

Appendix A

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

Product Name: Bluetooth mechanical keyboard

Trade Mark: keychron

Test Model: keychron K1

FCC ID: 2ASF4-KS

Environmental Conditions

Temperature:	22.1 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

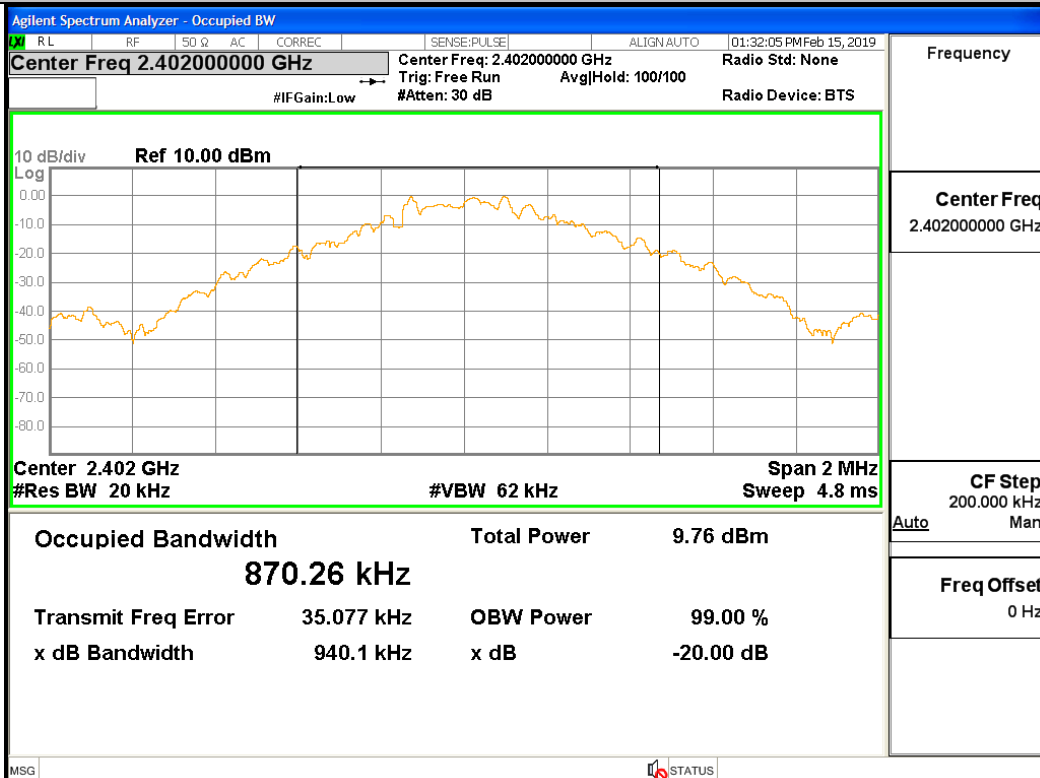
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.940	Not Specified	PASS
GFSK	MCH	0.948	Not Specified	PASS
GFSK	HCH	0.944	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.336	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.344	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.330	Not Specified	PASS
8DPSK	LCH	1.272	Not Specified	PASS
8DPSK	MCH	1.326	Not Specified	PASS
8DPSK	HCH	1.269	Not Specified	PASS

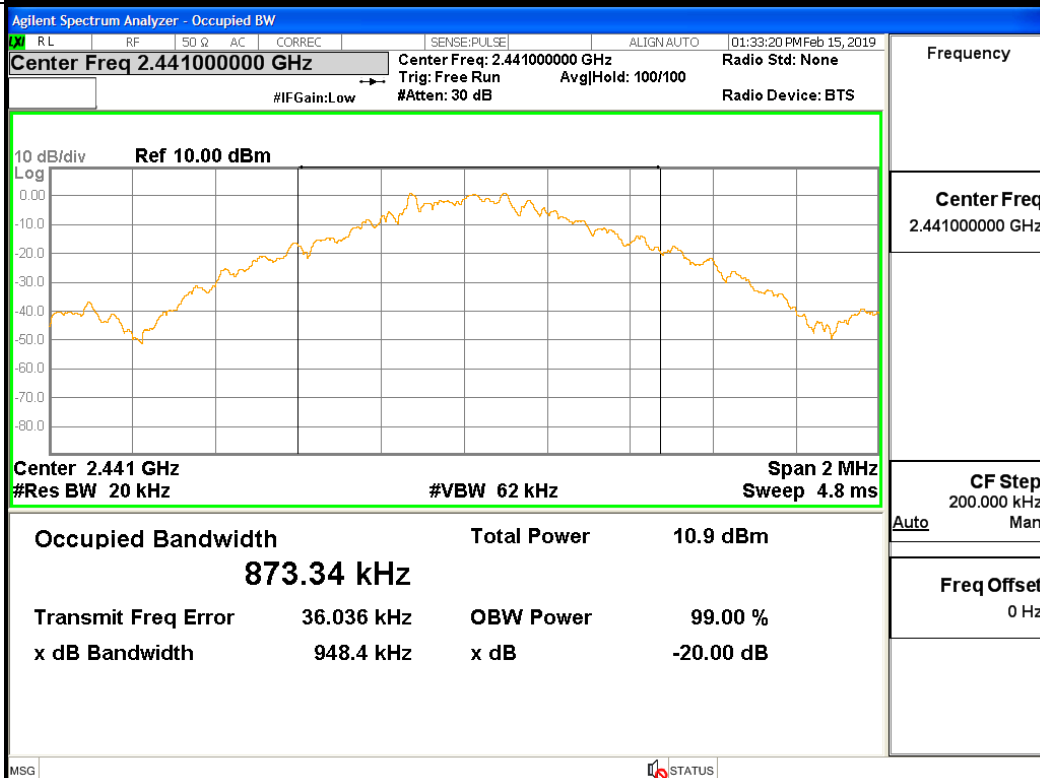
Test Graph

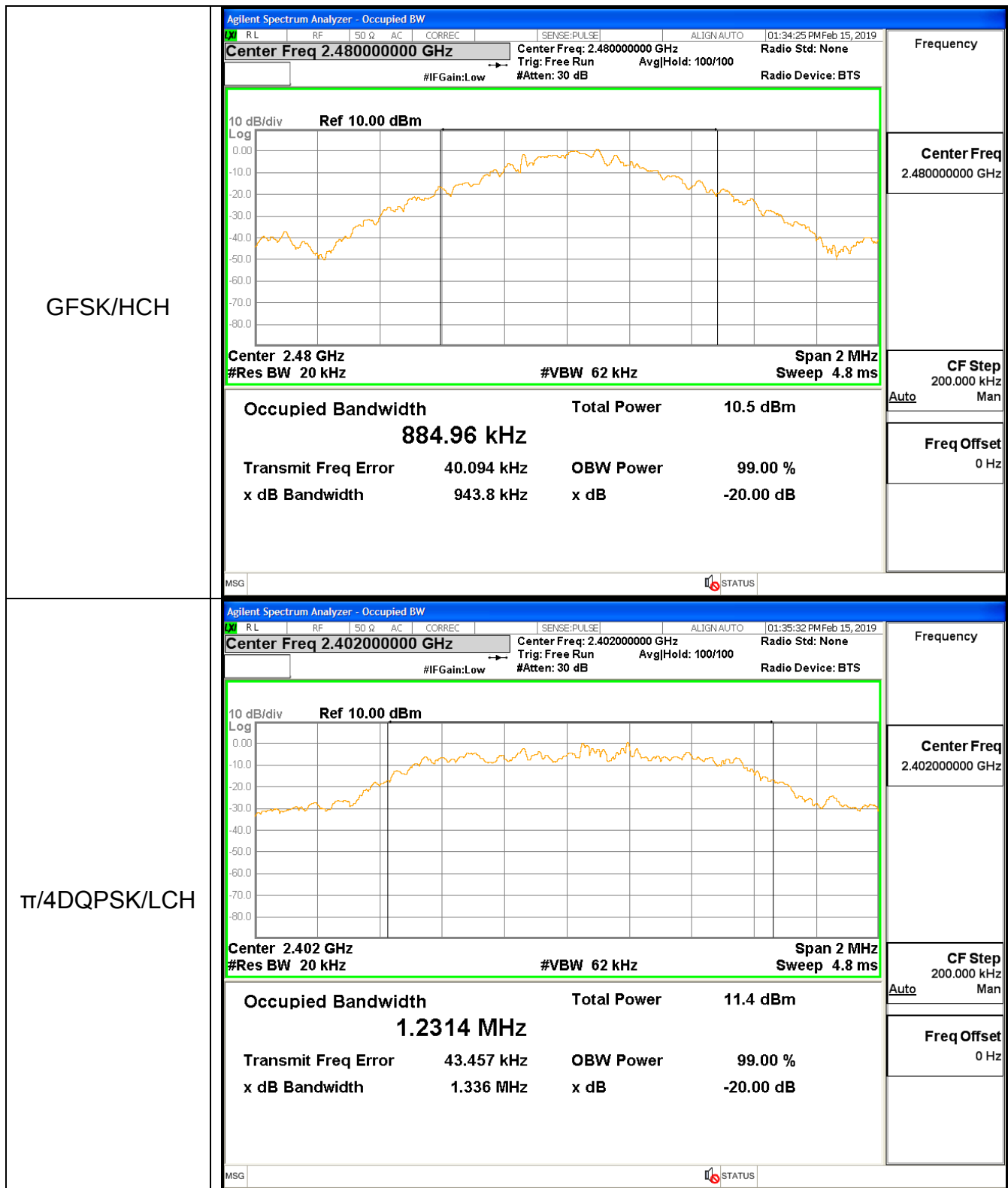
Graphs

GFSK/LCH



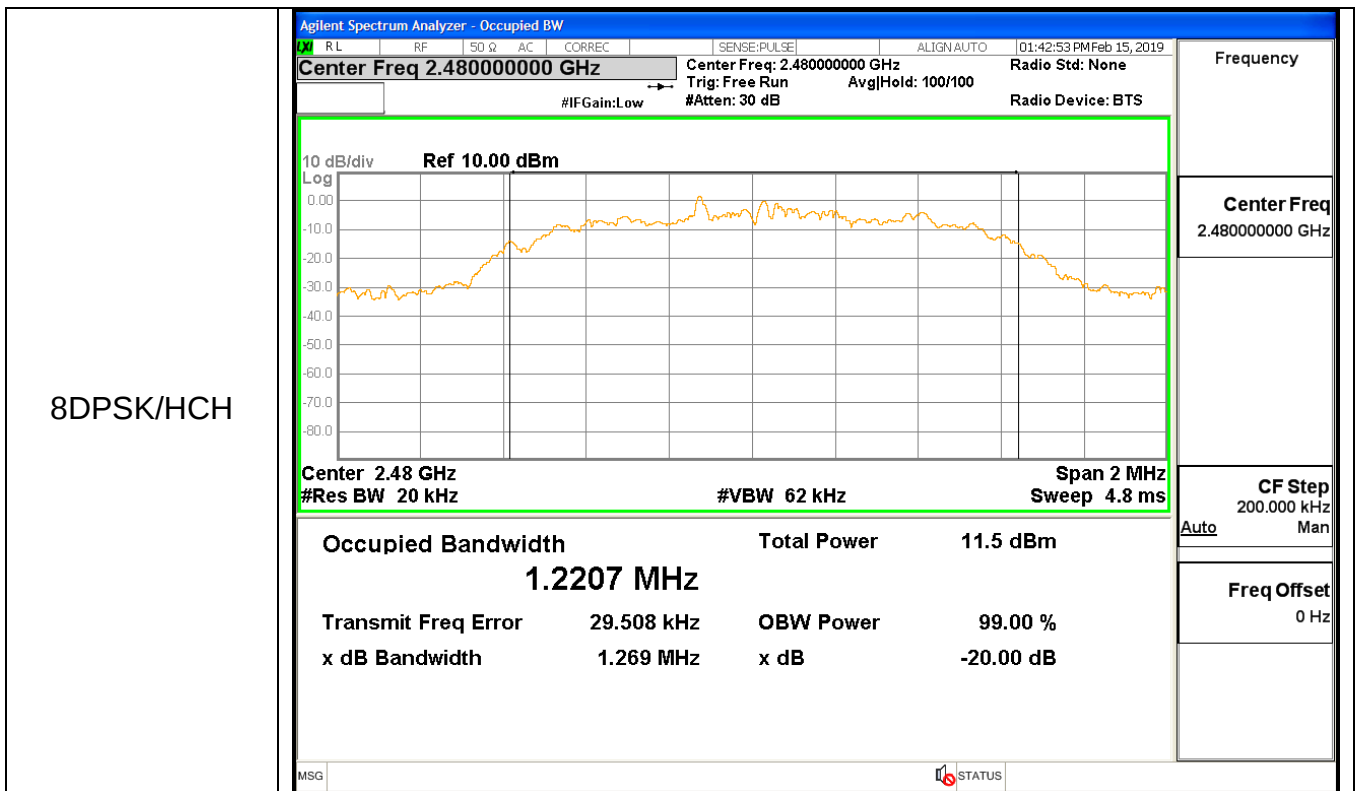
GFSK/MCH







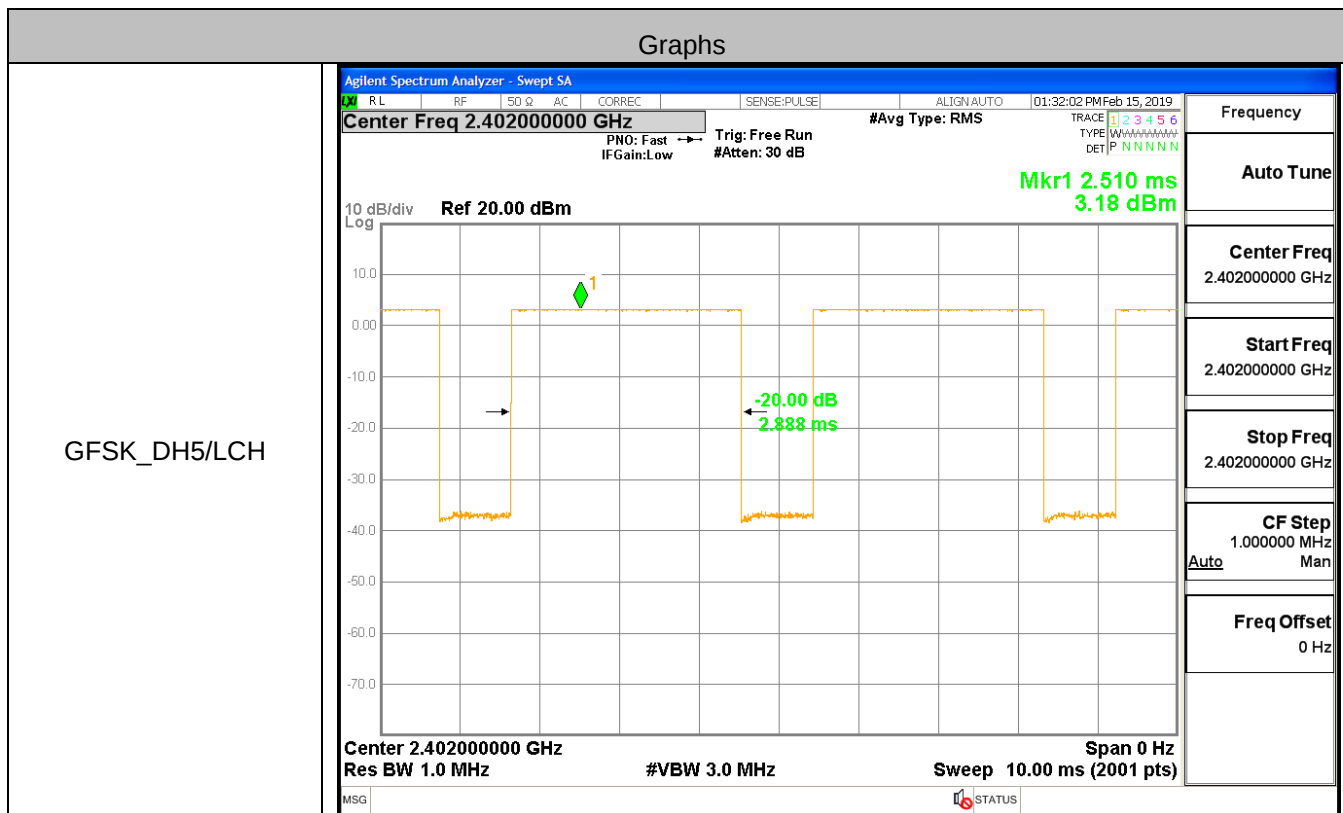


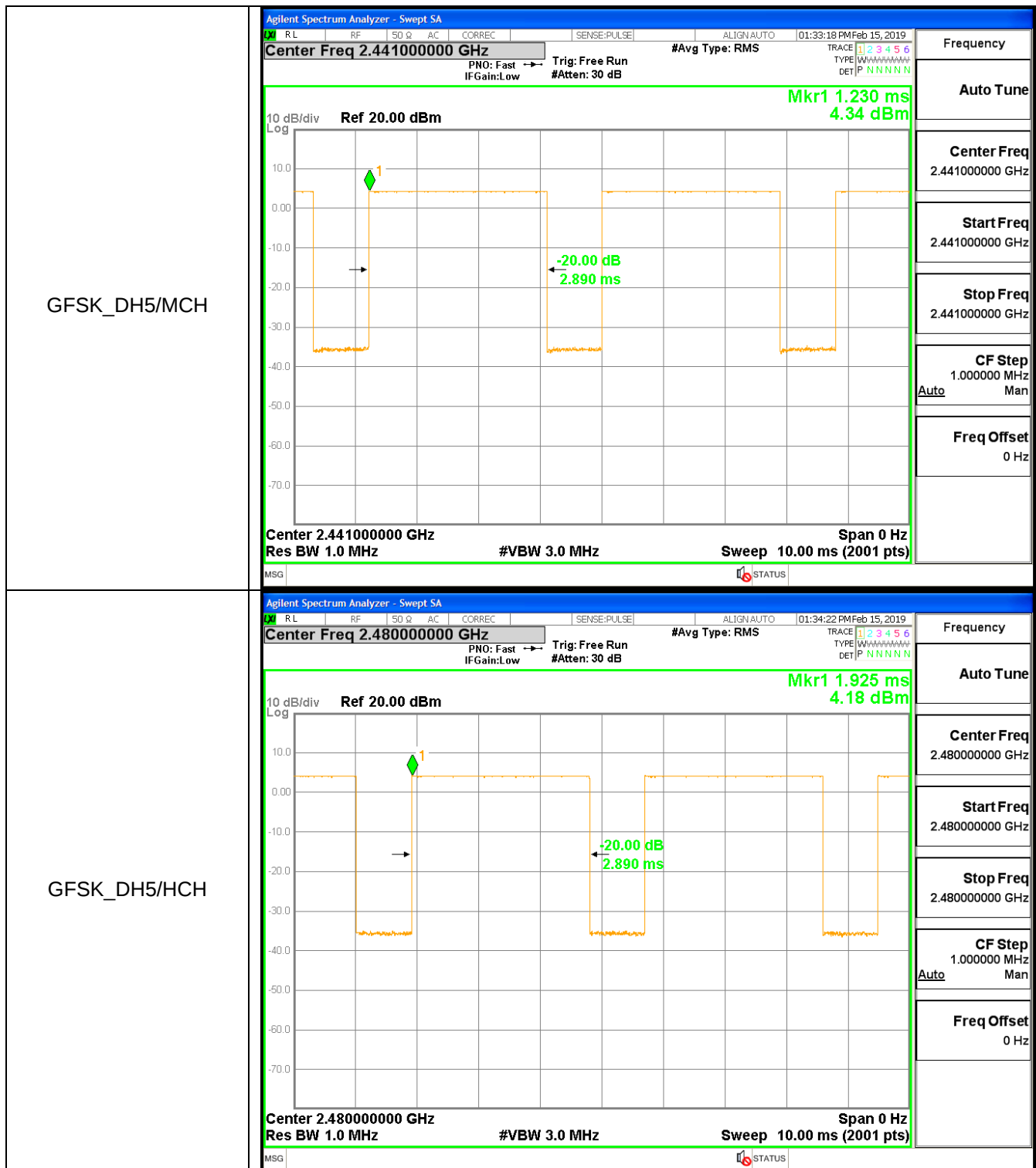


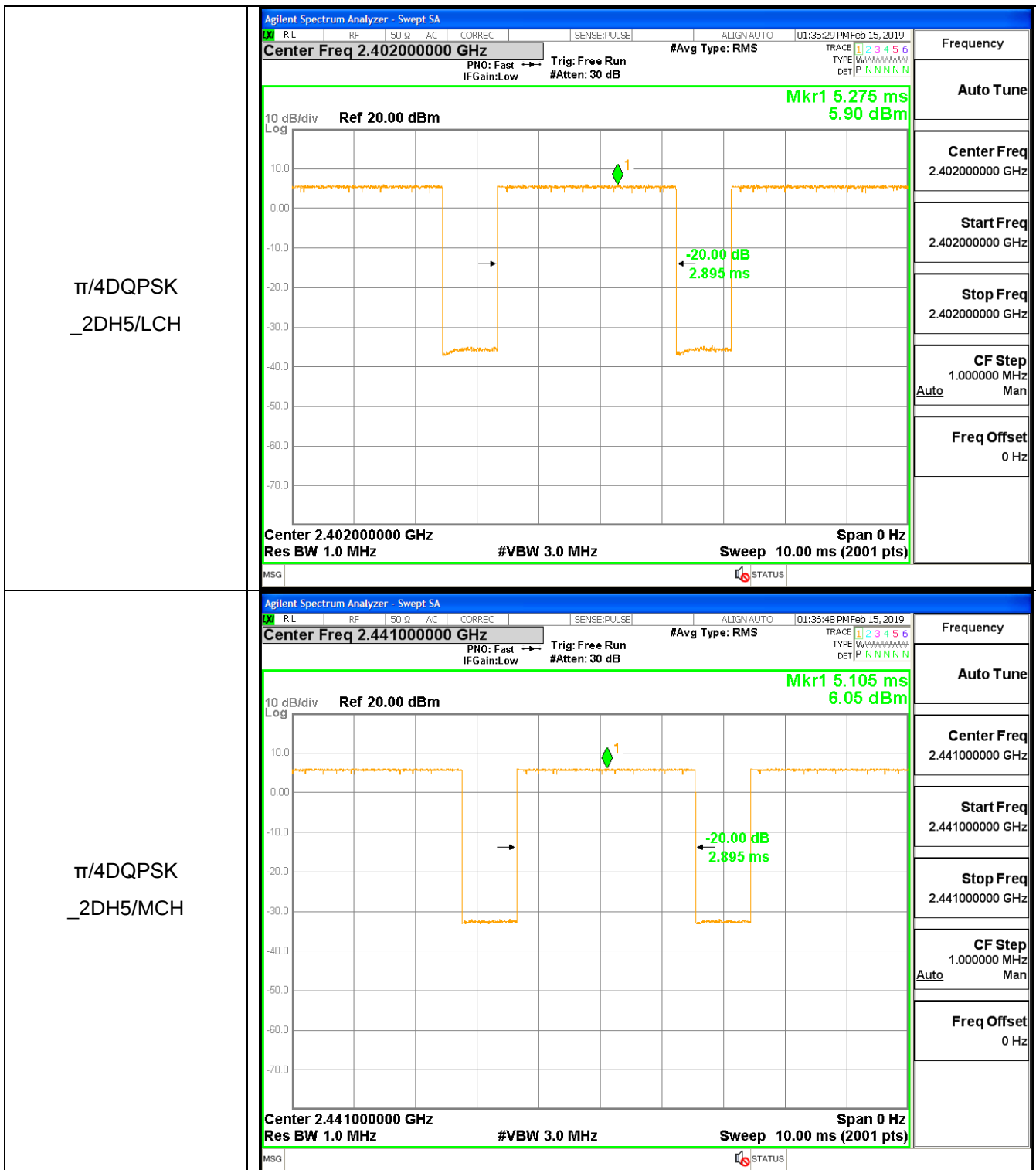
A.2 Dwell Time

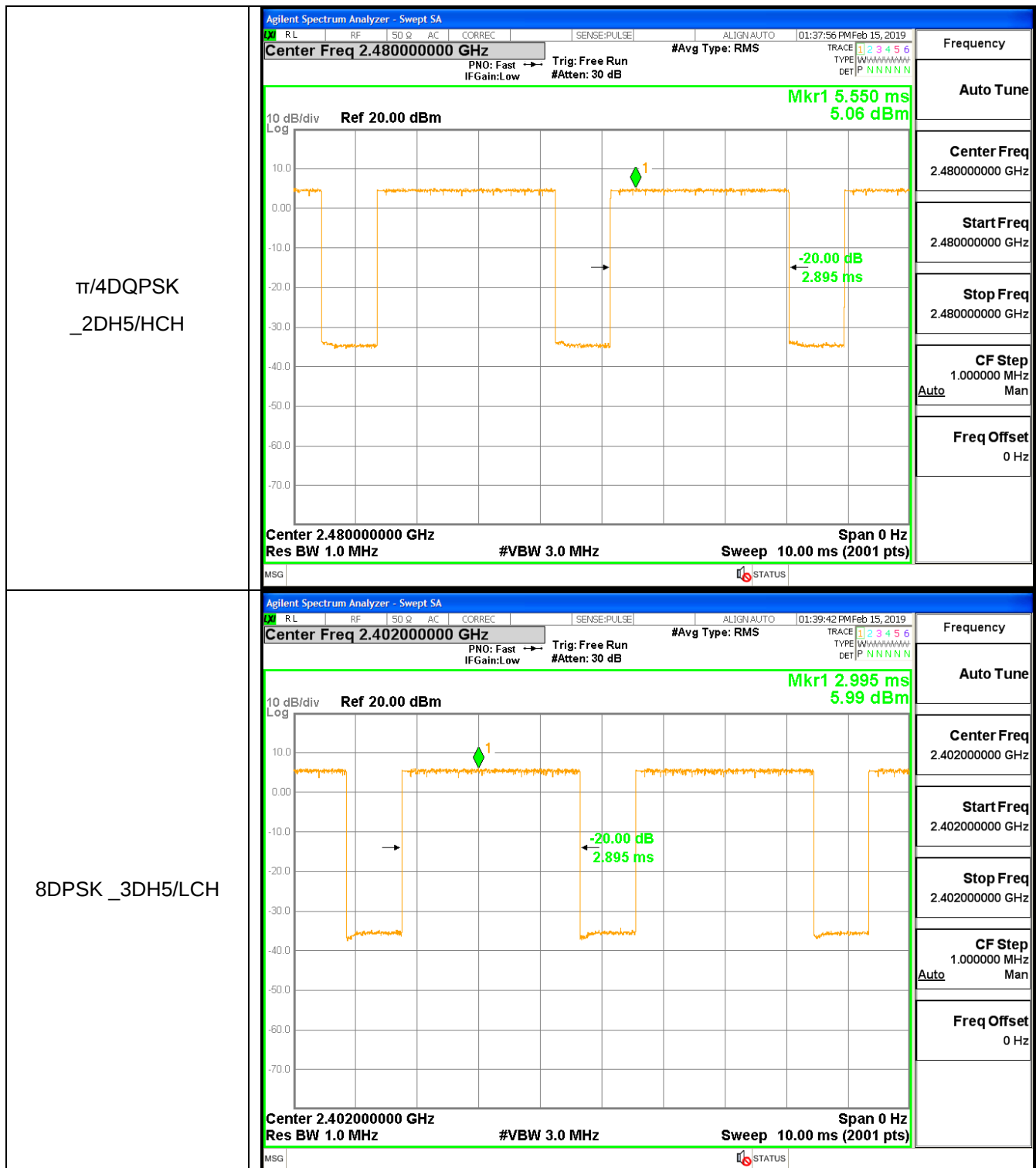
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002888	106.7	0.308129	0.4	PASS
GFSK	DH5	MCH	0.00289	106.7	0.308353	0.4	PASS
GFSK	DH5	HCH	0.00289	106.7	0.308362	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002895	106.7	0.308859	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002895	106.7	0.308866	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002895	106.7	0.308878	0.4	PASS
8DPSK	3DH5	LCH	0.002895	106.7	0.30886	0.4	PASS
8DPSK	3DH5	MCH	0.002895	106.7	0.308906	0.4	PASS
8DPSK	3DH5	HCH	0.002895	106.7	0.308902	0.4	PASS

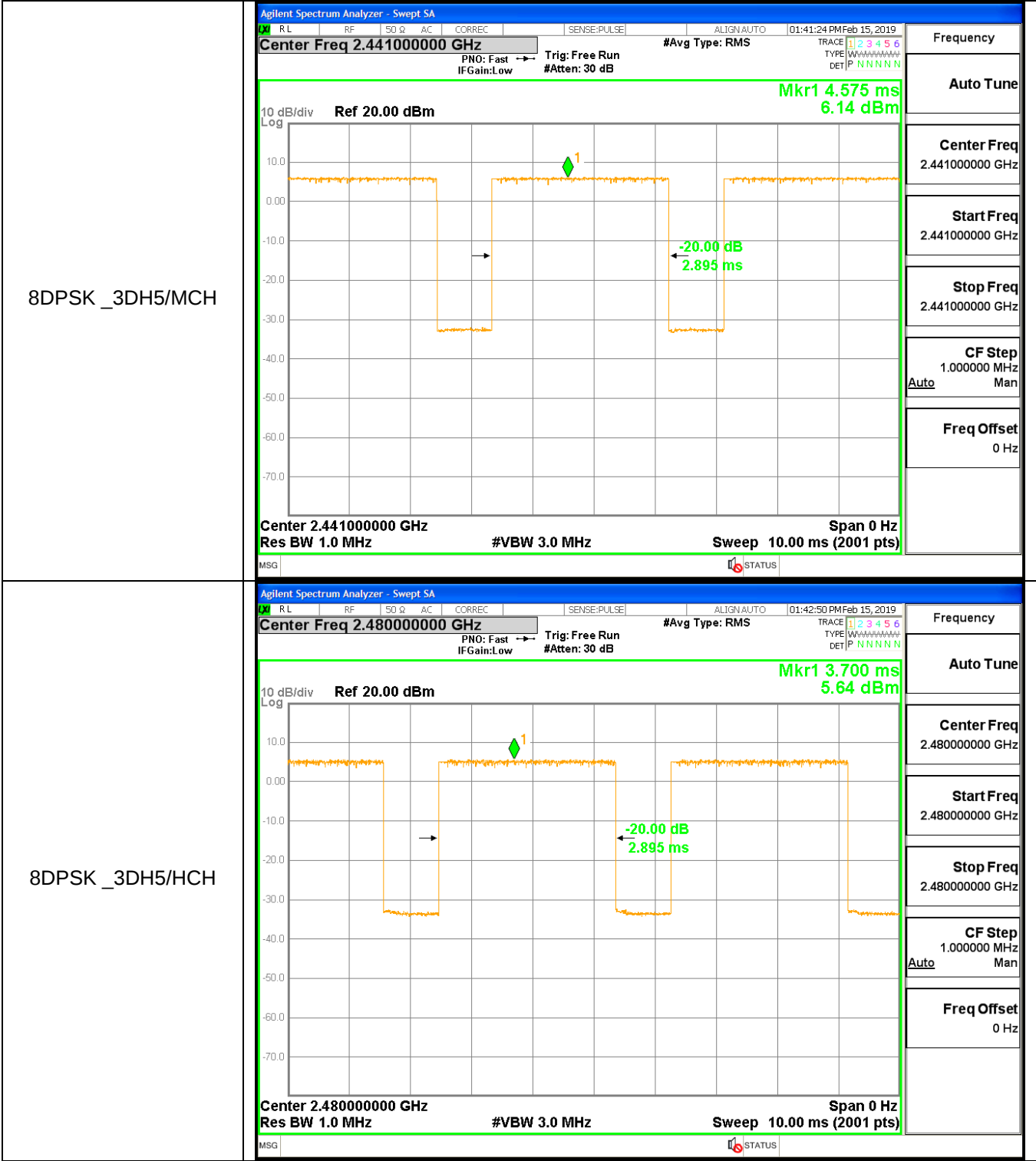
Test Graph









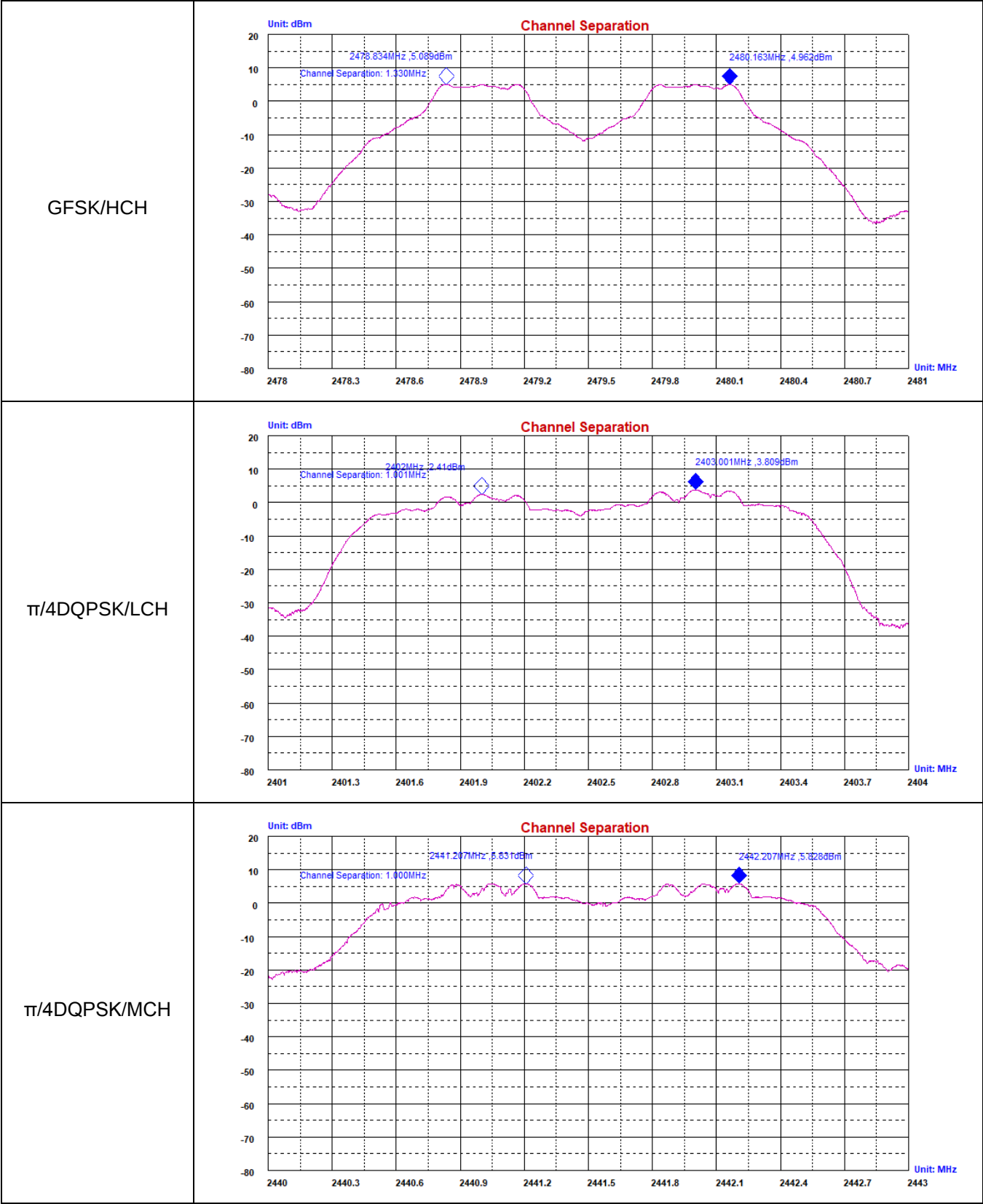


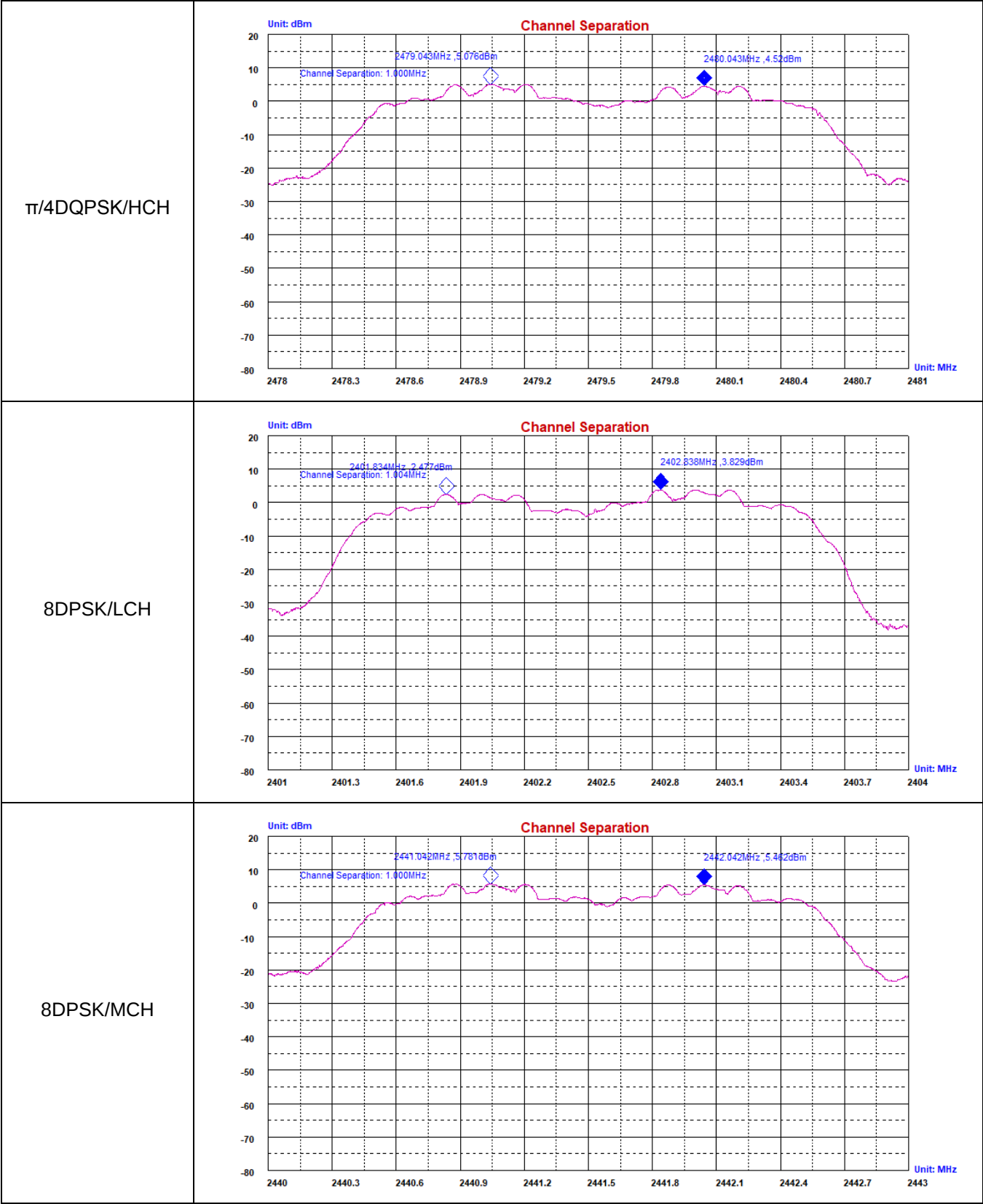
A.3 Carrier Frequency Separation

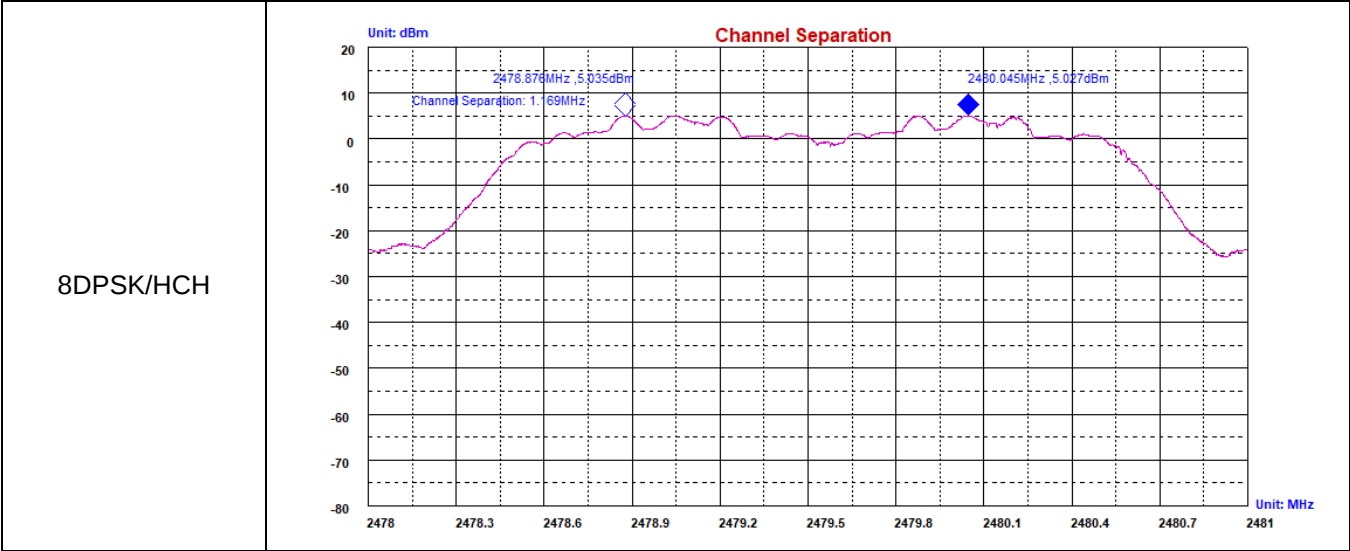
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.003	0.642	PASS
GFSK	MCH	1.000	0.625	PASS
GFSK	HCH	1.330	0.643	PASS
$\pi/4$ DQPSK	LCH	1.001	0.889	PASS
$\pi/4$ DQPSK	MCH	1.000	0.899	PASS
$\pi/4$ DQPSK	HCH	1.000	0.899	PASS
8DPSK	LCH	1.004	0.885	PASS
8DPSK	MCH	1.000	0.896	PASS
8DPSK	HCH	1.169	0.895	PASS

Test Graph





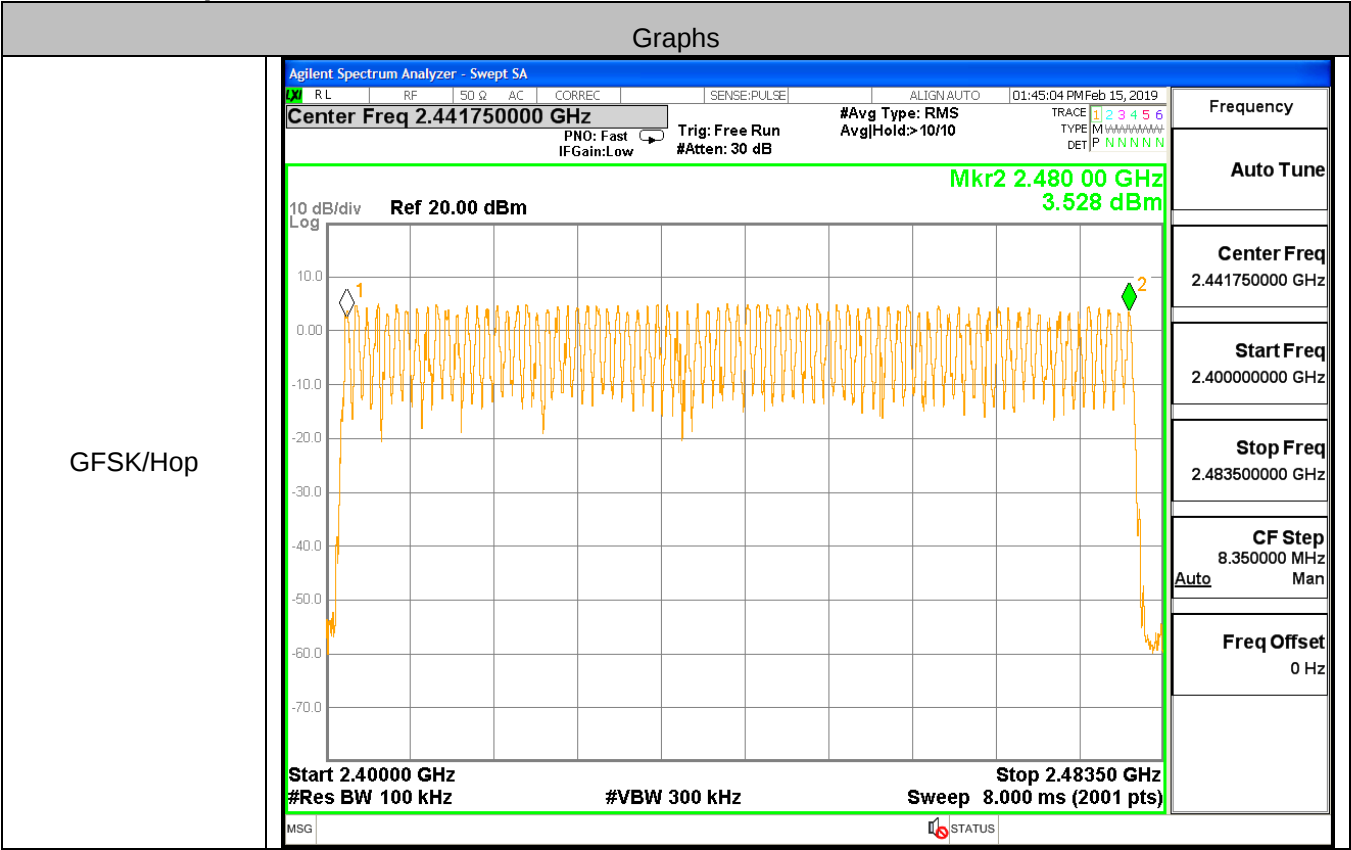


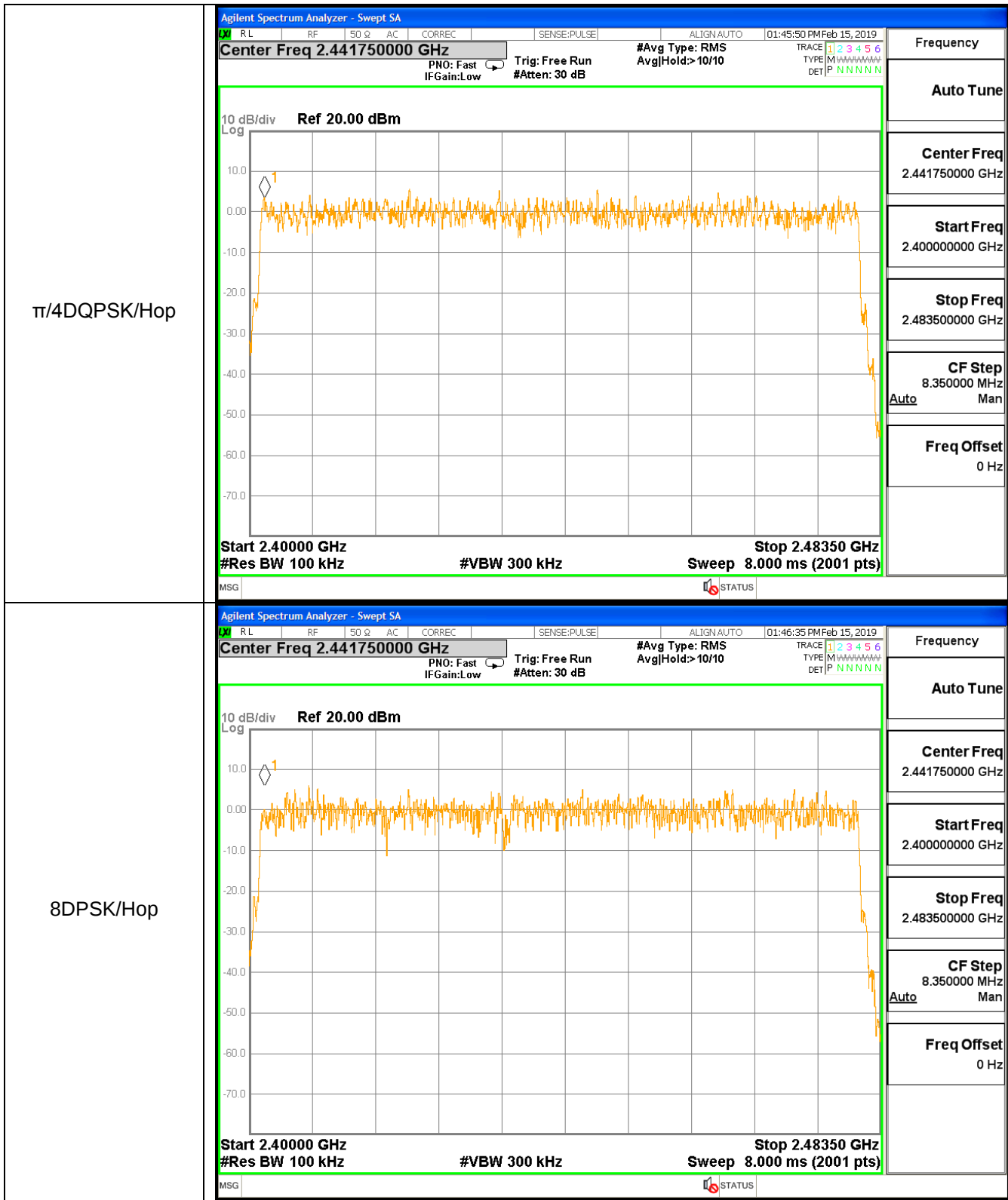


A.4 Hopping Channel Number

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

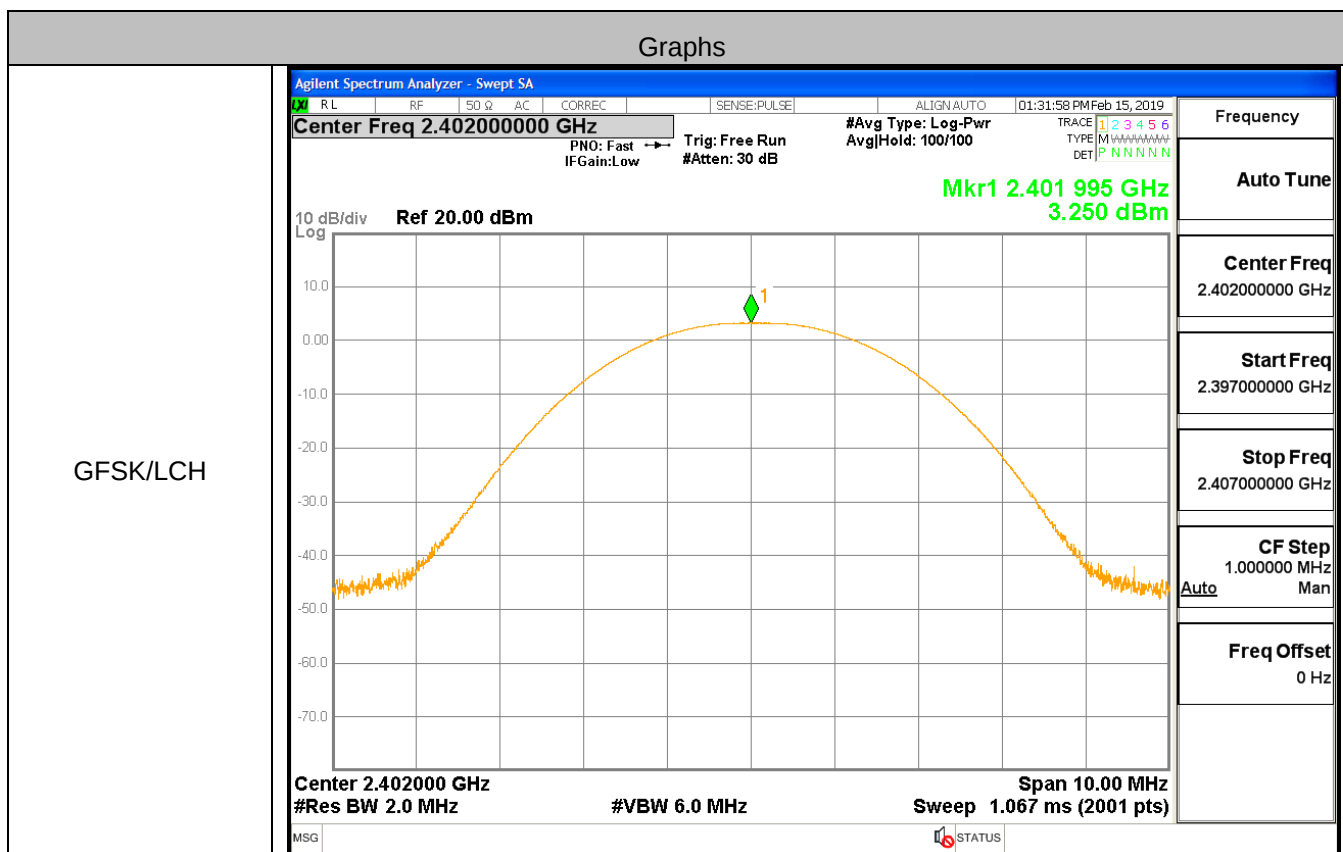


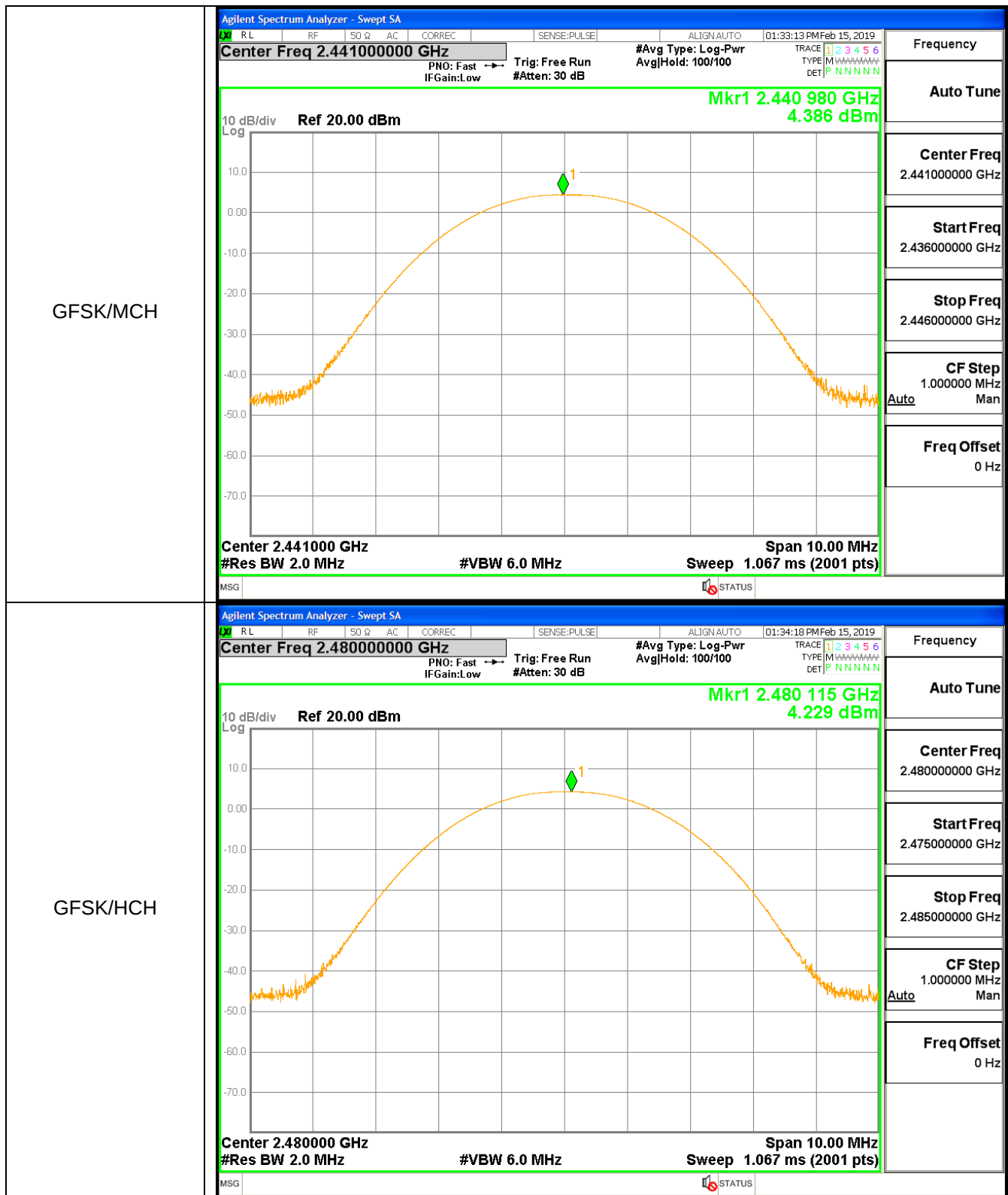


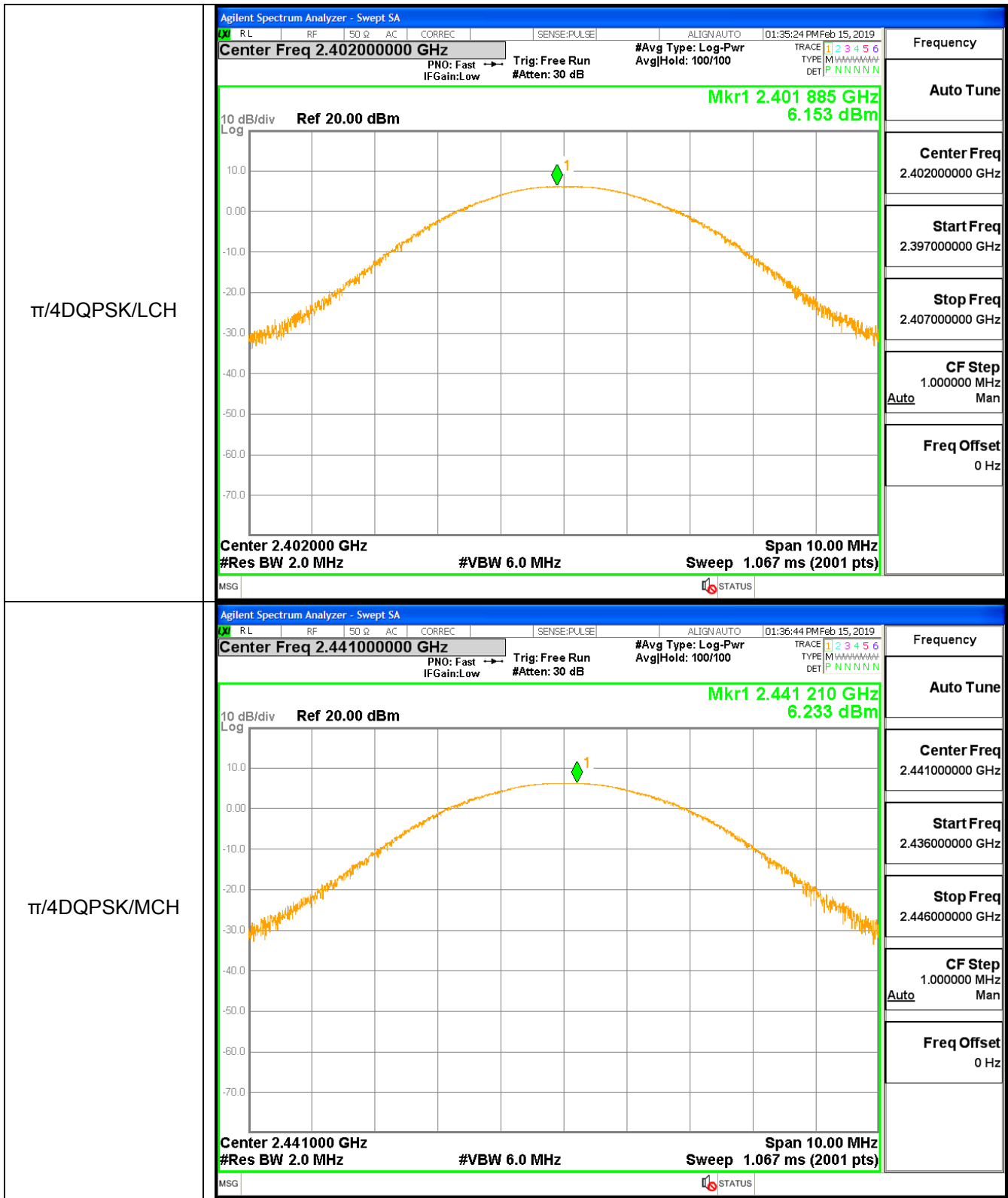
A.5 Conducted Peak Output Power

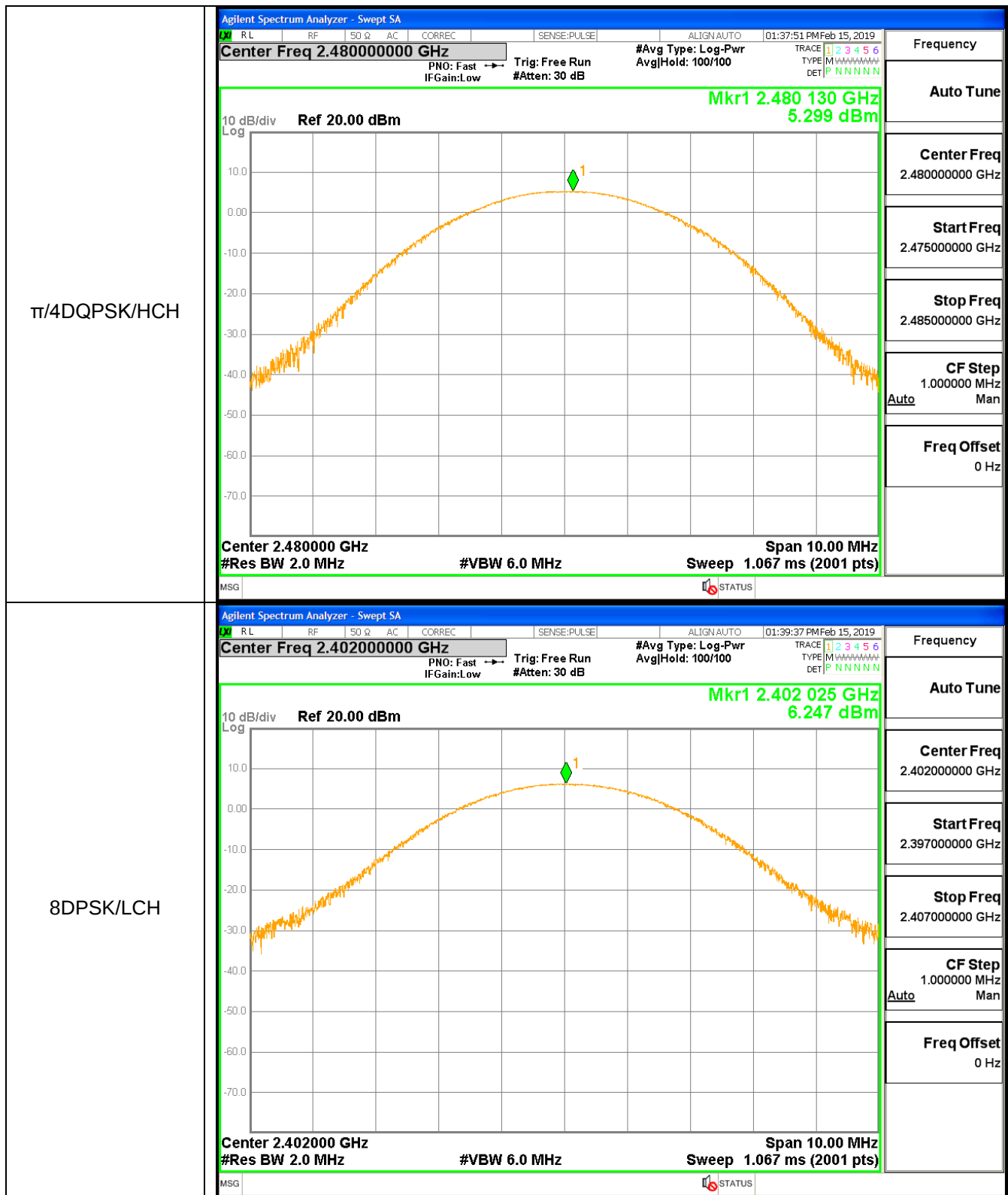
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	3.250	21	PASS
GFSK	MCH	4.386	21	PASS
GFSK	HCH	4.229	21	PASS
$\pi/4$ DQPSK	LCH	6.153	21	PASS
$\pi/4$ DQPSK	MCH	6.233	21	PASS
$\pi/4$ DQPSK	HCH	5.299	21	PASS
8DPSK	LCH	6.247	21	PASS
8DPSK	MCH	6.291	21	PASS
8DPSK	HCH	5.799	21	PASS

Test Graph









Frequency

Auto Tune

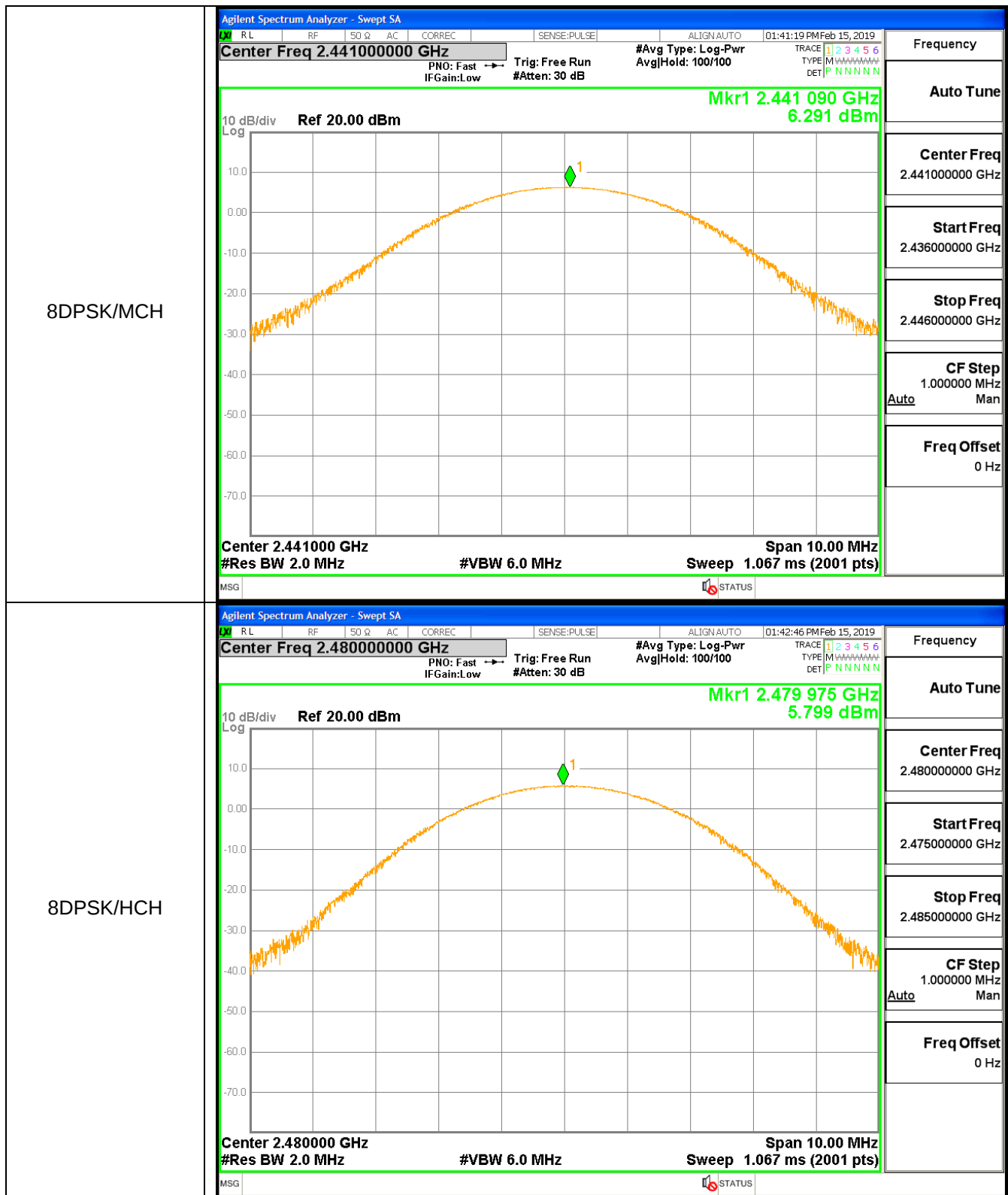
Center Freq
2.480000000 GHz

Start Freq
2.475000000 GHz

Stop Freq
2.485000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz



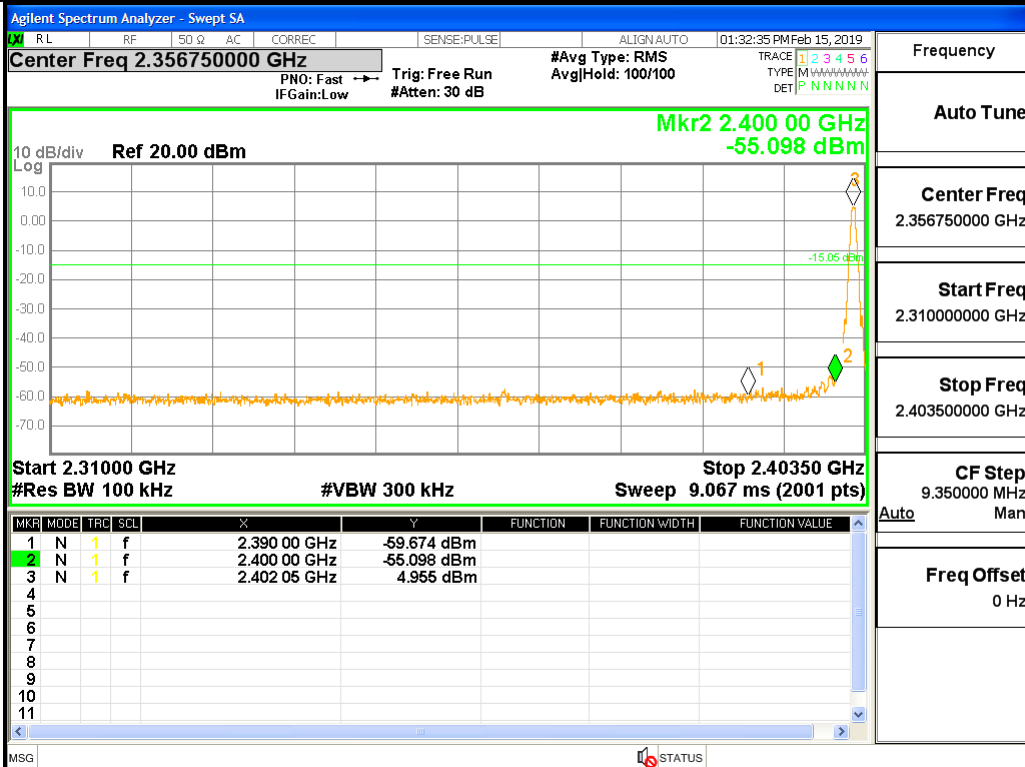
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	4.96	-59.67	-15.05	Pass
1DH5	2402	2400	4.96	-55.1	-15.05	Pass
1DH5-Hopping	2402	2390	4.95	-59.44	-15.05	Pass
1DH5-Hopping	2402	2400	4.95	-56.35	-15.05	Pass
1DH5	2480	2483.5	4.08	-59.02	-15.92	Pass
1DH5	2480	2500	4.08	-61.04	-15.92	Pass
1DH5-Hopping	2480	2483.5	4.78	-60.27	-15.22	Pass
1DH5-Hopping	2480	2500	4.78	-55.78	-15.22	Pass
2DH5	2402	2390	5.75	-61.05	-14.26	Pass
2DH5	2402	2400	5.75	-33.74	-14.26	Pass
2DH5-Hopping	2480	2483.5	5.36	-56.63	-14.64	Pass
2DH5-Hopping	2480	2500	5.36	-59.48	-14.64	Pass
2DH5	2480	2483.5	4.56	-53.34	-15.44	Pass
2DH5	2480	2500	4.56	-61.83	-15.44	Pass
2DH5-Hopping	2402	2390	3.62	-59.55	-16.38	Pass
2DH5-Hopping	2402	2400	3.62	-39.94	-16.38	Pass
3DH5	2402	2390	5.14	-61.91	-14.87	Pass
3DH5	2402	2400	5.14	-35.03	-14.87	Pass
3DH5-Hopping	2402	2390	4.66	-59.34	-15.34	Pass
3DH5-Hopping	2402	2400	4.66	-38.58	-15.34	Pass
3DH5	2480	2483.5	4.99	-50.34	-15.01	Pass
3DH5	2480	2500	4.99	-60.78	-15.01	Pass
3DH5-Hopping	2480	2483.5	4.99	-57.73	-15.01	Pass
3DH5-Hopping	2480	2500	4.99	-59.46	-15.01	Pass

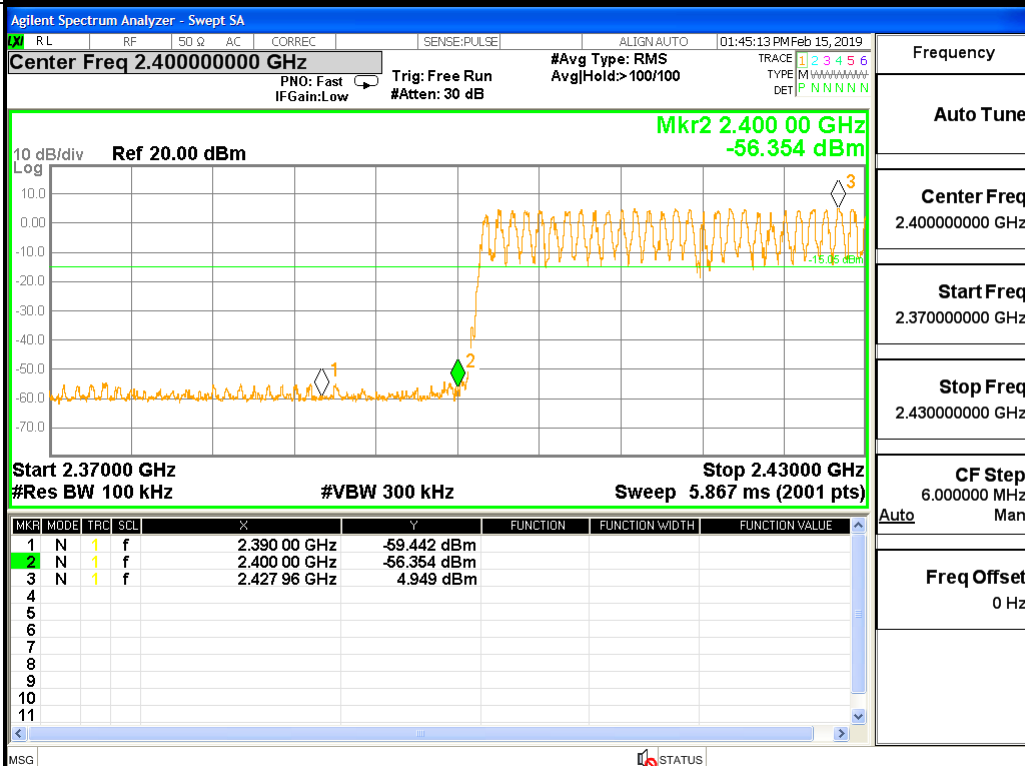
Test Graph

Graphs

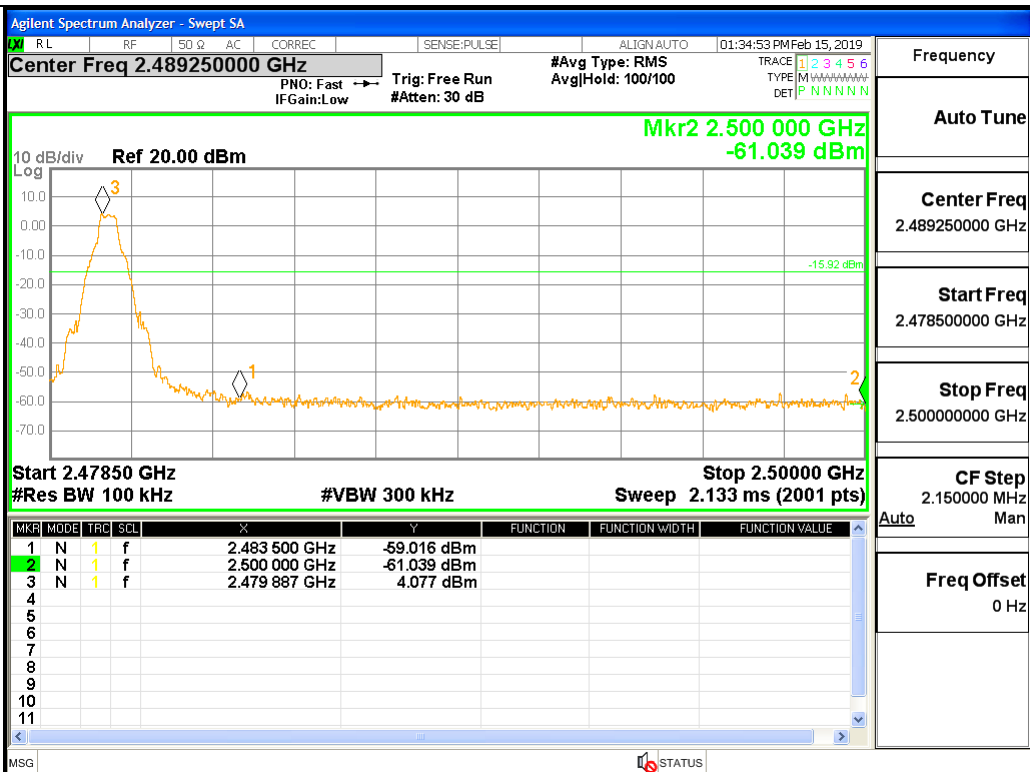
GFSK/LCH/No Hop



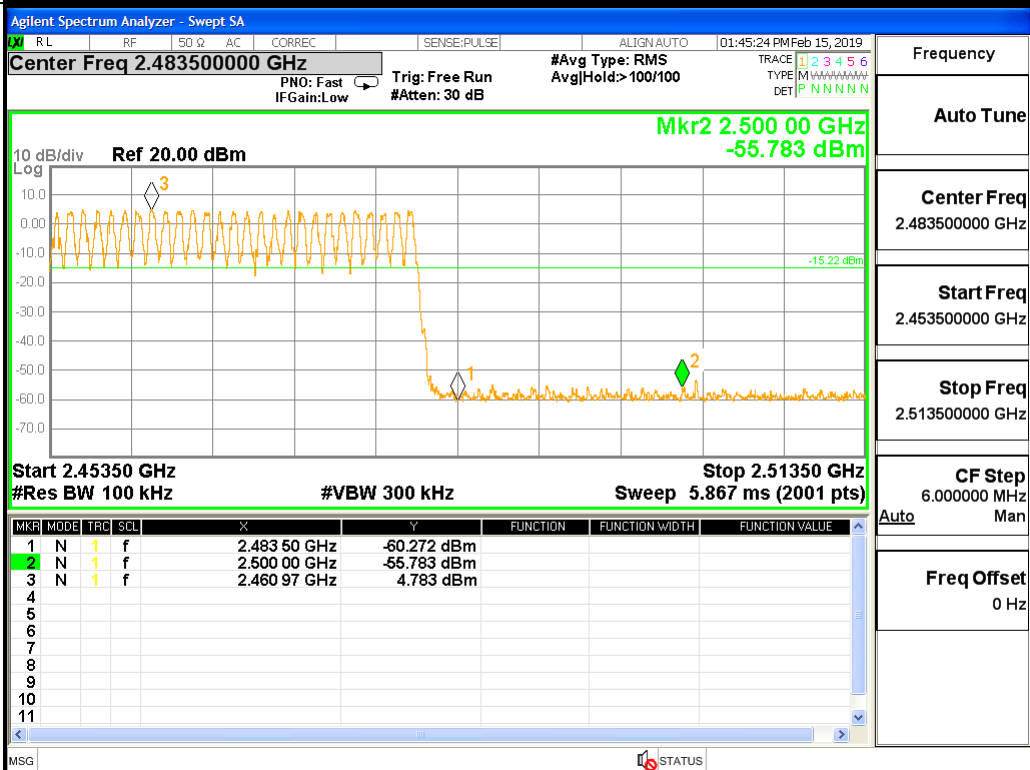
GFSK/LCH/Hop

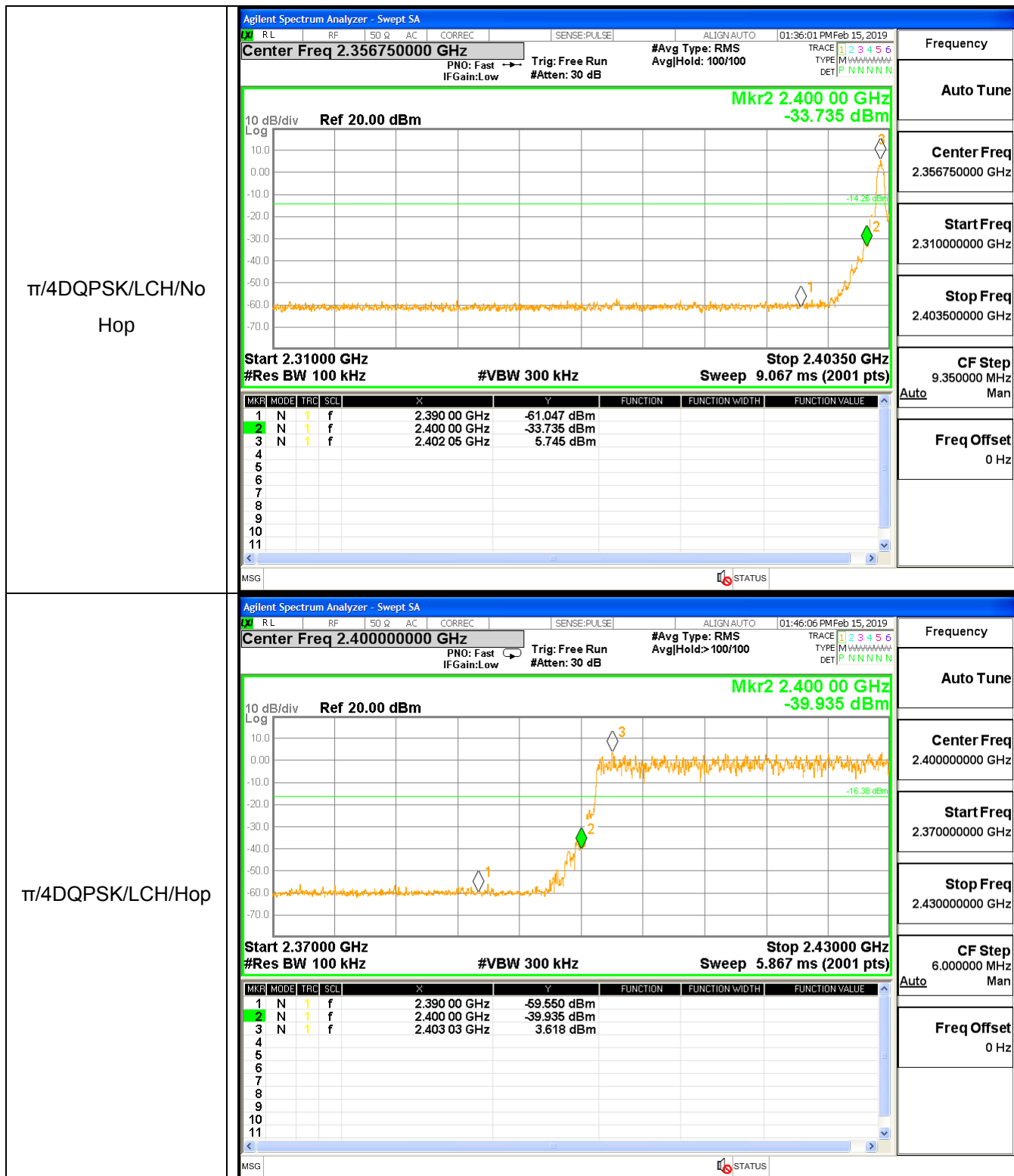


GFSK/HCH/No Hop



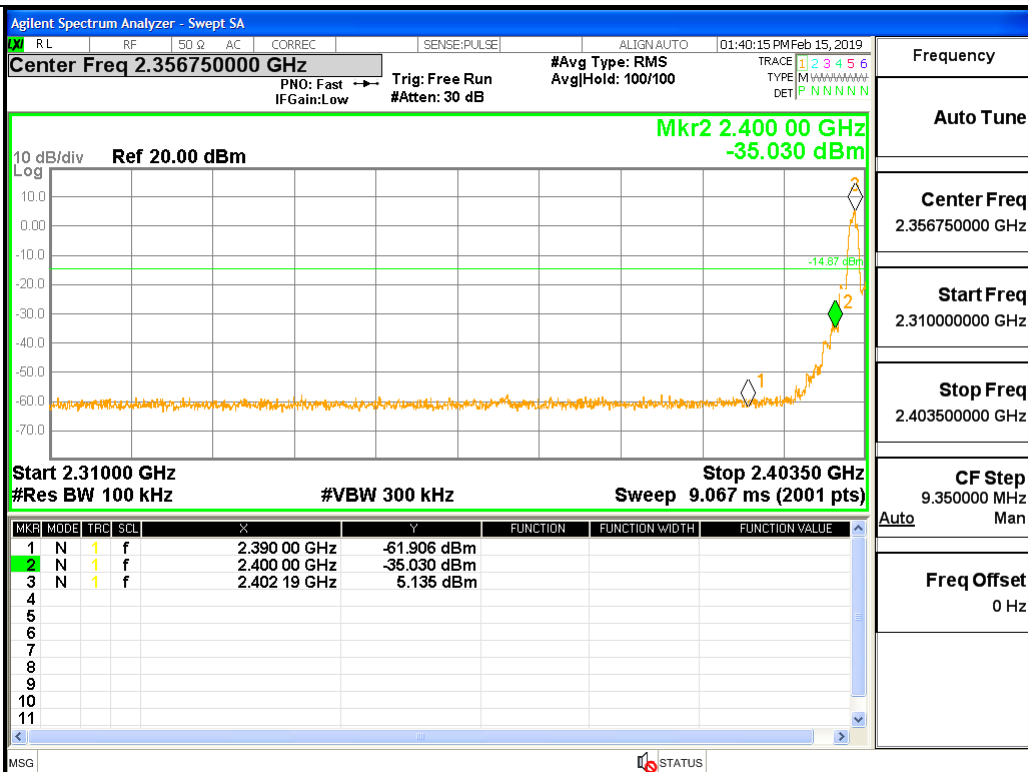
GFSK/HCH/Hop



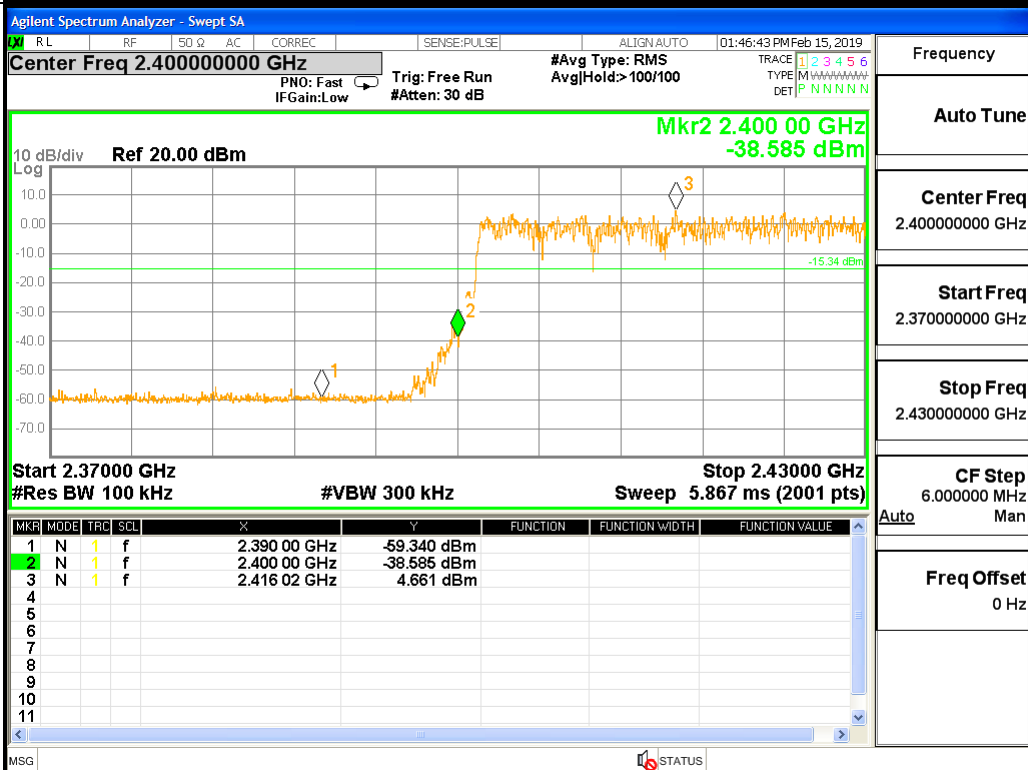


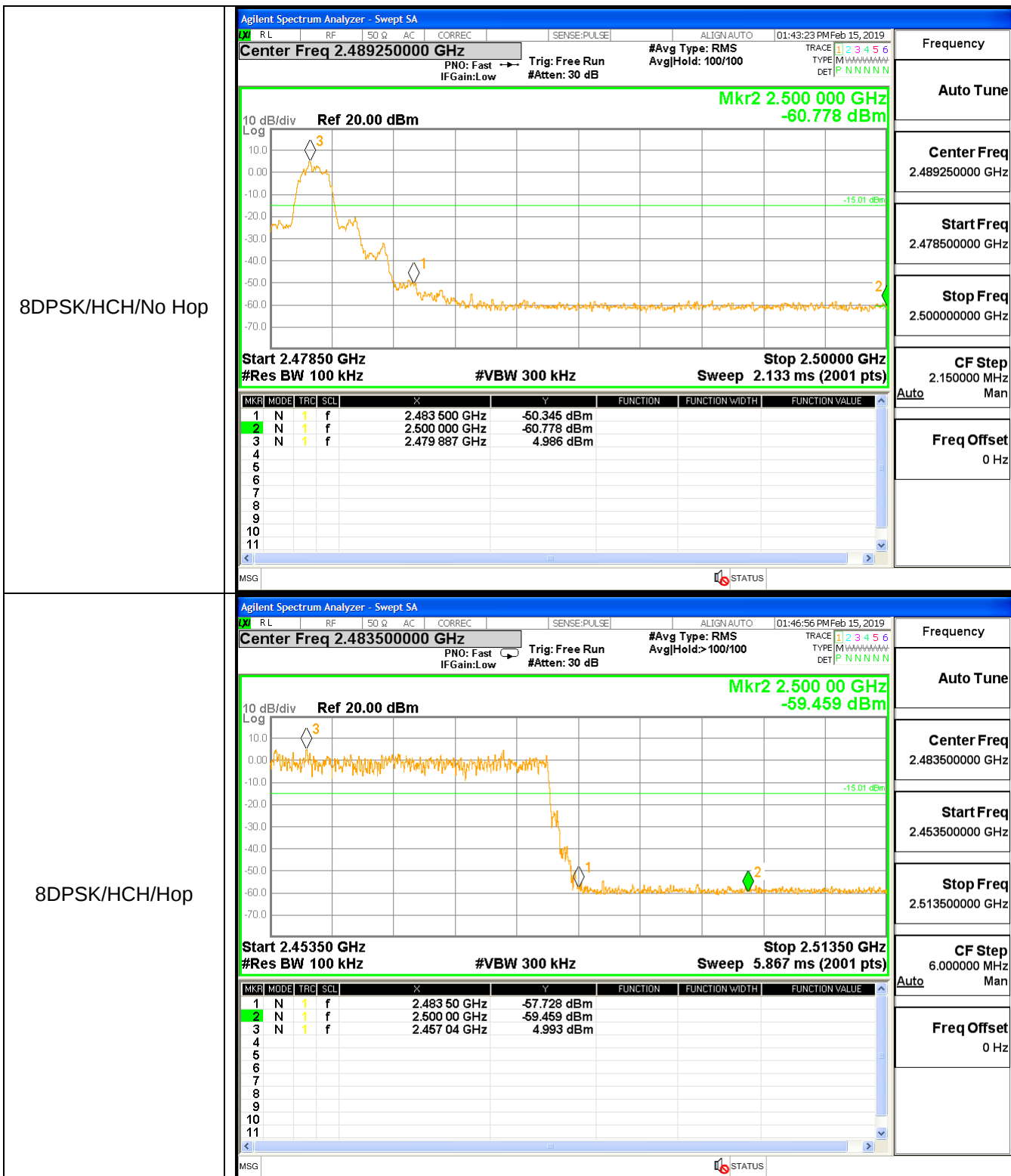


8DPSK/LCH/No Hop



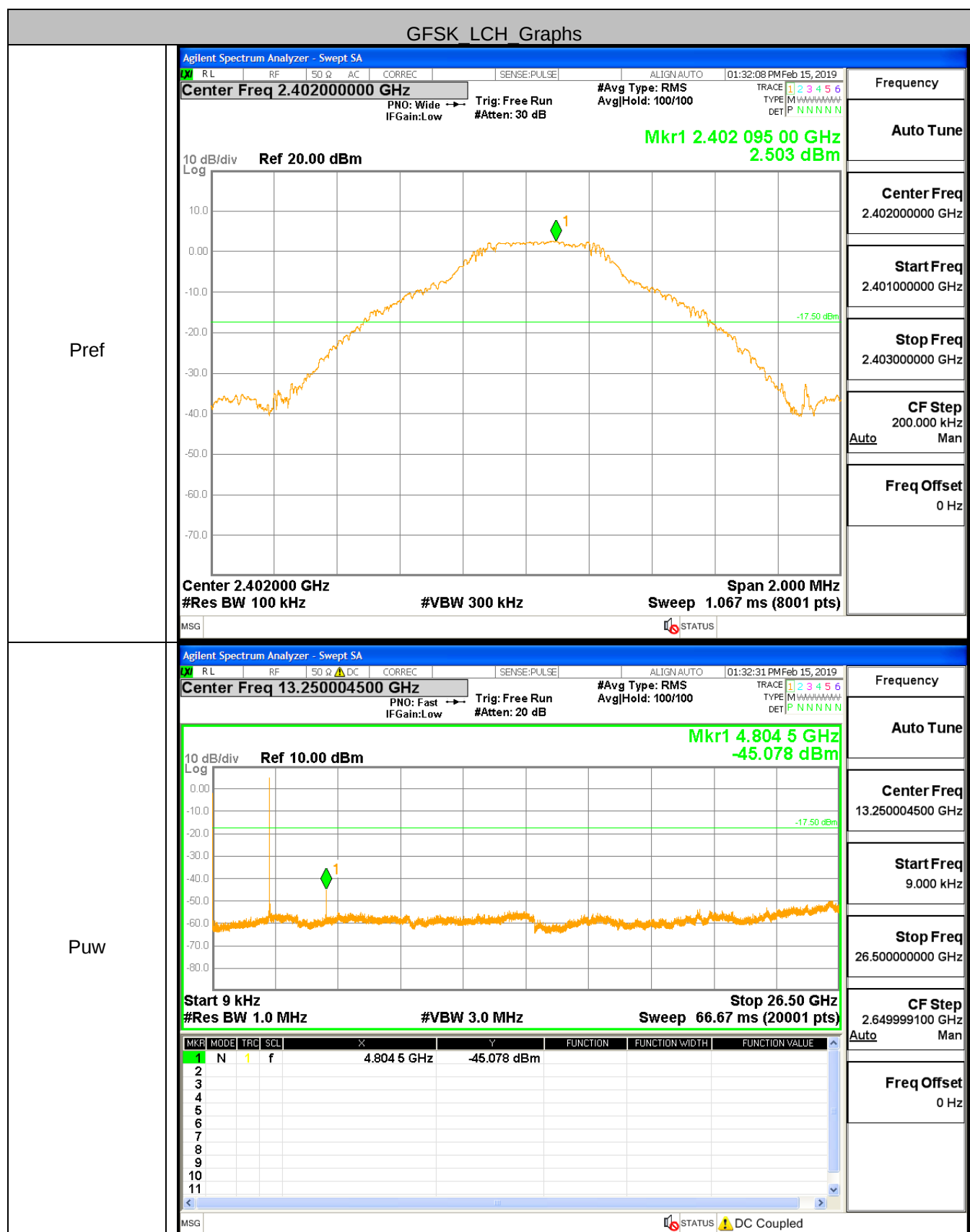
8DPSK/LCH/Hop

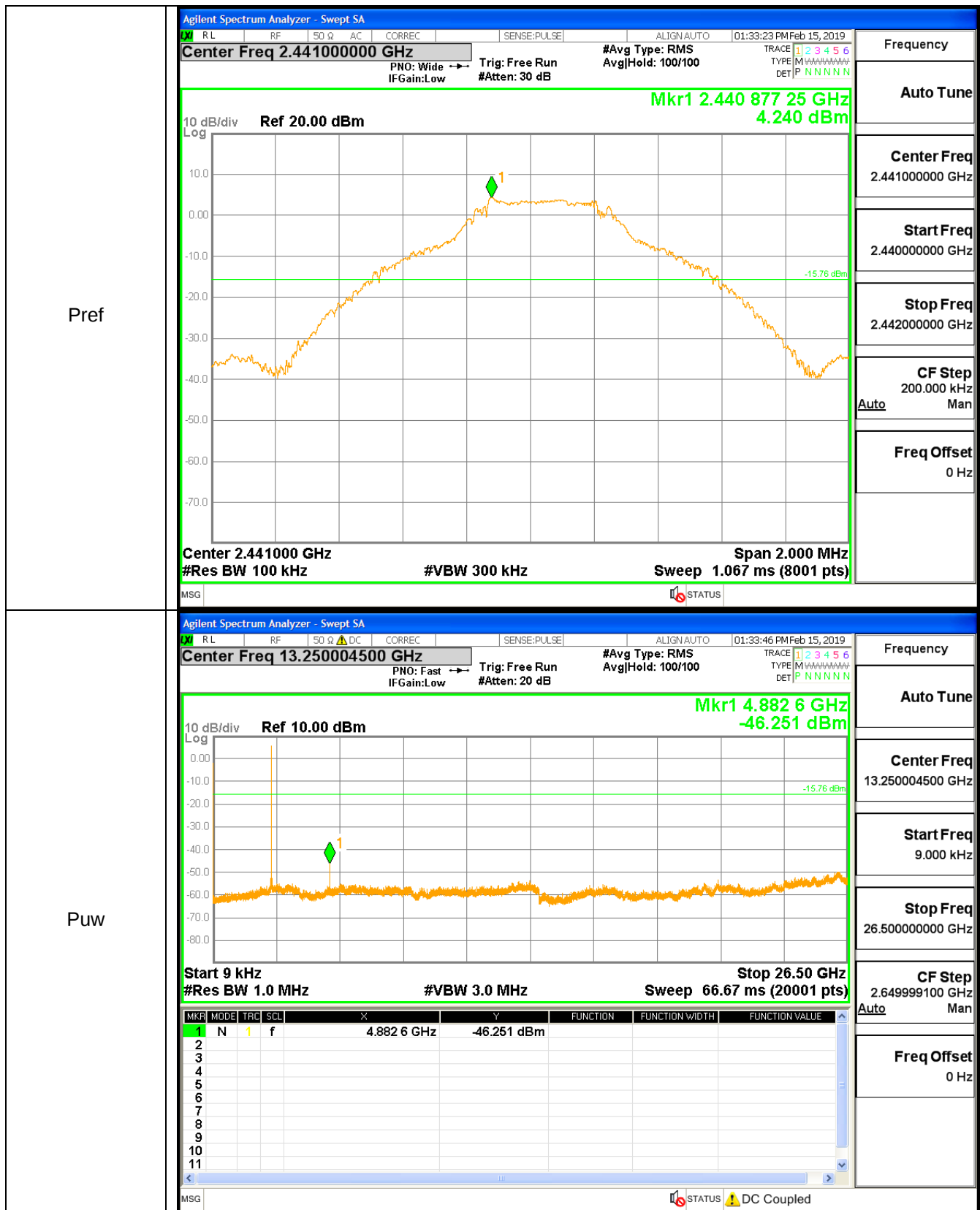




A.7 RF Conducted Spurious Emissions

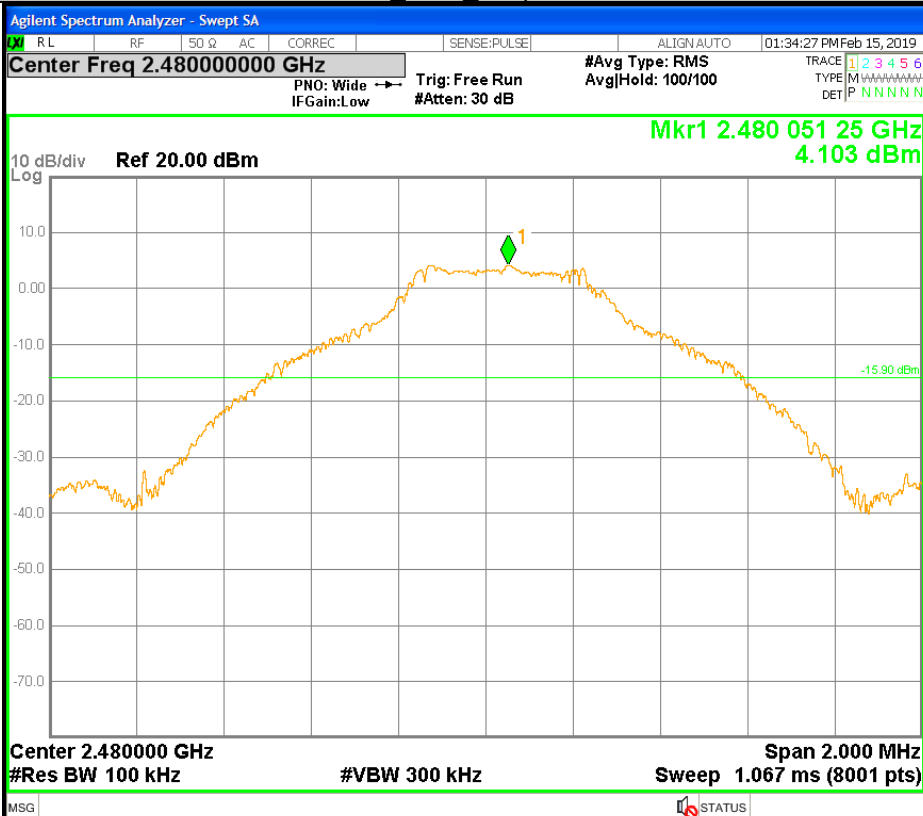
Test Graph



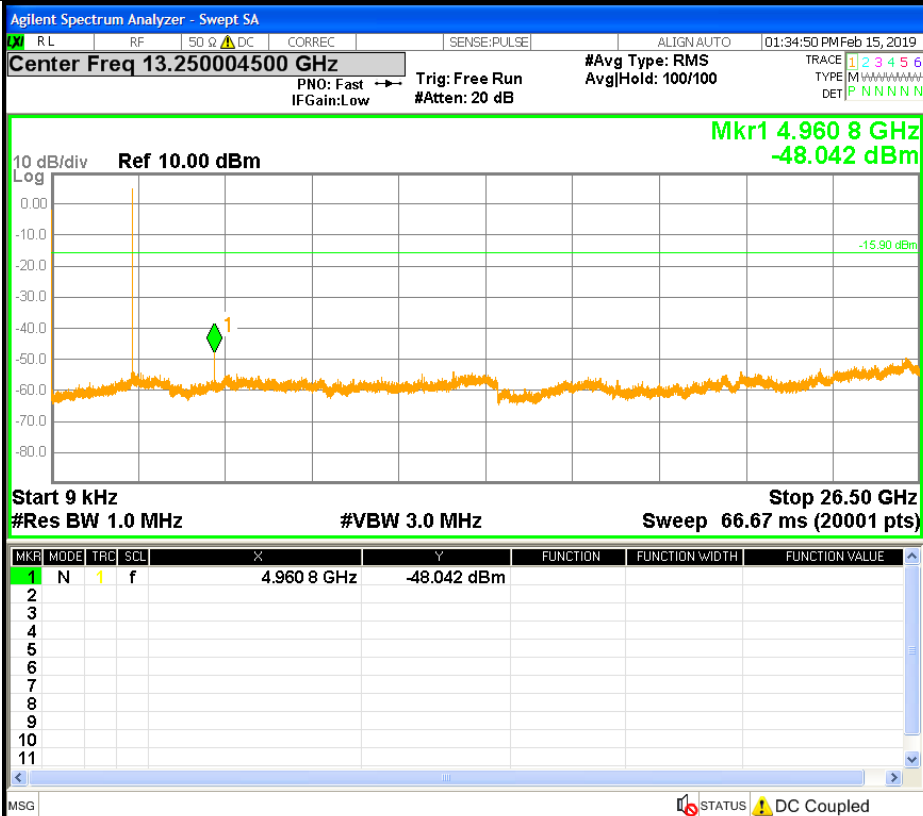


GFSK HCH Graphs

Pref

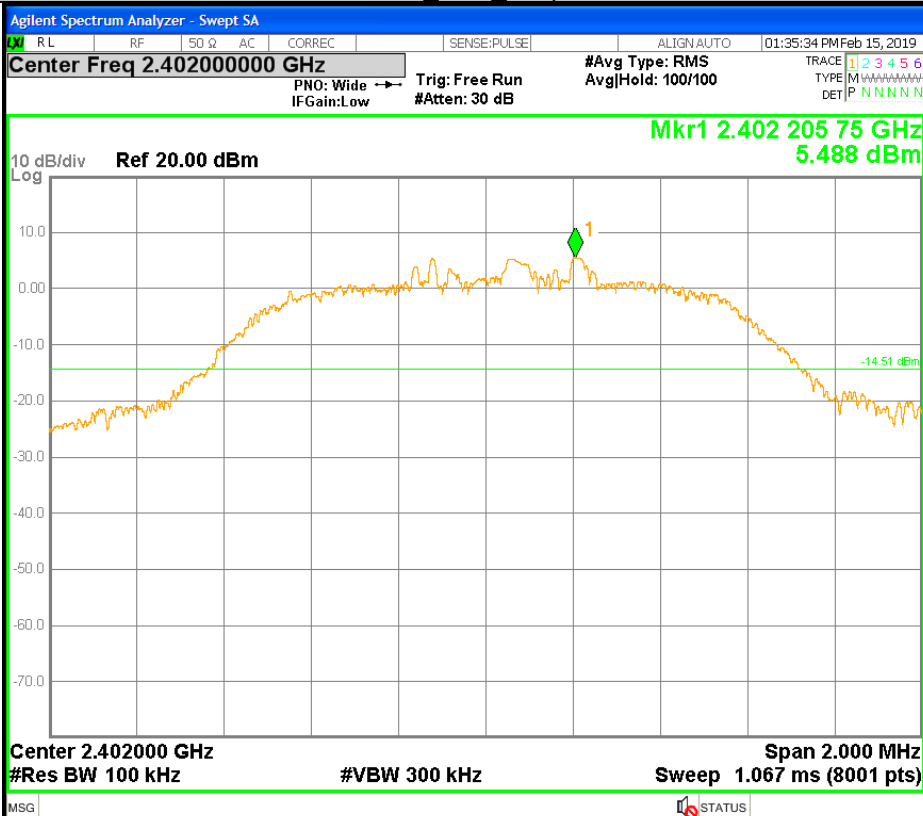


Puw



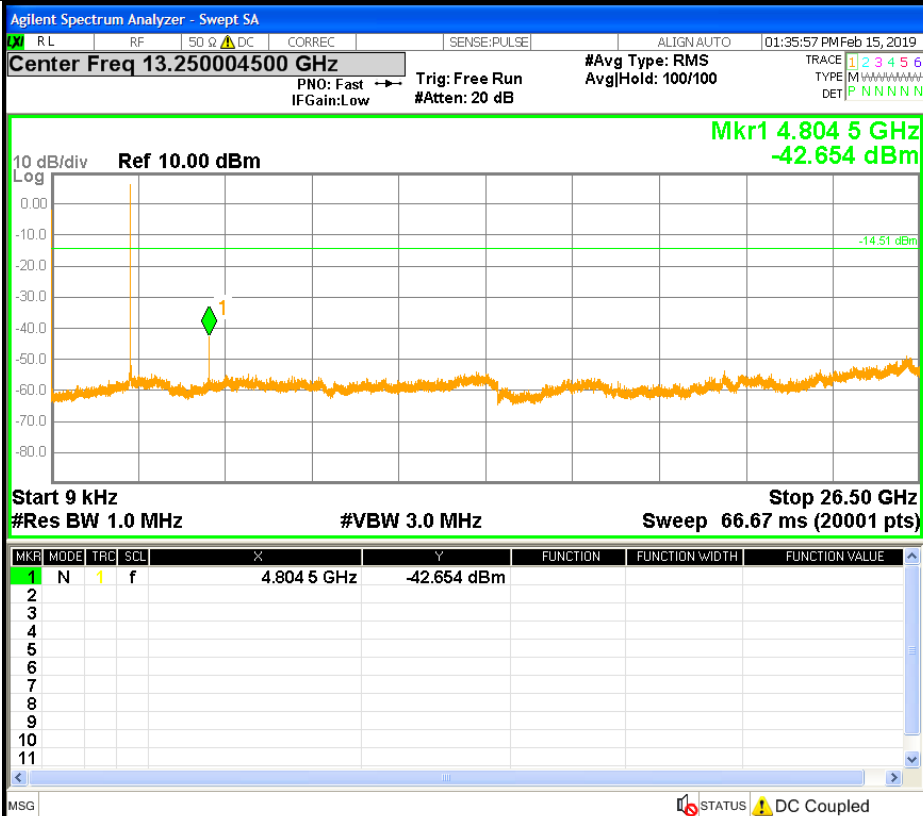
$\pi/4$ DQPSK LCH Graphs

Pref



Frequency
Auto Tune
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

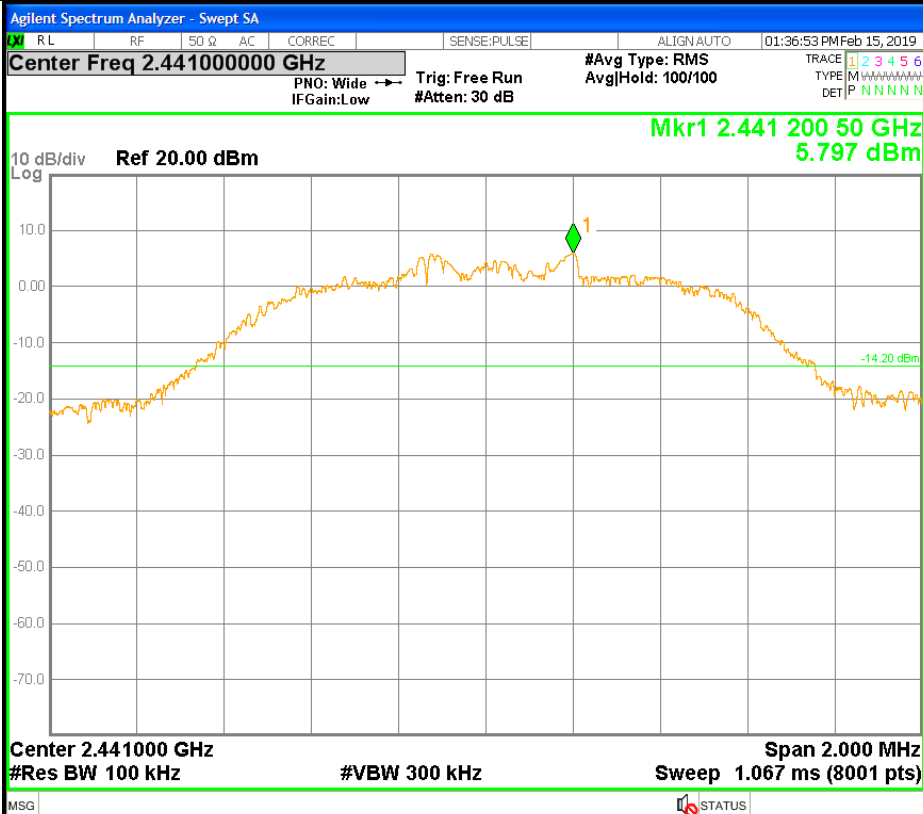
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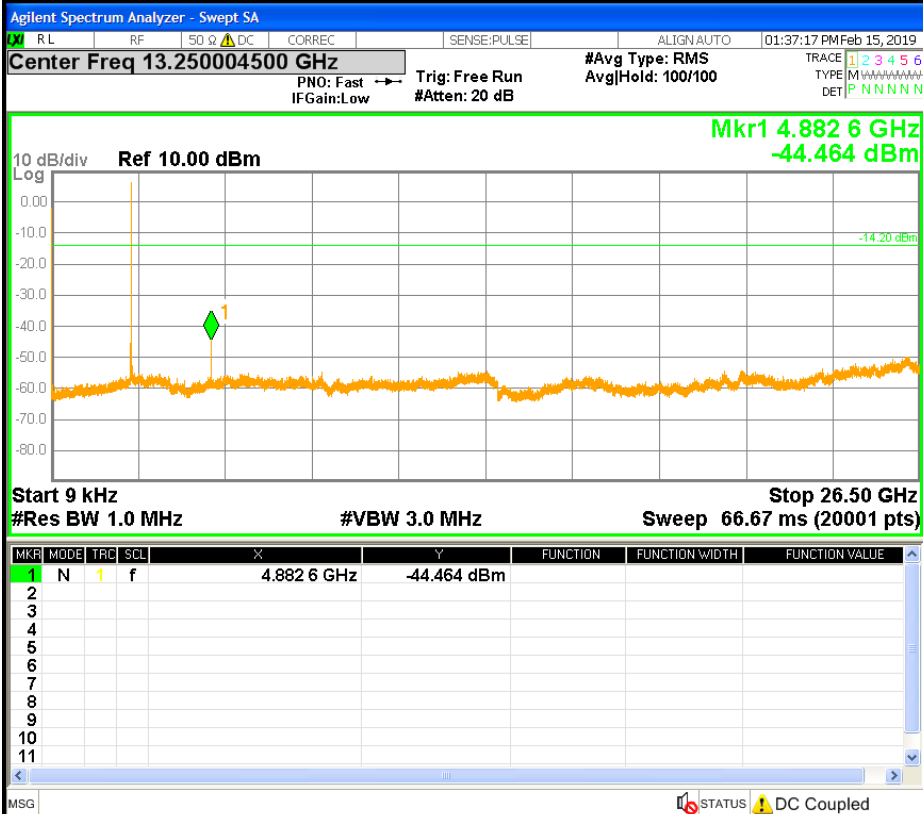
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK MCH Graphs

Pref

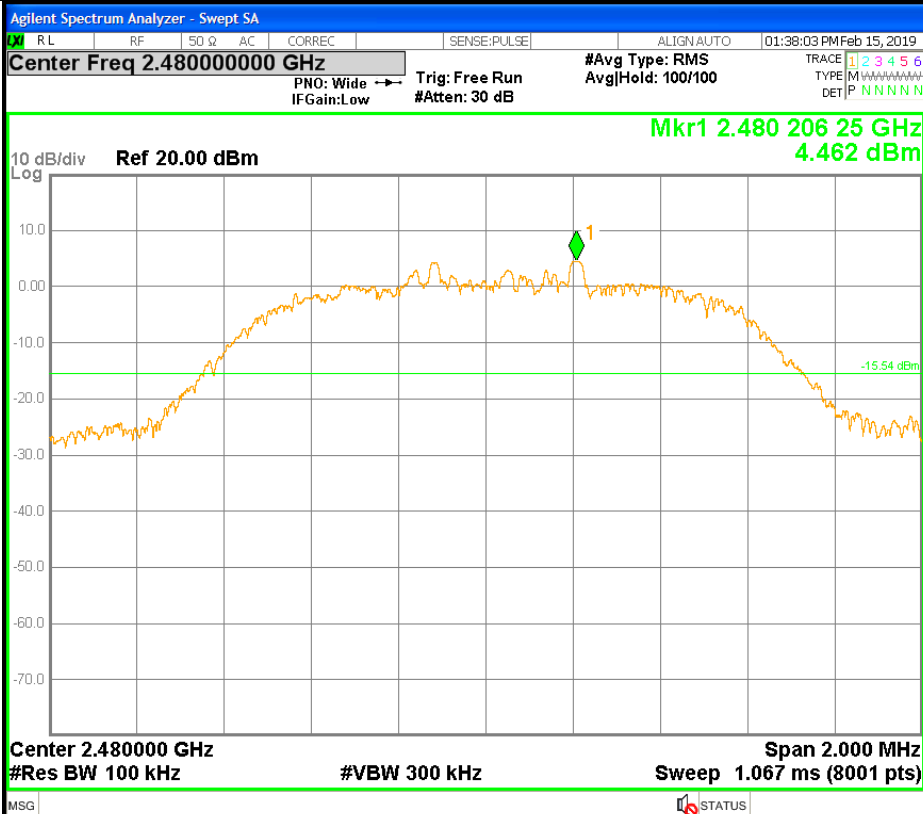


Puw

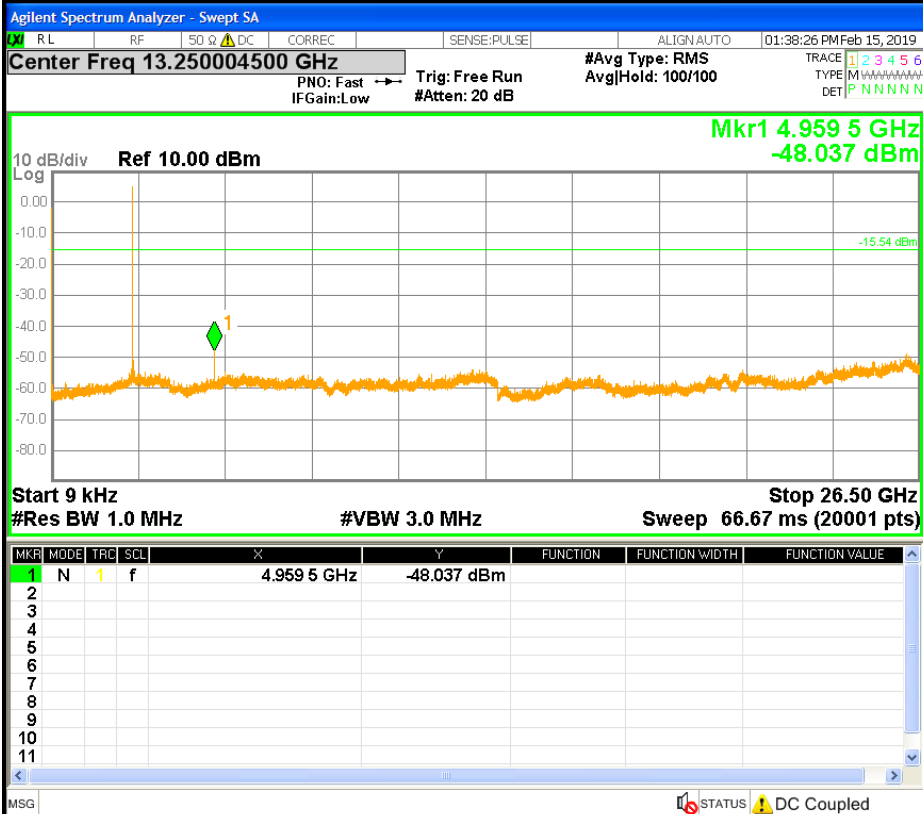


$\pi/4$ DQPSK HCH Graphs

Pref

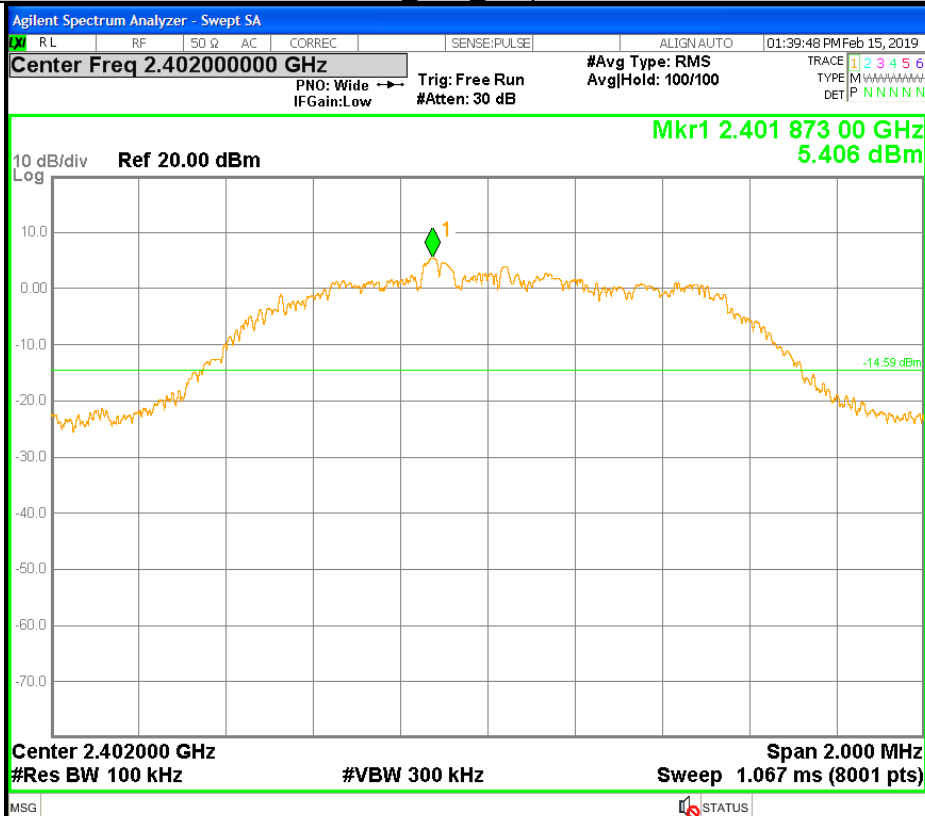


Puw

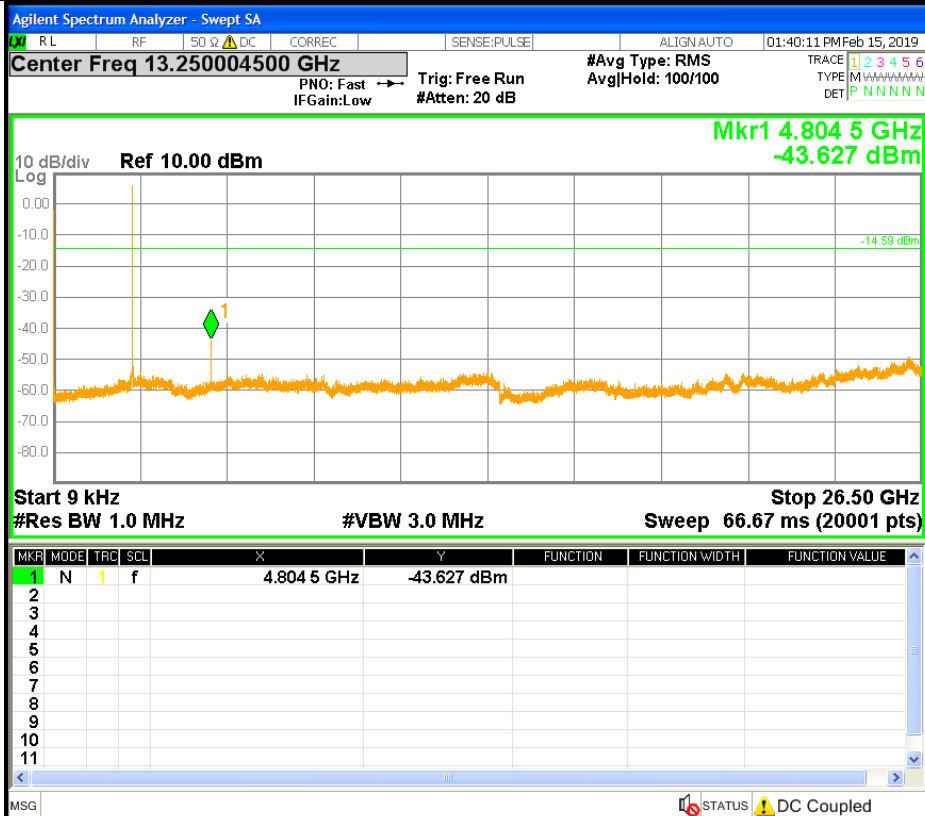


8DPSK LCH Graphs

Pref

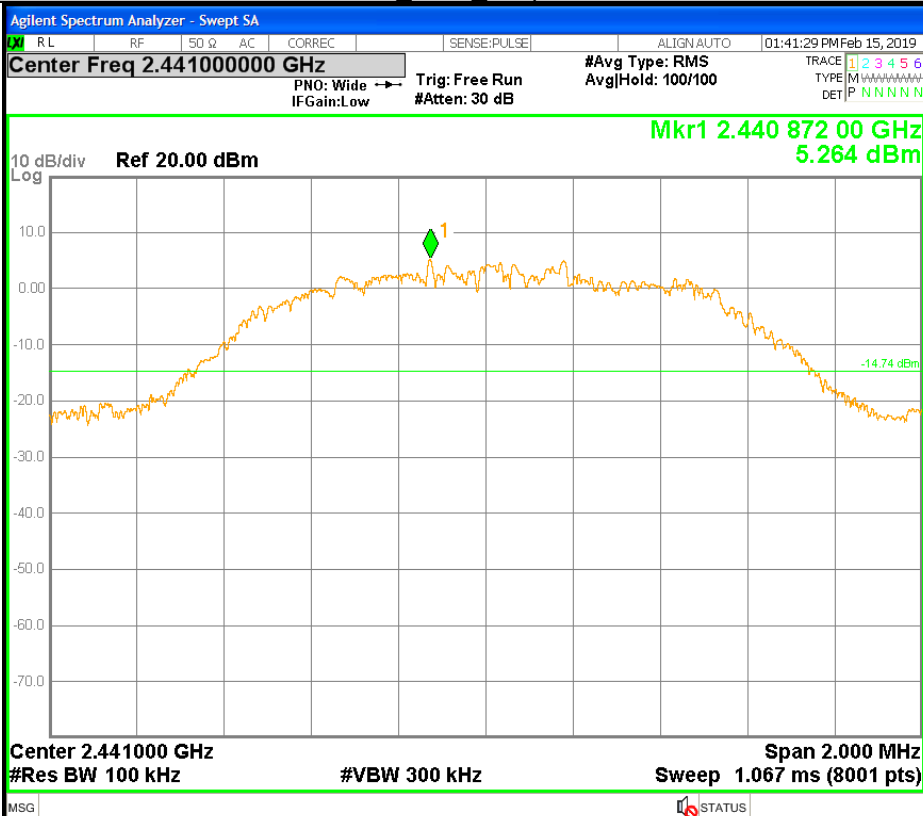


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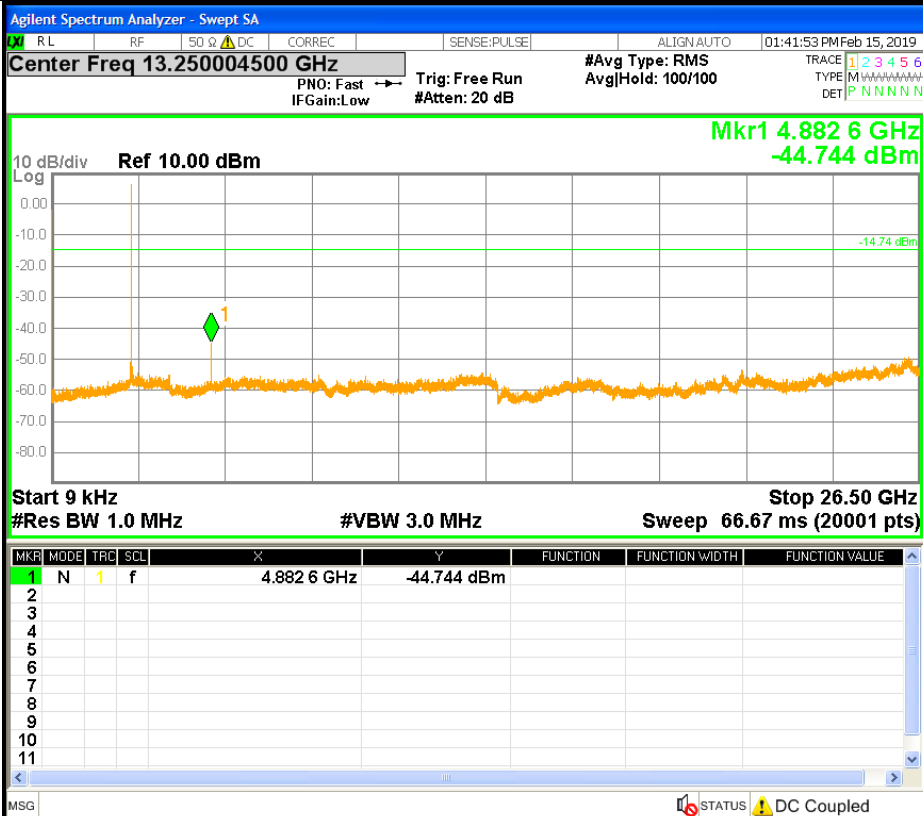


8DPSK MCH Graphs

Pref

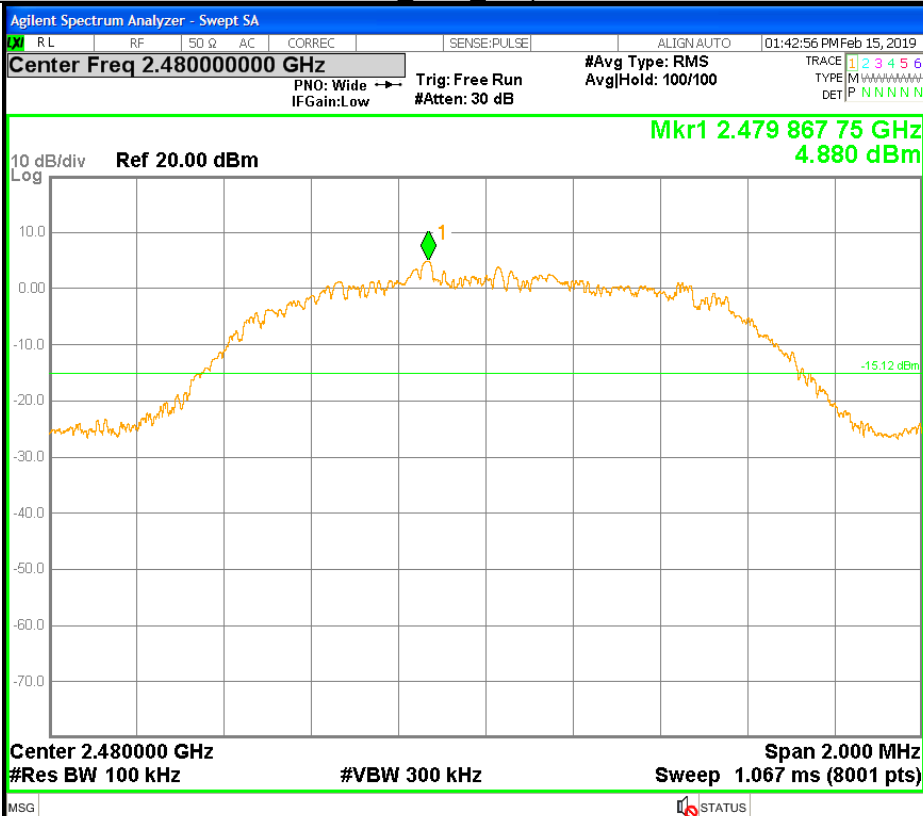


Puw

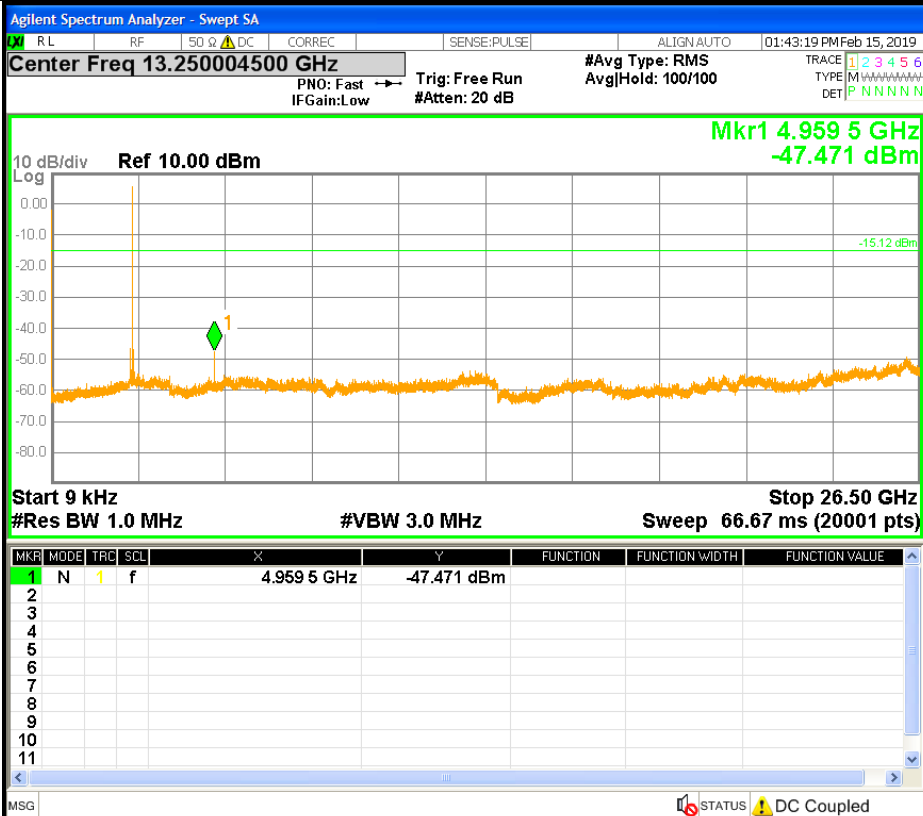


8DPSK HCH Graphs

Pref



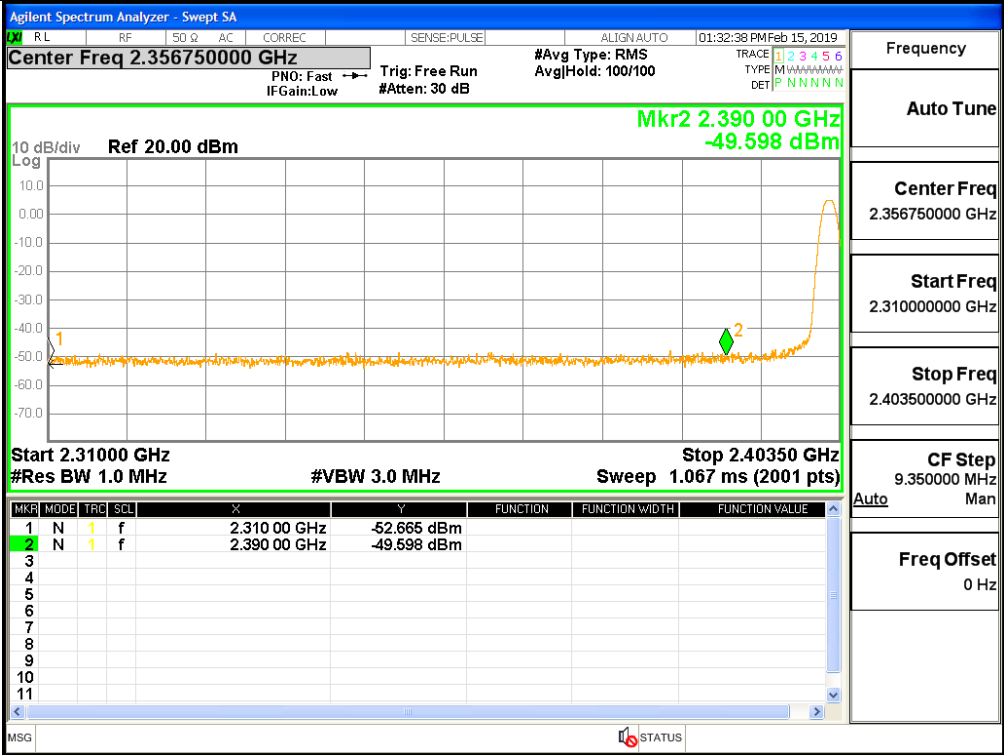
Puw



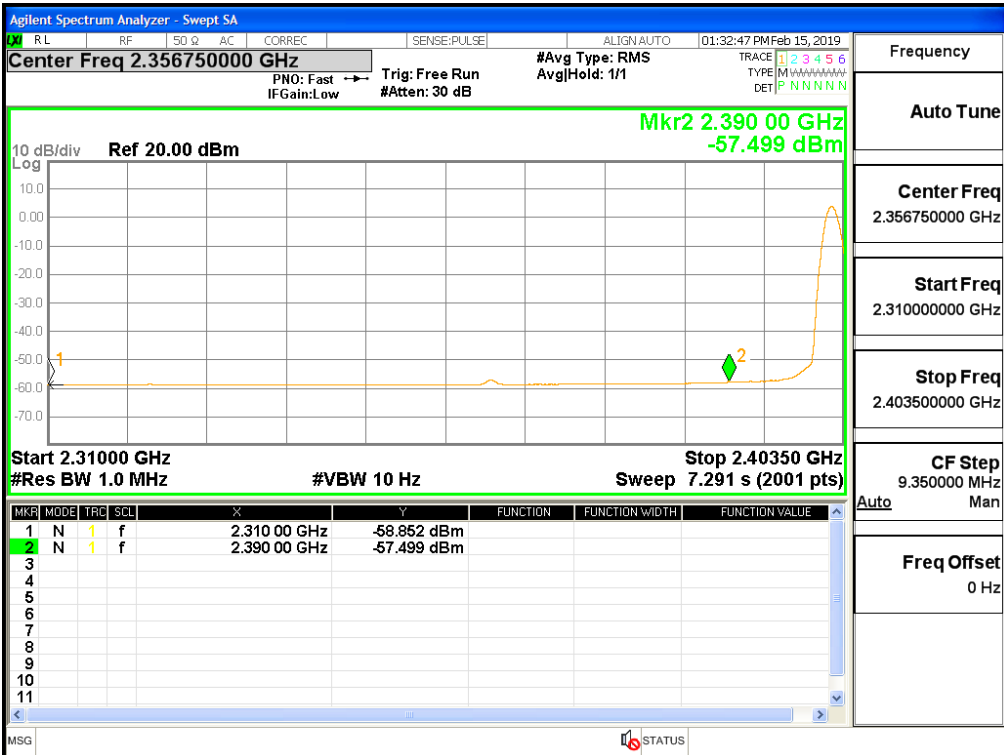
A.8 Restrict-band band-edge measurements

Type	Carrier Frequency (MHz)	Frequency(MHz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2310	2.00	0.00	-52.66	44.54	74	-58.85	38.35	54	Pass
1DH5	2402	2390	2.00	0.00	-49.6	47.6	74	-57.5	39.7	54	Pass
1DH5	2480	2483.5	2.00	0.00	-47.99	49.21	74	-53.5	43.7	54	Pass
1DH5	2480	2500	2.00	0.00	-50.43	46.77	74	-57.89	39.31	54	Pass
2DH5	2402	2310	2.00	0.00	-51.72	45.48	74	-58.82	38.38	54	Pass
2DH5	2402	2390	2.00	0.00	-51.41	45.79	74	-58.03	39.17	54	Pass
2DH5	2480	2483.5	2.00	0.00	-39	58.2	74	-48.72	48.48	54	Pass
2DH5	2480	2500	2.00	0.00	-51.88	45.32	74	-57.87	39.33	54	Pass
3DH5	2402	2310	2.00	0.00	-50.28	46.92	74	-58.86	38.34	54	Pass
3DH5	2402	2390	2.00	0.00	-52.46	44.74	74	-57.94	39.26	54	Pass
3DH5	2480	2483.5	2.00	0.00	-37.76	59.44	74	-46.66	50.54	54	Pass
3DH5	2480	2500	2.00	0.00	-49.54	47.66	74	-57.92	39.28	54	Pass

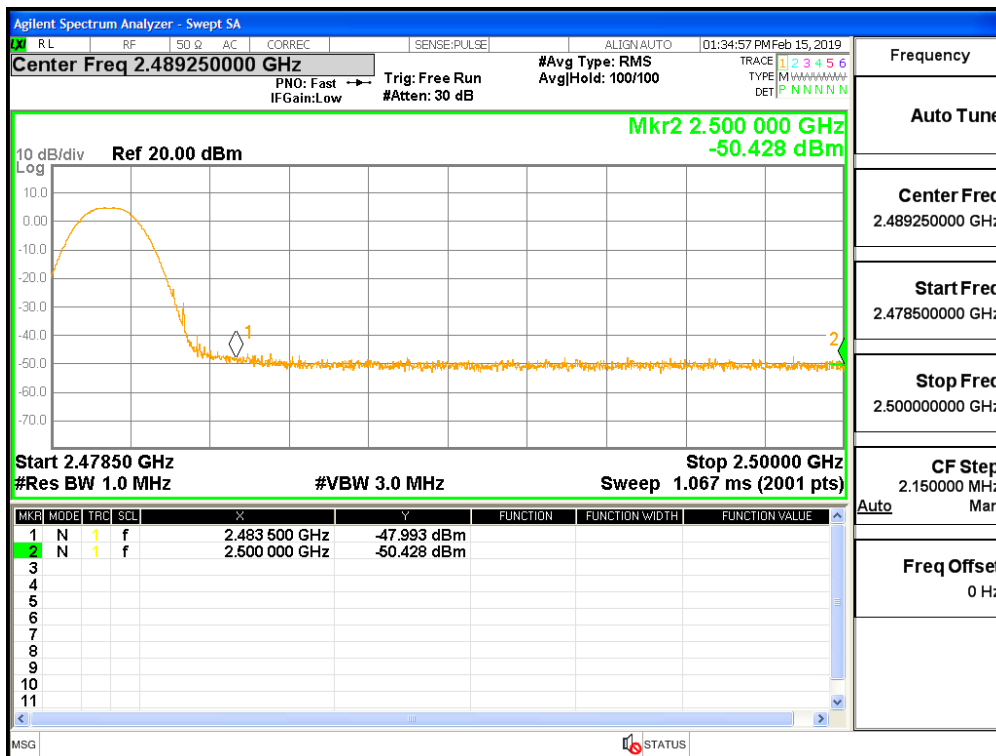
Restrict-band band-edge measurements_2402_PEAK_DH5



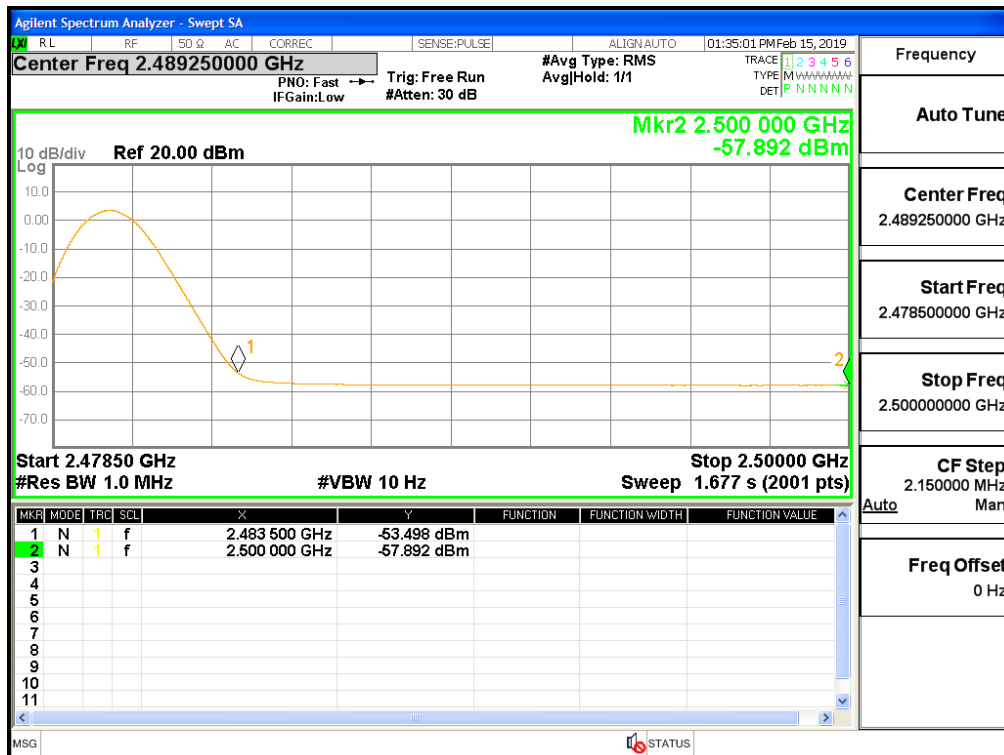
Restrict-band band-edge measurements_2402_AV_DH5



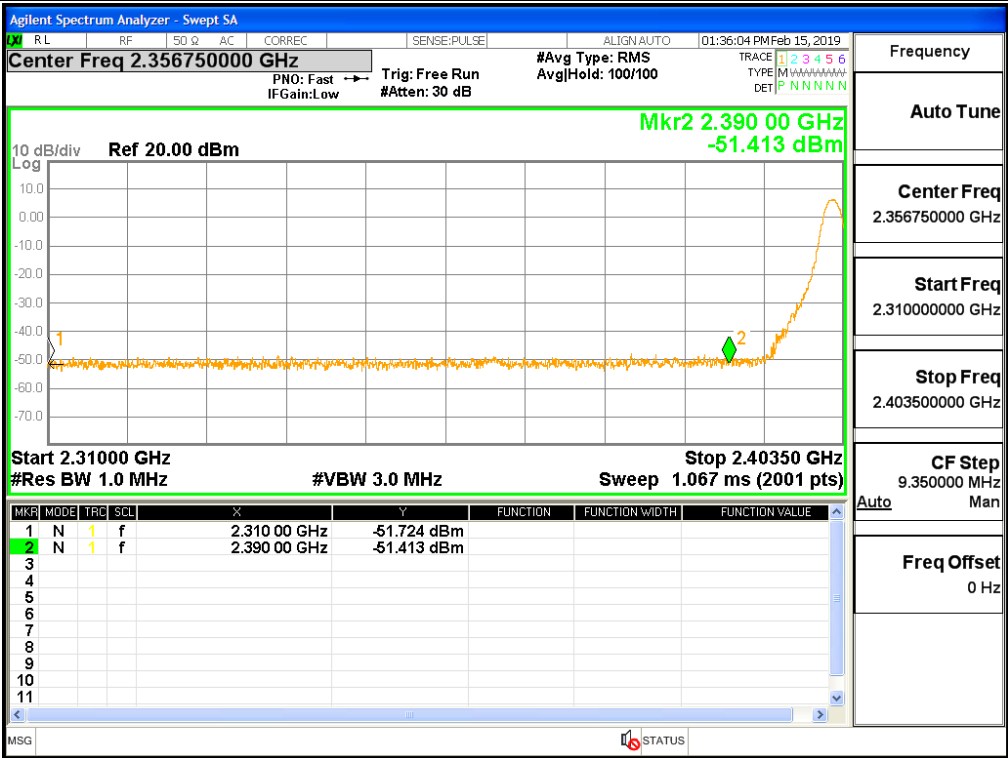
Restrict-band band-edge measurements_2480_PEAK_DH5



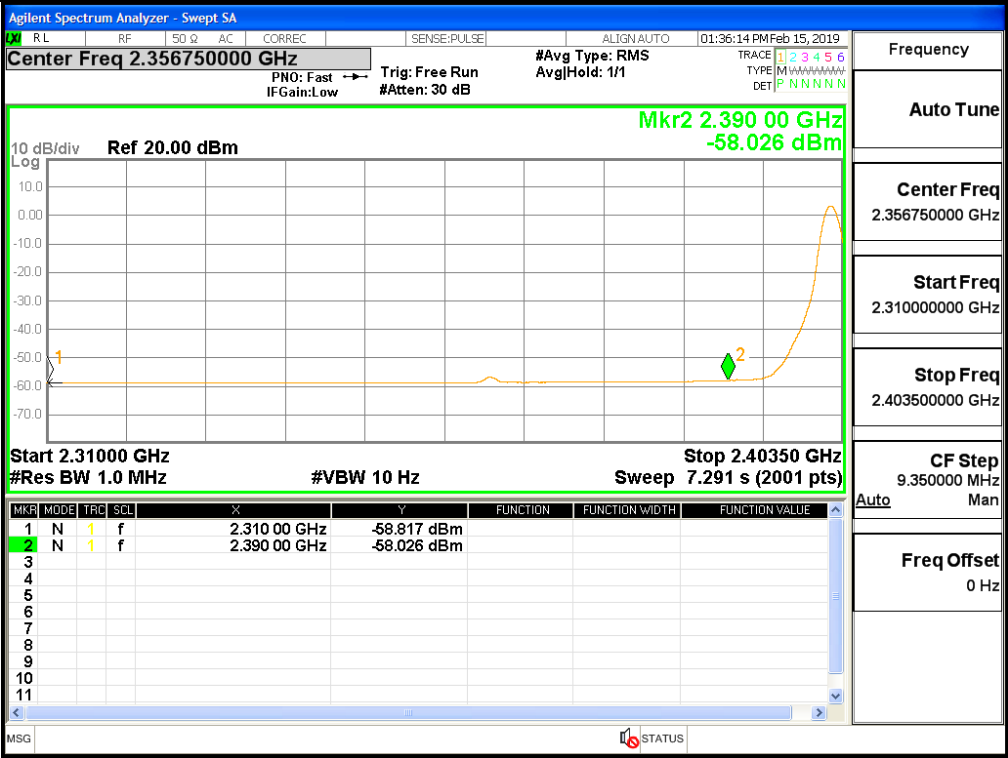
Restrict-band band-edge measurements_2480_AV_DH5



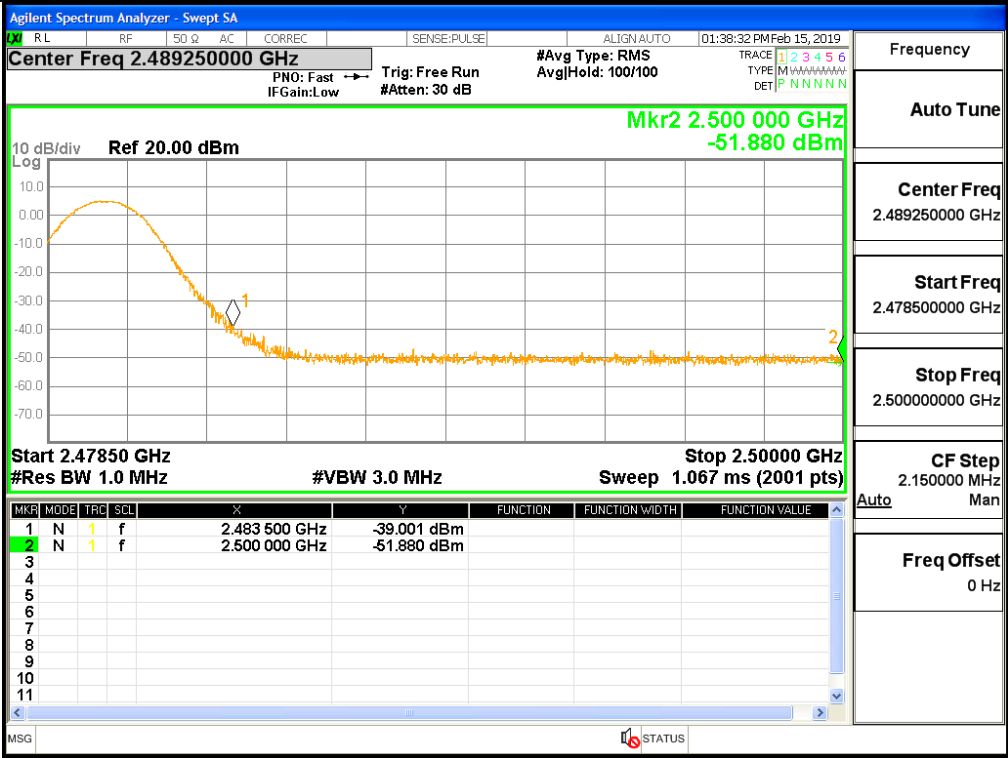
Restrict-band band-edge measurements_2402_PEAK_2DH5



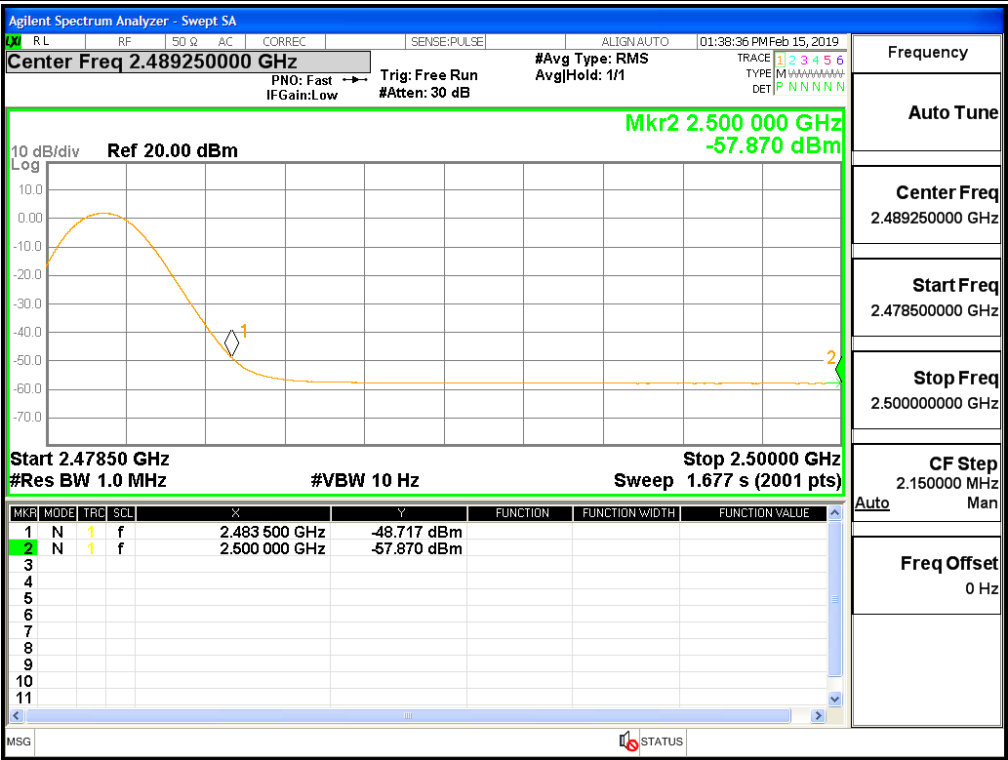
Restrict-band band-edge measurements_2402_AV_2DH5



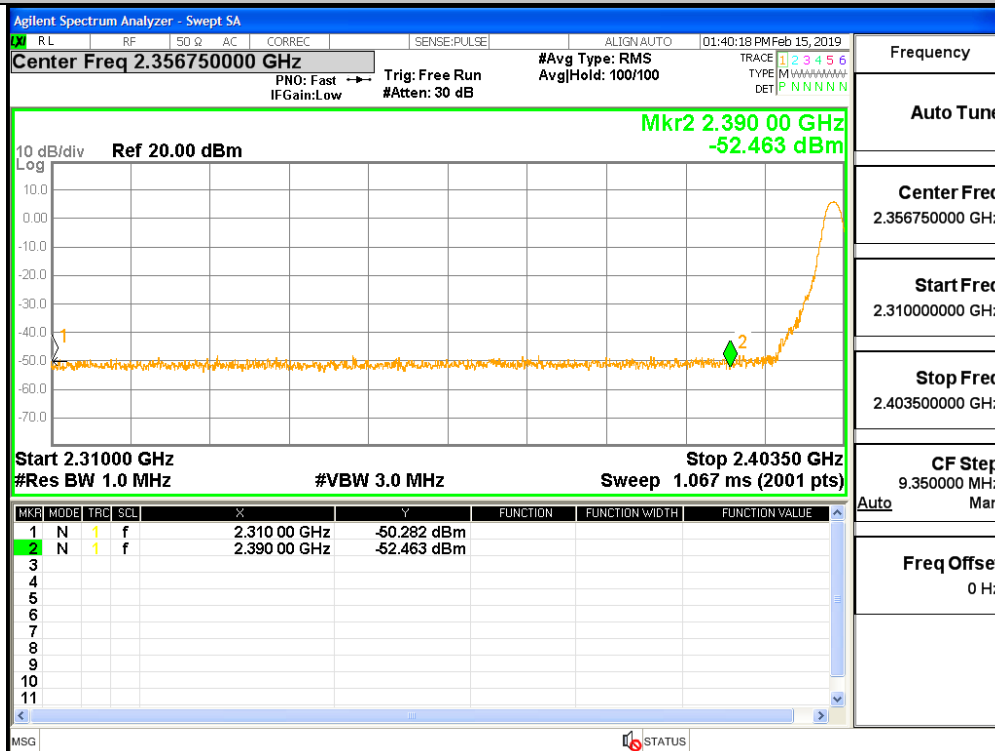
Restrict-band band-edge measurements_2480_PEAK_2DH5



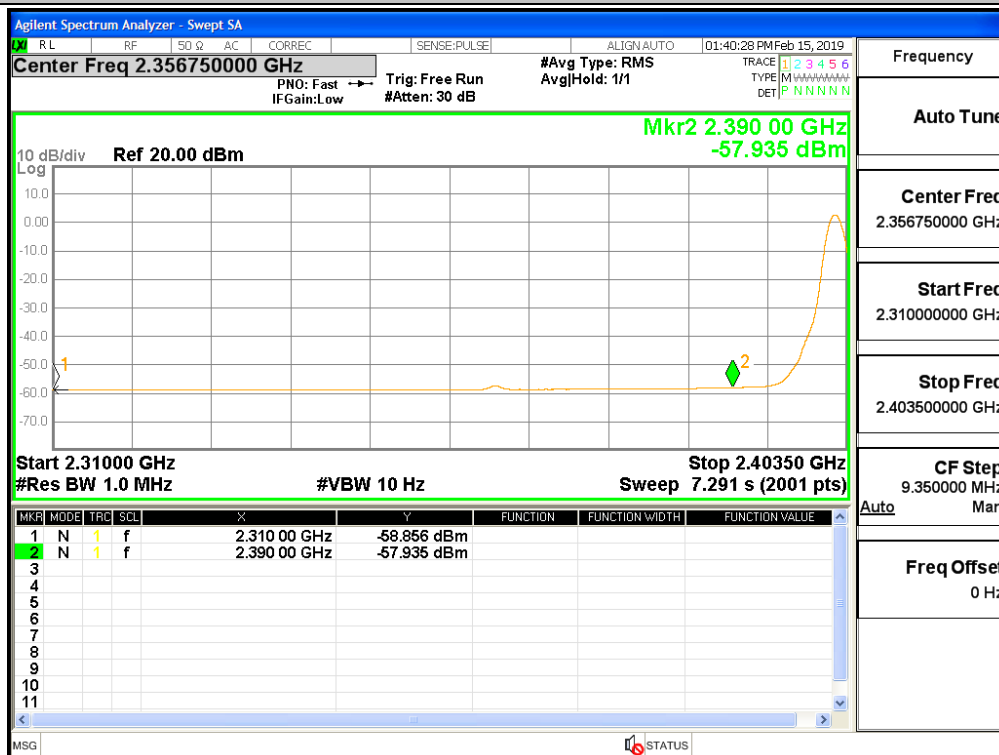
Restrict-band band-edge measurements_2480_AV_2DH5



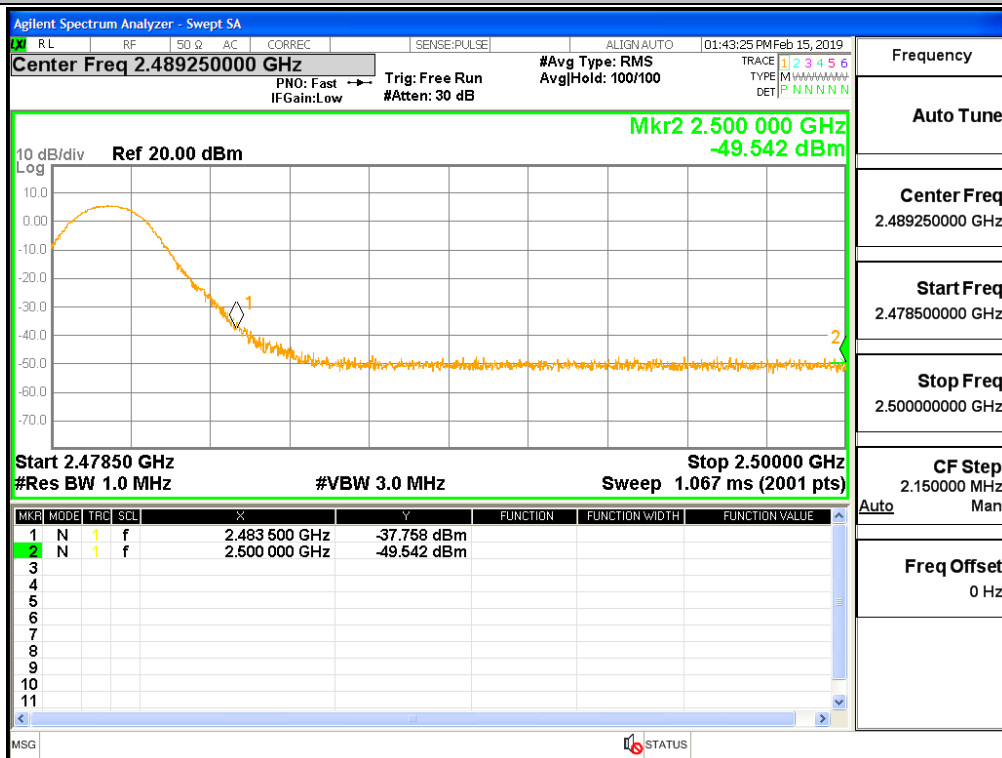
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

