

Appendix A

RF Test Data for BT V4.0(BDR/EDR) (Conducted Measurement)

Product Name: Pos system

Trade Mark: E-jeton

Test Model: R15

Environmental Conditions

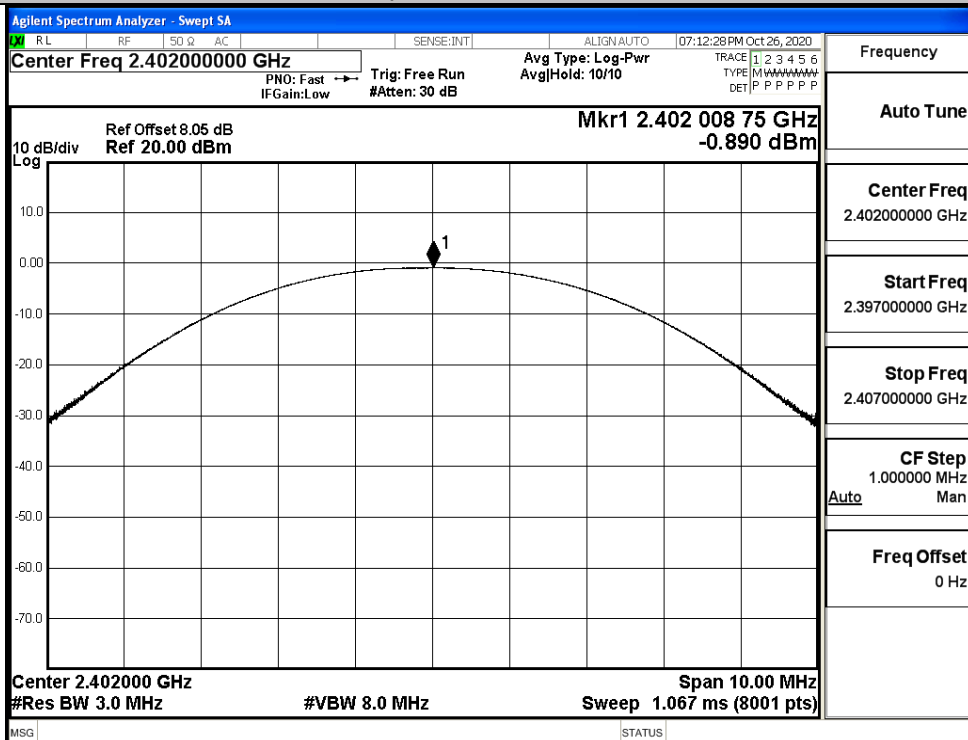
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Ken. He
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

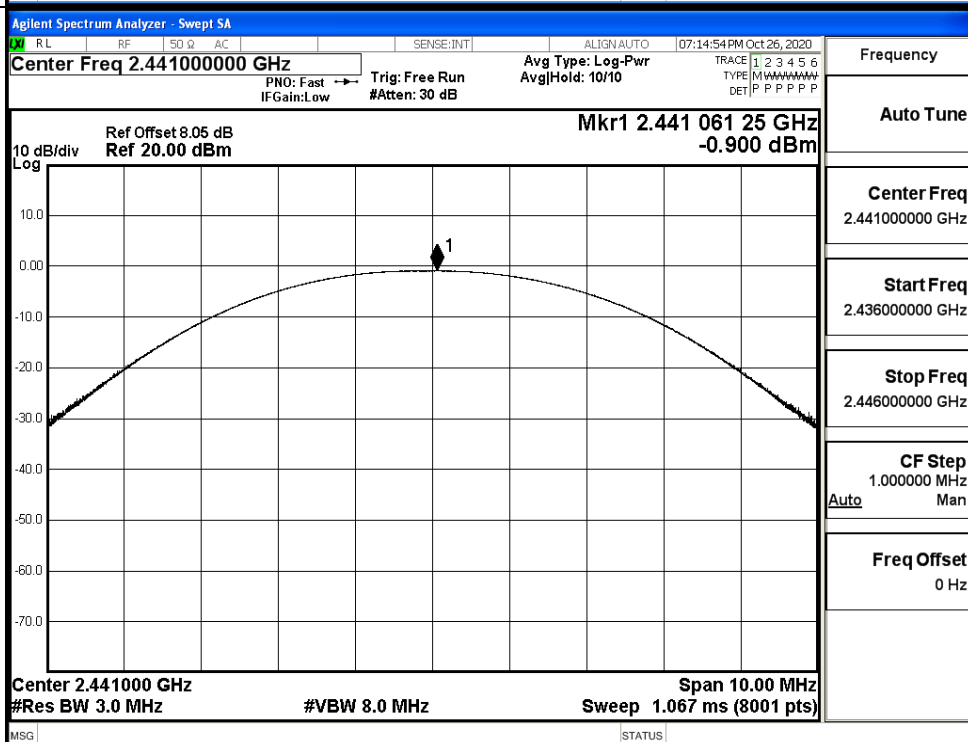
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.890	21	PASS
	MCH	-0.900	21	PASS
	HCH	-1.647	21	PASS
$\pi/4$ DQPSK	LCH	1.396	21	PASS
	MCH	1.320	21	PASS
	HCH	0.593	21	PASS
8DPSK	LCH	1.602	21	PASS
	MCH	1.560	21	PASS
	HCH	0.826	21	PASS

Test Graphs

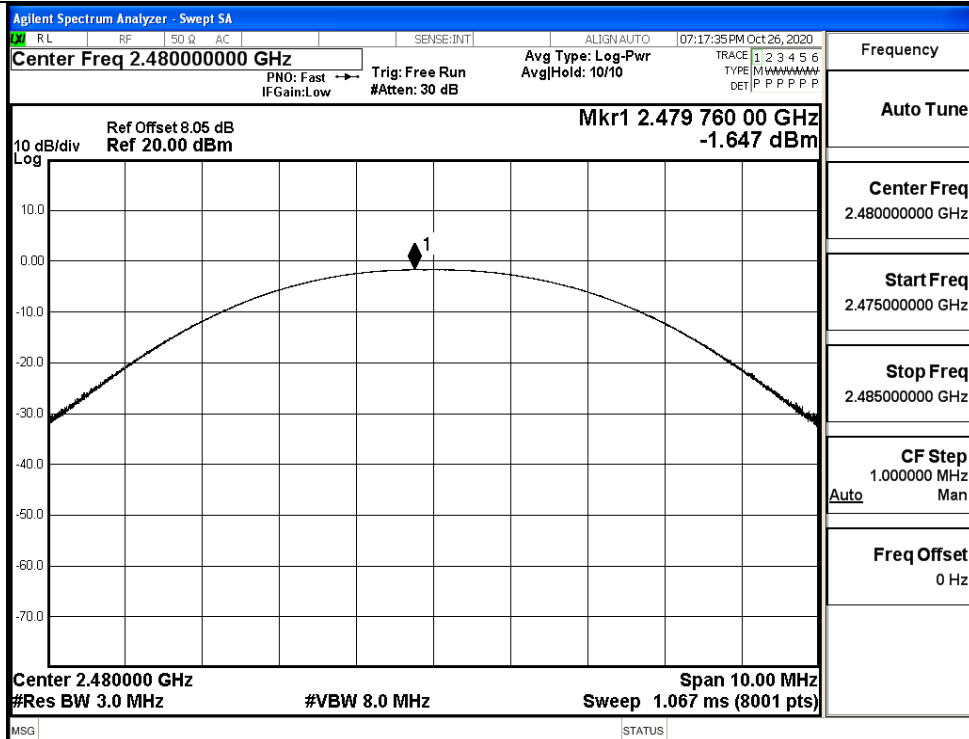
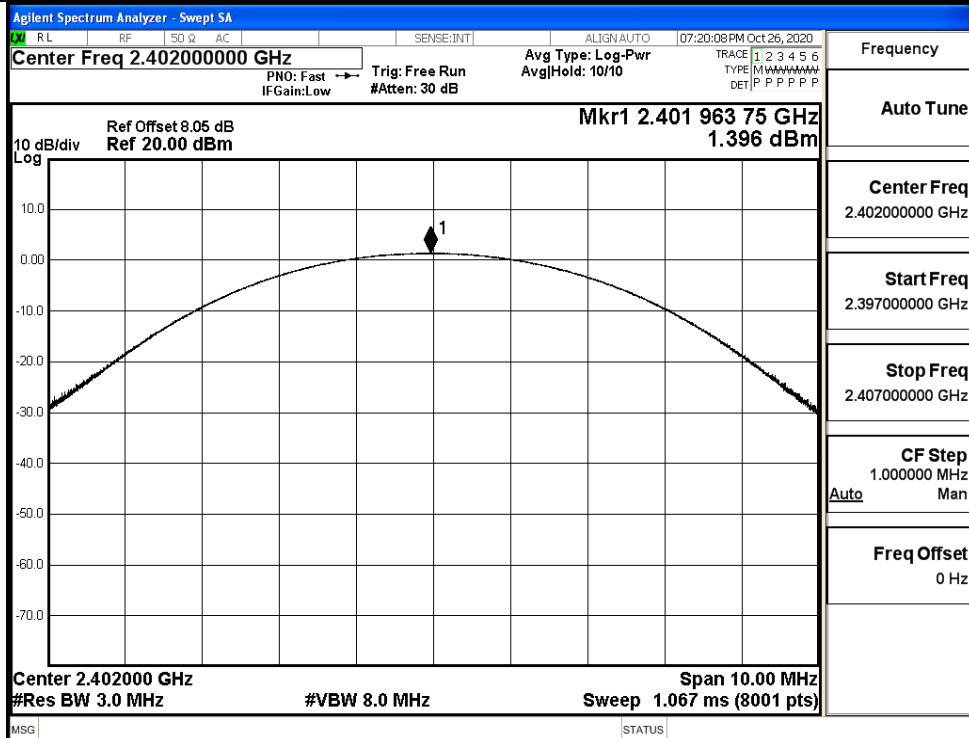
GFSK/LCH

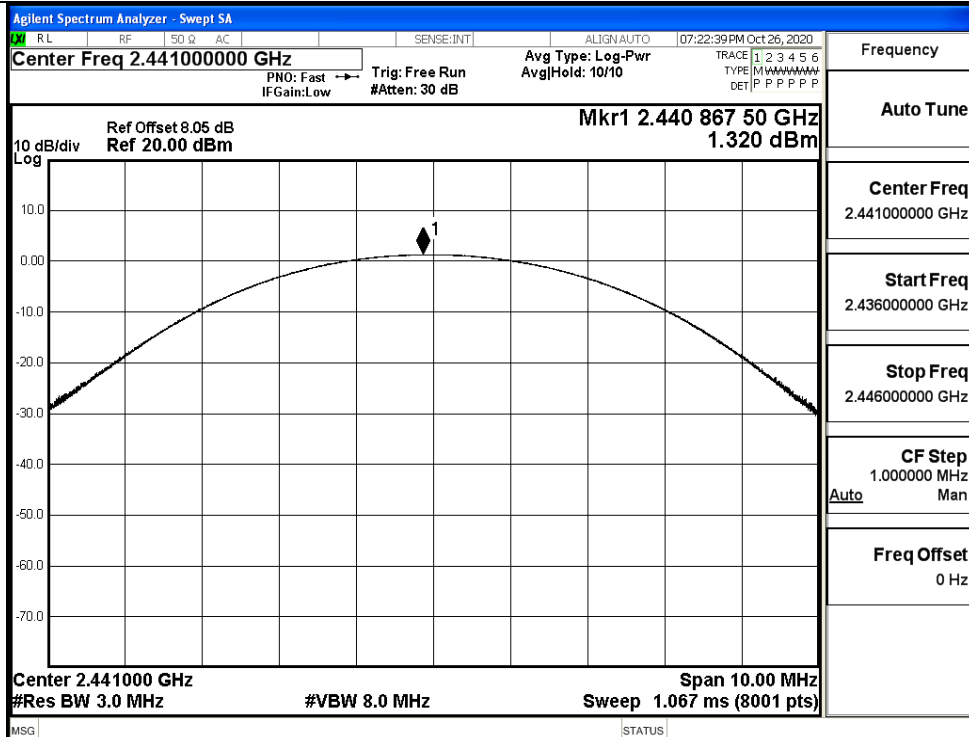
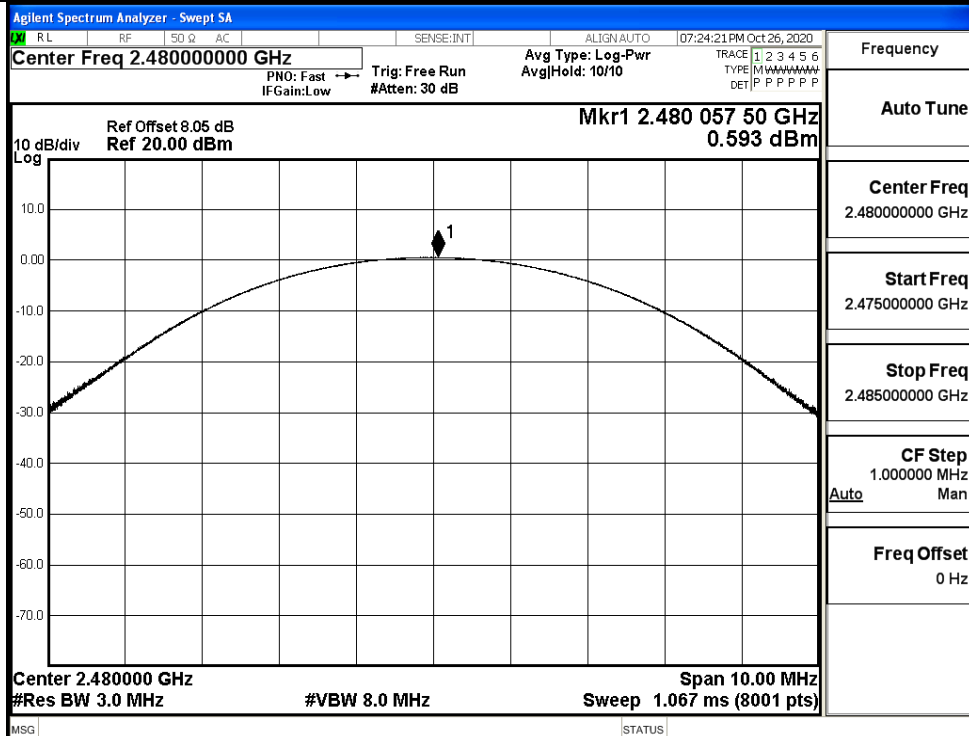


GFSK/MCH

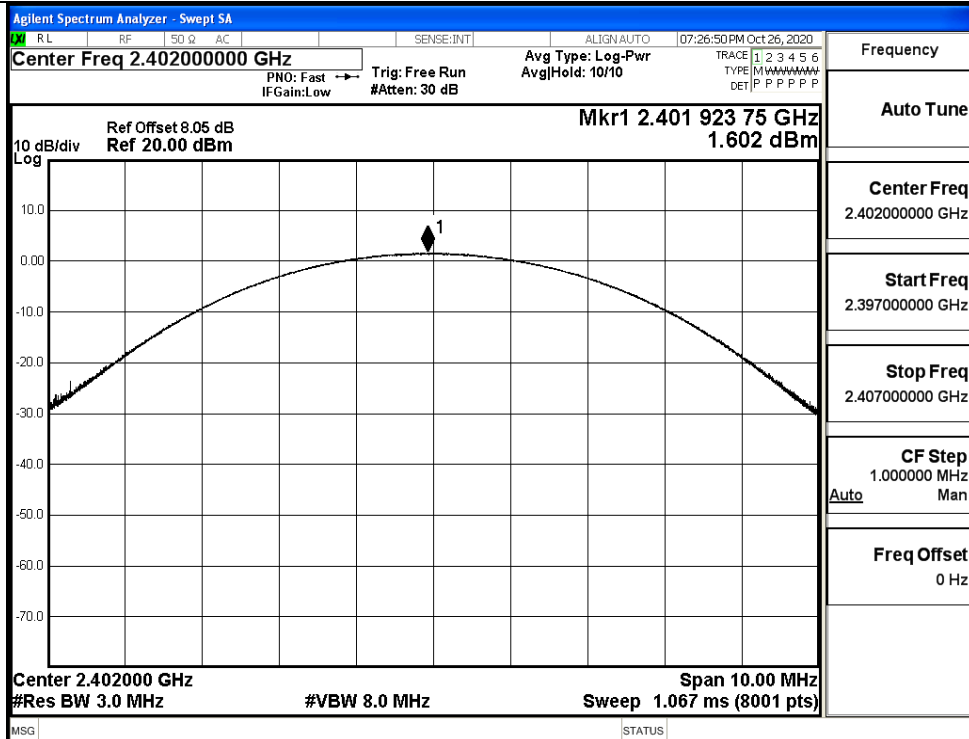


GFSK/HCH

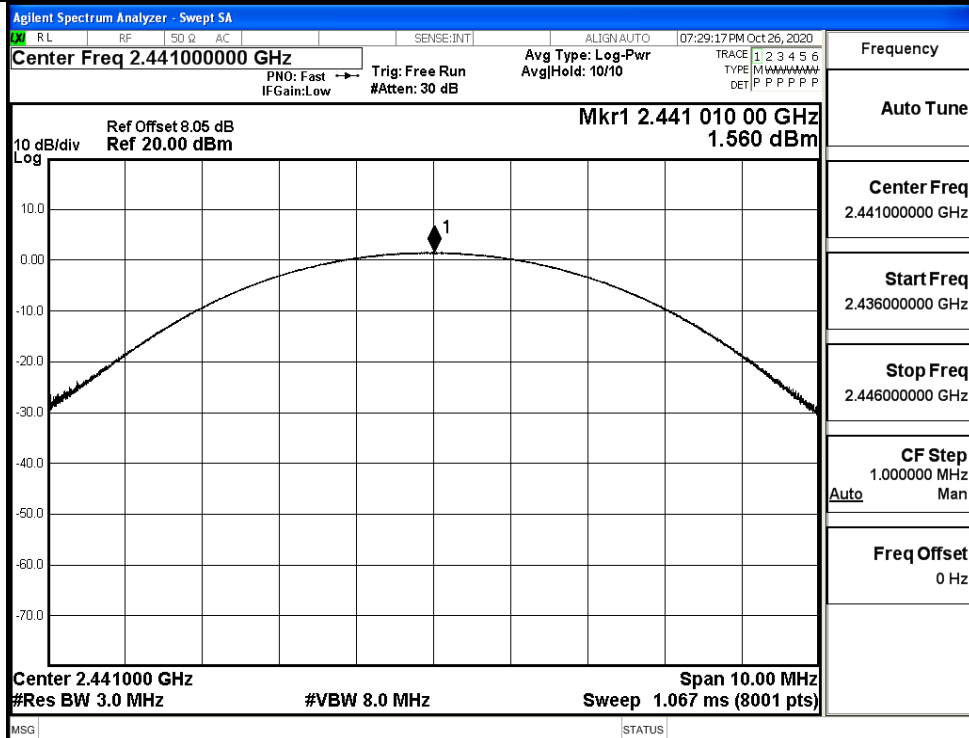
 $\pi/4$ DQPSK/LCH

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

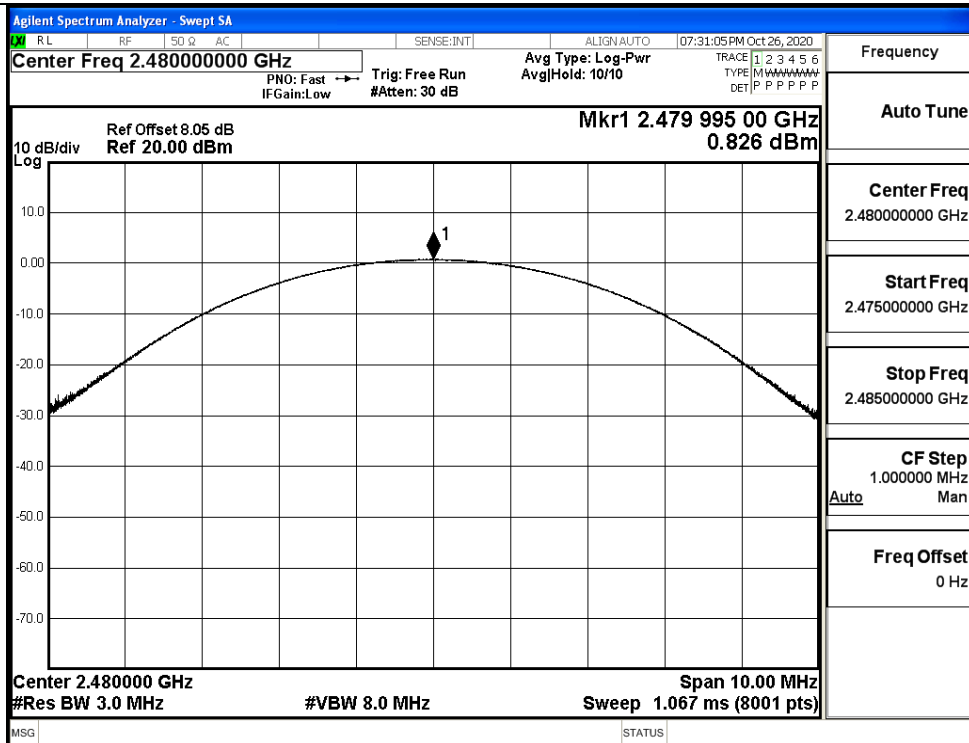
8DPSK/LCH



8DPSK/MCH



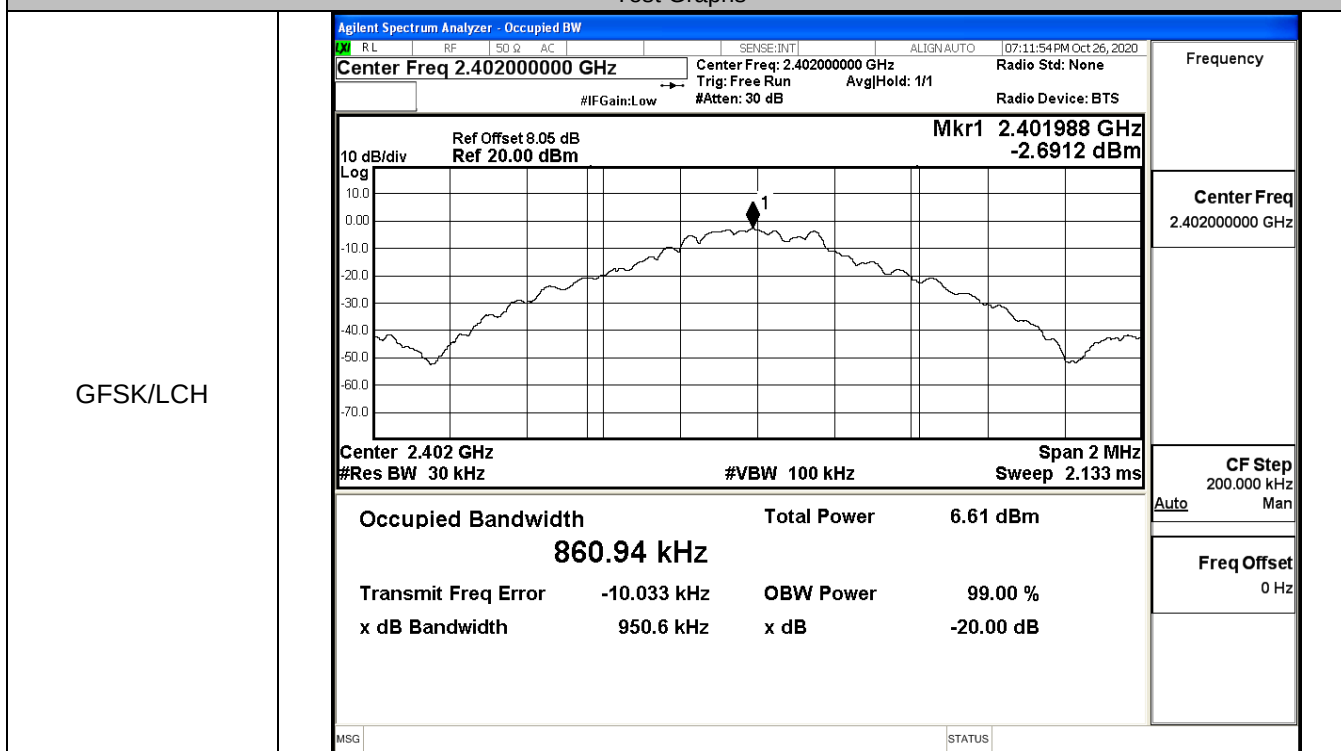
8DPSK/HCH



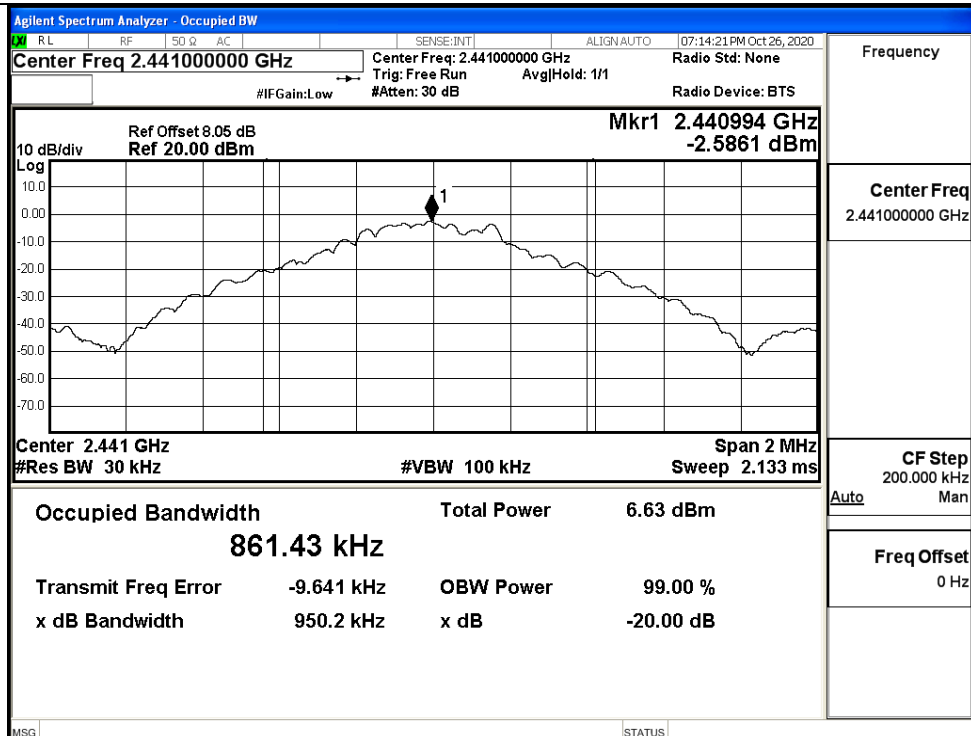
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9506	Not Specified	PASS
	MCH	0.9502	Not Specified	PASS
	HCH	0.9548	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.437	Not Specified	PASS
	MCH	1.435	Not Specified	PASS
	HCH	1.437	Not Specified	PASS
8DPSK	LCH	1.483	Not Specified	PASS
	MCH	1.478	Not Specified	PASS
	HCH	1.481	Not Specified	PASS

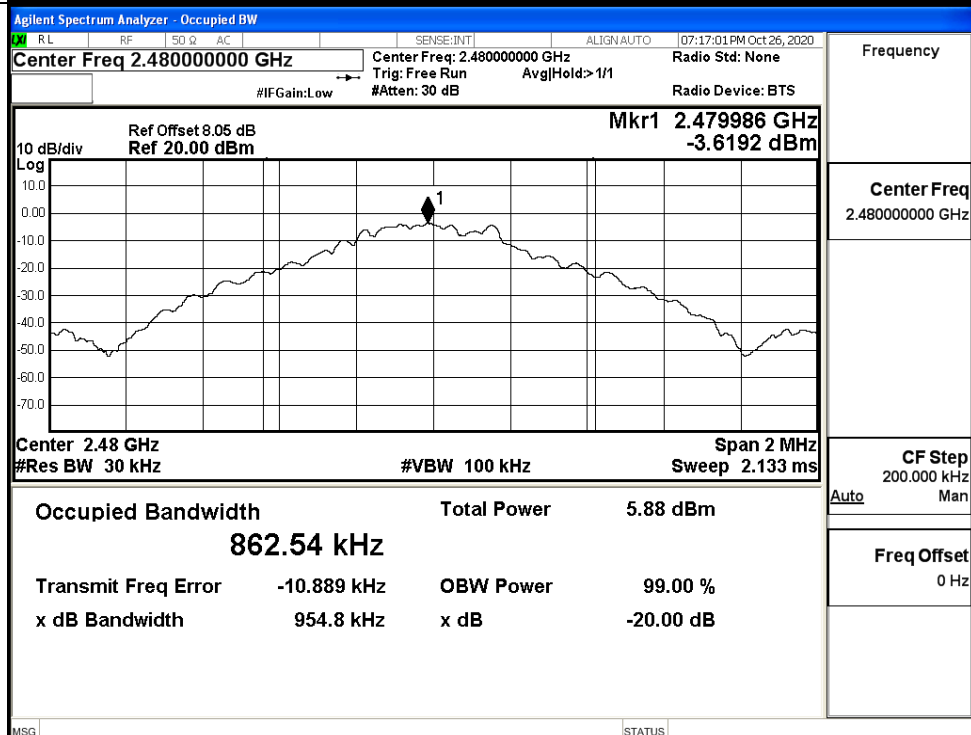
Test Graphs

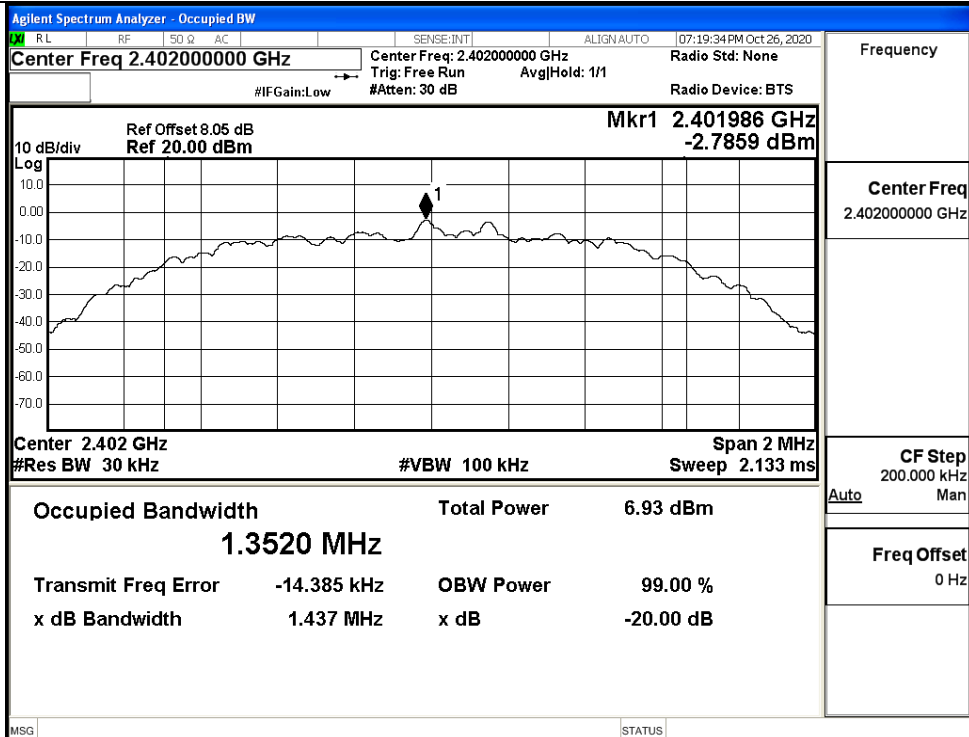


GFSK/MCH



GFSK/HCH

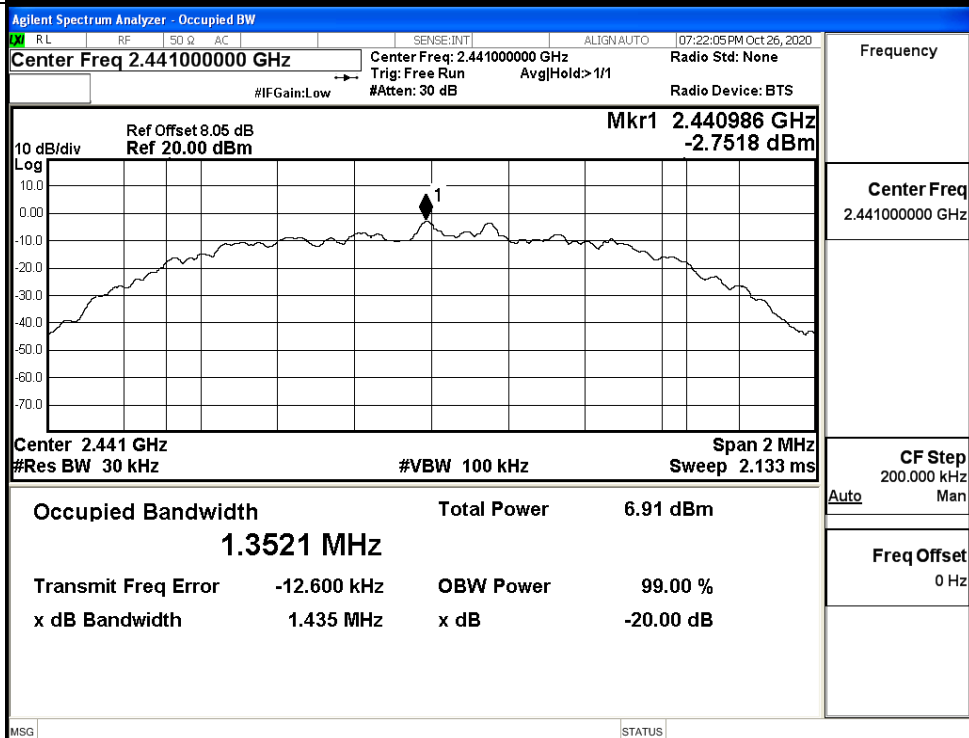


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.40200000 GHzCF Step
200.000 kHz
Man

Auto

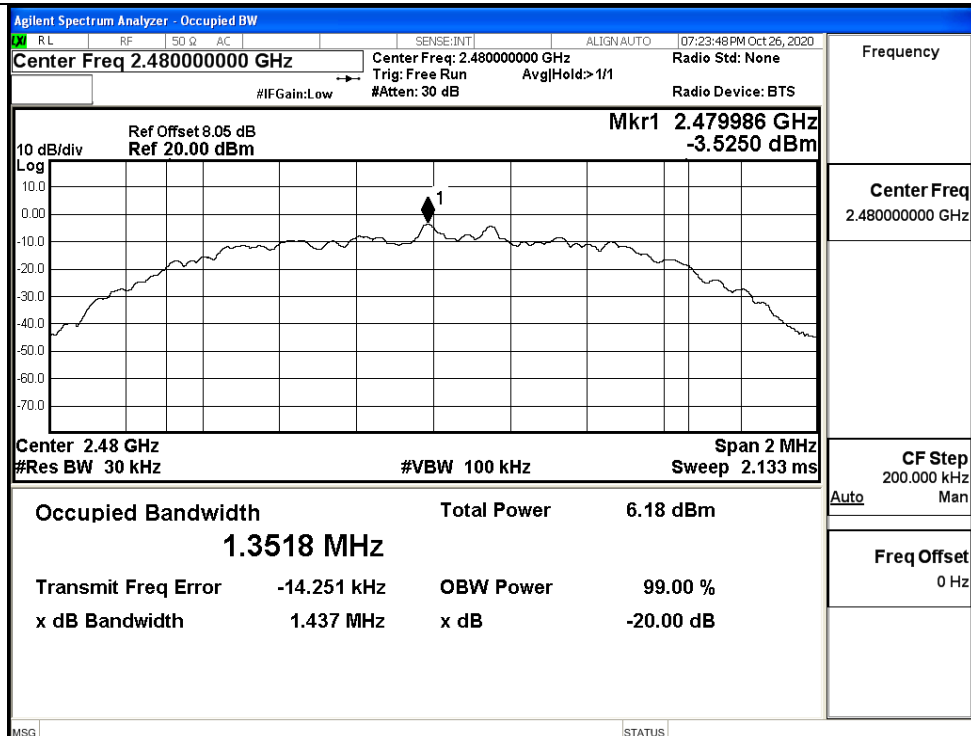
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

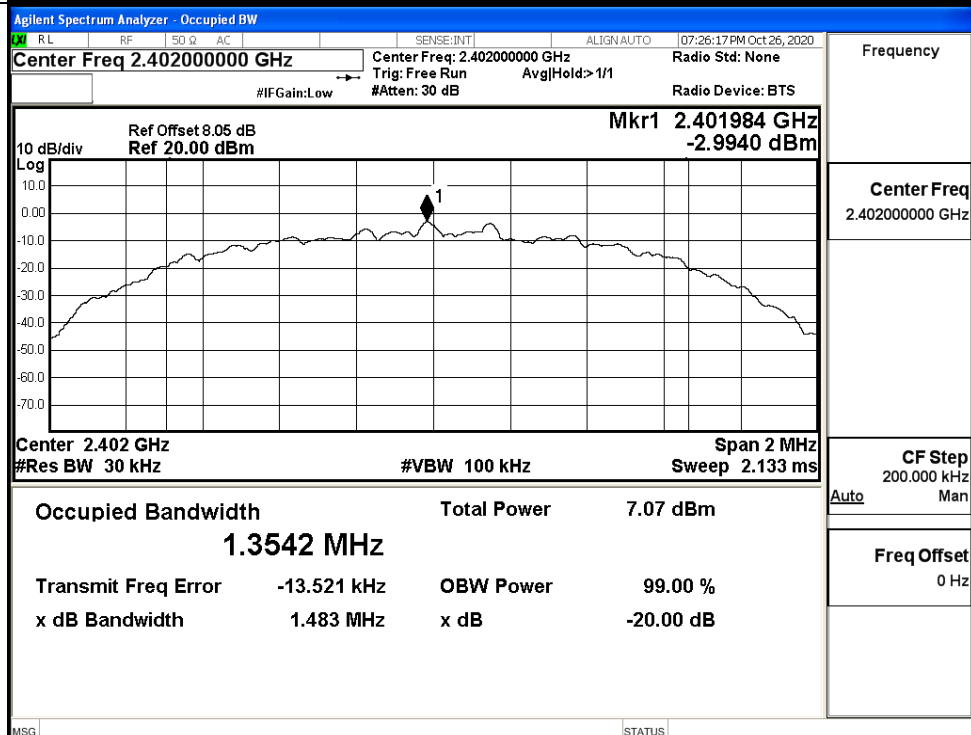
Center Freq
2.44100000 GHzCF Step
200.000 kHz
Man

Auto

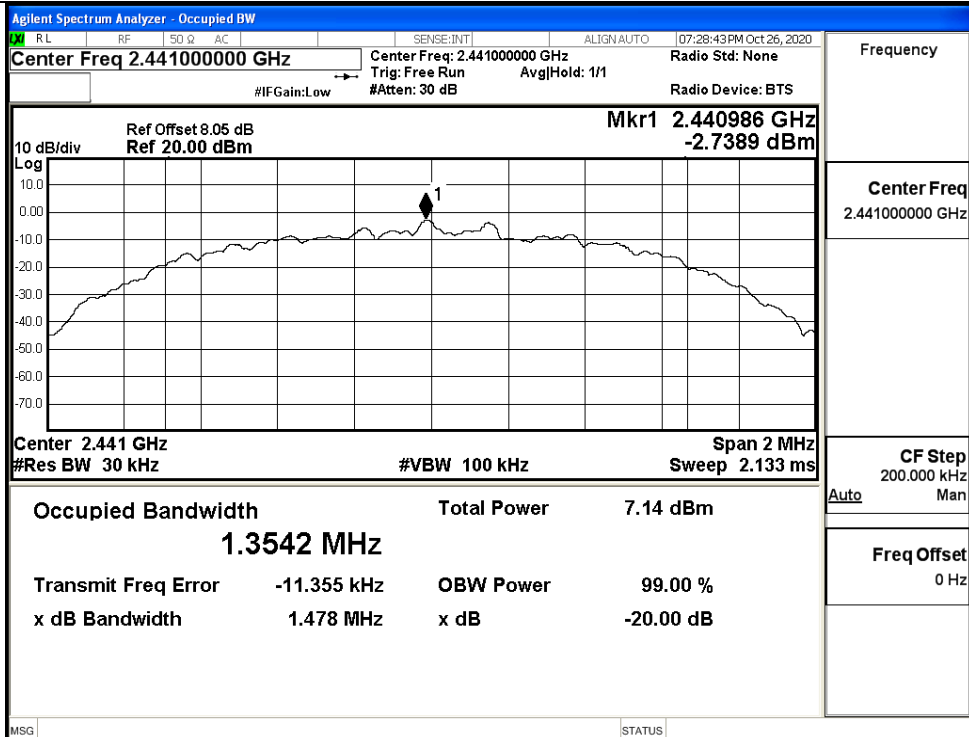
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

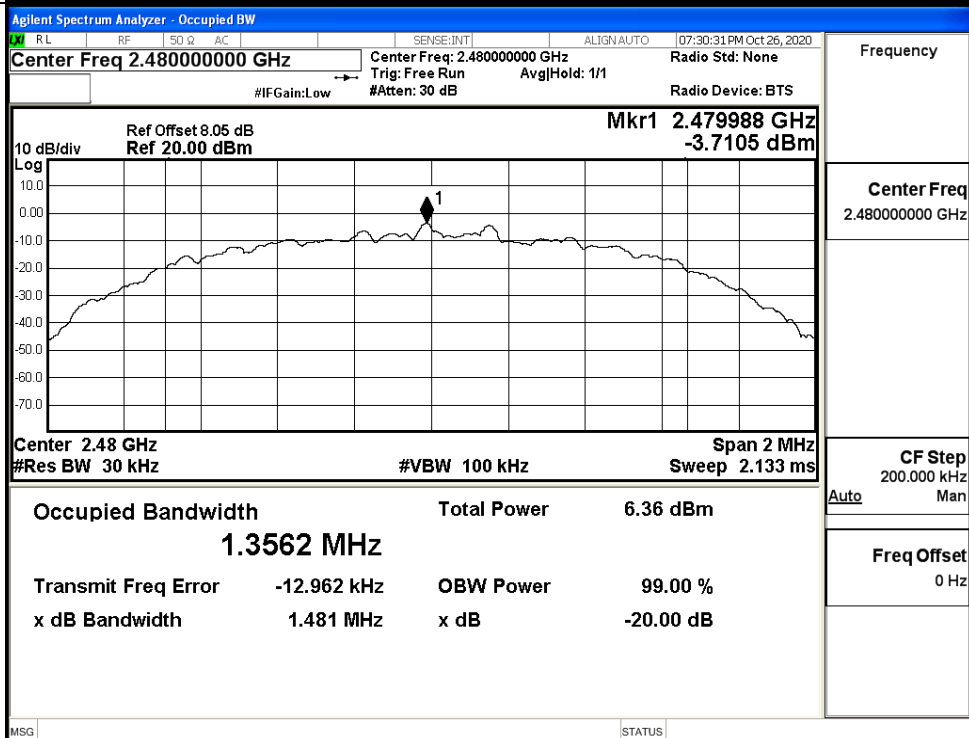
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

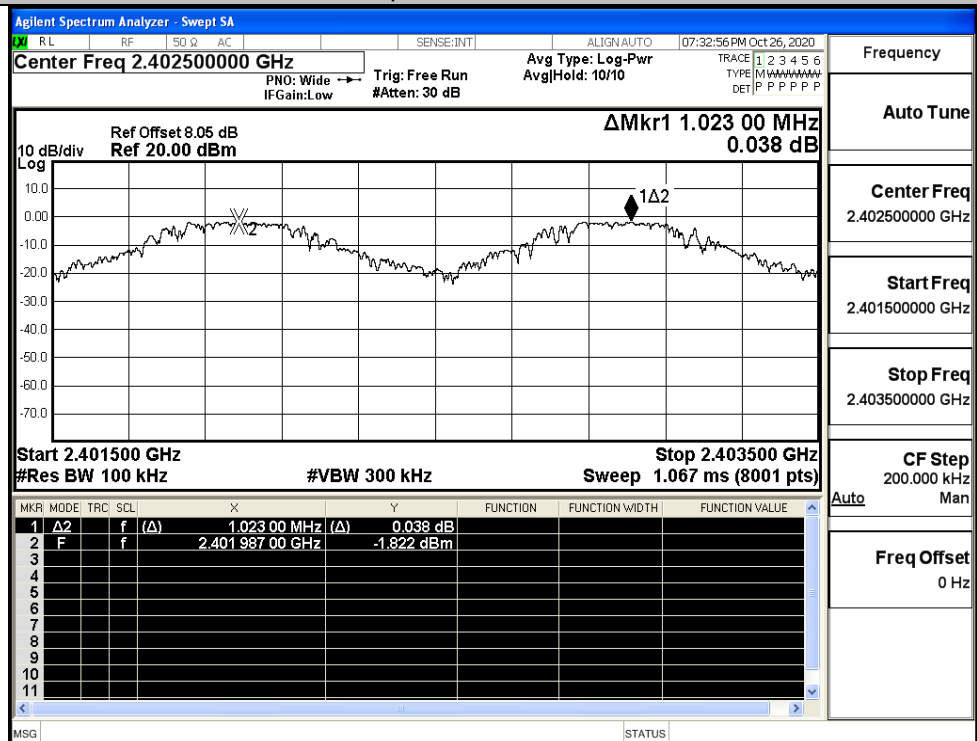


A.3 Carrier Frequency Separation

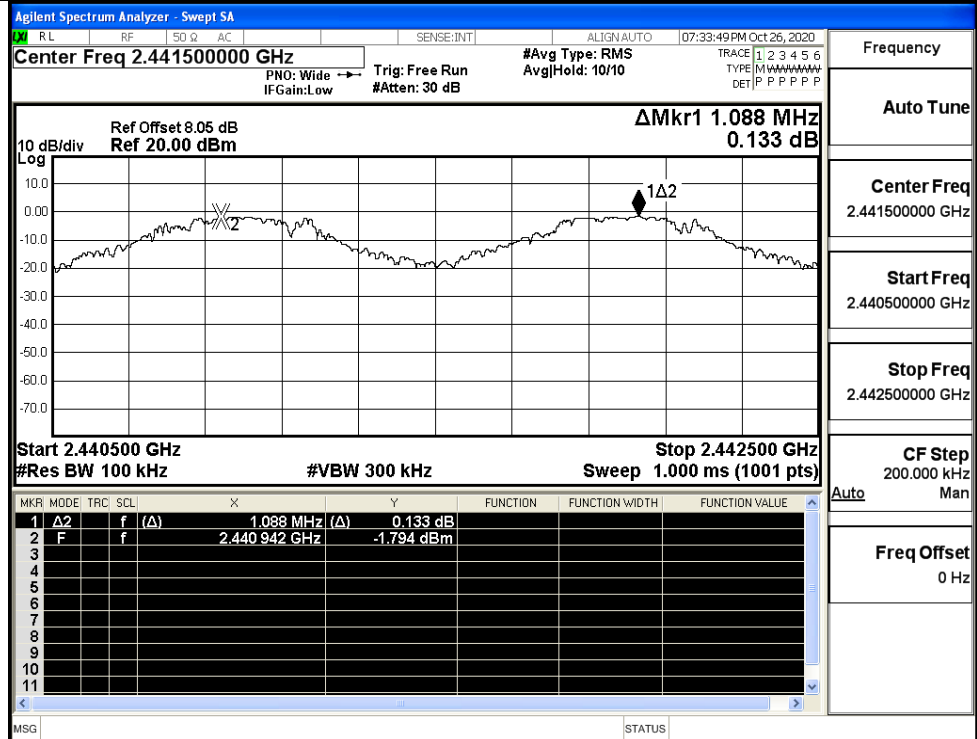
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.023	0.637	PASS
	MCH	1.088	0.637	PASS
	HCH	1.046	0.637	PASS
$\pi/4$ DQPSK	LCH	1.200	0.958	PASS
	MCH	0.984	0.958	PASS
	HCH	1.302	0.958	PASS
8DPSK	LCH	1.020	0.989	PASS
	MCH	1.052	0.989	PASS
	HCH	1.092	0.989	PASS

Test Graphs

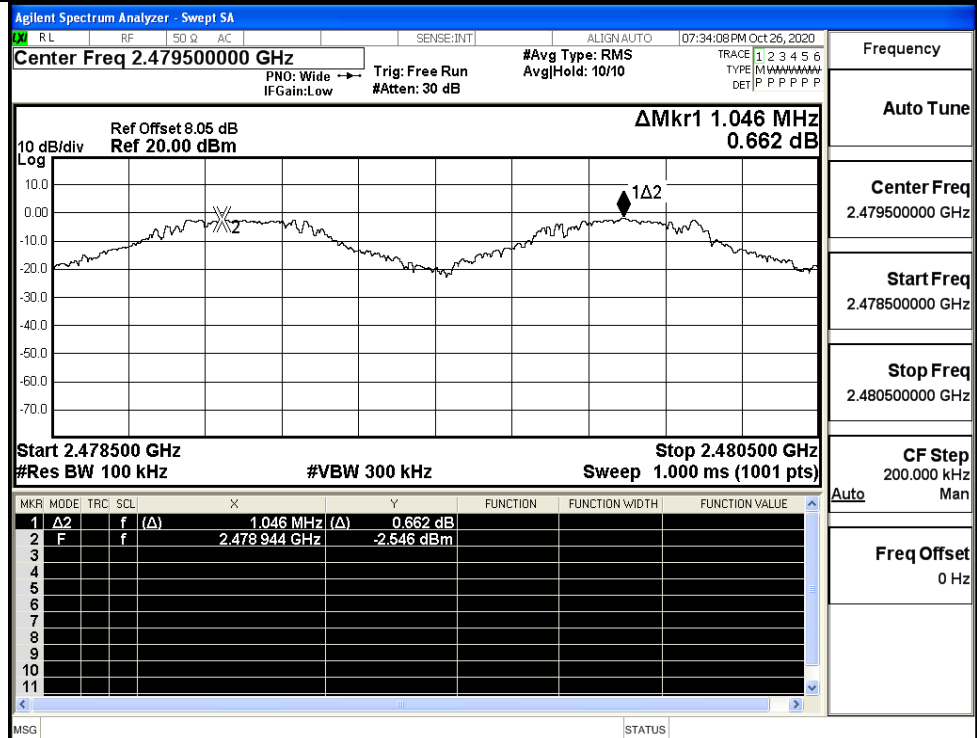
GFSK/LCH

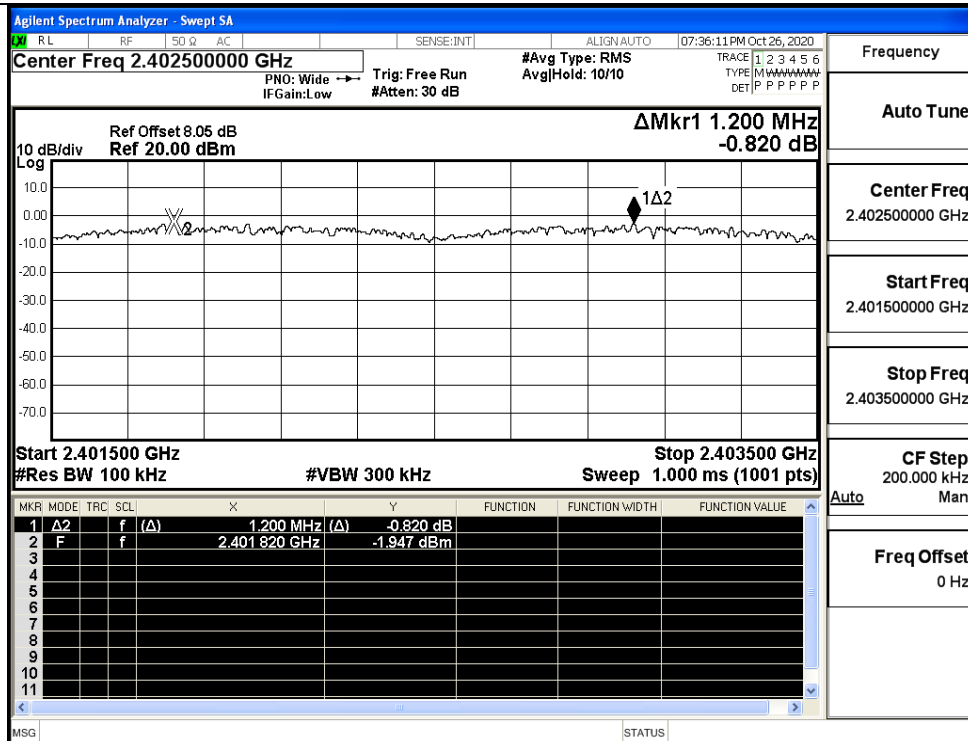


GFSK/MCH



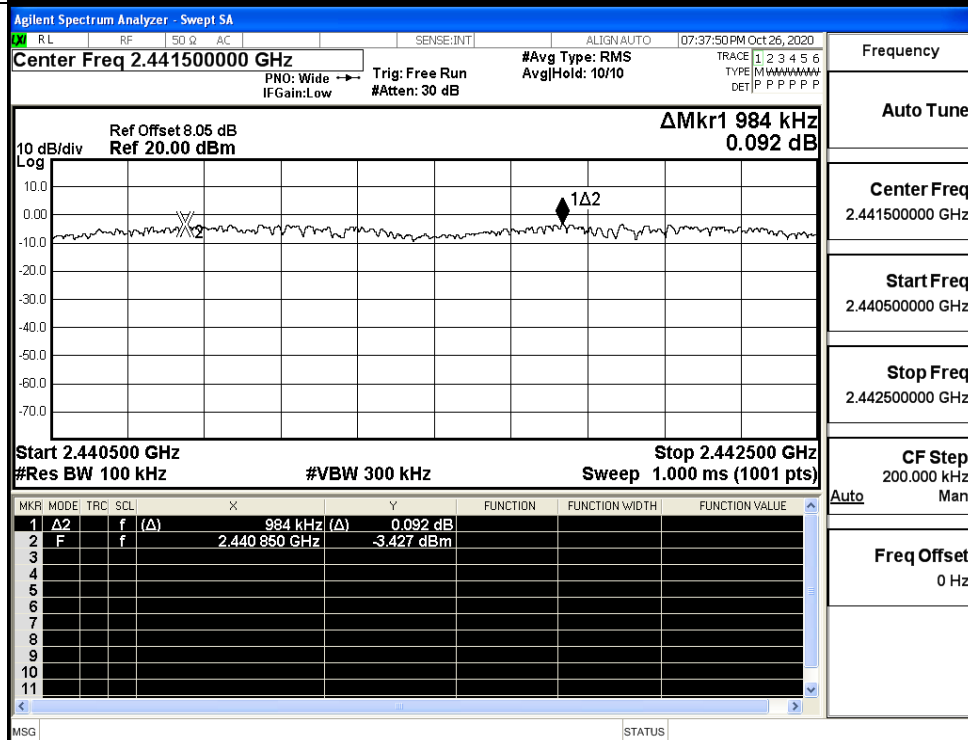
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

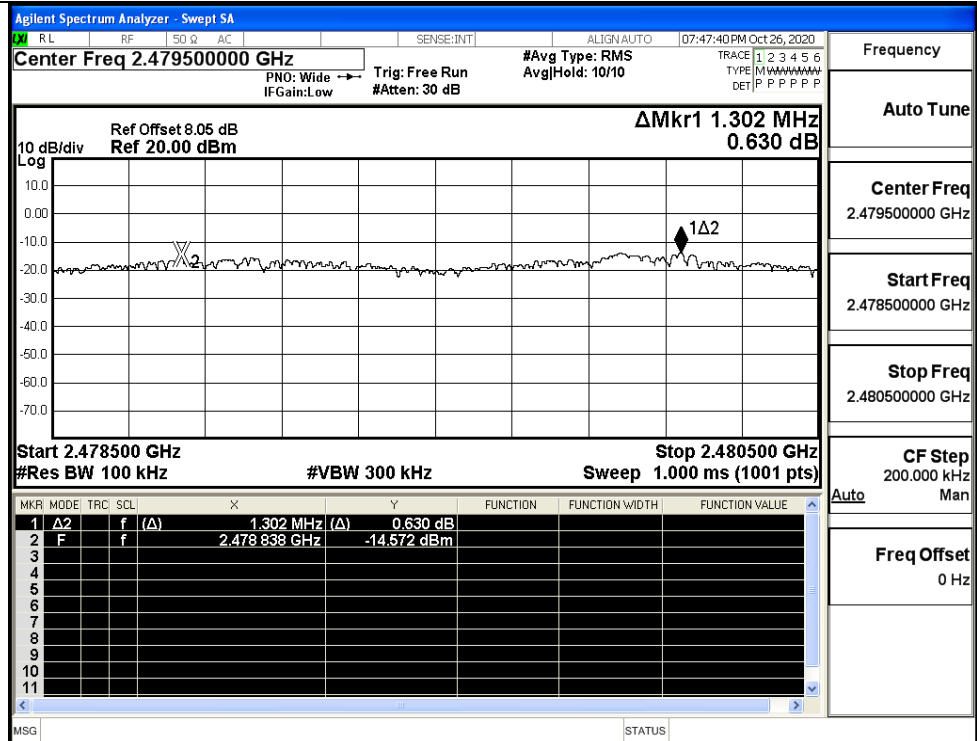
Auto Tune

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

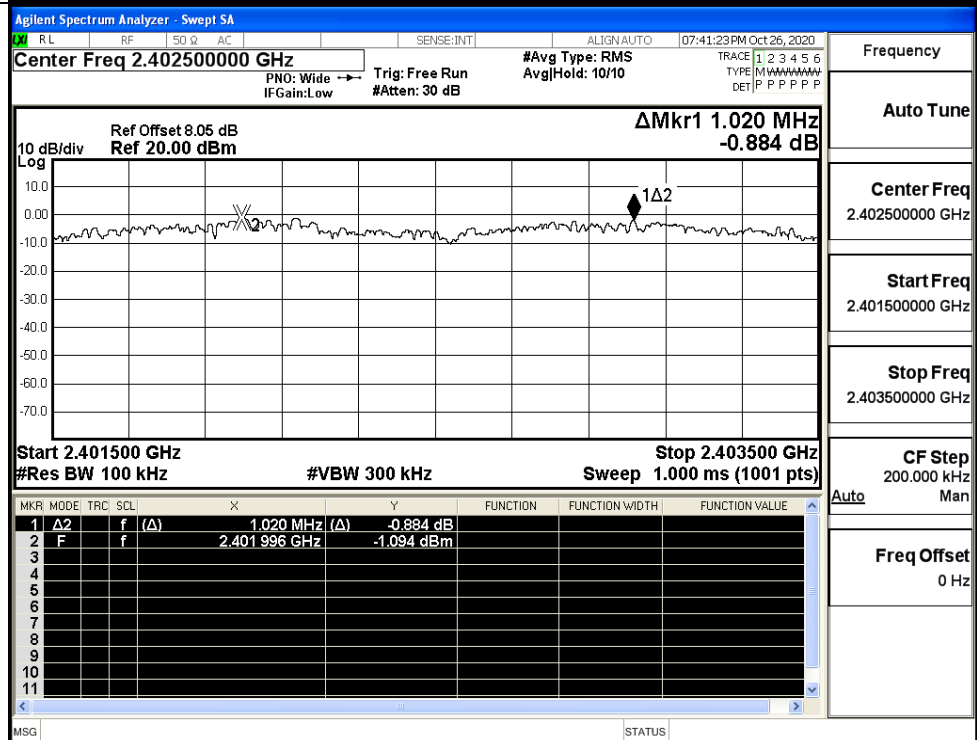
Frequency

Auto Tune

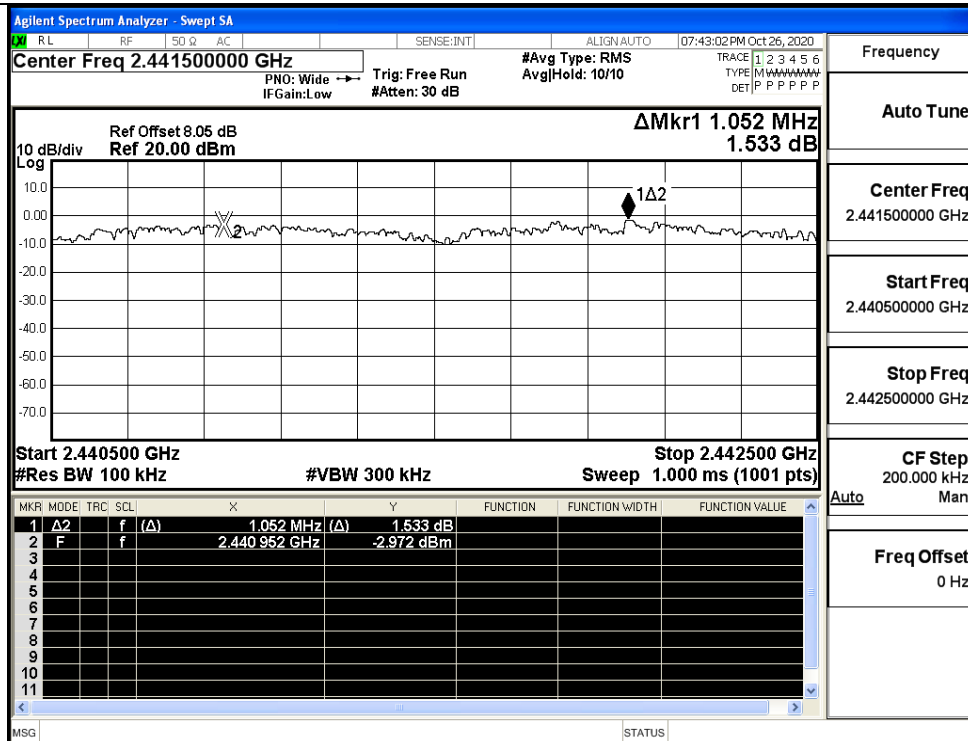
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

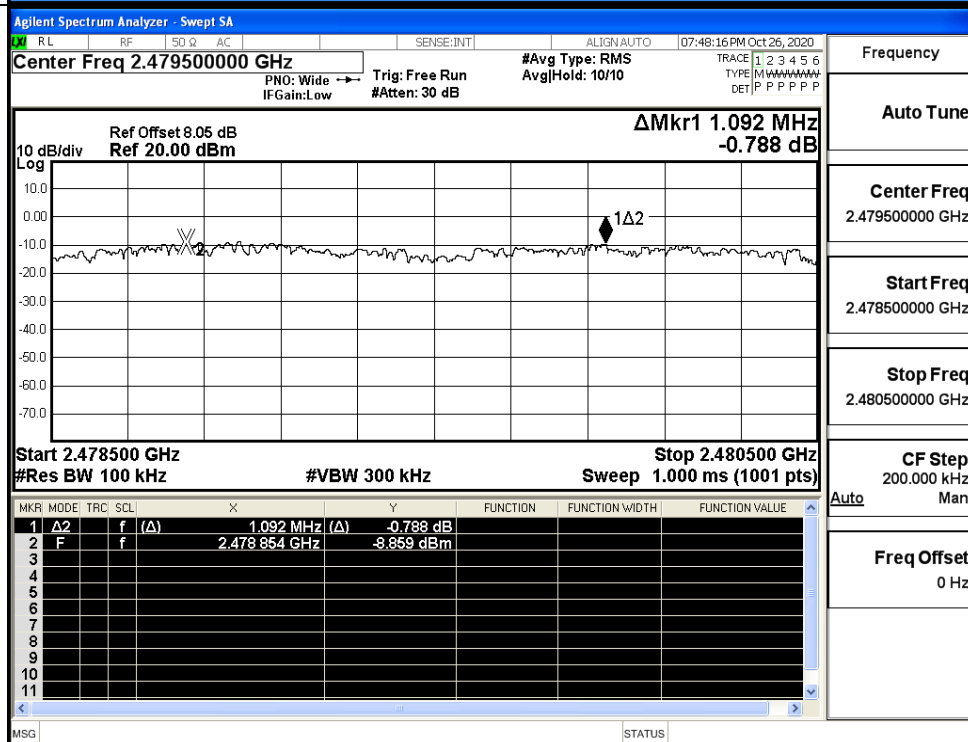
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

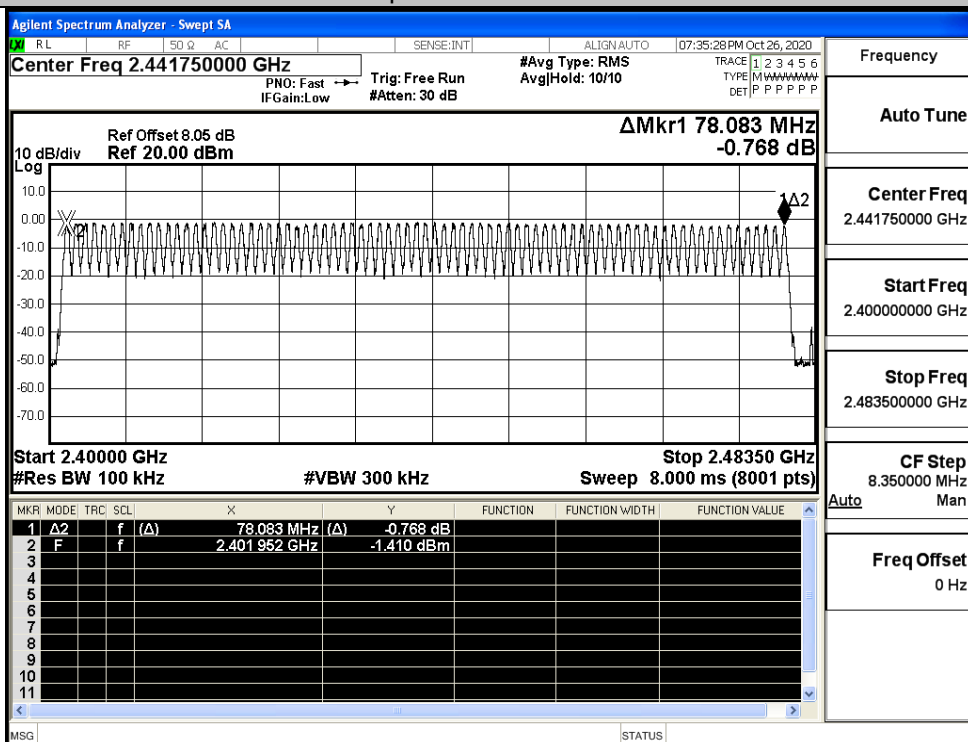


A.4 Hopping Channel Number

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

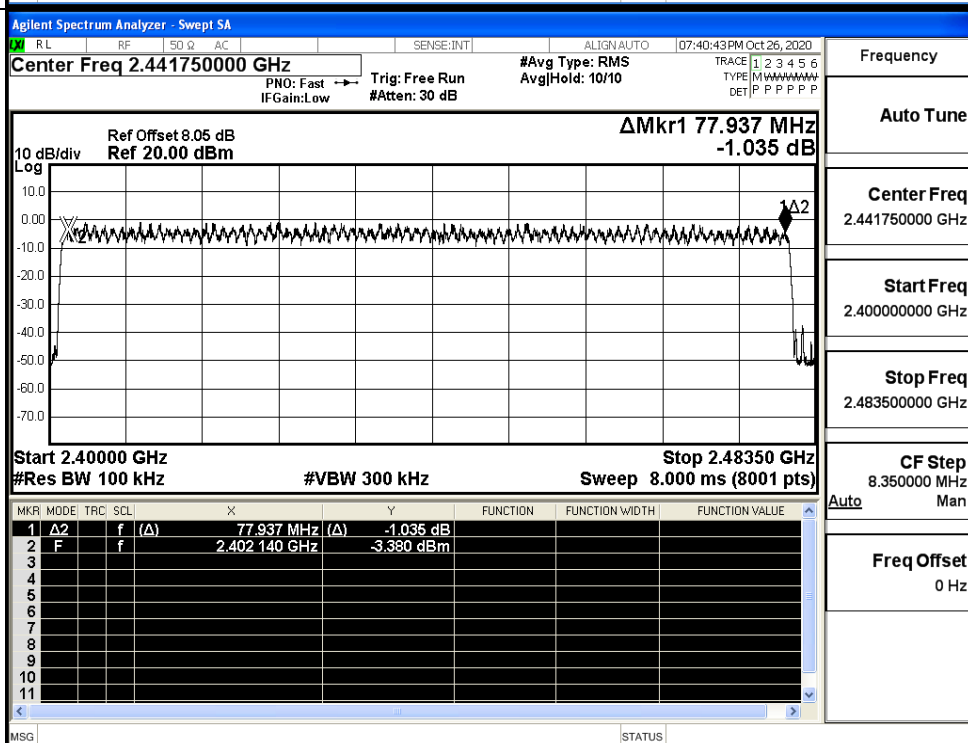
Test Graphs

GFSK/Hop



Frequency

Auto Tune

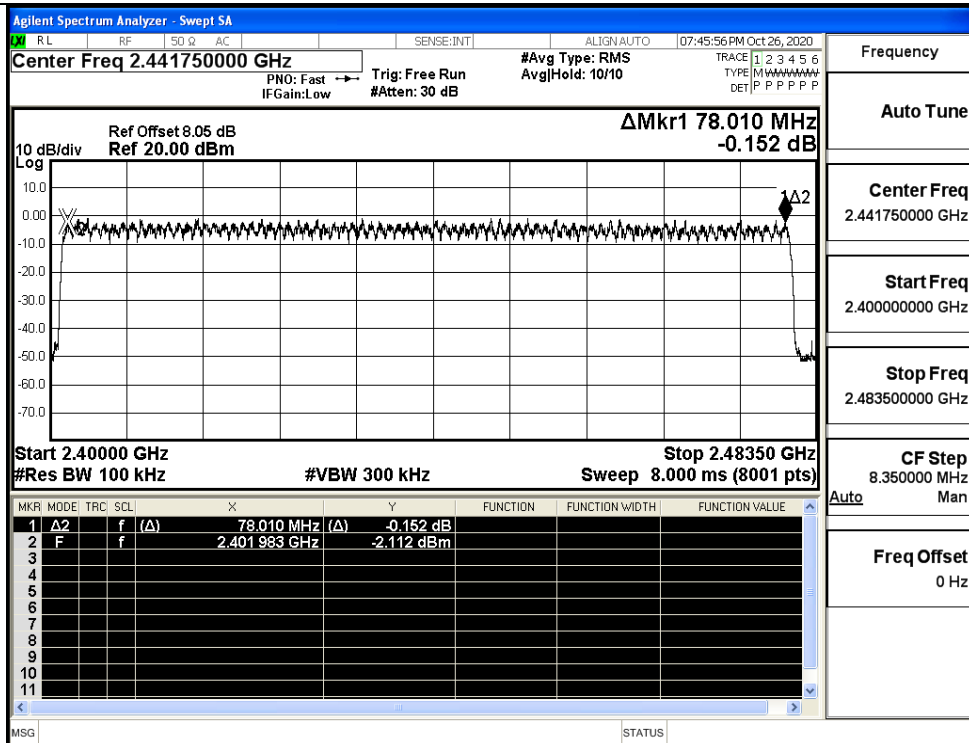
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

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

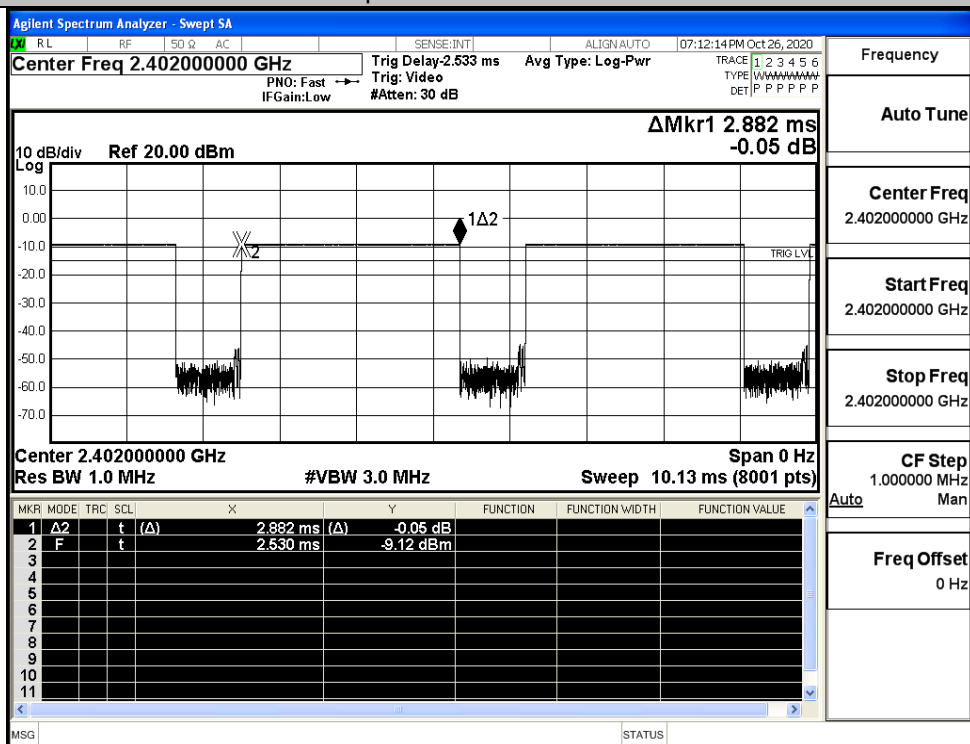


A.5 Dwell Time

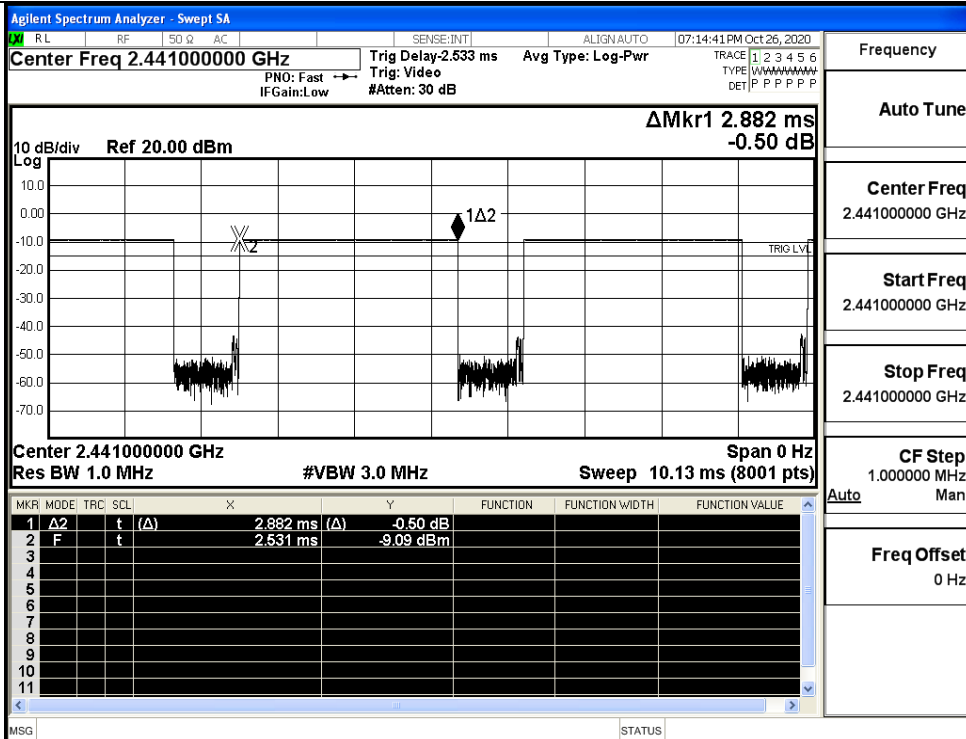
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

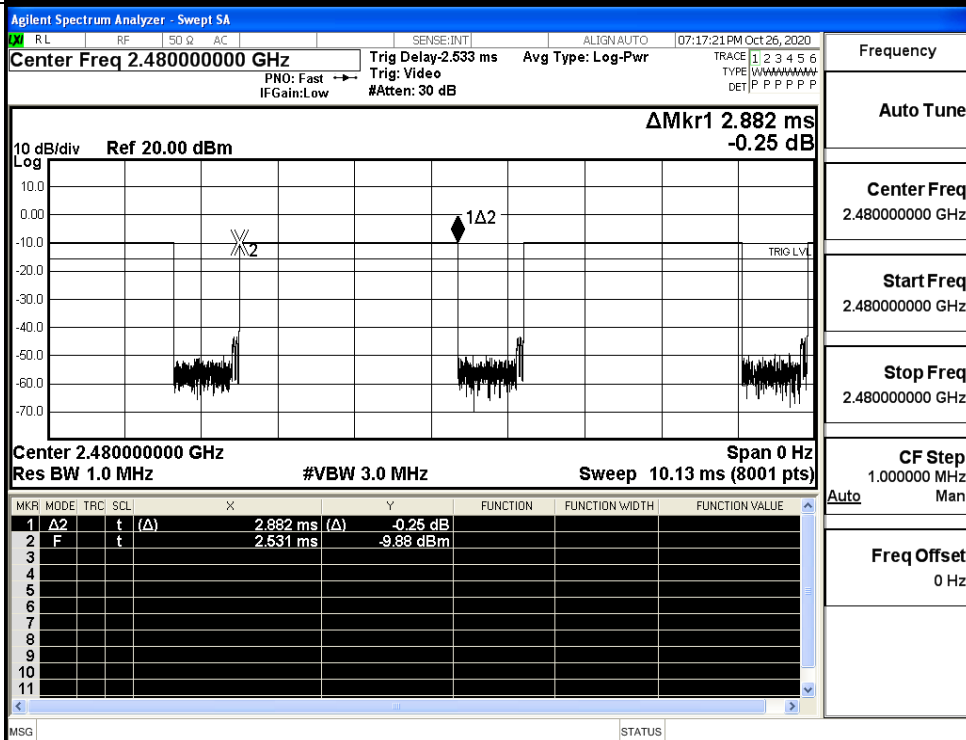
GFSK_DH5/LCH



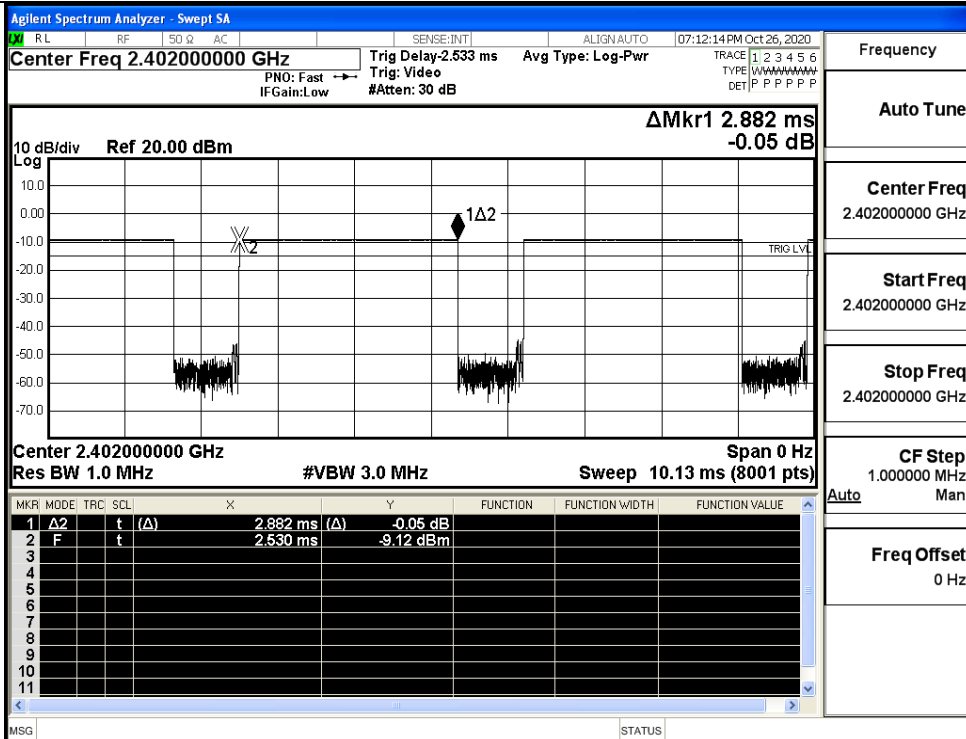
GFSK_DH5/MCH



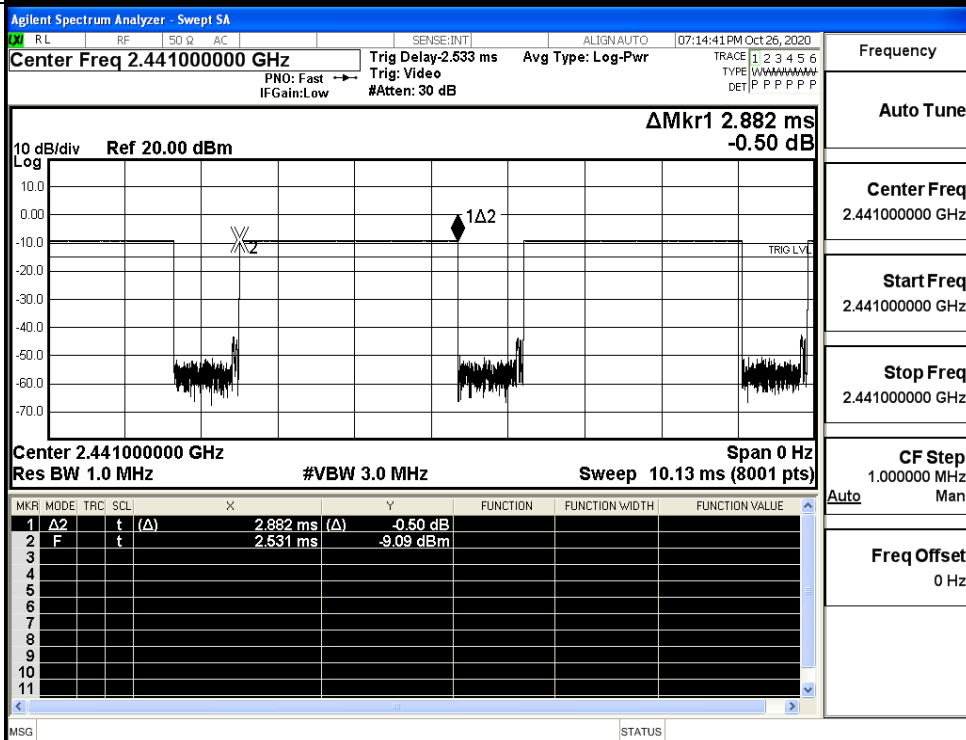
GFSK_DH5/HCH



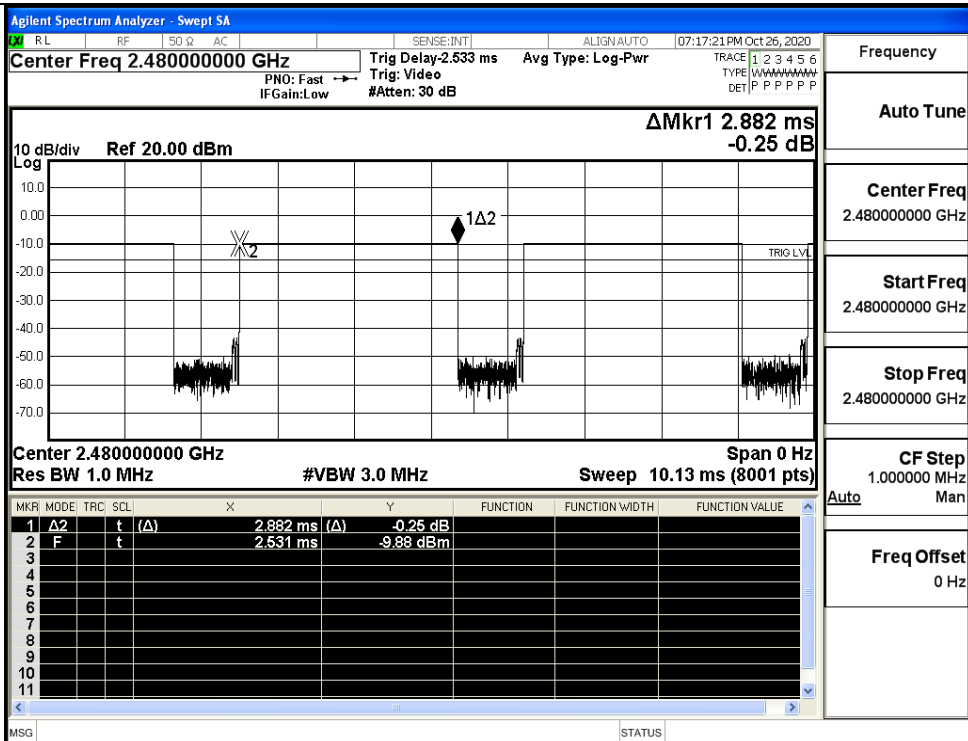
$\pi/4$ DQPSK
_2DH5/LCH



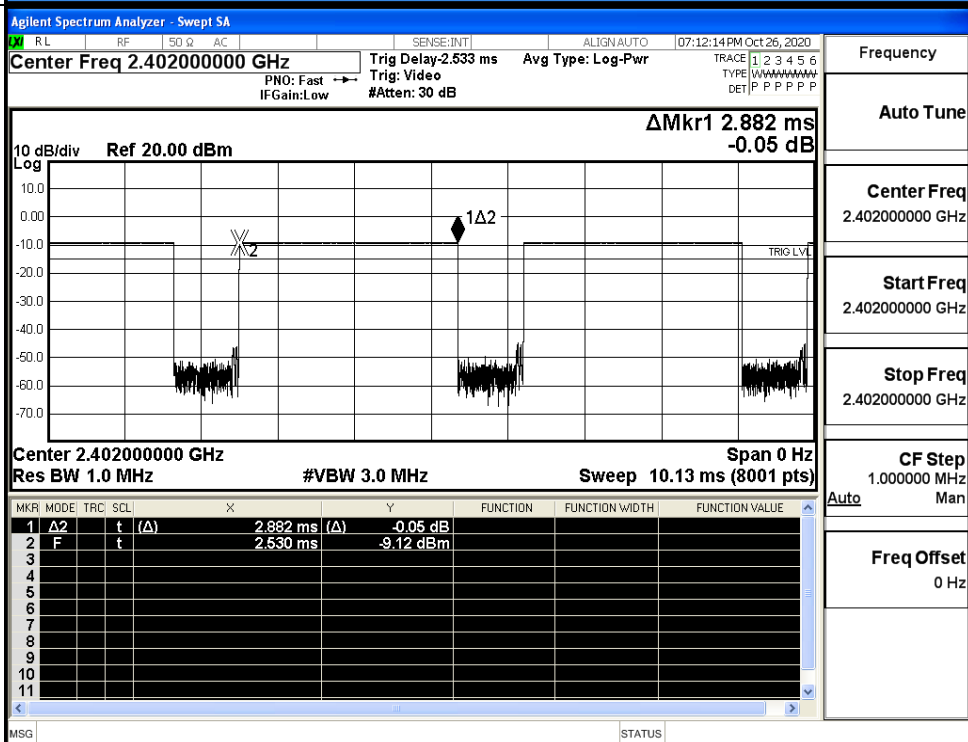
$\pi/4$ DQPSK
_2DH5/MCH



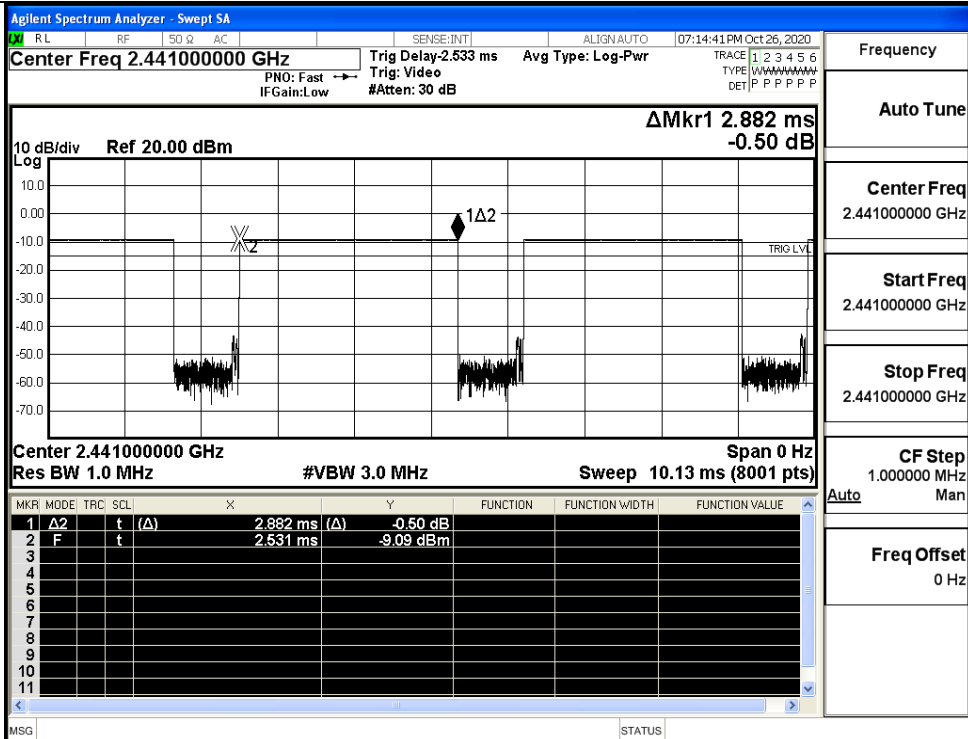
$\pi/4$ DQPSK
_2DH5/HCH



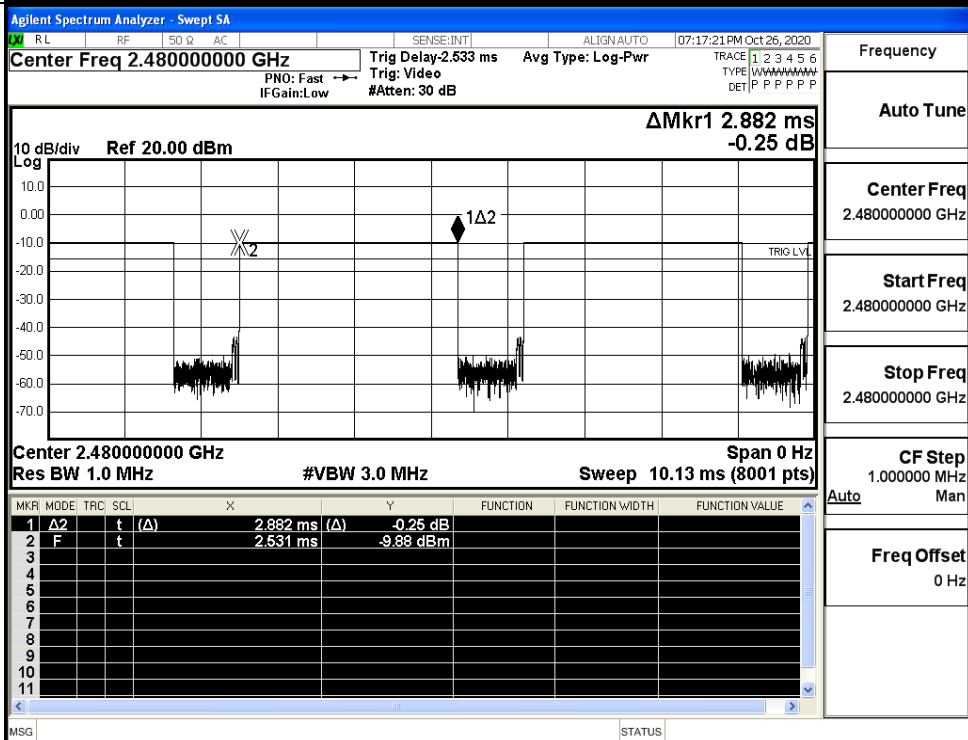
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



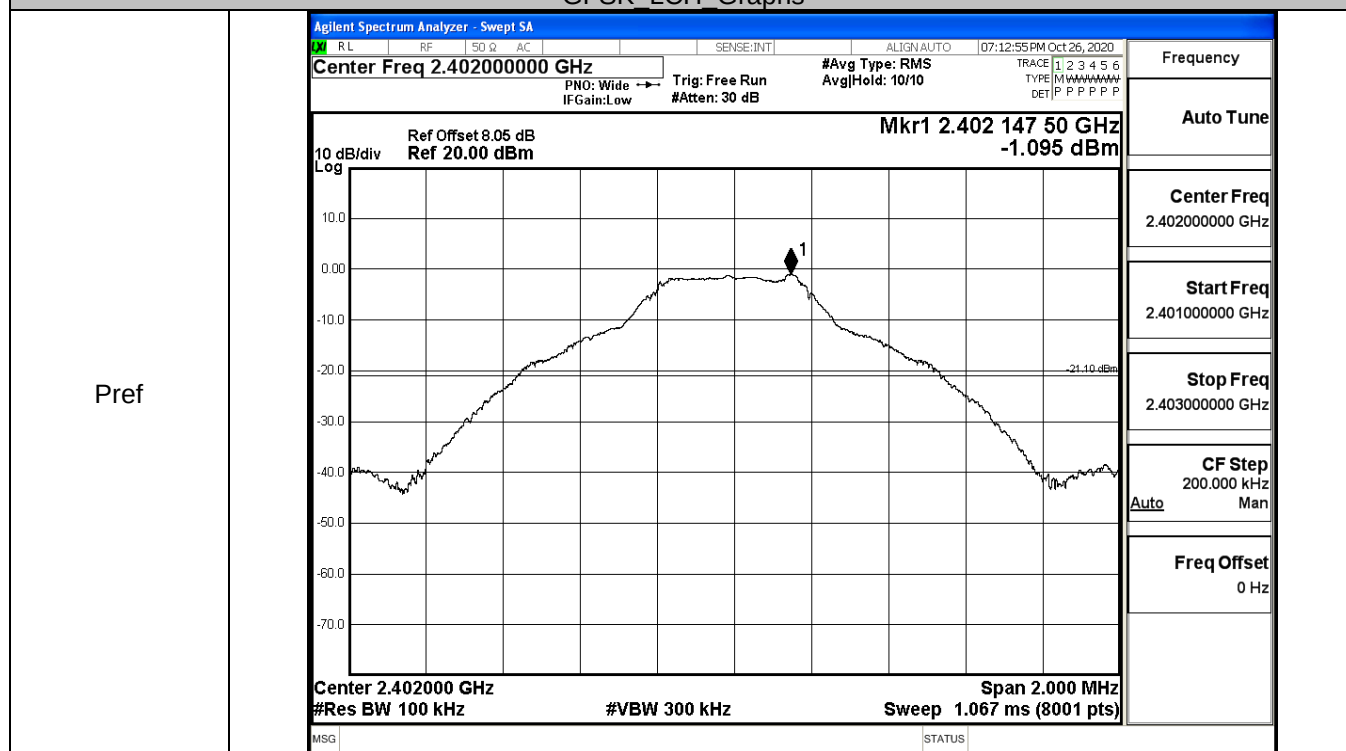
8DPSK_3DH5/HCH



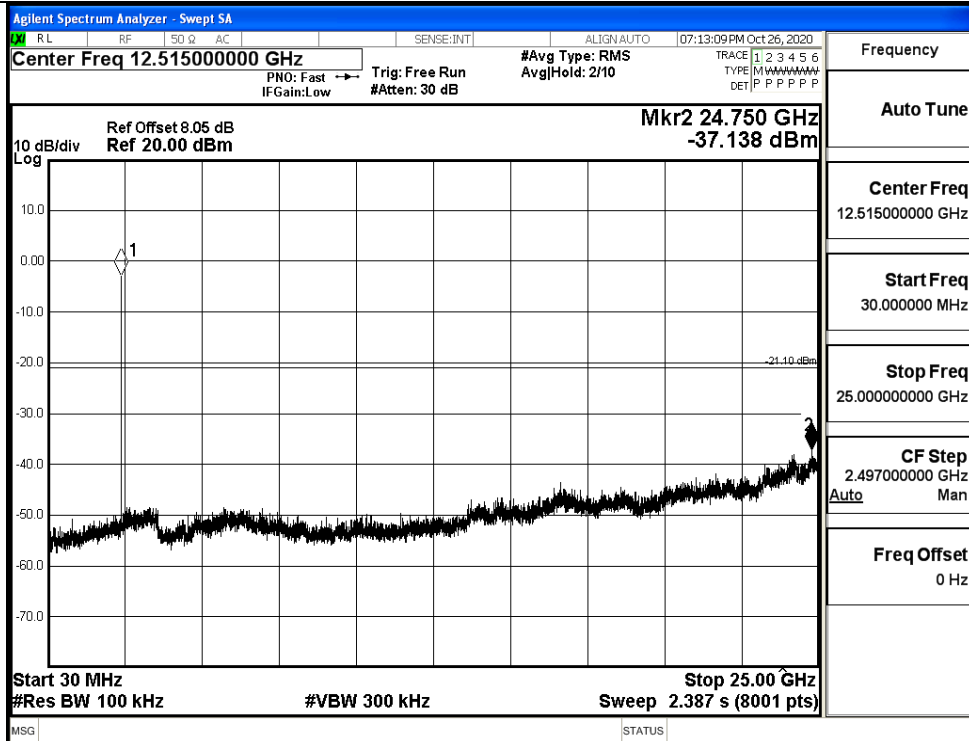
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.095	-37.138	-21.095	PASS
	MCH	-1.09	-37.559	-21.090	PASS
	HCH	-2.273	-37.395	-22.273	PASS
$\pi/4$ DQPSK	LCH	-1.178	-36.825	-21.178	PASS
	MCH	-1.131	-38.024	-21.131	PASS
	HCH	-2.012	-37.619	-22.012	PASS
8DPSK	LCH	-1.121	-37.053	-21.121	PASS
	MCH	-1.822	-36.710	-21.822	PASS
	HCH	-2.016	-36.951	-22.016	PASS

GFSK LCH Graphs

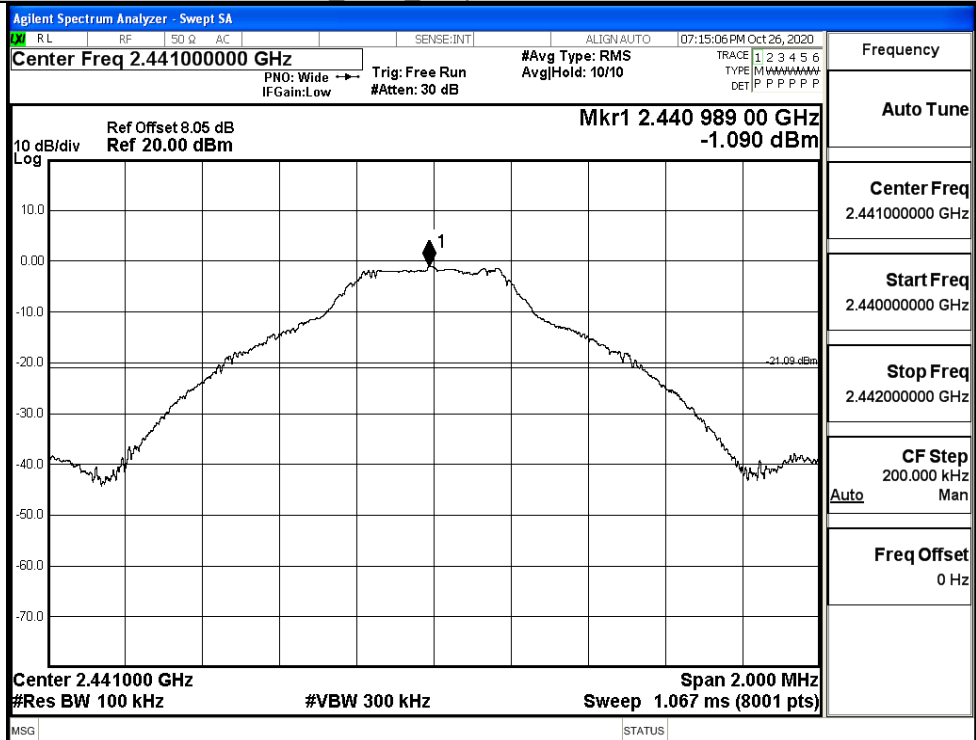


Puw

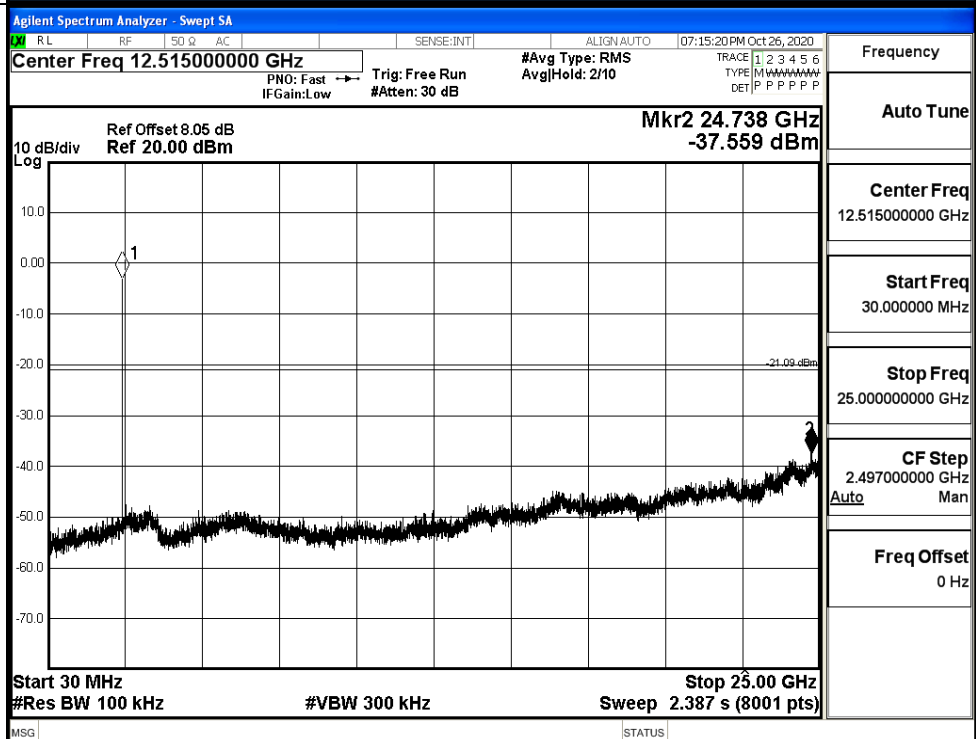


GFSK_MCH_Graphs

Pref

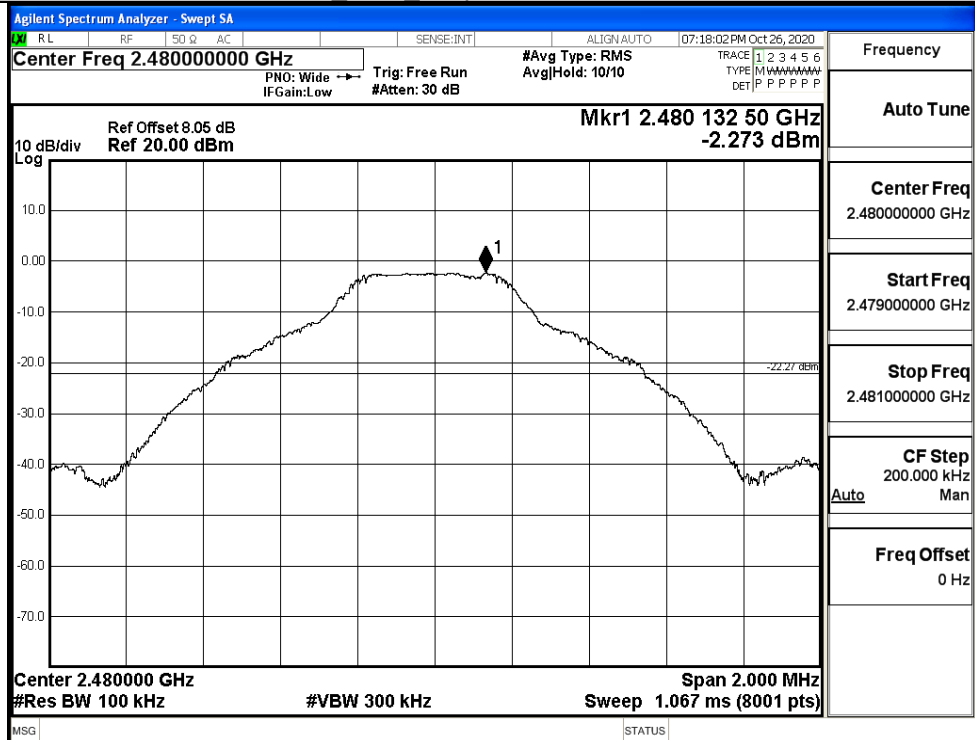


Puw

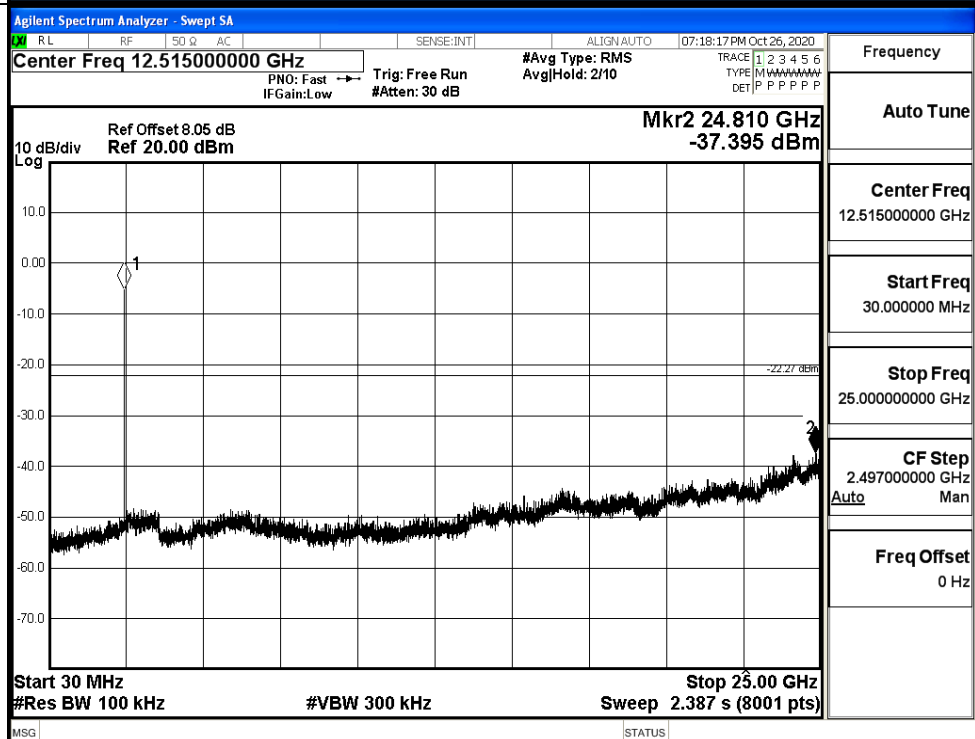


GFSK HCH Graphs

Pref

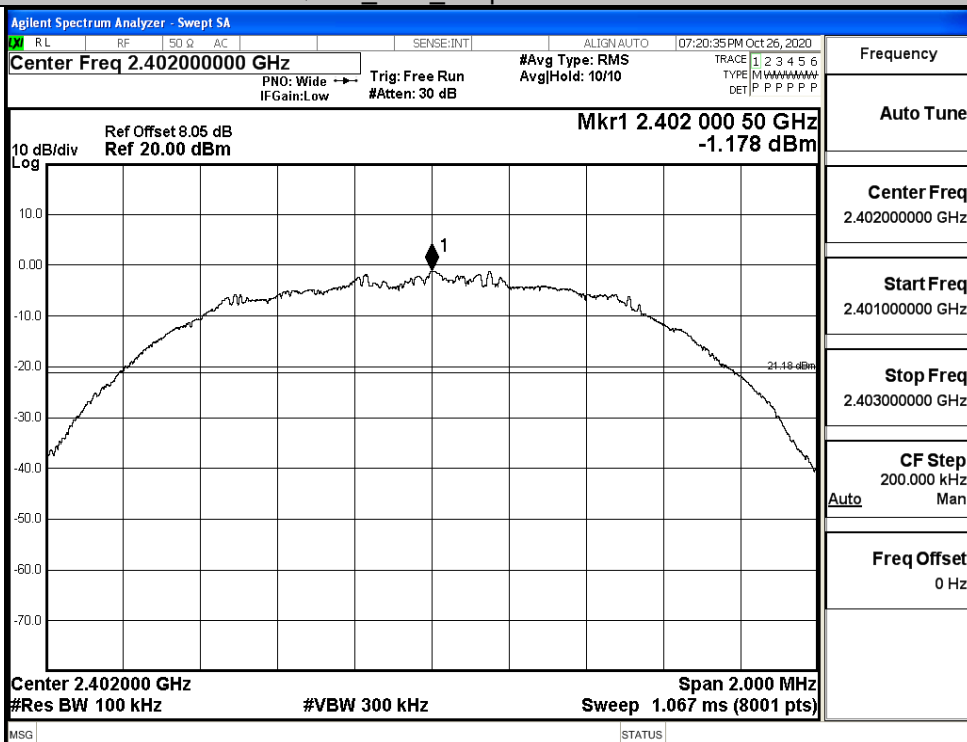


Puw

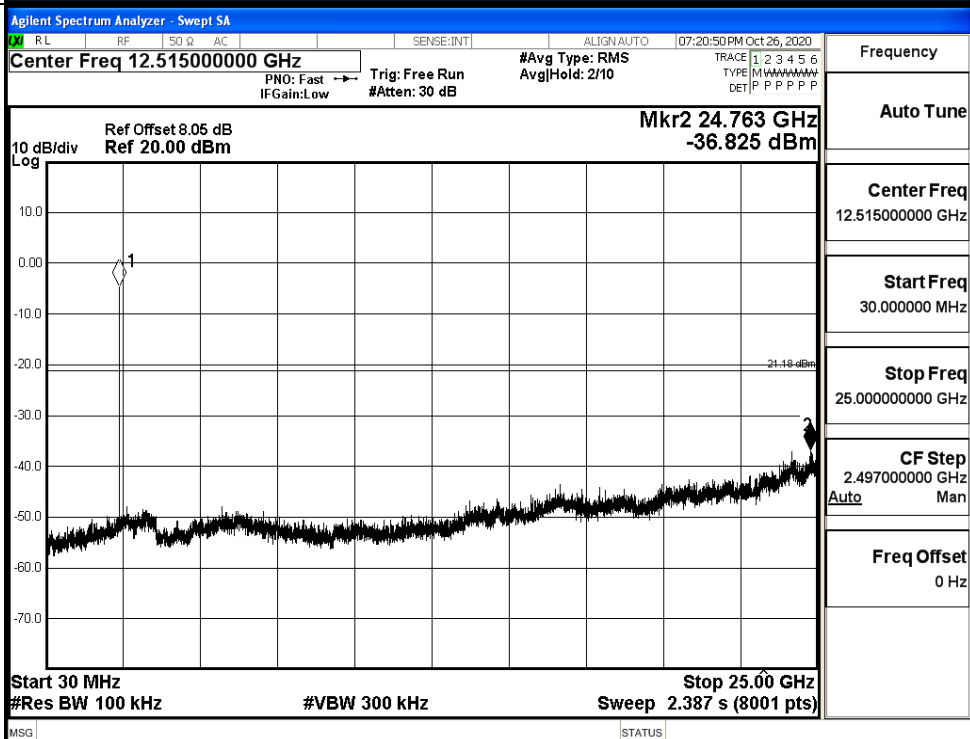


$\pi/4$ DQPSK_LCH_Graphs

Pref

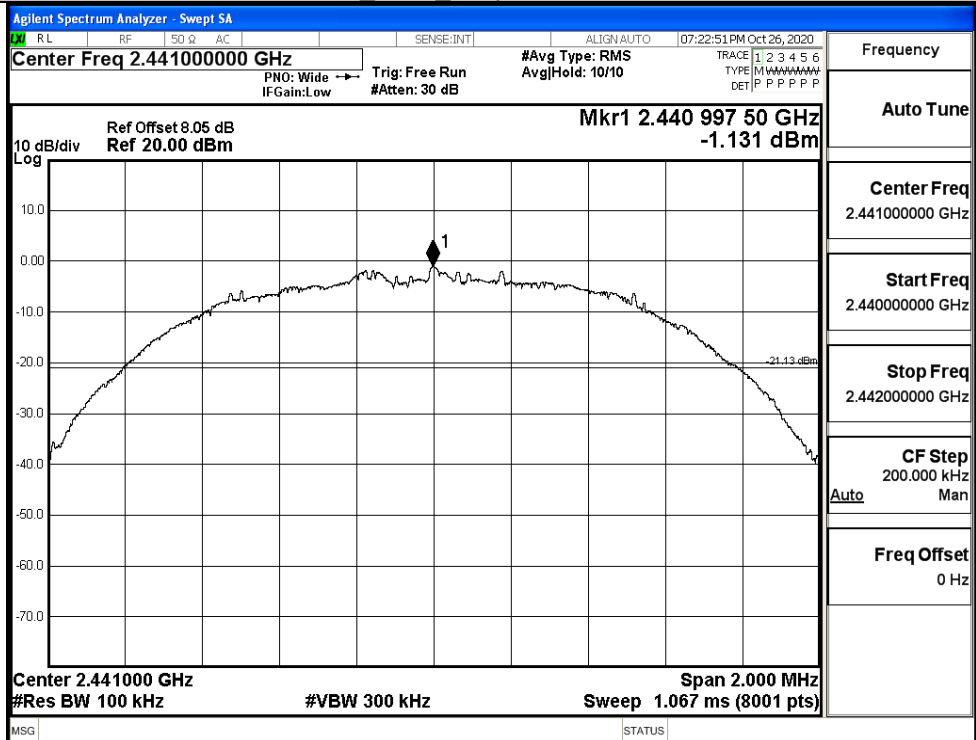


Puw

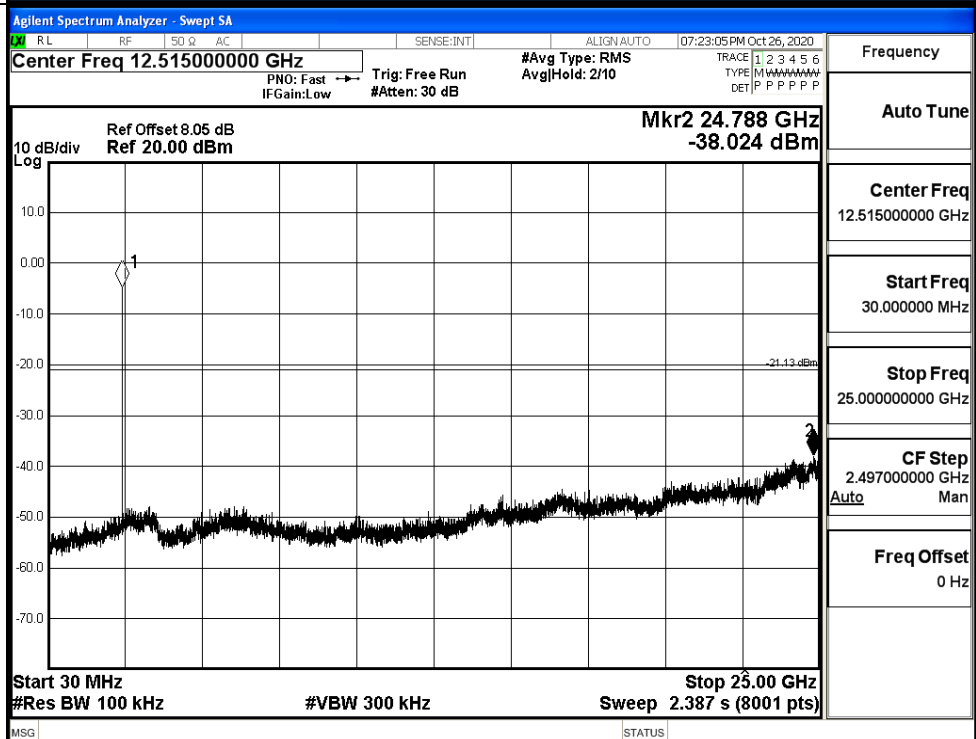


π /4DQPSK_MCH_Graphs

Pref

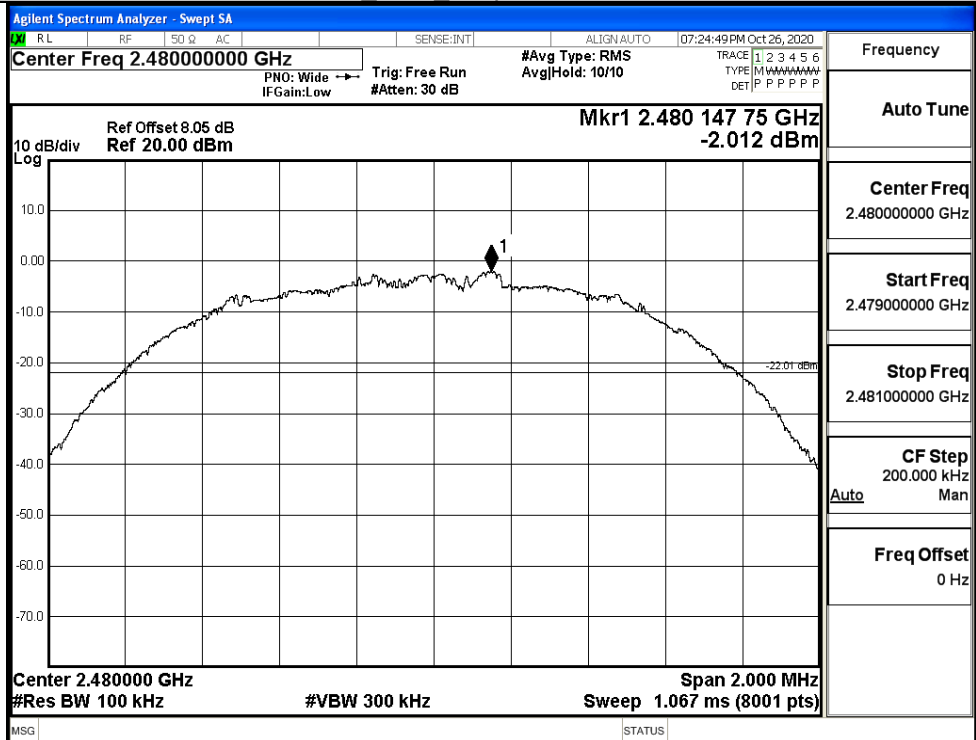


Puw

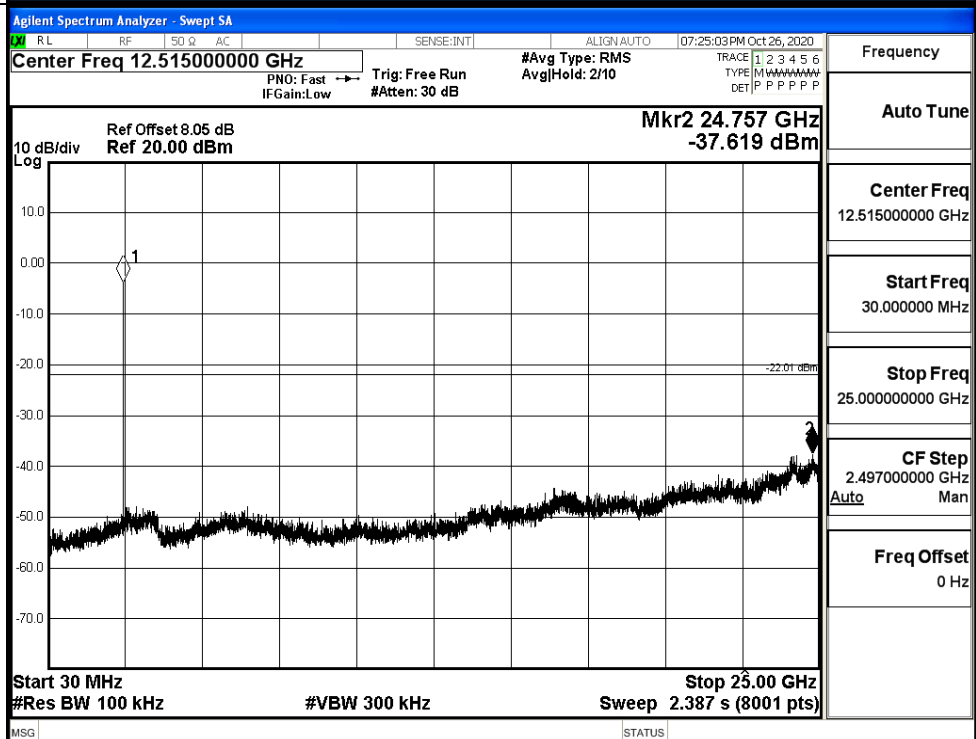


π /4DQPSK_HCH_Graphs

Pref

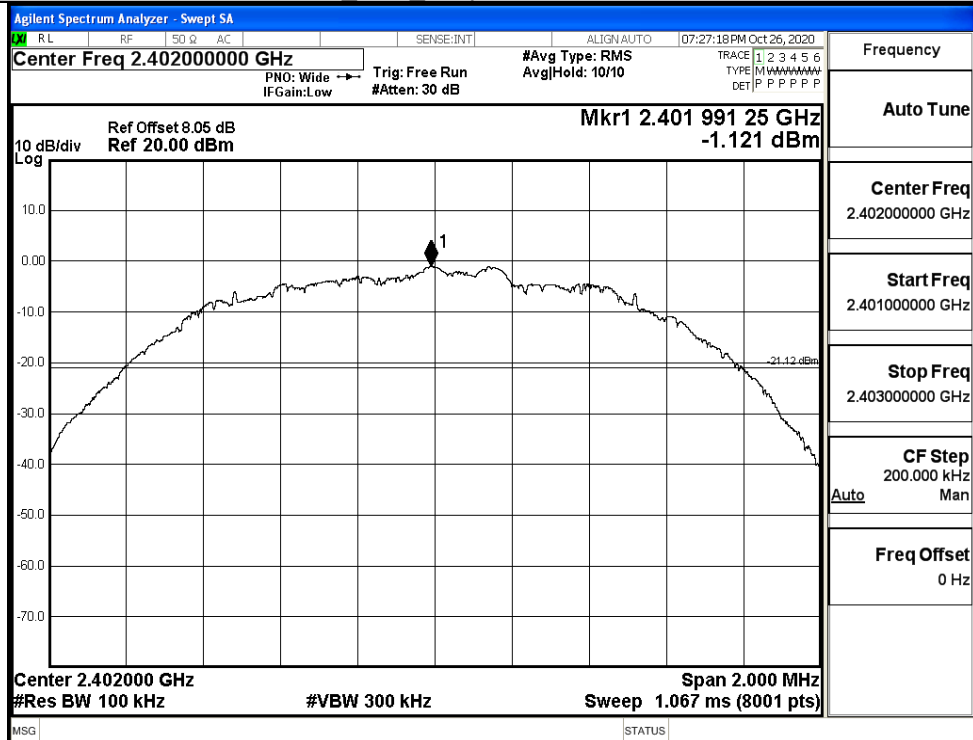


Puw

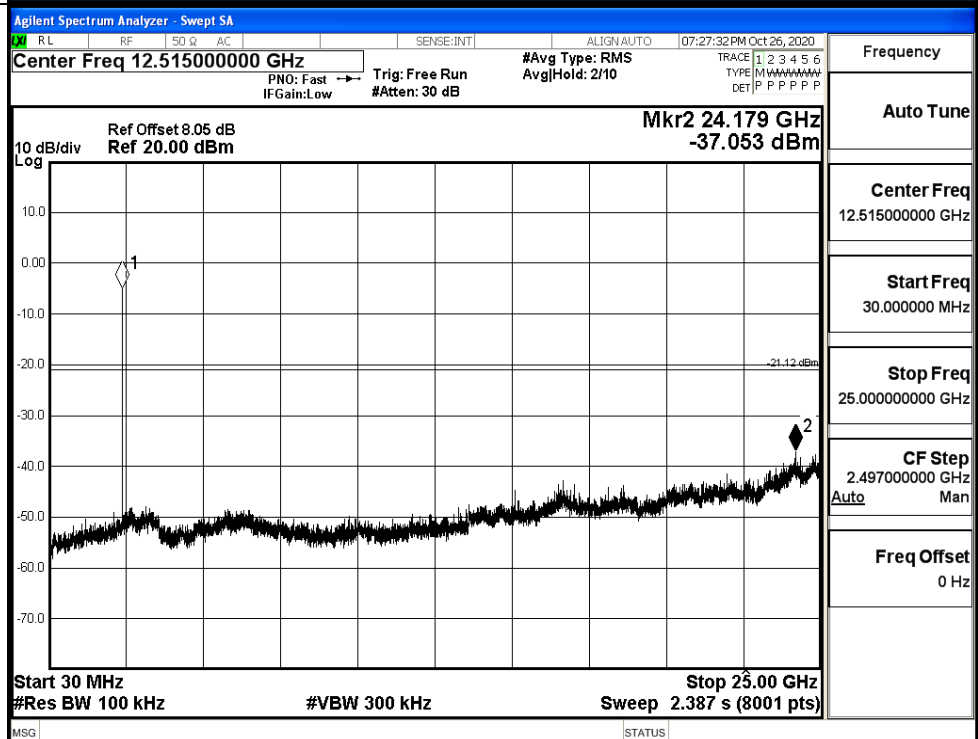


8DPSK_LCH_Graphs

Pref

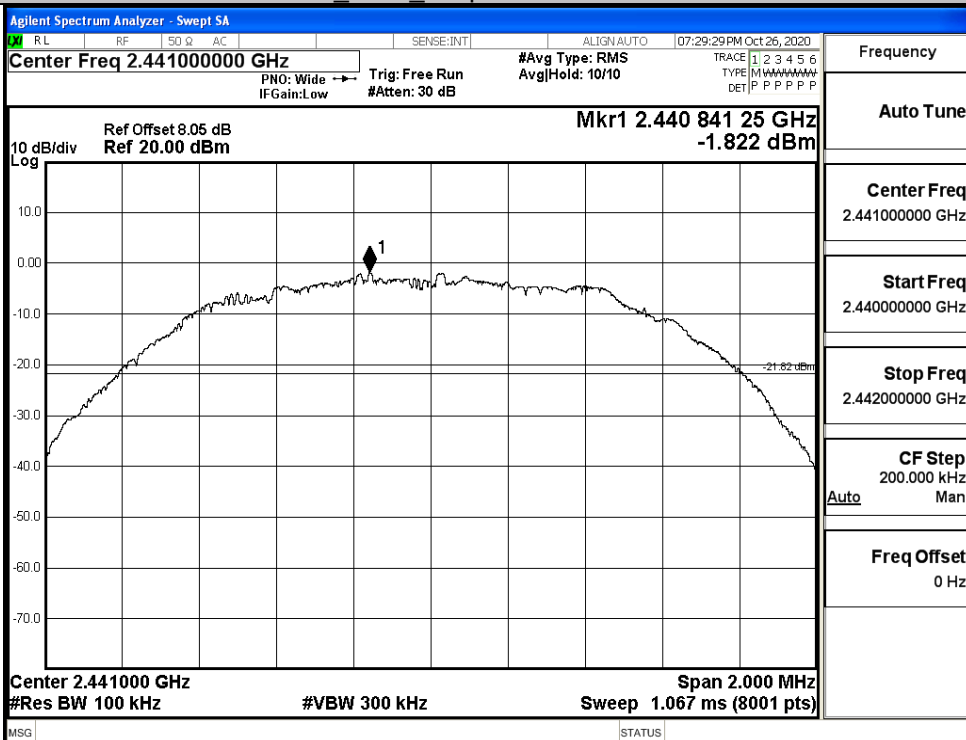


Puw

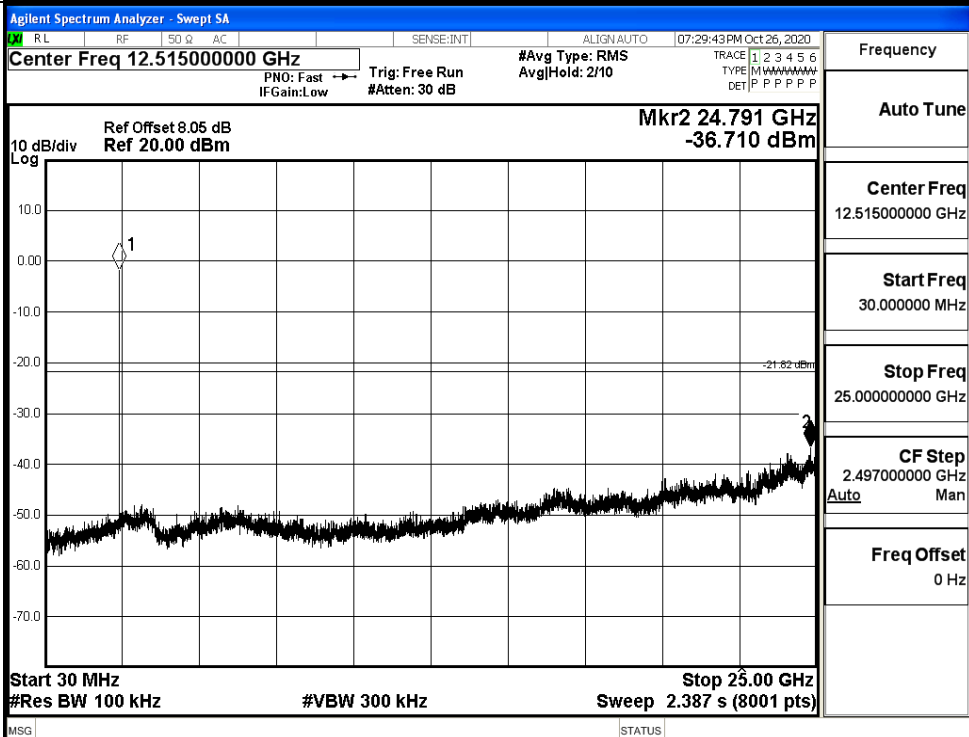


8DPSK_MCH_Graphs

Pref

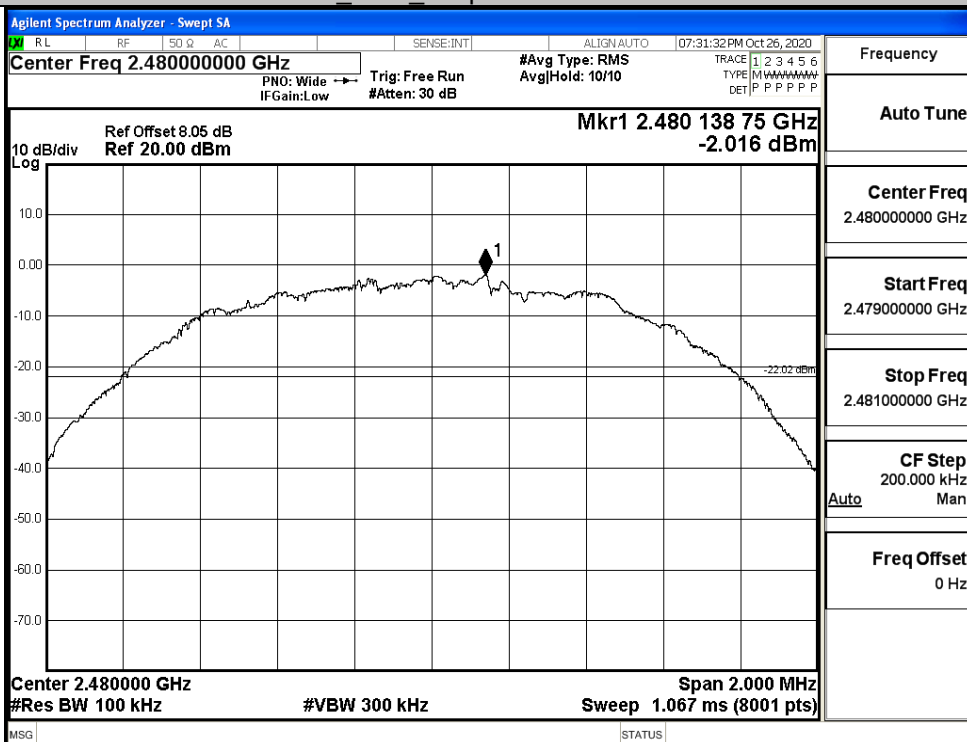


Puw

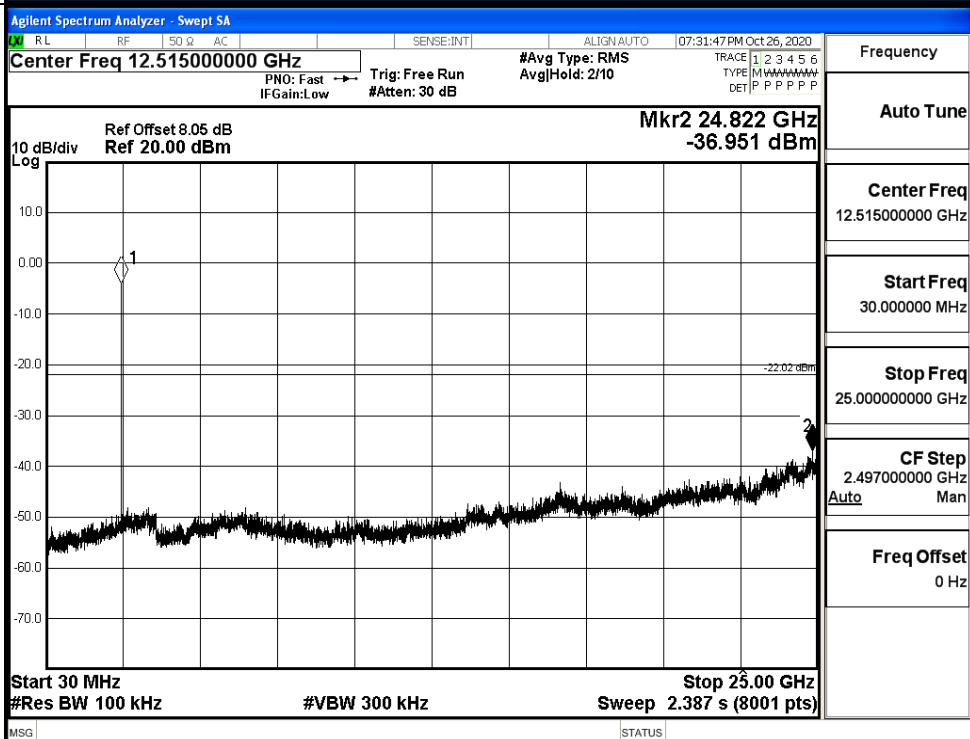


8DPSK_HCH_Graphs

Pref



Puw

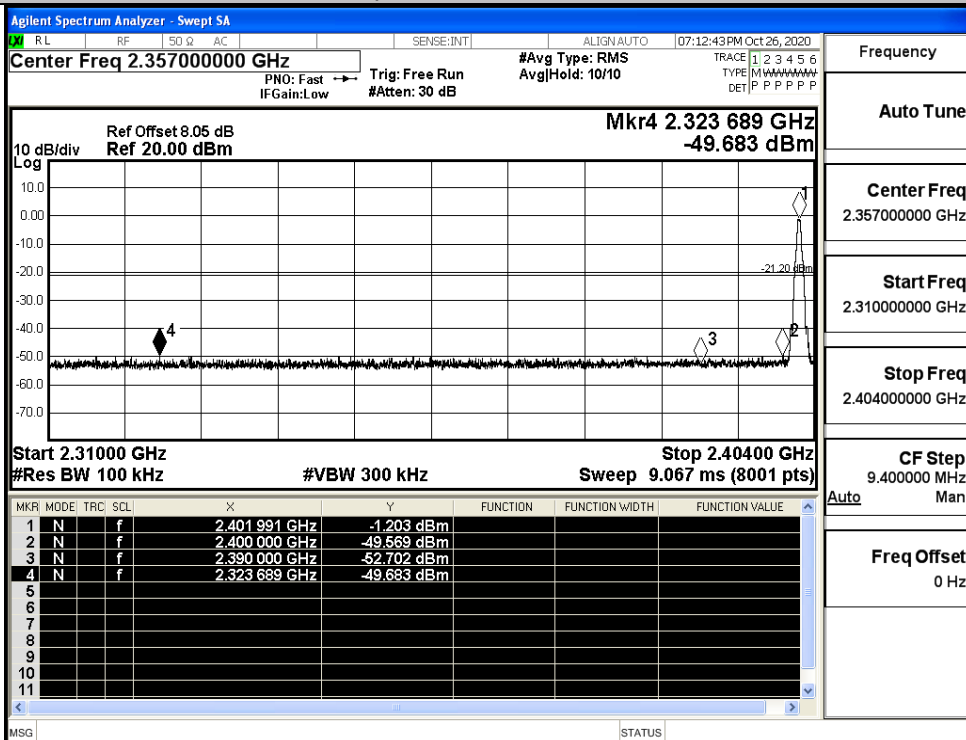


A.7 Band-edge for RF Conducted Emissions

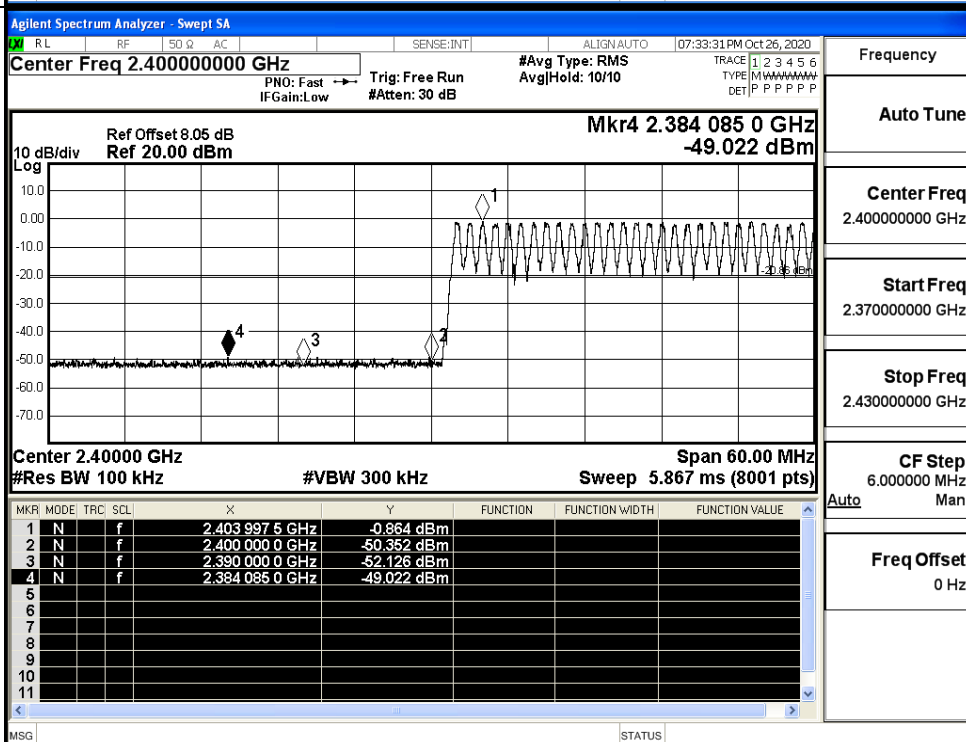
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.203	Off	-49.683	-21.20	PASS
			-0.864	On	-49.022	-20.86	PASS
	HCH	2480	-1.665	Off	-37.897	-21.67	PASS
			-1.313	On	-48.790	-21.31	PASS
$\pi/4$ DQPSK	LCH	2402	-1.371	Off	-49.823	-21.37	PASS
			-0.918	On	-48.442	-20.92	PASS
	HCH	2480	-2.062	Off	-38.203	-22.06	PASS
			-1.296	On	-38.166	-21.30	PASS
8DPSK	LCH	2402	-0.893	Off	-48.591	-20.89	PASS
			-0.798	On	-49.182	-20.80	PASS
	HCH	2480	-2.052	Off	-40.532	-22.05	PASS
			-1.293	On	-46.553	-21.29	PASS

Test Graphs

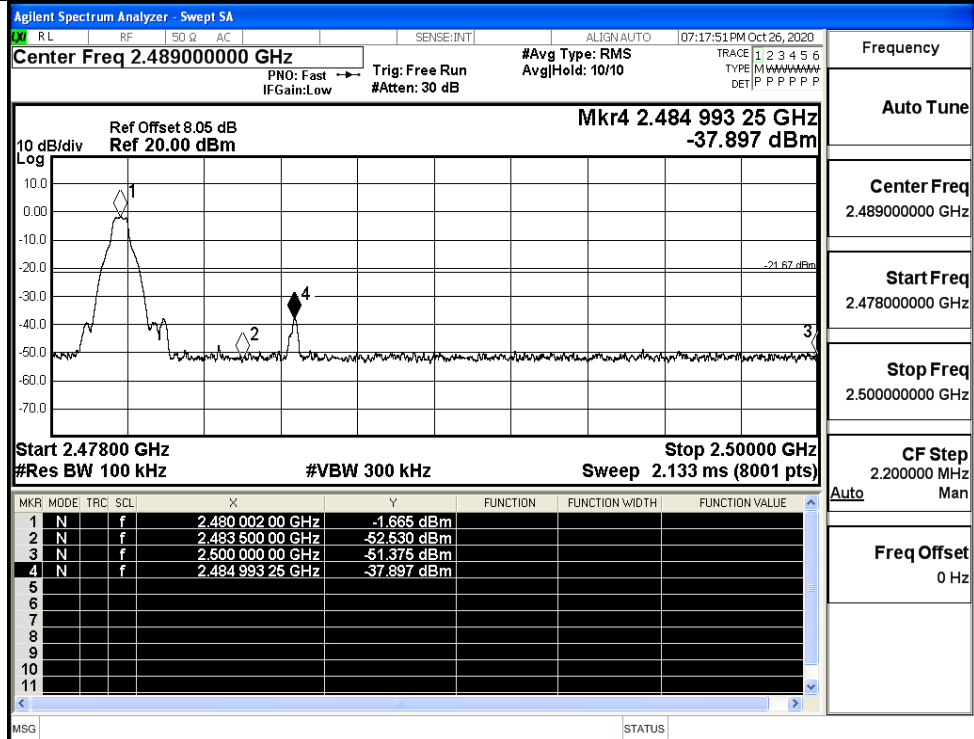
GFSK/LCH/No Hop



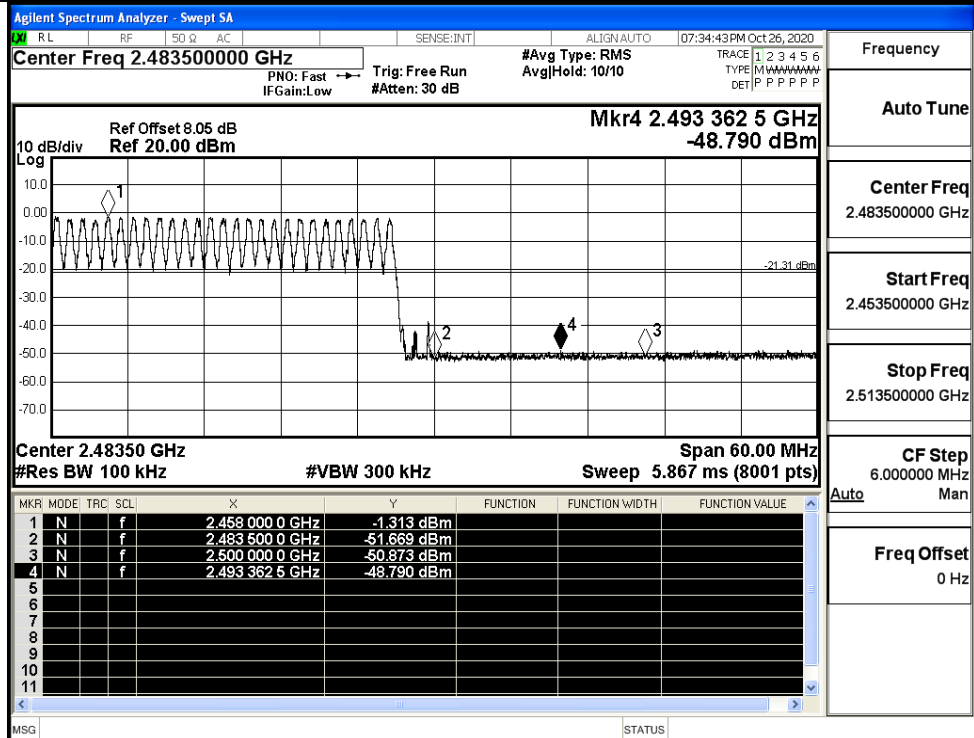
GFSK/LCH/Hop



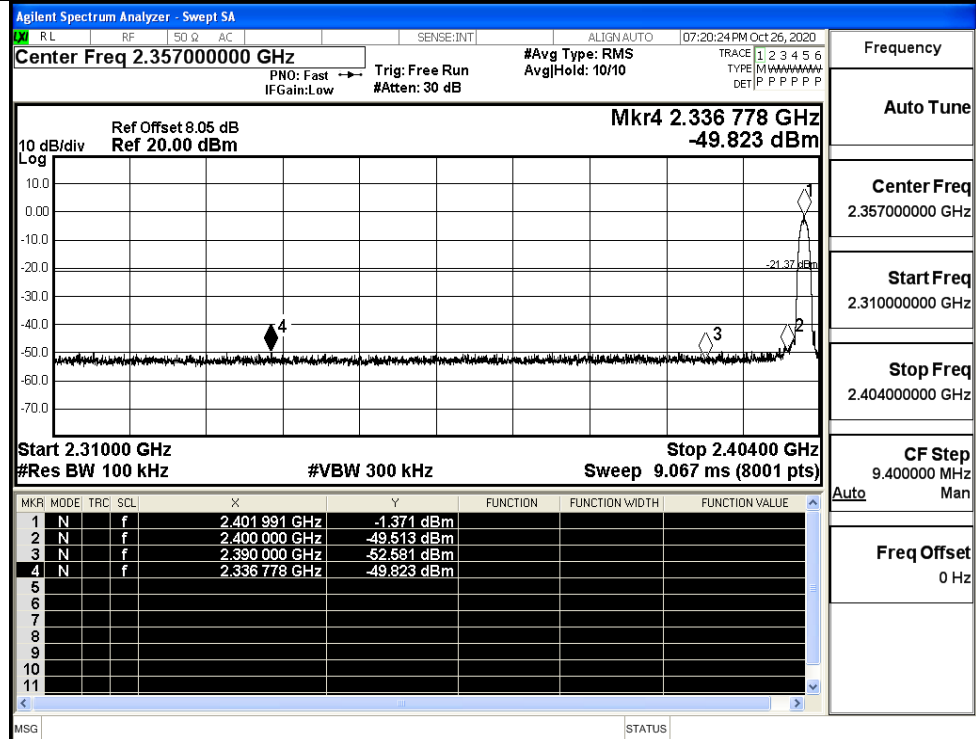
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

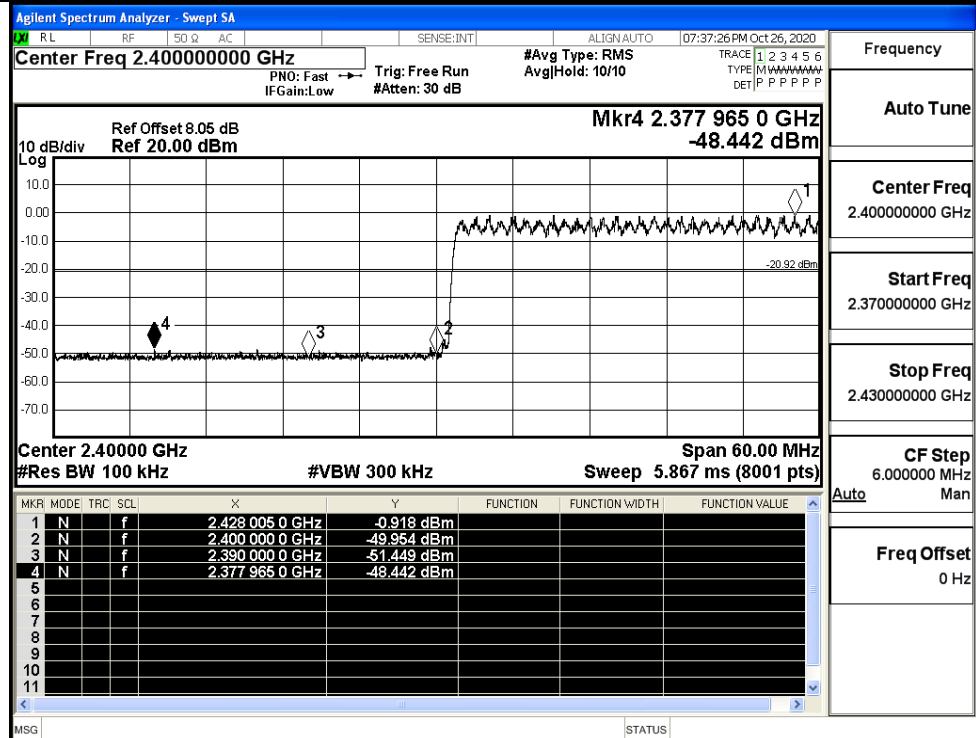
Stop Freq
2.404000000 GHz

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

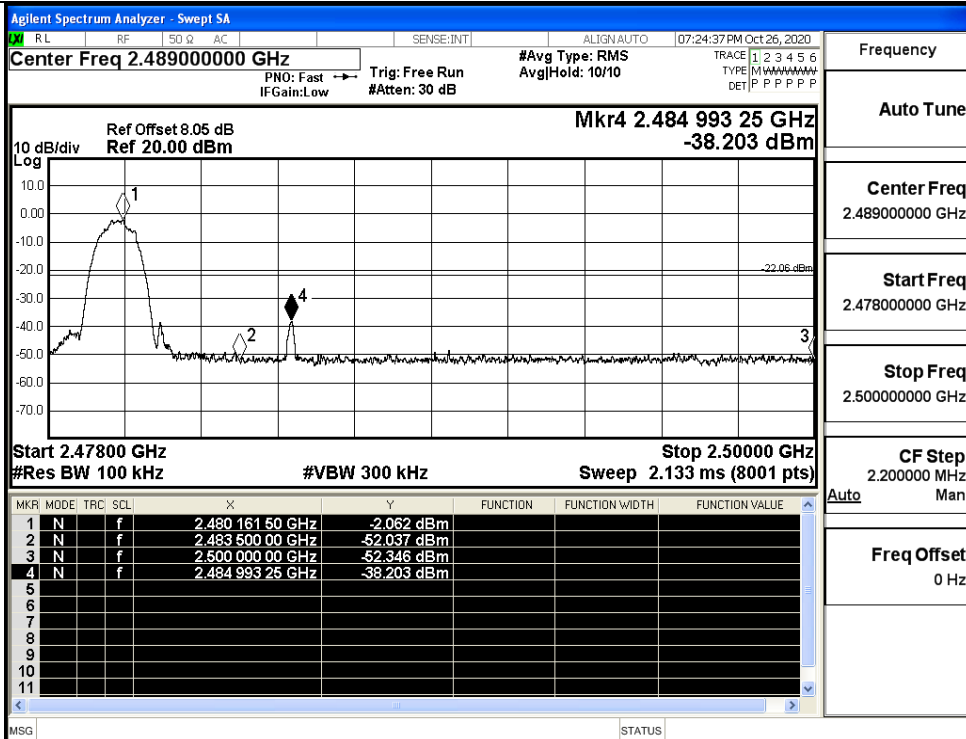
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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

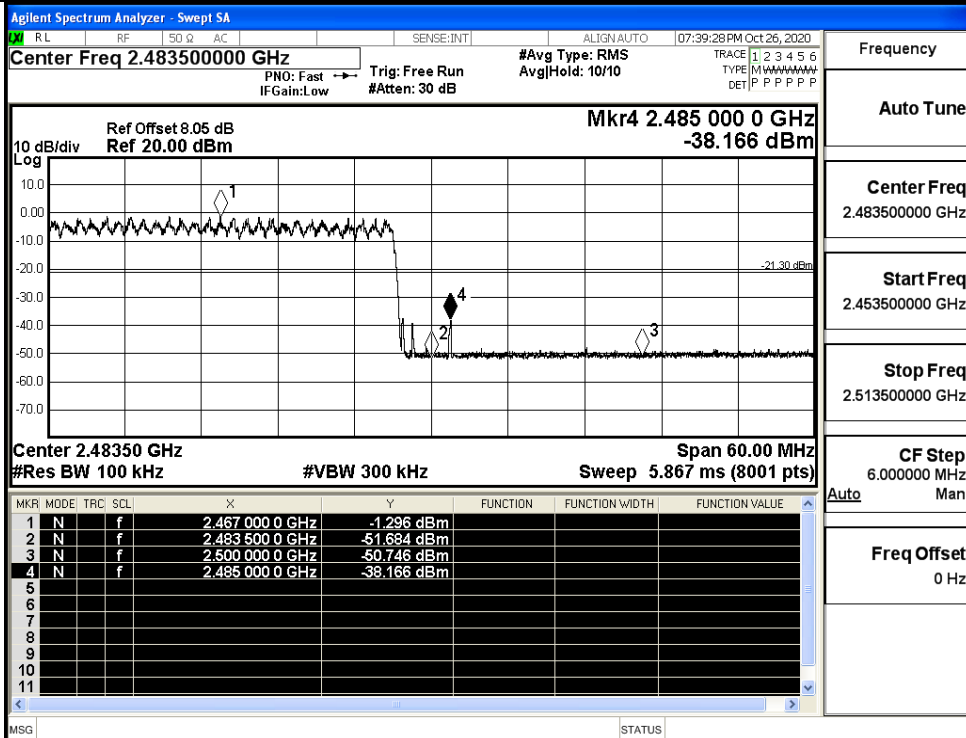


Frequency

Auto Tune

Center Freq
2.489000000 GHzStart Freq
2.478000000 GHzStop Freq
2.500000000 GHzCF Step
2.200000 MHz
Auto ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

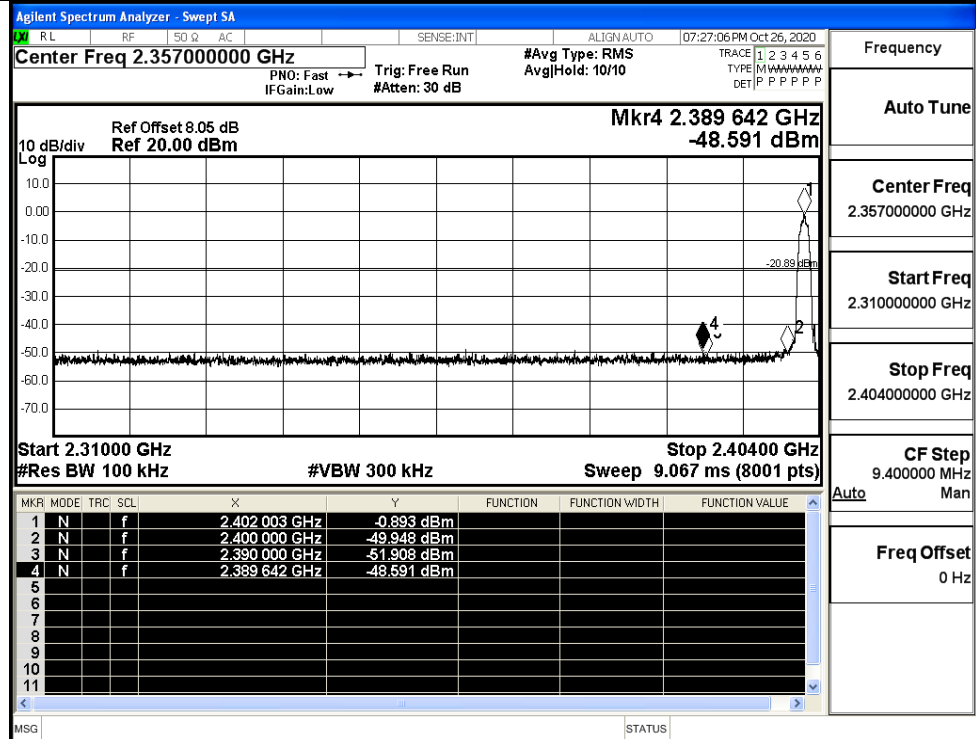


Frequency

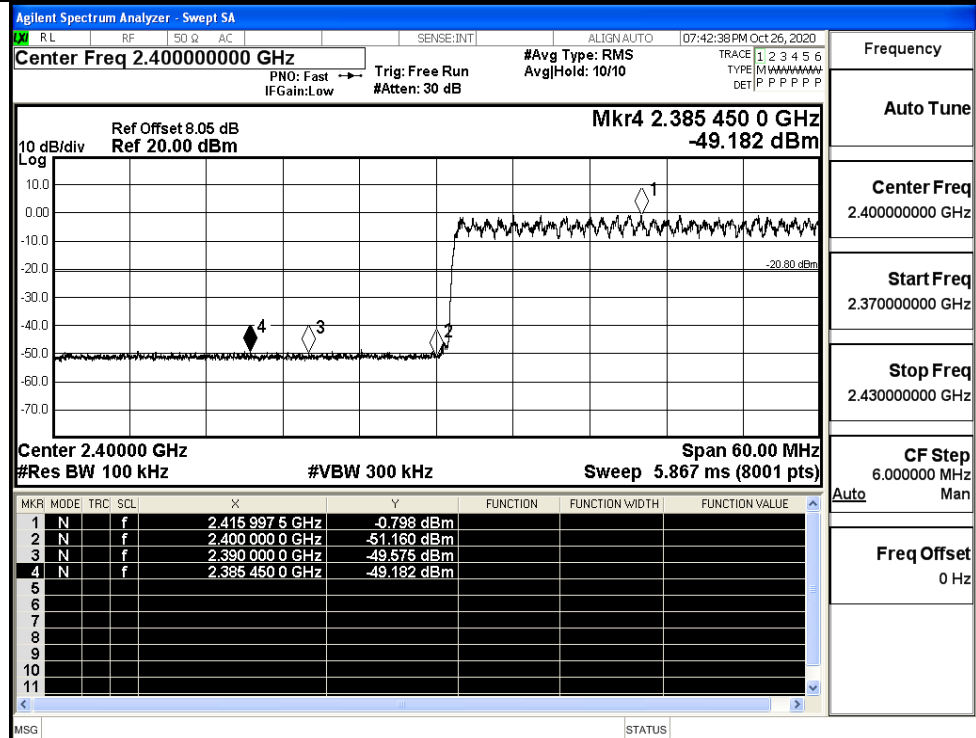
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.463500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

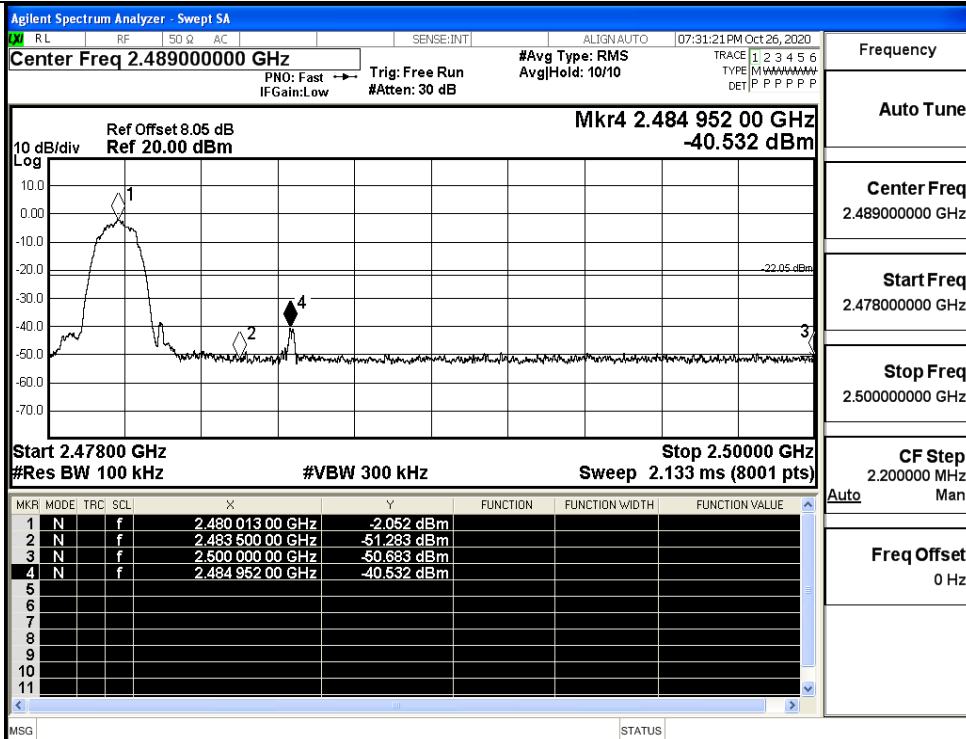
8DPSK/LCH/No Hop



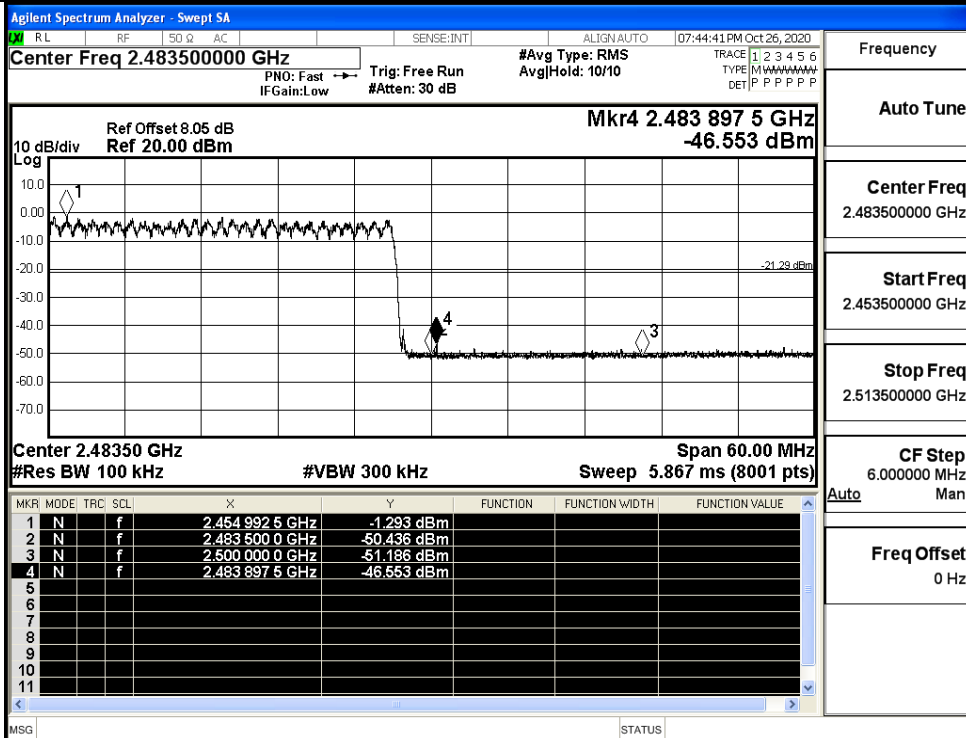
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



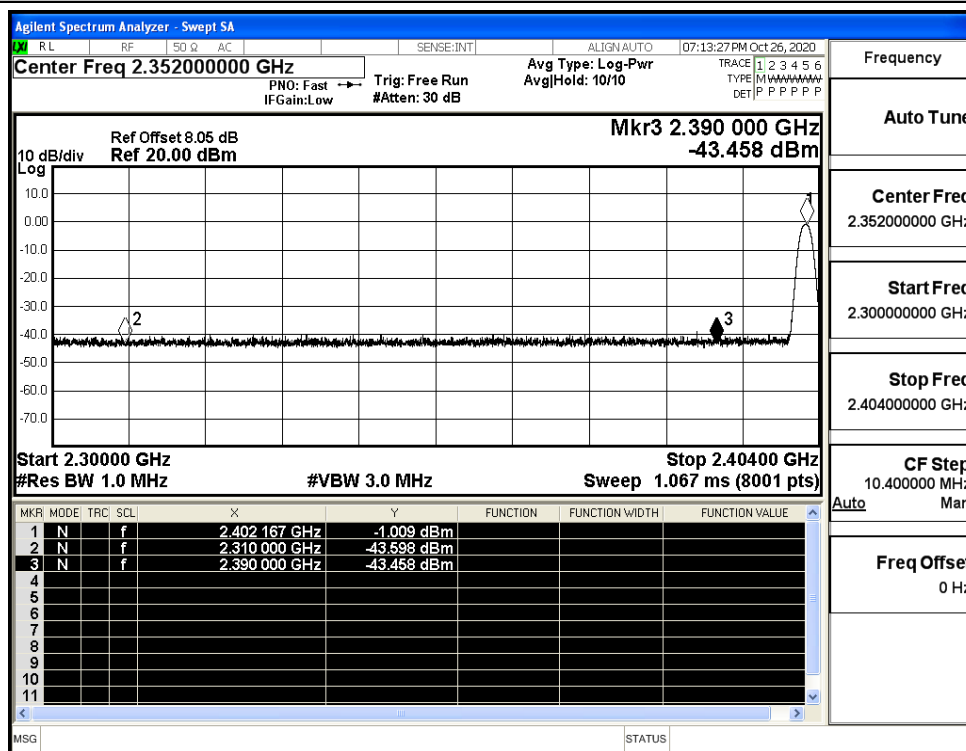
8DPSK/HCH/Hop



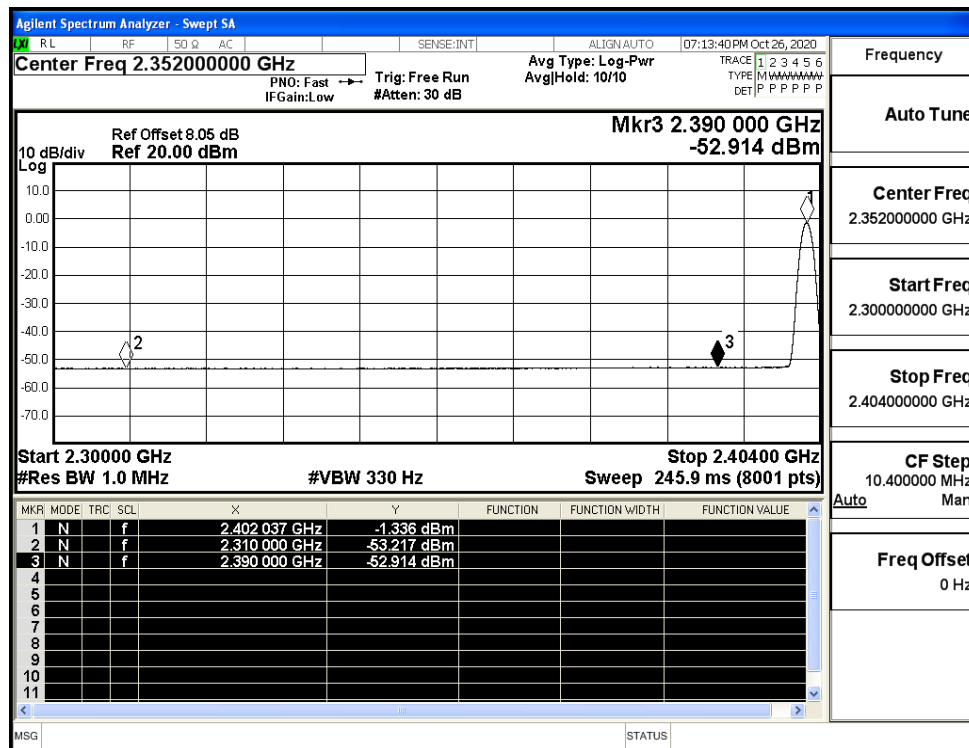
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.60	5.24	0	56.87	PEAK	74	PASS
	Off	2310.0	-53.22	5.24	0	47.25	AV	54	PASS
	Off	2390.0	-43.46	5.24	0	57.01	PEAK	74	PASS
	Off	2390.0	-52.91	5.24	0	47.56	AV	54	PASS
	Off	2483.5	-41.90	5.24	0	58.57	PEAK	74	PASS
	Off	2483.5	-52.38	5.24	0	48.09	AV	54	PASS
	Off	2500.0	-40.97	5.24	0	59.5	PEAK	74	PASS
	Off	2500.0	-52.06	5.24	0	48.41	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.73	5.24	0	56.74	PEAK	74	PASS
	Off	2310.0	-53.26	5.24	0	47.21	AV	54	PASS
	Off	2390.0	-41.97	5.24	0	58.5	PEAK	74	PASS
	Off	2390.0	-52.84	5.24	0	47.63	AV	54	PASS
	Off	2483.5	-42.49	5.24	0	57.98	PEAK	74	PASS
	Off	2483.5	-52.14	5.24	0	48.33	AV	54	PASS
	Off	2500.0	-42.55	5.24	0	57.92	PEAK	74	PASS
	Off	2500.0	-52.28	5.24	0	48.19	AV	54	PASS
8DPSK	Off	2310.0	-42.44	5.24	0	58.03	PEAK	74	PASS
	Off	2310.0	-53.24	5.24	0	47.23	AV	54	PASS
	Off	2390.0	-43.30	5.24	0	57.17	PEAK	74	PASS
	Off	2390.0	-52.91	5.24	0	47.56	AV	54	PASS
	Off	2483.5	-42.23	5.24	0	58.24	PEAK	74	PASS
	Off	2483.5	-51.99	5.24	0	48.48	AV	54	PASS
	Off	2500.0	-41.69	5.24	0	58.78	PEAK	74	PASS
	Off	2500.0	-52.26	5.24	0	48.21	AV	54	PASS

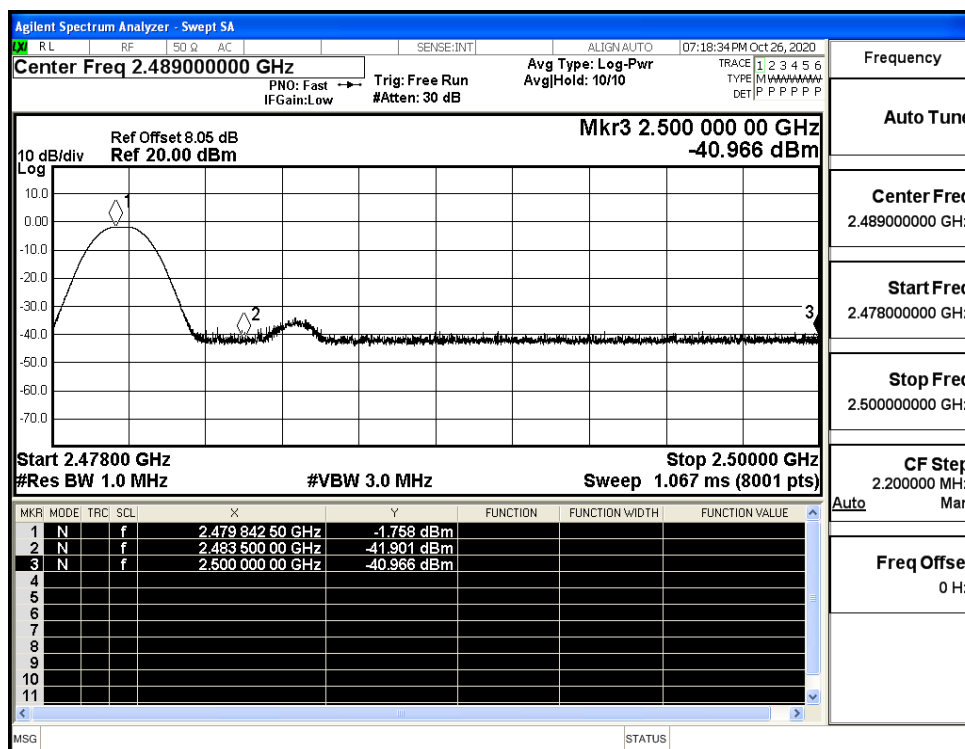
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



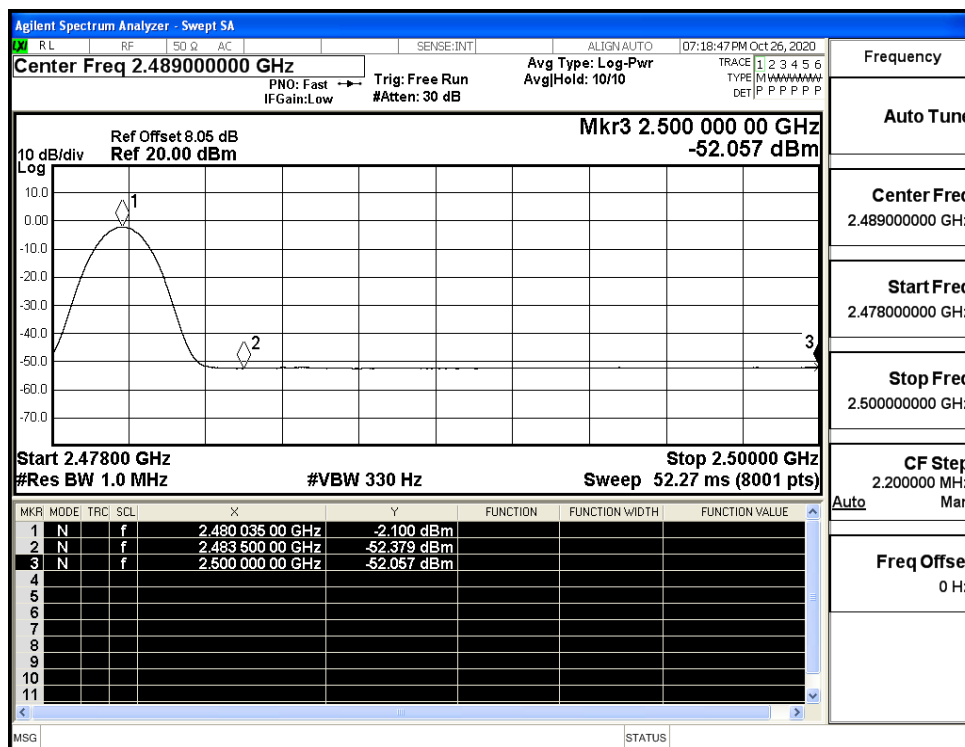
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

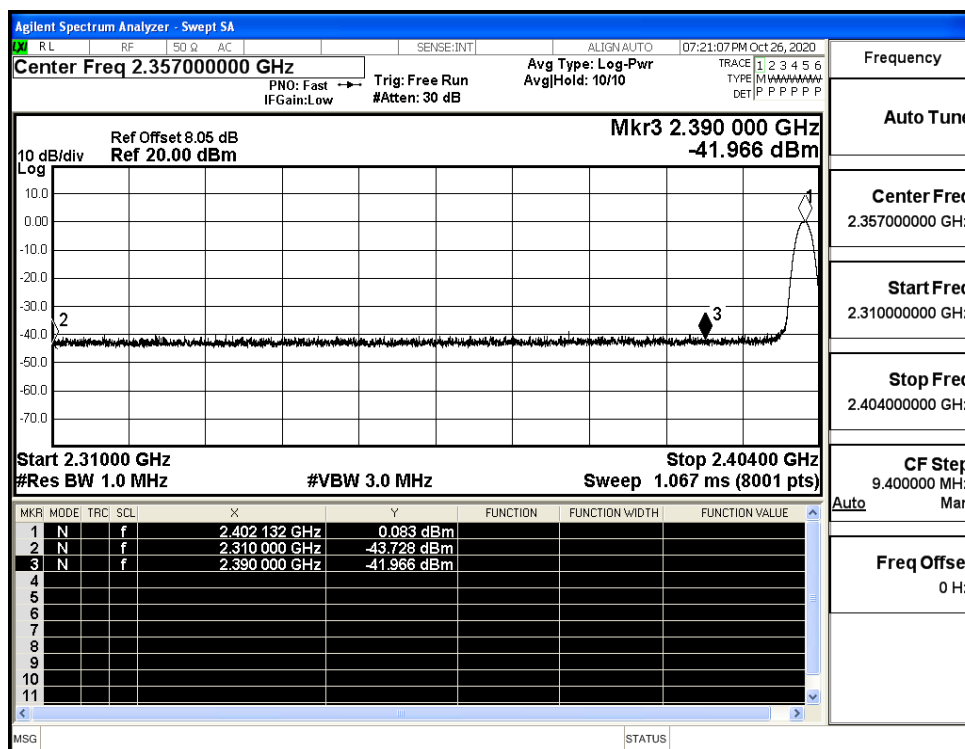
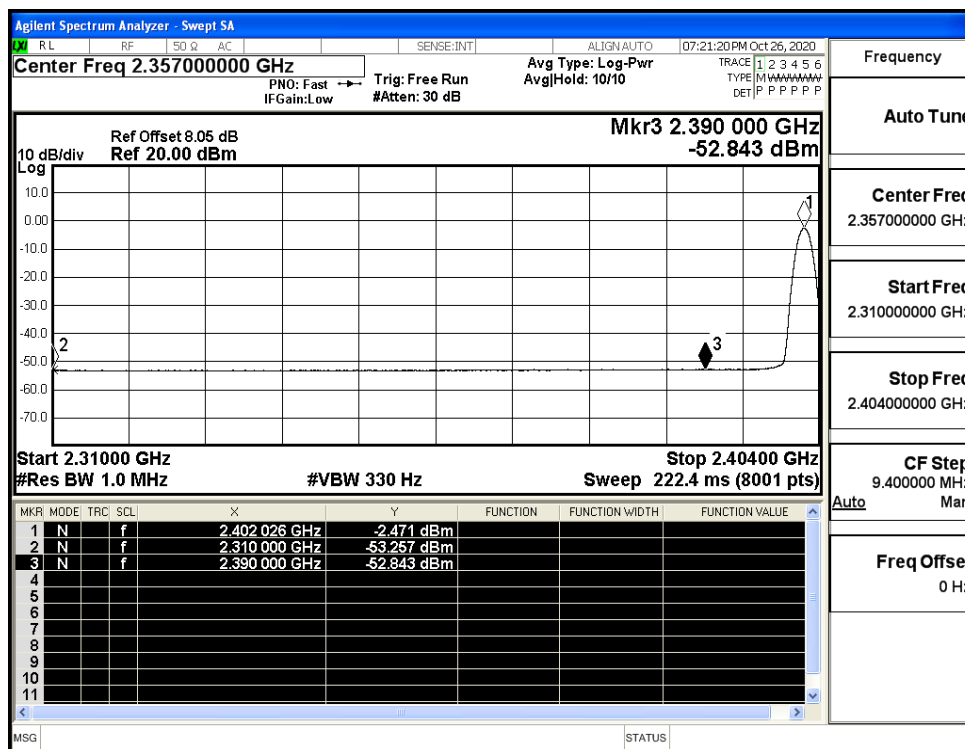


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

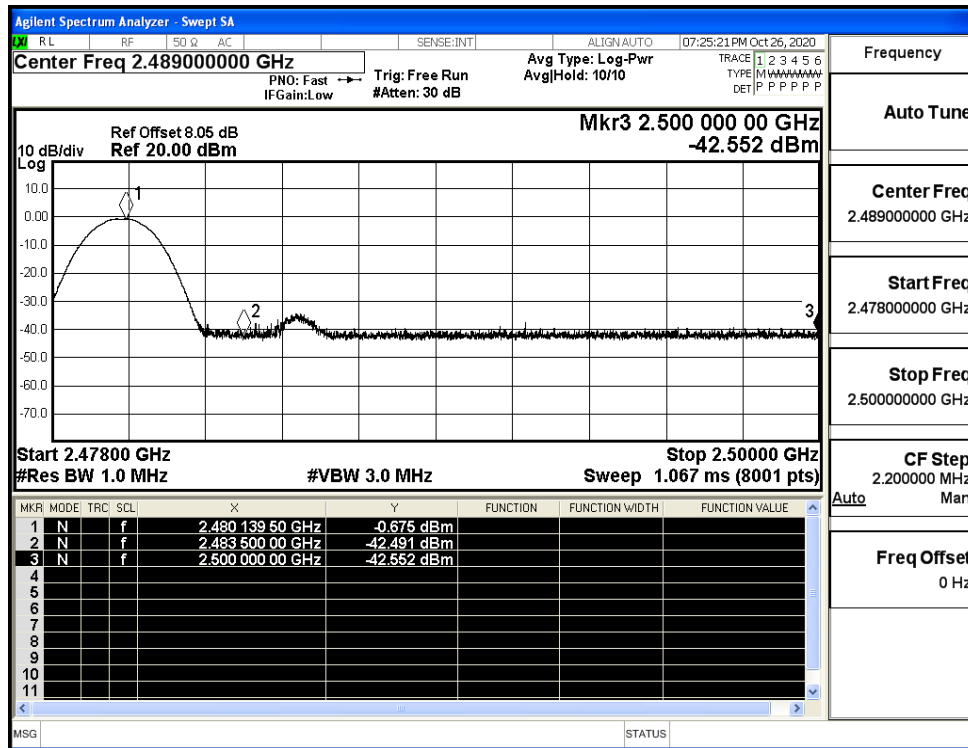


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)

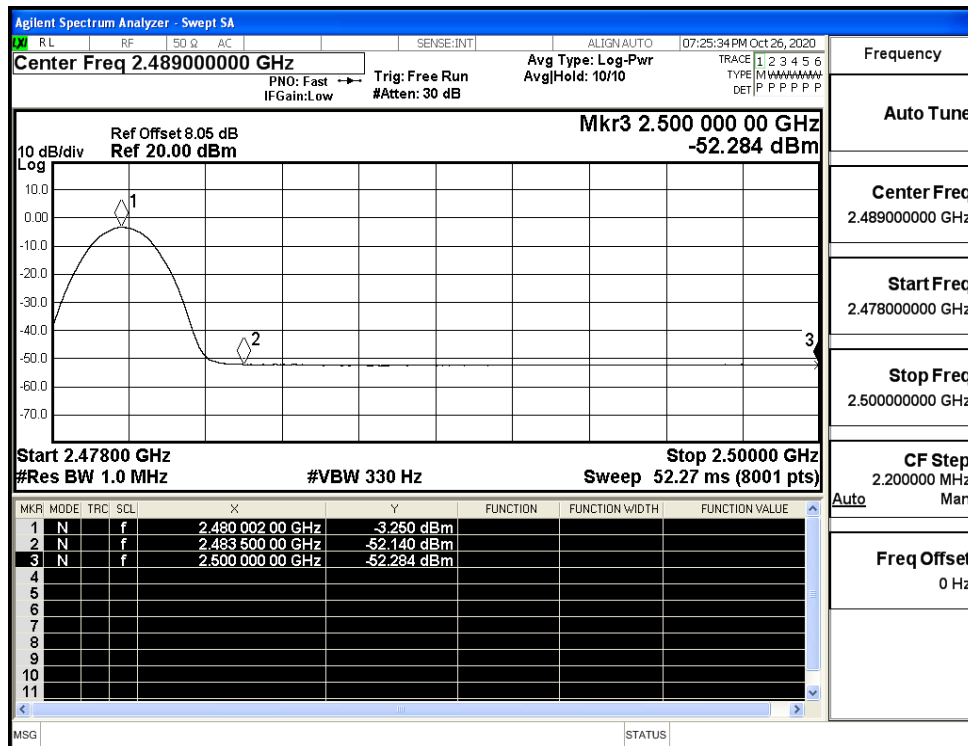


Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

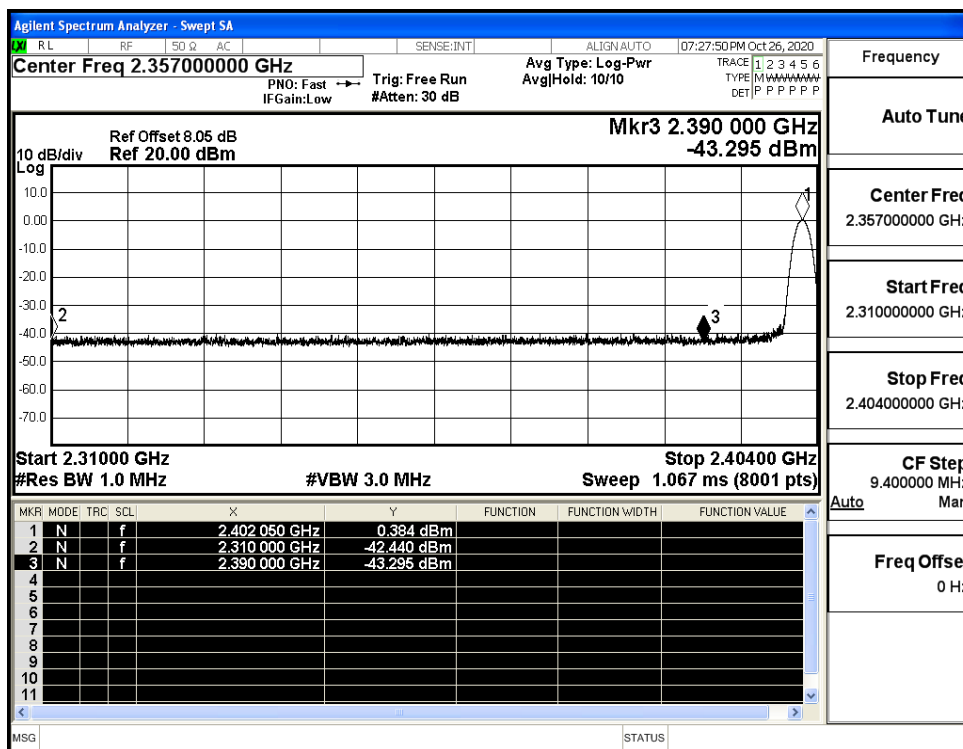
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (High Channel)



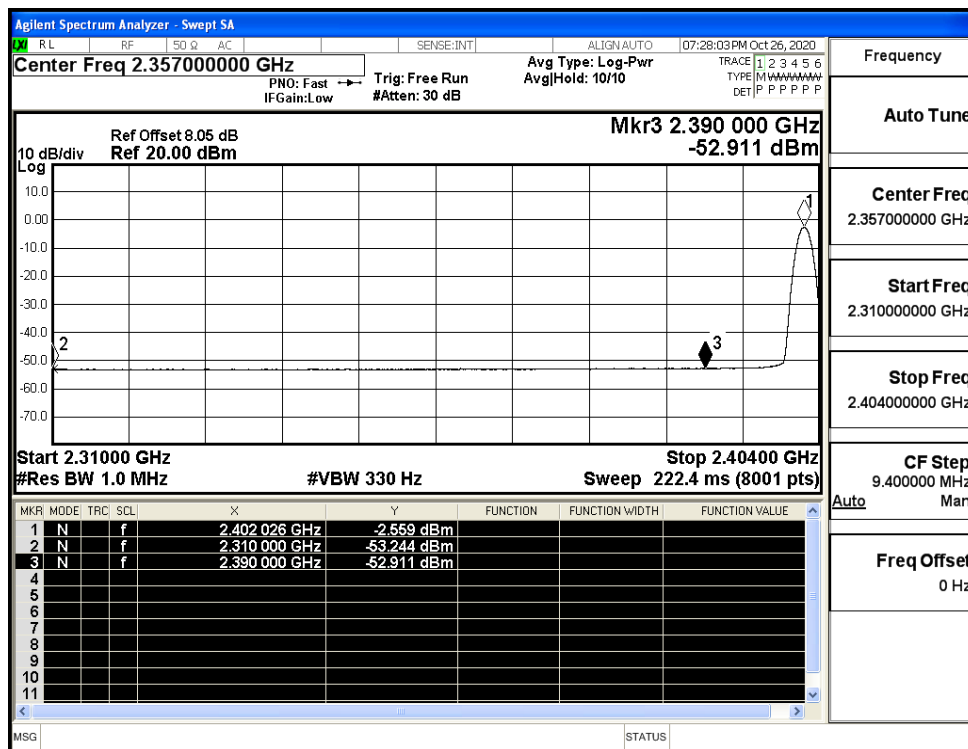
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)



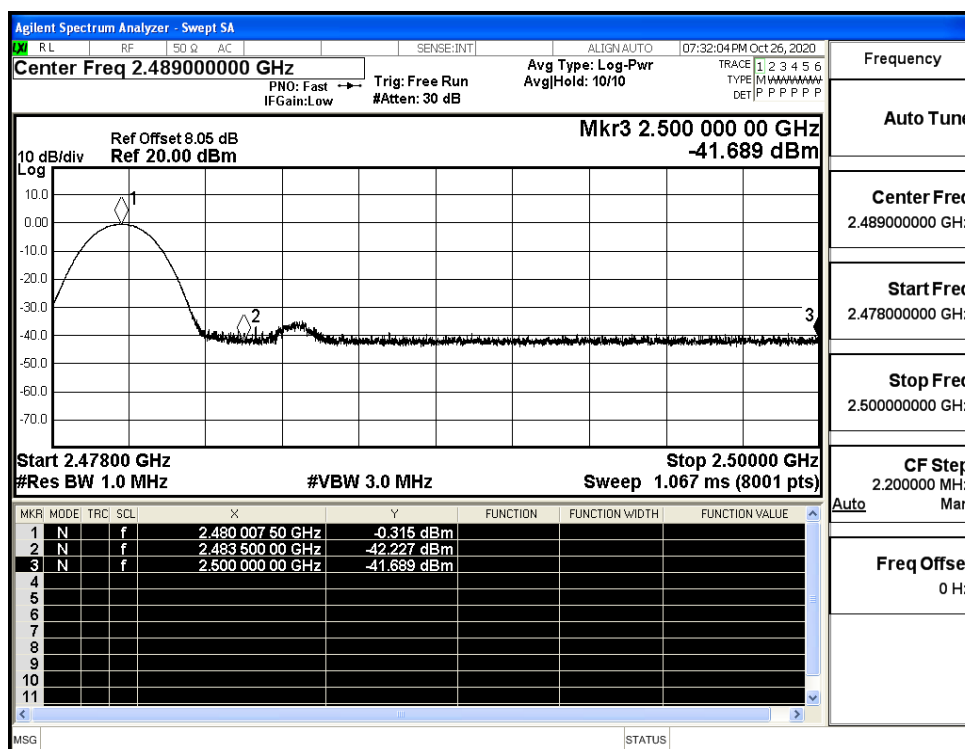
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



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)

