

Appendix A

RF Test Data for BT(BLE) (Conducted Measurement)

Product Name: Shenzhen SEI Robotics Co., Ltd.

Trade Mark: SEI

Test Model: SN8BABH

FCC ID: 2AOVU-SN8BABX

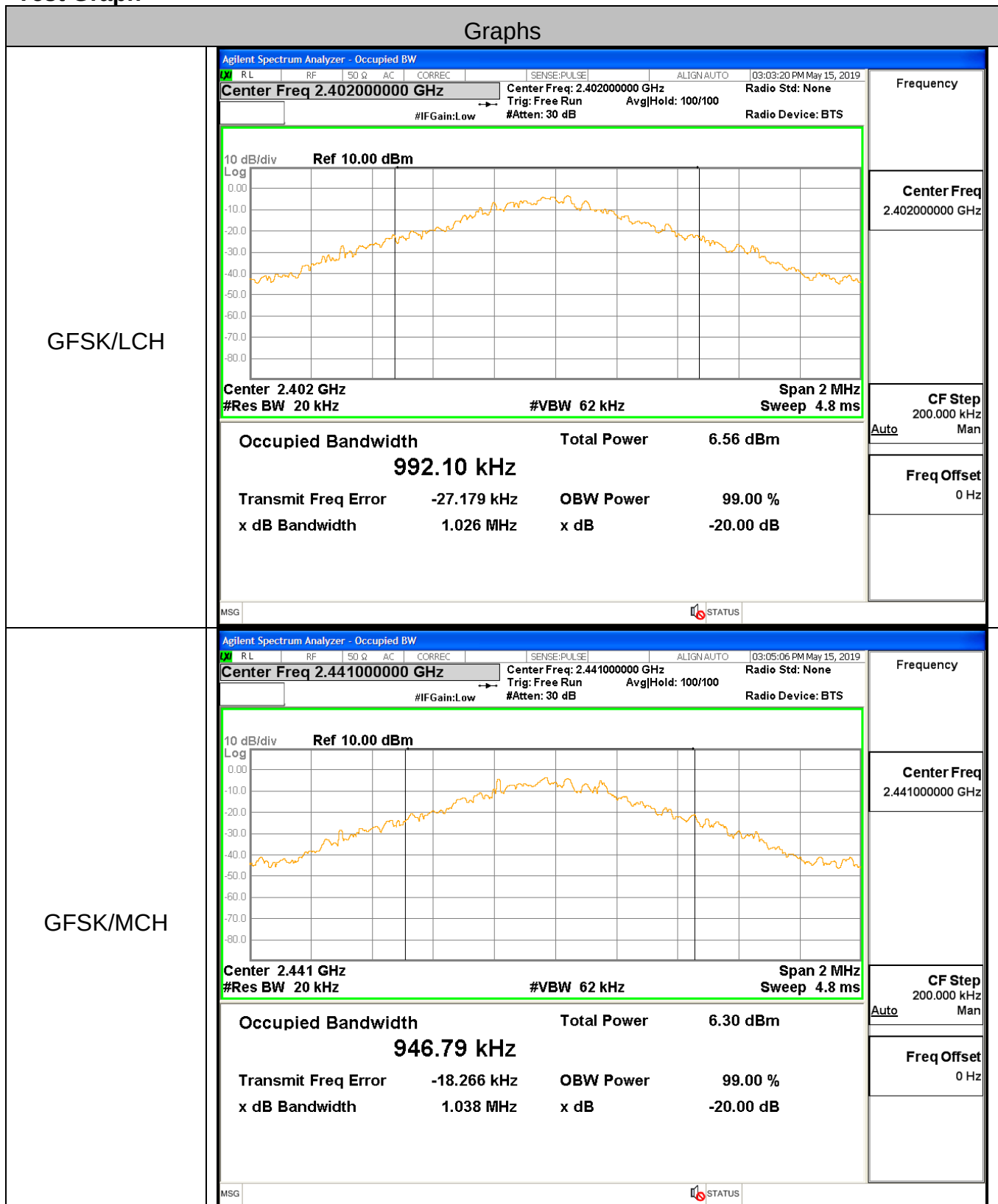
Environmental Conditions

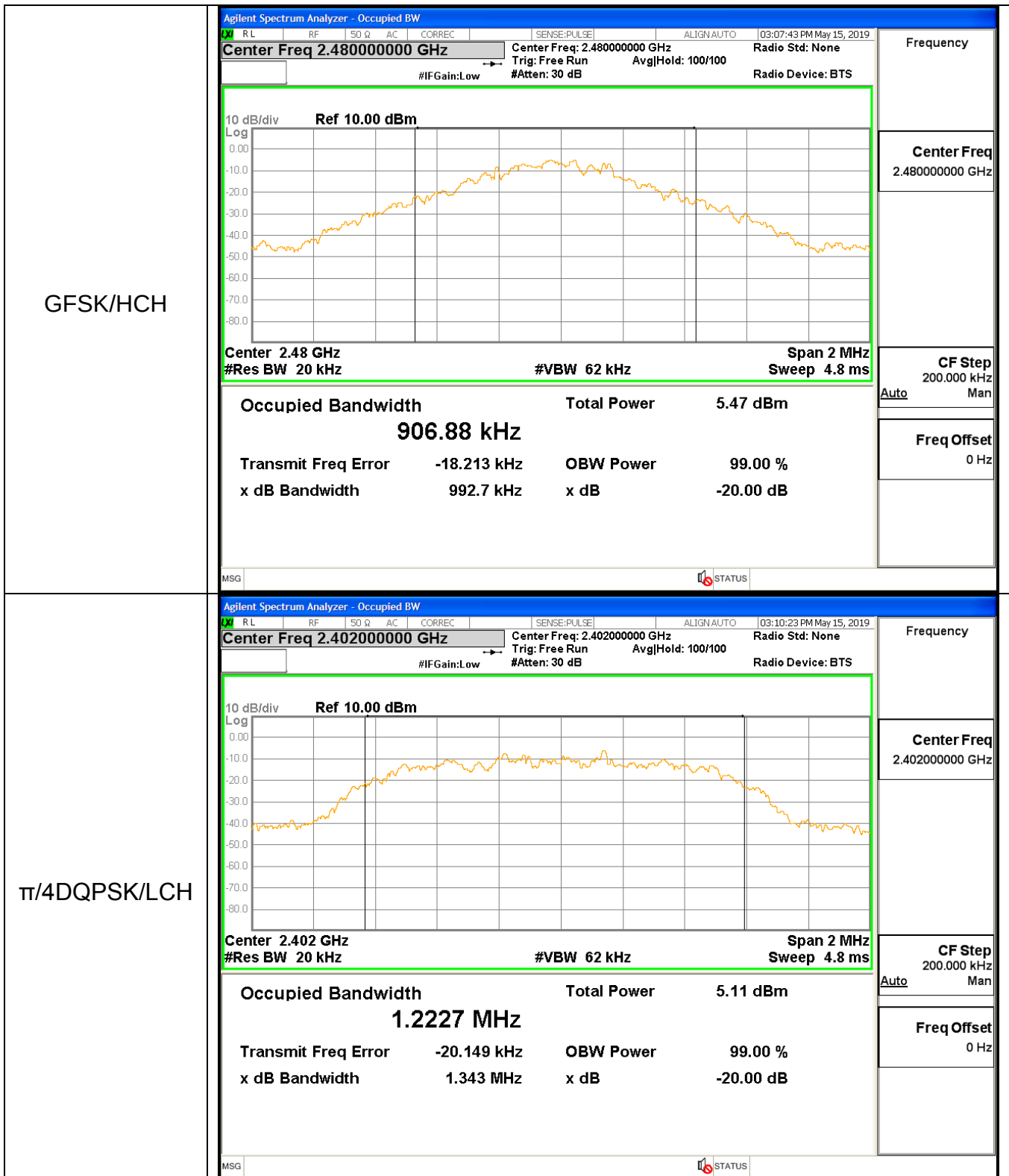
Temperature:	23.7° C
Relative Humidity:	52%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

A.1 20 dB Bandwidth

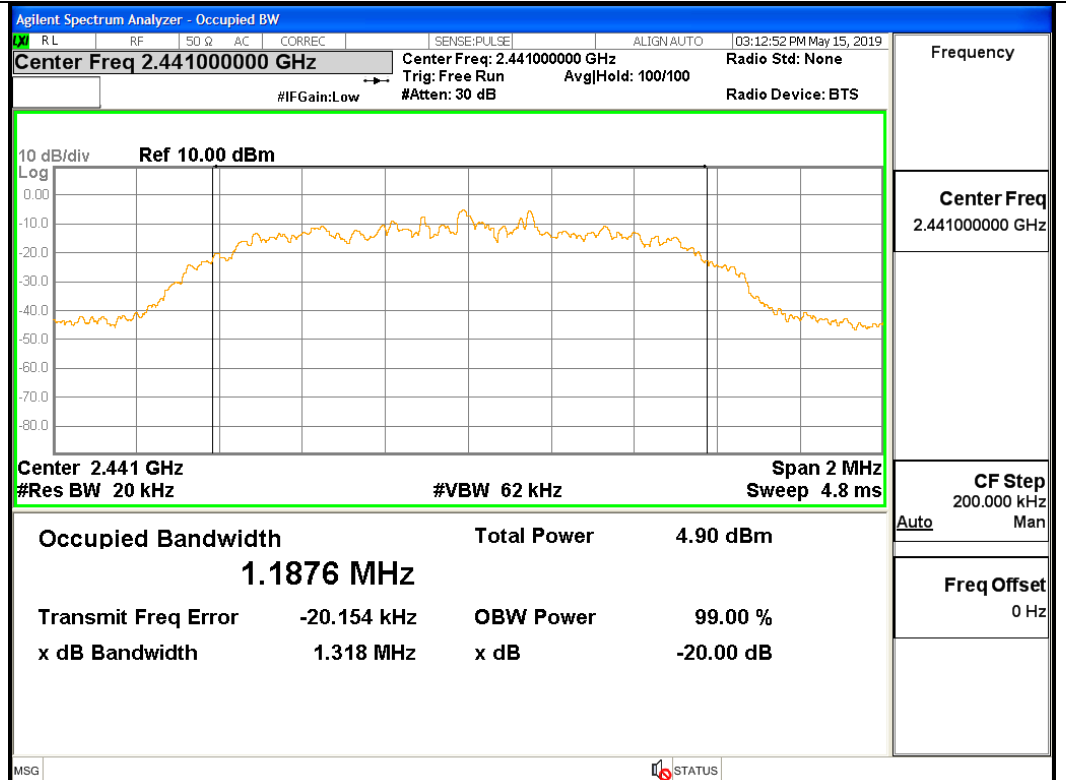
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	1.026	Not Specified	PASS
GFSK	MCH	1.038	Not Specified	PASS
GFSK	HCH	0.993	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.343	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.318	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.314	Not Specified	PASS
8DPSK	LCH	1.263	Not Specified	PASS
8DPSK	MCH	1.275	Not Specified	PASS
8DPSK	HCH	1.271	Not Specified	PASS

Test Graph

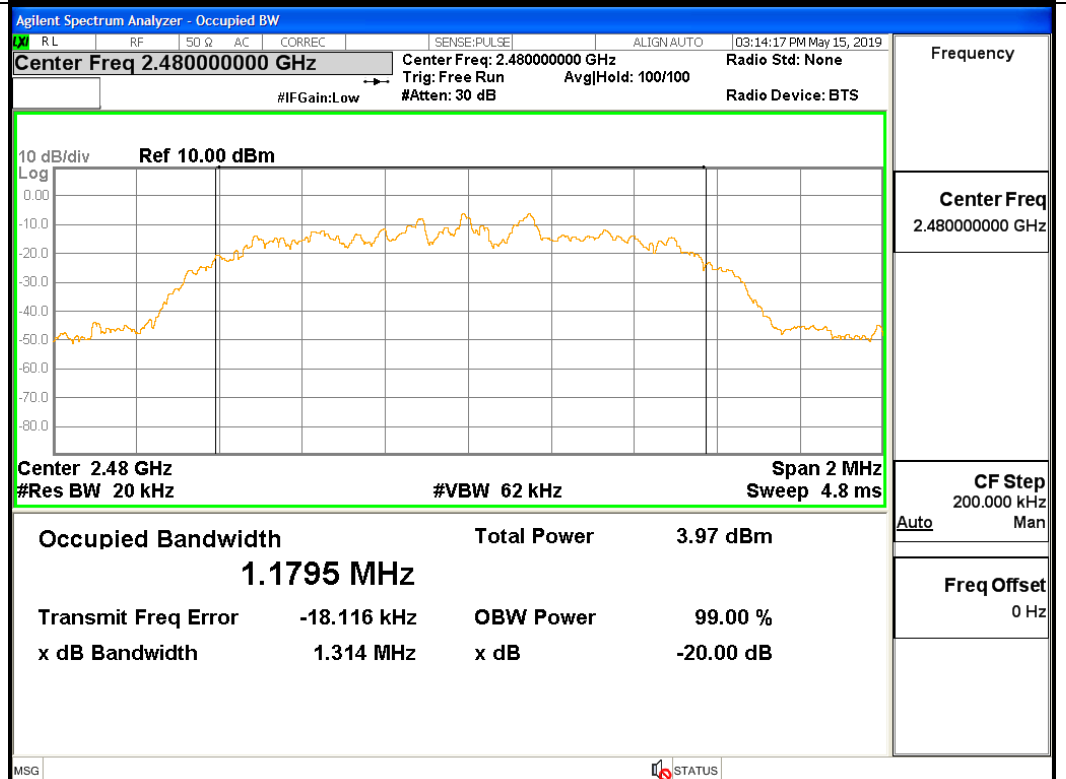




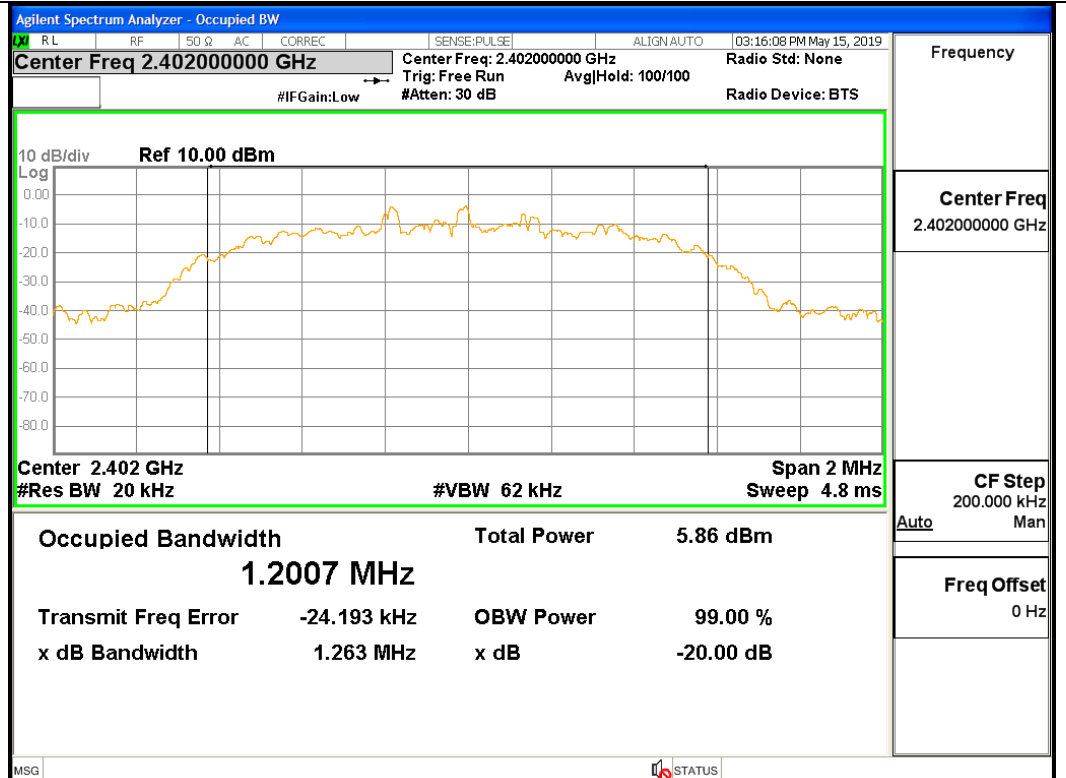
$\pi/4$ DQPSK/MCH



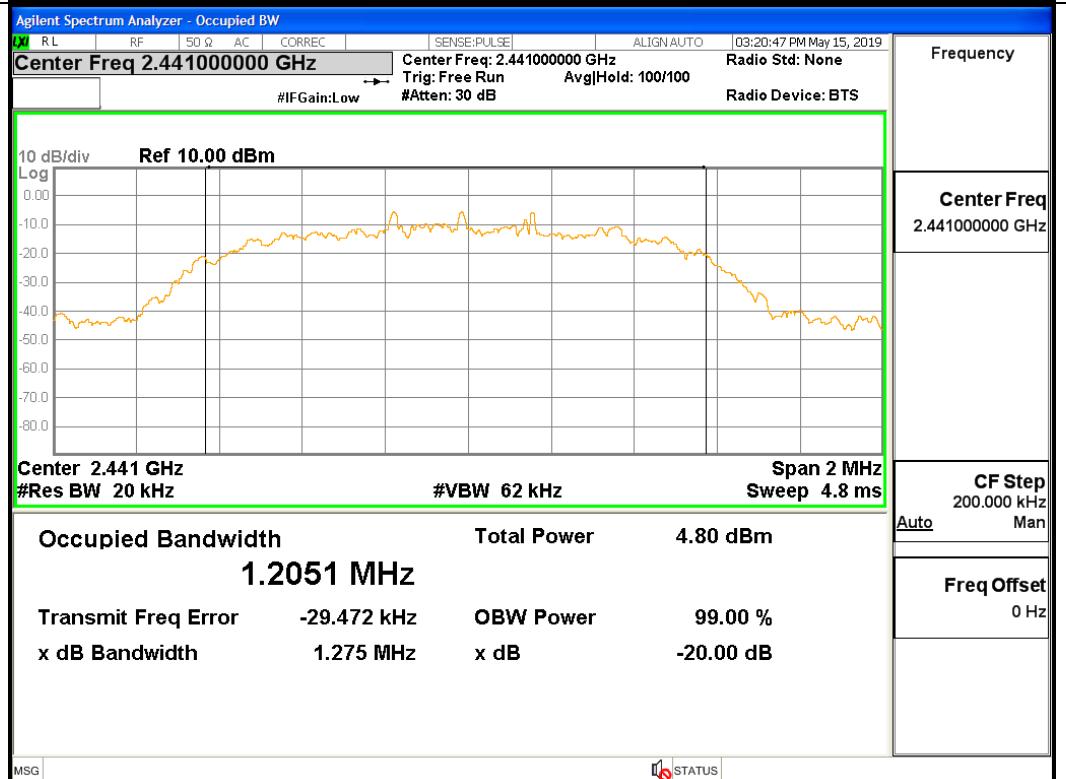
$\pi/4$ DQPSK/HCH

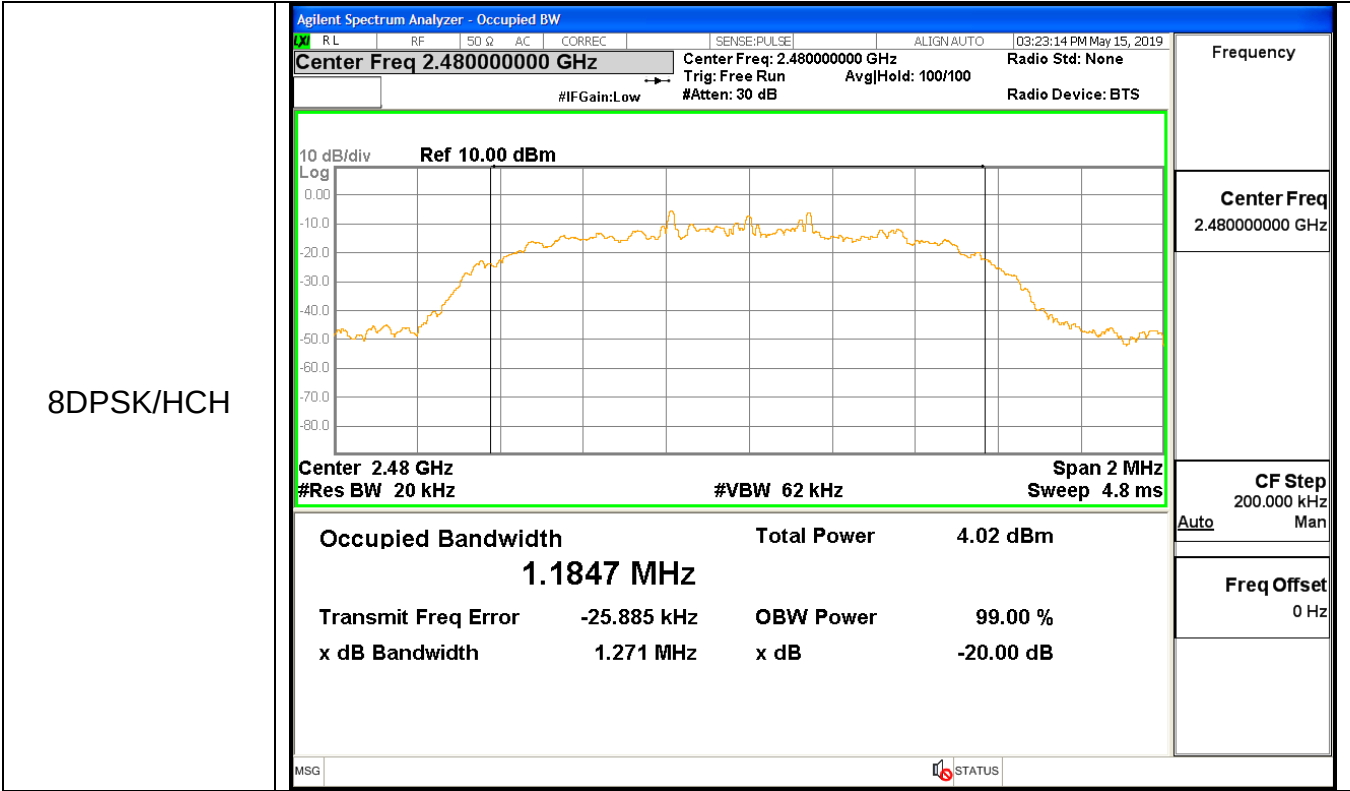


8DPSK/LCH



8DPSK/MCH

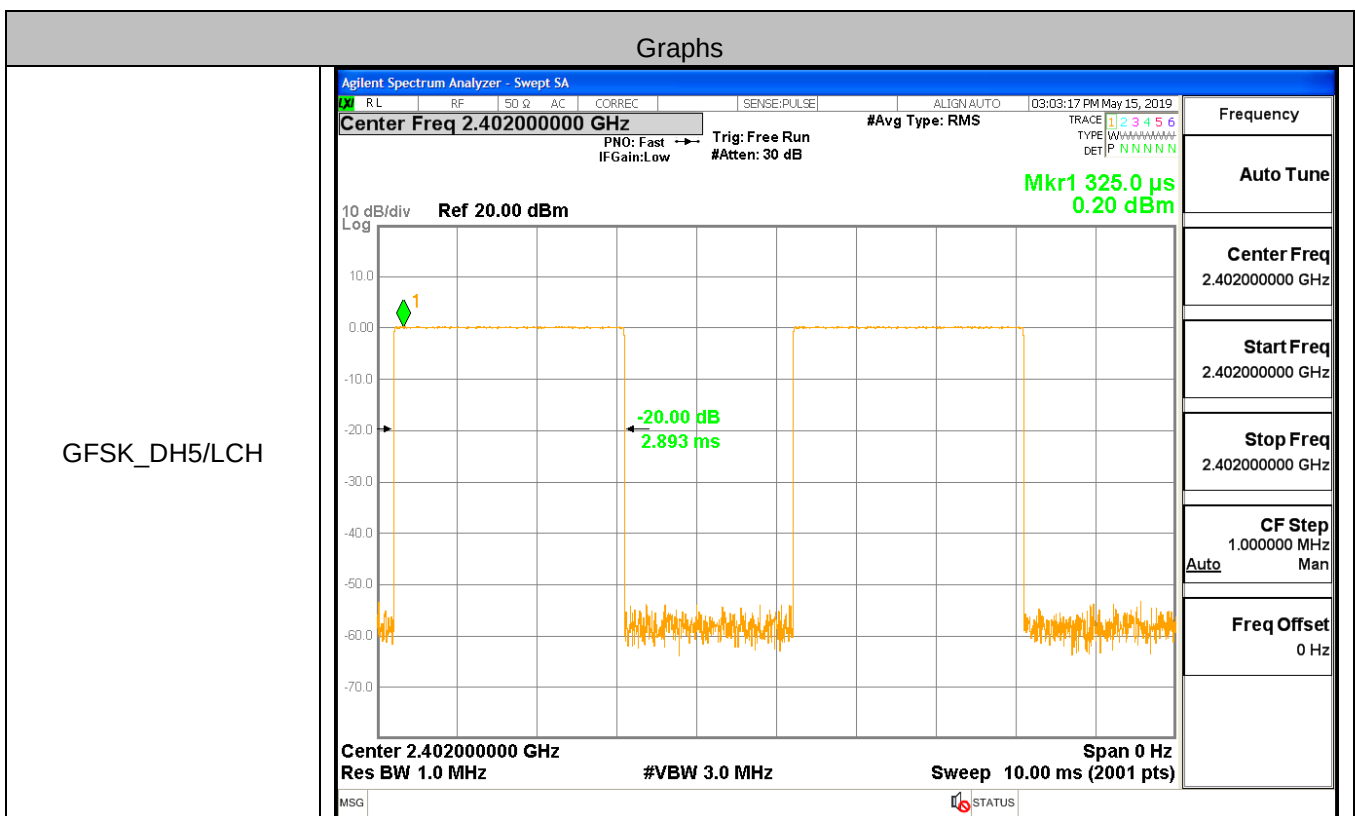


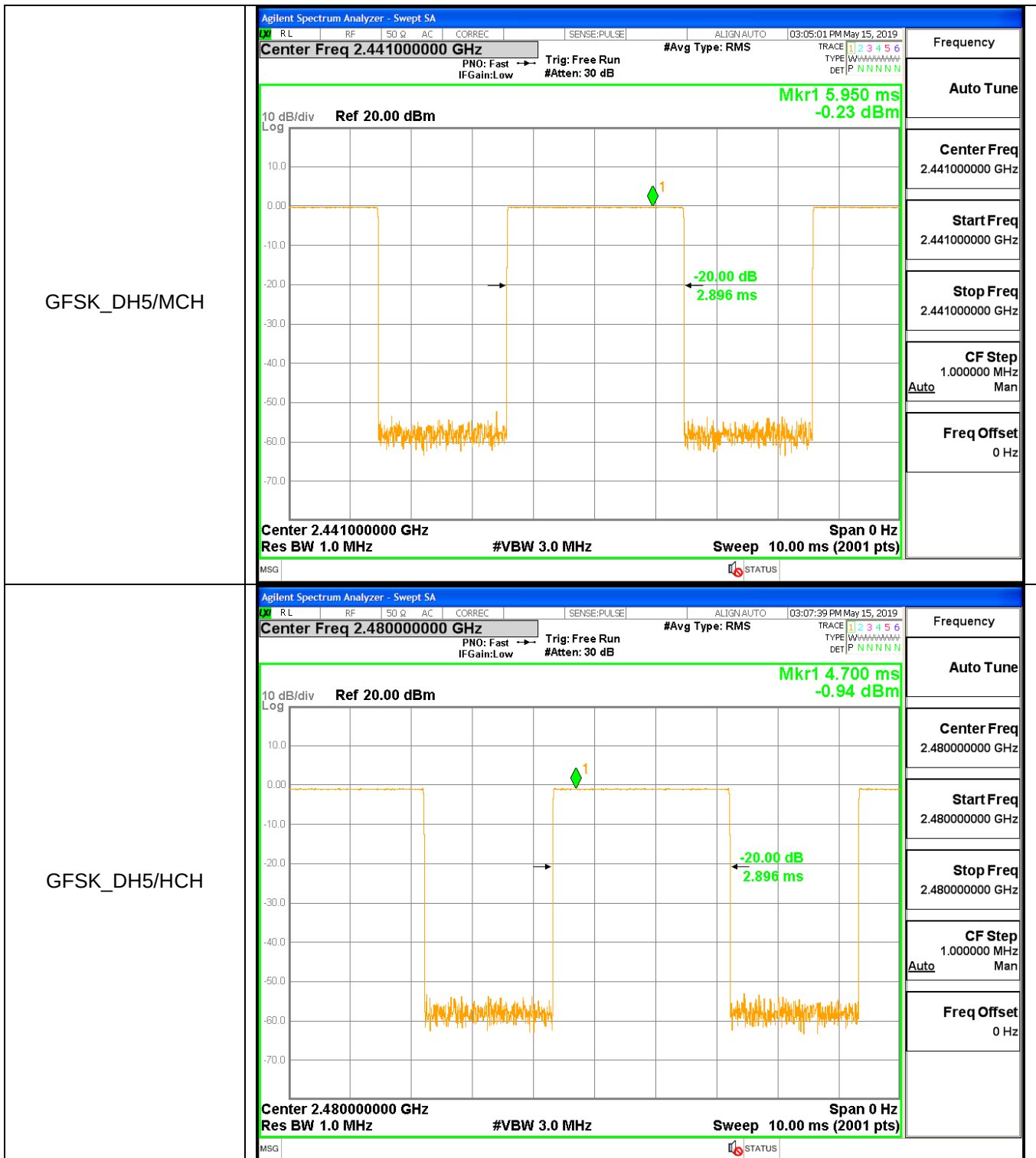


A.2 Dwell Time

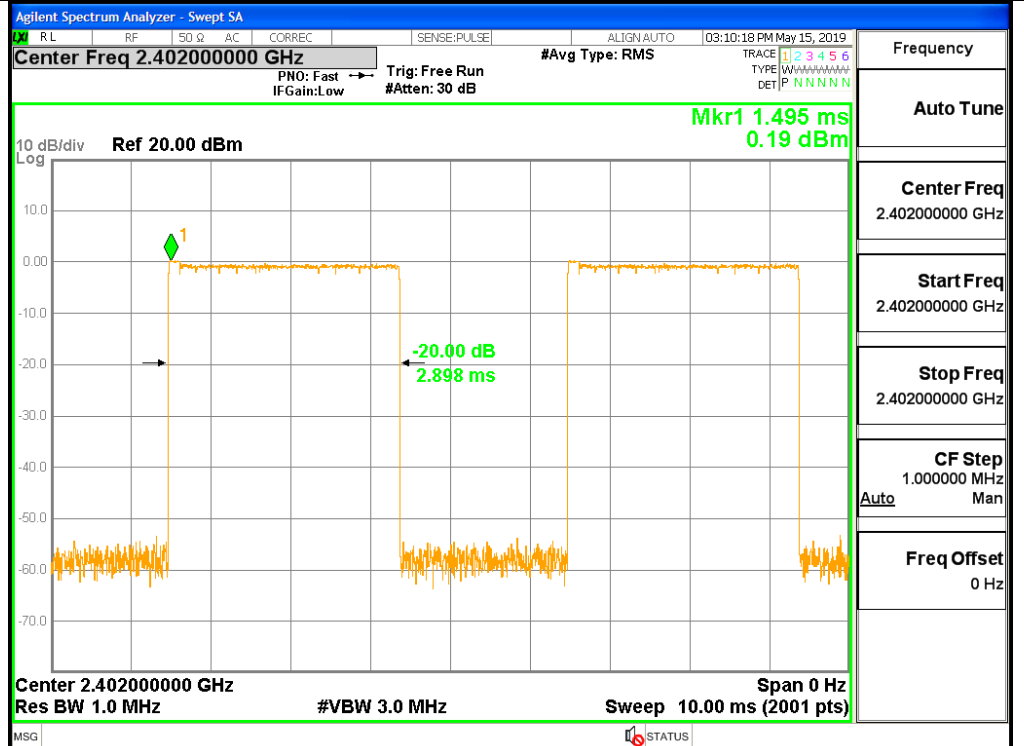
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002893	106.7	0.308658	0.4	PASS
GFSK	DH5	MCH	0.002896	106.7	0.309039	0.4	PASS
GFSK	DH5	HCH	0.002896	106.7	0.309019	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002898	106.7	0.309248	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002901	106.7	0.309511	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002899	106.7	0.309375	0.4	PASS
8DPSK	3DH5	LCH	0.002902	106.7	0.309634	0.4	PASS
8DPSK	3DH5	MCH	0.002902	106.7	0.30965	0.4	PASS
8DPSK	3DH5	HCH	0.002902	106.7	0.309625	0.4	PASS

Test Graph





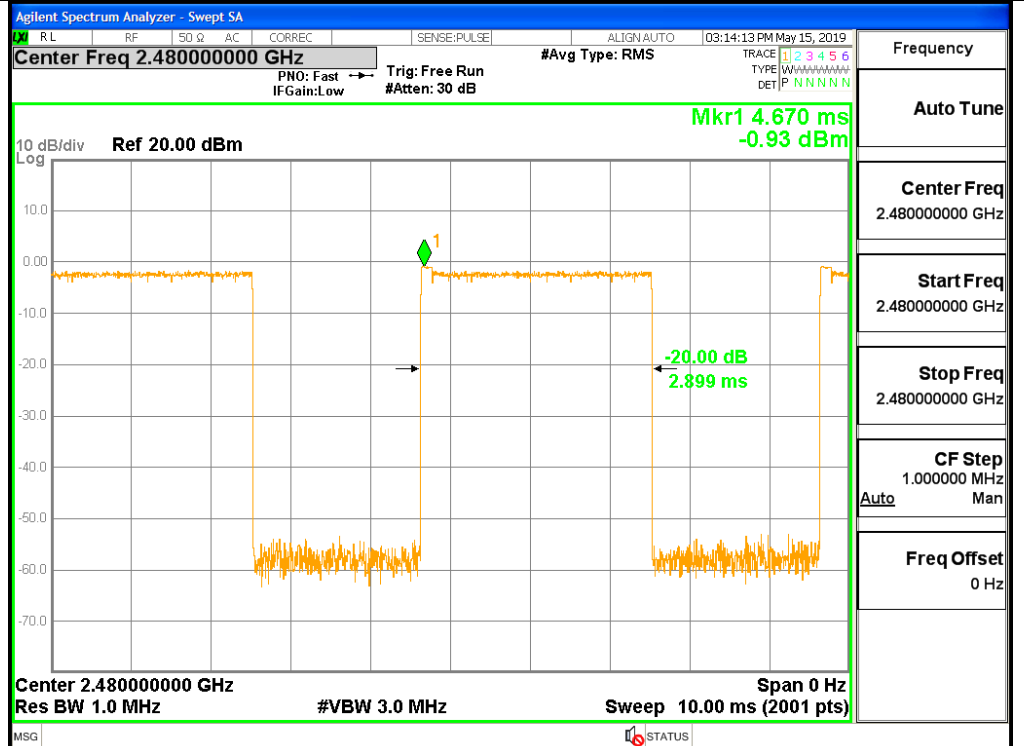
$\pi/4$ DQPSK
_2DH5/LCH



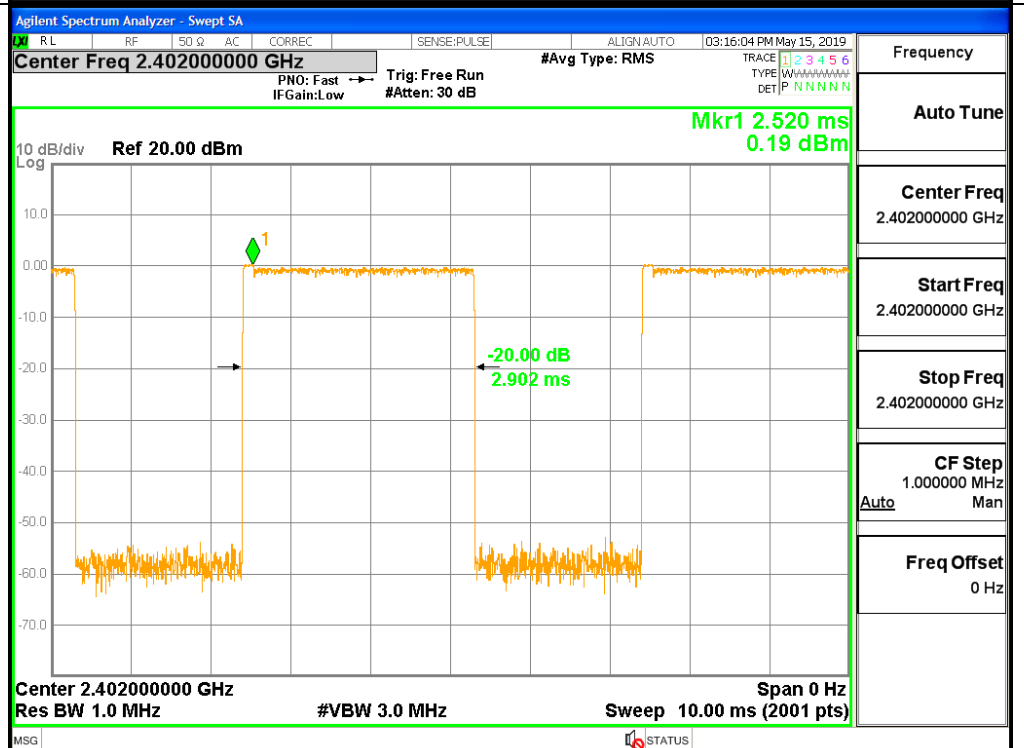
$\pi/4$ DQPSK
_2DH5/MCH

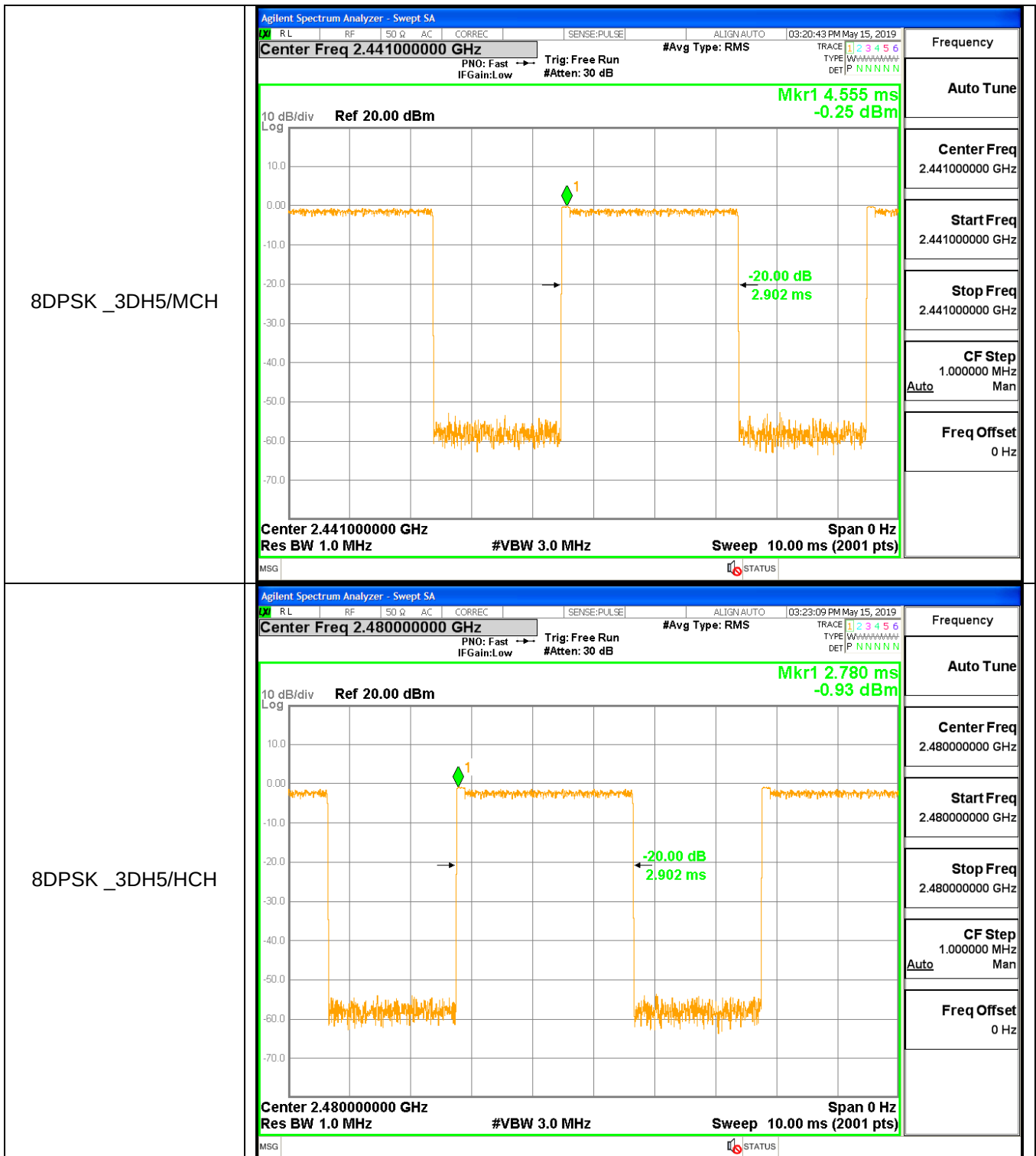


$\pi/4$ DQPSK
_2DH5/HCH



8DPSK_3DH5/LCH

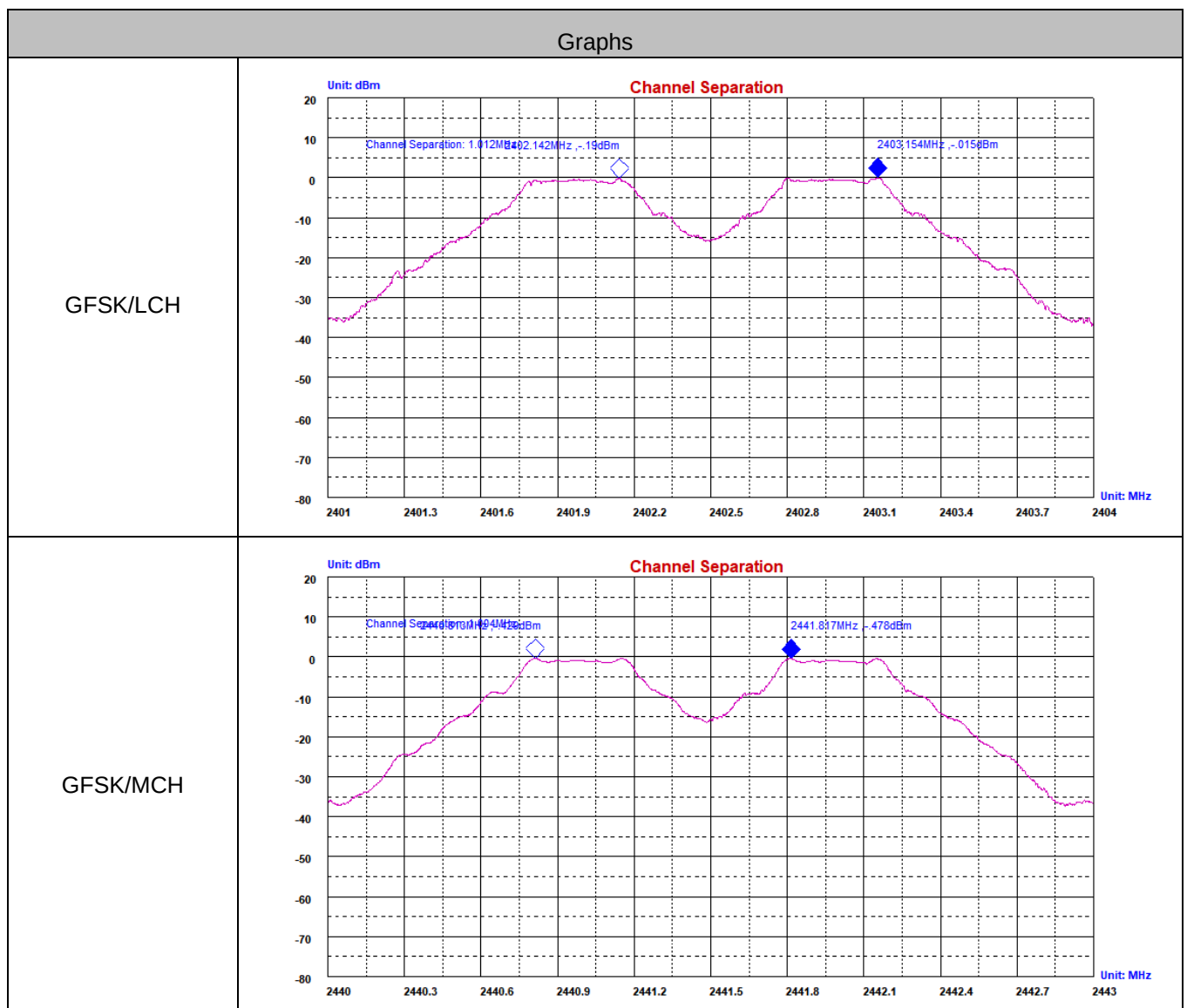


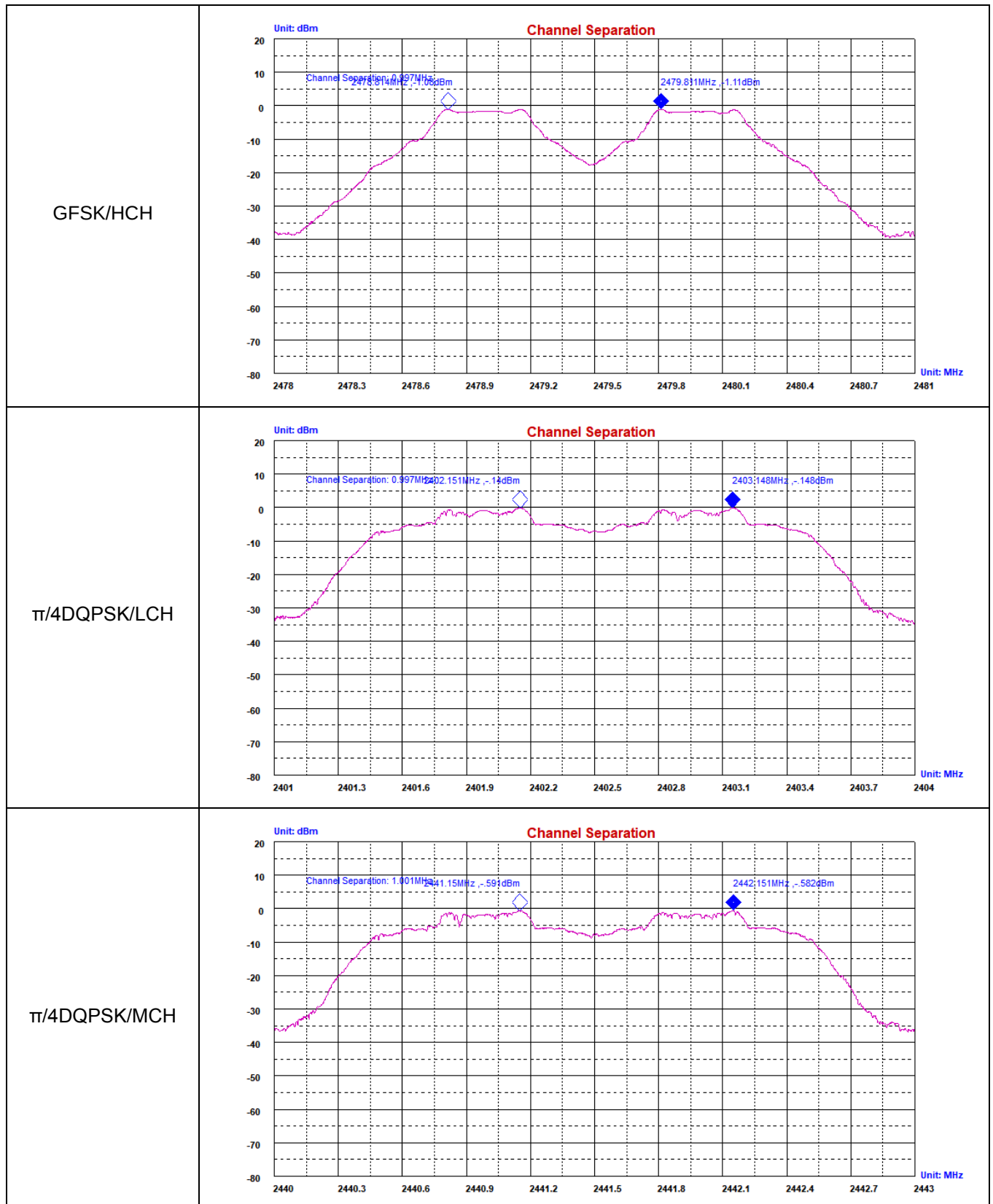


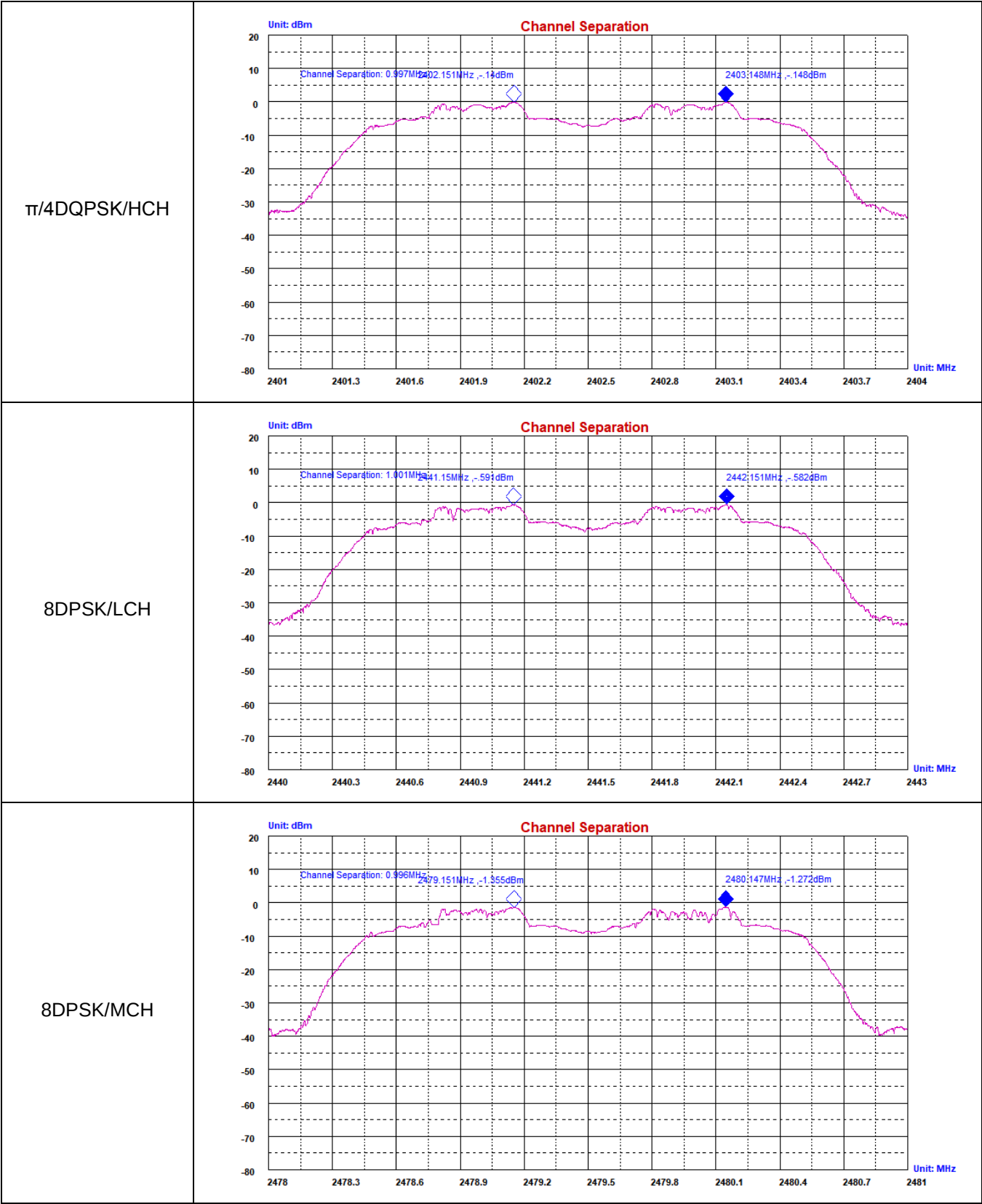
A.3 Carrier Frequency Separation

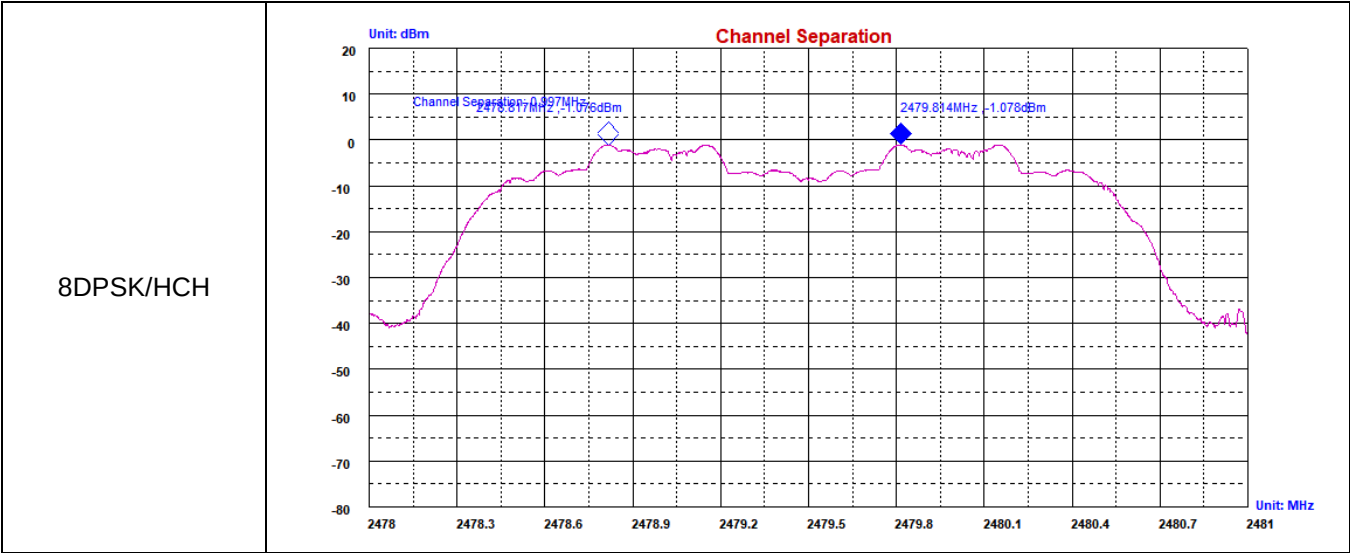
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.012	0.684	PASS
GFSK	MCH	1.004	0.692	PASS
GFSK	HCH	0.997	0.662	PASS
$\pi/4$ DQPSK	LCH	0.997	0.895	PASS
$\pi/4$ DQPSK	MCH	1.001	0.879	PASS
$\pi/4$ DQPSK	HCH	0.996	0.876	PASS
8DPSK	LCH	1.009	0.842	PASS
8DPSK	MCH	0.997	0.850	PASS
8DPSK	HCH	0.997	0.847	PASS

Test Graph





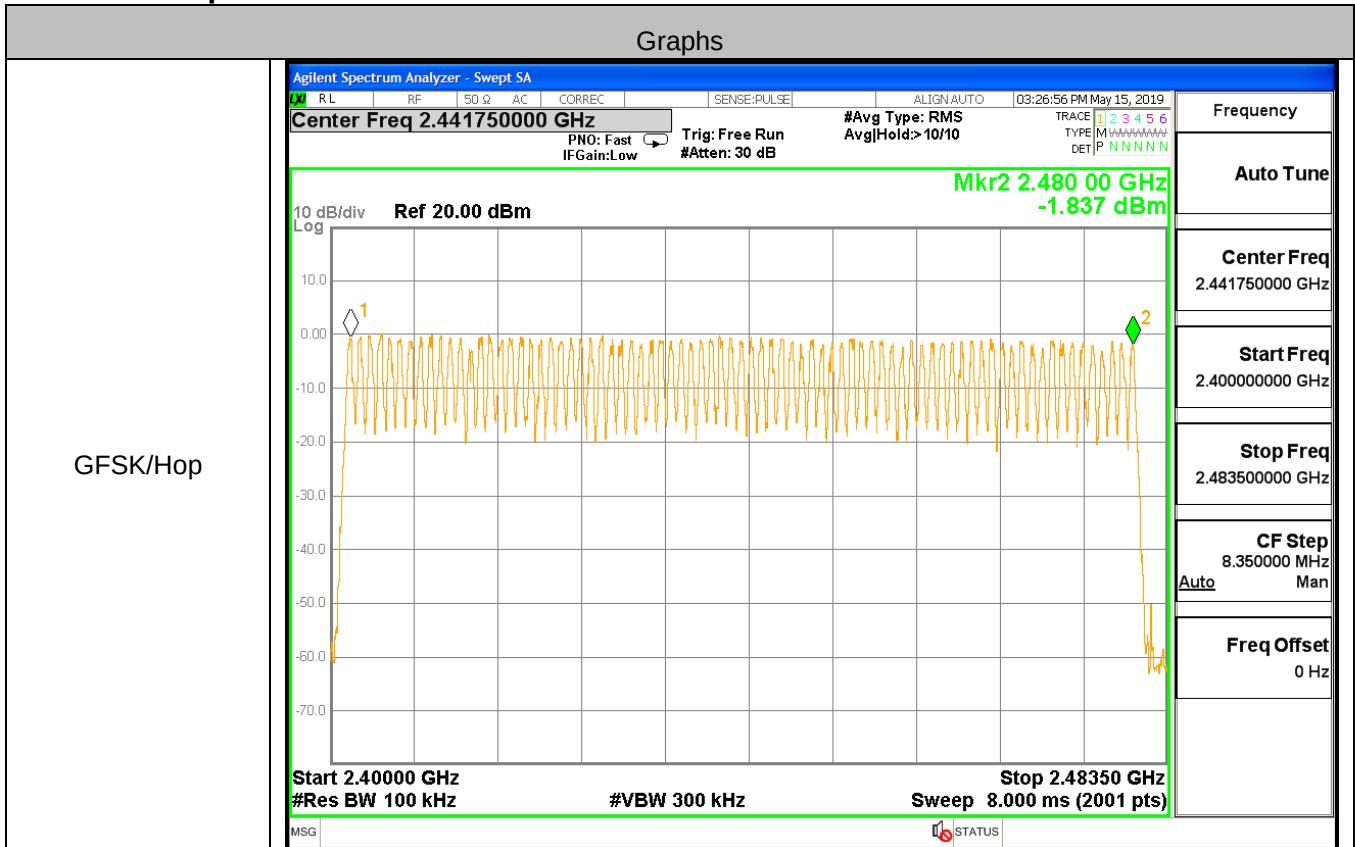


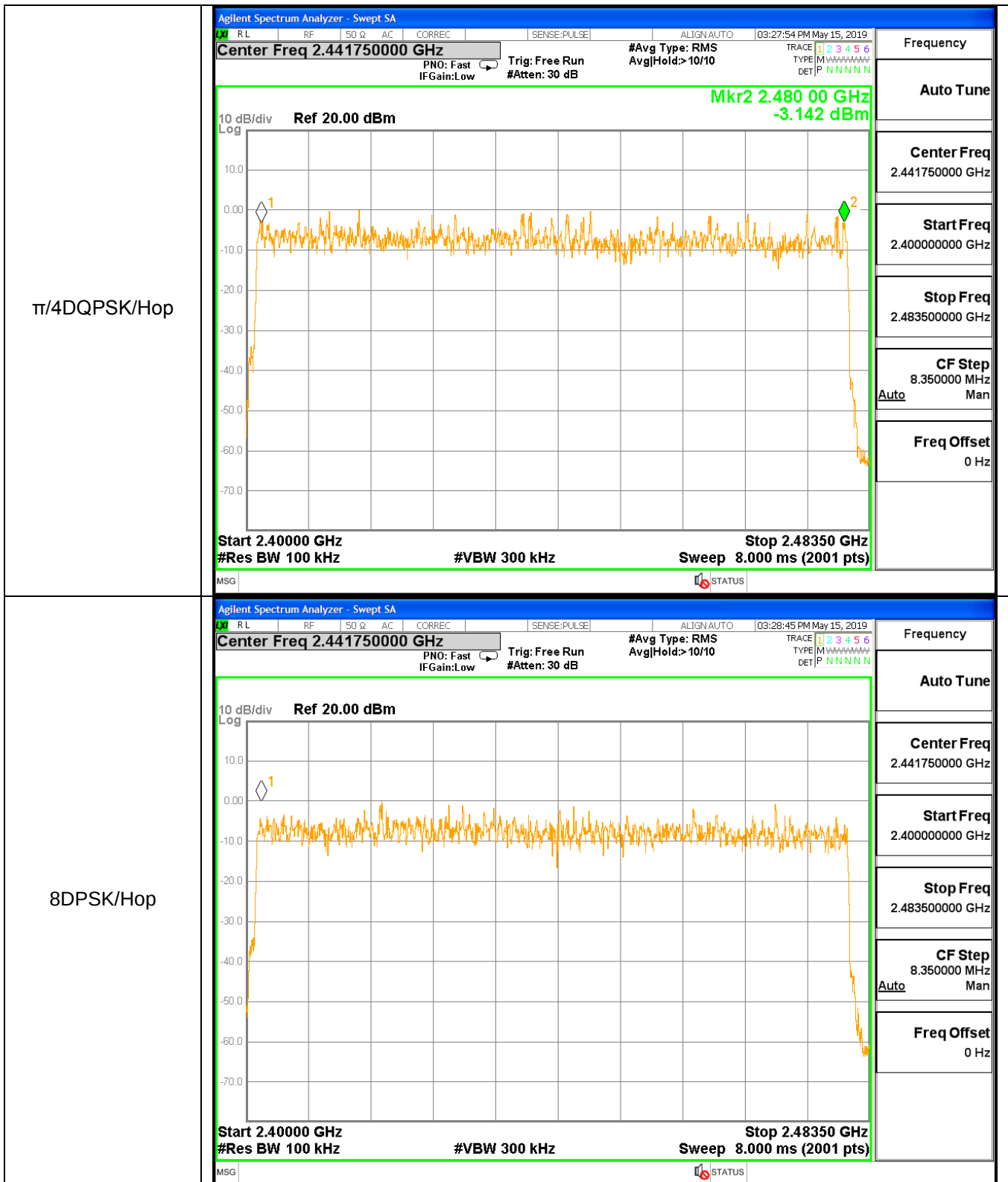


A.4 Hopping Channel Number

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 Graph

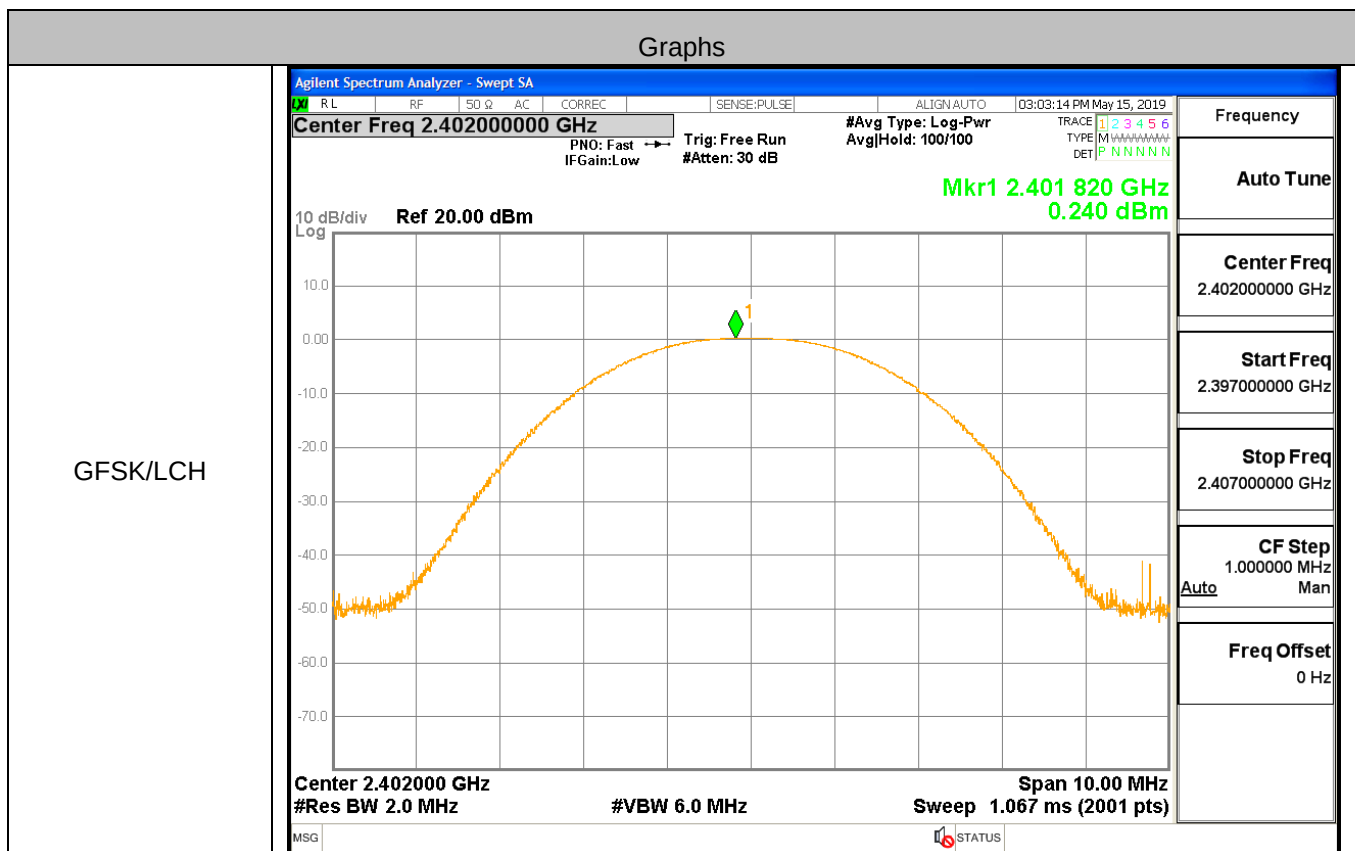




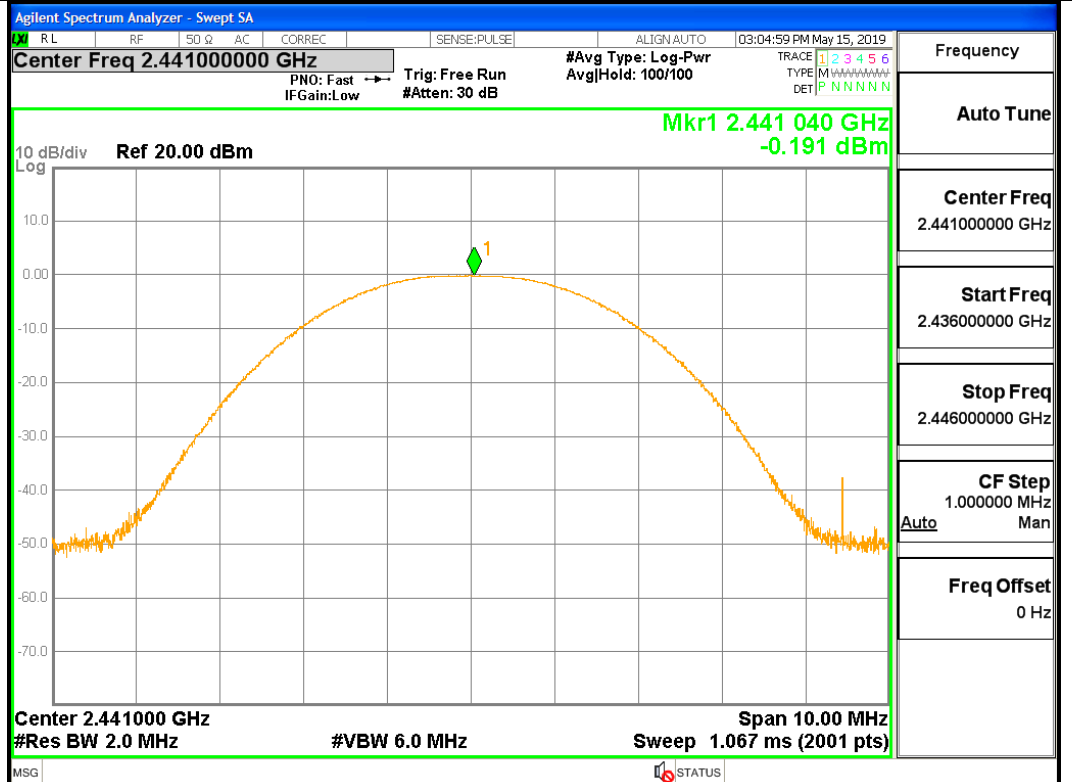
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.240	21	PASS
GFSK	MCH	-0.191	21	PASS
GFSK	HCH	-0.898	21	PASS
$\pi/4$ DQPSK	LCH	0.234	21	PASS
$\pi/4$ DQPSK	MCH	-0.198	21	PASS
$\pi/4$ DQPSK	HCH	-0.906	21	PASS
8DPSK	LCH	0.226	21	PASS
8DPSK	MCH	-0.195	21	PASS
8DPSK	HCH	-0.893	21	PASS

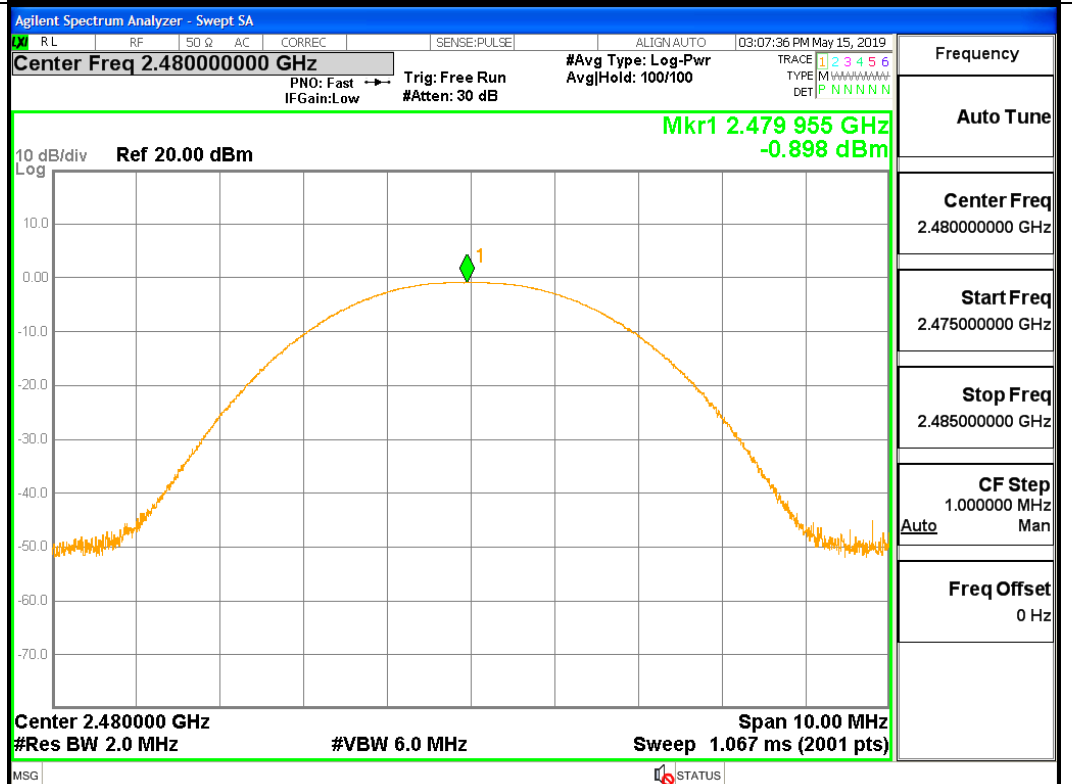
Test Graph

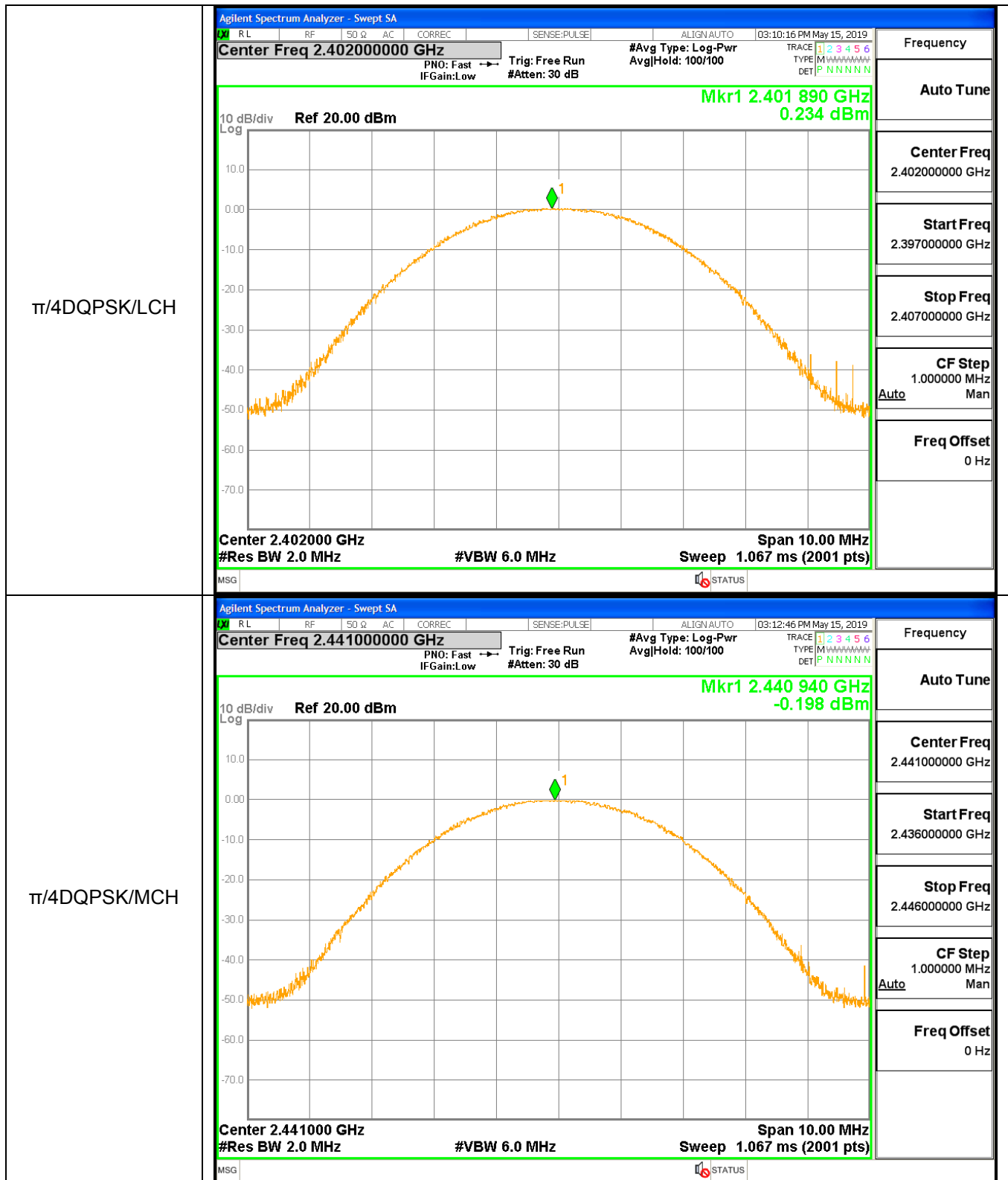


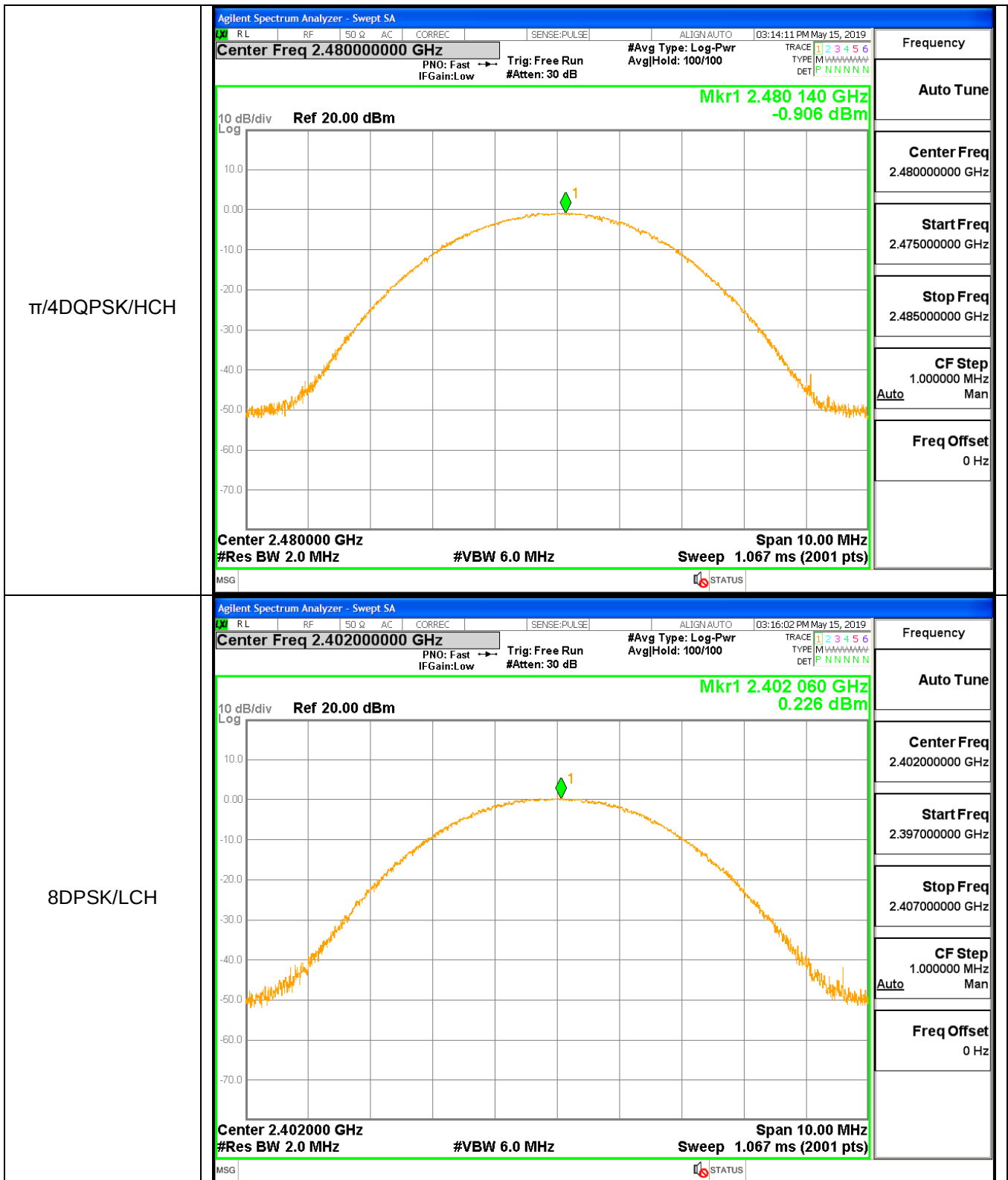
GFSK/MCH

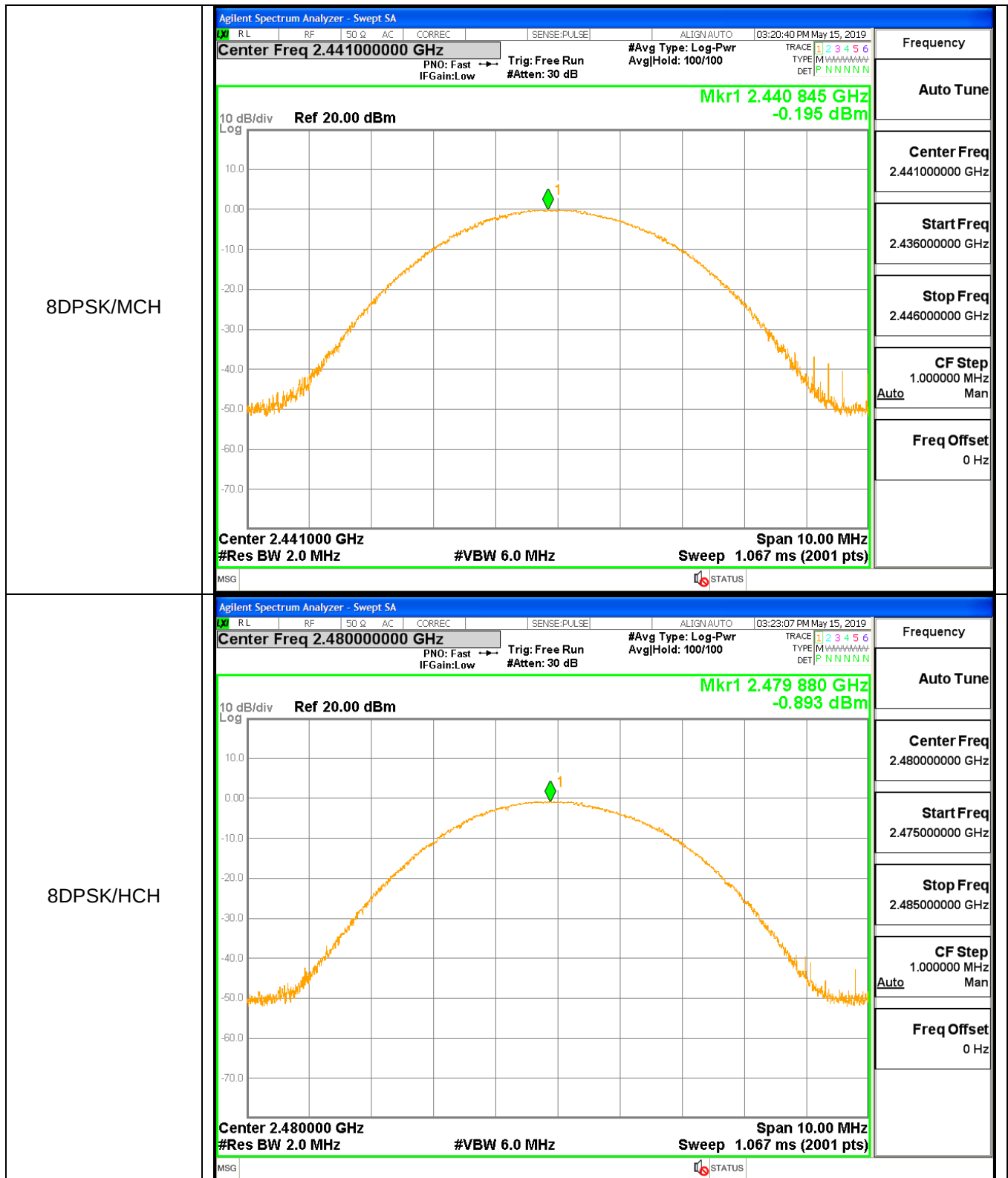


GFSK/HCH





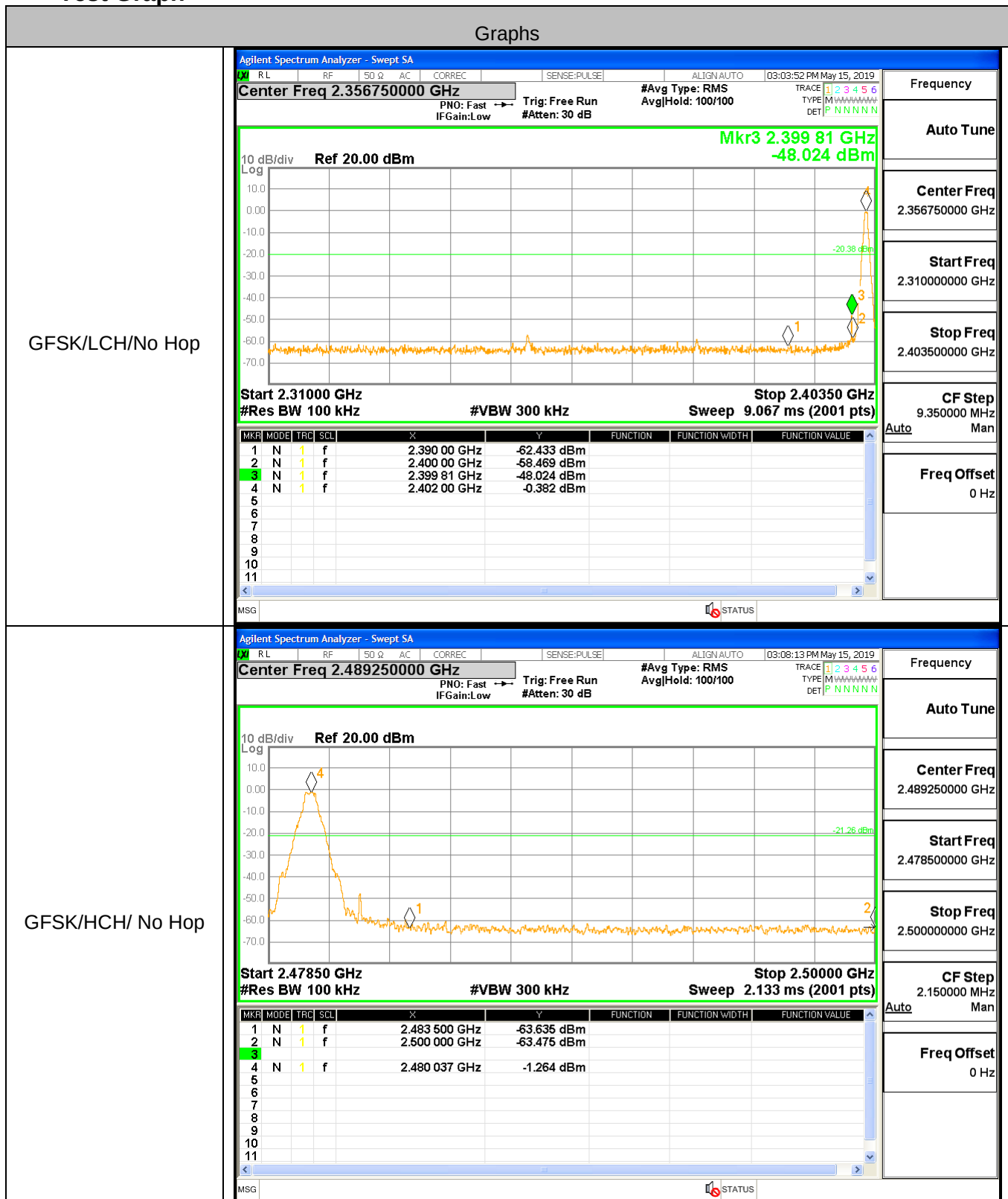




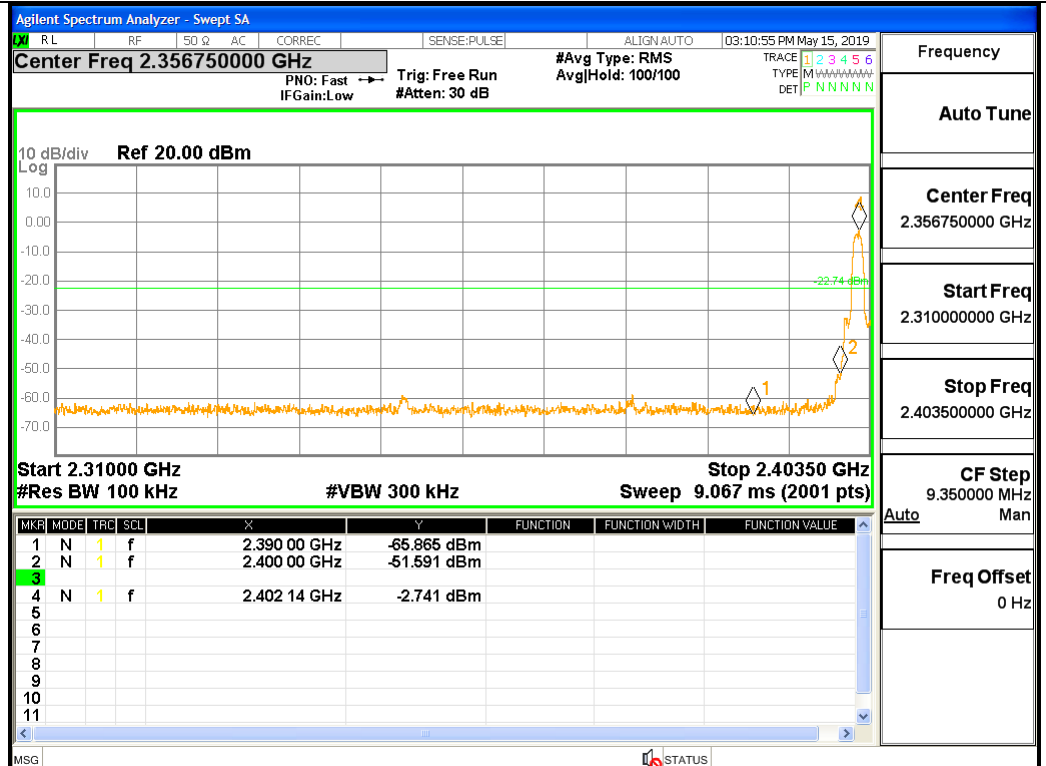
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2399.81	-0.38	-48.02	-20.38	Pass
1DH5	2480	2500	-1.26	-63.48	-21.26	Pass
2DH5	2402	2400	-2.74	-51.59	-22.74	Pass
2DH5	2480	2486.40	-3.62	-60.68	-23.62	Pass
3DH5	2402	2400	-0.95	-52.63	-20.95	Pass
3DH5	2480	2487.96	-1.03	-60.61	-21.03	Pass
1DH5-Hopping	2402	2391.93	-0.08	-57.09	-20.08	Pass
1DH5-Hopping	2480	2488	-0.58	-57.21	-20.58	Pass
2DH5-Hopping	2402	2399.79	-0.46	-51.76	-20.46	Pass
2DH5-Hopping	2480	2500	-0.72	-62.74	-20.72	Pass
3DH5-Hopping	2402	2399.91	-0.24	-50.59	-20.24	Pass
3DH5-Hopping	2480	2483.5	-2.90	-62.24	-22.90	Pass

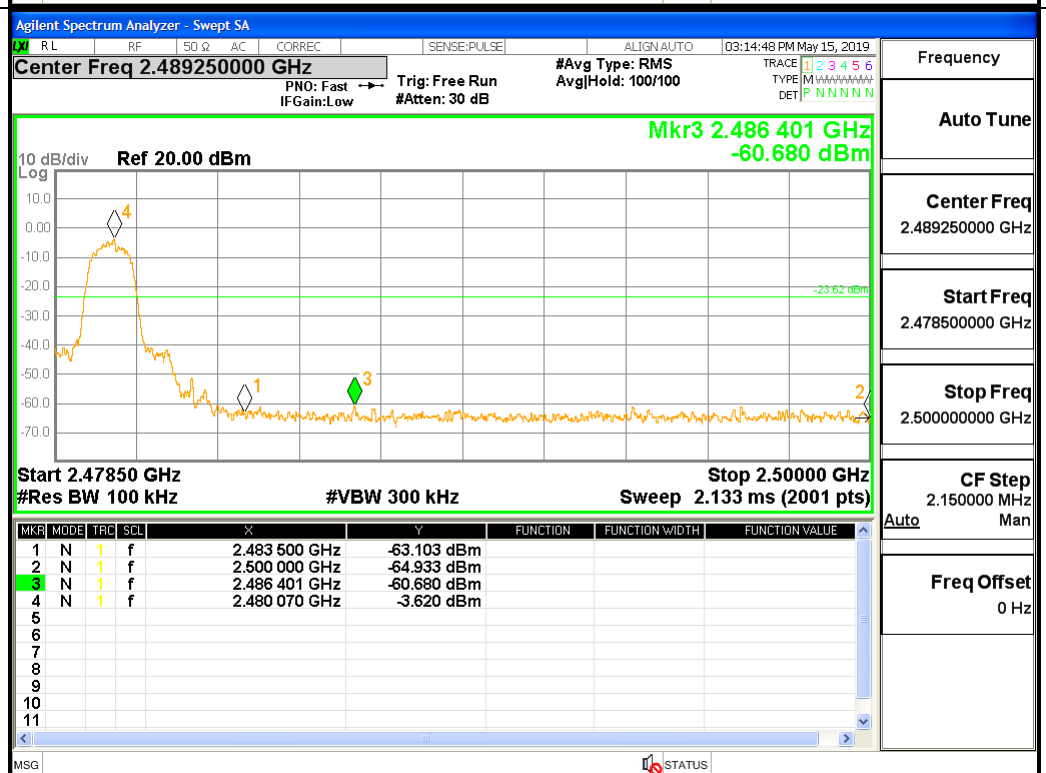
Test Graph



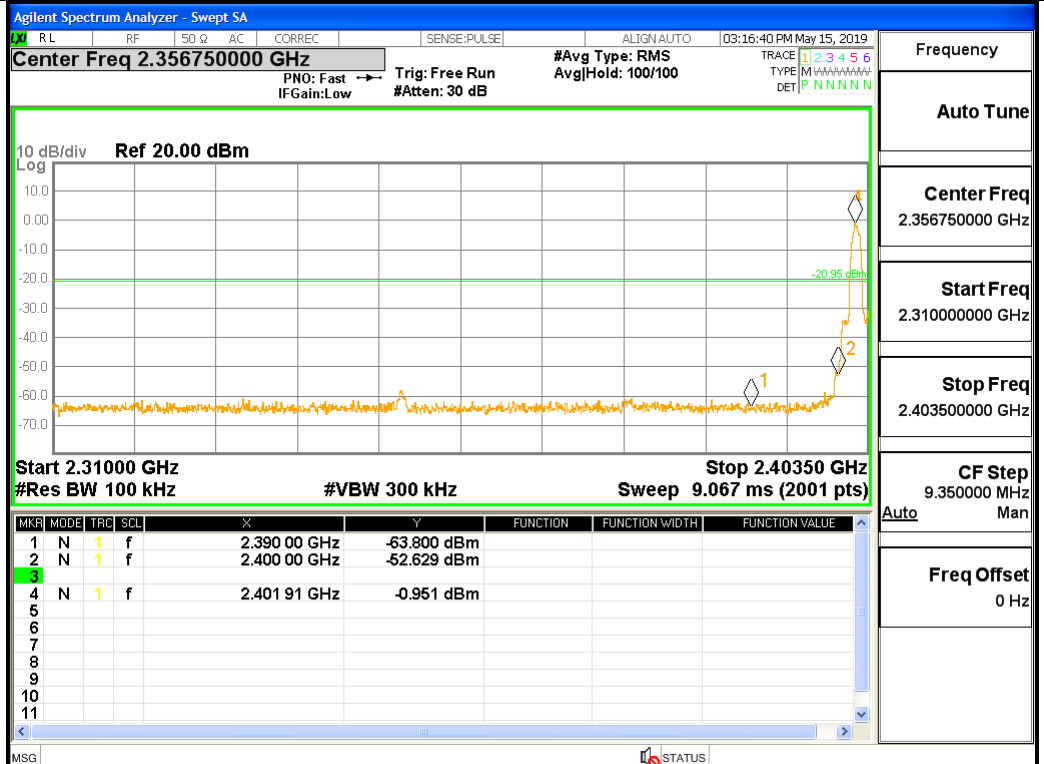
$\pi/4$ DQPSK/LCH/No
Hop



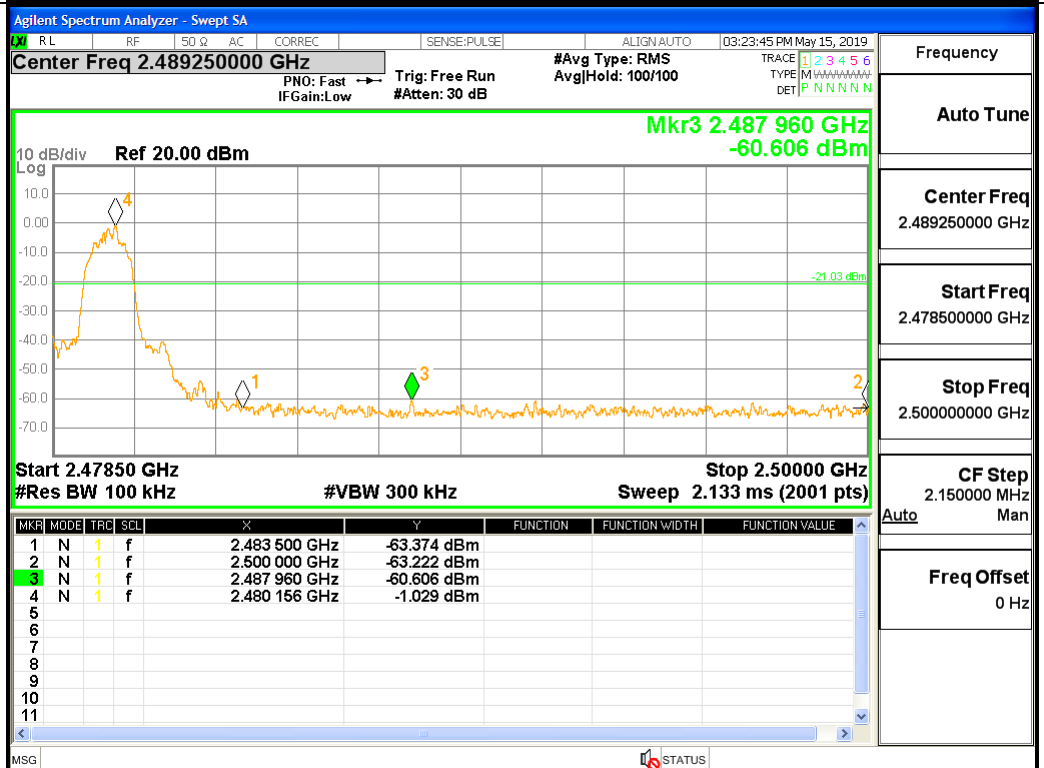
$\pi/4$ DQPSK/HCH/No
Hop



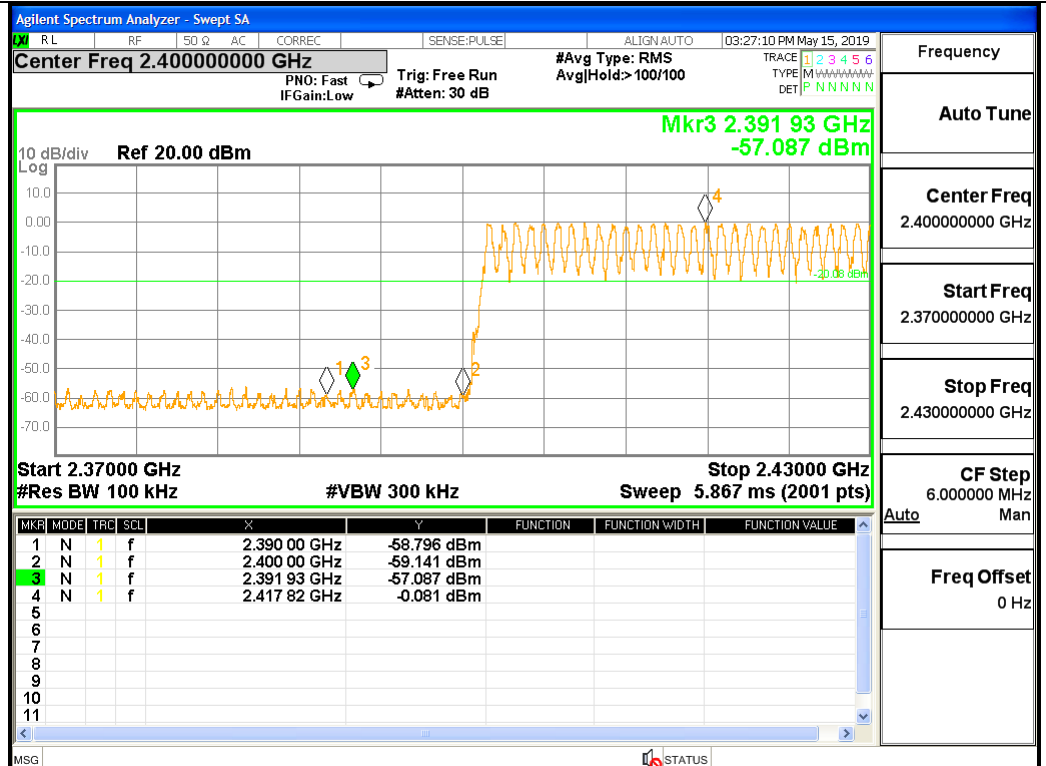
8DPSK/LCH/No Hop



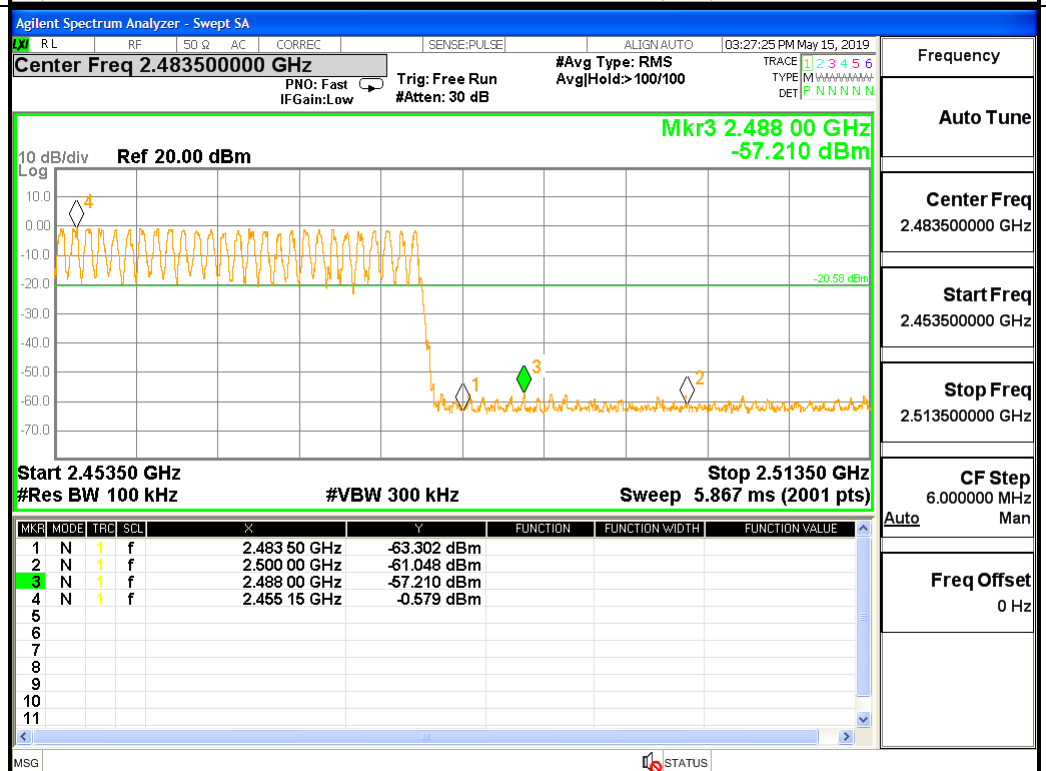
8DPSK/HCH/ No Hop

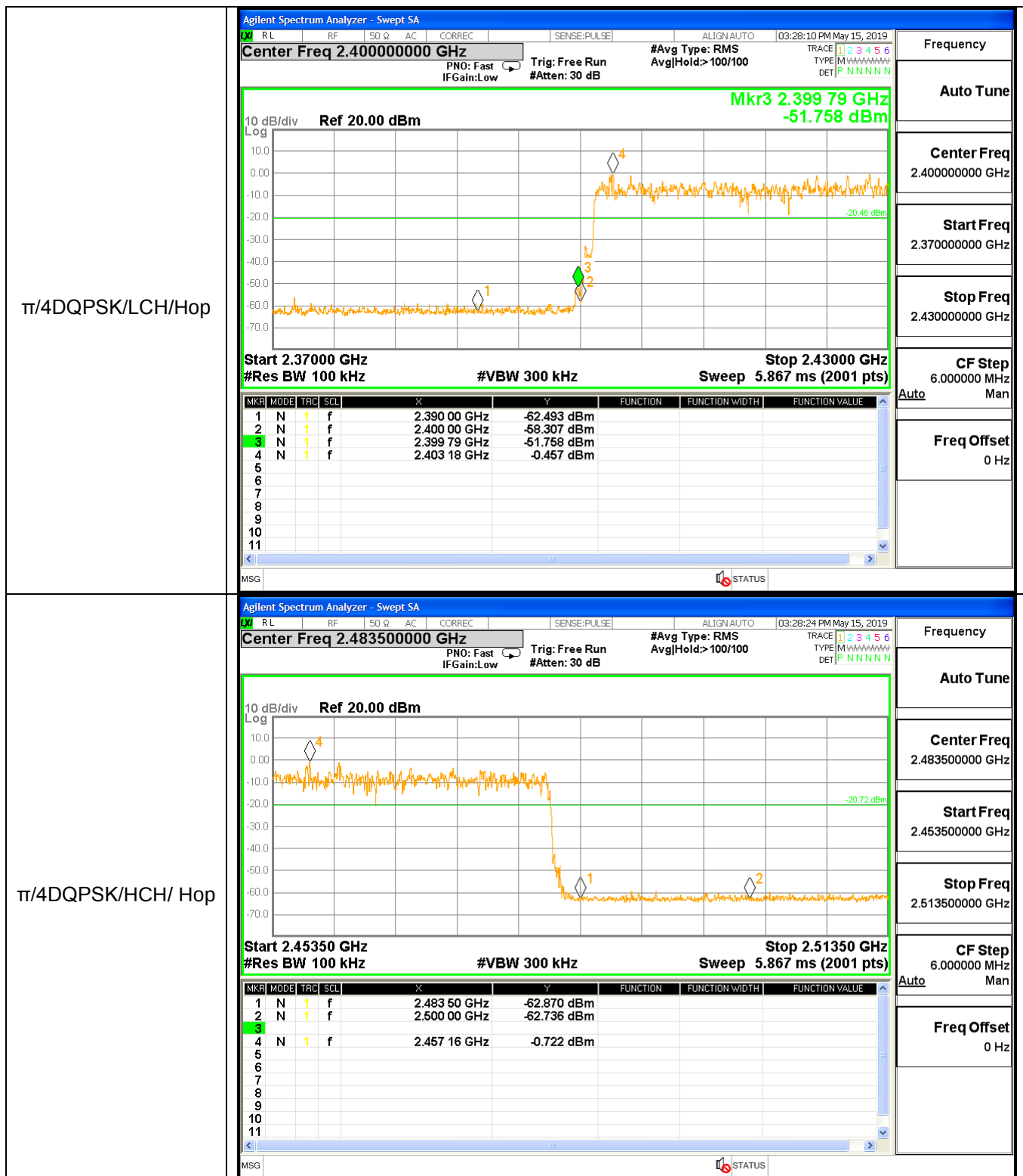


GFSK/LCH/Hop

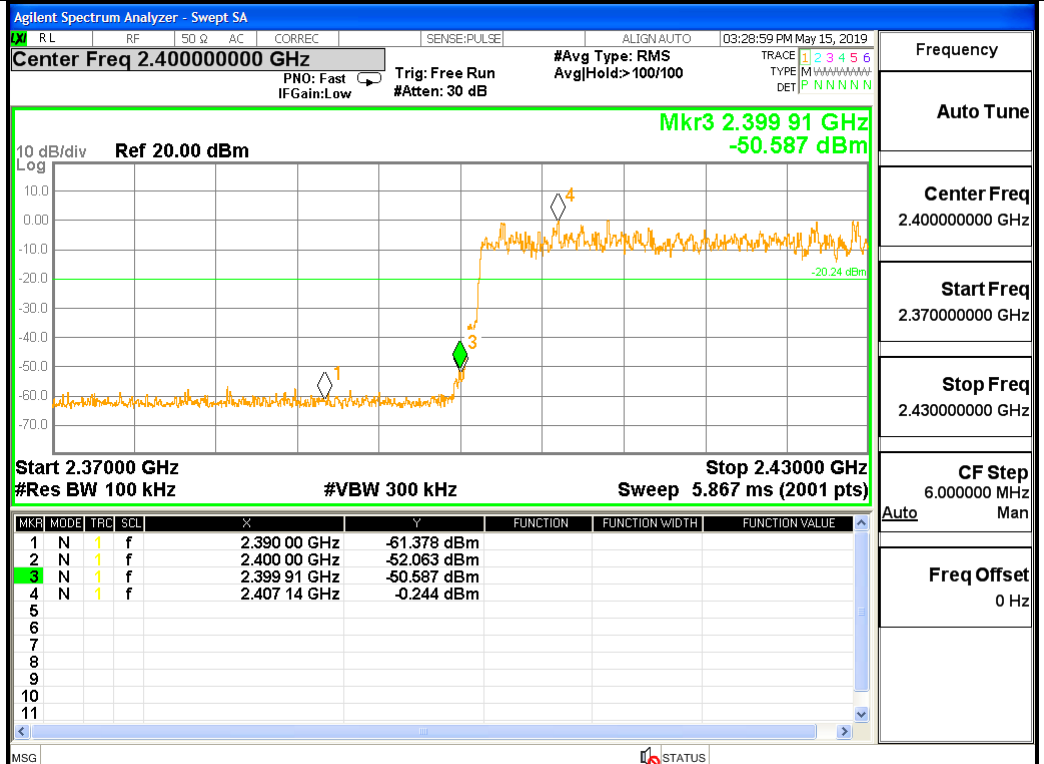


GFSK/HCH/Hop

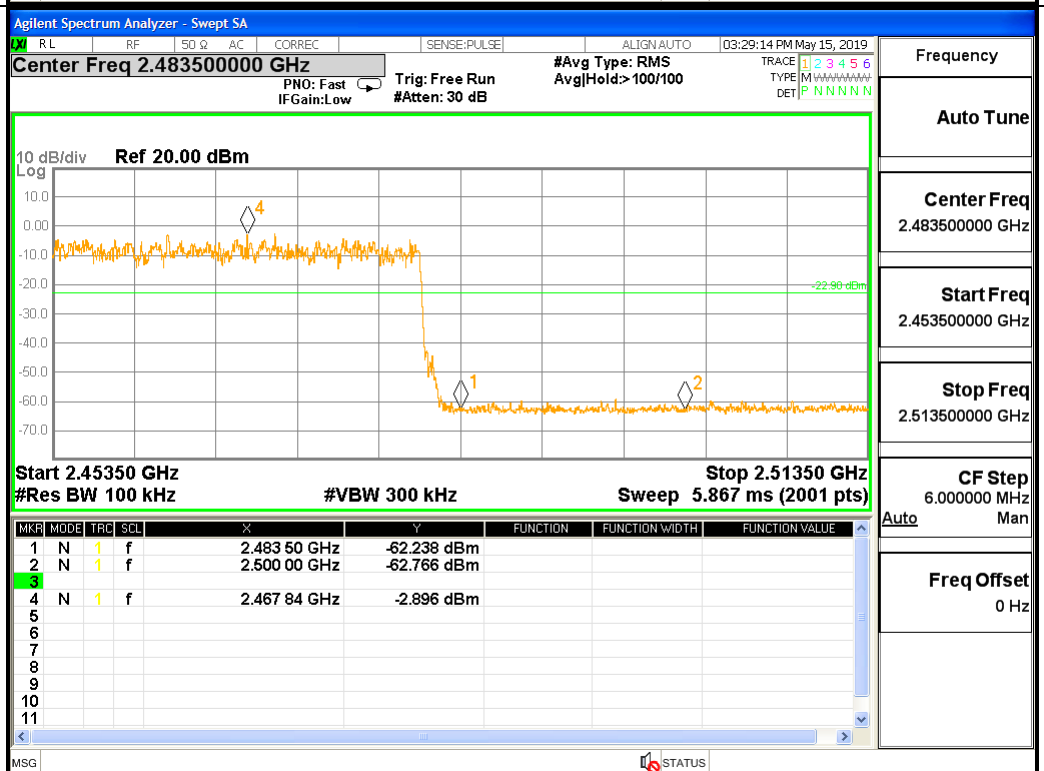




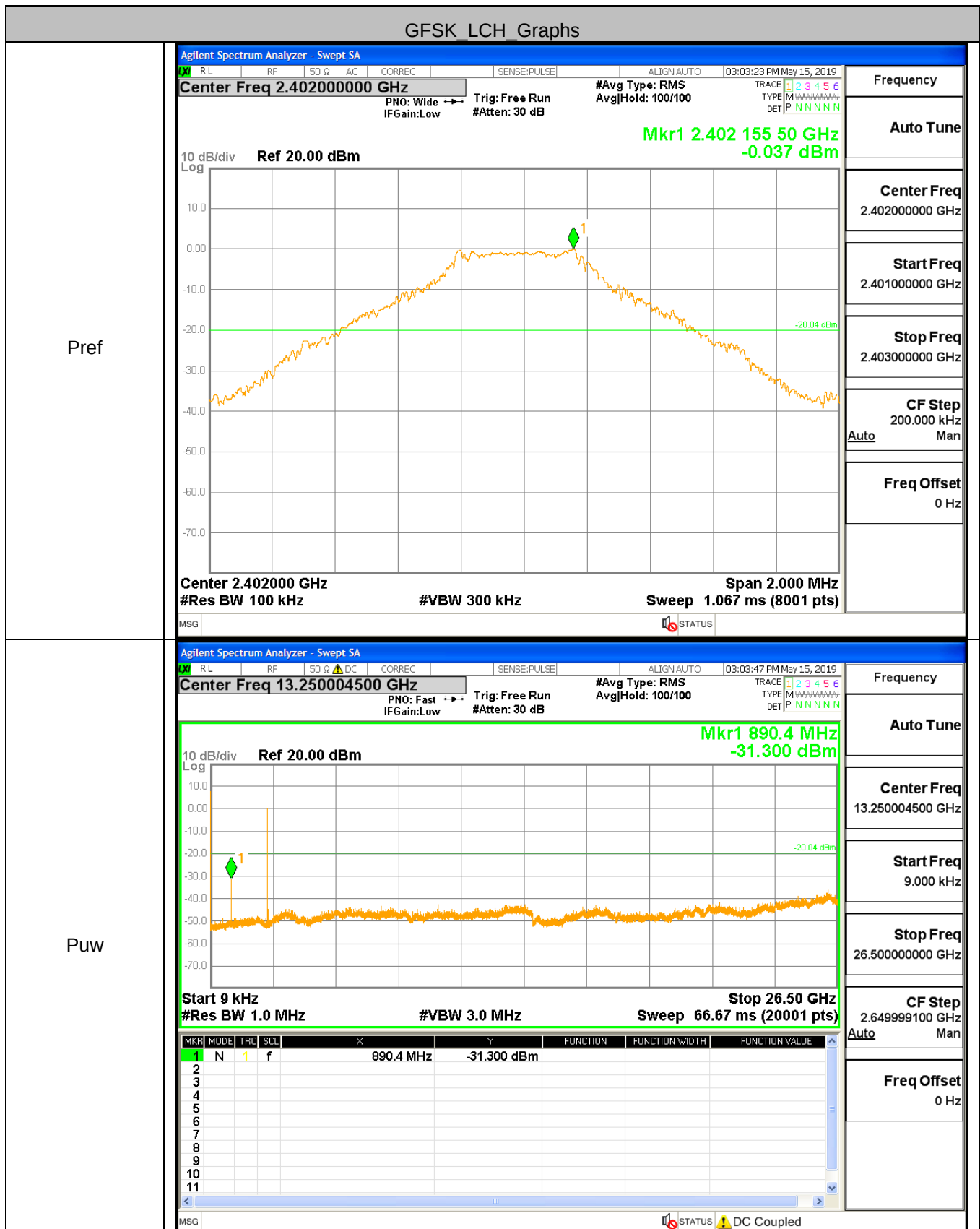
8DPSK/LCH/Hop

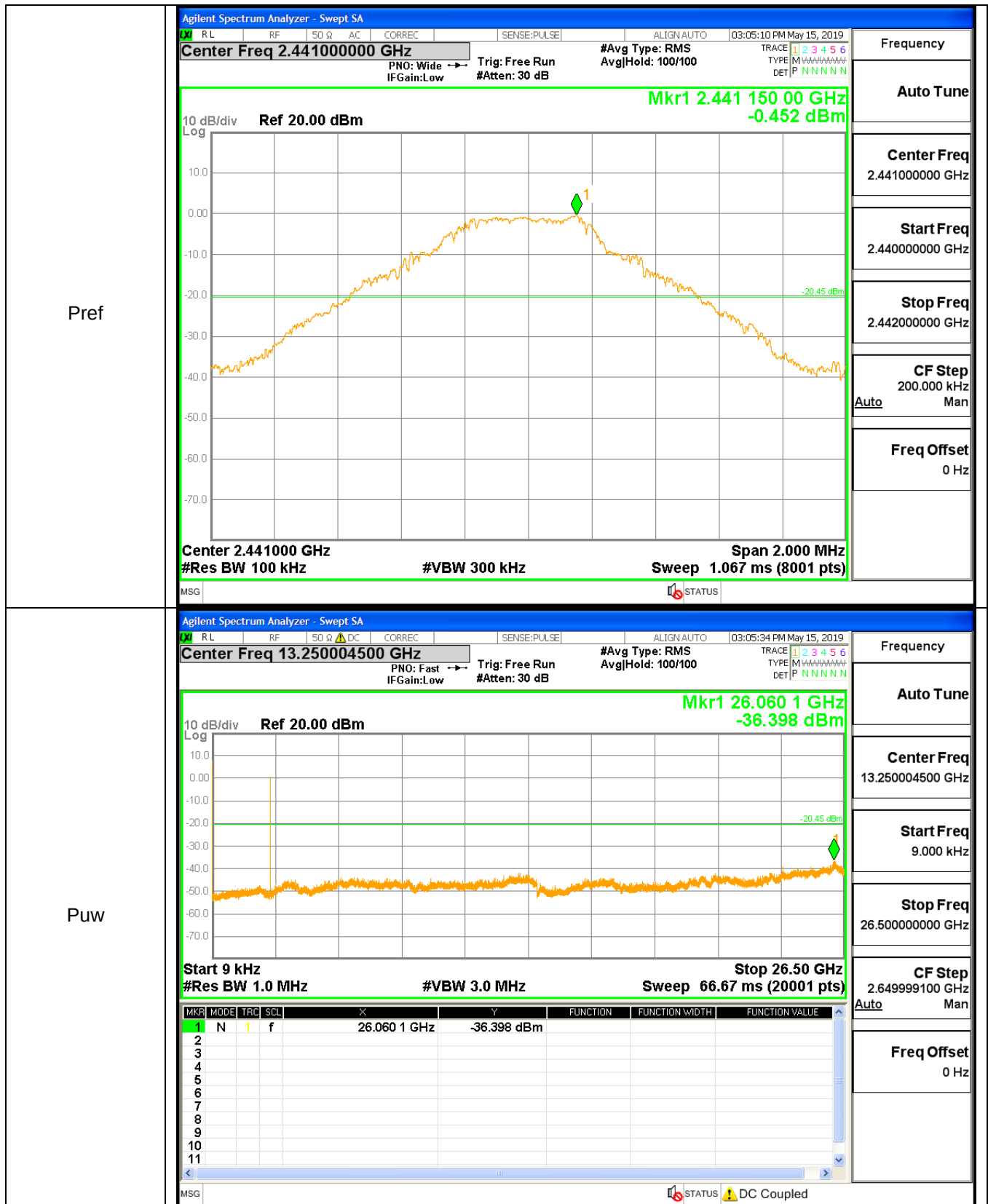


8DPSK/HCH/Hop



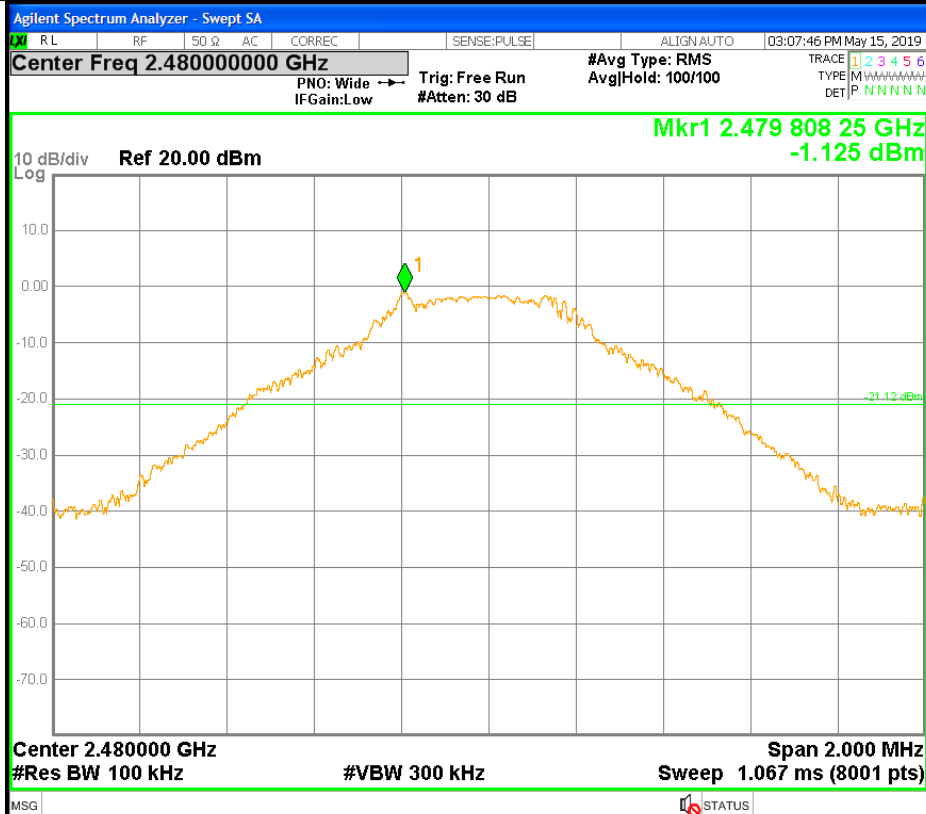
A.7 RF Conducted Spurious Emissions Test Graph





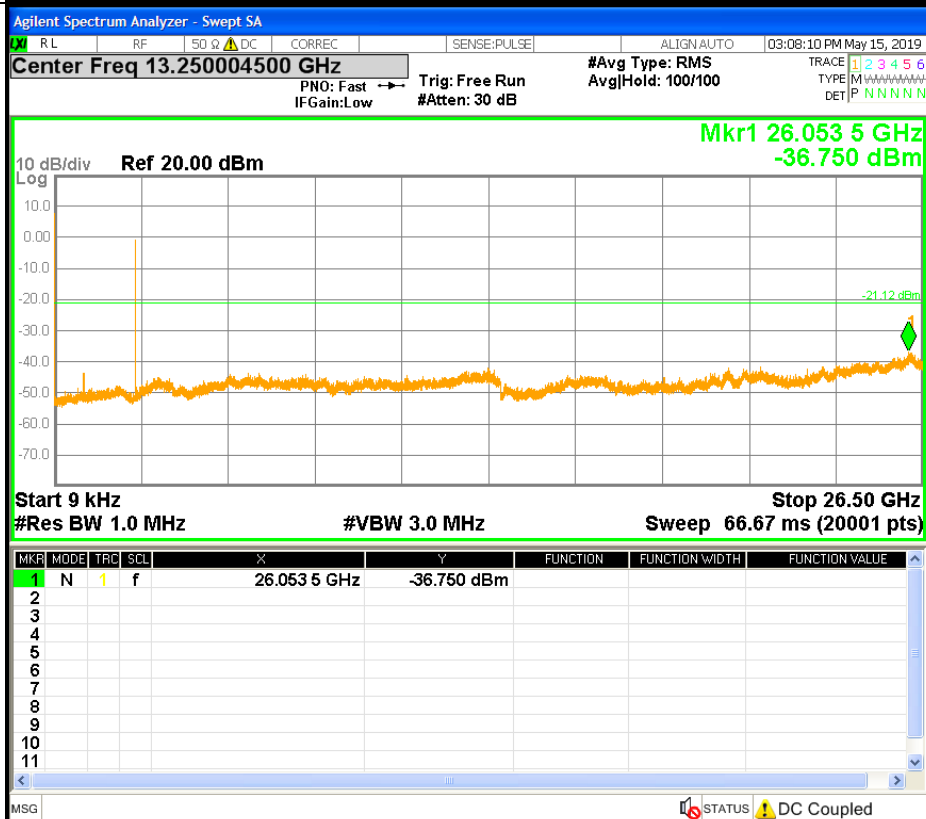
GFSK_HCH_Graphs

Pref

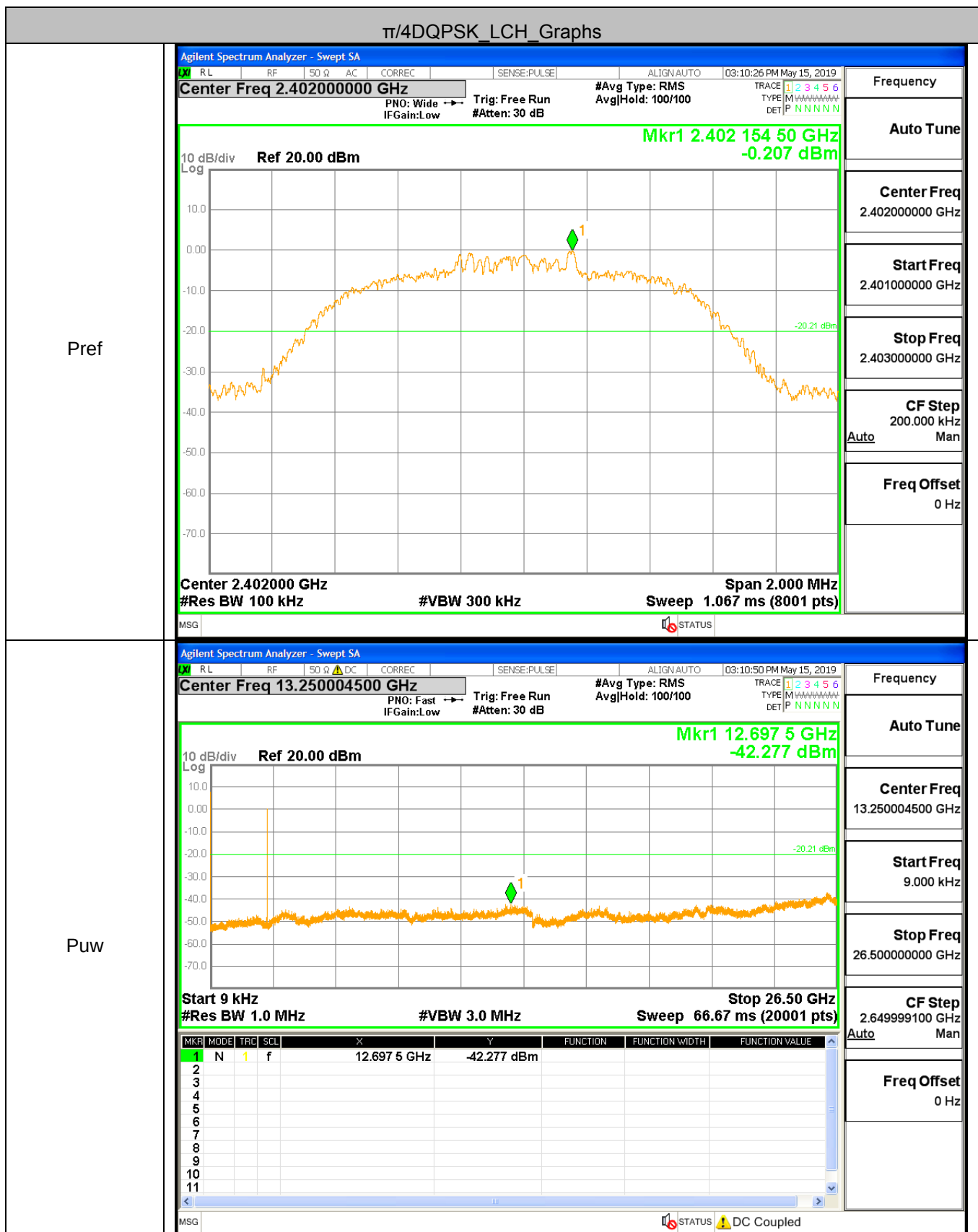


Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.479000000 GHz
Stop Freq 2.481000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

Puw

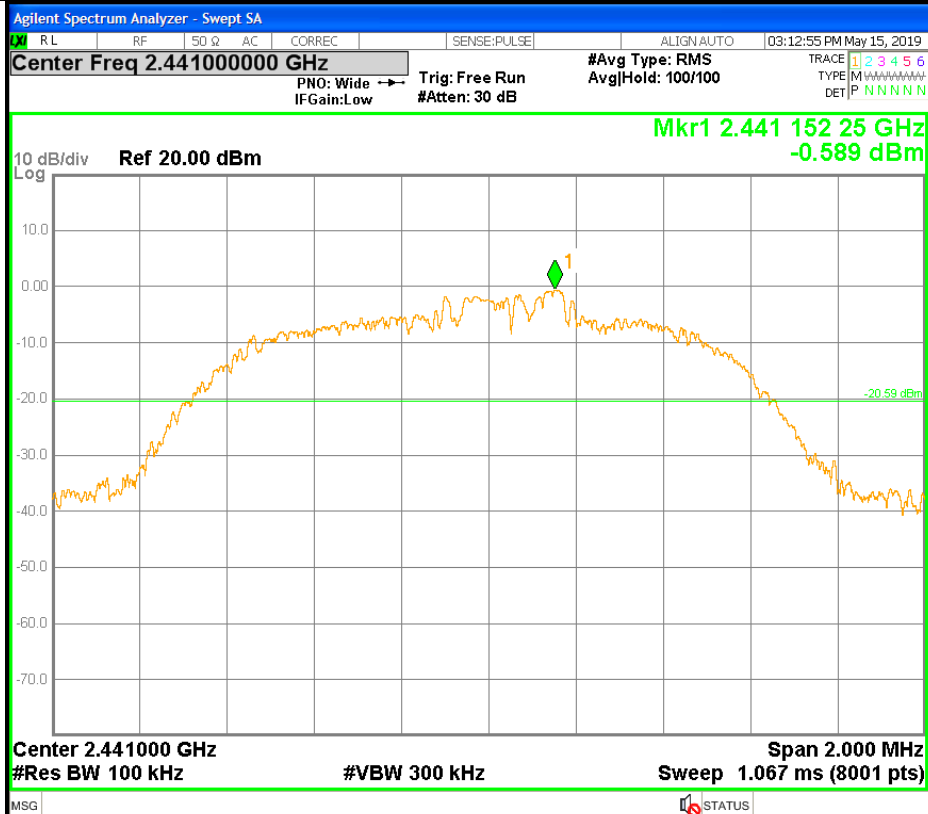


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz



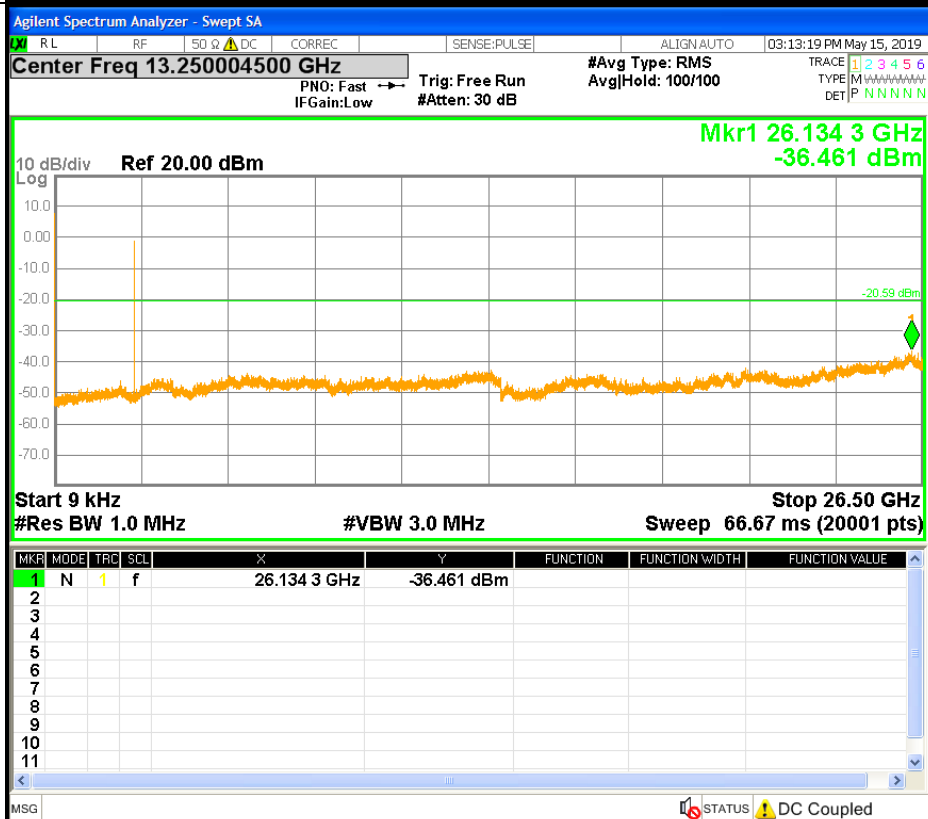
$\pi/4$ DQPSK_MCH_Graphs

Pref



Frequency
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Center Freq 2.441000000 GHz
Start Freq 2.440000000 GHz
Stop Freq 2.442000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

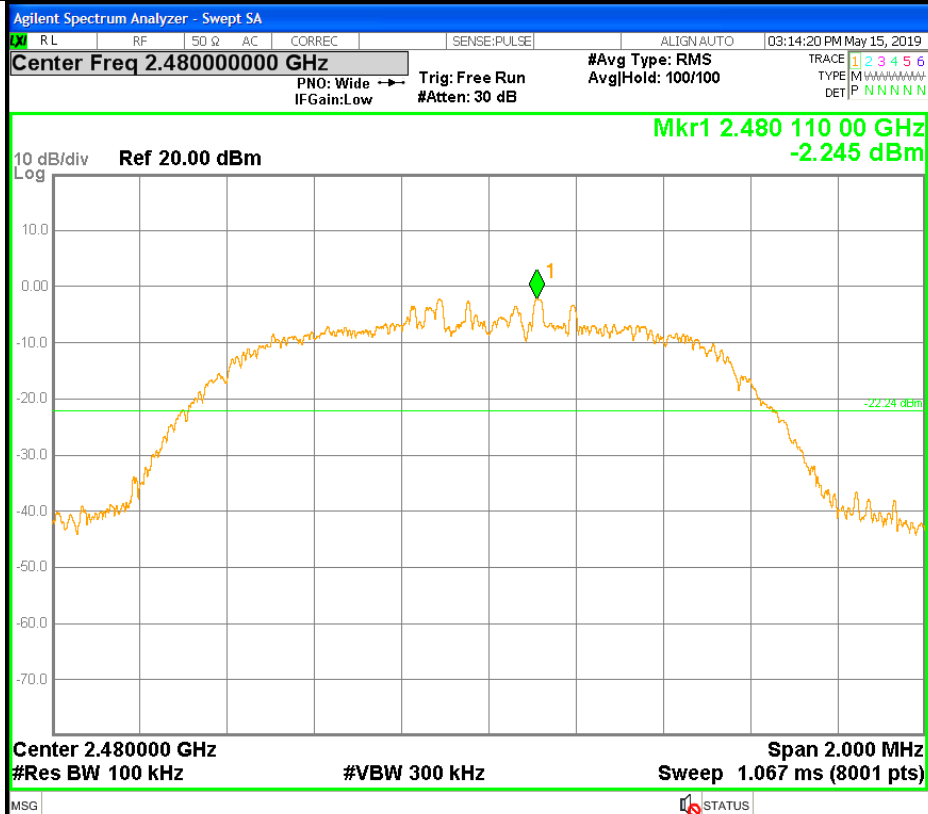
Puw



Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK_HCH_Graphs

Pref



Frequency

Auto Tune

Center Freq
2.480000000 GHz

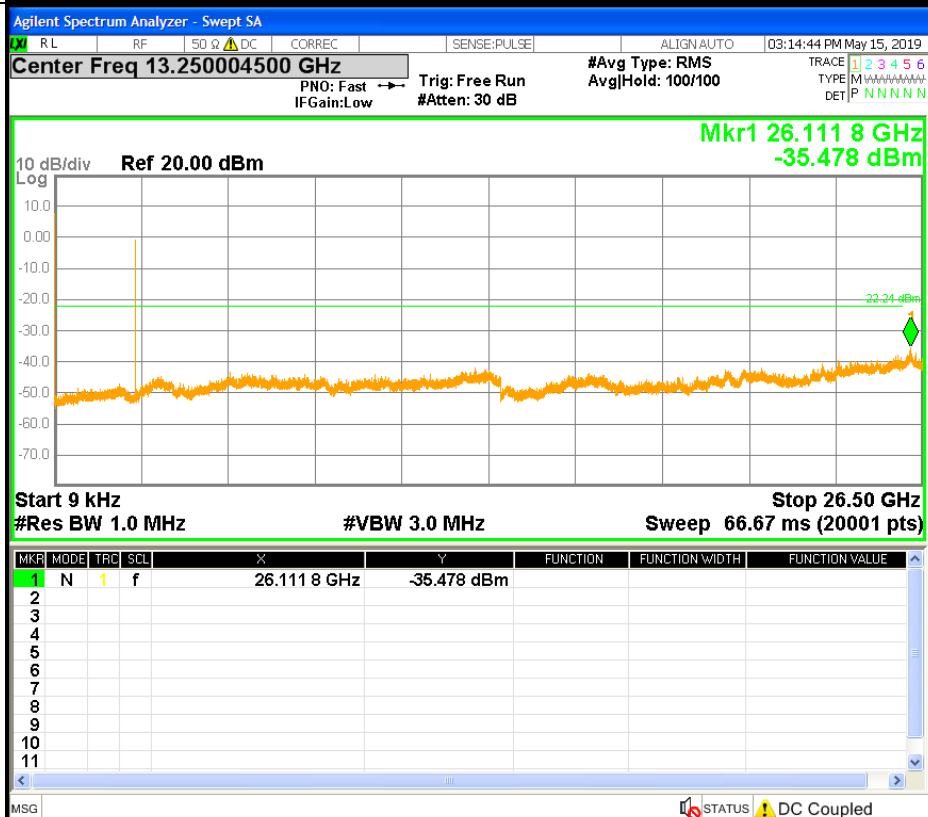
Start Freq
2.479000000 GHz

Stop Freq
2.481000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

Puw



Frequency

Auto Tune

Center Freq
13.250004500 GHz

Start Freq
9.000 kHz

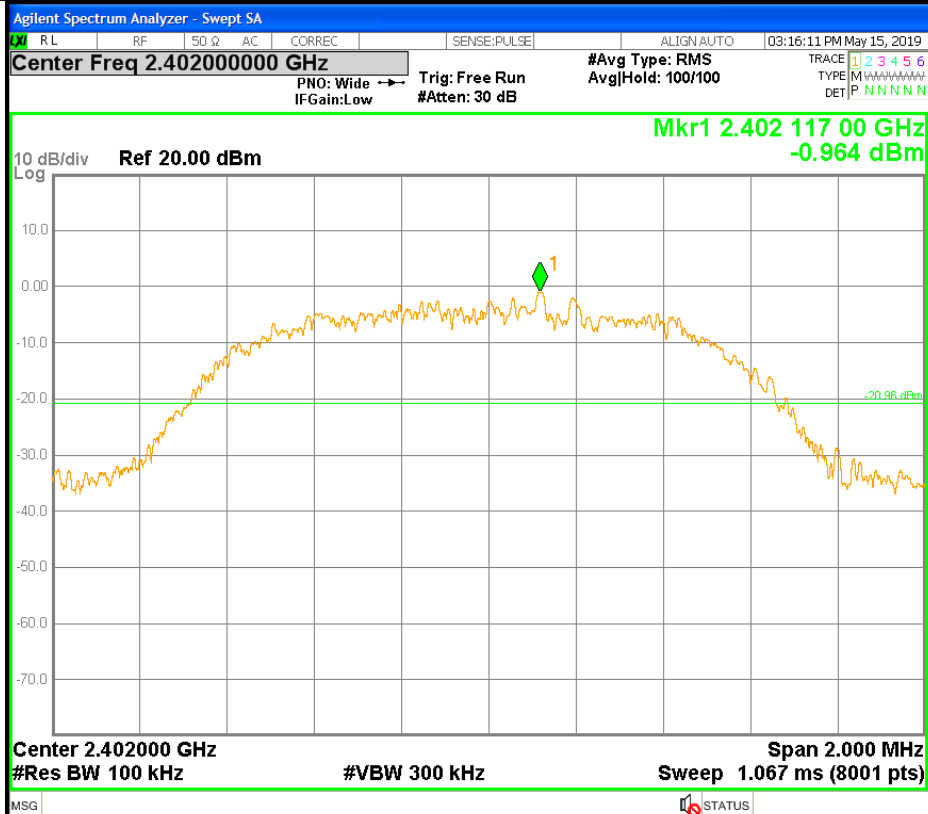
Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

Freq Offset
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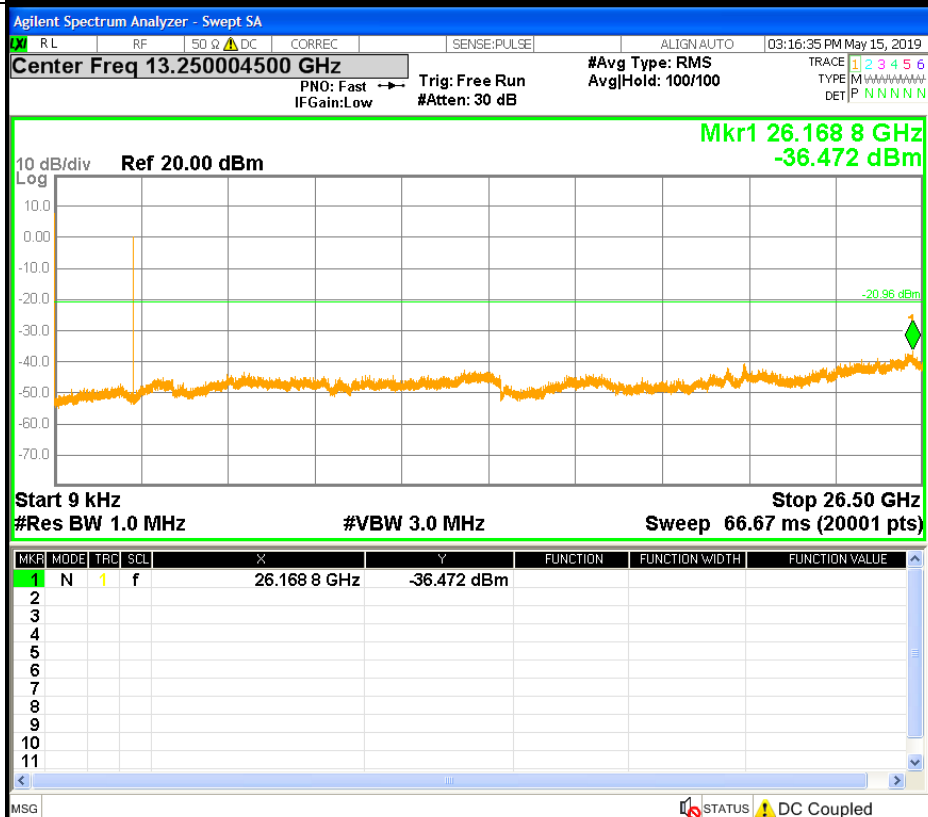
8DPSK LCH_Graphs

Pref



Frequency
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Center Freq 2.402000000 GHz
Start Freq 2.401000000 GHz
Stop Freq 2.403000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

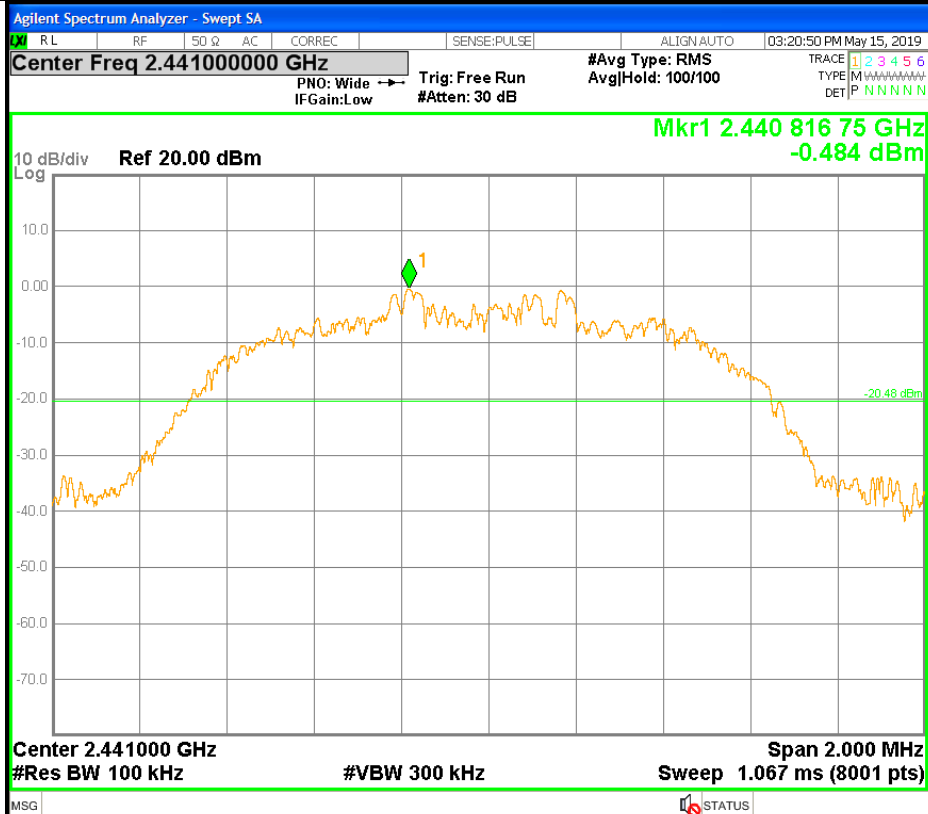
Puw



Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

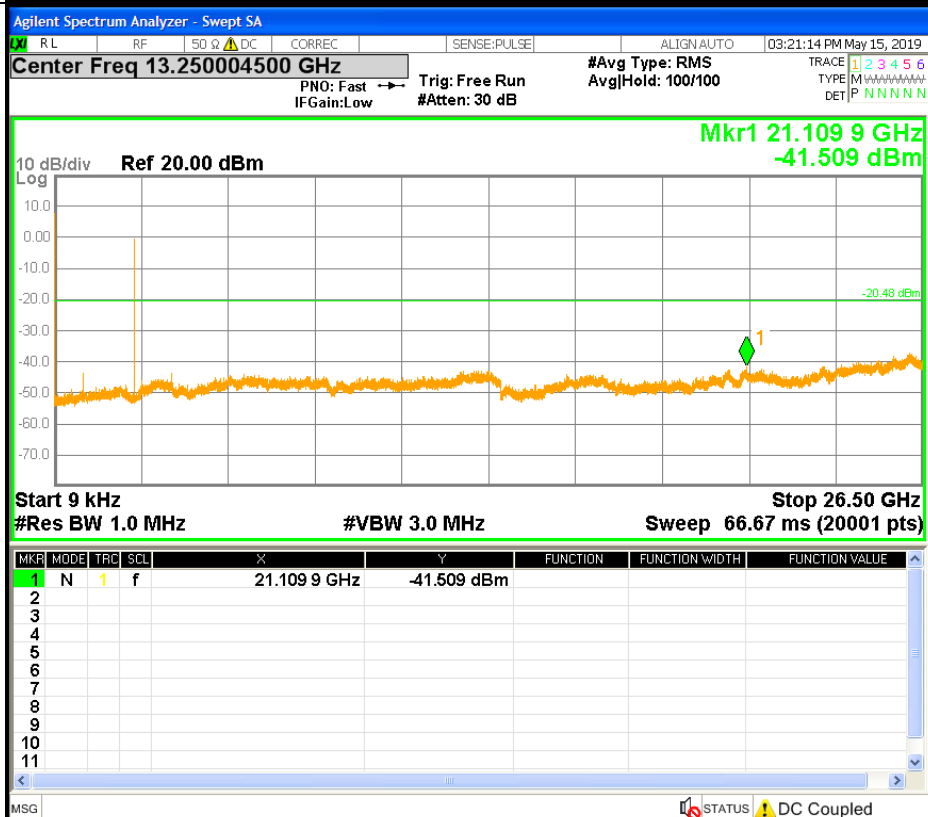
8DPSK_MCH_Graphs

Pref



Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.440000000 GHz
Stop Freq 2.442000000 GHz
CF Step 200.000 kHz Auto Man
Freq Offset 0 Hz

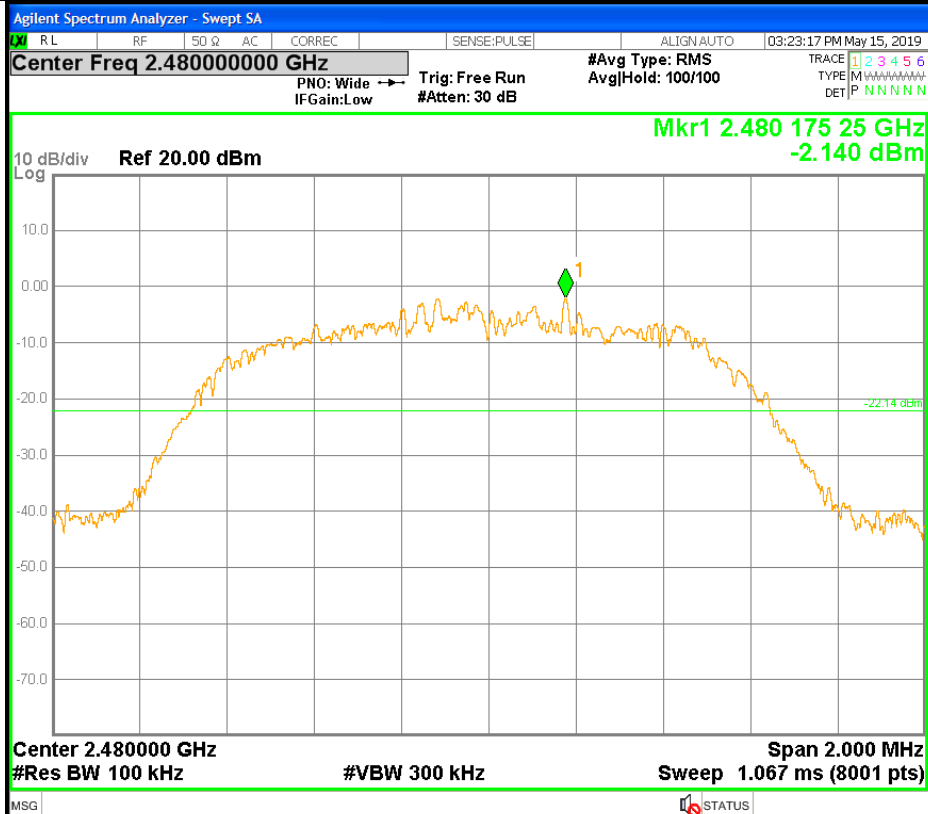
Puw



Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

8DPSK_HCH_Graphs

Pref



Frequency

Auto Tune

Center Freq
2.480000000 GHz

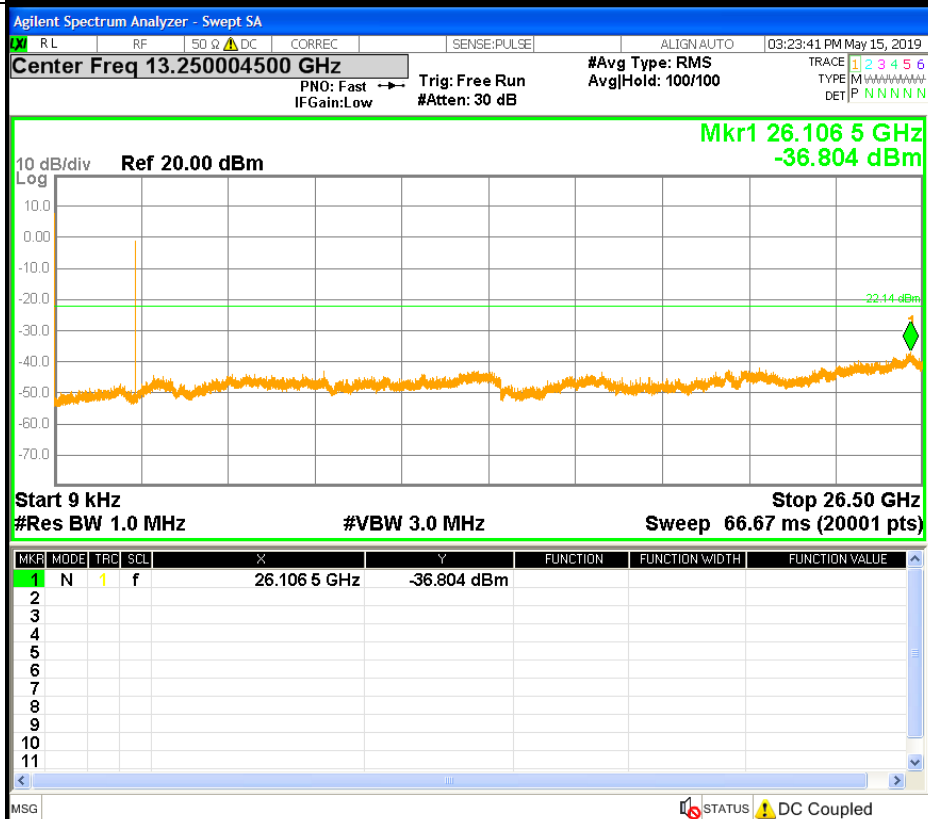
Start Freq
2.479000000 GHz

Stop Freq
2.481000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

Puw



Frequency

Auto Tune

Center Freq
13.250004500 GHz

Start Freq
9.000 kHz

Stop Freq
26.500000000 GHz

CF Step
2.649999100 GHz
Auto Man

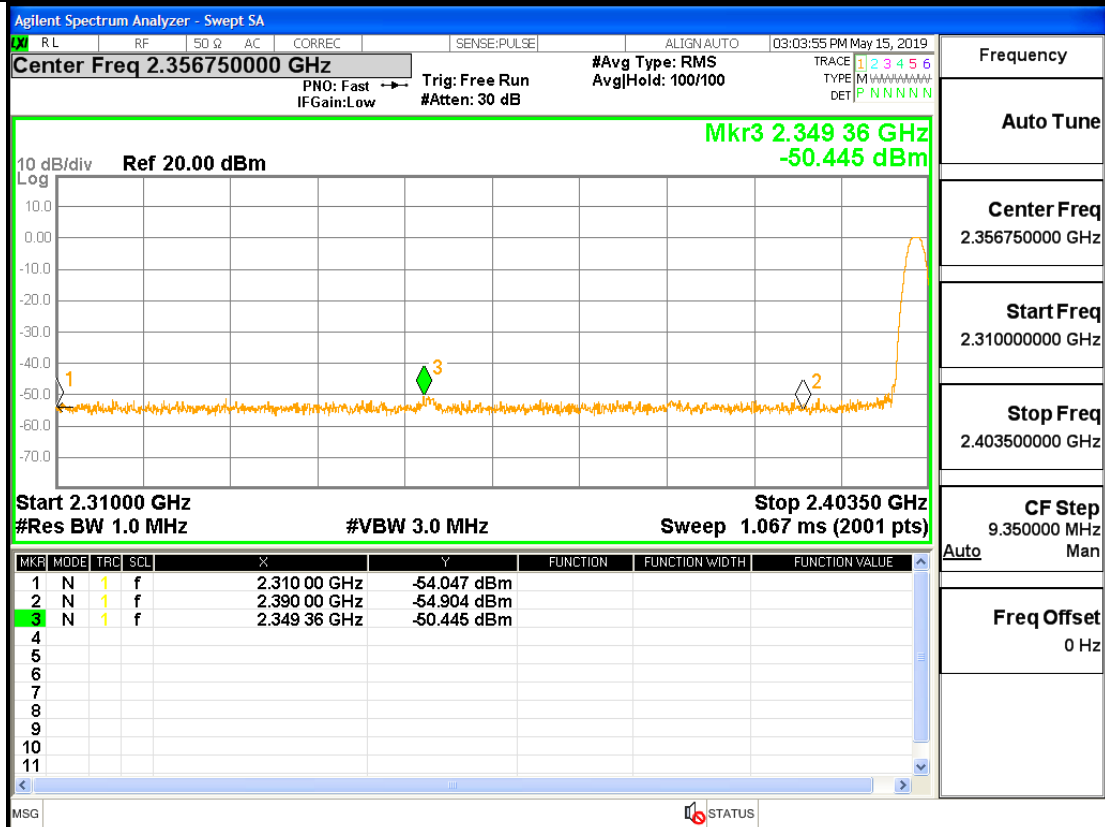
Freq Offset
0 Hz

A.8 Restrict-band band-edge measurements

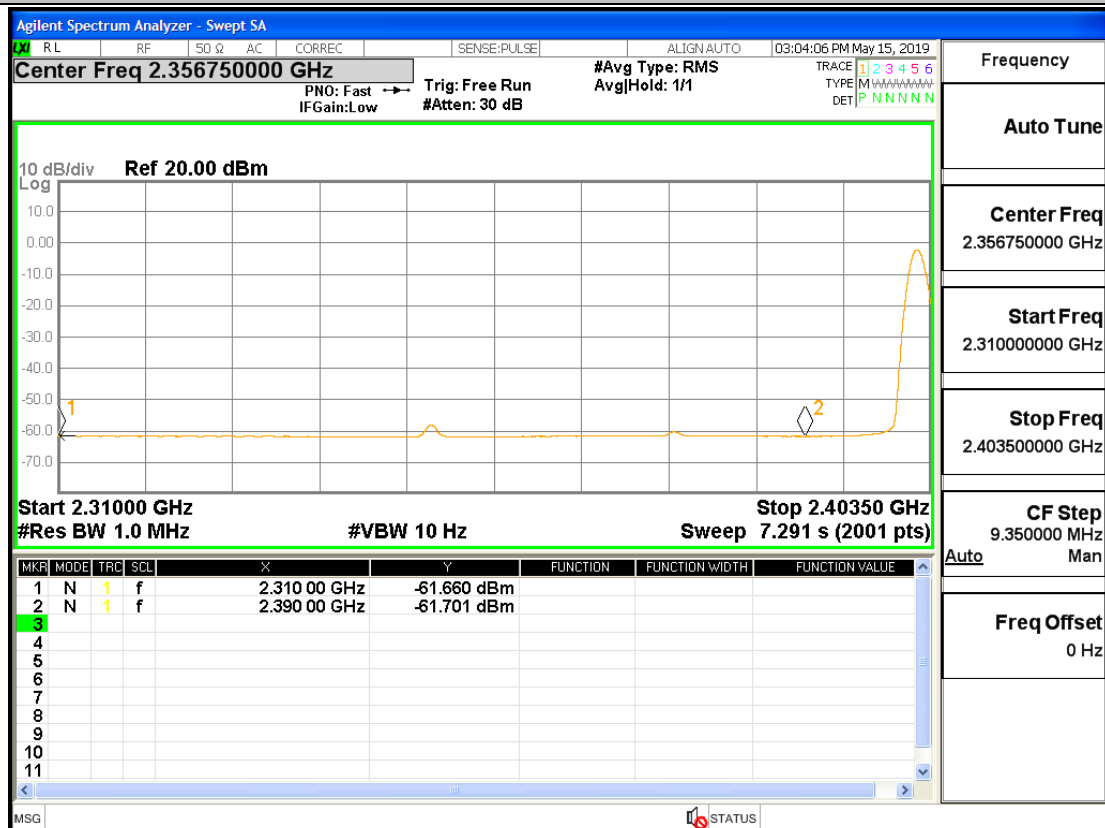
Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2349.36	3.10	0.00	-50.45	47.86	74	Pass
1DH5	2480	2483.76	3.10	0.00	-47.47	50.83	74	Pass
2DH5	2402	2350.25	3.10	0.00	-50.63	47.67	74	Pass
2DH5	2480	2483.50	3.10	0.00	-53.04	45.26	74	Pass
3DH5	2402	2350.06	3.10	0.00	-50.52	47.79	74	Pass
3DH5	2480	2483.54	3.10	0.00	-46.08	52.22	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310.00	3.10	0.00	-61.66	36.64	54	Pass
1DH5	2480	2483.50	3.10	0.00	-59.34	38.96	54	Pass
2DH5	2402	2310.00	3.10	0.00	-61.76	36.54	54	Pass
2DH5	2480	2483.50	3.10	0.00	-59.24	39.06	54	Pass
3DH5	2402	2310.00	3.10	0.00	-61.77	36.53	54	Pass
3DH5	2480	2483.50	3.10	0.00	-59.20	39.10	54	Pass

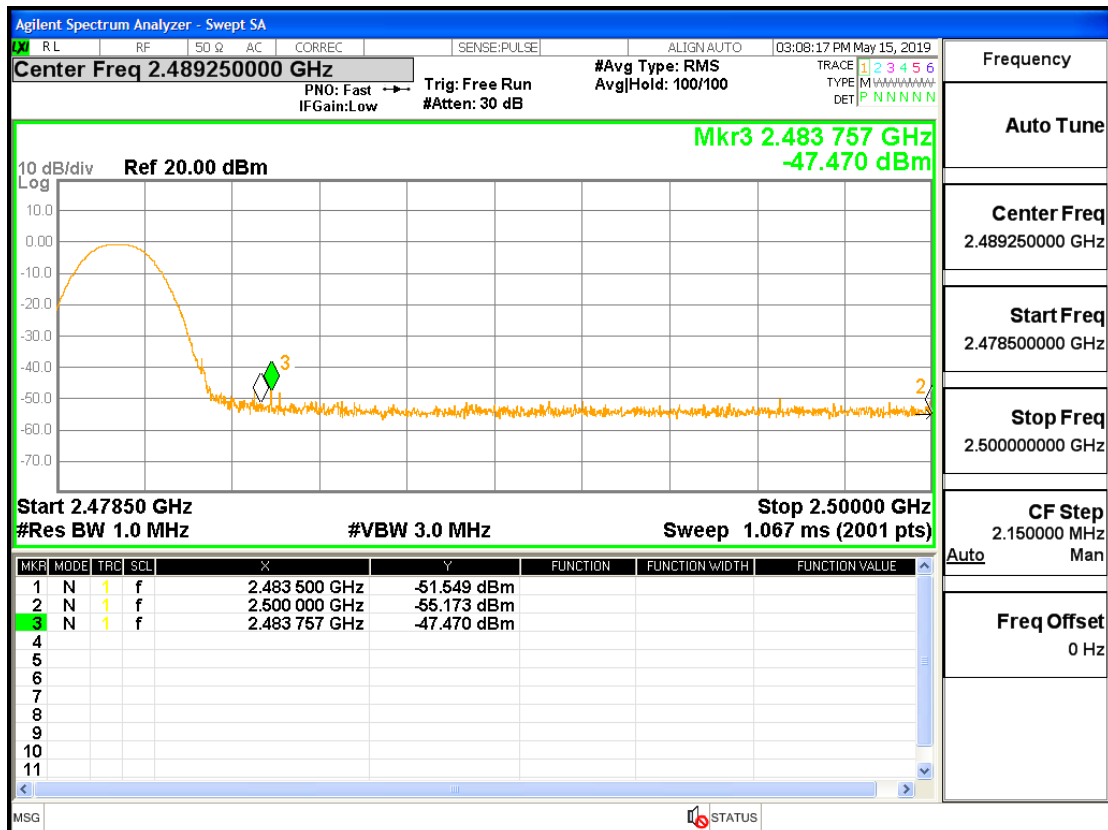
Restrict-band band-edge measurements_2402_PEAK_DH5



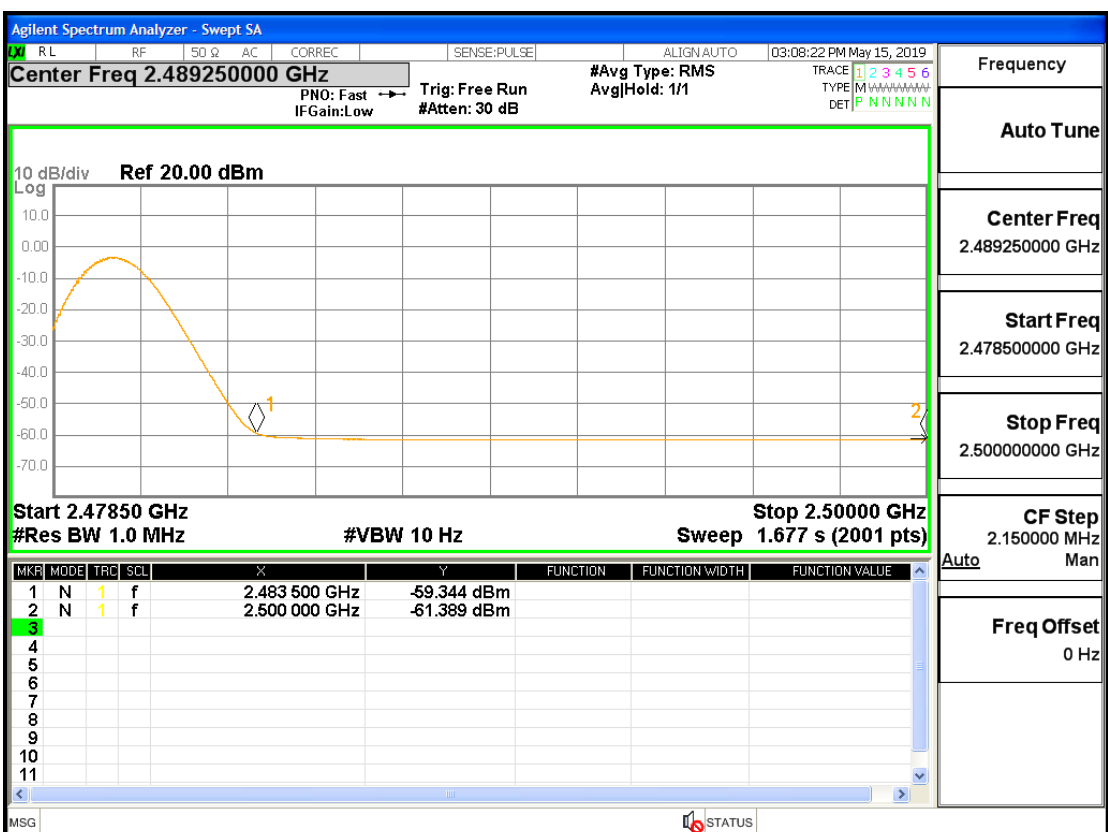
Restrict-band band-edge measurements_2402_AV_DH5



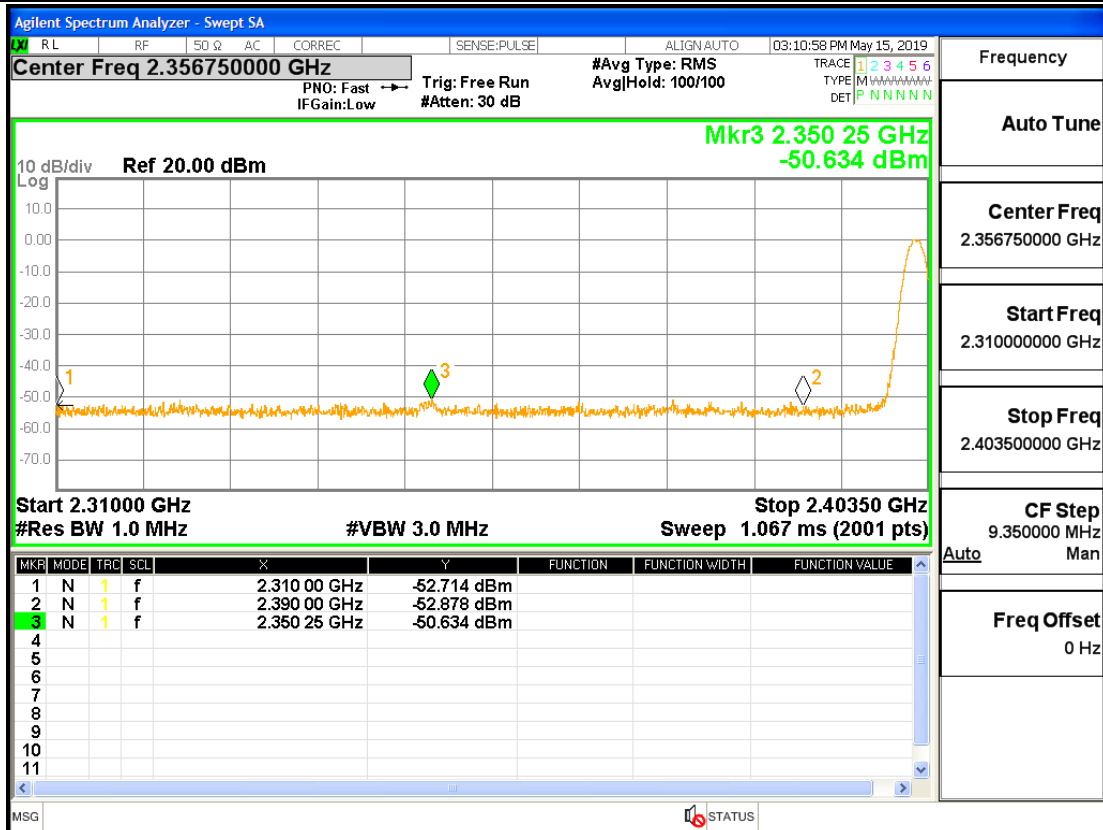
Restrict-band band-edge measurements_2480_PEAK_DH5



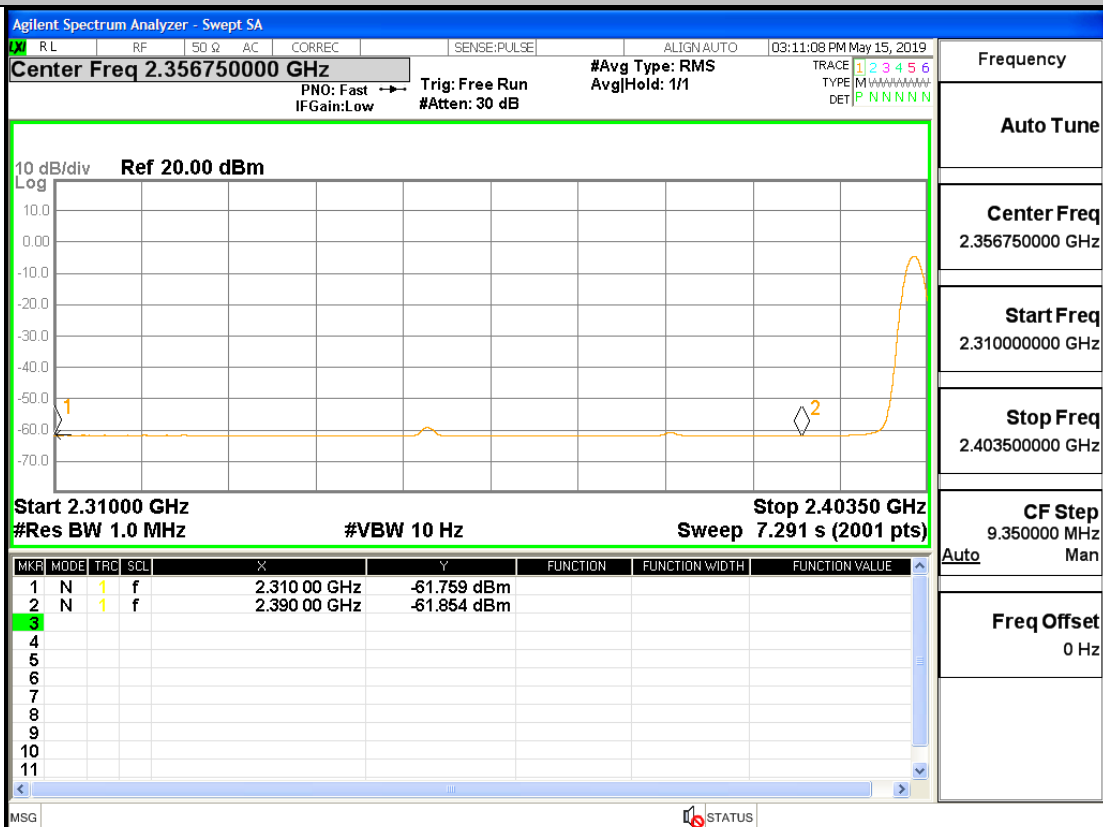
Restrict-band band-edge measurements_2480_AV_DH5



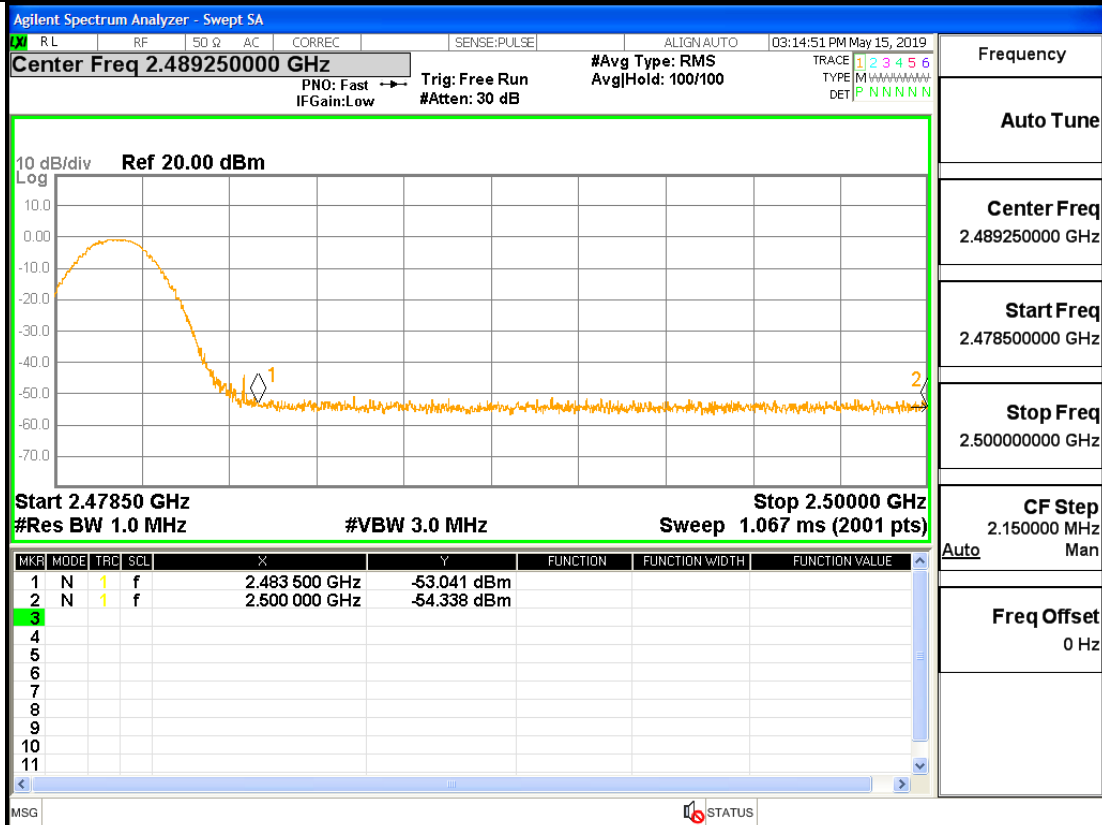
Restrict-band band-edge measurements_2402_PEAK_2DH5



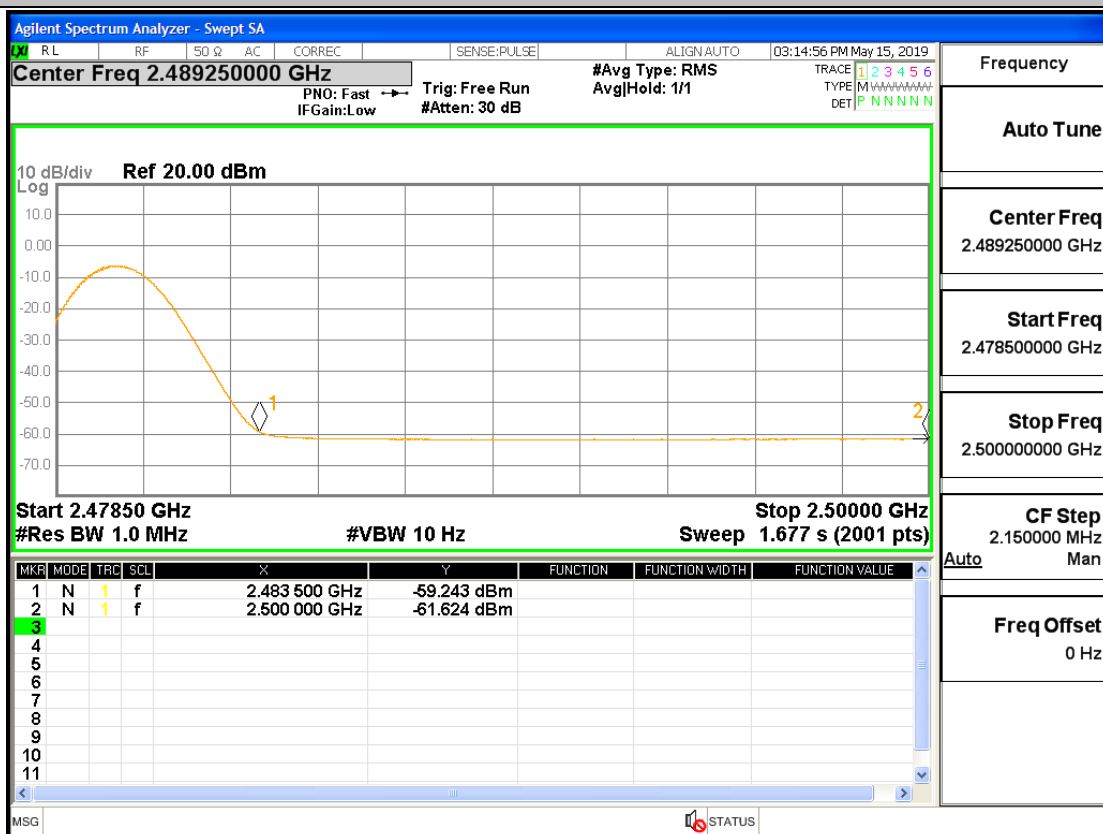
Restrict-band band-edge measurements_2402_AV_2DH5



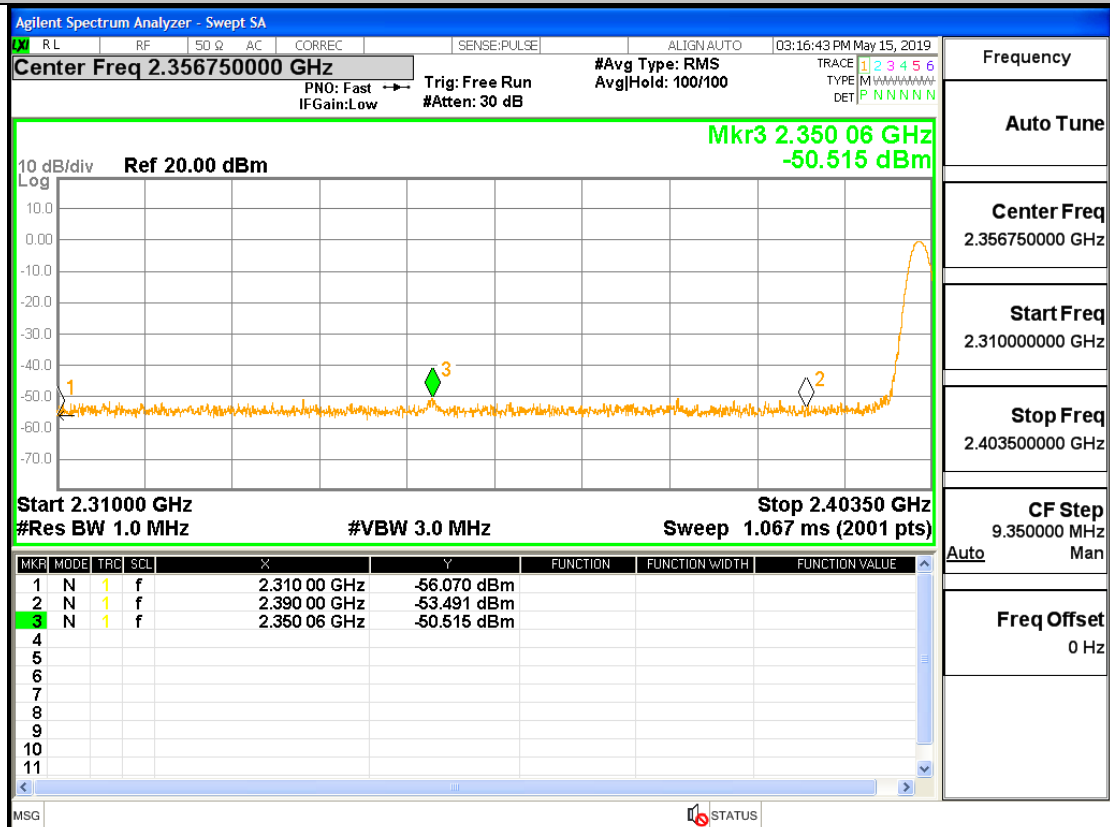
Restrict-band band-edge measurements_2480_PEAK_2DH5



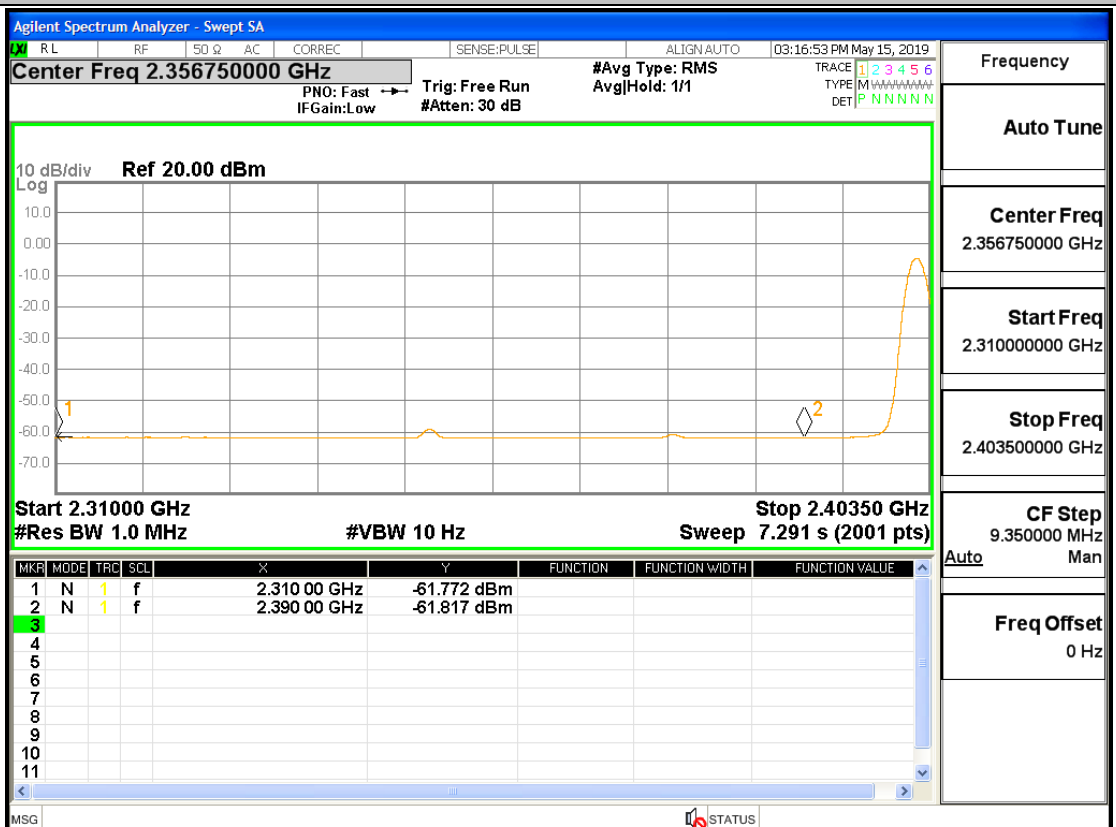
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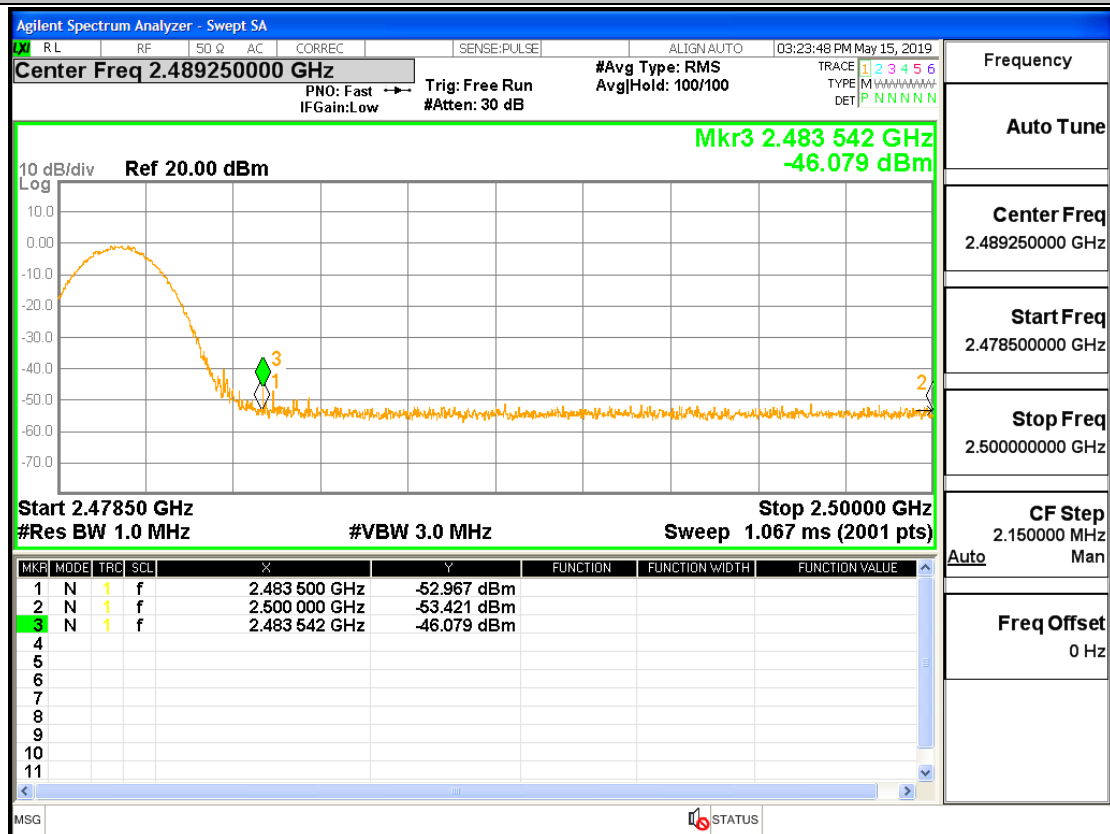
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

