

Appendix A

RF Test Data for BT V4.2 (BDR/EDR) (Conducted Measurement)

Product Name: Alarm clock BT Speaker& Wireless Charger

Trade Mark: iHip

Test Model: WLGLOCHGR-BK

Environmental Conditions

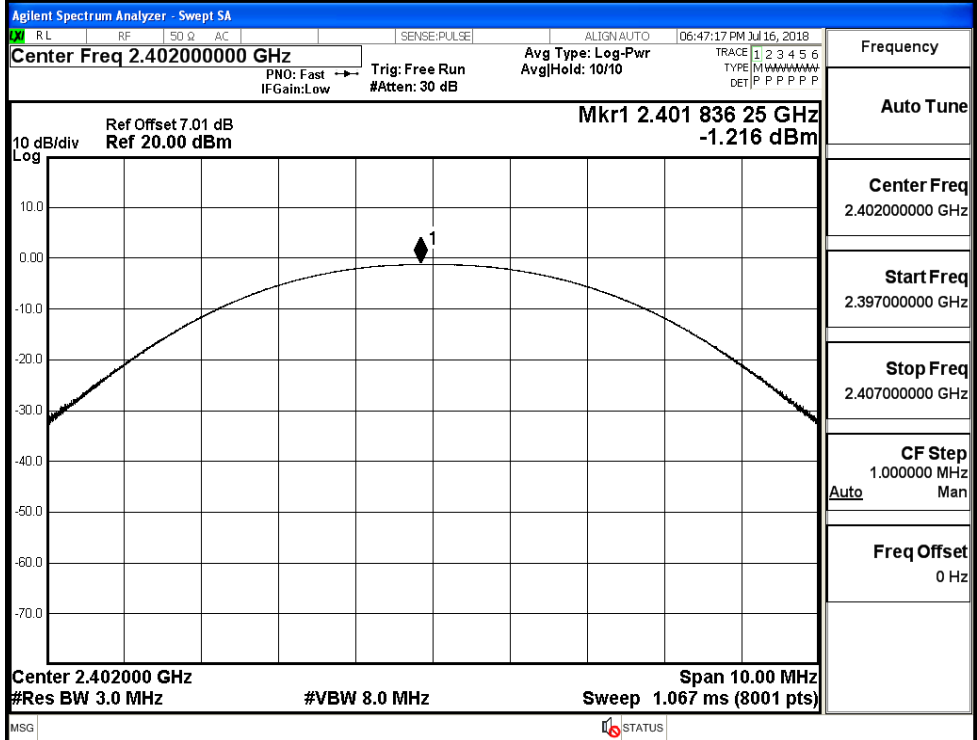
Temperature:	22.3 ° C
Relative Humidity:	52.1%
ATM Pressure:	100.0 kPa
Test Engineer:	Mina.Xu
Supervised by:	Jayden.Zhuo

A.1 Maximum Conducted Peak Output Power

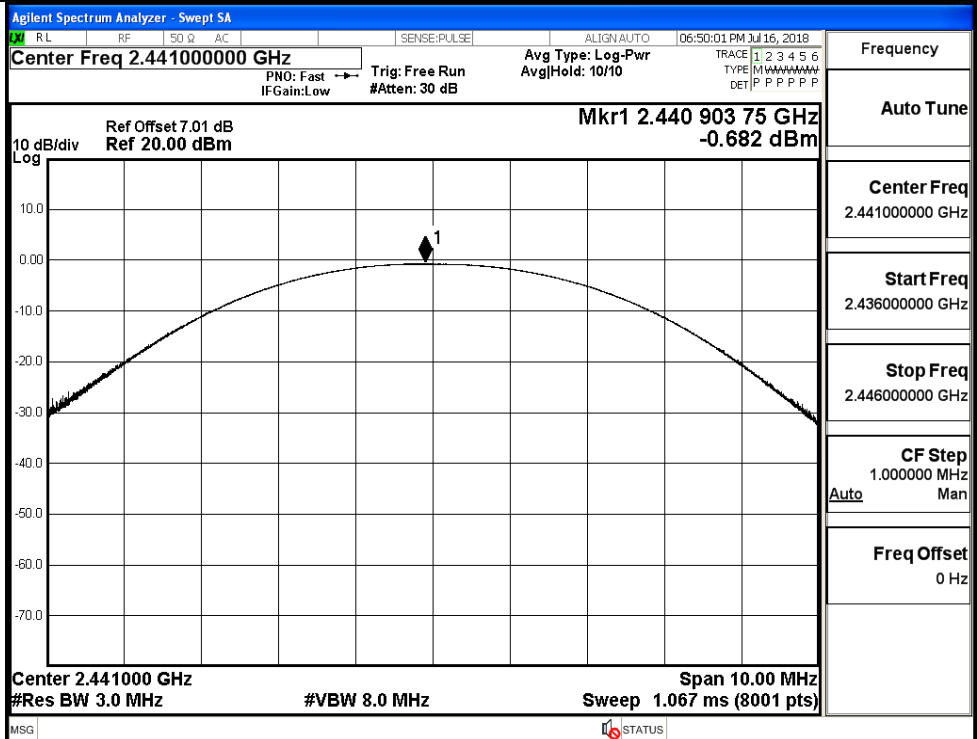
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.216	30	PASS
	MCH	-0.682	30	PASS
	HCH	-0.233	30	PASS
$\pi/4$ DQPSK	LCH	-2.040	21	PASS
	MCH	-1.541	21	PASS
	HCH	-1.228	21	PASS

Test Graphs

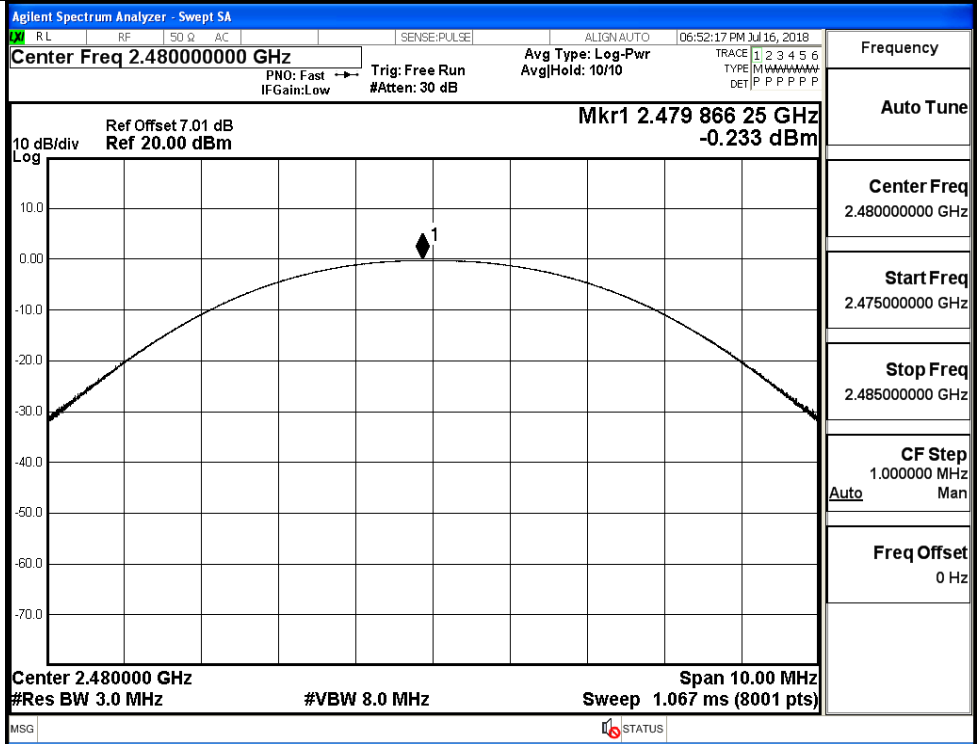
GFSK/LCH



GFSK/MCH

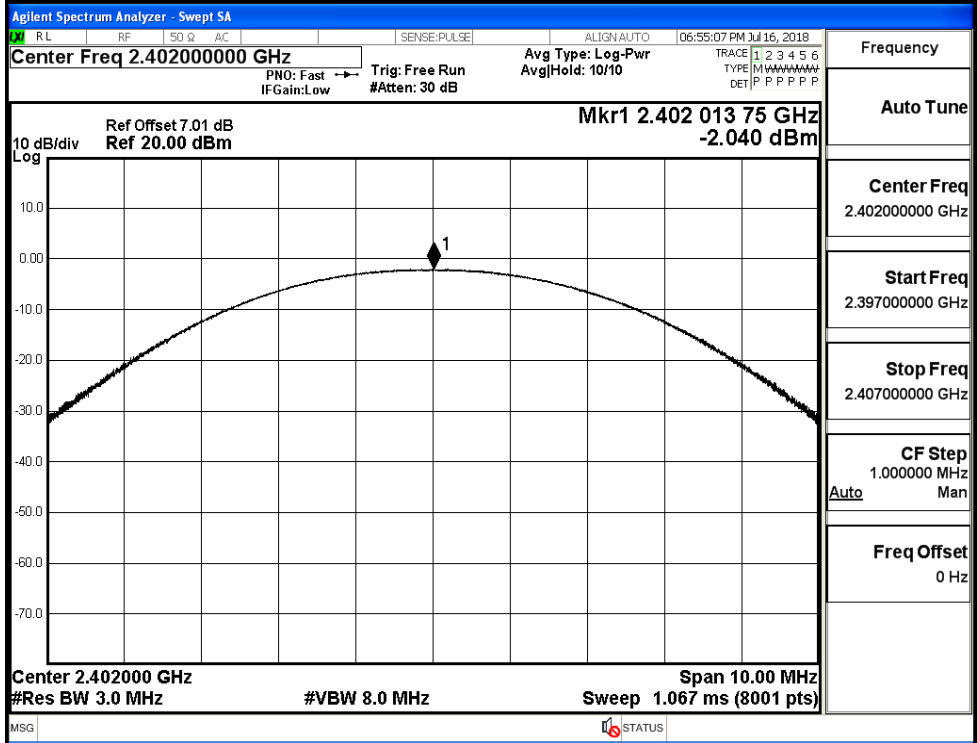


GFSK/HCH



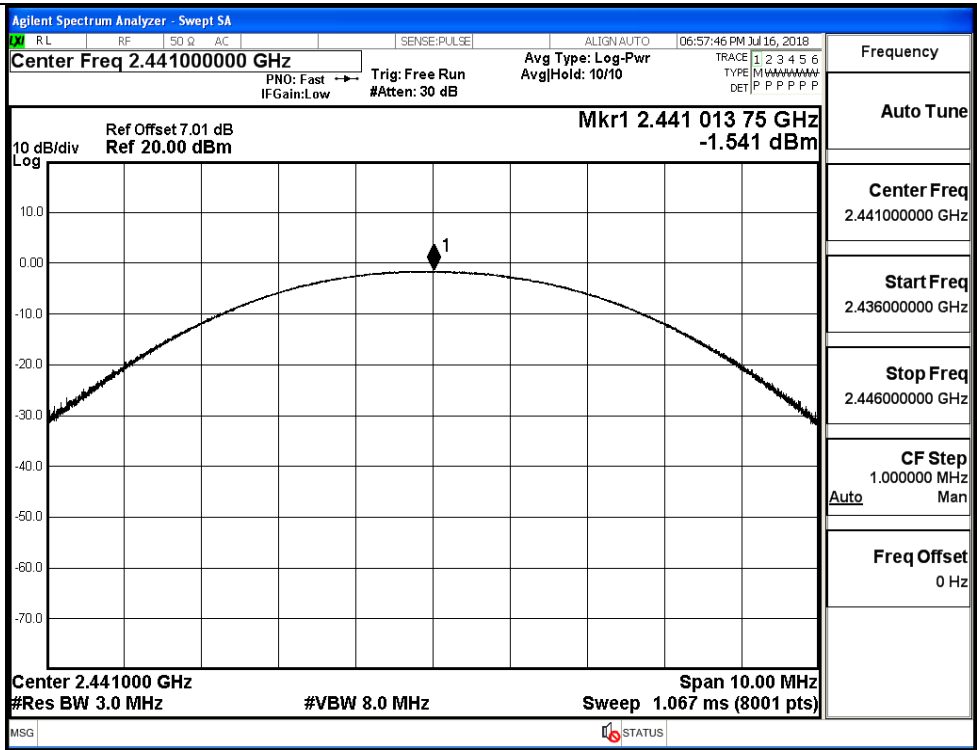
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.475000000 GHz
Stop Freq 2.485000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

π /4DQPSK/LCH

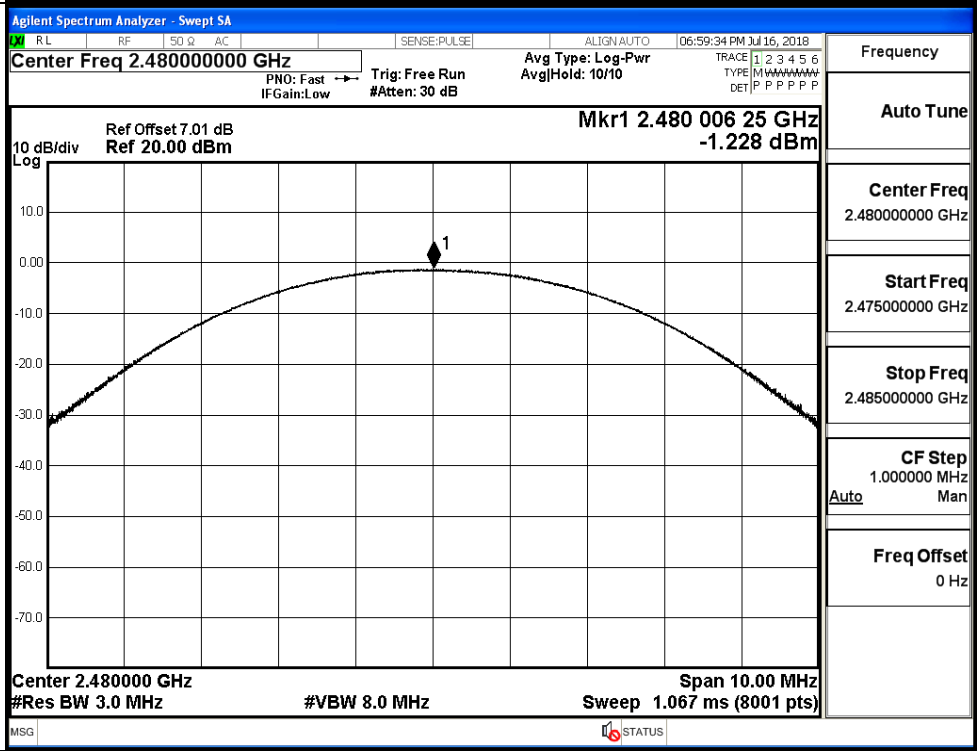


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.397000000 GHz
Stop Freq 2.407000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

π /4DQPSK/MCH

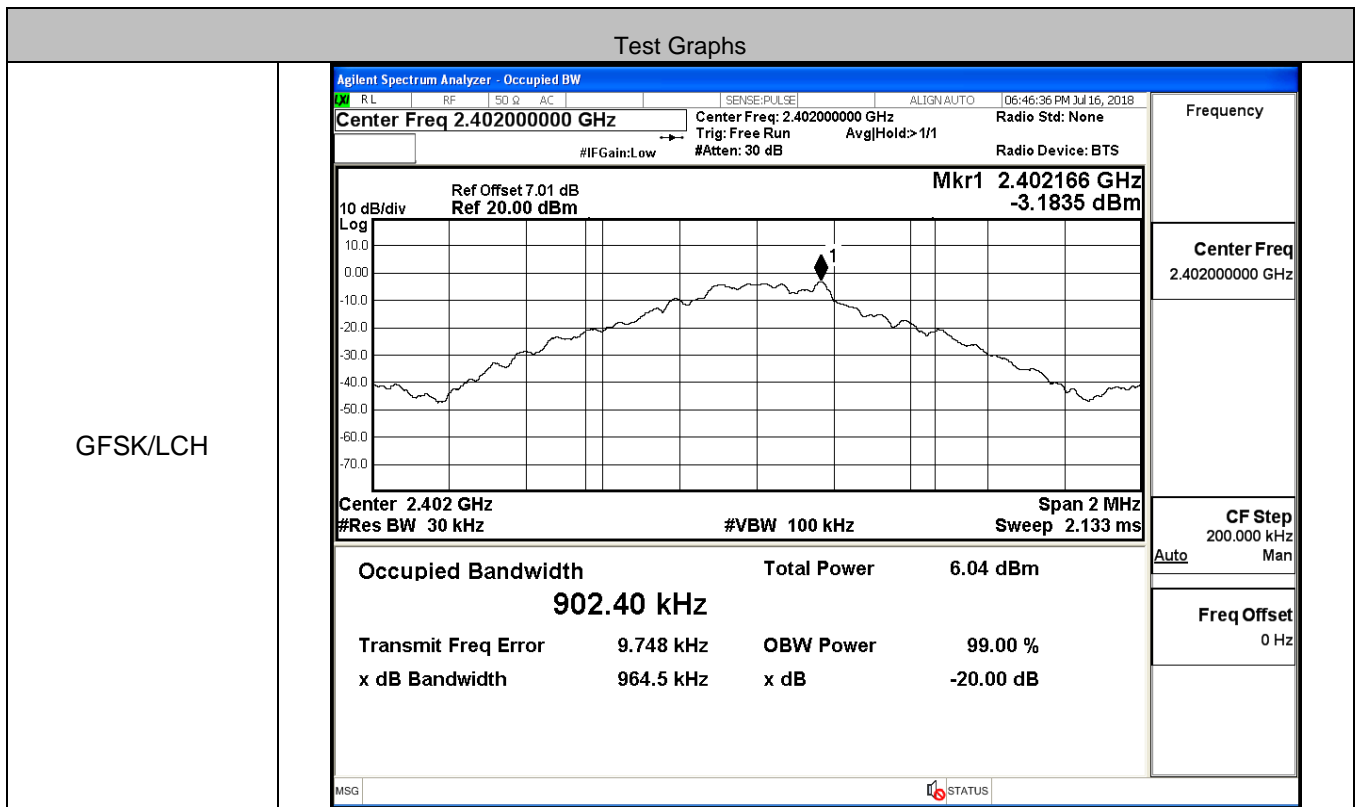


π /4DQPSK/HCH

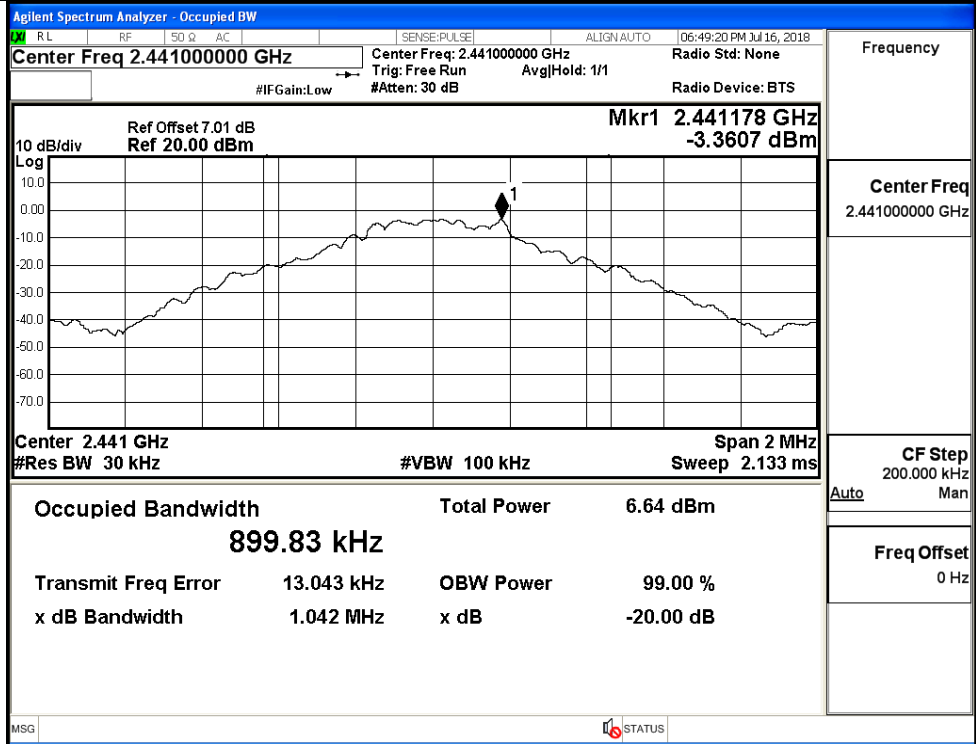


A.2 20dB Bandwidth

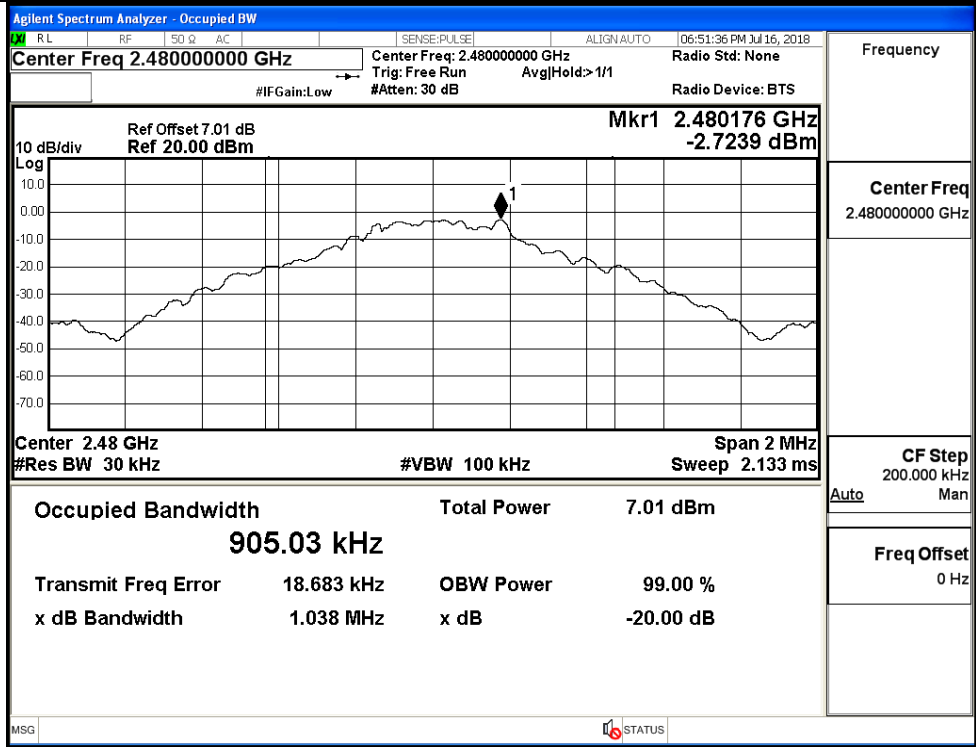
Mode	Channel.	99% Bandwidth (MHz)	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.90240	0.9645	Not Specified	PASS
	MCH	0.89983	1.042	Not Specified	PASS
	HCH	0.90503	1.038	Not Specified	PASS
π/4DQPSK	LCH	1.1802	1.315	Not Specified	PASS
	MCH	1.1788	1.309	Not Specified	PASS
	HCH	1.1694	1.288	Not Specified	PASS



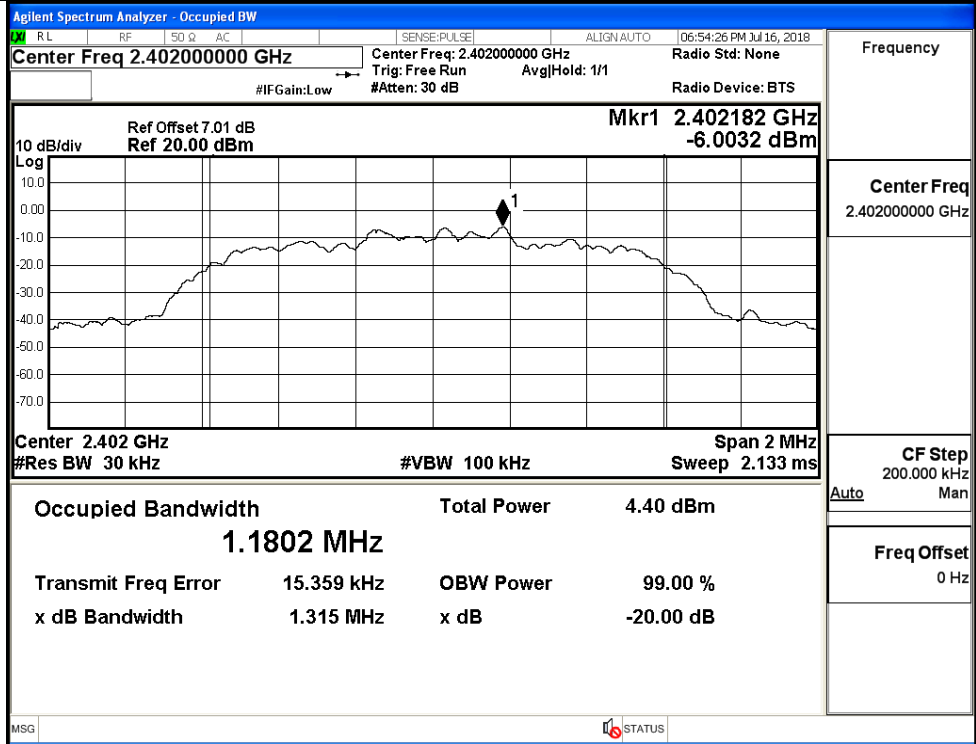
GFSK/MCH



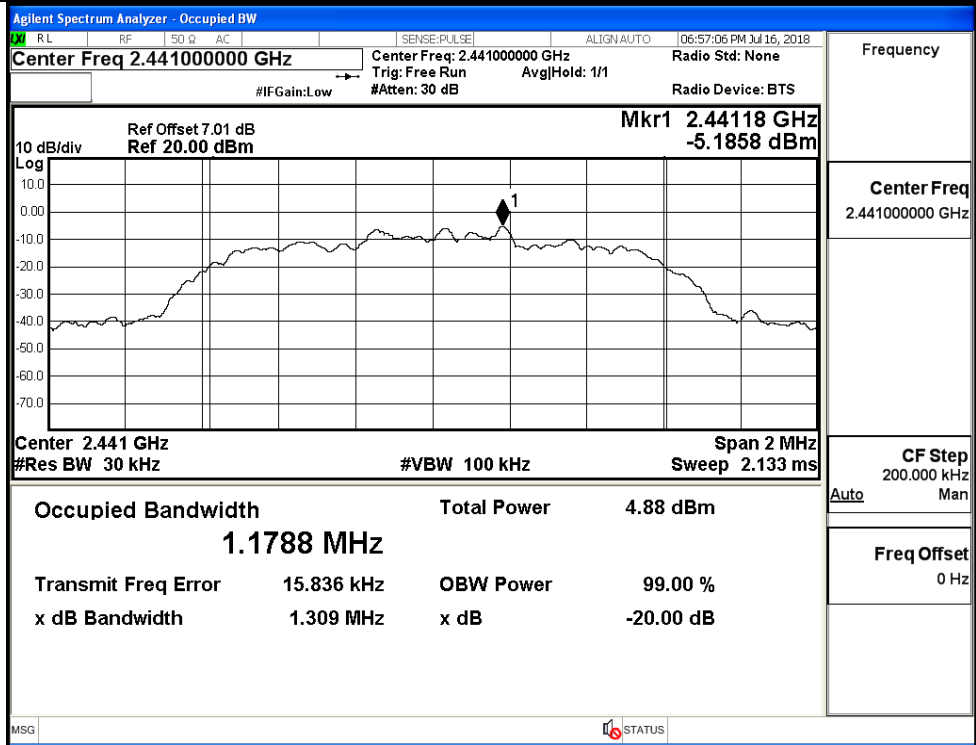
GFSK/HCH



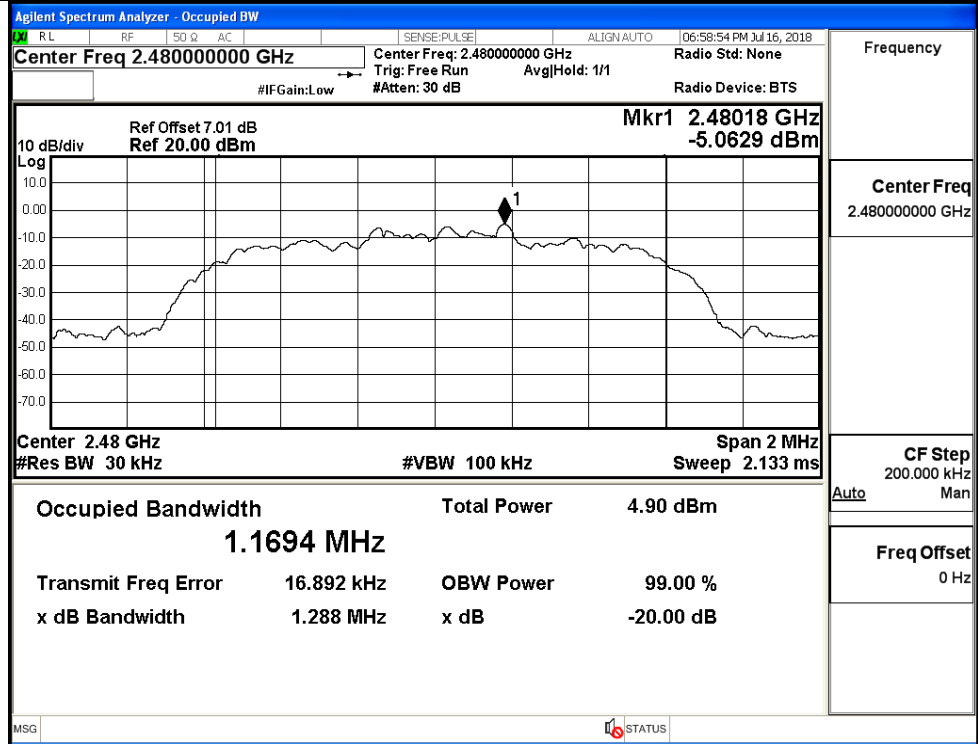
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

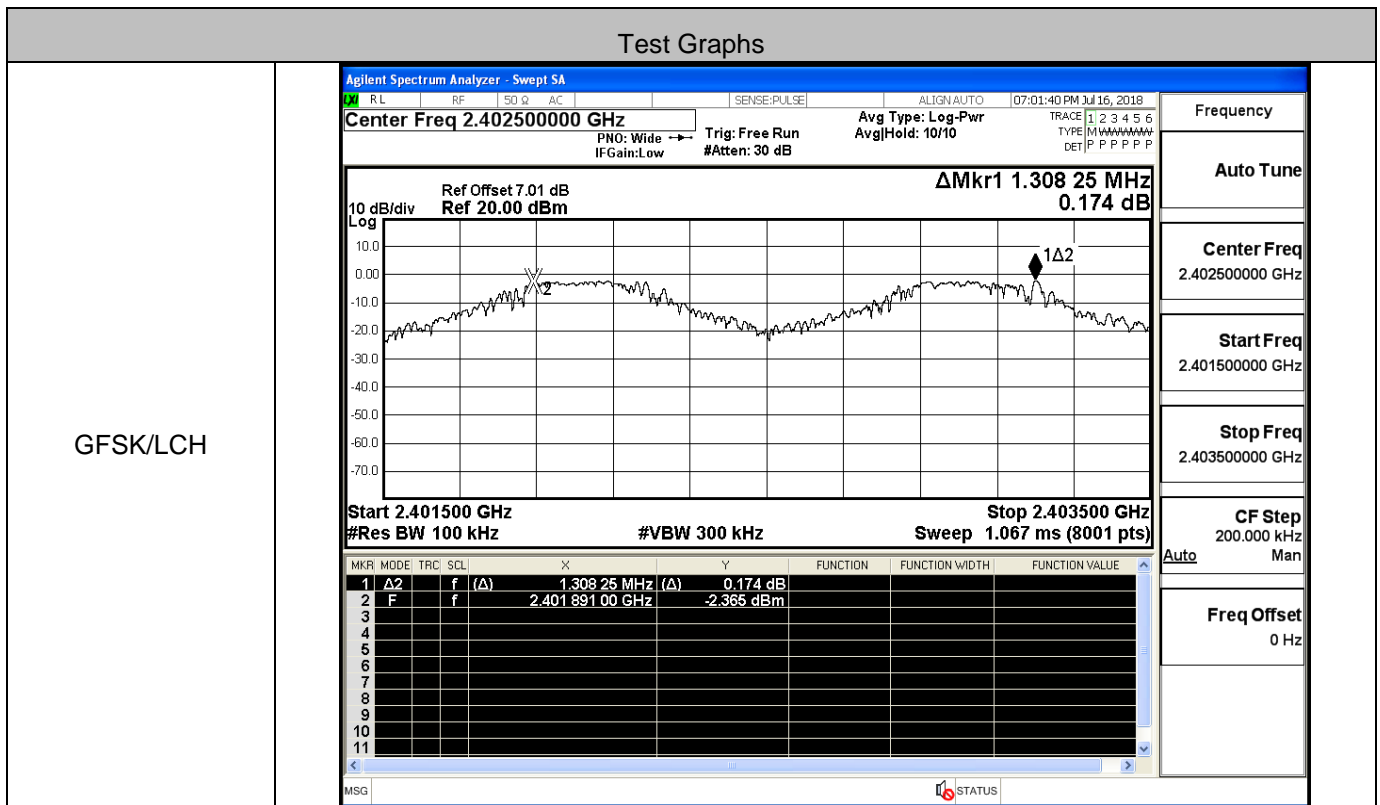


$\pi/4$ DQPSK/HCH

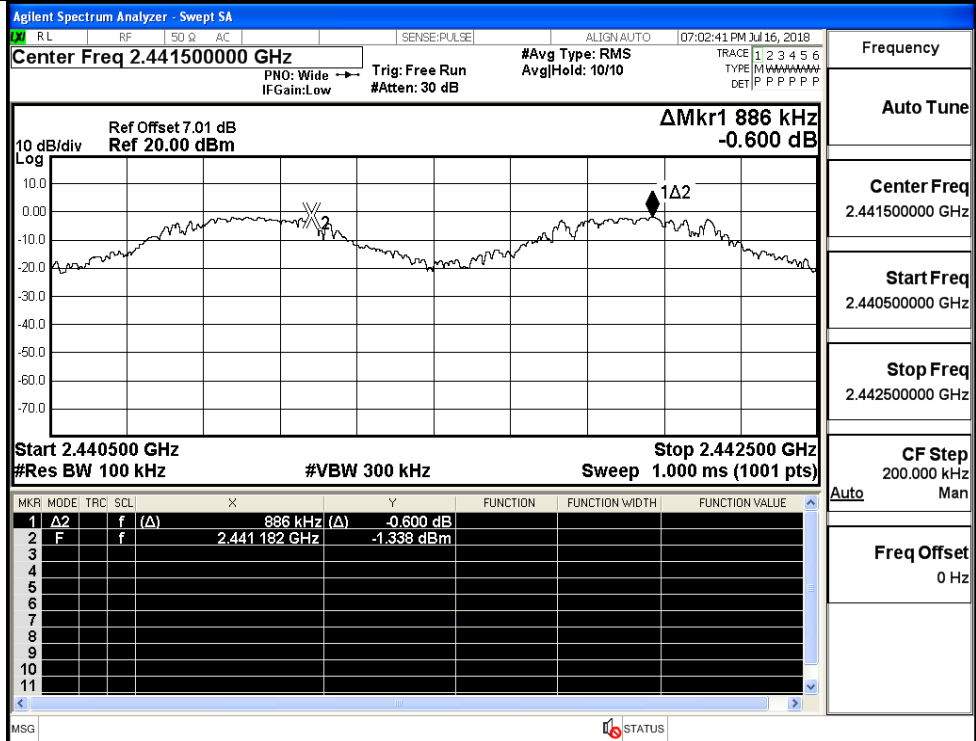


A.3 Carrier Frequency Separation

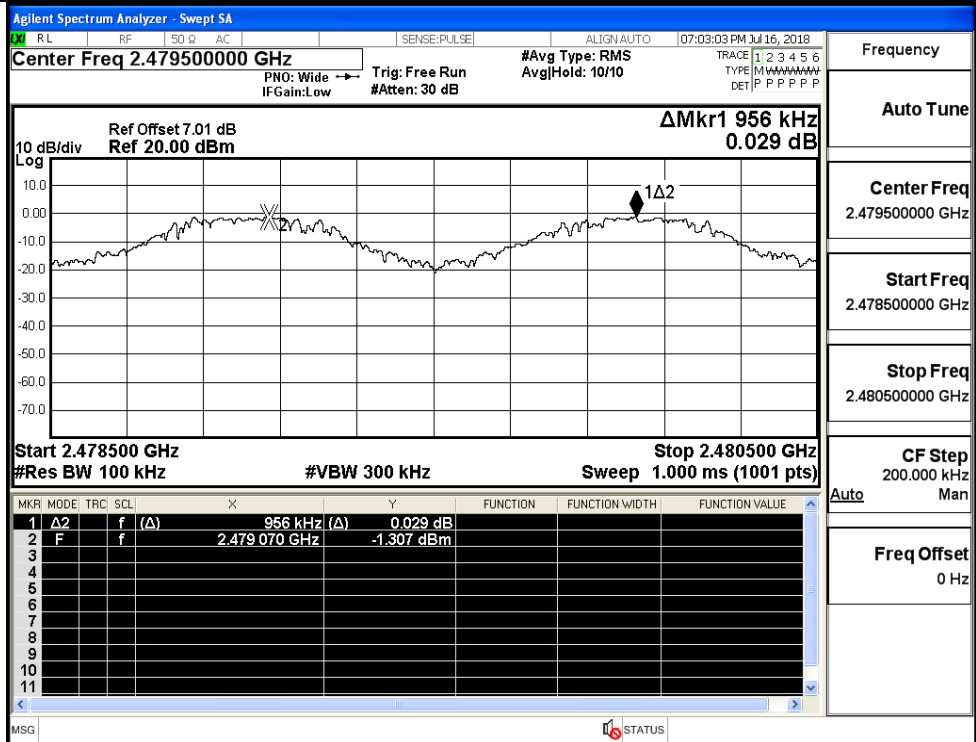
Mode	Channel	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.308	0.695	PASS
	MCH	0.886	0.695	PASS
	HCH	0.956	0.695	PASS
π/4DQPSK	LCH	0.988	0.877	PASS
	MCH	1.202	0.877	PASS
	HCH	1.134	0.877	PASS



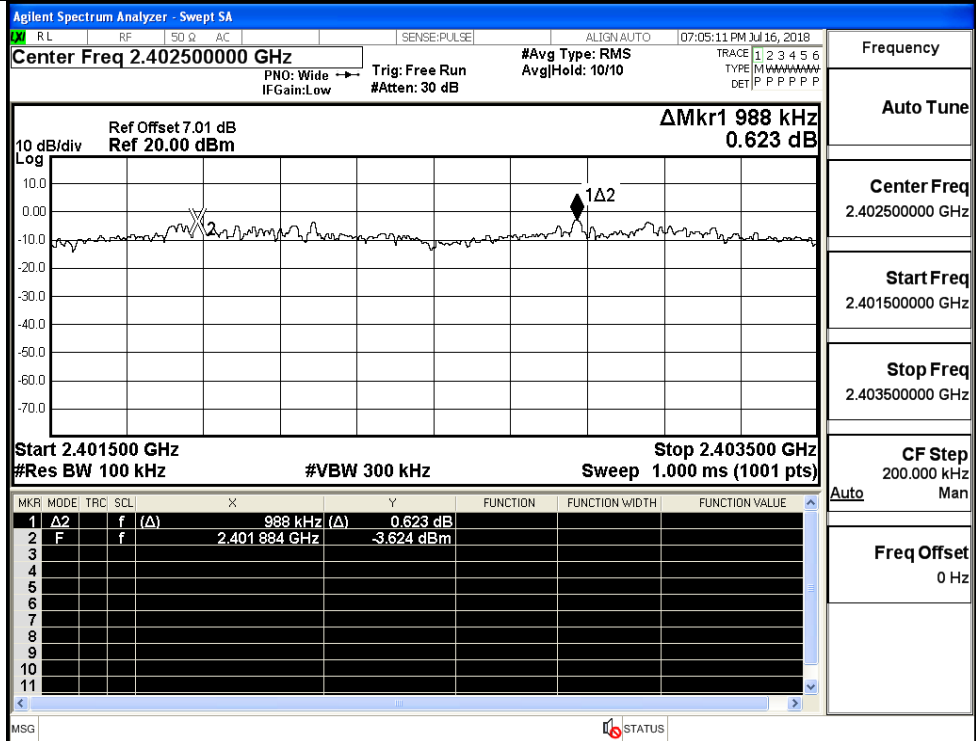
GFSK/MCH



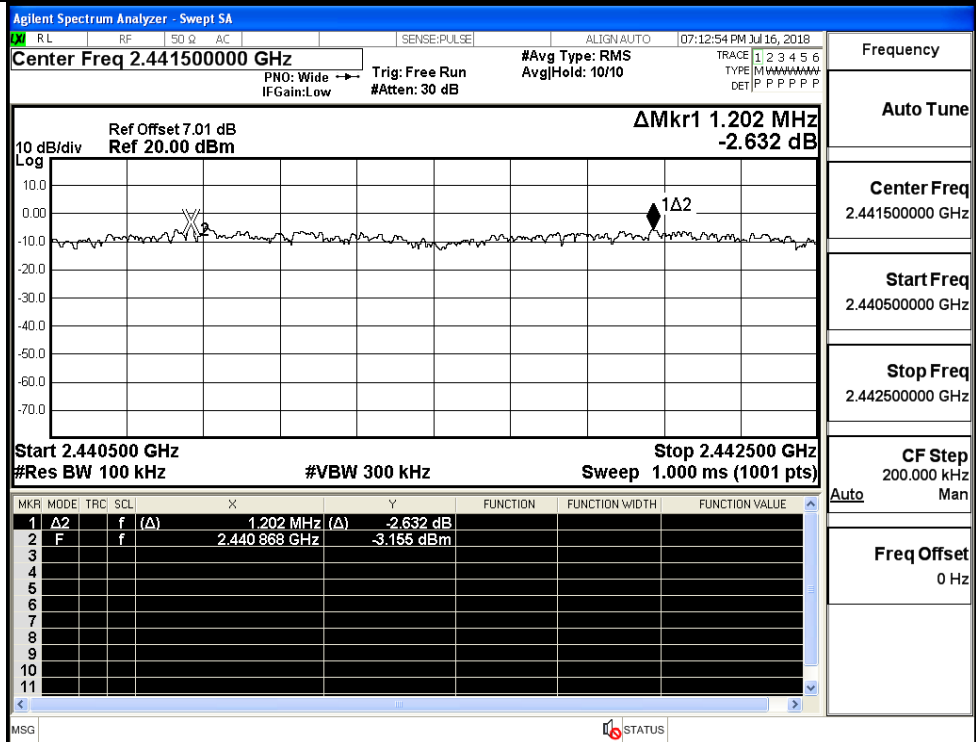
GFSK/HCH



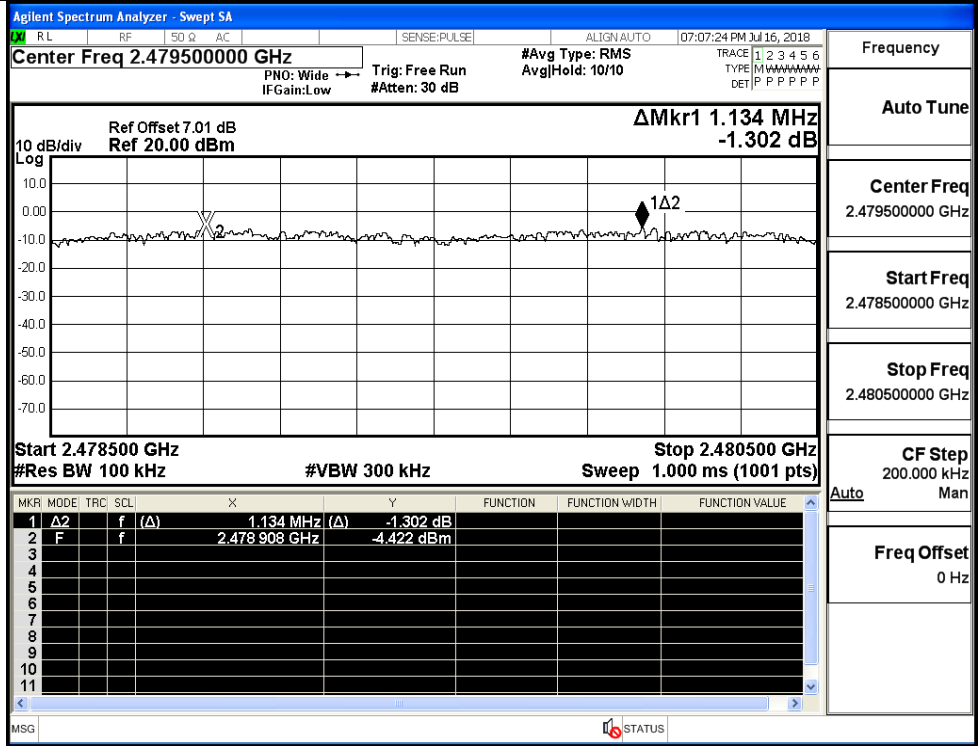
π /4DQPSK/LCH



π /4DQPSK/MCH



$\pi/4$ DQPSK/HCH

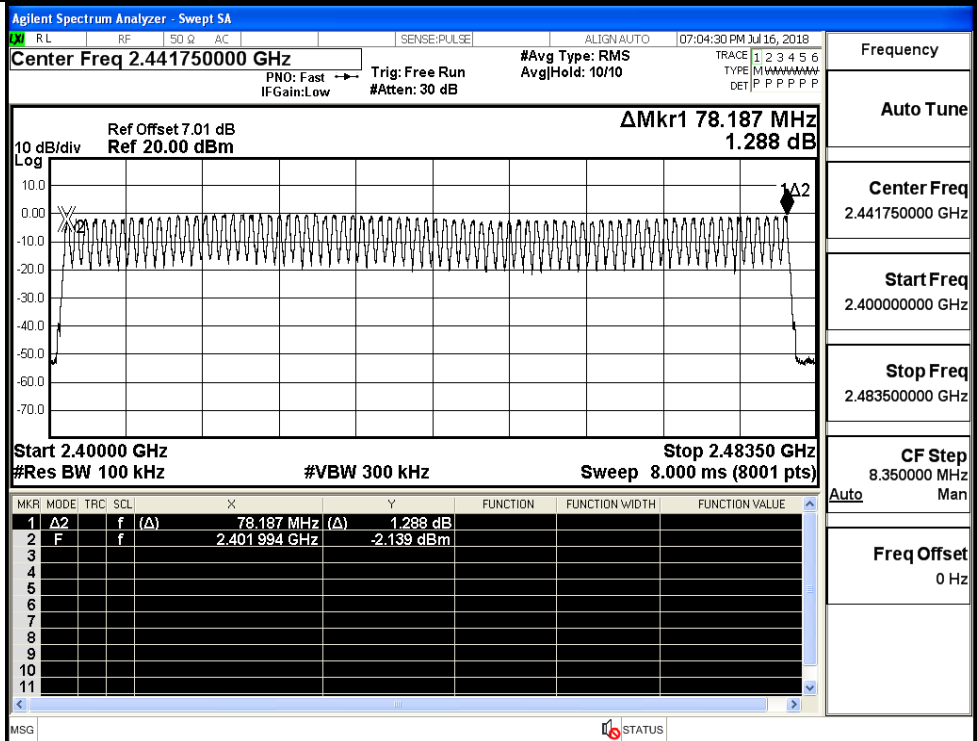


A.4 Hopping Channel Number

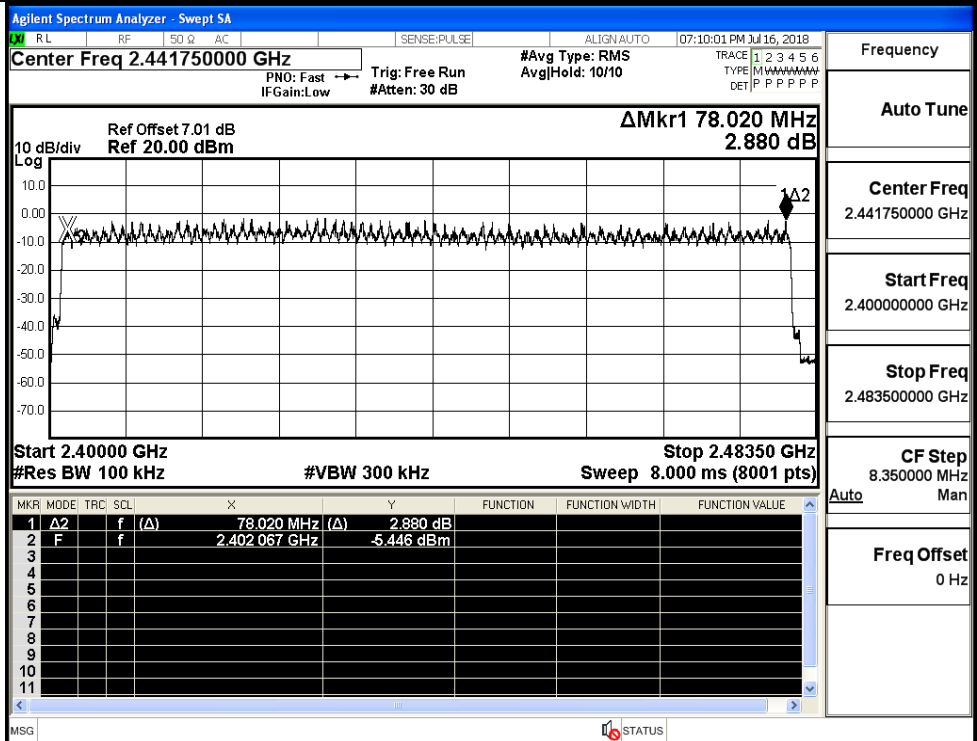
Mode	Channel.	Number of Hopping Channel [N]	Limit [N]	Verdict
GFSK	Hop	79	>=15	PASS
$\pi/4$ DQPSK	Hop	79	>=15	PASS
8DPSK	Hop	79	>=15	PASS

Test Graphs

GFSK/Hop

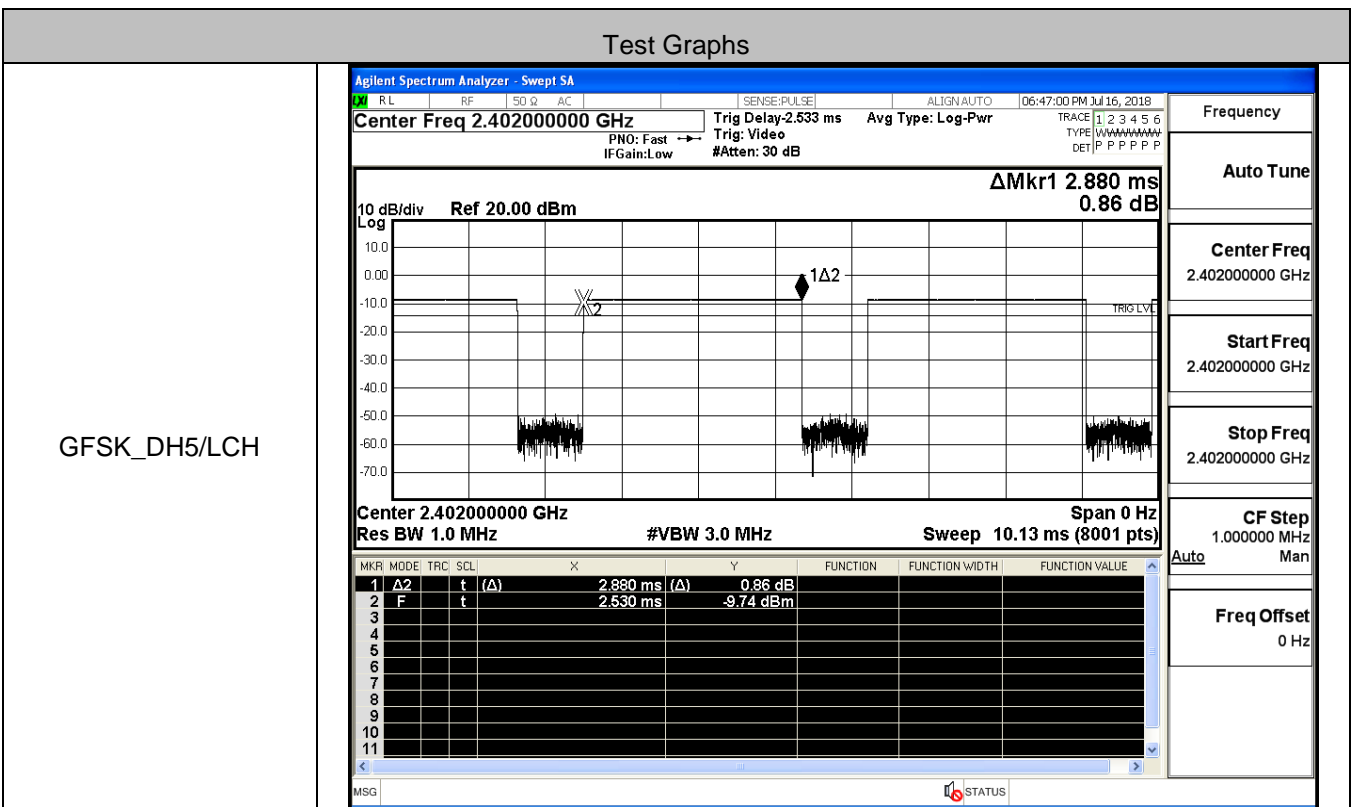


$\pi/4$ DQPSK/Hop

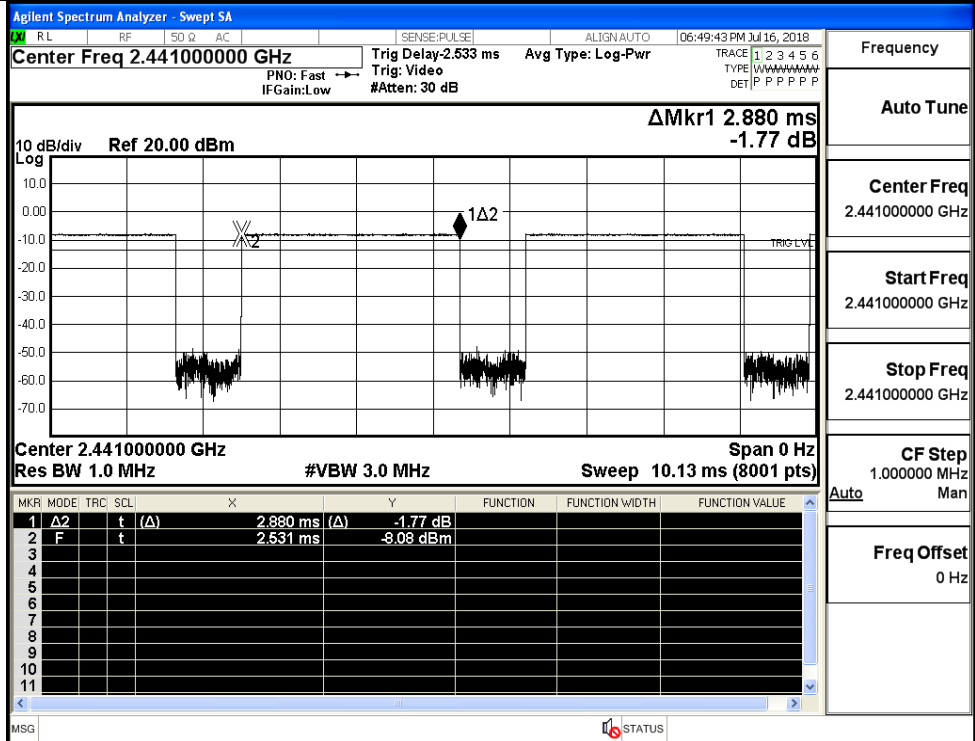


A.5 Dwell Time

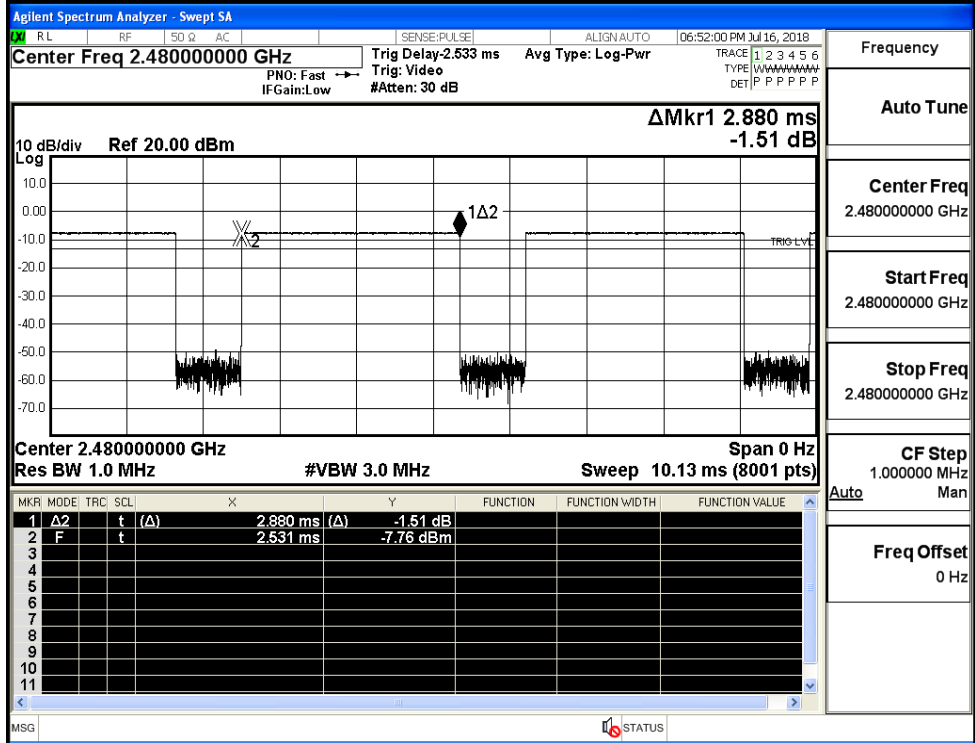
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
π/4DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88	106.7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



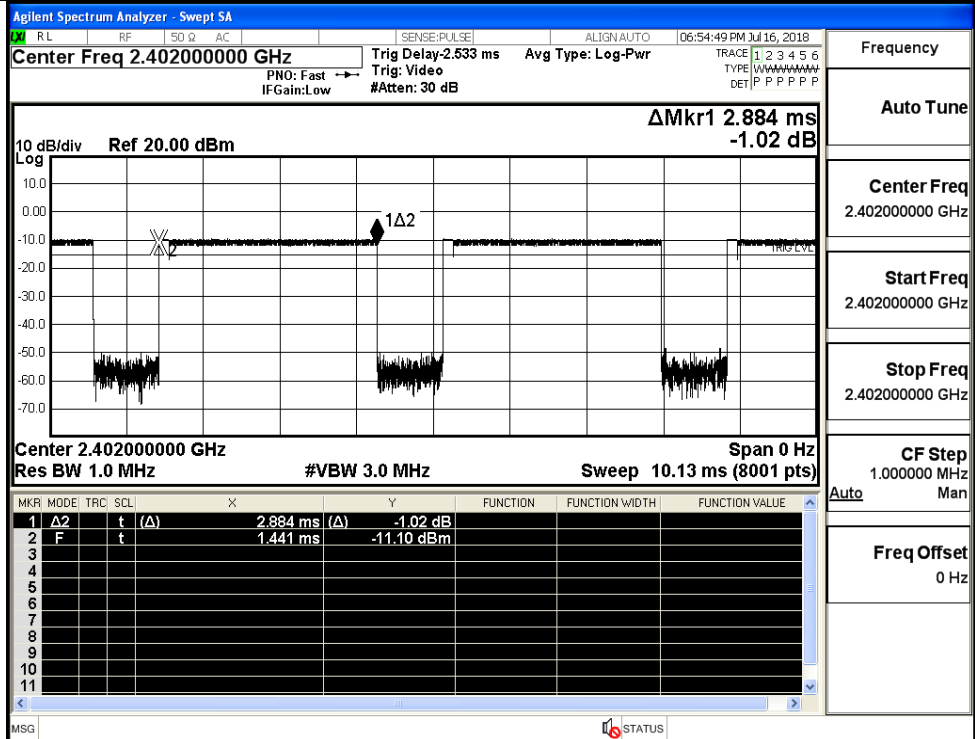
GFSK_DH5/MCH



GFSK_DH5/HCH

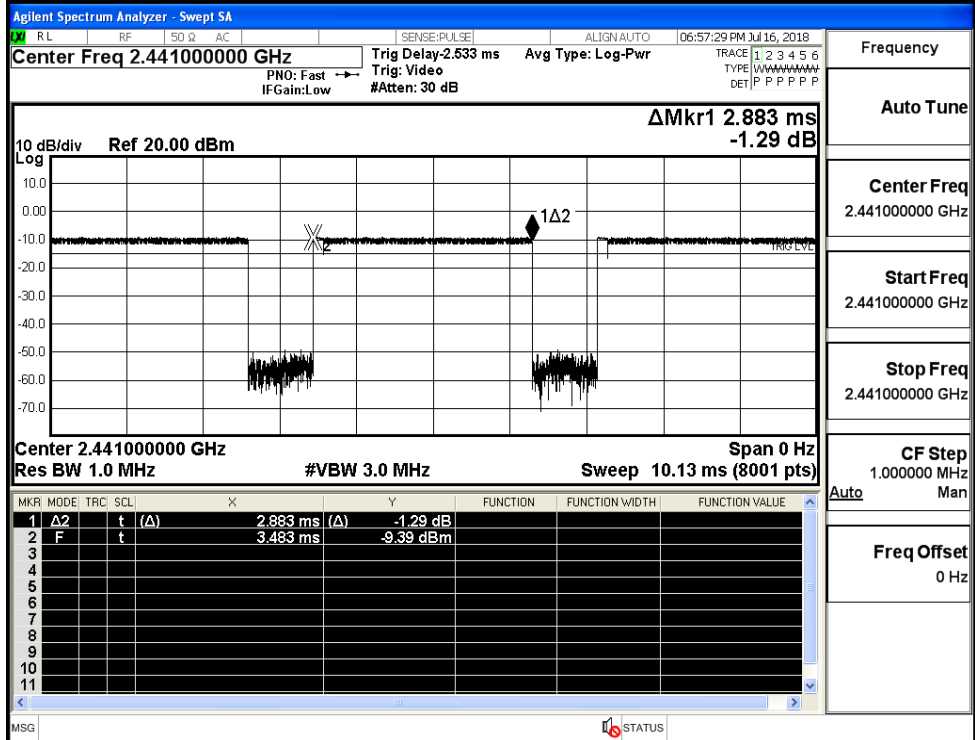


$\pi/4$ DQPSK
_2DH5/LCH



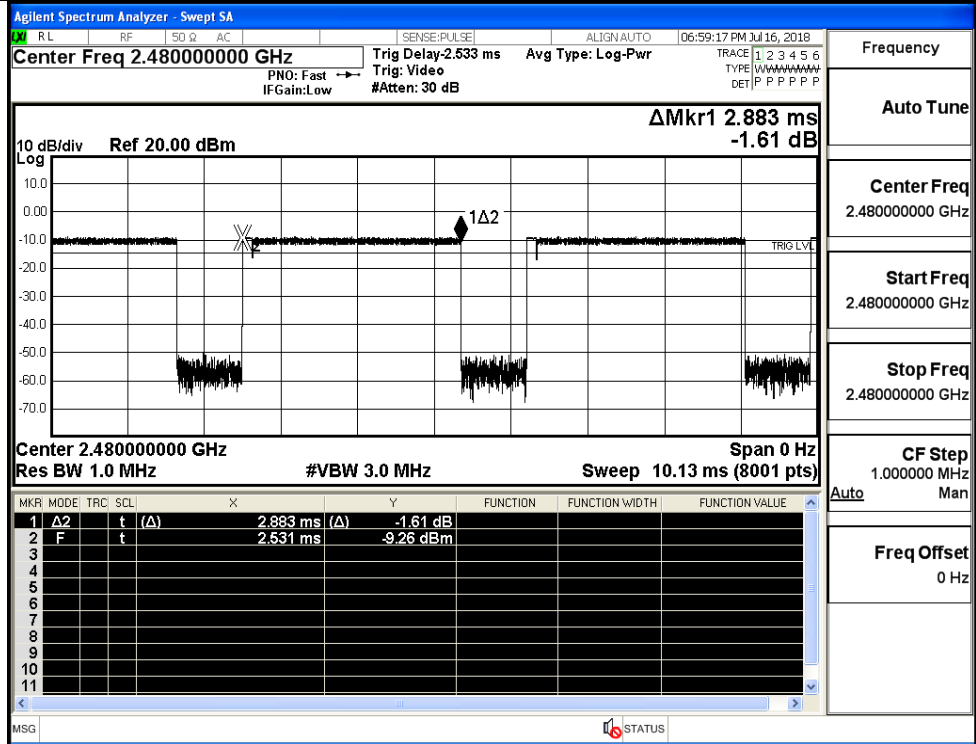
Frequency	
Auto Tune	
Center Freq	2.40200000 GHz
Start Freq	2.40200000 GHz
Stop Freq	2.40200000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/MCH



Frequency	
Auto Tune	
Center Freq	2.44100000 GHz
Start Freq	2.44100000 GHz
Stop Freq	2.44100000 GHz
CF Step	1.000000 MHz
Auto	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK
_2DH5/HCH

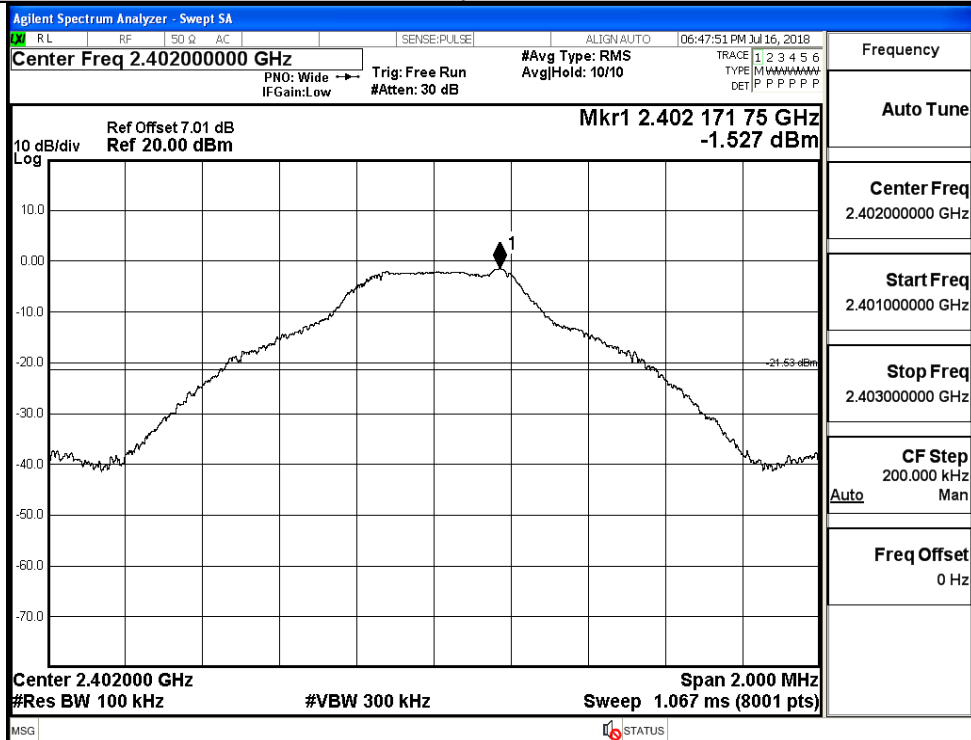


A.6 RF Conducted Spurious Emissions

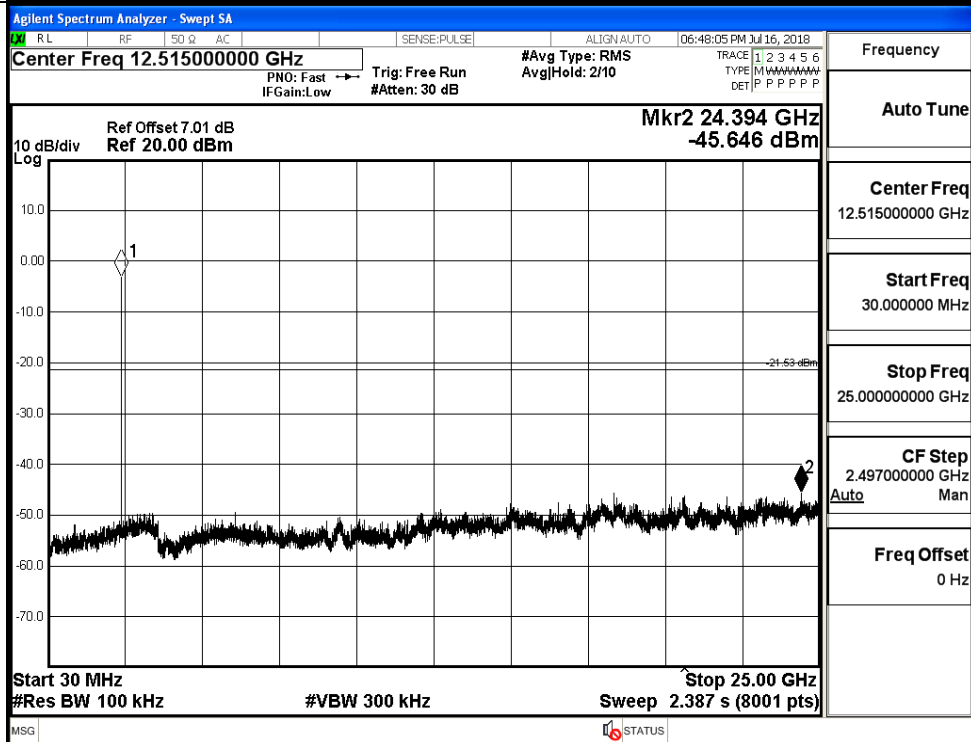
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.527	-45.646	-21.527	PASS
	MCH	-1.115	-45.591	-21.115	PASS
	HCH	-0.882	-45.315	-20.882	PASS
$\pi/4$ DQPSK	LCH	-2.949	-45.326	-22.949	PASS
	MCH	-2.395	-45.571	-22.395	PASS
	HCH	-2.271	-45.526	-22.271	PASS

GFSK_LCH_Graphs

Pref

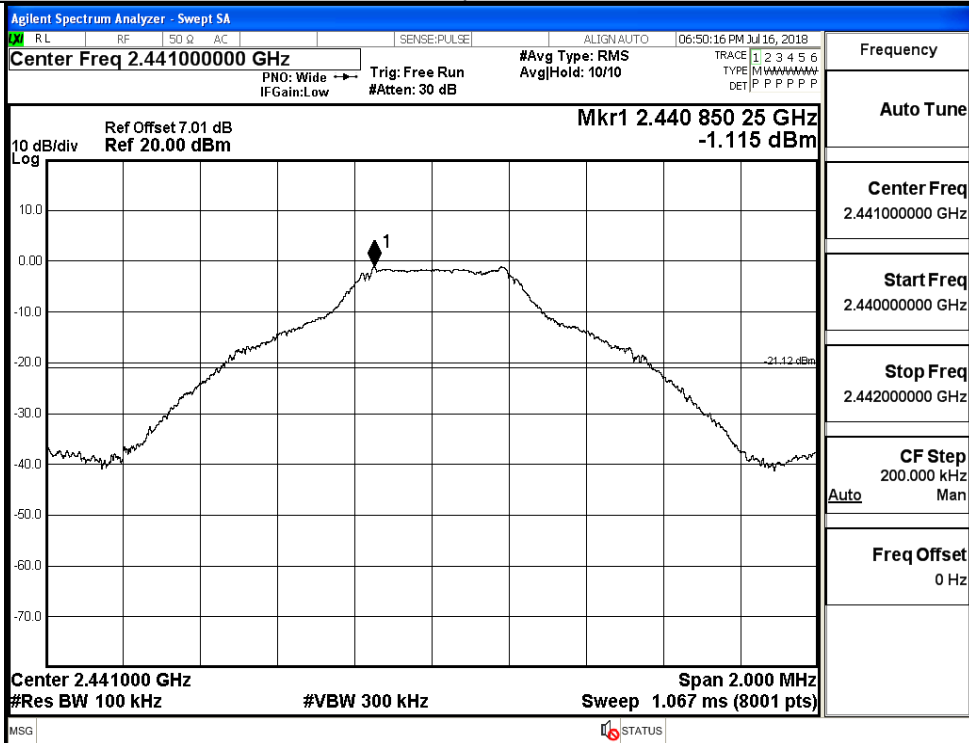


Puw

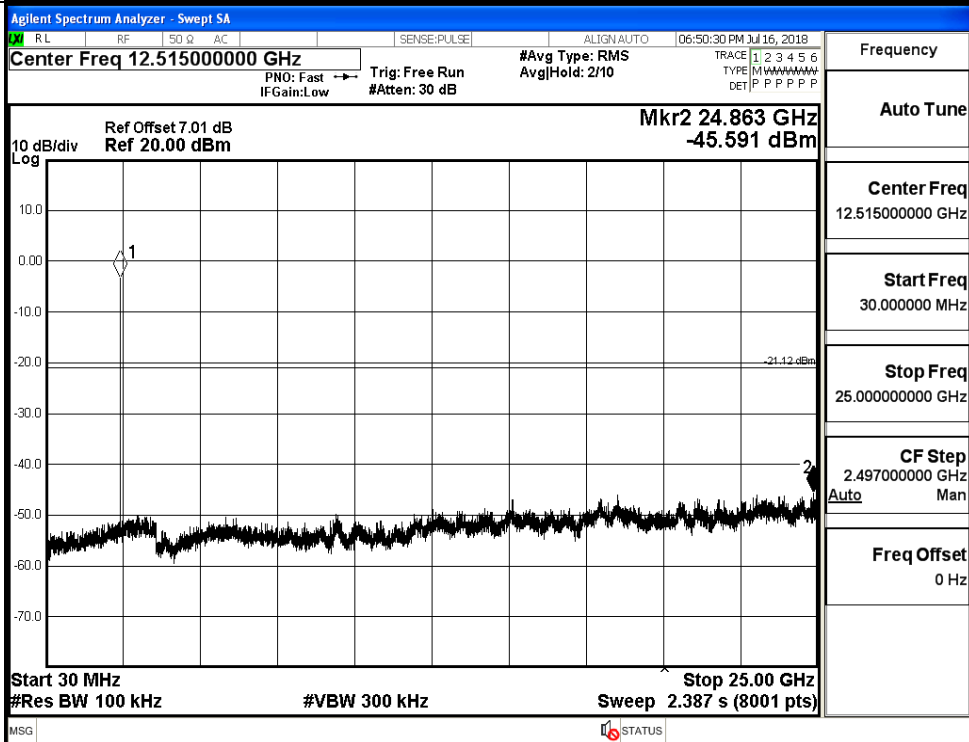


GFSK_MCH_Graphs

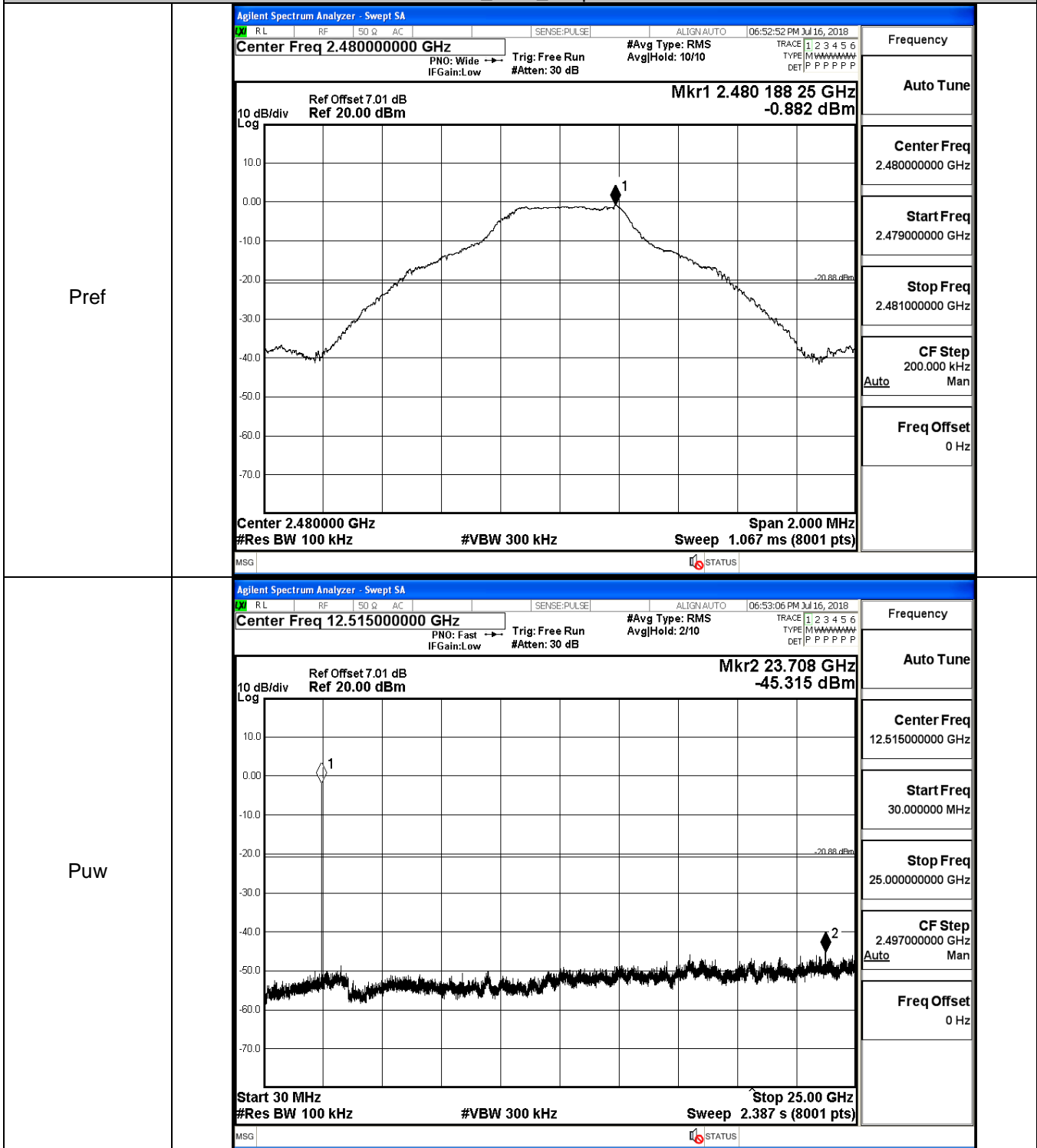
Pref



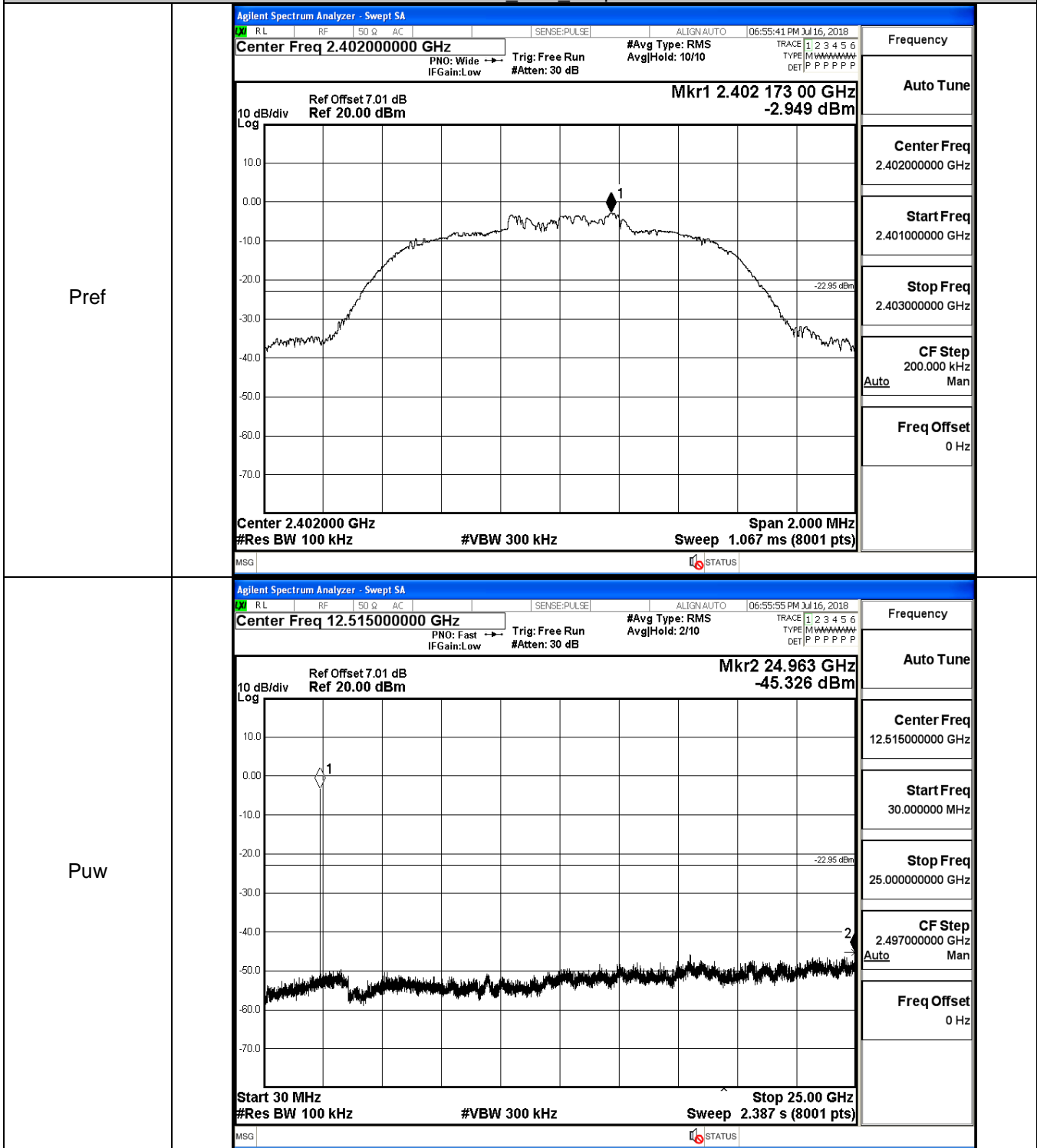
Puw



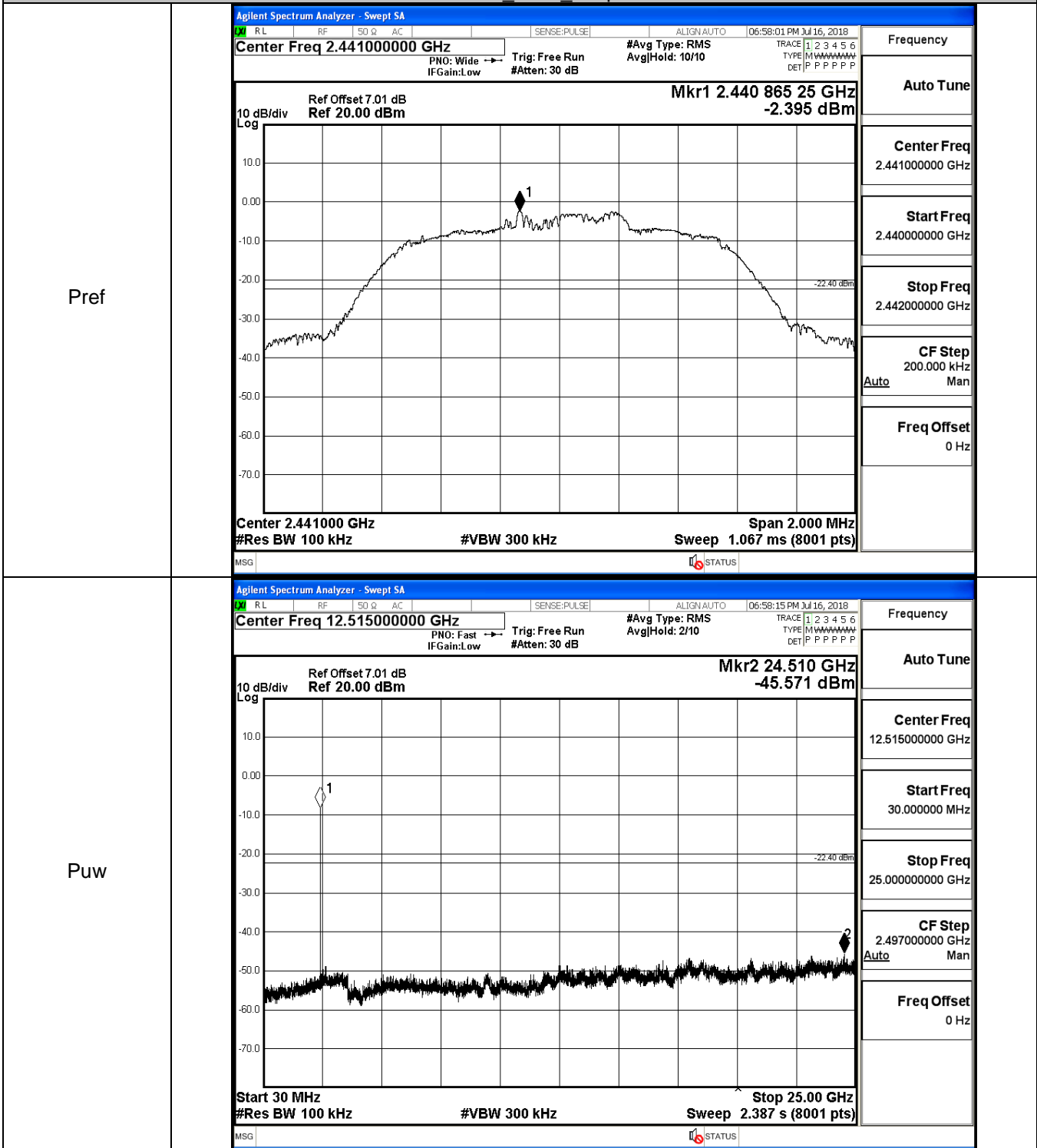
GFSK_HCH_Graphs



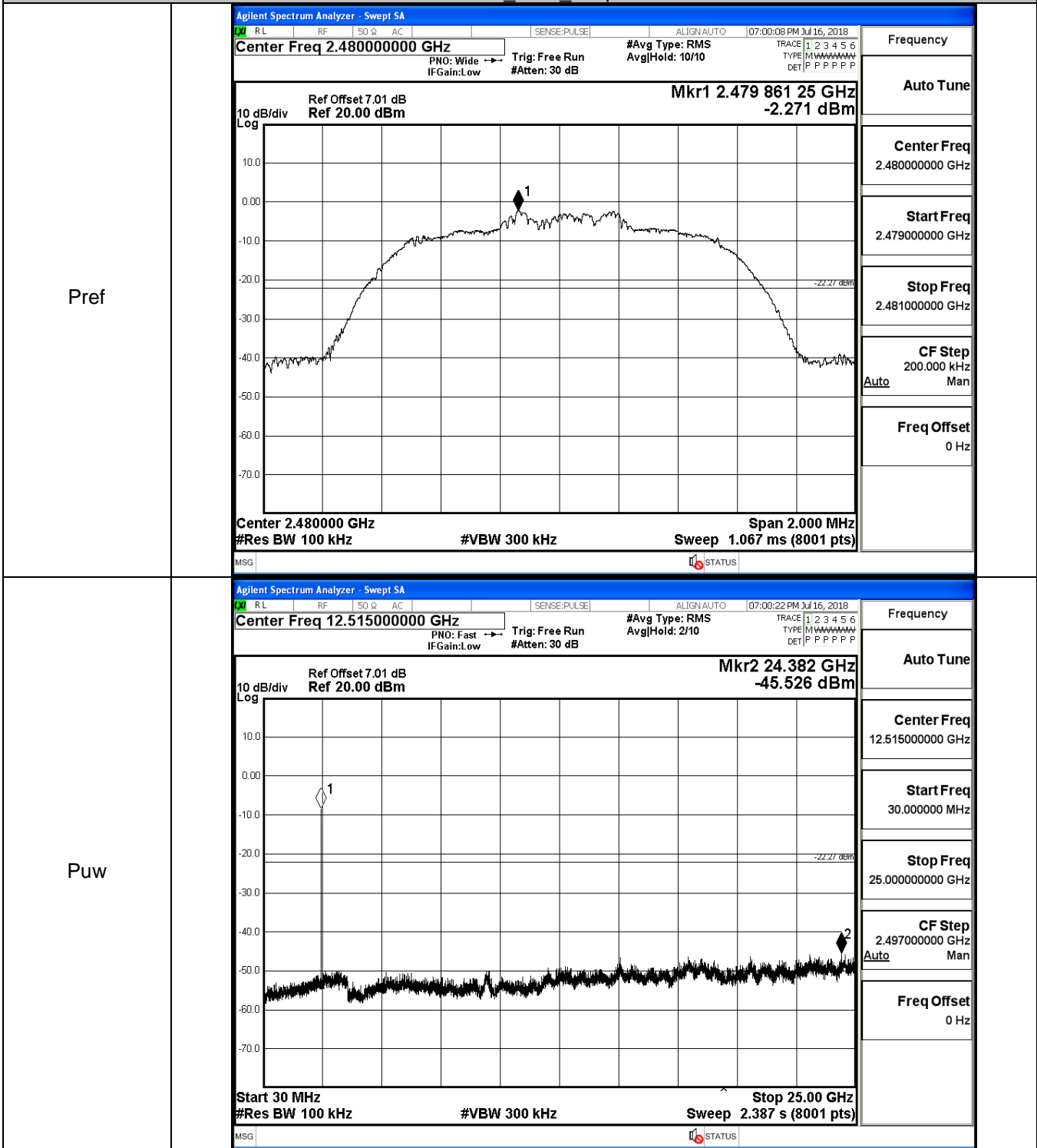
$\pi/4$ DQPSK LCH_Graphs



π /4DQPSK_MCH_Graphs



$\pi/4$ DQPSK_HCH_Graphs

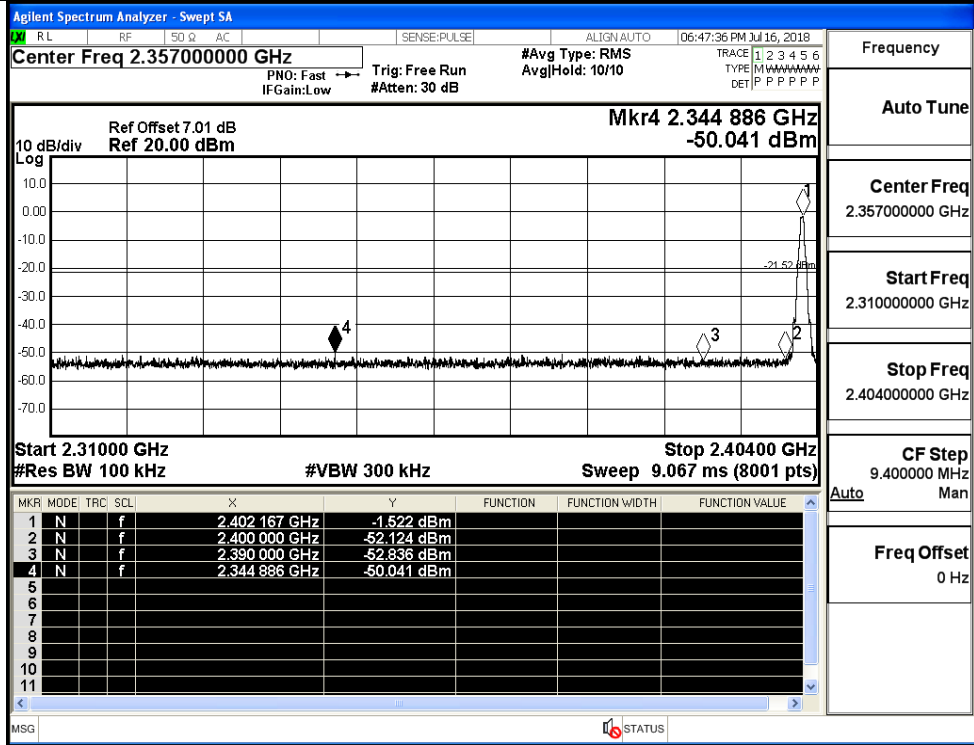


A.7 Band-edge for RF Conducted Emissions

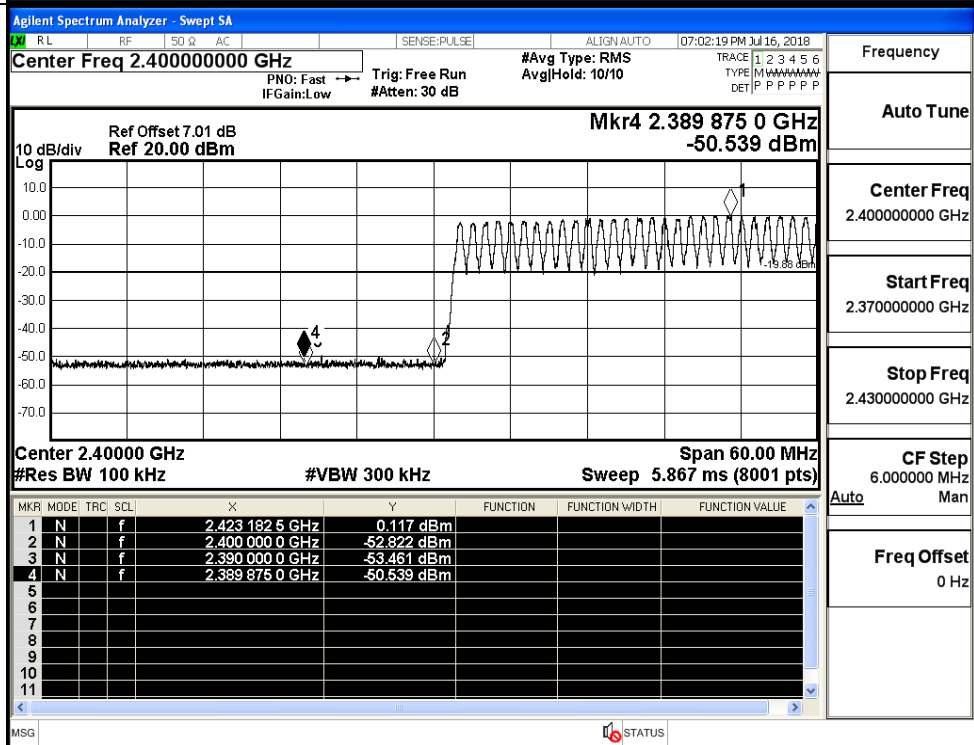
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-1.522	Off	-50.041	-21.52	PASS
			0.117	On	-50.539	-19.88	PASS
	HCH	2480	-0.650	Off	-50.534	-20.65	PASS
			-0.705	On	-50.438	-20.71	PASS
$\pi/4$ DQPSK	LCH	2402	-2.904	Off	-50.033	-22.9	PASS
			-1.433	On	-49.784	-21.43	PASS
	HCH	2480	-2.182	Off	-49.896	-22.18	PASS
			-2.395	On	-50.483	-22.4	PASS

Test Graphs

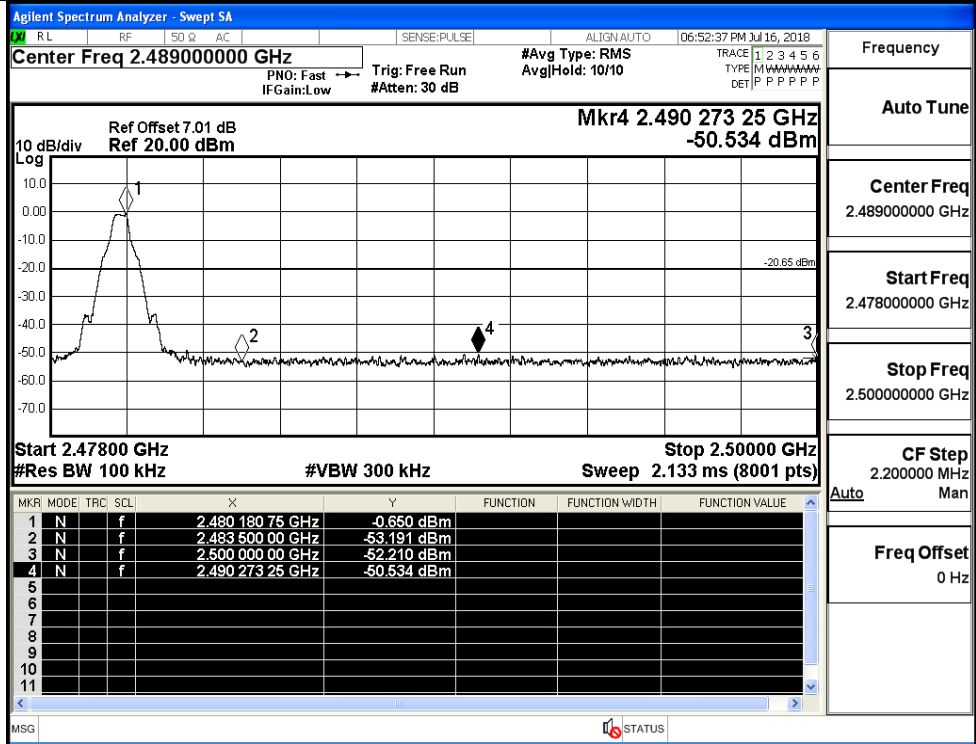
GFSK/LCH/No Hop



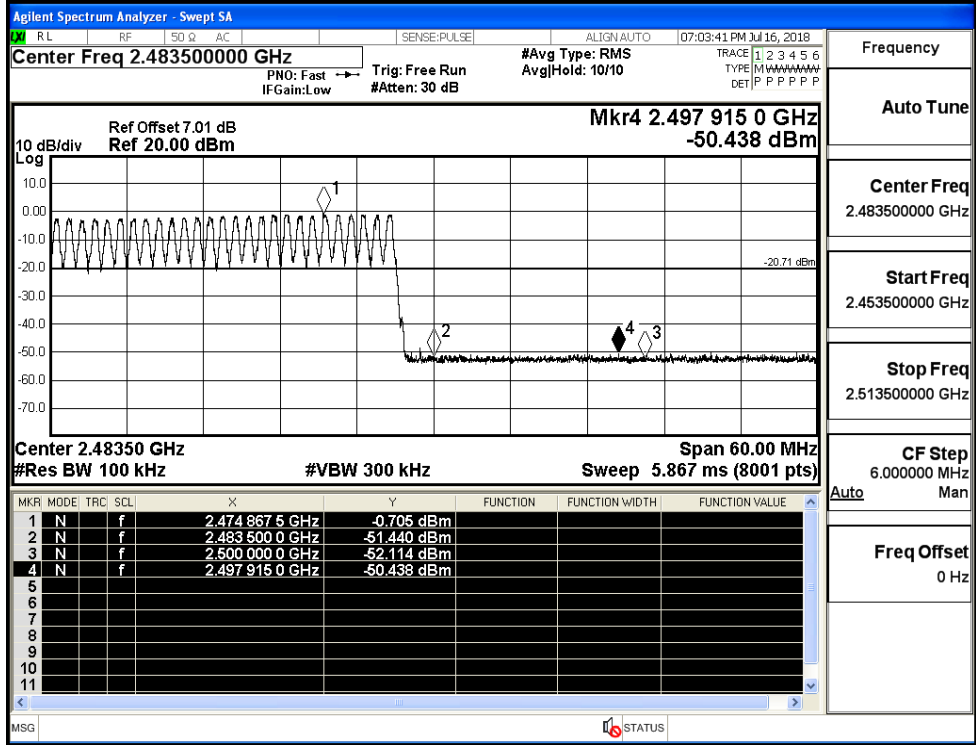
GFSK/LCH/Hop



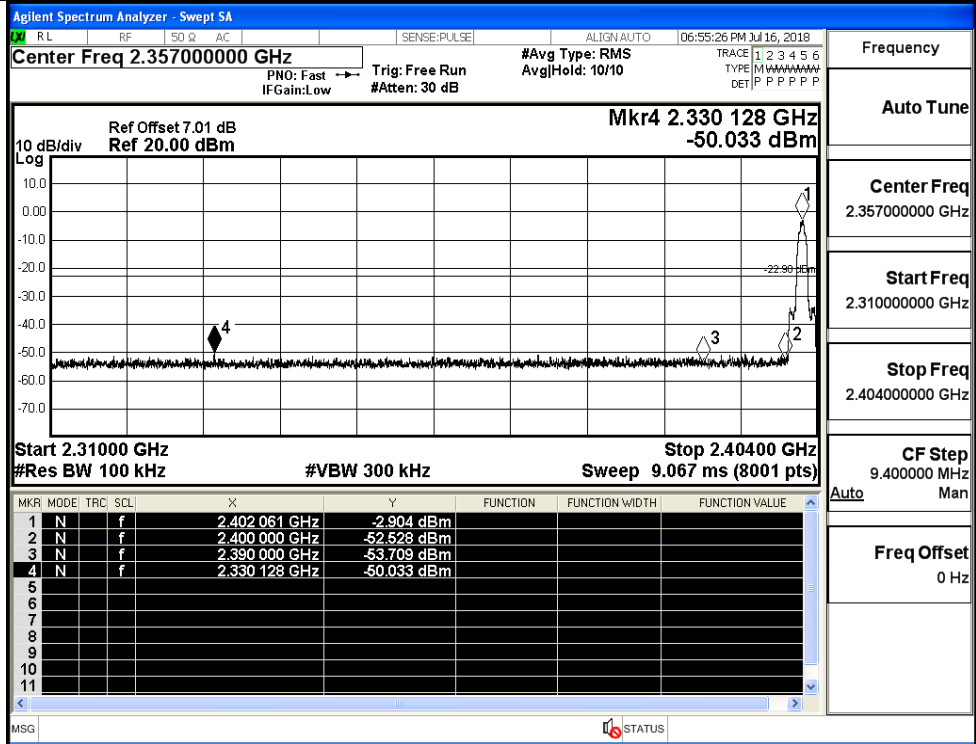
GFSK/HCH/No Hop



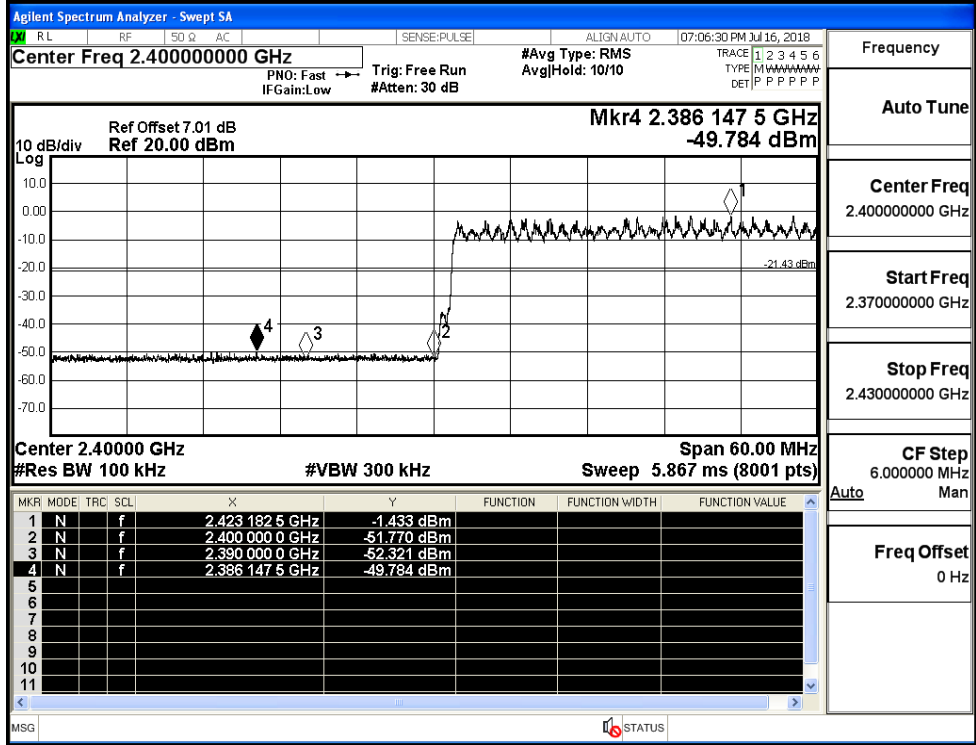
GFSK/HCH/Hop



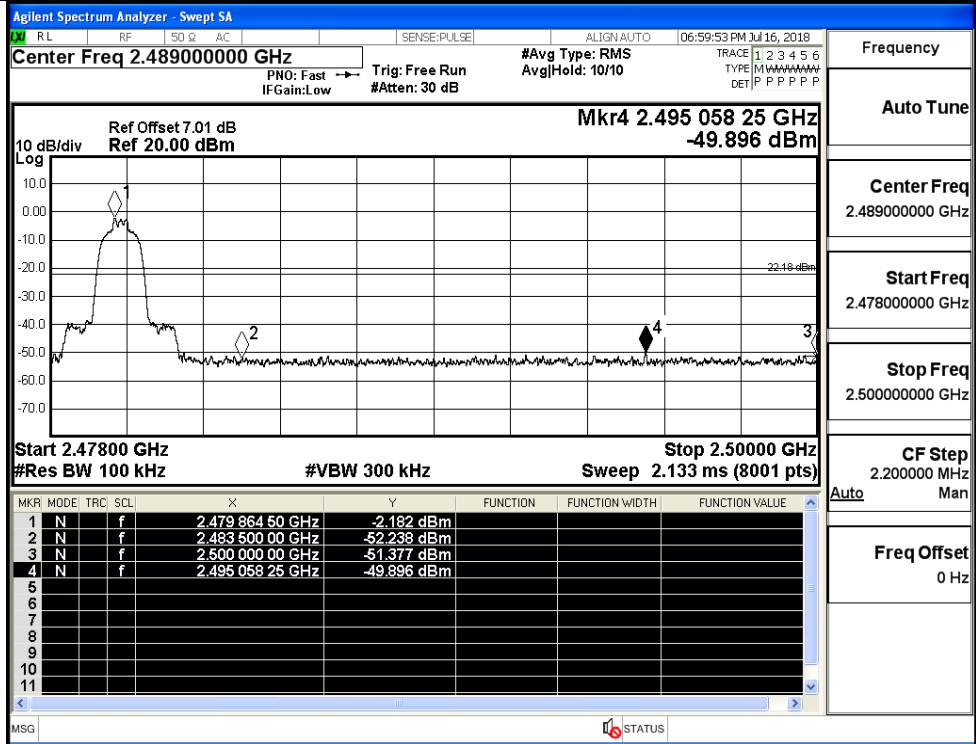
$\pi/4$ DQPSK/LCH/No
Hop



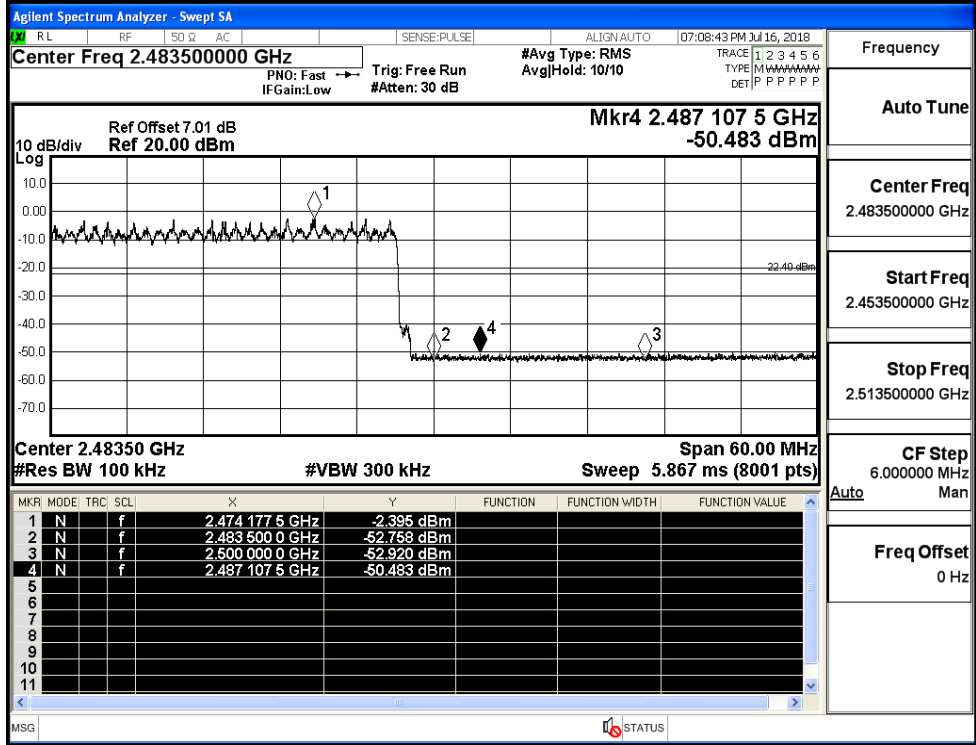
$\pi/4$ DQPSK/LCH/Hop



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



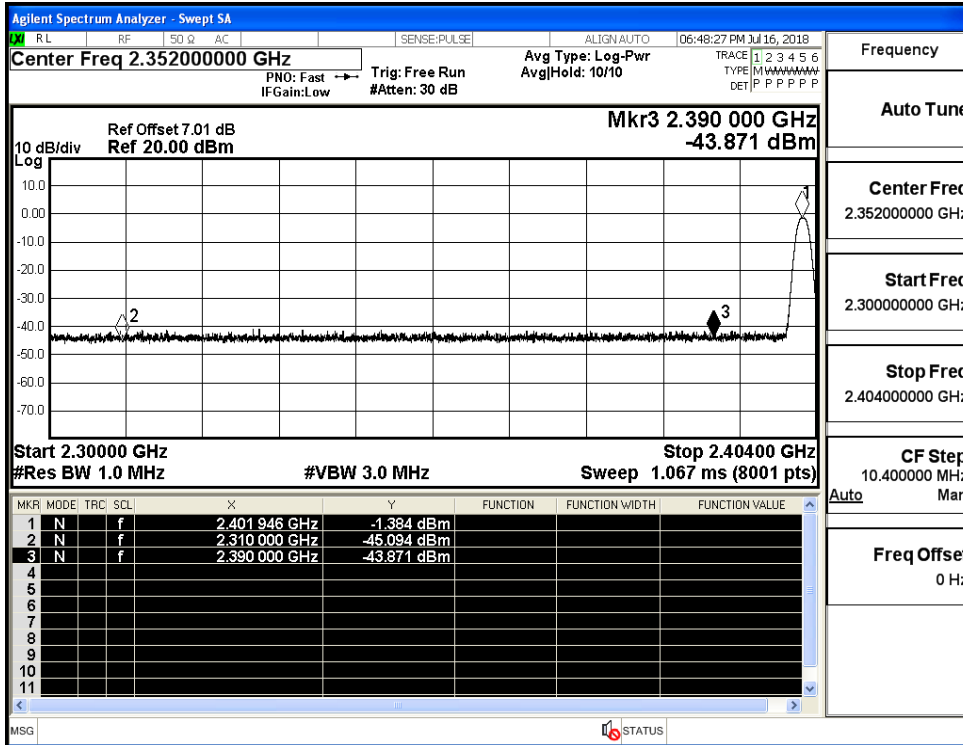
$\pi/4$ DQPSK/HCH/Hop



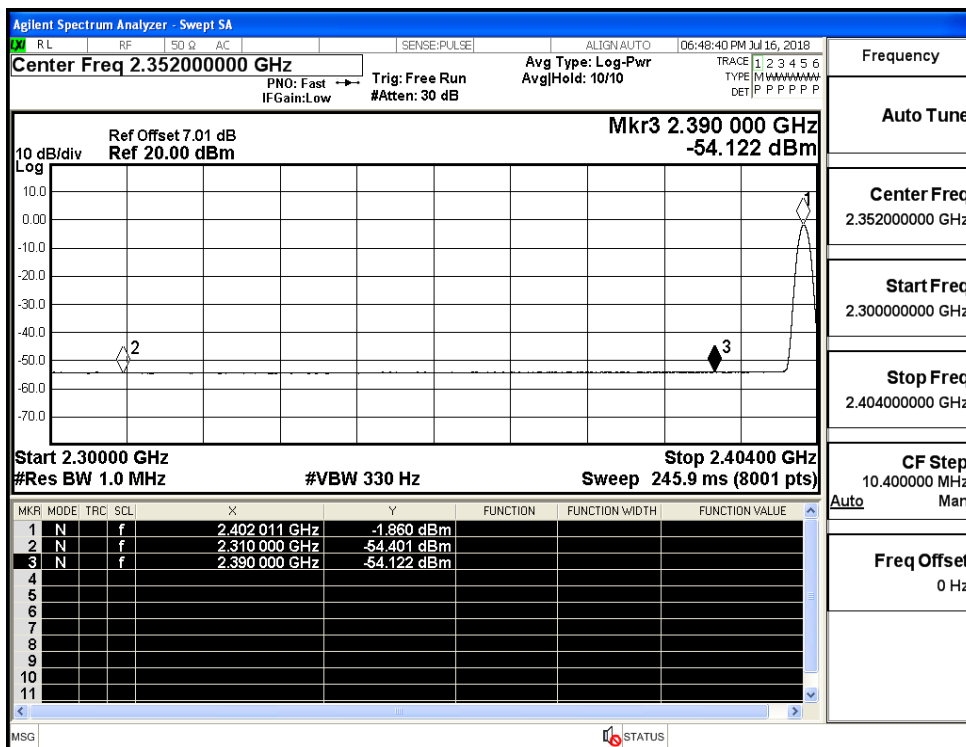
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-45.09	2.0	0	52.16	PEAK	74	PASS
	Off	2310.0	-54.40	2.0	0	42.86	AV	54	PASS
	Off	2390.0	-43.87	2.0	0	53.39	PEAK	74	PASS
	Off	2390.0	-54.12	2.0	0	43.14	AV	54	PASS
	Off	2483.5	-43.04	2.0	0	54.22	PEAK	74	PASS
	Off	2483.5	-53.83	2.0	0	43.43	AV	54	PASS
	Off	2500.0	-43.76	2.0	0	53.49	PEAK	74	PASS
	Off	2500.0	-53.70	2.0	0	43.56	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-45.69	2.0	0	51.57	PEAK	74	PASS
	Off	2310.0	-54.42	2.0	0	42.84	AV	54	PASS
	Off	2390.0	-43.77	2.0	0	53.49	PEAK	74	PASS
	Off	2390.0	-54.20	2.0	0	43.06	AV	54	PASS
	Off	2483.5	-43.68	2.0	0	53.58	PEAK	74	PASS
	Off	2483.5	-53.75	2.0	0	43.50	AV	54	PASS
	Off	2500.0	-42.99	2.0	0	54.27	PEAK	74	PASS
	Off	2500.0	-53.70	2.0	0	43.56	AV	54	PASS

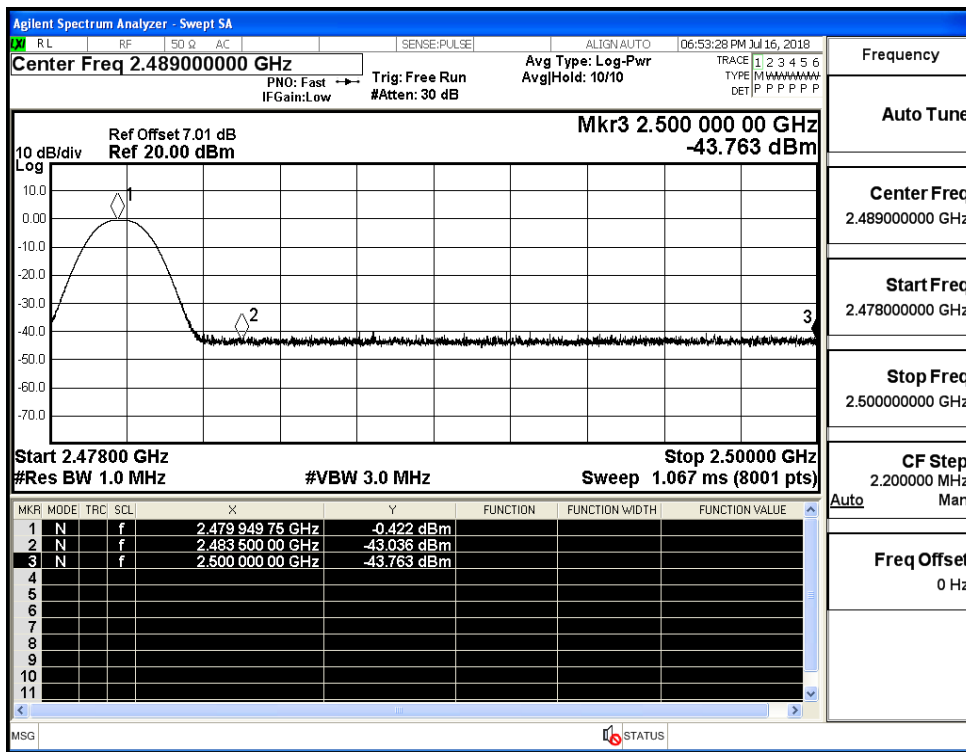
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



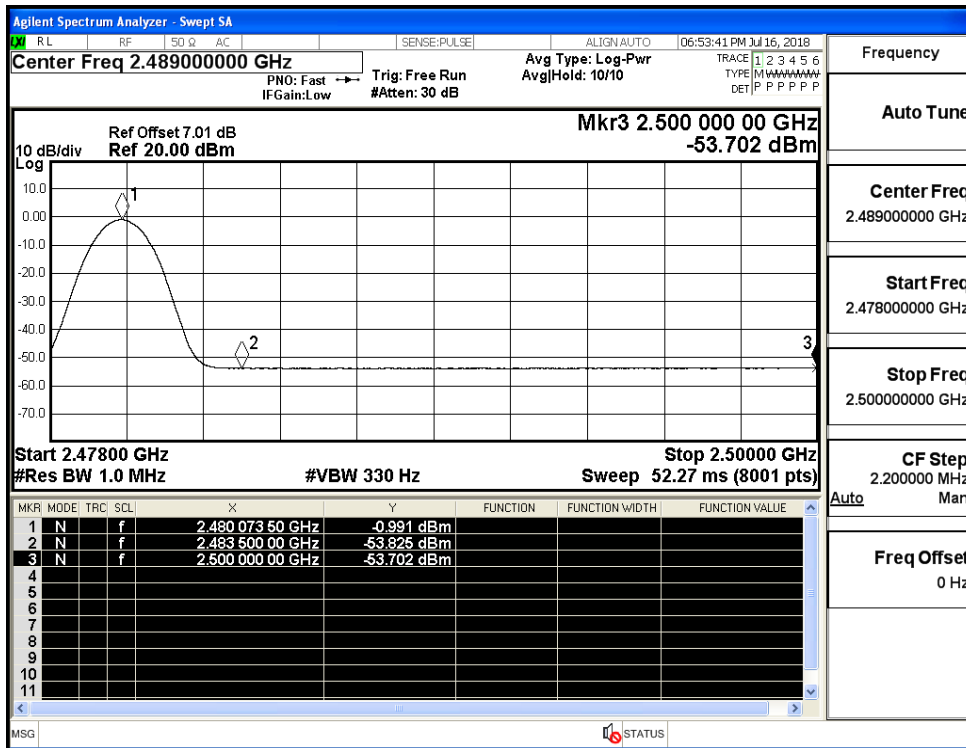
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



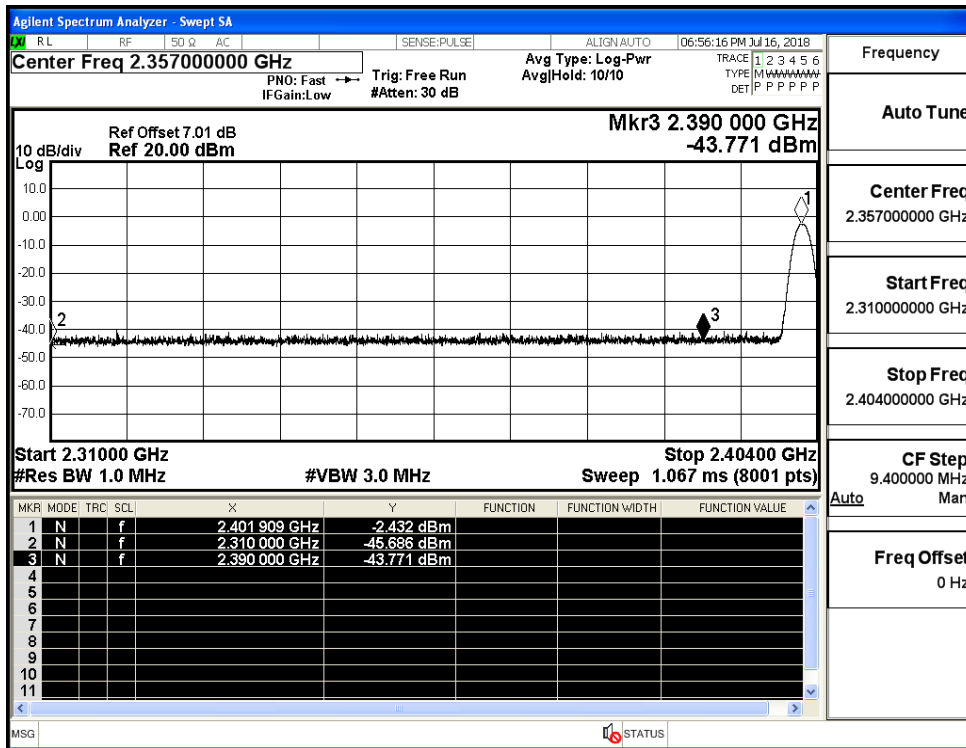
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



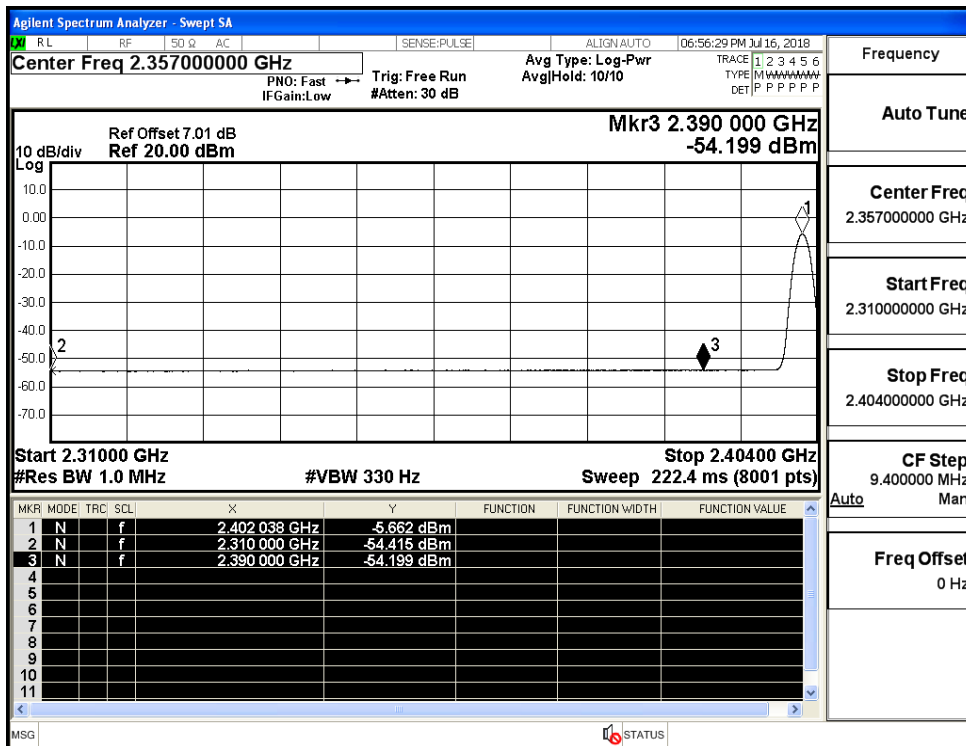
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



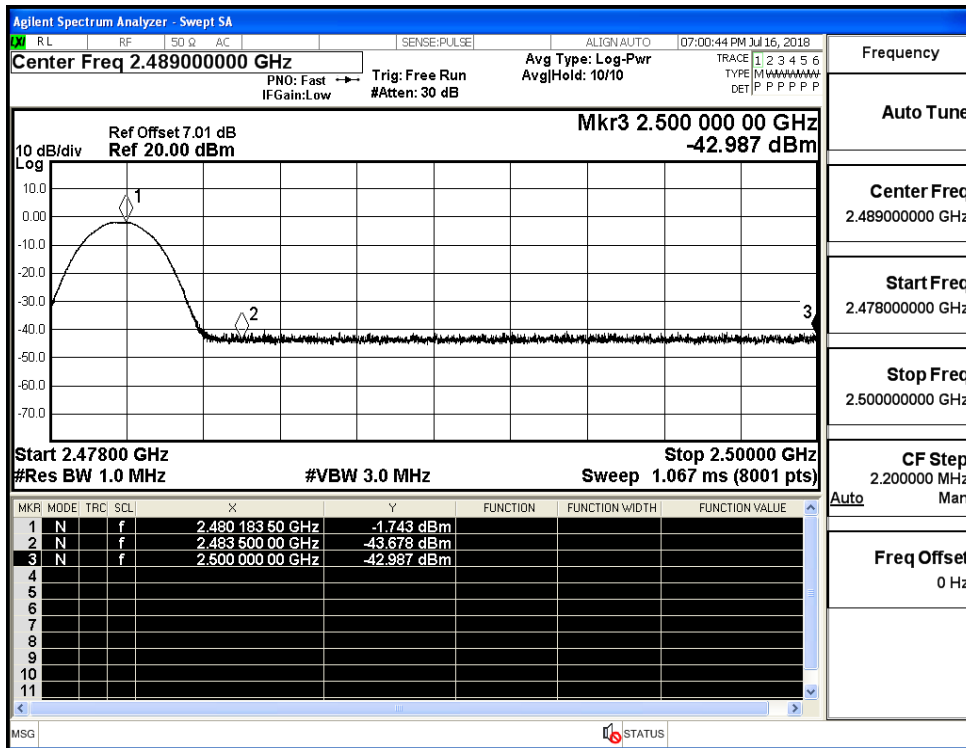
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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



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



Restrict-band band-edge measurements_Hopping Off_π/4-DQPSK_Average (High Channel)

