

Appendix A

RF Test Data for BT V5.1(BDR/EDR) (Conducted Measurement)

Product Name: Wireless earbuds

Trade Mark: N/A

Test Model: XY-EB007

Environmental Conditions

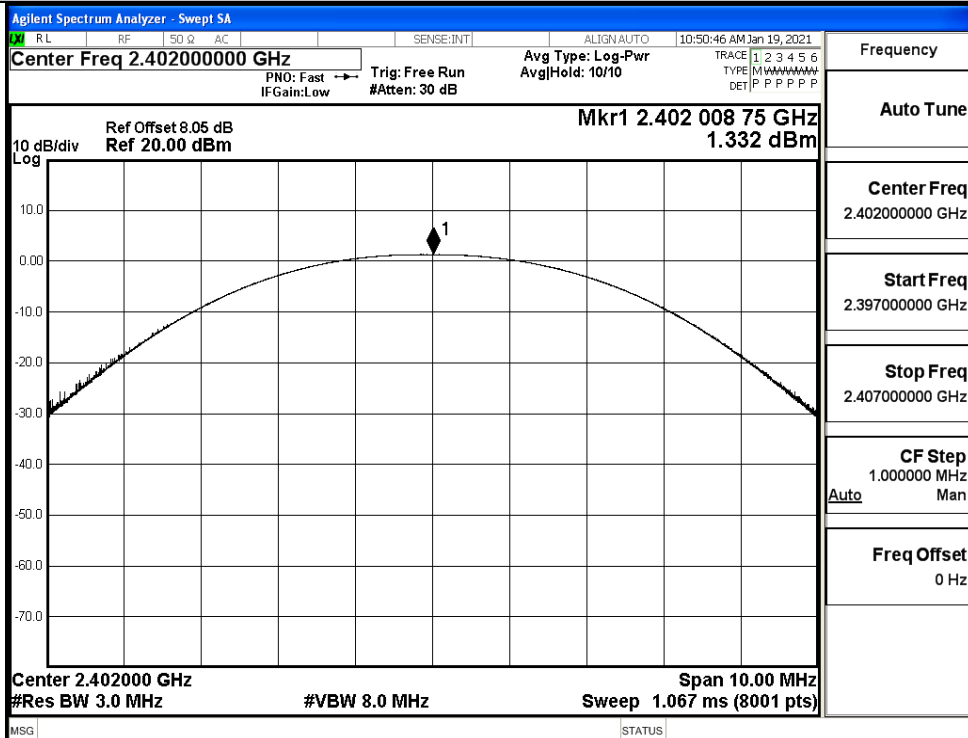
Temperature:	24.6 ° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ben Jin
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

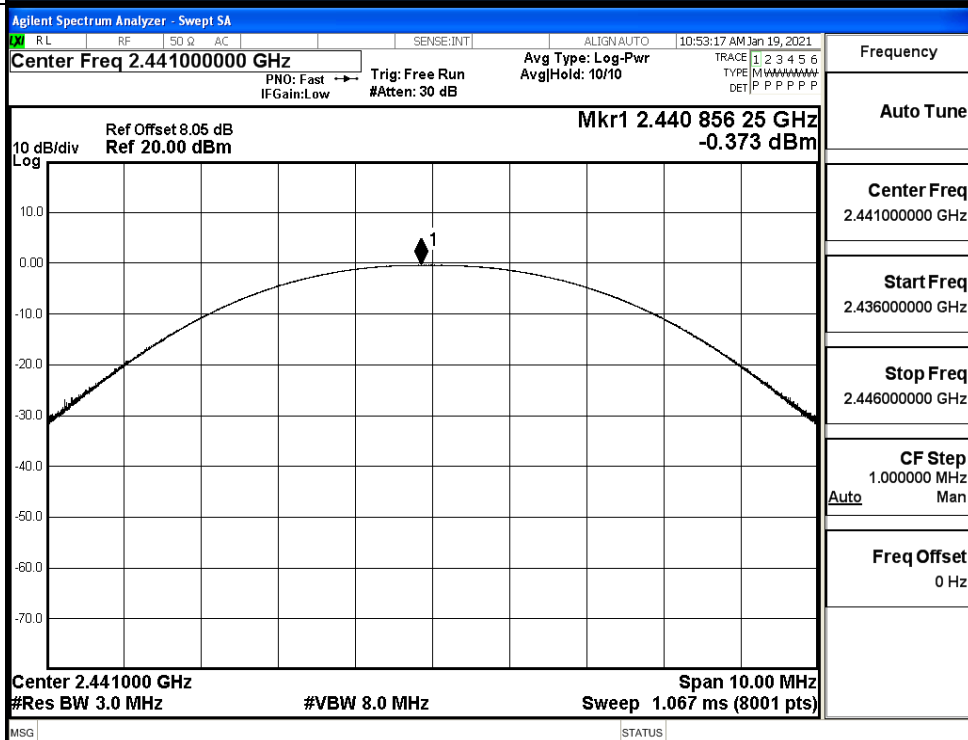
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.332	21	PASS
	MCH	-0.373	21	PASS
	HCH	-2.242	21	PASS
$\pi/4$ DQPSK	LCH	3.787	21	PASS
	MCH	1.956	21	PASS
	HCH	-0.005	21	PASS
8DPSK	LCH	4.257	21	PASS
	MCH	2.408	21	PASS
	HCH	0.450	21	PASS

Test Graphs

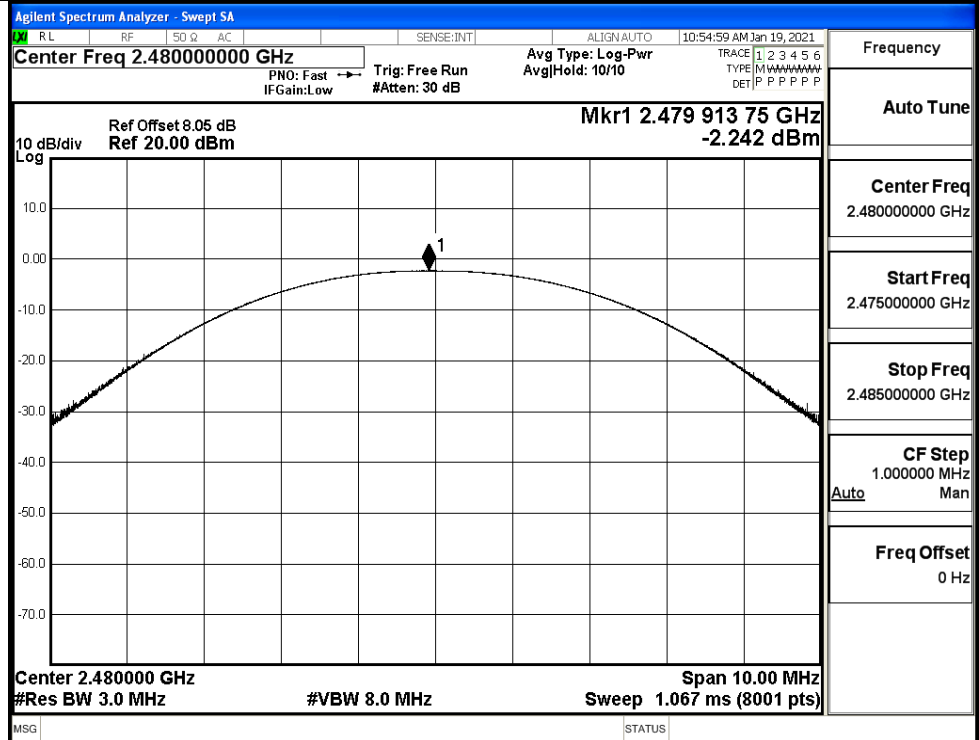
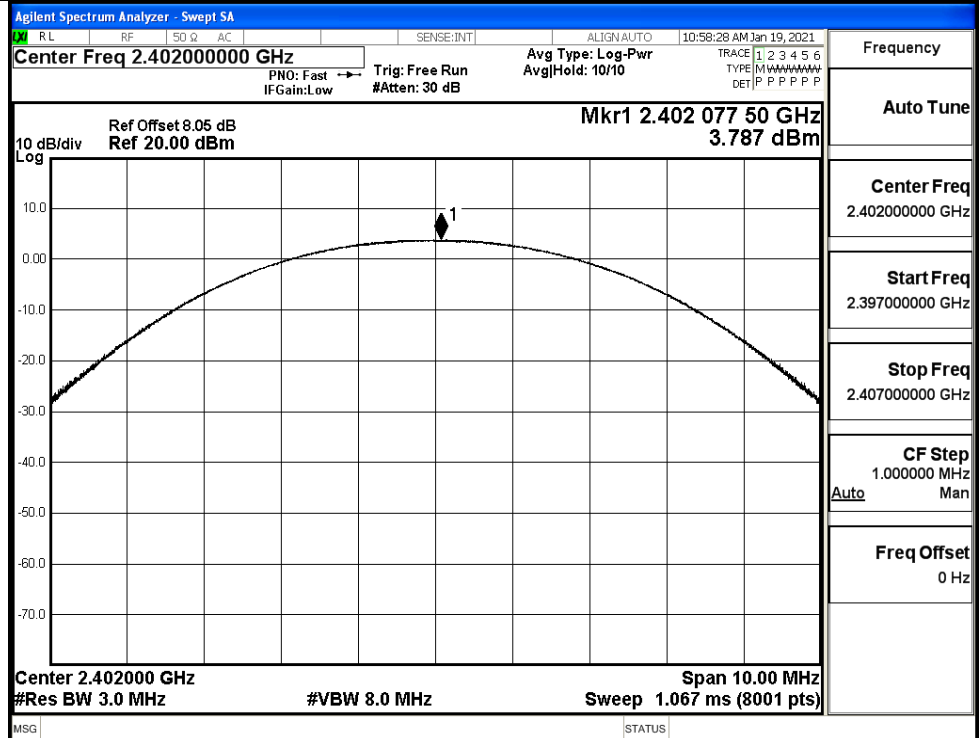
GFSK/LCH

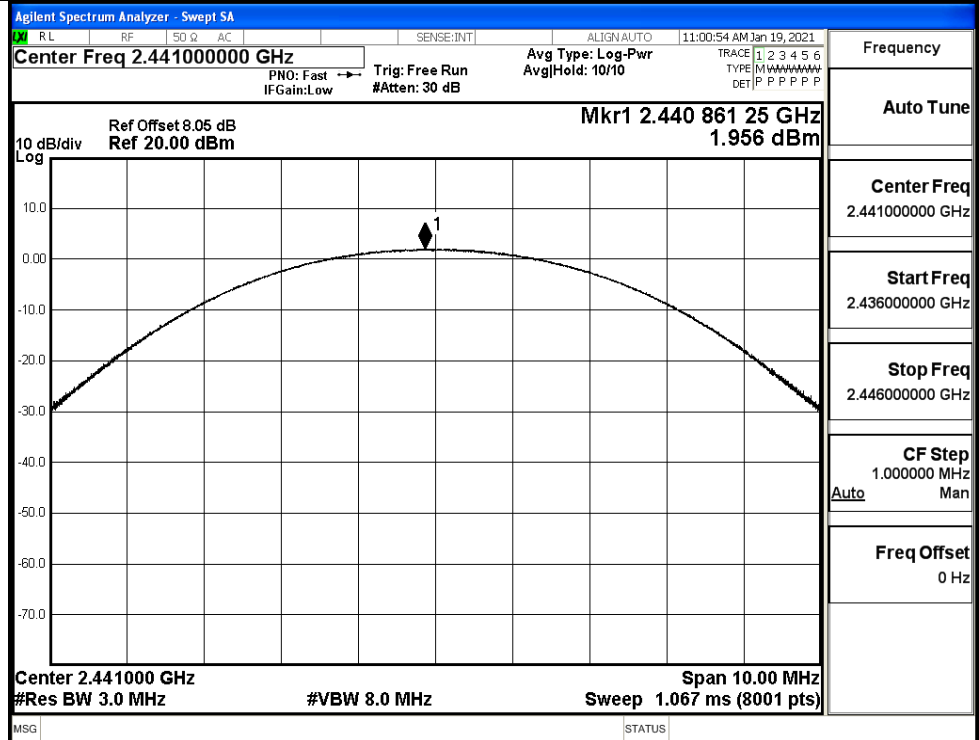
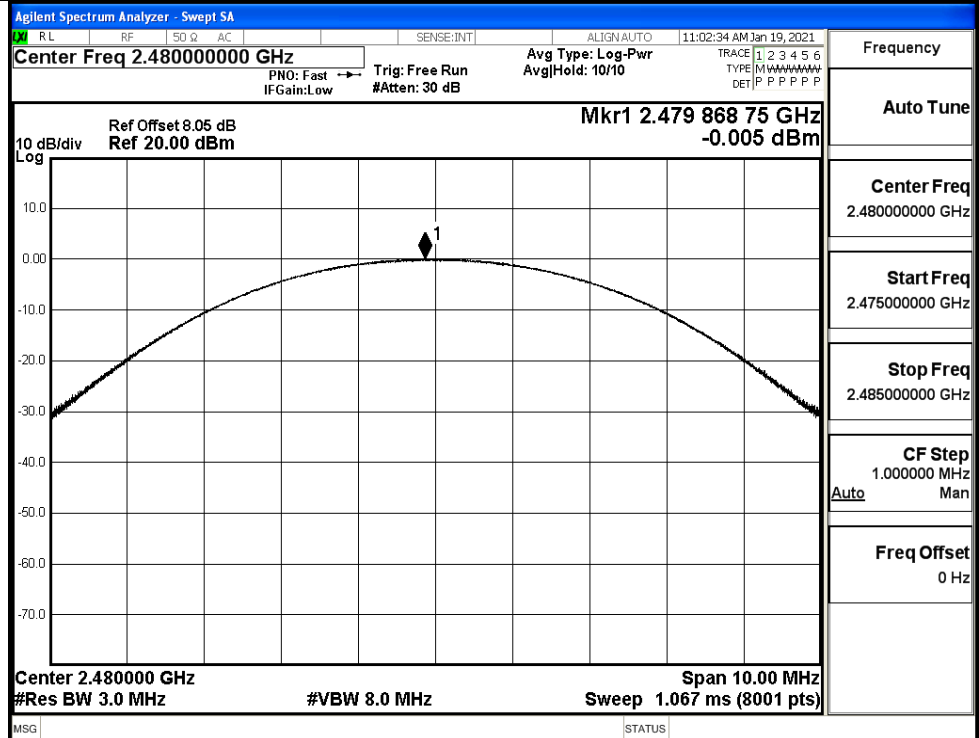


GFSK/MCH

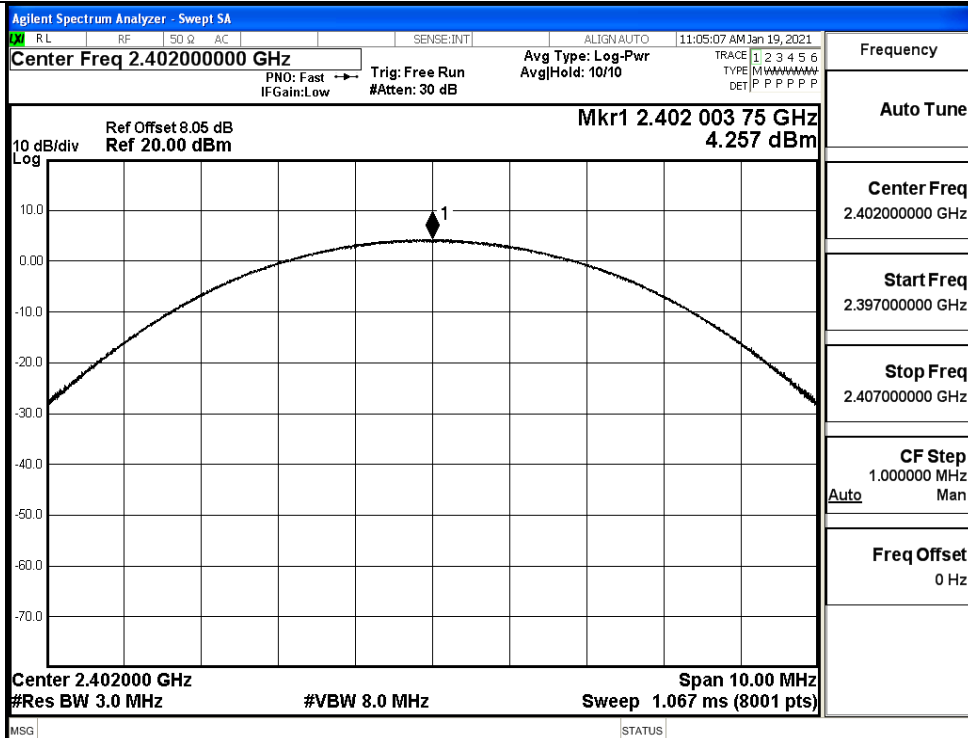


GFSK/HCH

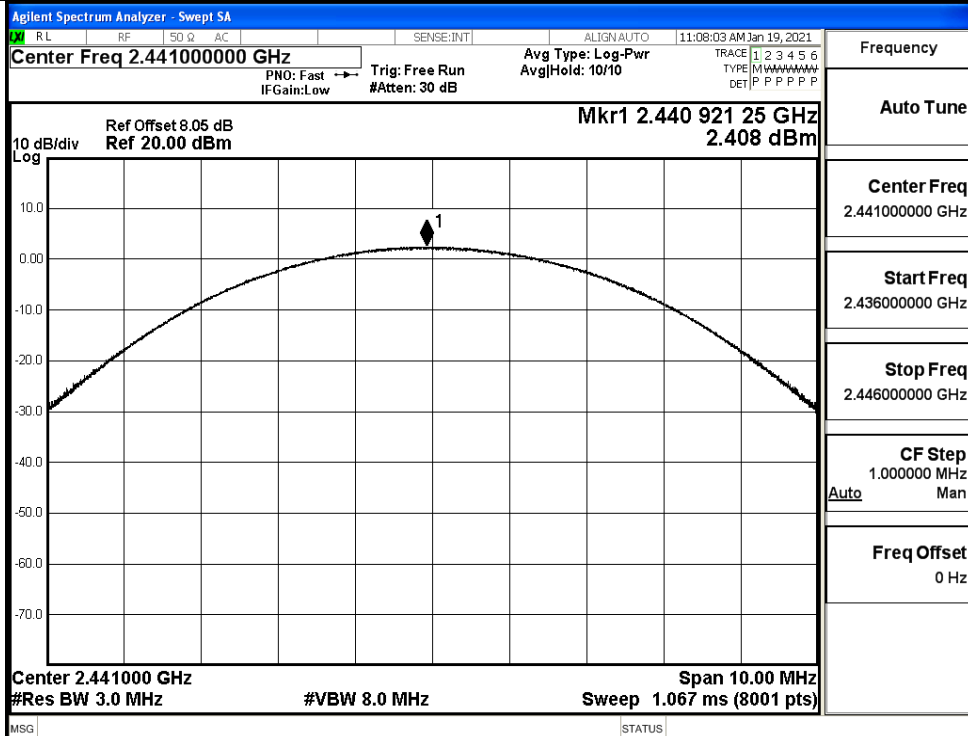
 π /4DQPSK/LCH

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

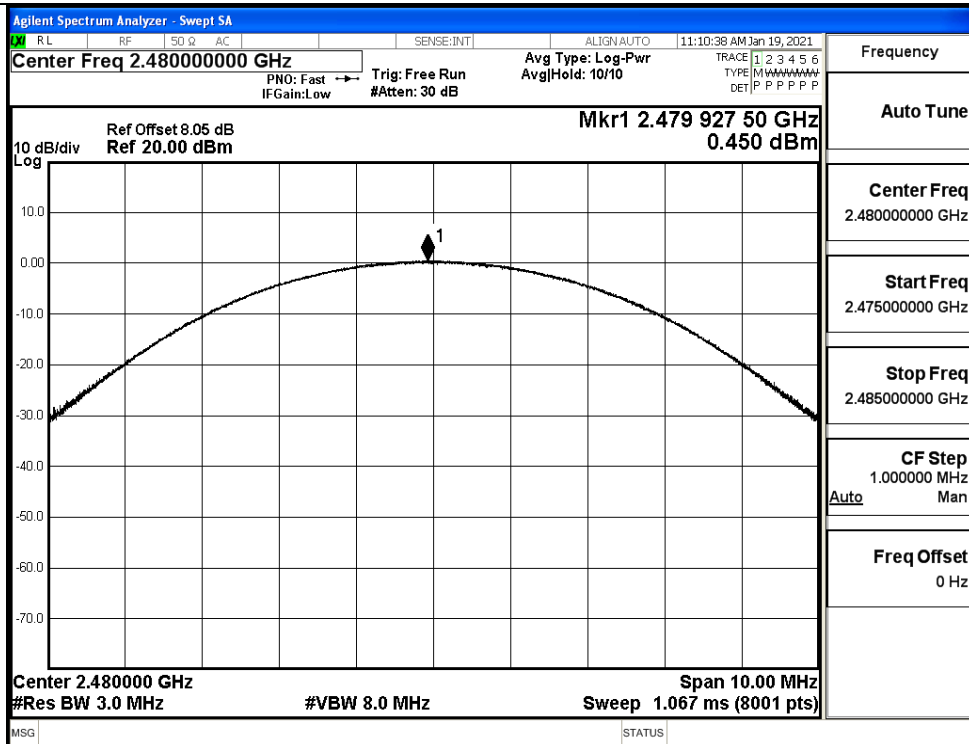
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

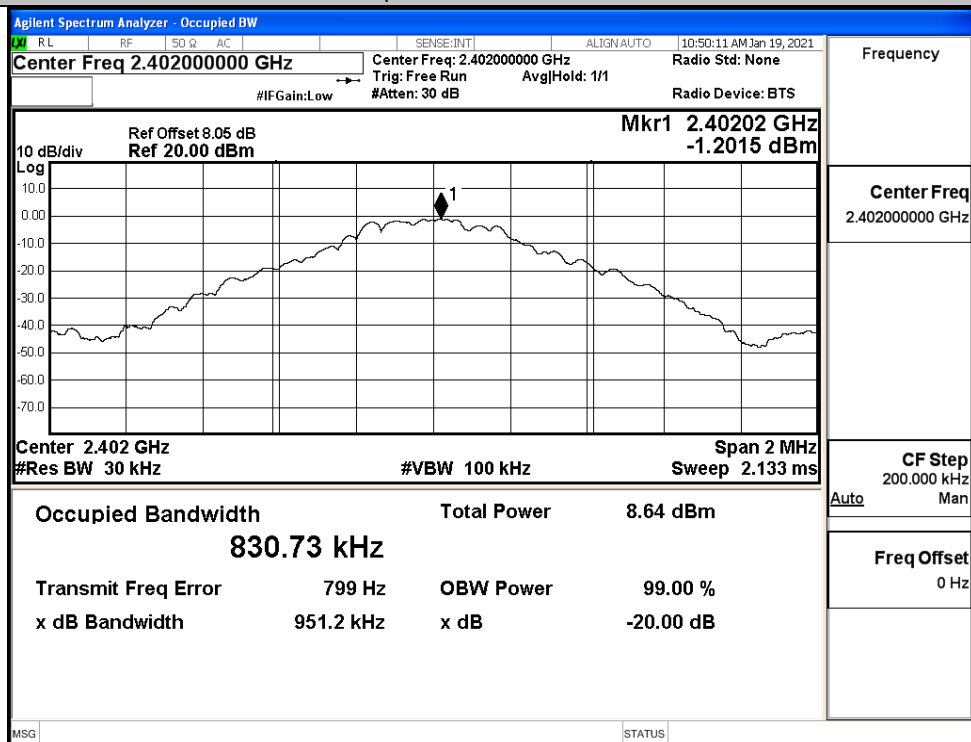


A.2 20dB Bandwidth

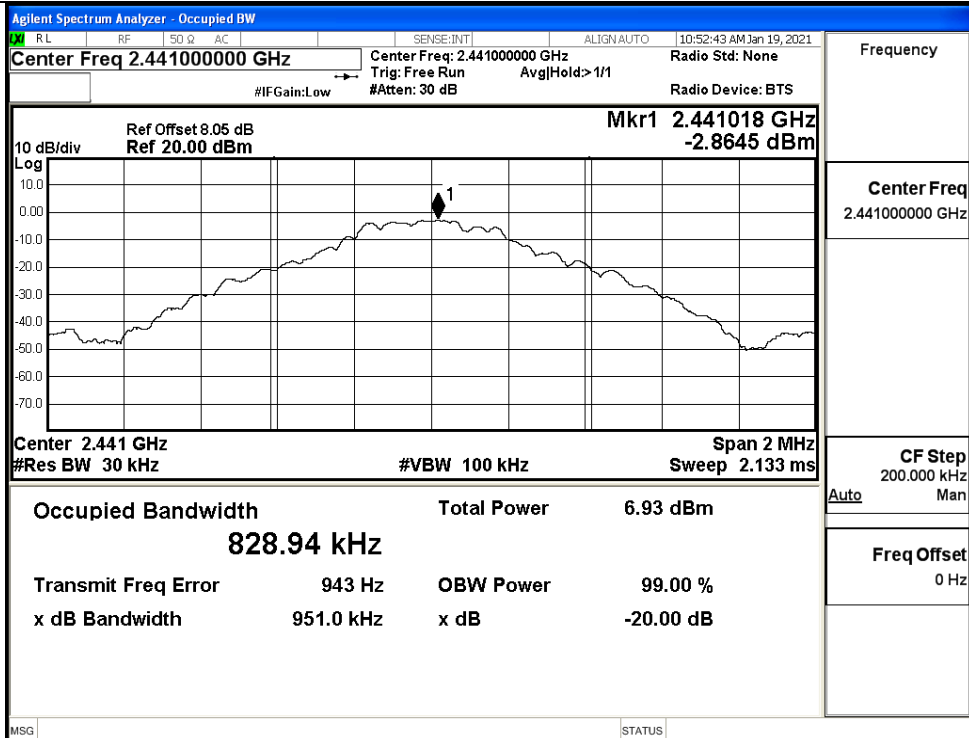
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9512	Not Specified	PASS
	MCH	0.9510	Not Specified	PASS
	HCH	0.9531	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.319	Not Specified	PASS
	MCH	1.320	Not Specified	PASS
	HCH	1.319	Not Specified	PASS
8DPSK	LCH	1.303	Not Specified	PASS
	MCH	1.302	Not Specified	PASS
	HCH	1.304	Not Specified	PASS

Test Graphs

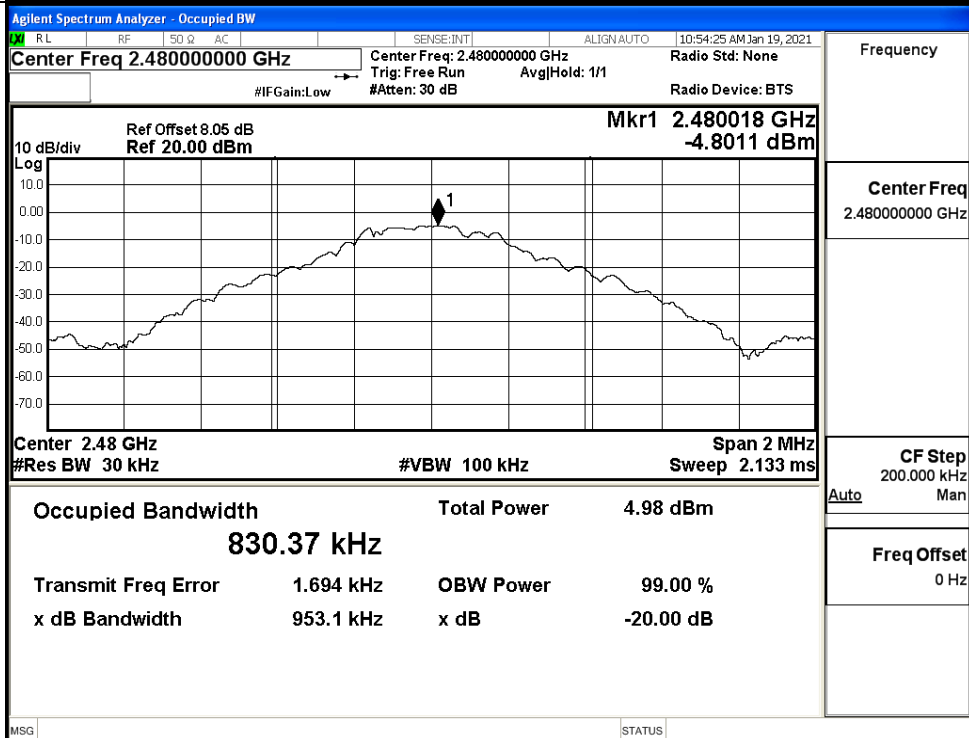
GFSK/LCH

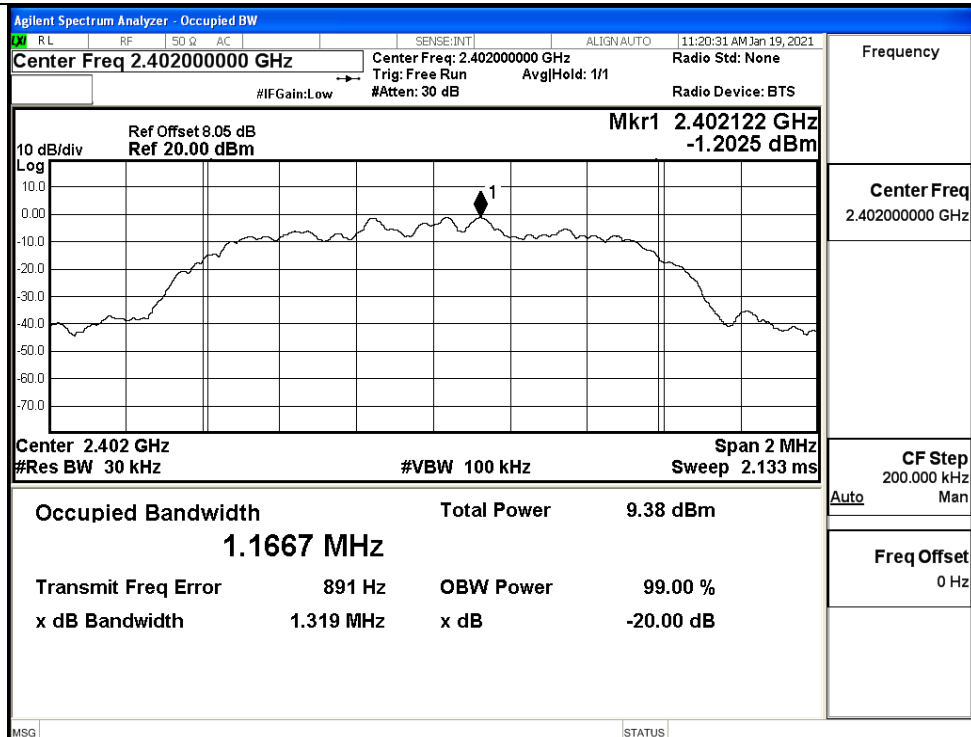
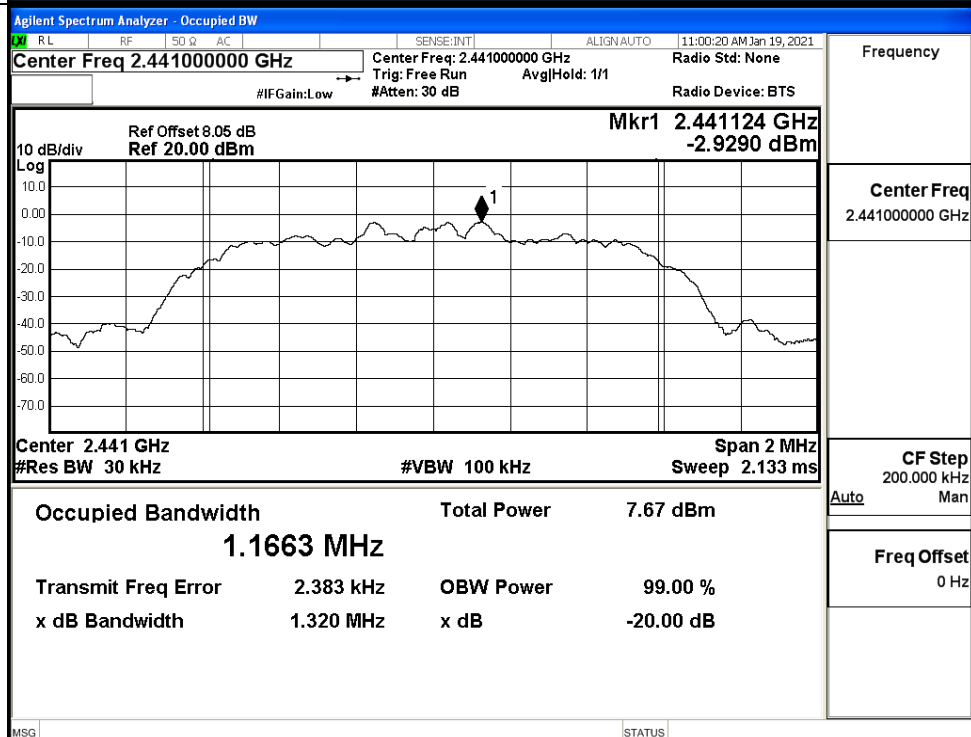


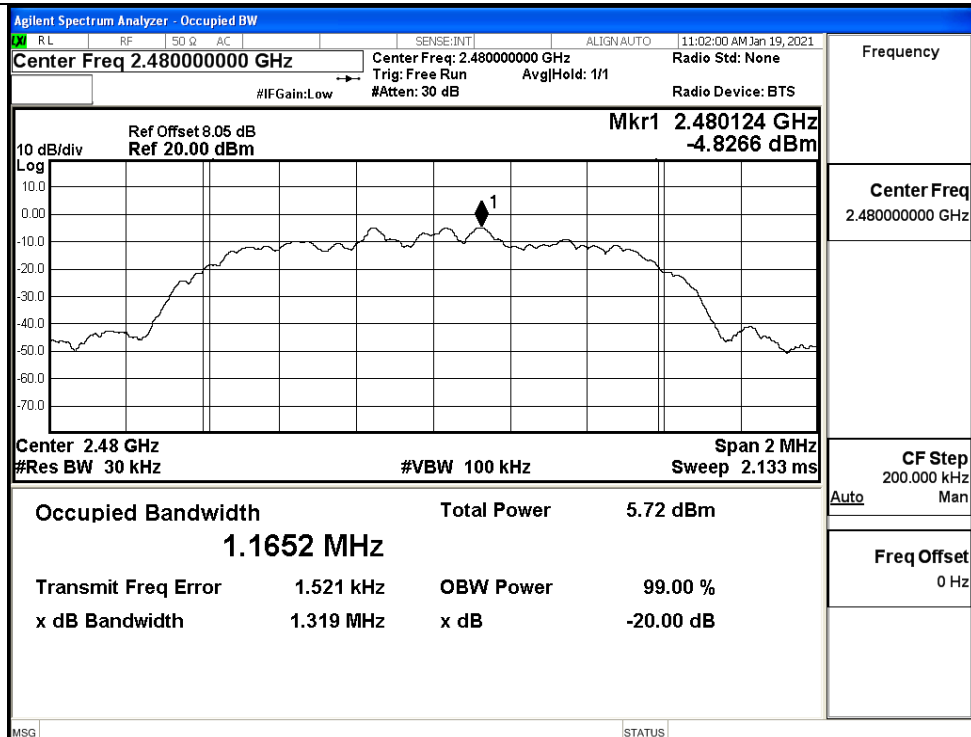
GFSK/MCH



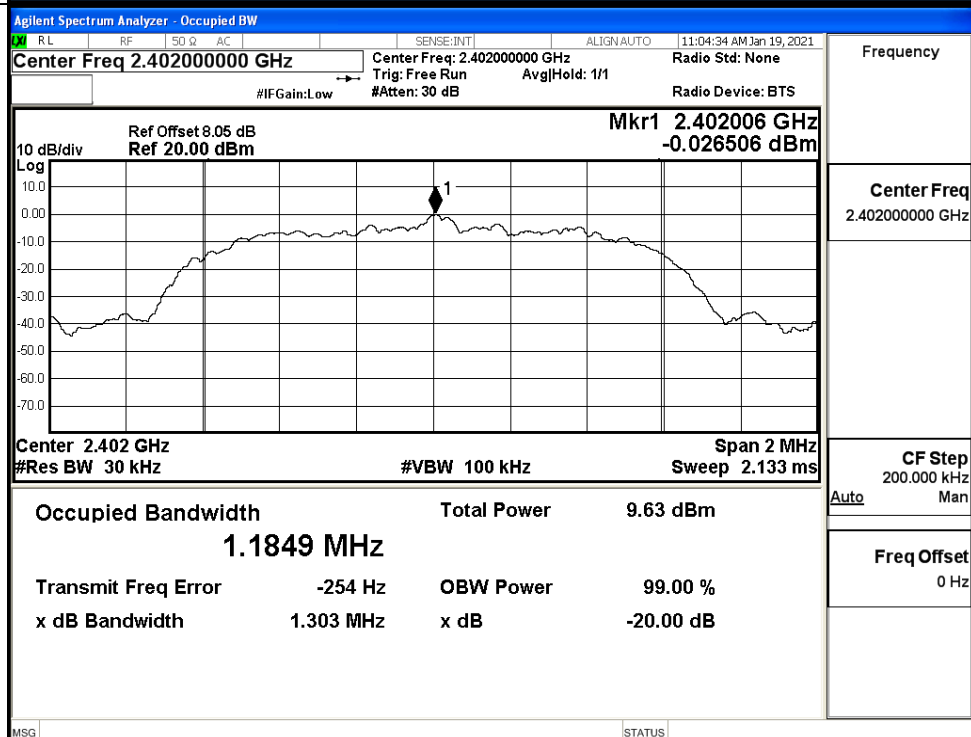
GFSK/HCH



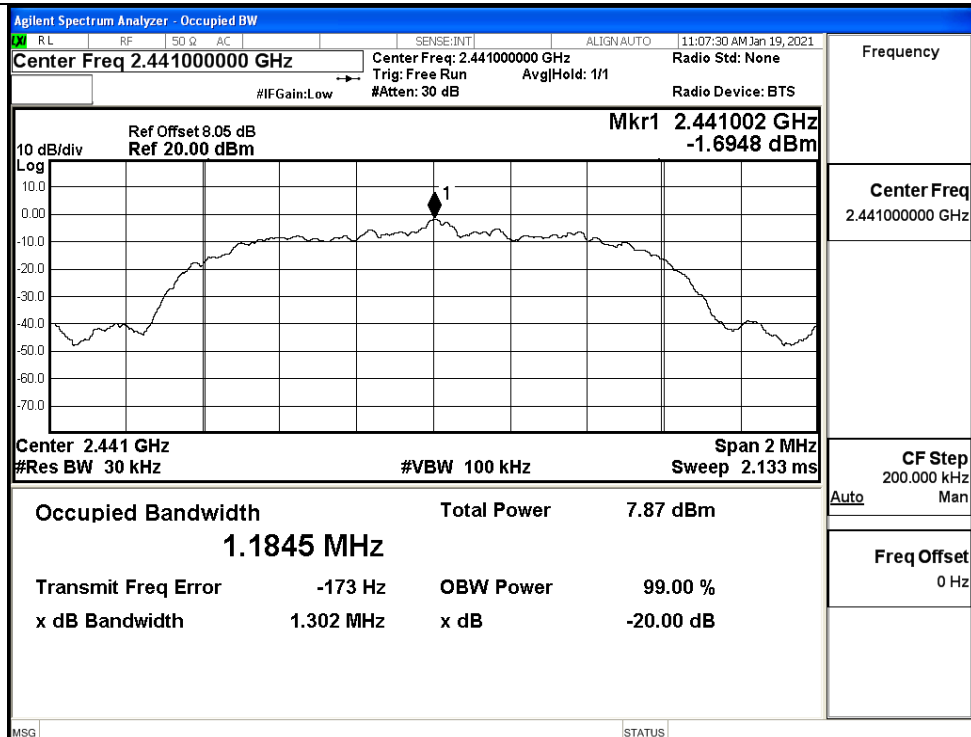
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

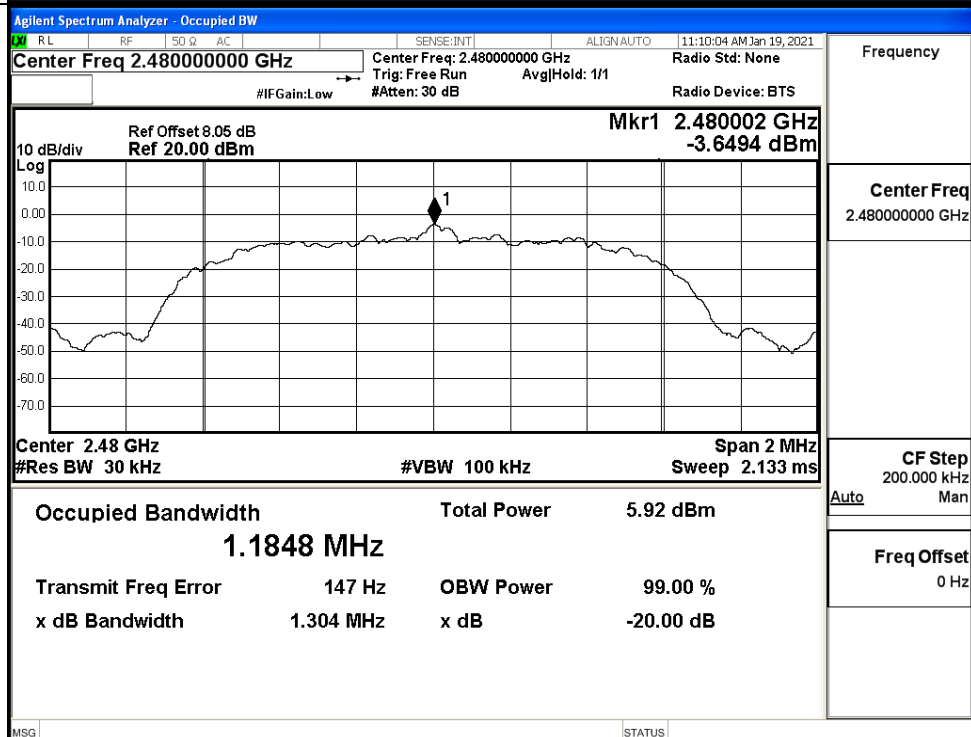
8DPSK/LCH



8DPSK/MCH



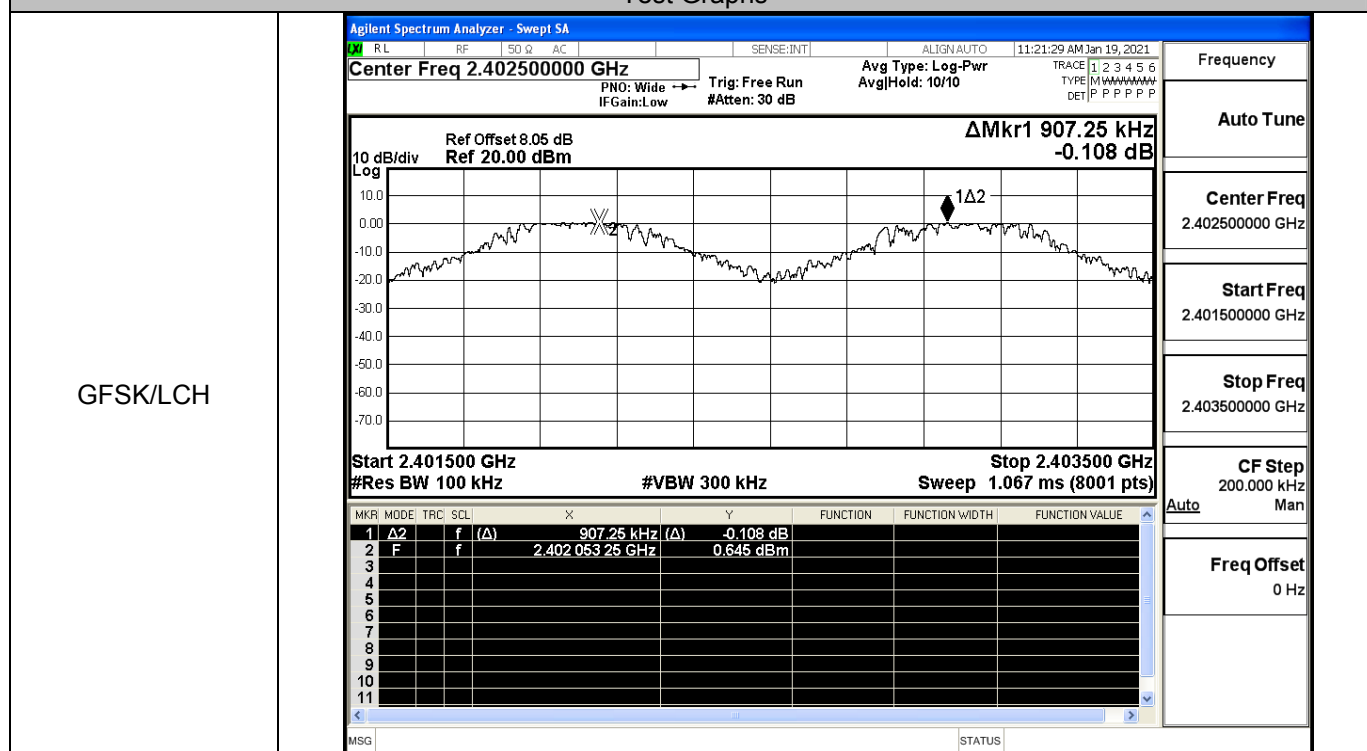
8DPSK/HCH



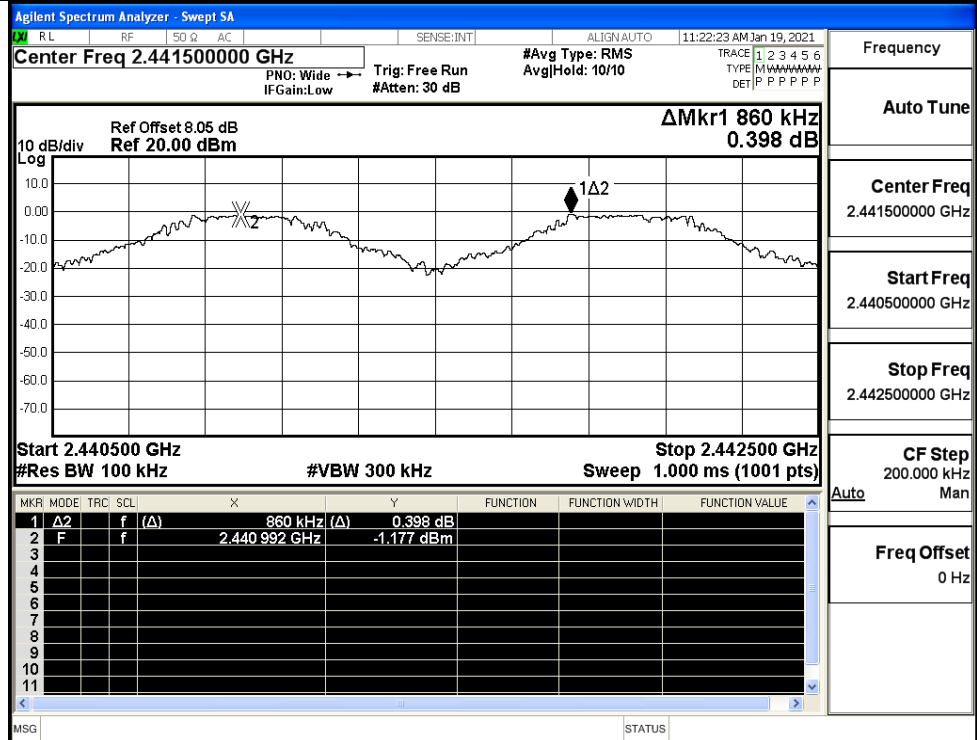
A.3 Carrier Frequency Separation

Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.907	0.635	PASS
	MCH	0.860	0.635	PASS
	HCH	1.140	0.635	PASS
$\pi/4$ DQPSK	LCH	1.040	0.880	PASS
	MCH	1.134	0.880	PASS
	HCH	1.048	0.880	PASS
8DPSK	LCH	1.158	0.869	PASS
	MCH	0.948	0.869	PASS
	HCH	0.918	0.869	PASS

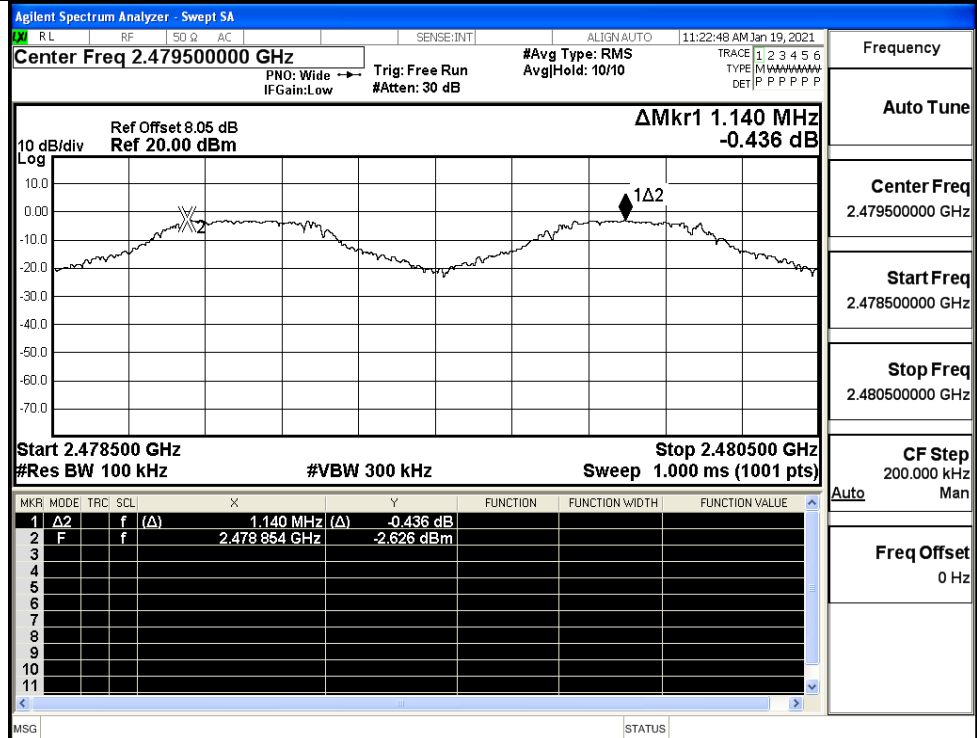
Test Graphs

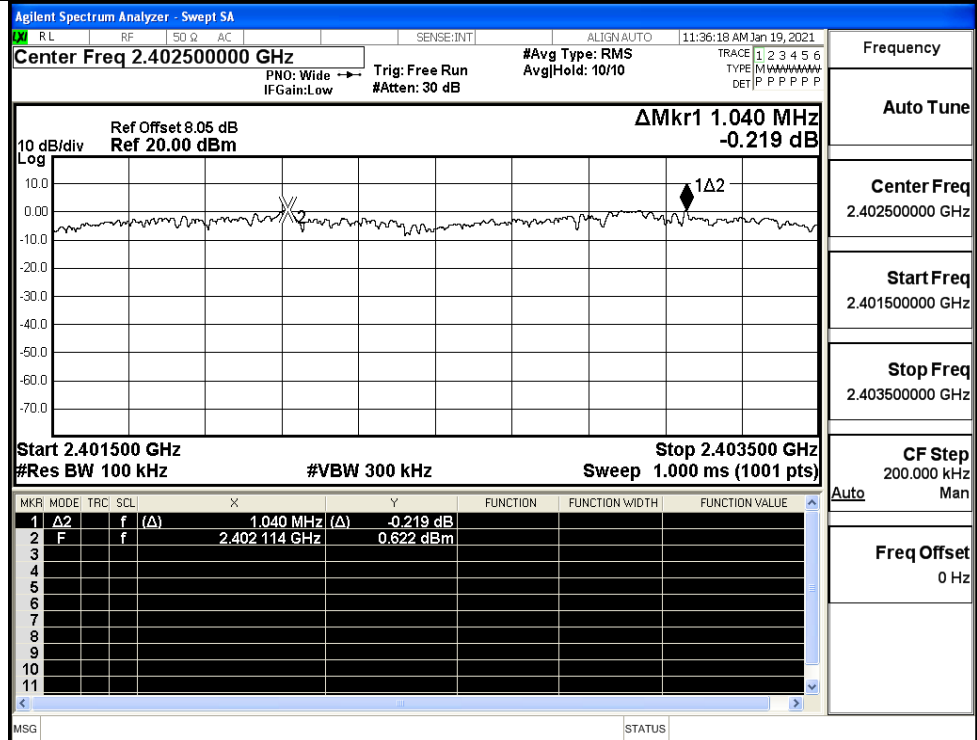
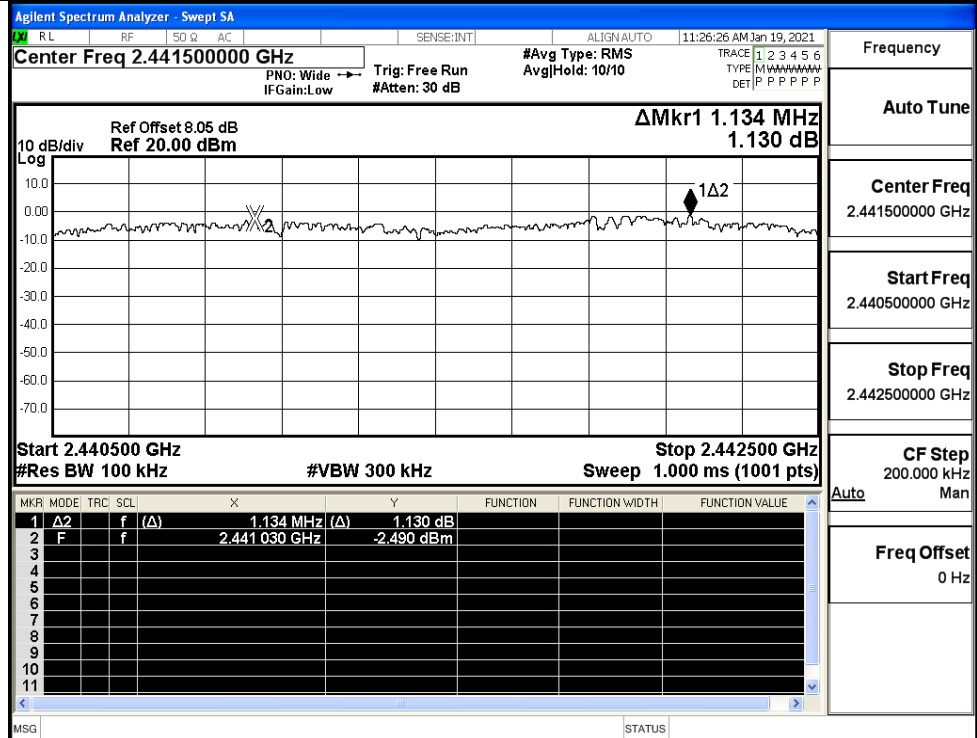


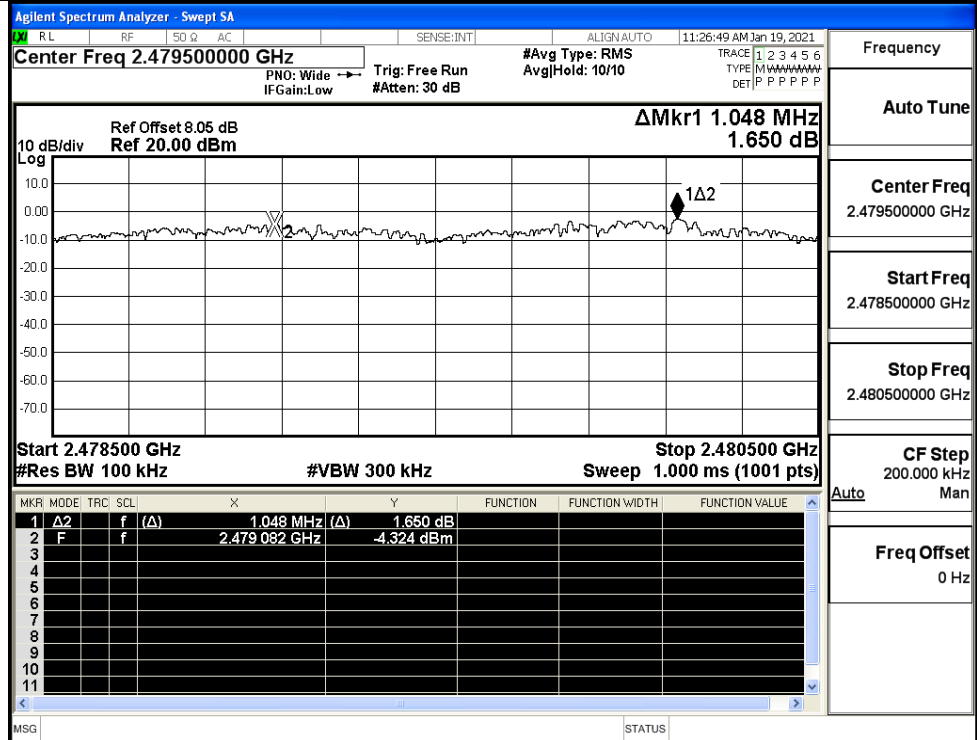
GFSK/MCH



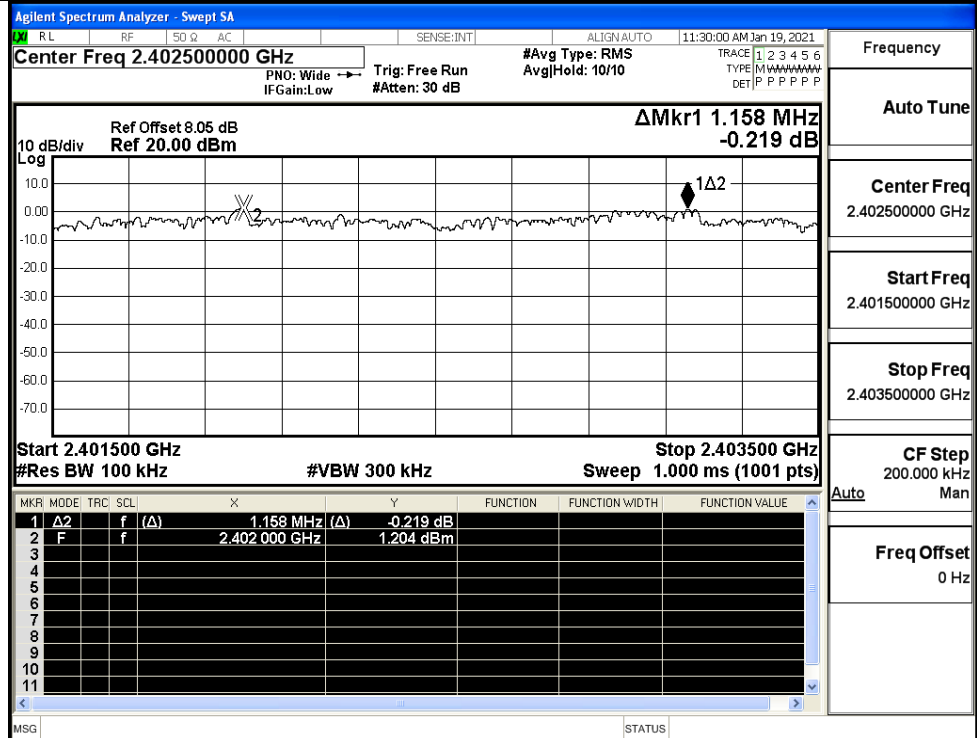
GFSK/HCH



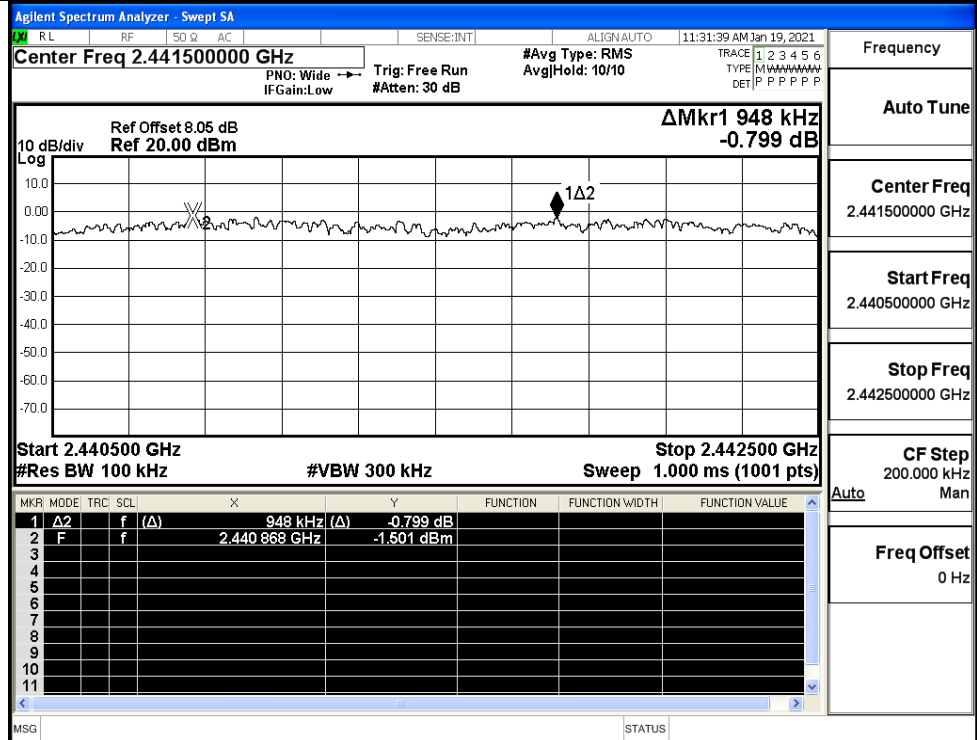
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

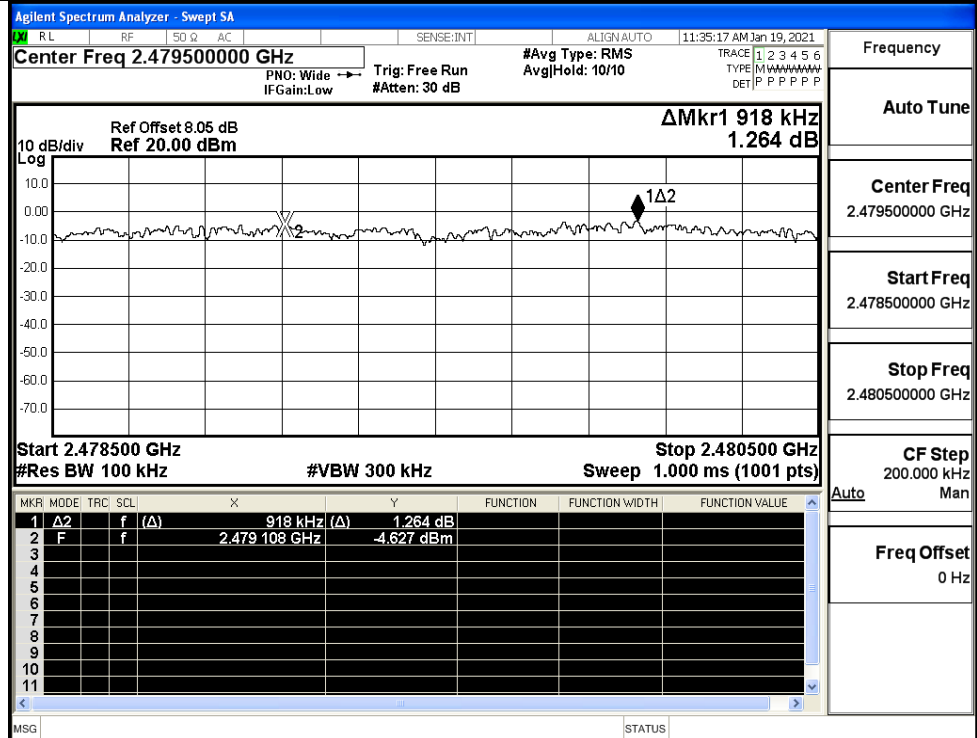
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

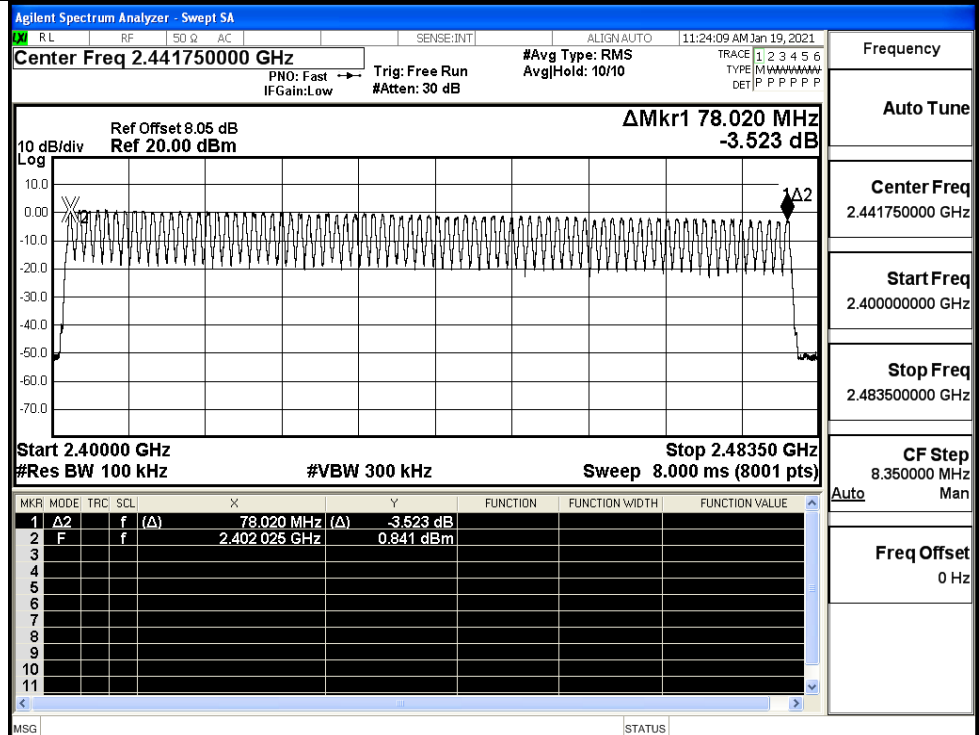


A.4 Hopping Channel Number

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

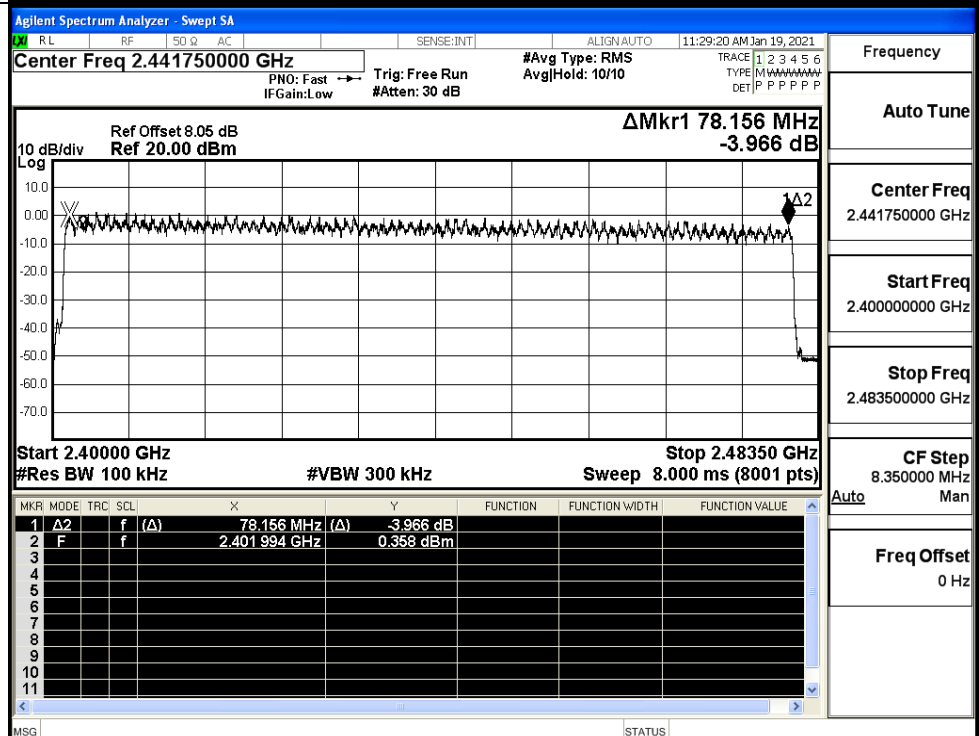
Test Graphs

GFSK/Hop



Frequency

Auto Tune

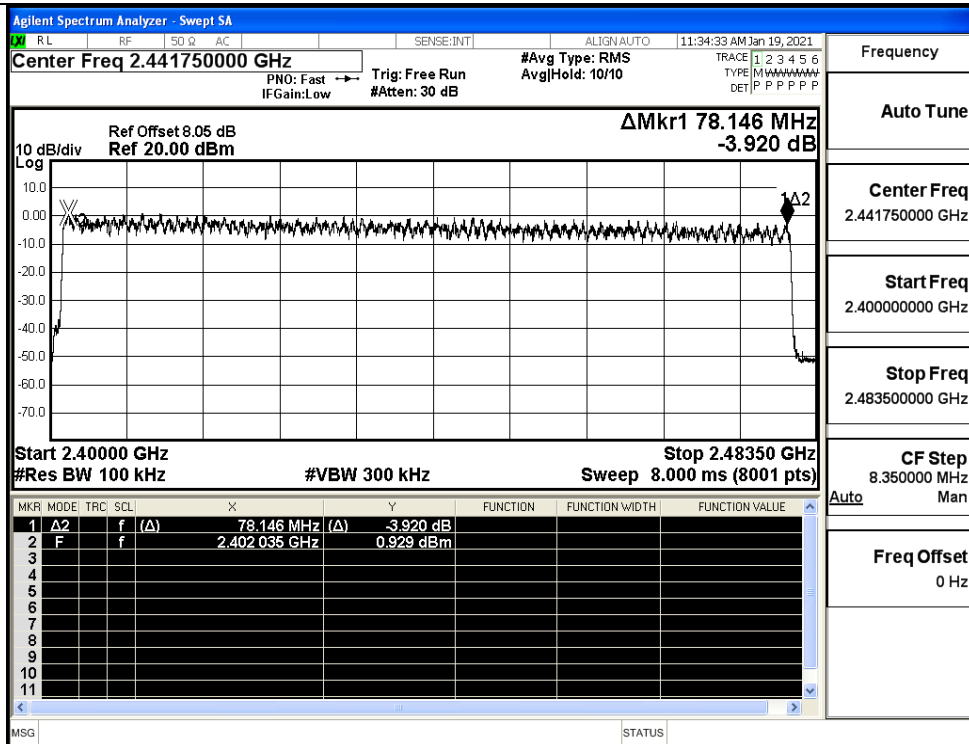
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

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

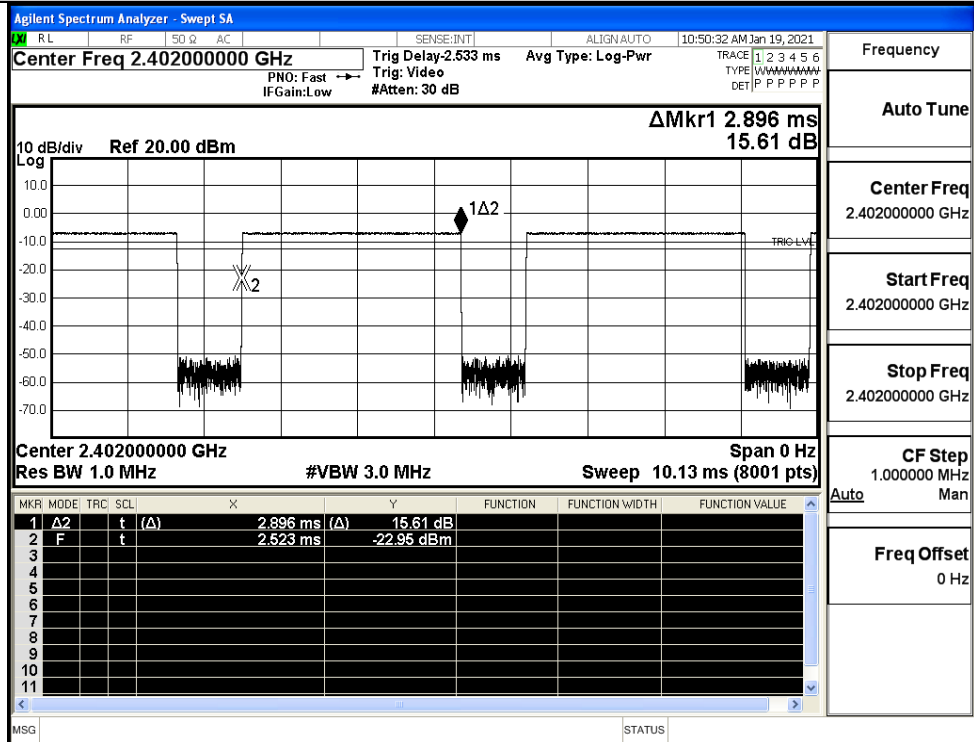


A.5 Dwell Time

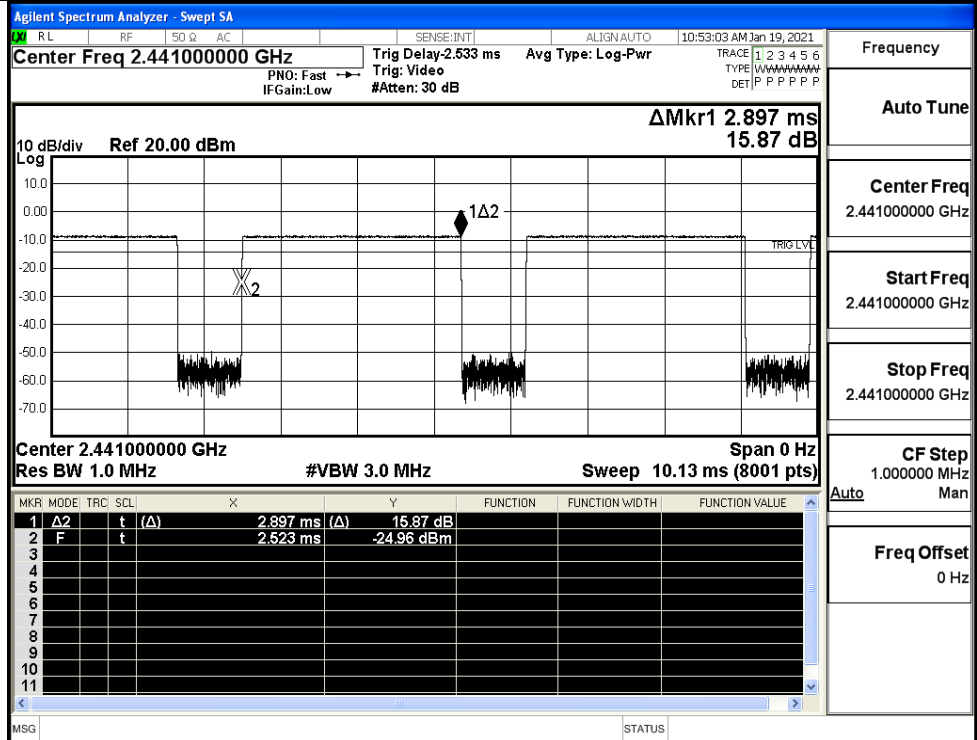
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7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

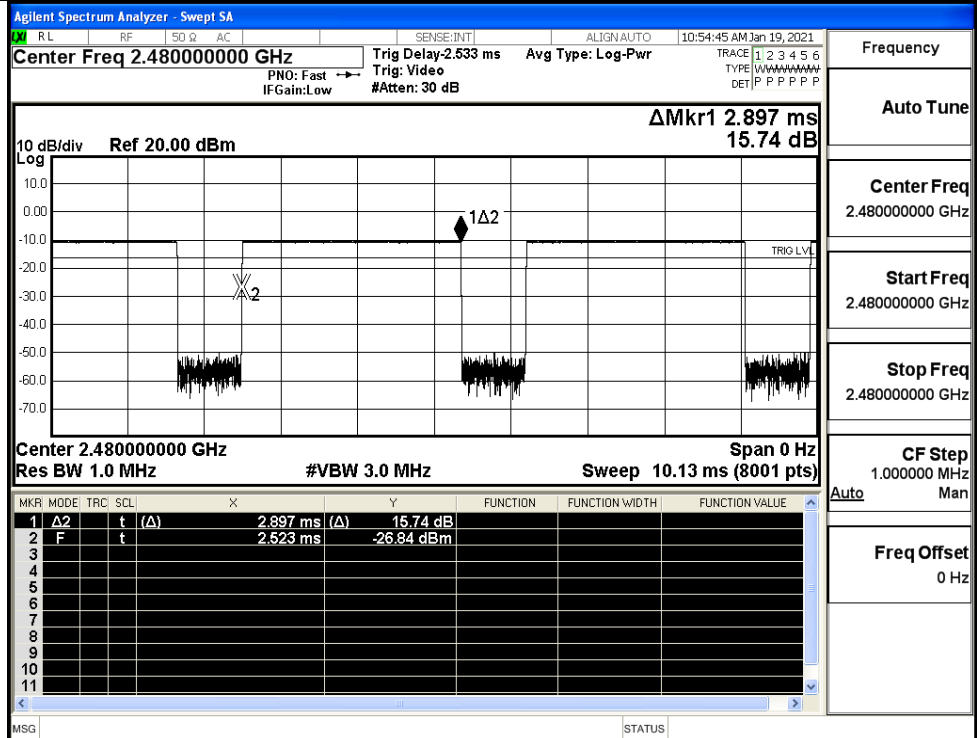
GFSK_DH5/LCH



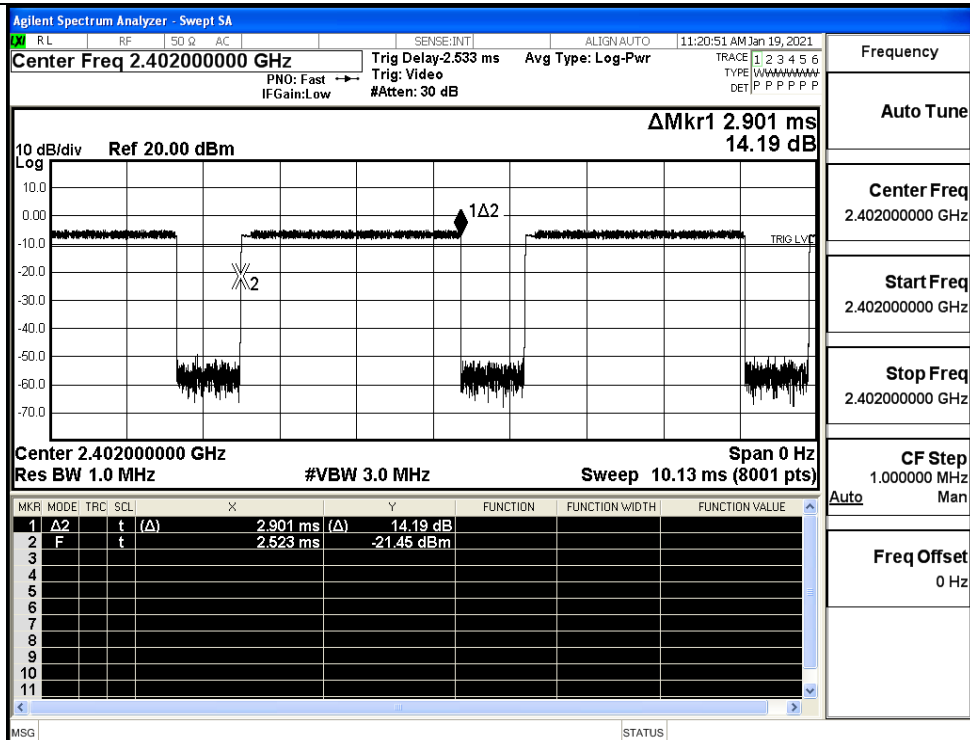
GFSK_DH5/MCH



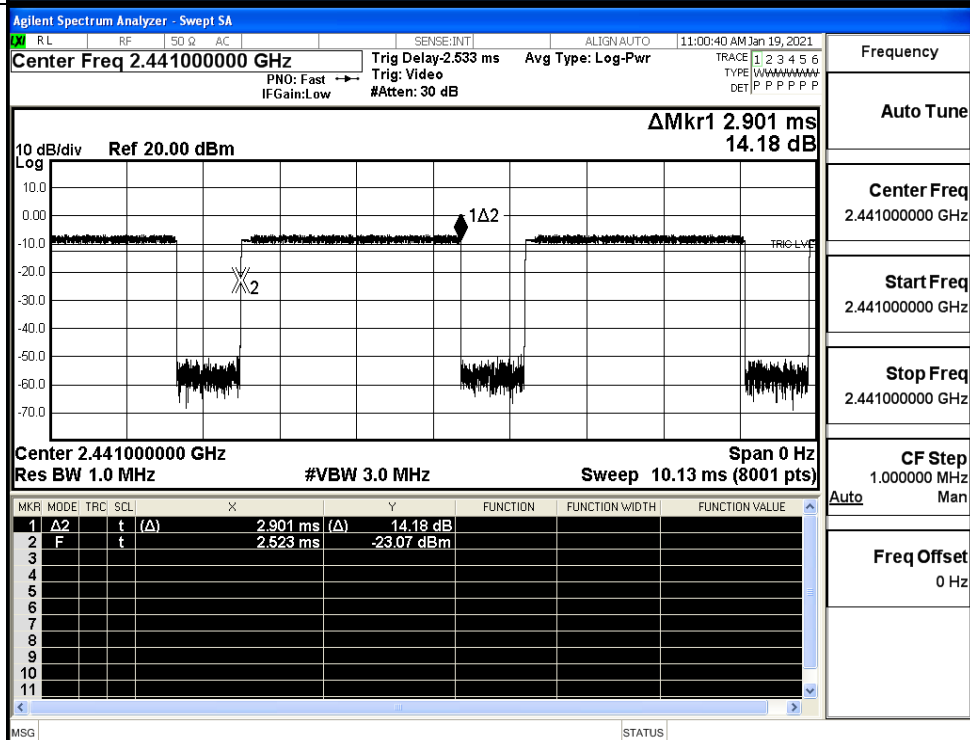
GFSK_DH5/HCH



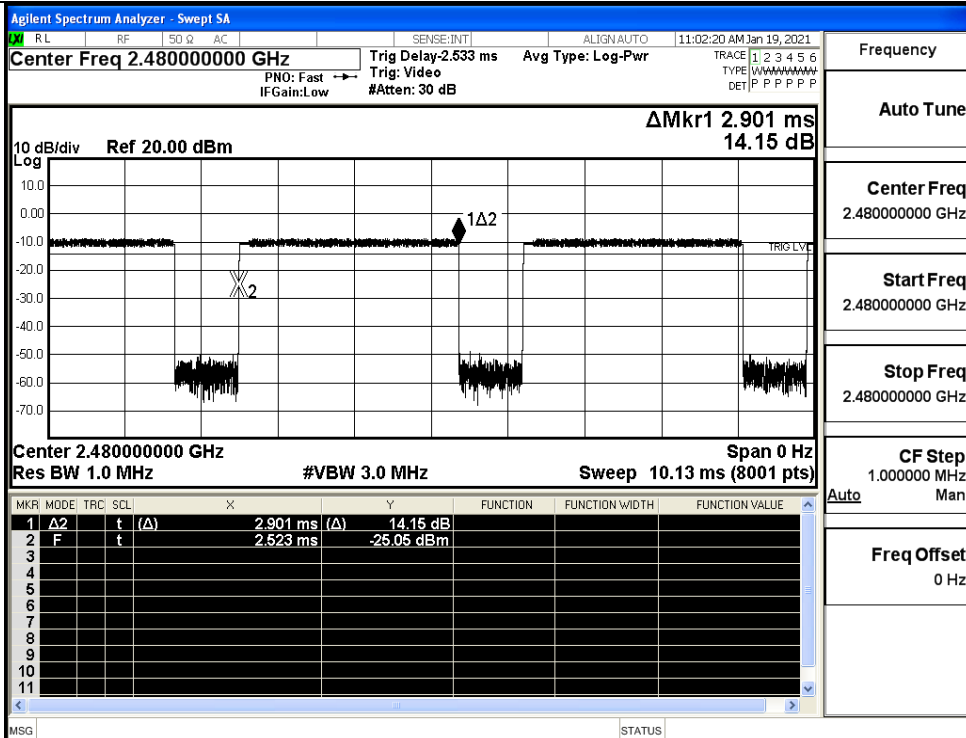
$\pi/4$ DQPSK
_2DH5/LCH



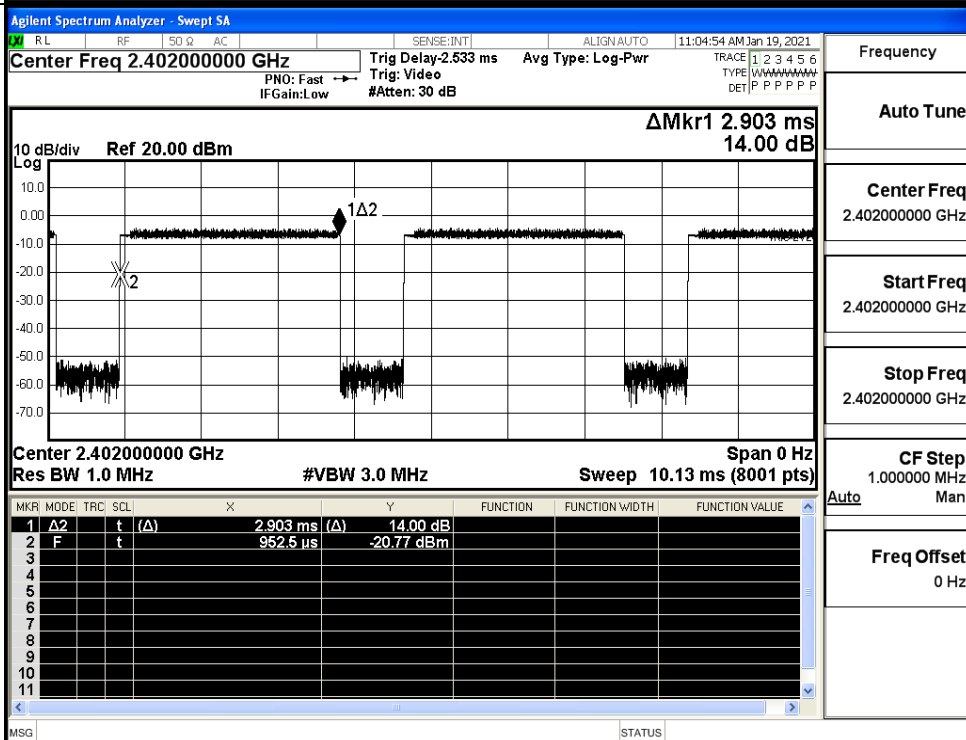
$\pi/4$ DQPSK
_2DH5/MCH



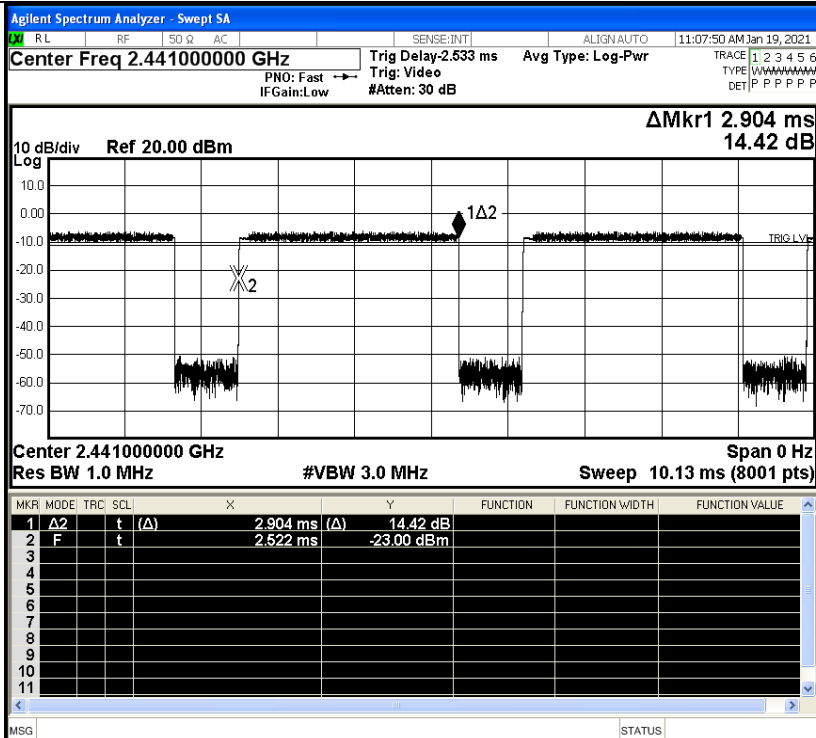
$\pi/4$ DQPSK
_2DH5/HCH



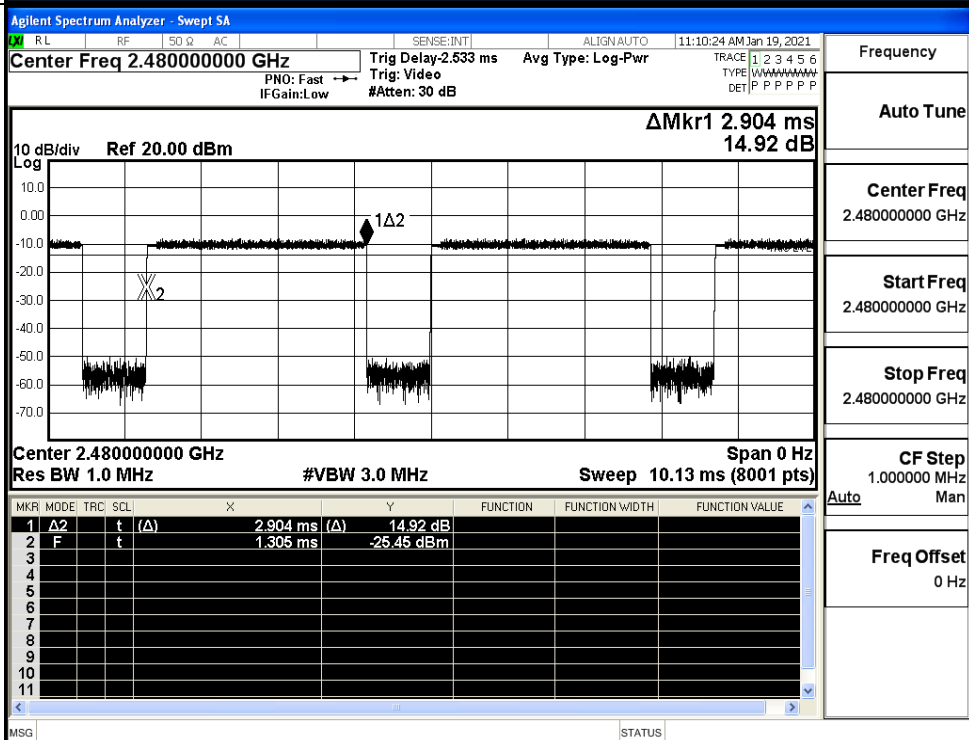
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



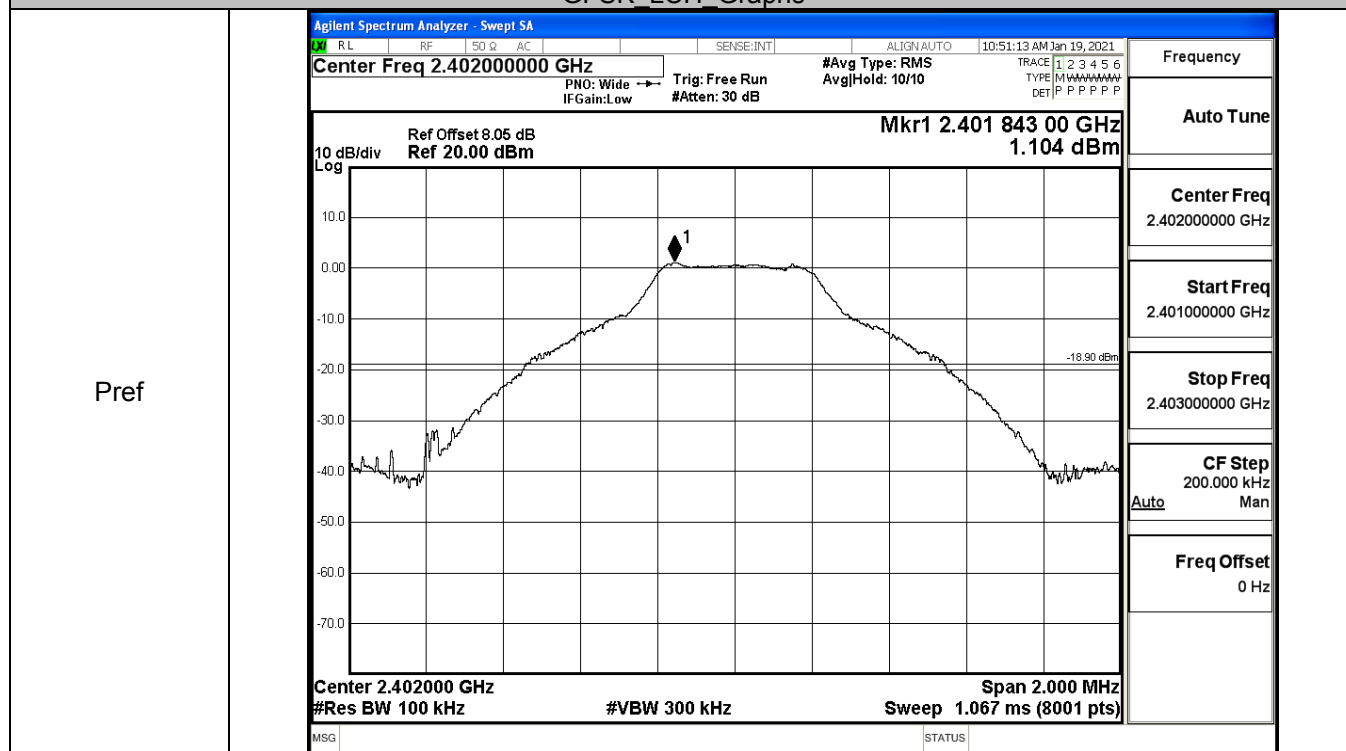
8DPSK_3DH5/HCH



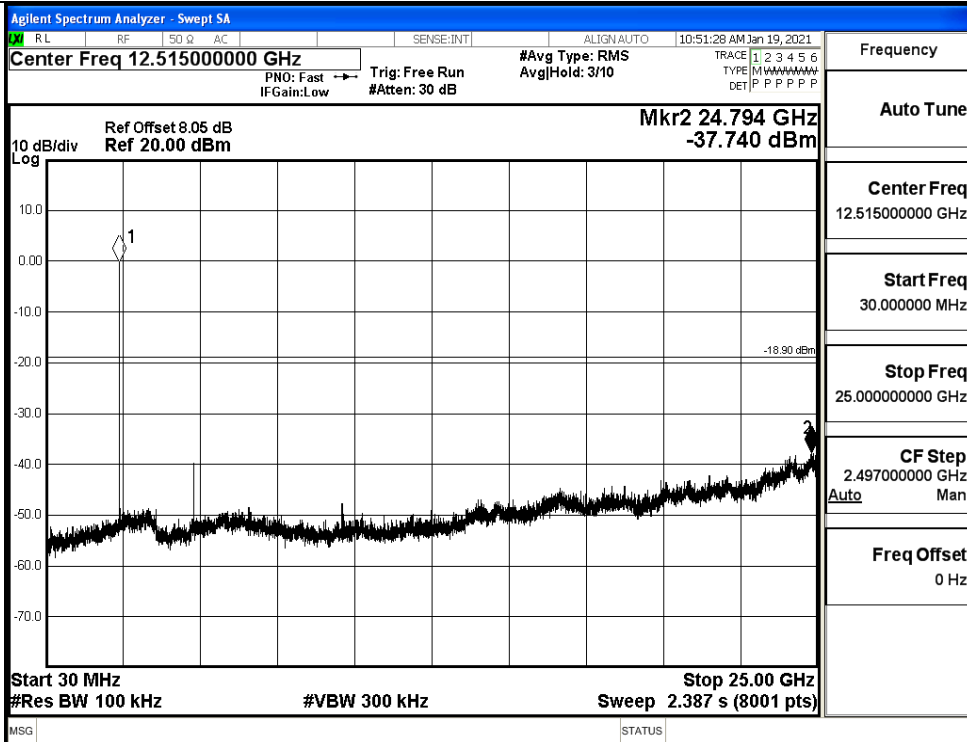
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.104	-37.740	-18.896	PASS
	MCH	-0.638	-37.378	-20.638	PASS
	HCH	-2.637	-36.810	-22.637	PASS
$\pi/4$ DQPSK	LCH	0.945	-38.071	-19.055	PASS
	MCH	-0.546	-37.369	-20.546	PASS
	HCH	-2.685	-37.269	-22.685	PASS
8DPSK	LCH	1.083	-37.648	-18.917	PASS
	MCH	-0.754	-38.528	-20.754	PASS
	HCH	-2.478	-37.984	-22.478	PASS

GFSK LCH Graphs

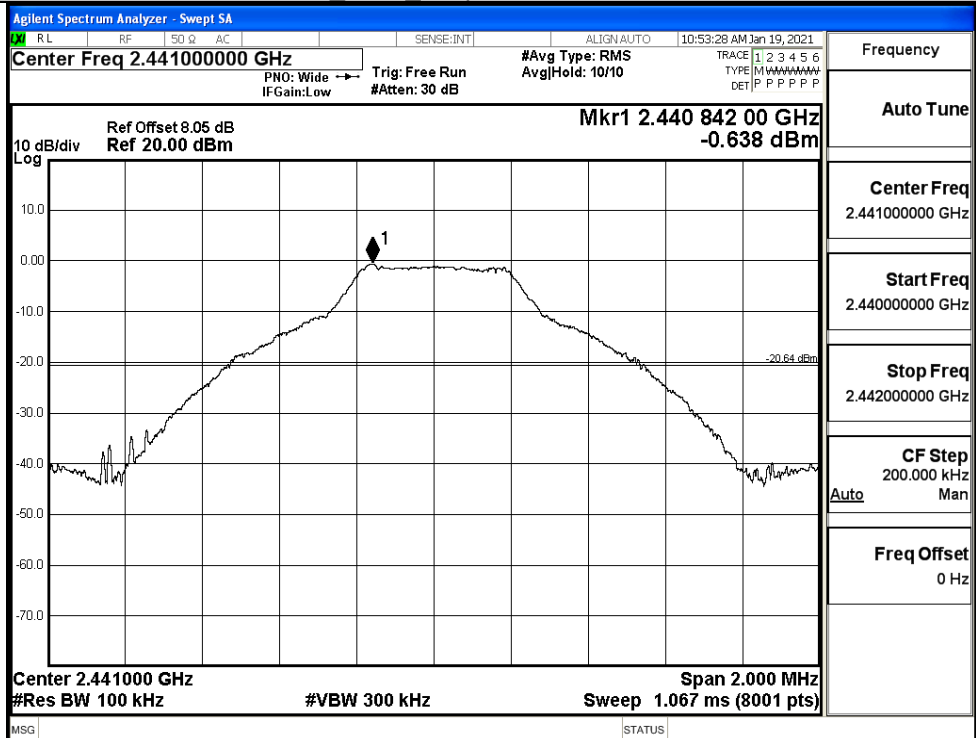


Puw

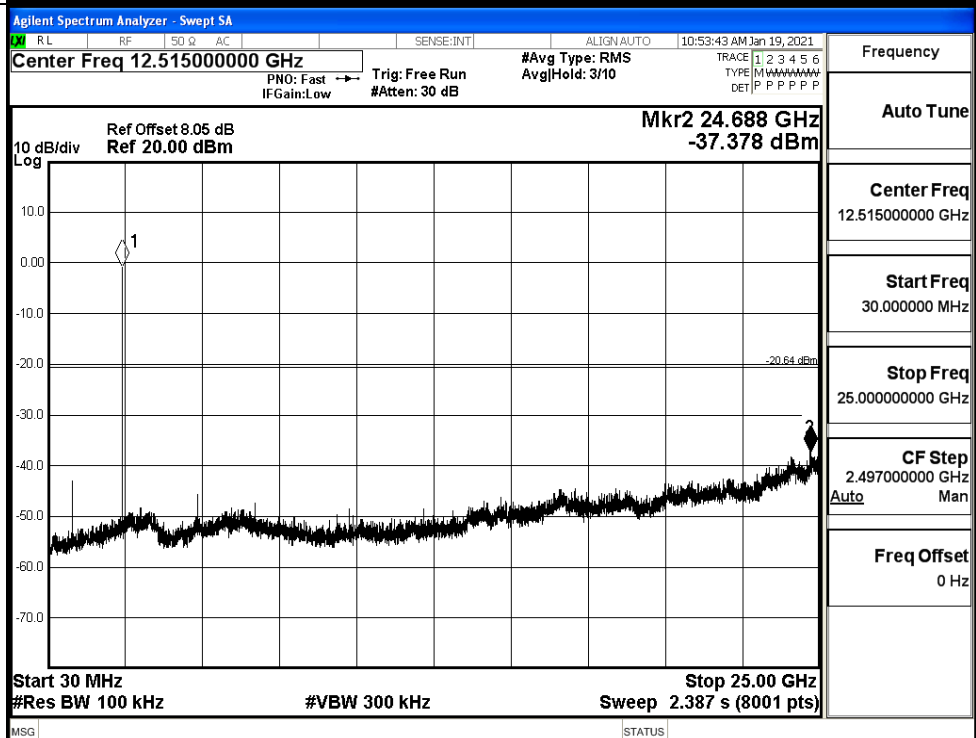


GFSK_MCH_Graphs

Pref

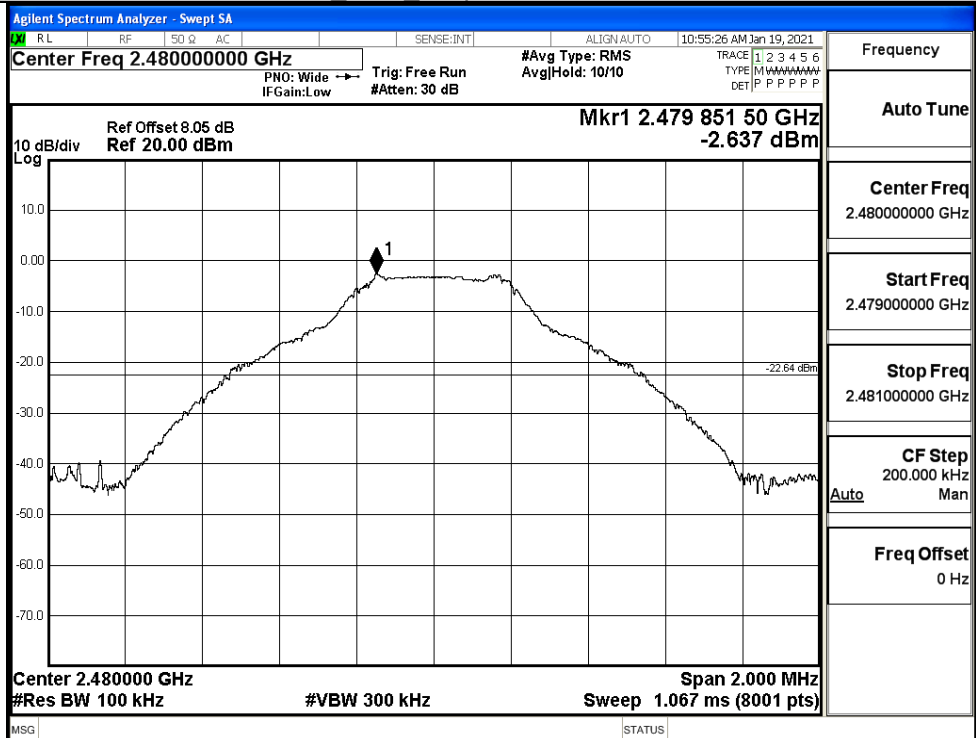


Puw

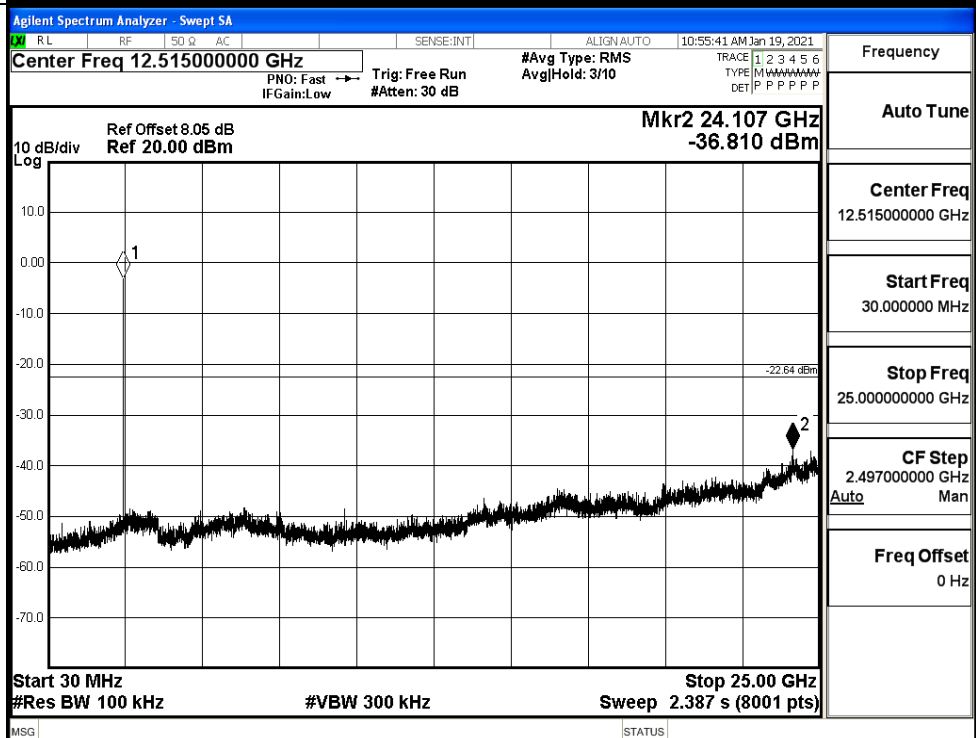


GFSK_HCH_Graphs

Pref

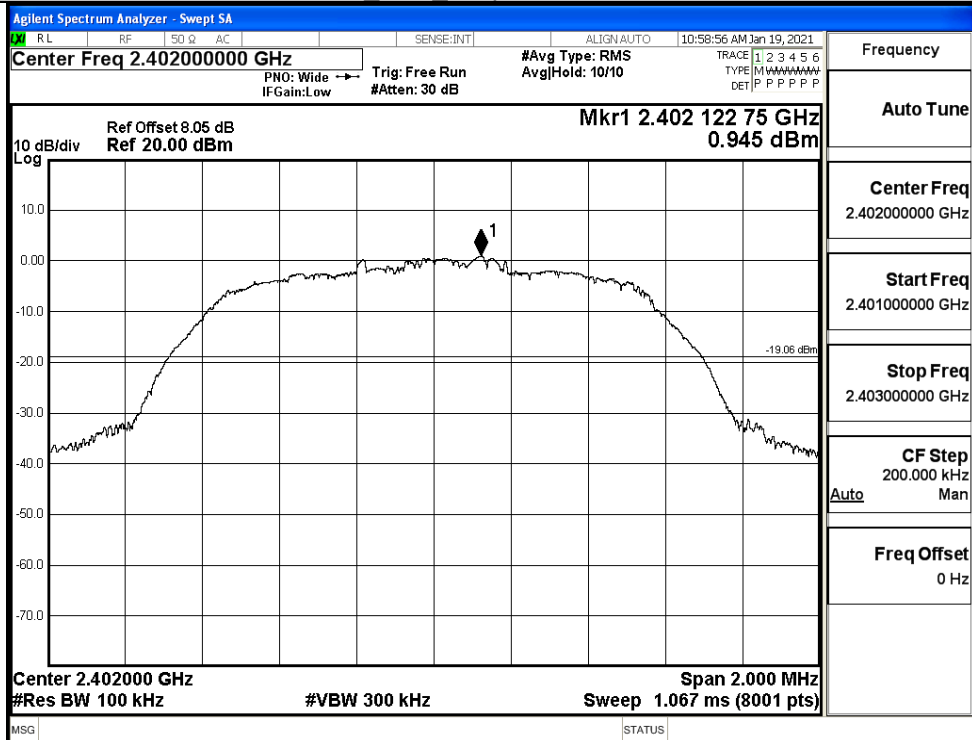


Puw

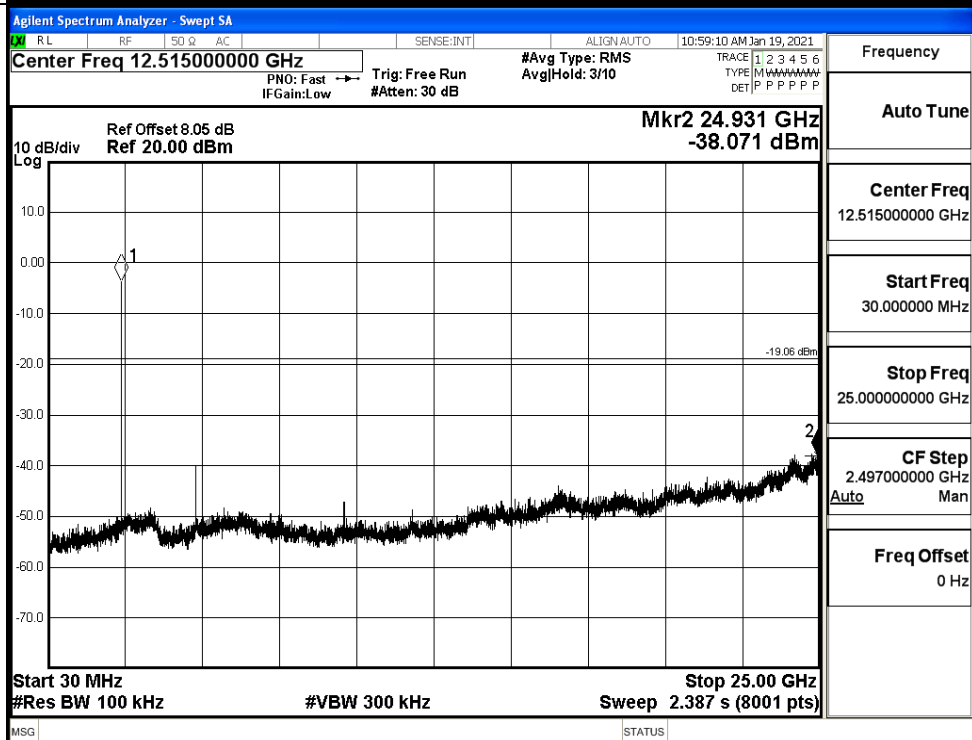


$\pi/4$ DQPSK_LCH_Graphs

Pref

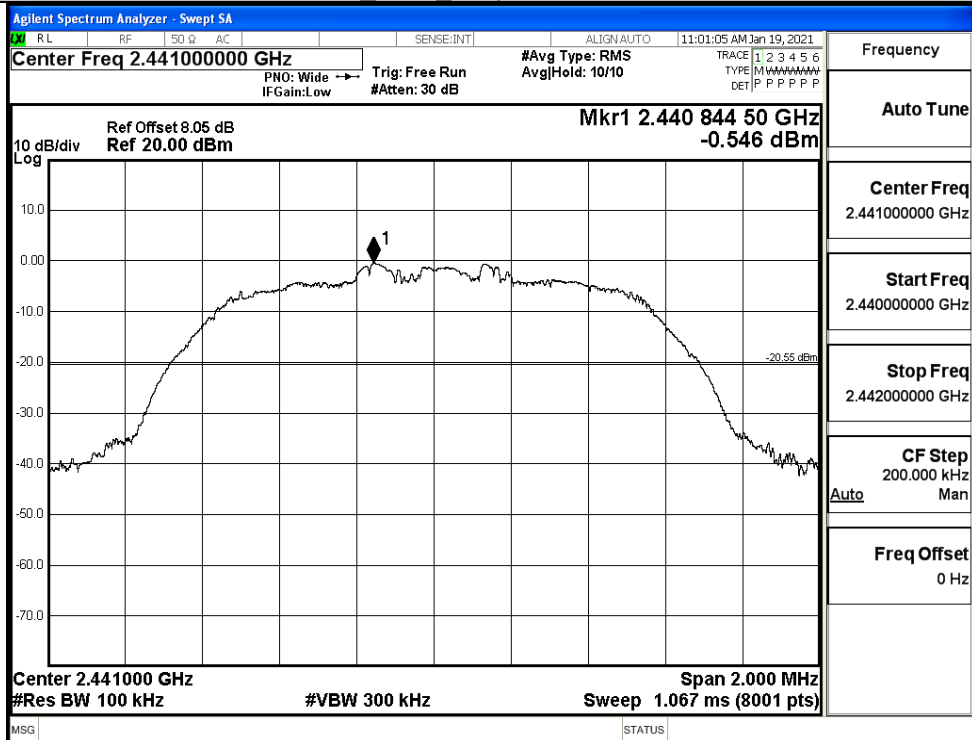


Puw

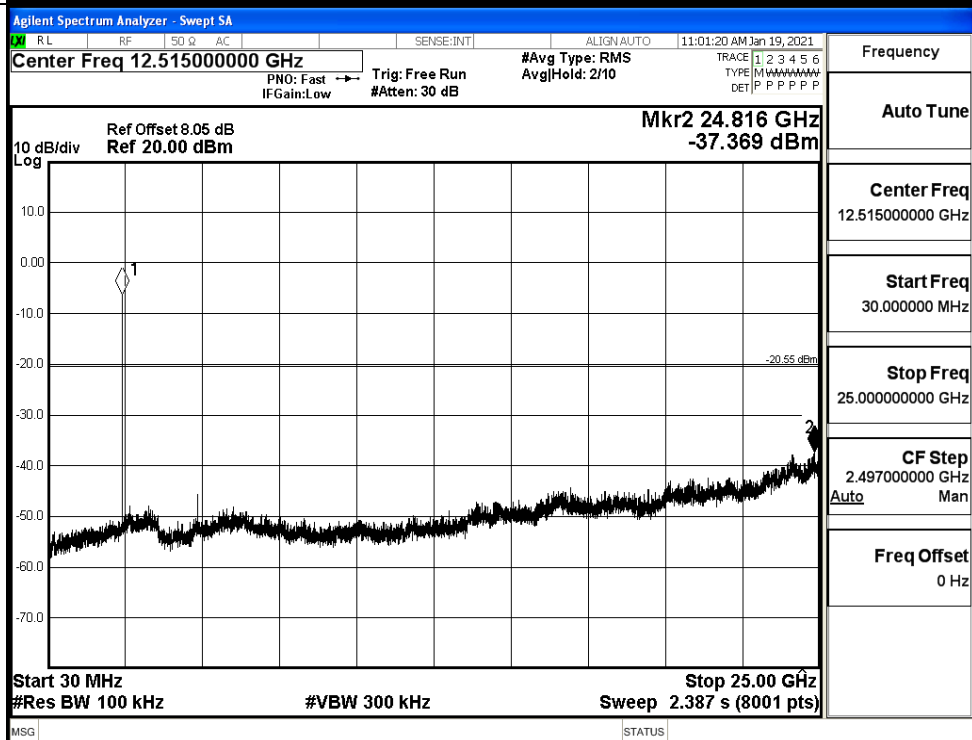


π /4DQPSK_MCH_Graphs

Pref

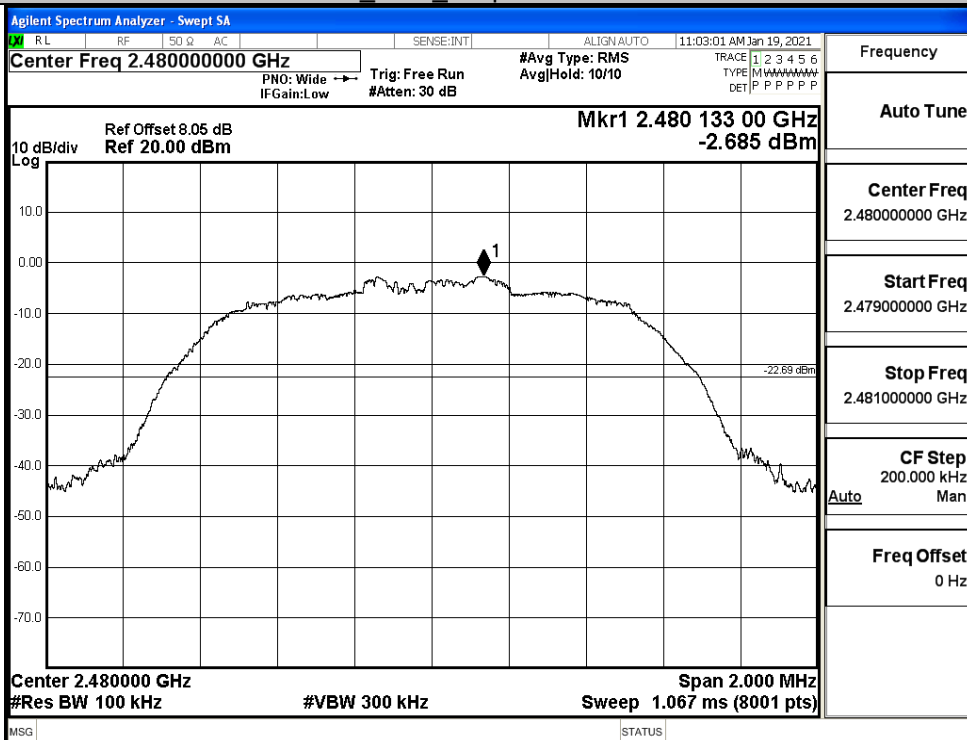


Puw

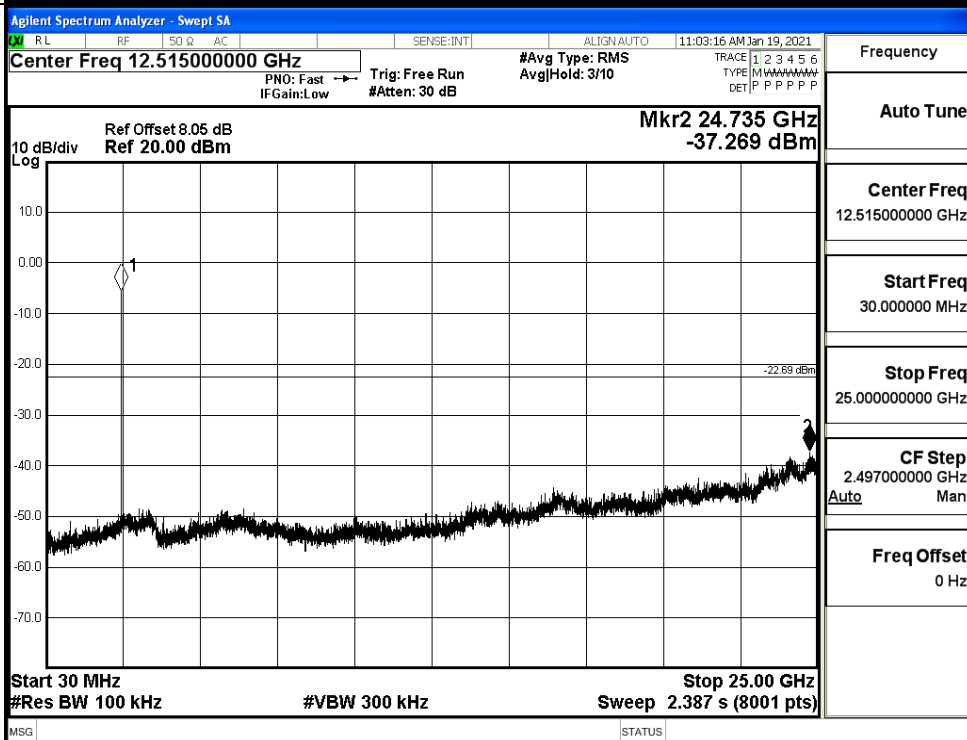


$\pi/4$ DQPSK_HCH_Graphs

Pref

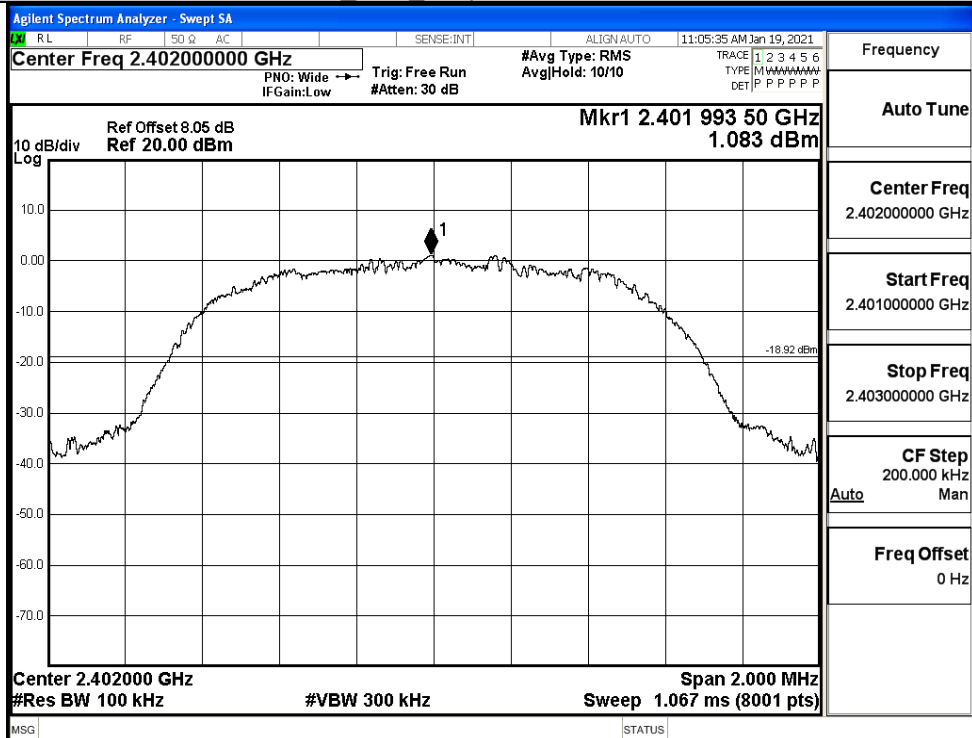


Puw

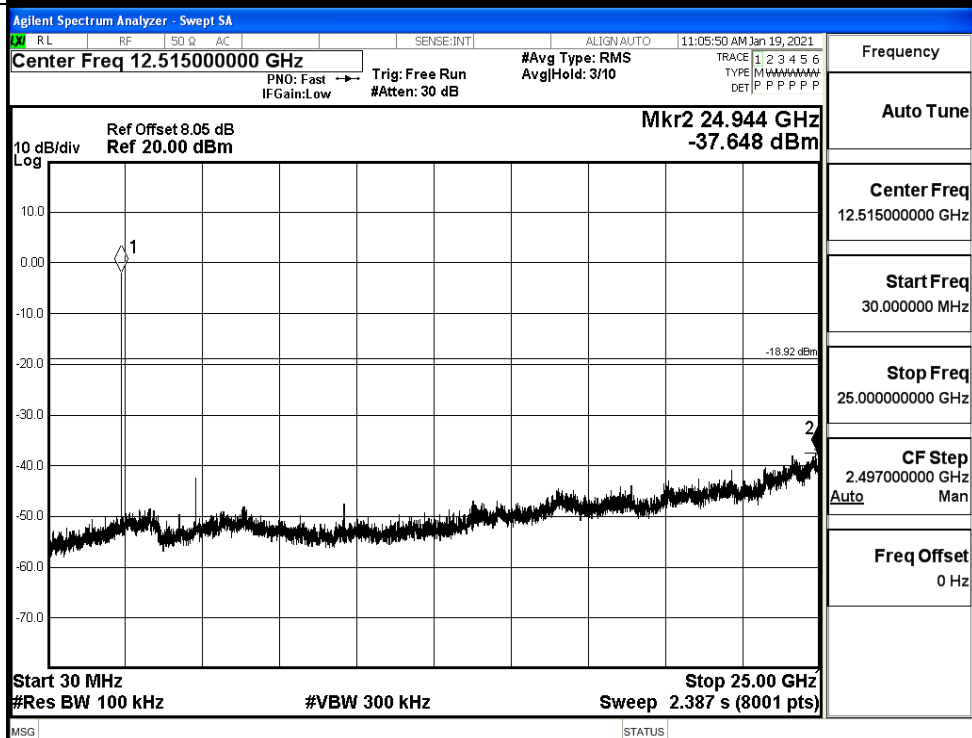


8DPSK_LCH_Graphs

Pref

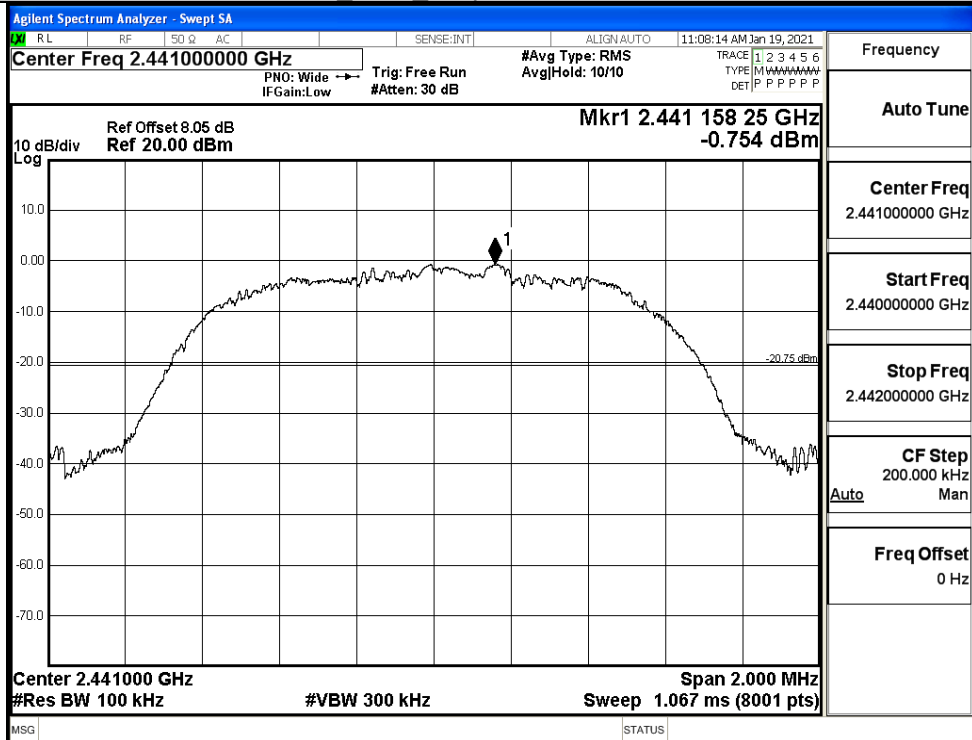


Puw

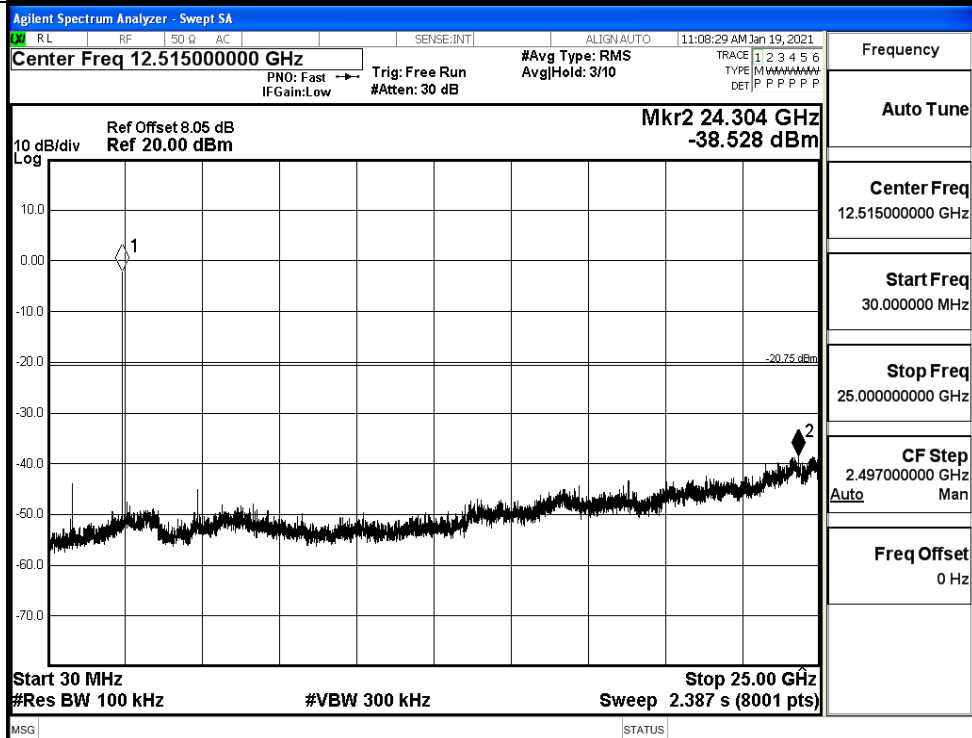


8DPSK_MCH_Graphs

Pref

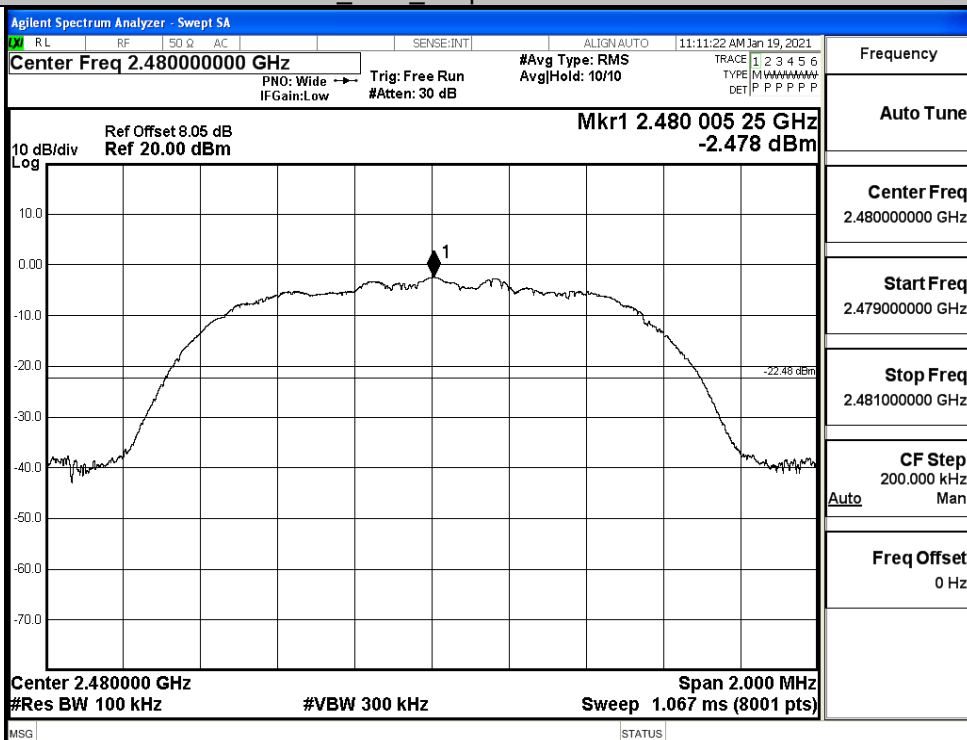


Puw

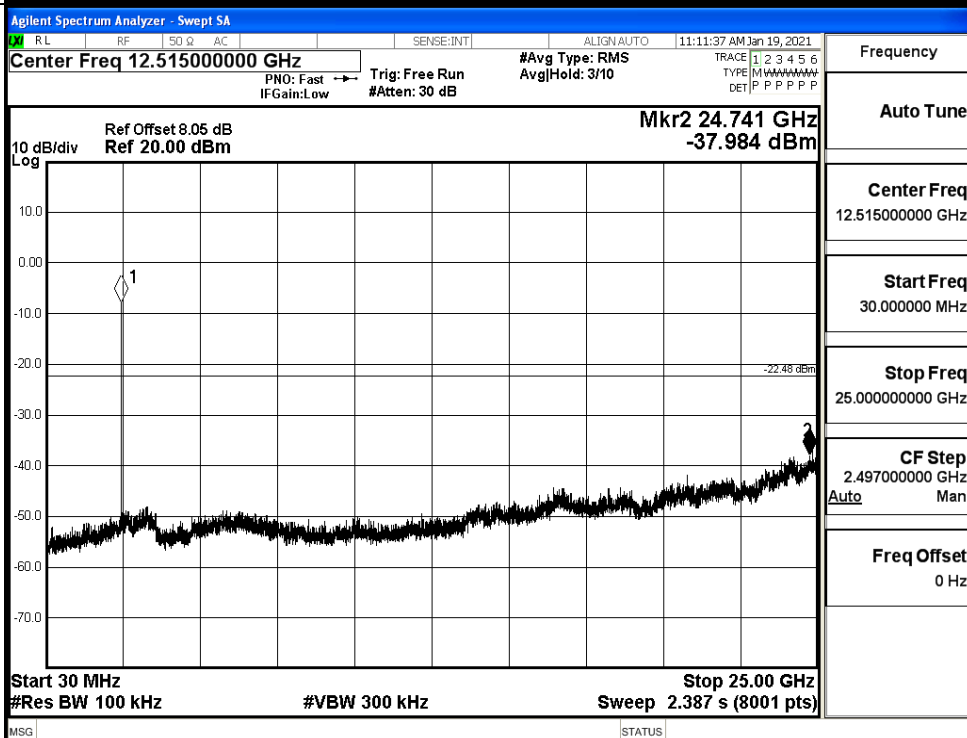


8DPSK_HCH_Graphs

Pref



Puw

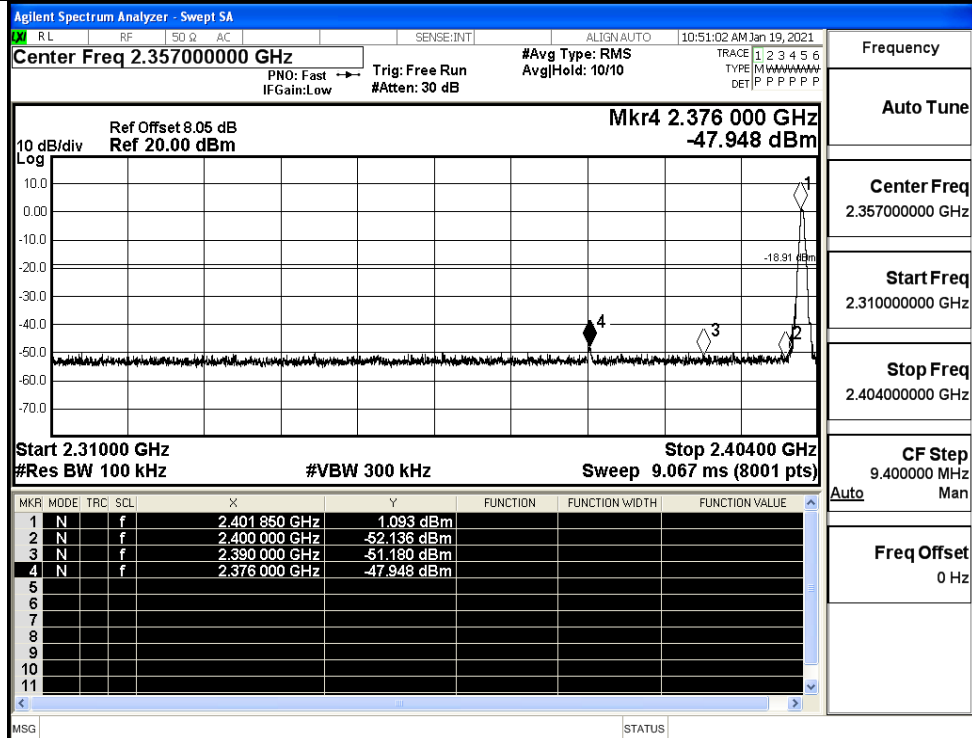


A.7 Band-edge for RF Conducted Emissions

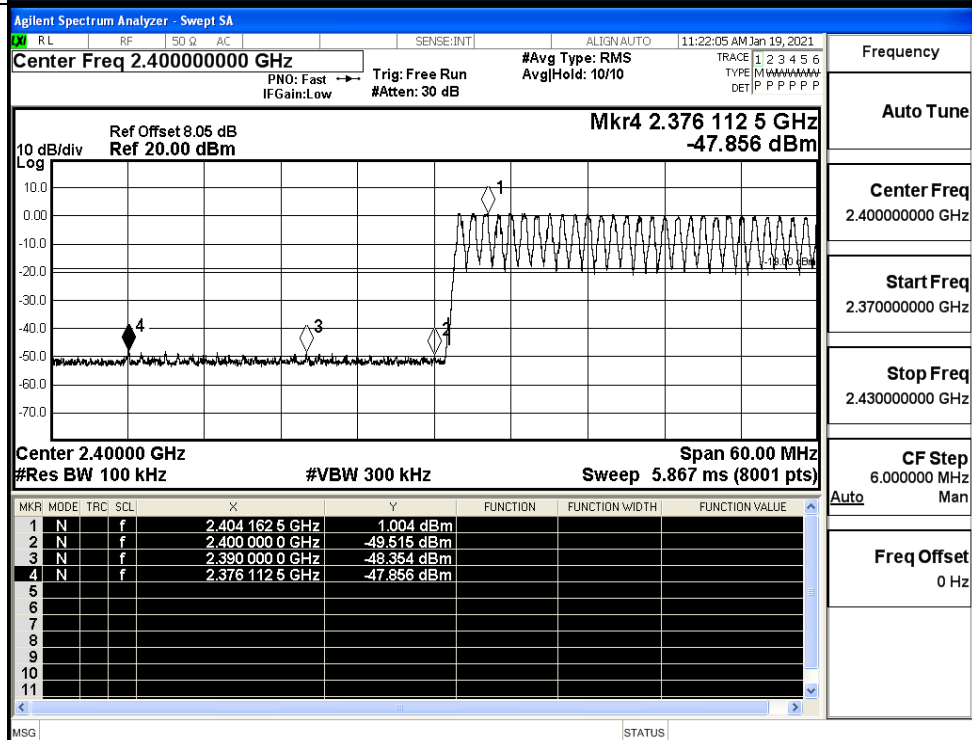
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	1.093	Off	-47.948	-18.91	PASS
			1.004	On	-47.856	-19	PASS
	HCH	2480	-2.629	Off	-49.688	-22.63	PASS
			-1.336	On	-48.197	-21.34	PASS
$\pi/4$ DQPSK	LCH	2402	0.799	Off	-46.778	-19.2	PASS
			1.326	On	-48.460	-18.67	PASS
	HCH	2480	-2.490	Off	-49.310	-22.49	PASS
			-1.372	On	-48.284	-21.37	PASS
8DPSK	LCH	2402	0.678	Off	-49.047	-19.32	PASS
			1.069	On	-47.601	-18.93	PASS
	HCH	2480	-2.488	Off	-49.193	-22.49	PASS
			-1.182	On	-48.493	-21.18	PASS

Test Graphs

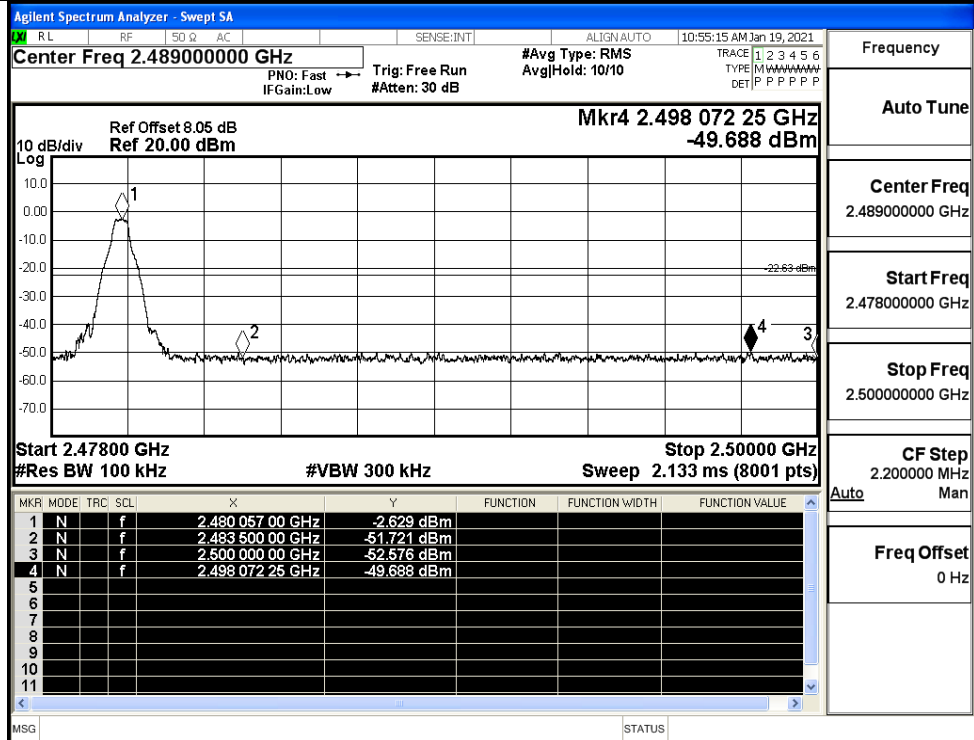
GFSK/LCH/No Hop



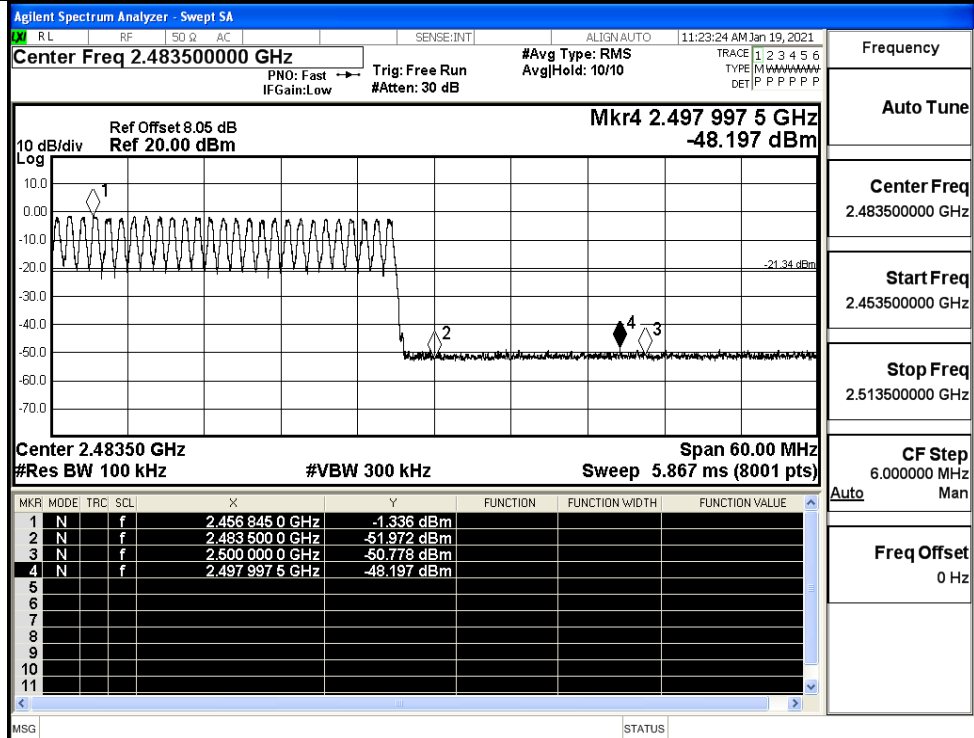
GFSK/LCH/Hop



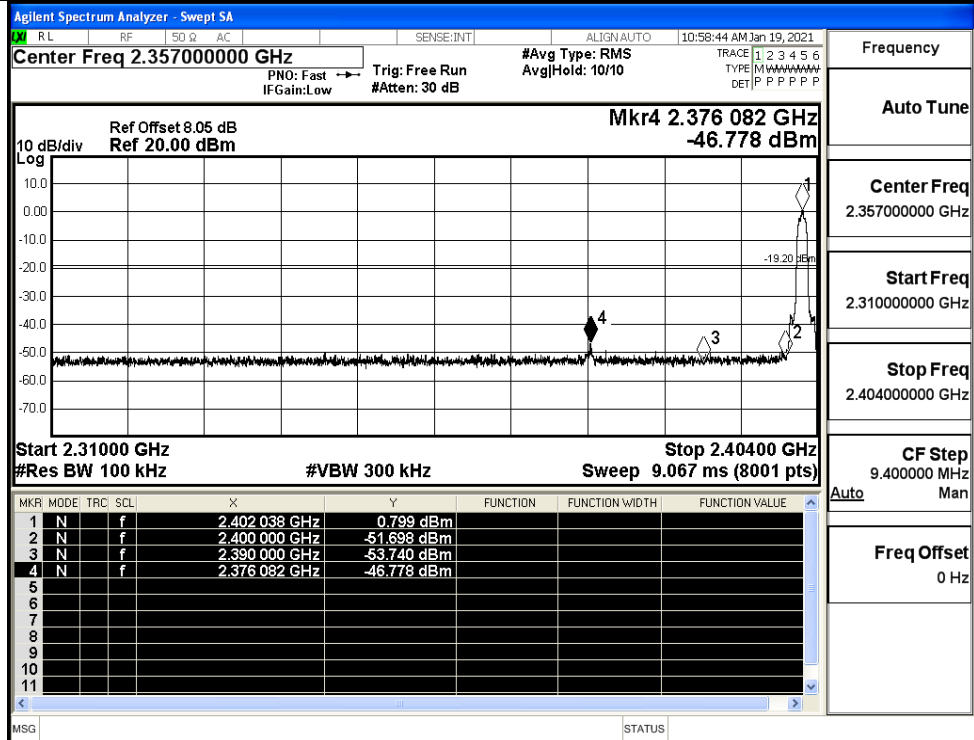
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

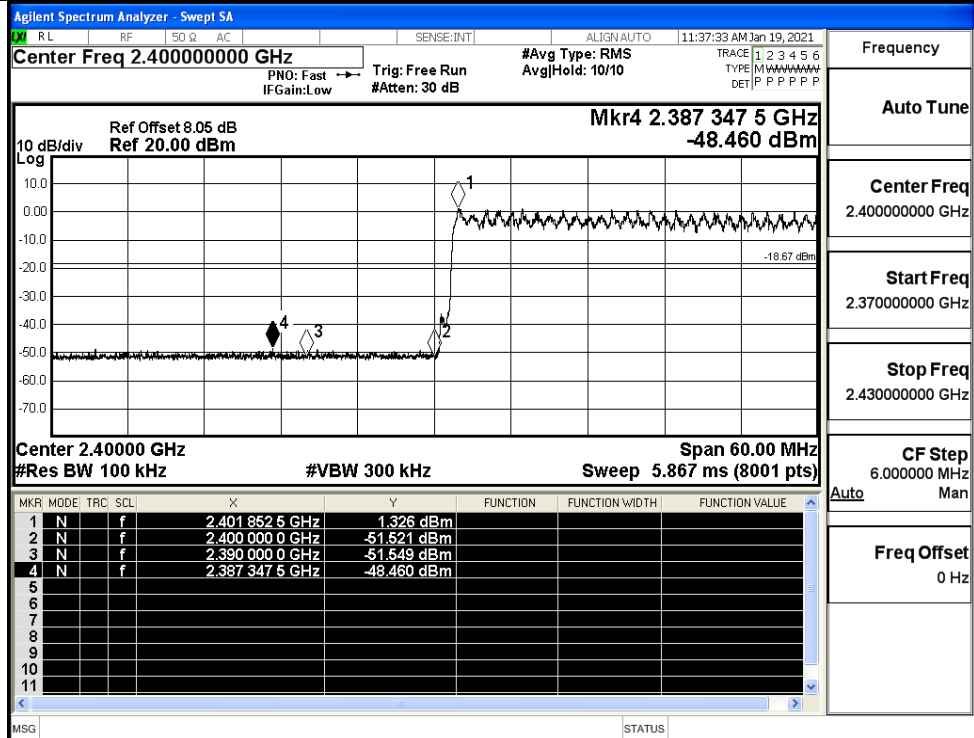
Stop Freq
2.404000000 GHz

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

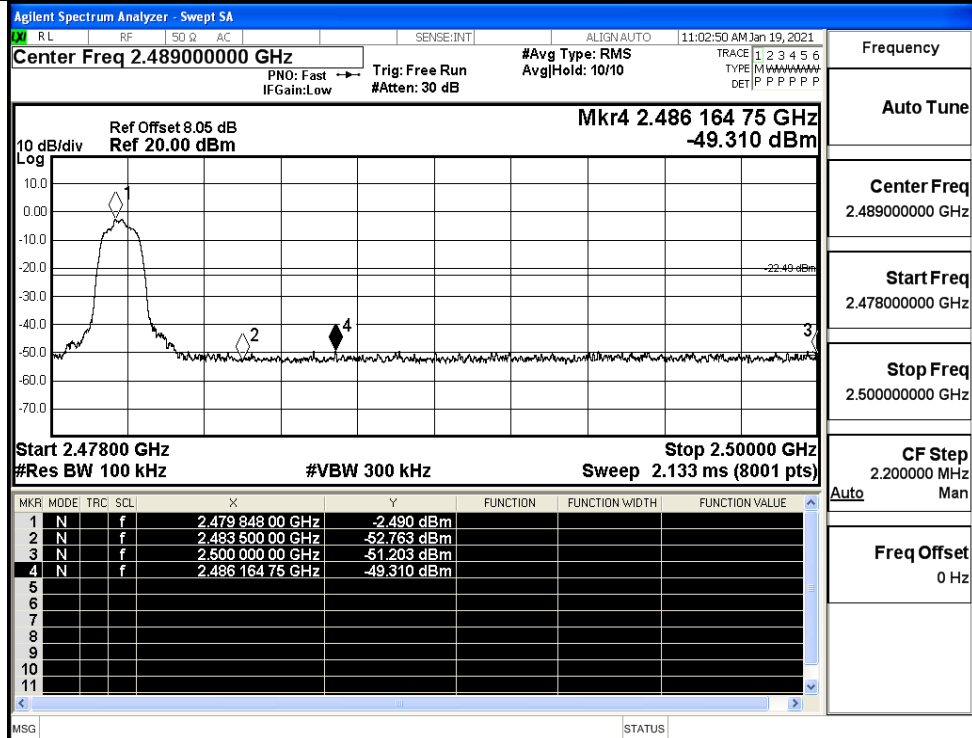
Stop Freq
2.430000000 GHz

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

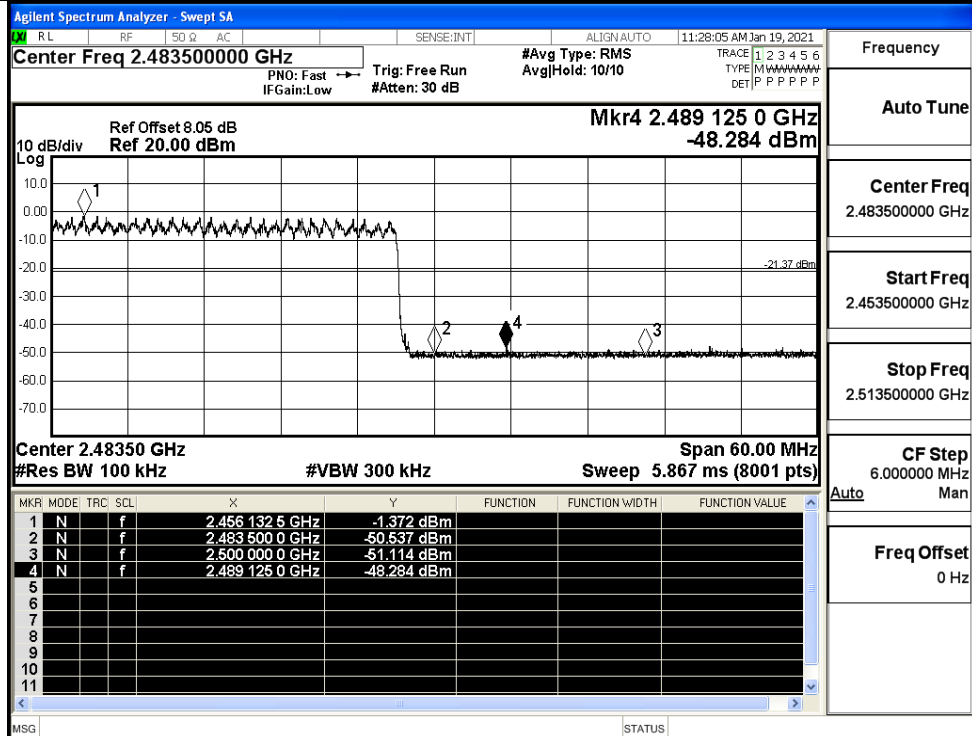
Start Freq
2.478000000 GHz

Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

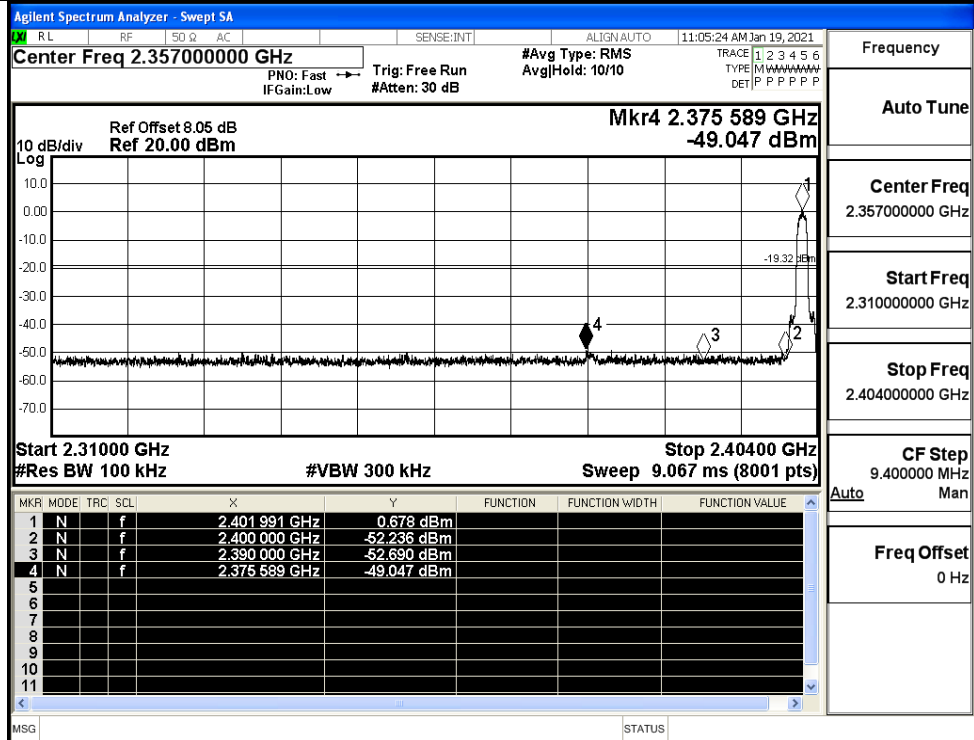
Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

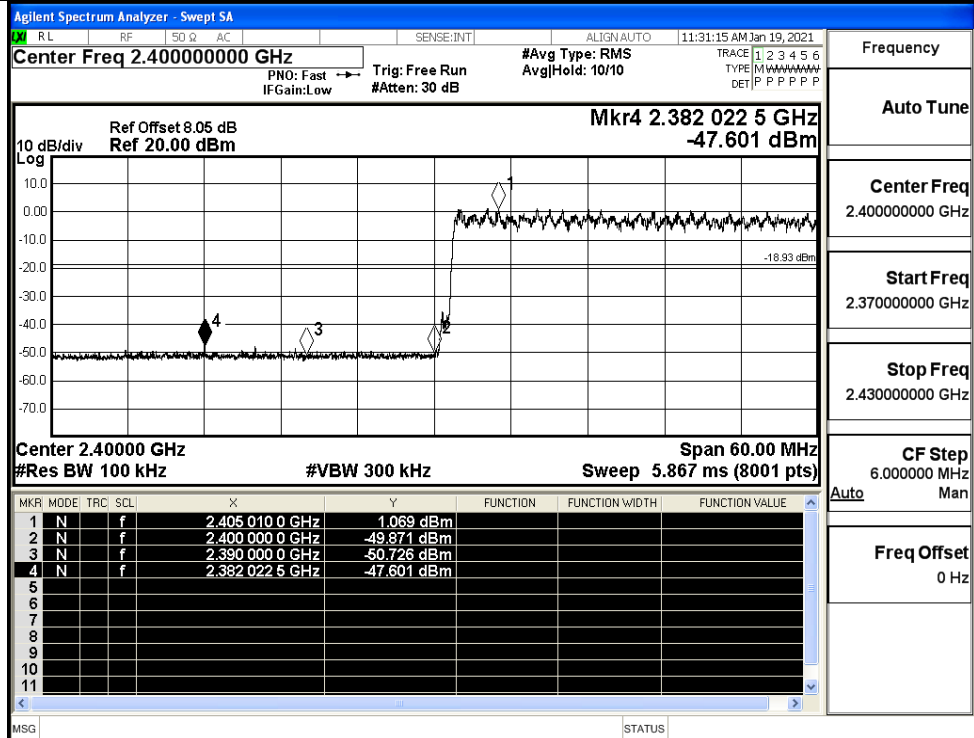
CF Step
6.000000 MHz

Freq Offset
0 Hz

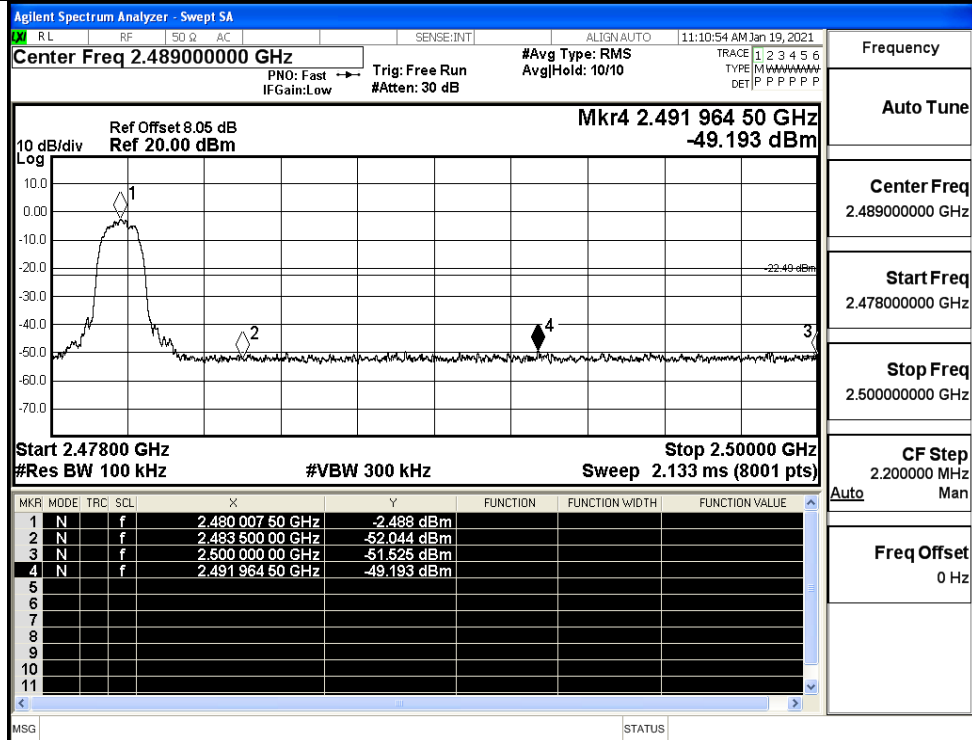
8DPSK/LCH/No Hop



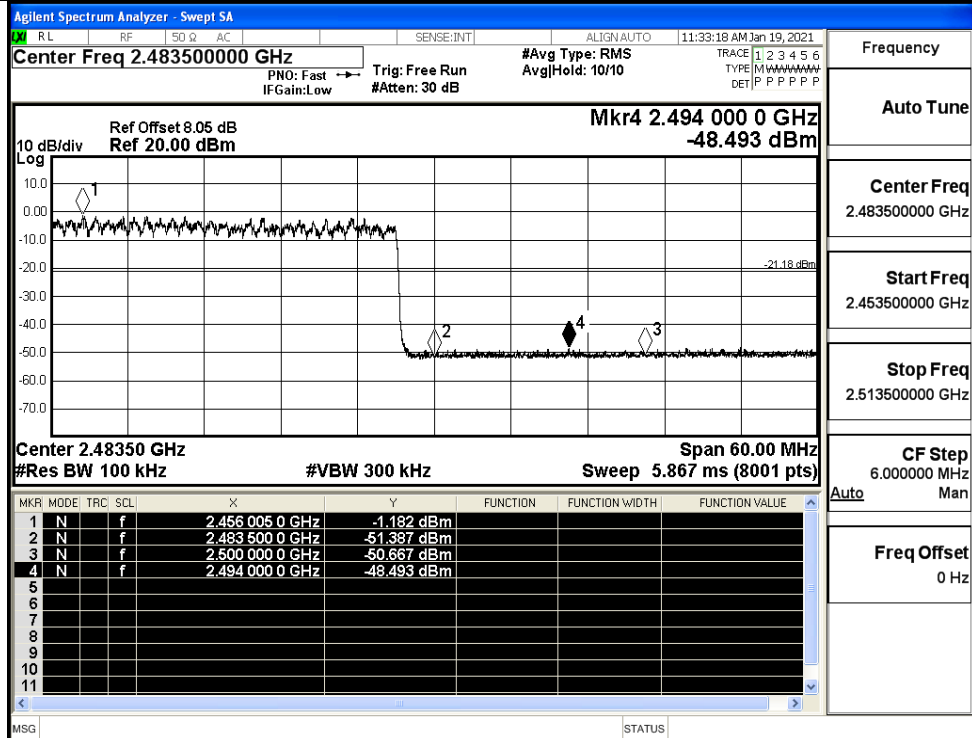
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



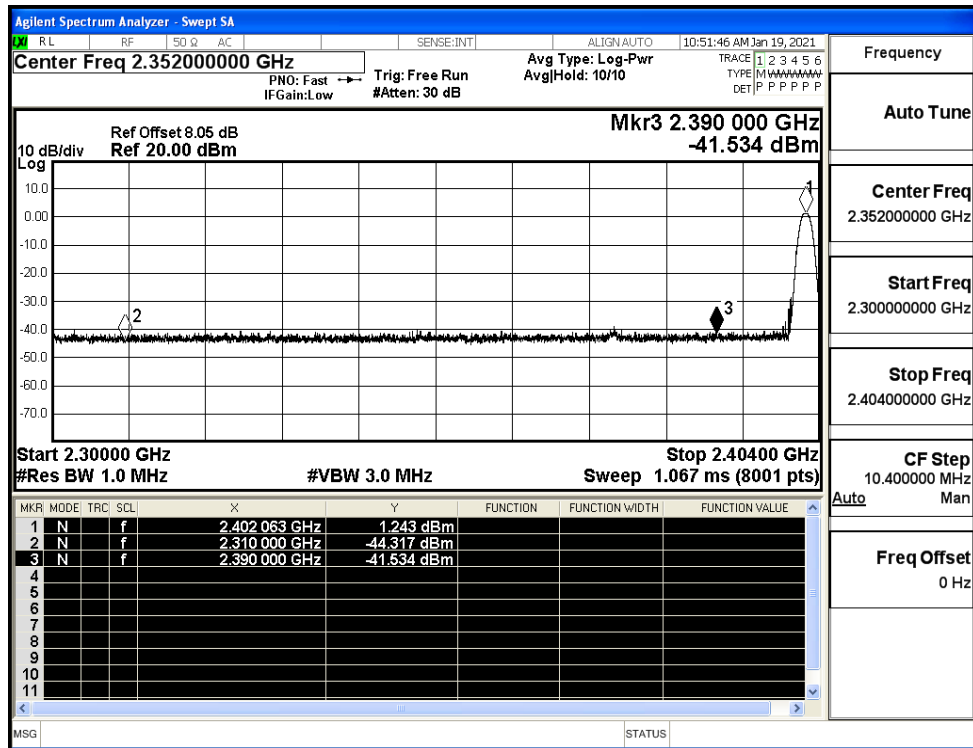
8DPSK/HCH/Hop



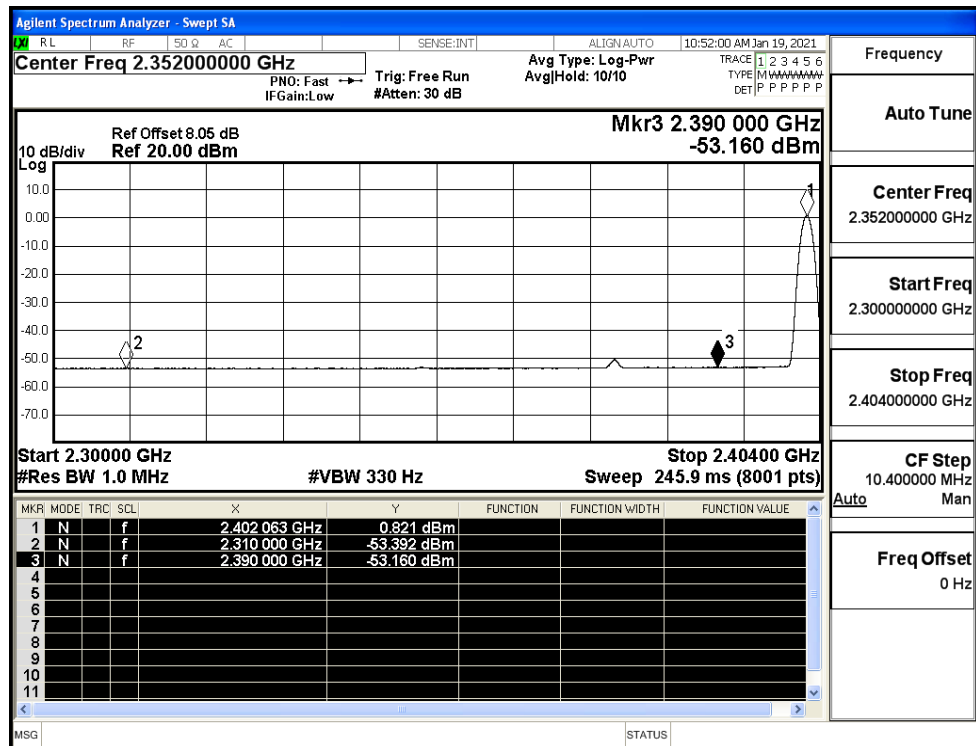
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-44.32	2.0	0	52.91	PEAK	74	PASS
	Off	2310.0	-53.39	2.0	0	43.84	AV	54	PASS
	Off	2390.0	-41.53	2.0	0	55.7	PEAK	74	PASS
	Off	2390.0	-53.16	2.0	0	44.07	AV	54	PASS
	Off	2483.5	-42.71	2.0	0	54.52	PEAK	74	PASS
	Off	2483.5	-52.69	2.0	0	44.54	AV	54	PASS
	Off	2500.0	-42.36	2.0	0	54.87	PEAK	74	PASS
	Off	2500.0	-52.57	2.0	0	44.66	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.90	2.0	0	54.33	PEAK	74	PASS
	Off	2310.0	-53.50	2.0	0	43.73	AV	54	PASS
	Off	2390.0	-43.97	2.0	0	53.26	PEAK	74	PASS
	Off	2390.0	-53.08	2.0	0	44.15	AV	54	PASS
	Off	2483.5	-42.44	2.0	0	54.79	PEAK	74	PASS
	Off	2483.5	-52.56	2.0	0	44.67	AV	54	PASS
	Off	2500.0	-42.66	2.0	0	54.57	PEAK	74	PASS
	Off	2500.0	-52.50	2.0	0	44.73	AV	54	PASS
8DPSK	Off	2310.0	-43.57	2.0	0	53.66	PEAK	74	PASS
	Off	2310.0	-53.64	2.0	0	43.59	AV	54	PASS
	Off	2390.0	-43.79	2.0	0	53.44	PEAK	74	PASS
	Off	2390.0	-53.10	2.0	0	44.13	AV	54	PASS
	Off	2483.5	-40.95	2.0	0	56.28	PEAK	74	PASS
	Off	2483.5	-52.56	2.0	0	44.67	AV	54	PASS
	Off	2500.0	-43.66	2.0	0	53.57	PEAK	74	PASS
	Off	2500.0	-52.44	2.0	0	44.79	AV	54	PASS

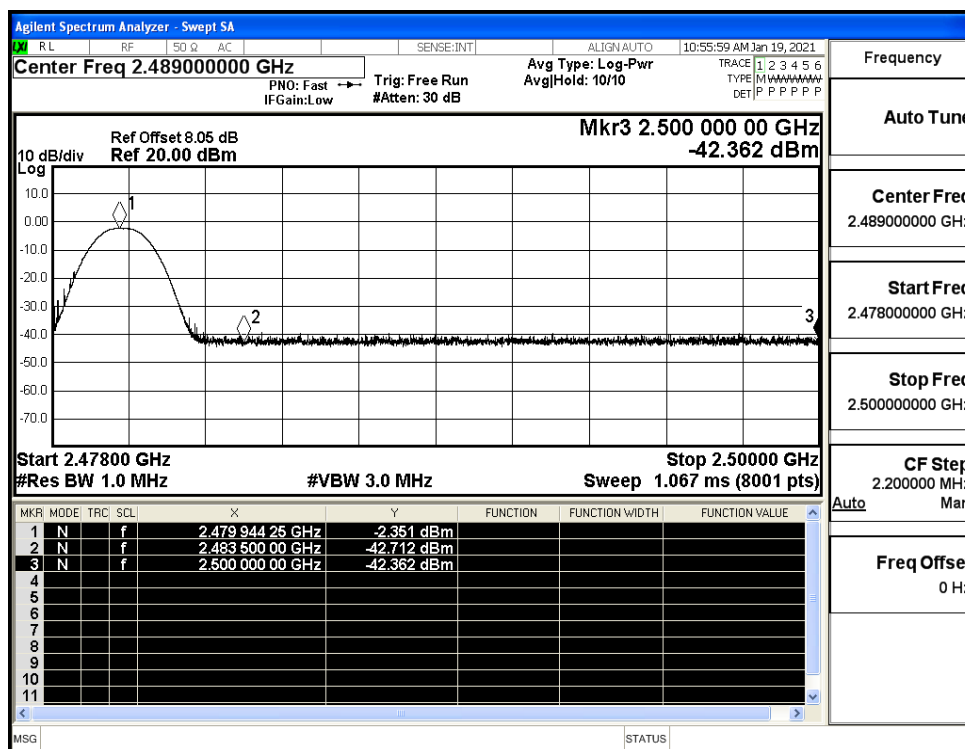
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



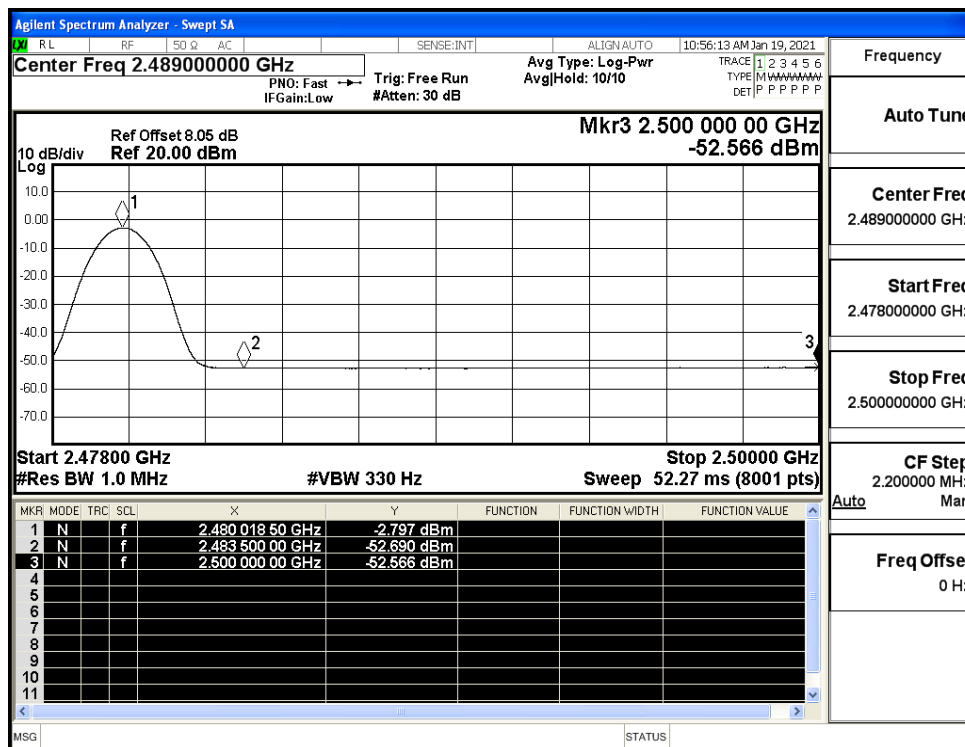
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

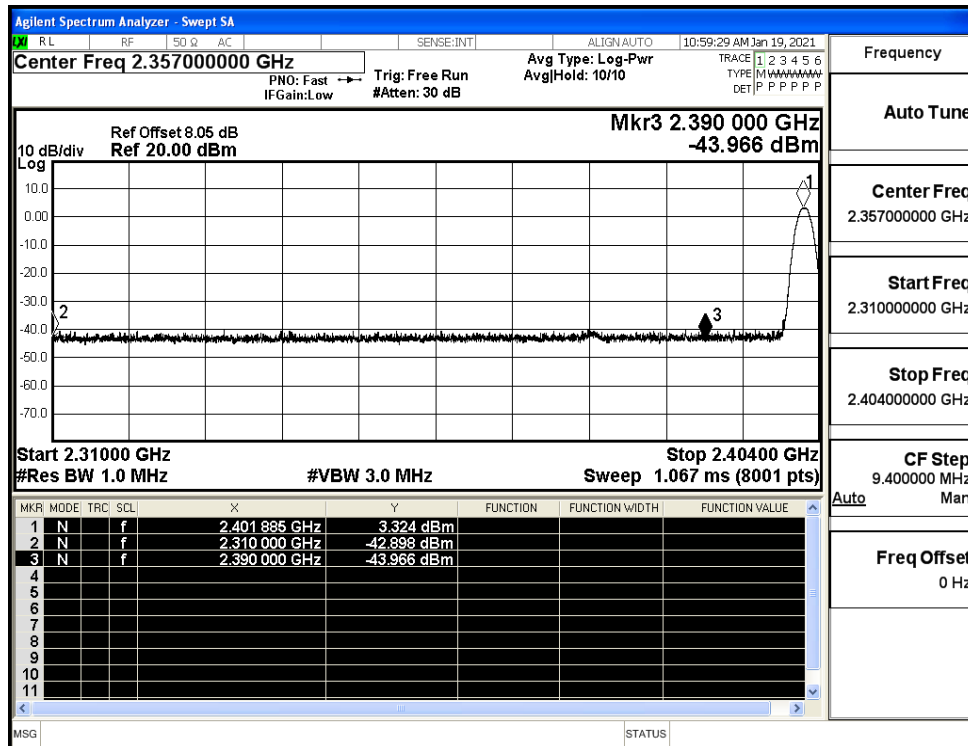
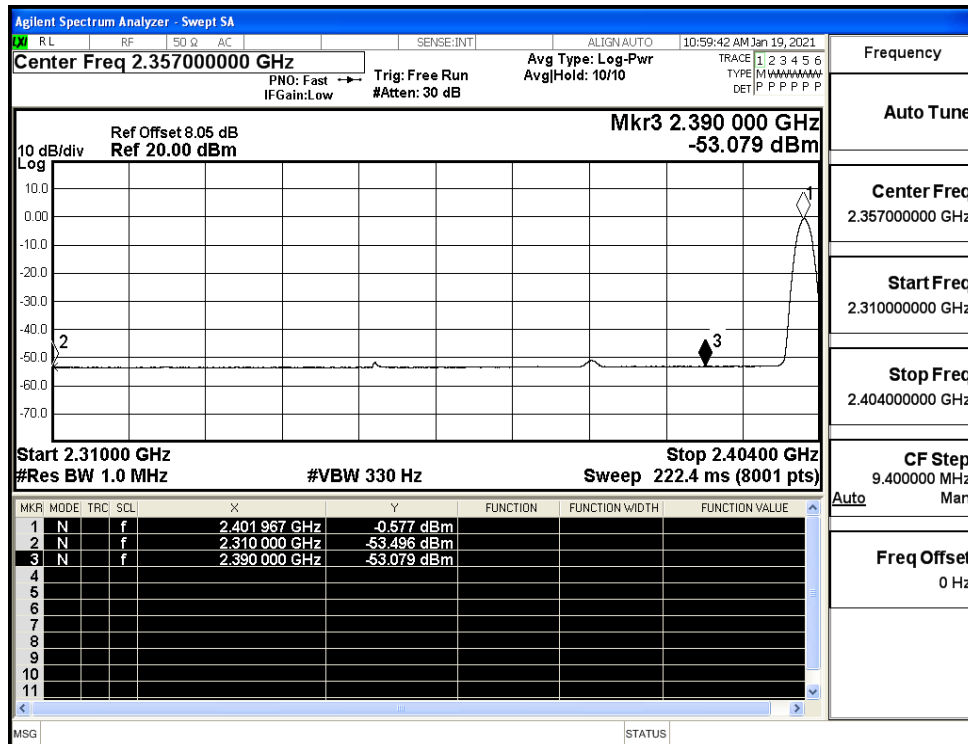


Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)

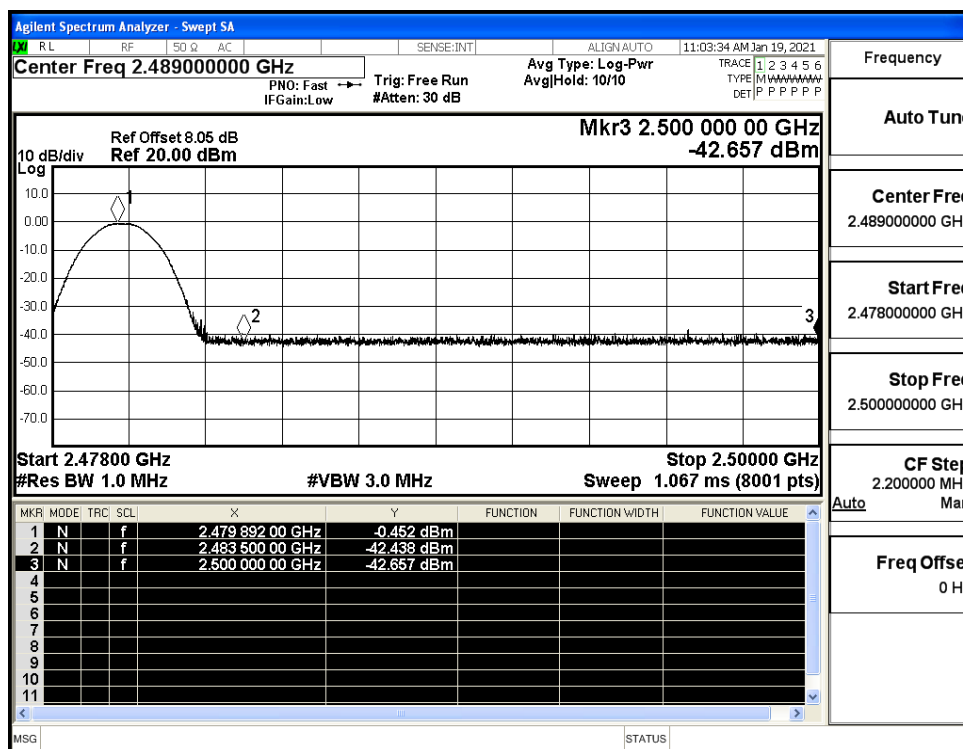


Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)

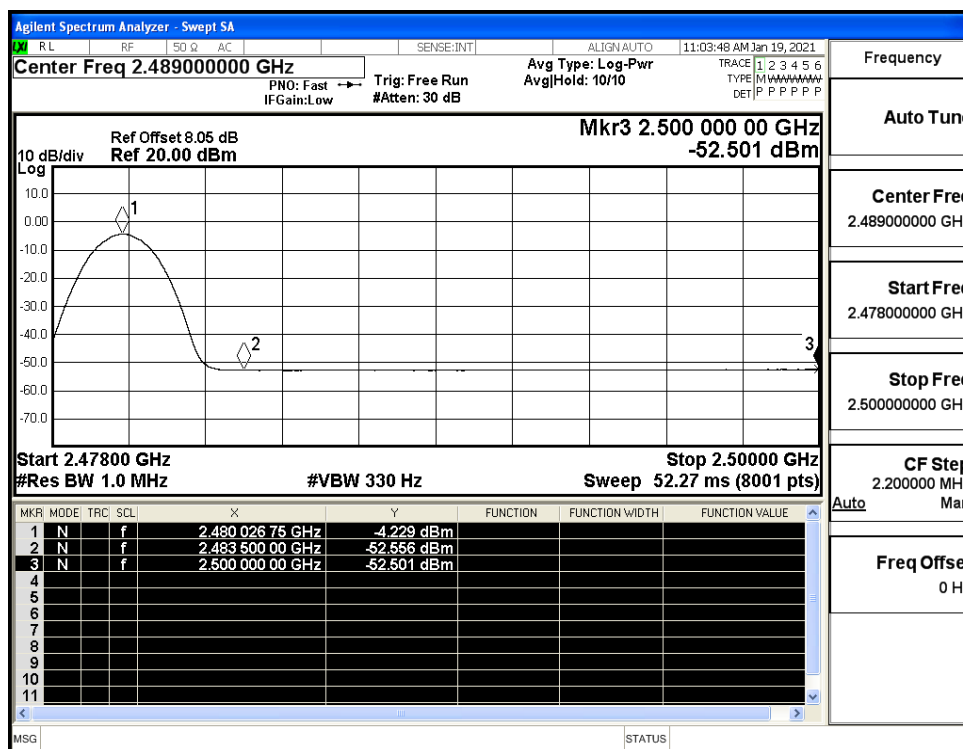


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

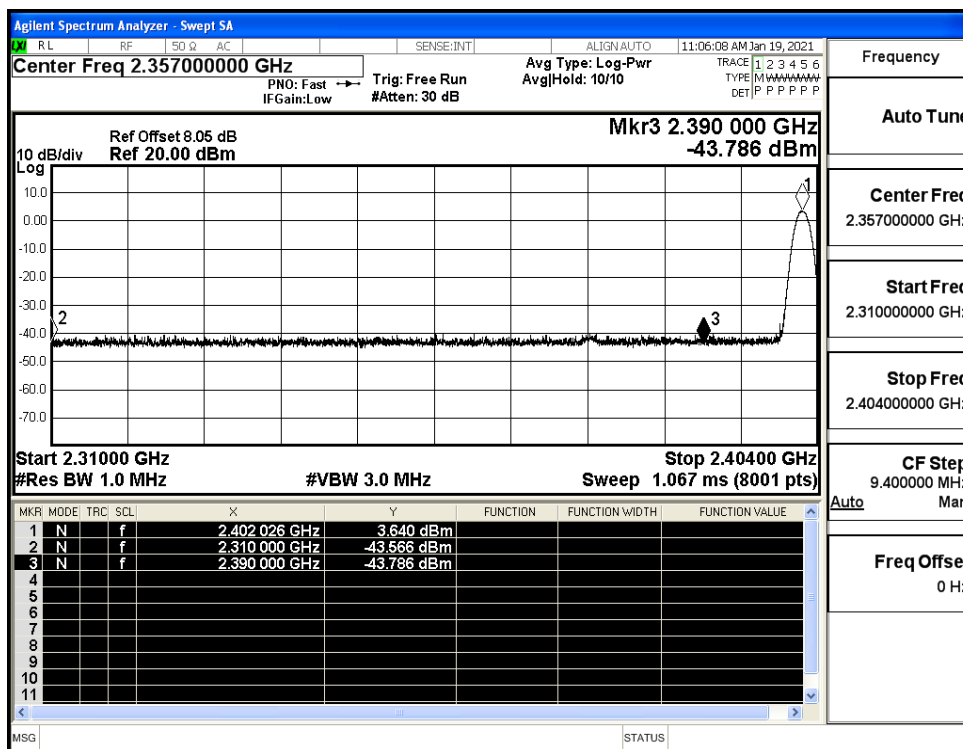
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



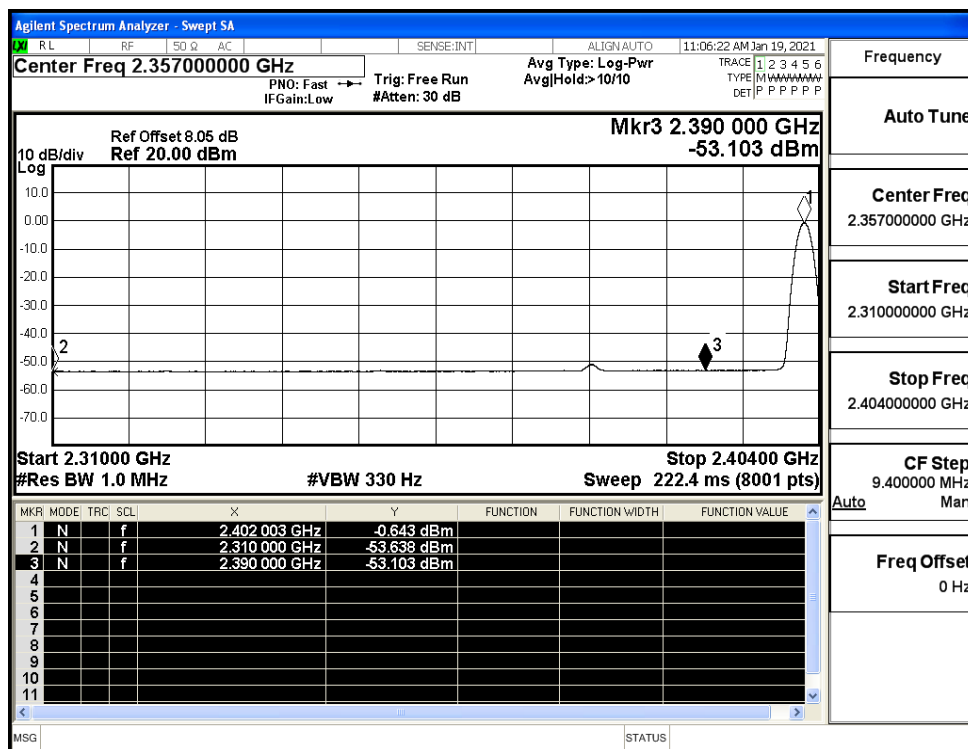
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



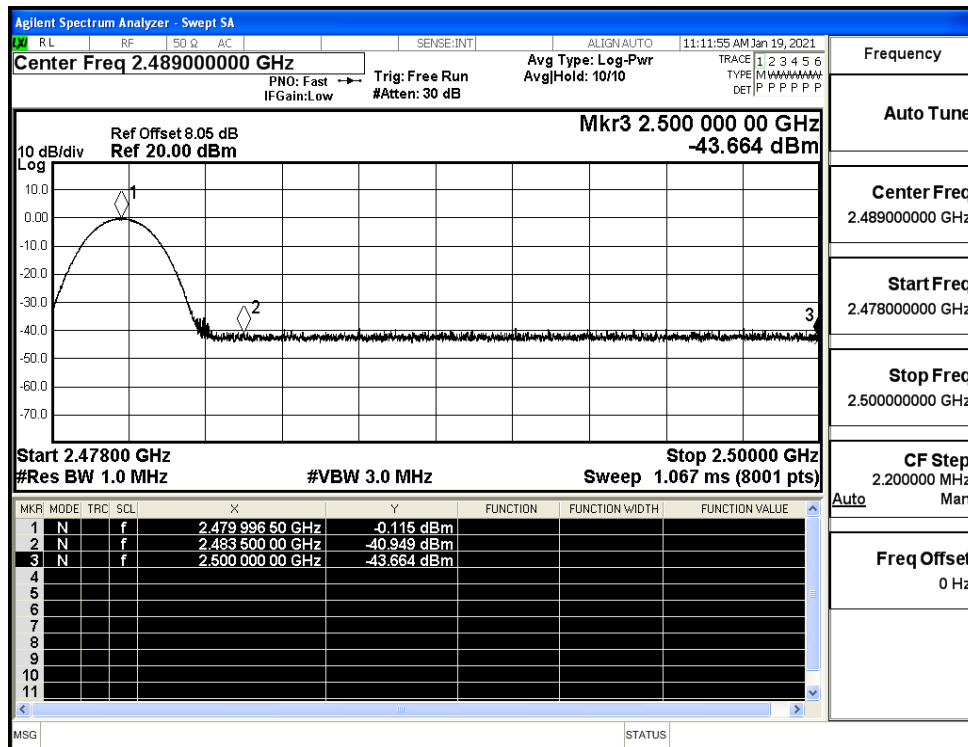
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

