

Appendix A

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

Product Name: BLUETOOTH SPEAKER

Trade Mark: N/A

Test Model: F400

Environmental Conditions

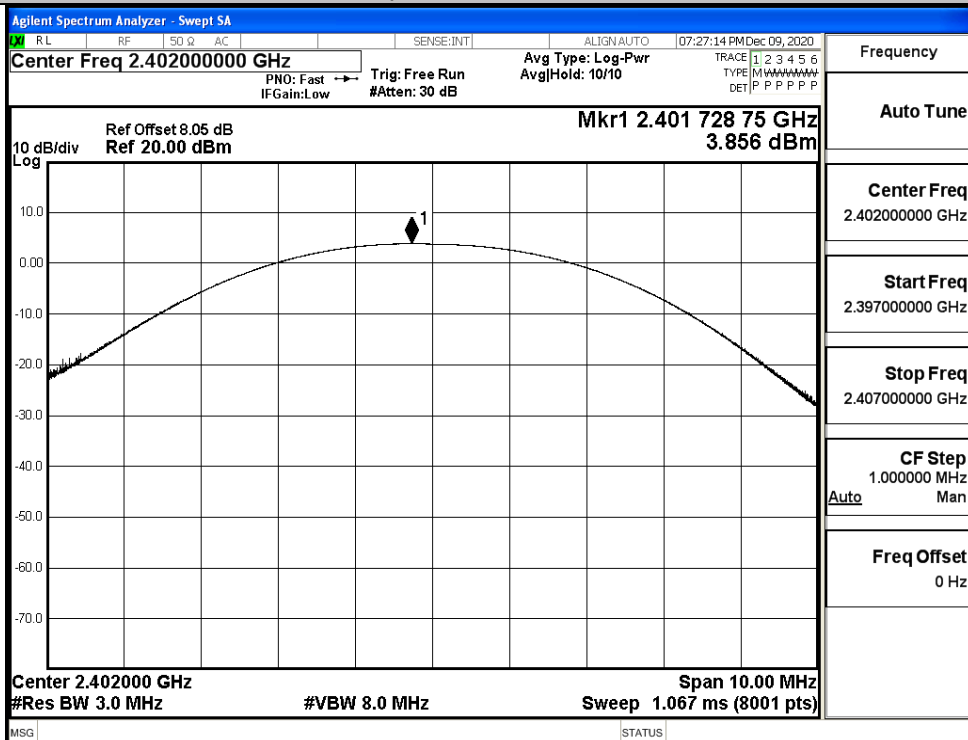
Temperature:	23.1 ° C
Relative Humidity:	53.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Ben Jin
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

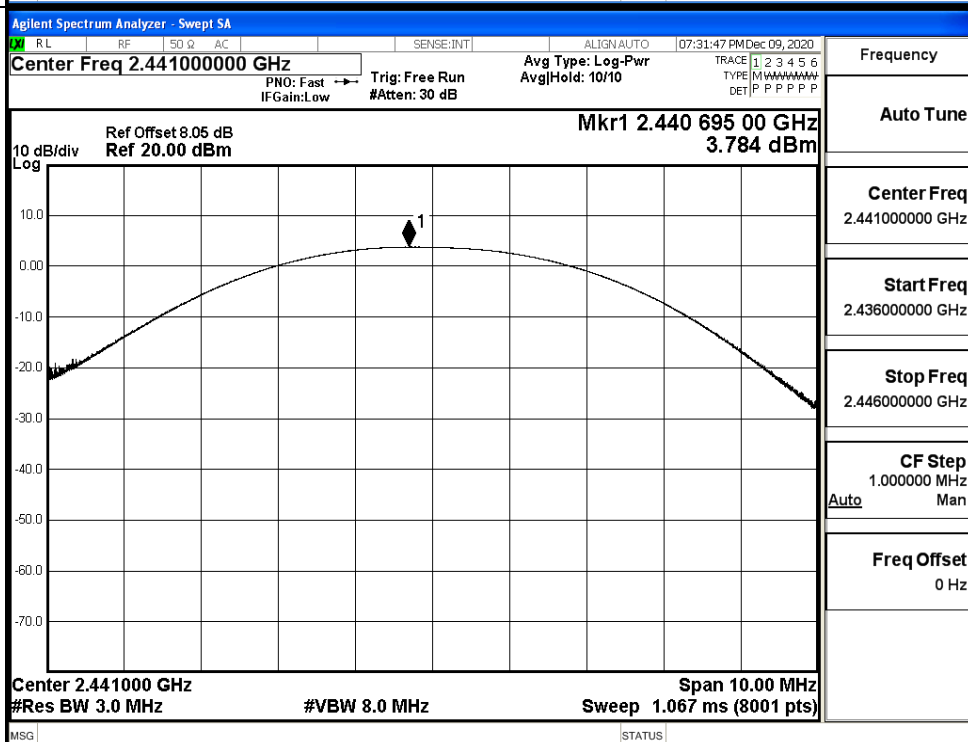
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.856	21	PASS
	MCH	3.784	21	PASS
	HCH	3.834	21	PASS
$\pi/4$ DQPSK	LCH	4.563	21	PASS
	MCH	4.442	21	PASS
	HCH	4.449	21	PASS

Test Graphs

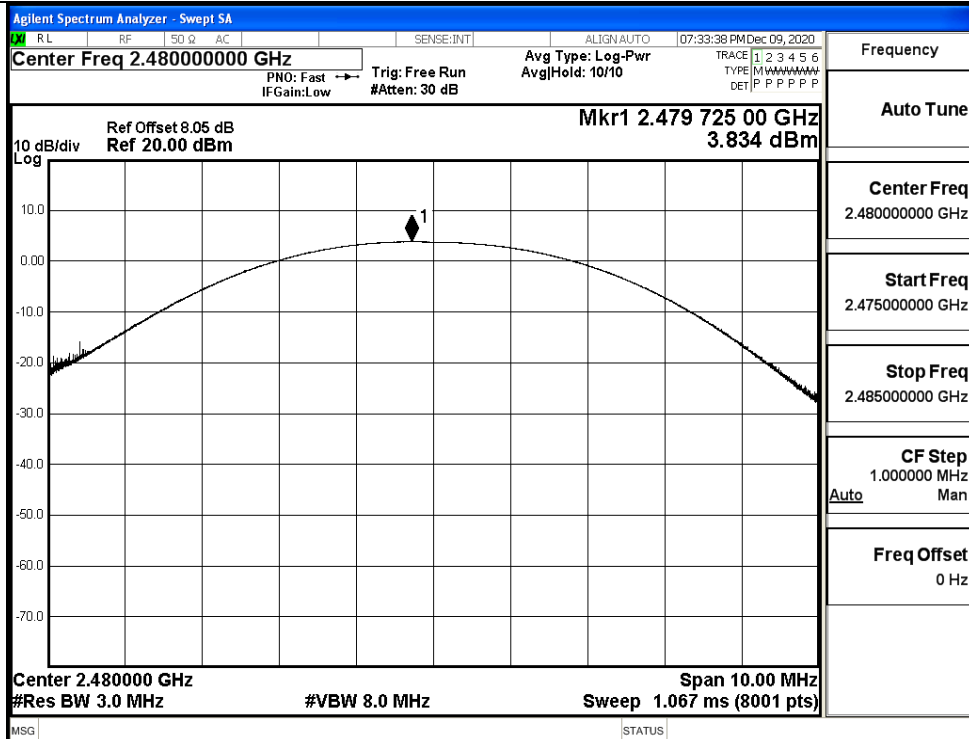
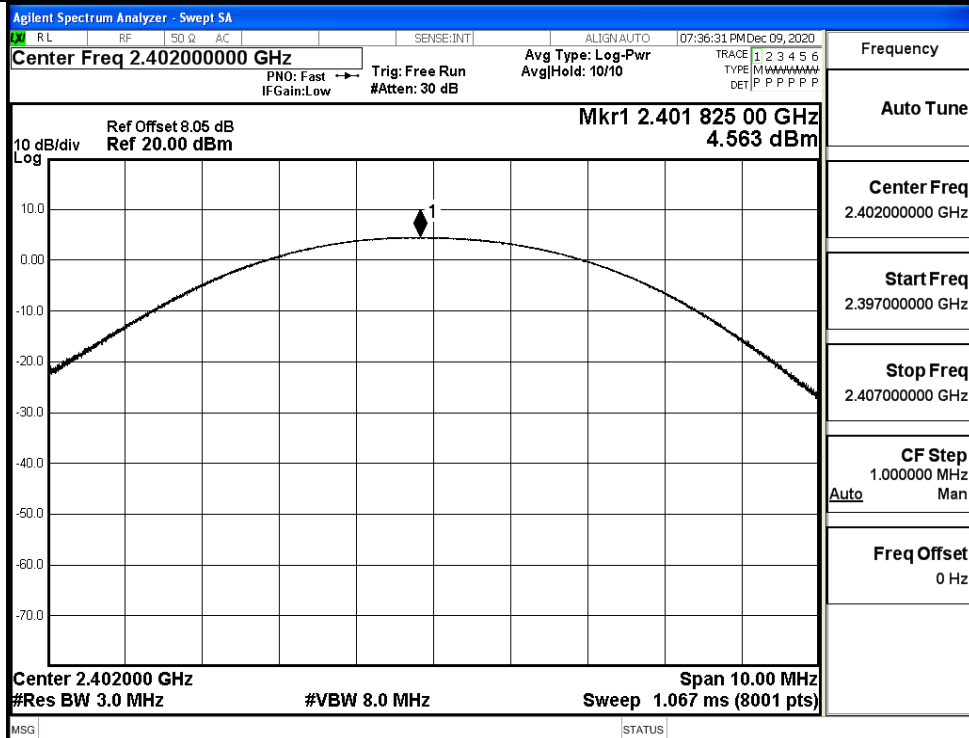
GFSK/LCH

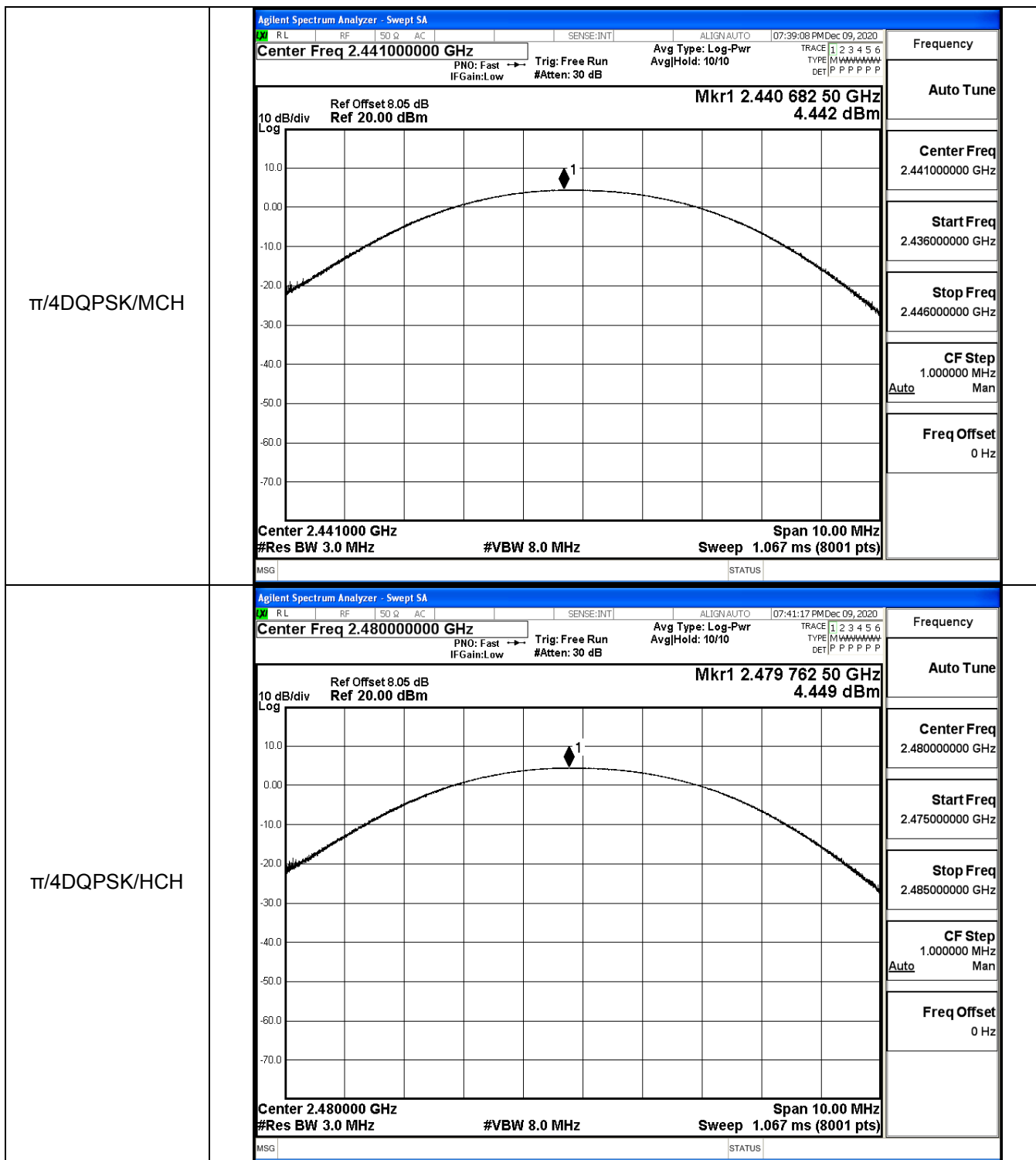


GFSK/MCH



GFSK/HCH

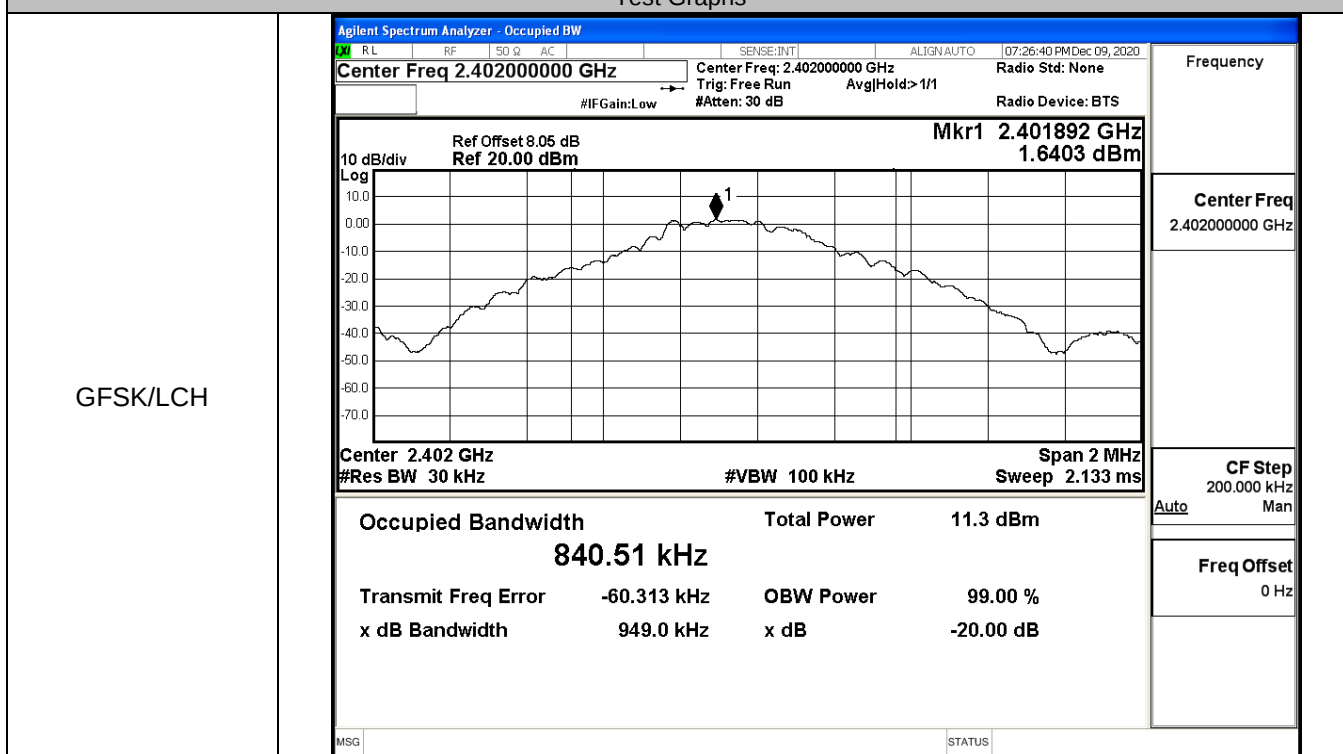
 $\pi/4$ DQPSK/LCH



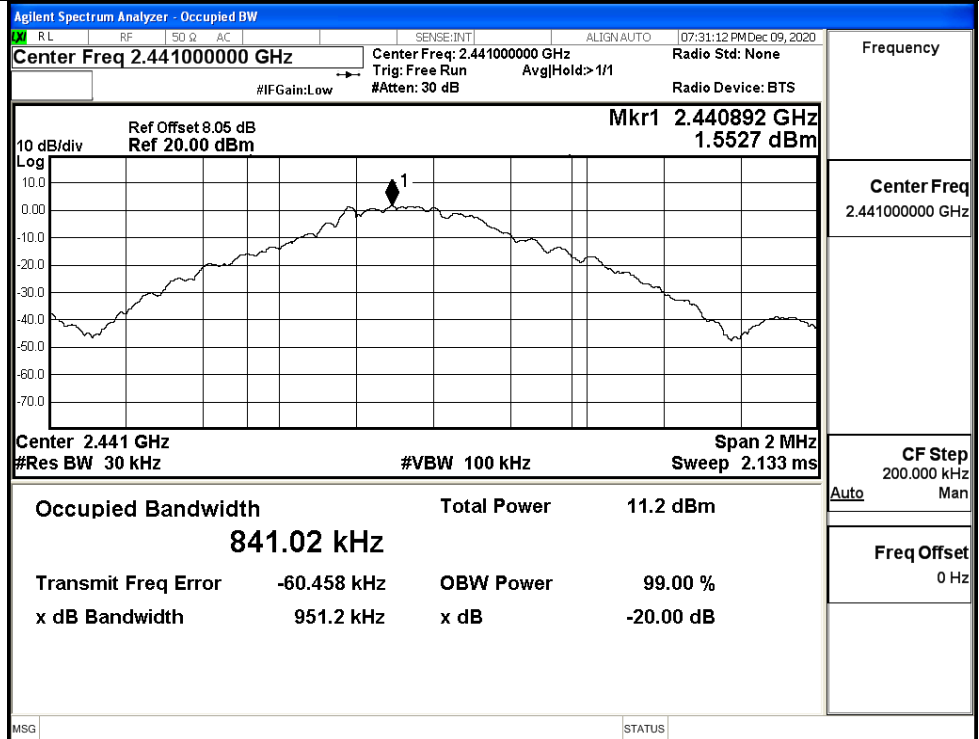
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9490	Not Specified	PASS
	MCH	0.9512	Not Specified	PASS
	HCH	0.9510	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.317	Not Specified	PASS
	MCH	1.312	Not Specified	PASS
	HCH	1.313	Not Specified	PASS

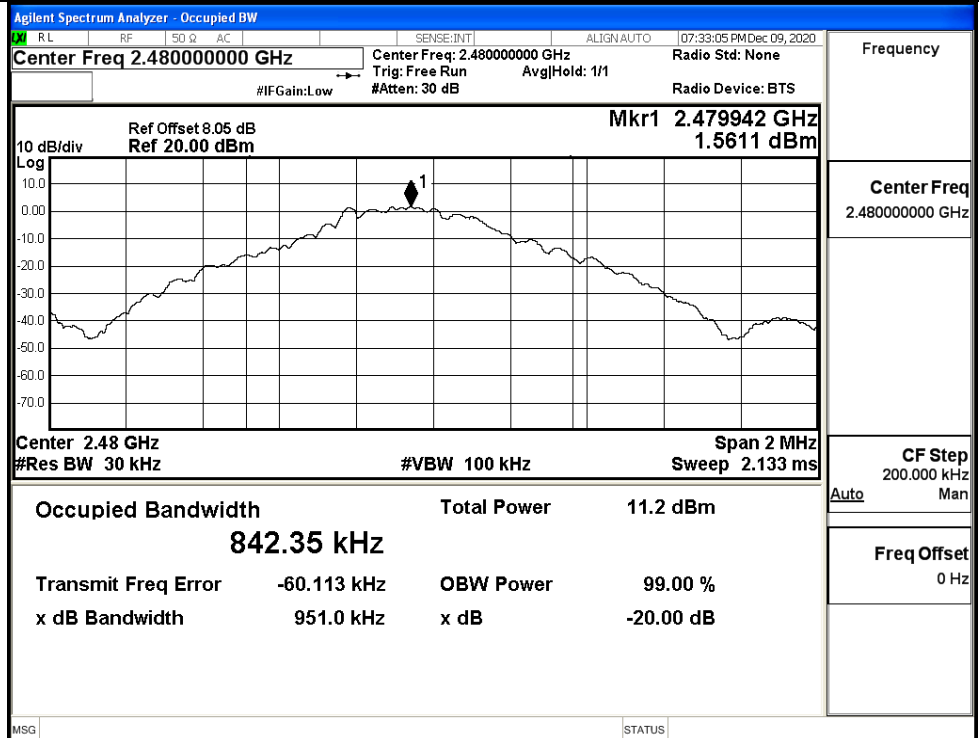
Test Graphs

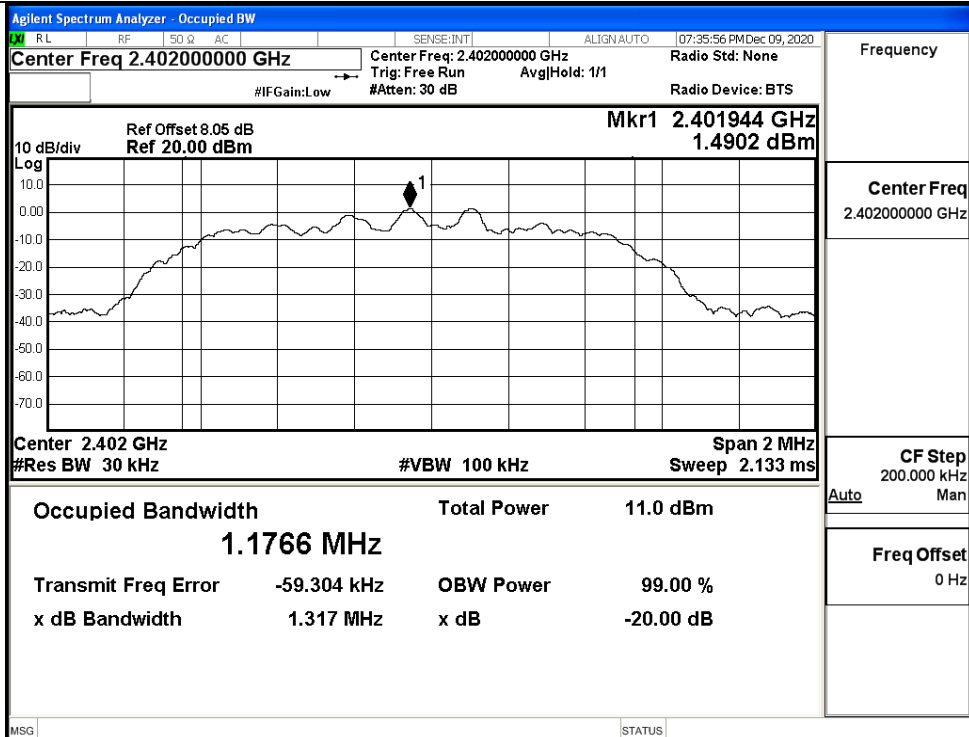


GFSK/MCH



GFSK/HCH

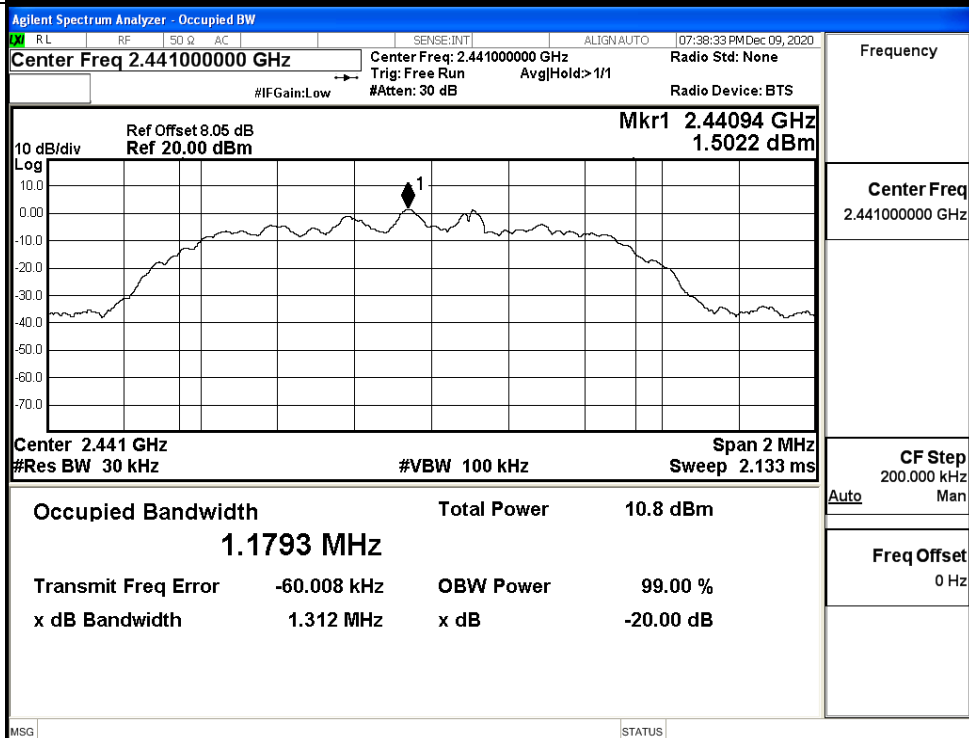


$\pi/4$ DQPSK/LCH

Frequency

Center Freq
2.40200000 GHzCF Step
200.000 kHz
Man

Auto

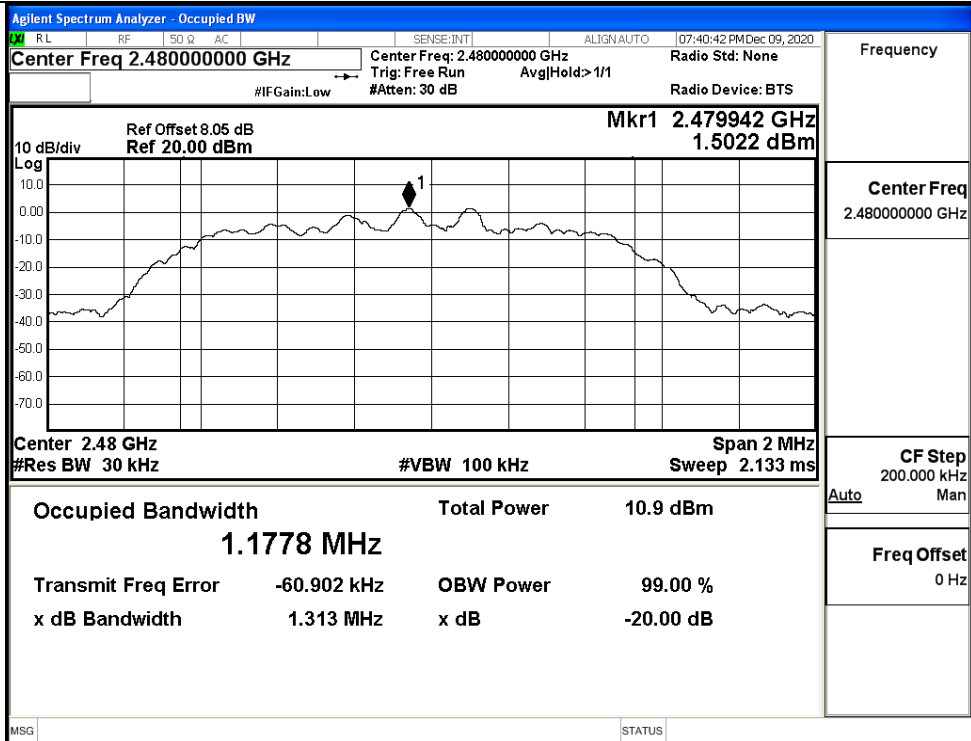
Freq Offset
0 Hz $\pi/4$ DQPSK/MCH

Frequency

Center Freq
2.44100000 GHzCF Step
200.000 kHz
Man

Auto

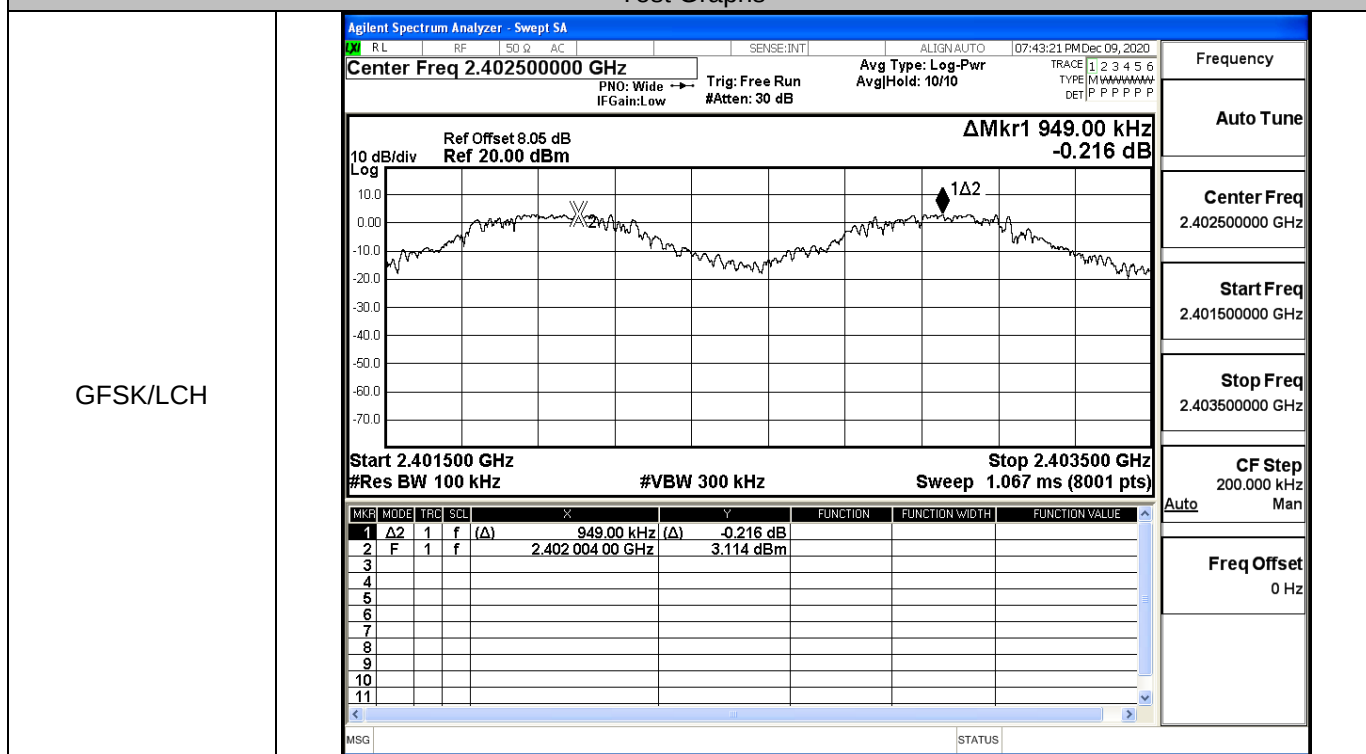
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH

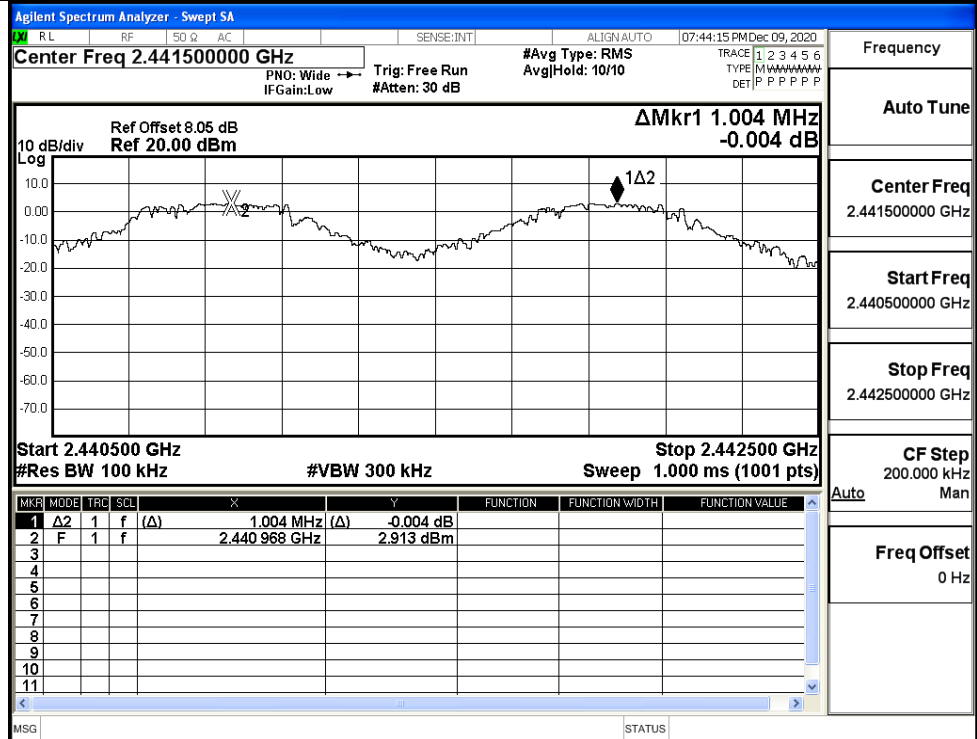
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.949	0.634	PASS
	MCH	1.004	0.634	PASS
	HCH	1.136	0.634	PASS
π /4DQPSK	LCH	0.998	0.878	PASS
	MCH	0.962	0.878	PASS
	HCH	1.012	0.878	PASS

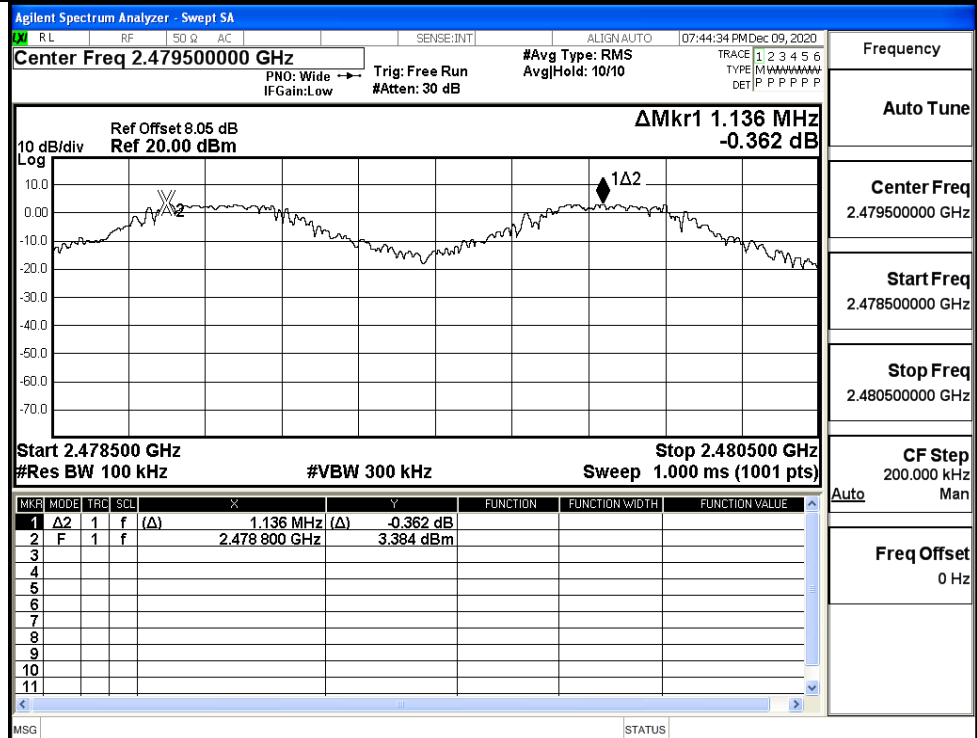
Test Graphs

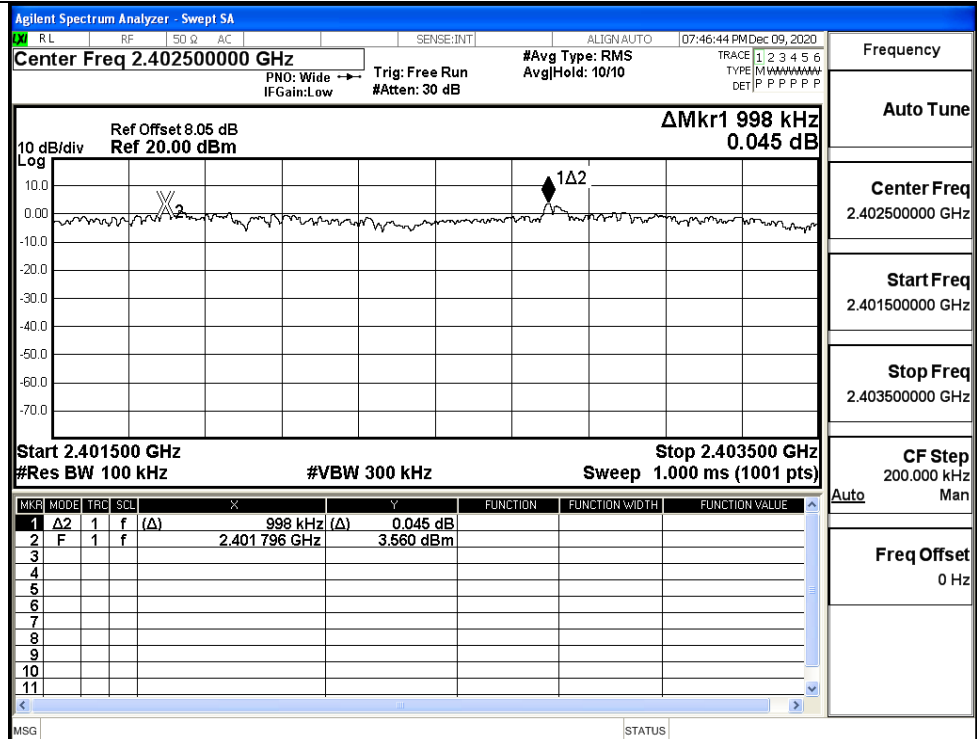
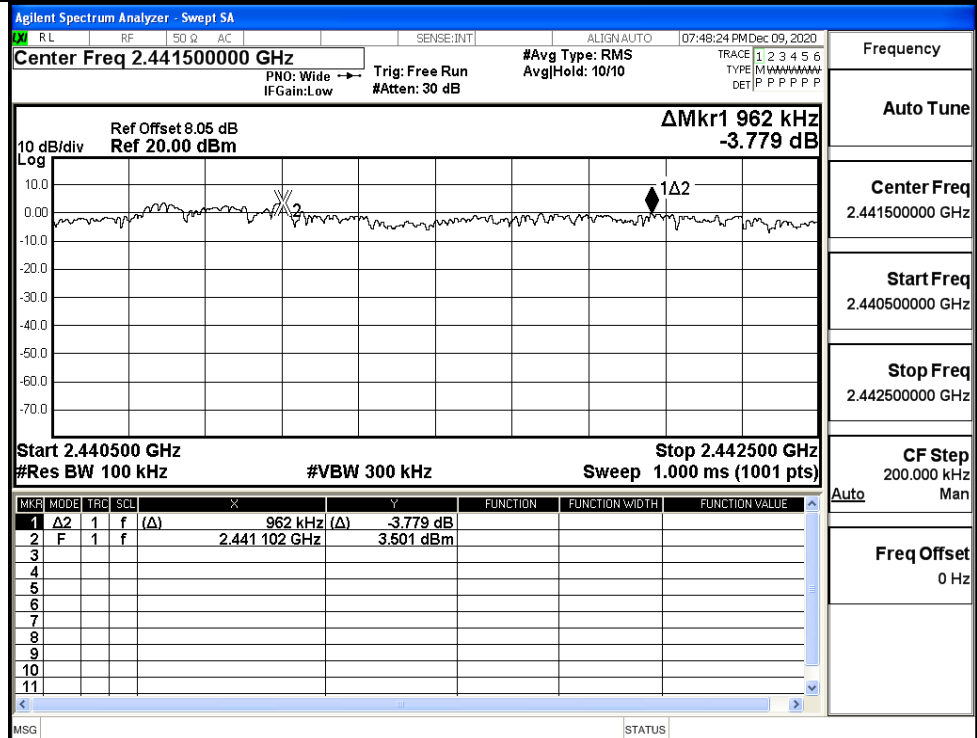


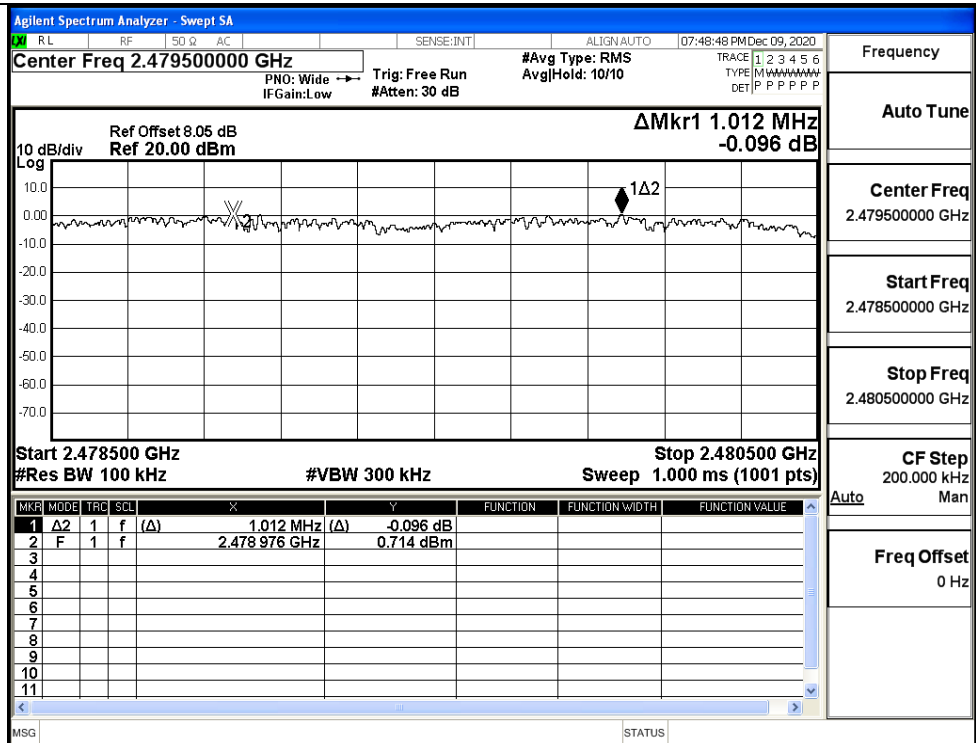
GFSK/MCH



GFSK/HCH



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

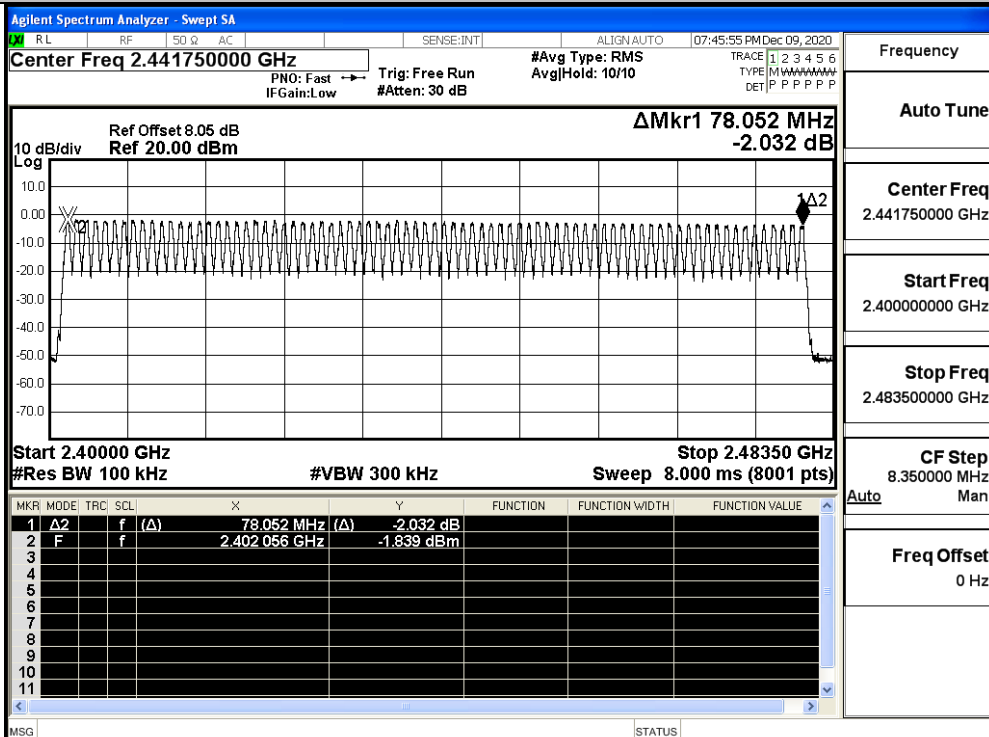
$\pi/4$ DQPSK/HCH

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

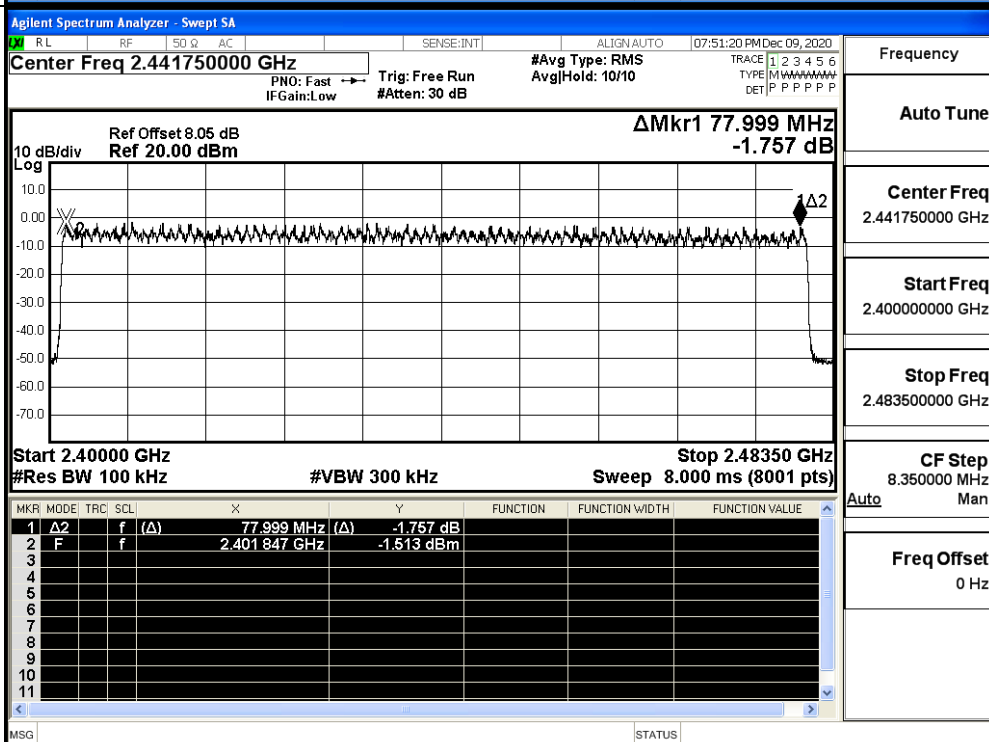
Test Graphs

GFSK/Hop



Frequency

Auto Tune

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

Frequency

Auto Tune

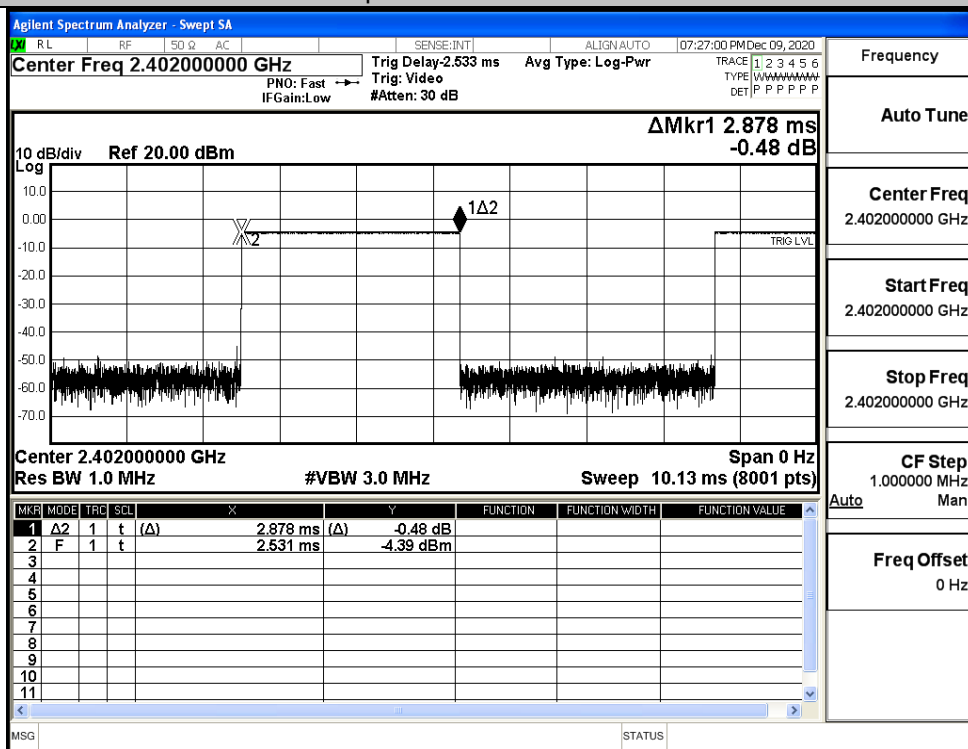
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
Auto ManFreq Offset
0 Hz

A.5 Dwell Time

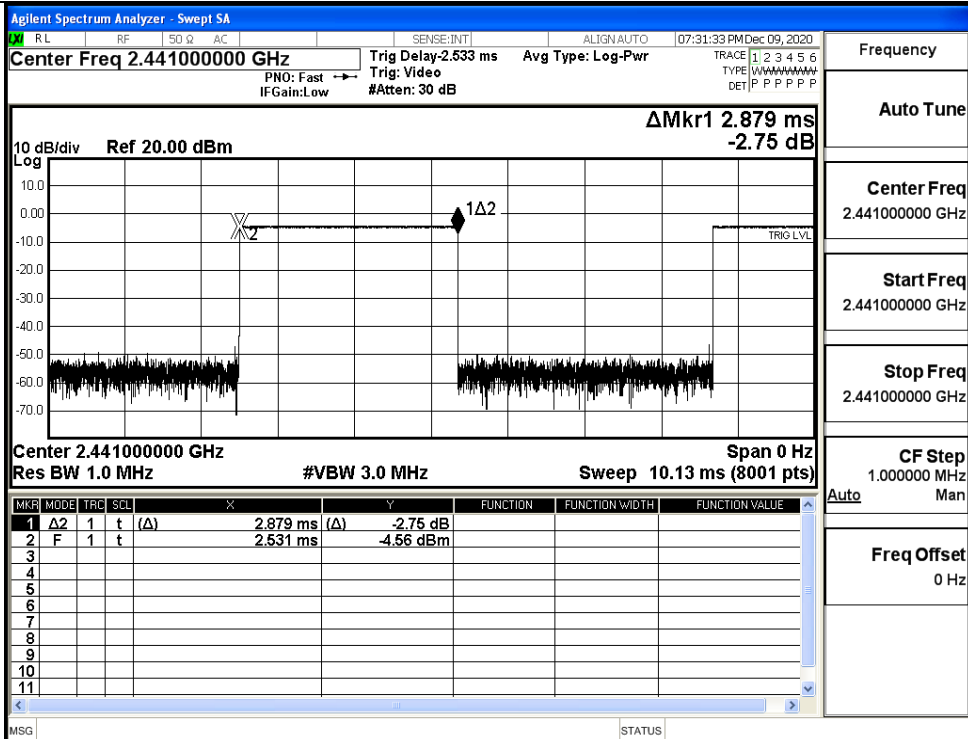
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.308	0.4	PASS
	2DH5	MCH	2.88	106.7	0.308	0.4	PASS
	2DH5	HCH	2.88	106.7	0.308	0.4	PASS

Test Graphs

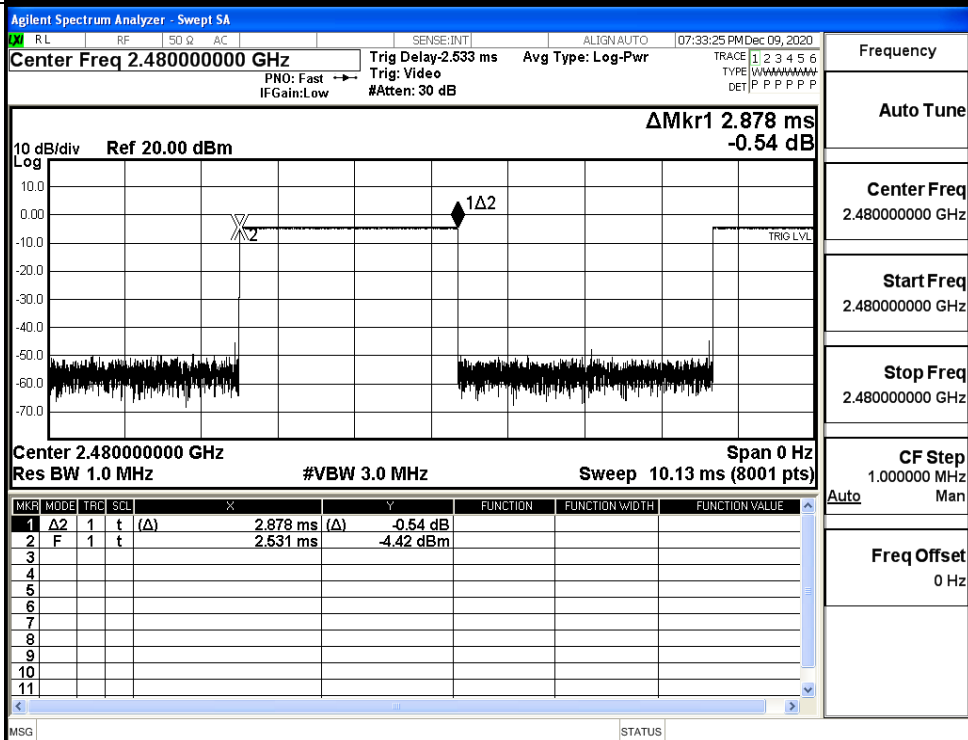
GFSK_DH5/LCH



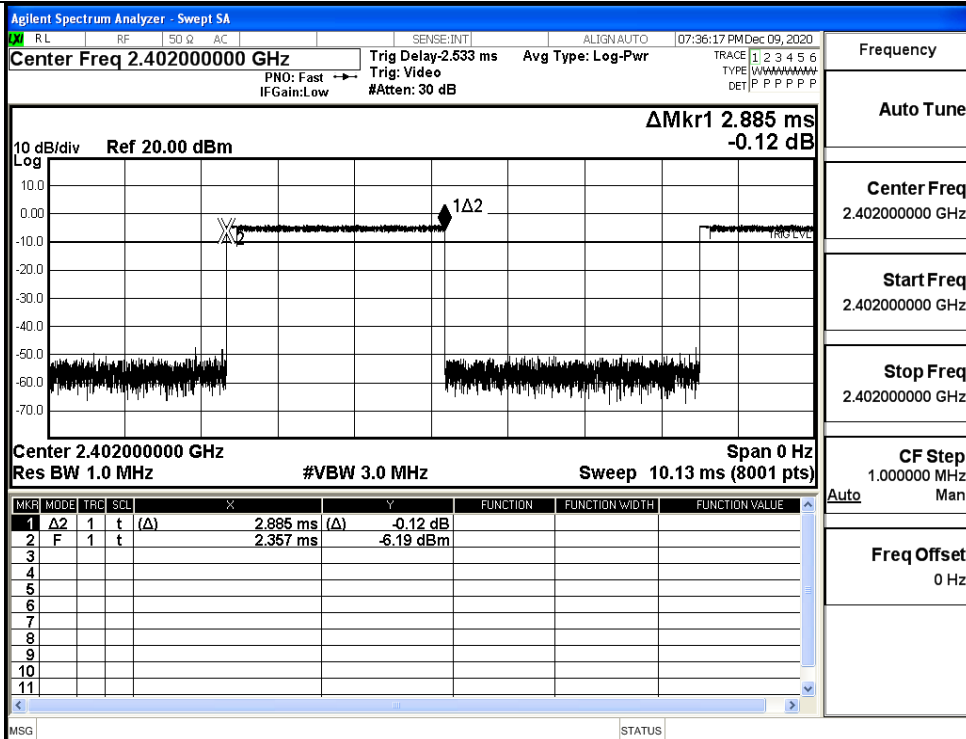
GFSK_DH5/MCH



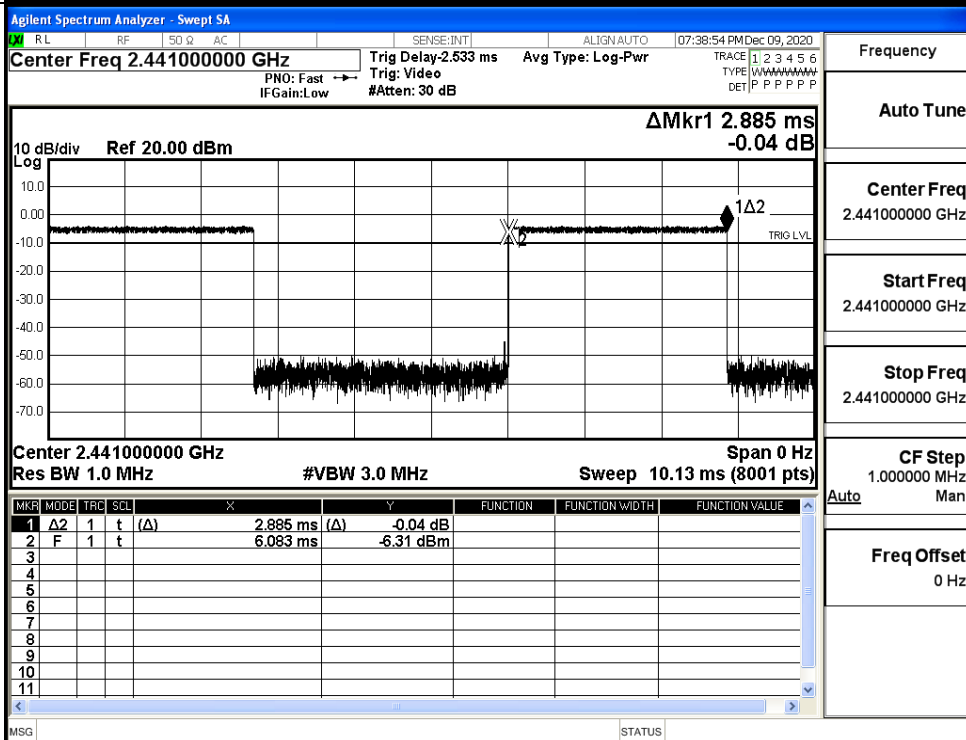
GFSK_DH5/HCH



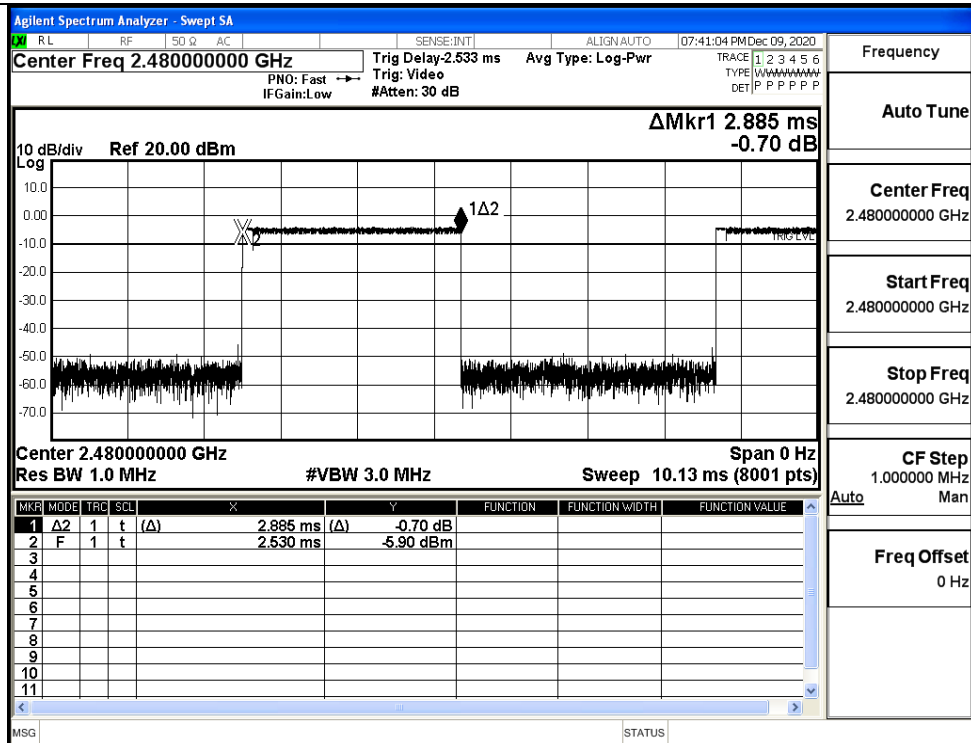
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



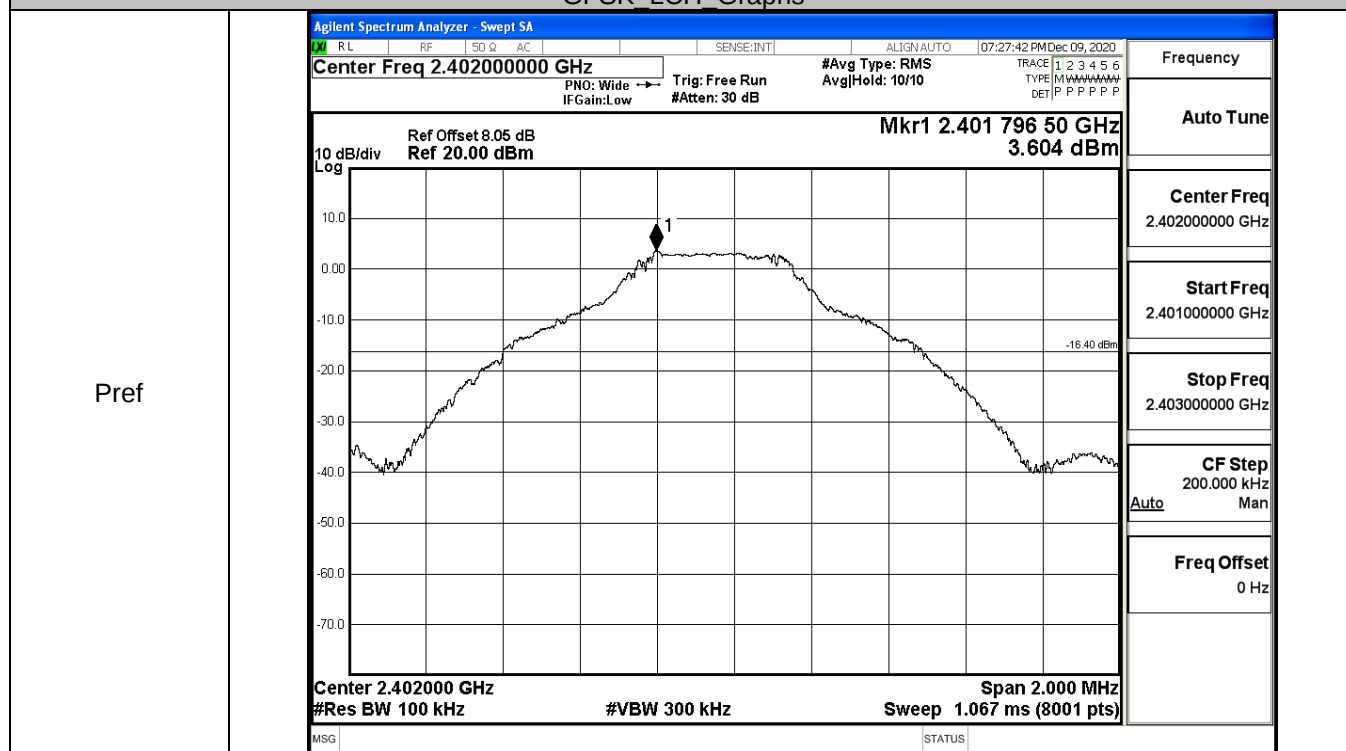
π/4DQPSK
_2DH5/HCH



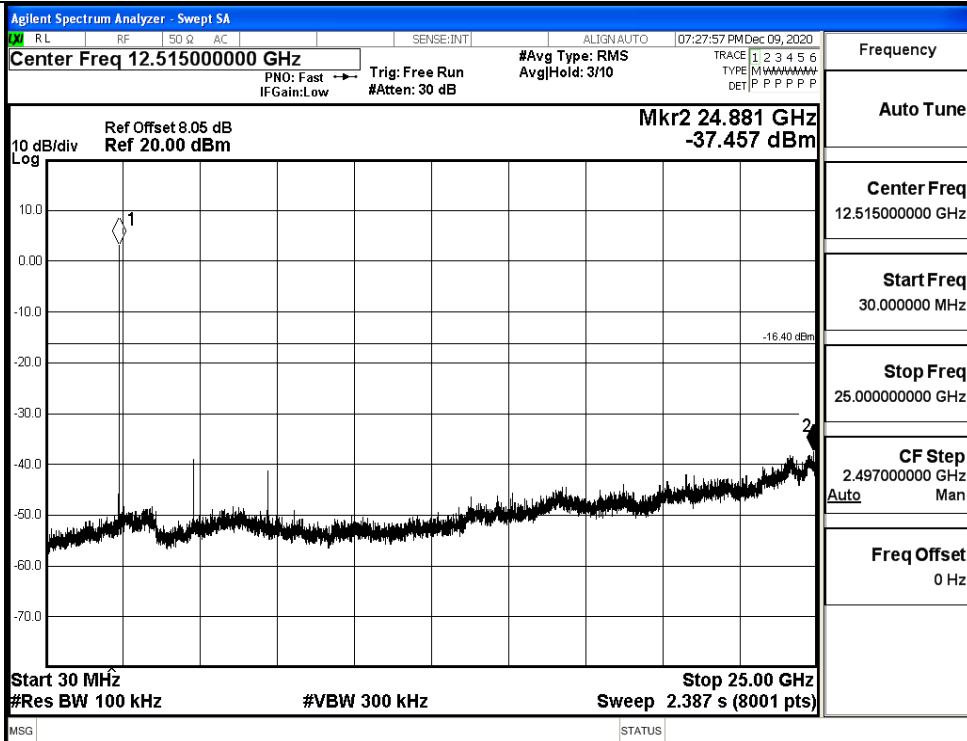
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.604	-37.457	-16.396	PASS
	MCH	3.339	-37.817	-16.661	PASS
	HCH	3.131	-38.120	-16.869	PASS
$\pi/4$ DQPSK	LCH	3.648	-37.596	-16.352	PASS
	MCH	3.606	-38.144	-16.394	PASS
	HCH	3.61	-38.163	-16.390	PASS

GFSK LCH Graphs

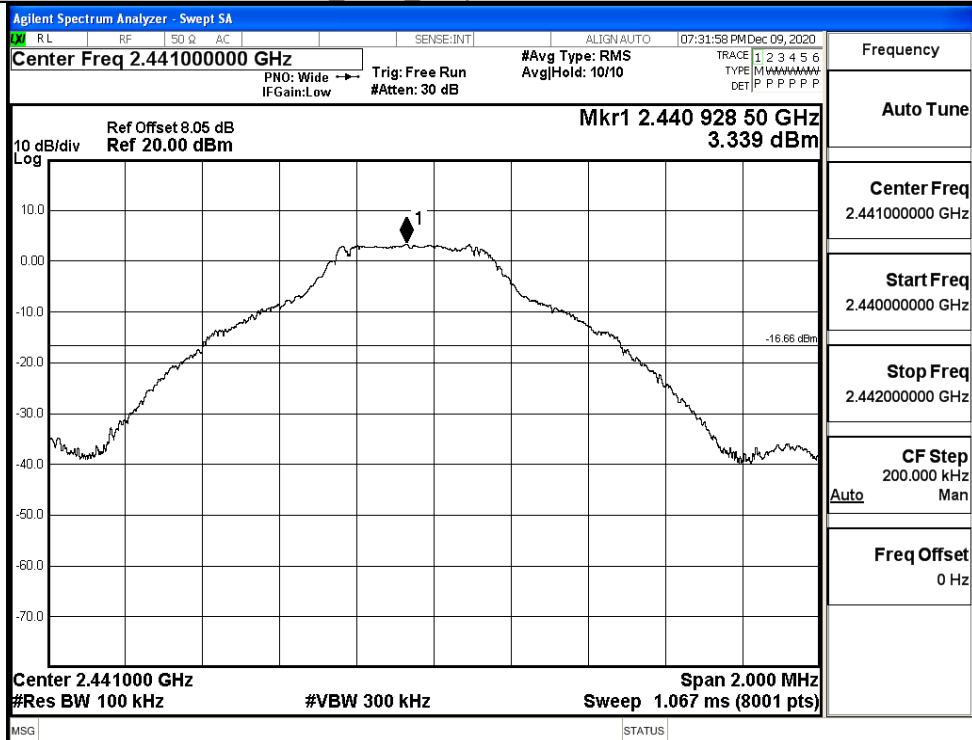


Puw

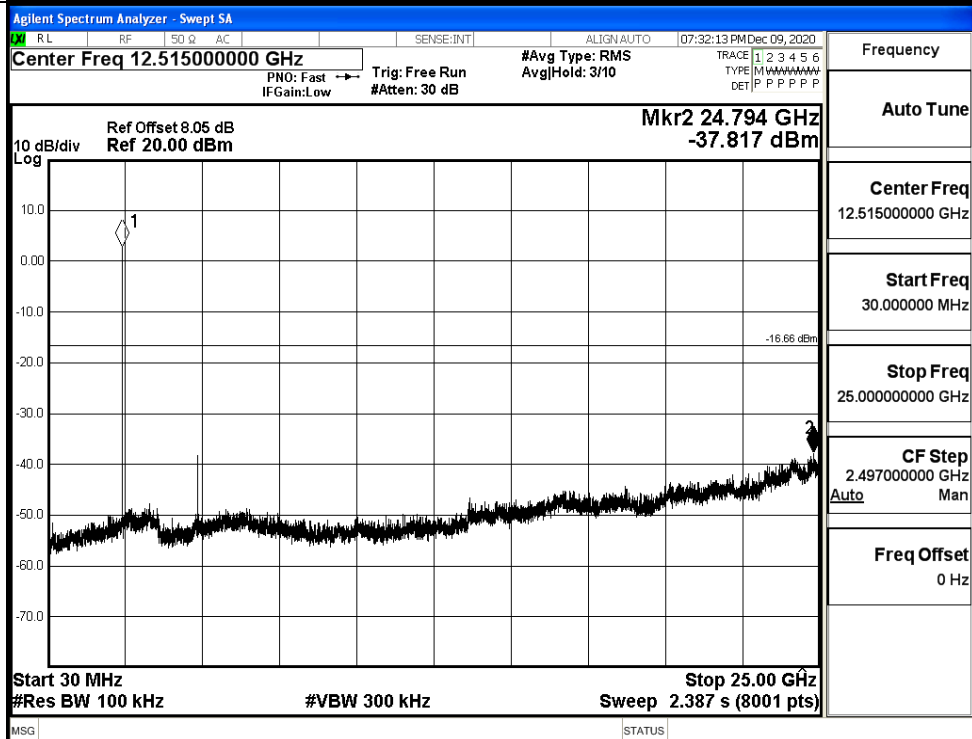


GFSK_MCH_Graphs

Pref

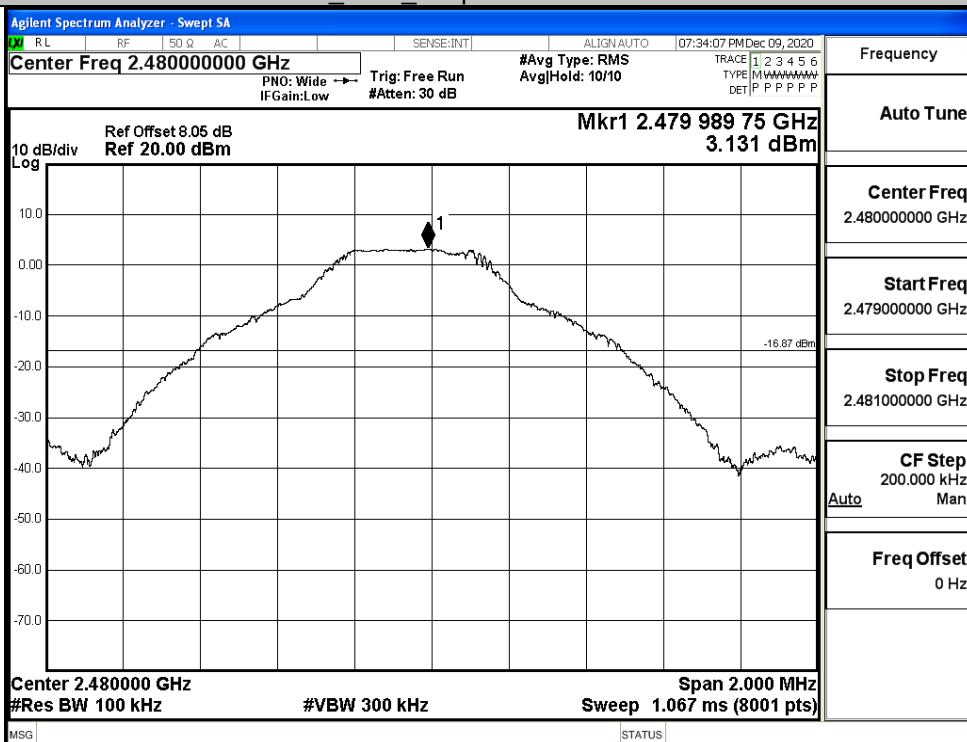


Puw

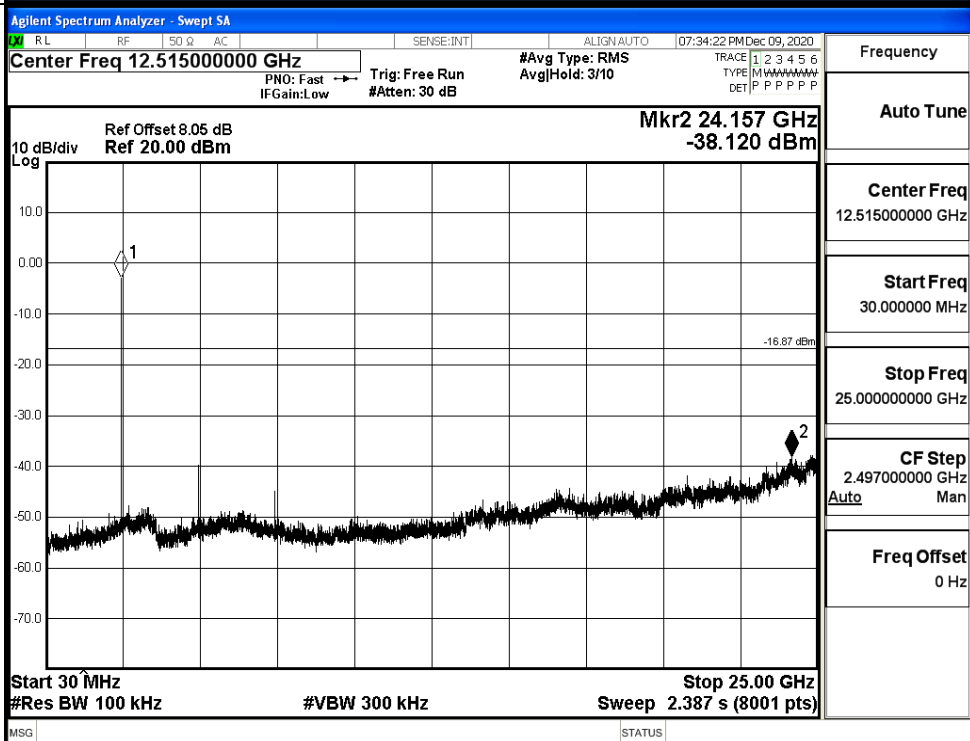


GFSK HCH Graphs

Pref

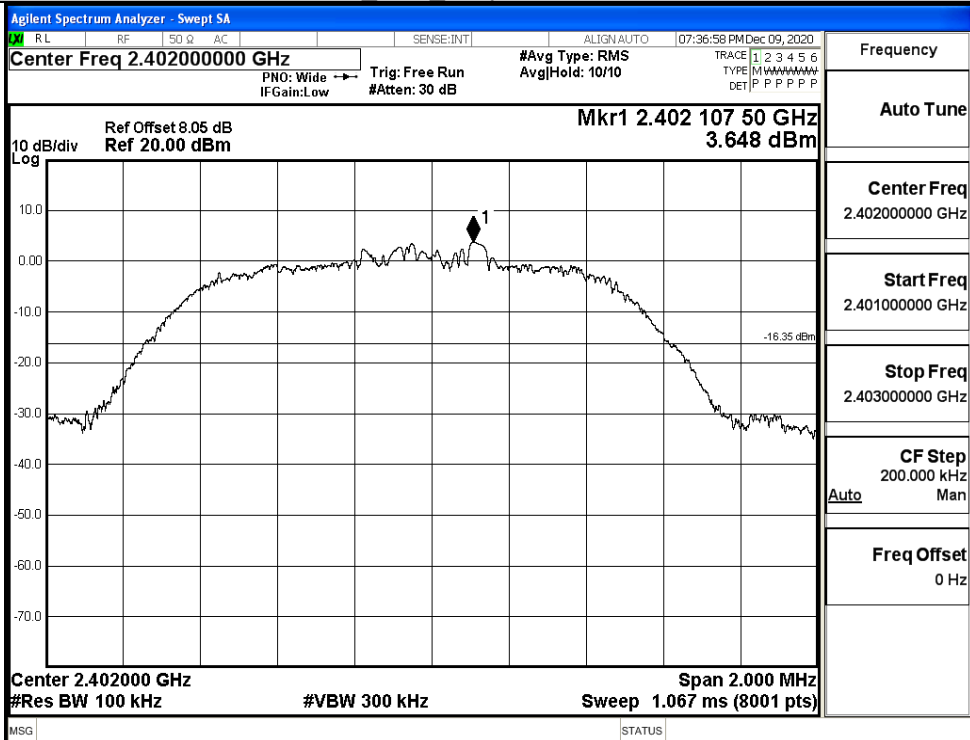


Puw

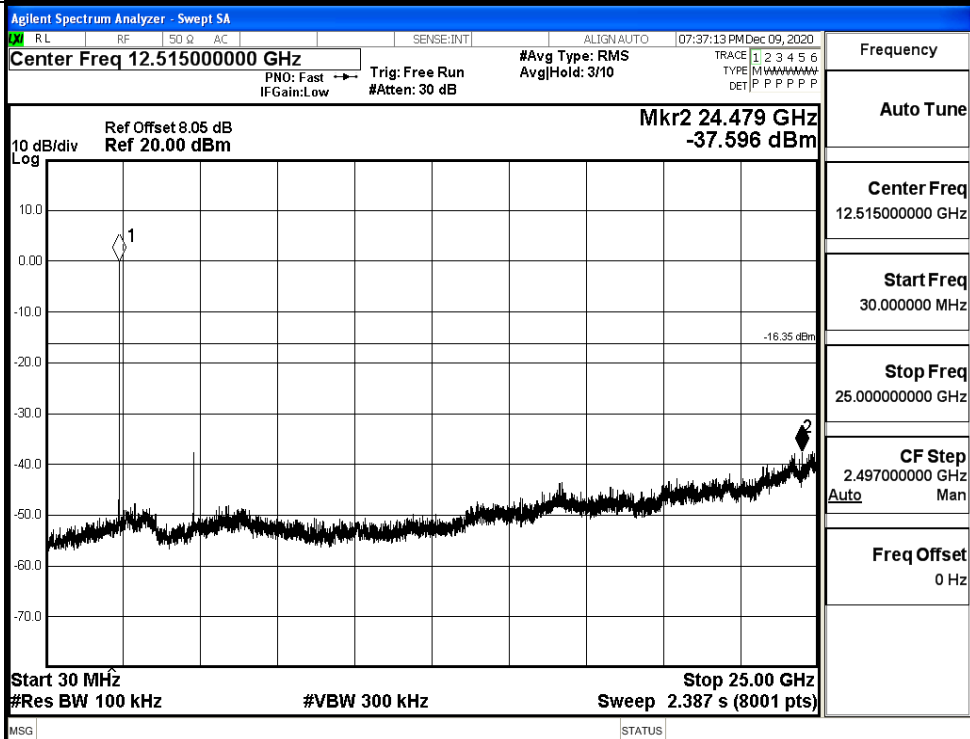


$\pi/4$ DQPSK_LCH_Graphs

Pref

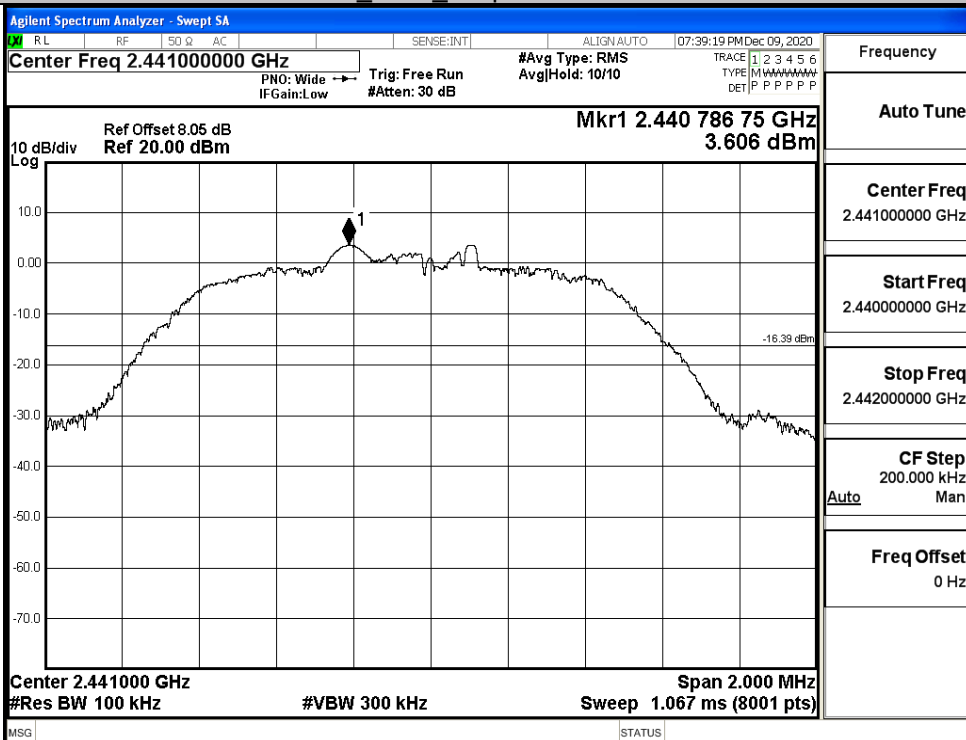


Puw

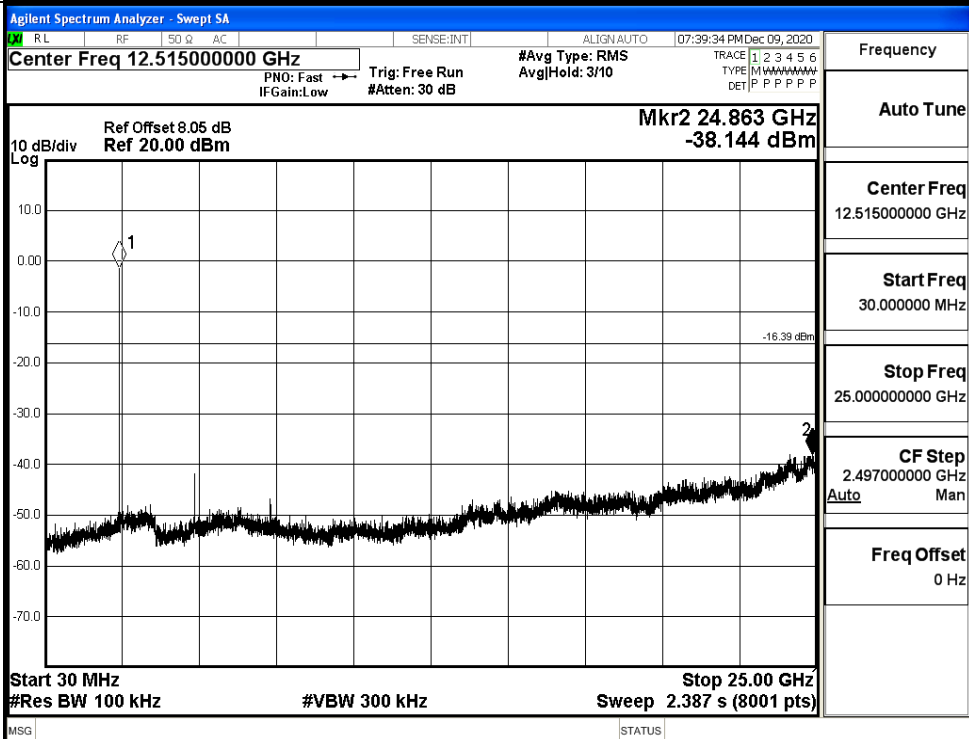


π /4DQPSK_MCH_Graphs

Pref

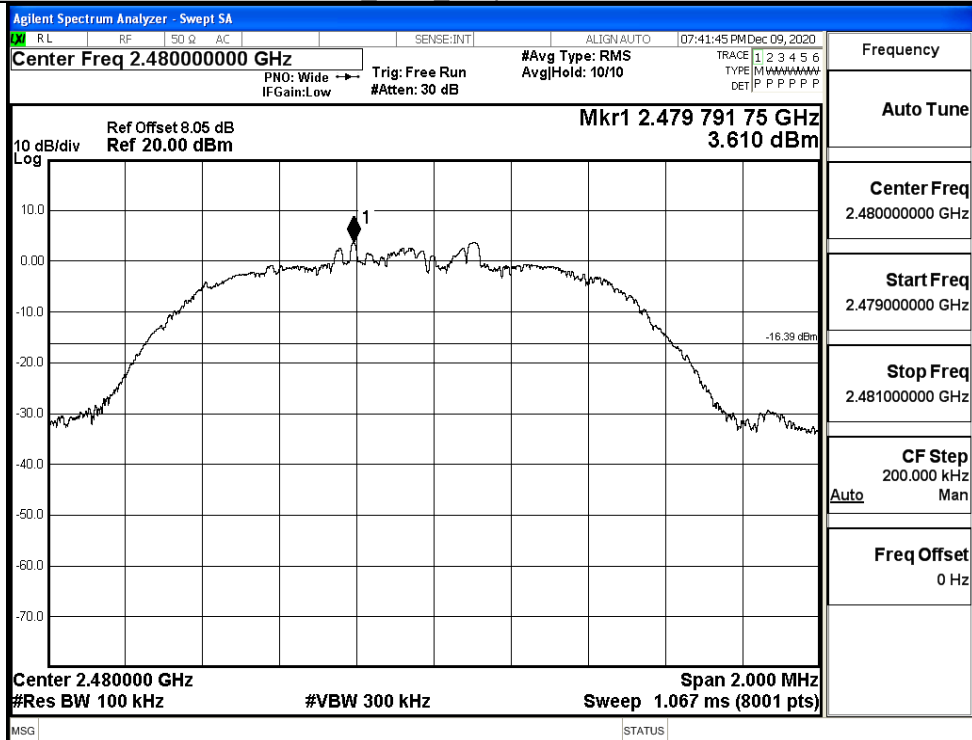


Puw

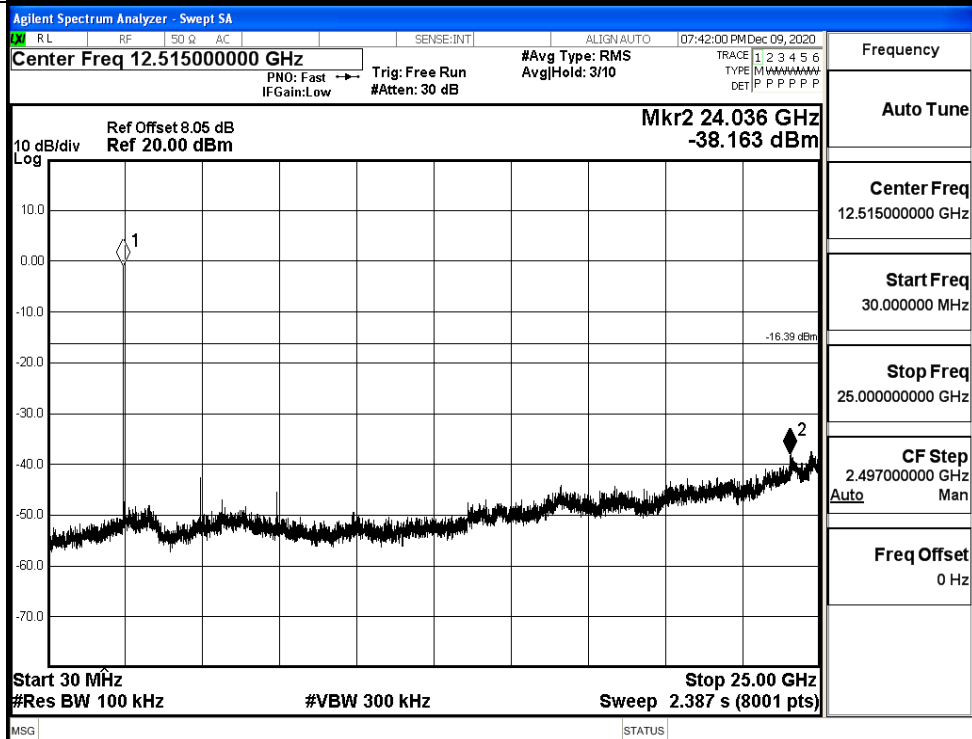


π /4DQPSK_HCH_Graphs

Pref



Puw

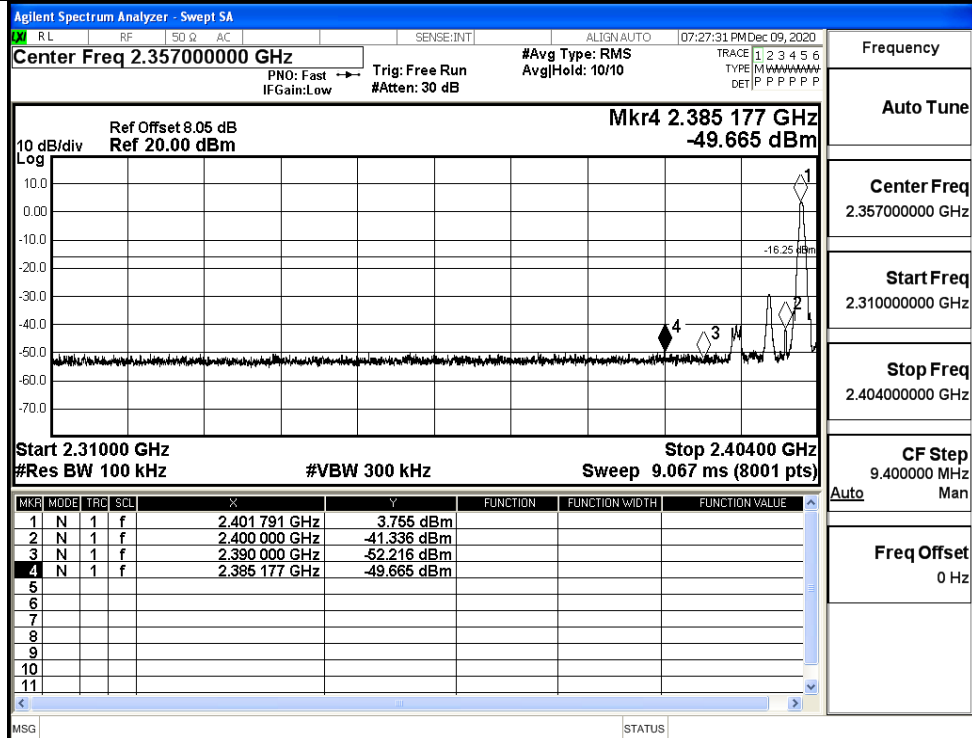


A.7 Band-edge for RF Conducted Emissions

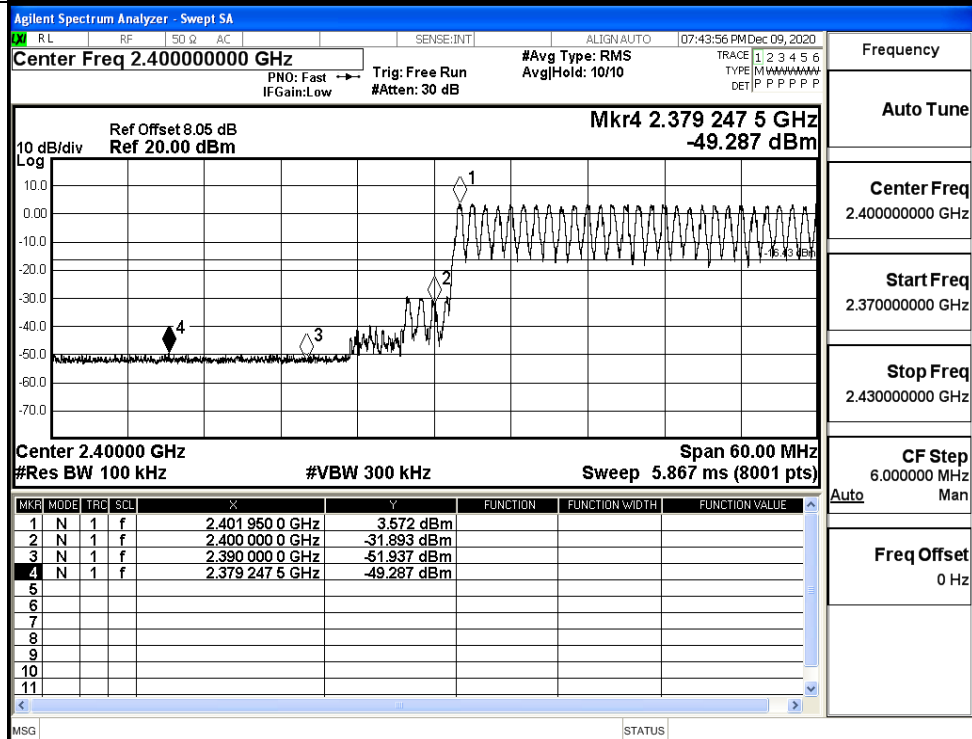
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	3.755	Off	-49.665	-16.25	PASS
			3.572	On	-49.287	-16.43	PASS
	HCH	2480	3.751	Off	-41.299	-16.25	PASS
			3.382	On	-44.288	-16.62	PASS
$\pi/4$ DQPSK	LCH	2402	1.068	Off	-49.546	-18.93	PASS
			3.635	On	-48.923	-16.37	PASS
	HCH	2480	1.068	Off	-43.820	-18.93	PASS
			3.590	On	-45.285	-16.41	PASS

Test Graphs

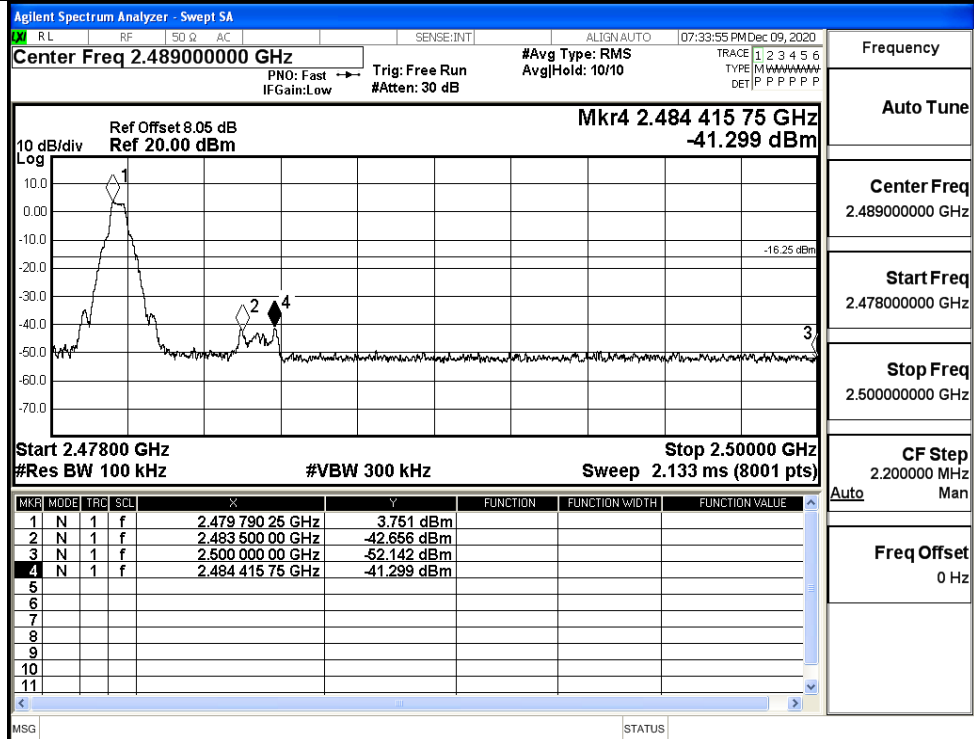
GFSK/LCH/No Hop



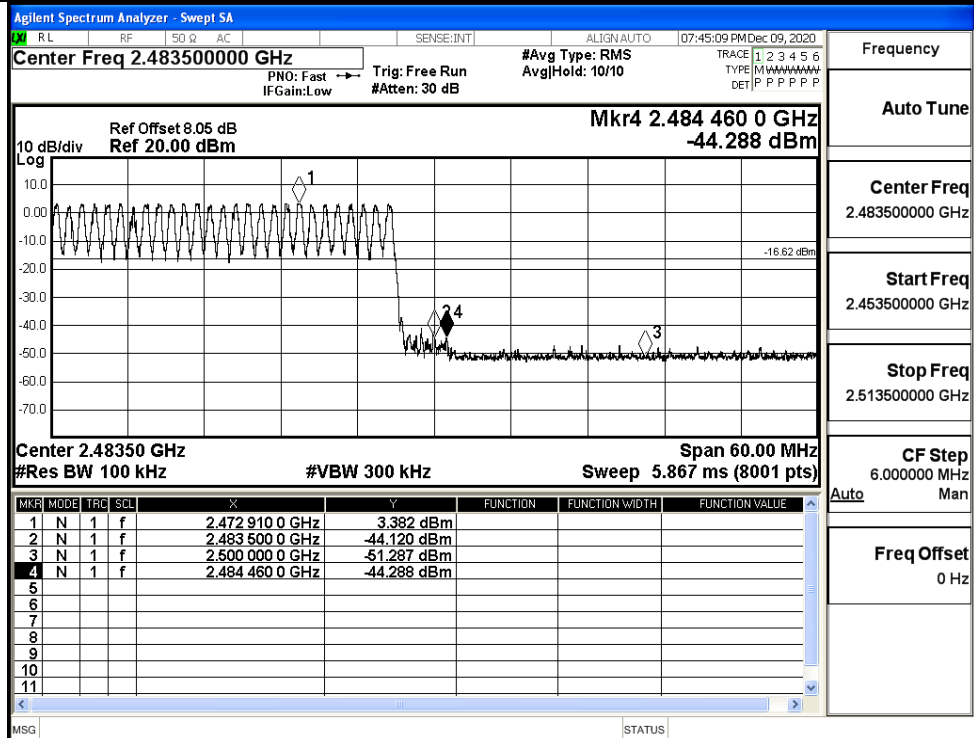
GFSK/LCH/Hop



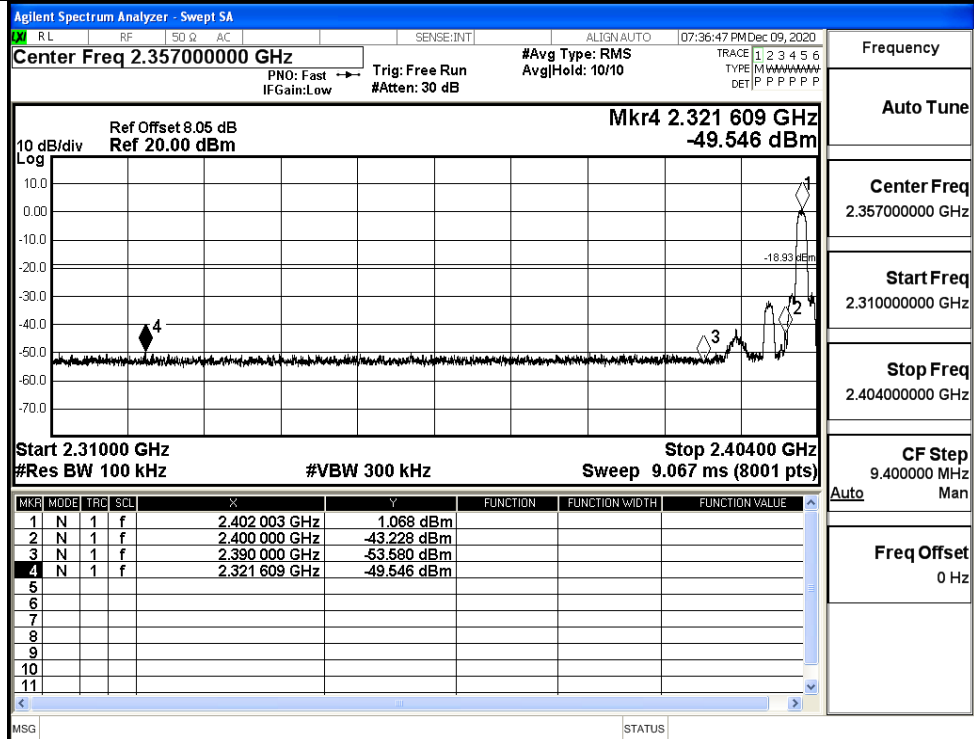
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

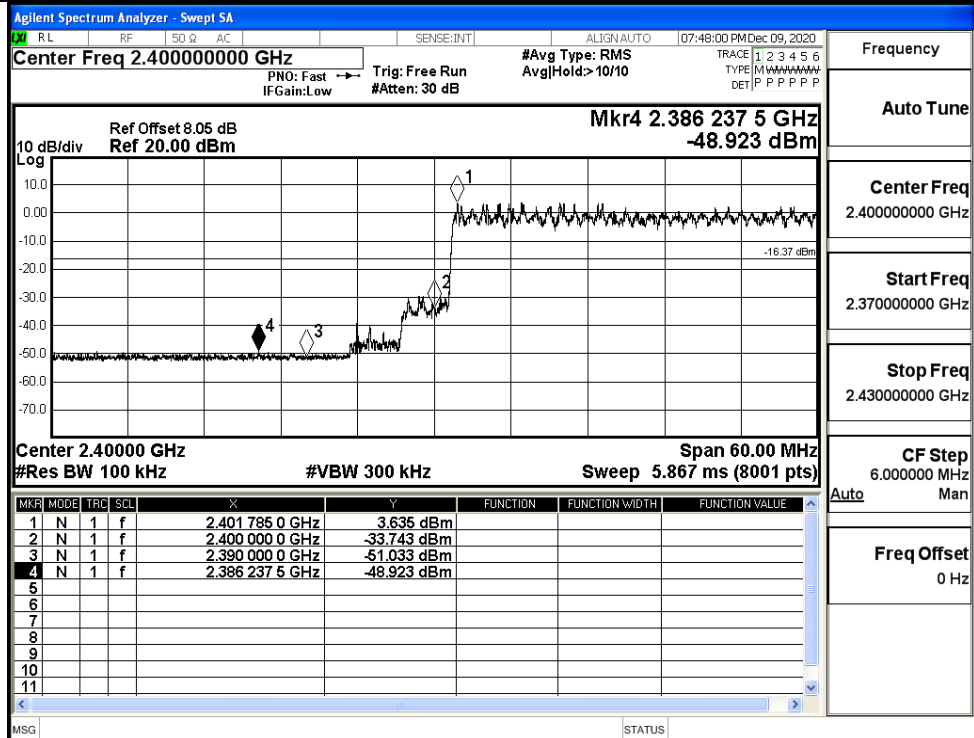
Start Freq
2.310000000 GHz

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

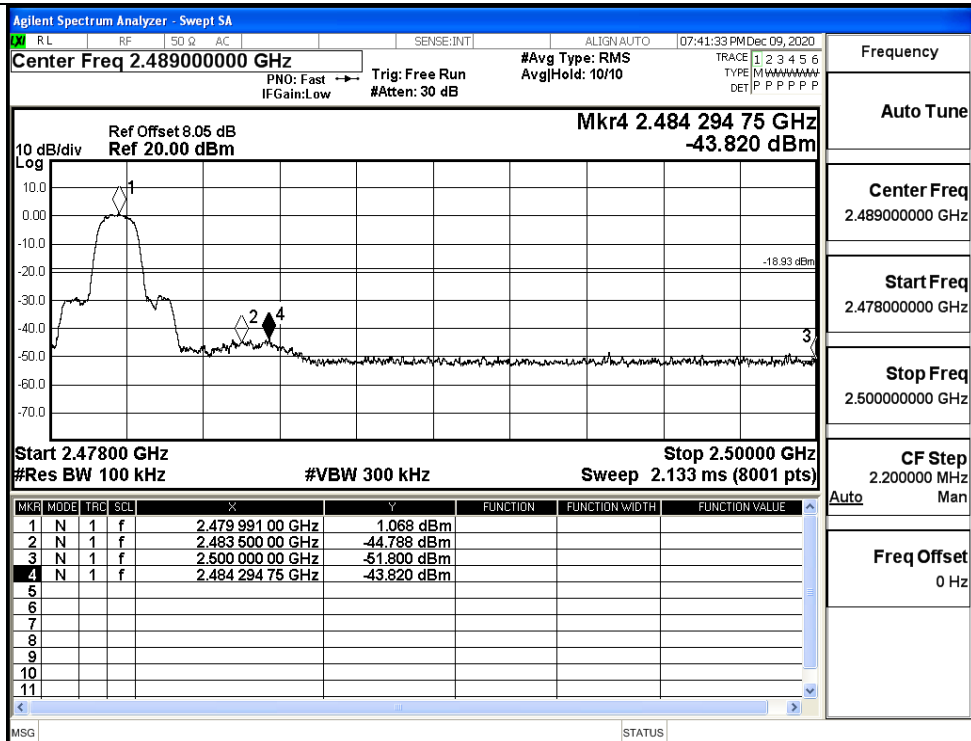
Start Freq
2.370000000 GHz

Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

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

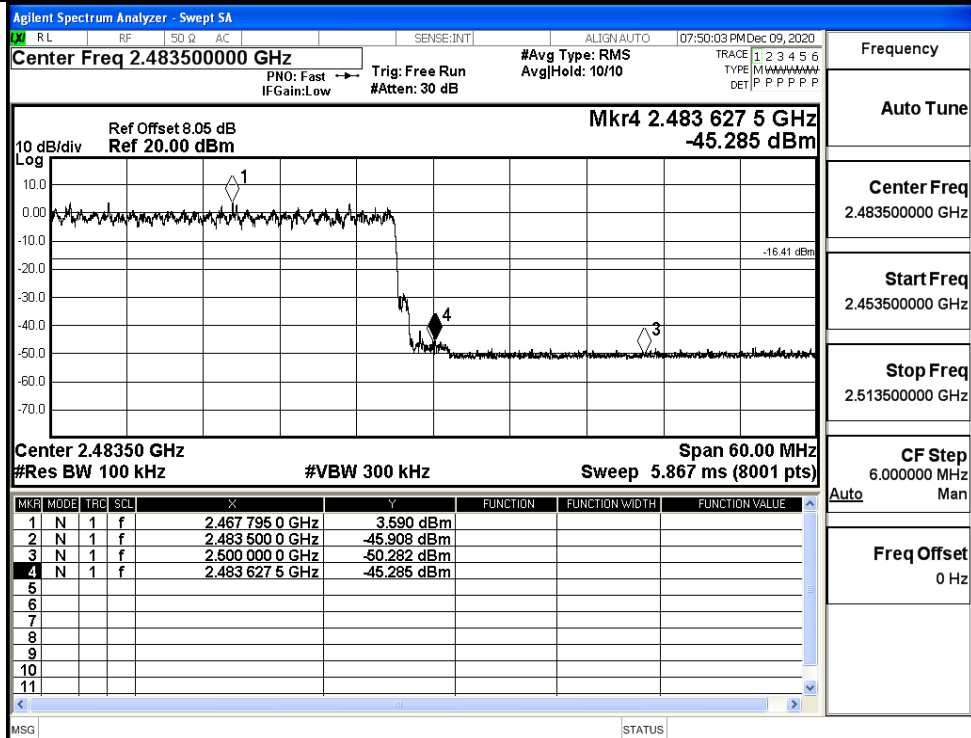


Frequency

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

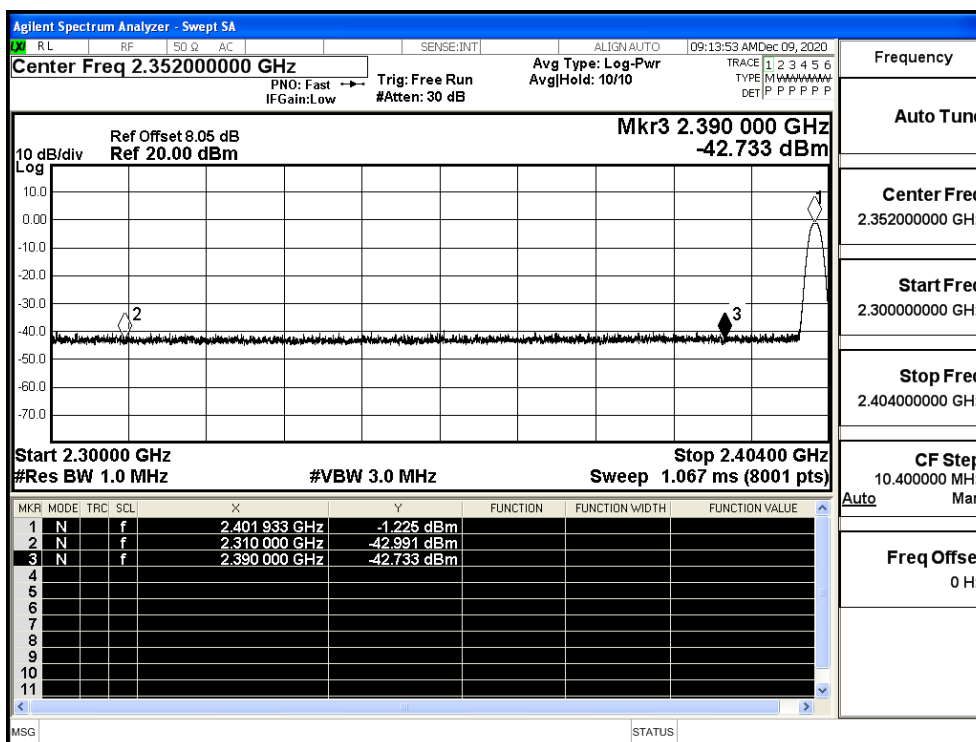
Auto Tune

Center Freq
2.483500000 GHzStart Freq
2.453500000 GHzStop Freq
2.513500000 GHzCF Step
6.000000 MHz
Auto ManFreq Offset
0 Hz

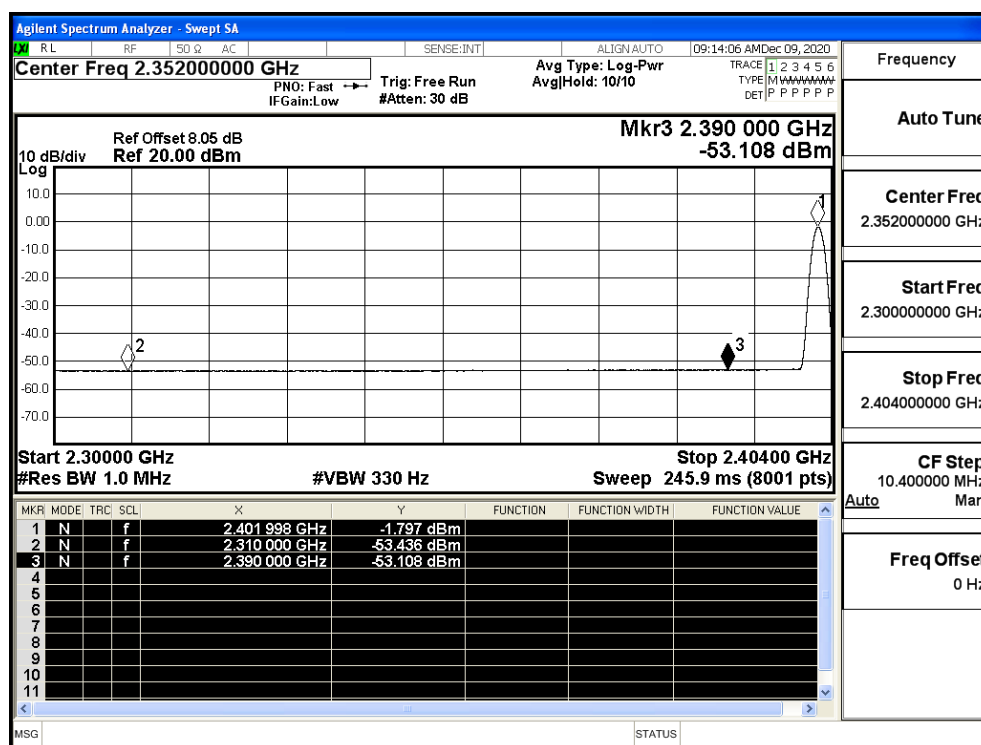
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.99	2.0	0	52.27	PEAK	74	PASS
	Off	2310.0	-53.44	2.0	0	41.82	AV	54	PASS
	Off	2390.0	-42.73	2.0	0	52.52	PEAK	74	PASS
	Off	2390.0	-53.11	2.0	0	42.15	AV	54	PASS
	Off	2483.5	-42.45	2.0	0	52.81	PEAK	74	PASS
	Off	2483.5	-52.56	2.0	0	42.70	AV	54	PASS
	Off	2500.0	-42.41	2.0	0	52.85	PEAK	74	PASS
	Off	2500.0	-52.40	2.0	0	42.86	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.66	2.0	0	52.60	PEAK	74	PASS
	Off	2310.0	-53.39	2.0	0	41.87	AV	54	PASS
	Off	2390.0	-43.36	2.0	0	51.90	PEAK	74	PASS
	Off	2390.0	-53.11	2.0	0	42.14	AV	54	PASS
	Off	2483.5	-42.73	2.0	0	52.53	PEAK	74	PASS
	Off	2483.5	-52.55	2.0	0	42.71	AV	54	PASS
	Off	2500.0	-43.95	2.0	0	51.31	PEAK	74	PASS
	Off	2500.0	-52.36	2.0	0	42.89	AV	54	PASS

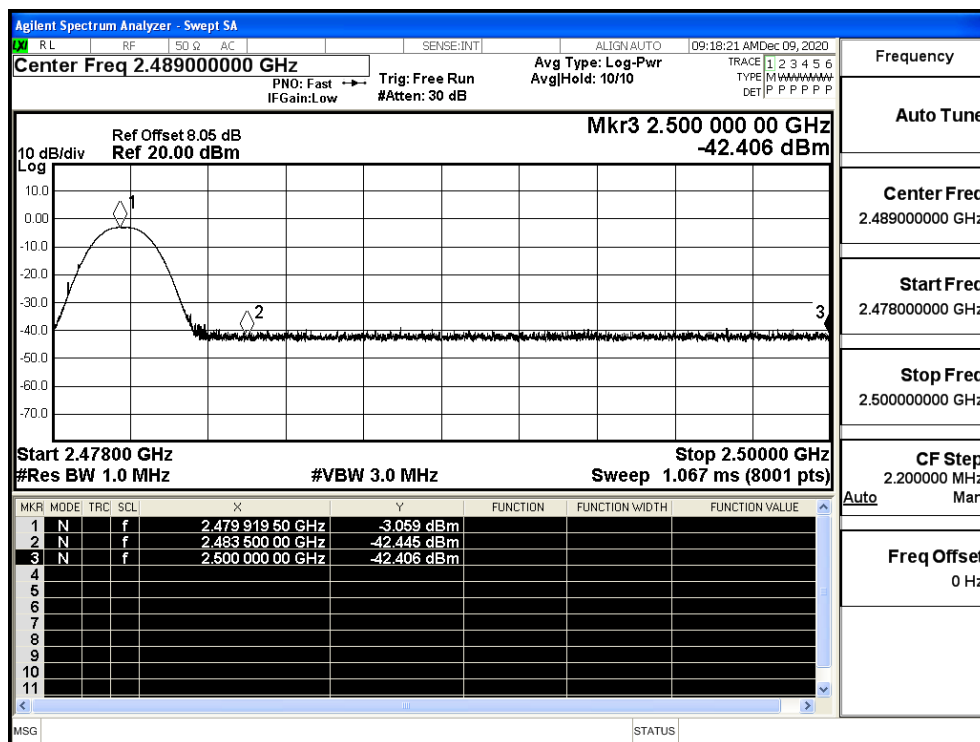
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



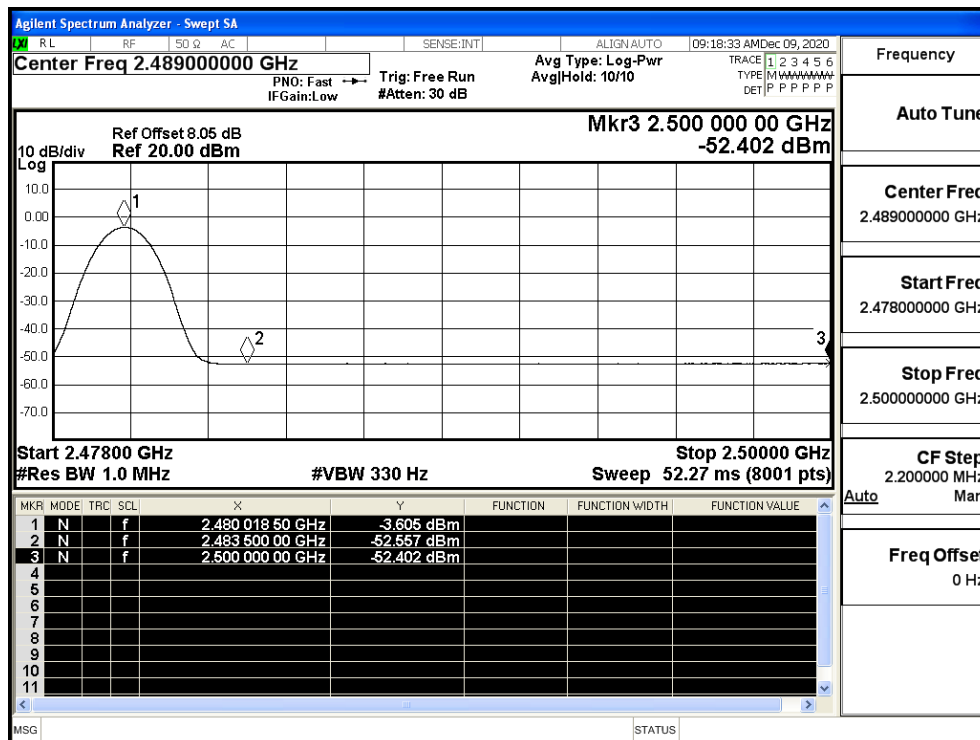
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)

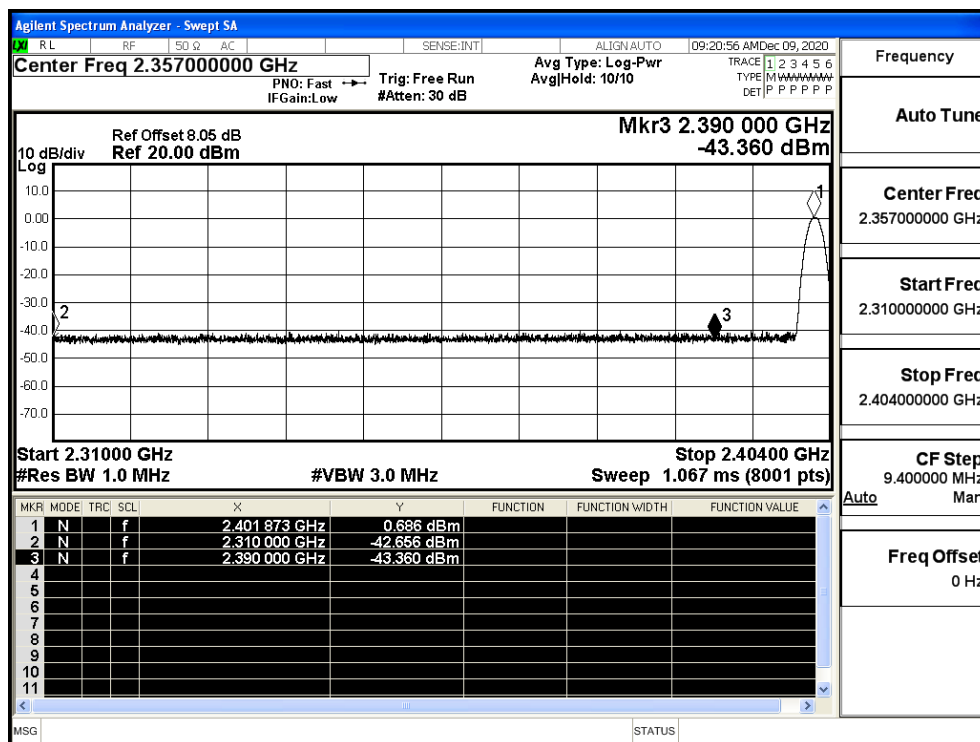
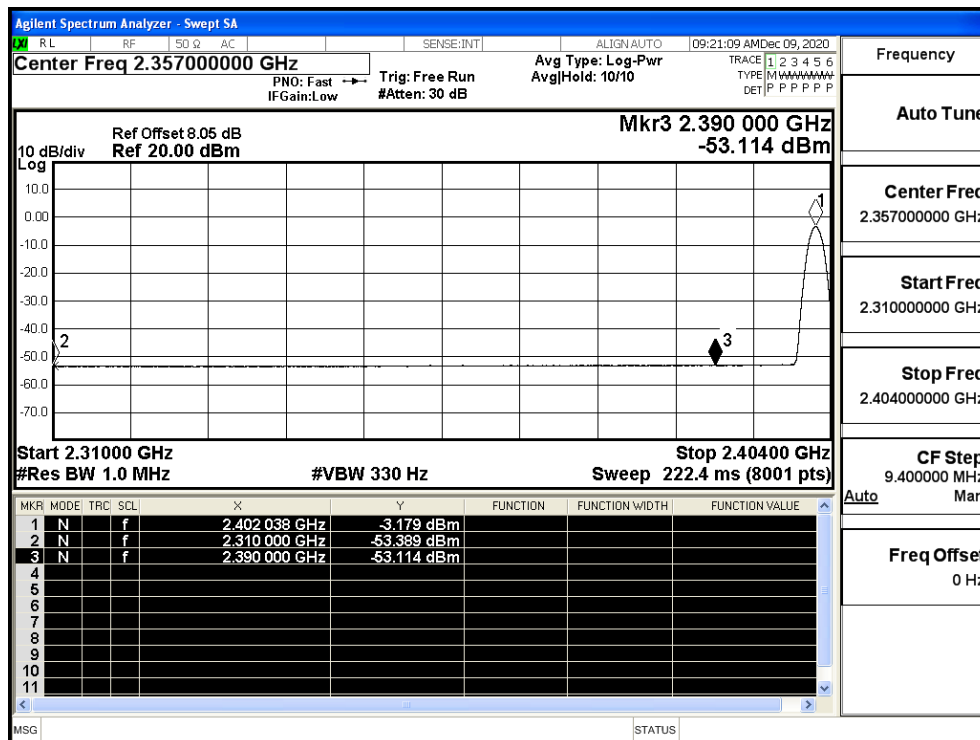


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

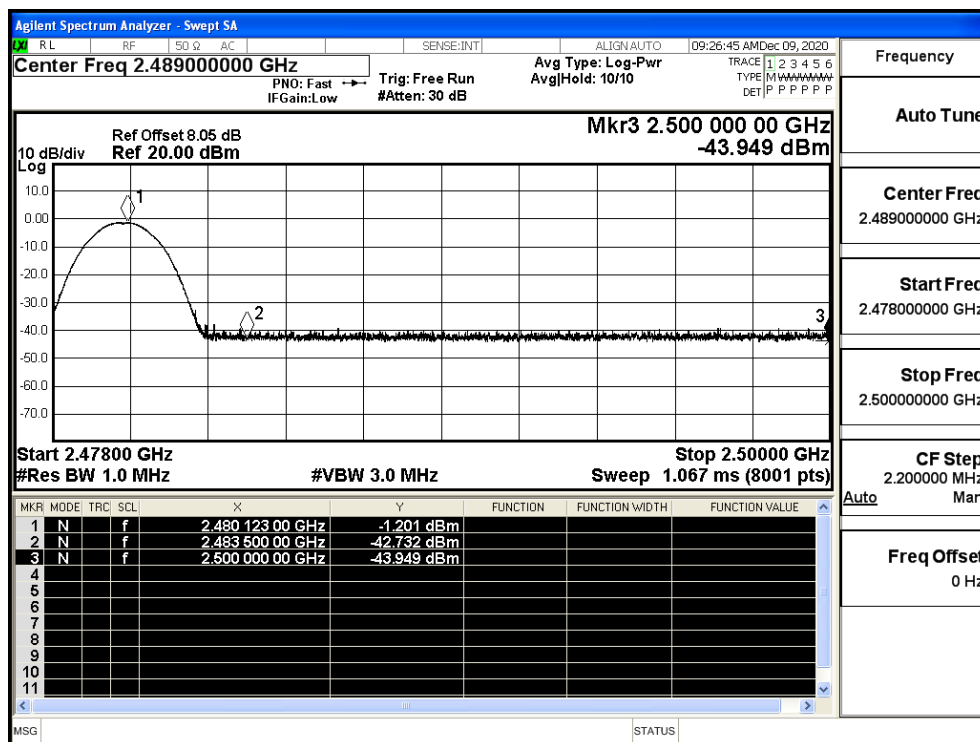


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

