

Appendix A

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

Product Name: Bluetooth headset

Trade Mark: munash,kendir

Test Model: M6

FCC ID: 2ASN9-M6

Environmental Conditions

Temperature:	22.7 ° C
Relative Humidity:	50%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

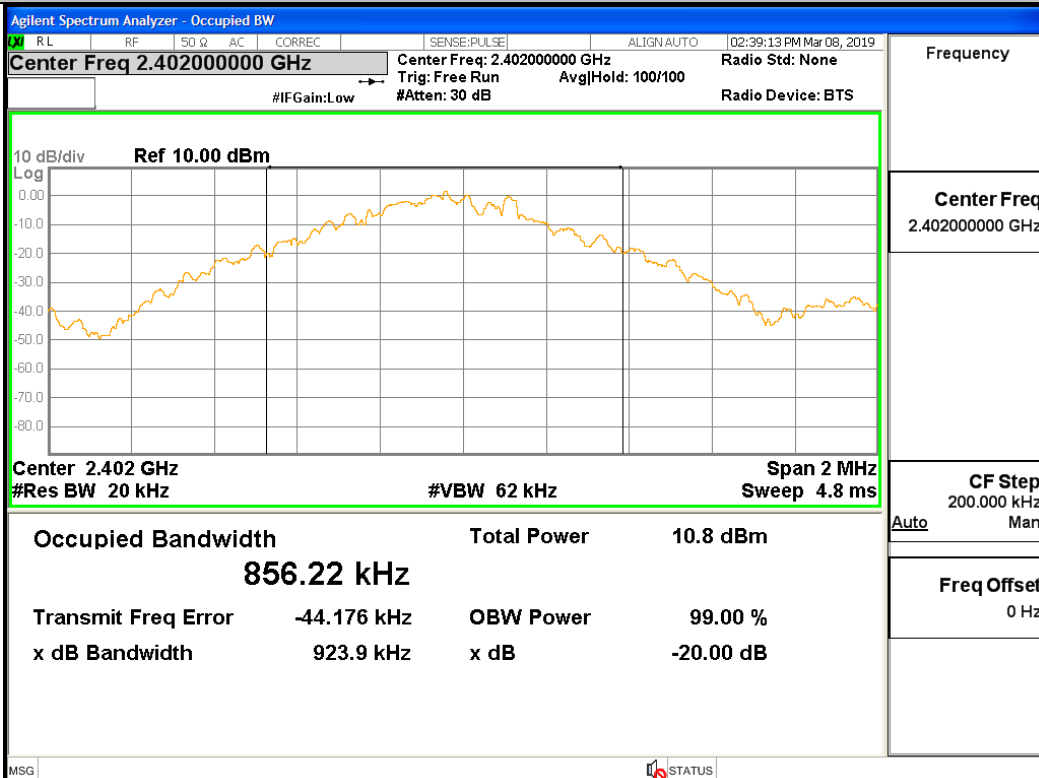
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.924	Not Specified	PASS
GFSK	MCH	0.857	Not Specified	PASS
GFSK	HCH	0.859	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.204	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.201	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.229	Not Specified	PASS
8DPSK	LCH	1.241	Not Specified	PASS
8DPSK	MCH	1.272	Not Specified	PASS
8DPSK	HCH	1.264	Not Specified	PASS

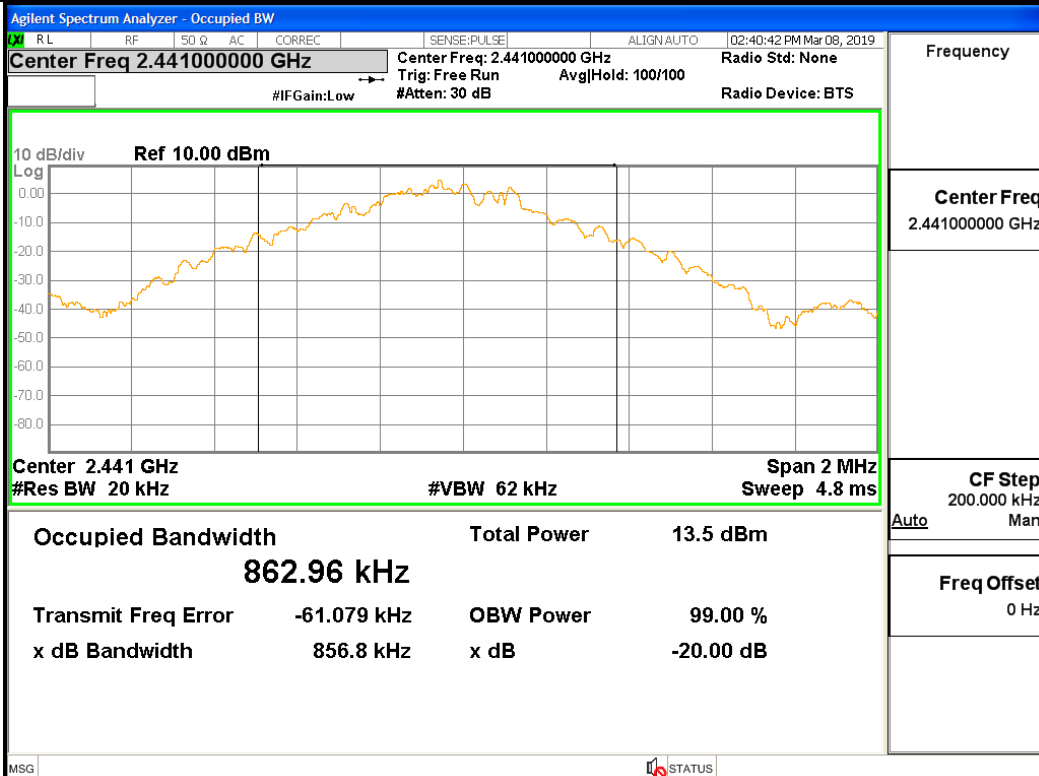
Test Graph

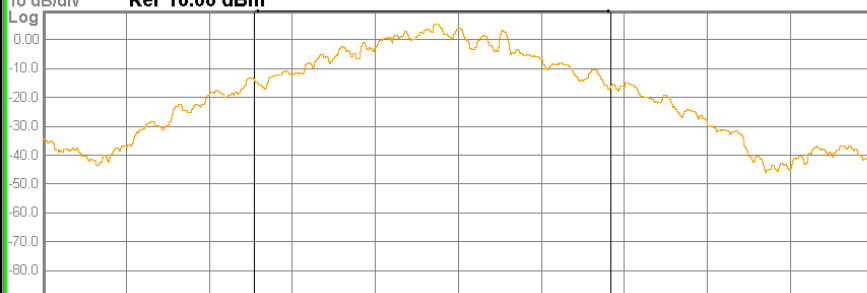
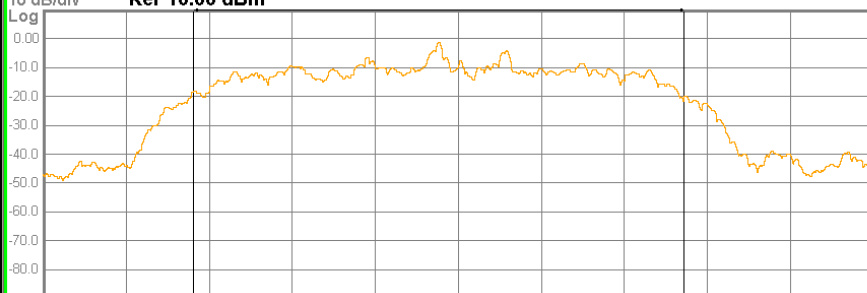
Graphs

GFSK/LCH



GFSK/MCH



GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 02:42:28 PM Mar 08, 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 10.00 dBm  Center 2.48 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 856.22 kHz Total Power 14.2 dBm Transmit Freq Error -61.988 kHz OBW Power 99.00 % x dB Bandwidth 859.3 kHz x dB -20.00 dB MSG  STATUS							Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
π/4DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 02:43:52 PM Mar 08, 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 10.00 dBm  Center 2.402 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1766 MHz Total Power 6.88 dBm Transmit Freq Error -46.420 kHz OBW Power 99.00 % x dB Bandwidth 1.204 MHz x dB -20.00 dB MSG  STATUS							Frequency Center Freq 2.402000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

Center Freq 2.402000000 GHz

Center Freq: 2.402000000 GHz

Radio Std: None

#IFGain:Low

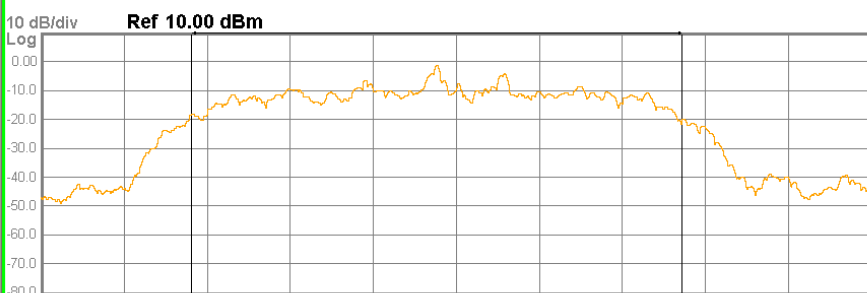
#Atten: 30 dB

AvgHold: 100/100

Radio Device: BTS

10 dB/div

Ref 10.00 dBm



Center 2.402 GHz

#Res BW 20 kHz

#VBW 62 kHz

Span 2 MHz

Sweep 4.8 ms

Occupied Bandwidth

1.1766 MHz

Total Power

6.88 dBm

Transmit Freq Error

-46.420 kHz

OBW Power

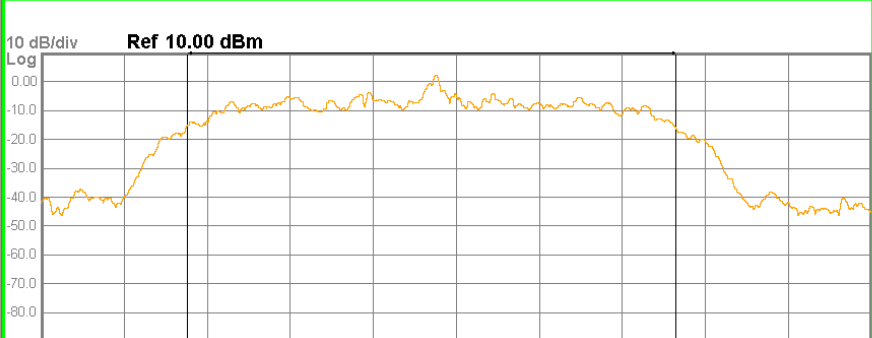
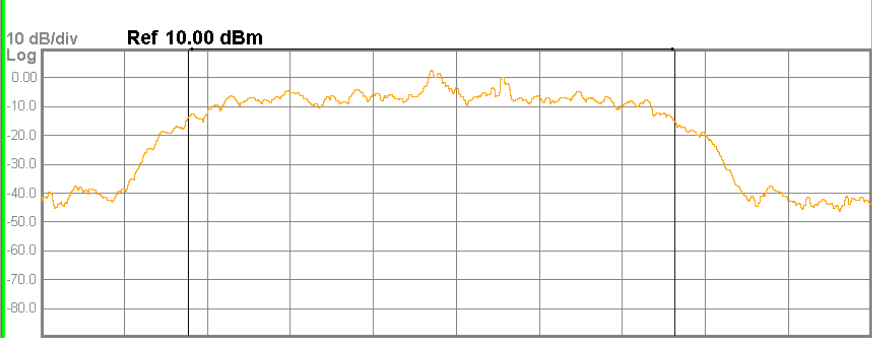
99.00 %

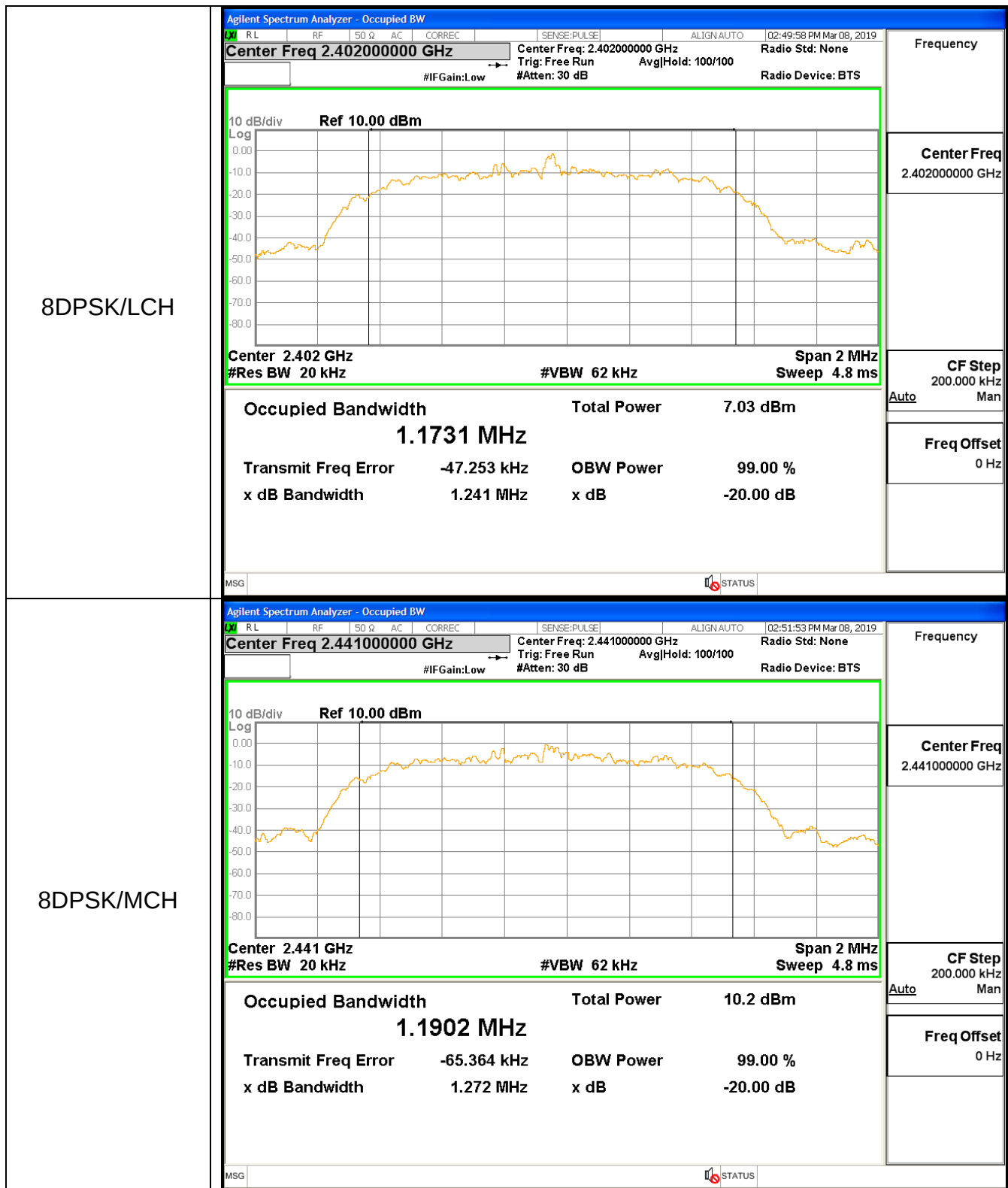
x dB Bandwidth

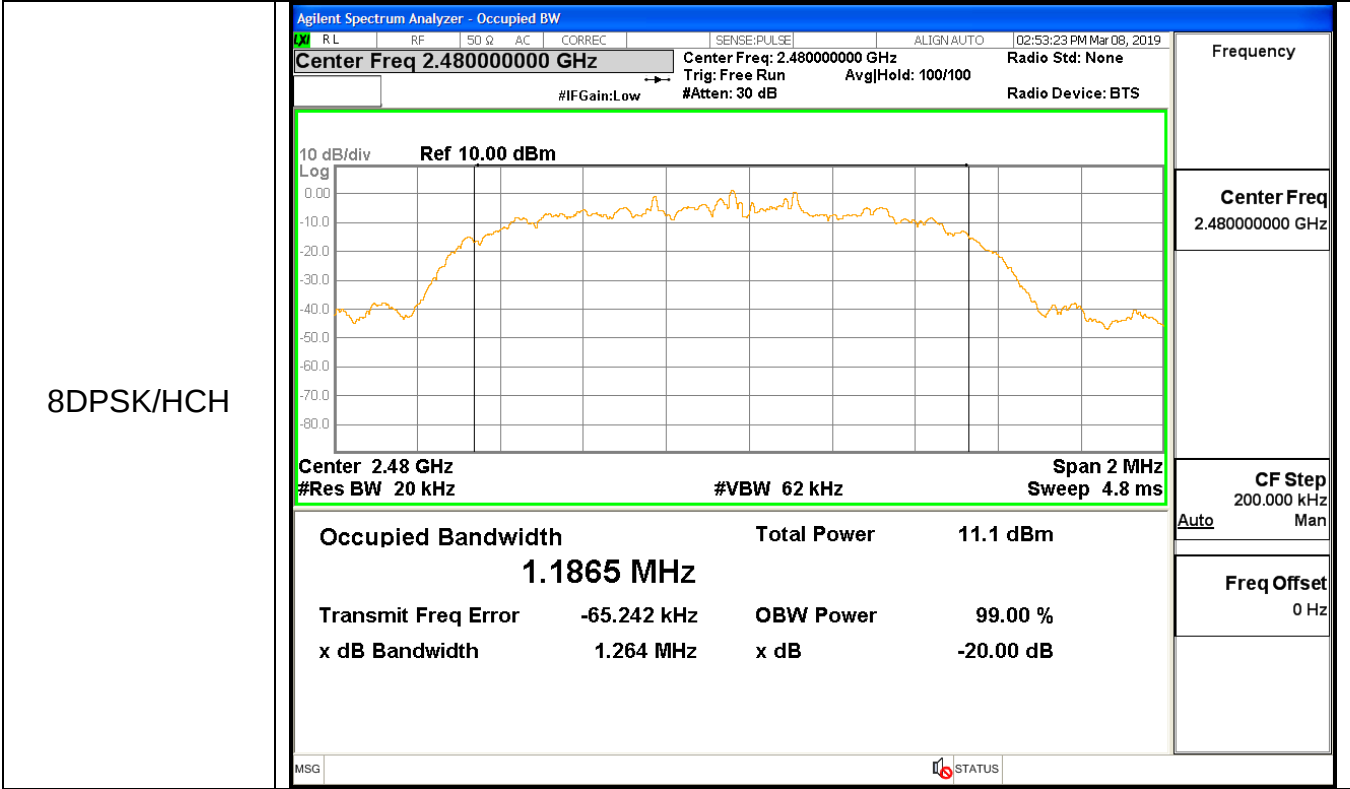
1.204 MHz

x dB

-20.00 dB

π/4DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN AUTO 02:45:36 PM Mar 08, 2019 Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB Trig: Free Run AvgHold: 100/100 Radio Device: BTS  10 dB/div Ref 10.00 dBm Center 2.441 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 1.1764 MHz Total Power 10.3 dBm Transmit Freq Error -58.957 kHz OBW Power 99.00 % x dB Bandwidth 1.201 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.441000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz
π/4DQPSK/HCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN AUTO 02:47:03 PM Mar 08, 2019 Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Radio Std: None #IFGain:Low #Atten: 30 dB Trig: Free Run AvgHold: 100/100 Radio Device: BTS  10 dB/div Ref 10.00 dBm Center 2.48 GHz Span 2 MHz #Res BW 20 kHz #VBW 62 kHz Sweep 4.8 ms Occupied Bandwidth 1.1723 MHz Total Power 11.2 dBm Transmit Freq Error -59.731 kHz OBW Power 99.00 % x dB Bandwidth 1.229 MHz x dB -20.00 dB MSG STATUS	Frequency Center Freq 2.480000000 GHz CF Step 200.000 kHz Auto Man Freq Offset 0 Hz

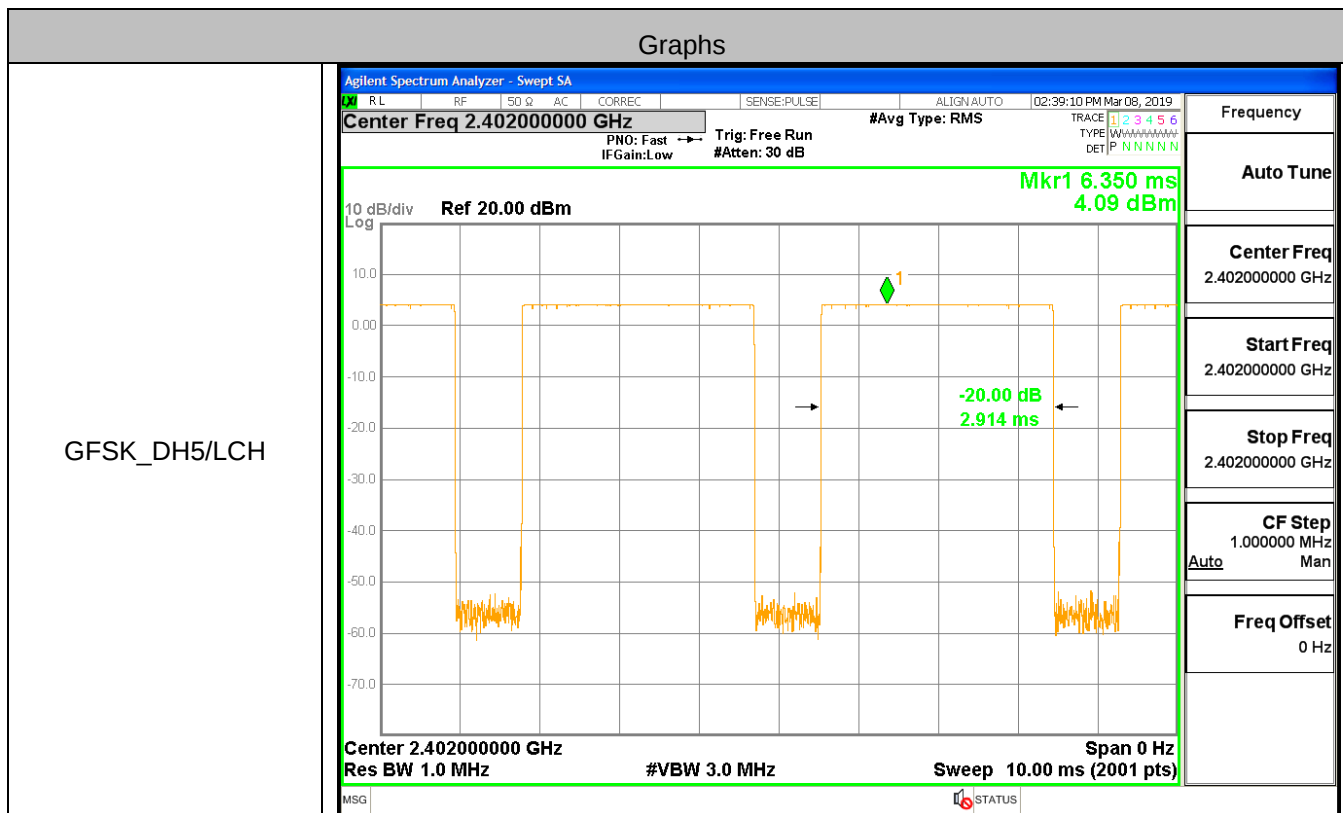


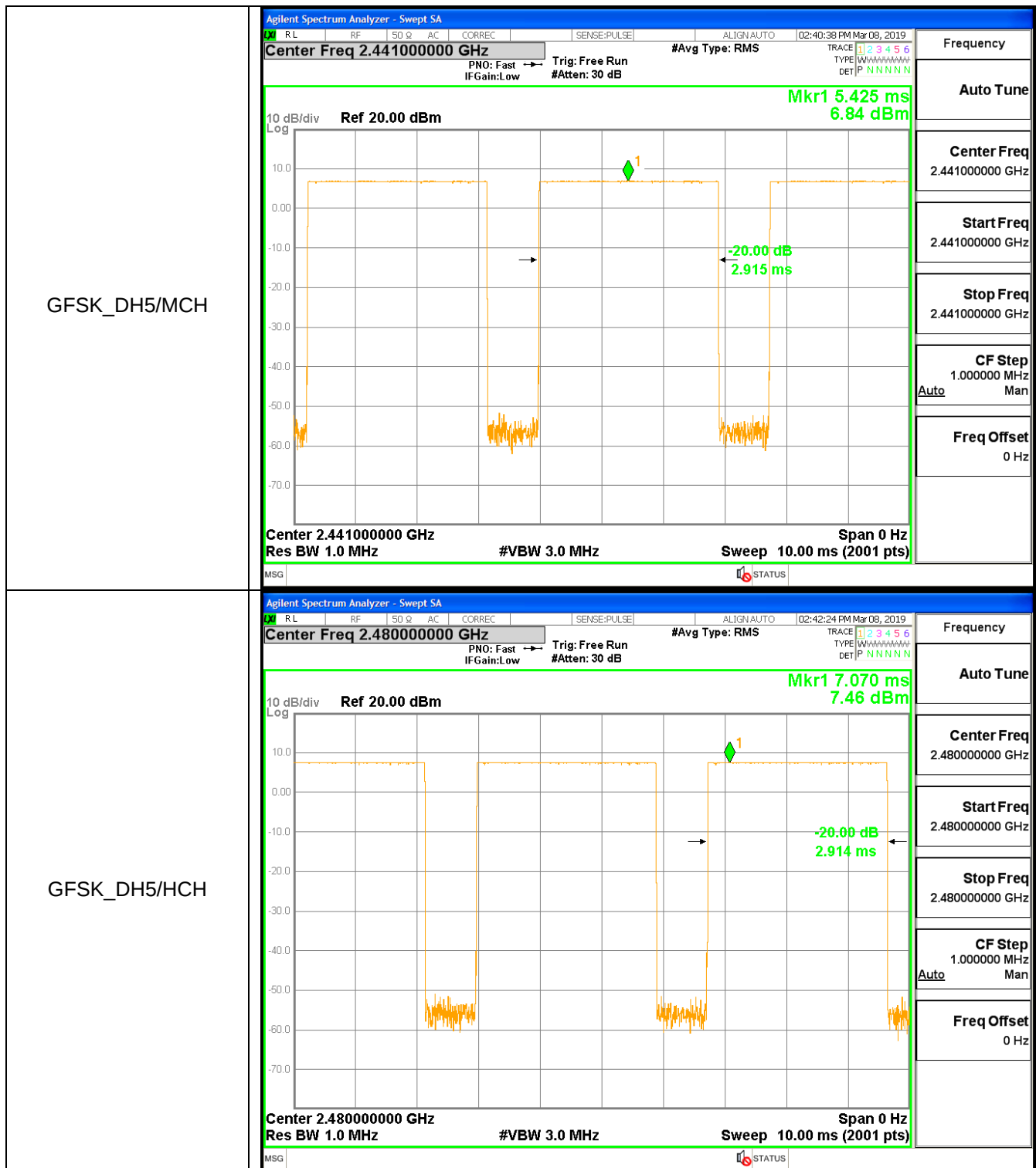


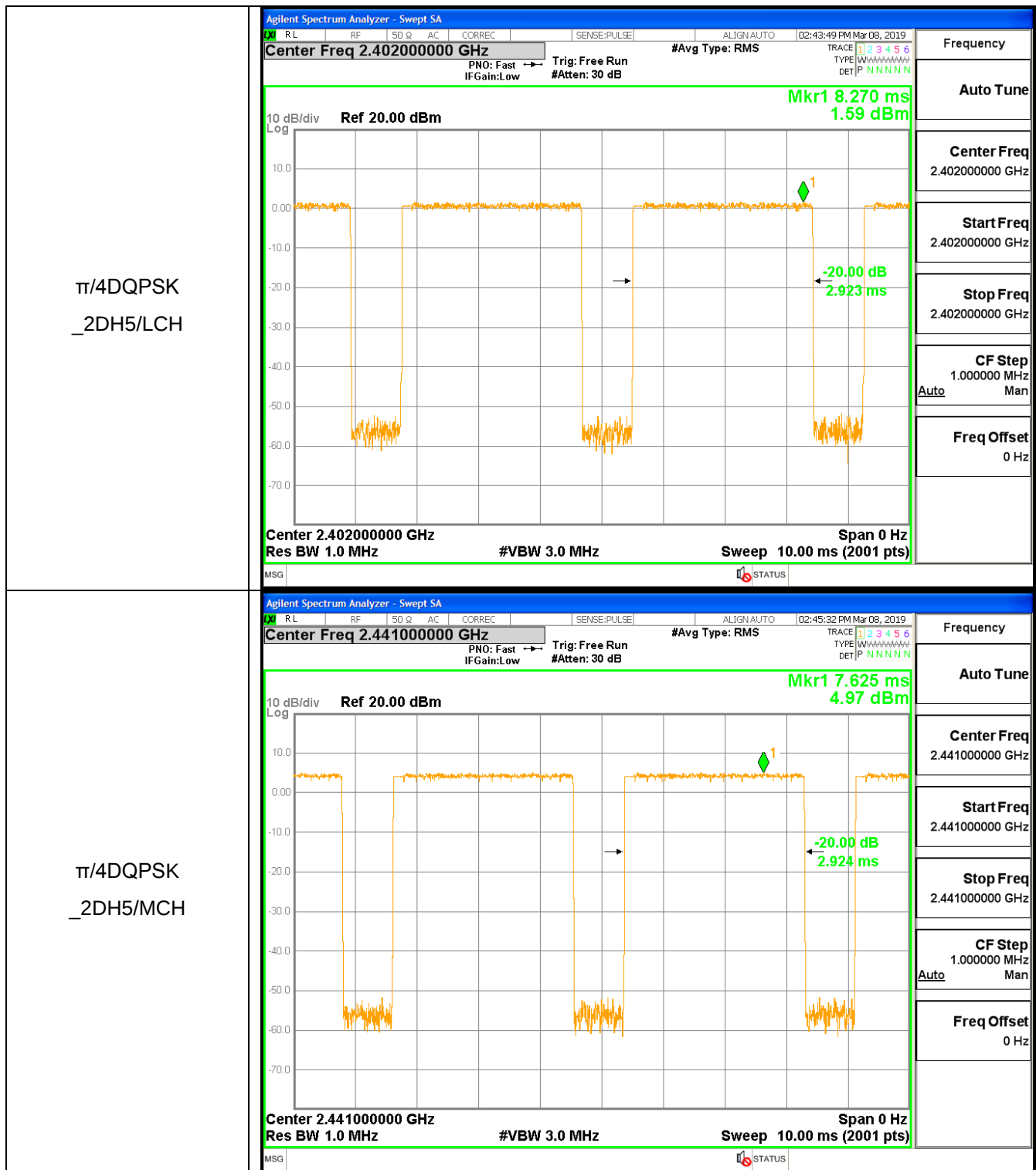
A.2 Dwell Time

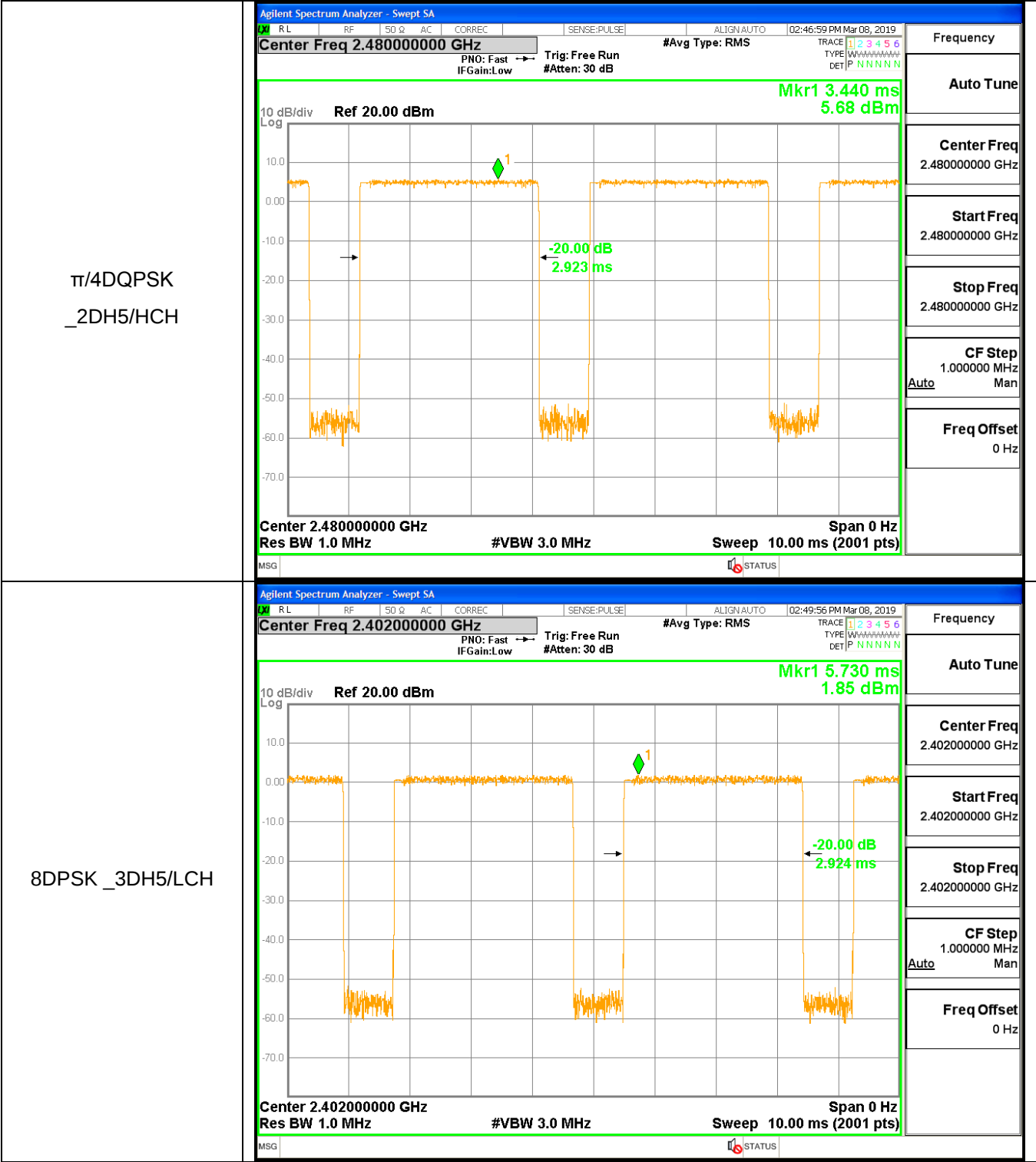
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002914	106.7	0.310901	0.4	PASS
GFSK	DH5	MCH	0.002915	106.7	0.310979	0.4	PASS
GFSK	DH5	HCH	0.002914	106.7	0.31097	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002923	106.7	0.311918	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002924	106.7	0.311955	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002923	106.7	0.311921	0.4	PASS
8DPSK	3DH5	LCH	0.002924	106.7	0.311959	0.4	PASS
8DPSK	3DH5	MCH	0.002924	106.7	0.311983	0.4	PASS
8DPSK	3DH5	HCH	0.002924	106.7	0.311986	0.4	PASS

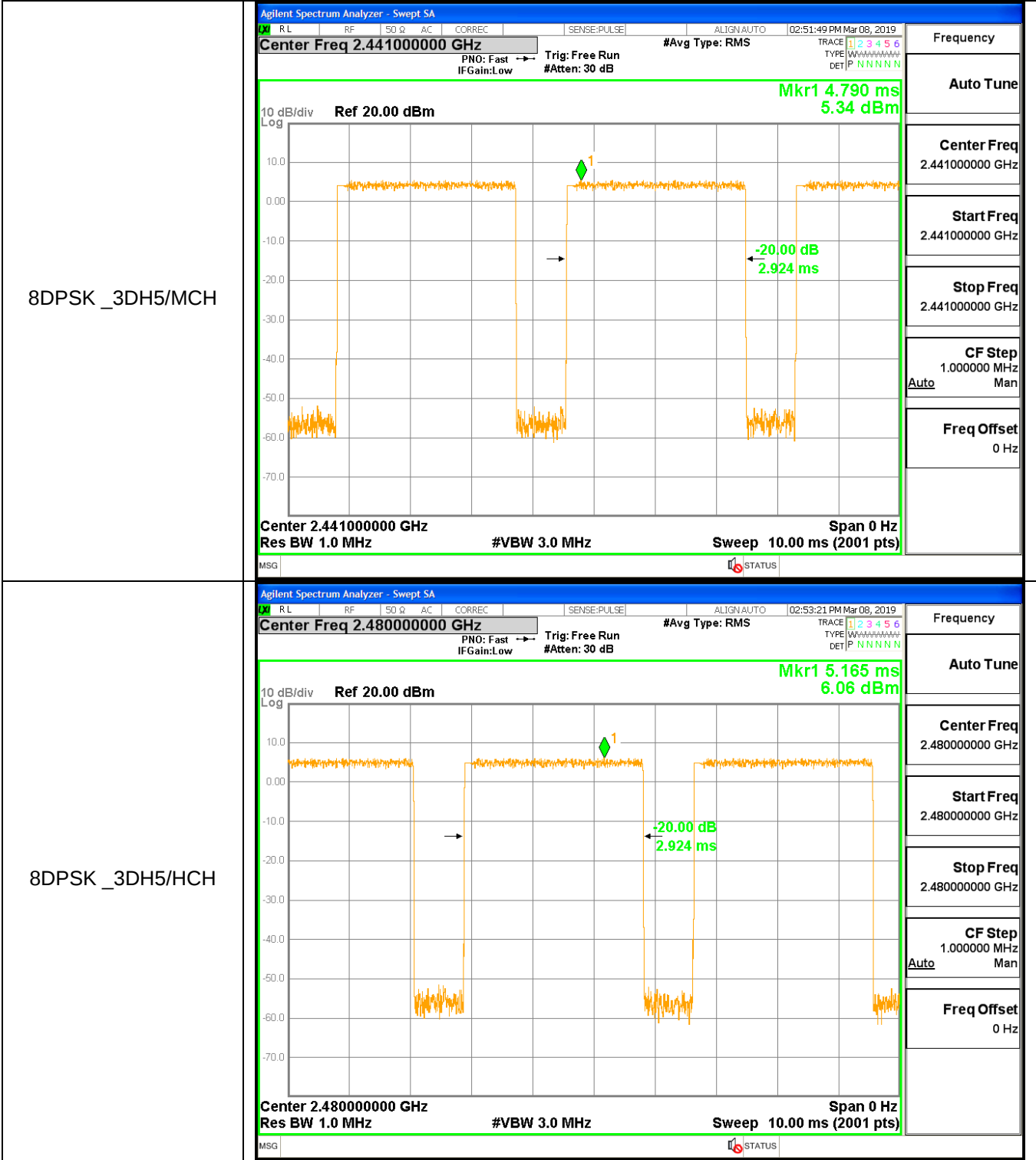
Test Graph









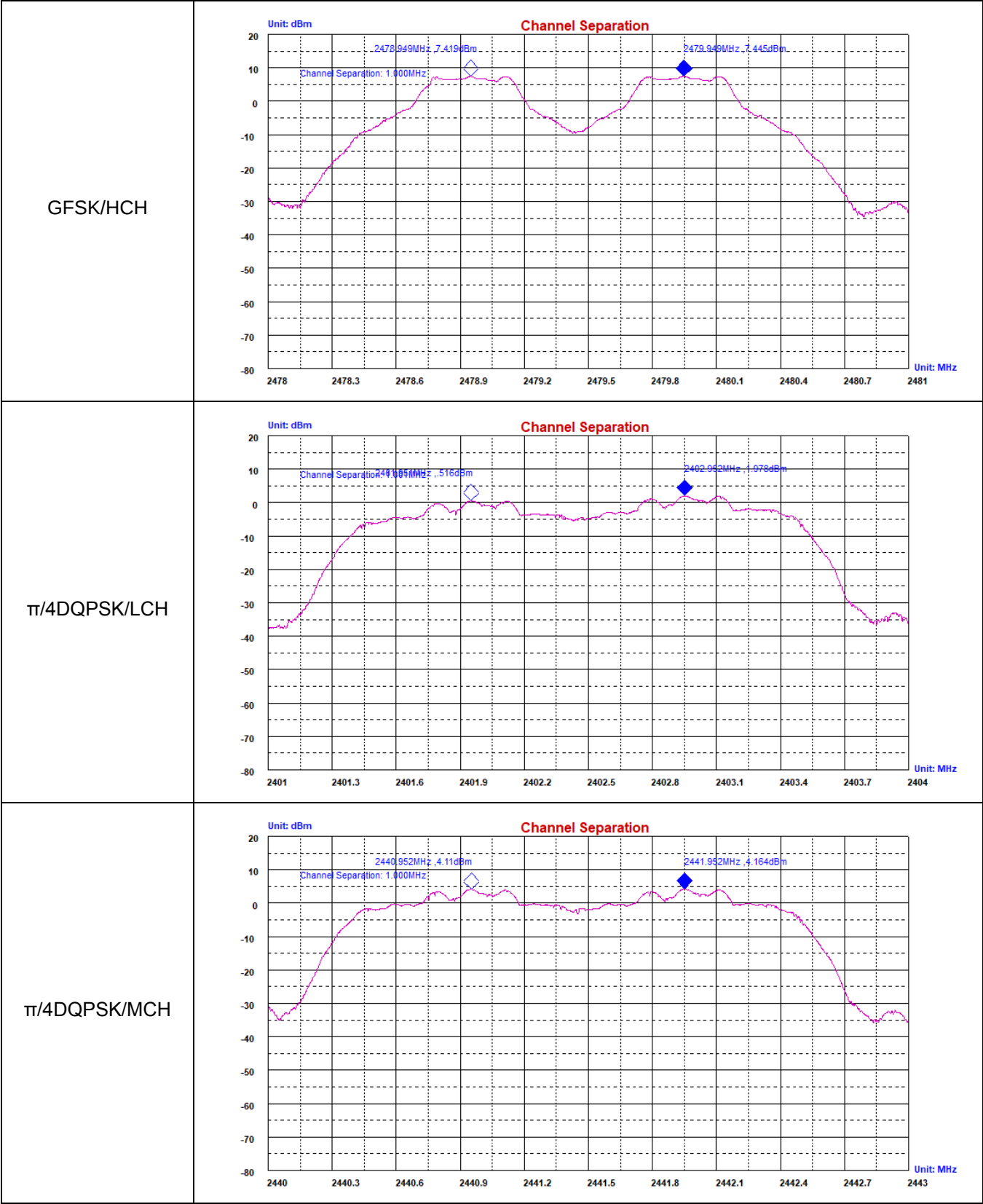


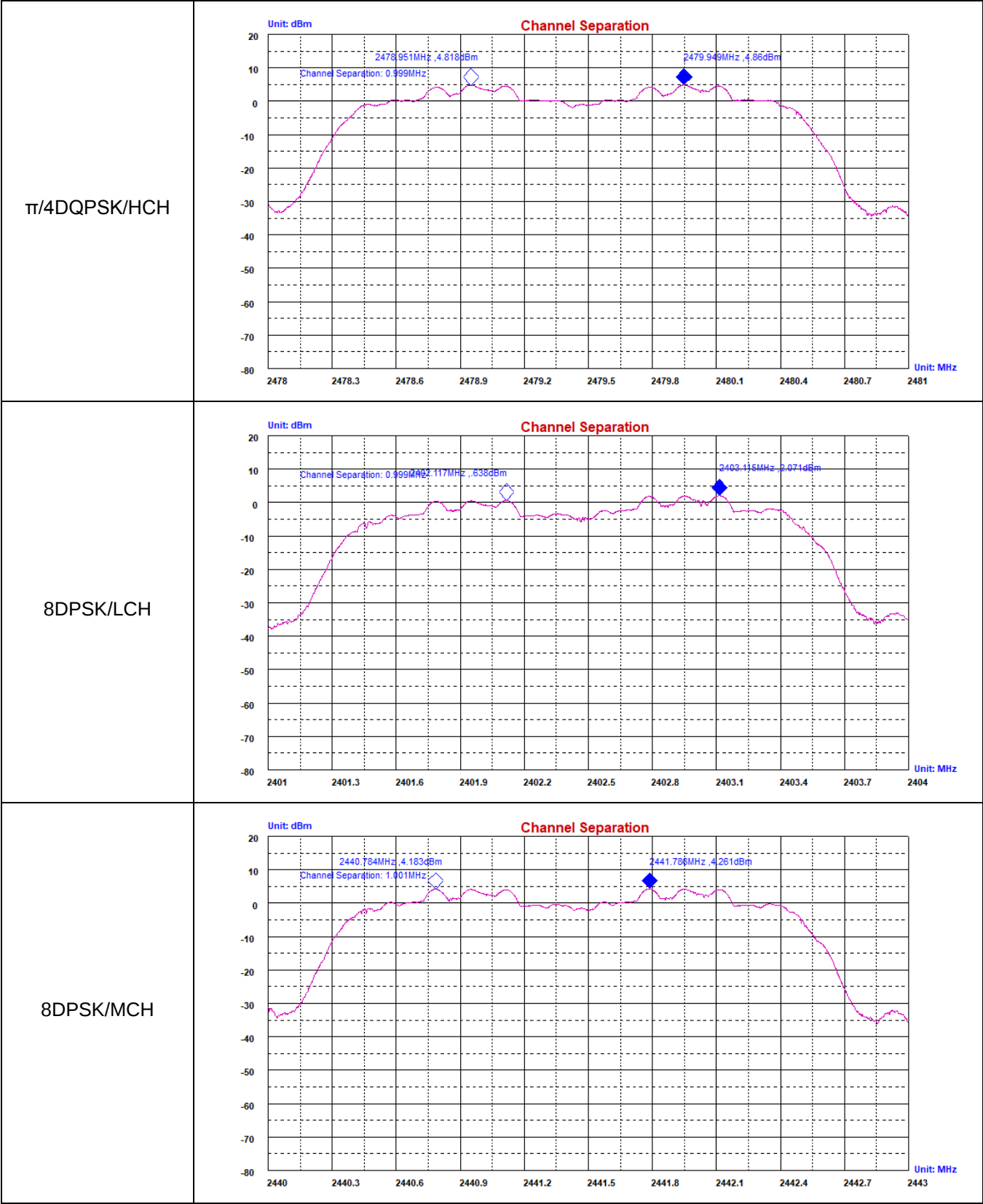
A.3 Carrier Frequency Separation

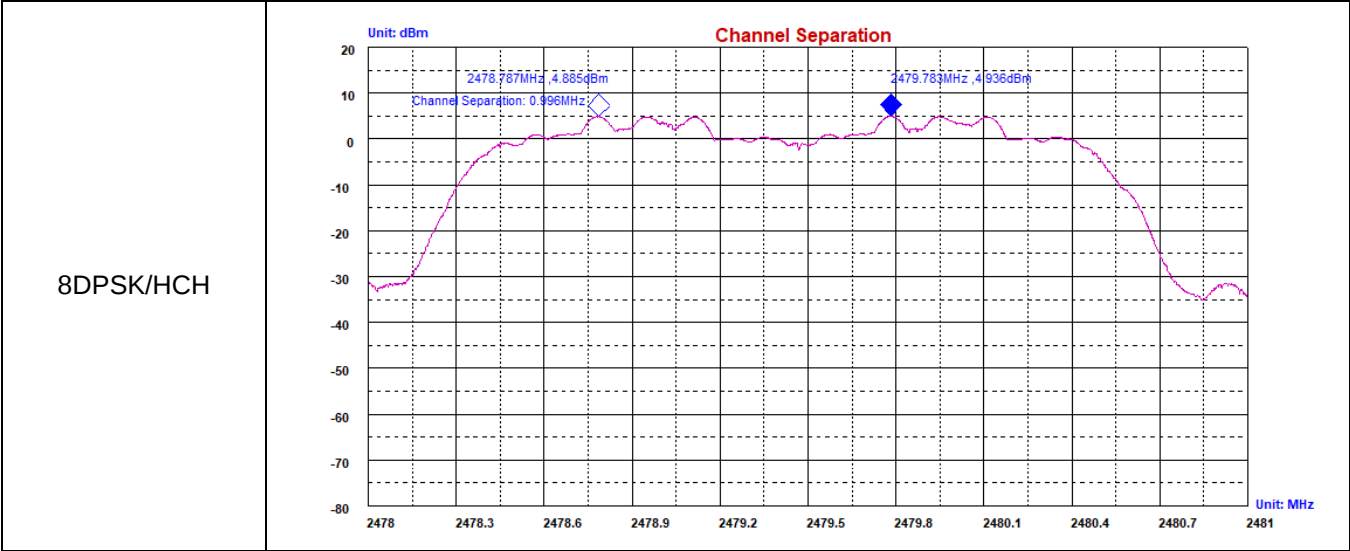
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.999	0.616	PASS
GFSK	MCH	1.001	0.571	PASS
GFSK	HCH	1.000	0.573	PASS
$\pi/4$ DQPSK	LCH	1.001	0.803	PASS
$\pi/4$ DQPSK	MCH	1.000	0.801	PASS
$\pi/4$ DQPSK	HCH	0.999	0.819	PASS
8DPSK	LCH	0.999	0.827	PASS
8DPSK	MCH	1.001	0.848	PASS
8DPSK	HCH	0.996	0.843	PASS

Test Graph





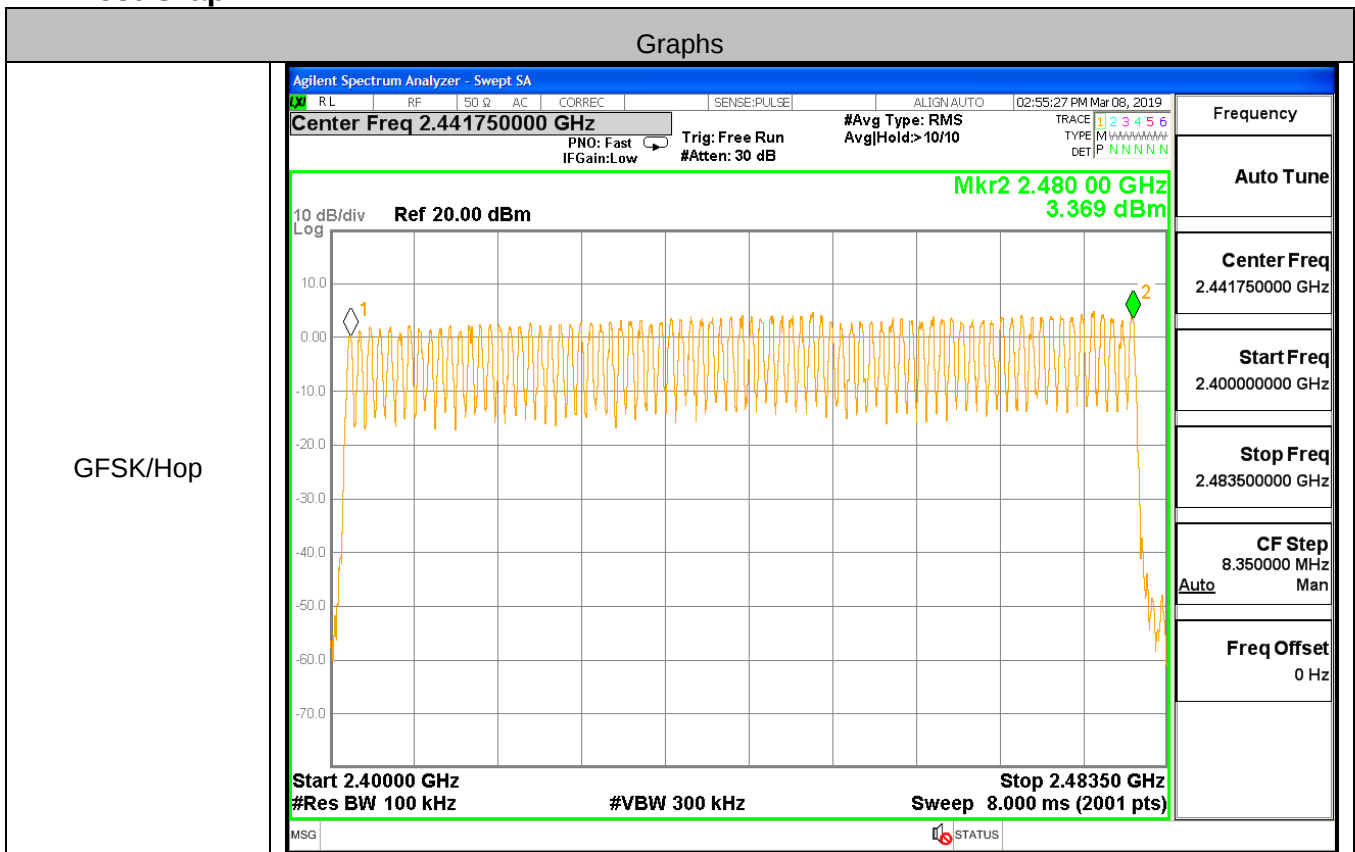


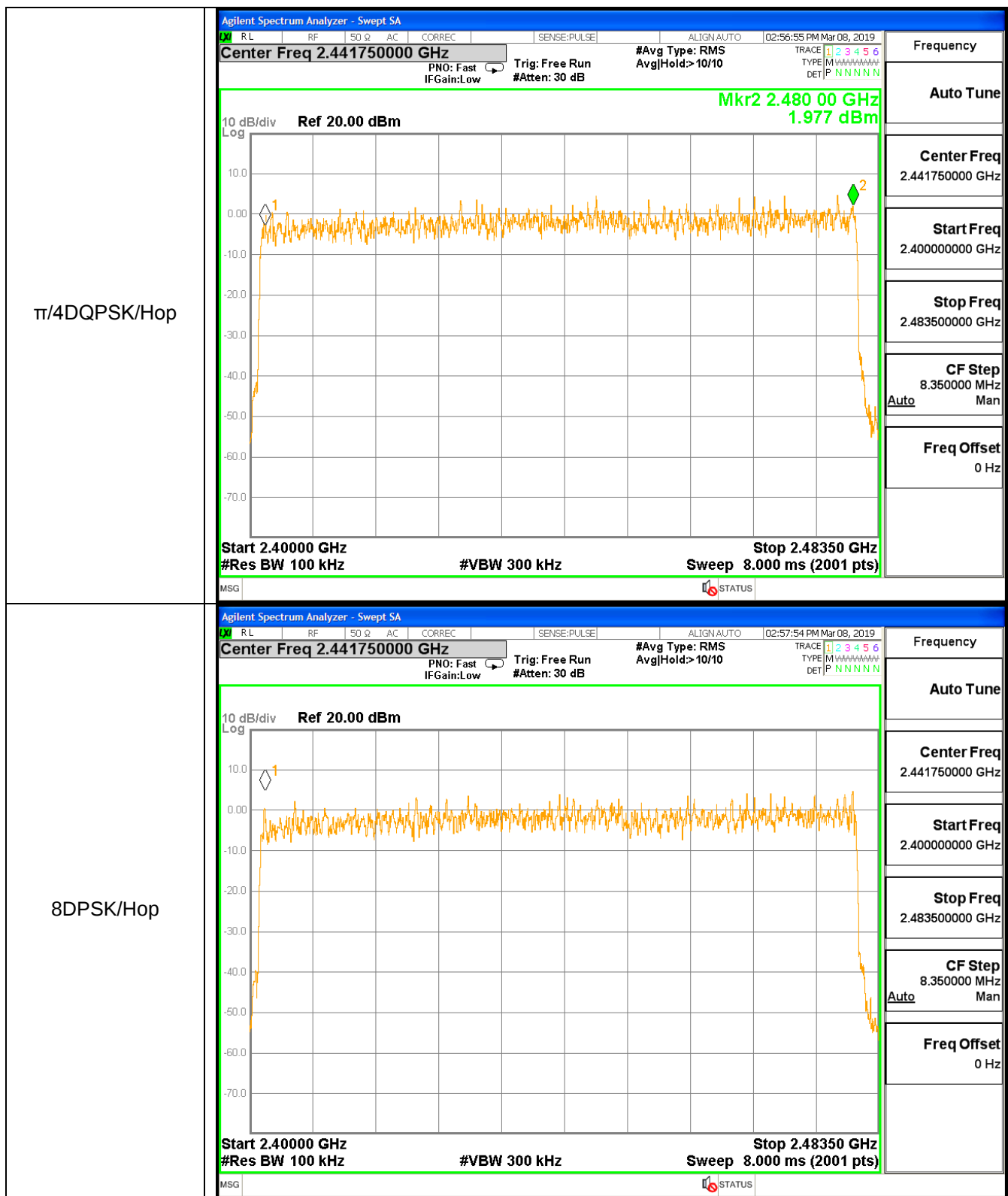


A.4 Hopping Channel Number

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

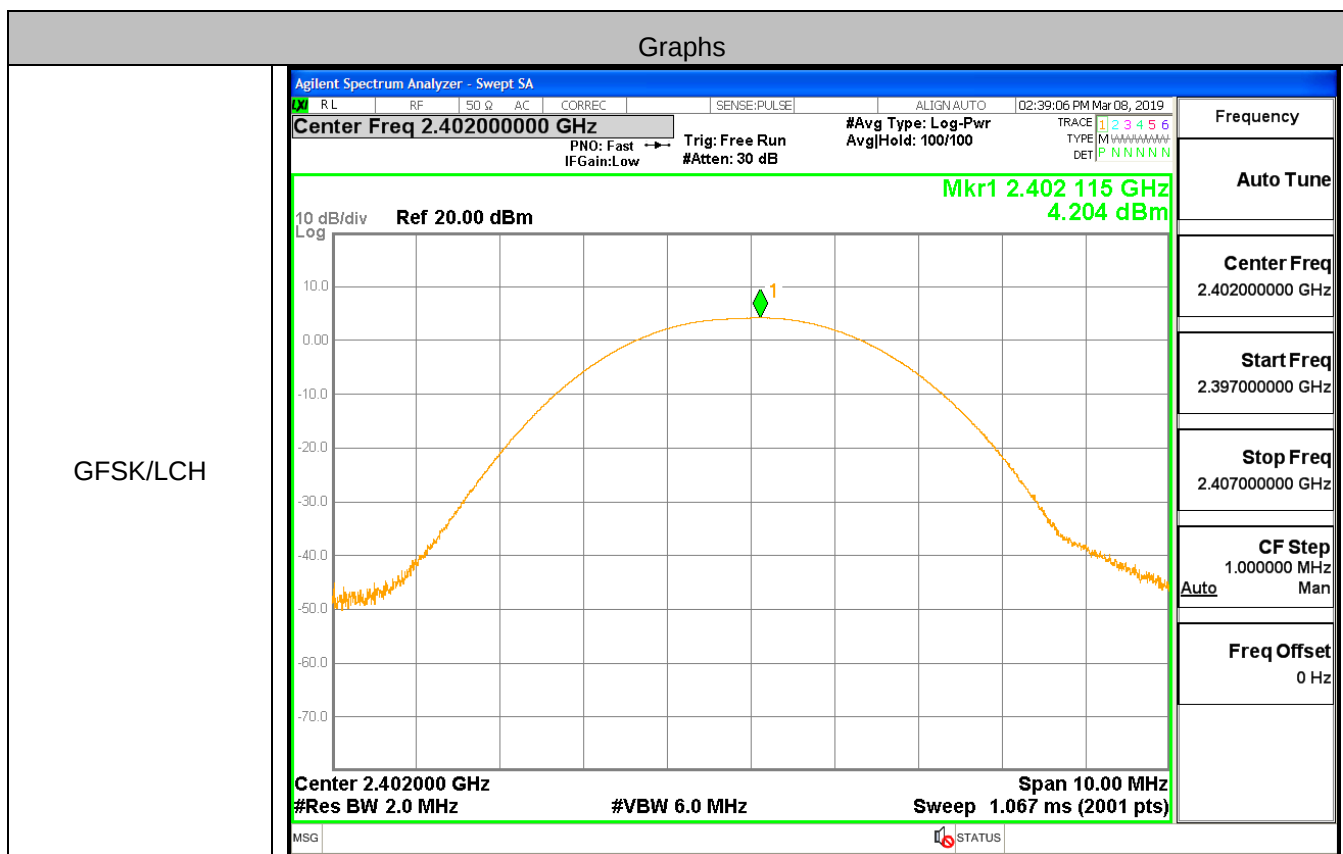


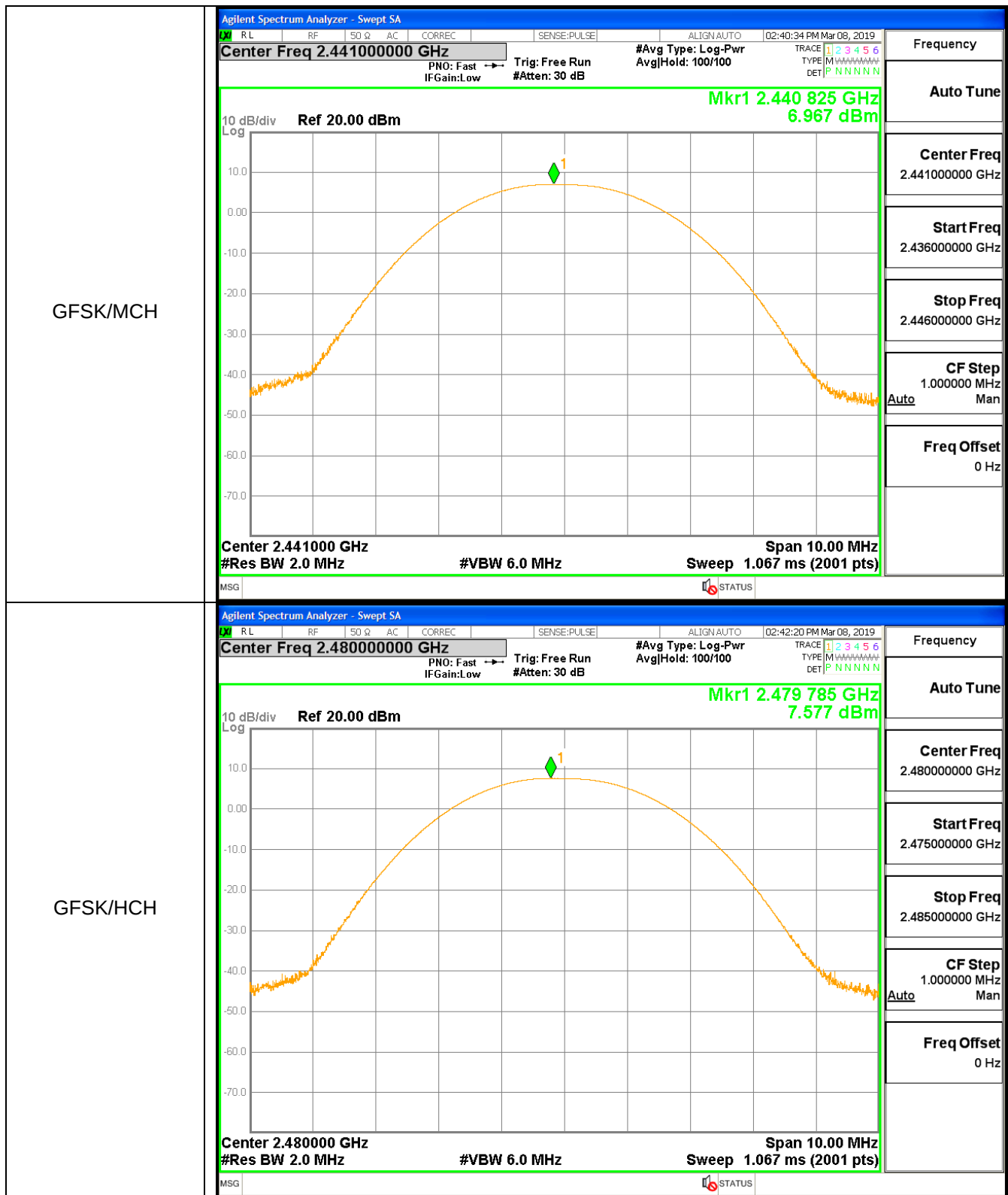


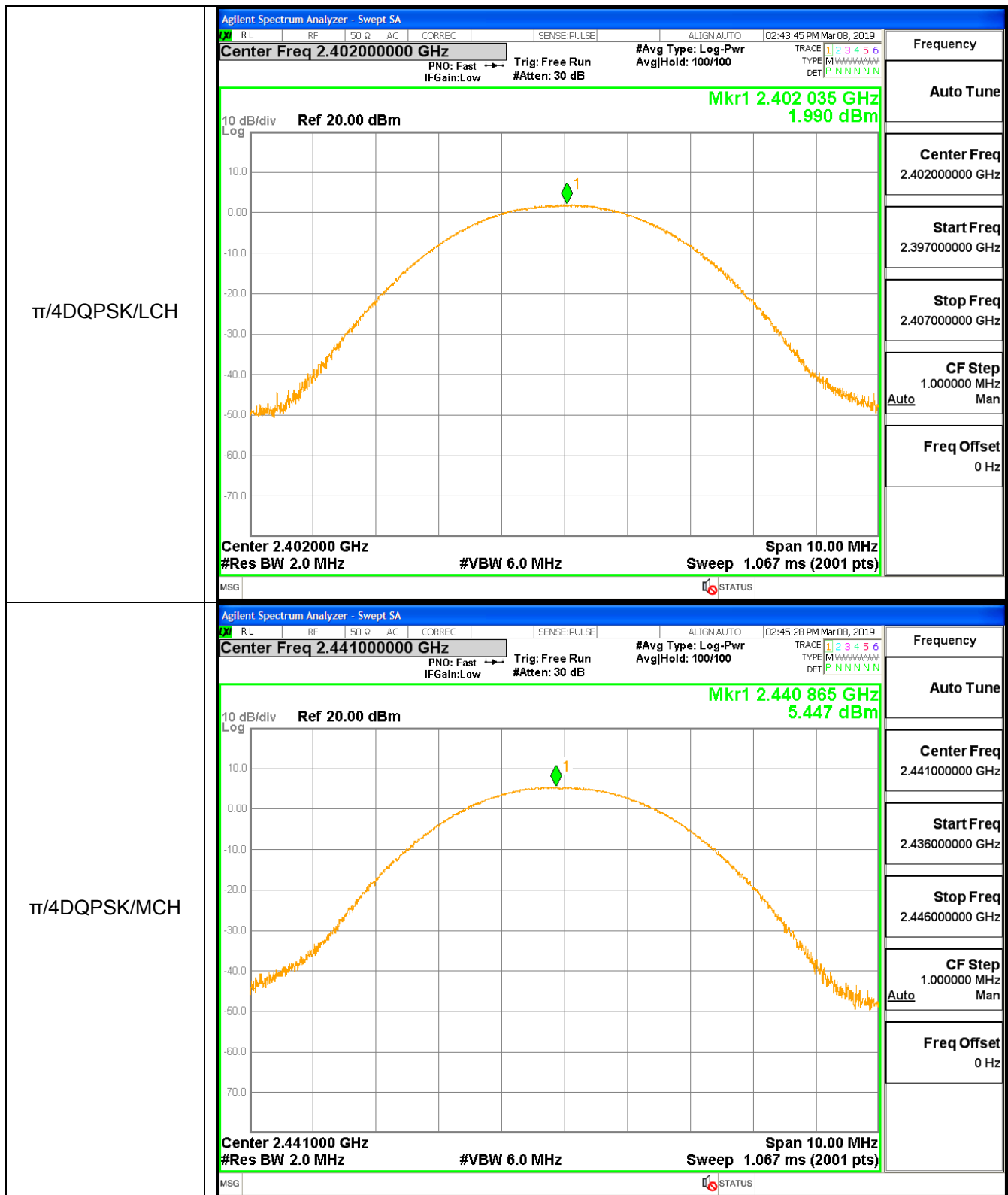
A.5 Conducted Peak Output Power

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	4.204	21	PASS
GFSK	MCH	6.967	21	PASS
GFSK	HCH	7.577	21	PASS
$\pi/4$ DQPSK	LCH	1.990	21	PASS
$\pi/4$ DQPSK	MCH	5.447	21	PASS
$\pi/4$ DQPSK	HCH	6.191	21	PASS
8DPSK	LCH	2.269	21	PASS
8DPSK	MCH	5.817	21	PASS
8DPSK	HCH	6.491	21	PASS

Test Graph







Frequency

Auto Tune

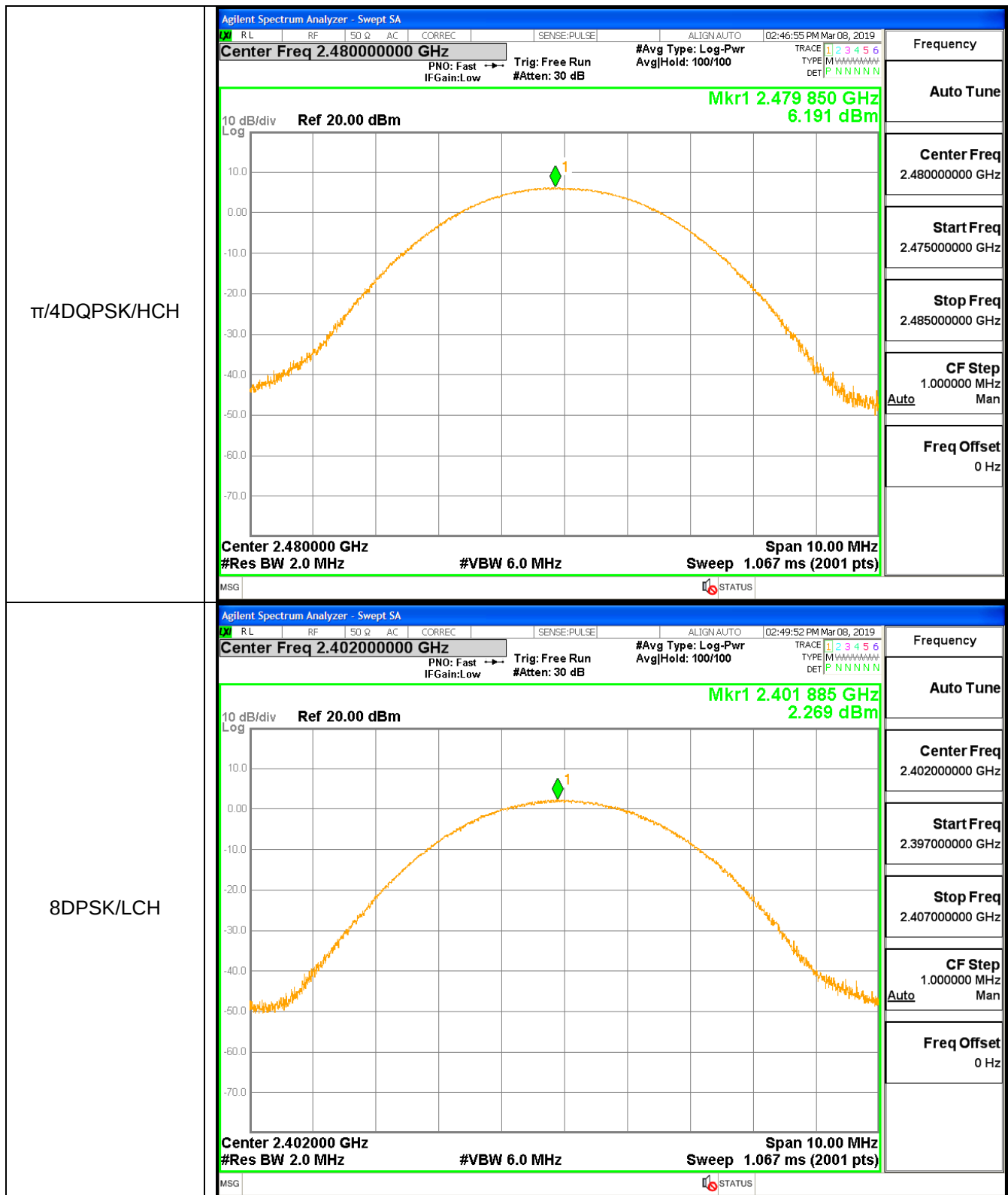
Center Freq
2.402000000 GHz

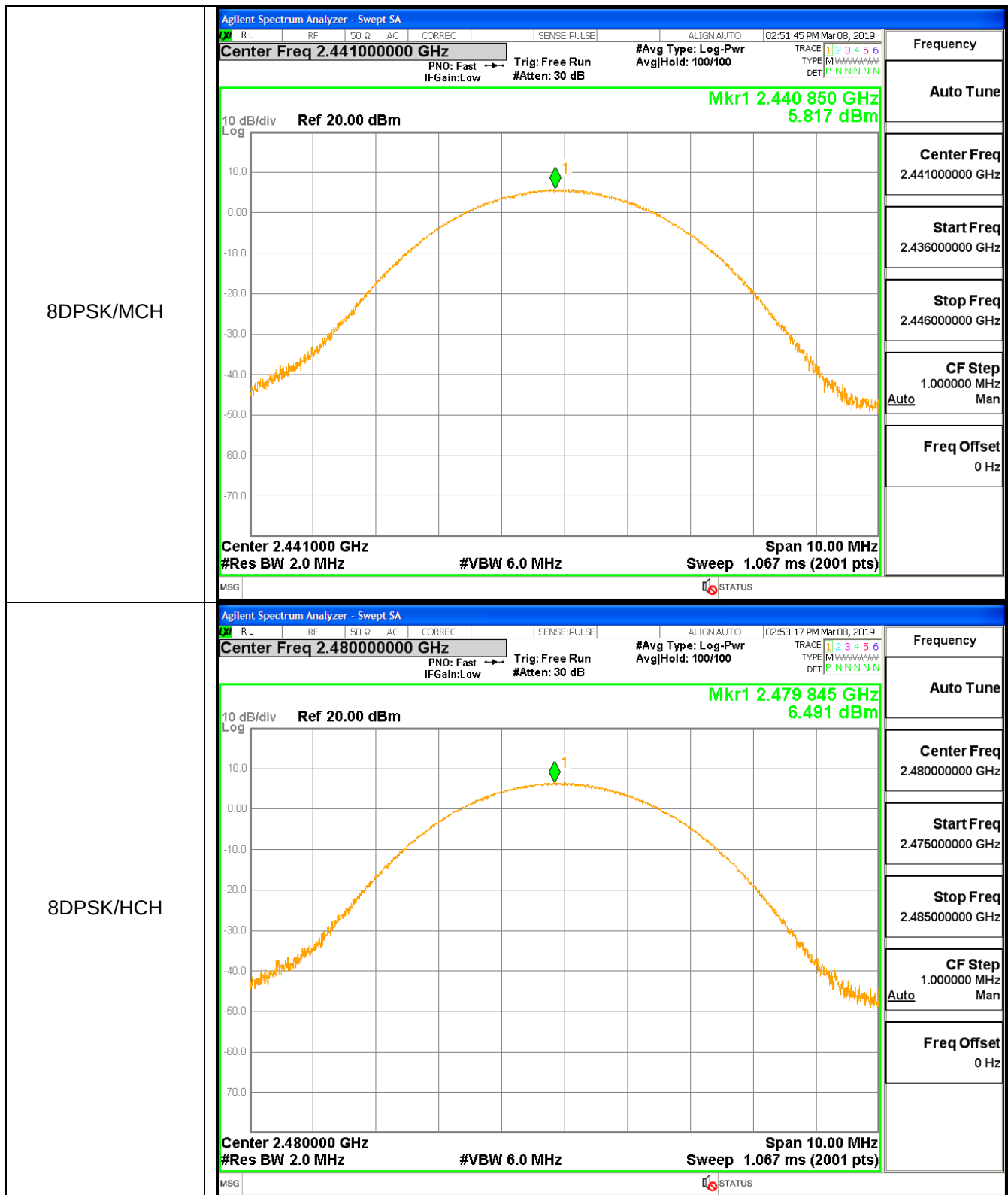
Start Freq
2.397000000 GHz

Stop Freq
2.407000000 GHz

CF Step
1.000000 MHz
Auto Man

Freq Offset
0 Hz

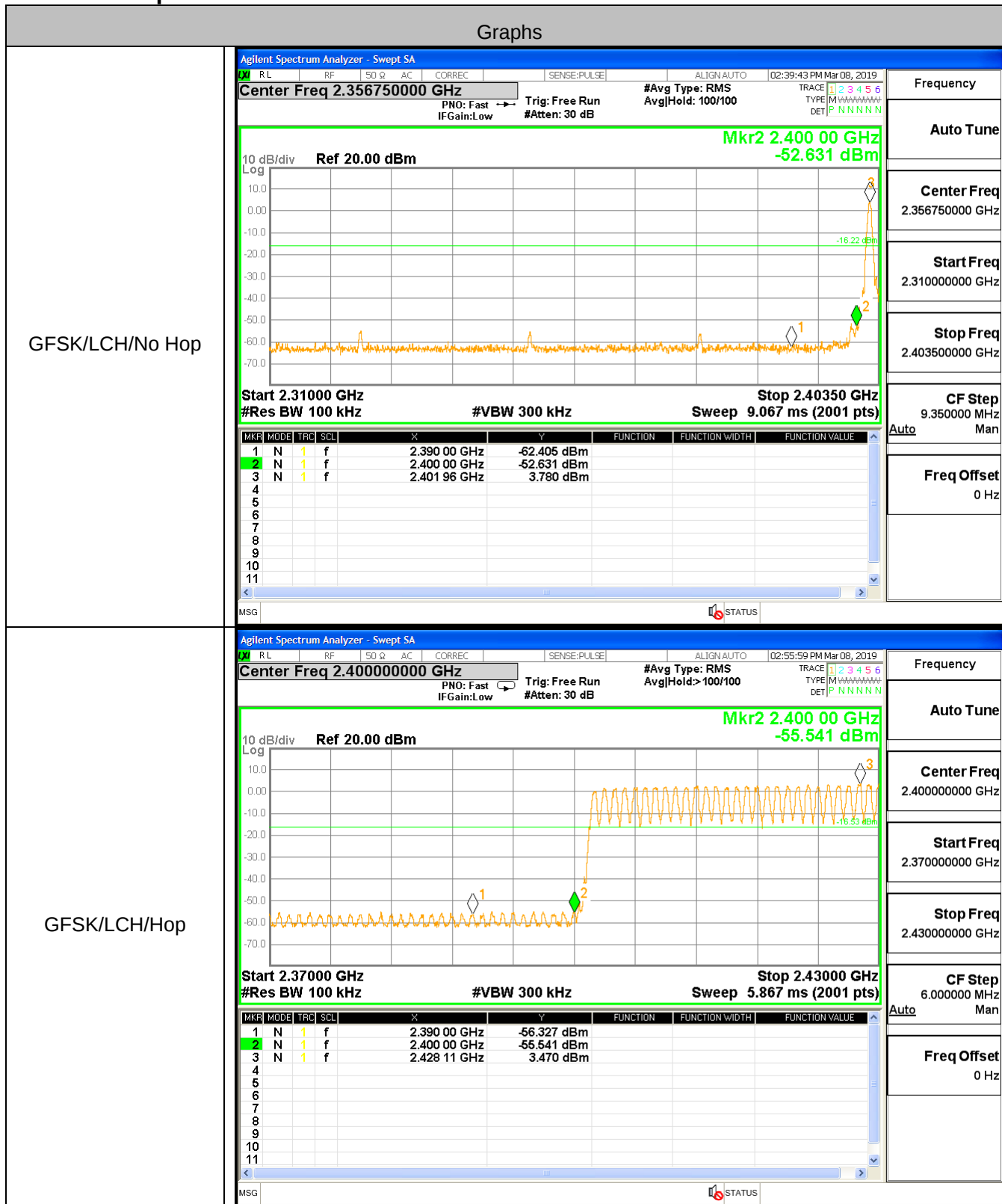




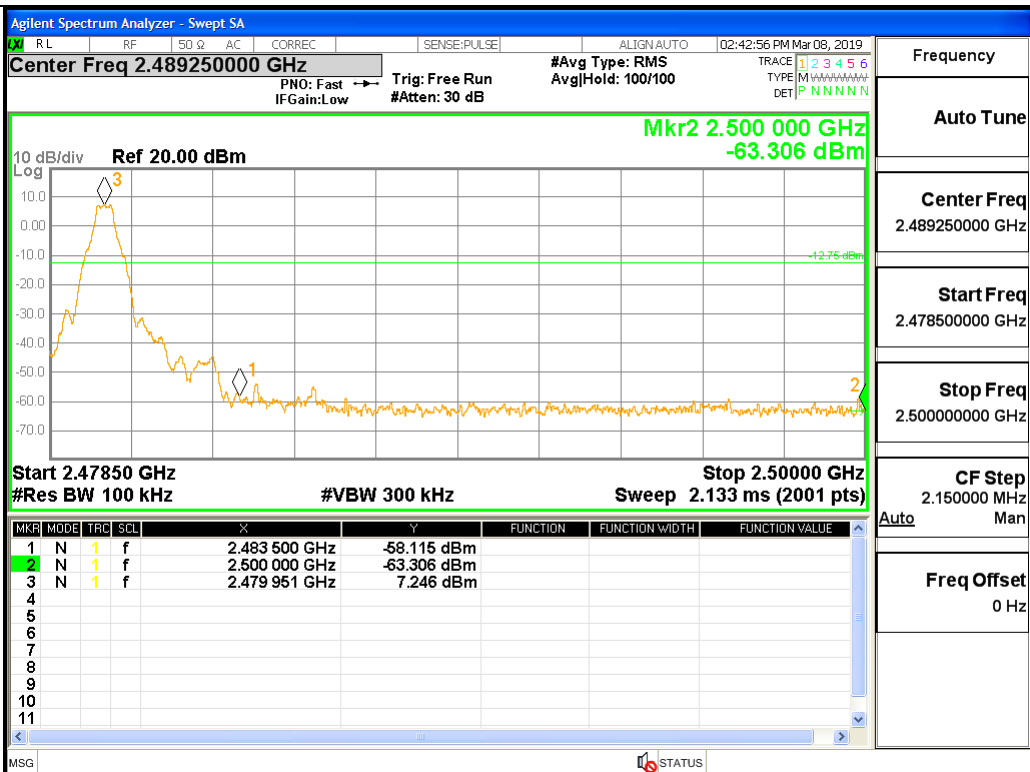
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	3.78	-62.40	-16.22	Pass
1DH5	2402	2400	3.78	-52.63	-16.22	Pass
1DH5-Hopping	2402	2390	3.47	-56.33	-16.53	Pass
1DH5-Hopping	2402	2400	3.47	-55.54	-16.53	Pass
1DH5	2480	2483.5	7.25	-58.12	-12.75	Pass
1DH5	2480	2500	7.25	-63.31	-12.75	Pass
1DH5-Hopping	2480	2483.5	4.45	-60.31	-15.55	Pass
1DH5-Hopping	2480	2500	4.45	-48.16	-15.55	Pass
2DH5	2402	2390	0.51	-62.90	-19.49	Pass
2DH5	2402	2400	0.51	-50.91	-19.49	Pass
2DH5-Hopping	2480	2390	4.56	-56.21	-15.44	Pass
2DH5-Hopping	2480	2400	4.56	-54.15	-15.44	Pass
2DH5	2480	2483.5	4.44	-61.58	-15.56	Pass
2DH5	2480	2500	4.44	-62.82	-15.56	Pass
2DH5-Hopping	2402	2390	2.92	-59.92	-17.08	Pass
2DH5-Hopping	2402	2400	2.92	-56.58	-17.08	Pass
3DH5	2402	2390	0.58	-63.56	-19.42	Pass
3DH5	2402	2400	0.58	-50.29	-19.42	Pass
3DH5-Hopping	2402	2390	3.01	-57.58	-16.99	Pass
3DH5-Hopping	2402	2400	3.01	-55.47	-16.99	Pass
3DH5	2480	2483.5	4.74	-58.47	-15.26	Pass
3DH5	2480	2500	4.74	-64.17	-15.26	Pass
3DH5-Hopping	2480	2483.5	4.56	-55.95	-15.44	Pass
3DH5-Hopping	2480	2500	4.56	-51.23	-15.44	Pass

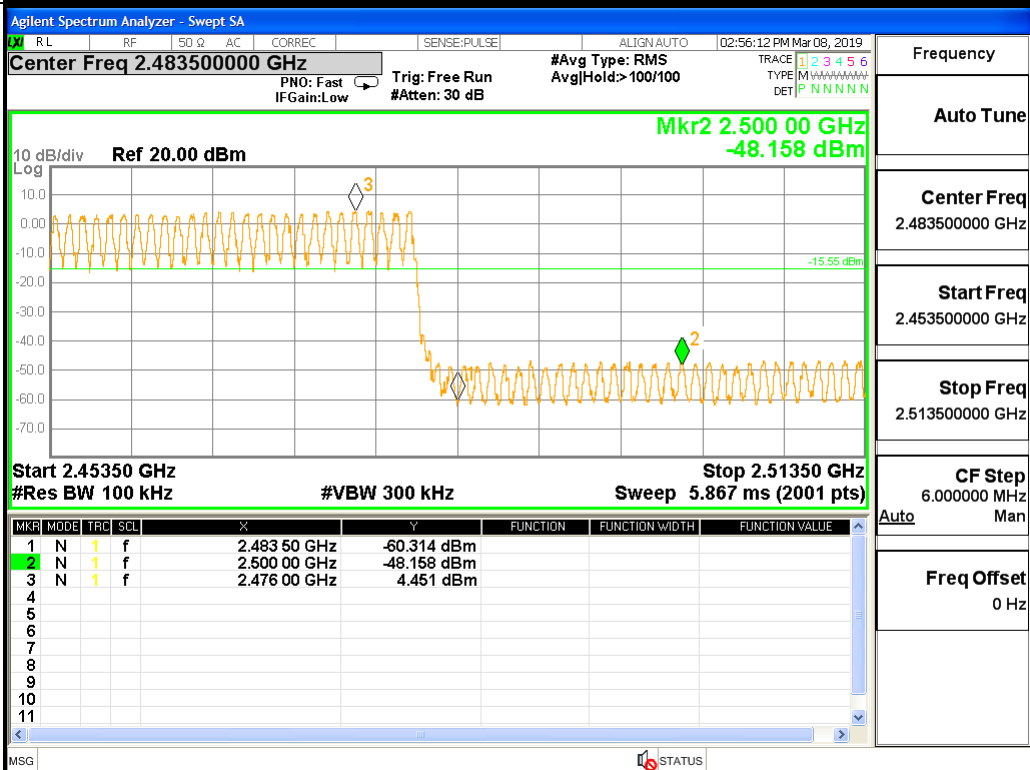
Test Graph

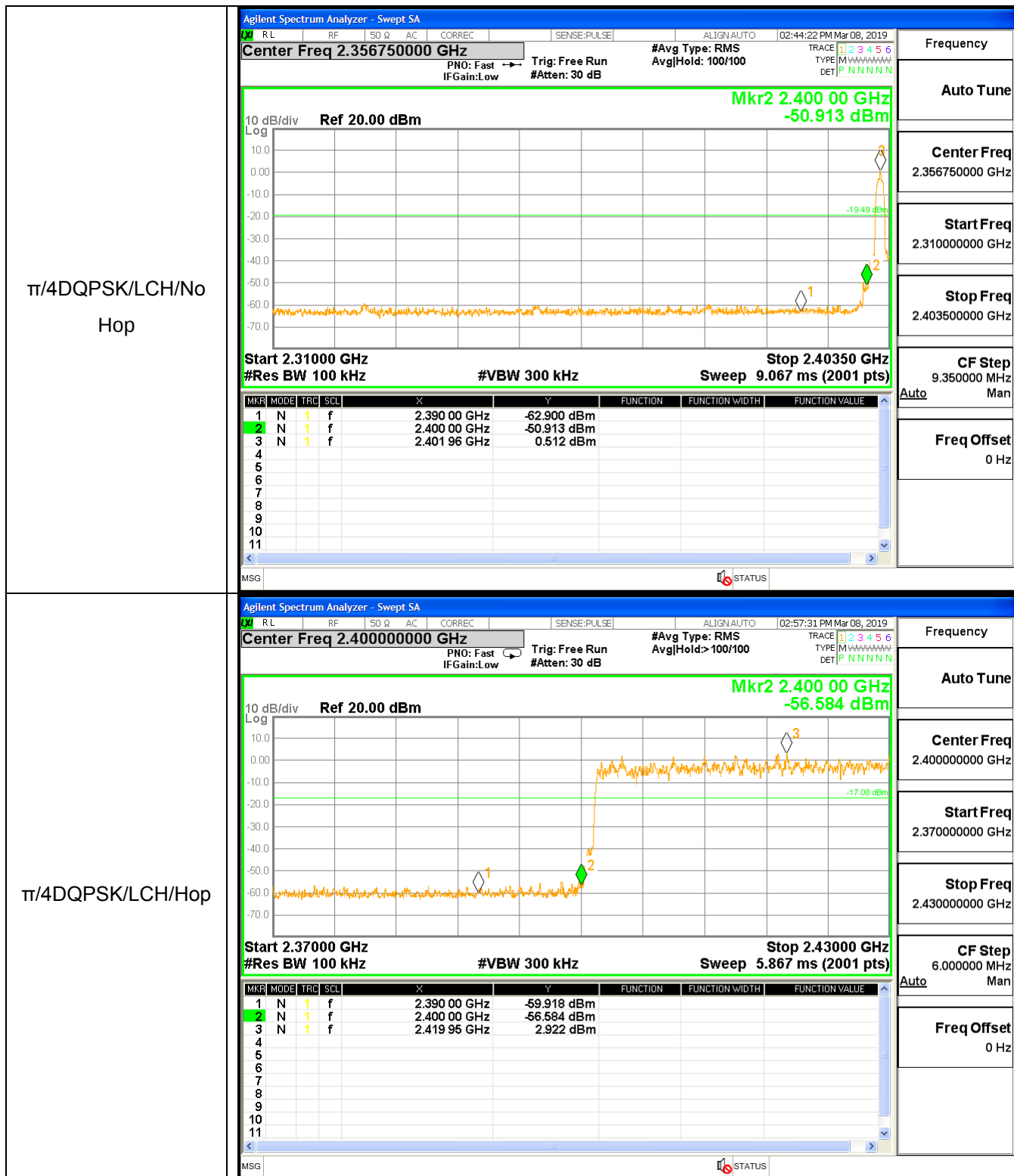


GFSK/HCH/No Hop



GFSK/HCH/Hop





π /4DQPSK/HCH/No Hop

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.489250000 GHz

Mkr2 2.500 000 GHz
-62.821 dBm

Start 2.47850 GHz
#Res BW 100 kHz

#VBW 300 kHz

Stop 2.50000 GHz
Sweep 2.133 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 500 GHz	-61.578 dBm			
2	N	1	f	2.500 000 GHz	-62.821 dBm			
3	N	1	f	2.480 113 GHz	4.436 dBm			

π /4DQPSK/HCH/Hop

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.483500000 GHz

Mkr2 2.500 00 GHz
-53.036 dBm

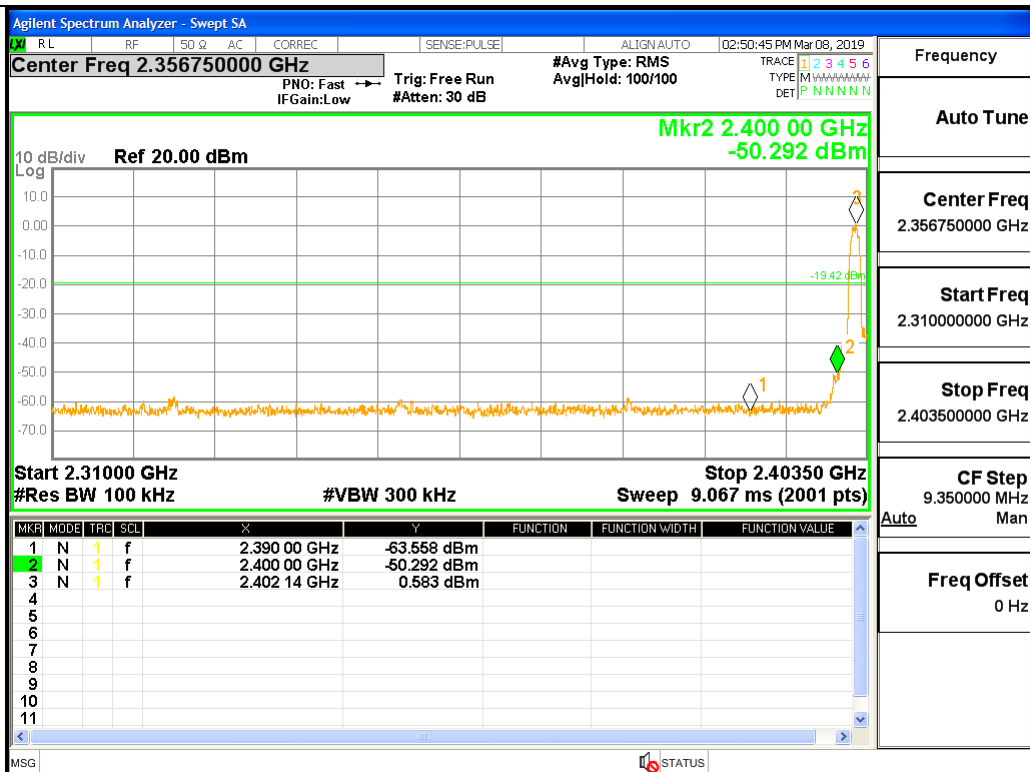
Start 2.45350 GHz
#Res BW 100 kHz

#VBW 300 kHz

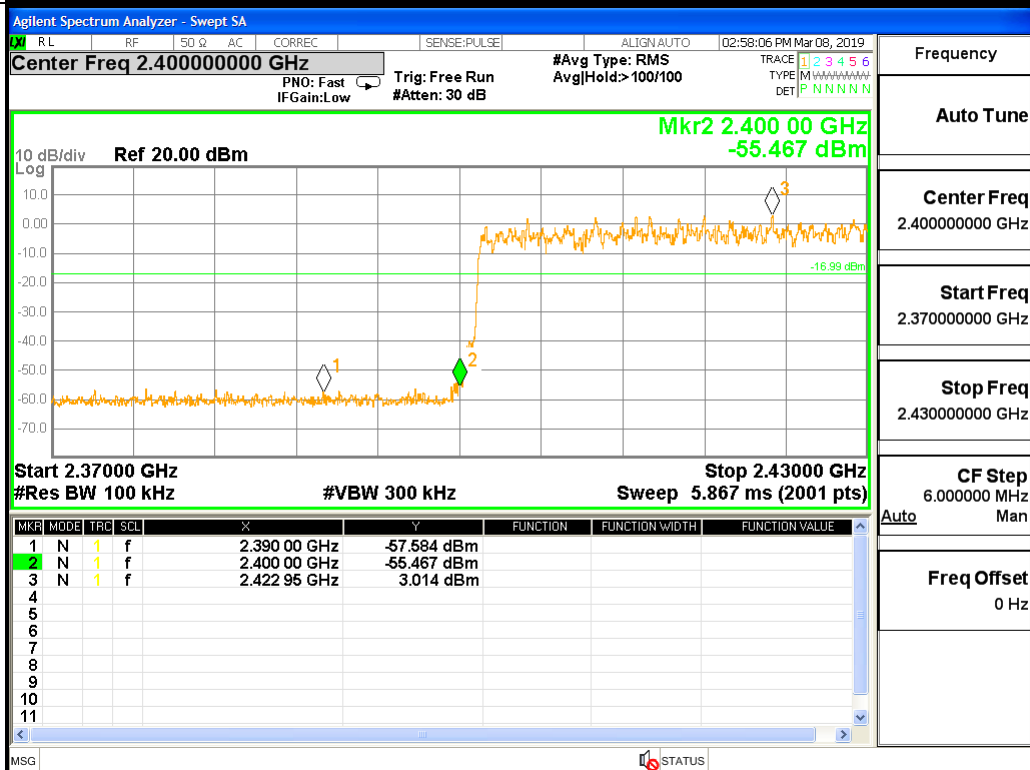
Stop 2.51350 GHz
Sweep 5.867 ms (2001 pts)

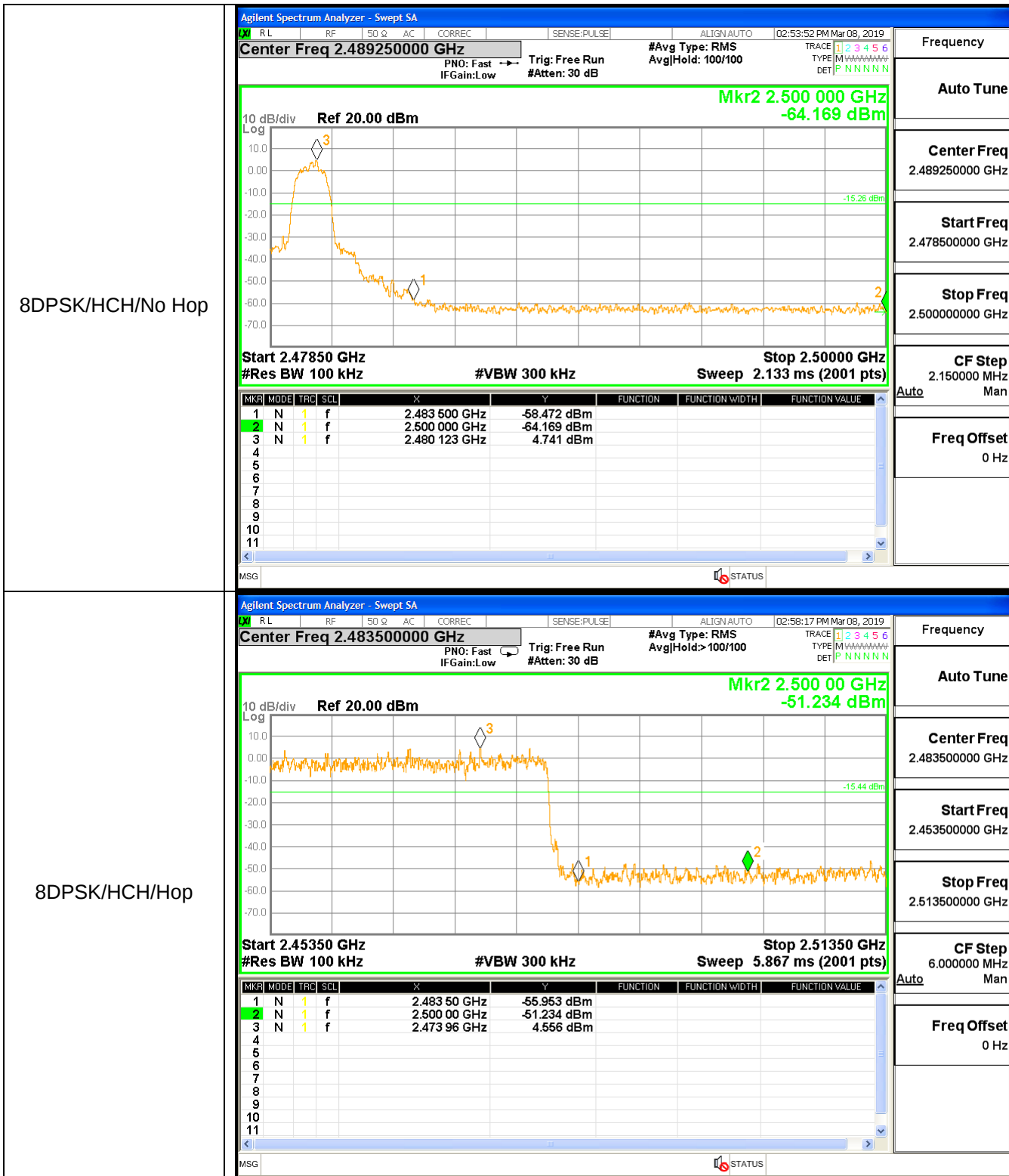
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 50 GHz	-54.714 dBm			
2	N	1	f	2.500 00 GHz	-53.036 dBm			
3	N	1	f	2.471 95 GHz	4.562 dBm			

8DPSK/LCH/No Hop

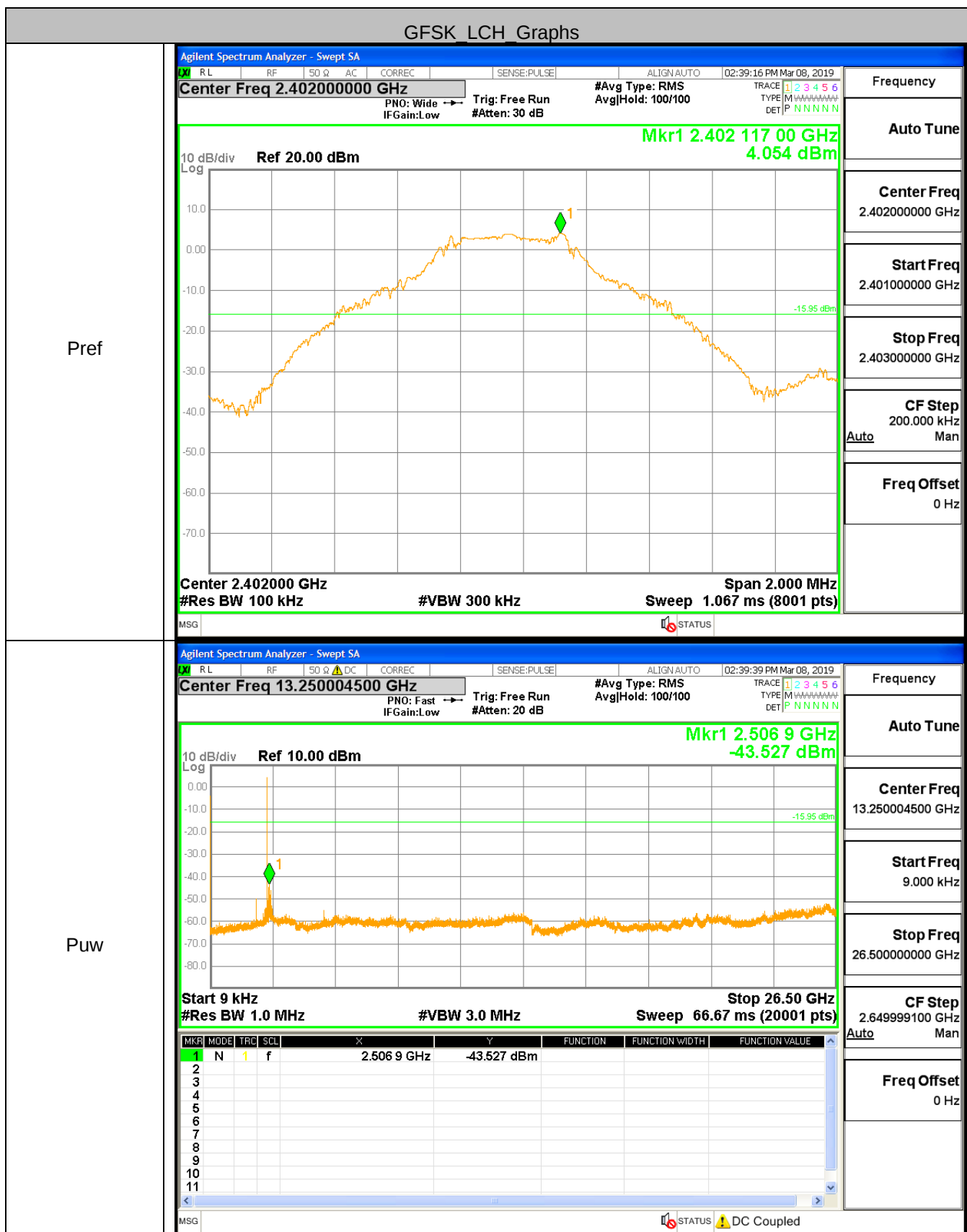


8DPSK/LCH/Hop

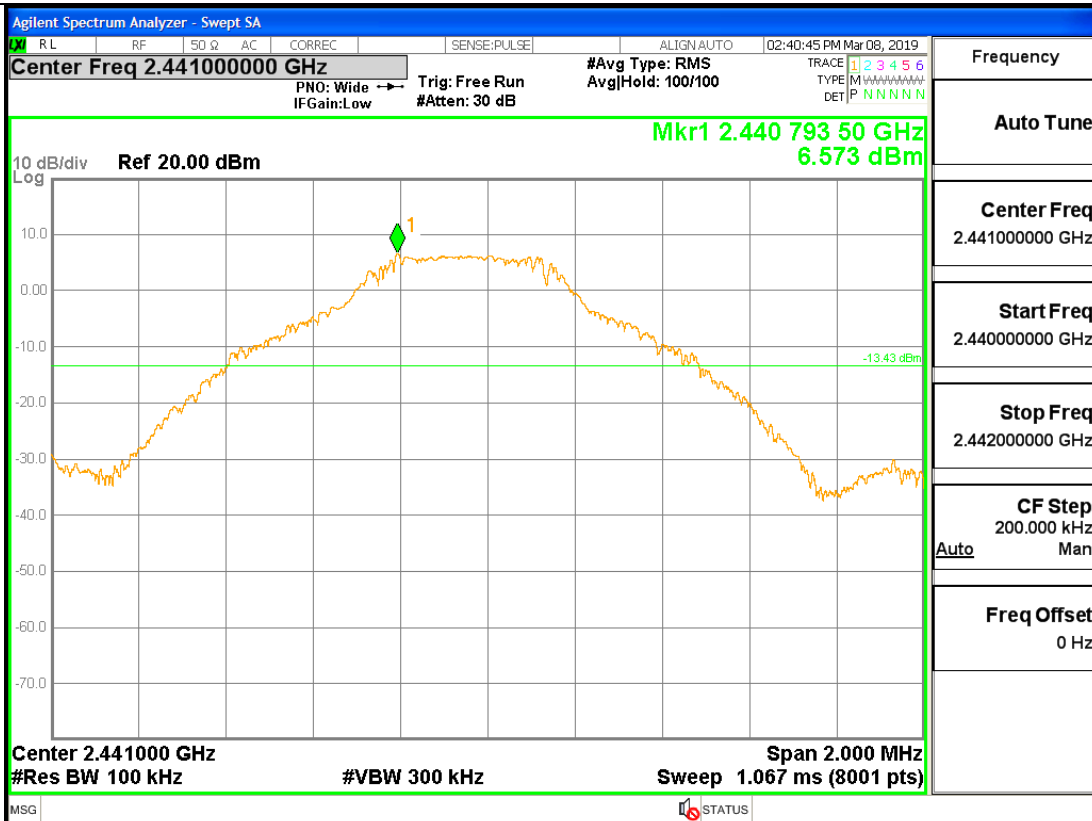




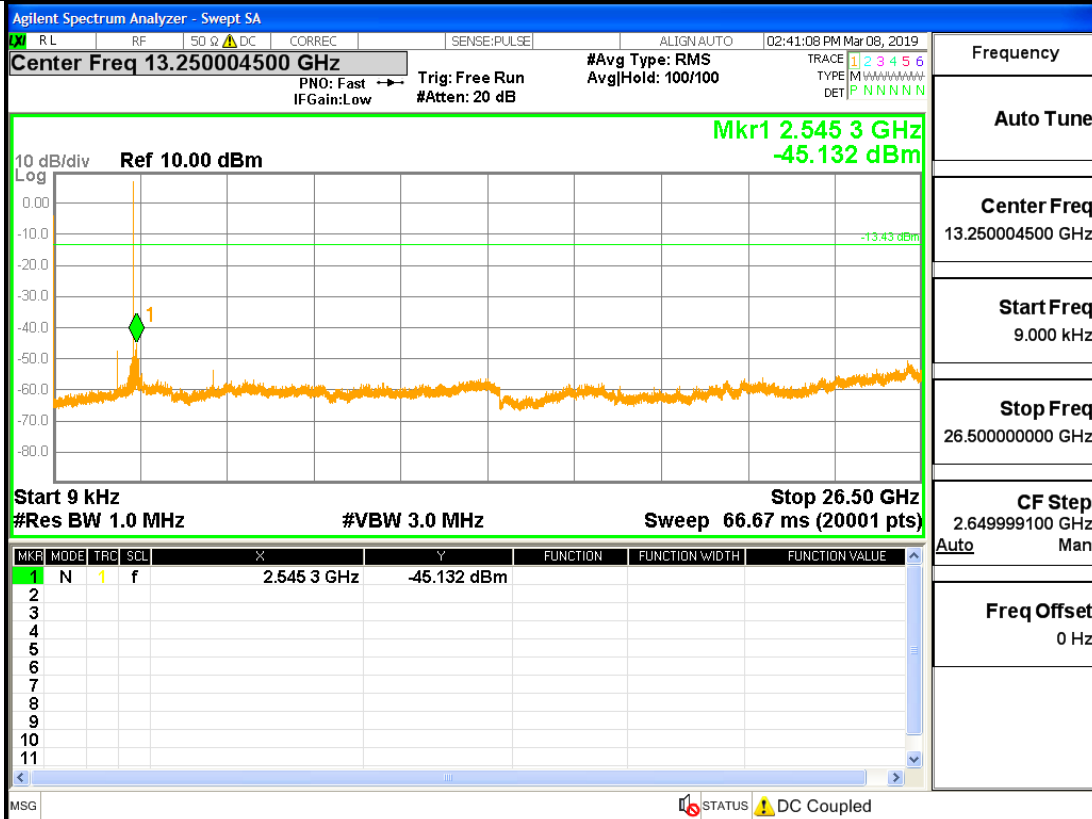
A.7 RF Conducted Spurious Emissions Test Graph



Pref

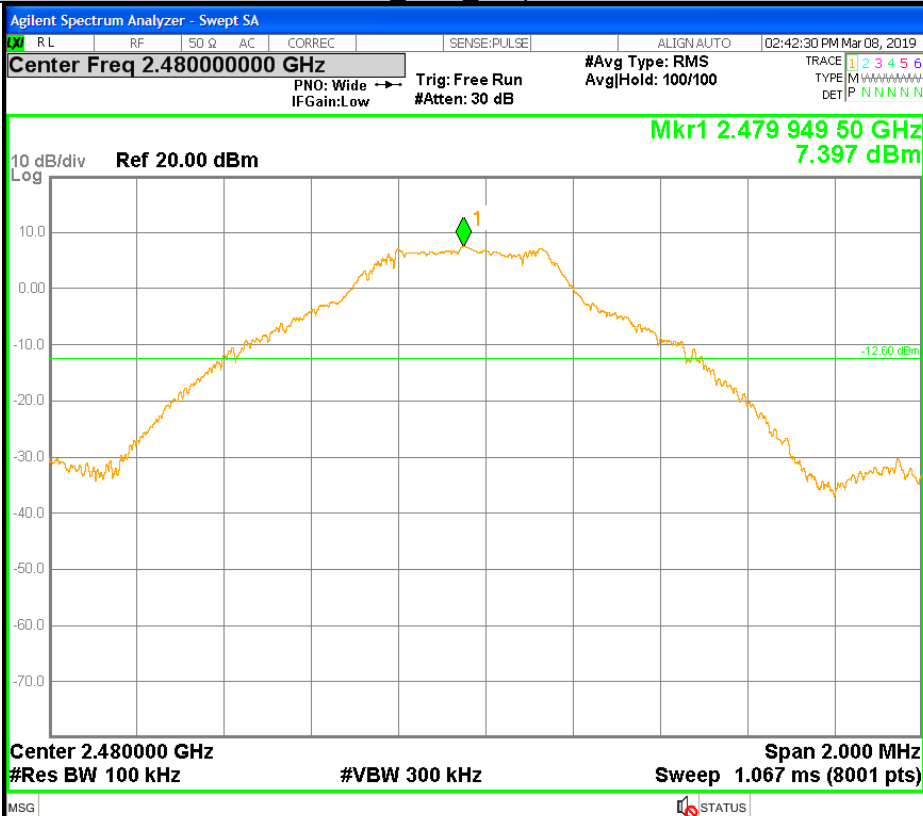


Puw

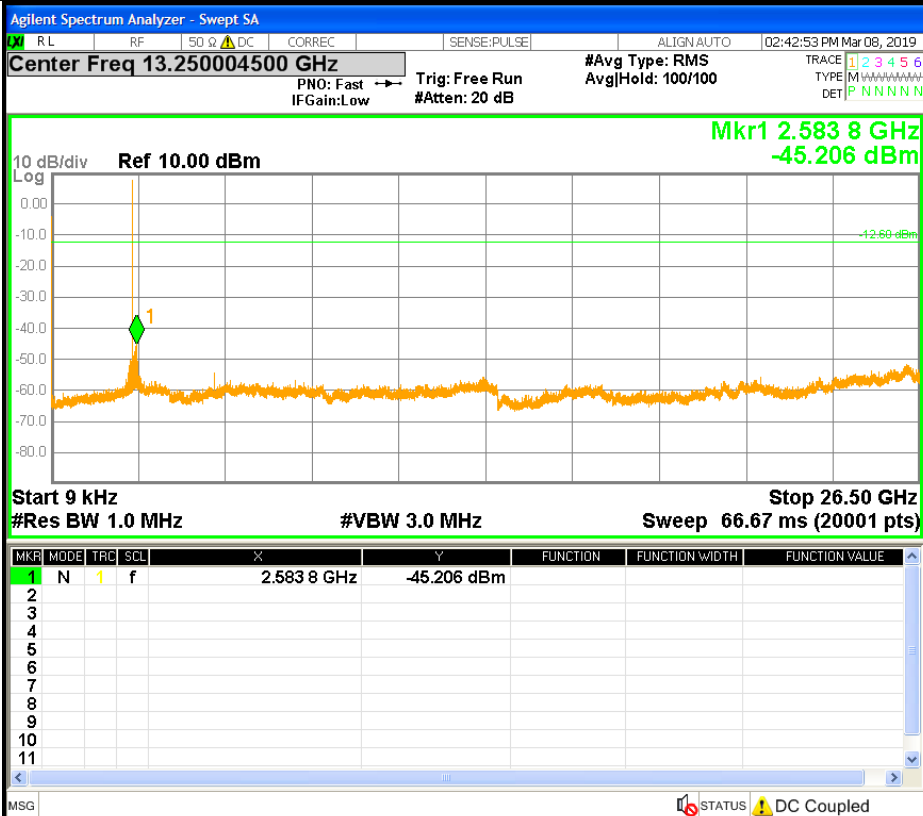


GFSK HCH Graphs

Pref

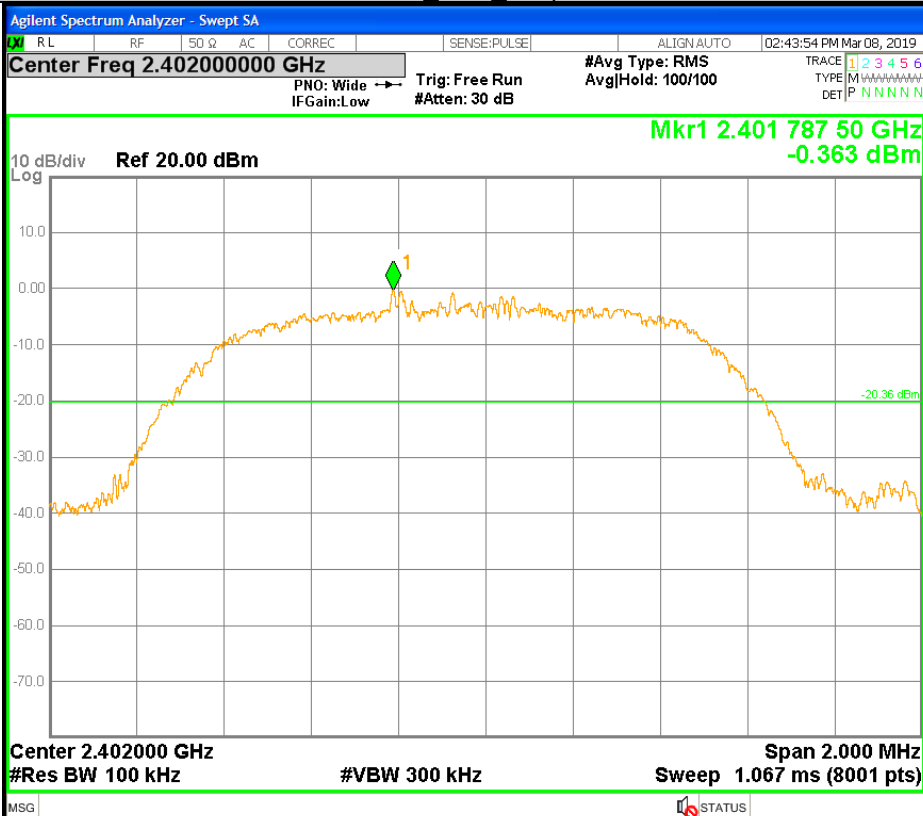


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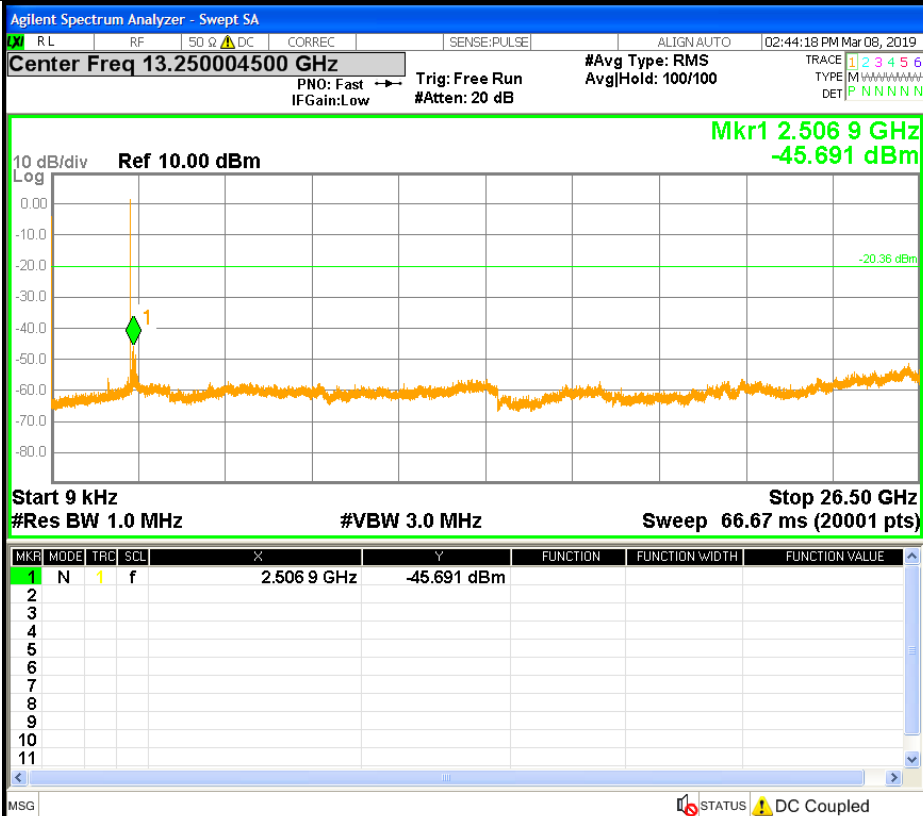


$\pi/4$ DQPSK LCH Graphs

Pref

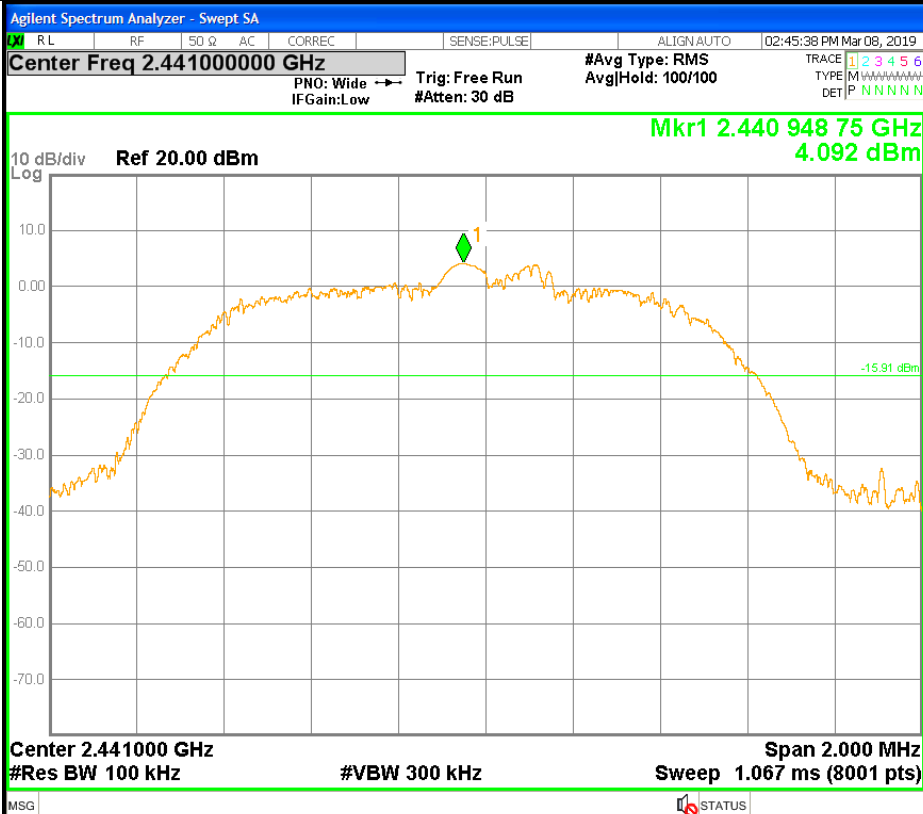


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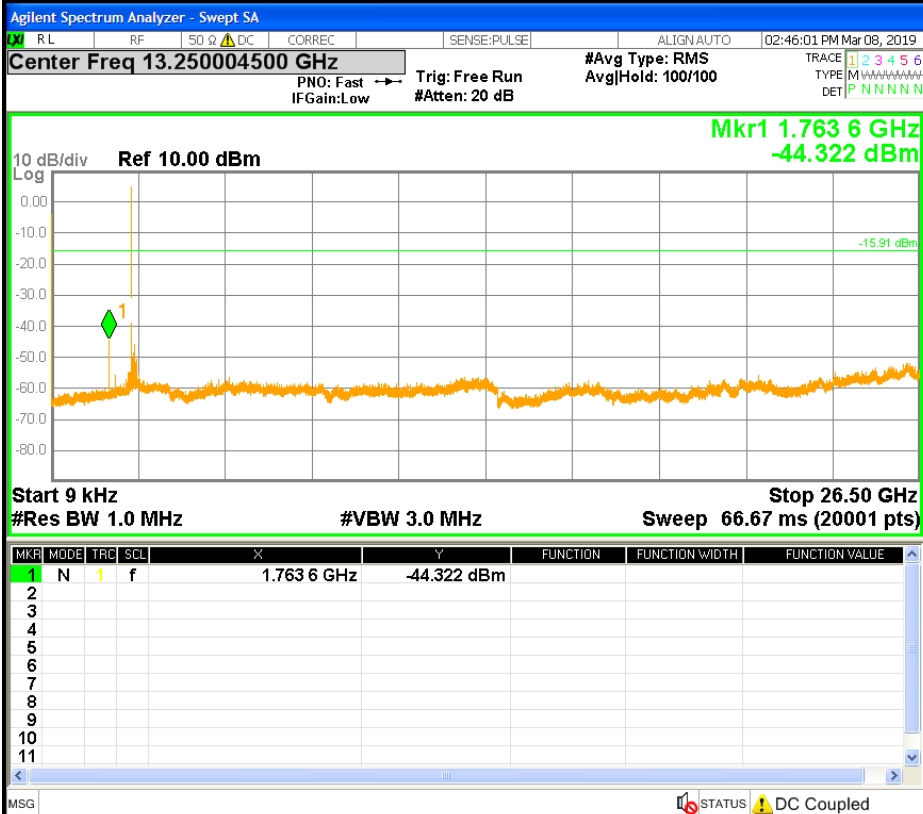


$\pi/4$ DQPSK MCH Graphs

Pref

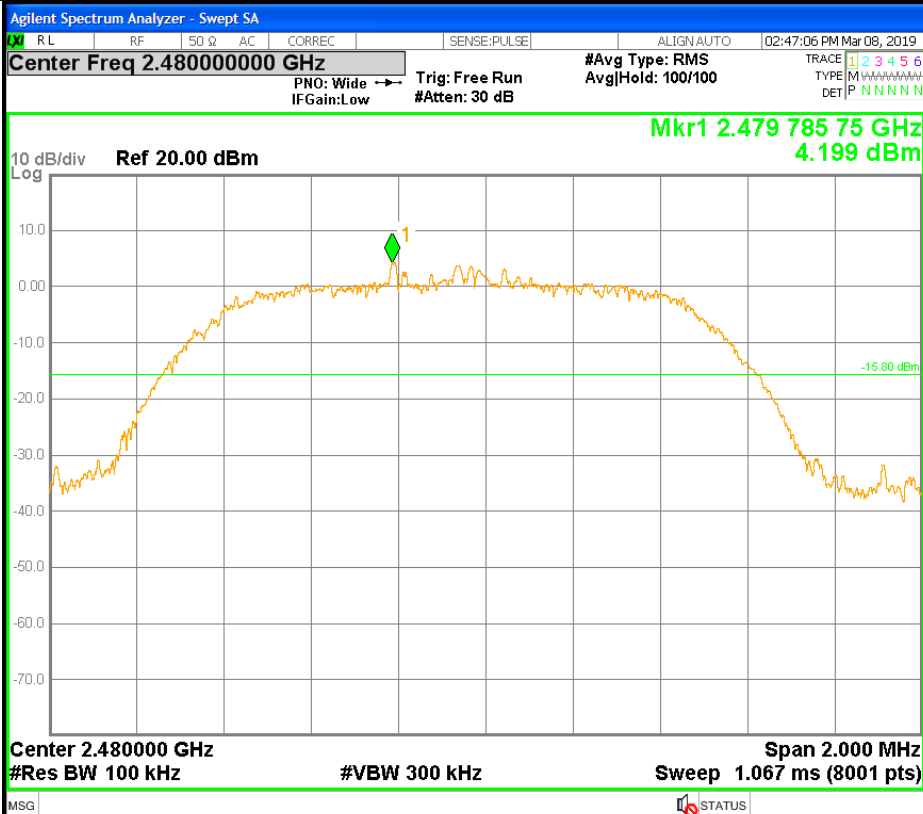


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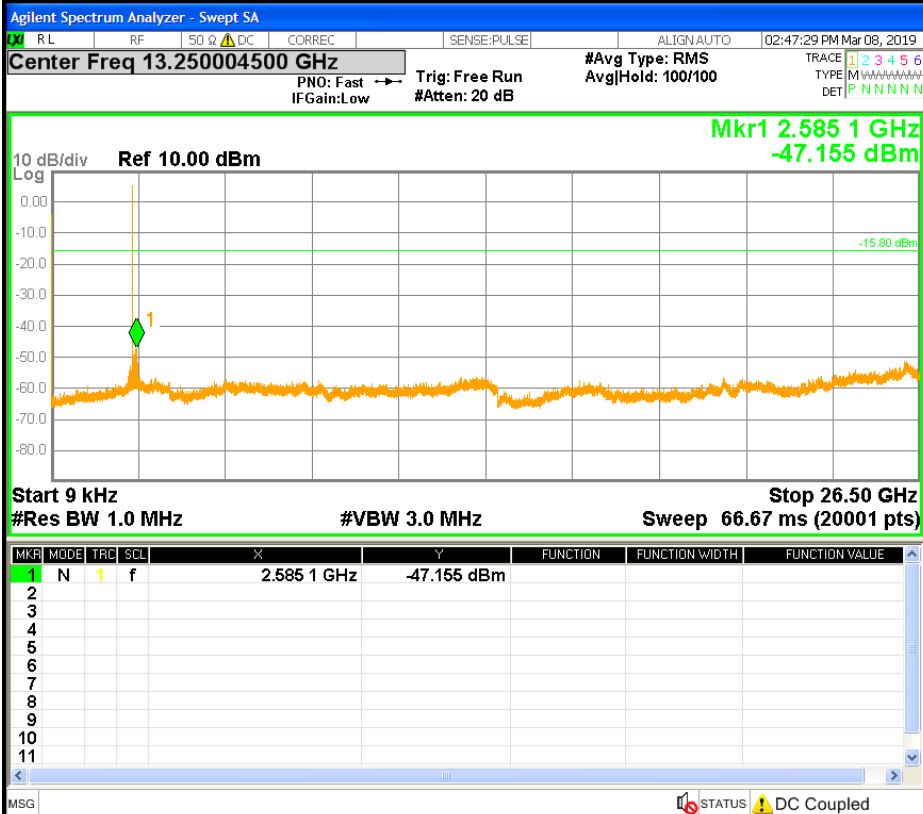


$\pi/4$ DQPSK HCH Graphs

Pref

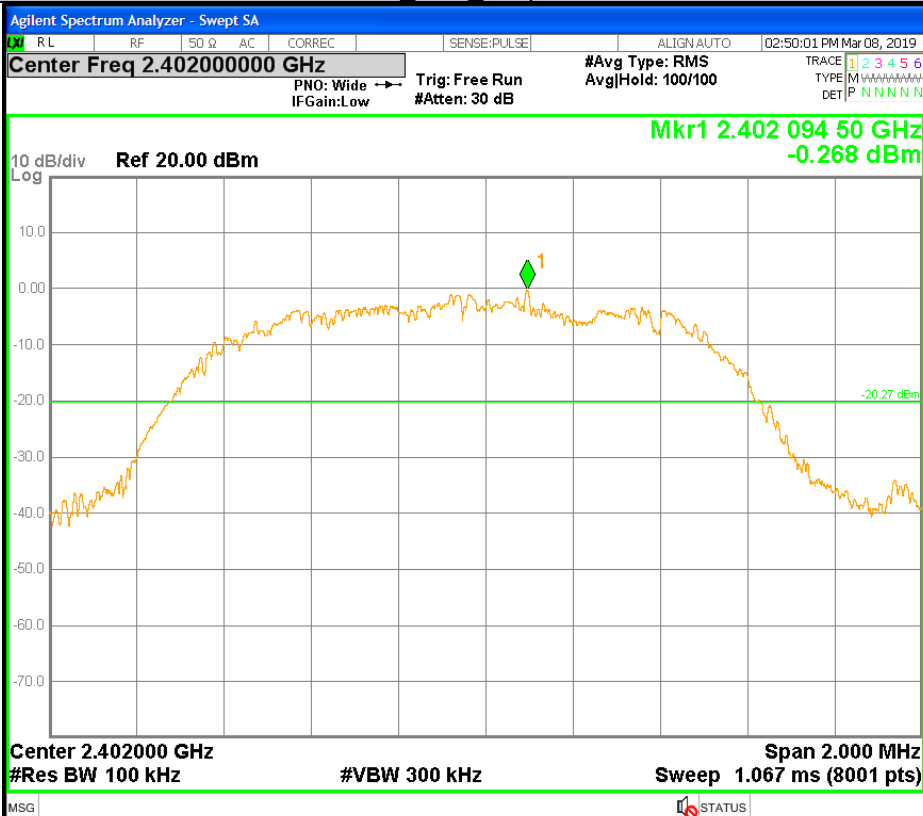


Puw

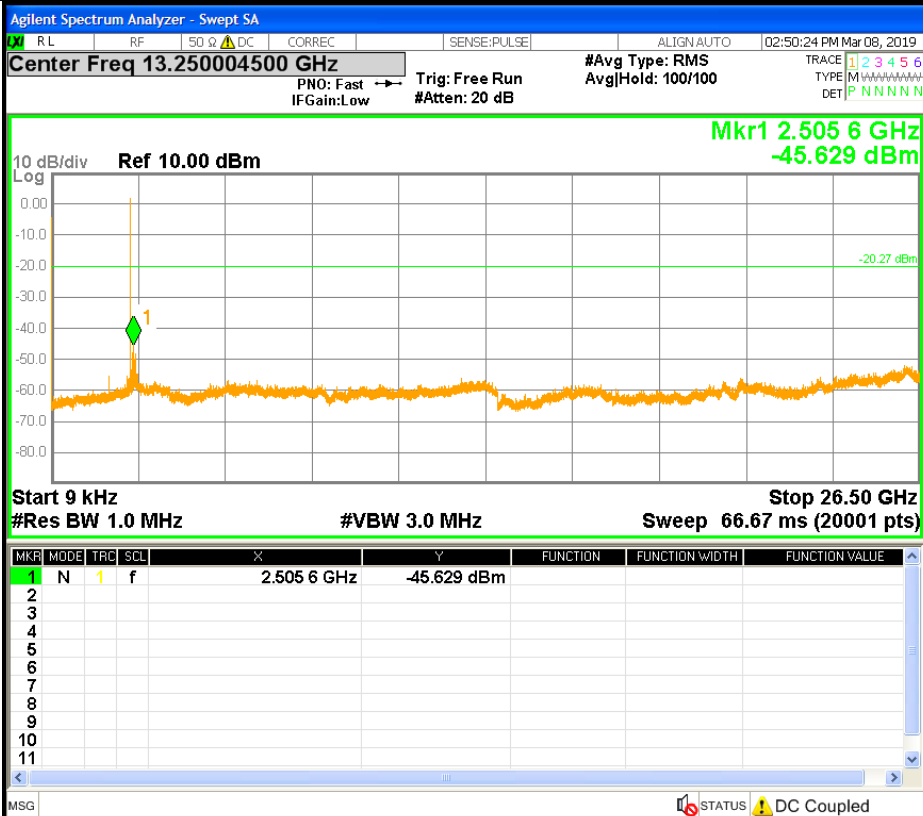


8DPSK LCH Graphs

Pref

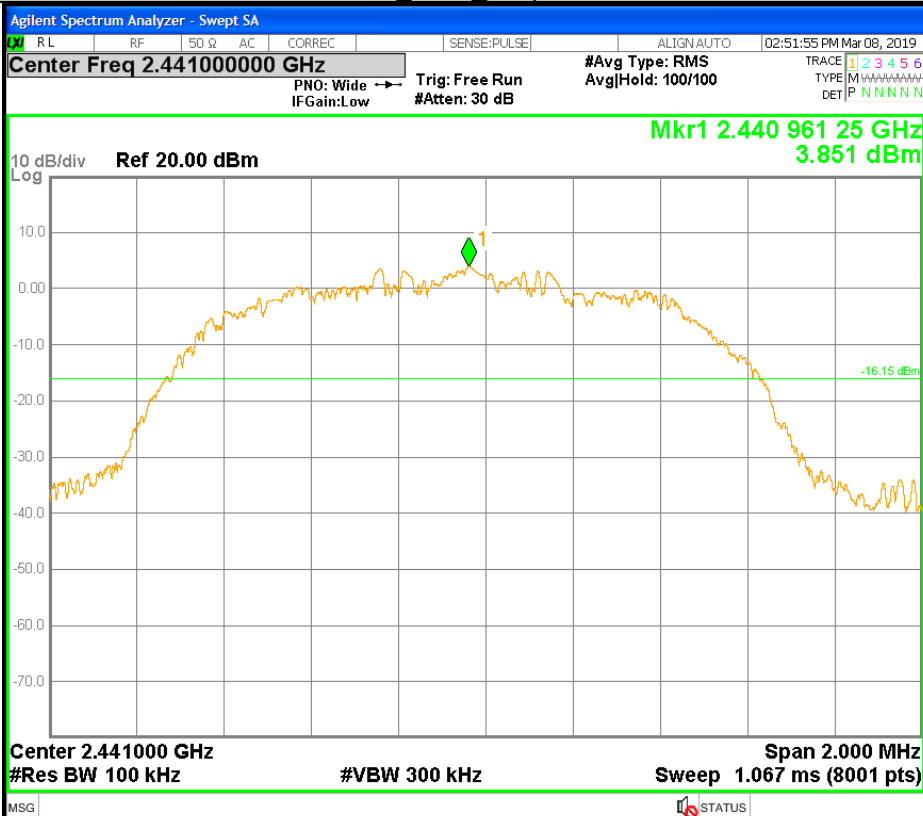


Puw

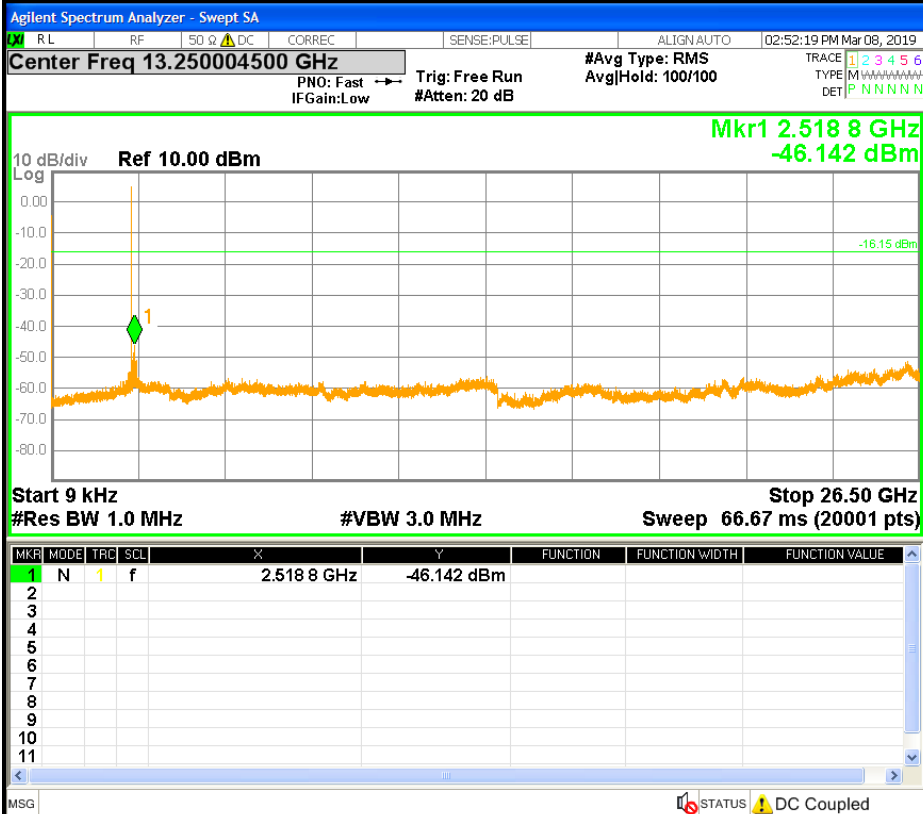


8DPSK MCH Graphs

Pref

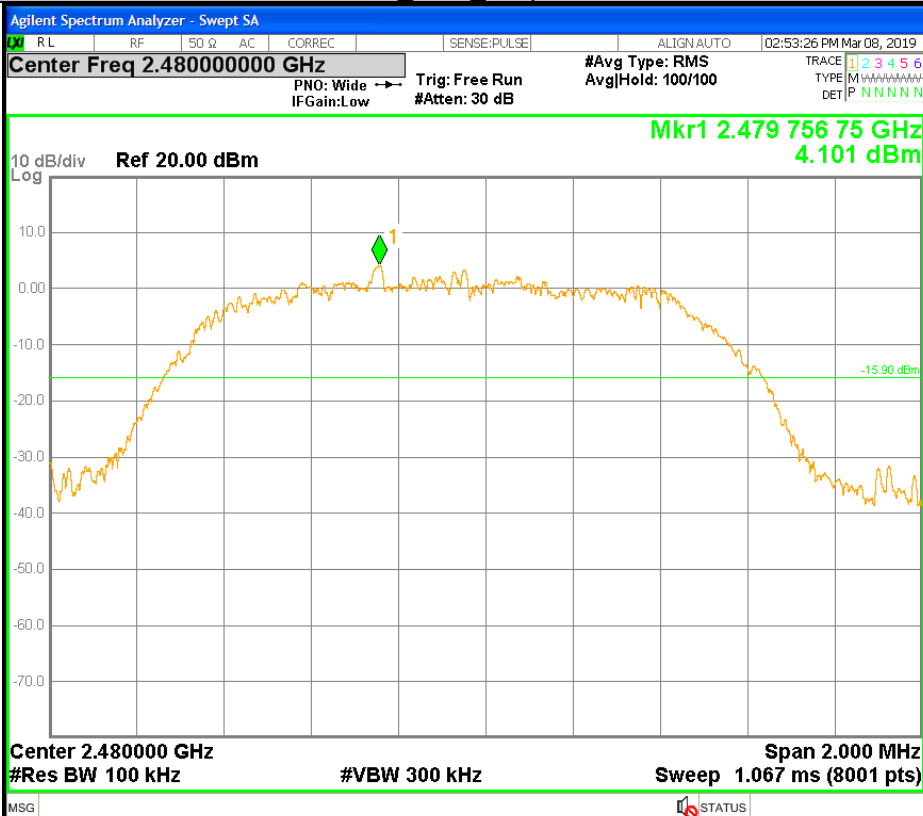


Puw

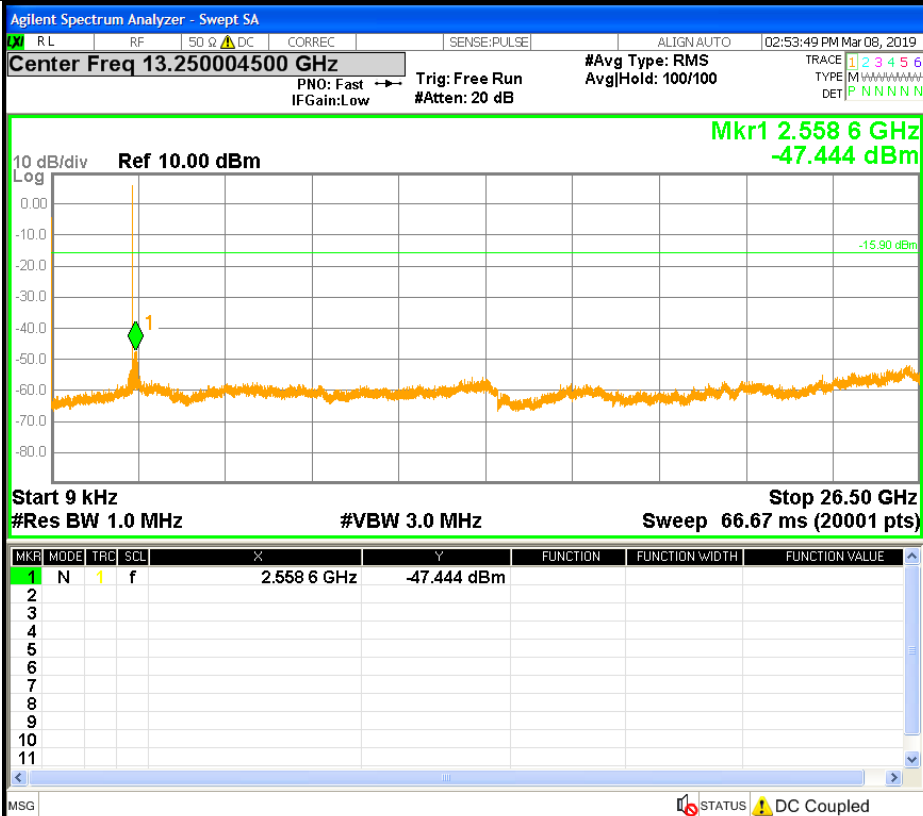


8DPSK HCH Graphs

Pref



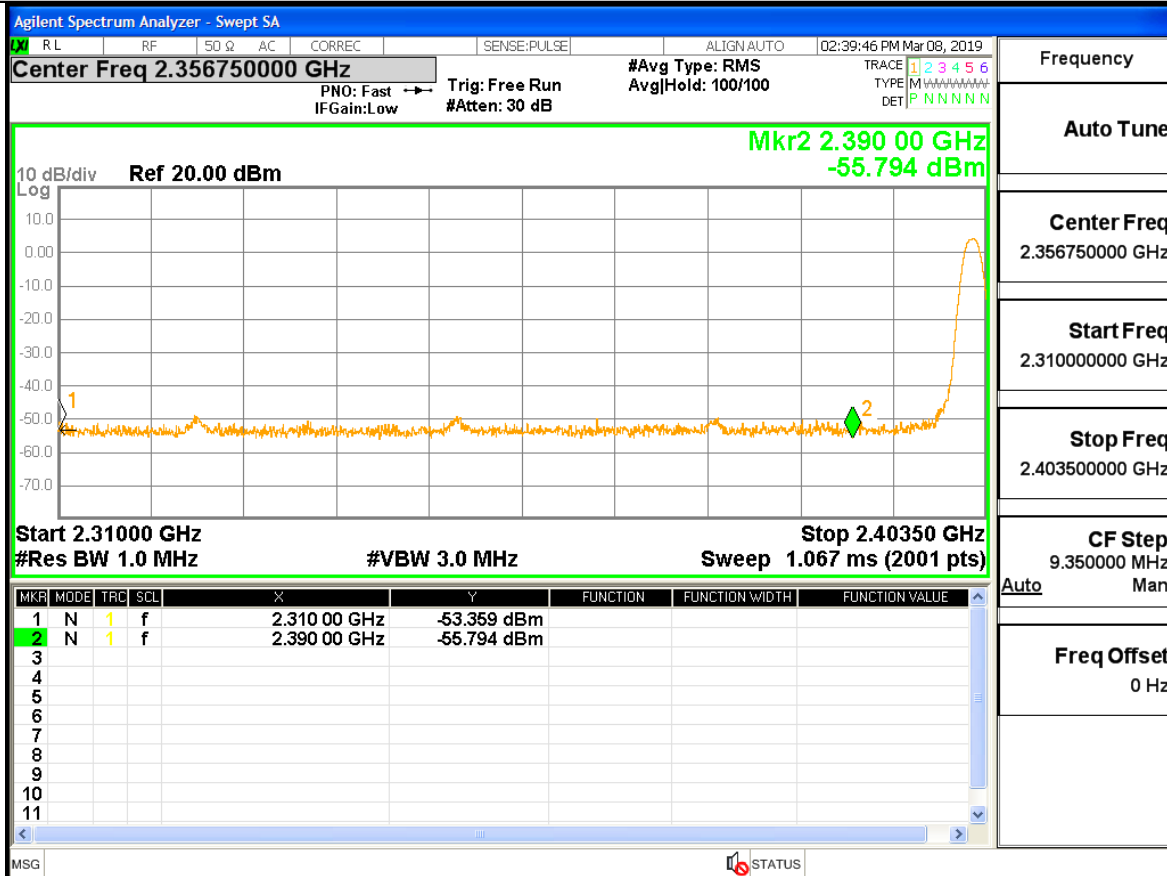
Puw



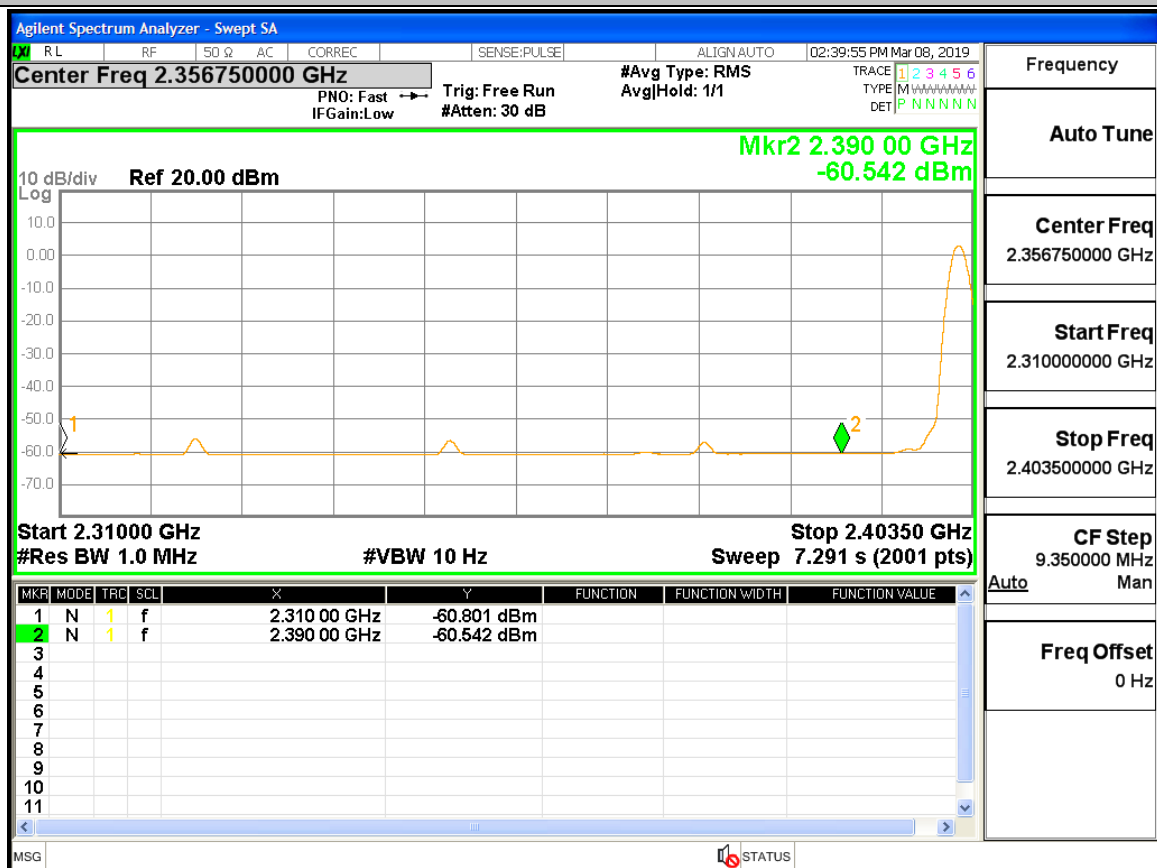
A.8 Restrict-band band-edge measurements

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	-53.36	43.84	74	-60.8	36.4	54	Pass
1DH5	2402	2390	2.00	0.00	-55.79	41.41	74	-60.54	36.66	54	Pass
1DH5	2480	2483.5	2.00	0.00	-44.88	52.32	74	-50.54	46.66	54	Pass
1DH5	2480	2500	2.00	0.00	-52.8	44.4	74	-59.78	37.42	54	Pass
2DH5	2402	2310	2.00	0.00	-53.97	43.23	74	-60.85	36.35	54	Pass
2DH5	2402	2390	2.00	0.00	-52.08	45.12	74	-60.57	36.63	54	Pass
2DH5	2480	2483.5	2.00	0.00	-46.52	50.68	74	-53.26	43.94	54	Pass
2DH5	2480	2500	2.00	0.00	-52.44	44.76	74	-59.81	37.39	54	Pass
3DH5	2402	2310	2.00	0.00	-53.51	43.69	74	-60.86	36.34	54	Pass
3DH5	2402	2390	2.00	0.00	-52.52	44.68	74	-60.57	36.63	54	Pass
3DH5	2480	2483.5	2.00	0.00	-46.98	50.22	74	-53.22	43.98	54	Pass
3DH5	2480	2500	2.00	0.00	-50.88	46.32	74	-59.88	37.32	54	Pass

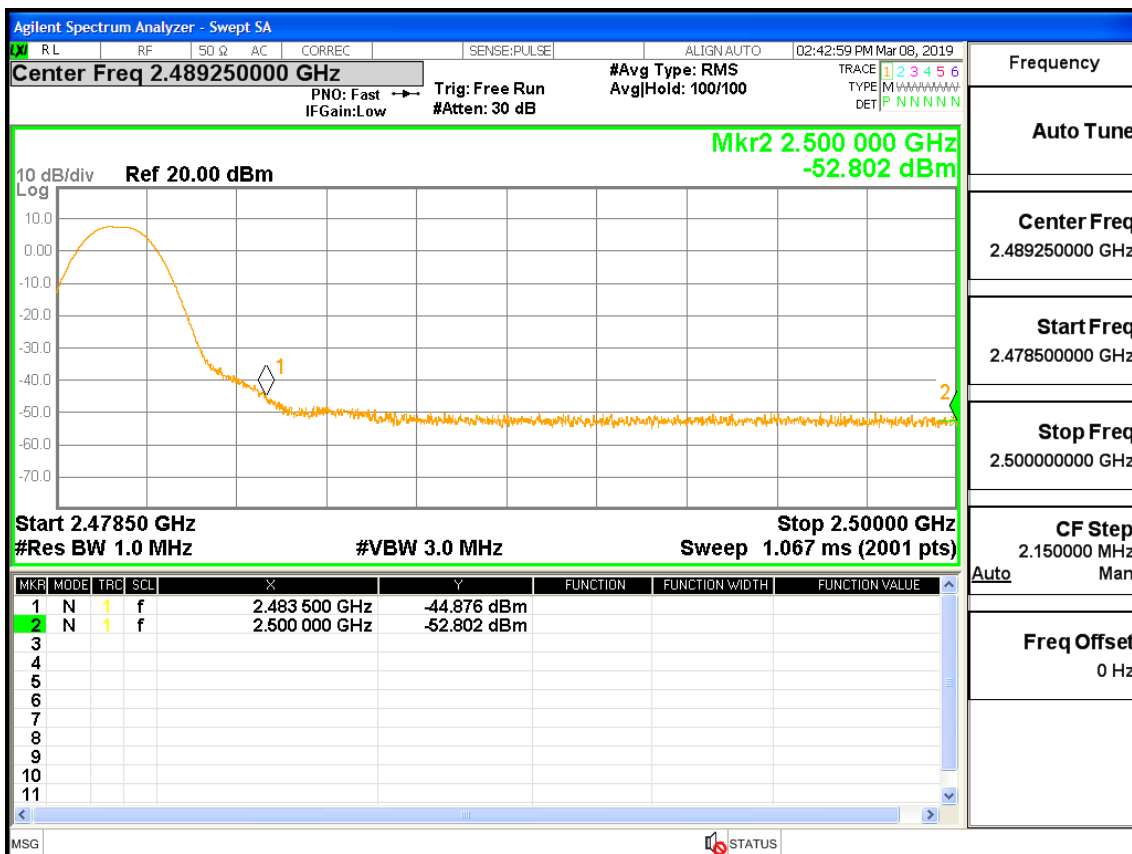
Restrict-band band-edge measurements_2402_PEAK_DH5



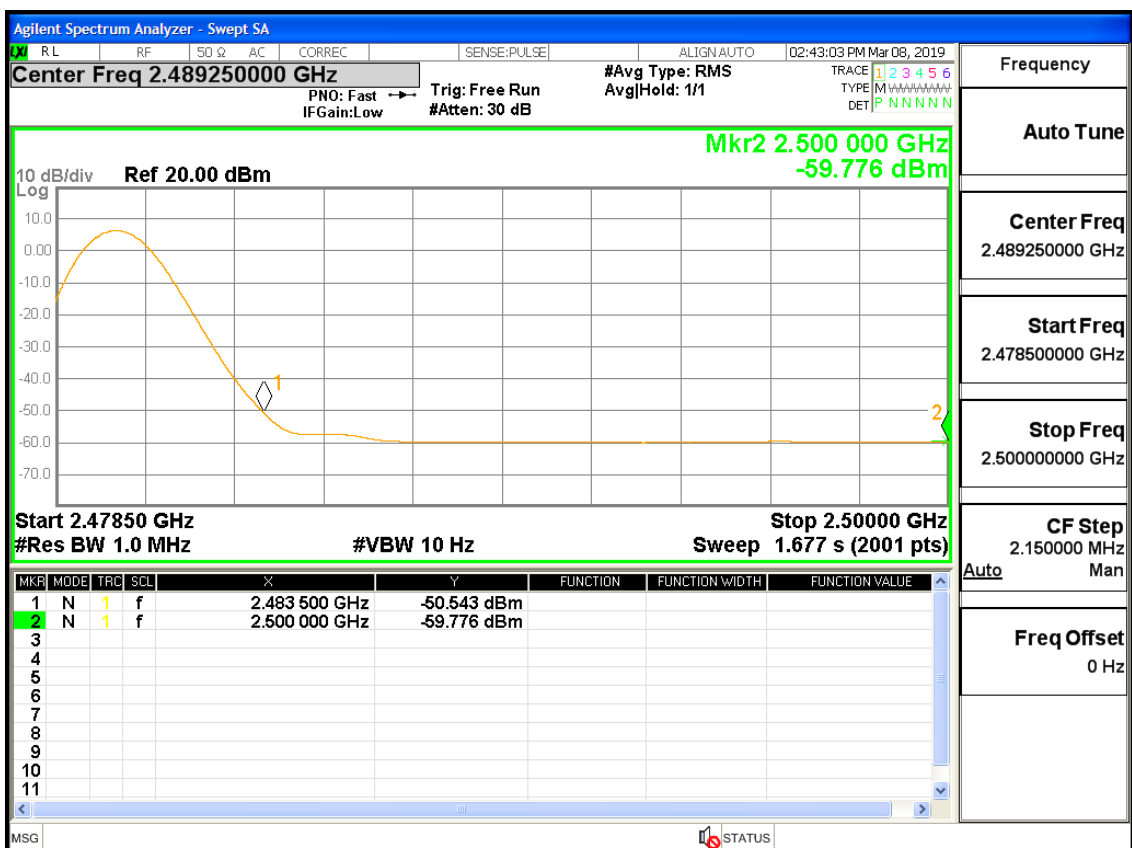
Restrict-band band-edge measurements_2402_AV_DH5



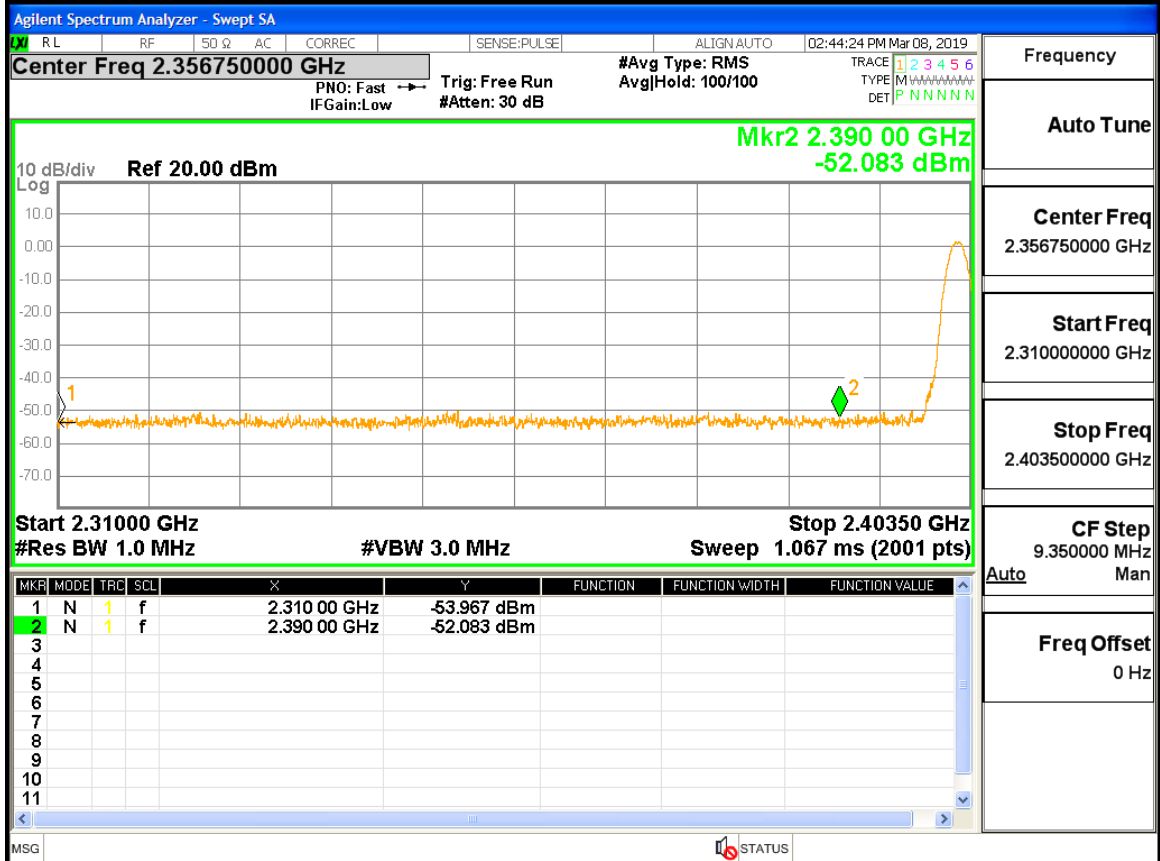
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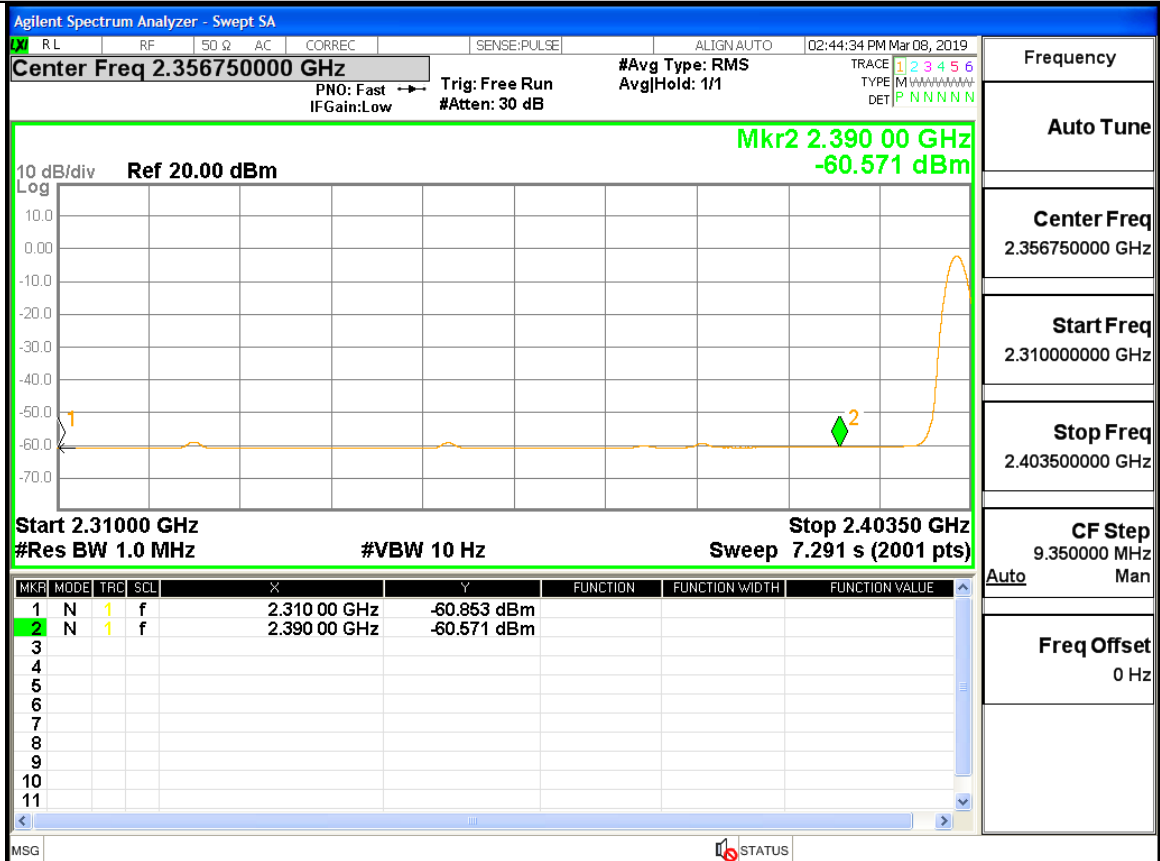
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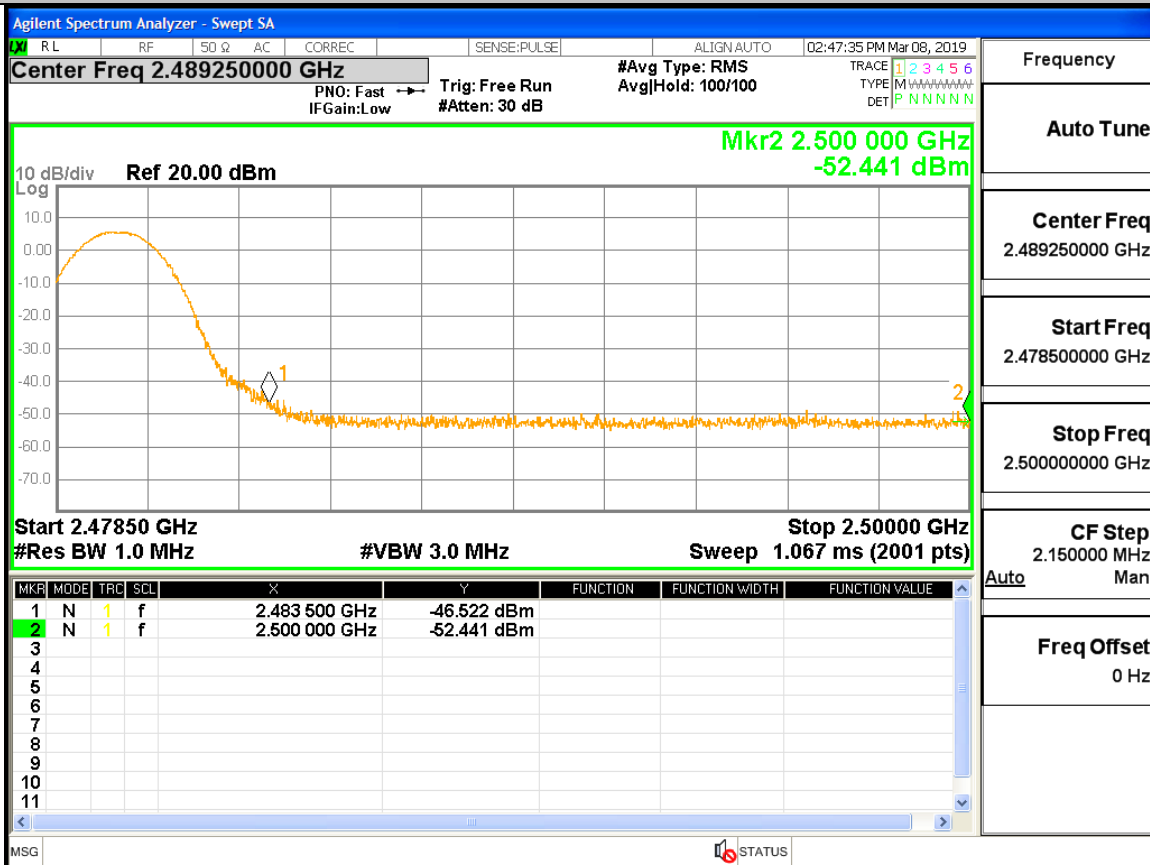
Restrict-band band-edge measurements_2402_PEAK_2DH5



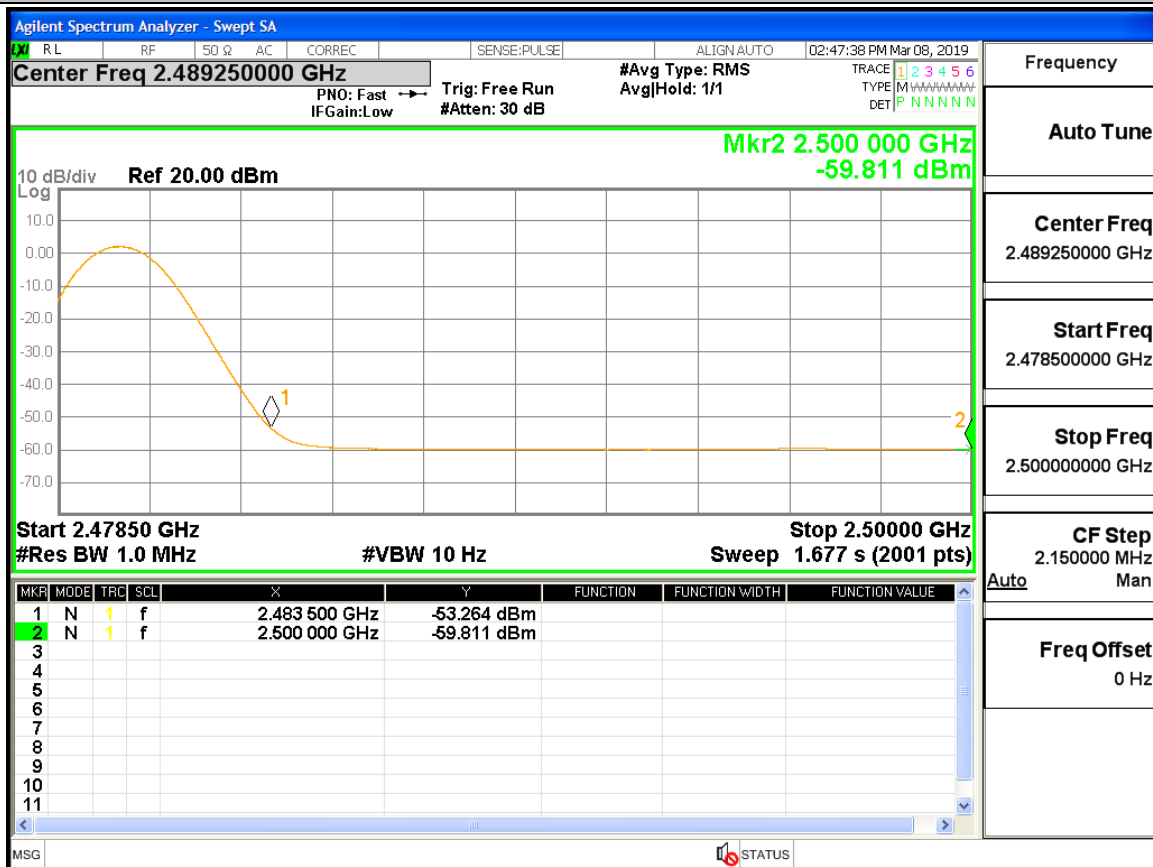
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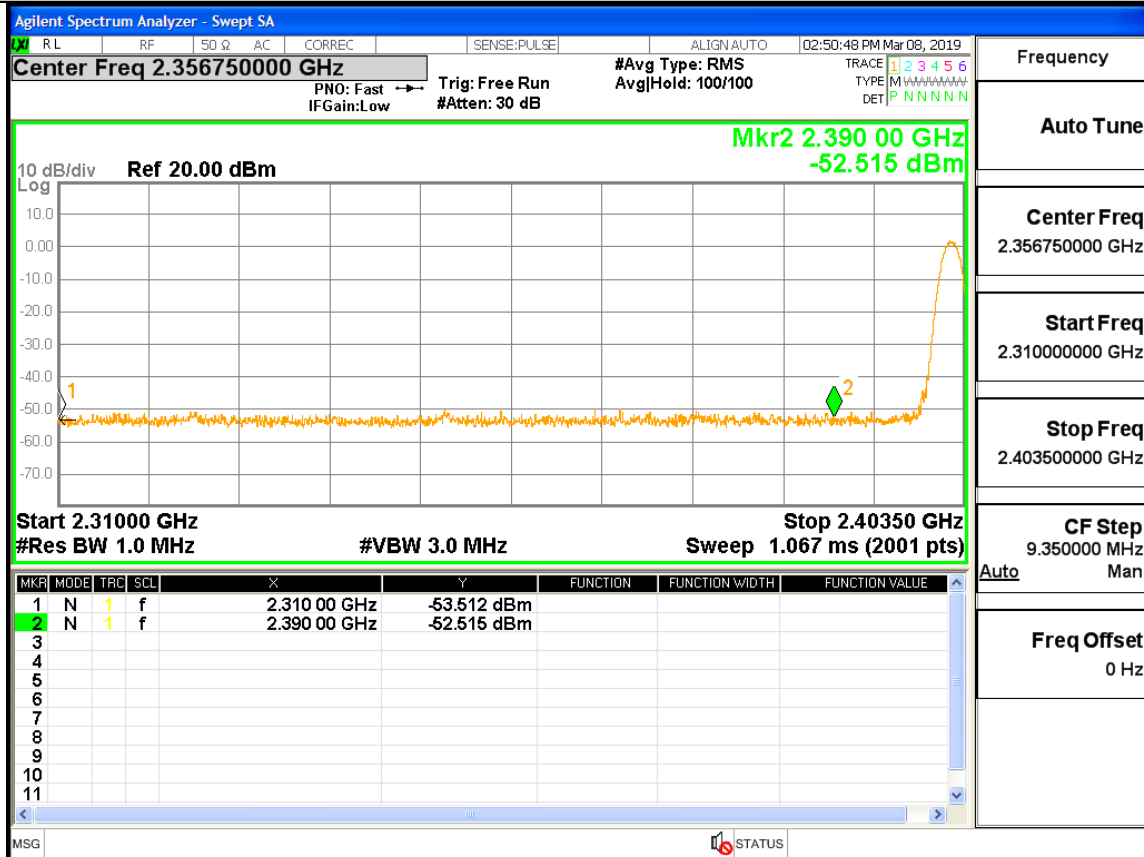
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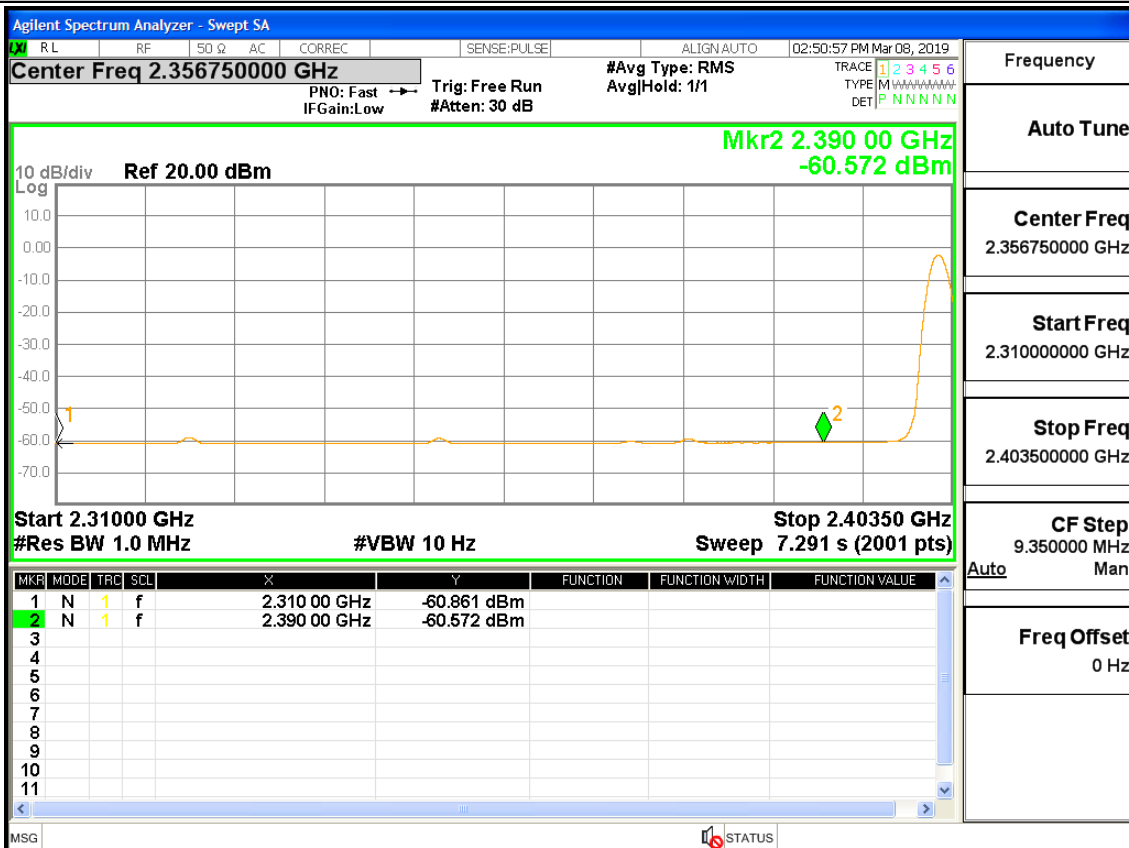
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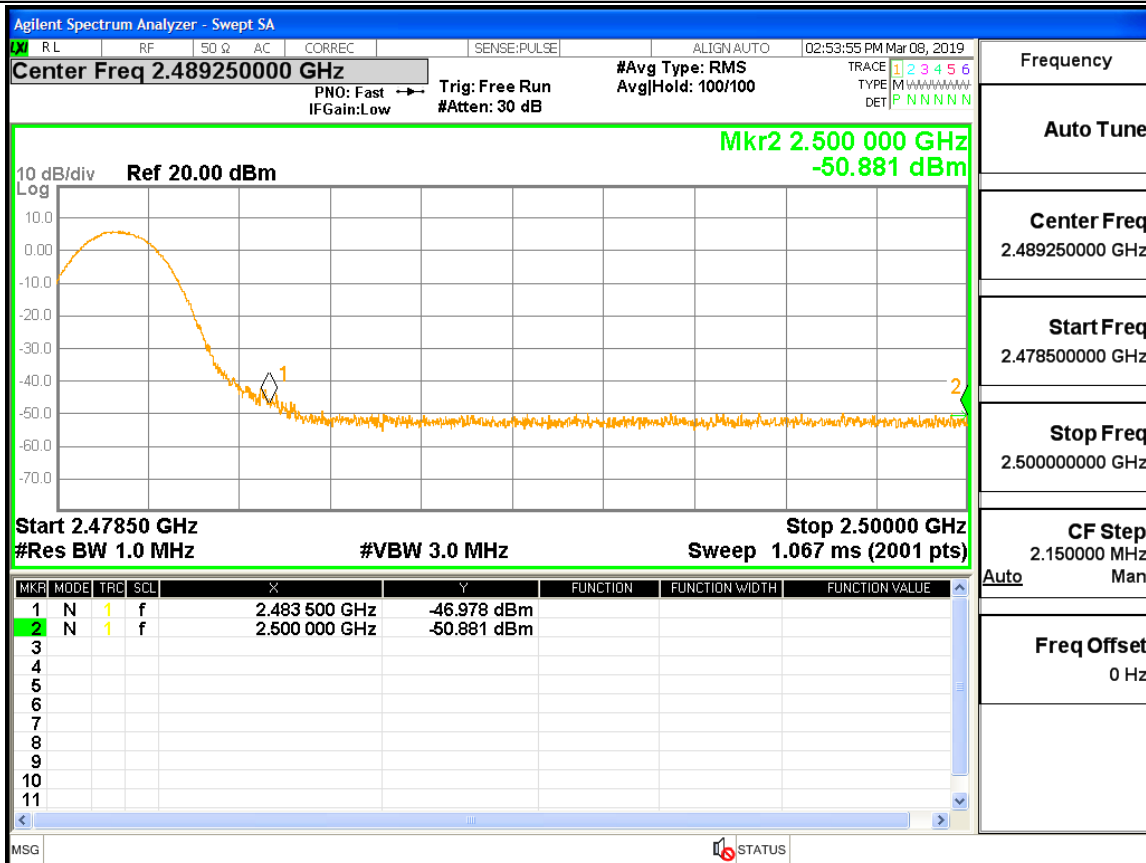
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

