

Appendix A

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

Product Name: Exos Bluetooth® Headphones

Trade Mark: Gemline

Test Model: 100245-001B

Environmental Conditions

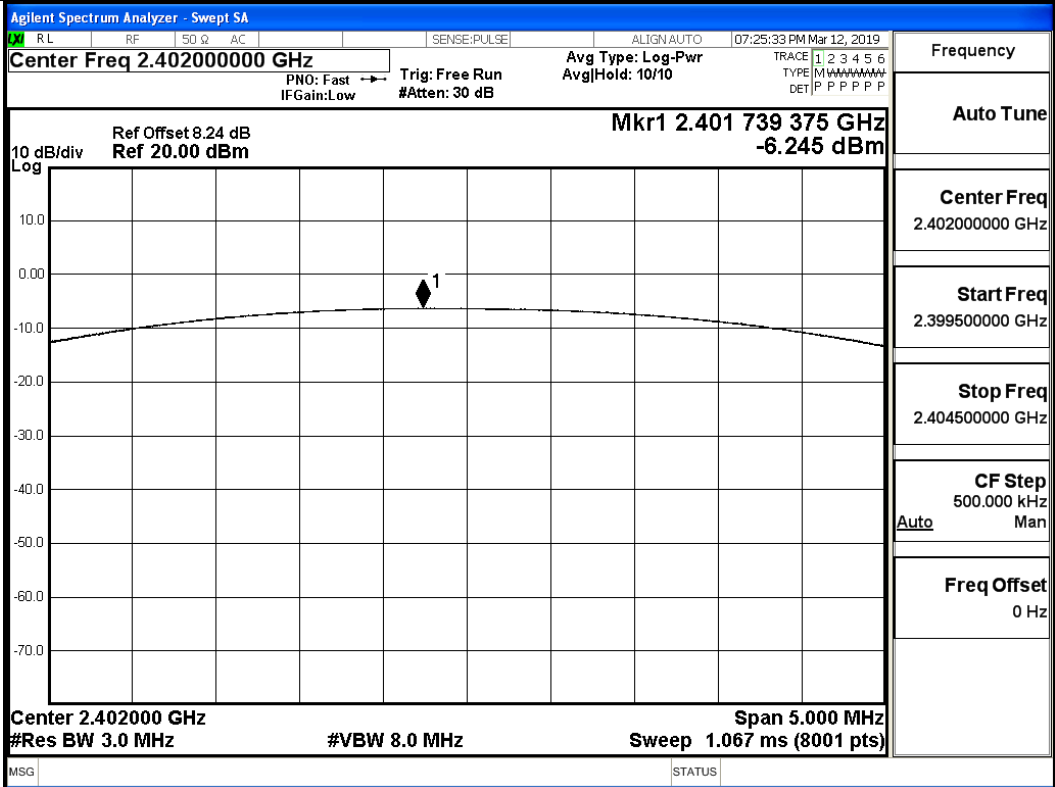
Temperature:	24.5 ° C
Relative Humidity:	51.9%
ATM Pressure:	100.0 kPa
Test Engineer:	David.Luo
Supervised by:	Wang Chuang

A.1 Maximum Conducted Peak Output Power

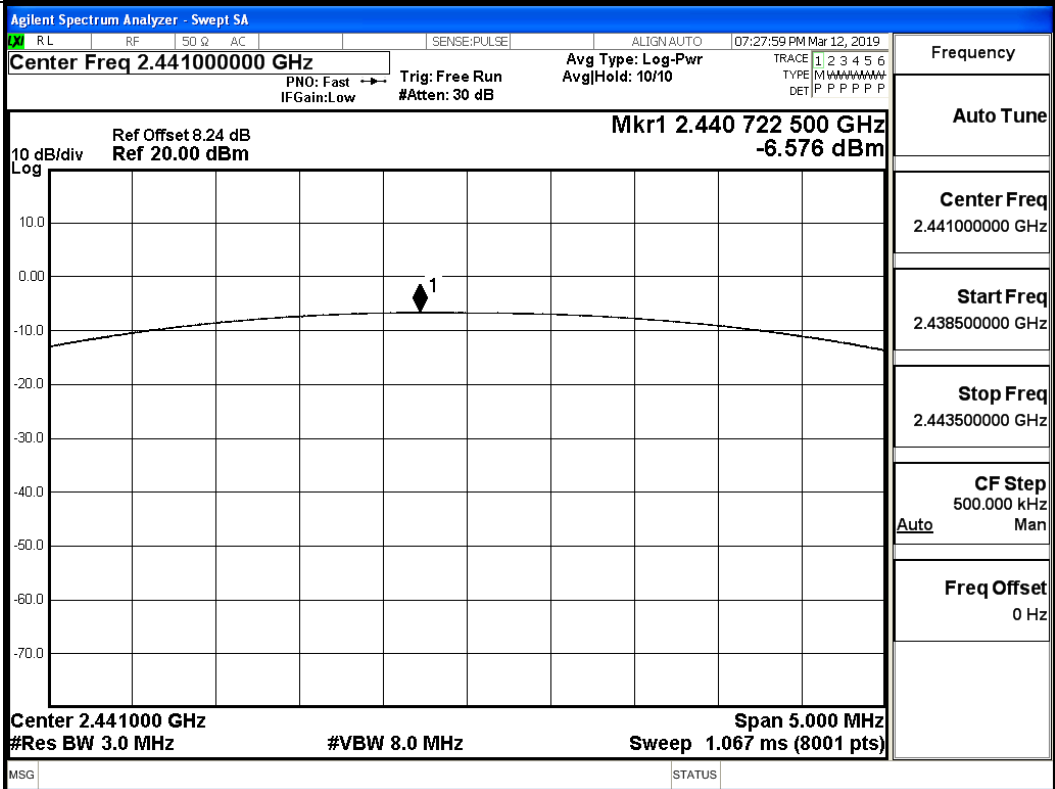
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-6.245	21	PASS
	MCH	-6.576	21	PASS
	HCH	-6.794	21	PASS
$\pi/4$ DQPSK	LCH	-6.125	21	PASS
	MCH	-6.384	21	PASS
	HCH	-6.251	21	PASS

Test Graphs

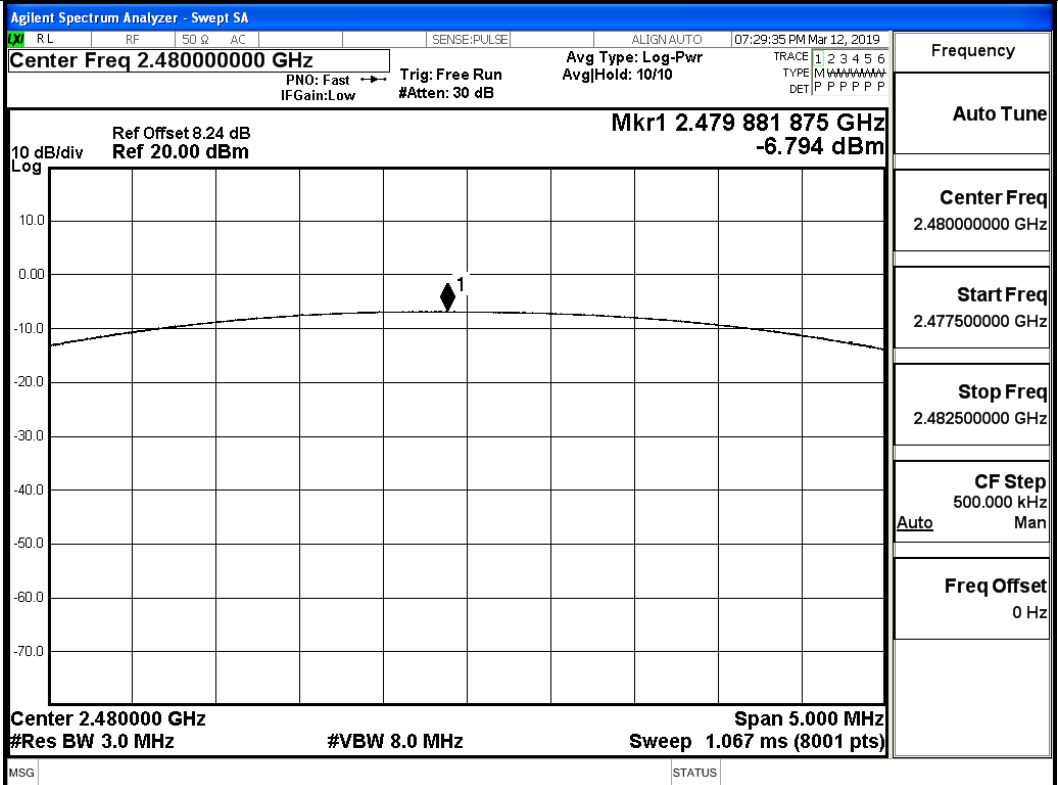
GFSK/LCH



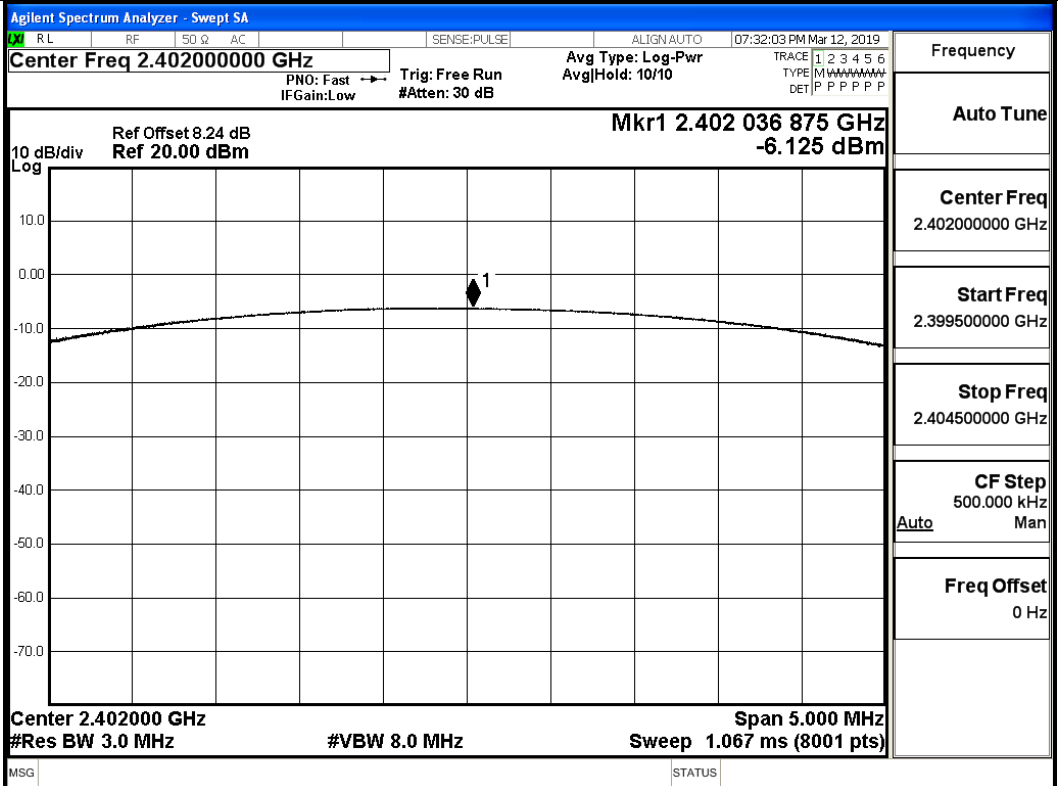
GFSK/MCH



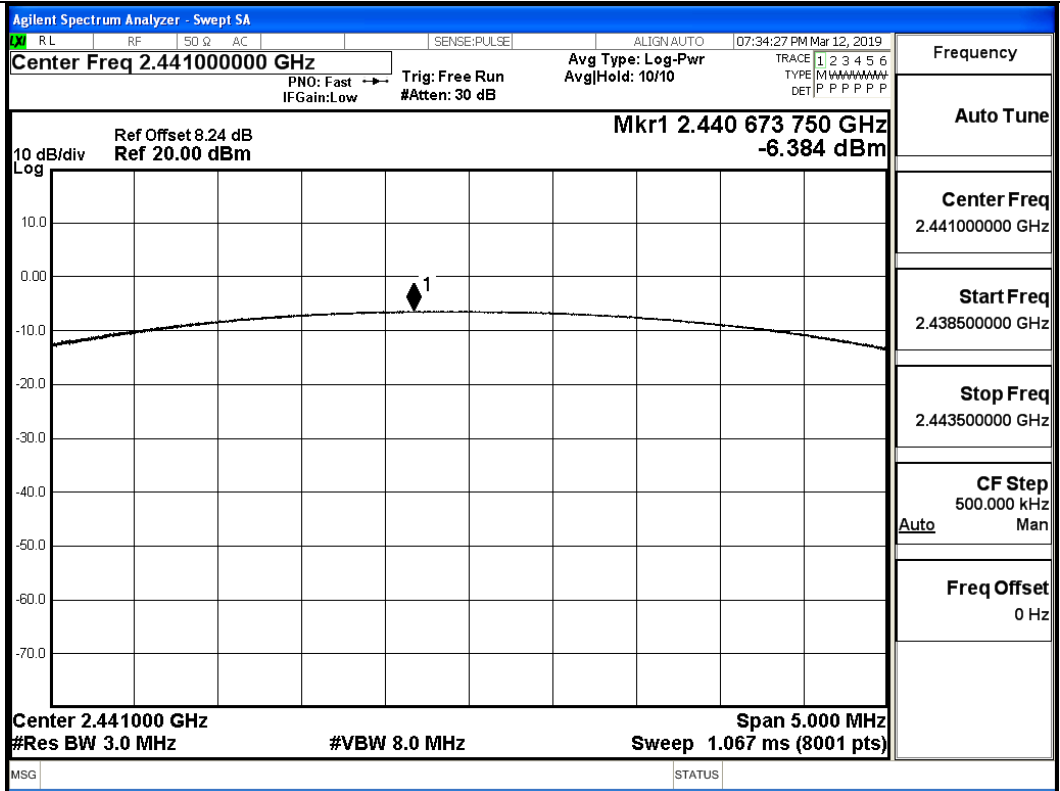
GFSK/HCH



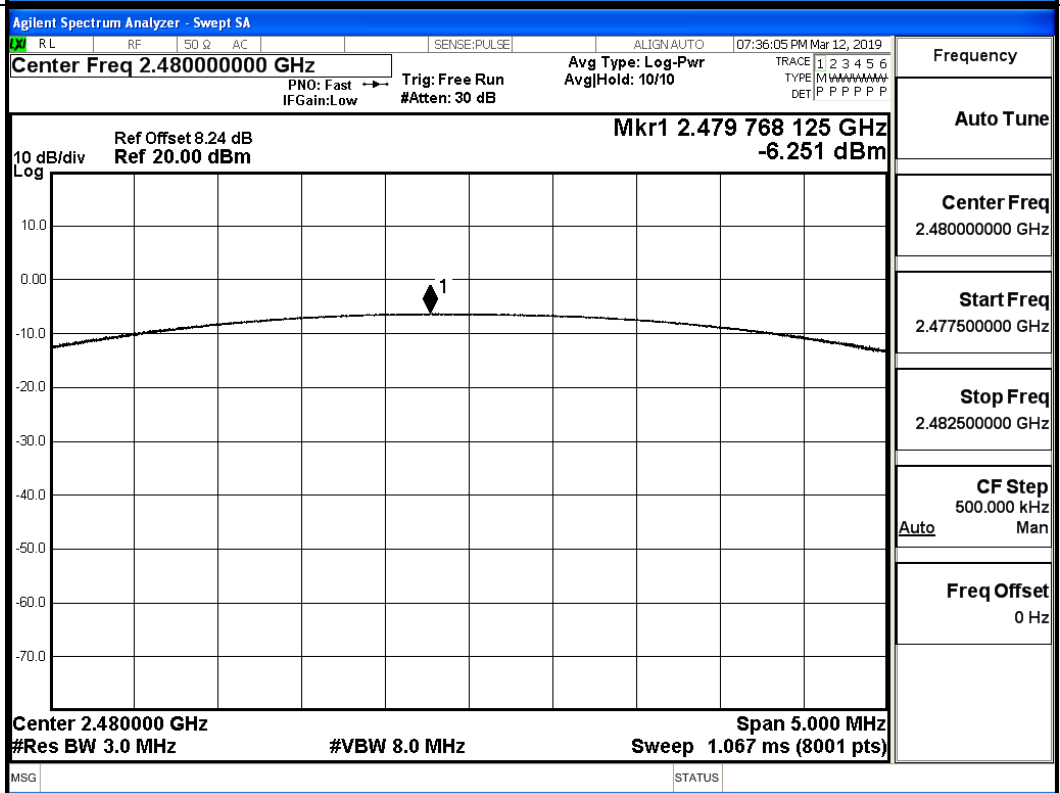
$\pi/4$ DQPSK/LCH



$\pi/4$ DQPSK/MCH

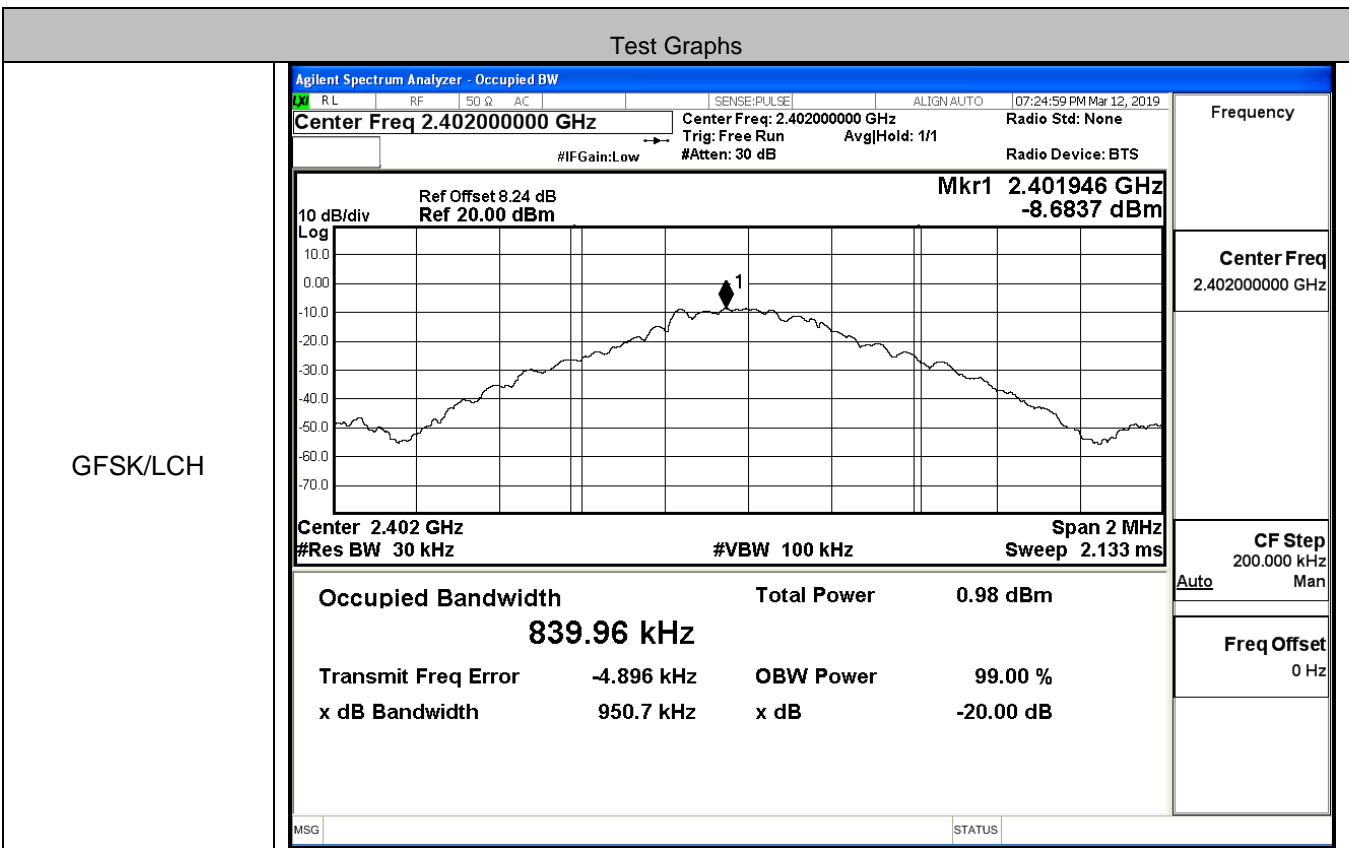


$\pi/4$ DQPSK/HCH

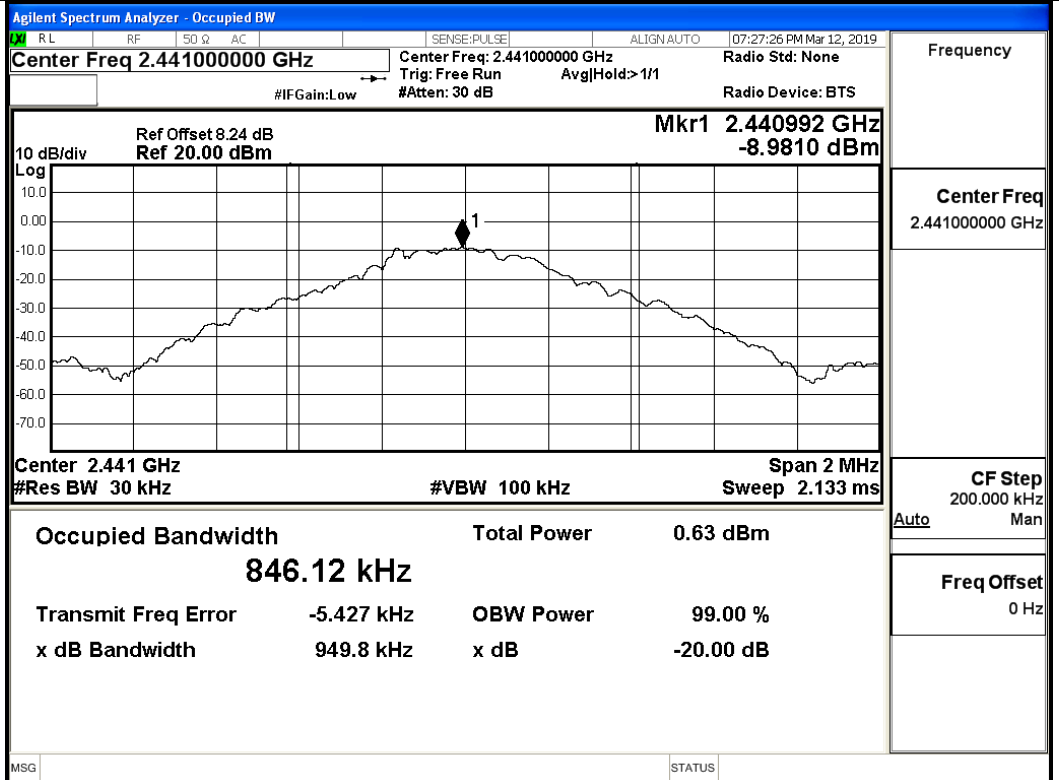


A.2 99% and 20dB Bandwidth

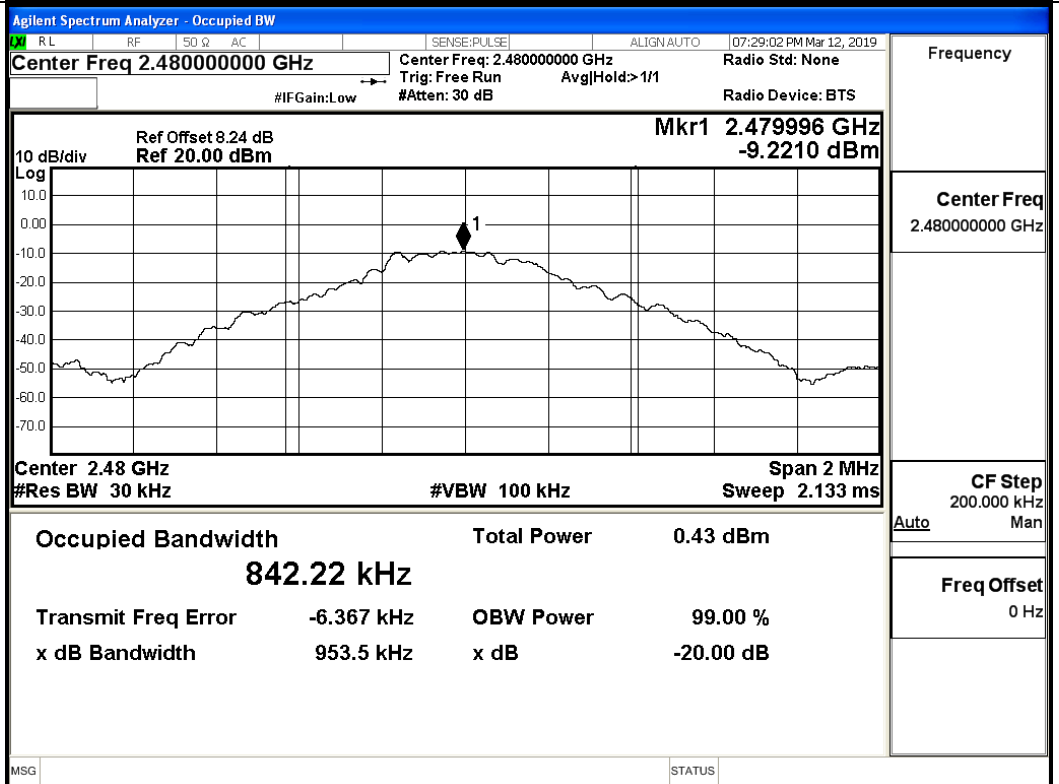
Mode	Channel	99% Bandwidth [MHz]	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.83996	0.9507	Not Specified	PASS
	MCH	0.84612	0.9498	Not Specified	PASS
	HCH	0.84222	0.9535	Not Specified	PASS
π/4DQPSK	LCH	1.1876	1.318	Not Specified	PASS
	MCH	1.1926	1.322	Not Specified	PASS
	HCH	1.1883	1.320	Not Specified	PASS

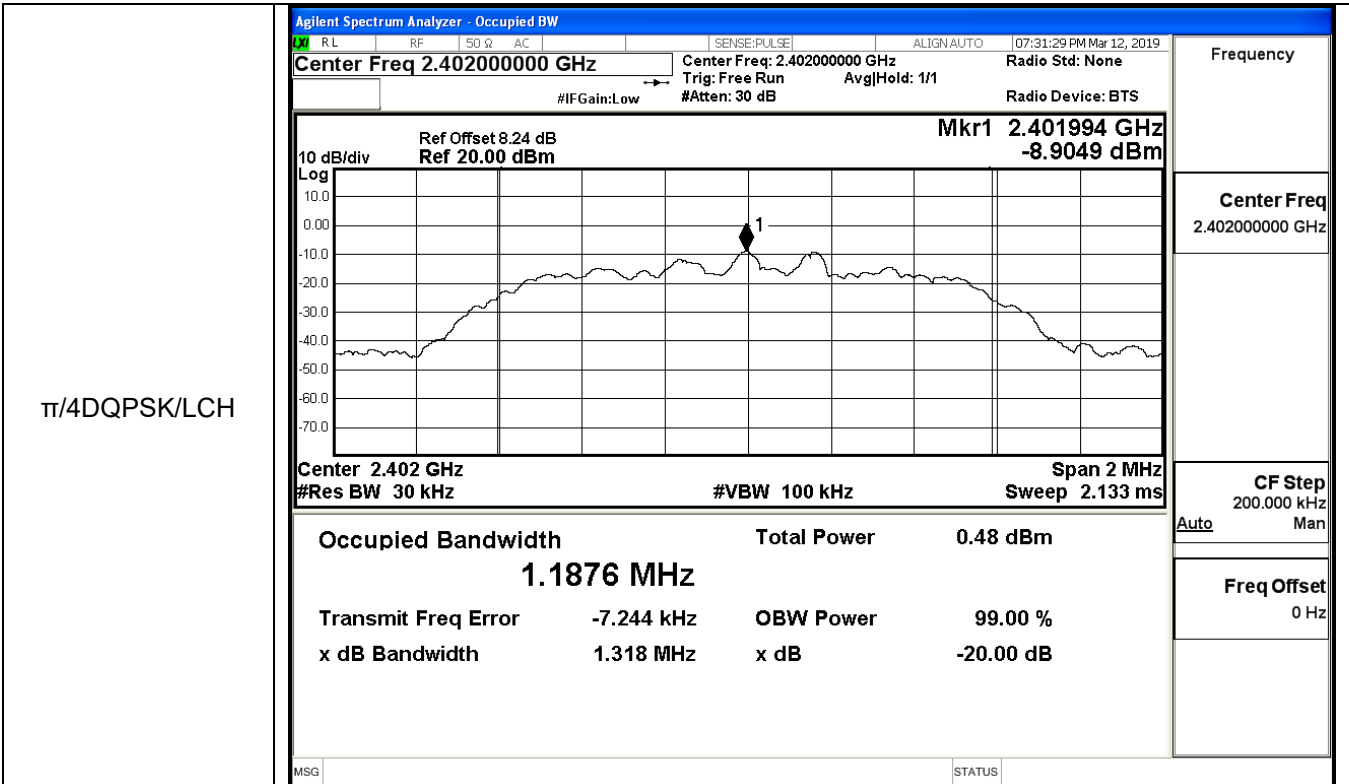


GFSK/MCH

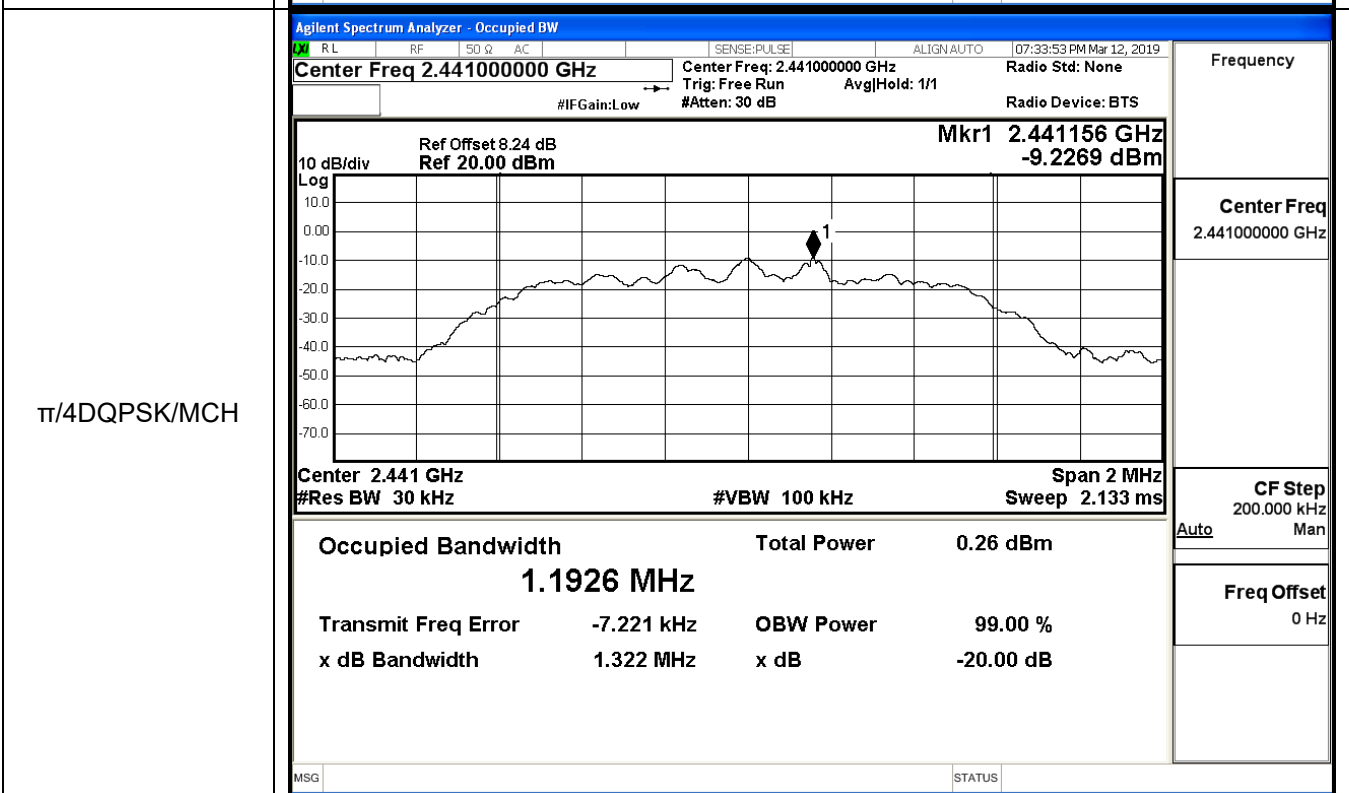


GFSK/HCH



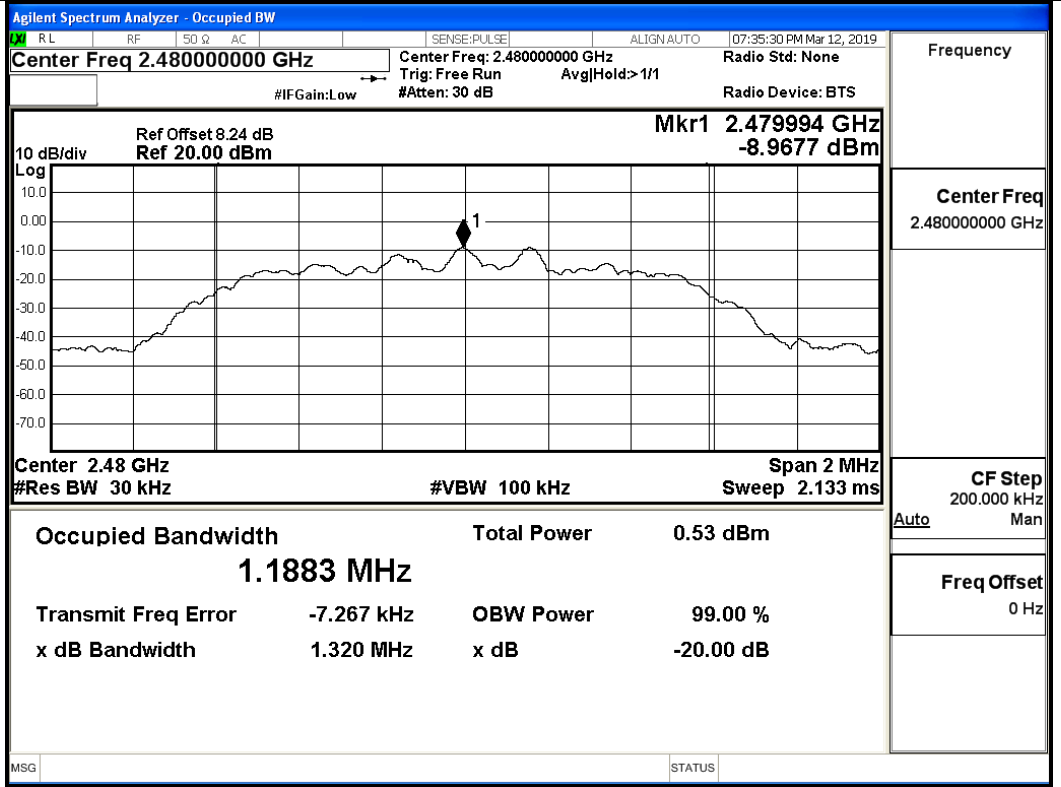


π/4DQPSK/LCH

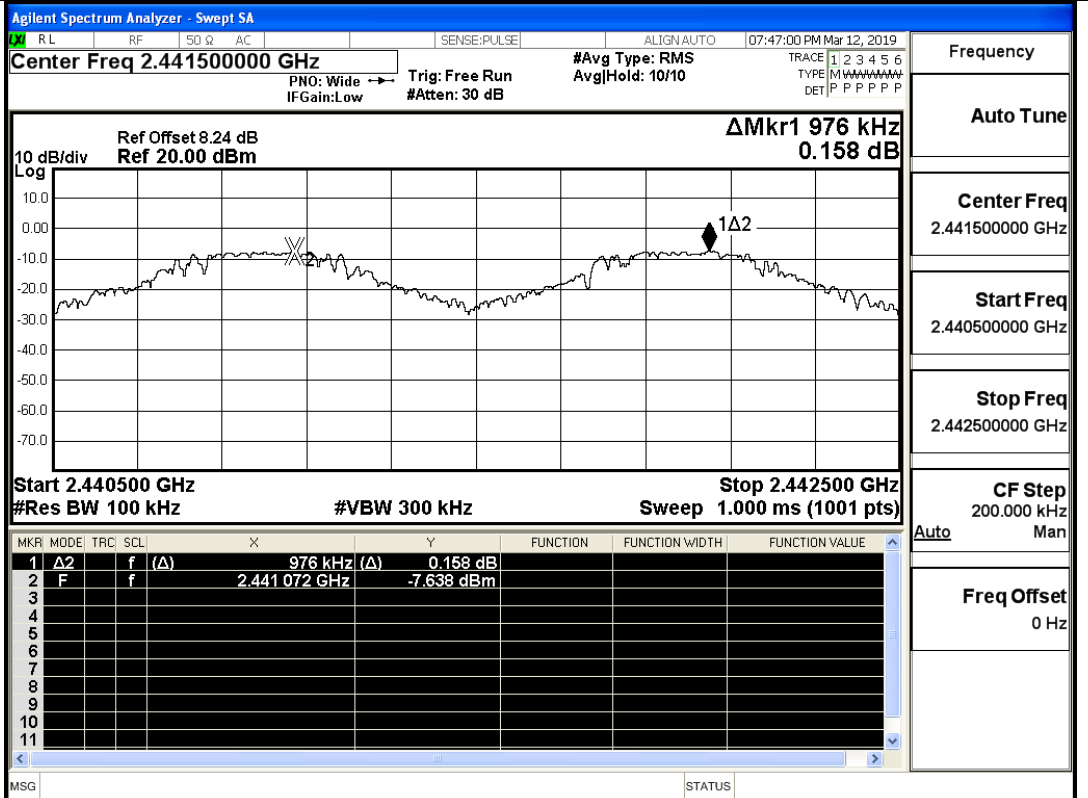


π/4DQPSK/MCH

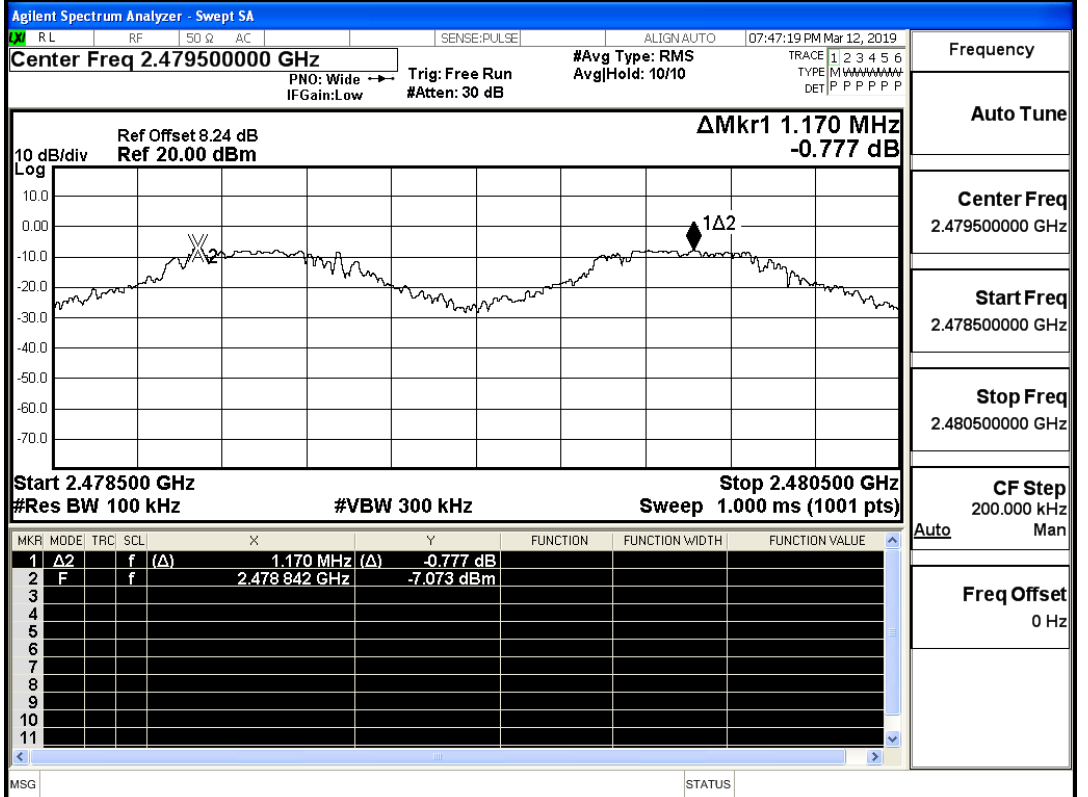
$\pi/4$ DQPSK/HCH



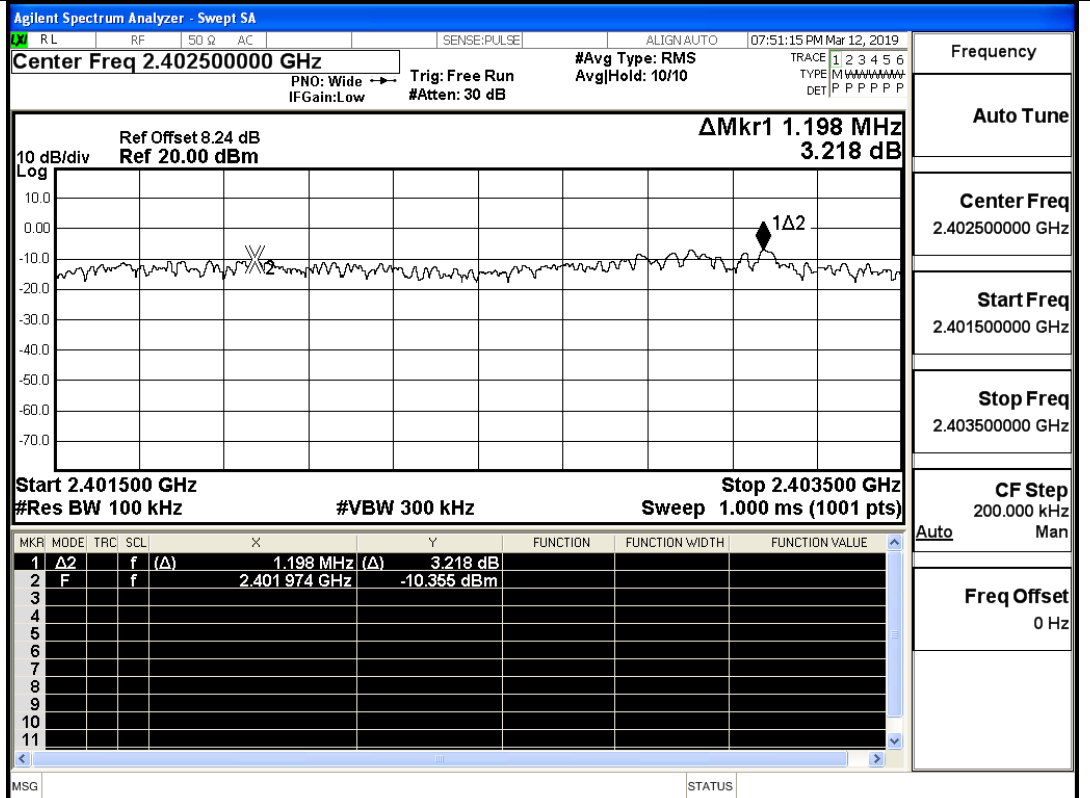
GFSK/MCH



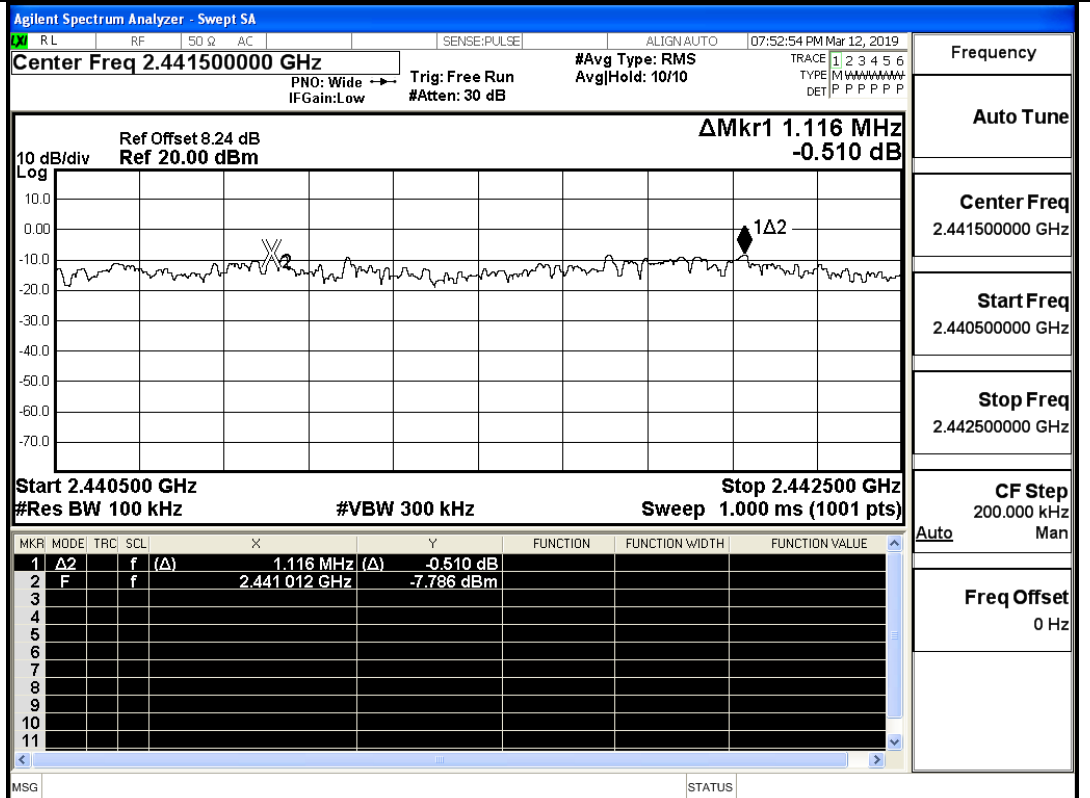
GFSK/HCH



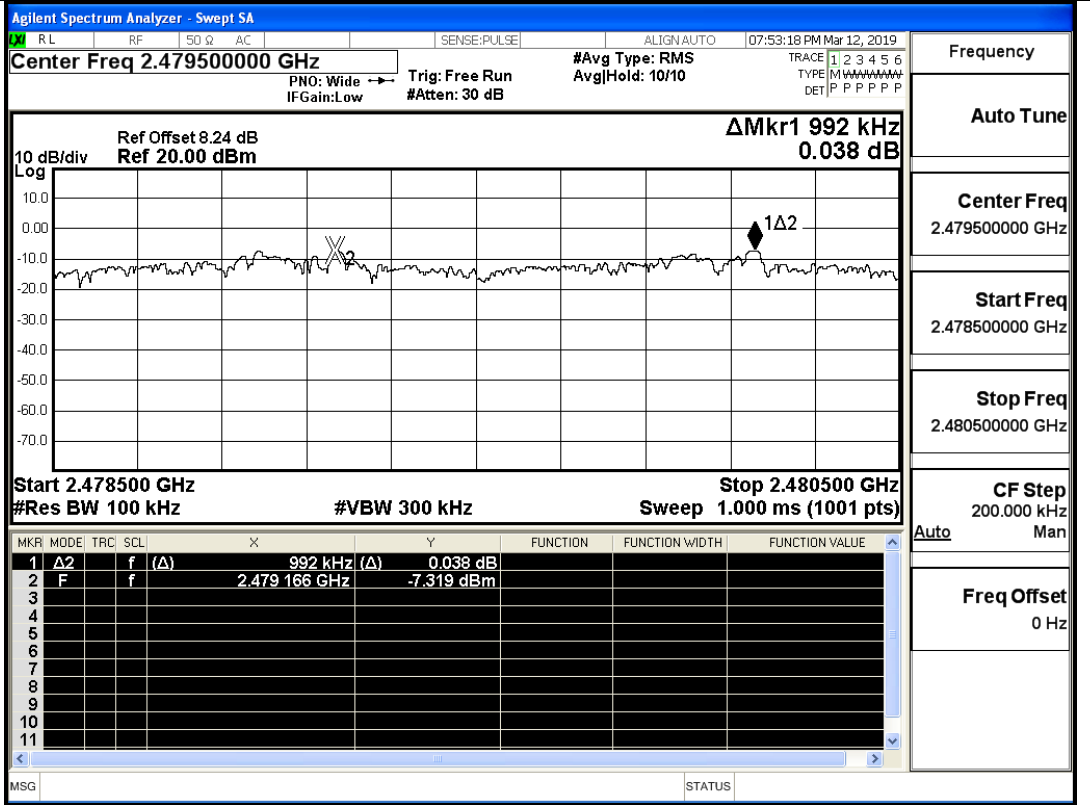
$\pi/4$ DQPSK/LCH



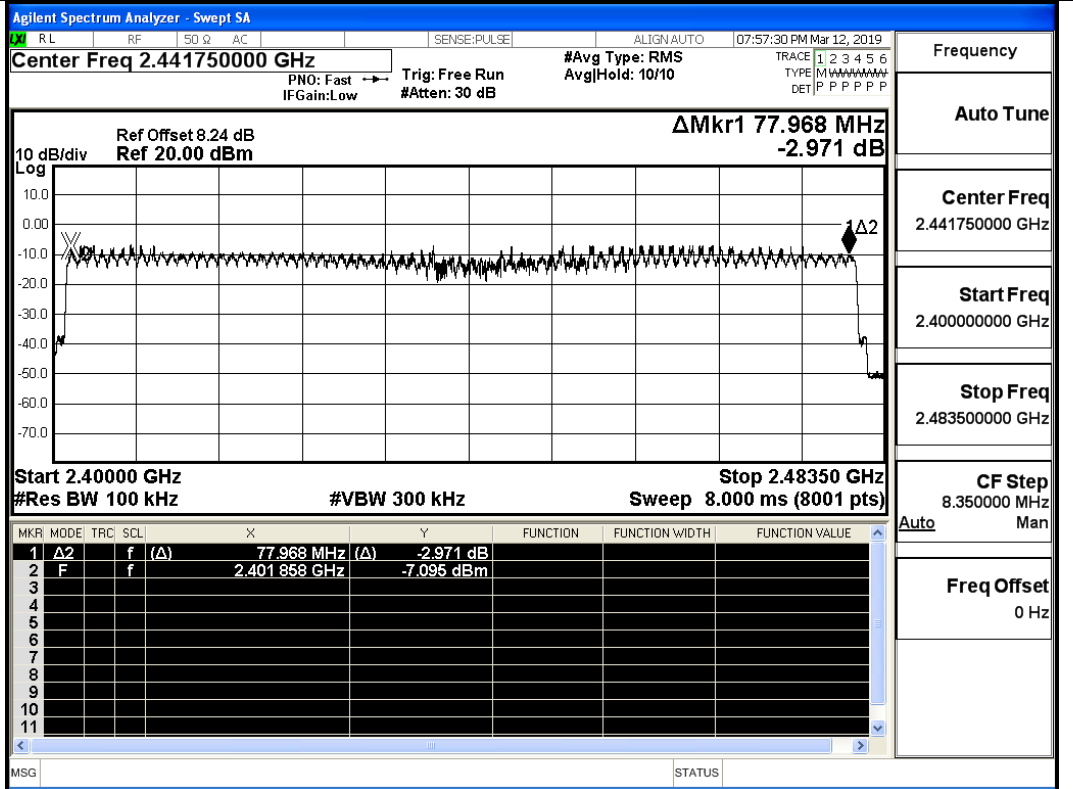
$\pi/4$ DQPSK/MCH



$\pi/4$ DQPSK/HCH

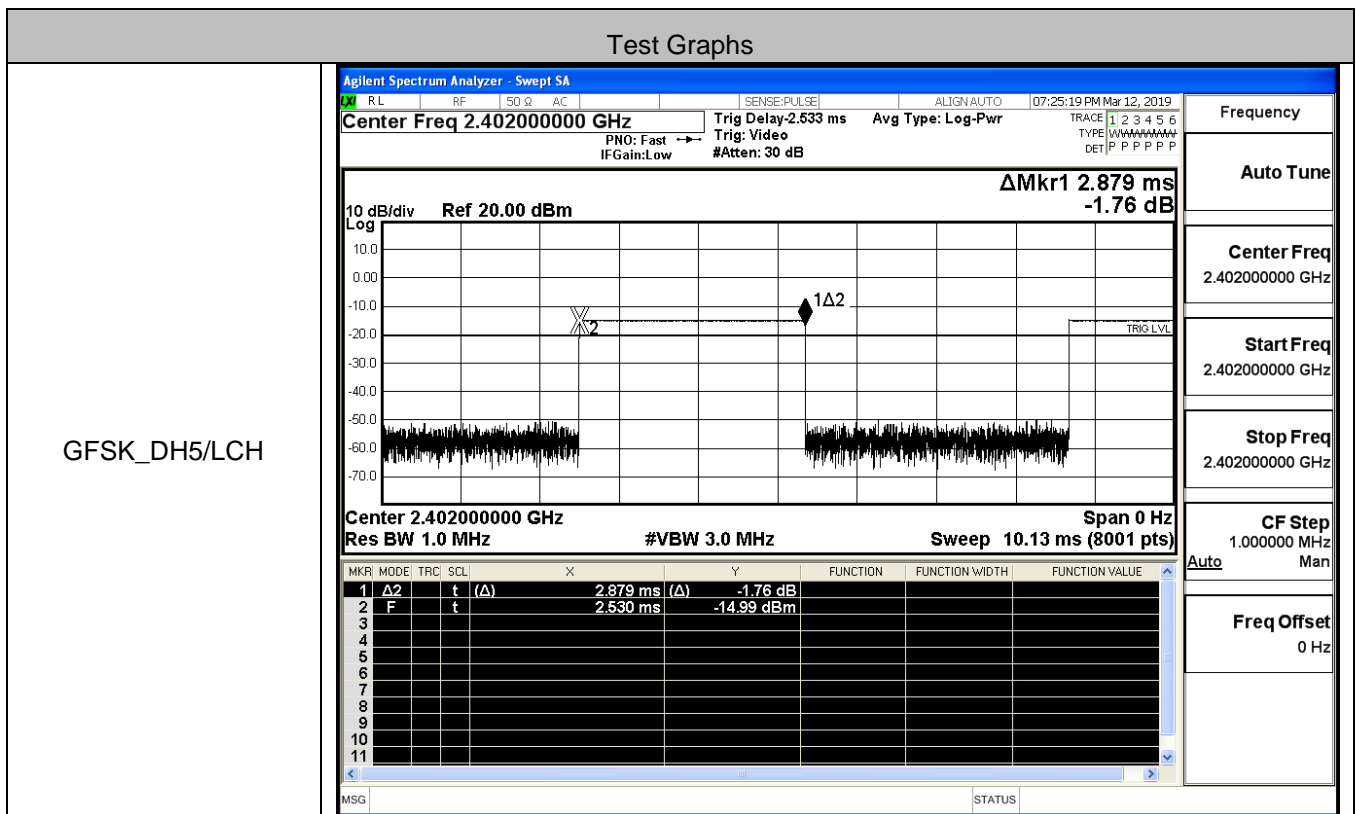


$\pi/4$ DQPSK/Hop

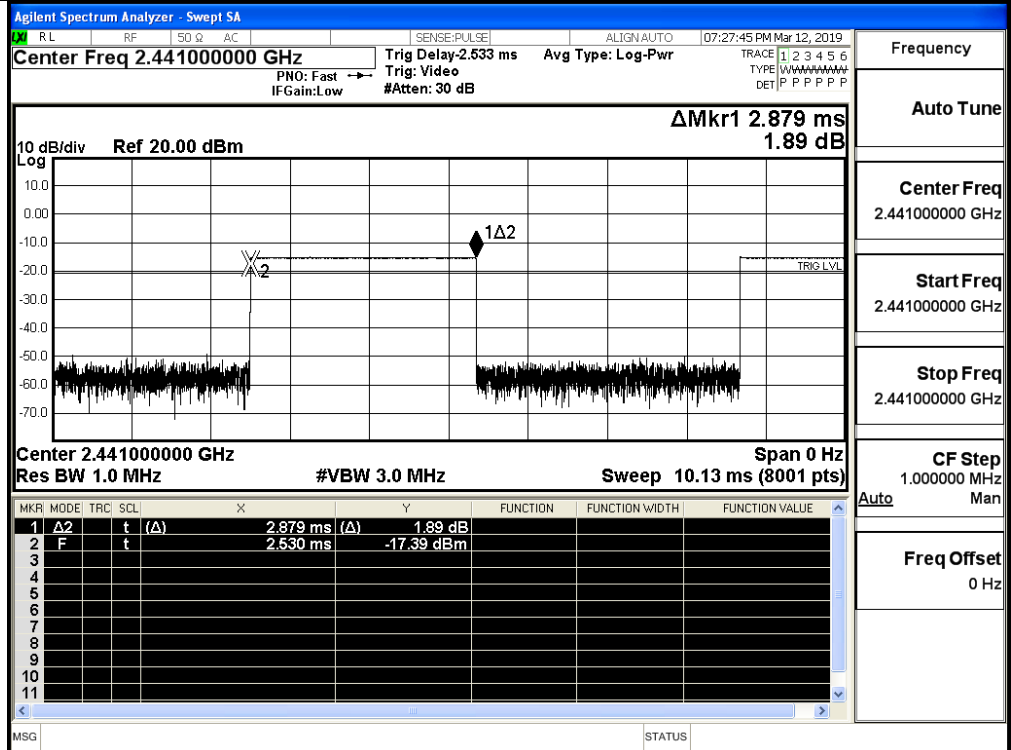


A.5 Dwell Time

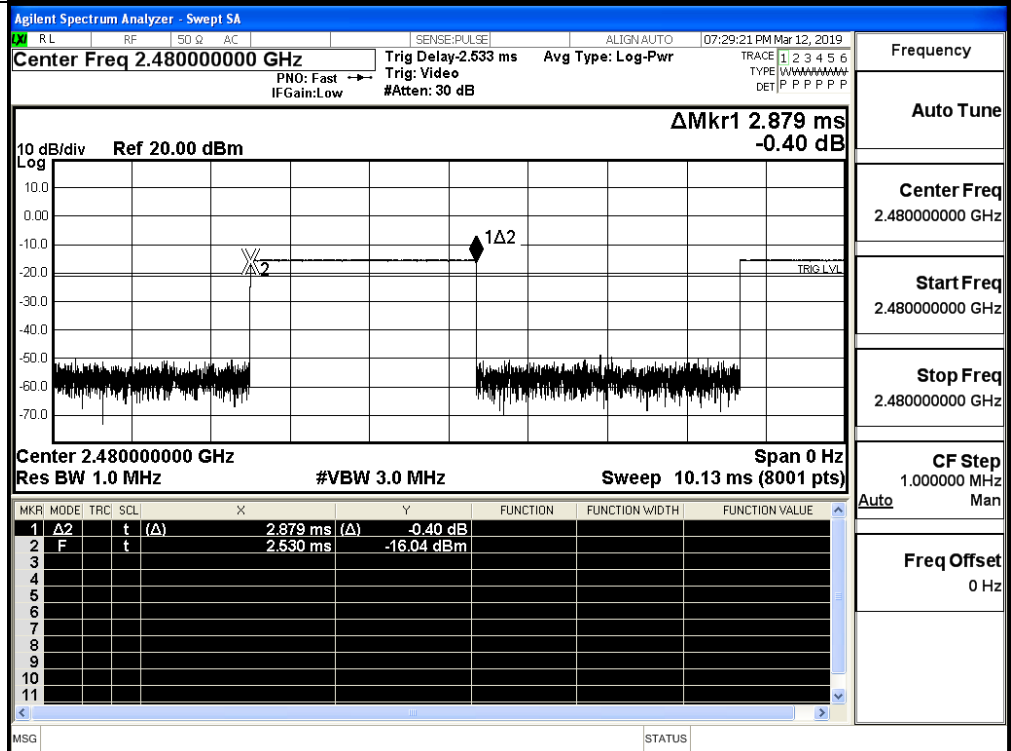
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.307	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.89	106.7	0.308	0.4	PASS



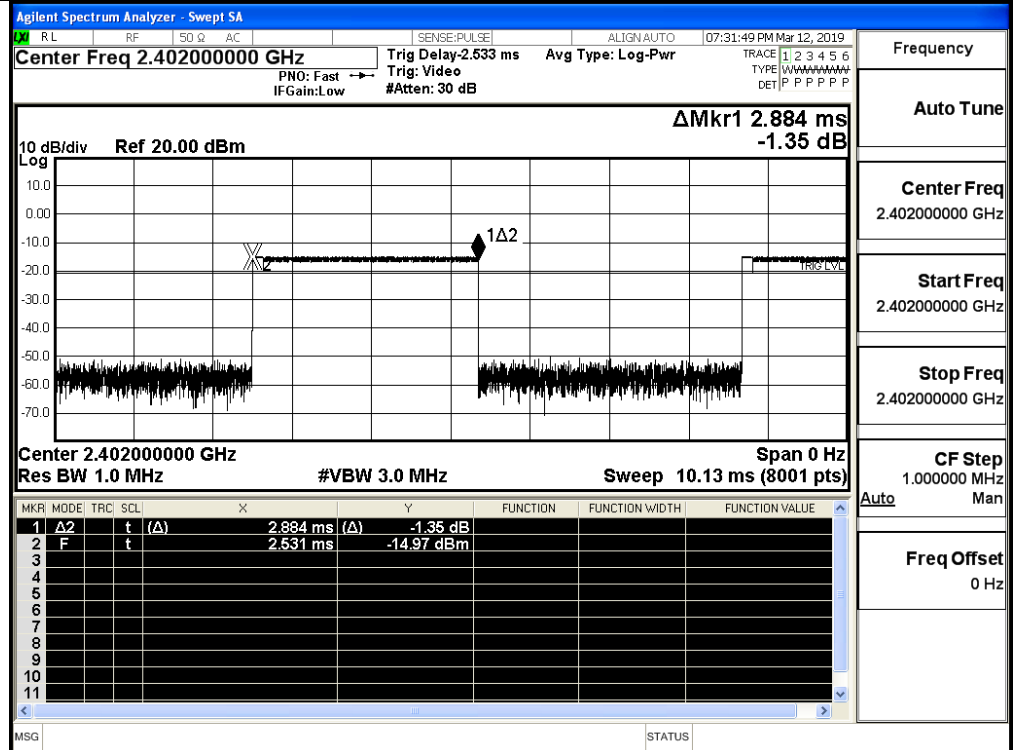
GFSK_DH5/MCH



GFSK_DH5/HCH

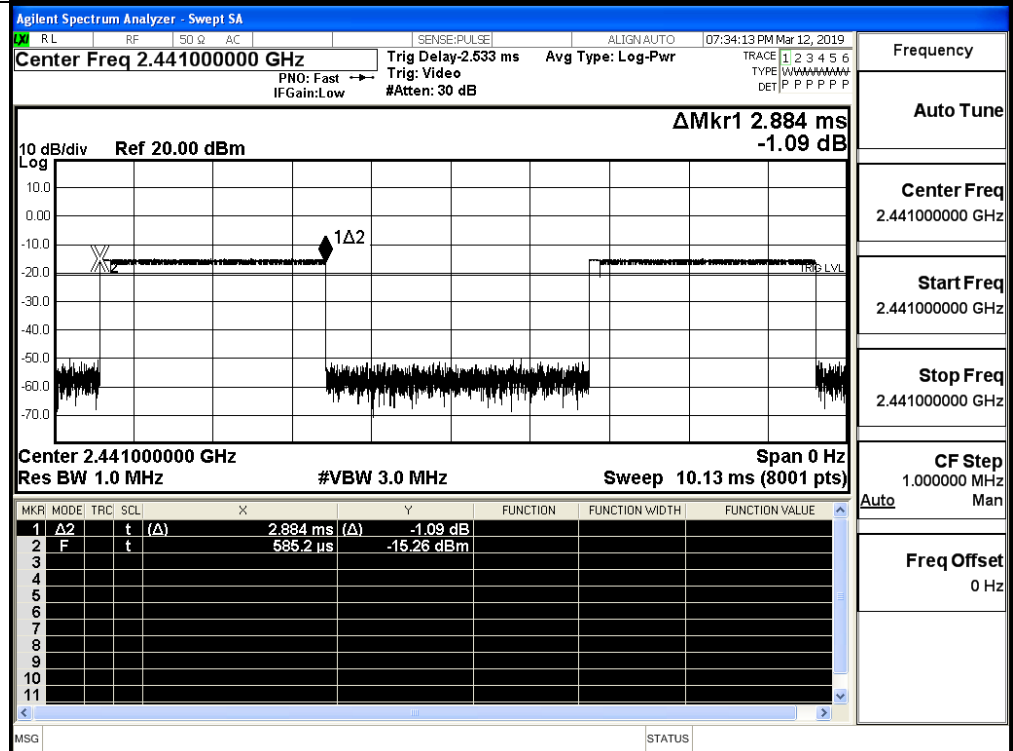


$\pi/4$ DQPSK
_2DH5/LCH



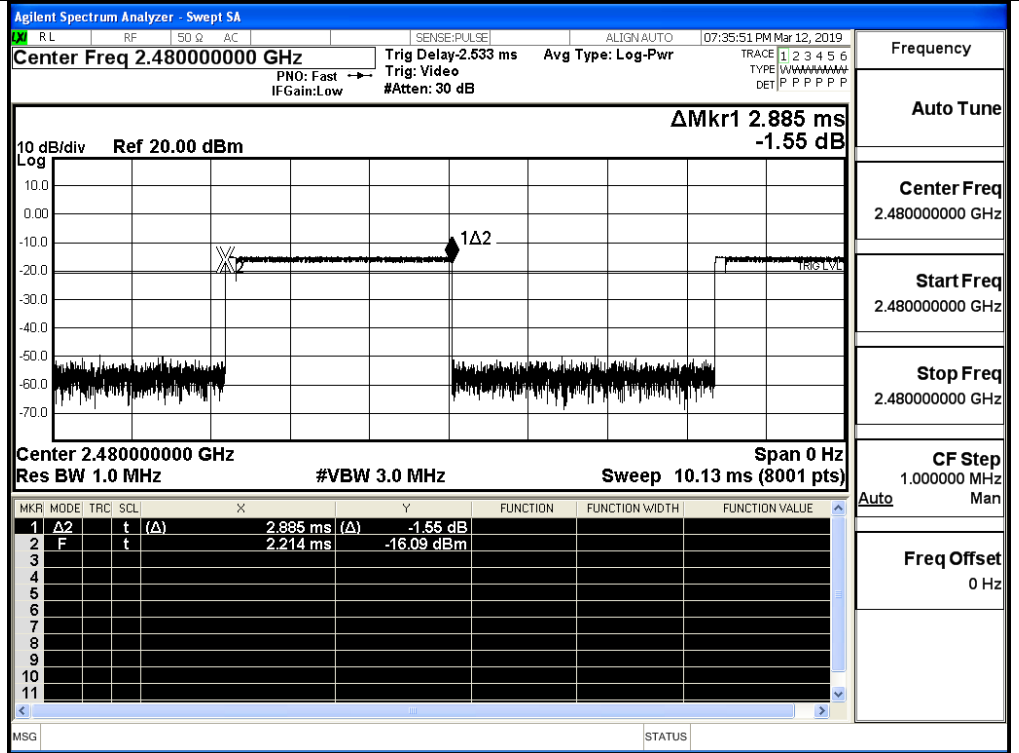
Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.402000000 GHz
Stop Freq 2.402000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK
_2DH5/MCH



Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.441000000 GHz
Stop Freq 2.441000000 GHz
CF Step 1.000000 MHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK
_2DH5/HCH

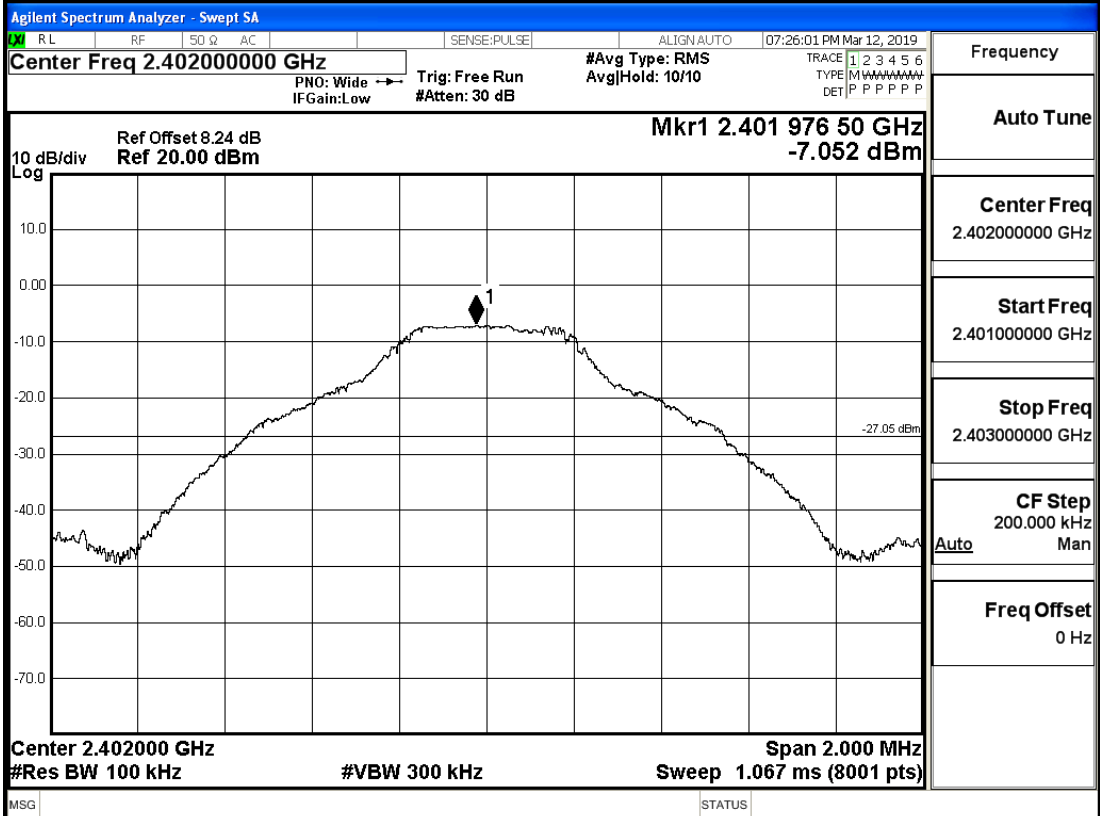


A.6 RF Conducted Spurious Emissions

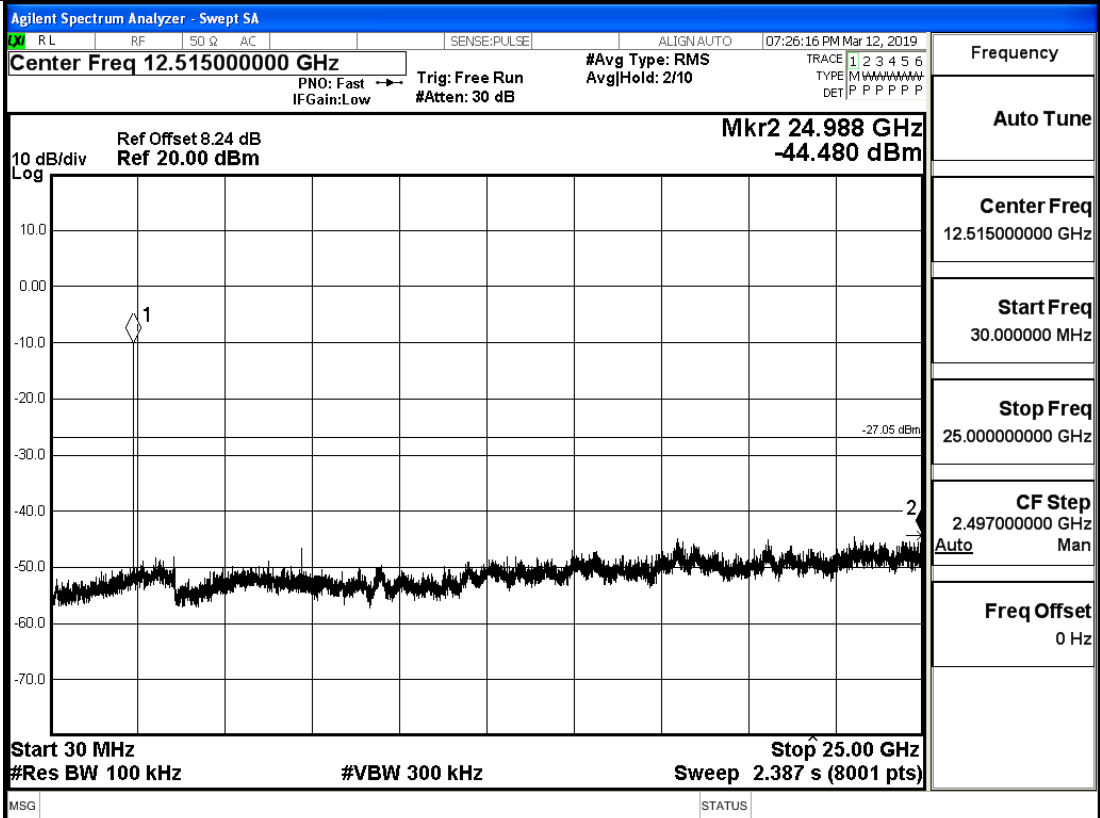
Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-7.052	-44.480	-27.052	PASS
	MCH	-7.475	-44.191	-27.475	PASS
	HCH	-7.087	-45.060	-27.087	PASS
$\pi/4$ DQPSK	LCH	-6.791	-44.186	-26.791	PASS
	MCH	-6.623	-44.692	-26.623	PASS
	HCH	-7.237	-44.559	-27.237	PASS

GFSK_LCH_Graphs

Pref

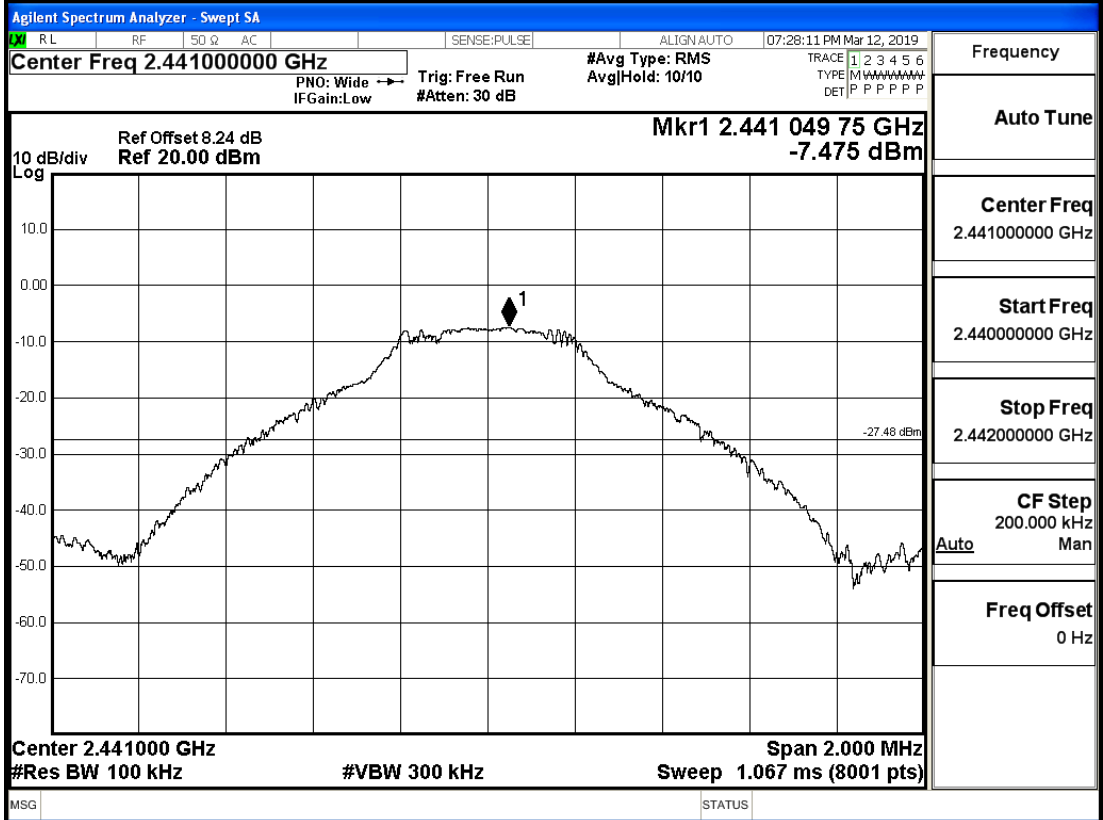


Puw

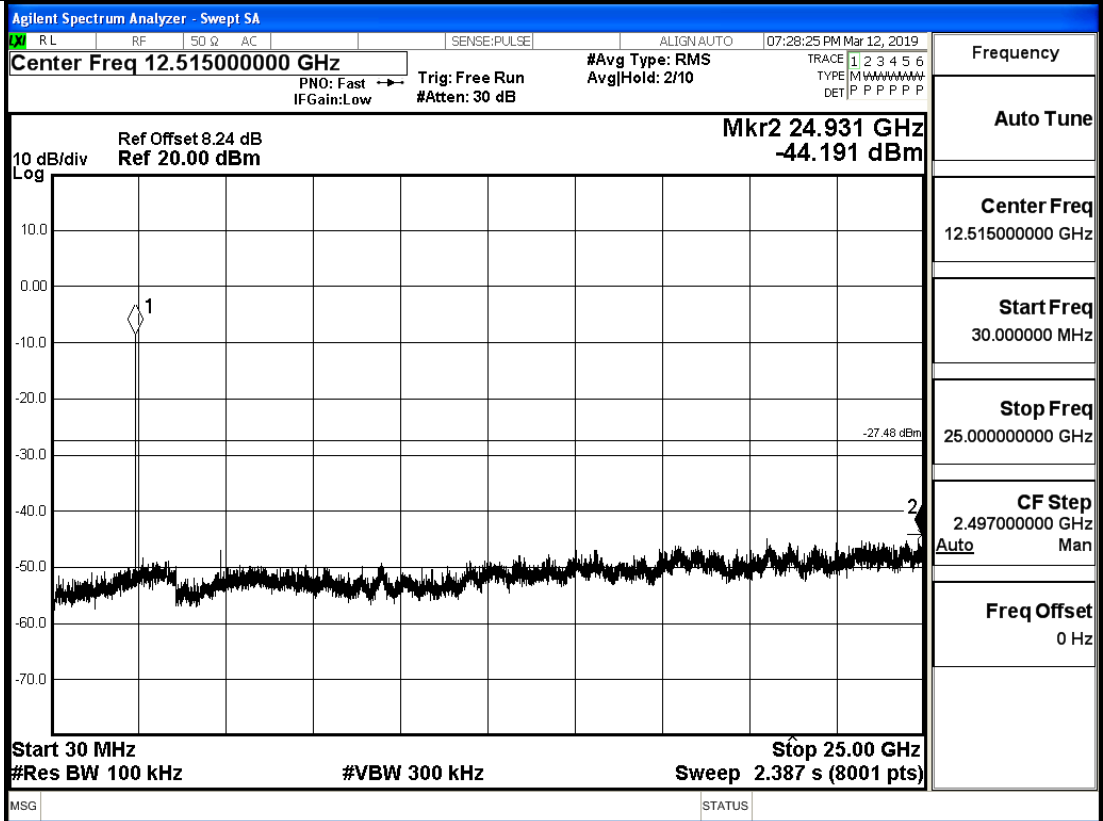


GFSK_MCH_Graphs

Pref

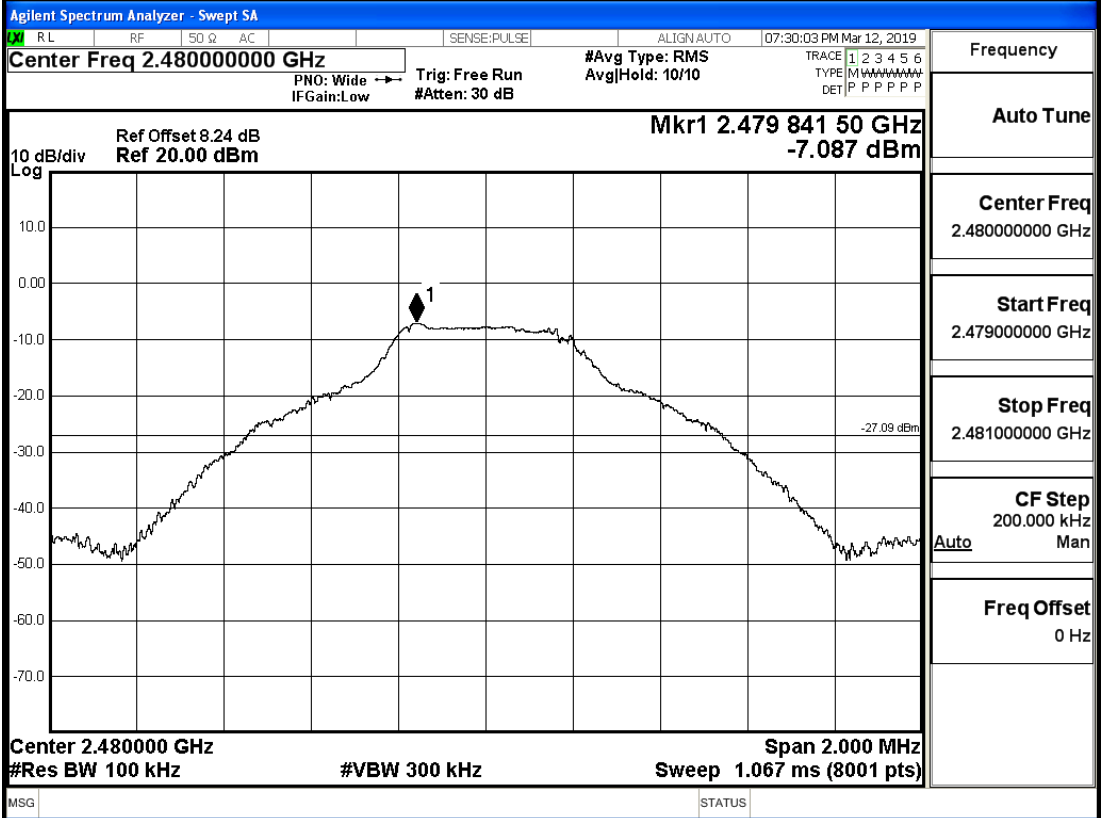


Puw

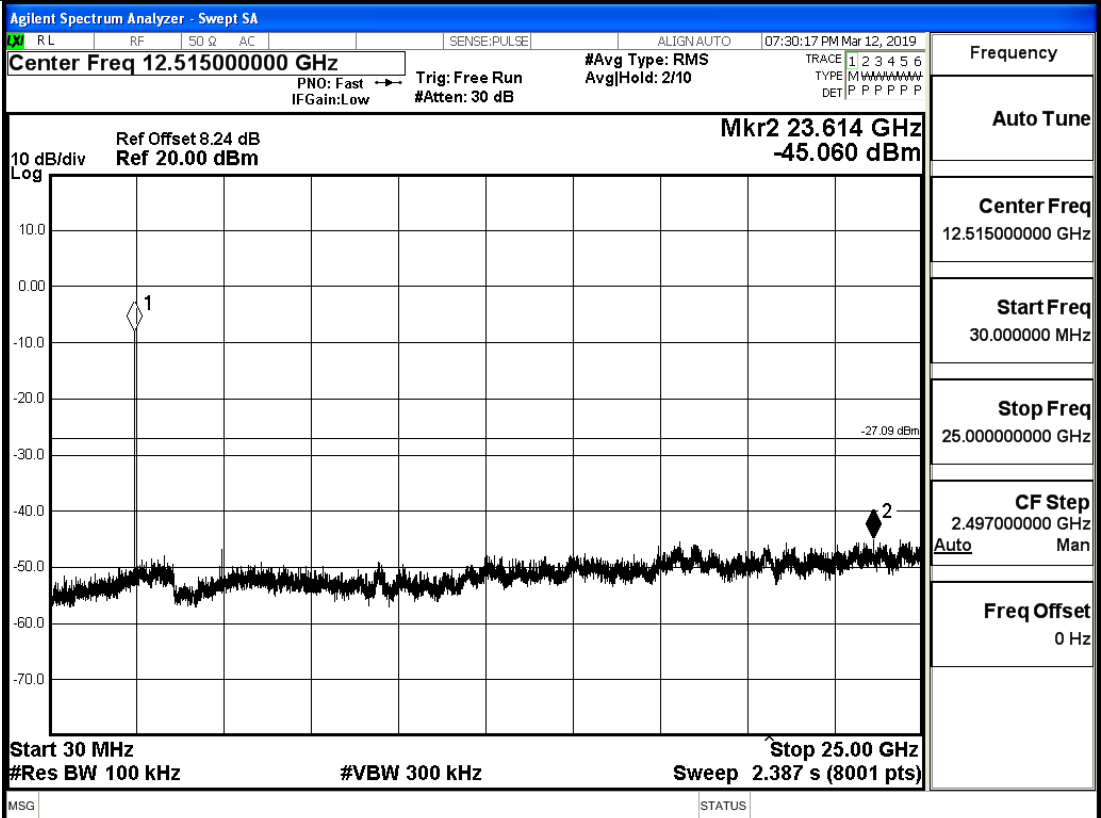


GFSK_HCH_Graphs

Pref

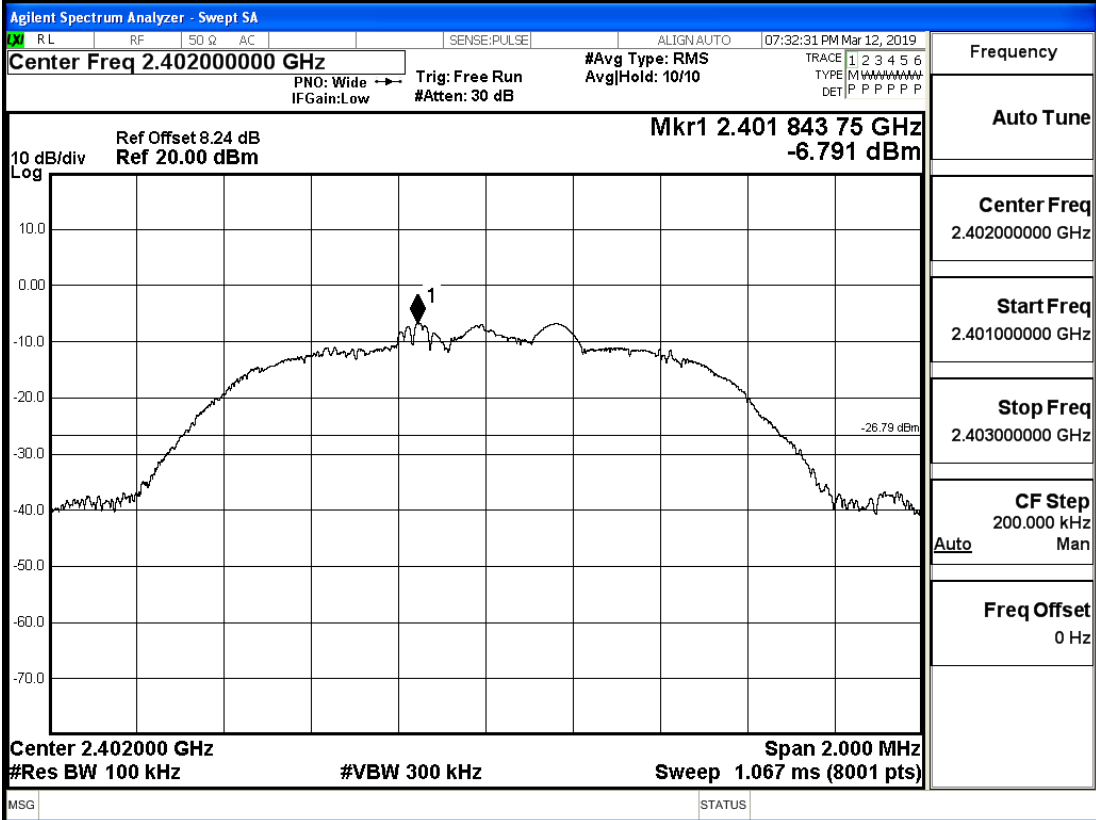


Puw

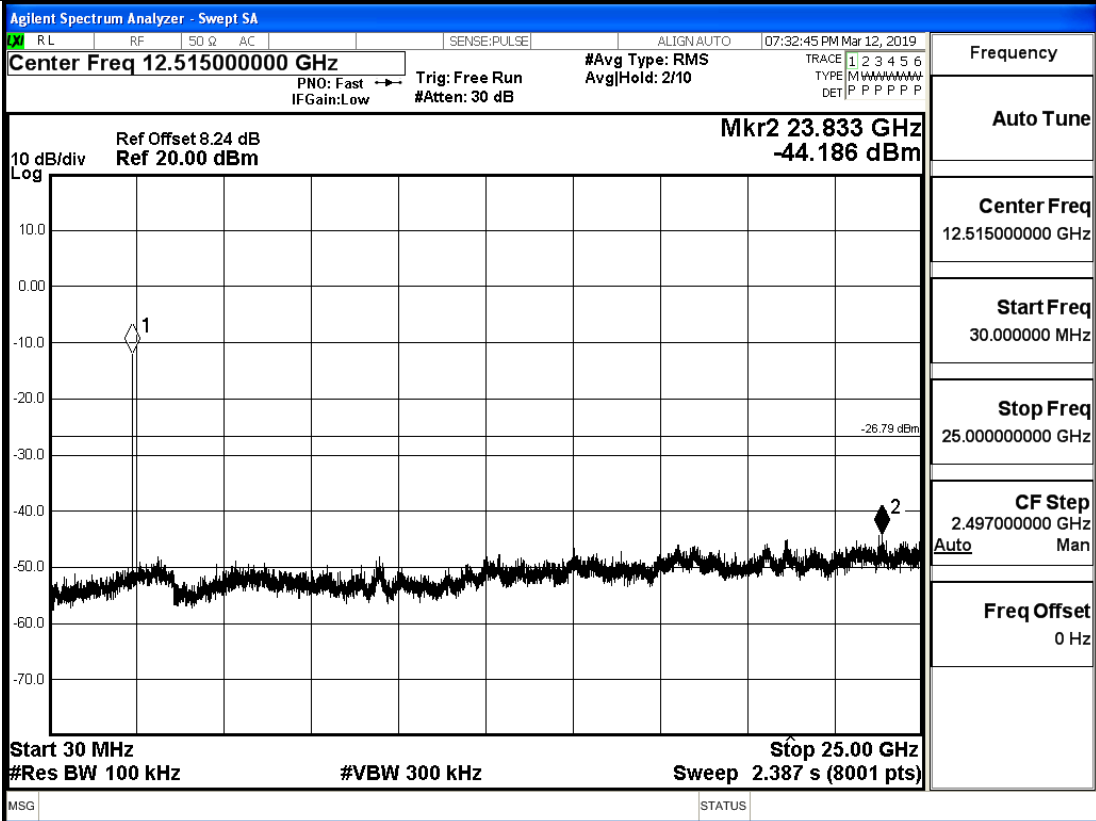


$\pi/4$ DQPSK_LCH_Graphs

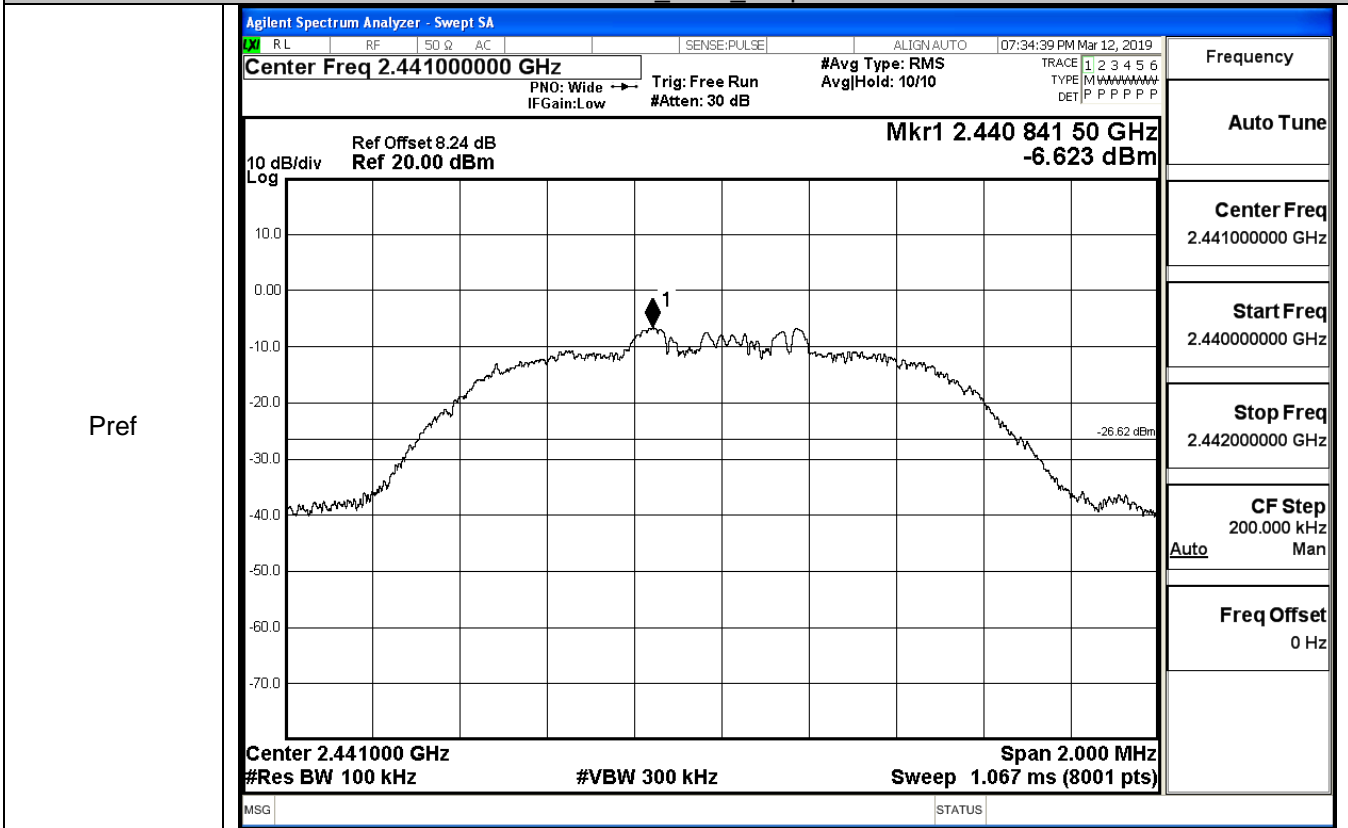
Pref



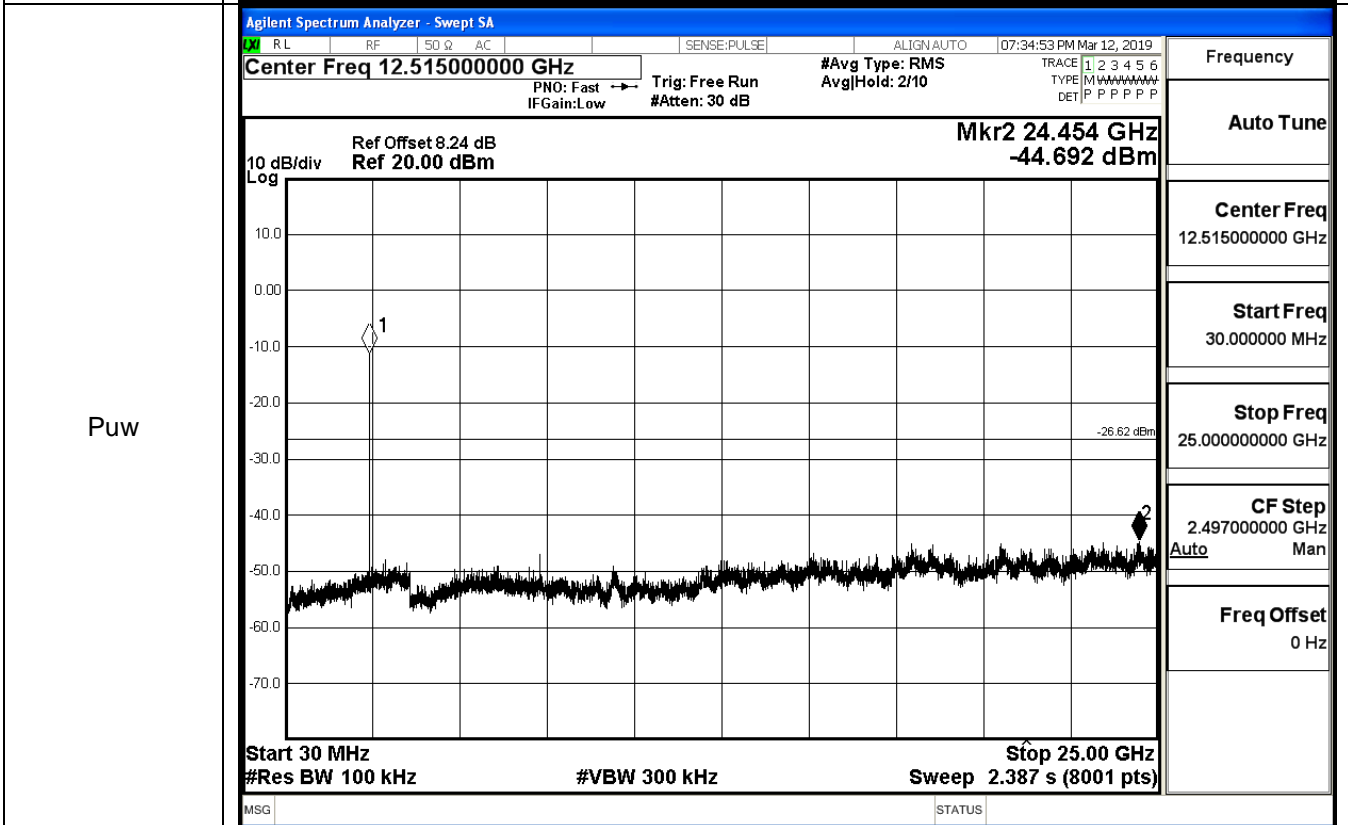
Puw



$\pi/4$ DQPSK_MCH_Graphs



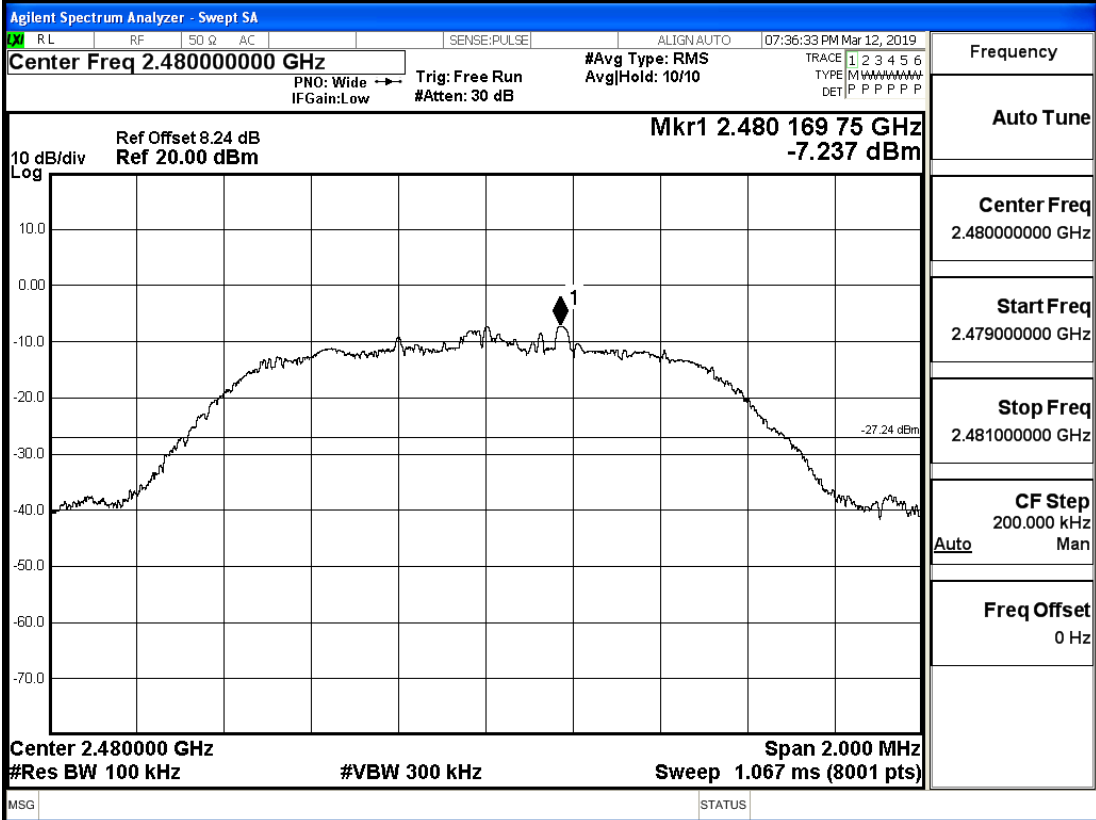
Pref



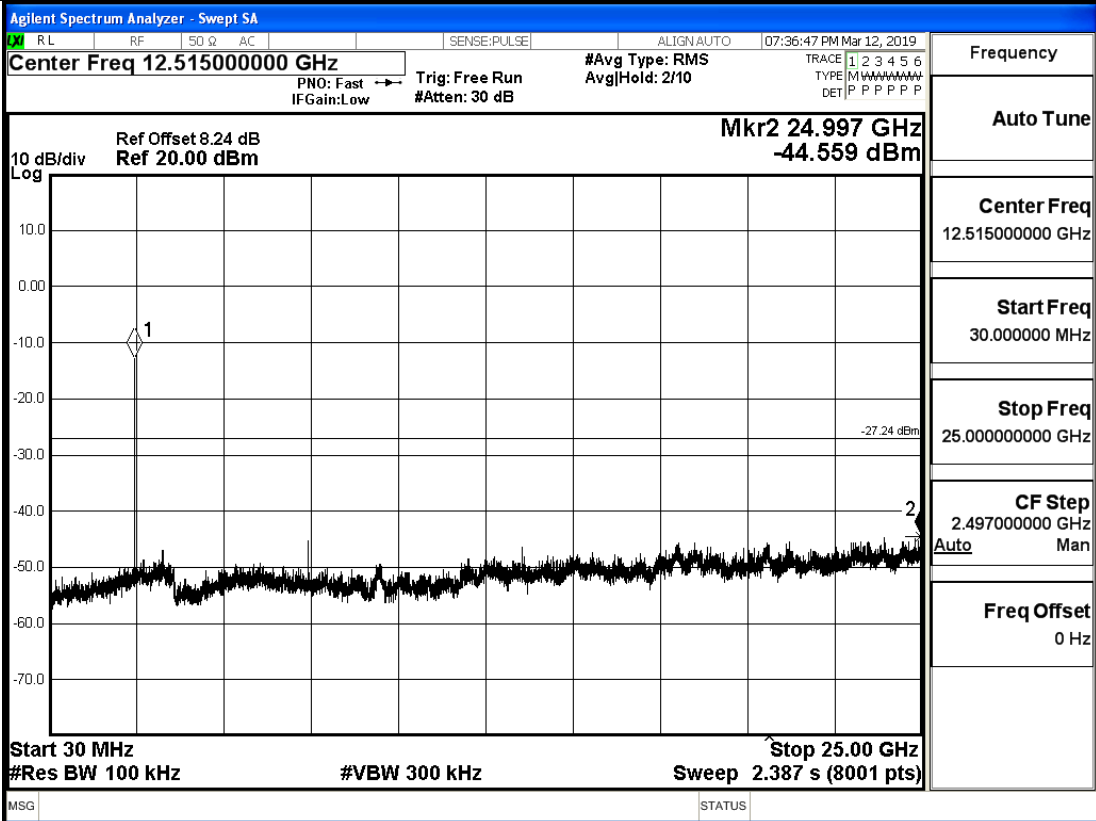
Puw

$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

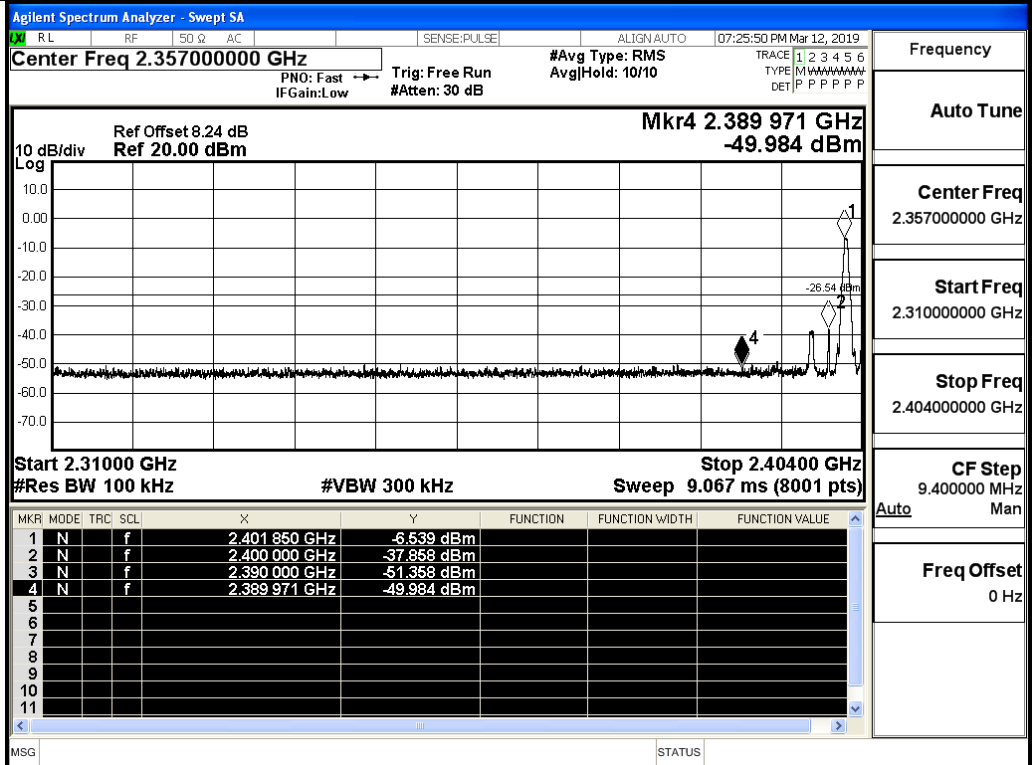


A.7 Band-edge for RF Conducted Emissions

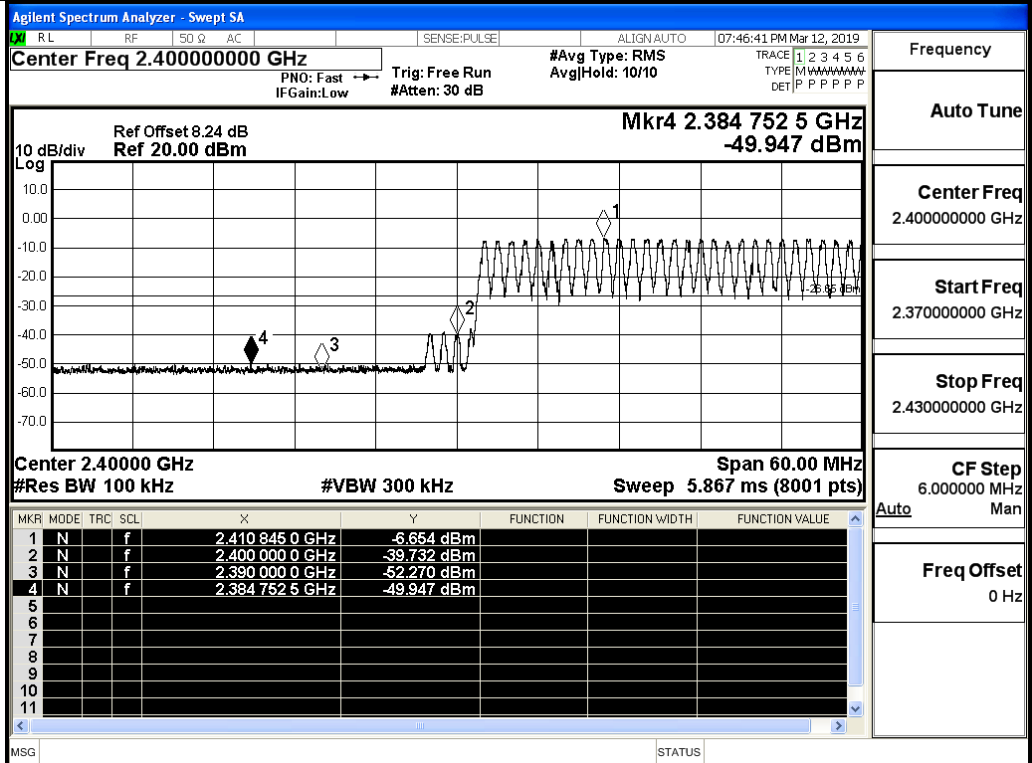
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-6.539	Off	-49.984	-26.54	PASS
			-6.654	On	-49.947	-26.65	PASS
	HCH	2480	-7.276	Off	-45.965	-27.28	PASS
			-6.959	On	-46.157	-26.96	PASS
$\pi/4$ DQPSK	LCH	2402	-8.121	Off	-49.794	-28.12	PASS
			-6.743	On	-49.781	-26.74	PASS
	HCH	2480	-7.001	Off	-45.184	-27.00	PASS
			-7.069	On	-48.575	-27.07	PASS

Test Graphs

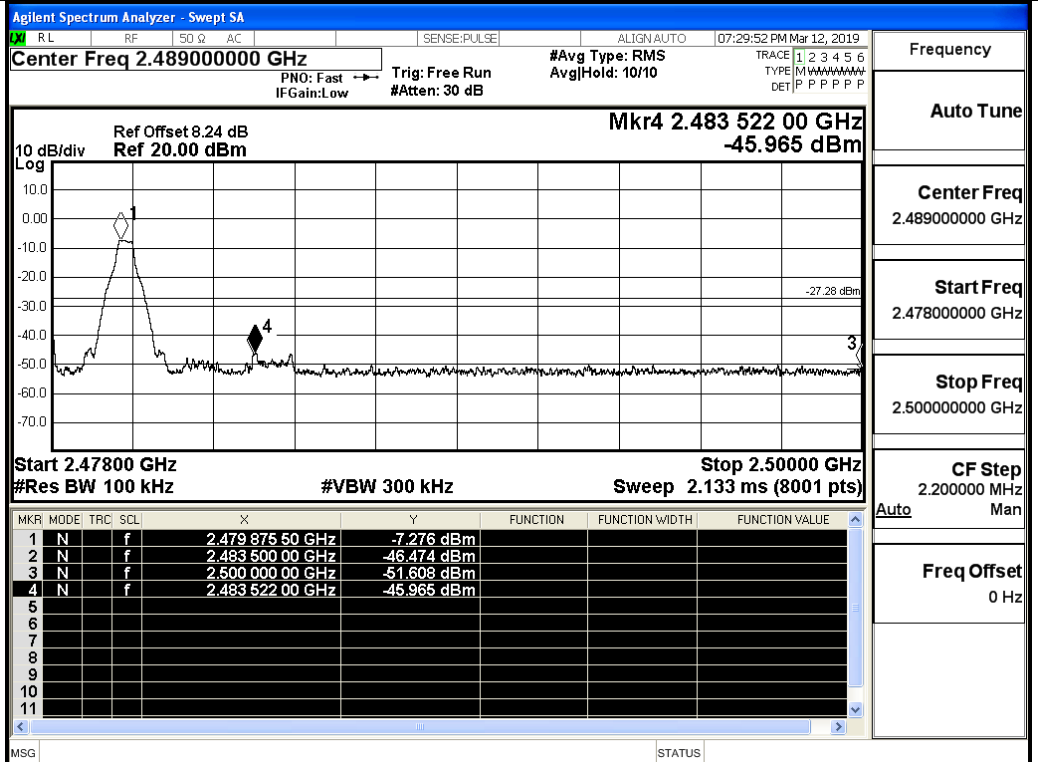
GFSK/LCH/No Hop



GFSK/LCH/Hop

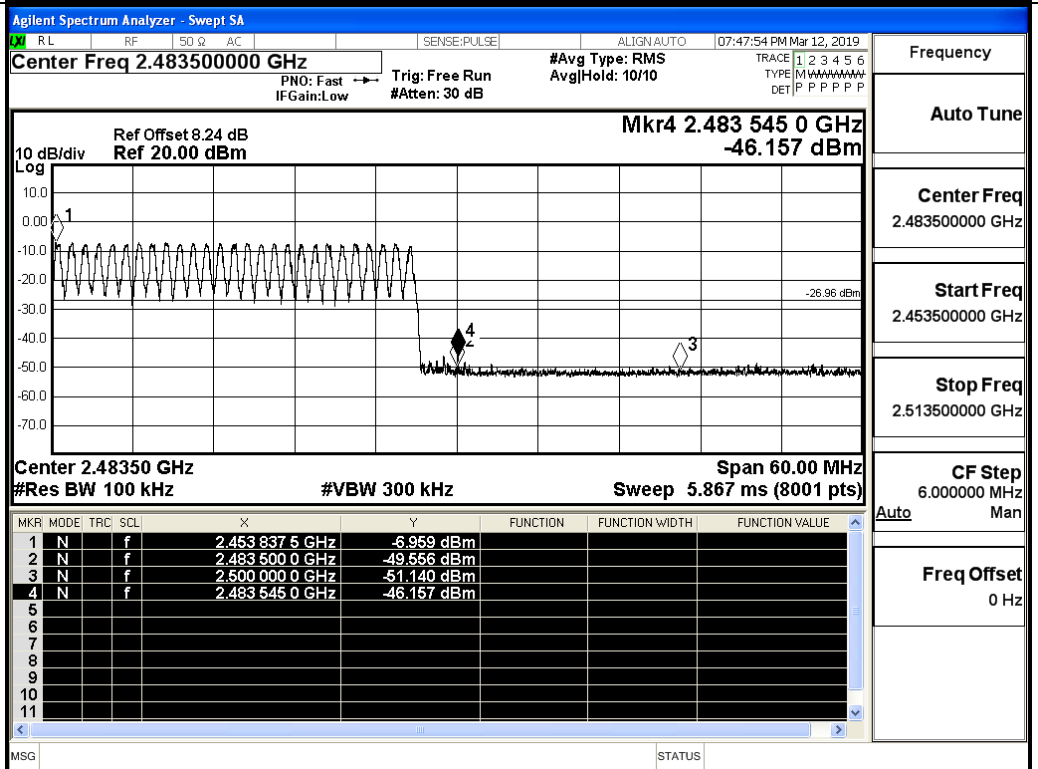


GFSK/HCH/No Hop



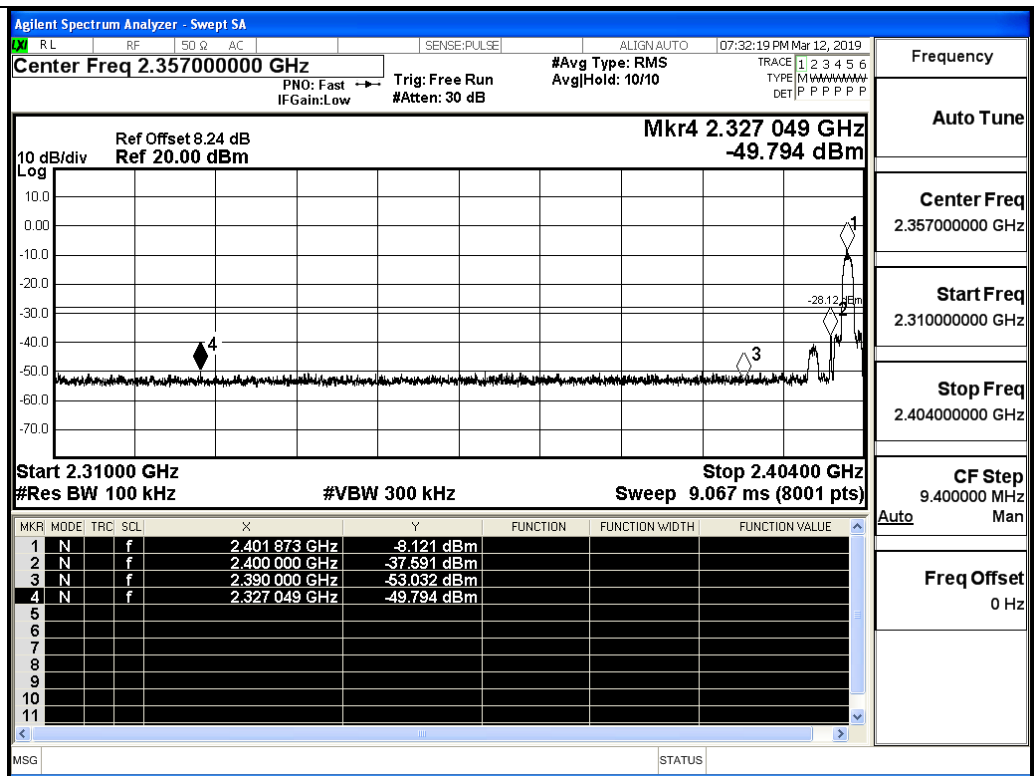
Frequency	Auto Tune
Center Freq	2.489000000 GHz
Start Freq	2.478000000 GHz
Stop Freq	2.500000000 GHz
CF Step	2.200000 MHz
Freq Offset	0 Hz

GFSK/HCH/Hop

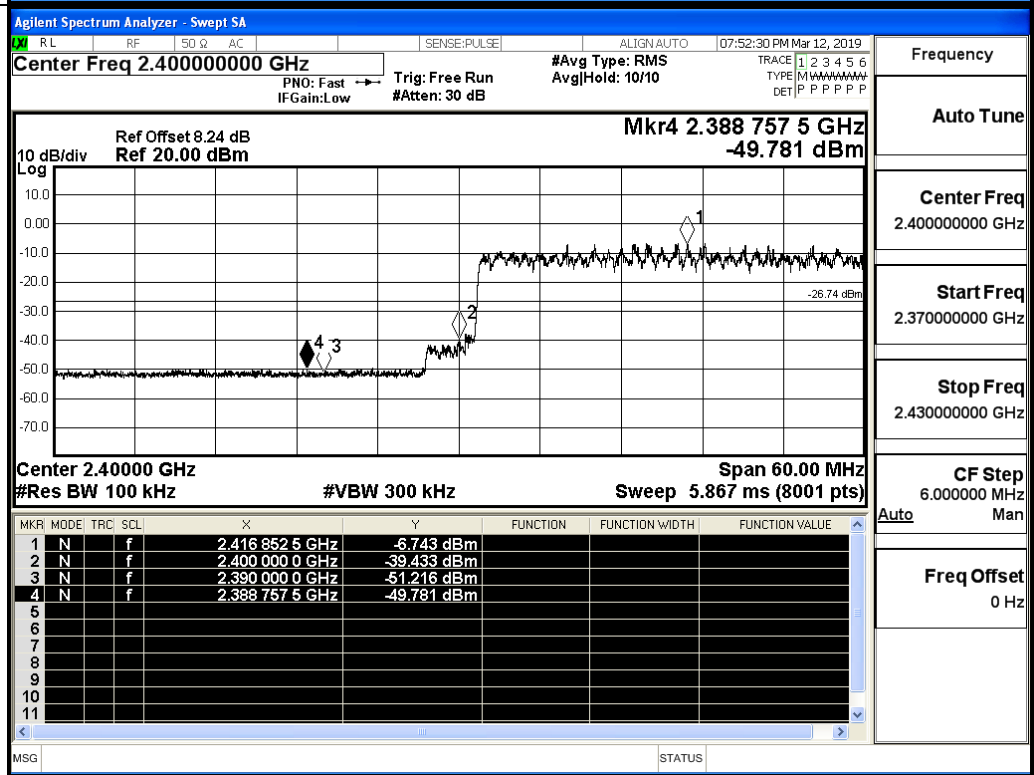


Frequency	Auto Tune
Center Freq	2.483500000 GHz
Start Freq	2.453500000 GHz
Stop Freq	2.513500000 GHz
CF Step	6.000000 MHz
Freq Offset	0 Hz

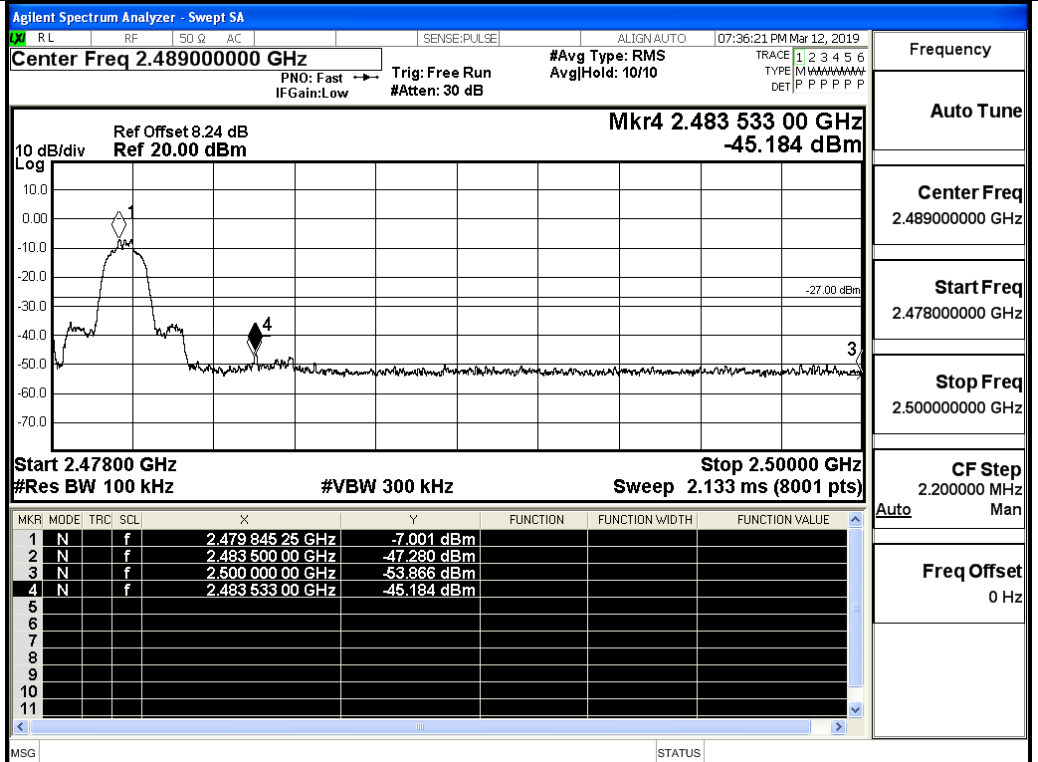
$\pi/4$ DQPSK/LCH/No
Hop



$\pi/4$ DQPSK/LCH/Hop

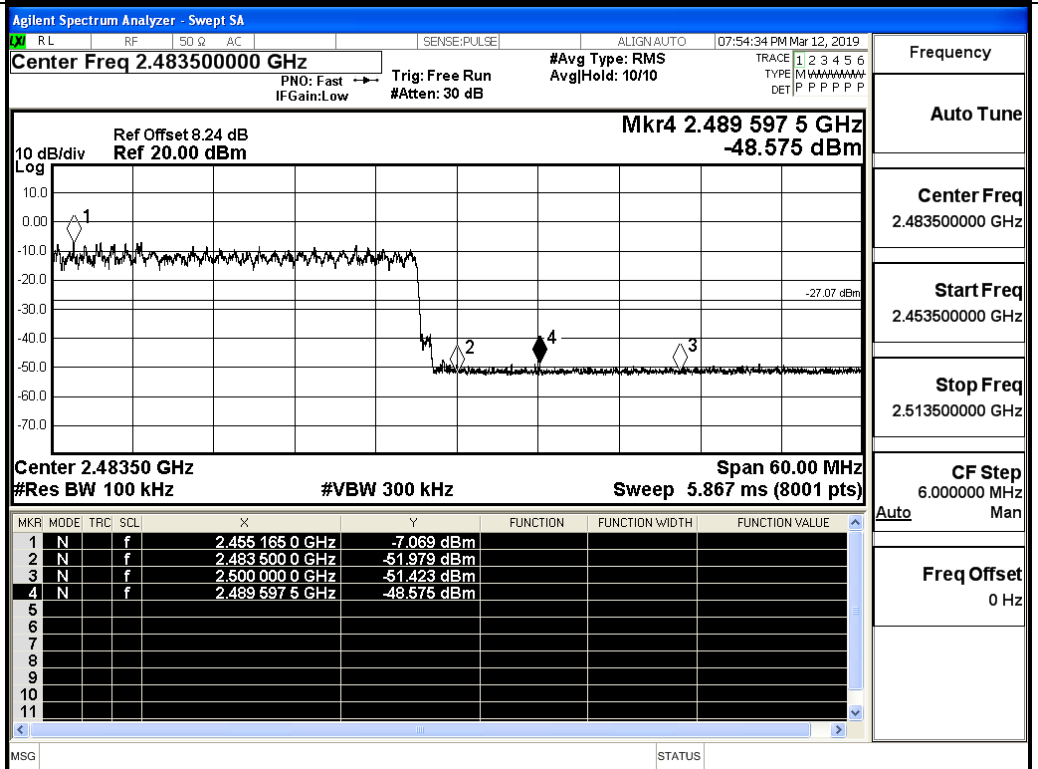


π /4DQPSK/HCH/No
Hop



Frequency
Auto Tune
Center Freq 2.489000000 GHz
Start Freq 2.478000000 GHz
Stop Freq 2.500000000 GHz
CF Step 2.200000 MHz Man
Freq Offset 0 Hz

π /4DQPSK/HCH/Hop

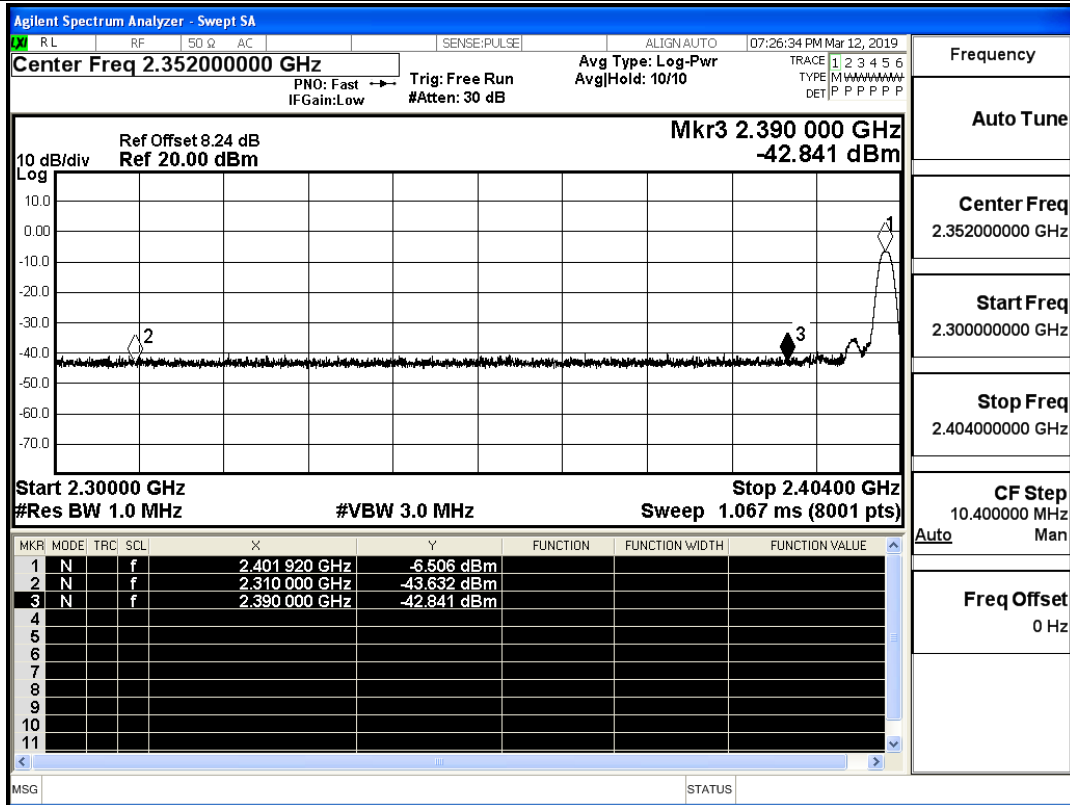


Frequency
Auto Tune
Center Freq 2.483500000 GHz
Start Freq 2.453500000 GHz
Stop Freq 2.513500000 GHz
CF Step 6.000000 MHz Man
Freq Offset 0 Hz

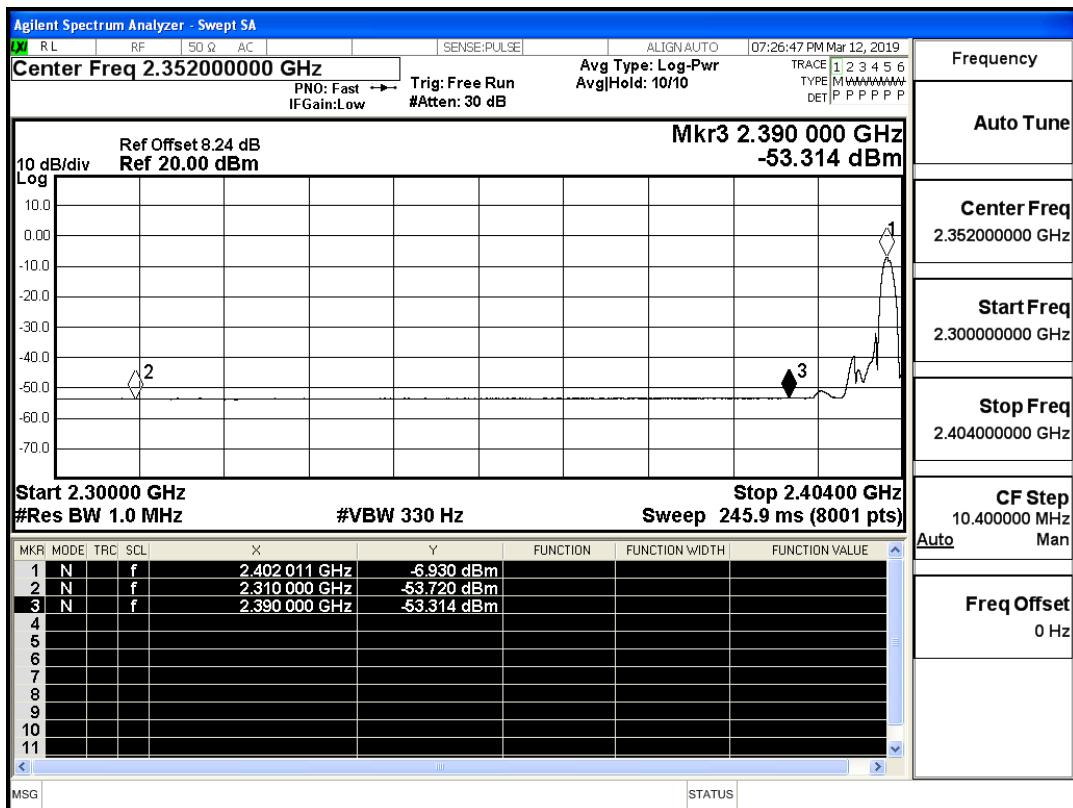
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.63	2.0	0	53.63	PEAK	74	PASS
	Off	2310.0	-53.72	2.0	0	43.54	AV	54	PASS
	Off	2390.0	-42.84	2.0	0	54.42	PEAK	74	PASS
	Off	2390.0	-53.31	2.0	0	43.94	AV	54	PASS
	Off	2483.5	-40.77	2.0	0	56.49	PEAK	74	PASS
	Off	2483.5	-49.22	2.0	0	48.04	AV	54	PASS
	Off	2500.0	-42.11	2.0	0	55.15	PEAK	74	PASS
	Off	2500.0	-53.03	2.0	0	44.23	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.46	2.0	0	53.79	PEAK	74	PASS
	Off	2310.0	-53.67	2.0	0	43.58	AV	54	PASS
	Off	2390.0	-43.32	2.0	0	53.93	PEAK	74	PASS
	Off	2390.0	-53.22	2.0	0	44.04	AV	54	PASS
	Off	2483.5	-41.00	2.0	0	56.26	PEAK	74	PASS
	Off	2483.5	-50.85	2.0	0	46.40	AV	54	PASS
	Off	2500.0	-42.39	2.0	0	54.87	PEAK	74	PASS
	Off	2500.0	-52.90	2.0	0	44.35	AV	54	PASS

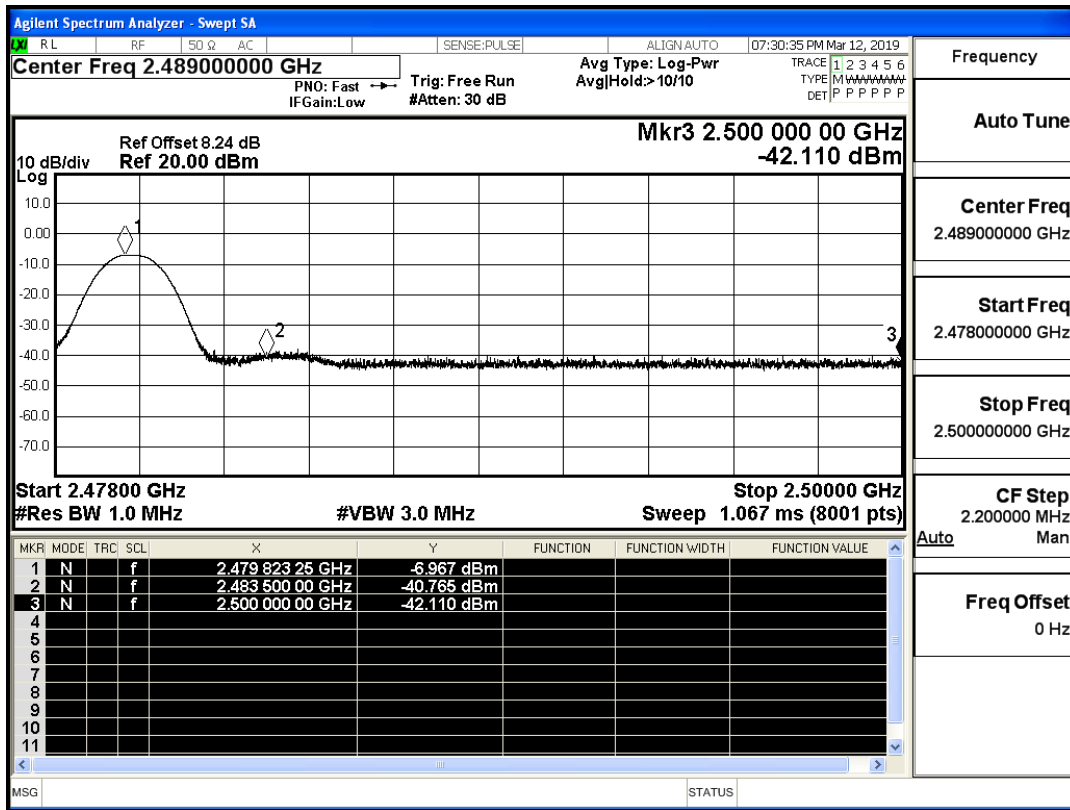
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



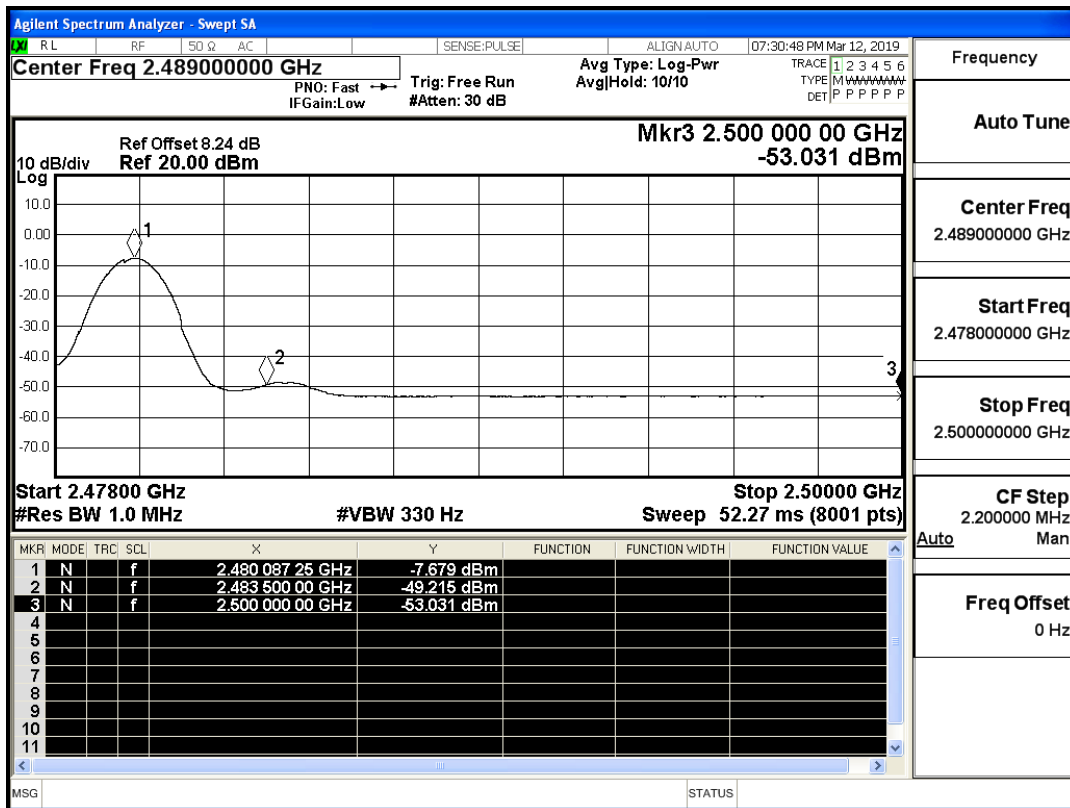
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)



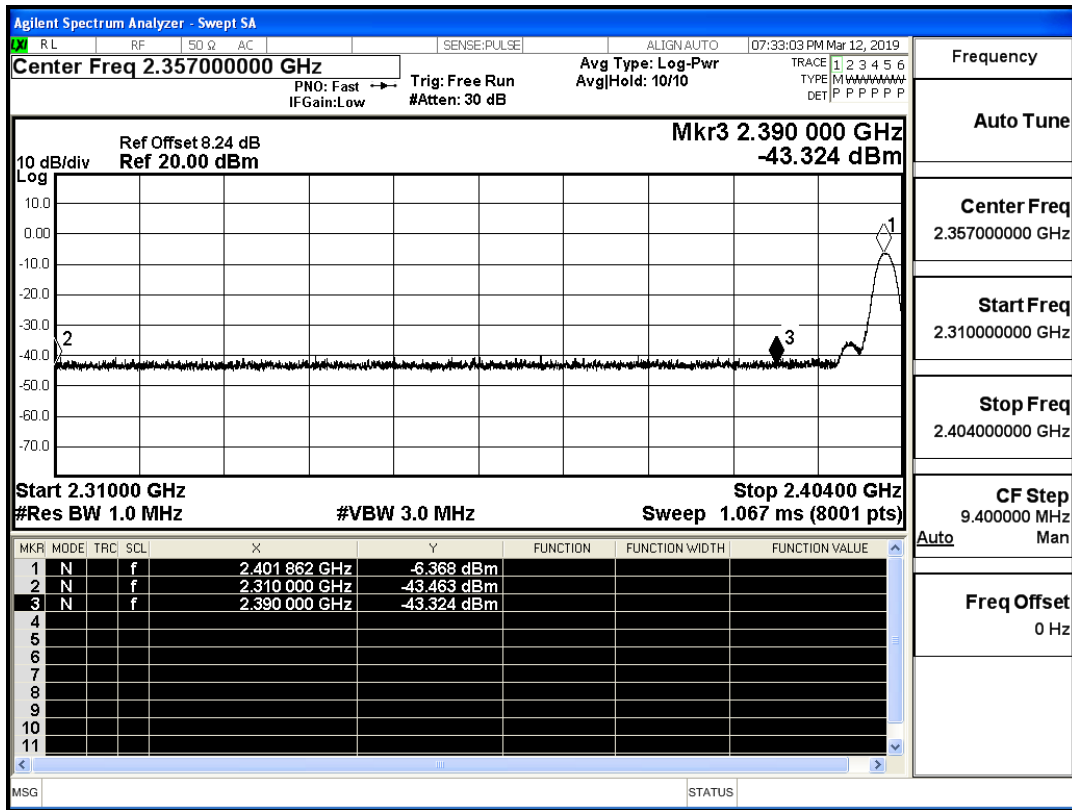
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



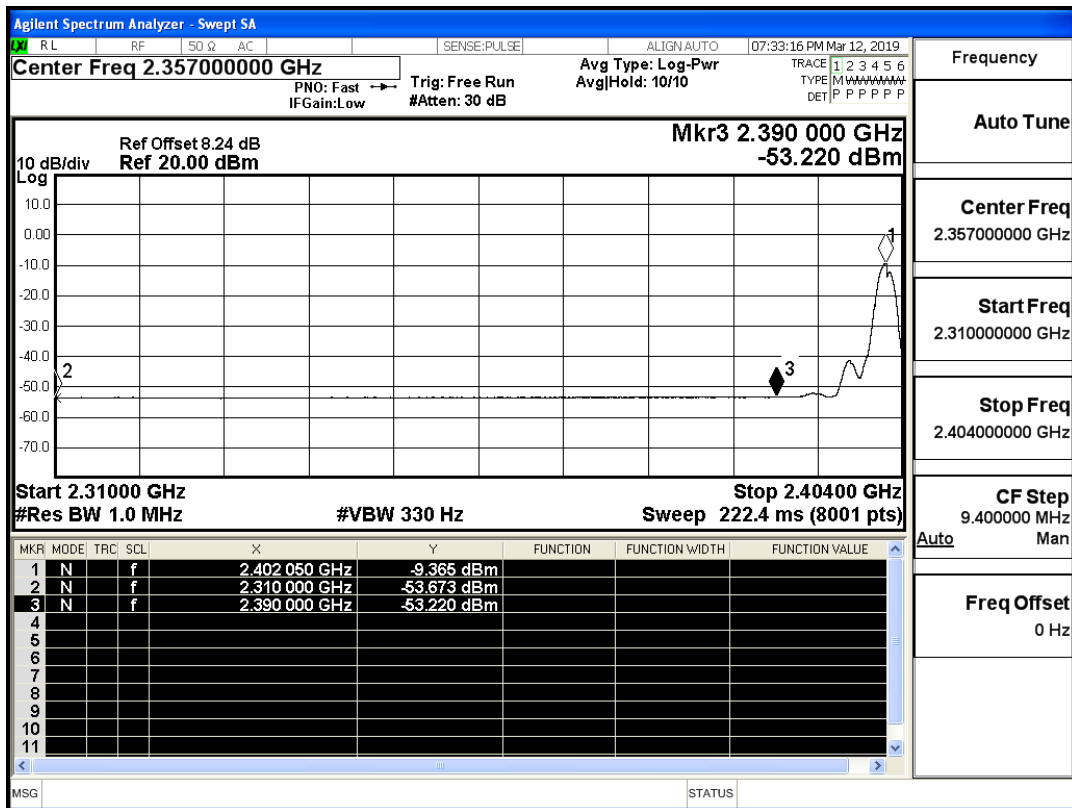
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



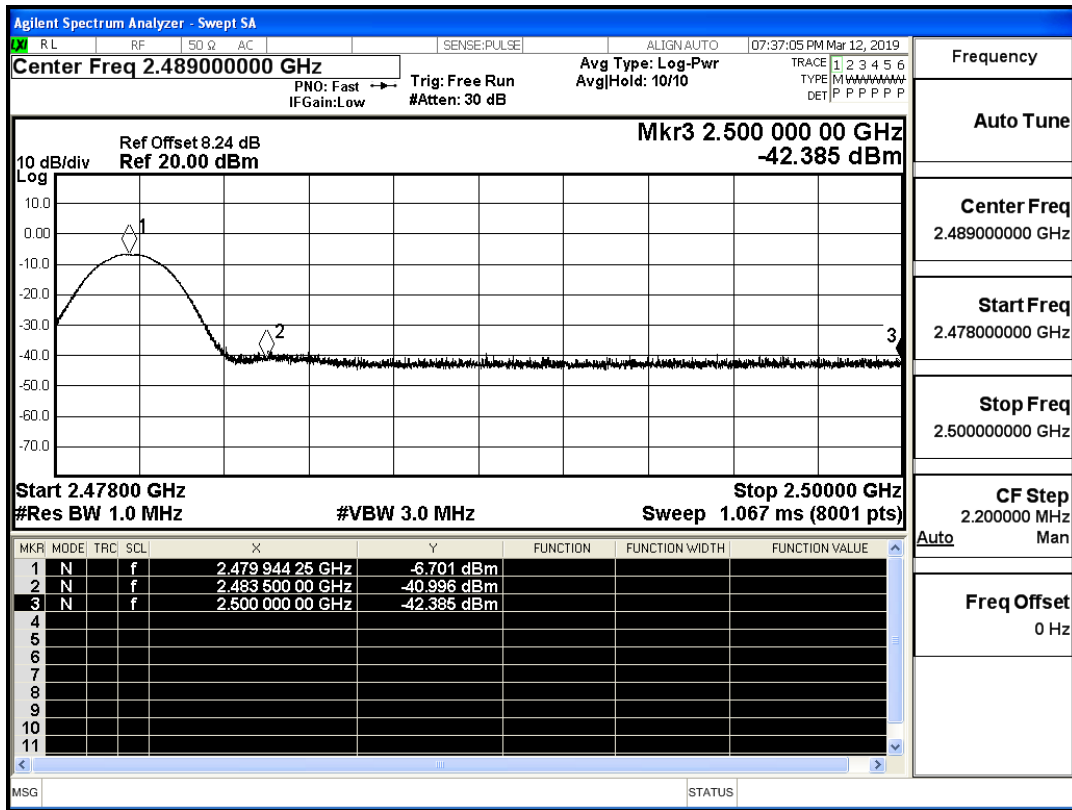
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)



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



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



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

