

Appendix A
RF Test Data for BT V5.0(DSS) (Conducted Measurement)
Product Name: Wireless earbuds
Trade Mark: Origaudio
Test Model: Kronies

Environmental Conditions

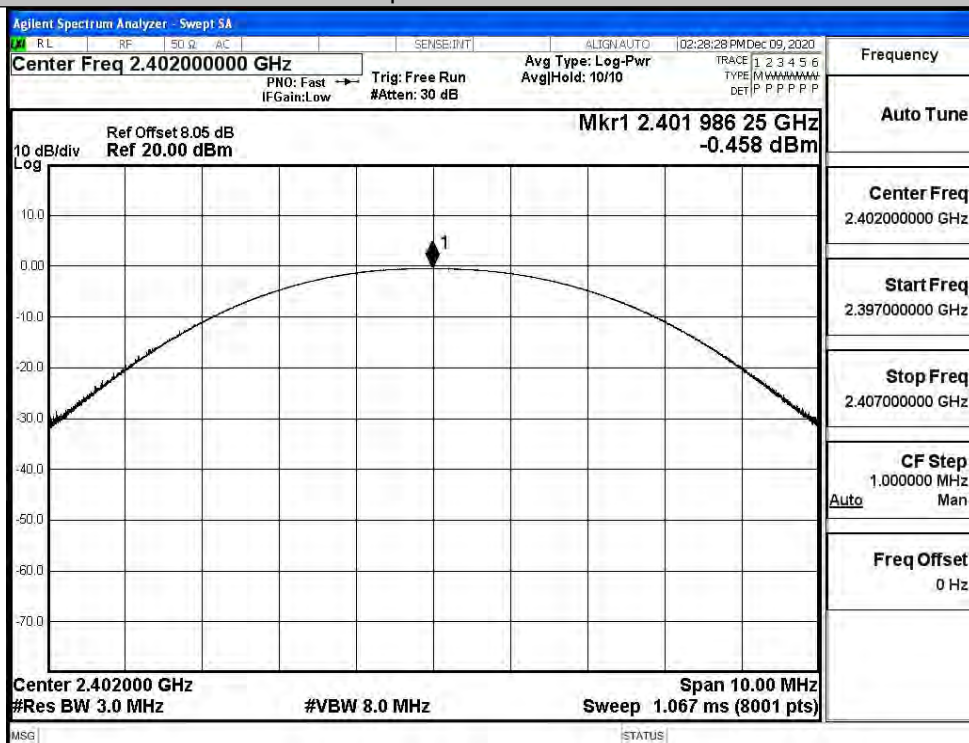
Temperature:	22.3 ° C
Relative Humidity:	53.2%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

A.1 Maxmum Conducted Peak Output Power

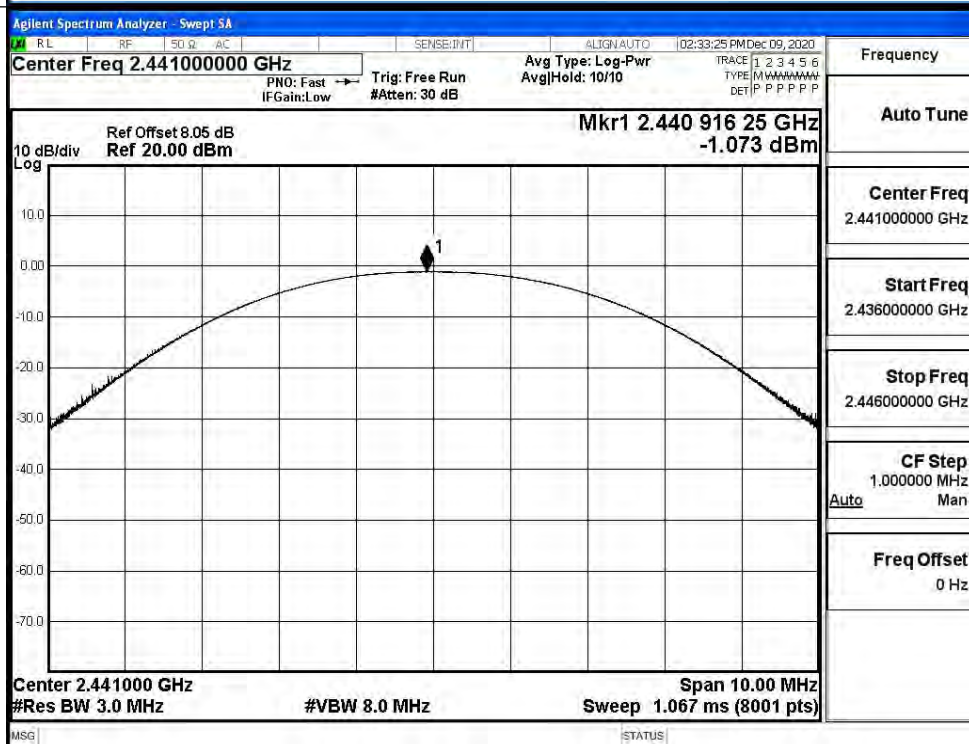
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.458	30	PASS
	MCH	-1.073	30	PASS
	HCH	-2.546	30	PASS
$\pi/4$ DQPSK	LCH	1.841	21	PASS
	MCH	1.280	21	PASS
	HCH	-0.273	21	PASS
8DPSK	LCH	2.369	21	PASS
	MCH	1.773	21	PASS
	HCH	0.211	21	PASS

Test Graphs

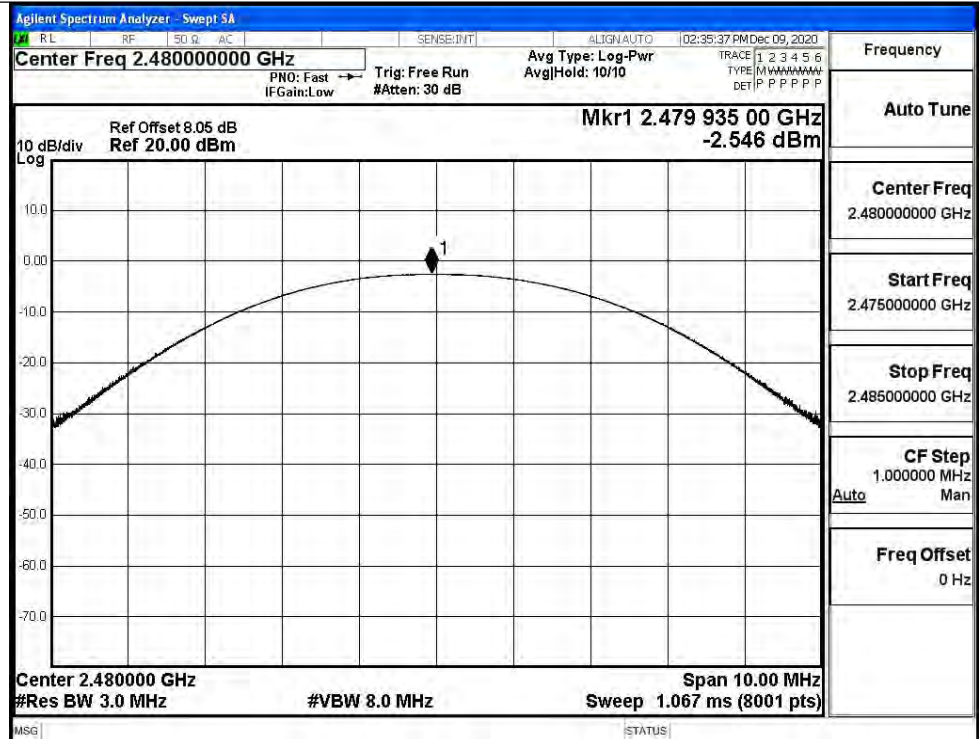
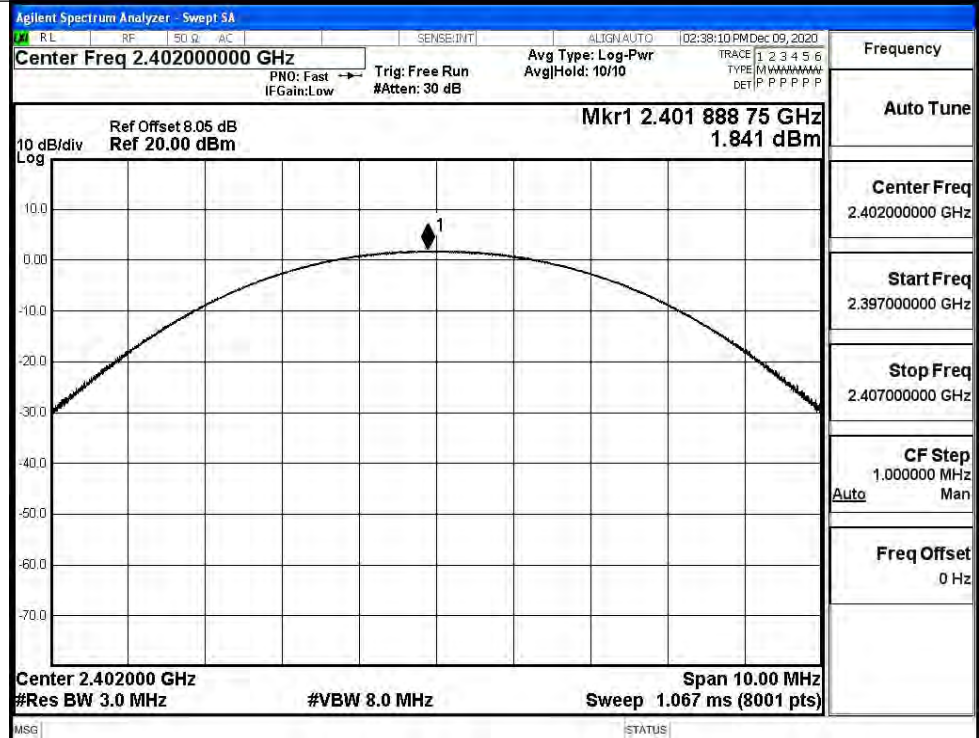
GFSK/LCH

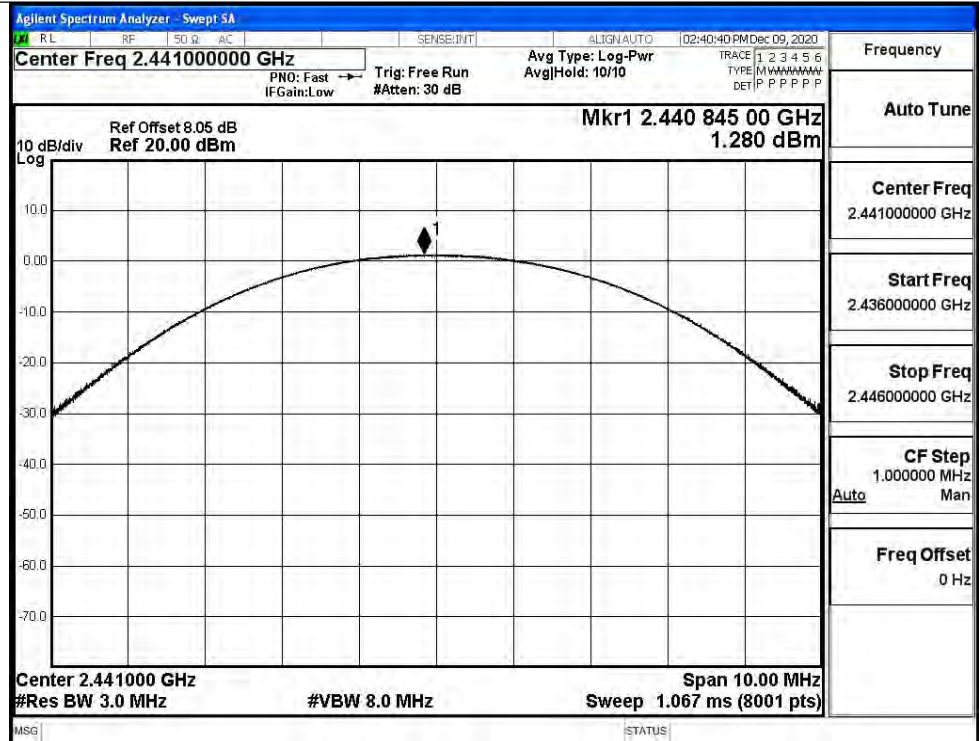
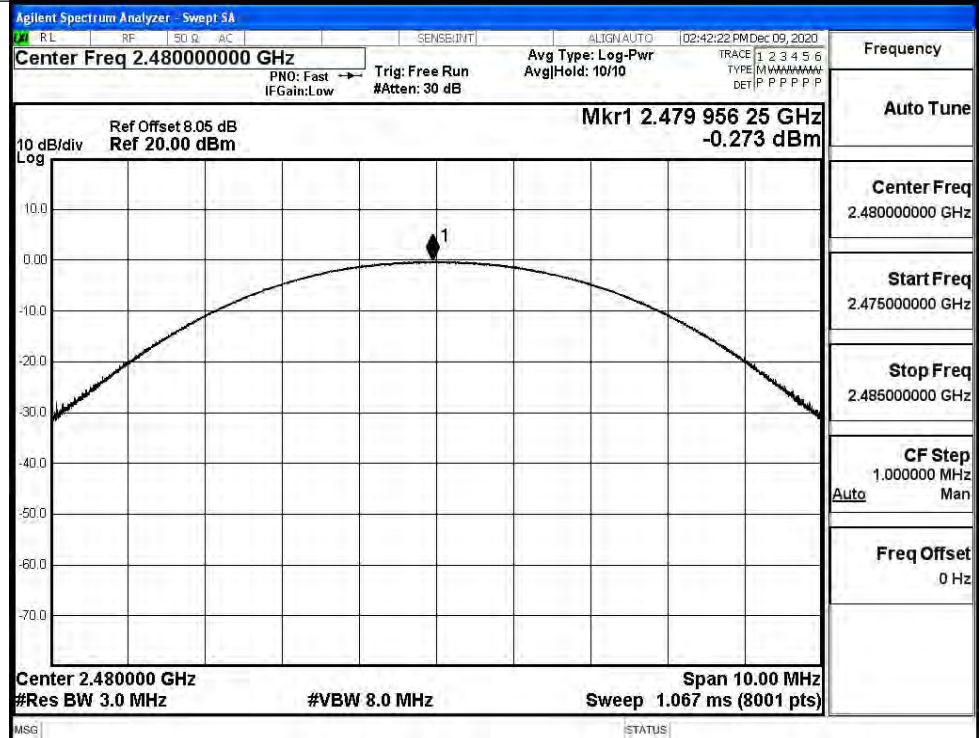


GFSK/MCH

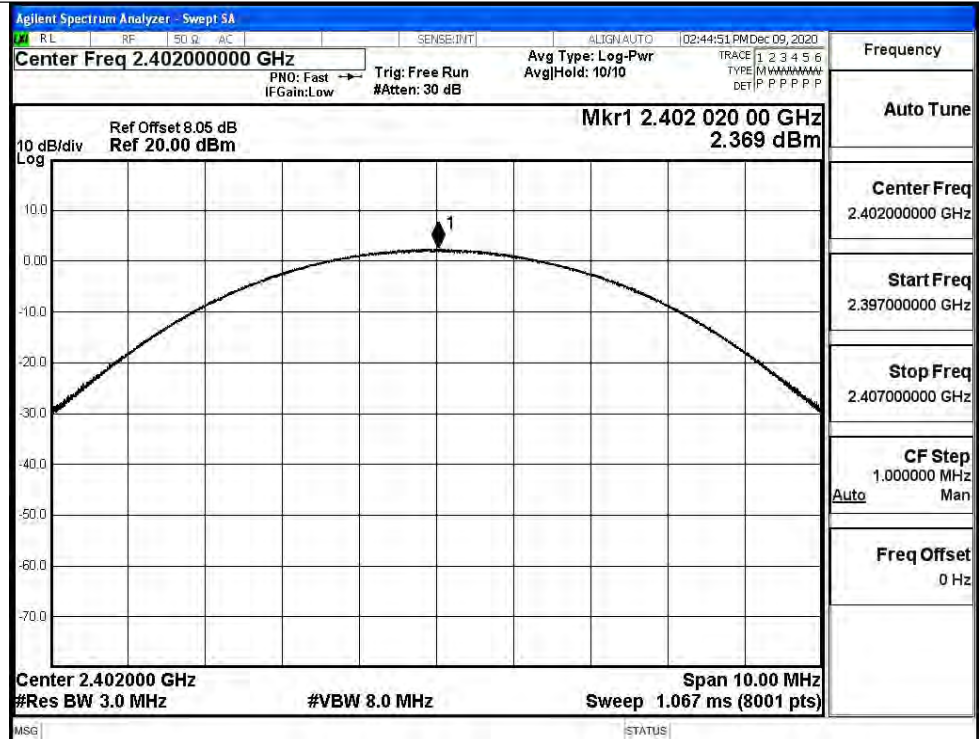


GFSK/HCH

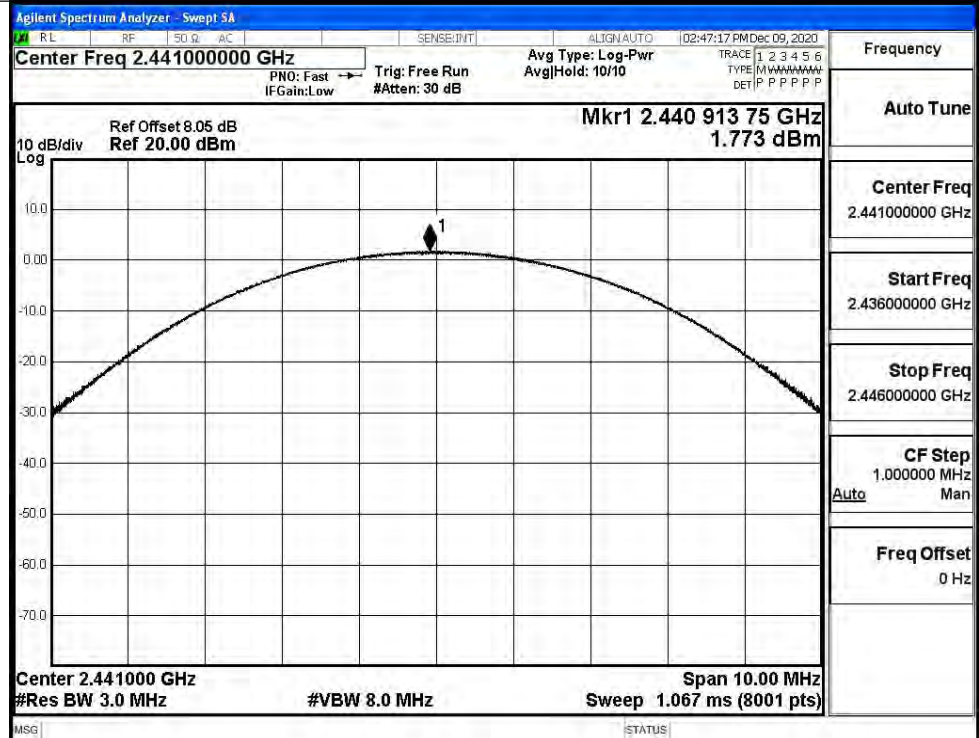
 π /4DQPSK/LCH

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

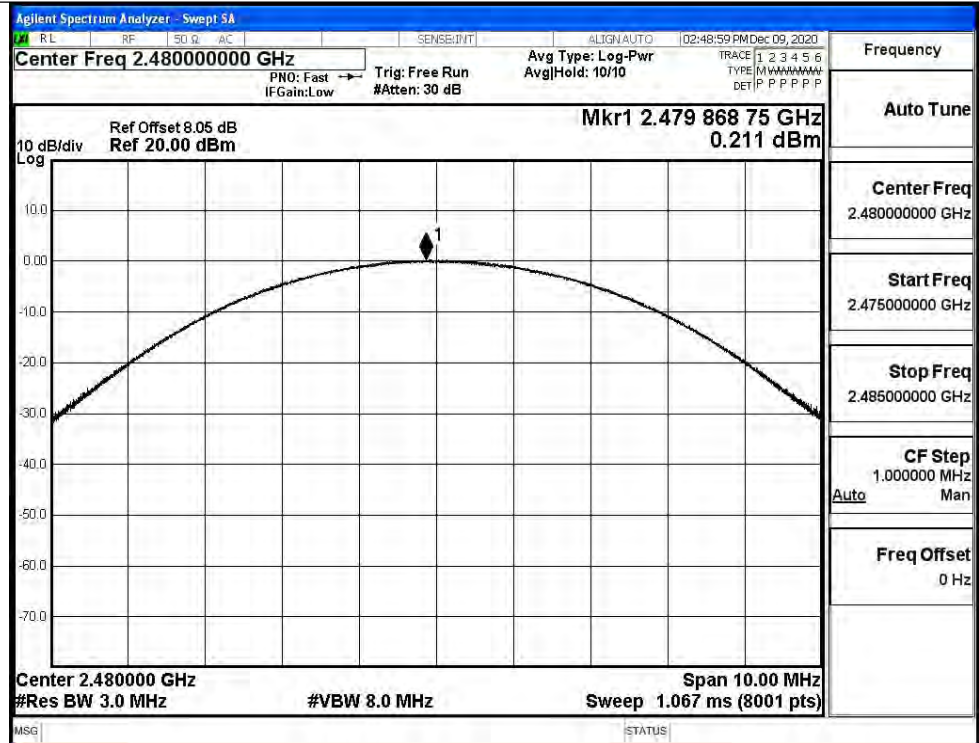
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

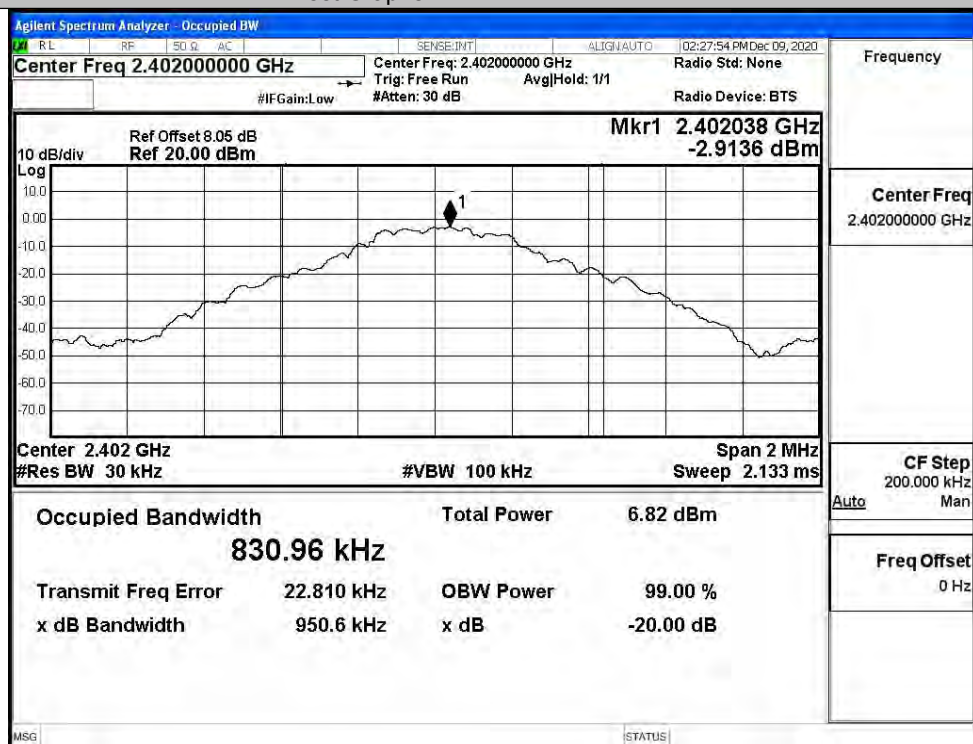


A.2 20dB Bandwidth

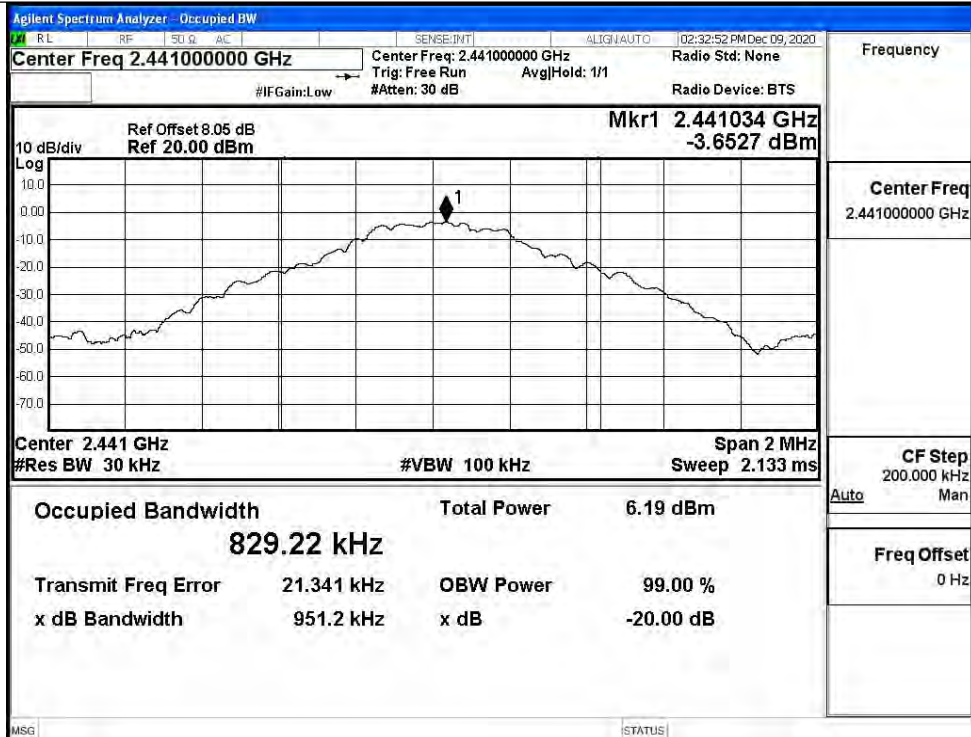
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9506	Not Specified	PASS
	MCH	0.9512	Not Specified	PASS
	HCH	0.9513	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.331	Not Specified	PASS
	MCH	1.332	Not Specified	PASS
	HCH	1.332	Not Specified	PASS
8DPSK	LCH	1.301	Not Specified	PASS
	MCH	1.301	Not Specified	PASS
	HCH	1.303	Not Specified	PASS

Test Graphs

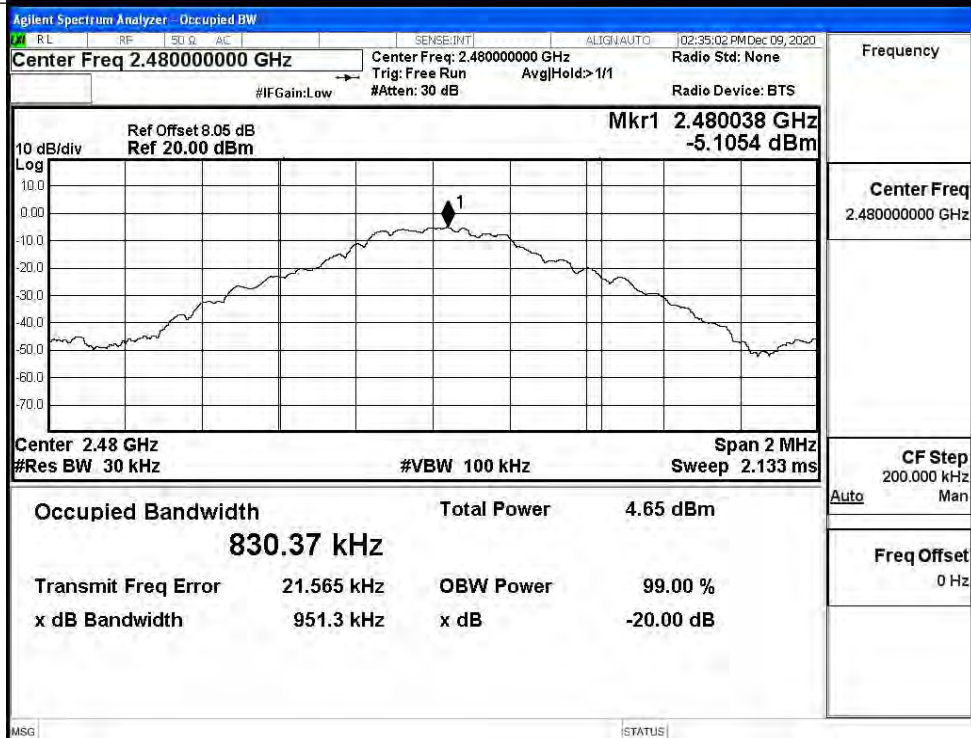
GFSK/LCH

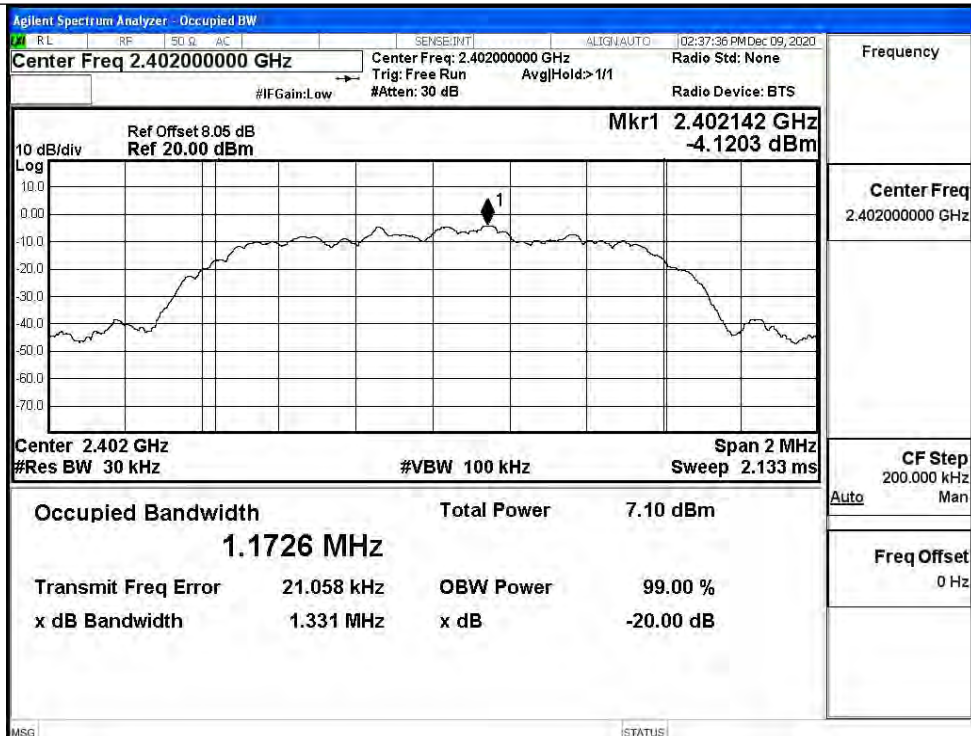
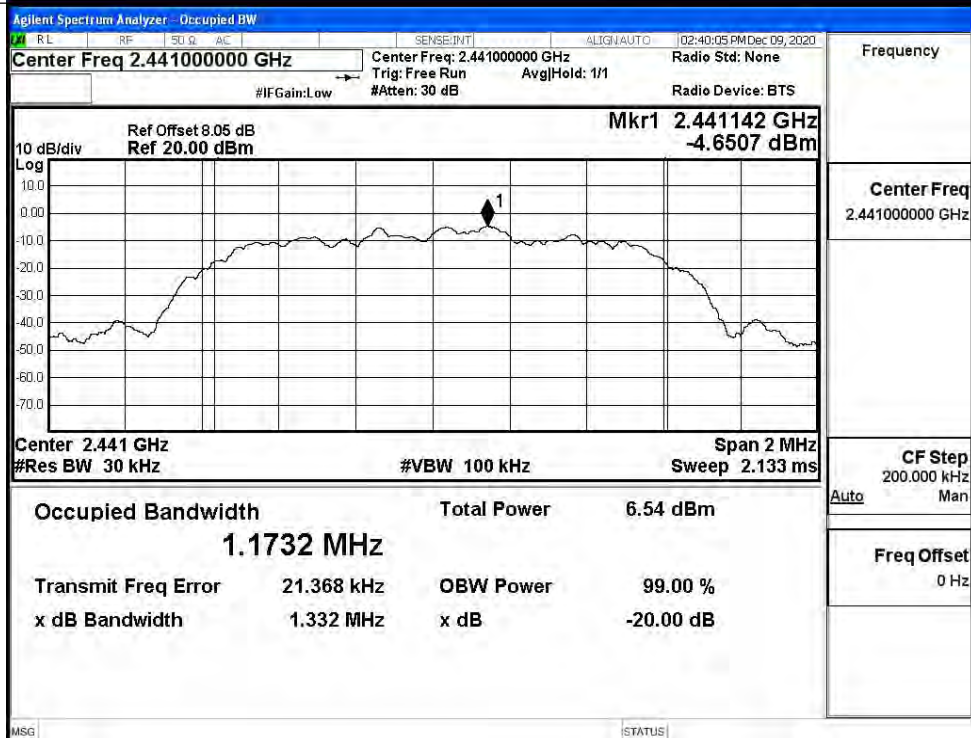


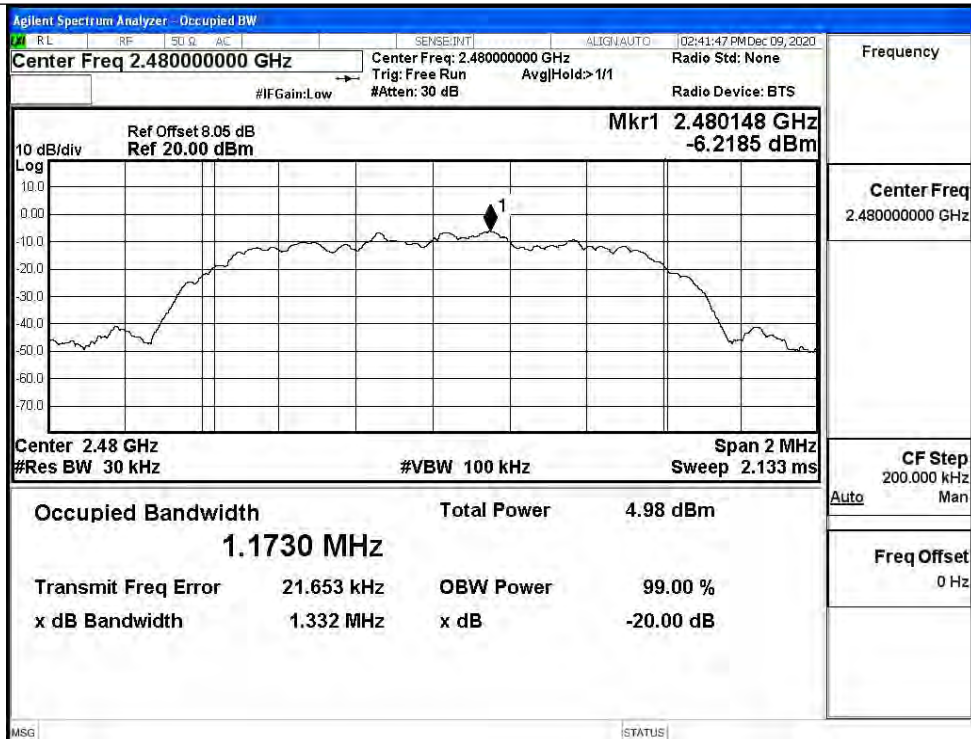
GFSK/MCH



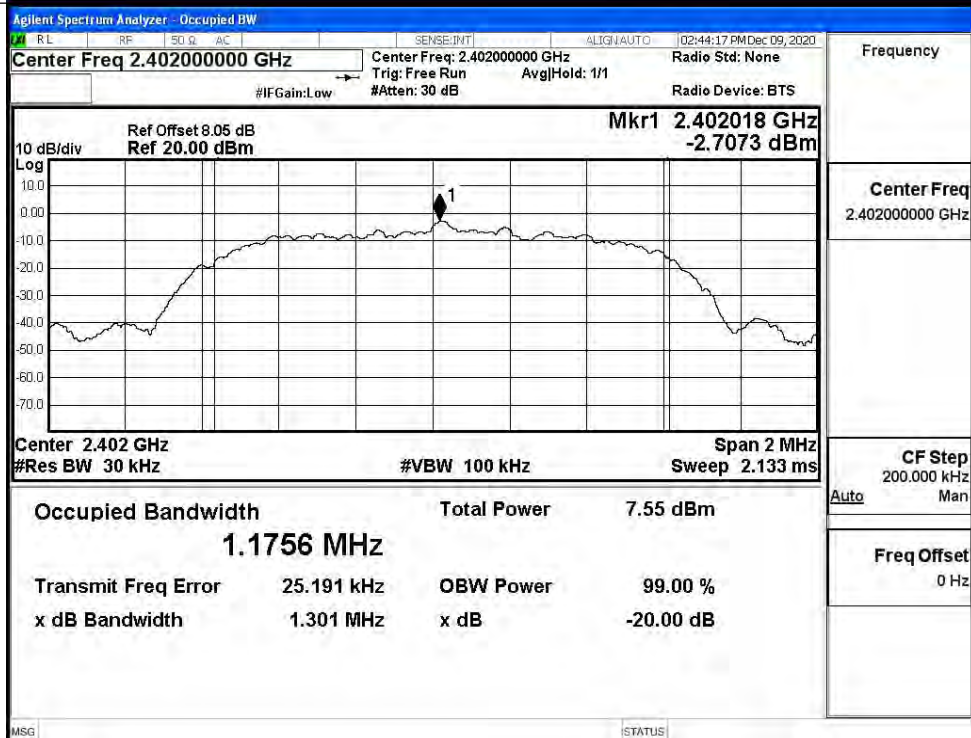
GFSK/HCH



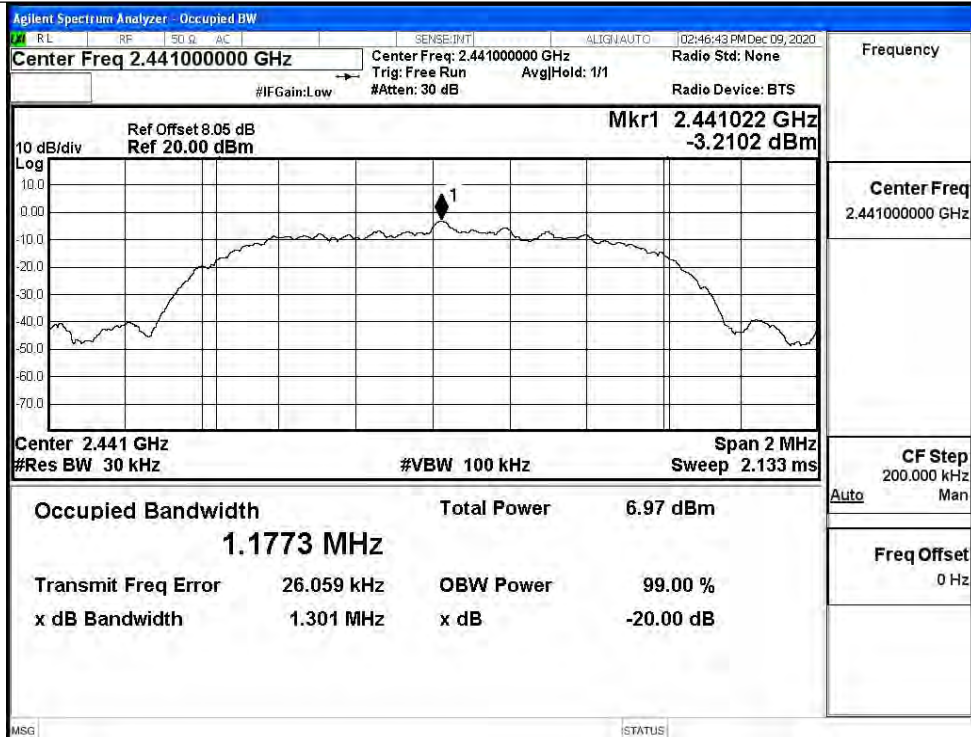
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

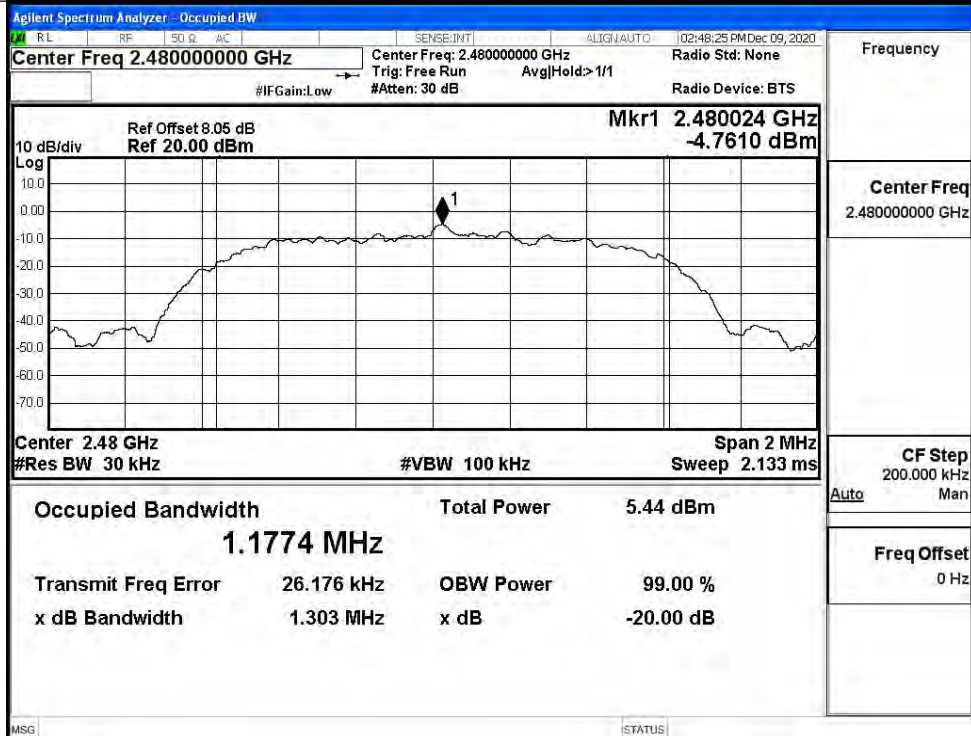
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

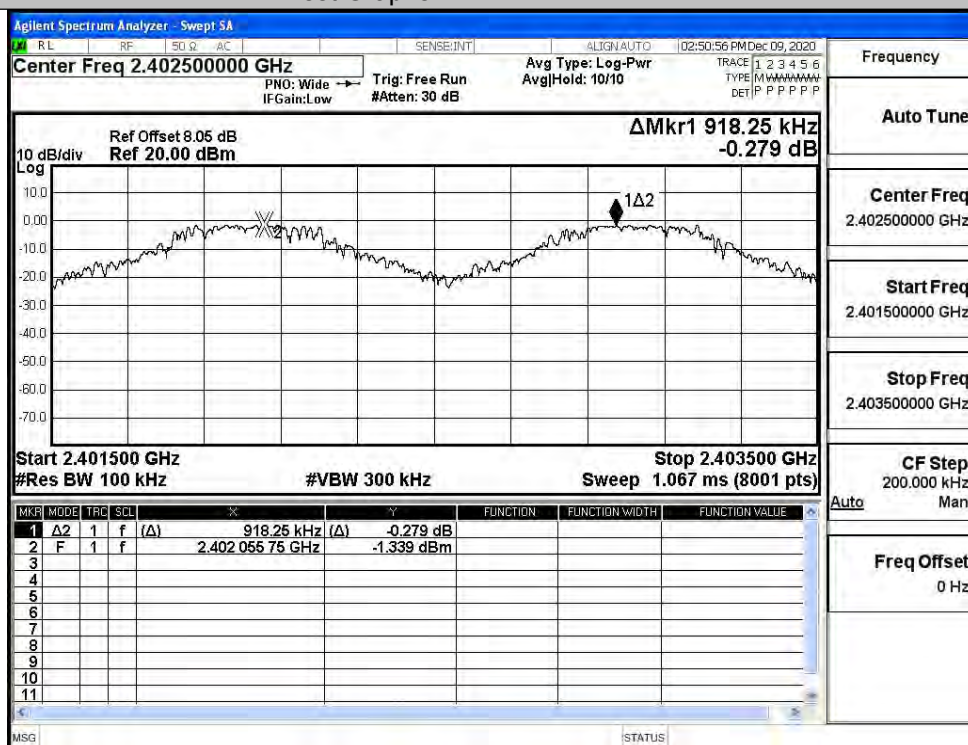


A.3 Carrier Frequency Separation

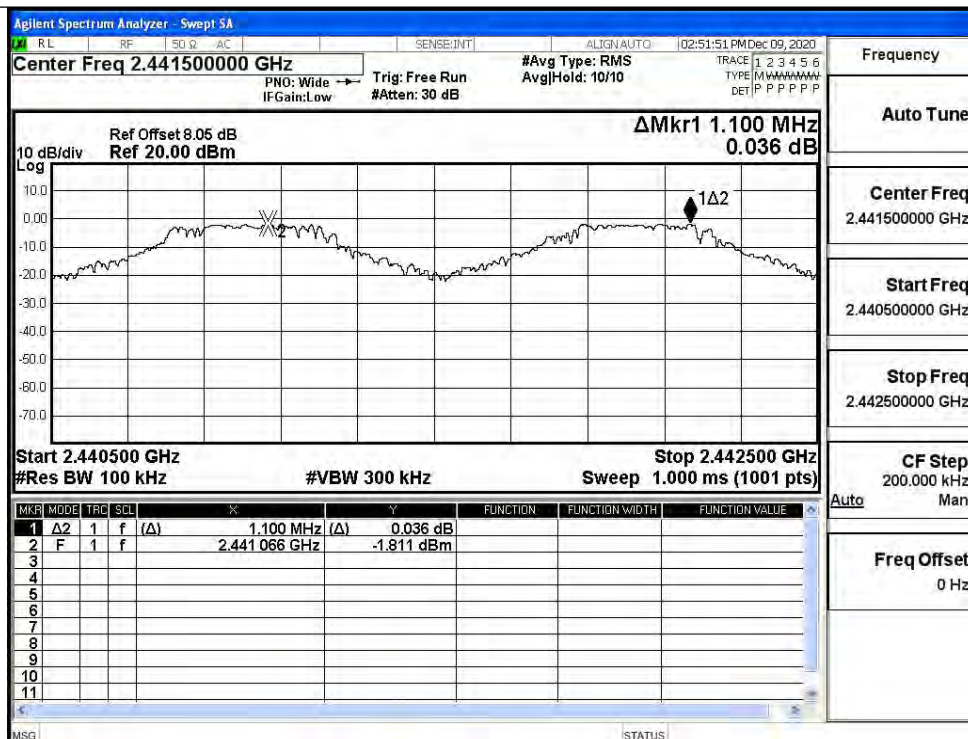
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.918	0.634	PASS
	MCH	1.100	0.634	PASS
	HCH	1.182	0.634	PASS
$\pi/4$ DQPSK	LCH	1.314	0.888	PASS
	MCH	1.016	0.888	PASS
	HCH	1.000	0.888	PASS
8DPSK	LCH	1.102	0.869	PASS
	MCH	1.080	0.869	PASS
	HCH	1.214	0.869	PASS

Test Graphs

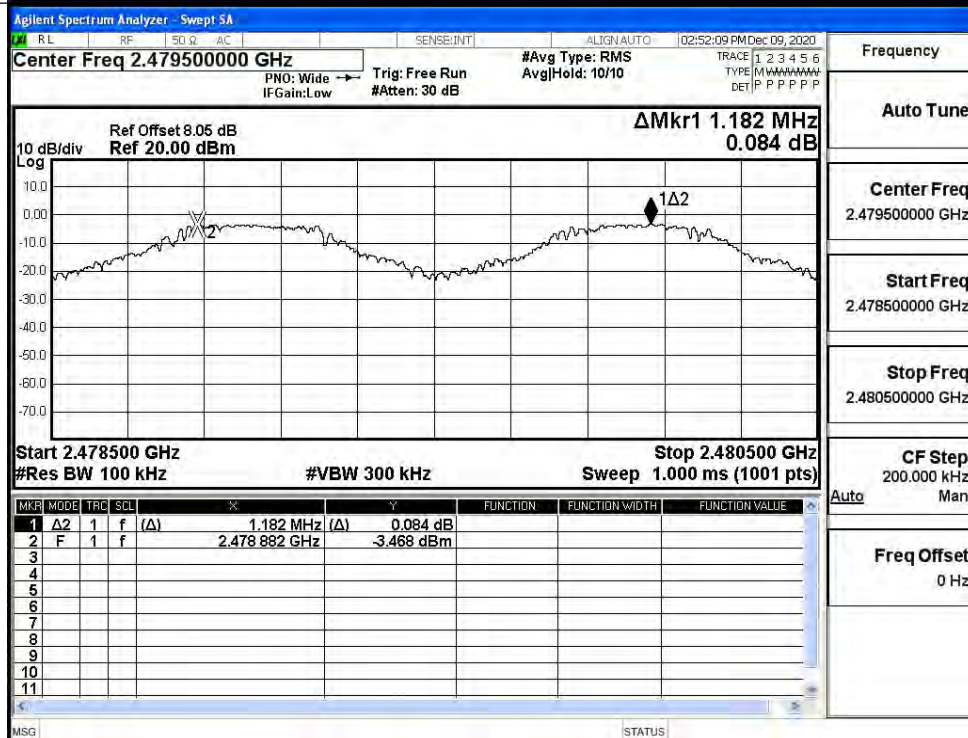
GFSK/LCH

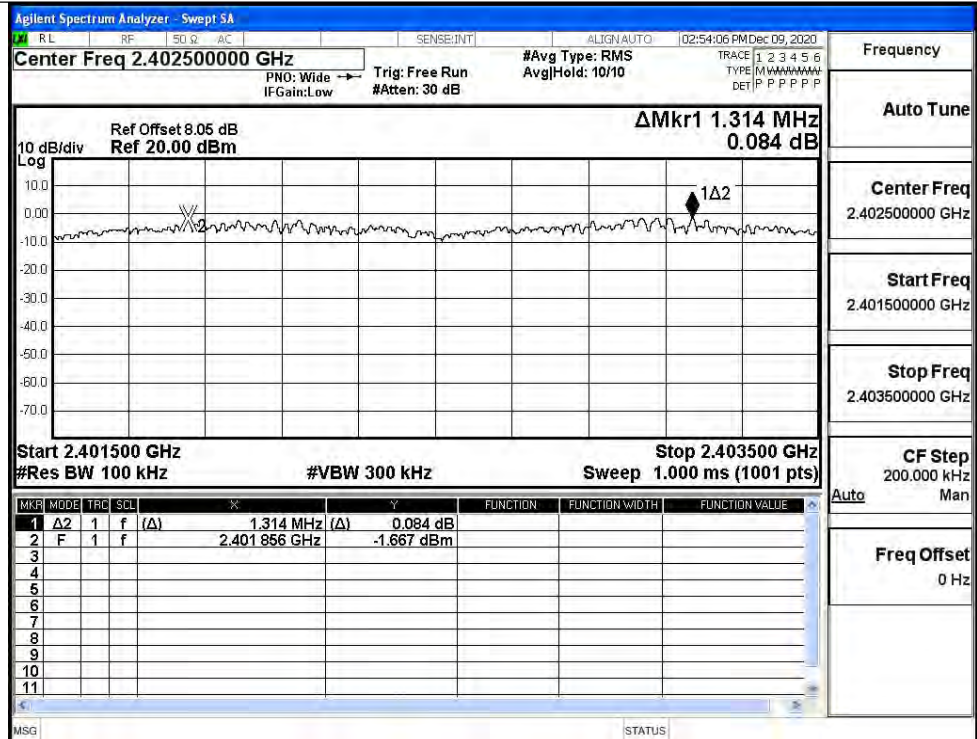
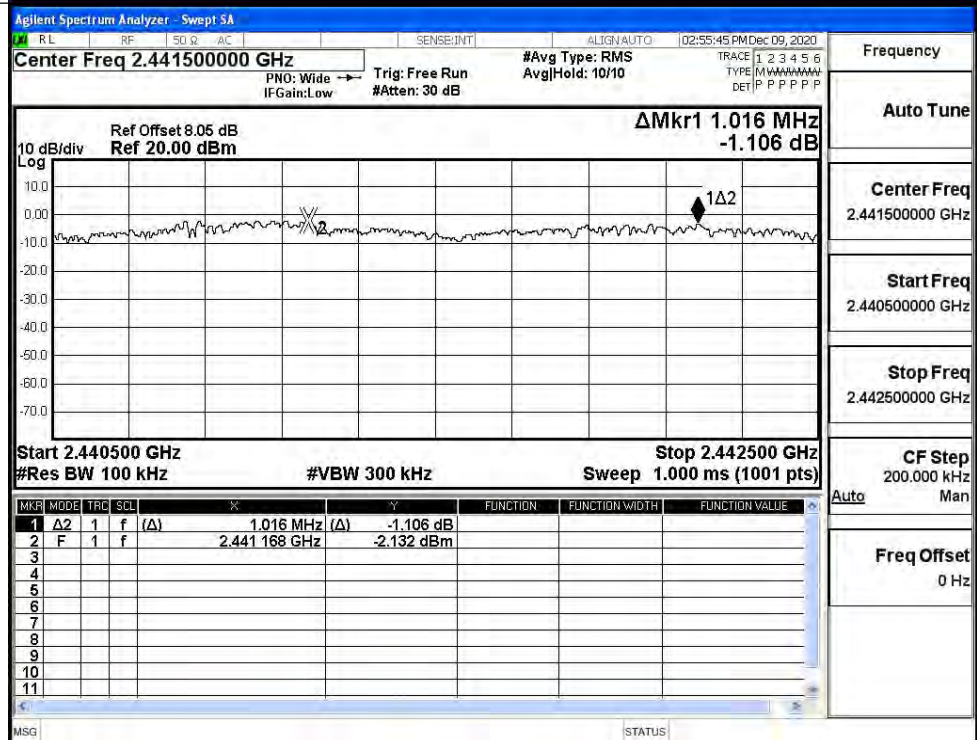


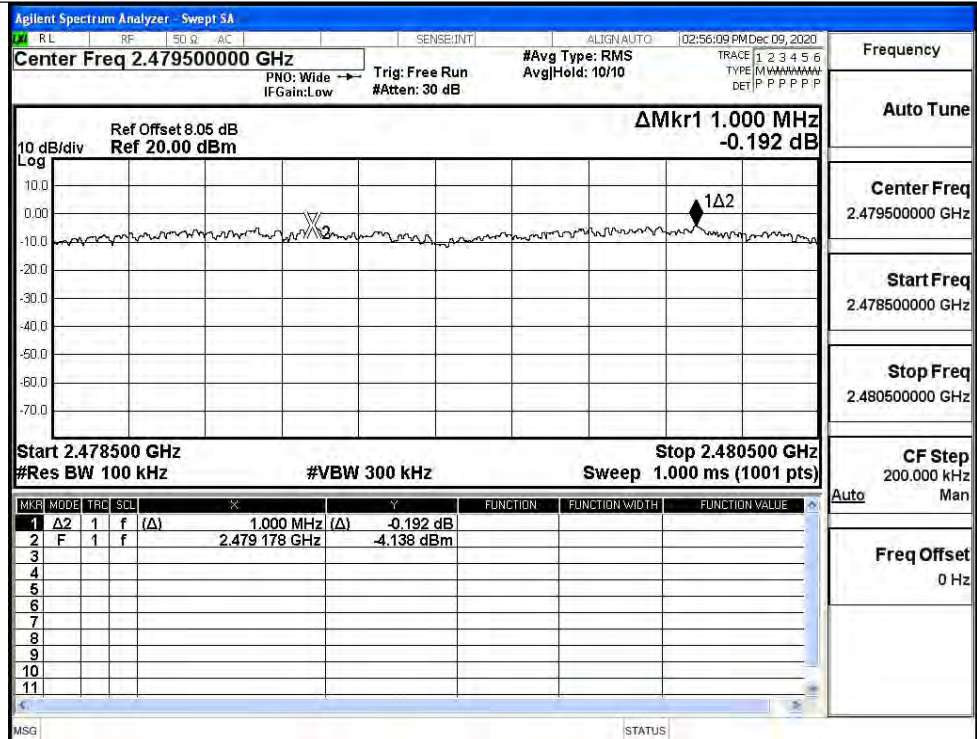
GFSK/MCH



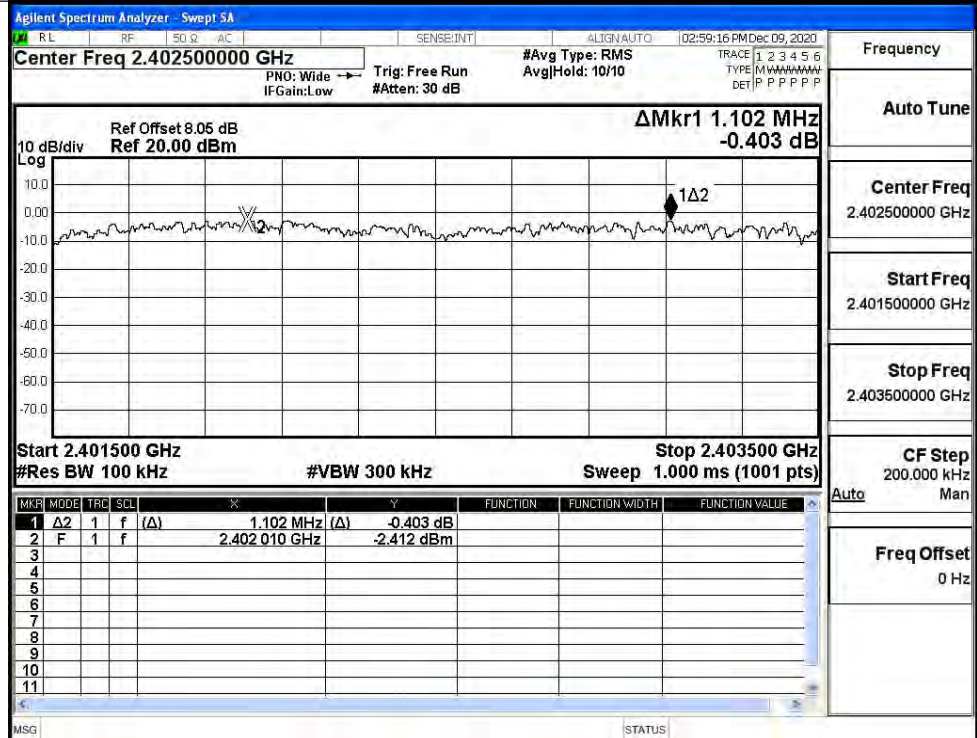
GFSK/HCH



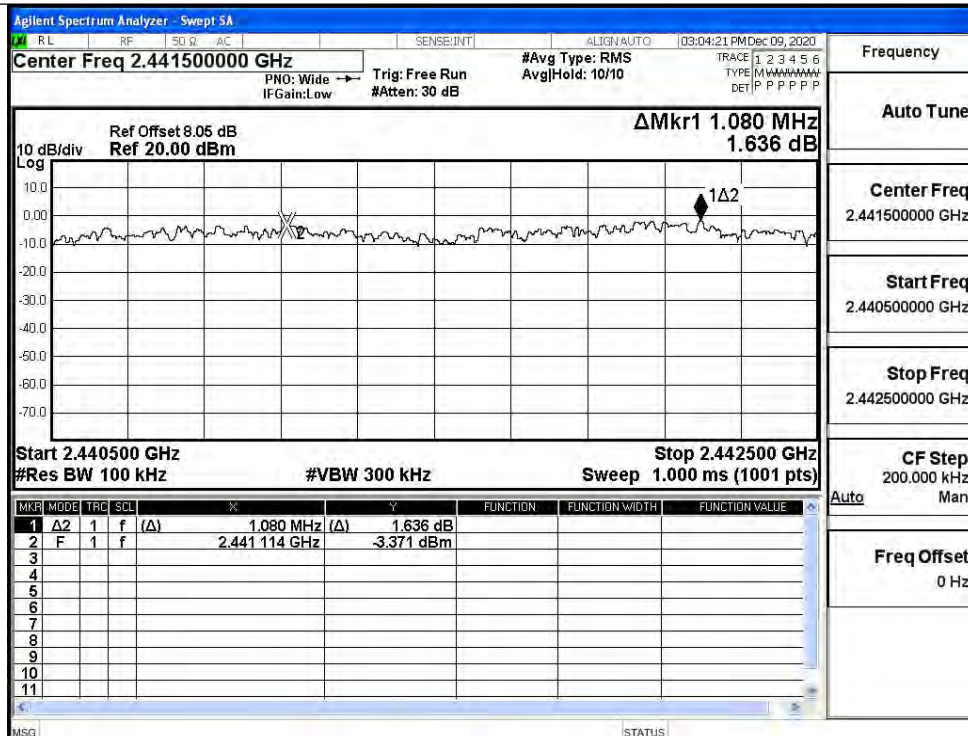
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

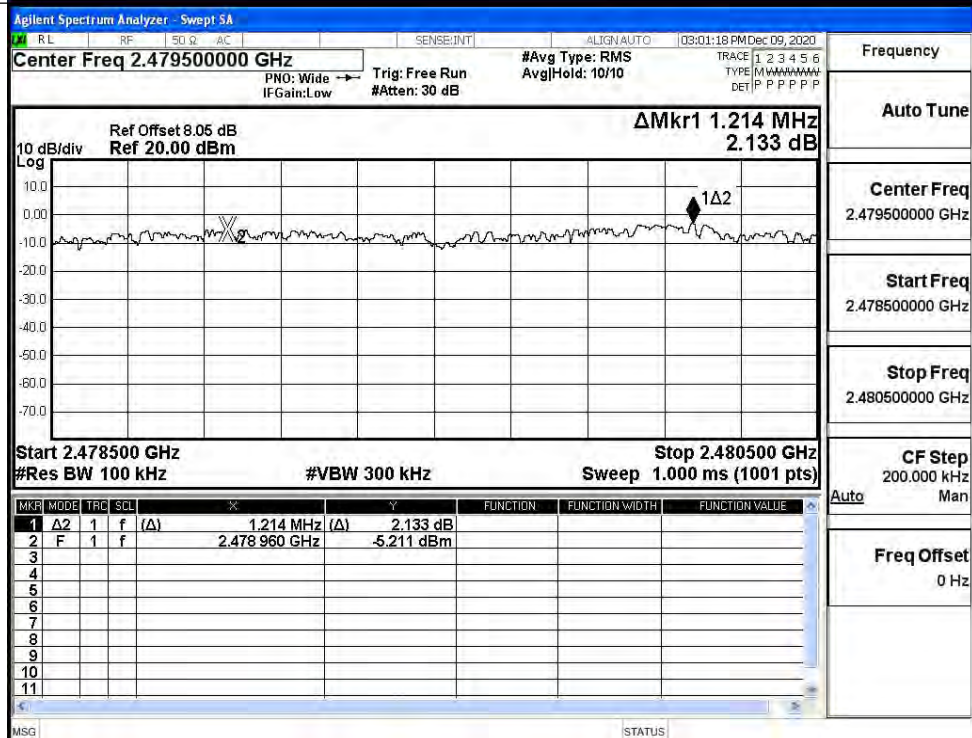
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

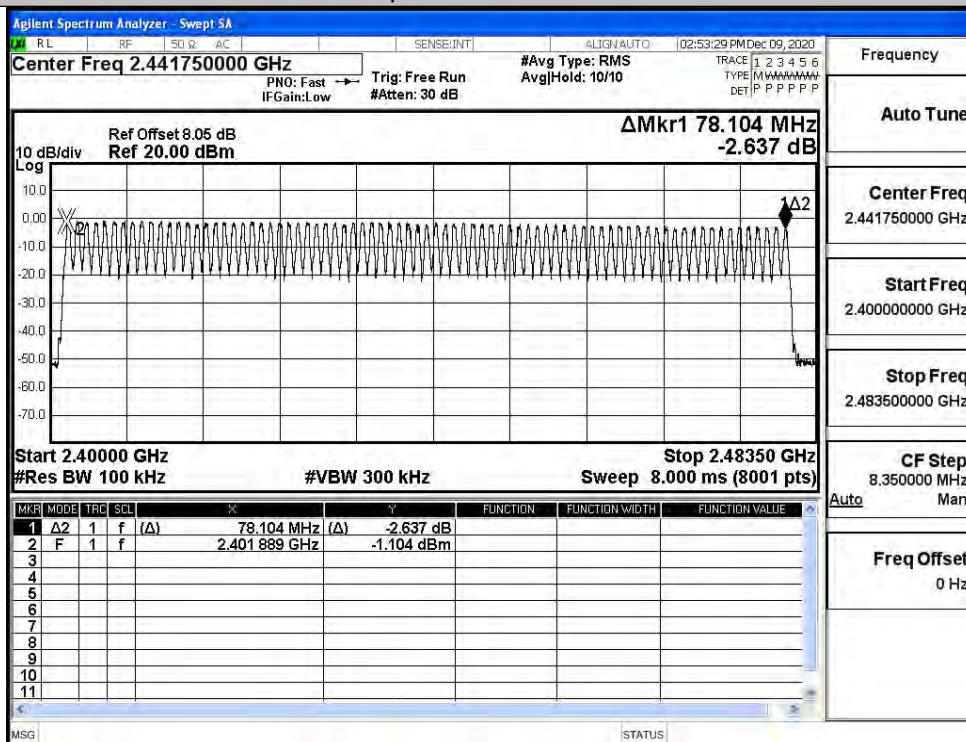
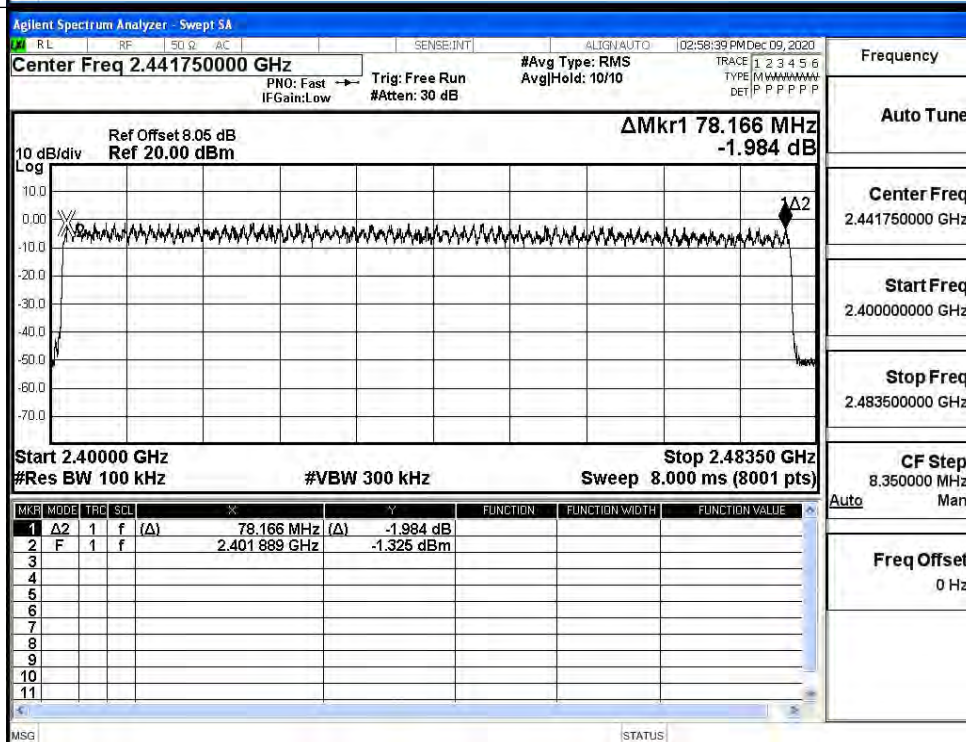


A.4 Hopping Channel Number

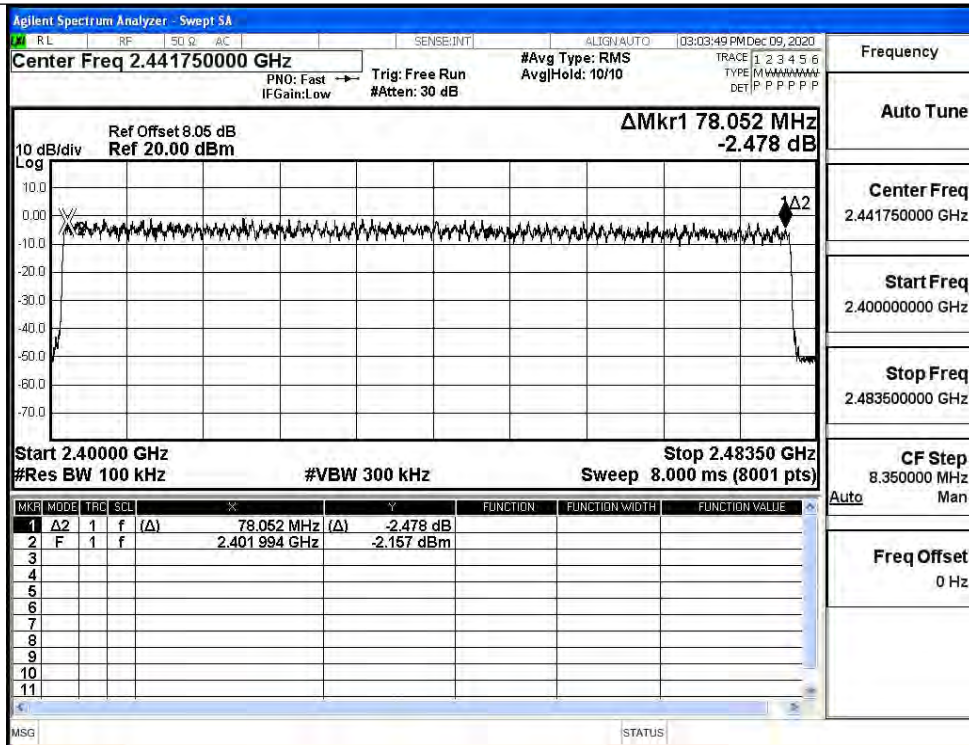
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

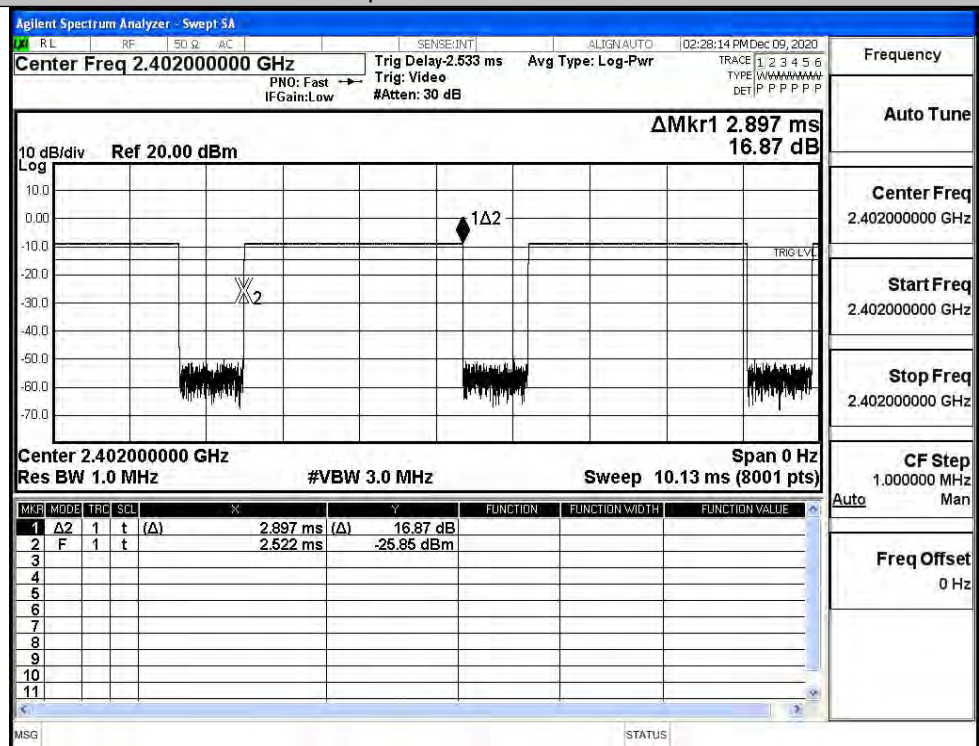


A.5 Dwell Time

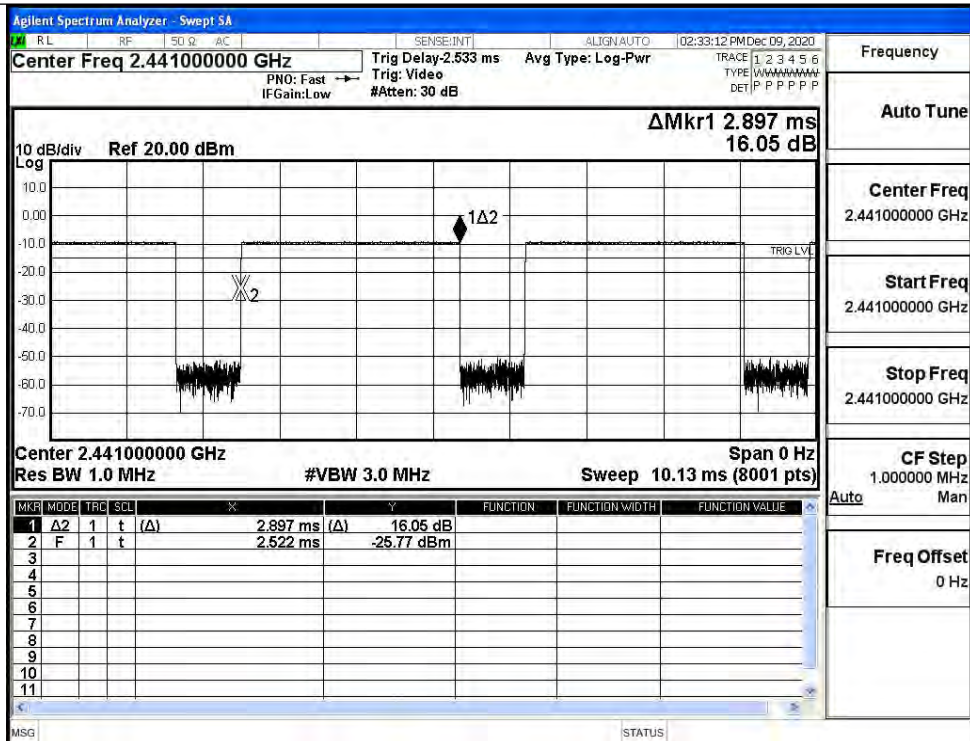
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.9	106.7	0.309	0.4	PASS
	DH5	MCH	2.9	106.7	0.309	0.4	PASS
	DH5	HCH	2.9	106.7	0.309	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.9	106.7	0.309	0.4	PASS
	2DH5	MCH	2.9	106.7	0.309	0.4	PASS
	2DH5	HCH	2.9	106.7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

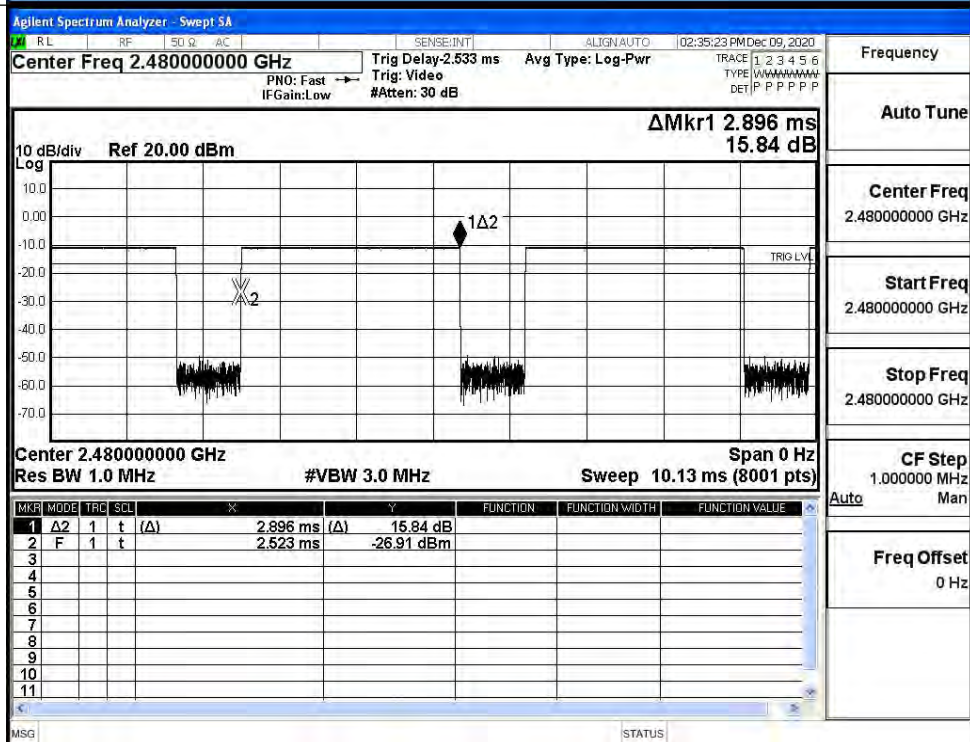
GFSK_DH5/LCH



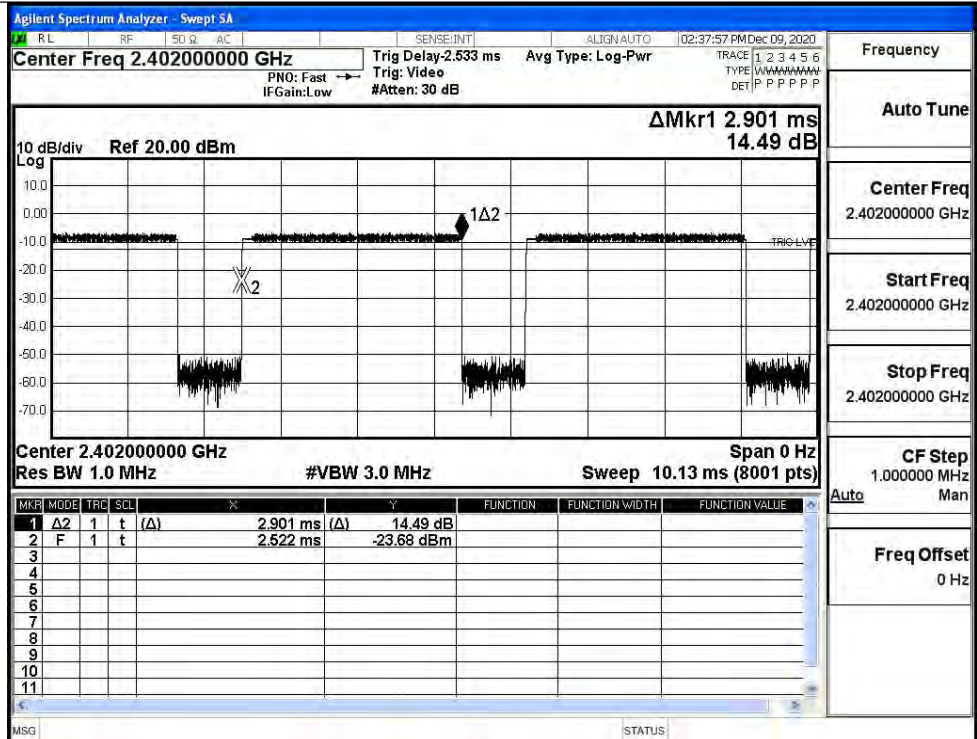
GFSK_DH5/MCH



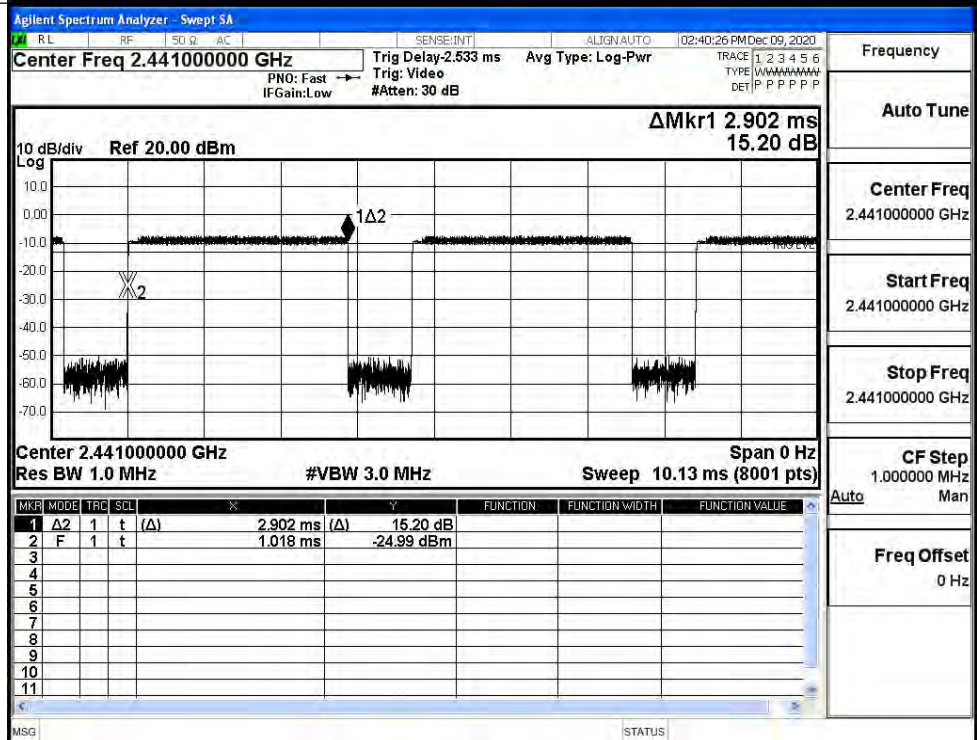
GFSK_DH5/HCH



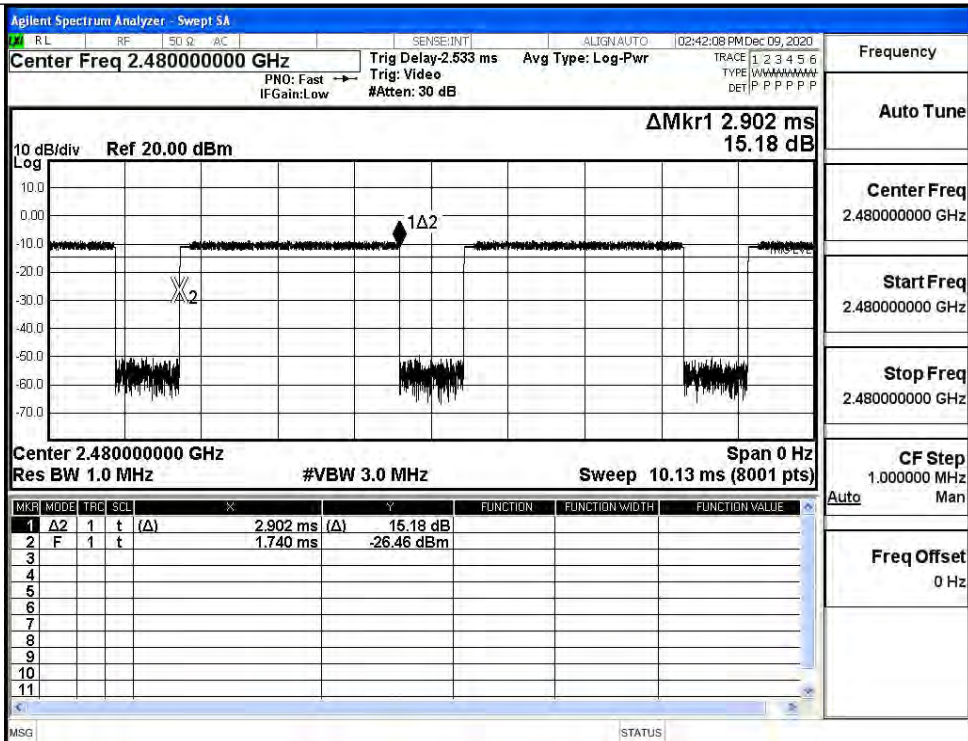
$\pi/4$ DQPSK
_2DH5/LCH



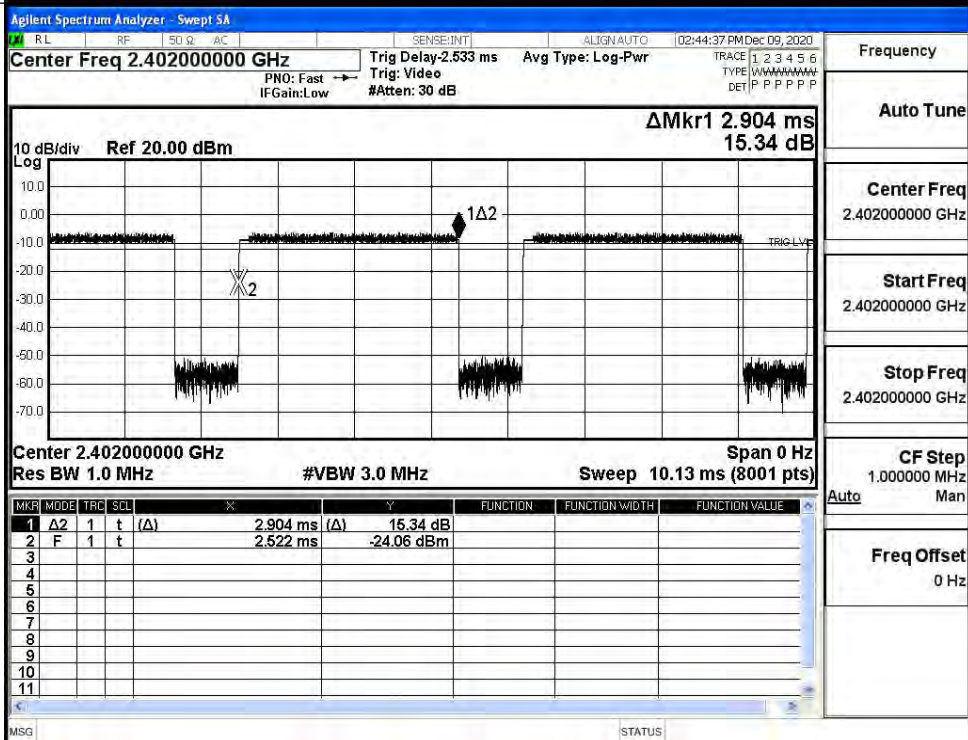
$\pi/4$ DQPSK
_2DH5/MCH



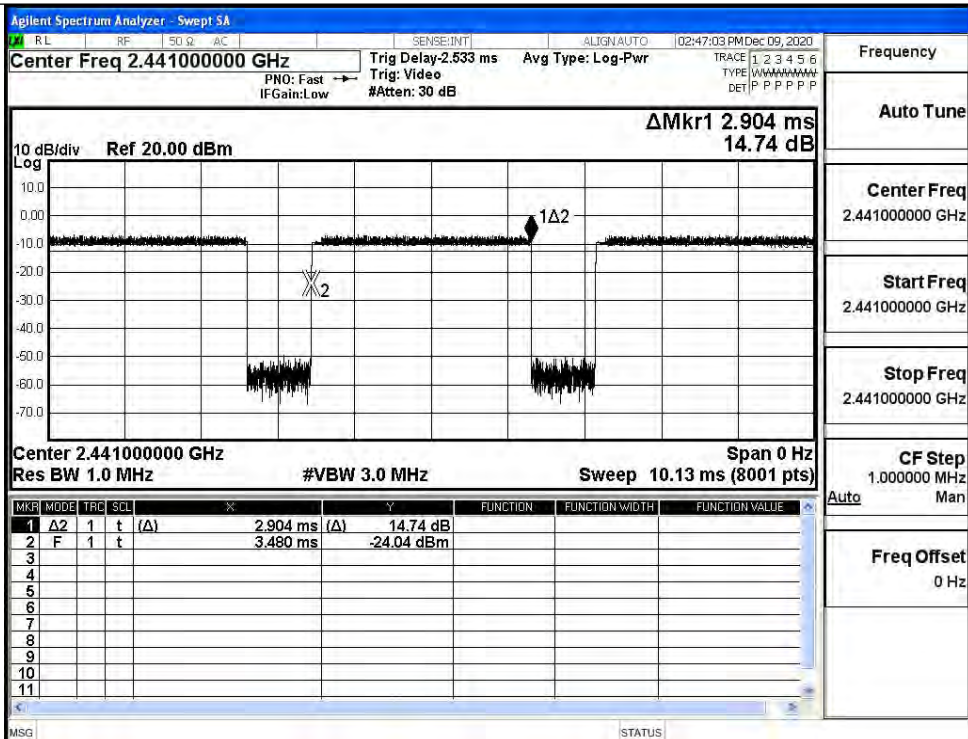
$\pi/4$ DQPSK
_2DH5/HCH



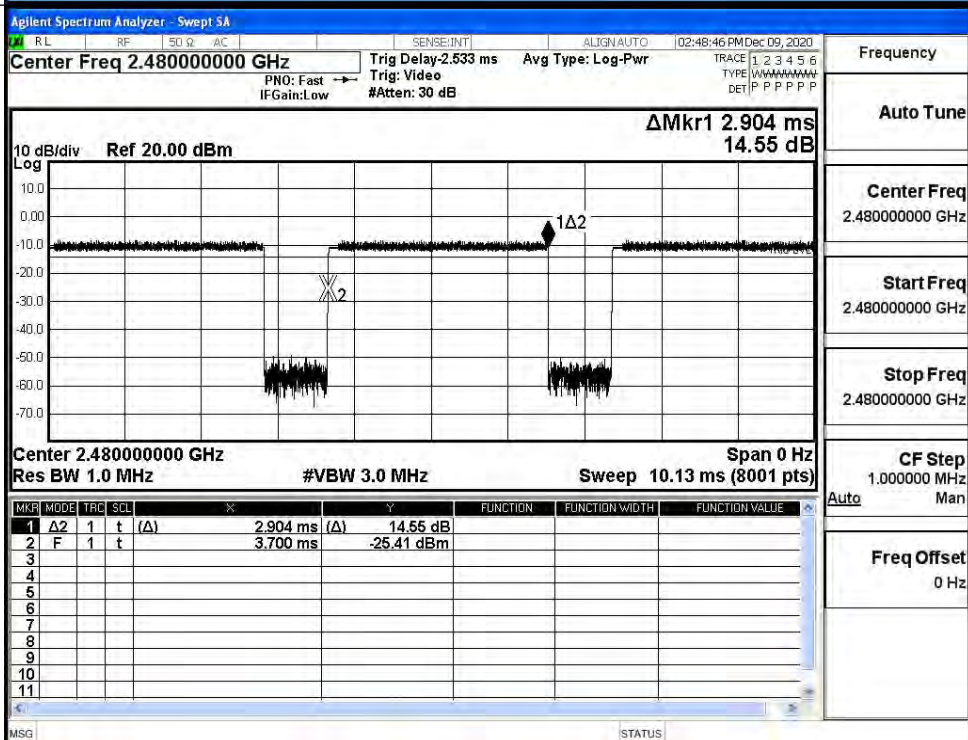
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

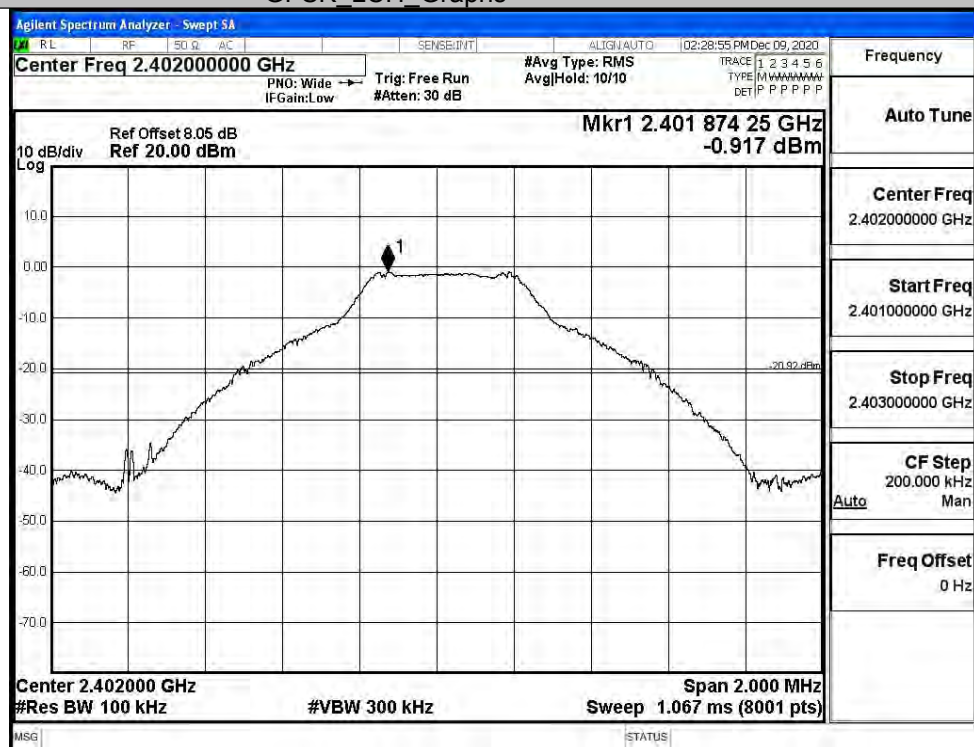


A.6 RF Conducted Spurious Emissions

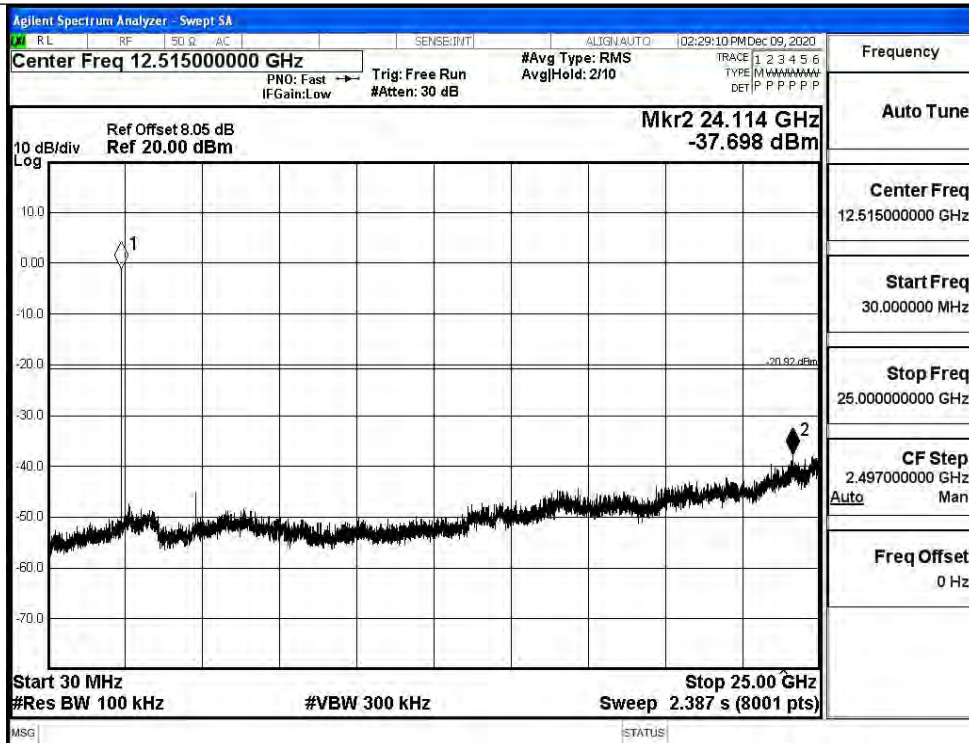
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.917	-37.698	-20.917	PASS
	MCH	-1.349	-37.401	-21.349	PASS
	HCH	-3.021	-37.162	-23.021	PASS
$\pi/4$ DQPSK	LCH	-0.936	-37.726	-20.936	PASS
	MCH	-2.07	-37.896	-22.070	PASS
	HCH	-3.541	-36.951	-23.541	PASS
8DPSK	LCH	-0.762	-38.328	-20.762	PASS
	MCH	-1.242	-38.420	-21.242	PASS
	HCH	-3.052	-37.452	-23.052	PASS

GFSK LCH Graphs

Pref

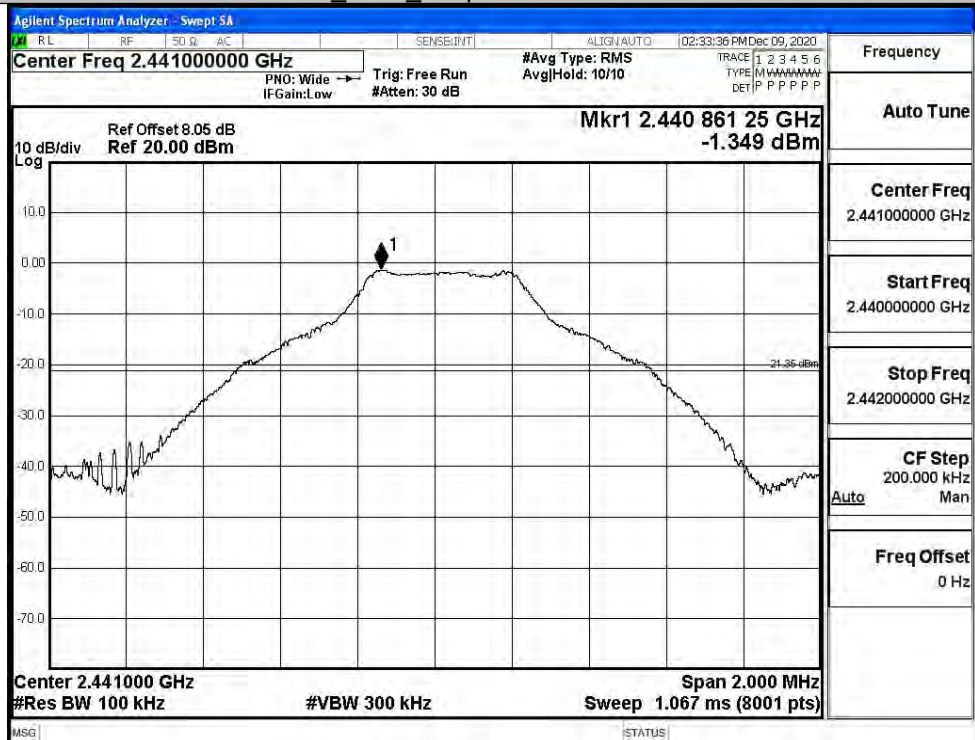


Puw

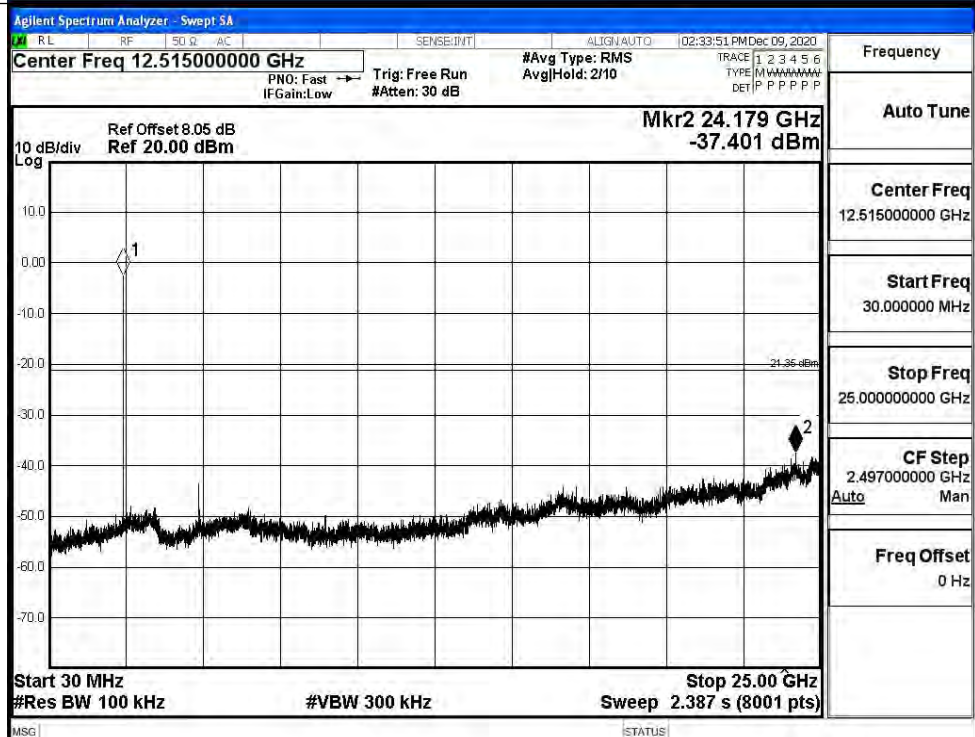


GFSK_MCH_Graphs

Pref

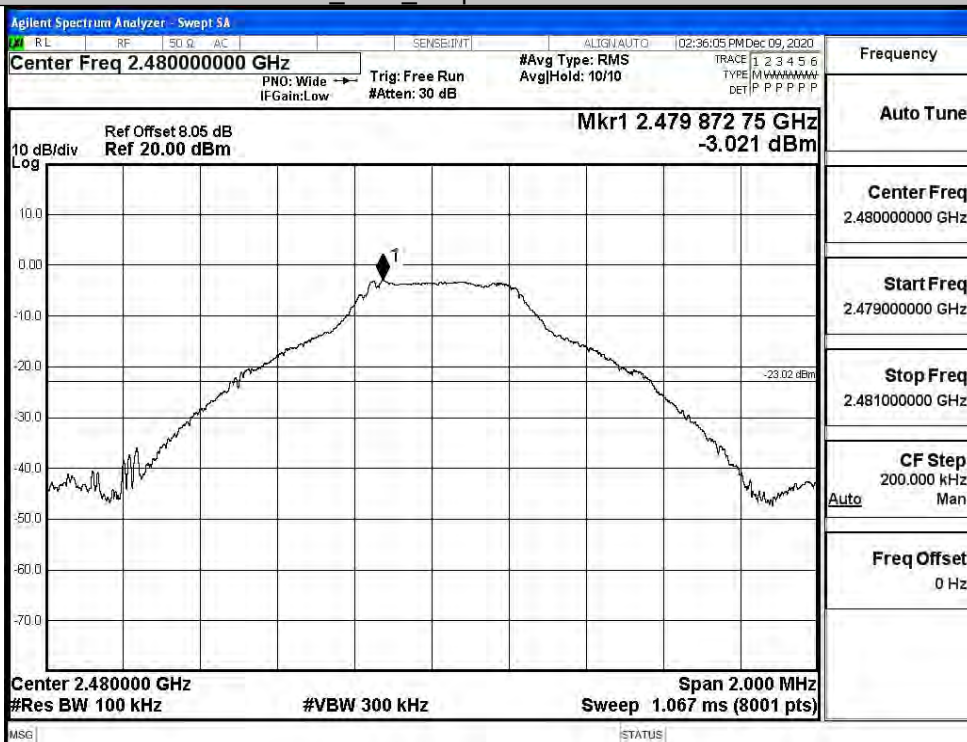


Puw

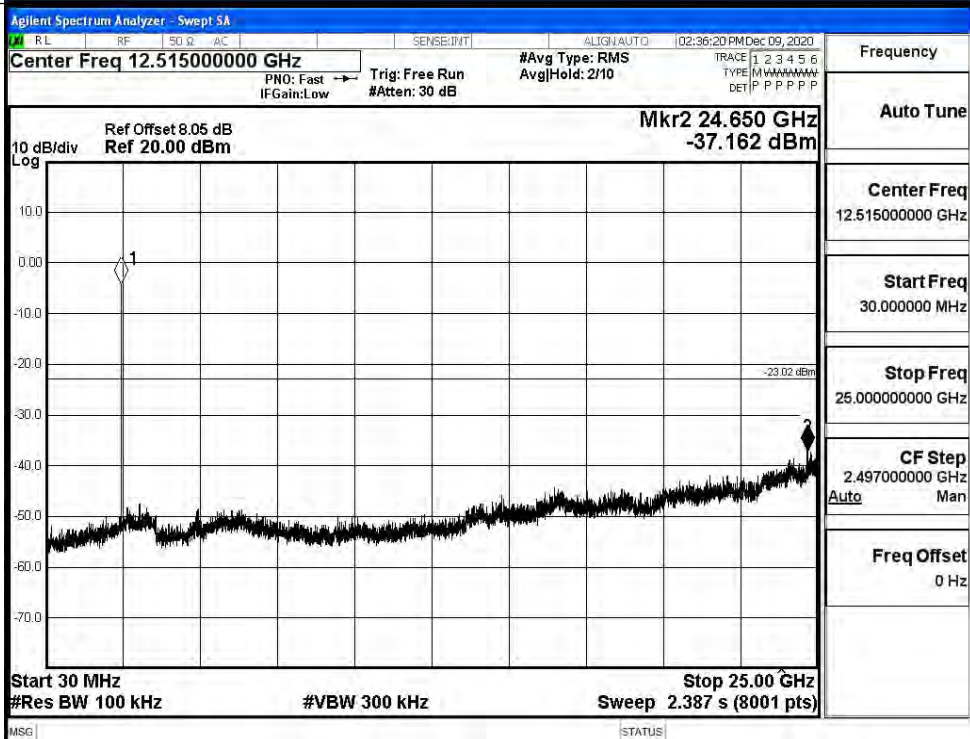


GFSK_HCH_Graphs

Pref

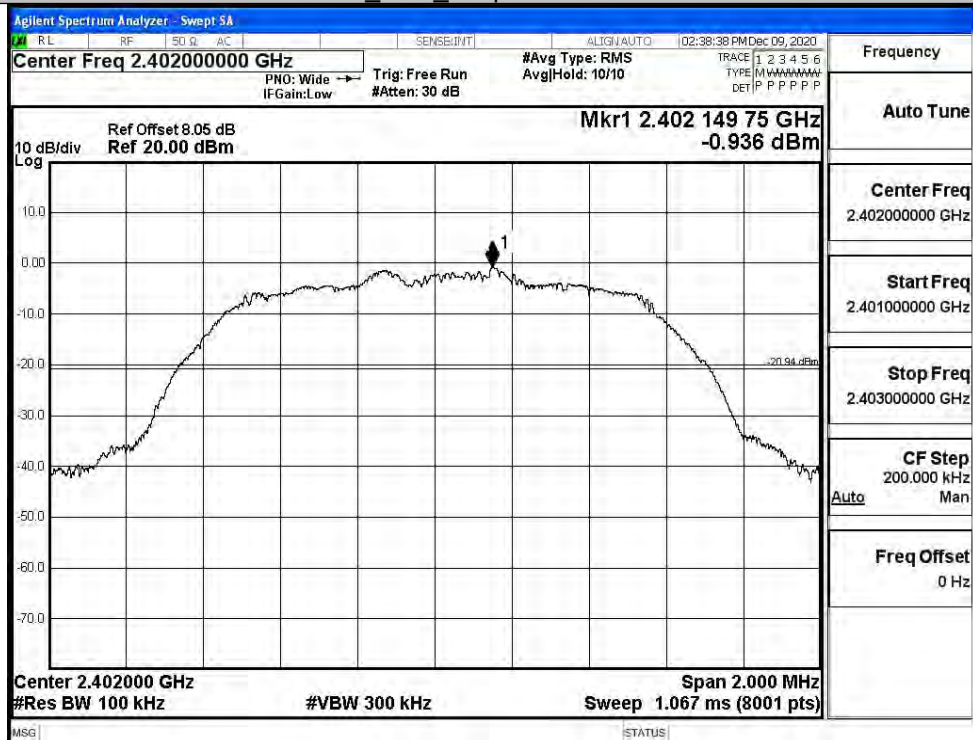


Puw

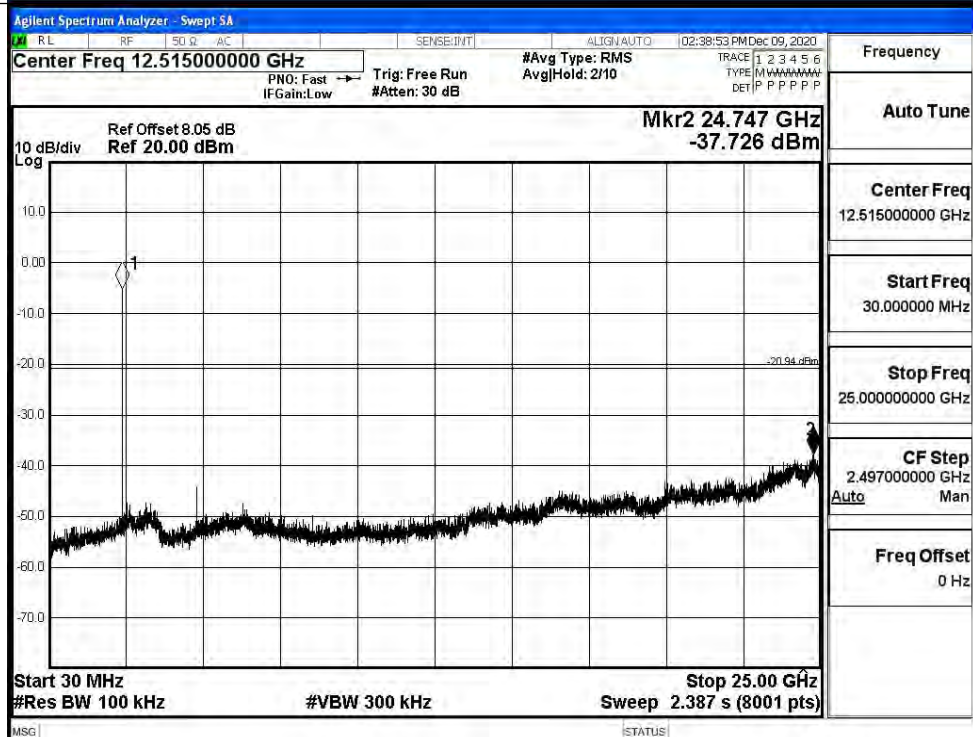


$\pi/4$ DQPSK_LCH_Graphs

Pref

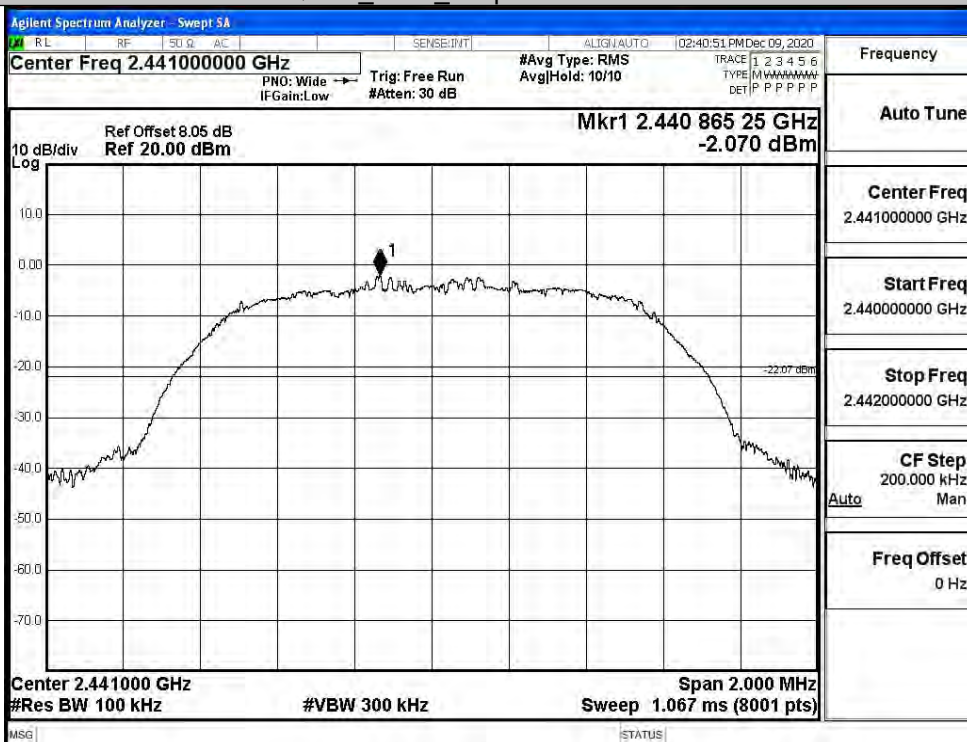


Puw



π /4DQPSK_MCH_Graphs

Pref

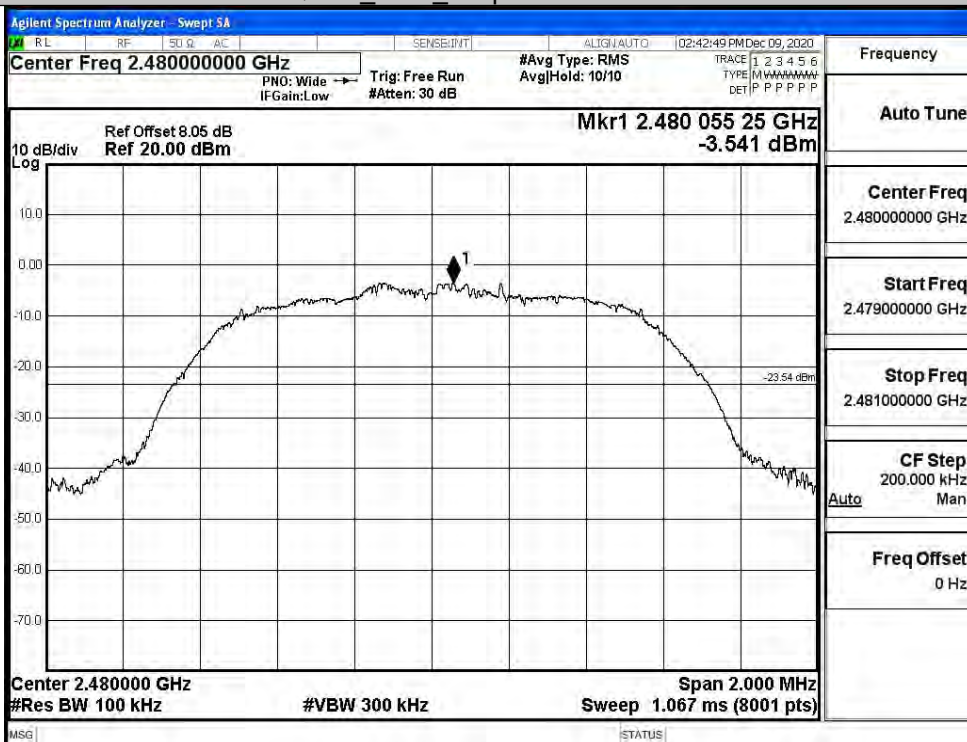


Puw

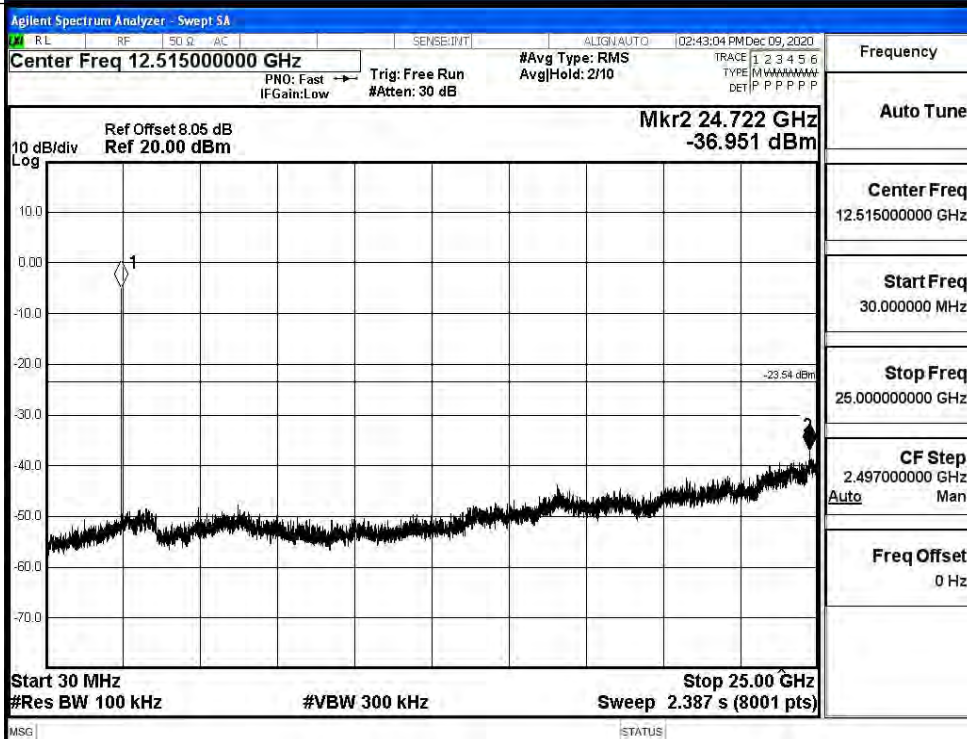


π /4DQPSK_HCH_Graphs

Pref

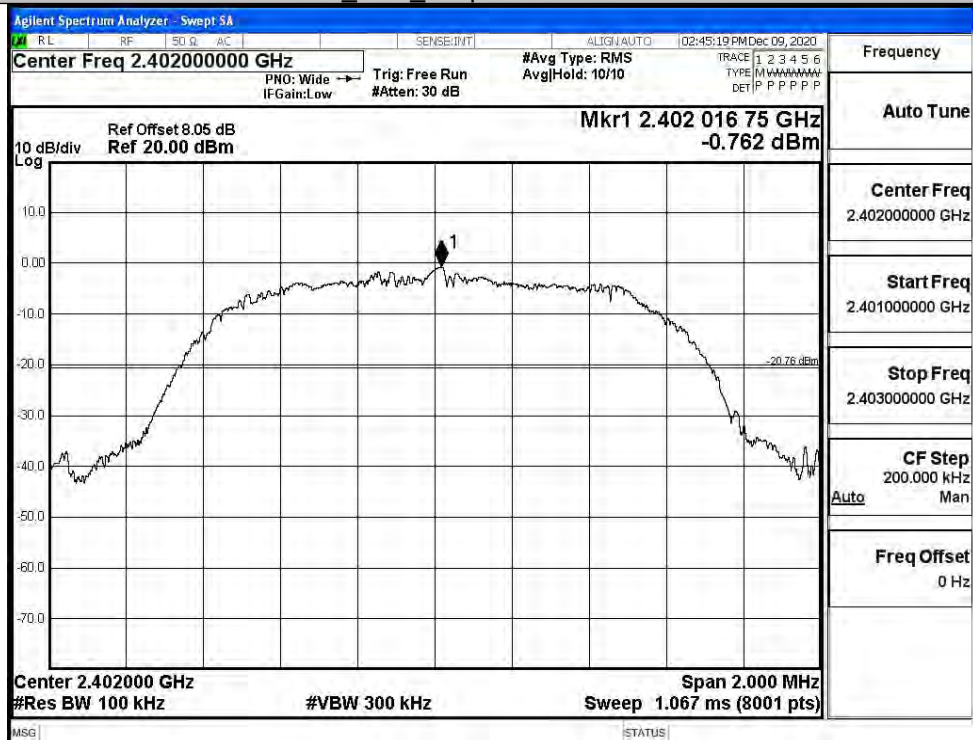


Puw

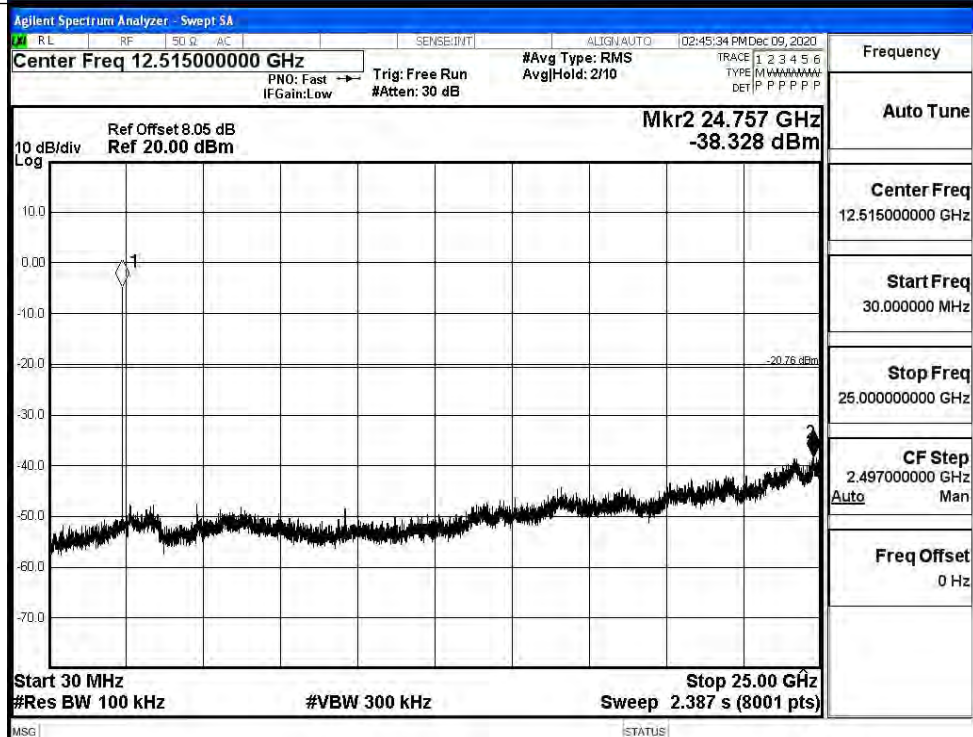


8DPSK_LCH_Graphs

Pref

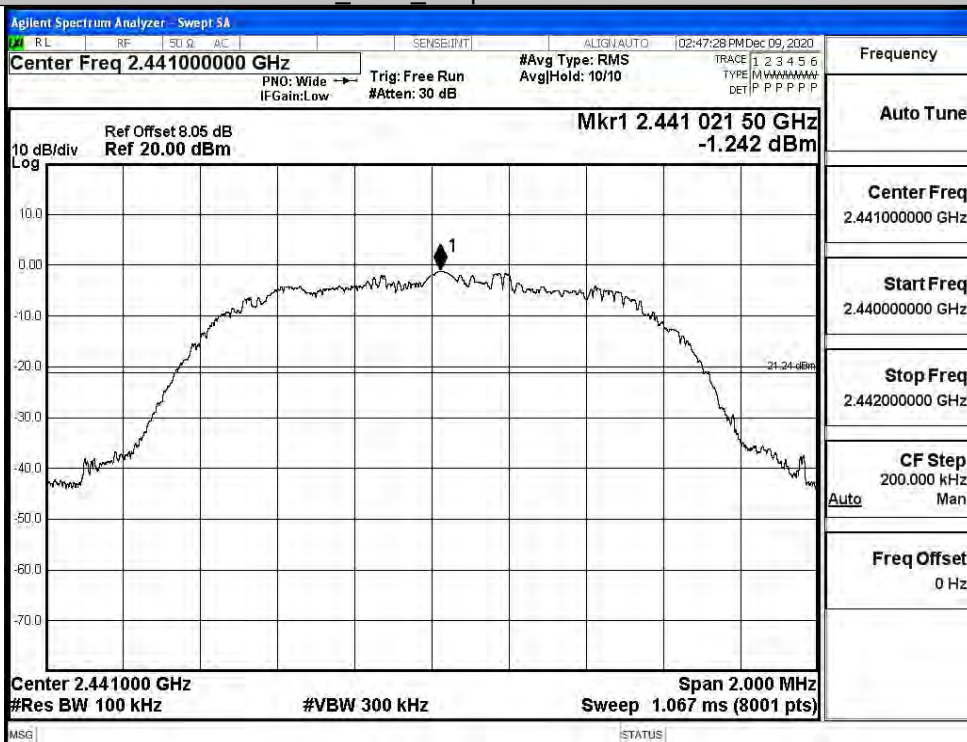


Puw



8DPSK_MCH_Graphs

Pref

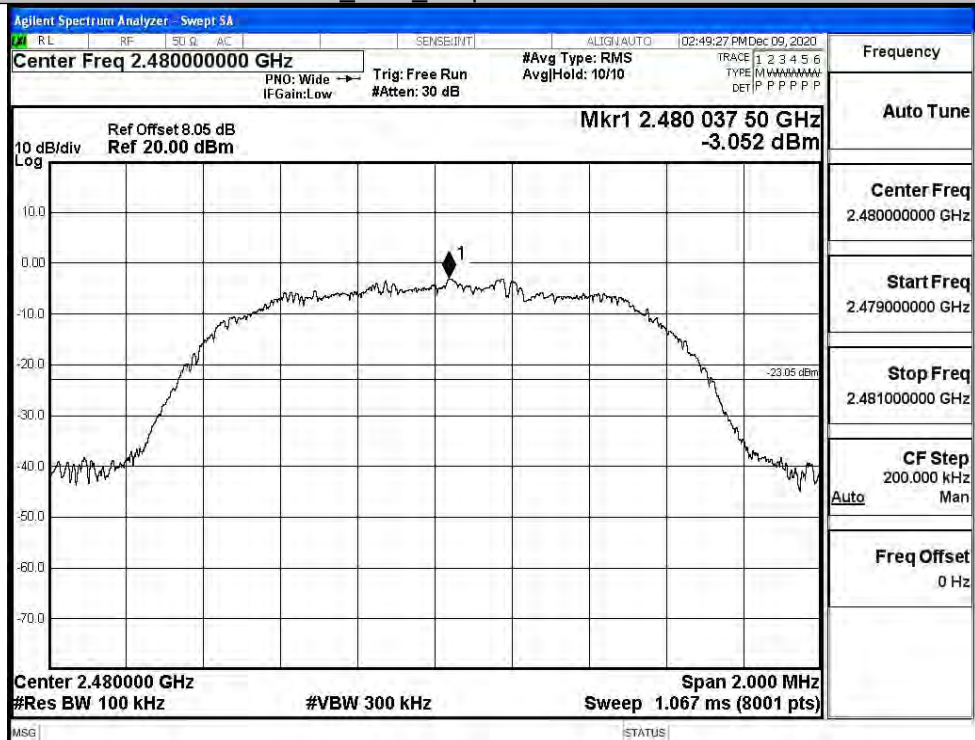


Puw

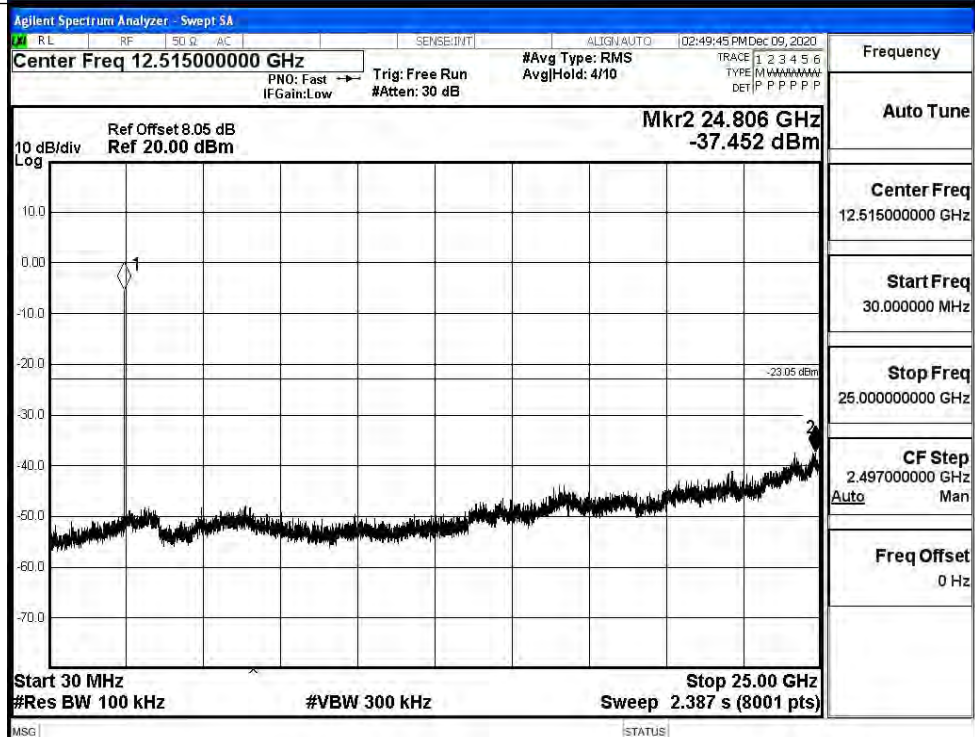


8DPSK_HCH_Graphs

Pref



Puw

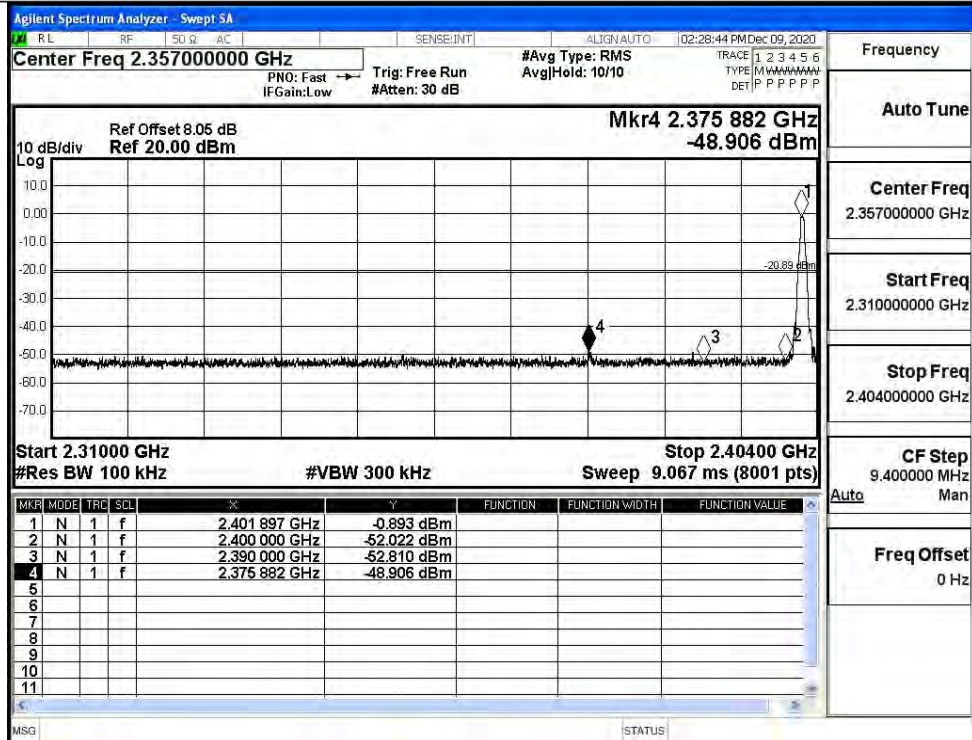


A.7 Band-edge for RF Conducted Emissions

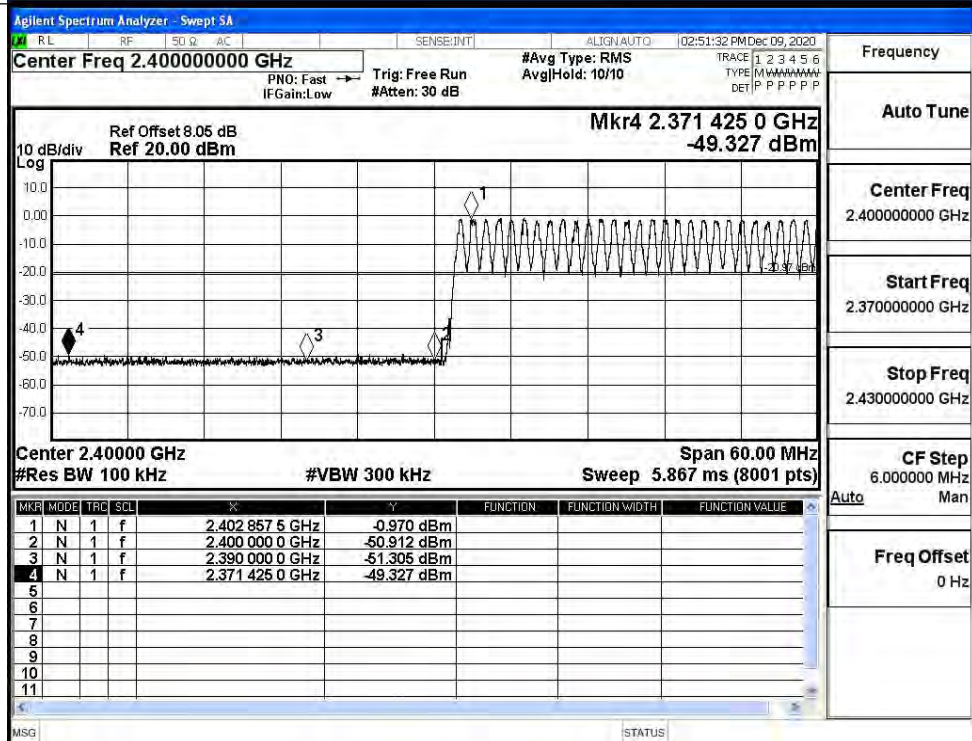
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.893	Off	-48.906	-20.89	PASS
			-0.970	On	-49.327	-20.97	PASS
	HCH	2480	-2.959	Off	-47.841	-22.96	PASS
			-2.141	On	-48.528	-22.14	PASS
$\pi/4$ DQPSK	LCH	2402	-0.907	Off	-49.772	-20.91	PASS
			-0.936	On	-48.459	-20.94	PASS
	HCH	2480	-3.062	Off	-49.398	-23.06	PASS
			-2.158	On	-48.358	-22.16	PASS
8DPSK	LCH	2402	-1.288	Off	-49.809	-21.29	PASS
			-0.691	On	-48.941	-20.69	PASS
	HCH	2480	-2.966	Off	-48.542	-22.97	PASS
			-1.801	On	-48.609	-21.80	PASS

Test Graphs

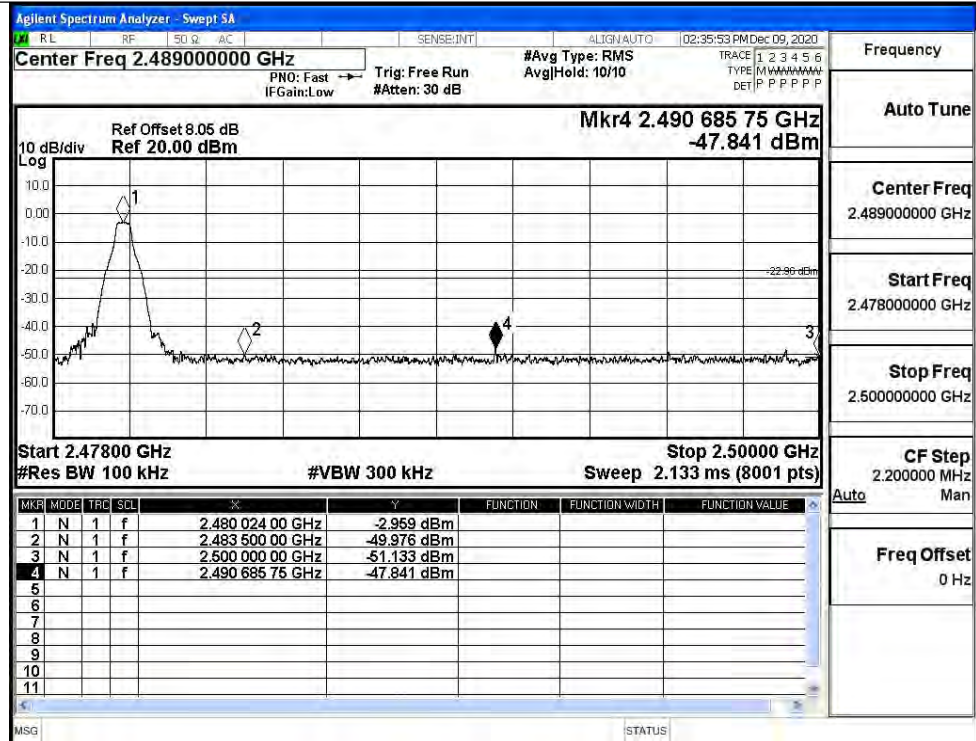
GFSK/LCH/No Hop



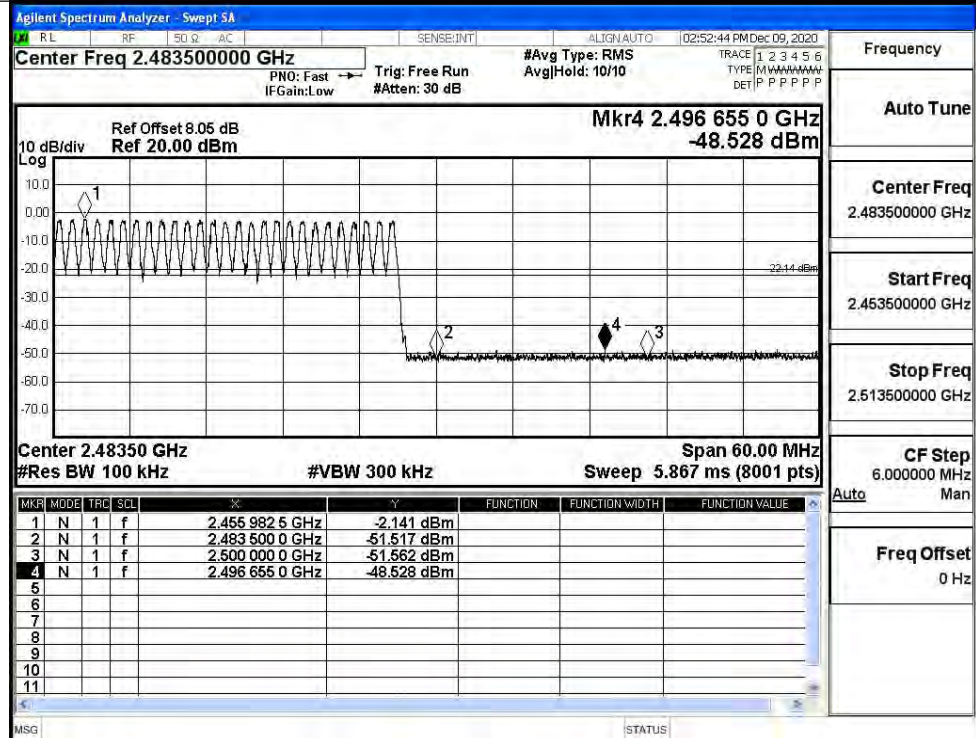
GFSK/LCH/Hop



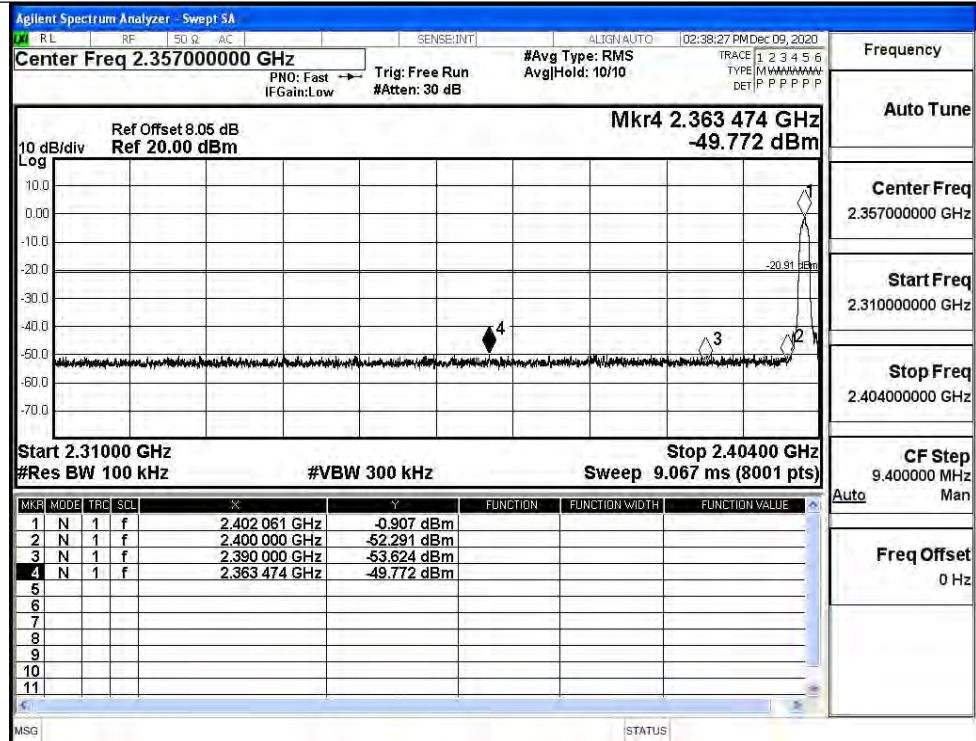
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

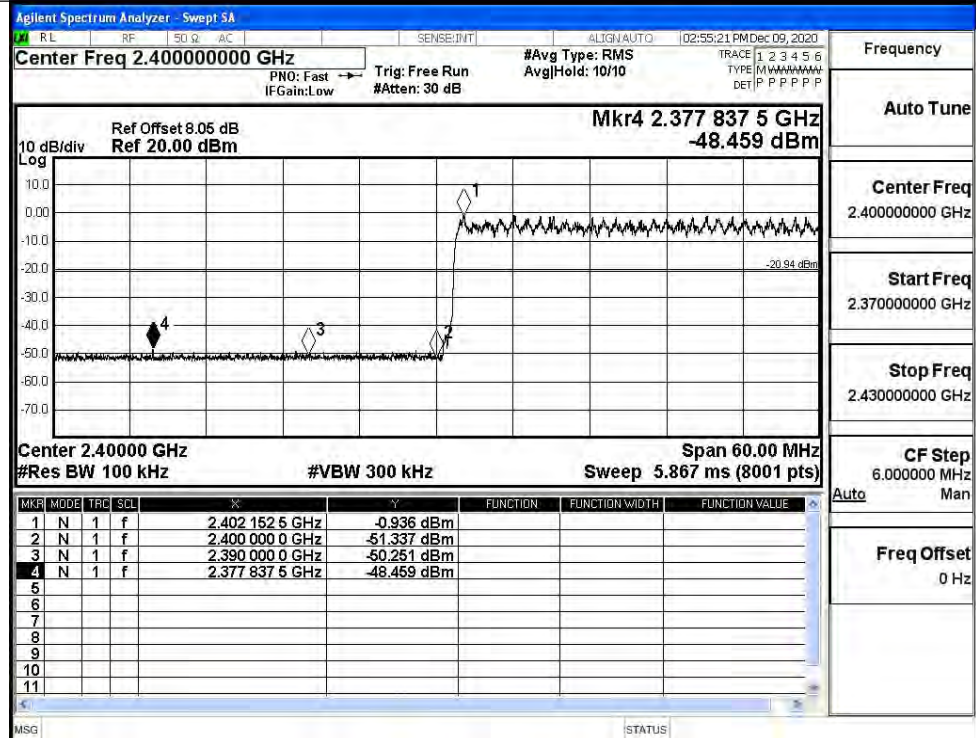
Start Freq
2.310000000 GHz

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

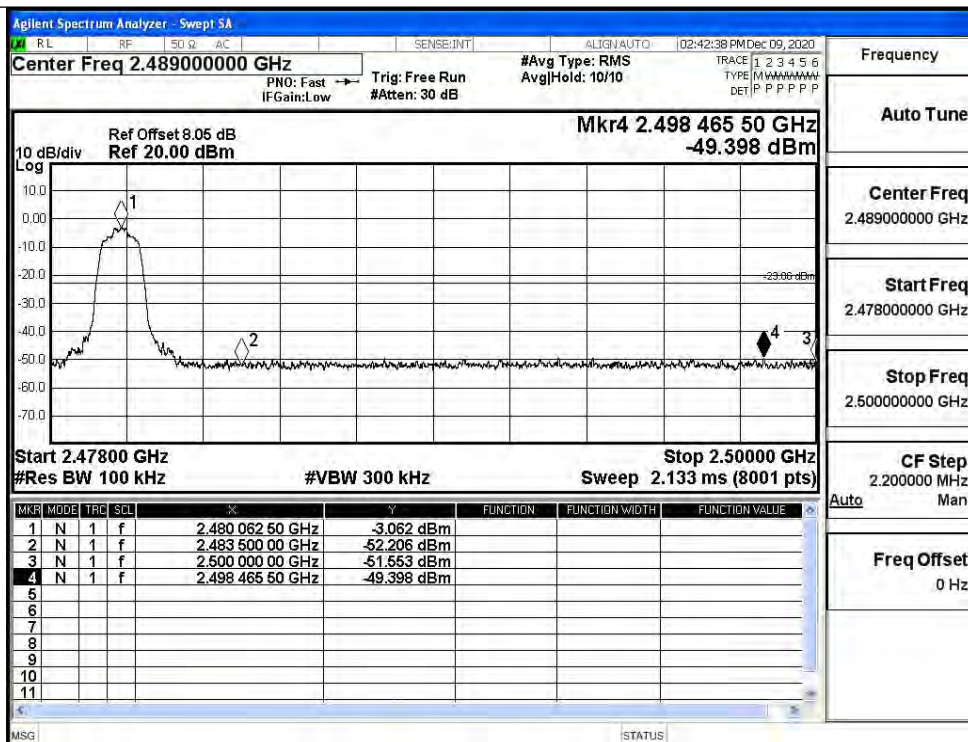
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

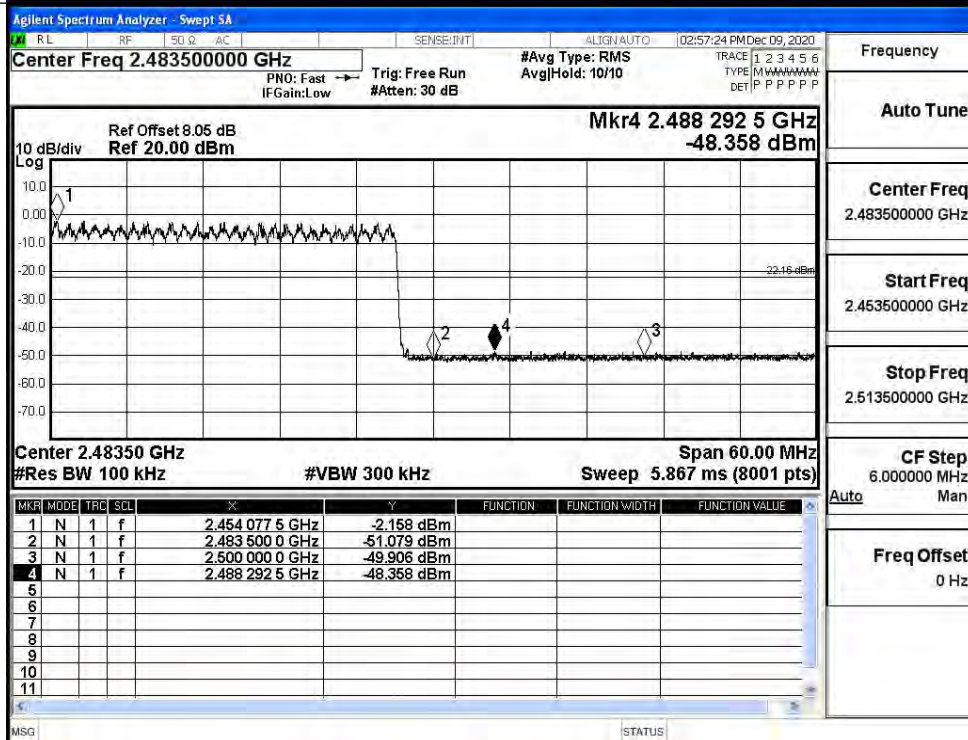
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

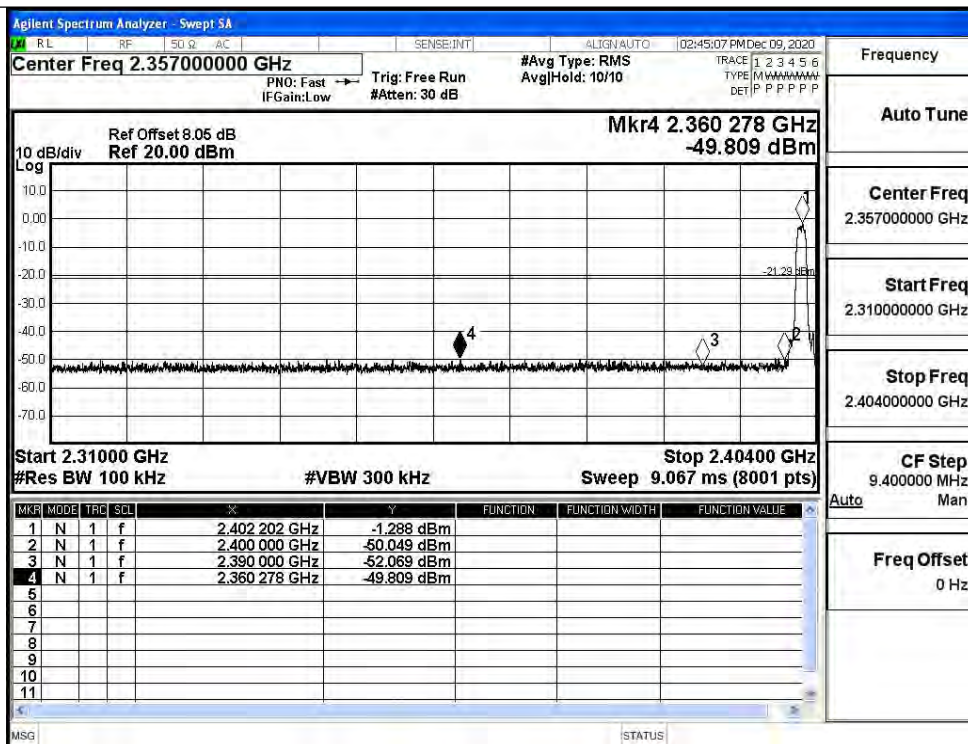
$\pi/4$ DQPSK/HCH/No
Hop



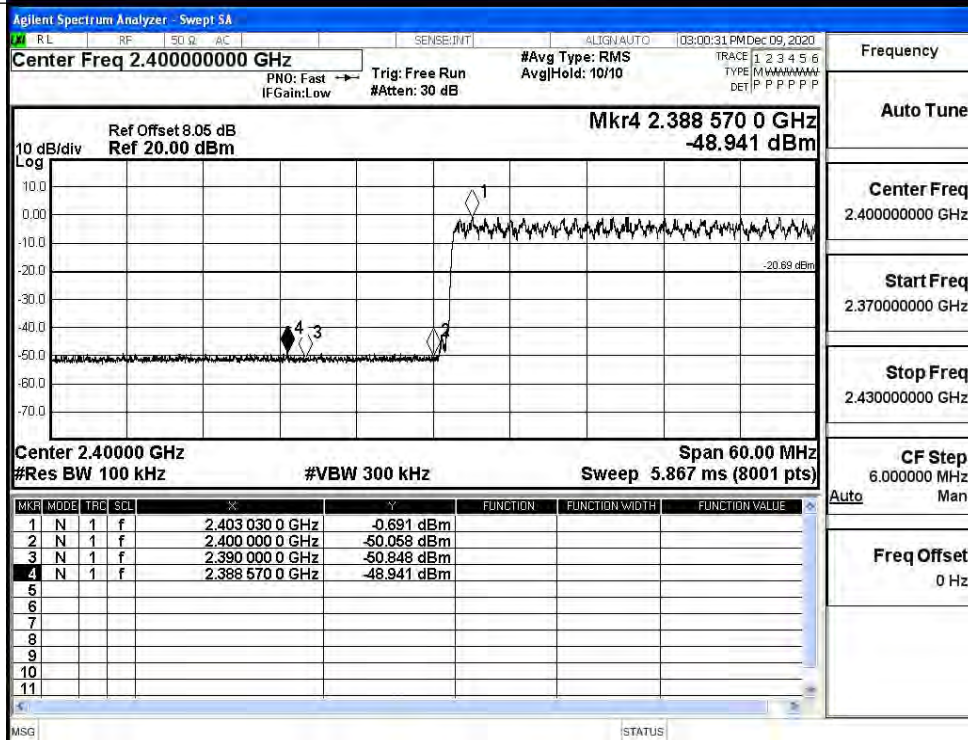
$\pi/4$ DQPSK/HCH/Hop



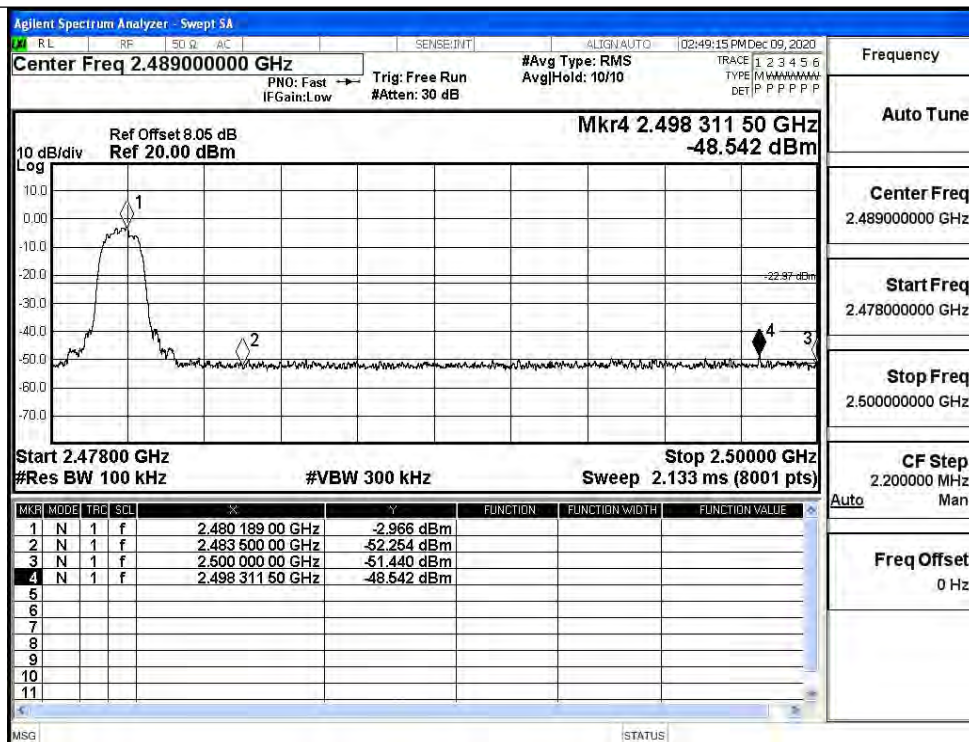
8DPSK/LCH/No Hop



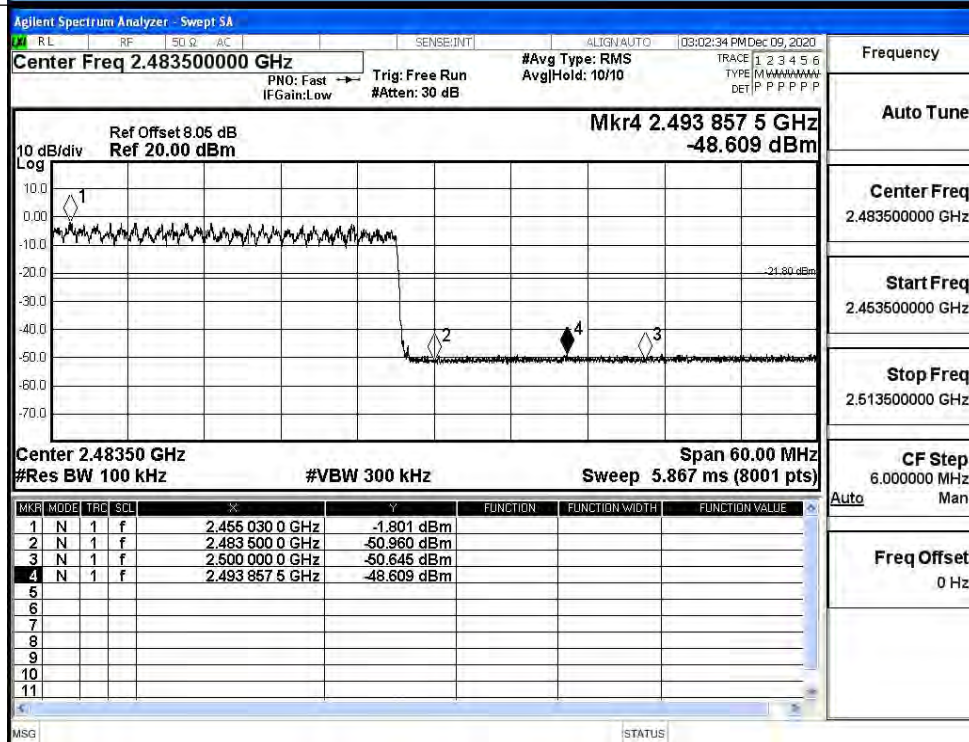
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



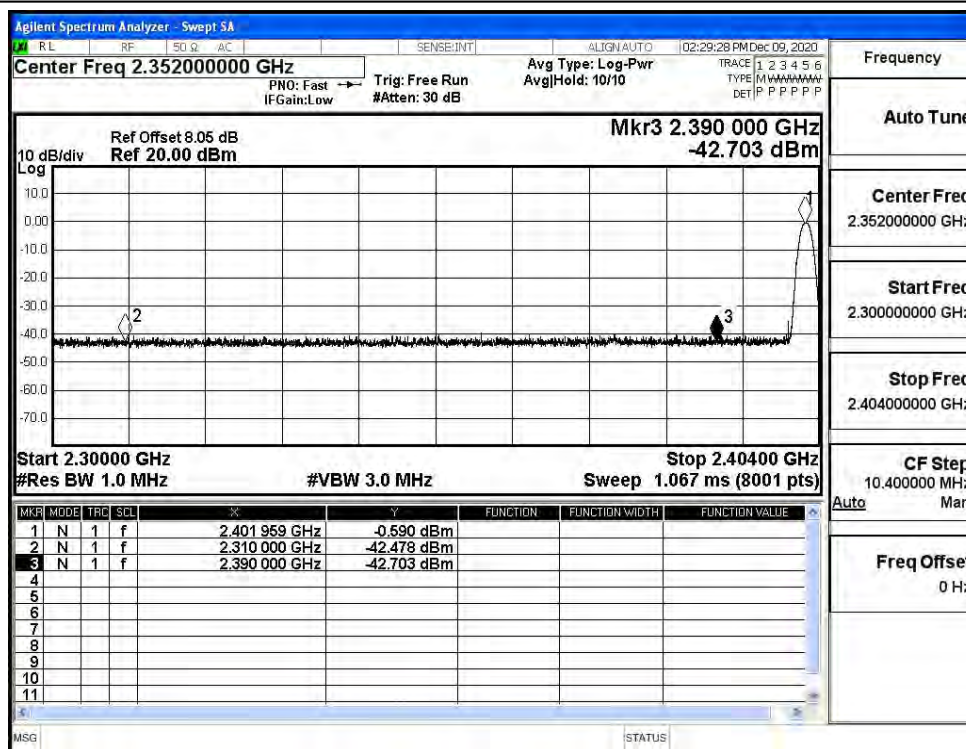
8DPSK/HCH/Hop



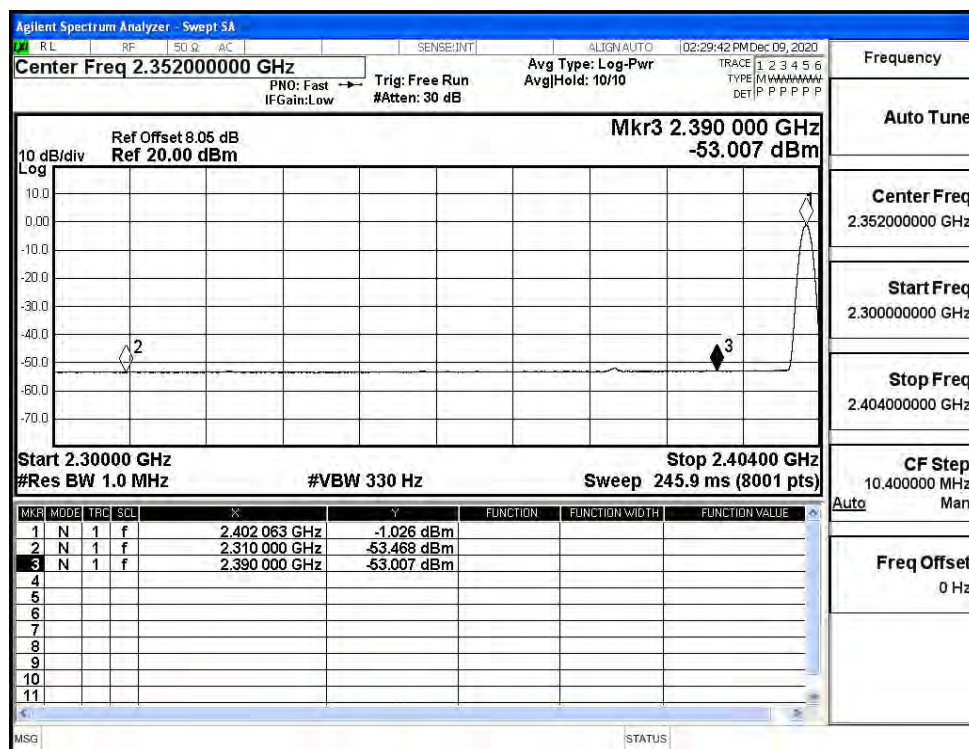
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.48	3.19	0	55.94	PEAK	74	PASS
	Off	2310.0	-53.47	3.19	0	44.95	AV	54	PASS
	Off	2390.0	-42.70	3.19	0	55.72	PEAK	74	PASS
	Off	2390.0	-53.01	3.19	0	45.41	AV	54	PASS
	Off	2483.5	-42.04	3.19	0	56.38	PEAK	74	PASS
	Off	2483.5	-52.60	3.19	0	45.82	AV	54	PASS
	Off	2500.0	-42.12	3.19	0	56.30	PEAK	74	PASS
	Off	2500.0	-52.41	3.19	0	46.01	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.35	3.19	0	54.07	PEAK	74	PASS
	Off	2310.0	-53.36	3.19	0	45.06	AV	54	PASS
	Off	2390.0	-42.62	3.19	0	55.80	PEAK	74	PASS
	Off	2390.0	-52.87	3.19	0	45.55	AV	54	PASS
	Off	2483.5	-41.90	3.19	0	56.52	PEAK	74	PASS
	Off	2483.5	-52.50	3.19	0	45.92	AV	54	PASS
	Off	2500.0	-42.99	3.19	0	55.43	PEAK	74	PASS
	Off	2500.0	-52.36	3.19	0	46.06	AV	54	PASS
8DPSK	Off	2310.0	-43.98	3.19	0	54.44	PEAK	74	PASS
	Off	2310.0	-53.42	3.19	0	45.00	AV	54	PASS
	Off	2390.0	-42.94	3.19	0	55.48	PEAK	74	PASS
	Off	2390.0	-53.01	3.19	0	45.41	AV	54	PASS
	Off	2483.5	-41.36	3.19	0	57.06	PEAK	74	PASS
	Off	2483.5	-52.44	3.19	0	45.98	AV	54	PASS
	Off	2500.0	-42.32	3.19	0	56.10	PEAK	74	PASS
	Off	2500.0	-52.42	3.19	0	46.00	AV	54	PASS

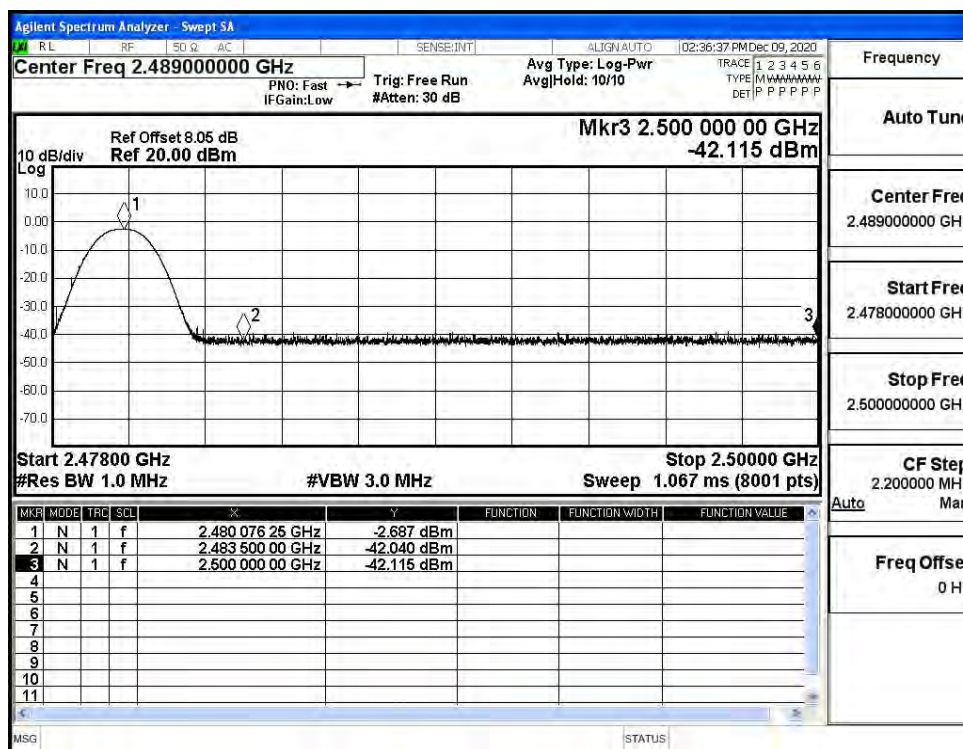
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



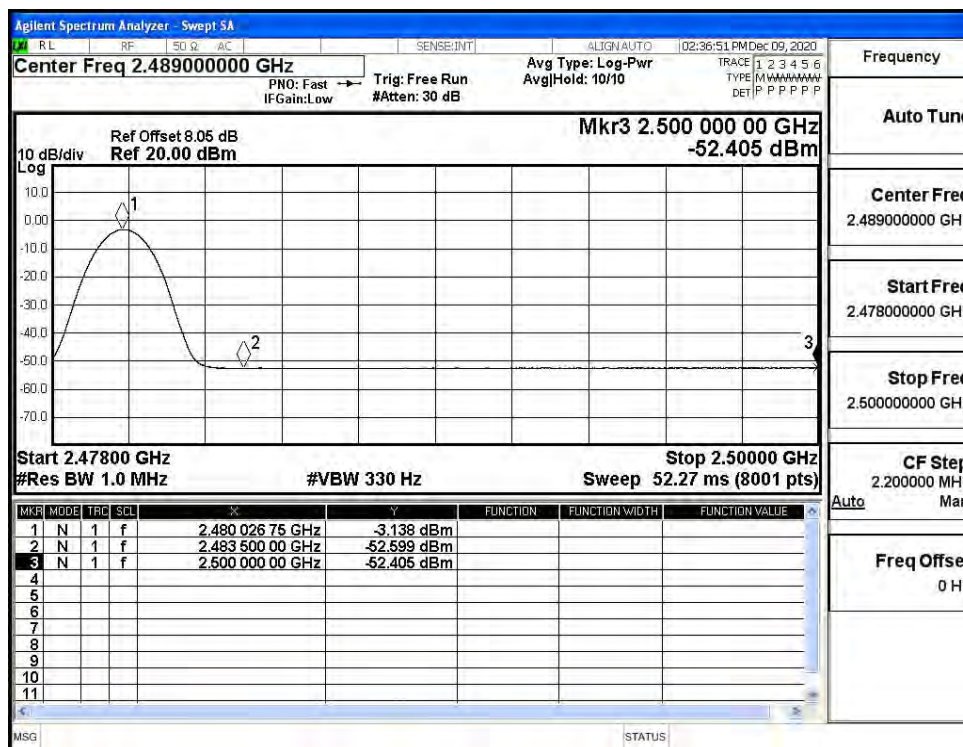
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

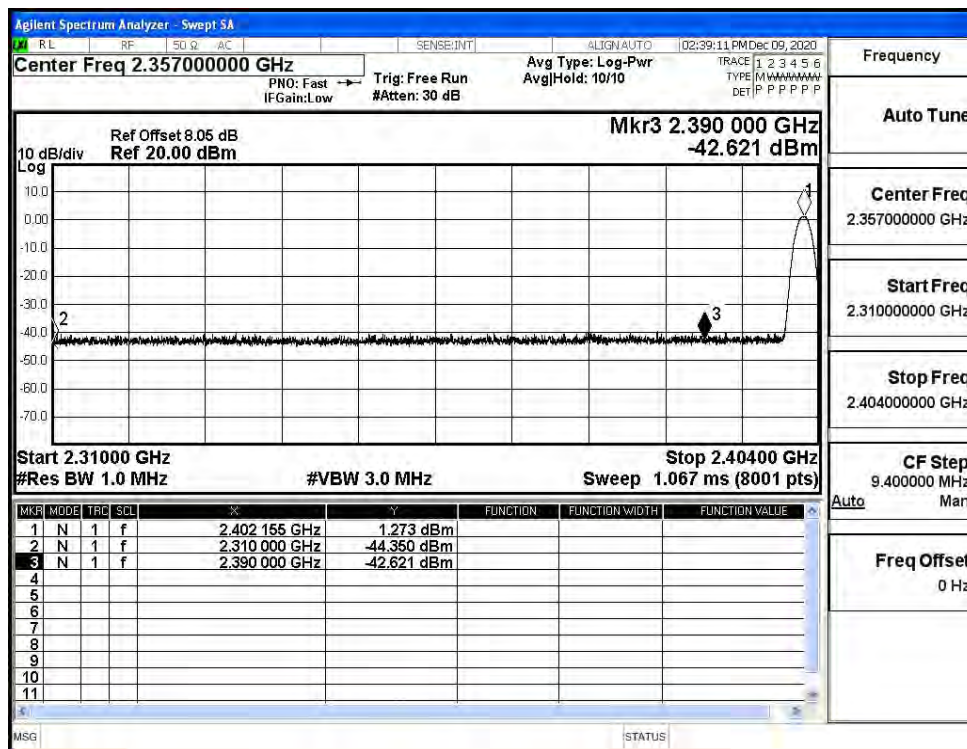
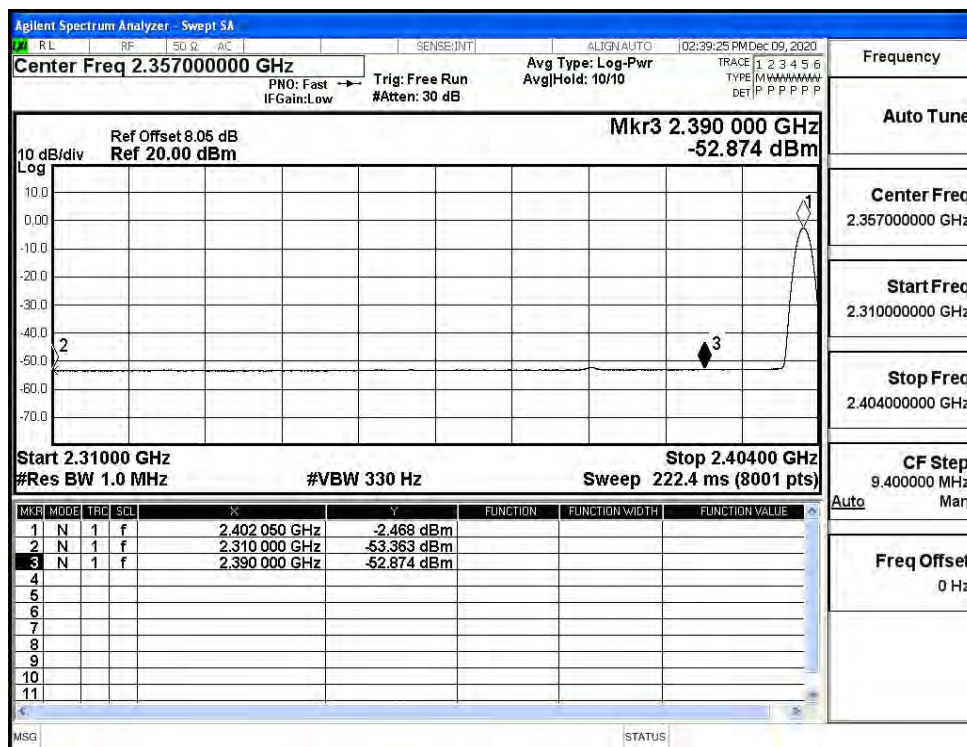


Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)

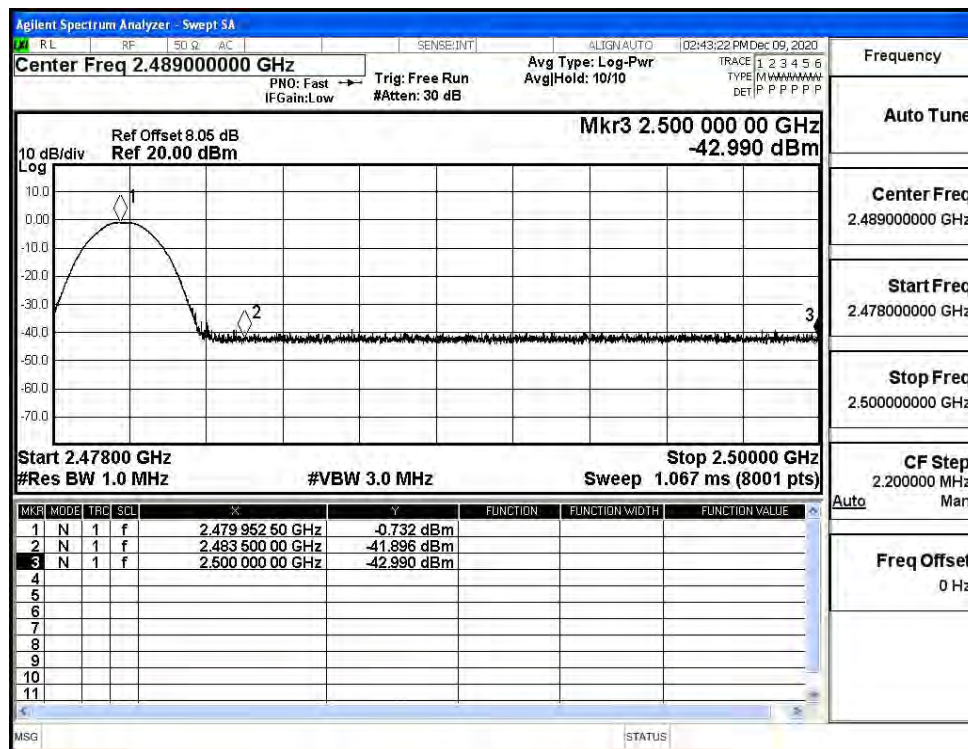


Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)

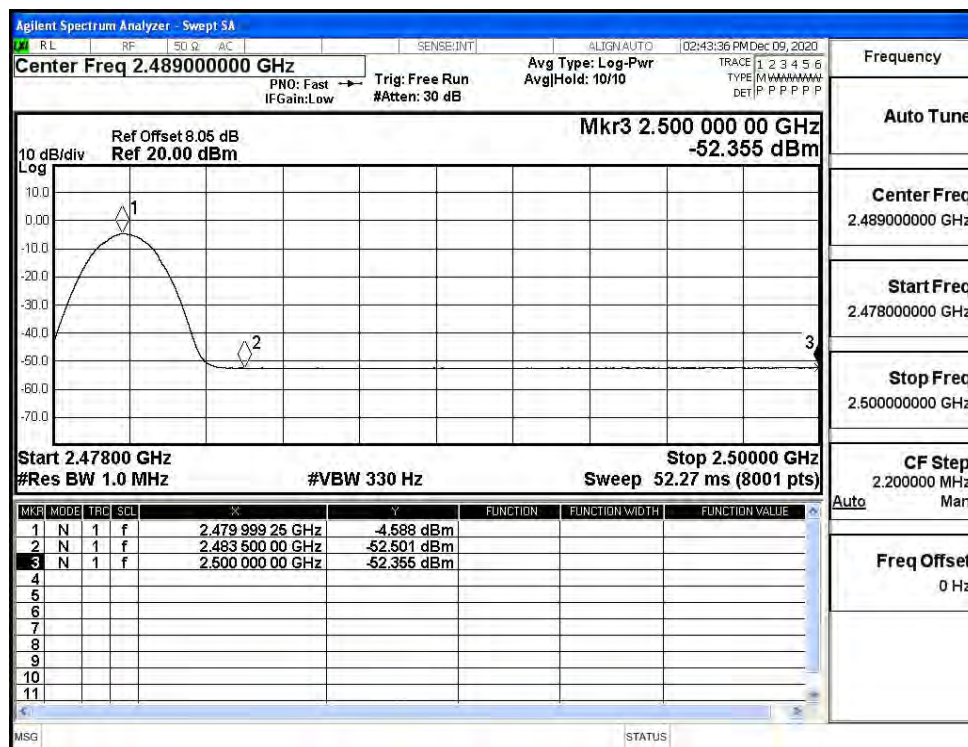


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

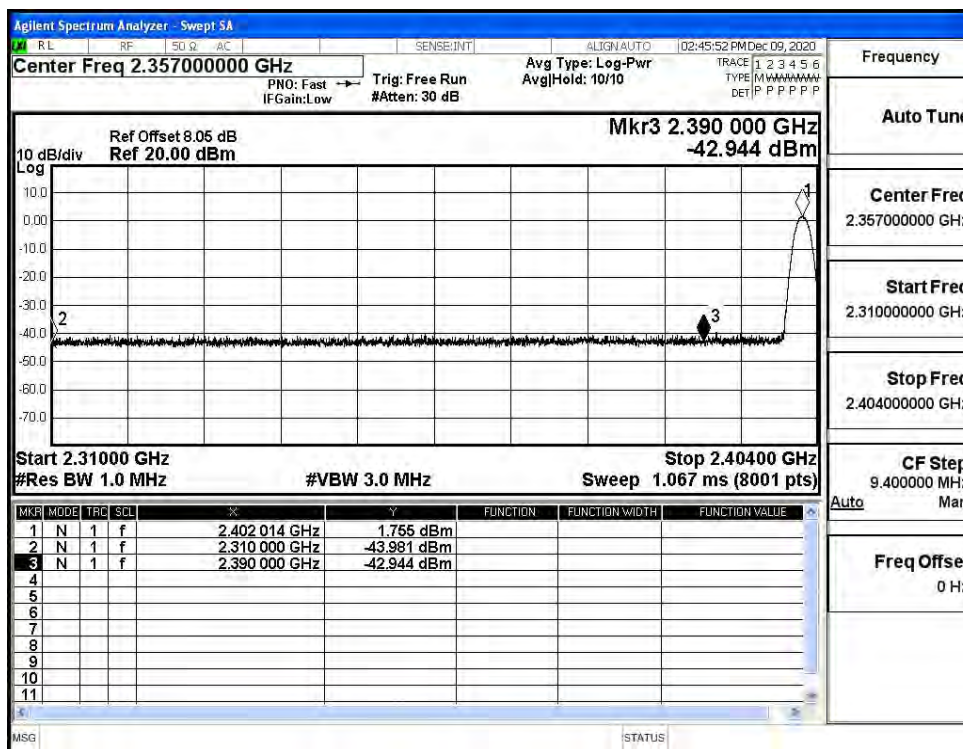
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



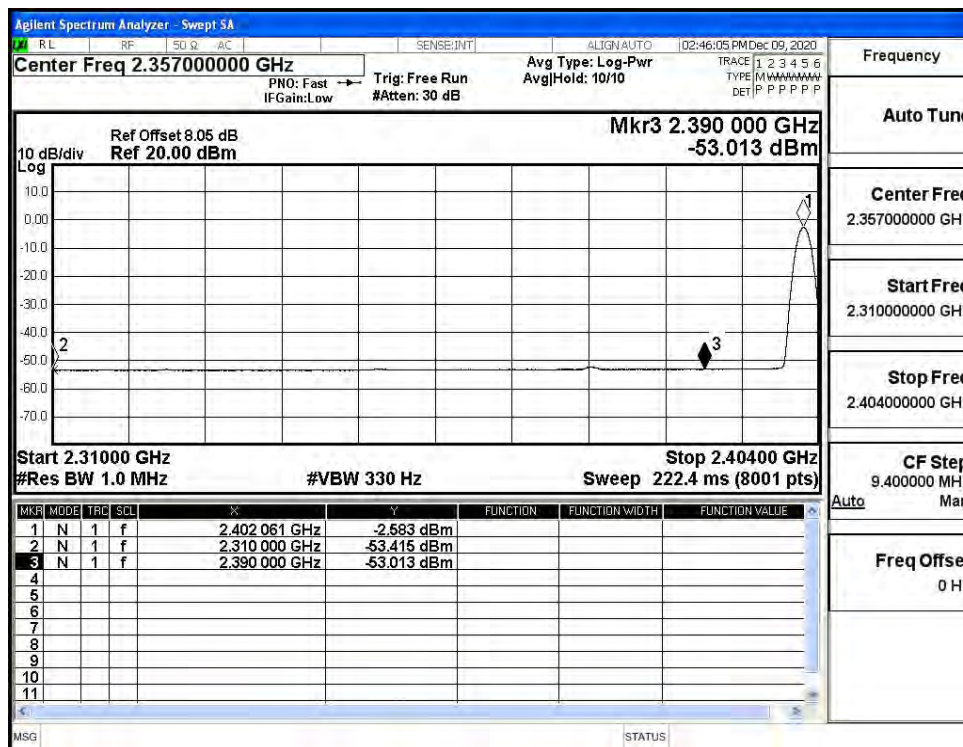
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



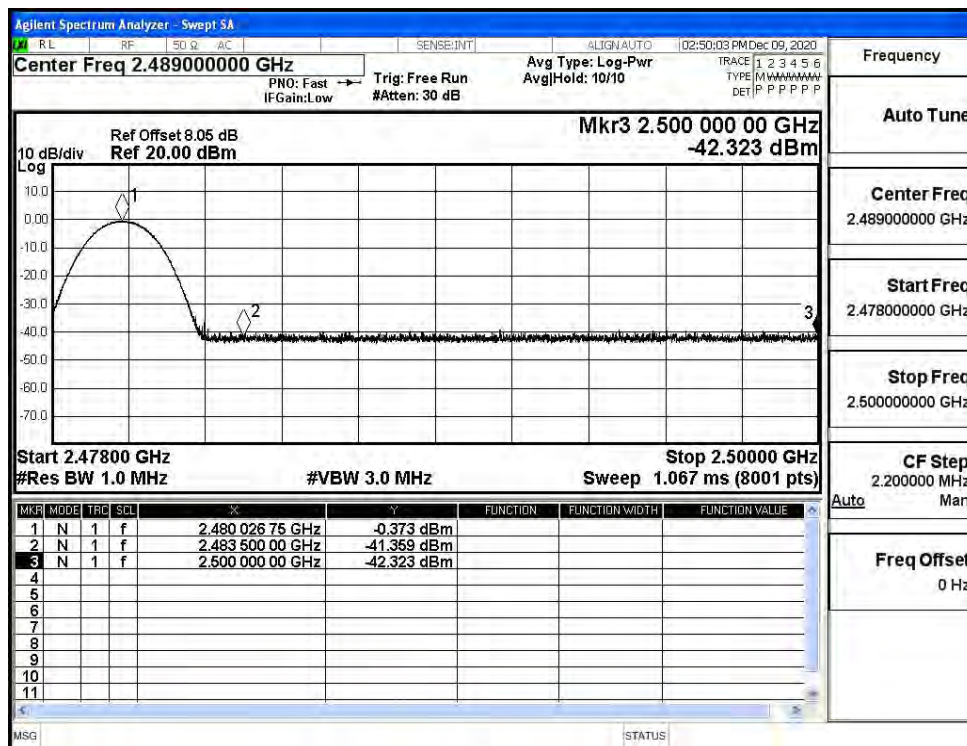
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

