

Appendix A

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

Product Name: Portable Karaoke Party Speaker

Trade Mark: gemini

Test Model: MPA-K650

Environmental Conditions

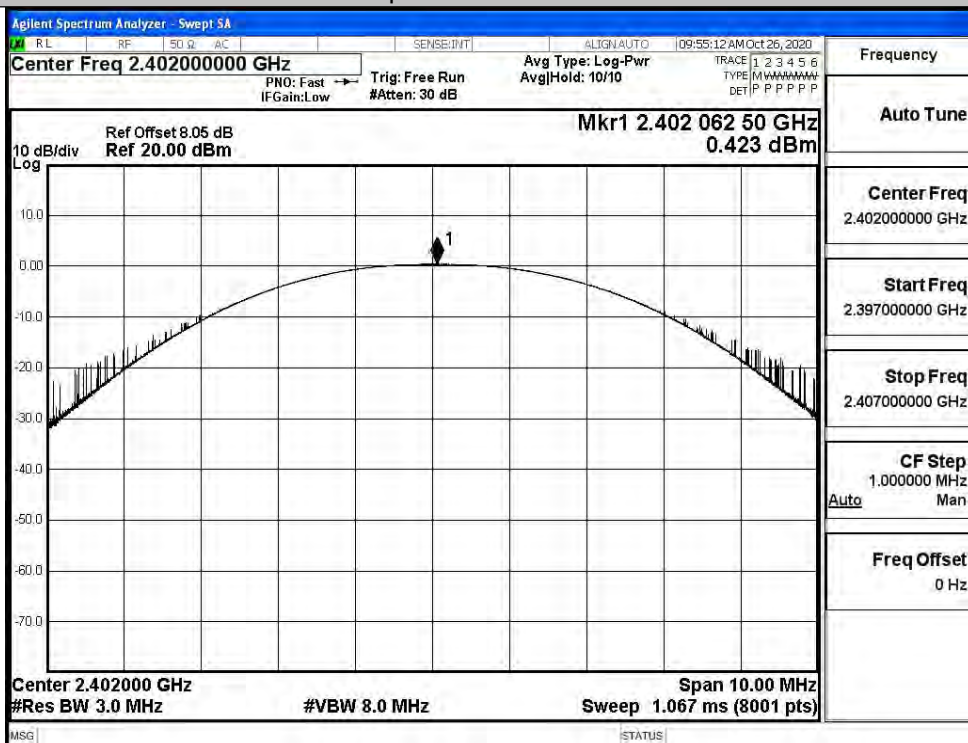
Temperature:	22.3° C
Relative Humidity:	53.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

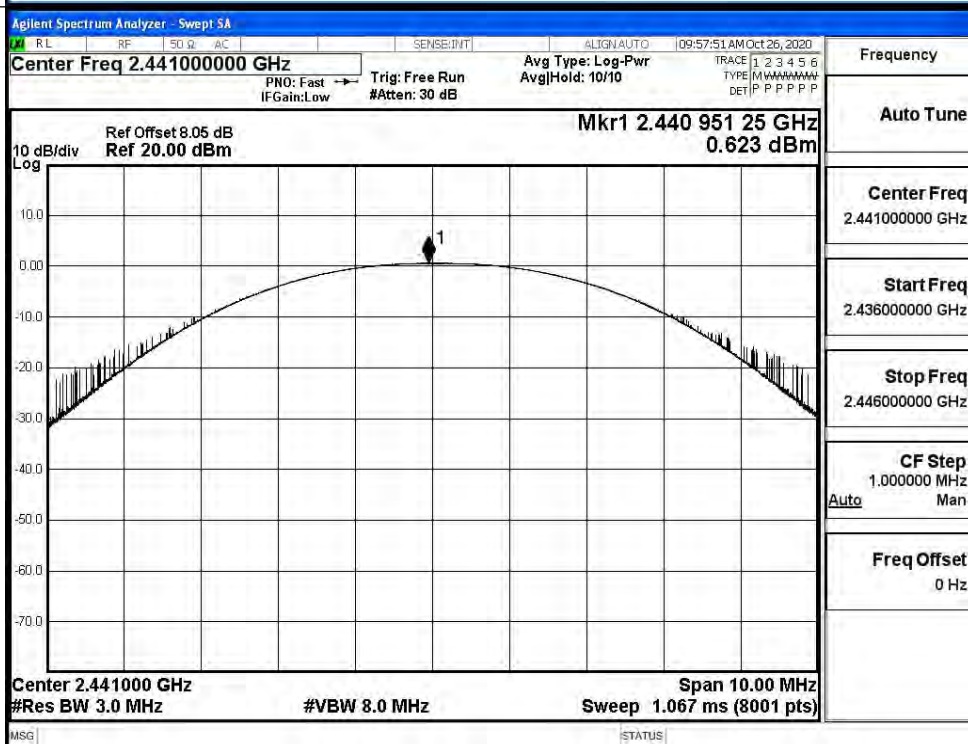
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.423	21	PASS
	MCH	0.623	21	PASS
	HCH	0.700	21	PASS
$\pi/4$ DQPSK	LCH	2.541	21	PASS
	MCH	2.786	21	PASS
	HCH	2.833	21	PASS
8DPSK	LCH	3.013	21	PASS
	MCH	3.177	21	PASS
	HCH	3.268	21	PASS

Test Graphs

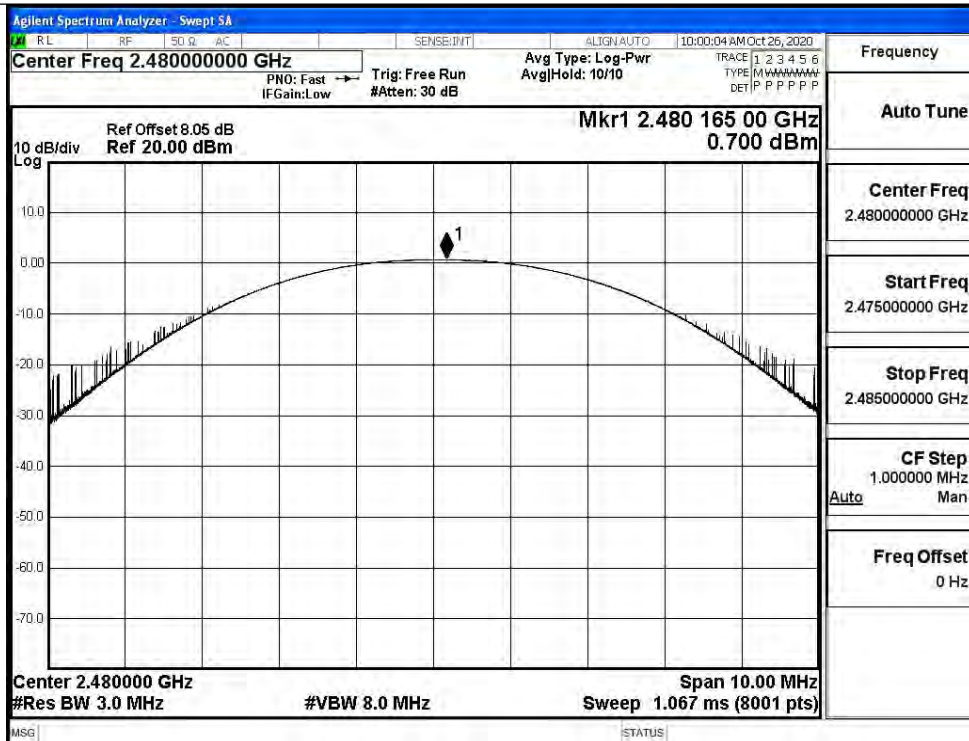
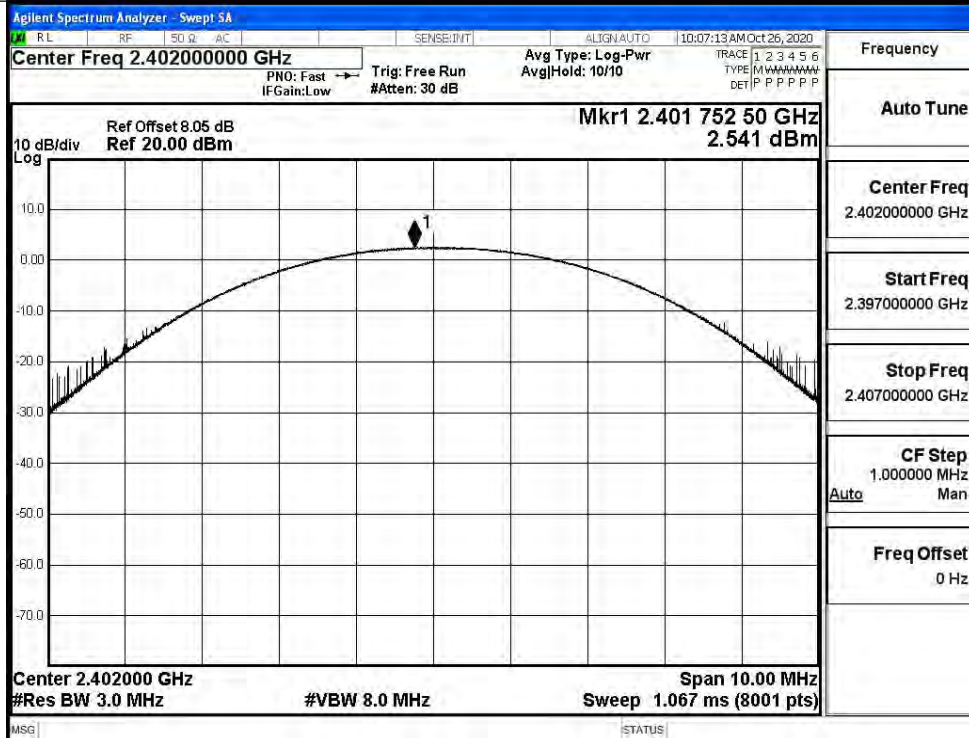
GFSK/LCH

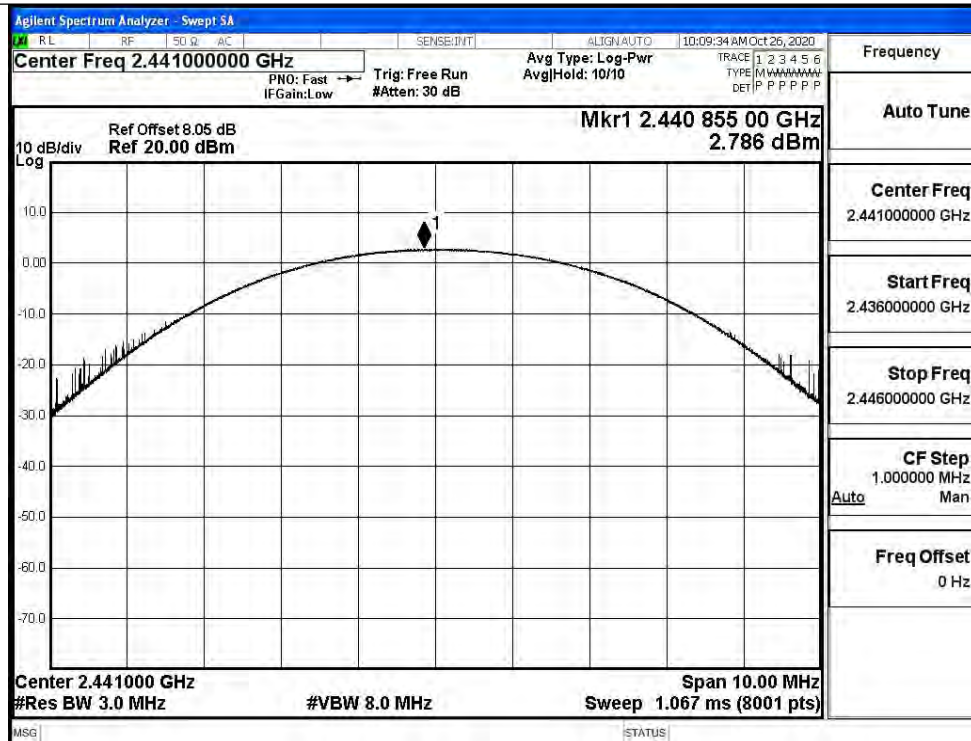
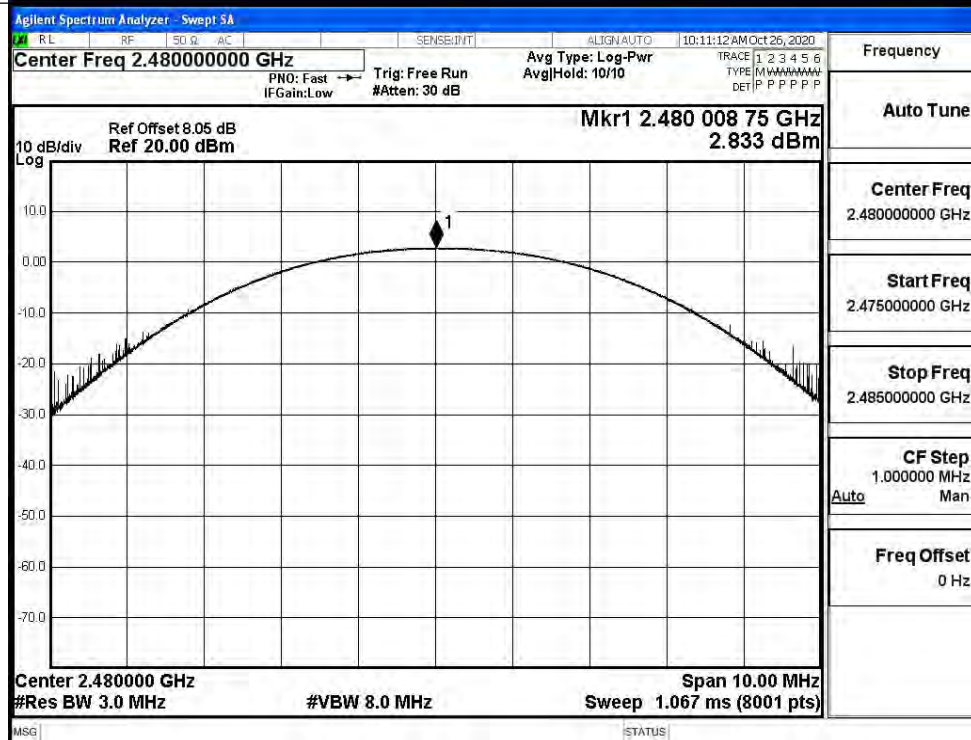


GFSK/MCH

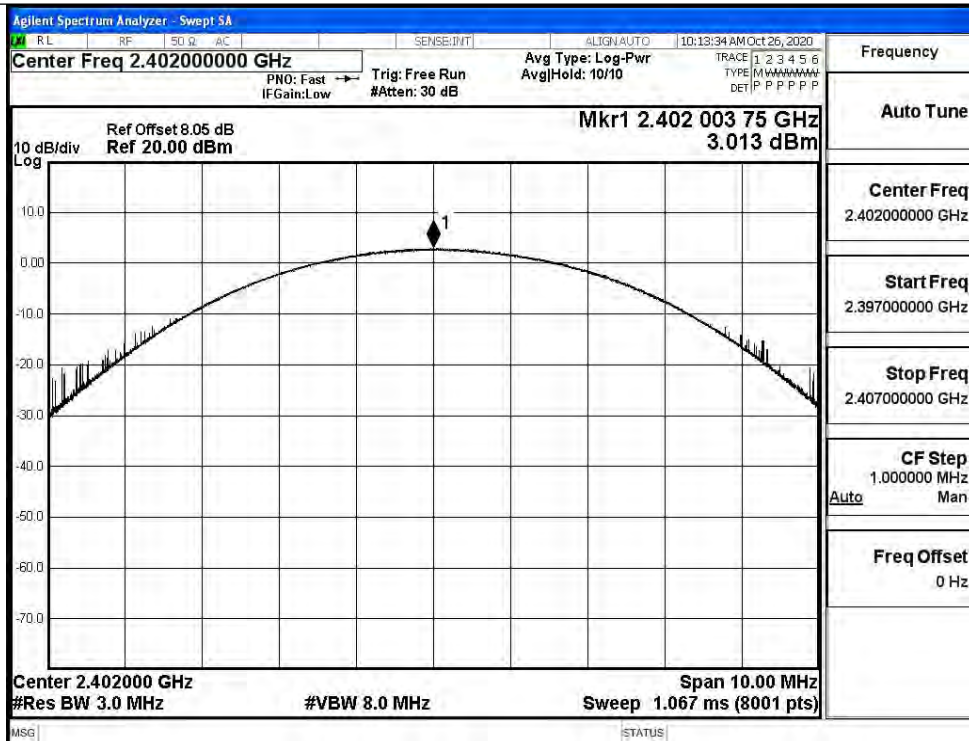


GFSK/HCH

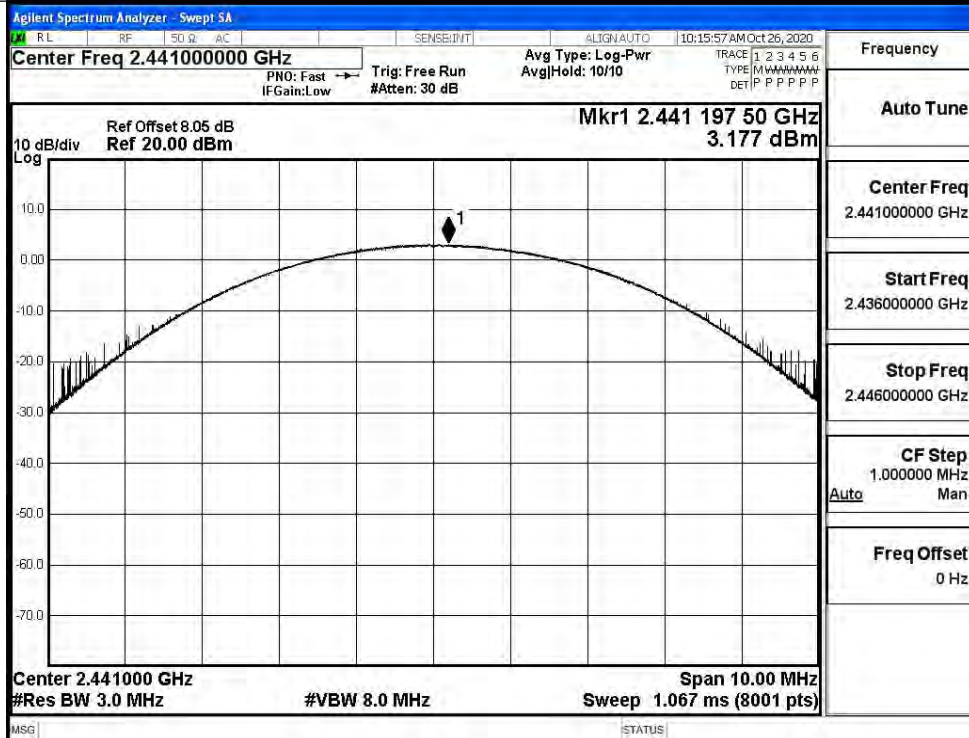
 π /4DQPSK/LCH

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

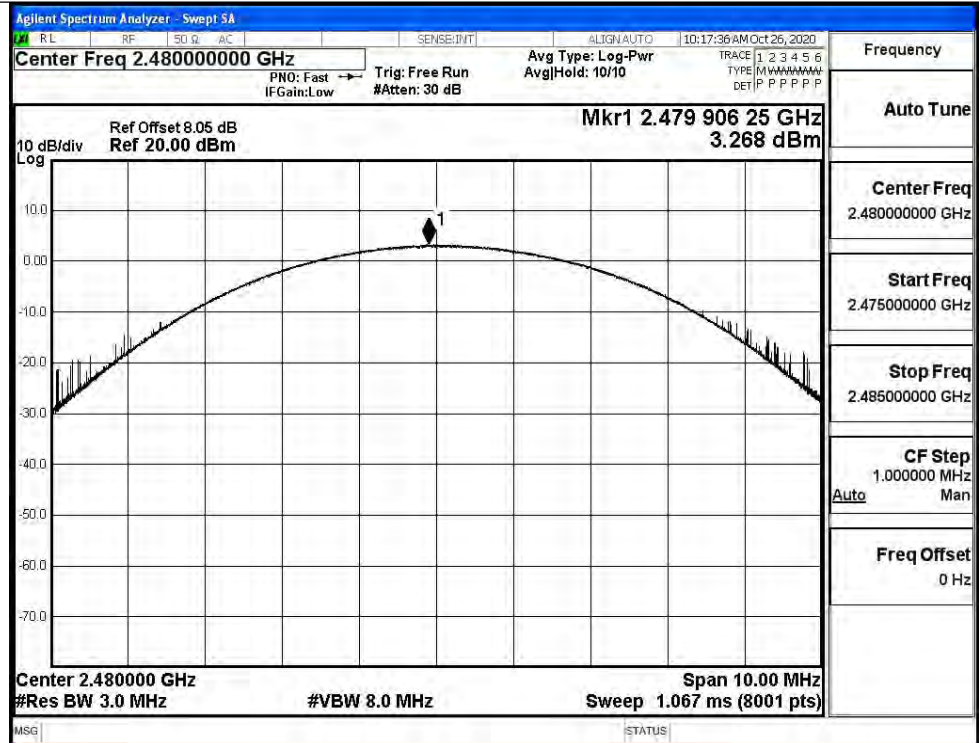
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

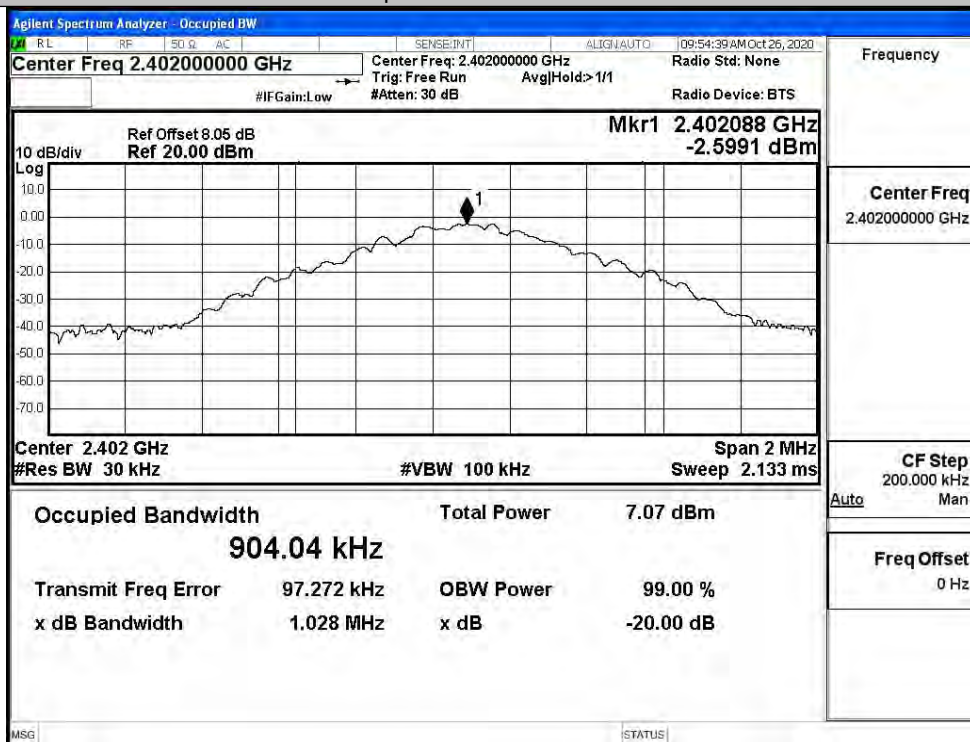


A.2 20dB Bandwidth

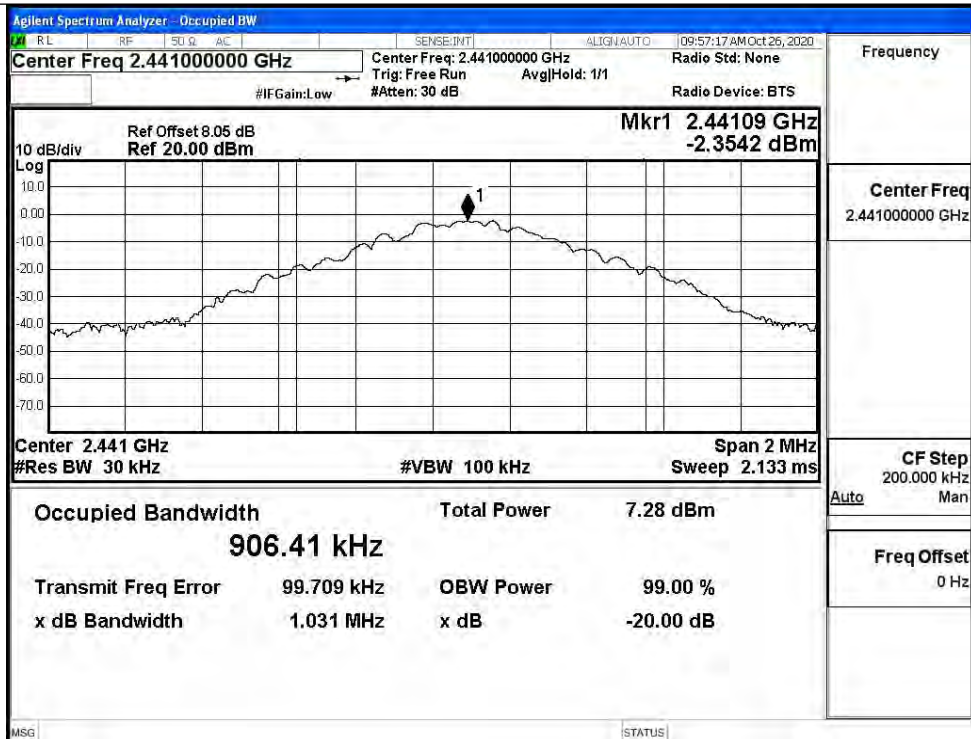
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.028	Not Specified	PASS
	MCH	1.031	Not Specified	PASS
	HCH	1.027	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.367	Not Specified	PASS
	MCH	1.366	Not Specified	PASS
	HCH	1.363	Not Specified	PASS
8DPSK	LCH	1.347	Not Specified	PASS
	MCH	1.349	Not Specified	PASS
	HCH	1.346	Not Specified	PASS

Test Graphs

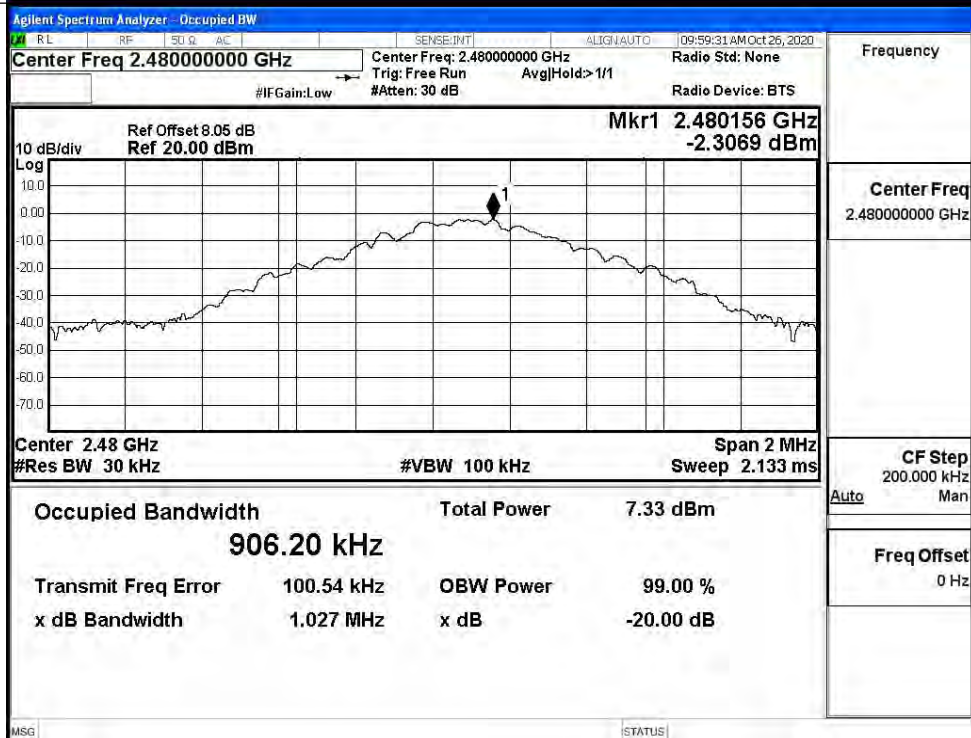
GFSK/LCH

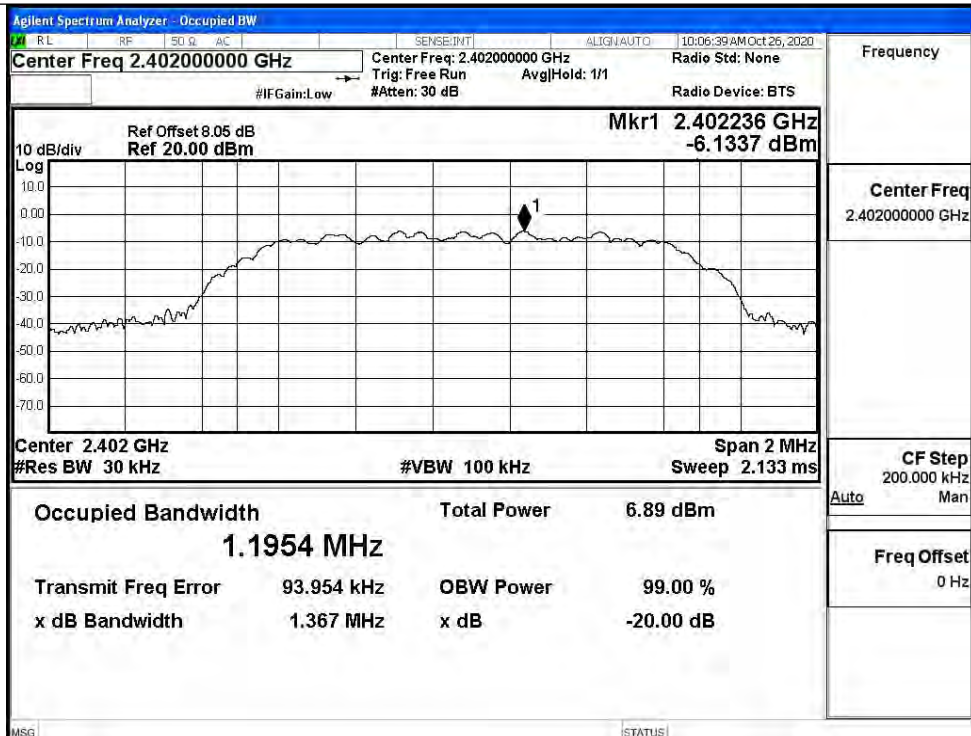
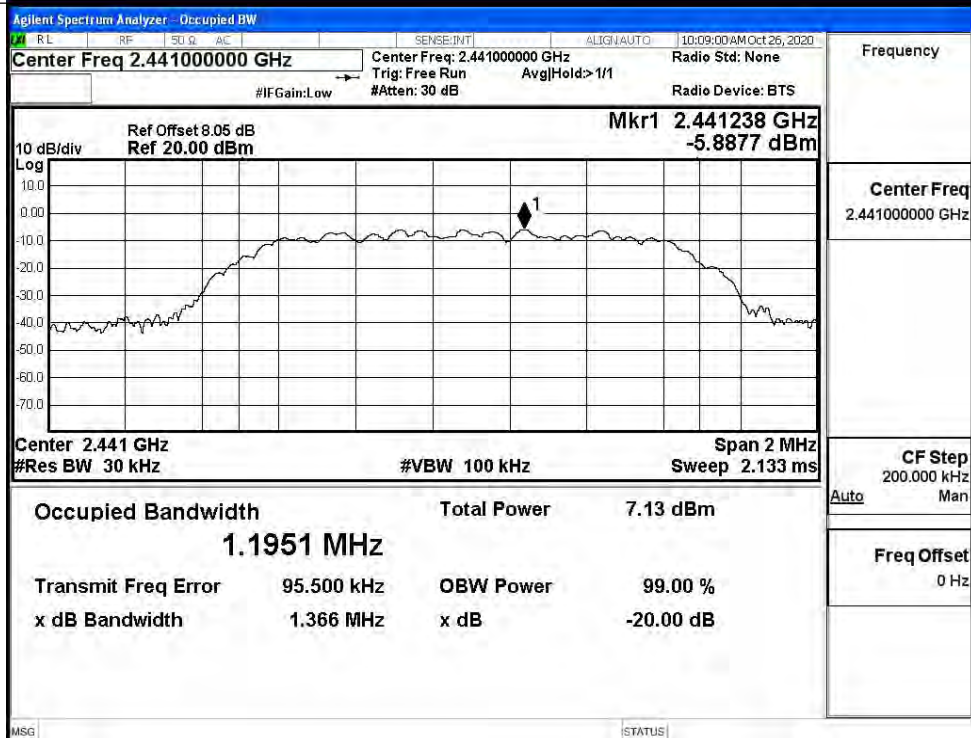


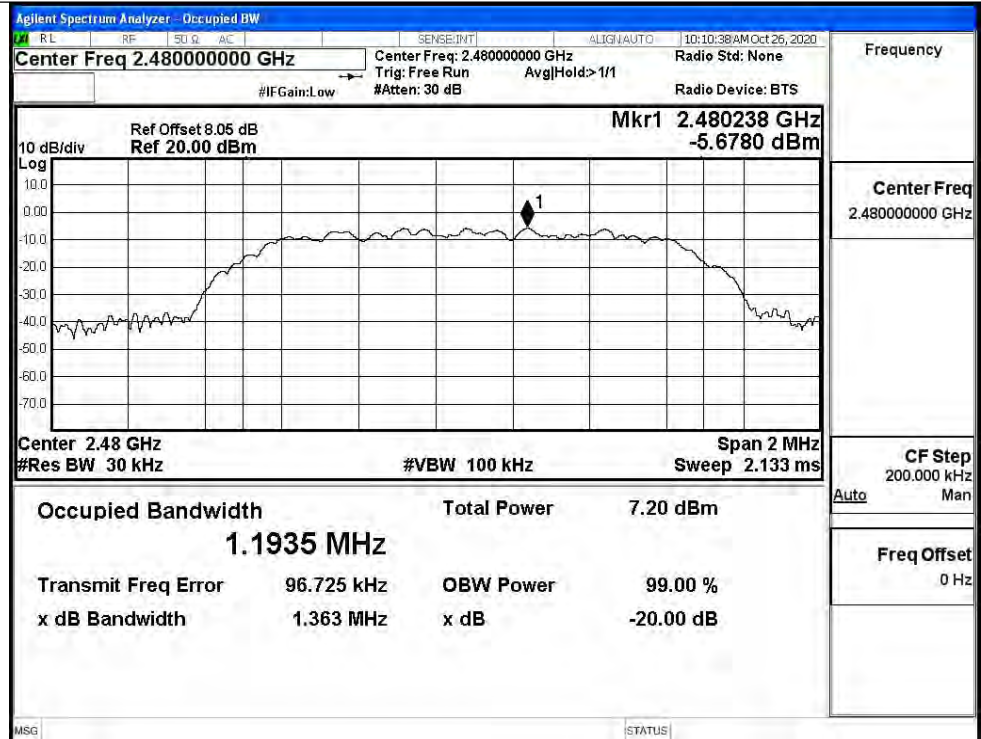
GFSK/MCH



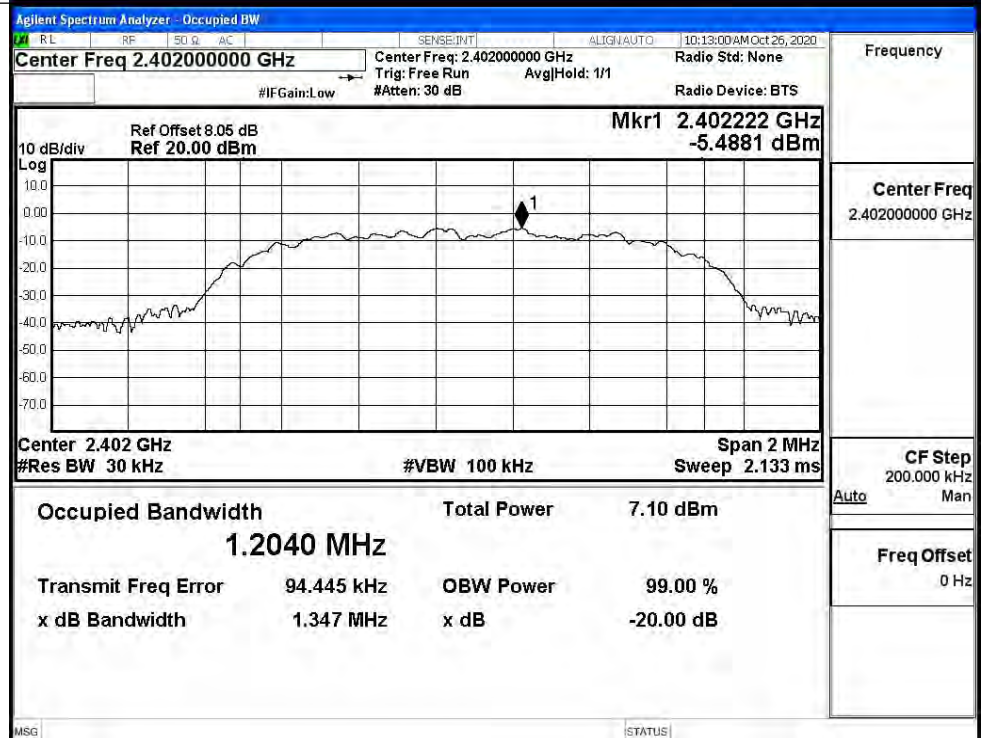
GFSK/HCH



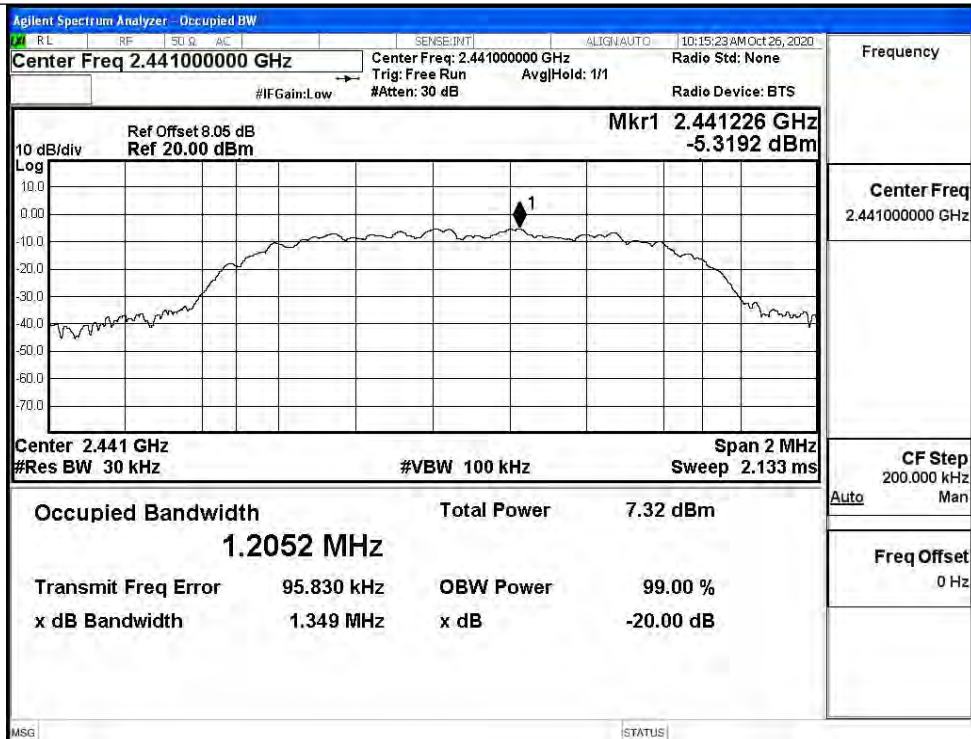
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

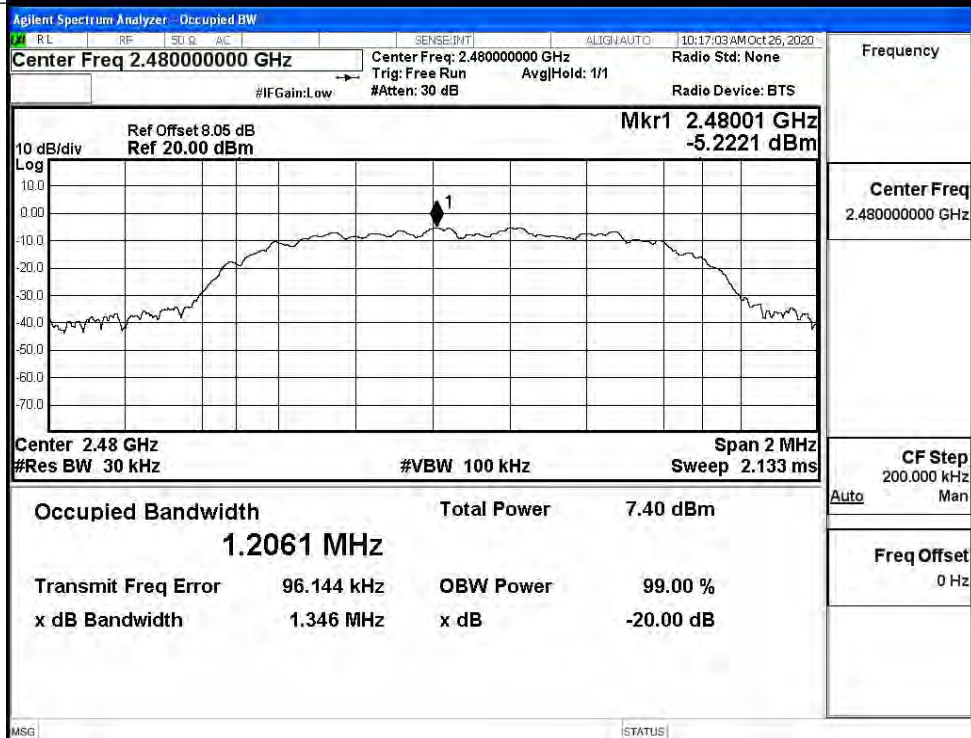
8DPSK/LCH



8DPSK/MCH

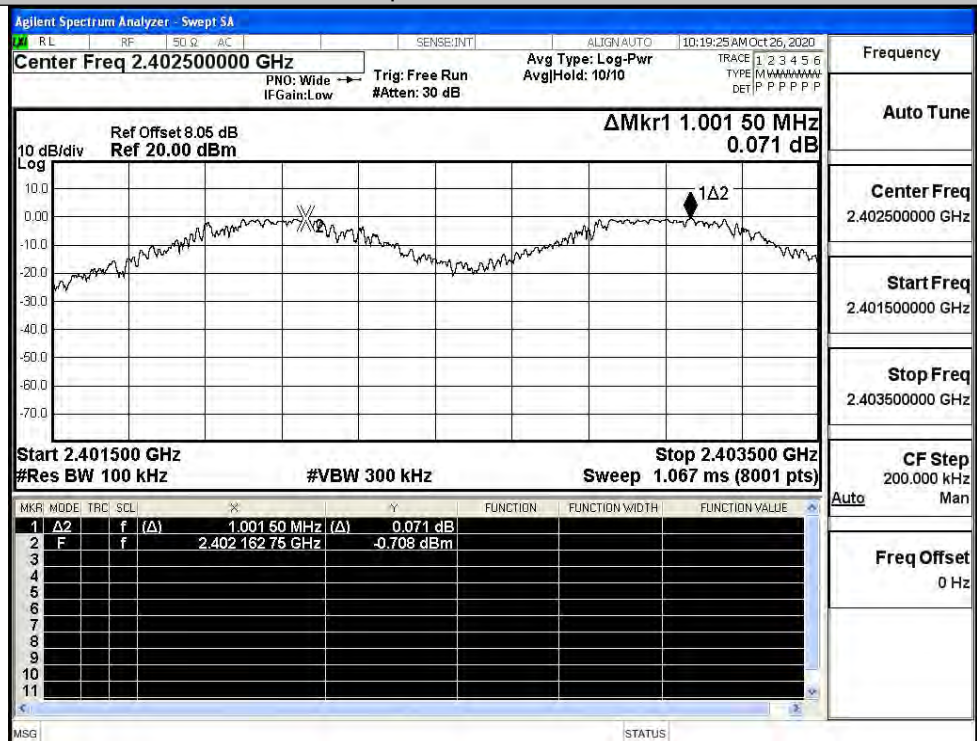


8DPSK/HCH

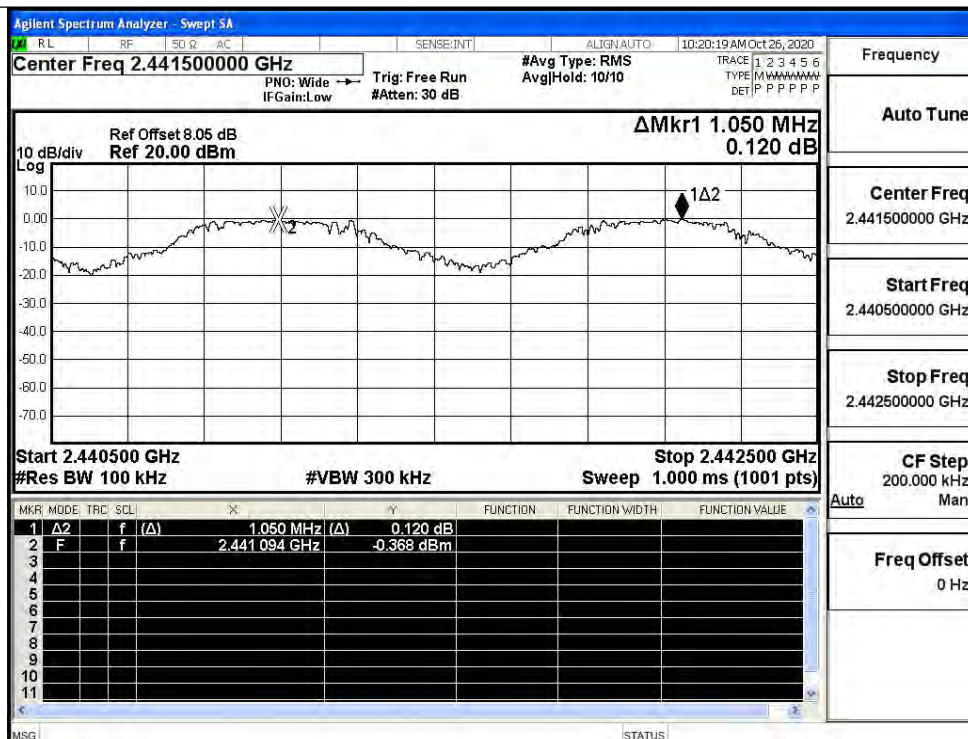


Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.001	0.685	PASS
	MCH	1.050	0.687	PASS
	HCH	0.978	0.685	PASS
$\pi/4$ DQPSK	LCH	1.024	0.911	PASS
	MCH	0.988	0.911	PASS
	HCH	1.156	0.909	PASS
8DPSK	LCH	1.038	0.898	PASS
	MCH	1.006	0.899	PASS
	HCH	0.996	0.897	PASS

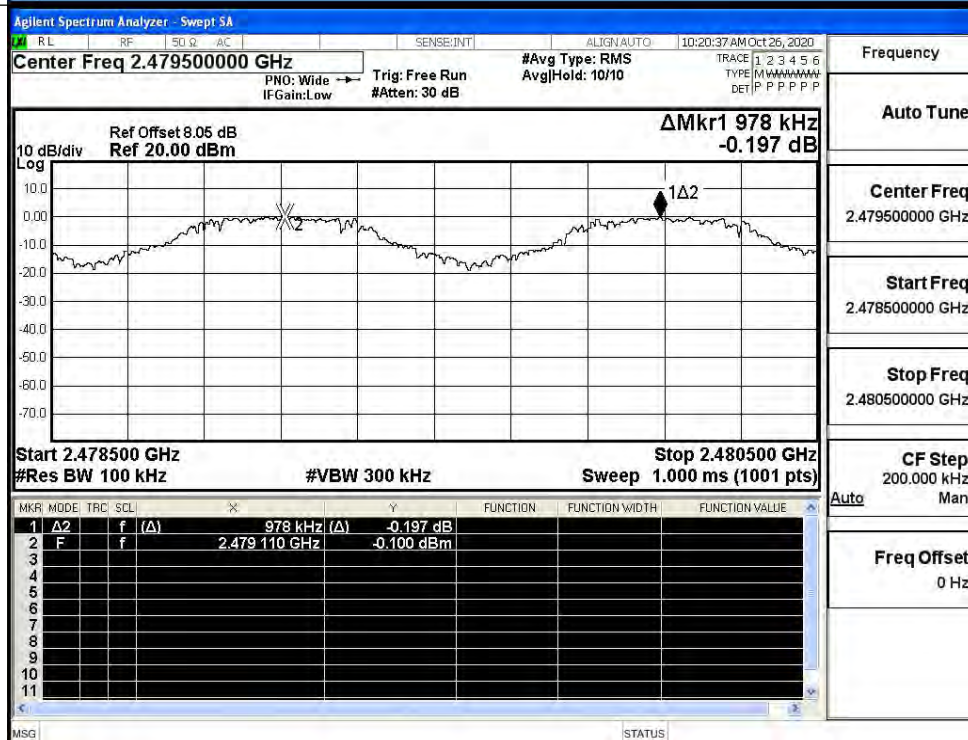
GFSK/LCH

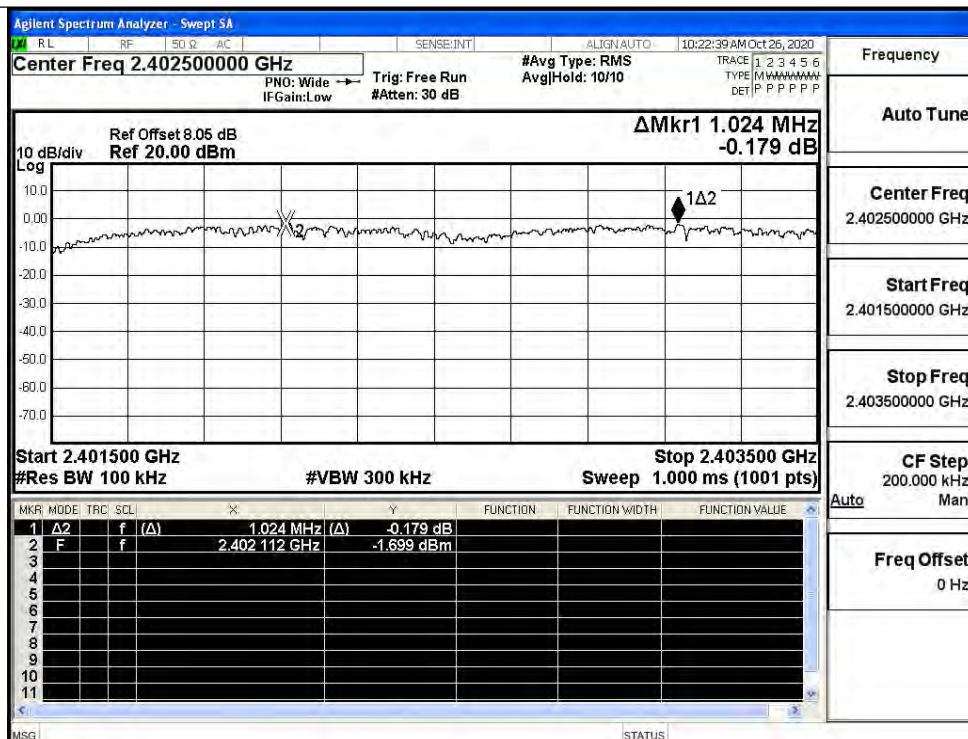
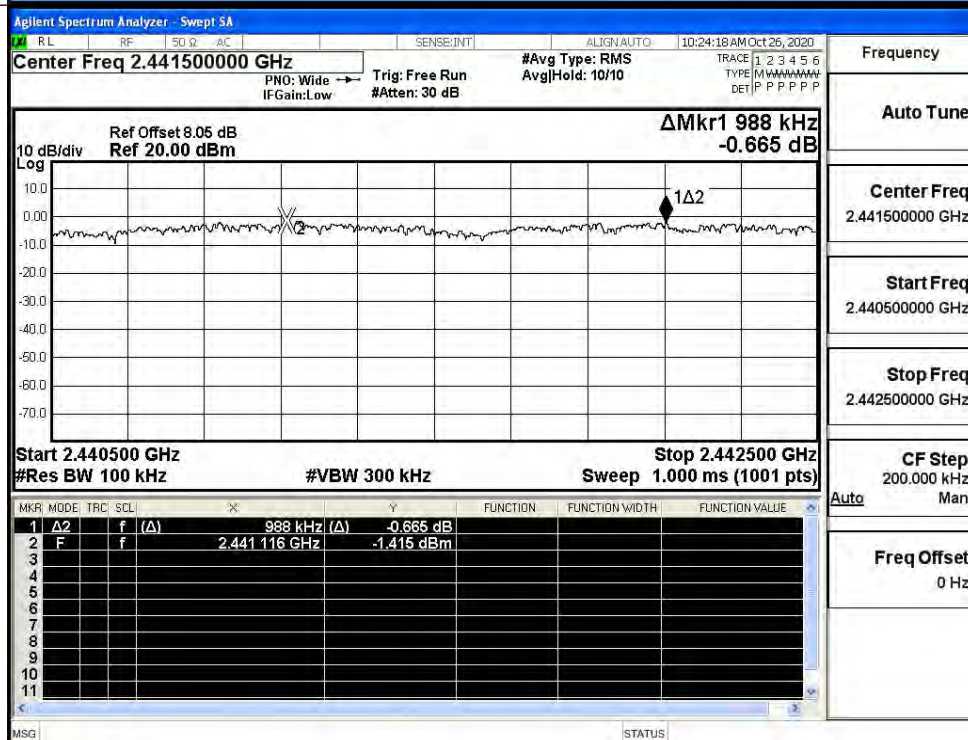


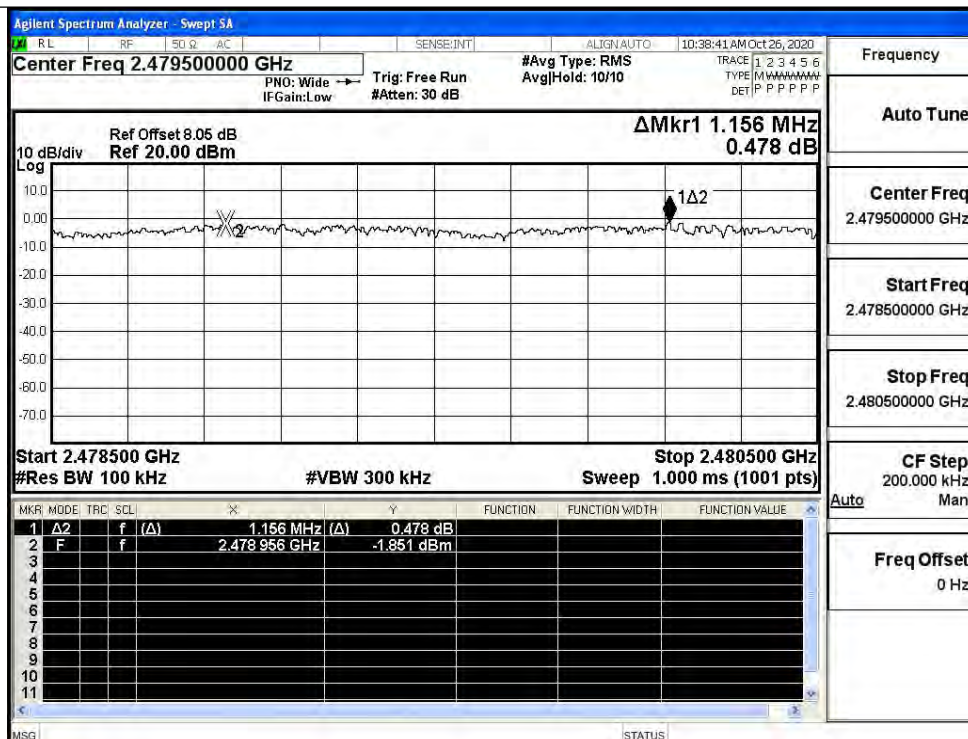
GFSK/MCH



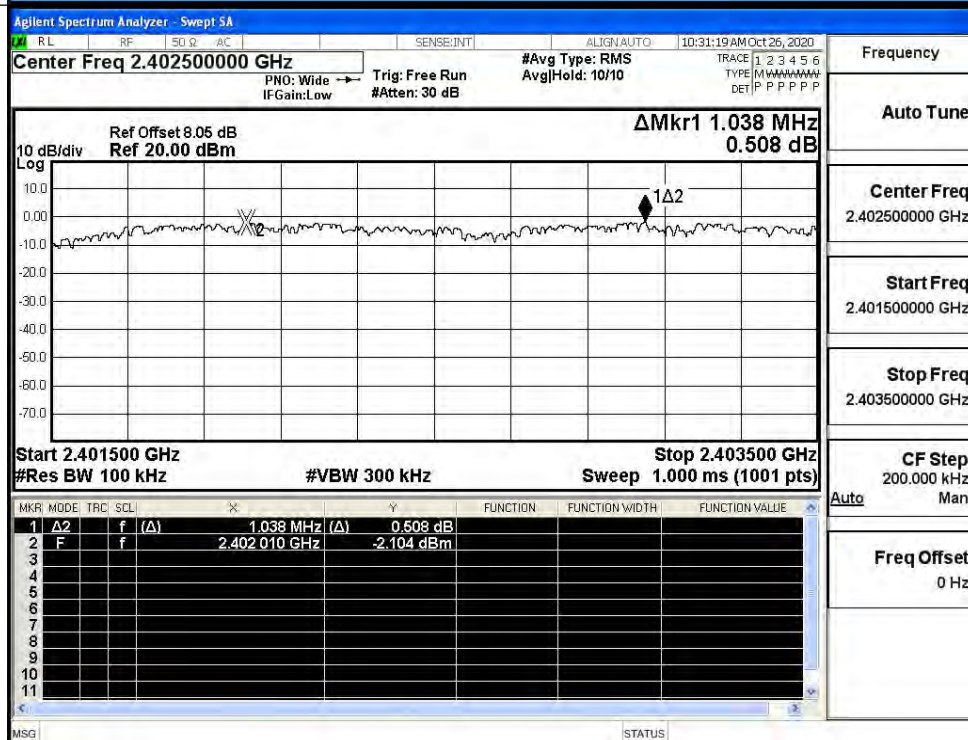
GFSK/HCH



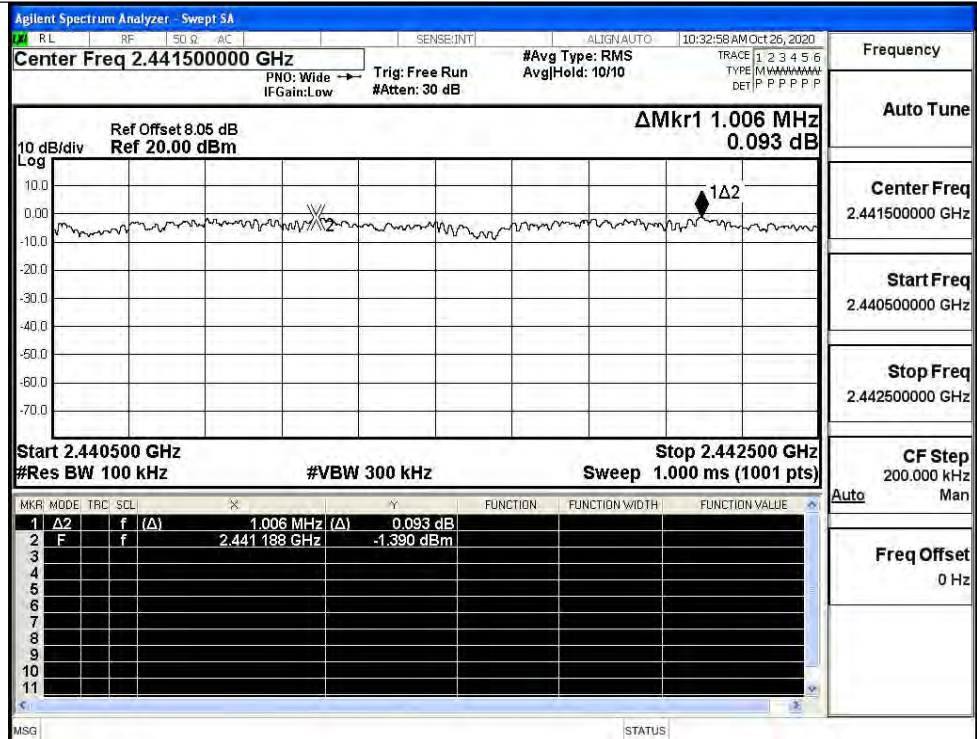
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

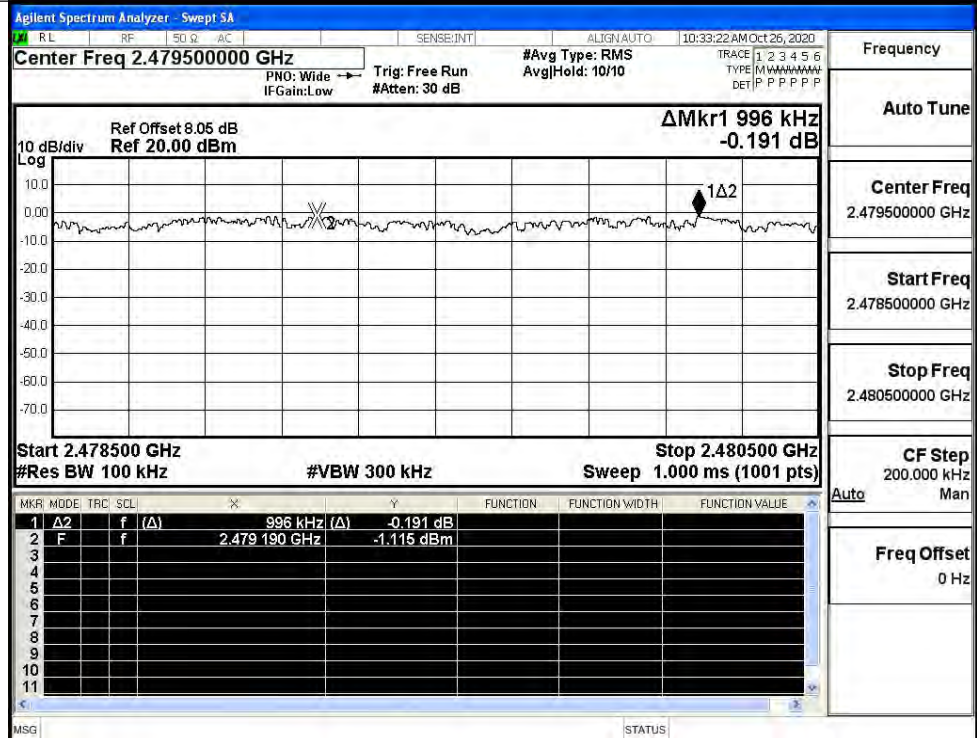
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

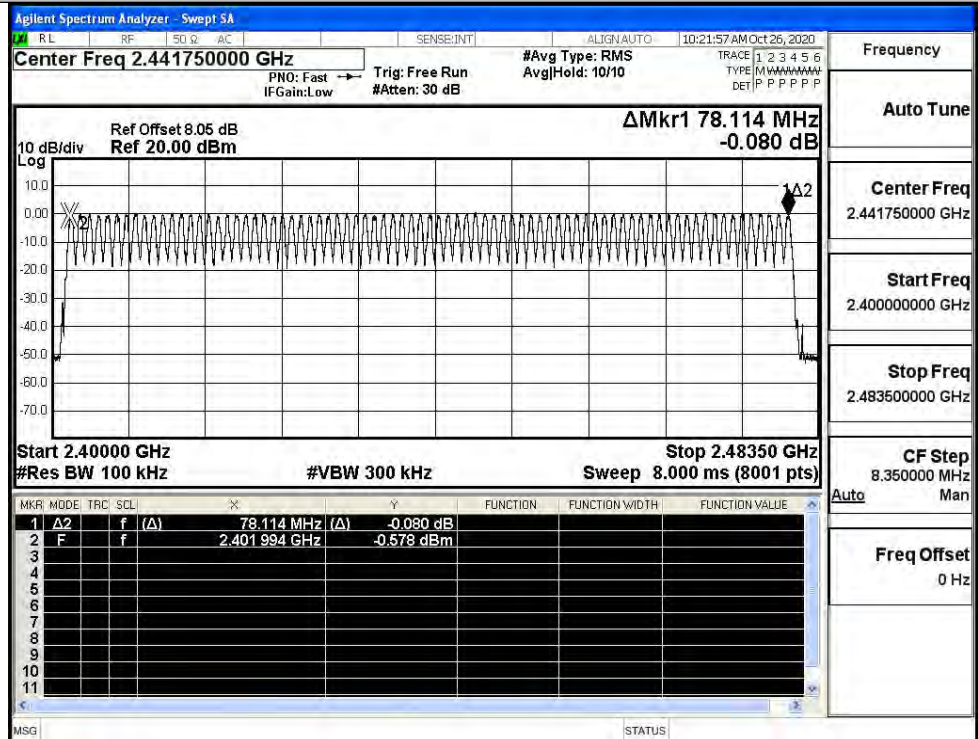
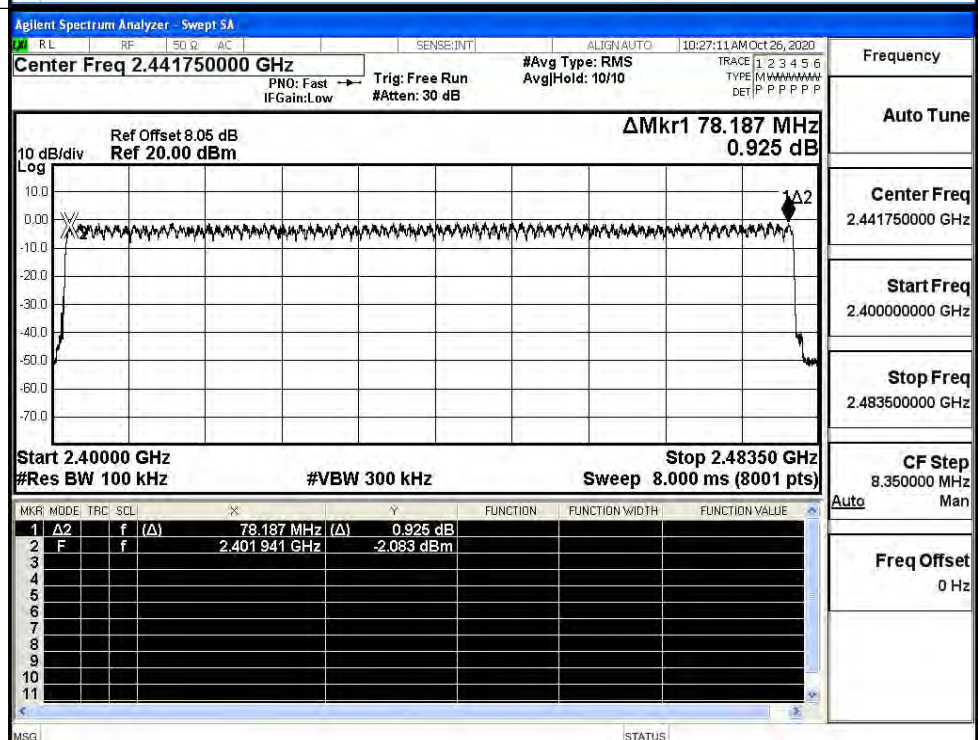


A.4 Hopping Channel Number

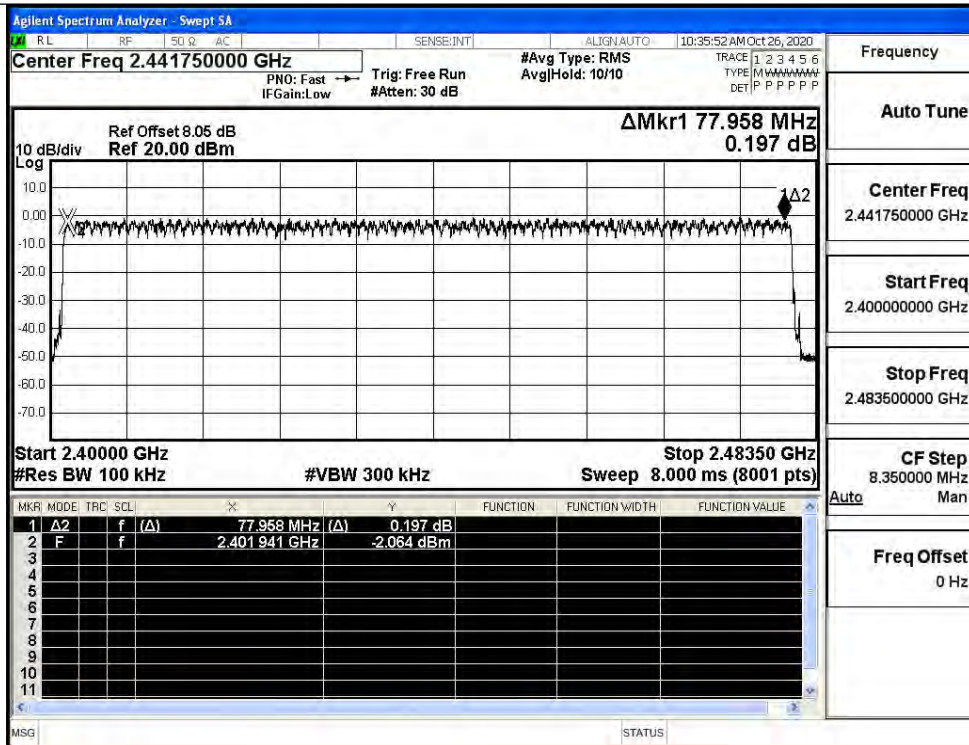
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS
8DPSK	Hop	79	≥ 15	PASS

Test Graphs

GFSK/Hop

 $\pi/4$ DQPSK/Hop

8DPSK/Hop

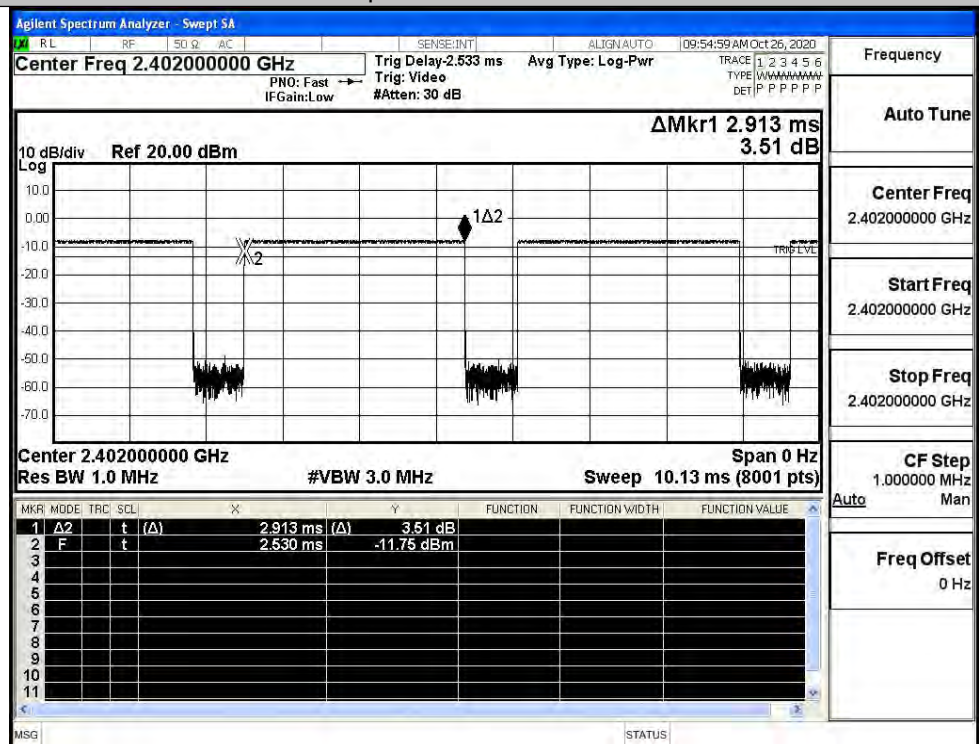


A.5 Dwell Time

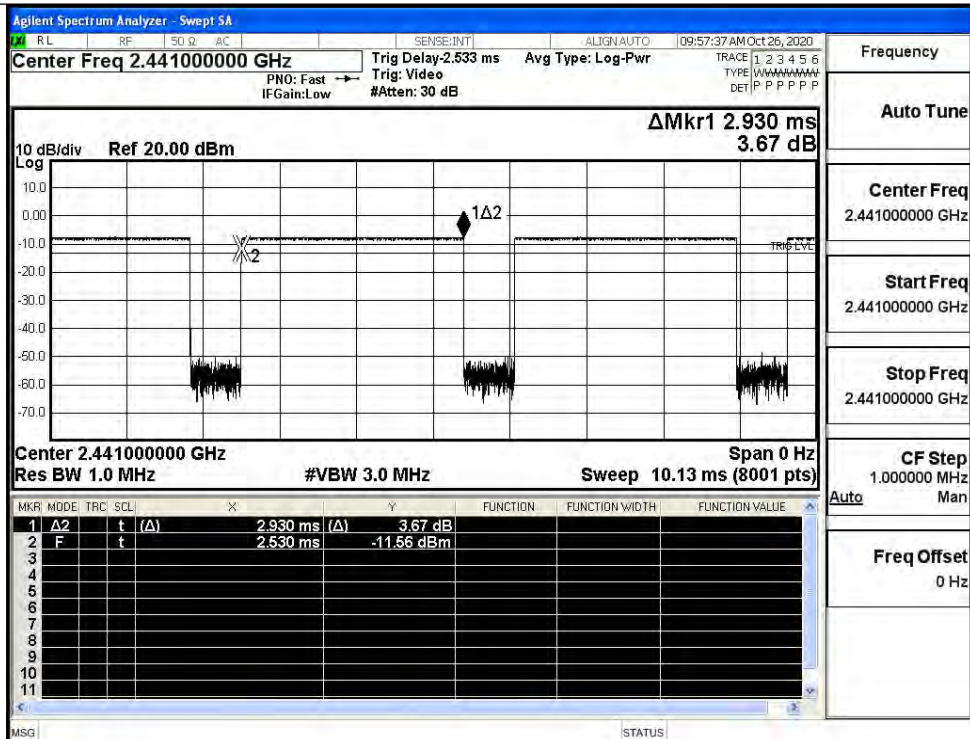
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.91	106.7	0.310	0.4	PASS
	DH5	MCH	2.93	106.7	0.313	0.4	PASS
	DH5	HCH	2.92	106.7	0.312	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.91	106.7	0.312	0.4	PASS
	2DH5	MCH	2.93	106.7	0.314	0.4	PASS
	2DH5	HCH	2.92	106.7	0.312	0.4	PASS
8DPSK	3DH5	LCH	2.91	106.7	0.310	0.4	PASS
	3DH5	MCH	2.93	106.7	0.313	0.4	PASS
	3DH5	HCH	2.92	106.7	0.312	0.4	PASS

Test Graphs

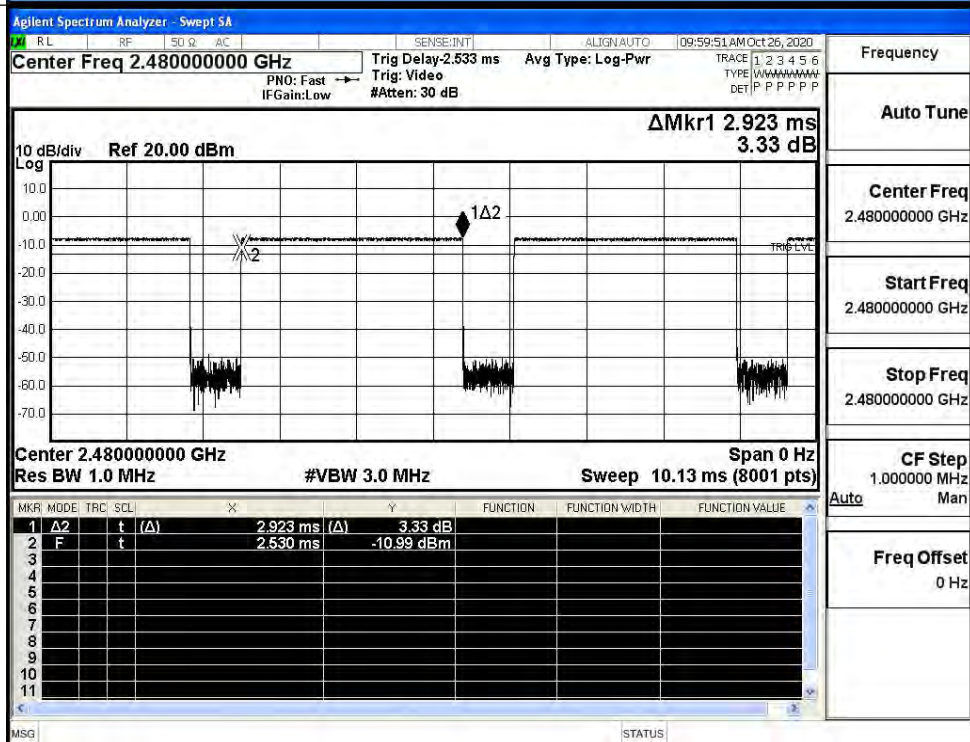
GFSK_DH5/LCH



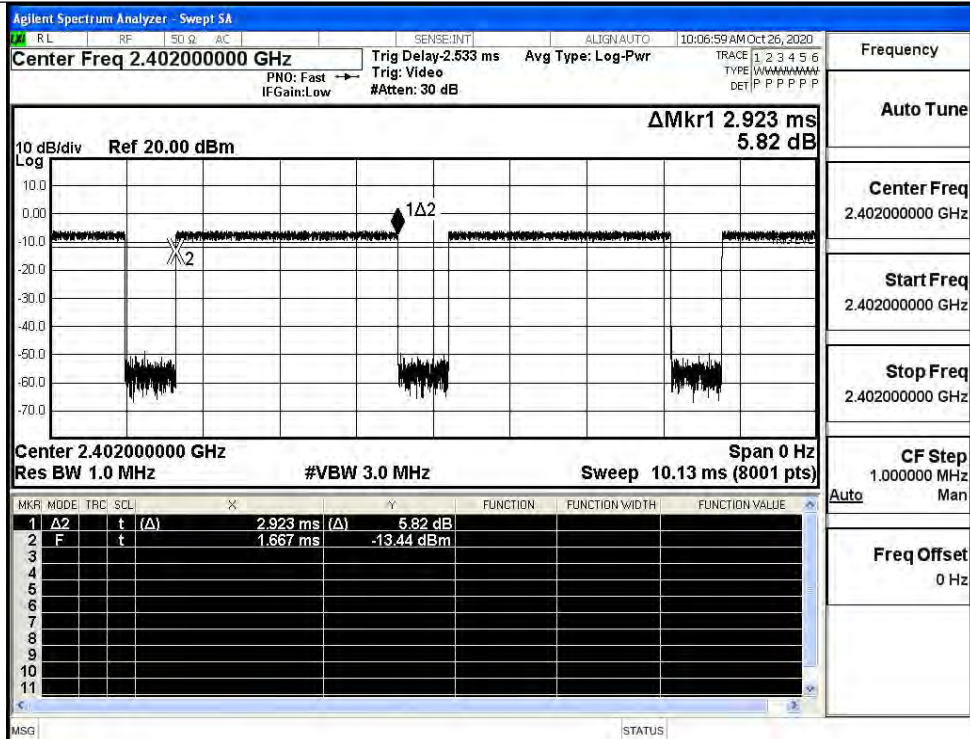
GFSK_DH5/MCH



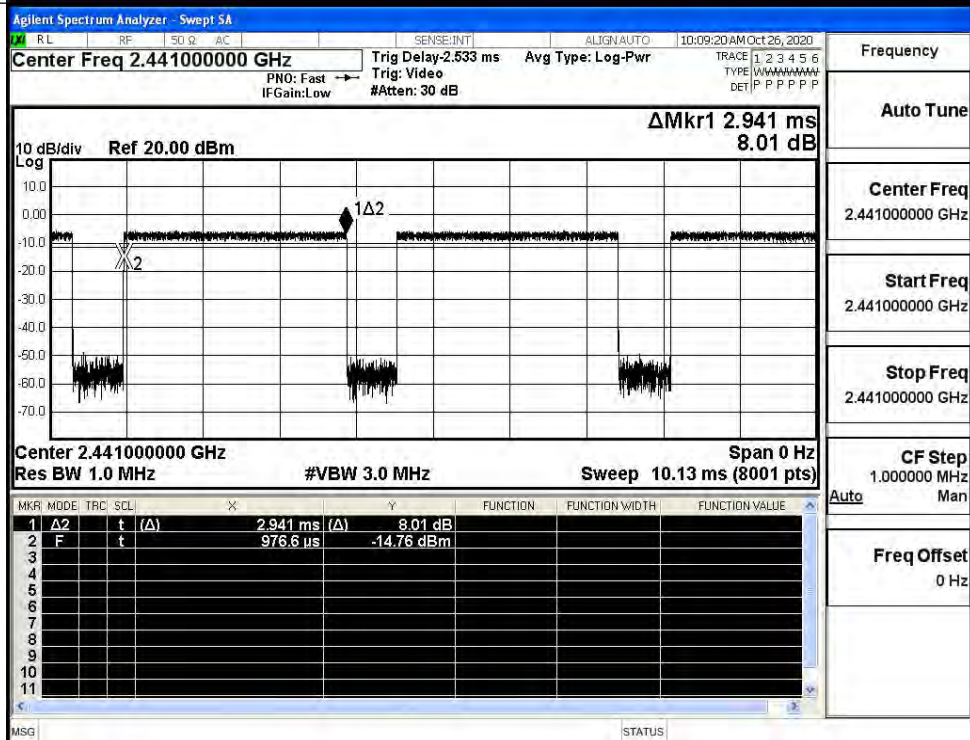
GFSK_DH5/HCH



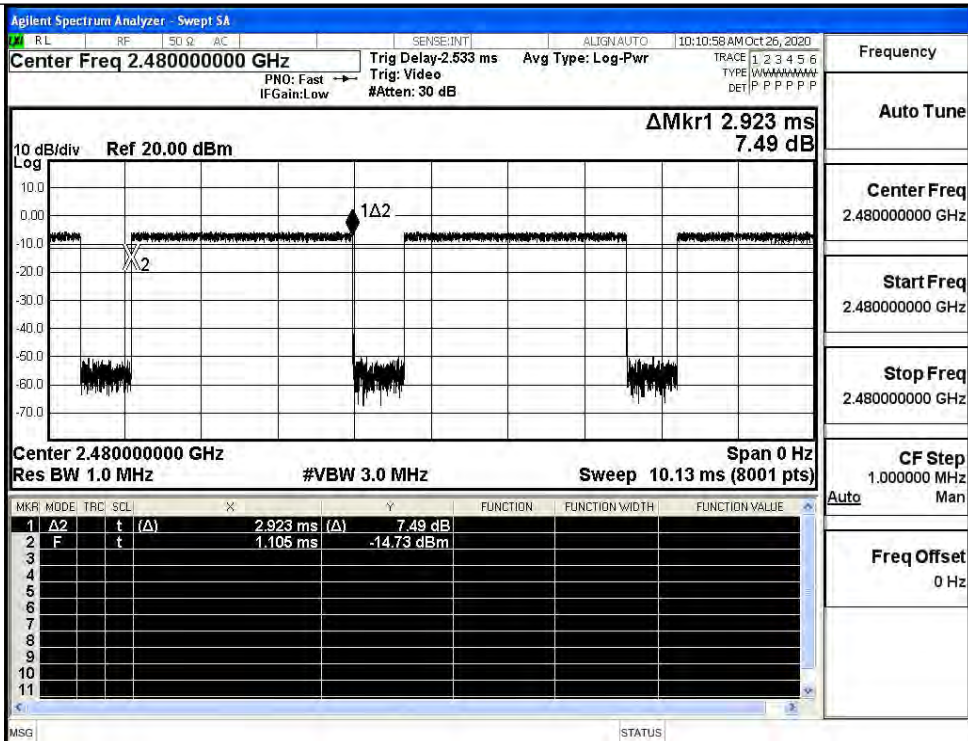
$\pi/4$ DQPSK
_2DH5/LCH



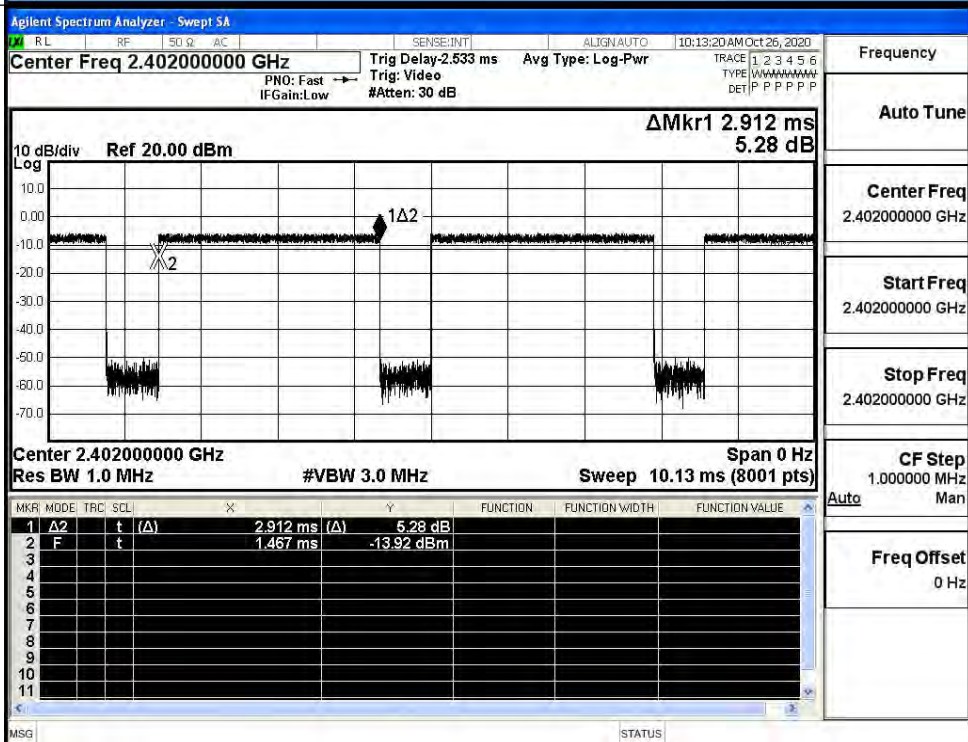
$\pi/4$ DQPSK
_2DH5/MCH



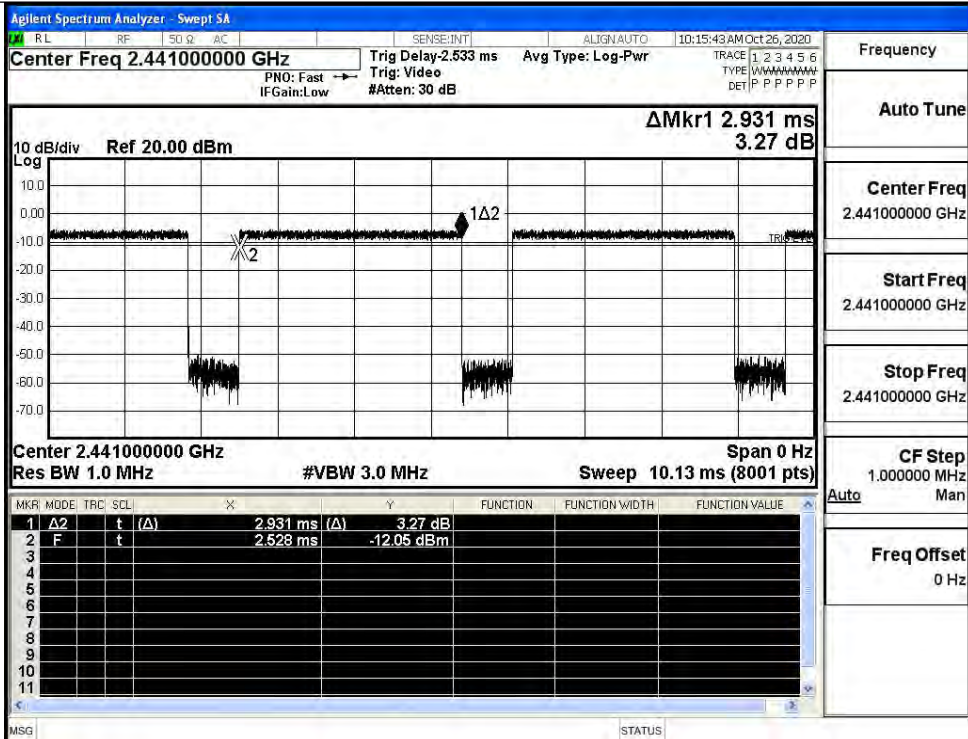
$\pi/4$ DQPSK
_2DH5/HCH



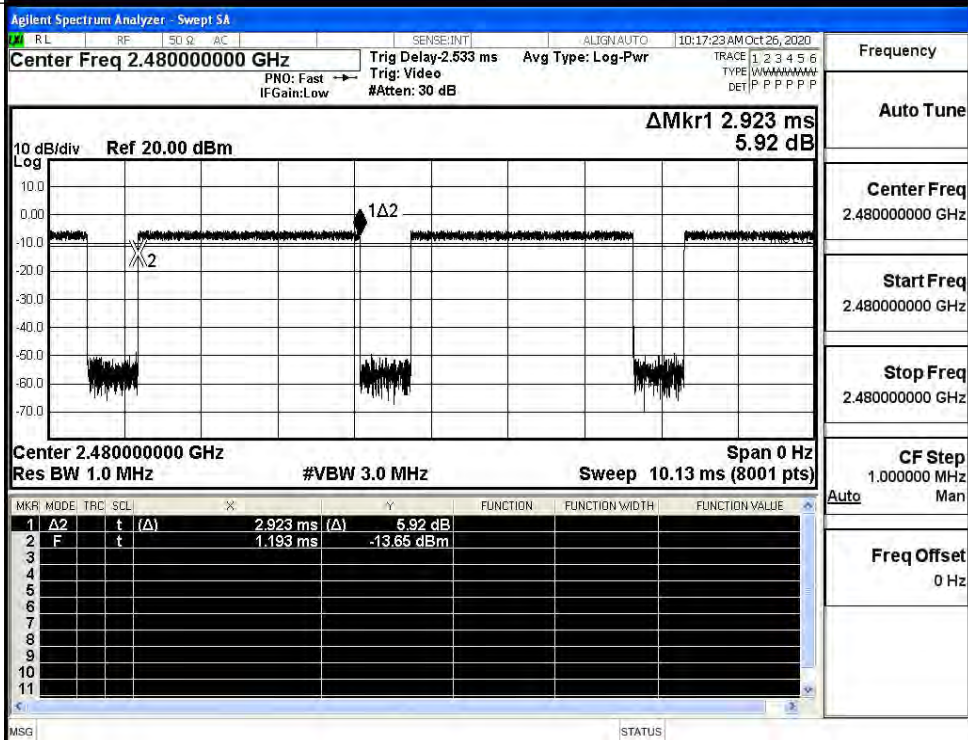
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



8DPSK_3DH5/HCH

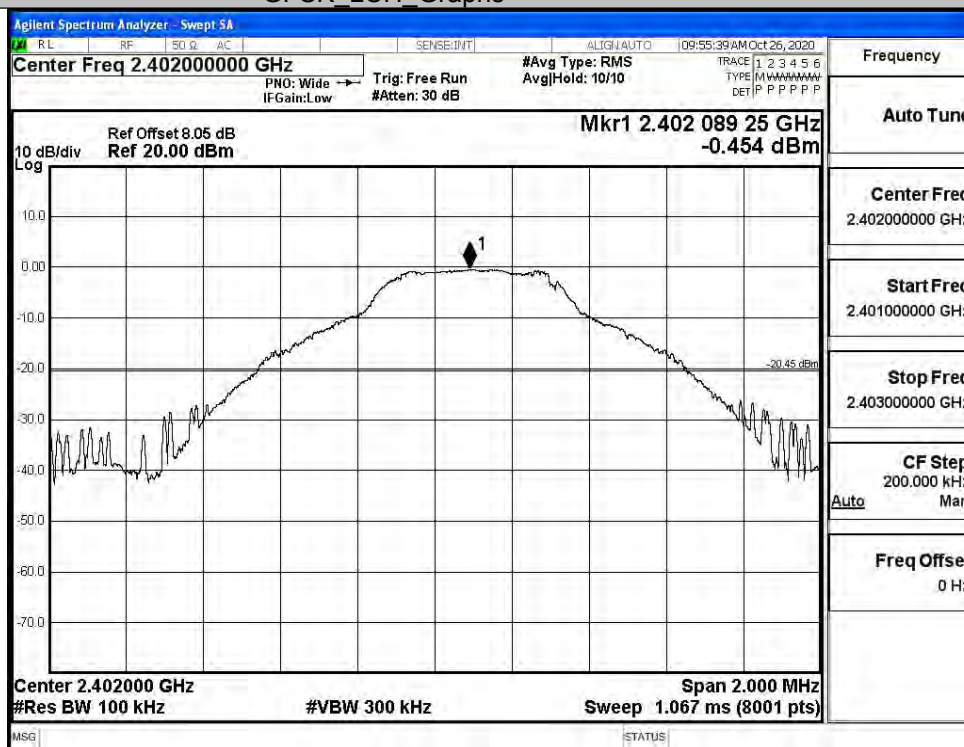


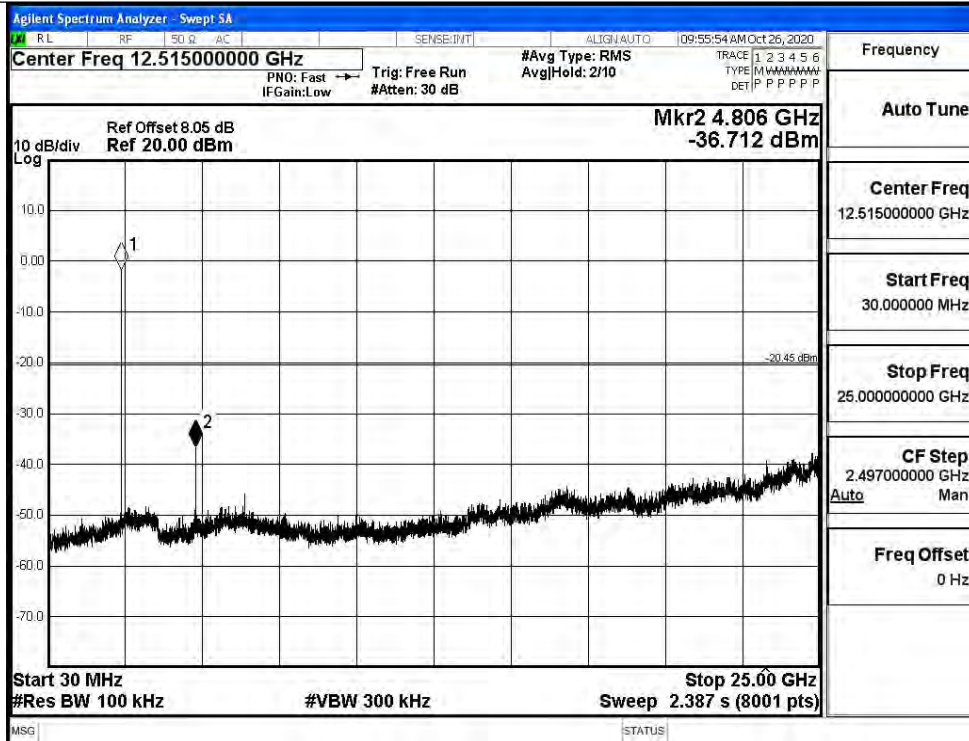
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.454	-36.712	-20.454	PASS
	MCH	-0.37	-37.669	-20.370	PASS
	HCH	-0.116	-37.825	-20.116	PASS
$\pi/4$ DQPSK	LCH	-1.568	-37.109	-21.568	PASS
	MCH	-1.299	-37.528	-21.299	PASS
	HCH	-1.357	-38.186	-21.357	PASS
8DPSK	LCH	-1.594	-37.520	-21.594	PASS
	MCH	-1.391	-37.470	-21.391	PASS
	HCH	-1.282	-38.023	-21.282	PASS

GFSK LCH Graphs

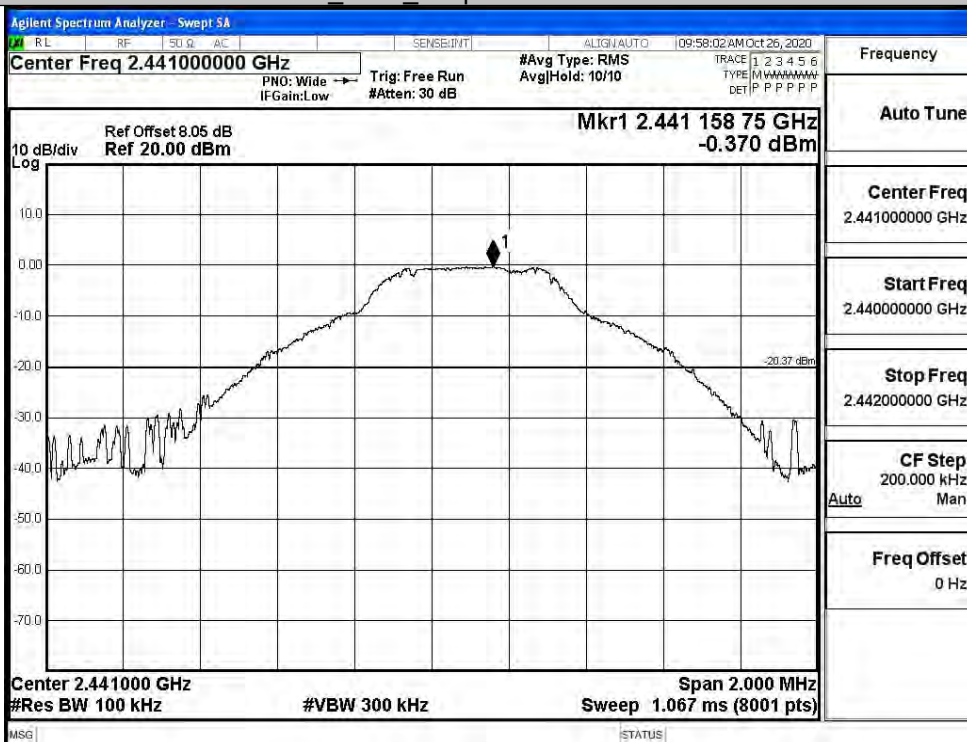
Pref



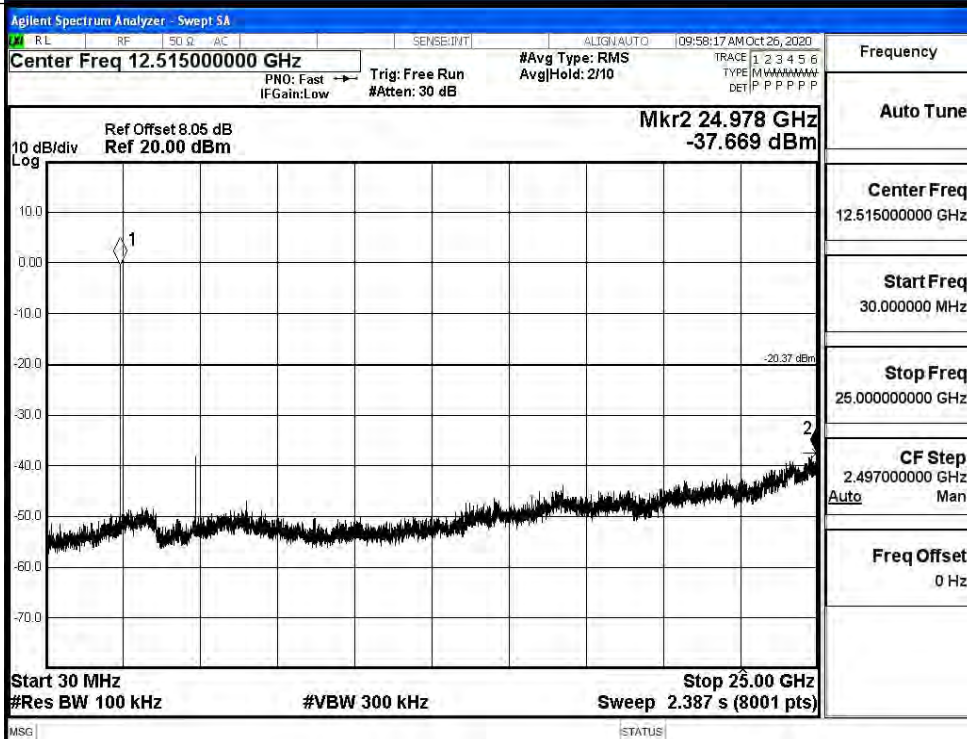
P_{uw}

GFSK_MCH_Graphs

Pref

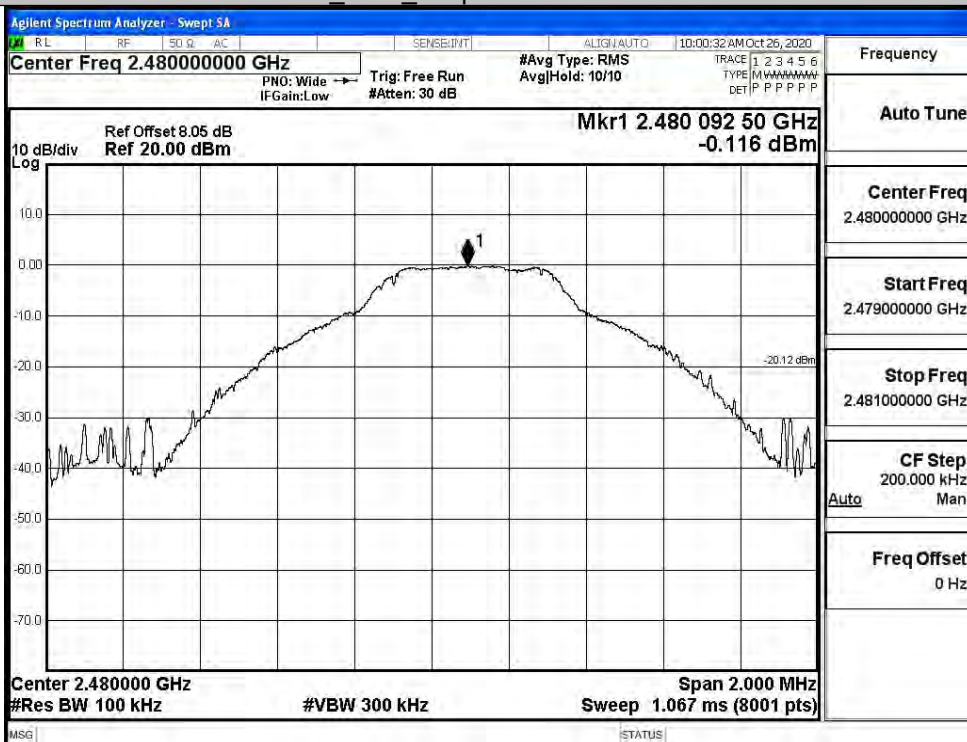


Puw

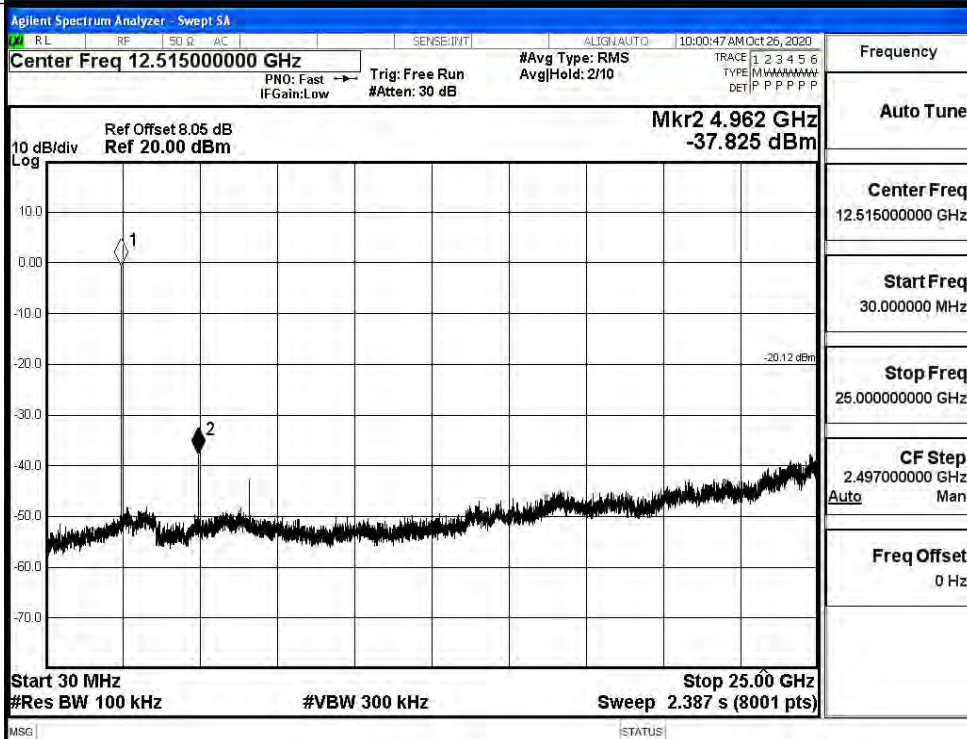


GFSK_HCH_Graphs

Pref

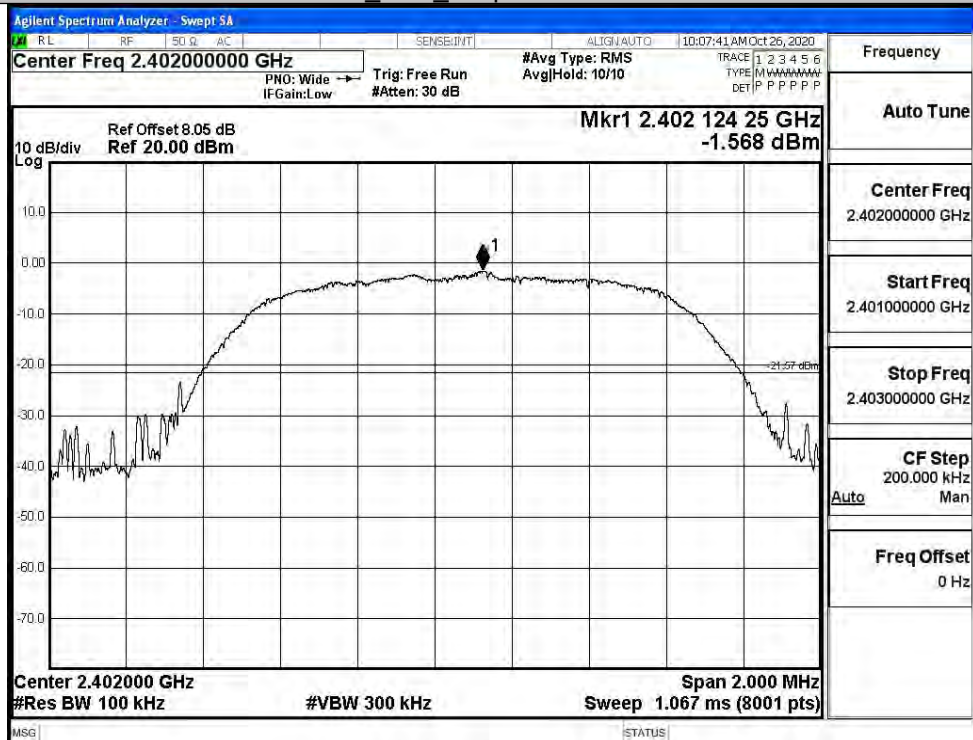


Puw

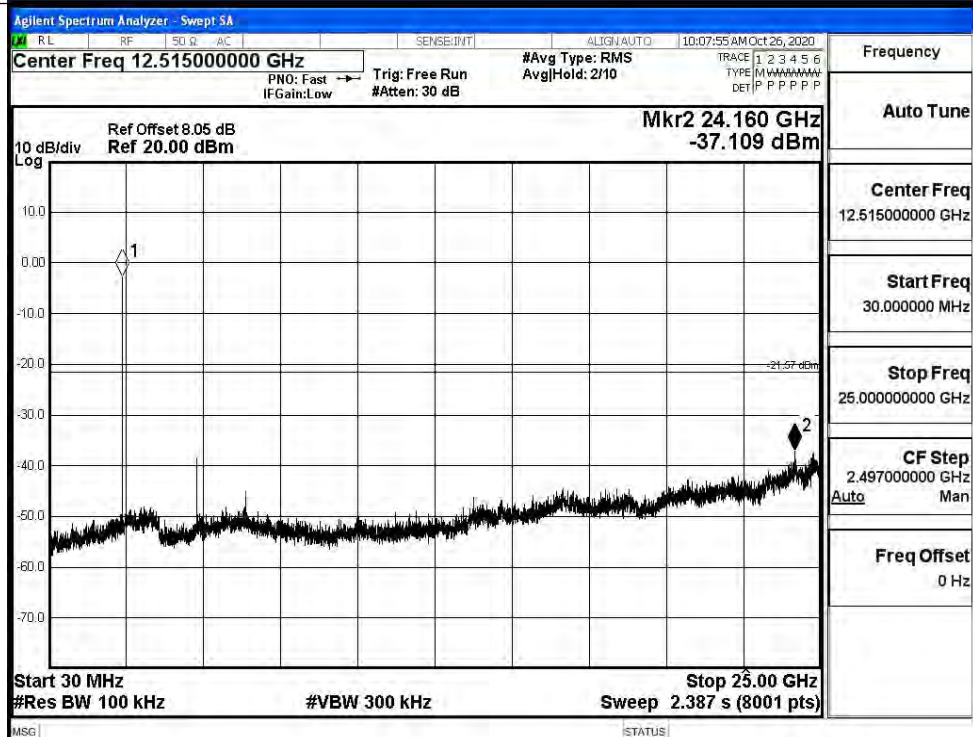


$\pi/4$ DQPSK_LCH_Graphs

Pref

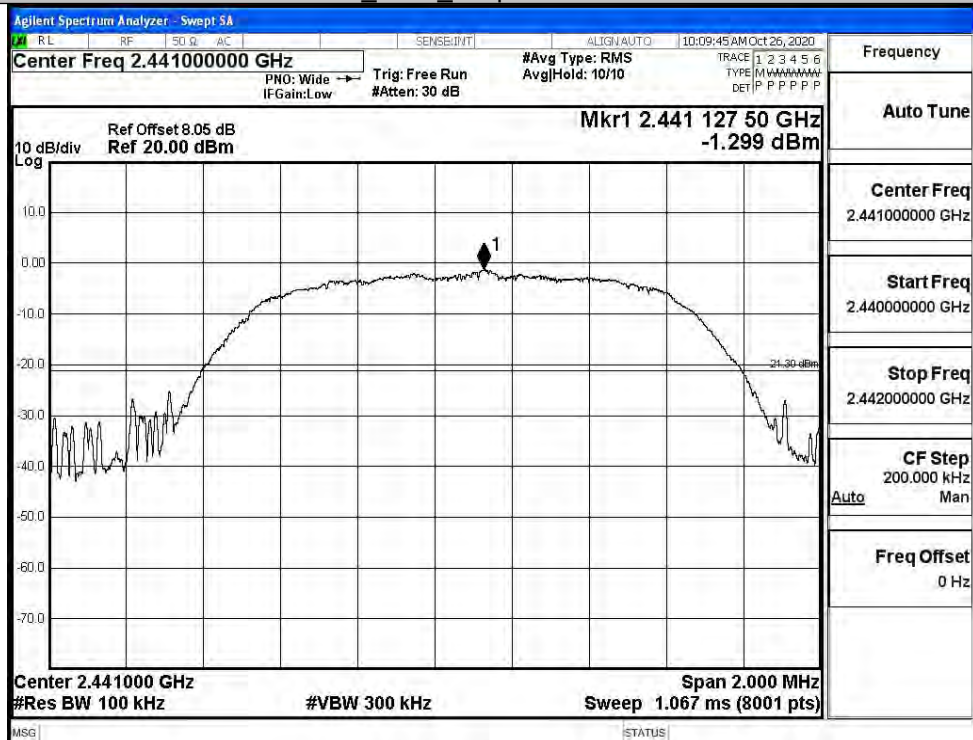


Puw

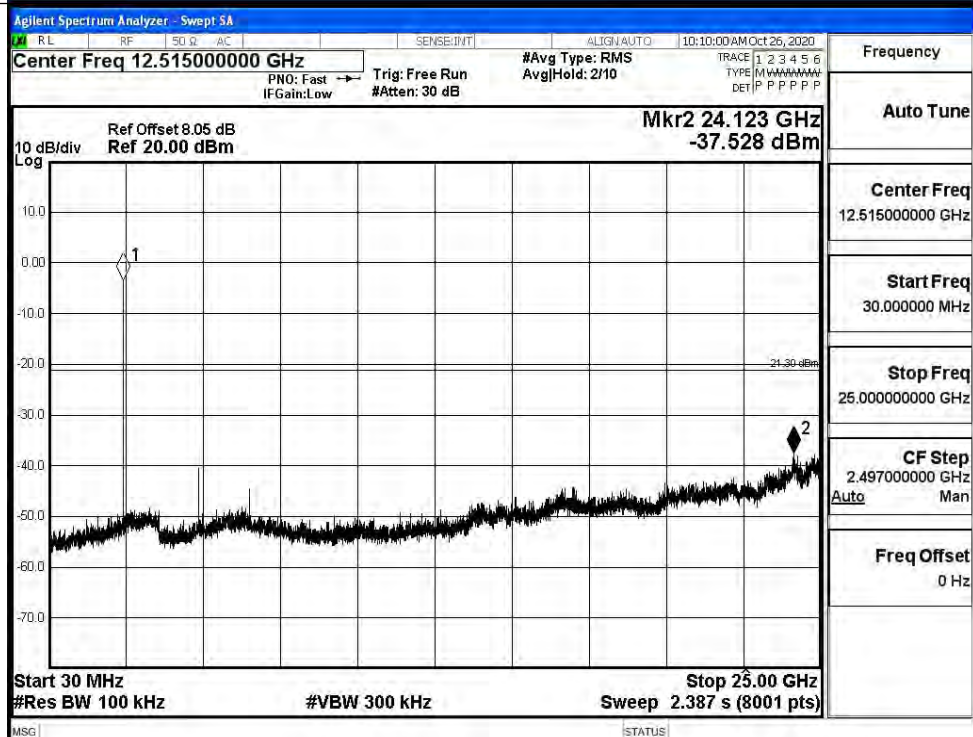


π /4DQPSK_MCH_Graphs

Pref

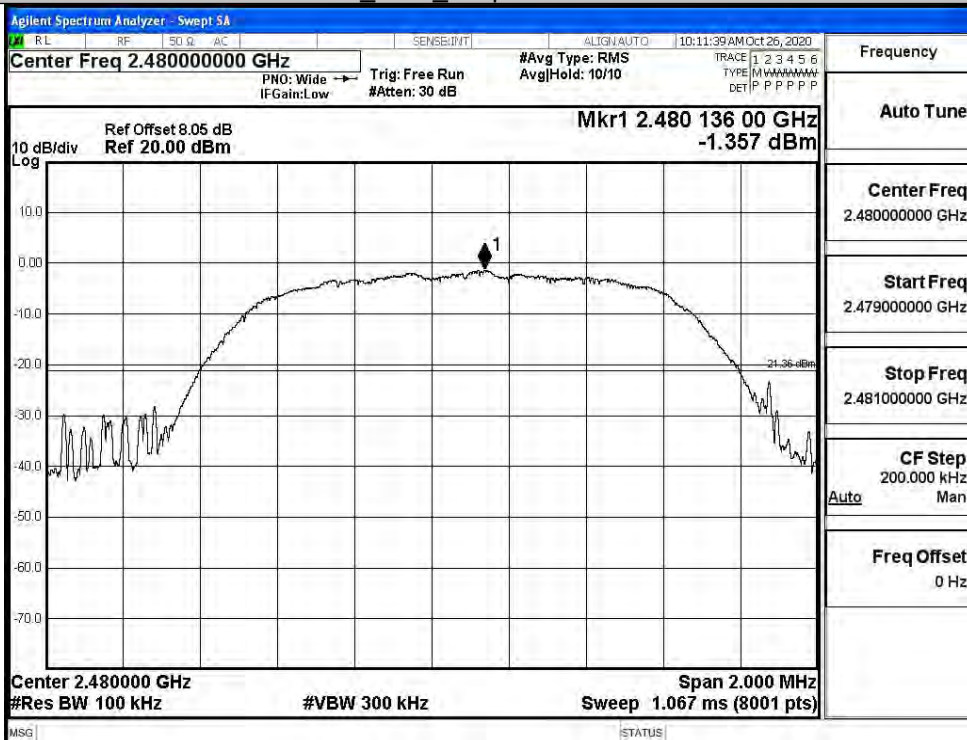


Puw



π /4DQPSK_HCH_Graphs

Pref

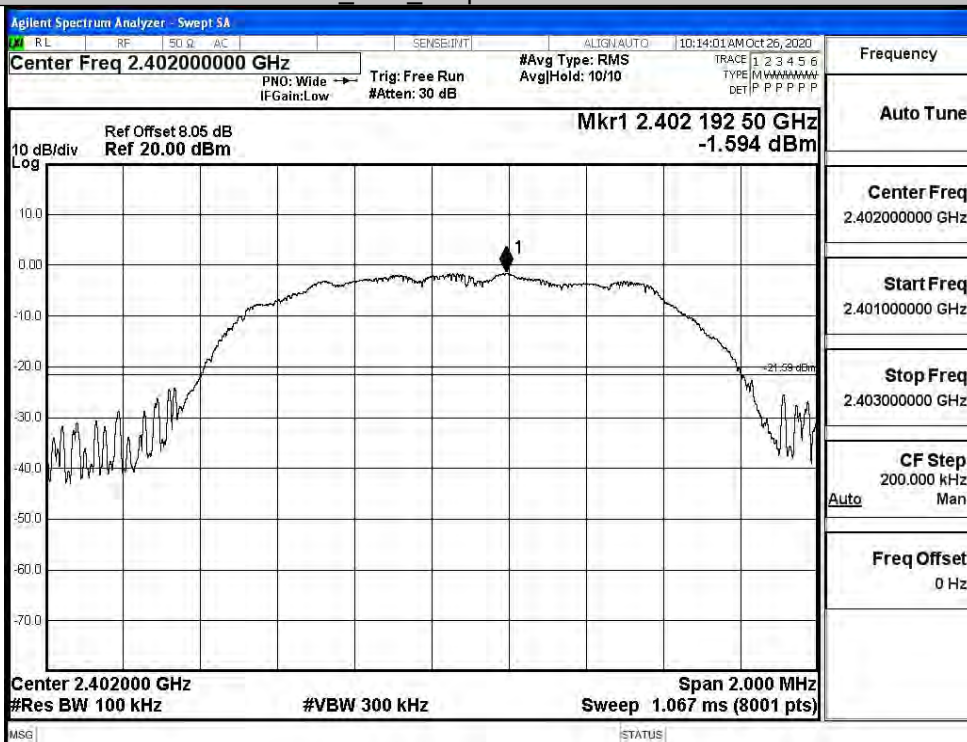


Puw

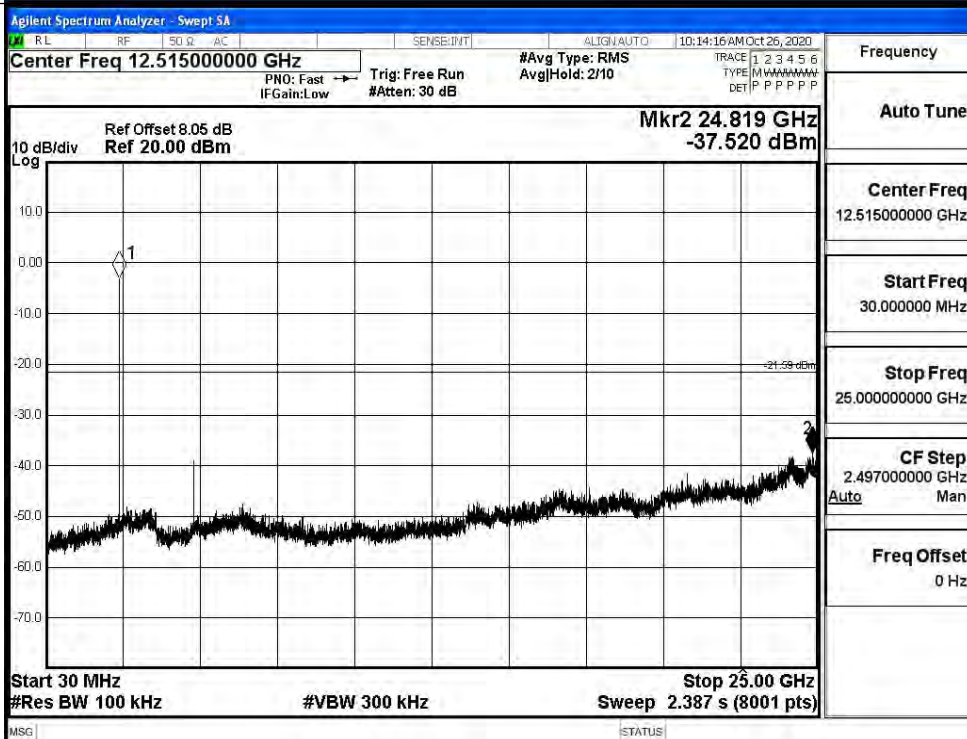


8DPSK_LCH_Graphs

Pref

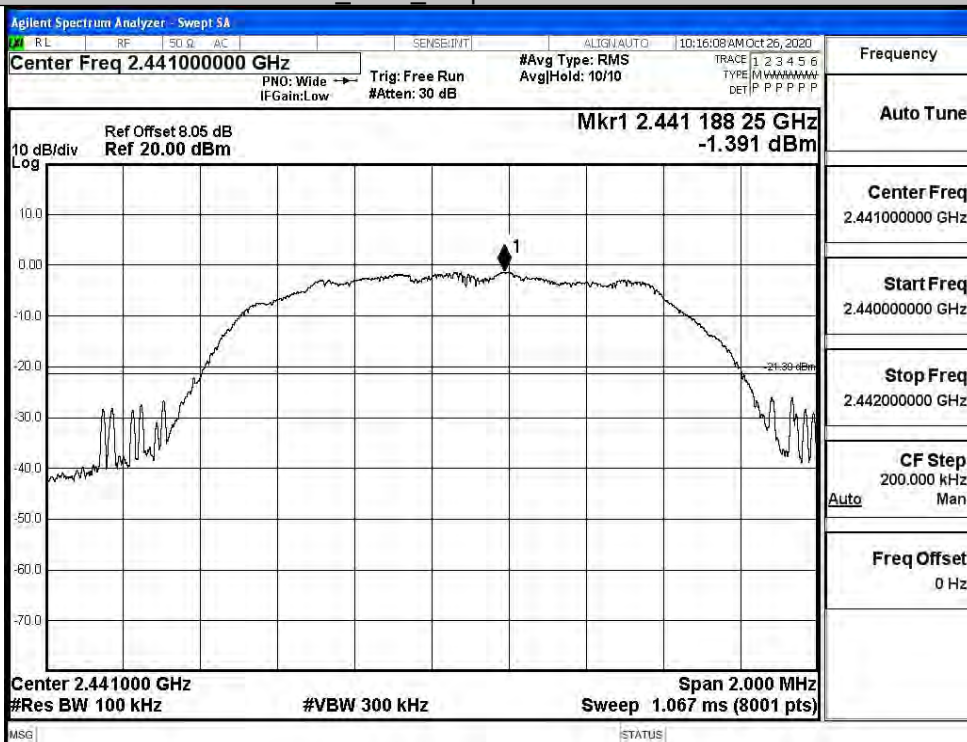


Puw

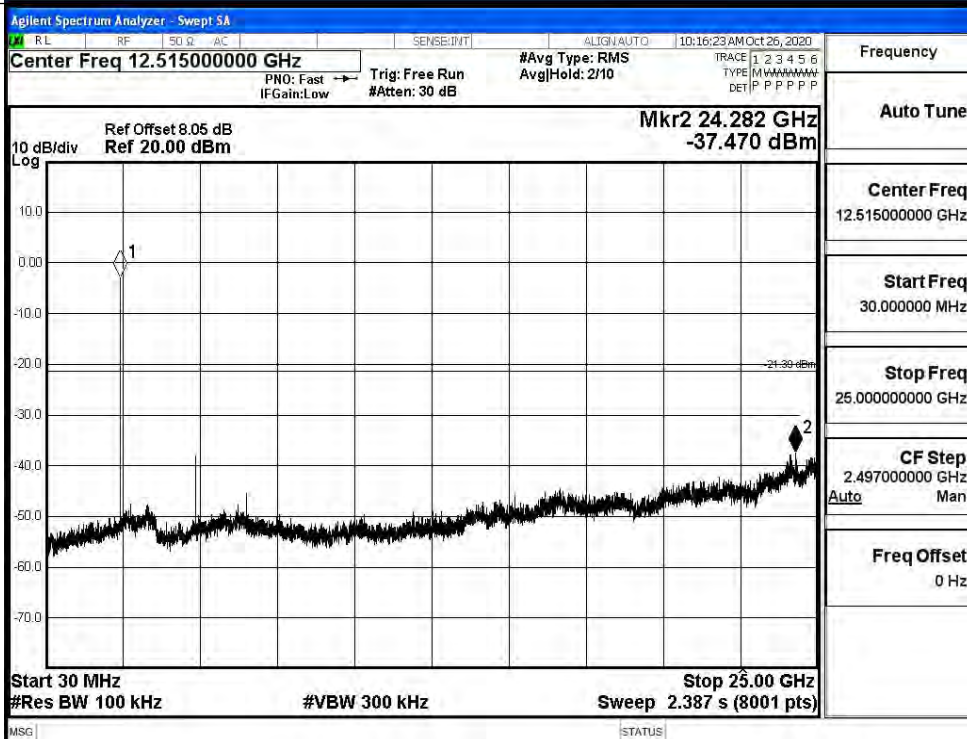


8DPSK_MCH_Graphs

Pref

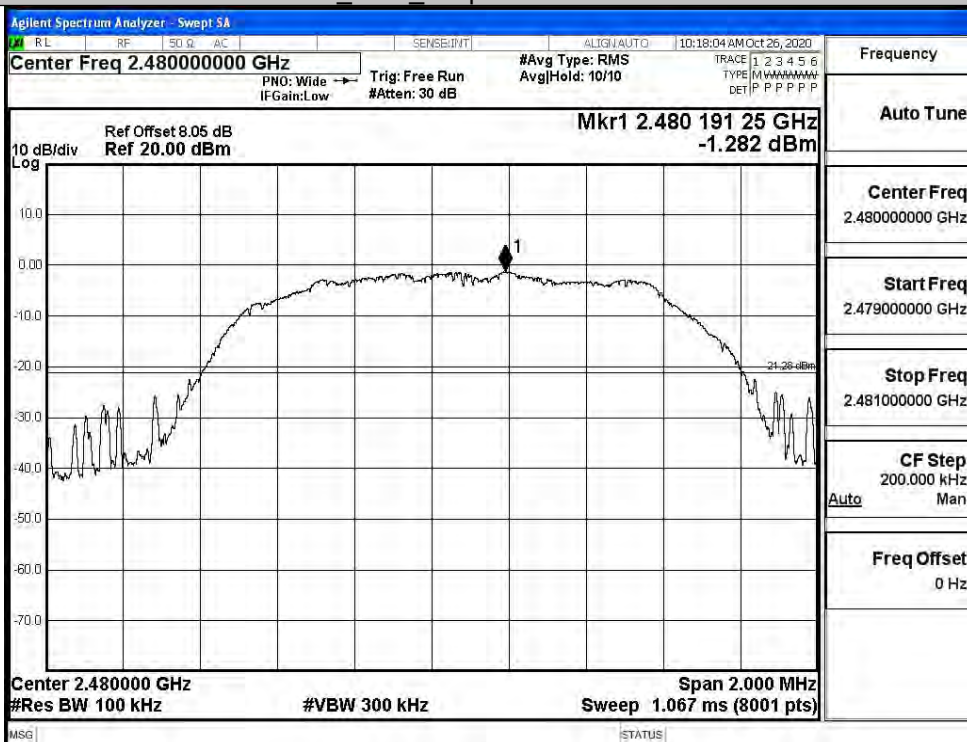


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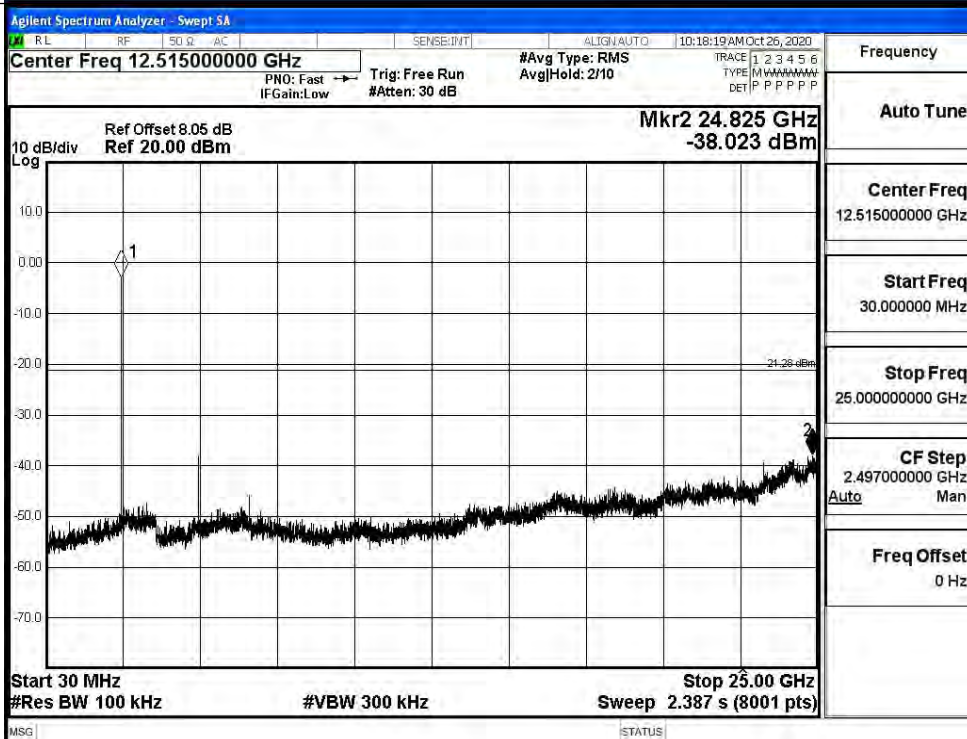


8DPSK_HCH_Graphs

Pref



Puw

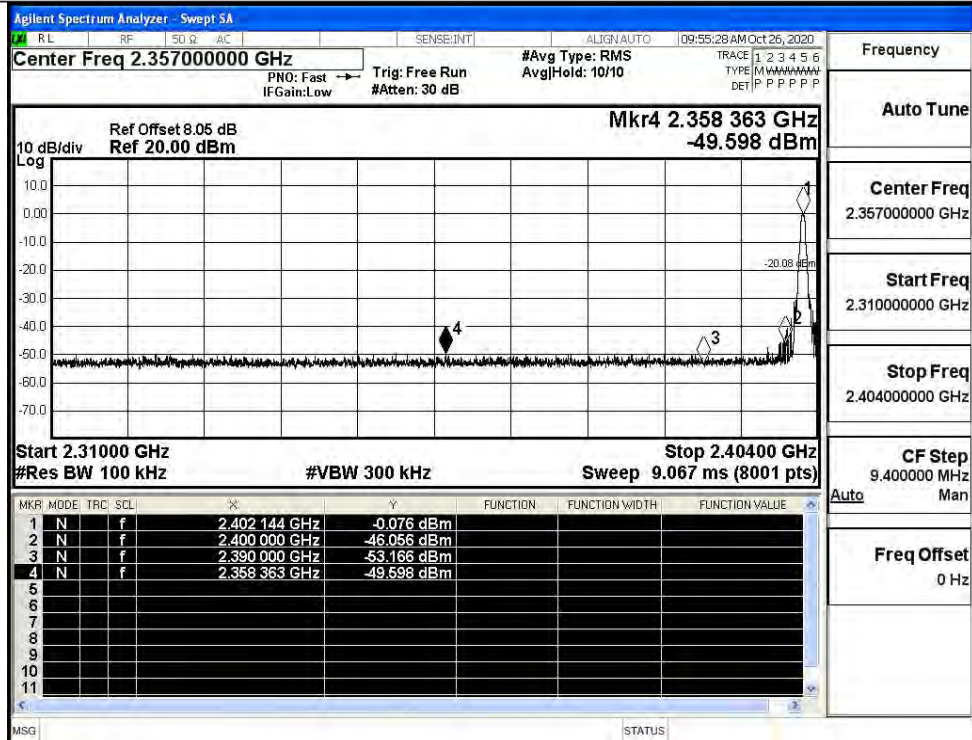


A.7 Band-edge for RF Conducted Emissions

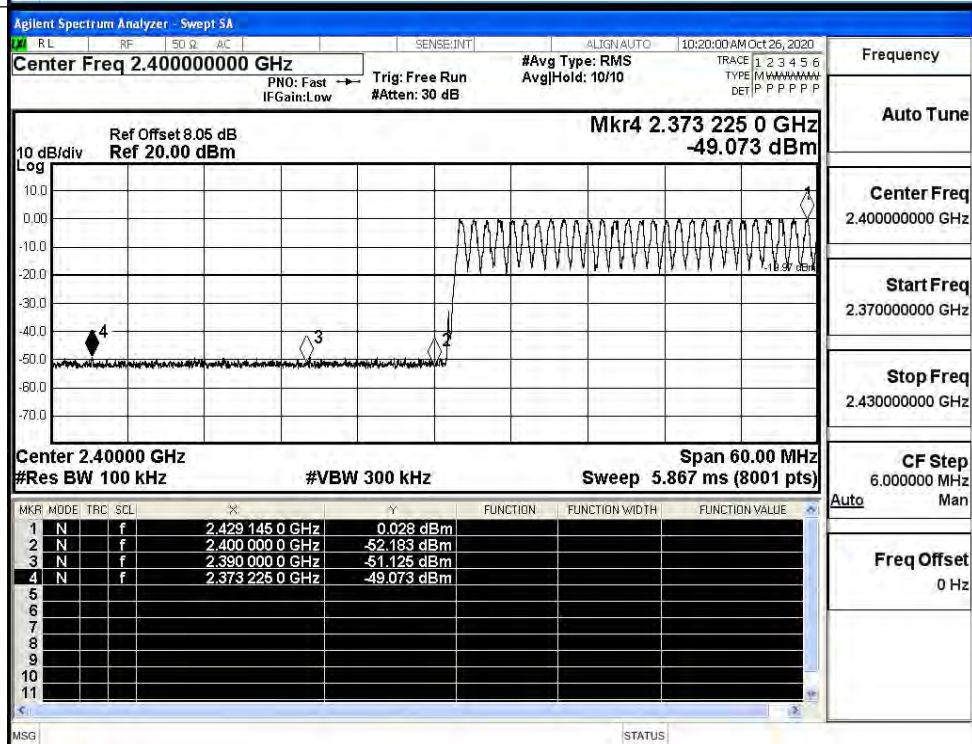
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.076	Off	-49.598	-20.08	PASS
			0.028	On	-49.073	-19.97	PASS
	HCH	2480	0.239	Off	-49.338	-19.76	PASS
			0.497	On	-48.574	-19.5	PASS
$\pi/4$ DQPSK	LCH	2402	-1.512	Off	-49.394	-21.51	PASS
			-1.223	On	-49.056	-21.22	PASS
	HCH	2480	-1.130	Off	-48.295	-21.13	PASS
			-0.938	On	-48.524	-20.94	PASS
8DPSK	LCH	2402	-1.412	Off	-49.596	-21.41	PASS
			-0.862	On	-49.009	-20.86	PASS
	HCH	2480	-0.781	Off	-46.843	-20.78	PASS
			-0.608	On	-48.345	-20.61	PASS

Test Graphs

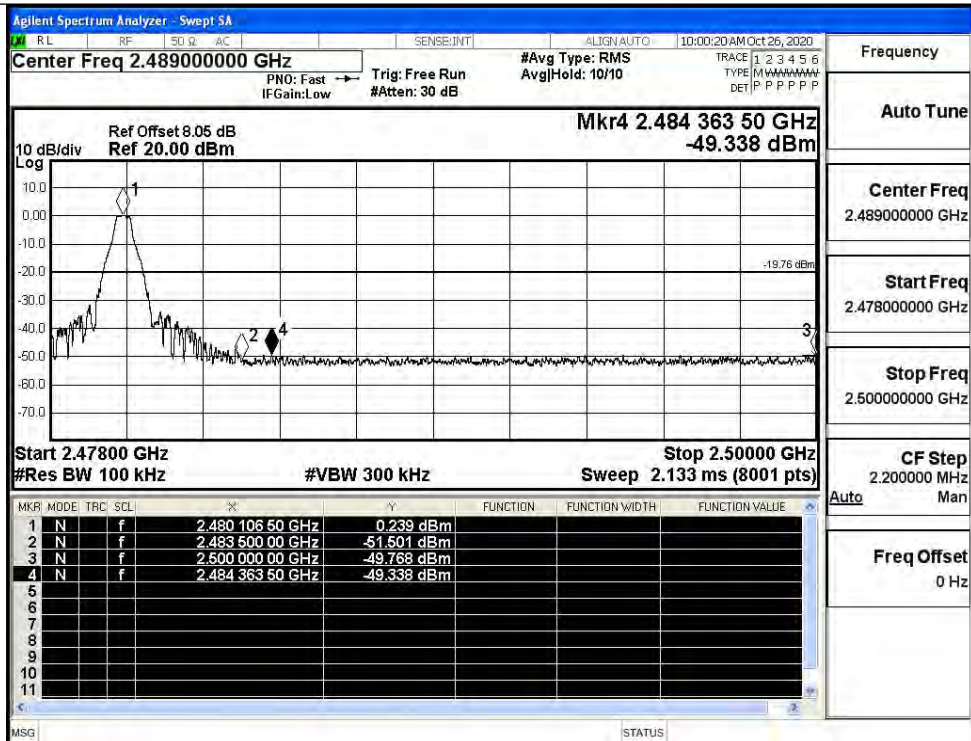
GFSK/LCH/No Hop



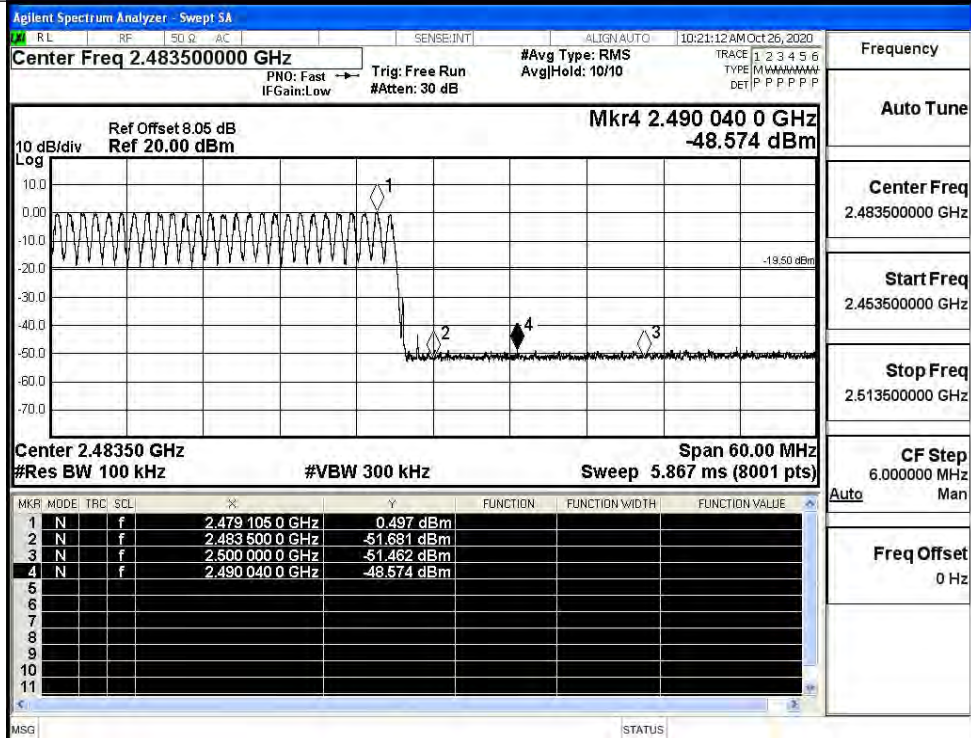
GFSK/LCH/Hop



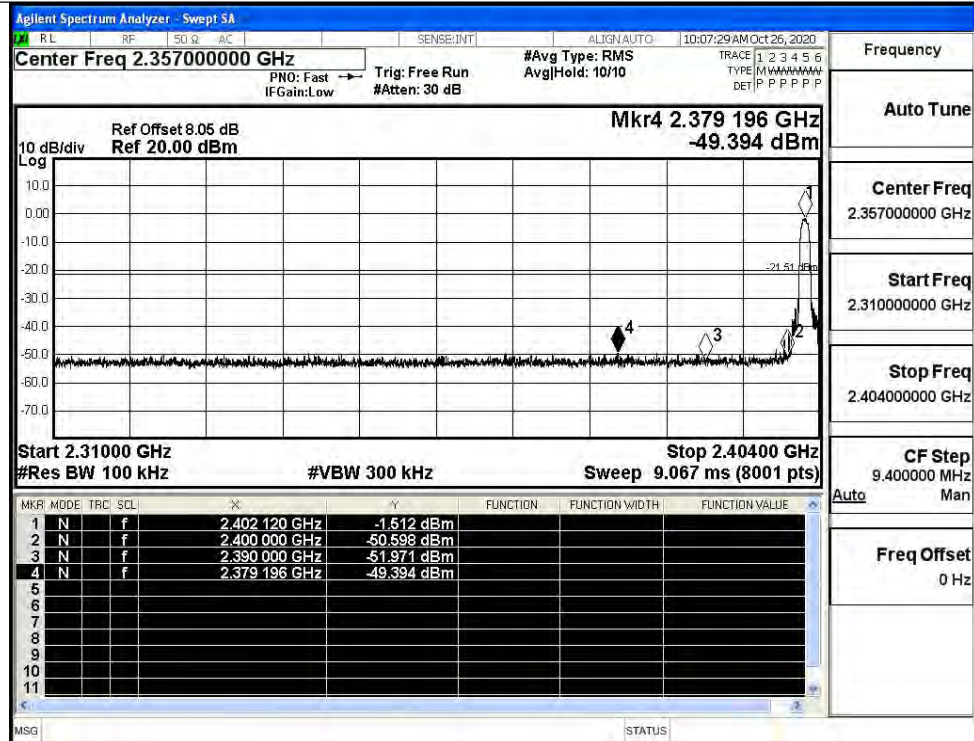
GFSK/HCH/No Hop



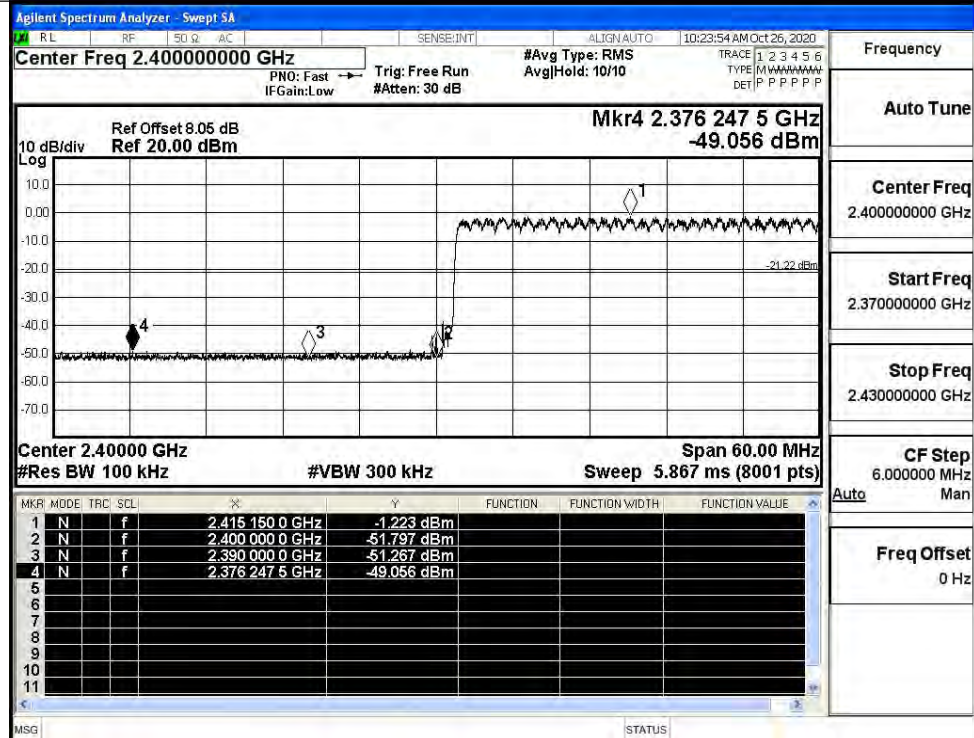
GFSK/HCH/Hop



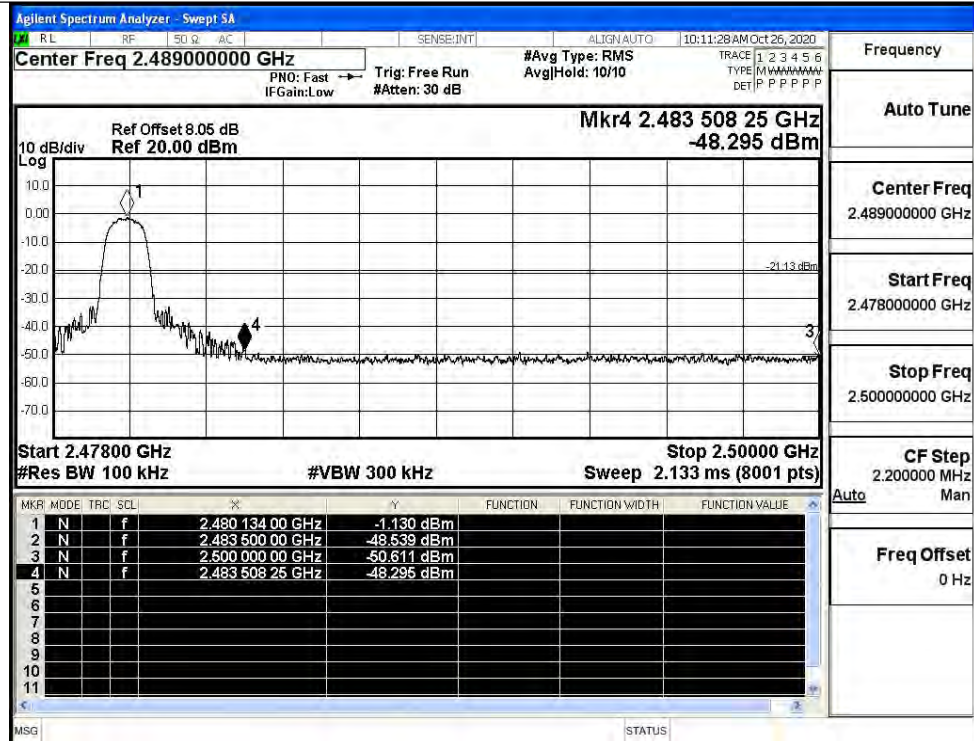
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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

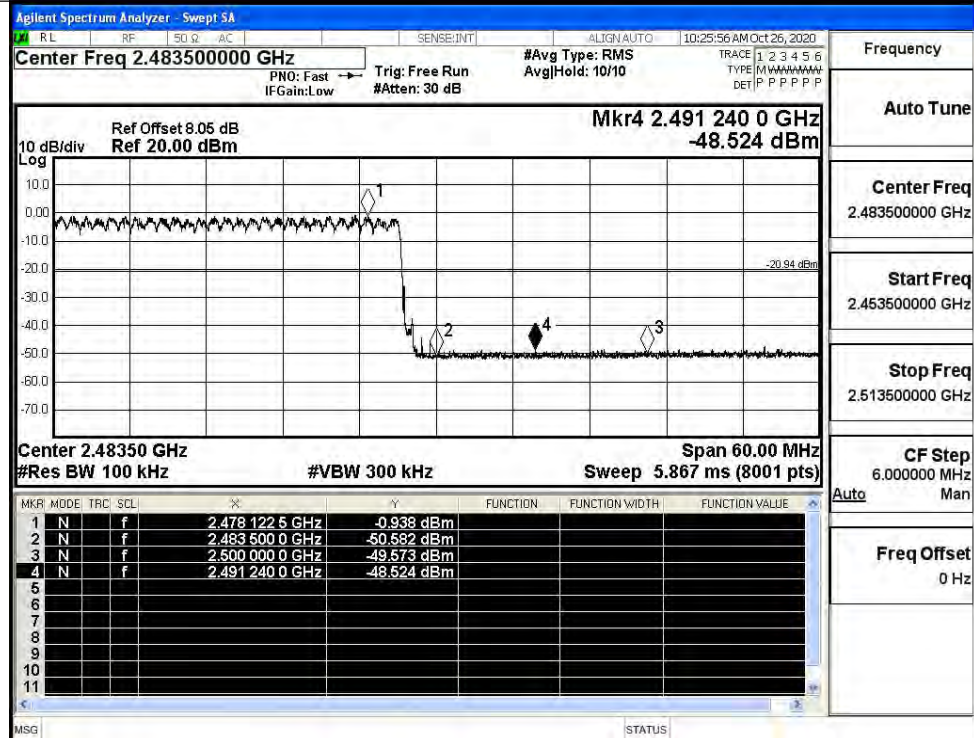


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHzFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

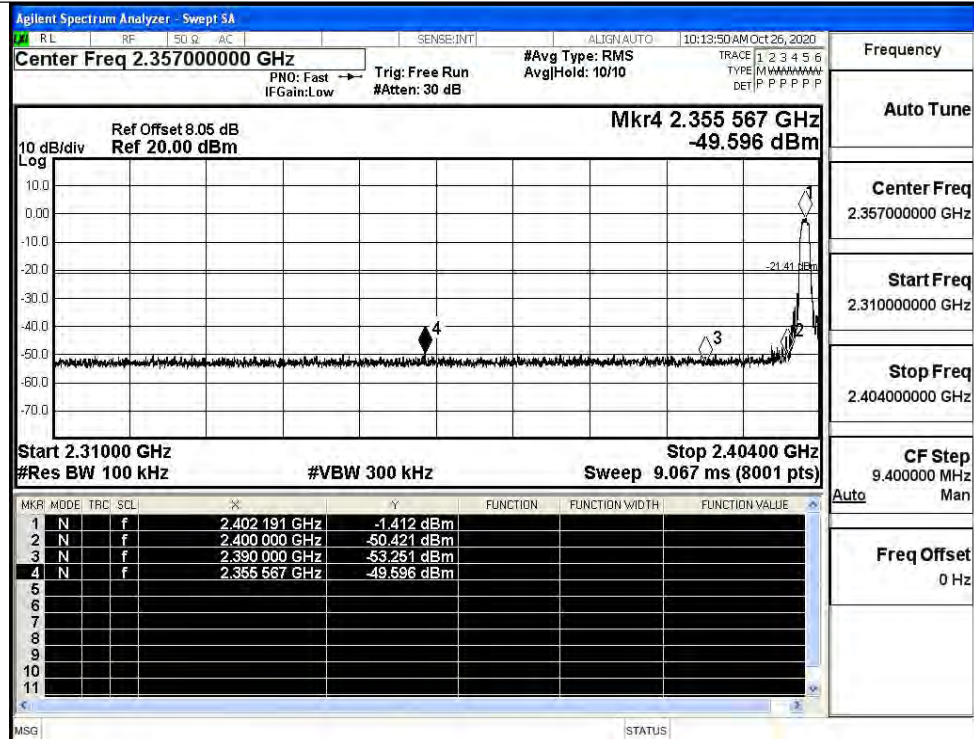


Frequency

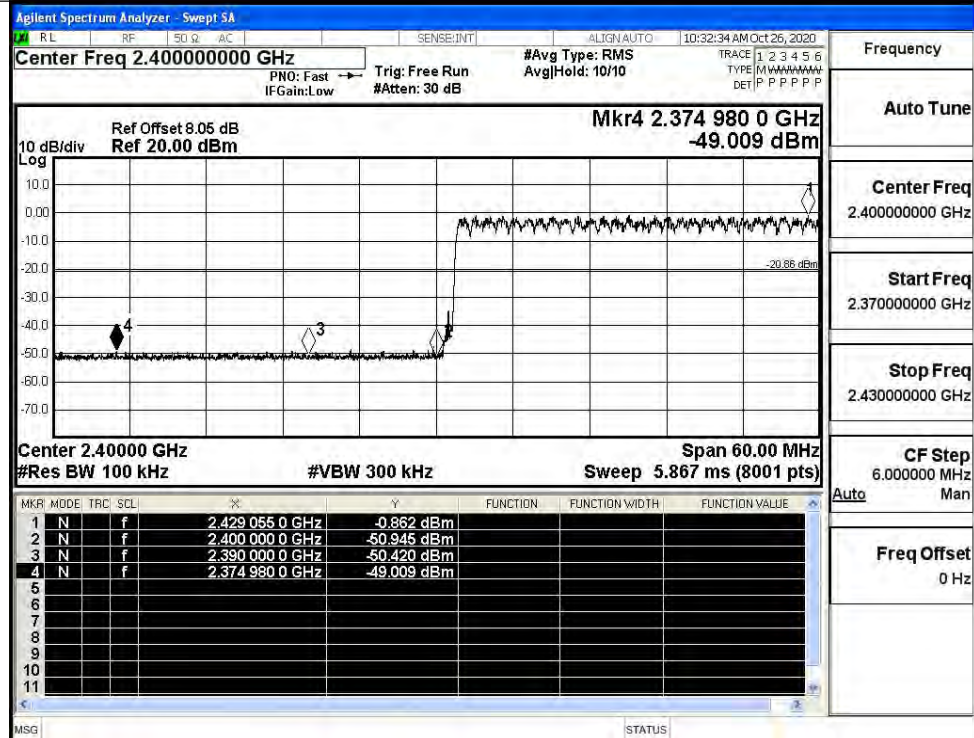
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHzFreq Offset
0 Hz

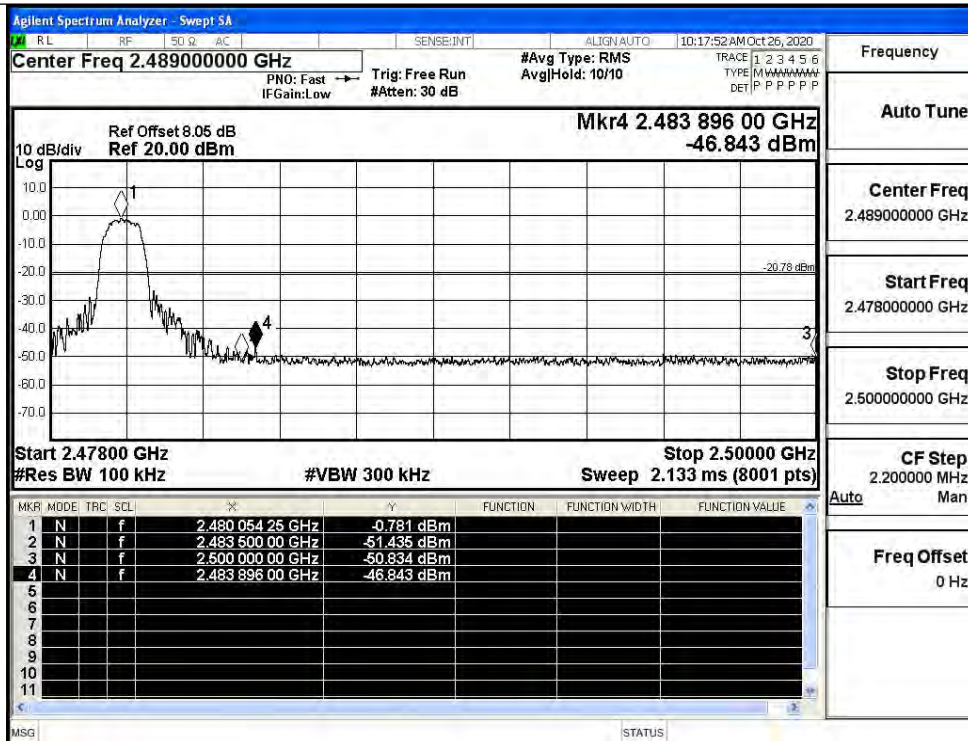
8DPSK/LCH/No Hop



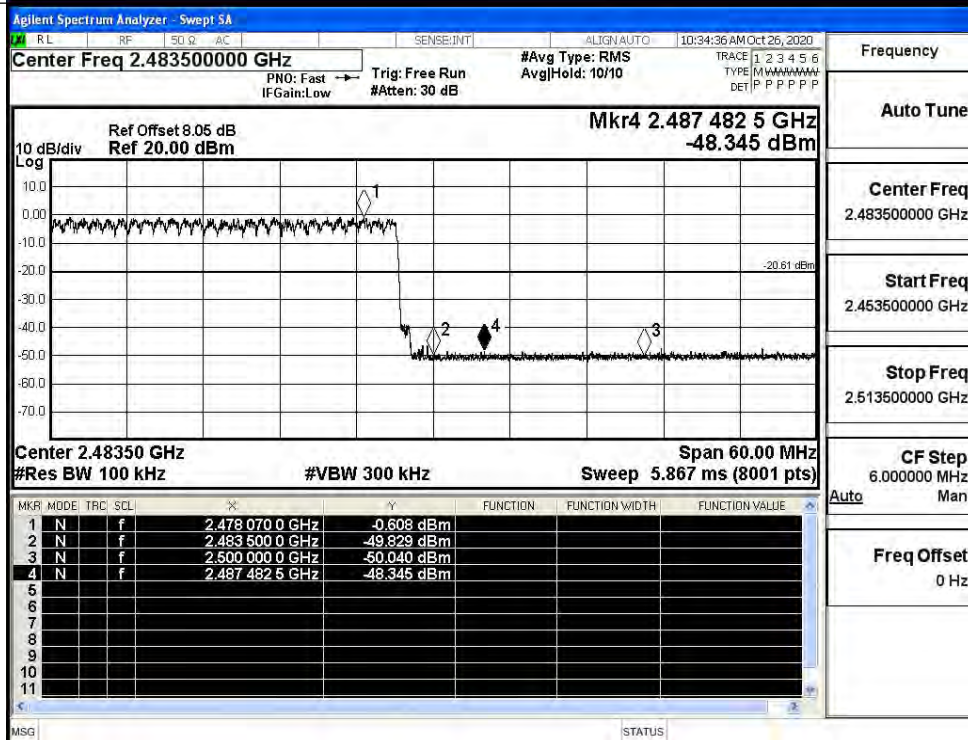
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



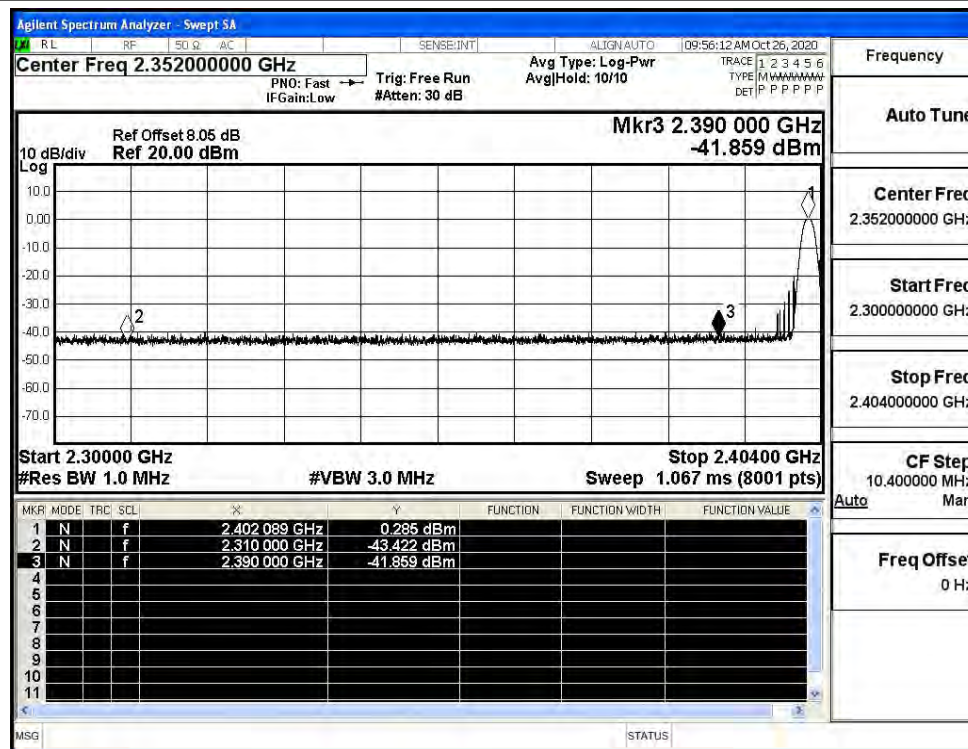
8DPSK/HCH/Hop



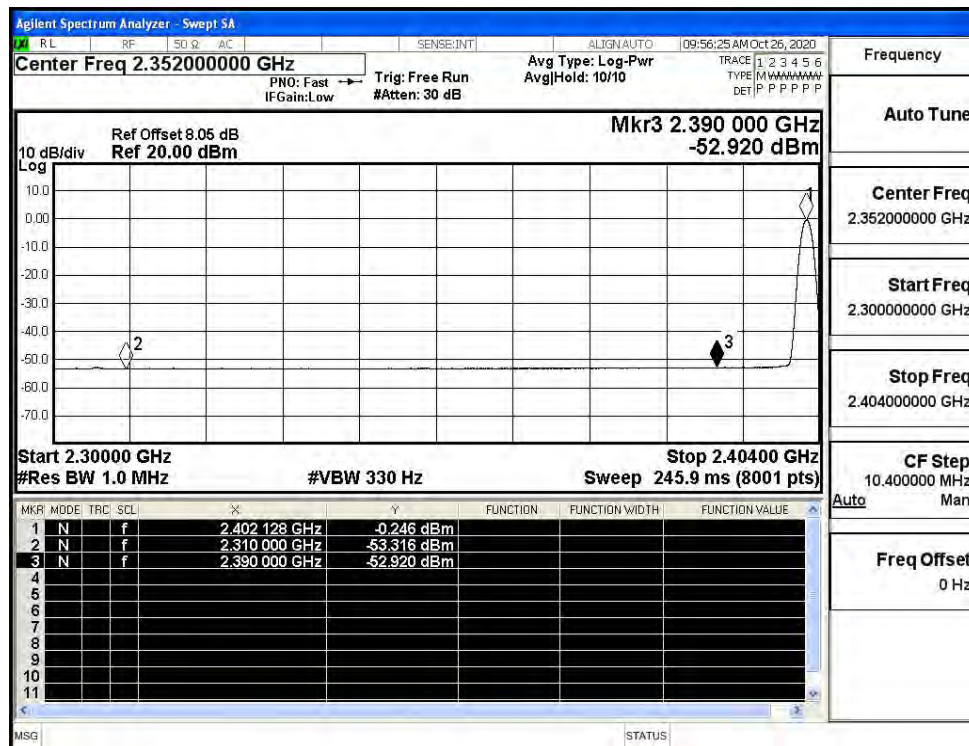
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.42	2.0	0	53.81	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	43.91	AV	54	PASS
	Off	2390.0	-41.86	2.0	0	55.37	PEAK	74	PASS
	Off	2390.0	-52.92	2.0	0	44.31	AV	54	PASS
	Off	2483.5	-41.79	2.0	0	55.44	PEAK	74	PASS
	Off	2483.5	-51.93	2.0	0	45.30	AV	54	PASS
	Off	2500.0	-41.40	2.0	0	55.83	PEAK	74	PASS
	Off	2500.0	-52.23	2.0	0	45.00	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-44.20	2.0	0	53.03	PEAK	74	PASS
	Off	2310.0	-53.29	2.0	0	43.94	AV	54	PASS
	Off	2390.0	-41.69	2.0	0	55.54	PEAK	74	PASS
	Off	2390.0	-52.82	2.0	0	44.41	AV	54	PASS
	Off	2483.5	-41.33	2.0	0	55.90	PEAK	74	PASS
	Off	2483.5	-51.80	2.0	0	45.43	AV	54	PASS
	Off	2500.0	-43.26	2.0	0	53.97	PEAK	74	PASS
	Off	2500.0	-52.17	2.0	0	45.06	AV	54	PASS
8DPSK	Off	2310.0	-43.69	2.0	0	53.54	PEAK	74	PASS
	Off	2310.0	-53.19	2.0	0	44.04	AV	54	PASS
	Off	2390.0	-41.02	2.0	0	56.21	PEAK	74	PASS
	Off	2390.0	-52.87	2.0	0	44.36	AV	54	PASS
	Off	2483.5	-41.72	2.0	0	55.51	PEAK	74	PASS
	Off	2483.5	-51.82	2.0	0	45.41	AV	54	PASS
	Off	2500.0	-41.80	2.0	0	55.43	PEAK	74	PASS
	Off	2500.0	-52.22	2.0	0	45.01	AV	54	PASS

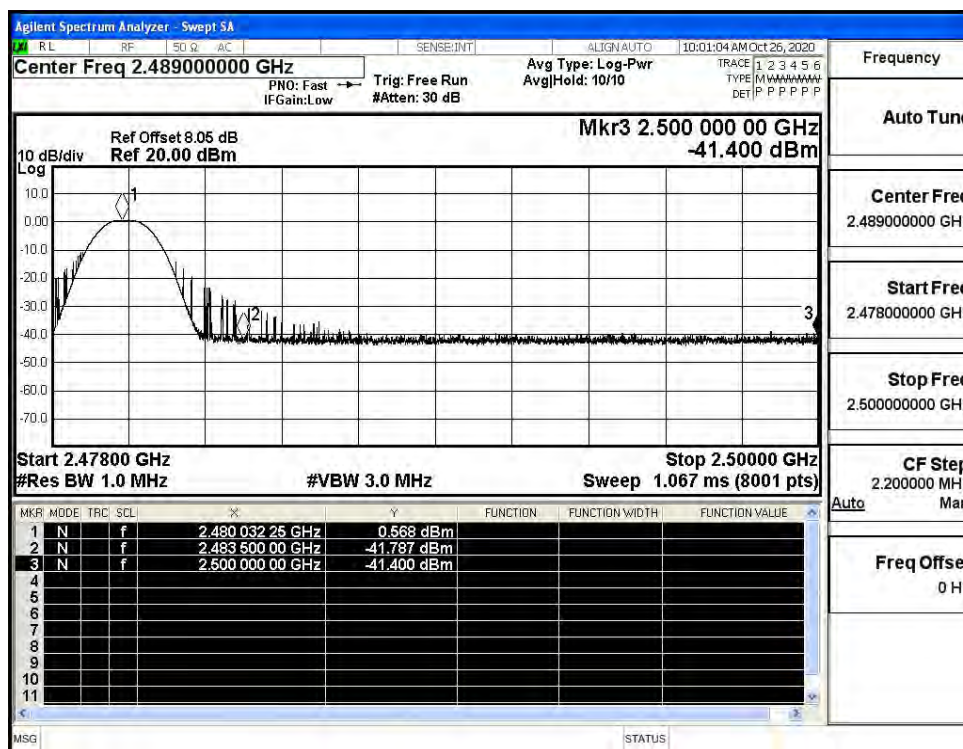
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



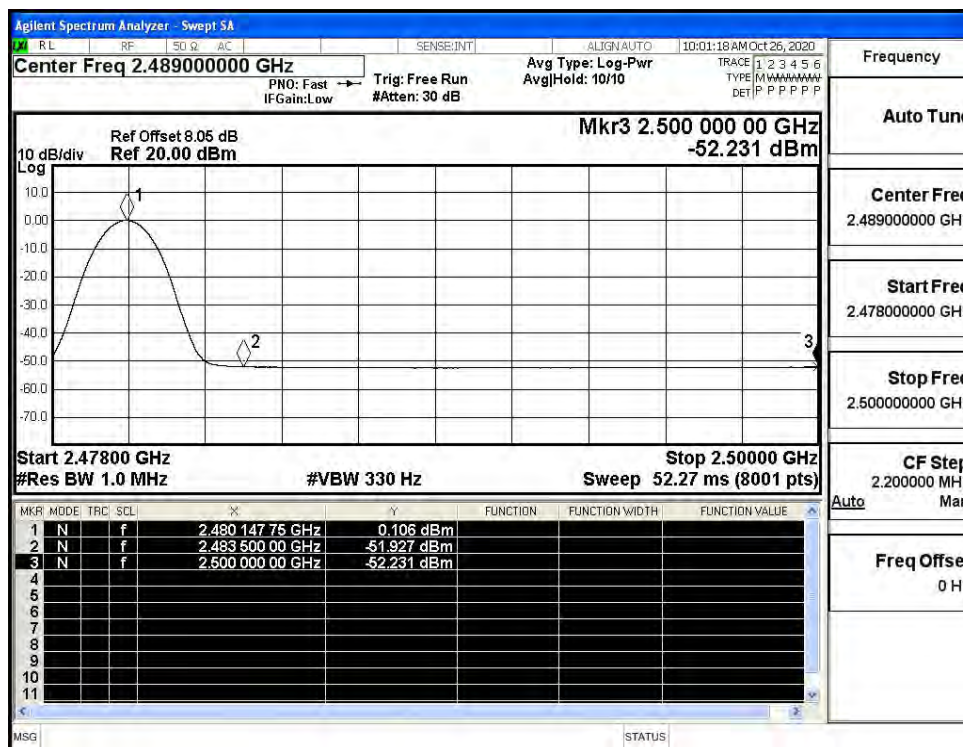
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

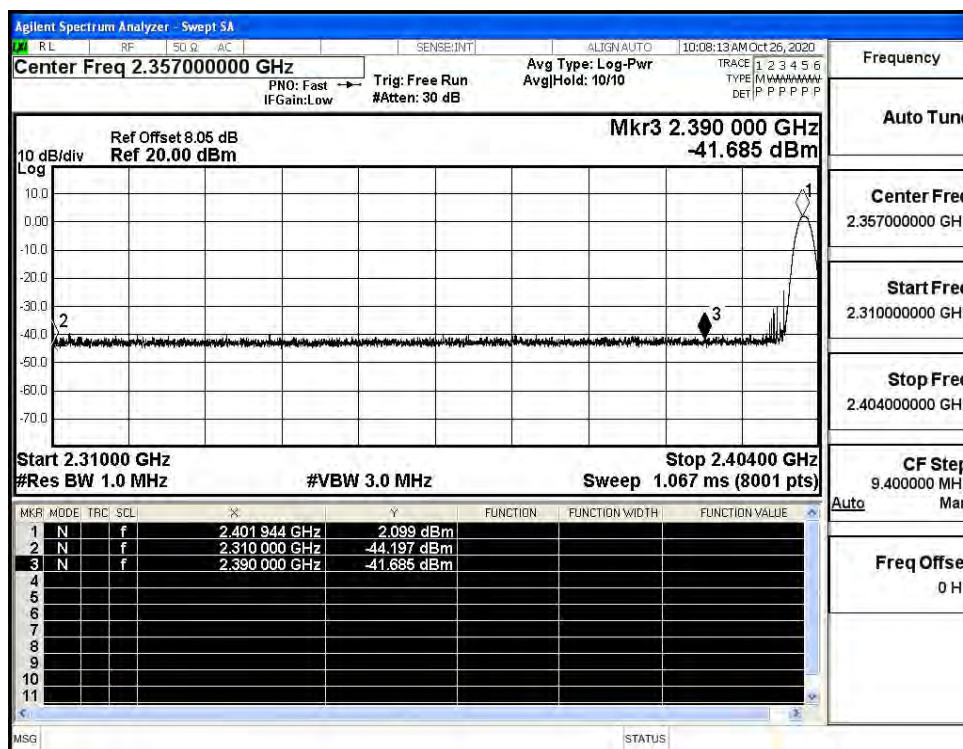
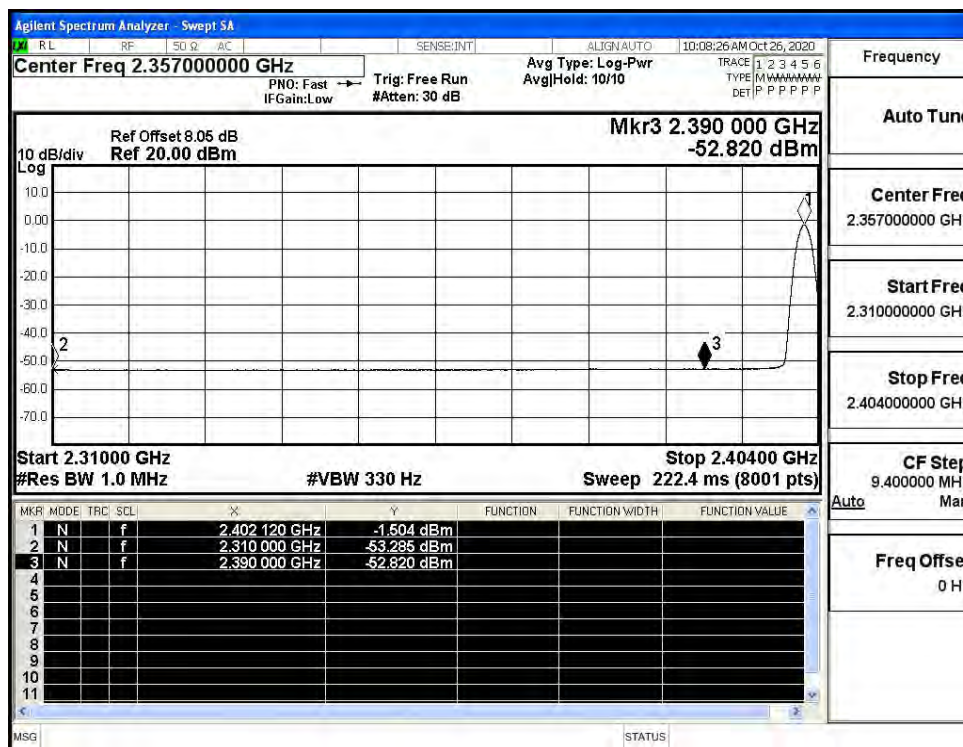


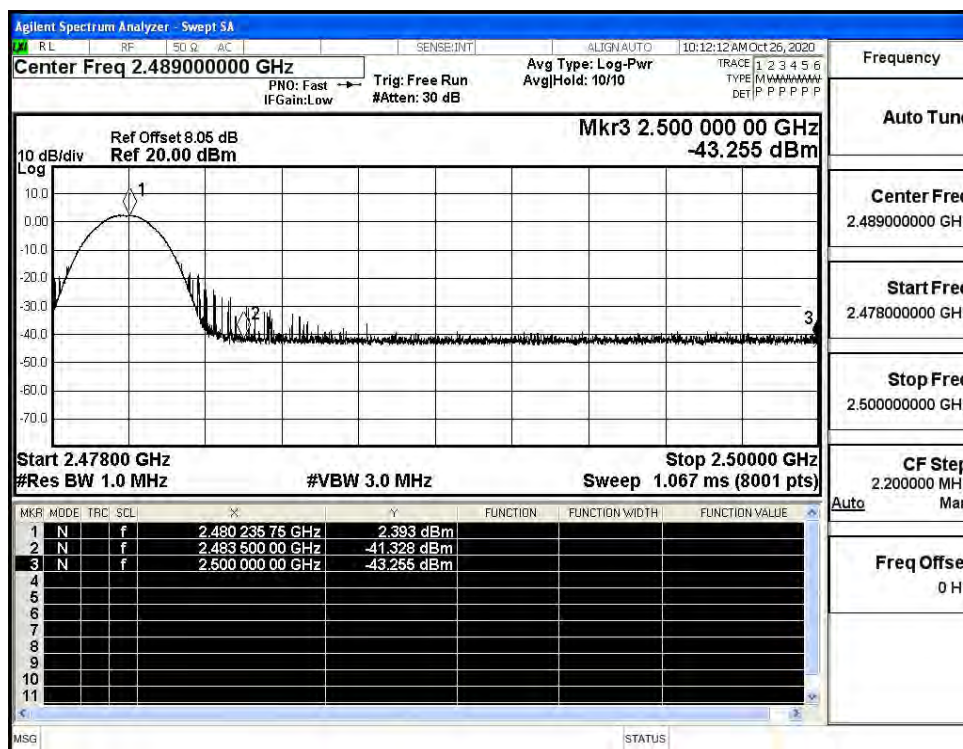
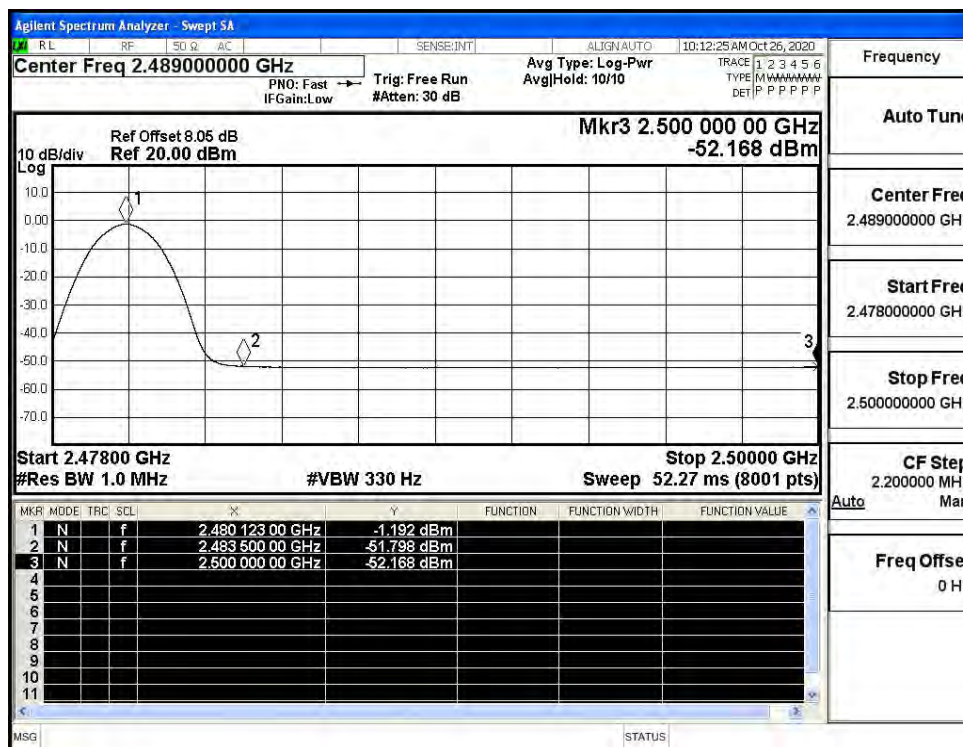
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



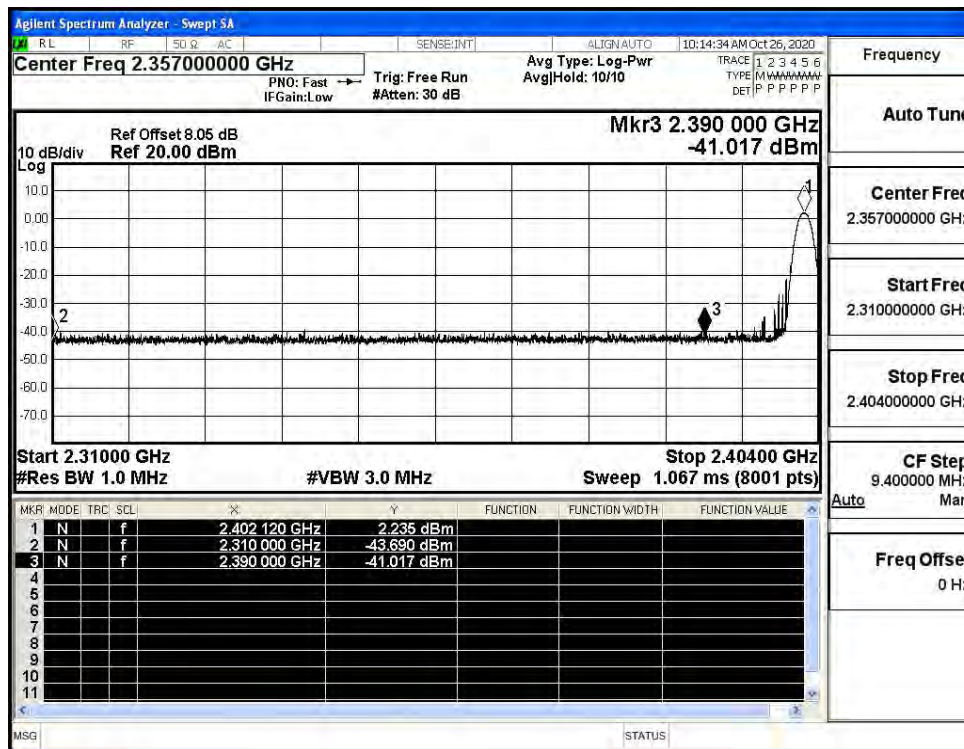
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (High Channel)



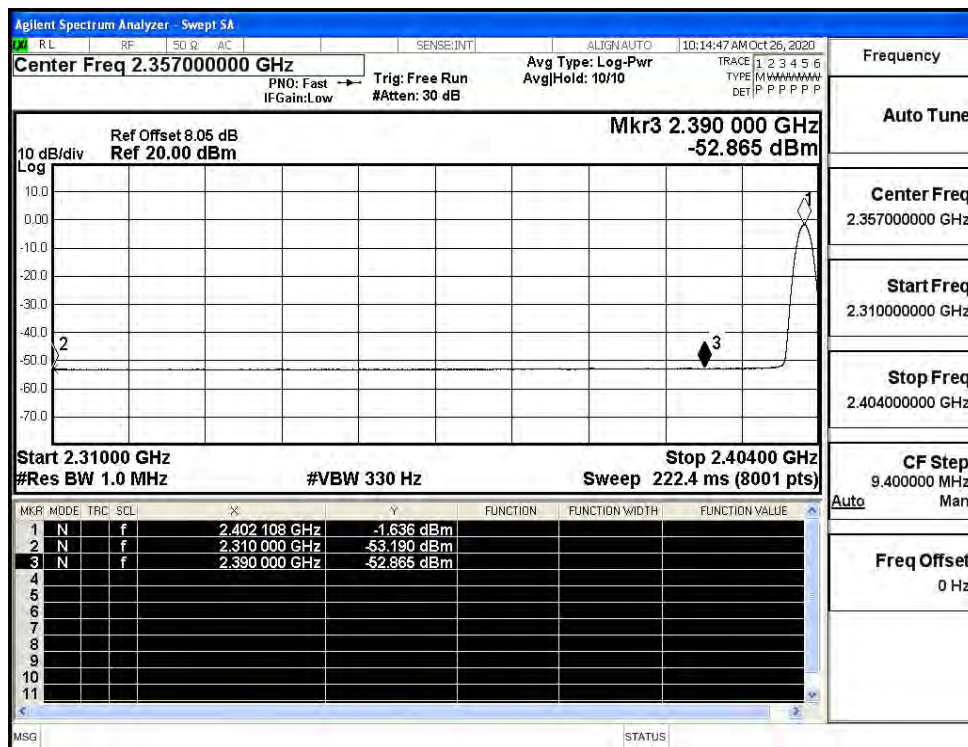
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

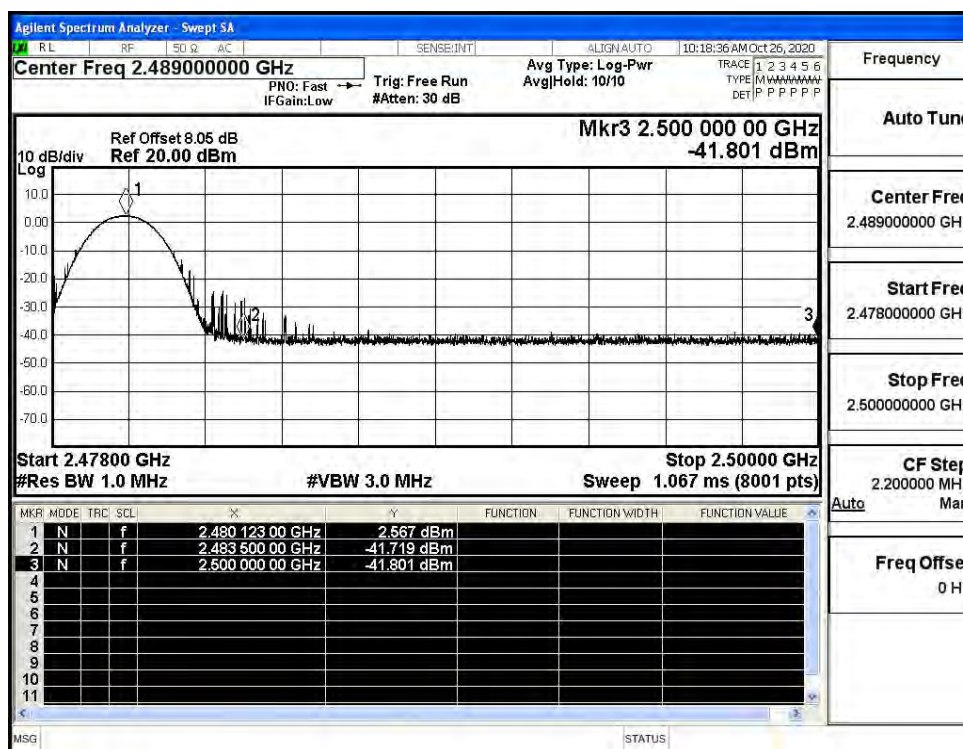
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

