

Appendix A
RF Test Data for BT V5.0(BDR/EDR) (Conducted Measurement)
Product Name: Bluetooth Speaker
Trade Mark: MVMT, Ground
Test Model: SP3418

Environmental Conditions

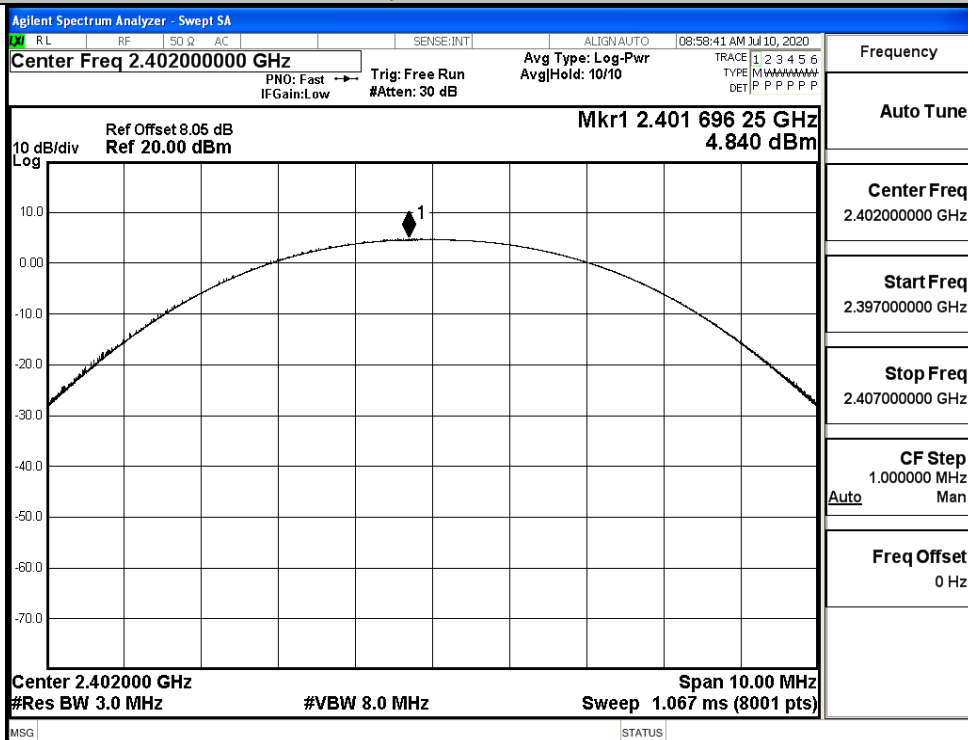
Temperature:	25.3 ° C
Relative Humidity:	53.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Li Huan
Supervised by:	Tom Liu

A.1 Maxmum Conducted Peak Output Power

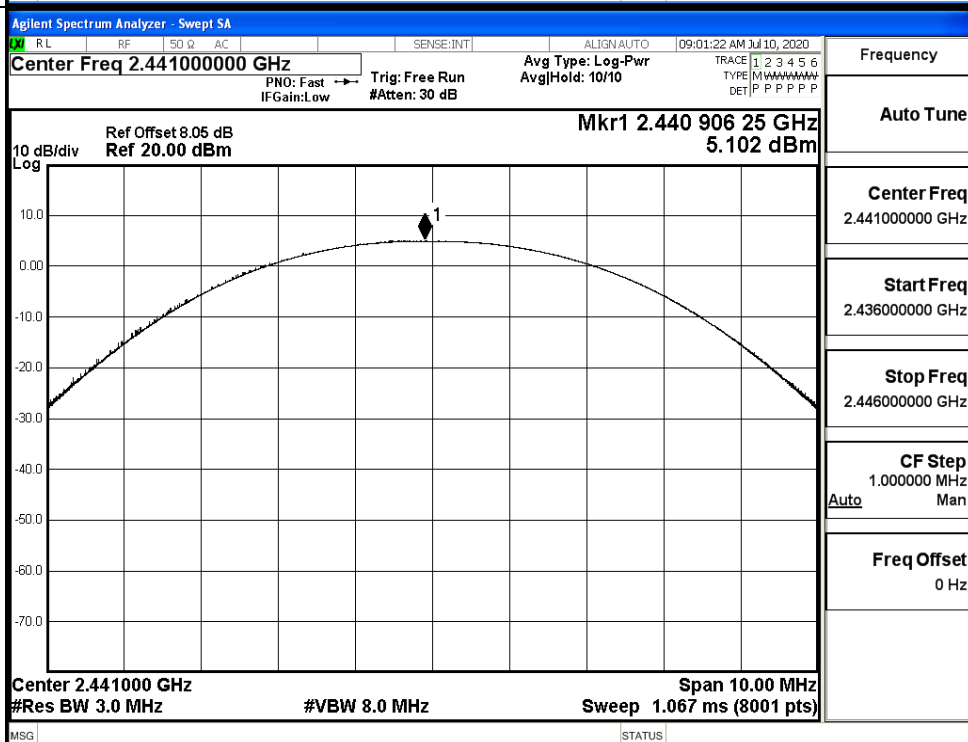
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.840	21	PASS
	MCH	5.102	21	PASS
	HCH	3.955	21	PASS
$\pi/4$ DQPSK	LCH	5.424	21	PASS
	MCH	5.683	21	PASS
	HCH	4.497	21	PASS

Test Graphs

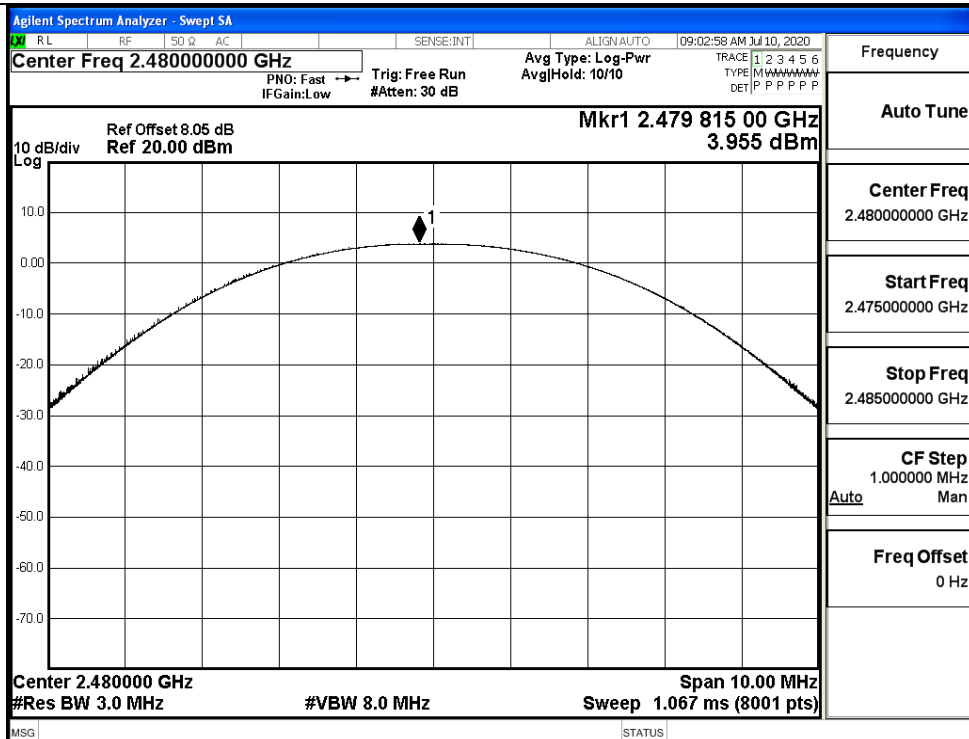
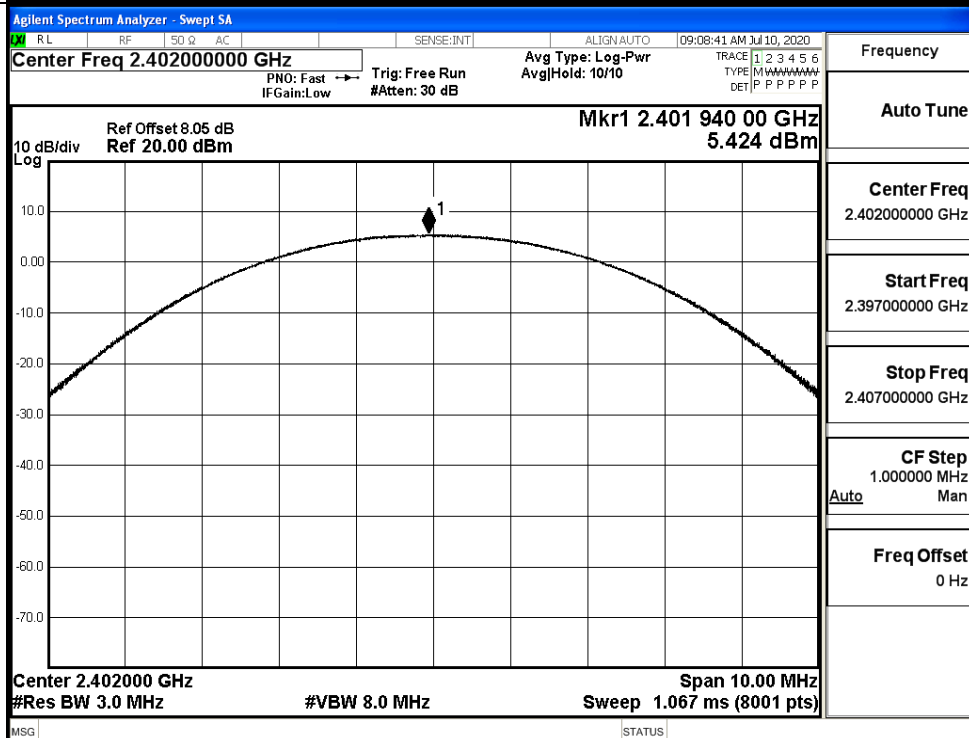
GFSK/LCH

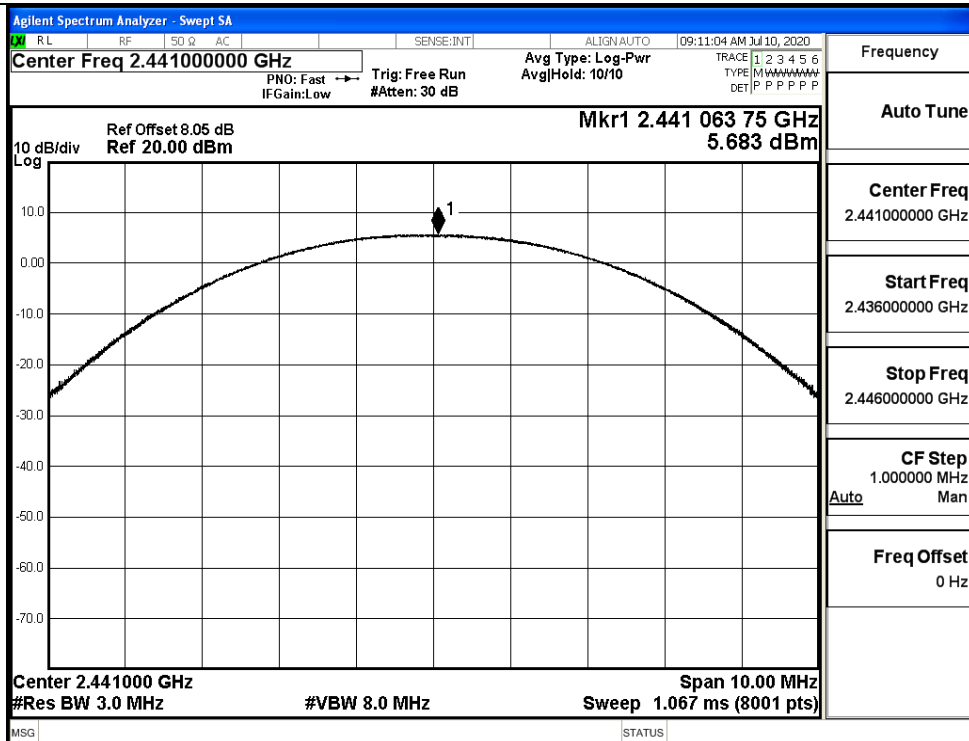
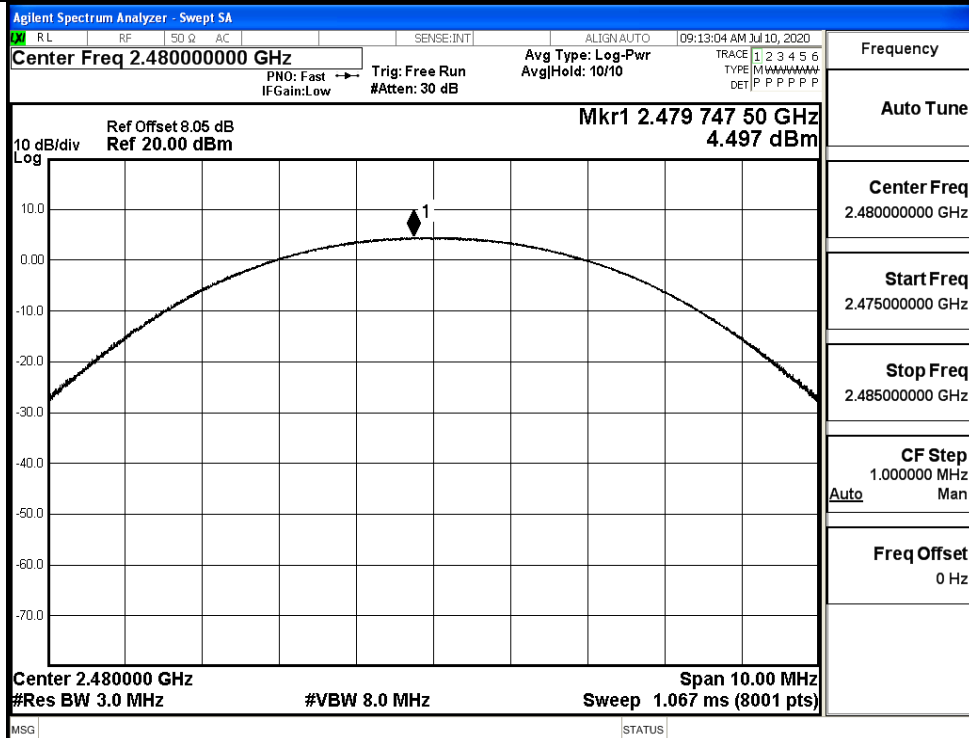


GFSK/MCH



GFSK/HCH

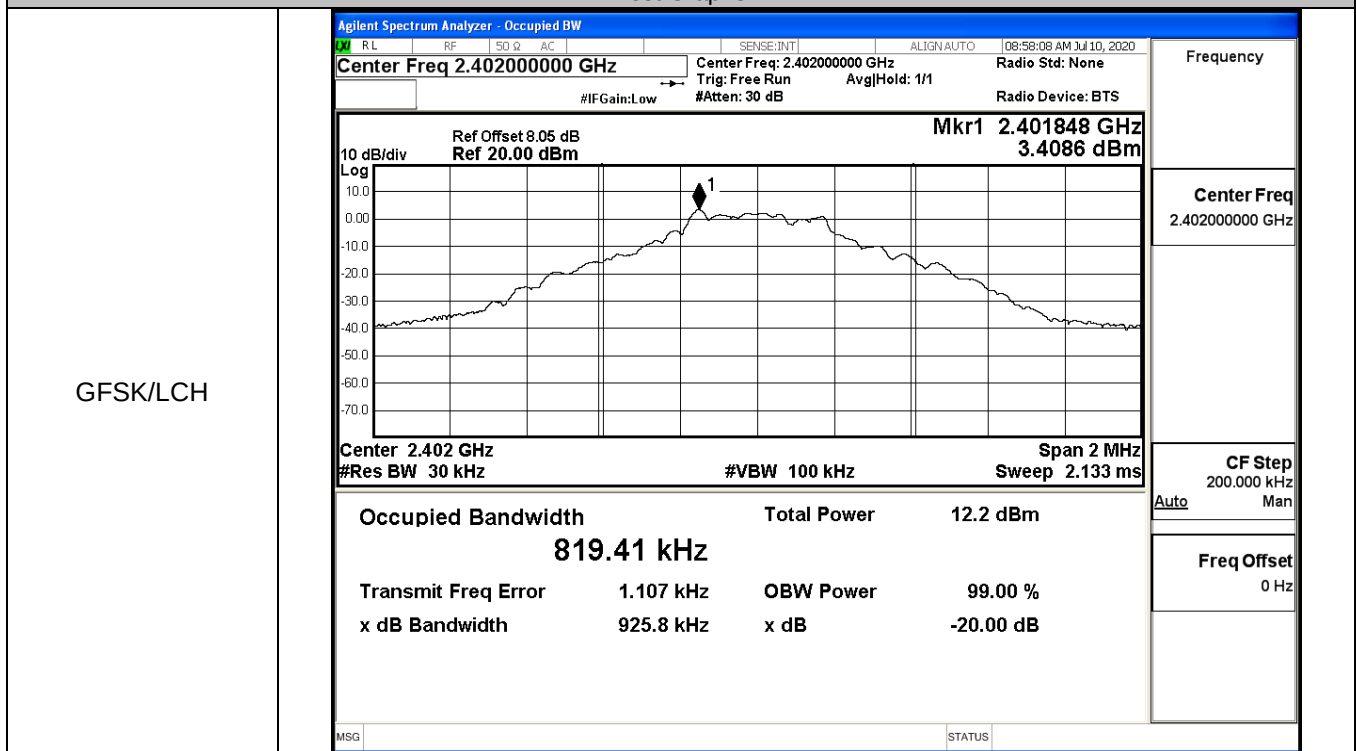
 π /4DQPSK/LCH

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

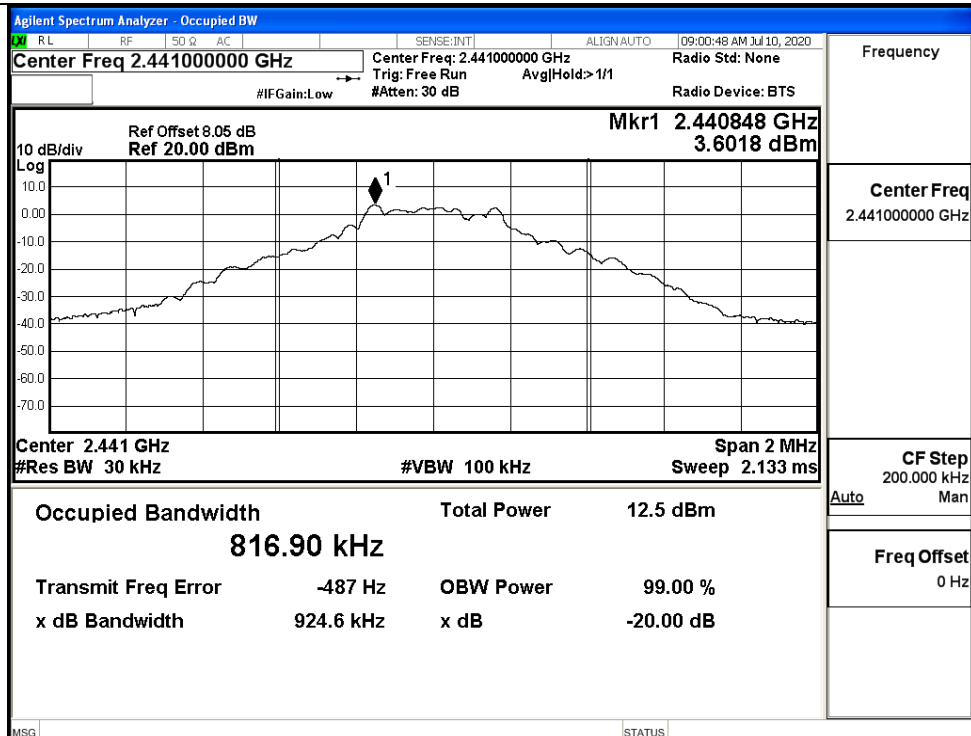
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9258	Not Specified	PASS
	MCH	0.9246	Not Specified	PASS
	HCH	0.9250	Not Specified	PASS
$\pi/4$ DQPSK	LCH	0.0000	Not Specified	PASS
	MCH	1.281	Not Specified	PASS
	HCH	1.282	Not Specified	PASS

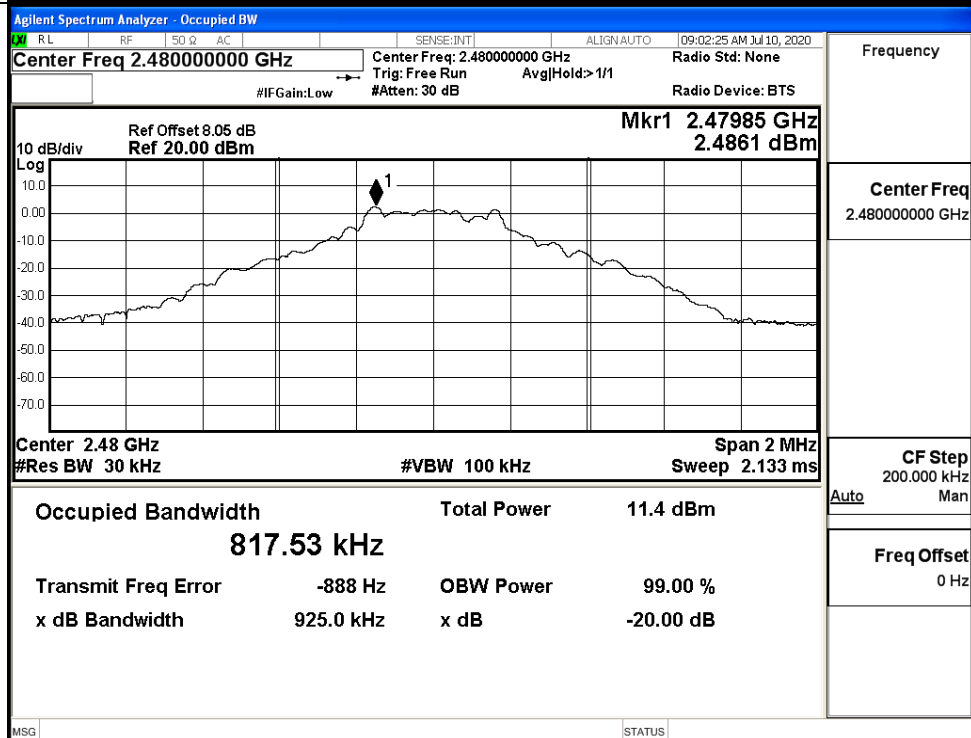
Test Graphs

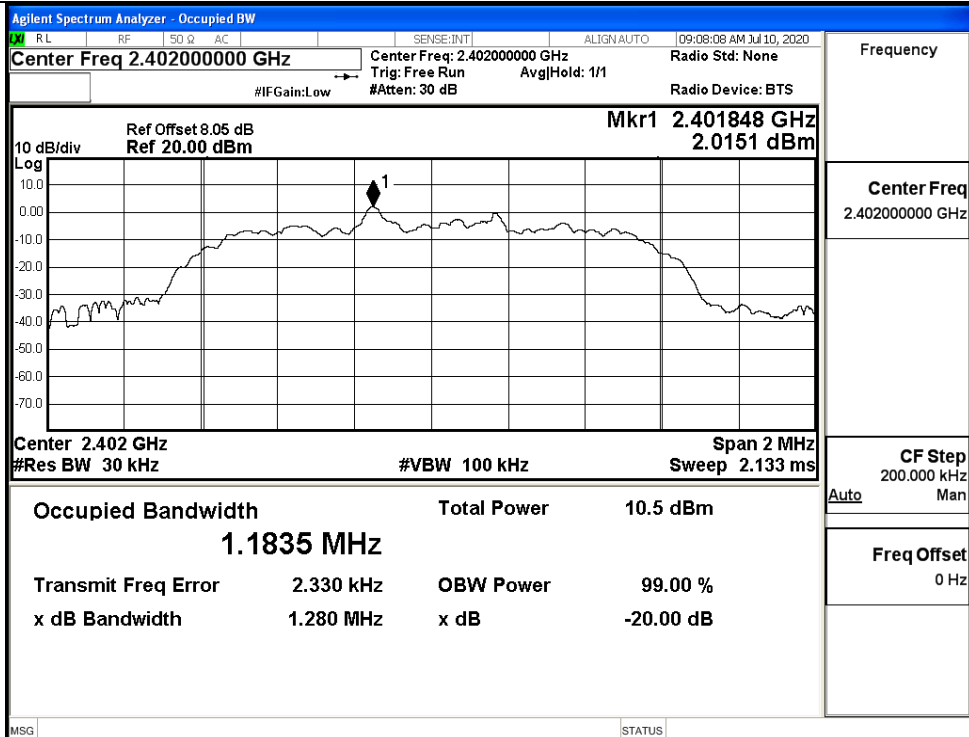
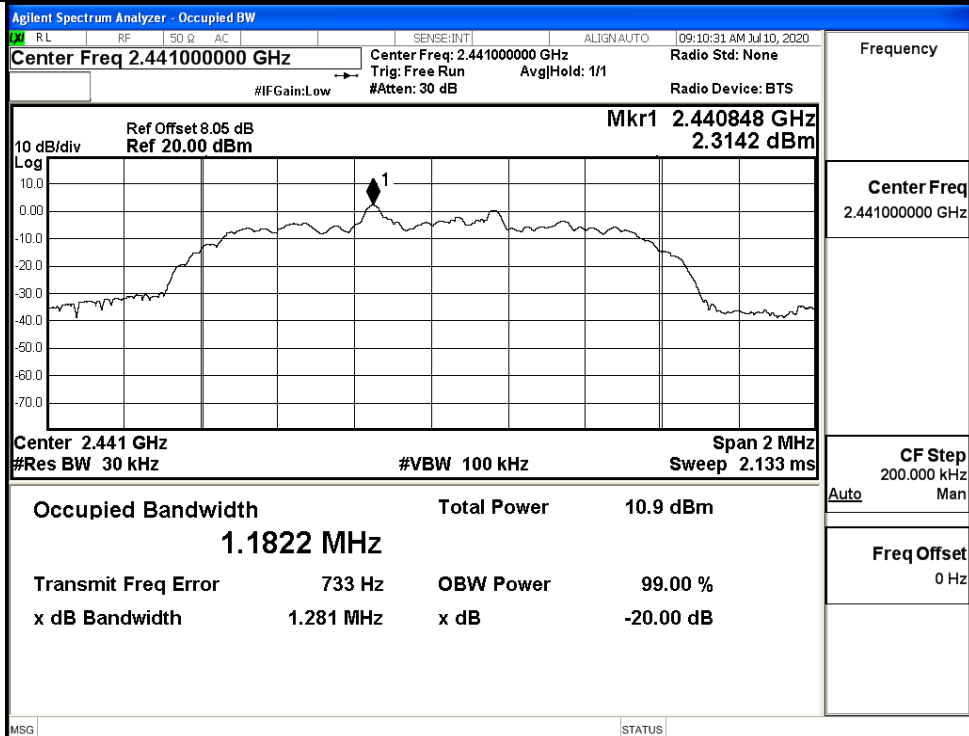


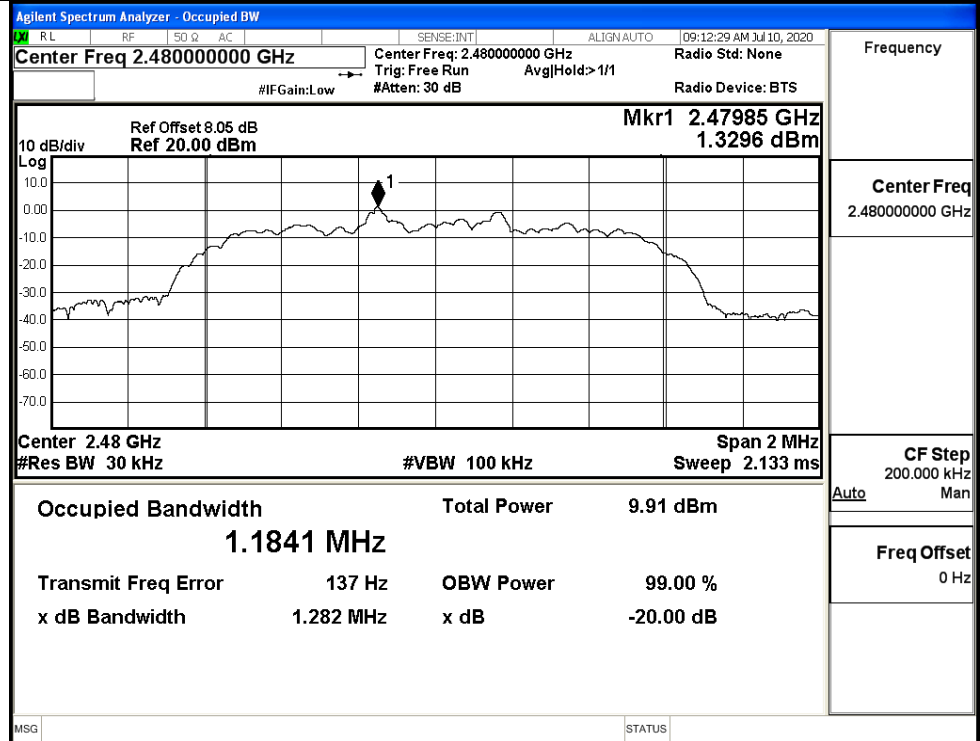
GFSK/MCH



GFSK/HCH



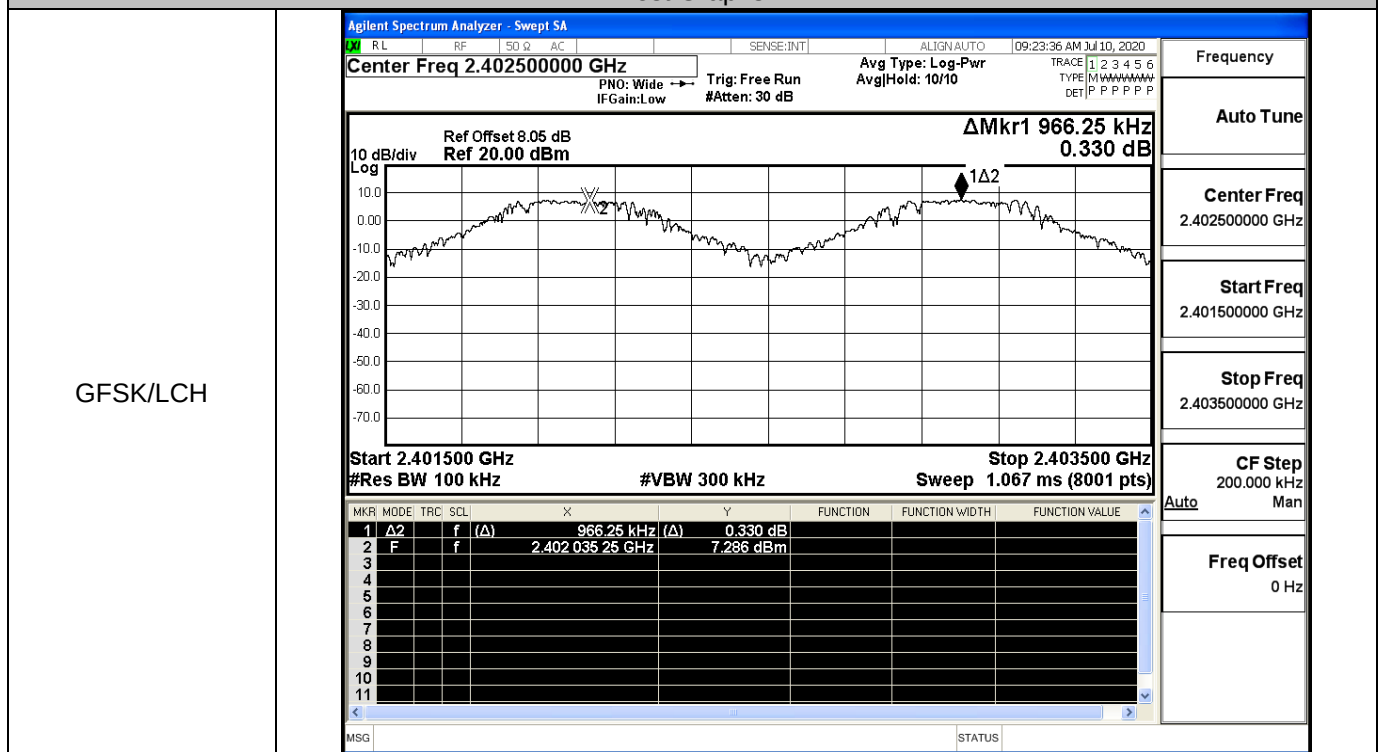
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

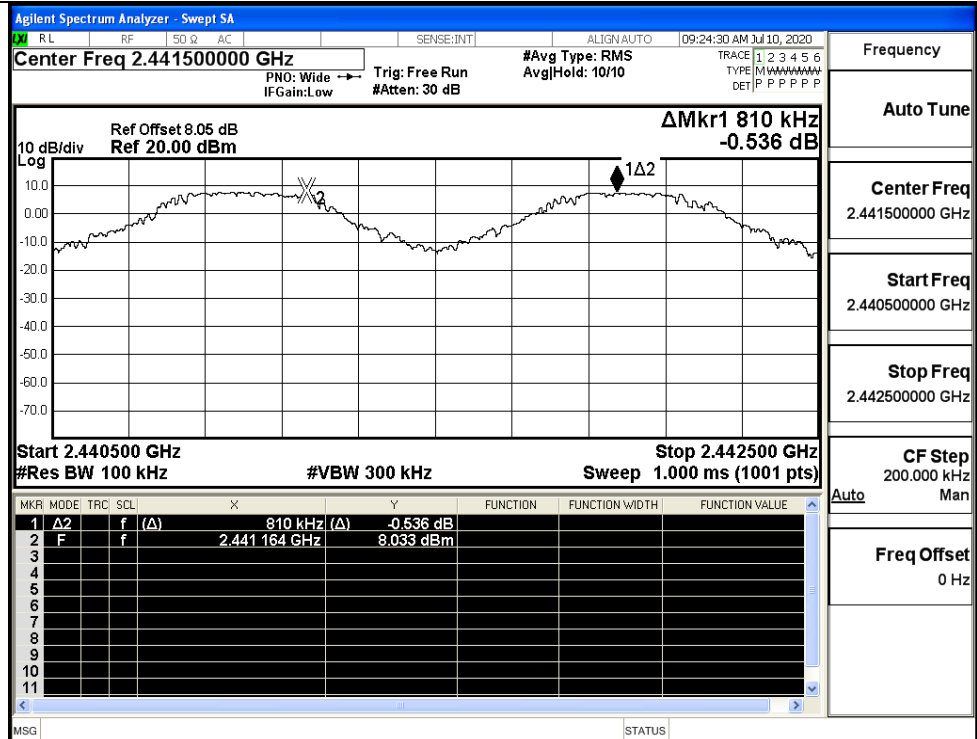
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.966	0.617	PASS
	MCH	0.810	0.617	PASS
	HCH	1.086	0.617	PASS
π /4DQPSK	LCH	1.222	0.855	PASS
	MCH	1.048	0.855	PASS
	HCH	1.368	0.855	PASS

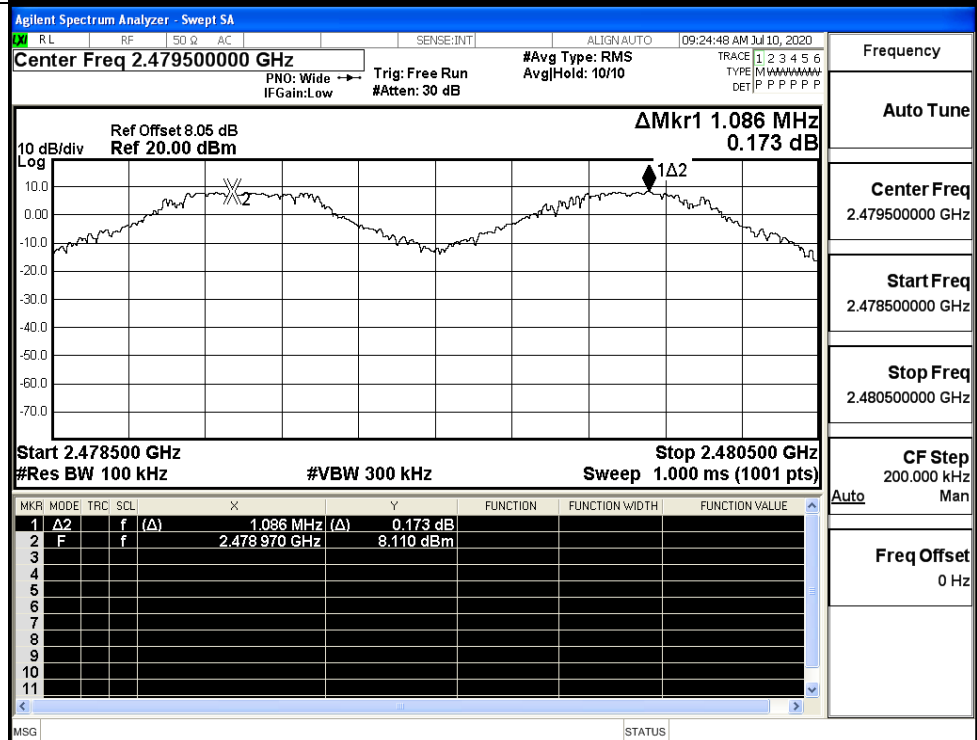
Test Graphs

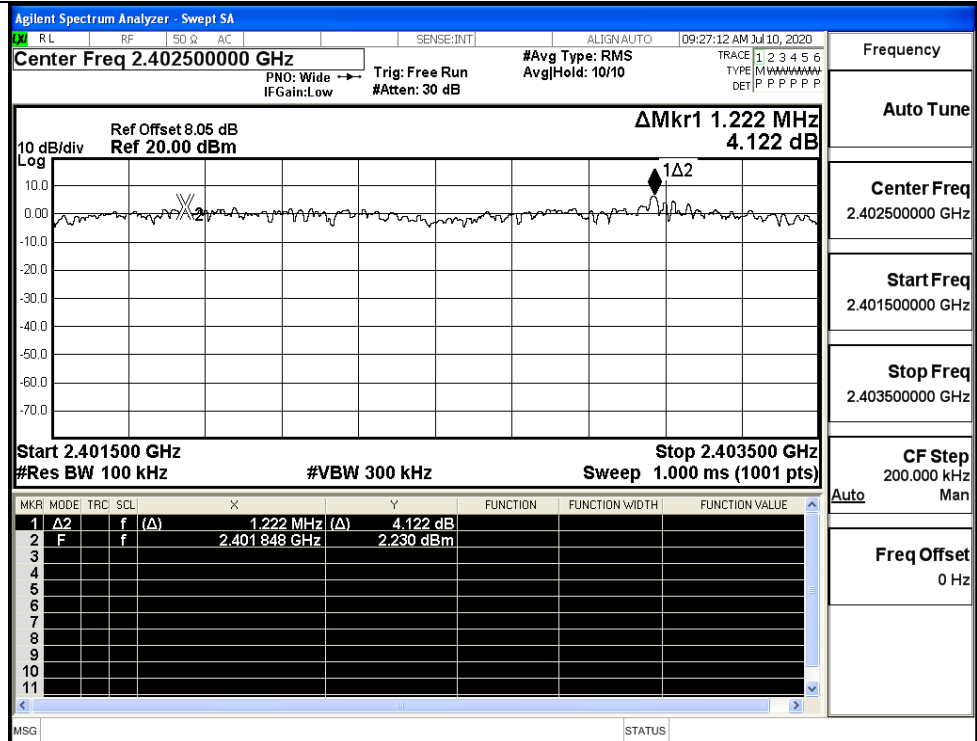
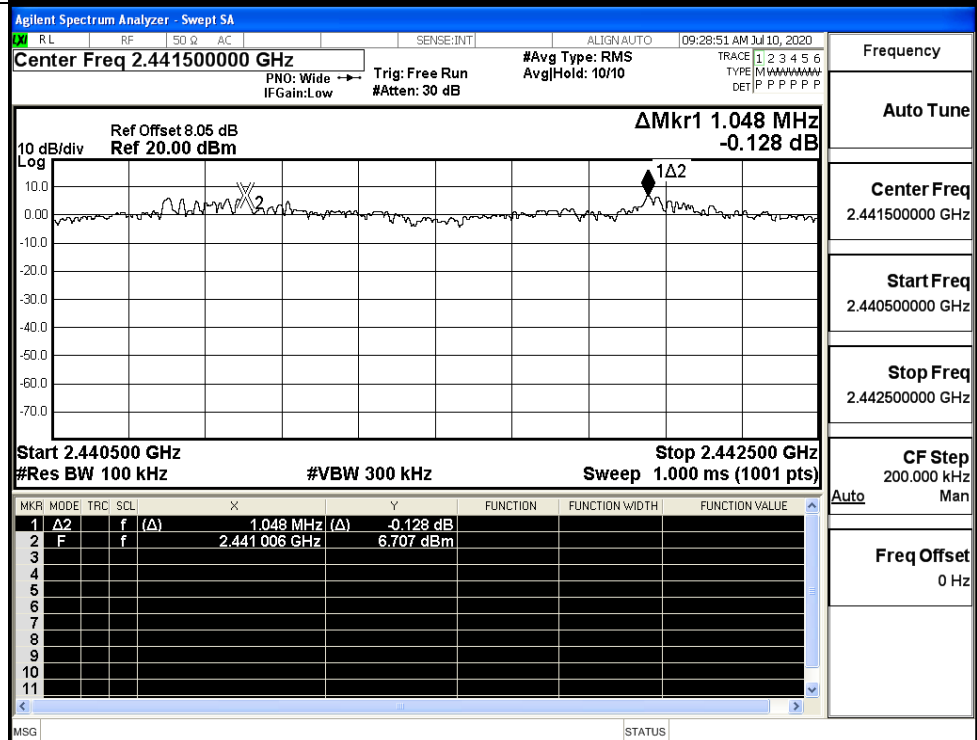


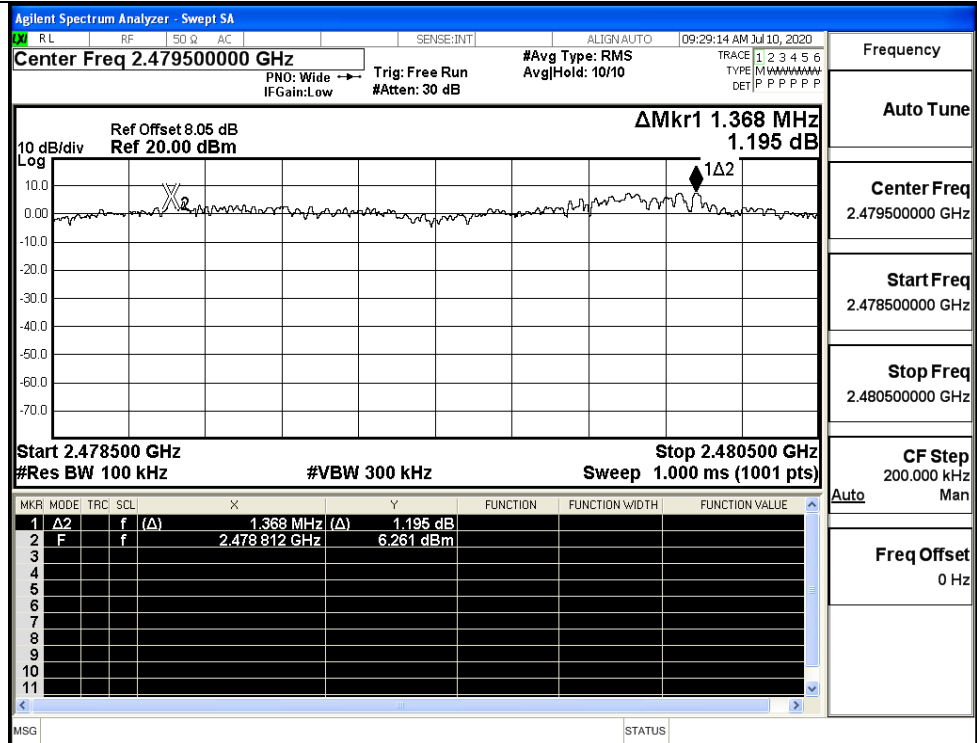
GFSK/MCH



GFSK/HCH



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

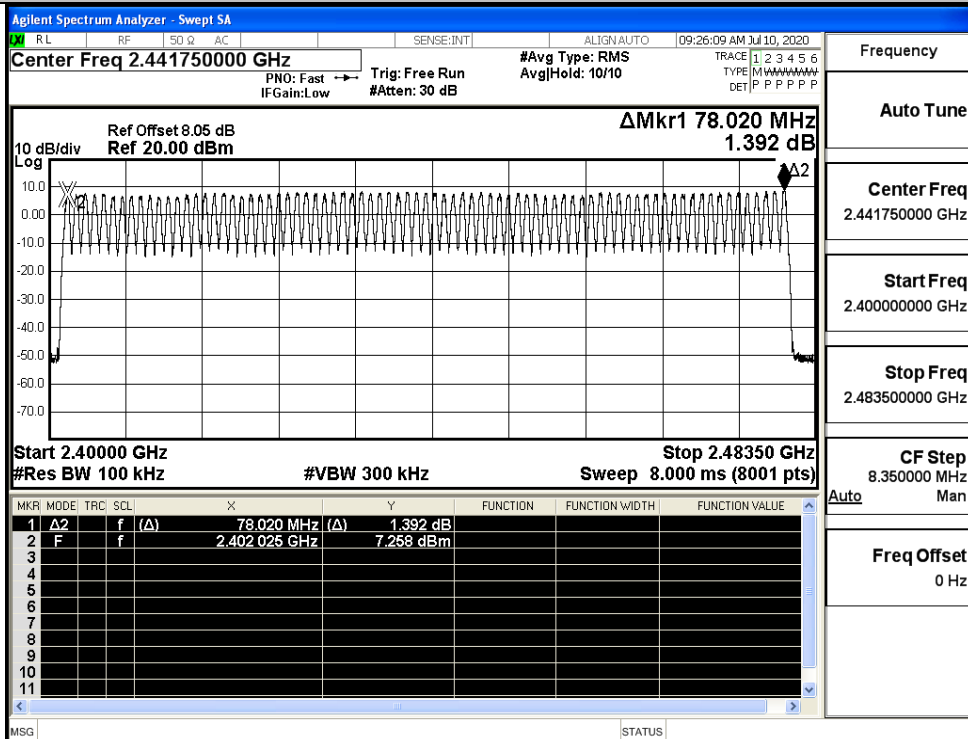
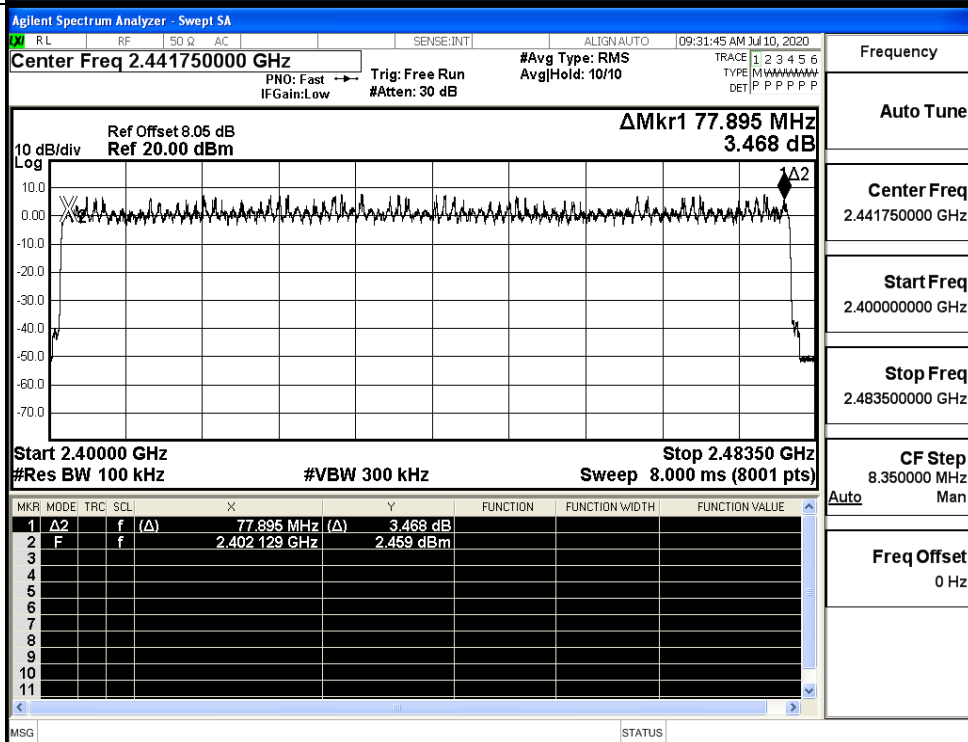
$\pi/4$ DQPSK/HCH

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

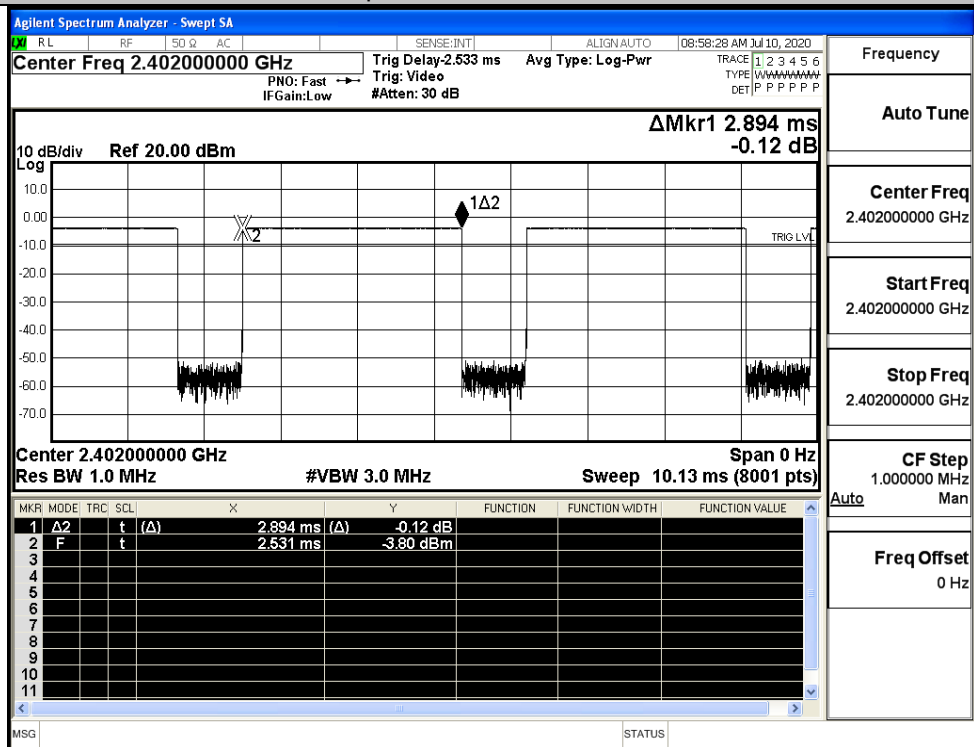
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

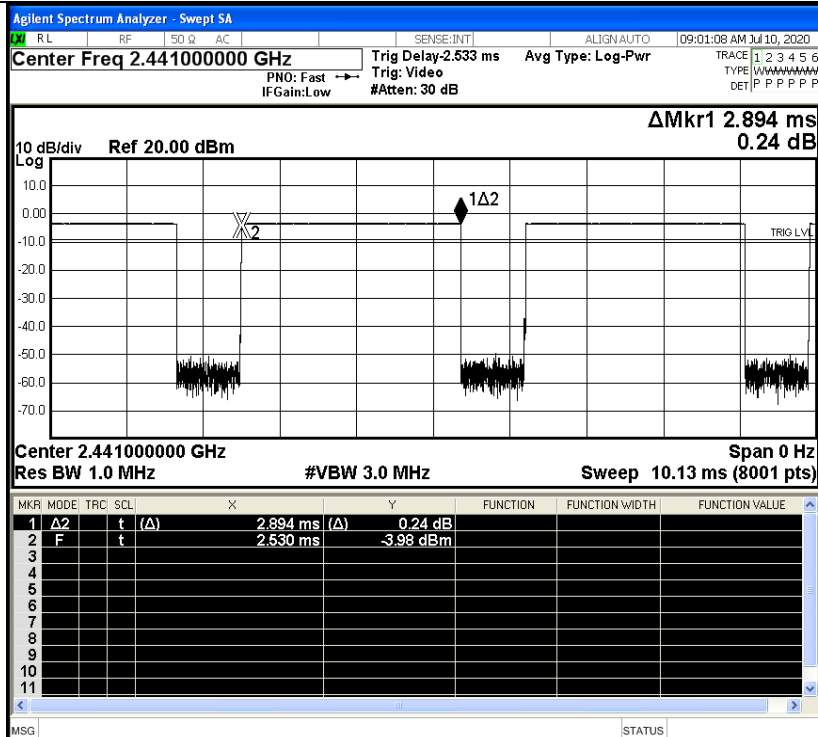
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.89	106.7	0.308	0.4	PASS
	DH5	MCH	2.89	106.7	0.308	0.4	PASS
	DH5	HCH	2.89	106.7	0.308	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.89	106.7	0.307	0.4	PASS
	2DH5	MCH	2.89	106.7	0.307	0.4	PASS
	2DH5	HCH	2.89	106.7	0.307	0.4	PASS

Test Graphs

GFSK_DH5/LCH



GFSK_DH5/MCH

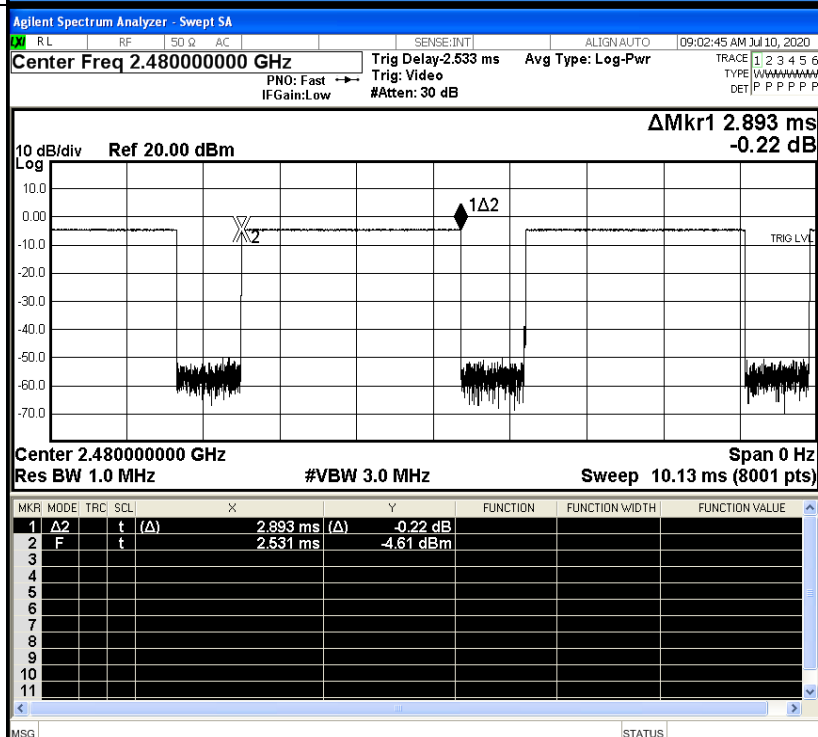


Frequency

Auto Tune

Center Freq
2.441000000 GHzStart Freq
2.441000000 GHzStop Freq
2.441000000 GHzCF Step
1.000000 MHz
Auto ManFreq Offset
0 Hz

GFSK_DH5/HCH

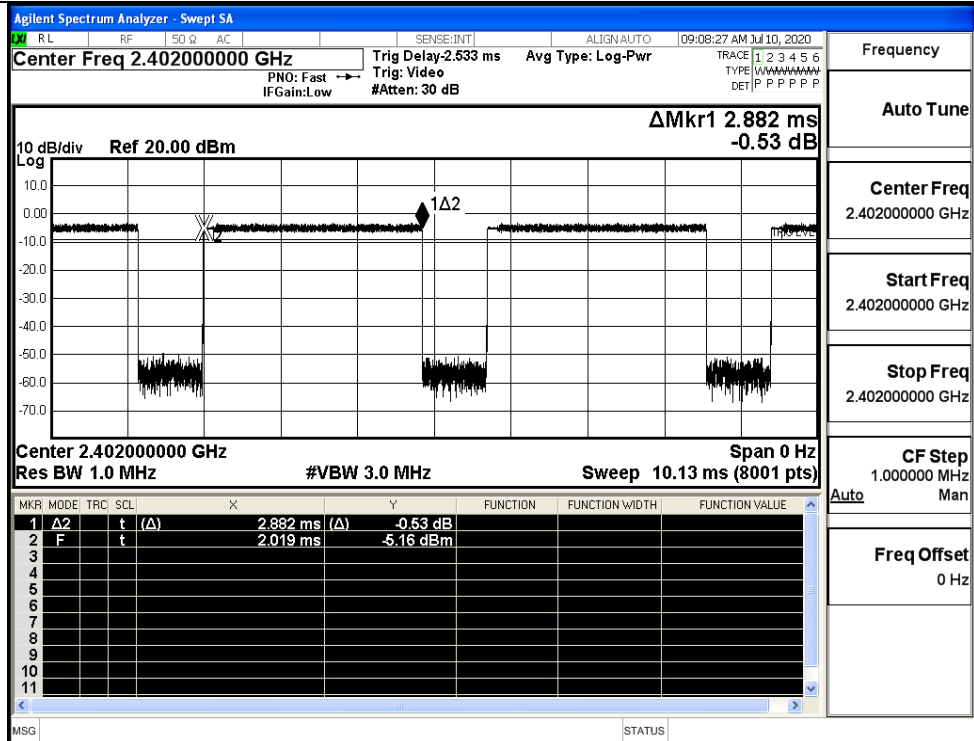


Frequency

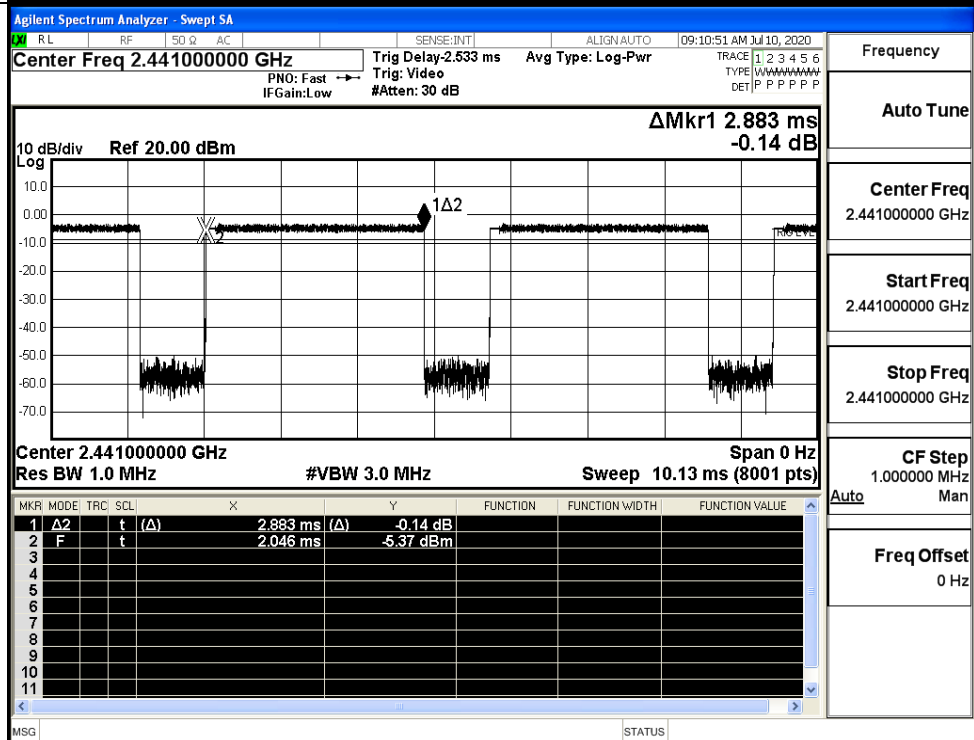
Auto Tune

Center Freq
2.480000000 GHzStart Freq
2.480000000 GHzStop Freq
2.480000000 GHzCF Step
1.000000 MHz
Auto ManFreq Offset
0 Hz

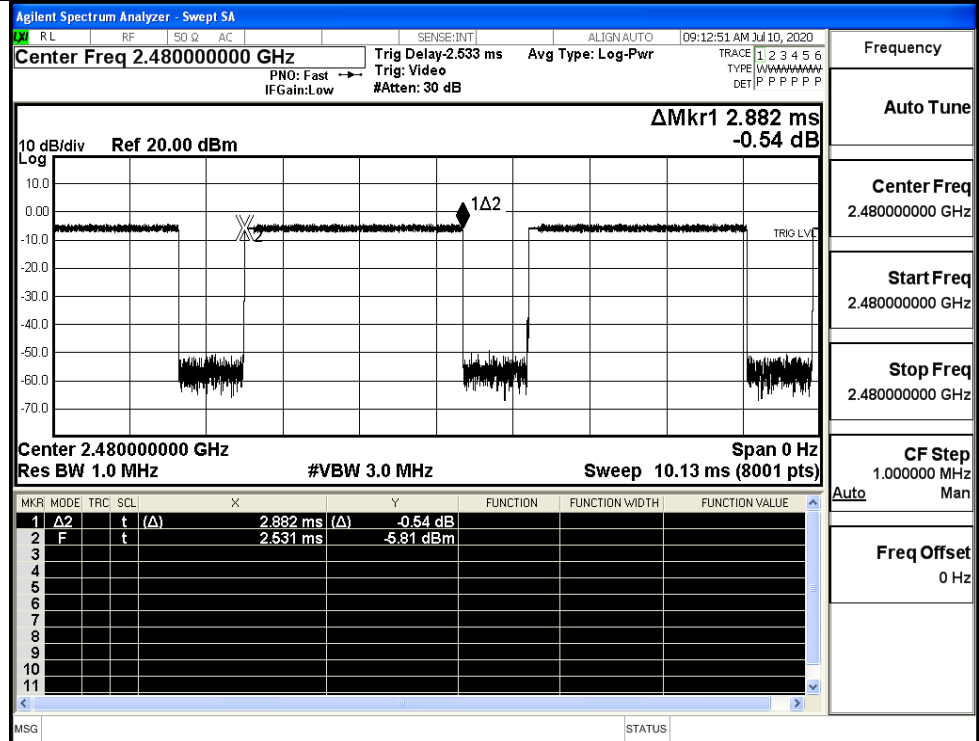
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



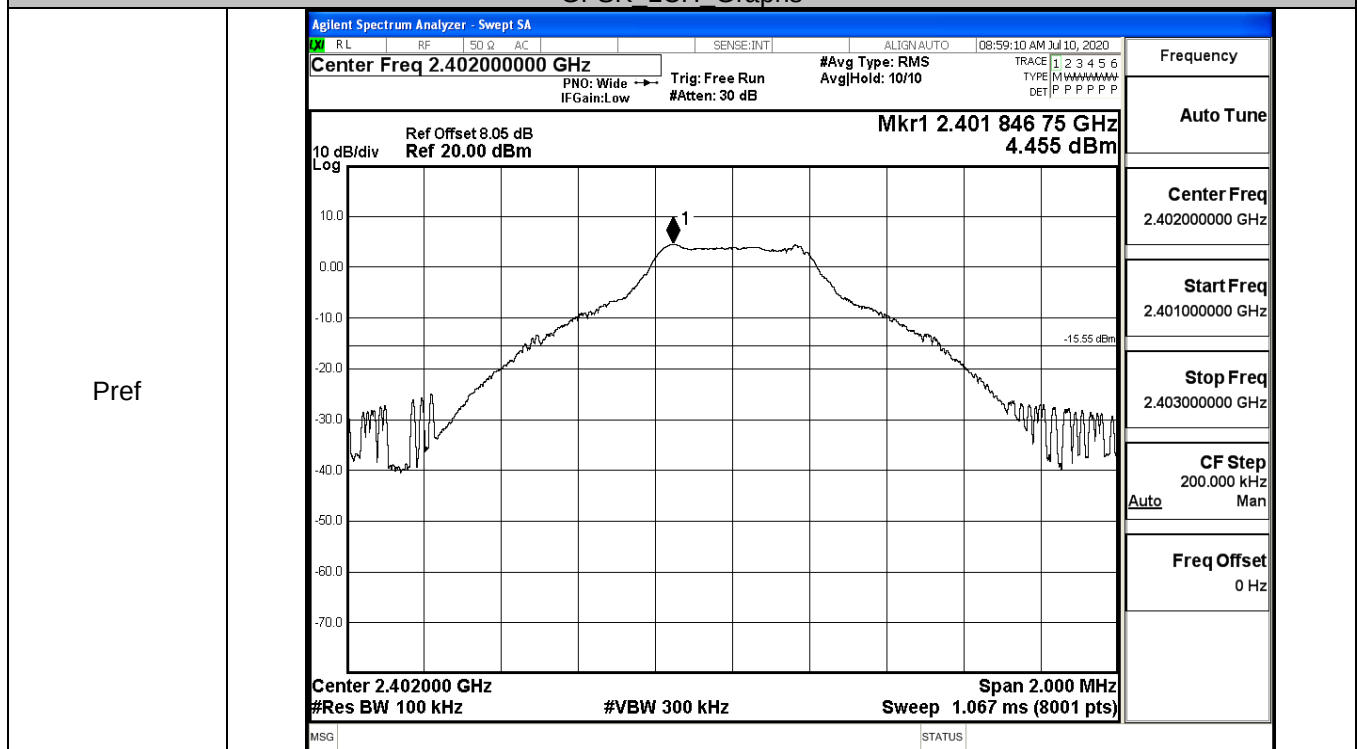
$\pi/4$ DQPSK
_2DH5/HCH

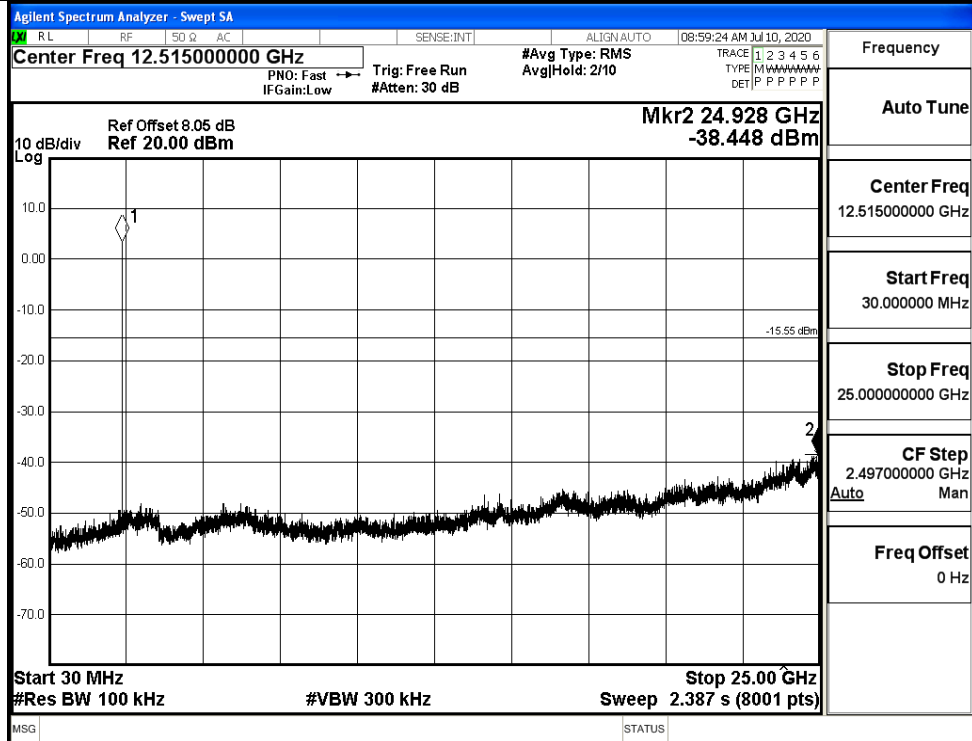


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.455	-38.448	-15.545	PASS
	MCH	4.671	-38.028	-15.329	PASS
	HCH	3.565	-37.885	-16.435	PASS
$\pi/4$ DQPSK	LCH	3.165	-37.363	-16.835	PASS
	MCH	3.088	-38.497	-16.912	PASS
	HCH	2.44	-37.686	-17.560	PASS

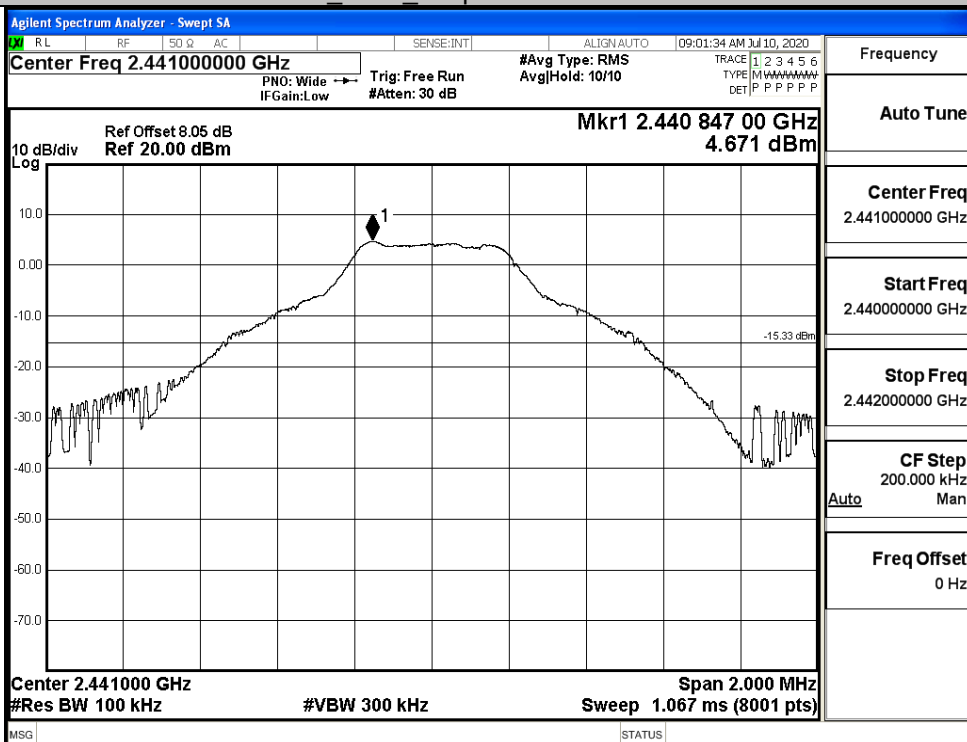
GFSK LCH Graphs



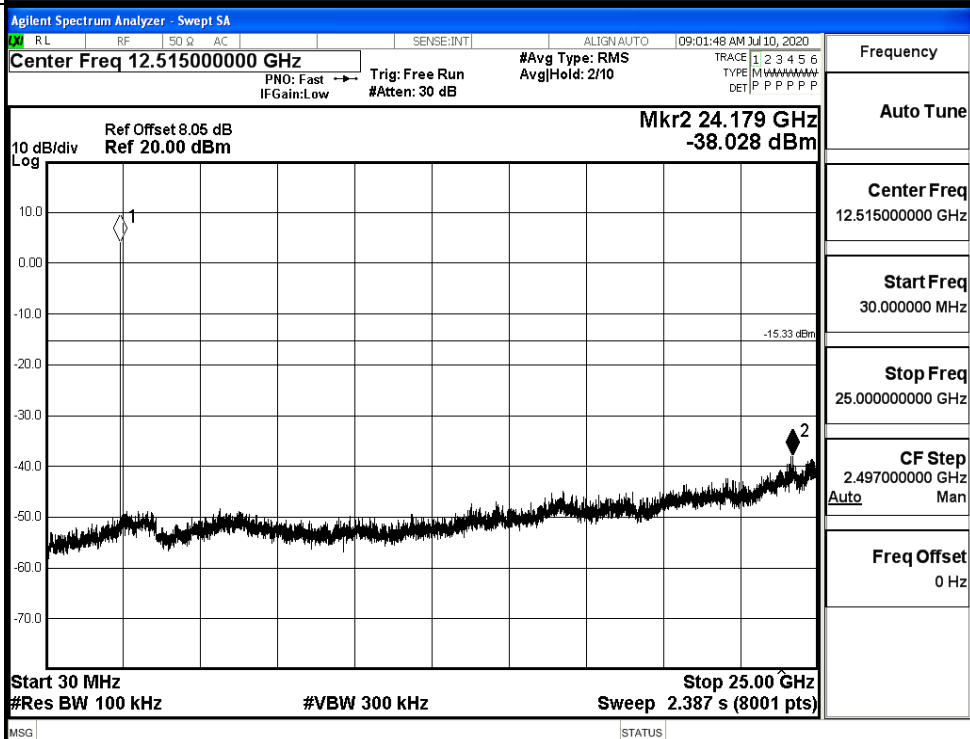
P_uw

GFSK_MCH_Graphs

Pref

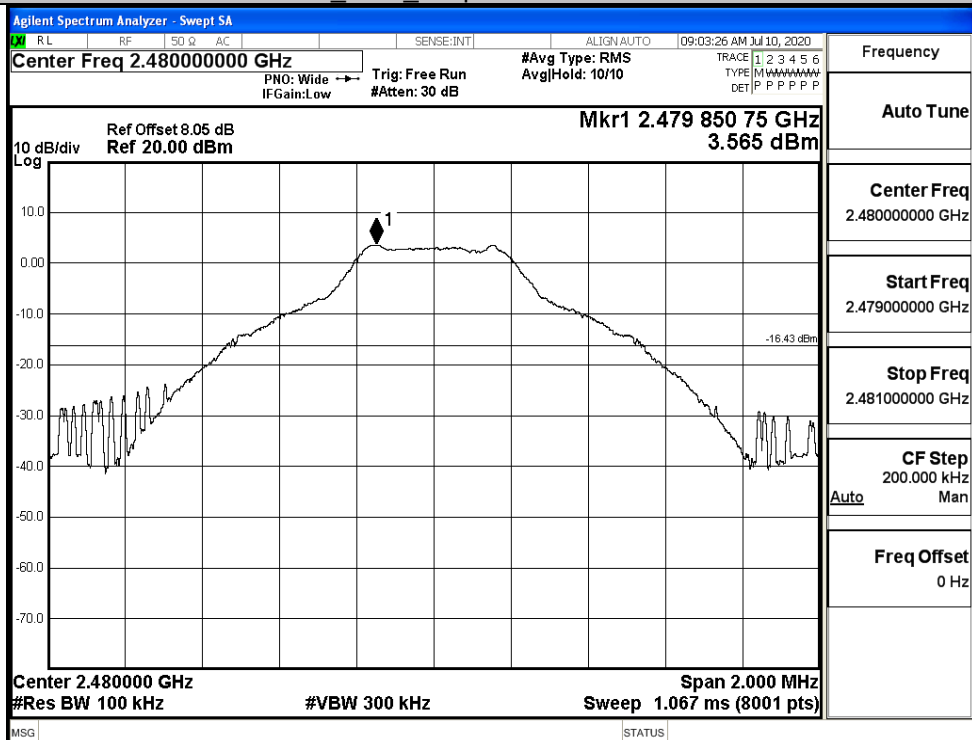


Puw

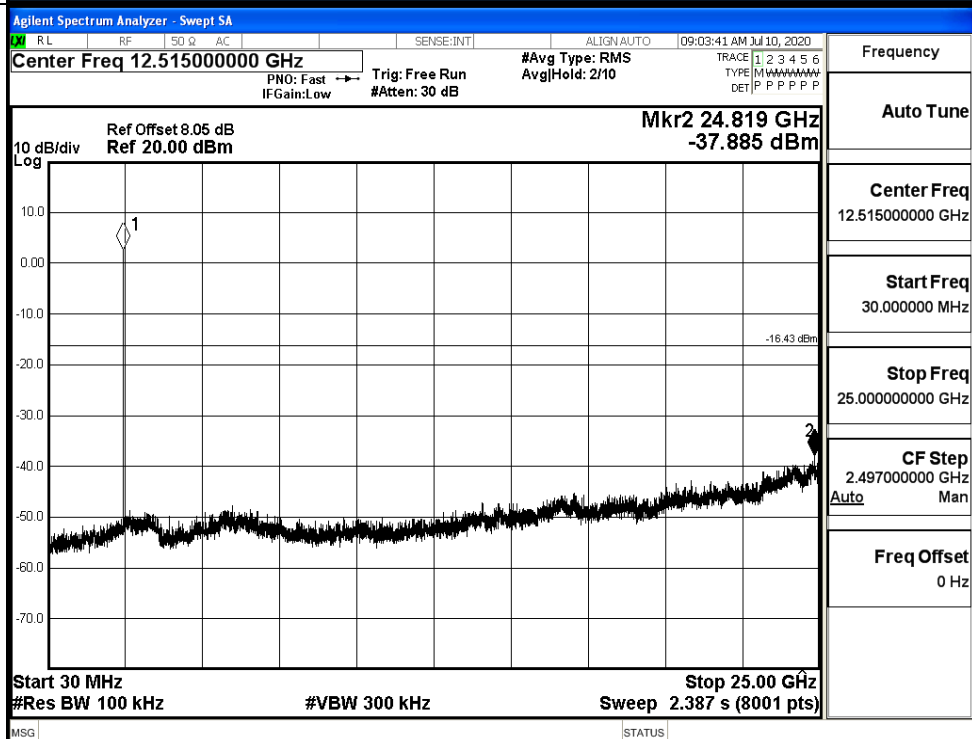


GFSK HCH Graphs

Pref

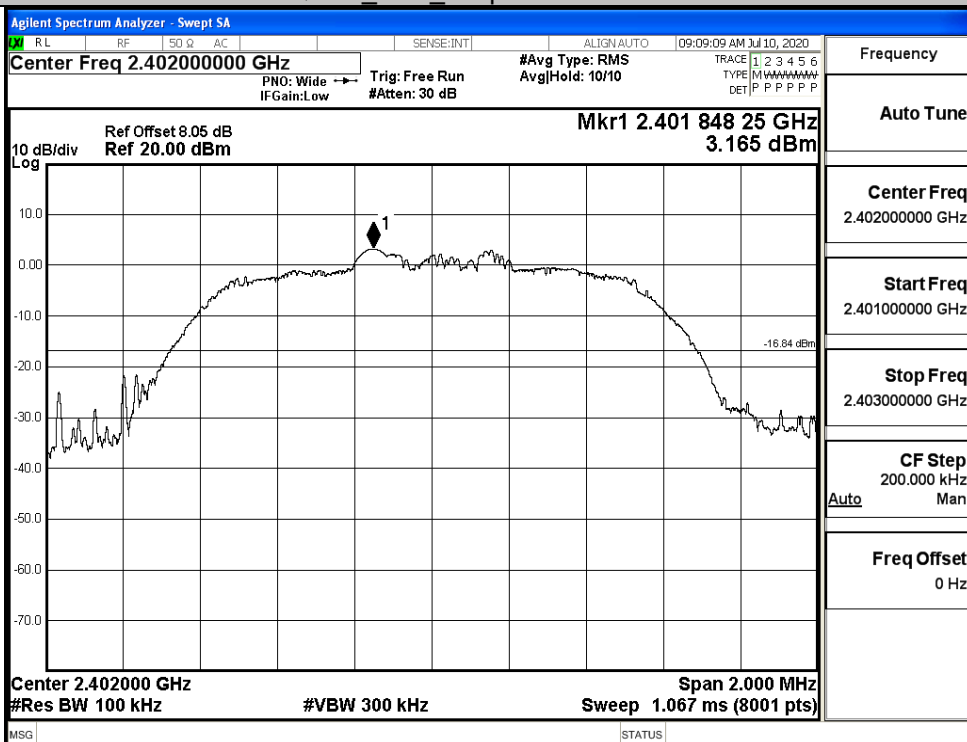


Puw

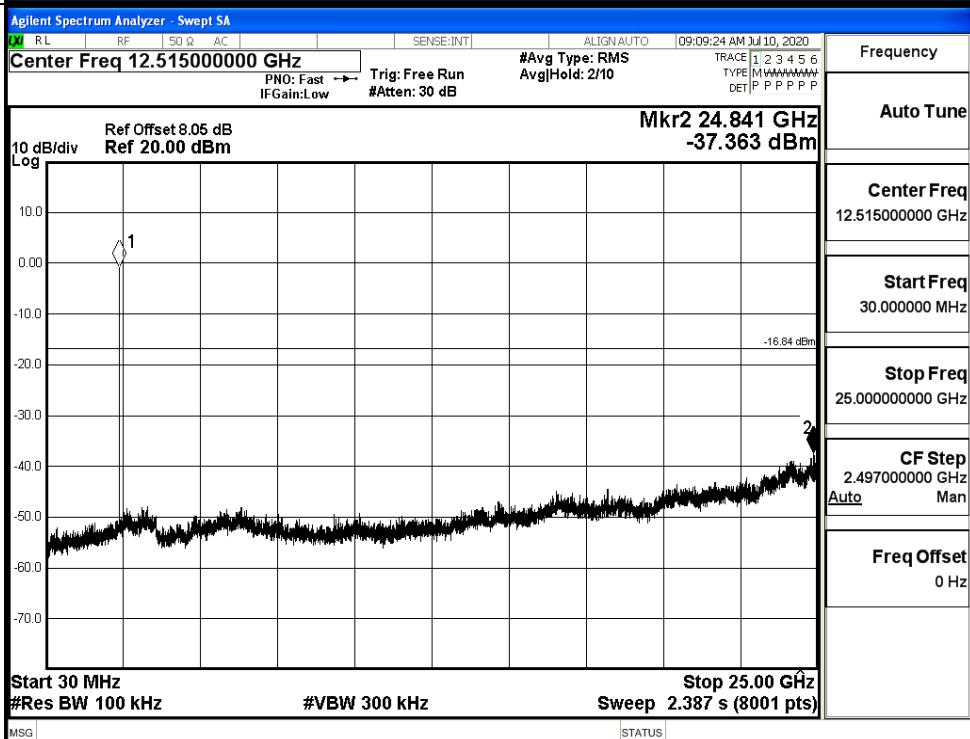


$\pi/4$ DQPSK_LCH_Graphs

Pref

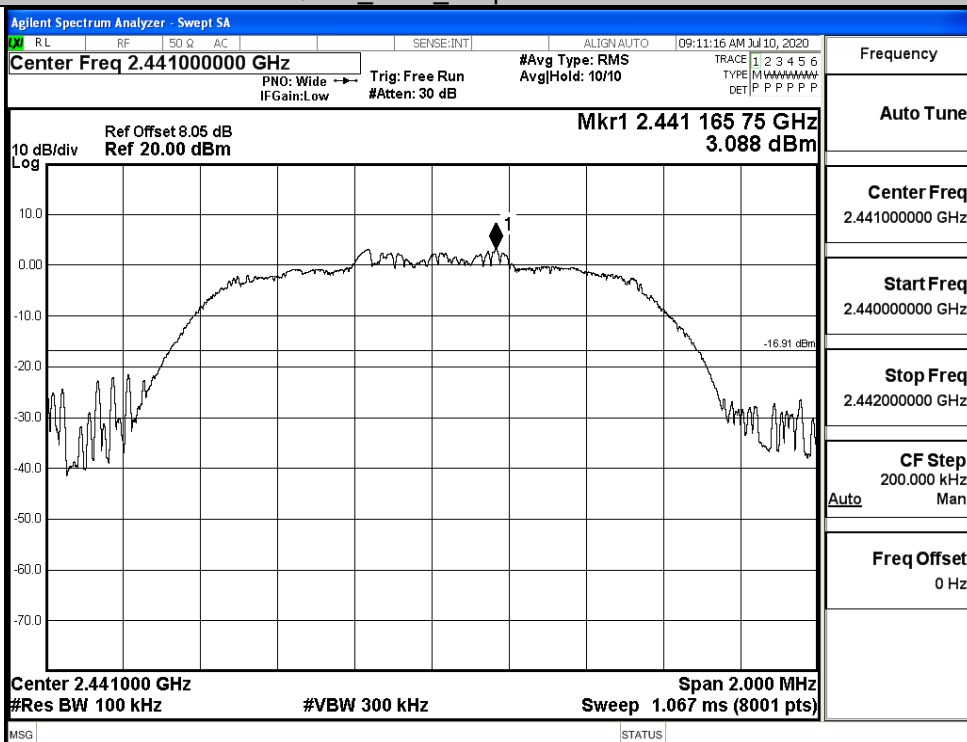


Puw

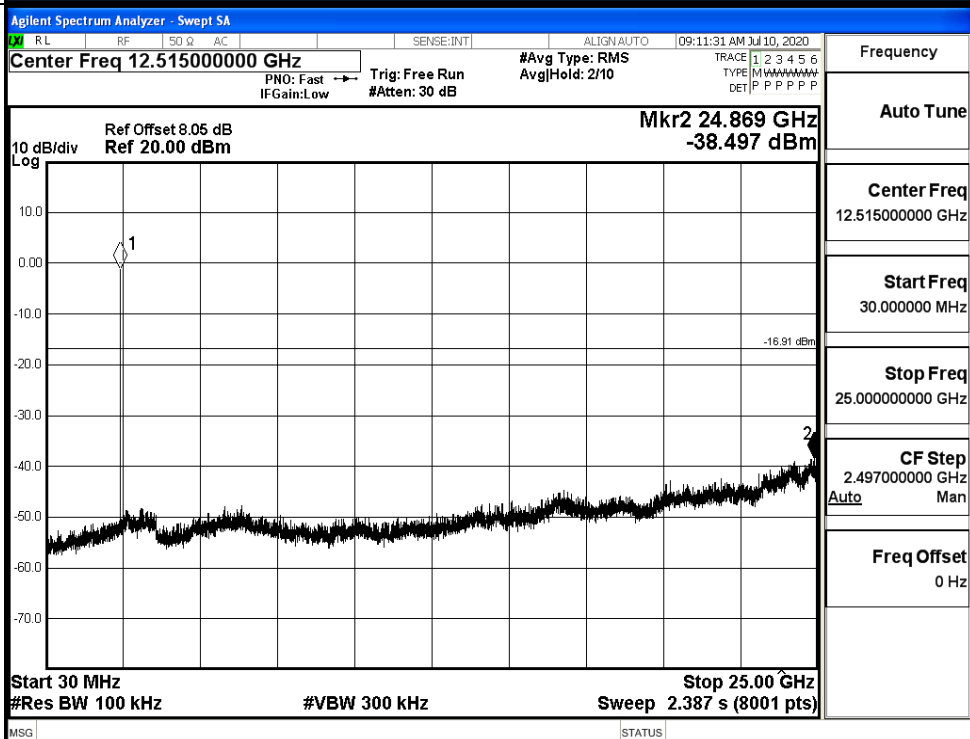


π /4DQPSK_MCH_Graphs

Pref

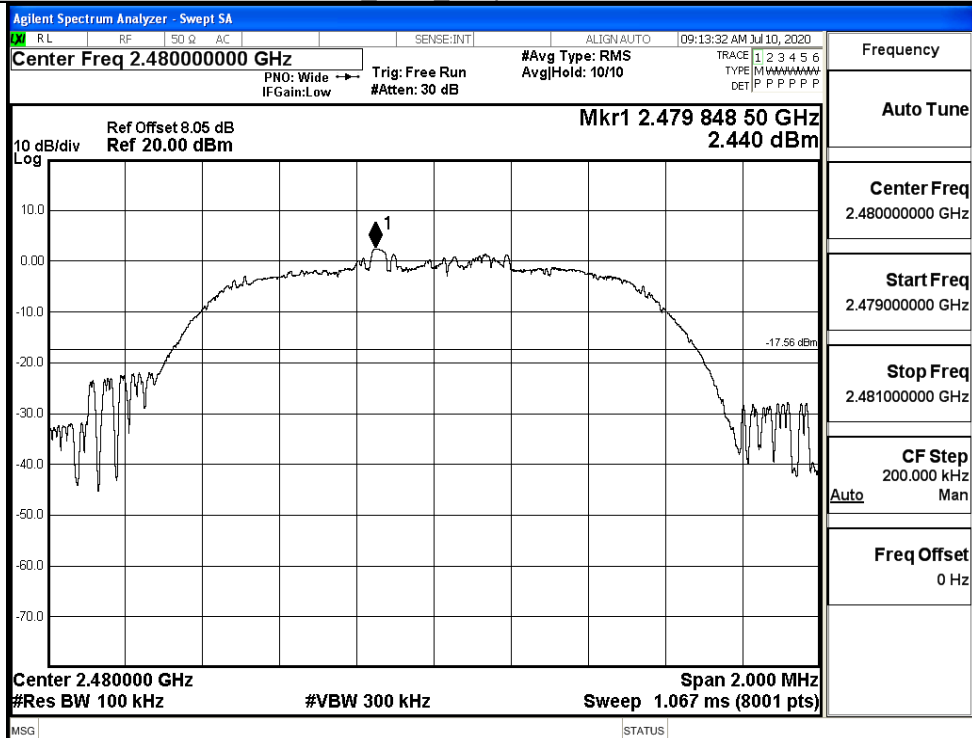


Puw

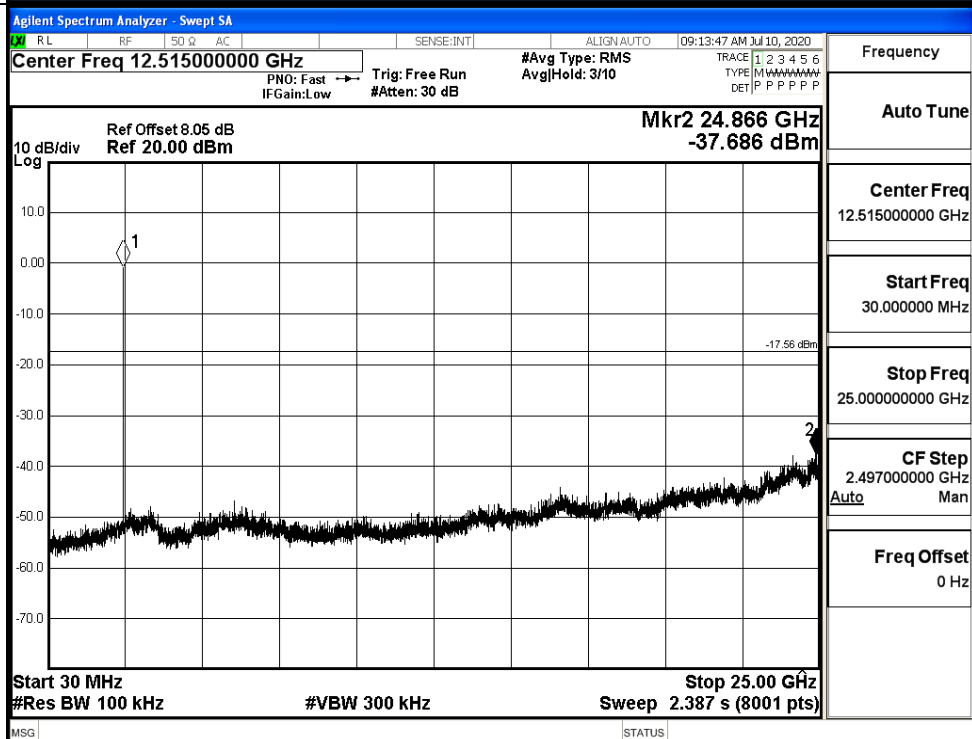


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

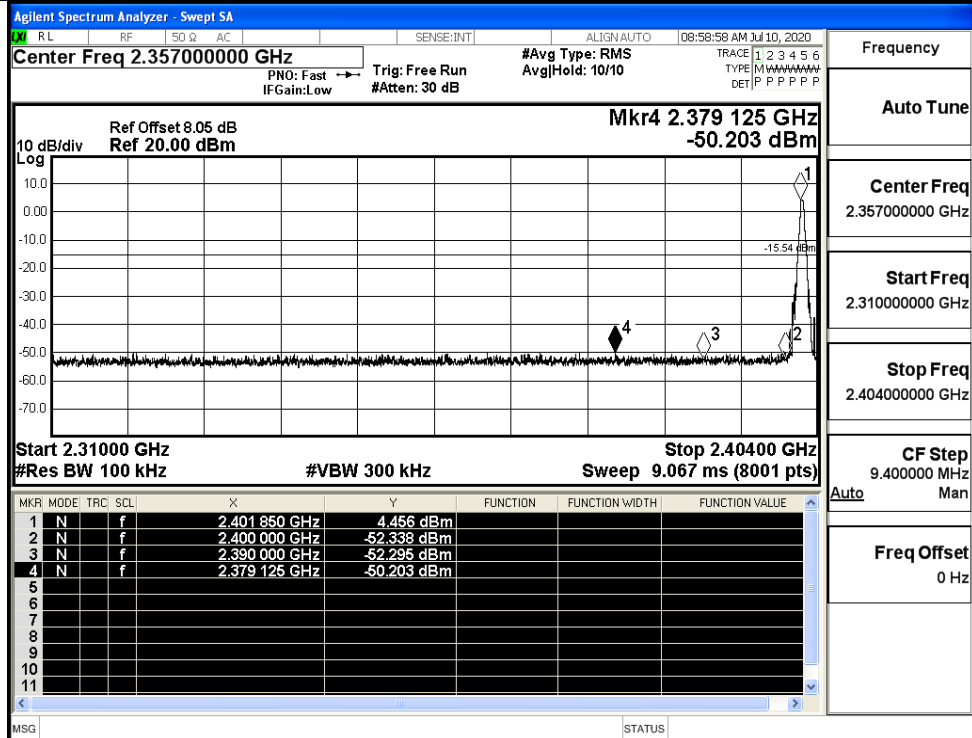


A.7 Band-edge for RF Conducted Emissions

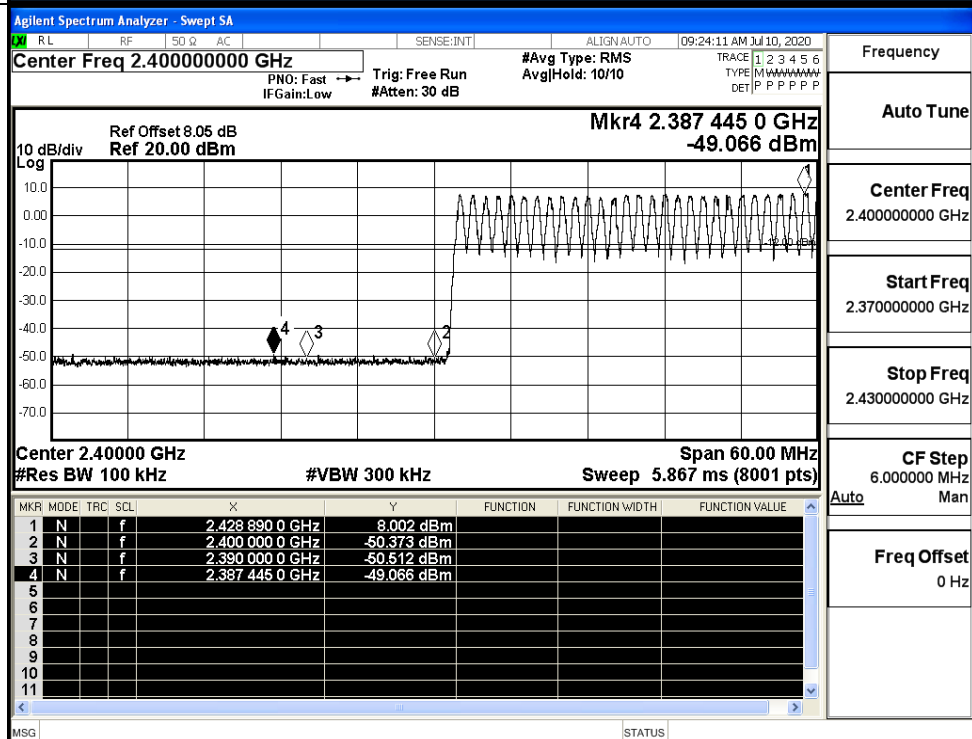
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	4.456	Off	-50.203	-15.54	PASS
			8.002	On	-49.066	-12	PASS
	HCH	2480	3.582	Off	-49.559	-16.42	PASS
			8.350	On	-48.009	-11.65	PASS
$\pi/4$ DQPSK	LCH	2402	3.202	Off	-50.075	-16.8	PASS
			7.264	On	-49.074	-12.74	PASS
	HCH	2480	1.927	Off	-49.065	-18.07	PASS
			7.677	On	-48.427	-12.32	PASS

Test Graphs

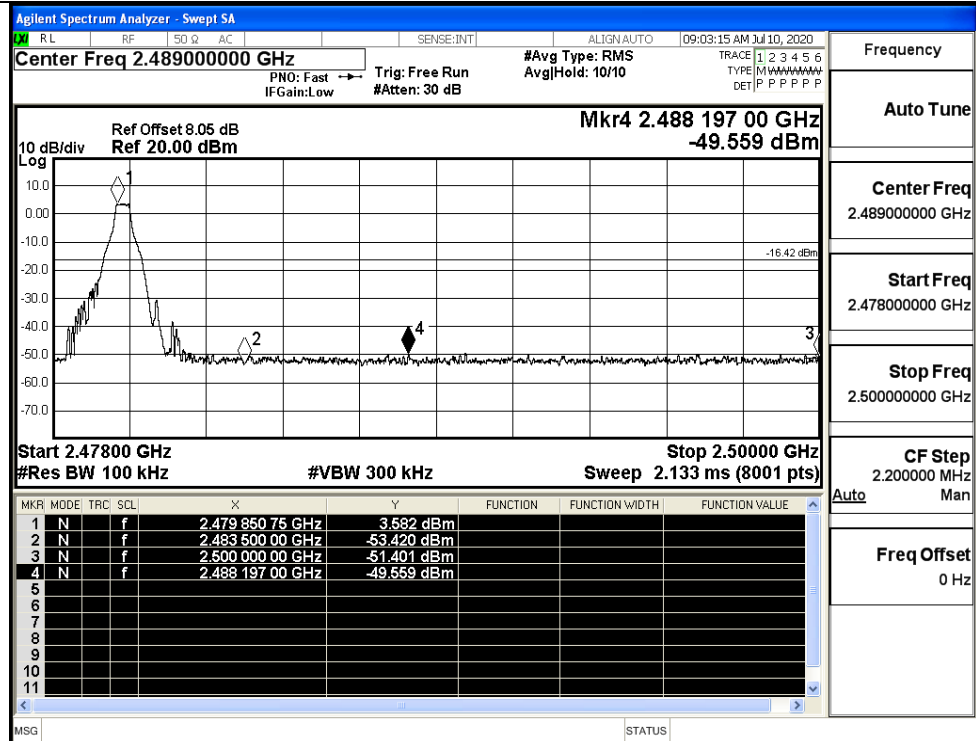
GFSK/LCH/No Hop



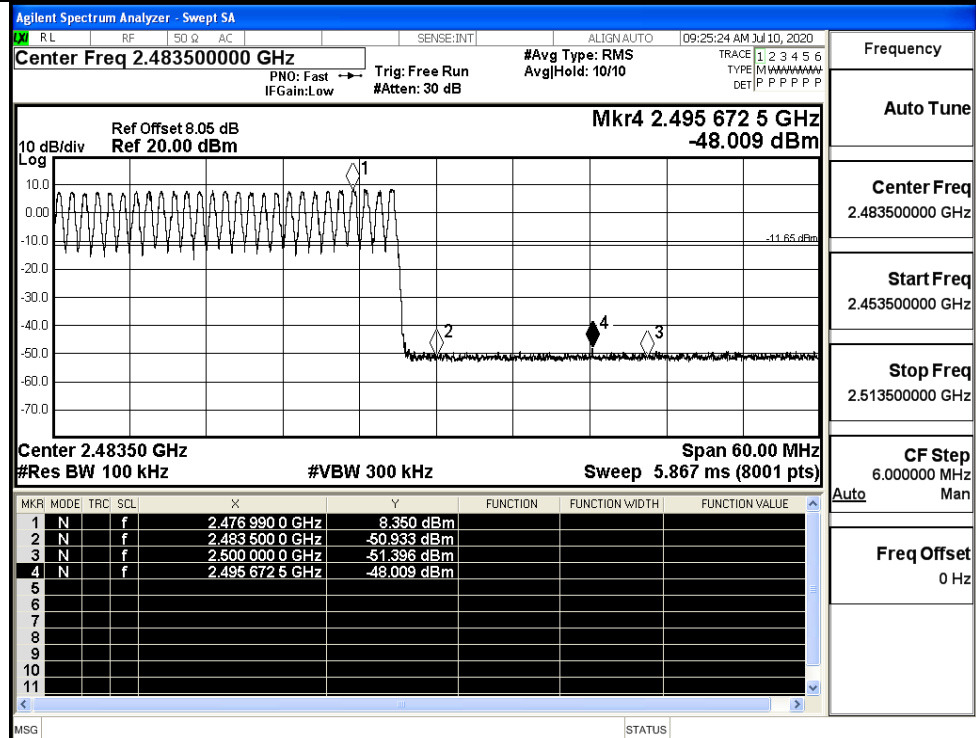
GFSK/LCH/Hop



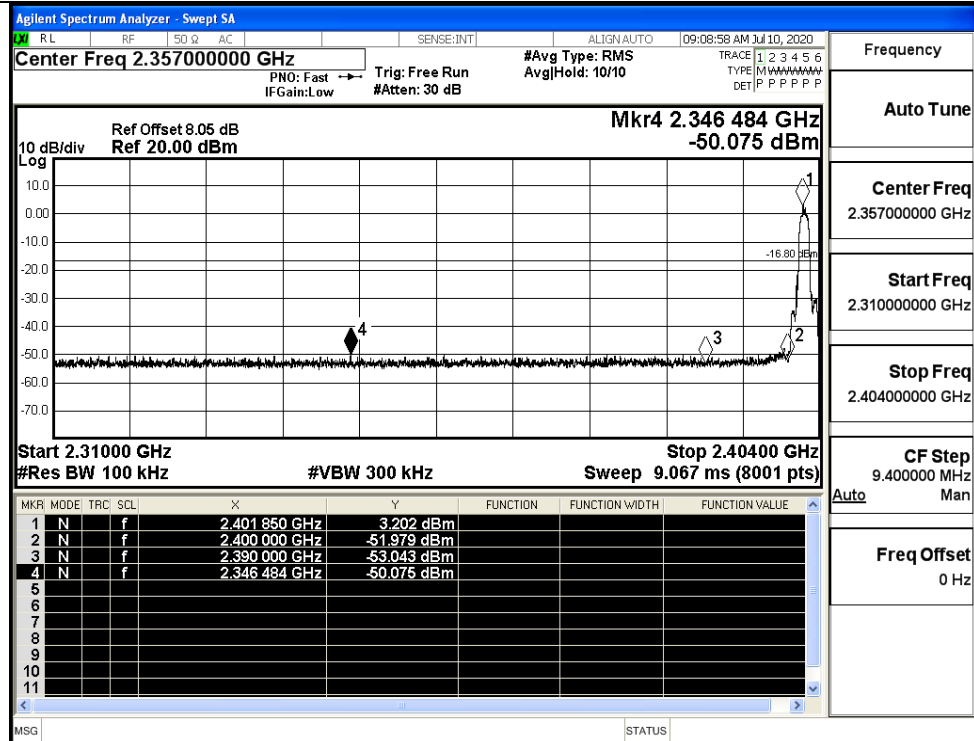
GFSK/HCH/No Hop



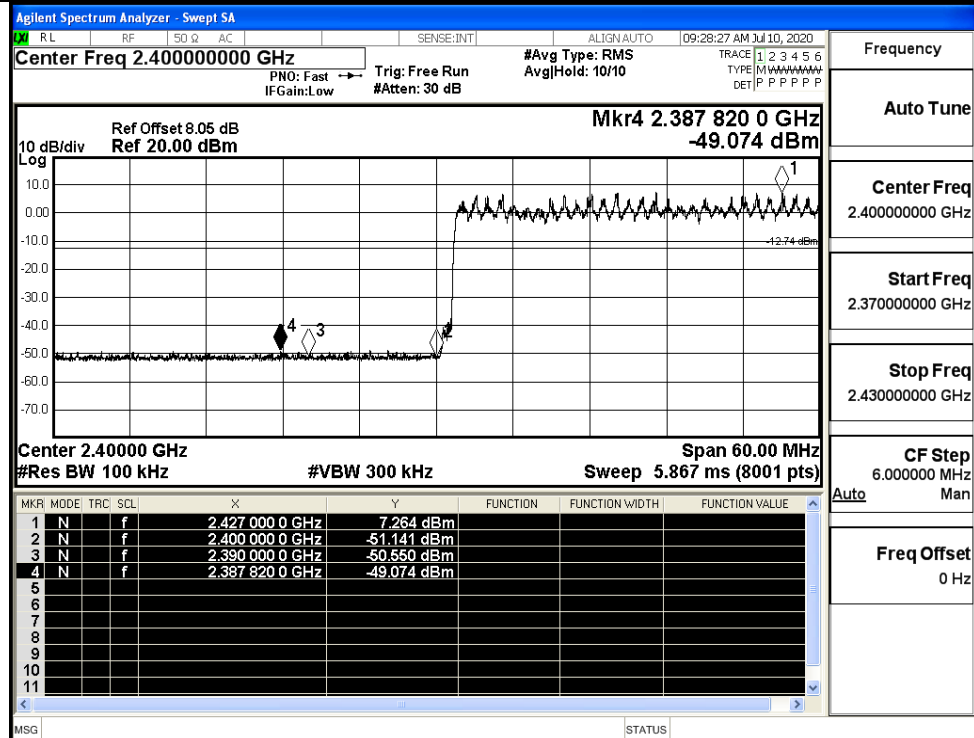
GFSK/HCH/Hop



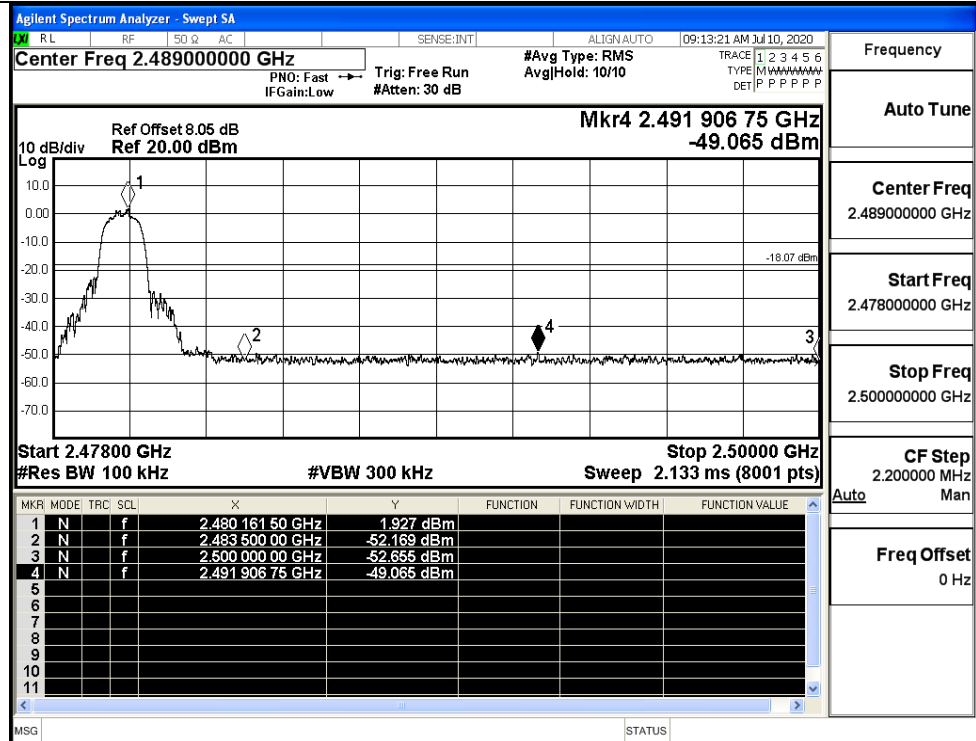
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

Start Freq
2.478000000 GHz

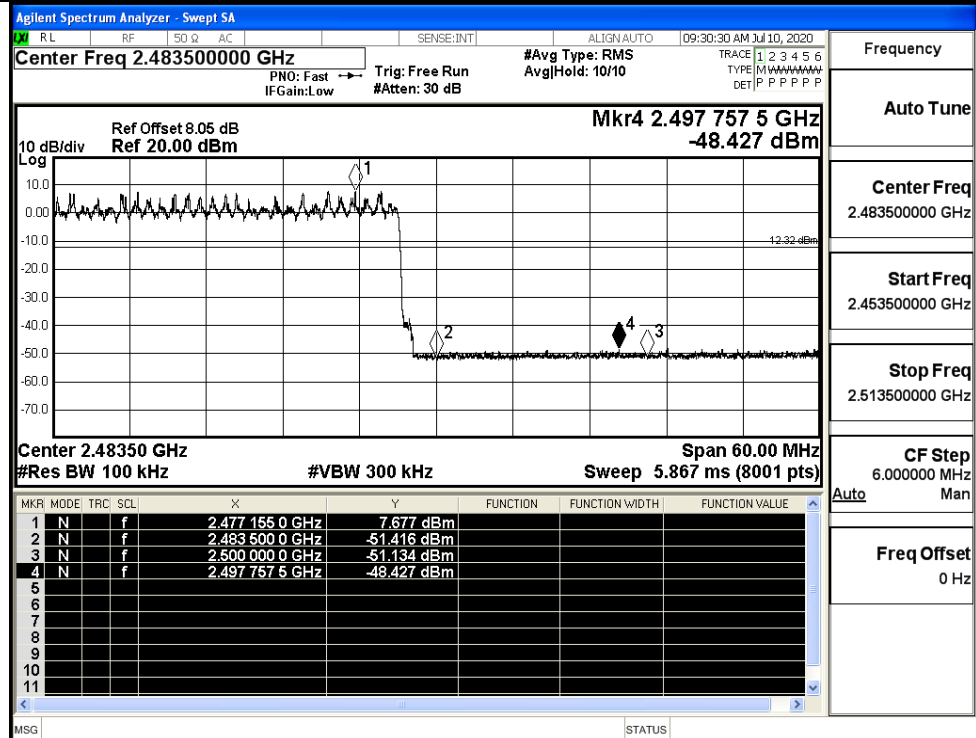
Stop Freq
2.500000000 GHz

CF Step
2.200000 MHz

Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop



Frequency

Auto Tune

Center Freq
2.483500000 GHz

Start Freq
2.453500000 GHz

Stop Freq
2.513500000 GHz

CF Step
6.000000 MHz

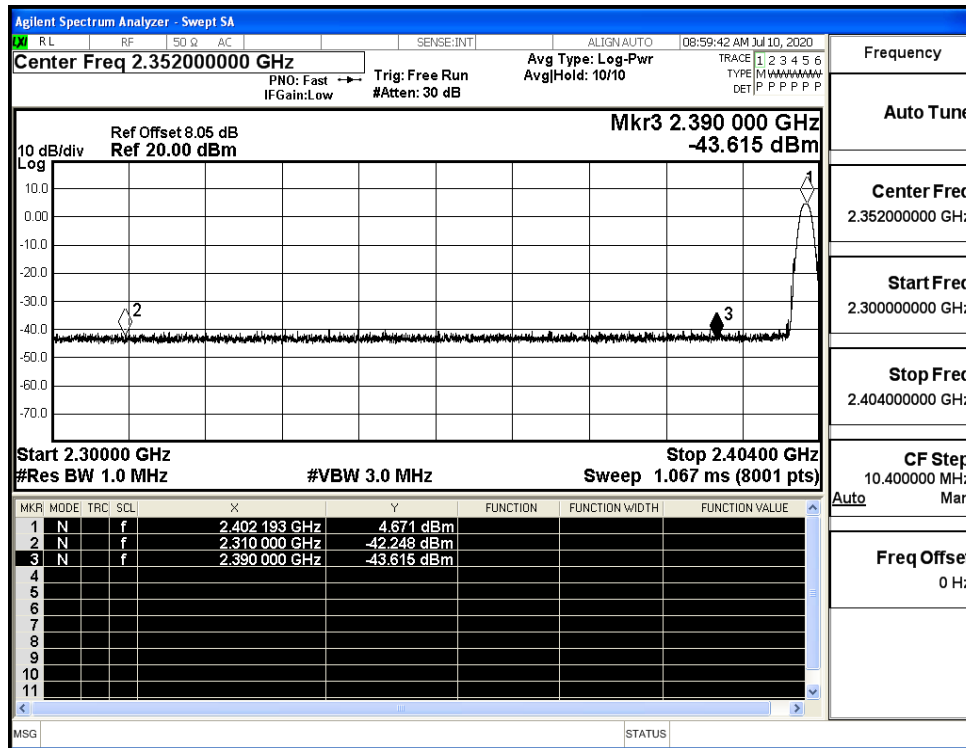
Auto Man

Freq Offset
0 Hz

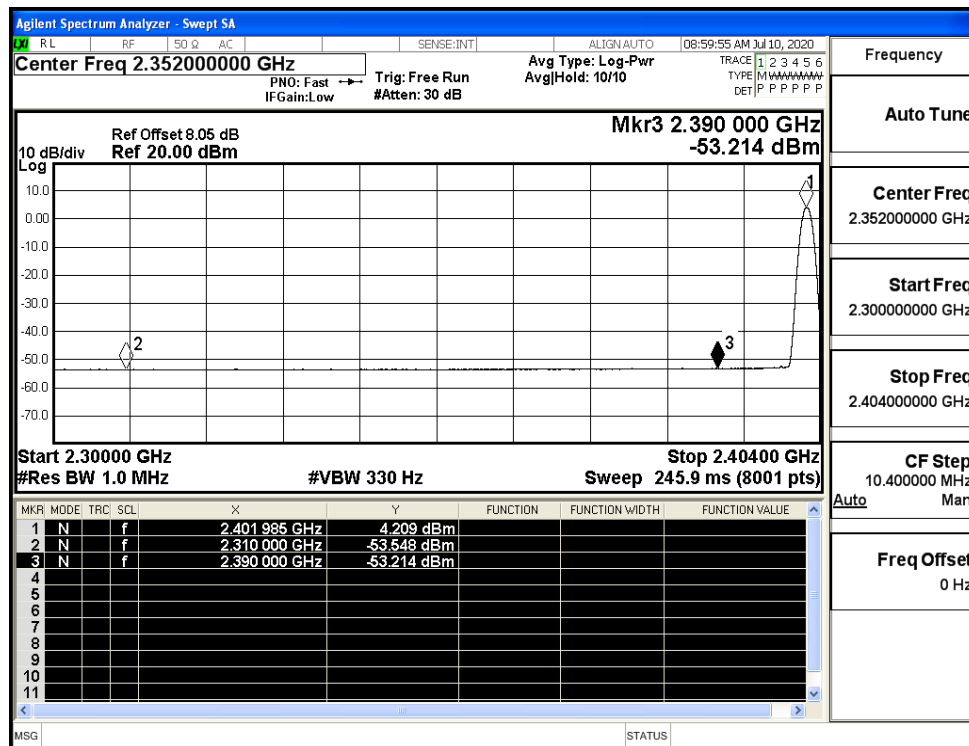
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.25	2.0	0	54.98	PEAK	74	PASS
	Off	2310.0	-53.55	2.0	0	43.68	AV	54	PASS
	Off	2390.0	-43.62	2.0	0	53.61	PEAK	74	PASS
	Off	2390.0	-53.21	2.0	0	44.02	AV	54	PASS
	Off	2483.5	-41.97	2.0	0	55.26	PEAK	74	PASS
	Off	2483.5	-52.57	2.0	0	44.66	AV	54	PASS
	Off	2500.0	-42.81	2.0	0	54.42	PEAK	74	PASS
	Off	2500.0	-52.57	2.0	0	44.66	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.77	2.0	0	54.46	PEAK	74	PASS
	Off	2310.0	-53.37	2.0	0	43.86	AV	54	PASS
	Off	2390.0	-42.31	2.0	0	54.92	PEAK	74	PASS
	Off	2390.0	-53.17	2.0	0	44.06	AV	54	PASS
	Off	2483.5	-42.80	2.0	0	54.43	PEAK	74	PASS
	Off	2483.5	-52.09	2.0	0	45.14	AV	54	PASS
	Off	2500.0	-41.79	2.0	0	55.44	PEAK	74	PASS
	Off	2500.0	-52.44	2.0	0	44.79	AV	54	PASS

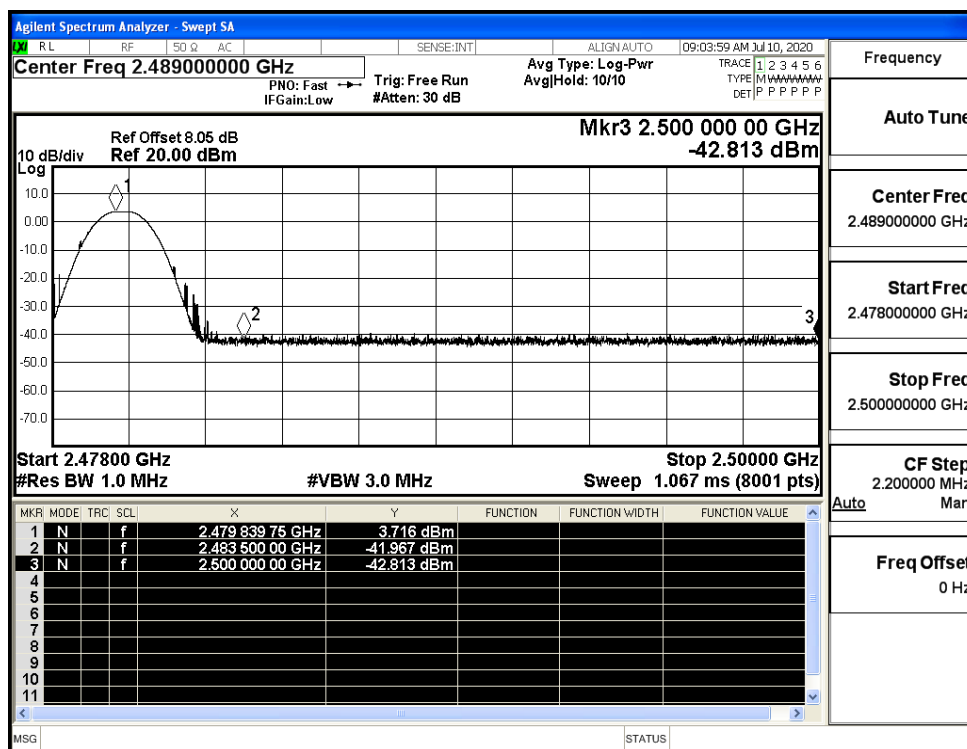
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



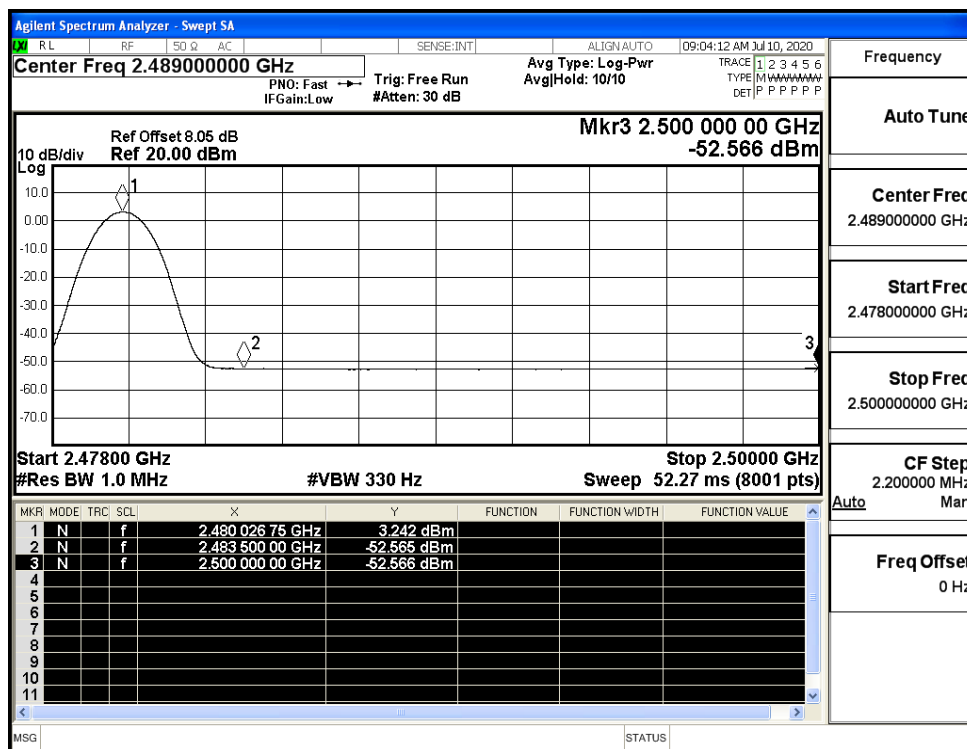
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

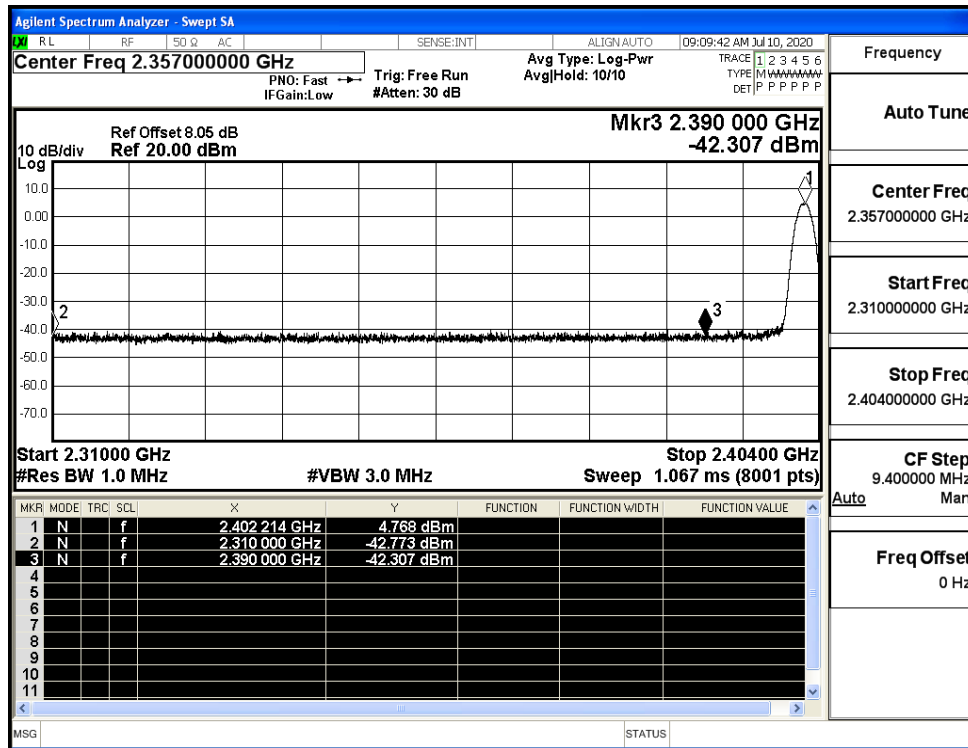
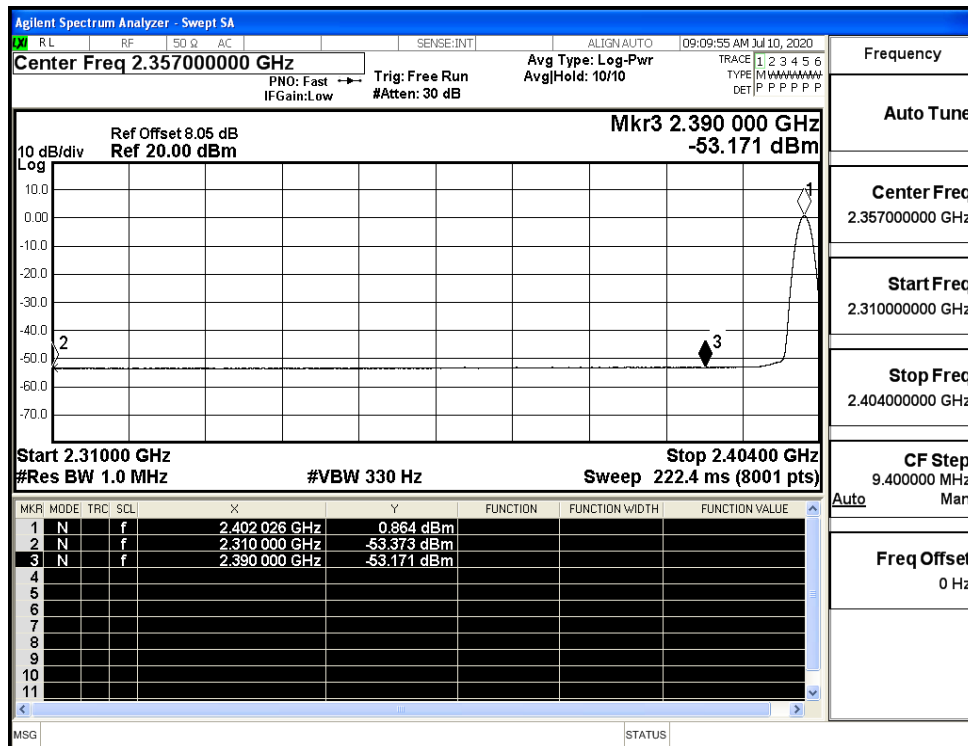


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

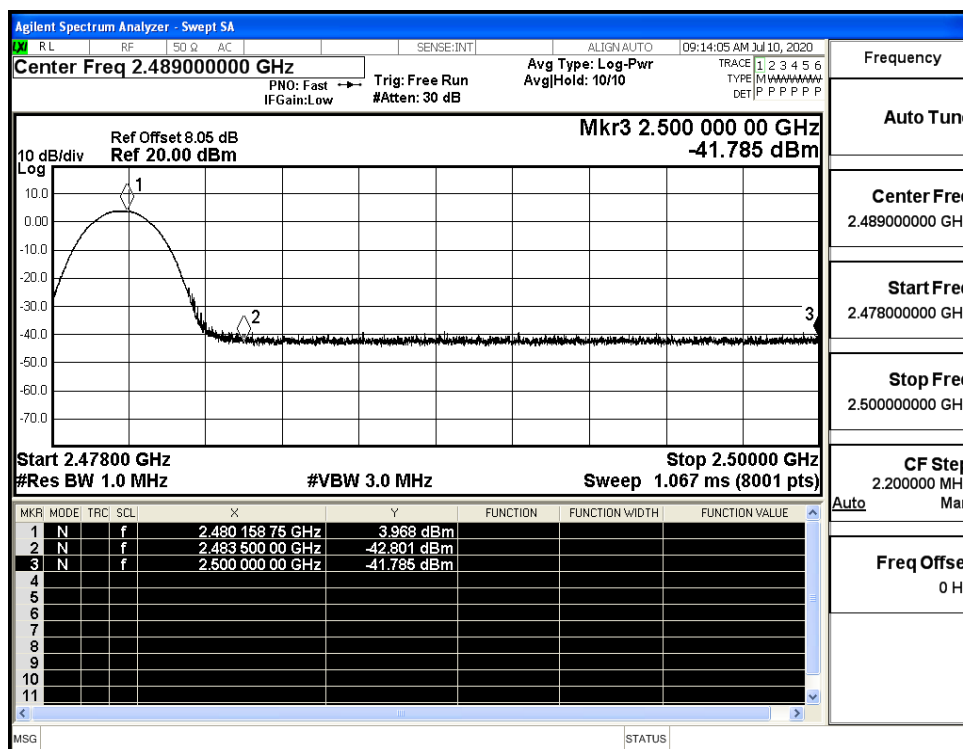


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

