

Appendix A

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

Product Name: Wattbike Performance Touchscreen

Trade Mark: WattbikePT1

Test Model: 80-000

FCC ID: 2AVJT-80-000

Environmental Conditions

Temperature:	22.8° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu
NOTE	Chipset/Module: MT6625L

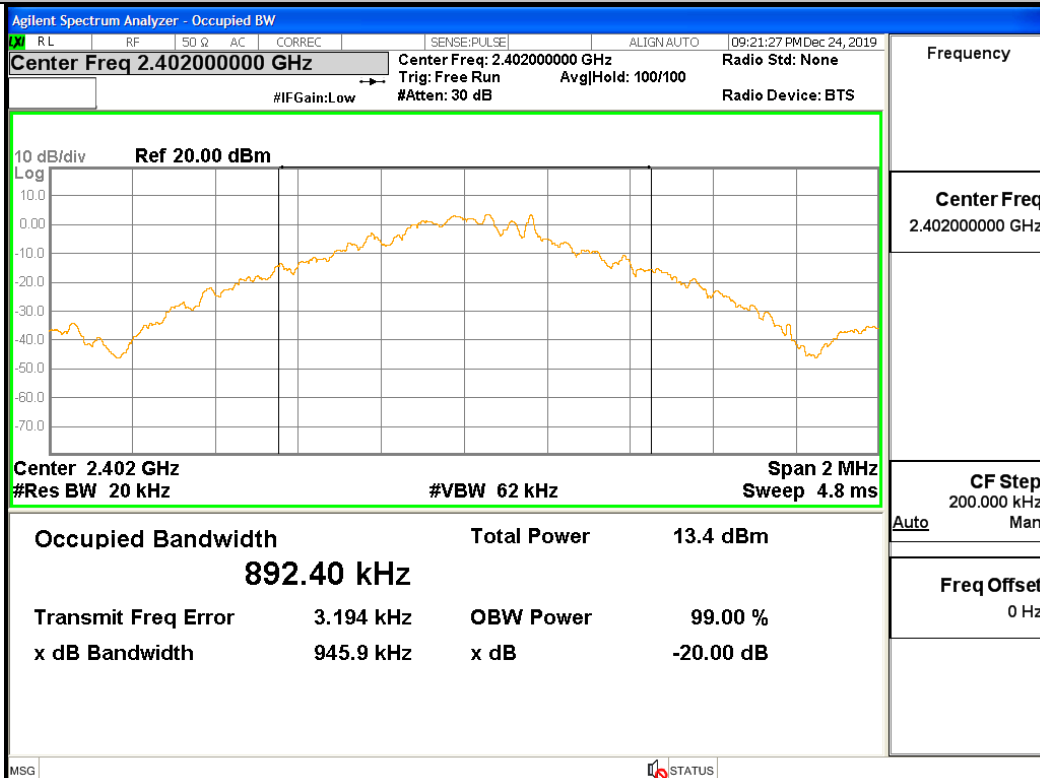
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.946	Not Specified	PASS
GFSK	MCH	0.944	Not Specified	PASS
GFSK	HCH	0.948	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.310	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.316	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.311	Not Specified	PASS
8DPSK	LCH	1.267	Not Specified	PASS
8DPSK	MCH	1.299	Not Specified	PASS
8DPSK	HCH	1.270	Not Specified	PASS

Test Graph

Graphs

GFSK/LCH



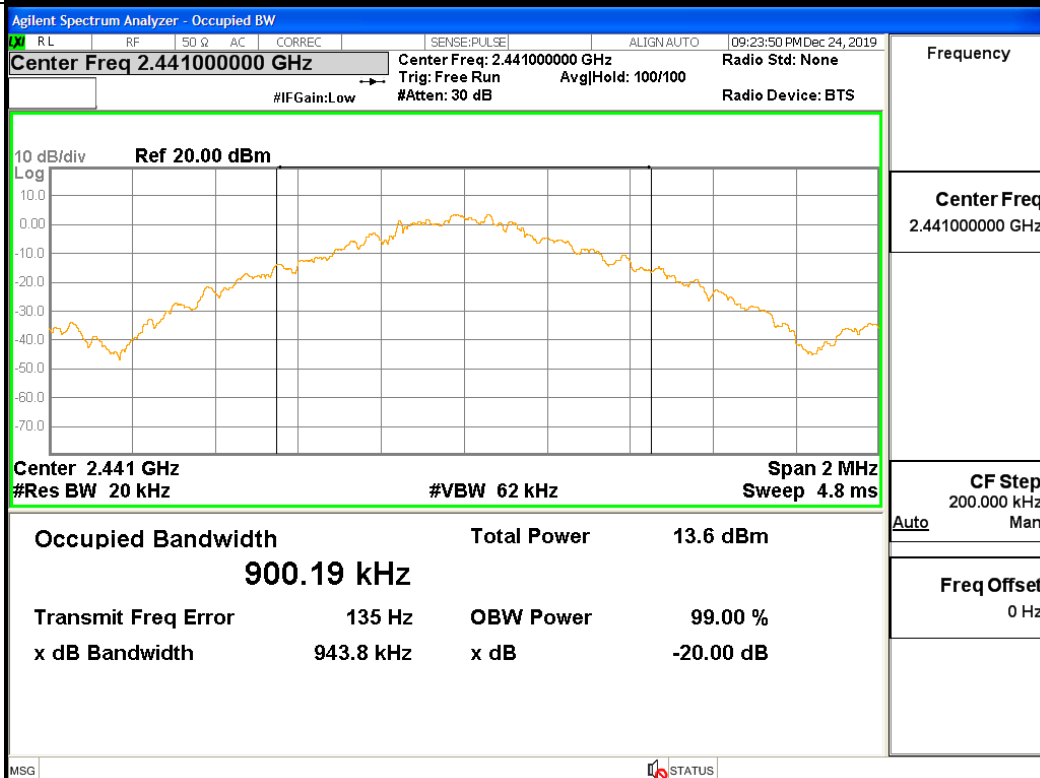
Frequency

Center Freq
2.40200000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

GFSK/MCH

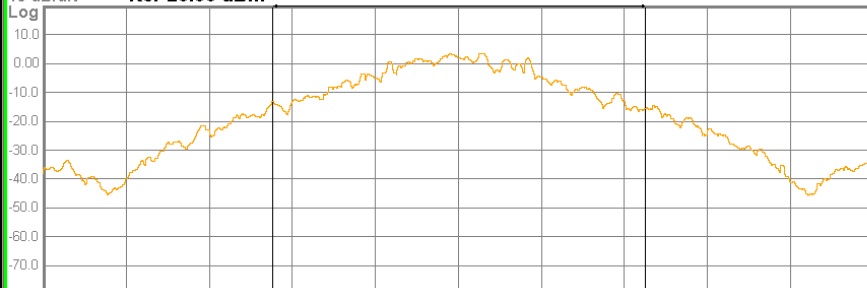
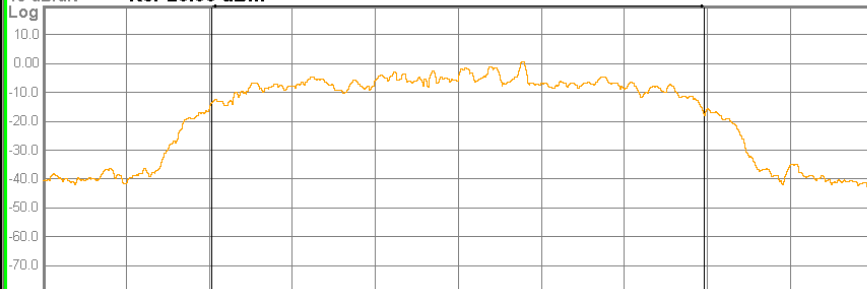


Frequency

Center Freq
2.441000000 GHz

CF Step
200.000 kHz
Auto Man

Freq Offset
0 Hz

GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 09:25:27 PM Dec 24, 2019 Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB AvgHold: 100/100 Radio Device: BTS 10 dB/div Ref 20.00 dBm  Center 2.48 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 893.86 kHz Total Power 13.8 dBm Transmit Freq Error 2.046 kHz OBW Power 99.00 % x dB Bandwidth 947.5 kHz x dB -20.00 dB MSG  STATUS										Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Freq Offset 0 Hz	
	π/4DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 09:27:12 PM Dec 24, 2019 Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB AvgHold: 100/100 Radio Device: BTS 10 dB/div Ref 20.00 dBm  Center 2.402 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1843 MHz Total Power 11.2 dBm Transmit Freq Error -684 Hz OBW Power 99.00 % x dB Bandwidth 1.310 MHz x dB -20.00 dB MSG  STATUS										Frequency Center Freq 2.402000000 GHz CF Step 200.000 kHz Auto Freq Offset 0 Hz

Center Freq 2.402000000 GHz

Center Freq: 2.402000000 GHz

Radio Std: None

#IFGain:Low

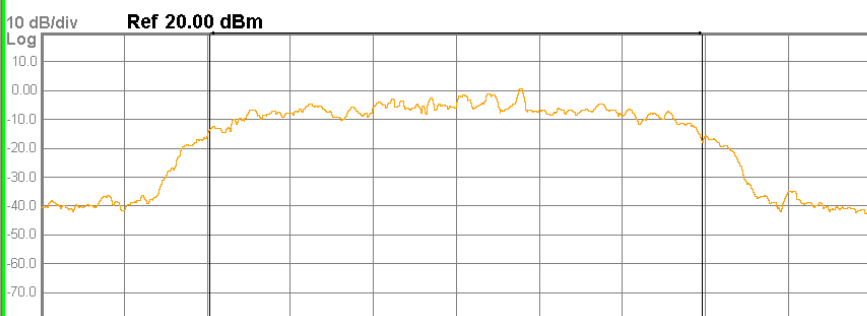
#Atten: 30 dB

AvgHold: 100/100

Radio Device: BTS

10 dB/div

Ref 20.00 dBm



Center 2.402 GHz

#Res BW 20 kHz

#VBW 62 kHz

Span 2 MHz

Sweep 4.8 ms

Occupied Bandwidth

1.1843 MHz

Total Power

11.2 dBm

Transmit Freq Error

-684 Hz

OBW Power

99.00 %

x dB Bandwidth

1.310 MHz

x dB

-20.00 dB

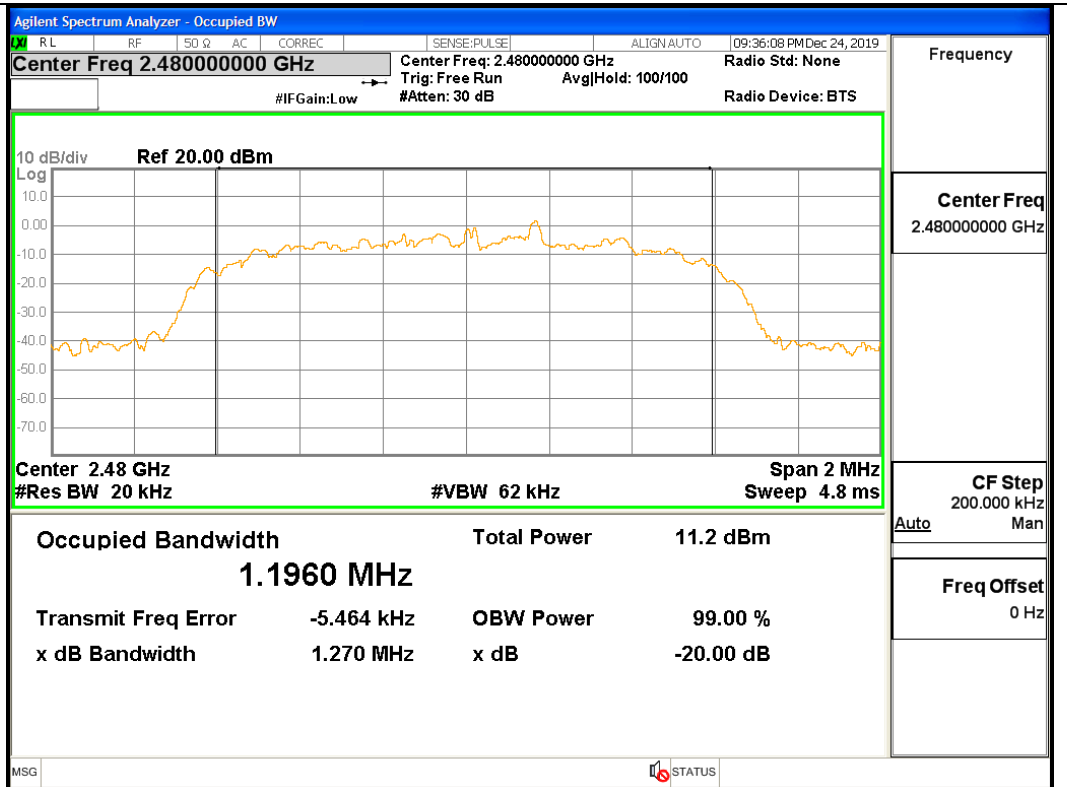
MSG

STATUS





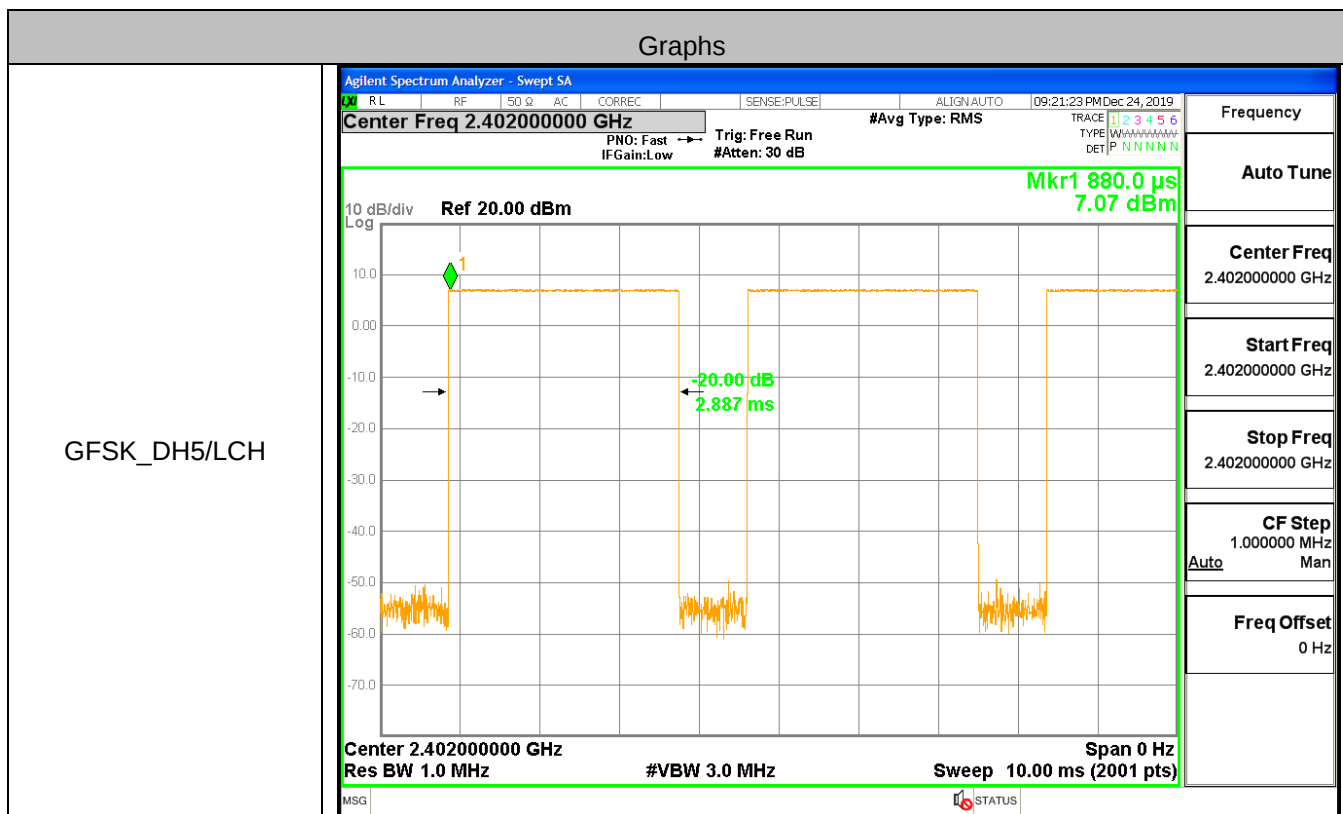
8DPSK/HCH

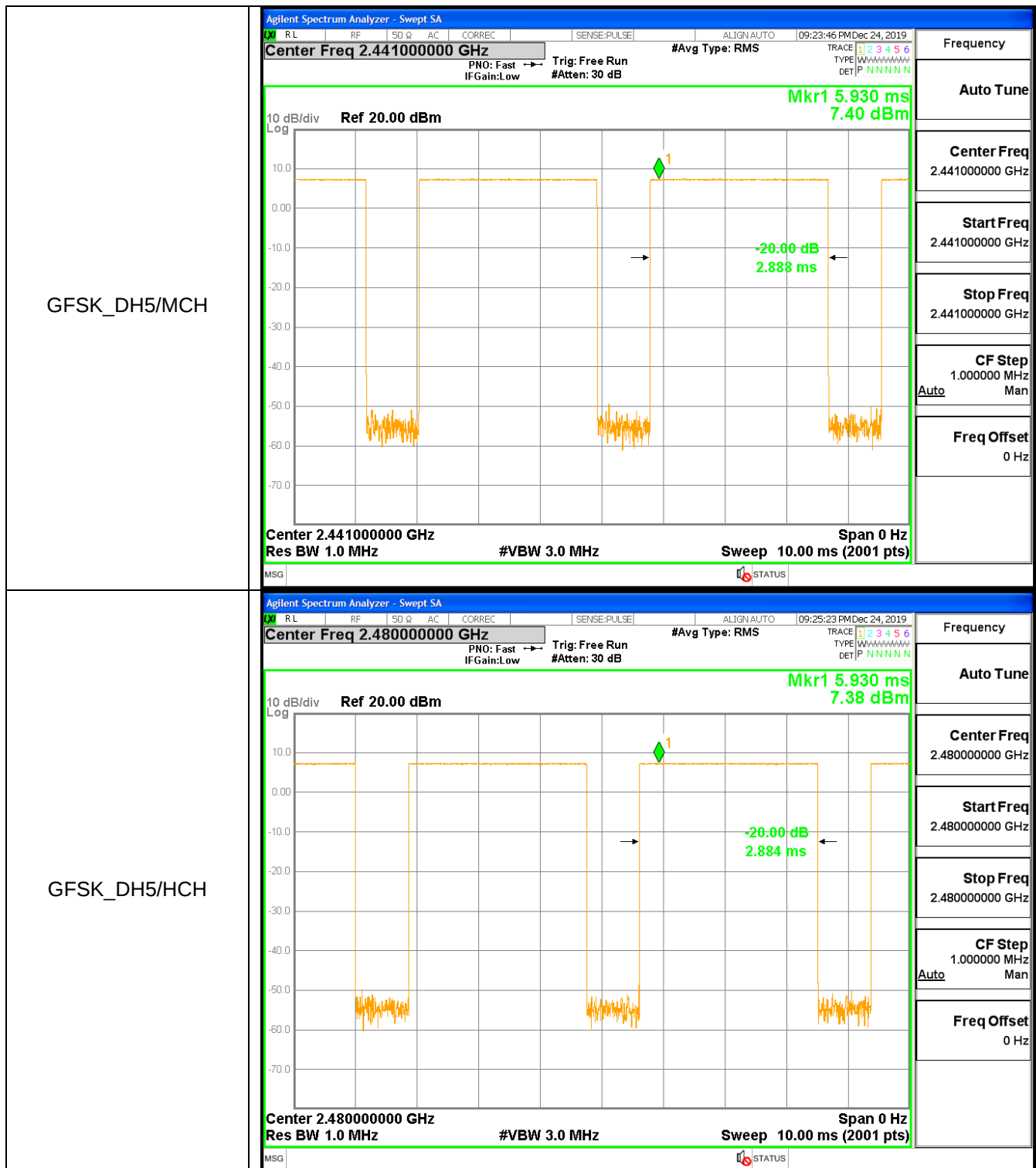


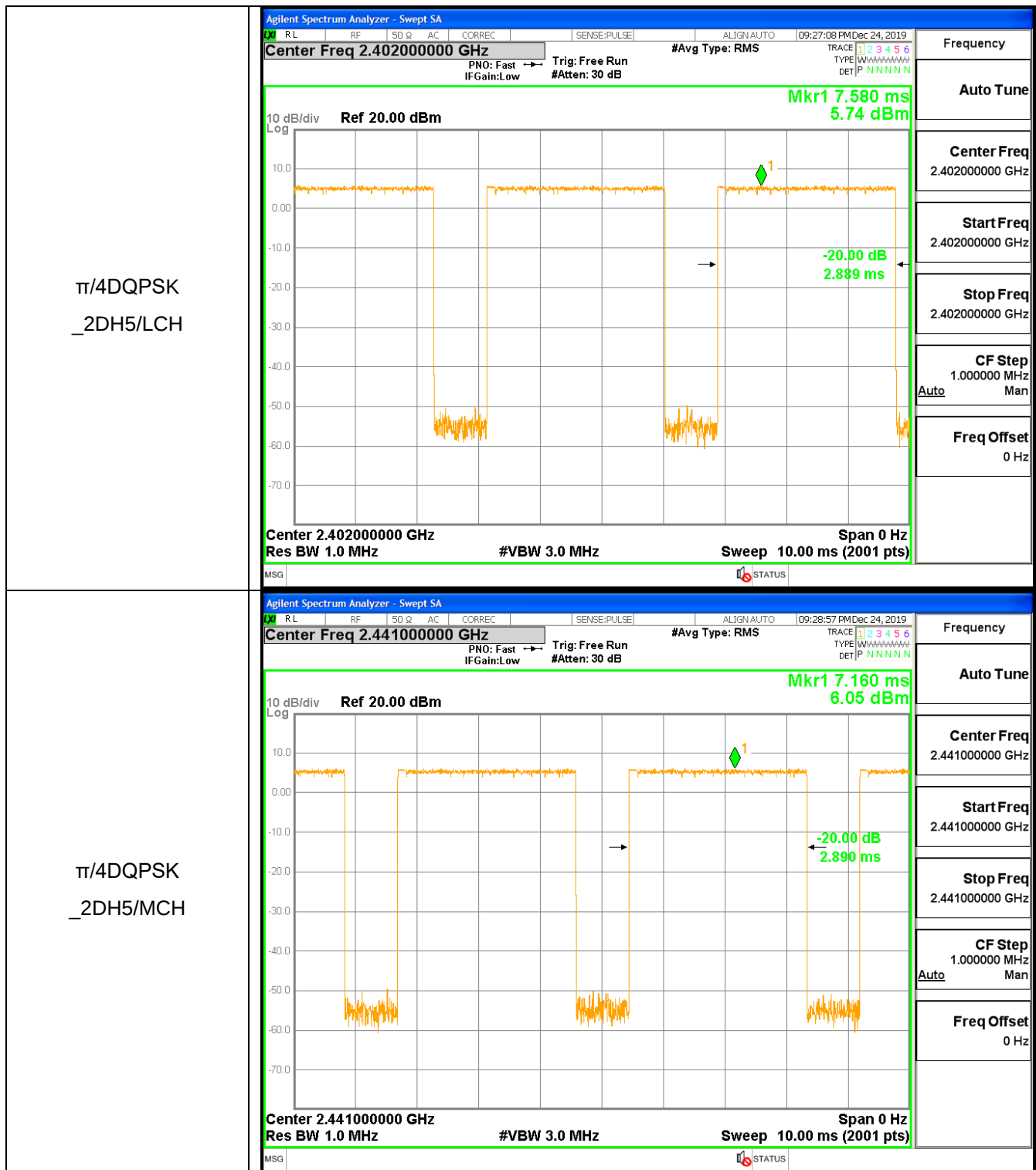
A.2 Dwell Time

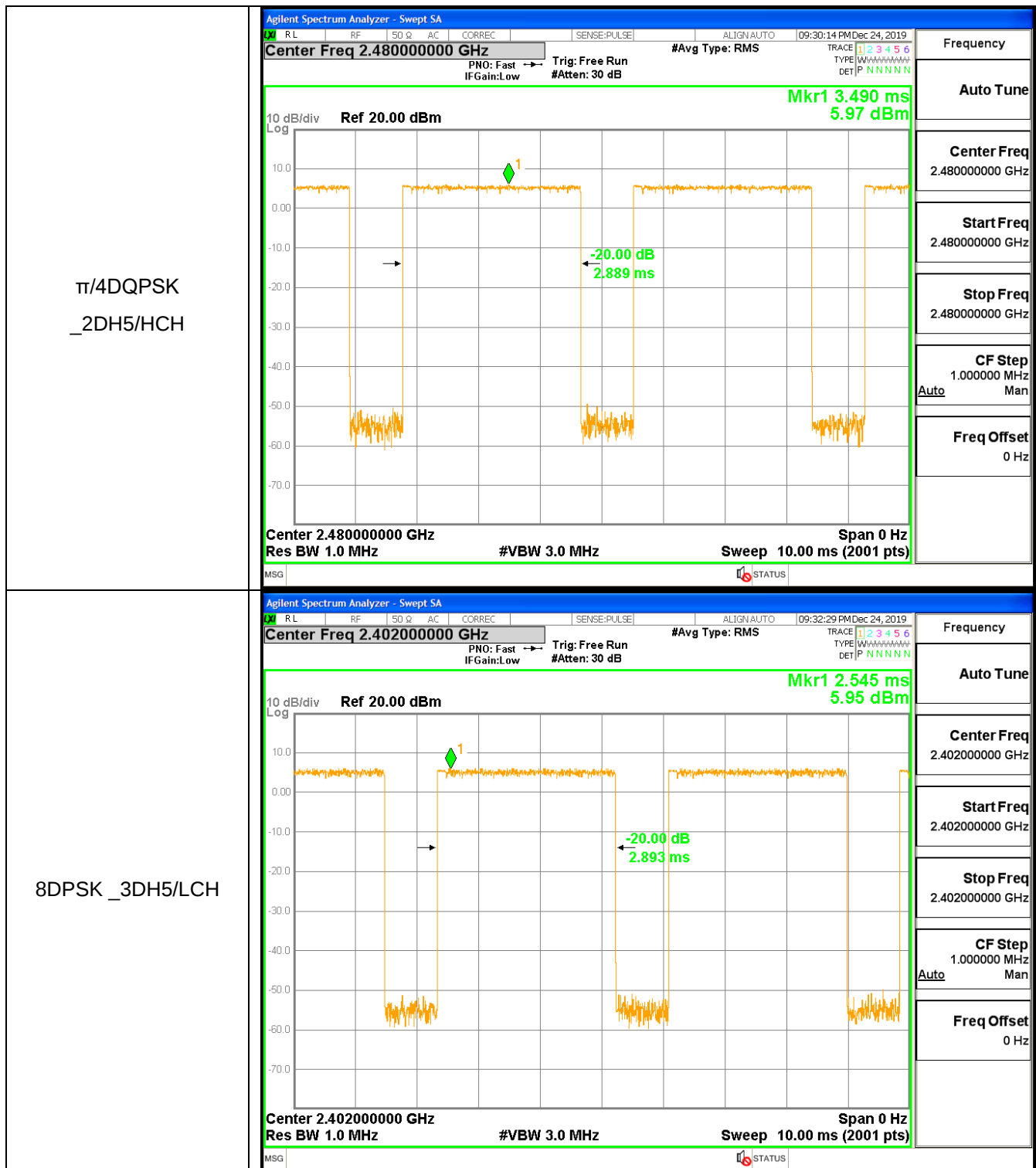
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002887	106.7	0.308039	0.4	PASS
GFSK	DH5	MCH	0.002888	106.7	0.308161	0.4	PASS
GFSK	DH5	HCH	0.002884	106.7	0.307718	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002889	106.7	0.308226	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.00289	106.7	0.308312	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002889	106.7	0.308209	0.4	PASS
8DPSK	3DH5	LCH	0.002893	106.7	0.308708	0.4	PASS
8DPSK	3DH5	MCH	0.002892	106.7	0.308536	0.4	PASS
8DPSK	3DH5	HCH	0.002893	106.7	0.308719	0.4	PASS

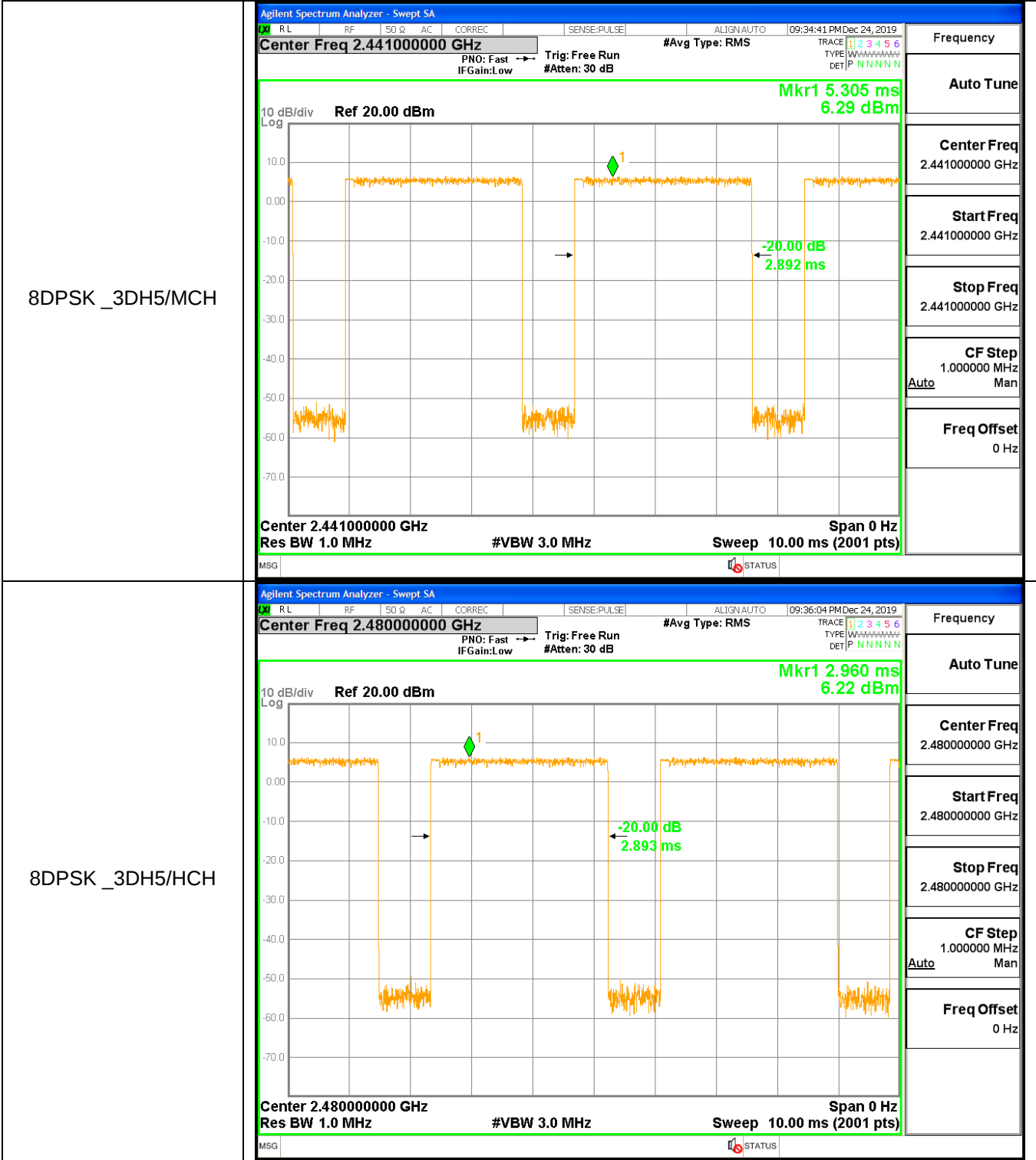
Test Graph







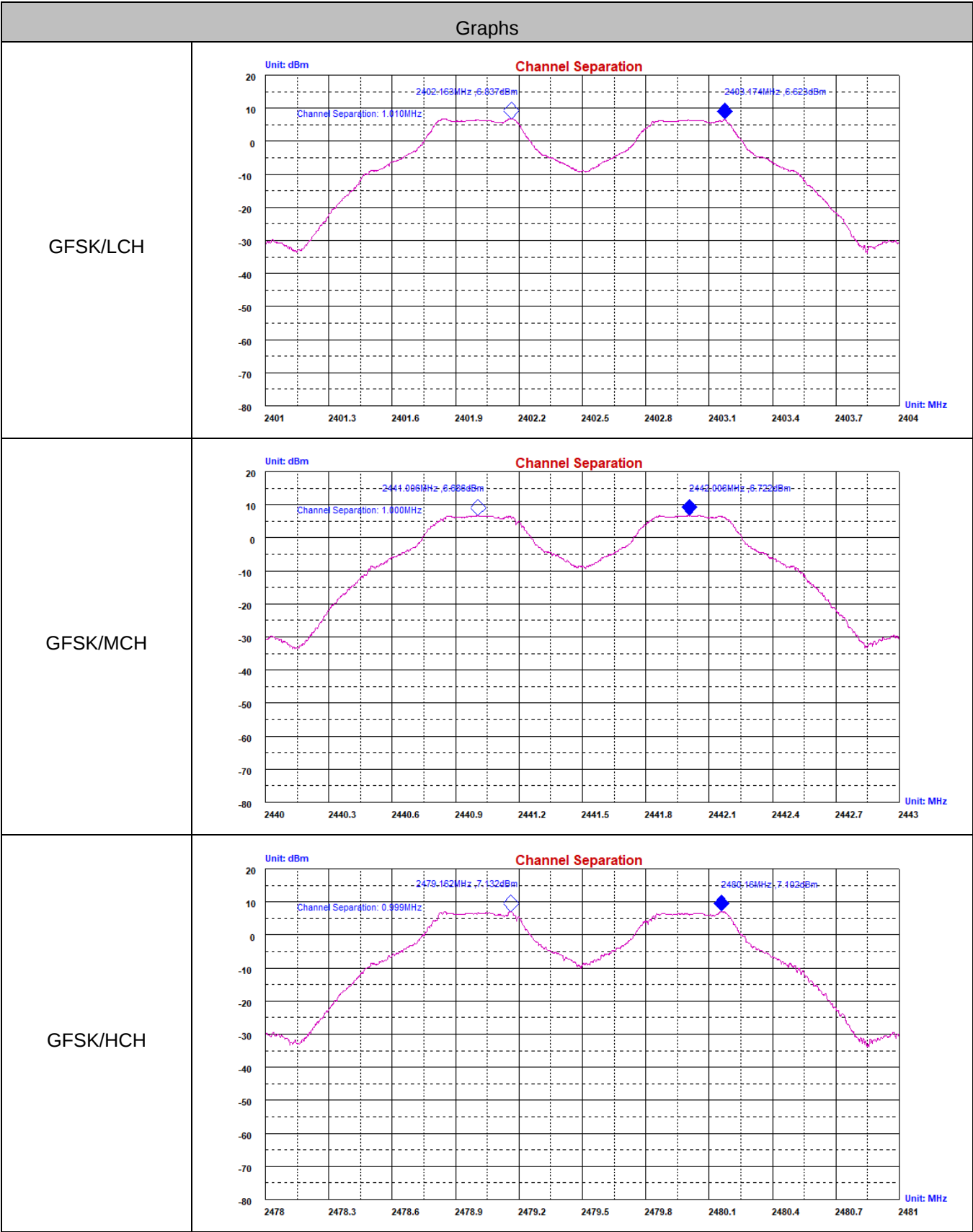


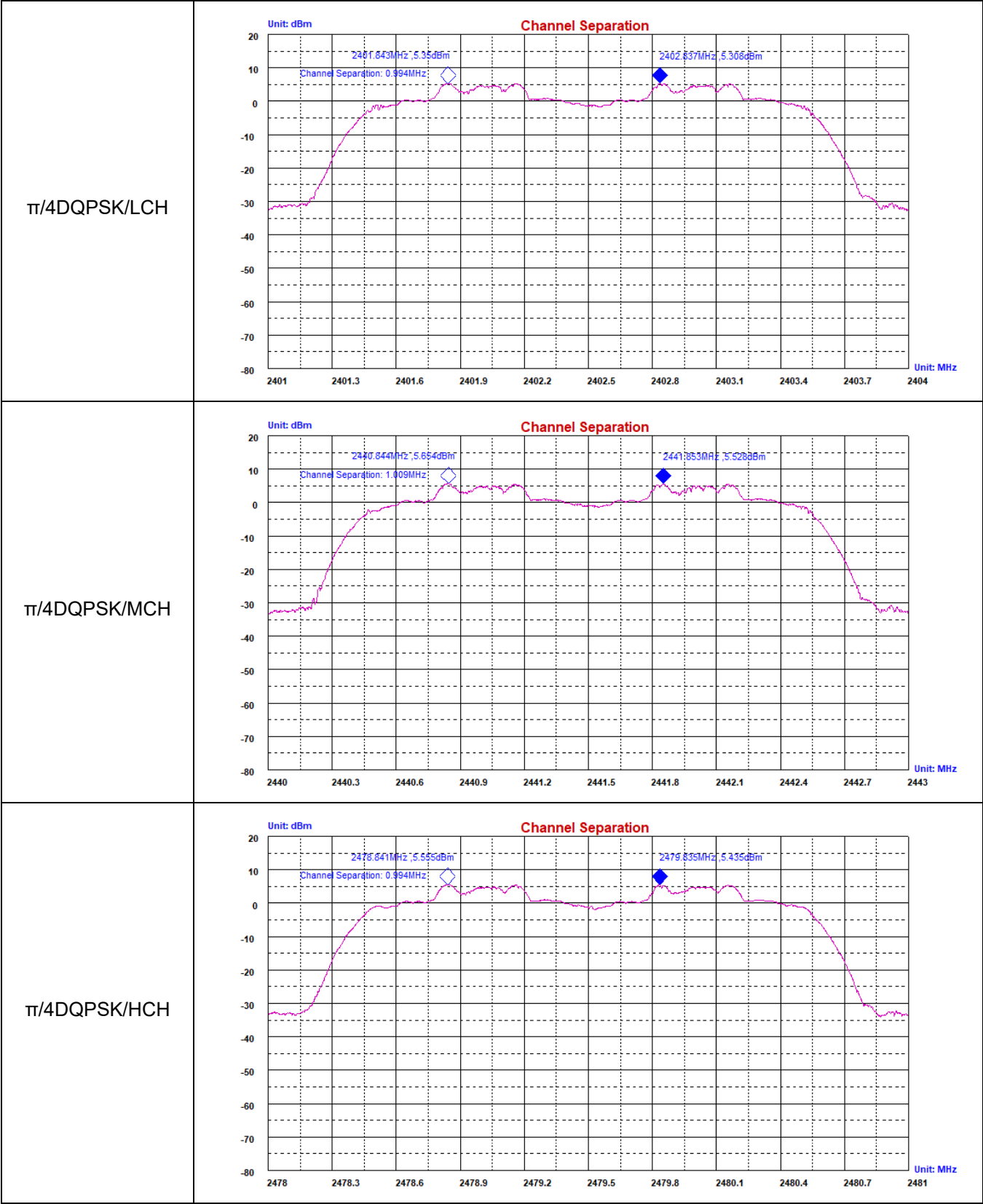


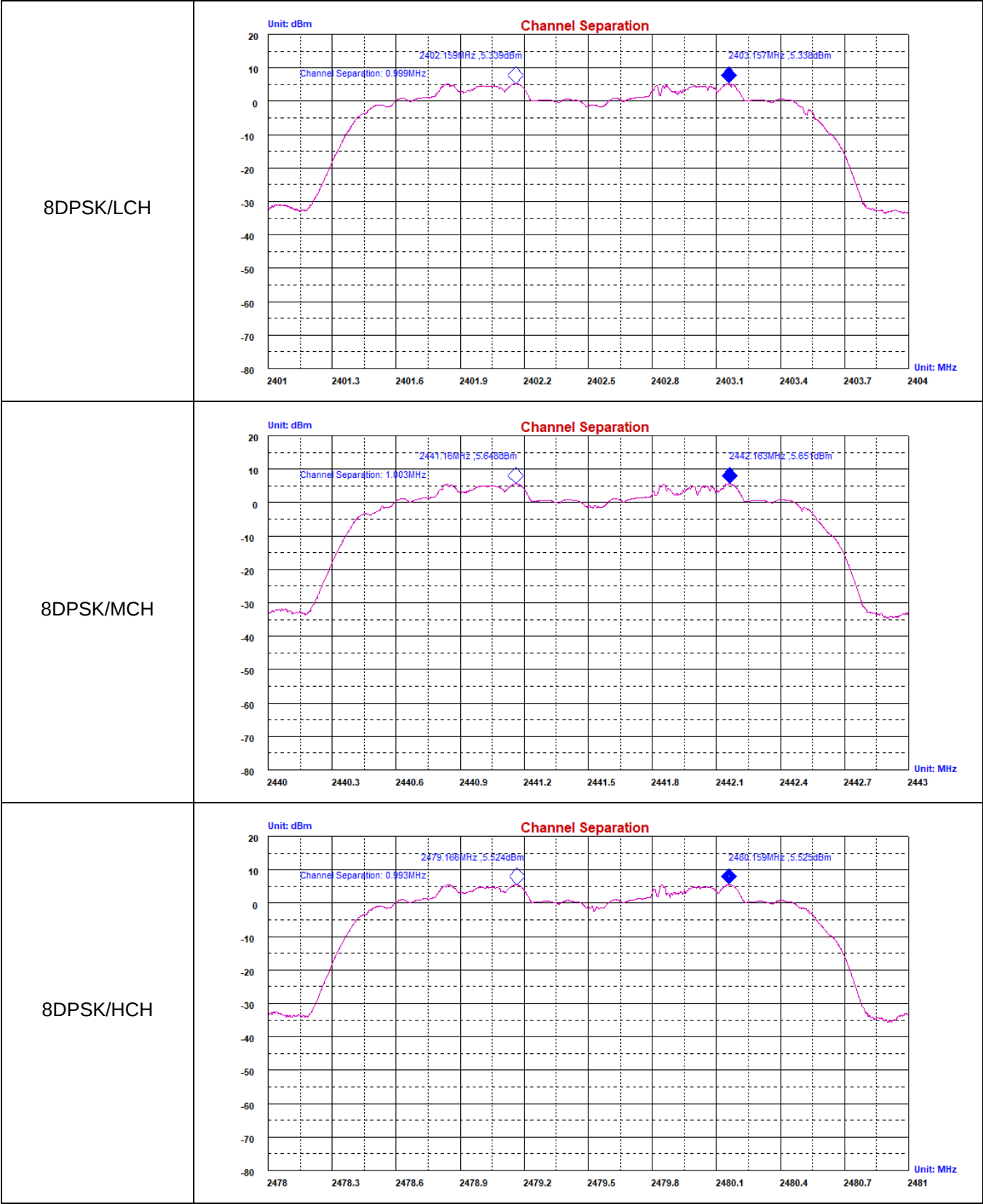
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.010	0.631	PASS
GFSK	MCH	1.000	0.629	PASS
GFSK	HCH	0.999	0.631	PASS
$\pi/4$ DQPSK	LCH	0.994	0.873	PASS
$\pi/4$ DQPSK	MCH	1.009	0.877	PASS
$\pi/4$ DQPSK	HCH	0.994	0.874	PASS
8DPSK	LCH	0.999	0.845	PASS
8DPSK	MCH	1.003	0.866	PASS
8DPSK	HCH	0.993	0.847	PASS

Test Graph



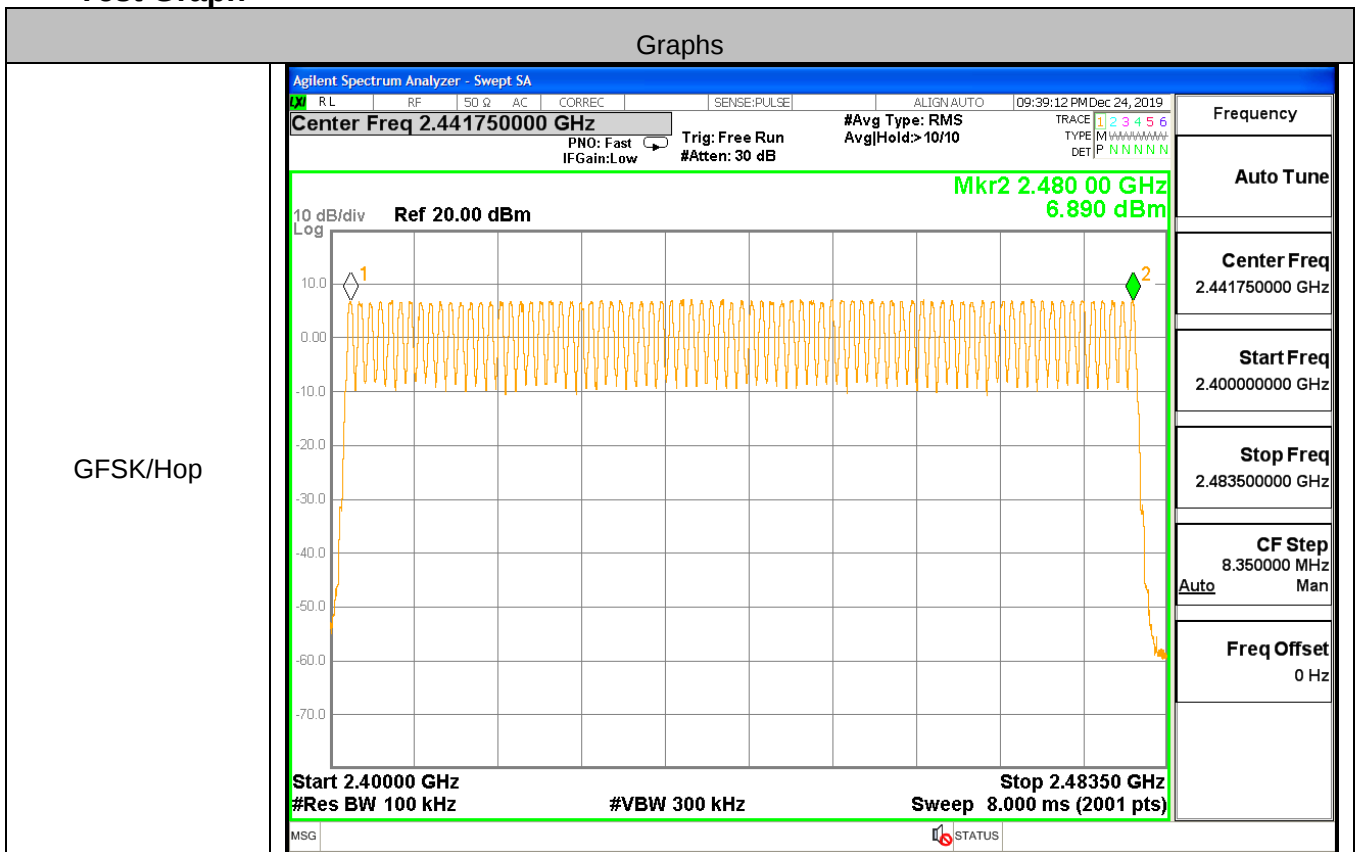


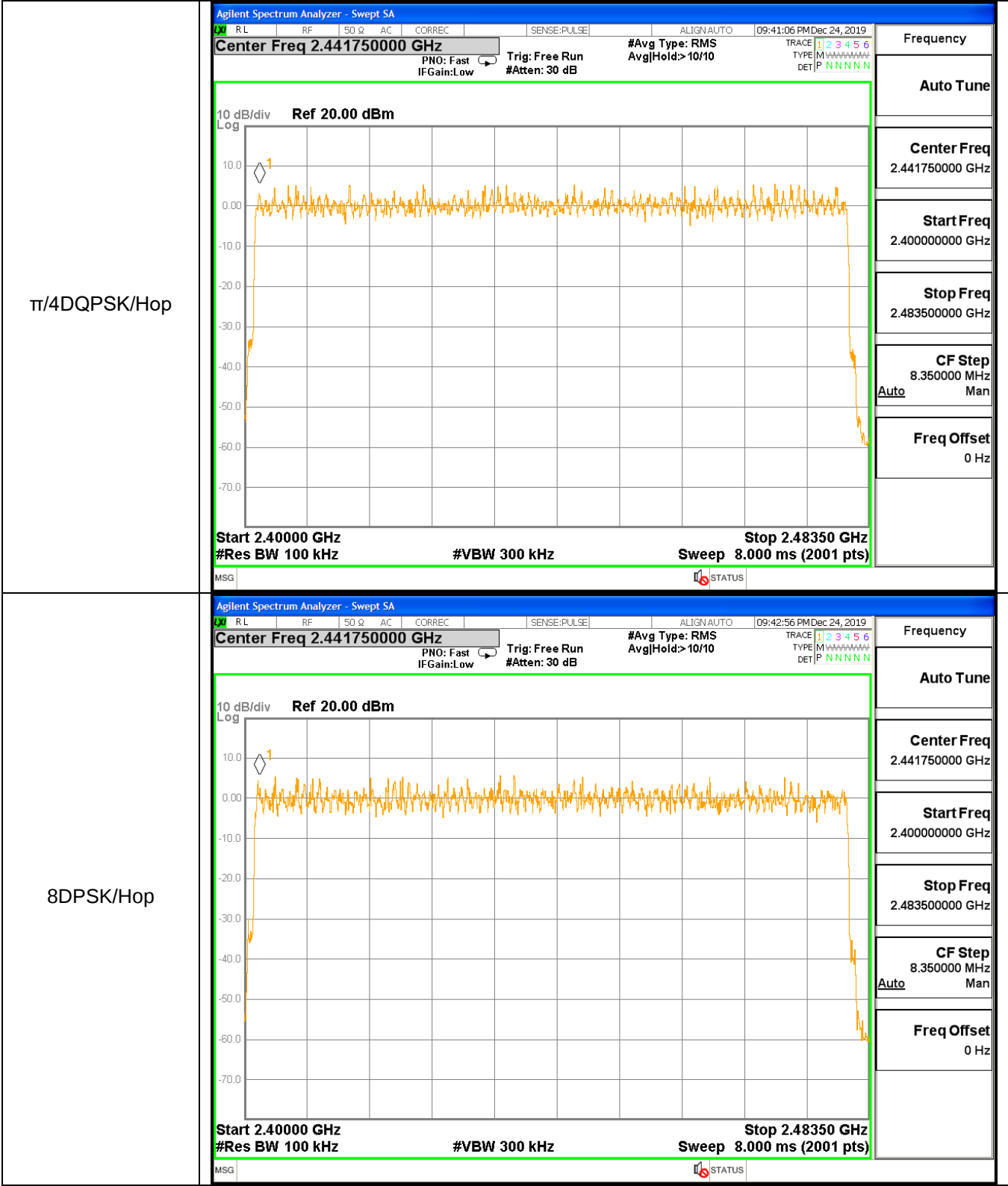


A.4 Hopping Channel Number

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

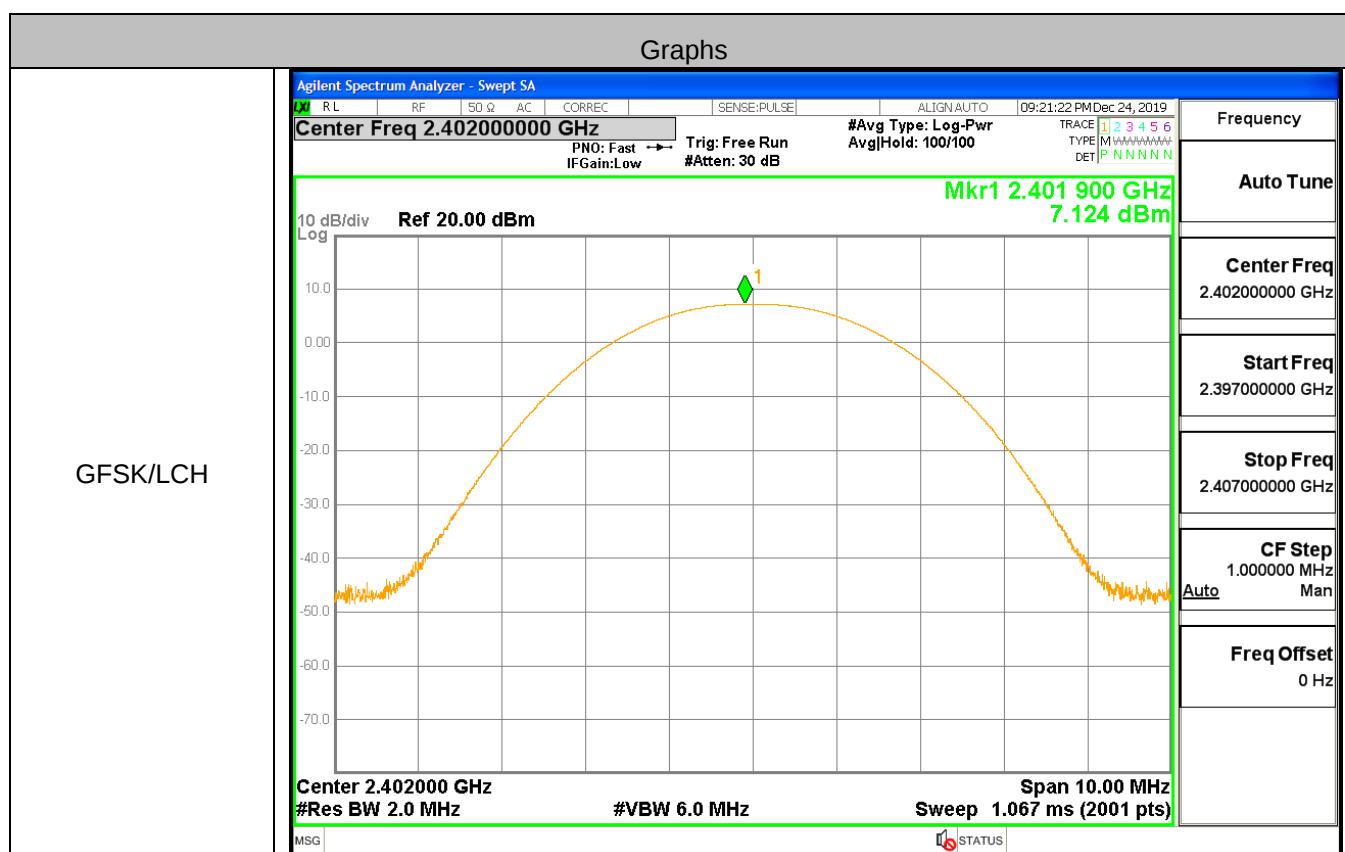


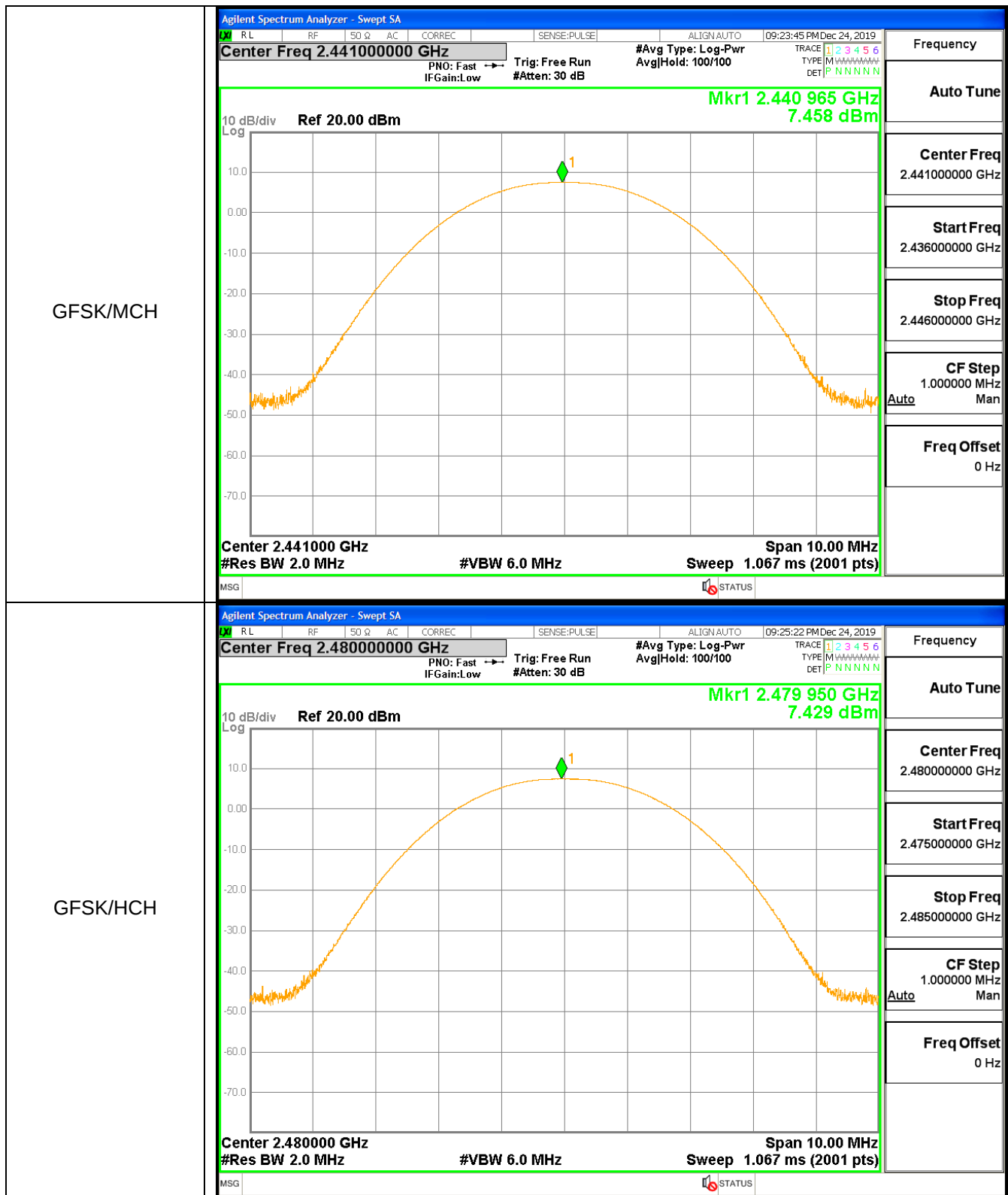


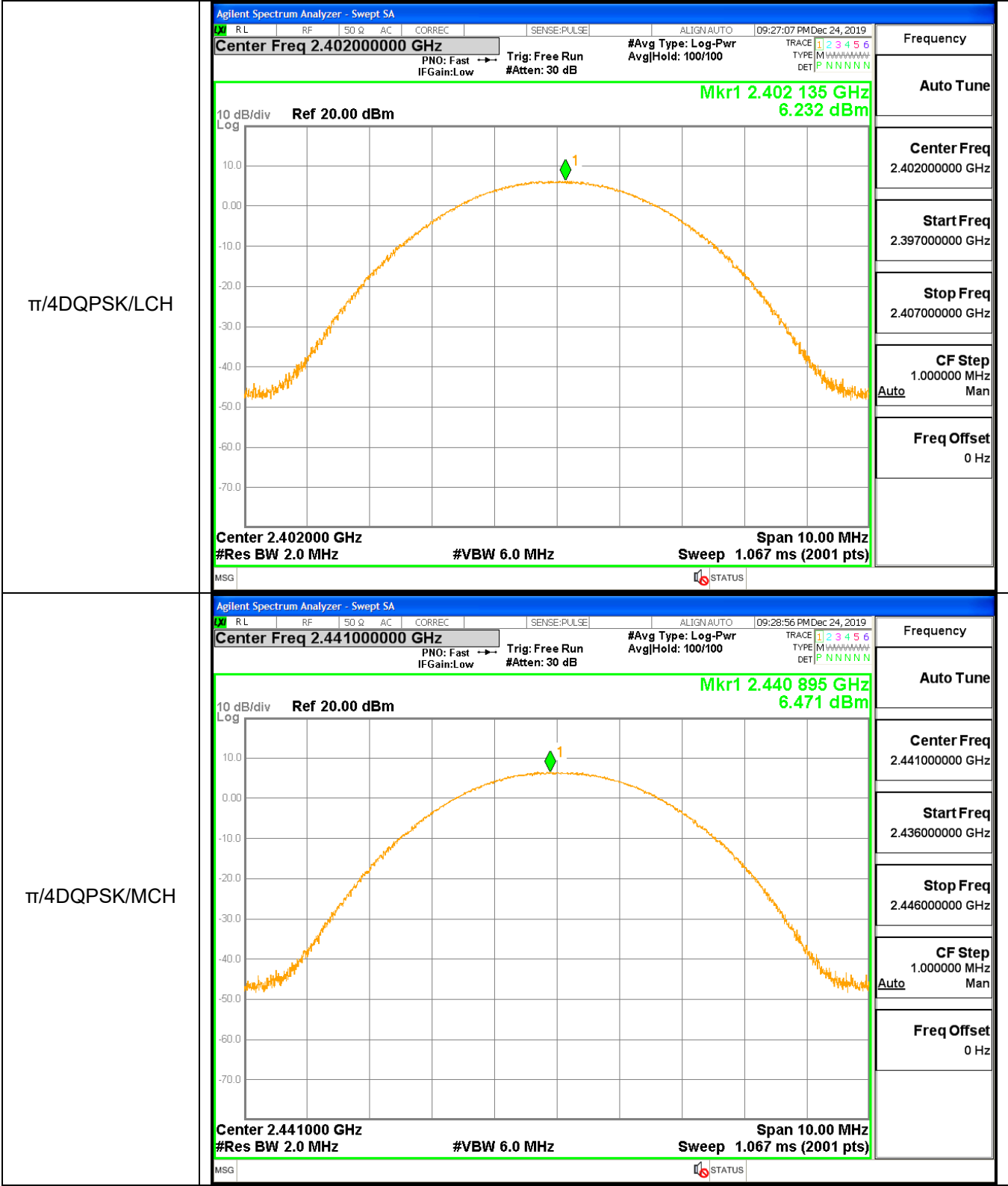
A.5 Conducted Peak Output Power

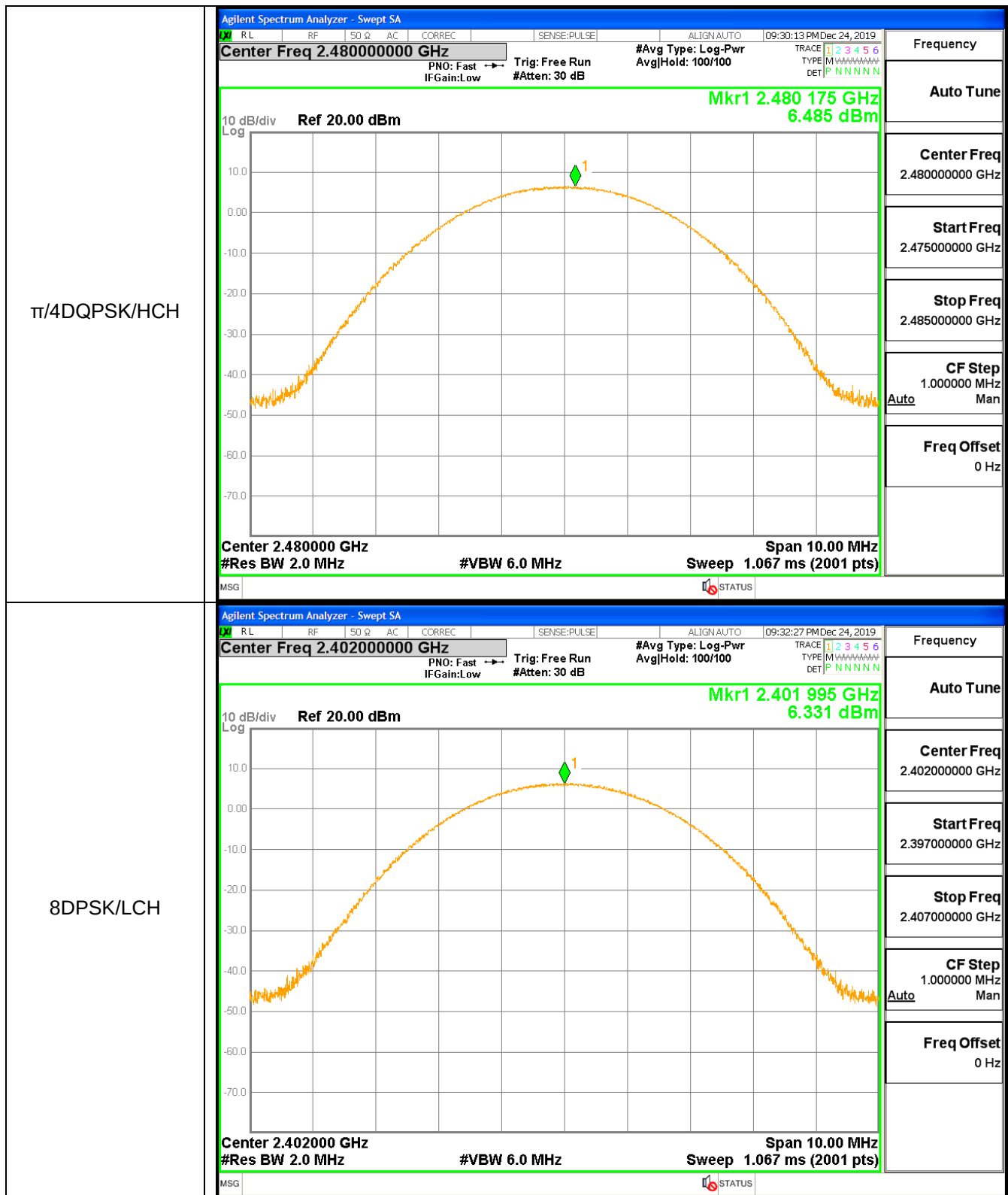
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	7.124	21	PASS
GFSK	MCH	7.458	21	PASS
GFSK	HCH	7.429	21	PASS
$\pi/4$ DQPSK	LCH	6.232	21	PASS
$\pi/4$ DQPSK	MCH	6.471	21	PASS
$\pi/4$ DQPSK	HCH	6.485	21	PASS
8DPSK	LCH	6.331	21	PASS
8DPSK	MCH	6.677	21	PASS
8DPSK	HCH	6.605	21	PASS

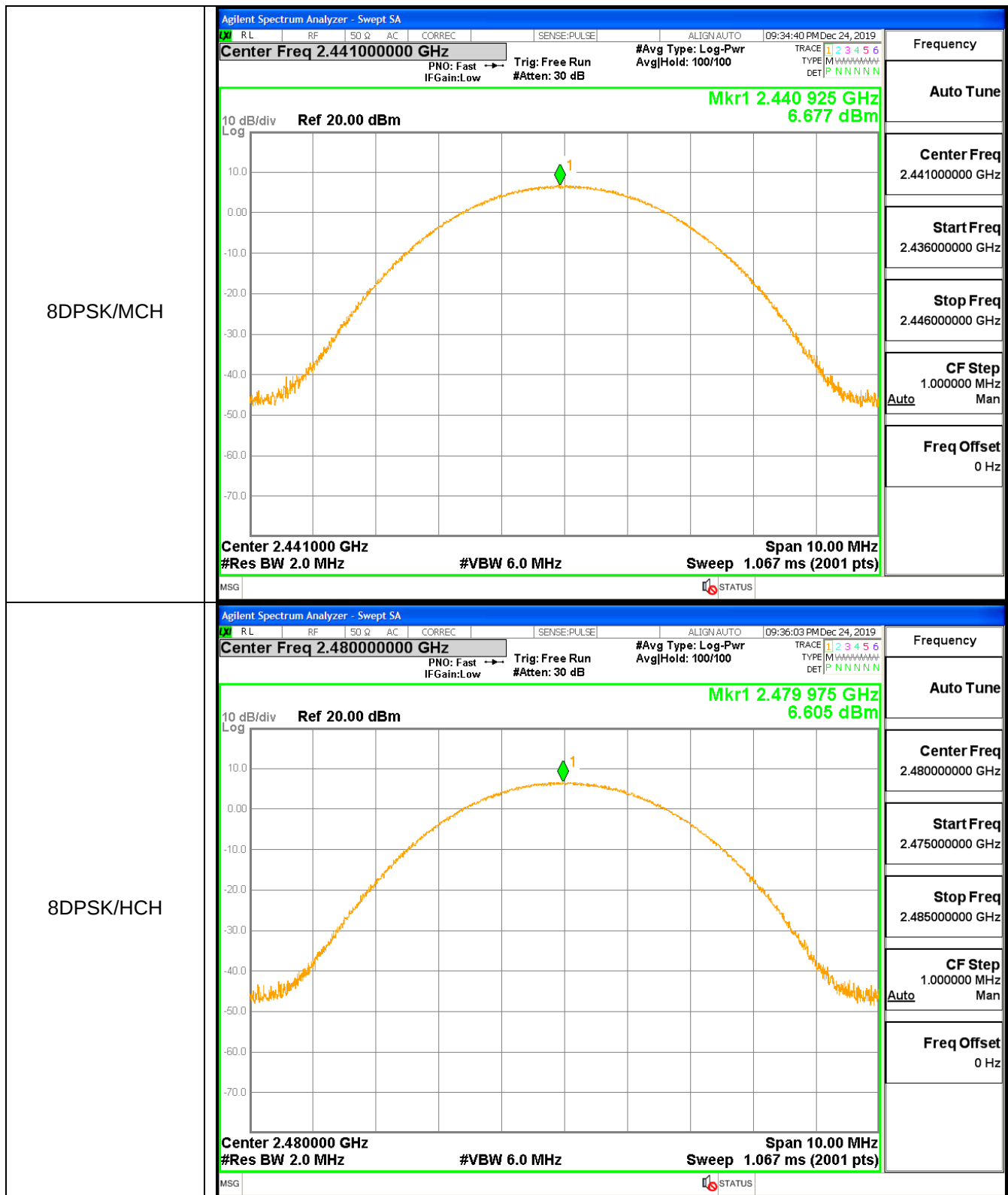
Test Graph









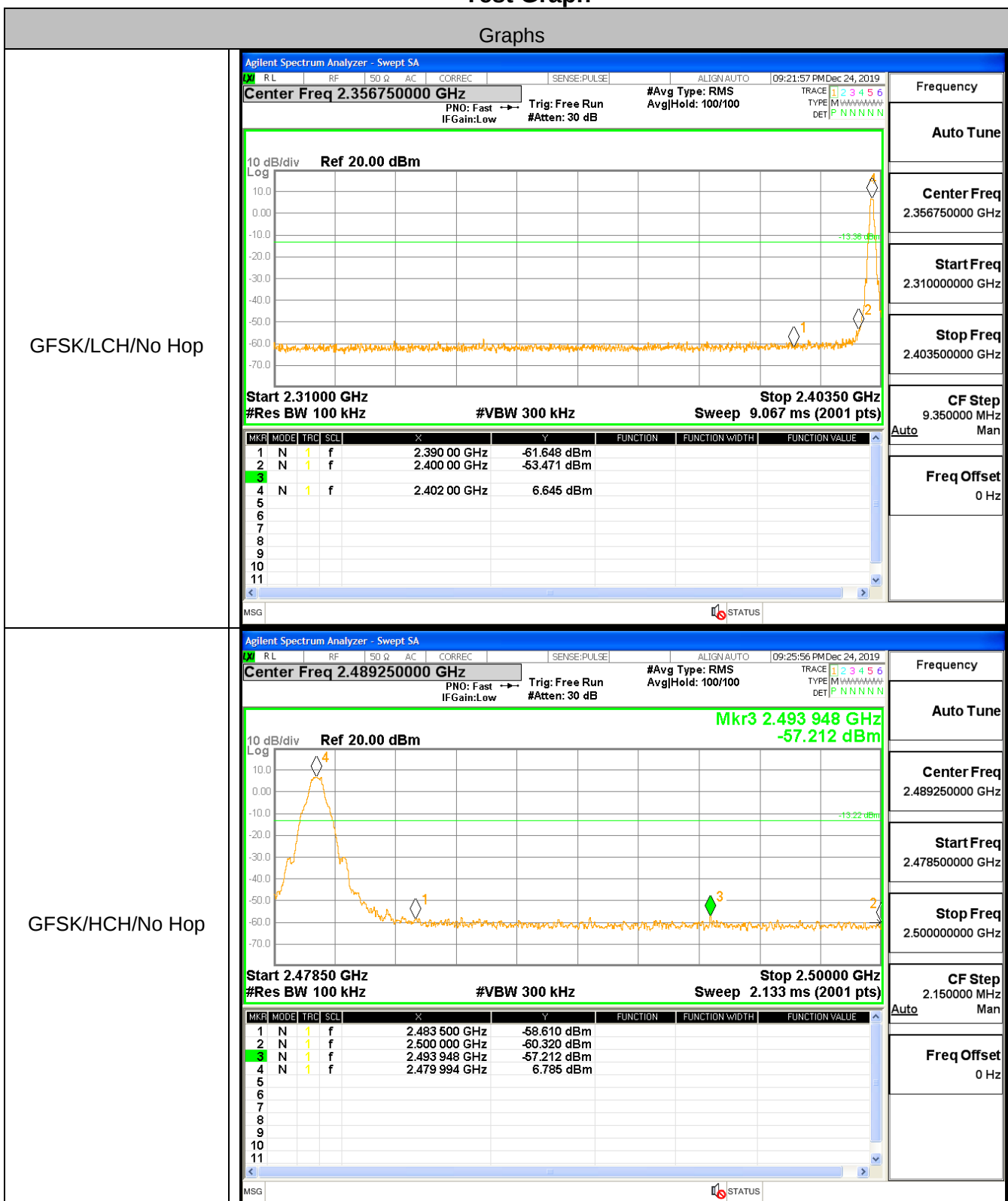


A.6 Band-edge for RF Conducted Emissions

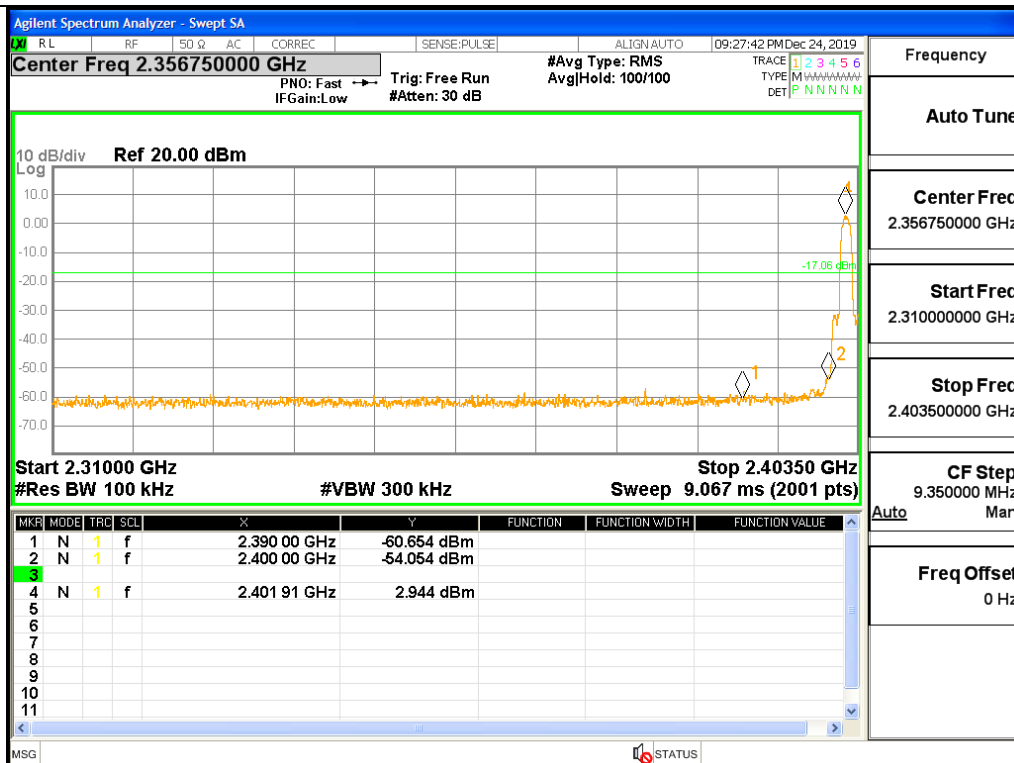
Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2400	6.645	-53.47	-13.355	Pass
1DH5	2480	2493.948	6.785	-57.212	-13.215	Pass
2DH5	2402	2400	2.944	-54.05	-17.056	Pass
2DH5	2480	2484.337	5.057	-56.764	-14.943	Pass
3DH5	2402	2400	5.291	-53.72	-14.709	Pass
3DH5	2480	2483.886	4.656	-56.066	-15.344	Pass
1DH5-Hopping	2402	2400	6.97	-56.81	-13.03	Pass
1DH5-Hopping	2480	2483.5	7.119	-56.84	-12.881	Pass
2DH5-Hopping	2402	2400	5.461	-55.23	-14.539	Pass
2DH5-Hopping	2480	2483.5	5.605	-58.88	-14.395	Pass
3DH5-Hopping	2402	2400	5.339	-55.7	-14.661	Pass
3DH5-Hopping	2480	2483.5	5.631	-58.18	-14.369	Pass

Test Graph

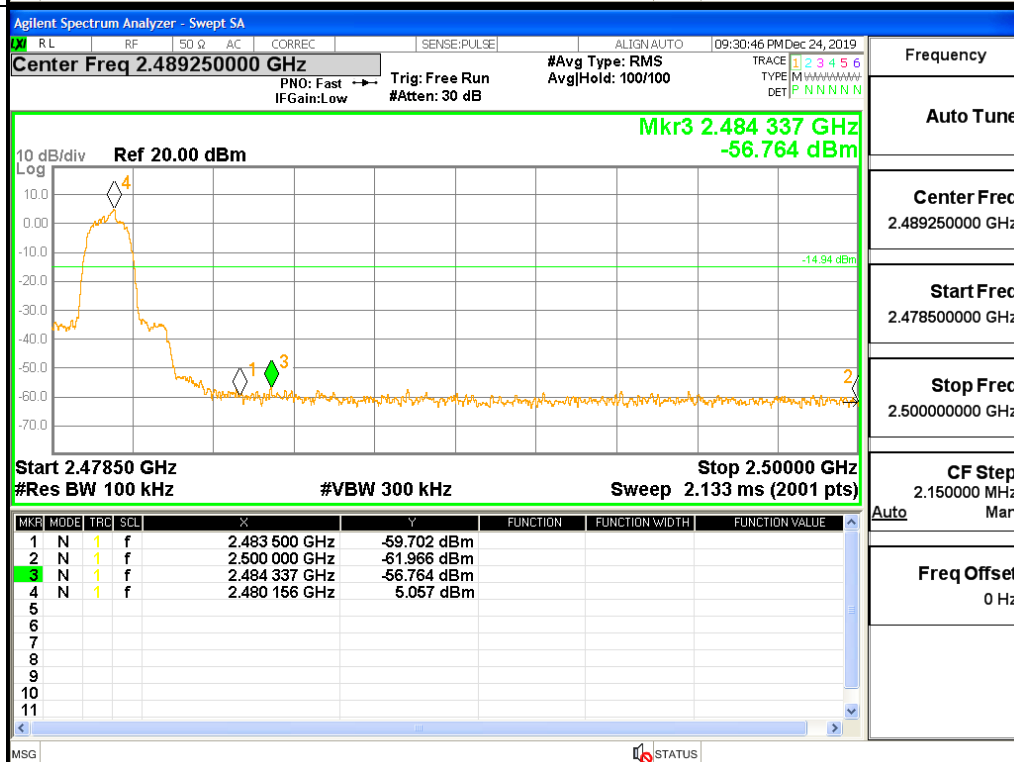
Graphs



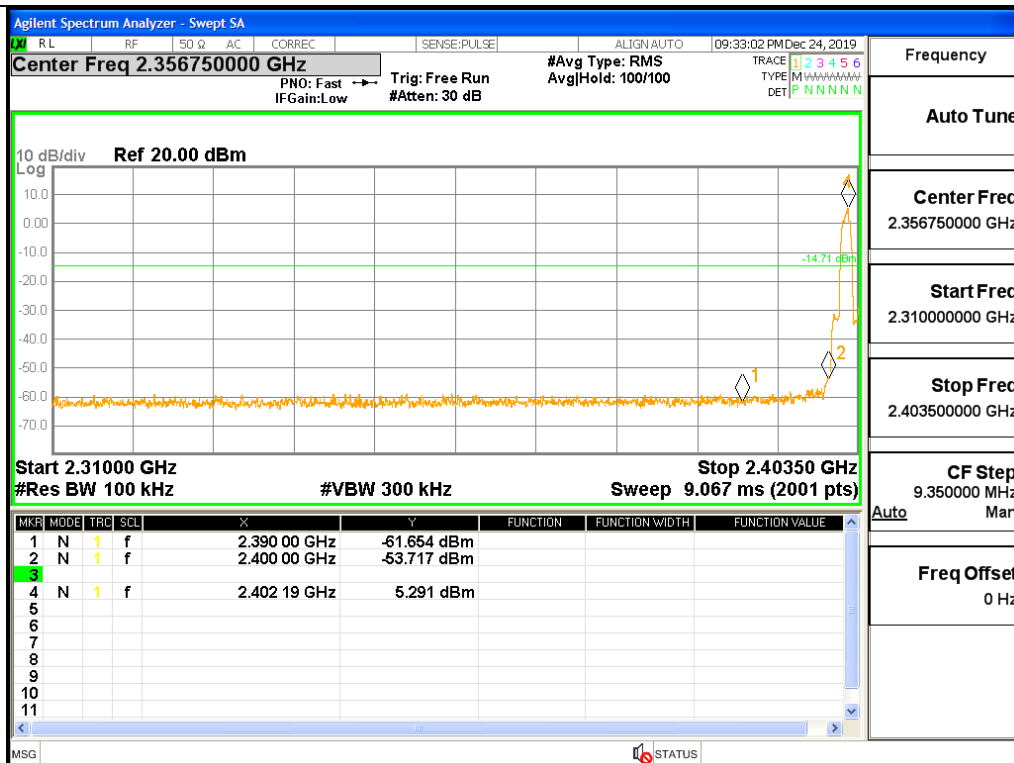
$\pi/4$ DQPSK/LCH/No
Hop



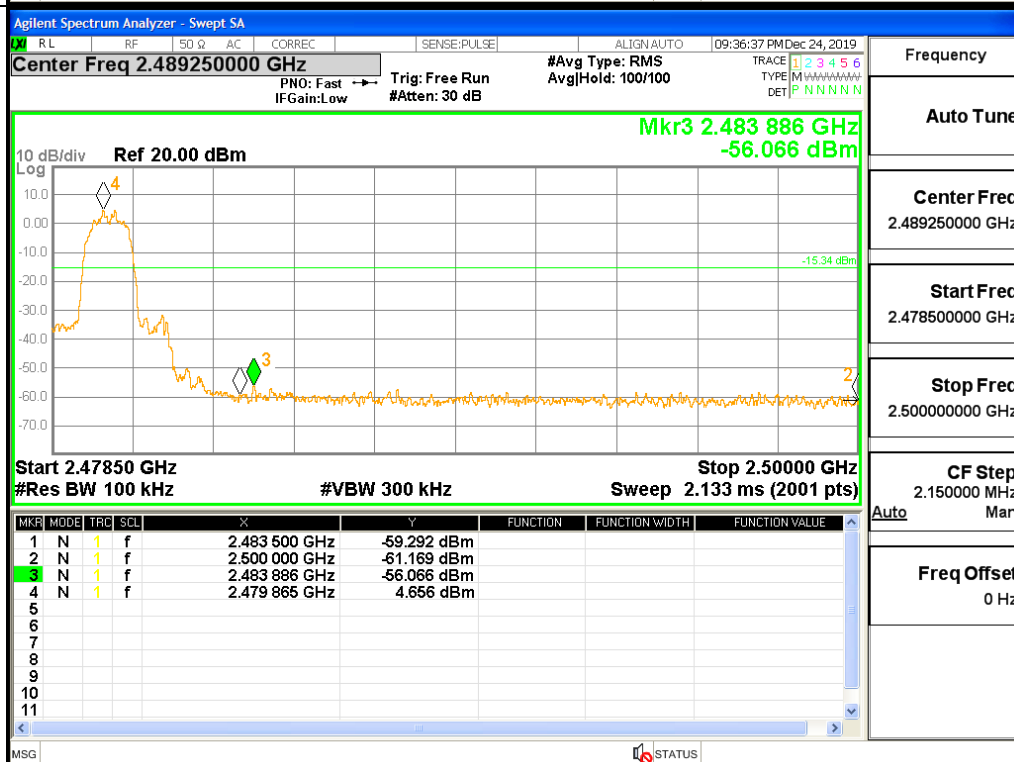
$\pi/4$ DQPSK/HCH/No
Hop



8DPSK/LCH/No Hop



8DPSK/HCH/No Hop



GFSK/LCH/Hop

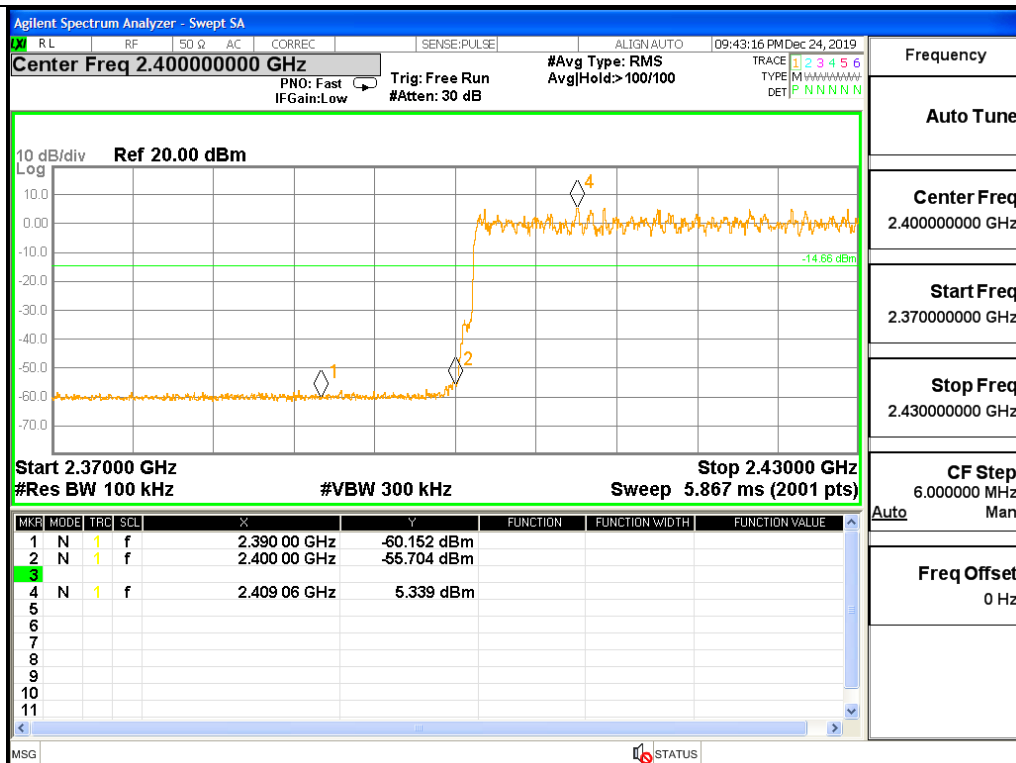


GFSK/HCH/Hop





8DPSK/LCH/Hop

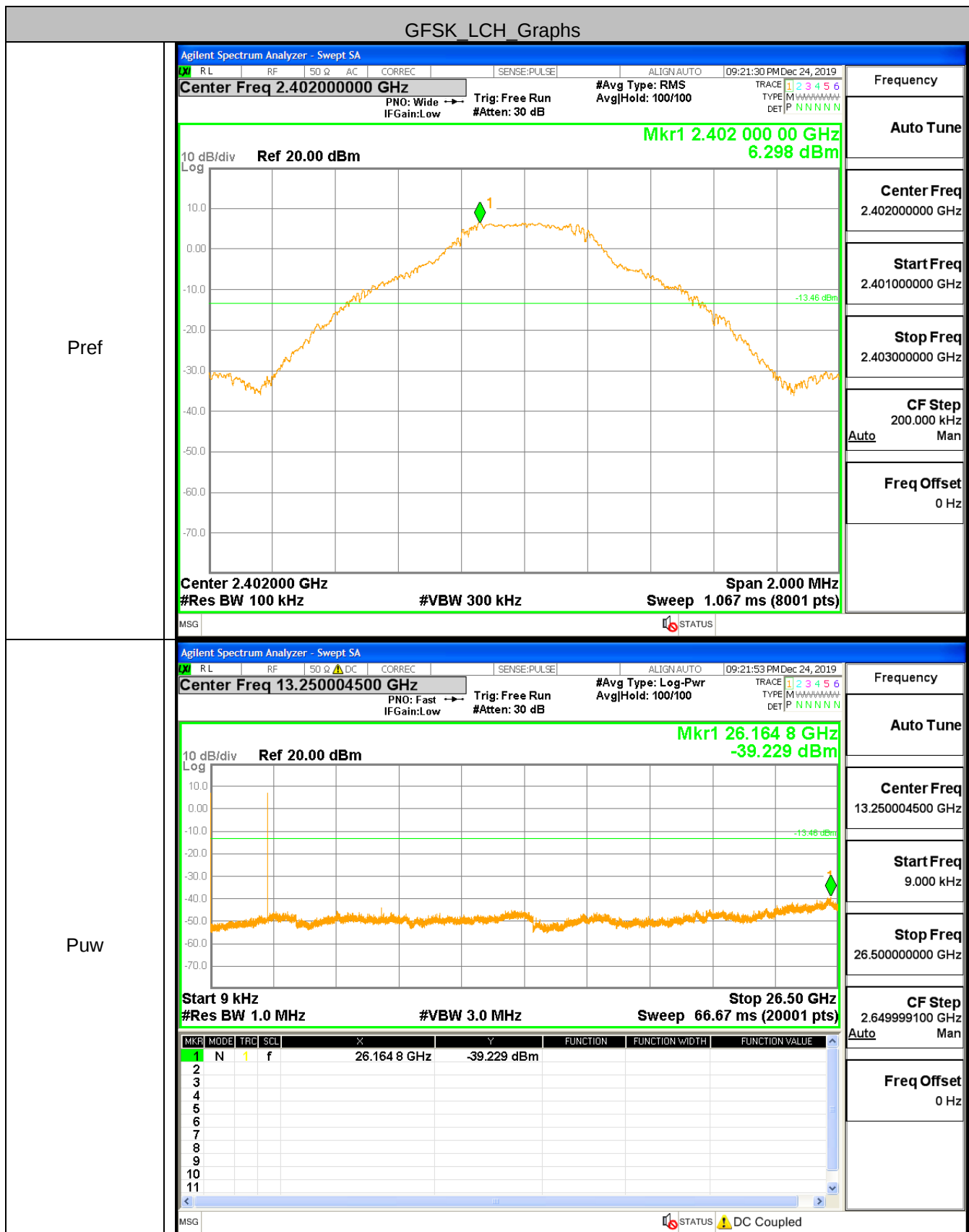


8DPSK/HCH/Hop



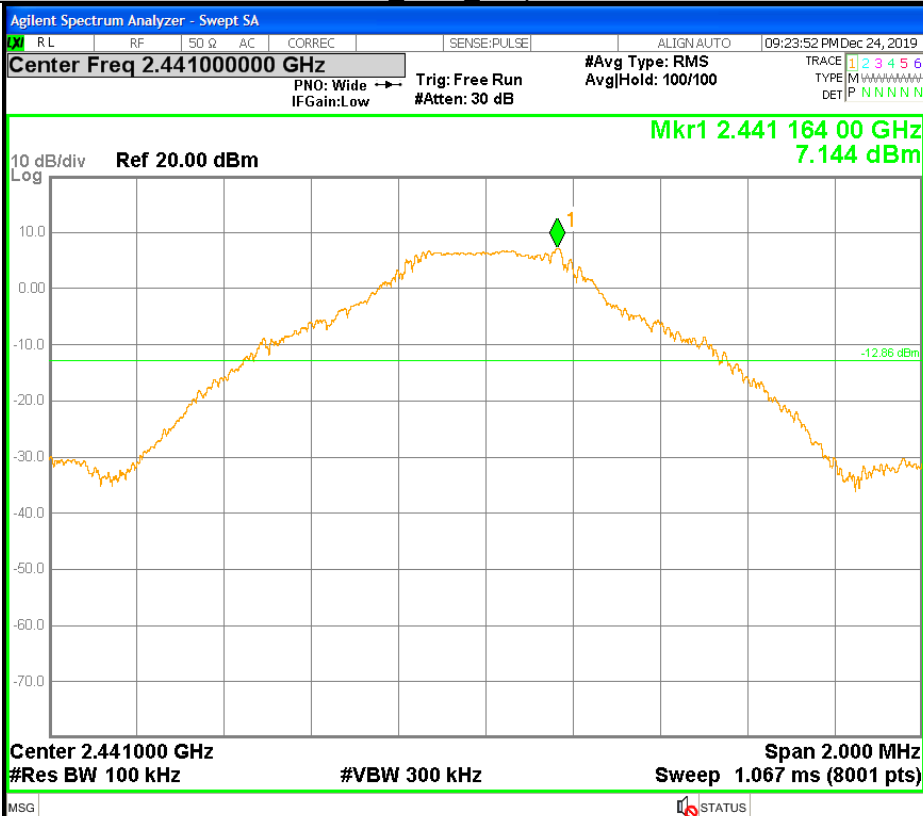
A.7 RF Conducted Spurious Emissions

Test Graph

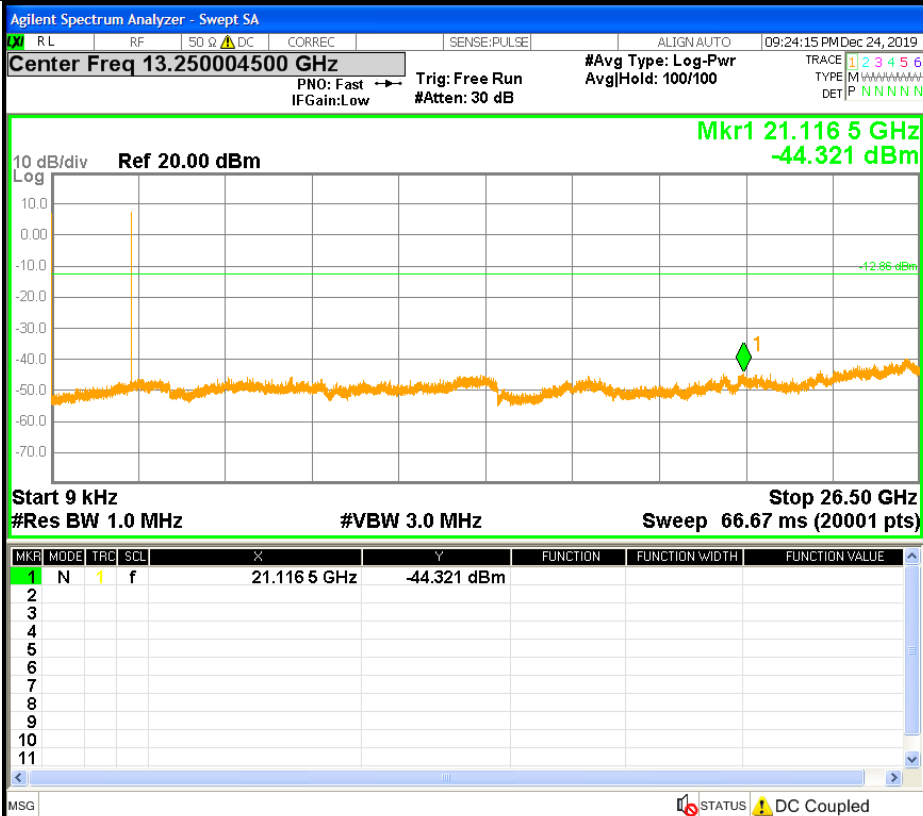


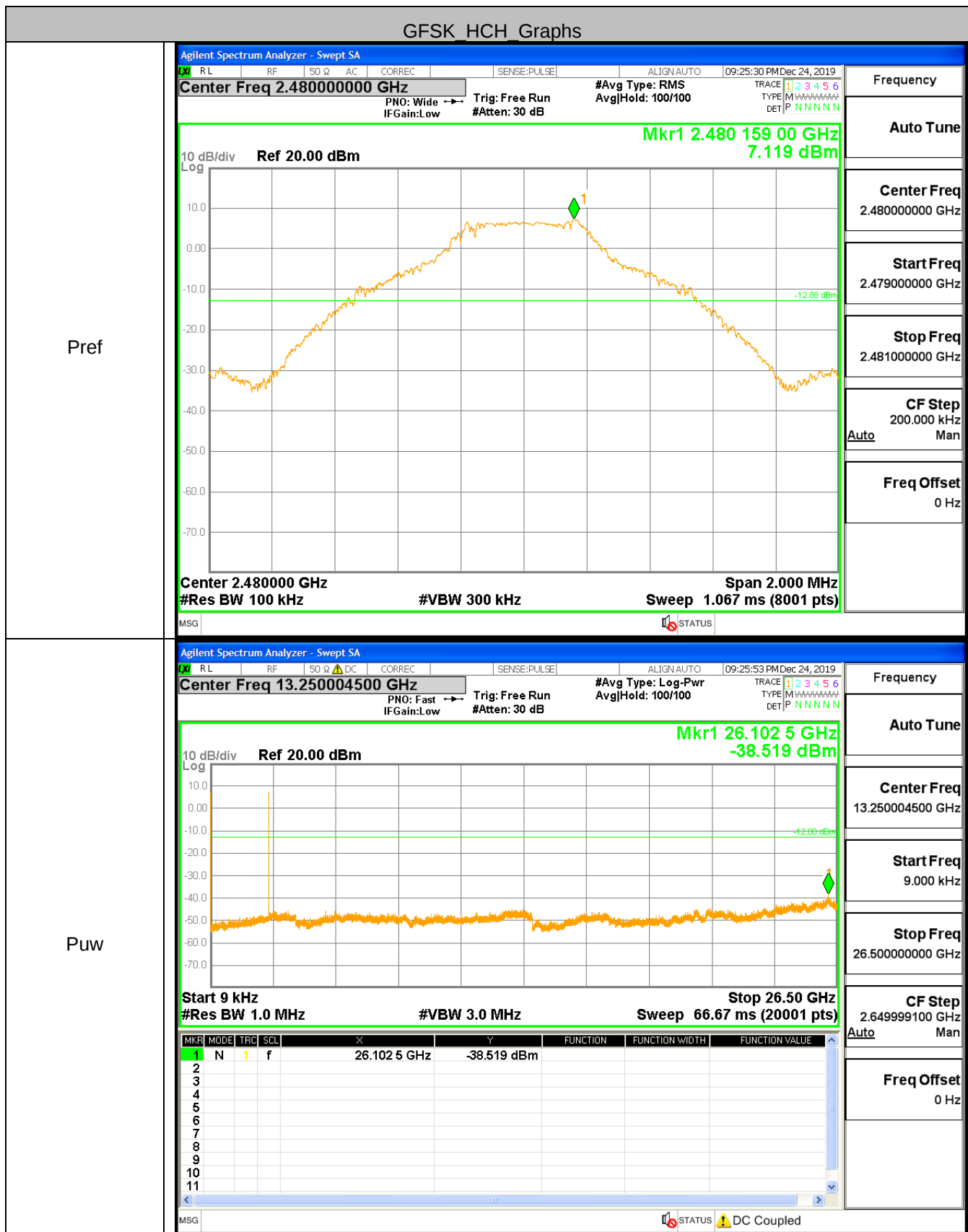
GFSK MCH Graphs

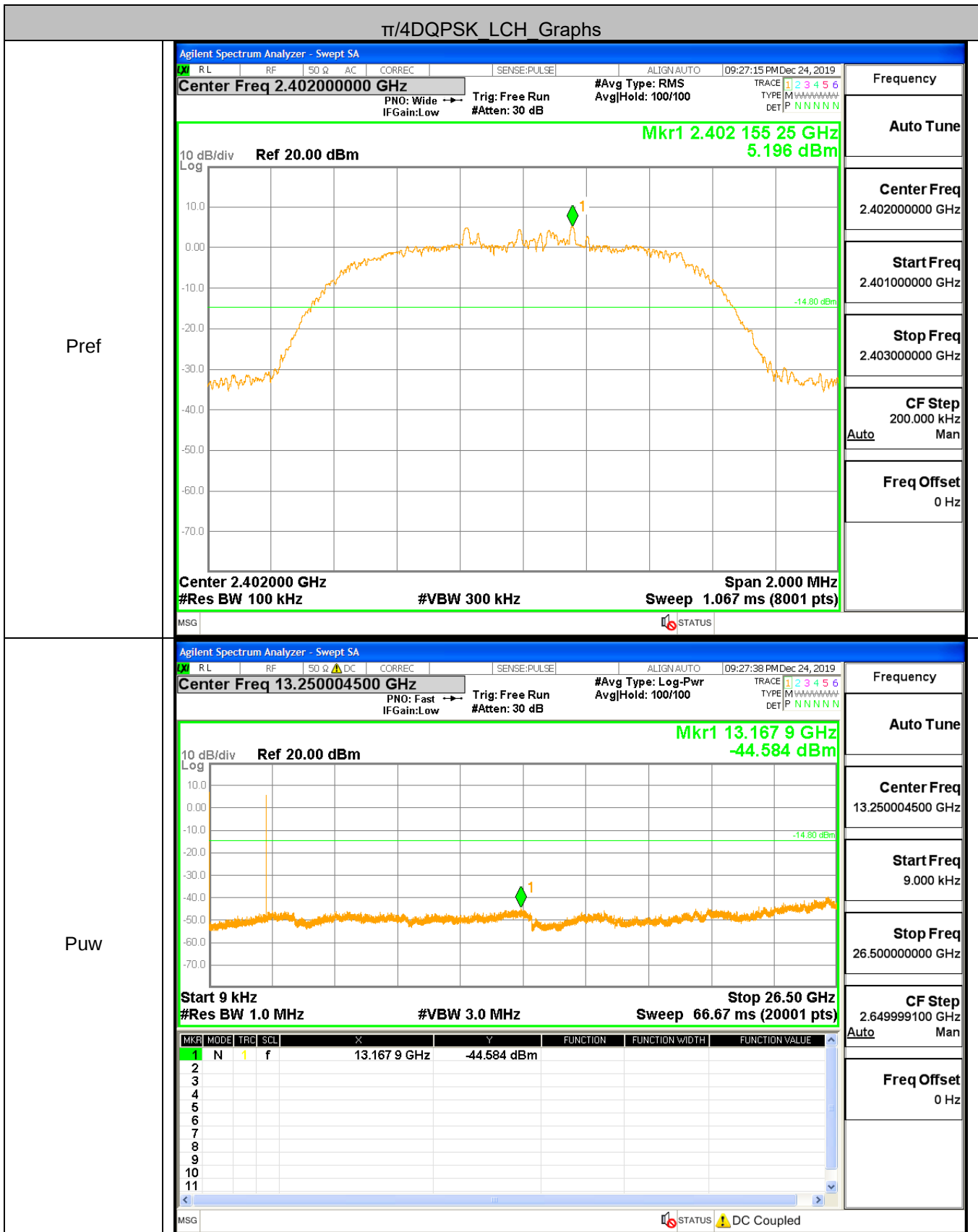
Pref



Puw

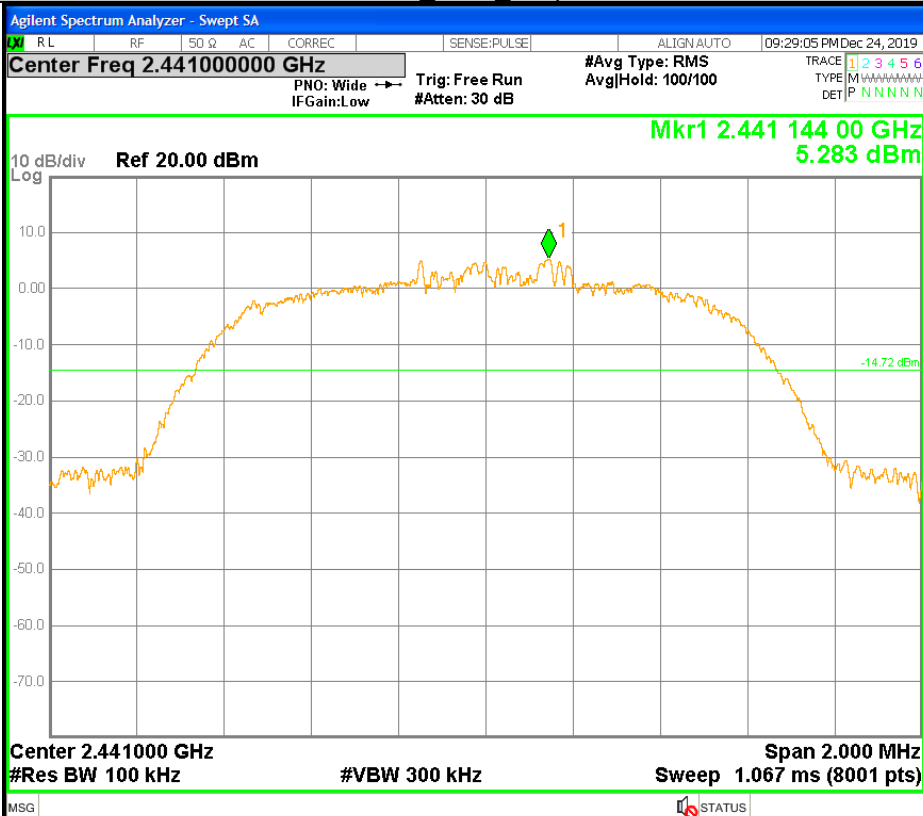




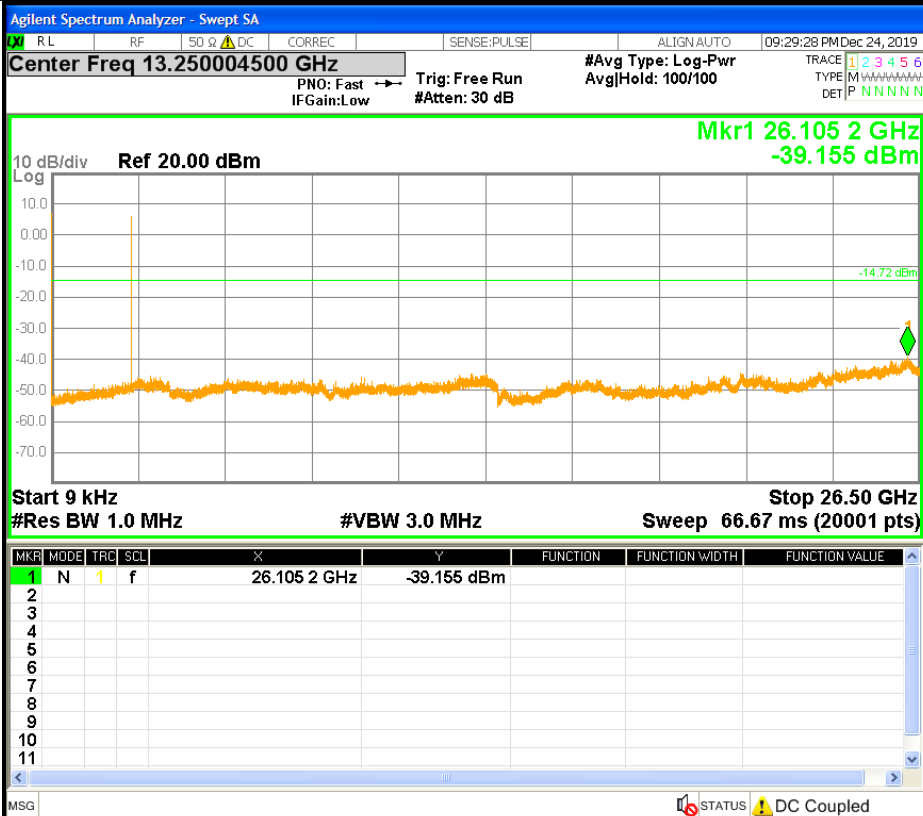


$\pi/4$ DQPSK MCH Graphs

Pref

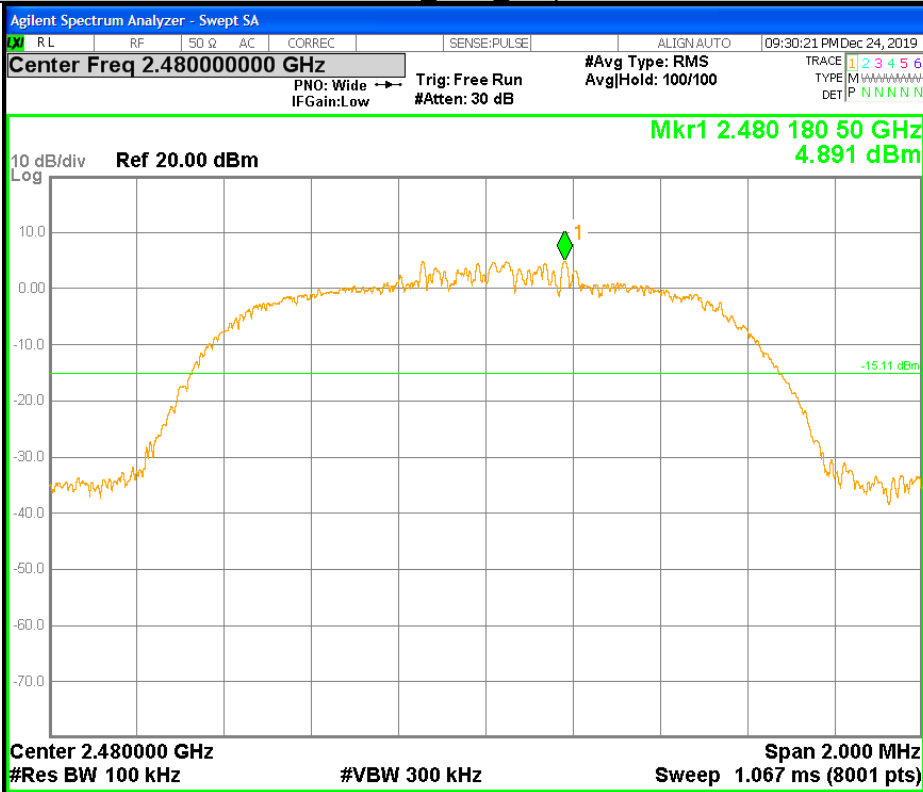


Puw

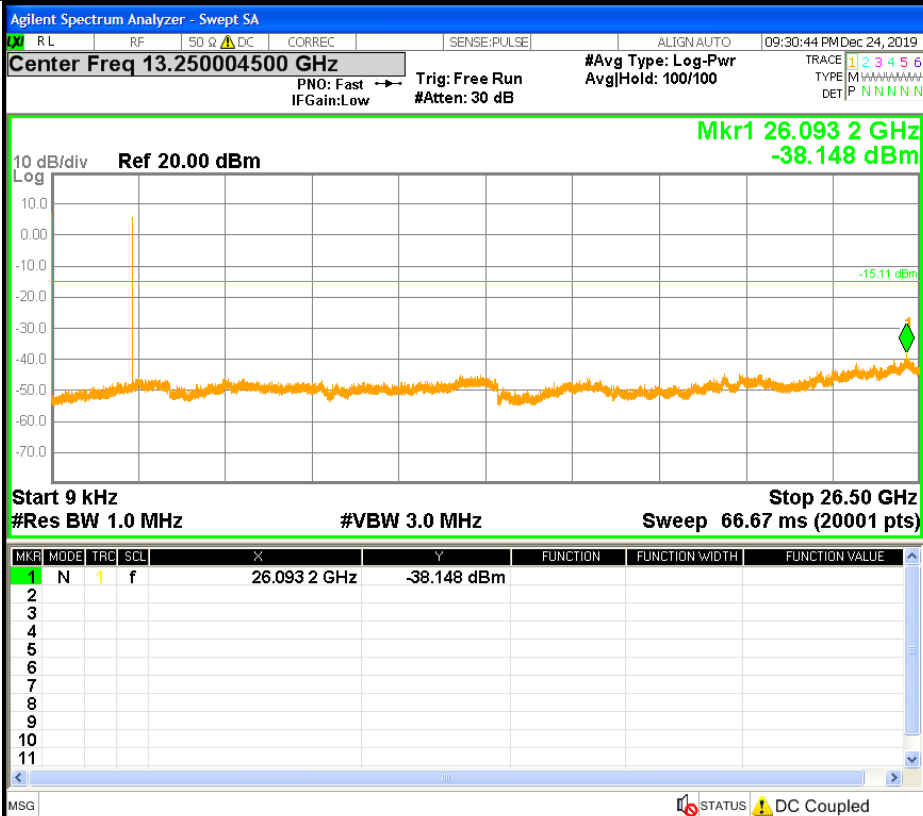


$\pi/4$ DQPSK HCH Graphs

Pref

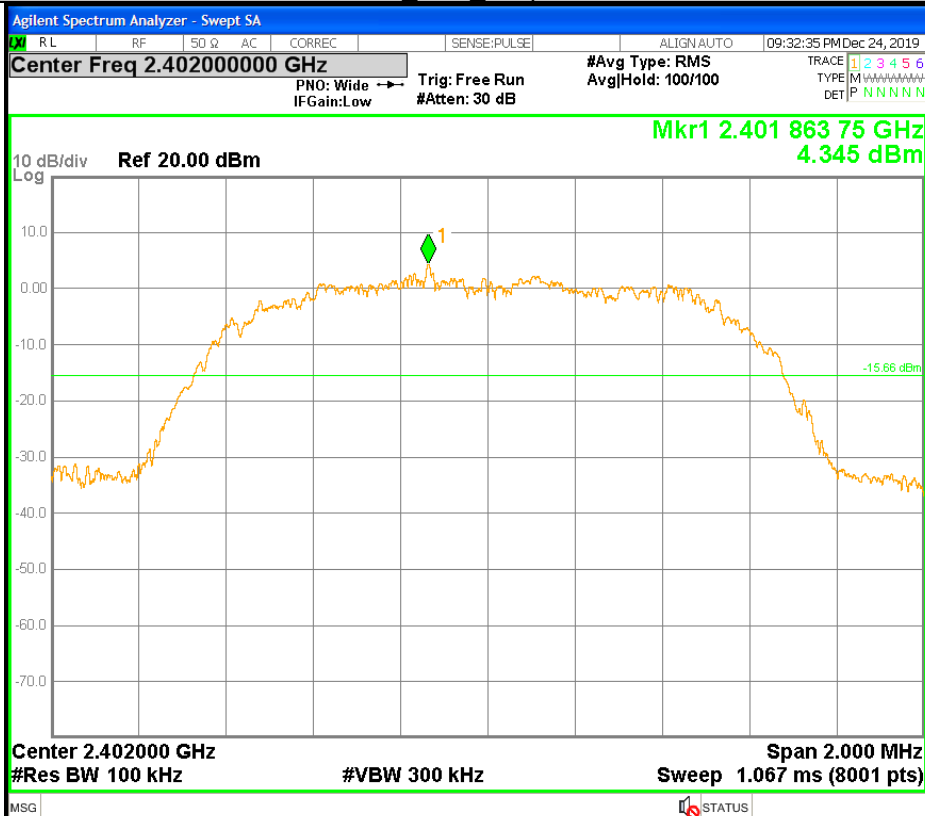


Puw

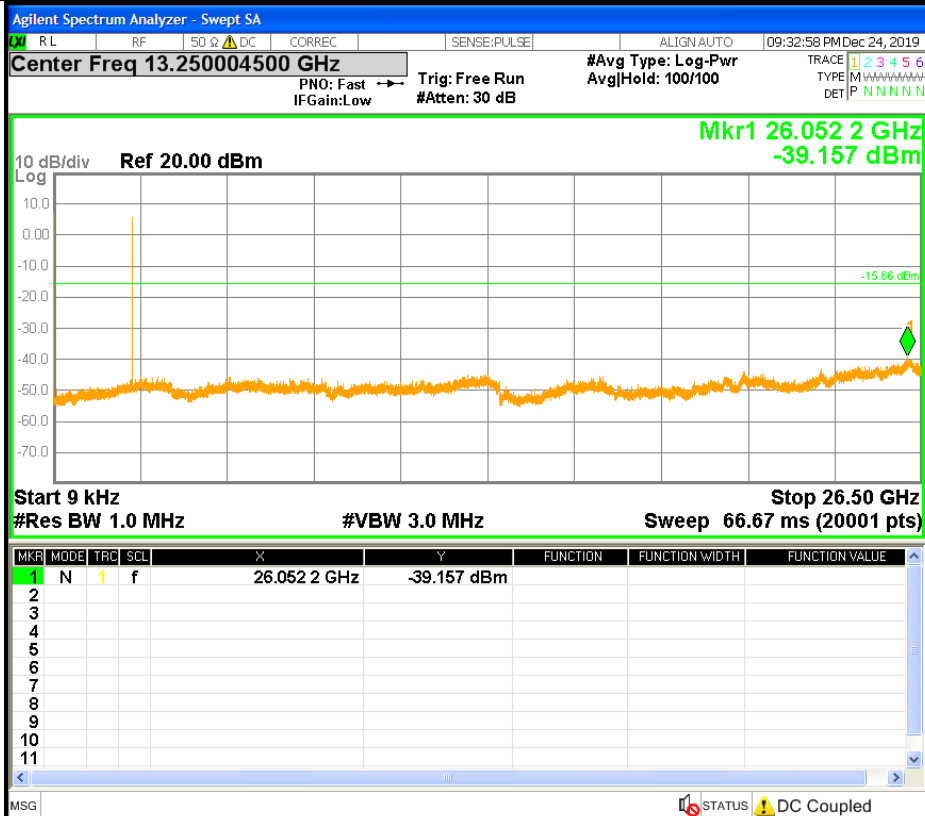


8DPSK LCH Graphs

Pref

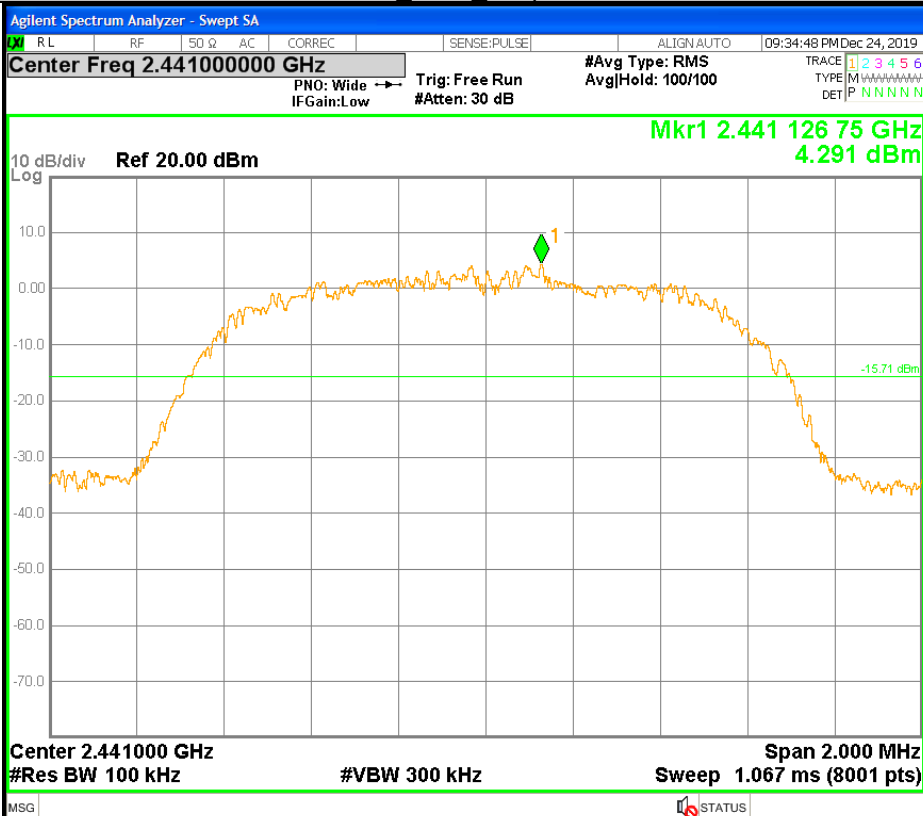


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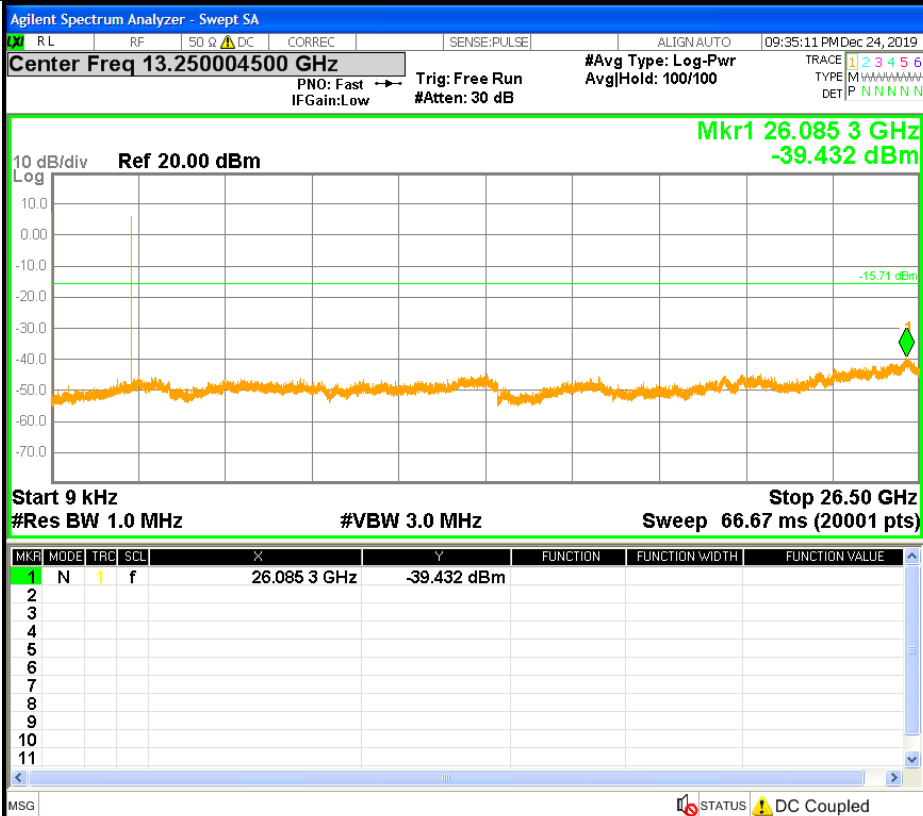


8DPSK MCH Graphs

Pref

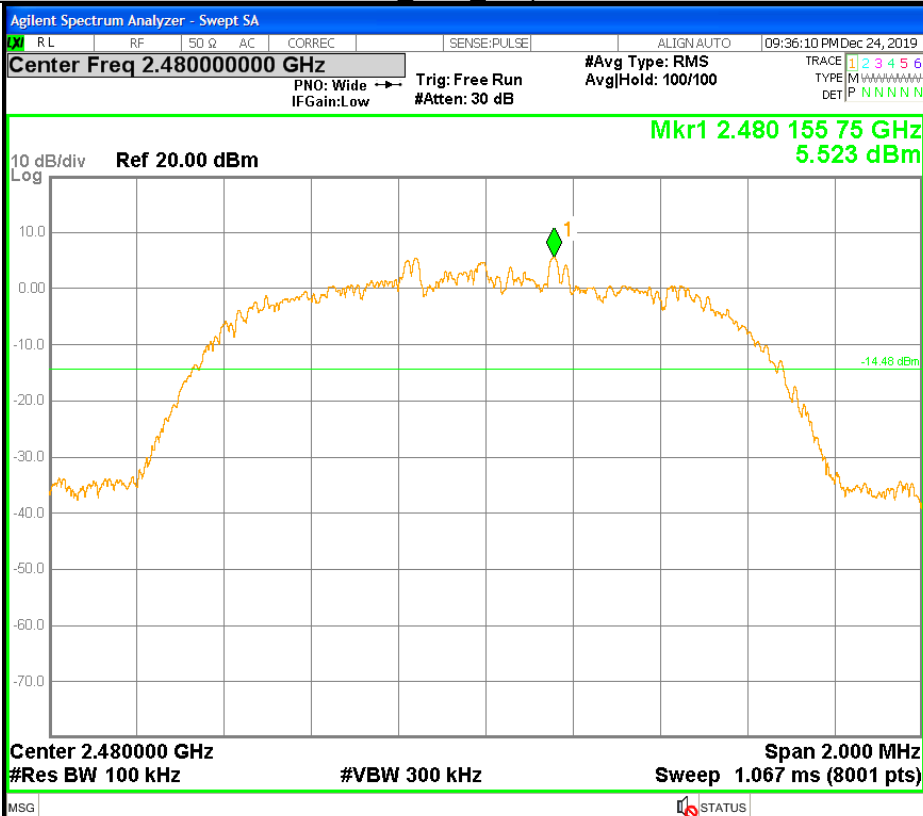


Puw

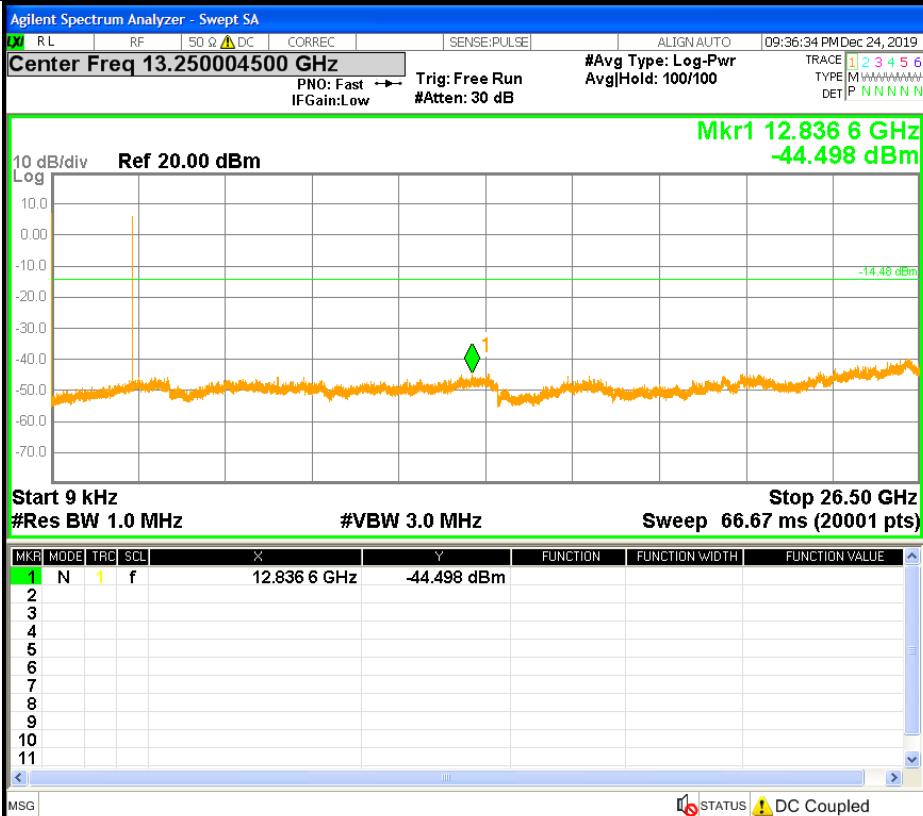


8DPSK HCH Graphs

Pref



Puw

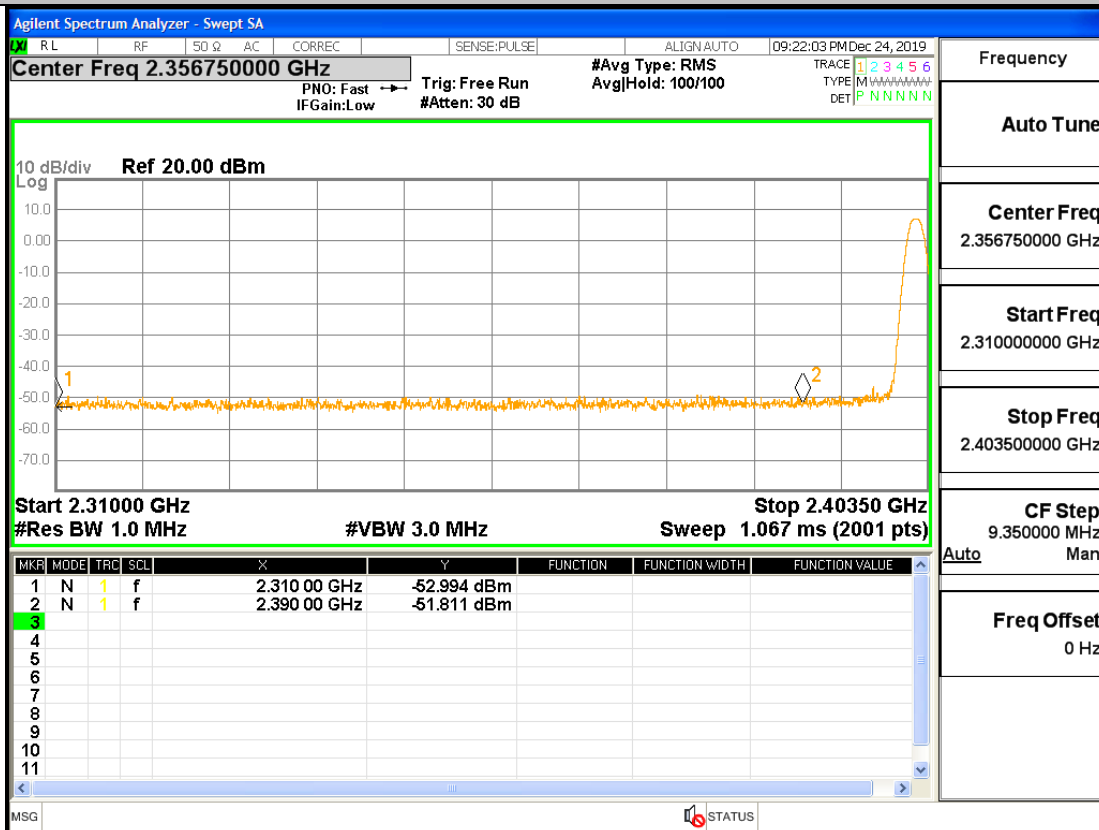


A.8 Restrict-band band-edge measurements

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Peak Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.00	0.00	-51.811	45.389	74	Pass
1DH5	2480	2483.5	2.00	0.00	-49.998	47.202	74	Pass
2DH5	2402	2390	2.00	0.00	-51.872	45.328	74	Pass
2DH5	2480	2483.5	2.00	0.00	-50.321	46.879	74	Pass
3DH5	2402	2390	2.00	0.00	-50.94	46.26	74	Pass
3DH5	2480	2483.5	2.00	0.00	-49.996	47.204	74	Pass

Type	Carrier Frequency (MHz)	Frequency(M Hz)	Gain	Ground Factor	Average Value(dBm)	E [dBuV/m]	Limit [dBuV/m]	Conclusion
1DH5	2402	2390	2.00	0.00	-58.209	38.991	54	Pass
1DH5	2480	2483.5	2.00	0.00	-50.007	47.193	54	Pass
2DH5	2402	2390	2.00	0.00	-58.448	38.752	54	Pass
2DH5	2480	2483.5	2.00	0.00	-50.243	46.957	54	Pass
3DH5	2402	2390	2.00	0.00	-58.225	38.975	54	Pass
3DH5	2480	2483.5	2.00	0.00	-50.132	47.068	54	Pass

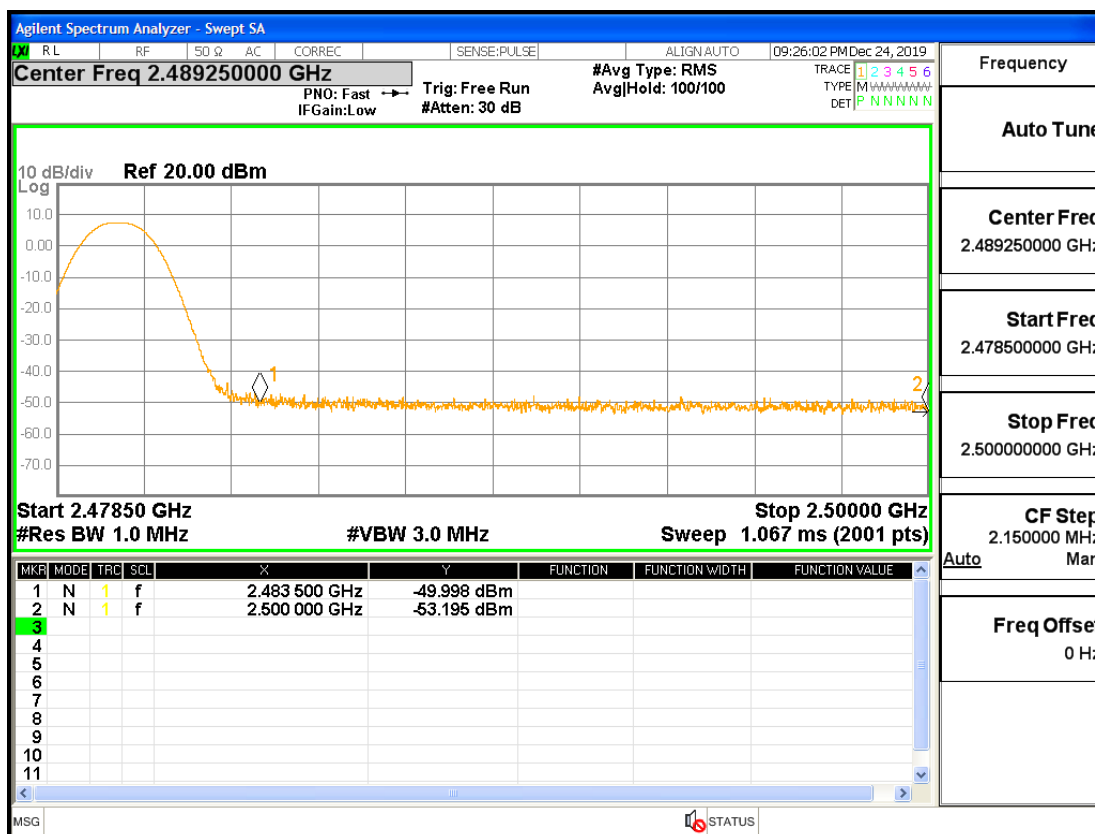
Restrict-band band-edge measurements_2402_PEAK_DH5



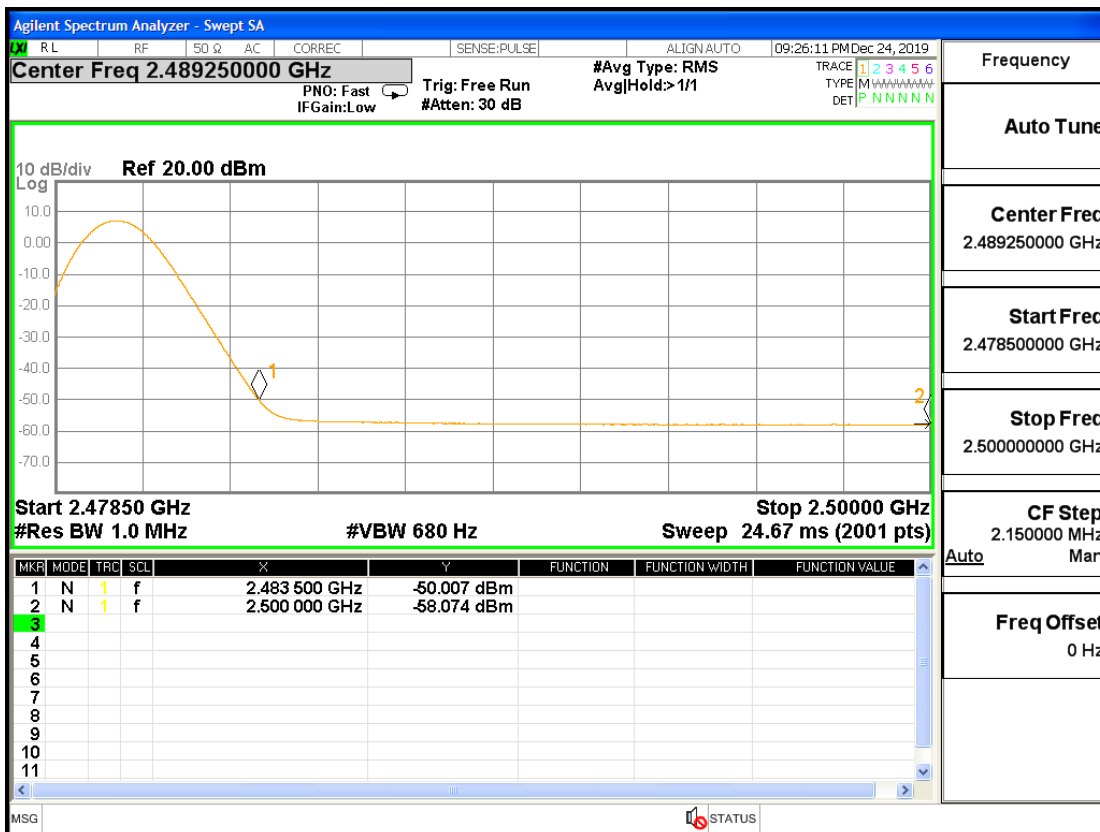
Restrict-band band-edge measurements_2402_AV_DH5



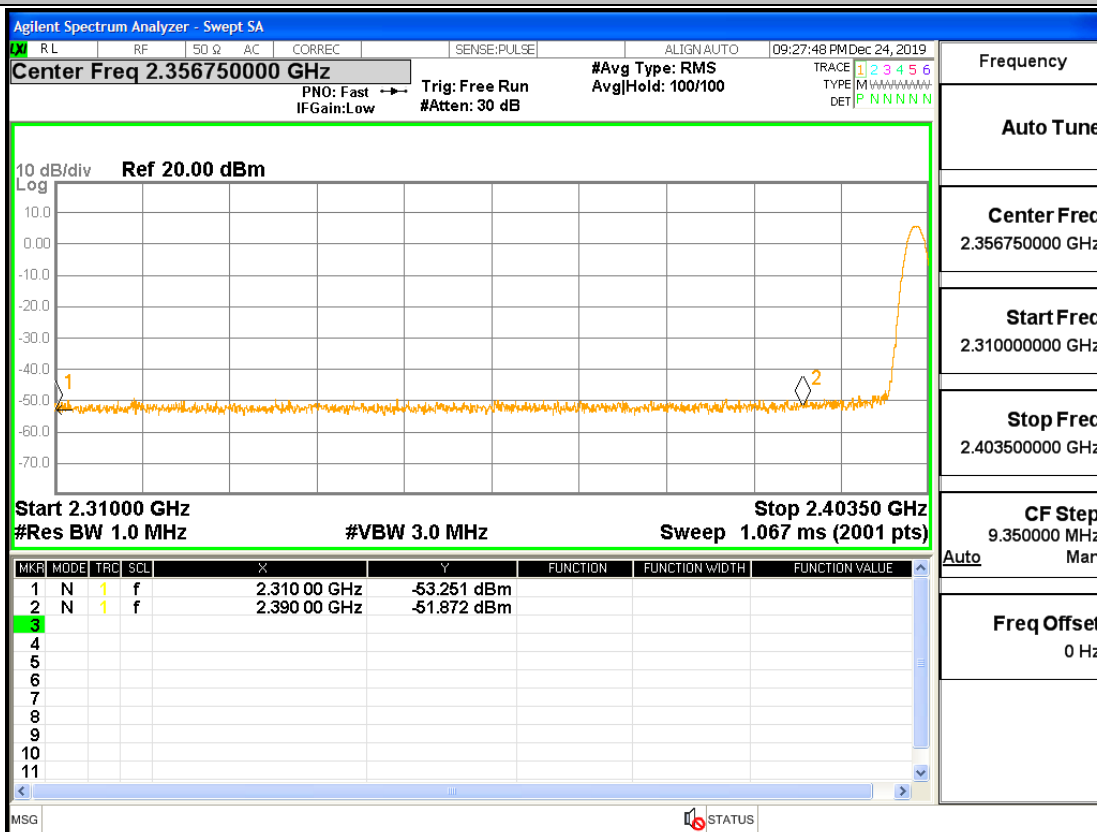
Restrict-band band-edge measurements_2480_PEAK_DH5



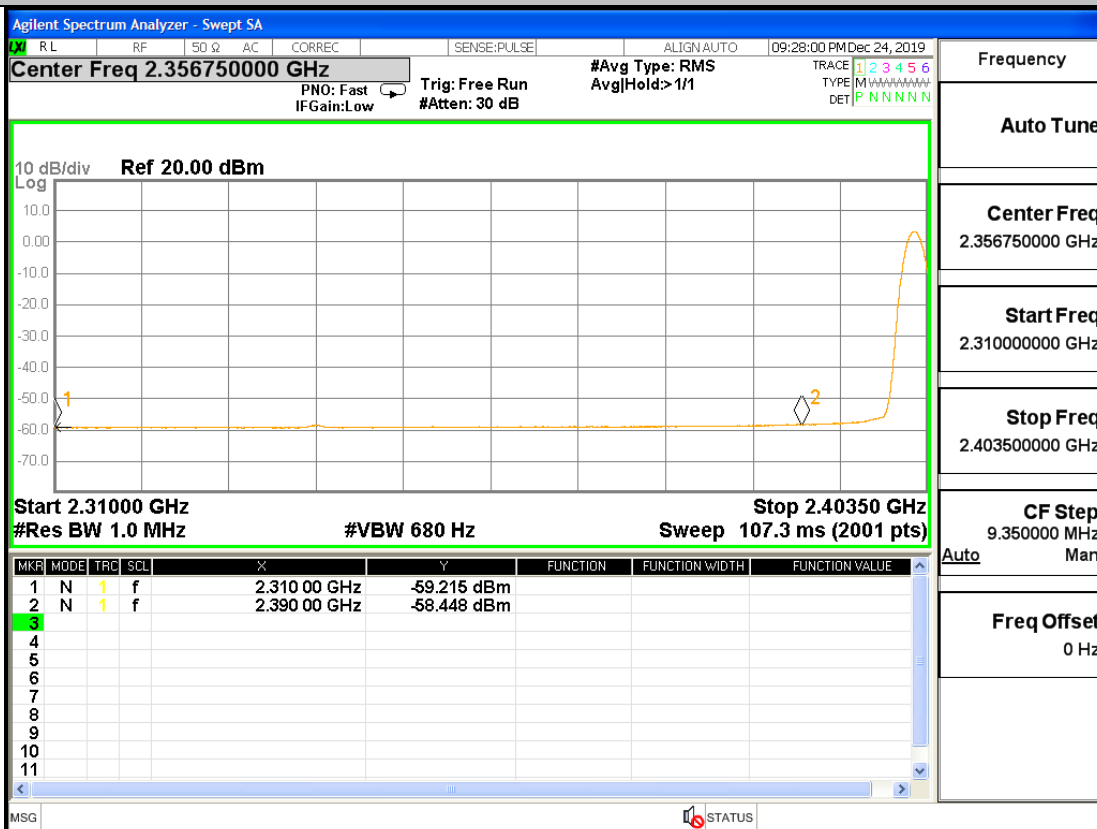
Restrict-band band-edge measurements_2480_AV_DH5



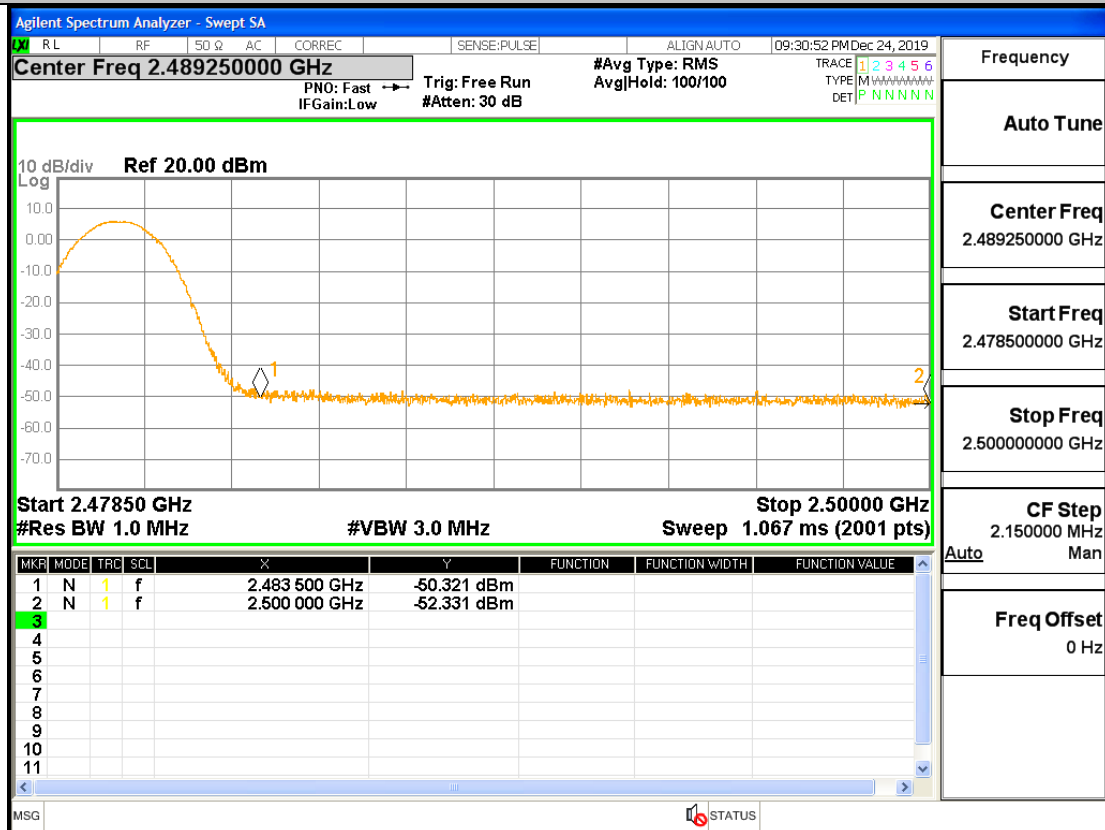
Restrict-band band-edge measurements_2402_PEAK_2DH5



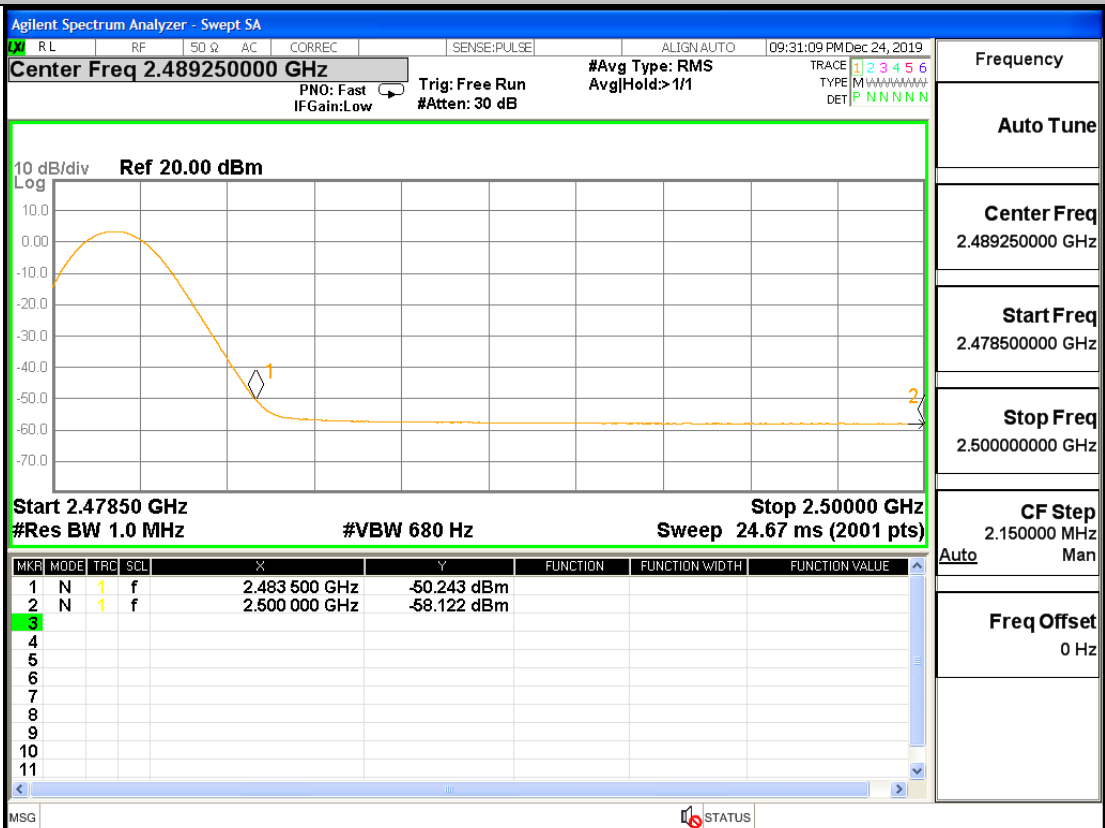
Restrict-band band-edge measurements_2402_AV_2DH5



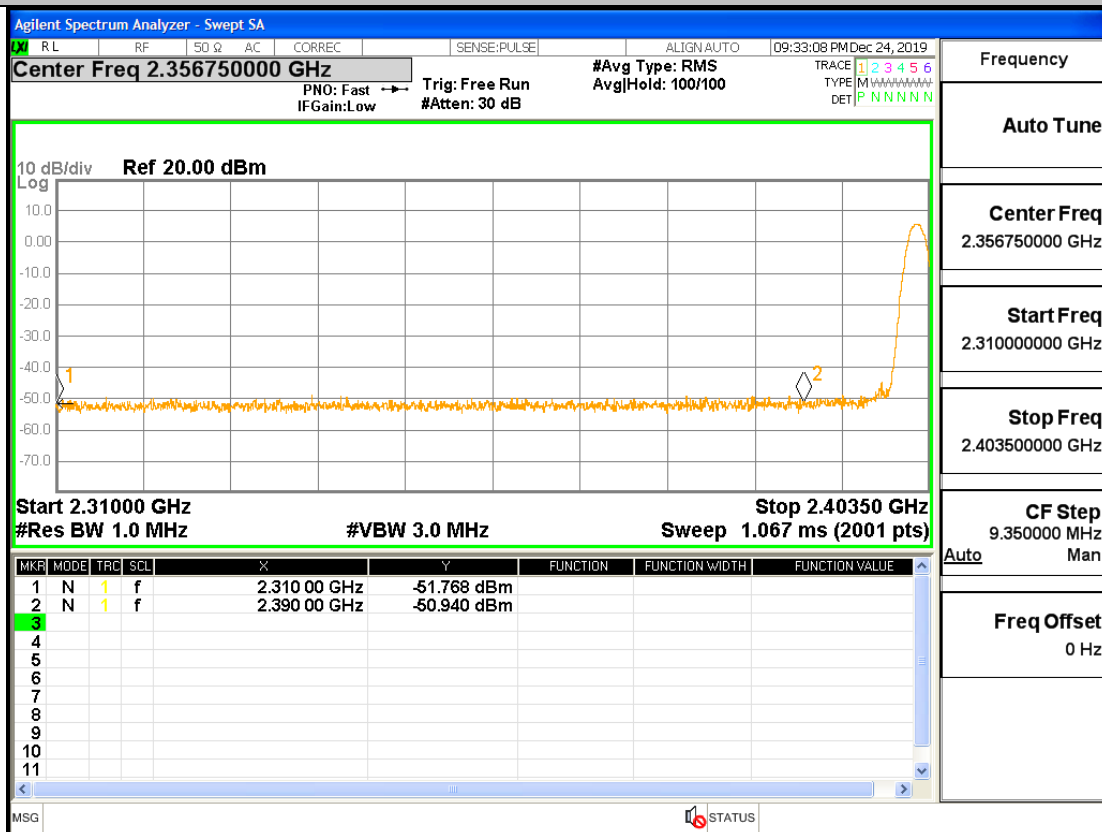
Restrict-band band-edge measurements_2480_PEAK_2DH5



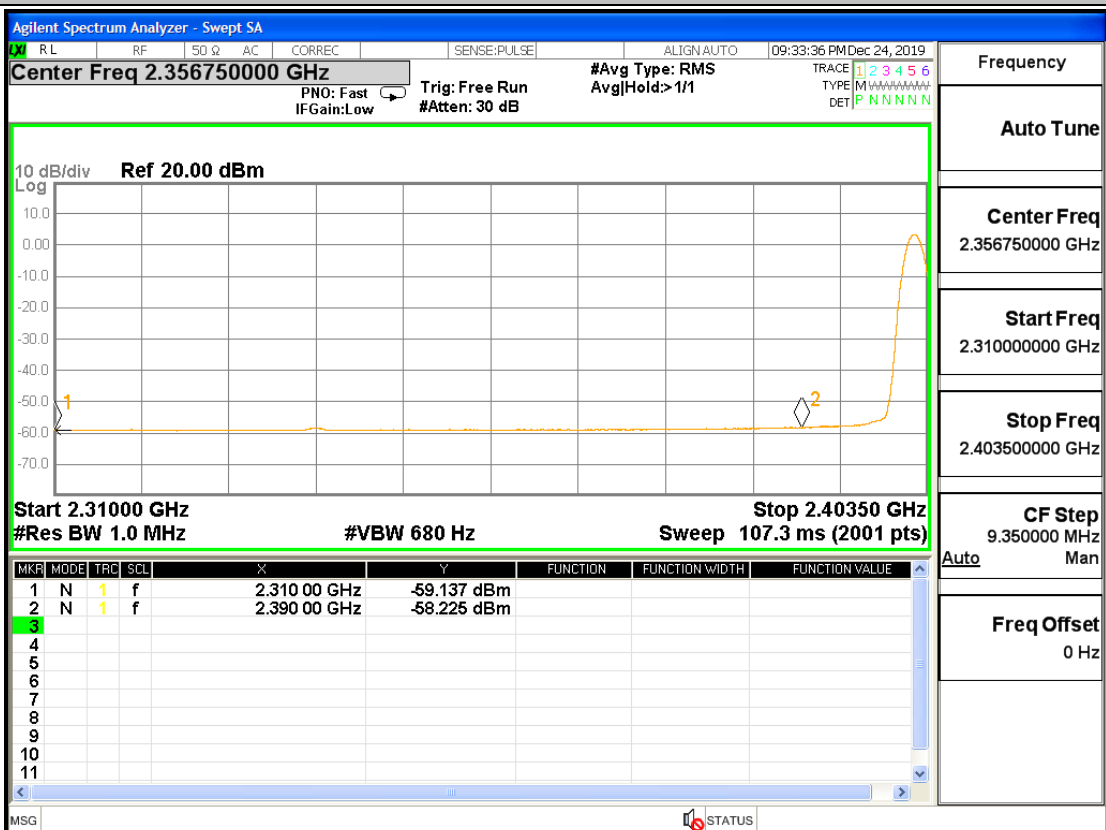
Restrict-band band-edge measurements_2480_AV_2DH5



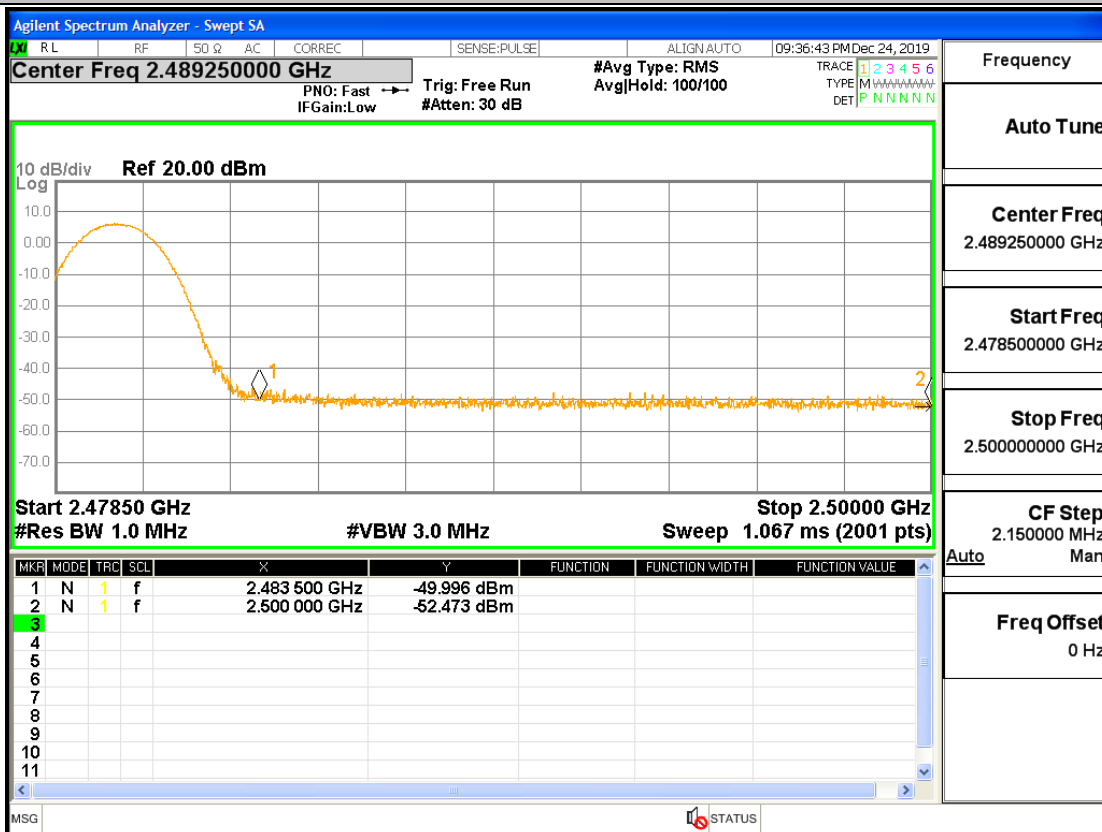
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

