

Appendix A

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

Product Name: Bluetooth Headphone

Trade Mark: N/A

Test Model: 24398-RK

Environmental Conditions

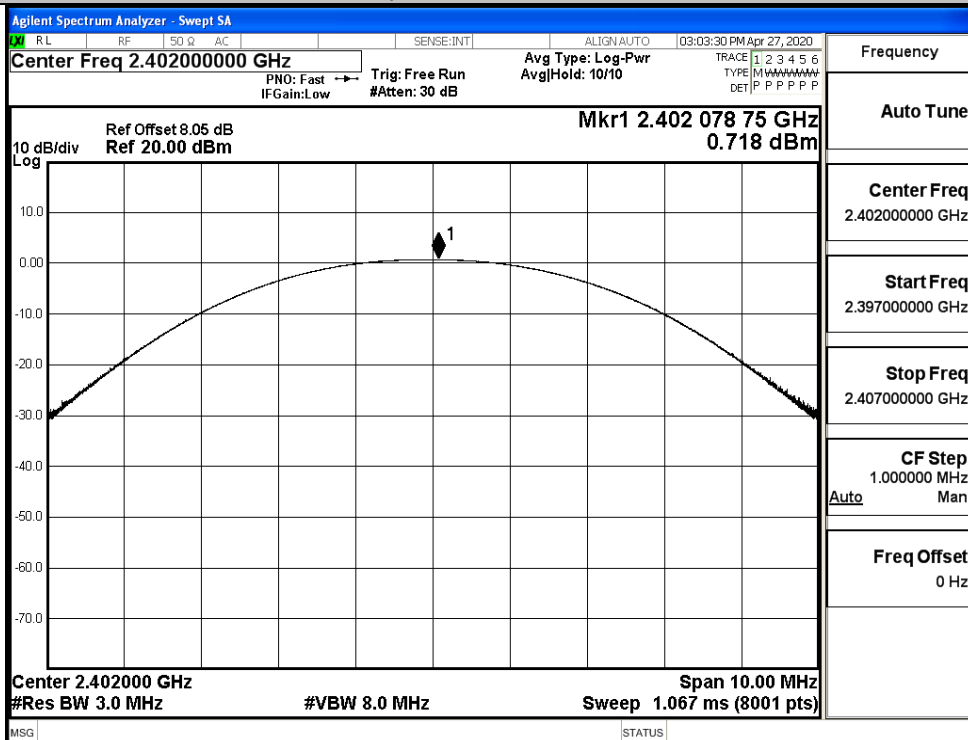
Temperature:	23.6 ° C
Relative Humidity:	53.6%
ATM Pressure:	100.0 kPa
Test Engineer:	Alisa Huang
Supervised by:	Li Huan

A.1 Maximum Conducted Peak Output Power

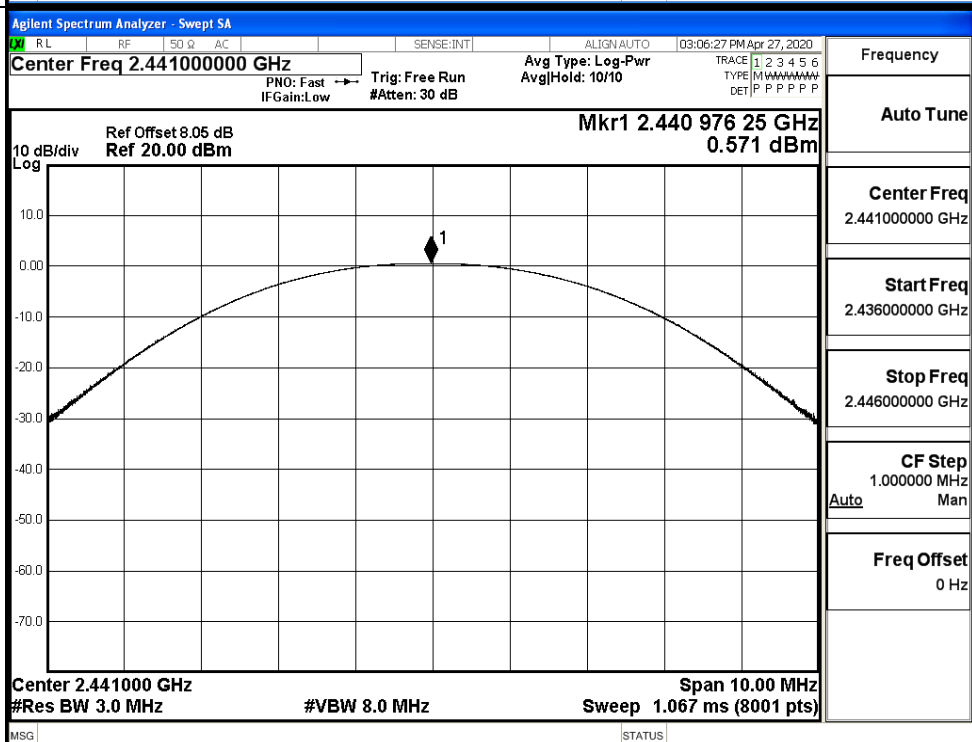
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.718	21	PASS
	MCH	0.571	21	PASS
	HCH	-0.232	21	PASS
$\pi/4$ DQPSK	LCH	0.538	21	PASS
	MCH	0.397	21	PASS
	HCH	-0.419	21	PASS

Test Graphs

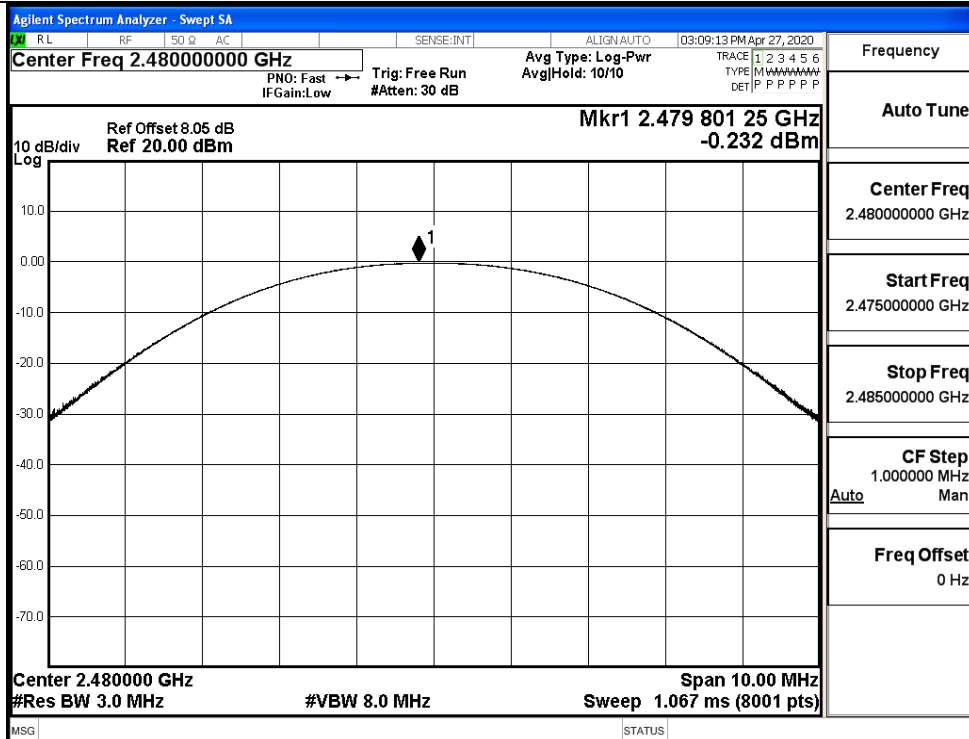
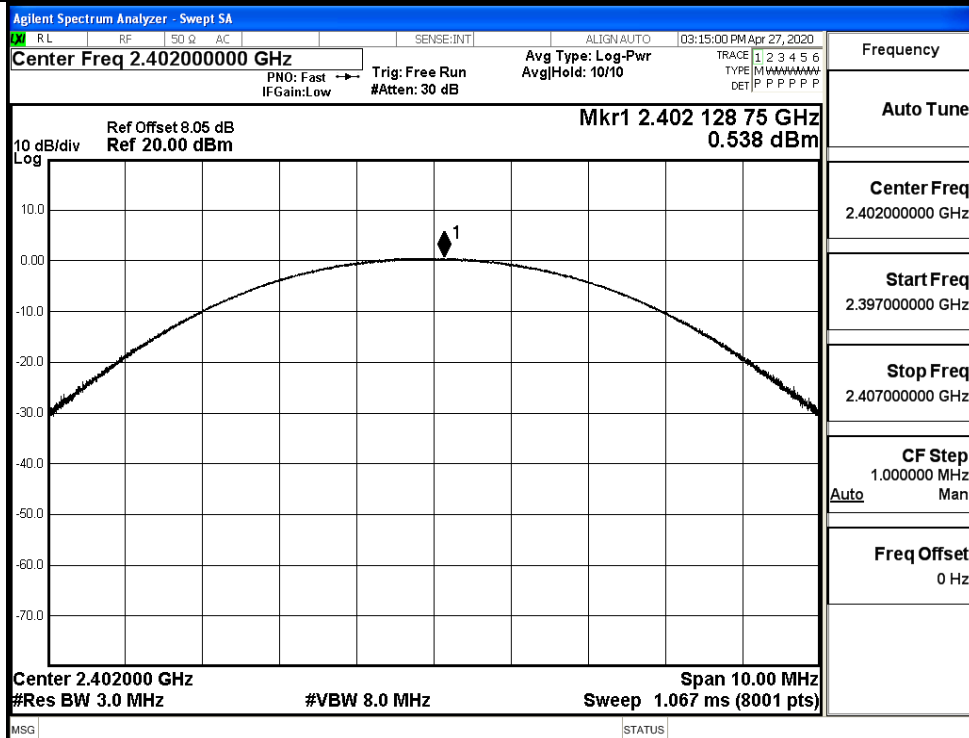
GFSK/LCH

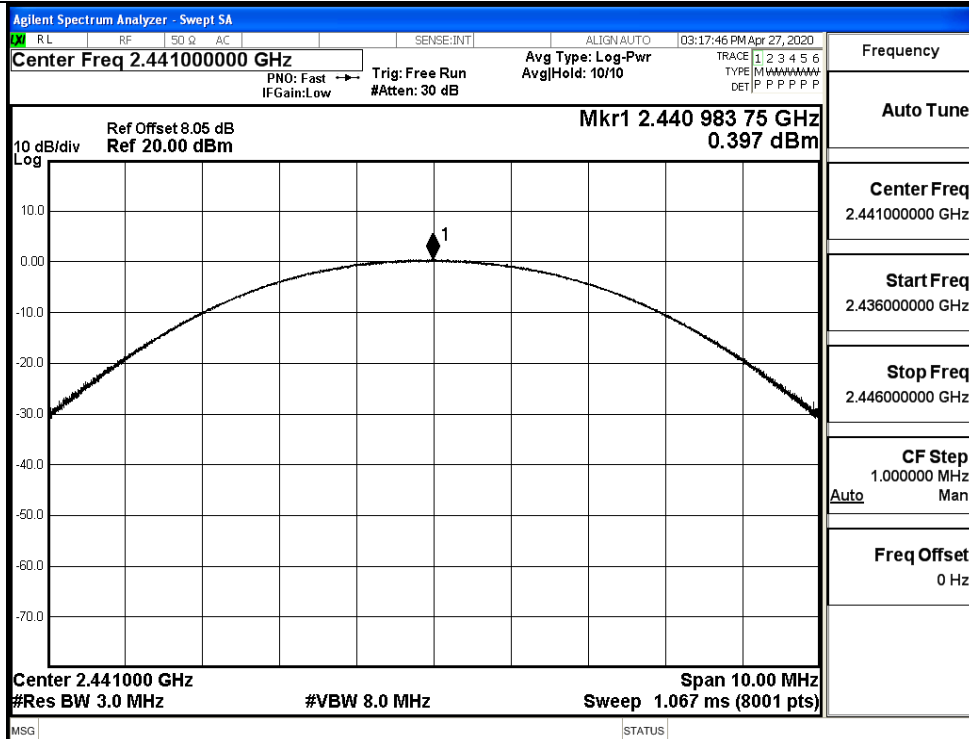
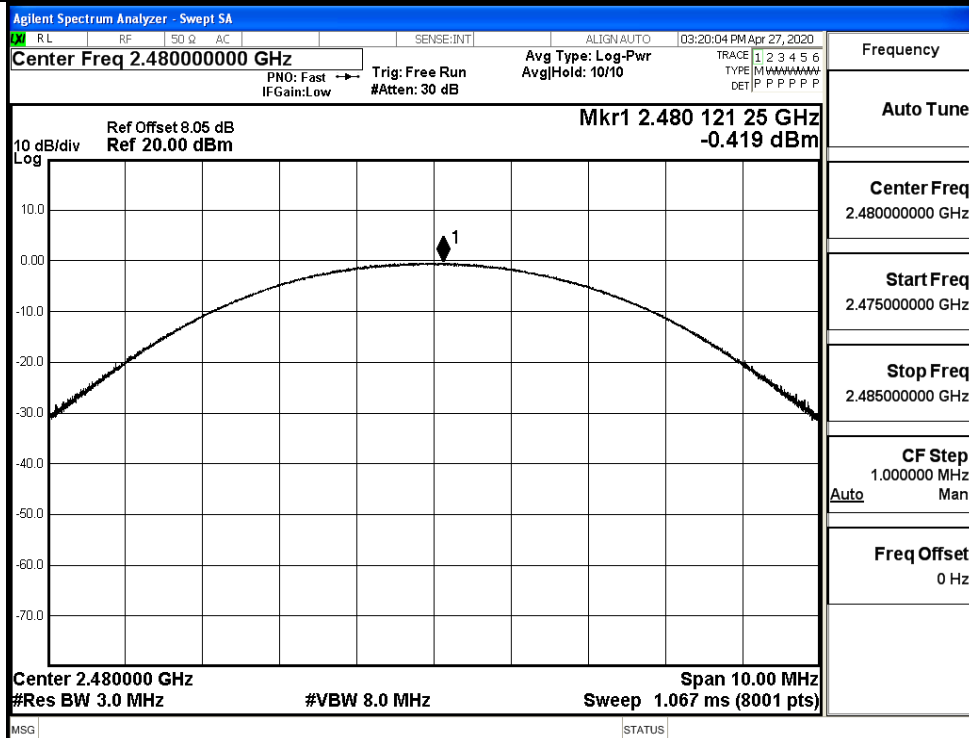


GFSK/MCH



GFSK/HCH

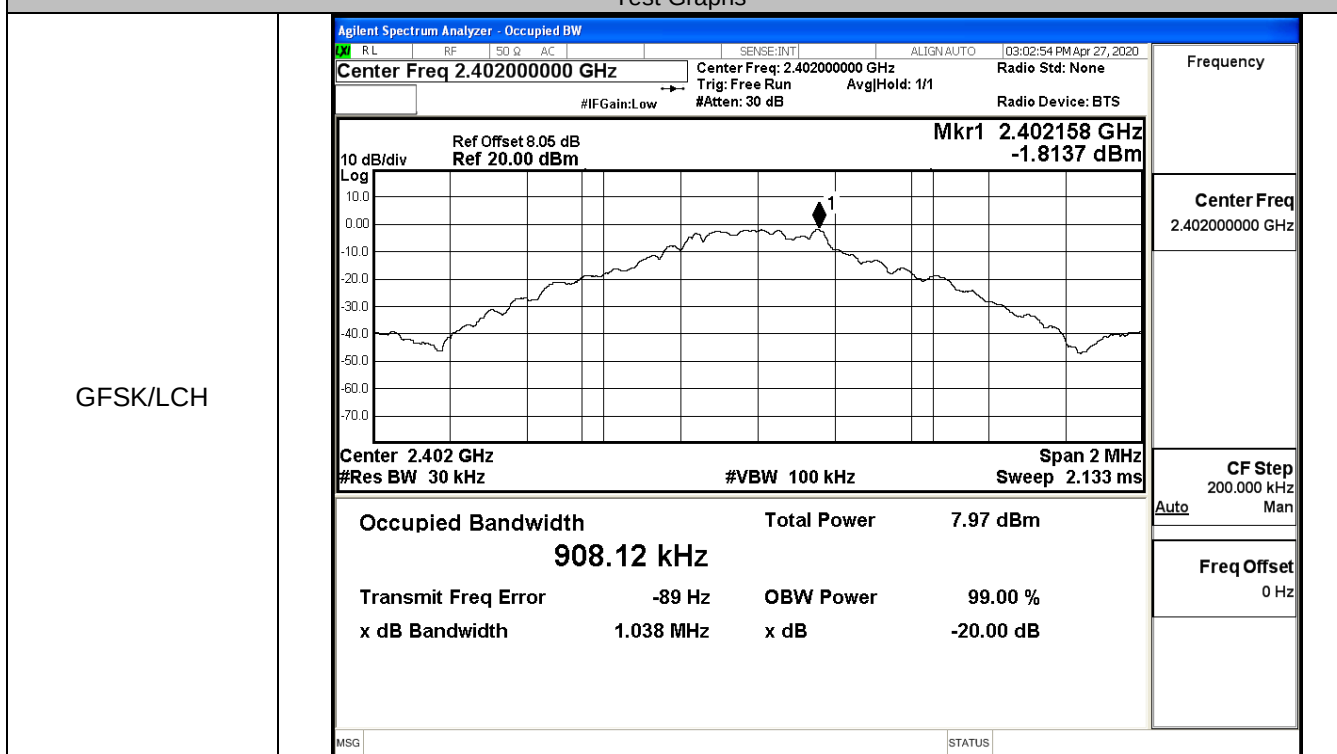
 $\pi/4$ DQPSK/LCH

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

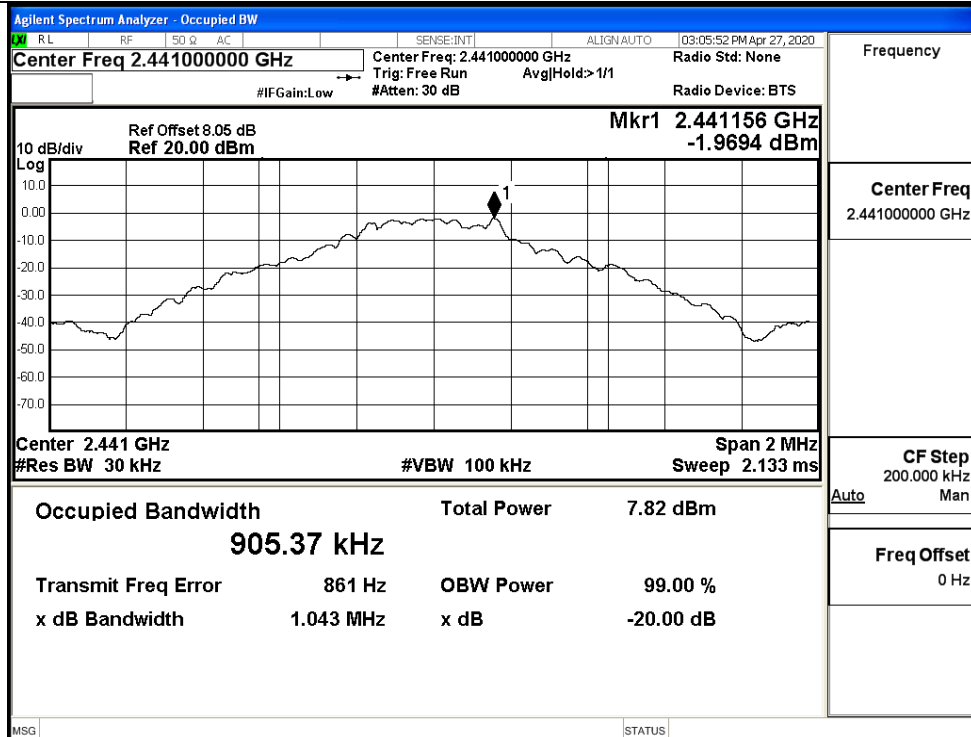
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.038	Not Specified	PASS
	MCH	1.043	Not Specified	PASS
	HCH	1.038	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.289	Not Specified	PASS
	MCH	1.291	Not Specified	PASS
	HCH	1.290	Not Specified	PASS

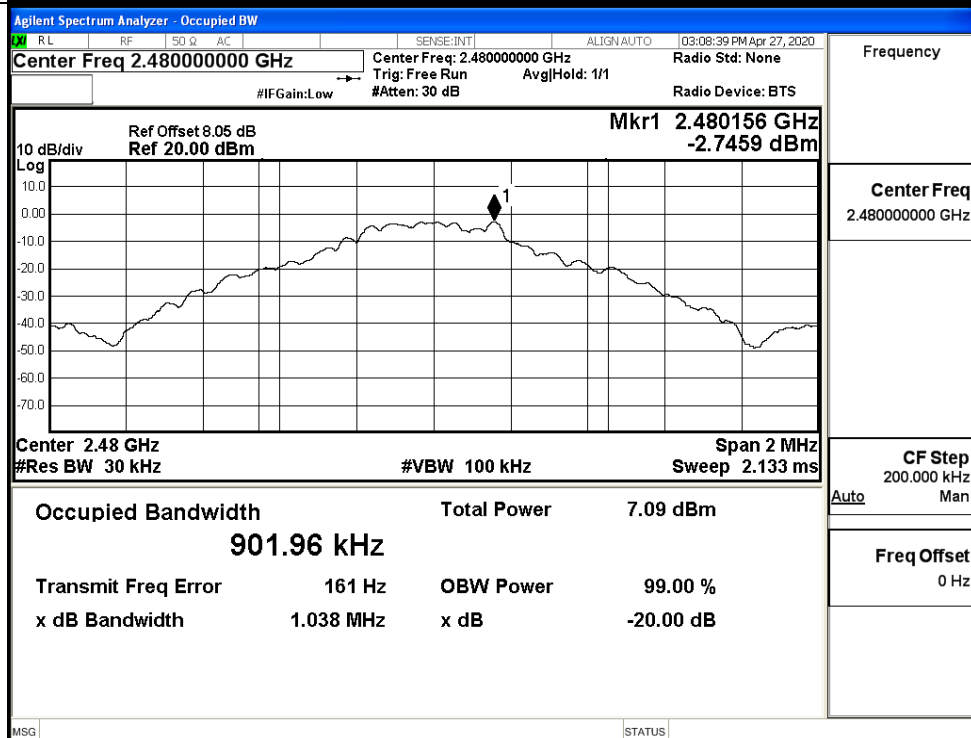
Test Graphs

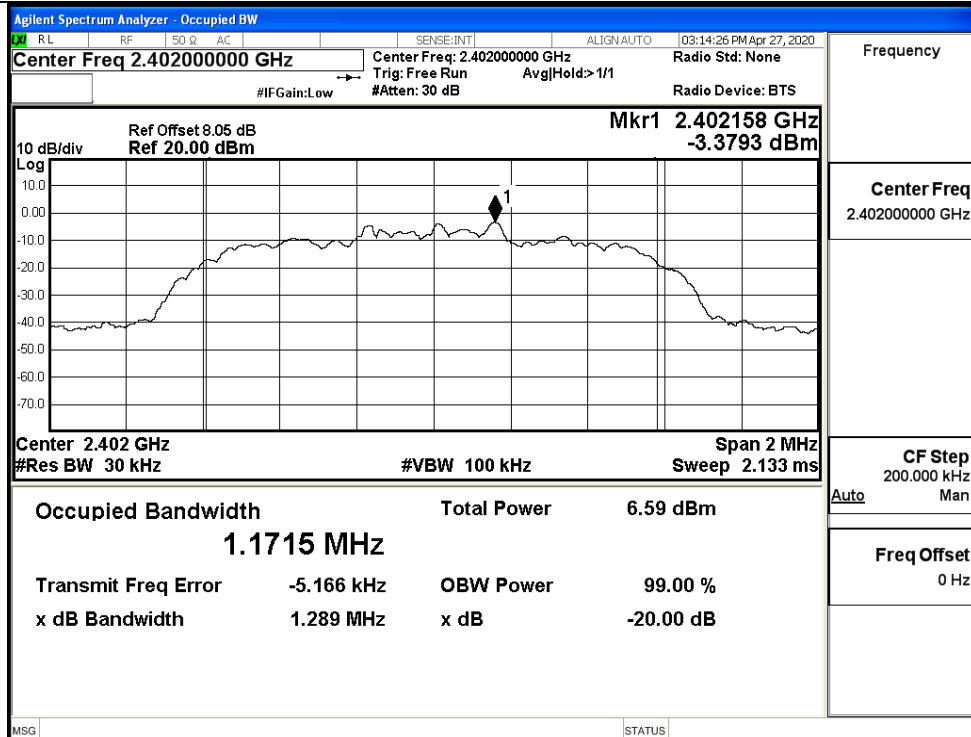
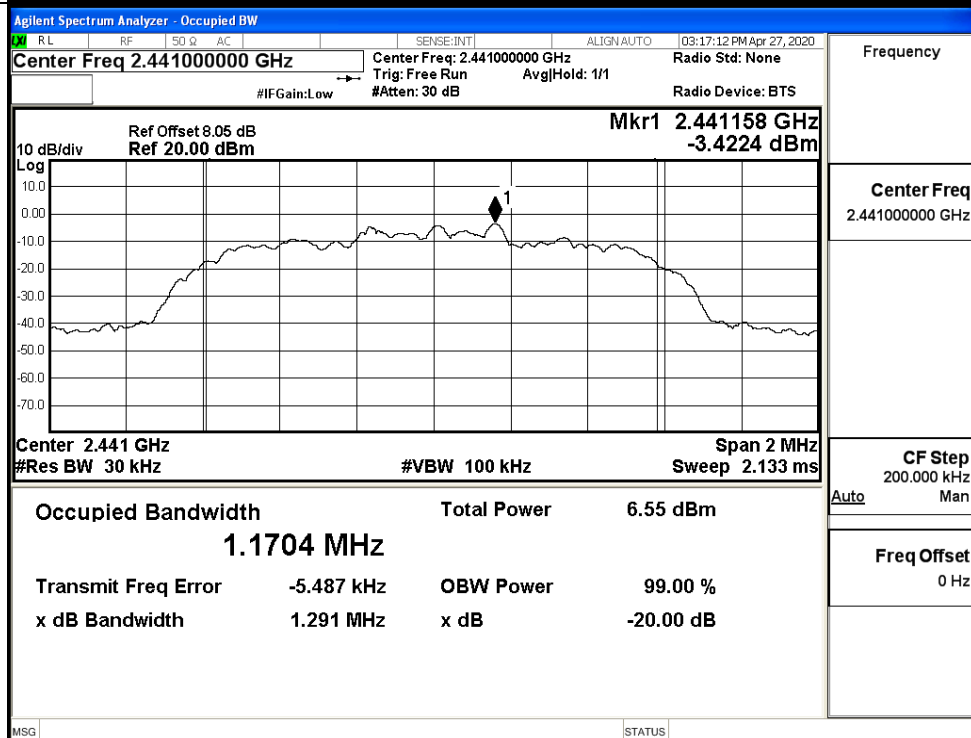


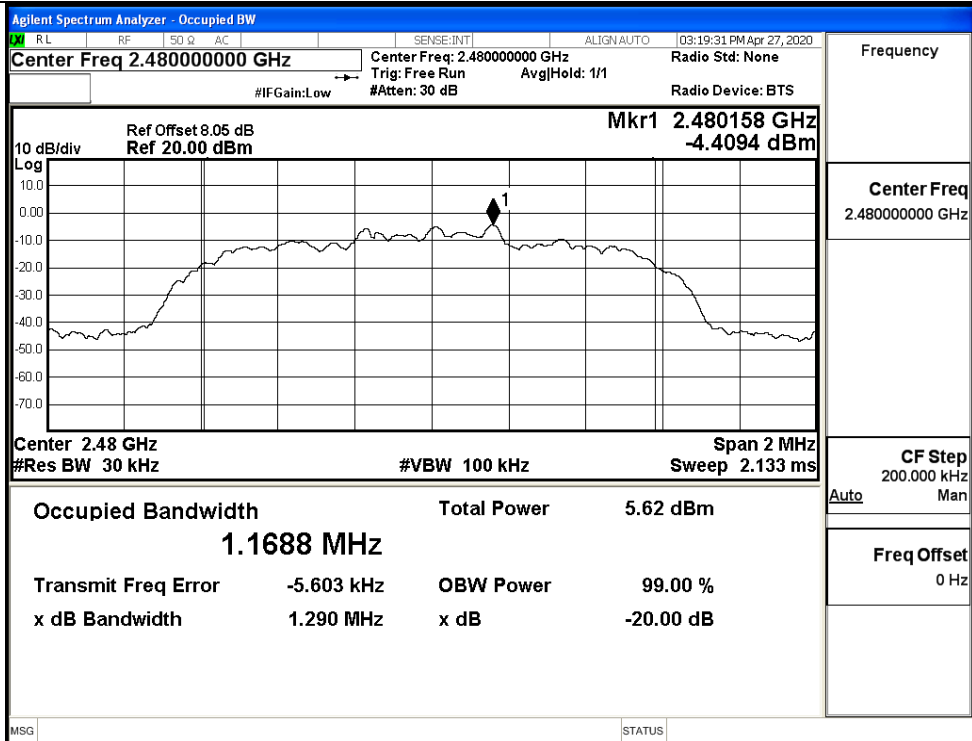
GFSK/MCH



GFSK/HCH



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

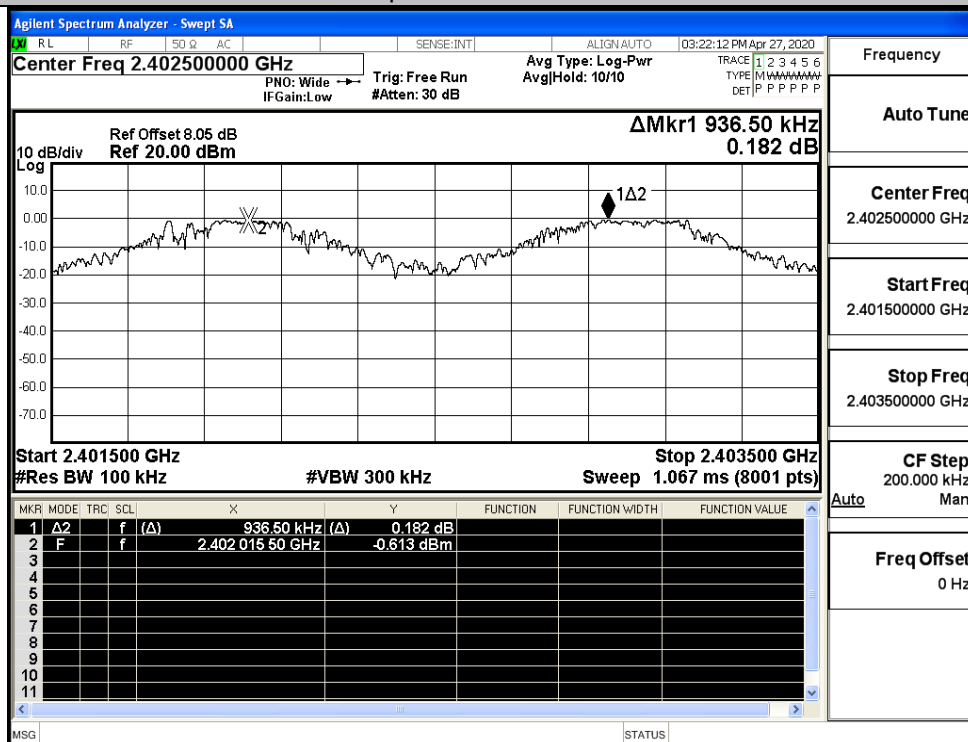
$\pi/4$ DQPSK/HCH

A.3 Carrier Frequency Separation

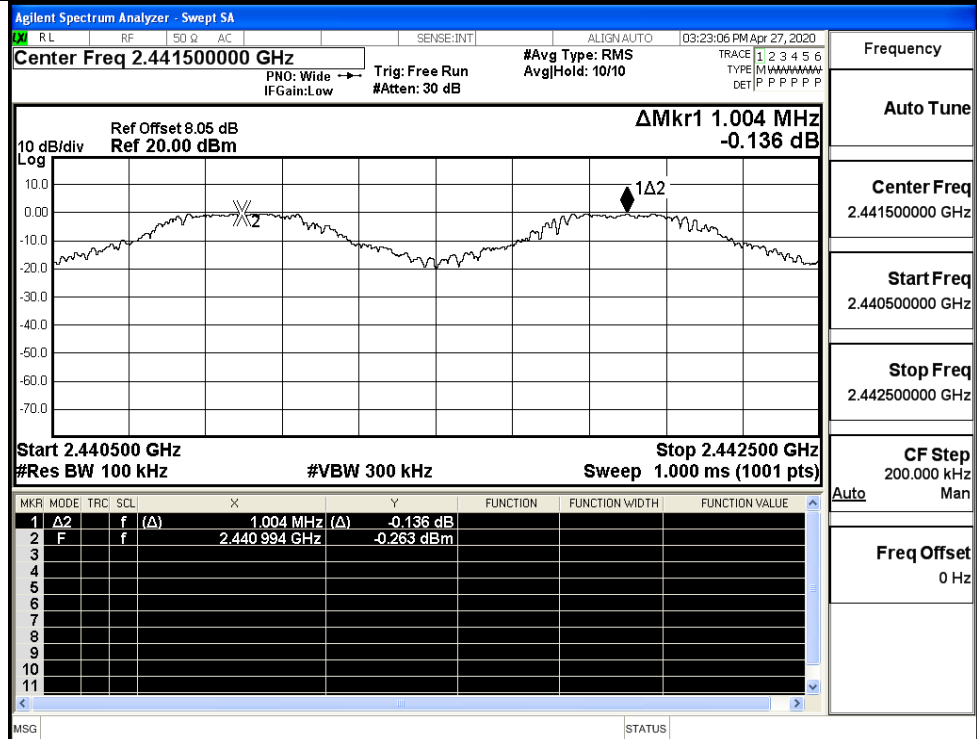
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.937	0.695	PASS
	MCH	1.004	0.695	PASS
	HCH	0.908	0.695	PASS
π /4DQPSK	LCH	0.952	0.861	PASS
	MCH	1.126	0.861	PASS
	HCH	0.874	0.861	PASS

Test Graphs

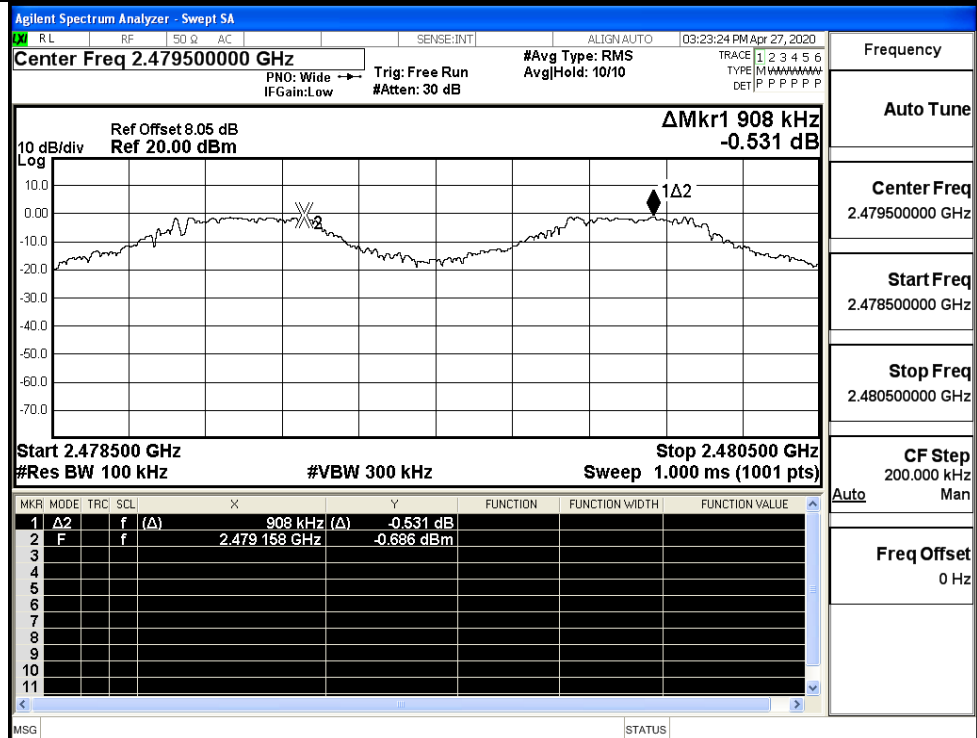
GFSK/LCH

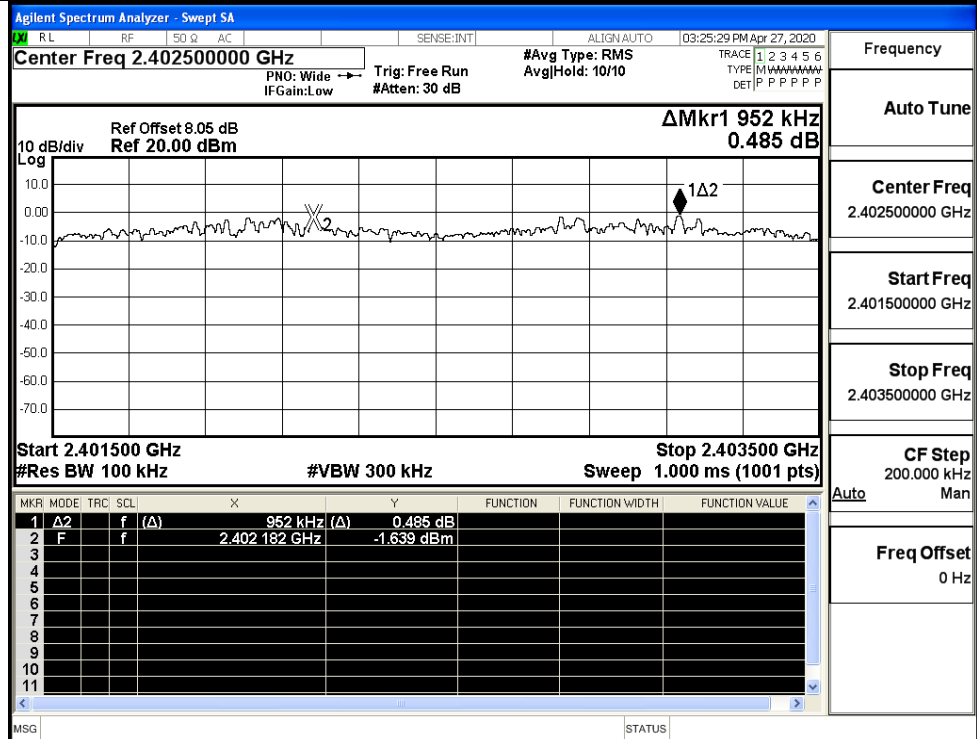
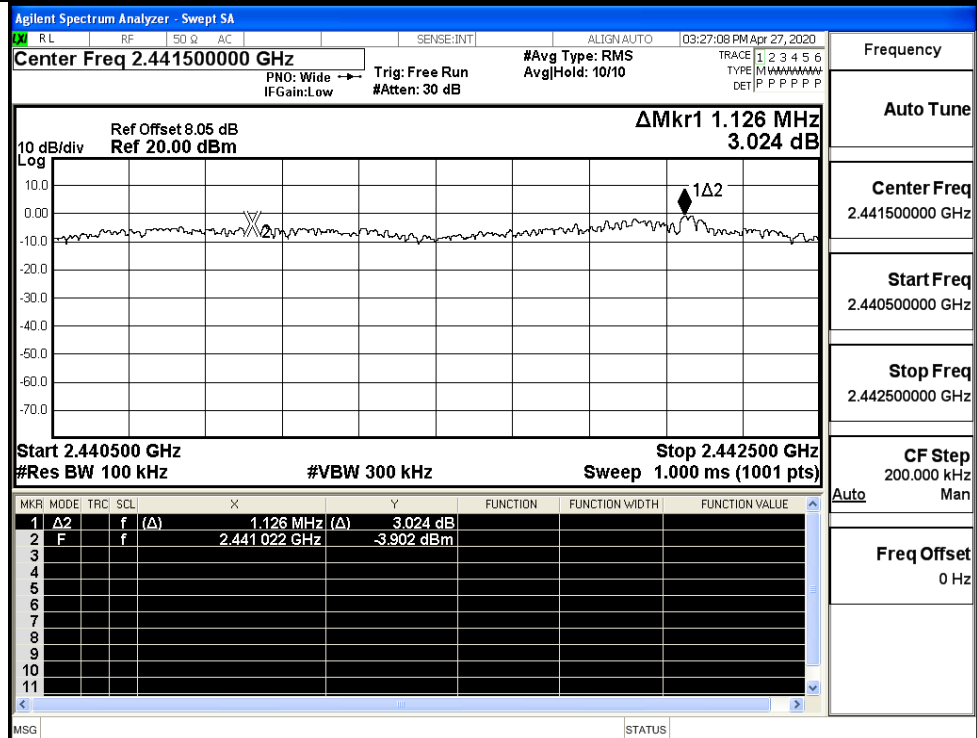


GFSK/MCH



GFSK/HCH



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

Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC

SENSE:INT

ALIGN:AUTO

03:30:35 PM Apr 27, 2020

Center Freq 2.479500000 GHz

PNO: Wide $\rightarrow$ Trg: Free Run #Ave Type: RMS Avg|Hold: 10/10

IF Gain: Low #Atten: 30 dB

TRACE 1 2 3 4 5 6

TYPE M W W W W W W W W

DET P P P P P P P

Frequency

Auto Tune

Center Freq 2.479500000 GHz

Start Freq 2.478500000 GHz

Stop Freq 2.480500000 GHz

CF Step 200.000 kHz

Auto Man

Freq Offset 0 Hz

Ref Offset 8.05 dB

Ref 20.00 dBm

Δ Mkr1 874 kHz

1.059 dB

10 dB/div

Log

10.0

0.00

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

1A2

Start 2.478500 GHz

#Res BW 100 kHz

#VBW 300 kHz

Stop 2.480500 GHz

Sweep 1.000 ms (1001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ 2	f	(Δ)	874 kHz (Δ)	1.059 dB			
2	F	f		2.478 956 GHz	-3.371 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG

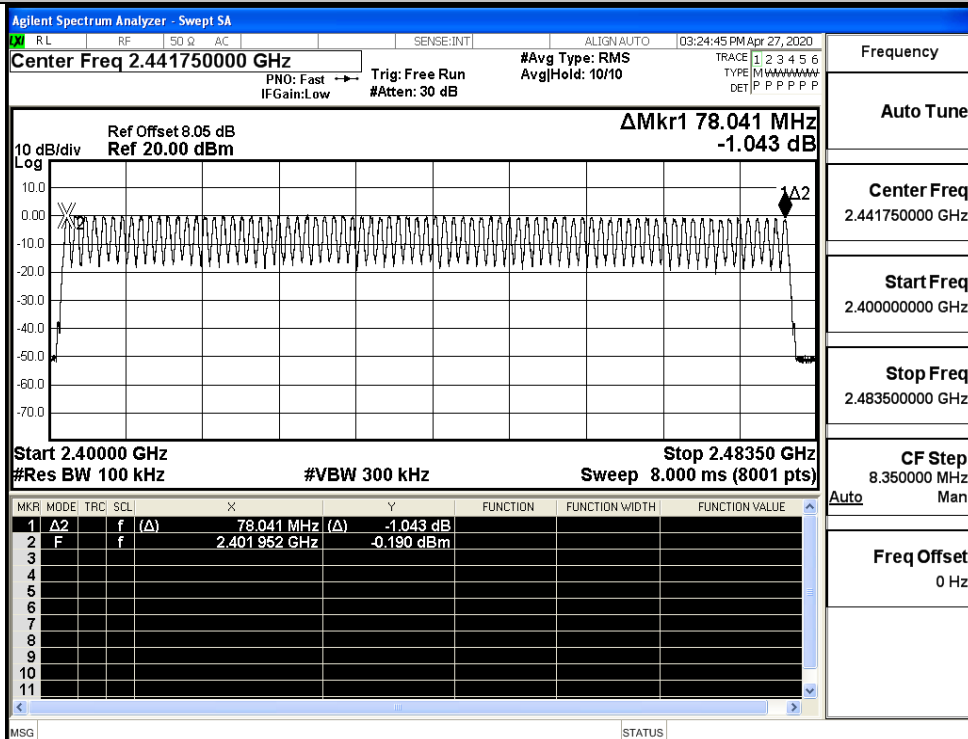
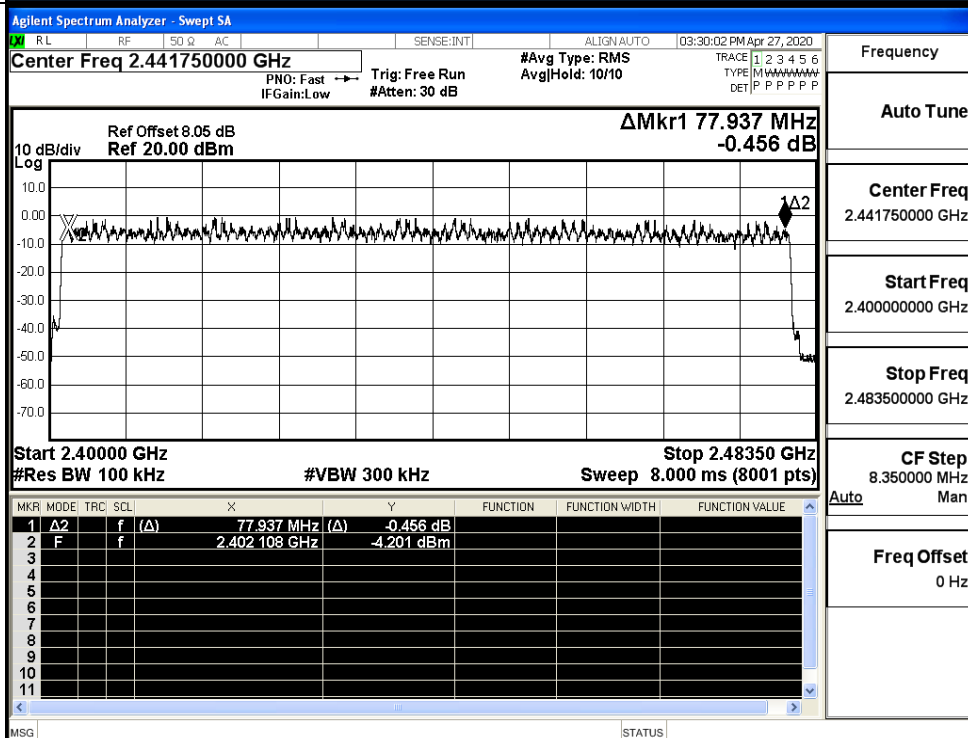
STATUS

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

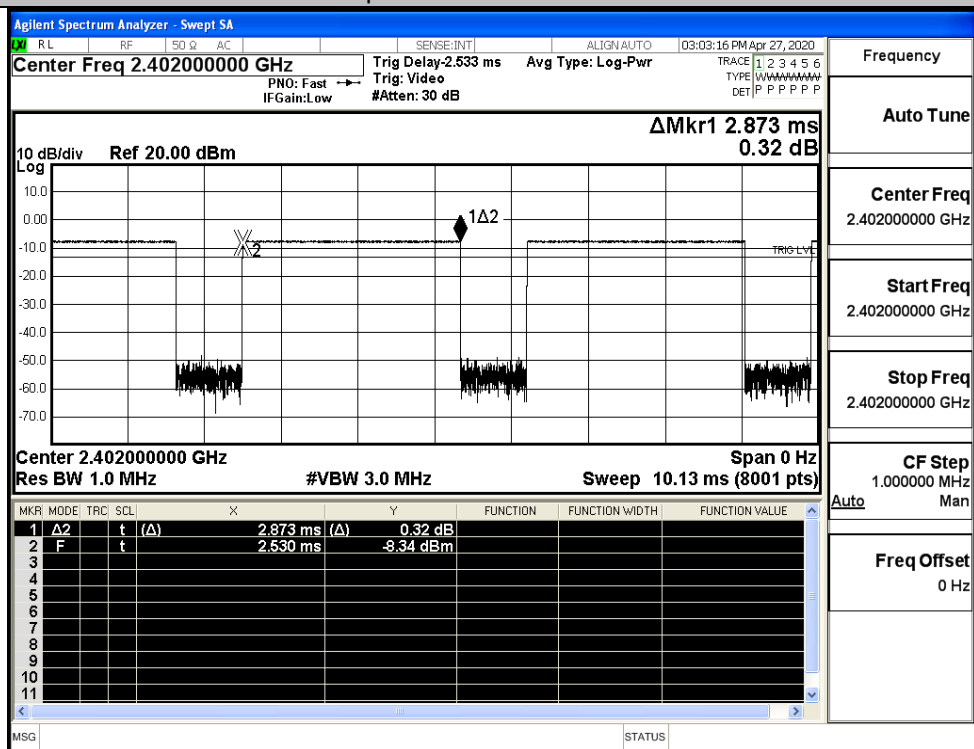
 $\pi/4$ DQPSK/Hop

A.5 Dwell Time

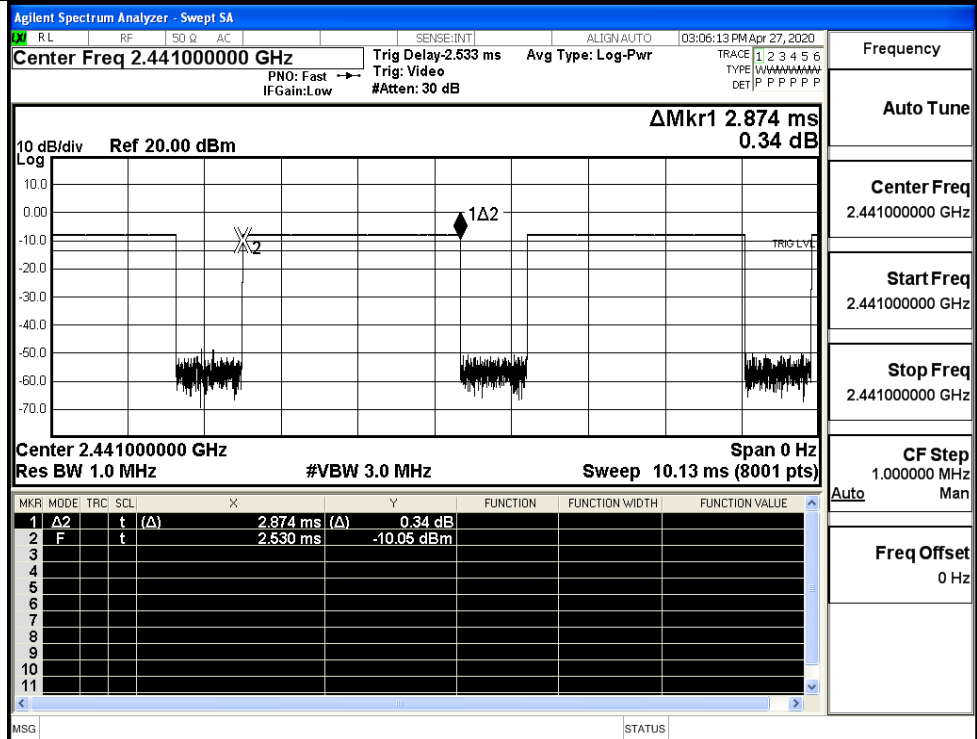
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.87	106.7	0.306	0.4	PASS
	DH5	MCH	2.87	106.7	0.306	0.4	PASS
	DH5	HCH	2.87	106.7	0.306	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.87	106.7	0.307	0.4	PASS
	2DH5	MCH	2.87	106.7	0.307	0.4	PASS
	2DH5	HCH	2.87	106.7	0.307	0.4	PASS

Test Graphs

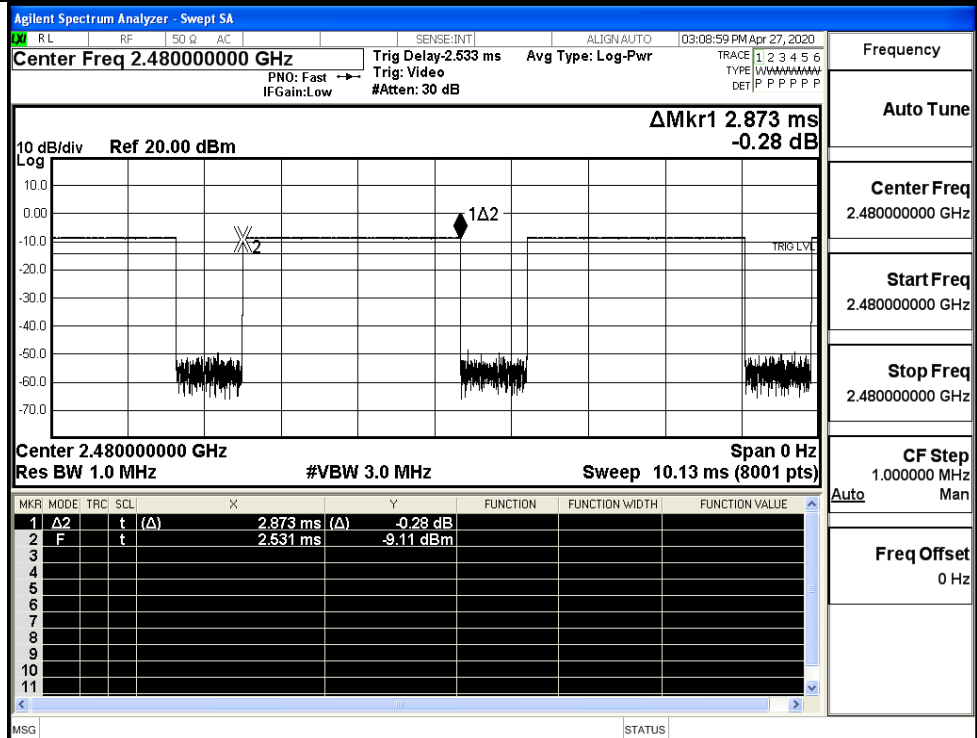
GFSK_DH5/LCH



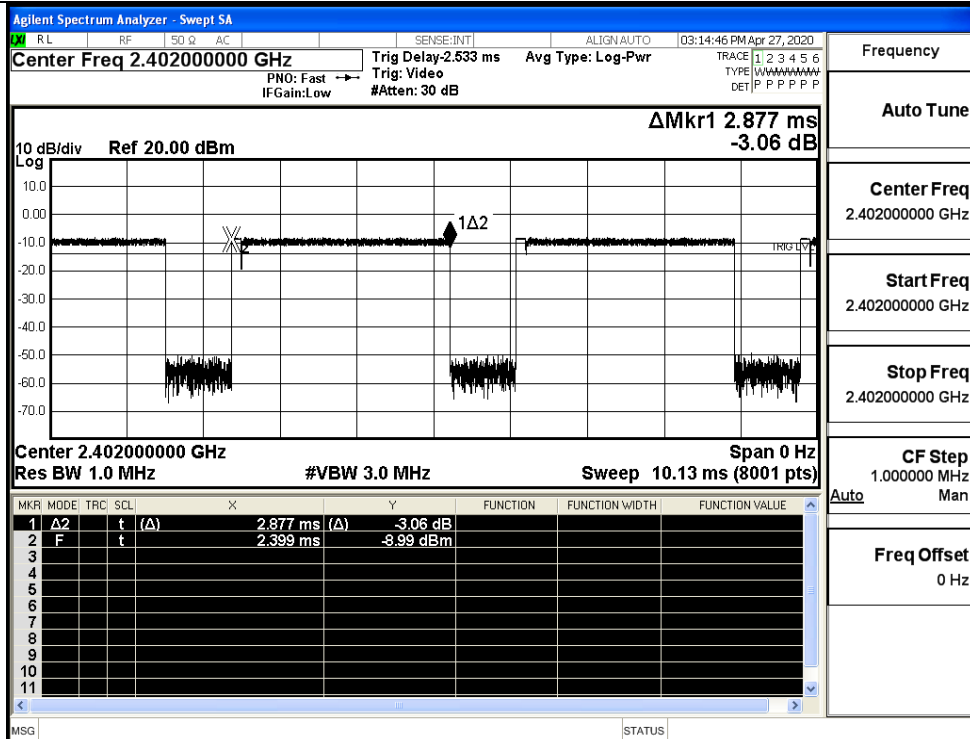
GFSK_DH5/MCH



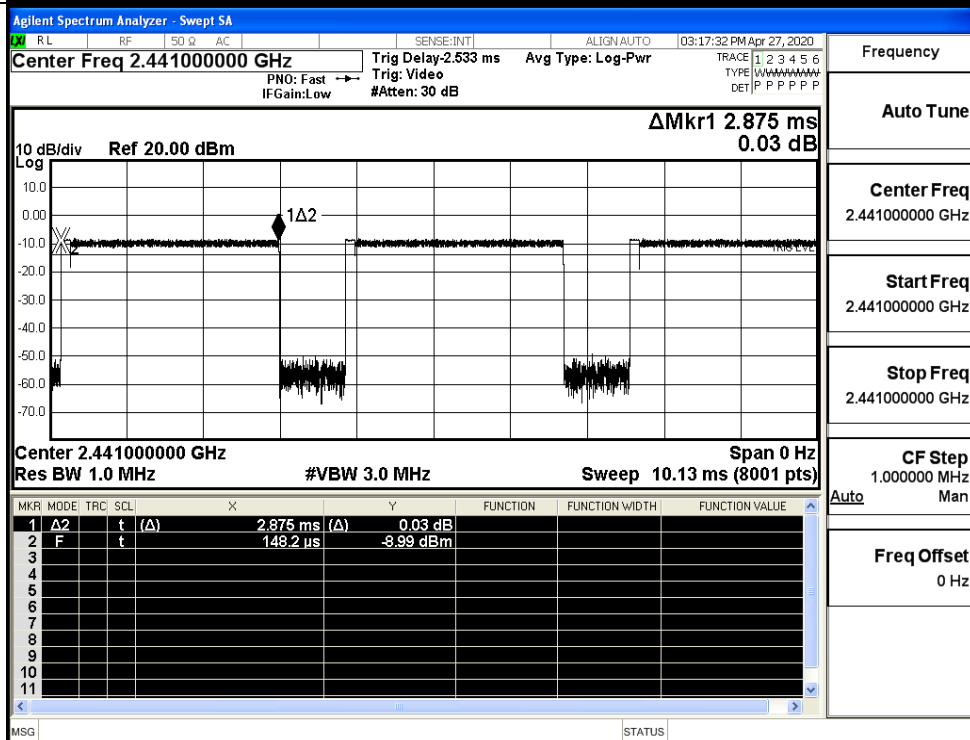
GFSK_DH5/HCH



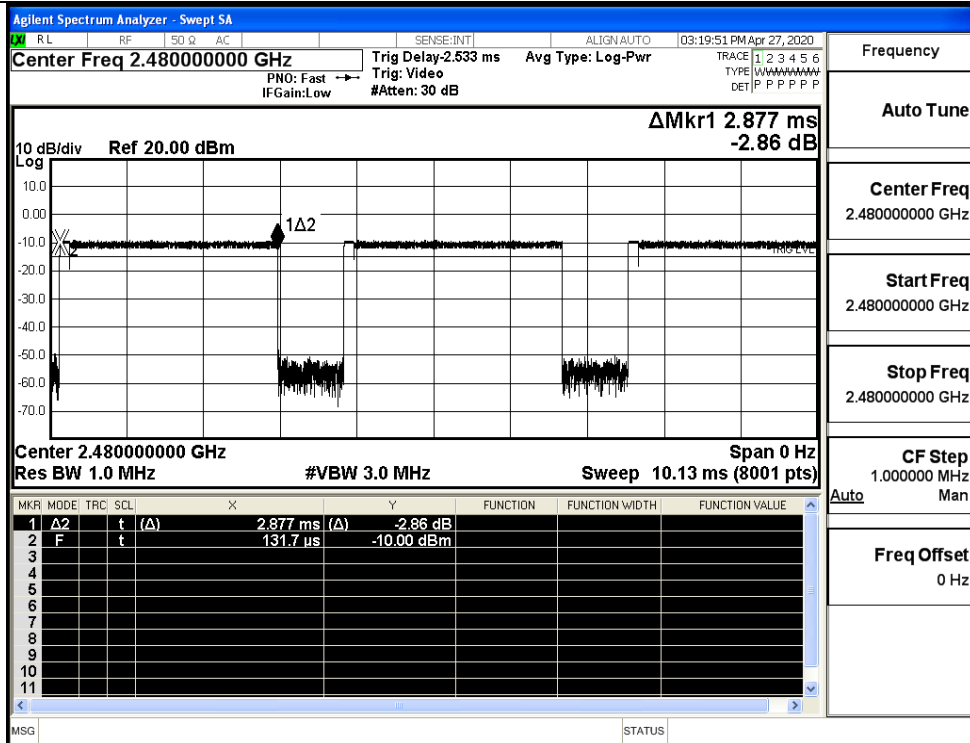
$\pi/4$ DQPSK
_2DH5/LCH



$\pi/4$ DQPSK
_2DH5/MCH

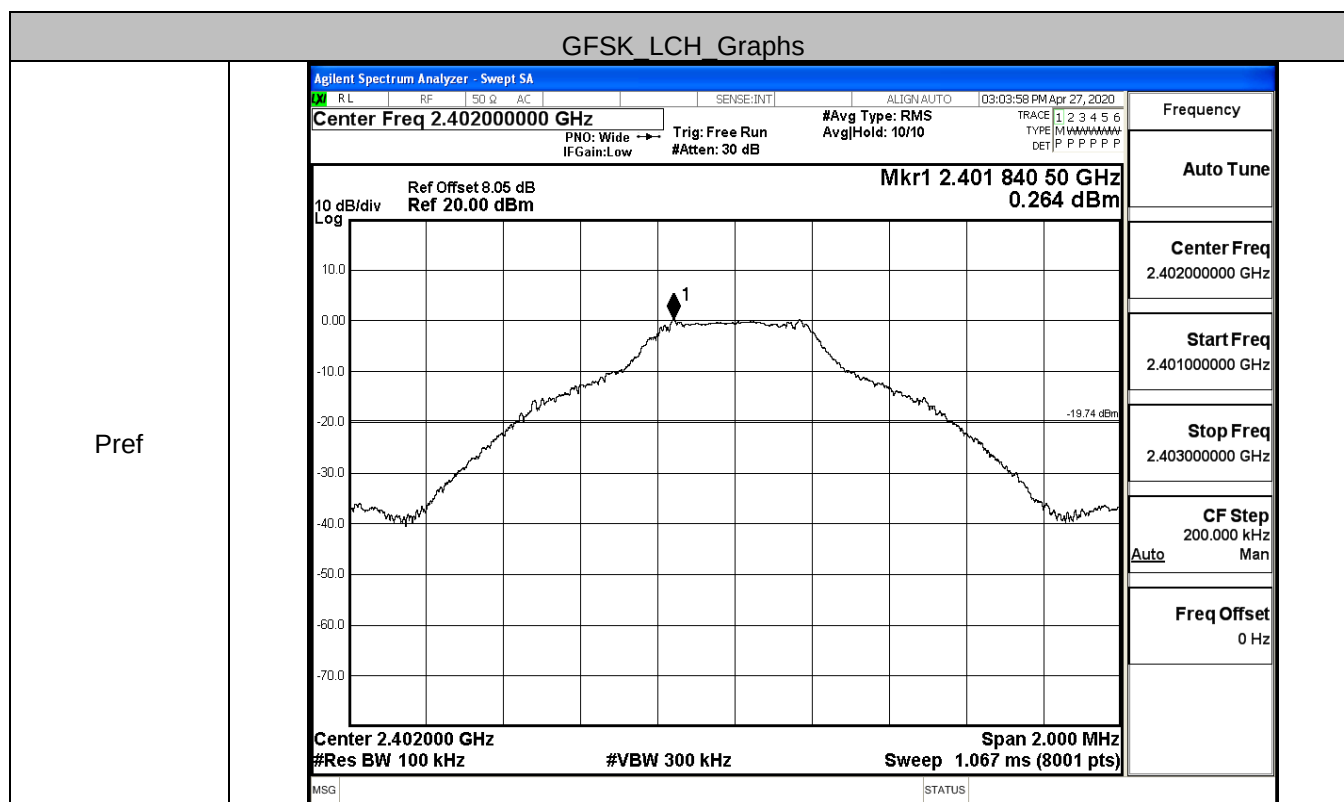


$\pi/4$ DQPSK
_2DH5/HCH

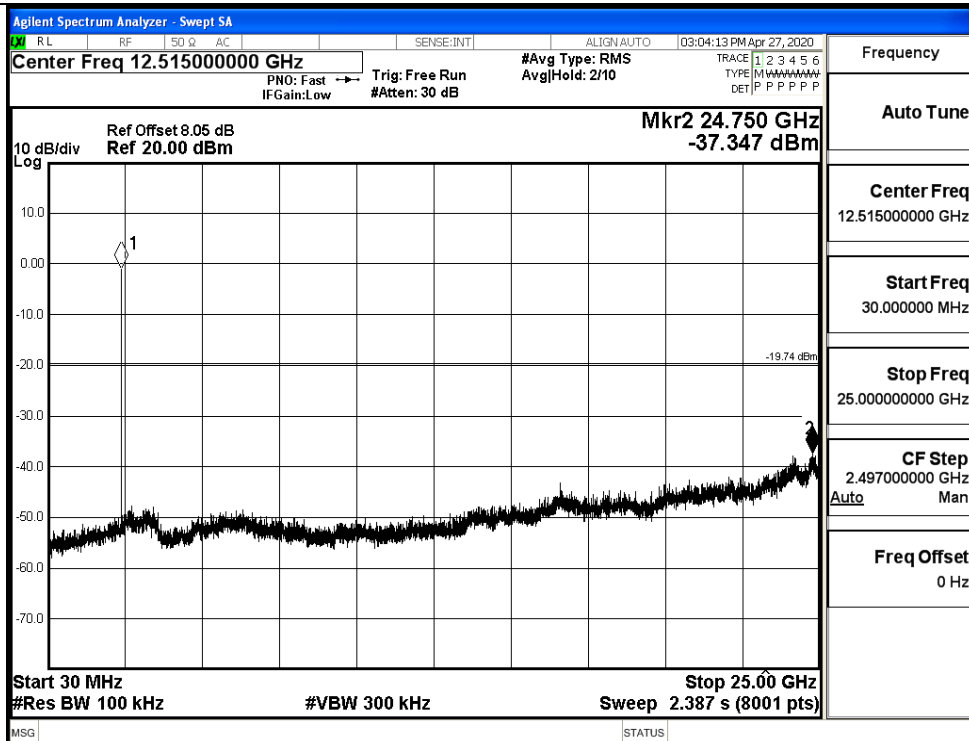


A.6 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.264	-37.347	-19.736	PASS
	MCH	-0.248	-37.277	-20.248	PASS
	HCH	-0.645	-37.575	-20.645	PASS
$\pi/4$ DQPSK	LCH	-0.567	-38.363	-20.567	PASS
	MCH	-0.698	-37.240	-20.698	PASS
	HCH	-2.002	-37.032	-22.002	PASS

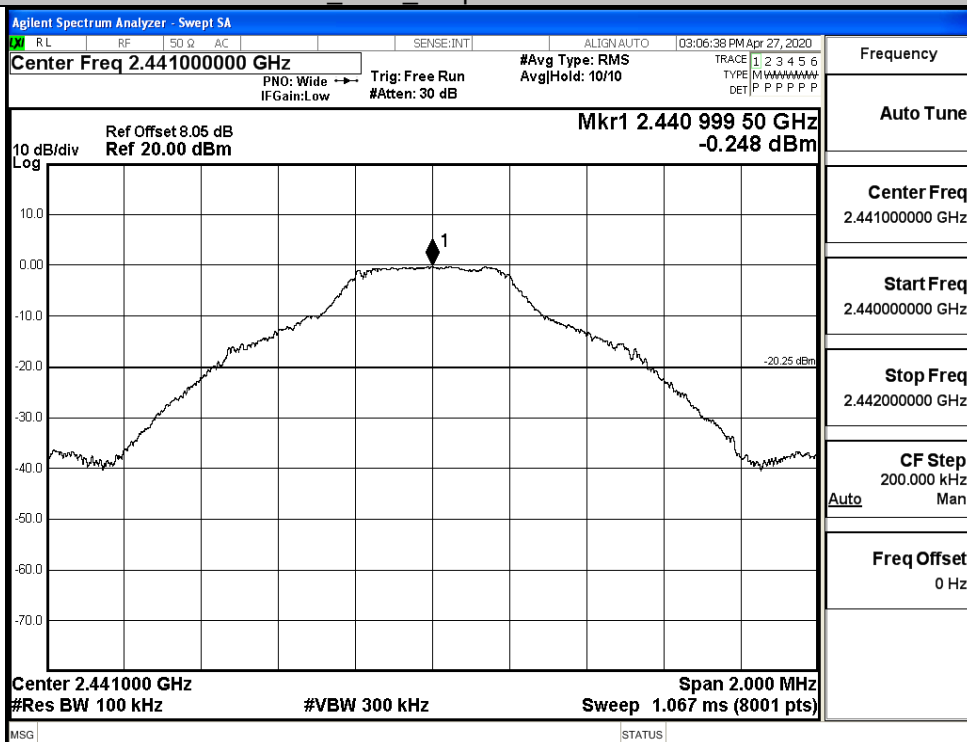


Puw

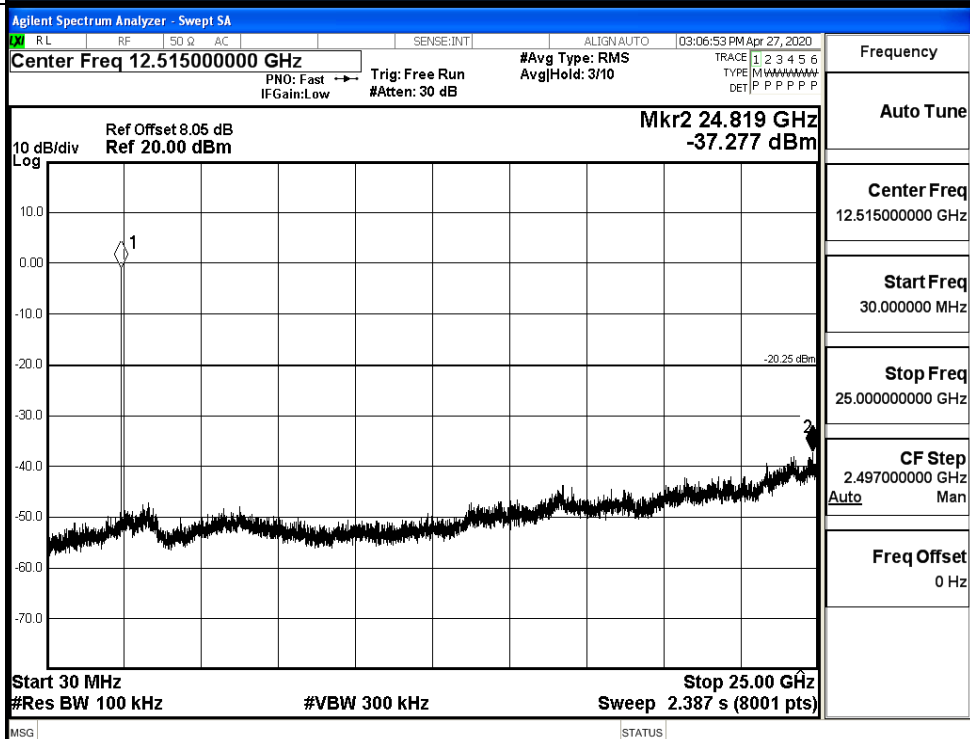


GFSK_MCH_Graphs

Pref

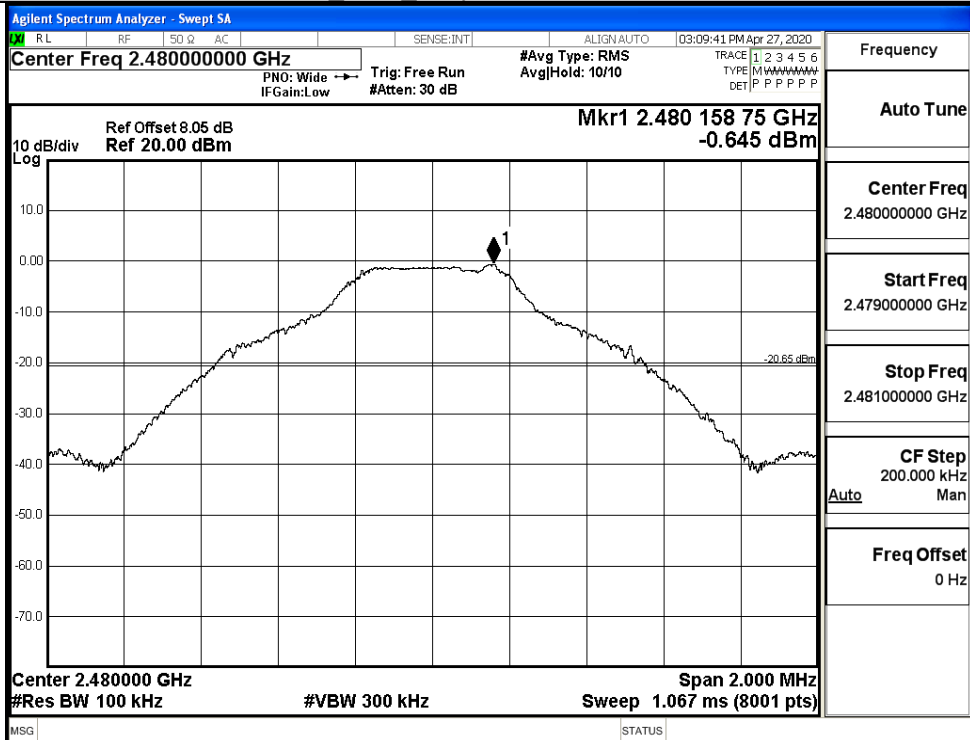


Puw

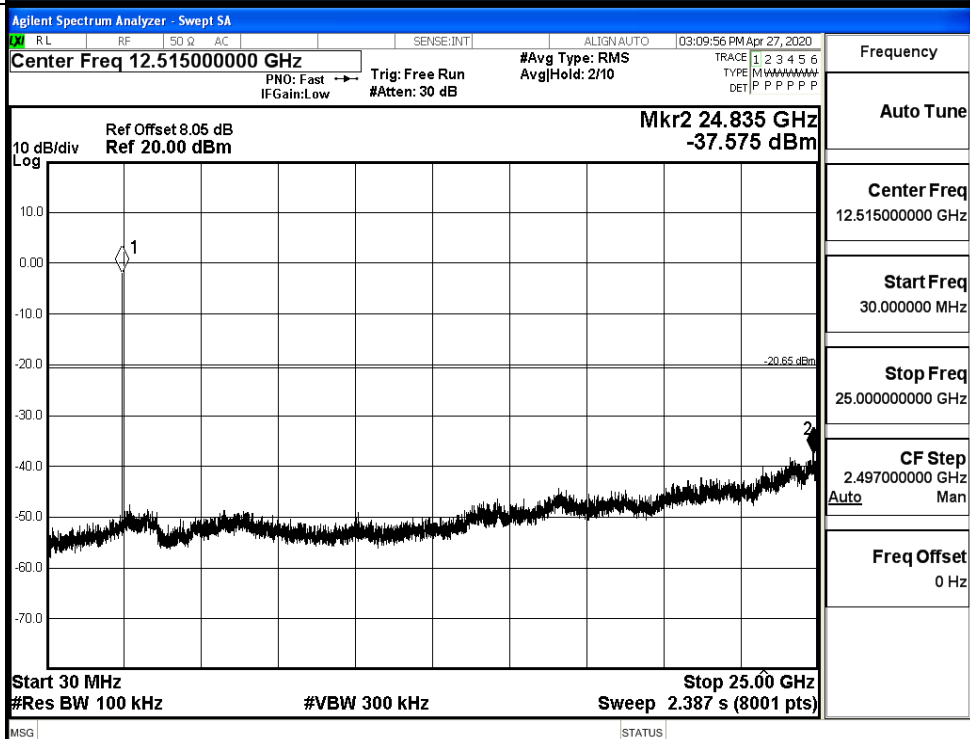


GFSK HCH_Graphs

Pref

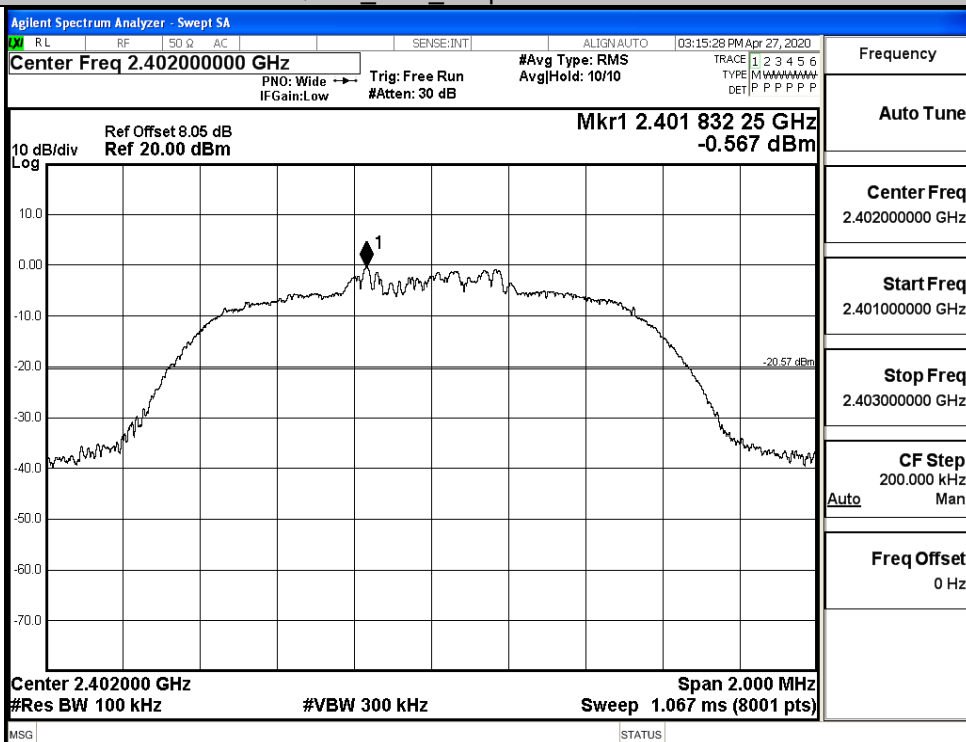


Puw

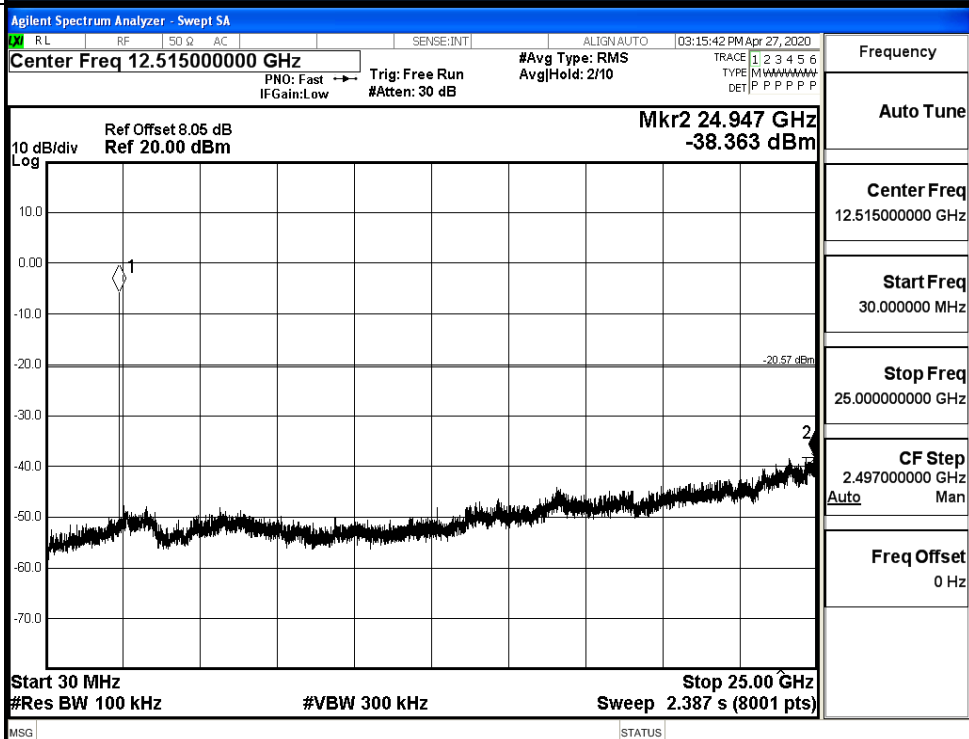


$\pi/4$ DQPSK_LCH_Graphs

Pref

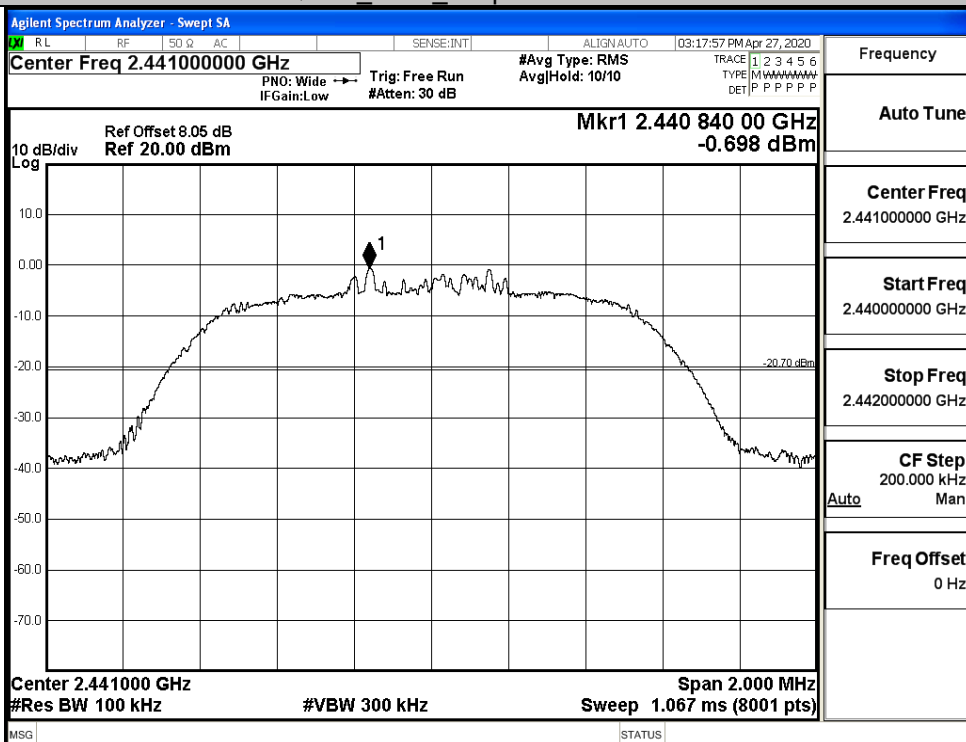


Puw

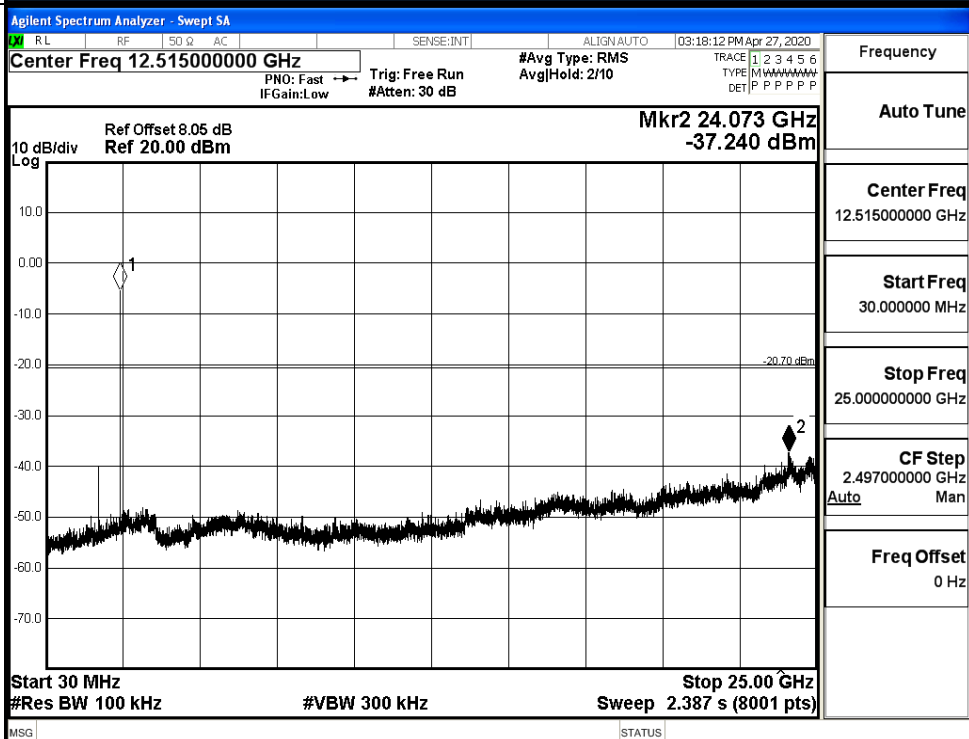


π /4DQPSK_MCH_Graphs

Pref

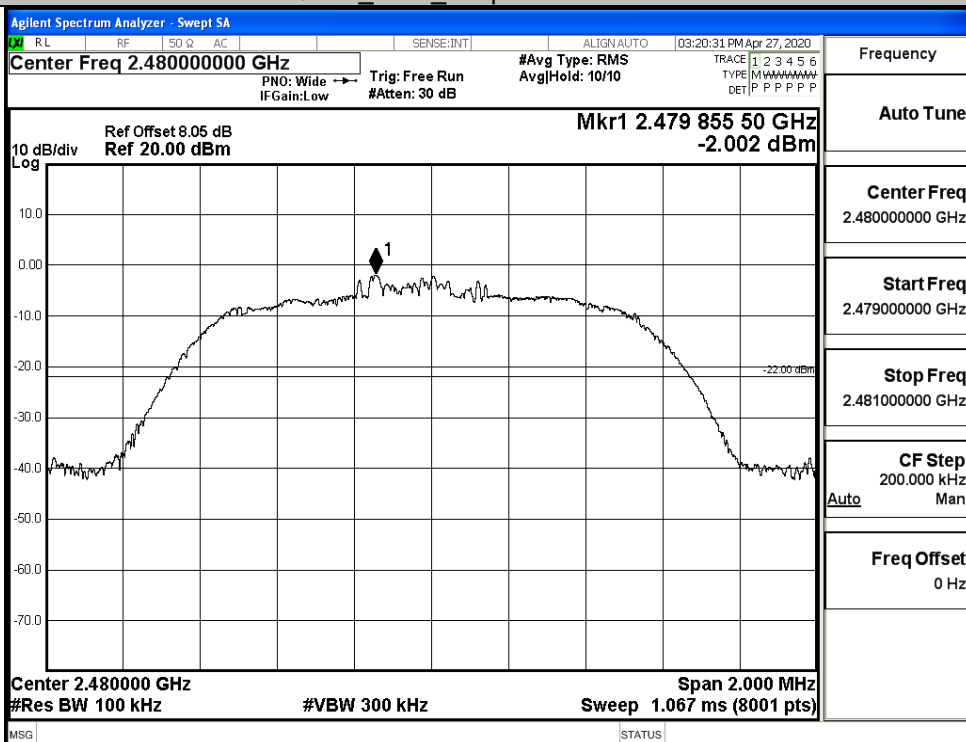


Puw

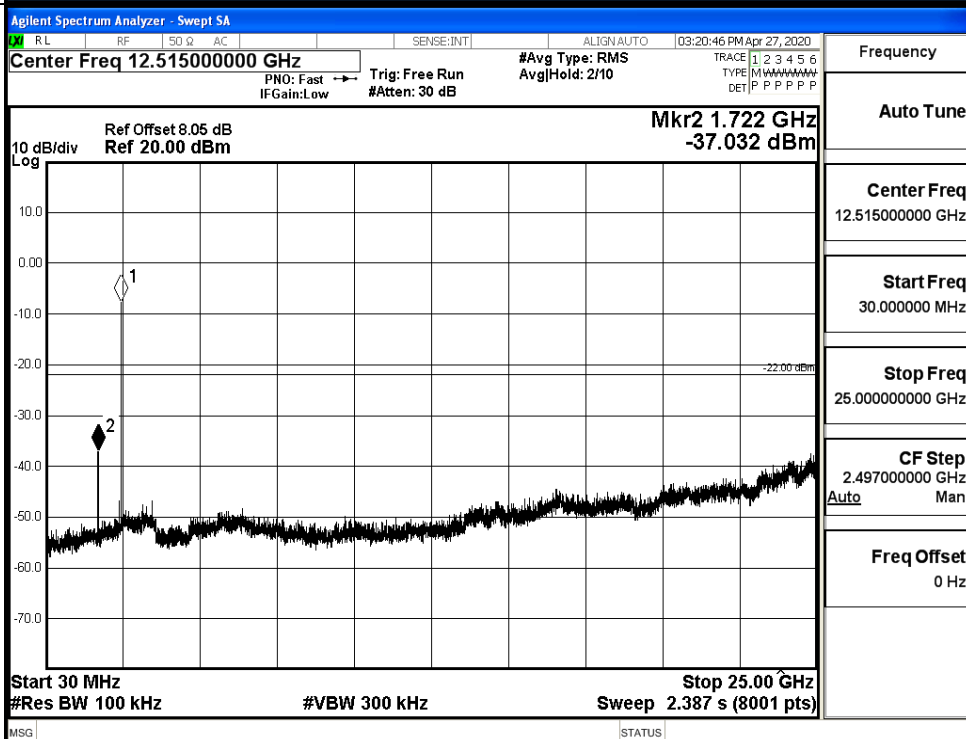


$\pi/4$ DQPSK_HCH_Graphs

Pref



Puw

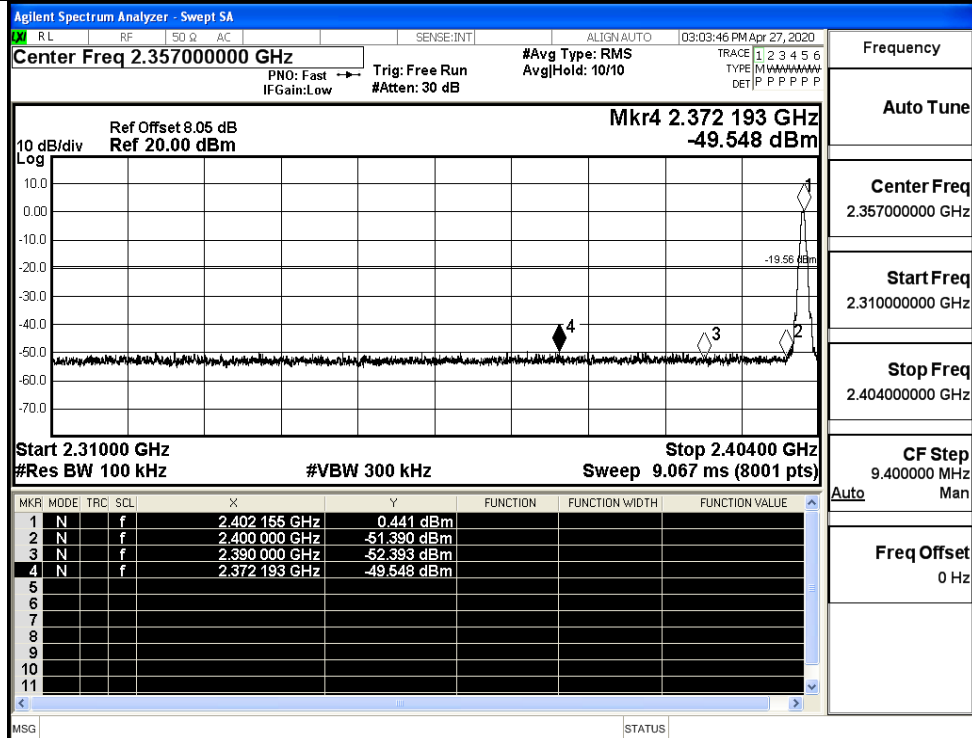


A.7 Band-edge for RF Conducted Emissions

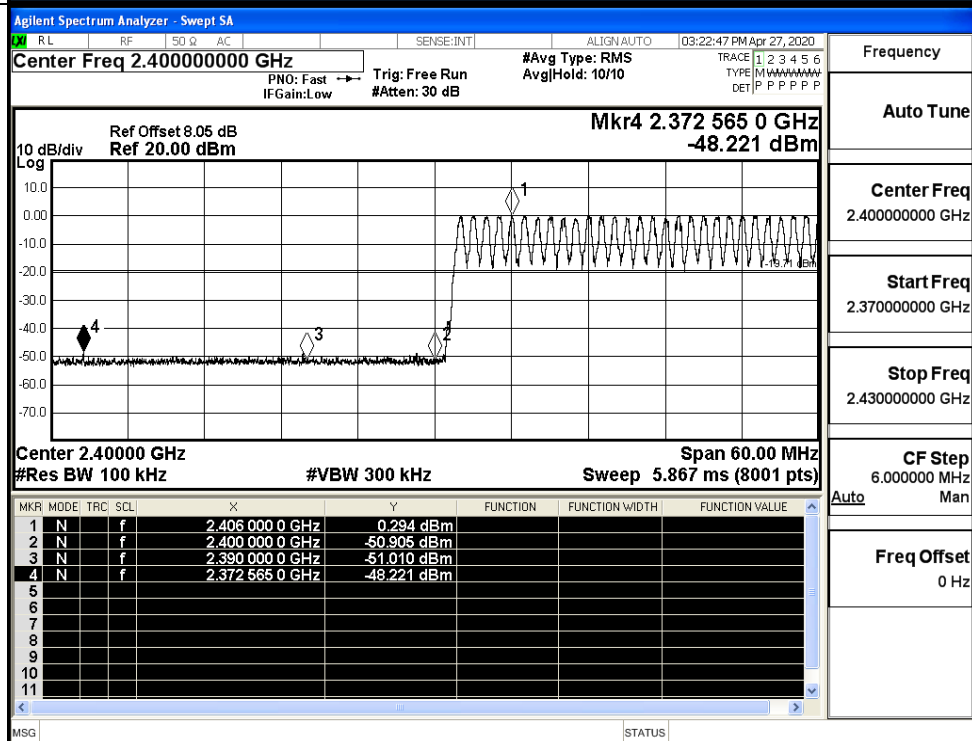
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	0.441	Off	-49.548	-19.56	PASS
			0.294	On	-48.221	-19.71	PASS
	HCH	2480	-0.573	Off	-48.972	-20.57	PASS
			-0.296	On	-48.582	-20.3	PASS
$\pi/4$ DQPSK	LCH	2402	-0.698	Off	-49.716	-20.7	PASS
			-0.497	On	-48.441	-20.5	PASS
	HCH	2480	-1.652	Off	-49.090	-21.65	PASS
			-0.974	On	-48.254	-20.97	PASS

Test Graphs

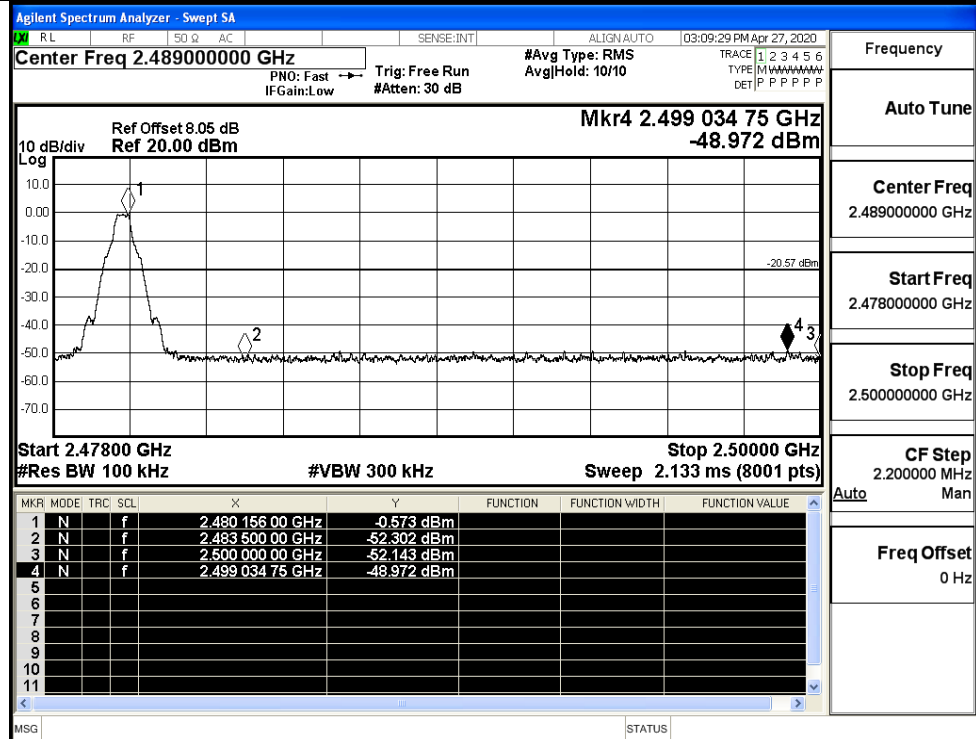
GFSK/LCH/No Hop



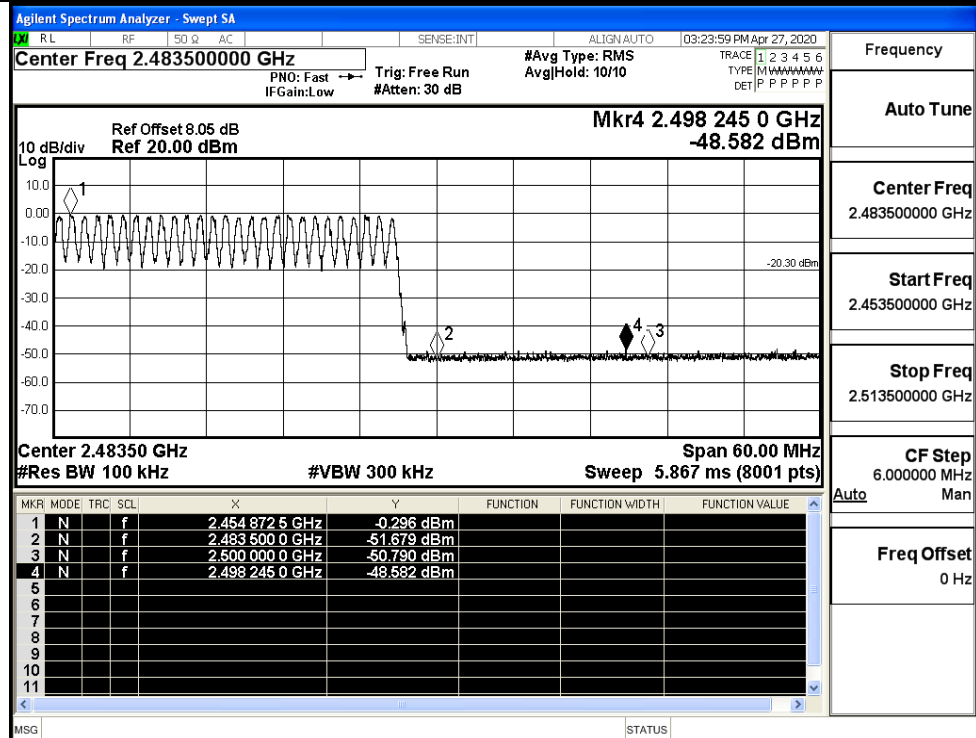
GFSK/LCH/Hop



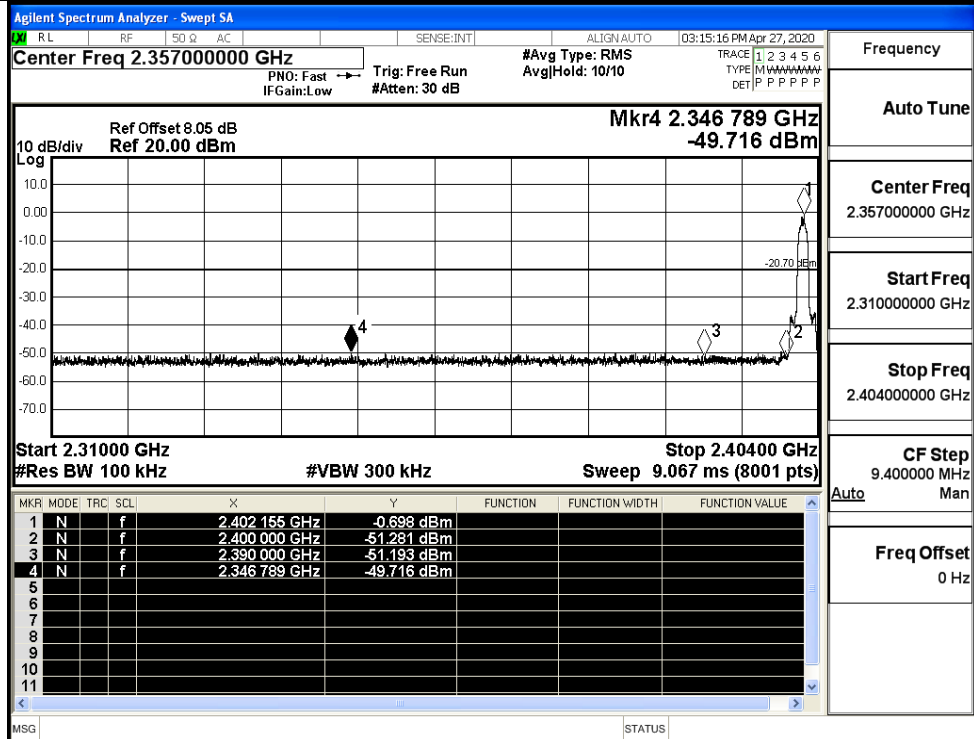
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

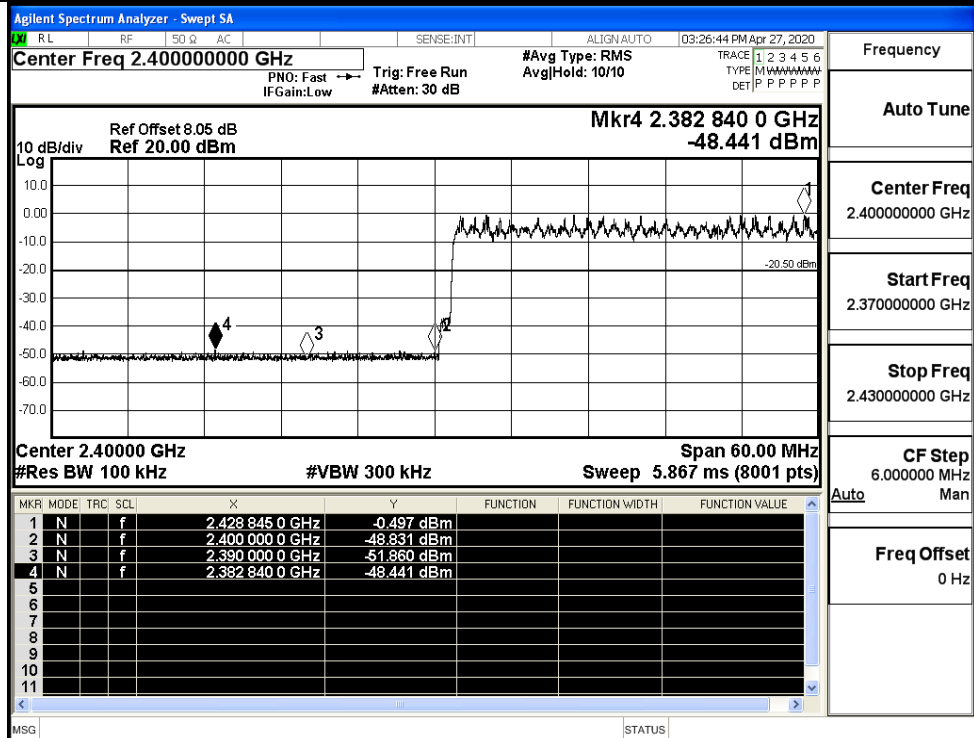
Start Freq
2.310000000 GHz

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

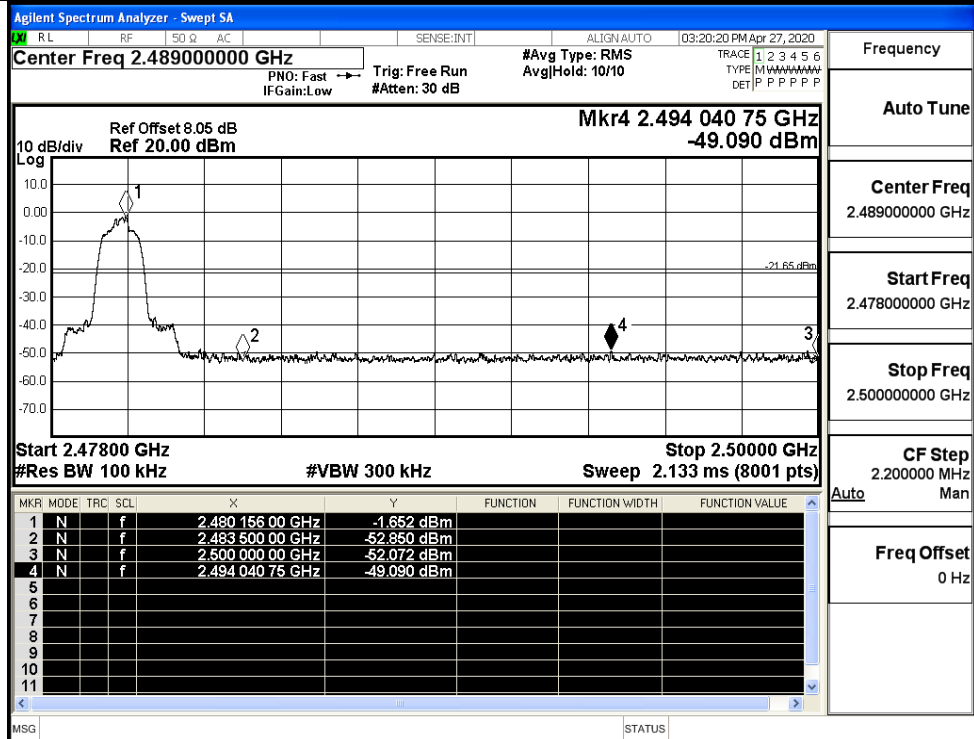
Start Freq
2.370000000 GHz

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

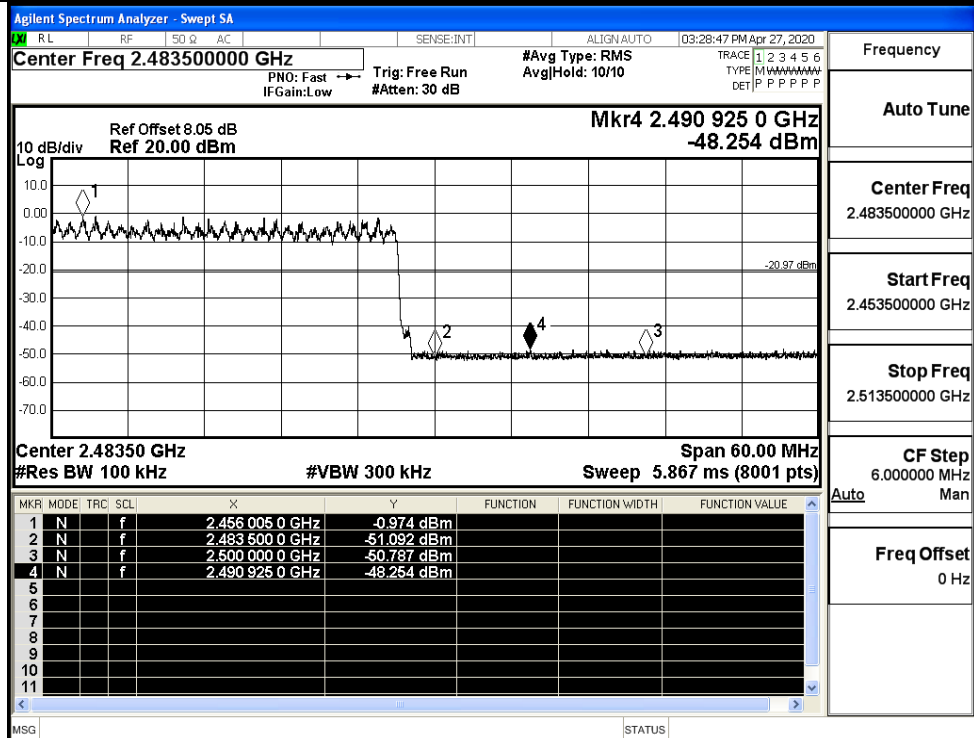
Start Freq
2.478000000 GHz

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

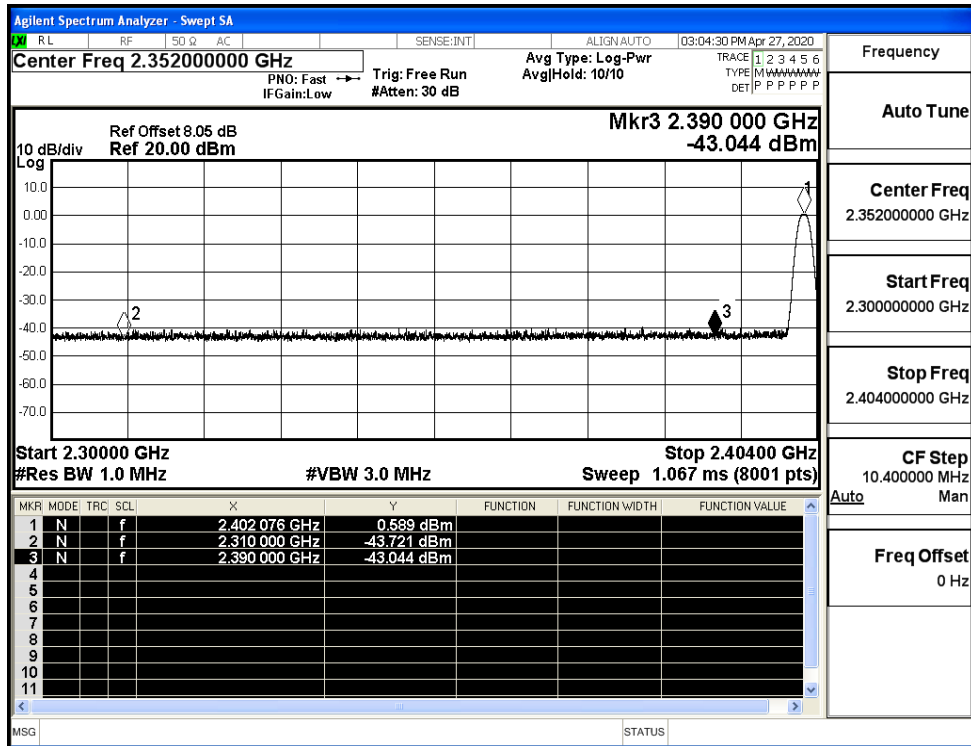
CF Step
6.000000 MHz
Auto Man

Freq Offset
0 Hz

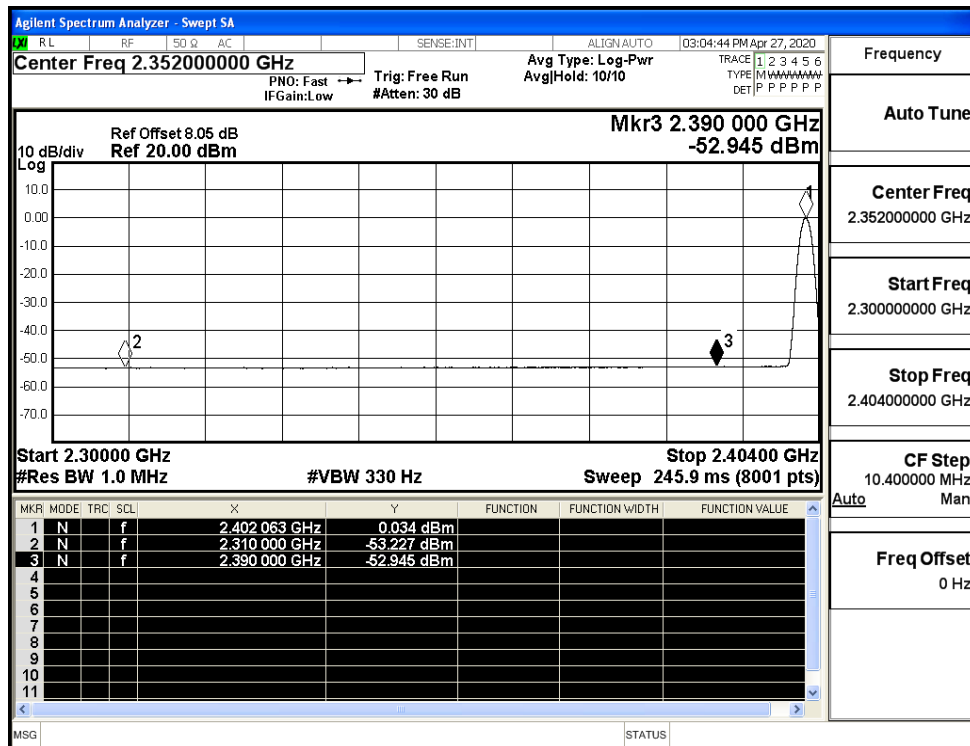
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.72	2.0	0	53.54	PEAK	74	PASS
	Off	2310.0	-53.23	2.0	0	44.03	AV	54	PASS
	Off	2390.0	-43.04	2.0	0	54.21	PEAK	74	PASS
	Off	2390.0	-52.95	2.0	0	44.31	AV	54	PASS
	Off	2483.5	-41.56	2.0	0	55.70	PEAK	74	PASS
	Off	2483.5	-52.55	2.0	0	44.70	AV	54	PASS
	Off	2500.0	-42.35	2.0	0	54.91	PEAK	74	PASS
	Off	2500.0	-52.34	2.0	0	44.92	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-42.07	2.0	0	55.19	PEAK	74	PASS
	Off	2310.0	-53.22	2.0	0	44.04	AV	54	PASS
	Off	2390.0	-42.49	2.0	0	54.76	PEAK	74	PASS
	Off	2390.0	-53.04	2.0	0	44.21	AV	54	PASS
	Off	2483.5	-43.55	2.0	0	53.71	PEAK	74	PASS
	Off	2483.5	-52.45	2.0	0	44.81	AV	54	PASS
	Off	2500.0	-41.68	2.0	0	55.57	PEAK	74	PASS
	Off	2500.0	-52.32	2.0	0	44.94	AV	54	PASS

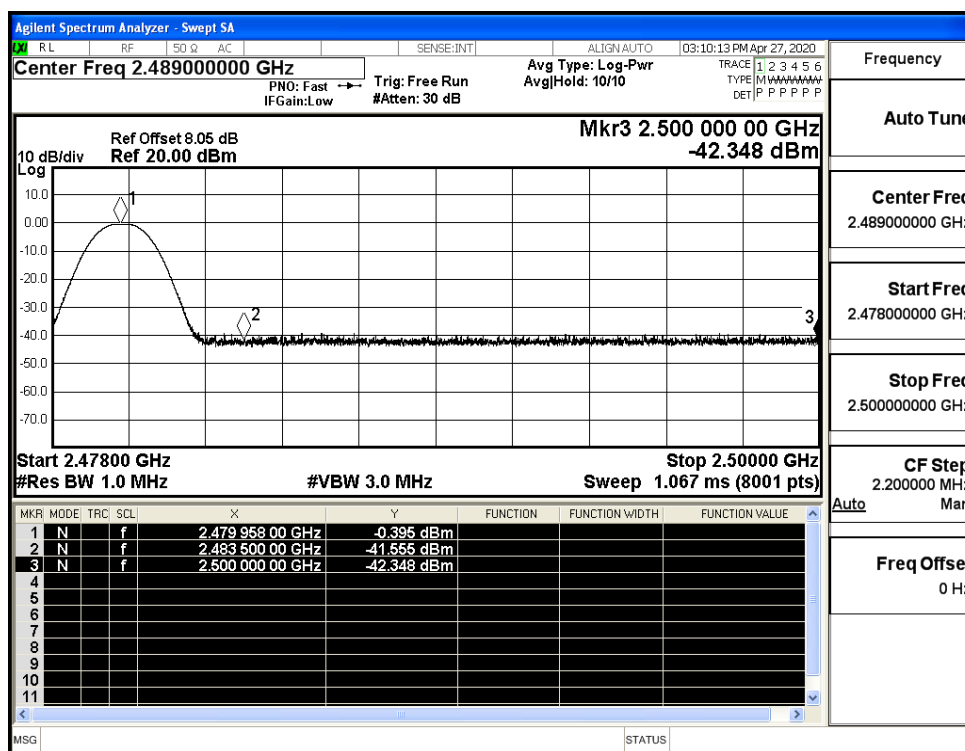
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



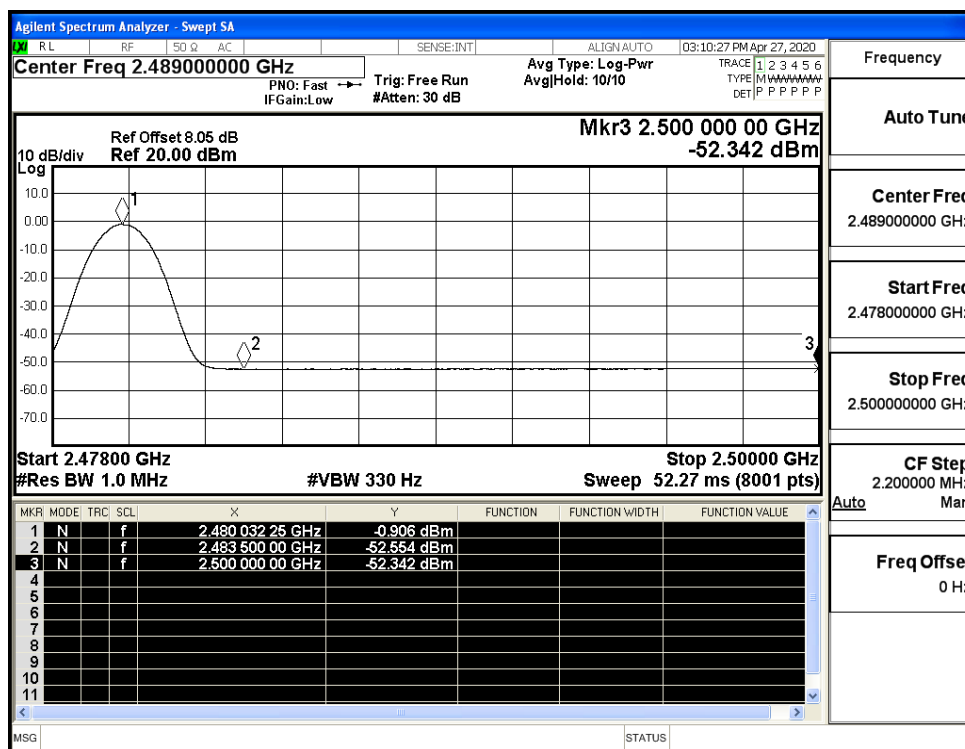
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

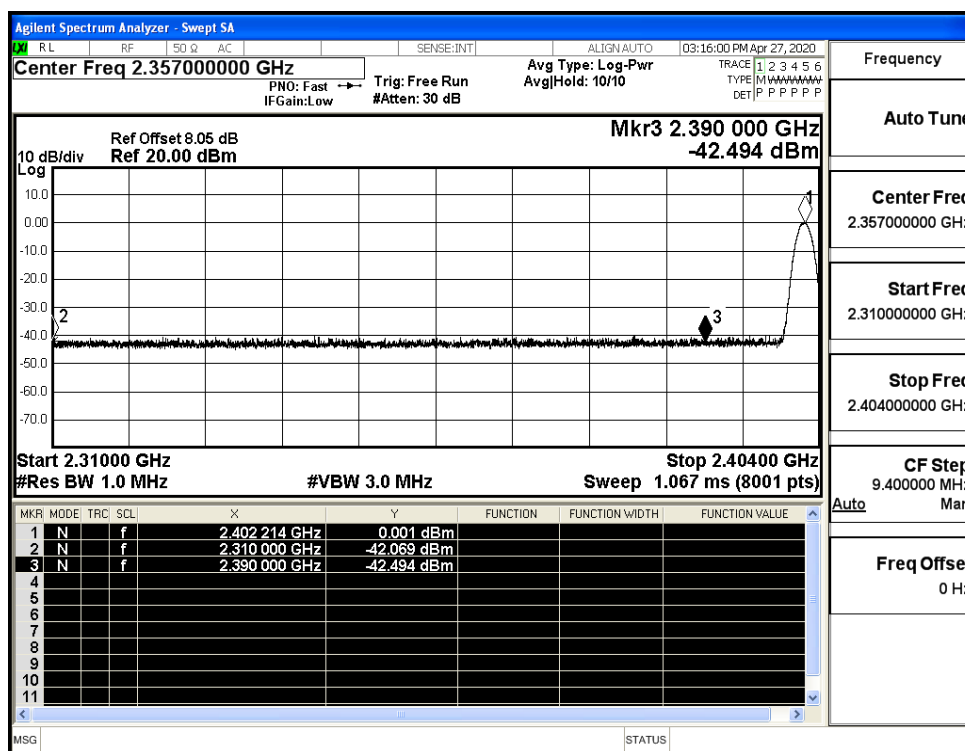
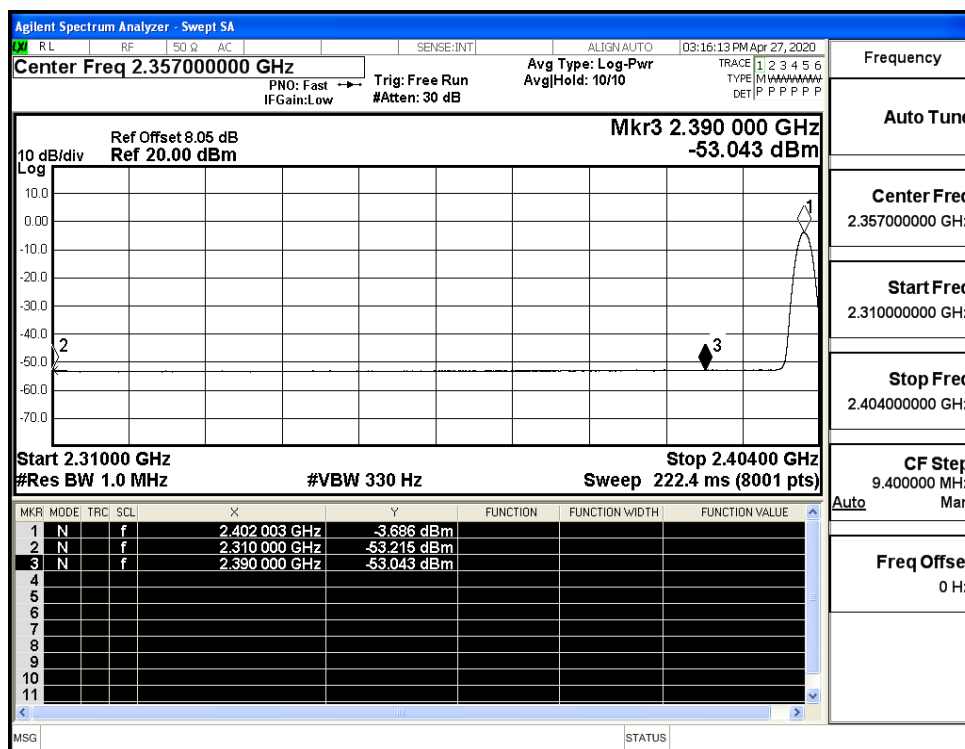


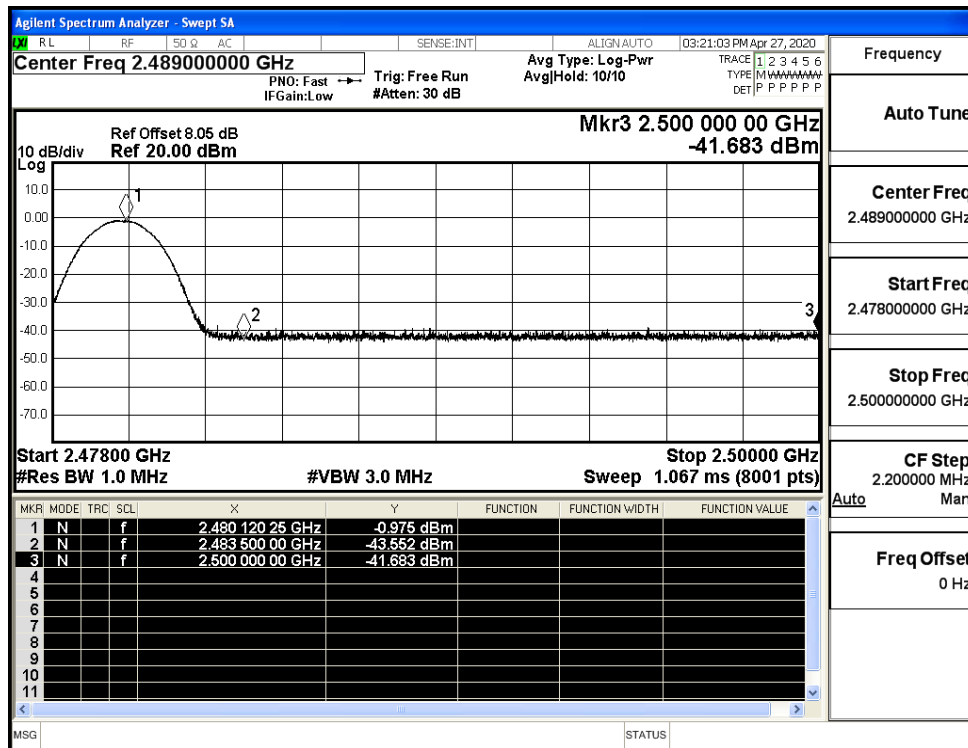
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



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)