

Appendix A

RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)

Product Name: Bluetooth speaker

Trade Mark: N/A

Test Model: SMARTCOM-323

Environmental Conditions

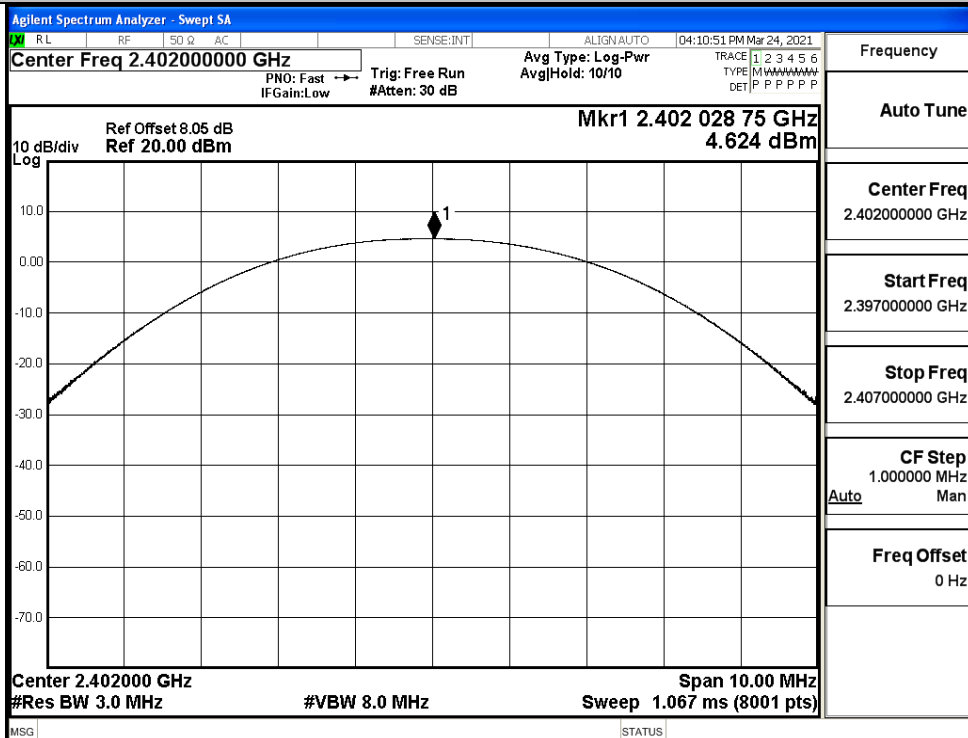
Temperature:	24.6° C
Relative Humidity:	54.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

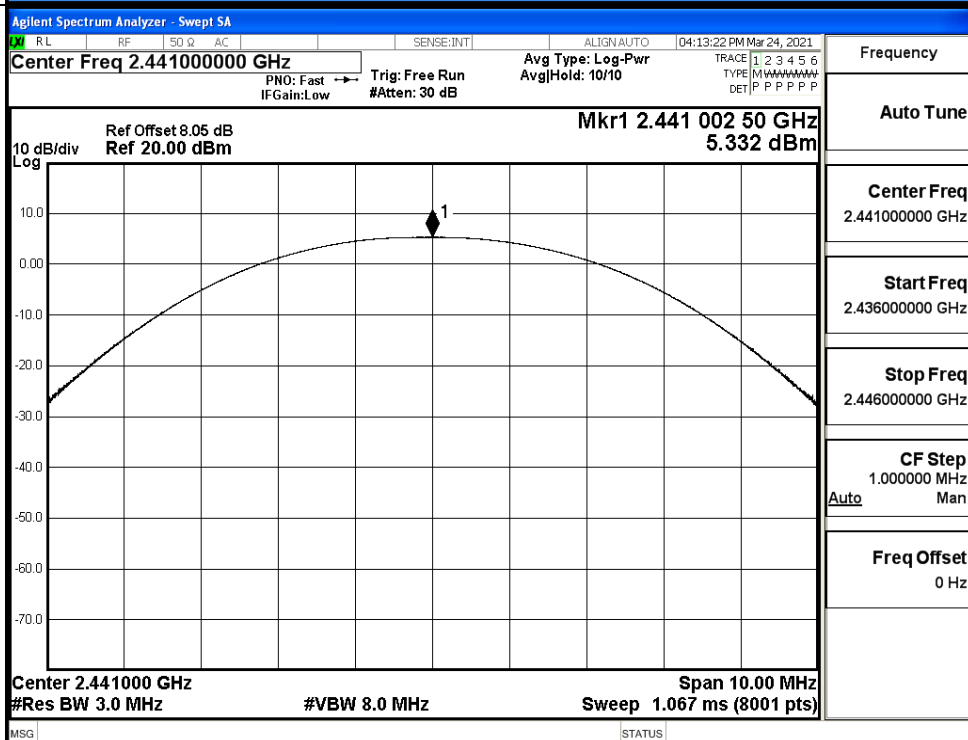
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.624	21	PASS
	MCH	5.332	21	PASS
	HCH	5.065	21	PASS
$\pi/4$ DQPSK	LCH	4.474	21	PASS
	MCH	5.123	21	PASS
	HCH	4.922	21	PASS

Test Graphs

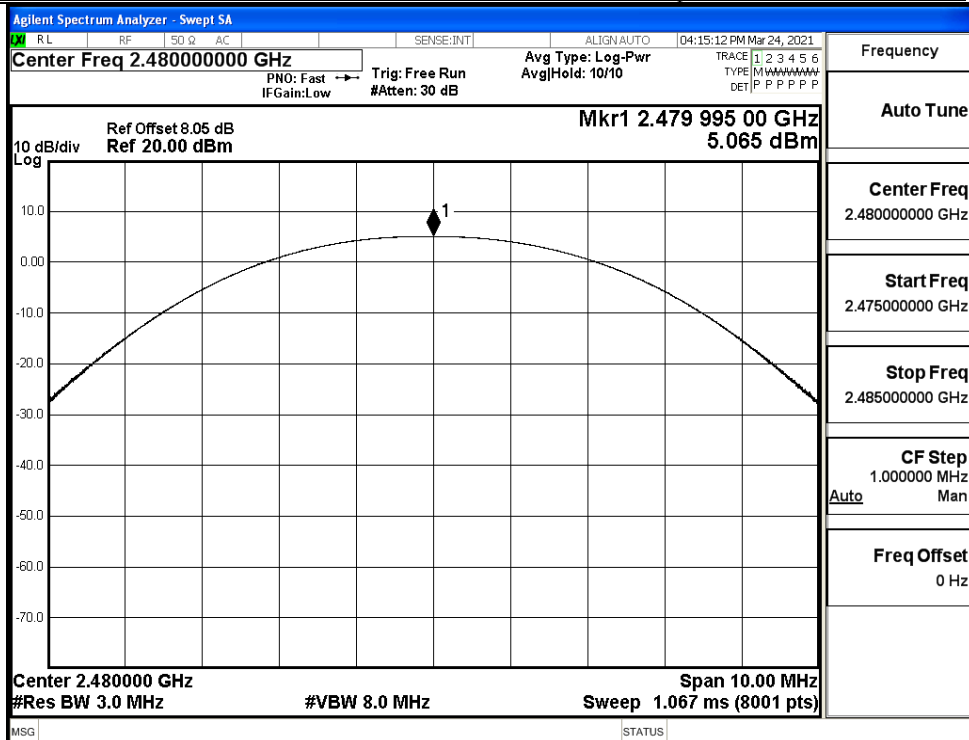
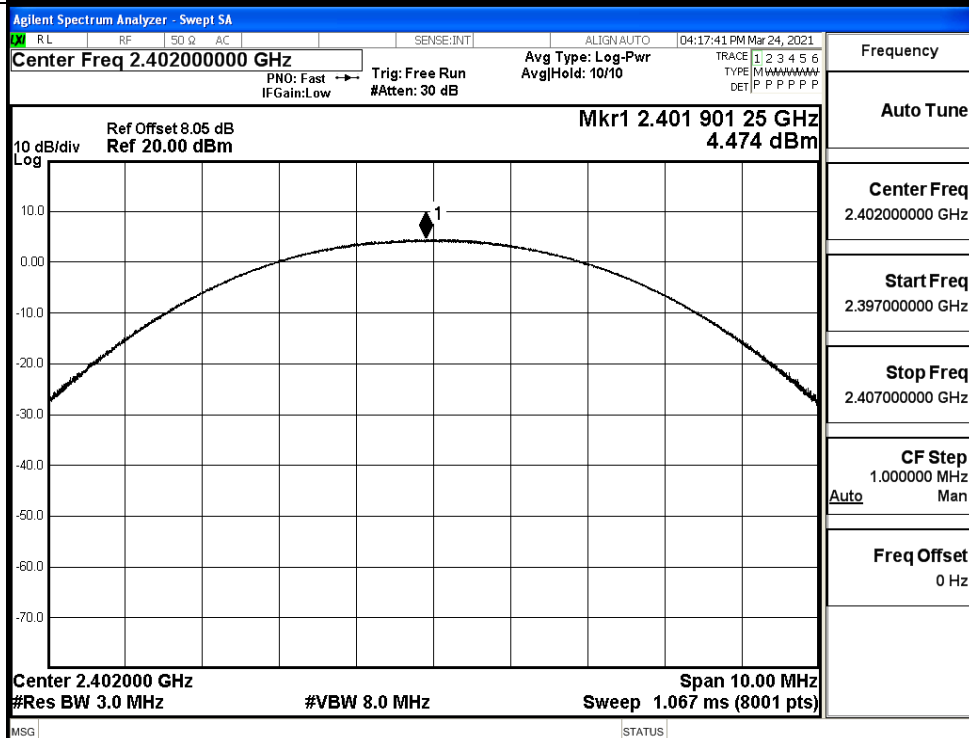
GFSK/LCH

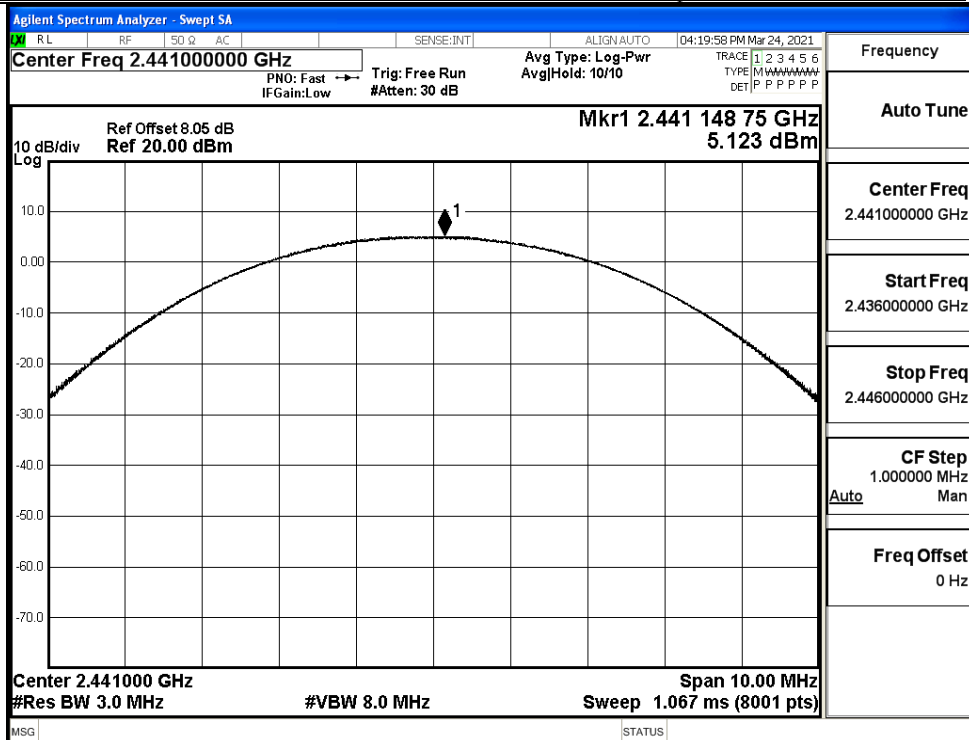
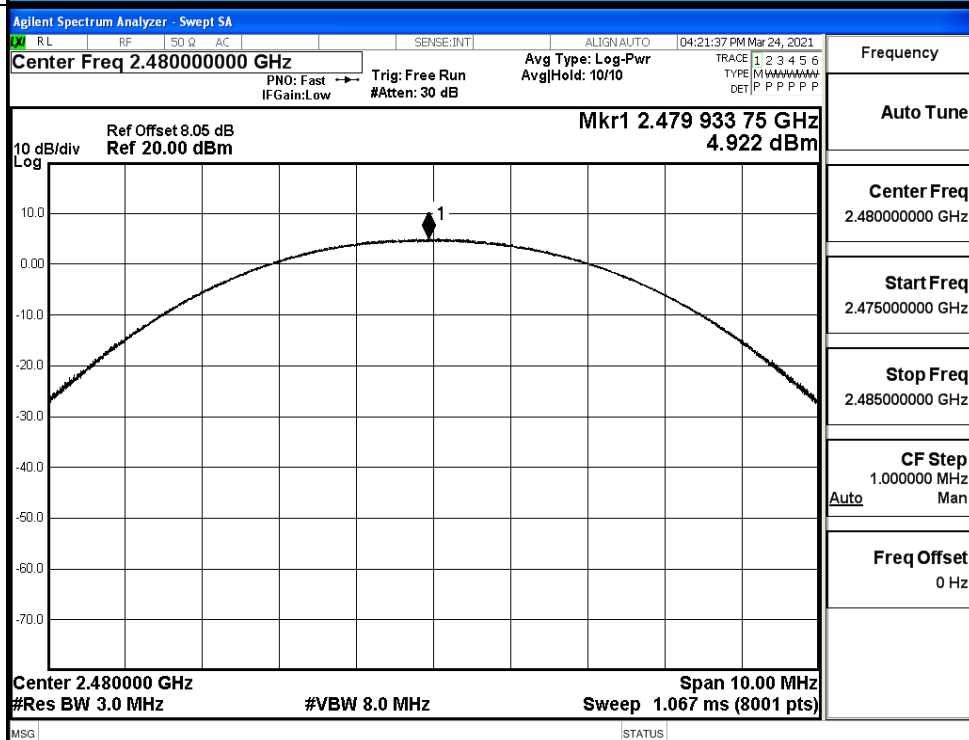


GFSK/MCH



GFSK/HCH

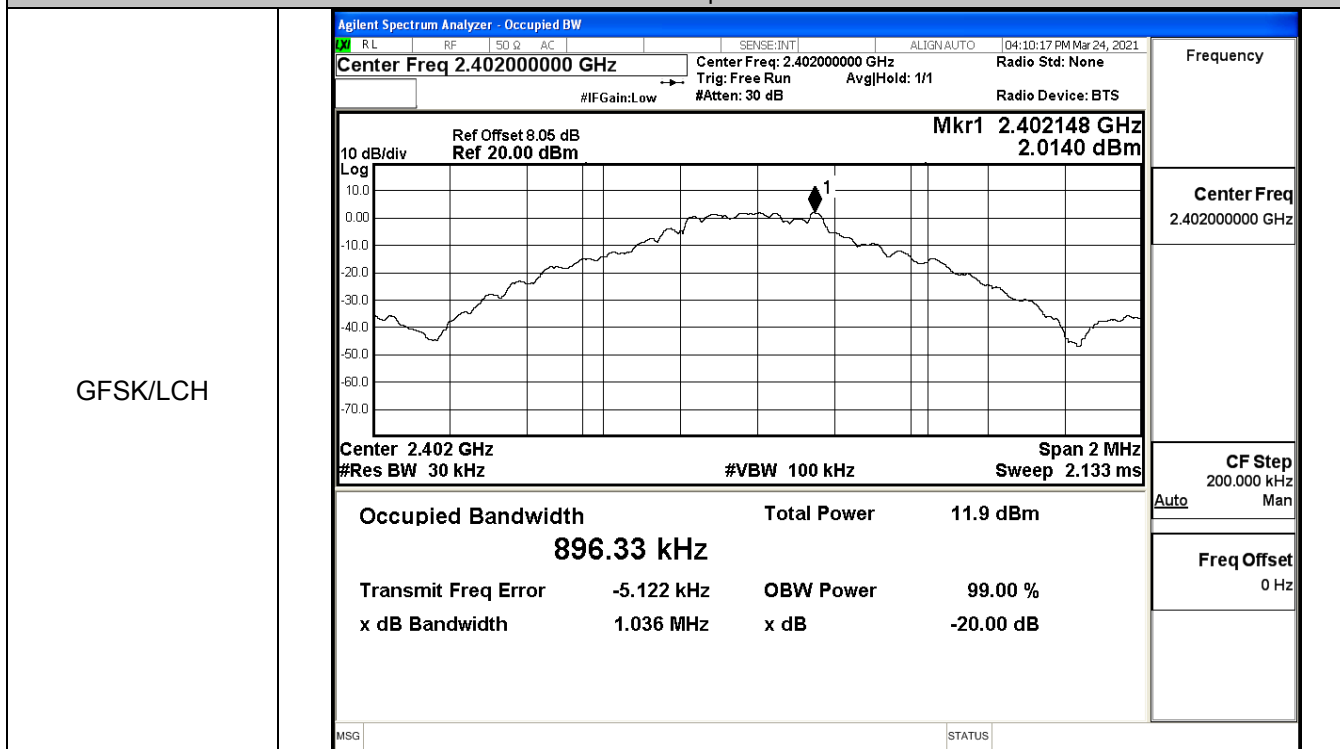
 π /4DQPSK/LCH

π /4DQPSK/MCH π /4DQPSK/HCH

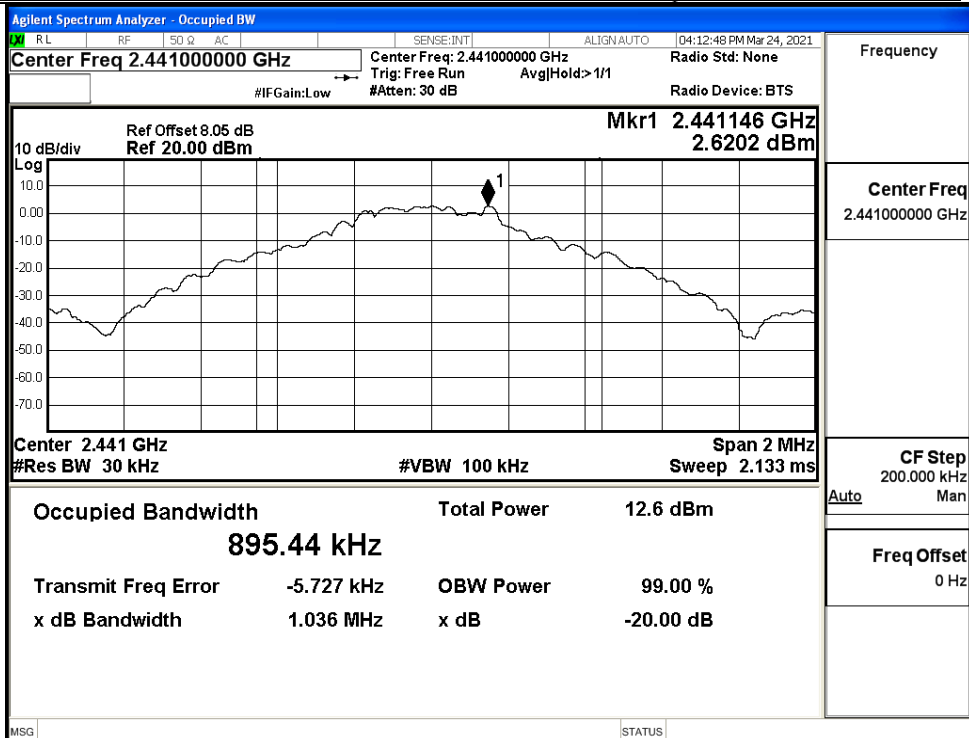
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.036	Not Specified	PASS
	MCH	1.036	Not Specified	PASS
	HCH	1.037	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.287	Not Specified	PASS
	MCH	1.287	Not Specified	PASS
	HCH	1.285	Not Specified	PASS

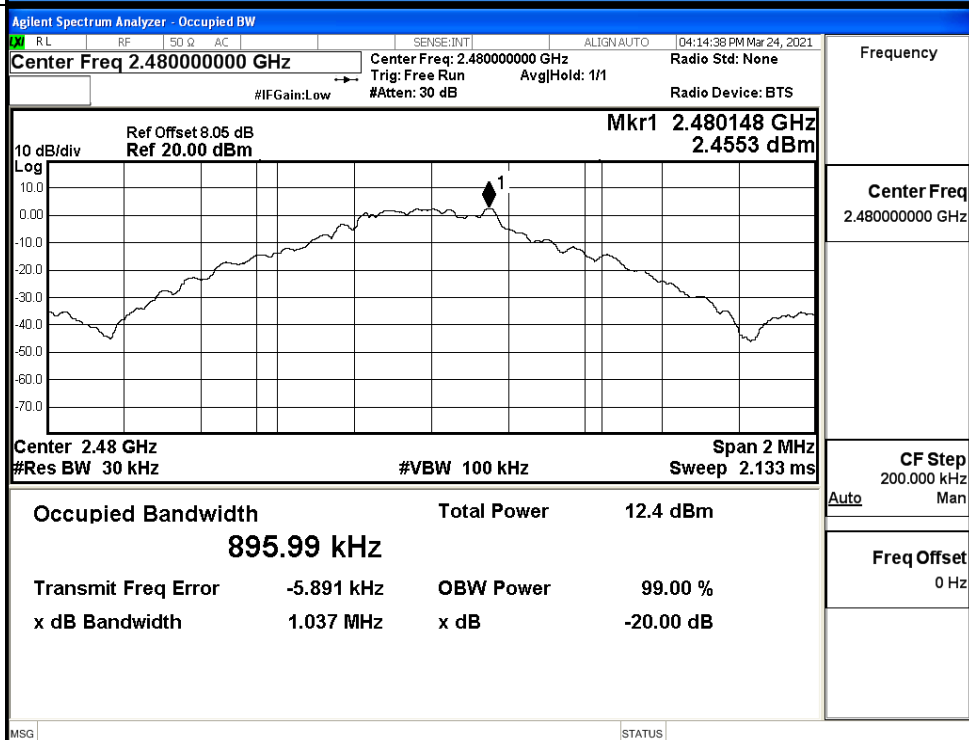
Test Graphs

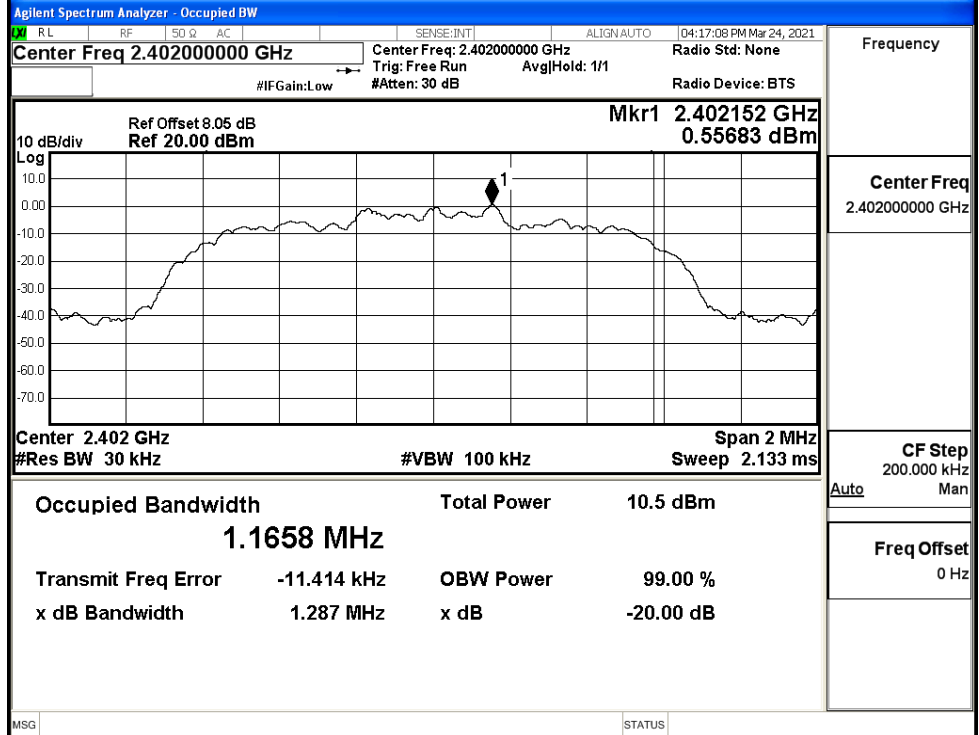
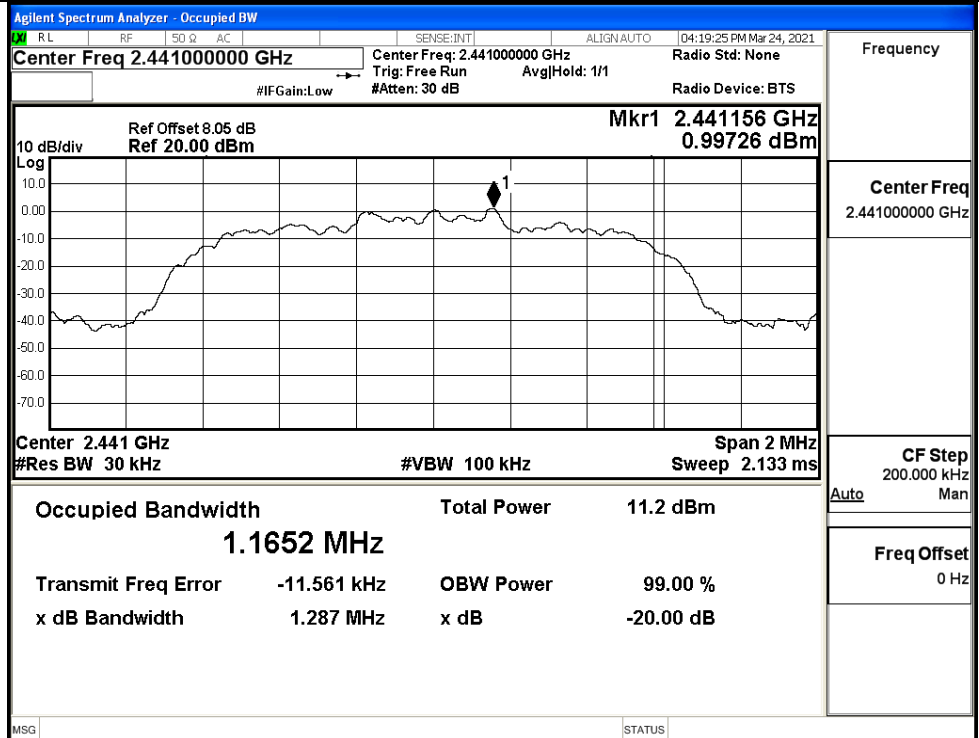


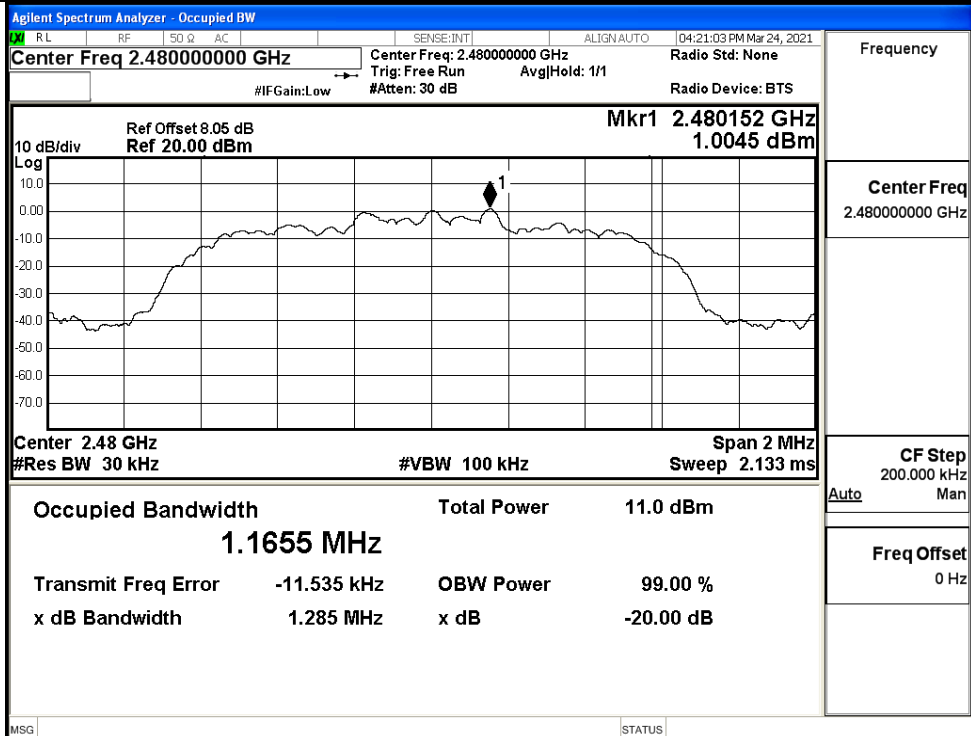
GFSK/MCH



GFSK/HCH



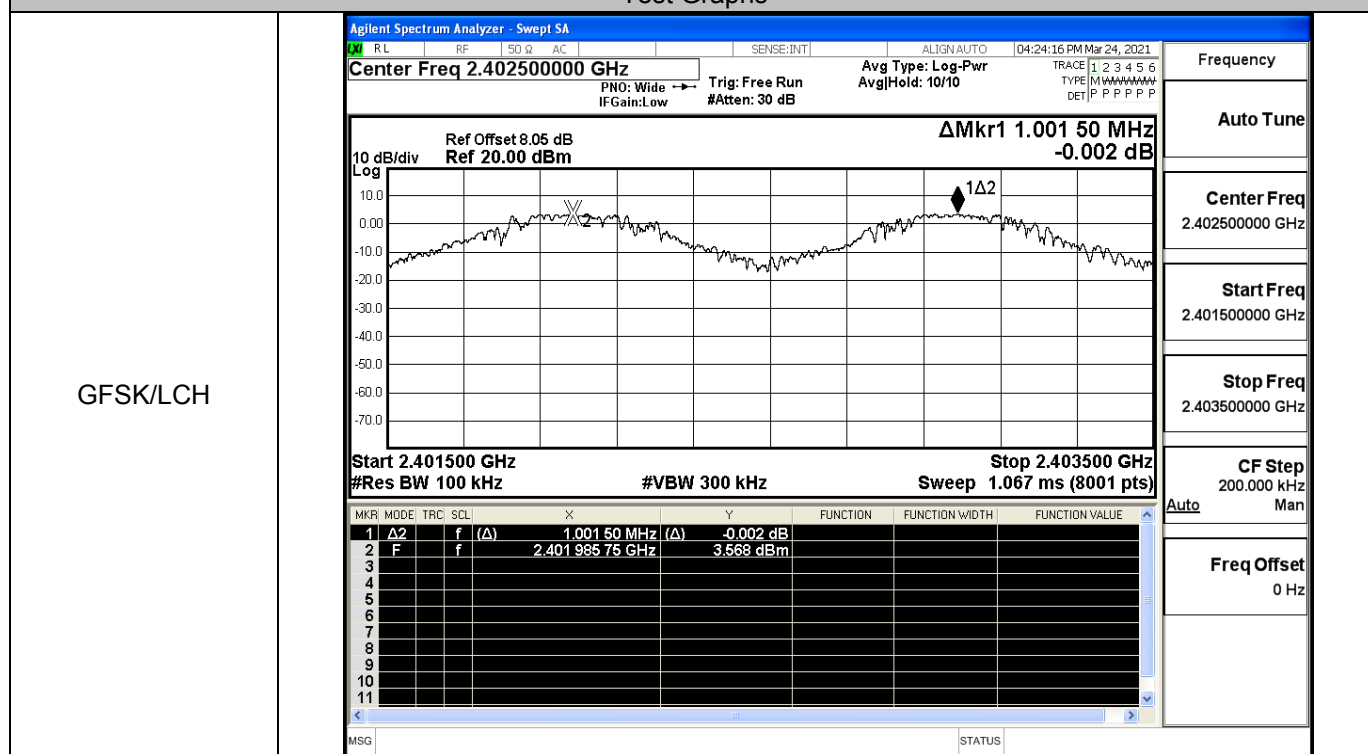
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

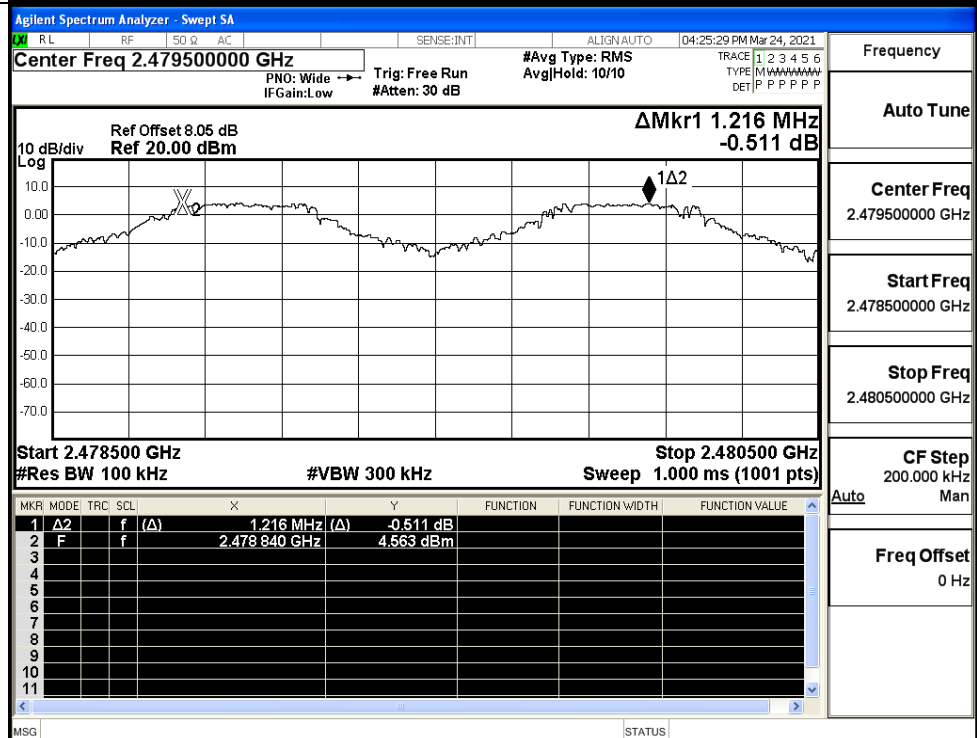
A.3 Carrier Frequency Separation

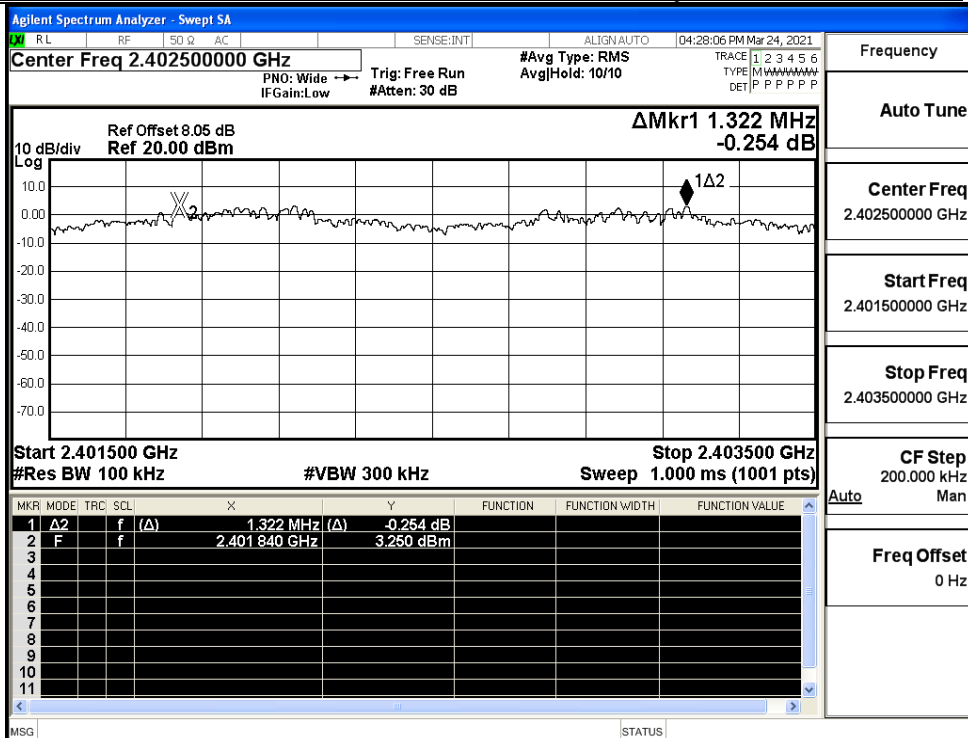
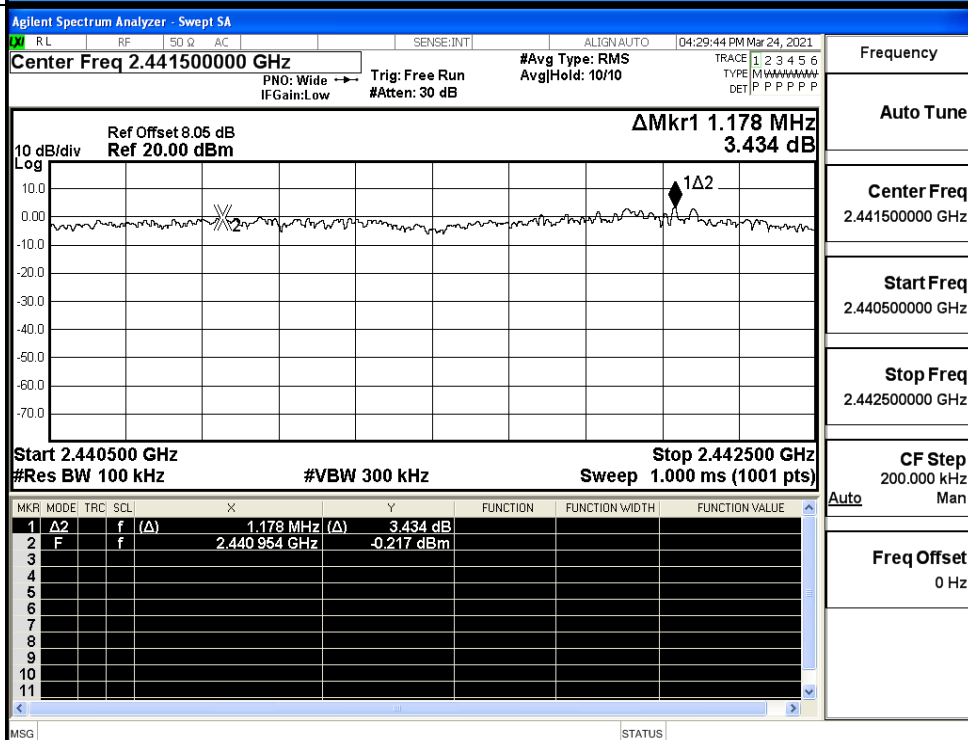
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.002	0.691	PASS
	MCH	1.178	0.691	PASS
	HCH	1.216	0.691	PASS
$\pi/4$ DQPSK	LCH	1.322	0.858	PASS
	MCH	1.178	0.858	PASS
	HCH	1.190	0.858	PASS

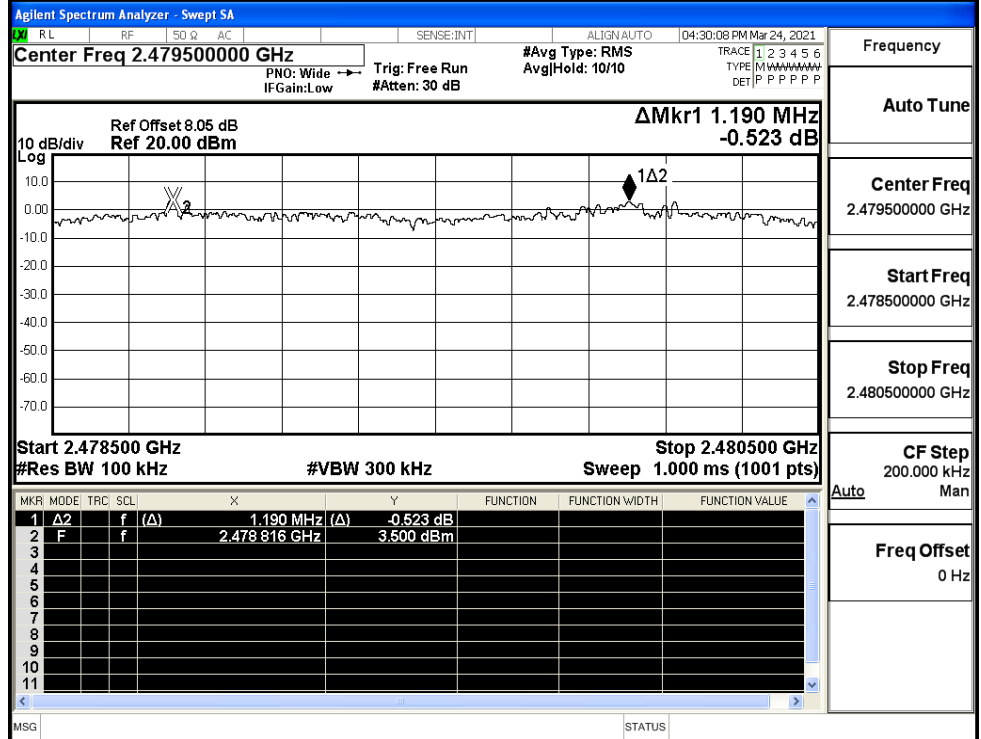
Test Graphs



GFSK/HCH



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

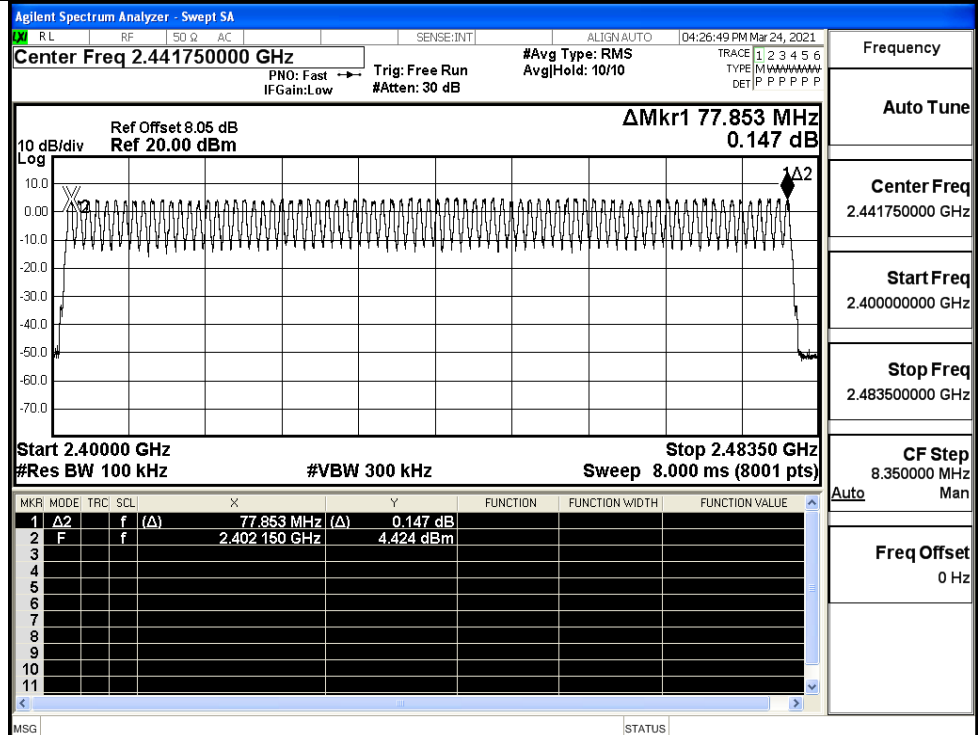
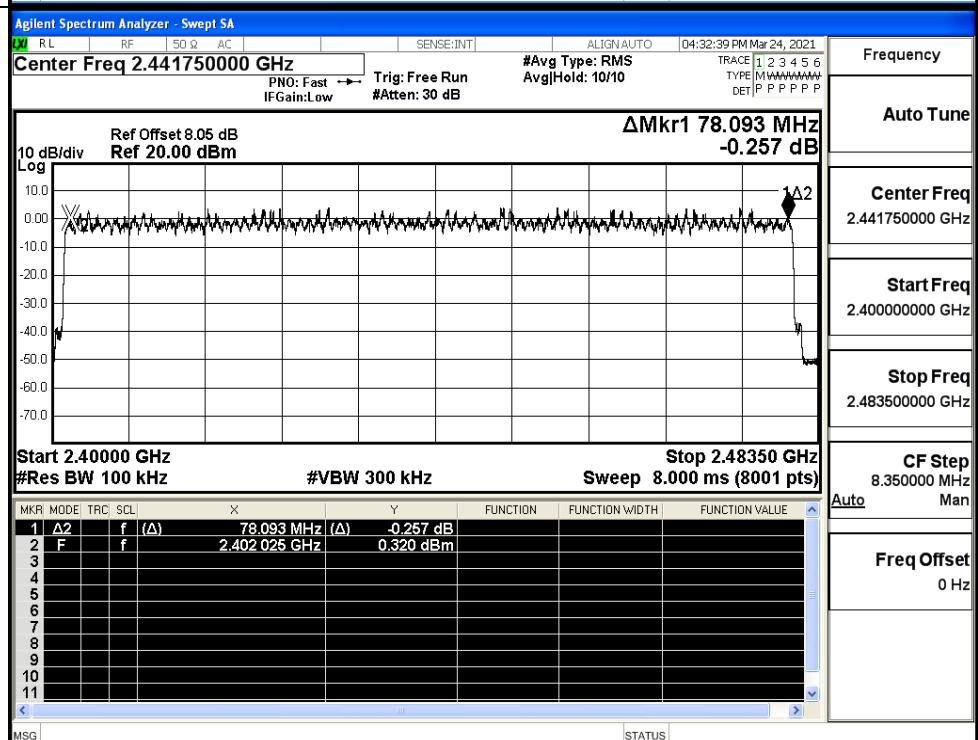
$\pi/4$ DQPSK/HCH

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

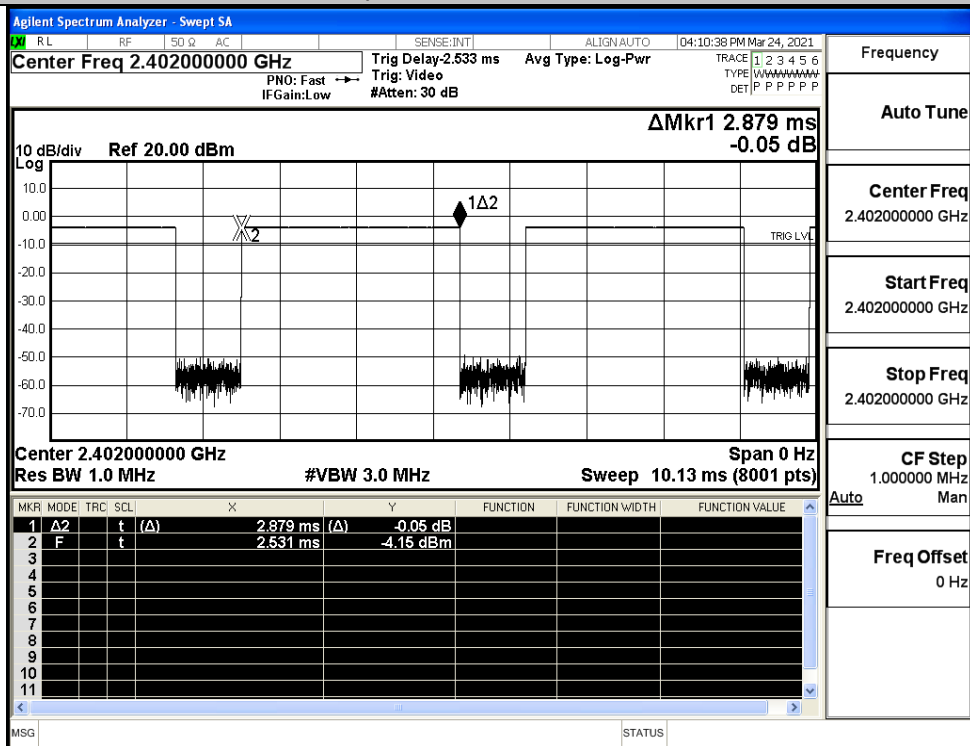
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

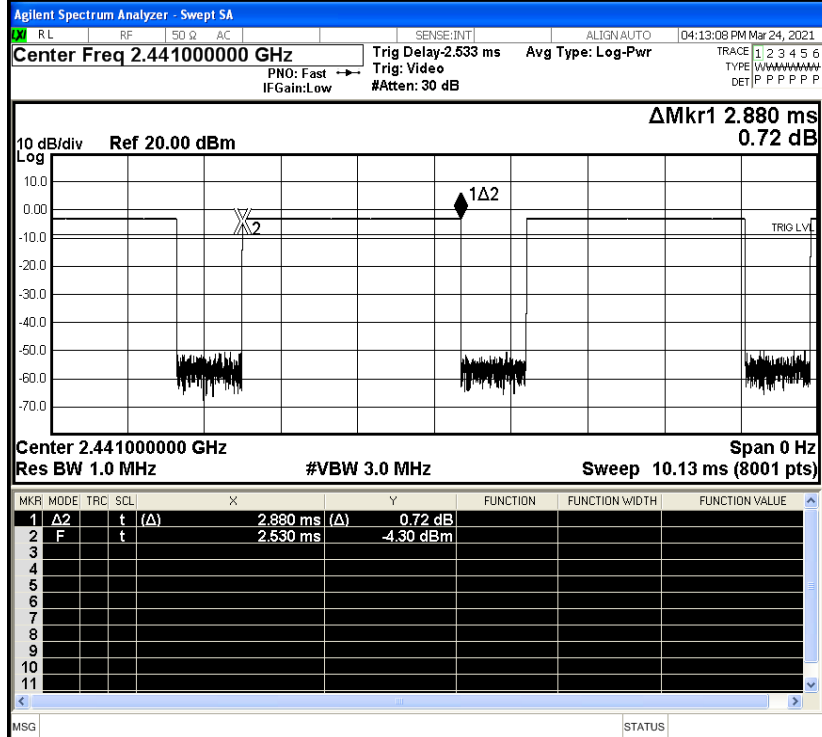
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

GFSK_DH5/LCH



GFSK_DH5/MCH



Frequency

Auto Tune

Center Freq

2.441000000 GHz

Start Freq

2.441000000 GHz

Stop Freq

2.441000000 GHz

CF Step

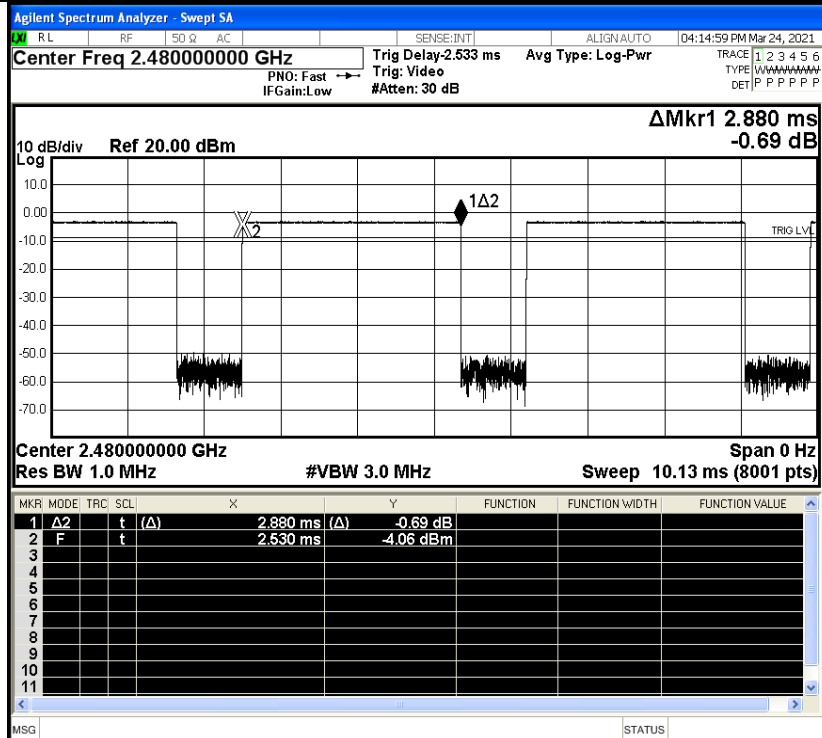
1.000000 MHz

Auto Man

Freq Offset

0 Hz

GFSK_DH5/HCH



Frequency

Auto Tune

Center Freq

2.480000000 GHz

Start Freq

2.480000000 GHz

Stop Freq

2.480000000 GHz

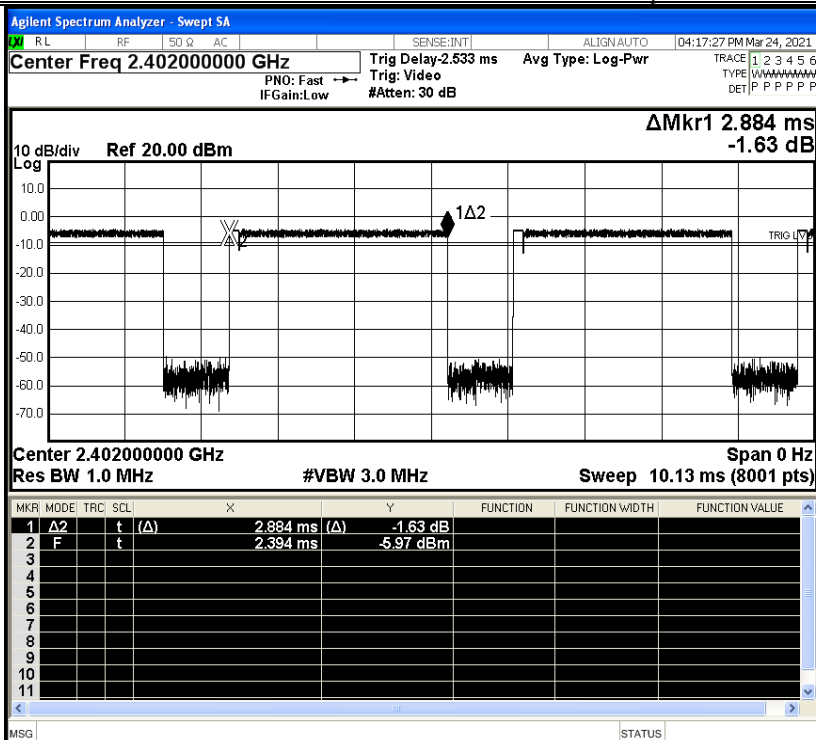
CF Step

1.000000 MHz

Auto Man

Freq Offset

0 Hz

$\pi/4$ DQPSK
_2DH5/LCH

Frequency

Auto Tune

Center Freq

2.402000000 GHz

Start Freq

2.402000000 GHz

Stop Freq

2.402000000 GHz

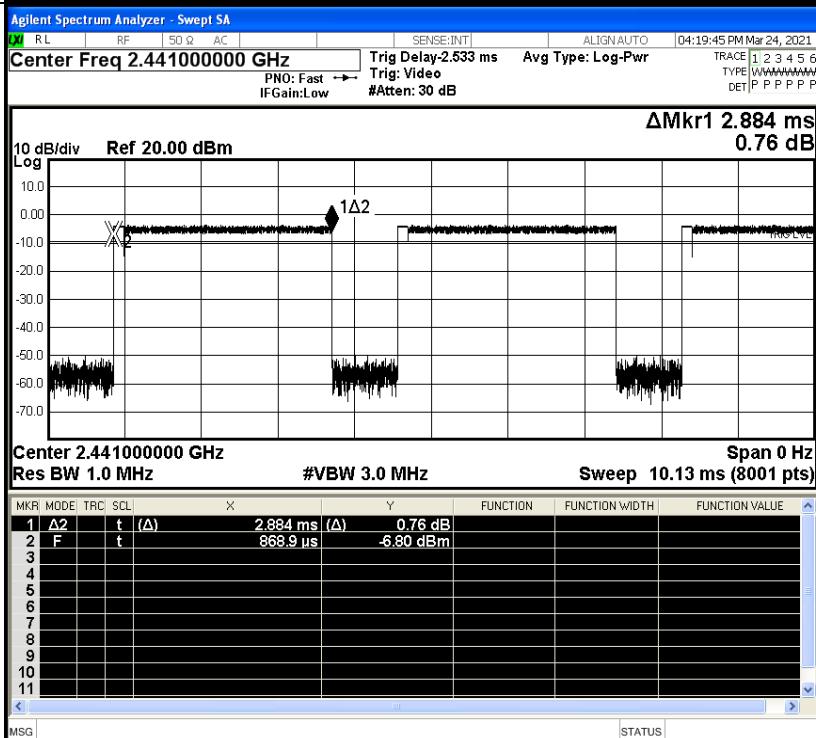
CF Step

1.000000 MHz

Auto Man

Freq Offset

0 Hz

 $\pi/4$ DQPSK
_2DH5/MCH

Frequency

Auto Tune

Center Freq

2.441000000 GHz

Start Freq

2.441000000 GHz

Stop Freq

2.441000000 GHz

CF Step

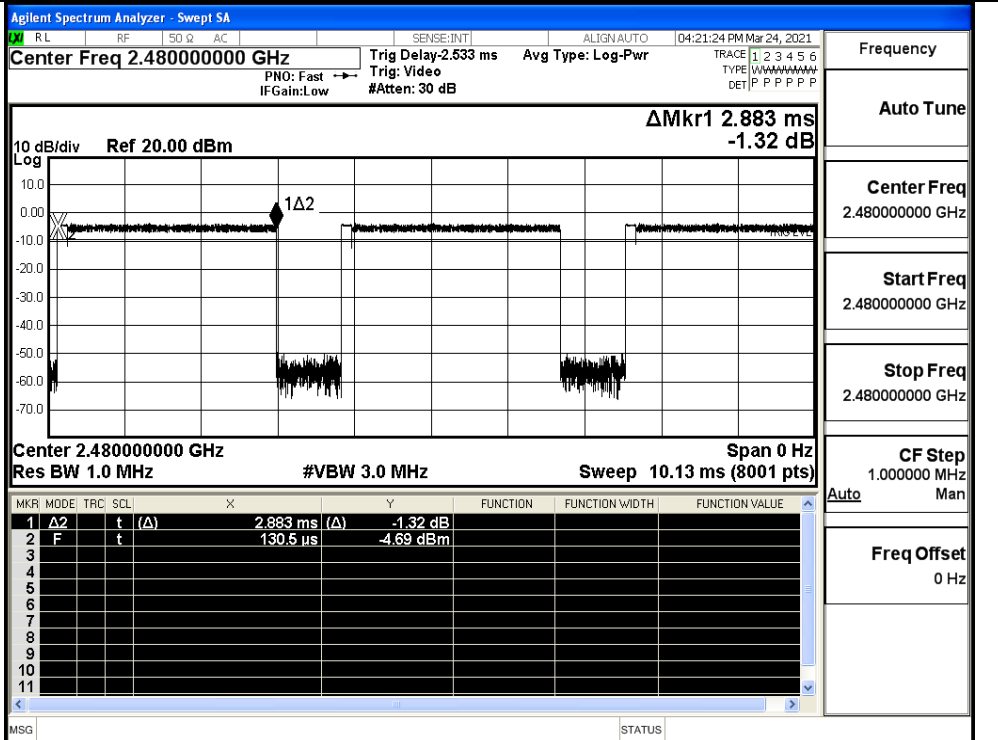
1.000000 MHz

Auto Man

Freq Offset

0 Hz

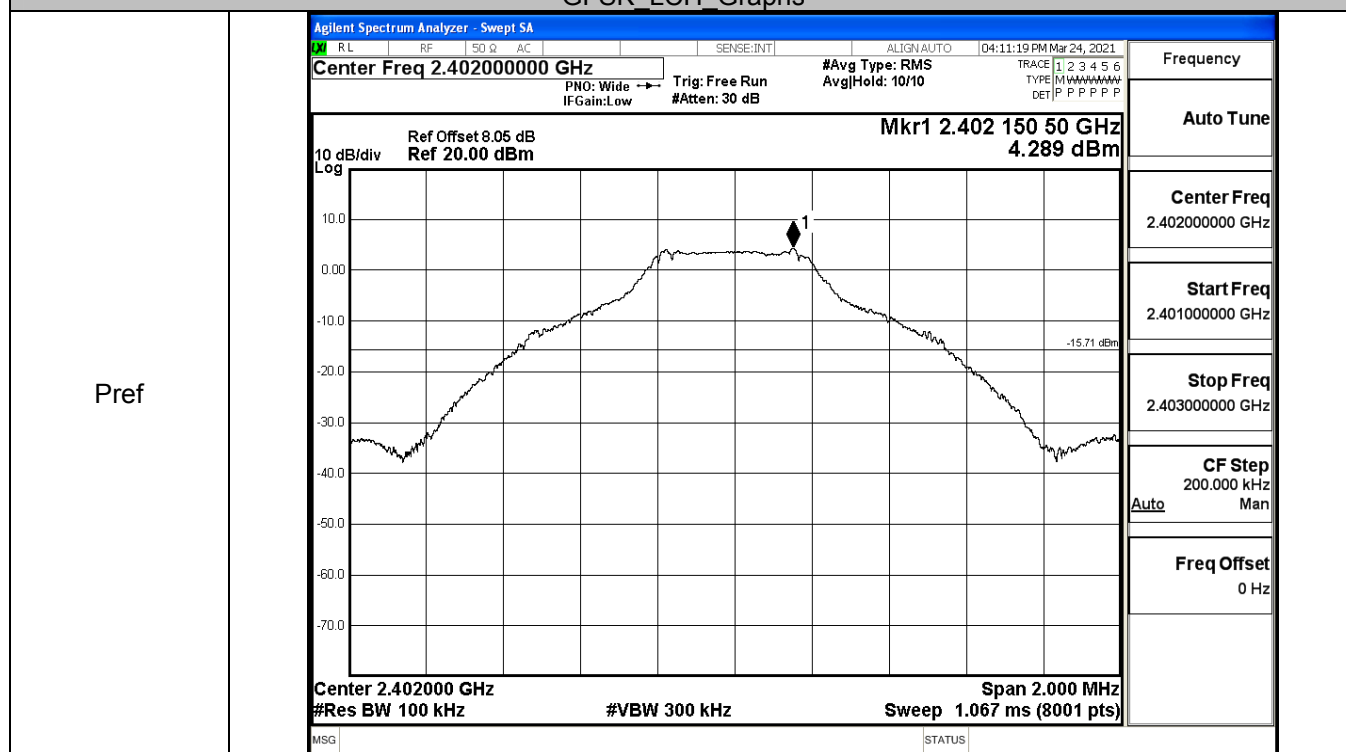
$\pi/4$ DQPSK
_2DH5/HCH

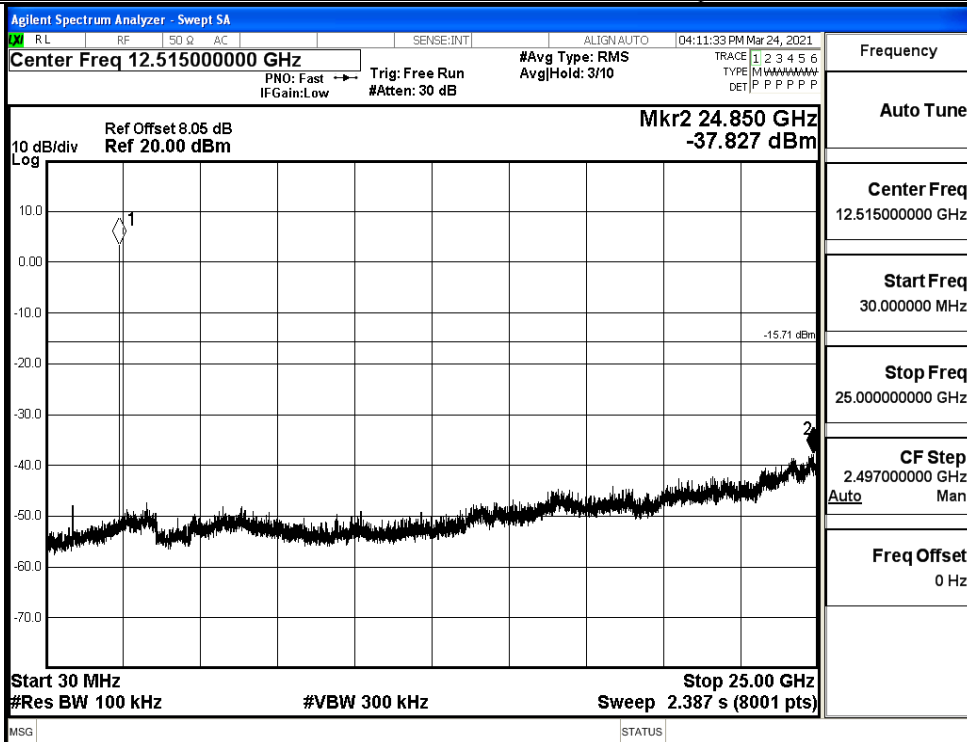


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.289	-37.827	-15.711	PASS
	MCH	4.952	-37.047	-15.048	PASS
	HCH	4.261	-38.100	-15.739	PASS
$\pi/4$ DQPSK	LCH	3.33	-36.545	-16.670	PASS
	MCH	3.982	-38.044	-16.018	PASS
	HCH	3.814	-37.953	-16.186	PASS

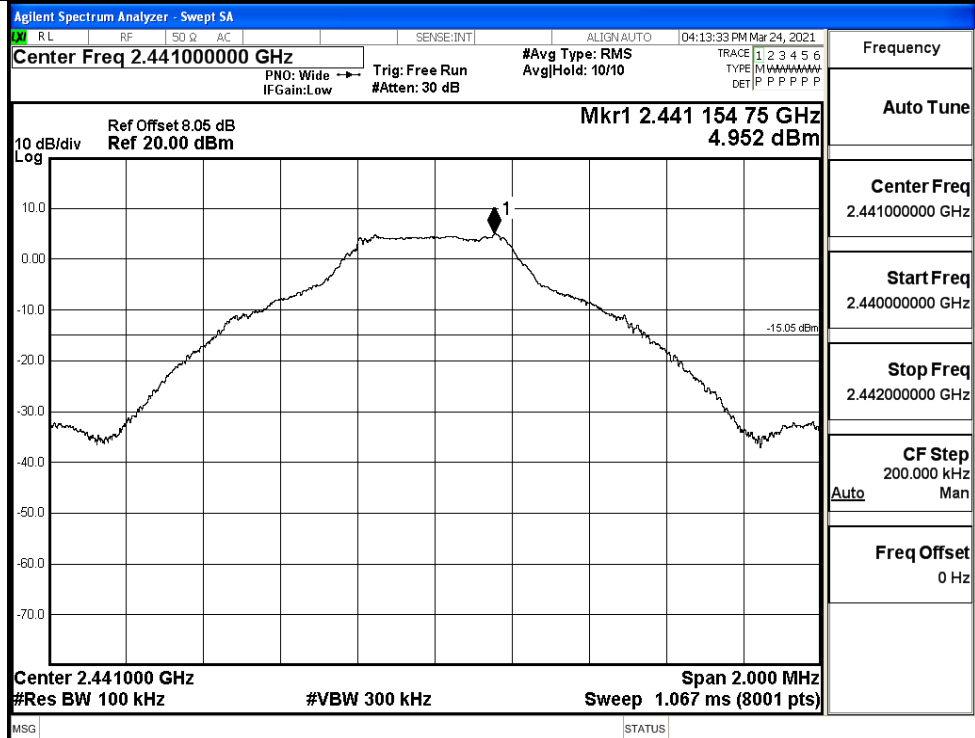
GFSK LCH Graphs



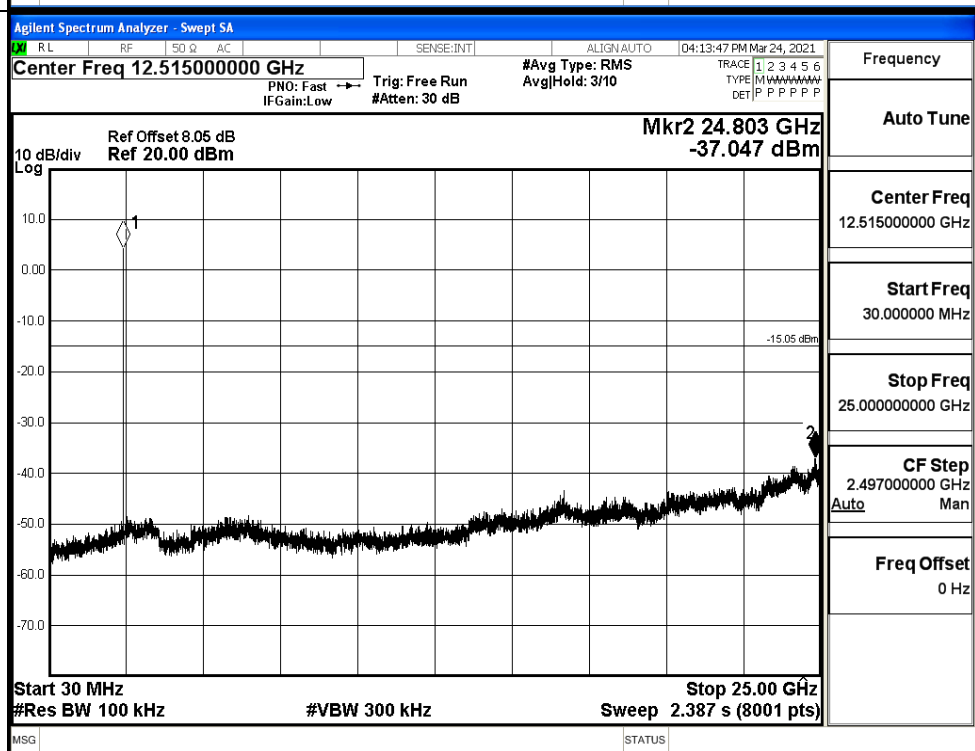
P_uw

GFSK_MCH_Graphs

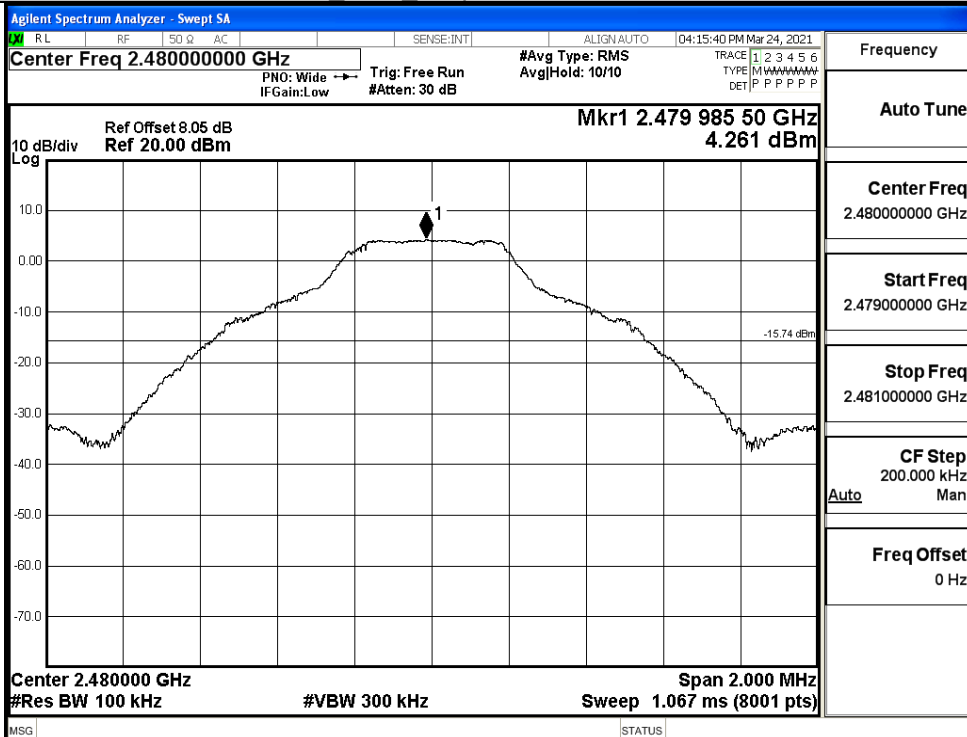
Pref



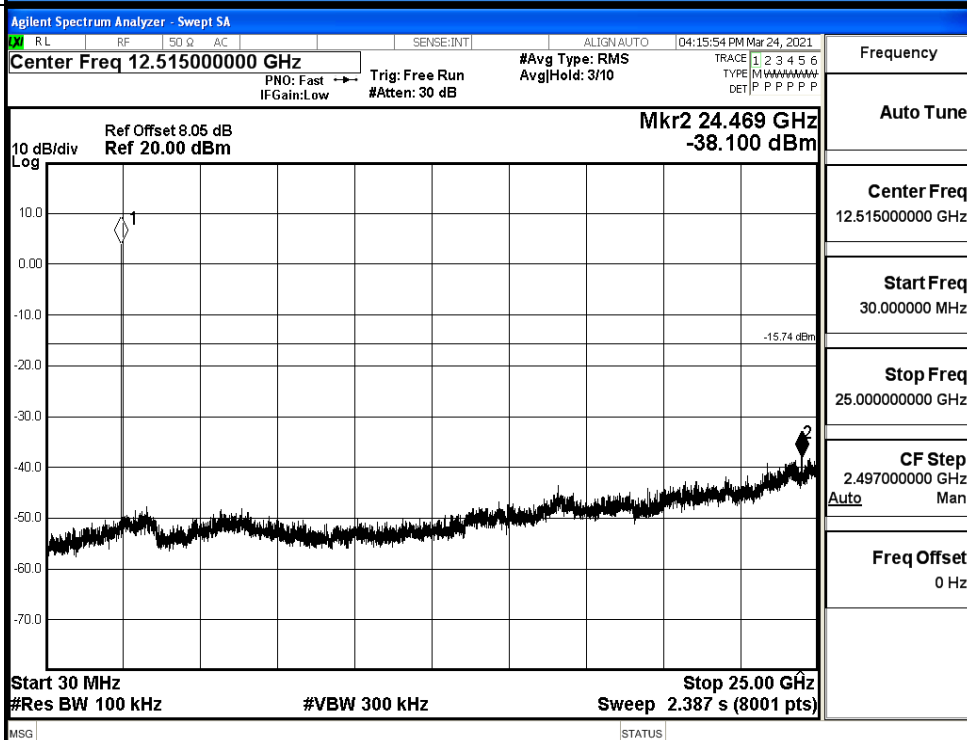
Puw



Pref

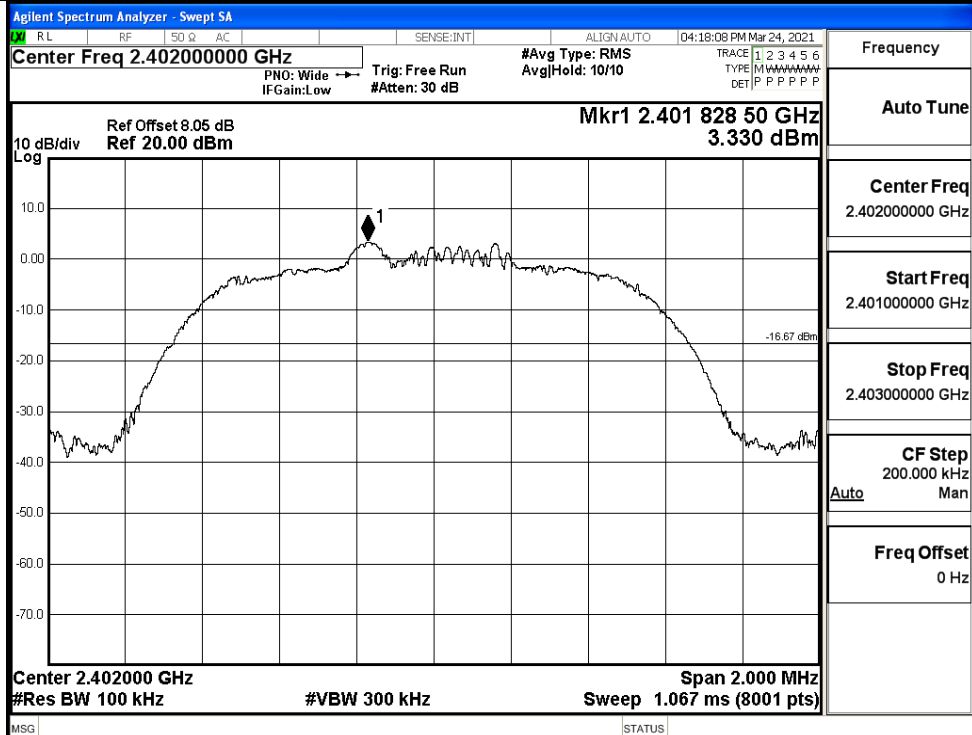


Puw

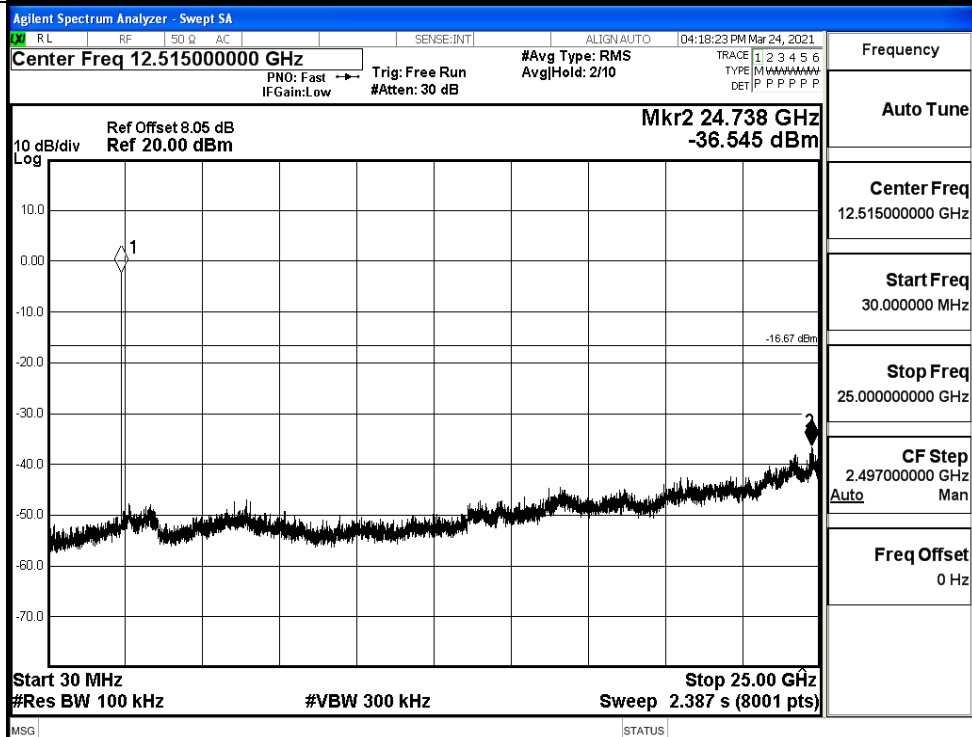


π /4DQPSK LCH_Graphs

Pref

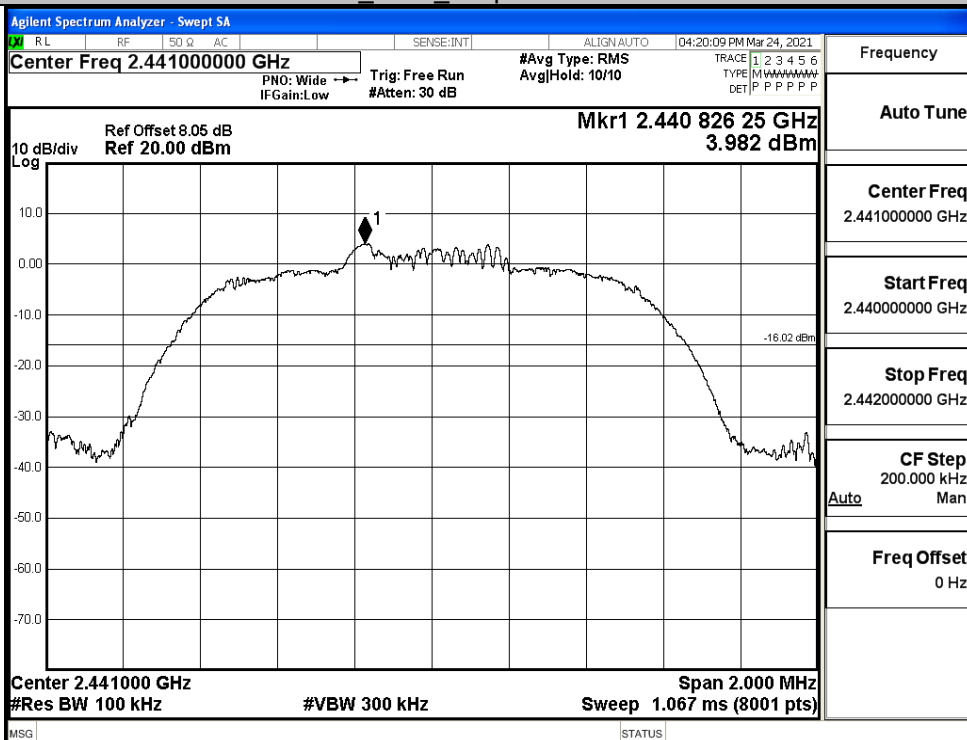


Puw

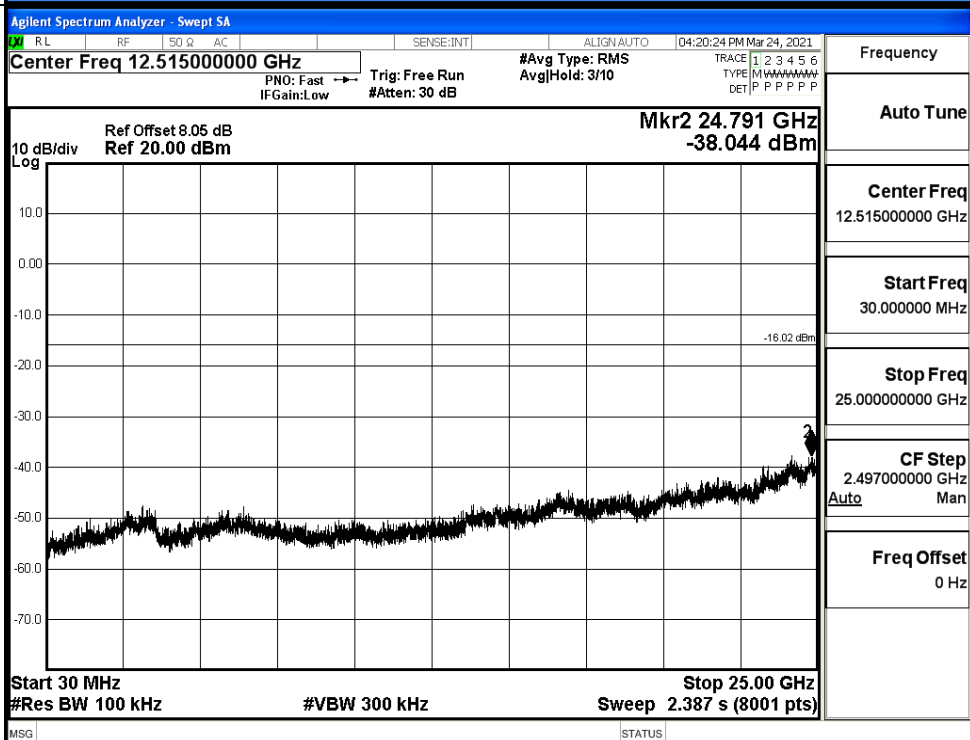


π /4DQPSK_MCH_Graphs

Pref

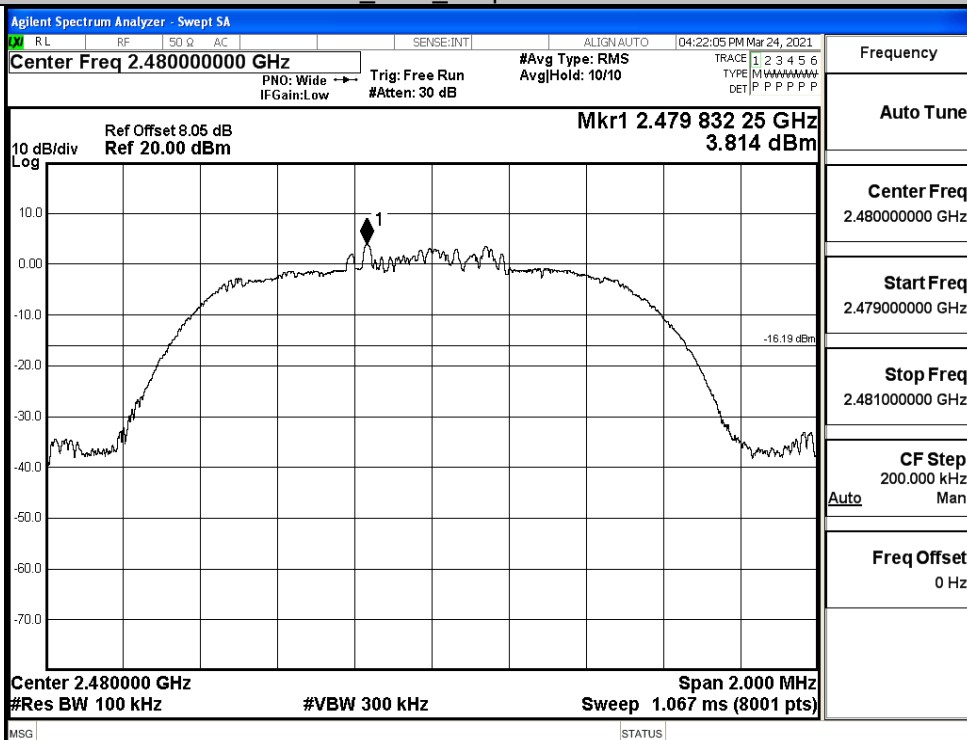


Puw

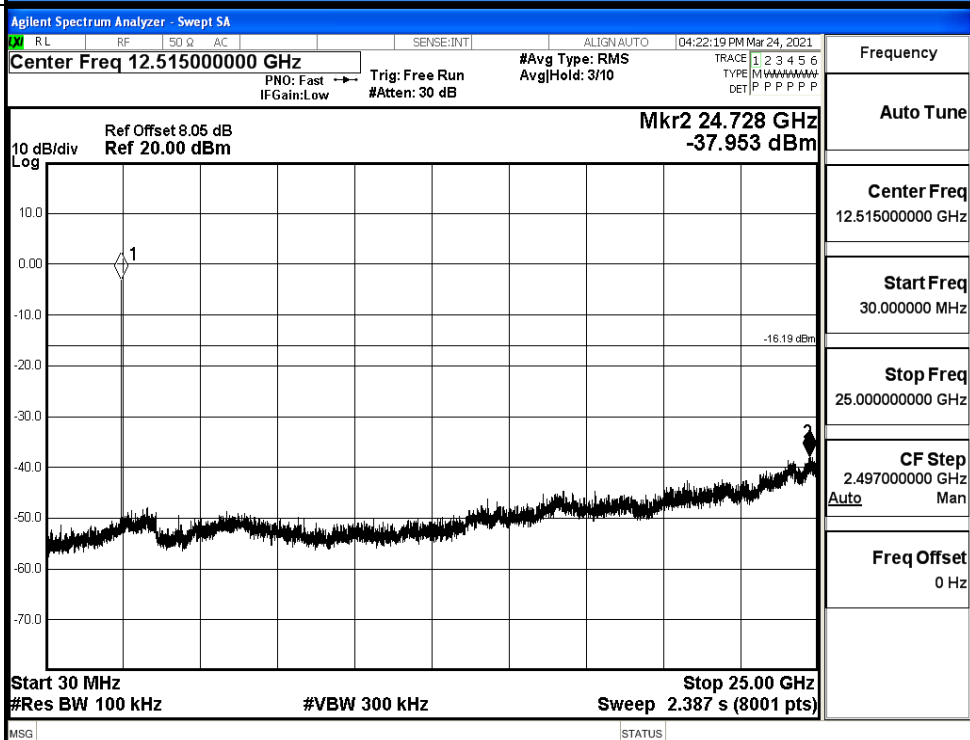


π /4DQPSK_HCH_Graphs

Pref



Puw

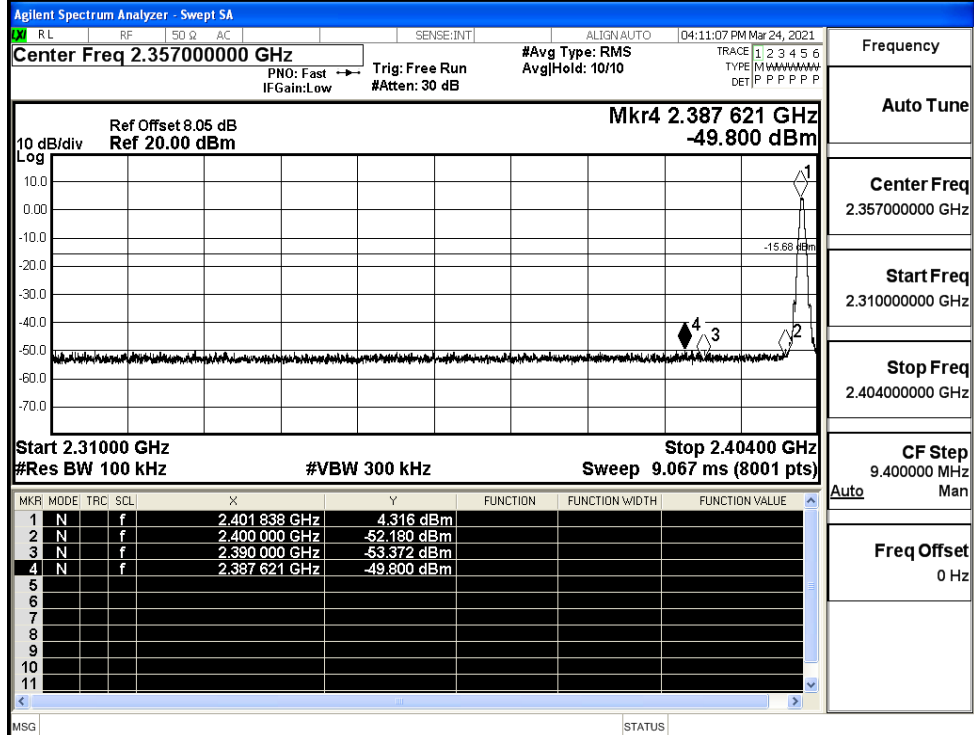


A.7 Band-edge for RF Conducted Emissions

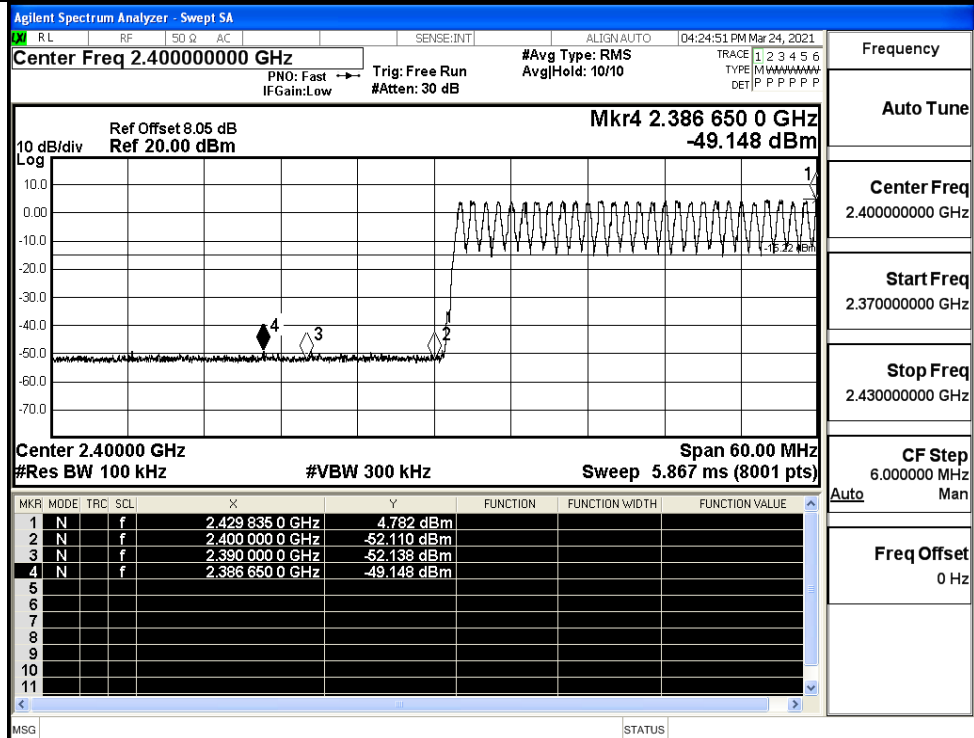
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.316	Off	-49.800	-15.68	PASS
			4.782	On	-49.148	-15.22	PASS
	HCH	2480	4.845	Off	-48.862	-15.16	PASS
			4.843	On	-48.957	-15.16	PASS
$\pi/4$ DQPSK	LCH	2402	3.275	Off	-49.390	-16.73	PASS
			3.627	On	-48.774	-16.37	PASS
	HCH	2480	3.792	Off	-49.187	-16.21	PASS
			3.884	On	-48.743	-16.12	PASS

Test Graphs

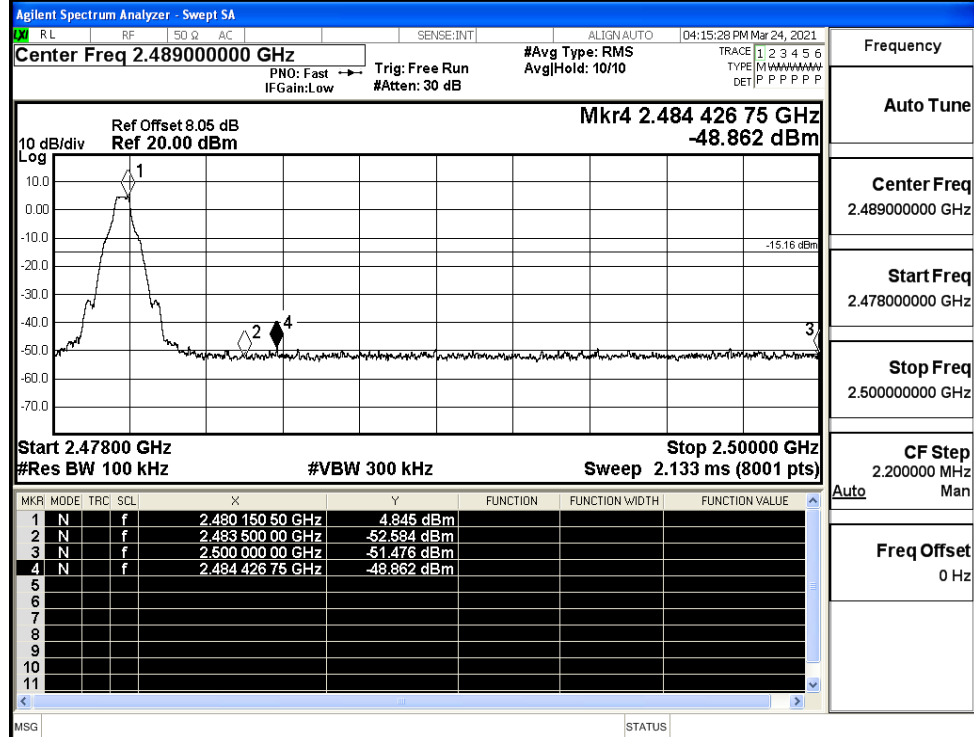
GFSK/LCH/No Hop



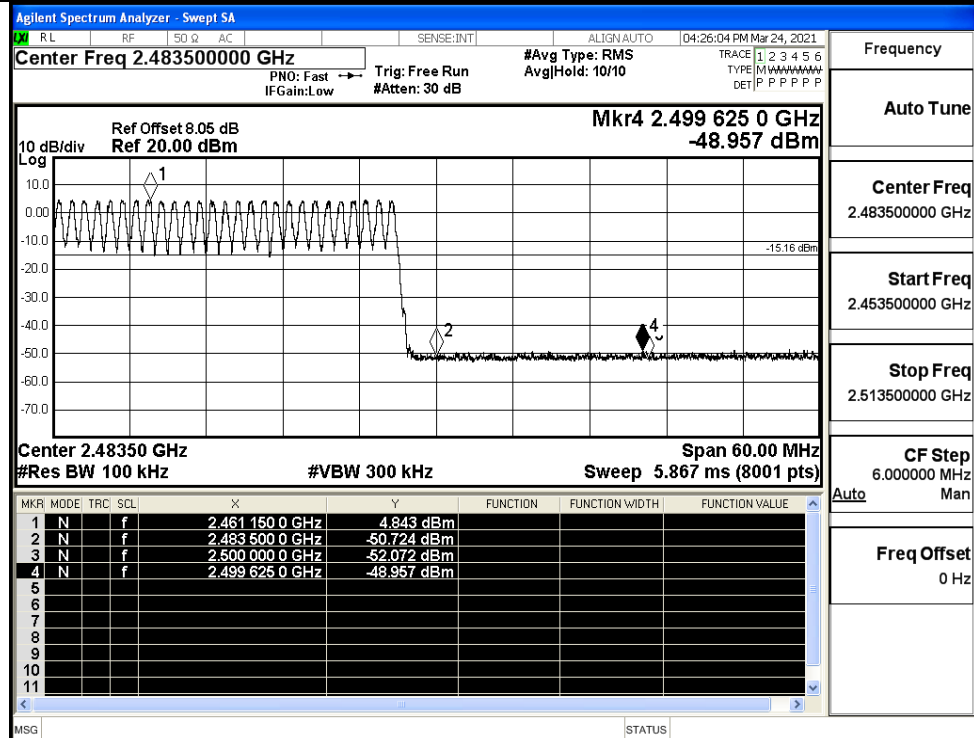
GFSK/LCH/Hop



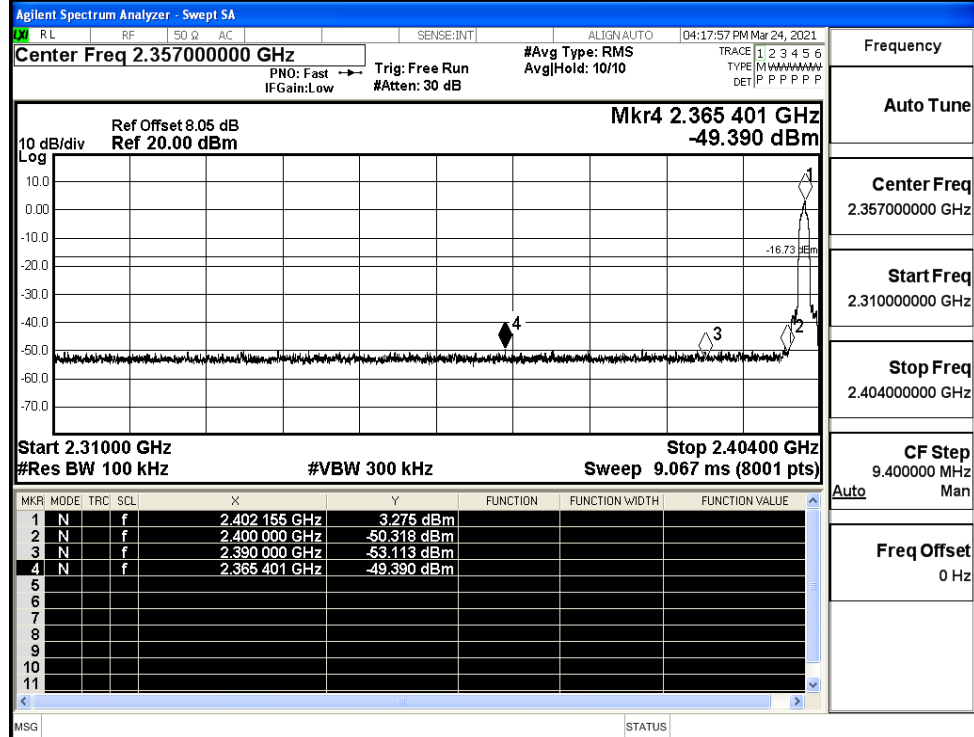
GFSK/HCH/No Hop



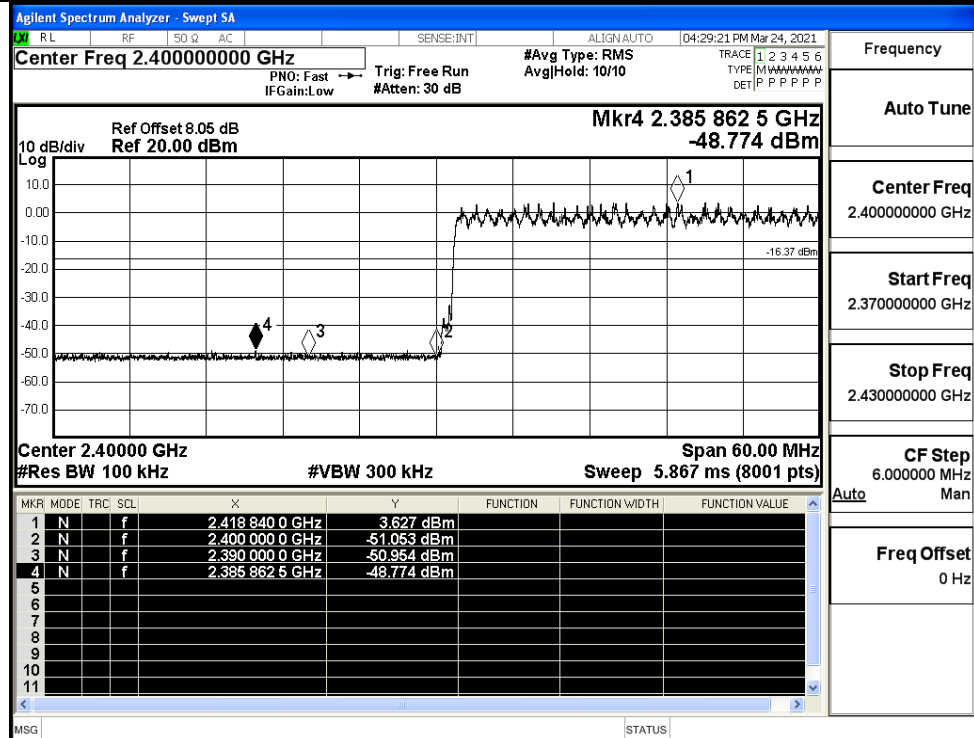
GFSK/HCH/Hop



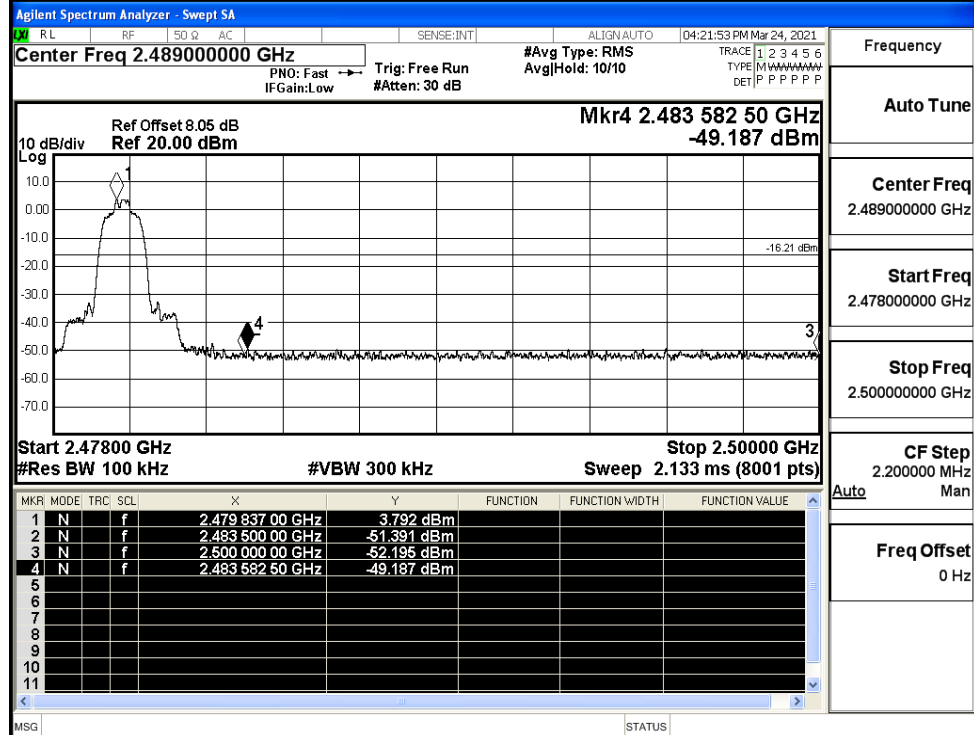
$\pi/4$ DQPSK/LCH/No
Hop



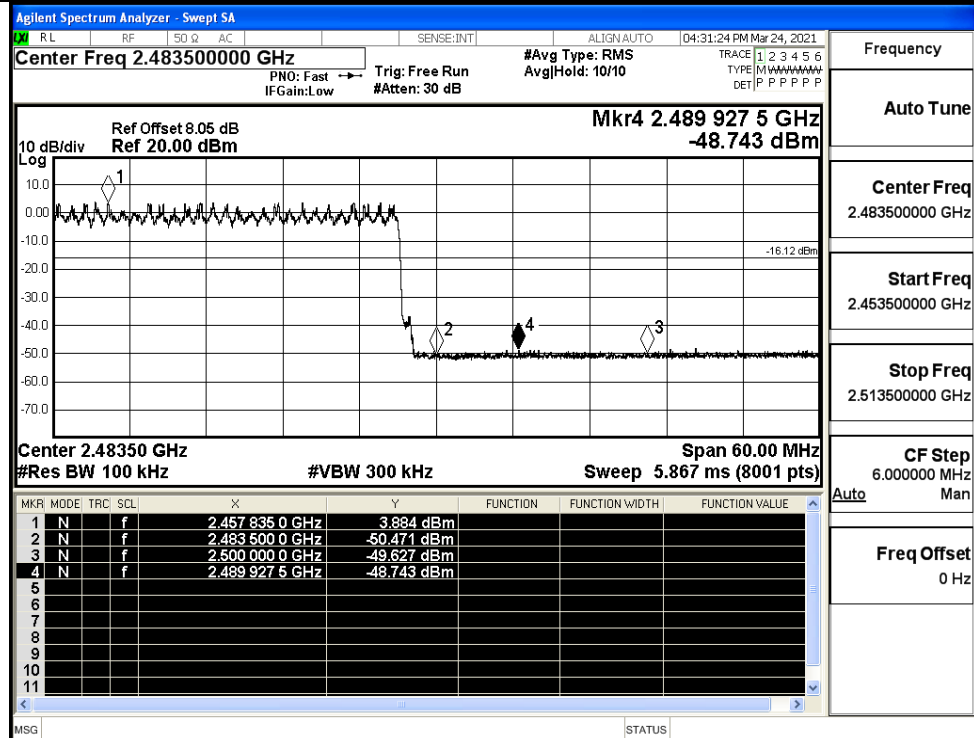
$\pi/4$ DQPSK/LCH/Hop



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



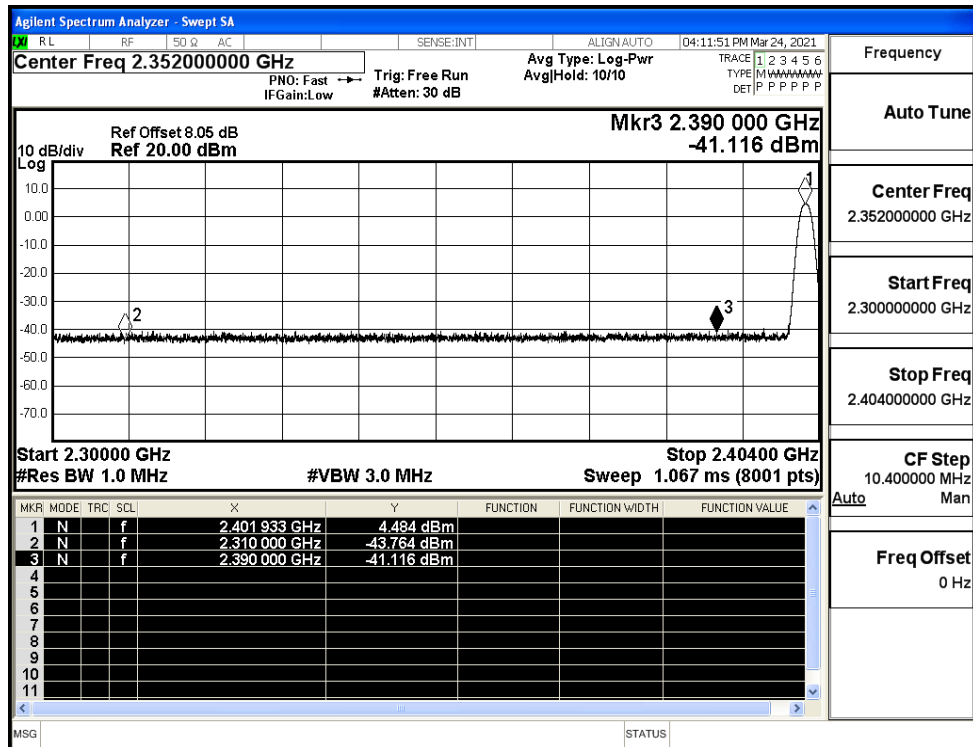
$\pi/4$ DQPSK/HCH/Hop



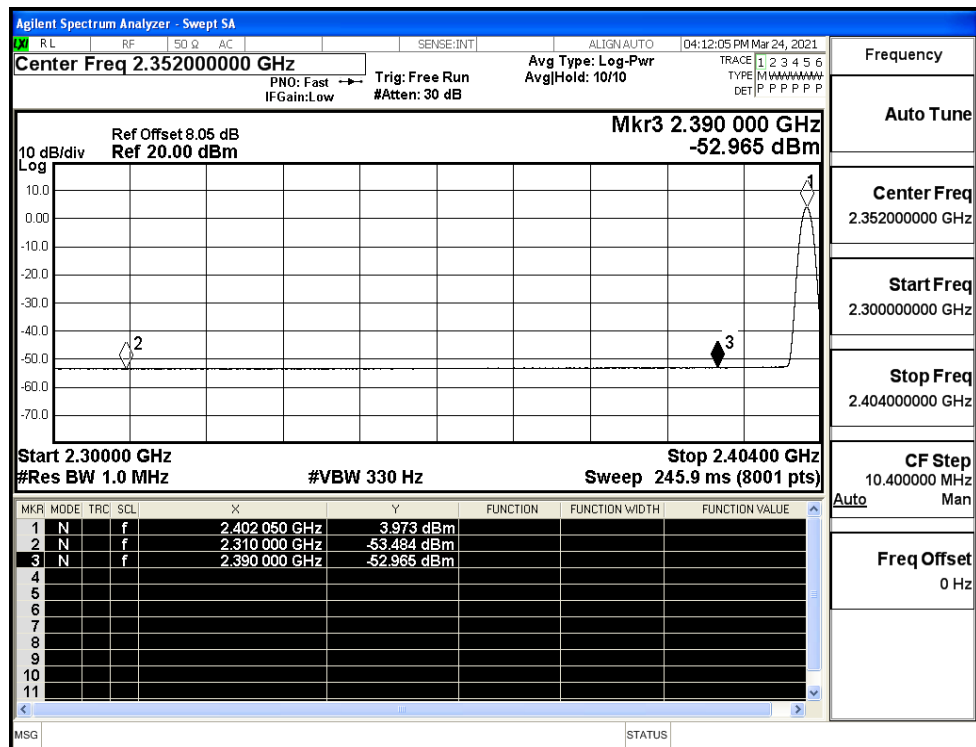
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.76	2.0	0	51.49	PEAK	74	PASS
	Off	2310.0	-53.48	2.0	0	41.77	AV	54	PASS
	Off	2390.0	-41.12	2.0	0	54.14	PEAK	74	PASS
	Off	2390.0	-52.97	2.0	0	42.29	AV	54	PASS
	Off	2483.5	-42.95	2.0	0	52.31	PEAK	74	PASS
	Off	2483.5	-52.26	2.0	0	42.99	AV	54	PASS
	Off	2500.0	-42.37	2.0	0	52.89	PEAK	74	PASS
	Off	2500.0	-52.38	2.0	0	42.88	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.01	2.0	0	53.25	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	41.98	AV	54	PASS
	Off	2390.0	-42.80	2.0	0	52.46	PEAK	74	PASS
	Off	2390.0	-53.03	2.0	0	42.23	AV	54	PASS
	Off	2483.5	-41.35	2.0	0	53.91	PEAK	74	PASS
	Off	2483.5	-52.32	2.0	0	42.94	AV	54	PASS
	Off	2500.0	-42.80	2.0	0	52.46	PEAK	74	PASS
	Off	2500.0	-52.41	2.0	0	42.84	AV	54	PASS

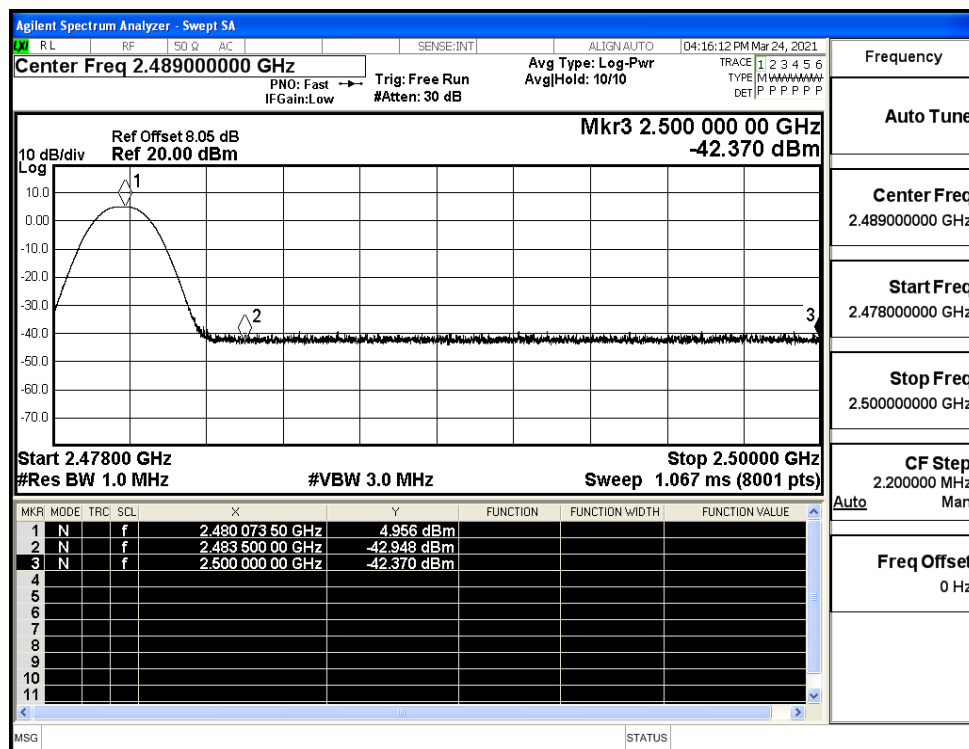
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



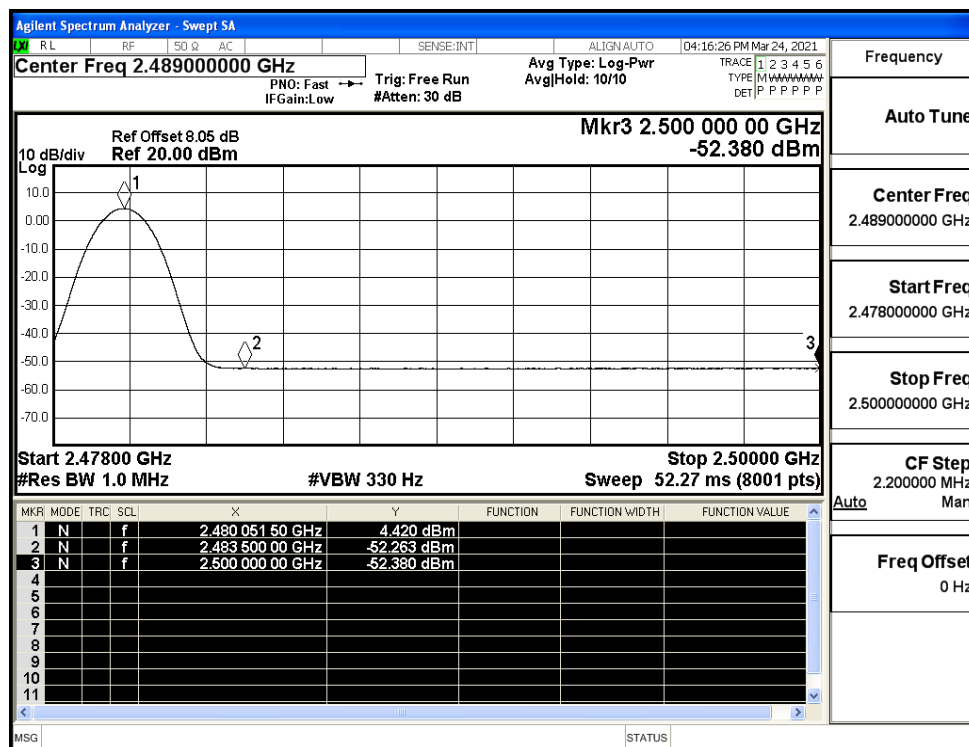
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



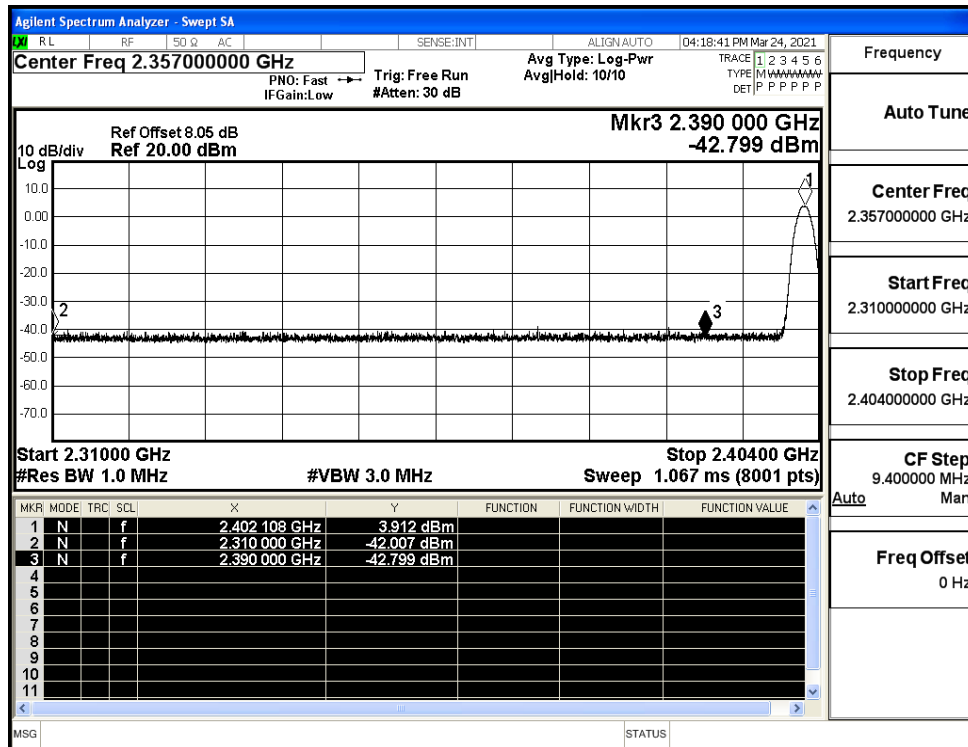
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



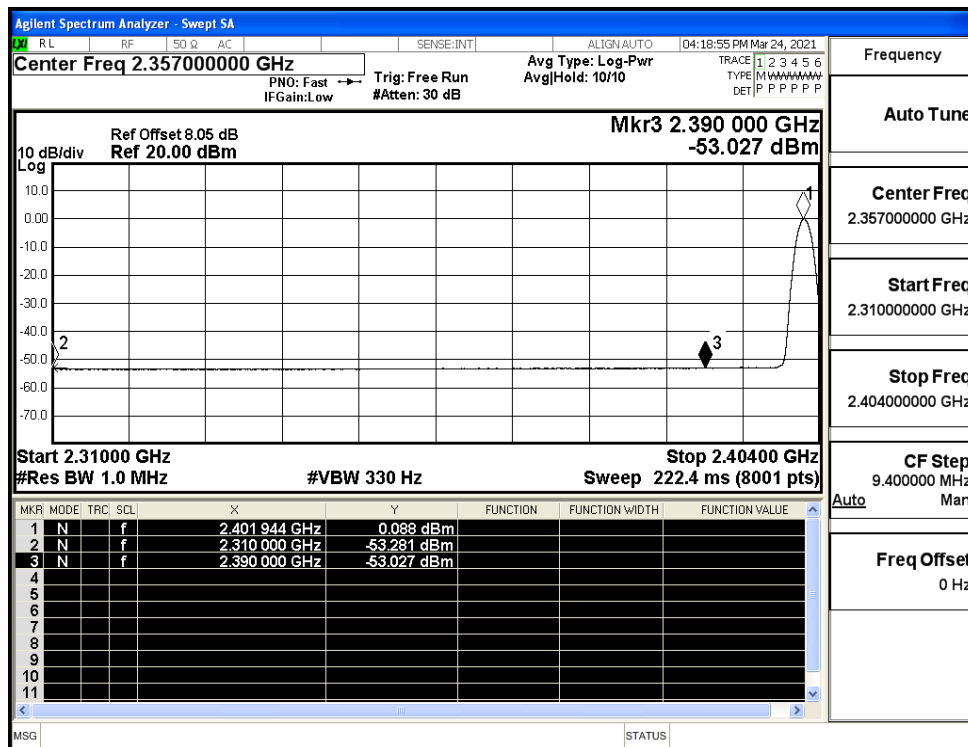
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



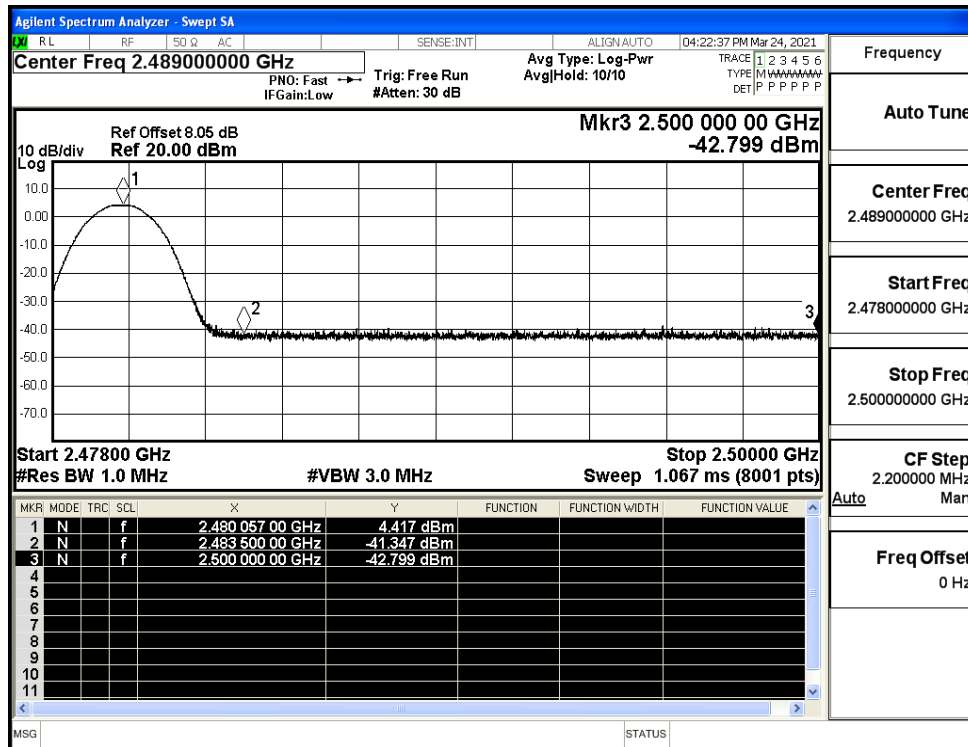
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_π/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)

