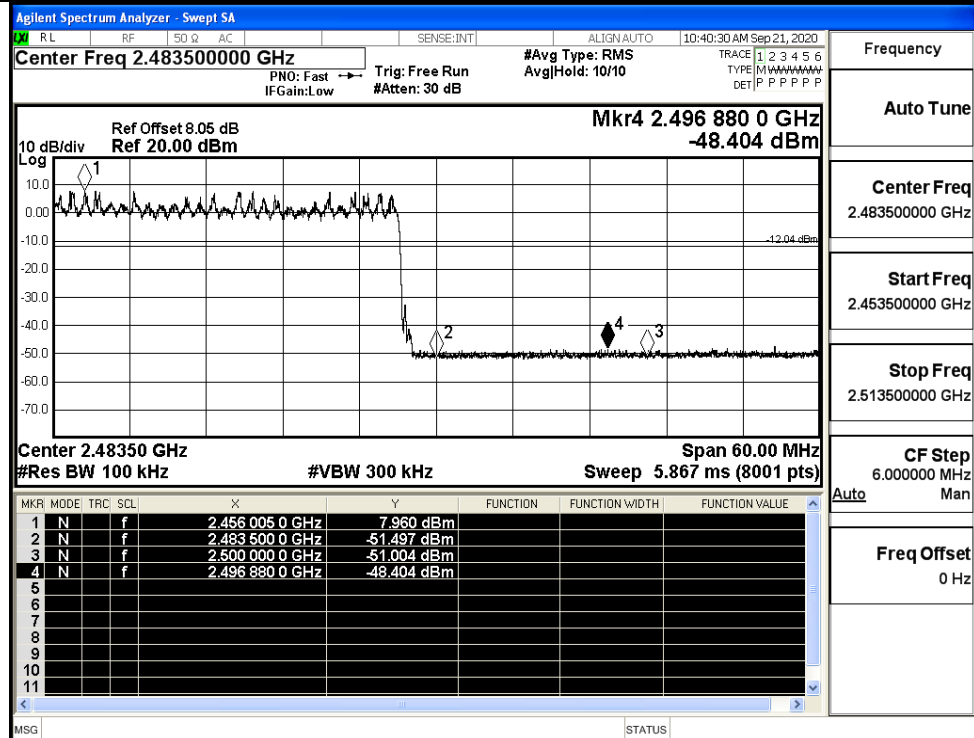
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz
Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

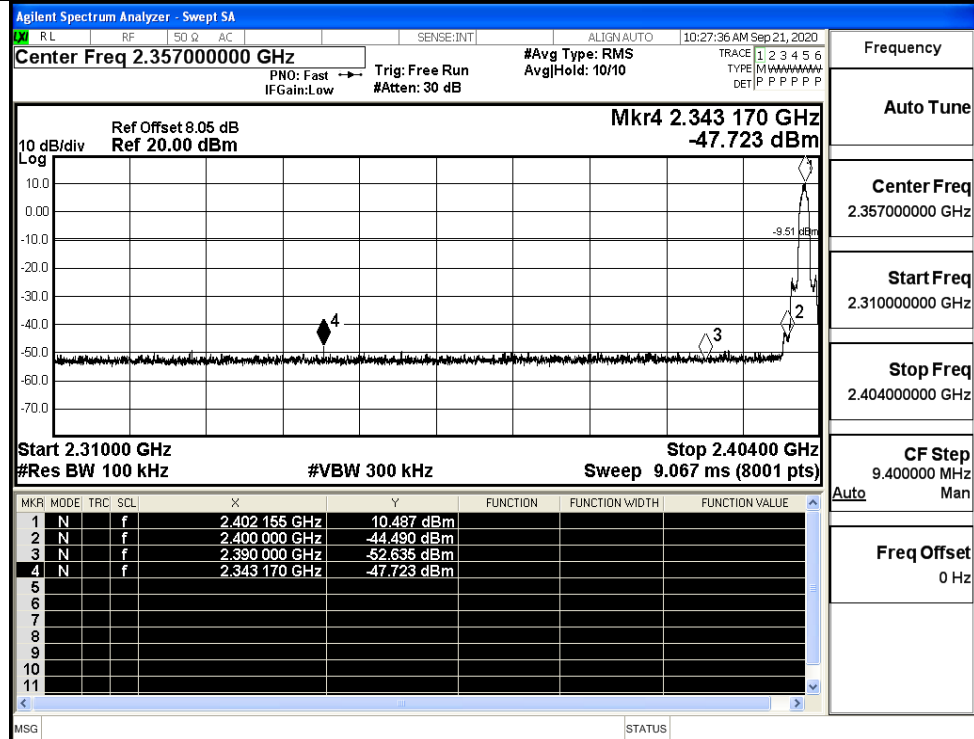
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

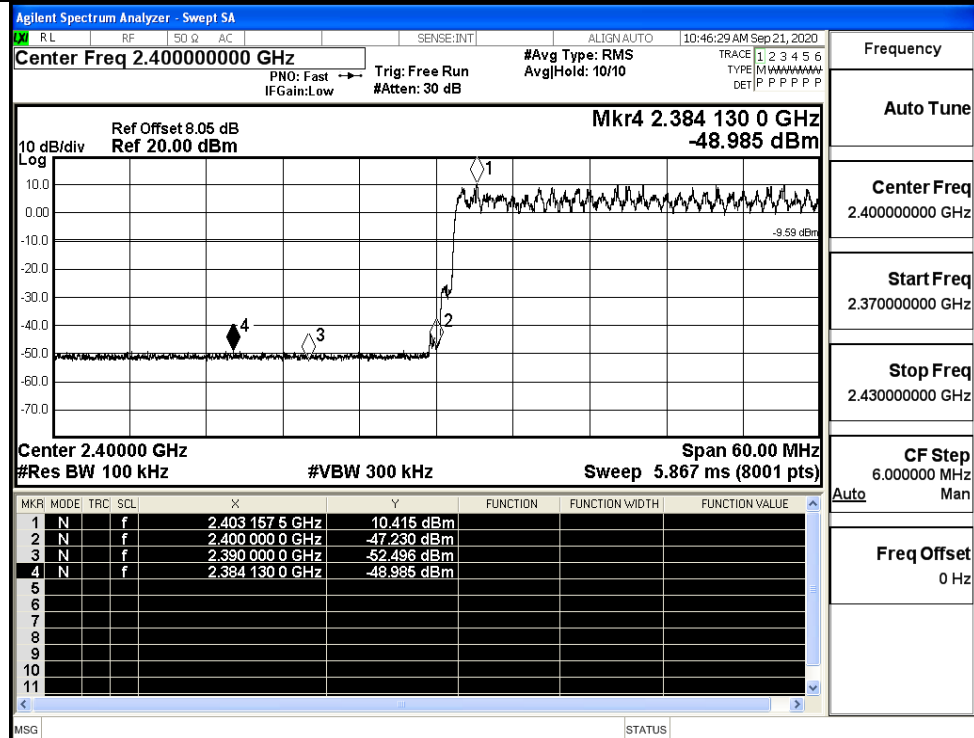
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

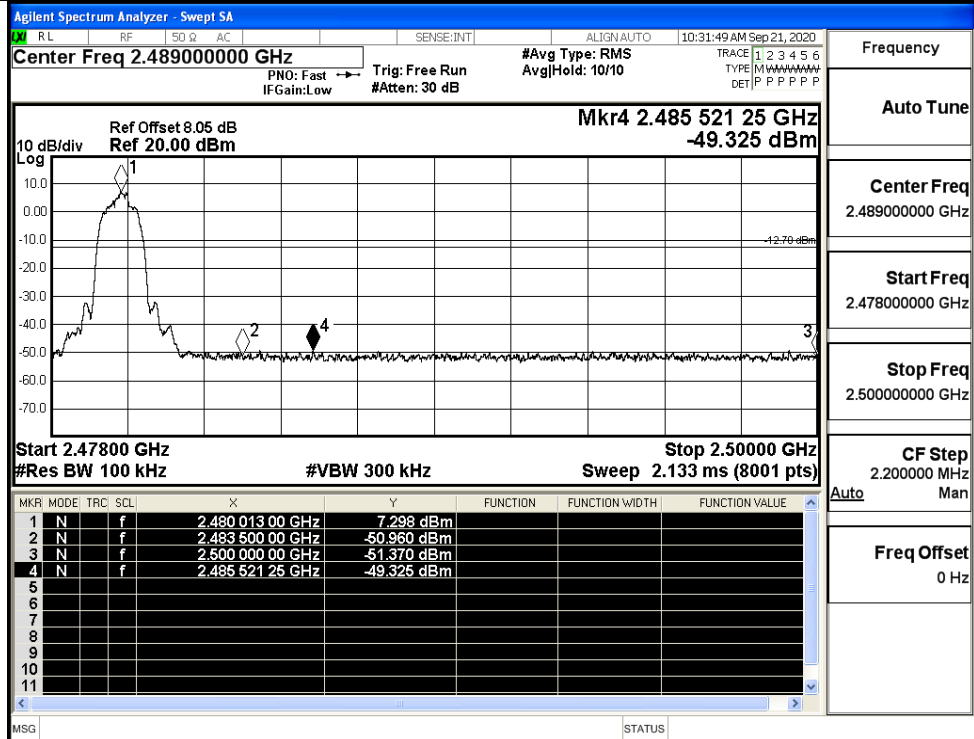
8DPSK/LCH/No Hop



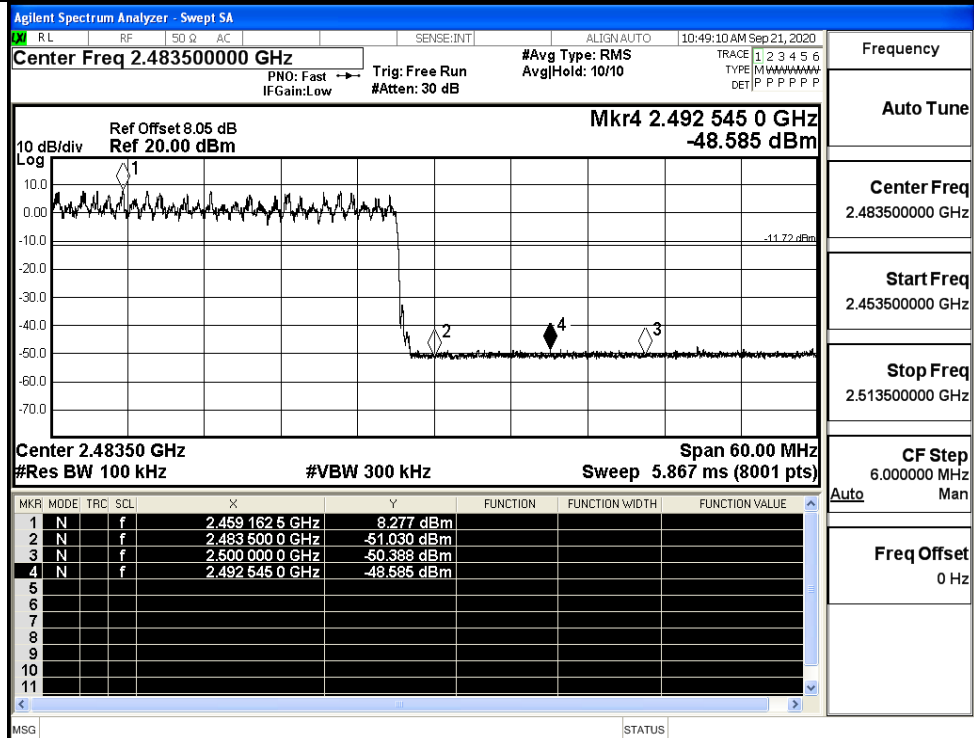
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



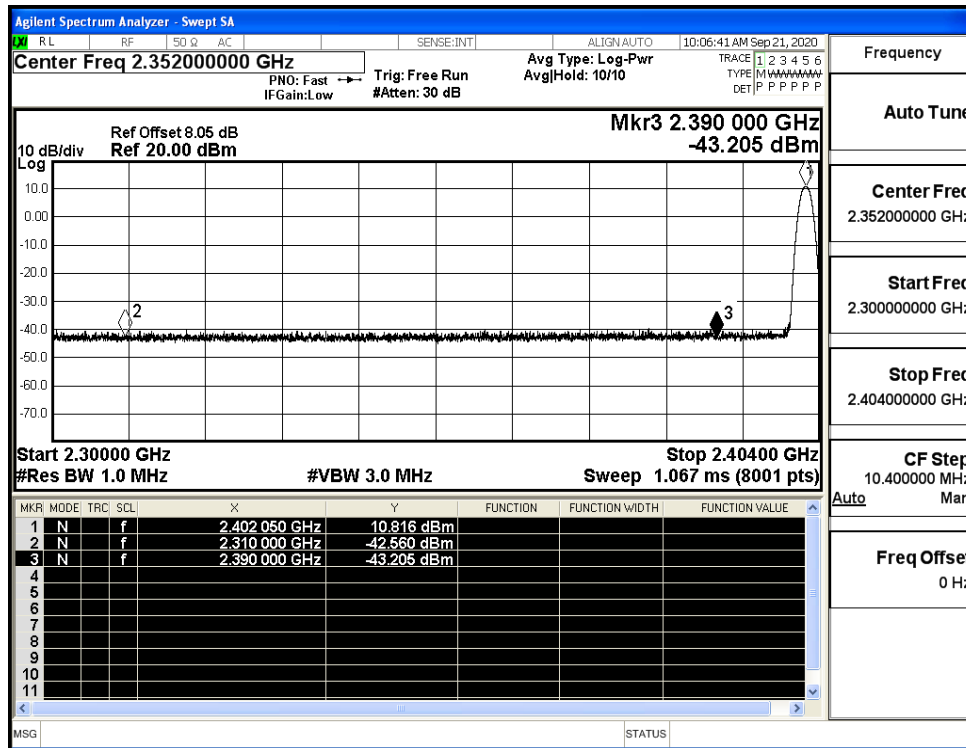
8DPSK/HCH/Hop



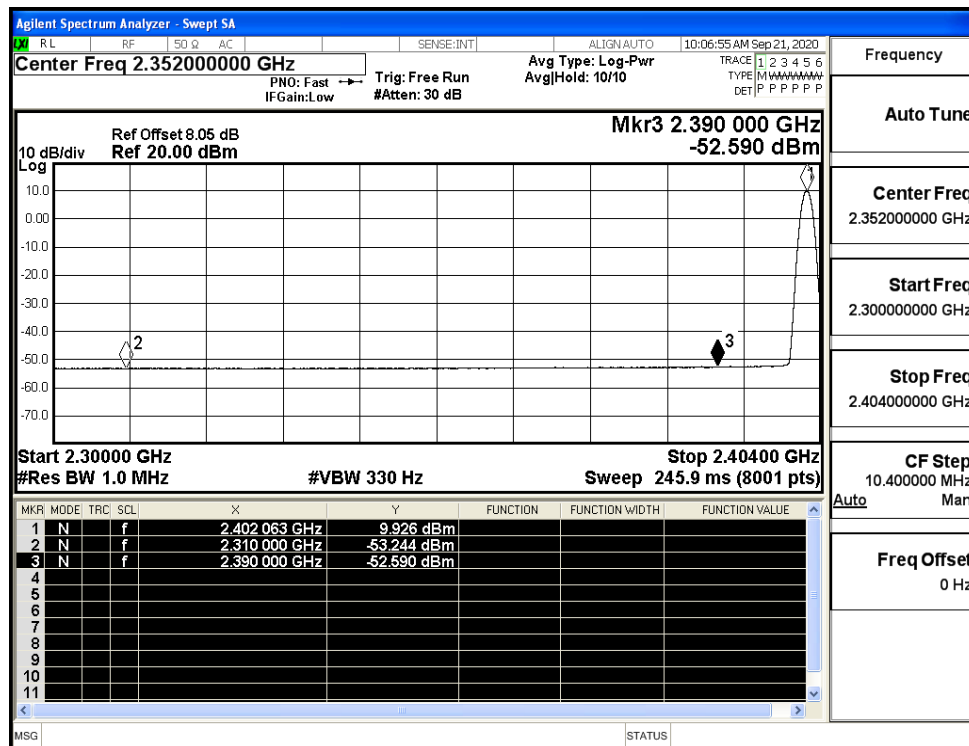
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.56	2.0	0	54.67	PEAK	74	PASS
	Off	2310.0	-53.24	2.0	0	43.99	AV	54	PASS
	Off	2390.0	-43.21	2.0	0	54.02	PEAK	74	PASS
	Off	2390.0	-52.59	2.0	0	44.64	AV	54	PASS
	Off	2483.5	-41.07	2.0	0	56.16	PEAK	74	PASS
	Off	2483.5	-52.06	2.0	0	45.17	AV	54	PASS
	Off	2500.0	-42.57	2.0	0	54.66	PEAK	74	PASS
	Off	2500.0	-52.22	2.0	0	45.01	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.36	2.0	0	54.87	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	43.95	AV	54	PASS
	Off	2390.0	-43.81	2.0	0	53.42	PEAK	74	PASS
	Off	2390.0	-52.71	2.0	0	44.52	AV	54	PASS
	Off	2483.5	-41.36	2.0	0	55.87	PEAK	74	PASS
	Off	2483.5	-52.01	2.0	0	45.22	AV	54	PASS
	Off	2500.0	-42.70	2.0	0	54.53	PEAK	74	PASS
	Off	2500.0	-52.21	2.0	0	45.02	AV	54	PASS
8DPSK	Off	2310.0	-42.75	2.0	0	54.48	PEAK	74	PASS
	Off	2310.0	-53.16	2.0	0	44.07	AV	54	PASS
	Off	2390.0	-42.23	2.0	0	55.00	PEAK	74	PASS
	Off	2390.0	-52.70	2.0	0	44.53	AV	54	PASS
	Off	2483.5	-40.99	2.0	0	56.24	PEAK	74	PASS
	Off	2483.5	-52.17	2.0	0	45.06	AV	54	PASS
	Off	2500.0	-42.33	2.0	0	54.90	PEAK	74	PASS
	Off	2500.0	-52.17	2.0	0	45.06	AV	54	PASS

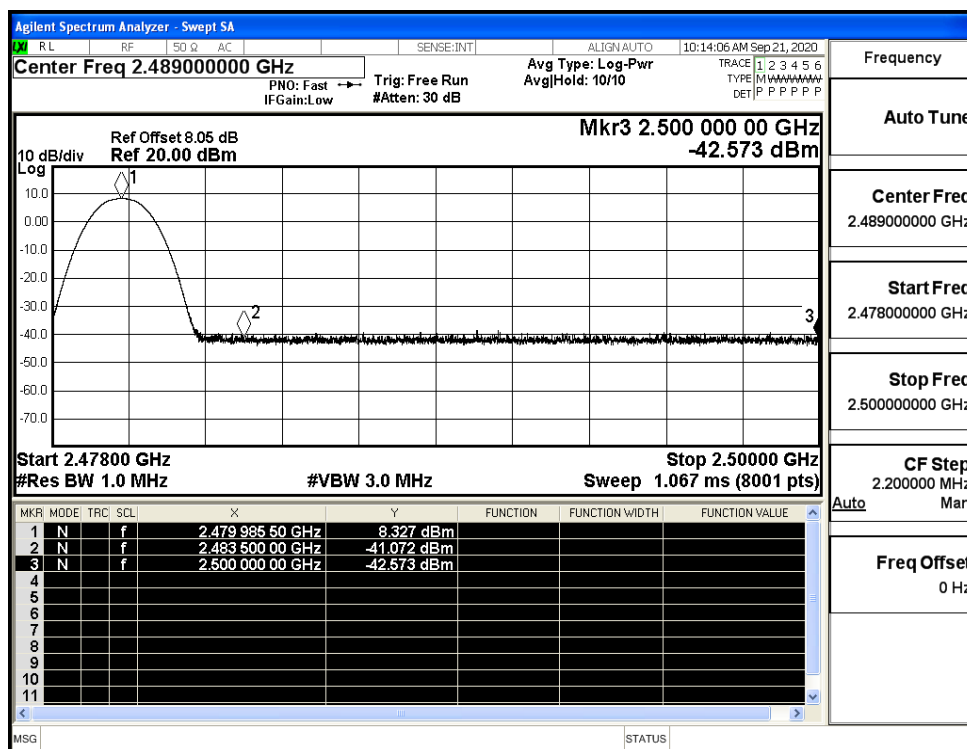
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



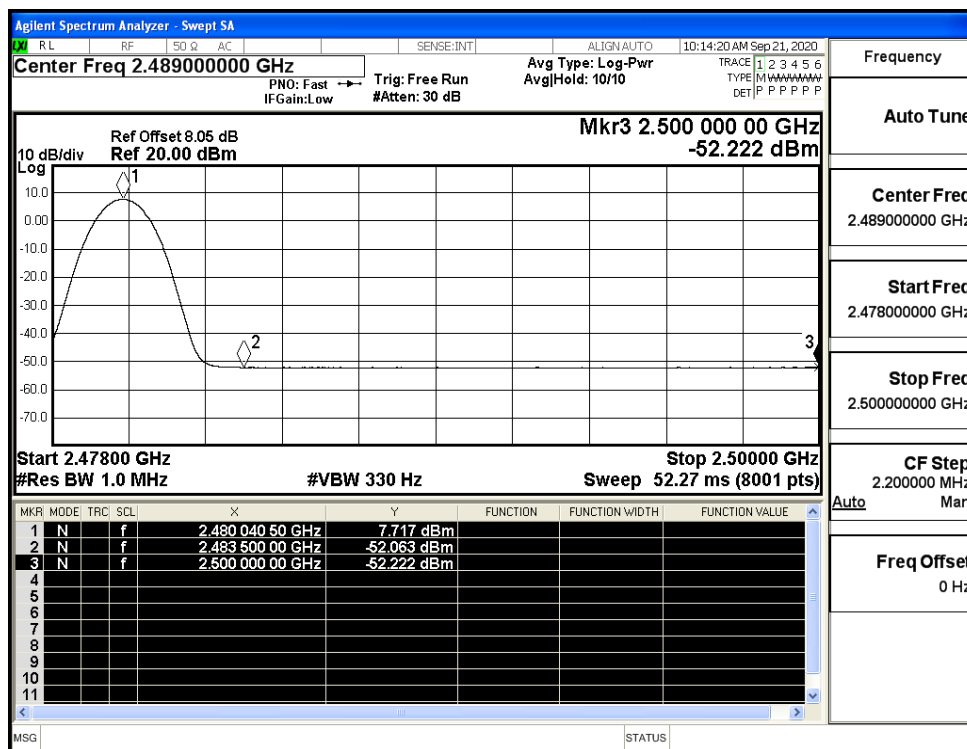
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

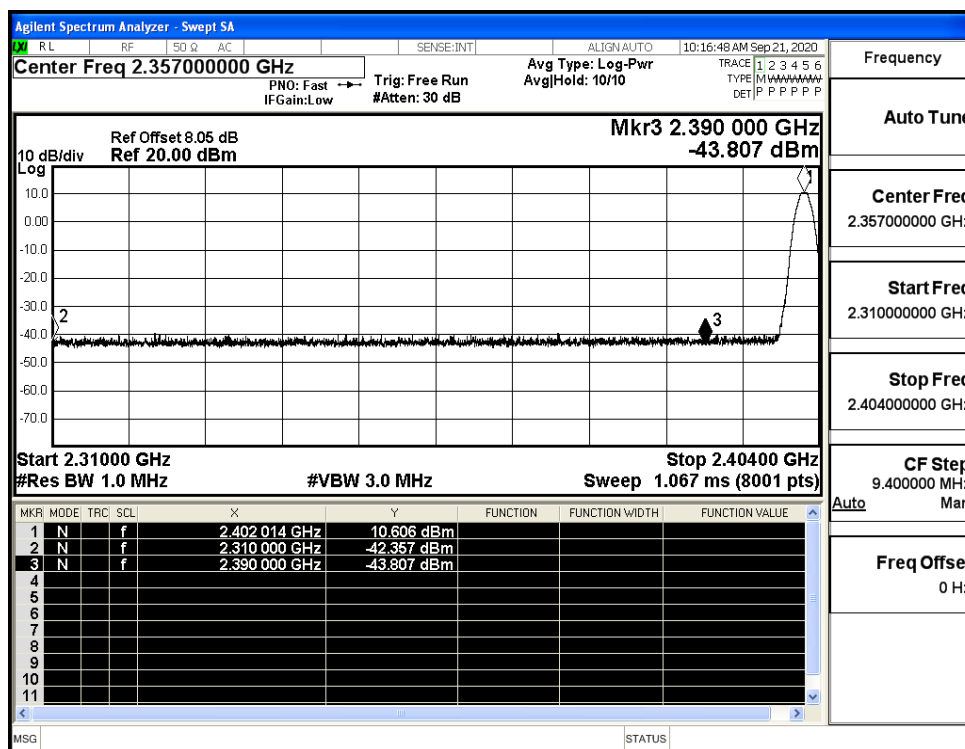
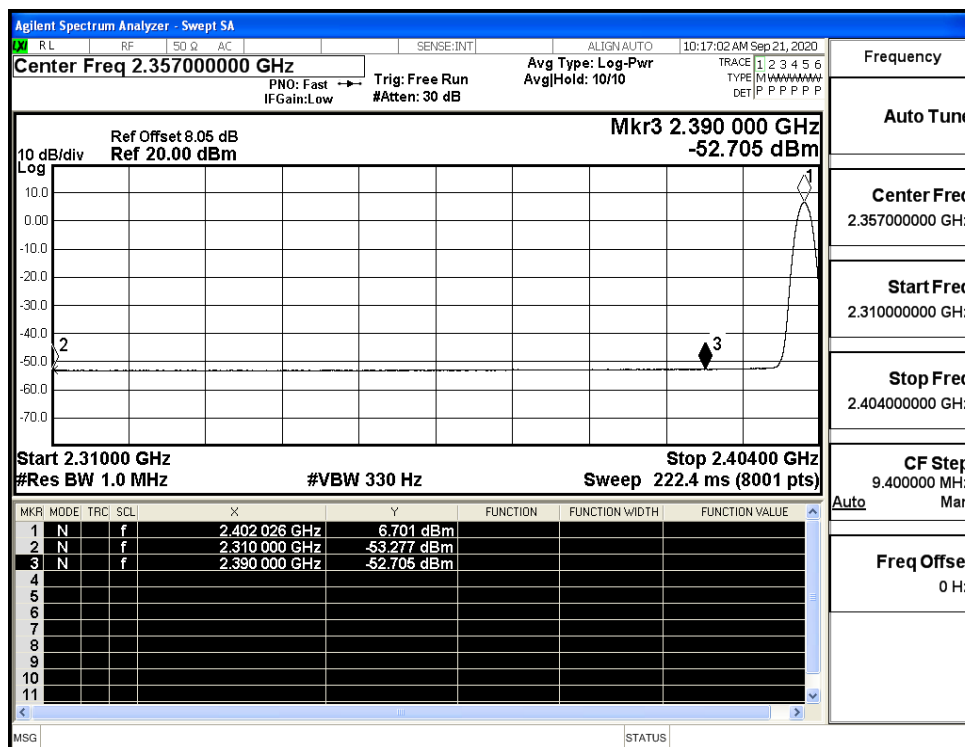


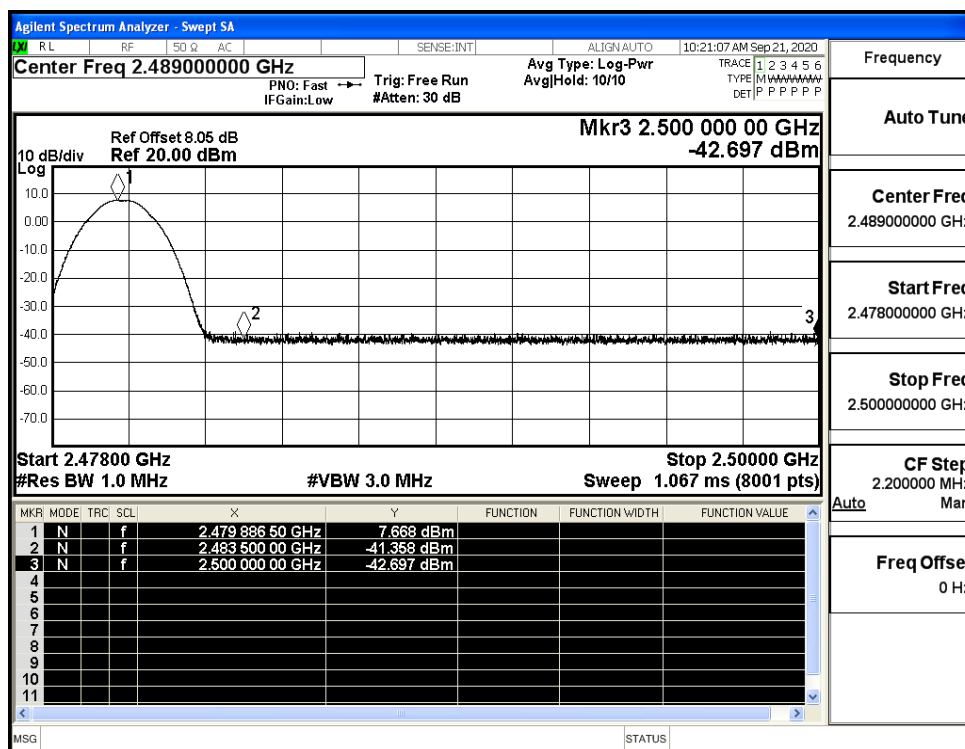
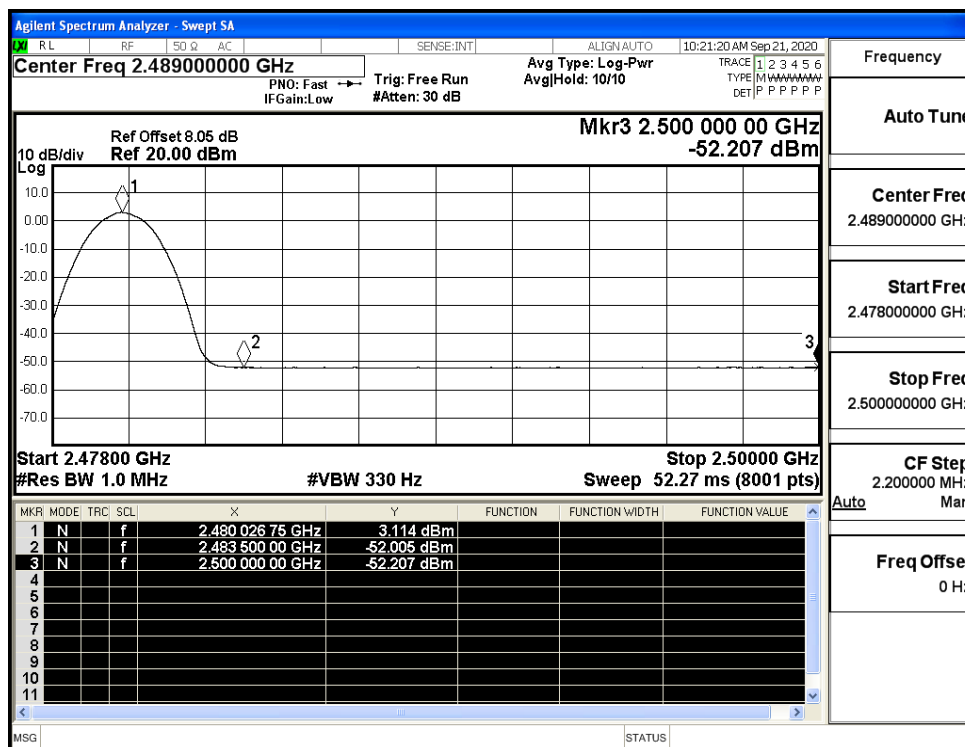
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



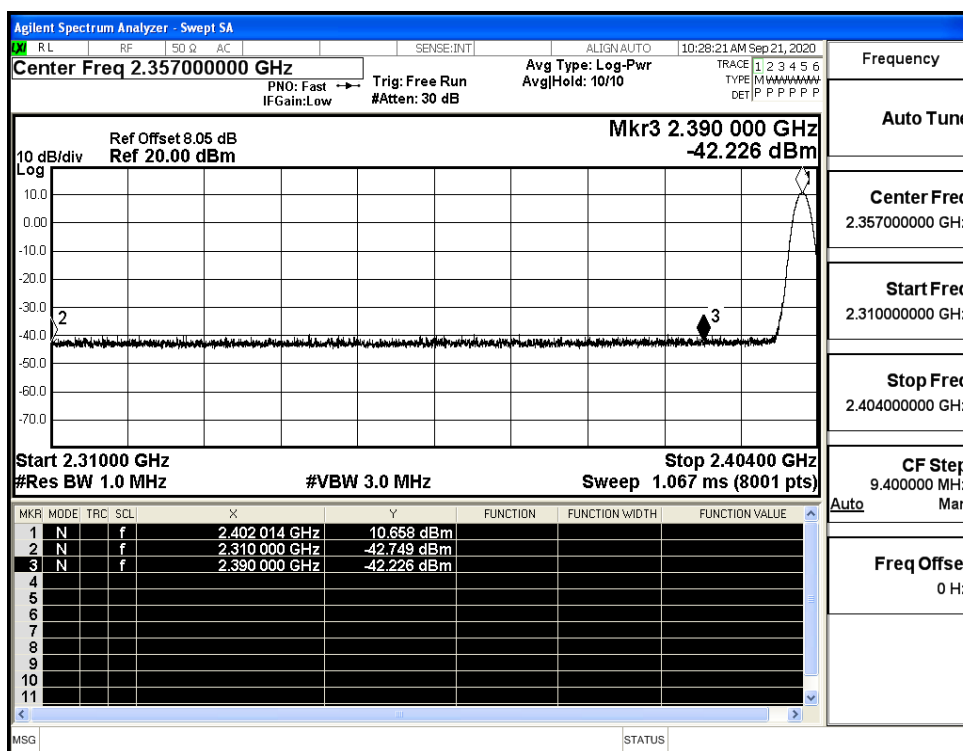
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



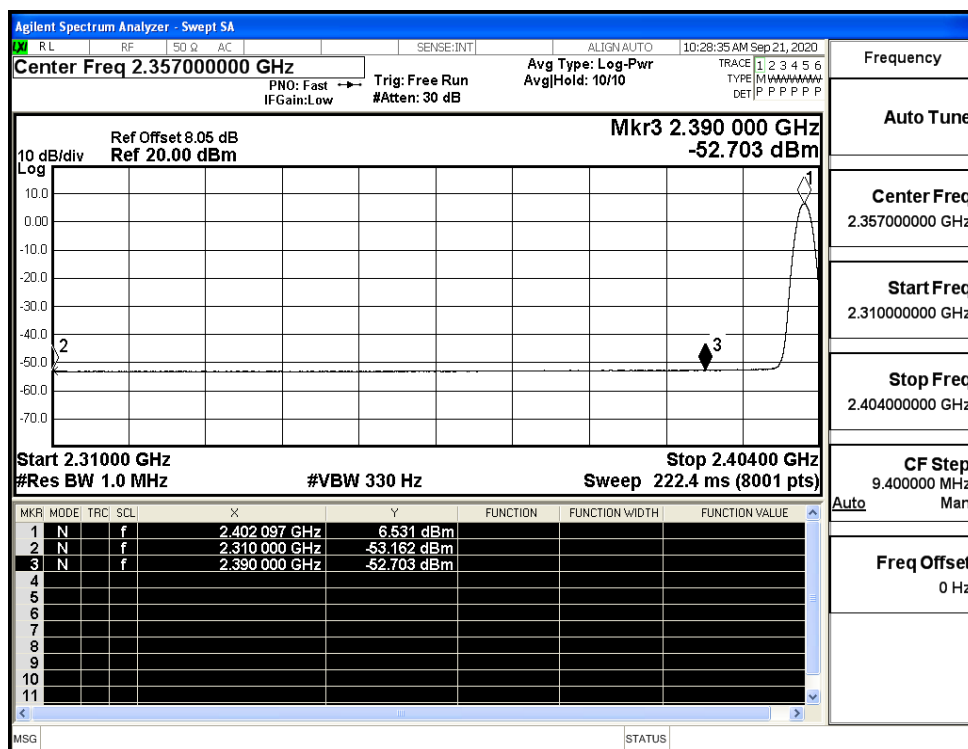
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

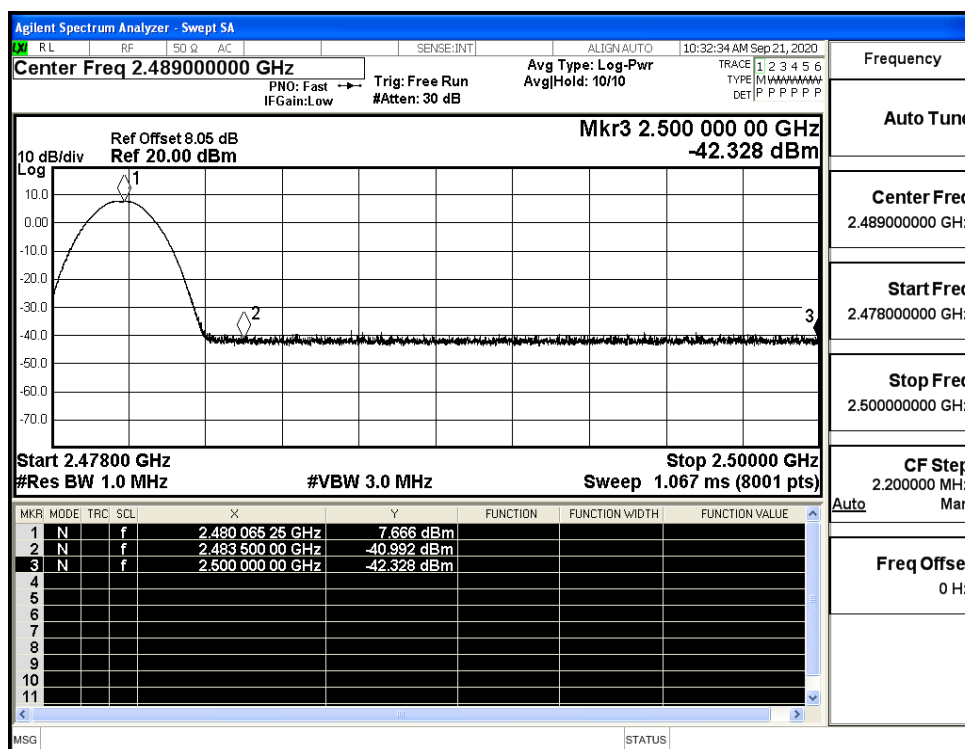
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

