

Appendix A

RF Test Data for BT V4.2(BR/EDR) (Conducted Measurement)

Product Name: IPTV Receiver

Trade Mark: FORMULER

Test Model: Z ALPHA

Environmental Conditions

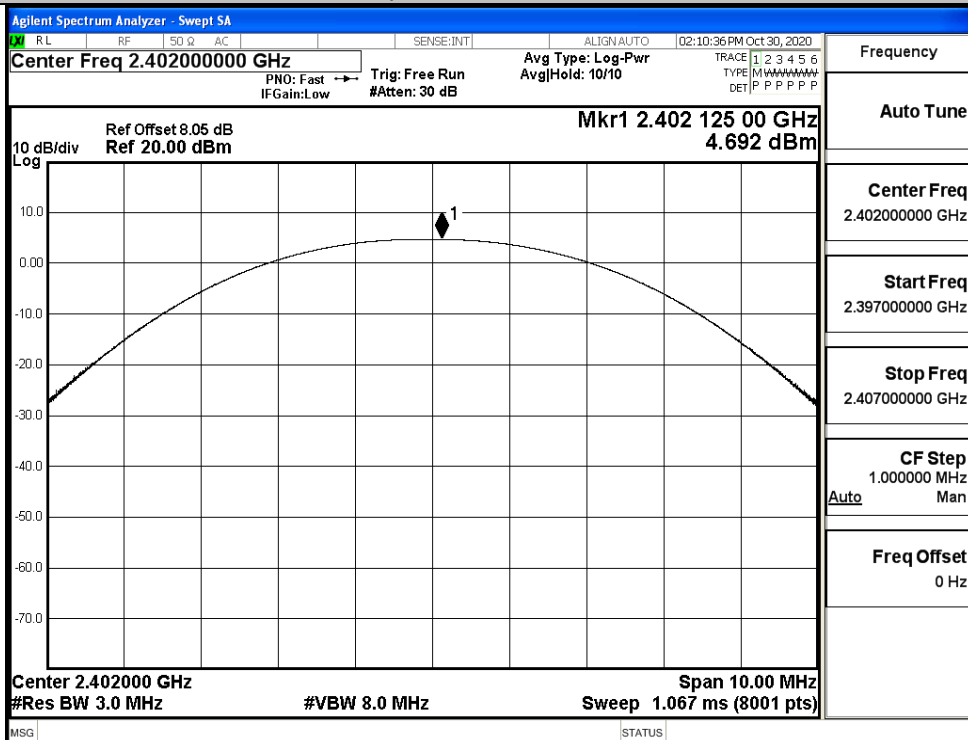
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken He
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

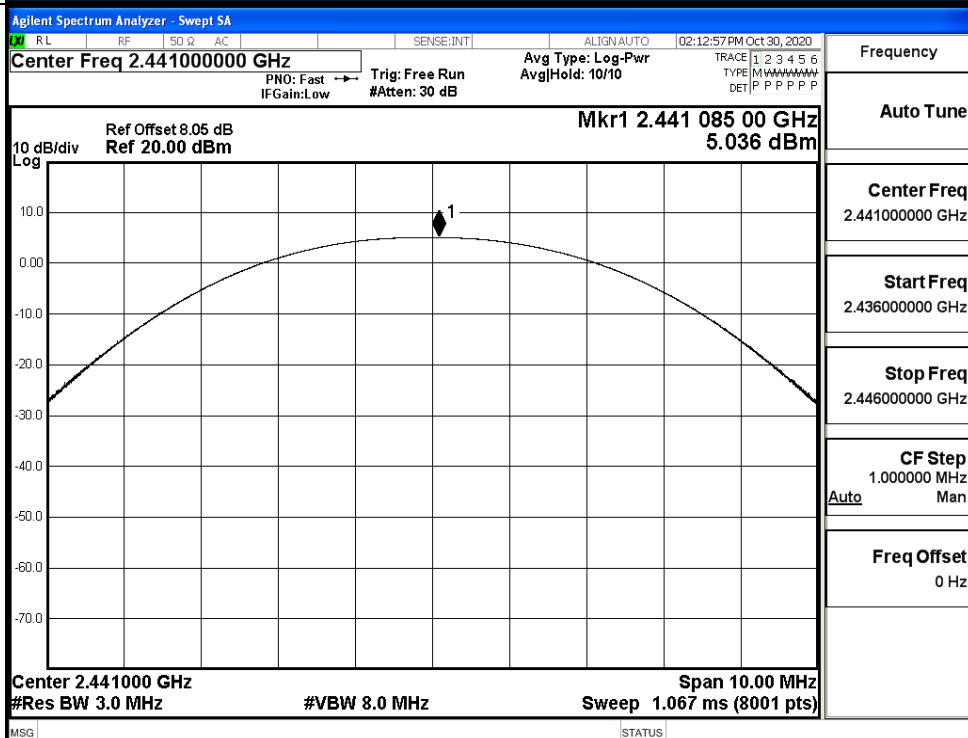
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.692	21	PASS
	MCH	5.036	21	PASS
	HCH	4.483	21	PASS
$\pi/4$ DQPSK	LCH	1.104	21	PASS
	MCH	1.560	21	PASS
	HCH	1.014	21	PASS
8DPSK	LCH	1.325	21	PASS
	MCH	1.797	21	PASS
	HCH	1.237	21	PASS

Test Graphs

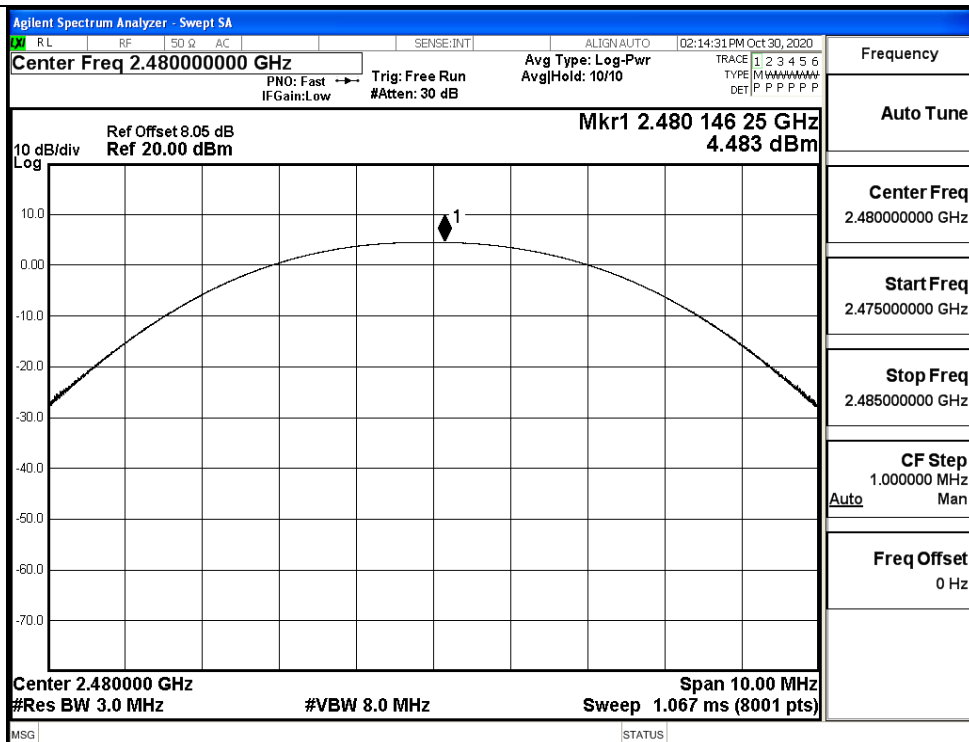
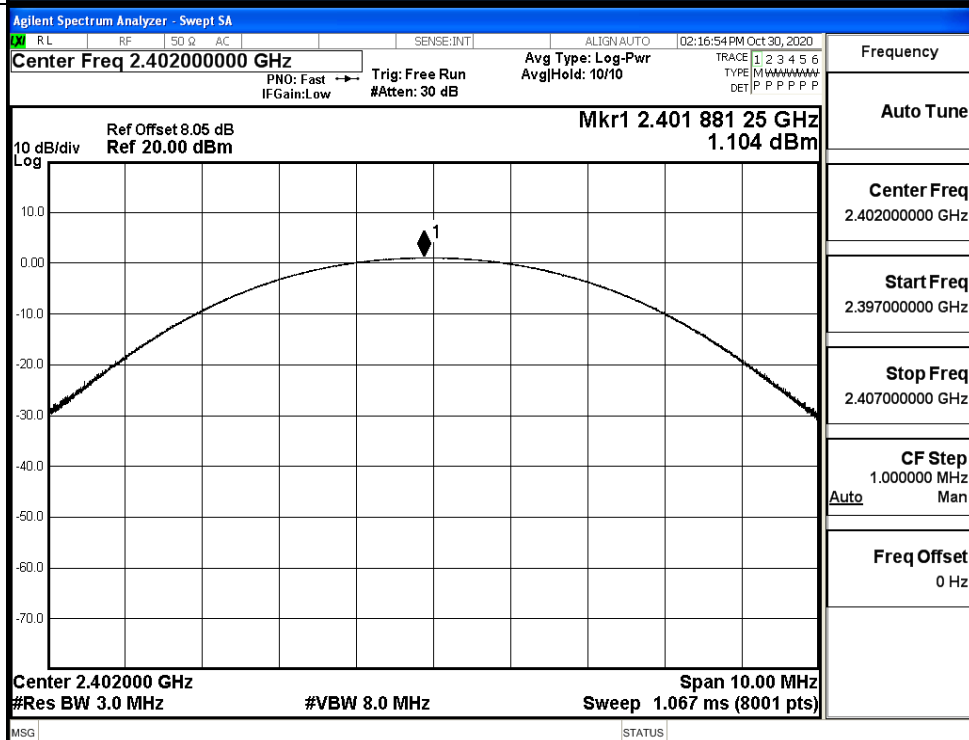
GFSK/LCH

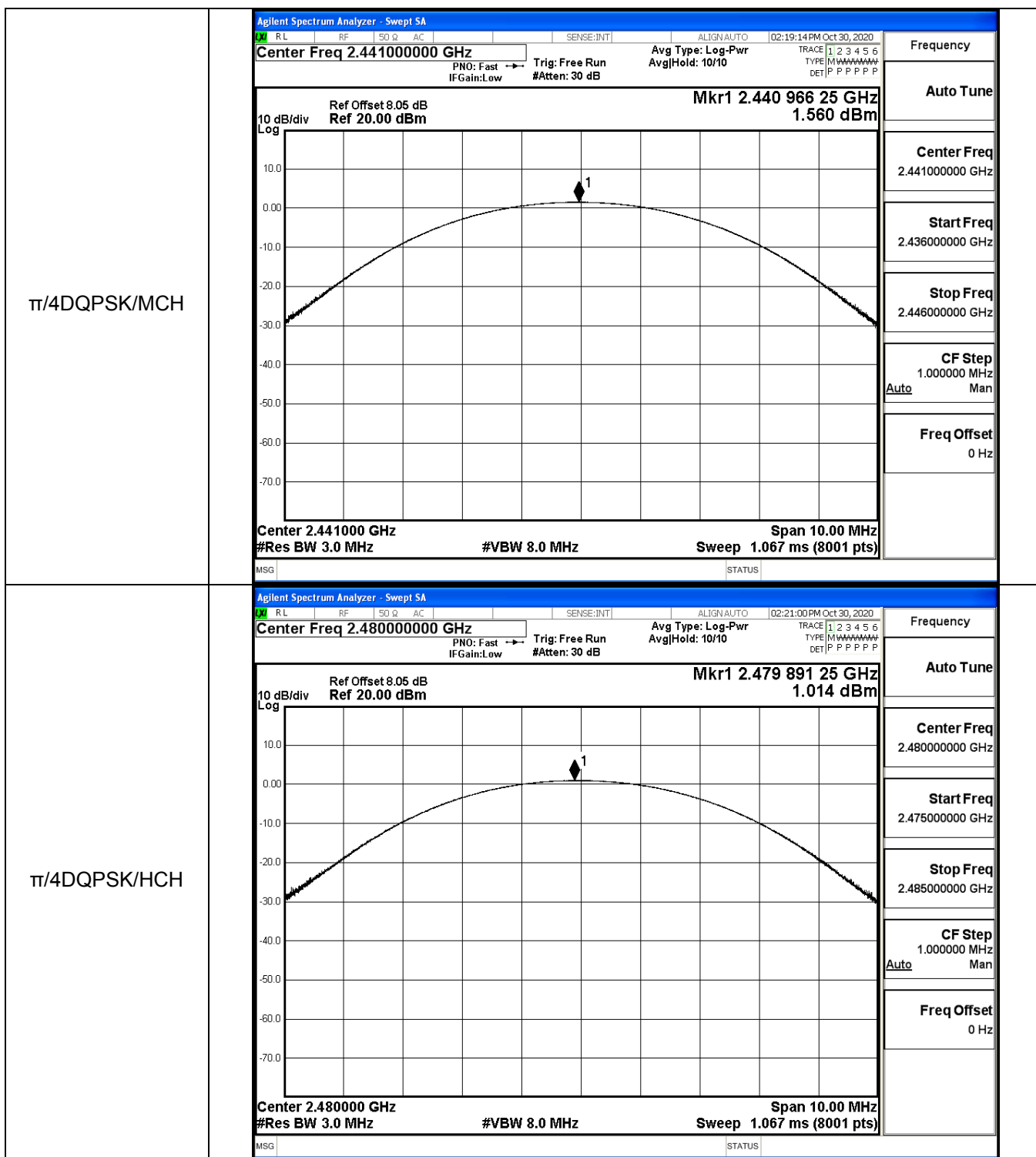


GFSK/MCH

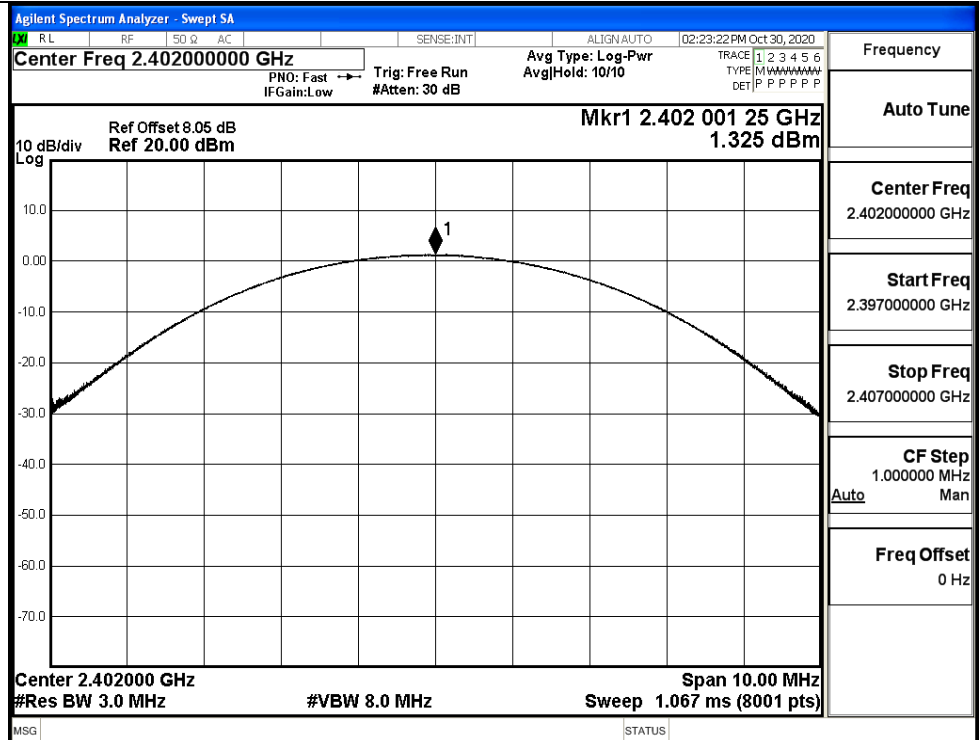


GFSK/HCH

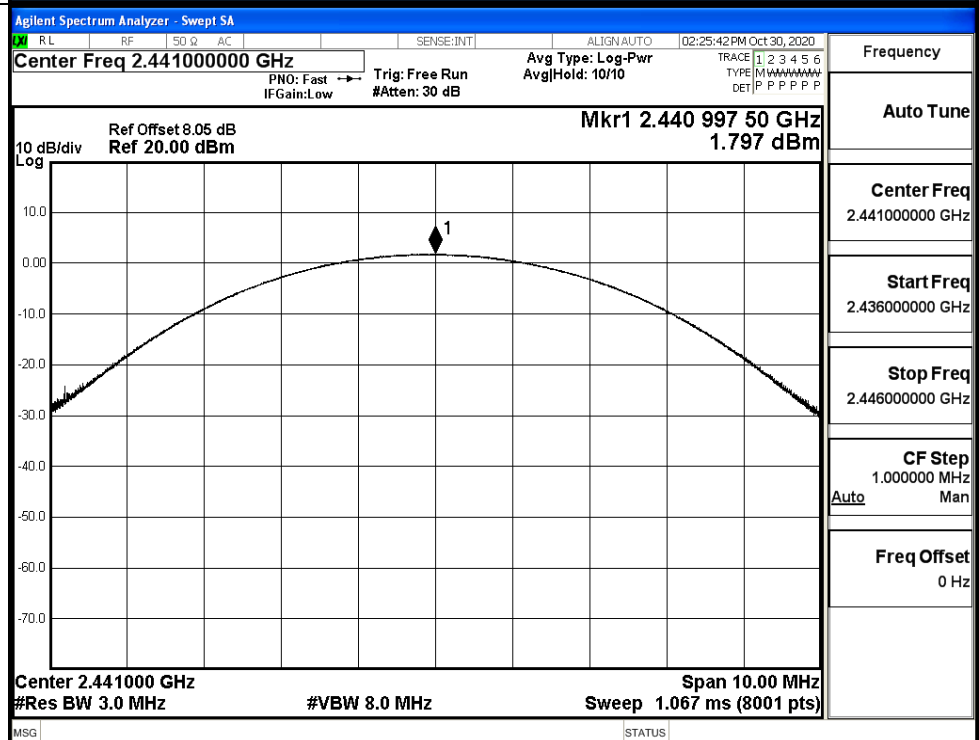
 π /4DQPSK/LCH



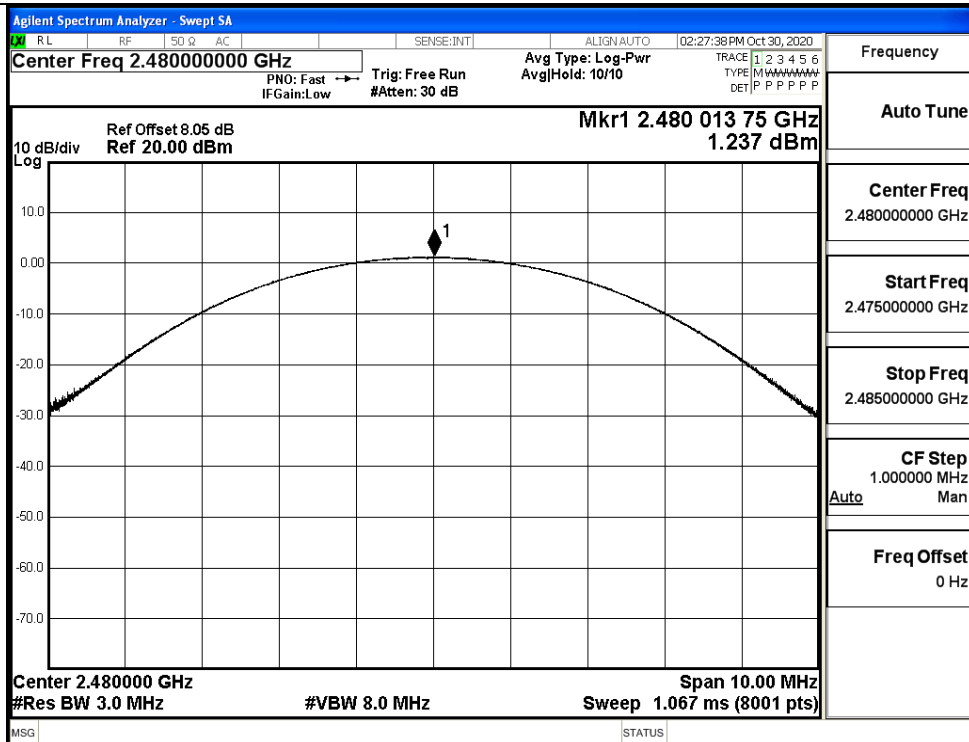
8DPSK/LCH



8DPSK/MCH



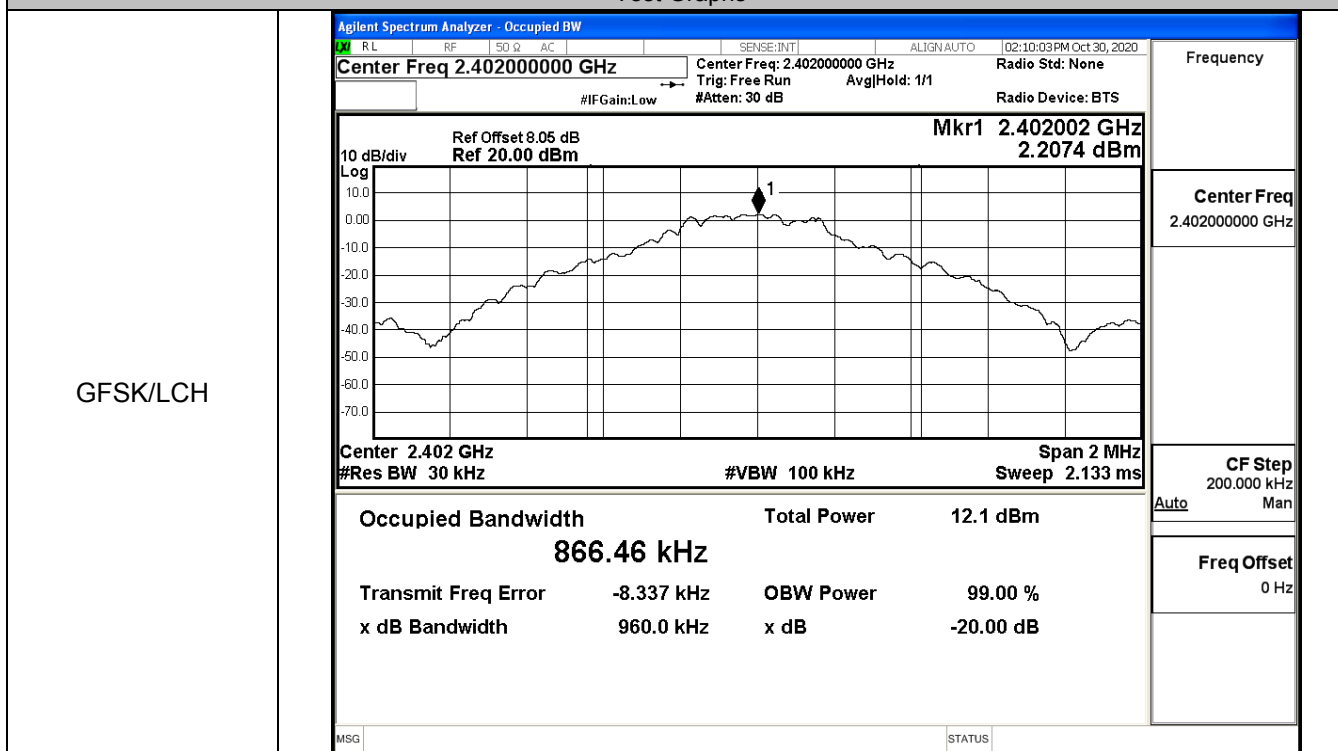
8DPSK/HCH



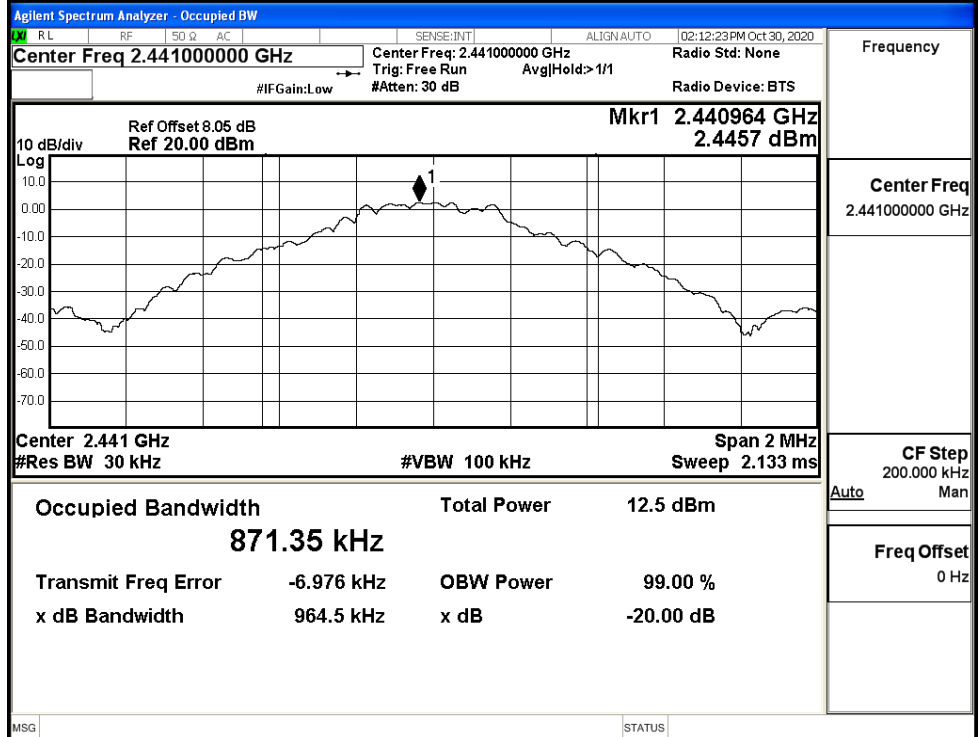
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9600	Not Specified	PASS
	MCH	0.9645	Not Specified	PASS
	HCH	0.9646	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.521	Not Specified	PASS
	MCH	1.521	Not Specified	PASS
	HCH	1.520	Not Specified	PASS
8DPSK	LCH	1.513	Not Specified	PASS
	MCH	1.511	Not Specified	PASS
	HCH	1.512	Not Specified	PASS

Test Graphs



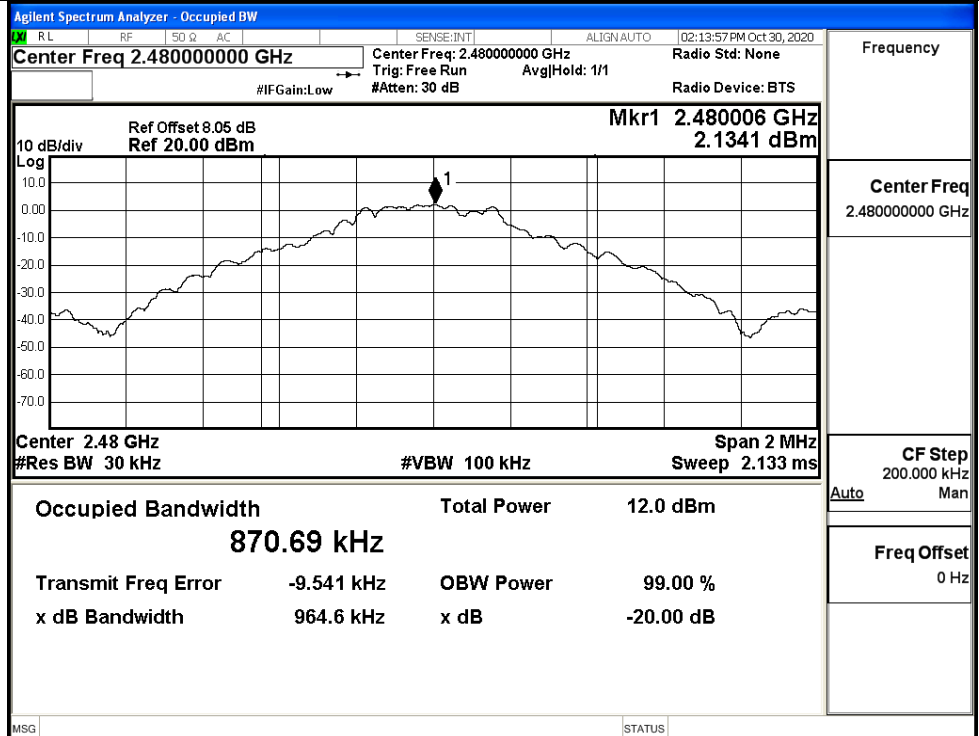
GFSK/MCH



Frequency

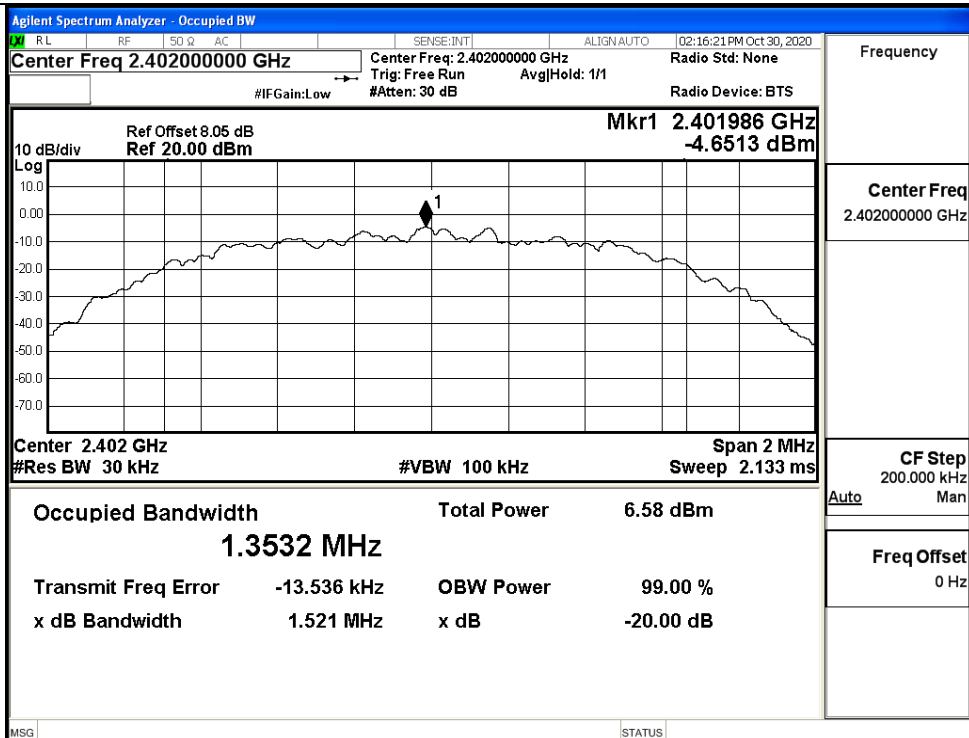
Center Freq
2.441000000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

GFSK/HCH



Frequency

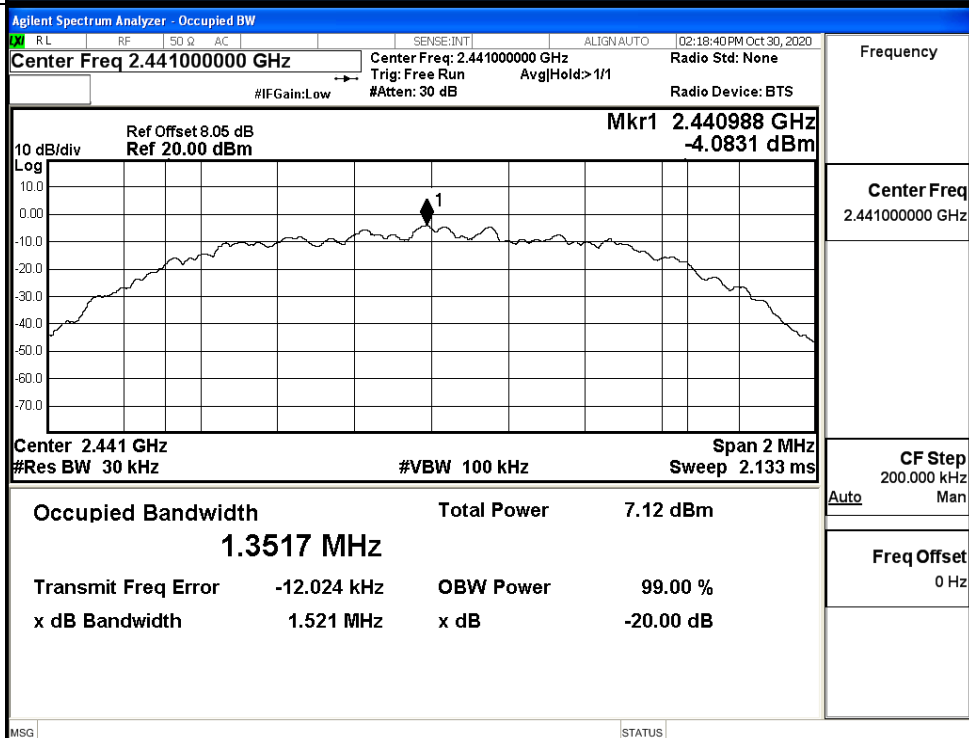
Center Freq
2.480000000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.402000000 GHzCF Step
200.000 kHz
Man

Auto

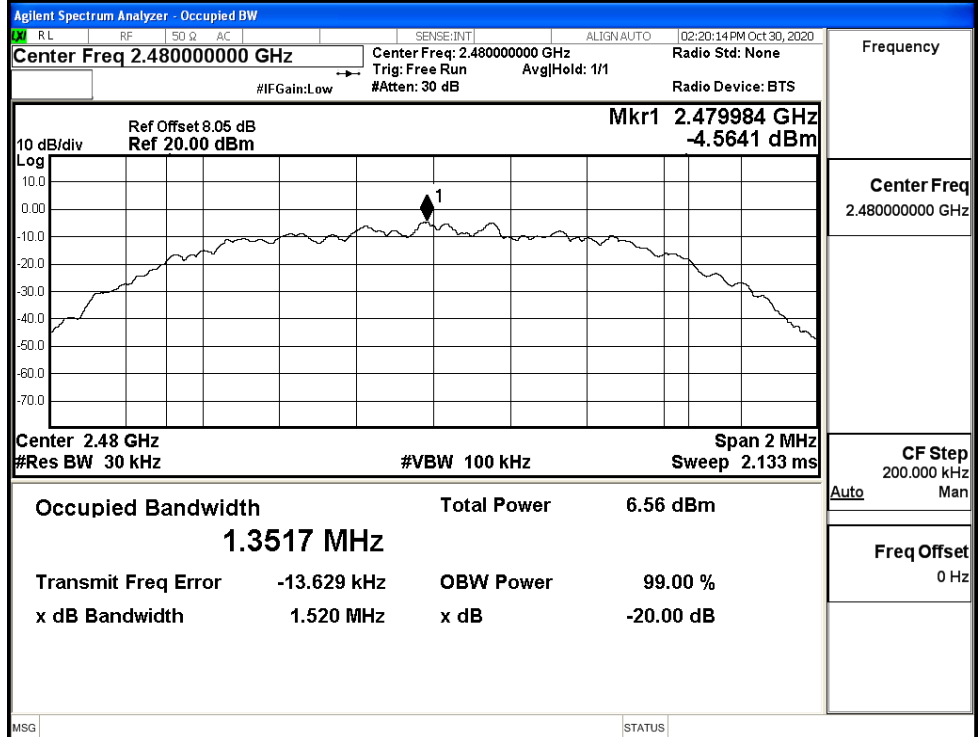
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

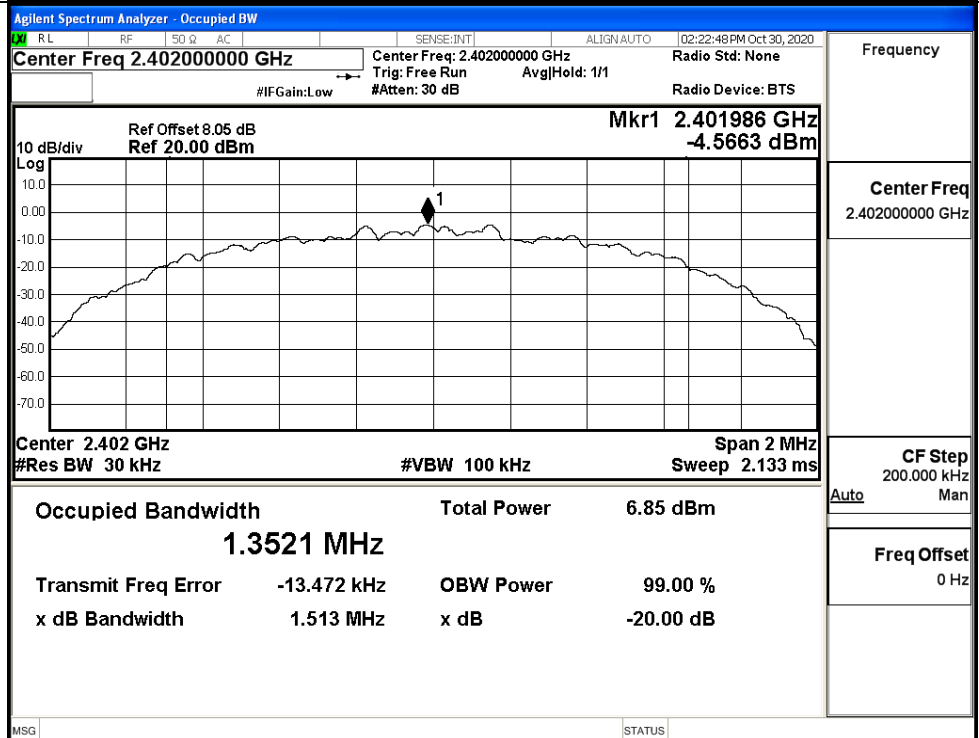
Center Freq
2.441000000 GHzCF Step
200.000 kHz
Man

Auto

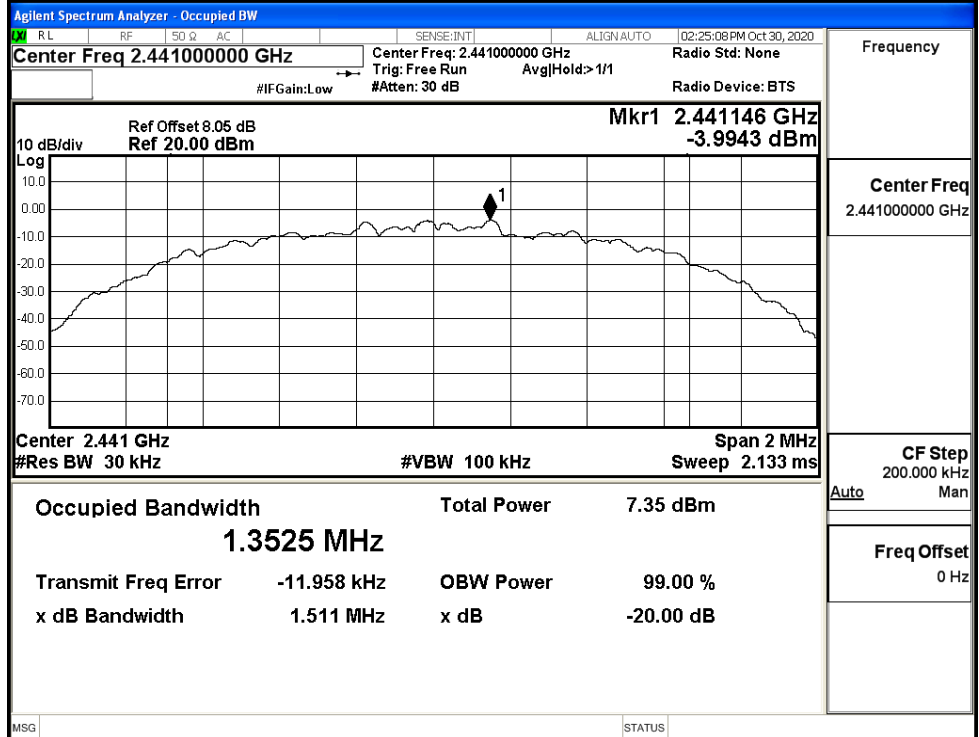
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

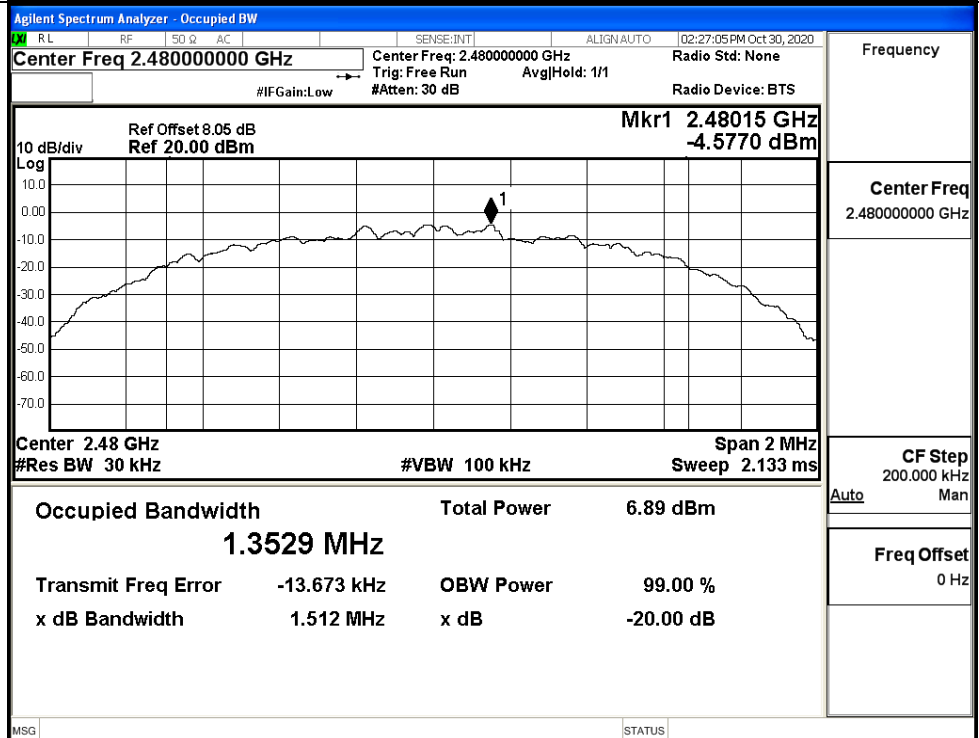
8DPSK/LCH



8DPSK/MCH



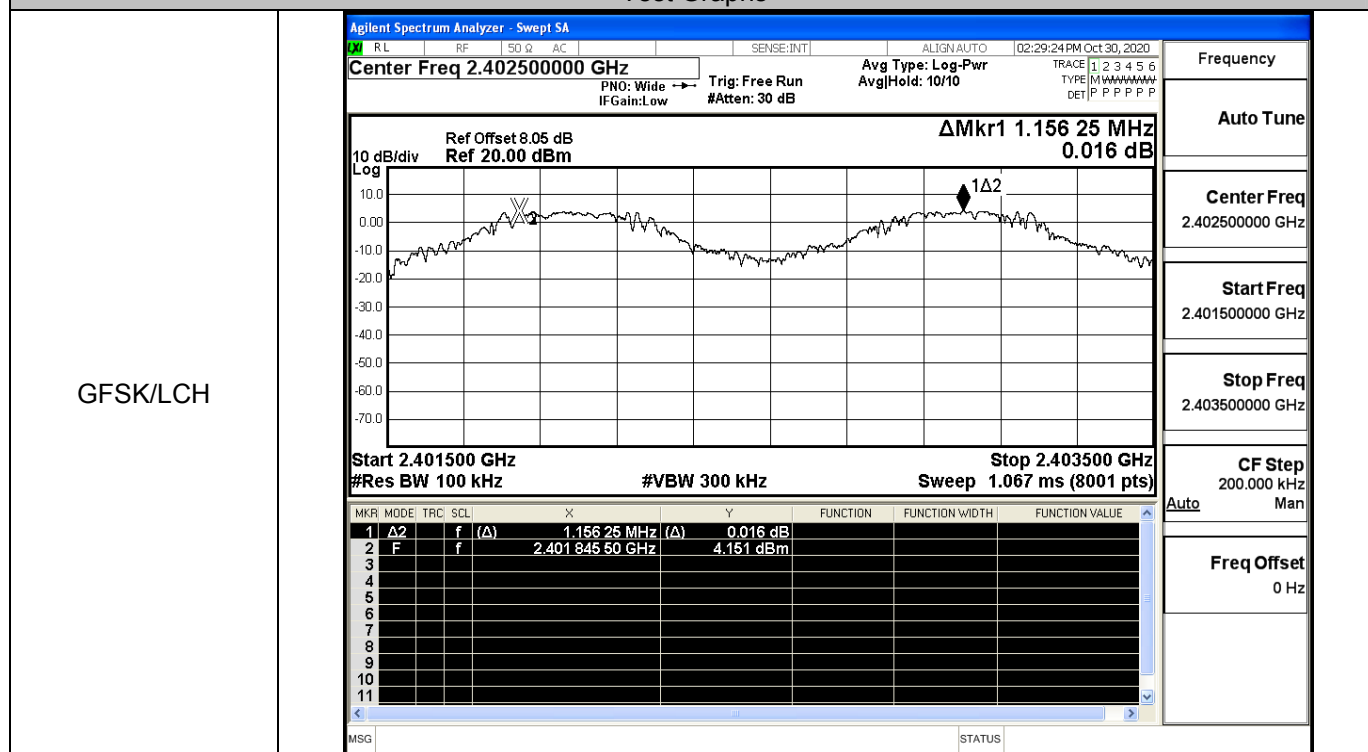
8DPSK/HCH



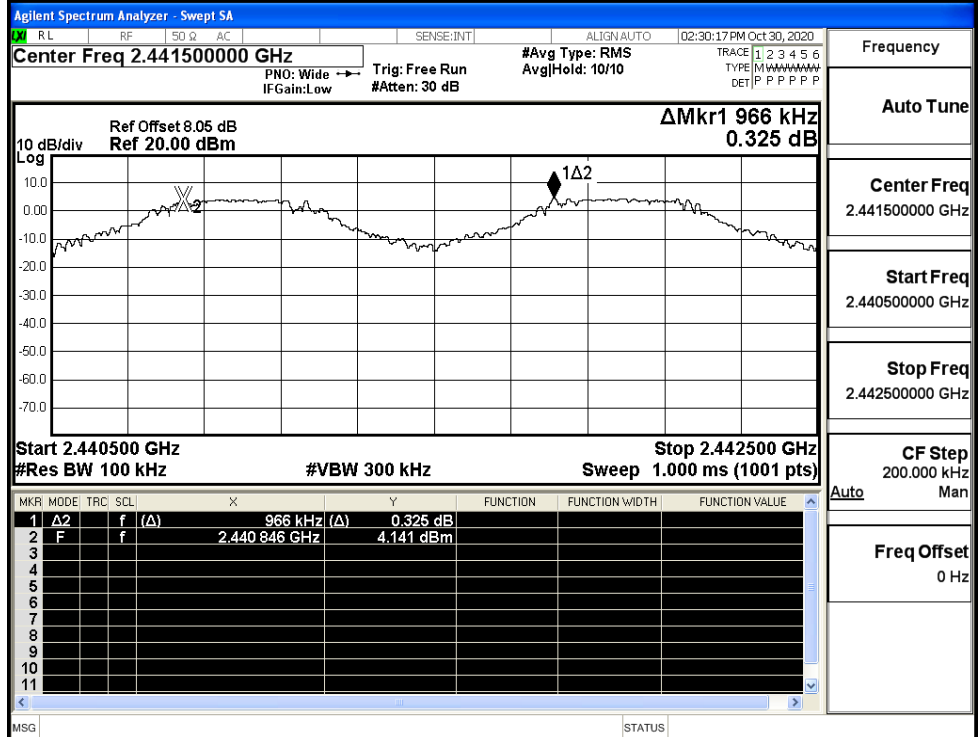
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.156	0.643	PASS
	MCH	0.966	0.643	PASS
	HCH	0.902	0.643	PASS
$\pi/4$ DQPSK	LCH	1.154	1.014	PASS
	MCH	1.030	1.014	PASS
	HCH	1.206	1.014	PASS
8DPSK	LCH	1.246	1.009	PASS
	MCH	1.208	1.009	PASS
	HCH	0.940	1.009	PASS

Test Graphs



GFSK/MCH

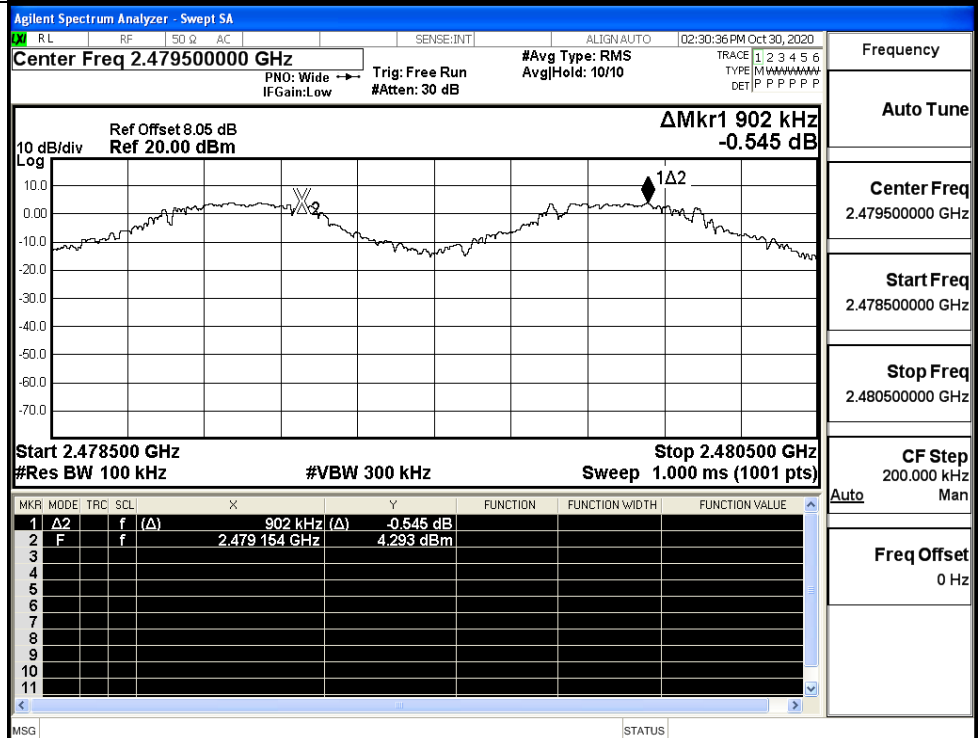


Frequency

Auto Tune

Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

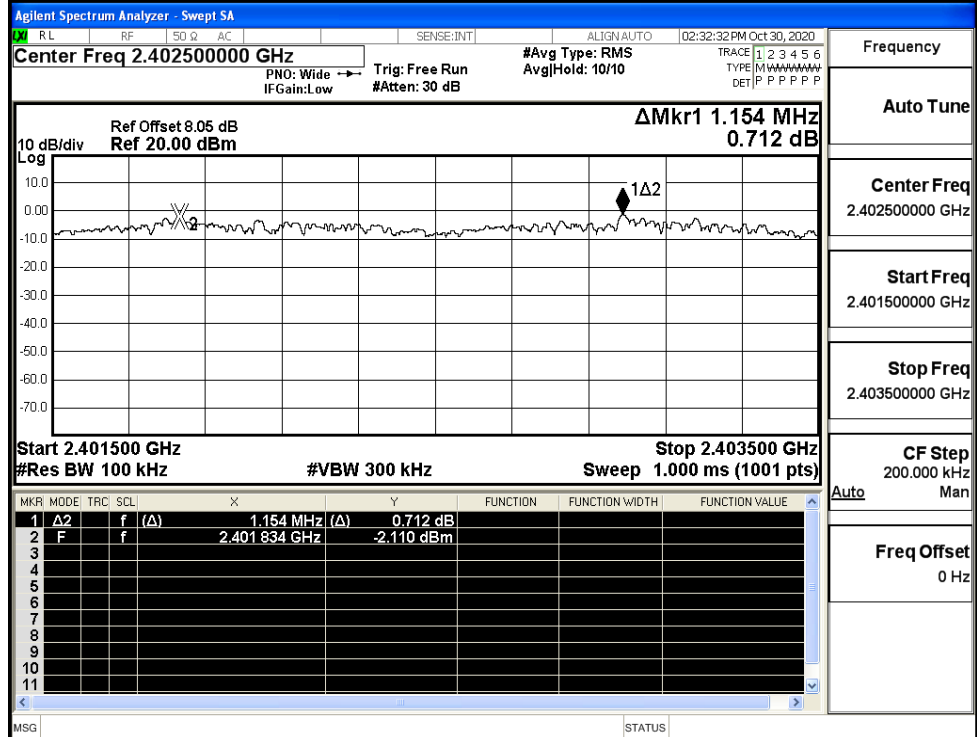
GFSK/HCH



Frequency

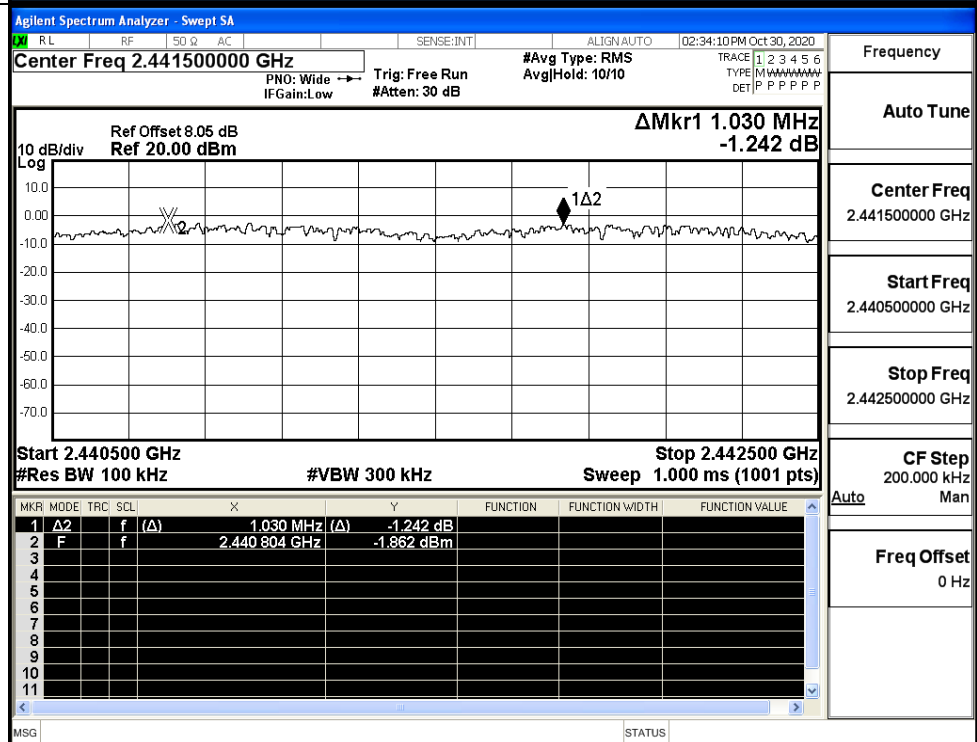
Auto Tune

Center Freq
2.479500000 GHzStart Freq
2.478500000 GHzStop Freq
2.480500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/LCH

Frequency

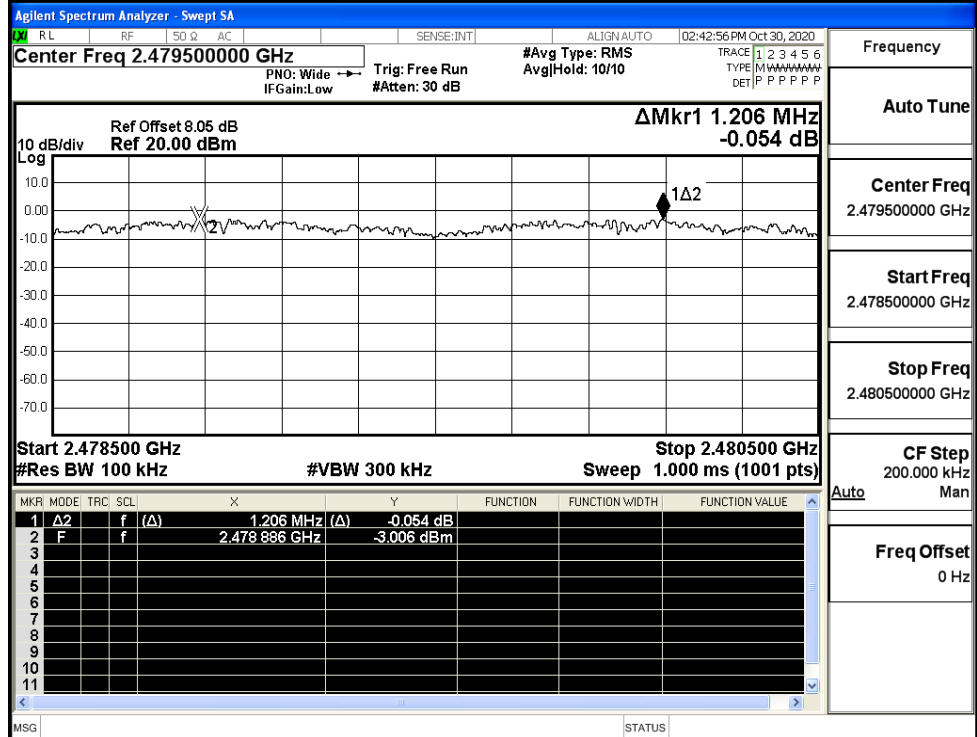
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

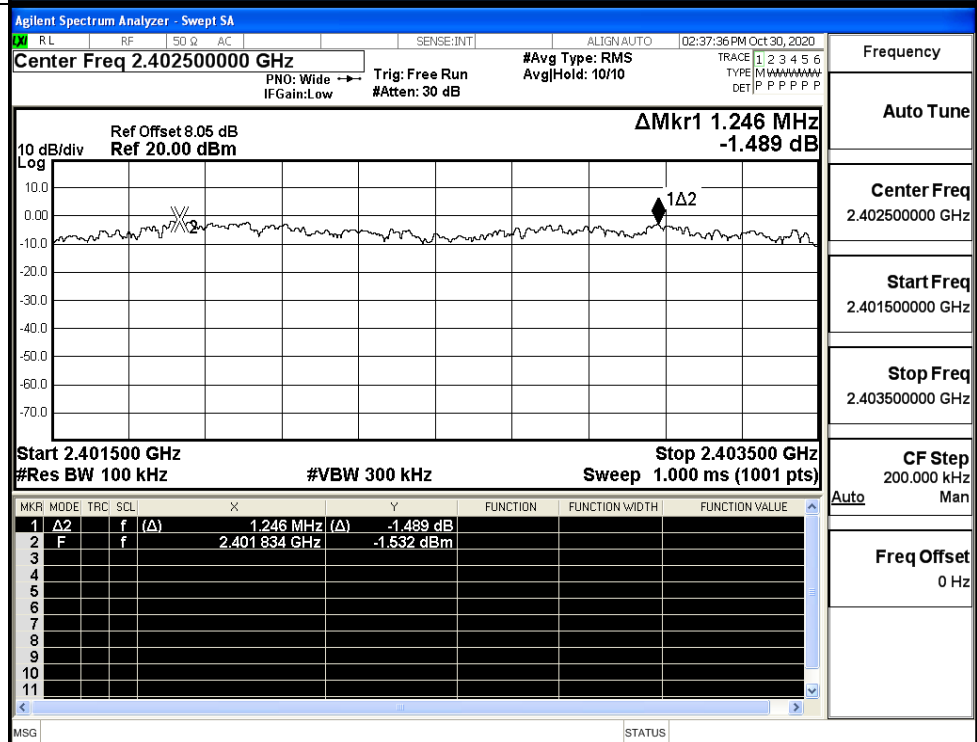
Frequency

Auto Tune

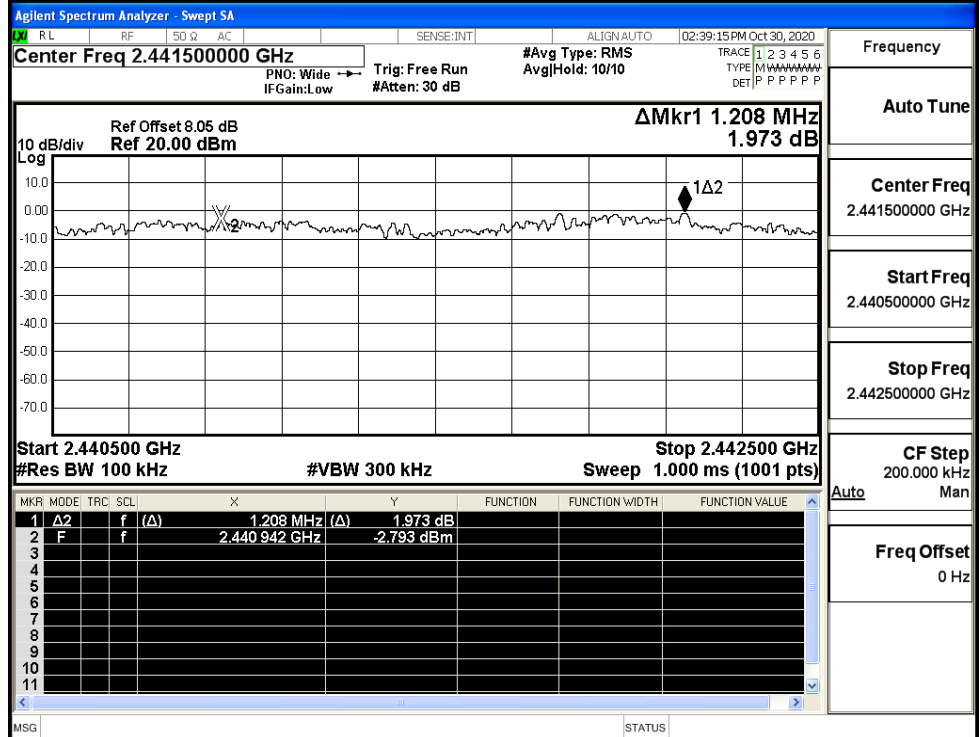
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

π /4DQPSK/HCH

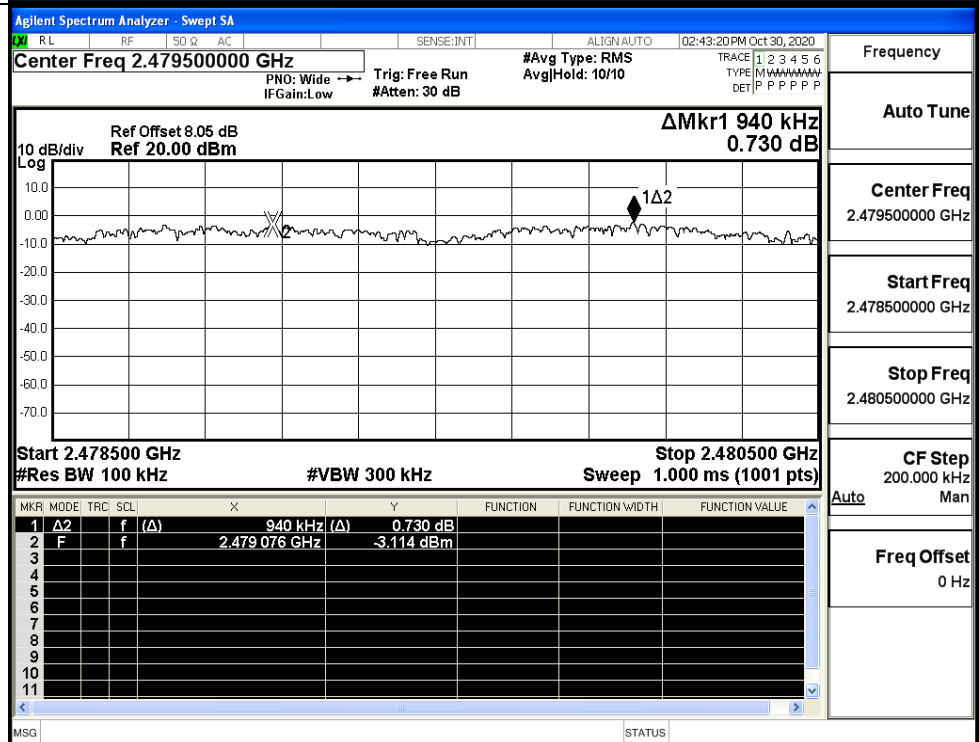
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

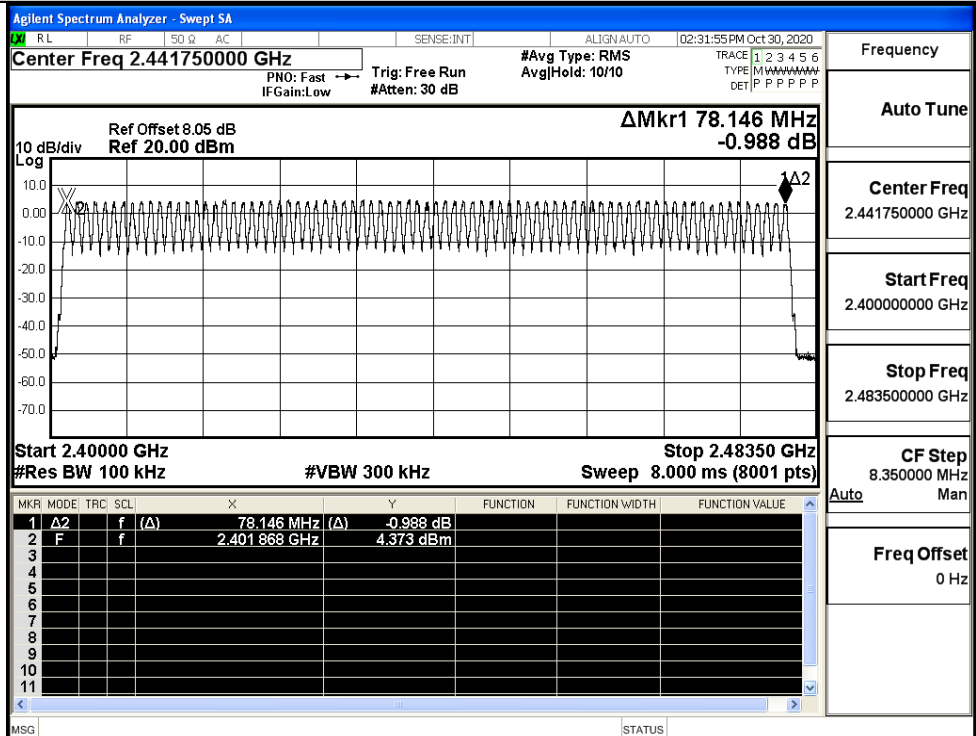


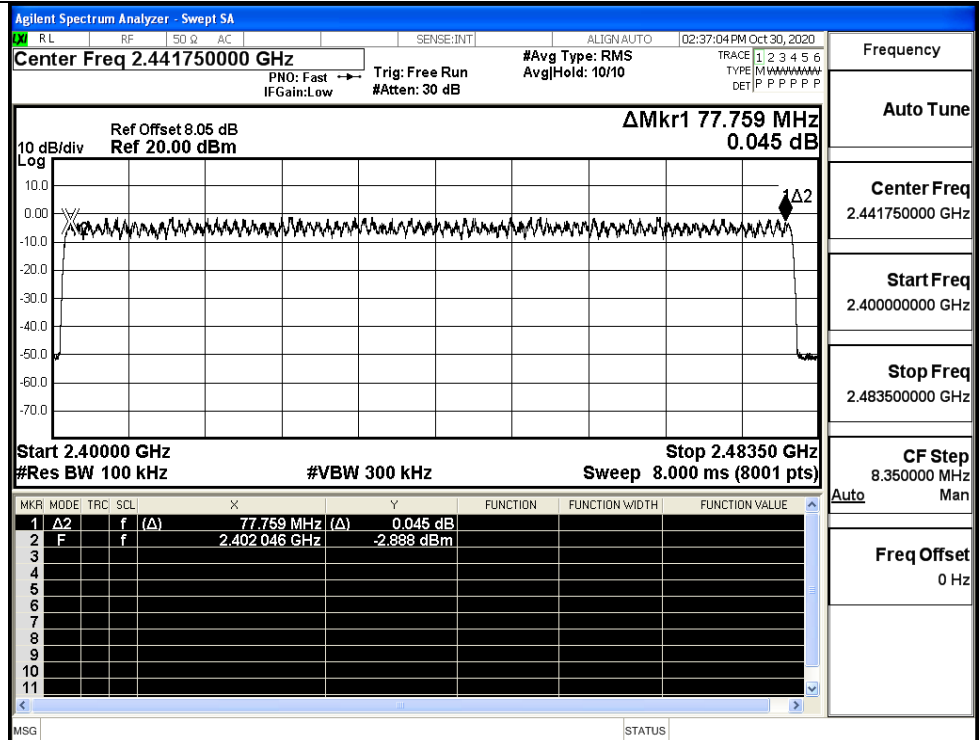
A.4 Hopping Channel Number

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

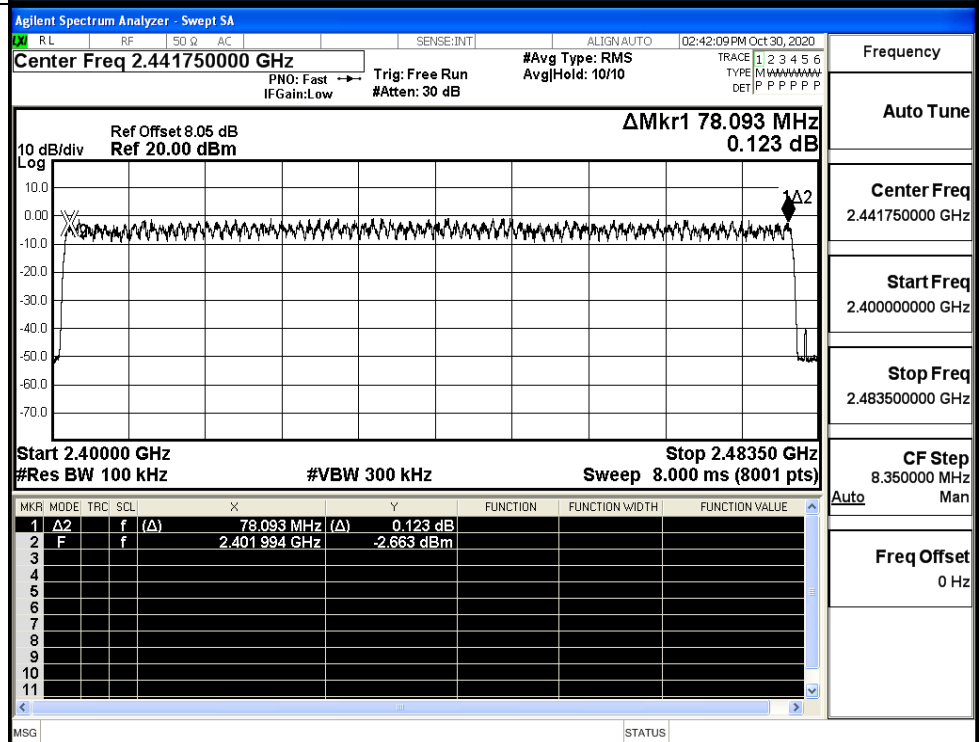
Test Graphs

GFSK/Hop



$\pi/4$ DQPSK/Hop

8DPSK/Hop

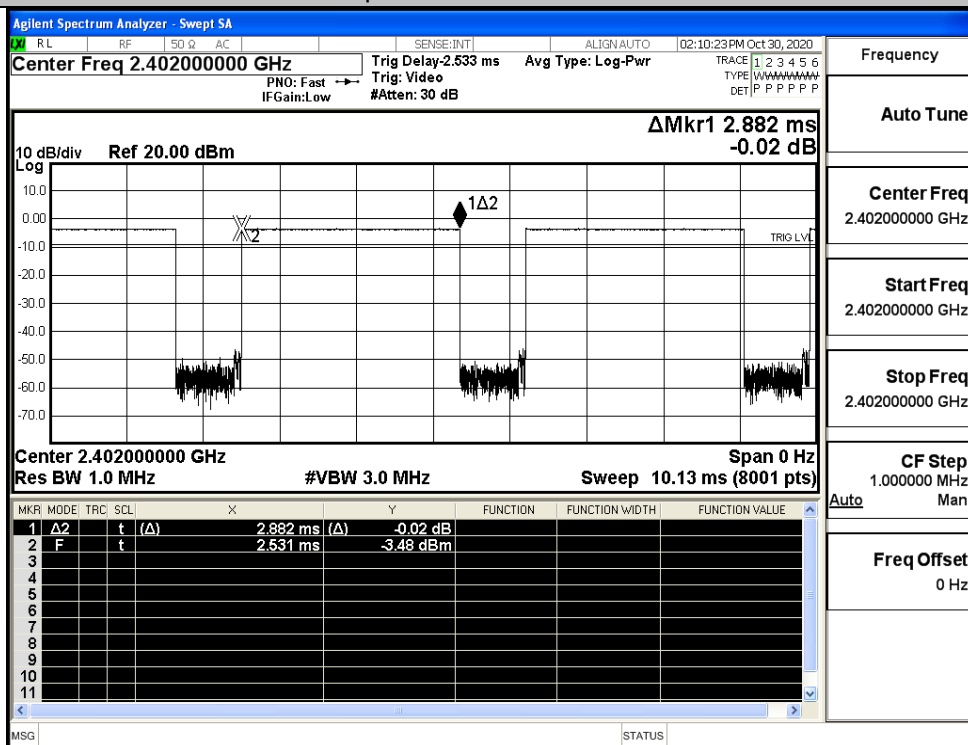


A.5 Dwell Time

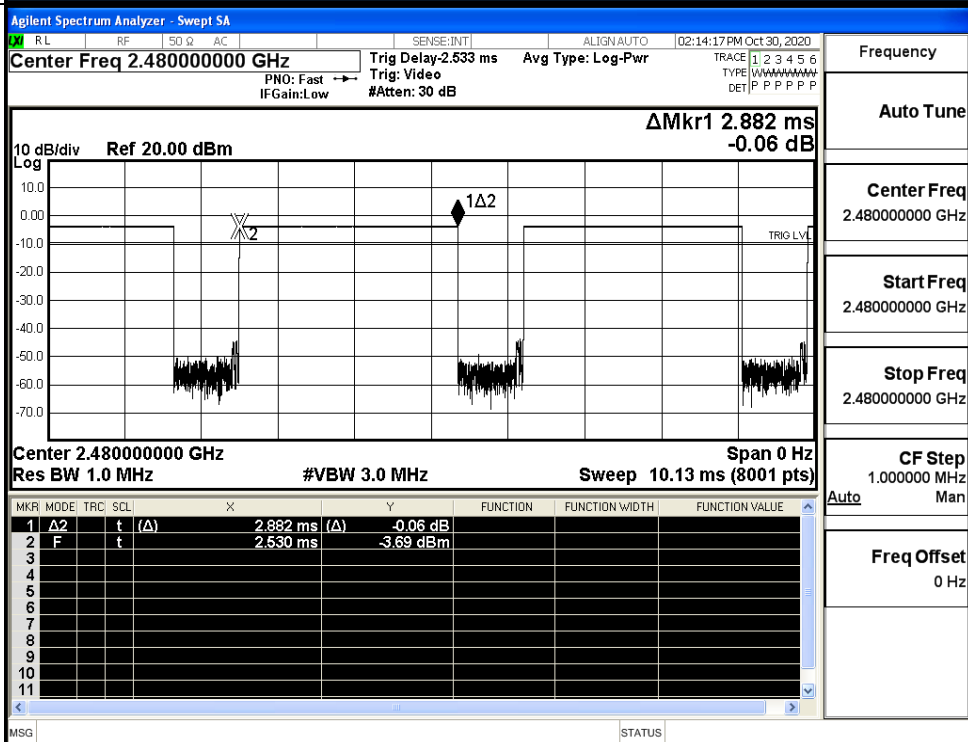
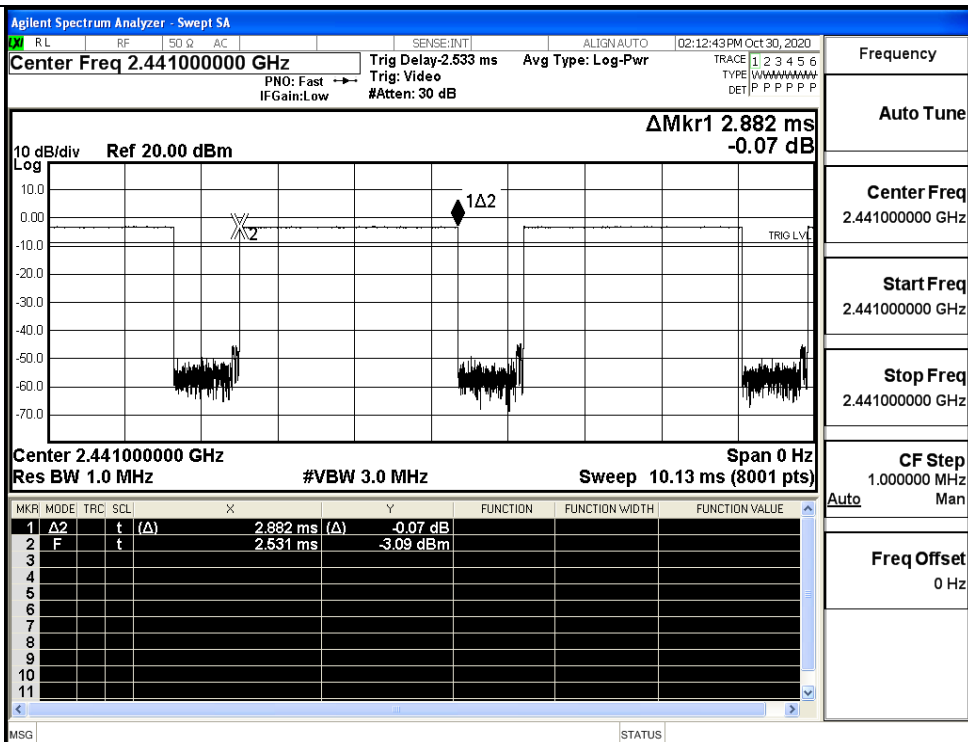
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.015	0.4	PASS
	2DH5	MCH	2.88	106.7	0.015	0.4	PASS
	2DH5	HCH	2.88	106.7	0.015	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.015	0.4	PASS
	3DH5	MCH	2.88	106.7	0.015	0.4	PASS
	3DH5	HCH	2.88	106.7	0.015	0.4	PASS

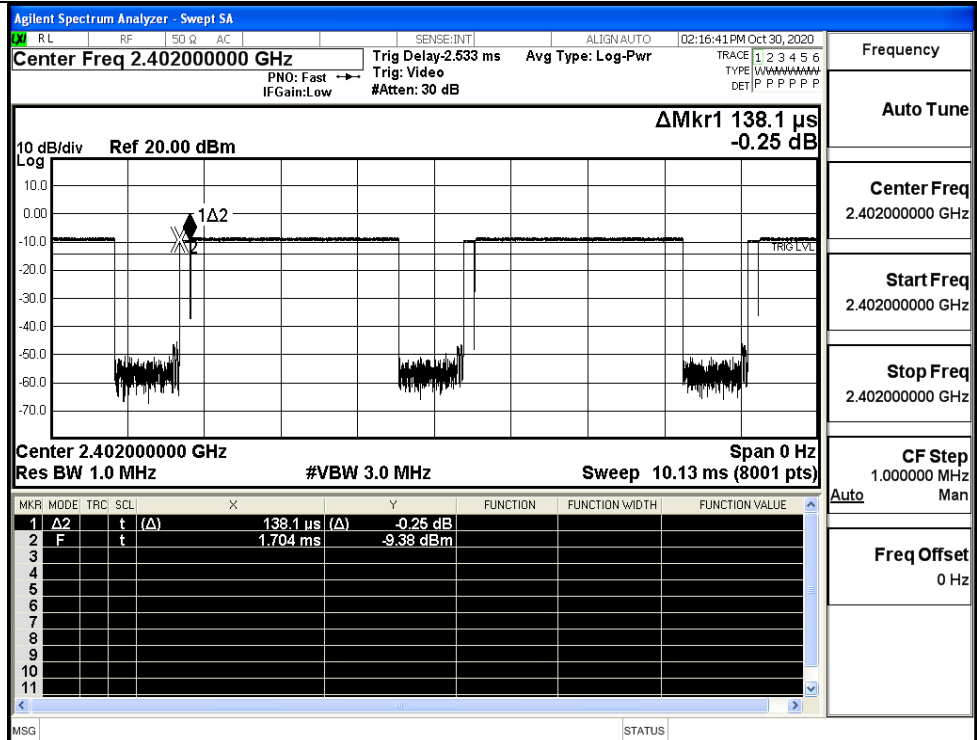
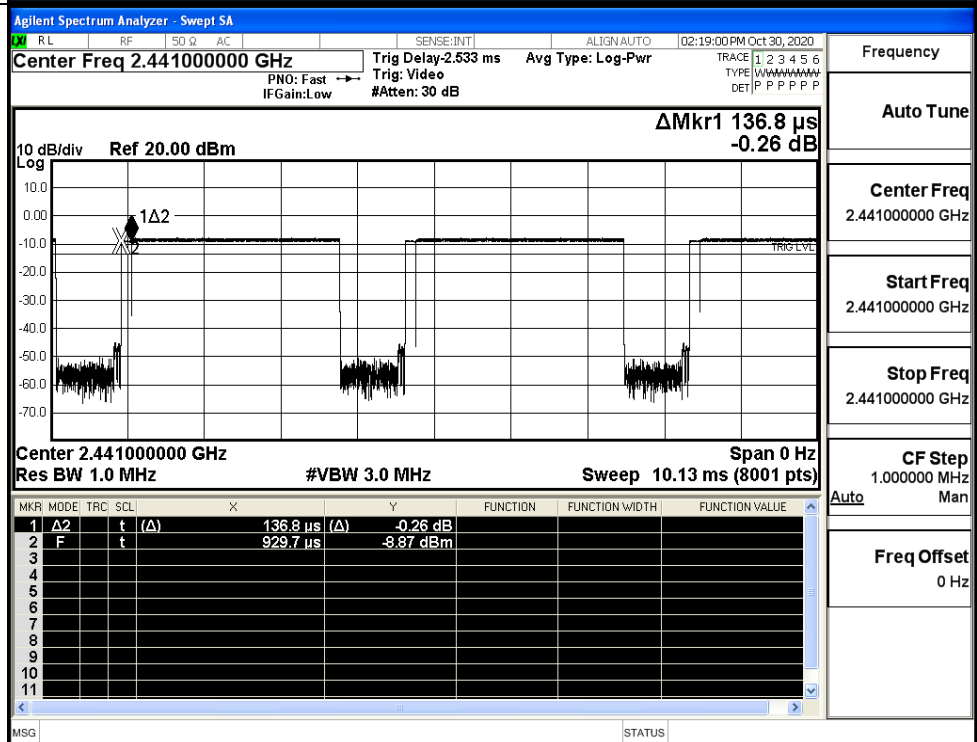
Test Graphs

GFSK_DH5/LCH

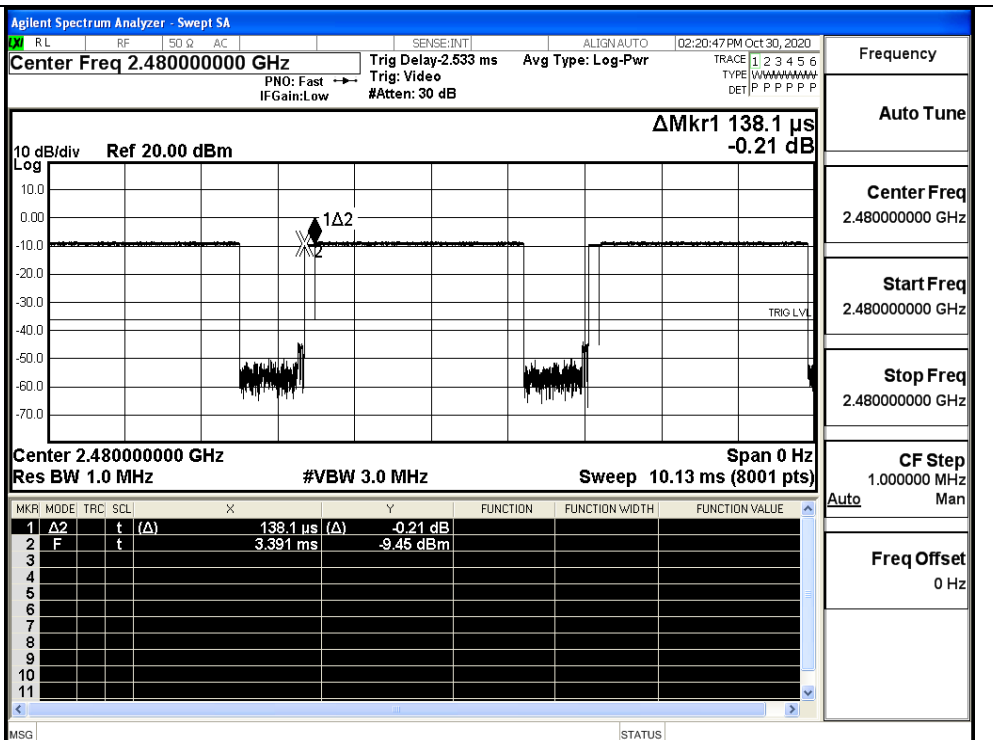


GFSK_DH5/HCH

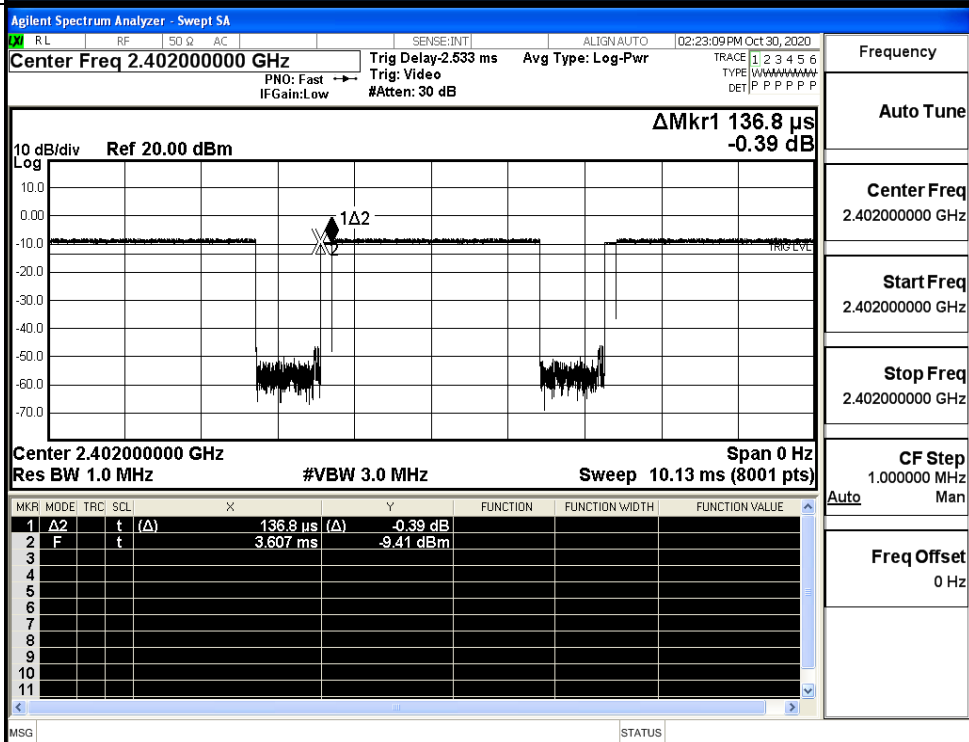


$\pi/4$ DQPSK
_2DH5/LCH $\pi/4$ DQPSK
_2DH5/MCH

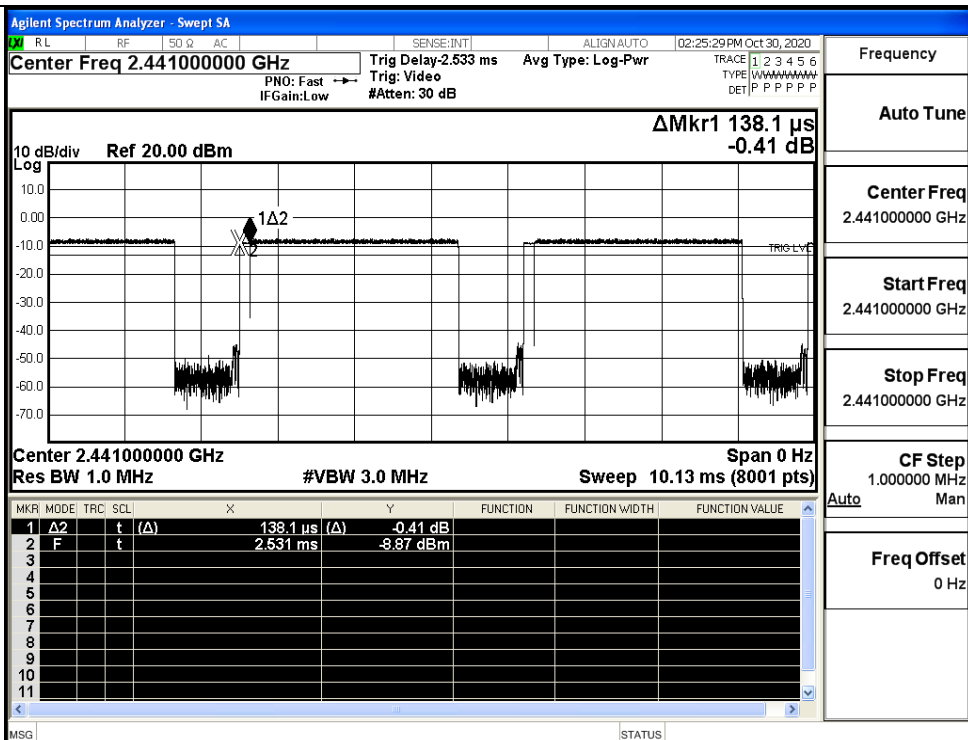
$\pi/4$ DQPSK
_2DH5/HCH



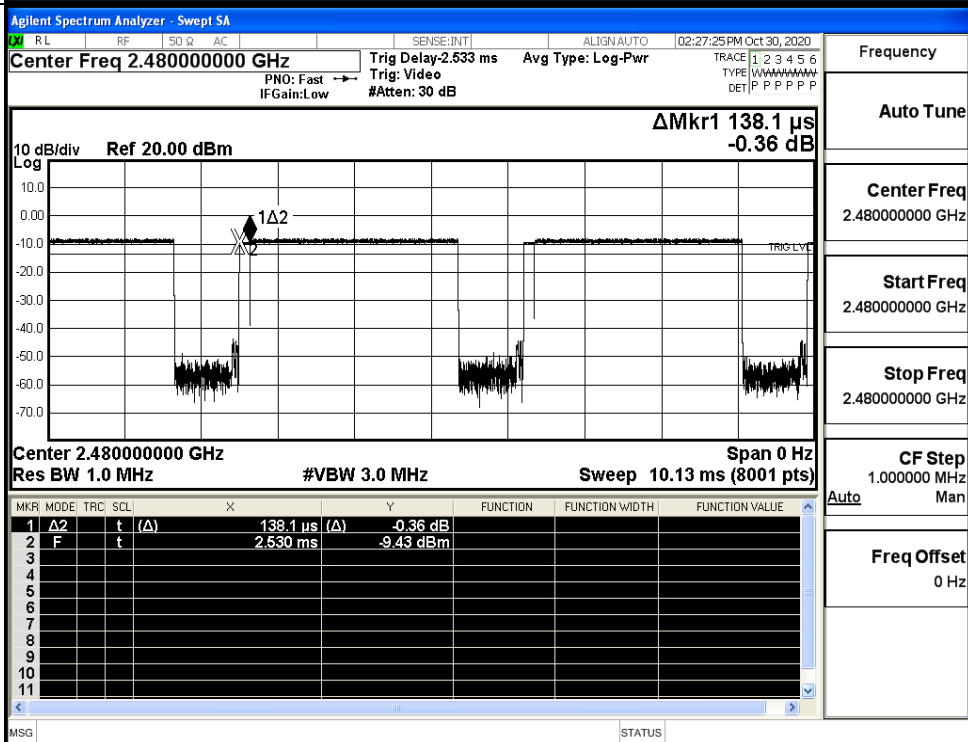
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



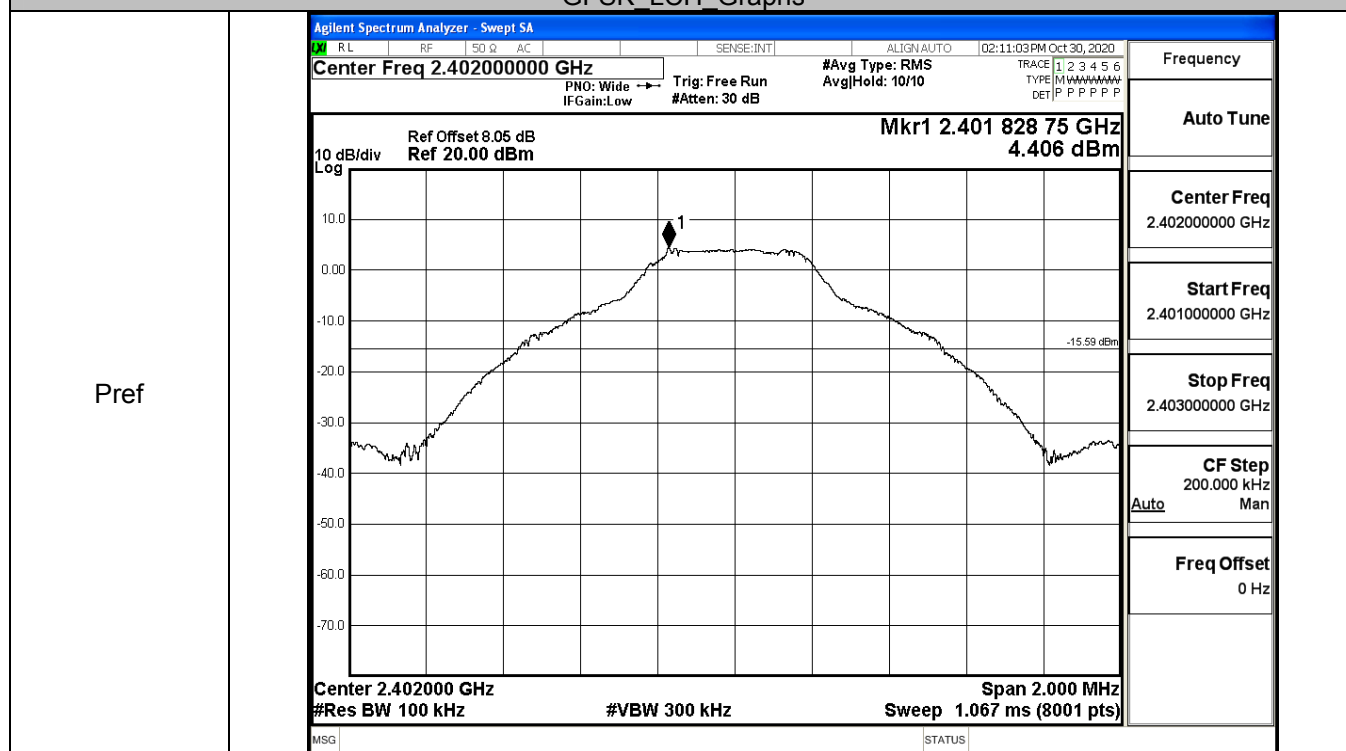
8DPSK_3DH5/HCH

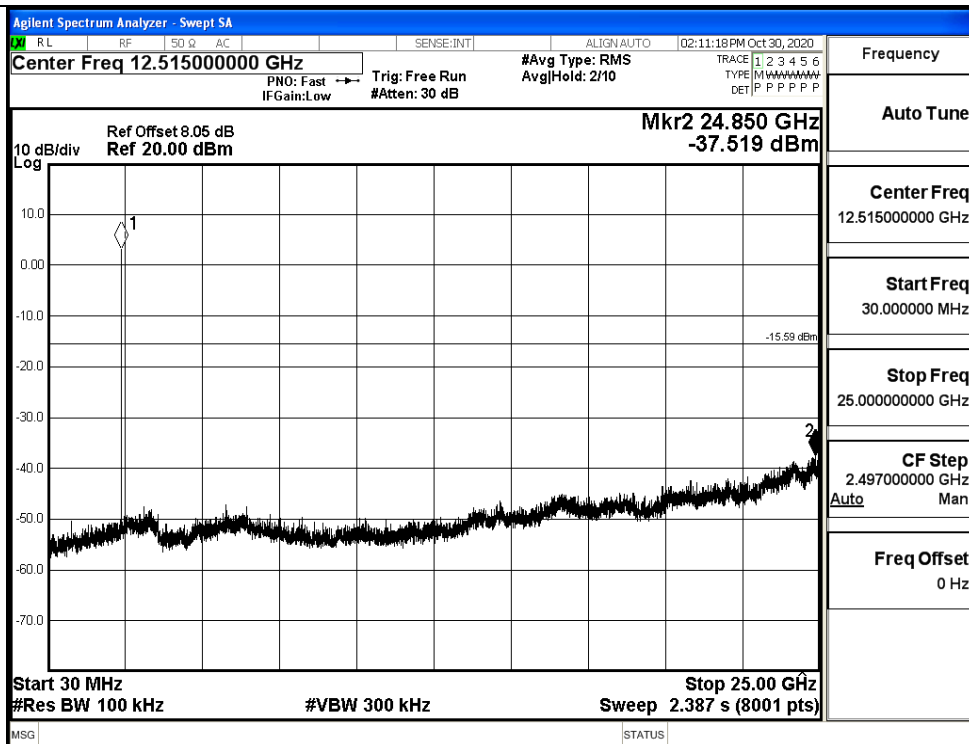


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.406	-37.519	-15.594	PASS
	MCH	4.813	-37.778	-15.187	PASS
	HCH	4.329	-37.666	-15.671	PASS
$\pi/4$ DQPSK	LCH	-1.531	-37.742	-21.531	PASS
	MCH	-0.987	-37.492	-20.987	PASS
	HCH	-1.534	-37.327	-21.534	PASS
8DPSK	LCH	-1.394	-37.964	-21.394	PASS
	MCH	-0.971	-37.566	-20.971	PASS
	HCH	-1.389	-37.784	-21.389	PASS

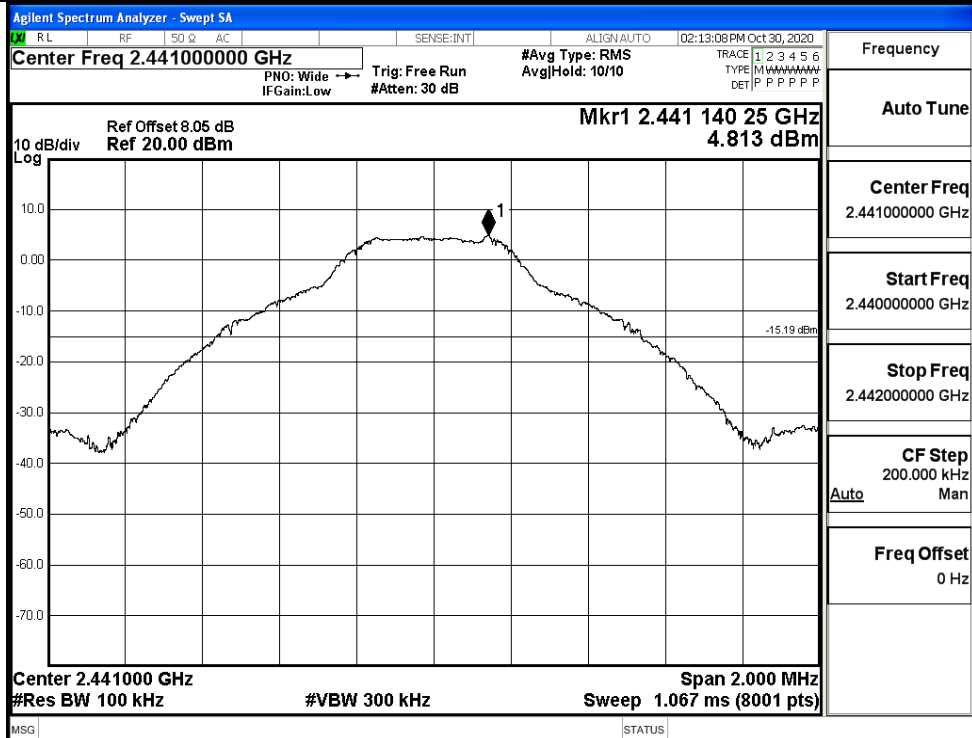
GFSK LCH Graphs



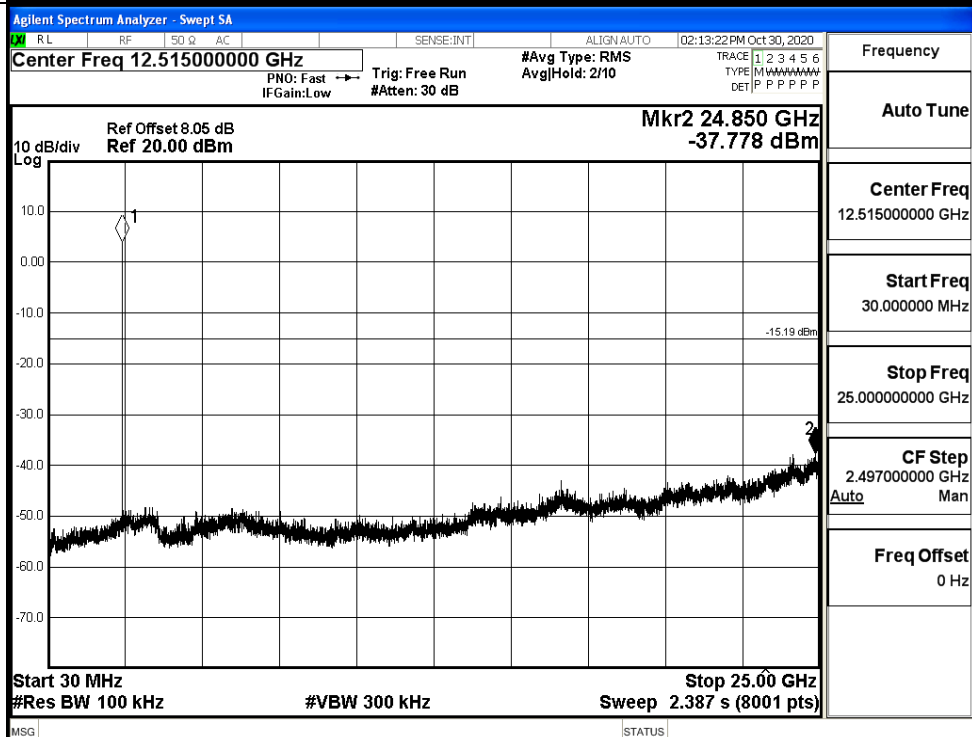
P_{uw}

GFSK_MCH_Graphs

Pref

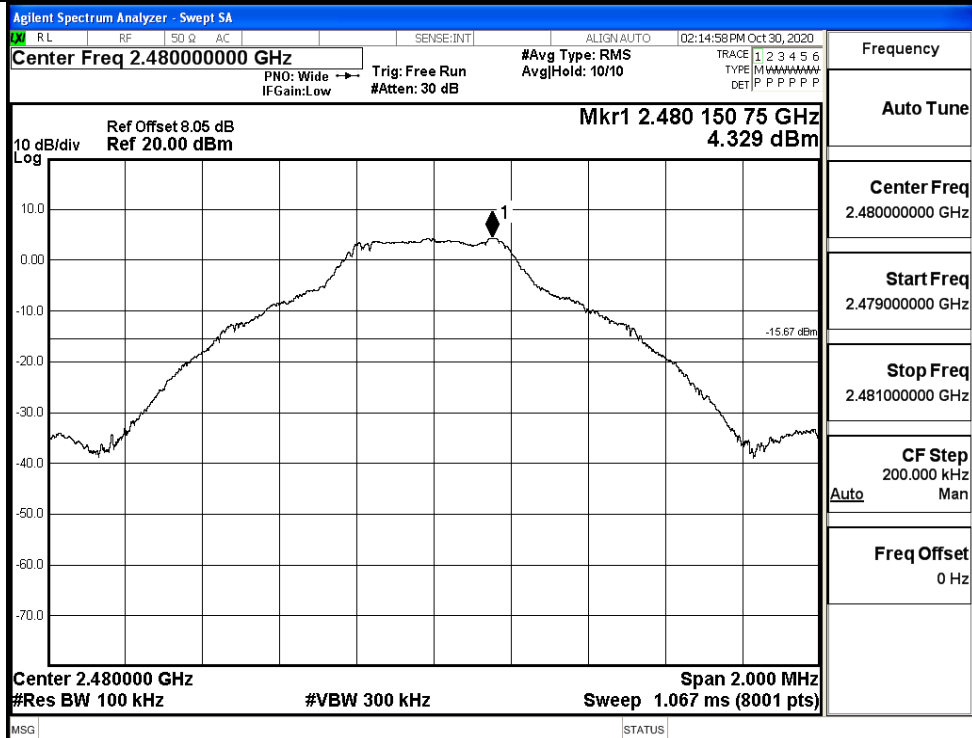


Puw

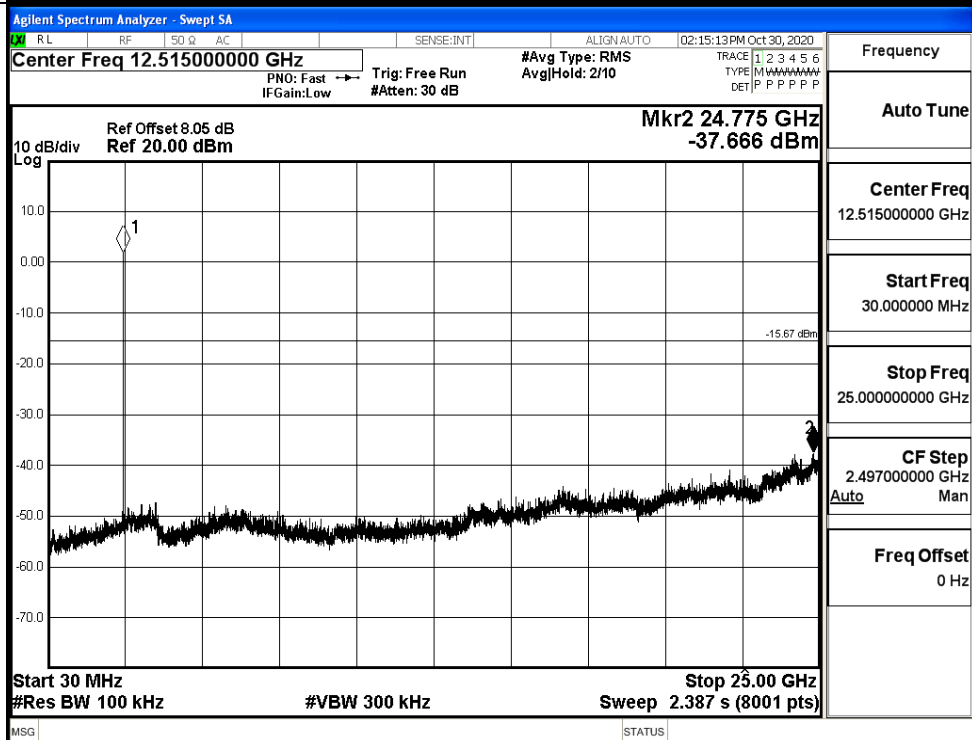


GFSK HCH_Graphs

Pref

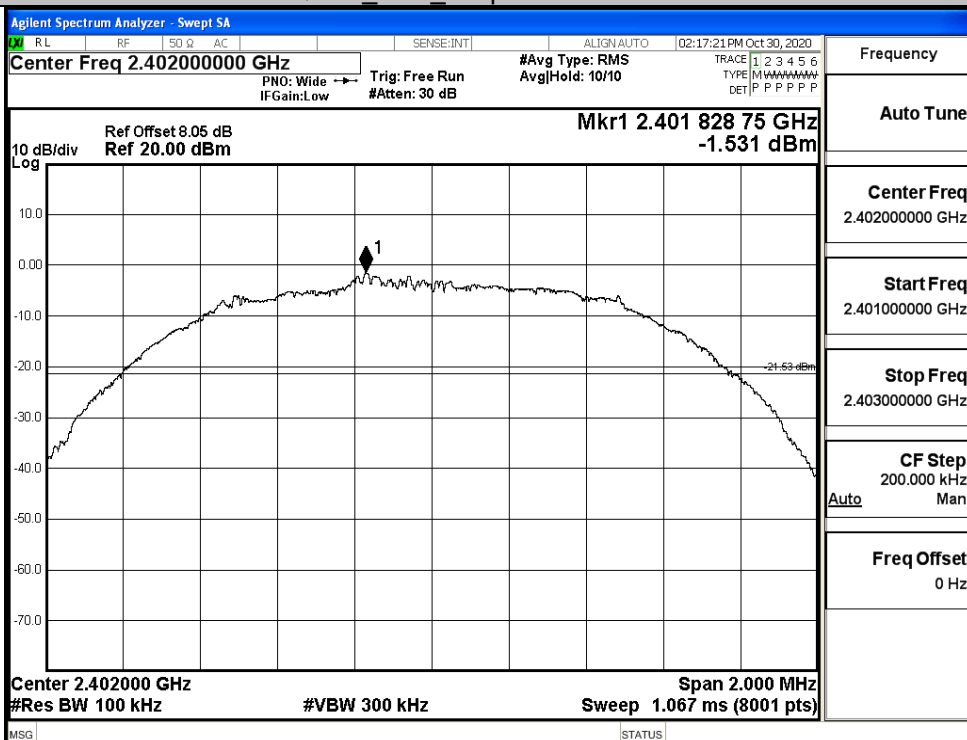


Puw

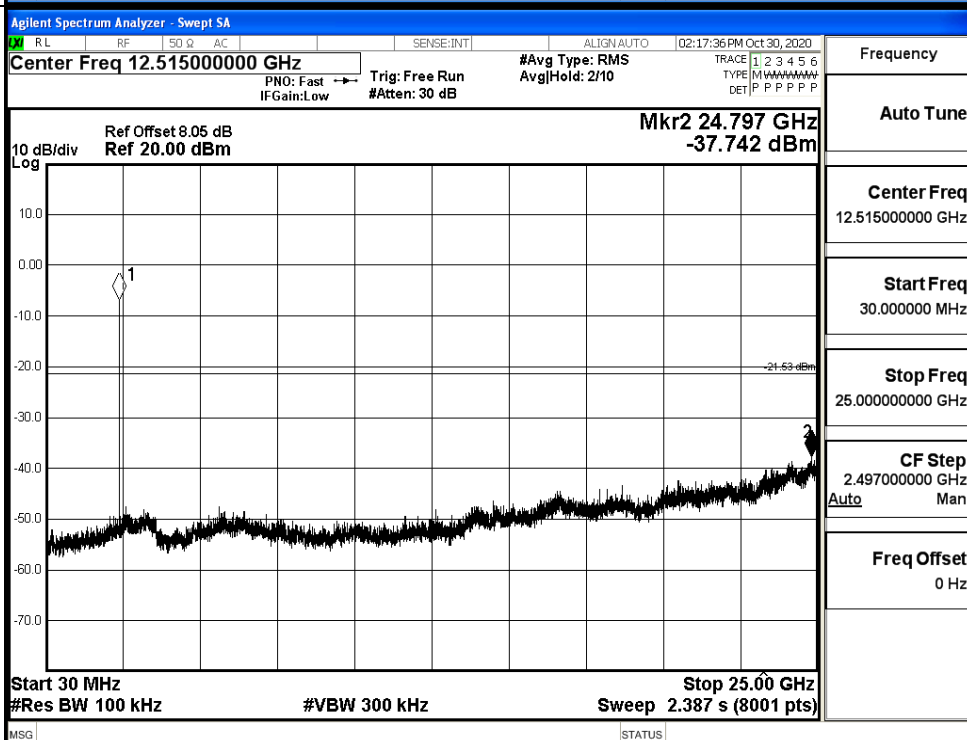


$\pi/4$ DQPSK LCH_Graphs

Pref

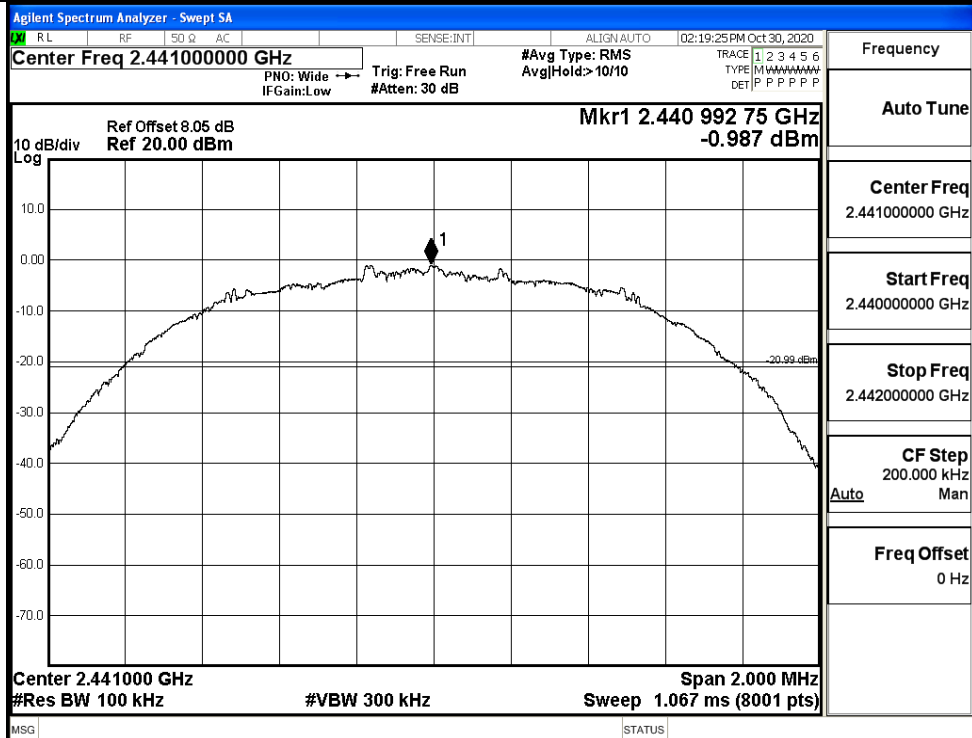


Puw

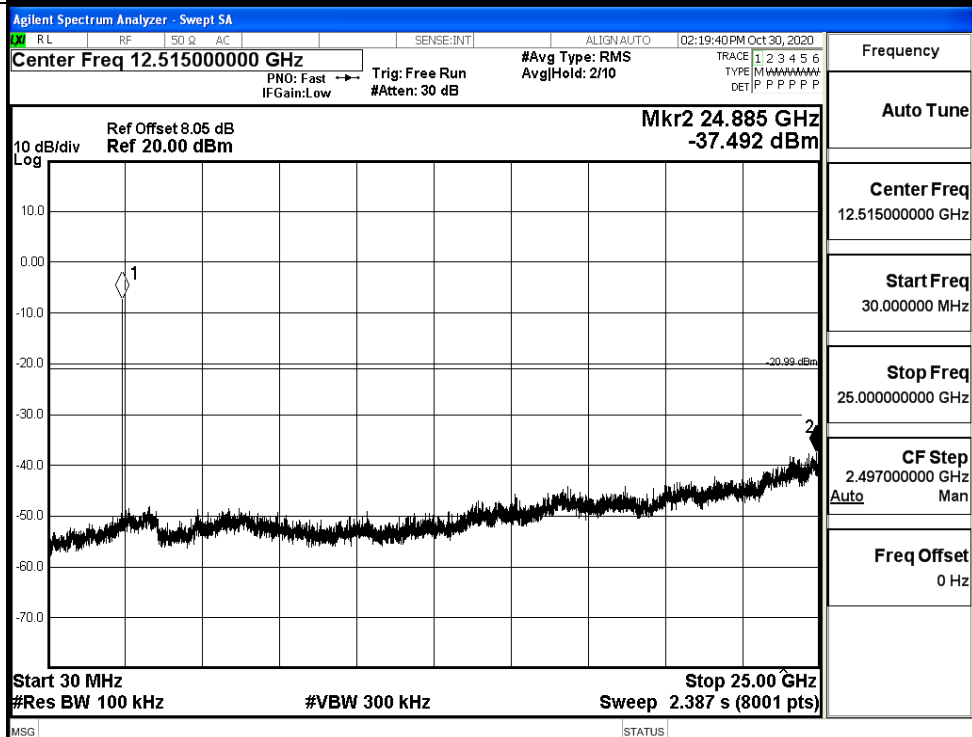


$\pi/4$ DQPSK_MCH_Graphs

Pref

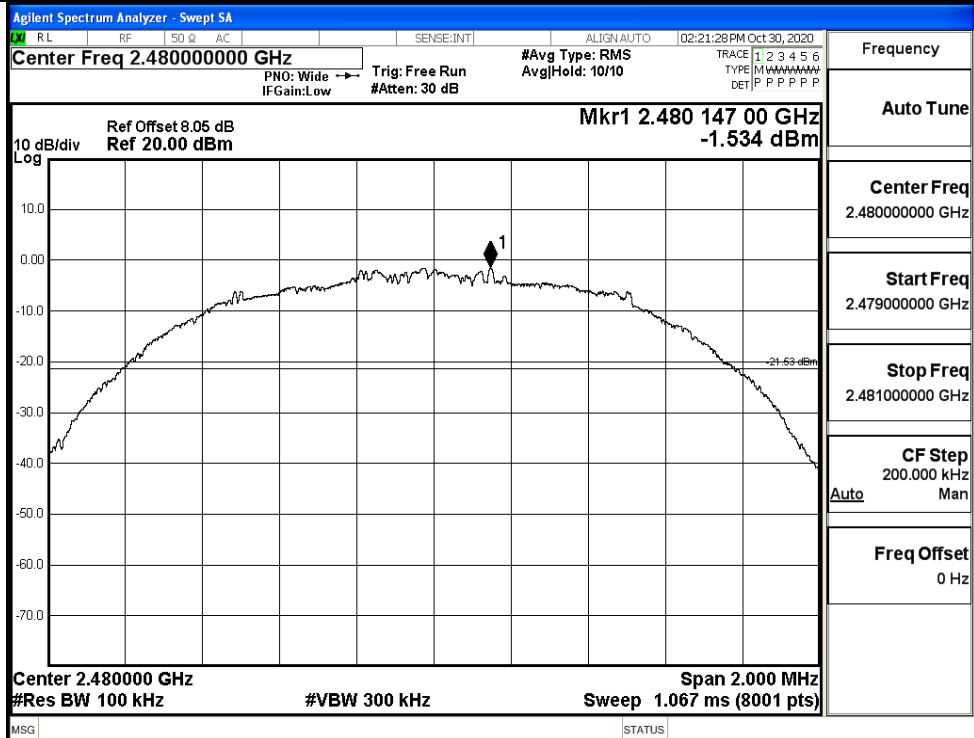


Puw

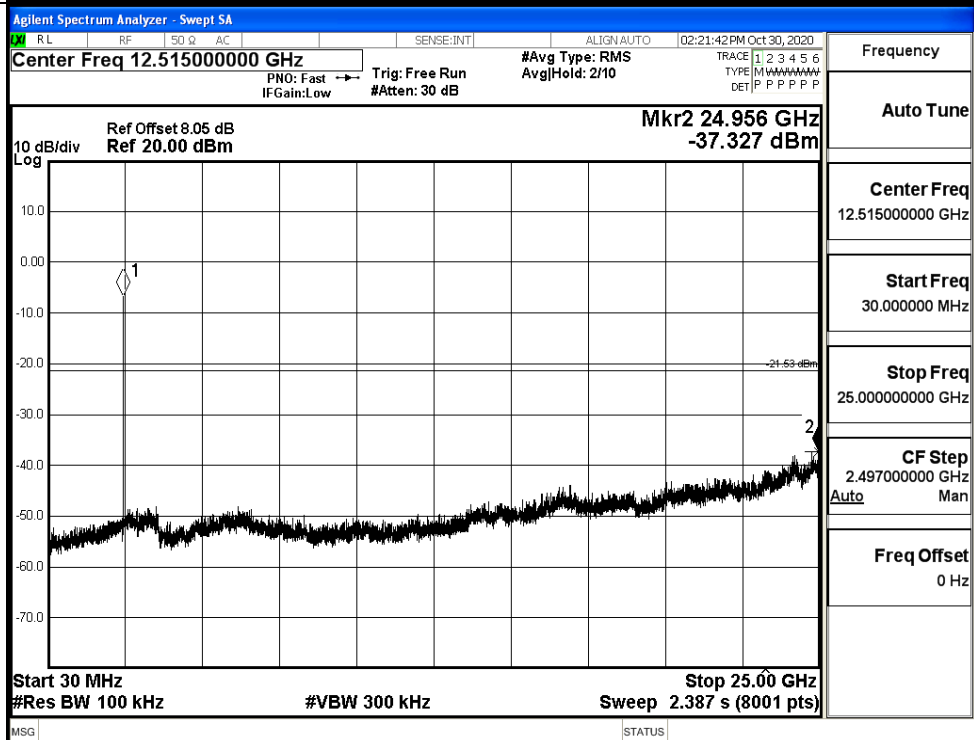


$\pi/4$ DQPSK_HCH_Graphs

Pref

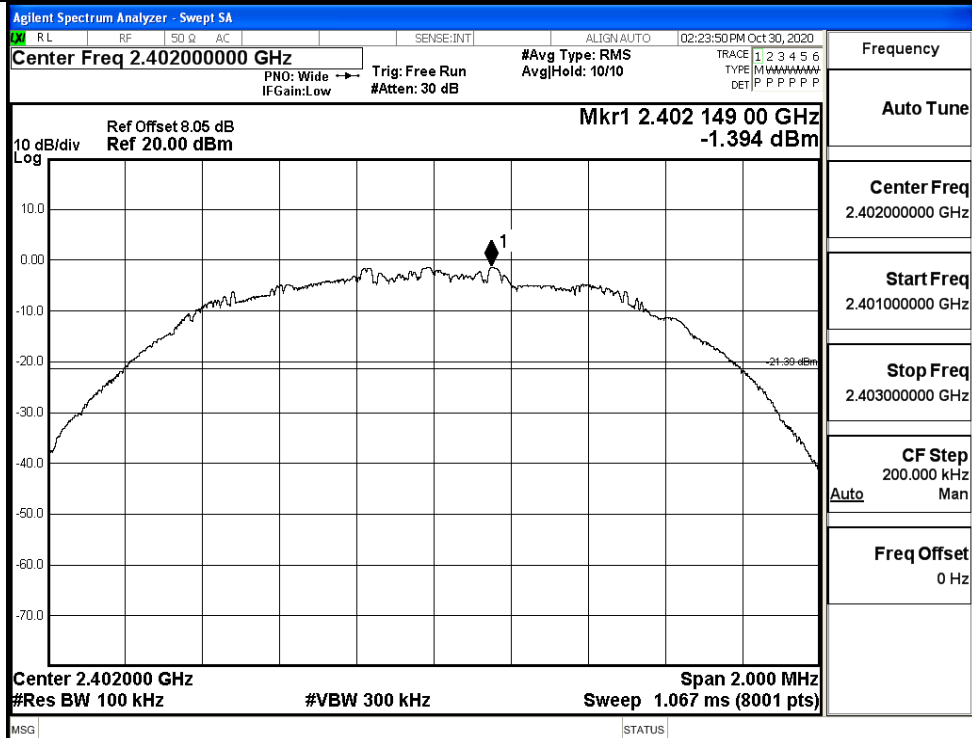


Puw

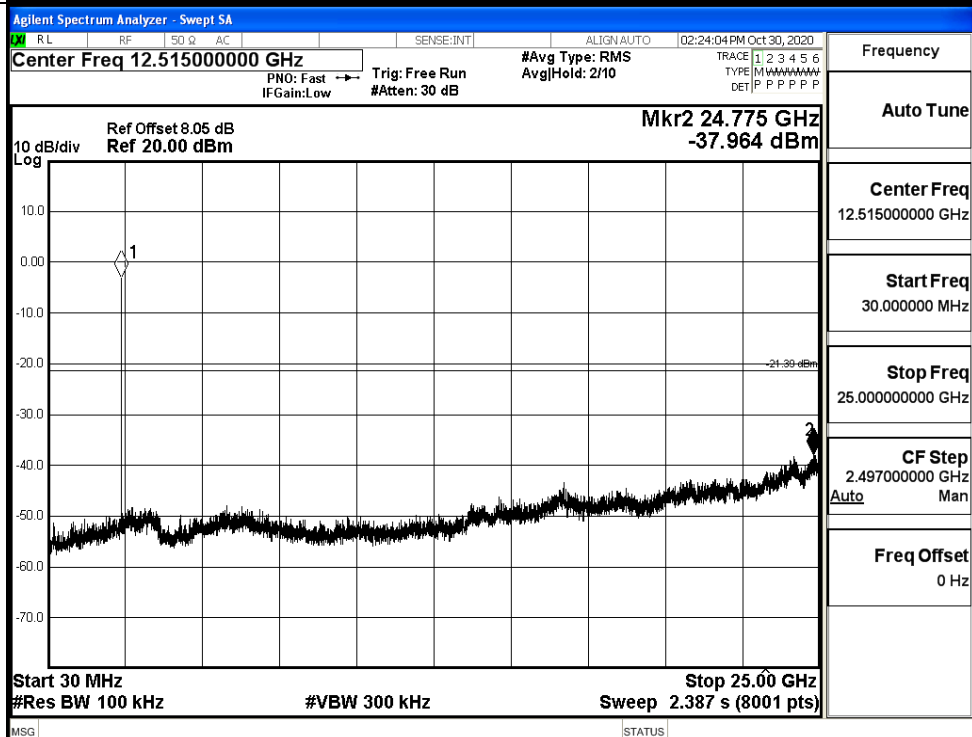


8DPSK_LCH_Graphs

Pref

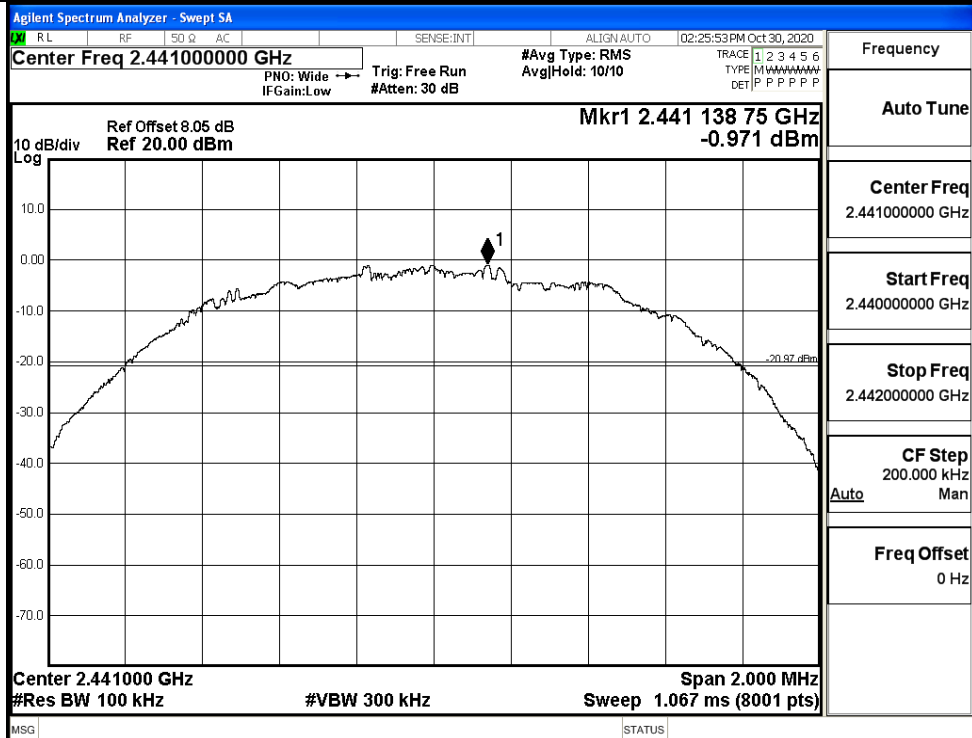


Puw

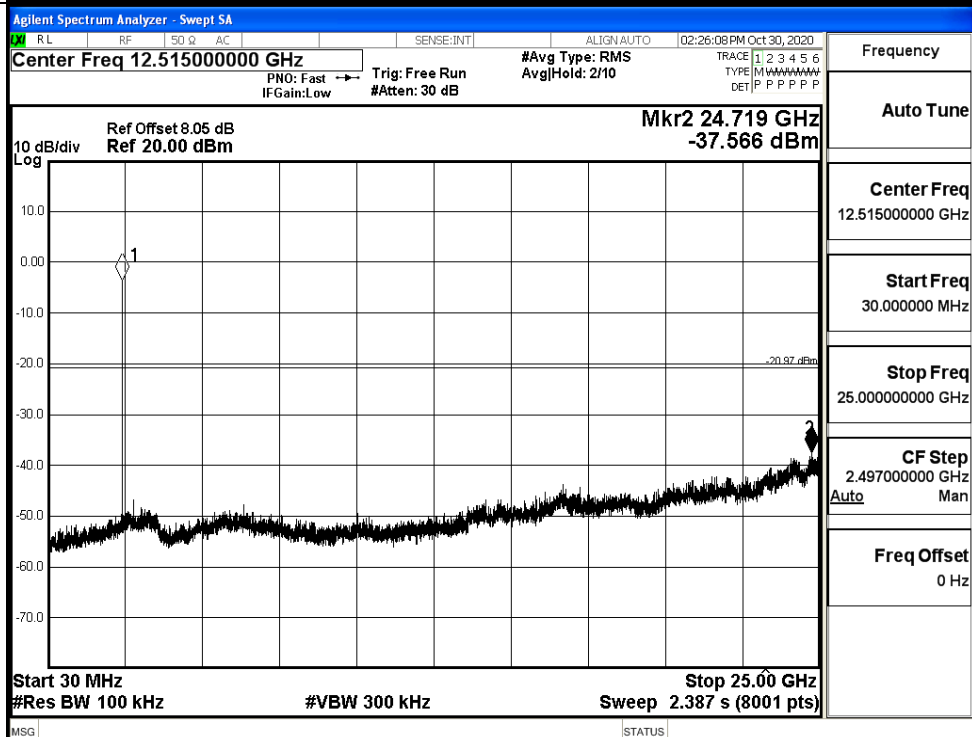


8DPSK MCH_Graphs

Pref

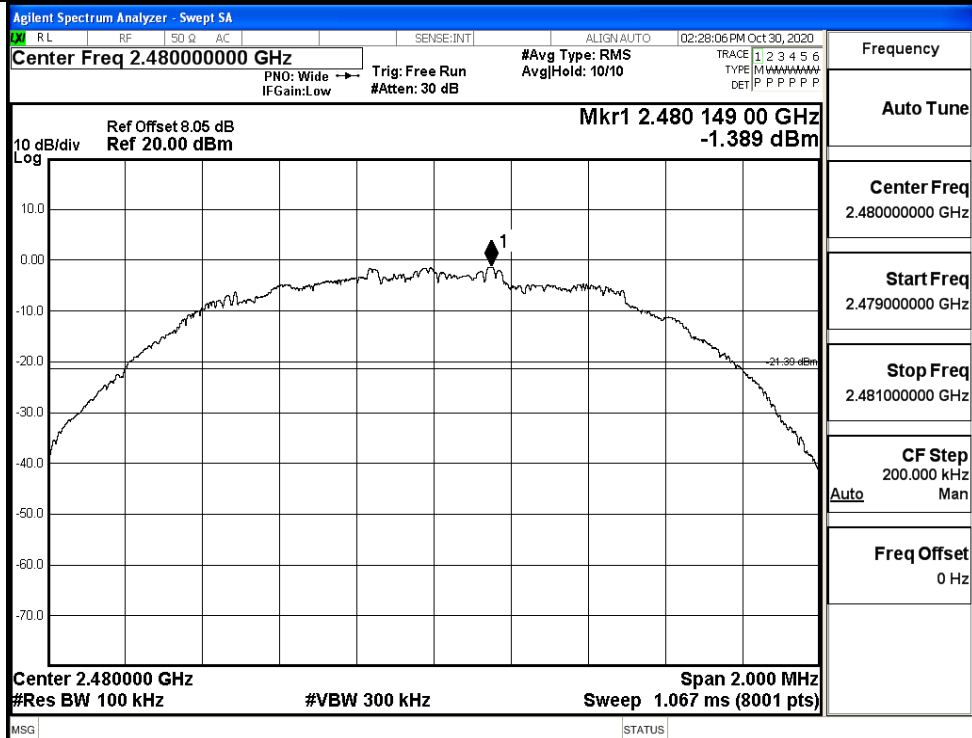


Puw

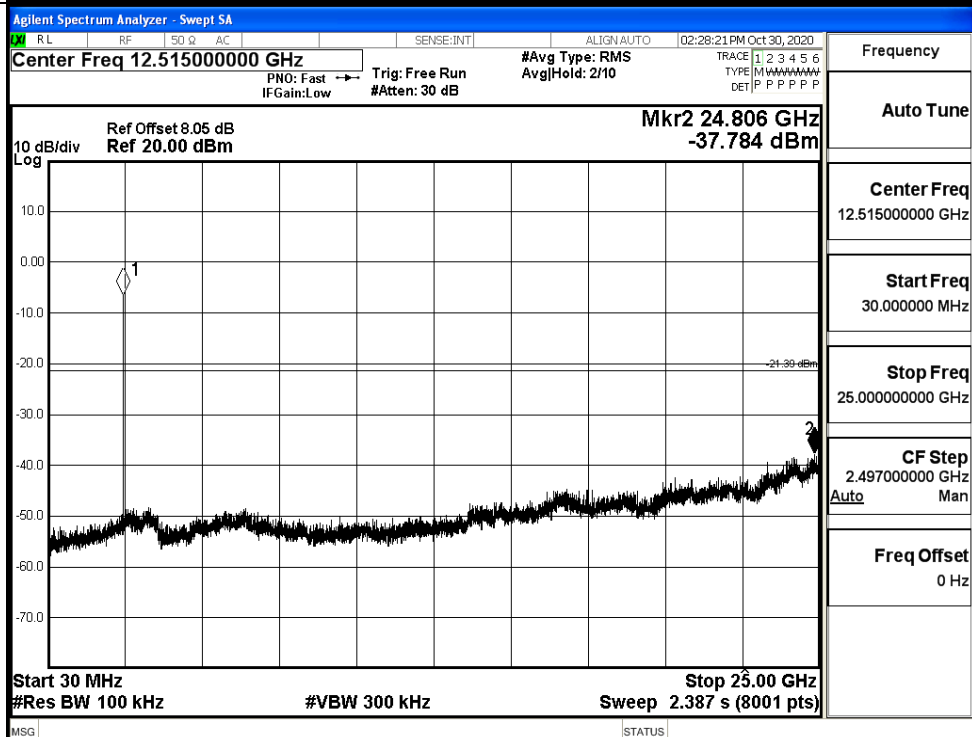


8DPSK_HCH_Graphs

Pref



Puw

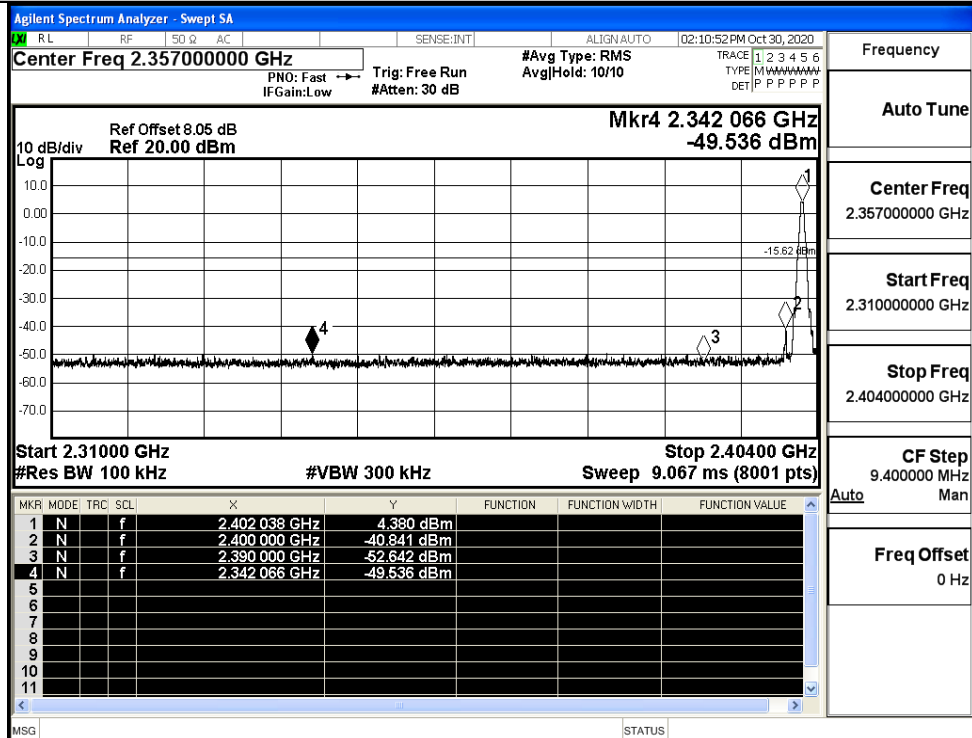


A.7 Band-edge for RF Conducted Emissions

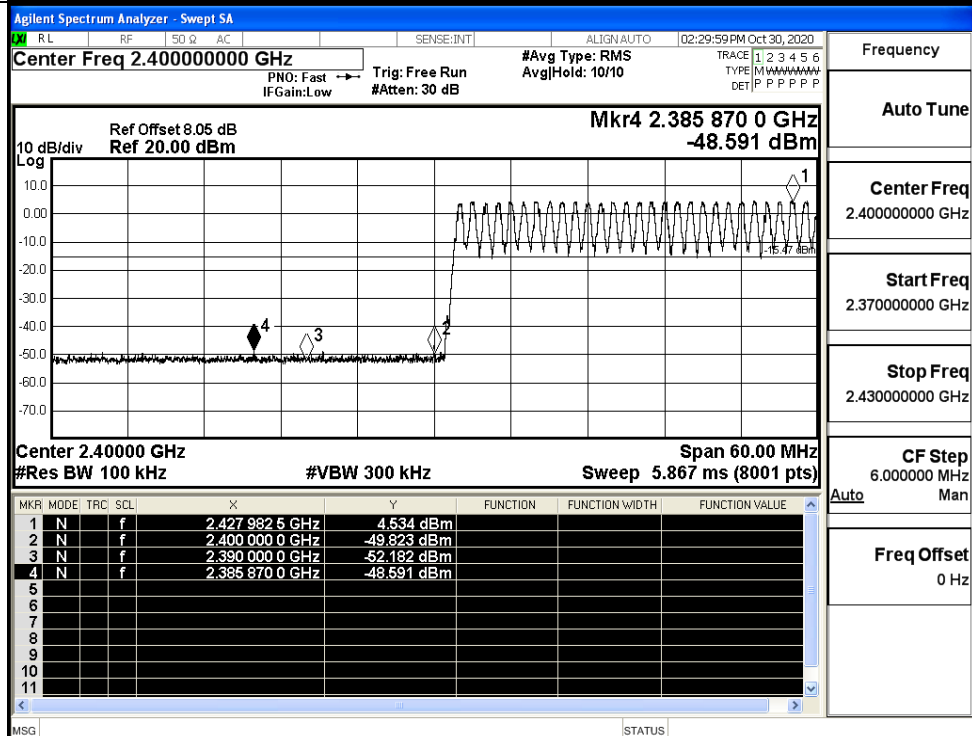
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.380	Off	-49.536	-15.62	PASS
			4.534	On	-48.591	-15.47	PASS
	HCH	2480	4.333	Off	-39.795	-15.67	PASS
			4.645	On	-38.634	-15.36	PASS
$\pi/4$ DQPSK	LCH	2402	-1.472	Off	-49.497	-21.47	PASS
			-1.358	On	-48.708	-21.36	PASS
	HCH	2480	-1.452	Off	-38.884	-21.45	PASS
			-1.160	On	-39.097	-21.16	PASS
8DPSK	LCH	2402	-1.354	Off	-49.582	-21.35	PASS
			-0.931	On	-49.186	-20.93	PASS
	HCH	2480	-1.517	Off	-39.498	-21.52	PASS
			-0.996	On	-48.432	-21	PASS

Test Graphs

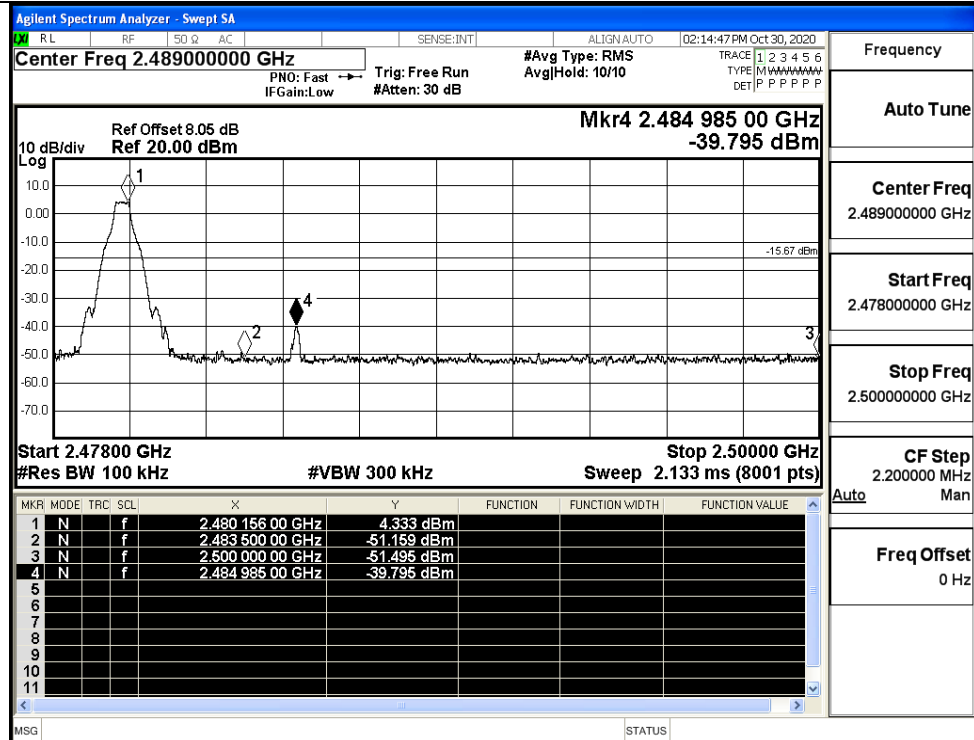
GFSK/LCH/No Hop



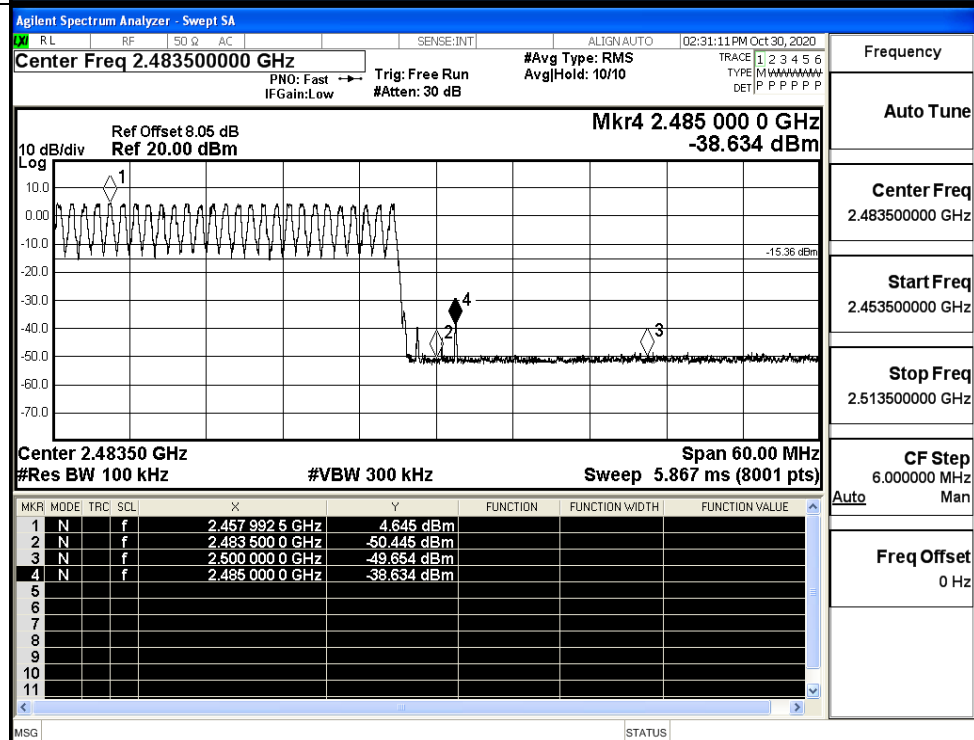
GFSK/LCH/Hop



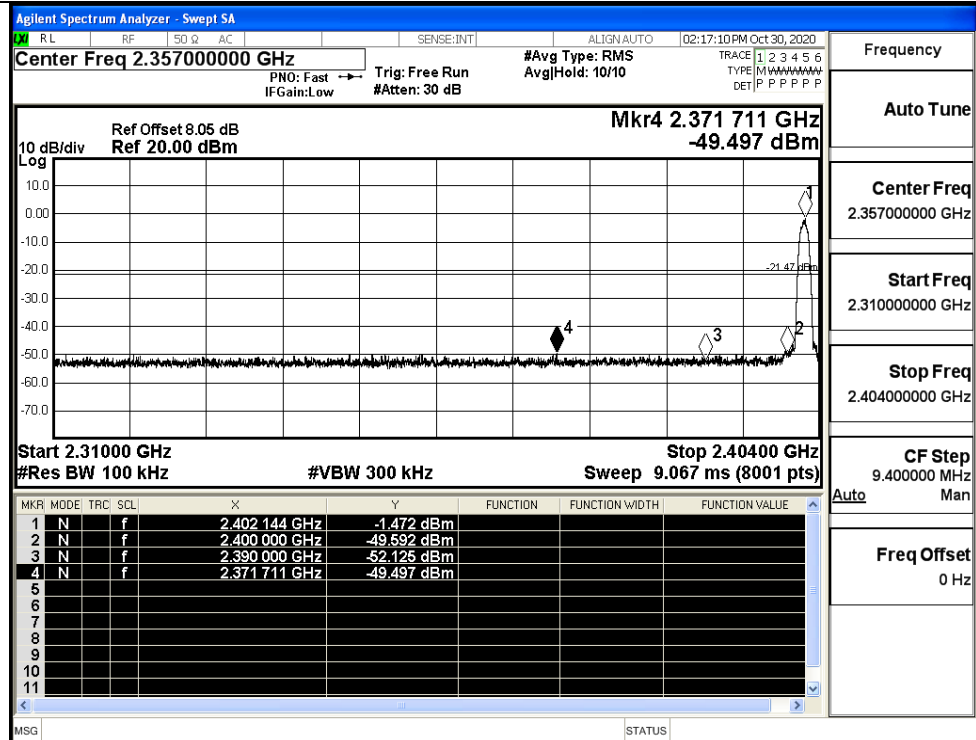
GFSK/HCH/No Hop



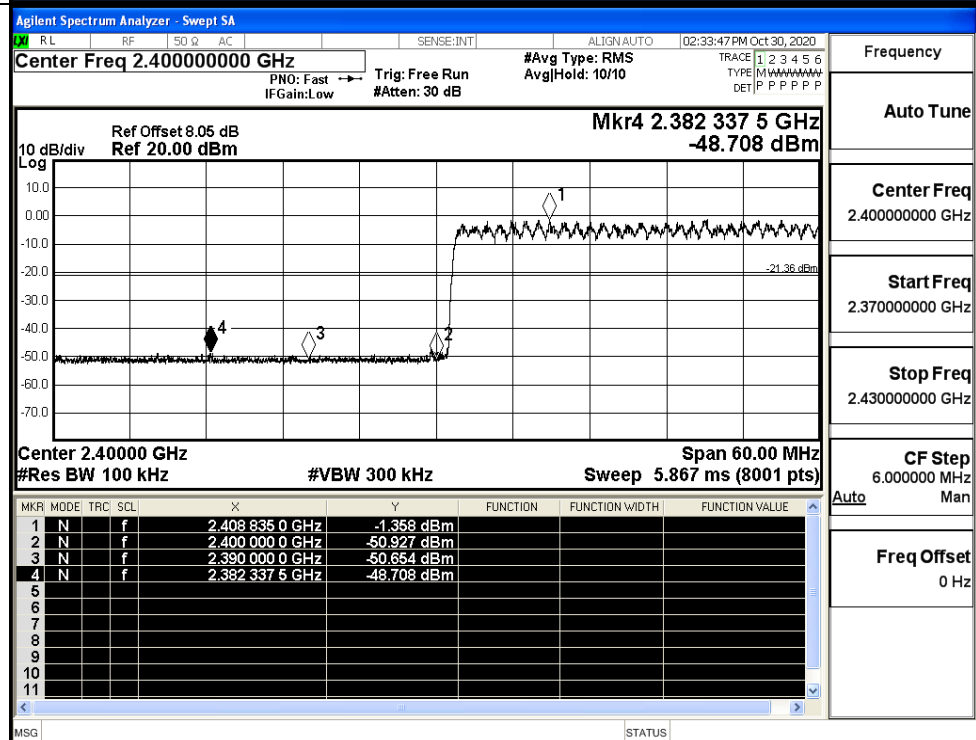
GFSK/HCH/Hop



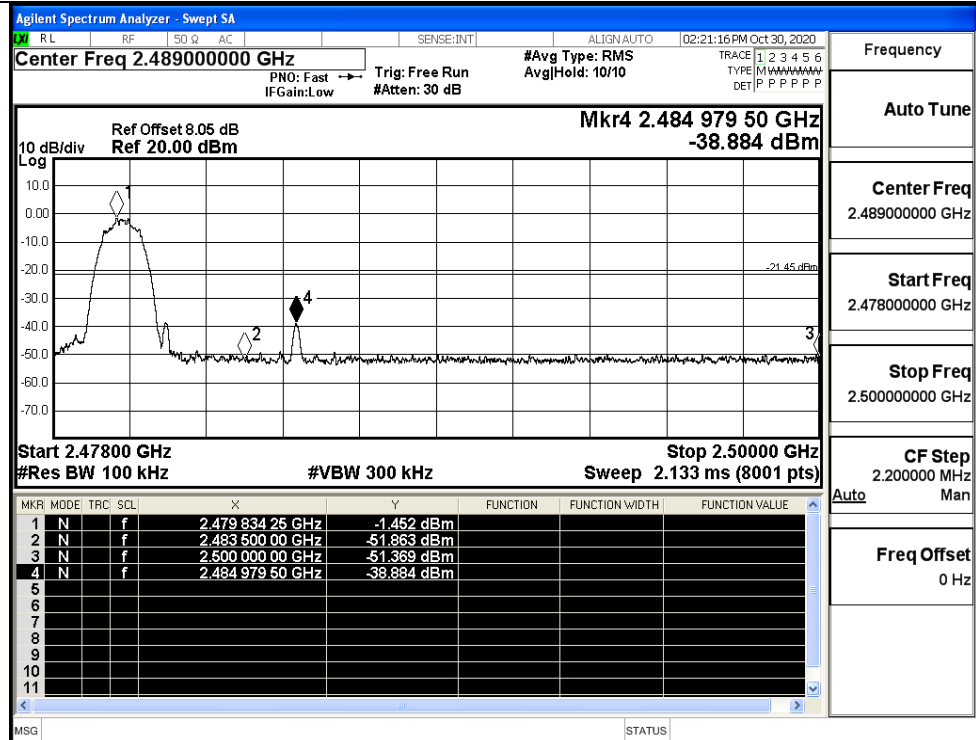
$\pi/4$ DQPSK/LCH/No
Hop



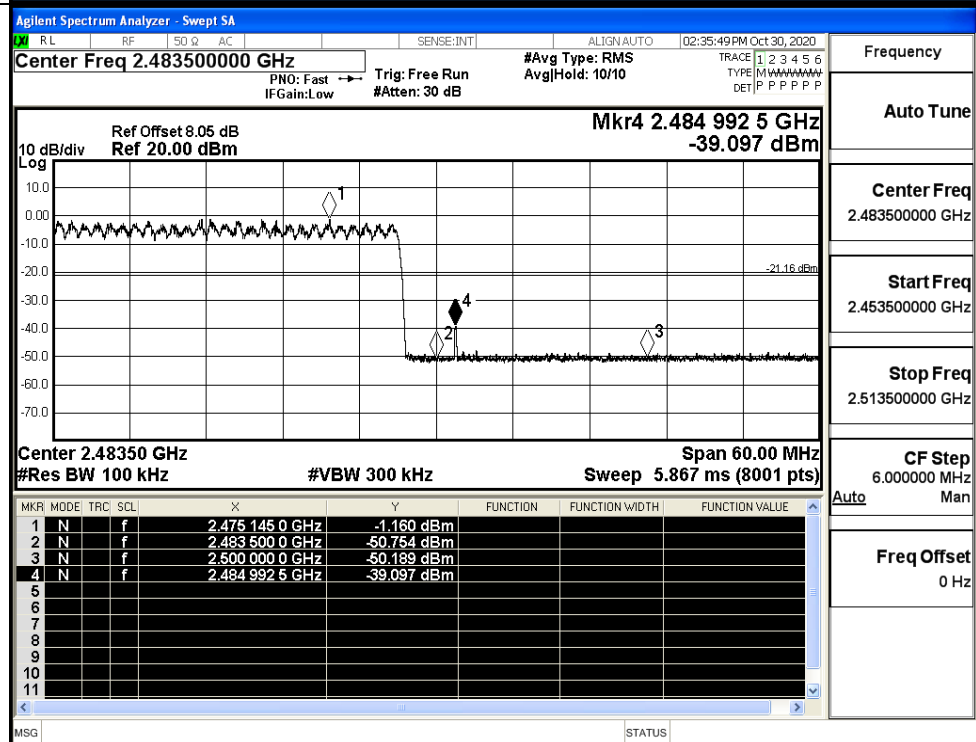
$\pi/4$ DQPSK/LCH/Hop



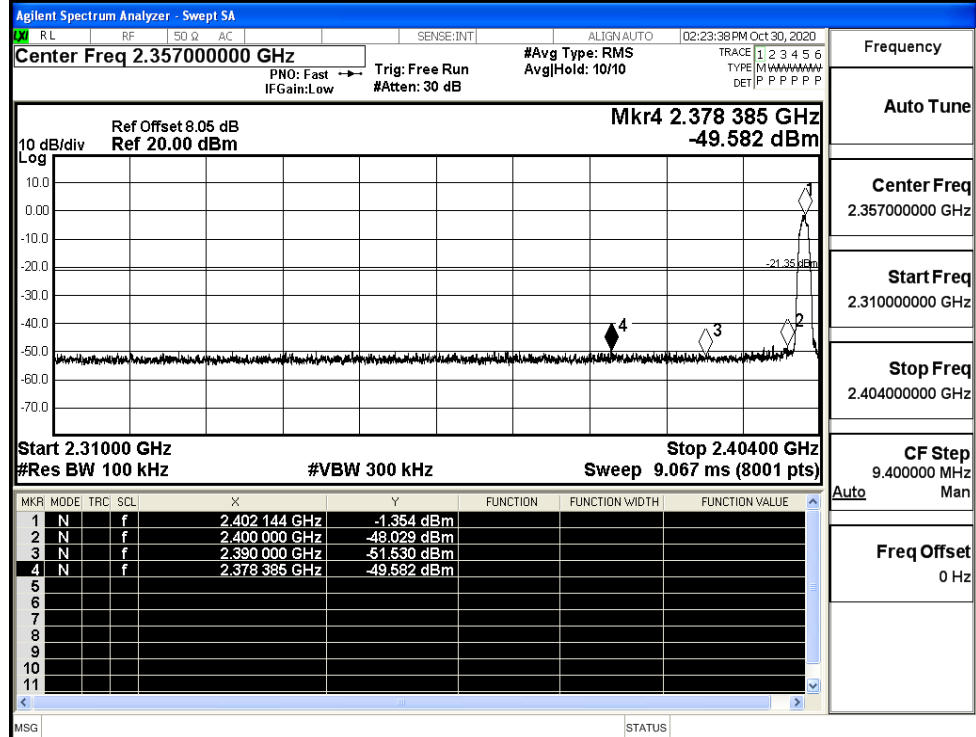
$\pi/4$ DQPSK/HCH/No
Hop



$\pi/4$ DQPSK/HCH/Hop



8DPSK/LCH/No Hop



Frequency

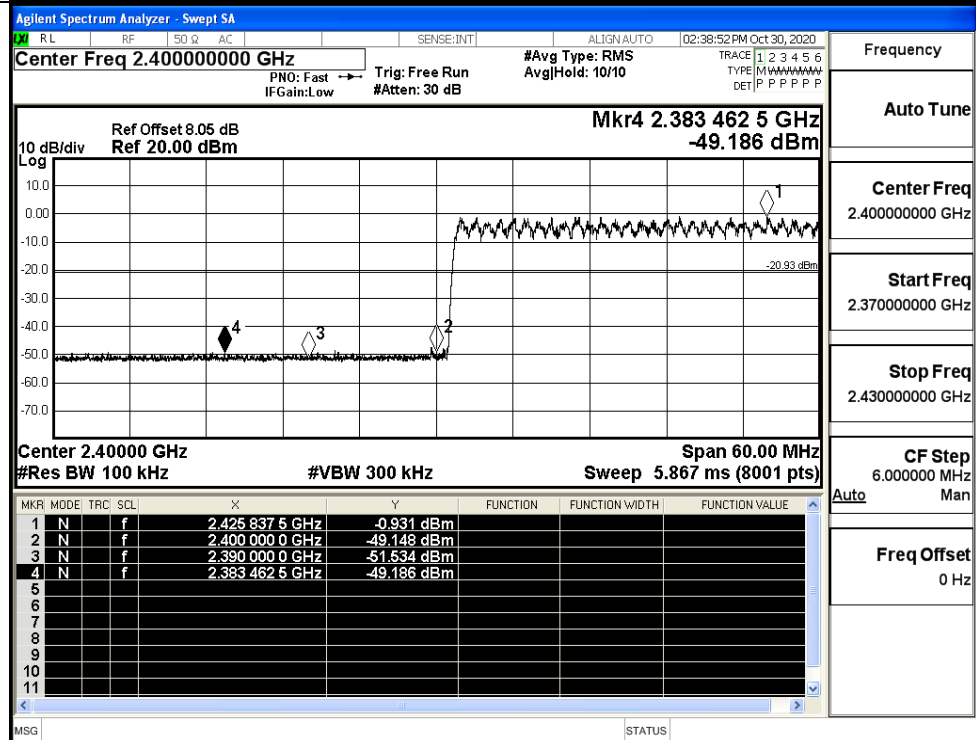
Auto Tune

Center Freq
2.357000000 GHzStart Freq
2.310000000 GHzStop Freq
2.404000000 GHzCF Step
9.400000 MHz

Auto

Freq Offset
0 Hz

8DPSK/LCH/Hop



Frequency

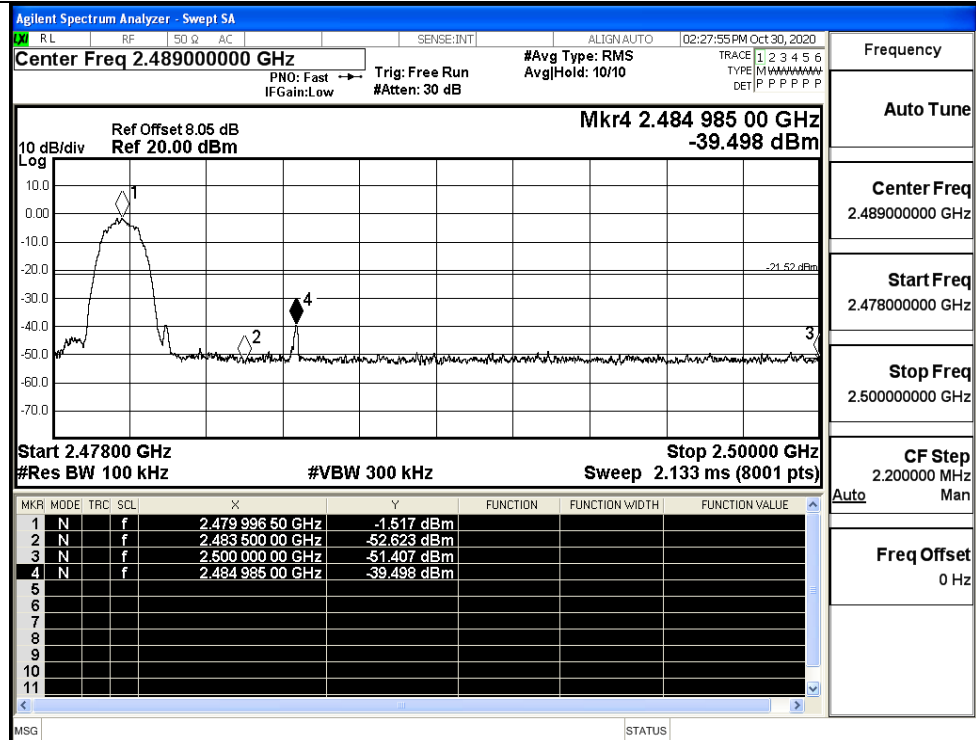
Auto Tune

Center Freq
2.400000000 GHzStart Freq
2.370000000 GHzStop Freq
2.430000000 GHzCF Step
6.000000 MHz

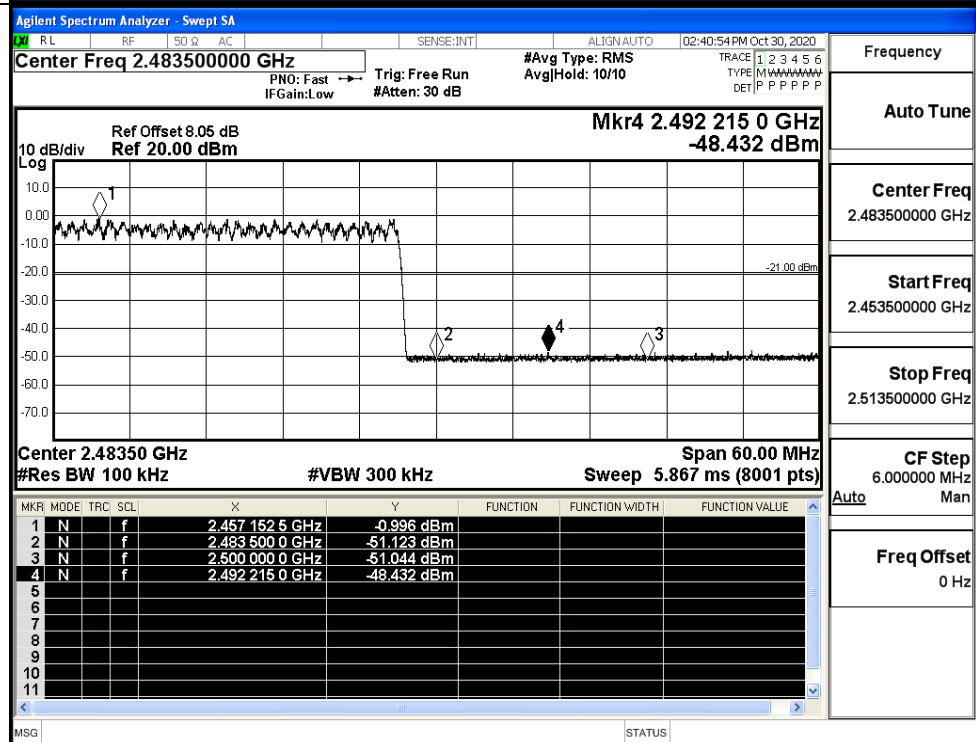
Auto

Freq Offset
0 Hz

8DPSK/HCH/No Hop



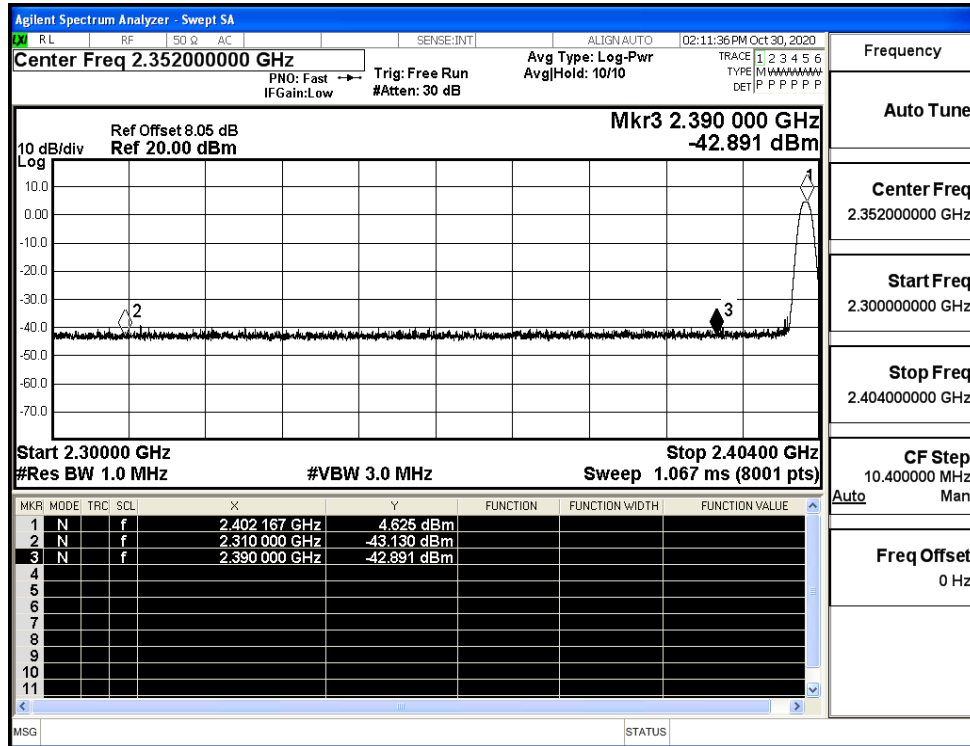
8DPSK/HCH/Hop



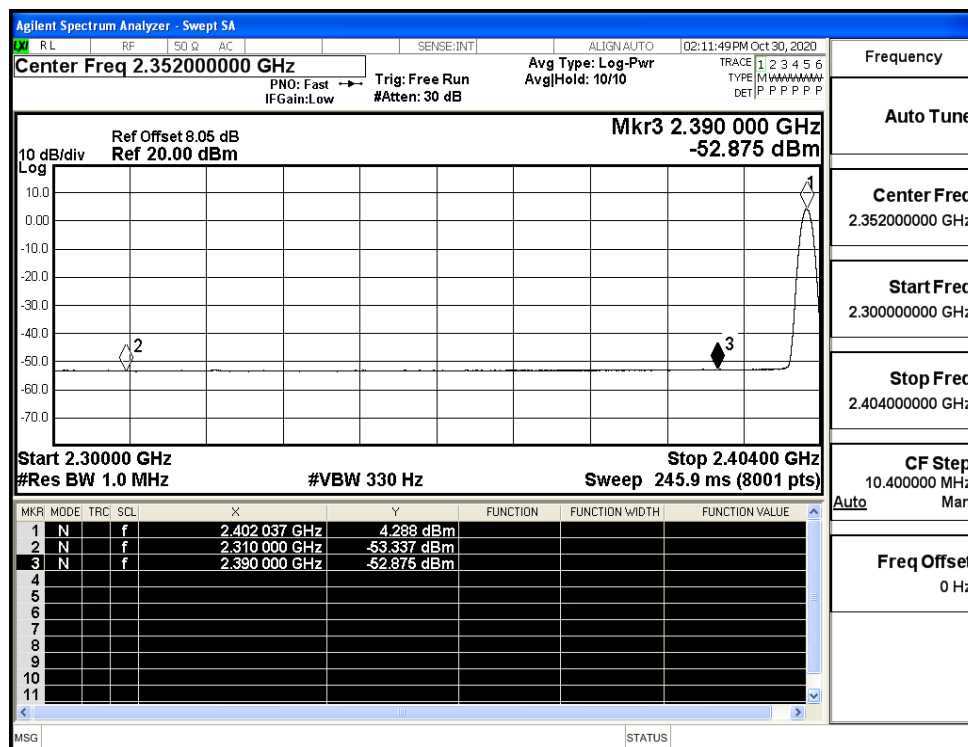
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.13	2.0	0	52.13	PEAK	74	PASS
	Off	2310.0	-53.34	2.0	0	41.92	AV	54	PASS
	Off	2390.0	-42.89	2.0	0	52.37	PEAK	74	PASS
	Off	2390.0	-52.88	2.0	0	42.38	AV	54	PASS
	Off	2483.5	-41.27	2.0	0	53.99	PEAK	74	PASS
	Off	2483.5	-52.14	2.0	0	43.12	AV	54	PASS
	Off	2500.0	-42.08	2.0	0	53.17	PEAK	74	PASS
	Off	2500.0	-52.26	2.0	0	43.00	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.92	2.0	0	51.34	PEAK	74	PASS
	Off	2310.0	-53.25	2.0	0	42.01	AV	54	PASS
	Off	2390.0	-43.75	2.0	0	51.51	PEAK	74	PASS
	Off	2390.0	-53.02	2.0	0	42.24	AV	54	PASS
	Off	2483.5	-42.53	2.0	0	52.72	PEAK	74	PASS
	Off	2483.5	-52.07	2.0	0	43.19	AV	54	PASS
	Off	2500.0	-40.62	2.0	0	54.64	PEAK	74	PASS
	Off	2500.0	-52.29	2.0	0	42.97	AV	54	PASS
8DPSK	Off	2310.0	-43.18	2.0	0	52.08	PEAK	74	PASS
	Off	2310.0	-53.32	2.0	0	41.94	AV	54	PASS
	Off	2390.0	-42.30	2.0	0	52.96	PEAK	74	PASS
	Off	2390.0	-52.98	2.0	0	42.28	AV	54	PASS
	Off	2483.5	-41.31	2.0	0	53.94	PEAK	74	PASS
	Off	2483.5	-52.11	2.0	0	43.15	AV	54	PASS
	Off	2500.0	-41.03	2.0	0	54.23	PEAK	74	PASS
	Off	2500.0	-52.25	2.0	0	43.00	AV	54	PASS

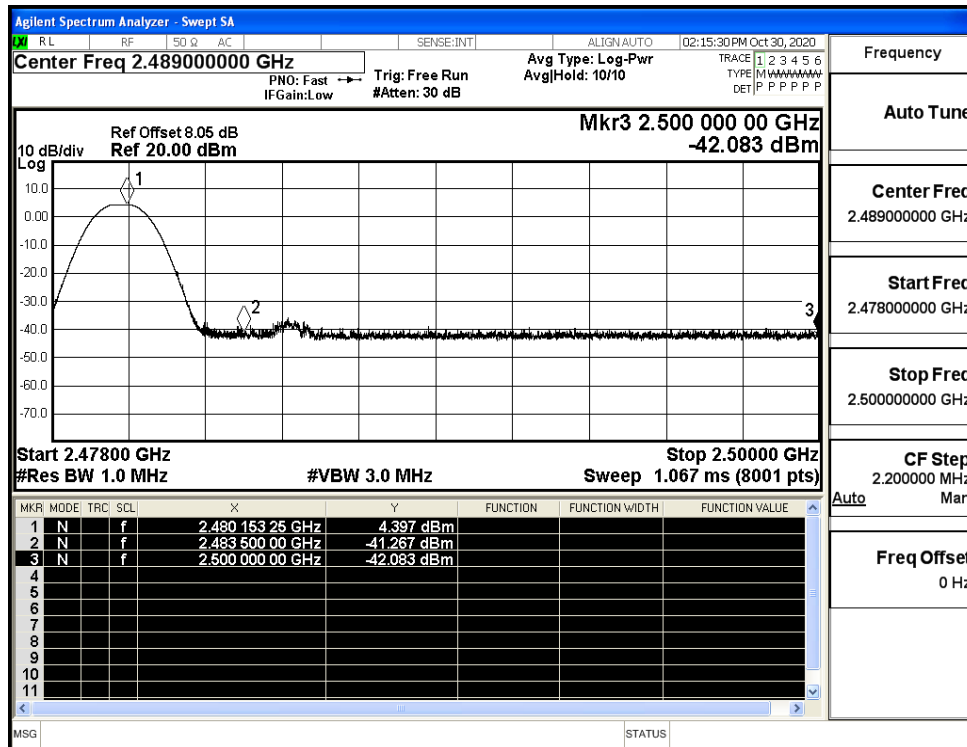
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



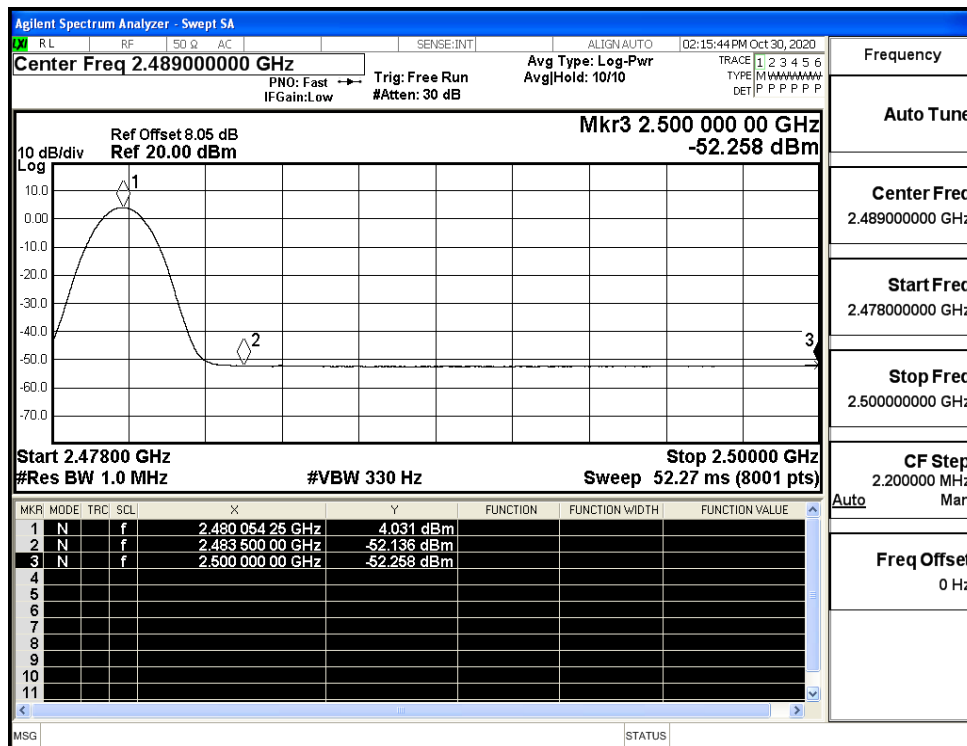
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

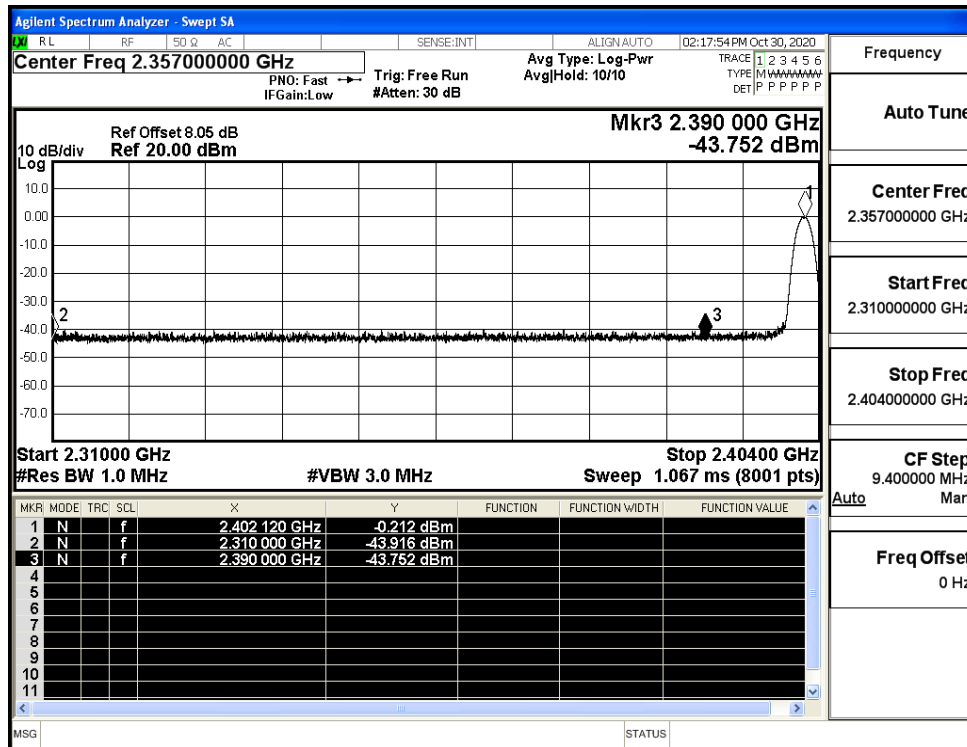
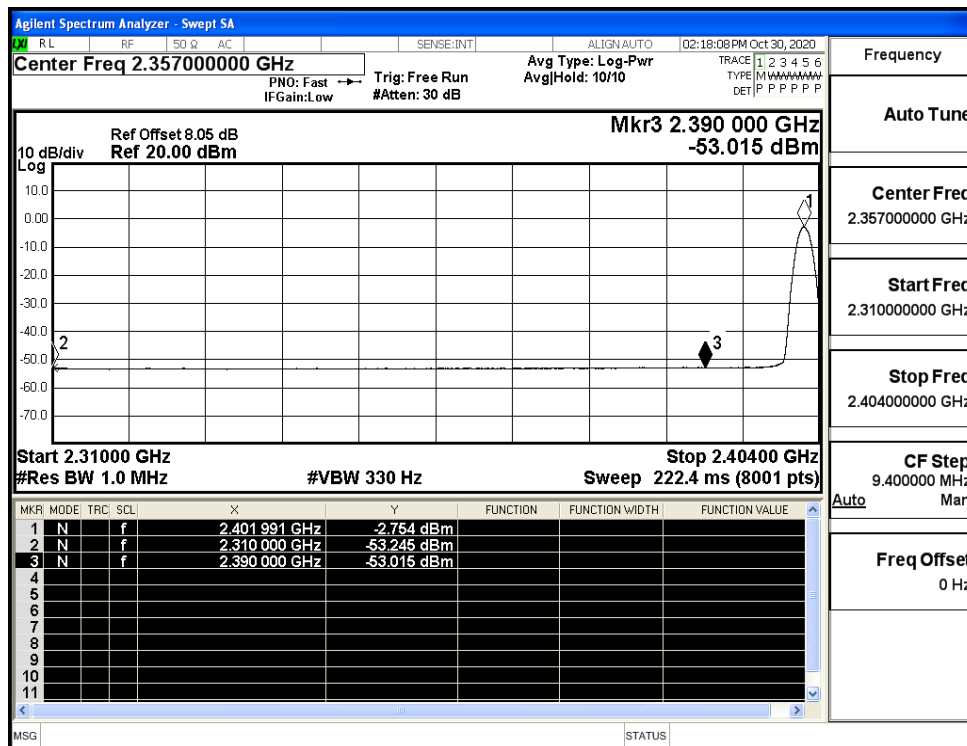


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

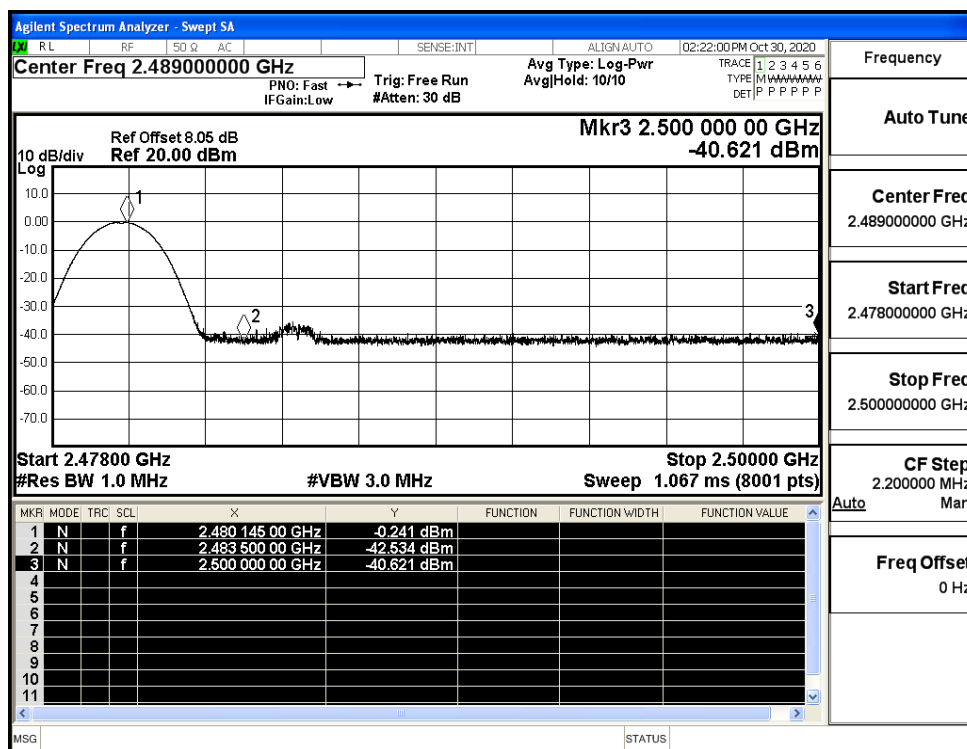


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

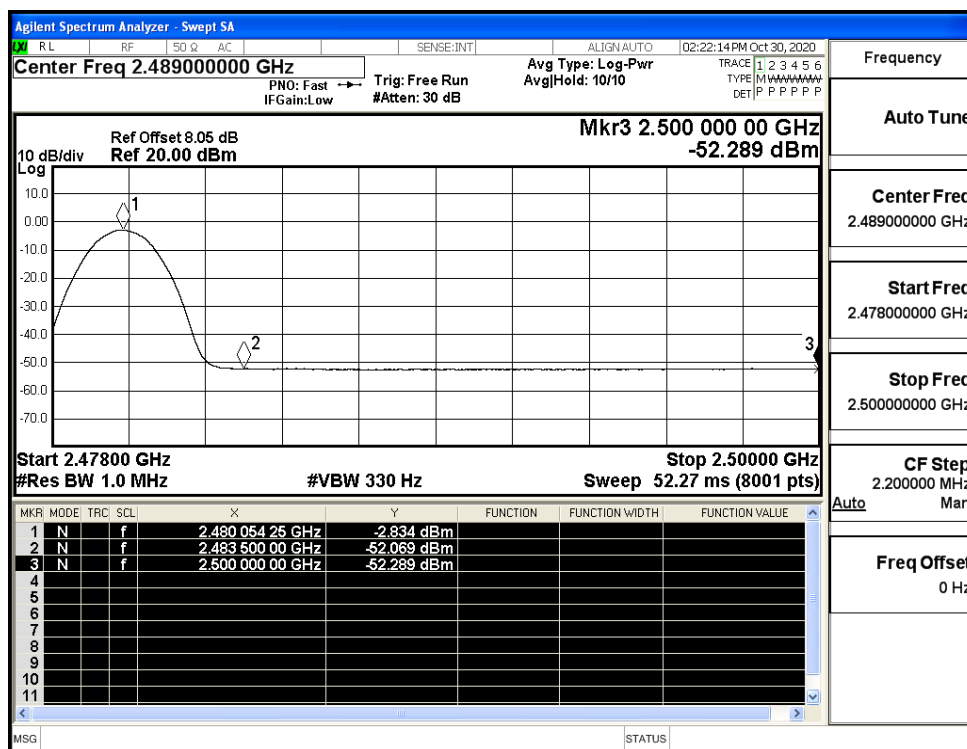


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

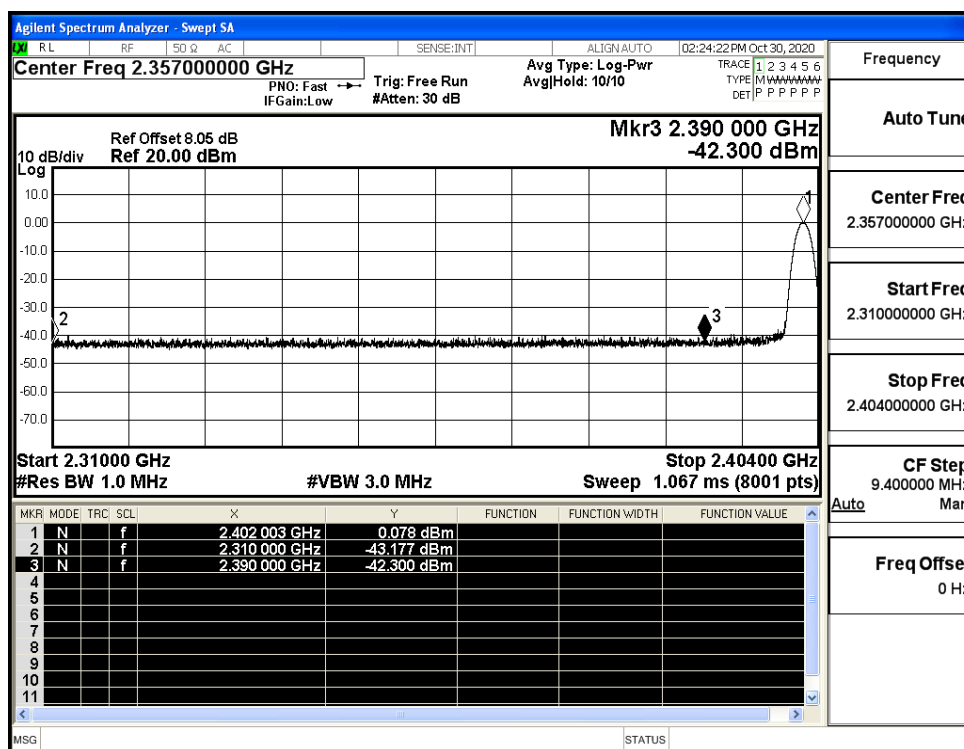
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



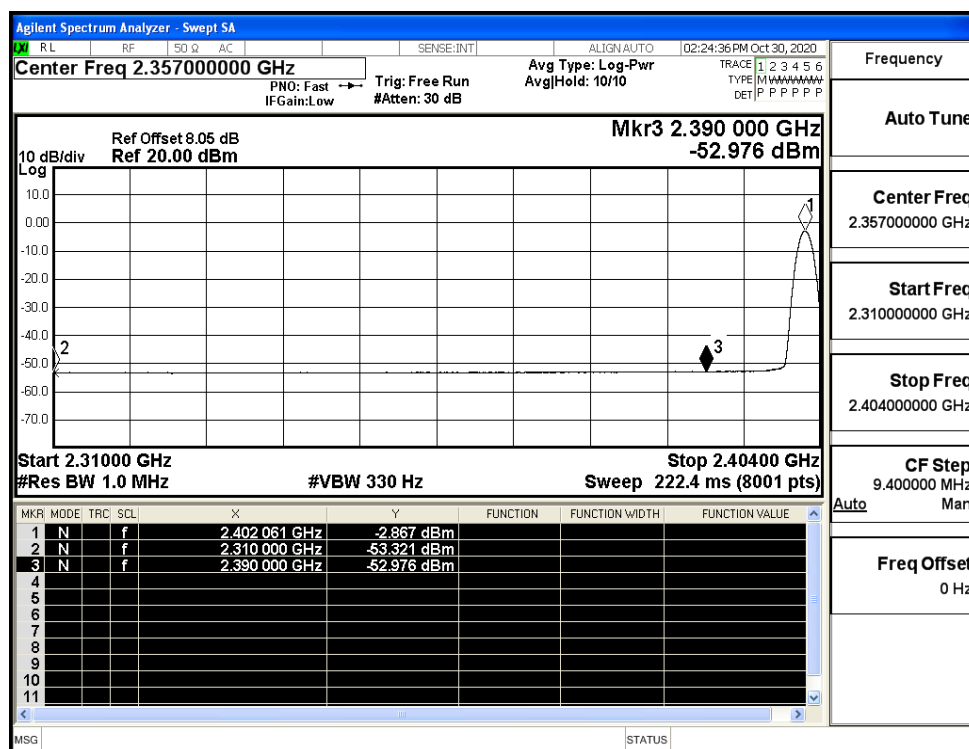
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



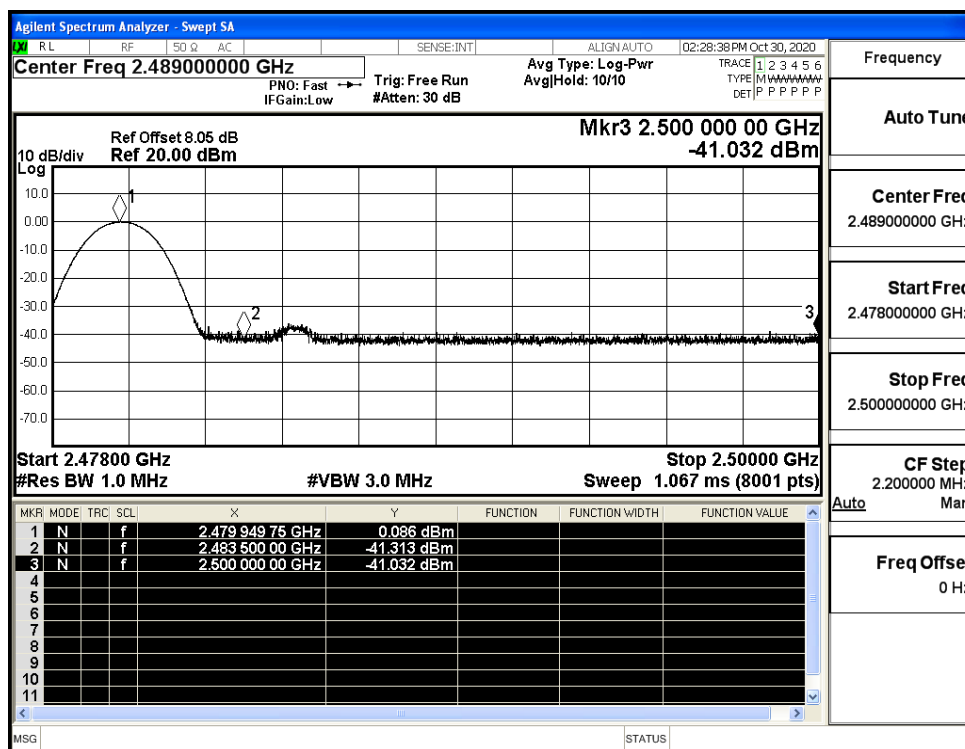
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

