

Appendix A

RF Test Data for BT V5.1(BDR/EDR) (Conducted Measurement)

Product Name: Wireless Earbuds

Trade Mark: N/A

Test Model: XO-9929

Environmental Conditions

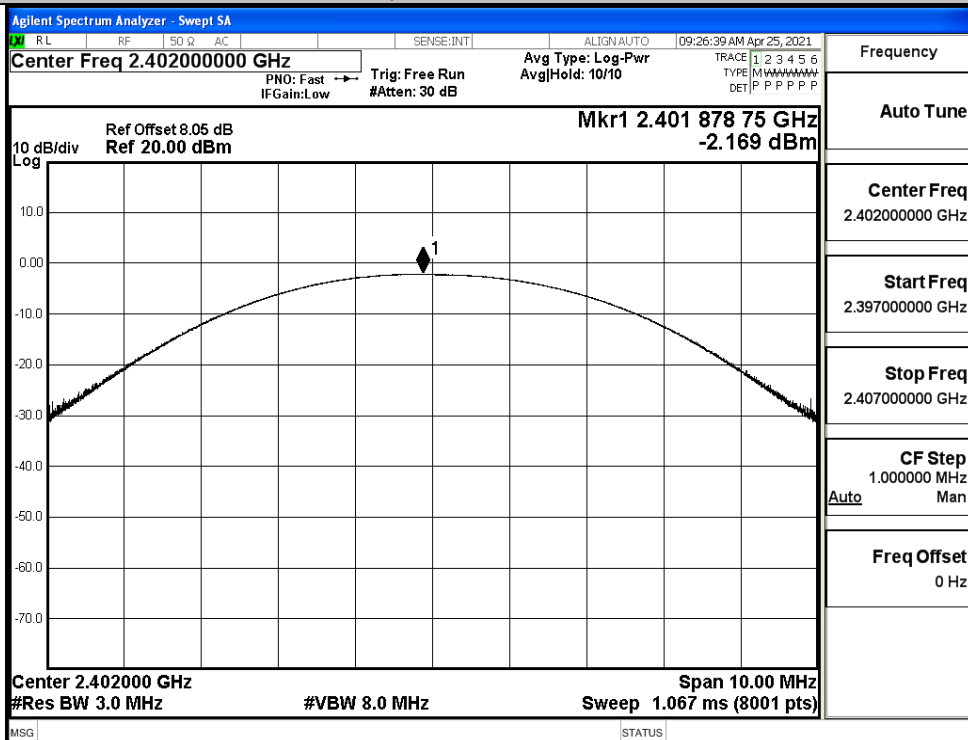
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Jay Li
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

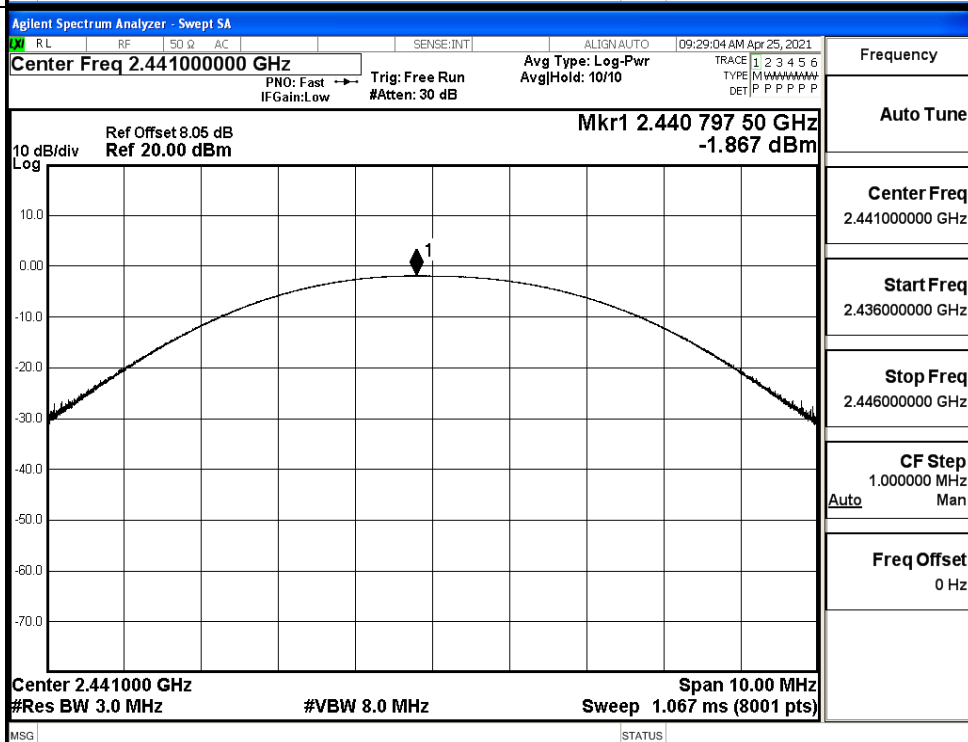
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.169	21	PASS
	MCH	-1.867	21	PASS
	HCH	-2.194	21	PASS
$\pi/4$ DQPSK	LCH	-1.299	21	PASS
	MCH	-0.984	21	PASS
	HCH	-1.303	21	PASS

Test Graphs

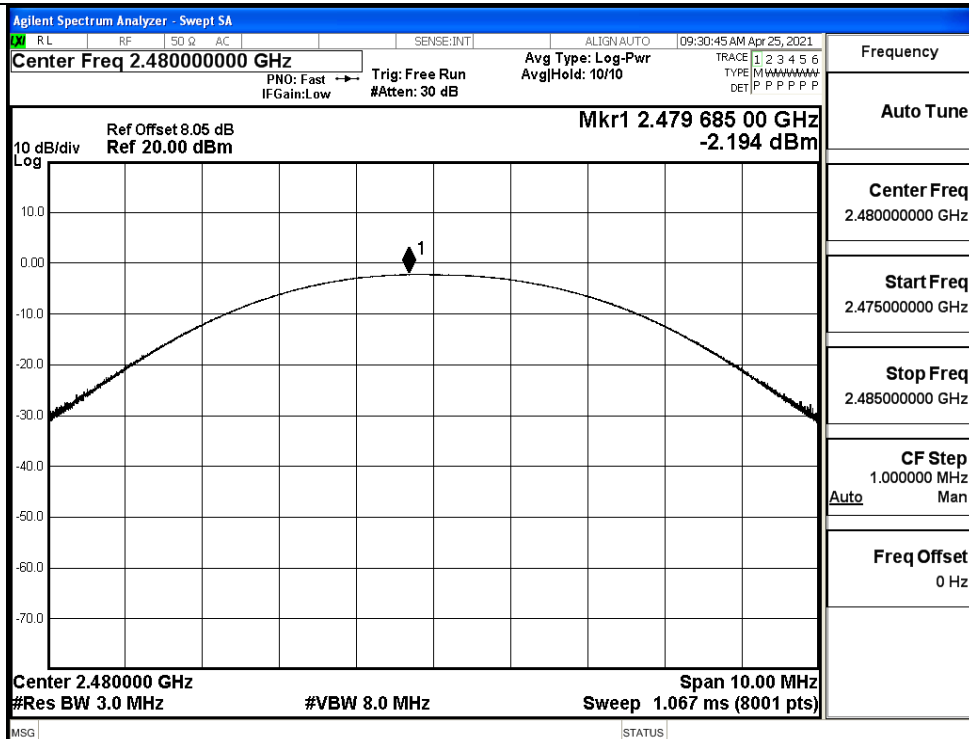
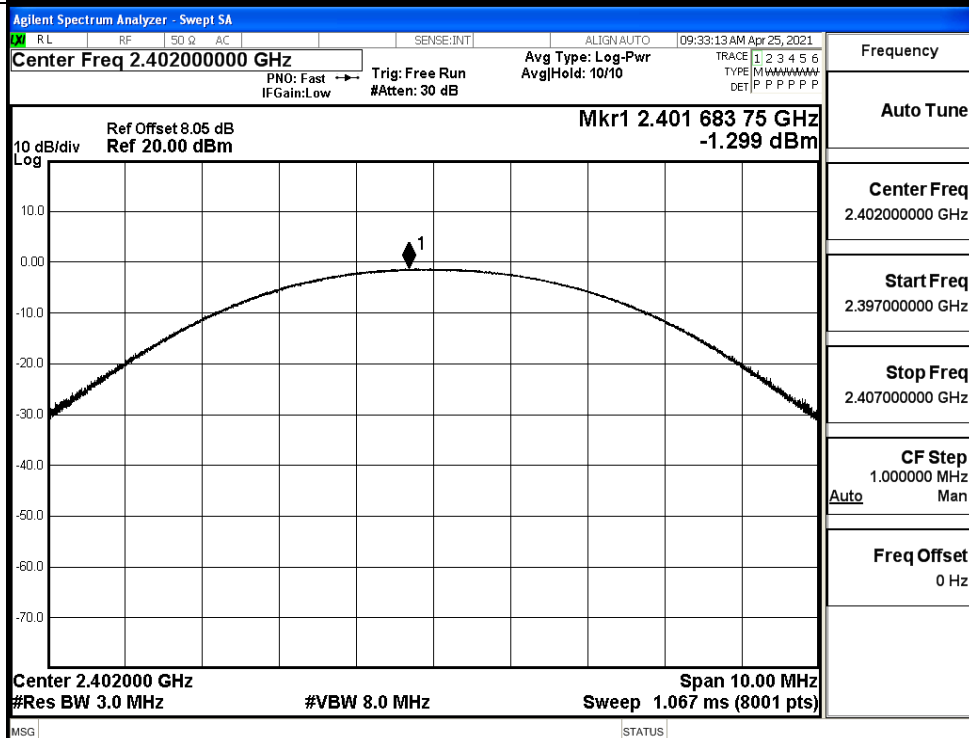
GFSK/LCH

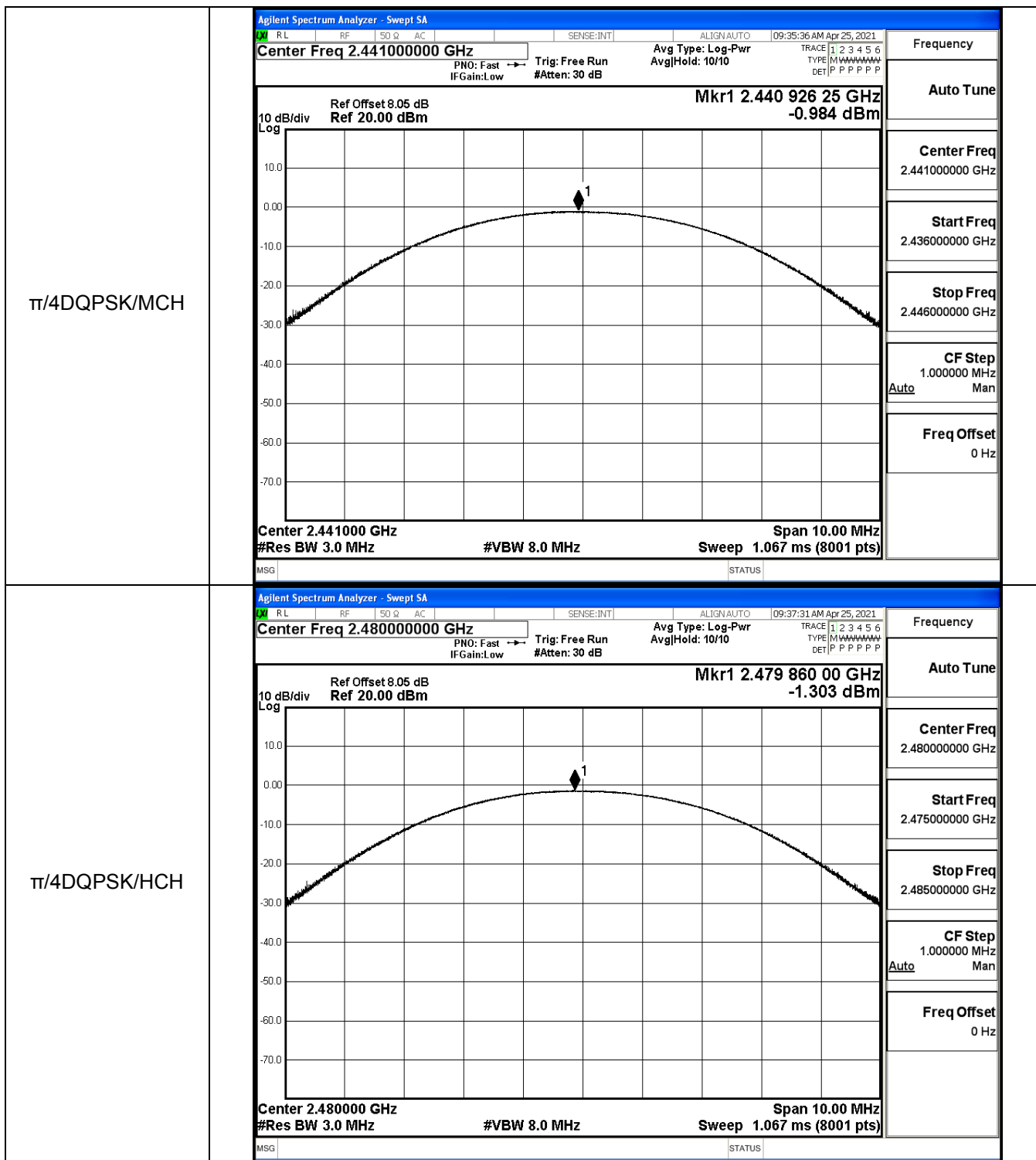


GFSK/MCH



GFSK/HCH

 $\pi/4$ DQPSK/LCH

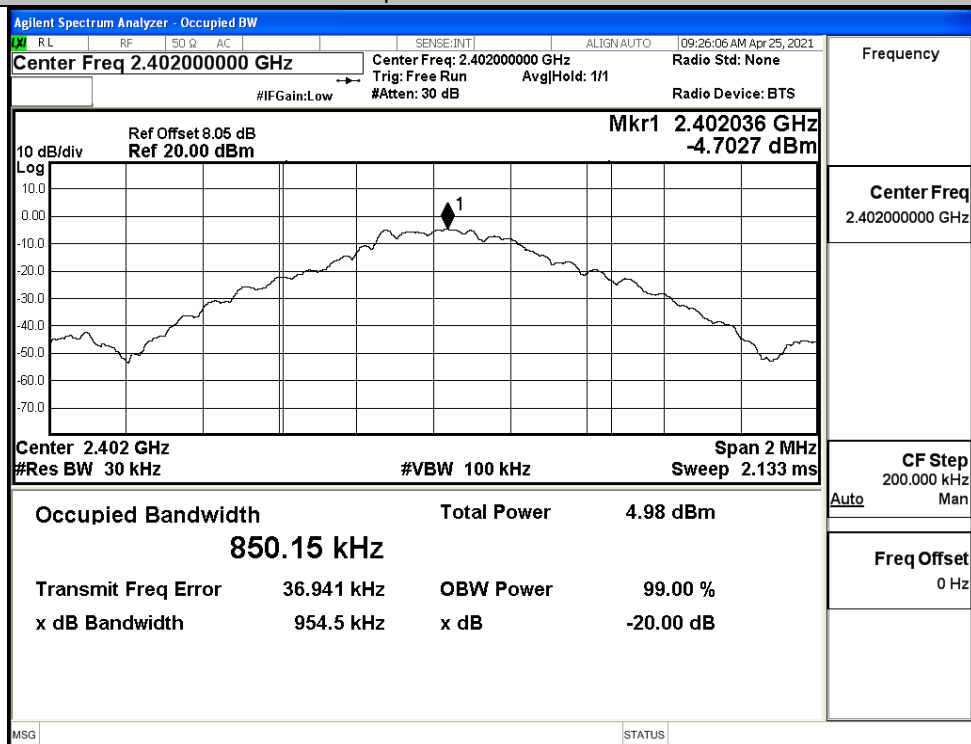


A.2 20dB Bandwidth

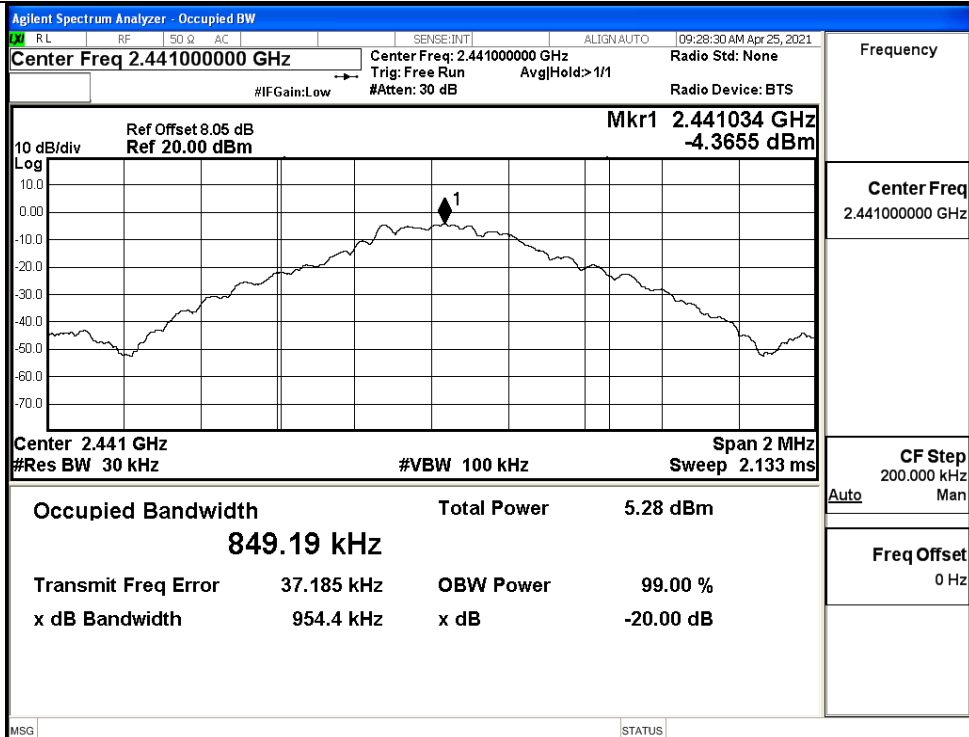
Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9545	Not Specified	PASS
	MCH	0.9544	Not Specified	PASS
	HCH	0.9555	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.281	Not Specified	PASS
	MCH	1.282	Not Specified	PASS
	HCH	1.282	Not Specified	PASS

Test Graphs

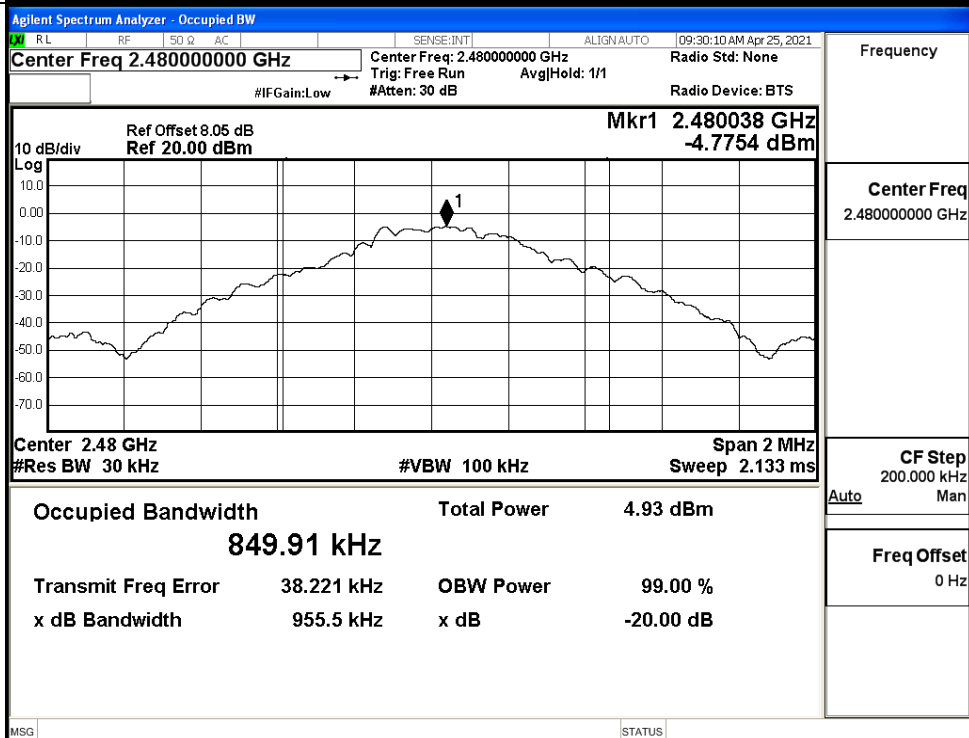
GFSK/LCH

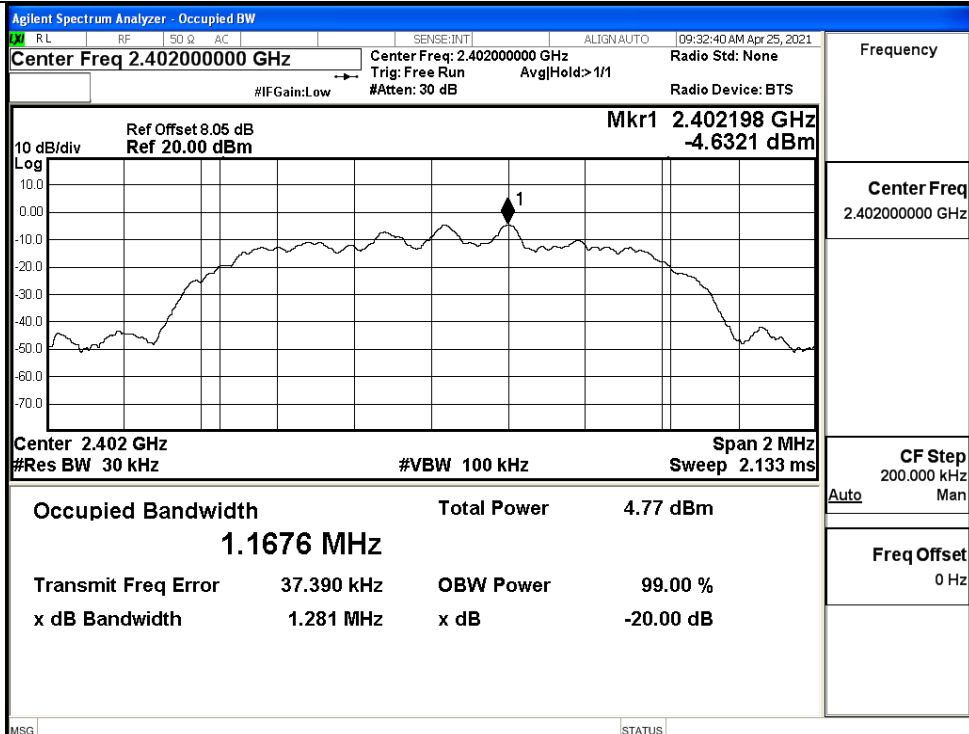
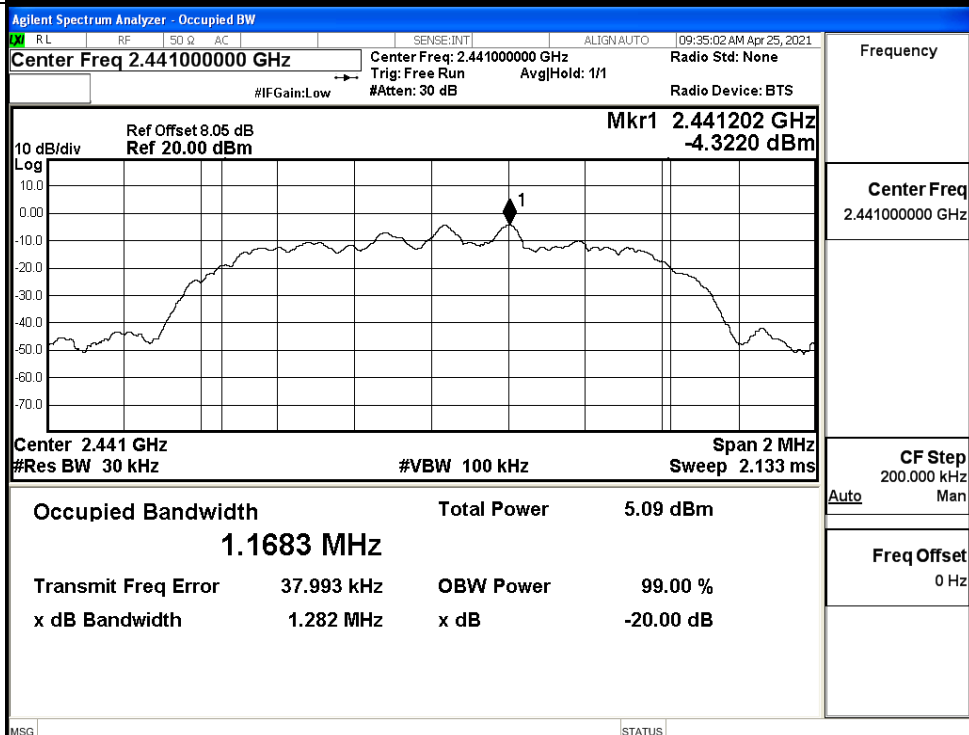


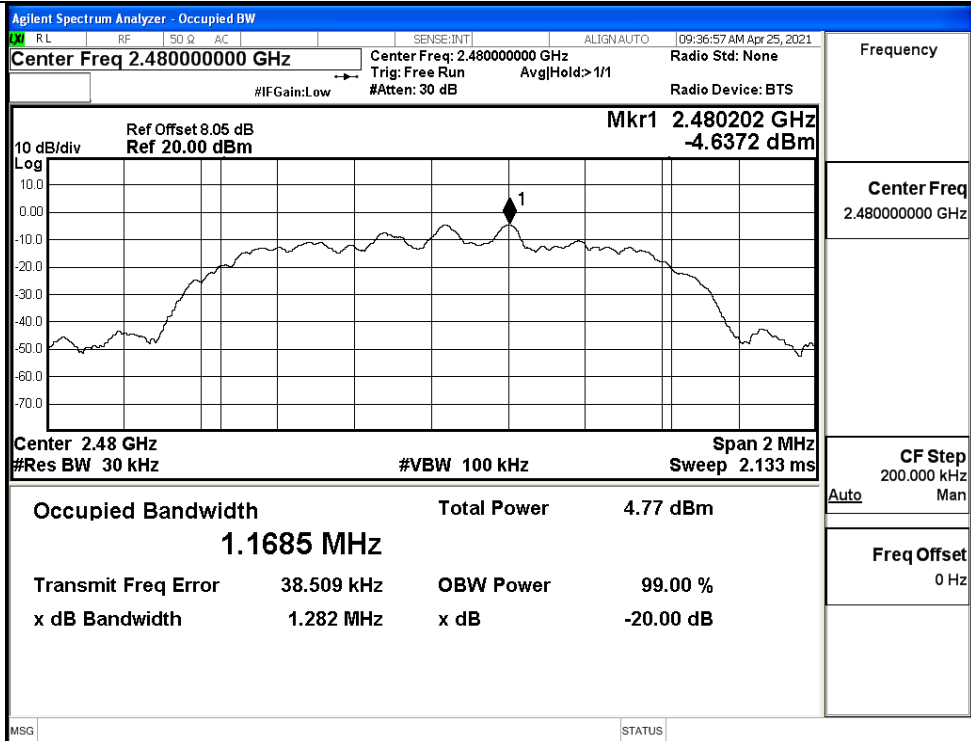
GFSK/MCH



GFSK/HCH



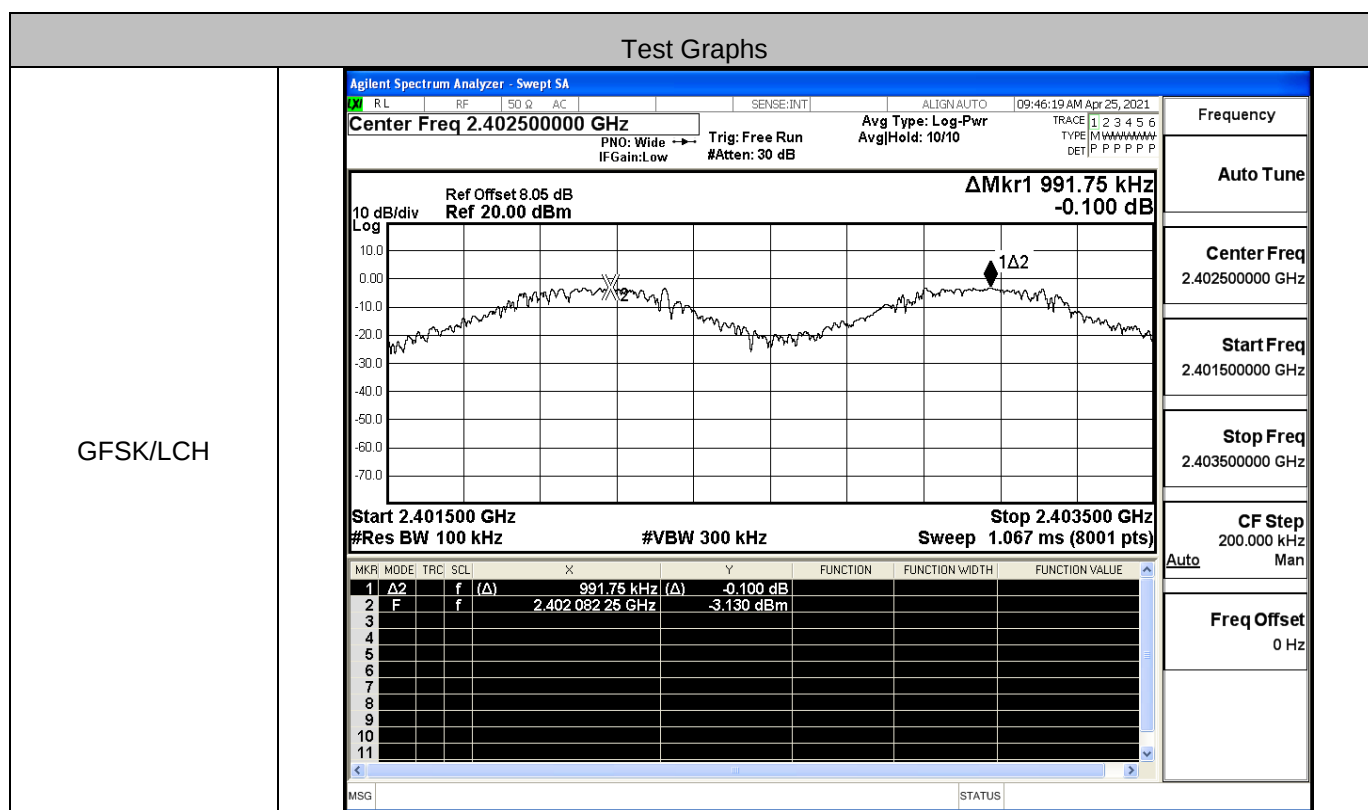
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

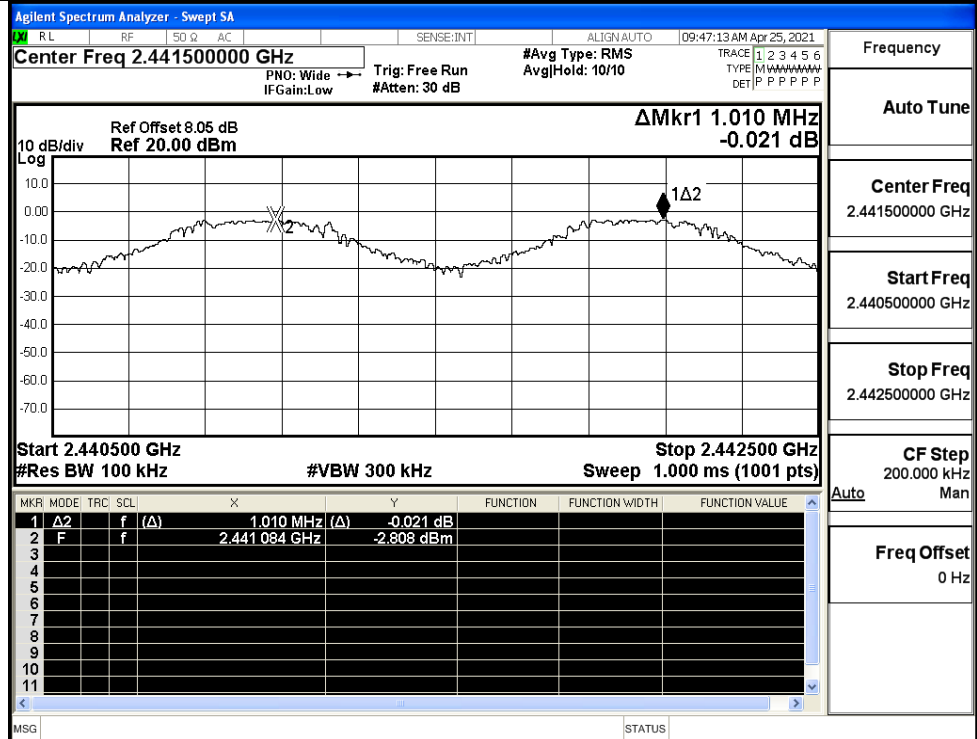
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.992	0.637	PASS
	MCH	1.010	0.637	PASS
	HCH	1.170	0.637	PASS
$\pi/4$ DQPSK	LCH	1.062	0.855	PASS
	MCH	0.986	0.855	PASS
	HCH	1.024	0.855	PASS

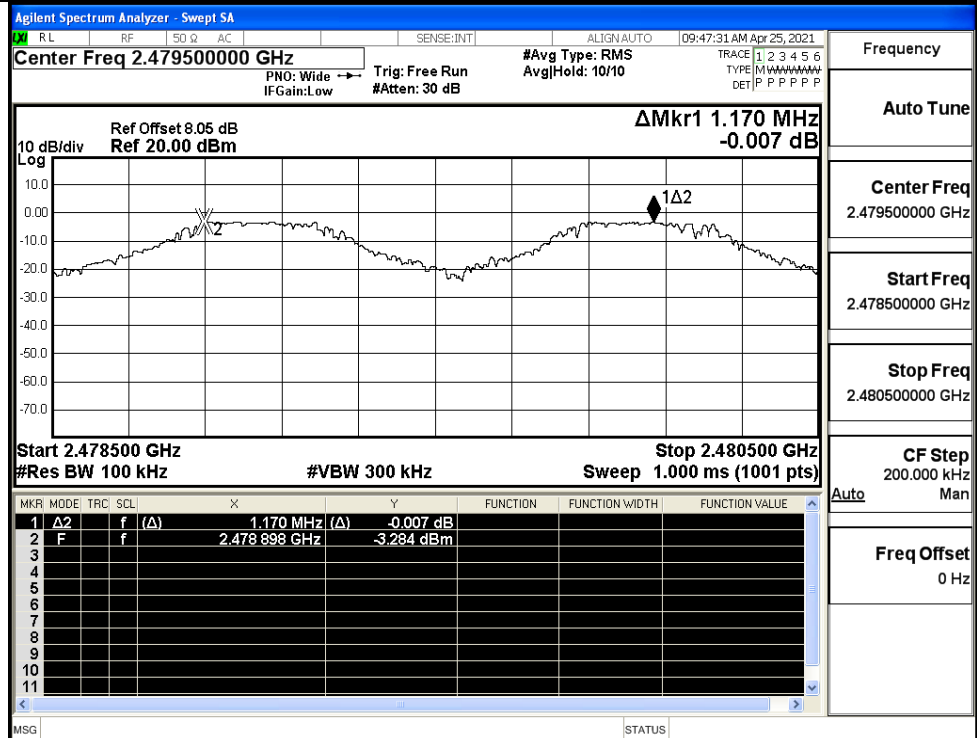
Test Graphs

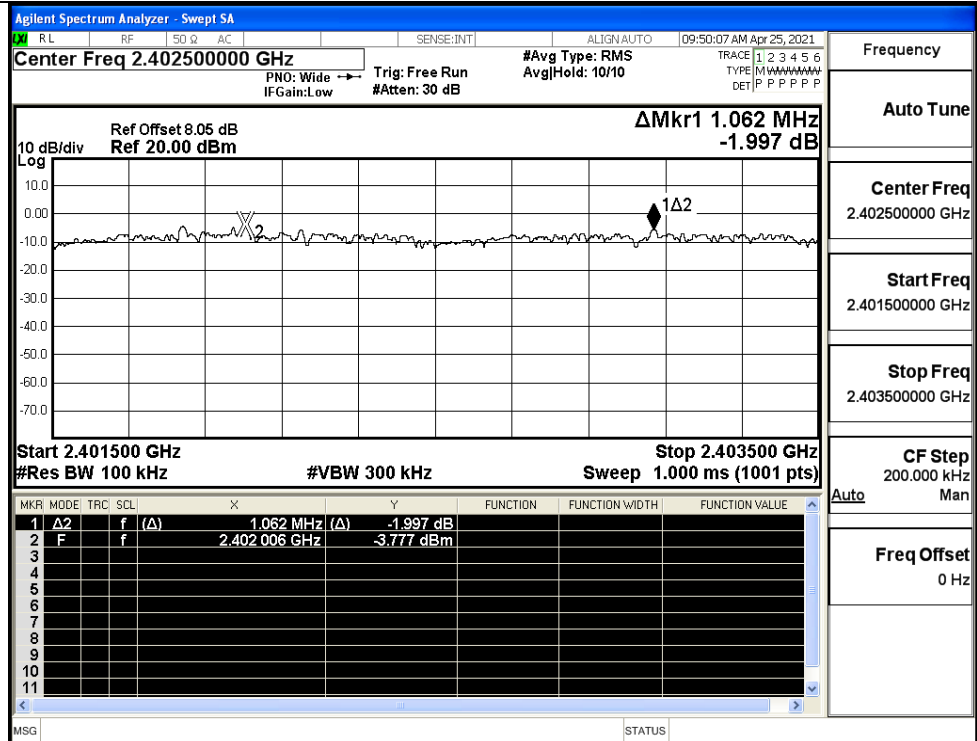
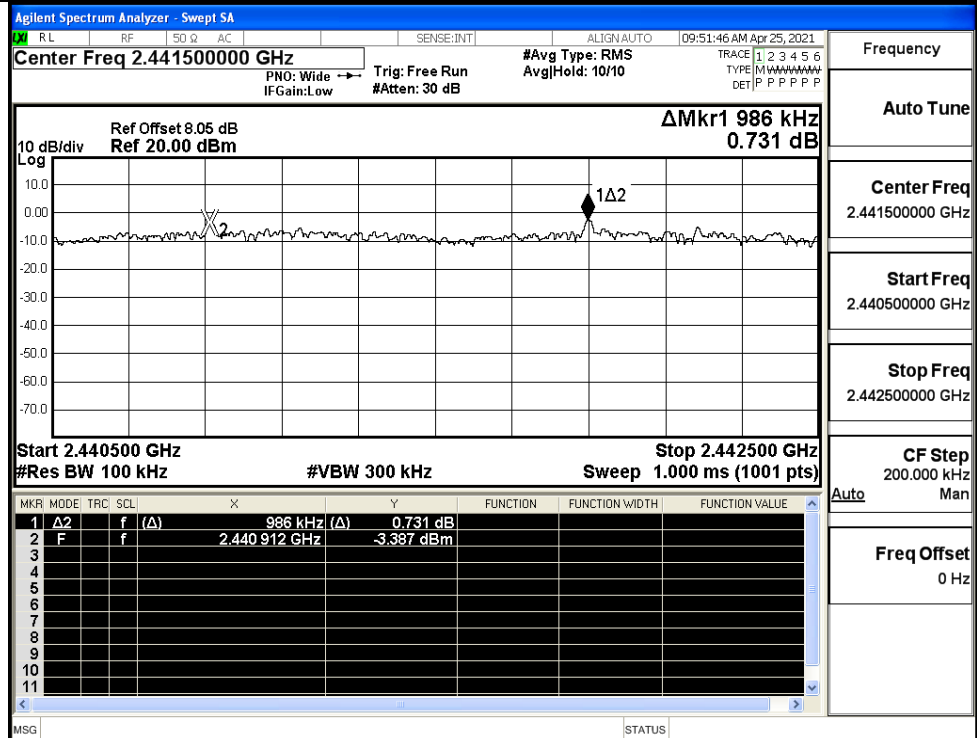


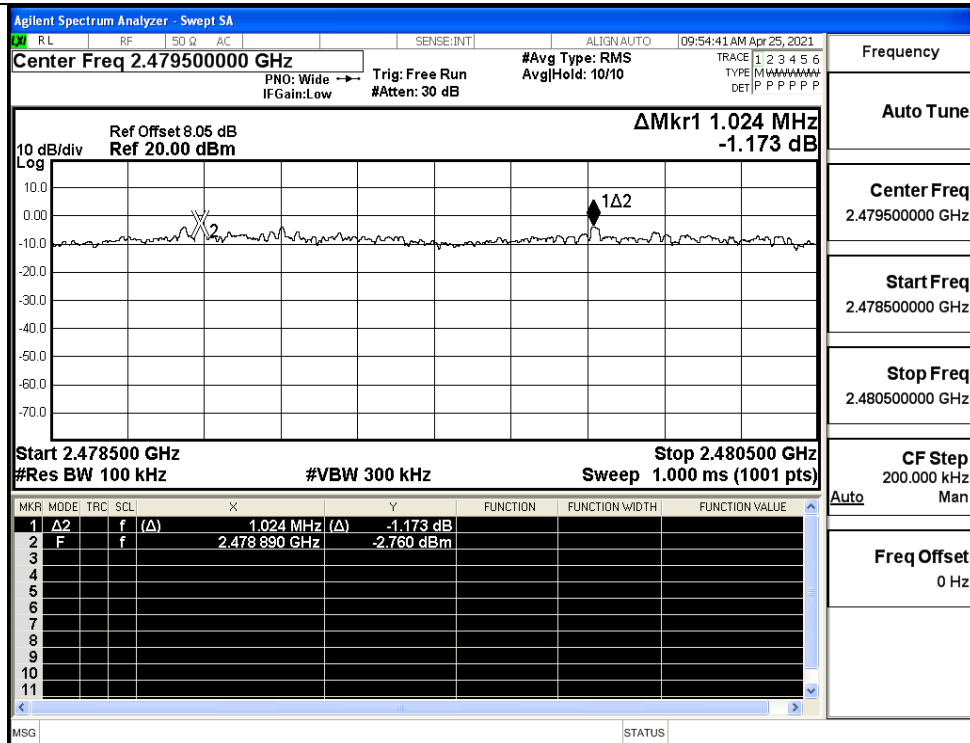
GFSK/MCH



GFSK/HCH



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

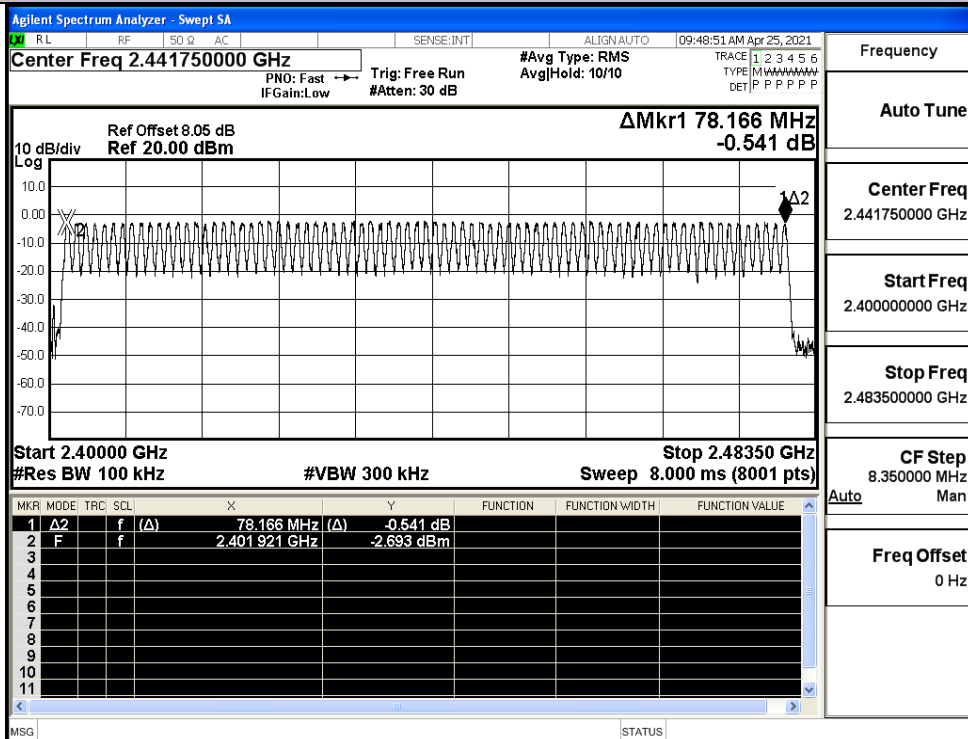
$\pi/4$ DQPSK/HCH

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

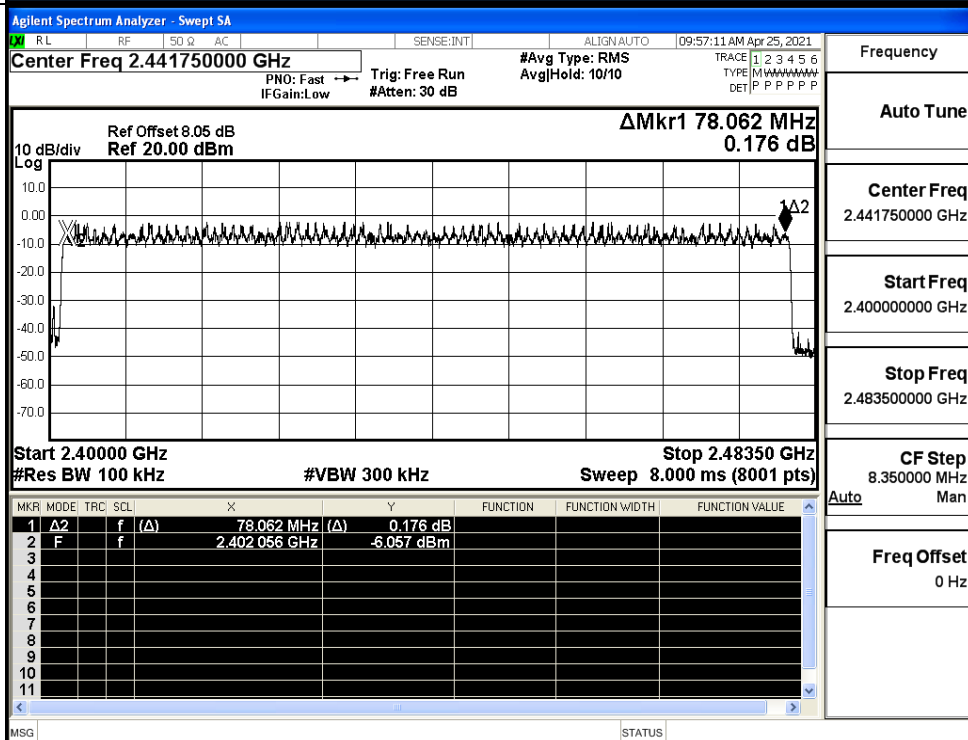
Test Graphs

GFSK/Hop



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

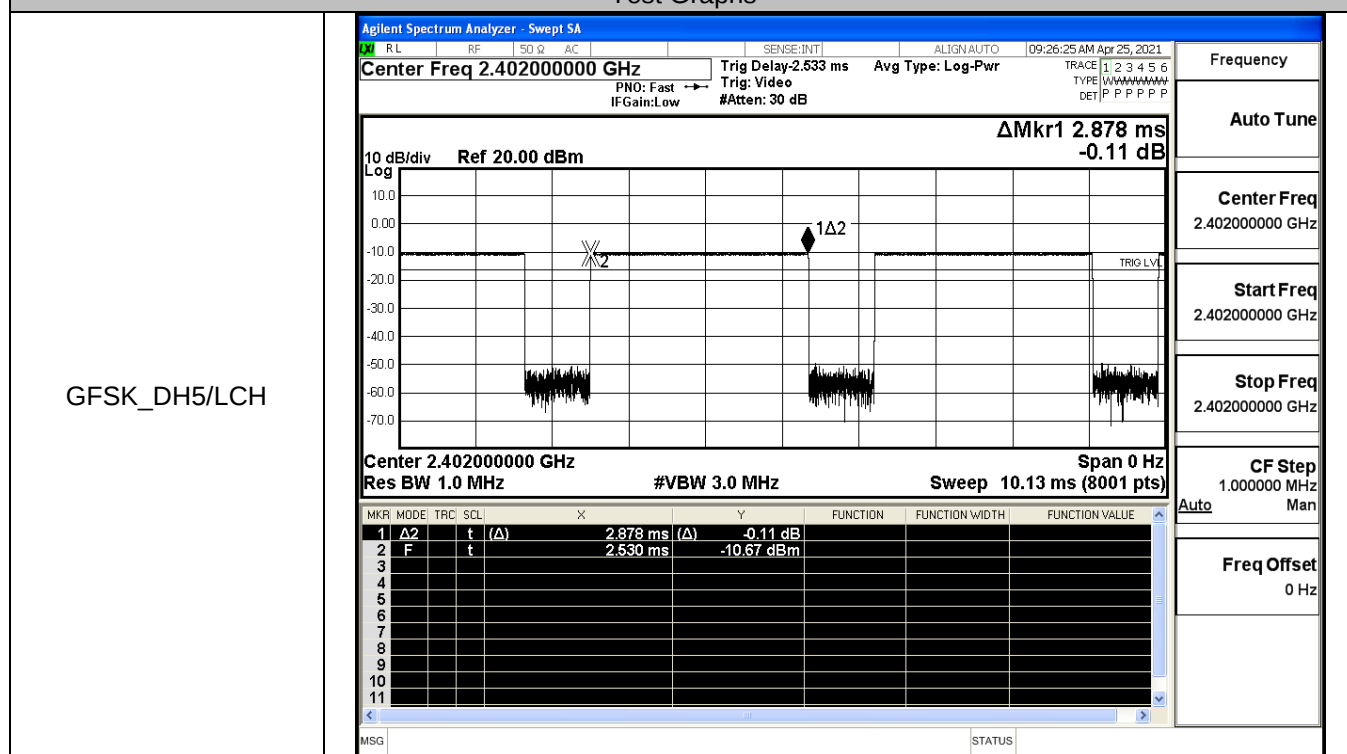
Auto Tune

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

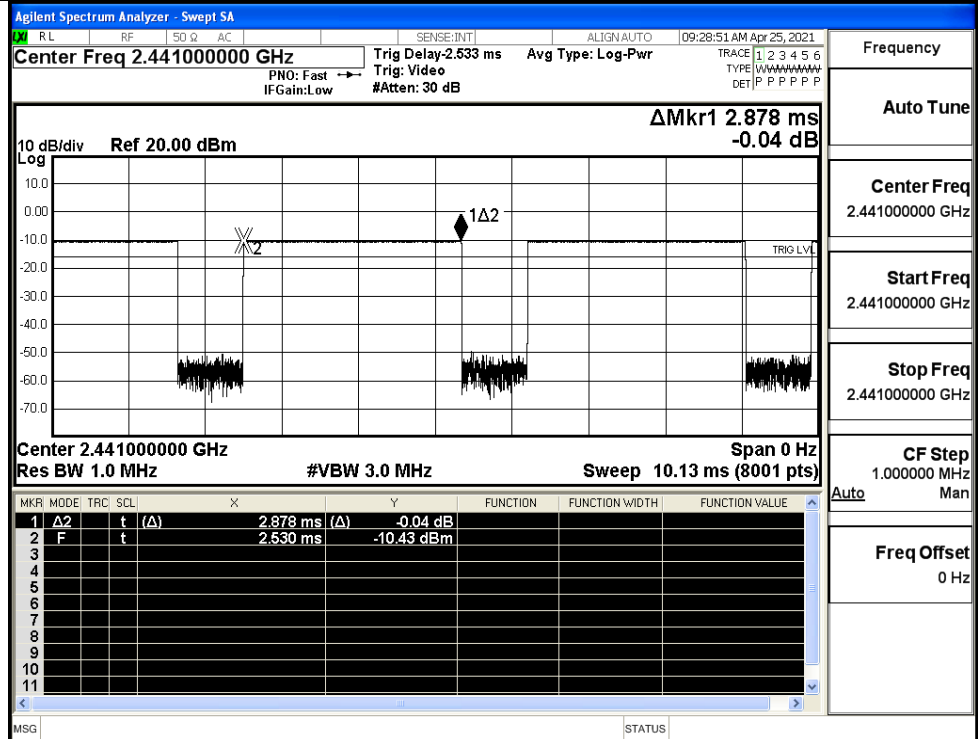
A.5 Dwell Time

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

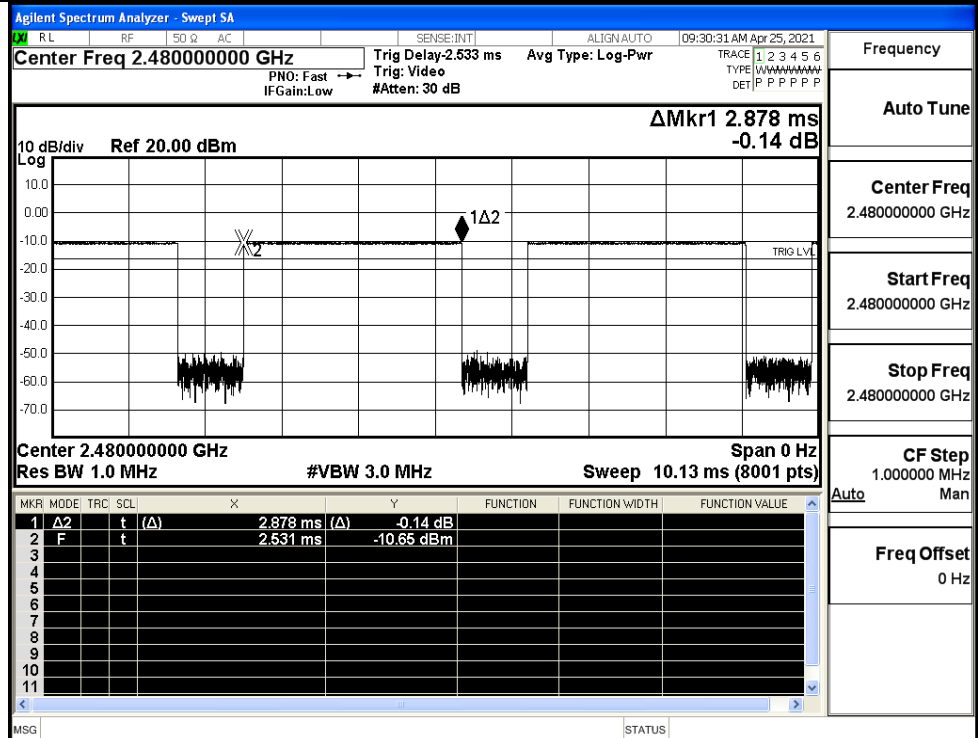
Test Graphs



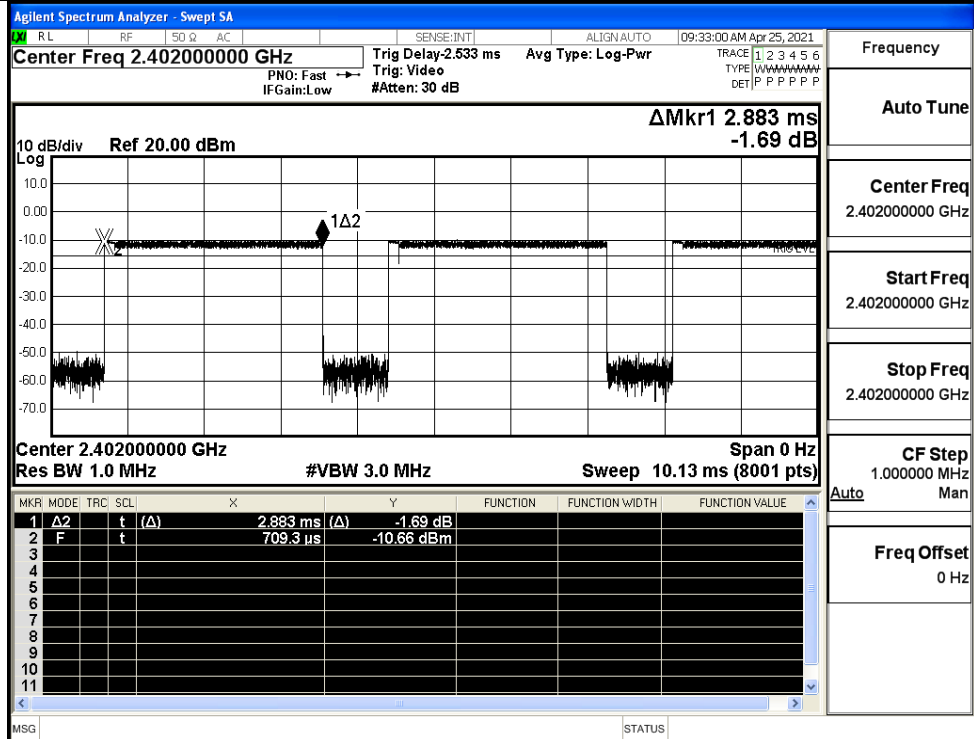
GFSK_DH5/MCH



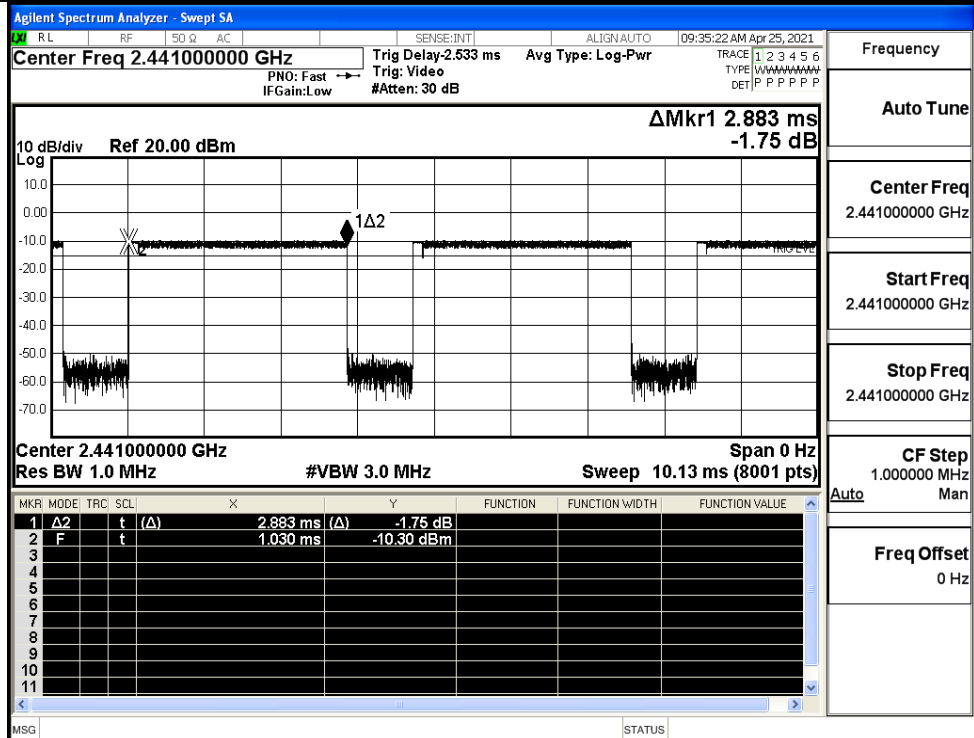
GFSK_DH5/HCH



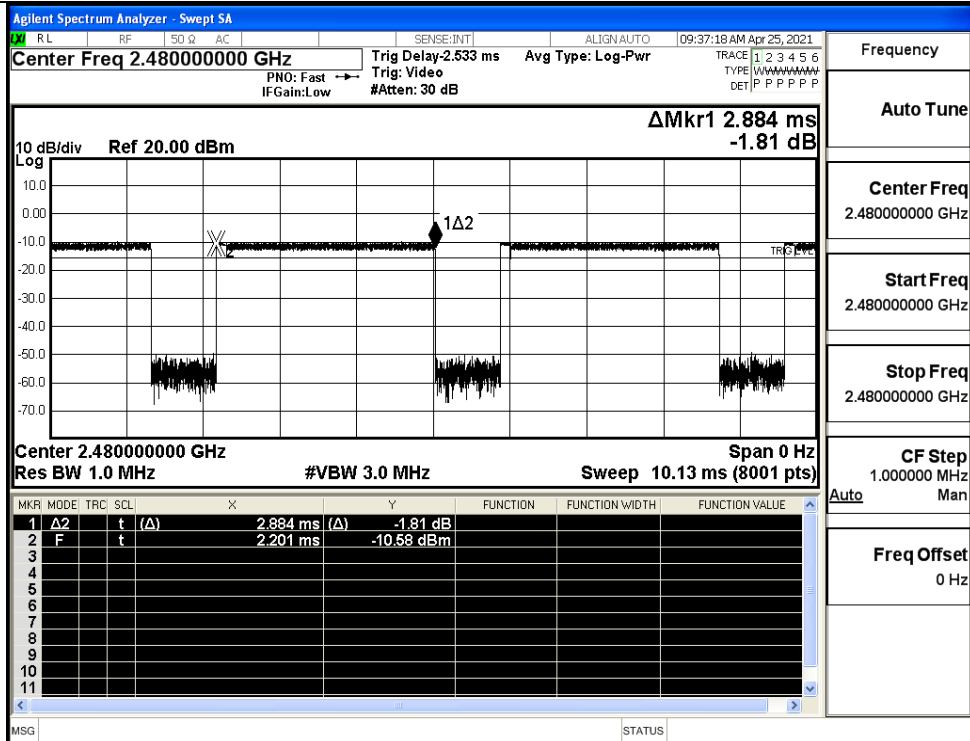
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



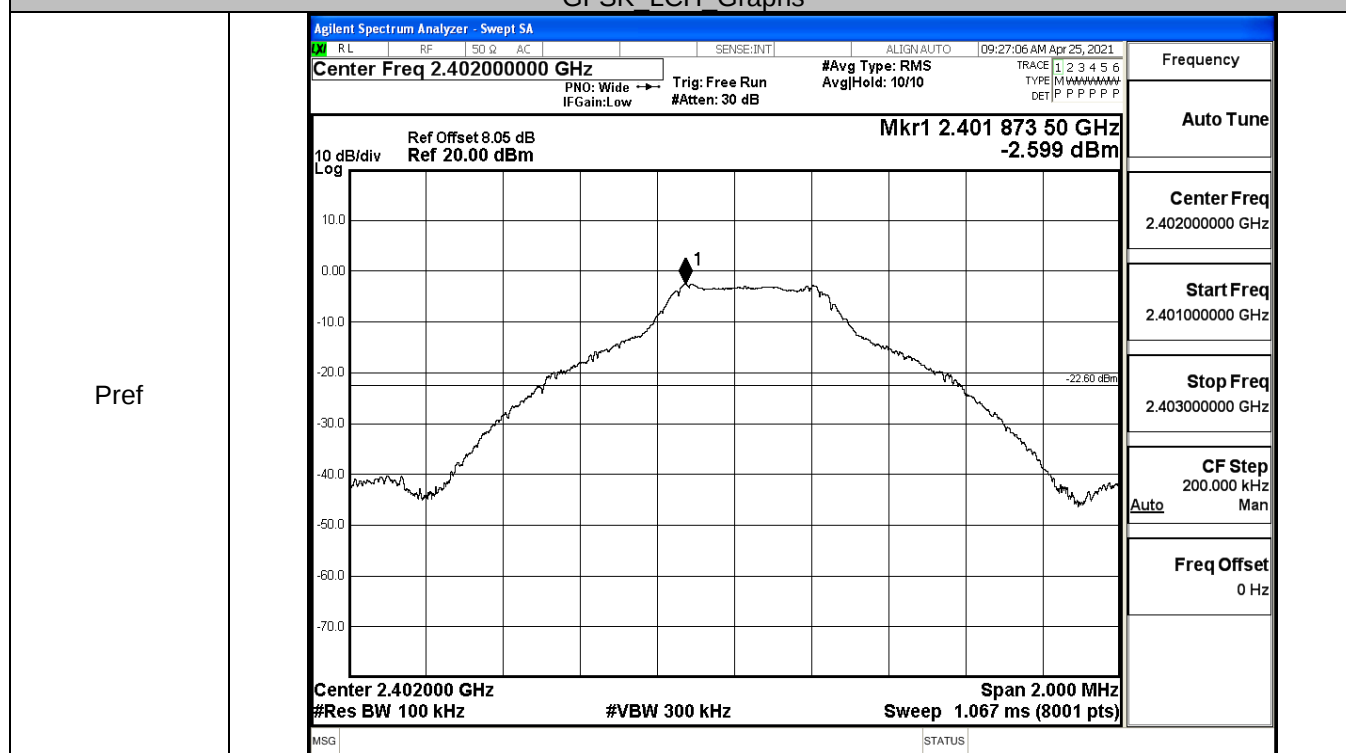
$\pi/4$ DQPSK
_2DH5/HCH



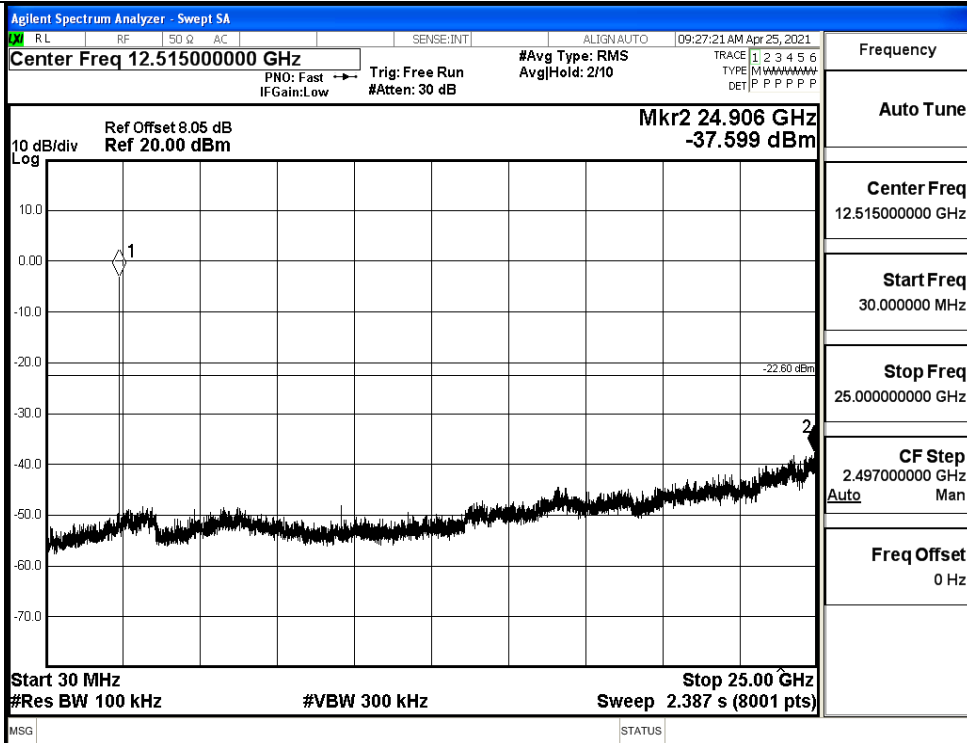
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.599	-37.599	-22.599	PASS
	MCH	-2.404	-37.554	-22.404	PASS
	HCH	-2.582	-37.015	-22.582	PASS
$\pi/4$ DQPSK	LCH	-2.626	-38.145	-22.626	PASS
	MCH	-2.329	-37.834	-22.329	PASS
	HCH	-2.609	-37.816	-22.609	PASS

GFSK LCH Graphs

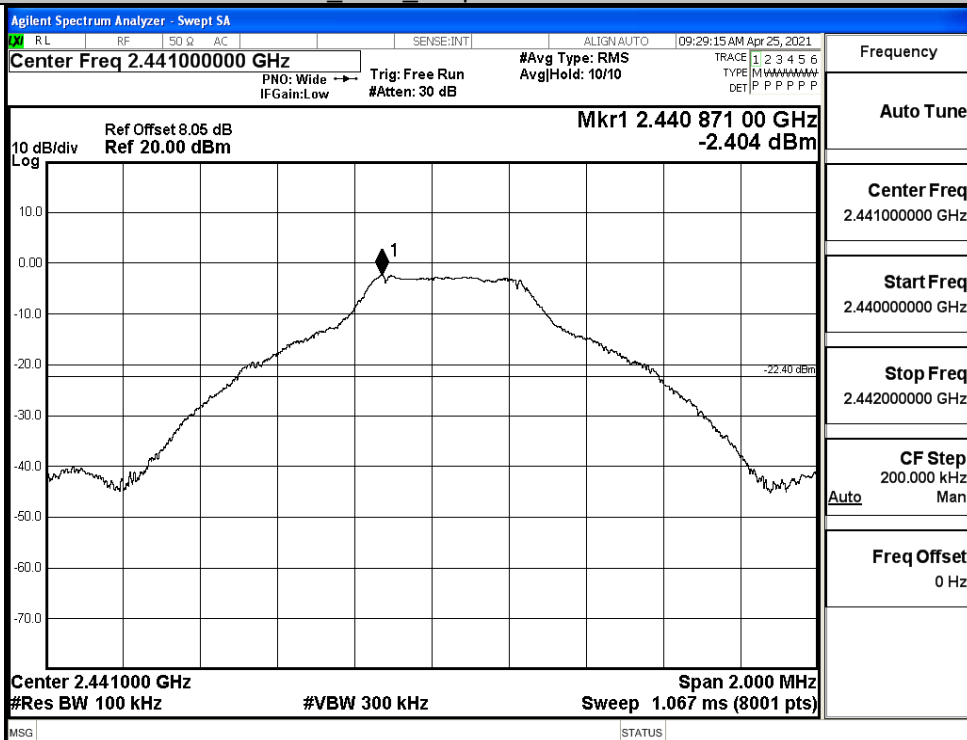


Puw

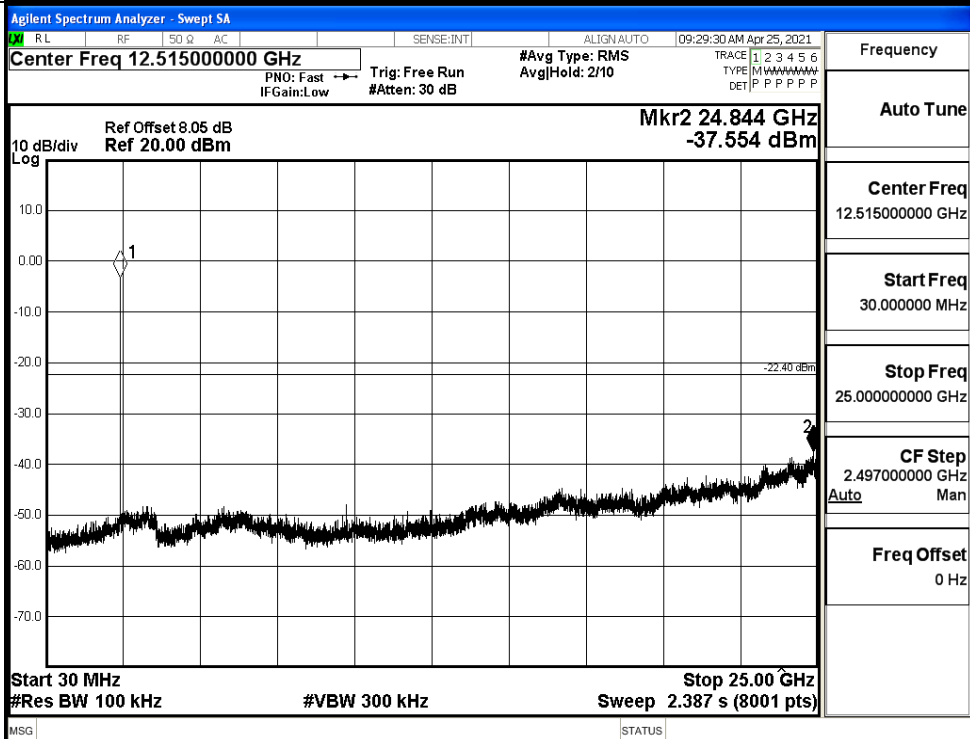


GFSK_MCH_Graphs

Pref

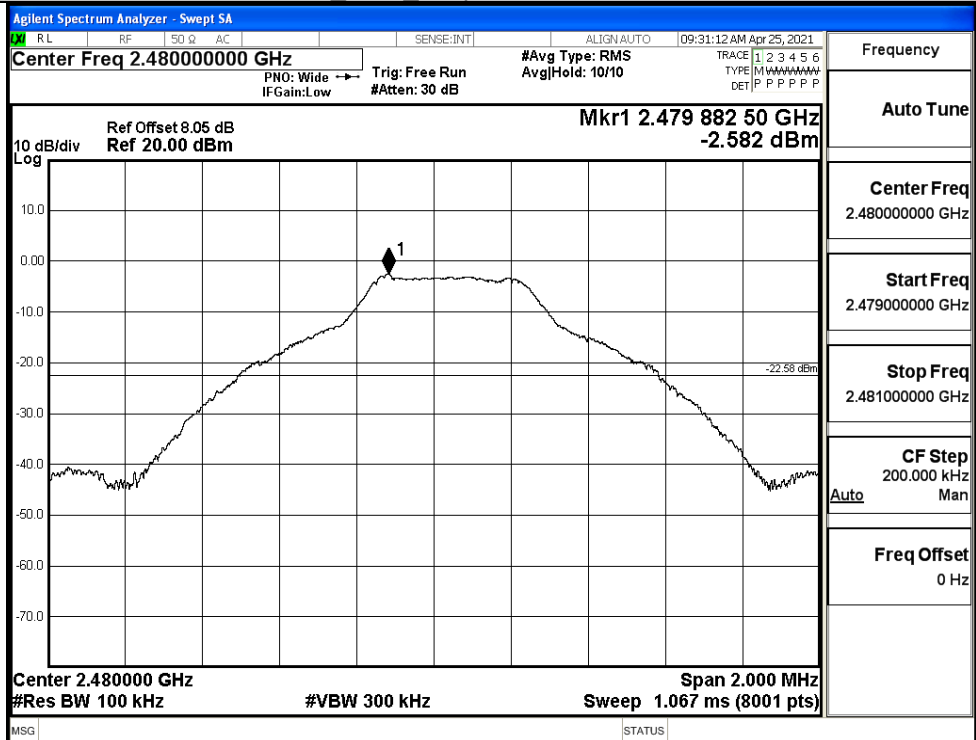


Puw

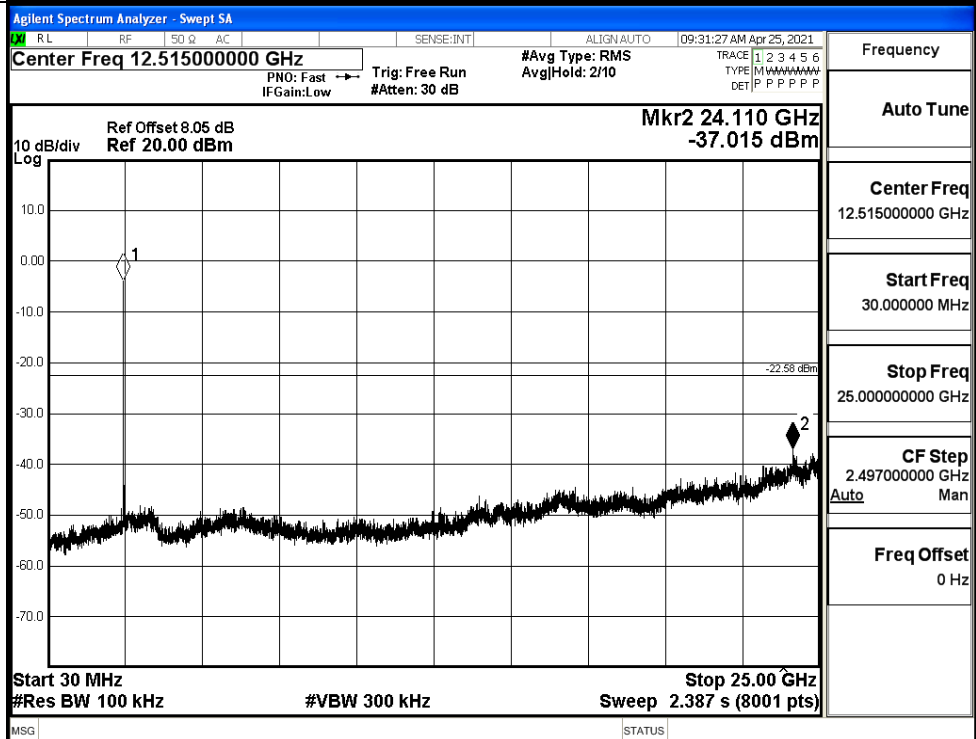


GFSK HCH Graphs

Pref

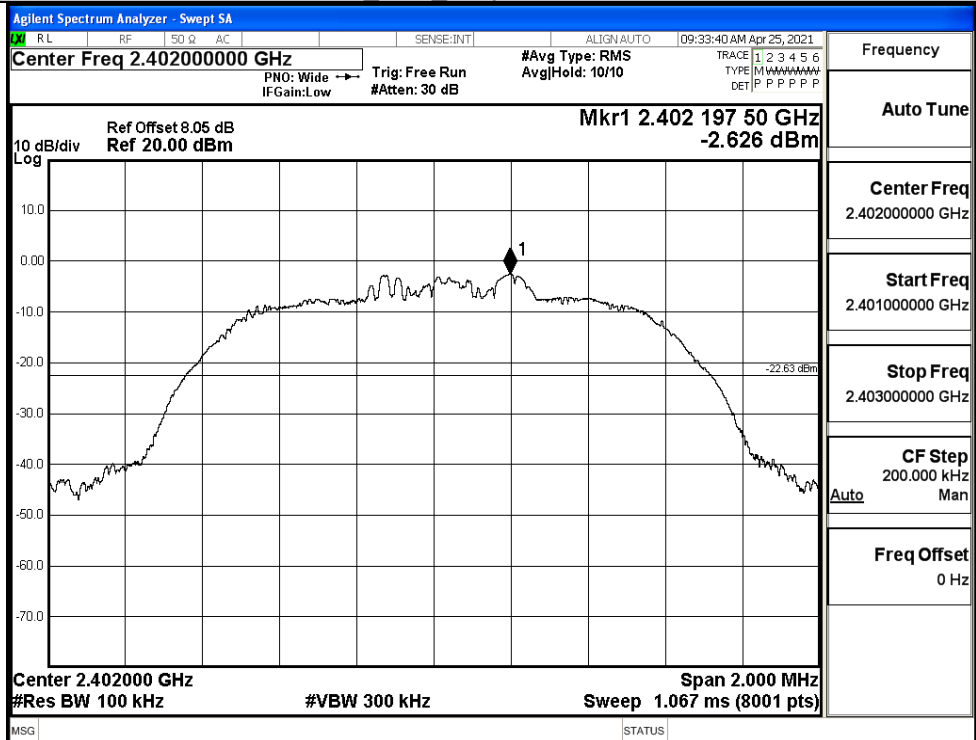


Puw

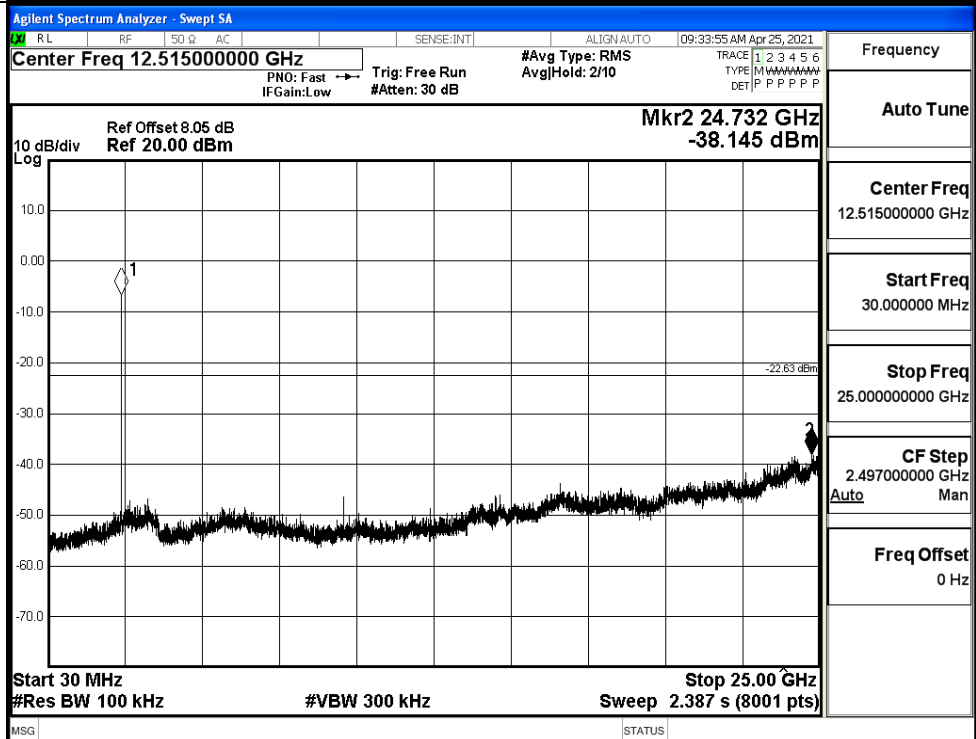


$\pi/4$ DQPSK_LCH_Graphs

Pref

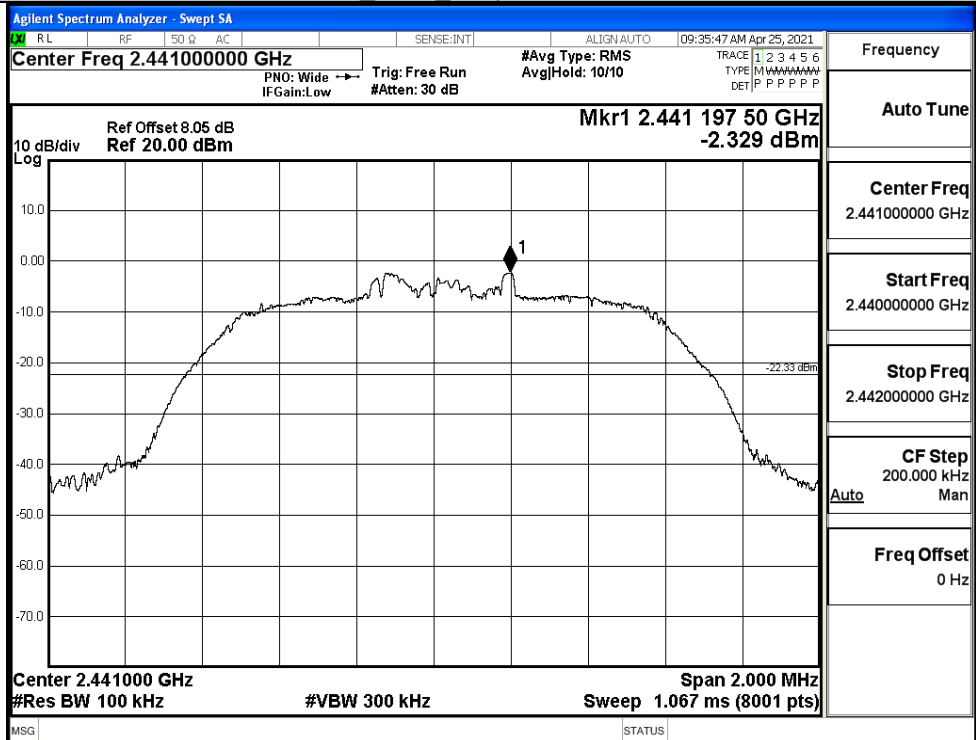


Puw

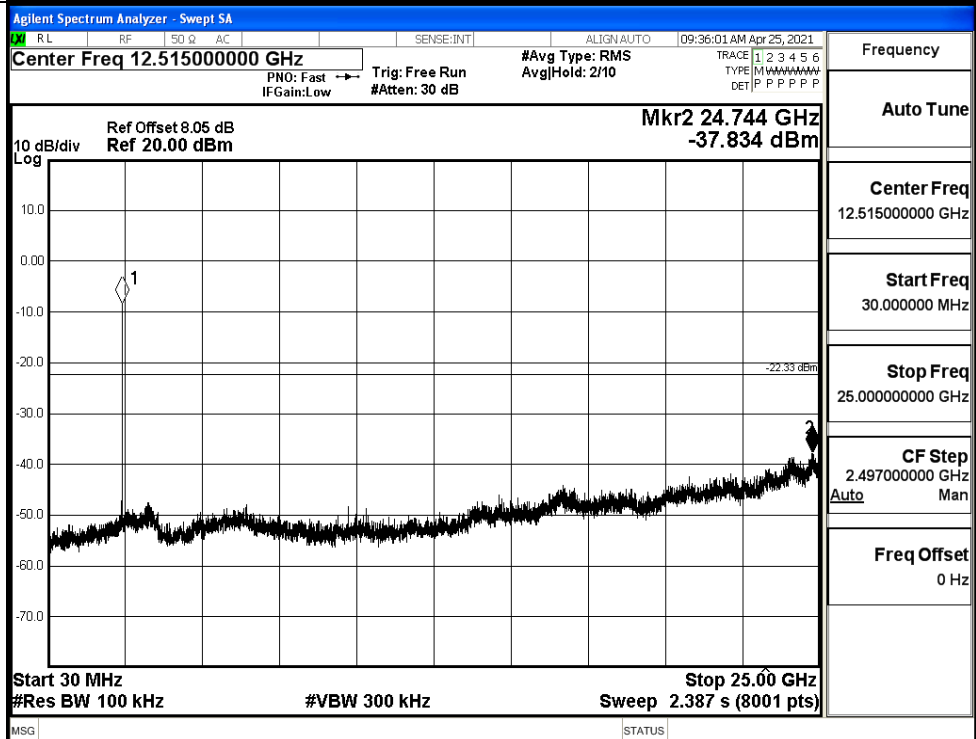


$\pi/4$ DQPSK_MCH_Graphs

Pref

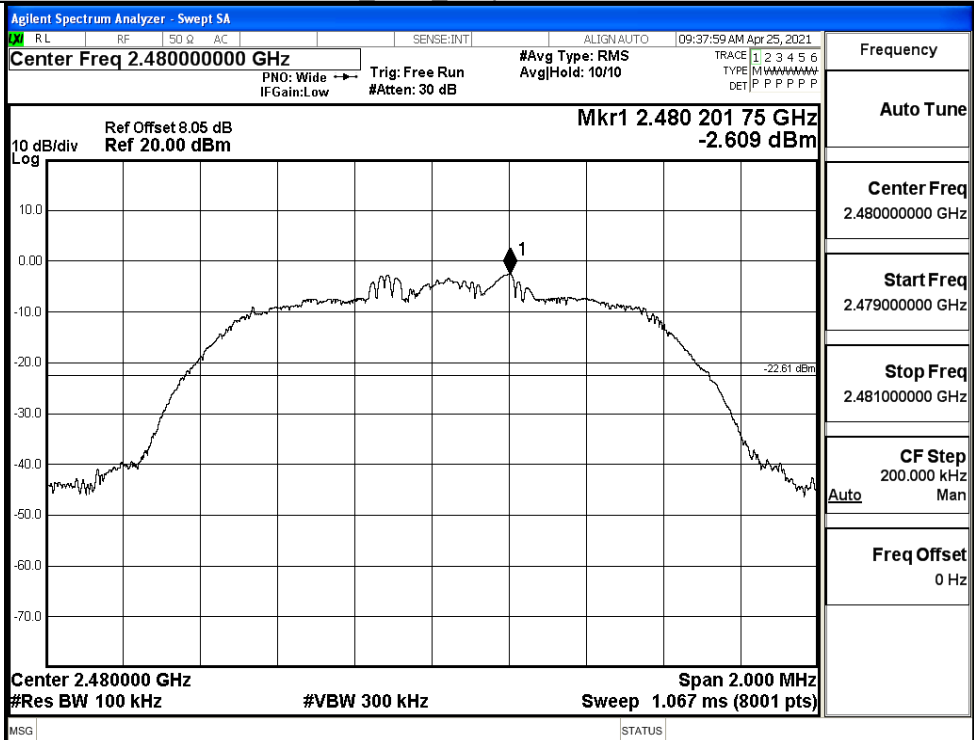


Puw

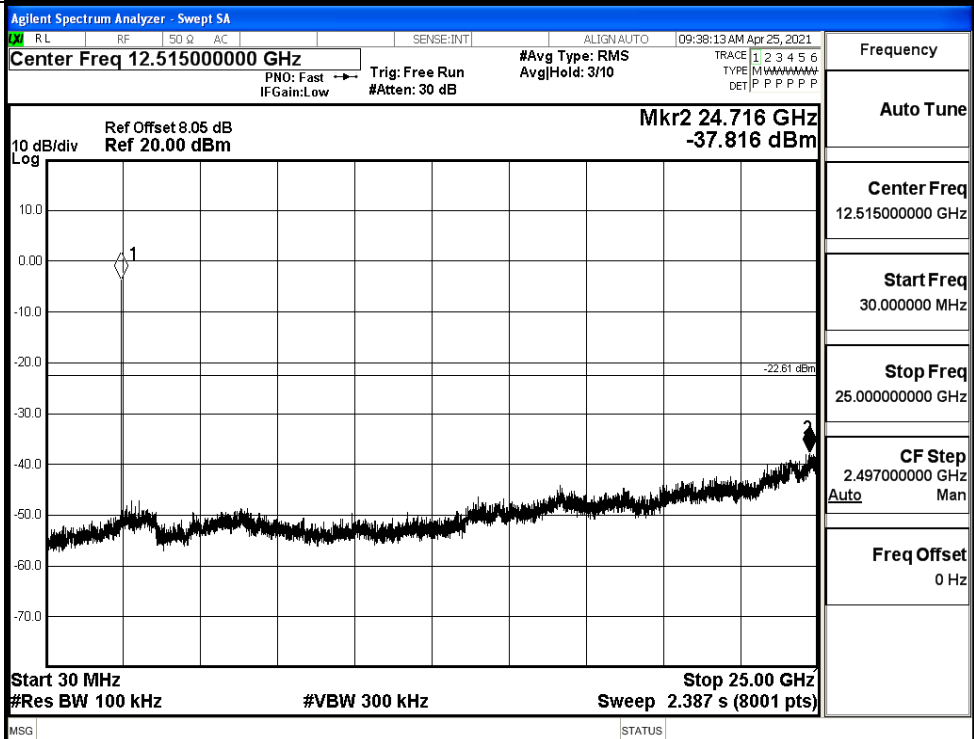


π /4DQPSK_HCH_Graphs

Pref



Puw

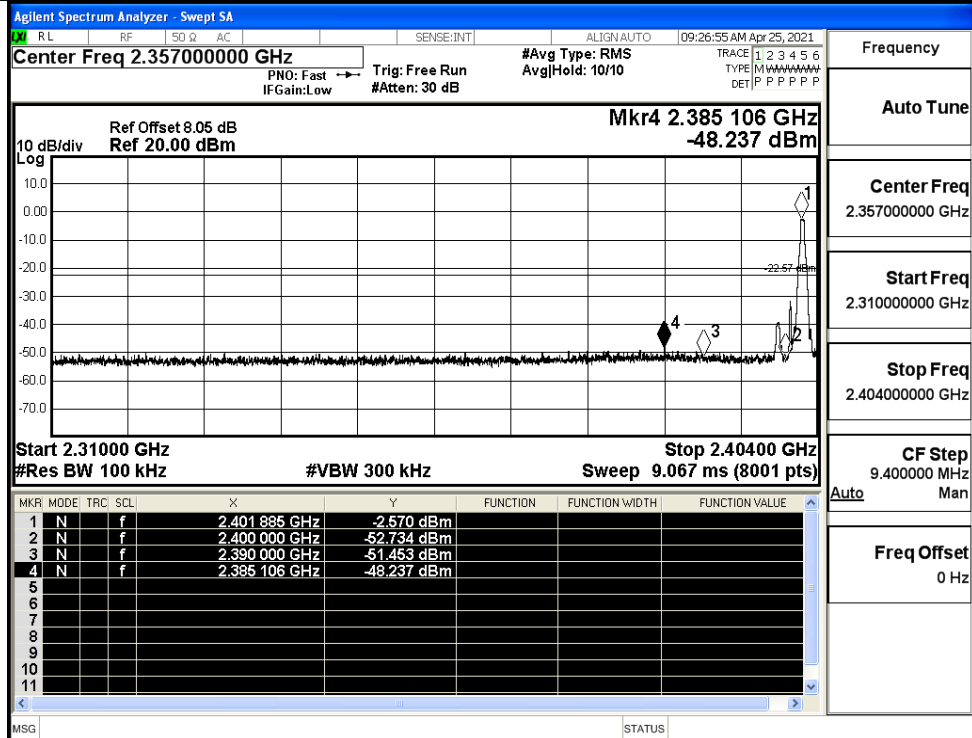


A.7 Band-edge for RF Conducted Emissions

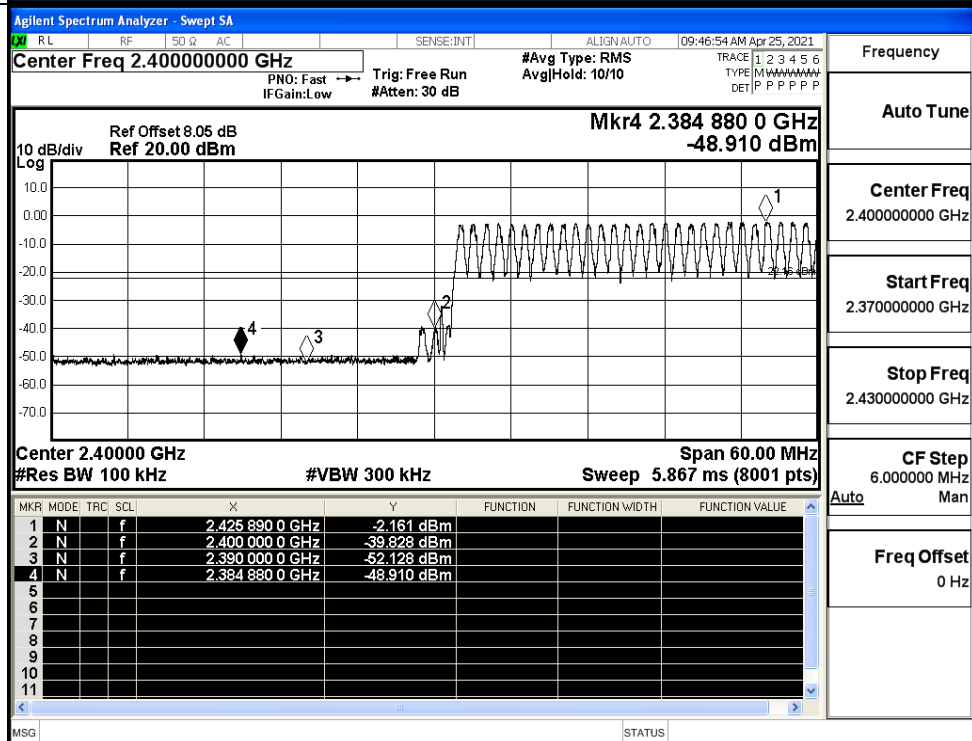
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.570	Off	-48.237	-22.57	PASS
			-2.161	On	-48.910	-22.16	PASS
	HCH	2480	-2.581	Off	-43.124	-22.58	PASS
			-2.568	On	-43.775	-22.57	PASS
$\pi/4$ DQPSK	LCH	2402	-2.542	Off	-49.522	-22.54	PASS
			-2.123	On	-48.835	-22.12	PASS
	HCH	2480	-2.678	Off	-42.832	-22.68	PASS
			-2.367	On	-45.437	-22.37	PASS

Test Graphs

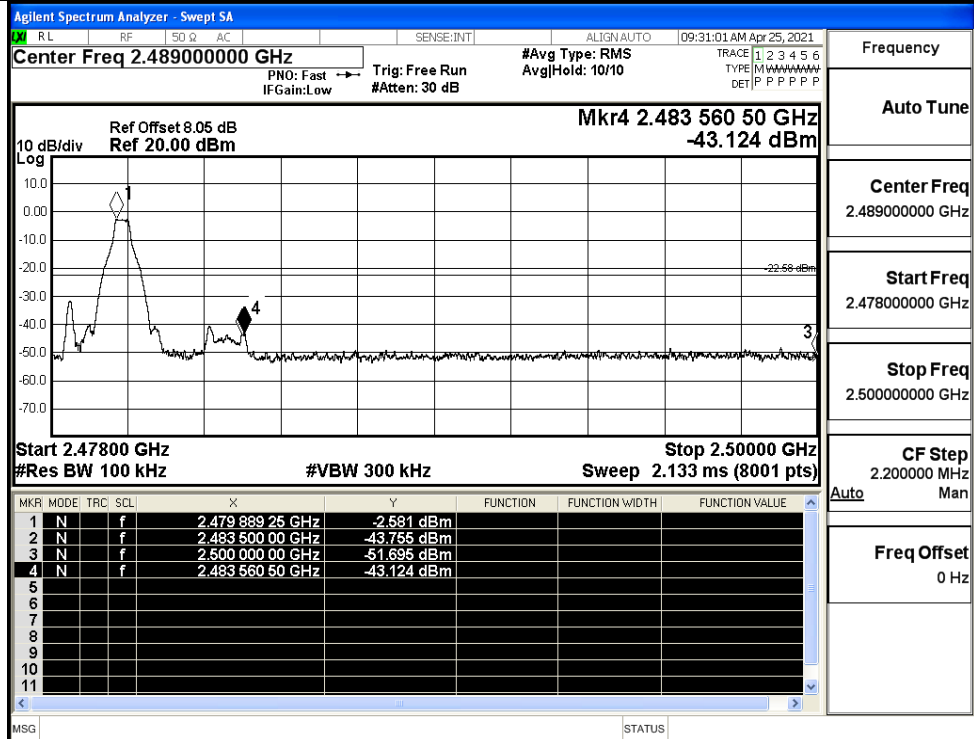
GFSK/LCH/No Hop



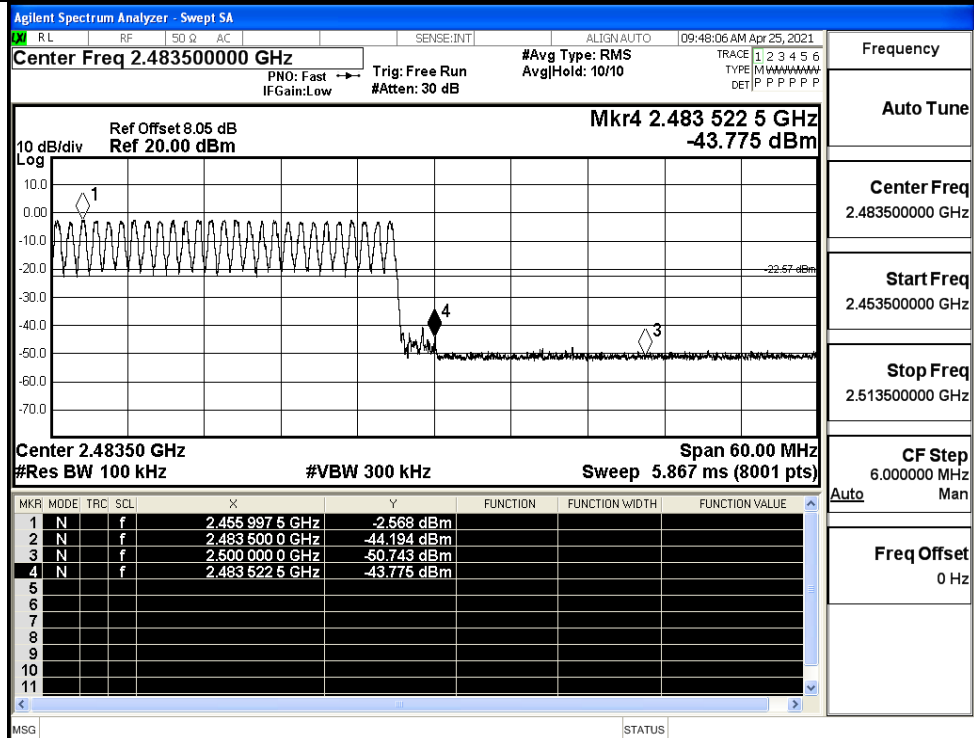
GFSK/LCH/Hop



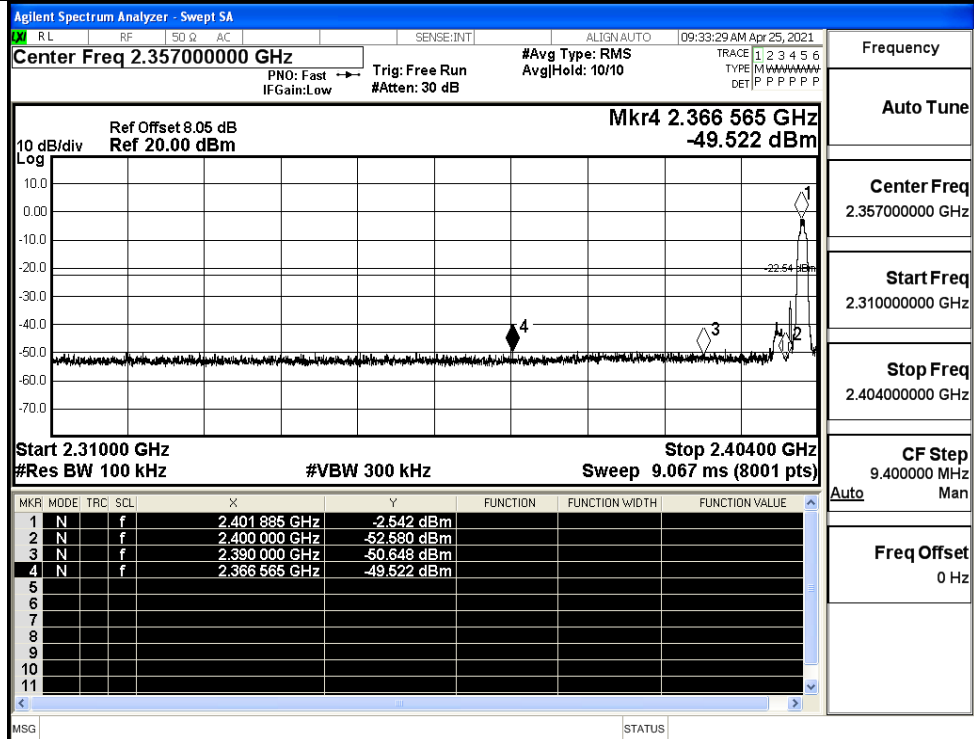
GFSK/HCH/No Hop



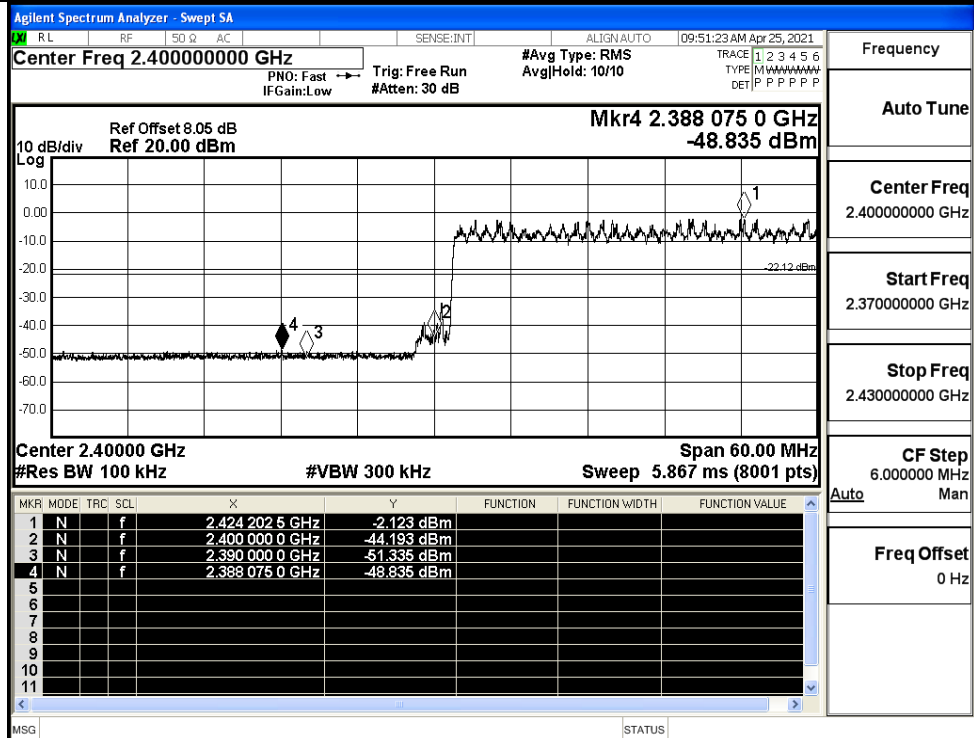
GFSK/HCH/Hop



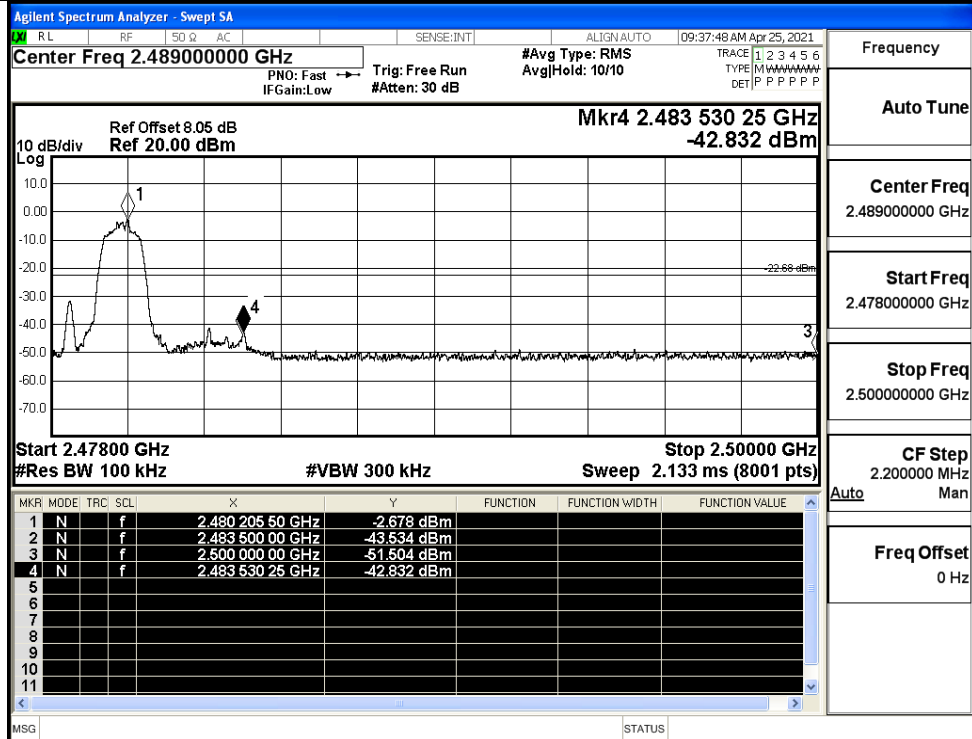
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop



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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

Start Freq
2.478000000 GHz

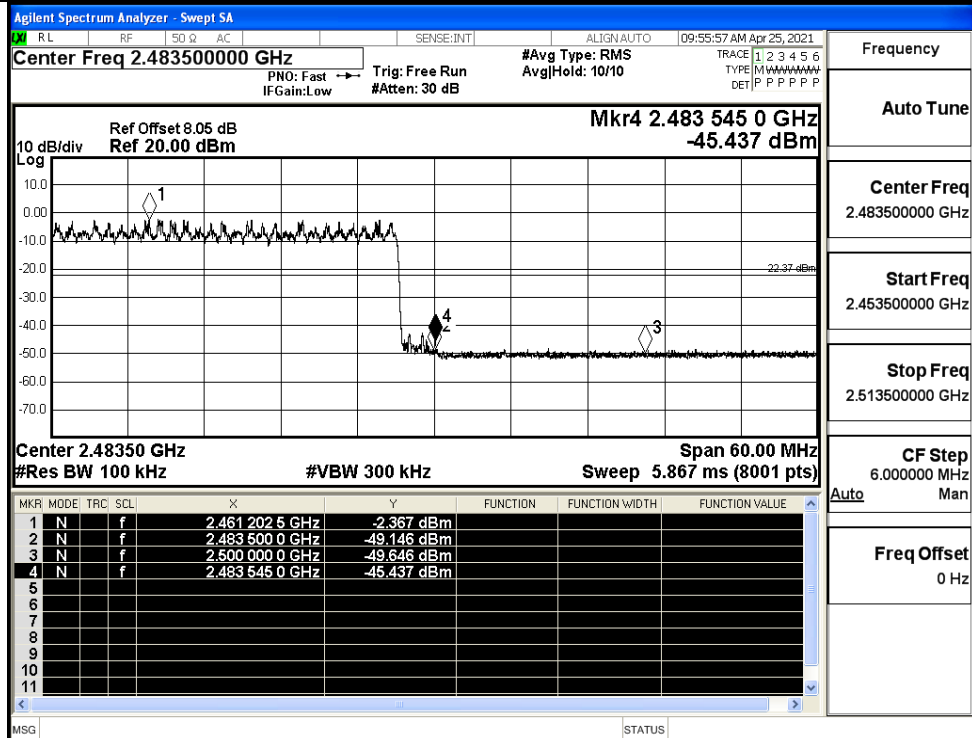
Stop Freq
2.500000000 GHz

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

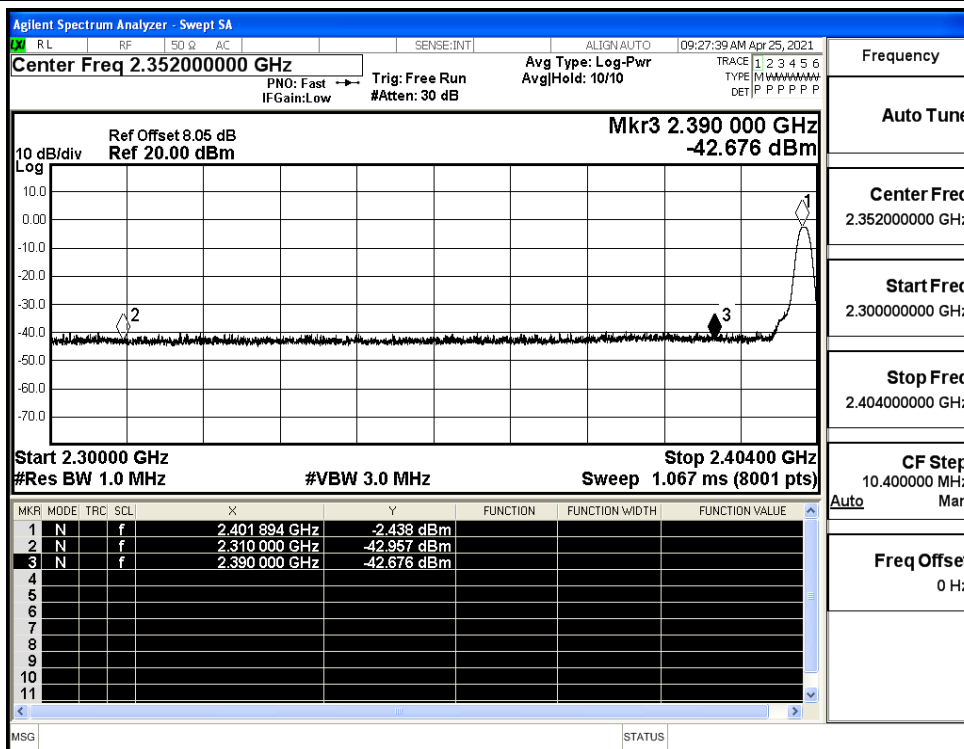
Auto Man

Freq Offset
0 Hz

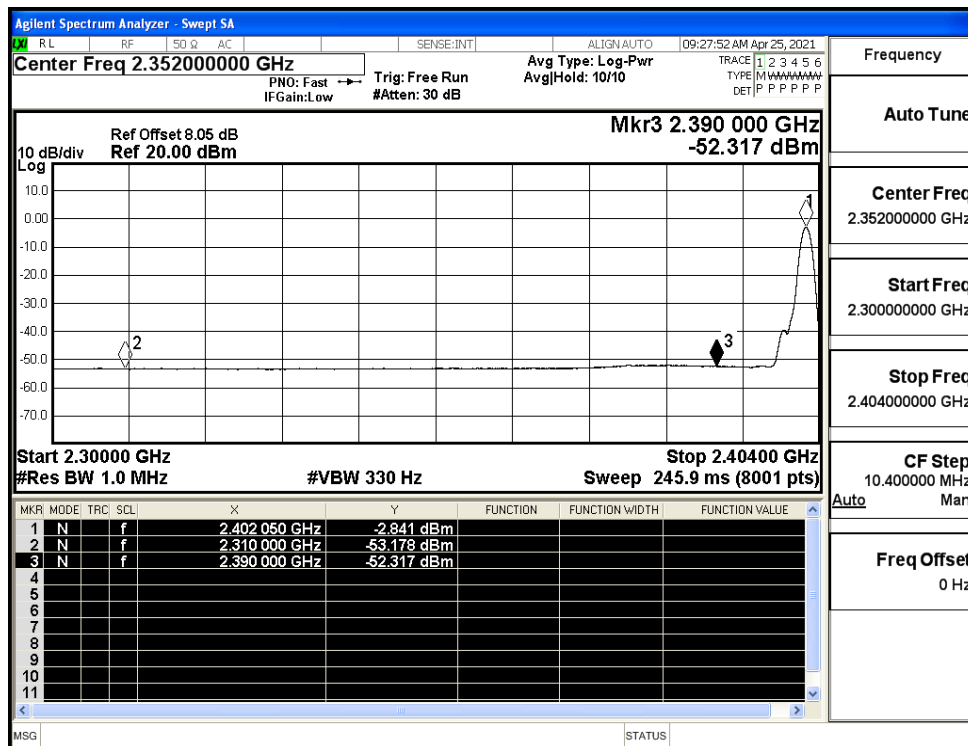
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-42.96	2.0	0	54.27	PEAK	74	PASS
	Off	2310.0	-53.18	2.0	0	44.05	AV	54	PASS
	Off	2390.0	-42.68	2.0	0	54.55	PEAK	74	PASS
	Off	2390.0	-52.32	2.0	0	44.91	AV	54	PASS
	Off	2483.5	-38.13	2.0	0	59.10	PEAK	74	PASS
	Off	2483.5	-45.63	2.0	0	51.60	AV	54	PASS
	Off	2500.0	-42.68	2.0	0	54.55	PEAK	74	PASS
	Off	2500.0	-51.48	2.0	0	45.75	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.09	2.0	0	54.14	PEAK	74	PASS
	Off	2310.0	-53.30	2.0	0	43.93	AV	54	PASS
	Off	2390.0	-42.67	2.0	0	54.56	PEAK	74	PASS
	Off	2390.0	-52.41	2.0	0	44.82	AV	54	PASS
	Off	2483.5	-37.53	2.0	0	59.70	PEAK	74	PASS
	Off	2483.5	-48.18	2.0	0	49.05	AV	54	PASS
	Off	2500.0	-41.67	2.0	0	55.56	PEAK	74	PASS
	Off	2500.0	-51.67	2.0	0	45.56	AV	54	PASS

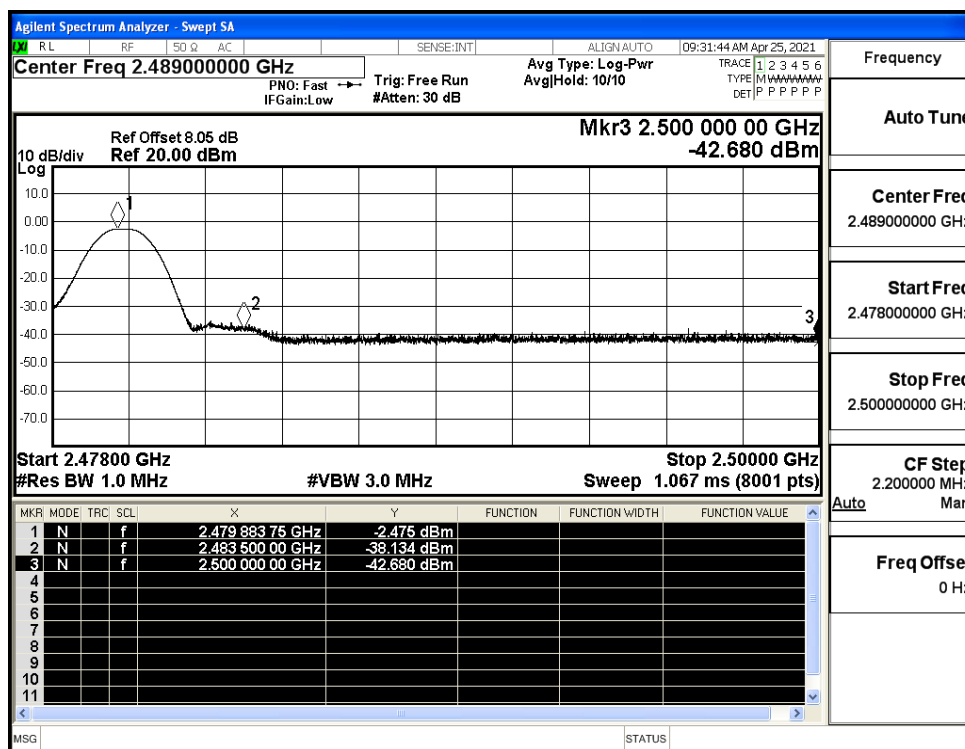
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



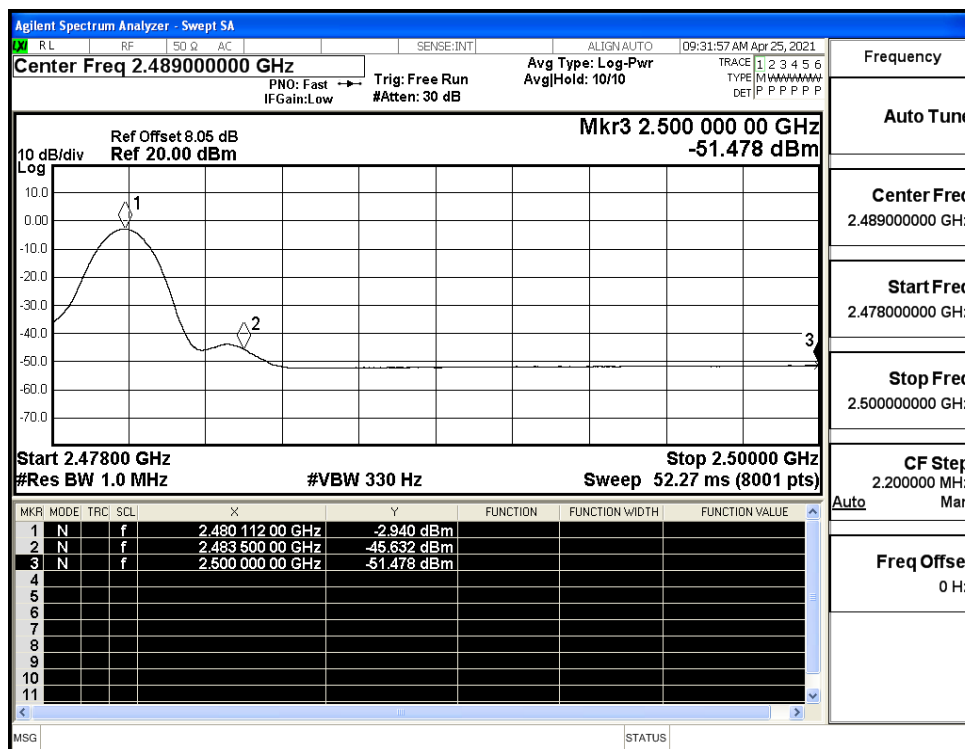
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

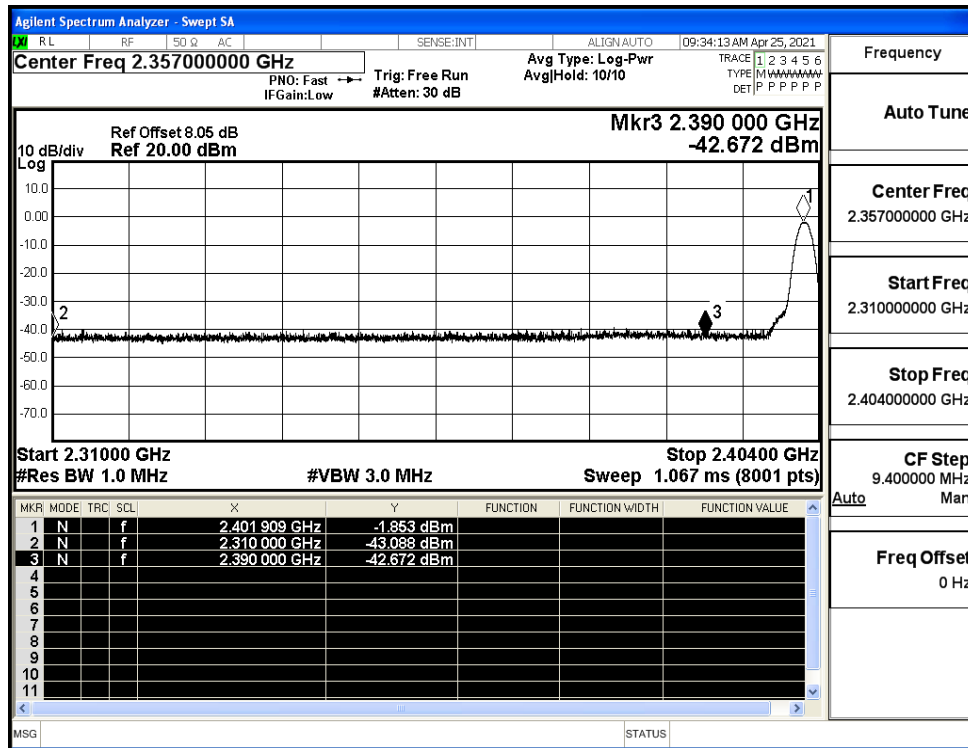
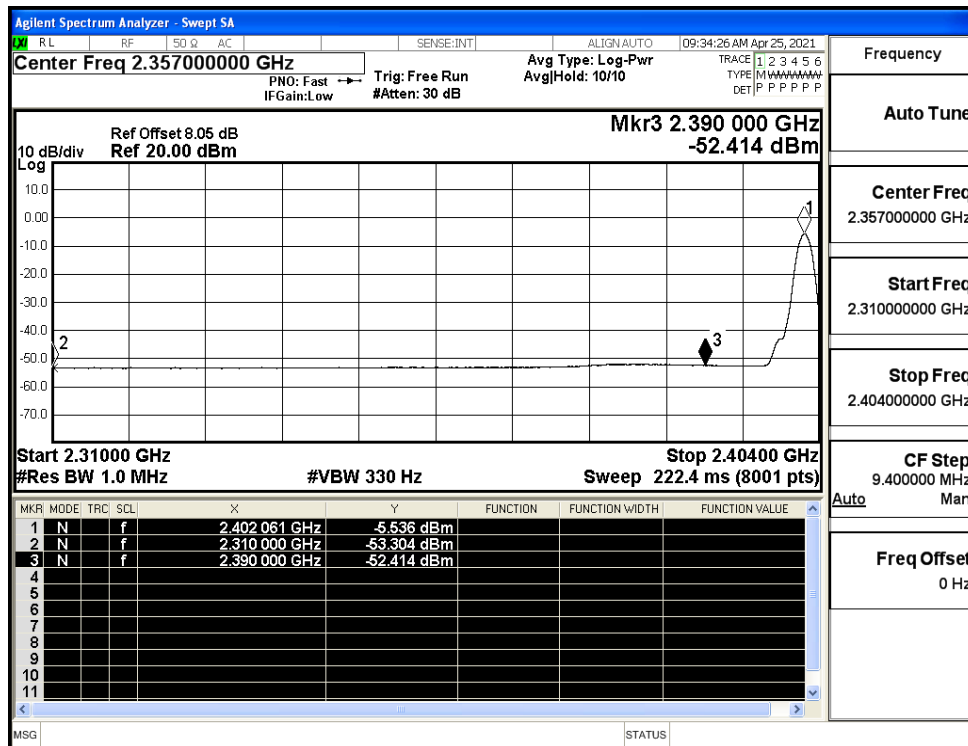


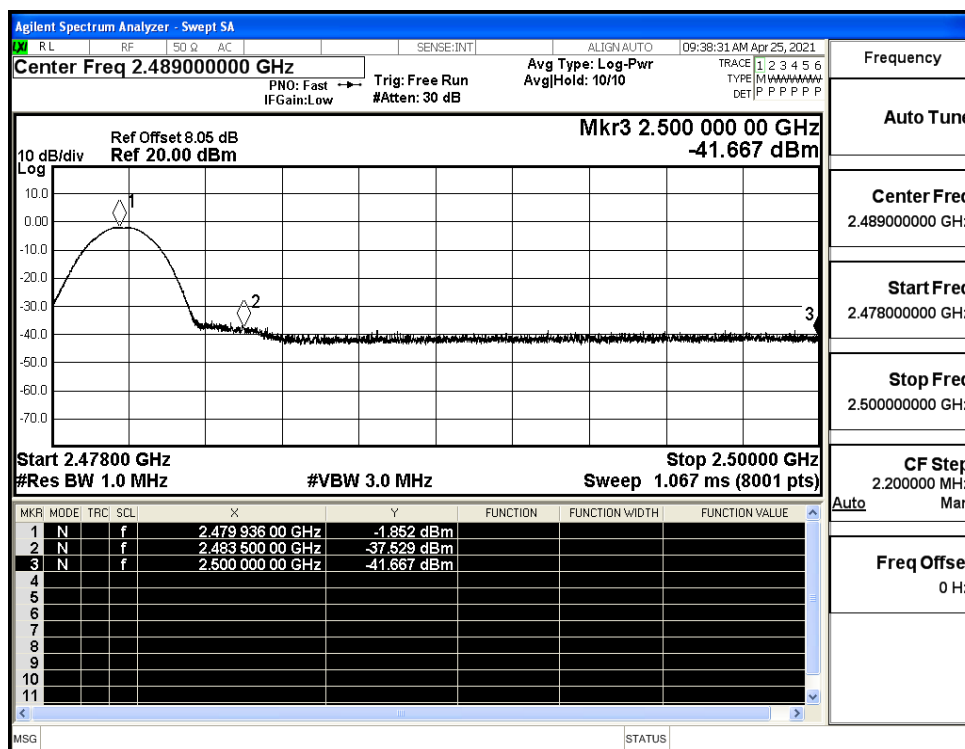
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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