

Appendix A

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

Product Name: Wireless Earbuds

Trade Mark: N/A

Test Model: XO-10028

Environmental Conditions

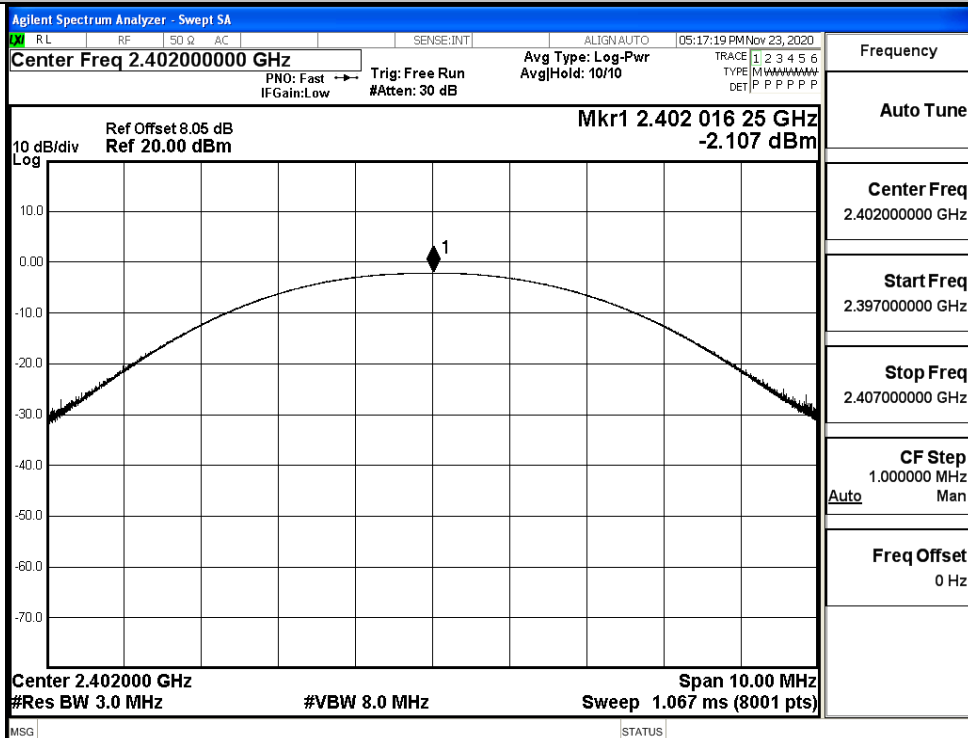
Temperature:	23.3° C
Relative Humidity:	53.7%
ATM Pressure:	100.0 kPa
Test Engineer:	Dancy Chen
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

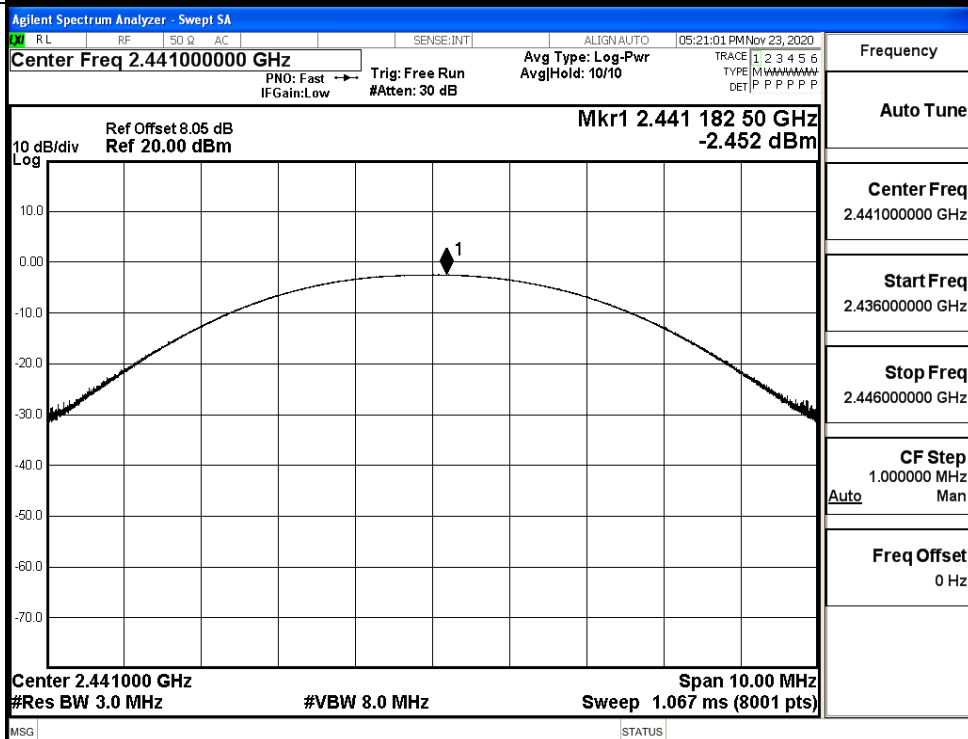
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.107	21	PASS
	MCH	-2.452	21	PASS
	HCH	-3.644	21	PASS
$\pi/4$ DQPSK	LCH	-1.440	21	PASS
	MCH	-1.710	21	PASS
	HCH	-2.852	21	PASS

Test Graphs

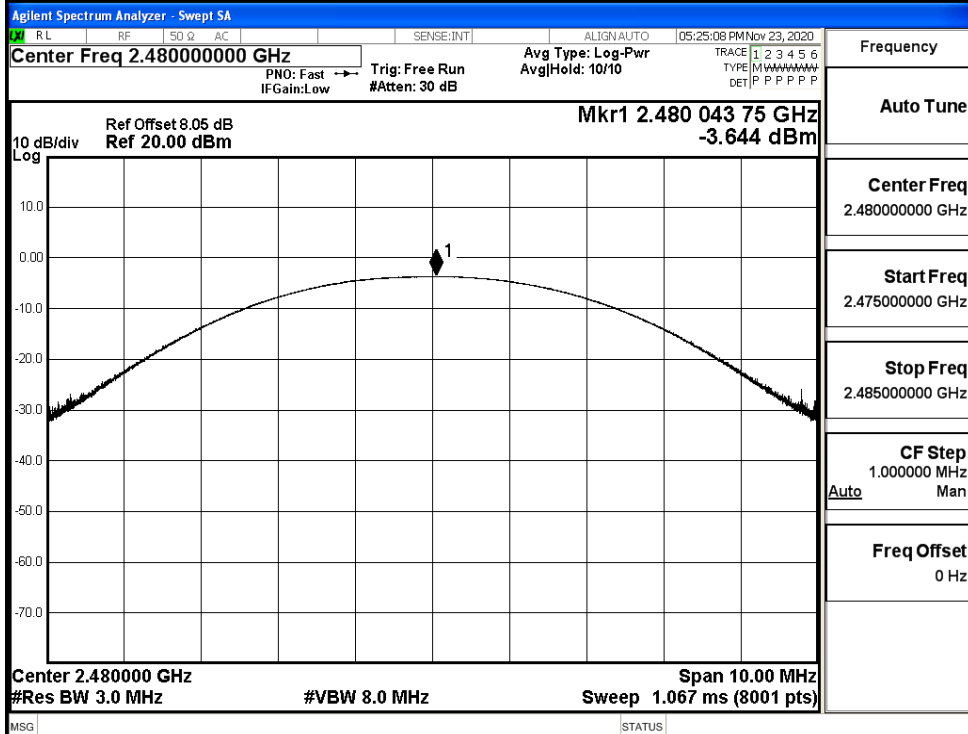
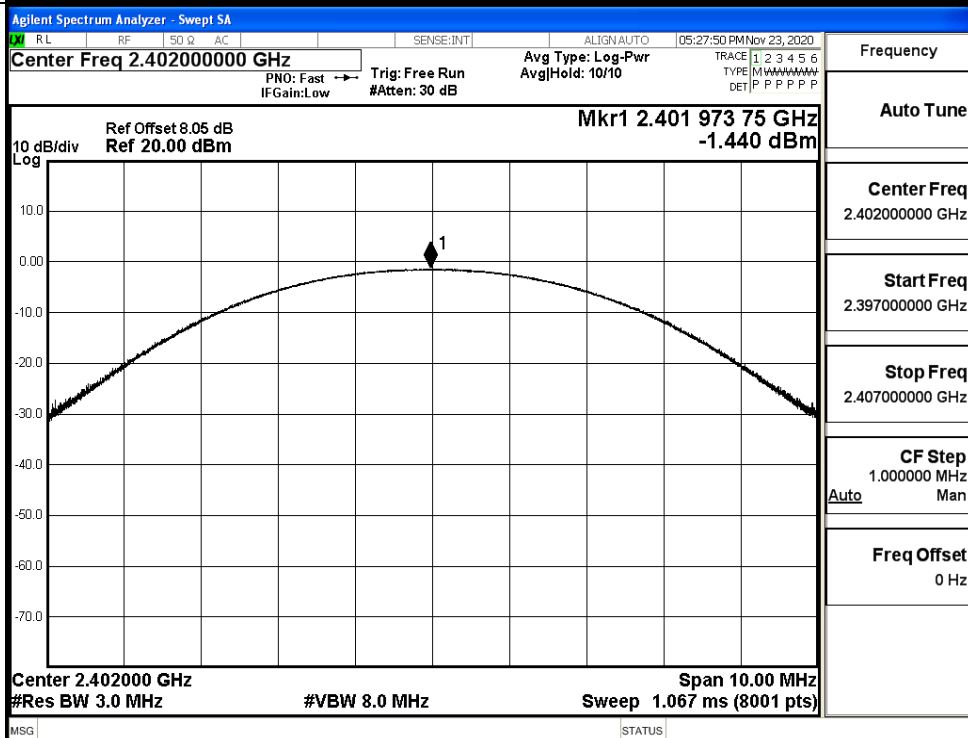
GFSK/LCH

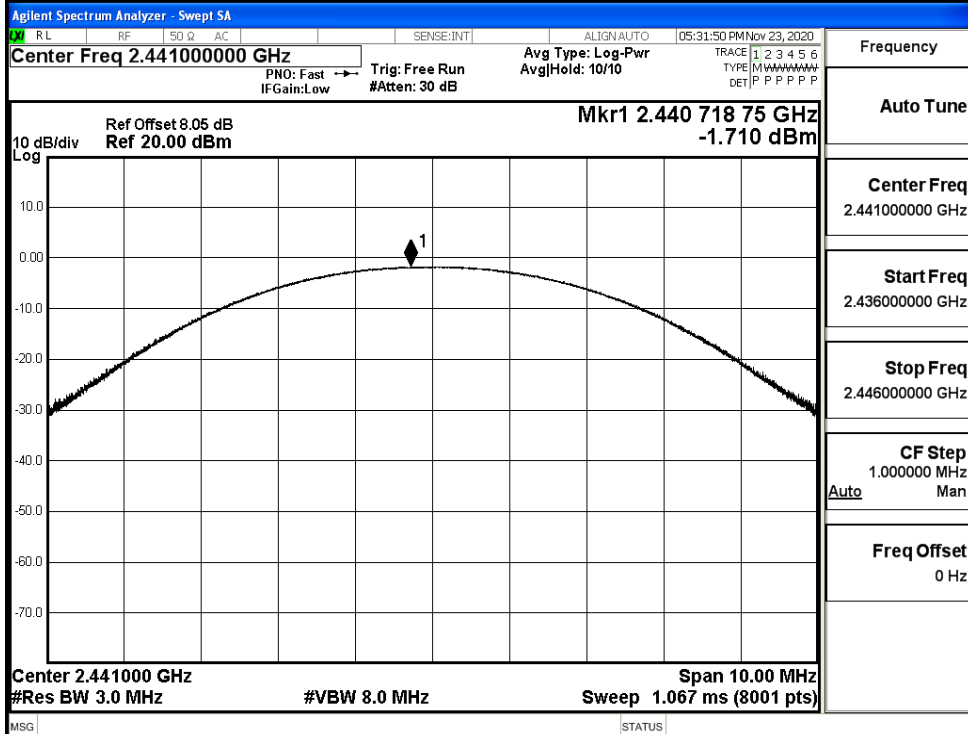
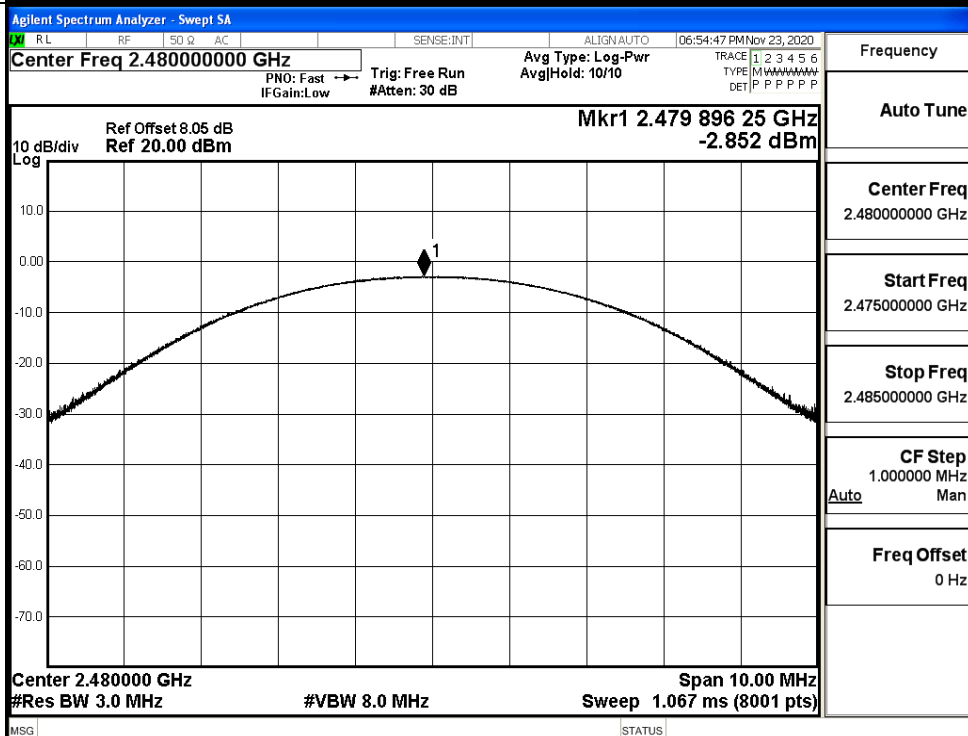


GFSK/MCH



GFSK/HCH

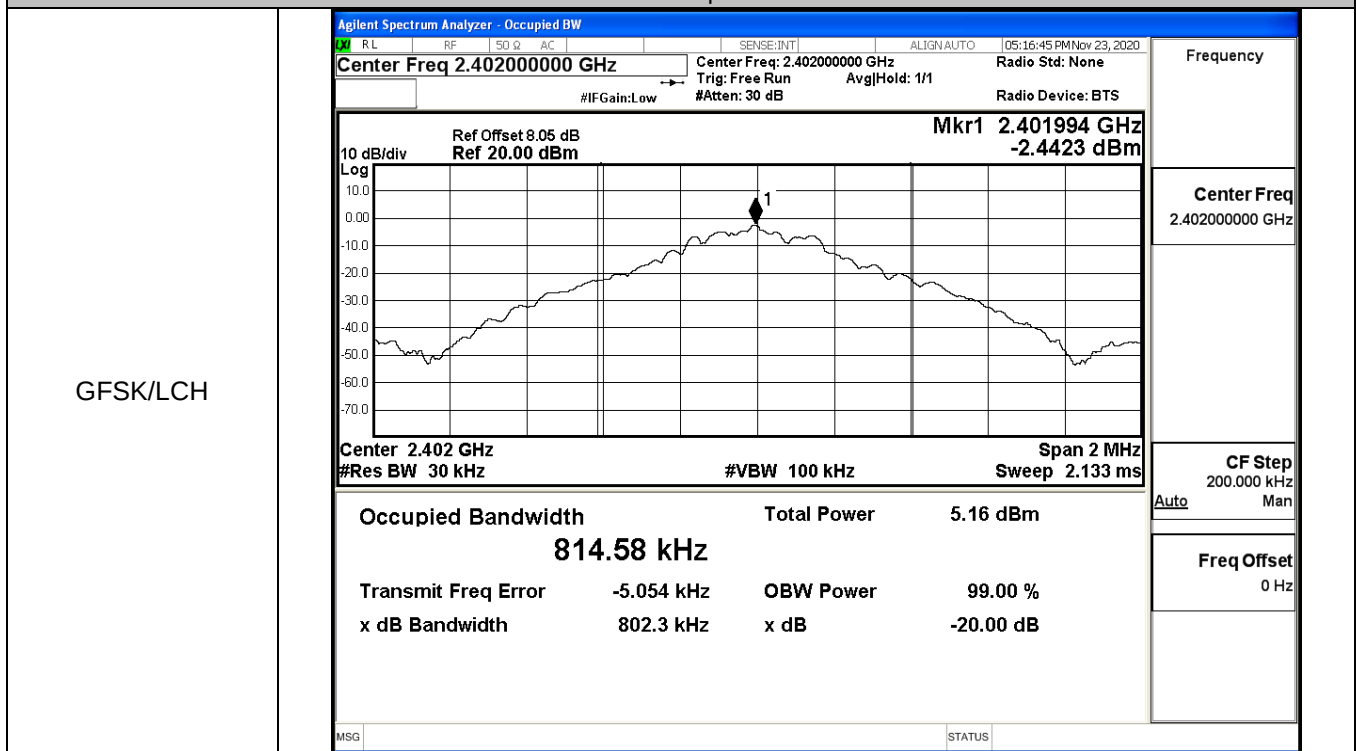
 π /4DQPSK/LCH

π /4DQPSK/MCH π /4DQPSK/HCH

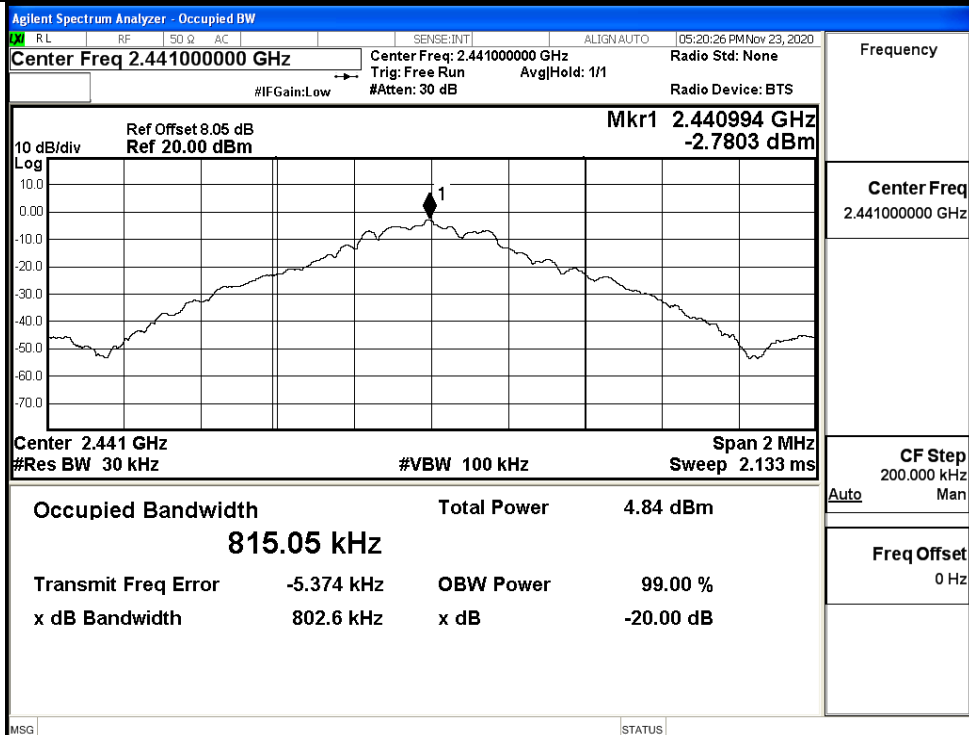
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.8023	Not Specified	PASS
	MCH	0.8026	Not Specified	PASS
	HCH	0.8057	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.245	Not Specified	PASS
	MCH	1.241	Not Specified	PASS
	HCH	1.247	Not Specified	PASS

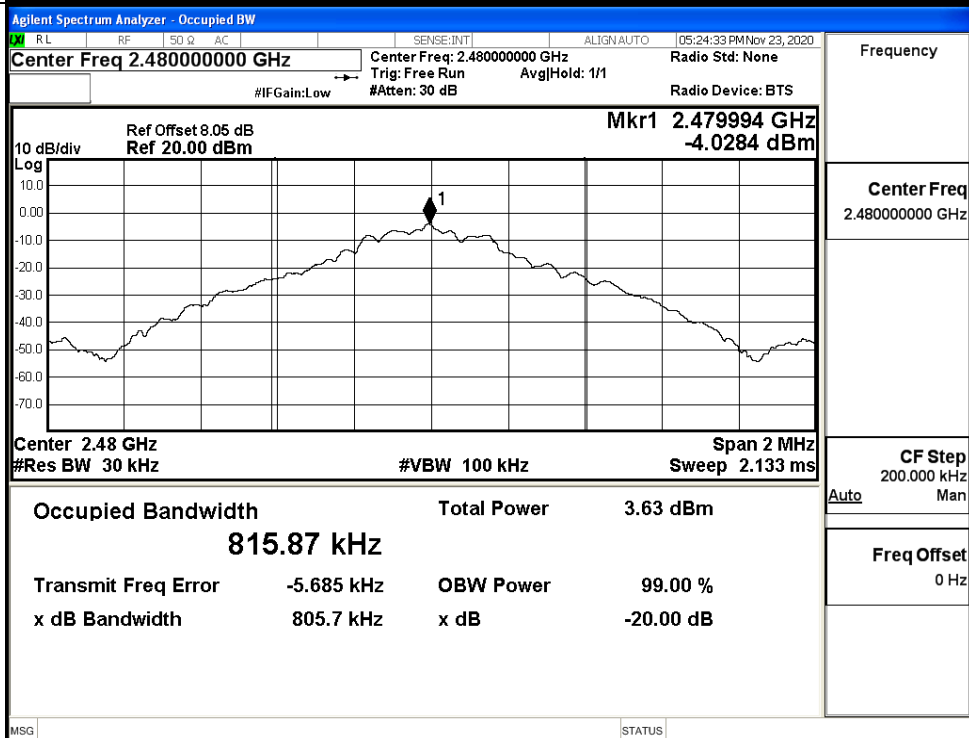
Test Graphs

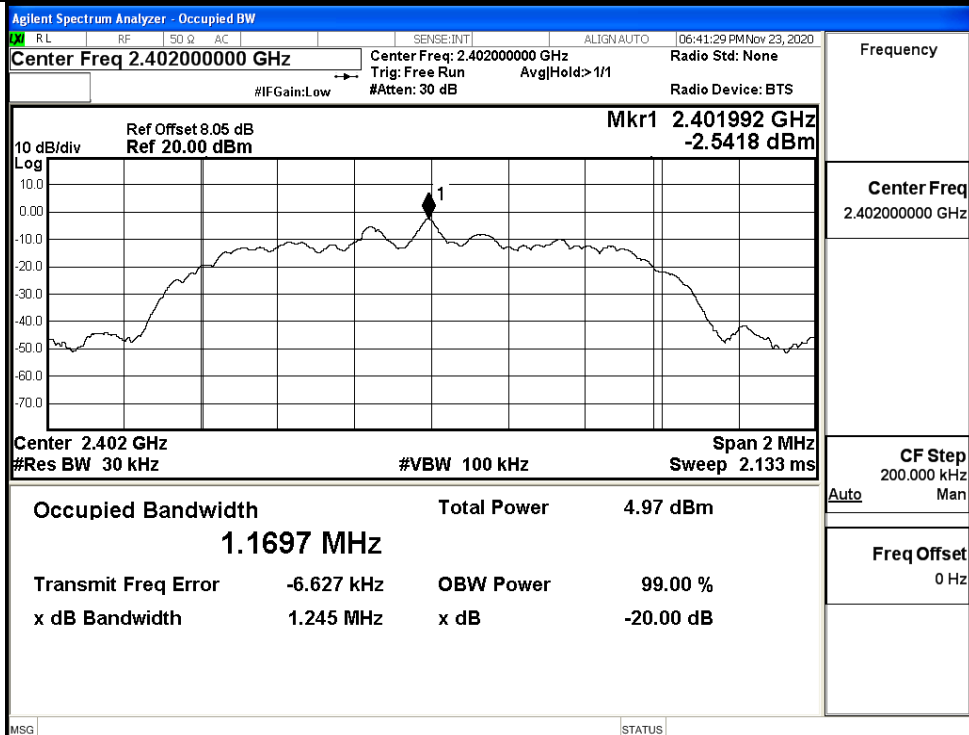
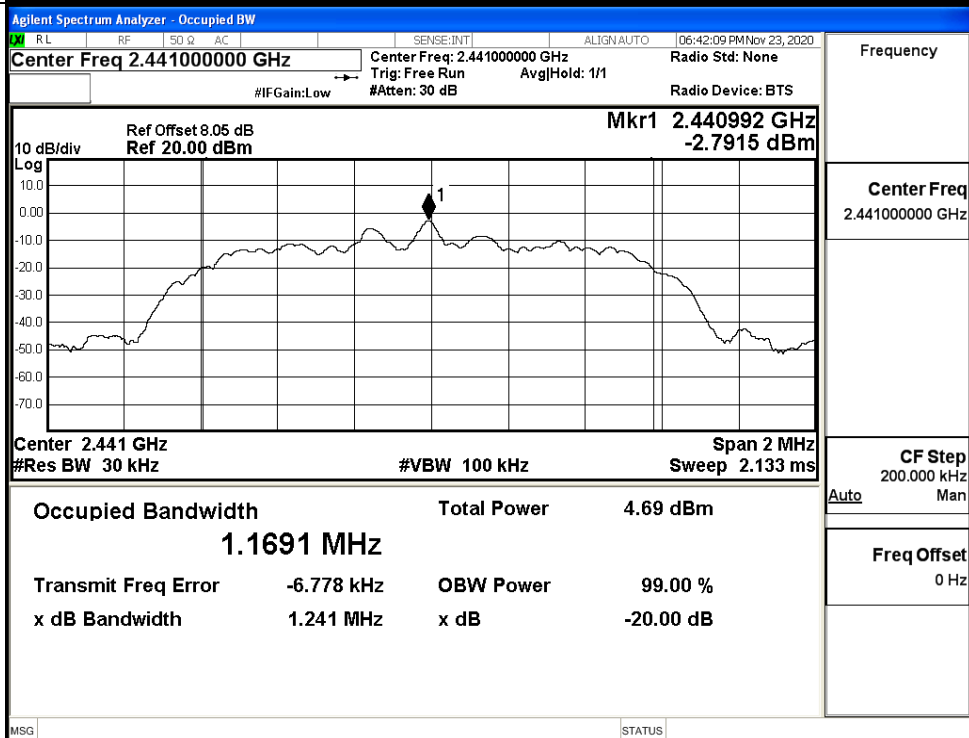


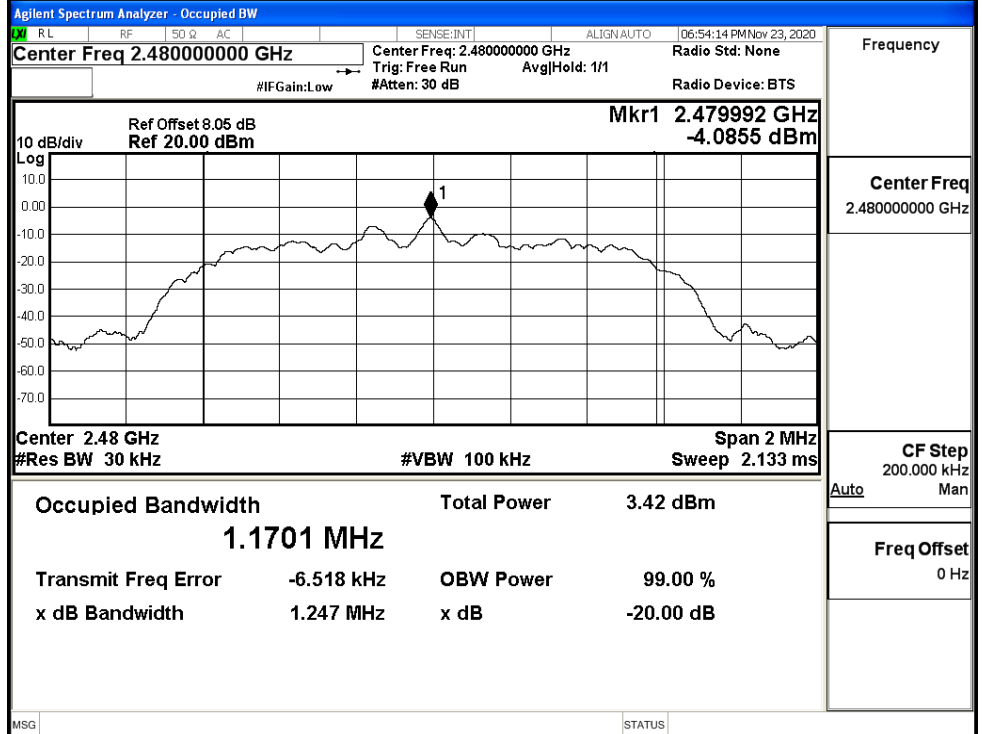
GFSK/MCH



GFSK/HCH



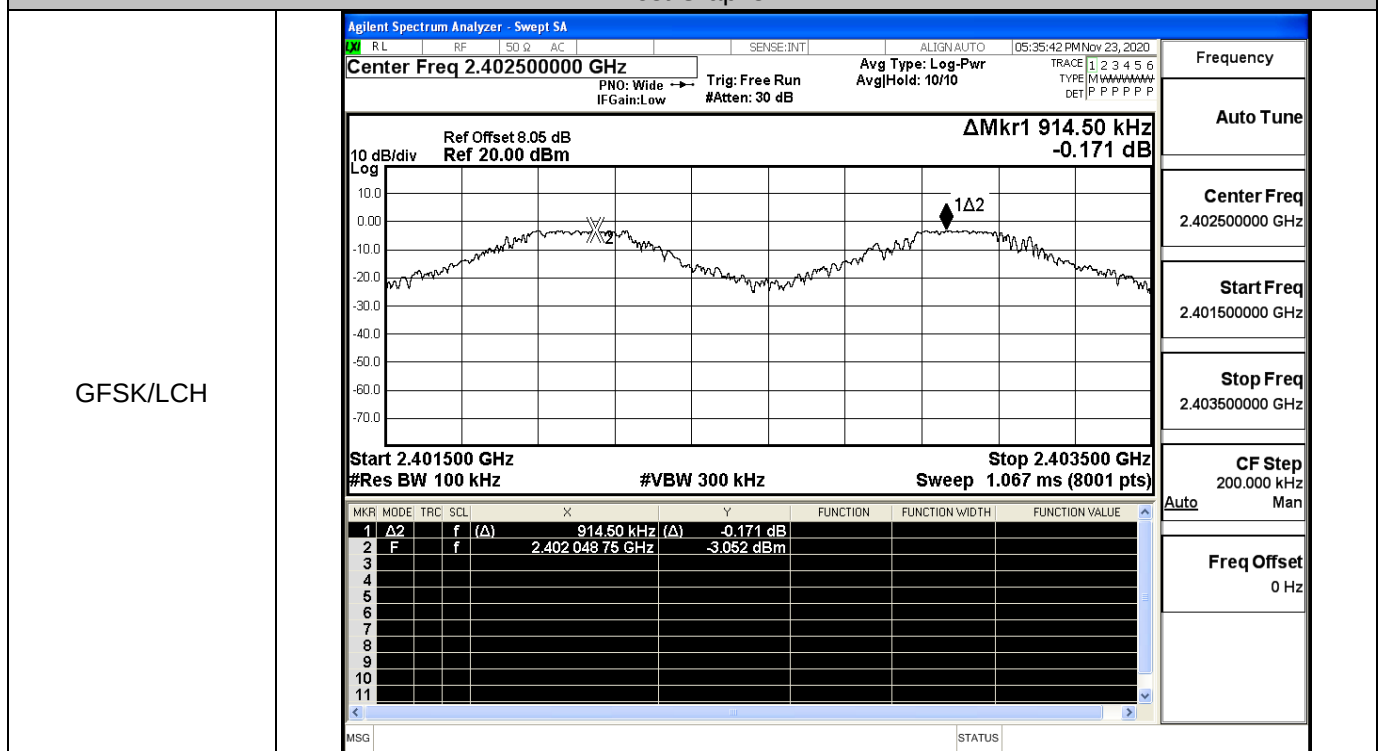
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

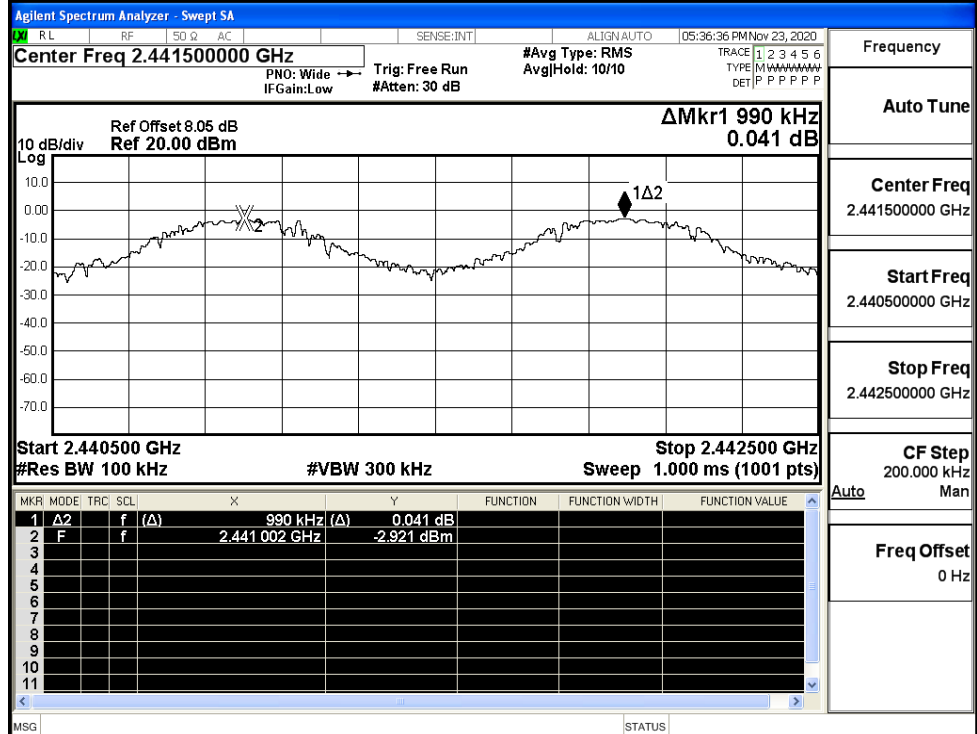
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.914	0.537	PASS
	MCH	0.990	0.537	PASS
	HCH	0.988	0.537	PASS
$\pi/4$ DQPSK	LCH	1.088	0.831	PASS
	MCH	1.146	0.831	PASS
	HCH	1.184	0.831	PASS

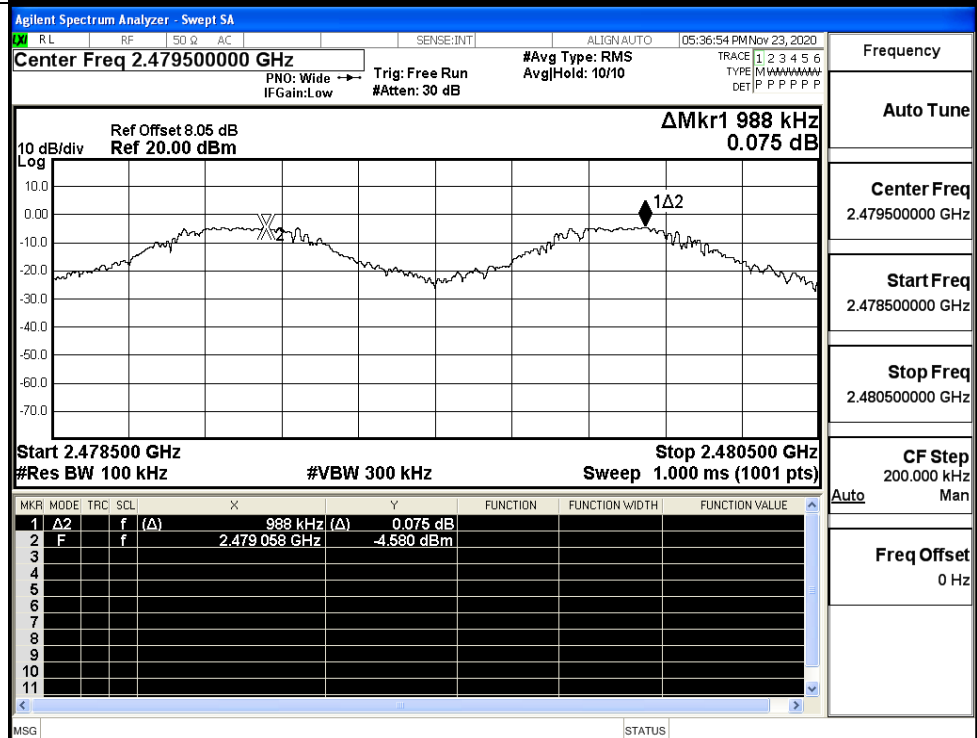
Test Graphs

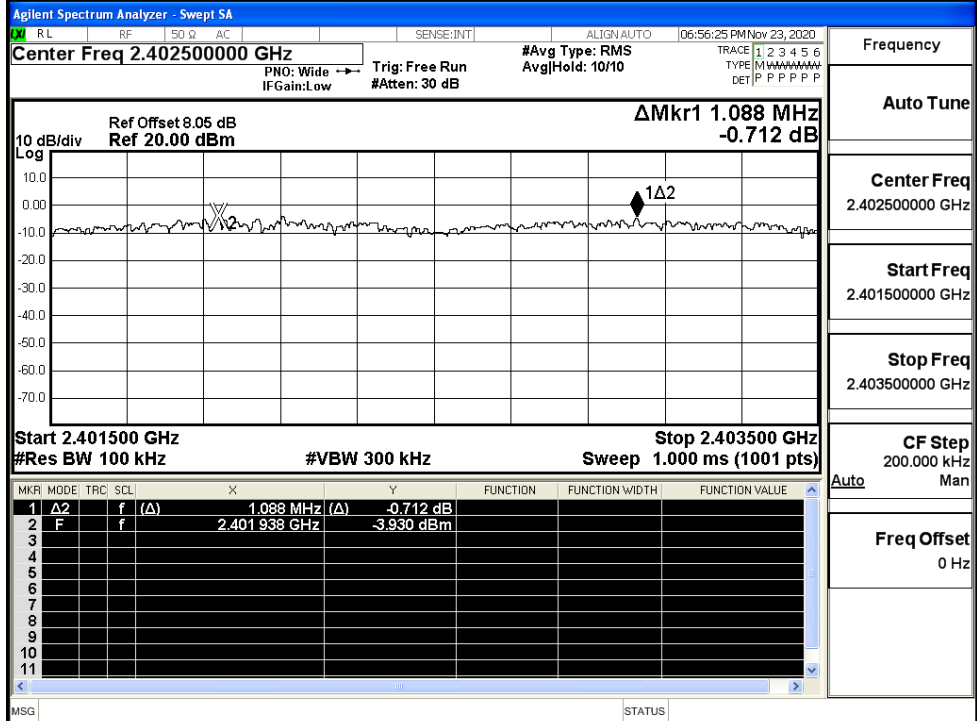
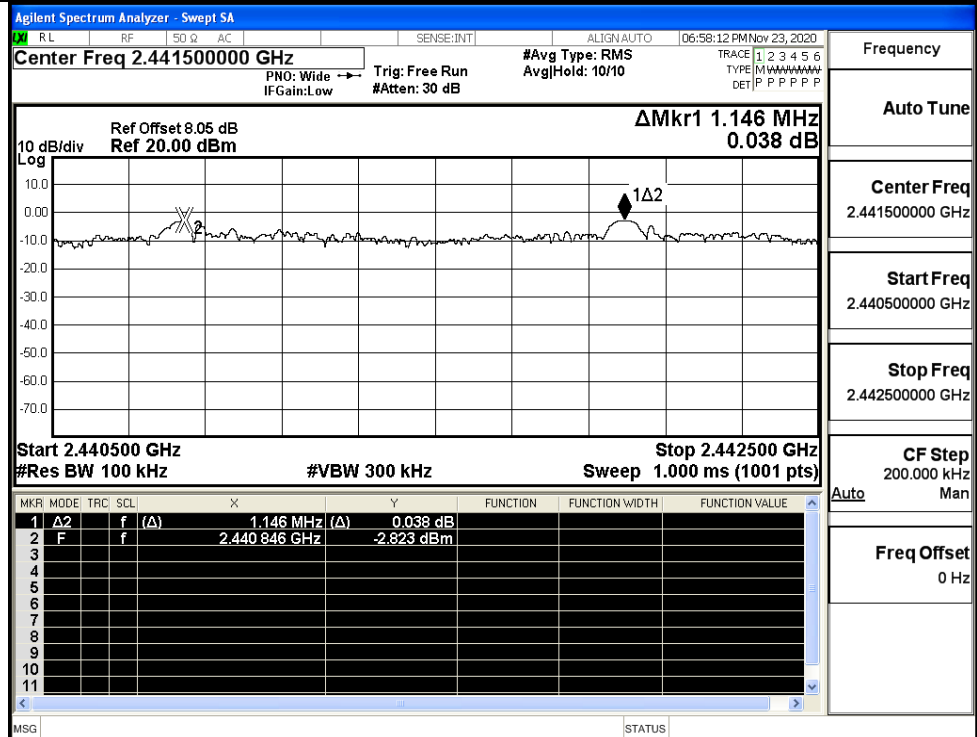


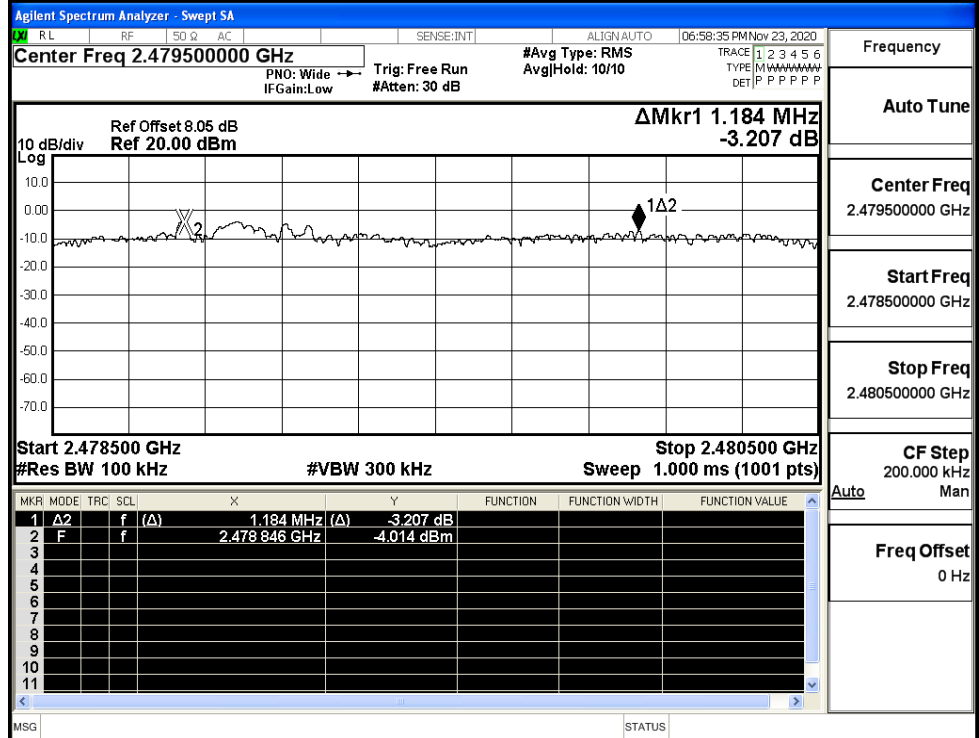
GFSK/MCH



GFSK/HCH



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

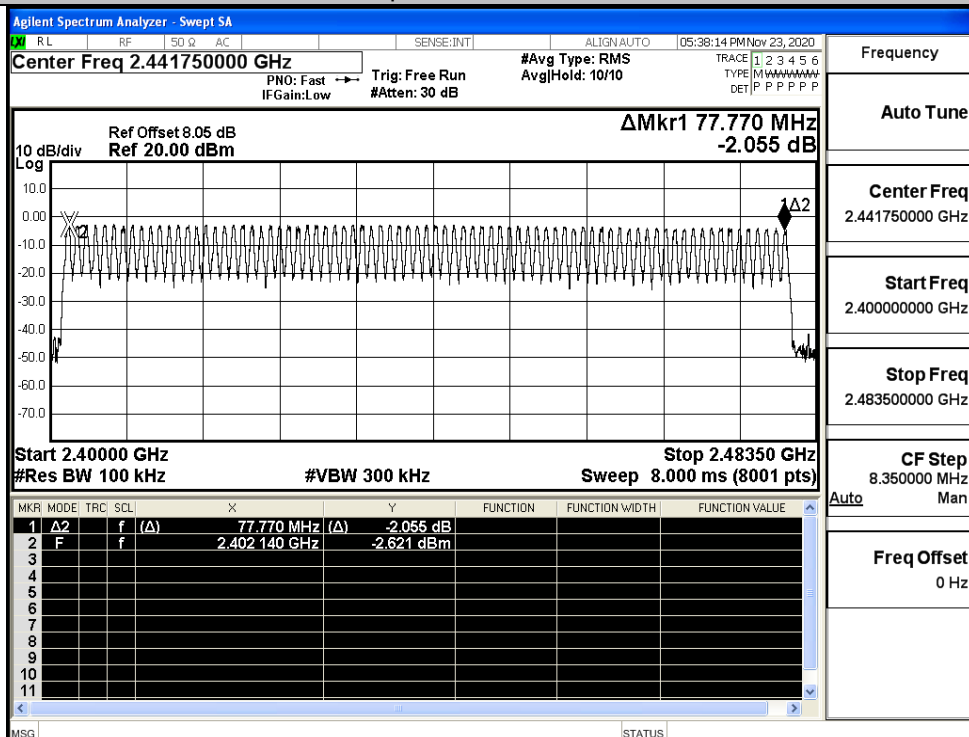
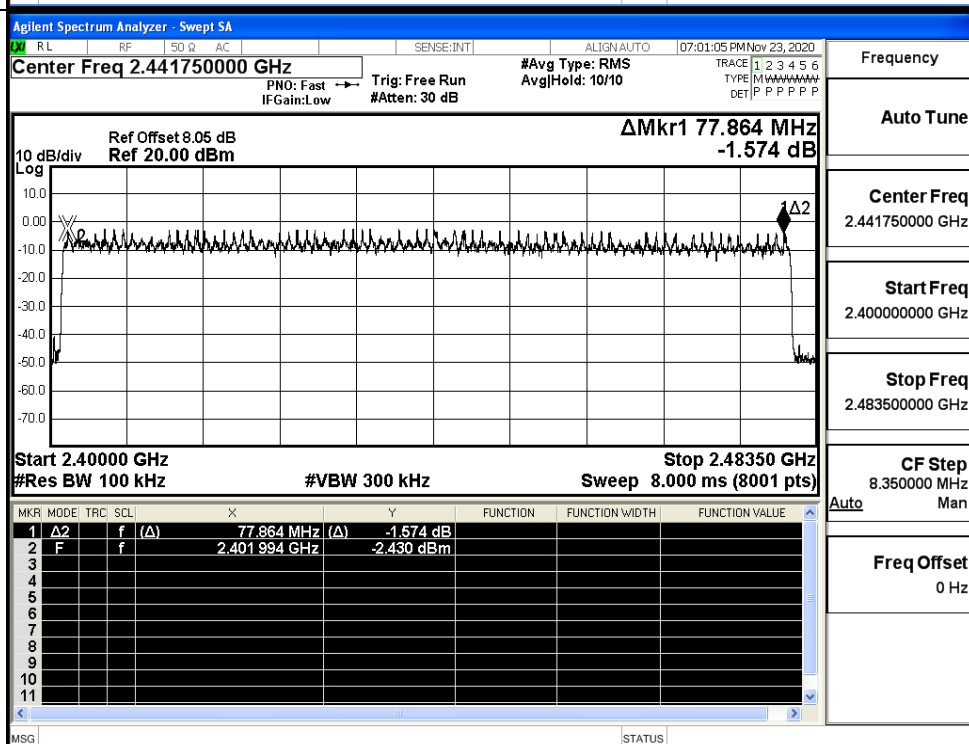
$\pi/4$ DQPSK/HCH

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

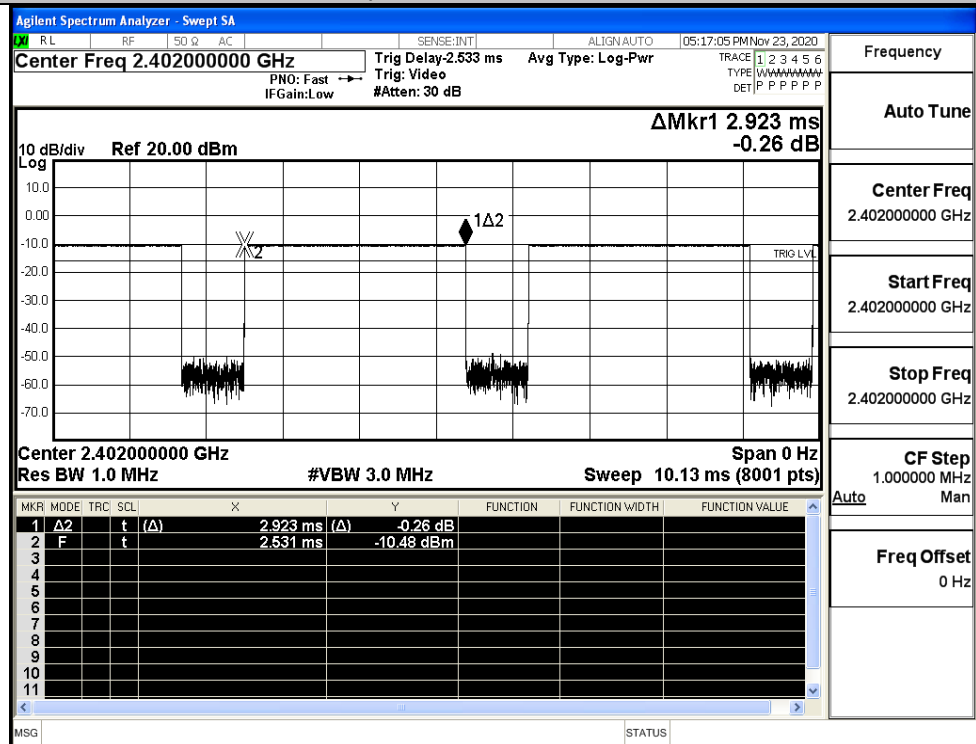
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

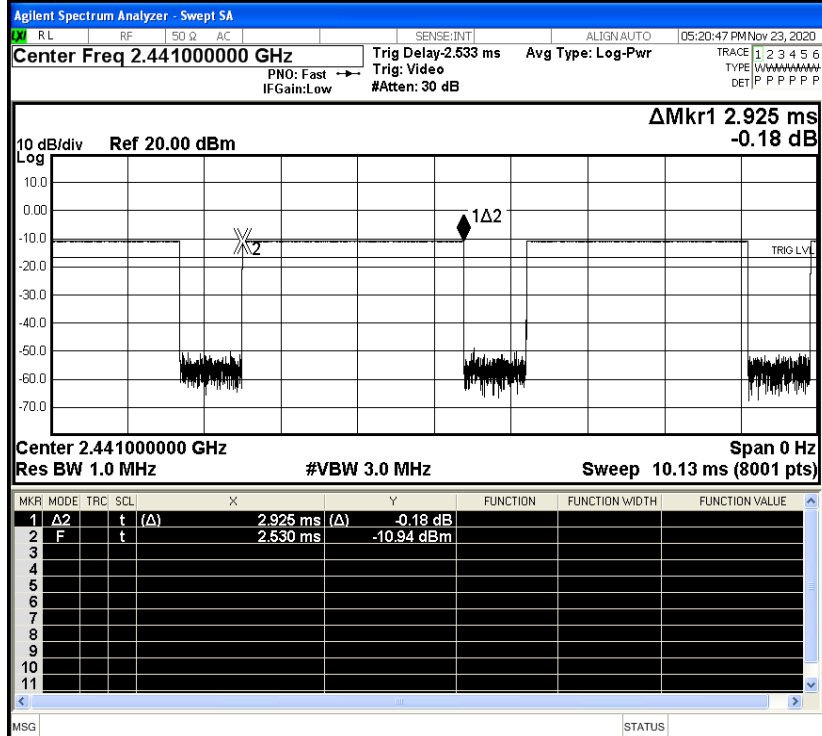
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.92	106.7	0.312	0.4	PASS
	DH5	MCH	2.92	106.7	0.312	0.4	PASS
	DH5	HCH	2.92	106.7	0.312	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.92	106.7	0.313	0.4	PASS
	2DH5	MCH	2.92	106.7	0.313	0.4	PASS
	2DH5	HCH	2.92	106.7	0.313	0.4	PASS

Test Graphs

GFSK_DH5/LCH



GFSK_DH5/MCH

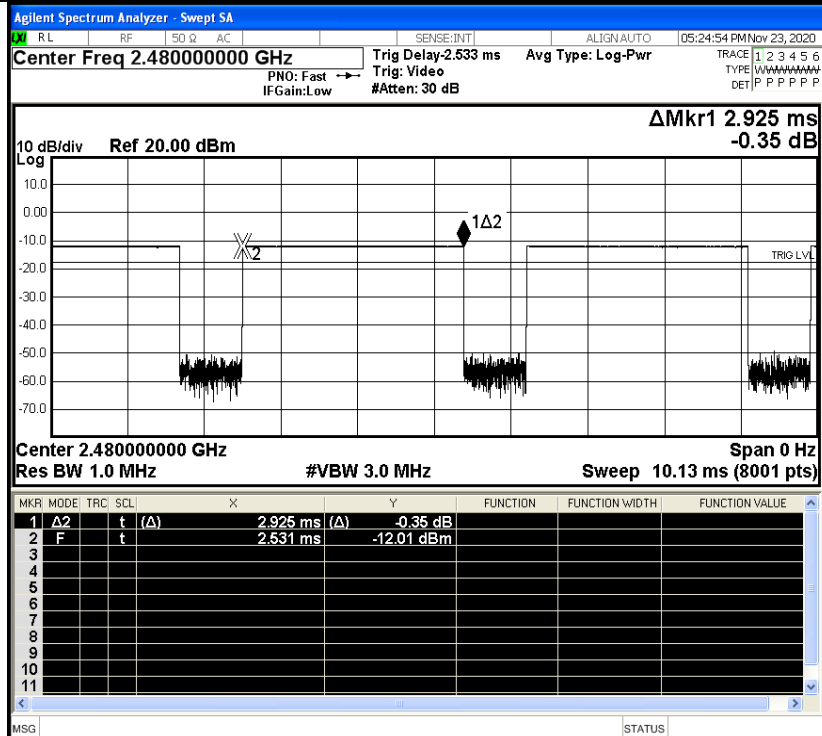


Frequency

Auto Tune

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

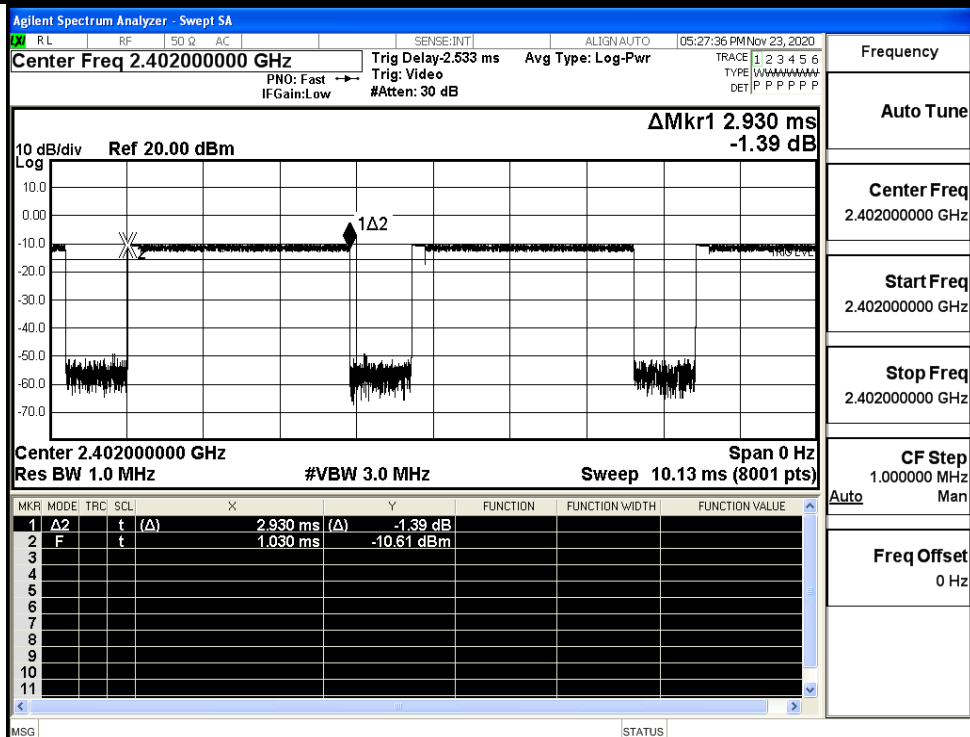
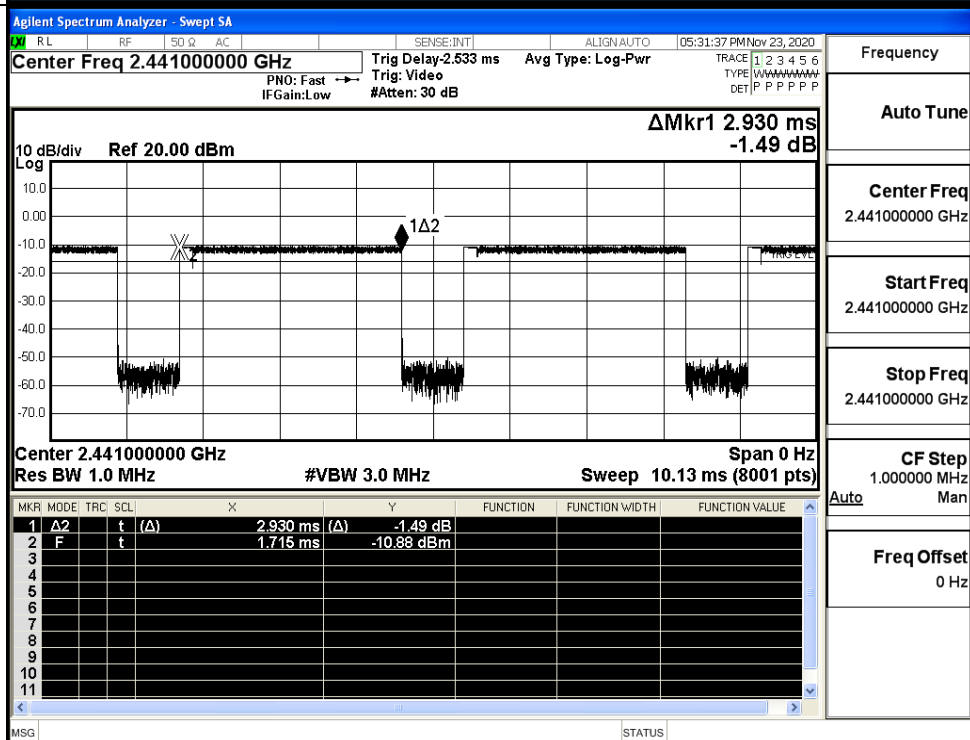
GFSK_DH5/HCH



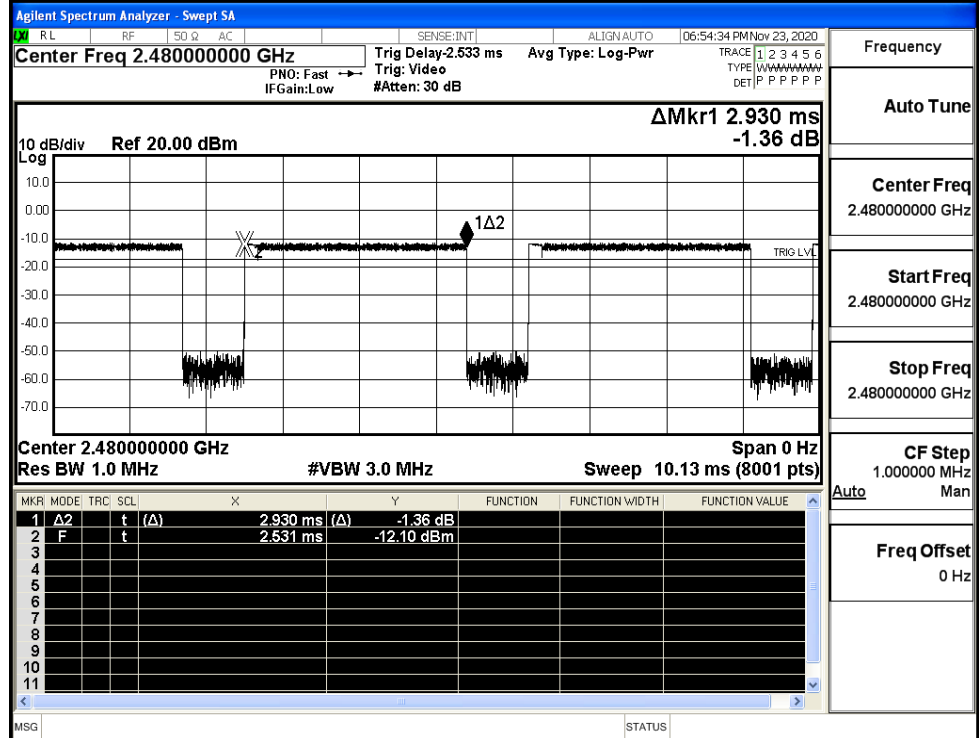
Frequency

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

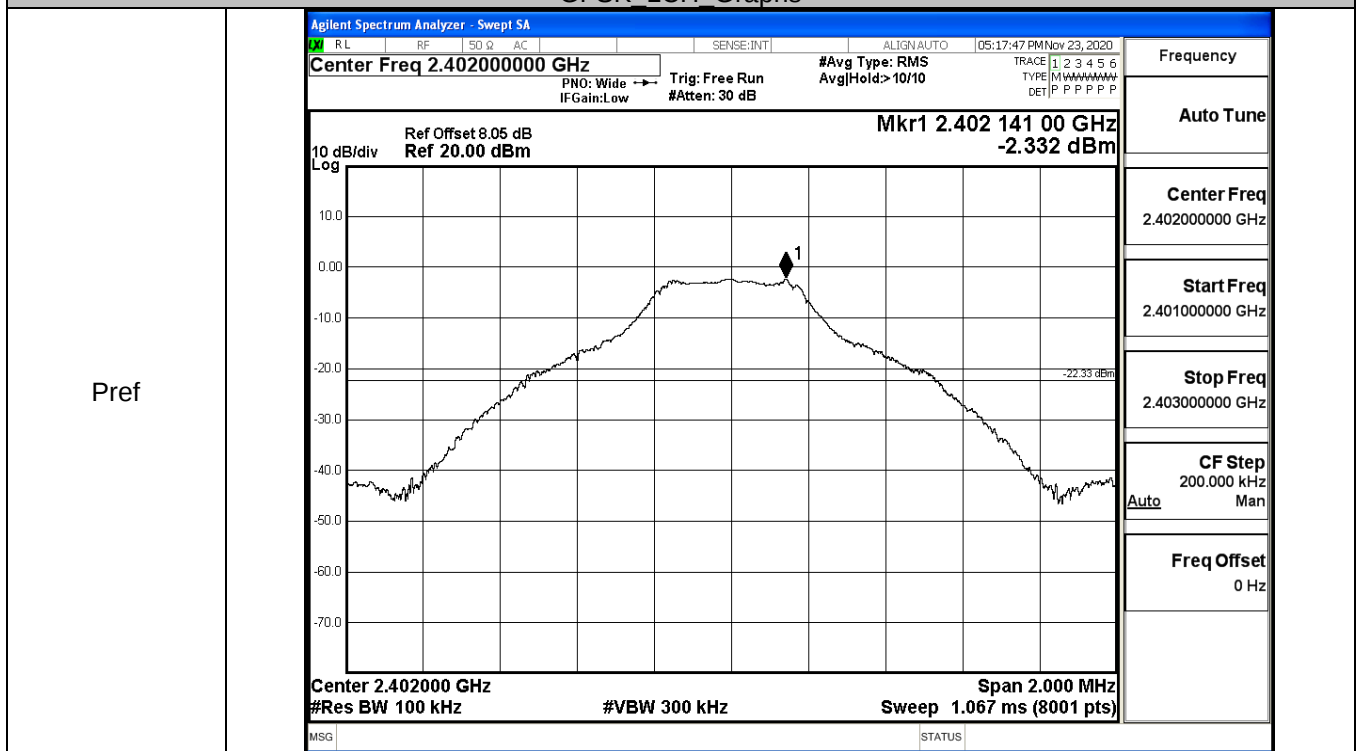
$\pi/4$ DQPSK
_2DH5/HCH



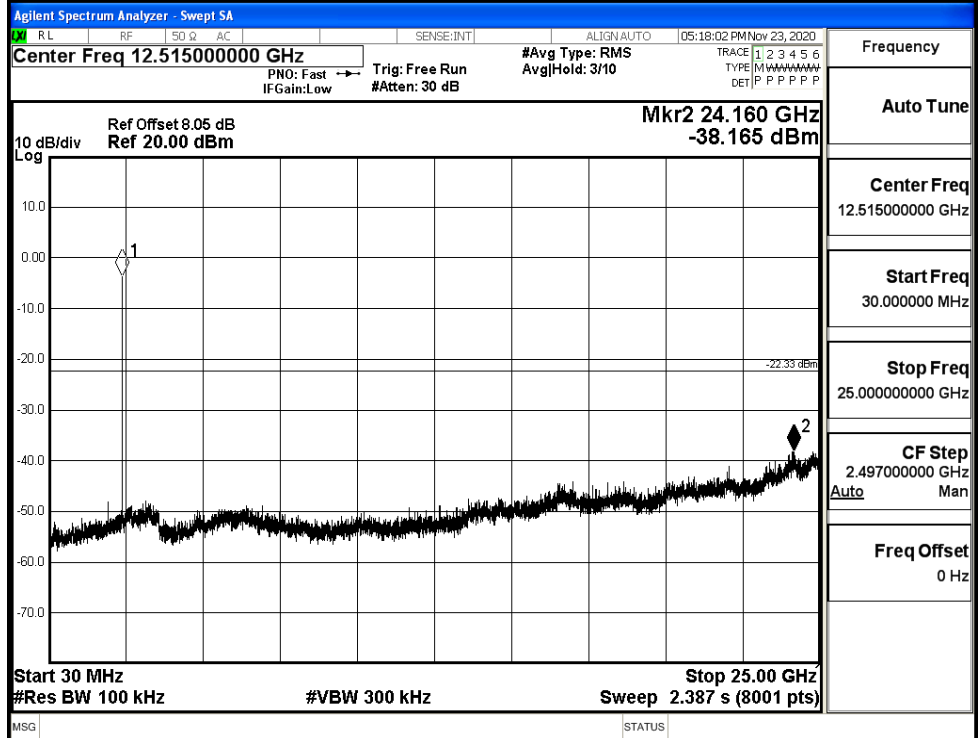
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-2.332	-38.165	-22.332	PASS
	MCH	-2.729	-38.612	-22.729	PASS
	HCH	-3.971	-37.931	-23.971	PASS
$\pi/4$ DQPSK	LCH	-2.528	-38.627	-22.528	PASS
	MCH	-2.802	-37.781	-22.802	PASS
	HCH	-3.967	-37.297	-23.967	PASS

GFSK LCH Graphs

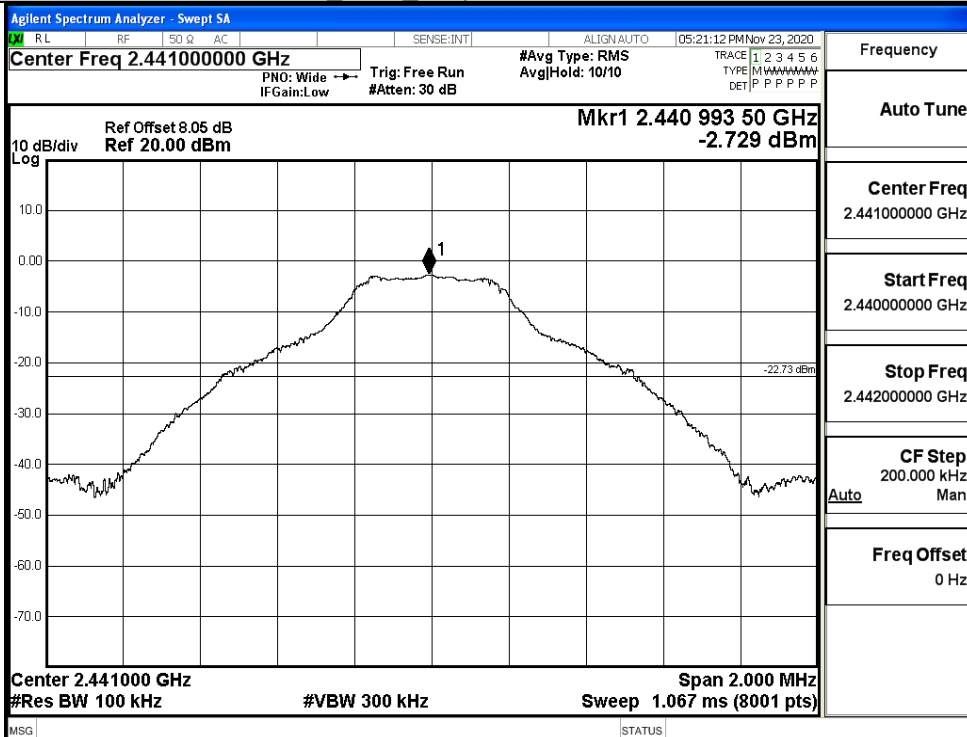


Puw

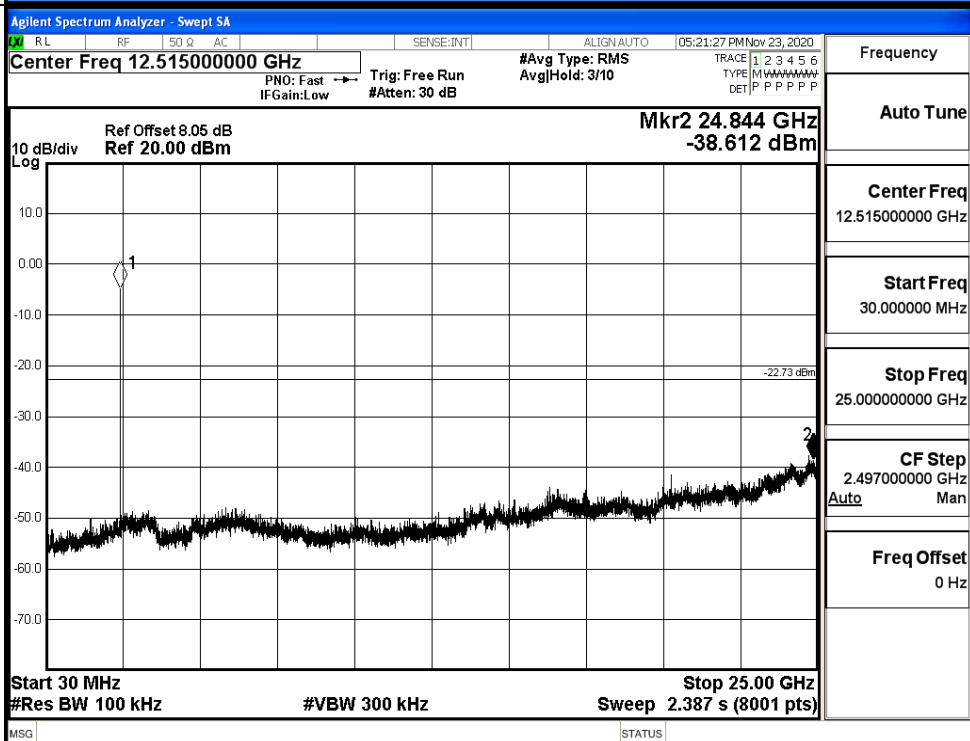


GFSK MCH_Graphs

Pref

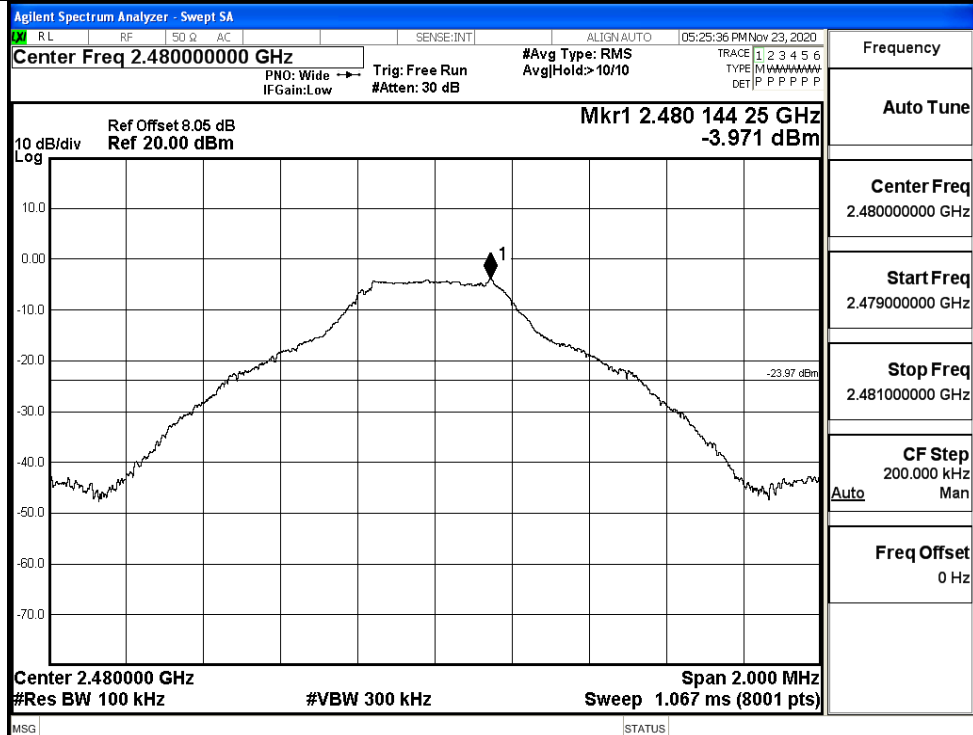


Puw

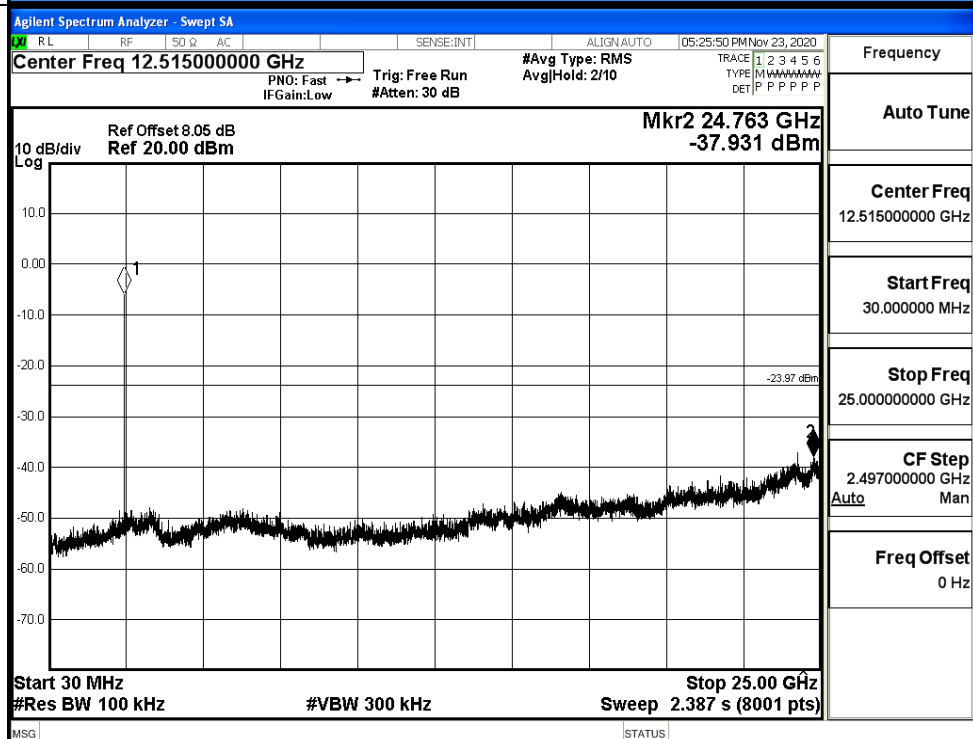


GFSK_HCH_Graphs

Pref

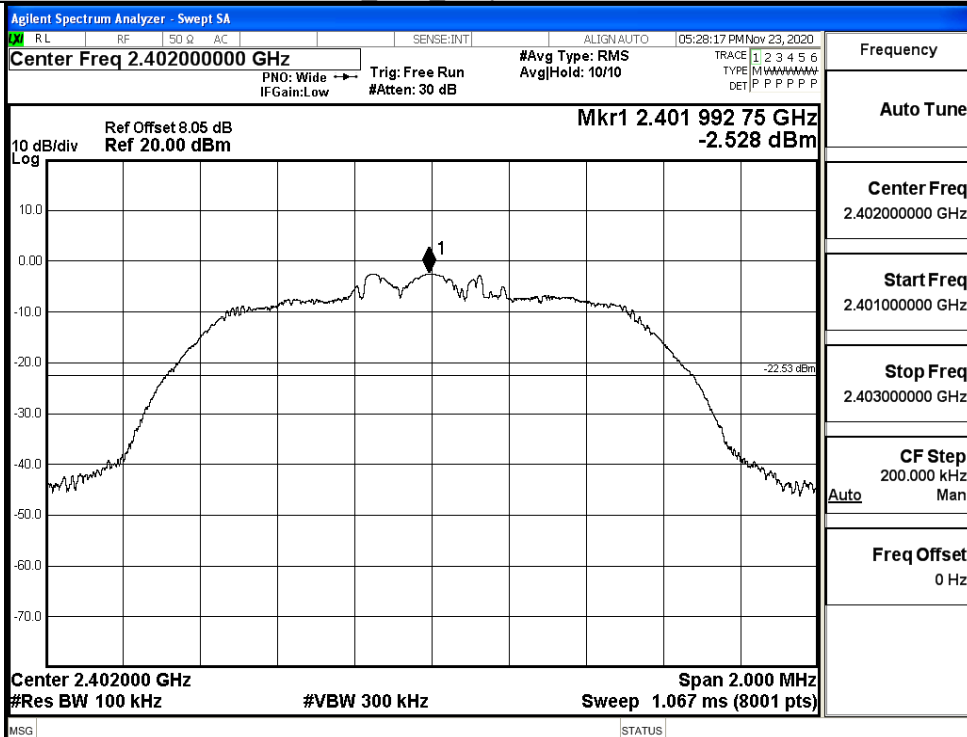


Puw

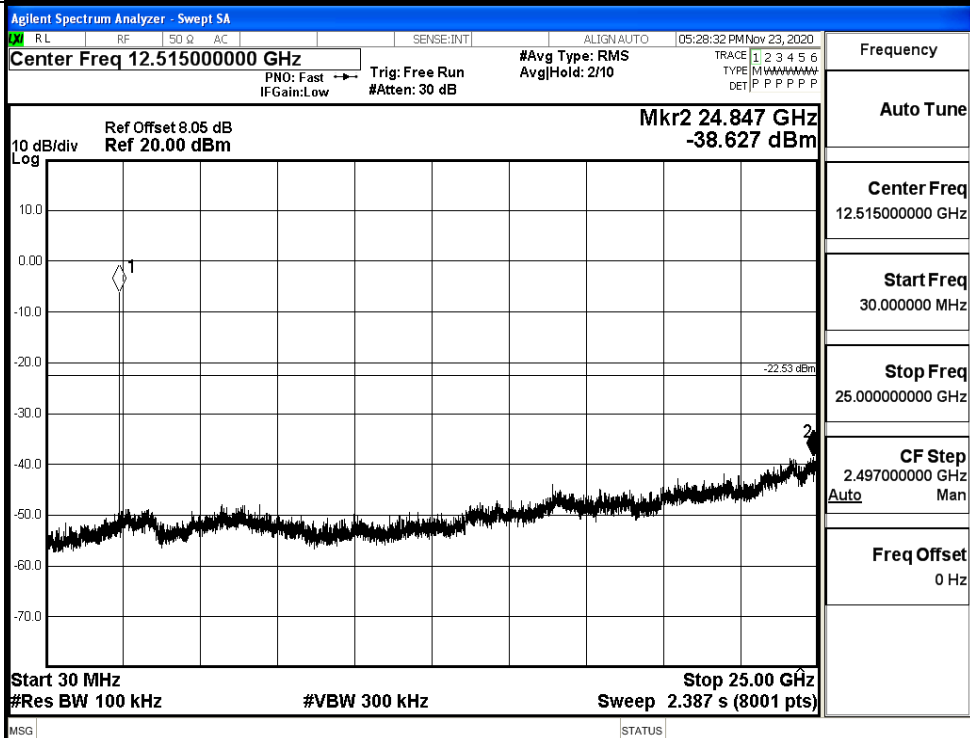


π /4DQPSK LCH_Graphs

Pref

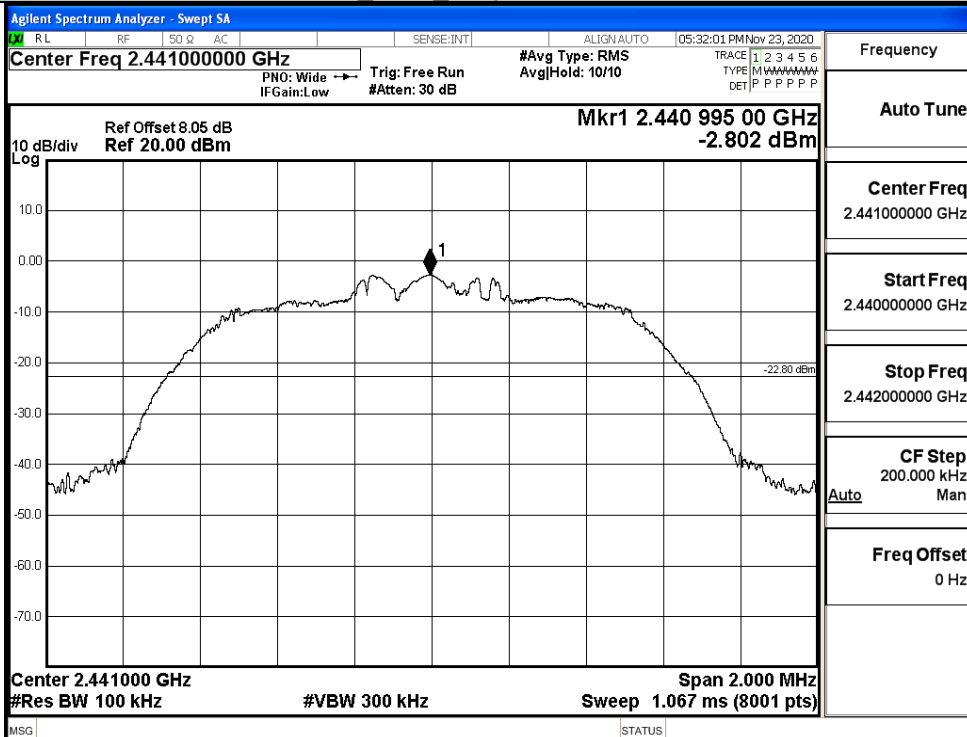


Puw

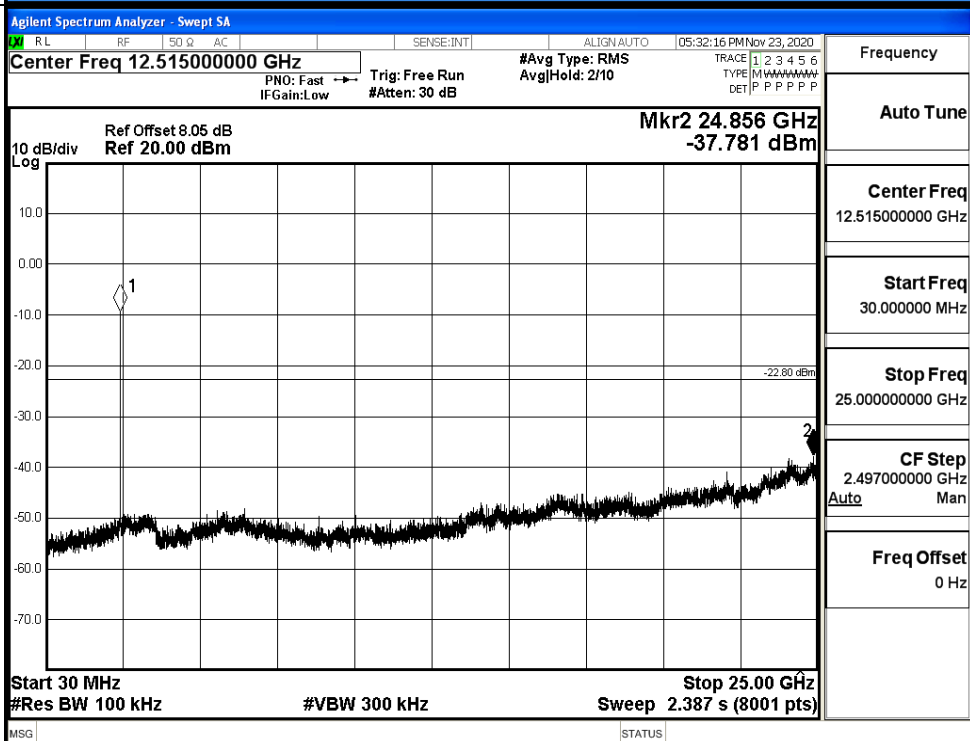


π /4DQPSK MCH Graphs

Pref

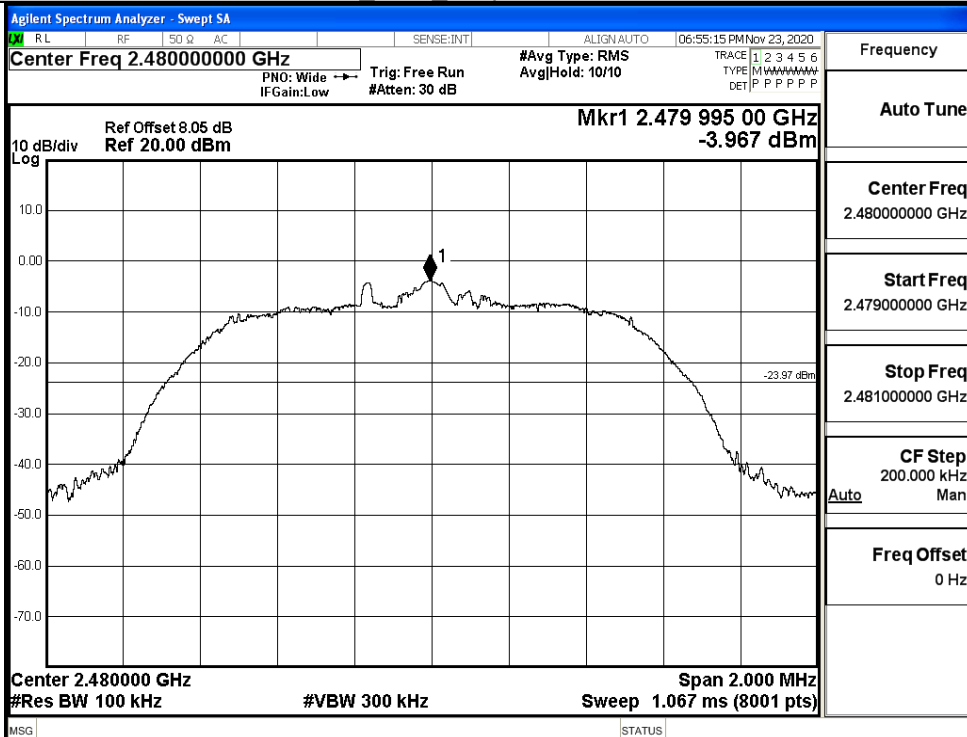


Puw

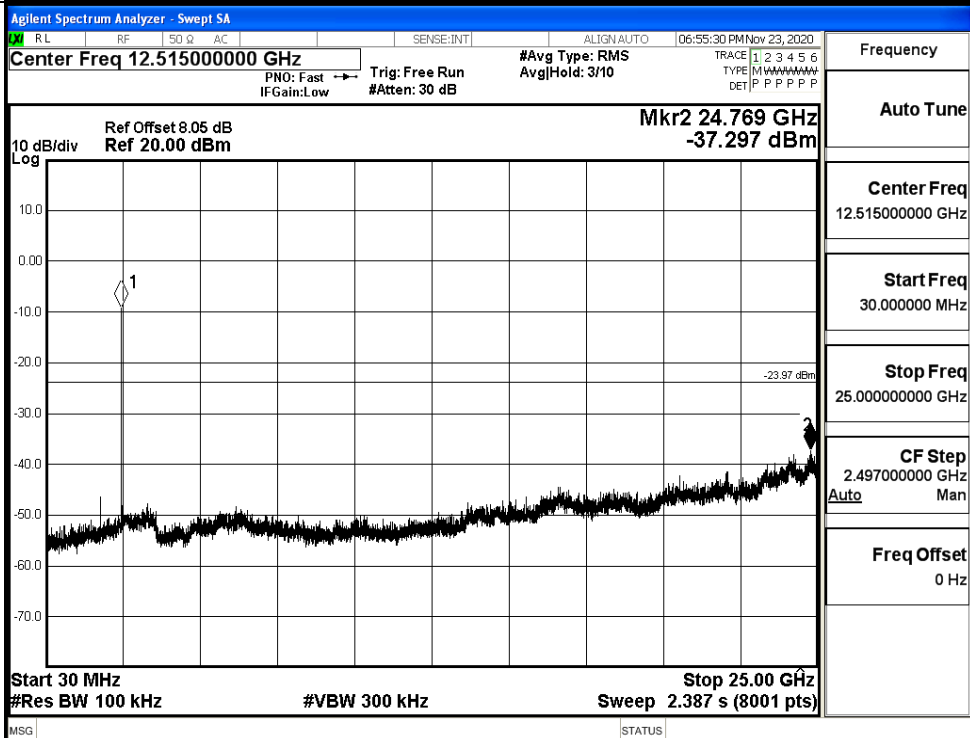


π /4DQPSK_HCH_Graphs

Pref



Puw

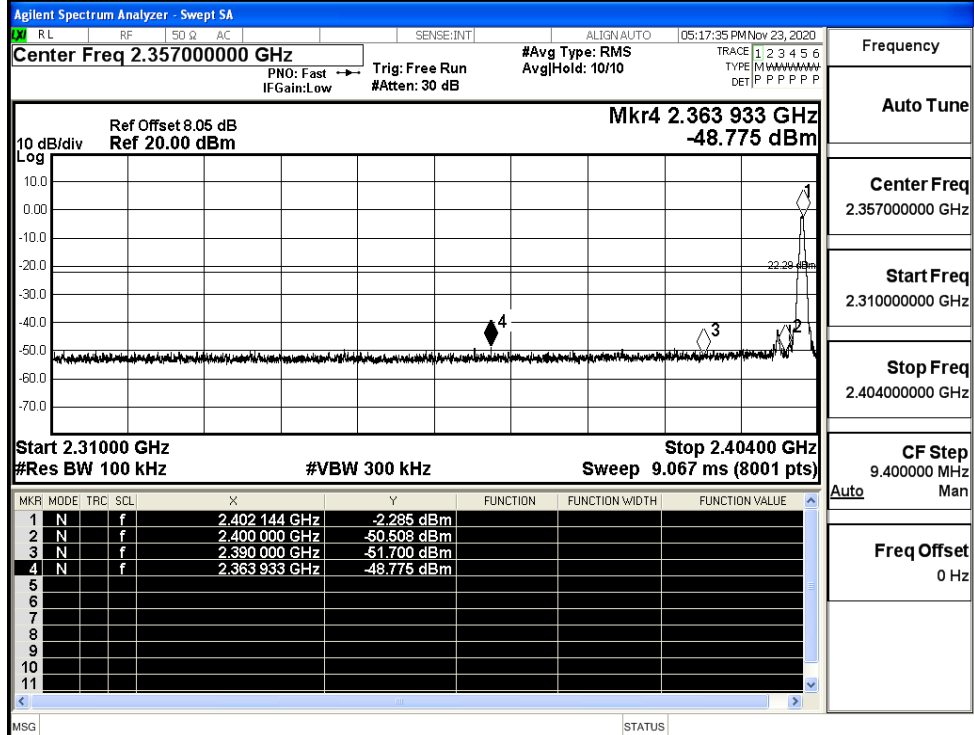


A.7 Band-edge for RF Conducted Emissions

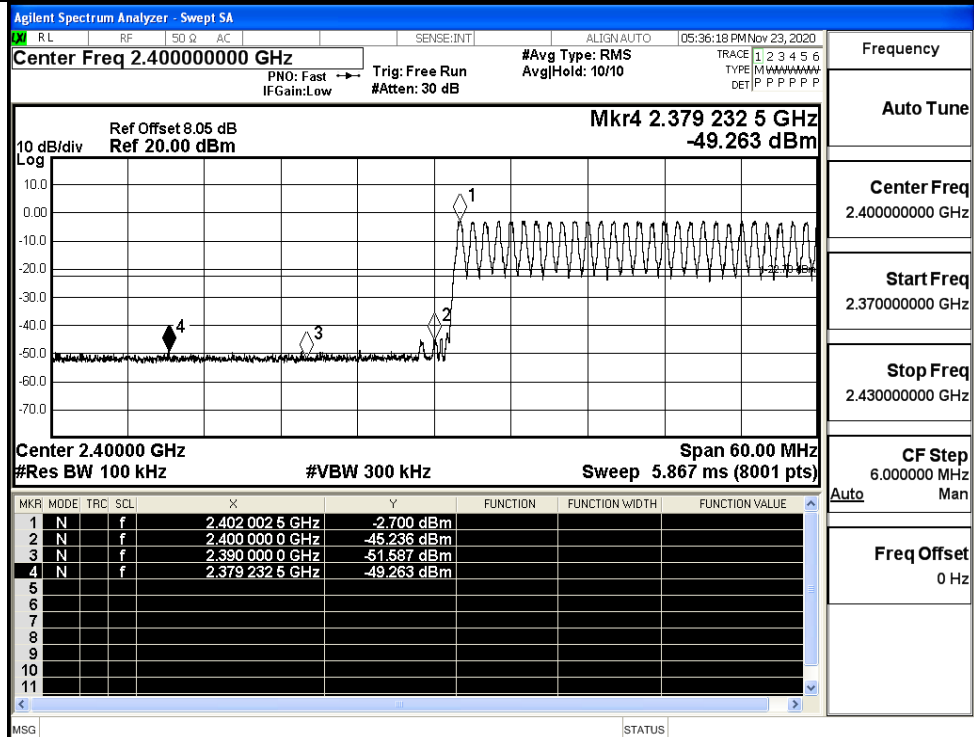
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-2.285	Off	-48.775	-22.29	PASS
			-2.700	On	-49.263	-22.7	PASS
	HCH	2480	-3.905	Off	-45.596	-23.91	PASS
			-3.574	On	-47.686	-23.57	PASS
π /4DQPSK	LCH	2402	-2.513	Off	-48.783	-22.51	PASS
			-2.560	On	-44.397	-22.56	PASS
	HCH	2480	-3.955	Off	-47.032	-23.96	PASS
			-3.372	On	-48.209	-23.37	PASS

Test Graphs

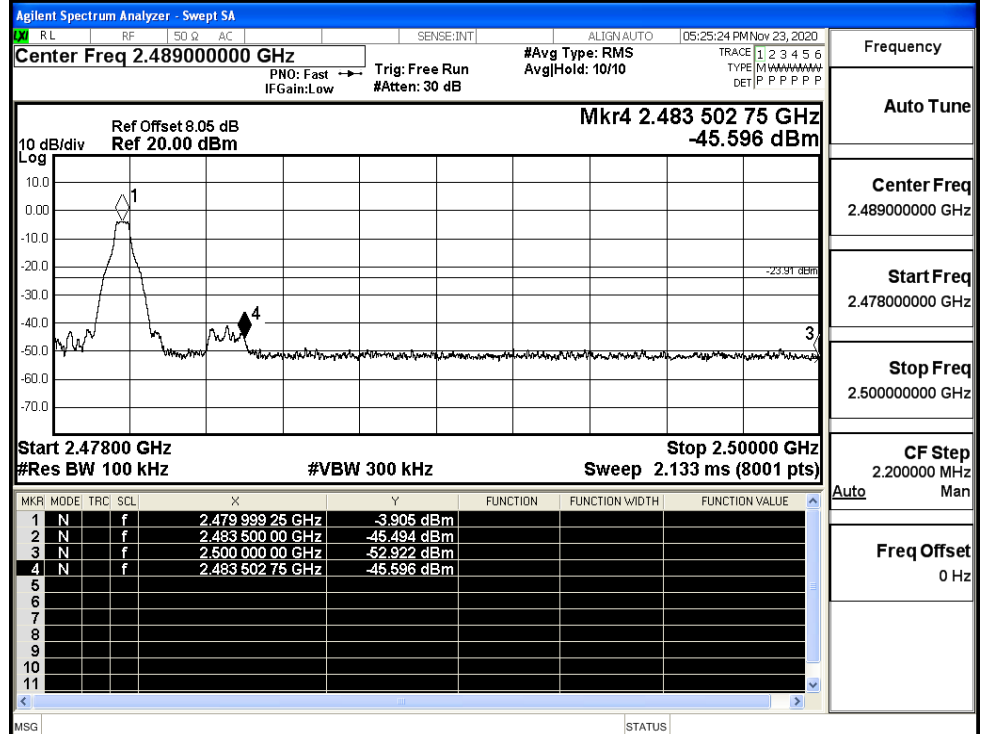
GFSK/LCH/No Hop



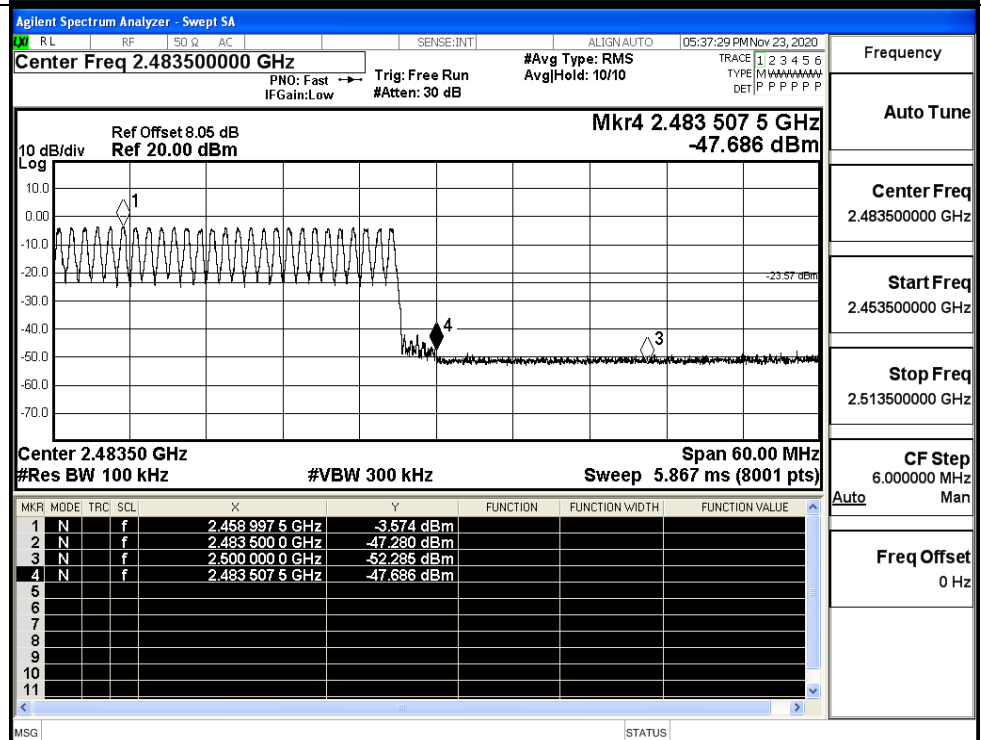
GFSK/LCH/Hop



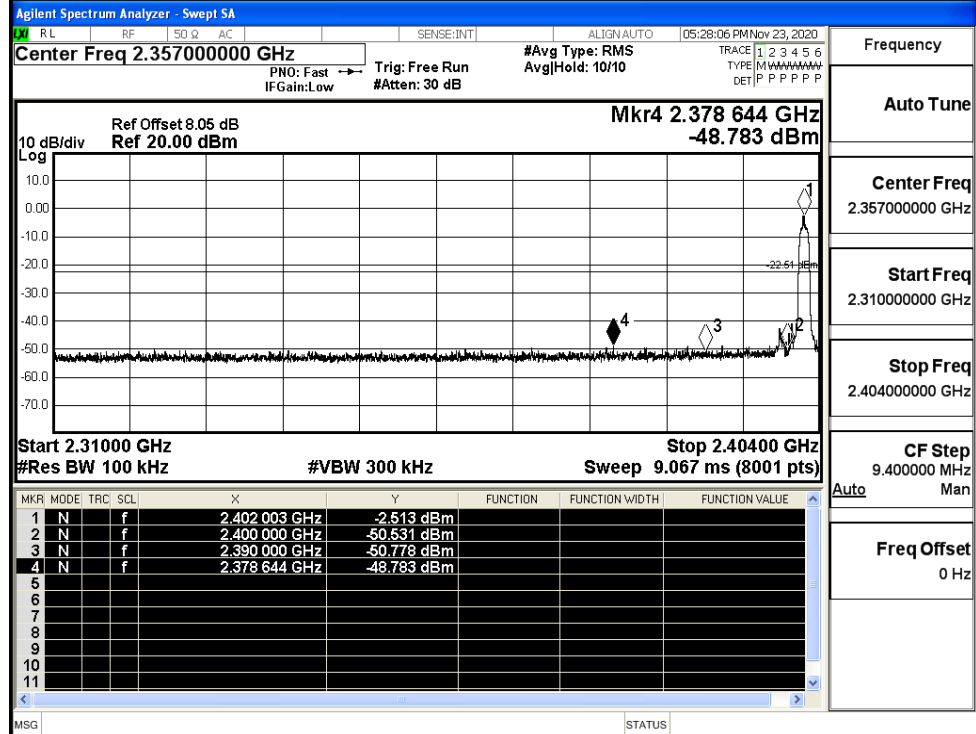
GFSK/HCH/No Hop



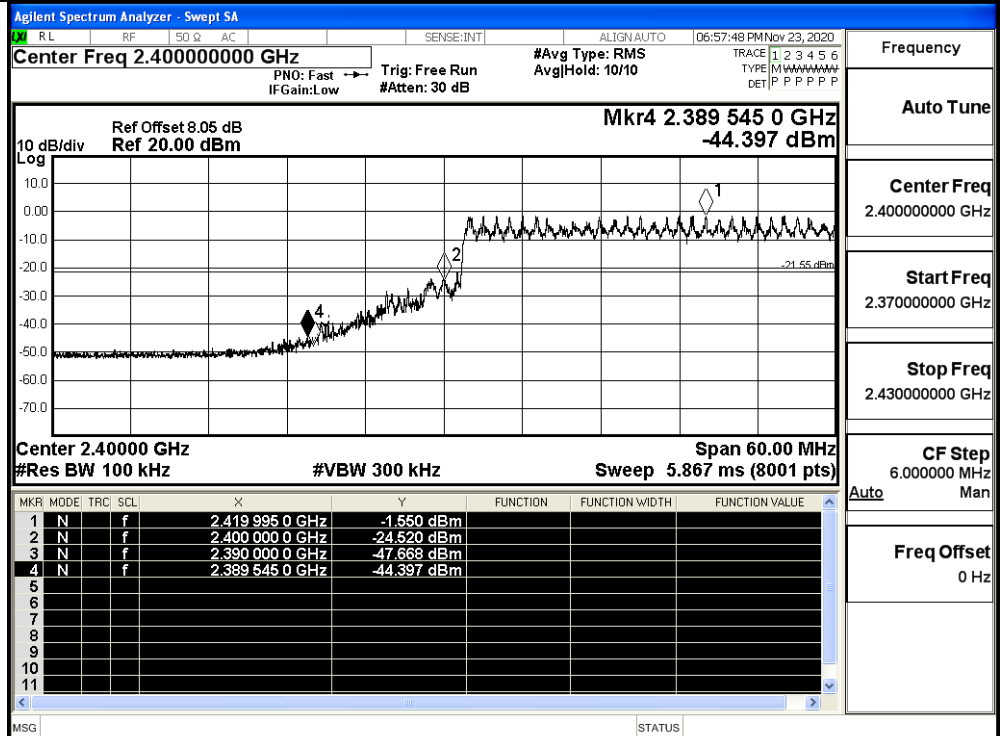
GFSK/HCH/Hop



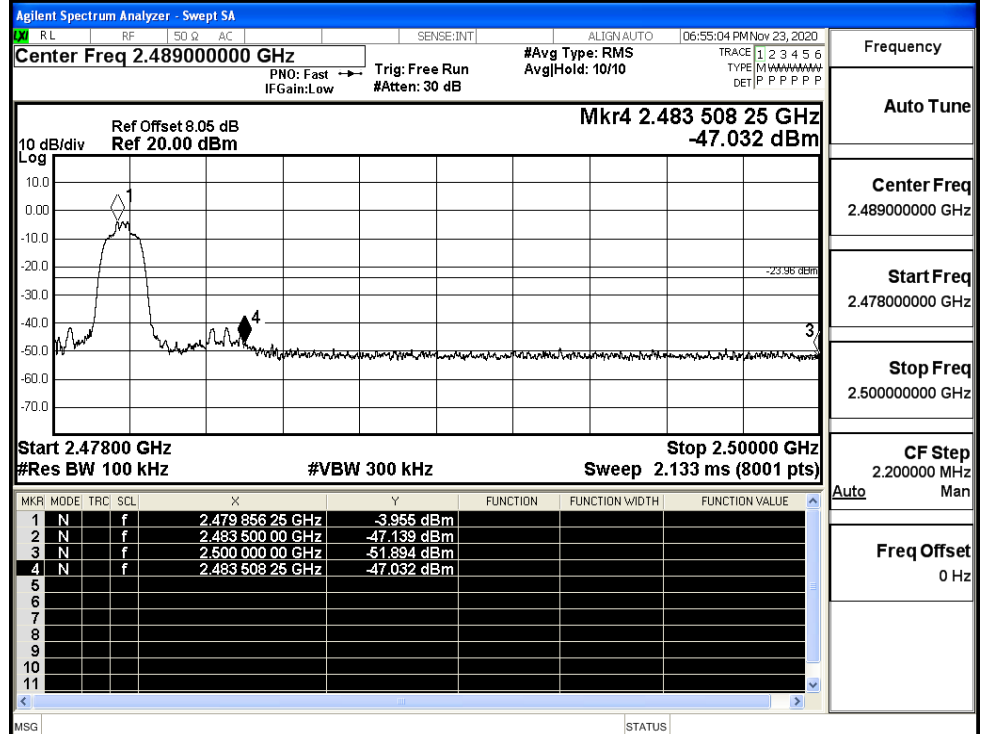
$\pi/4$ DQPSK/LCH/No
Hop



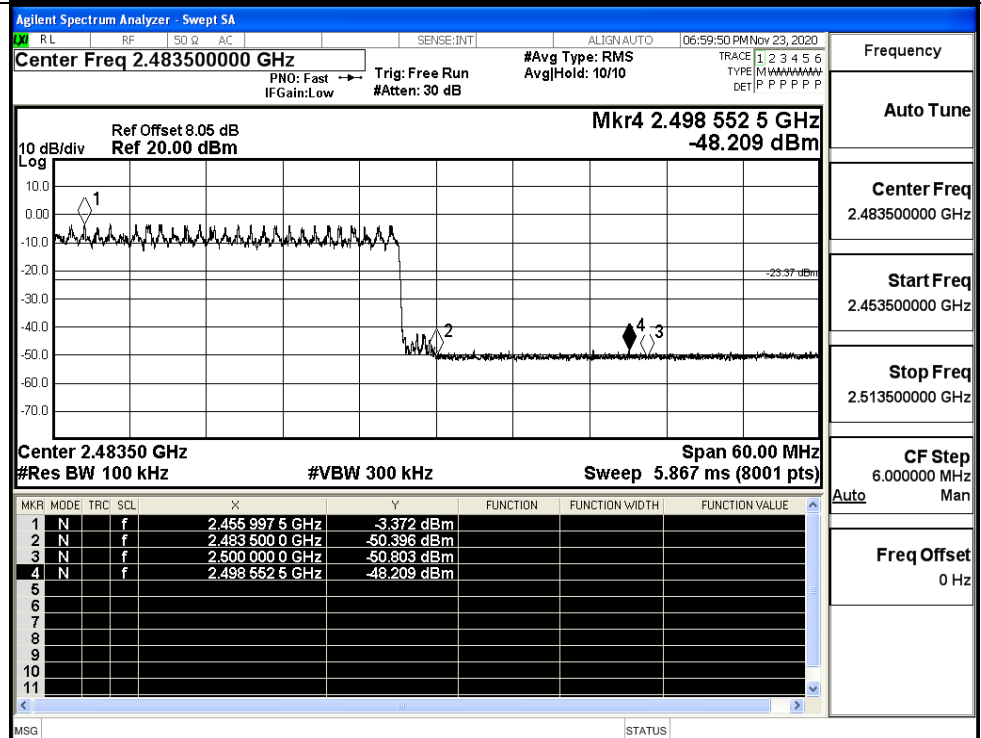
$\pi/4$ DQPSK/LCH/Hop



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



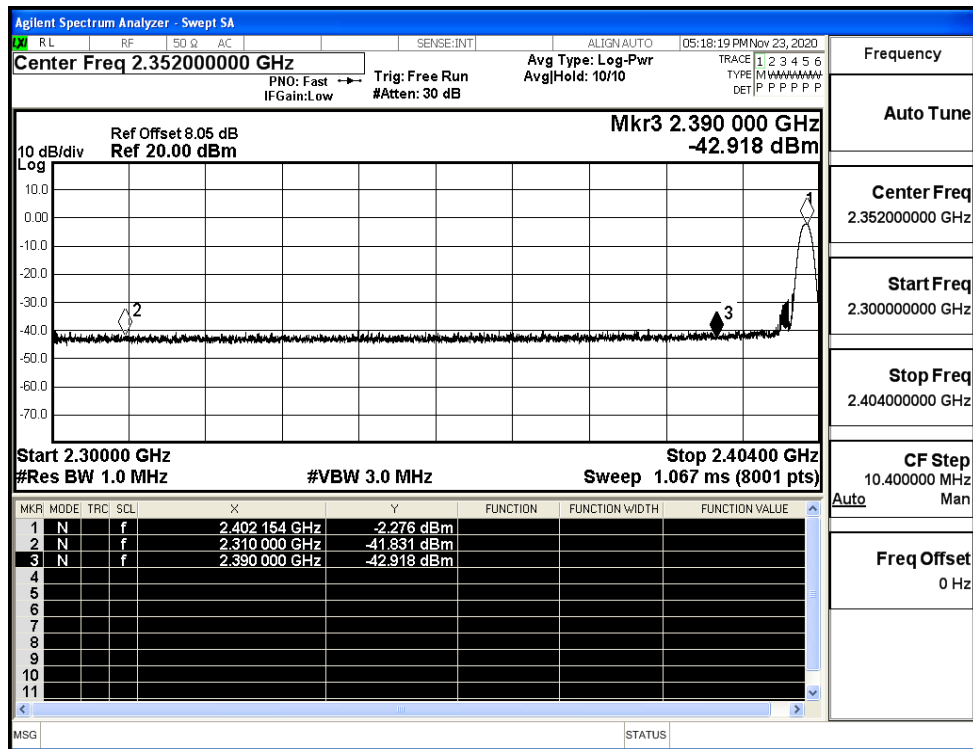
$\pi/4$ DQPSK/HCH/Hop



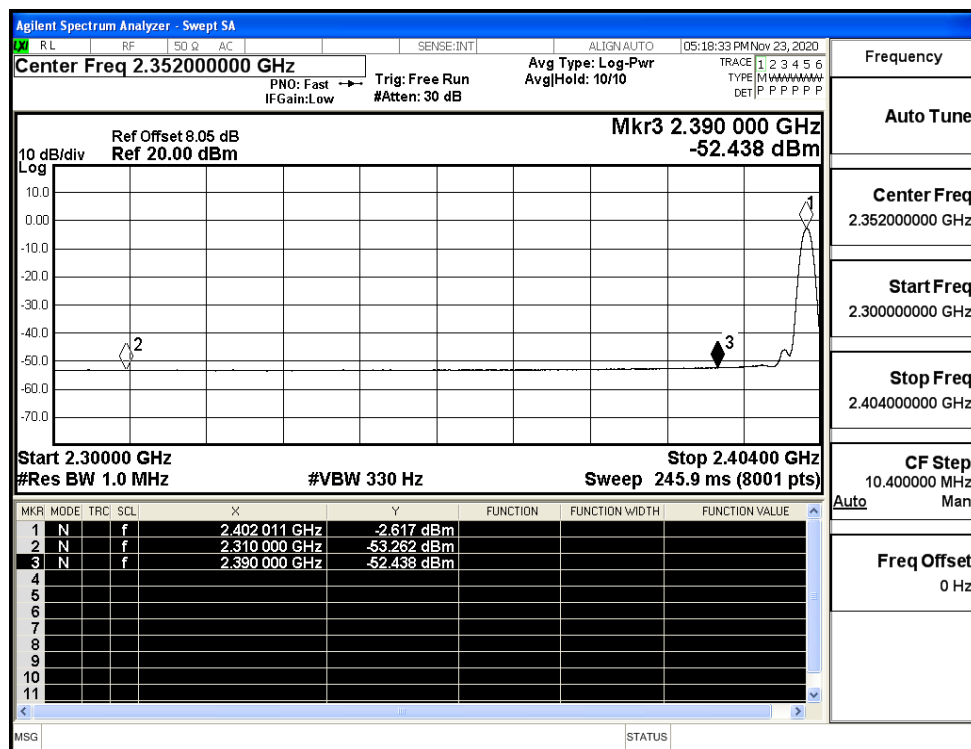
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-41.83	2.0	0	55.43	PEAK	74	PASS
	Off	2310.0	-53.26	2.0	0	44.00	AV	54	PASS
	Off	2390.0	-42.92	2.0	0	54.34	PEAK	74	PASS
	Off	2390.0	-52.44	2.0	0	44.82	AV	54	PASS
	Off	2483.5	-38.53	2.0	0	58.73	PEAK	74	PASS
	Off	2483.5	-46.26	2.0	0	50.99	AV	54	PASS
	Off	2500.0	-41.95	2.0	0	55.31	PEAK	74	PASS
	Off	2500.0	-52.30	2.0	0	44.96	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.90	2.0	0	54.35	PEAK	74	PASS
	Off	2310.0	-53.46	2.0	0	43.80	AV	54	PASS
	Off	2390.0	-41.68	2.0	0	55.58	PEAK	74	PASS
	Off	2390.0	-52.50	2.0	0	44.76	AV	54	PASS
	Off	2483.5	-38.70	2.0	0	58.56	PEAK	74	PASS
	Off	2483.5	-48.53	2.0	0	48.73	AV	54	PASS
	Off	2500.0	-41.83	2.0	0	55.43	PEAK	74	PASS
	Off	2500.0	-52.18	2.0	0	45.08	AV	54	PASS

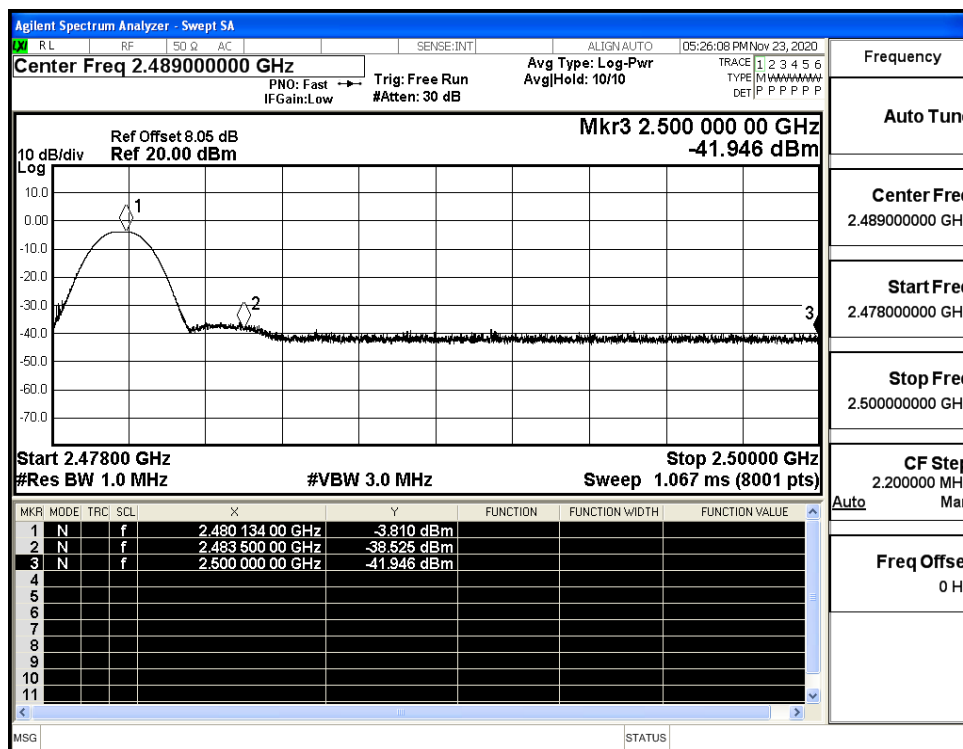
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (Low Channel)



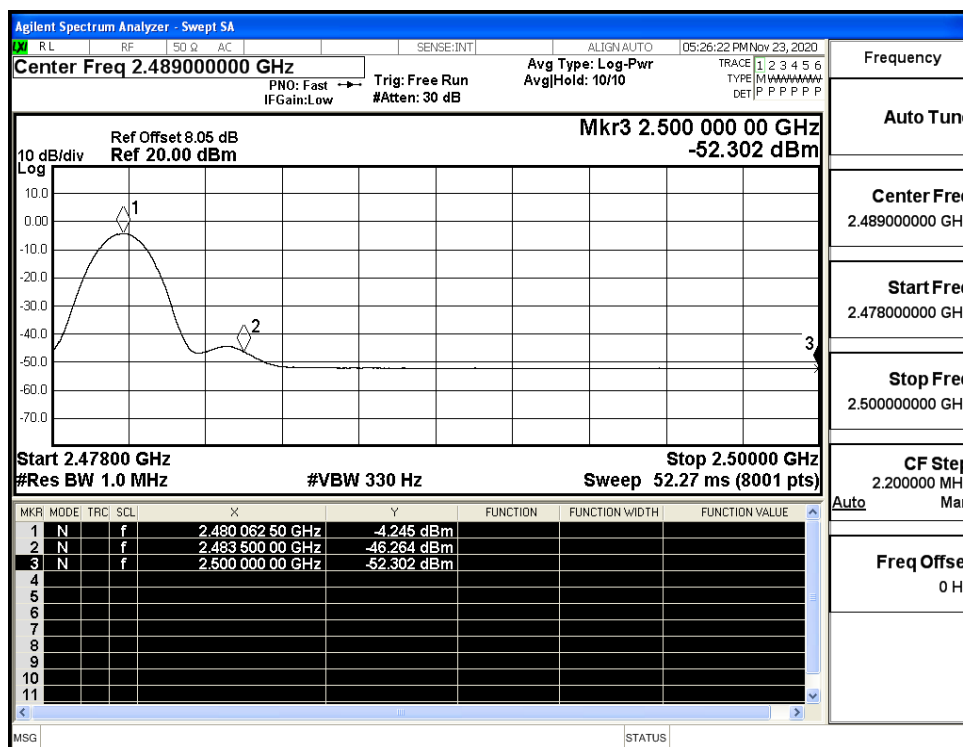
Restrict-band band-edge measurements_Hopping Off_ GFSK_Average (Low Channel)



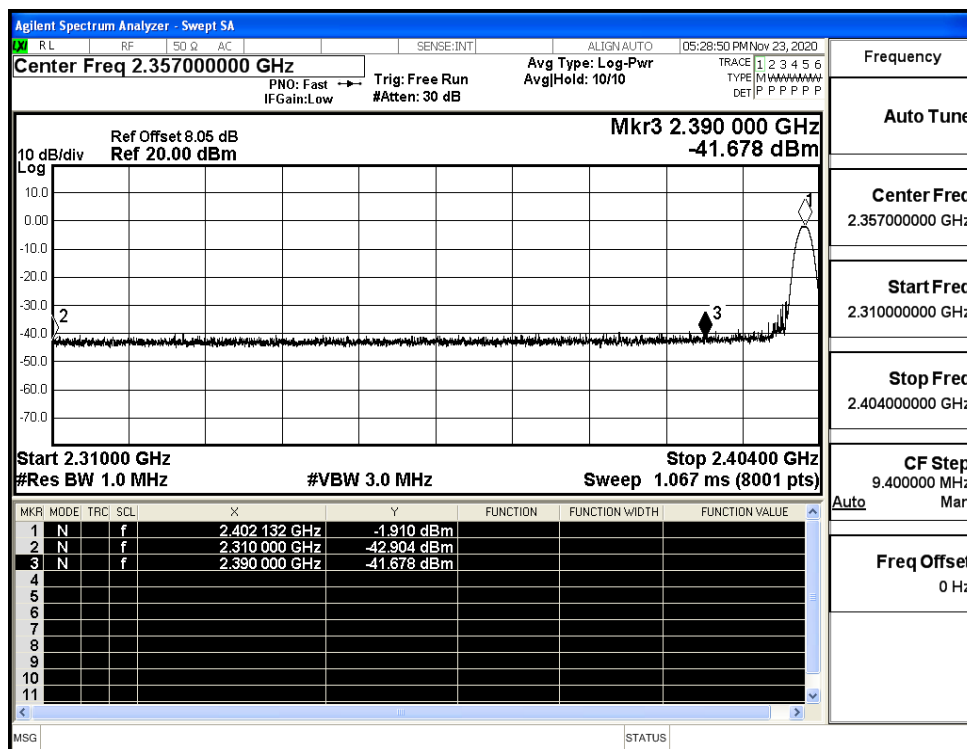
Restrict-band band-edge measurements_Hopping Off_ GFSK_PEAK (High Channel)



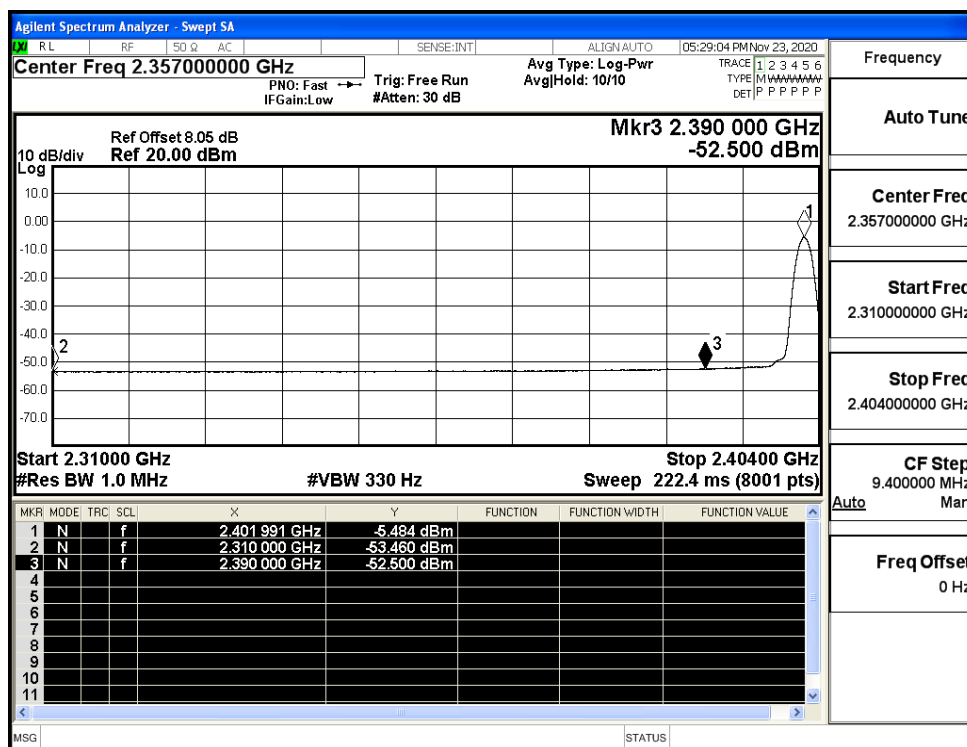
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



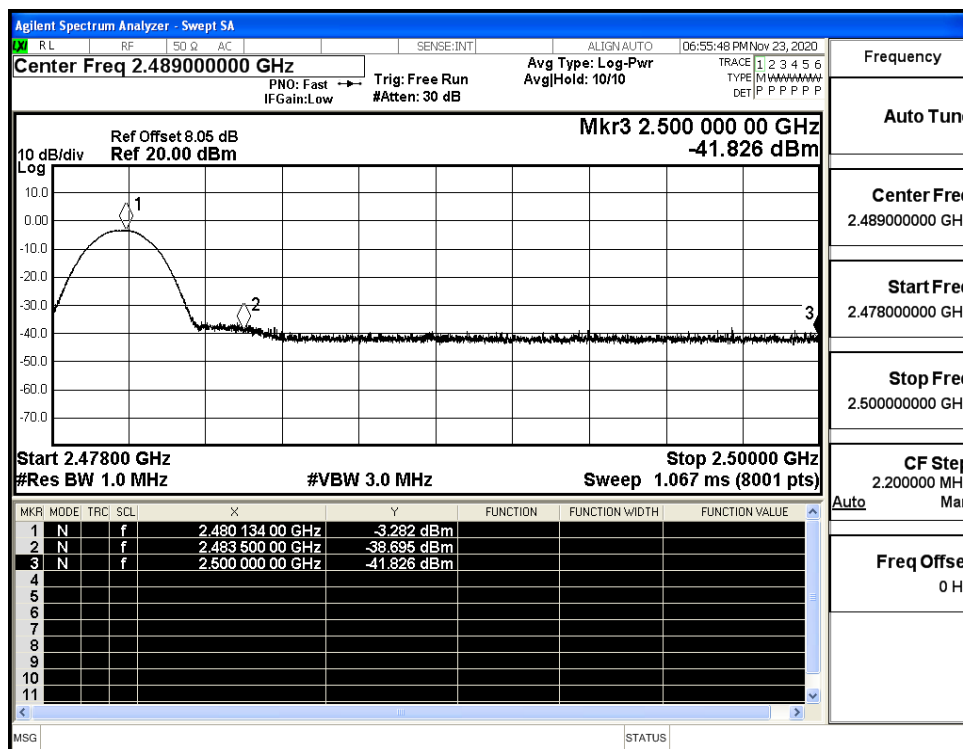
Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_PEAK (Low Channel)



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)

