

Appendix A

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

Product Name: Star Niaht Liaht Projector

Trade Mark: NEXTRON

Test Model: HT-500MAX

Environmental Conditions

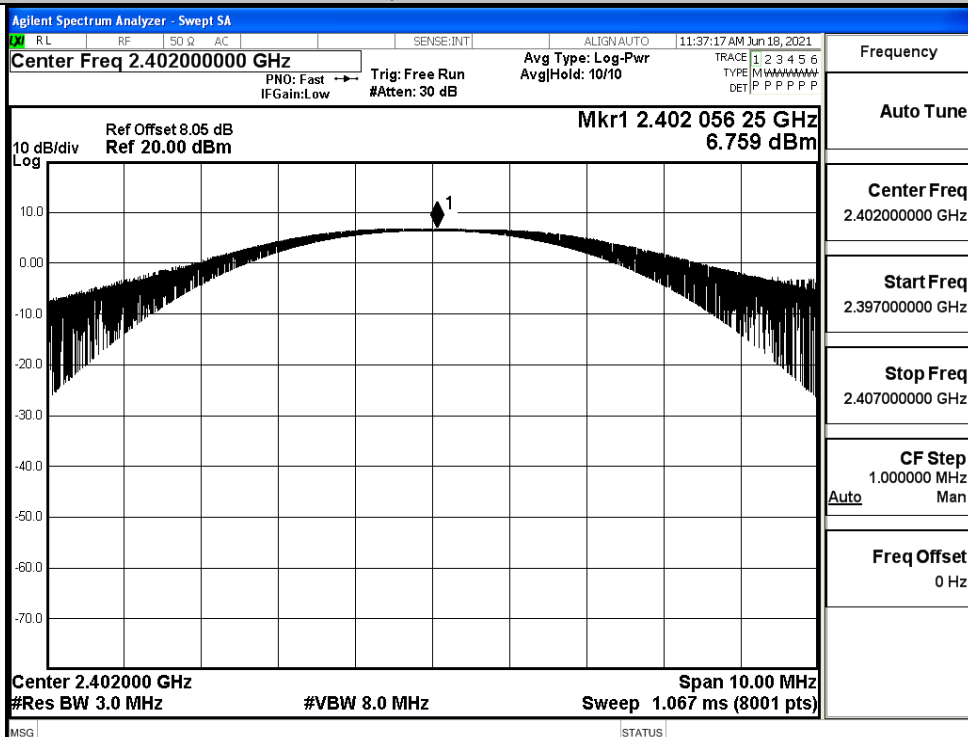
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

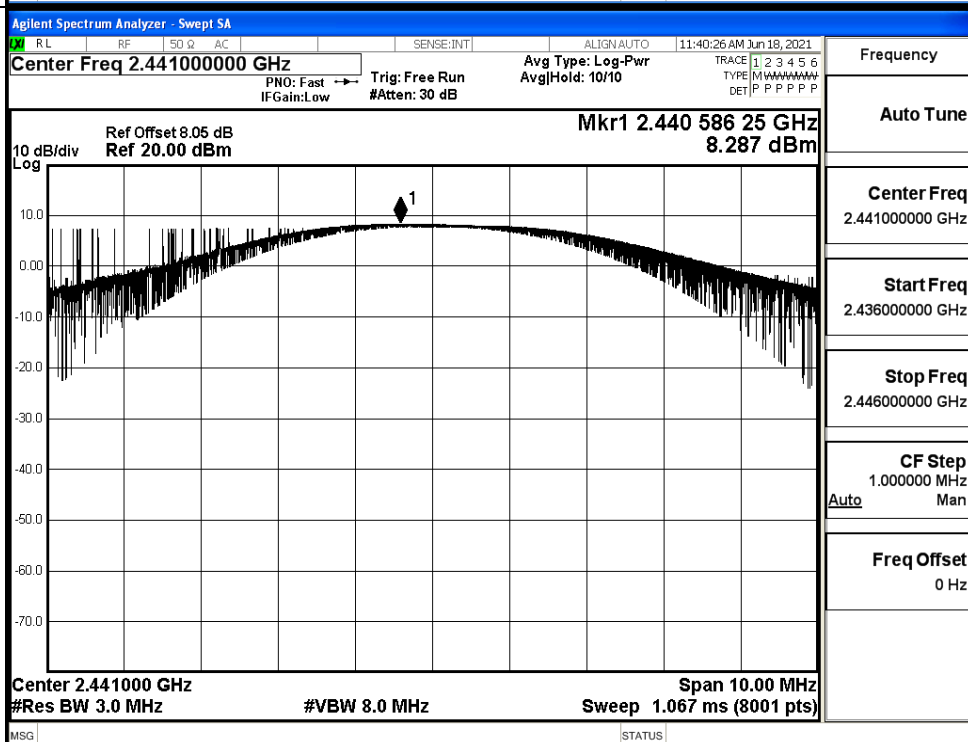
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.759	21	PASS
	MCH	8.287	21	PASS
	HCH	6.673	21	PASS
$\pi/4$ DQPSK	LCH	5.594	21	PASS
	MCH	6.949	21	PASS
	HCH	5.406	21	PASS
8DPSK	LCH	5.697	21	PASS
	MCH	6.930	21	PASS
	HCH	5.428	21	PASS

Test Graphs

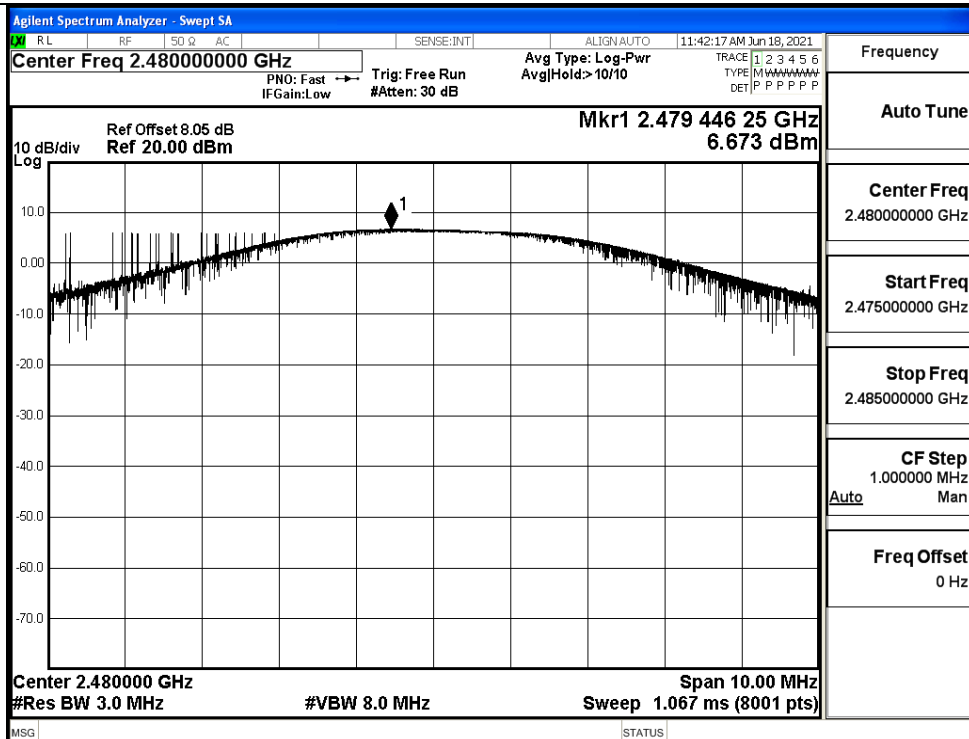
GFSK/LCH



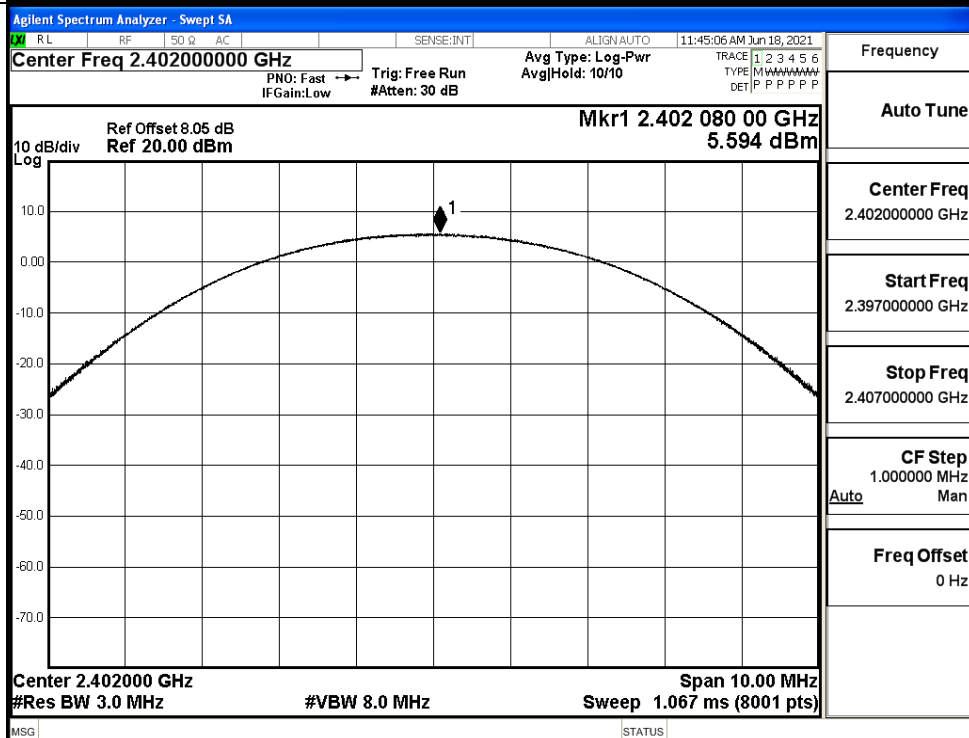
GFSK/MCH

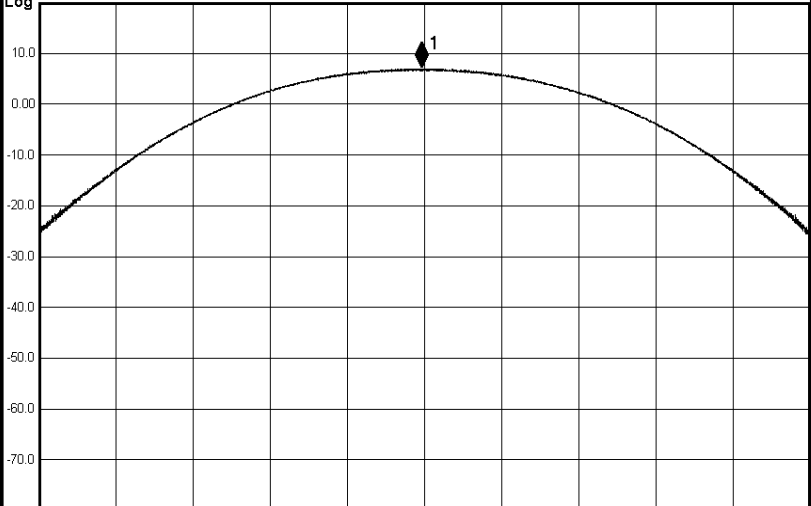
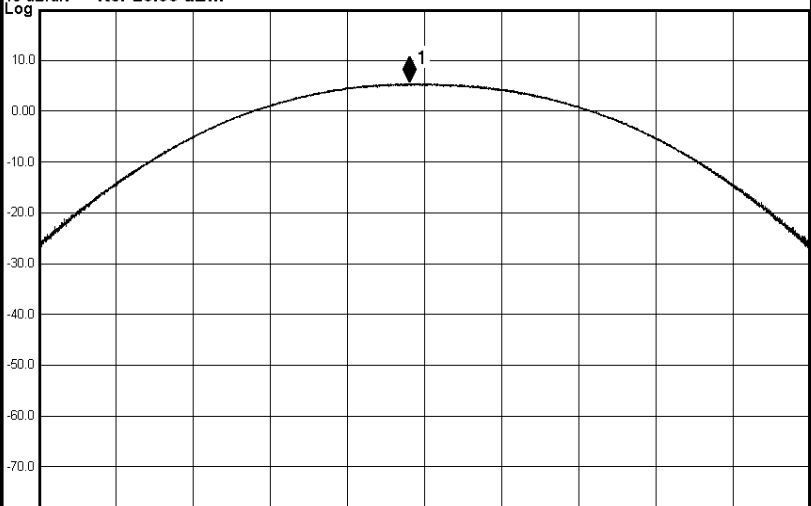


GFSK/HCH

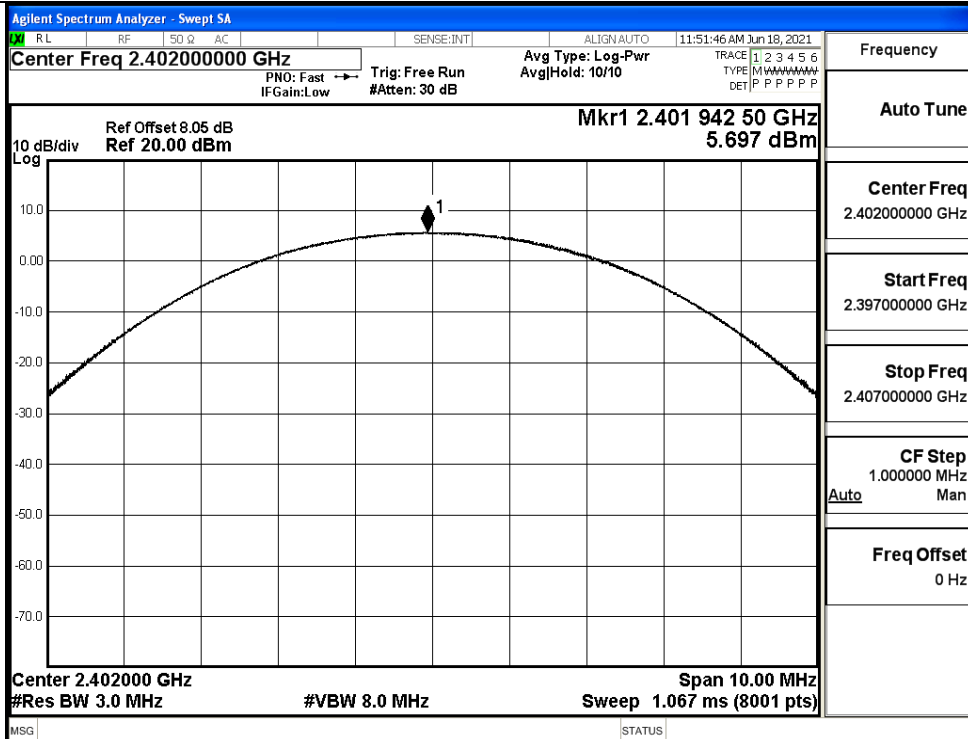


$\pi/4$ DQPSK/LCH

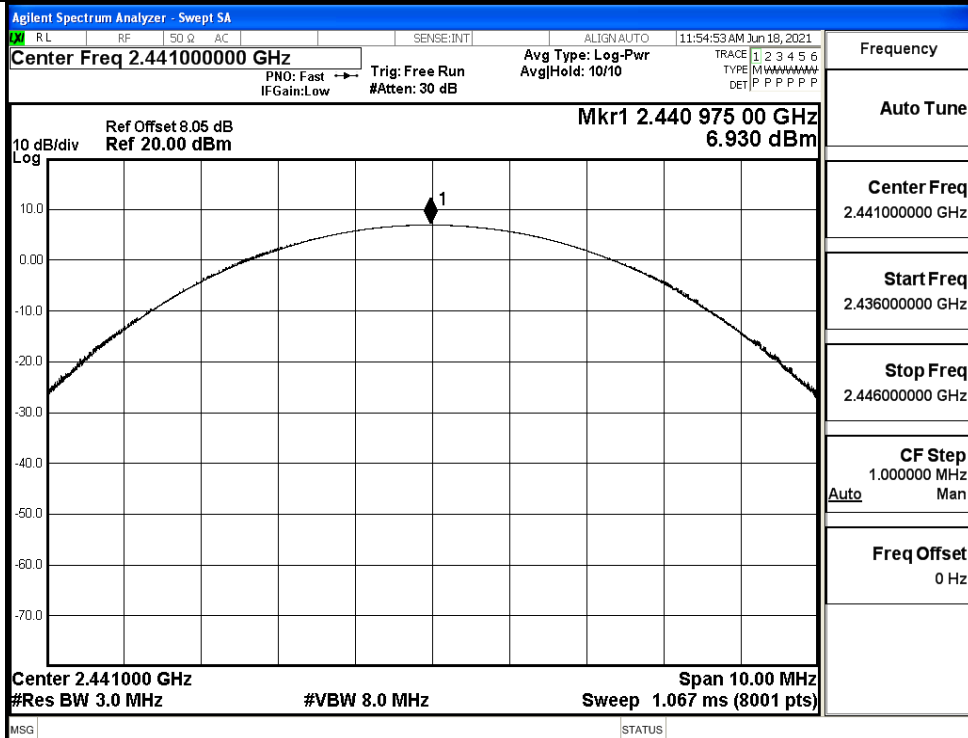


$\pi/4$DQPSK/MCH	Agilent Spectrum Analyzer - Swept SA X R L RF 50 Q AC SENSE:INT ALIGN:AUTO 11:47:33 AM Jun 18, 2021 Center Freq 2.441000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.440 957 50 GHz 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Log  Center 2.441000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.441000000 GHz Start Freq 2.436000000 GHz Stop Freq 2.446000000 GHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz
$\pi/4$DQPSK/HCH	Agilent Spectrum Analyzer - Swept SA X R L RF 50 Q AC SENSE:INT ALIGN:AUTO 11:49:18 AM Jun 18, 2021 Center Freq 2.480000000 GHz PNO: Fast IF Gain: Low Trig: Free Run #Atten: 30 dB Avg Type: Log-Pwr AvgHold: 10/10 Mkr1 2.479 808 75 GHz 10 dB/div Ref Offset 8.05 dB Ref 20.00 dBm Log  Center 2.480000 GHz #Res BW 3.0 MHz #VBW 8.0 MHz Span 10.00 MHz Sweep 1.067 ms (8001 pts) MSG STATUS Frequency Auto Tune Center Freq 2.480000000 GHz Start Freq 2.475000000 GHz Stop Freq 2.485000000 GHz CF Step 1.000000 MHz Auto Man Freq Offset 0 Hz

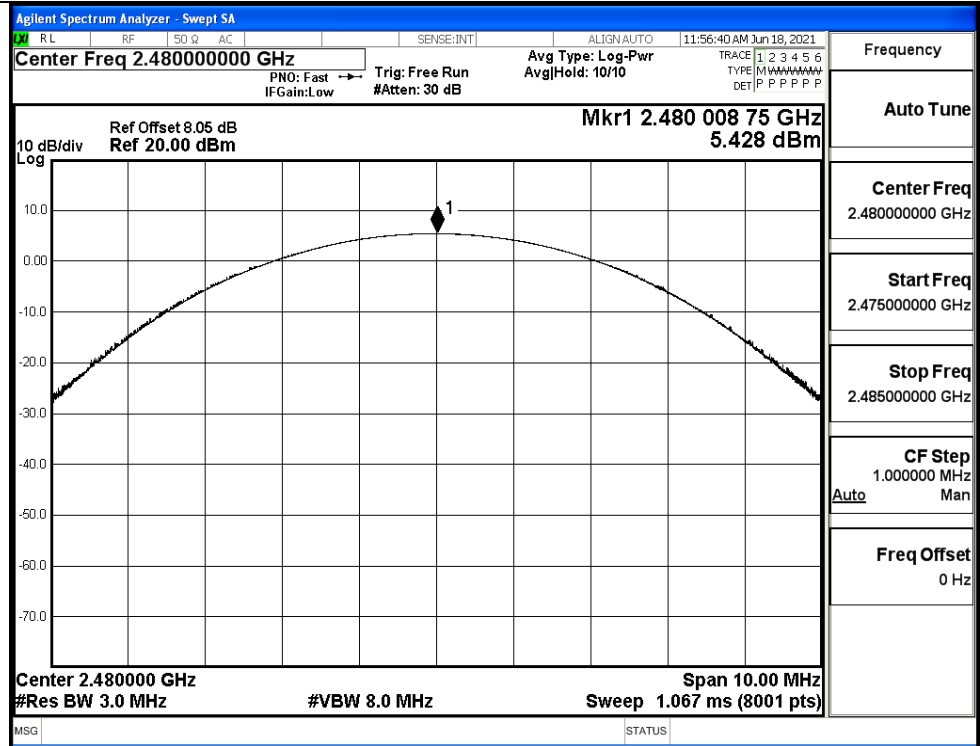
8DPSK/LCH



8DPSK/MCH



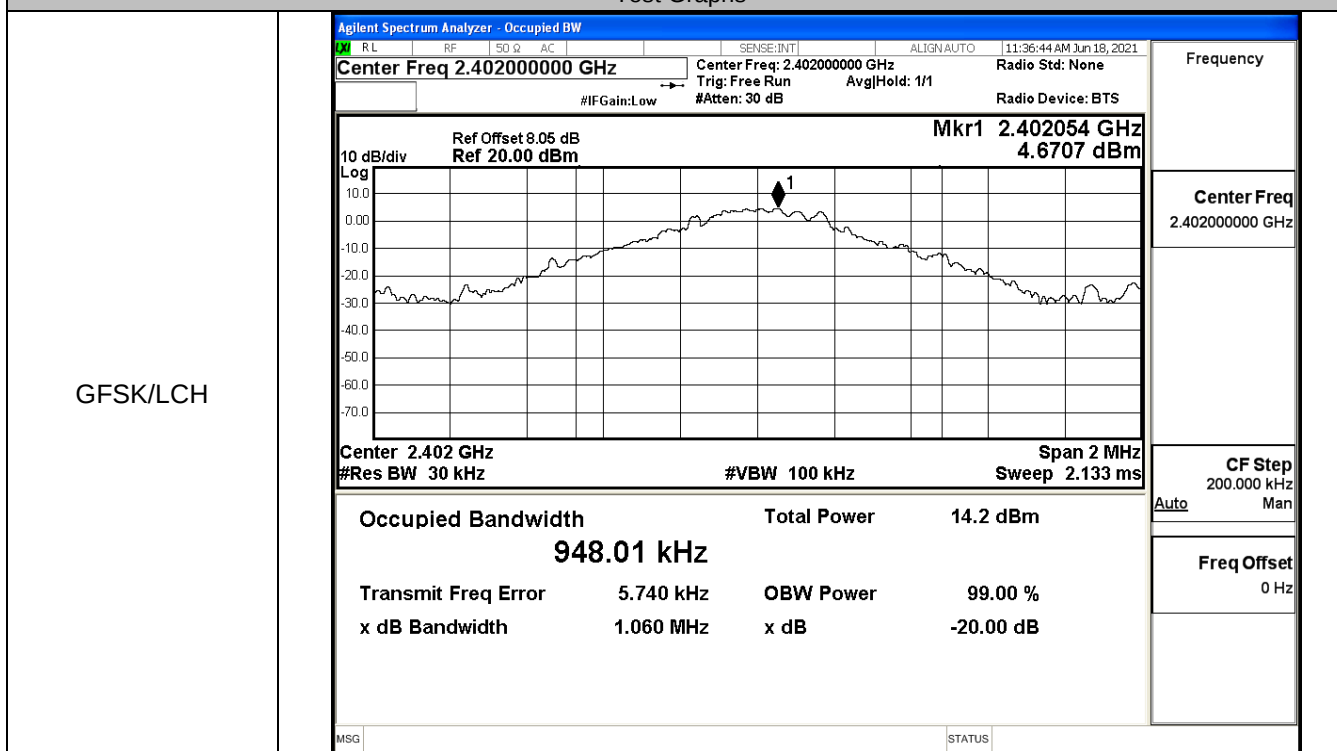
8DPSK/HCH



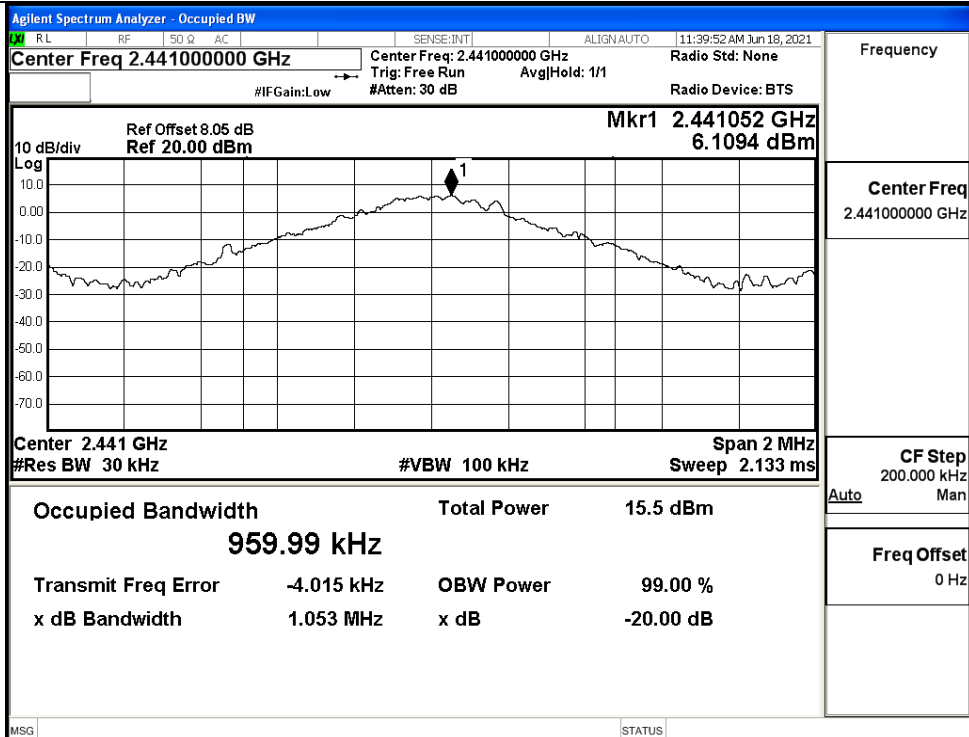
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.060	Not Specified	PASS
	MCH	1.053	Not Specified	PASS
	HCH	1.053	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.289	Not Specified	PASS
	MCH	1.289	Not Specified	PASS
	HCH	1.288	Not Specified	PASS
8DPSK	LCH	1.290	Not Specified	PASS
	MCH	1.204	Not Specified	PASS
	HCH	1.206	Not Specified	PASS

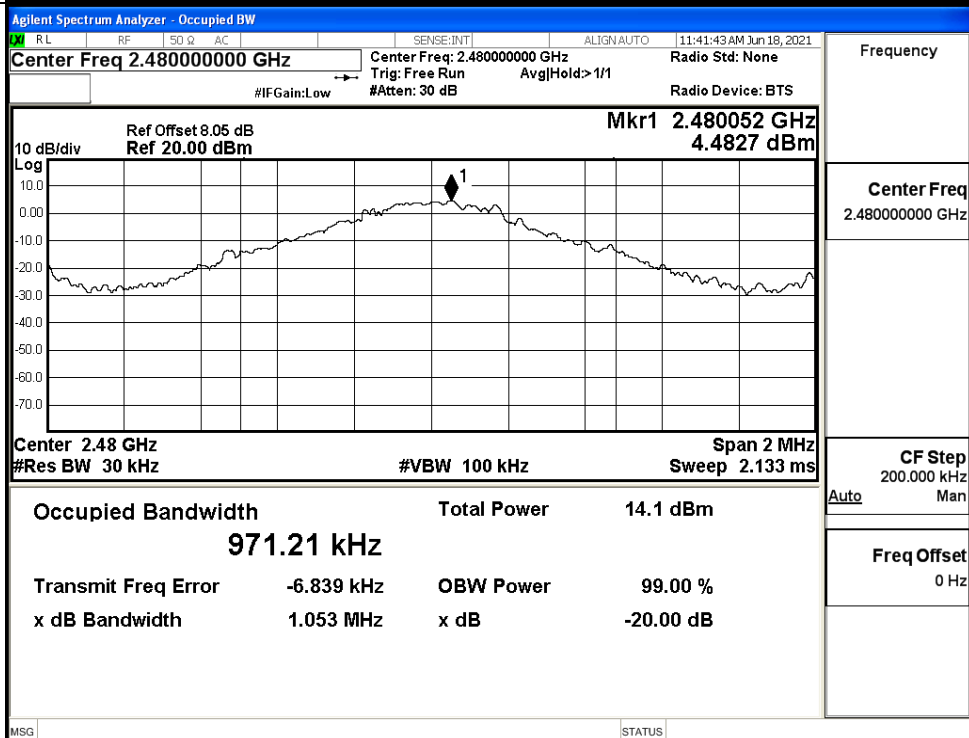
Test Graphs



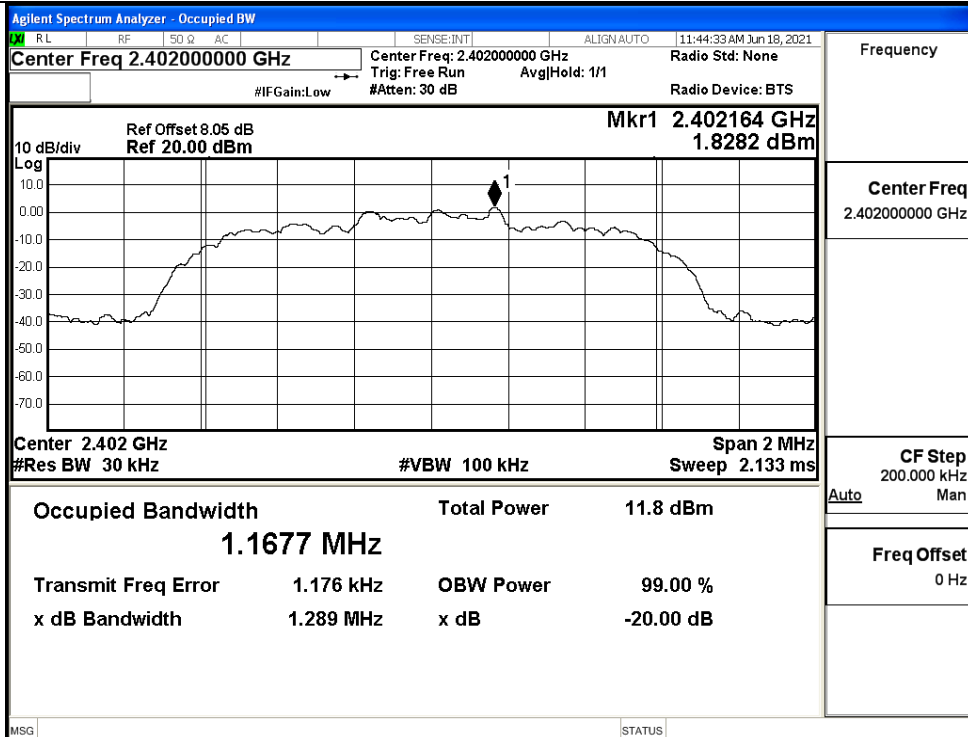
GFSK/MCH



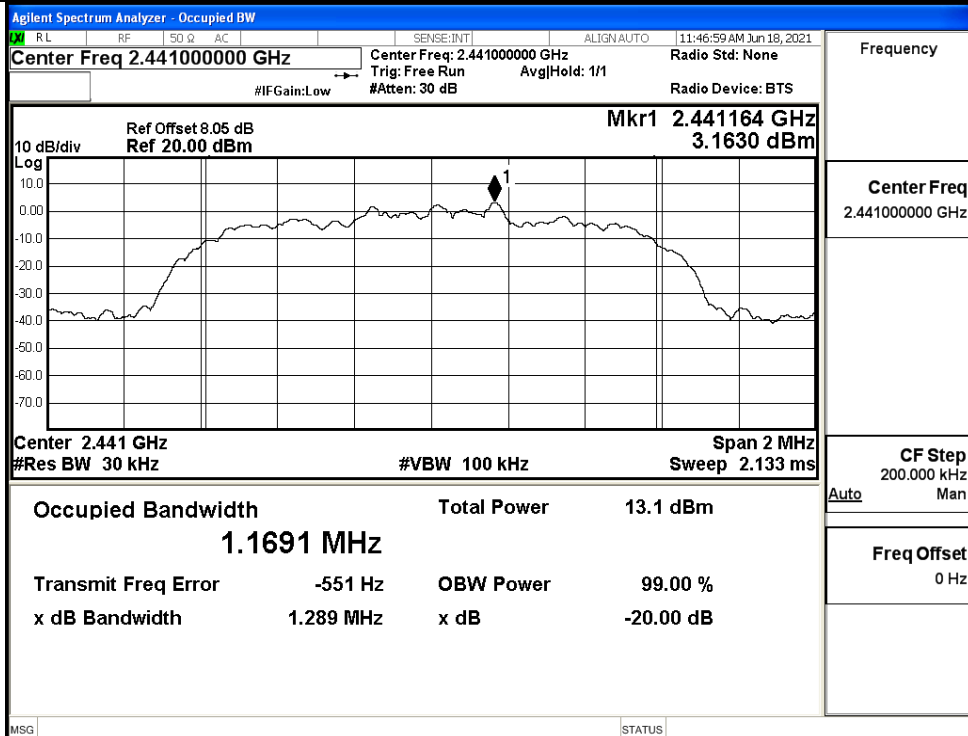
GFSK/HCH

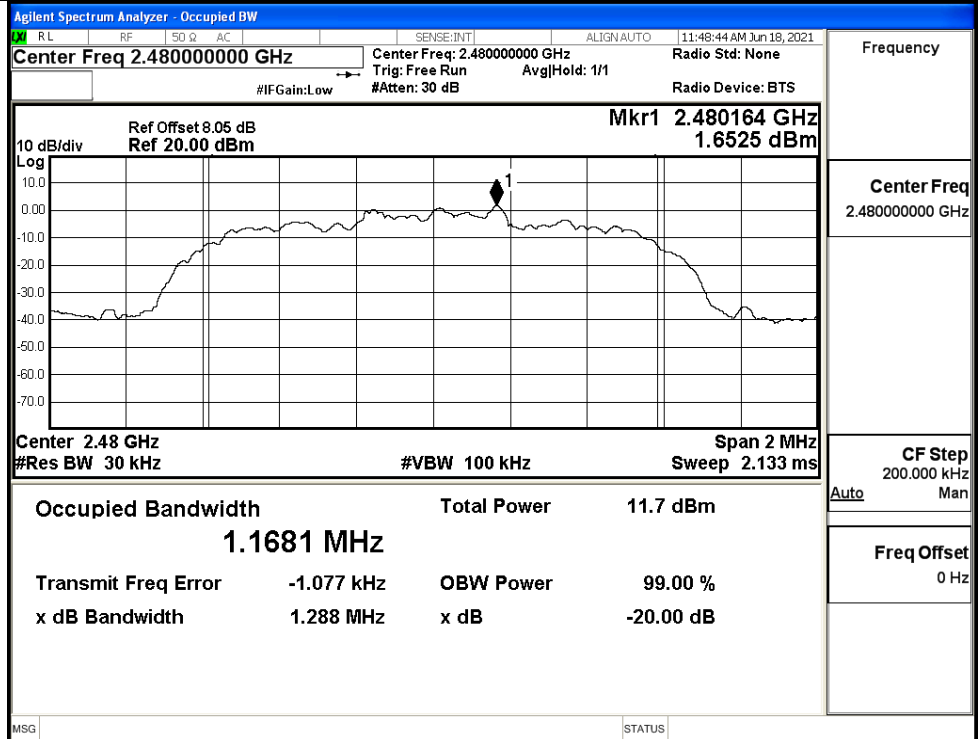


$\pi/4$ DQPSK/LCH

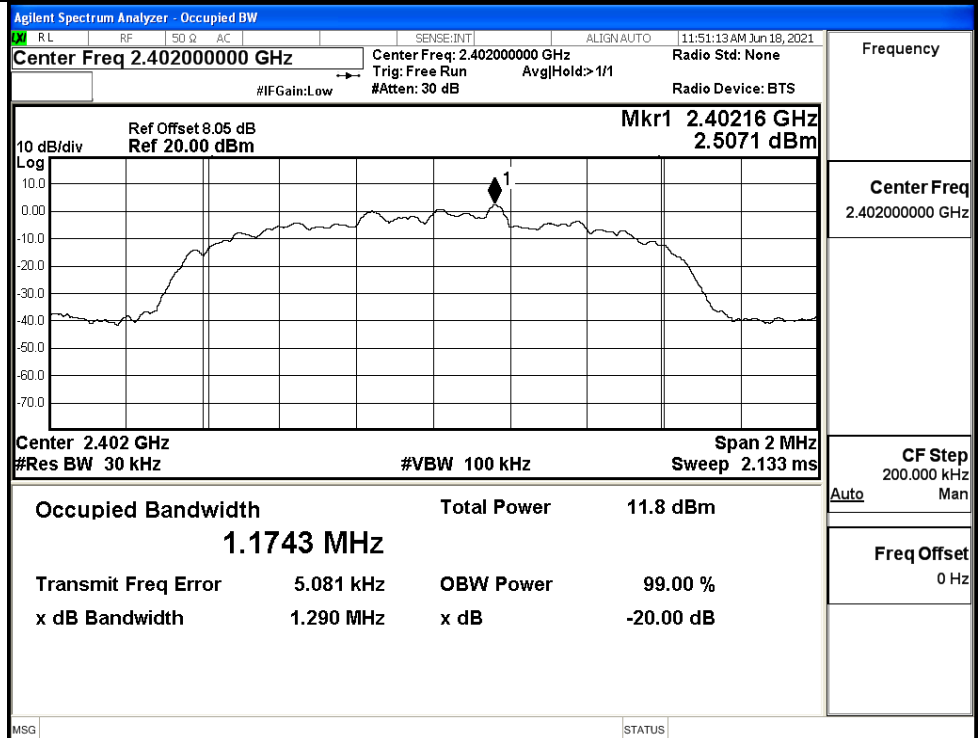


$\pi/4$ DQPSK/MCH

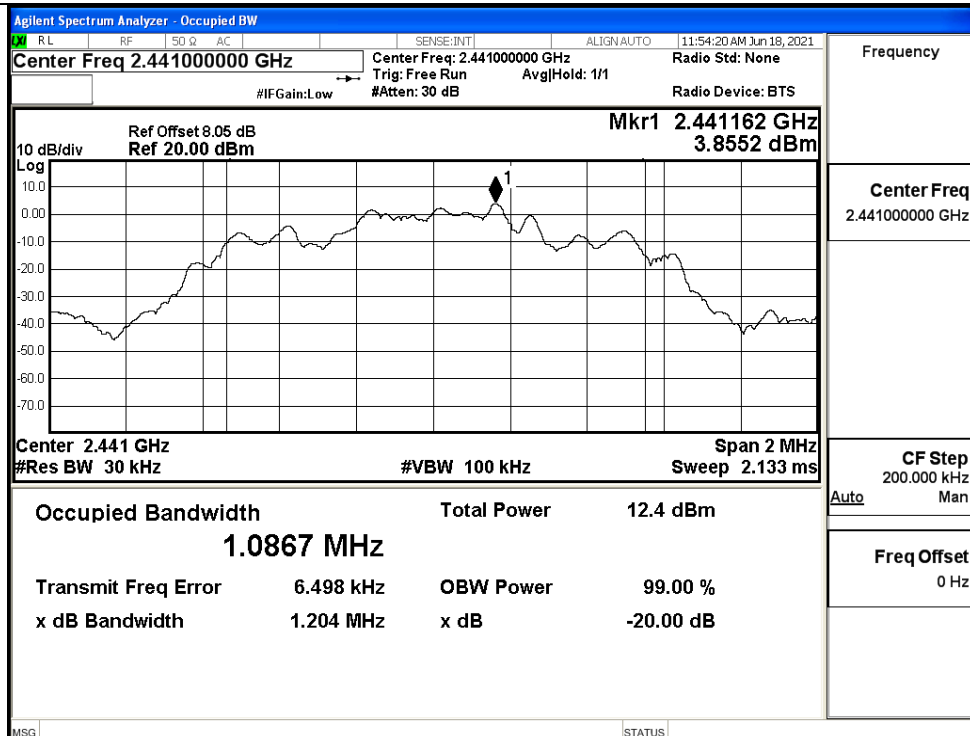


$\pi/4$ DQPSK/HCH

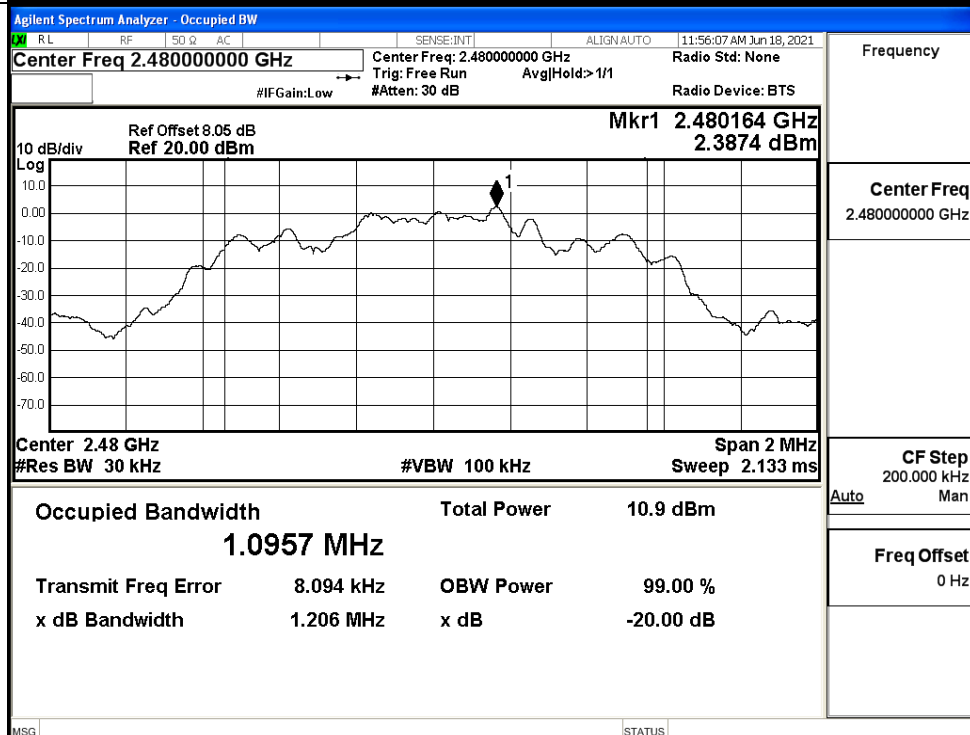
8DPSK/LCH



8DPSK/MCH



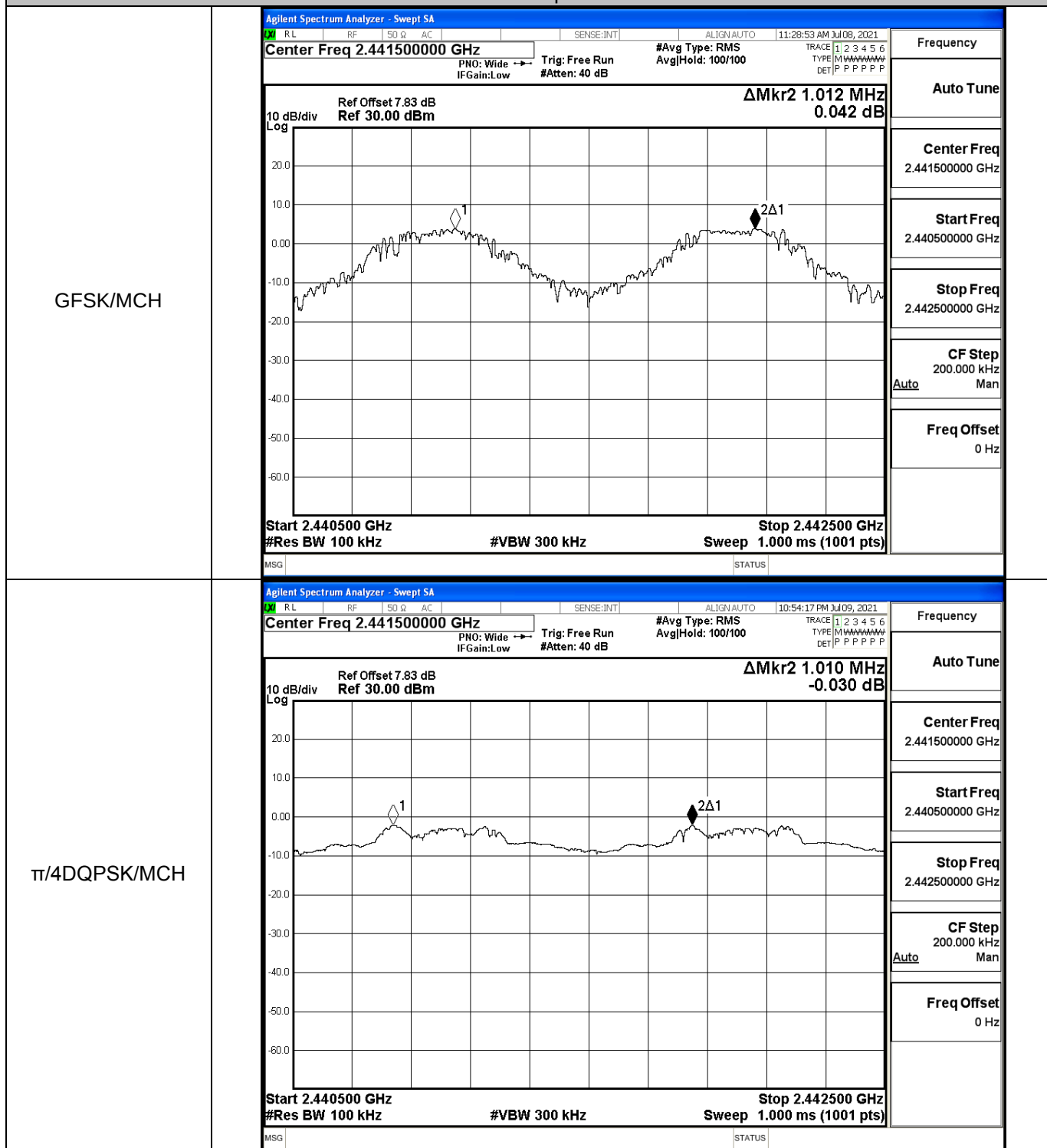
8DPSK/HCH



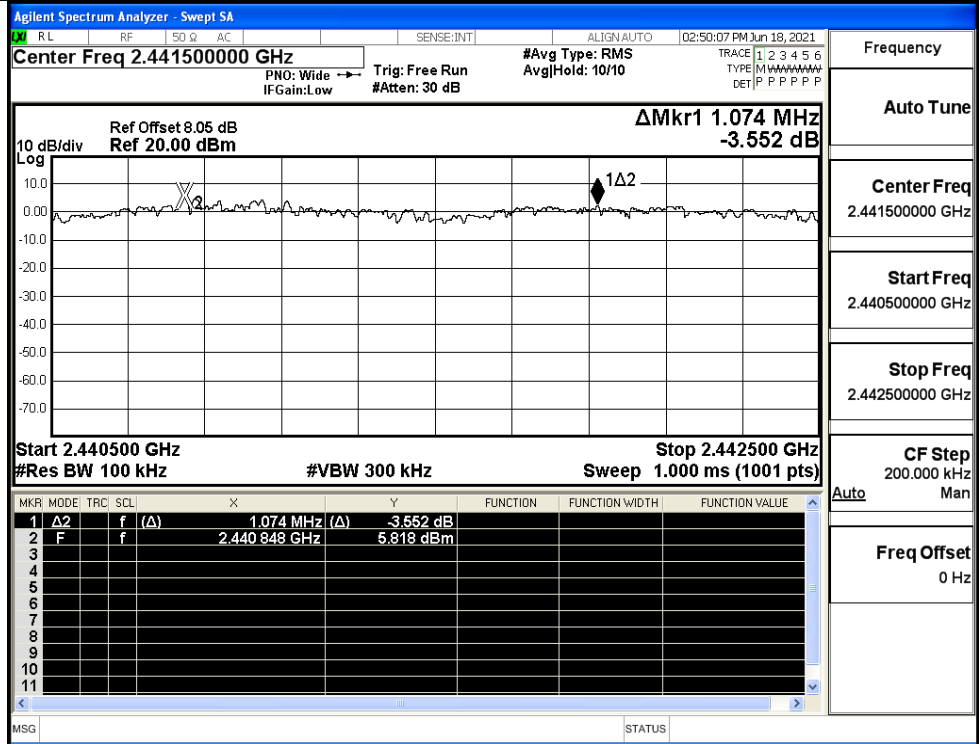
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	MCH	1.012	0.707	PASS
$\pi/4$ -DQPSK	MCH	1.01	0.859	PASS
8DPSK	MCH	1.074	0.860	PASS

Test Graphs



8DPSK/MCH

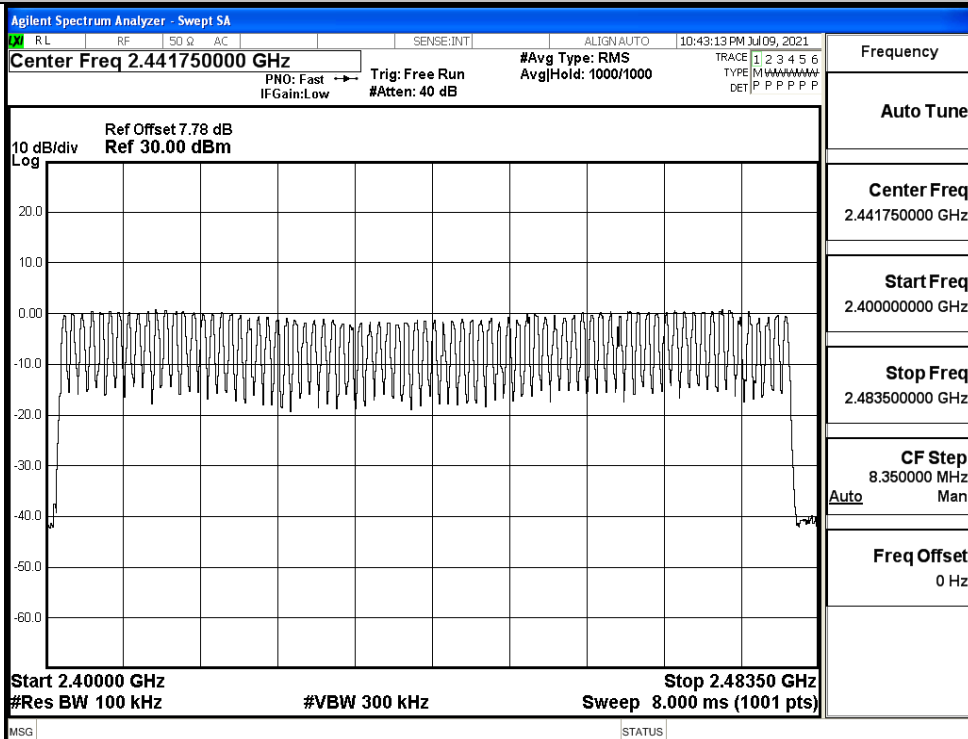


A.4 Hopping Channel Number

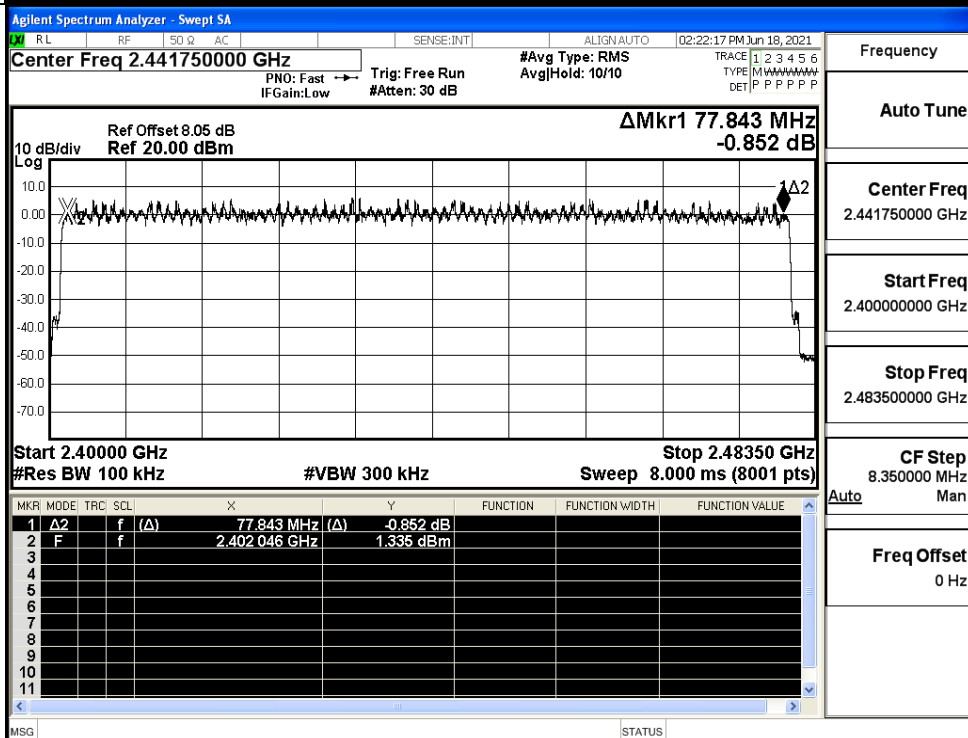
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

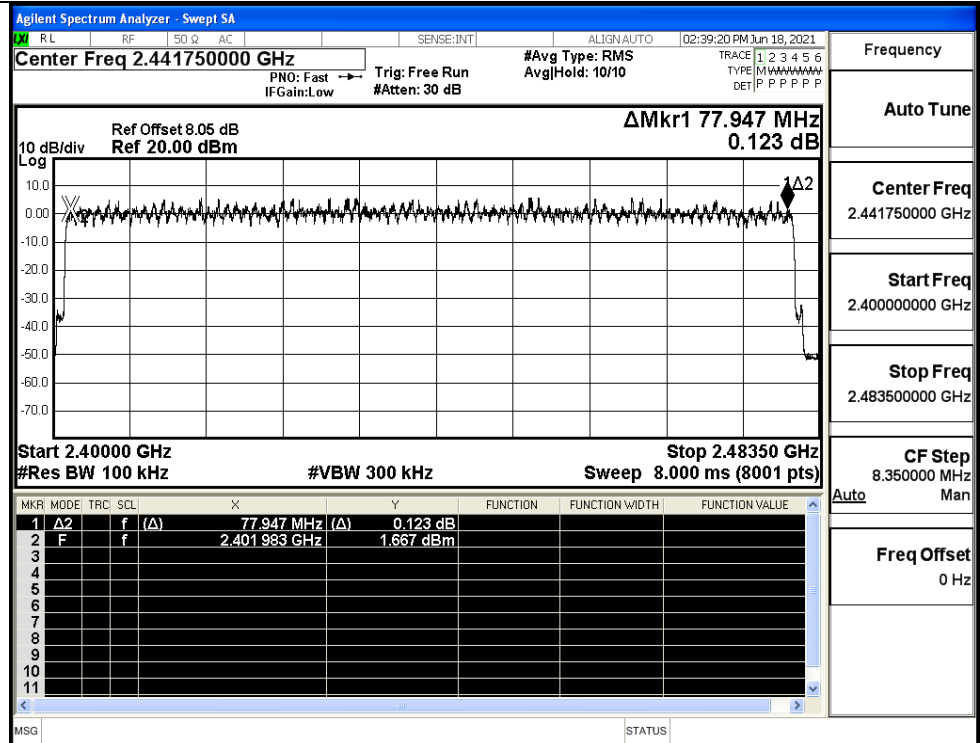
GFSK/Hop



$\pi/4$ DQPSK/Hop



8DPSK/Hop

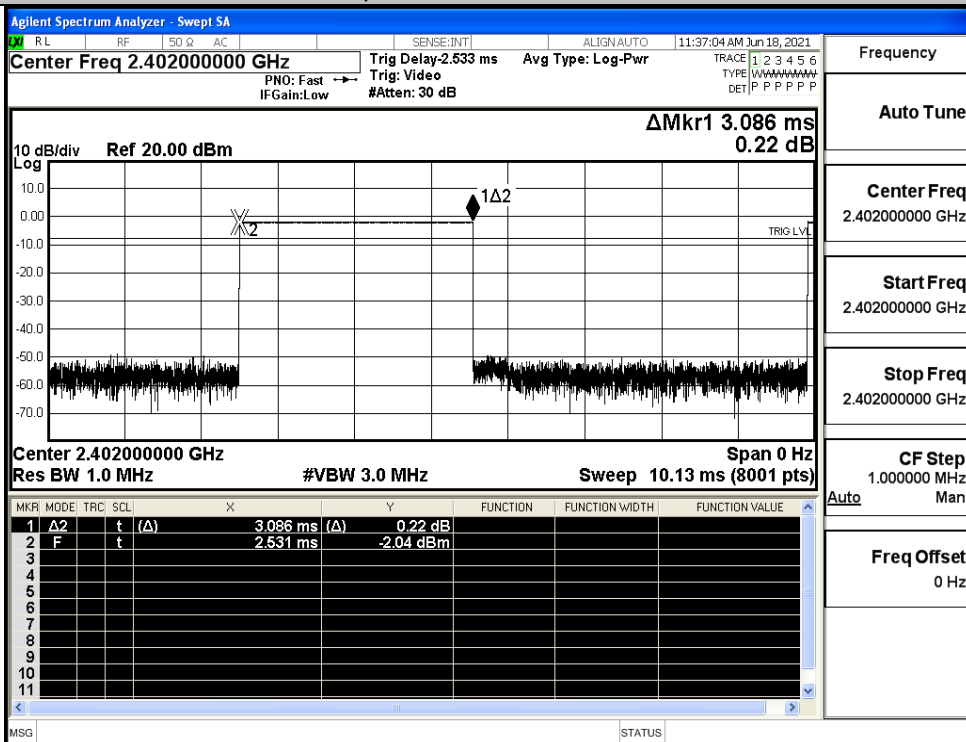


A.5 Dwell Time

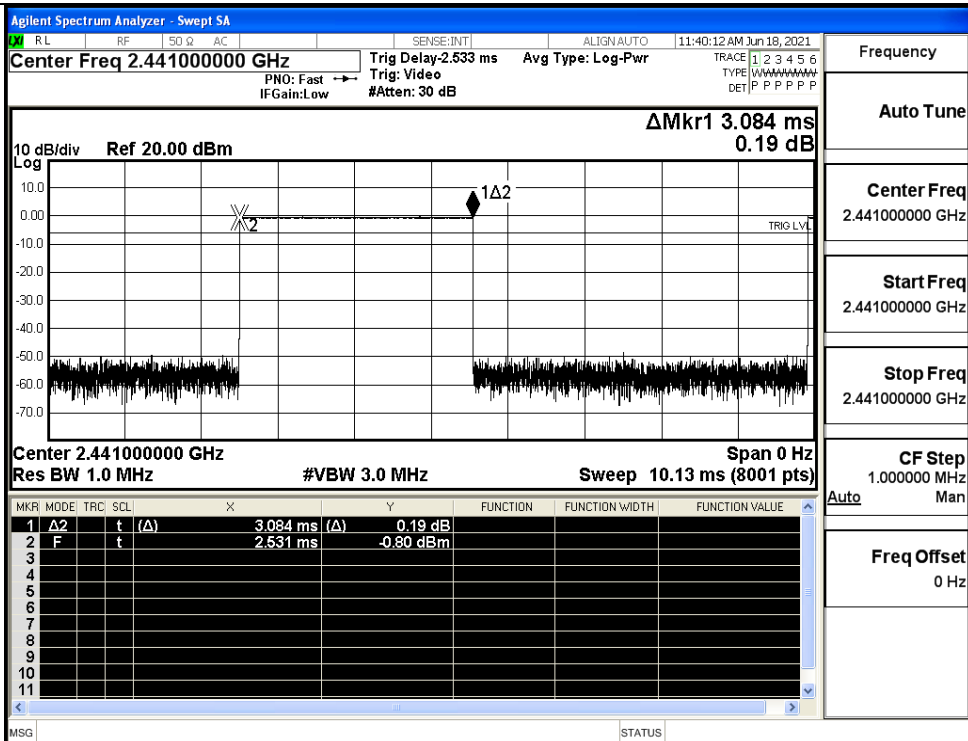
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	3.09	106.7	0.33	0.4	PASS
	DH5	MCH	3.08	106.7	0.329	0.4	PASS
	DH5	HCH	3.08	106.7	0.329	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	3.09	106.7	0.307	0.4	PASS
	2DH5	MCH	3.08	106.7	0.307	0.4	PASS
	2DH5	HCH	3.08	106.7	0.307	0.4	PASS
8DPSK	3DH5	LCH	3.09	106.7	0.308	0.4	PASS
	3DH5	MCH	3.08	106.7	0.308	0.4	PASS
	3DH5	HCH	3.08	106.7	0.308	0.4	PASS

Test Graphs

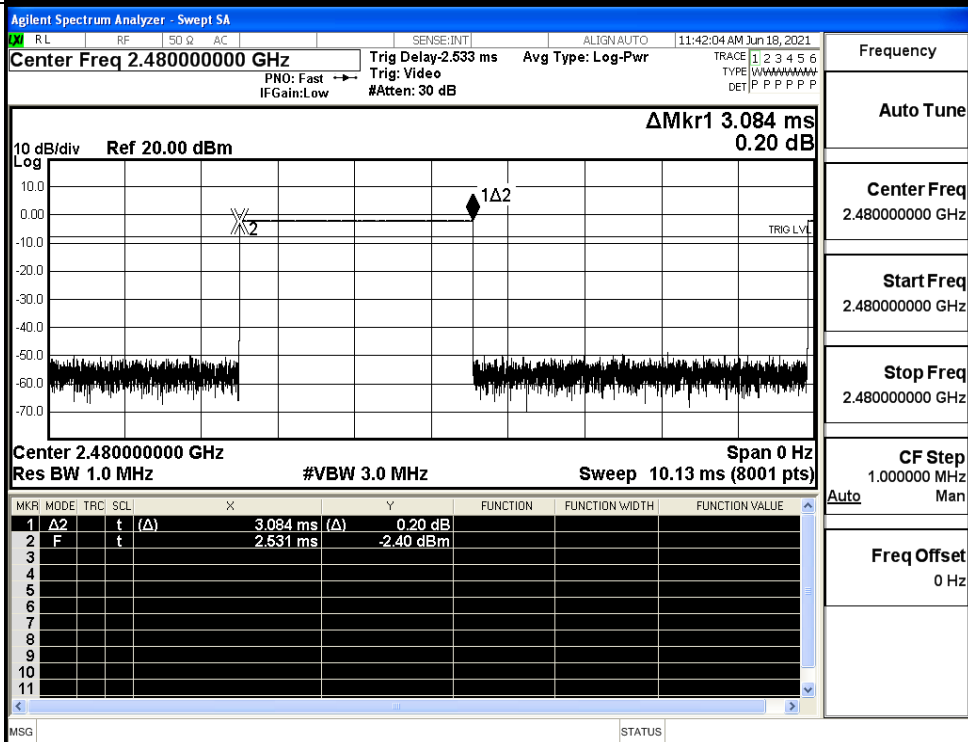
GFSK_DH5/LCH



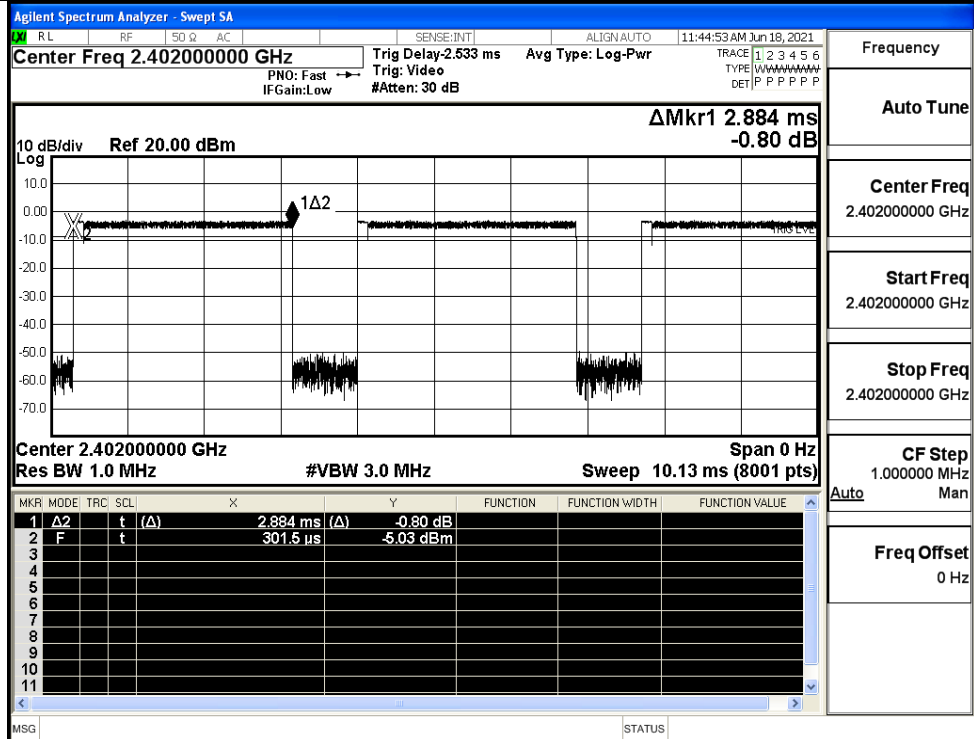
GFSK_DH5/MCH



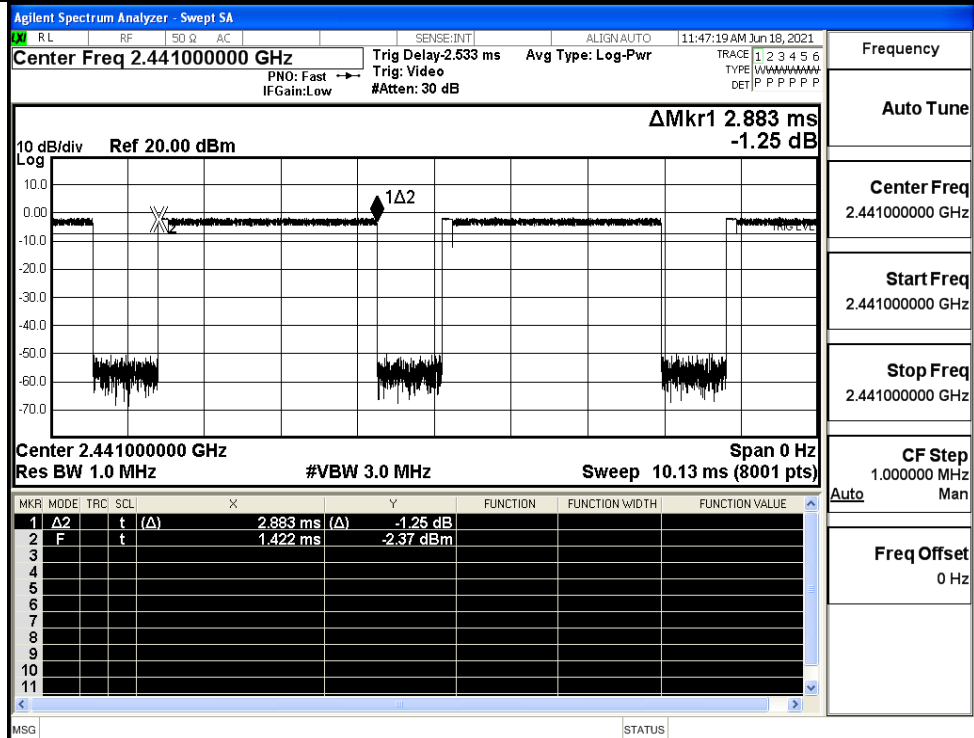
GFSK_DH5/HCH



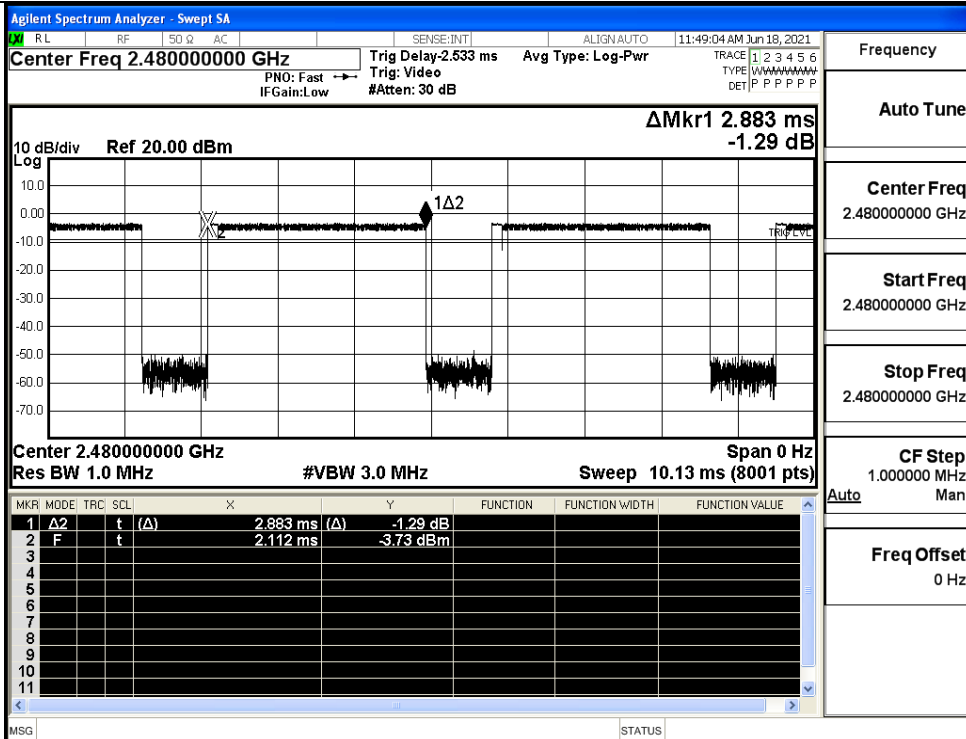
$\pi/4$ DQPSK
_2DH5/LCH



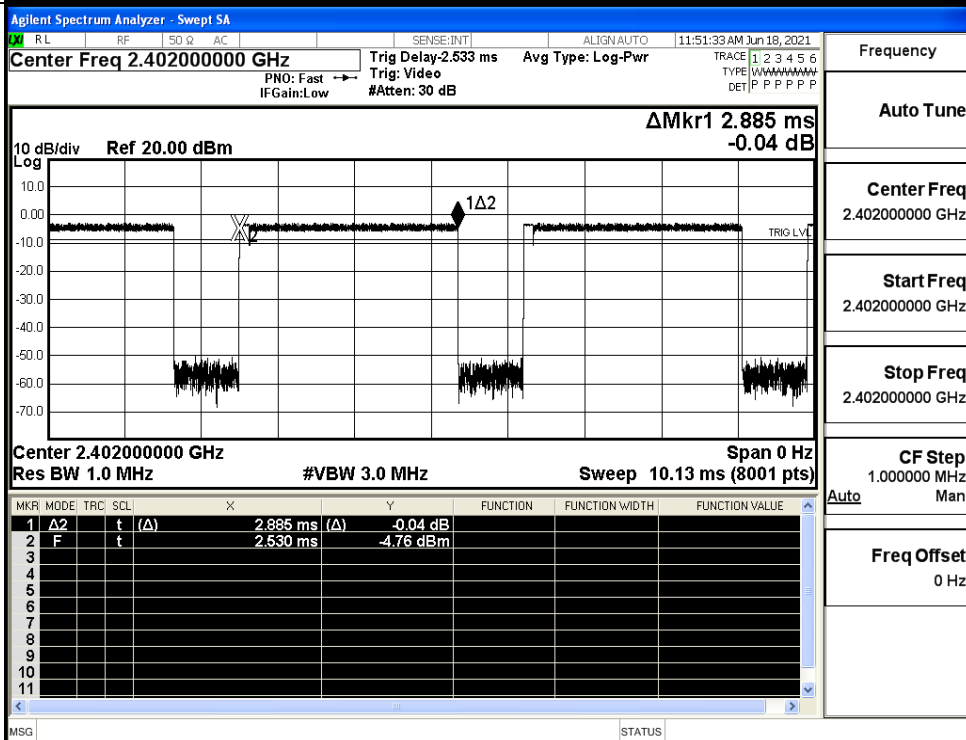
$\pi/4$ DQPSK
_2DH5/MCH



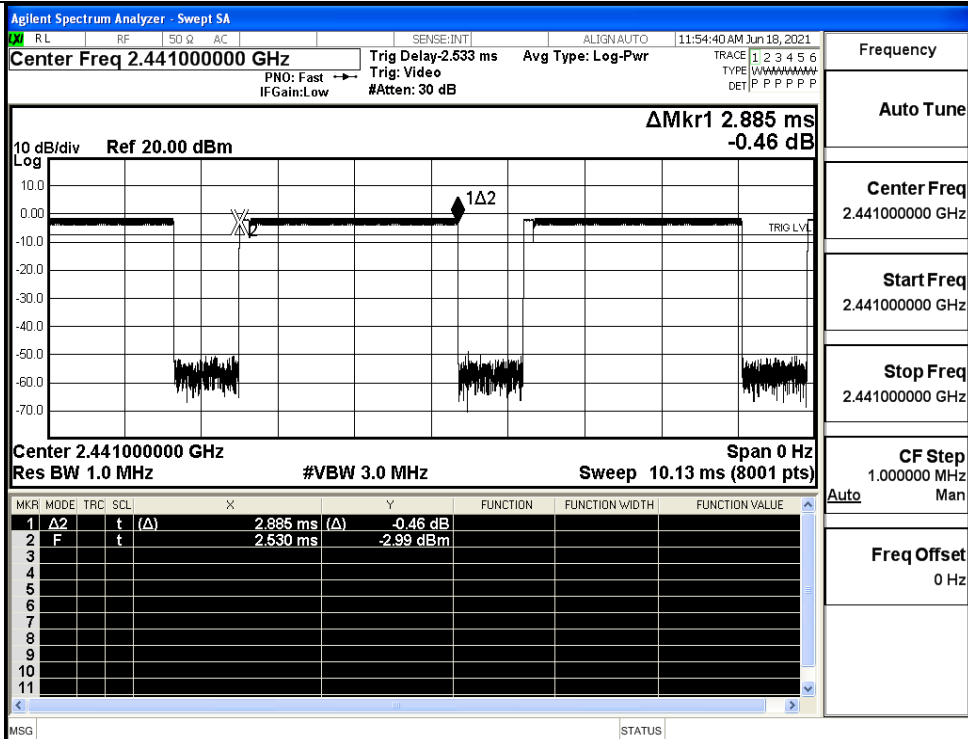
$\pi/4$ DQPSK
_2DH5/HCH



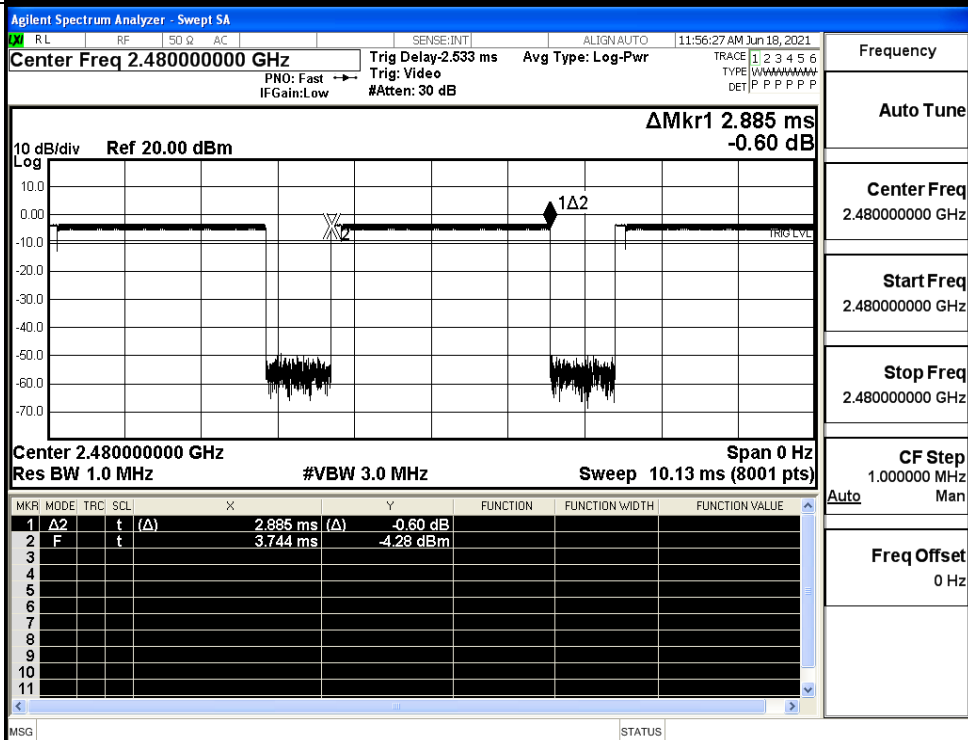
8DPSK_3DH5/LCH



8DPSK_3DH5/MCH

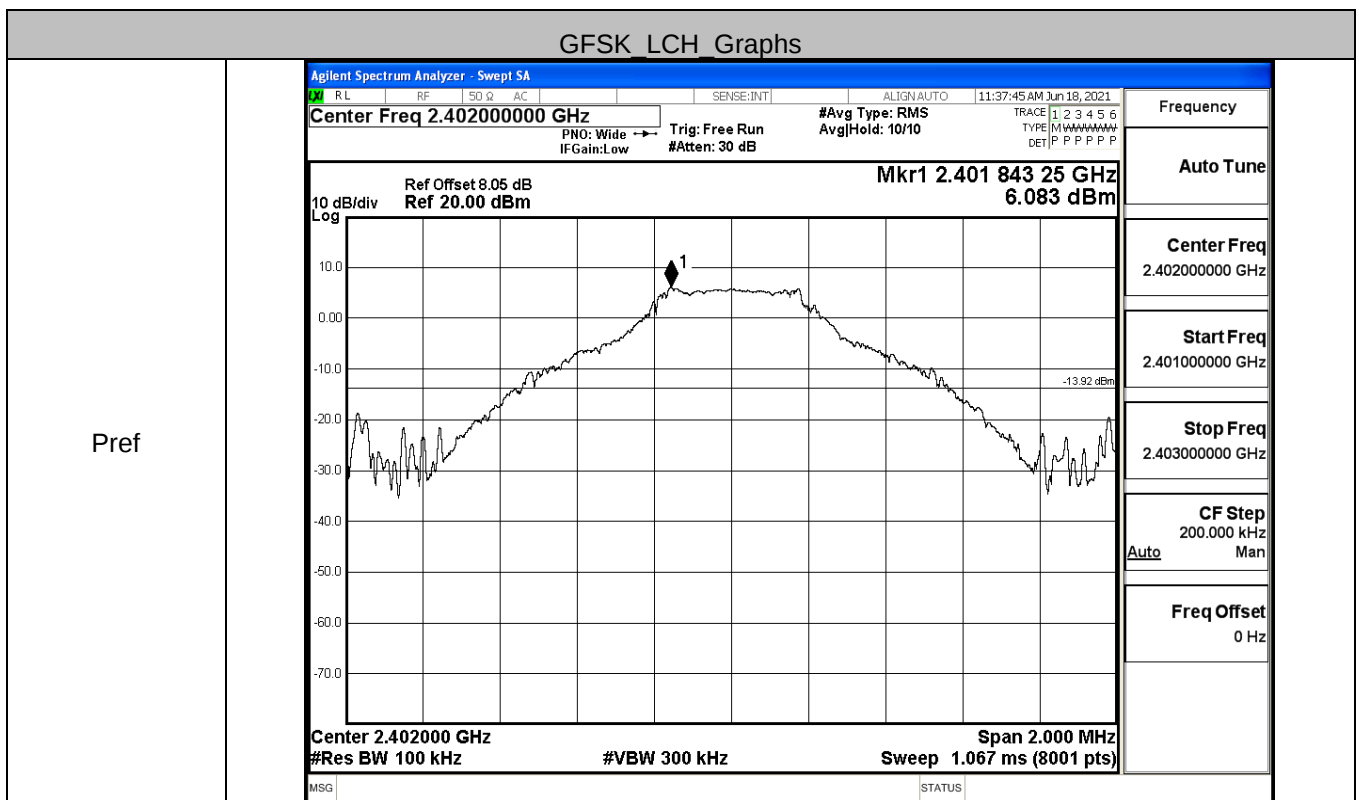


8DPSK_3DH5/HCH

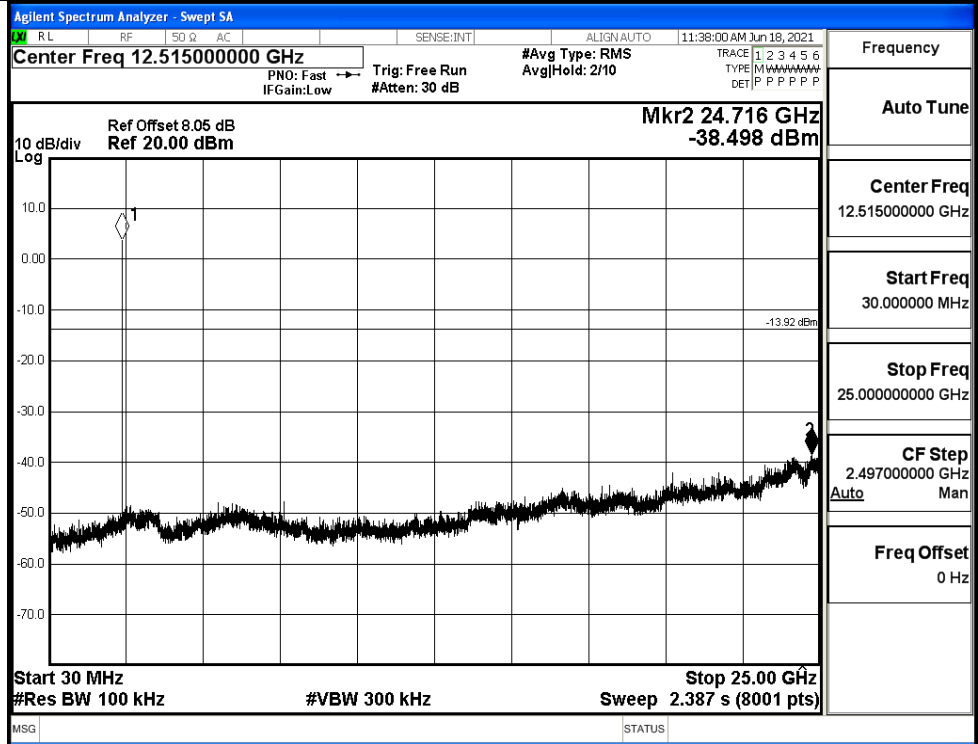


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	6.083	-38.498	-13.917	PASS
	MCH	7.241	-37.744	-12.759	PASS
	HCH	5.949	-38.109	-14.051	PASS
$\pi/4$ DQPSK	LCH	4.492	-37.224	-15.508	PASS
	MCH	5.207	-37.113	-14.793	PASS
	HCH	4.278	-37.851	-15.722	PASS
8DPSK	LCH	4.348	-37.086	-15.652	PASS
	MCH	5.976	-37.956	-14.024	PASS
	HCH	4.495	-38.031	-15.505	PASS

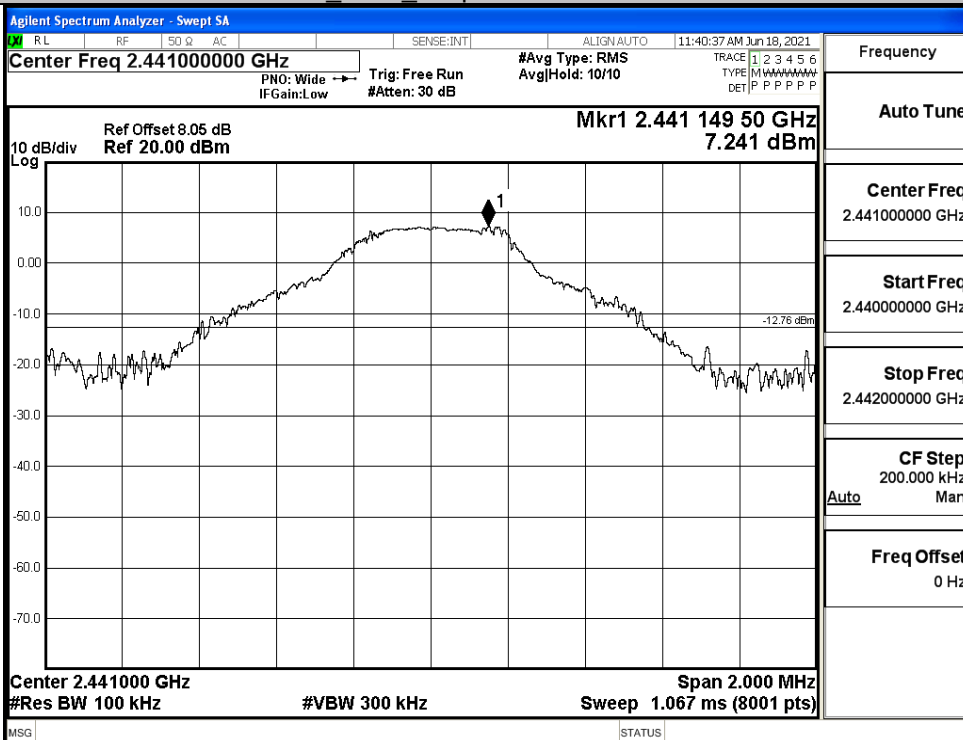


Puw

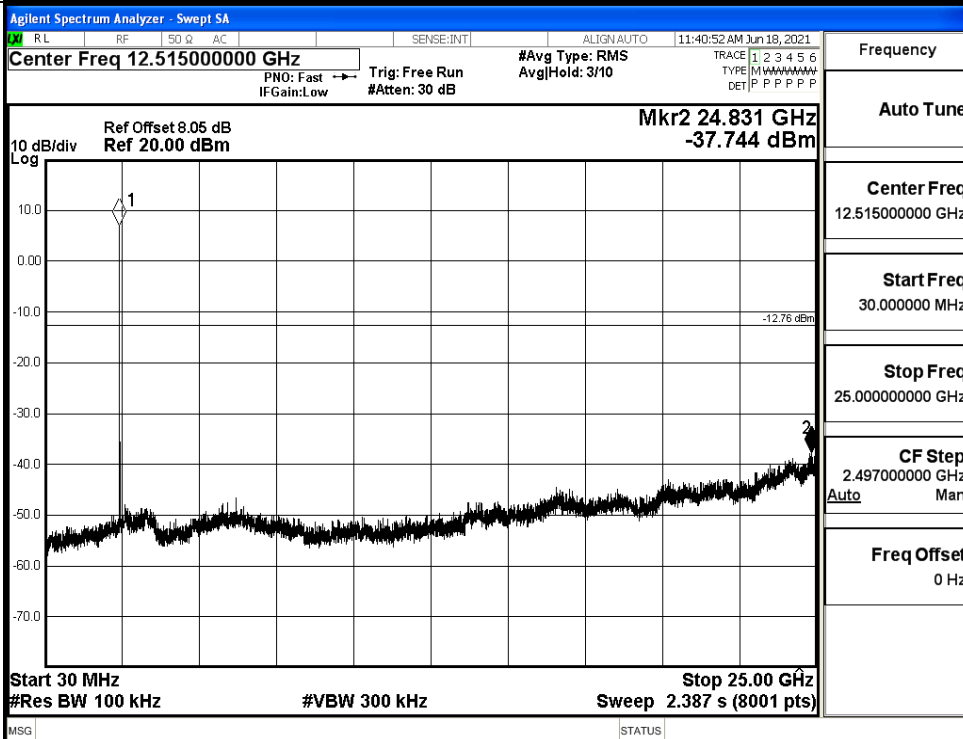


GFSK_MCH_Graphs

Pref

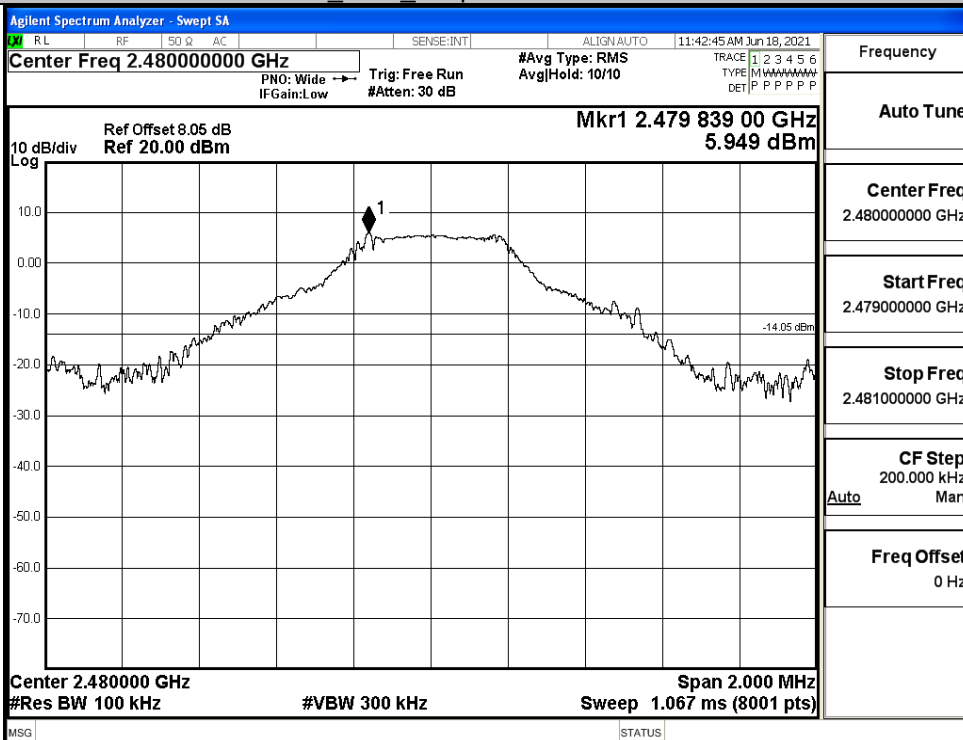


Puw

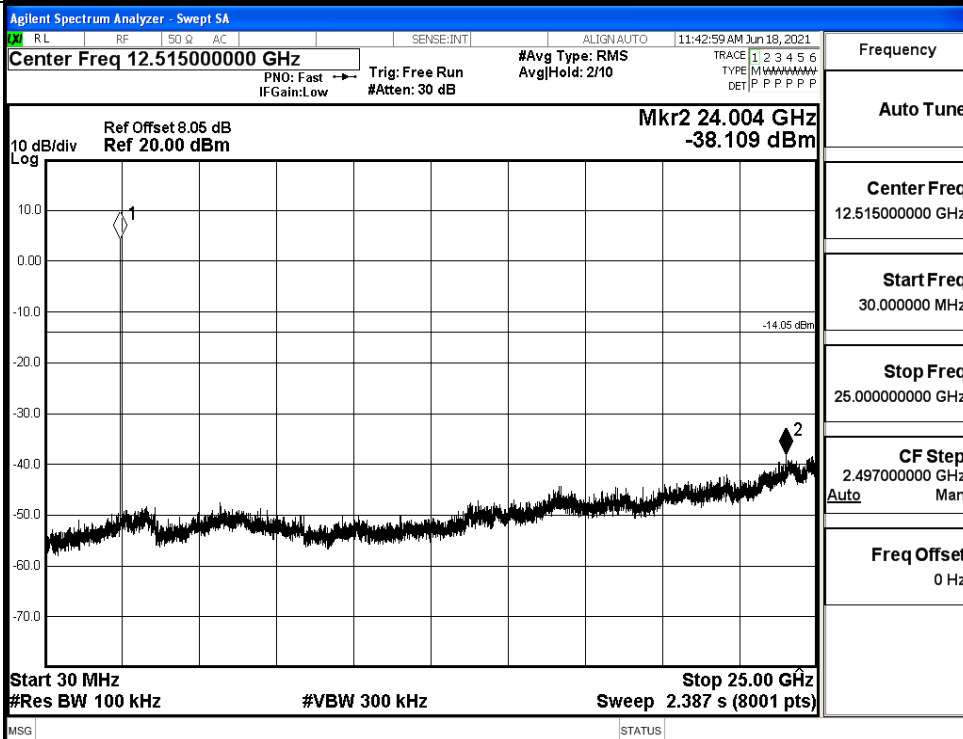


GFSK HCH_Graphs

Pref

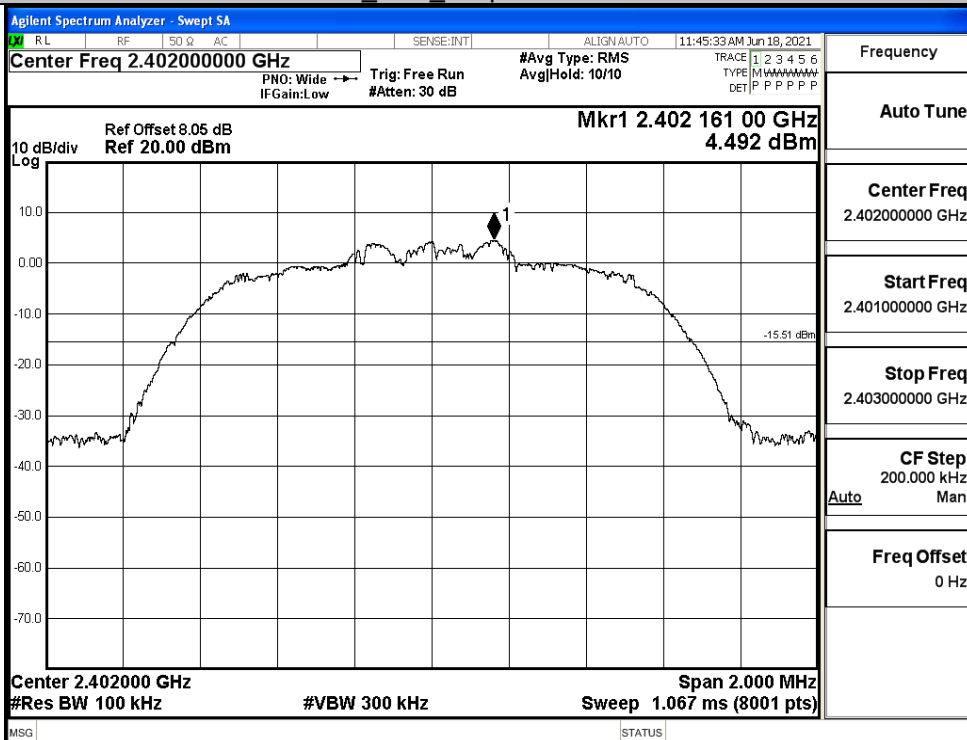


Puw

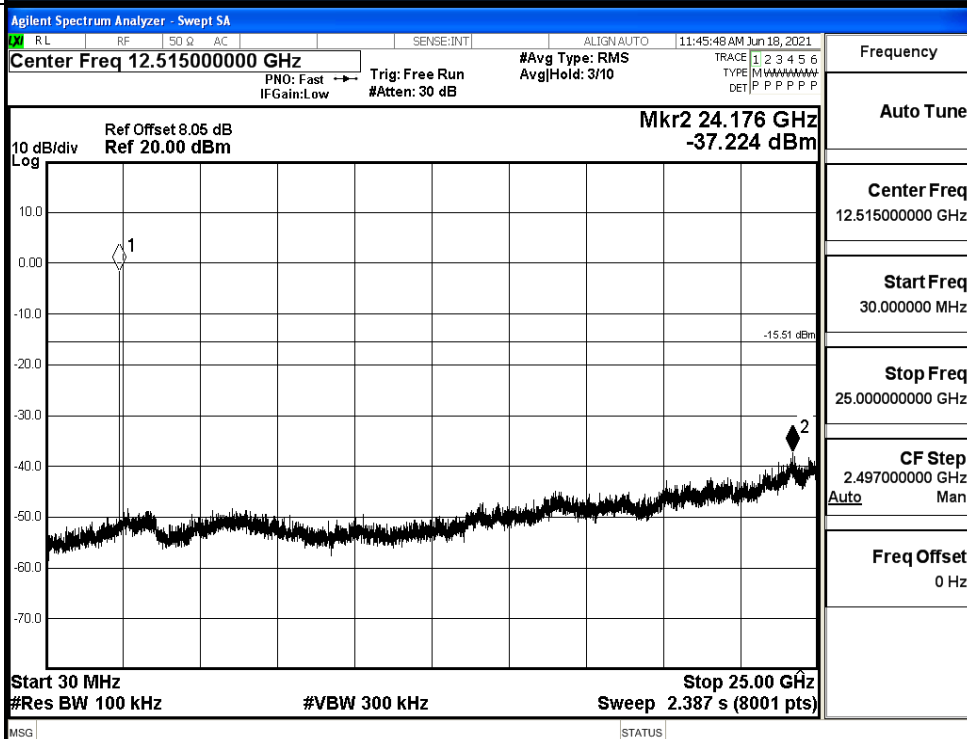


$\pi/4$ DQPSK_LCH_Graphs

Pref

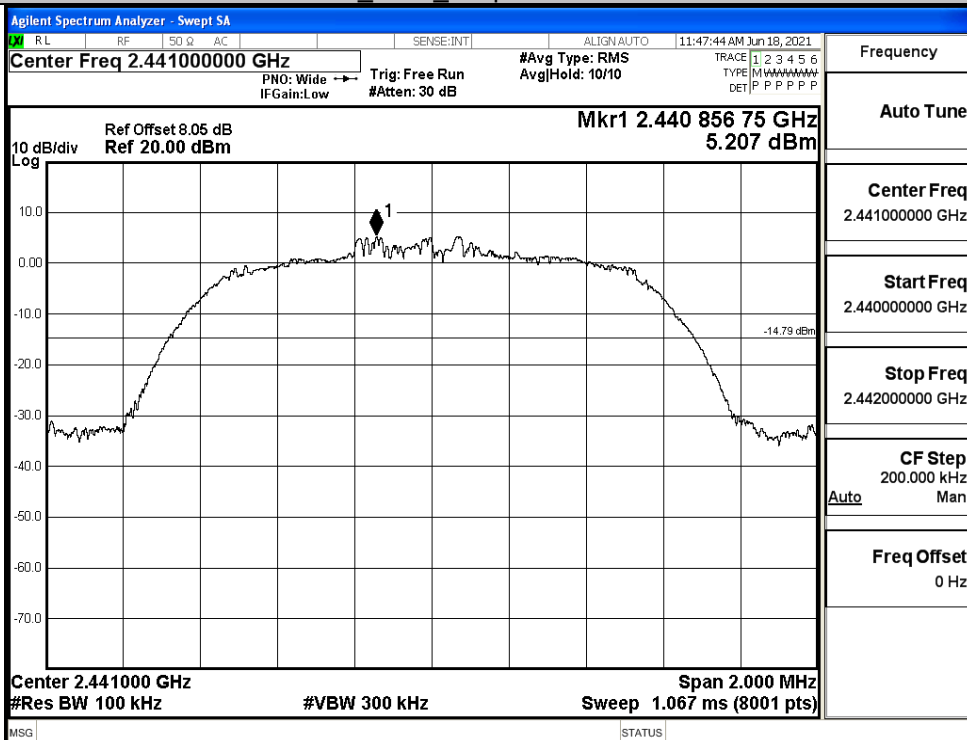


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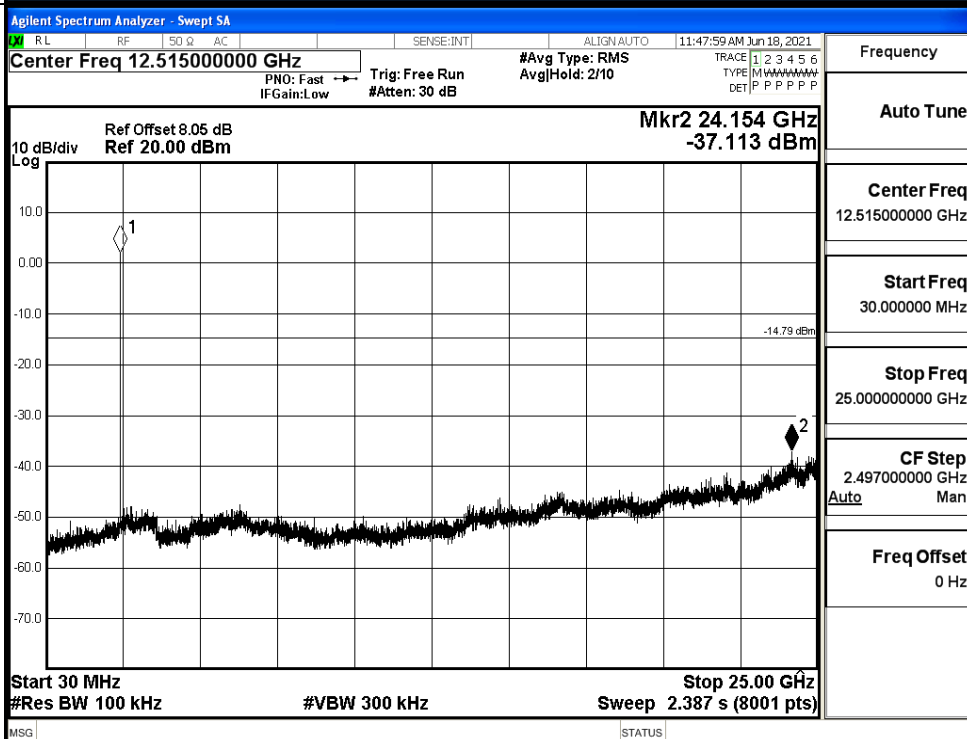


$\pi/4$ DQPSK_MCH_Graphs

Pref

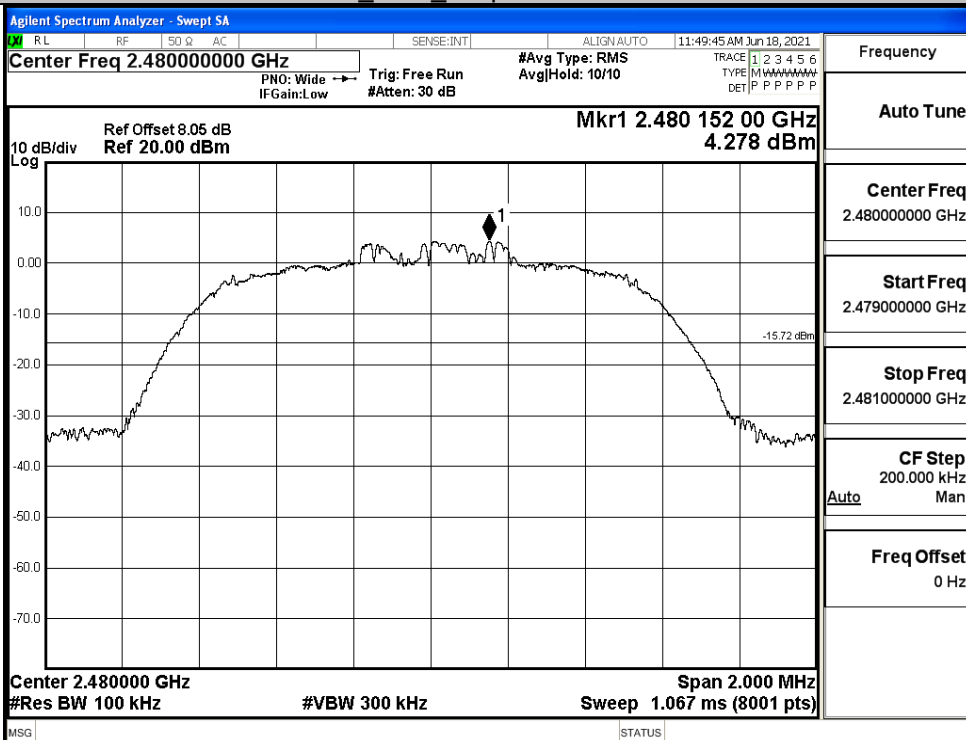


Puw

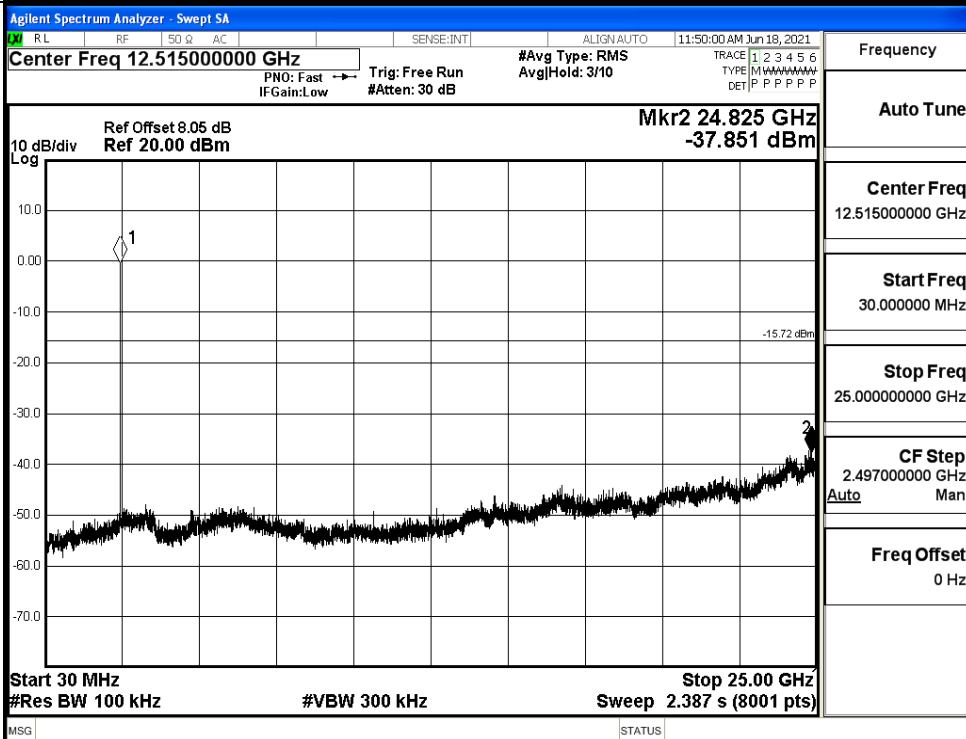


$\pi/4$ DQPSK_HCH_Graphs

Pref

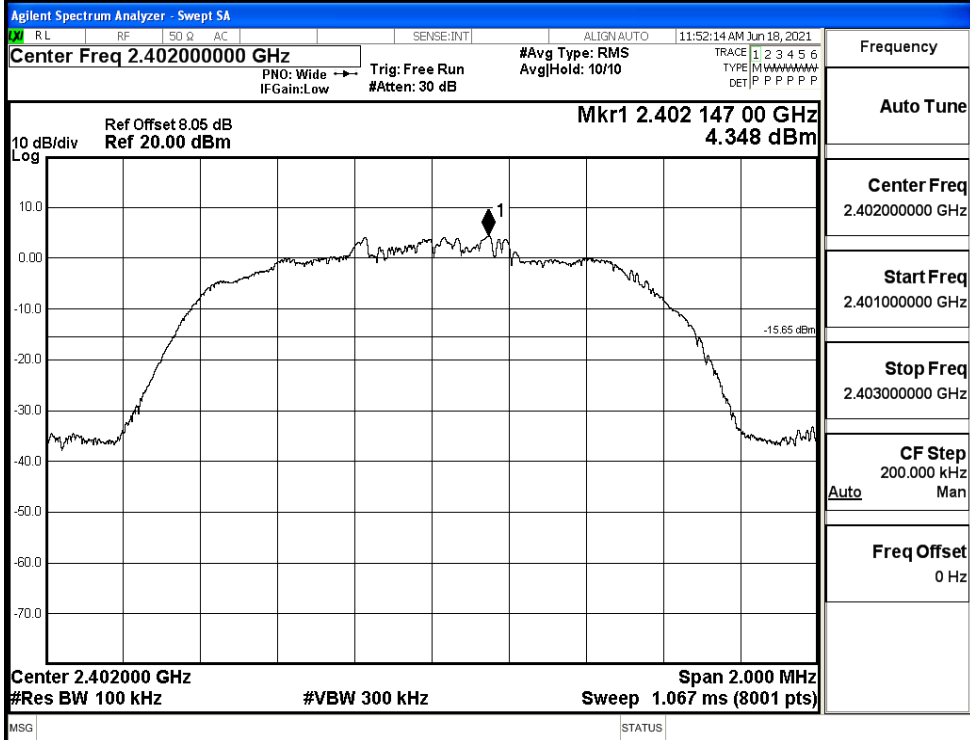


Puw

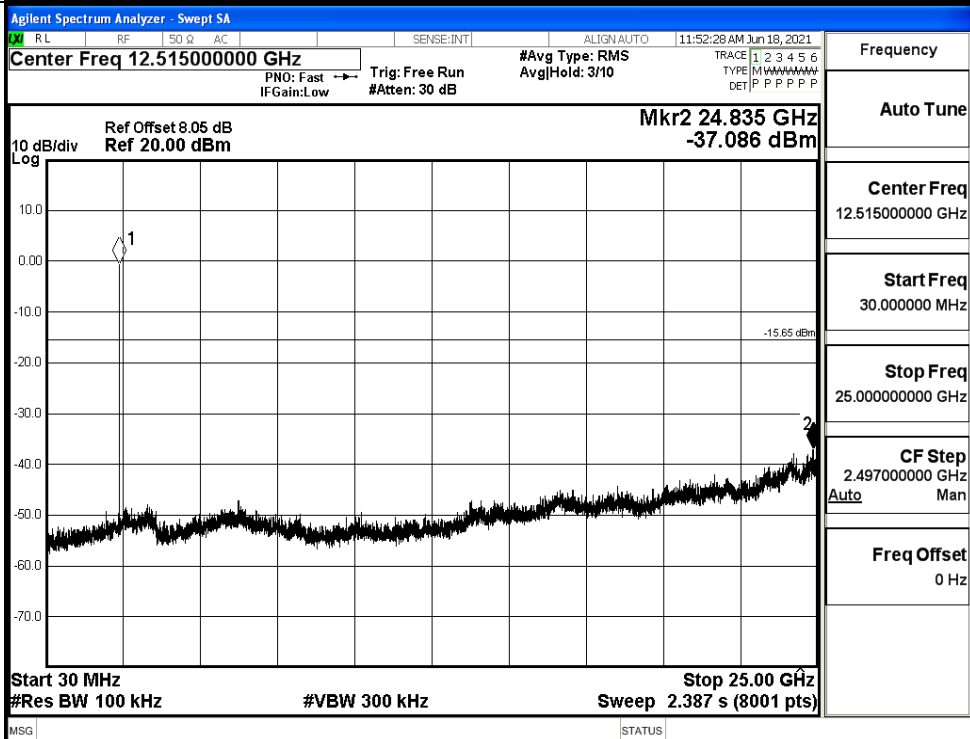


8DPSK_LCH_Graphs

Pref

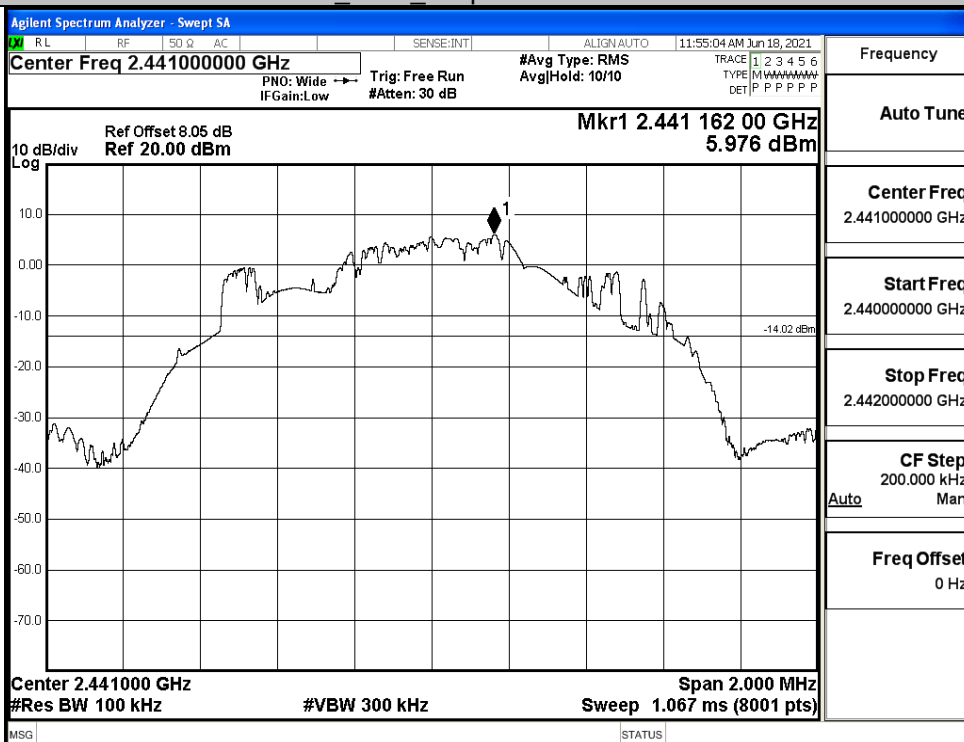


Puw

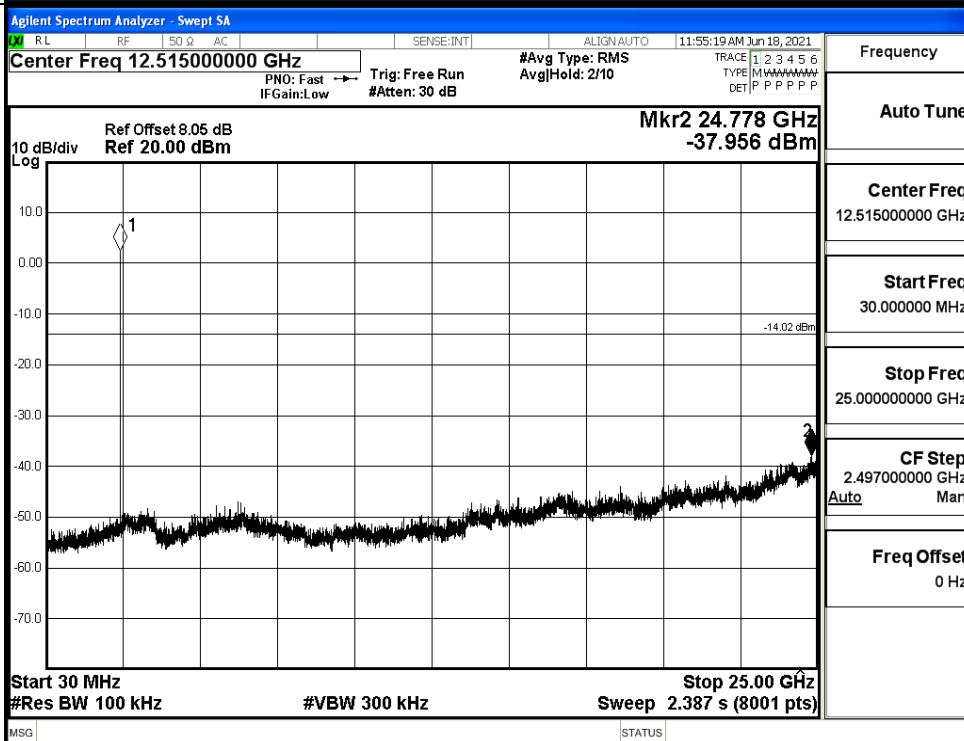


8DPSK_MCH_Graphs

Pref

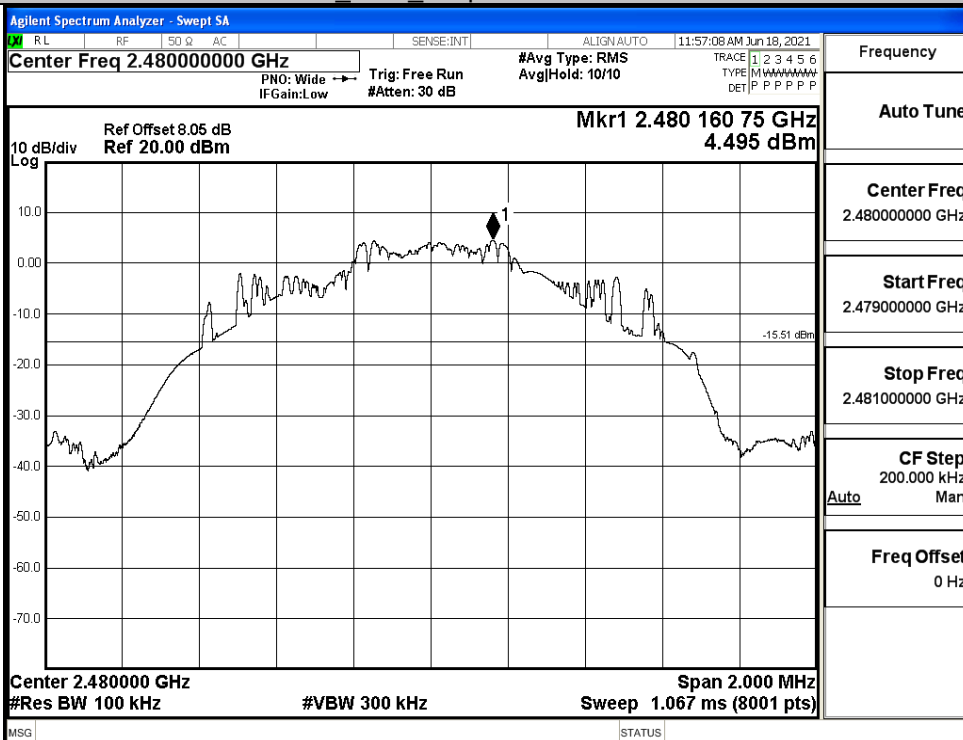


Puw

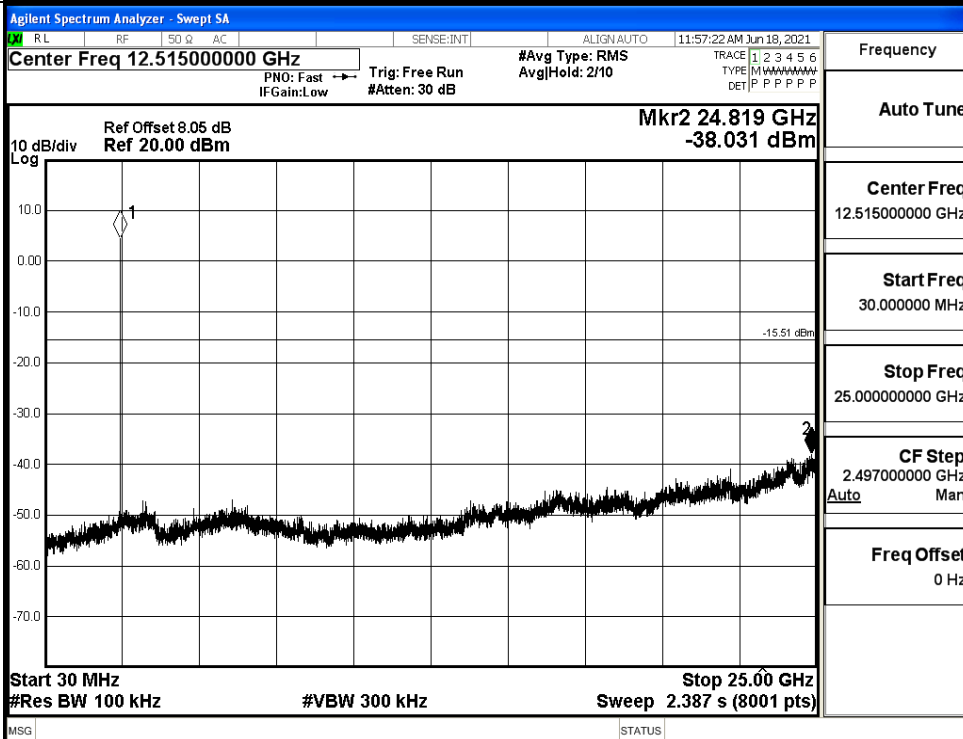


8DPSK_HCH_Graphs

Pref



Puw

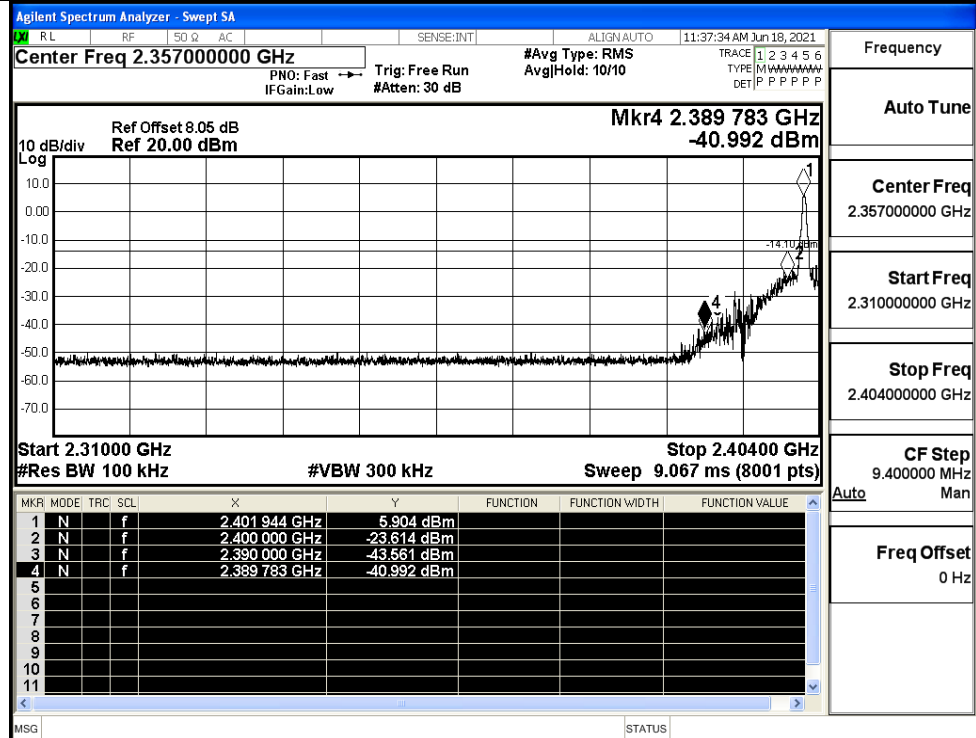


A.7 Band-edge for RF Conducted Emissions

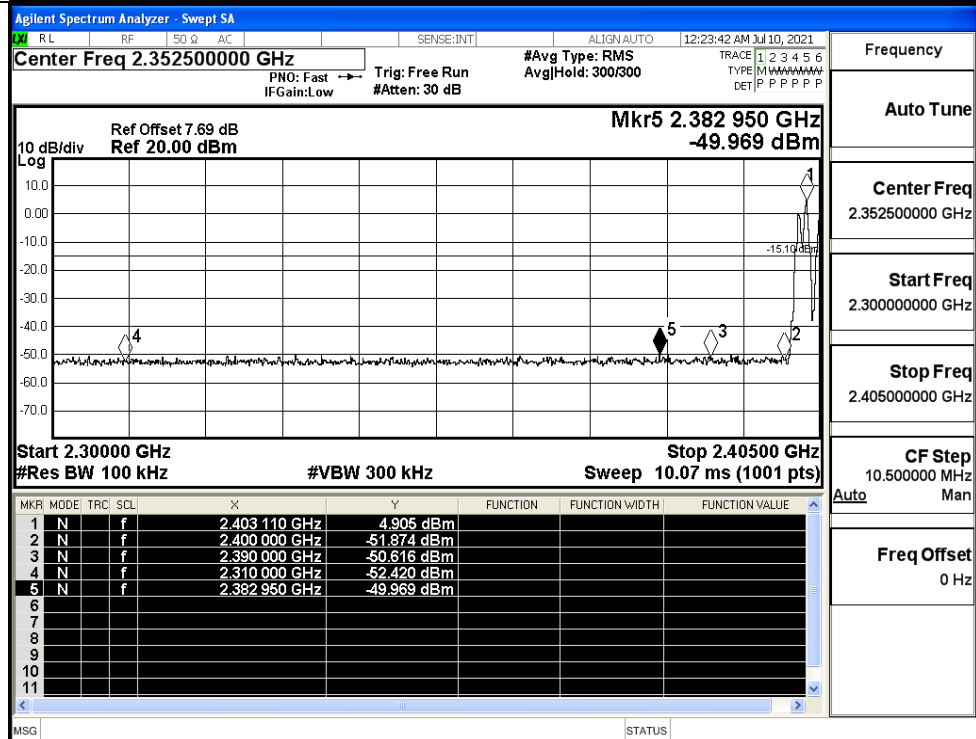
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	5.904	Off	-40.992	-14.1	PASS
			4.91	On	-49.97	-15.1	PASS
	HCH	2480	5.886	Off	-24.094	-14.11	PASS
			7.034	On	-48.490	-12.97	PASS
$\pi/4$ DQPSK	LCH	2402	4.571	Off	-49.179	-15.43	PASS
			0.32	On	-49.56	-19.68	PASS
	HCH	2480	4.231	Off	-48.705	-15.77	PASS
			5.500	On	-48.925	-14.5	PASS
8DPSK	LCH	2402	4.602	Off	-48.430	-15.4	PASS
			5.836	On	-48.832	-14.16	PASS
	HCH	2480	4.661	Off	-48.532	-15.34	PASS
			5.668	On	-48.781	-14.33	PASS

Test Graphs

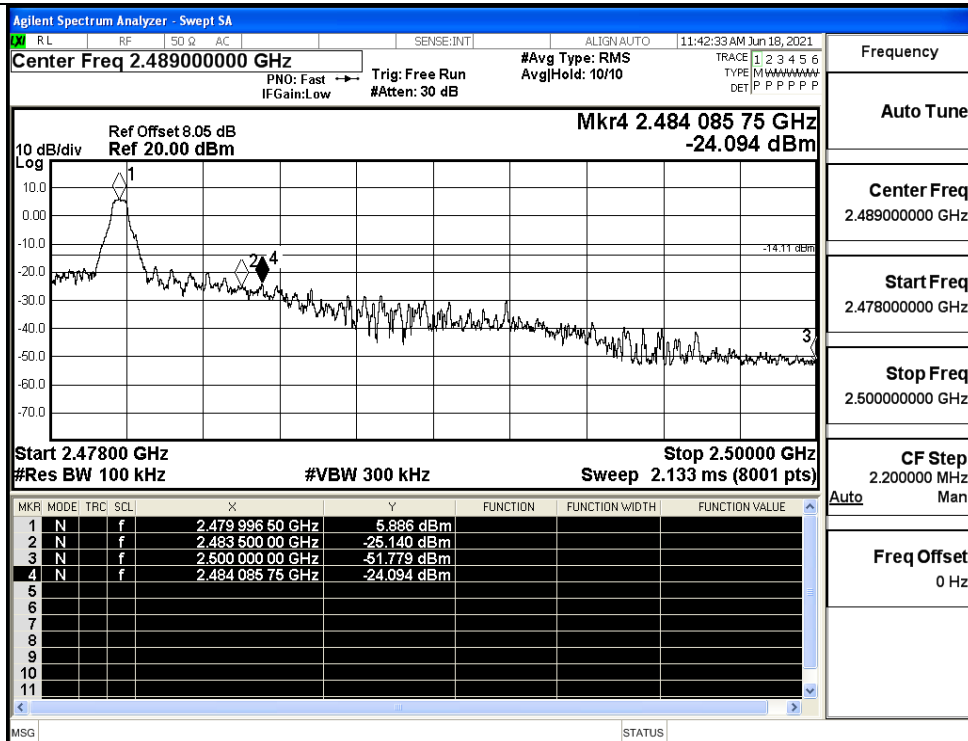
GFSK/LCH/No Hop



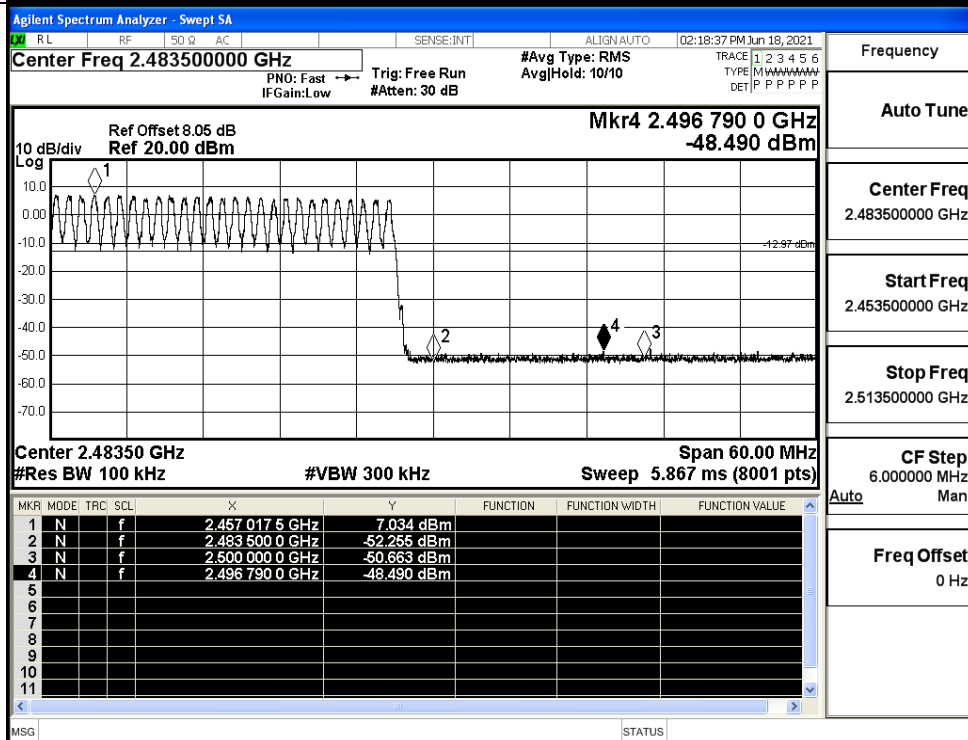
GFSK/LCH/Hop



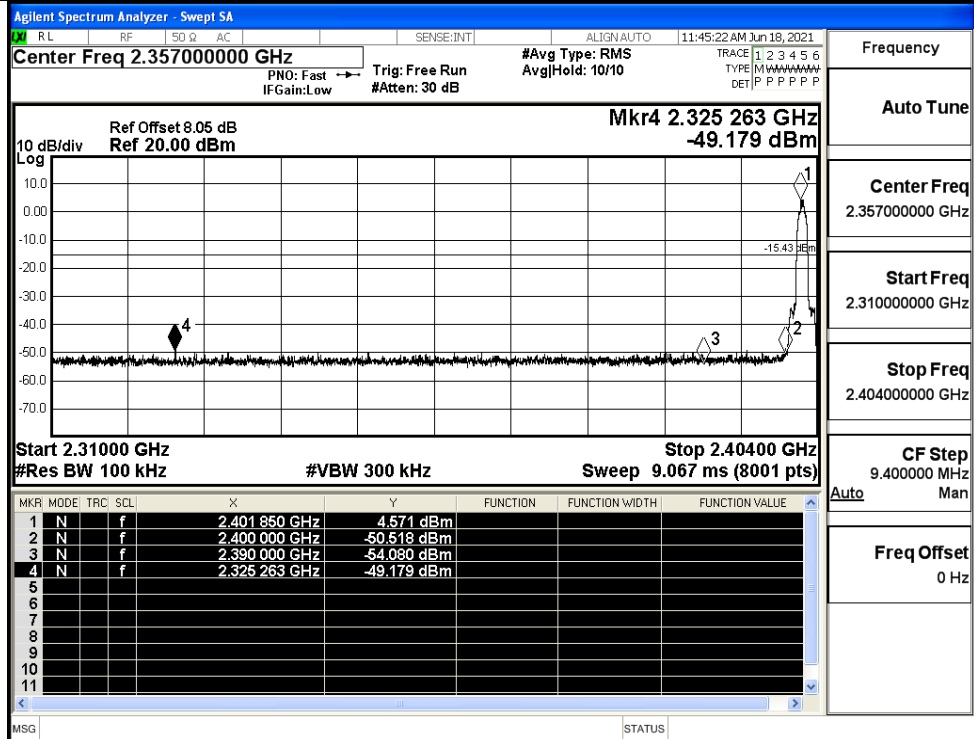
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

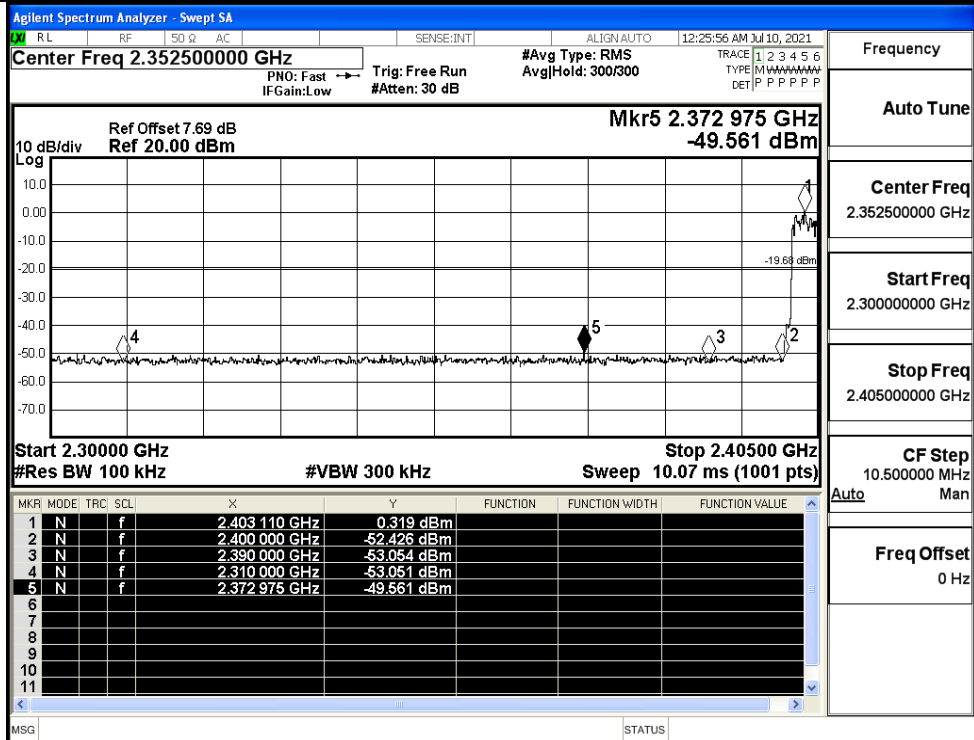
Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz

Auto

Freq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.352500000 GHz

Start Freq
2.300000000 GHz

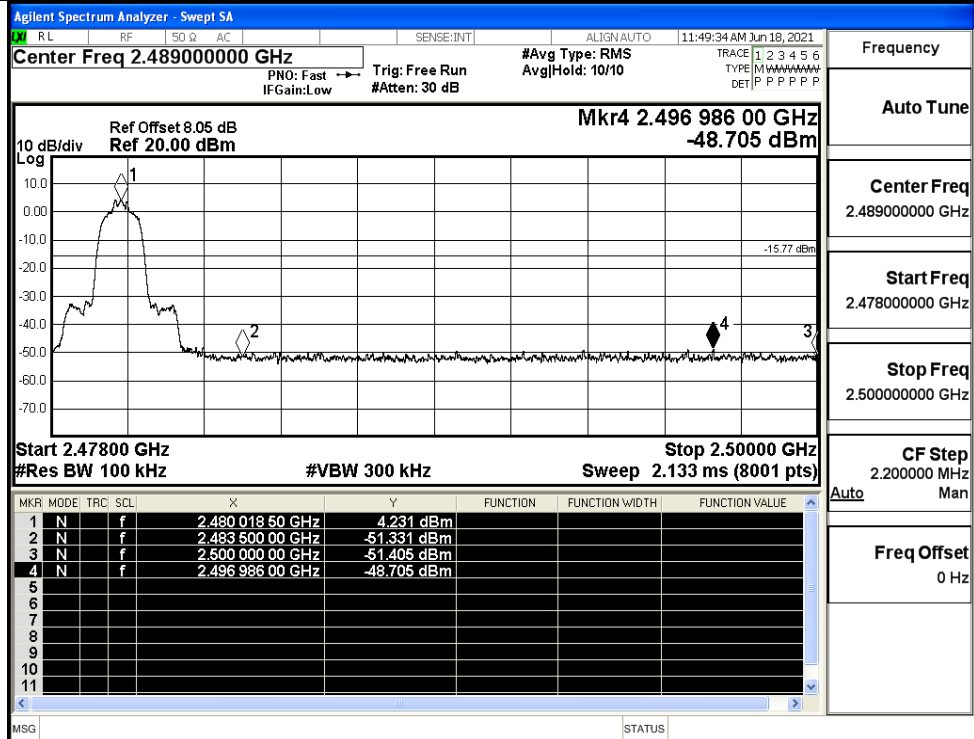
Stop Freq
2.405000000 GHz

CF Step
10.500000 MHz

Auto

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

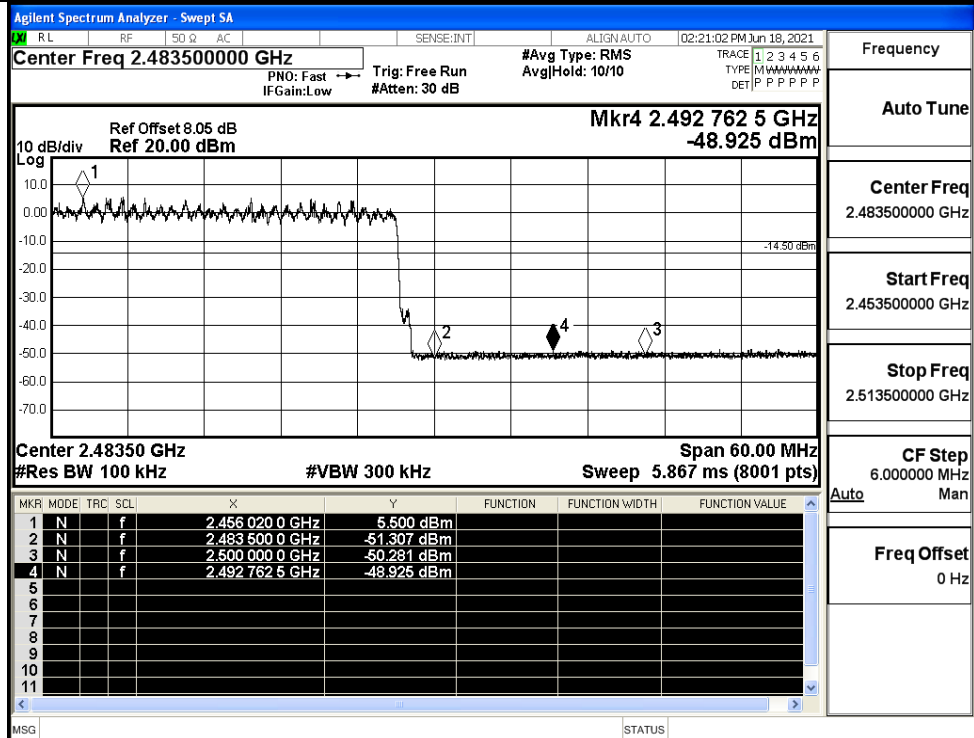
Start Freq
2.478000000 GHz

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

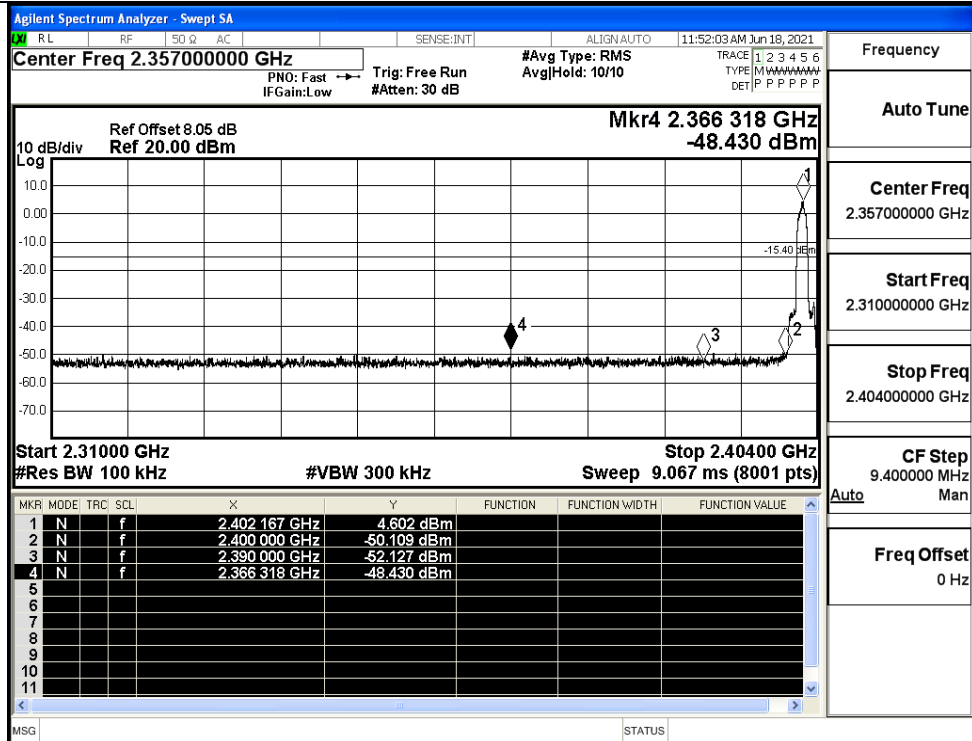
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

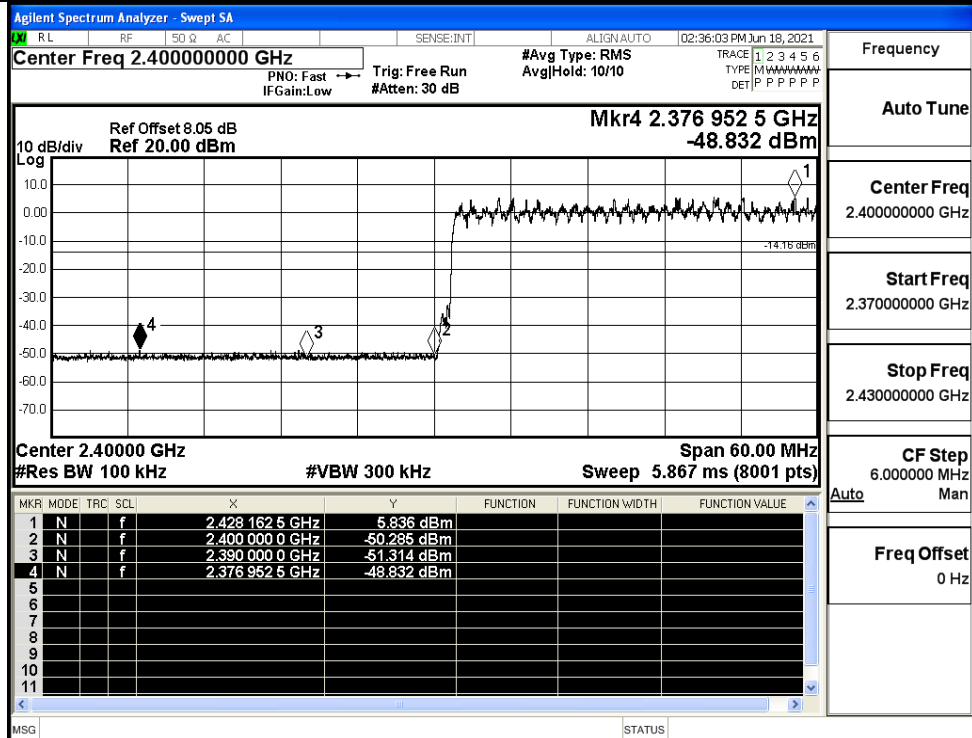
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

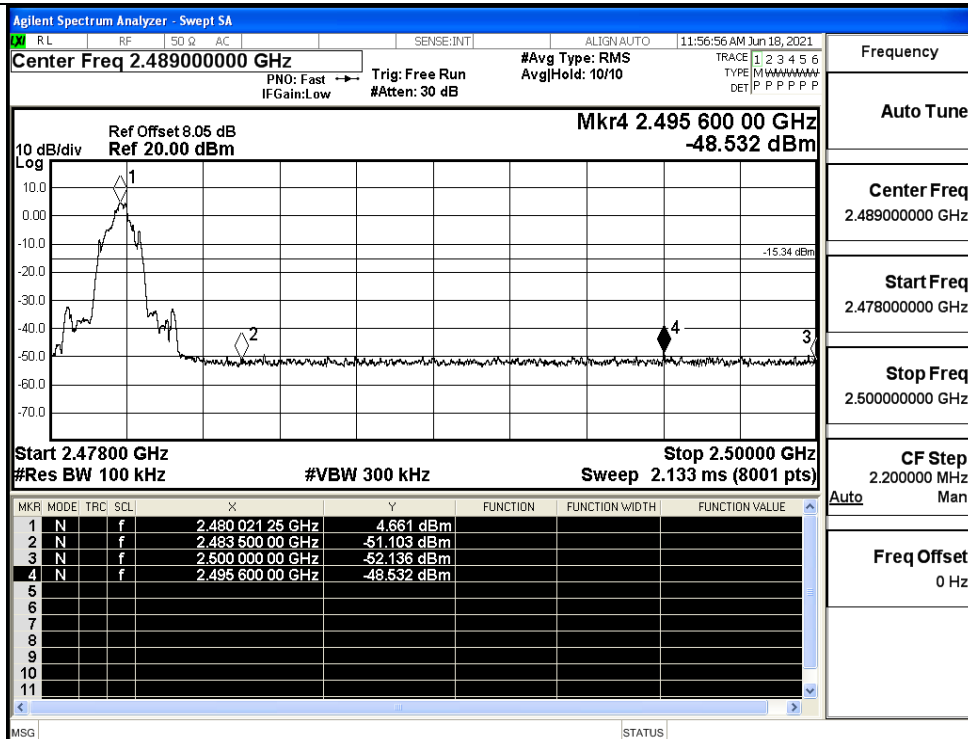
8DPSK/LCH/No Hop



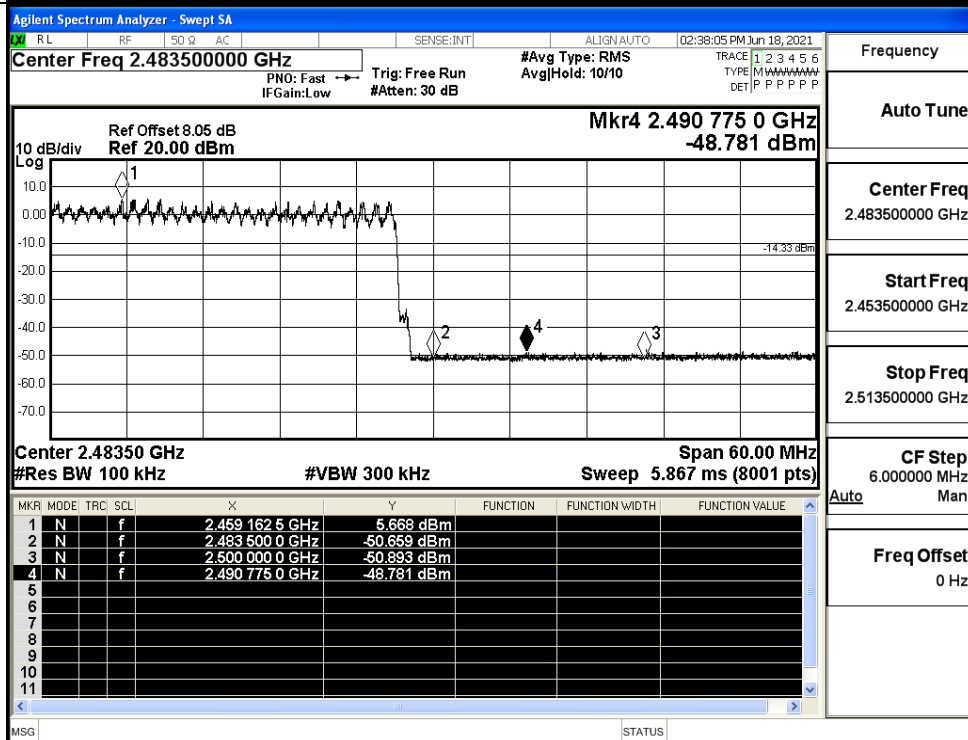
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



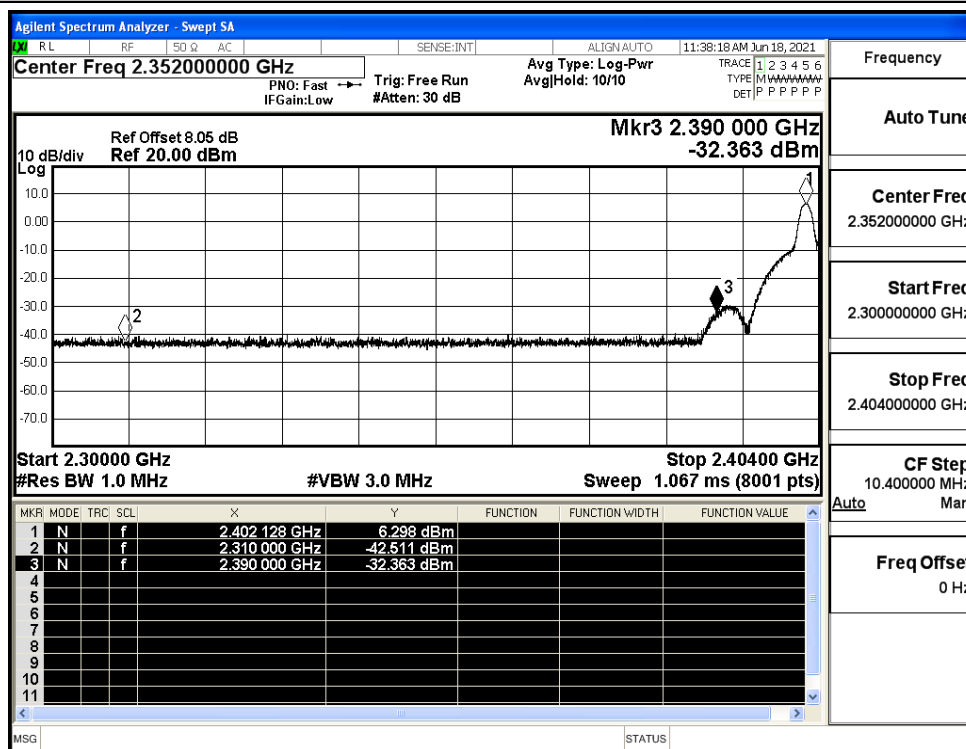
8DPSK/HCH/Hop



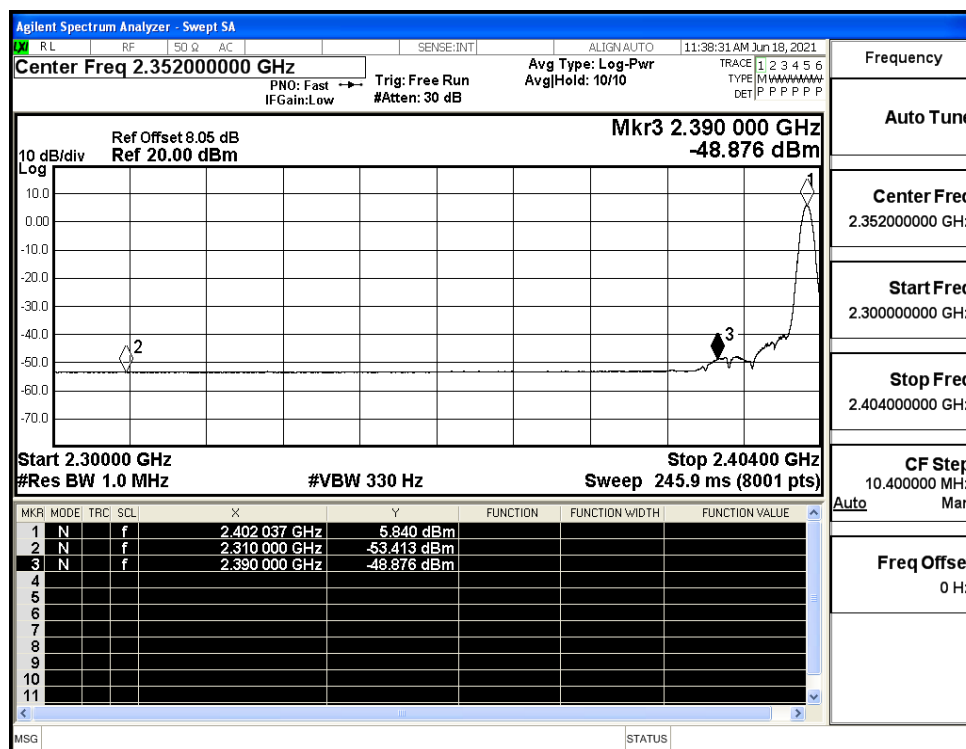
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.51	2.0	0	54.72	PEAK	74	PASS
	Off	2310.0	-53.41	2.0	0	43.82	AV	54	PASS
	Off	2390.0	-32.36	2.0	0	64.87	PEAK	74	PASS
	Off	2390.0	-48.88	2.0	0	48.35	AV	54	PASS
	Off	2483.5	-43.75	2.0	0	53.48	PEAK	74	PASS
	Off	2483.5	-48.37	2.0	0	48.86	AV	54	PASS
	Off	2500.0	-44.83	2.0	0	52.40	PEAK	74	PASS
	Off	2500.0	-48.4	2.0	0	48.83	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.26	2.0	0	53.97	PEAK	74	PASS
	Off	2310.0	-53.38	2.0	0	43.85	AV	54	PASS
	Off	2390.0	-42.97	2.0	0	54.26	PEAK	74	PASS
	Off	2390.0	-53.00	2.0	0	44.23	AV	54	PASS
	Off	2483.5	-42.42	2.0	0	54.81	PEAK	74	PASS
	Off	2483.5	-52.20	2.0	0	45.03	AV	54	PASS
	Off	2500.0	-43.05	2.0	0	54.18	PEAK	74	PASS
	Off	2500.0	-52.44	2.0	0	44.79	AV	54	PASS
8DPSK	Off	2310.0	-42.91	2.0	0	54.32	PEAK	74	PASS
	Off	2310.0	-53.40	2.0	0	43.83	AV	54	PASS
	Off	2390.0	-43.09	2.0	0	54.14	PEAK	74	PASS
	Off	2390.0	-53.05	2.0	0	44.18	AV	54	PASS
	Off	2483.5	-41.76	2.0	0	55.47	PEAK	74	PASS
	Off	2483.5	-52.37	2.0	0	44.86	AV	54	PASS
	Off	2500.0	-42.92	2.0	0	54.31	PEAK	74	PASS
	Off	2500.0	-52.38	2.0	0	44.85	AV	54	PASS

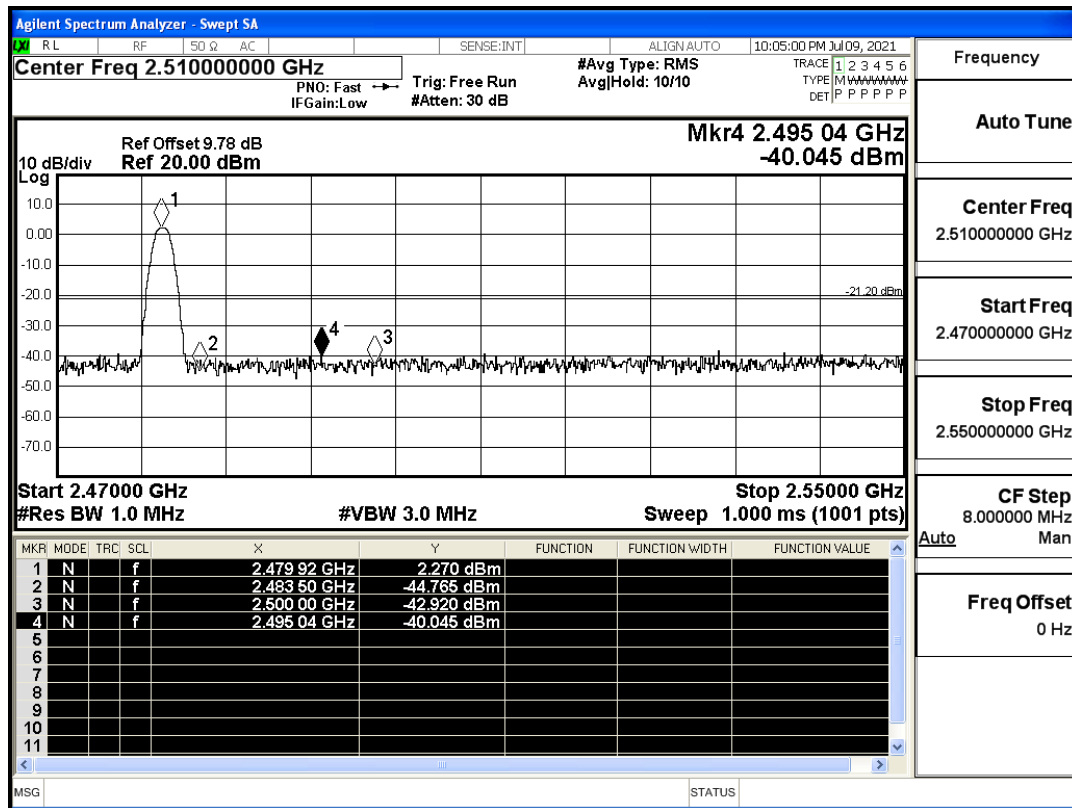
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



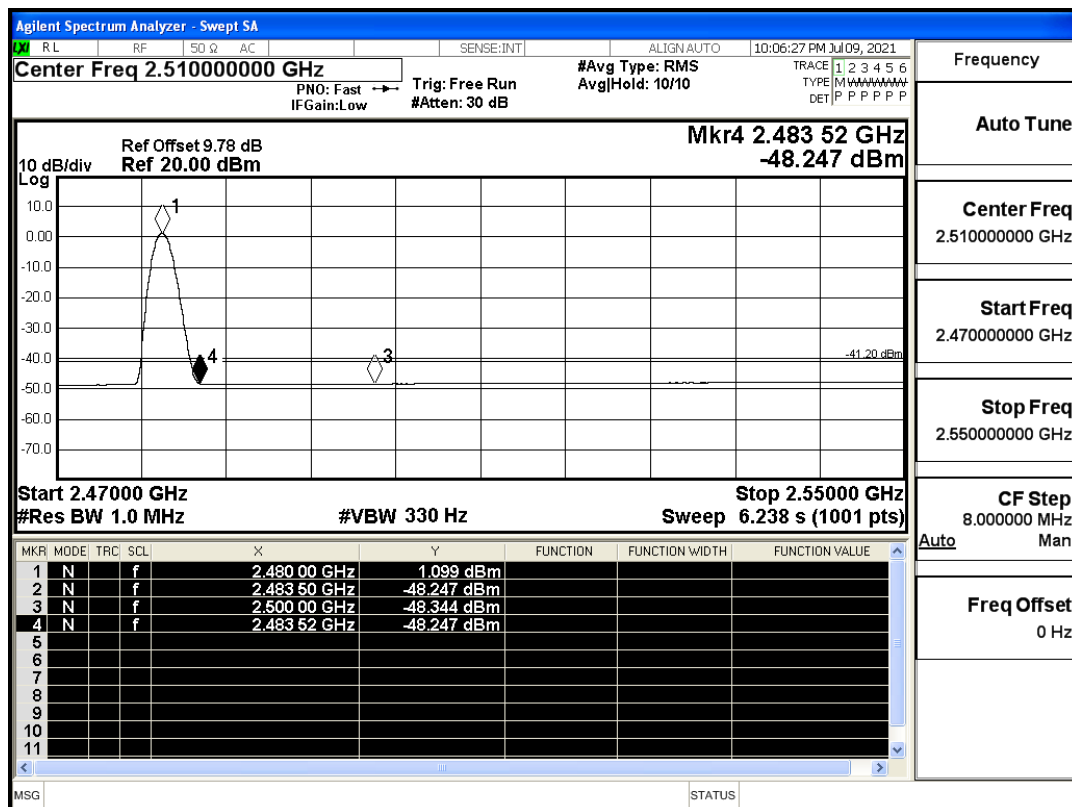
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



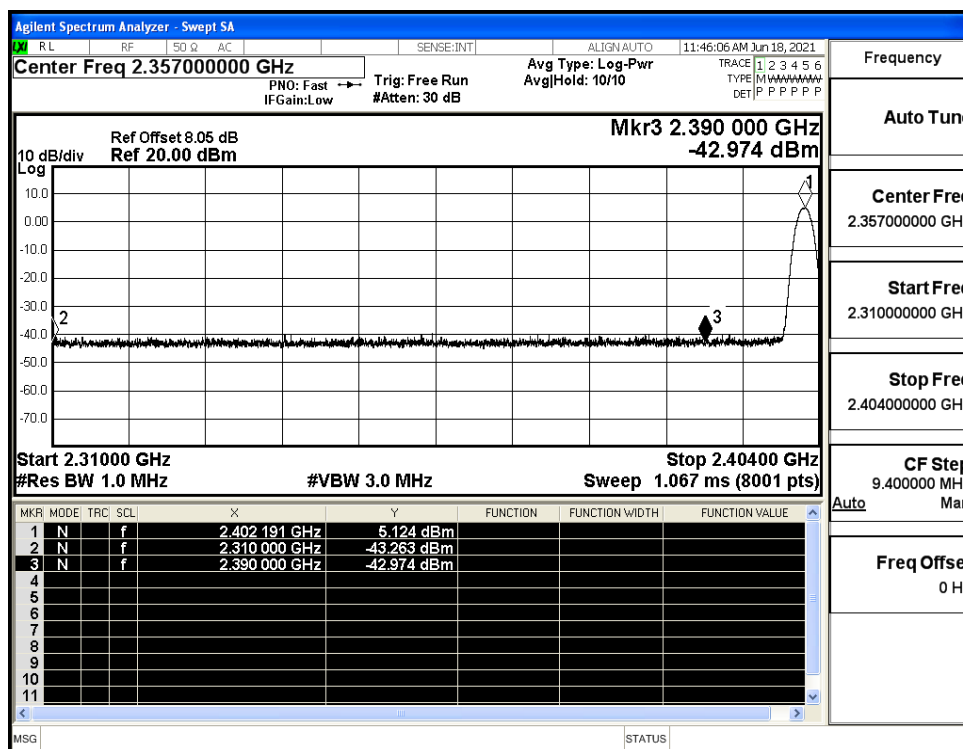
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



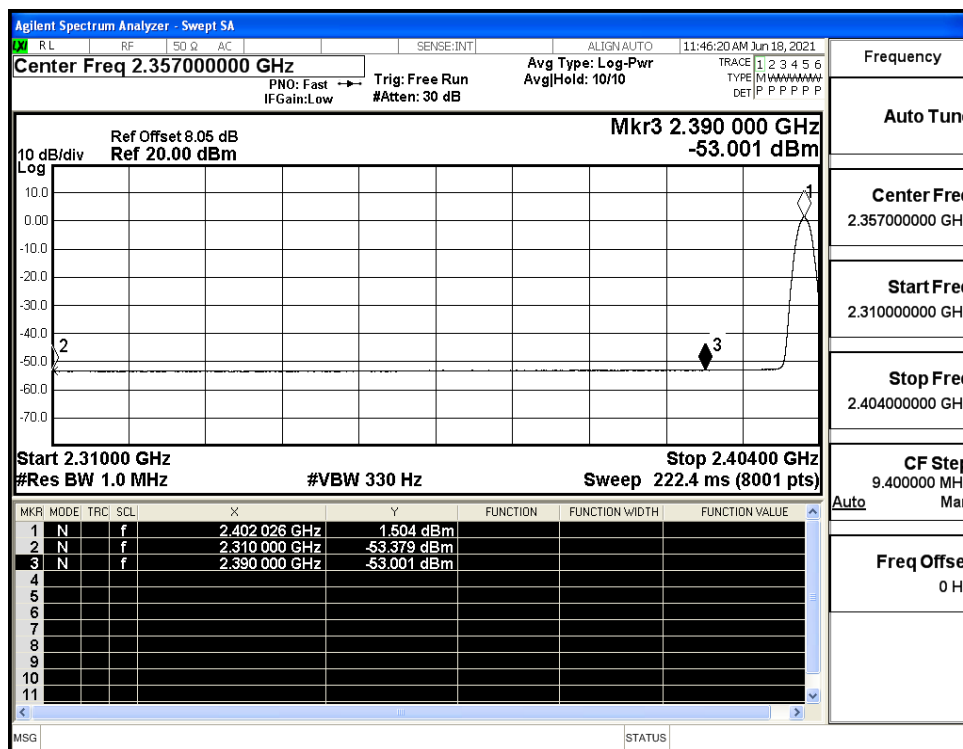
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



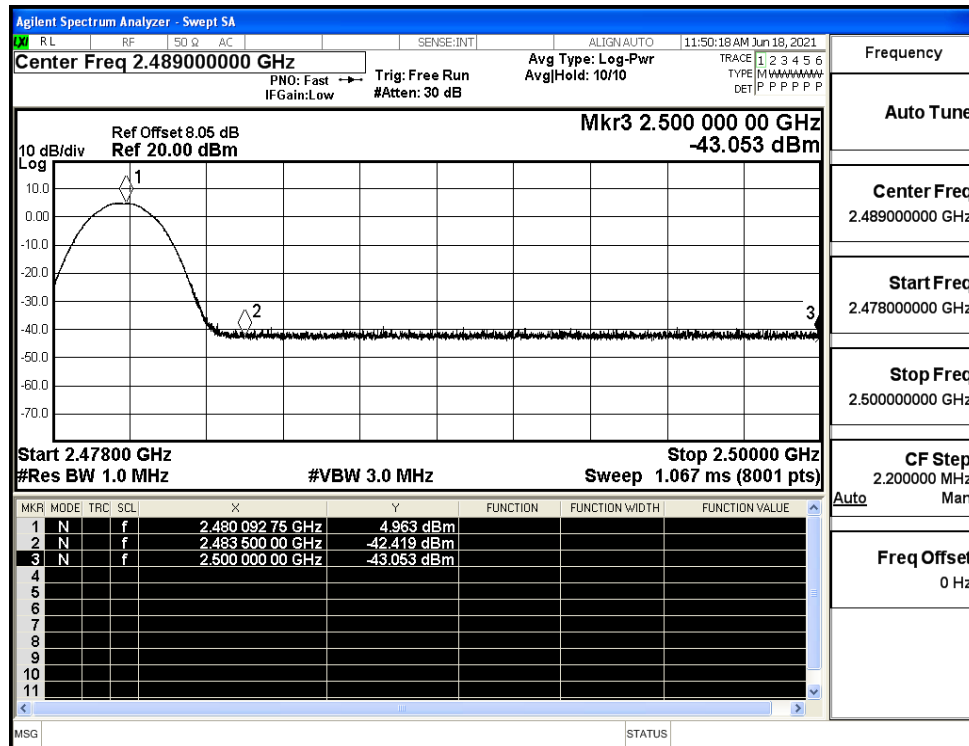
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



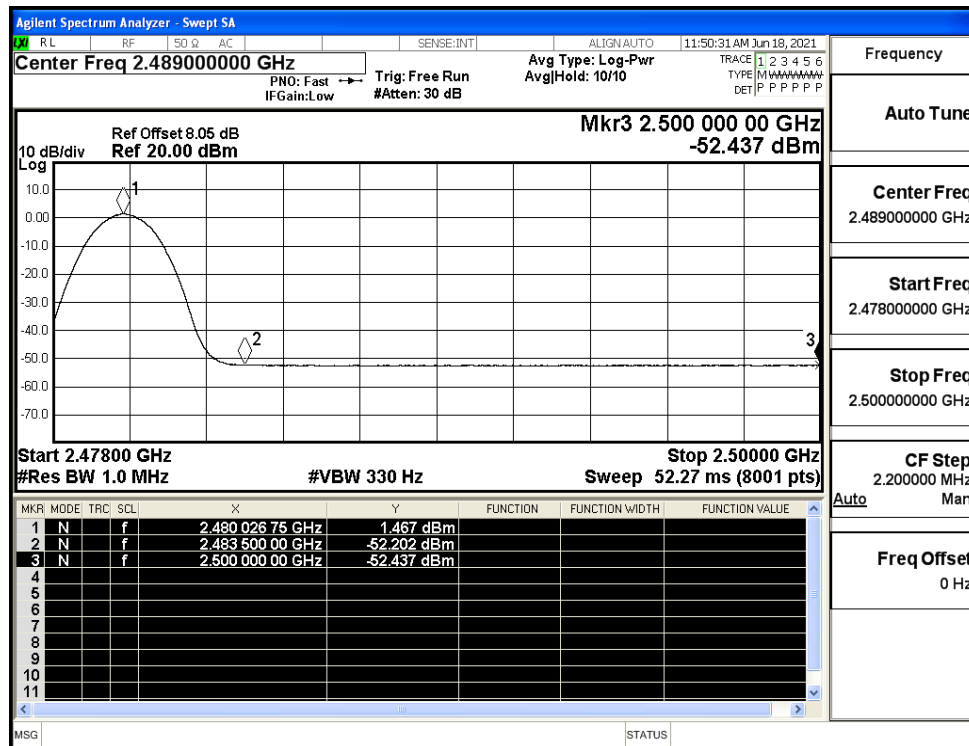
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)



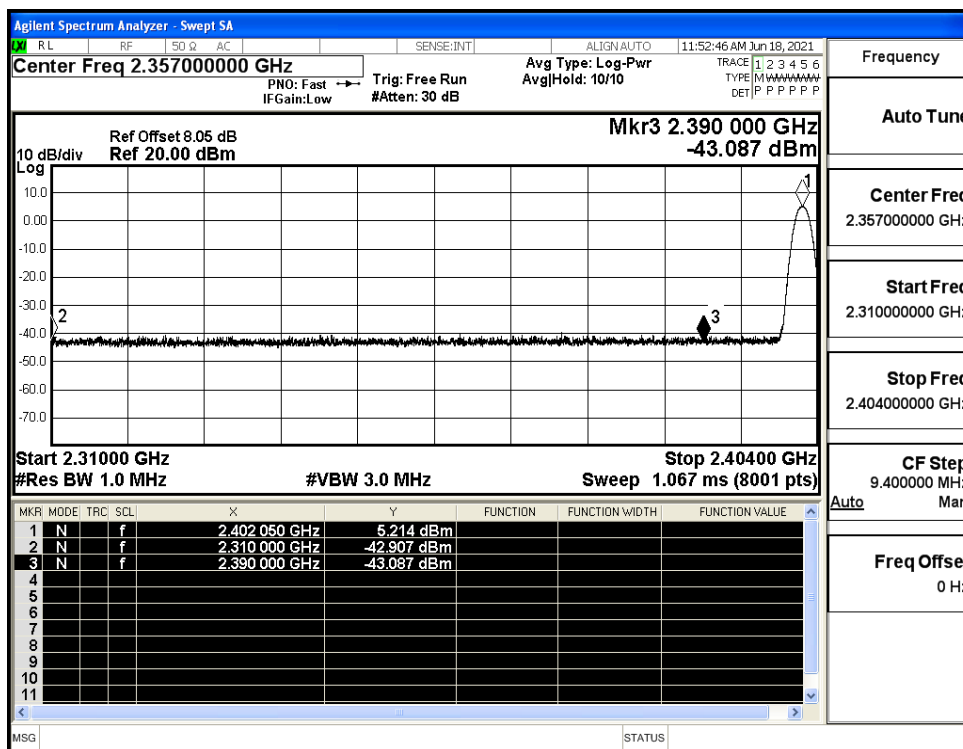
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



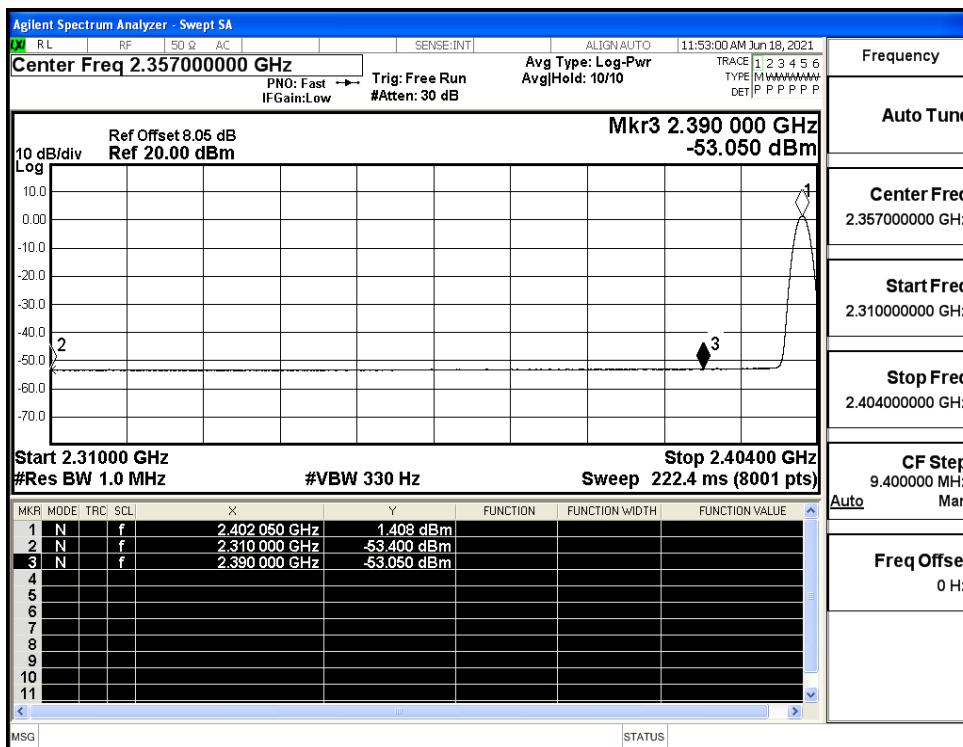
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



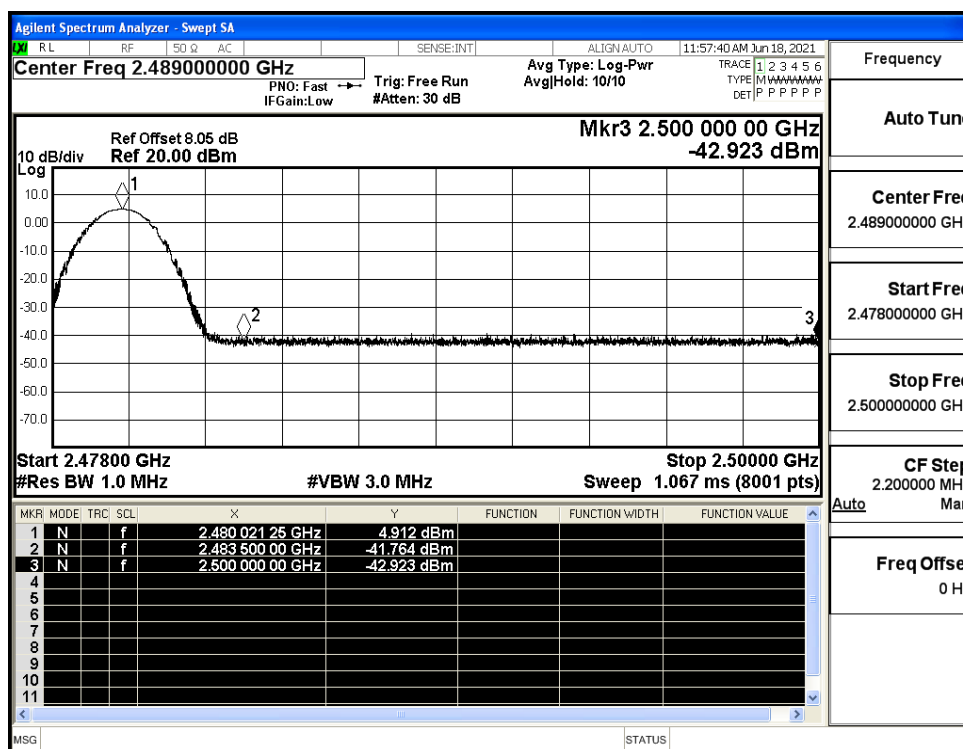
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

