

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: Optical projector

Trade Mark: CINEMOOD

Test Model: CNMD0020

Environmental Conditions

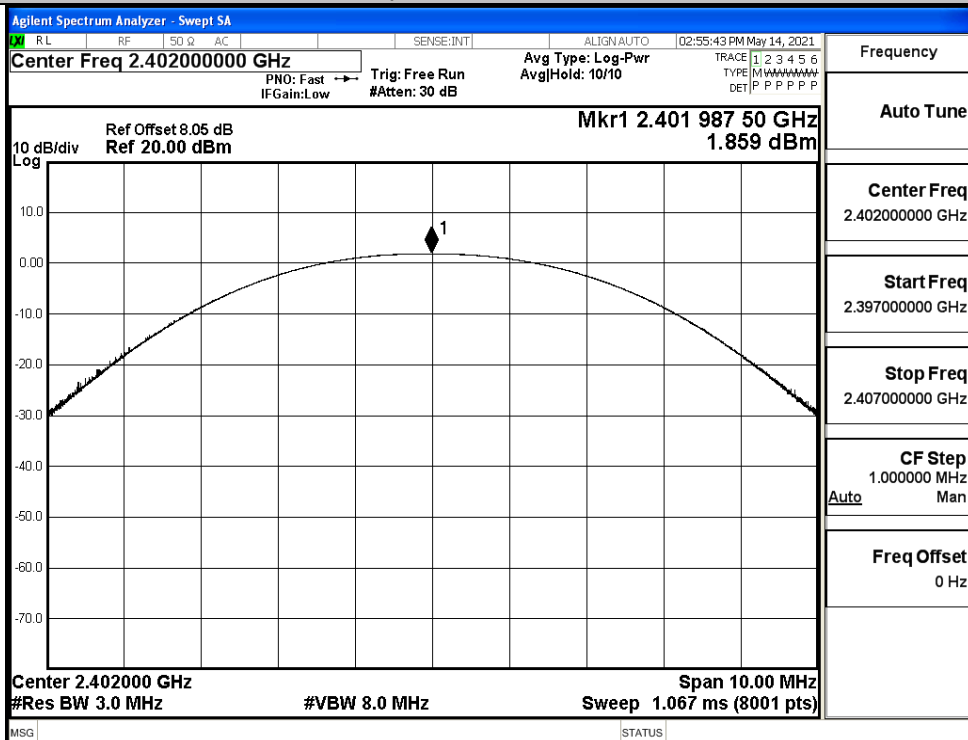
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

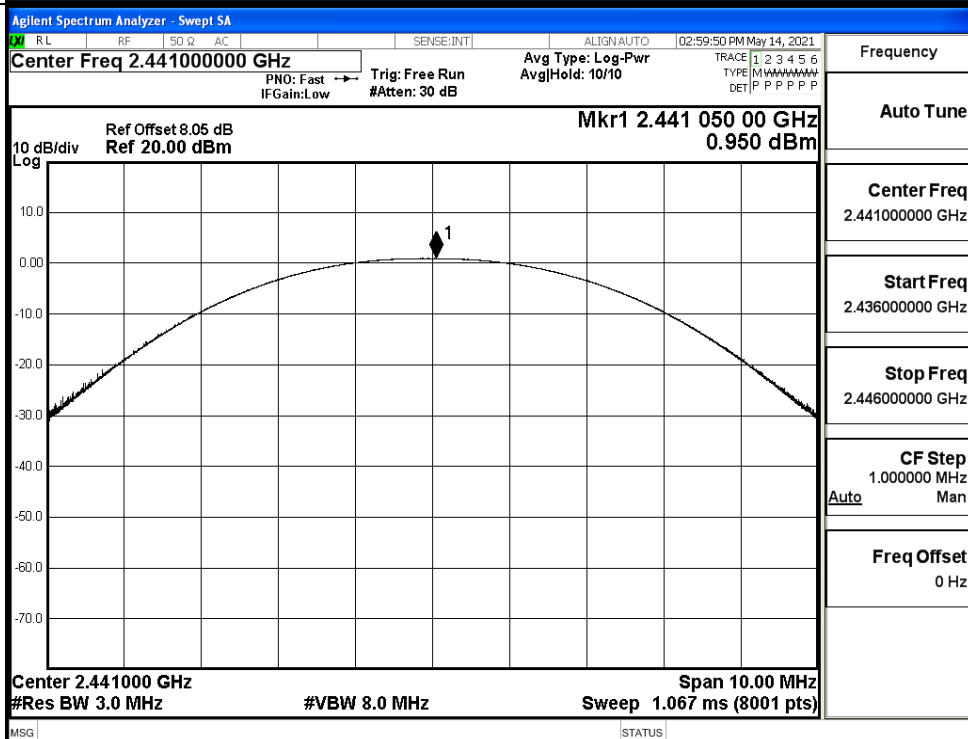
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.859	21	PASS
	MCH	0.950	21	PASS
	HCH	-0.287	21	PASS
$\pi/4$ DQPSK	LCH	4.093	21	PASS
	MCH	3.182	21	PASS
	HCH	1.964	21	PASS
8DPSK	LCH	4.609	21	PASS
	MCH	3.744	21	PASS
	HCH	2.506	21	PASS

Test Graphs

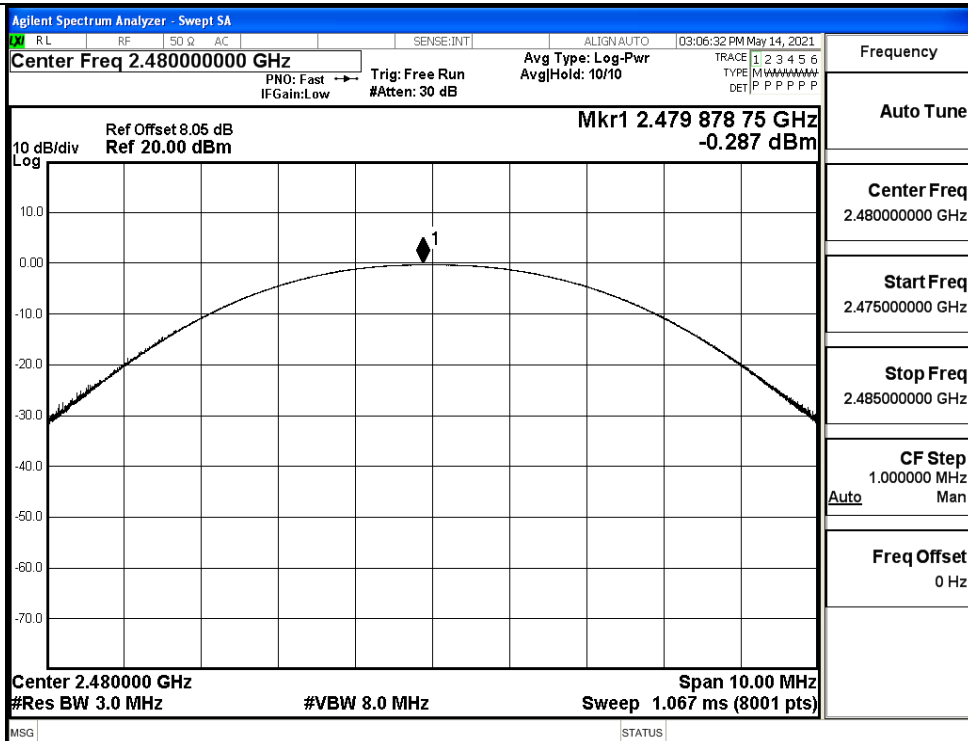
GFSK/LCH



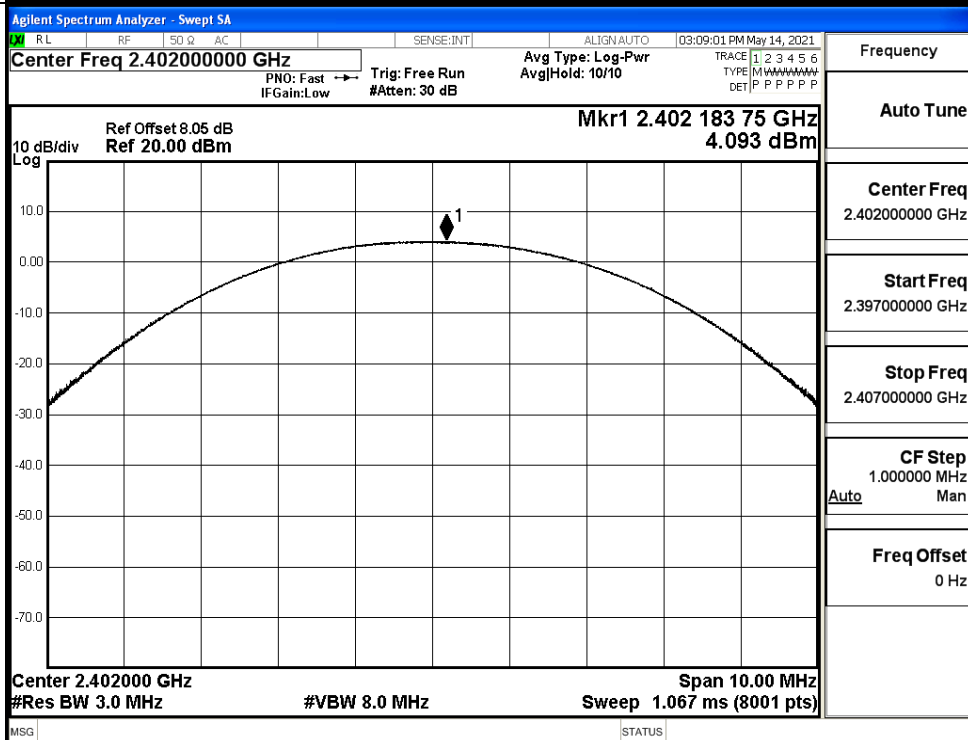
GFSK/MCH

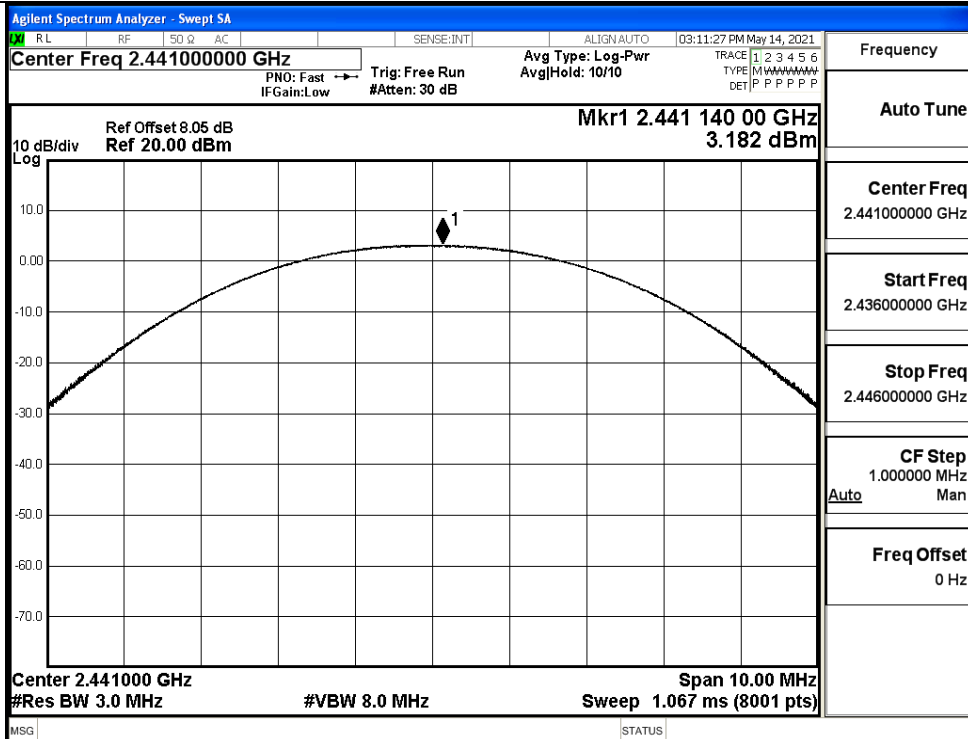
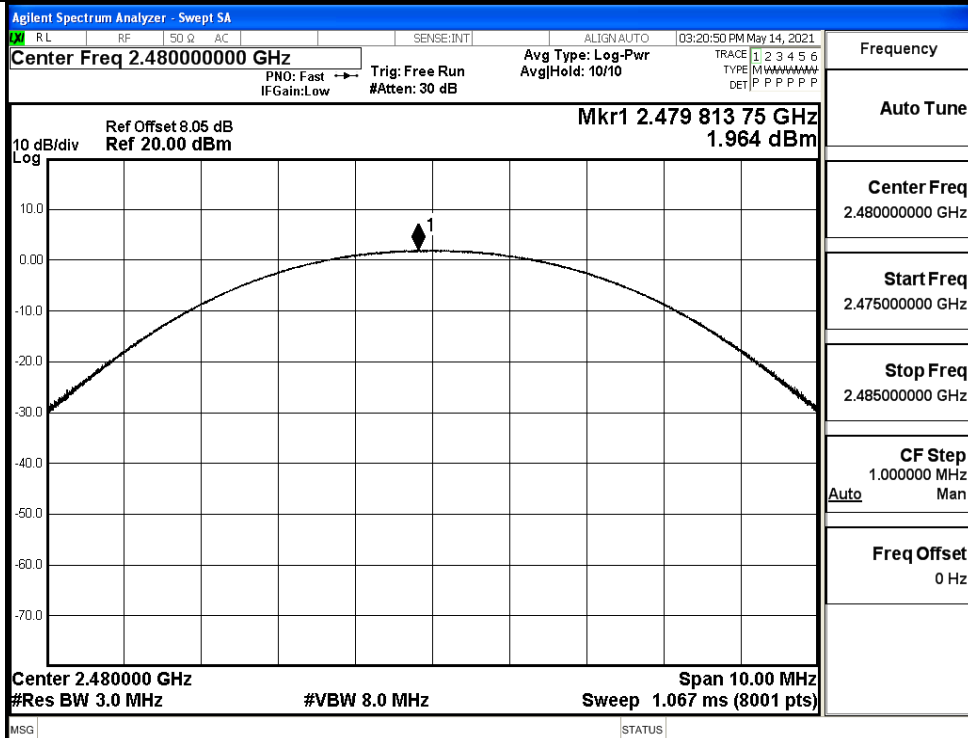


GFSK/HCH

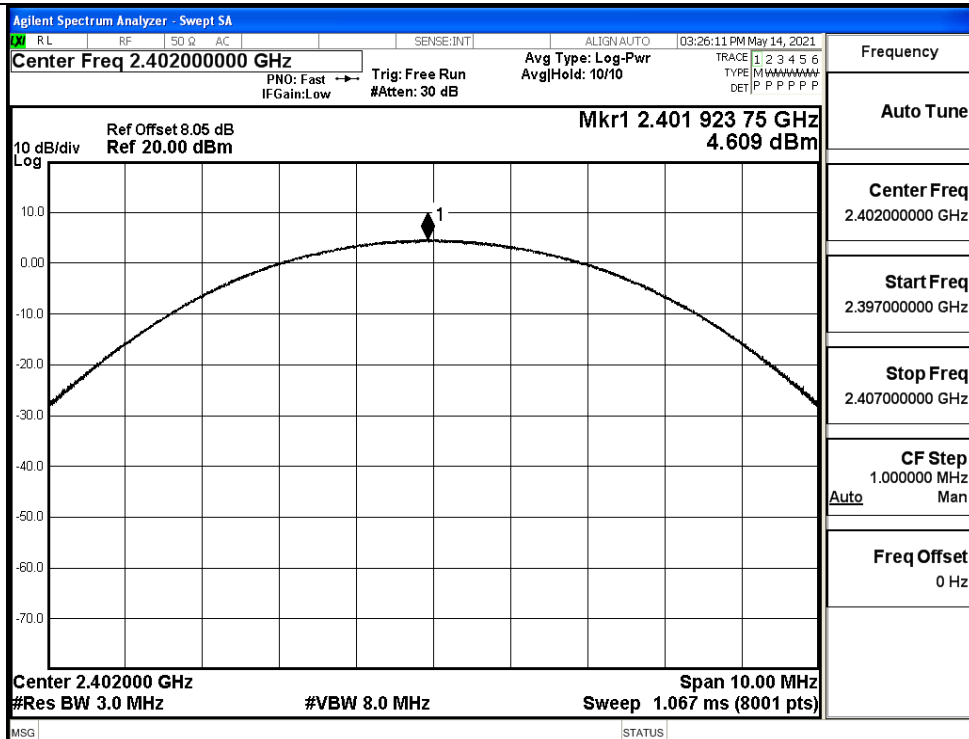


$\pi/4$ DQPSK/LCH

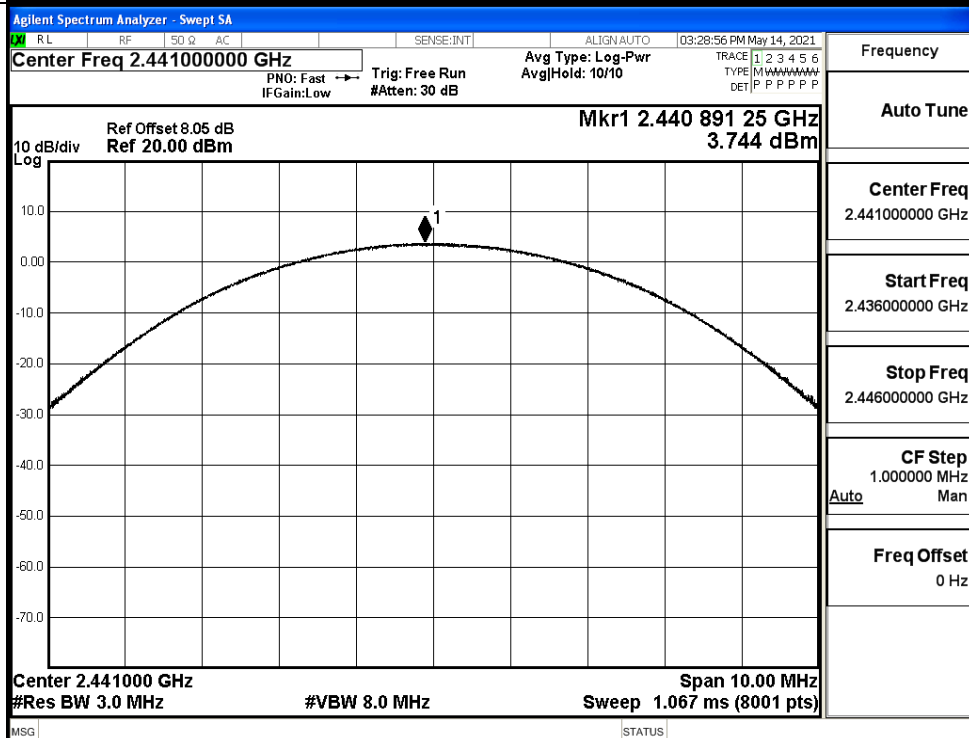


$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

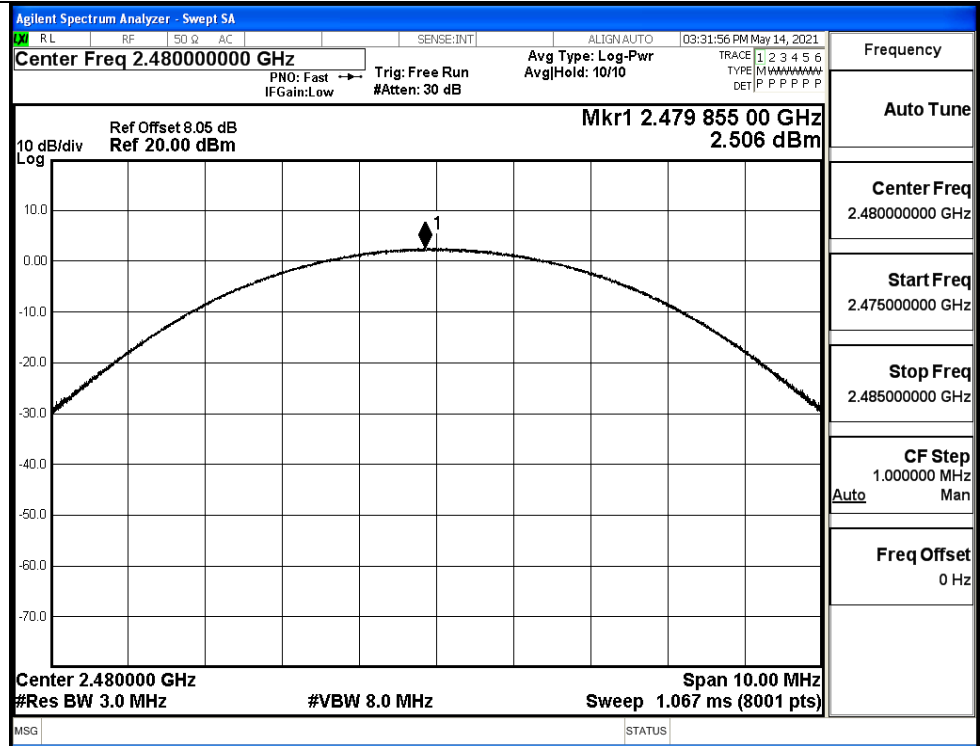
8DPSK/LCH



8DPSK/MCH



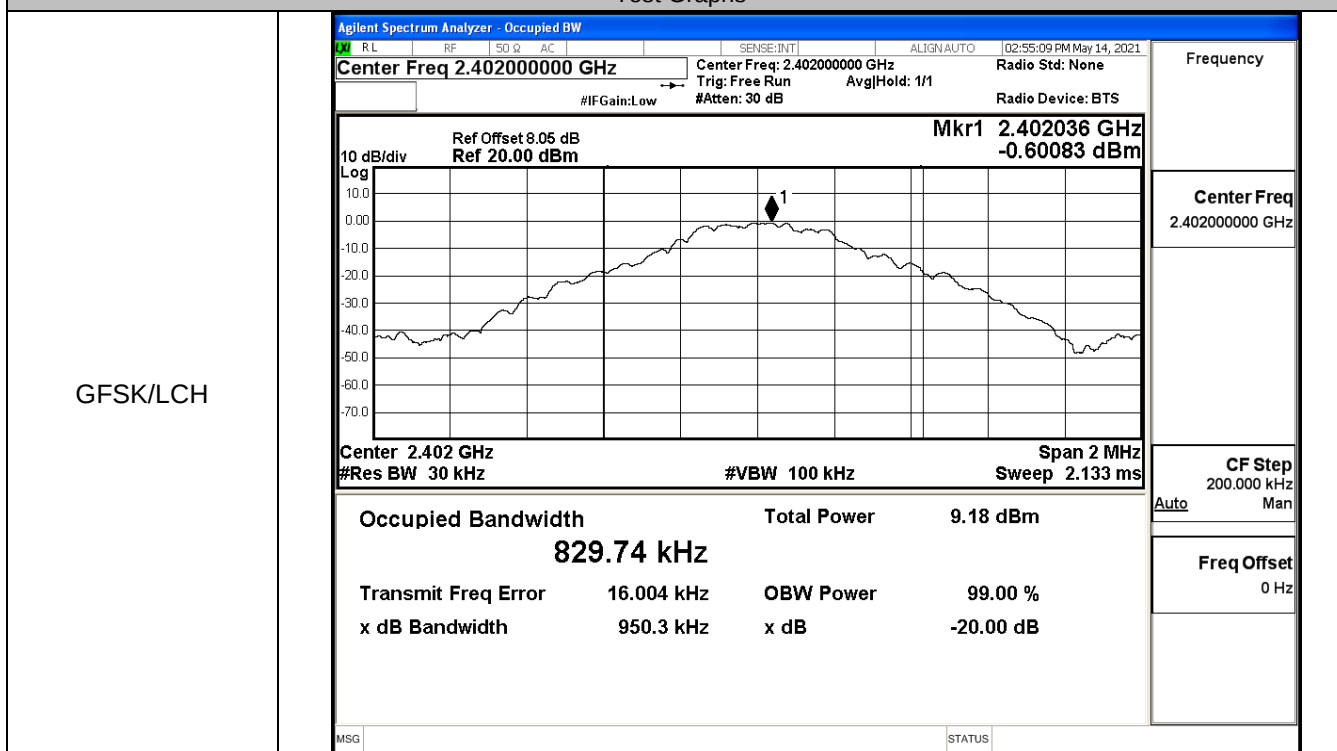
8DPSK/HCH



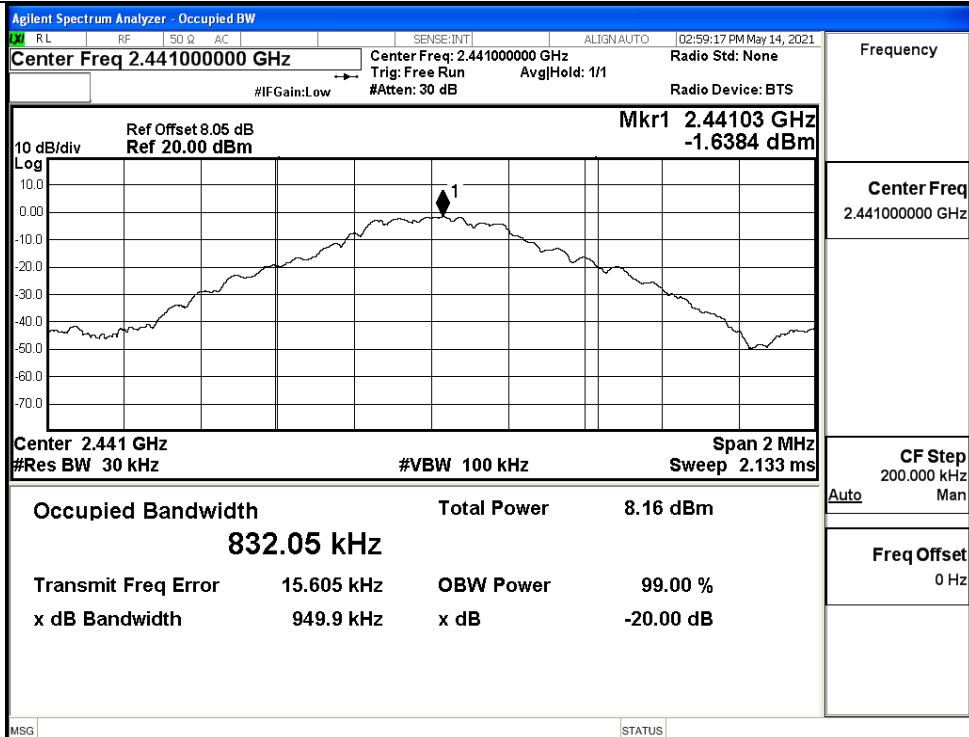
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9503	Not Specified	PASS
	MCH	0.9499	Not Specified	PASS
	HCH	0.9514	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.333	Not Specified	PASS
	MCH	1.331	Not Specified	PASS
	HCH	1.333	Not Specified	PASS
8DPSK	LCH	1.298	Not Specified	PASS
	MCH	1.297	Not Specified	PASS
	HCH	1.300	Not Specified	PASS

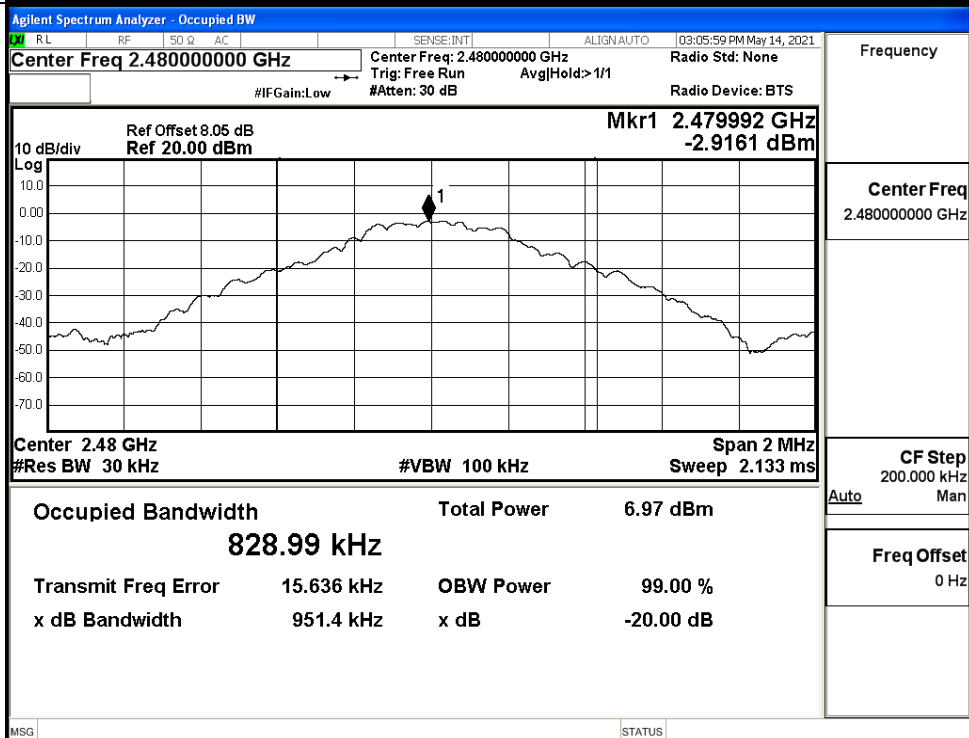
Test Graphs



GFSK/MCH

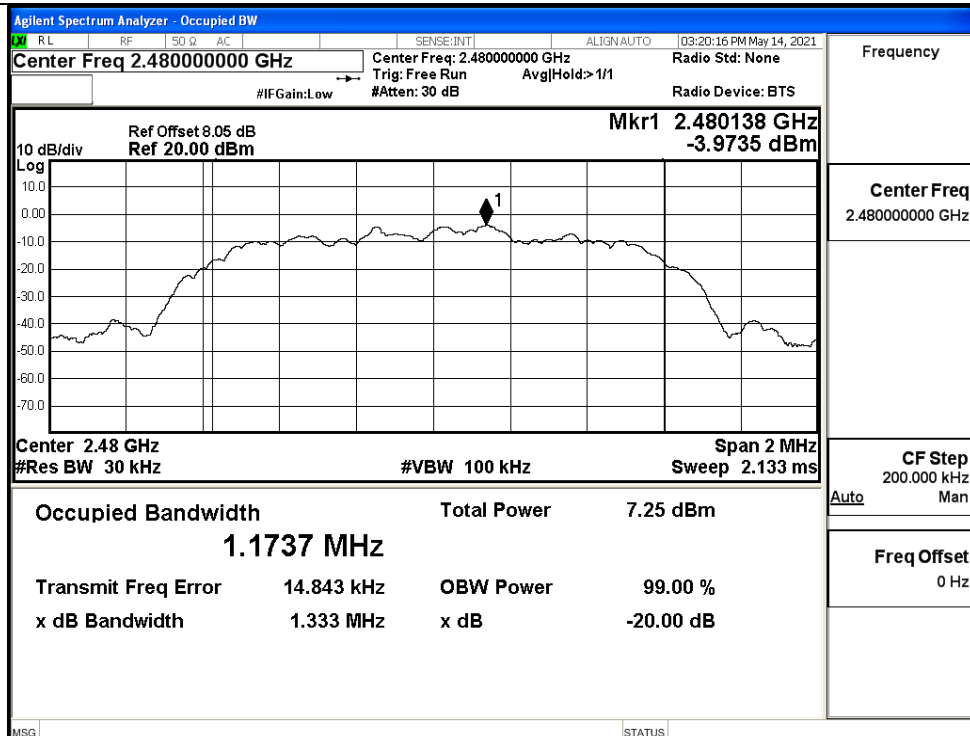


GFSK/HCH

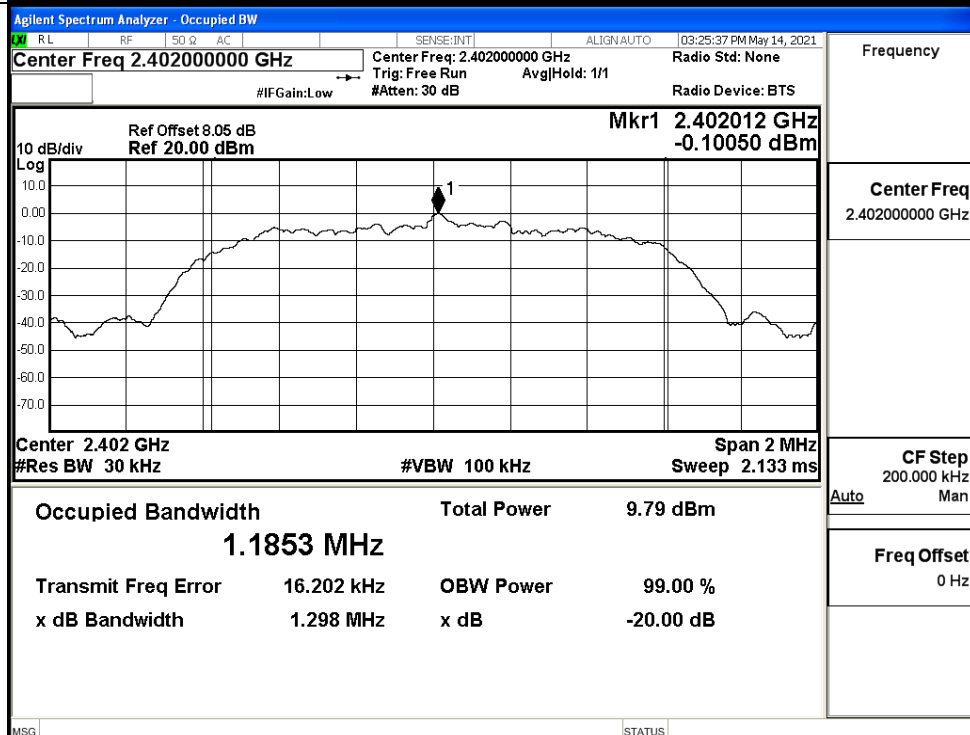


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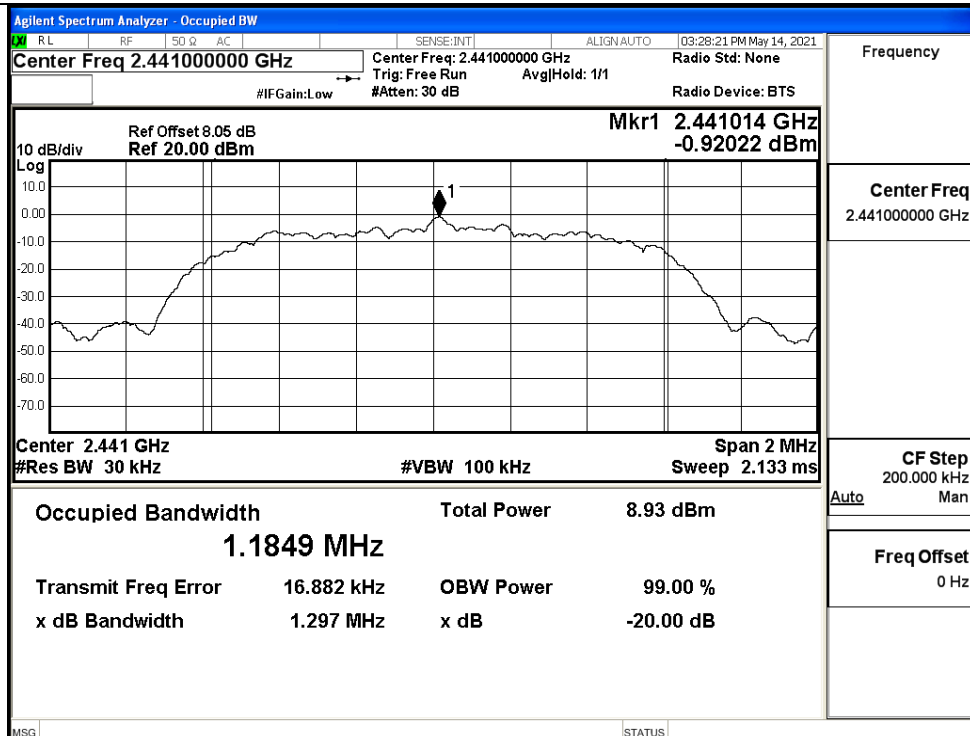
$\pi/4$ DQPSK/HCH



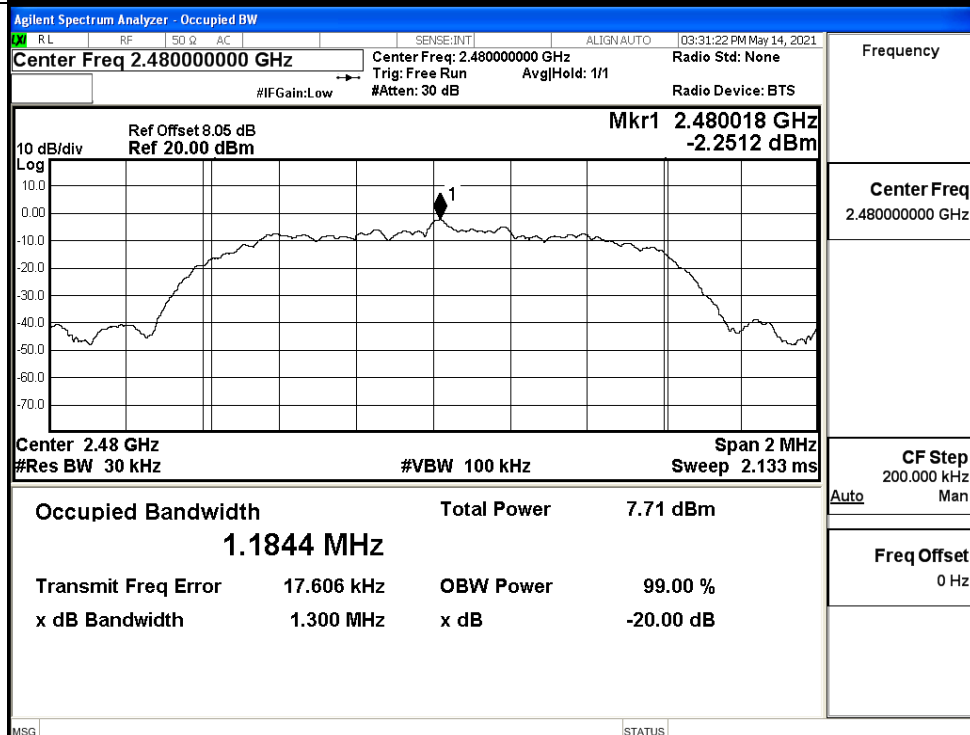
8DPSK/LCH



8DPSK/MCH



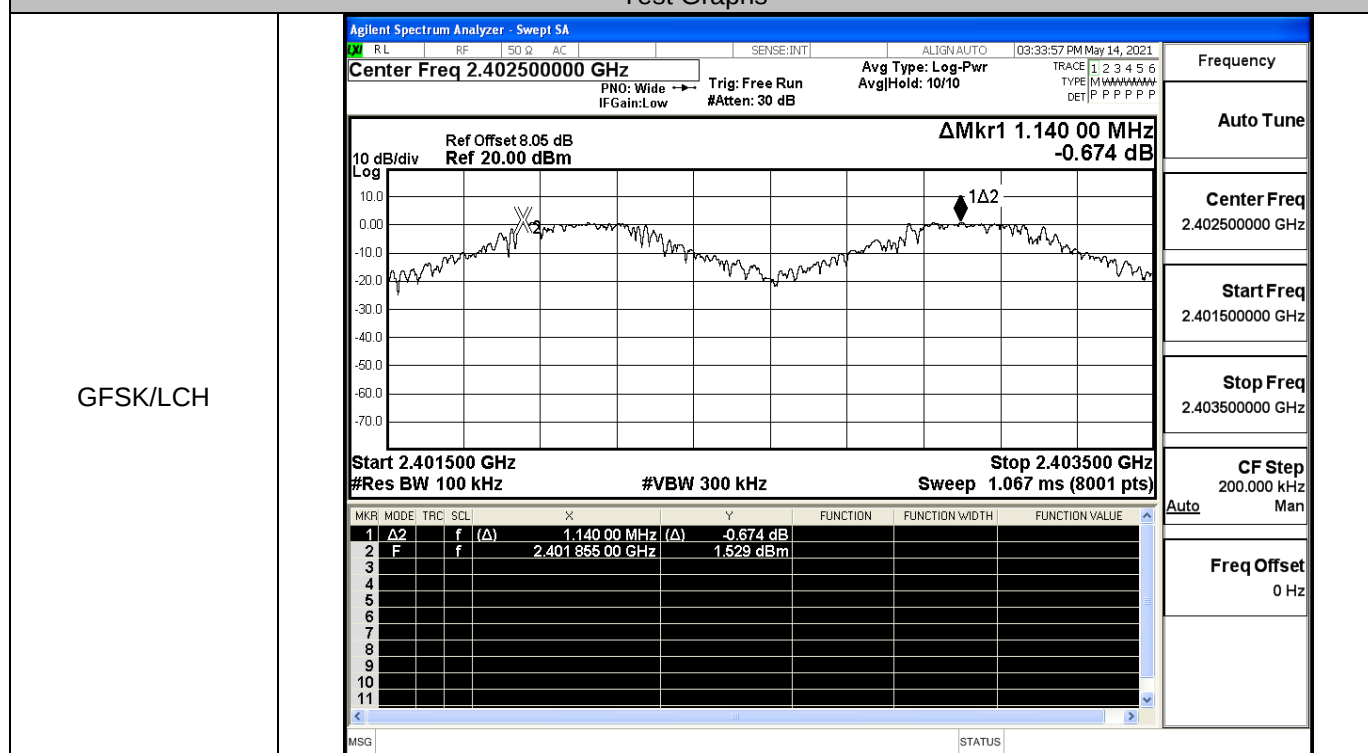
8DPSK/HCH



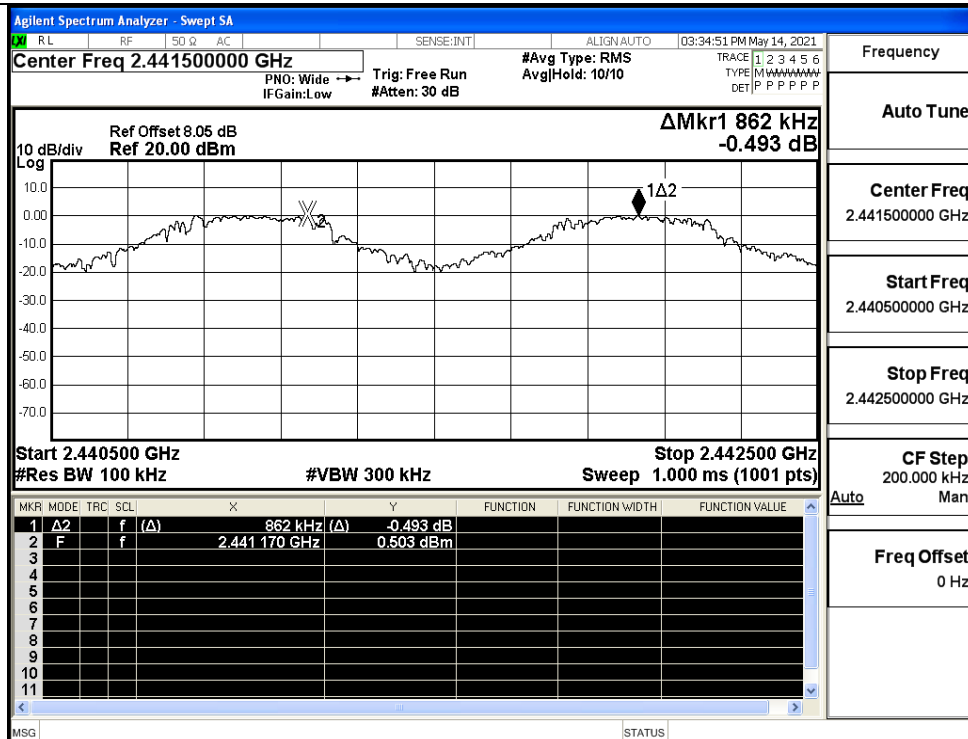
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.140	0.634	PASS
	MCH	0.862	0.634	PASS
	HCH	0.800	0.634	PASS
$\pi/4$ DQPSK	LCH	1.298	0.889	PASS
	MCH	1.290	0.889	PASS
	HCH	0.898	0.889	PASS
8DPSK	LCH	1.060	0.867	PASS
	MCH	1.036	0.867	PASS
	HCH	0.988	0.867	PASS

Test Graphs



GFSK/MCH



Frequency

Auto Tune

Center Freq
2.441500000 GHz

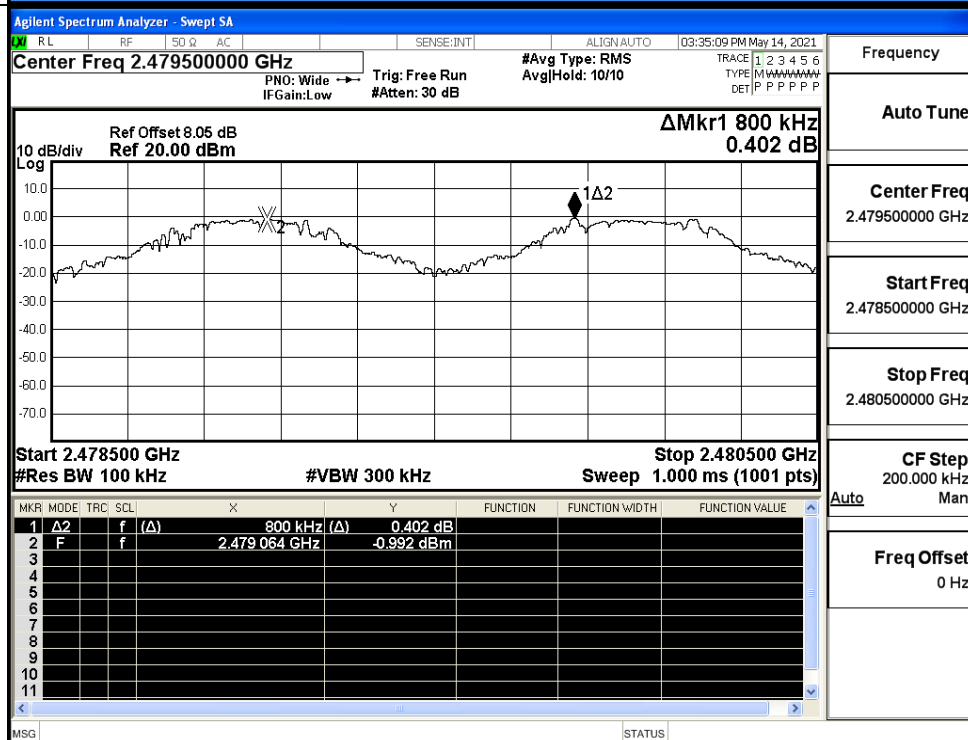
Start Freq
2.440500000 GHz

Stop Freq
2.442500000 GHz

CF Step
200.000 kHz
Man

Freq Offset
0 Hz

GFSK/HCH



Frequency

Auto Tune

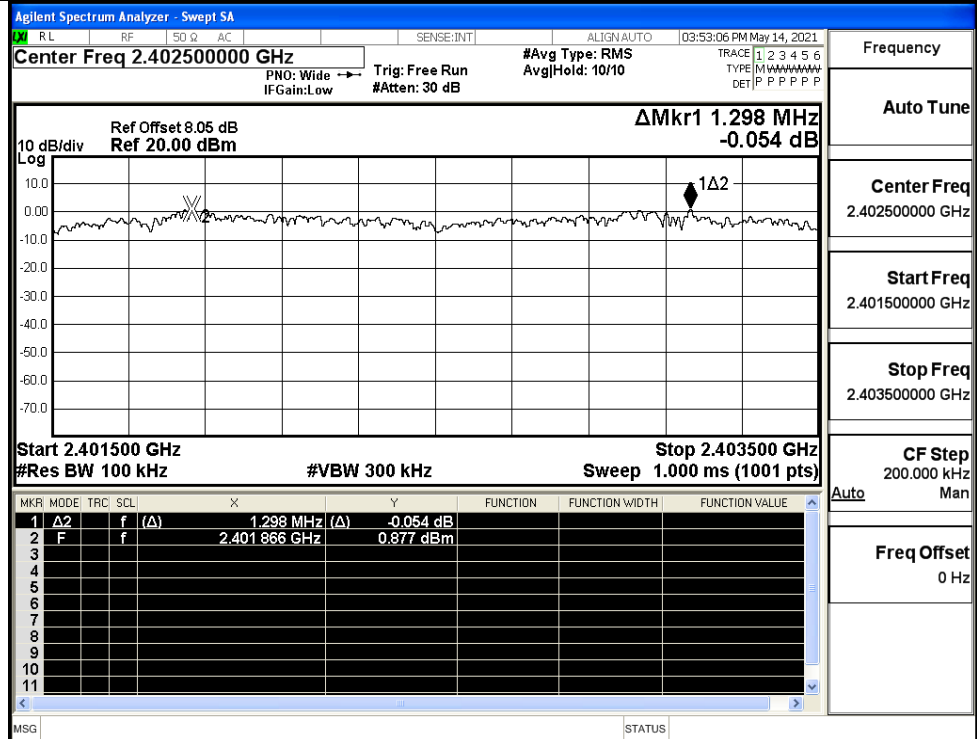
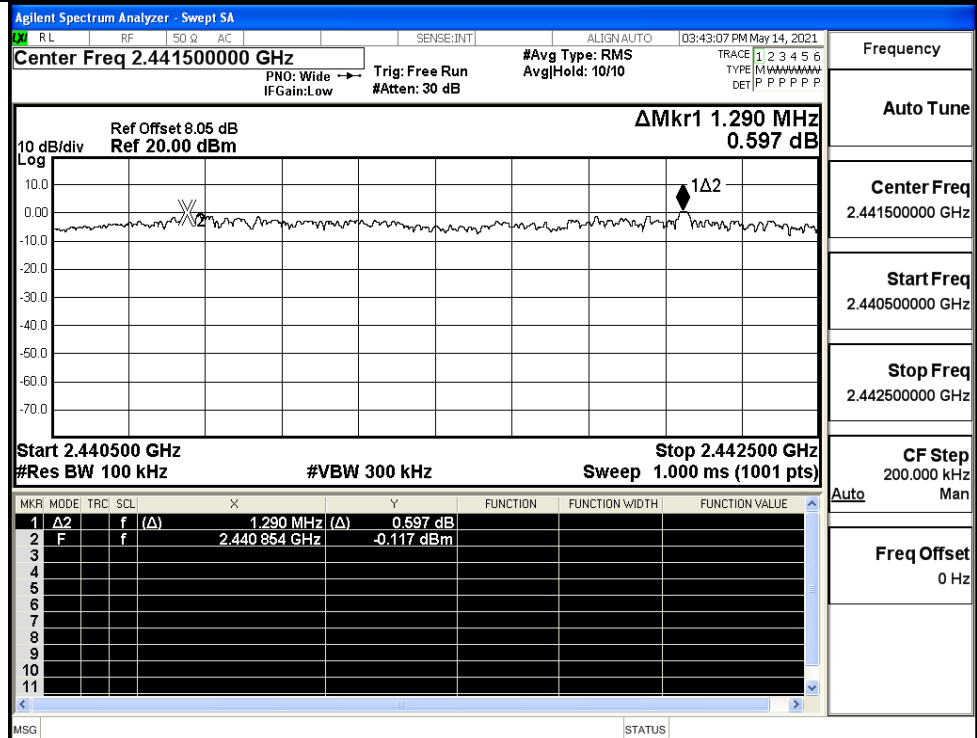
Center Freq
2.479500000 GHz

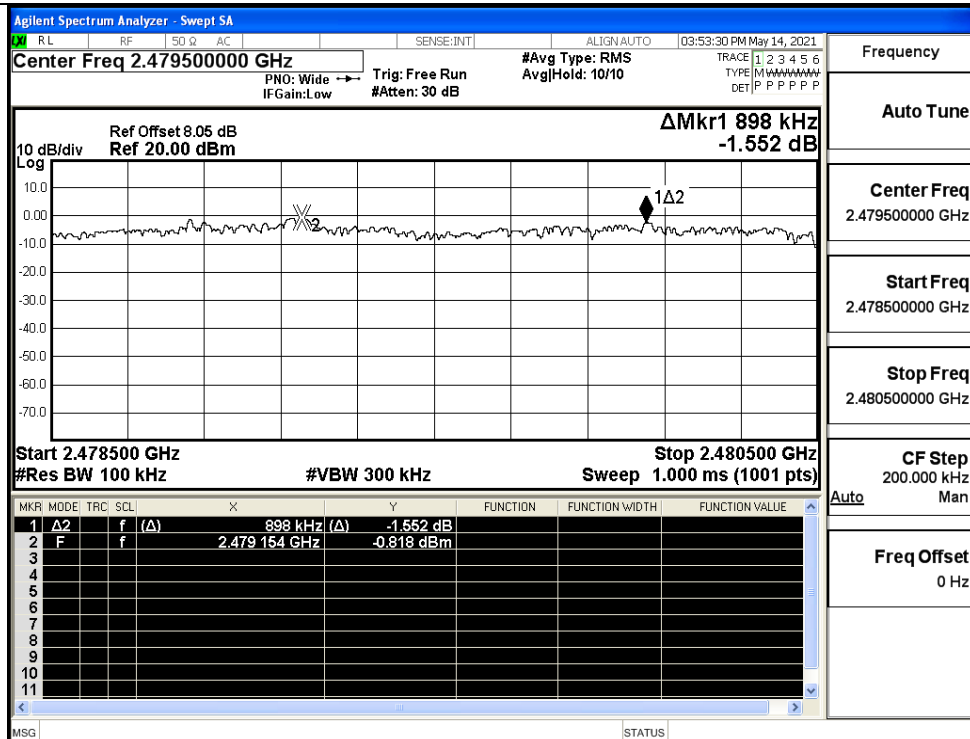
Start Freq
2.478500000 GHz

Stop Freq
2.480500000 GHz

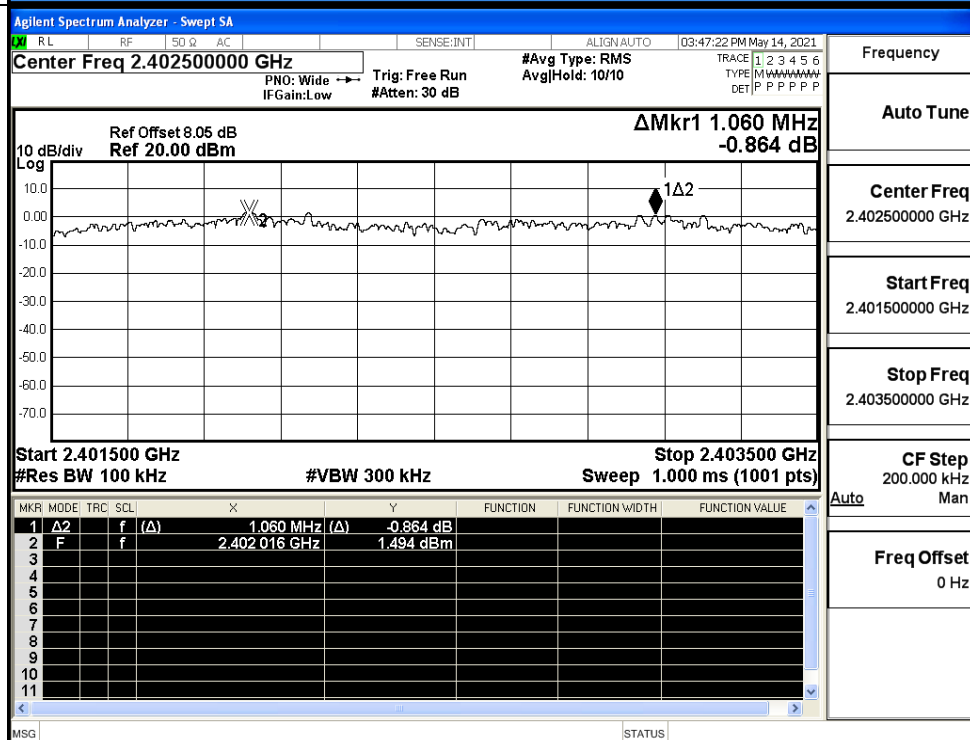
CF Step
200.000 kHz
Man

Freq Offset
0 Hz

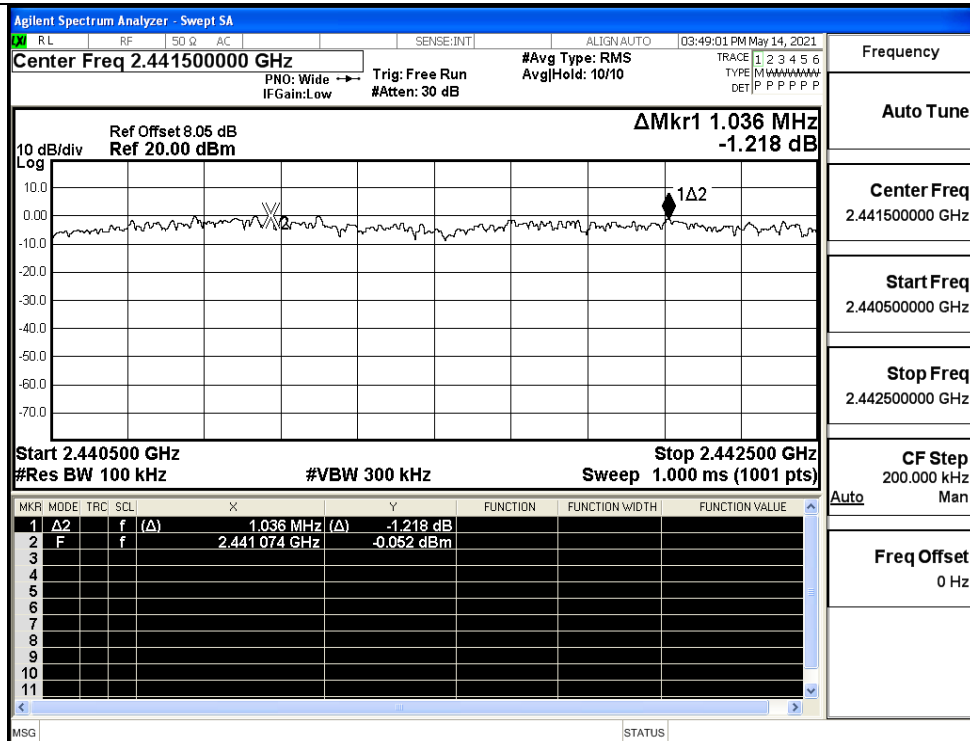
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

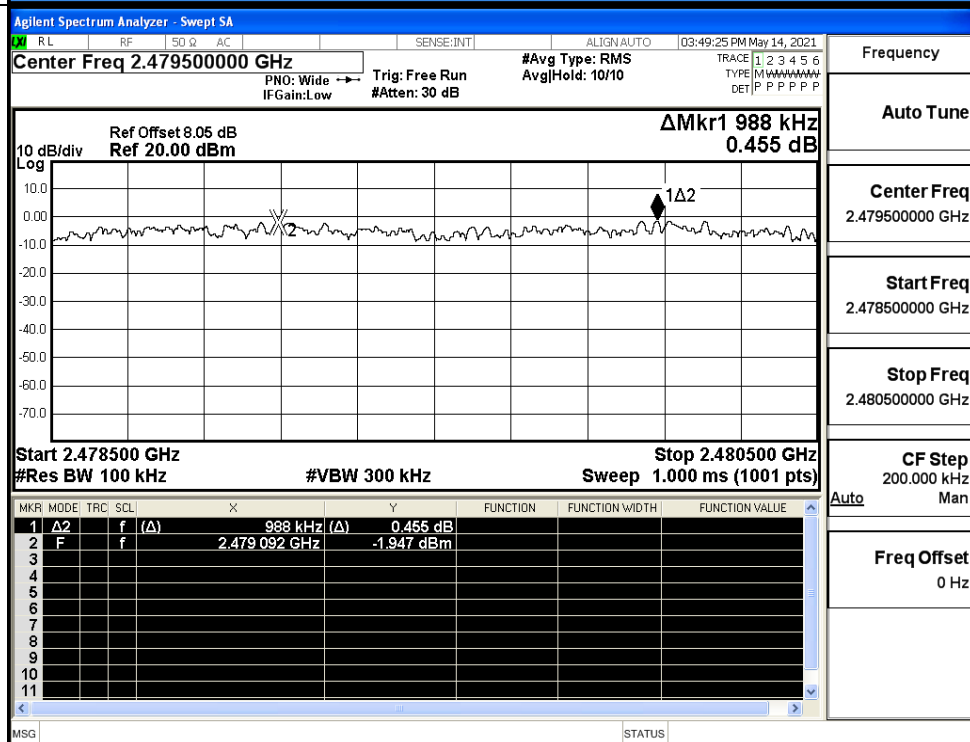
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

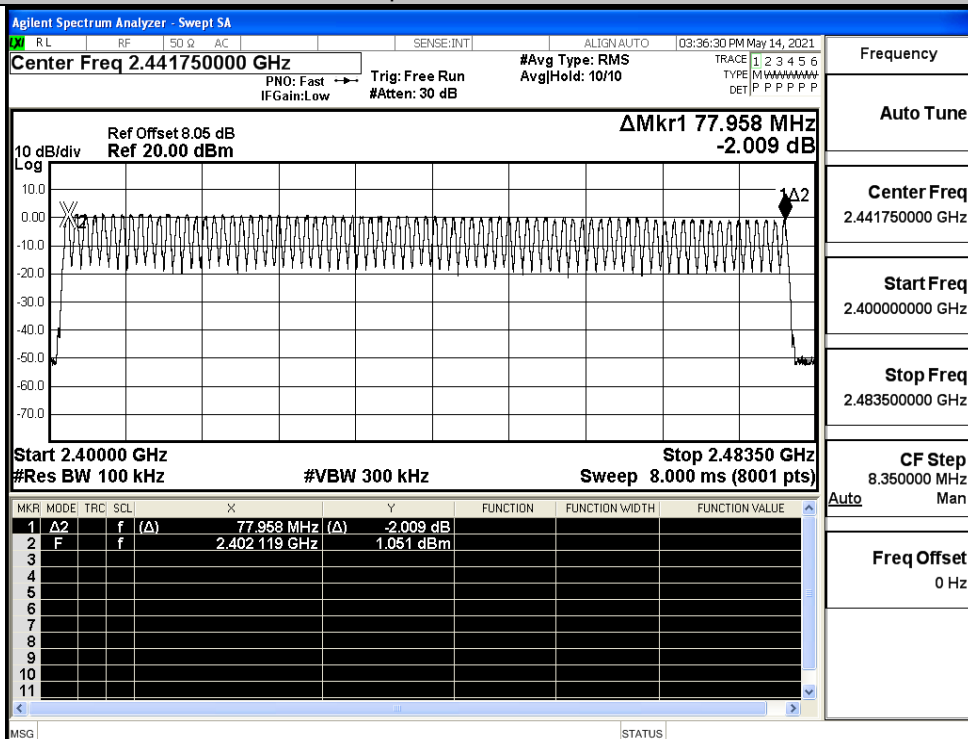


A.4 Hopping Channel Number

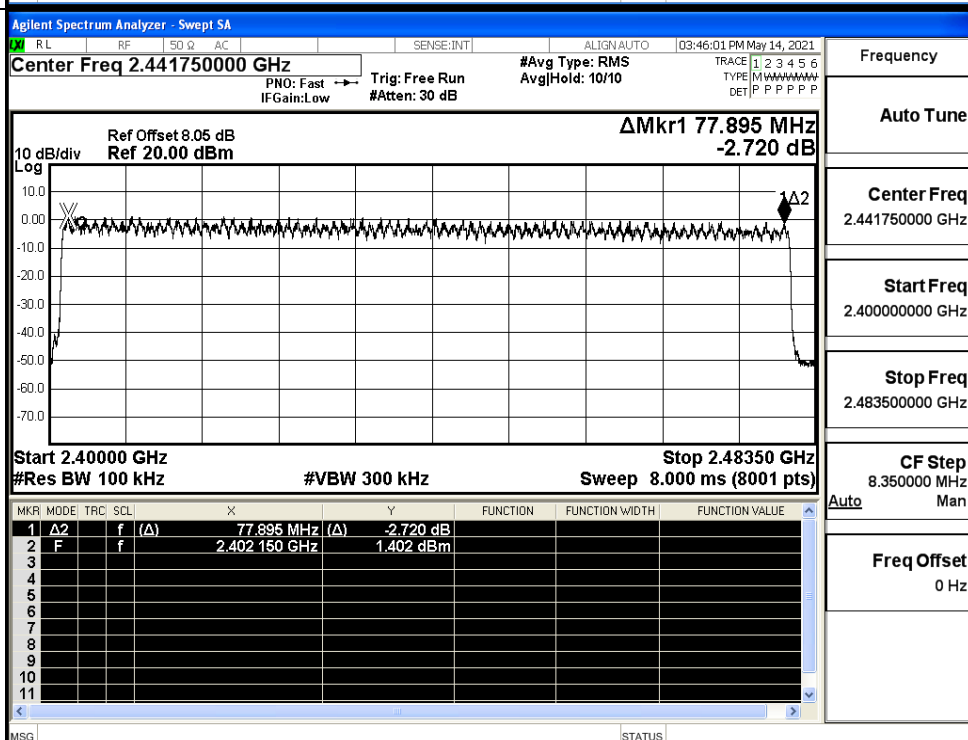
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

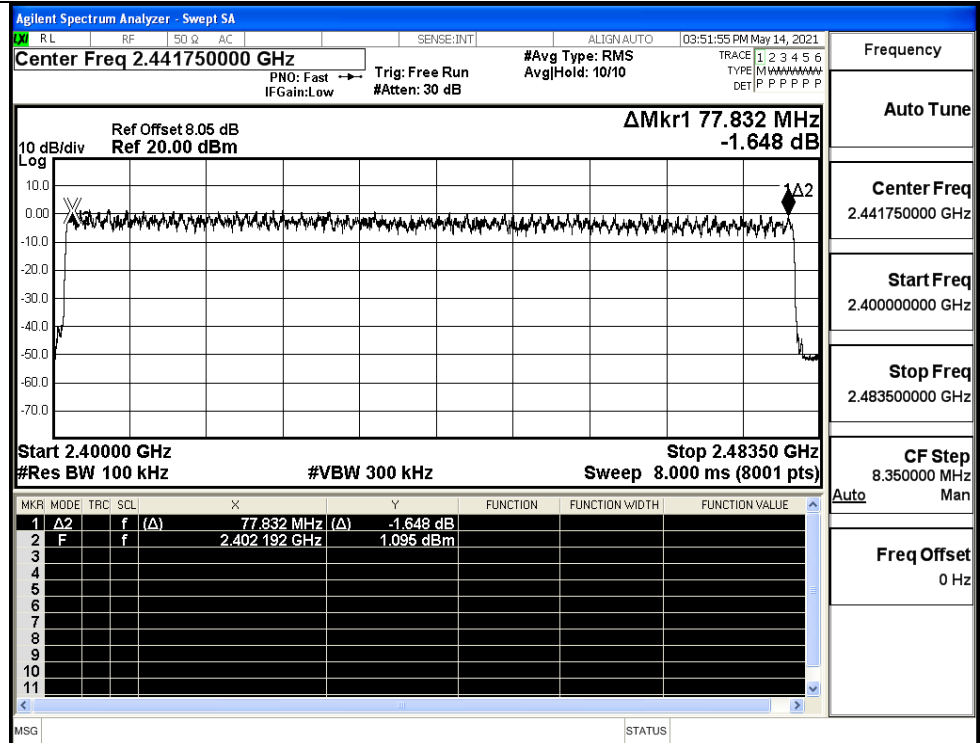
GFSK/Hop



$\pi/4$ DQPSK/Hop



8DPSK/Hop

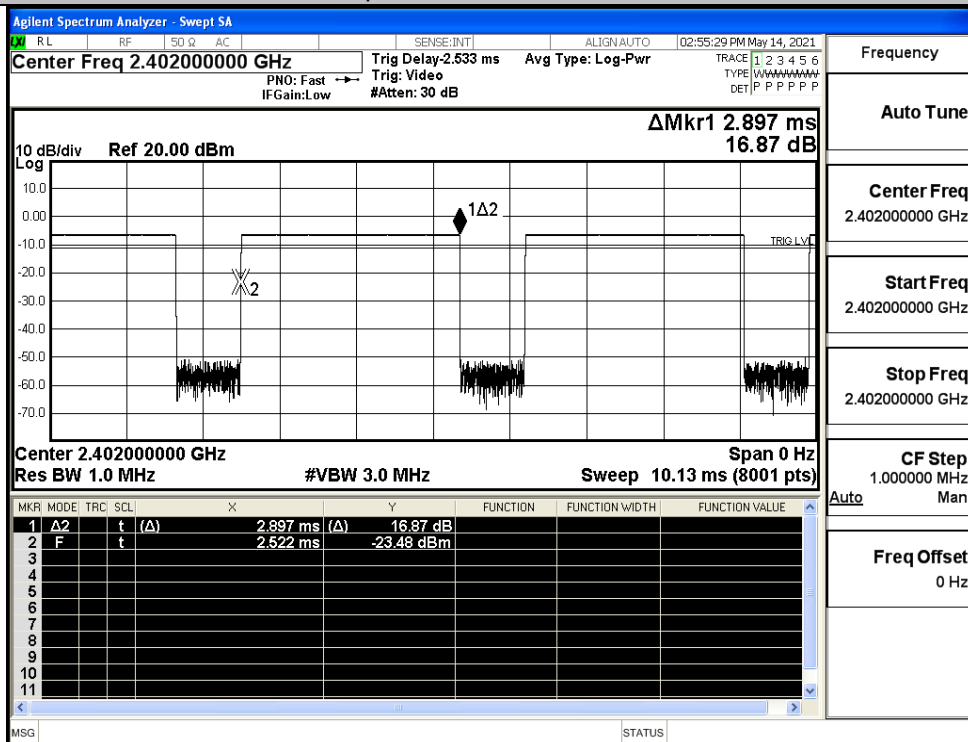


A.5 Dwell Time

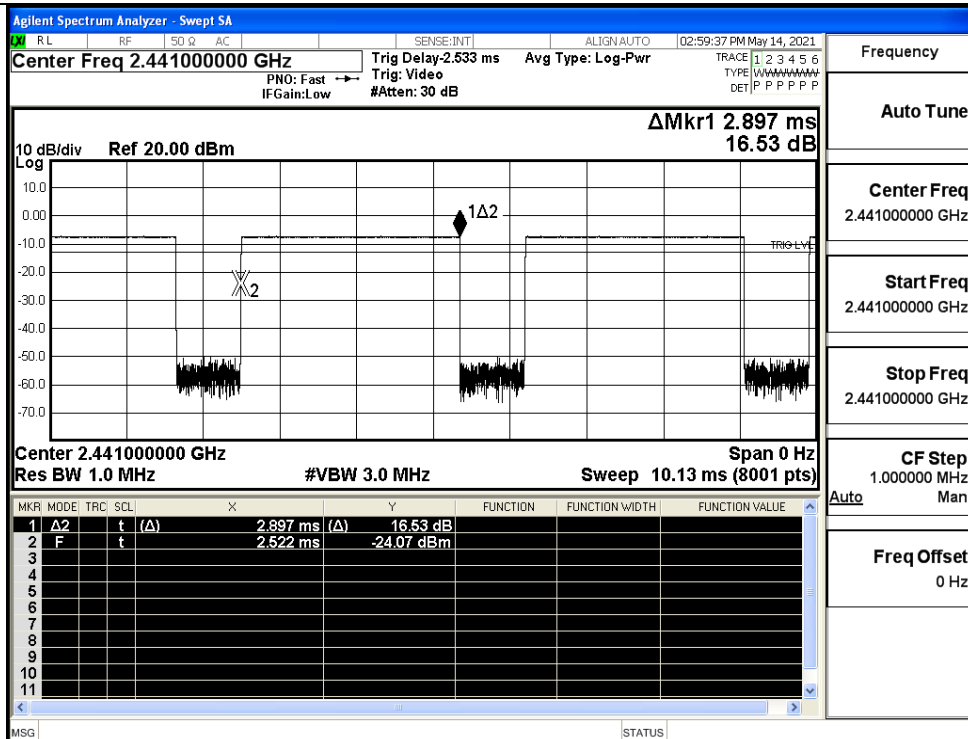
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7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

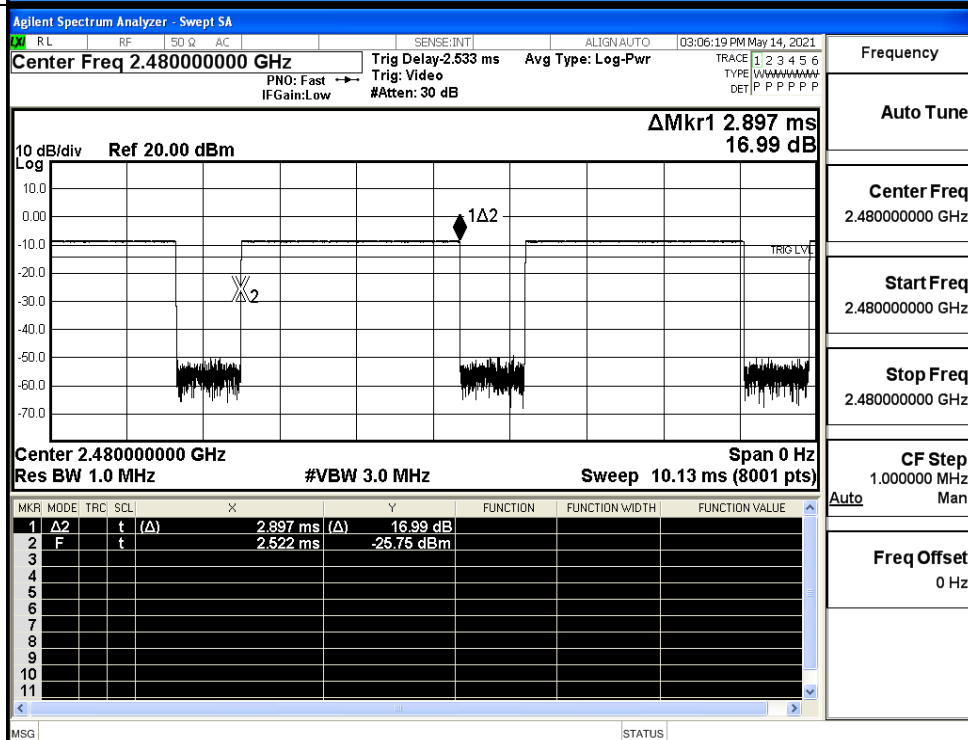
GFSK_DH5/LCH



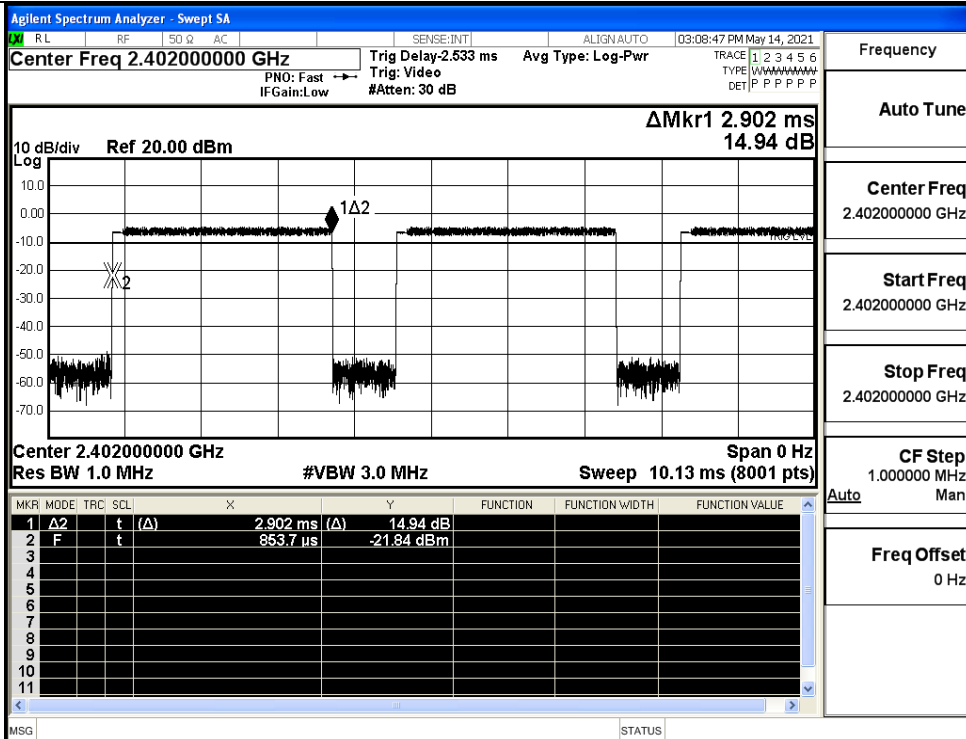
GFSK_DH5/MCH



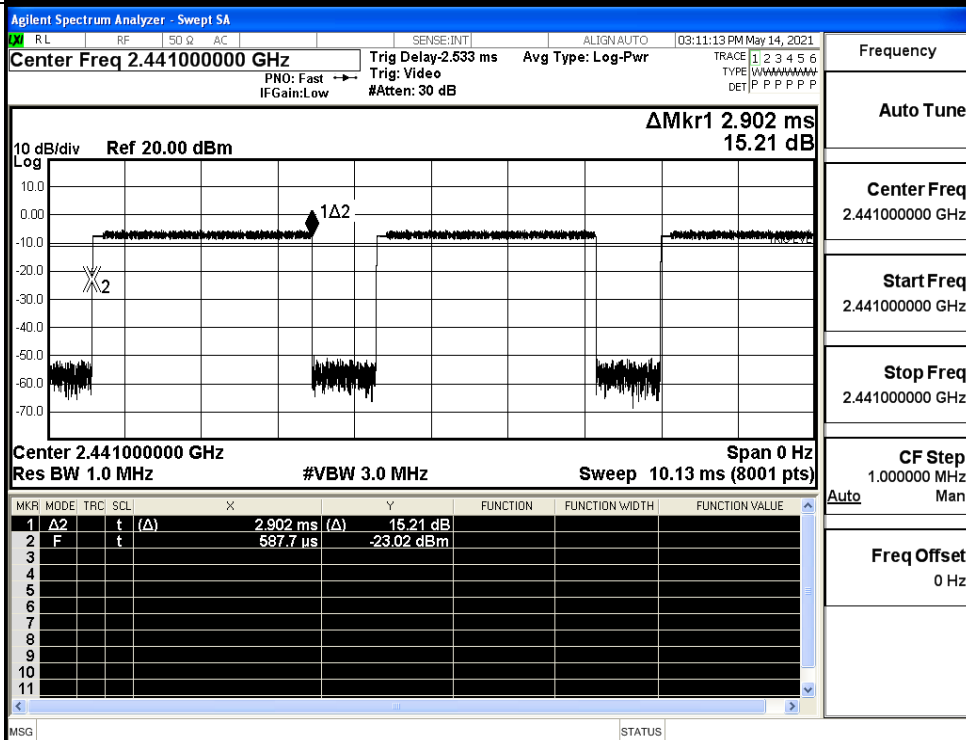
GFSK_DH5/HCH



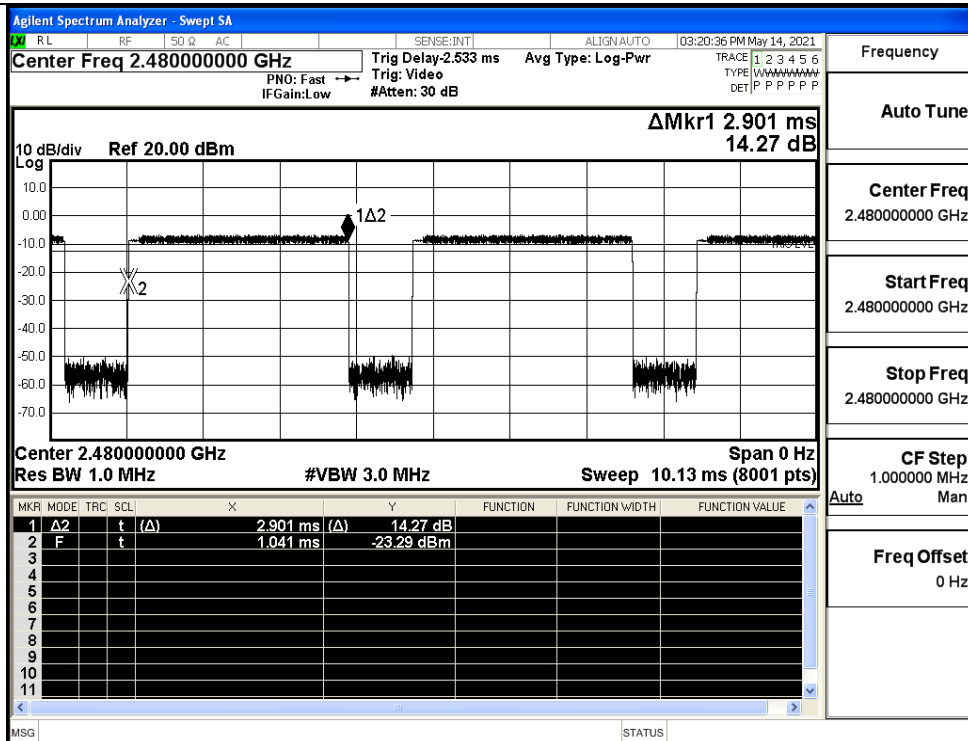
$\pi/4$ DQPSK
_2DH5/LCH



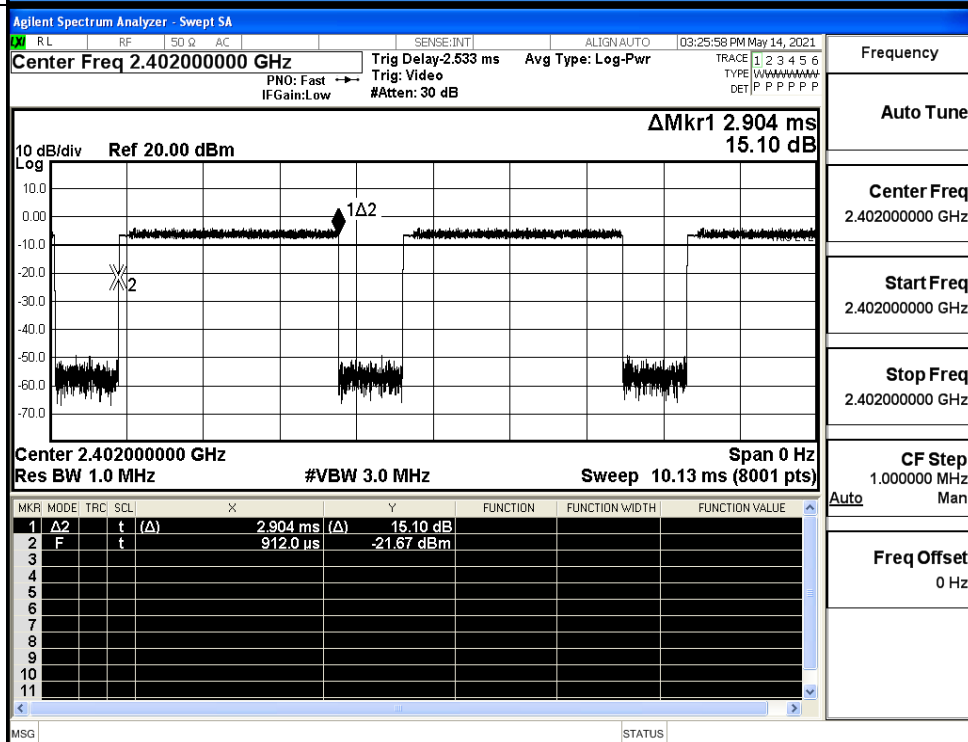
$\pi/4$ DQPSK
_2DH5/MCH



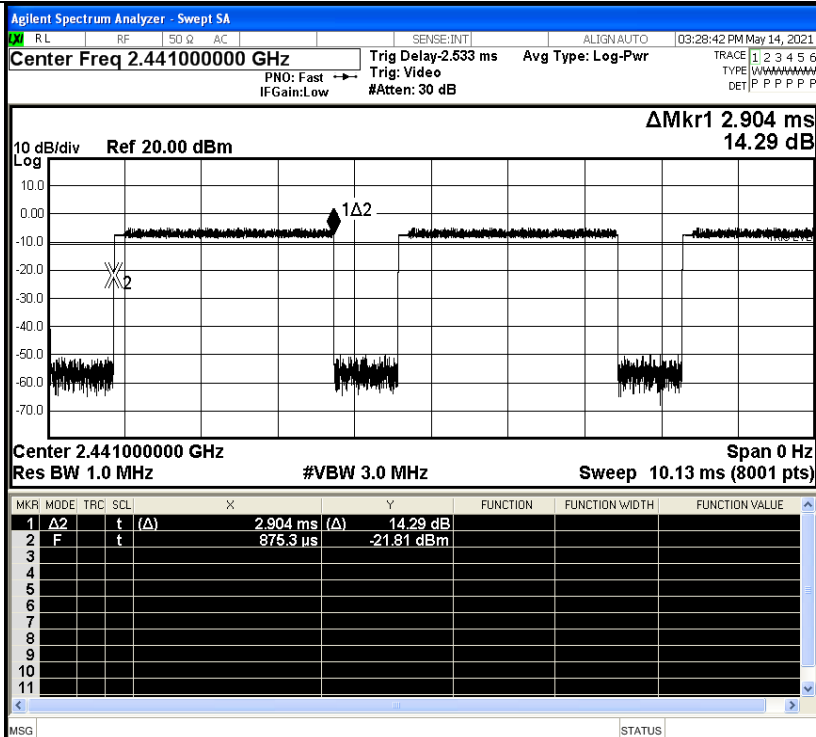
$\pi/4$ DQPSK
_2DH5/HCH



8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



Frequency

Auto Tune

Center Freq
2.441000000 GHz

Start Freq
2.441000000 GHz

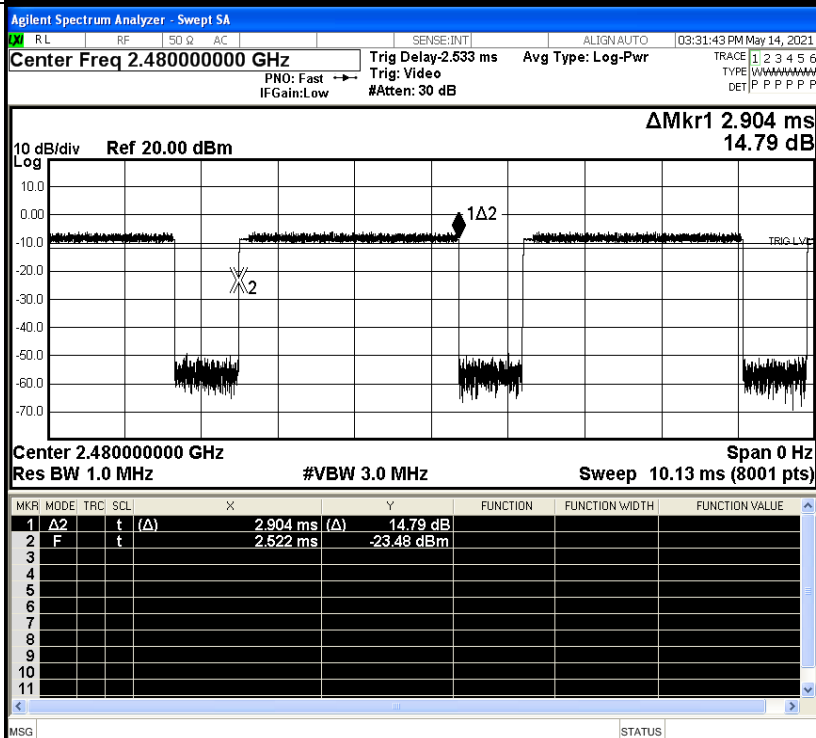
Stop Freq
2.441000000 GHz

CF Step
1.000000 MHz

Auto

Freq Offset
0 Hz

8DPSK_3DH5/HCH



Frequency

Auto Tune

Center Freq
2.480000000 GHz

Start Freq
2.480000000 GHz

Stop Freq
2.480000000 GHz

CF Step
1.000000 MHz

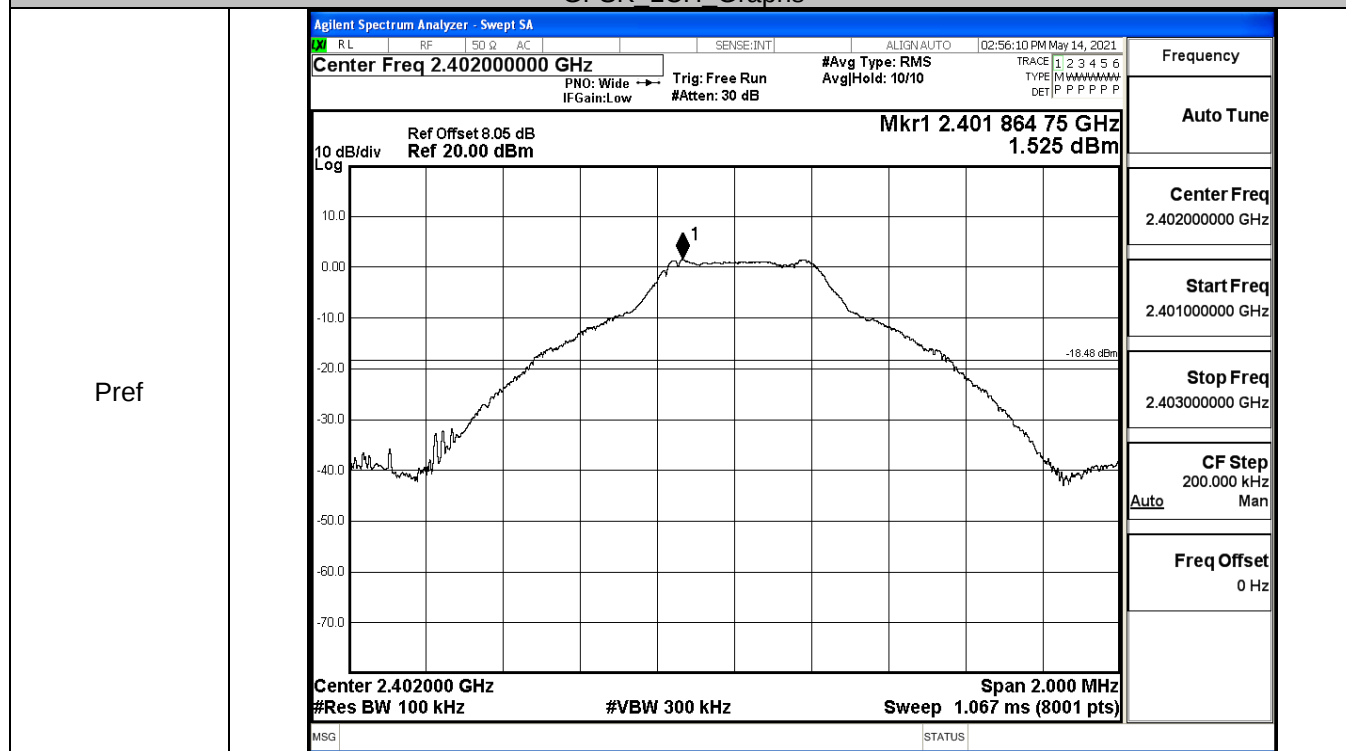
Auto

Freq Offset
0 Hz

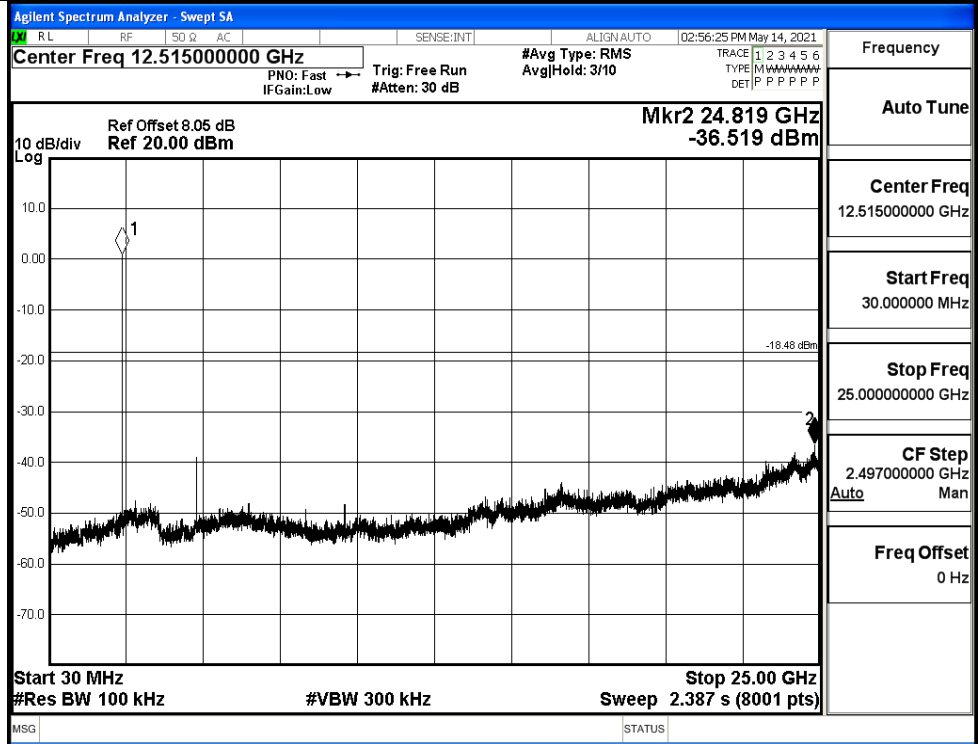
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.525	-36.519	-18.475	PASS
	MCH	0.514	-36.770	-19.486	PASS
	HCH	-0.736	-37.922	-20.736	PASS
$\pi/4$ DQPSK	LCH	0.821	-37.912	-19.179	PASS
	MCH	0.445	-37.765	-19.555	PASS
	HCH	-0.773	-36.963	-20.773	PASS
8DPSK	LCH	1.280	-36.997	-18.720	PASS
	MCH	0.594	-37.766	-19.406	PASS
	HCH	-0.636	-37.466	-20.636	PASS

GFSK LCH Graphs

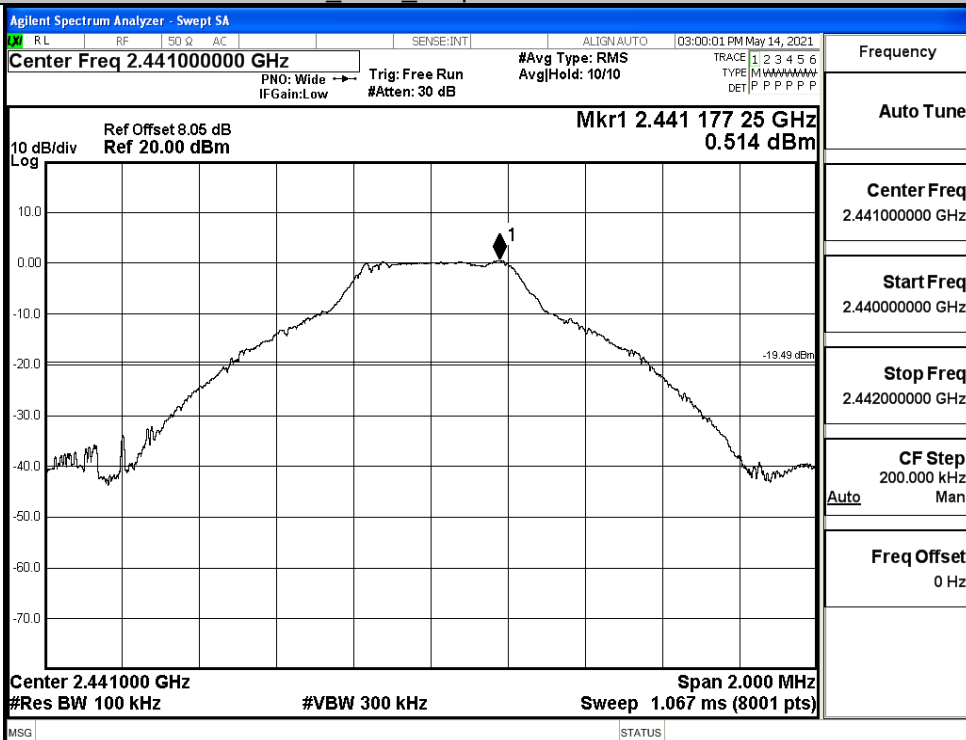


Puw

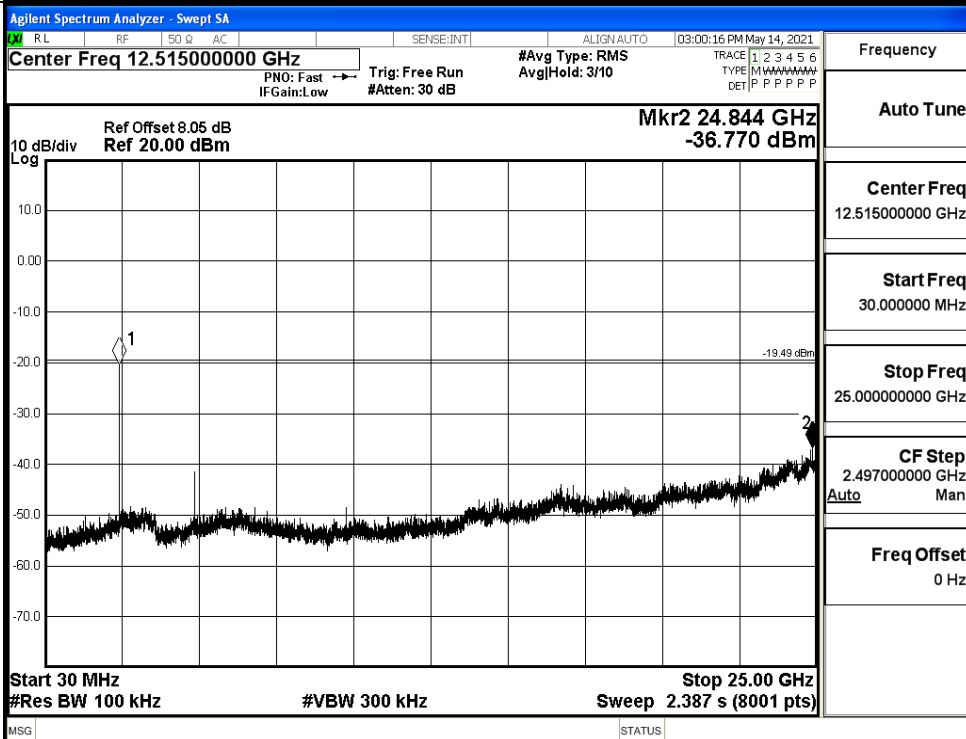


GFSK_MCH_Graphs

Pref

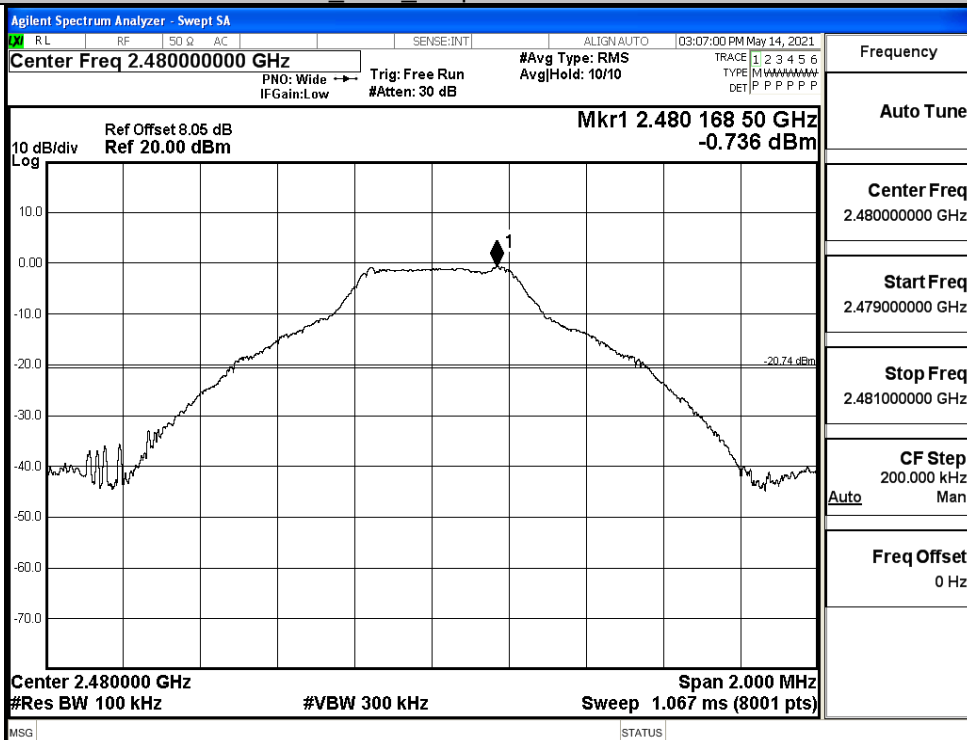


Puw

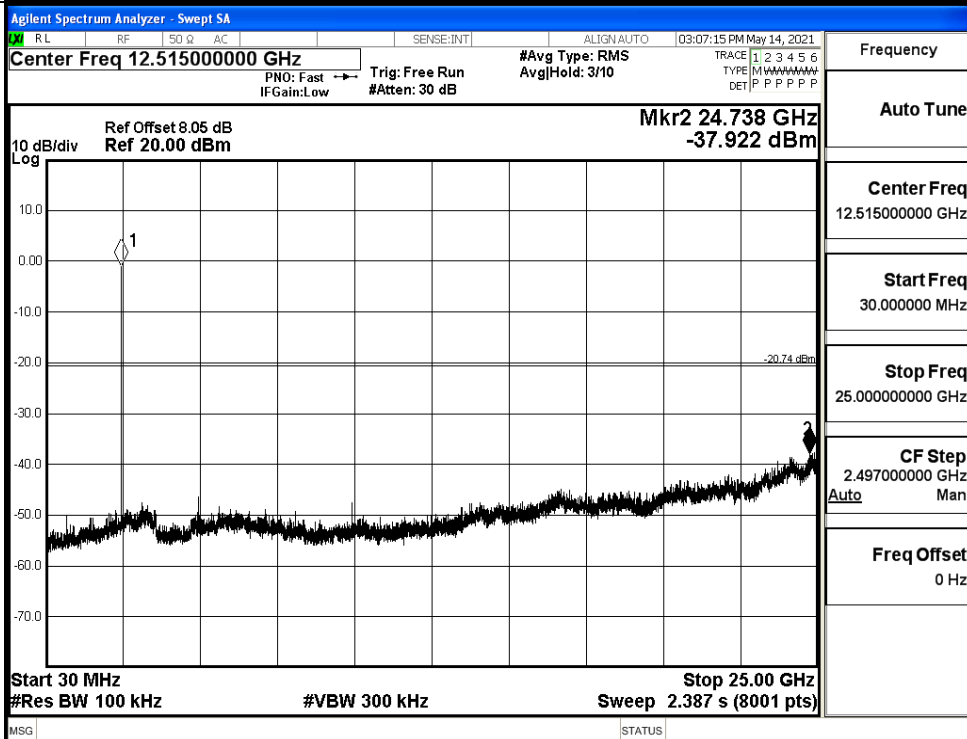


GFSK HCH_Graphs

Pref

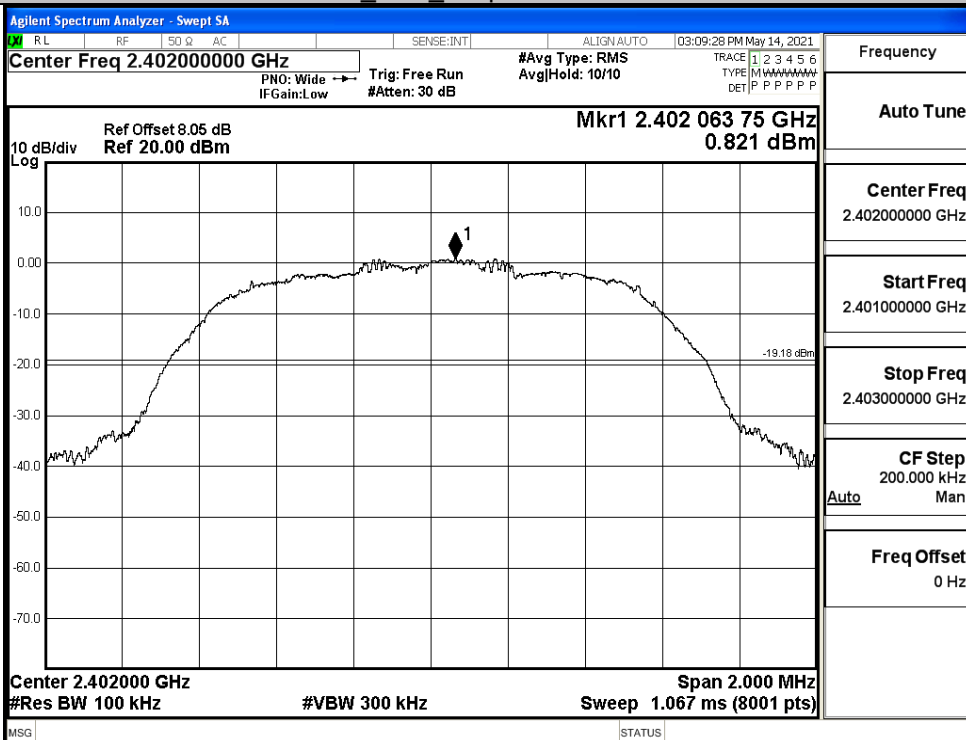


Puw

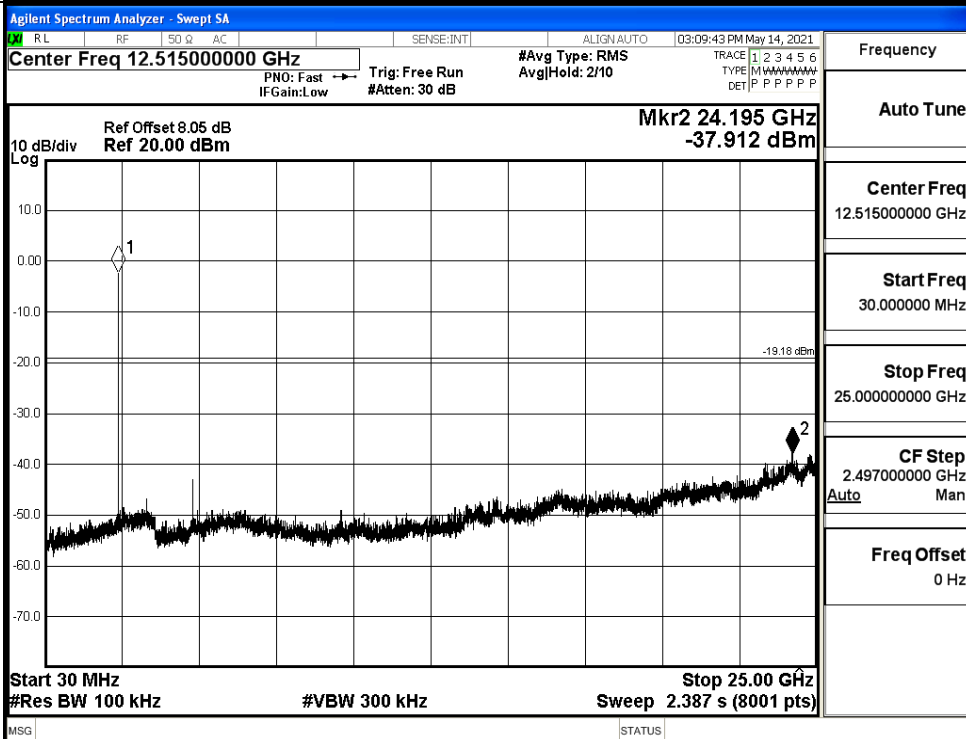


$\pi/4$ DQPSK_LCH_Graphs

Pref

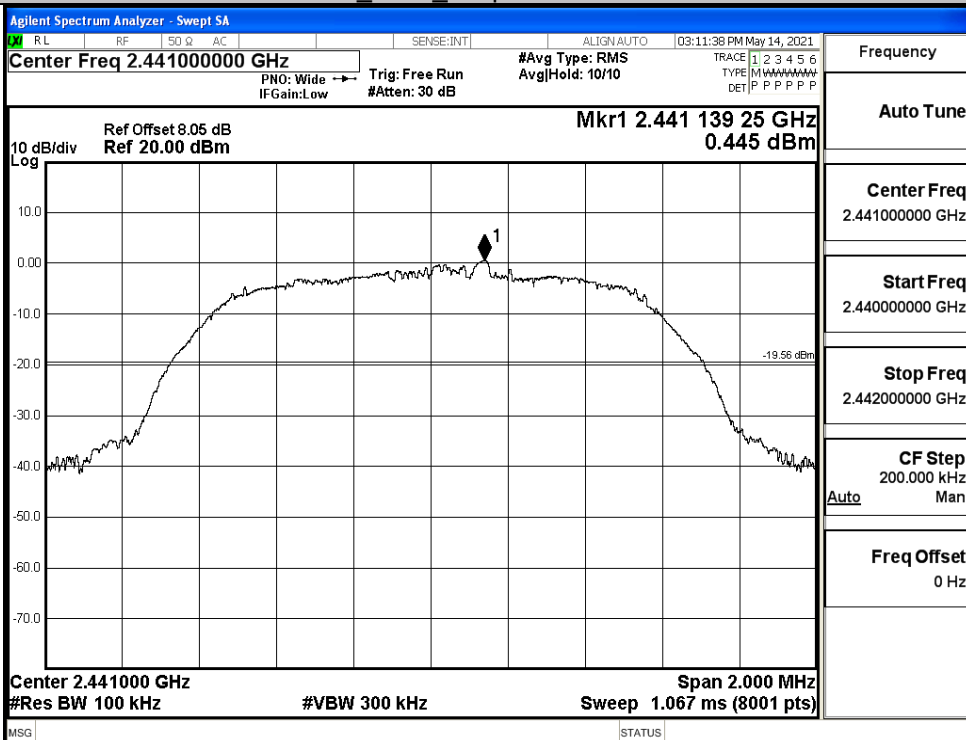


Puw

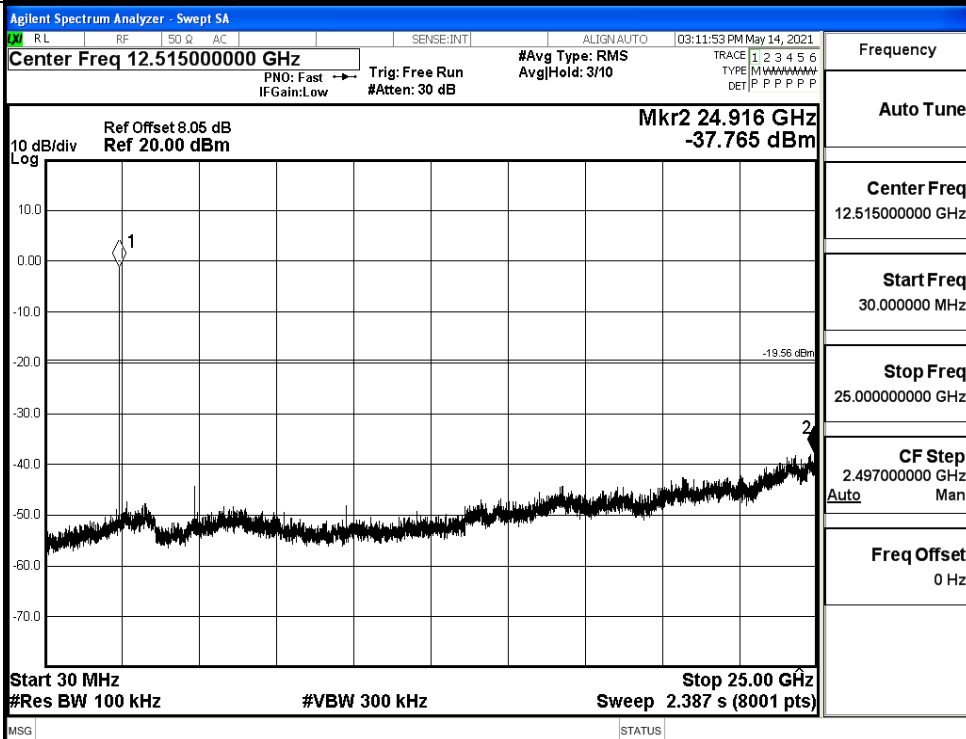


π /4DQPSK_MCH_Graphs

Pref

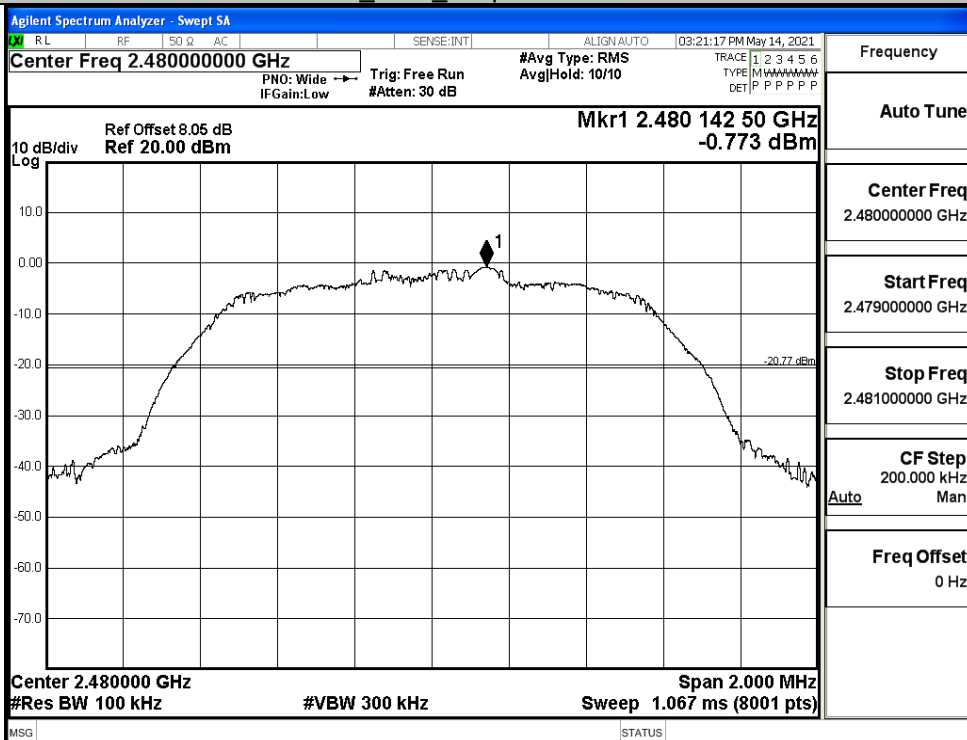


Puw

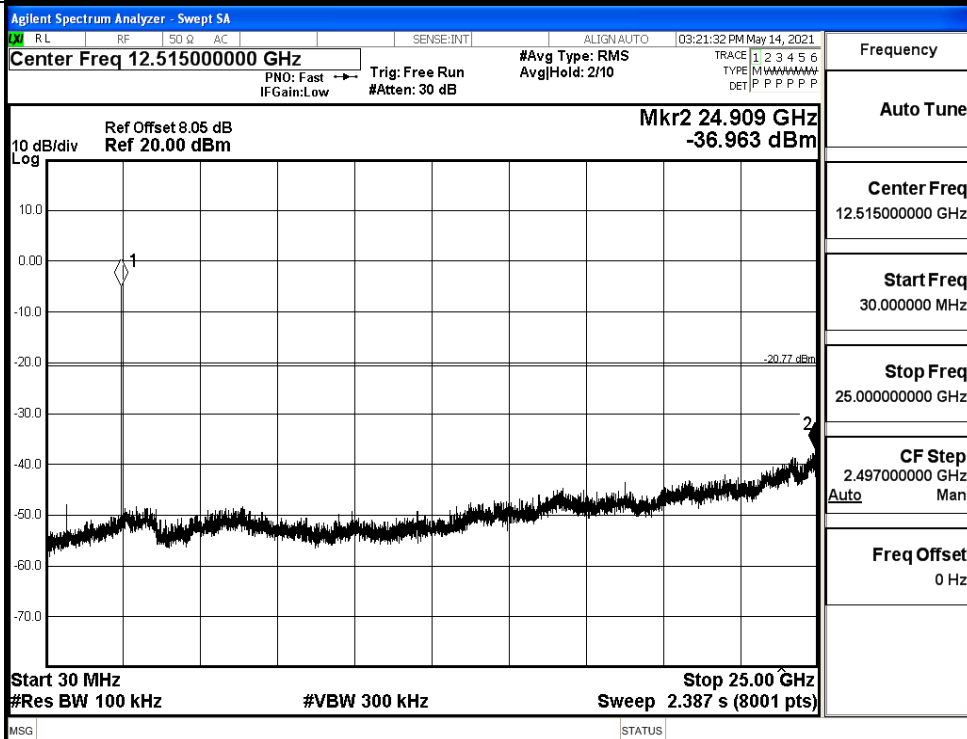


$\pi/4$ DQPSK_HCH_Graphs

Pref

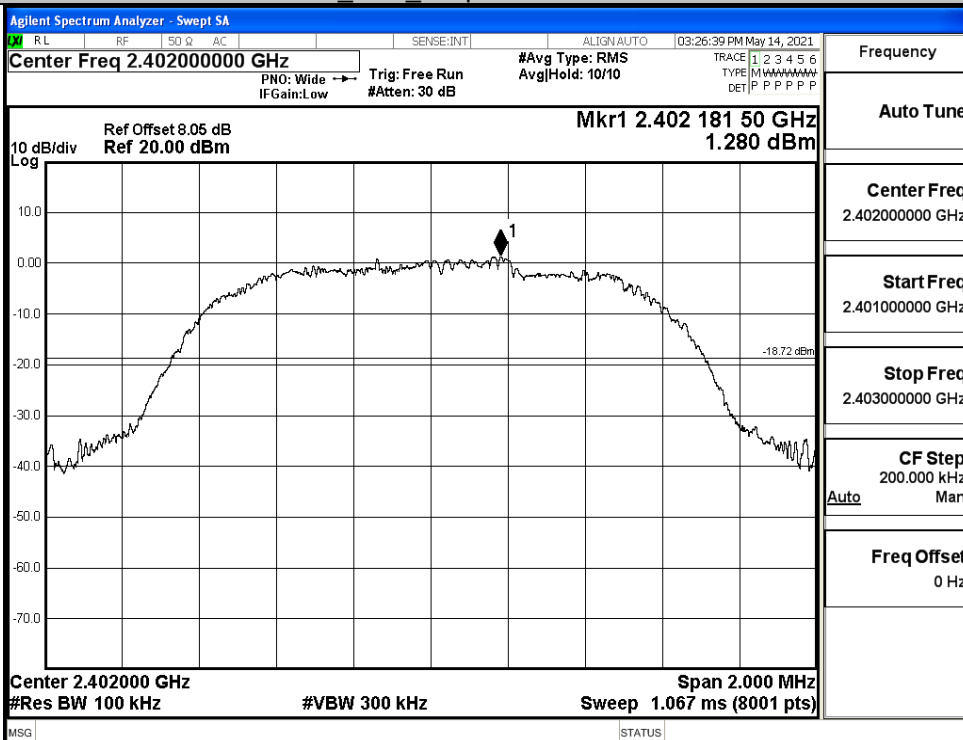


Puw

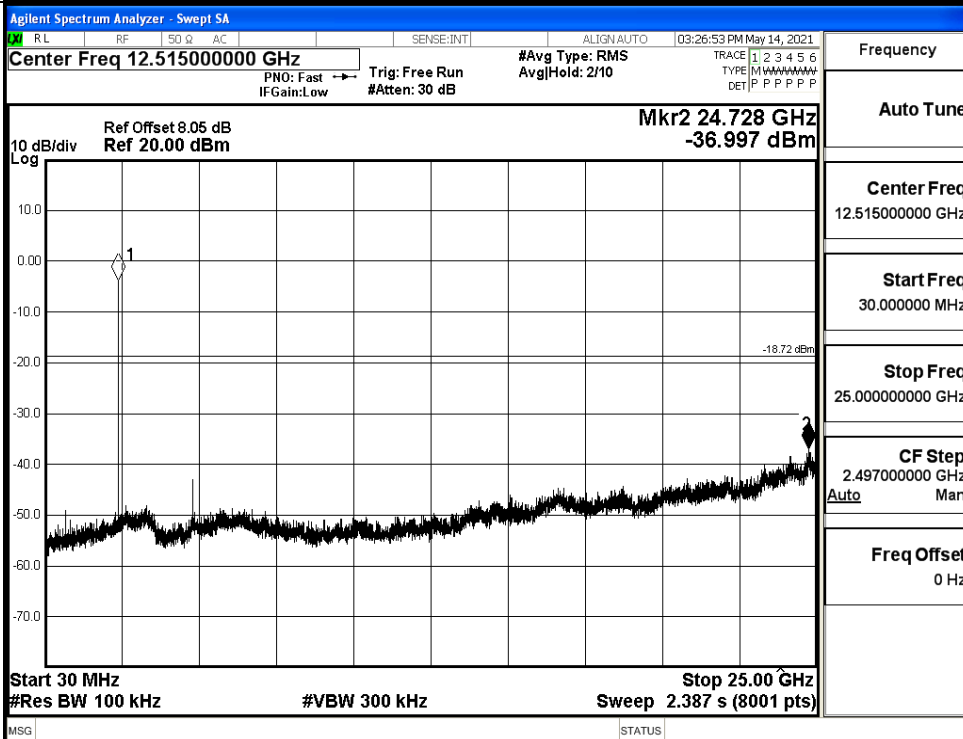


8DPSK_LCH_Graphs

Pref

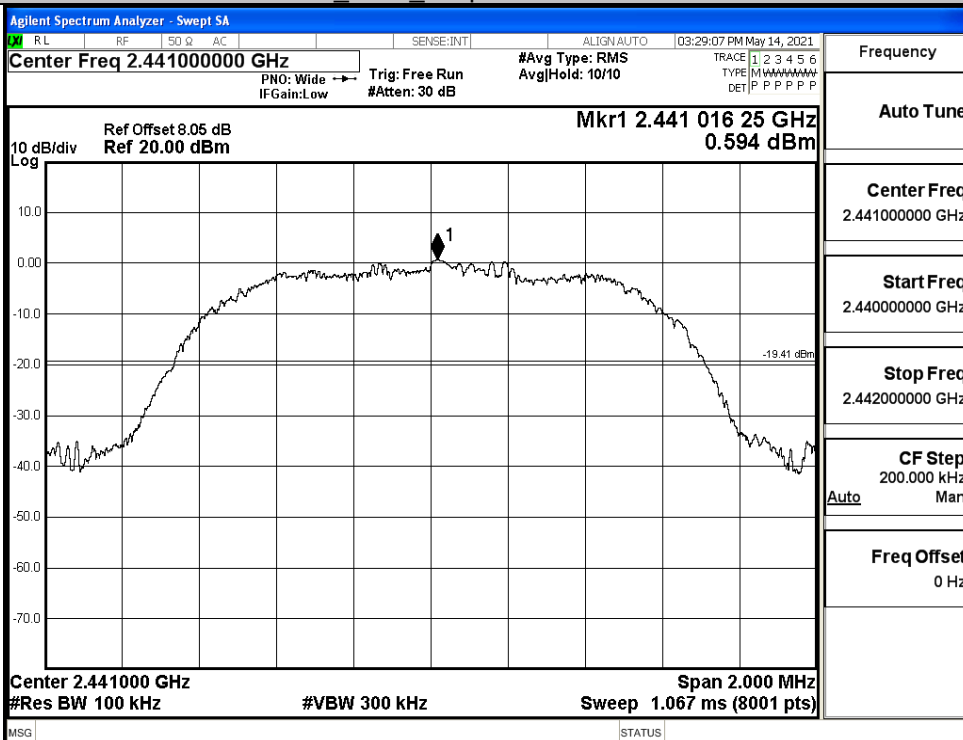


Puw

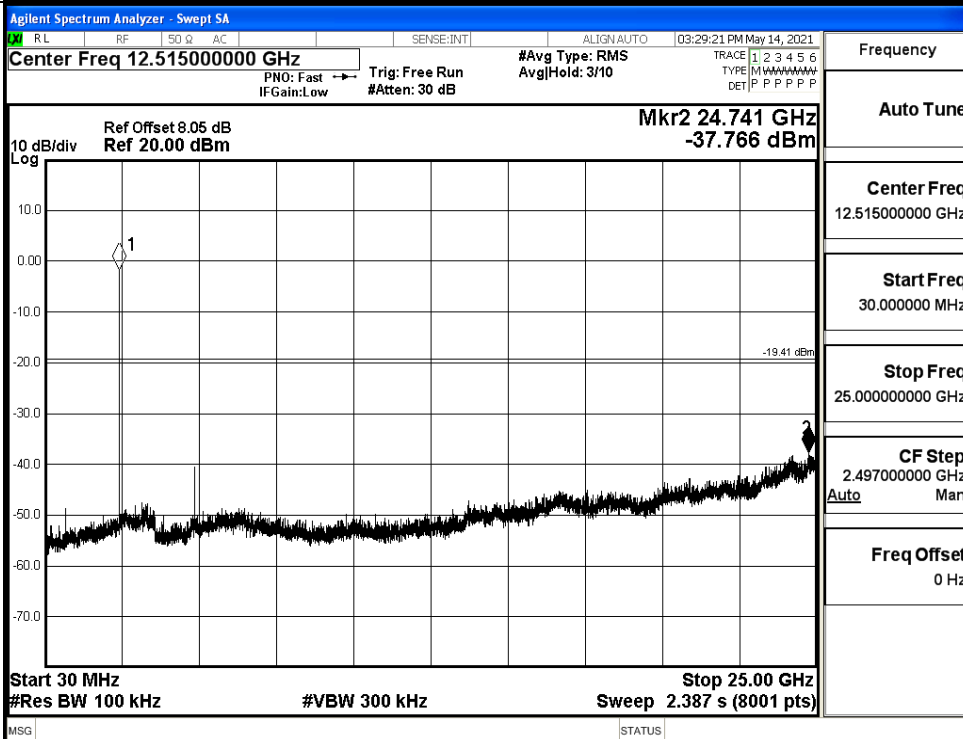


8DPSK_MCH_Graphs

Pref

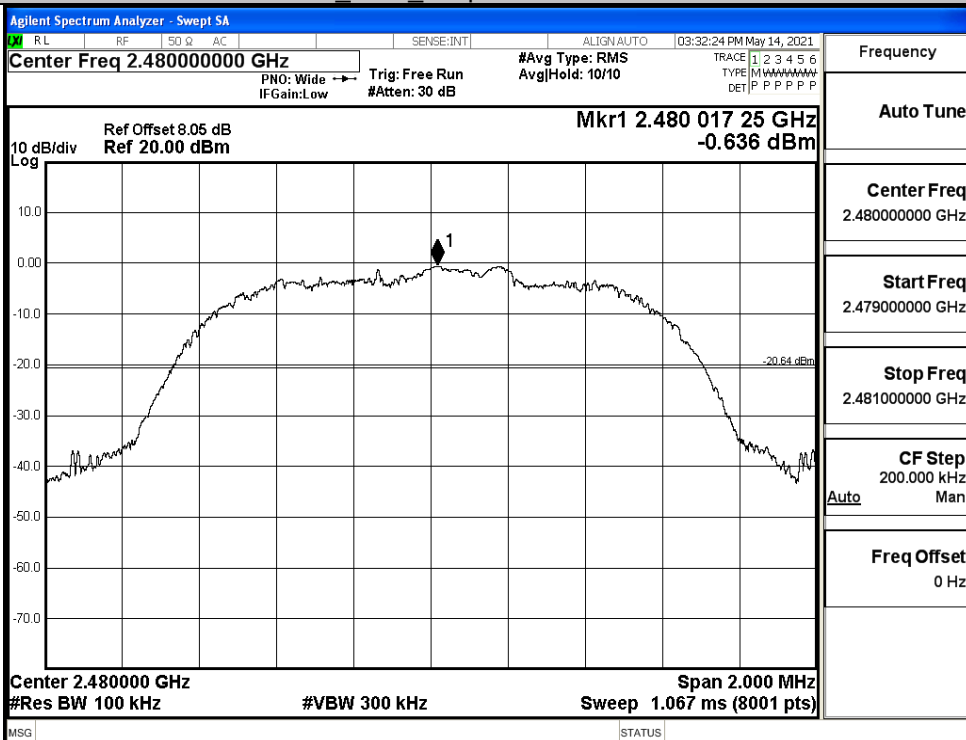


Puw

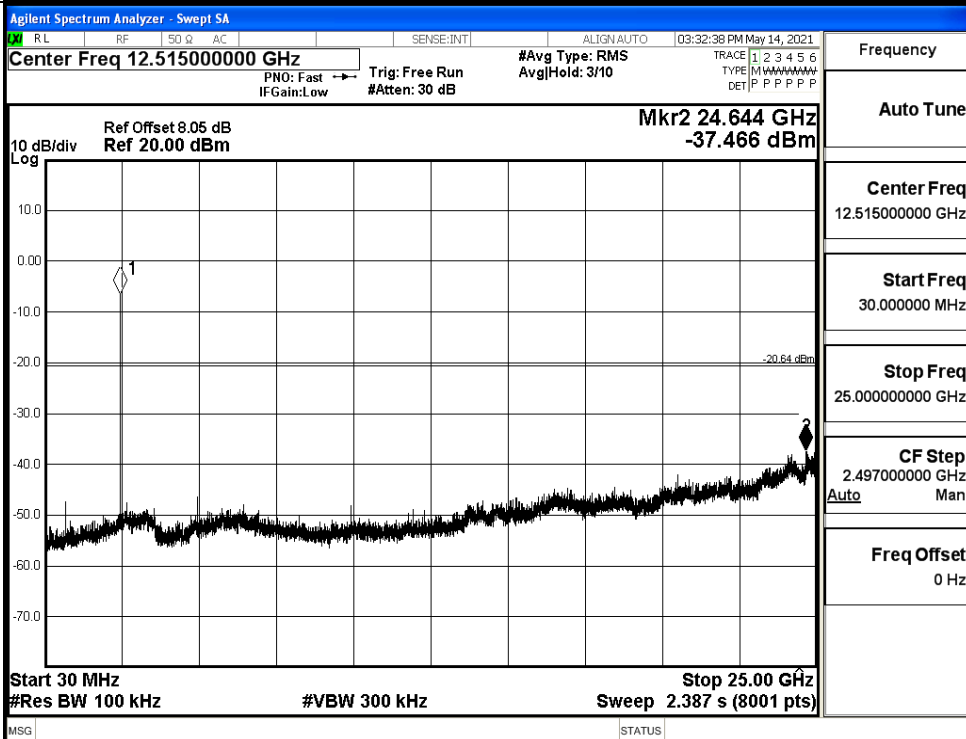


8DPSK_HCH_Graphs

Pref



Puw

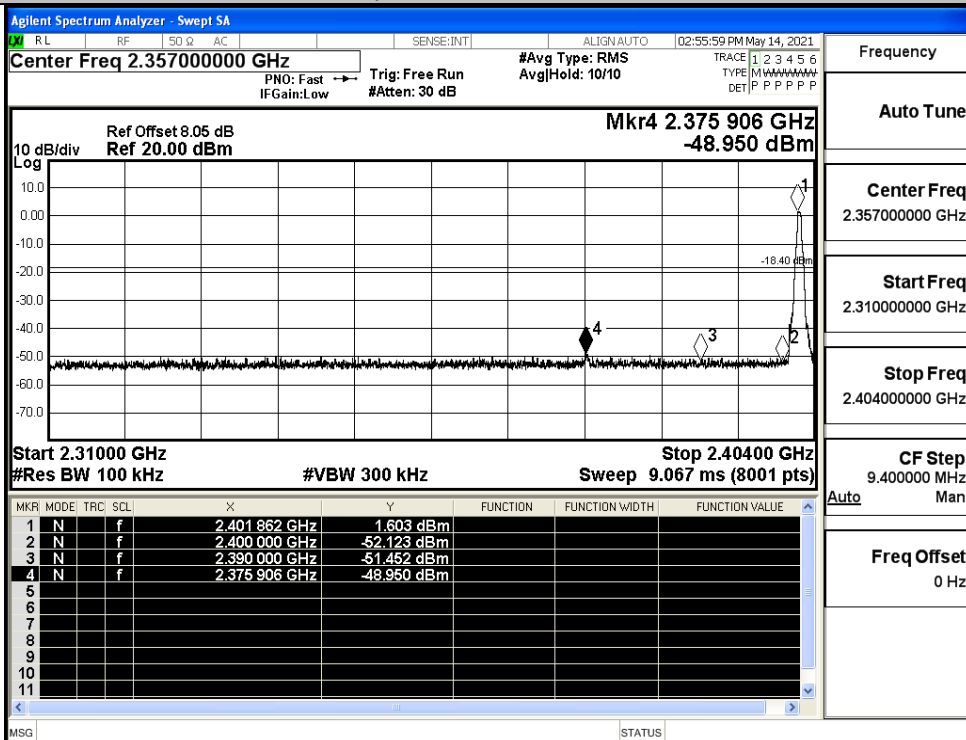


A.7 Band-edge for RF Conducted Emissions

Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.603	Off	-48.950	-18.4	PASS
			1.374	On	-48.541	-18.63	PASS
	HCH	2480	-0.587	Off	-48.703	-20.59	PASS
			-0.157	On	-48.880	-20.16	PASS
$\pi/4$ DQPSK	LCH	2402	1.236	Off	-49.567	-18.76	PASS
			1.084	On	-48.457	-18.92	PASS
	HCH	2480	-0.814	Off	-49.195	-20.81	PASS
			-0.112	On	-48.811	-20.11	PASS
8DPSK	LCH	2402	1.443	Off	-48.936	-18.56	PASS
			1.218	On	-48.331	-18.78	PASS
	HCH	2480	-0.669	Off	-48.580	-20.67	PASS
			0.164	On	-47.118	-19.84	PASS

Test Graphs

GFSK/LCH/No Hop



Frequency

Auto Tune

Center Freq
2.357000000 GHz

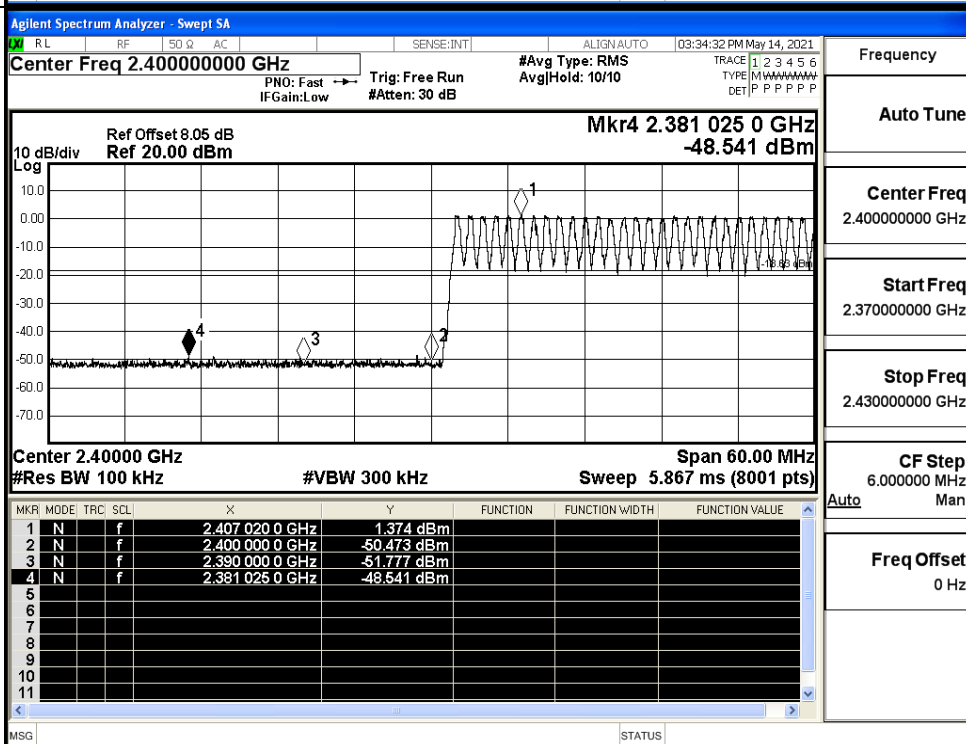
Start Freq
2.310000000 GHz

Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz

Freq Offset
0 Hz

GFSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

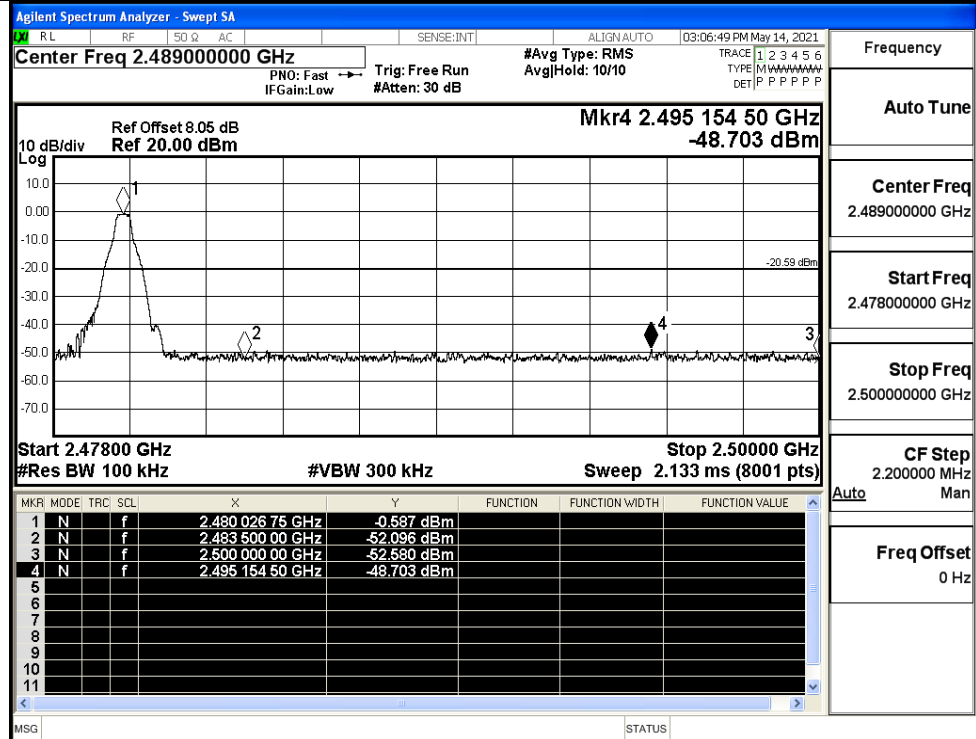
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

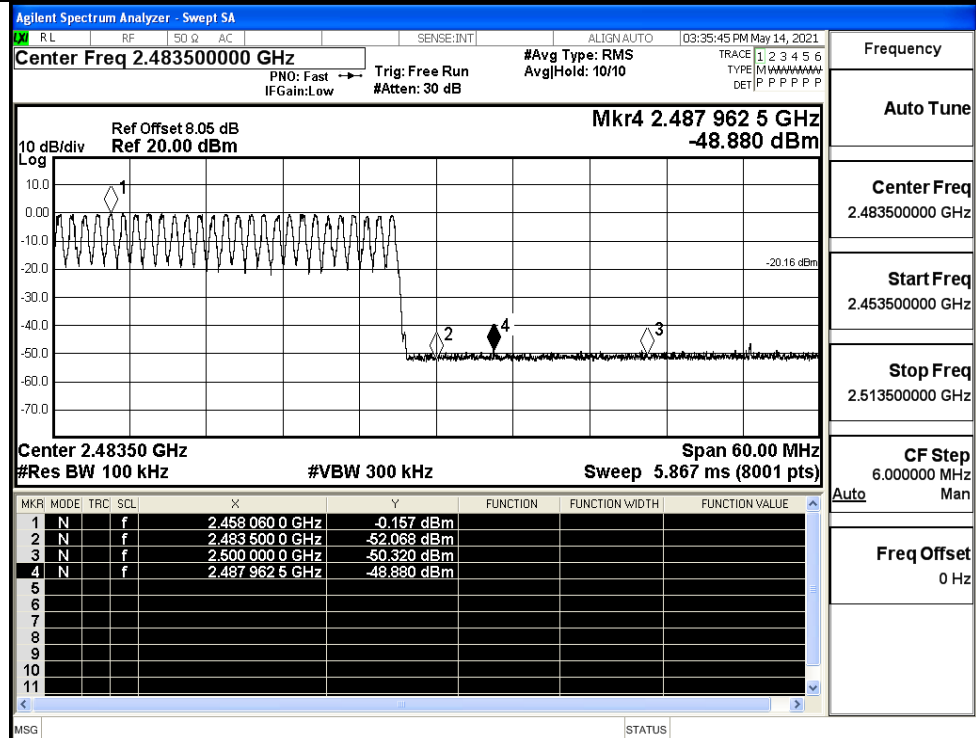
CF Step
6.000000 MHz

Freq Offset
0 Hz

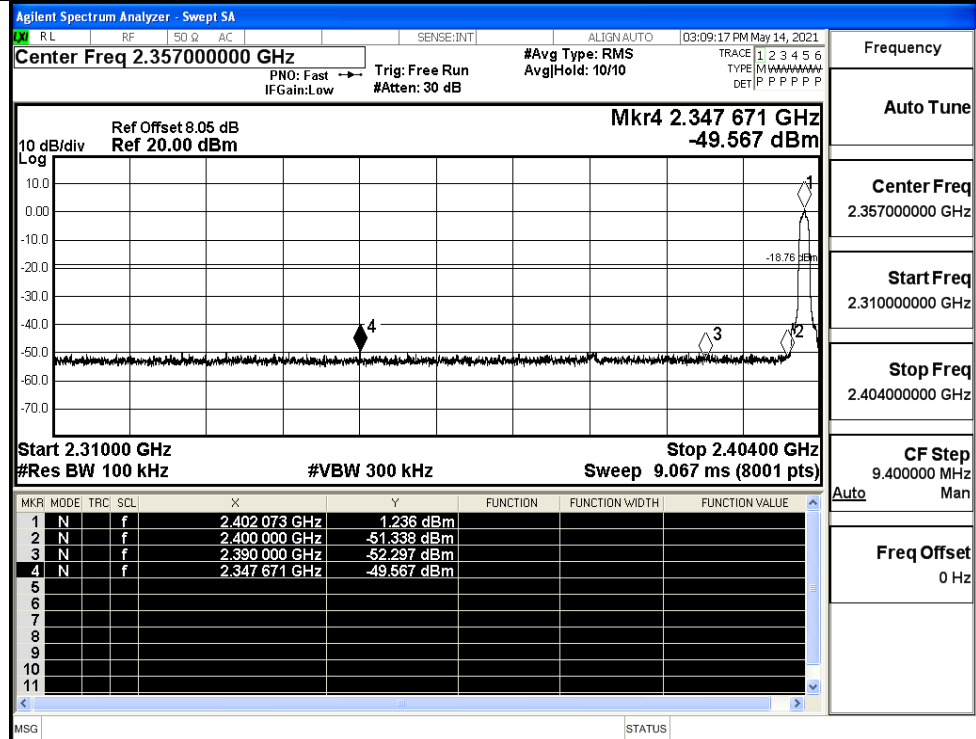
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

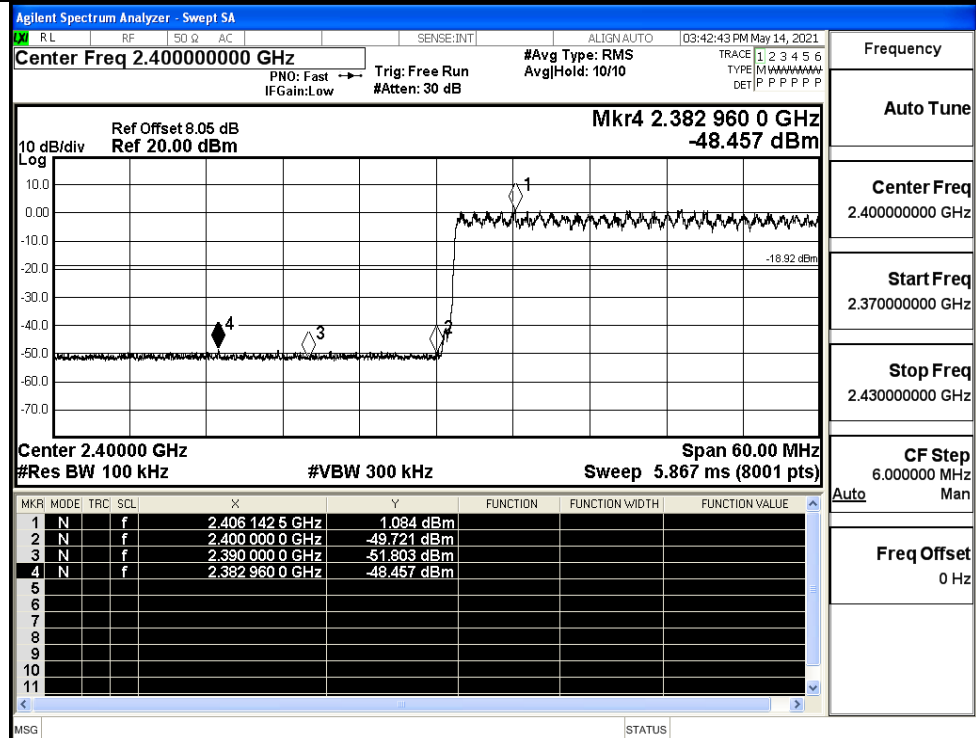
Start Freq
2.310000000 GHz

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

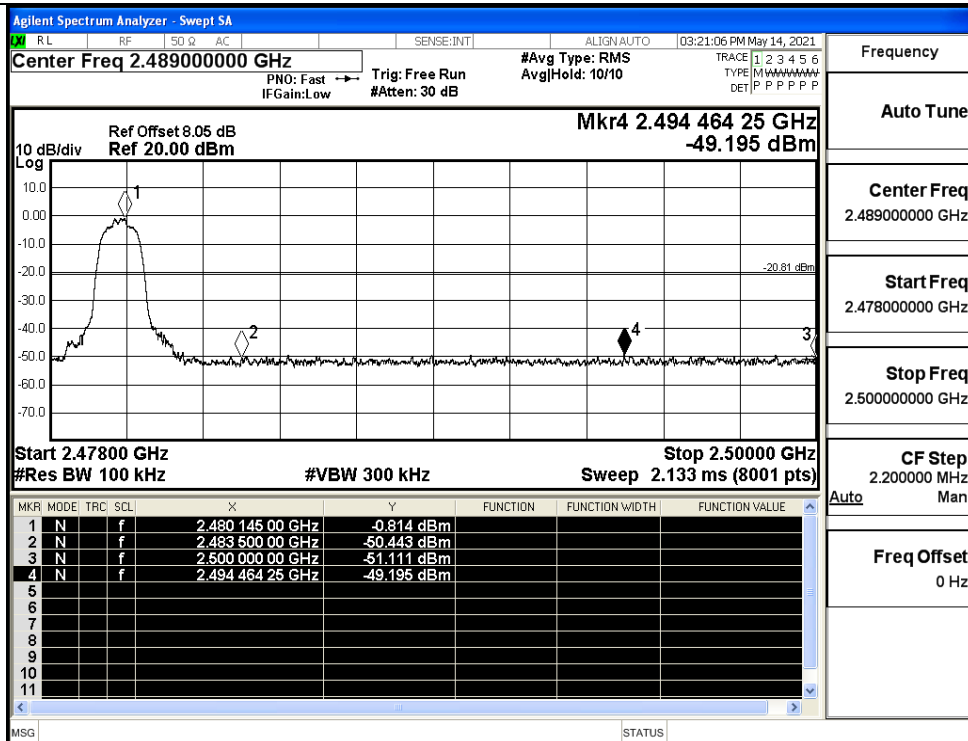
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

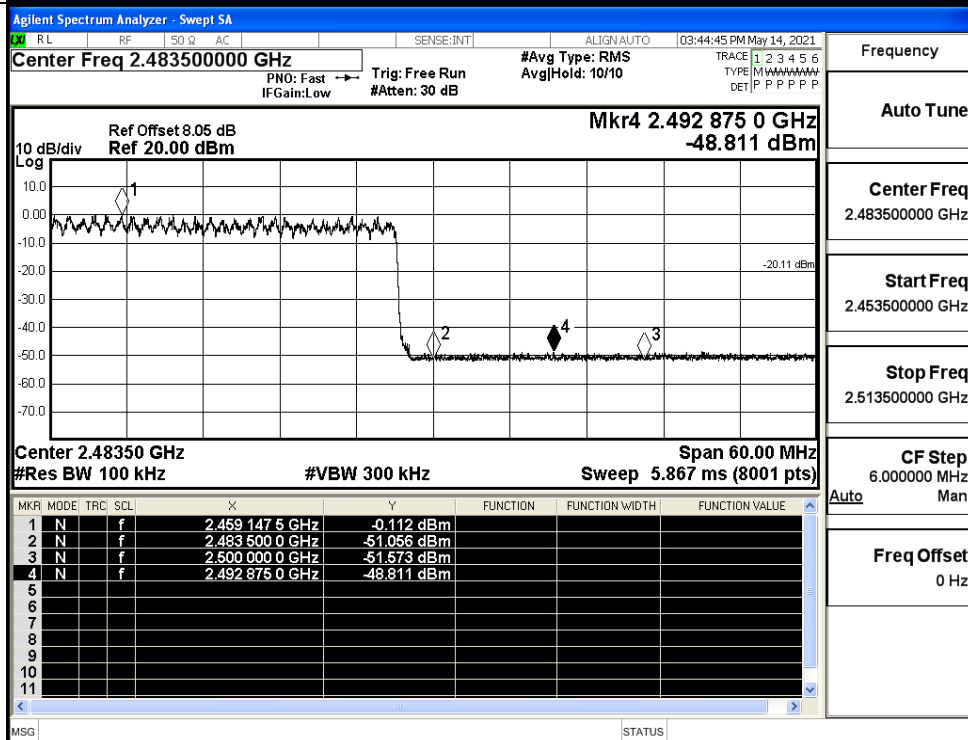


Frequency

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

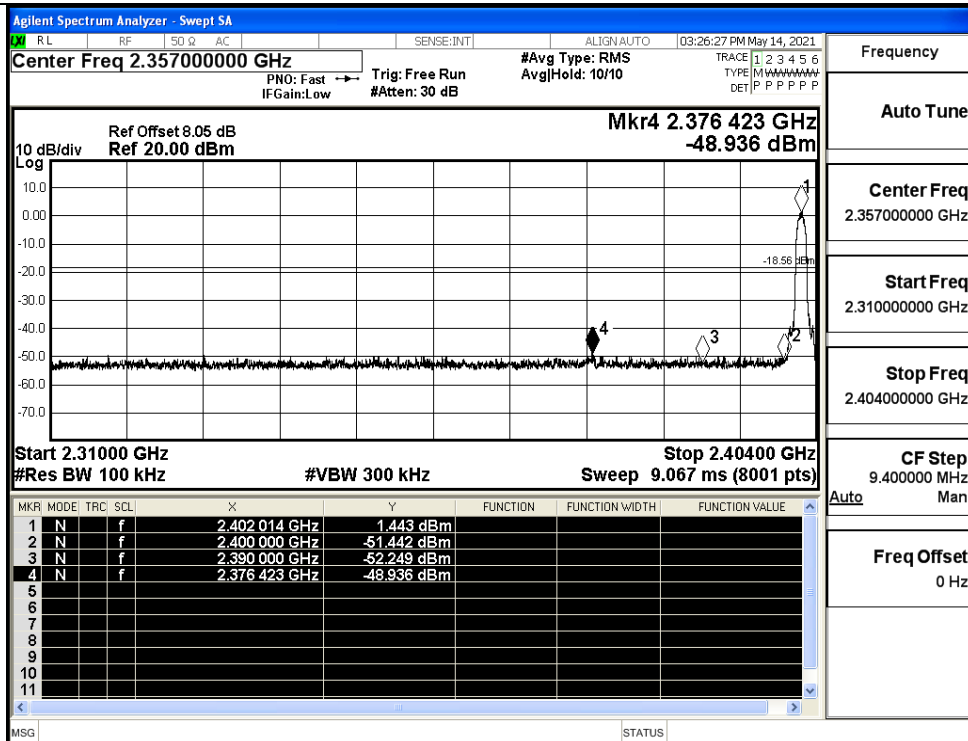


Frequency

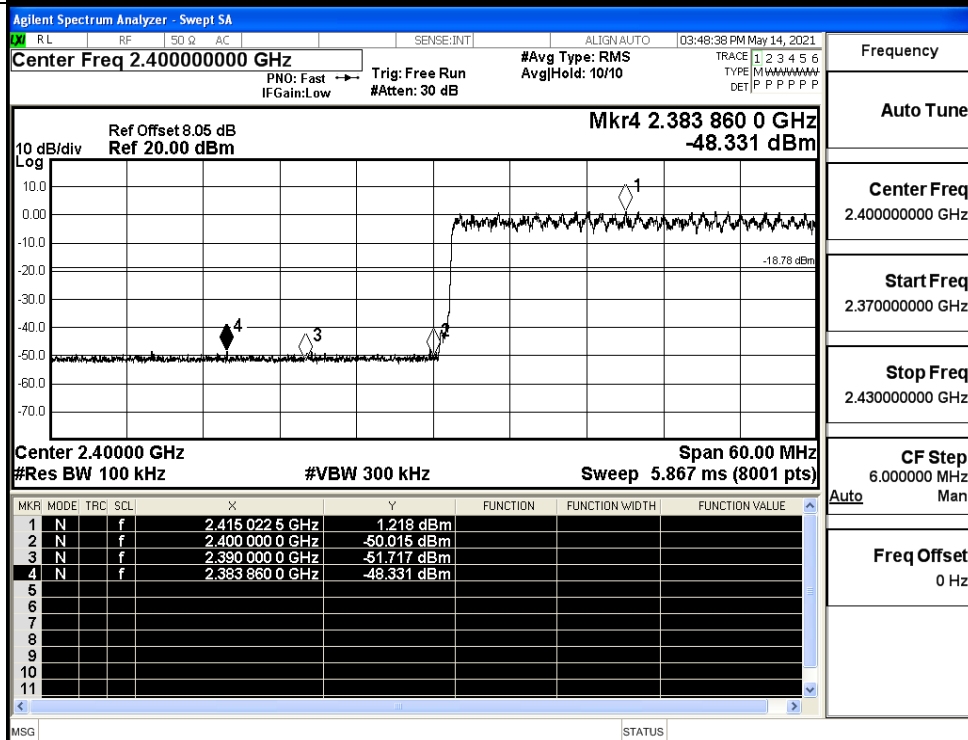
Auto Tune

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

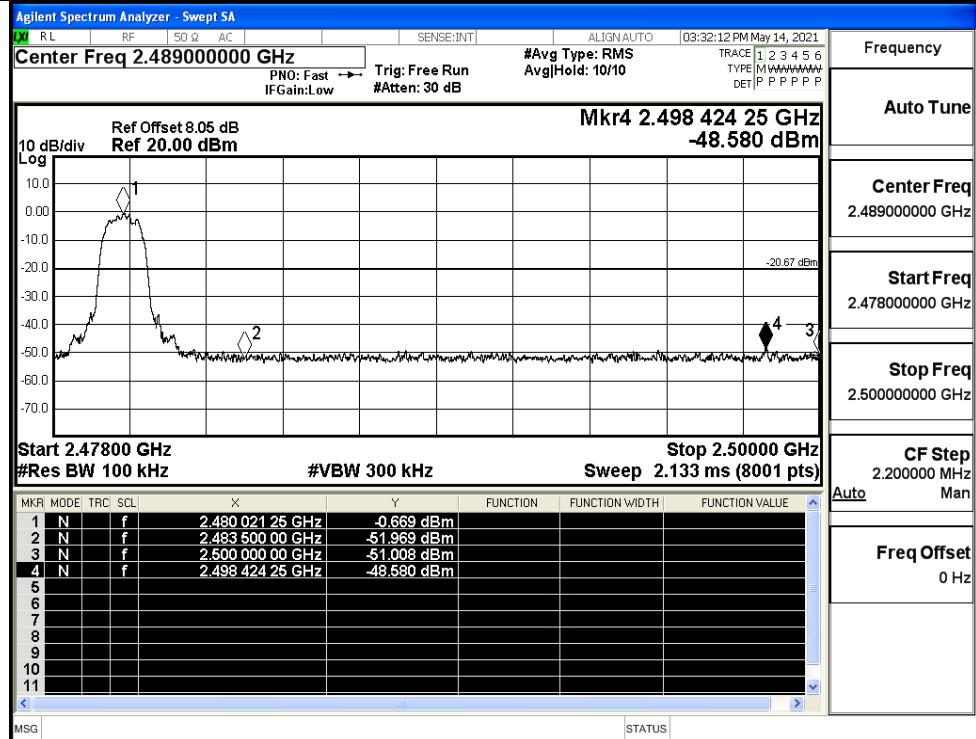
8DPSK/LCH/No Hop



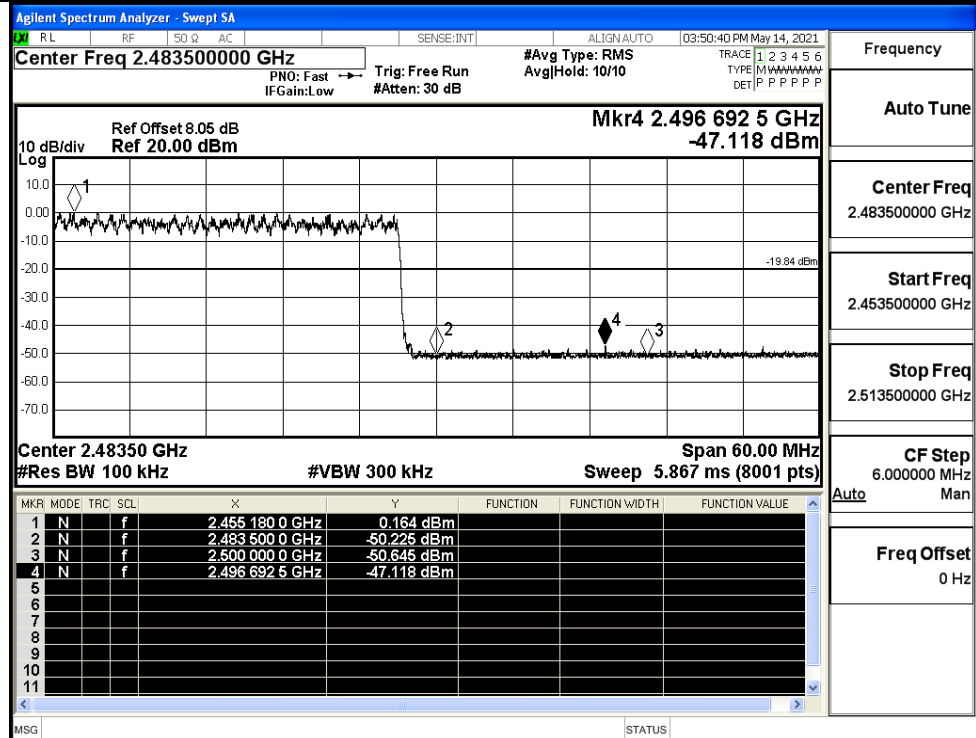
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



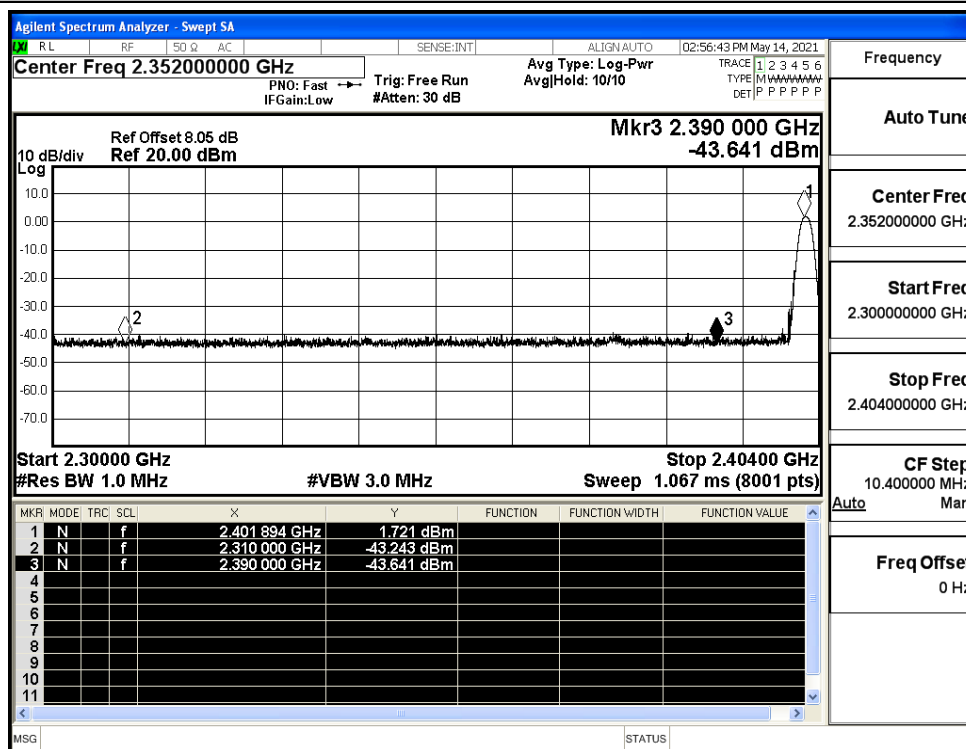
8DPSK/HCH/Hop



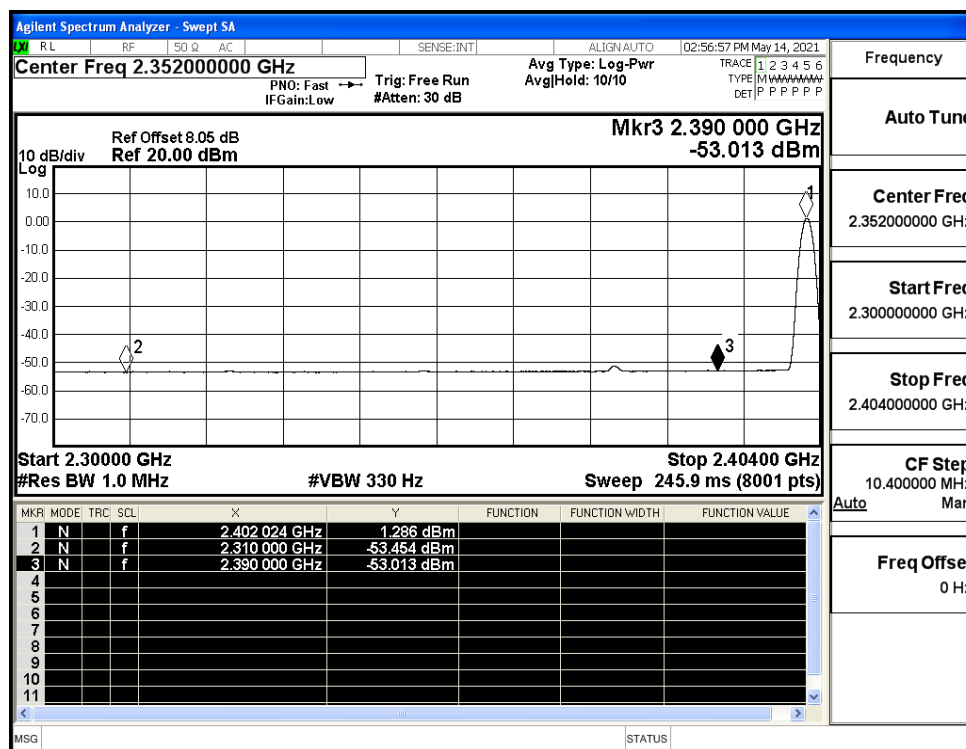
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.24	2.0	0	53.99	PEAK	74	PASS
	Off	2310.0	-53.45	2.0	0	43.78	AV	54	PASS
	Off	2390.0	-43.64	2.0	0	53.59	PEAK	74	PASS
	Off	2390.0	-53.01	2.0	0	44.22	AV	54	PASS
	Off	2483.5	-43.07	2.0	0	54.16	PEAK	74	PASS
	Off	2483.5	-52.44	2.0	0	44.79	AV	54	PASS
	Off	2500.0	-42.72	2.0	0	54.51	PEAK	74	PASS
	Off	2500.0	-52.28	2.0	0	44.95	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.69	2.0	0	53.54	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	43.95	AV	54	PASS
	Off	2390.0	-43.47	2.0	0	53.76	PEAK	74	PASS
	Off	2390.0	-52.97	2.0	0	44.26	AV	54	PASS
	Off	2483.5	-41.32	2.0	0	55.91	PEAK	74	PASS
	Off	2483.5	-52.45	2.0	0	44.78	AV	54	PASS
	Off	2500.0	-42.33	2.0	0	54.90	PEAK	74	PASS
	Off	2500.0	-52.39	2.0	0	44.84	AV	54	PASS
8DPSK	Off	2310.0	-43.68	2.0	0	53.55	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	43.97	AV	54	PASS
	Off	2390.0	-43.42	2.0	0	53.81	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	44.35	AV	54	PASS
	Off	2483.5	-42.88	2.0	0	54.35	PEAK	74	PASS
	Off	2483.5	-52.46	2.0	0	44.77	AV	54	PASS
	Off	2500.0	-41.14	2.0	0	56.09	PEAK	74	PASS
	Off	2500.0	-52.35	2.0	0	44.88	AV	54	PASS

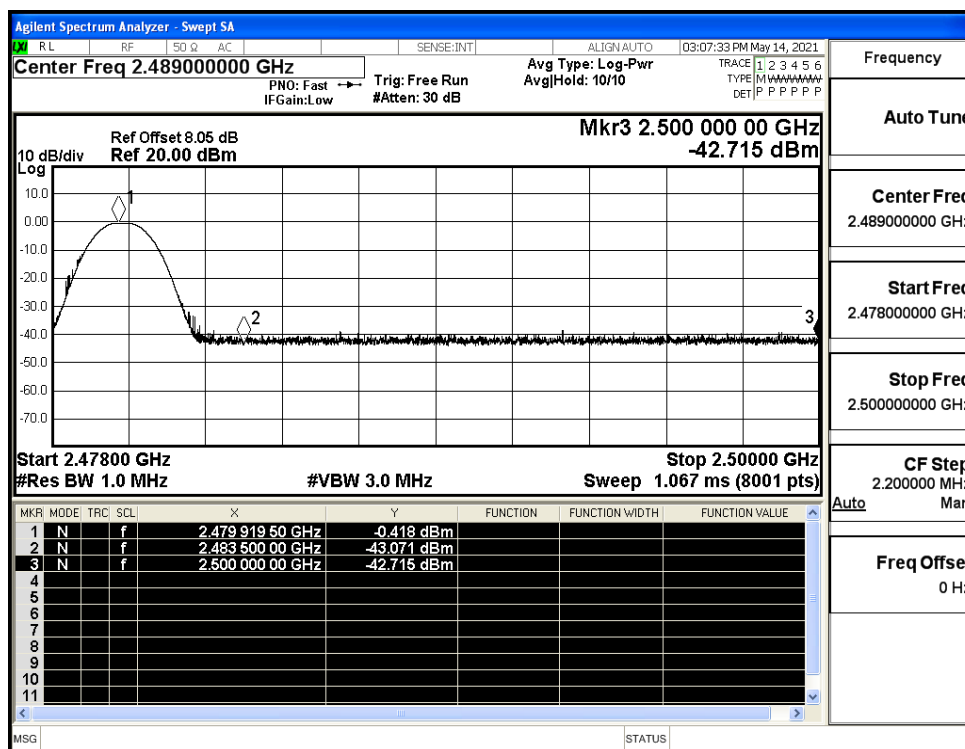
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



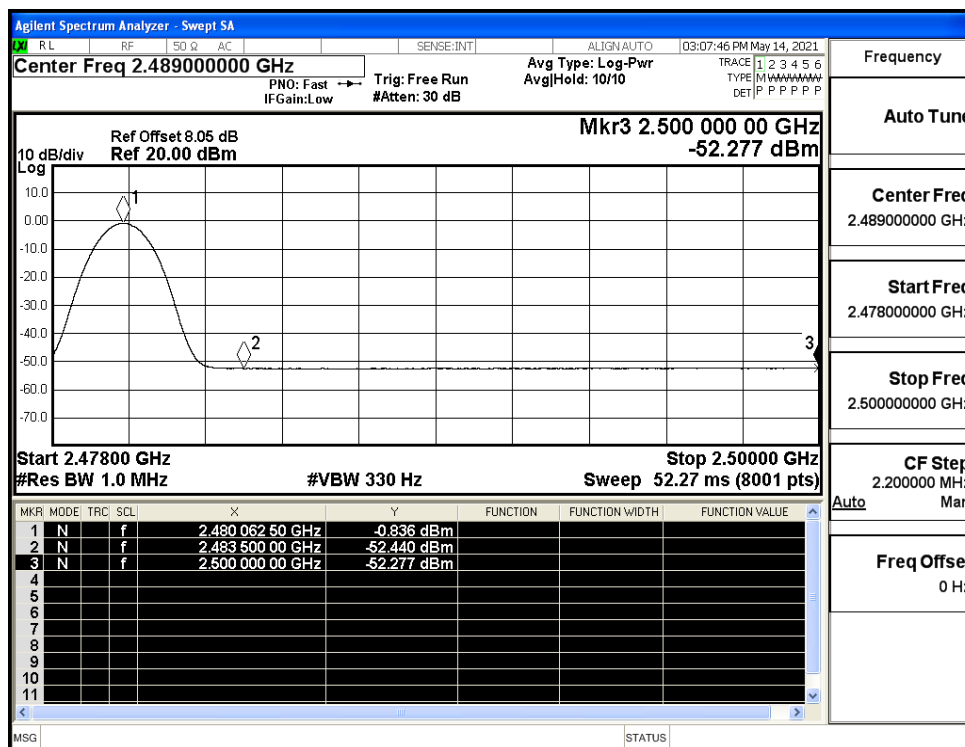
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

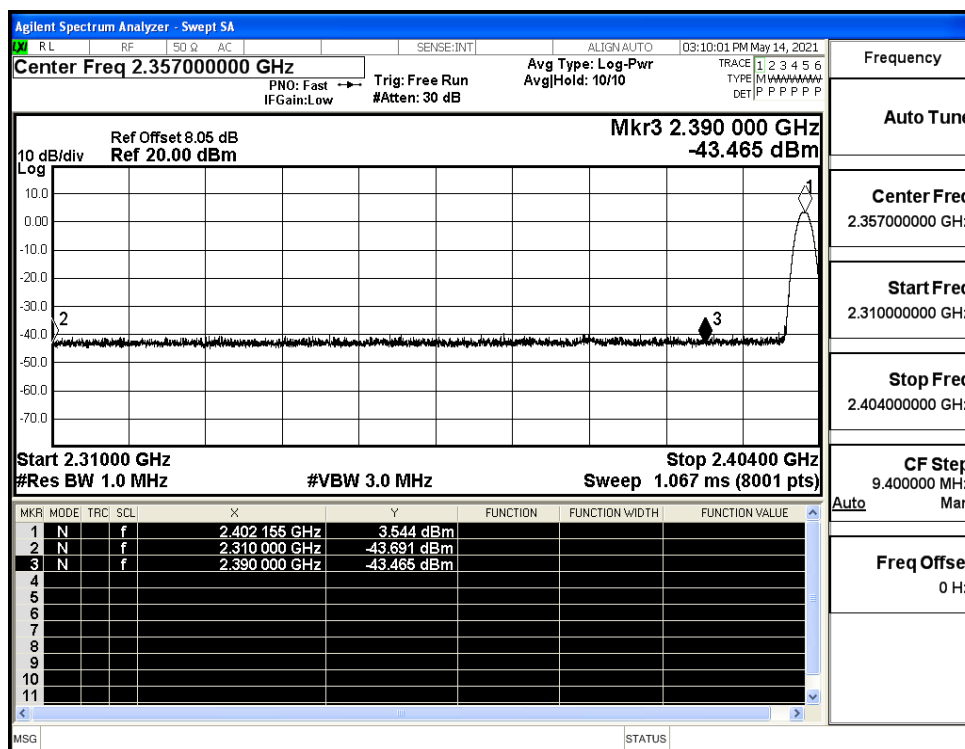
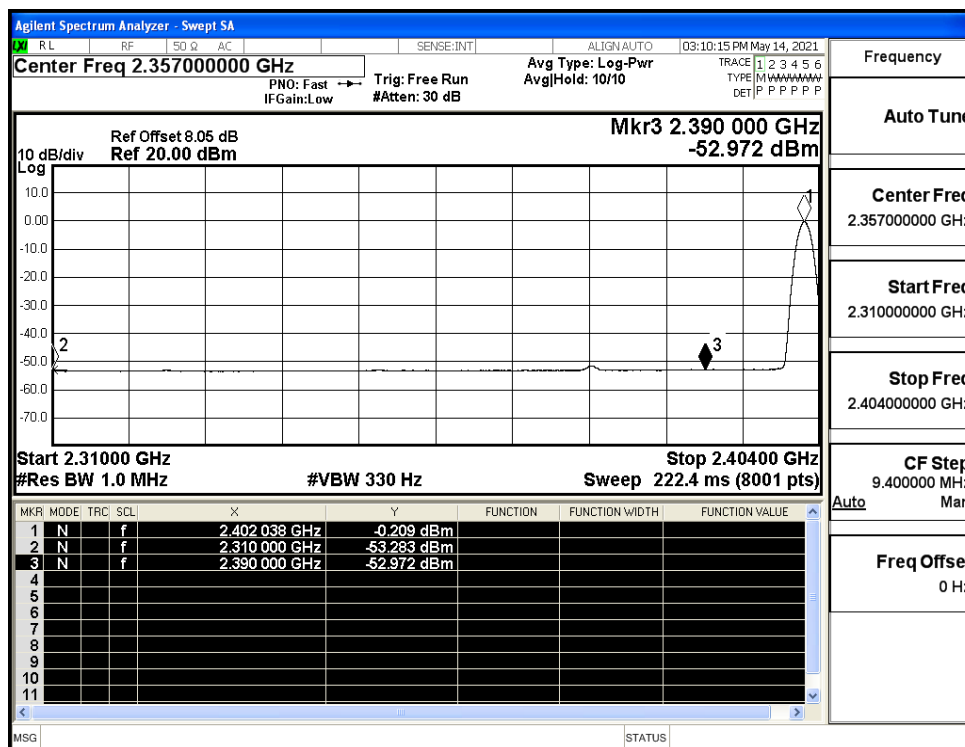


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

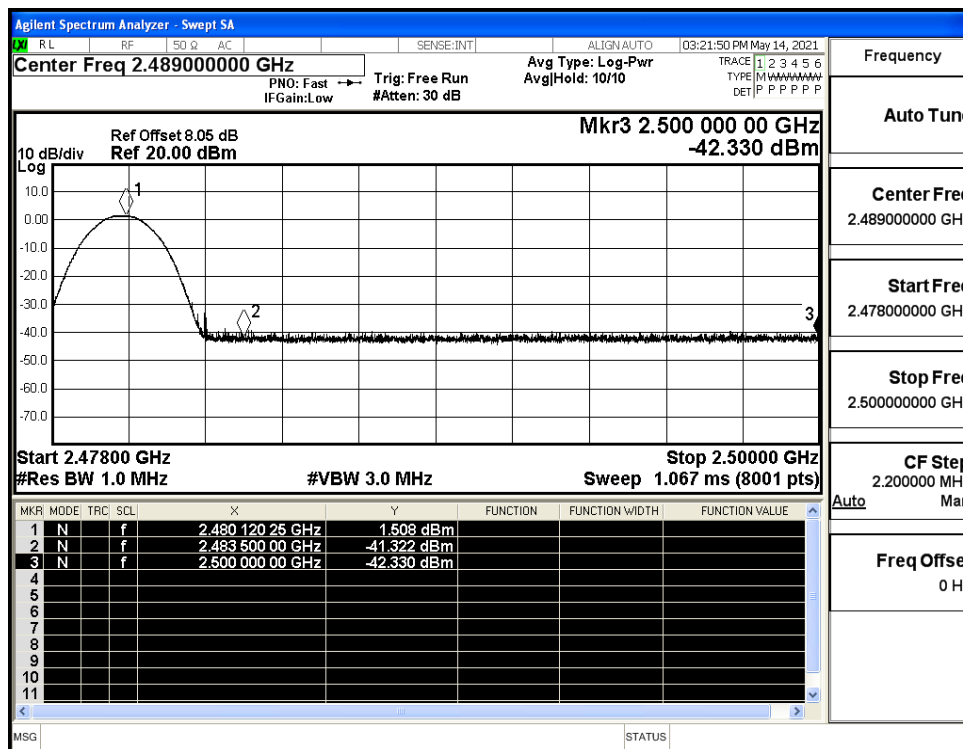


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

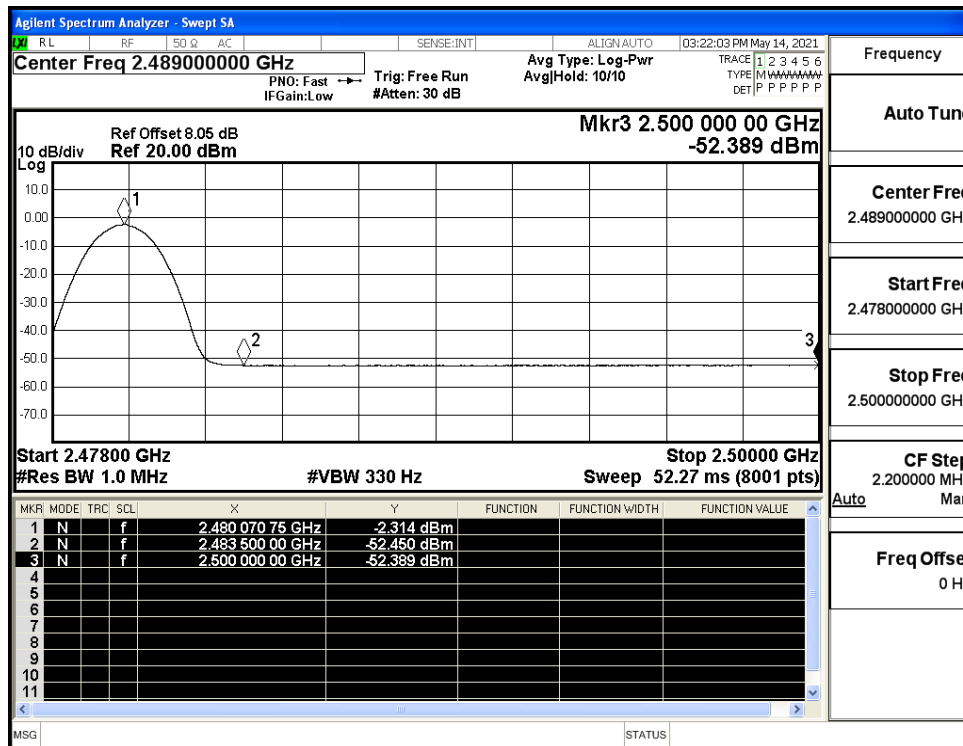


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

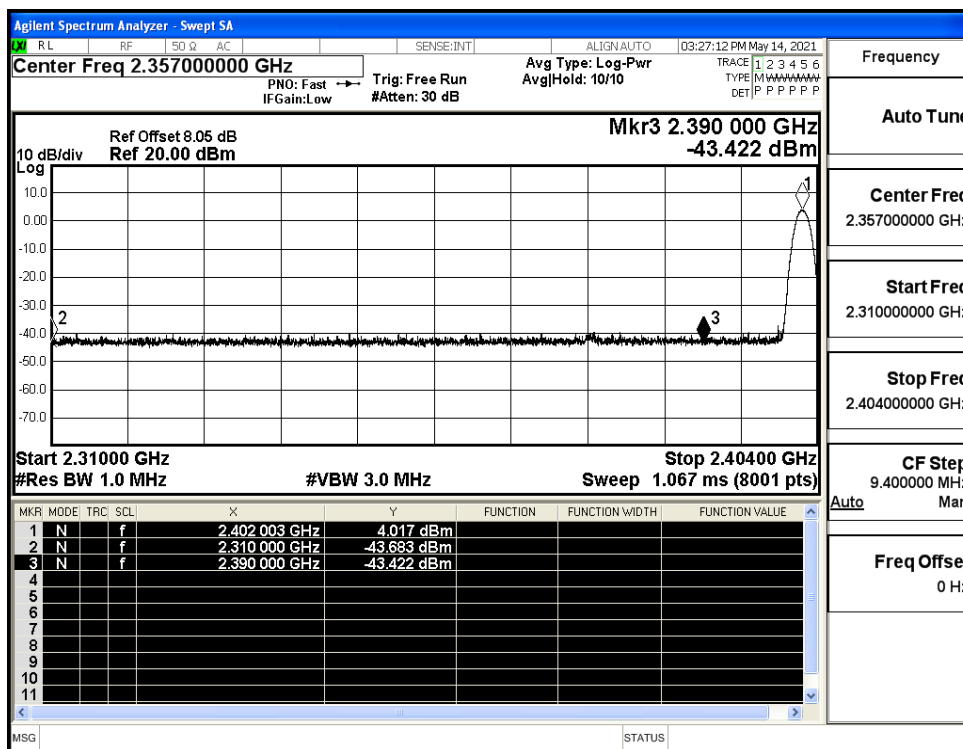
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



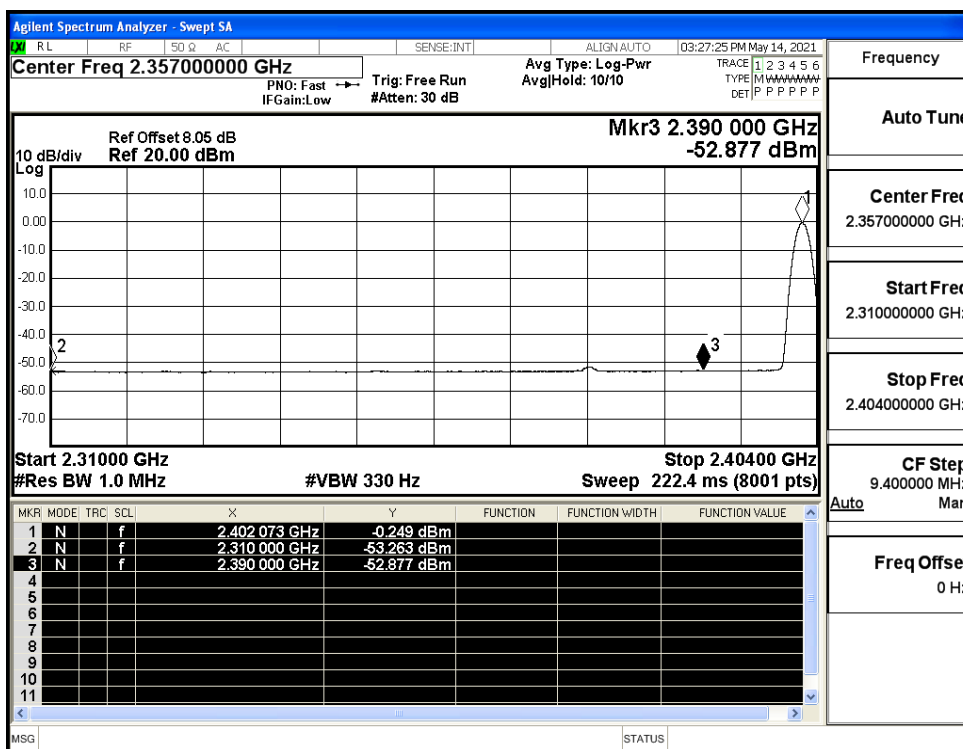
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



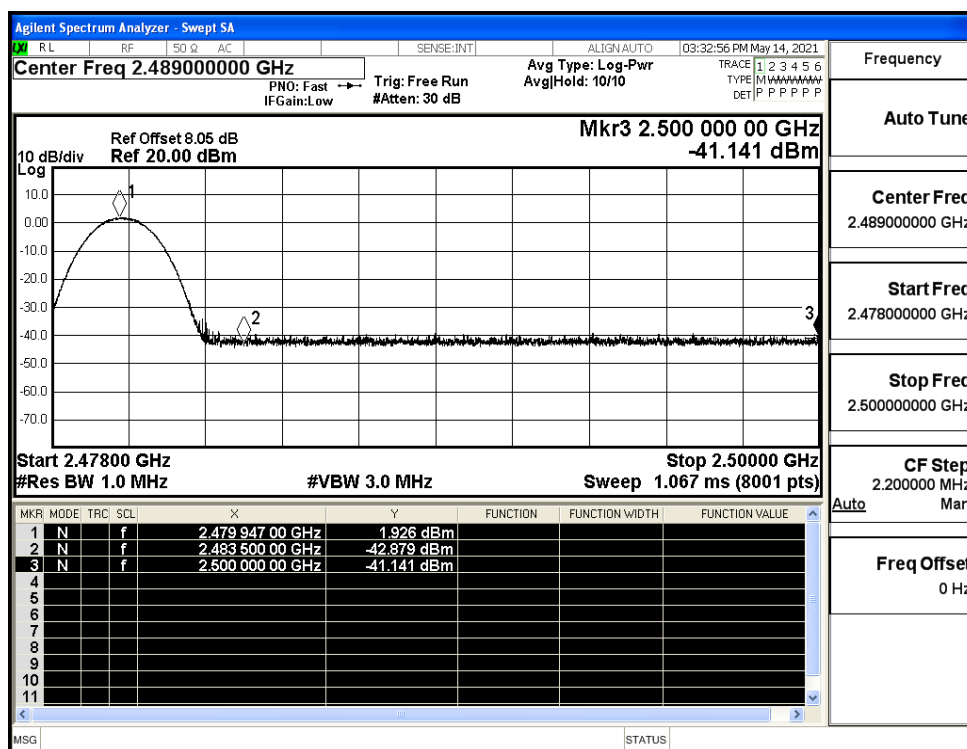
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

