

Appendix A

RF Test Data for BT V4.1(BDR/EDR) (Conducted Measurement)

Product Name: In-lane Entry Kiosk

Trade Mark: N/A

Test Model: REEF-US-LKS8343A

Environmental Conditions

Temperature:	23.5 ° C
Relative Humidity:	54.3%
ATM Pressure:	100.0 kPa
Test Engineer:	QUXIN
Supervised by:	Li Huan

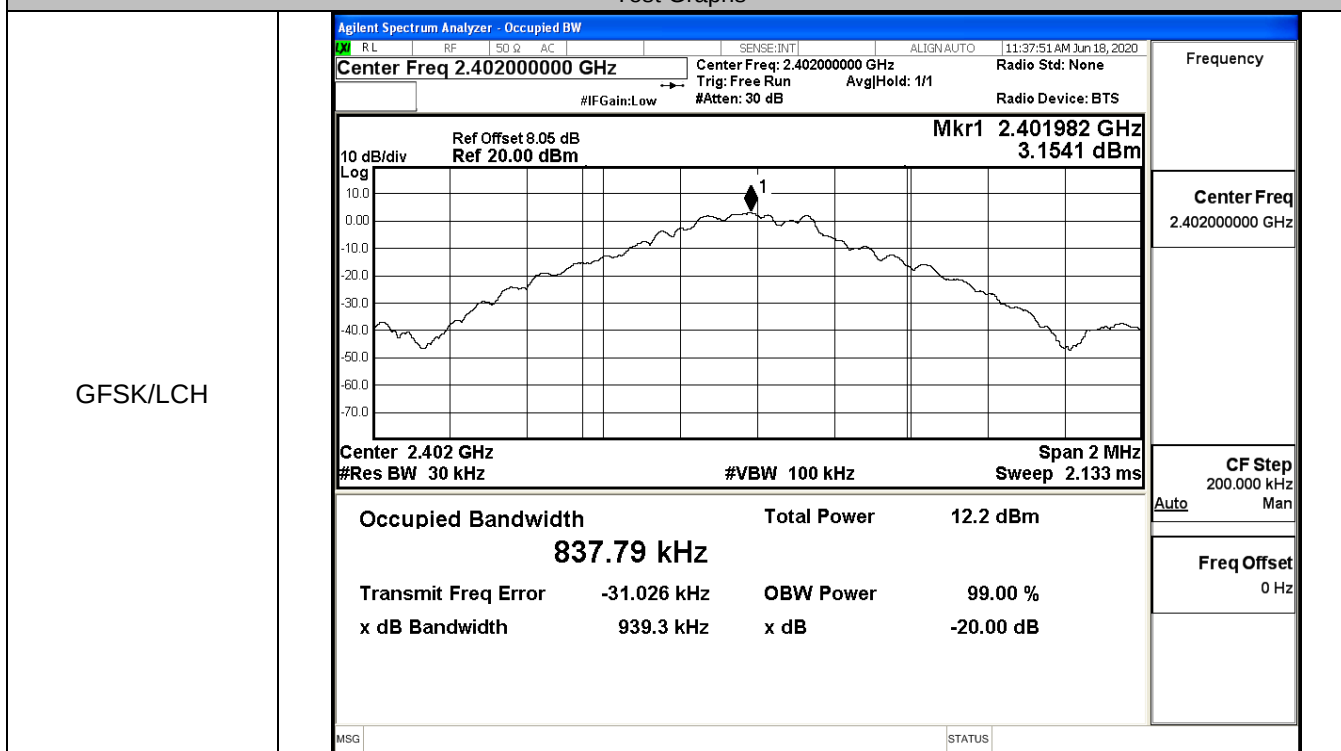
A.1 Maximum Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.420	21	PASS
	MCH	-0.844	21	PASS
	HCH	-0.720	21	PASS
$\pi/4$ DQPSK	LCH	-1.257	21	PASS
	MCH	-0.707	21	PASS
	HCH	1.328	21	PASS
8DPSK	LCH	-0.781	21	PASS
	MCH	1.460	21	PASS
	HCH	1.547	21	PASS

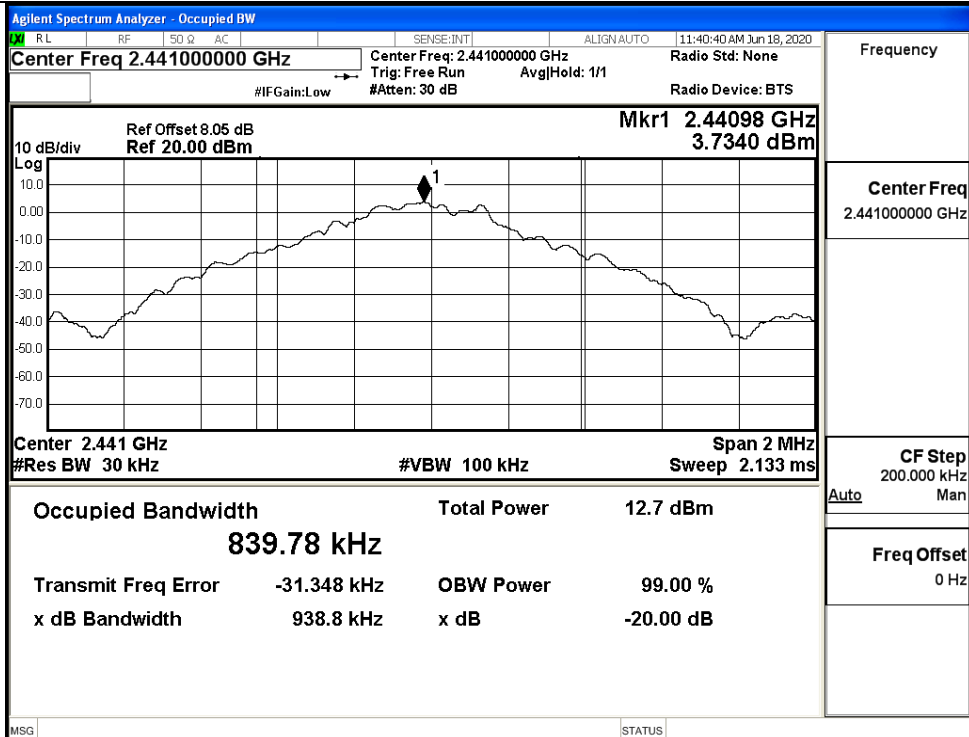
A.2 20dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.9393	Not Specified	PASS
	MCH	0.9388	Not Specified	PASS
	HCH	0.9419	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.317	Not Specified	PASS
	MCH	1.315	Not Specified	PASS
	HCH	1.319	Not Specified	PASS
8DPSK	LCH	1.312	Not Specified	PASS
	MCH	1.309	Not Specified	PASS
	HCH	1.309	Not Specified	PASS

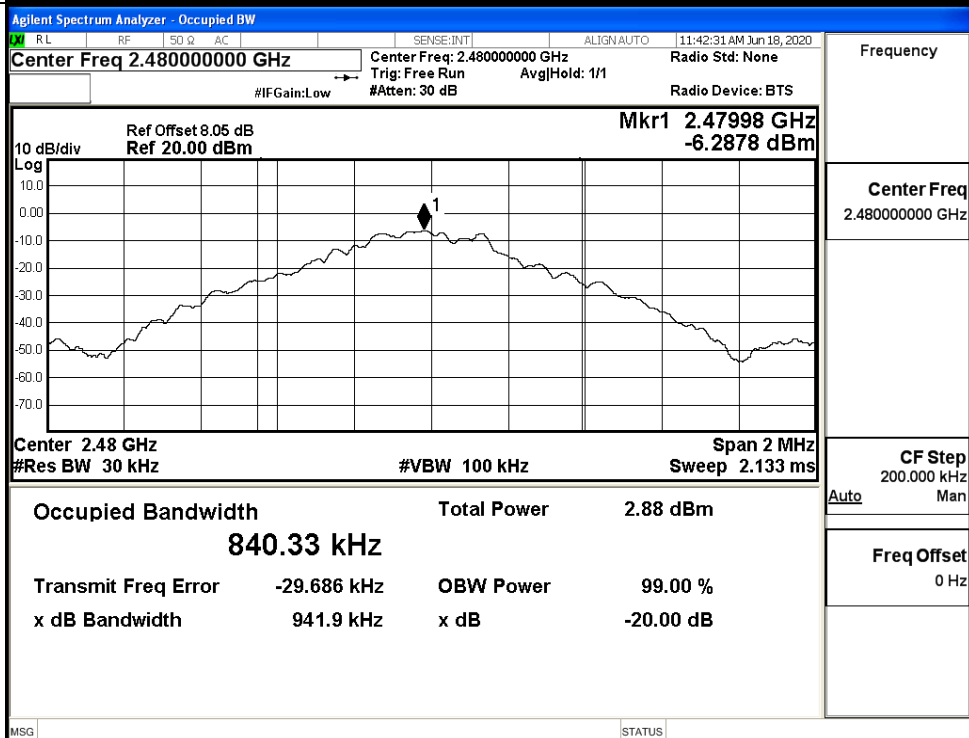
Test Graphs

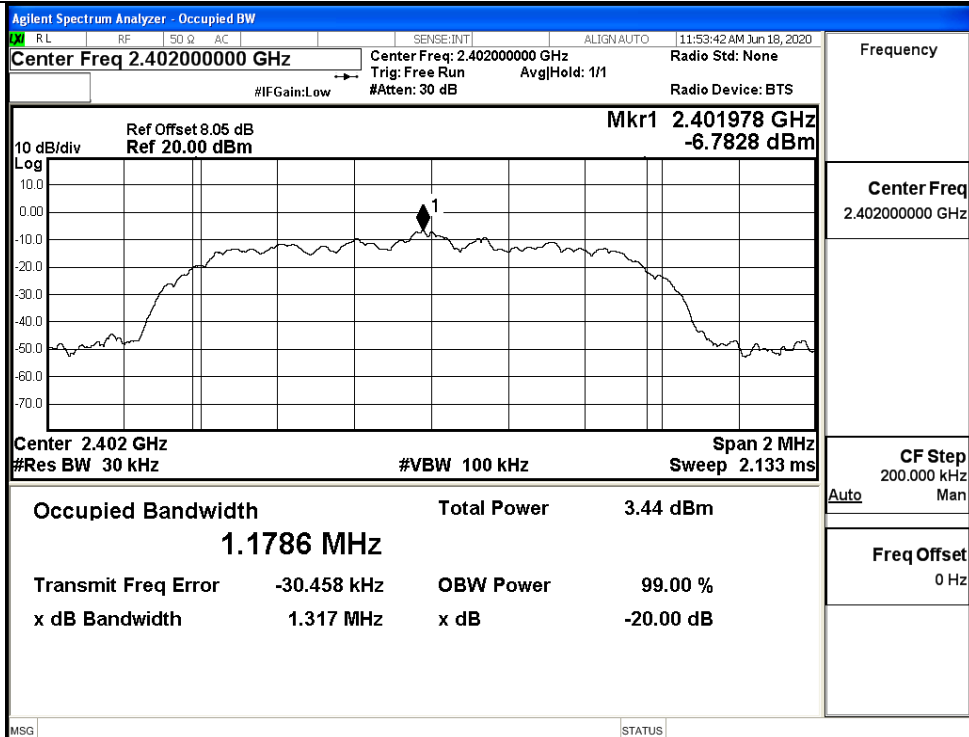
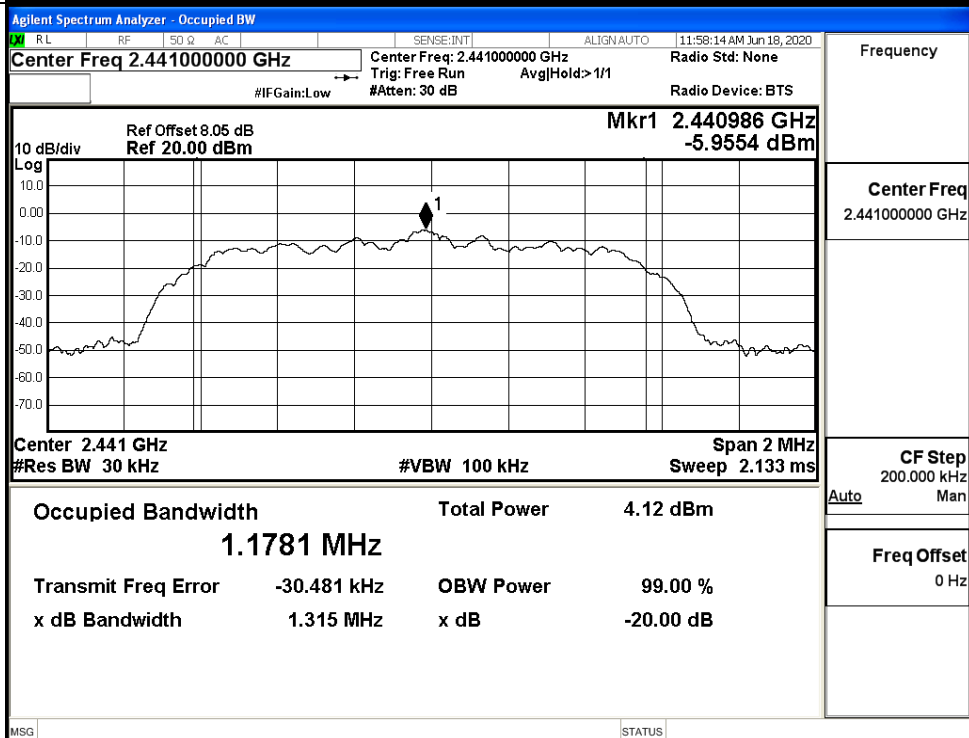


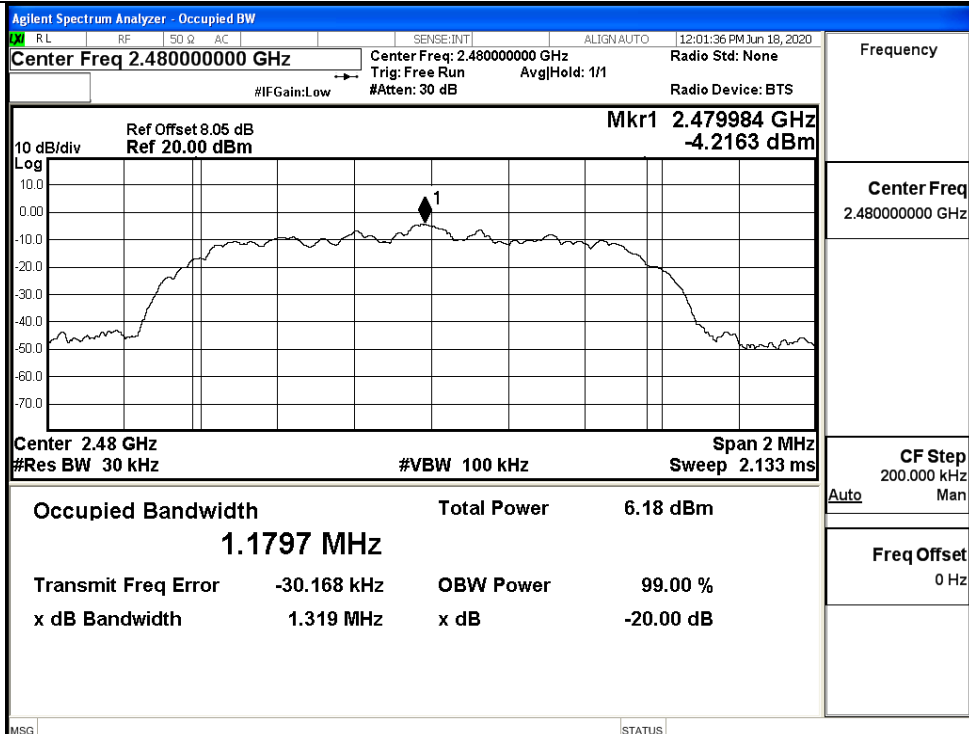
GFSK/MCH



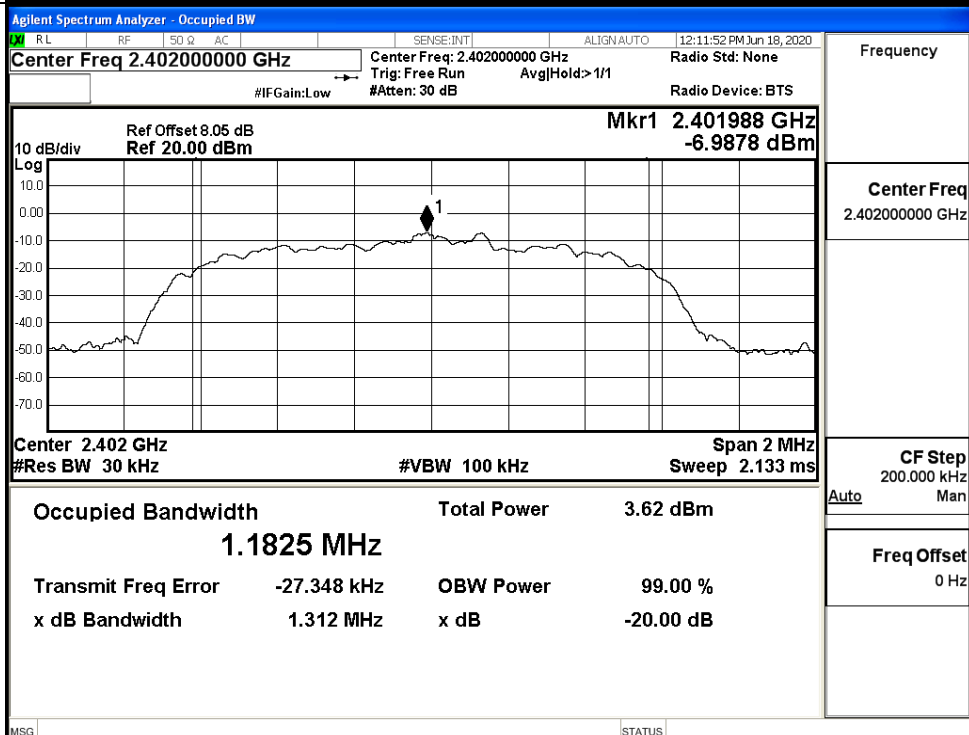
GFSK/HCH



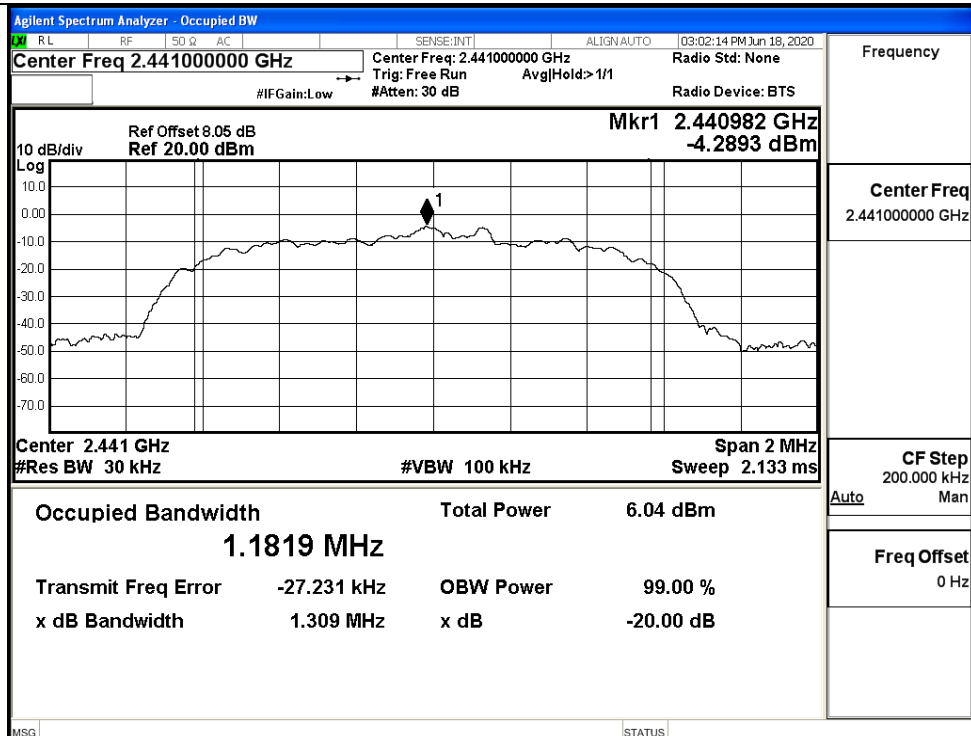
$\pi/4$ DQPSK/LCH $\pi/4$ DQPSK/MCH

$\pi/4$ DQPSK/HCH

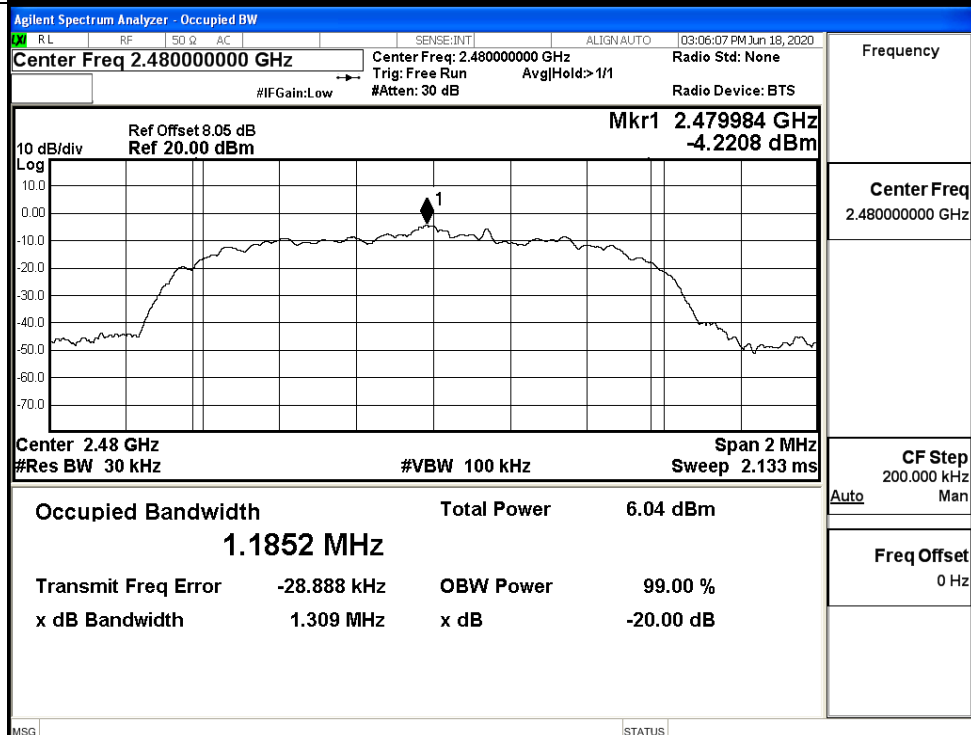
8DPSK/LCH



8DPSK/MCH



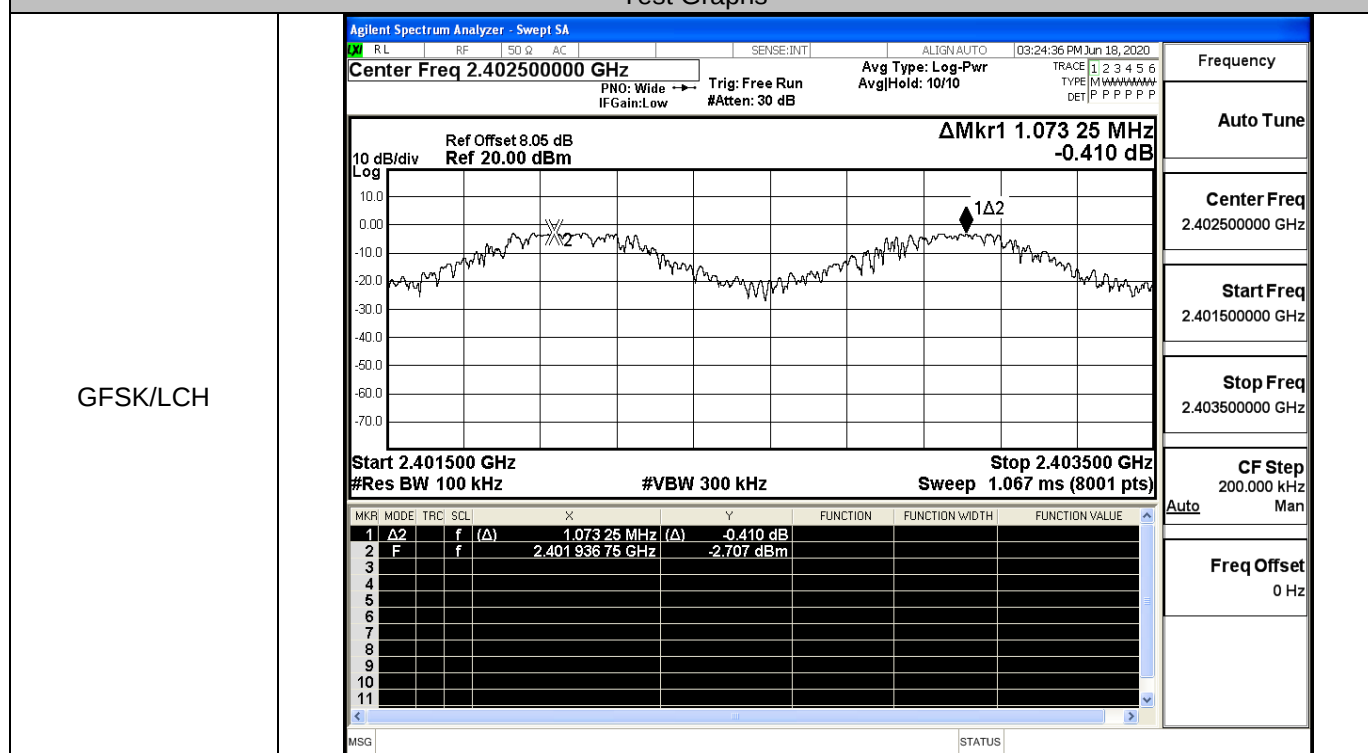
8DPSK/HCH



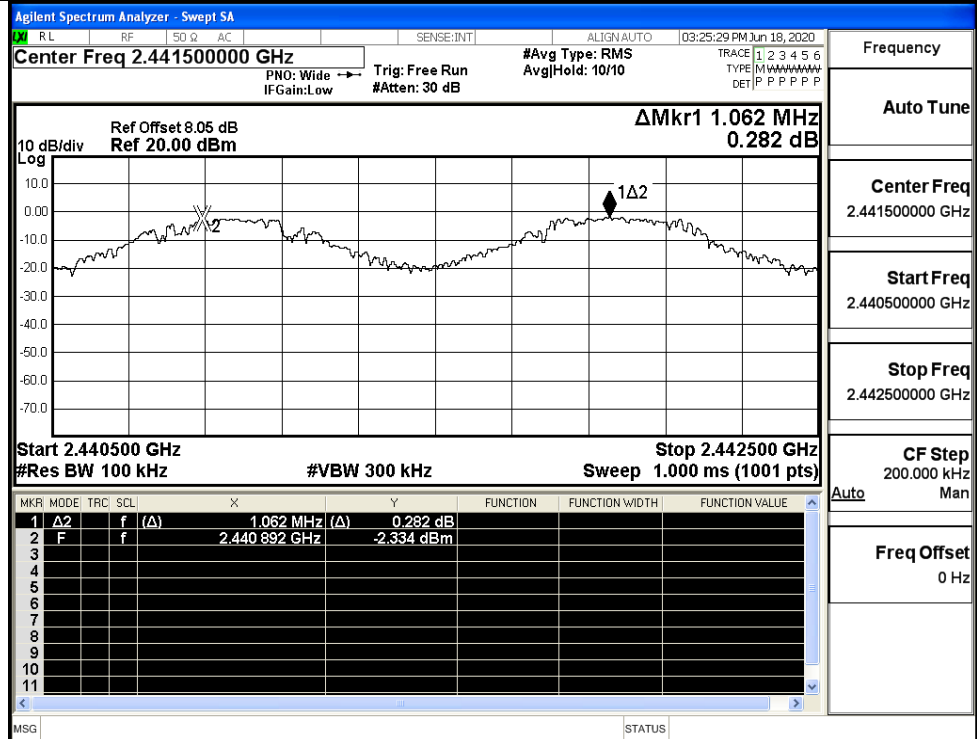
A.4 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.073	0.626	PASS
	MCH	1.062	0.626	PASS
	HCH	1.024	0.628	PASS
$\pi/4$ DQPSK	LCH	0.972	0.878	PASS
	MCH	0.966	0.877	PASS
	HCH	1.020	0.879	PASS
8DPSK	LCH	0.924	0.875	PASS
	MCH	0.932	0.873	PASS
	HCH	1.014	0.873	PASS

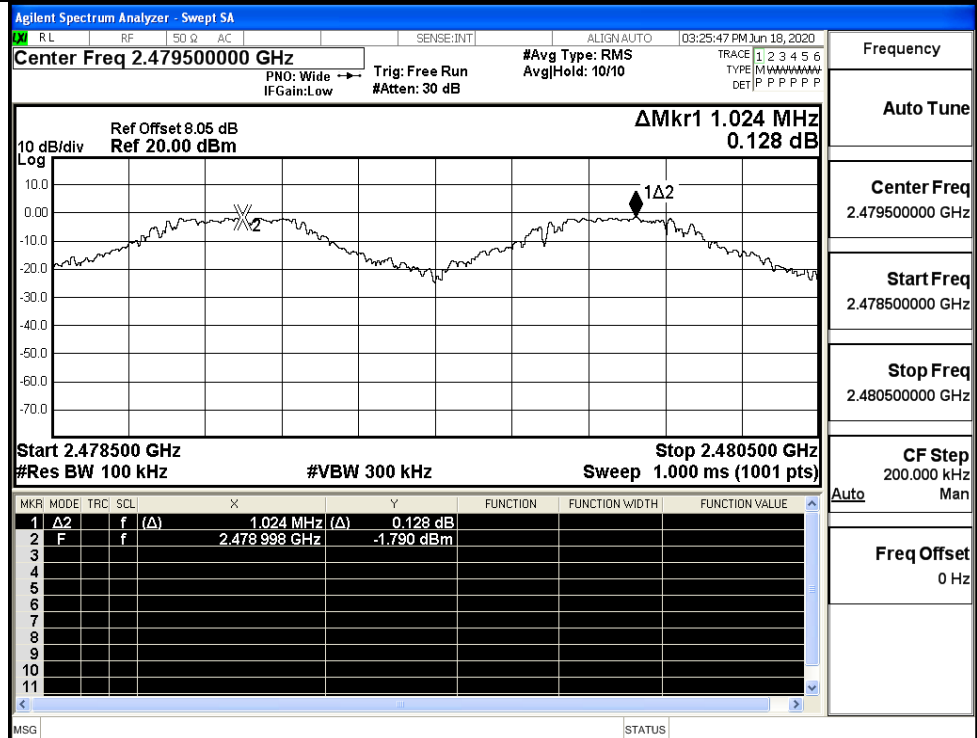
Test Graphs

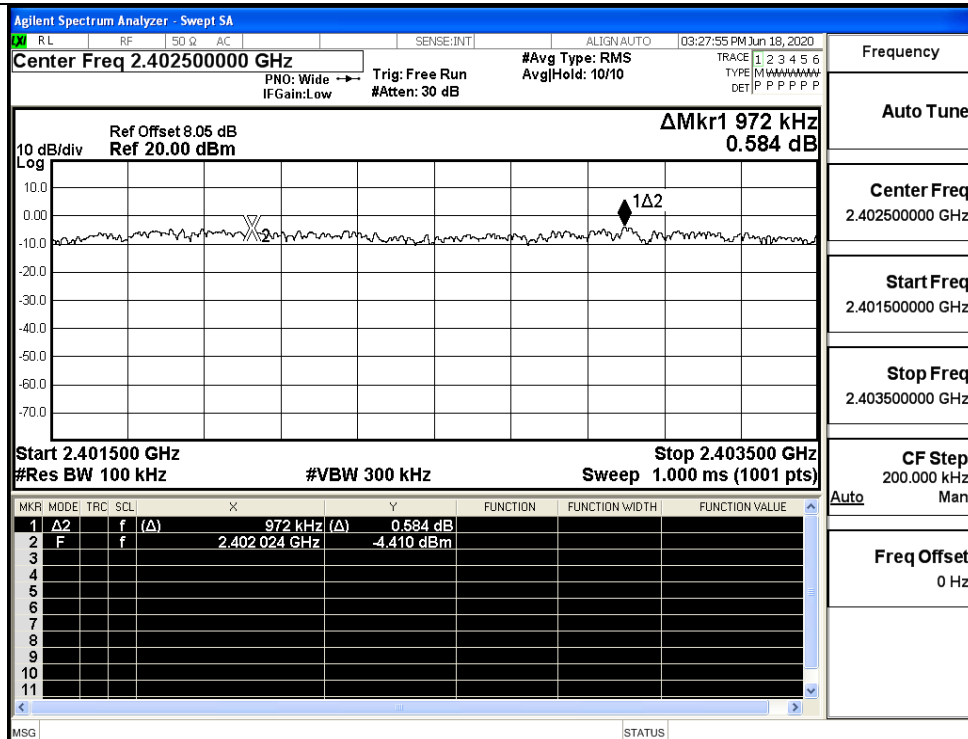


GFSK/MCH



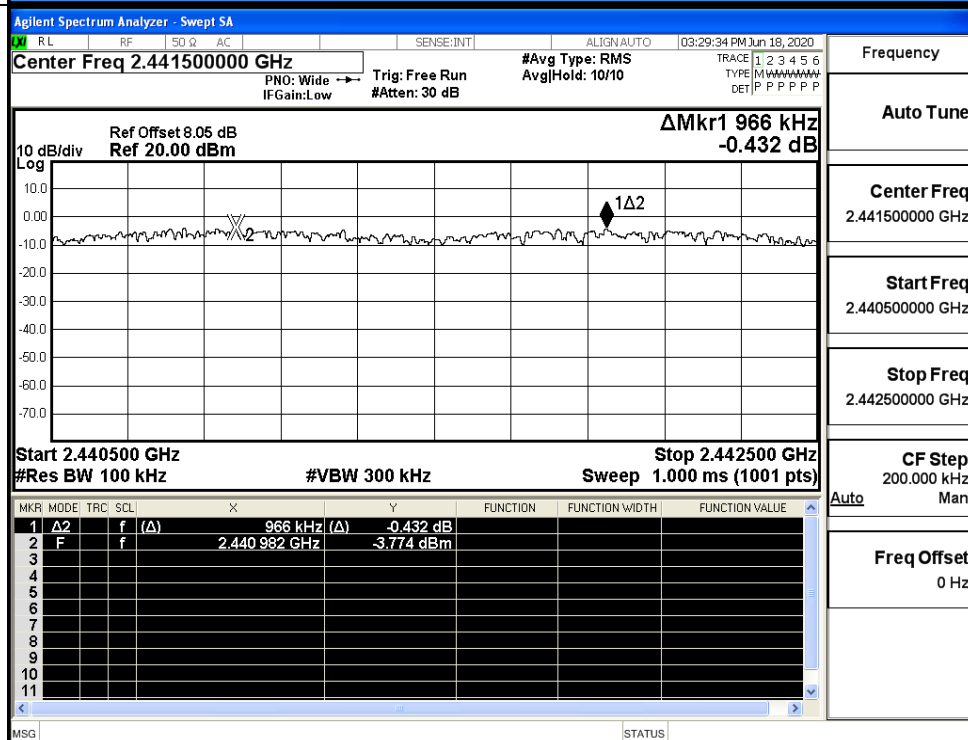
GFSK/HCH



$\pi/4$ DQPSK/LCH

Frequency

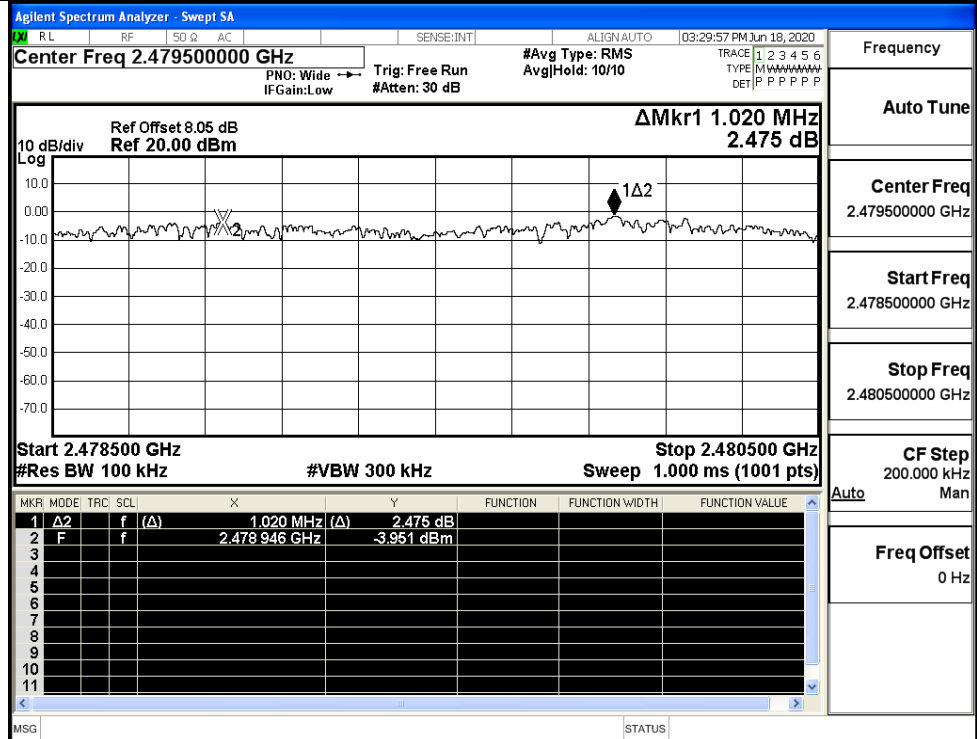
Auto Tune

Center Freq
2.402500000 GHzStart Freq
2.401500000 GHzStop Freq
2.403500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz $\pi/4$ DQPSK/MCH

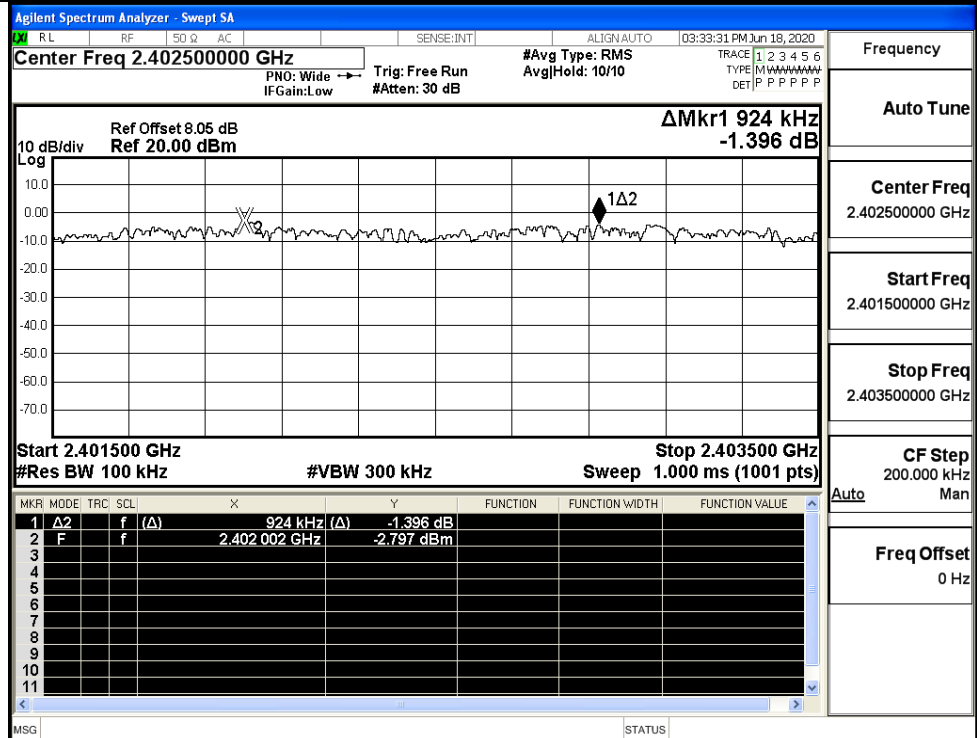
Frequency

Auto Tune

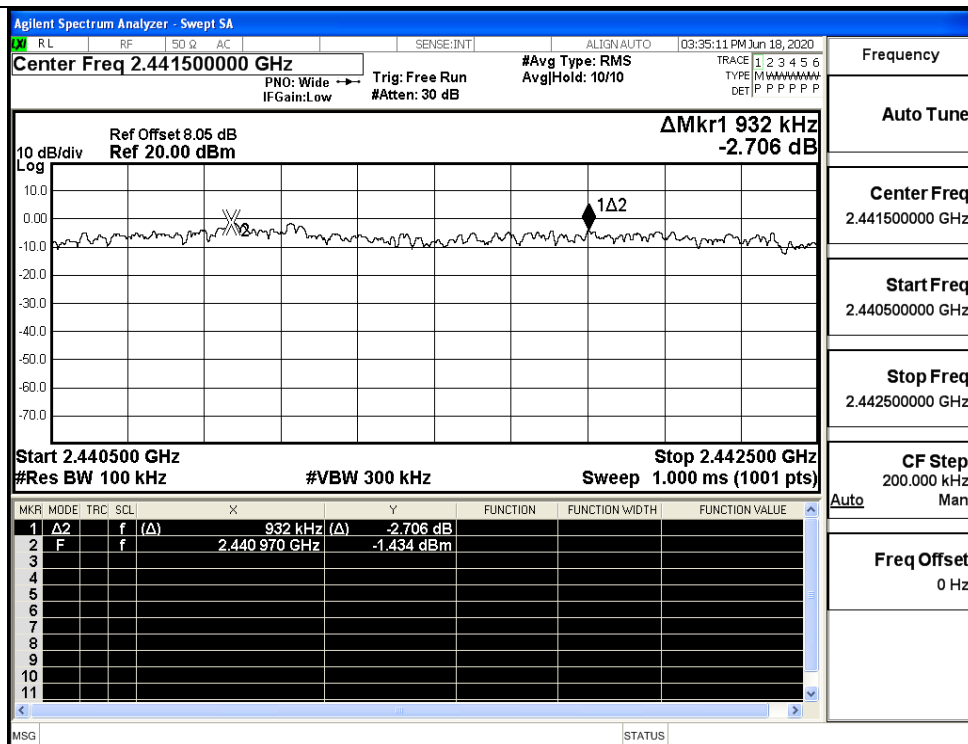
Center Freq
2.441500000 GHzStart Freq
2.440500000 GHzStop Freq
2.442500000 GHzCF Step
200.000 kHz
ManFreq Offset
0 Hz

$\pi/4$ DQPSK/HCH

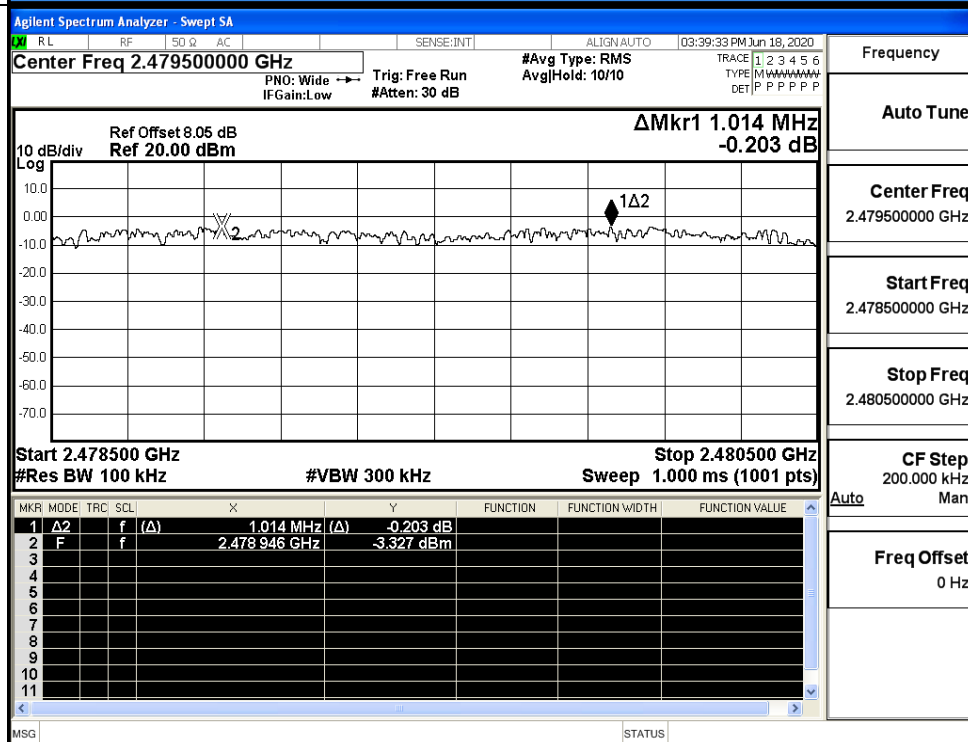
8DPSK/LCH



8DPSK/MCH



8DPSK/HCH

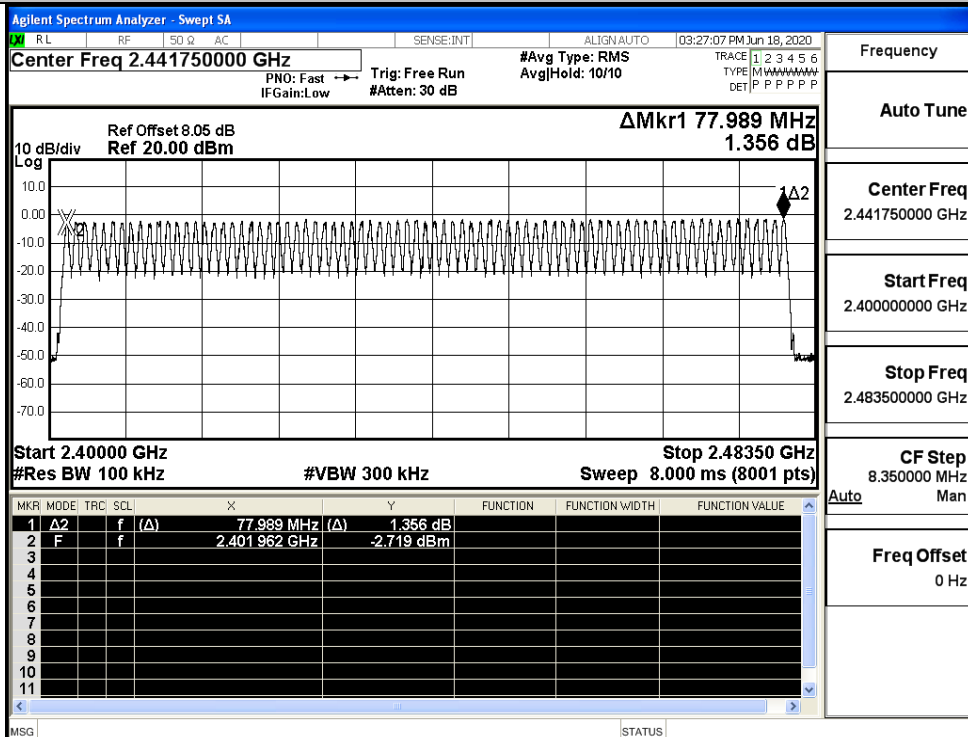


A.5 Hopping Channel Number

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

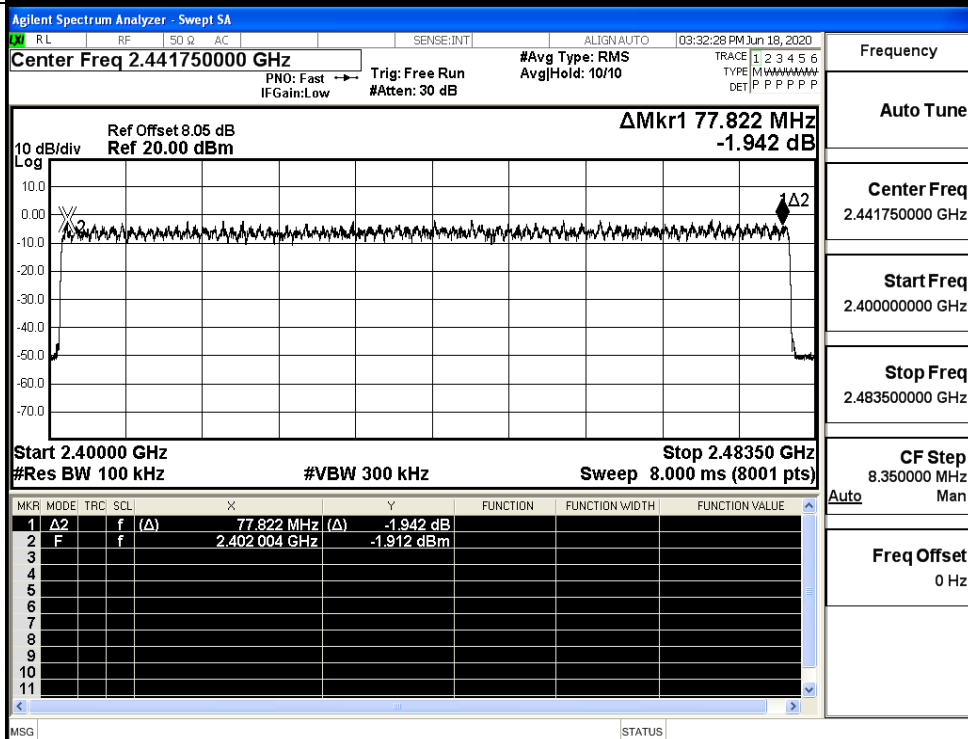
Test Graphs

GFSK/Hop



Frequency

Auto Tune

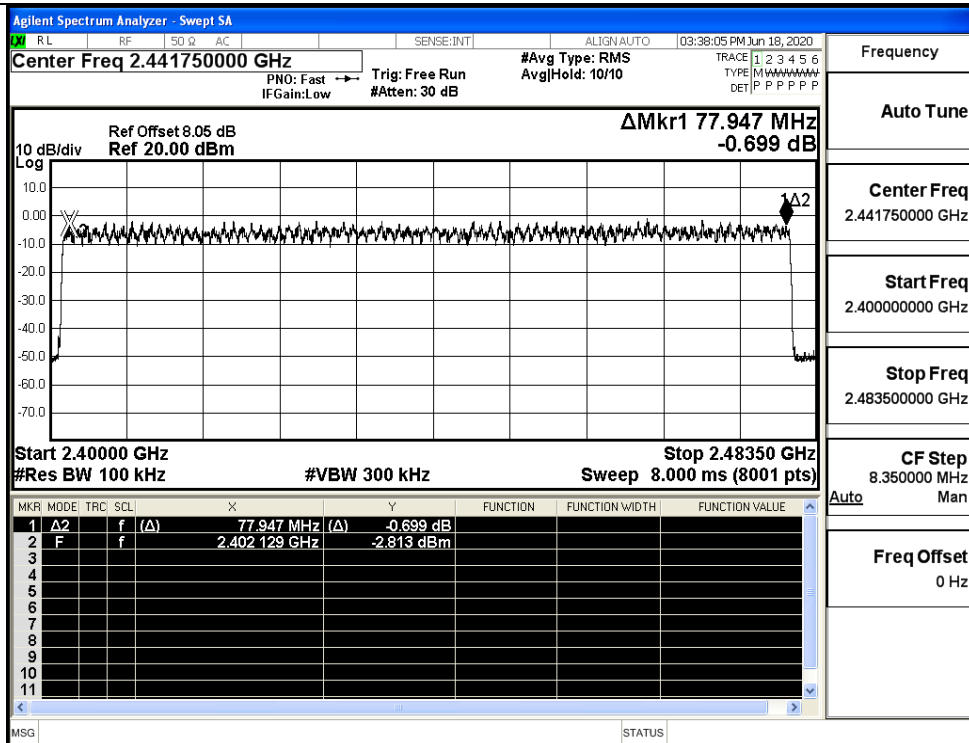
Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
Auto ManFreq Offset
0 Hz $\pi/4$ DQPSK/Hop

Frequency

Auto Tune

Center Freq
2.441750000 GHzStart Freq
2.400000000 GHzStop Freq
2.483500000 GHzCF Step
8.350000 MHz
Auto ManFreq Offset
0 Hz

8DPSK/Hop

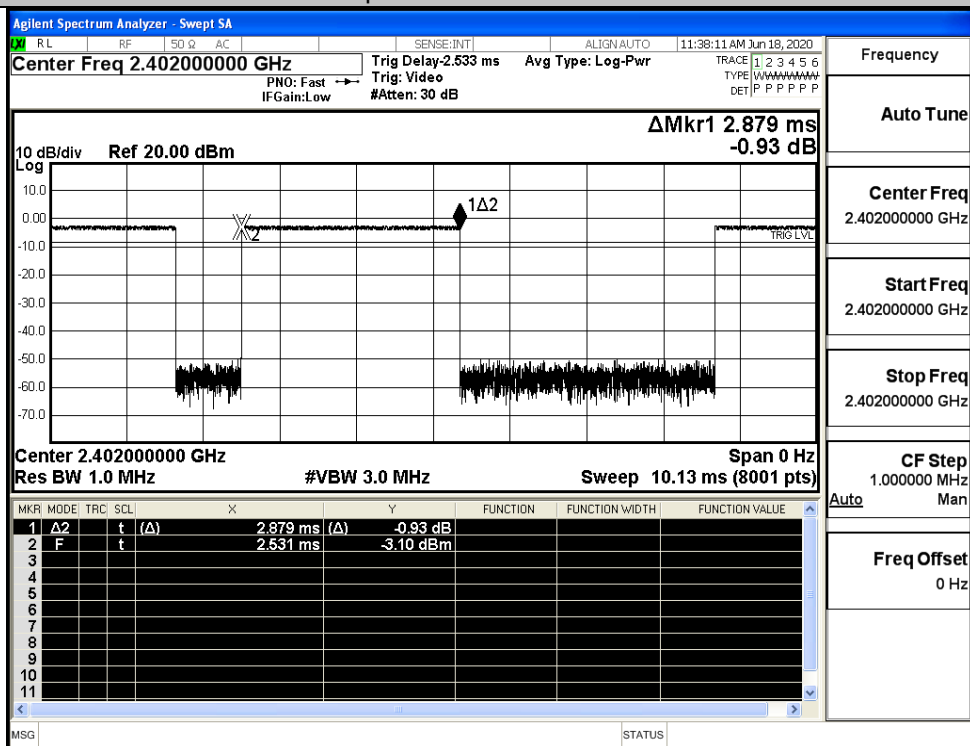


A.6 Dwell Time

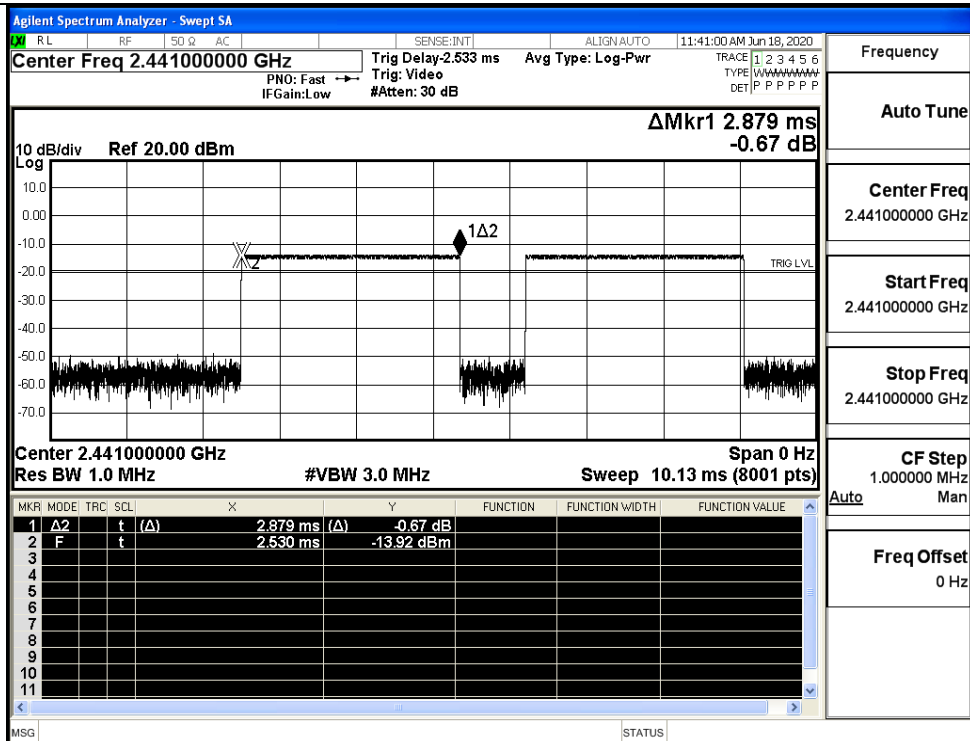
Mode	Packet	Channel	Burst Width [ms/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	2.88	106.7	0.307	0.4	PASS
	DH5	MCH	2.88	106.7	0.307	0.4	PASS
	DH5	HCH	2.88	106.7	0.307	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	2.88	106.7	0.015	0.4	PASS
	2DH5	MCH	2.88	106.7	0.014	0.4	PASS
	2DH5	HCH	2.88	106.7	0.015	0.4	PASS
8DPSK	3DH5	LCH	2.88	106.7	0.015	0.4	PASS
	3DH5	MCH	2.88	106.7	0.015	0.4	PASS
	3DH5	HCH	2.88	106.7	0.015	0.4	PASS

Test Graphs

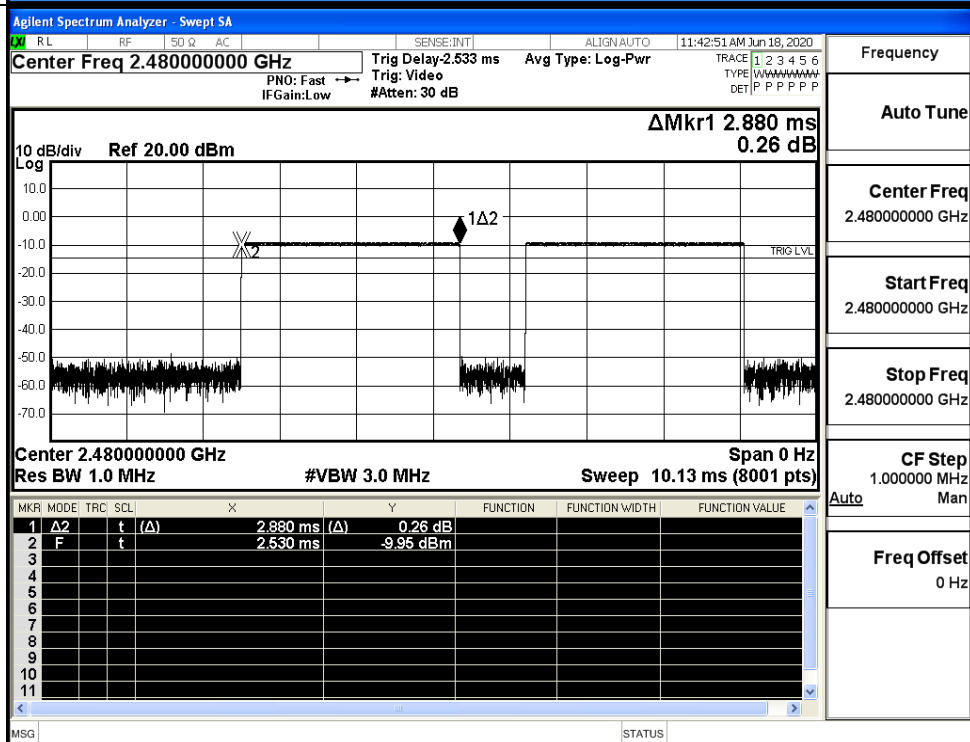
GFSK_DH5/LCH



GFSK_DH5/MCH



GFSK_DH5/HCH



Agilent Spectrum Analyzer - Swept SA

RL RF SO Q AC SENSE:INT ALIGN AUTO 11:54:02 AM Jun 18, 2020

Center Freq 2.402000000 GHz Trig Delay-2.533 ms Avg Type: Log-Pwr
 PNO: Fast → Trig: Video TYPE: W W W W W W W W
 IF Gain: Low #Atten: 30 dB DET: P P P P P P P

Auto Tune

Frequency

Center Freq
2.402000000 GHz

Start Freq
2.402000000 GHz

Stop Freq
2.402000000 GHz

CF Step
1.000000 MHz
Man

Freq Offset
0 Hz

ΔMkr1 135.5 μs
0.36 dB

10 dB/div Ref 20.00 dBm

Center 2.402000000 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)	135.5 μs	(Δ) 0.36 dB			
2	F	t		1.682 ms	-12.45 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

MSG **STATUS**

Agilent Spectrum Analyzer - Swept SA

RL RF SO Q AC SENSE:INT ALIGN:AUTO 11:58:34 AM Jun 18, 2020

Center Freq 2.441000000 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
 TYPE P P P P P P DET P P P P P P

ΔMkr1 134.3 μs -0.33 dB

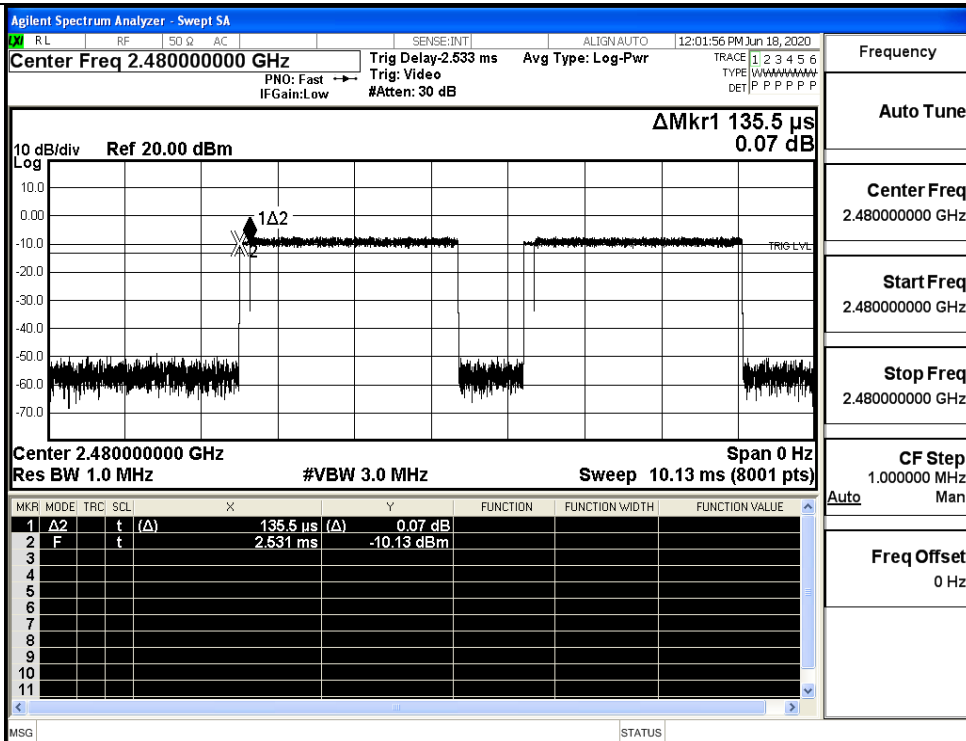
The main plot area shows a spectrum from 10 dB/div to -70.0 dBm. A reference level is set at 20.00 dBm. The center frequency is 2.441 GHz with a resolution bandwidth of 1.0 MHz and a video bandwidth of 3.0 MHz. A sweep time of 10.13 ms is used, resulting in 8001 points per span. A marker labeled Δ2 is placed on the signal peak.

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	Δ2	t	(Δ)	134.3 μs	-0.33 dB			
2	F	t		2.531 ms	-12.26 dBm			
3								
4								
5								
6								
7								
8								
9								
10								
11								

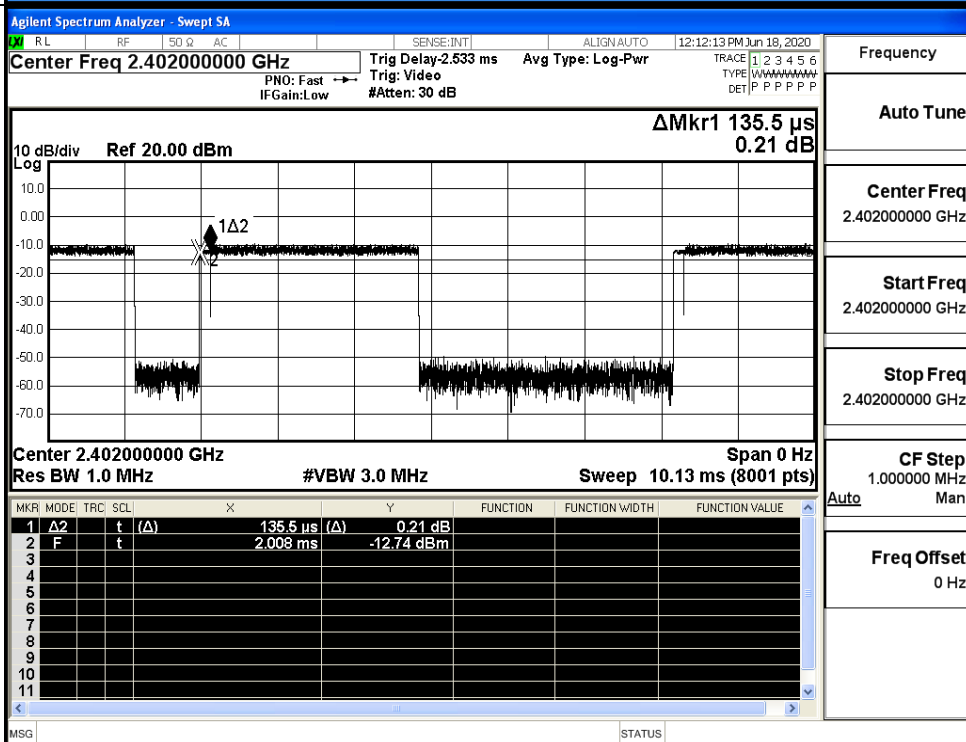
Center 2.441000000 GHz Span 0 Hz
Res BW 1.0 MHz #VBW 3.0 MHz Sweep 10.13 ms (8001 pts)

MSG STATUS

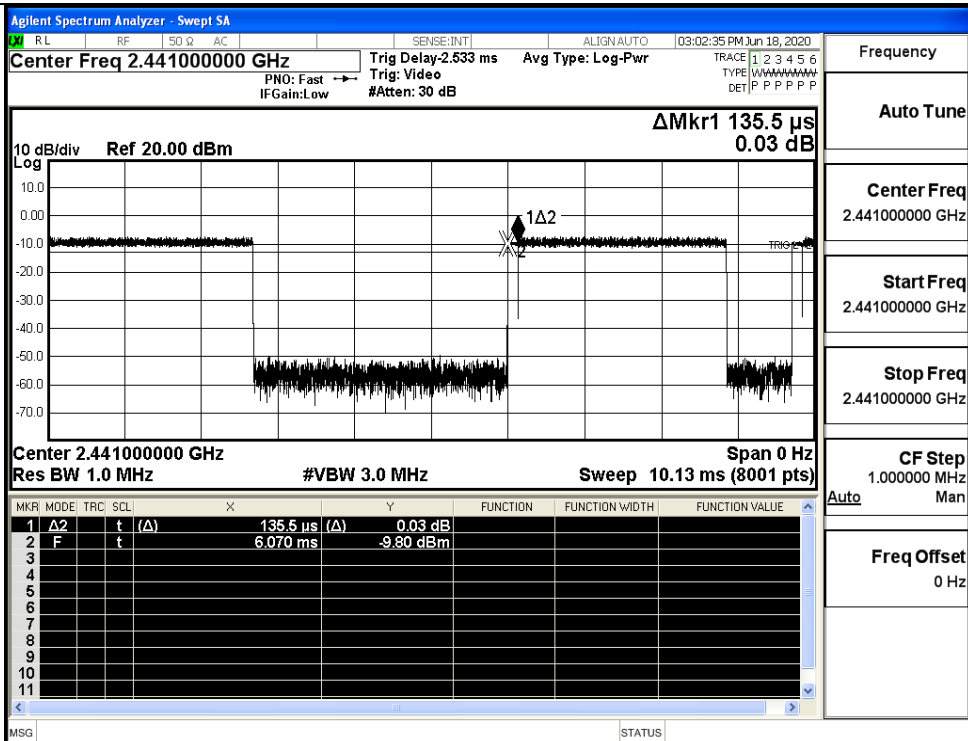
$\pi/4$ DQPSK
_2DH5/HCH



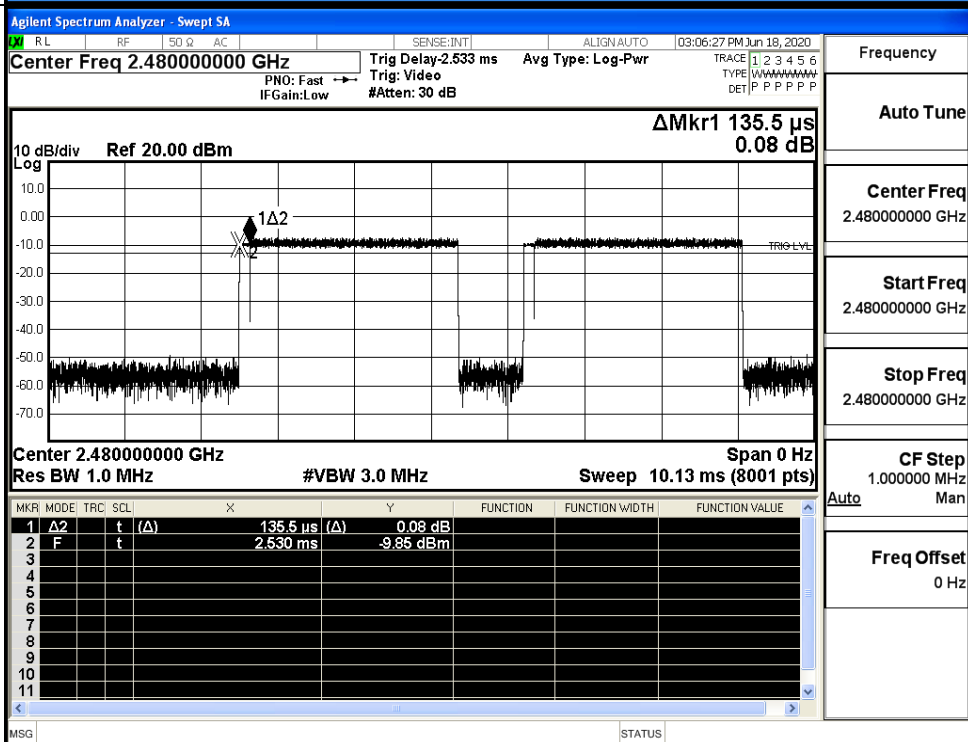
8DPSK _3DH5/LCH



8DPSK_3DH5/MCH



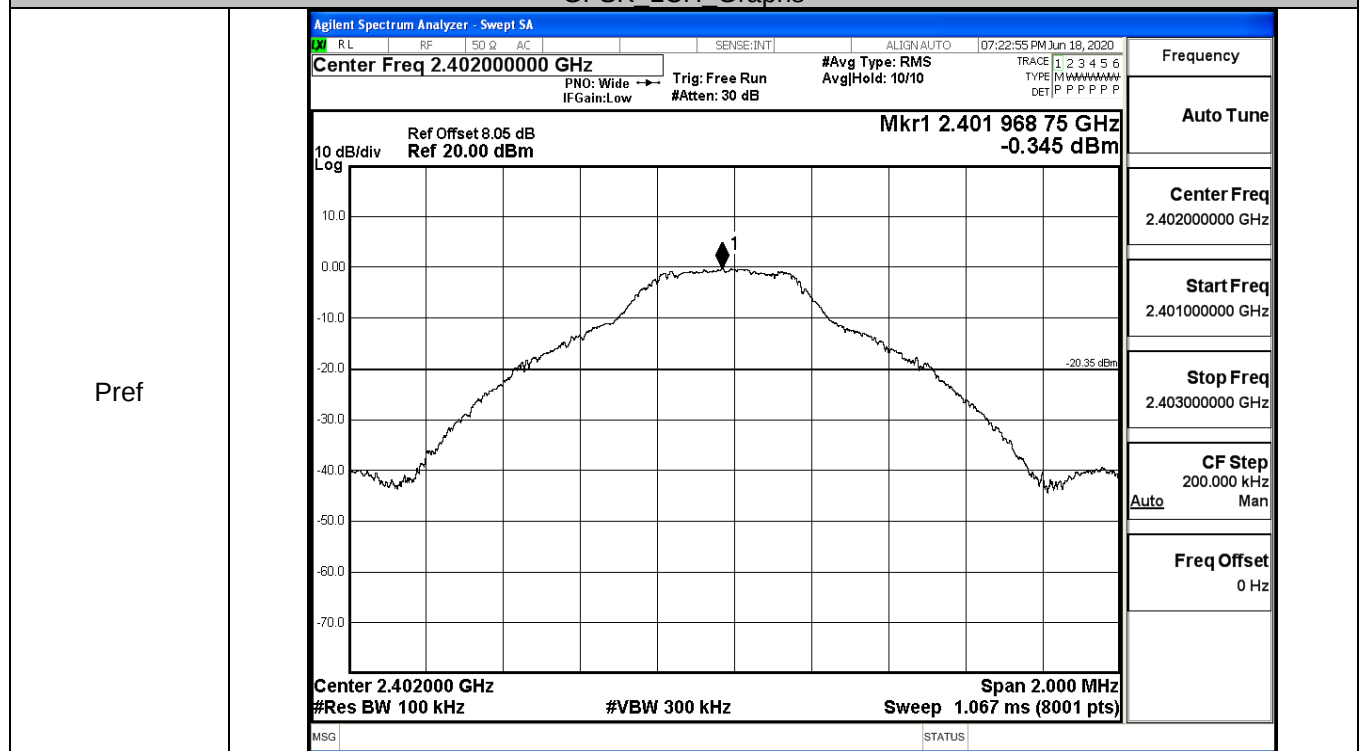
8DPSK_3DH5/HCH

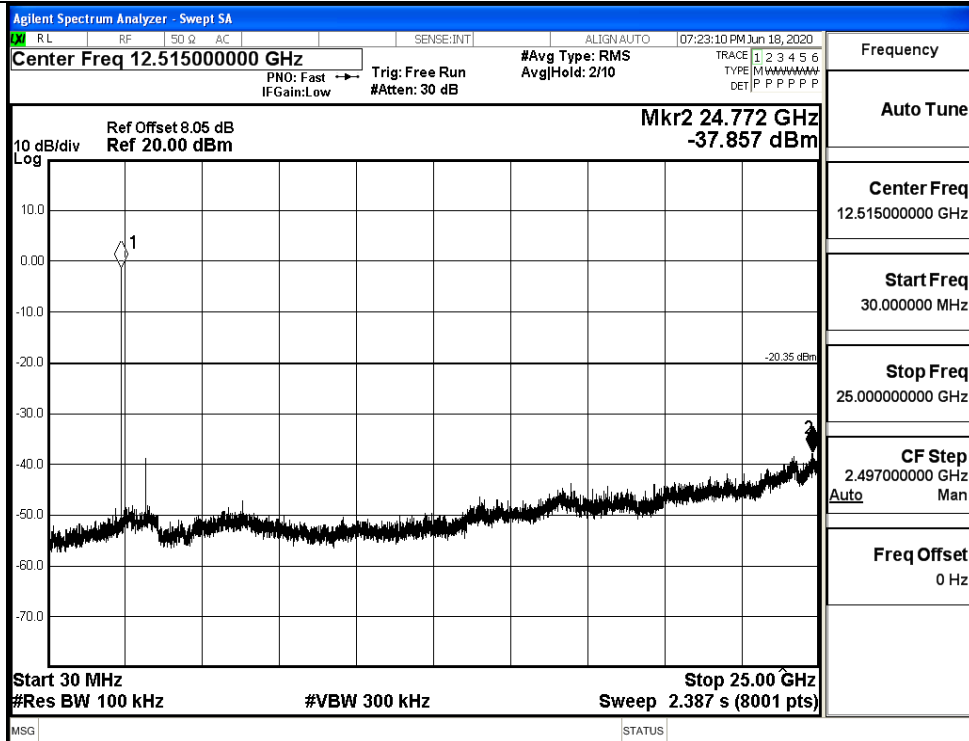


A.7 RF Conducted Spurious Emissions

Mode	Channel	Pref [dBm]	Max. Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-0.345	-37.857	-20.345	PASS
	MCH	-1.559	-37.269	-21.559	PASS
	HCH	-1.079	-38.538	-21.079	PASS
$\pi/4$ DQPSK	LCH	-4.359	-36.900	-24.359	PASS
	MCH	-3.557	-37.672	-23.557	PASS
	HCH	-1.351	-37.549	-21.351	PASS
8DPSK	LCH	-3.02	-37.877	-23.020	PASS
	MCH	-1.386	-38.433	-21.386	PASS
	HCH	-1.782	-37.849	-21.782	PASS

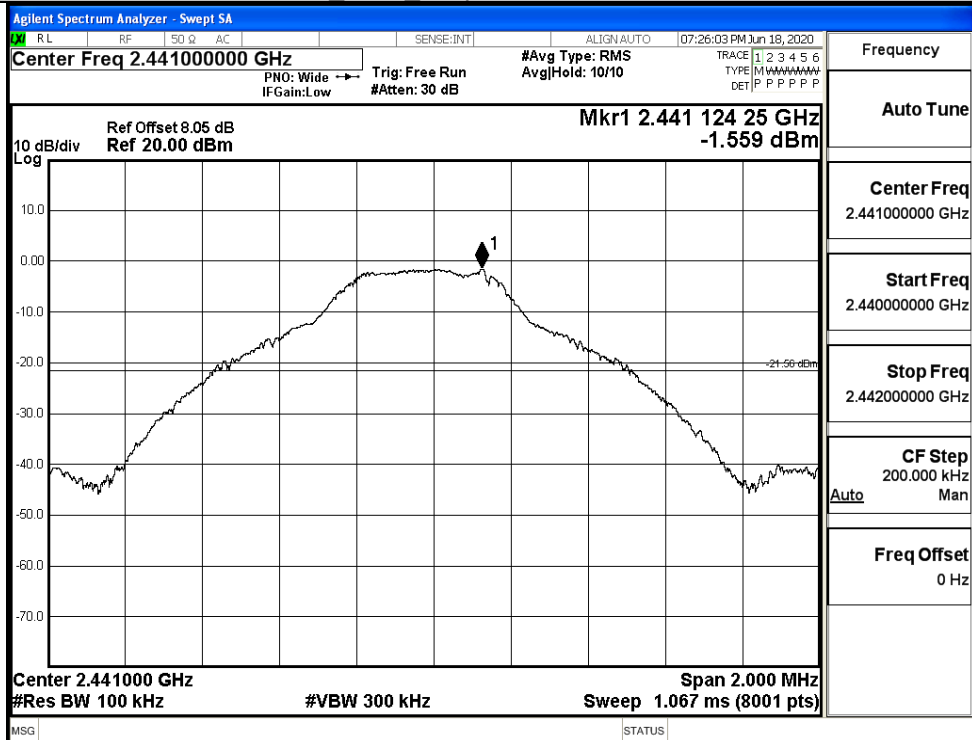
GFSK LCH Graphs



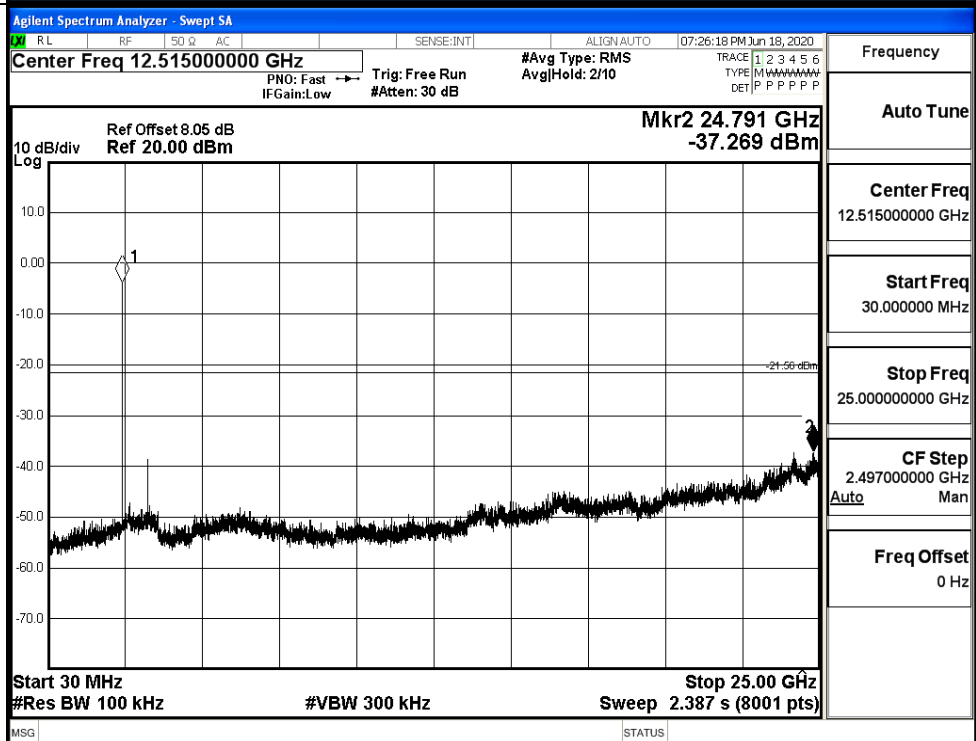
P_{uw}

GFSK_MCH_Graphs

Pref

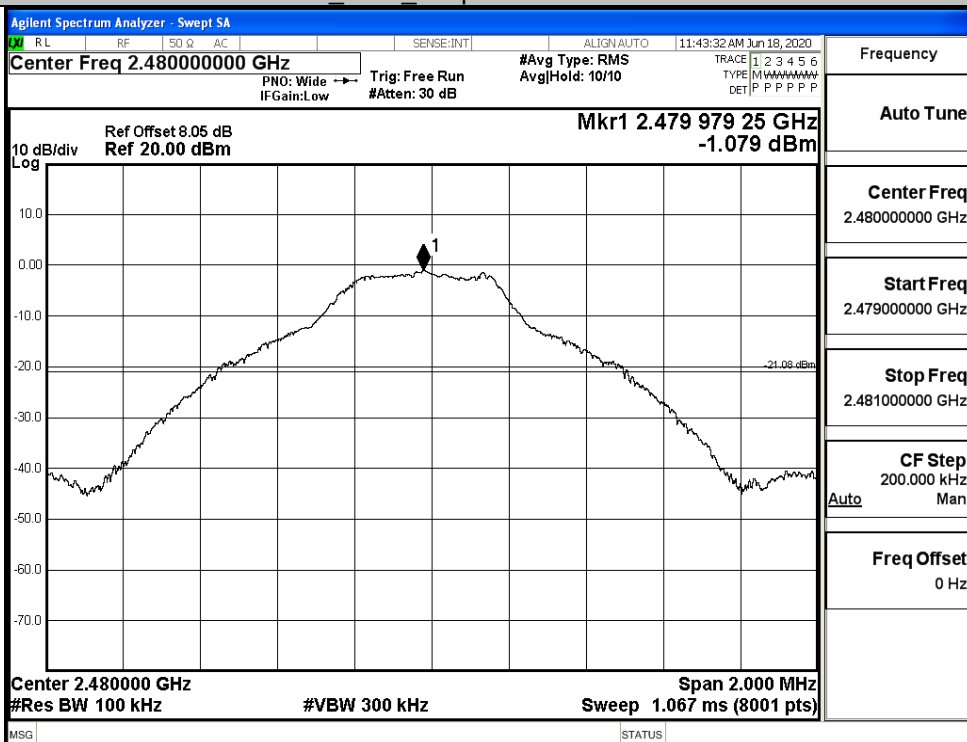


Puw

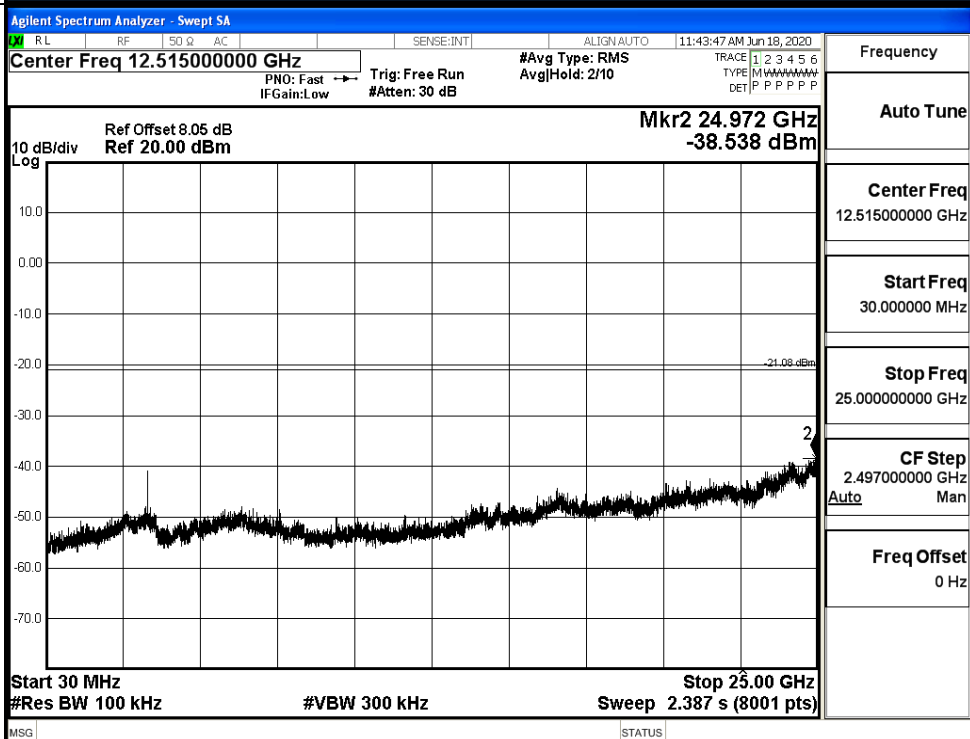


GFSK HCH_Graphs

Pref

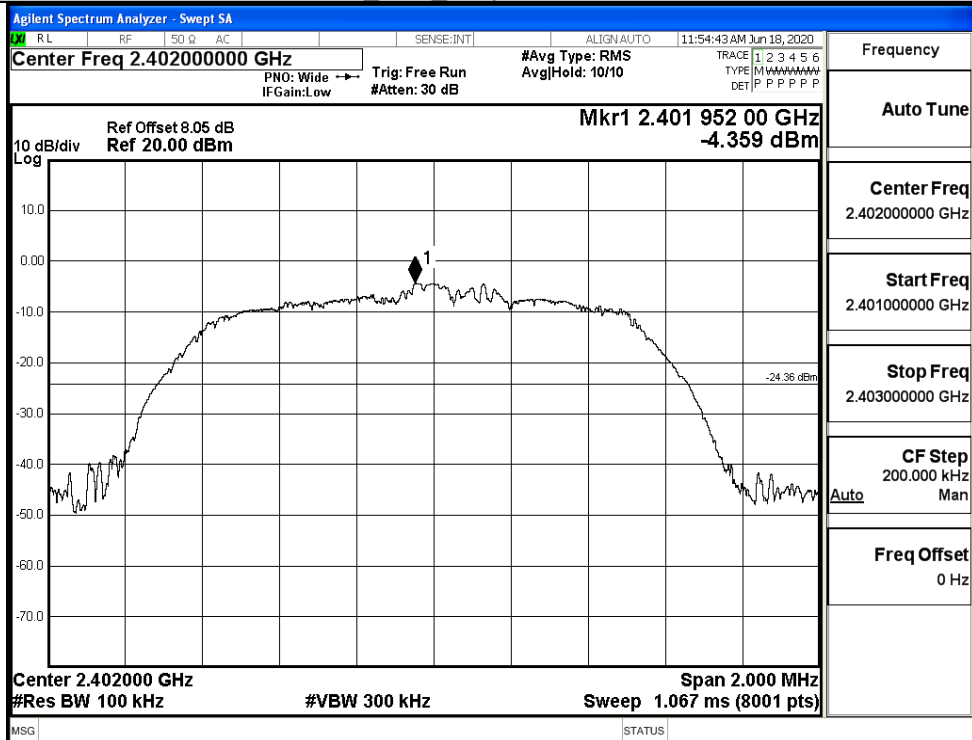


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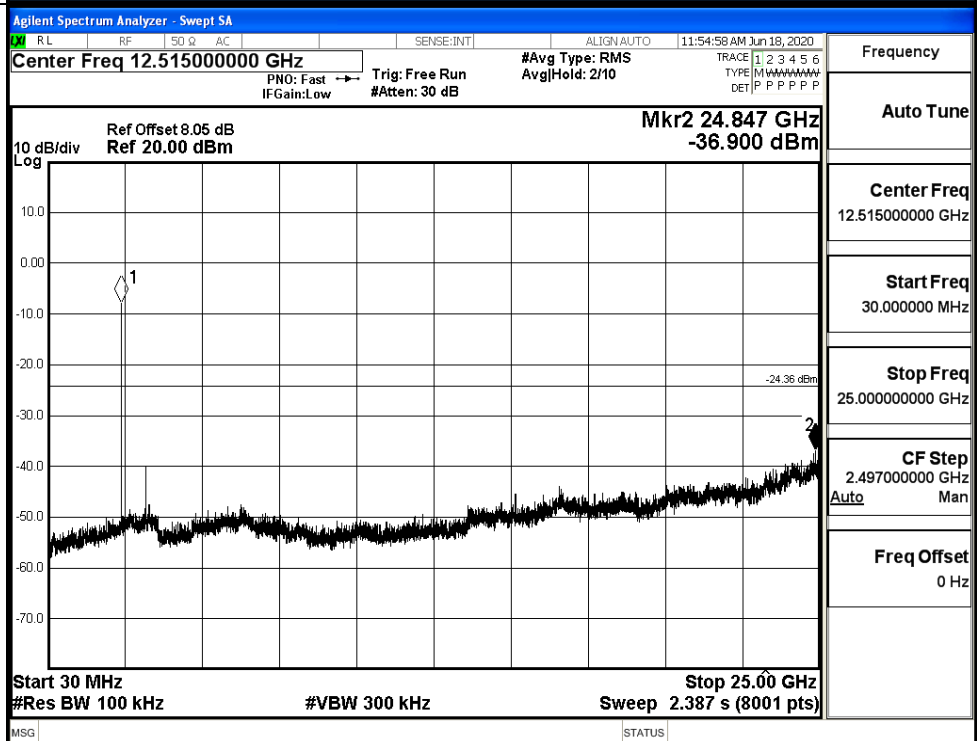


$\pi/4$ DQPSK_LCH_Graphs

Pref

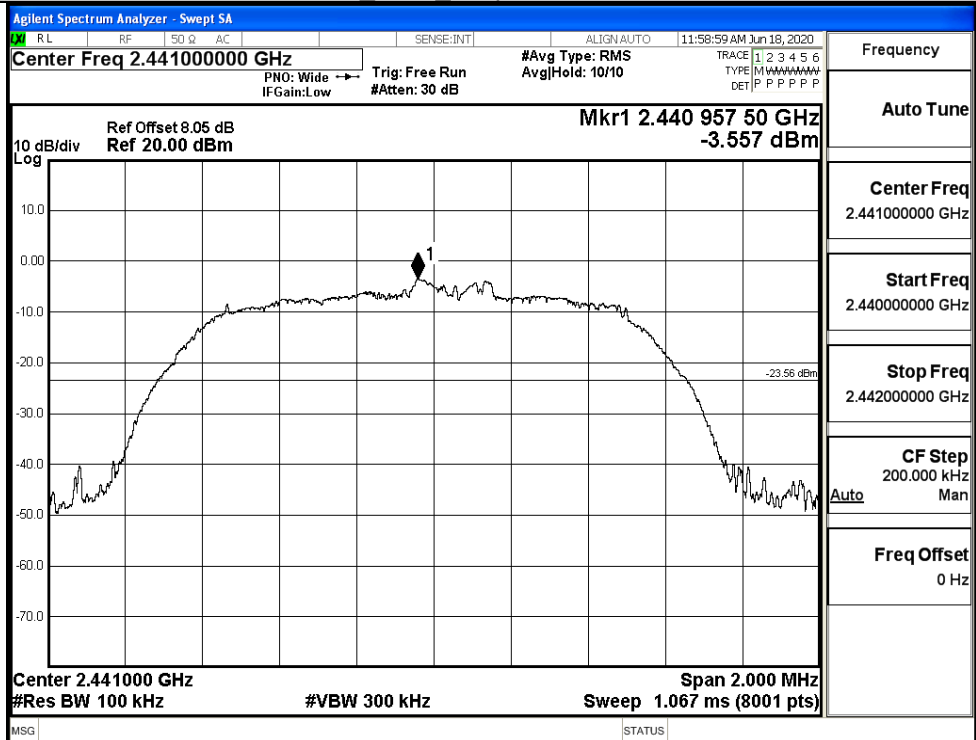


Puw

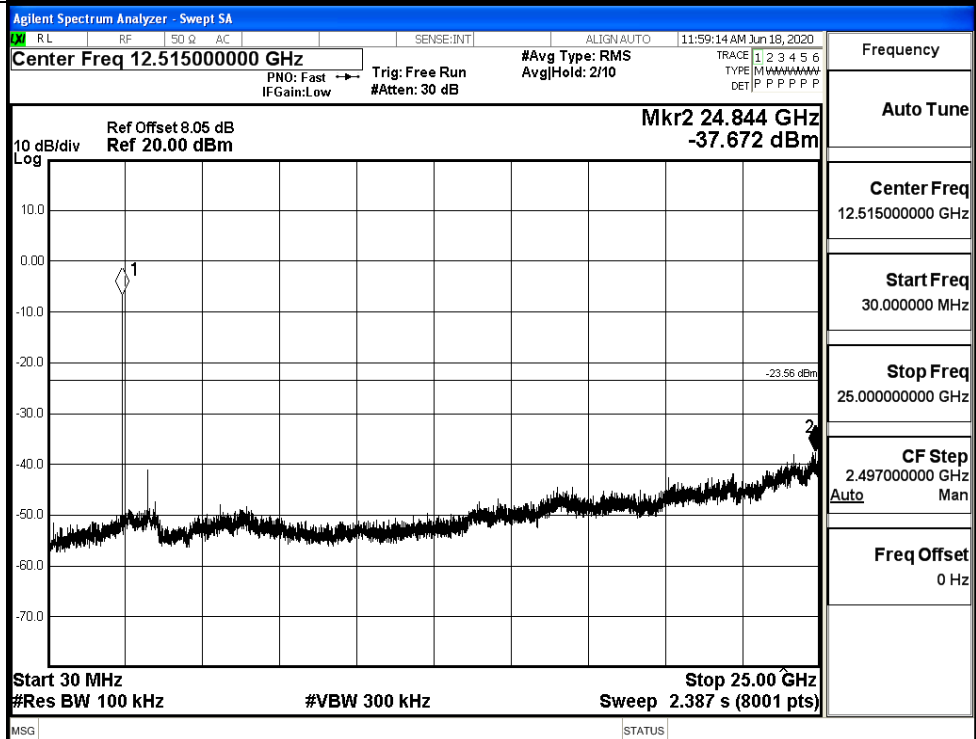


$\pi/4$ DQPSK_MCH_Graphs

Pref

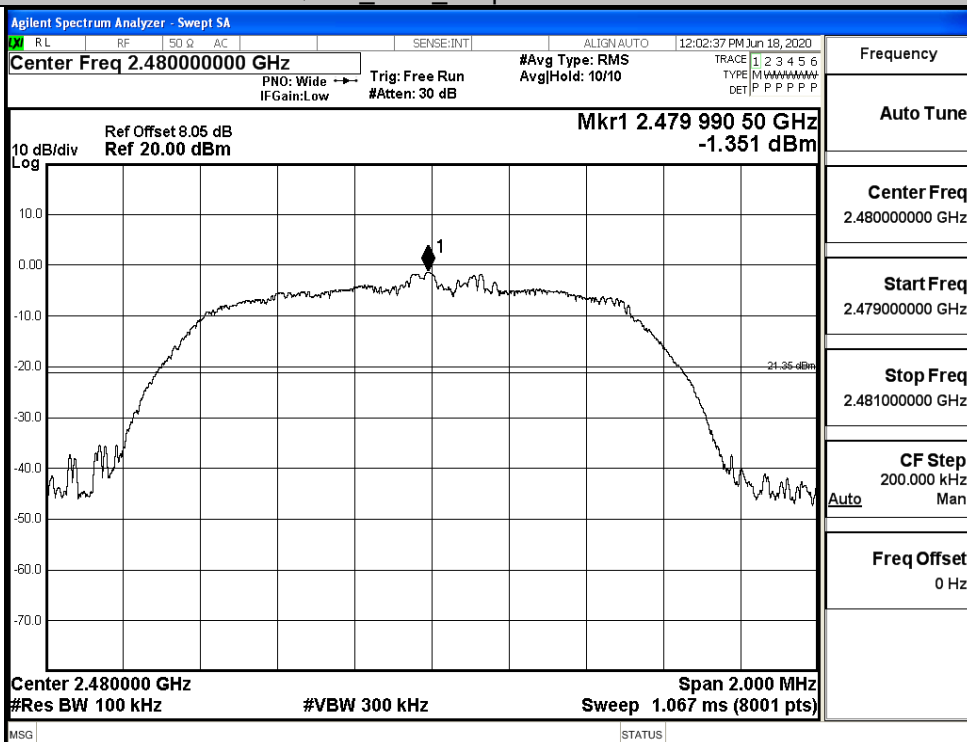


Puw

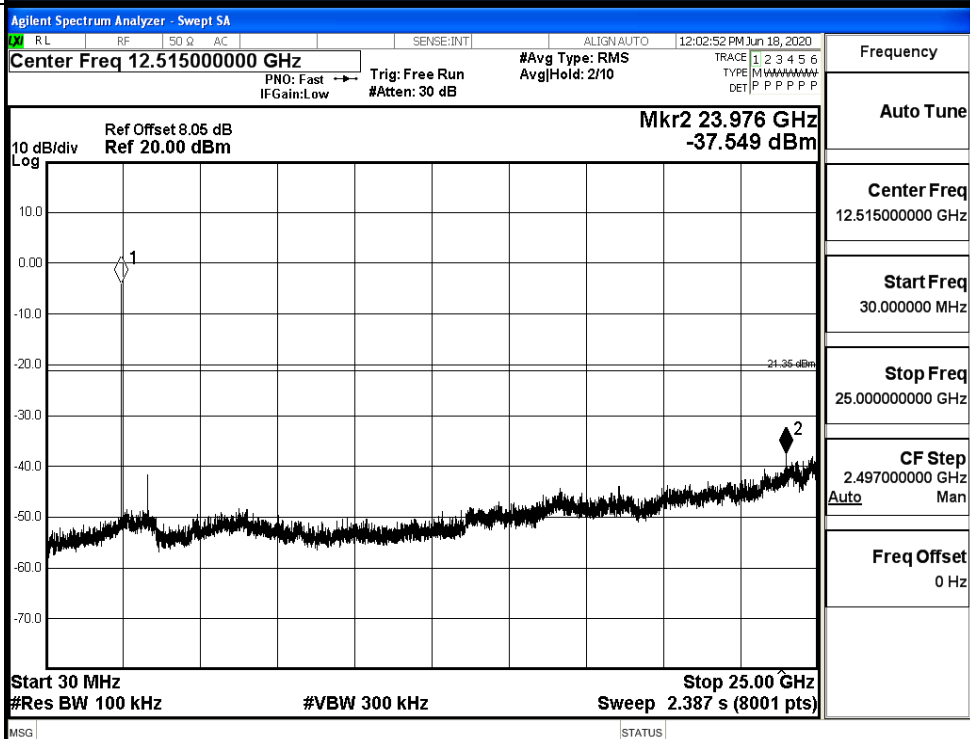


$\pi/4$ DQPSK_HCH_Graphs

Pref

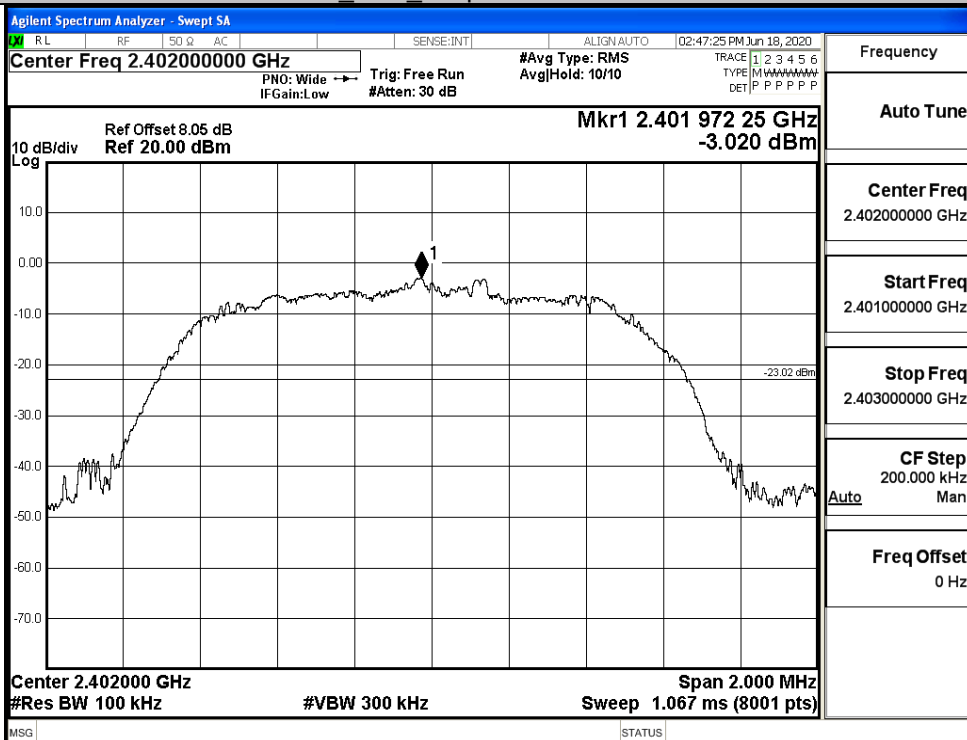


Puw

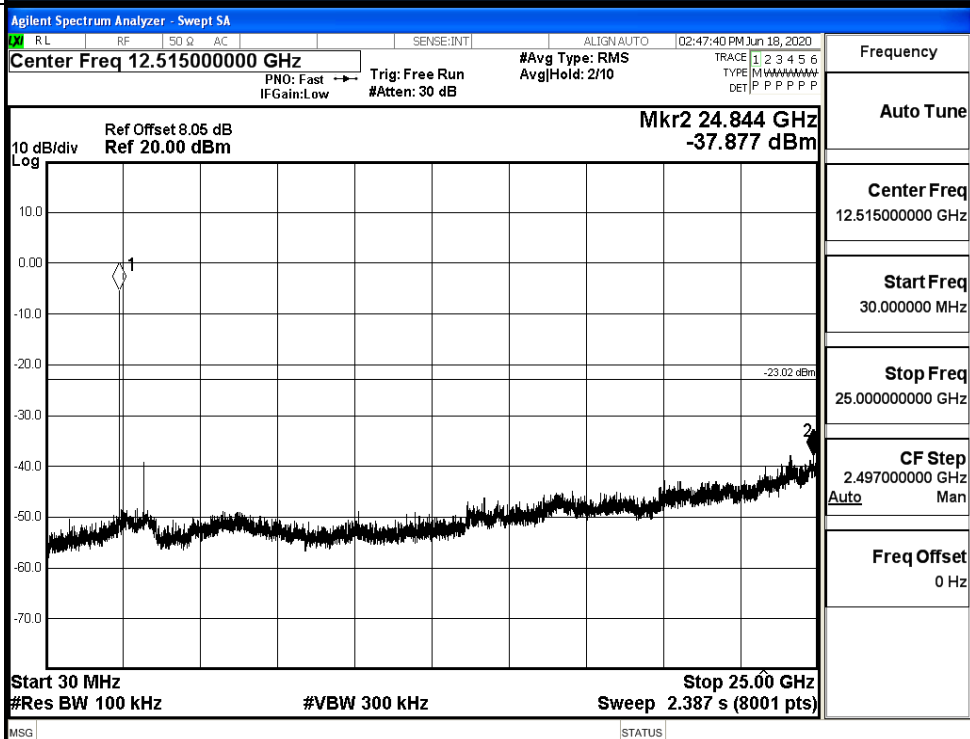


8DPSK_LCH_Graphs

Pref

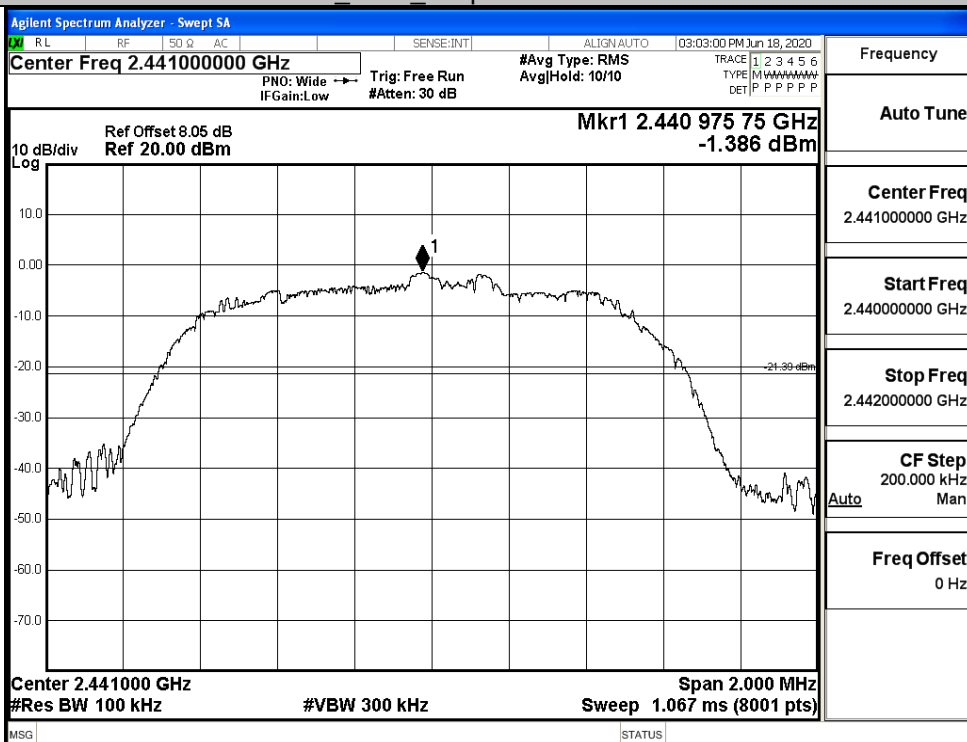


Puw

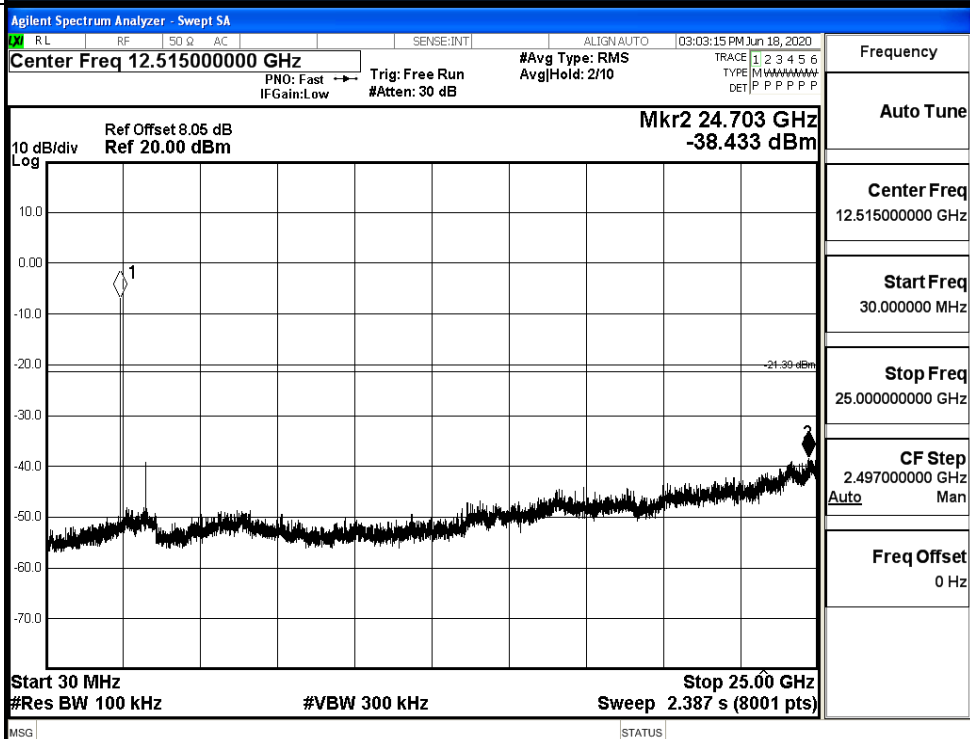


8DPSK_MCH_Graphs

Pref

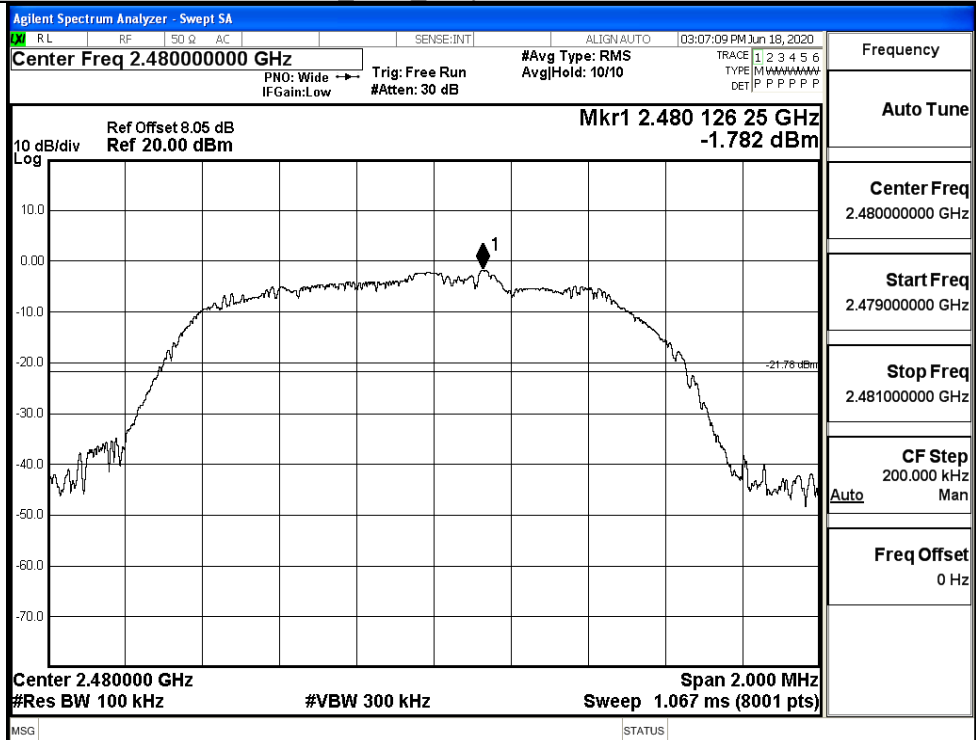


Puw

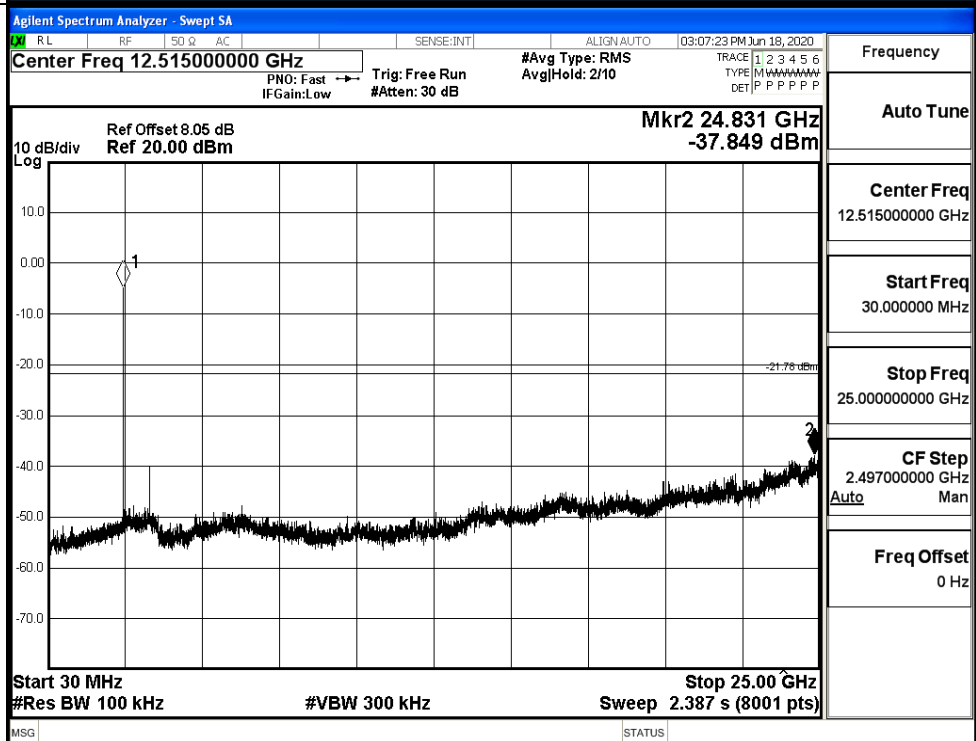


8DPSK_HCH_Graphs

Pref



Puw

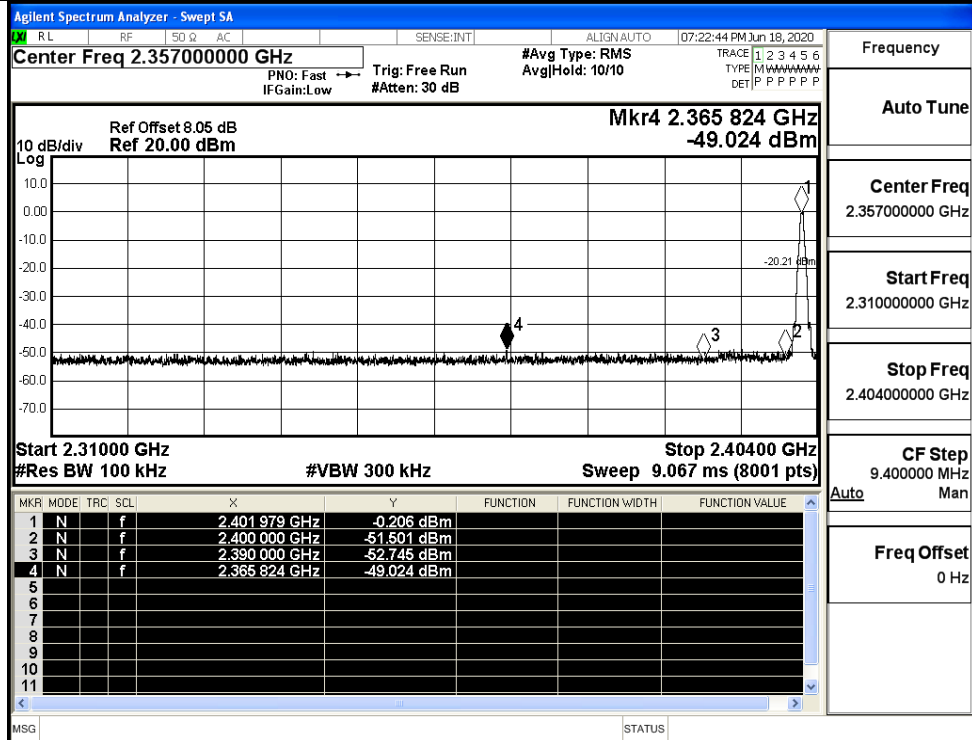


A.8 Band-edge for RF Conducted Emissions

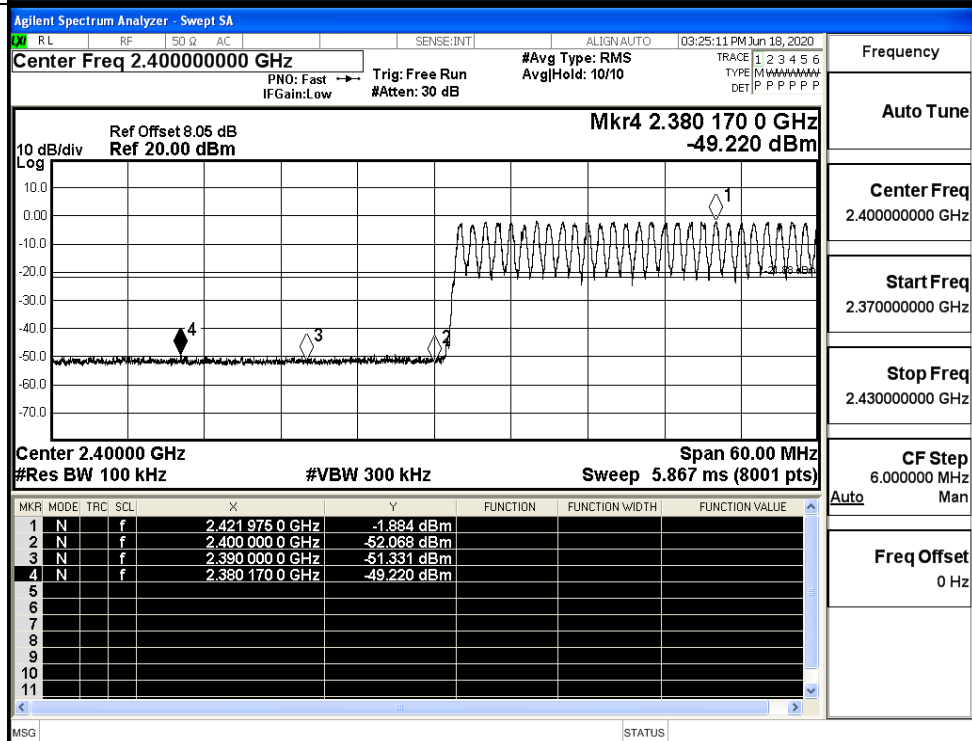
Mode	Channel	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max Spurious Level [dBm]	Limit [dBm]	Verdict
GFSK	LCH	2402	-0.206	Off	-49.024	-20.21	PASS
			-1.884	On	-49.220	-21.88	PASS
	HCH	2480	-1.249	Off	-47.989	-21.25	PASS
			-1.412	On	-48.695	-21.41	PASS
$\pi/4$ DQPSK	LCH	2402	-4.150	Off	-49.727	-24.15	PASS
			-1.951	On	-48.642	-21.95	PASS
	HCH	2480	-1.659	Off	-48.714	-21.66	PASS
			-1.131	On	-48.647	-21.13	PASS
8DPSK	LCH	2402	-2.965	Off	-49.625	-22.97	PASS
			-1.874	On	-49.263	-21.87	PASS
	HCH	2480	-1.310	Off	-48.342	-21.31	PASS
			-1.260	On	-48.080	-21.26	PASS

Test Graphs

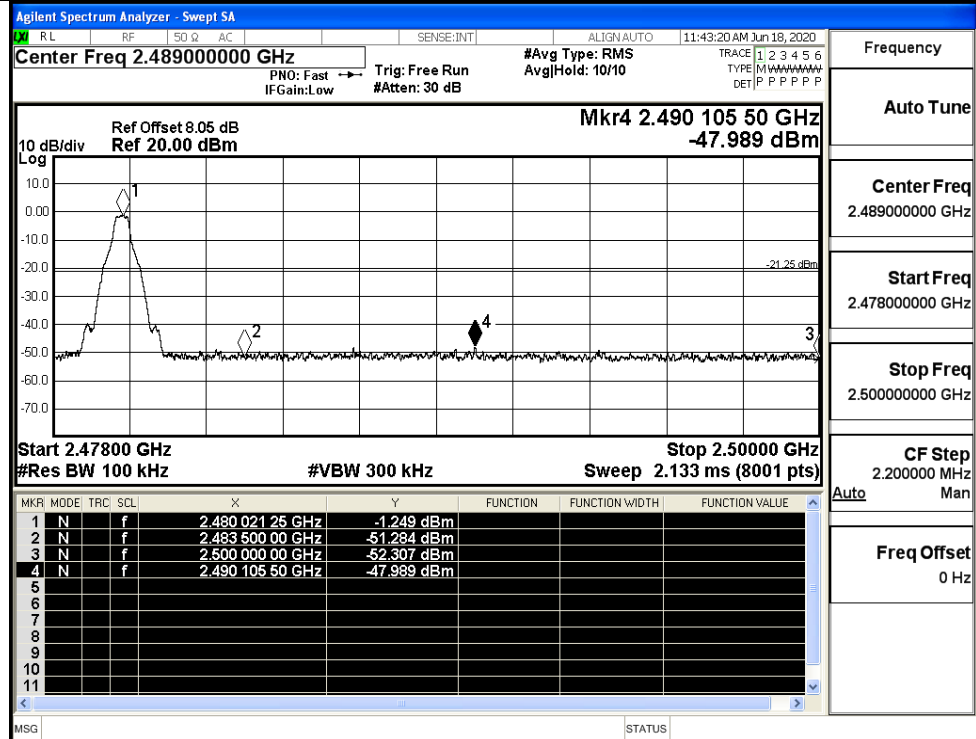
GFSK/LCH/No Hop



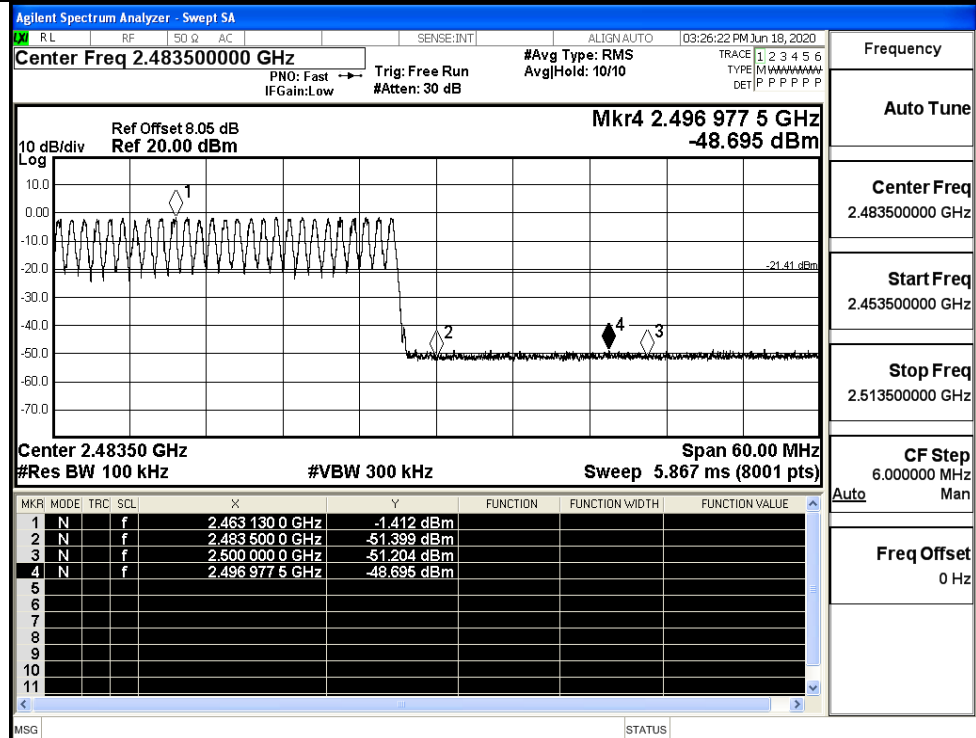
GFSK/LCH/Hop



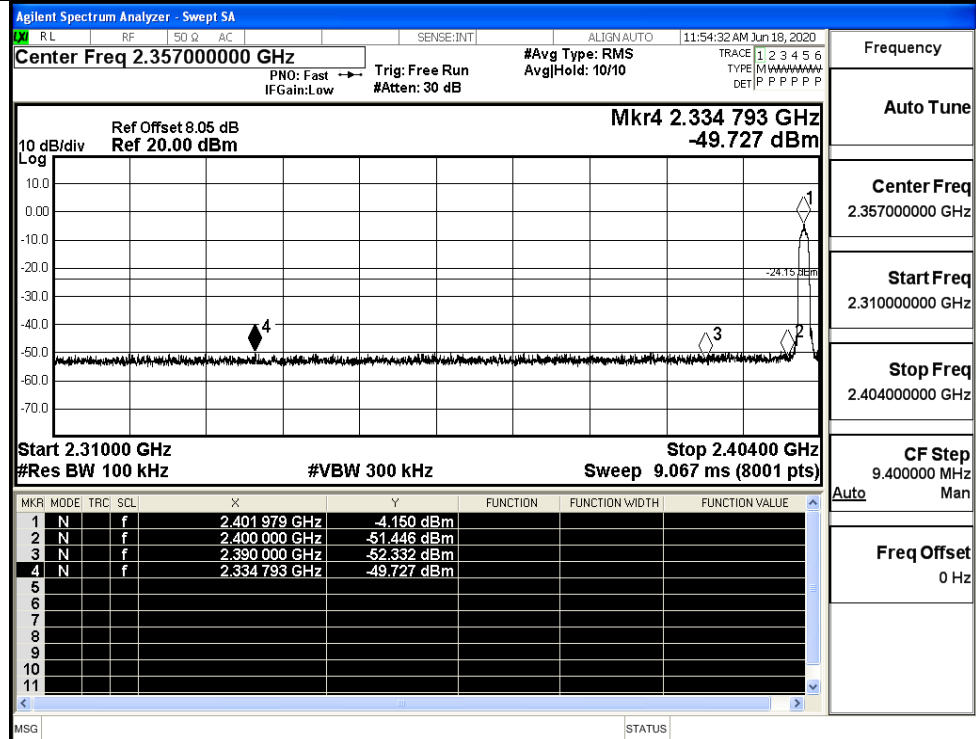
GFSK/HCH/No Hop



GFSK/HCH/Hop



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



Frequency

Auto Tune

Center Freq
2.357000000 GHz

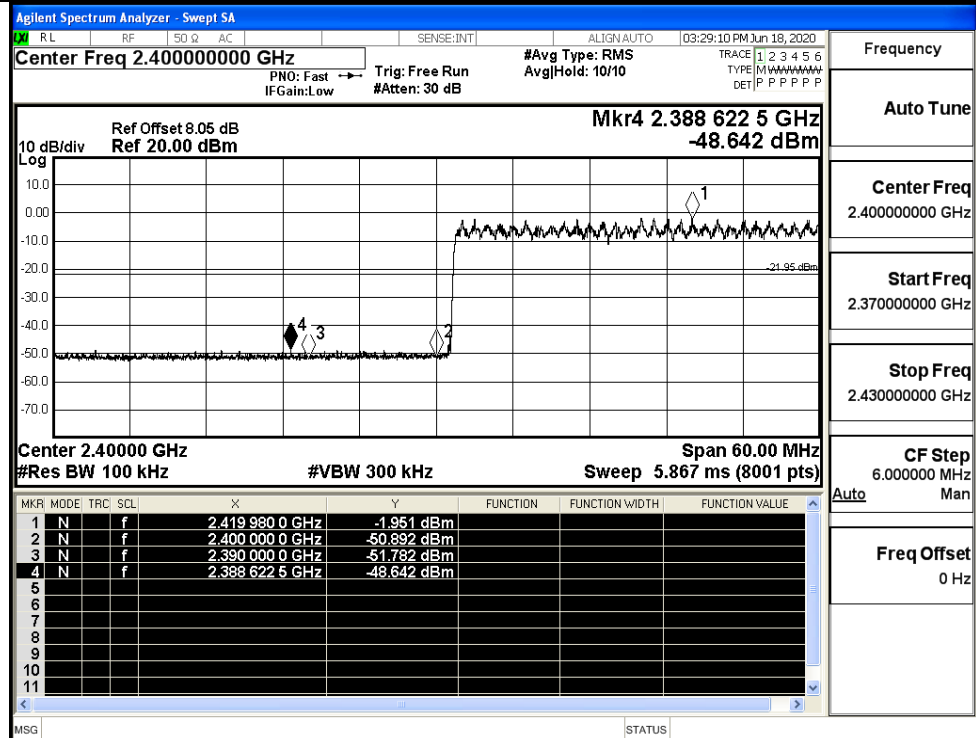
Start Freq
2.310000000 GHz

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

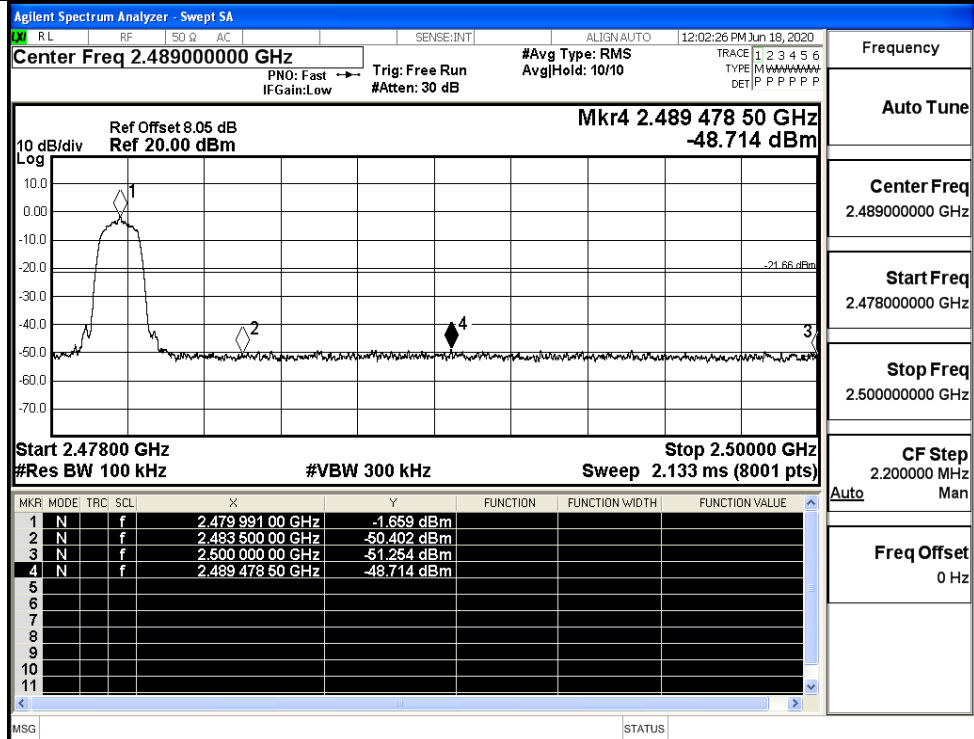
Start Freq
2.370000000 GHz

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

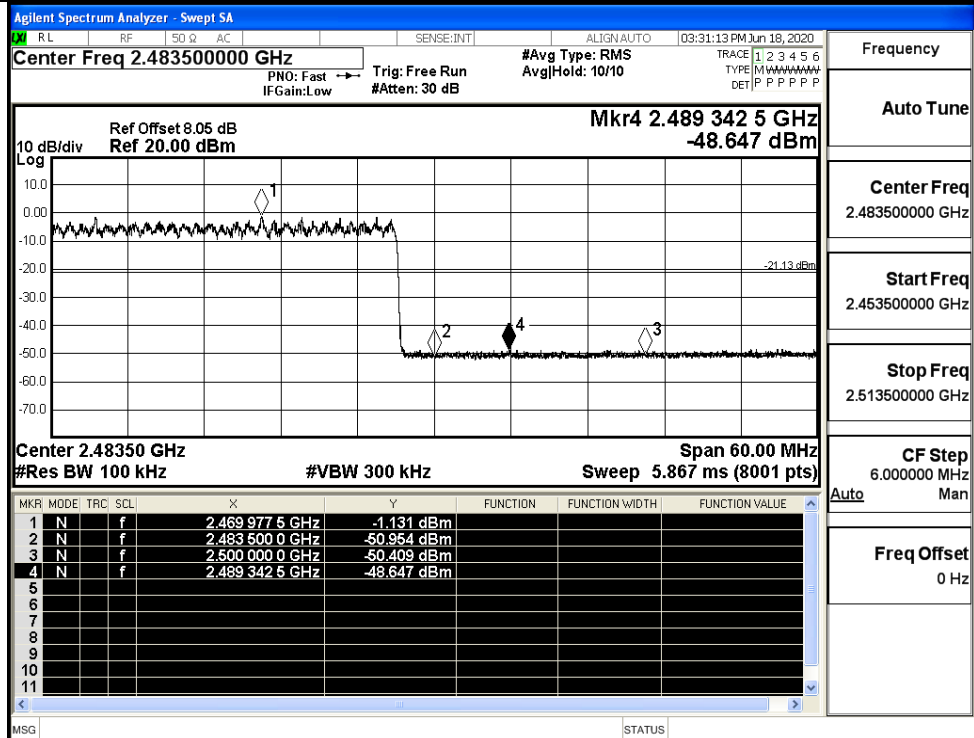
2.200000 MHz

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

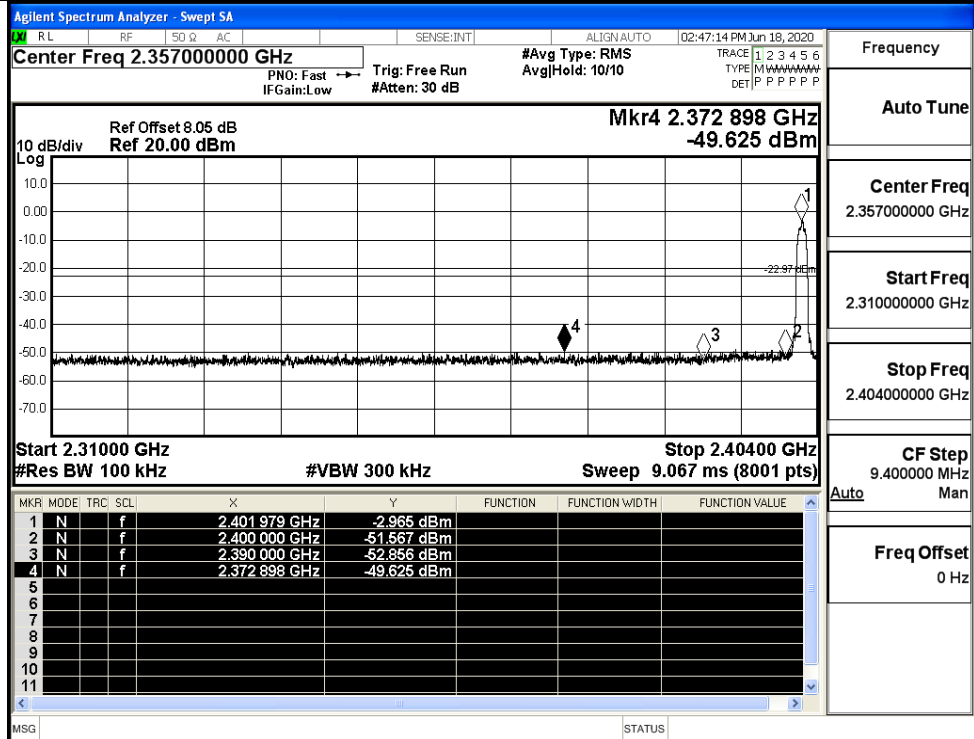
6.000000 MHz

Auto Man

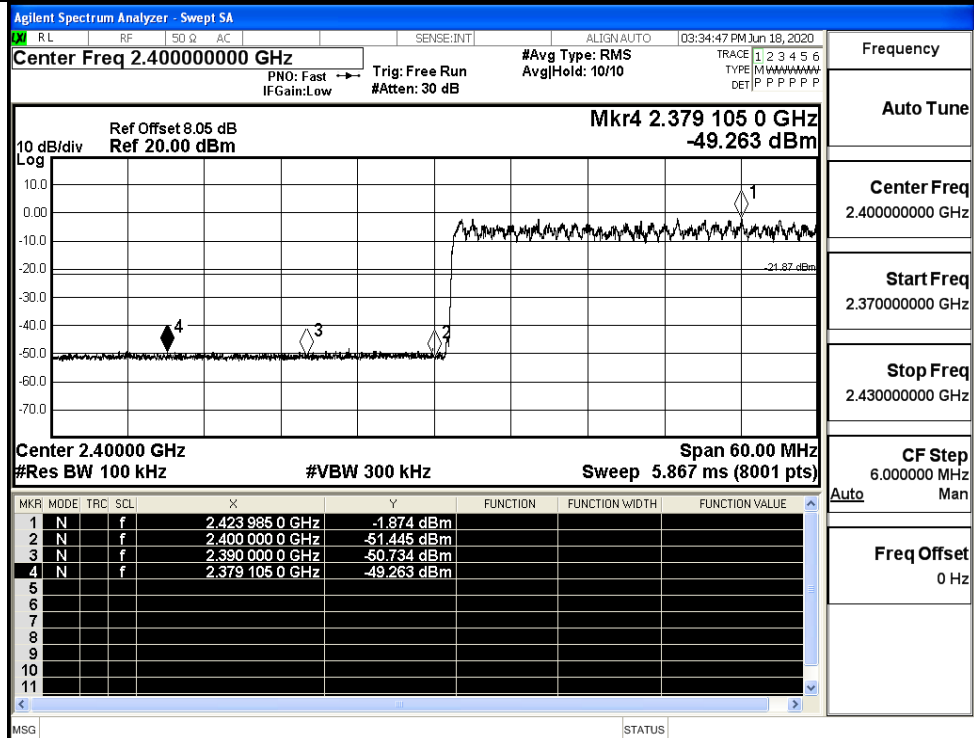
Freq Offset

0 Hz

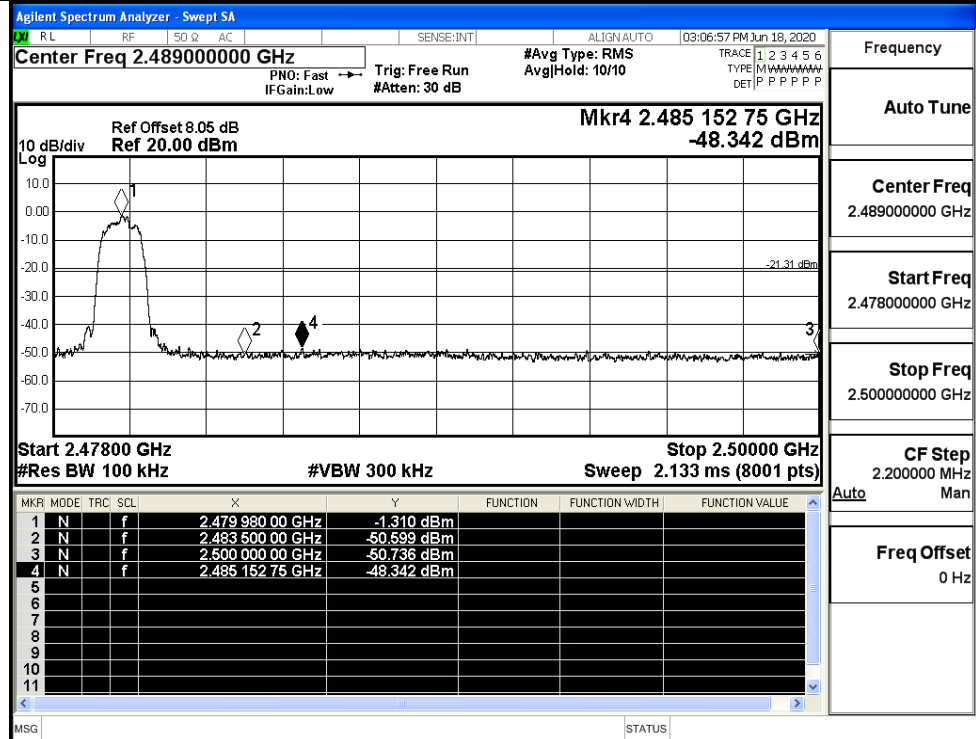
8DPSK/LCH/No Hop



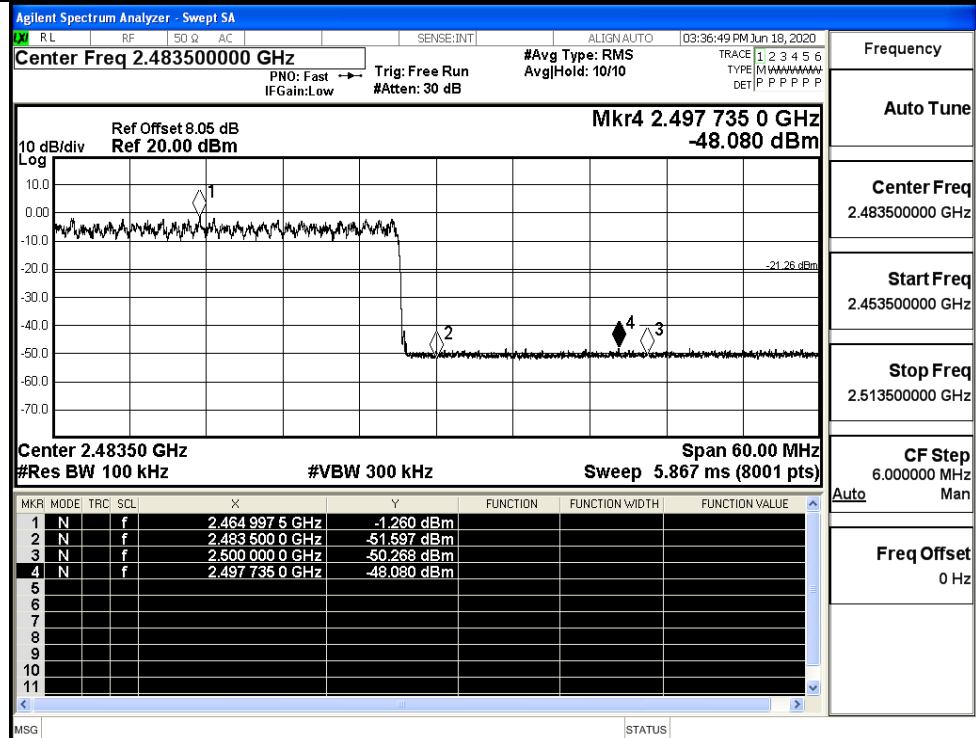
8DPSK/LCH/Hop



8DPSK/HCH/No Hop



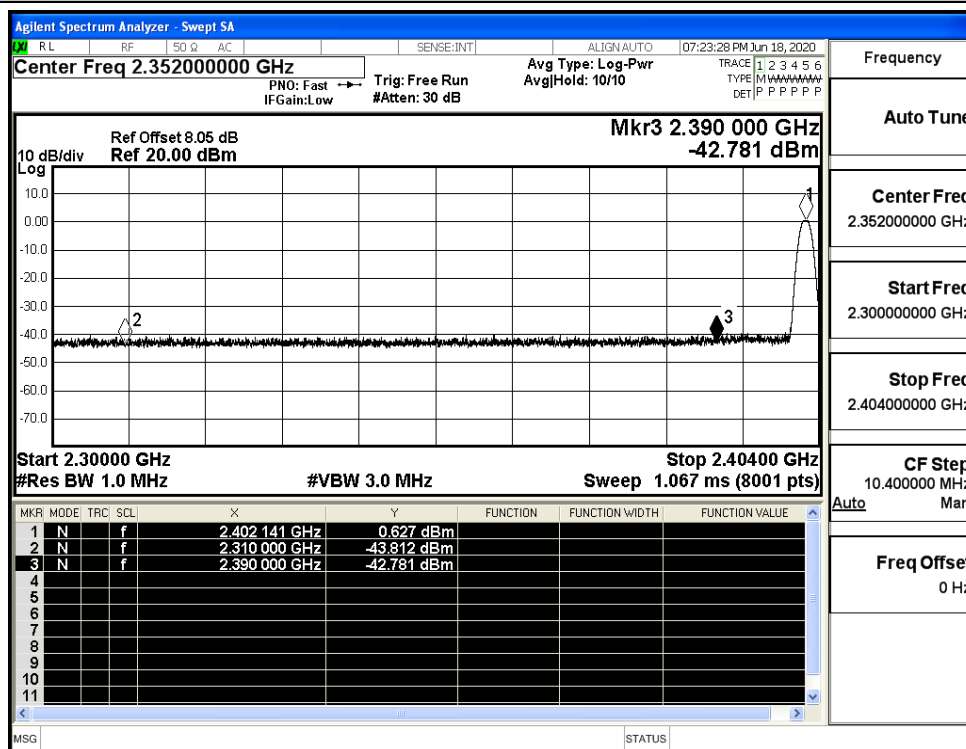
8DPSK/HCH/Hop



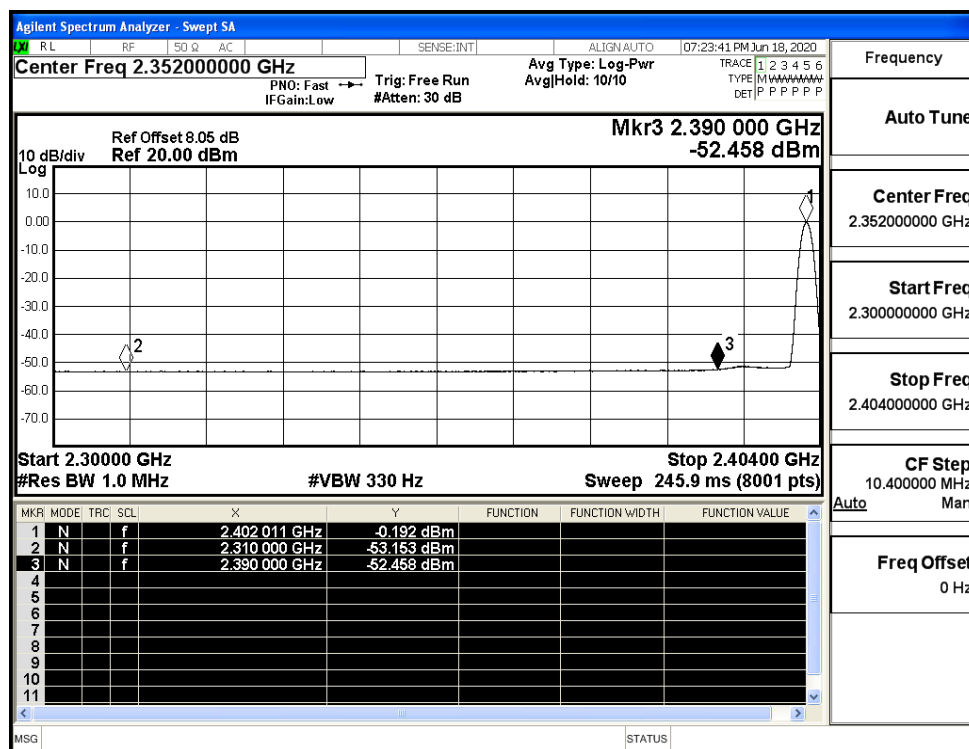
A.8 Restrict-band band-edge measurements

Test Mode	Hopping	Freq.	Power [dBm]	Gain	Ground Factor	E [dBuV/m]	Detector	Limit [dBuV/m]	Verdict
GFSK	Off	2310.0	-43.81	2.0	0	53.42	PEAK	74	PASS
	Off	2310.0	-53.15	2.0	0	44.08	AV	54	PASS
	Off	2390.0	-42.78	2.0	0	54.45	PEAK	74	PASS
	Off	2390.0	-52.46	2.0	0	44.77	AV	54	PASS
	Off	2483.5	-40.70	2.0	0	56.53	PEAK	74	PASS
	Off	2483.5	-51.91	2.0	0	45.32	AV	54	PASS
	Off	2500.0	-42.14	2.0	0	55.09	PEAK	74	PASS
	Off	2500.0	-52.29	2.0	0	44.94	AV	54	PASS
$\pi/4$ DQPSK	Off	2310.0	-43.95	2.0	0	53.28	PEAK	74	PASS
	Off	2310.0	-53.28	2.0	0	43.95	AV	54	PASS
	Off	2390.0	-40.98	2.0	0	56.25	PEAK	74	PASS
	Off	2390.0	-52.65	2.0	0	44.58	AV	54	PASS
	Off	2483.5	-41.82	2.0	0	55.41	PEAK	74	PASS
	Off	2483.5	-51.69	2.0	0	45.54	AV	54	PASS
	Off	2500.0	-41.61	2.0	0	55.62	PEAK	74	PASS
	Off	2500.0	-52.31	2.0	0	44.92	AV	54	PASS
8DPSK	Off	2310.0	-43.46	2.0	0	53.77	PEAK	74	PASS
	Off	2310.0	-53.35	2.0	0	43.88	AV	54	PASS
	Off	2390.0	-42.75	2.0	0	54.48	PEAK	74	PASS
	Off	2390.0	-52.68	2.0	0	44.55	AV	54	PASS
	Off	2483.5	-41.16	2.0	0	56.07	PEAK	74	PASS
	Off	2483.5	-51.39	2.0	0	45.84	AV	54	PASS
	Off	2500.0	-41.79	2.0	0	55.44	PEAK	74	PASS
	Off	2500.0	-52.16	2.0	0	45.07	AV	54	PASS

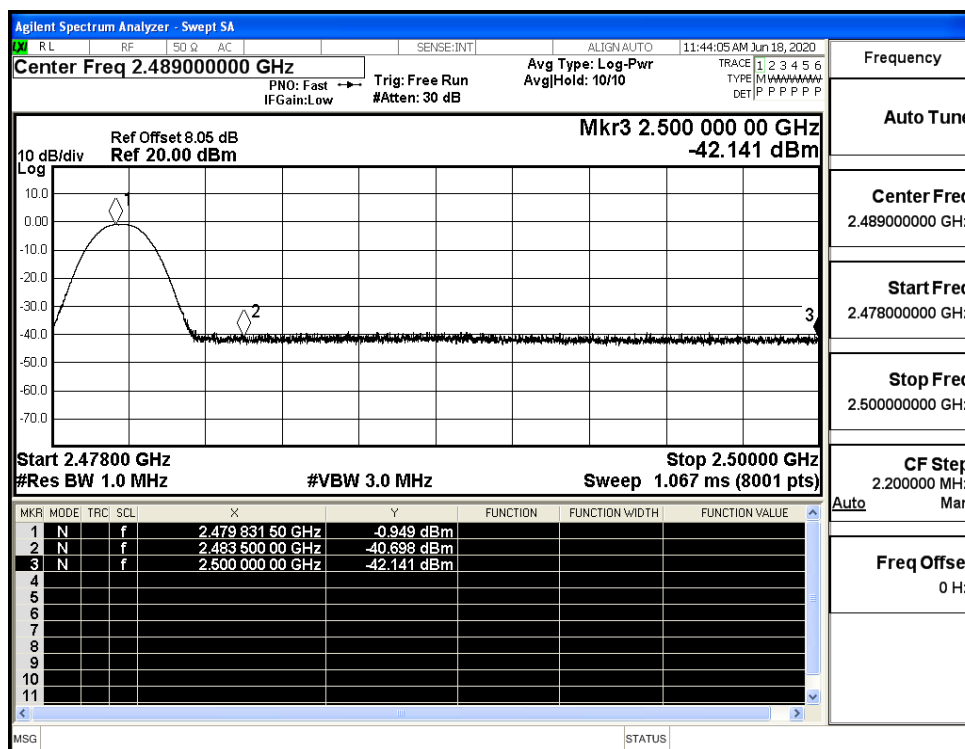
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (Low Channel)



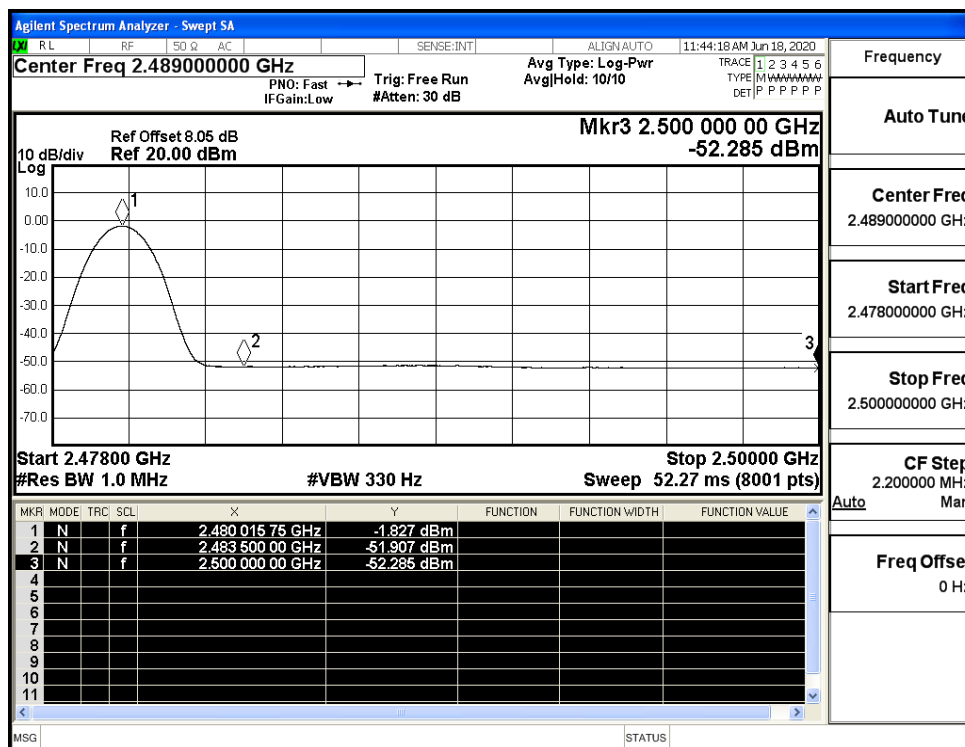
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (Low Channel)

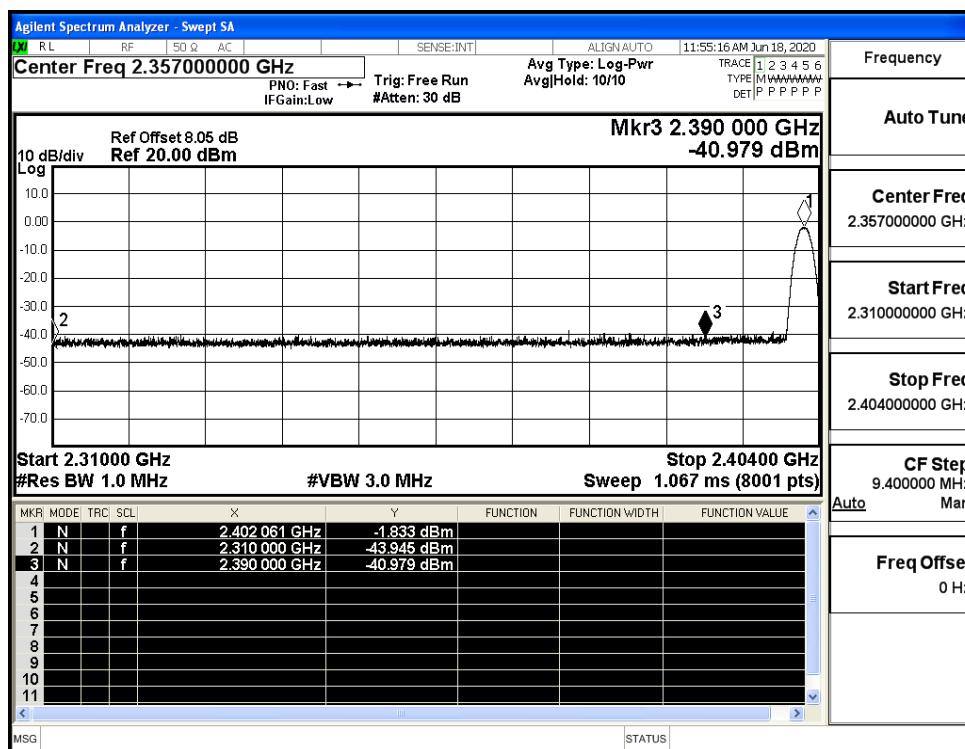
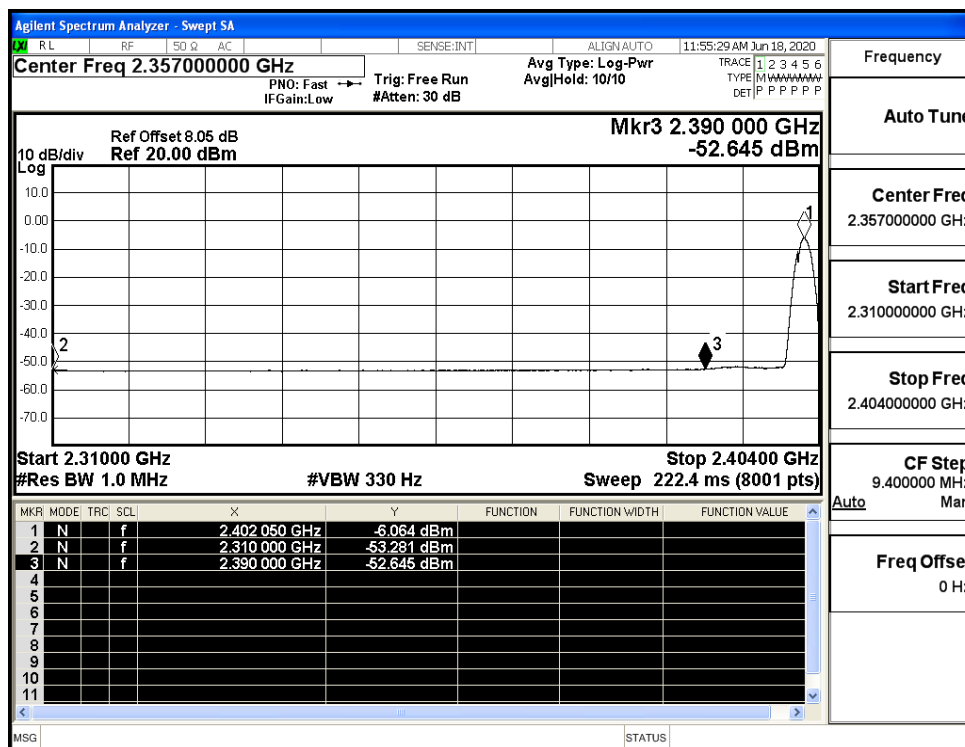


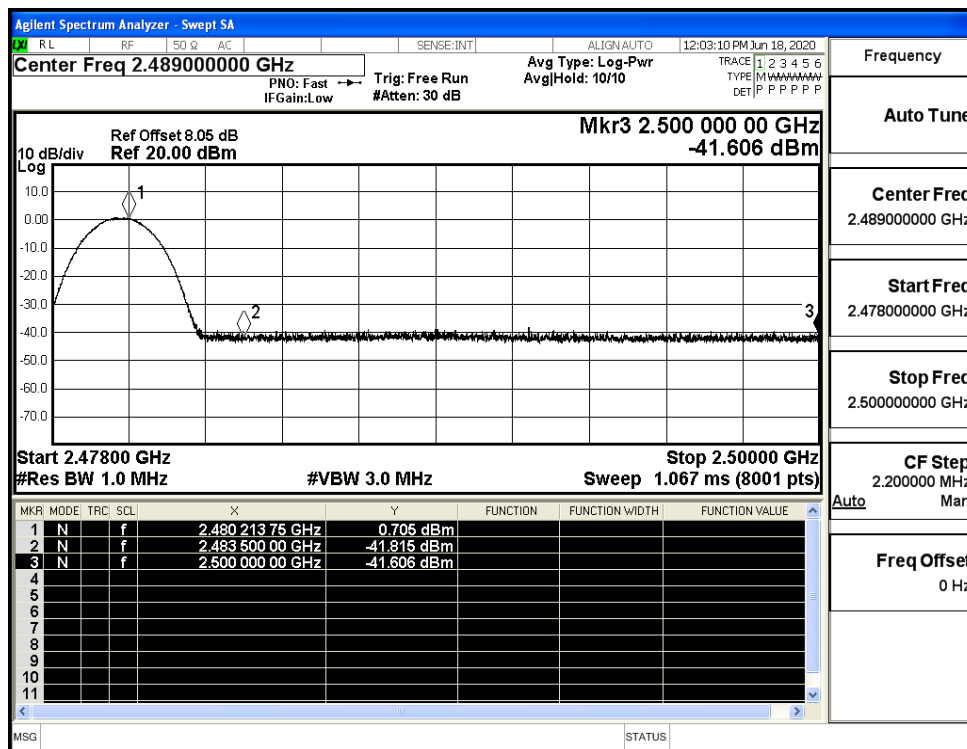
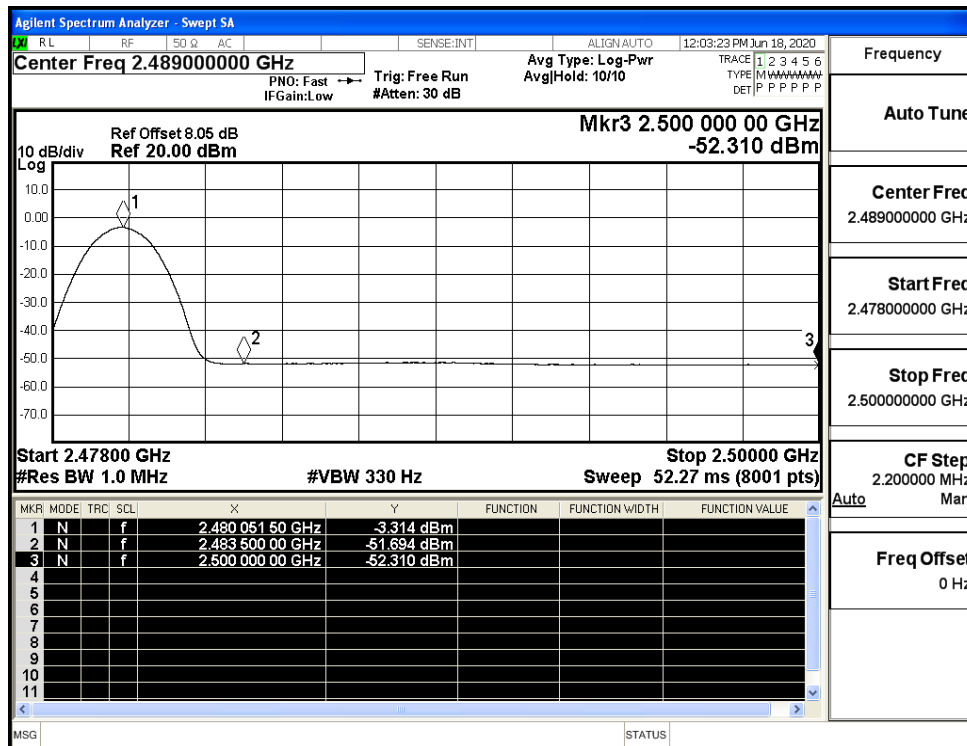
Restrict-band band-edge measurements_Hopping Off_GFSK_PEAK (High Channel)



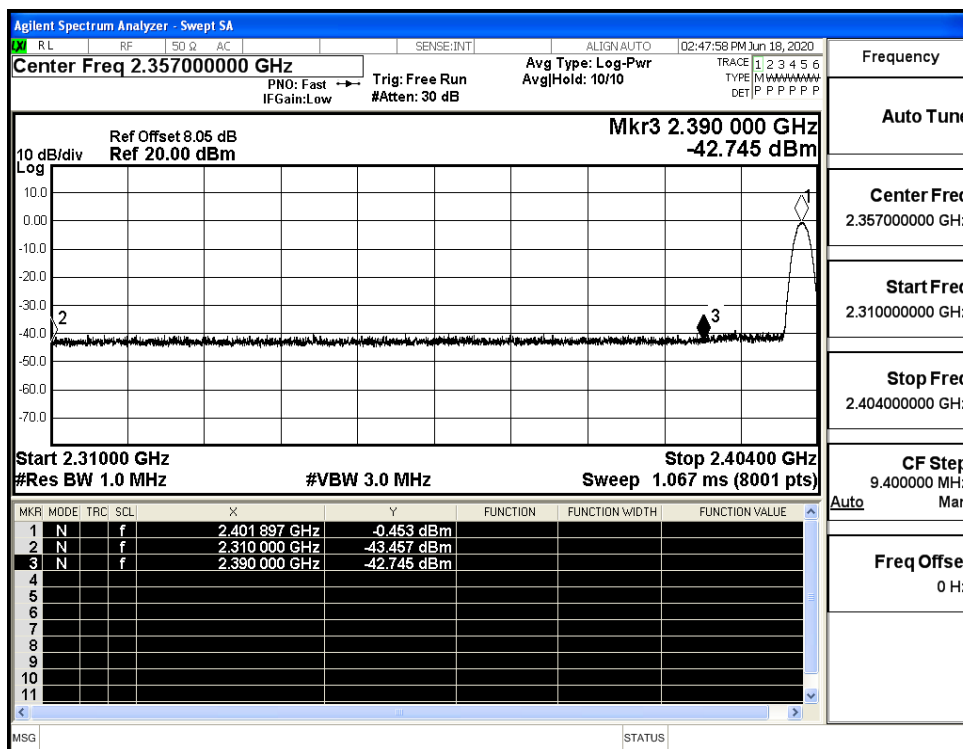
Restrict-band band-edge measurements_Hopping Off_GFSK_Average (High Channel)



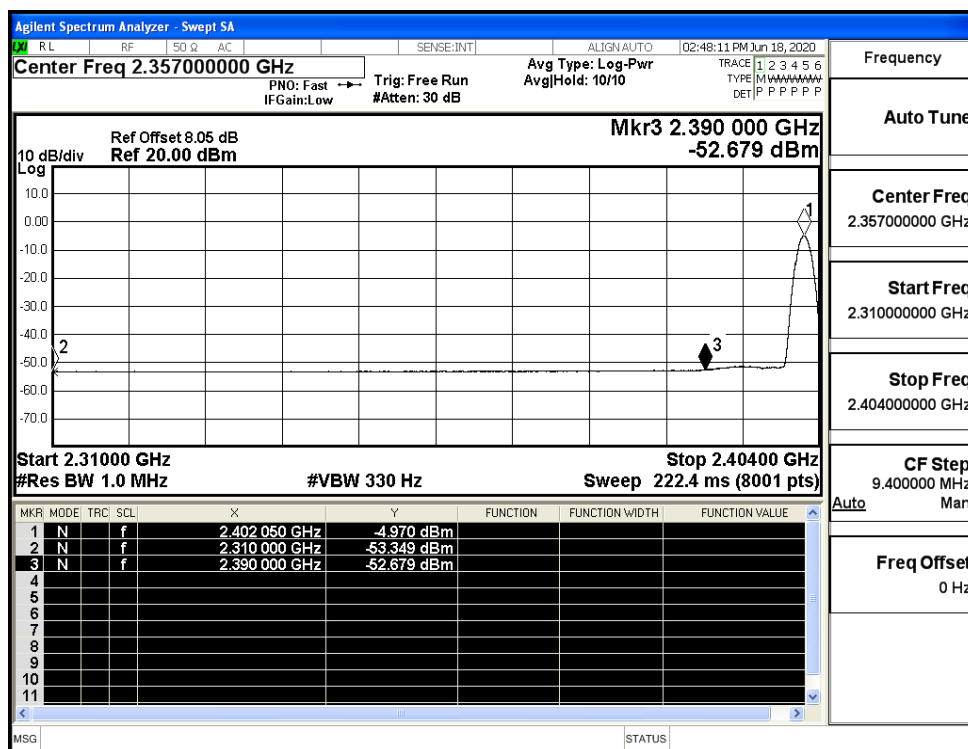
Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_PEAK (Low Channel)Restrict-band band-edge measurements_Hopping Off $\pi/4$ -DQPSK_Average (Low Channel)

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)

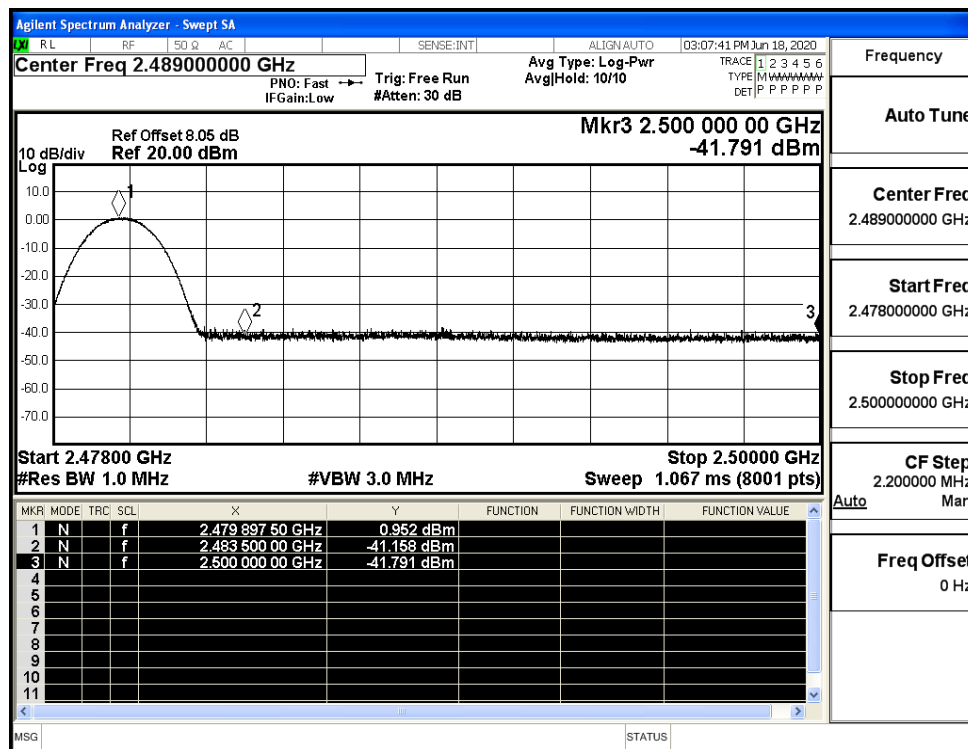
Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (Low Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_PEAK (High Channel)



Restrict-band band-edge measurements_Hopping Off_8DPSK_Average (High Channel)

