

Appendix A

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

Product Name: Bluetooth Speaker Power Bank

Trade Mark: Energizer

Test Model: BTS-051

Environmental Conditions

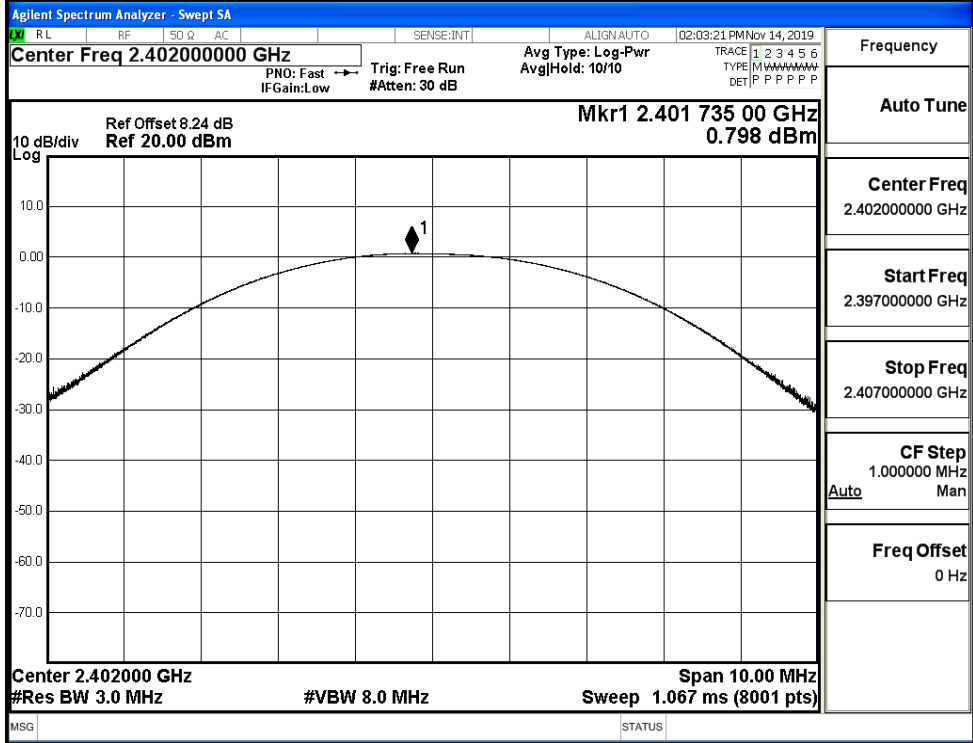
Temperature:	22.8 ° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Zhuo zhuo
Supervised by:	Tom.Liu

A.1 Maxmum Conducted Peak Output Power

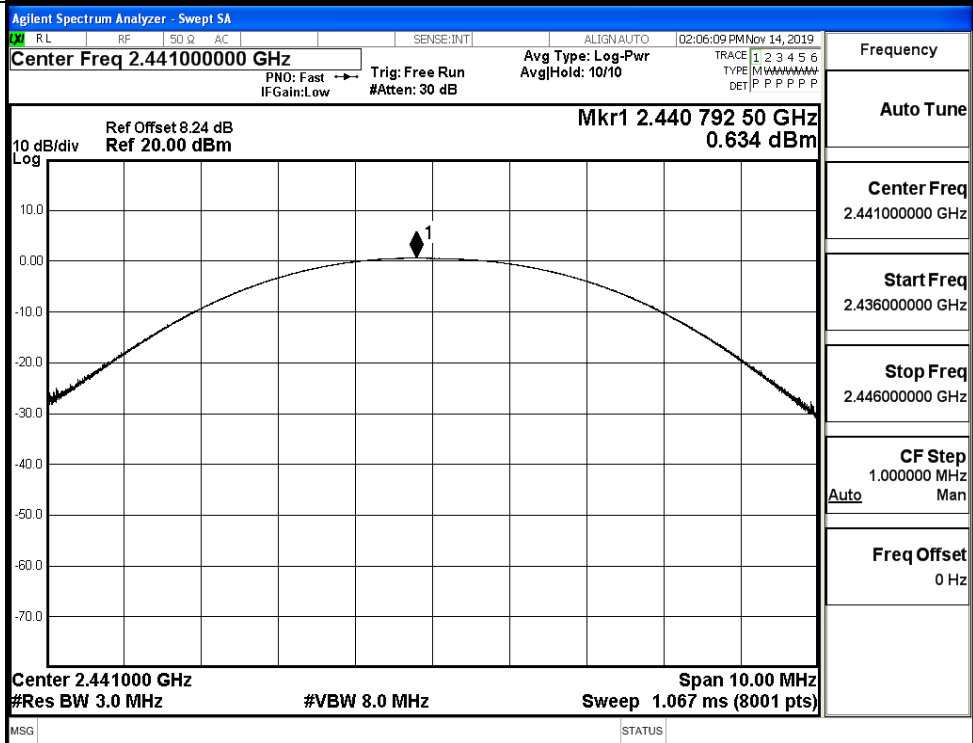
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.798	21	PASS
	MCH	0.634	21	PASS
	HCH	0.408	21	PASS
$\pi/4$ DQPSK	LCH	1.280	21	PASS
	MCH	1.154	21	PASS
	HCH	0.724	21	PASS

Test Graphs

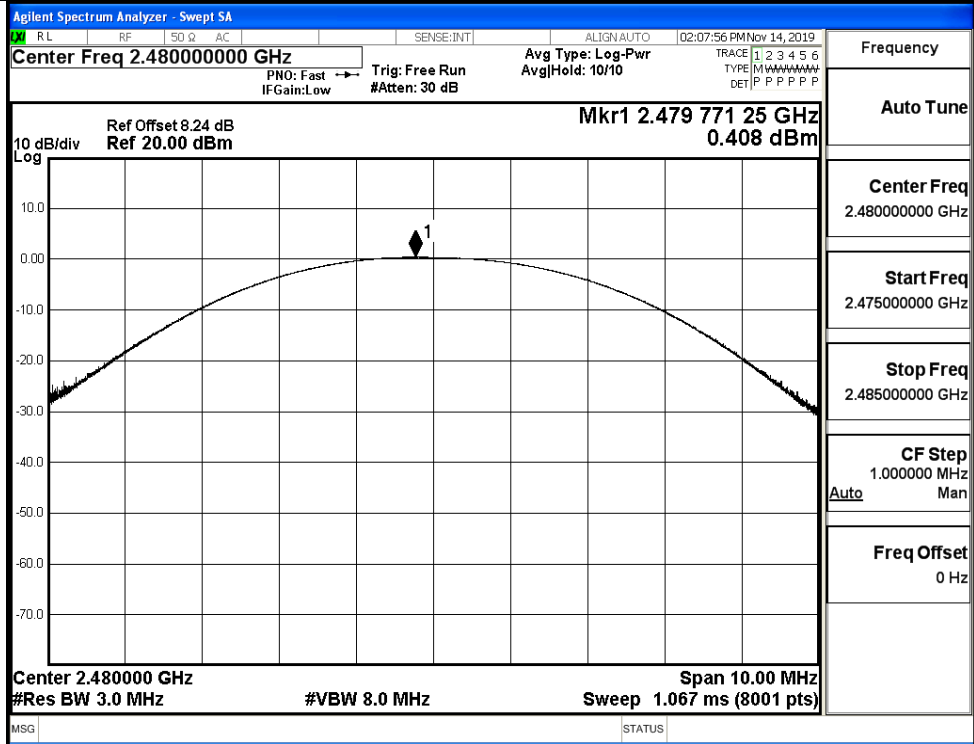
GFSK/LCH



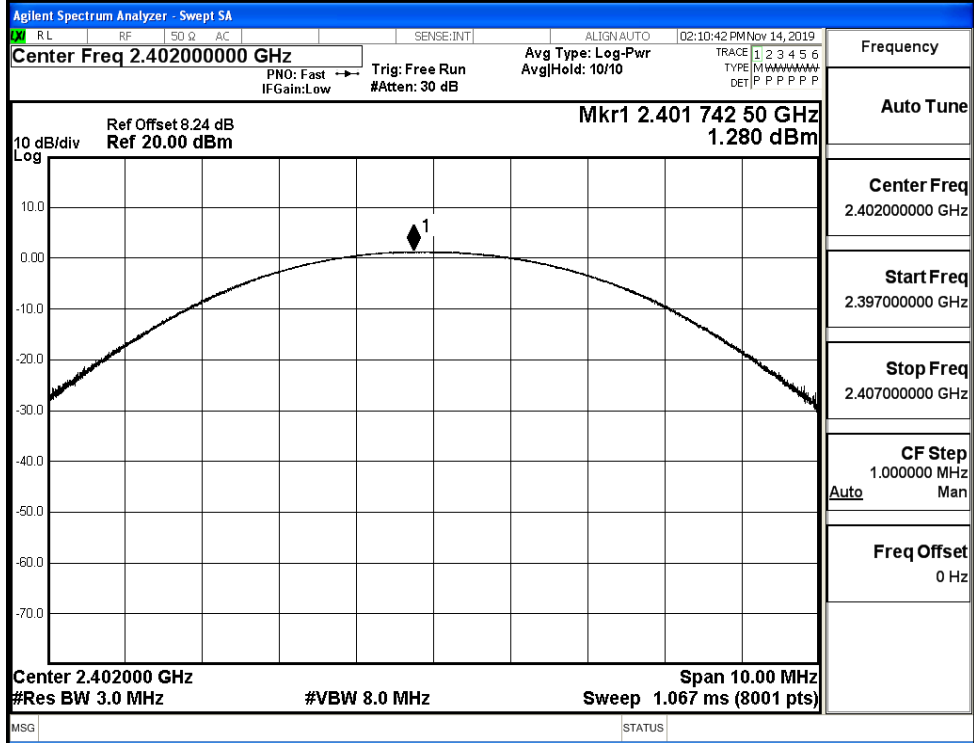
GFSK/MCH



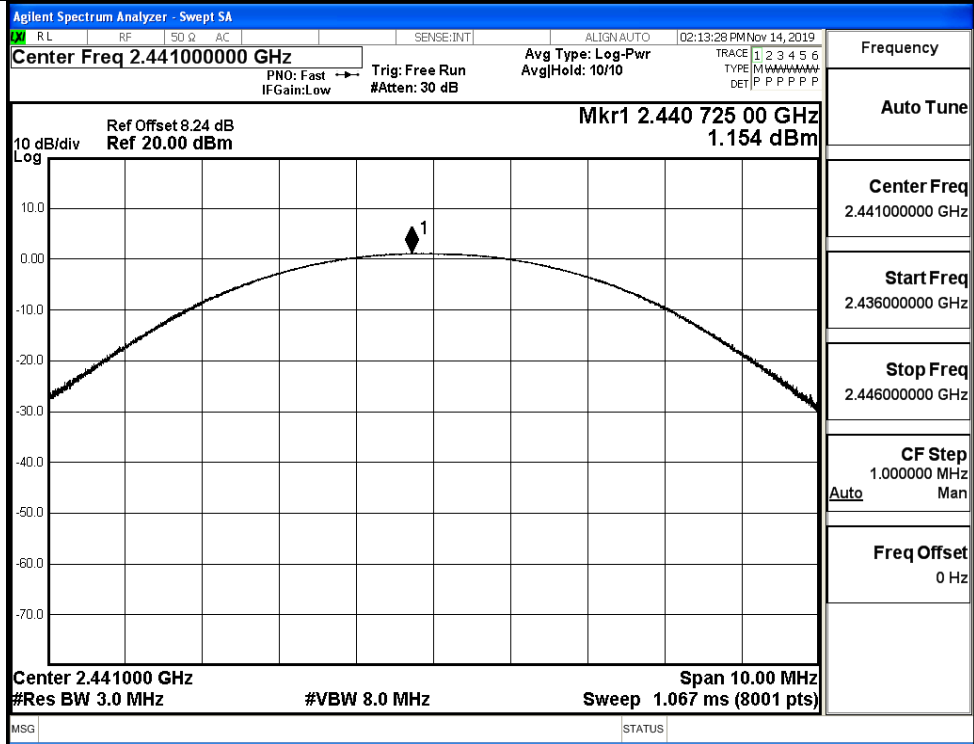
GFSK/HCH



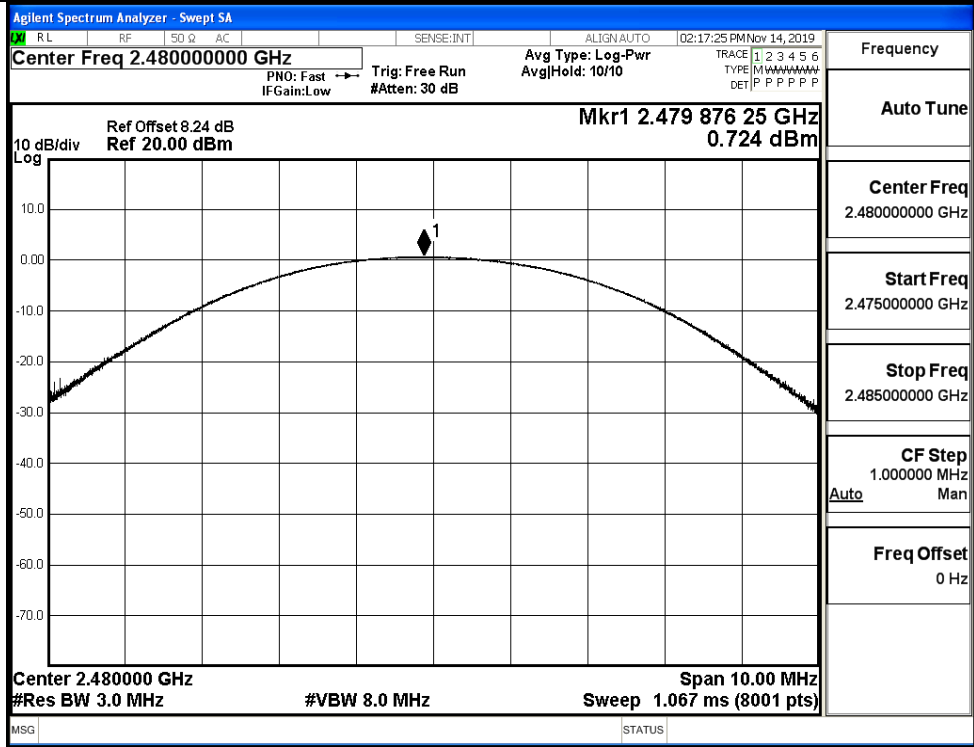
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

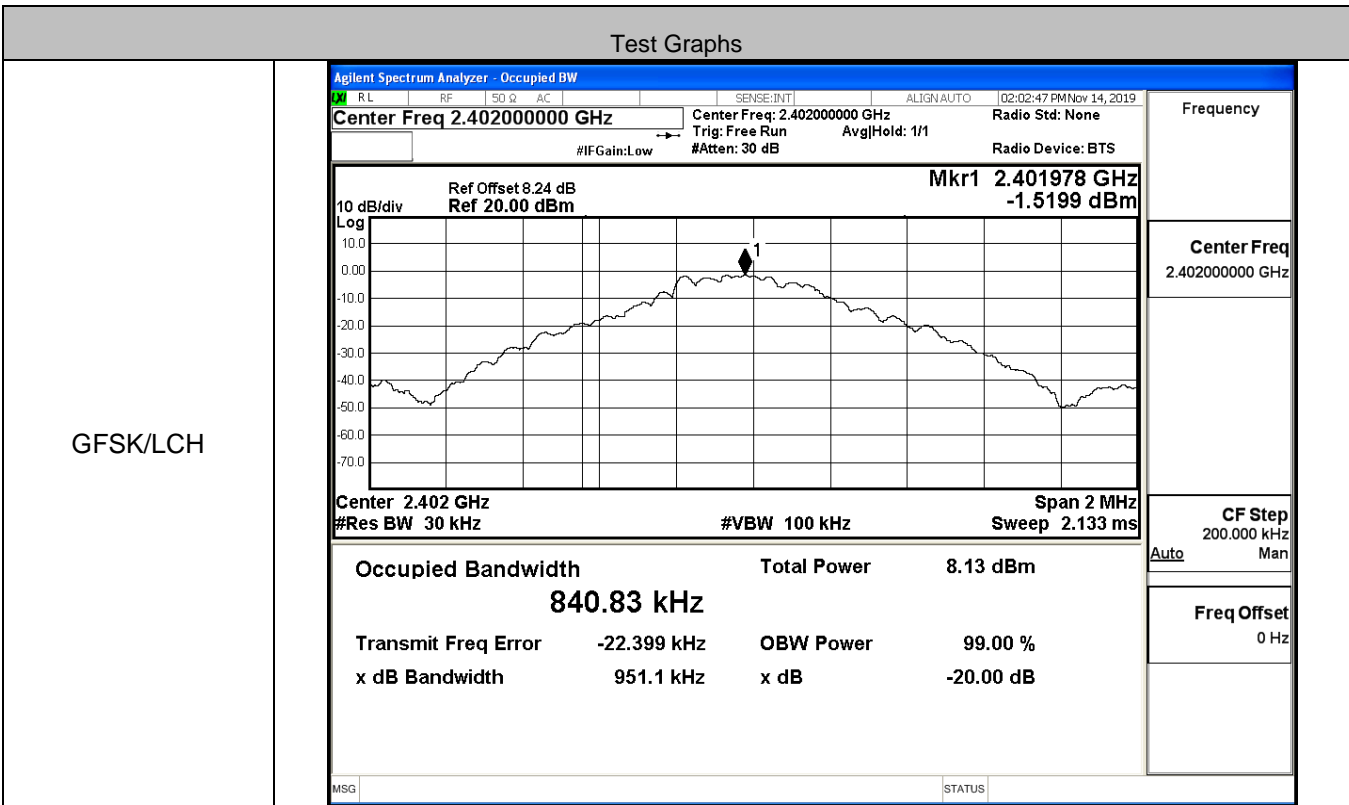


$\pi/4$ DQPSK/HCH

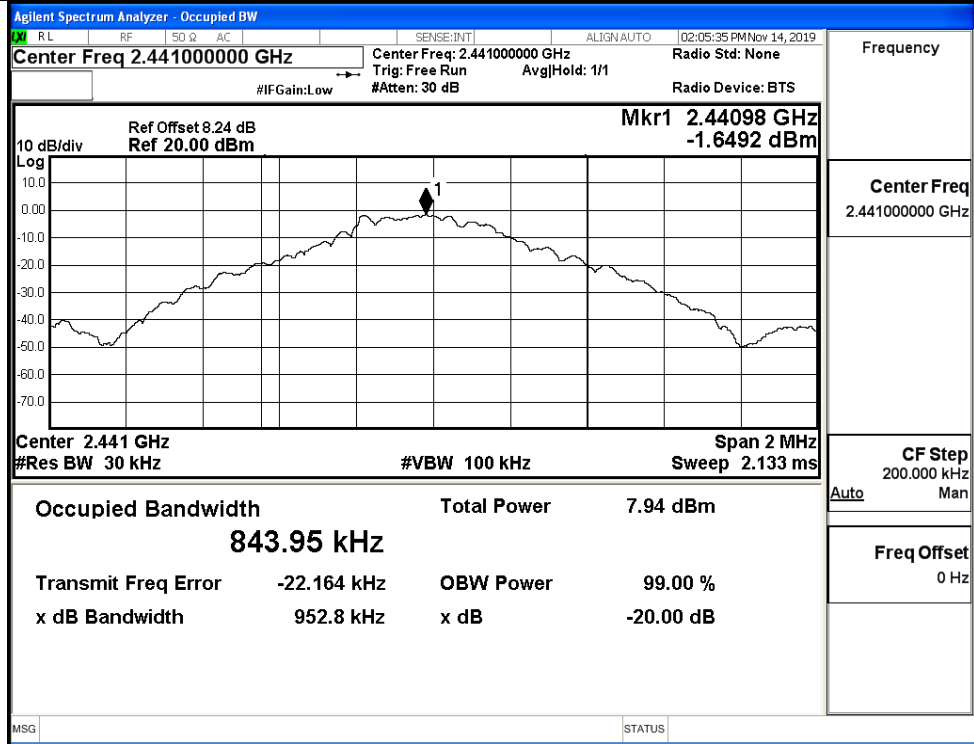


A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9511	Not Specified	PASS
	MCH	0.9528	Not Specified	PASS
	HCH	0.9530	Not Specified	PASS
π/4DQPSK	LCH	1.314	Not Specified	PASS
	MCH	1.315	Not Specified	PASS
	HCH	1.313	Not Specified	PASS

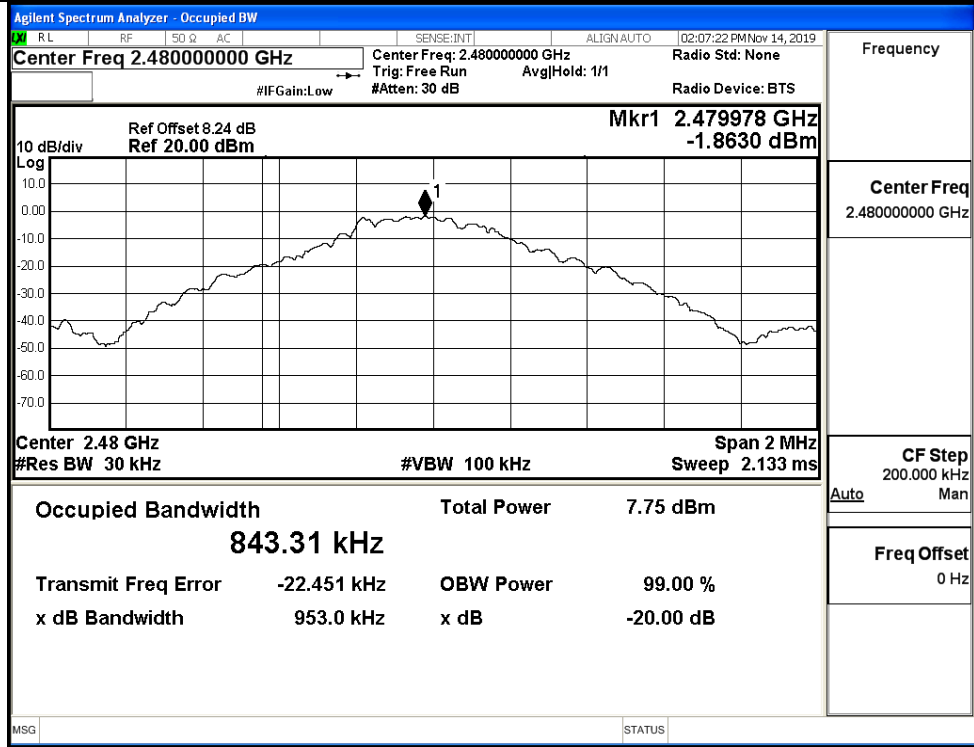


GFSK/MCH



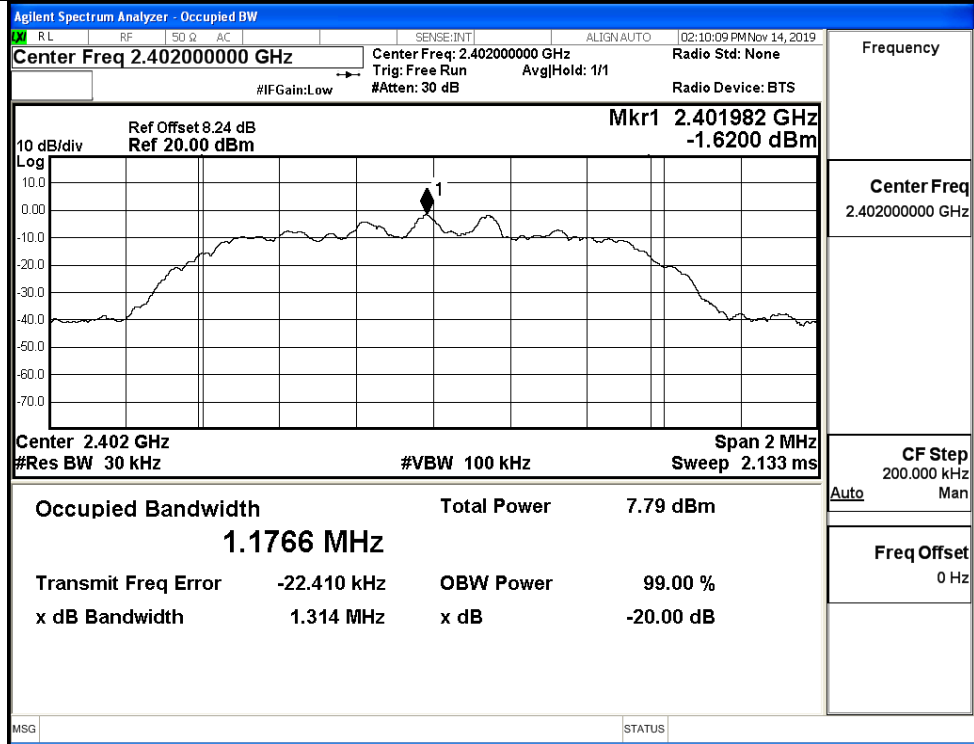
Frequency	2.441000000 GHz
Center Freq	2.441000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

GFSK/HCH

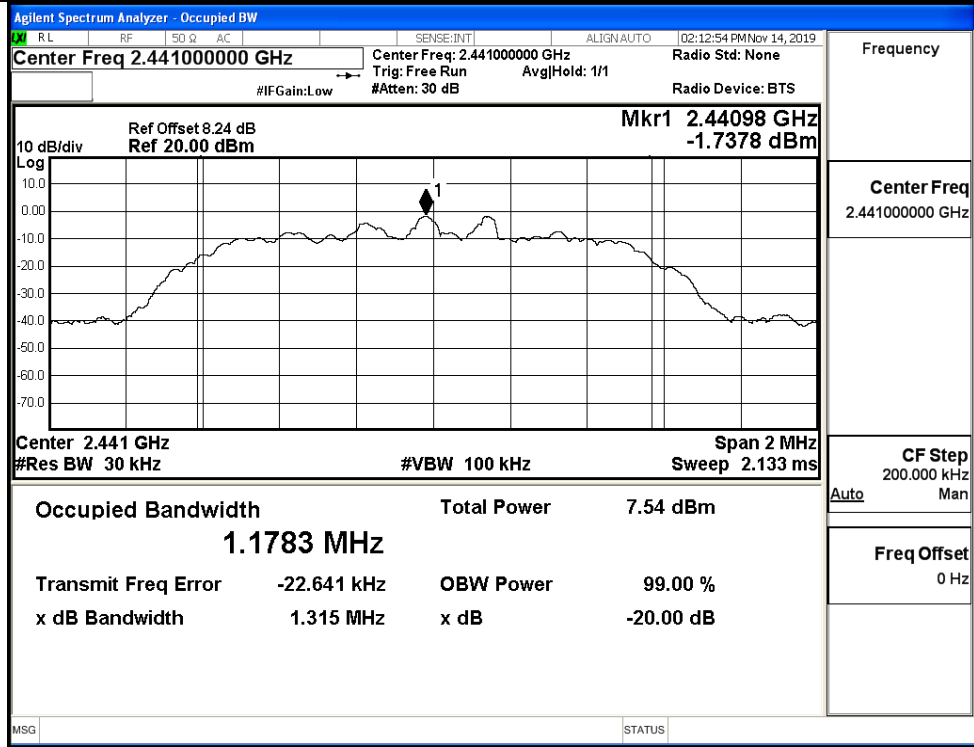


Frequency	2.480000000 GHz
Center Freq	2.480000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

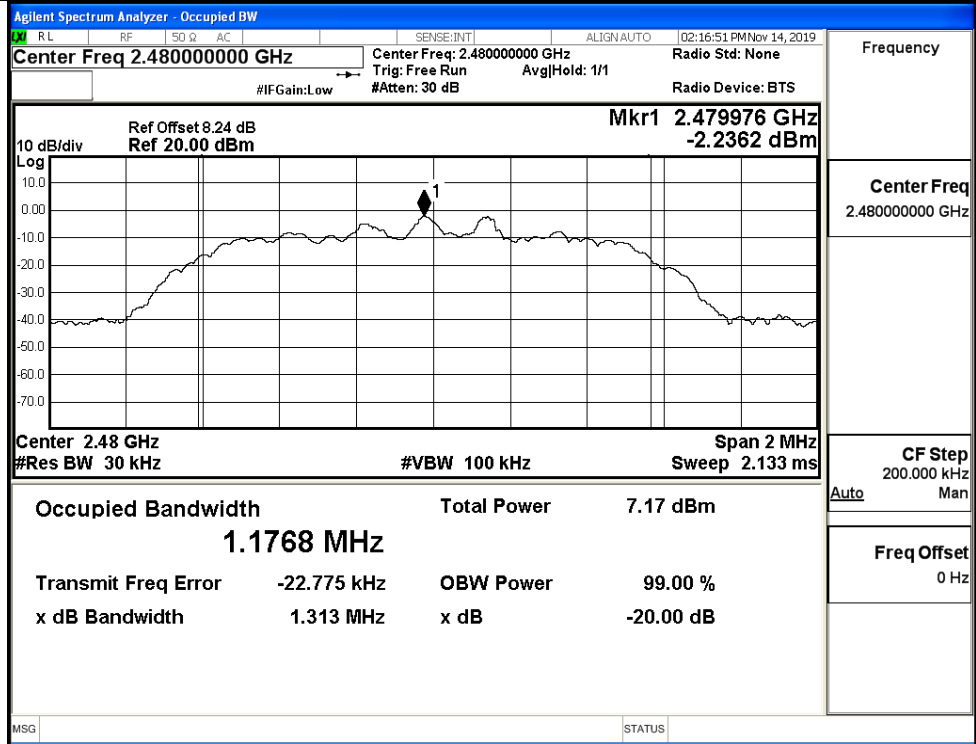
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

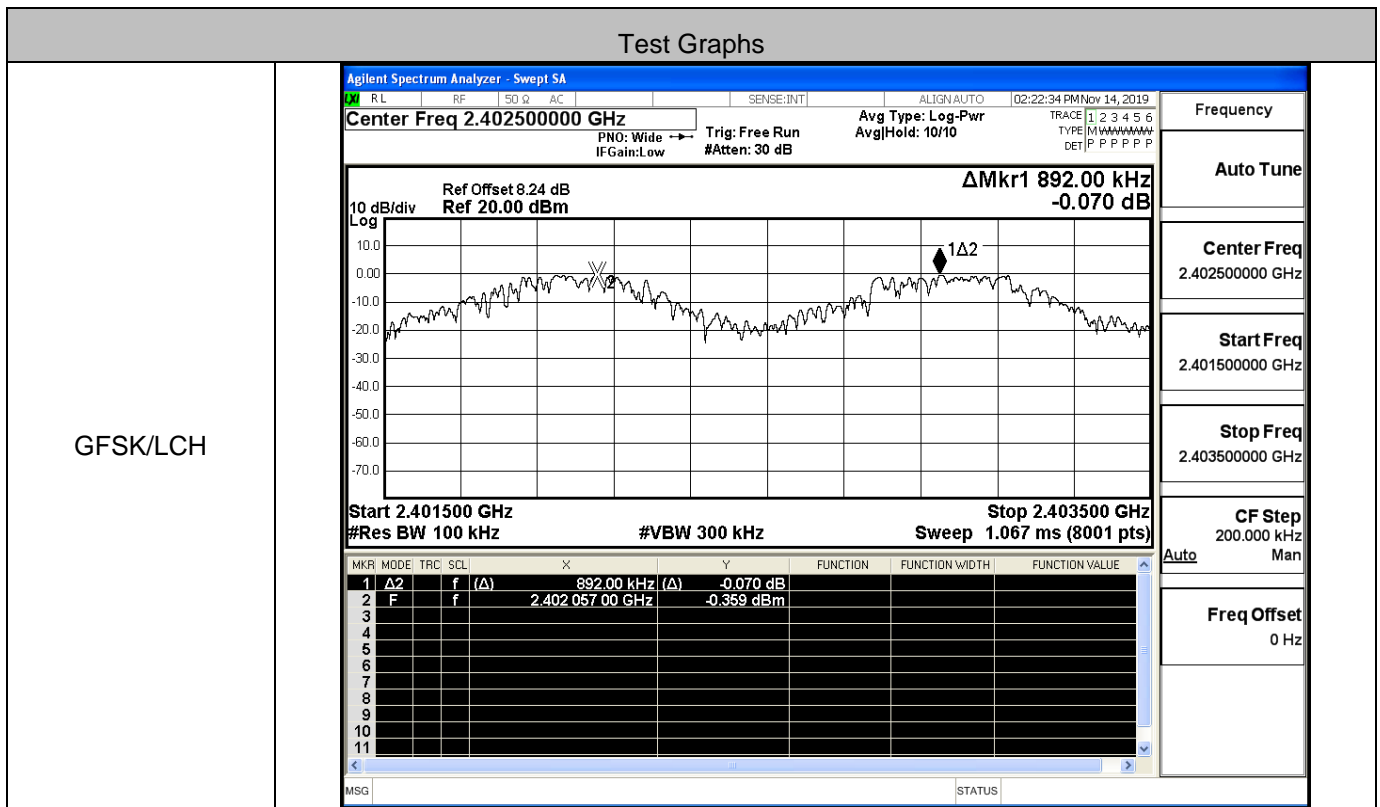


$\pi/4$ DQPSK/HCH

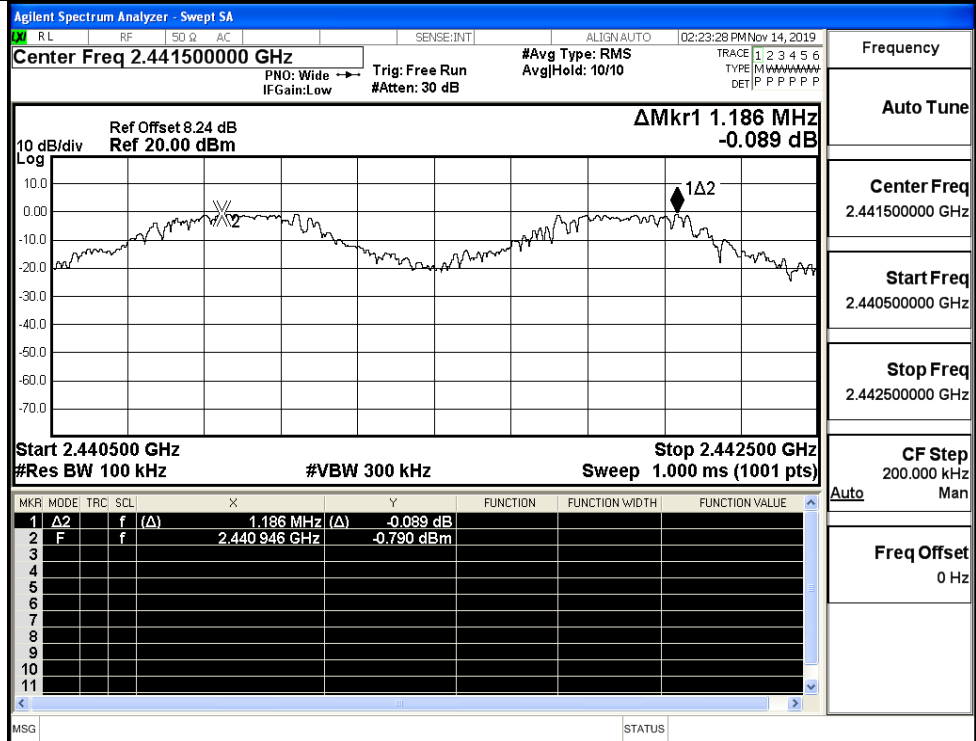


A.3 Carrier Frequency Separation

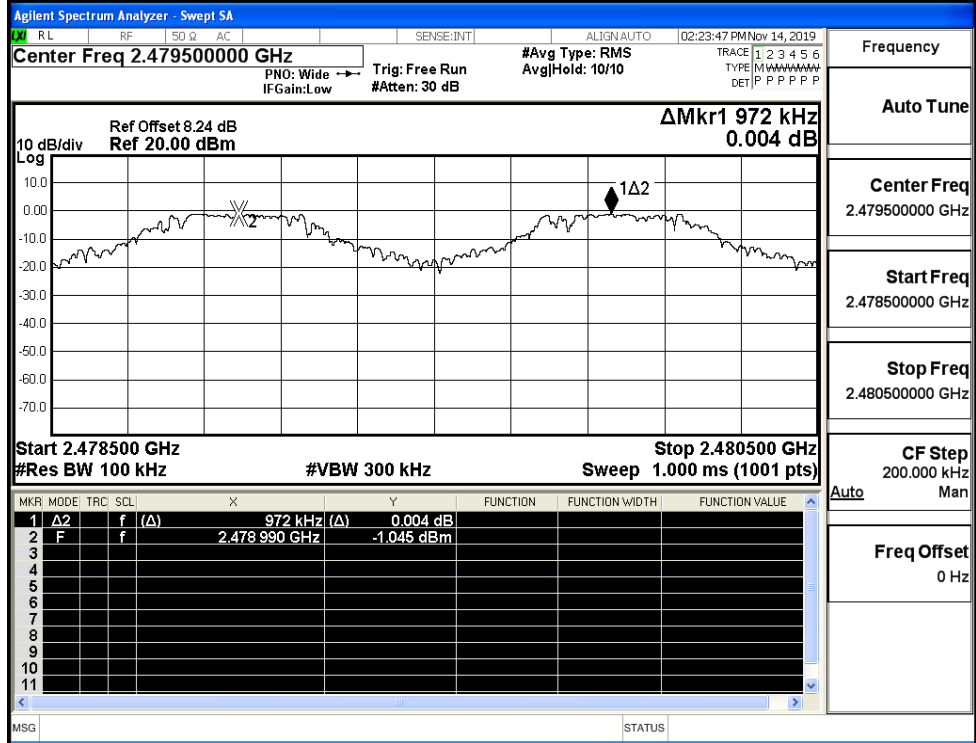
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.892	0.635	PASS
	MCH	1.186	0.635	PASS
	HCH	0.972	0.635	PASS
π/4DQPSK	LCH	0.982	0.877	PASS
	MCH	1.026	0.877	PASS
	HCH	0.974	0.877	PASS



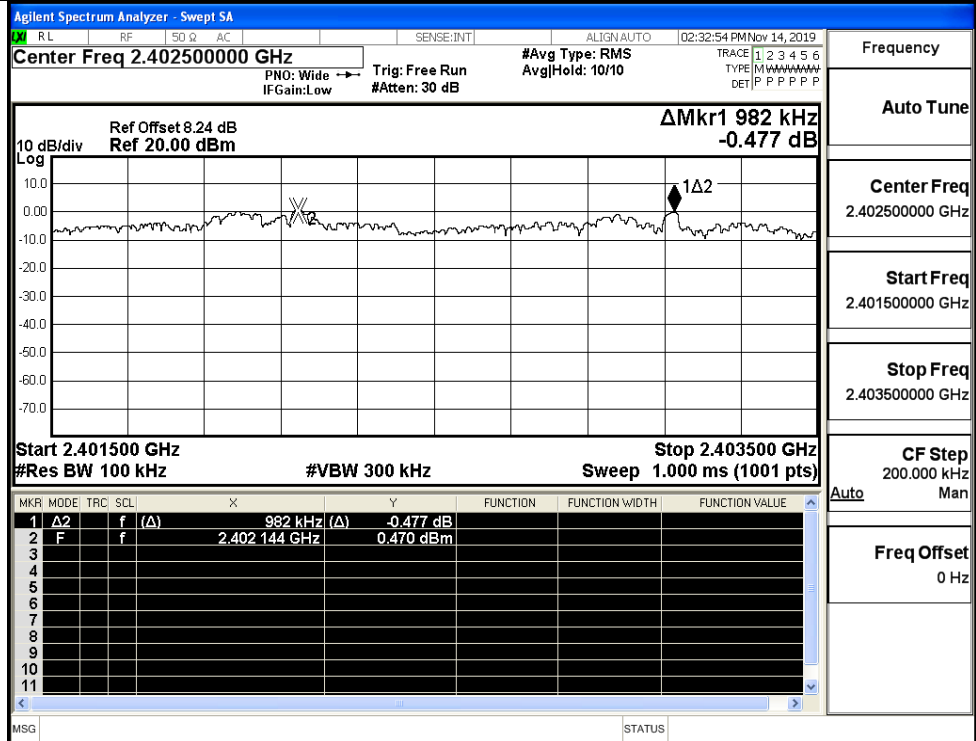
GFSK/MCH



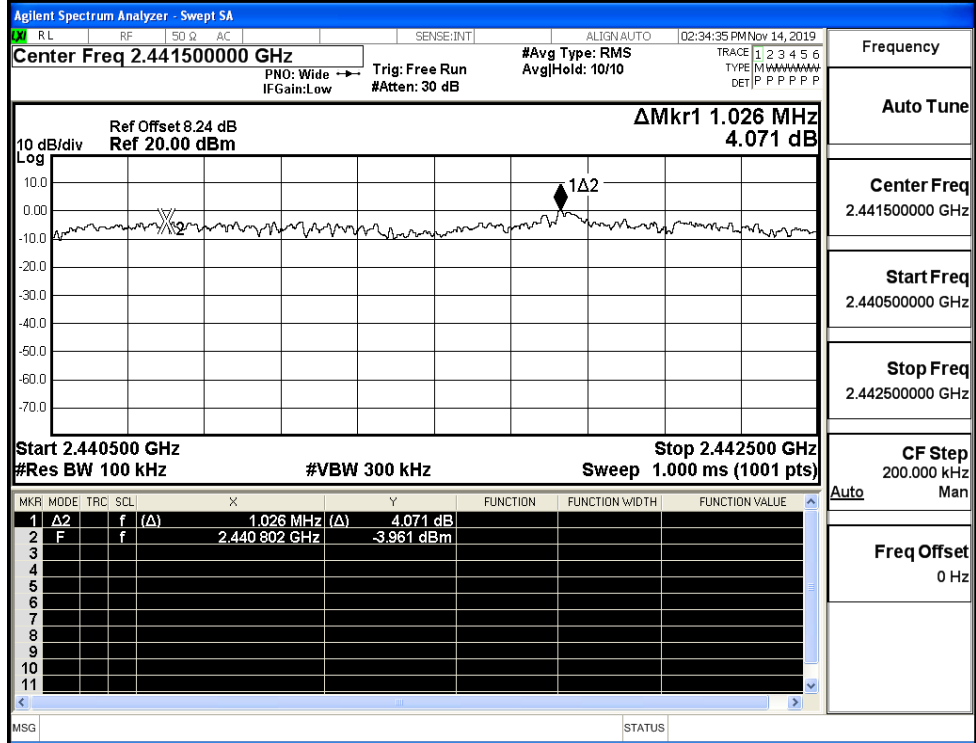
GFSK/HCH

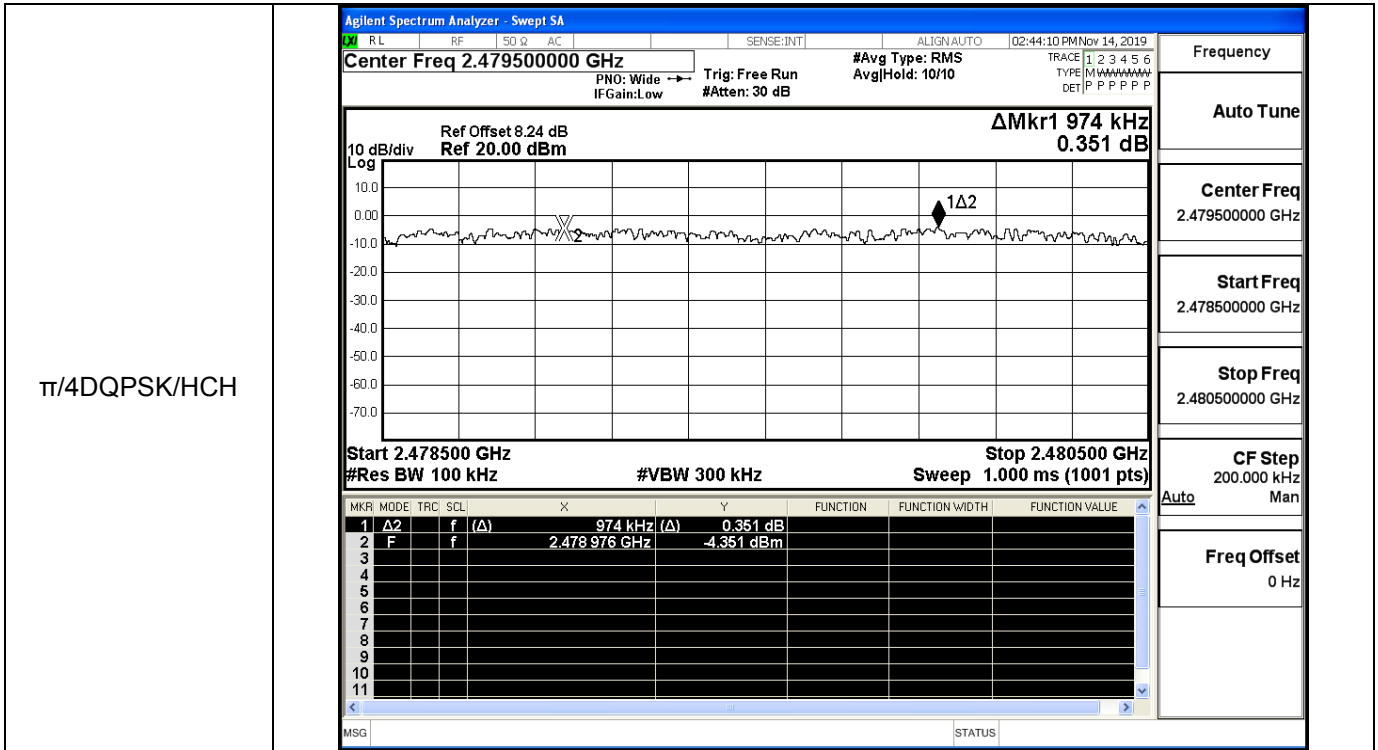


$\pi/4$ DQPSK/LCH



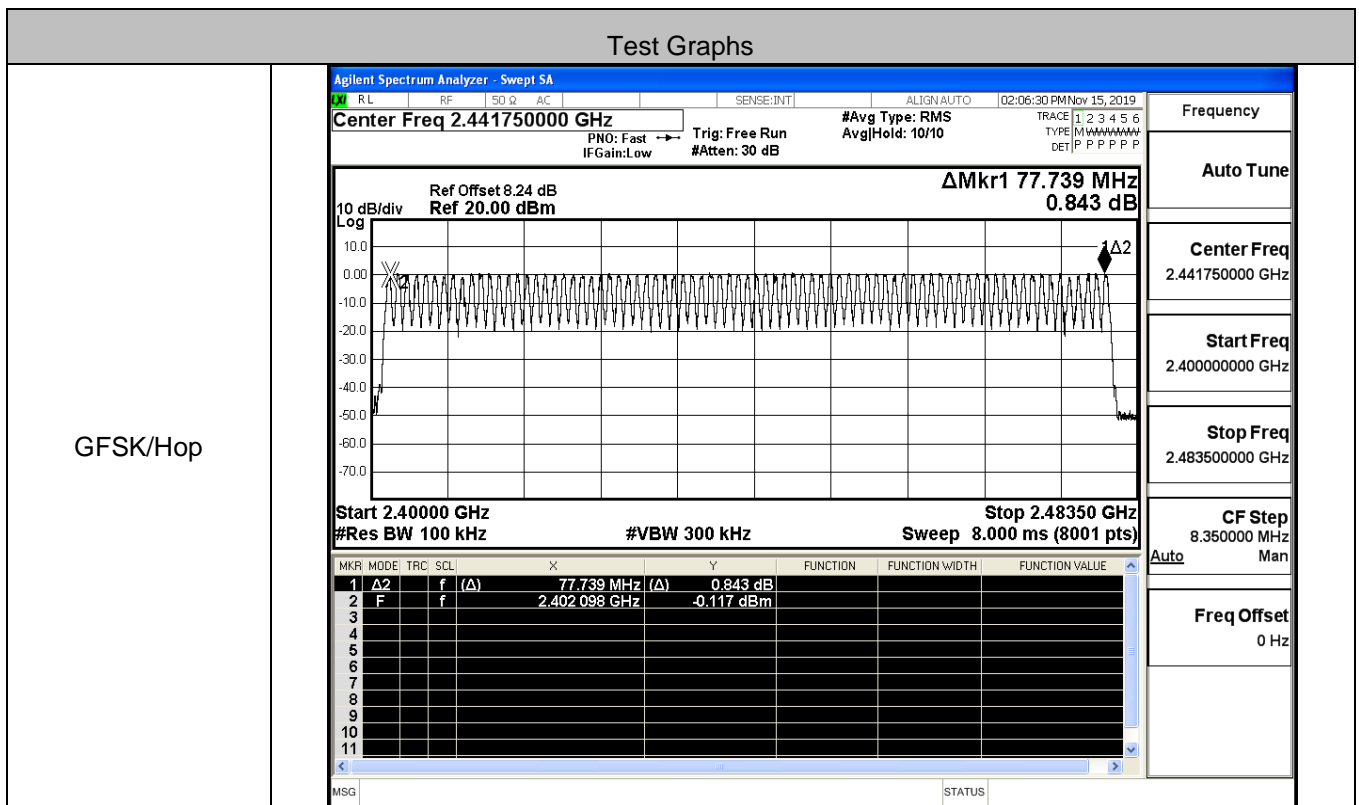
$\pi/4$ DQPSK/MCH



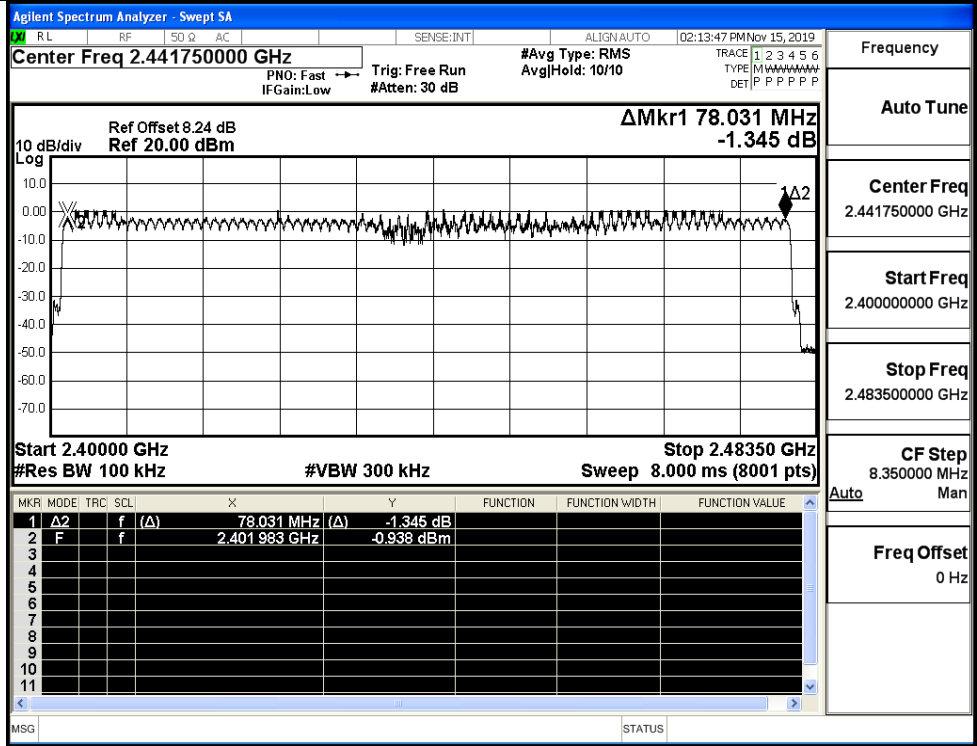


A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS

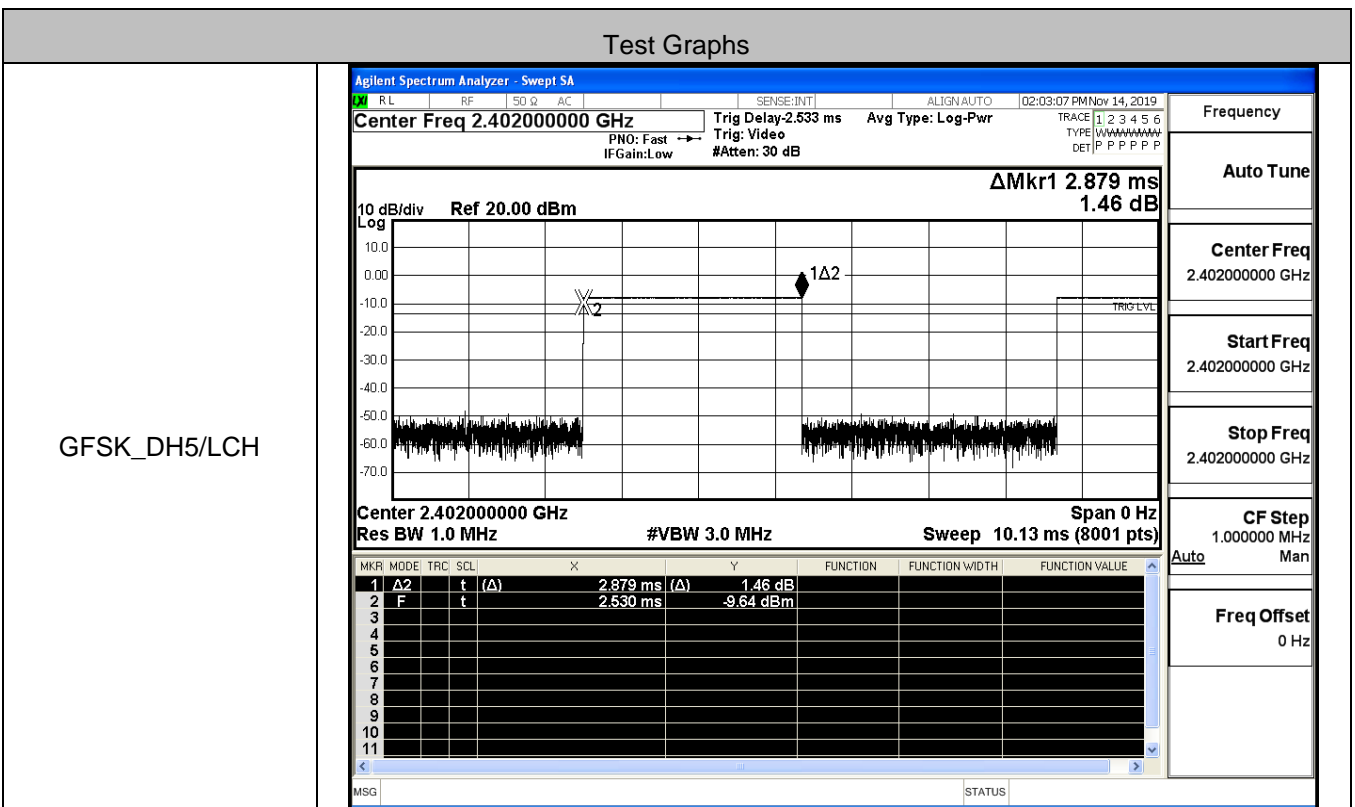


$\pi/4$ DQPSK/Hop

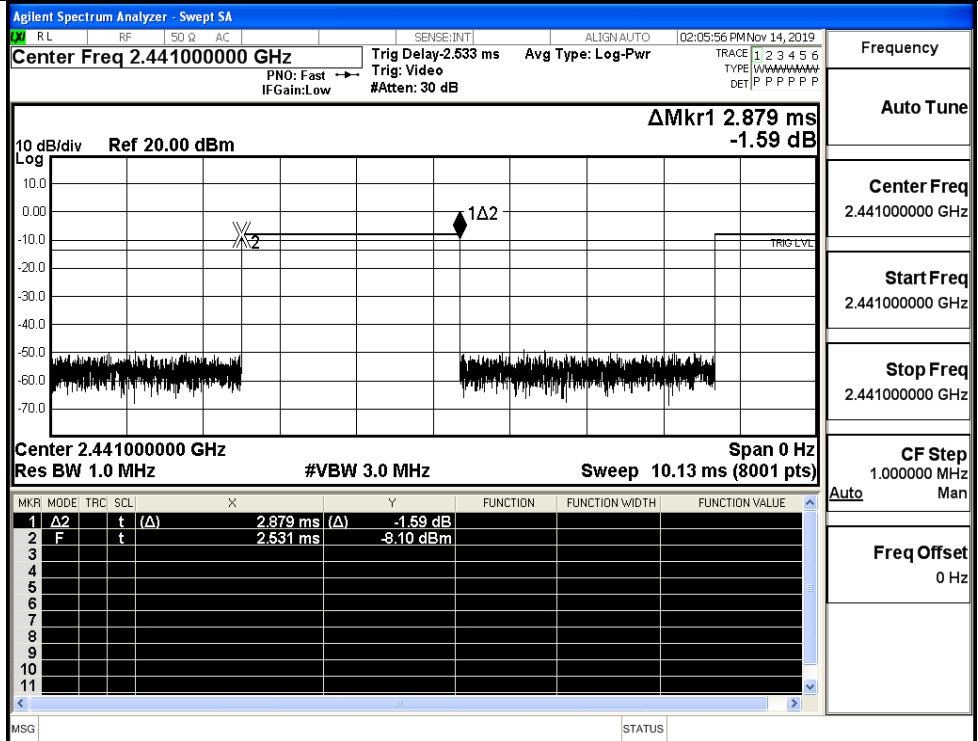


A.5 Dwell Time

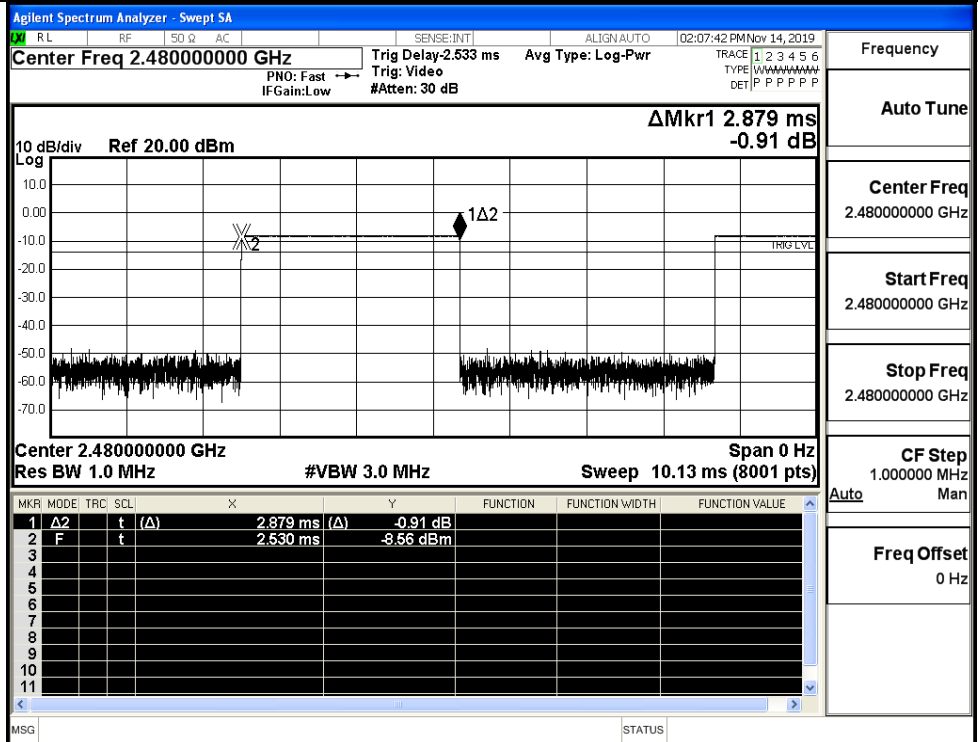
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



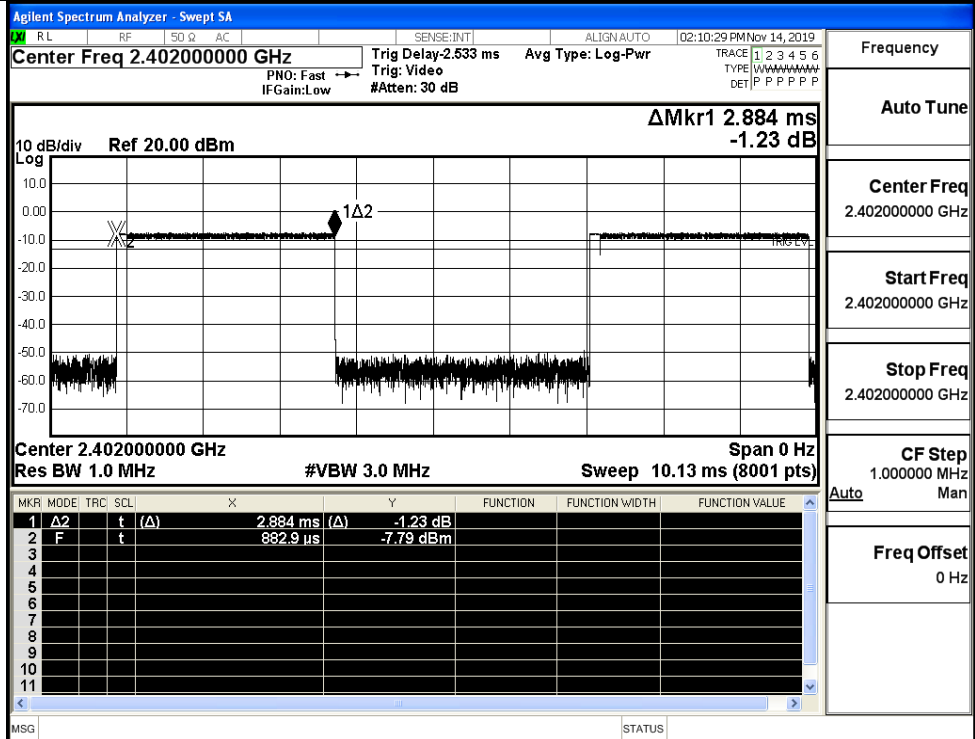
GFSK_DH5/MCH



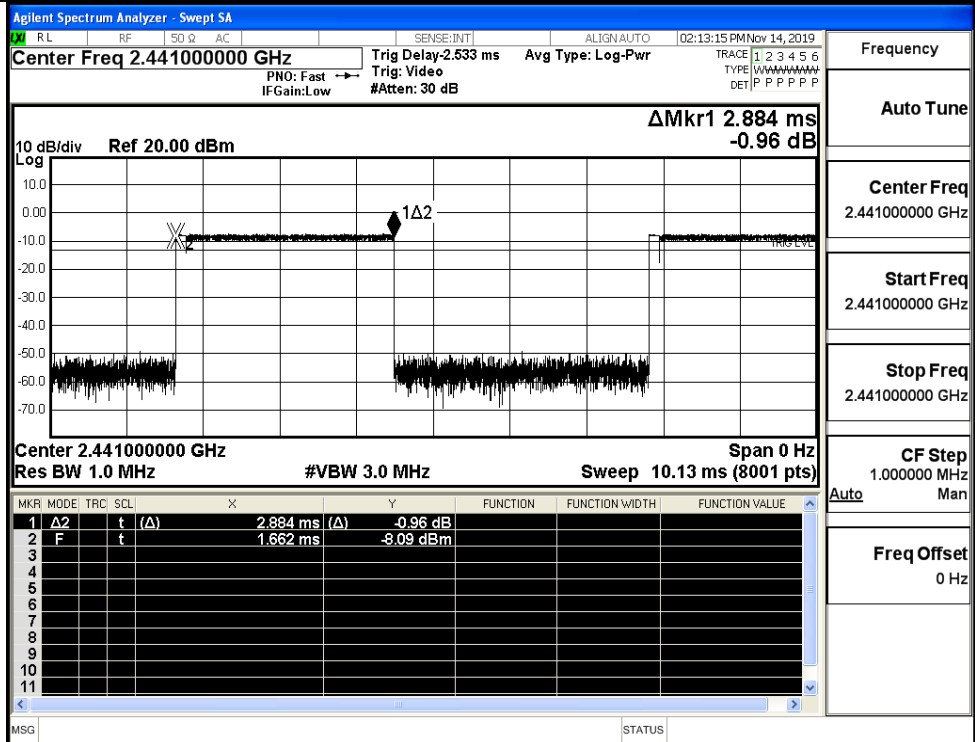
GFSK_DH5/HCH



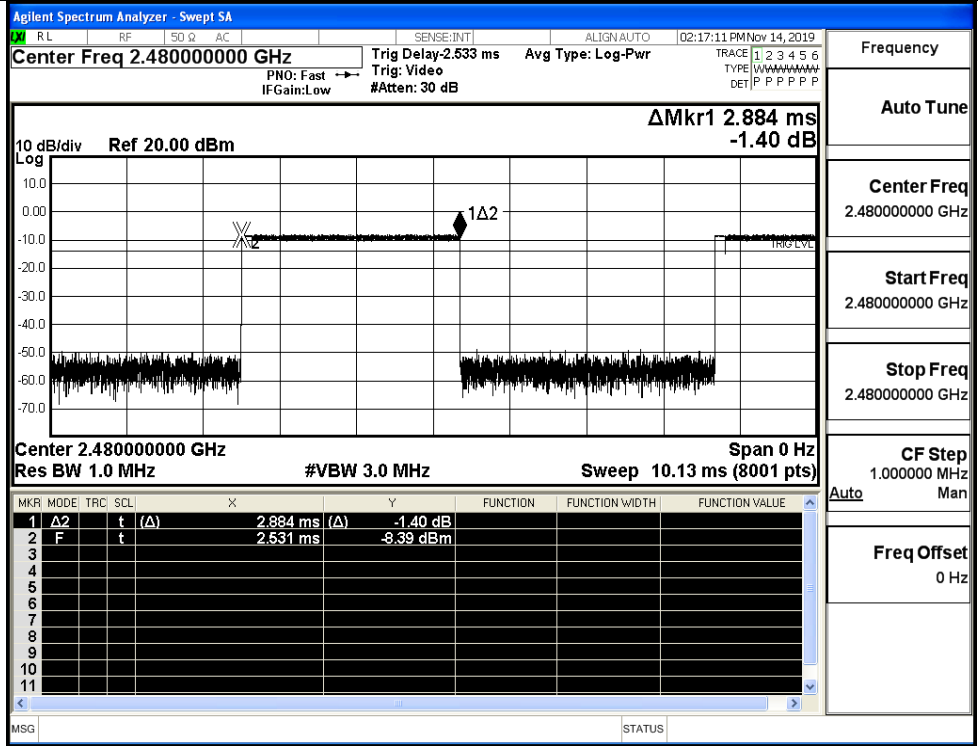
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

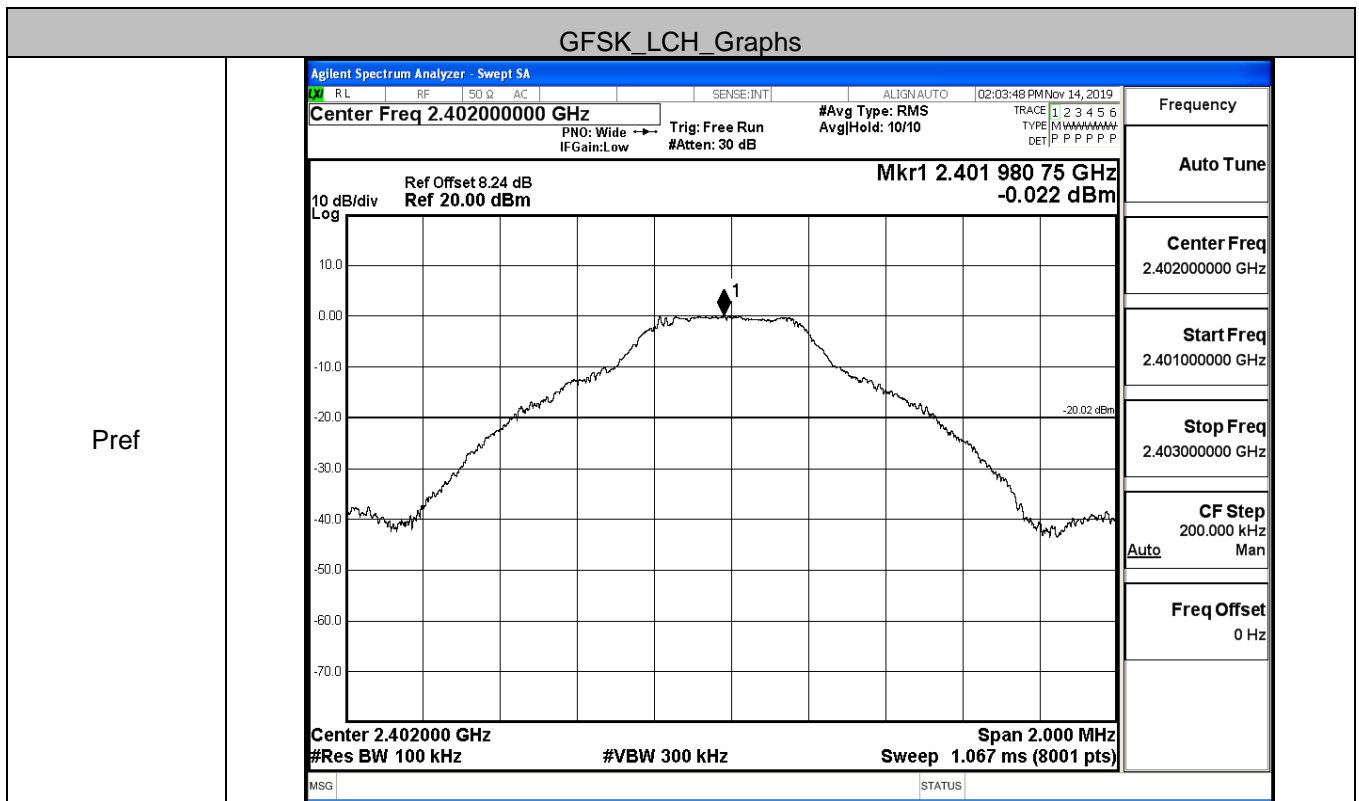


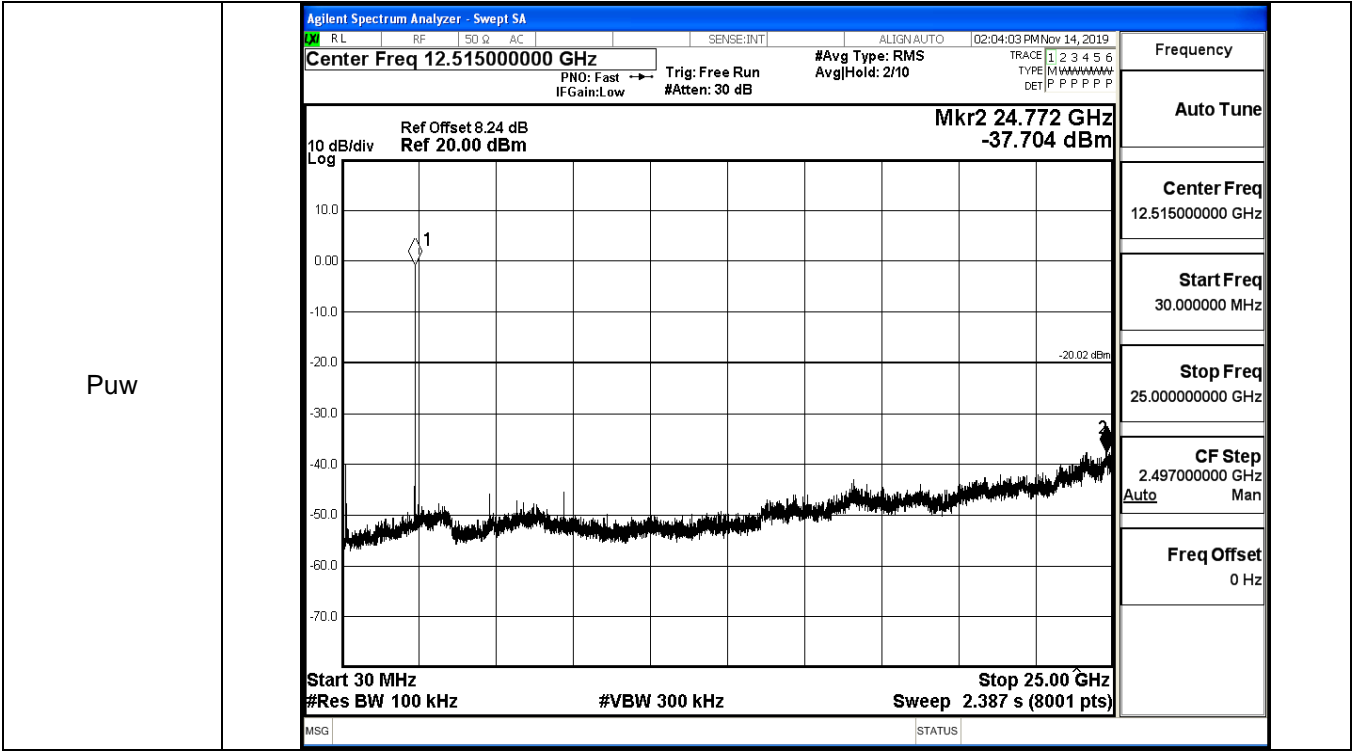
$\pi/4$ DQPSK
_2DH5/HCH



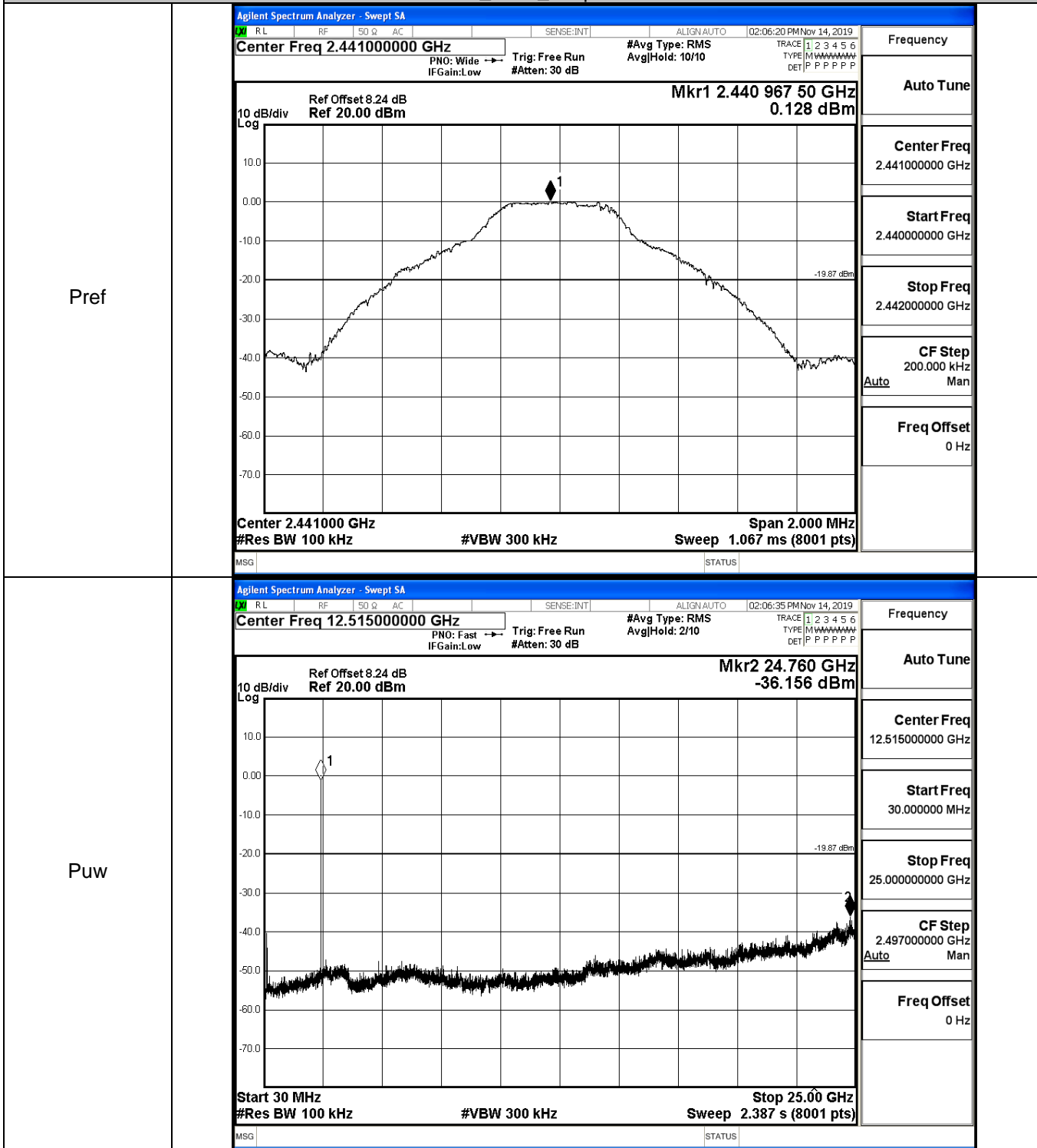
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.022	-37.704	-20.022	PASS
	MCH	0.128	-36.156	-19.872	PASS
	HCH	-0.357	-36.836	-20.357	PASS
π/4DQPSK	LCH	0.429	-37.533	-19.571	PASS
	MCH	0.025	-36.716	-19.975	PASS
	HCH	-0.215	-36.315	-20.215	PASS

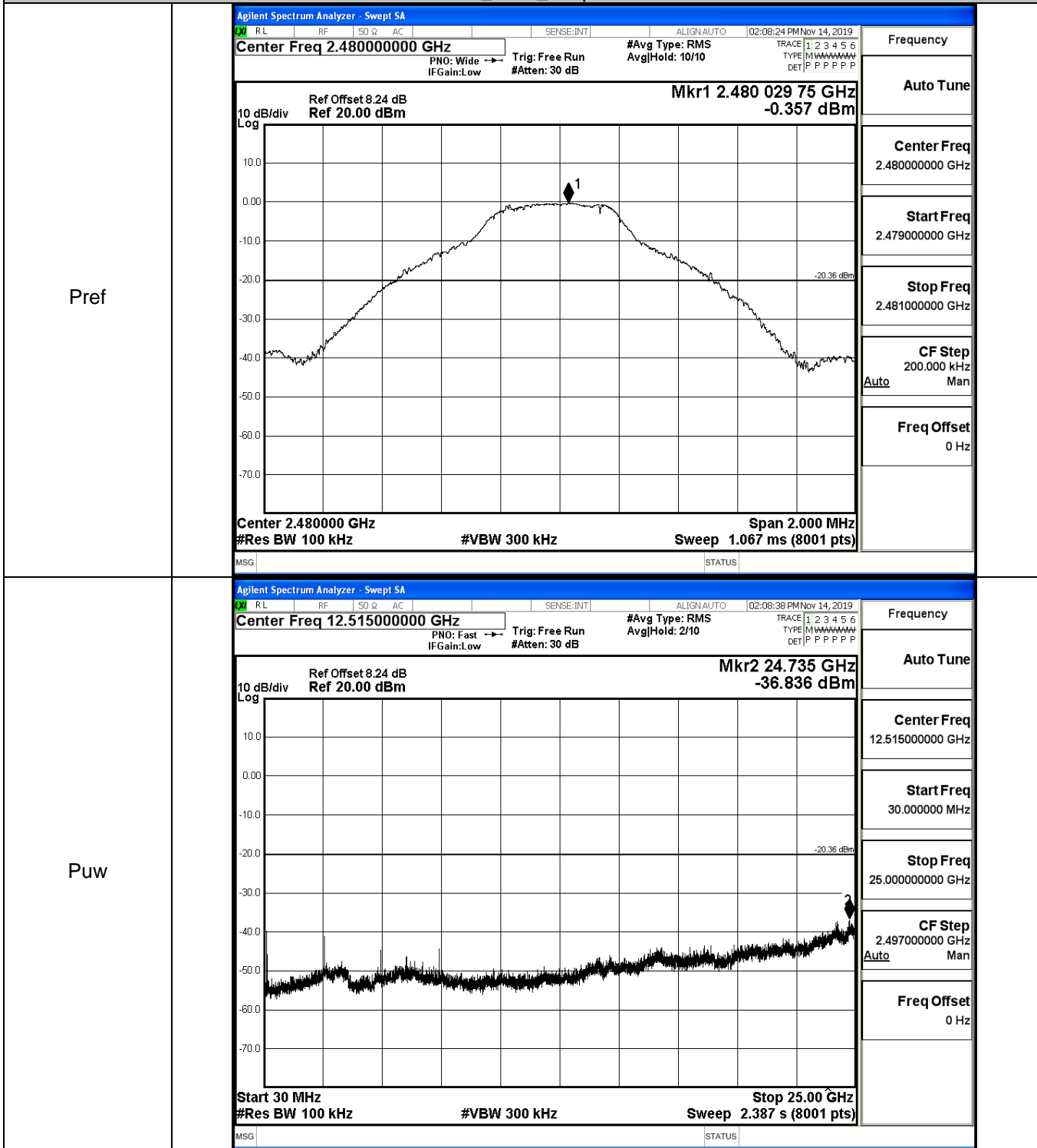




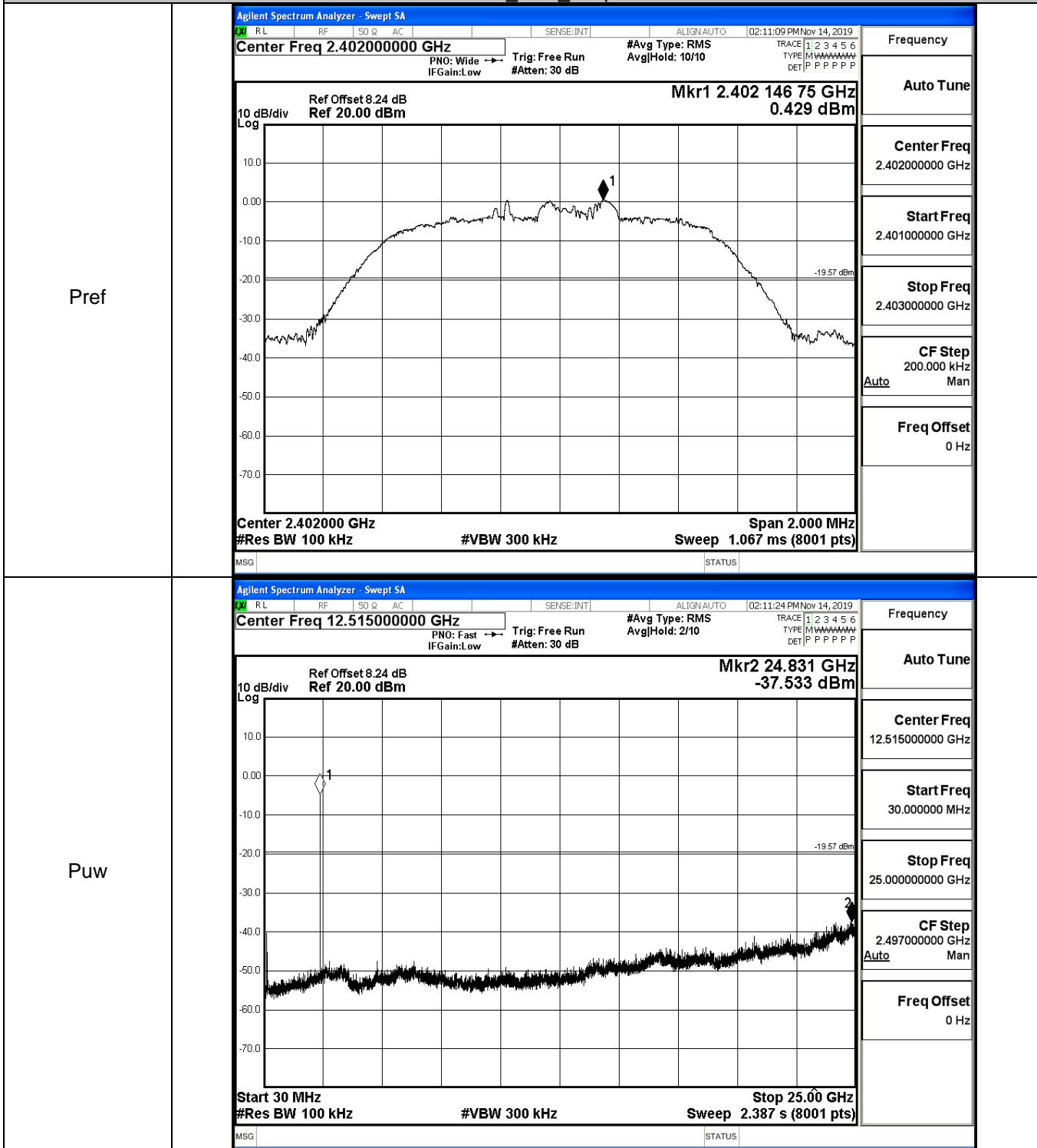
GFSK_MCH_Graphs



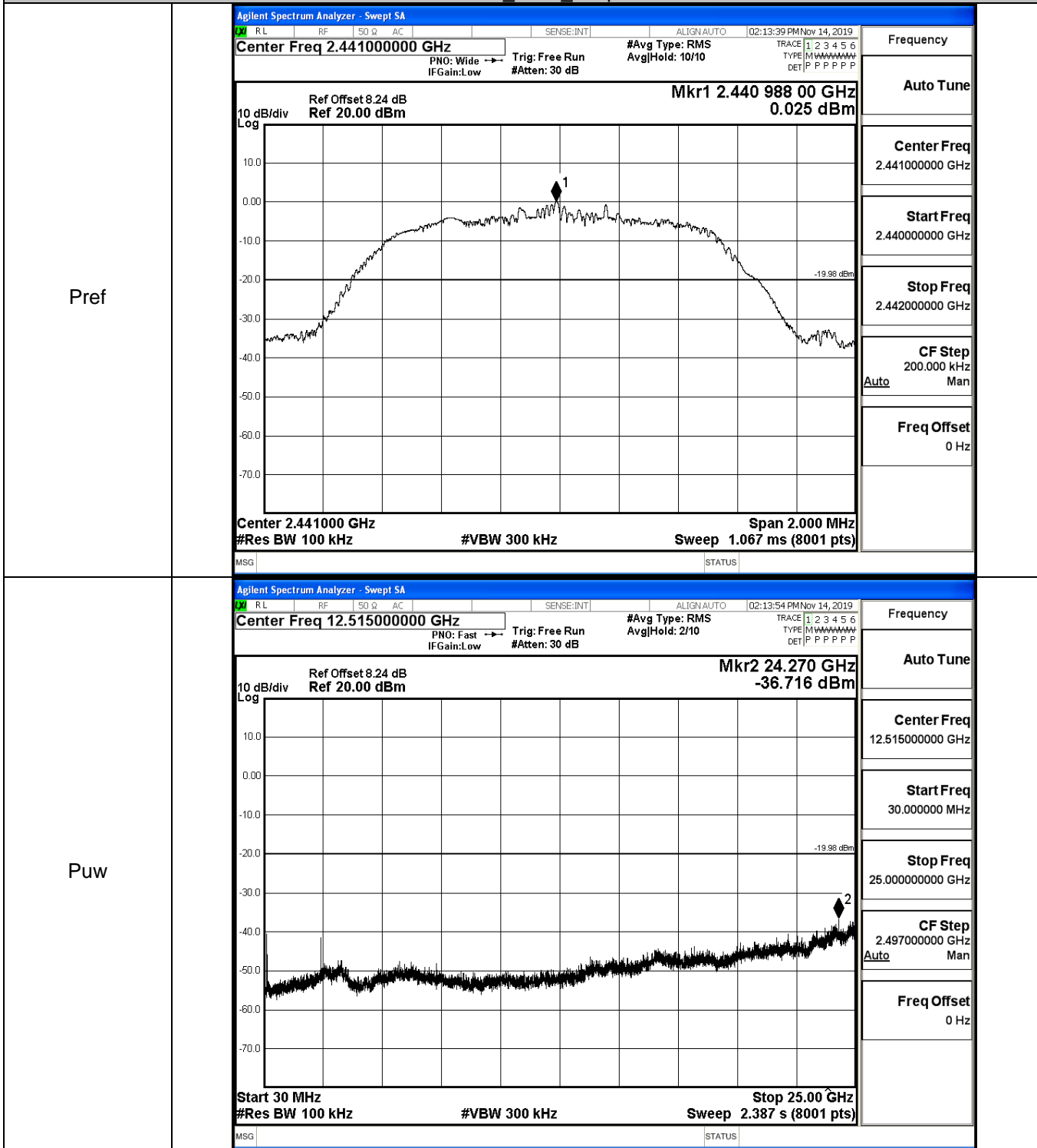
GFSK_HCH_Graphs



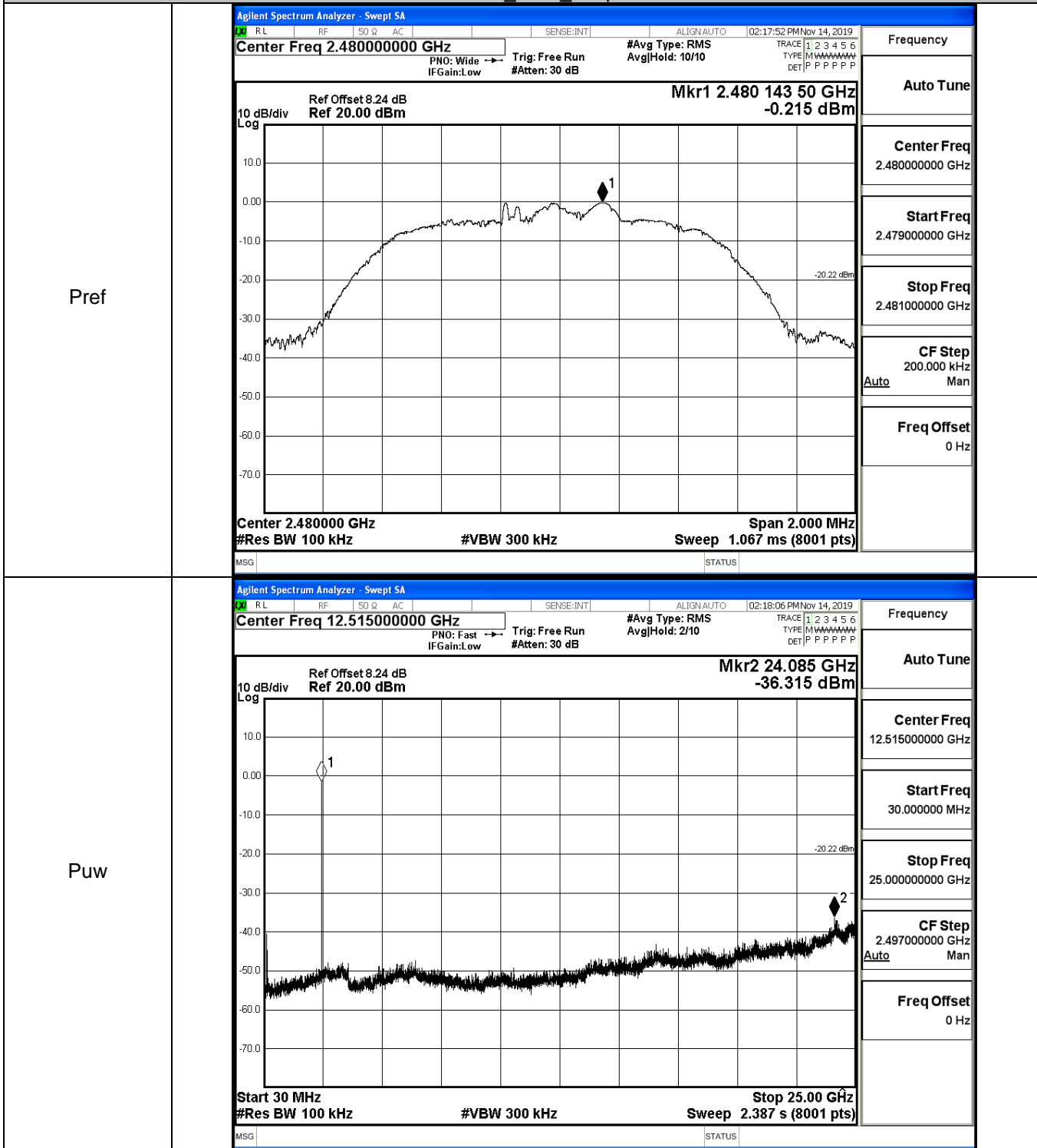
$\pi/4$ DQPSK_LCH_Graphs



$\pi/4$ DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

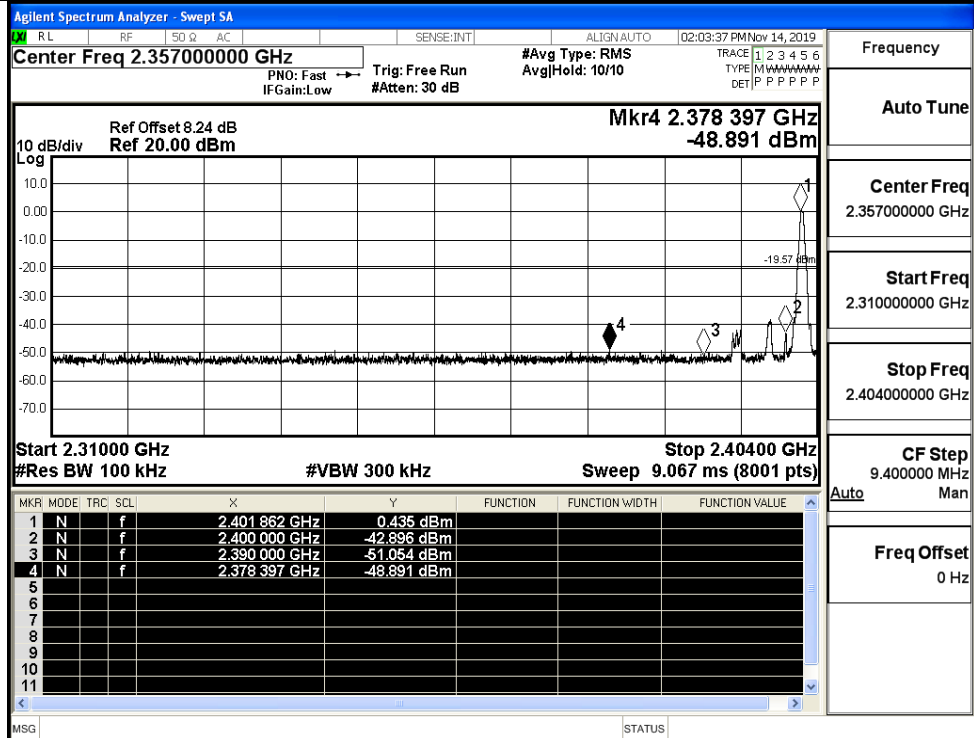


A.7 Band-edge for RF Conducted Emissions

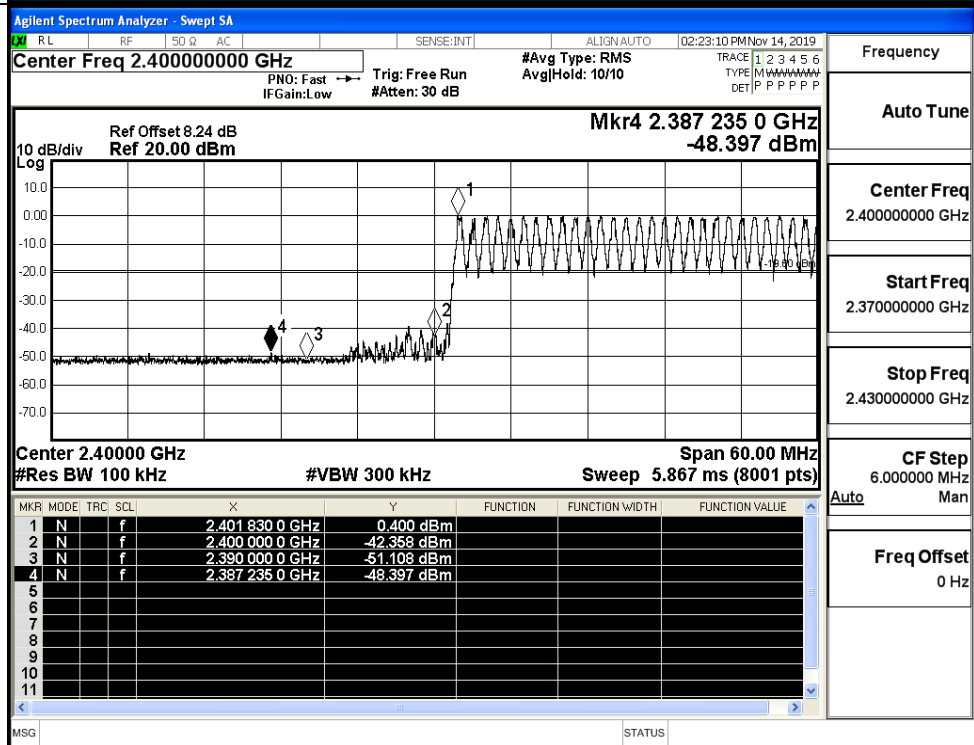
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.435	Off	-48.891	-19.57	PASS
			0.400	On	-48.397	-19.6	PASS
	HCH	2480	0.079	Off	-46.883	-19.92	PASS
			-0.417	On	-48.417	-20.42	PASS
π /4DQPSK	LCH	2402	-0.036	Off	-47.735	-20.04	PASS
			0.461	On	-48.752	-19.54	PASS
	HCH	2480	-0.192	Off	-48.195	-20.19	PASS
			0.016	On	-47.795	-19.98	PASS

Test Graphs

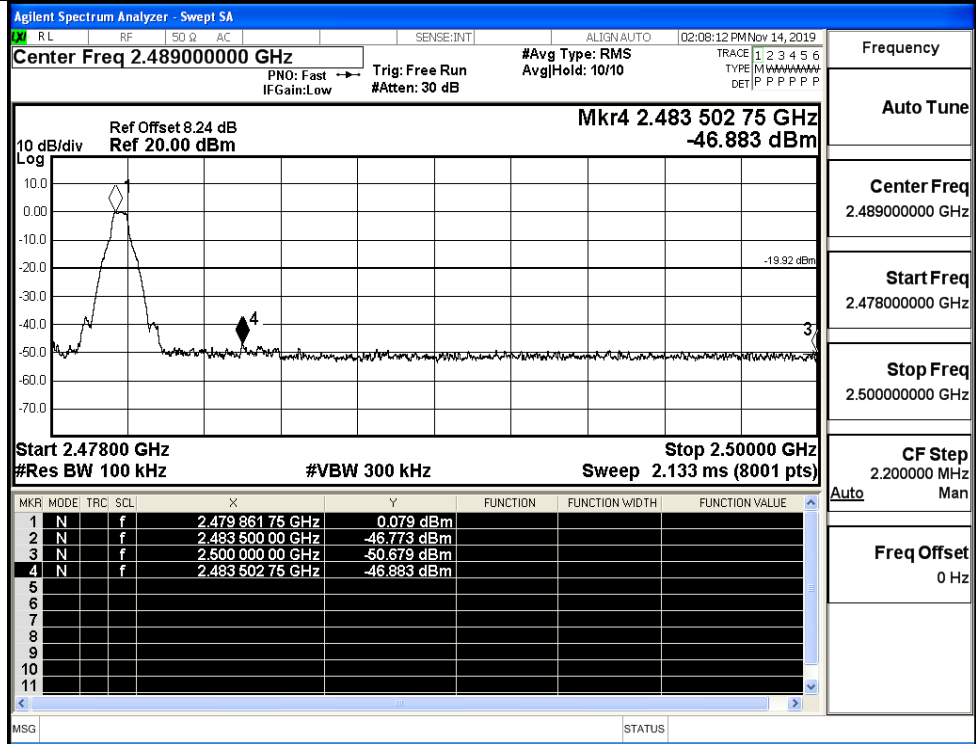
GFSK/LCH/No Hop



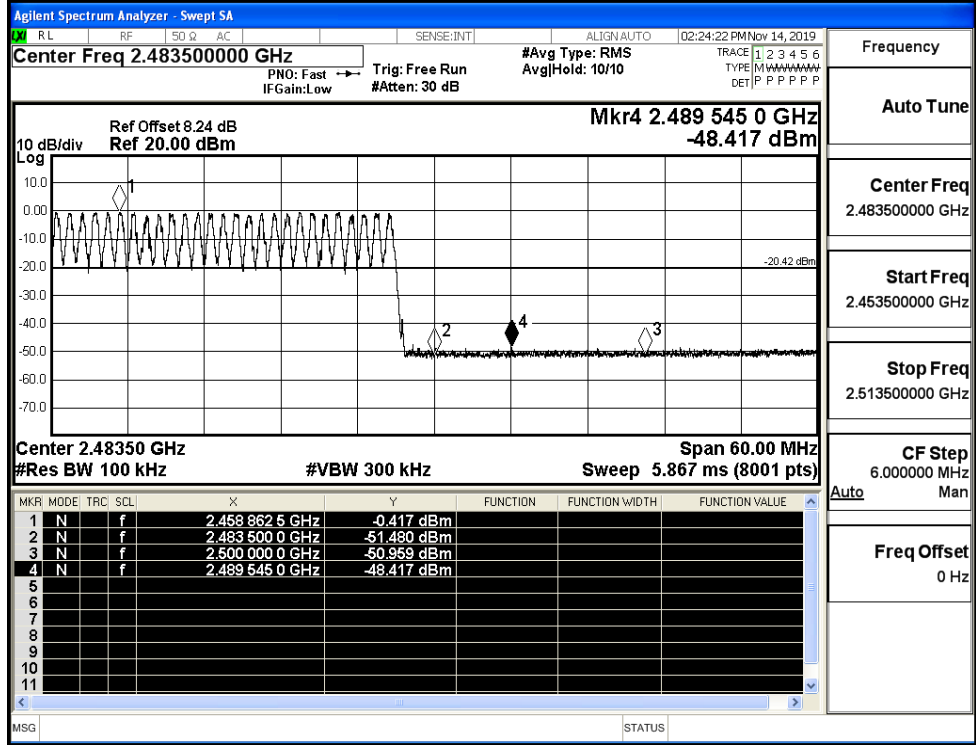
GFSK/LCH/Hop



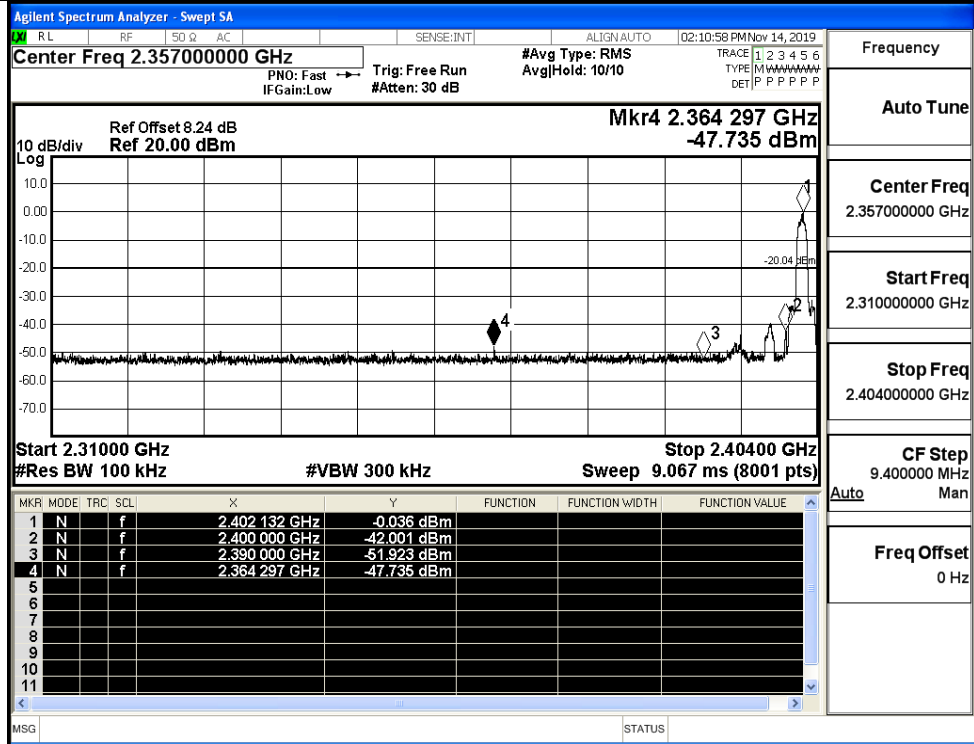
GFSK/HCH/No Hop



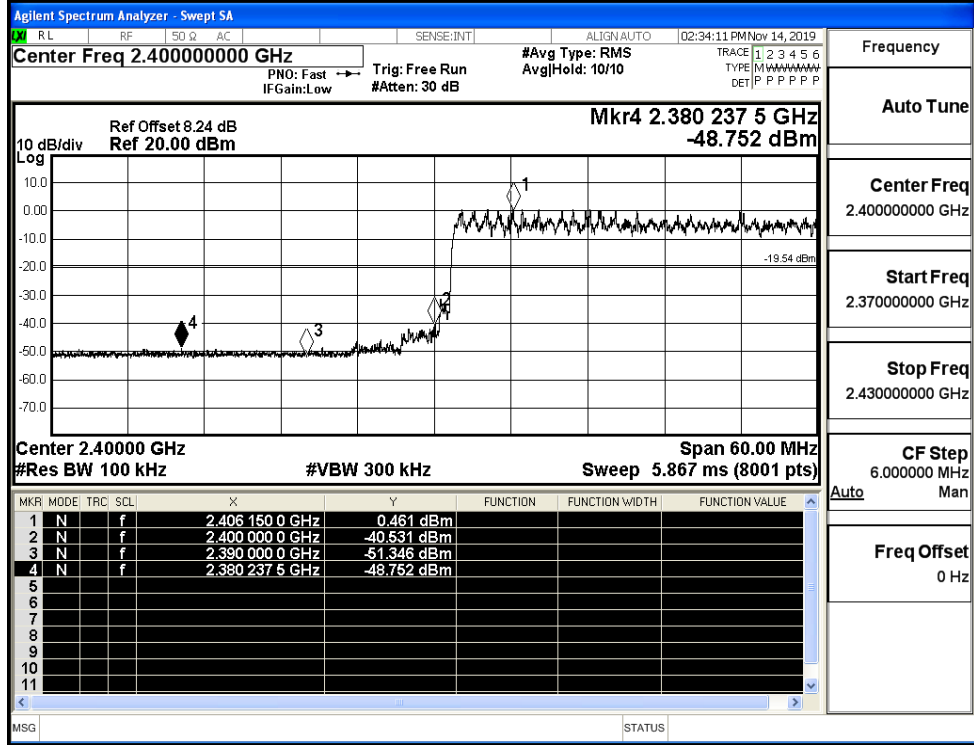
GFSK/HCH/Hop



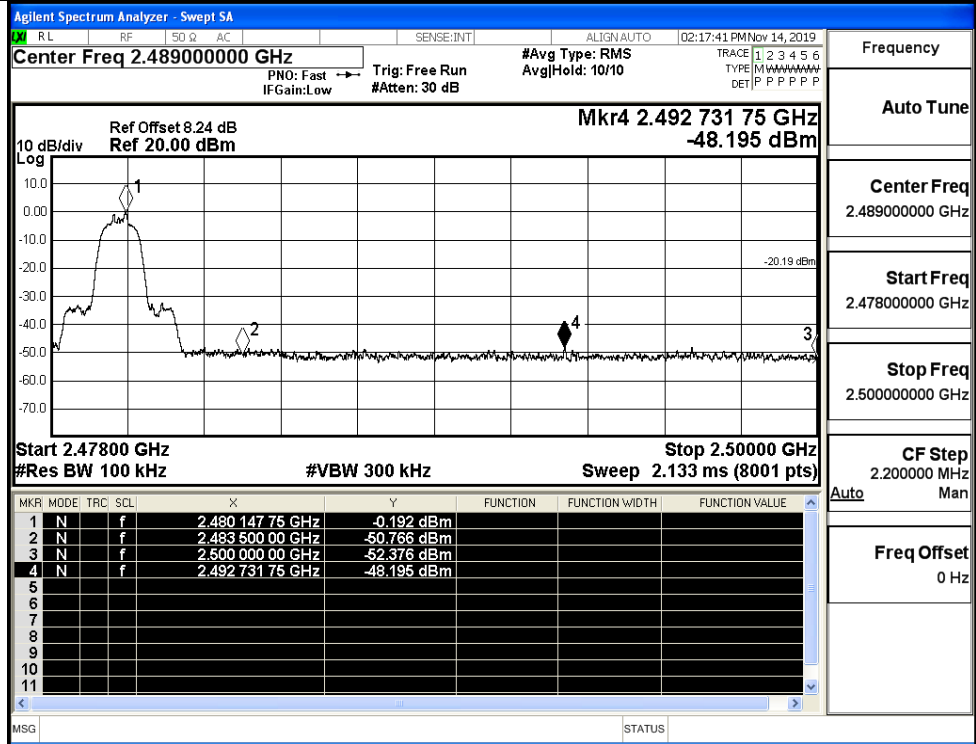
$\pi/4$ DQPSK/LCH/No
Hop



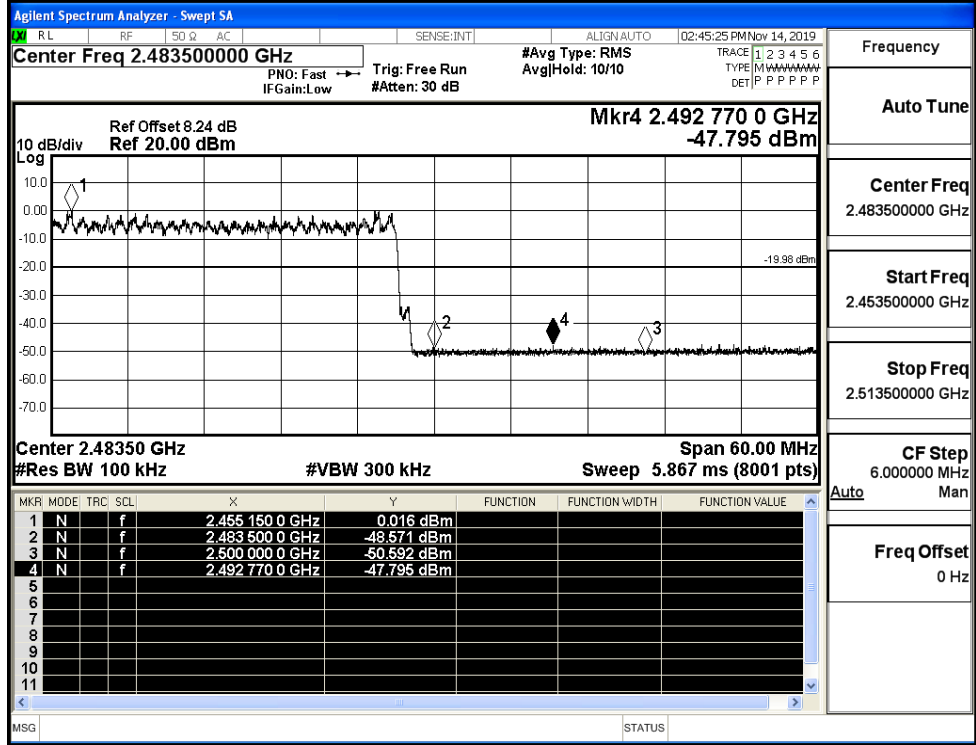
$\pi/4$ DQPSK/LCH/Hop



π /4DQPSK/HCH/No Hop



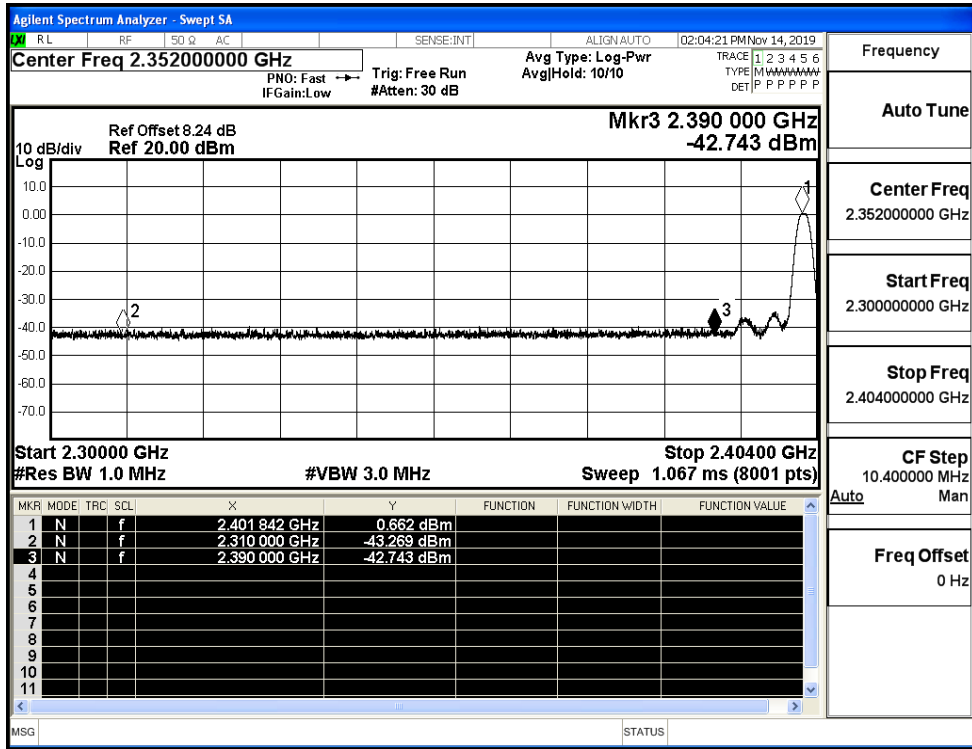
π /4DQPSK/HCH/Hop



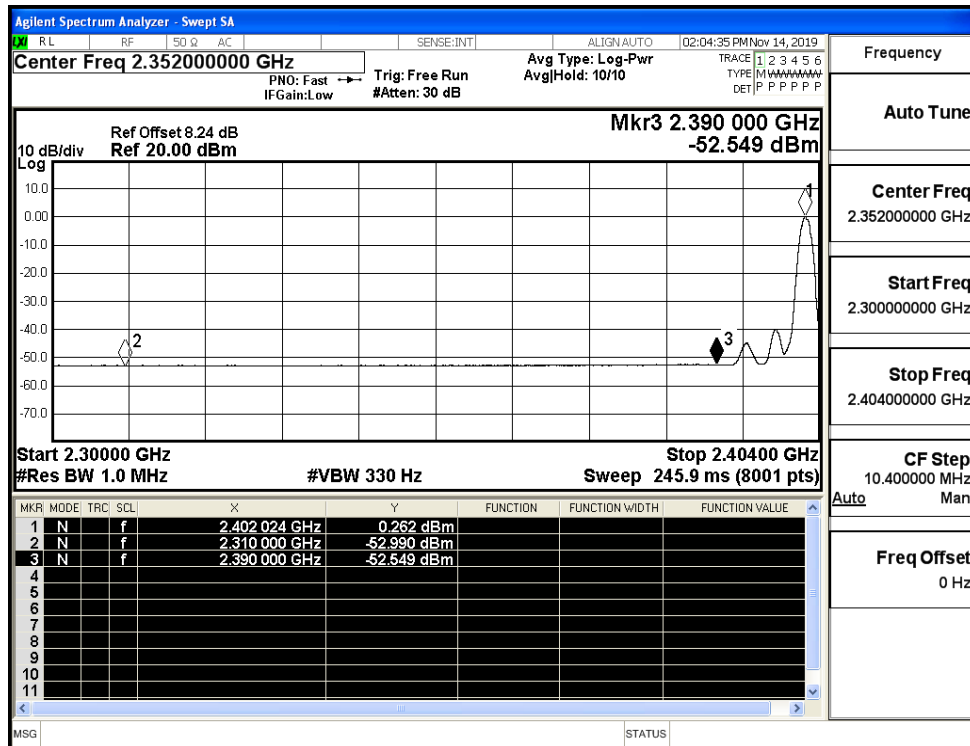
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.27	2.0	0	51.99	PEAK	74	PASS
	Off	2310.0	-52.99	2.0	0	42.27	AV	54	PASS
	Off	2390.0	-42.74	2.0	0	52.51	PEAK	74	PASS
	Off	2390.0	-52.55	2.0	0	42.71	AV	54	PASS
	Off	2483.5	-39.68	2.0	0	55.57	PEAK	74	PASS
	Off	2483.5	-49.30	2.0	0	45.95	AV	54	PASS
	Off	2500.0	-42.22	2.0	0	53.03	PEAK	74	PASS
	Off	2500.0	-51.86	2.0	0	43.40	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.40	2.0	0	52.86	PEAK	74	PASS
	Off	2310.0	-52.99	2.0	0	42.27	AV	54	PASS
	Off	2390.0	-41.59	2.0	0	53.67	PEAK	74	PASS
	Off	2390.0	-52.49	2.0	0	42.76	AV	54	PASS
	Off	2483.5	-40.11	2.0	0	55.15	PEAK	74	PASS
	Off	2483.5	-50.60	2.0	0	44.66	AV	54	PASS
	Off	2500.0	-42.10	2.0	0	53.16	PEAK	74	PASS
	Off	2500.0	-51.91	2.0	0	43.35	AV	54	PASS

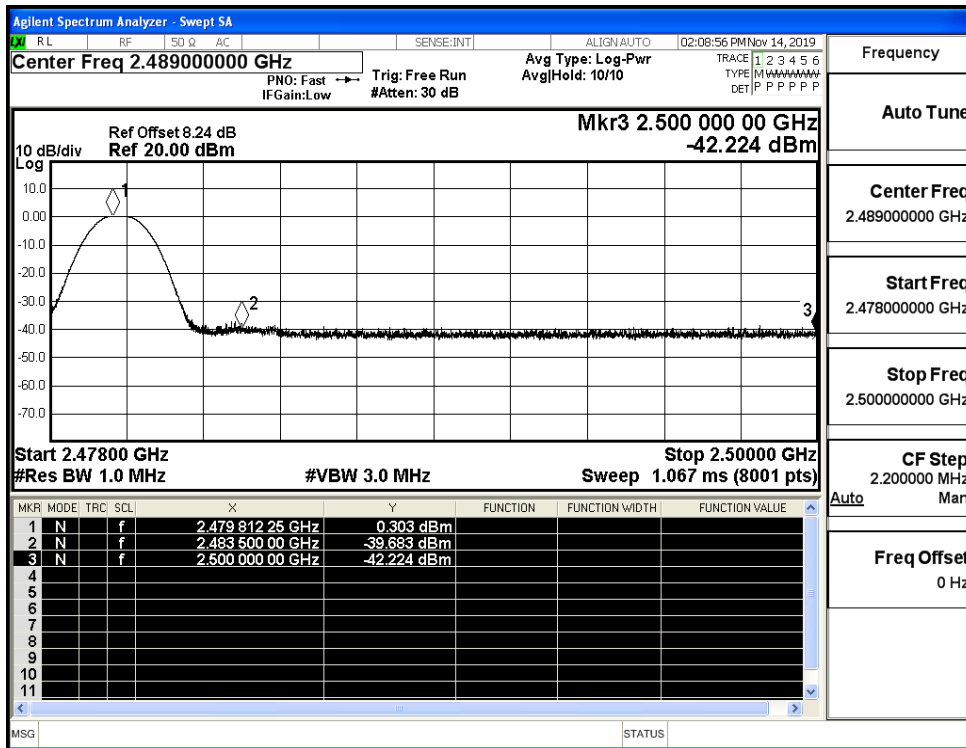
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



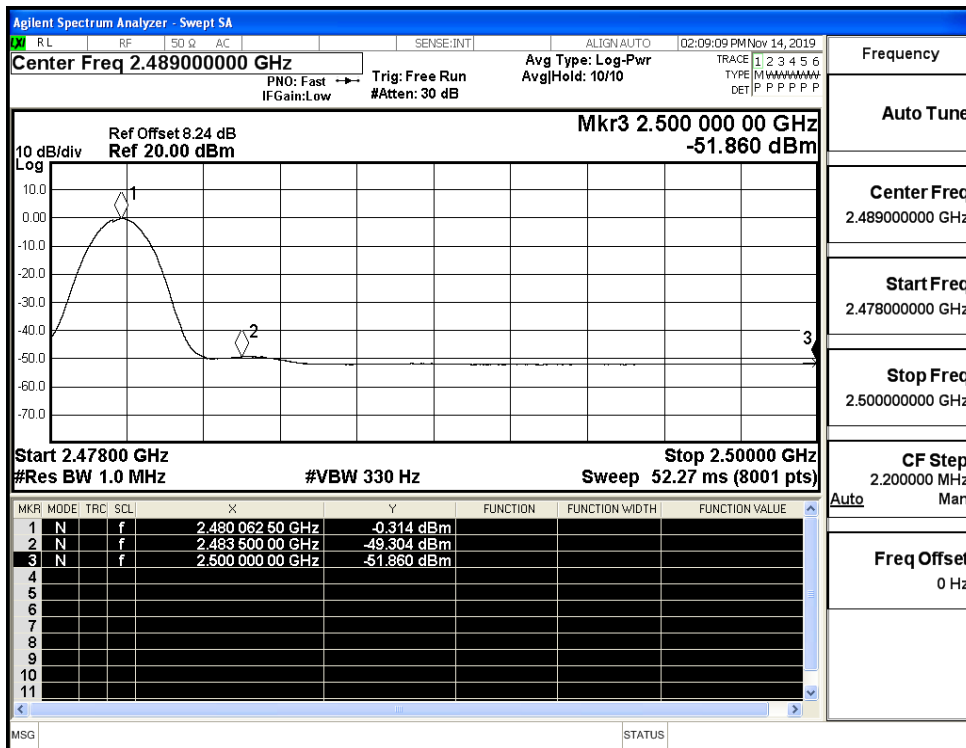
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



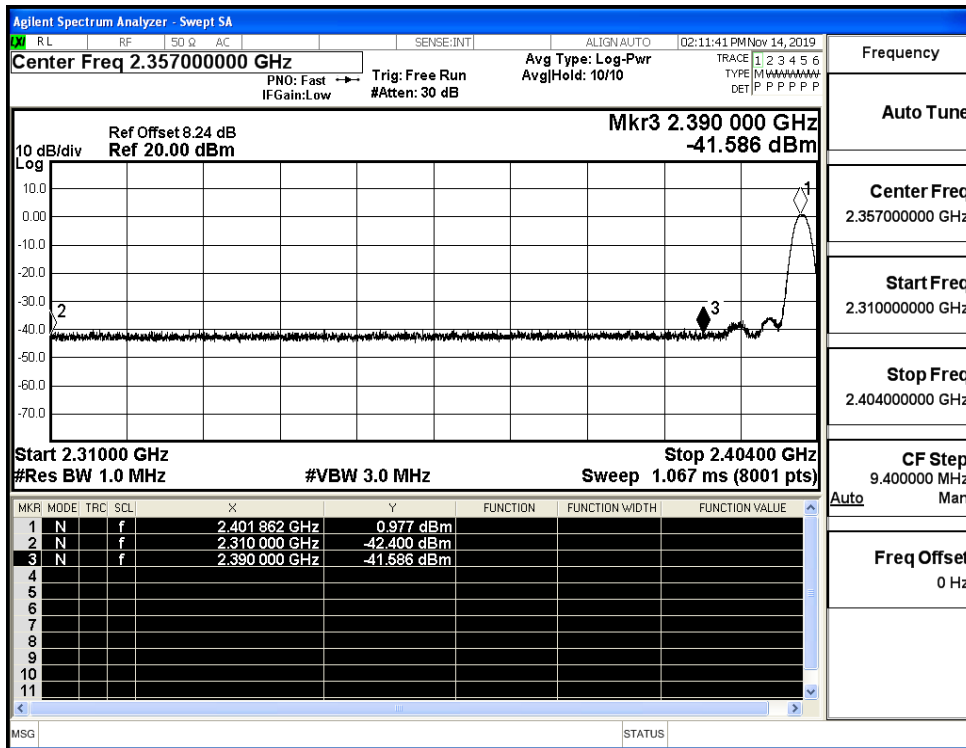
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



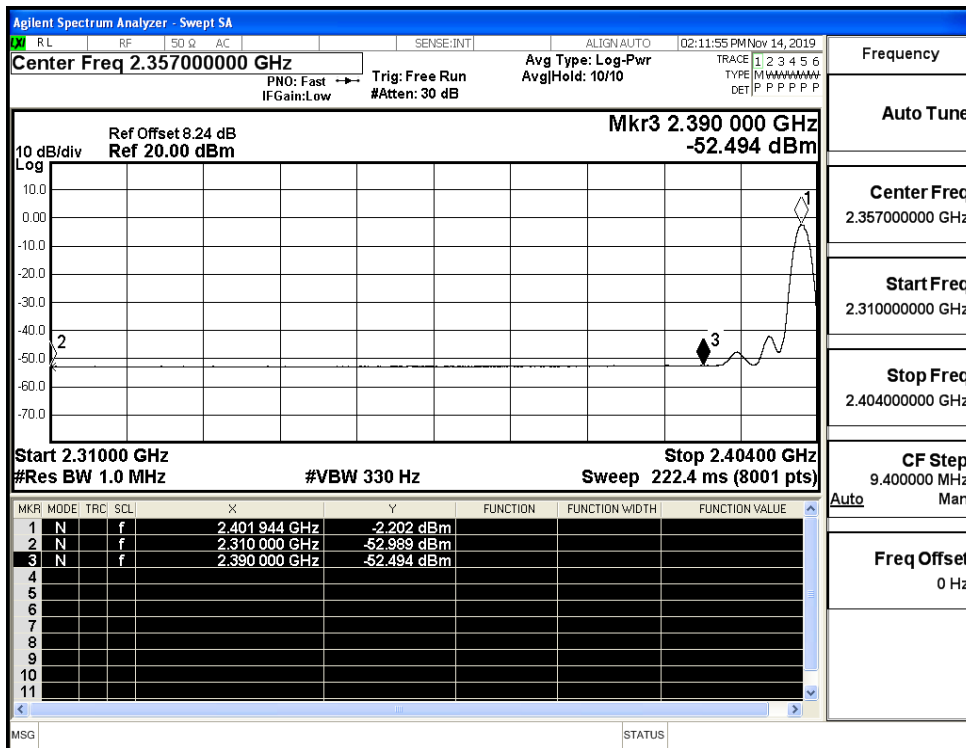
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



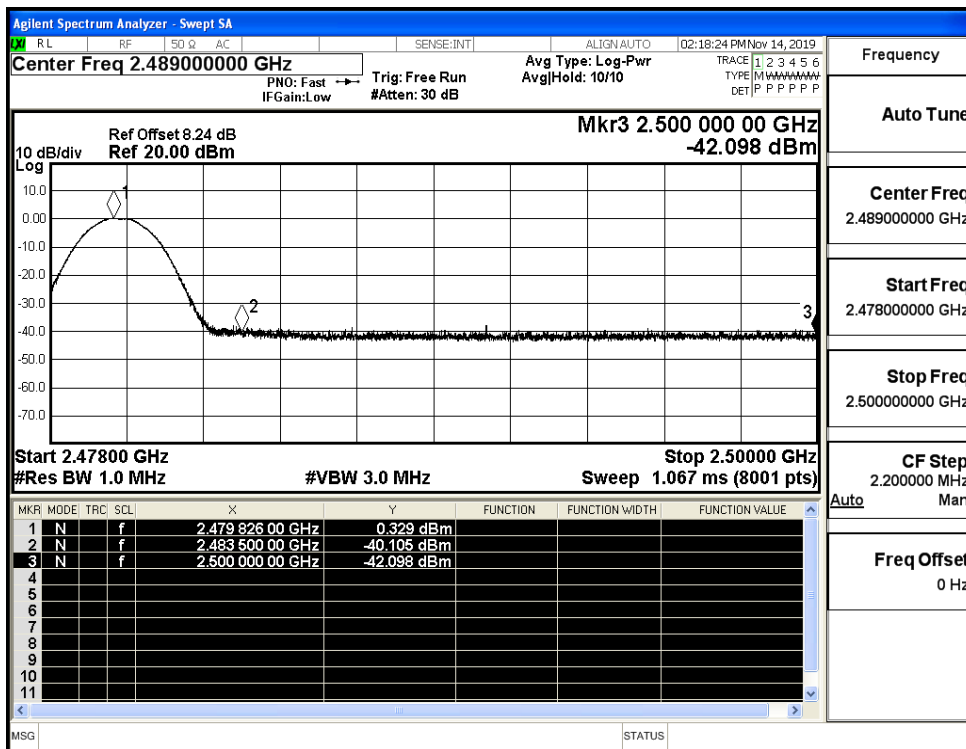
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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)

