

Appendix A

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

Product Name: Wireless Speaker Diffuser

Trade Mark:  zen rox
Test Model: CVS-03

Environmental Conditions

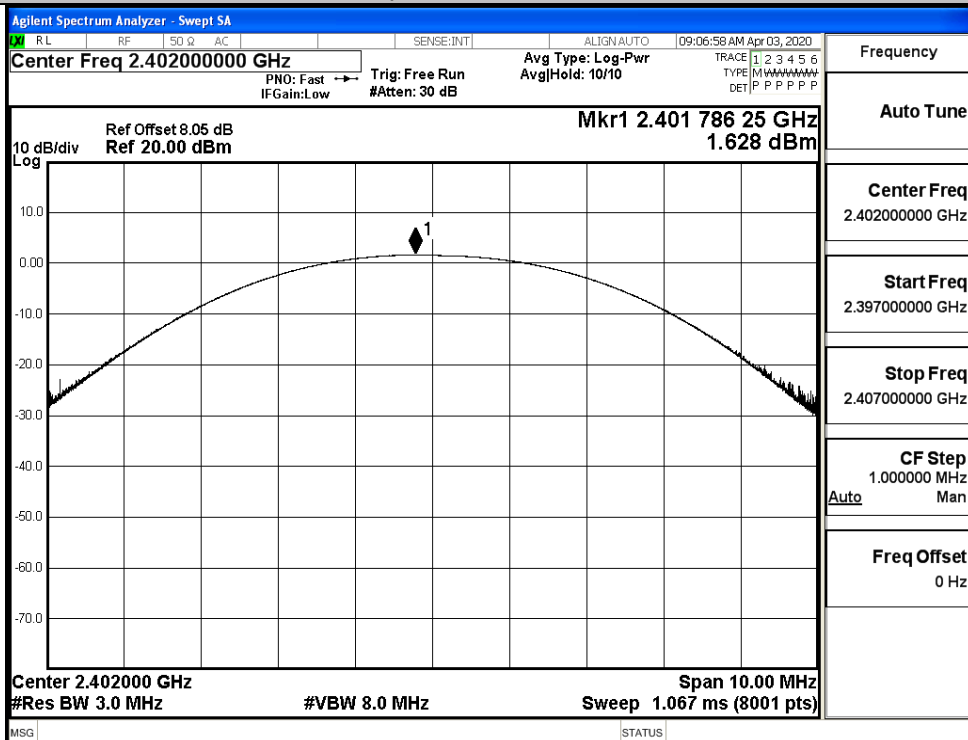
Temperature:	25°C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Qu Xin
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

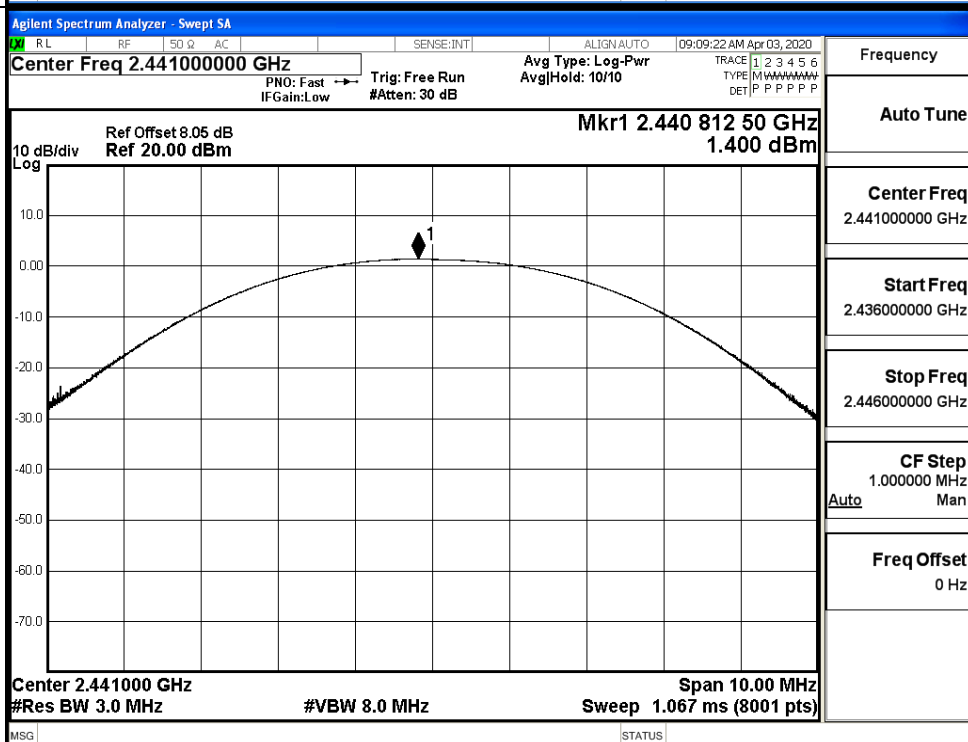
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	1.628	21	PASS
	MCH	1.400	21	PASS
	HCH	0.730	21	PASS
$\pi/4$ DQPSK	LCH	2.246	21	PASS
	MCH	1.922	21	PASS
	HCH	1.250	21	PASS

Test Graphs

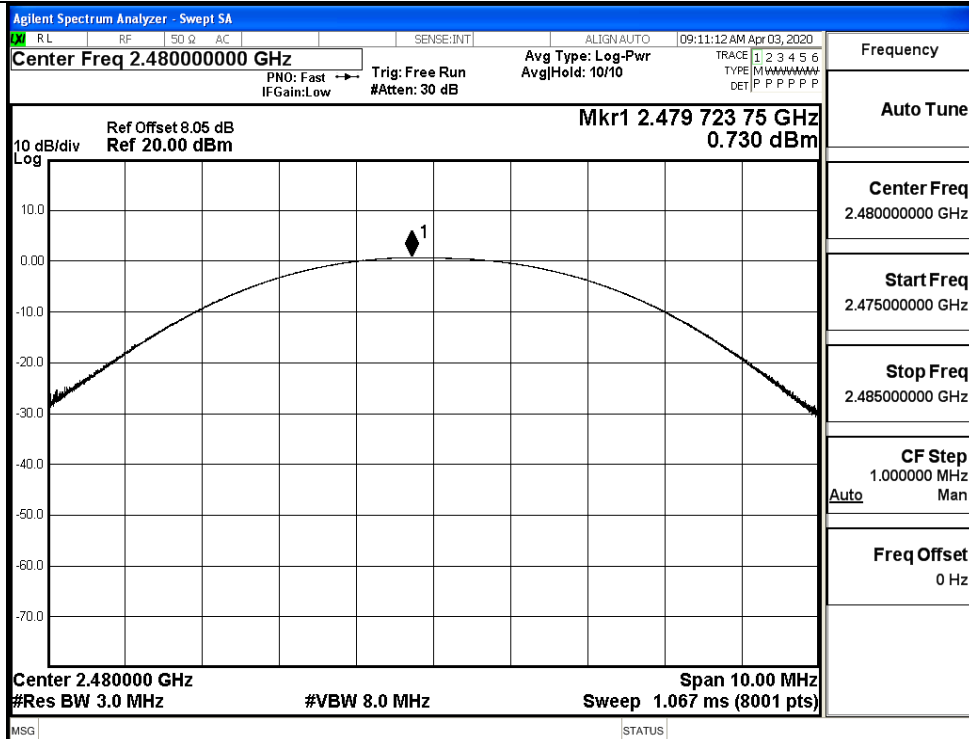
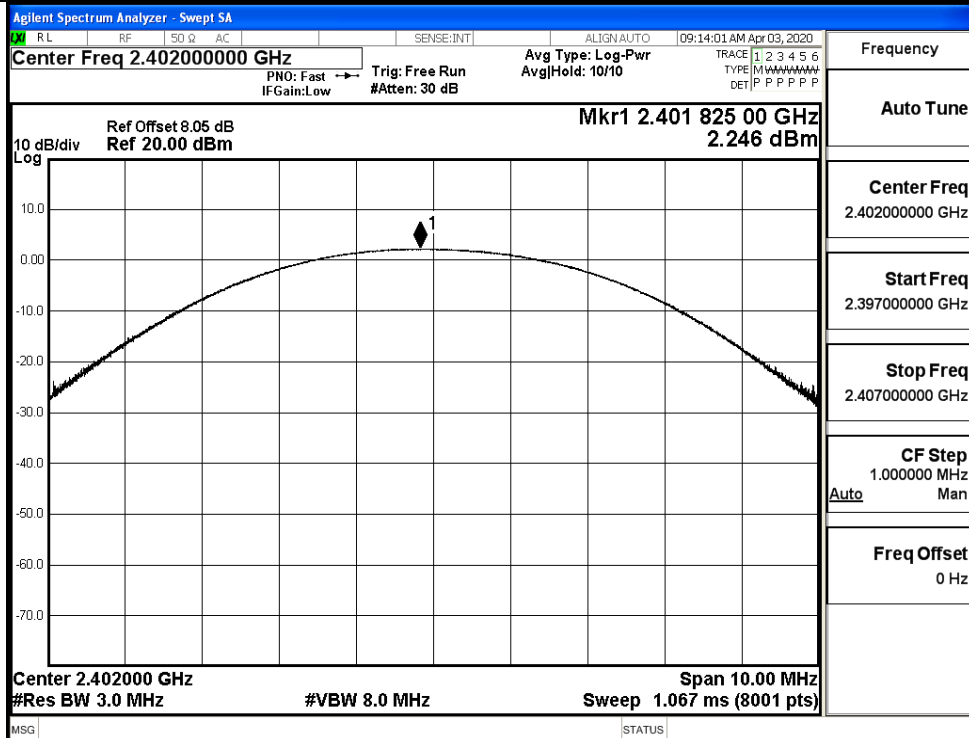
GFSK/LCH

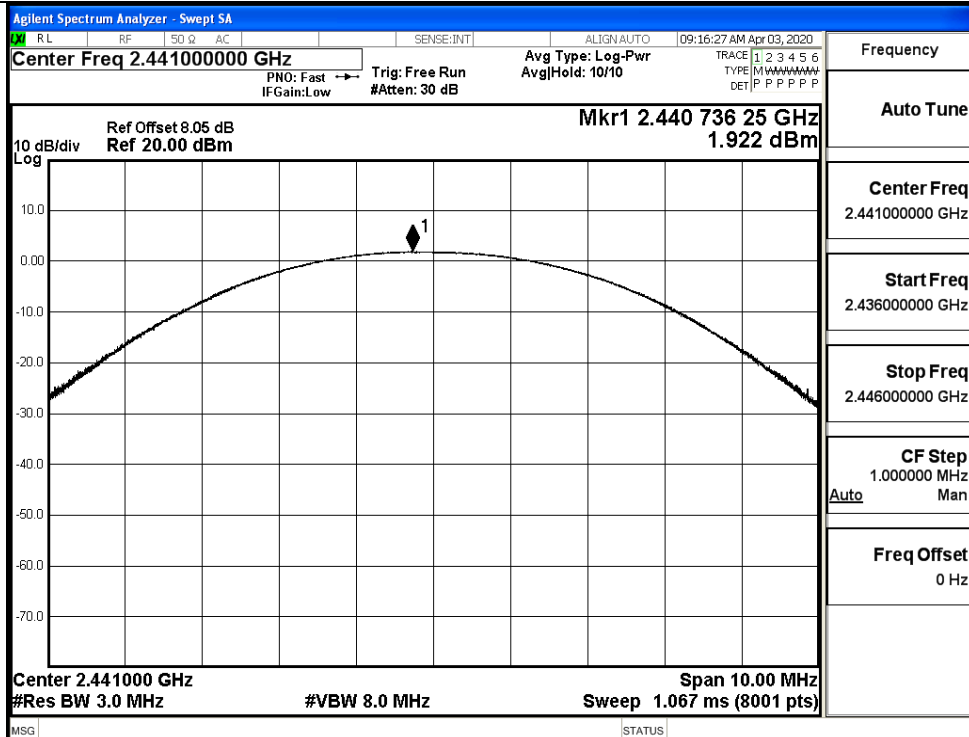
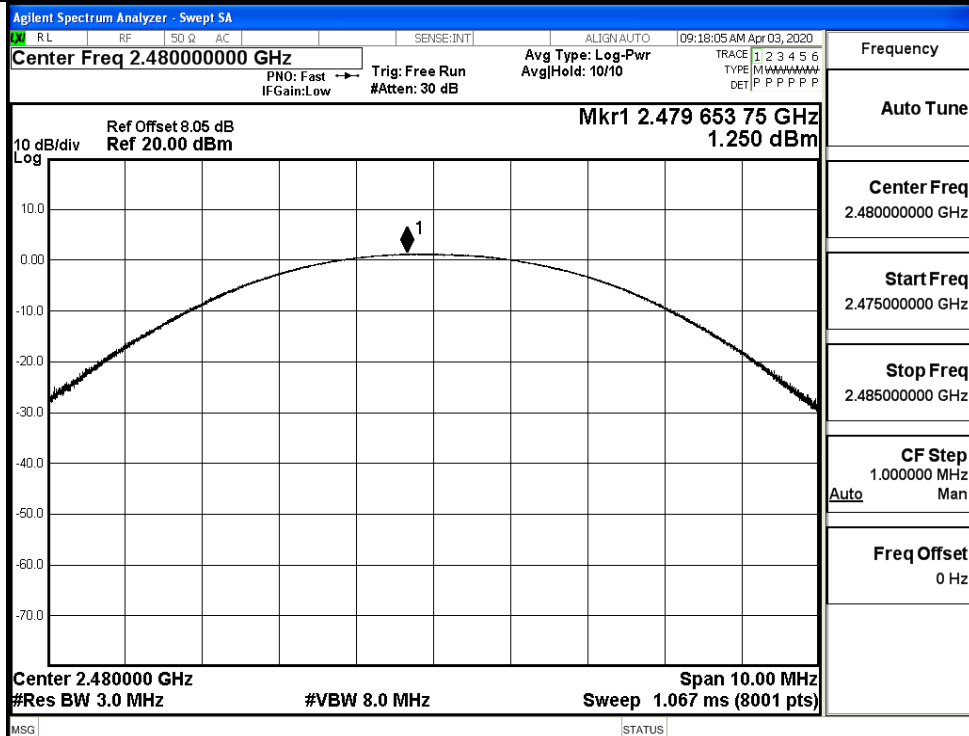


GFSK/MCH



GFSK/HCH

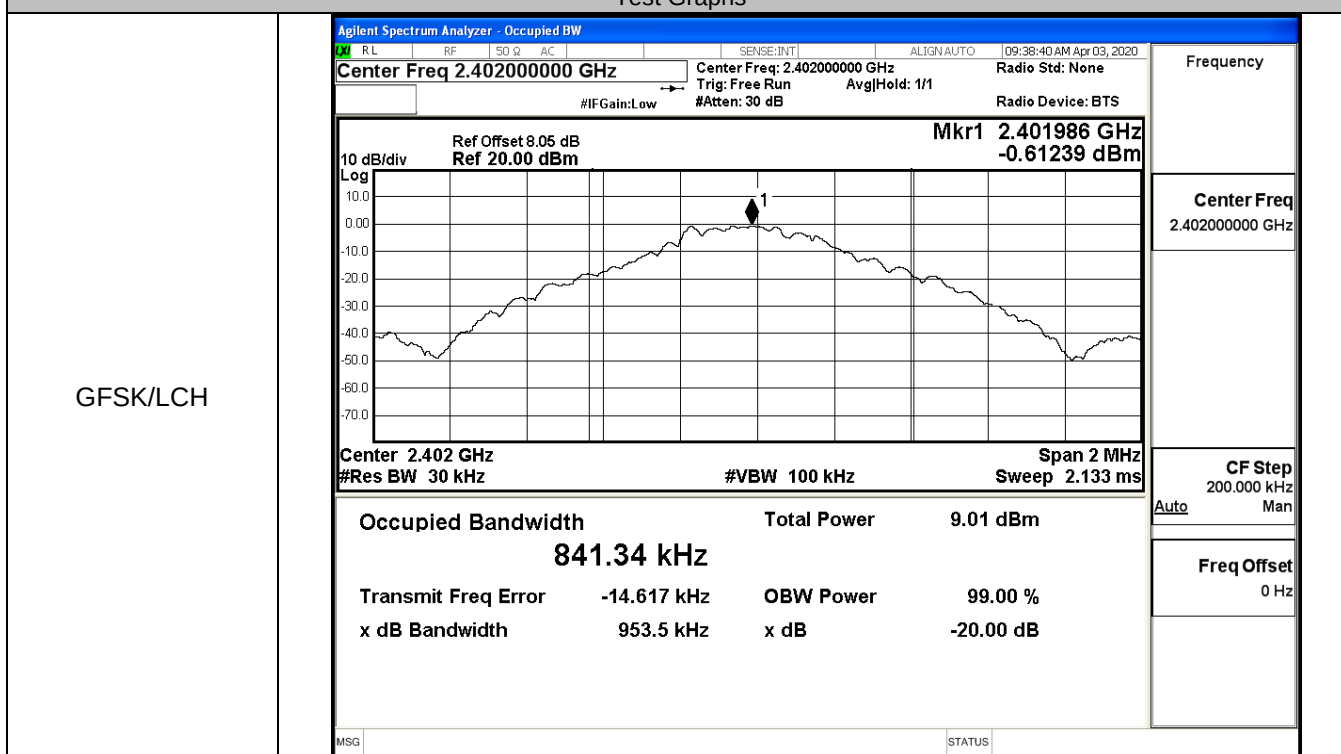
 π /4DQPSK/LCH

$\pi/4$ DQPSK/MCH $\pi/4$ DQPSK/HCH

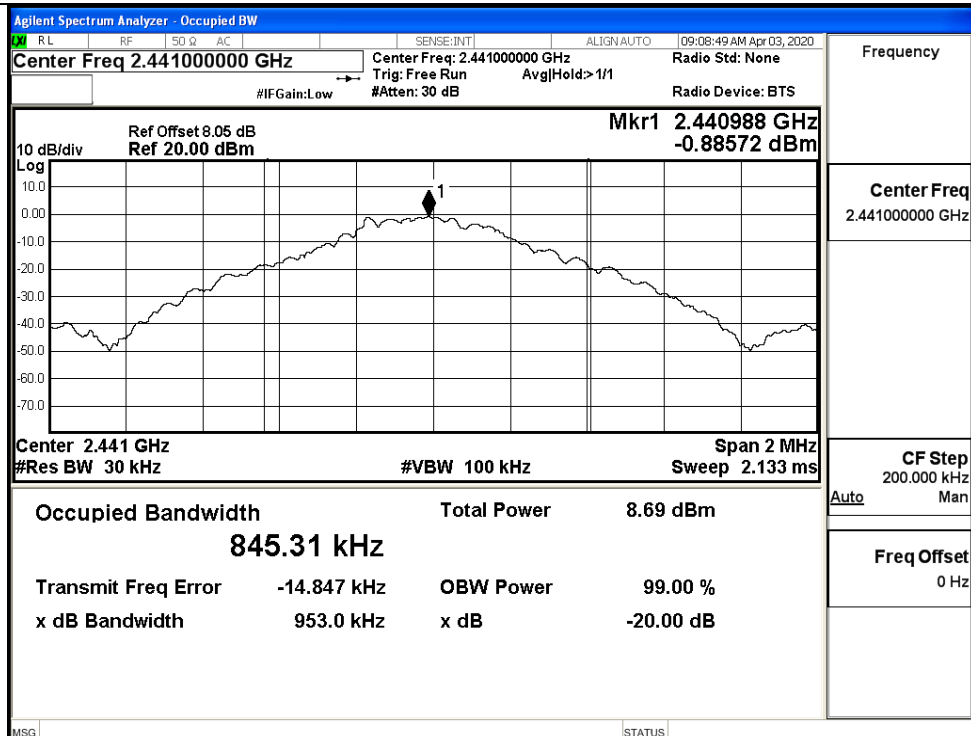
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9535	Not Specified	PASS
	MCH	0.9530	Not Specified	PASS
	HCH	0.9523	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.317	Not Specified	PASS
	MCH	1.314	Not Specified	PASS
	HCH	1.316	Not Specified	PASS

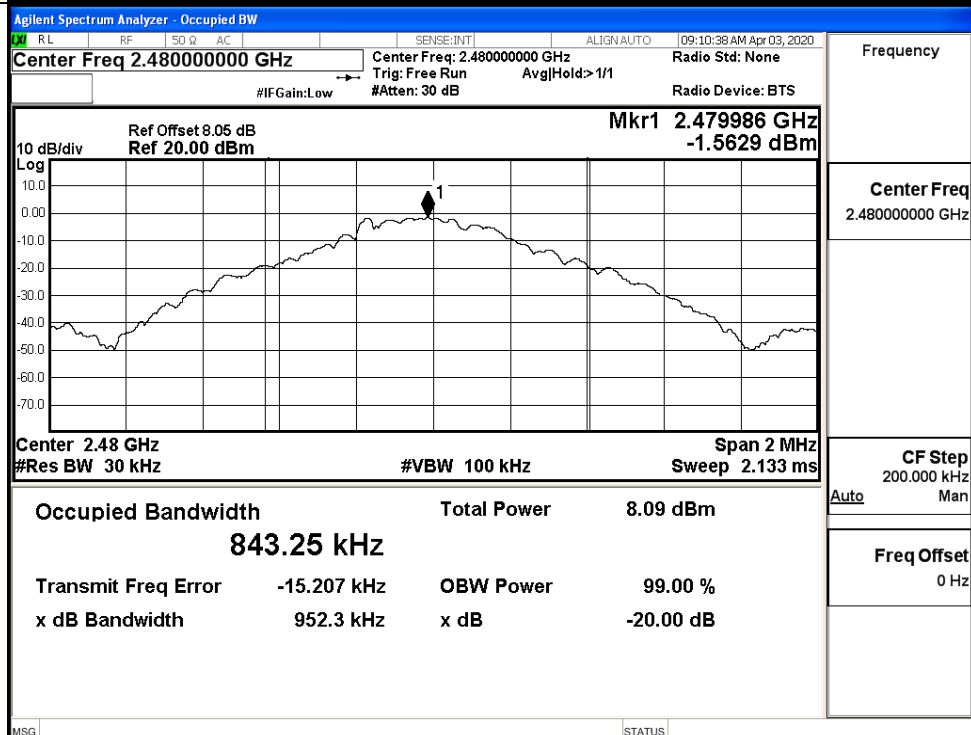
Test Graphs

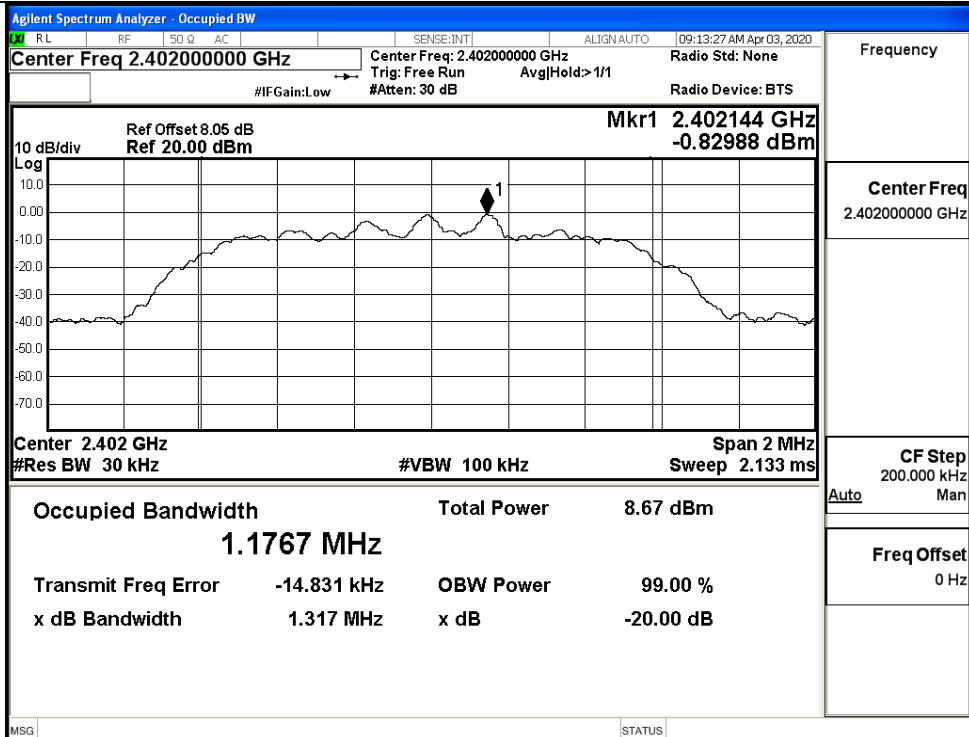
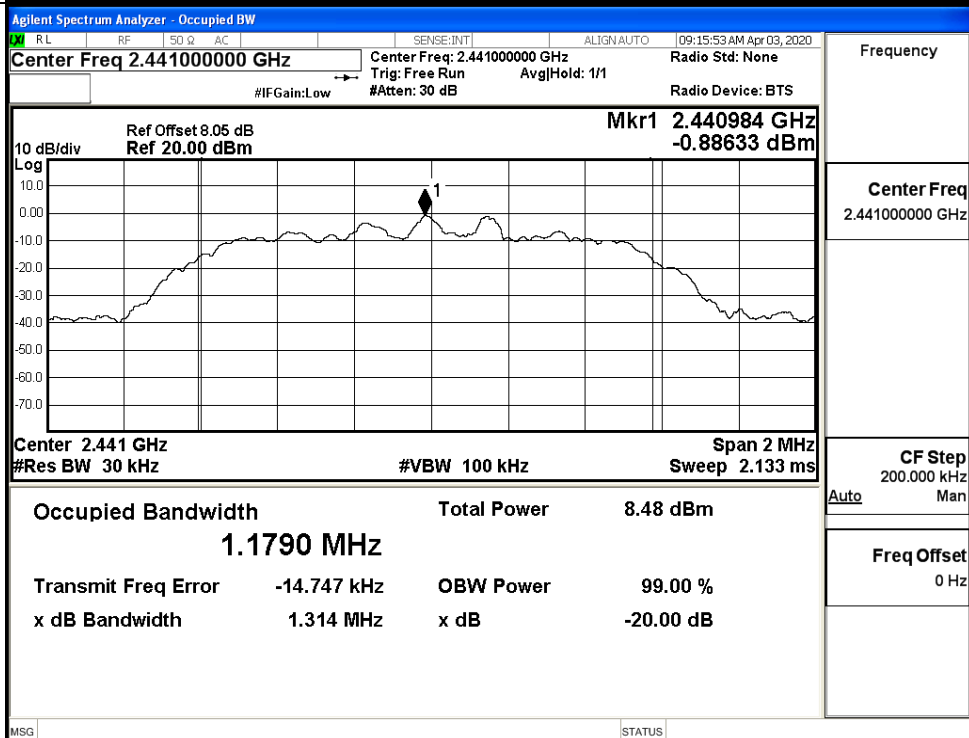


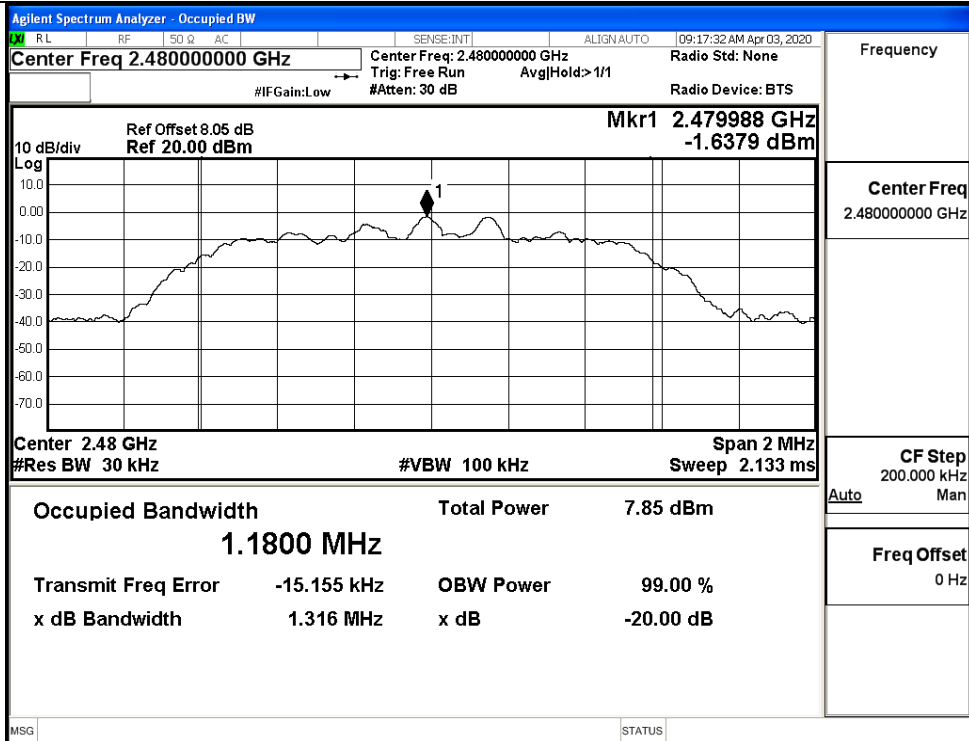
GFSK/MCH



GFSK/HCH



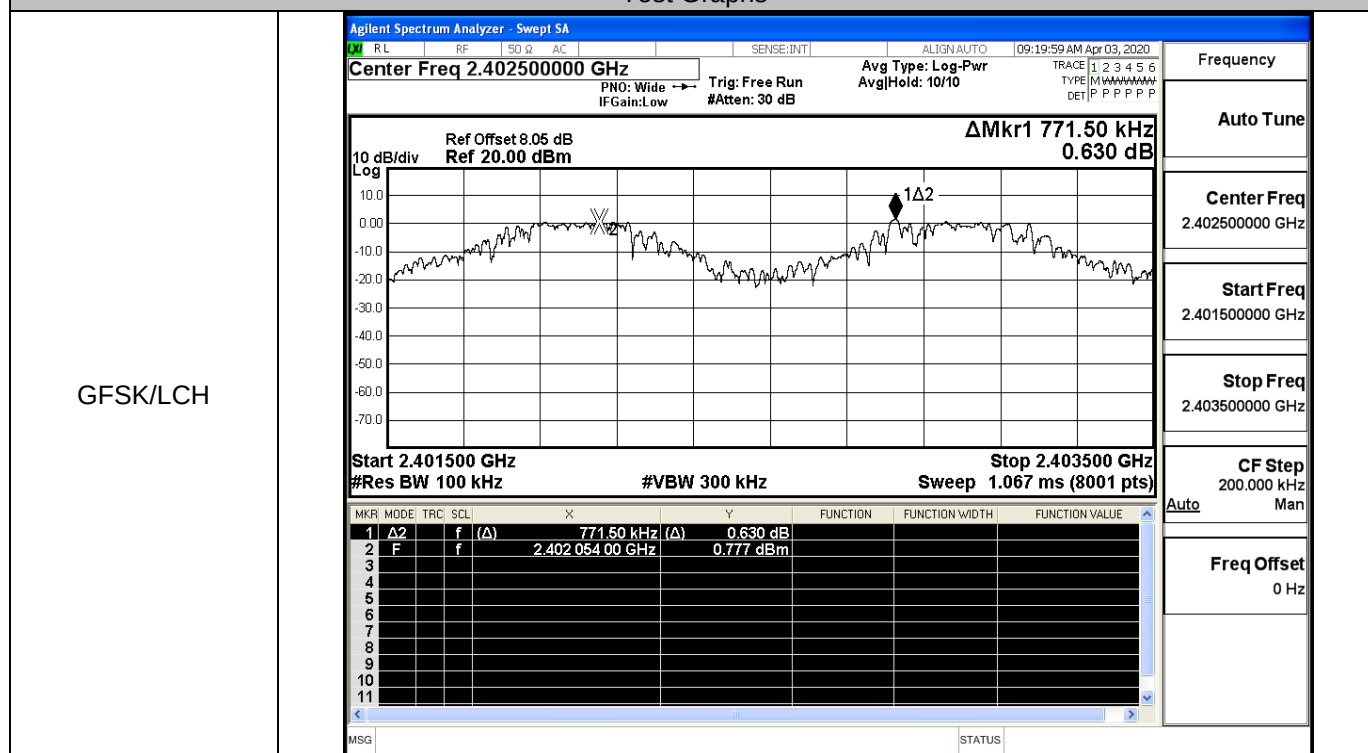
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

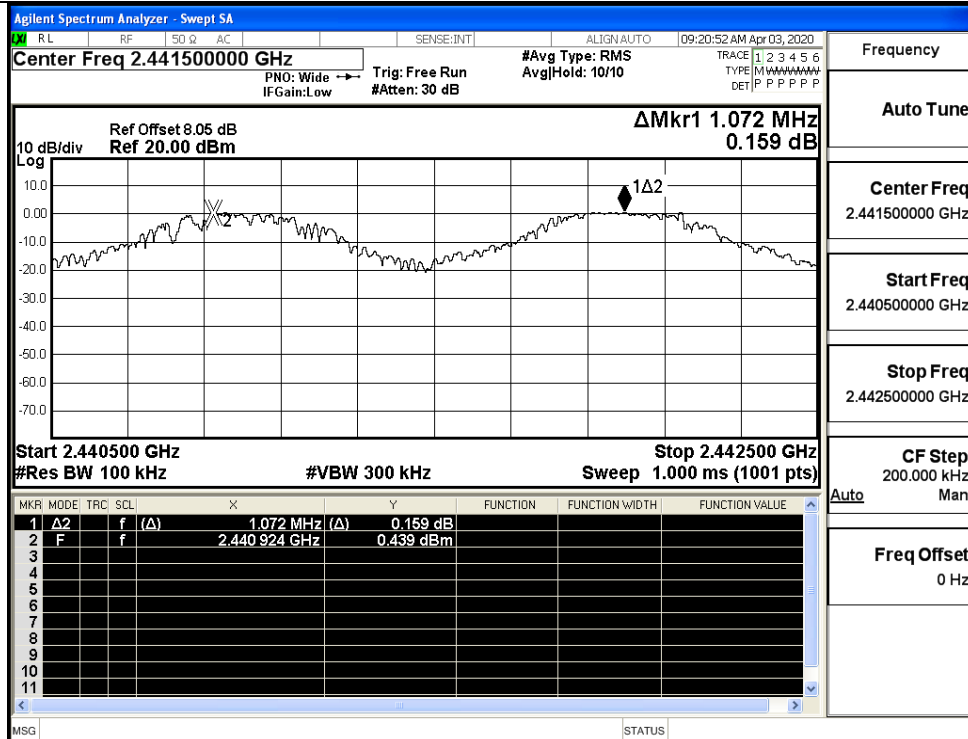
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.771	0.635	PASS
	MCH	1.072	0.635	PASS
	HCH	1.082	0.635	PASS
$\pi/4$ DQPSK	LCH	0.992	0.878	PASS
	MCH	1.014	0.878	PASS
	HCH	0.960	0.878	PASS

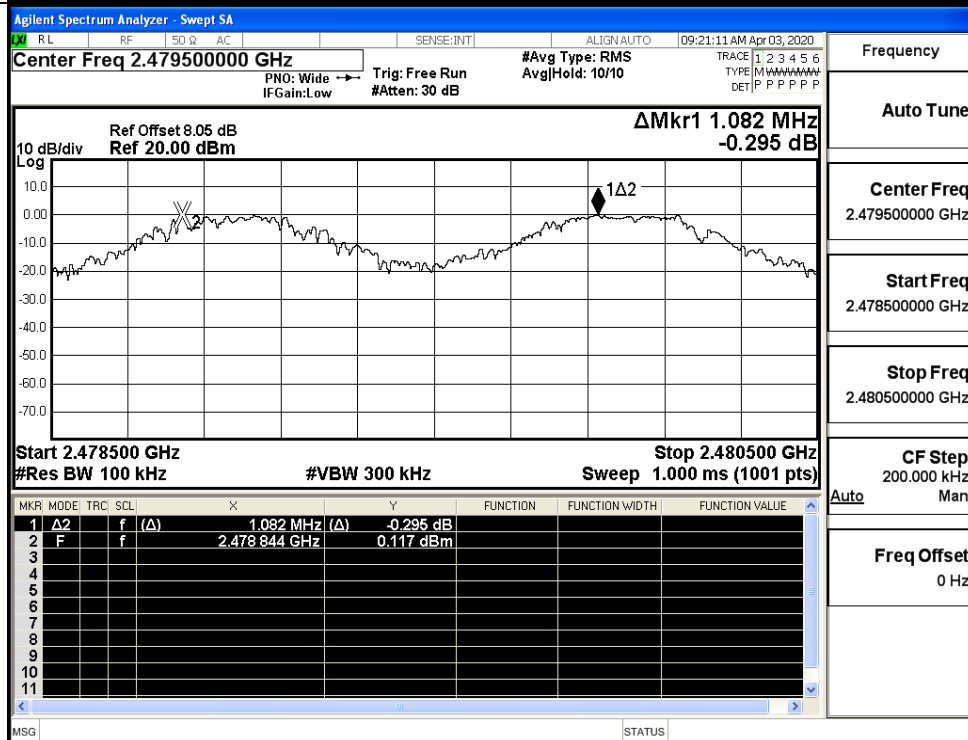
Test Graphs

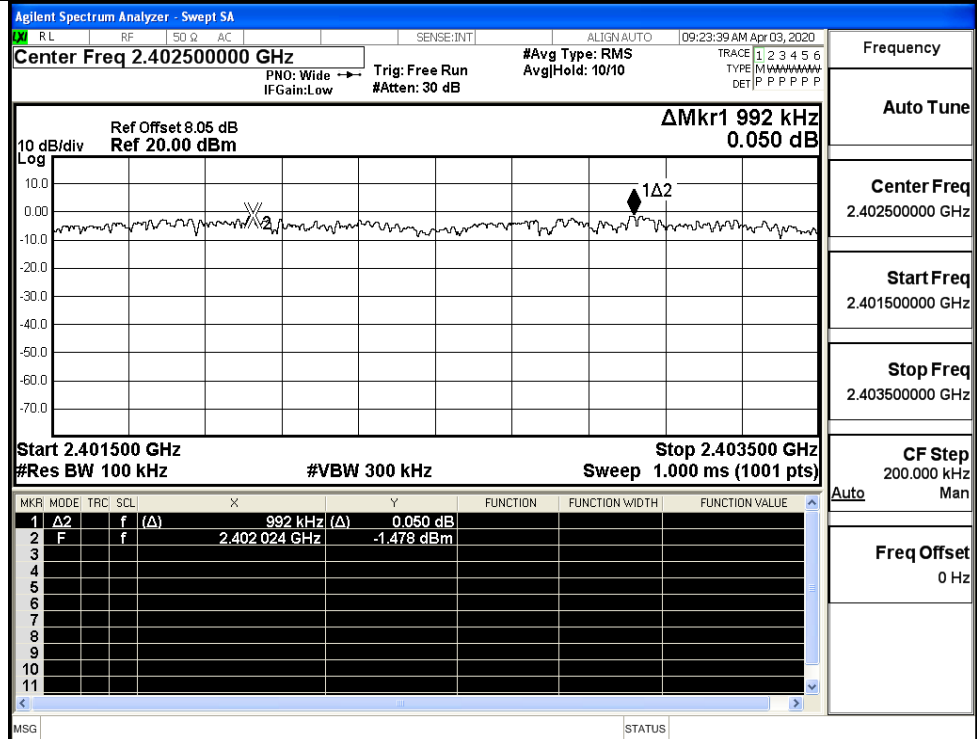
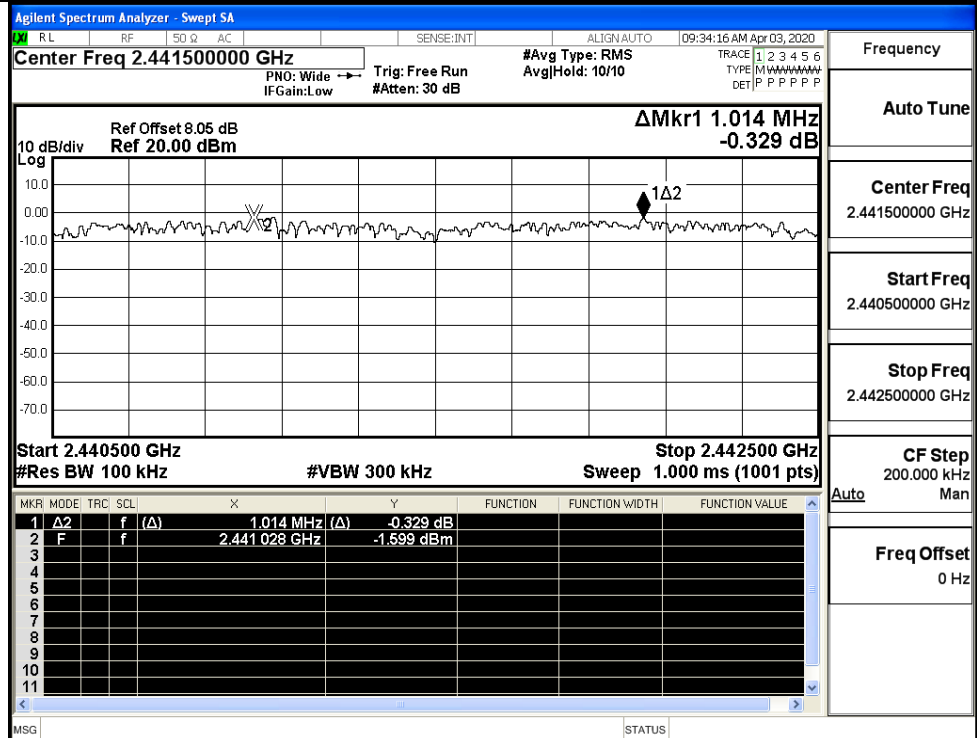


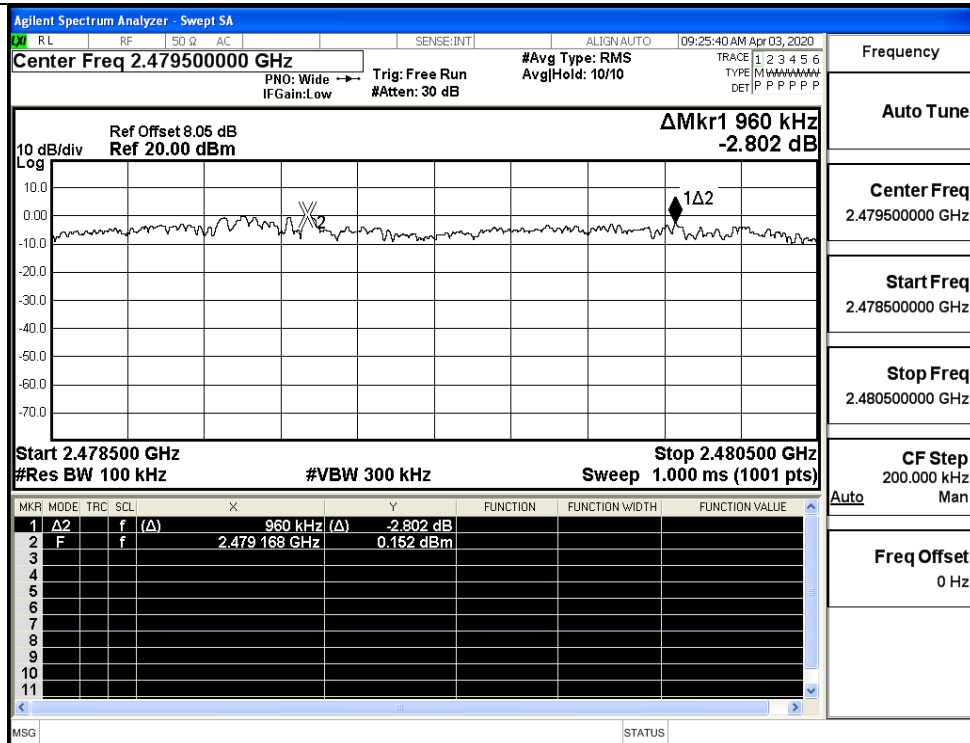
GFSK/MCH



GFSK/HCH



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

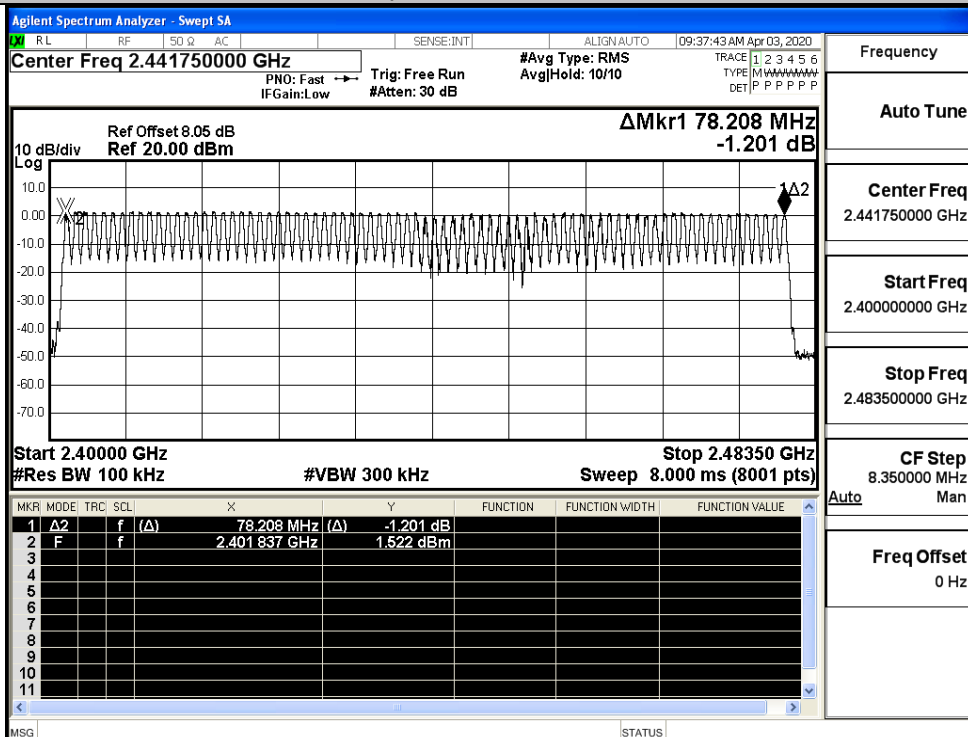
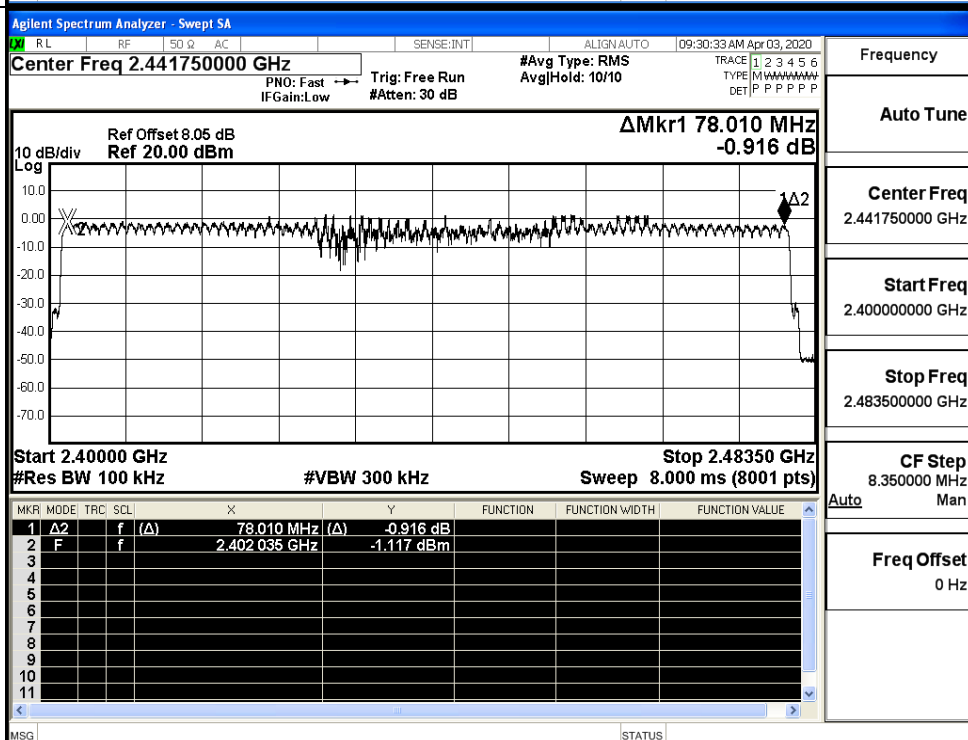
$\pi/4$ DQPSK/HCH

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

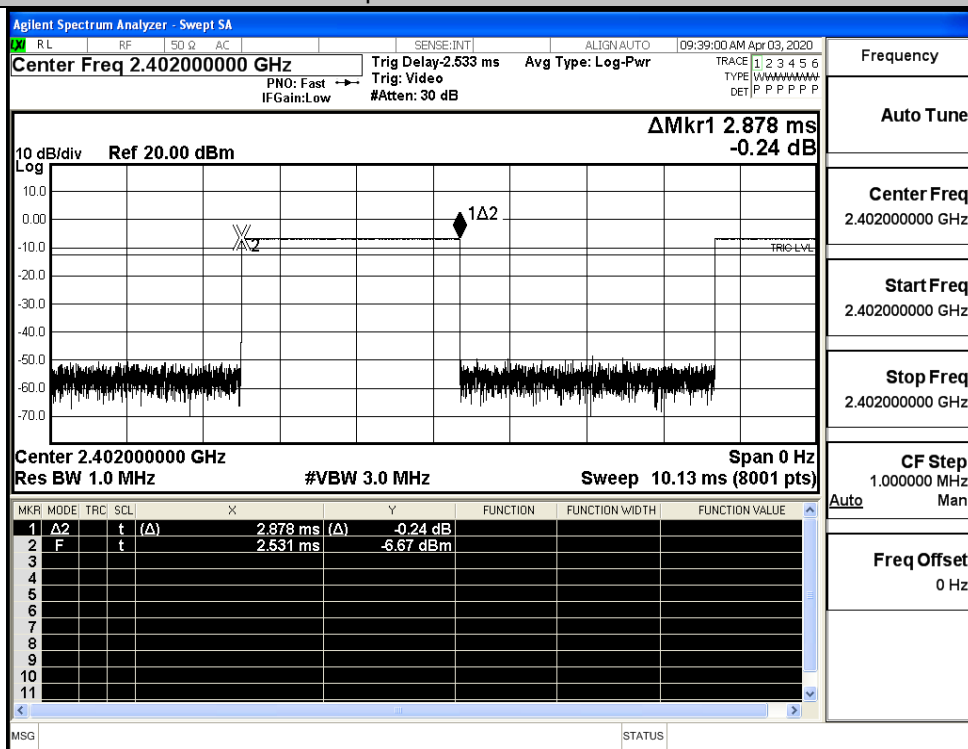
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

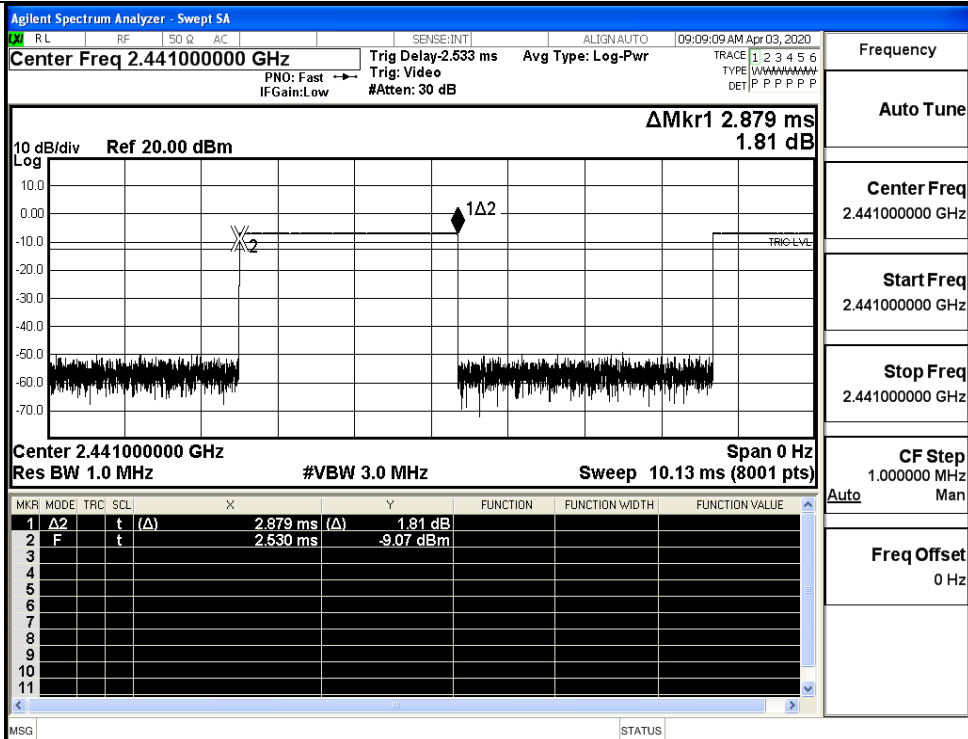
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.308	0.4	PASS
	2DH5	MCH	2.88	106.7	0.307	0.4	PASS
	2DH5	HCH	2.88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

Test Graphs

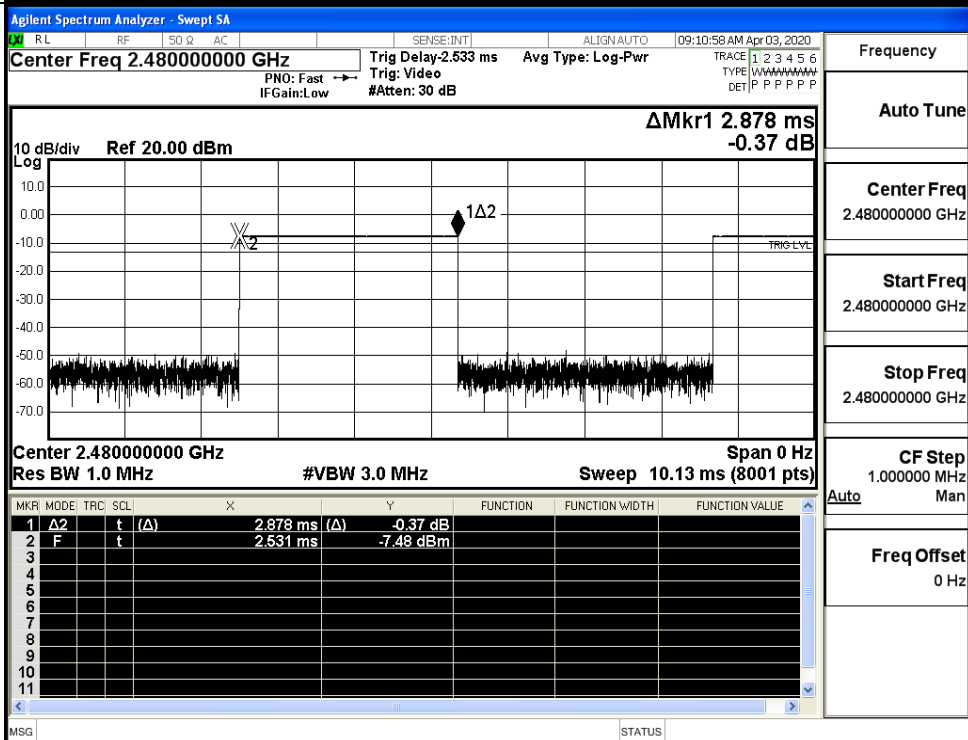
GFSK_DH5/LCH



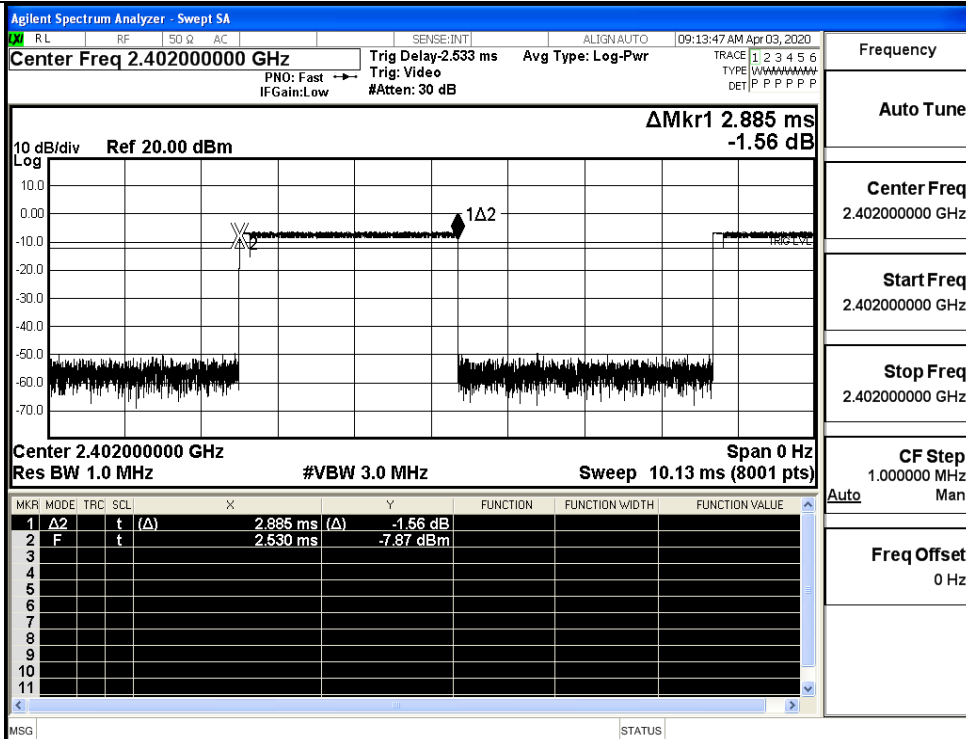
GFSK_DH5/MCH



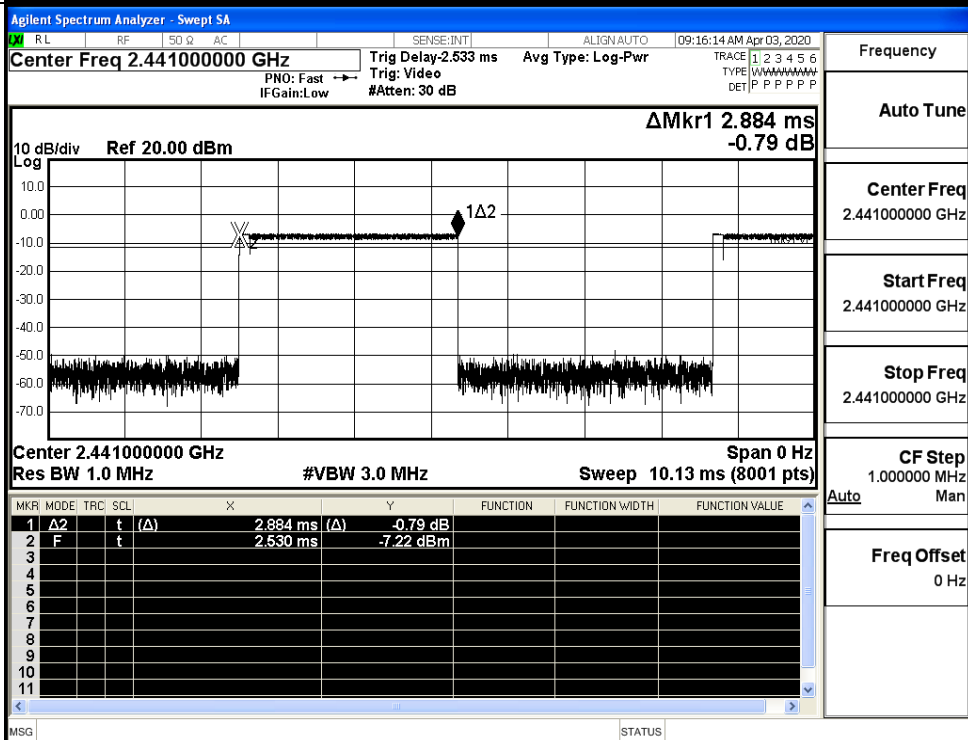
GFSK_DH5/HCH



$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH



Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT ALIGN AUTO 09:17:52 AM Apr 03, 2020

Center Freq 2.480000000 GHz Trig Delay: 2.533 ms Avg Type: Log-Pwr
 PNO: Fast IF Gain: Low Trig: Video #Atten: 30 dB TRACE 1 2 3 4 5 6
 DET P P P P P P

ΔMkr1 2.884 ms -1.26 dB

The main display shows a spectrum plot with a frequency range from approximately 2.47 GHz to 2.49 GHz. The vertical axis is labeled 'Log' and ranges from -70.0 to 10.0 dBm/div. A reference level is set at 20.00 dBm. A signal is visible around -60 dBm. A marker is placed at 2.884 ms with a value of -1.26 dB.

Center 2.480000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 3.0 MHz Sweep 10.13 ms (8001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	t	(Δ)	2.884 ms	-1.26 dB			
2	F	t		511.7 μs	-7.55 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

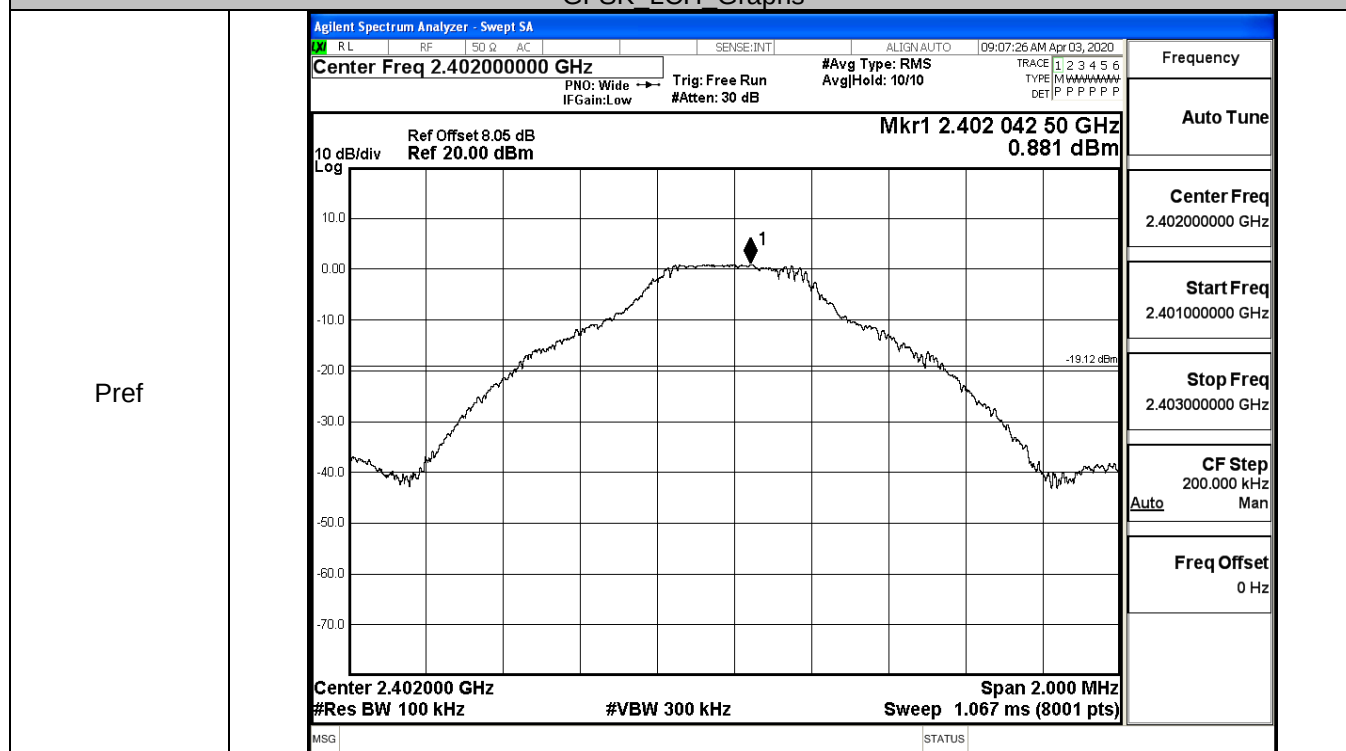
MSG STATUS

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

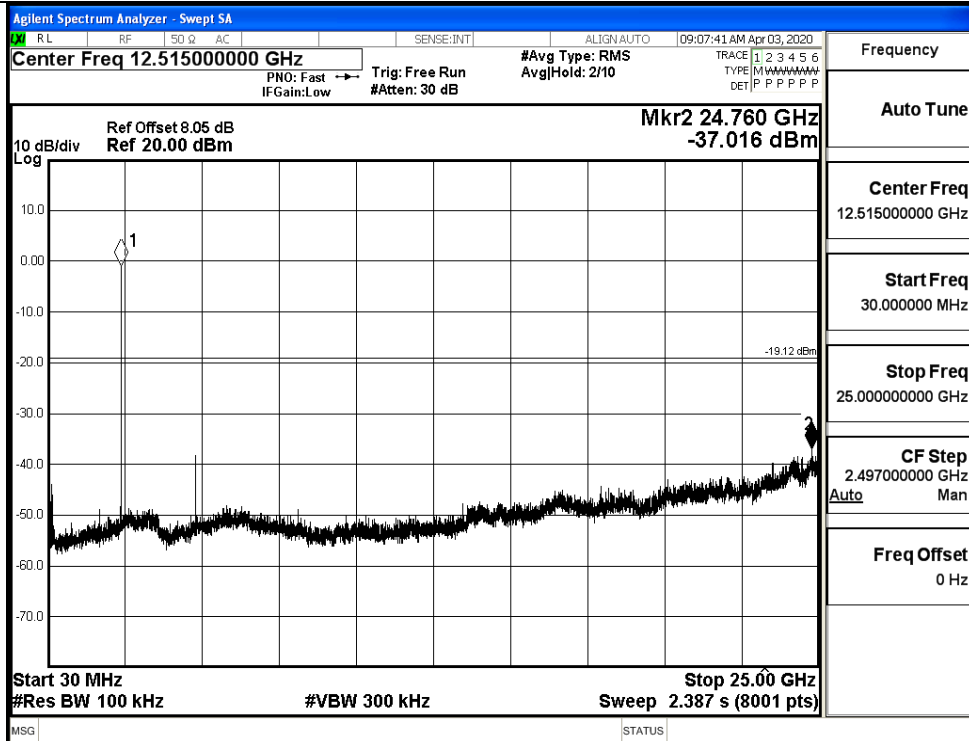
A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.881	-37.016	-19.119	PASS
	MCH	0.871	-36.372	-19.129	PASS
	HCH	0.575	-37.678	-19.425	PASS
$\pi/4$ DQPSK	LCH	1.371	-37.427	-18.629	PASS
	MCH	0.582	-37.385	-19.418	PASS
	HCH	0.462	-37.735	-19.538	PASS

GFSK LCH Graphs

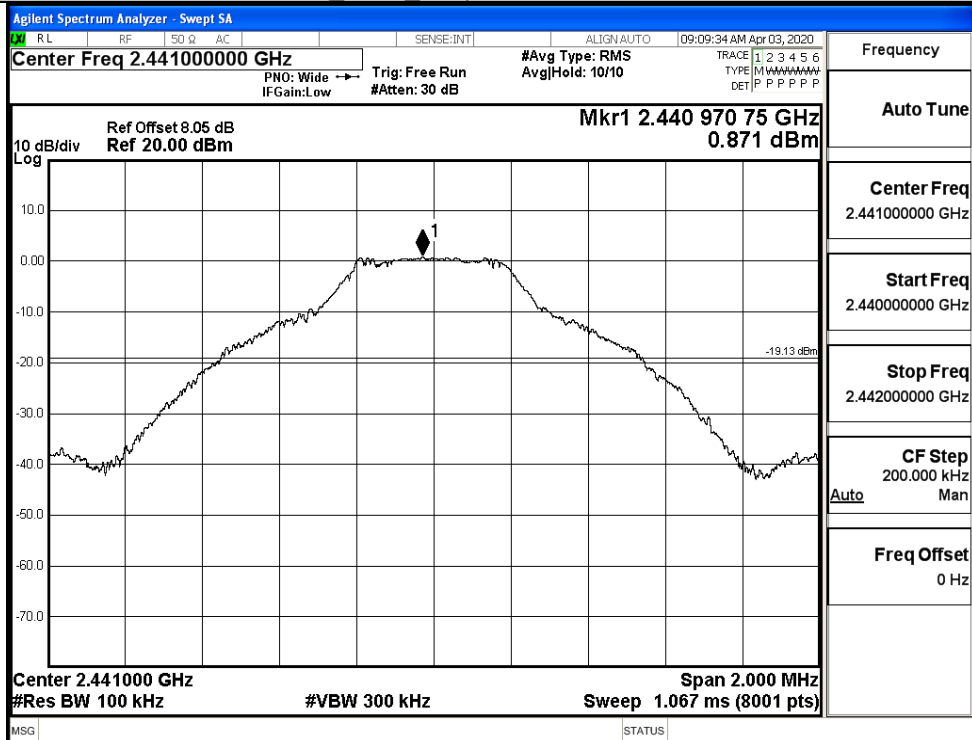


Puw

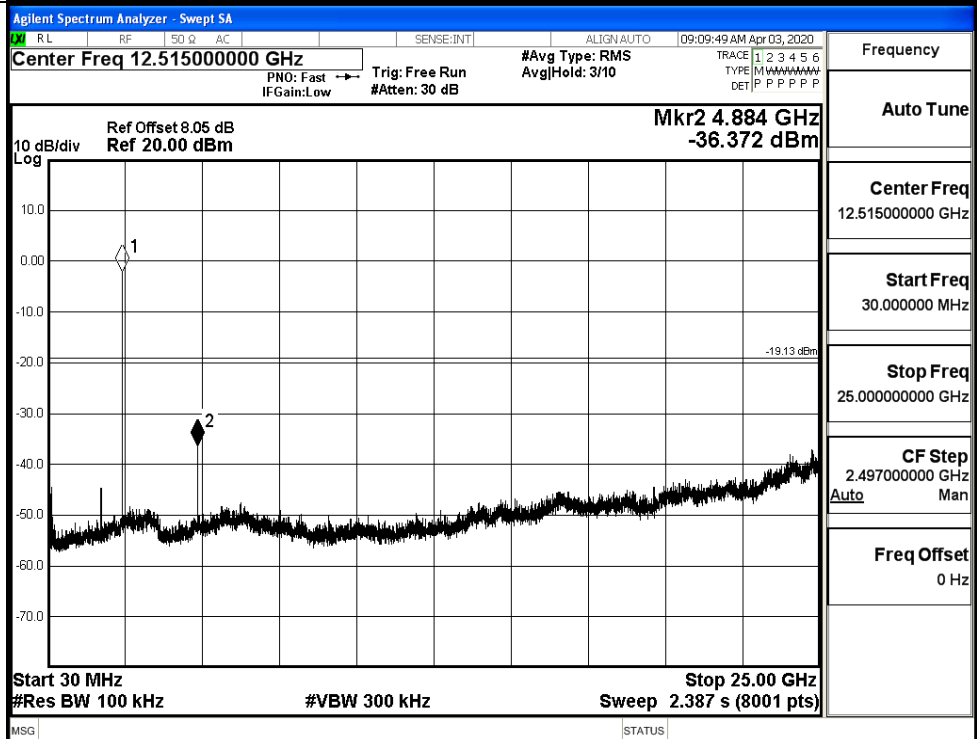


GFSK_MCH_Graphs

Pref

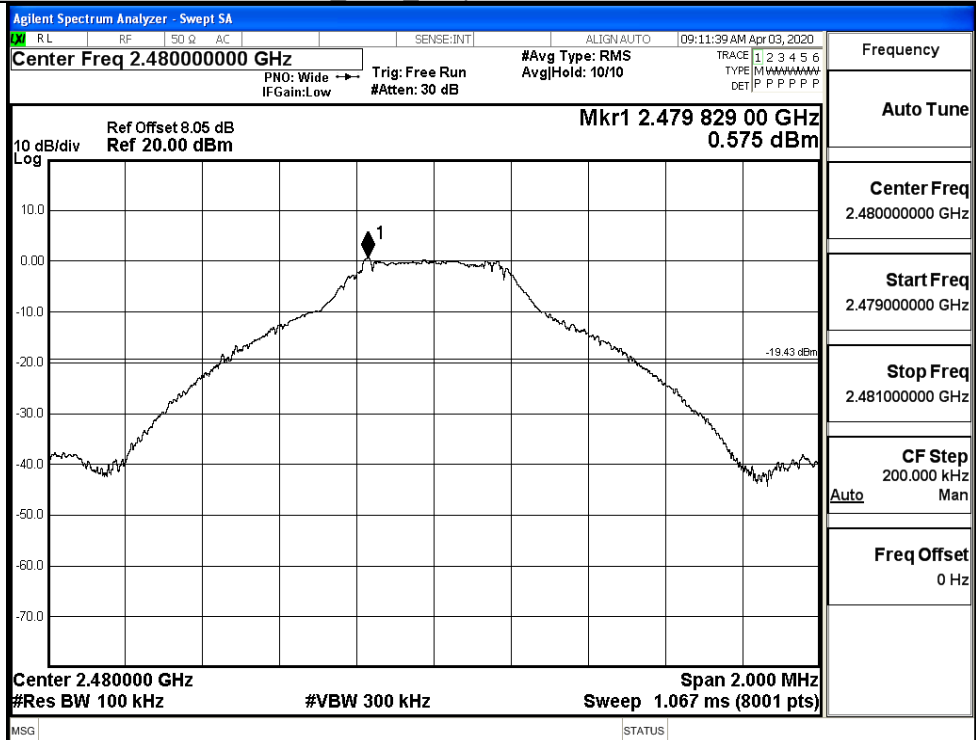


Puw

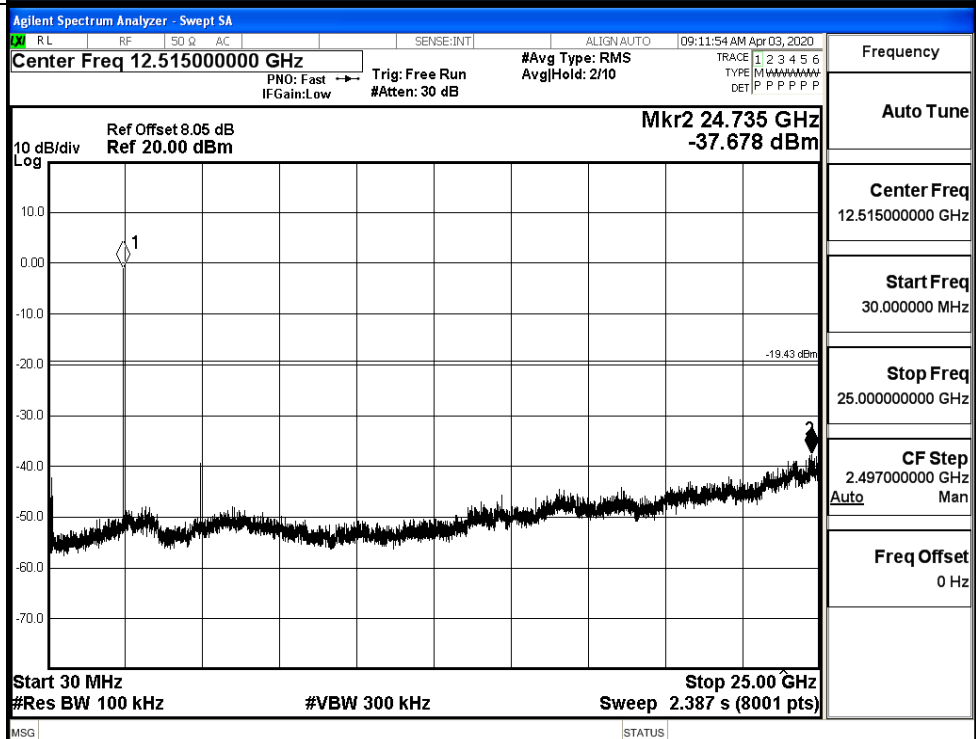


GFSK HCH Graphs

Pref

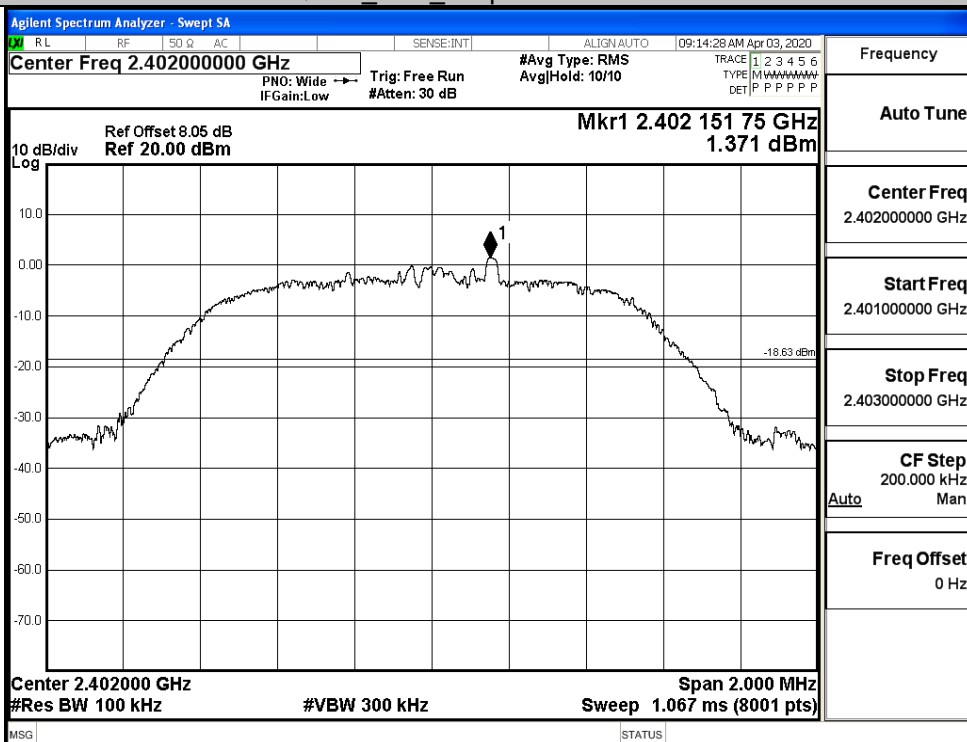


Puw

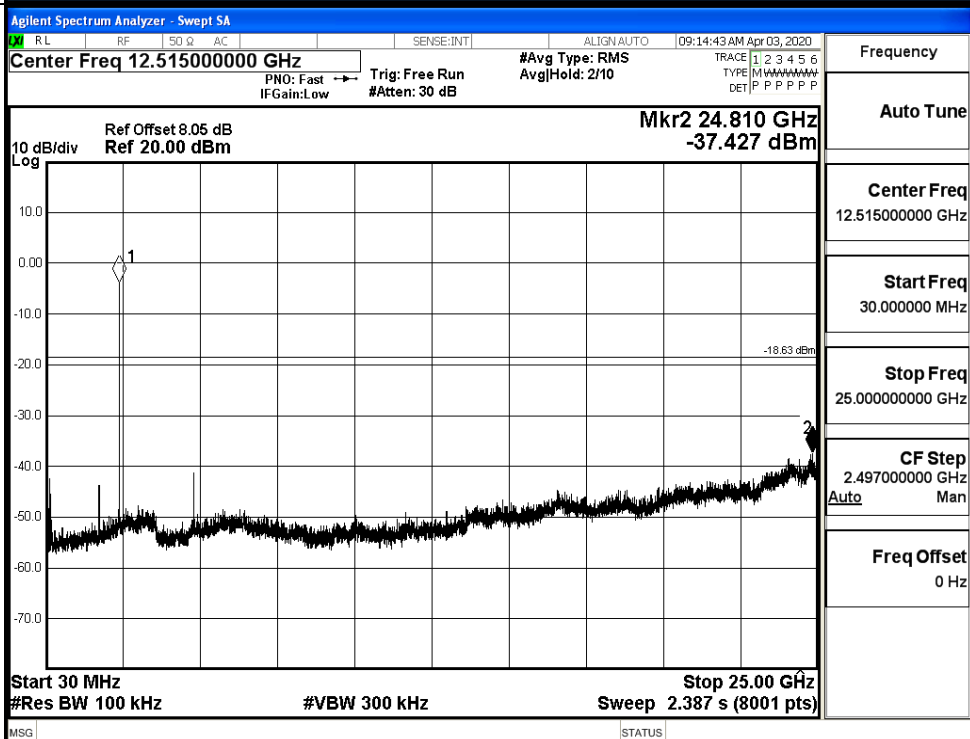


$\pi/4$ DQPSK_LCH_Graphs

Pref

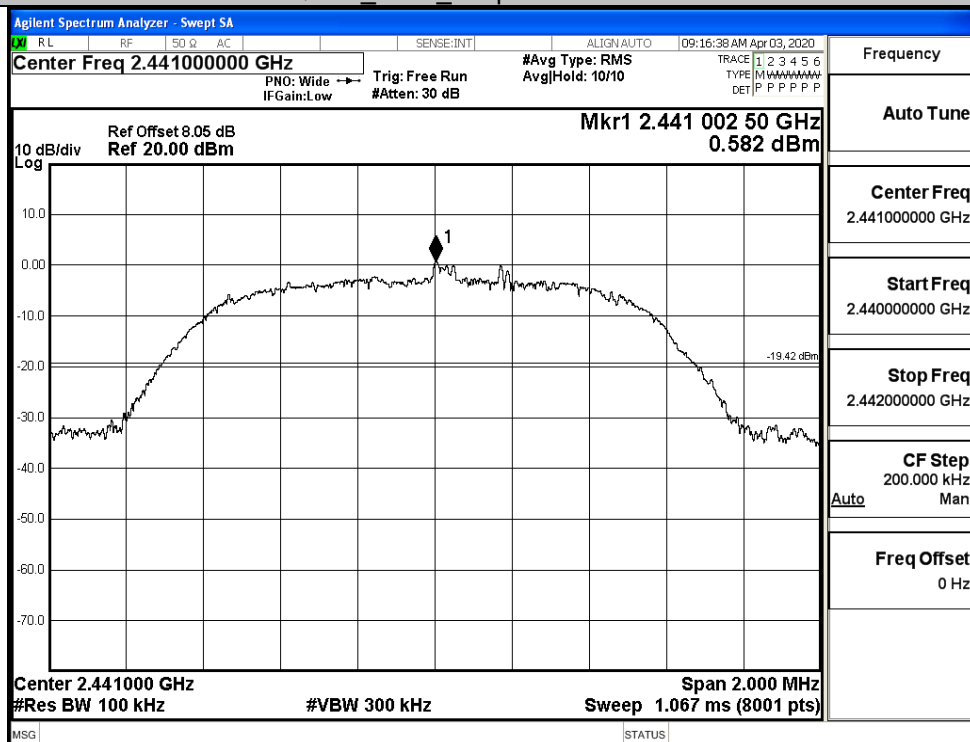


Puw

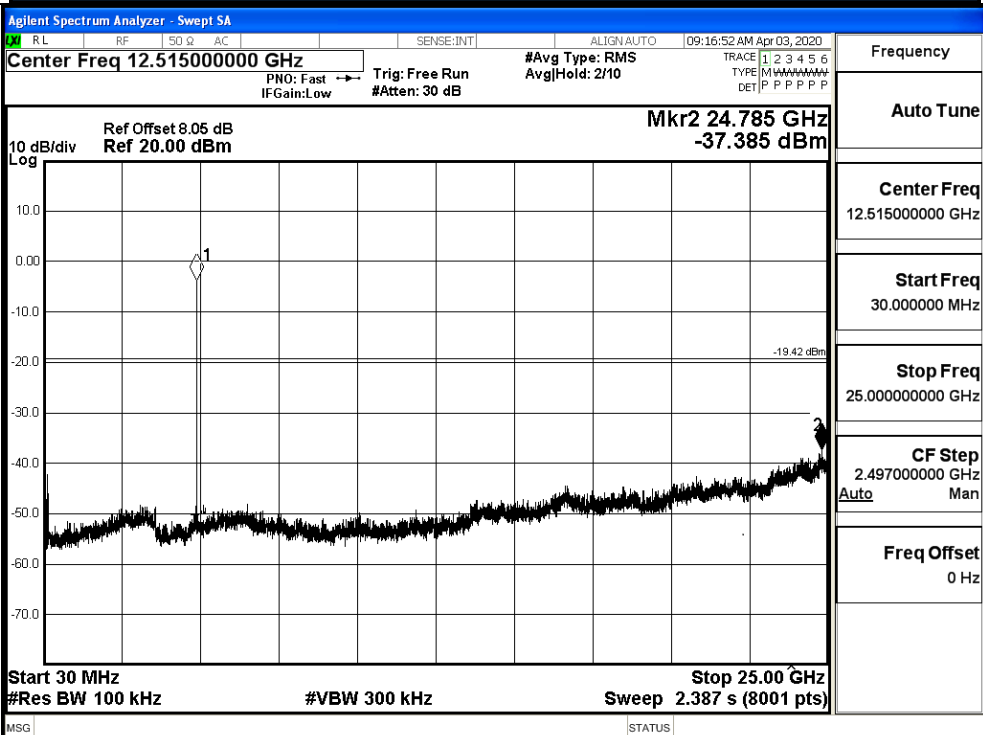


$\pi/4$ DQPSK_MCH_Graphs

Pref

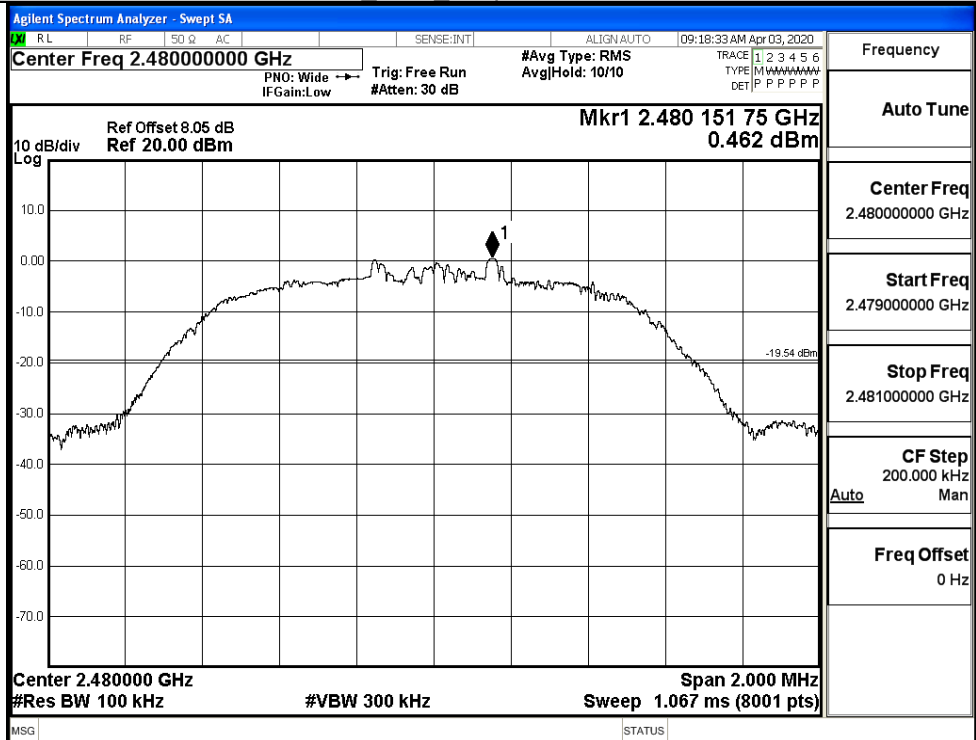


Puw



π /4DQPSK_HCH_Graphs

Pref



Puw

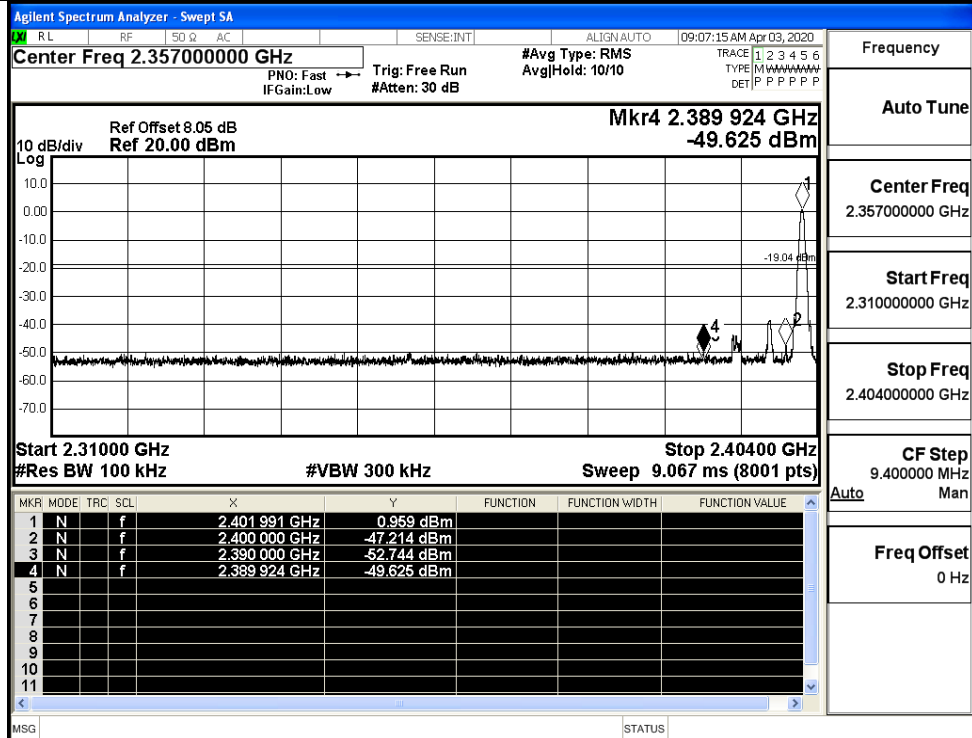


A.7 Band-edge for RF Conducted Emissions

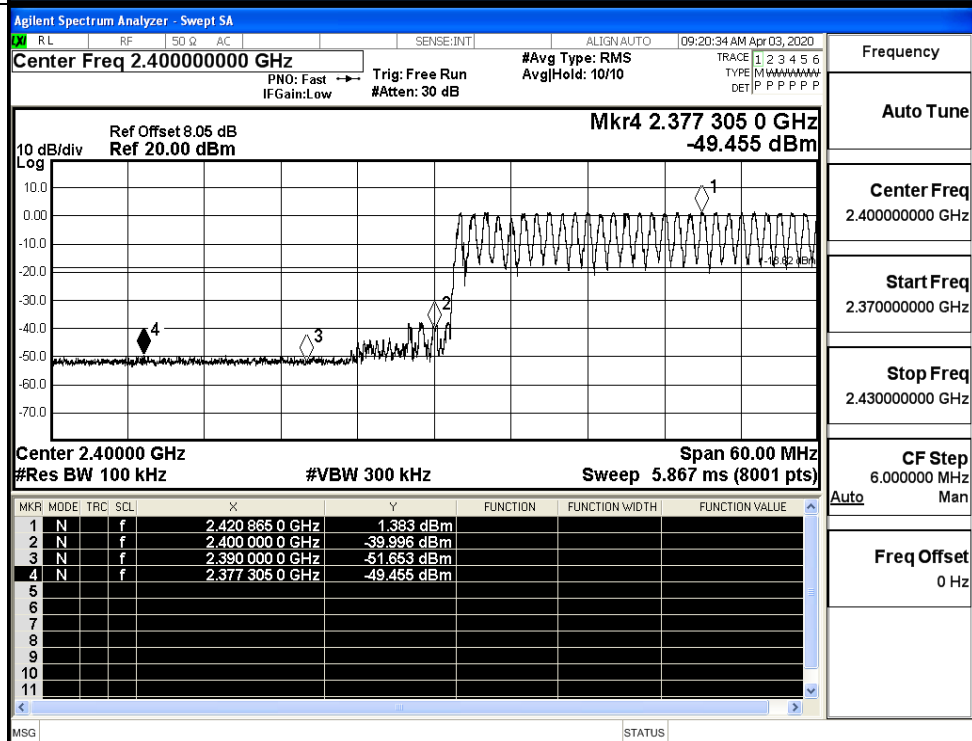
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.959	Off	-49.625	-19.04	PASS
			1.383	On	-49.455	-18.62	PASS
	HCH	2480	0.461	Off	-47.749	-19.54	PASS
			1.323	On	-48.954	-18.68	PASS
$\pi/4$ DQPSK	LCH	2402	-0.797	Off	-49.669	-20.8	PASS
			1.550	On	-48.752	-18.45	PASS
	HCH	2480	-1.125	Off	-48.944	-21.13	PASS
			1.149	On	-48.318	-18.85	PASS

Test Graphs

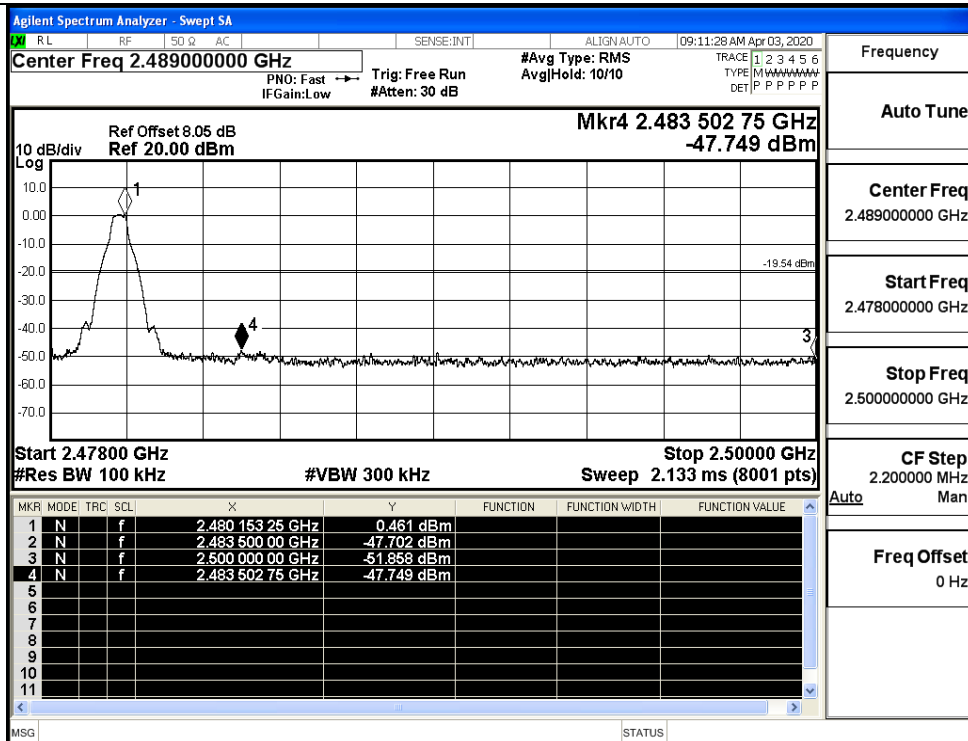
GFSK/LCH/No Hop



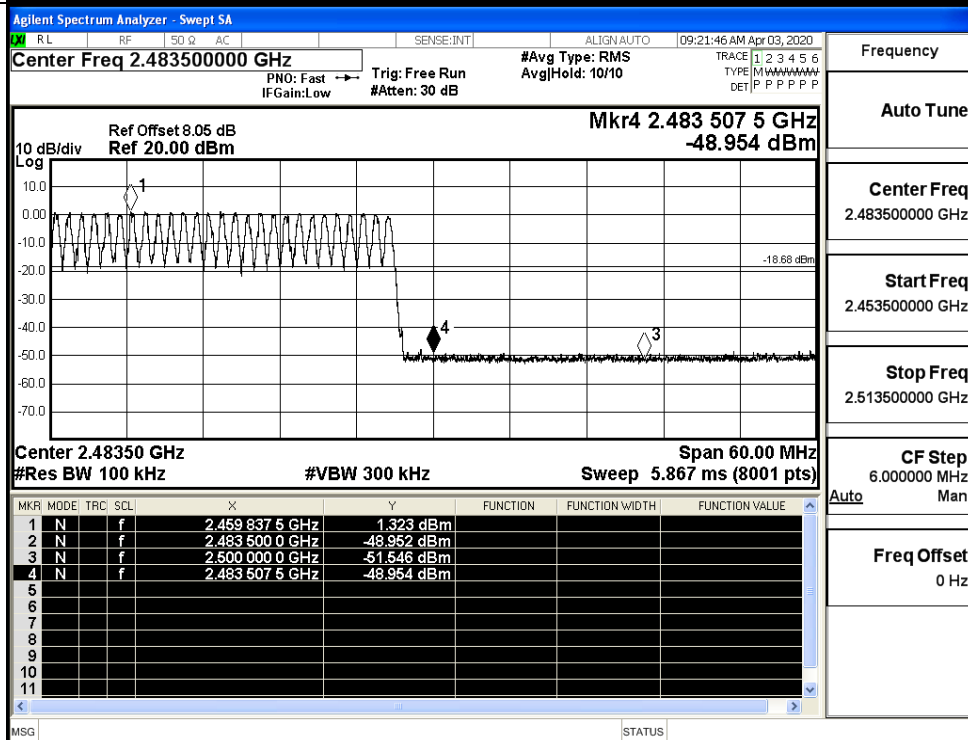
GFSK/LCH/Hop



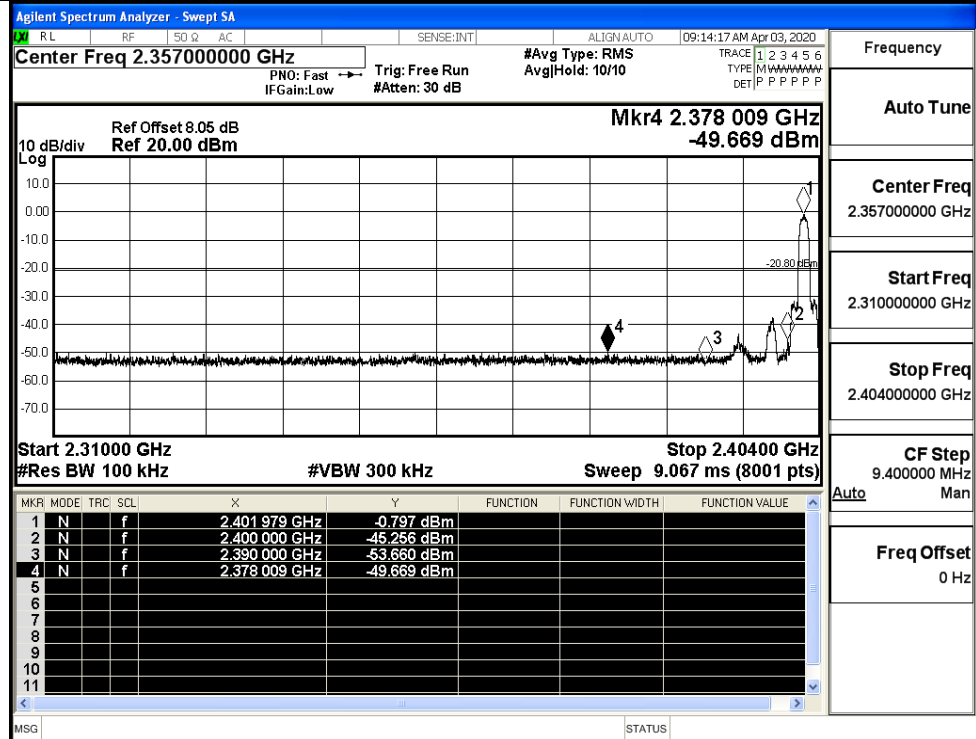
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

Start Freq
2.310000000 GHz

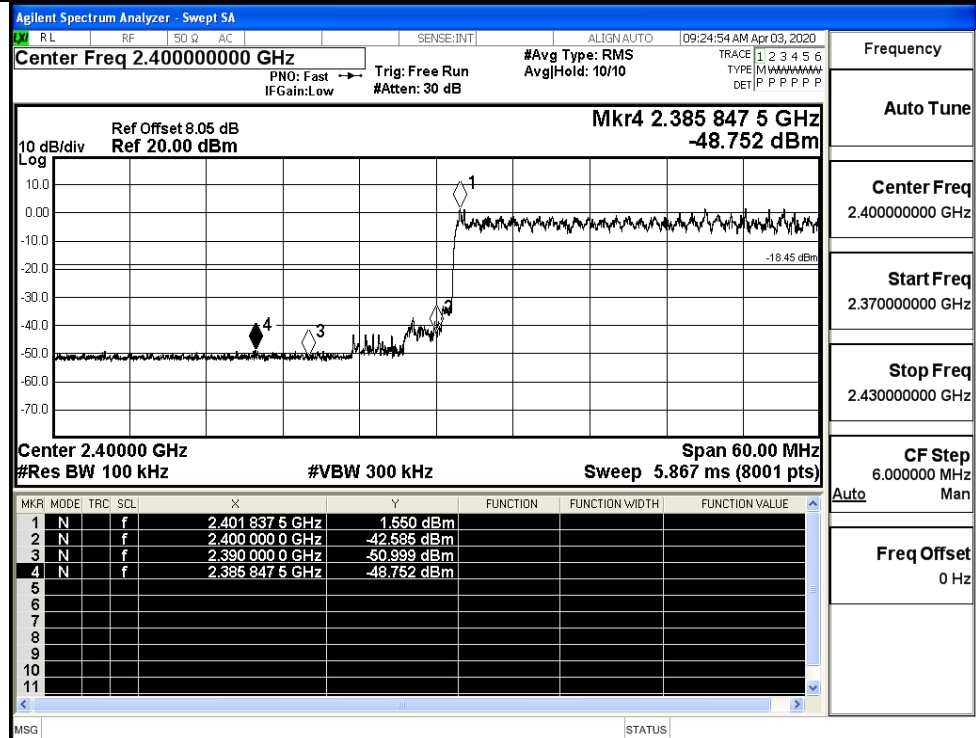
Stop Freq
2.404000000 GHz

CF Step
9.400000 MHz

Auto Man

Freq Offset
0 Hz

$\pi/4$ DQPSK/LCH/Hop



Frequency

Auto Tune

Center Freq
2.400000000 GHz

Start Freq
2.370000000 GHz

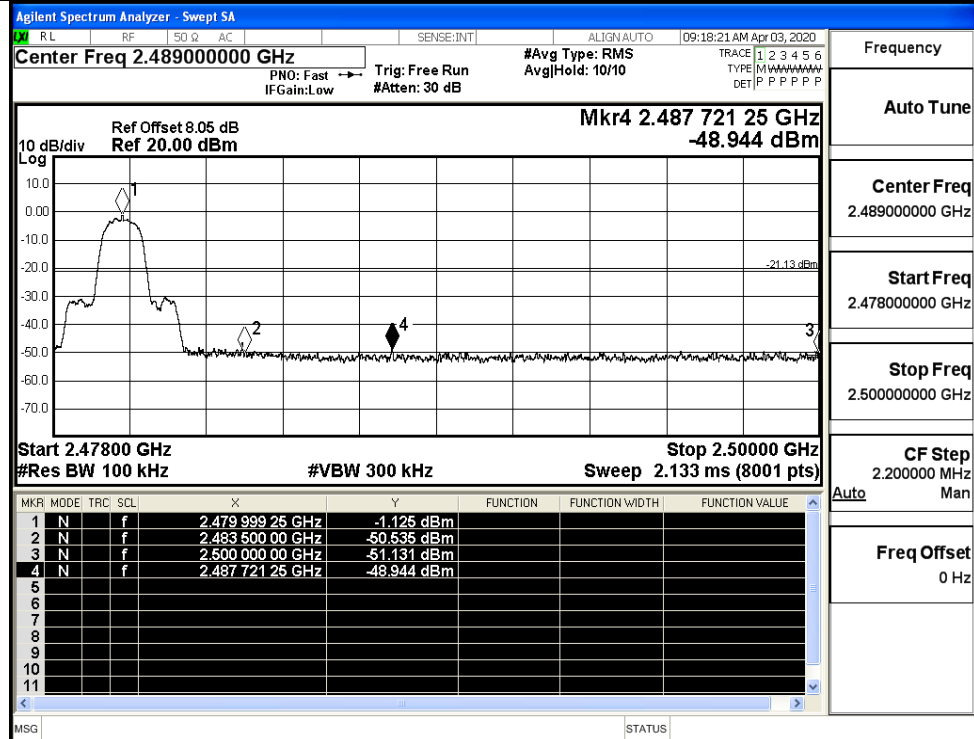
Stop Freq
2.430000000 GHz

CF Step
6.000000 MHz

Auto Man

Freq Offset
0 Hz

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



Frequency

Auto Tune

Center Freq
2.489000000 GHz

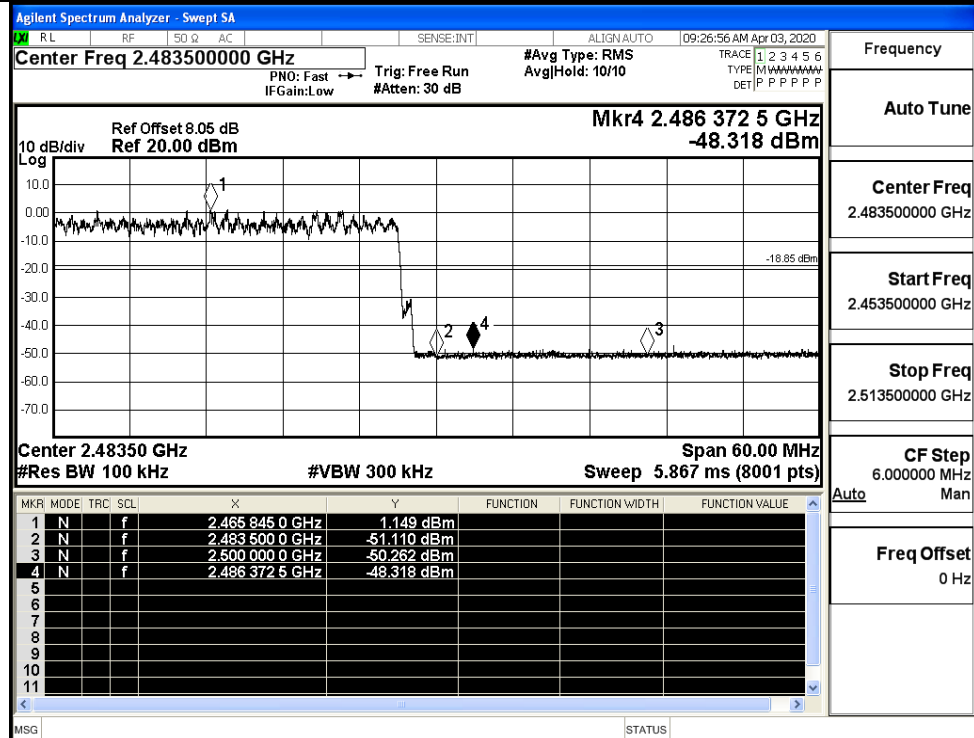
Start Freq
2.478000000 GHz

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

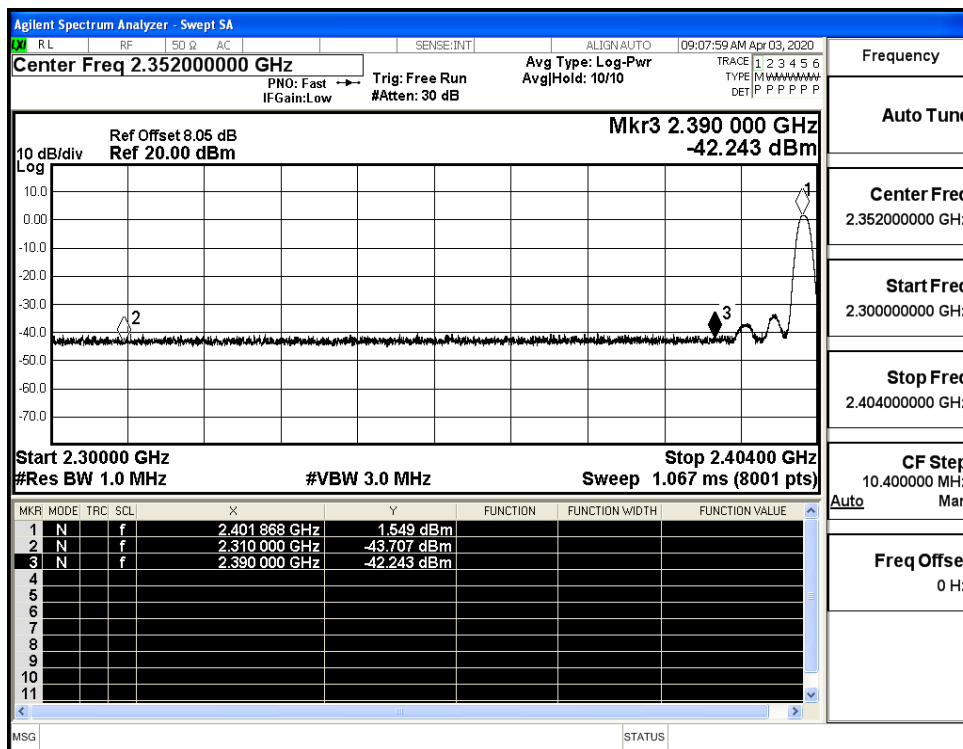
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

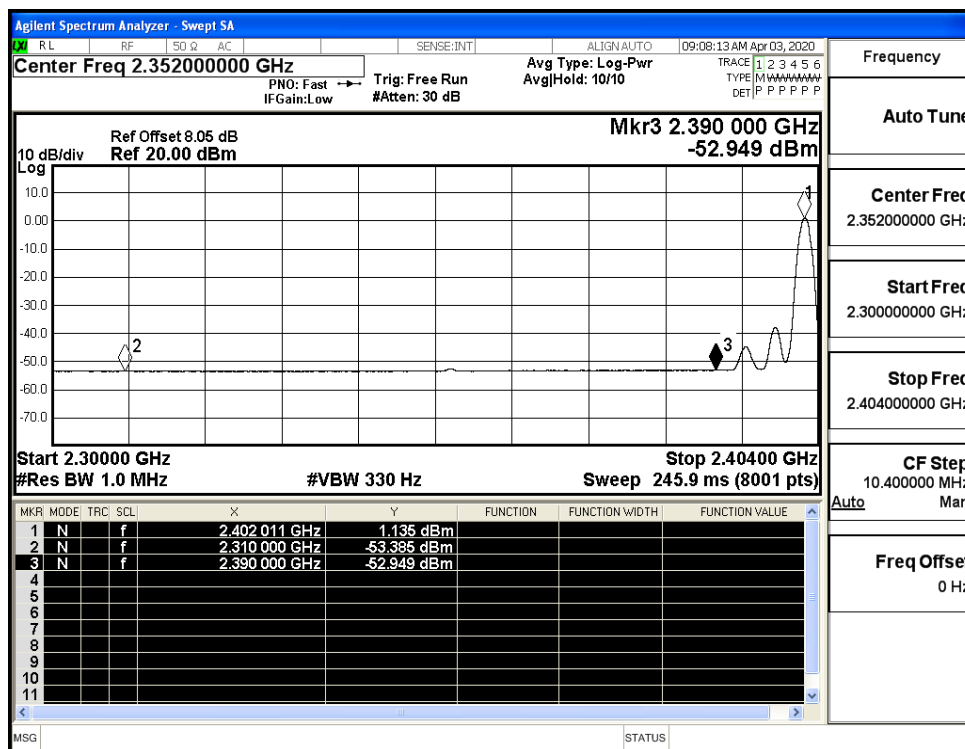
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.71	5.0	0	56.52	PEAK	74	PASS
	Off	2310.0	-53.39	5.0	0	46.84	AV	54	PASS
	Off	2390.0	-42.24	5.0	0	57.99	PEAK	74	PASS
	Off	2390.0	-52.95	5.0	0	47.28	AV	54	PASS
	Off	2483.5	-40.35	5.0	0	59.88	PEAK	74	PASS
	Off	2483.5	-49.93	5.0	0	50.30	AV	54	PASS
	Off	2500.0	-42.75	5.0	0	57.48	PEAK	74	PASS
	Off	2500.0	-52.33	5.0	0	47.90	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.12	5.0	0	58.11	PEAK	74	PASS
	Off	2310.0	-53.39	5.0	0	46.84	AV	54	PASS
	Off	2390.0	-44.00	5.0	0	56.23	PEAK	74	PASS
	Off	2390.0	-53.01	5.0	0	47.22	AV	54	PASS
	Off	2483.5	-41.89	5.0	0	58.34	PEAK	74	PASS
	Off	2483.5	-50.86	5.0	0	49.37	AV	54	PASS
	Off	2500.0	-42.27	5.0	0	57.96	PEAK	74	PASS
	Off	2500.0	-52.37	5.0	0	47.86	AV	54	PASS

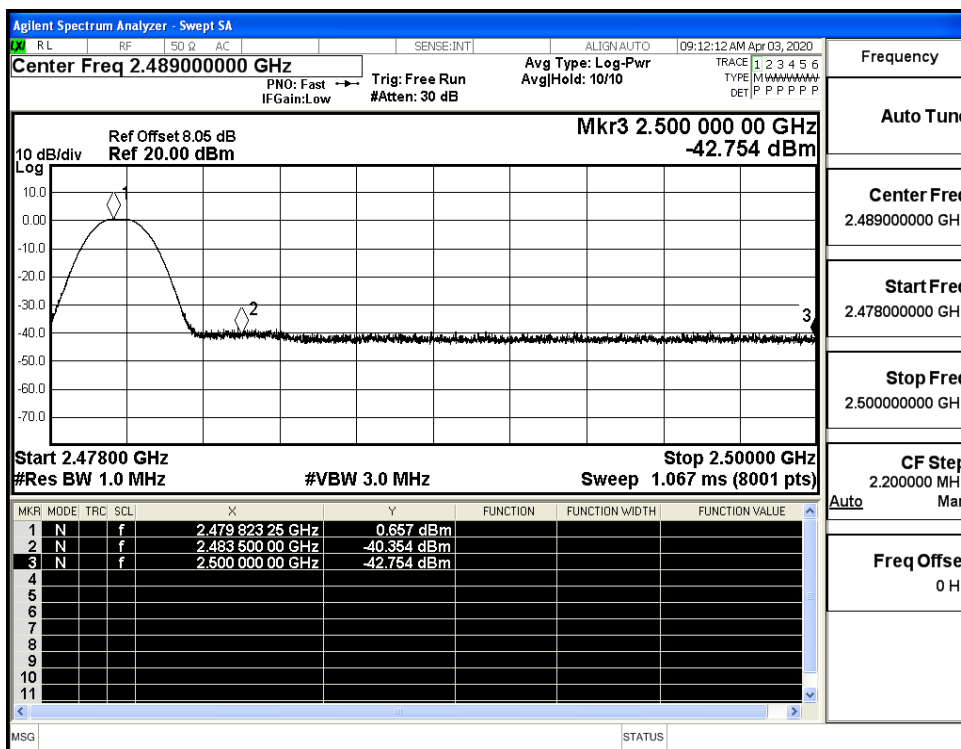
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



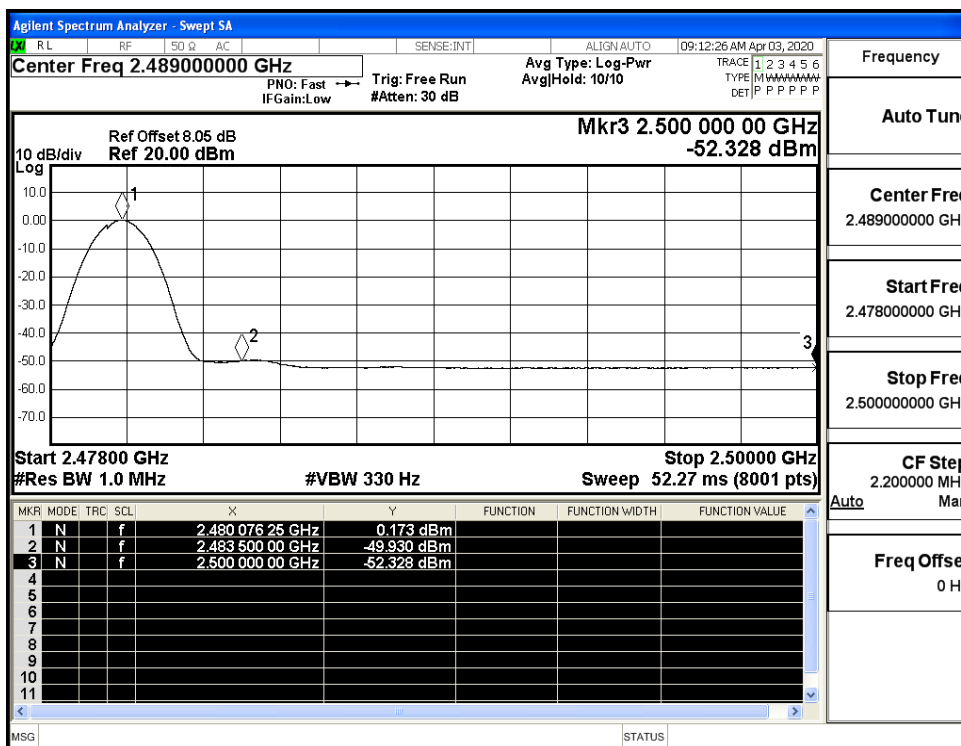
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

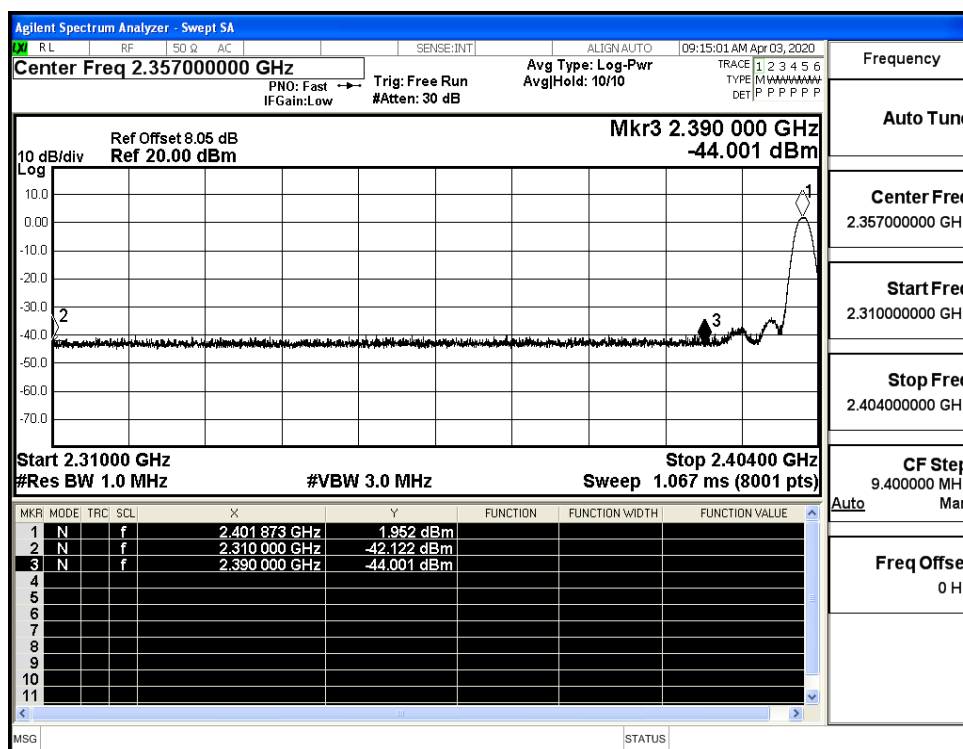
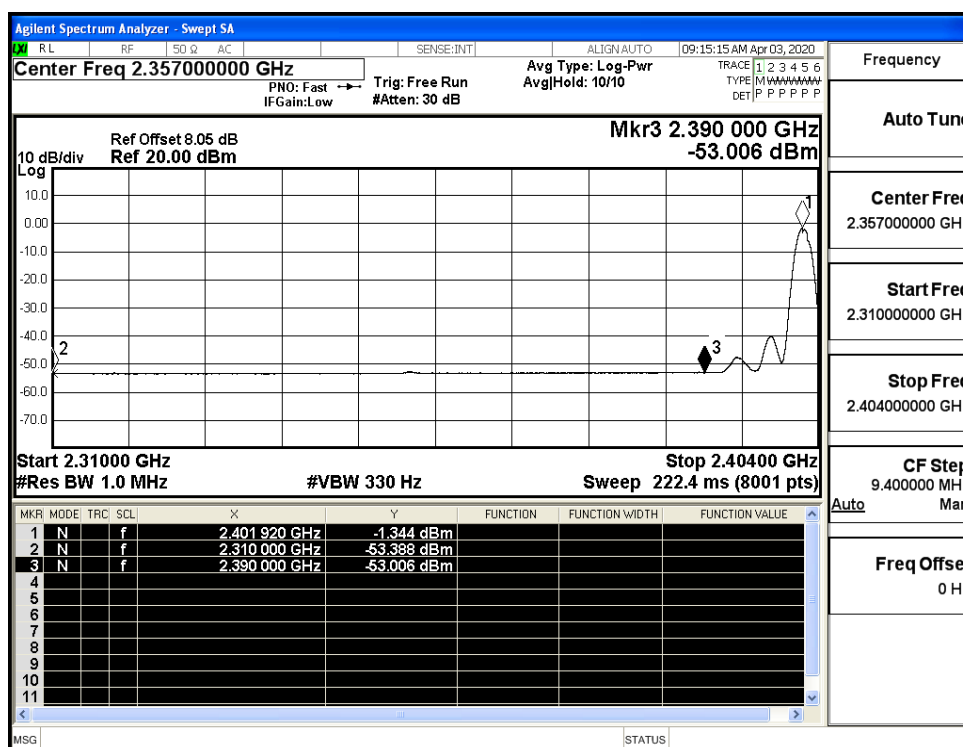


Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)

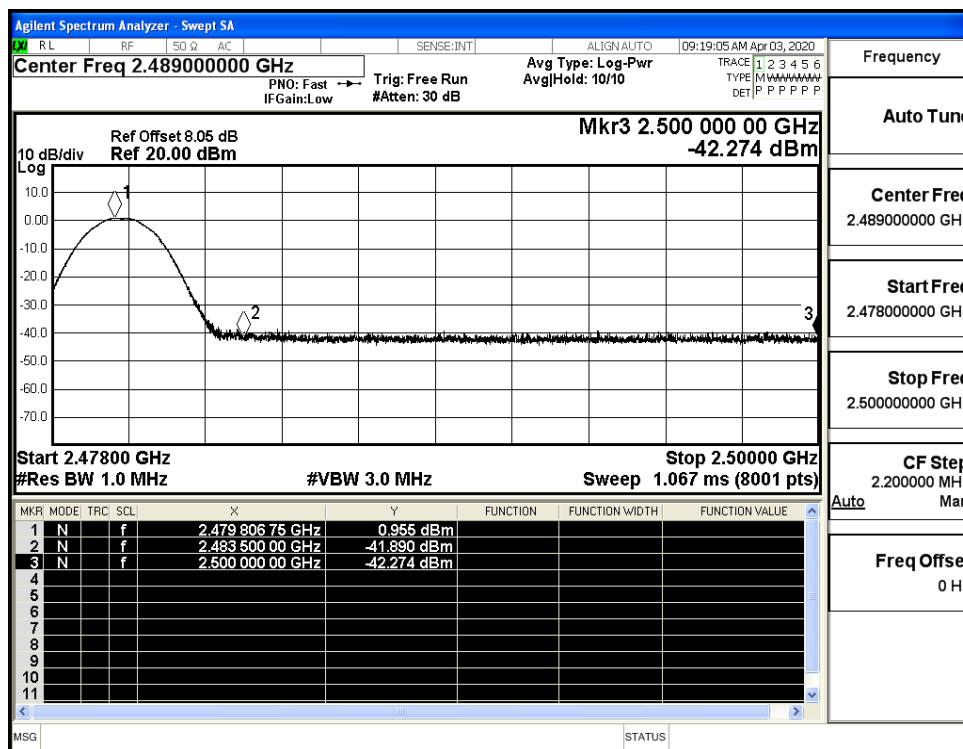


Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



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)

