

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

Product Name: Bluetooth headset

Trade Mark: sentry

Test Model: H2

FCC ID: 2ACP4-H2

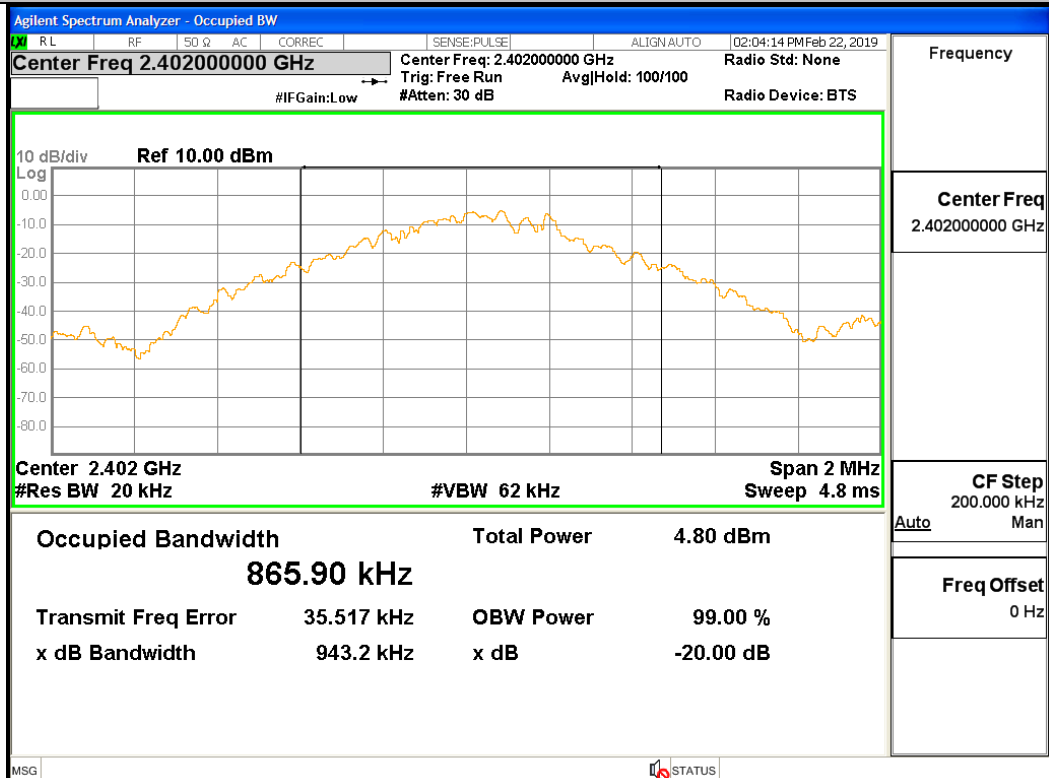
Environmental Conditions

Temperature:	23.8 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

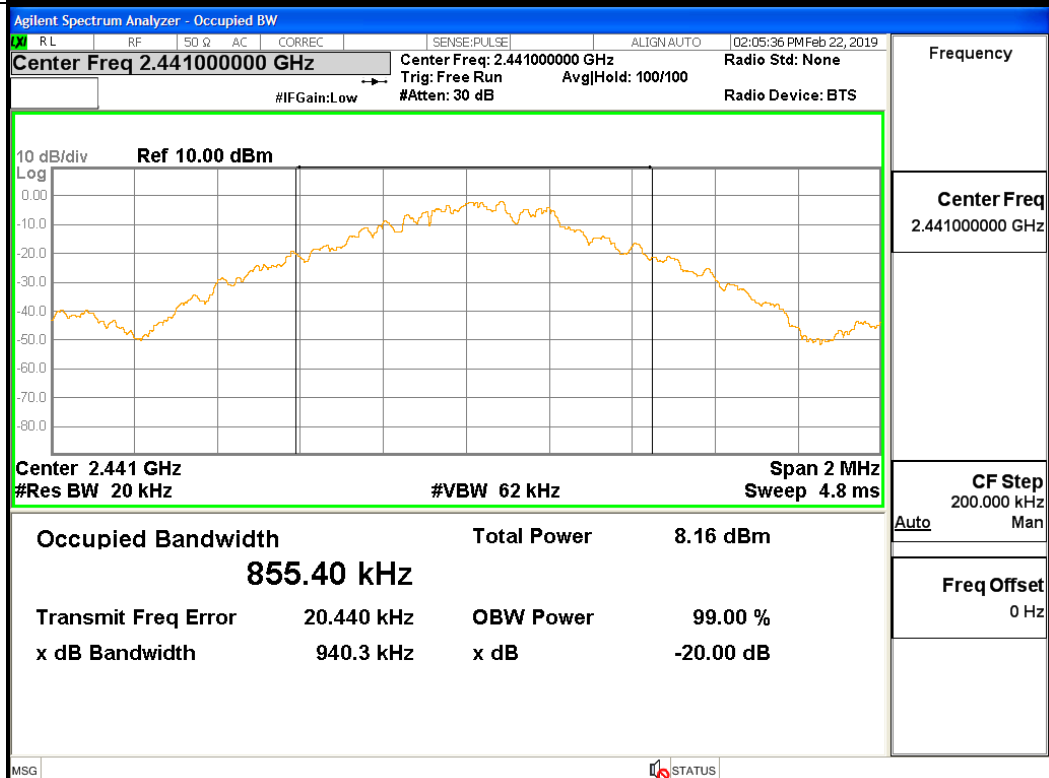
A.1 20 dB Bandwidth

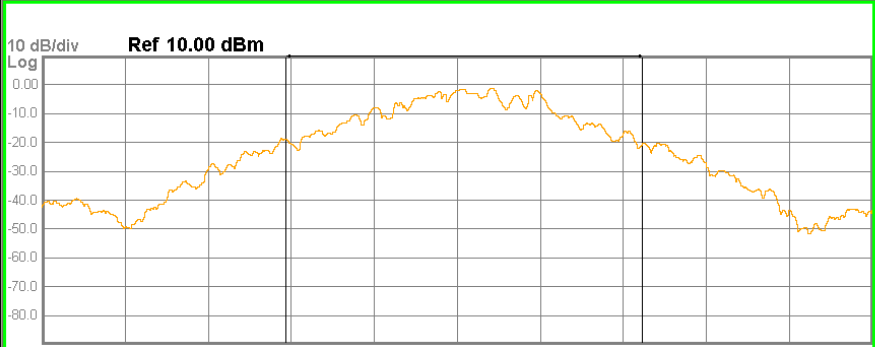
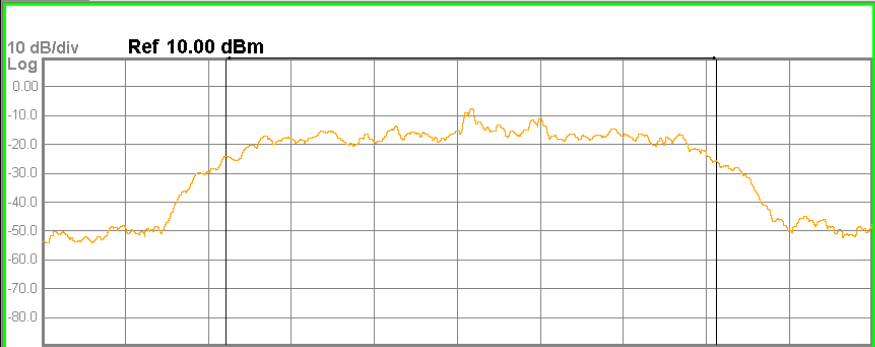
Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.943	Not Specified	PASS
GFSK	MCH	0.940	Not Specified	PASS
GFSK	HCH	0.938	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.225	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.225	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.226	Not Specified	PASS
8DPSK	LCH	1.253	Not Specified	PASS
8DPSK	MCH	1.252	Not Specified	PASS
8DPSK	HCH	1.260	Not Specified	PASS

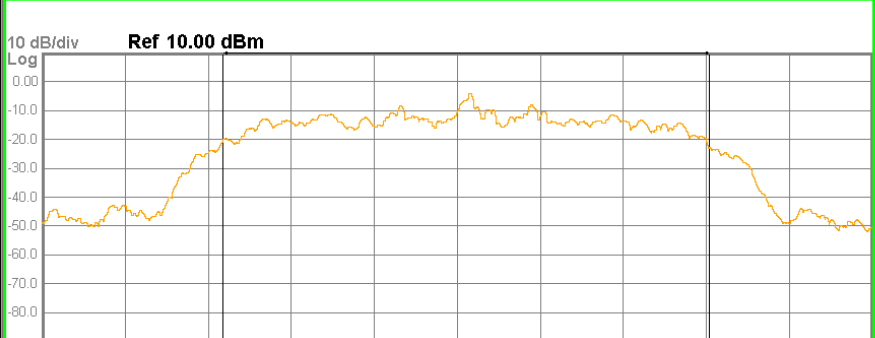
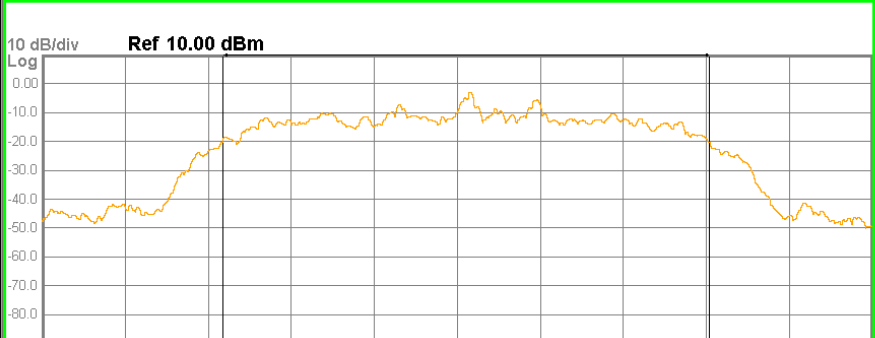
GFSK/LCH



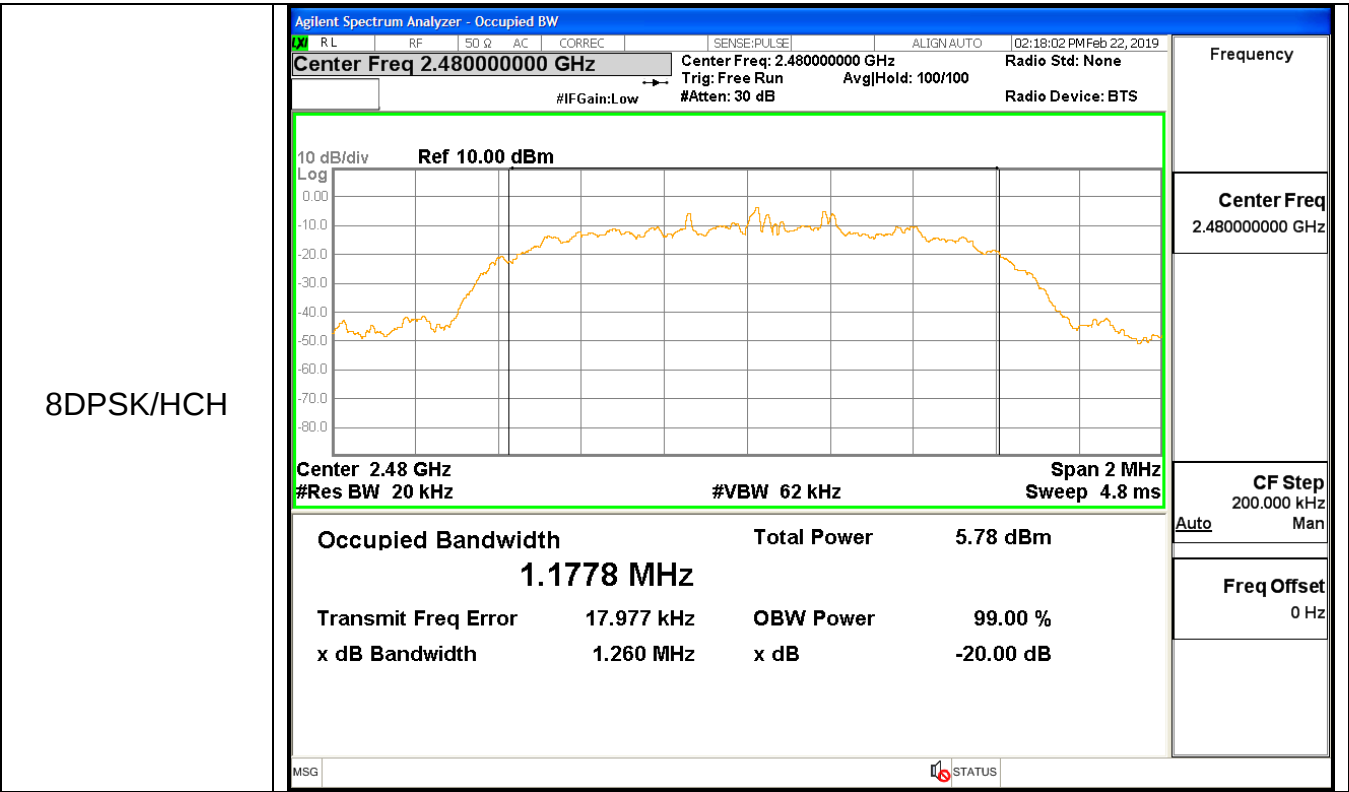
GFSK/MCH



GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB Radio Std: None Avg/Hold: 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 856.13 kHz Total Power 9.03 dBm Transmit Freq Error 17.946 kHz OBW Power 99.00 % x dB Bandwidth 937.7 kHz x dB -20.00 dB MSG STATUS	Frequency
	Center Freq 2.480000000 GHz	Center Freq
	CF Step 200.000 kHz Man	CF Step
	Freq Offset 0 Hz	Freq Offset
π/4DQPSK/LCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB Radio Std: None Avg/Hold: 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 1.1786 MHz Total Power 1.05 dBm Transmit Freq Error 33.150 kHz OBW Power 99.00 % x dB Bandwidth 1.225 MHz x dB -20.00 dB MSG STATUS	Frequency
	Center Freq 2.402000000 GHz	Center Freq
	CF Step 200.000 kHz Man	CF Step
	Freq Offset 0 Hz	Freq Offset

π/4DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS 10 dB/div Ref 10.00 dBm  Center 2.441 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1722 MHz Total Power 4.57 dBm Transmit Freq Error 21.235 kHz OBW Power 99.00 % x dB Bandwidth 1.225 MHz x dB -20.00 dB MSG STATUS
π/4DQPSK/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz Center Freq: 2.480000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None 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 1.1711 MHz Total Power 5.76 dBm Transmit Freq Error 21.431 kHz OBW Power 99.00 % x dB Bandwidth 1.226 MHz x dB -20.00 dB MSG STATUS

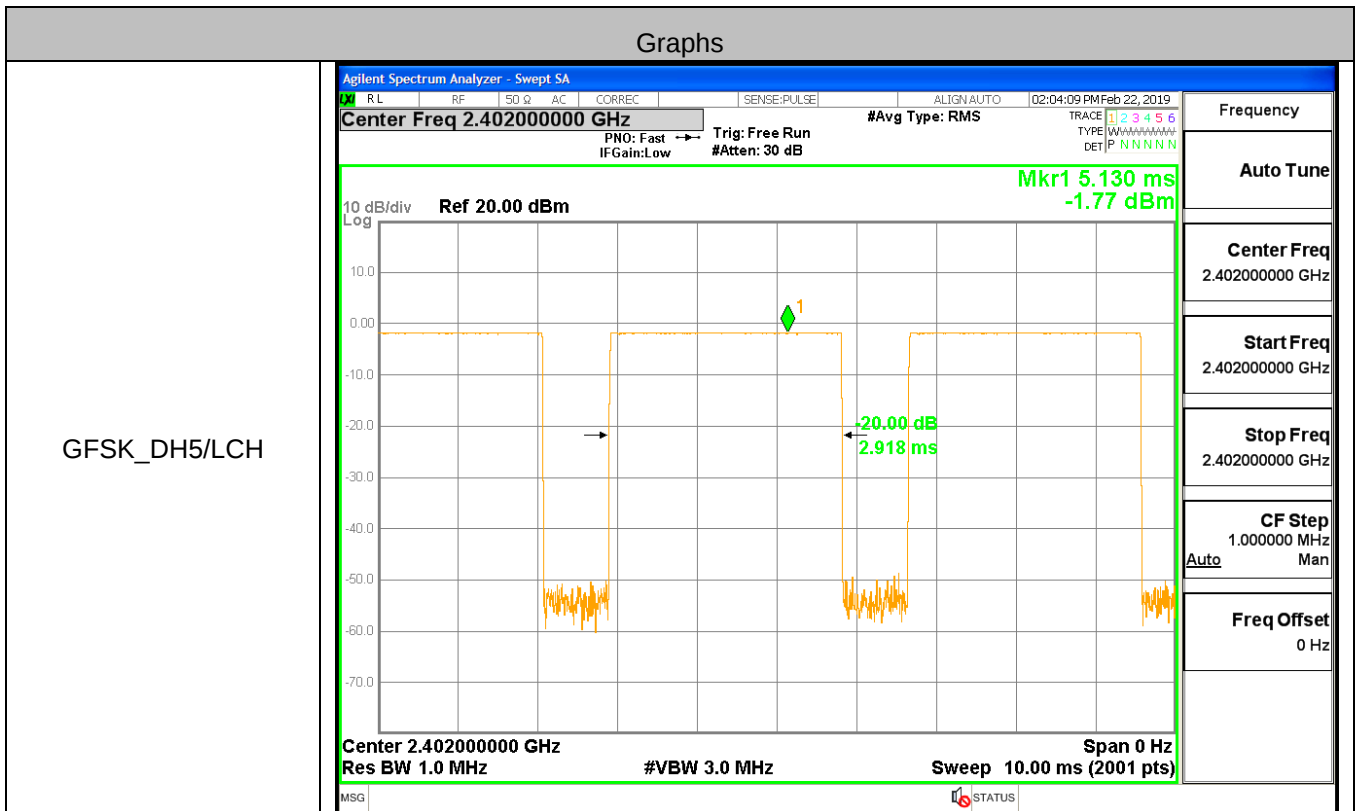
8DPSK/LCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 02:14:13 PM Feb 22, 2019 Center Freq 2.402000000 GHz Center Freq: 2.402000000 GHz Radio Std: None #IFGain:Low Trig: Free Run Avg/Hold: 100/100 Radio Device: BTS				Frequency
	10 dB/div Ref 10.00 dBm Log 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 -80.0				Center Freq 2.402000000 GHz
	Center 2.402 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1694 MHz Total Power 1.36 dBm Transmit Freq Error 30.213 kHz OBW Power 99.00 % x dB Bandwidth 1.253 MHz x dB -20.00 dB				CF Step 200.000 kHz Auto Man
	Freq Offset 0 Hz				
8DPSK/MCH	Agilent Spectrum Analyzer - Occupied BW RL RF 50 Ω AC CORREC SENSE:PULSE ALIGN:AUTO 02:16:17 PM Feb 22, 2019 Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Radio Std: None #IFGain:Low Trig: Free Run Avg/Hold: 100/100 Radio Device: BTS				Frequency
	10 dB/div Ref 10.00 dBm Log 0.00 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 -80.0				Center Freq 2.441000000 GHz
	Center 2.441 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1756 MHz Total Power 5.04 dBm Transmit Freq Error 16.905 kHz OBW Power 99.00 % x dB Bandwidth 1.252 MHz x dB -20.00 dB				CF Step 200.000 kHz Auto Man
	Freq Offset 0 Hz				

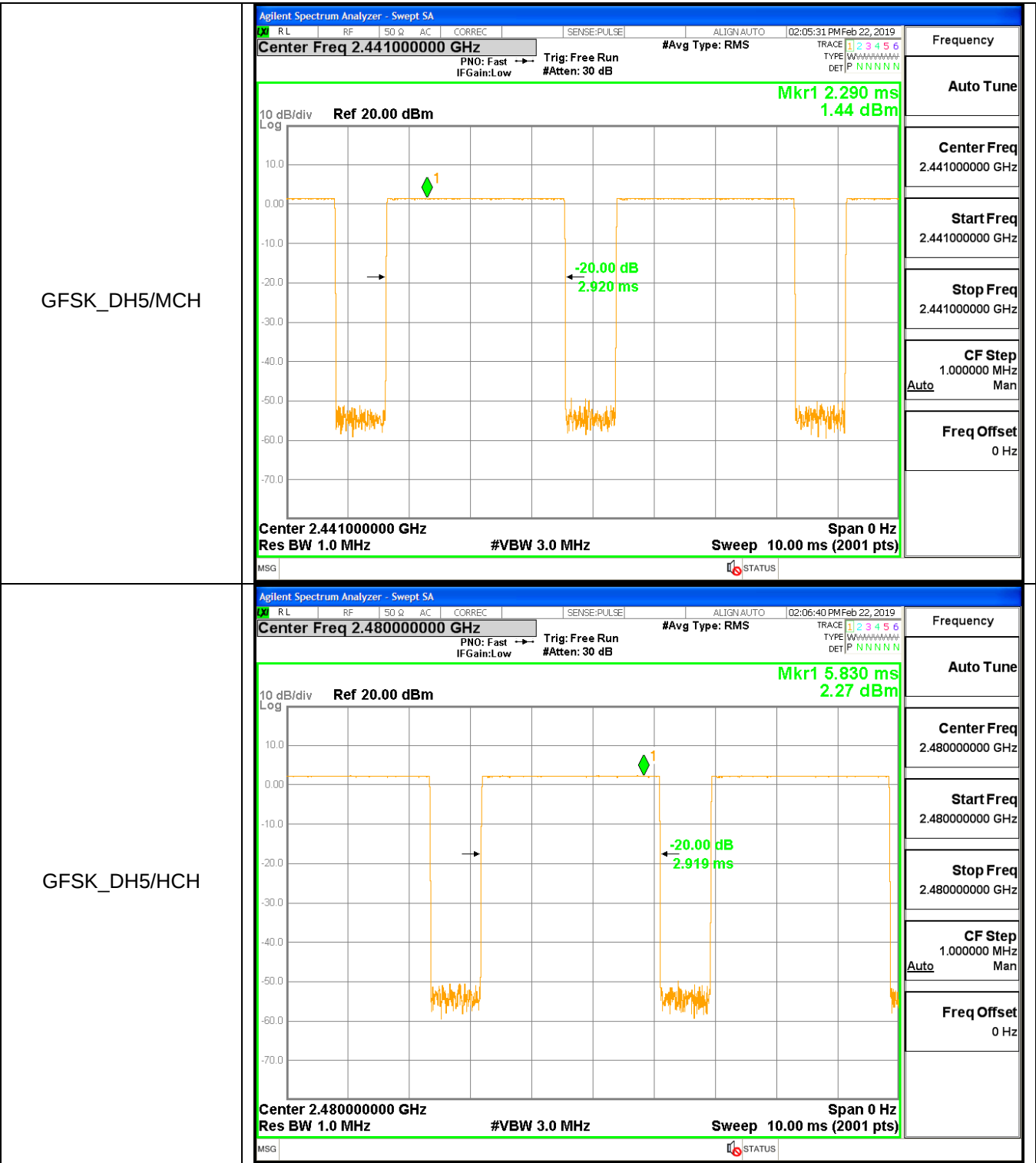


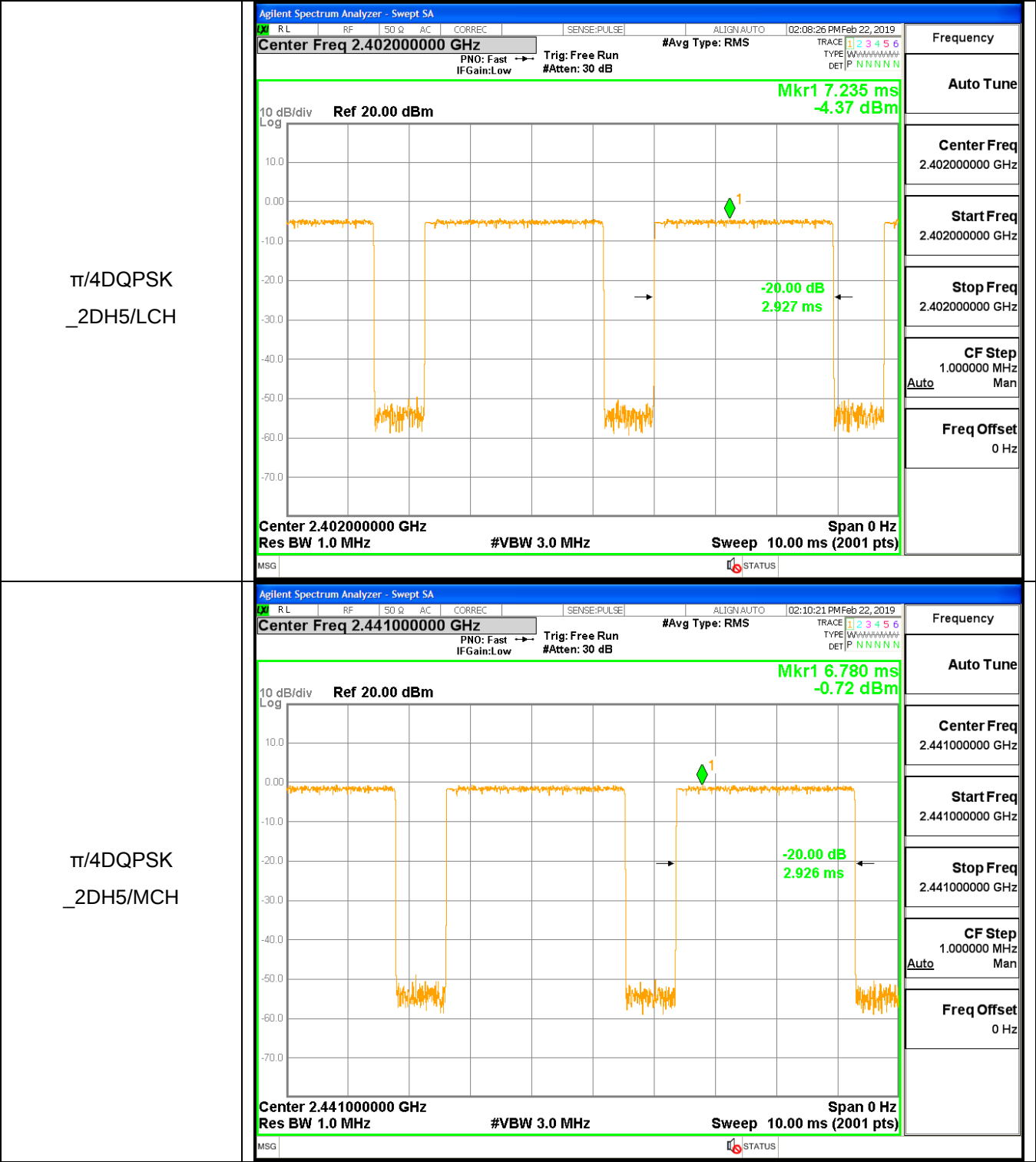
A.2 Dwell Time

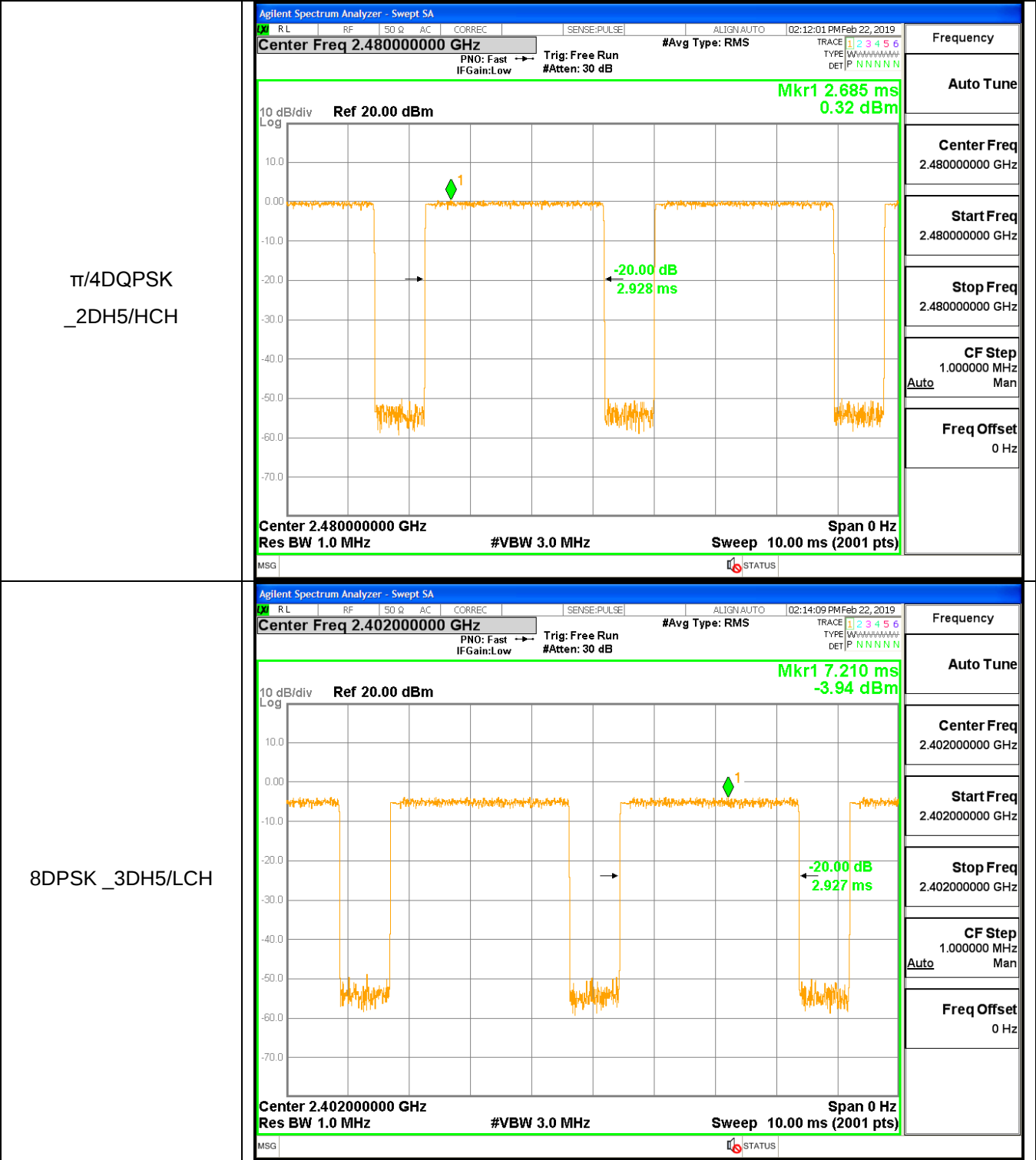
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002918	106.7	0.311396	0.4	PASS
GFSK	DH5	MCH	0.00292	106.7	0.311522	0.4	PASS
GFSK	DH5	HCH	0.002919	106.7	0.31147	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002927	106.7	0.31231	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002926	106.7	0.312233	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002928	106.7	0.312367	0.4	PASS
8DPSK	3DH5	LCH	0.002927	106.7	0.312285	0.4	PASS
8DPSK	3DH5	MCH	0.002928	106.7	0.312462	0.4	PASS
8DPSK	3DH5	HCH	0.002928	106.7	0.312467	0.4	PASS

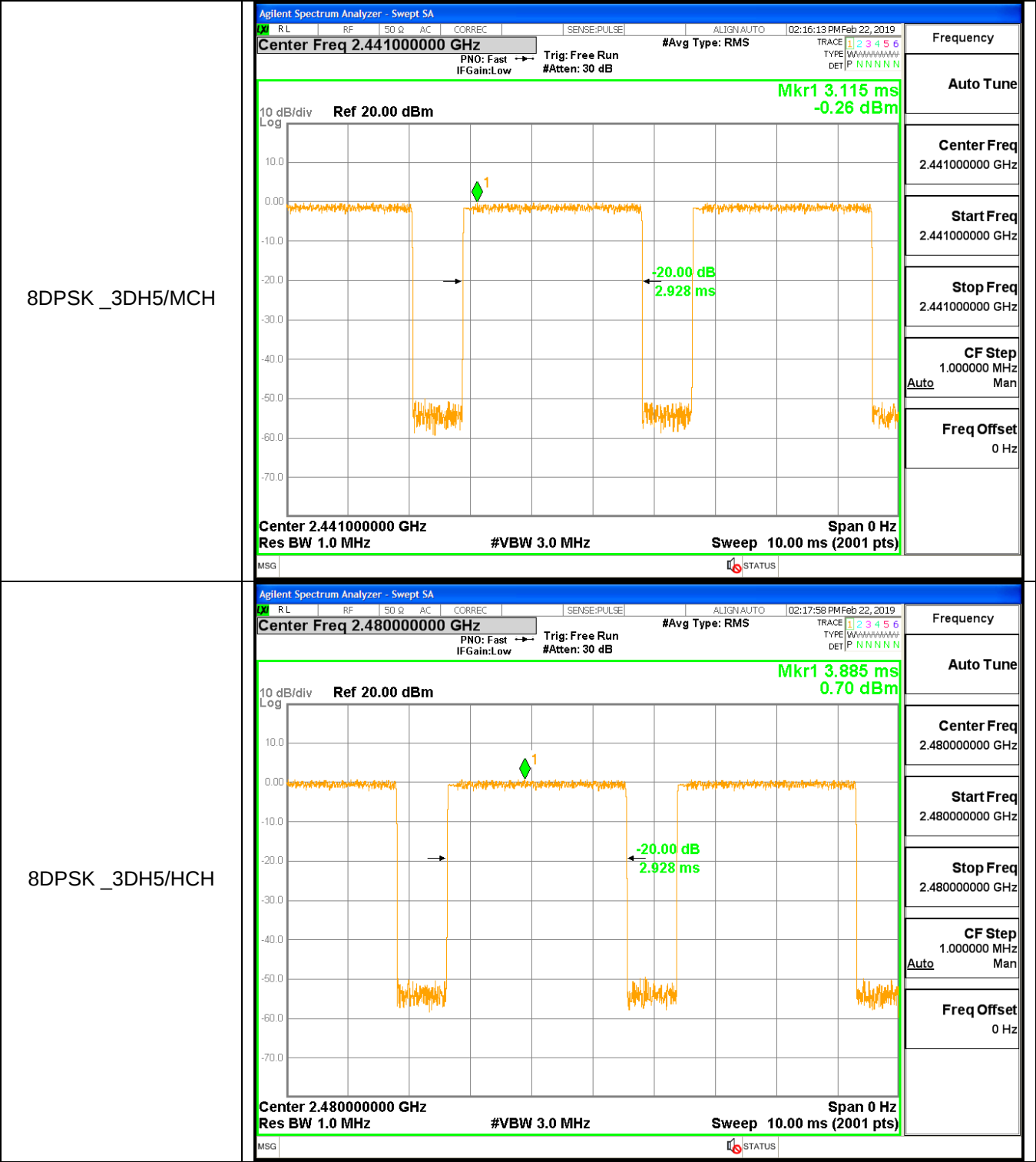
Test Graph







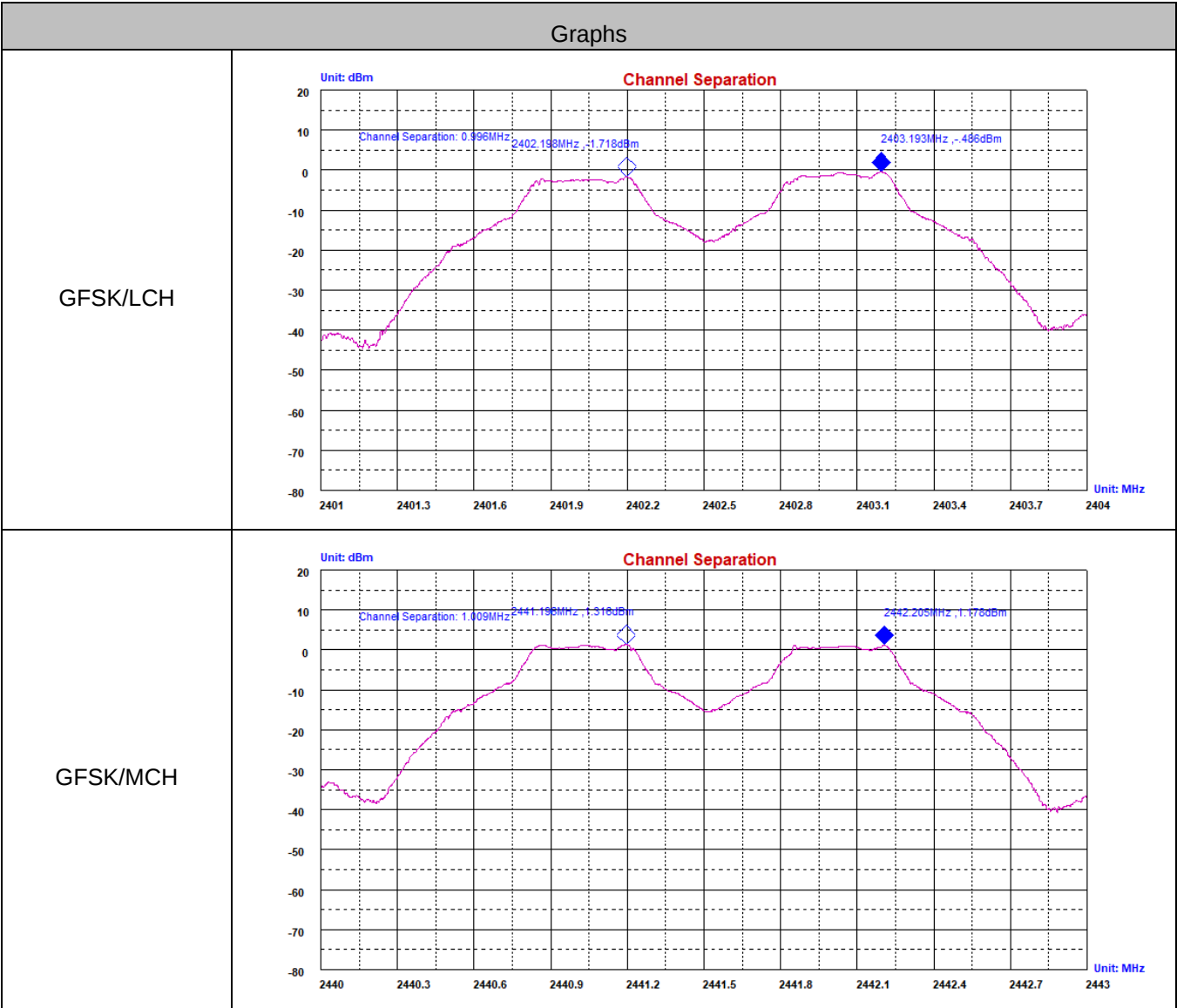


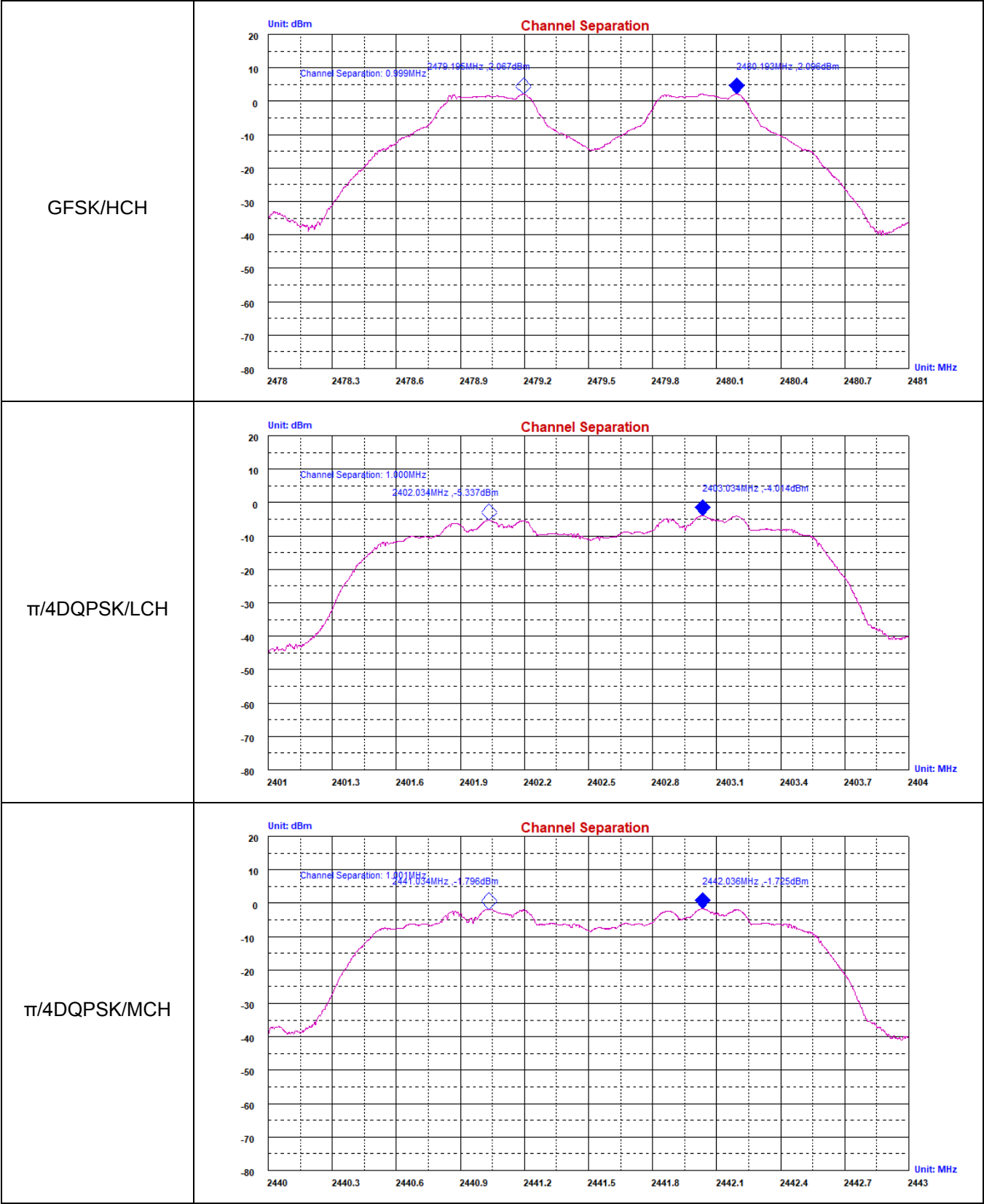


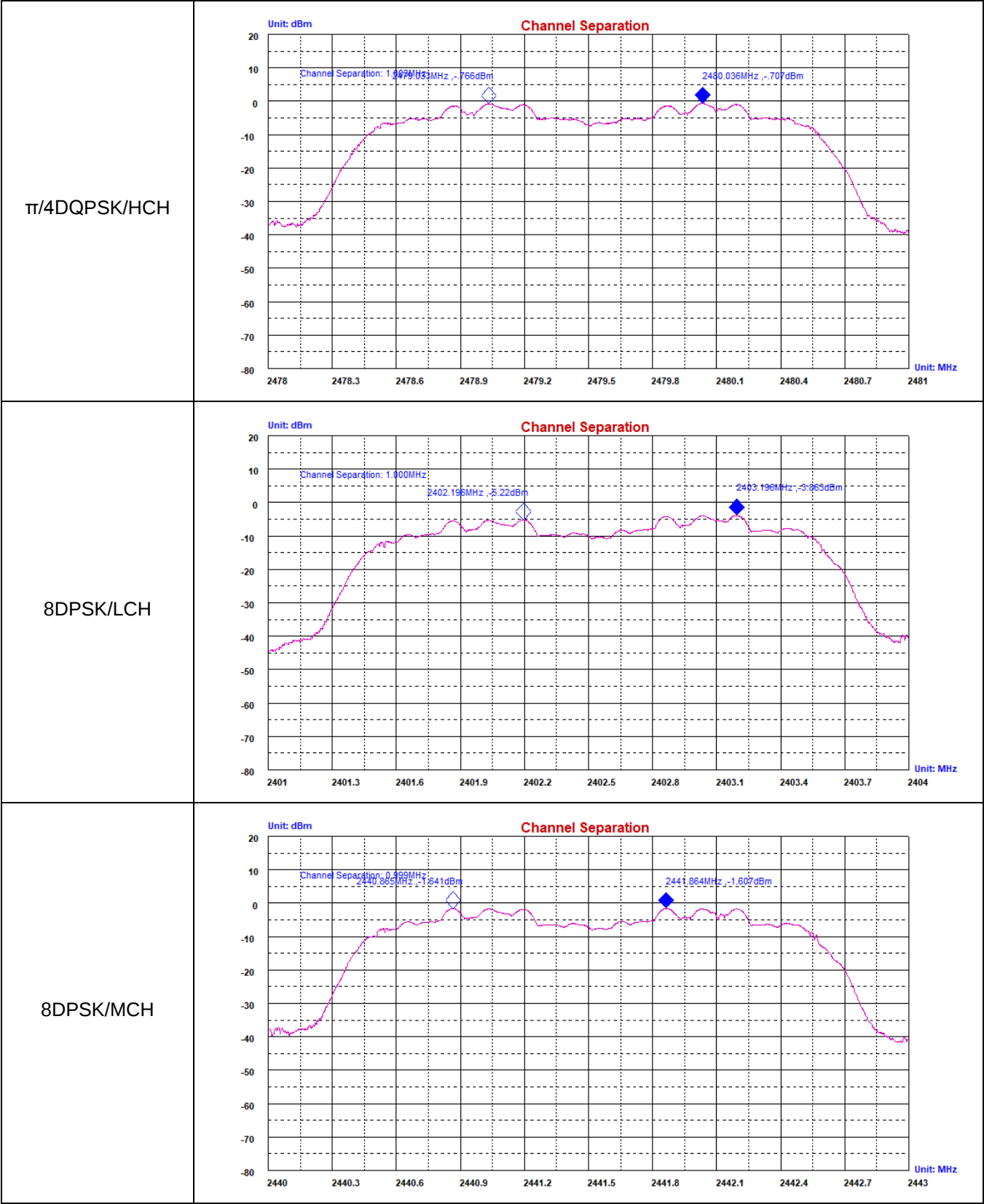
A.3 Carrier Frequency Separation

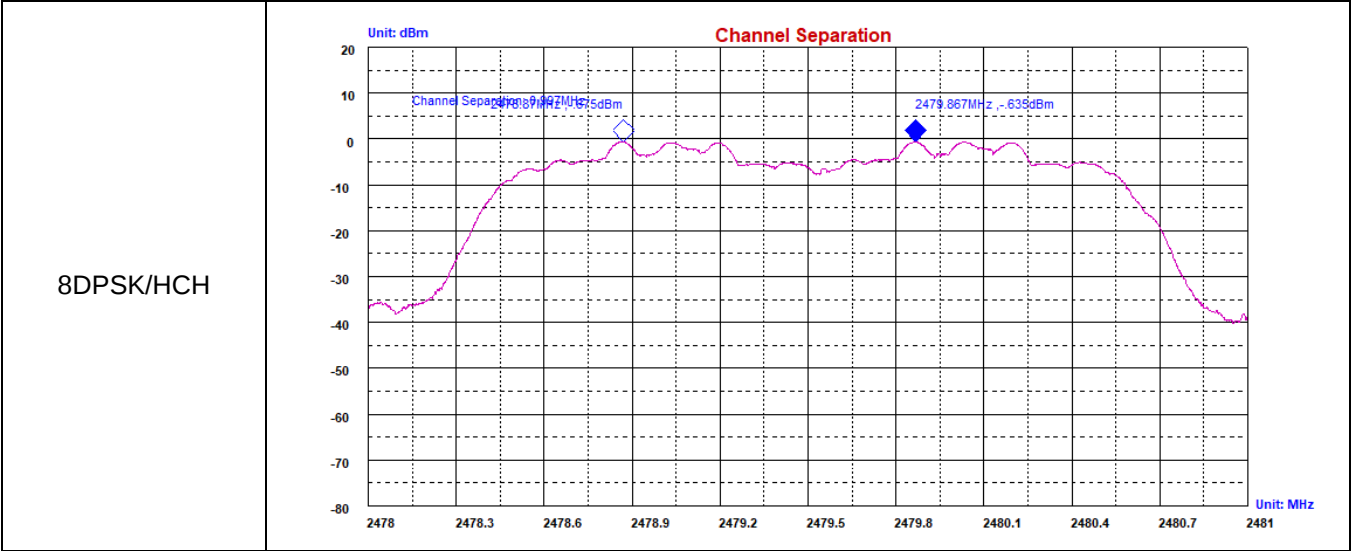
Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	0.996	0.629	PASS
GFSK	MCH	1.009	0.627	PASS
GFSK	HCH	0.999	0.625	PASS
$\pi/4$ DQPSK	LCH	1.000	0.817	PASS
$\pi/4$ DQPSK	MCH	1.001	0.817	PASS
$\pi/4$ DQPSK	HCH	1.003	0.817	PASS
8DPSK	LCH	1.000	0.835	PASS
8DPSK	MCH	0.999	0.835	PASS
8DPSK	HCH	0.997	0.840	PASS

Test Graph





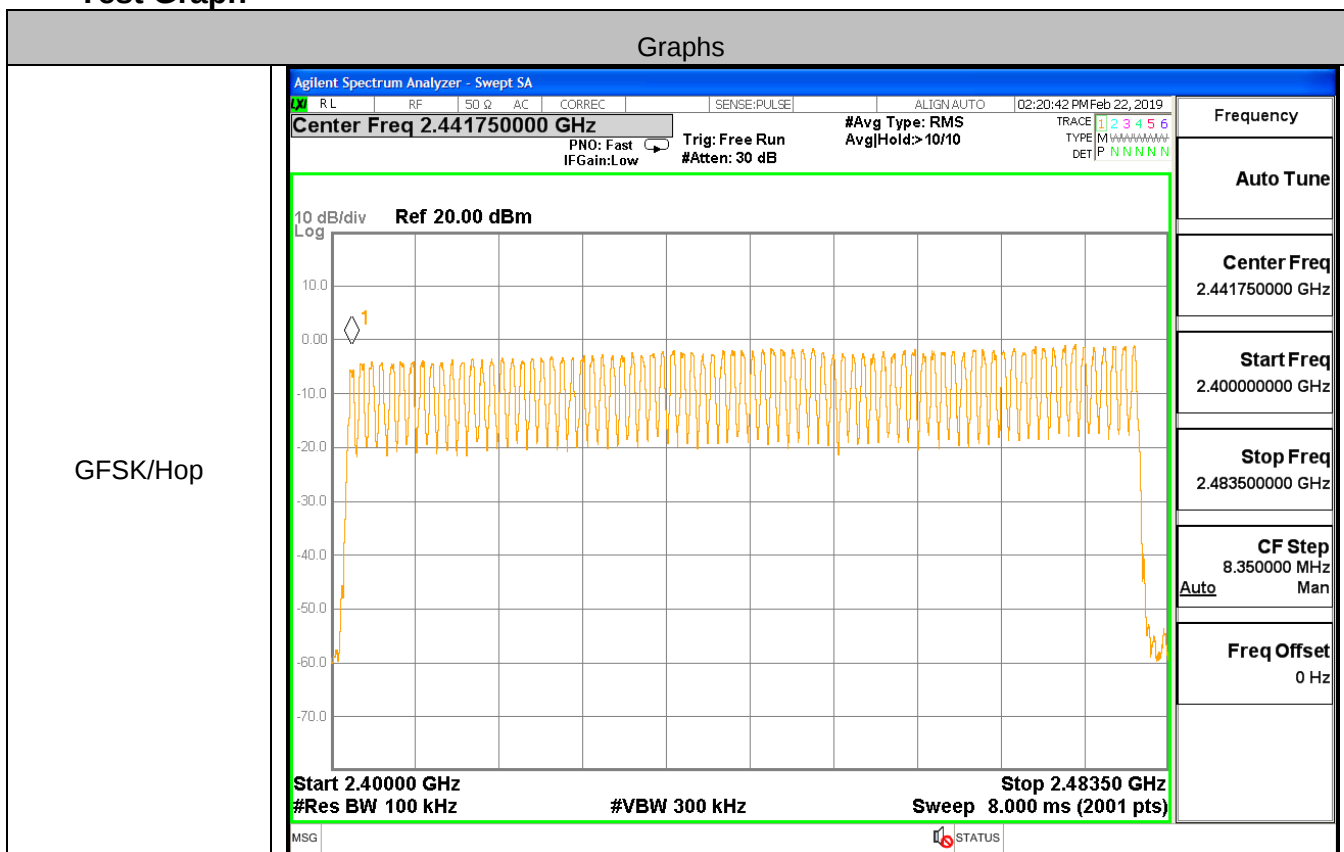


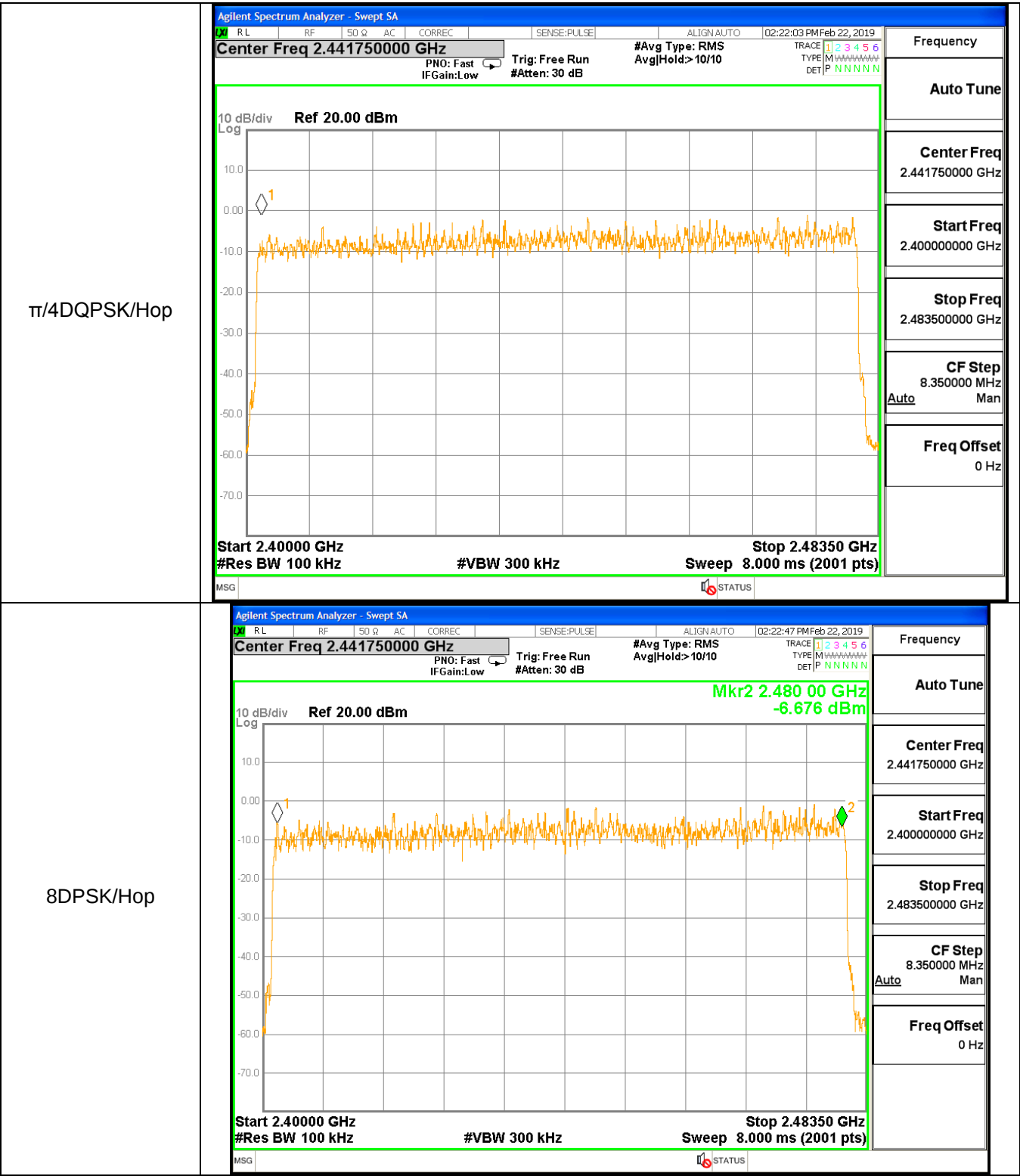


A.4 Hopping Channel Number

Mode	Channel.	Number of Hopping Channel[N]	Limit[N]	Verdict
GFSK	Hop	79	≥ 15	PASS
$\pi/4$ DQPSK	Hop	79	≥ 15	PASS

Test Graph

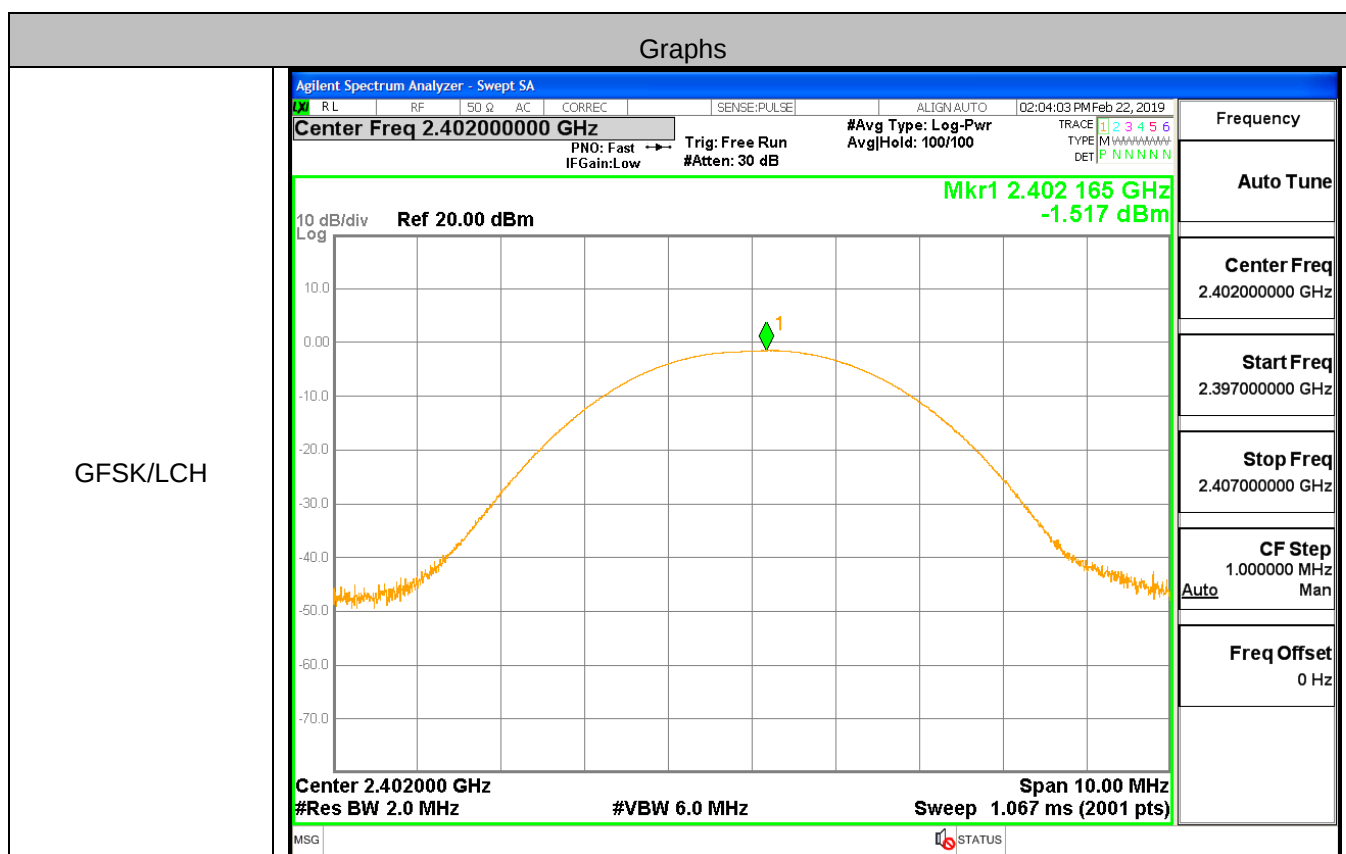


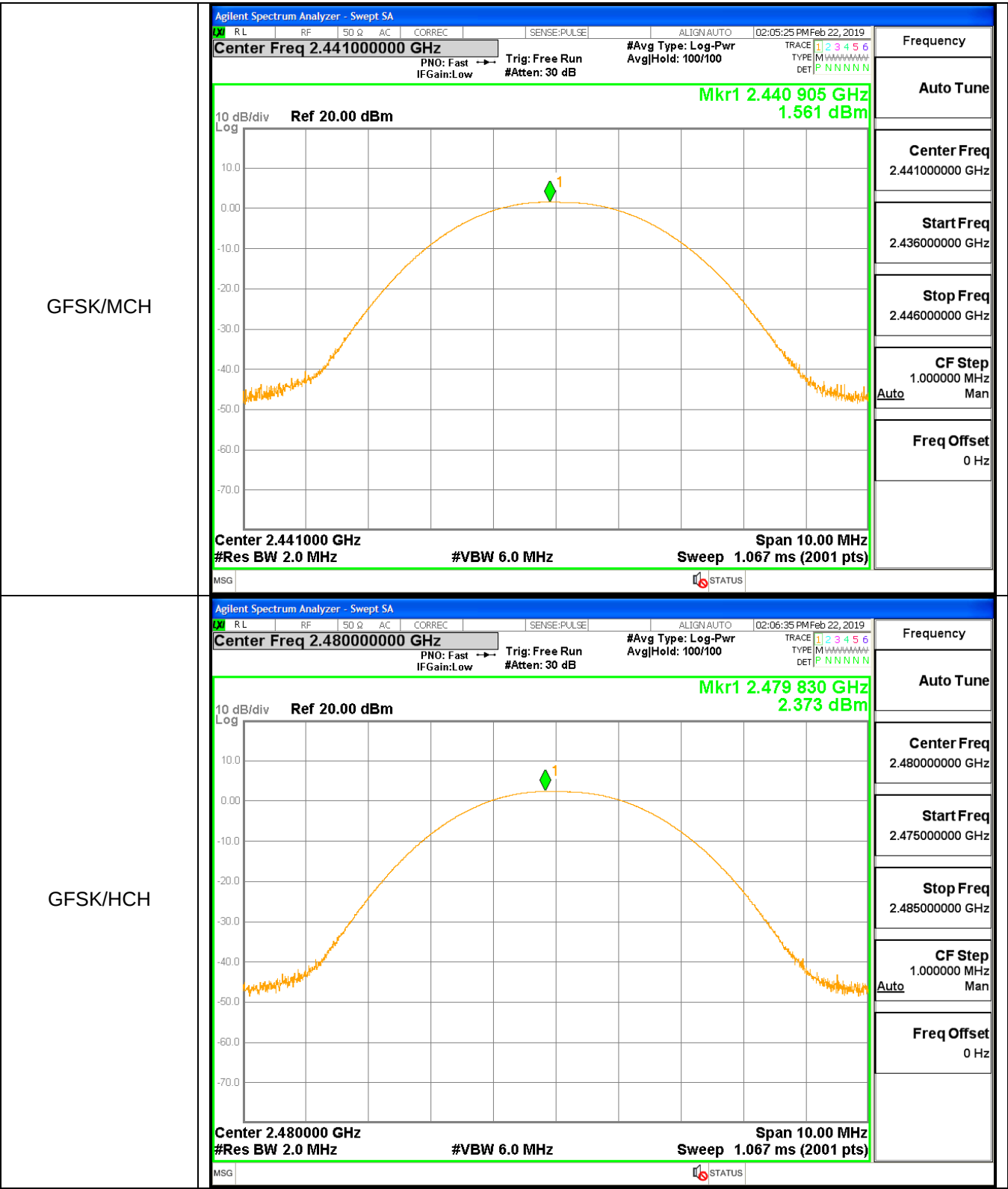


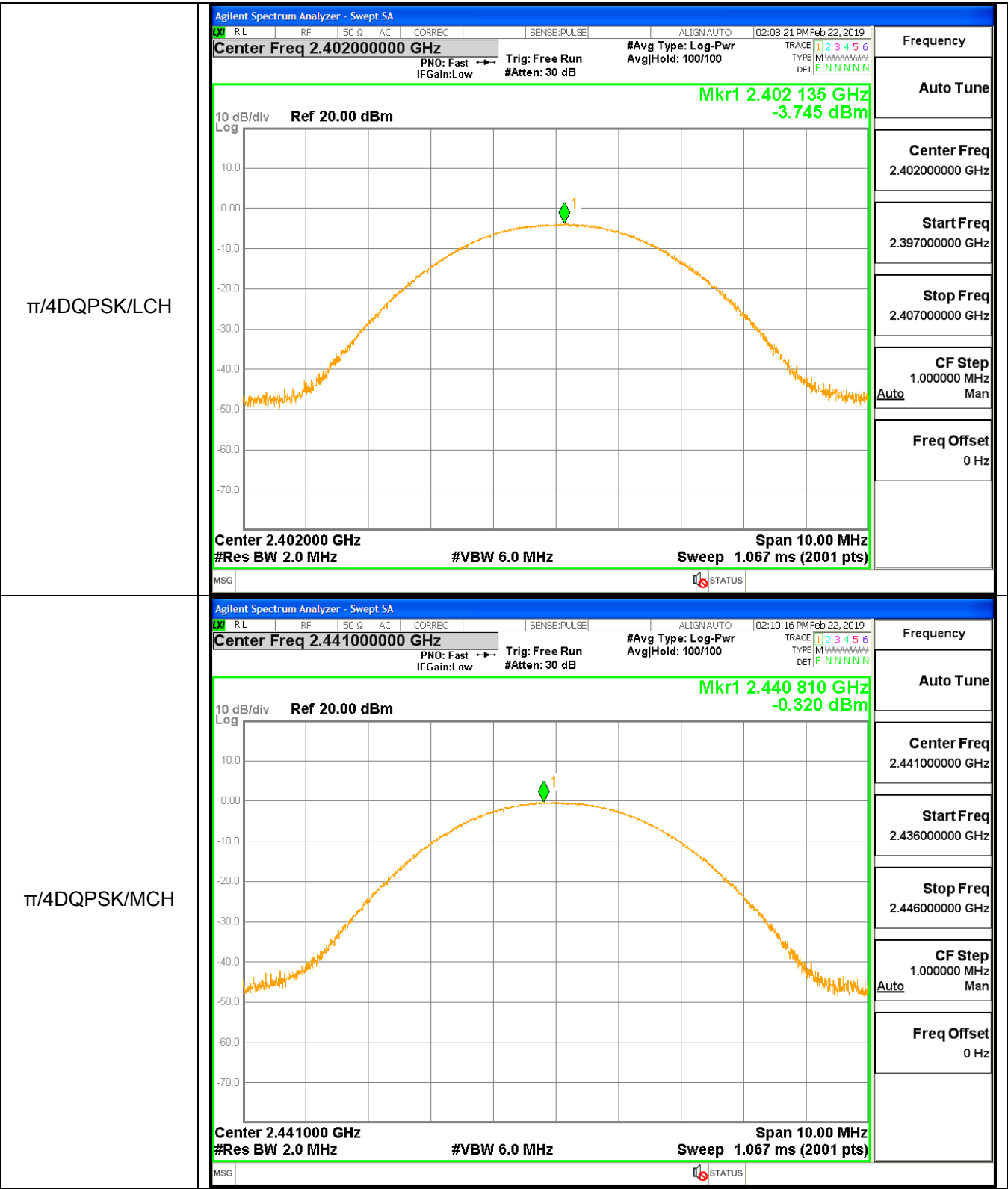
A.5 Conducted Peak Output Power

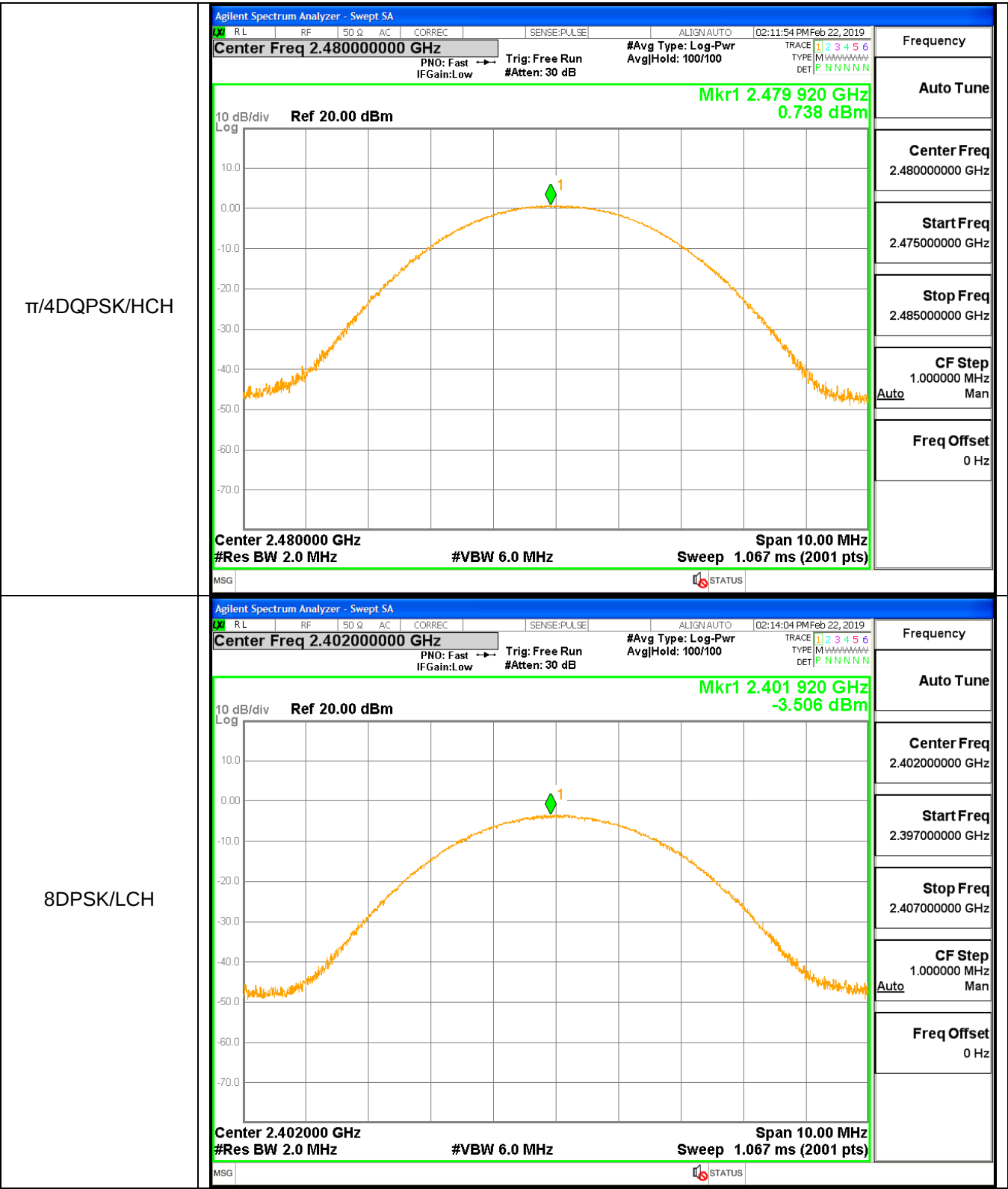
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	-1.517	21	PASS
GFSK	MCH	1.561	21	PASS
GFSK	HCH	2.373	21	PASS
$\pi/4$ DQPSK	LCH	-3.745	21	PASS
$\pi/4$ DQPSK	MCH	-0.320	21	PASS
$\pi/4$ DQPSK	HCH	0.738	21	PASS
8DPSK	LCH	-3.506	21	PASS
8DPSK	MCH	0.174	21	PASS
8DPSK	HCH	1.178	21	PASS

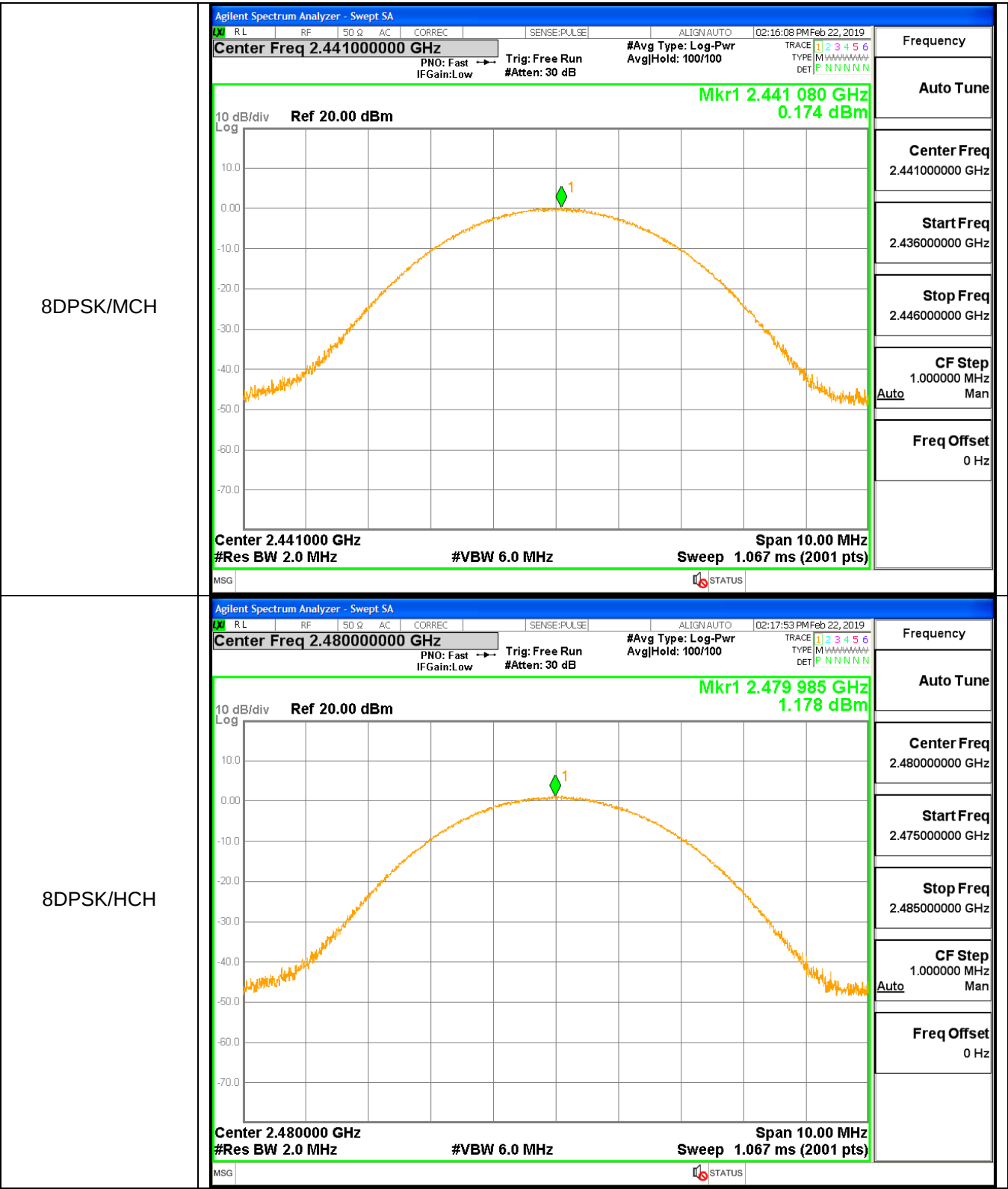
Test Graph







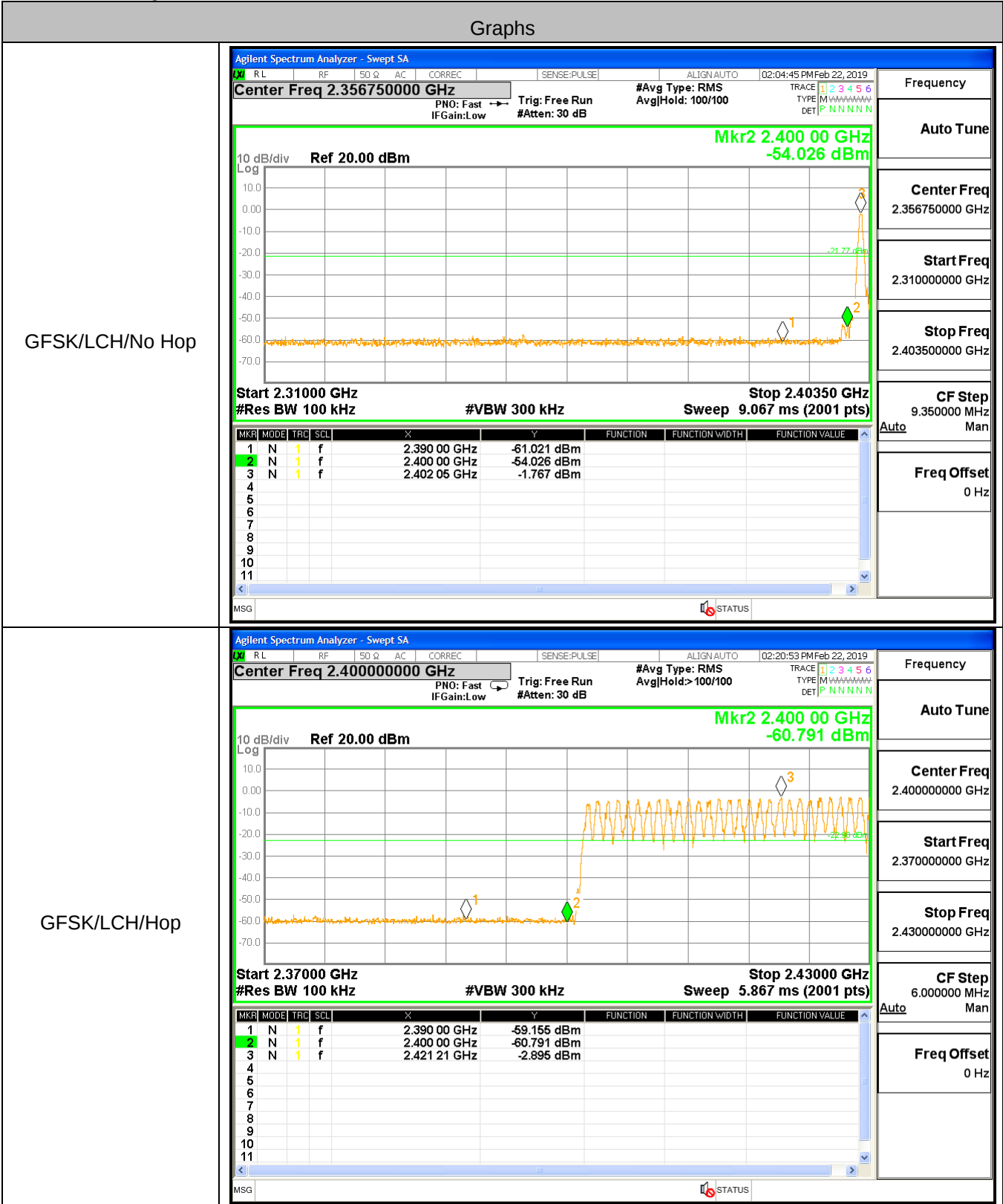


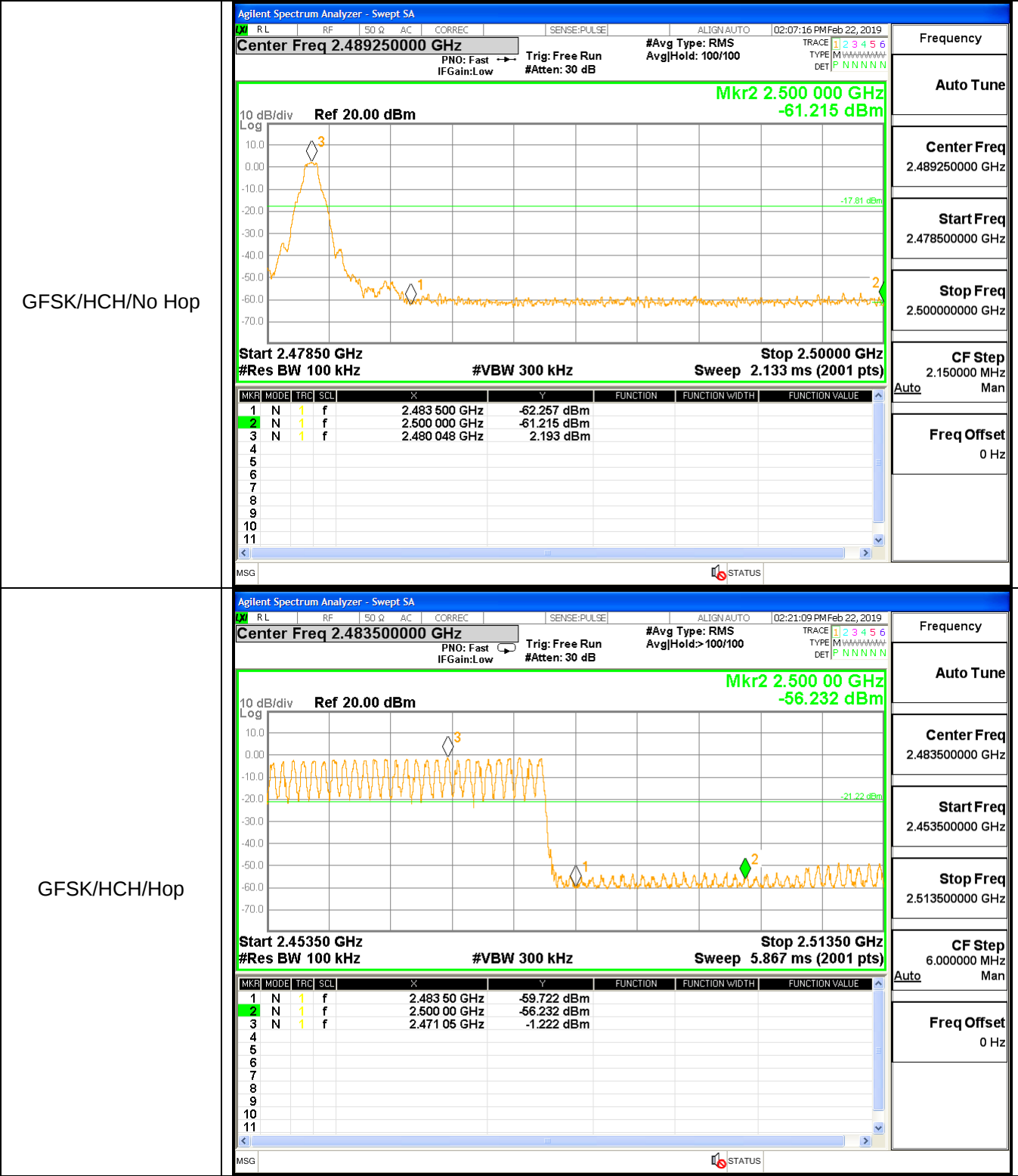


A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	-61.02	-21.77	-1.77	Pass
1DH5	2402	2400	-54.03	-21.77	-1.77	Pass
1DH5-Hopping	2402	2390	-59.16	-22.90	-2.90	Pass
1DH5-Hopping	2402	2400	-60.79	-22.90	-2.90	Pass
1DH5	2480	2483.5	-62.26	-17.81	2.19	Pass
1DH5	2480	2500	-61.22	-17.81	2.19	Pass
1DH5-Hopping	2480	2483.5	-59.72	-21.22	-1.22	Pass
1DH5-Hopping	2480	2500	-56.23	-21.22	-1.22	Pass
2DH5	2402	2390	-62.52	-25.57	-5.57	Pass
2DH5	2402	2400	-56.92	-25.57	-5.57	Pass
2DH5-Hopping	2480	2483.5	-60.47	-22.01	-2.01	Pass
2DH5-Hopping	2480	2500	-59.26	-22.01	-2.01	Pass
2DH5	2480	2483.5	-61.59	-21.67	-1.67	Pass
2DH5	2480	2500	-59.17	-21.67	-1.67	Pass
2DH5-Hopping	2402	2390	-60.78	-22.76	-2.76	Pass
2DH5-Hopping	2402	2400	-60.91	-22.76	-2.76	Pass
3DH5	2402	2390	-5.40	-62.75	-25.40	Pass
3DH5	2402	2400	-5.40	-57.61	-25.40	Pass
3DH5-Hopping	2402	2390	-3.87	-59.90	-23.87	Pass
3DH5-Hopping	2402	2400	-3.87	-60.42	-23.87	Pass
3DH5	2480	2483.5	-1.08	-56.78	-21.08	Pass
3DH5	2480	2500	-1.08	-59.36	-21.08	Pass
3DH5-Hopping	2480	2483.5	-1.36	-59.46	-21.36	Pass
3DH5-Hopping	2480	2500	-1.36	-58.02	-21.36	Pass

Test Graph





π /4DQPSK/LCH/No Hop

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.356750000 GHz

PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB

#Avg Type: RMS Avg|Hold: 100/100

Frequency Auto Tune

Center Freq 2.356750000 GHz

Start Freq 2.310000000 GHz

Stop Freq 2.403500000 GHz

CF Step 9.350000 MHz Man

Freq Offset 0 Hz

Mkr2 2.400 00 GHz -56.921 dBm

10 dB/div Ref 20.00 dBm

Log

Start 2.31000 GHz Stop 2.40350 GHz

#Res BW 100 kHz #VBW 300 kHz Sweep 9.067 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-62.518 dBm			
2	N	1	f	2.400 00 GHz	-56.921 dBm			
3	N	1	f	2.402 05 GHz	-5.573 dBm			

MSG STATUS

π /4DQPSK/LCH/Hop

Agilent Spectrum Analyzer - Swept SA

Center Freq 2.400000000 GHz

PNO: Fast IFGain:Low Trig: Free Run #Atten: 30 dB

#Avg Type: RMS Avg|Hold: 100/100

Frequency Auto Tune

Center Freq 2.400000000 GHz

Start Freq 2.370000000 GHz

Stop Freq 2.430000000 GHz

CF Step 6.000000 MHz Man

Freq Offset 0 Hz

Mkr2 2.400 00 GHz -60.914 dBm

10 dB/div Ref 20.00 dBm

Log

Start 2.37000 GHz Stop 2.43000 GHz

#Res BW 100 kHz #VBW 300 kHz Sweep 5.867 ms (2001 pts)

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-60.781 dBm			
2	N	1	f	2.400 00 GHz	-60.914 dBm			
3	N	1	f	2.428 05 GHz	-2.765 dBm			

MSG STATUS

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

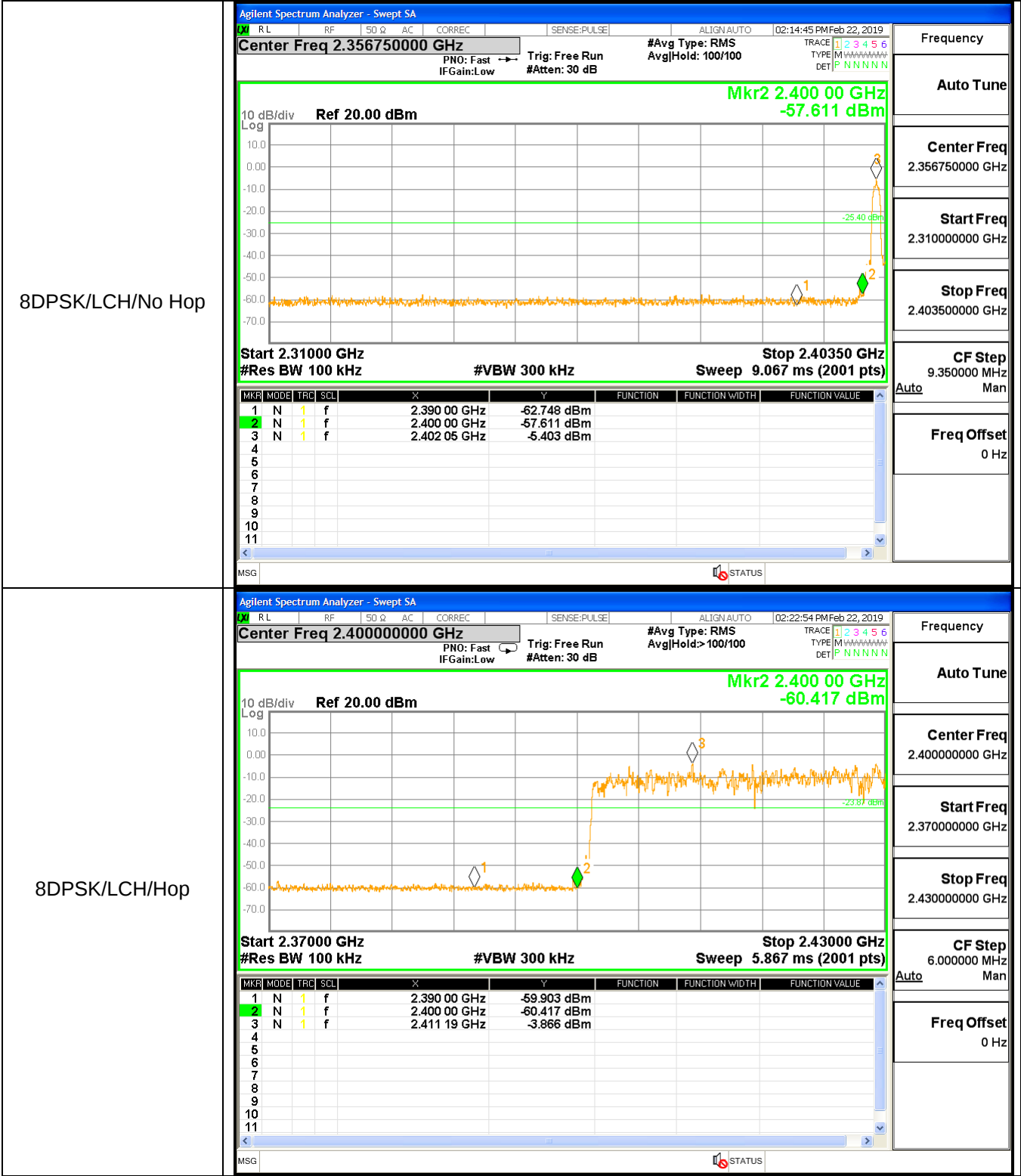
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 500 GHz	-61.587 dBm			
2	N	1	f	2.500 000 GHz	-59.174 dBm			
3	N	1	f	2.480 070 GHz	-1.665 dBm			

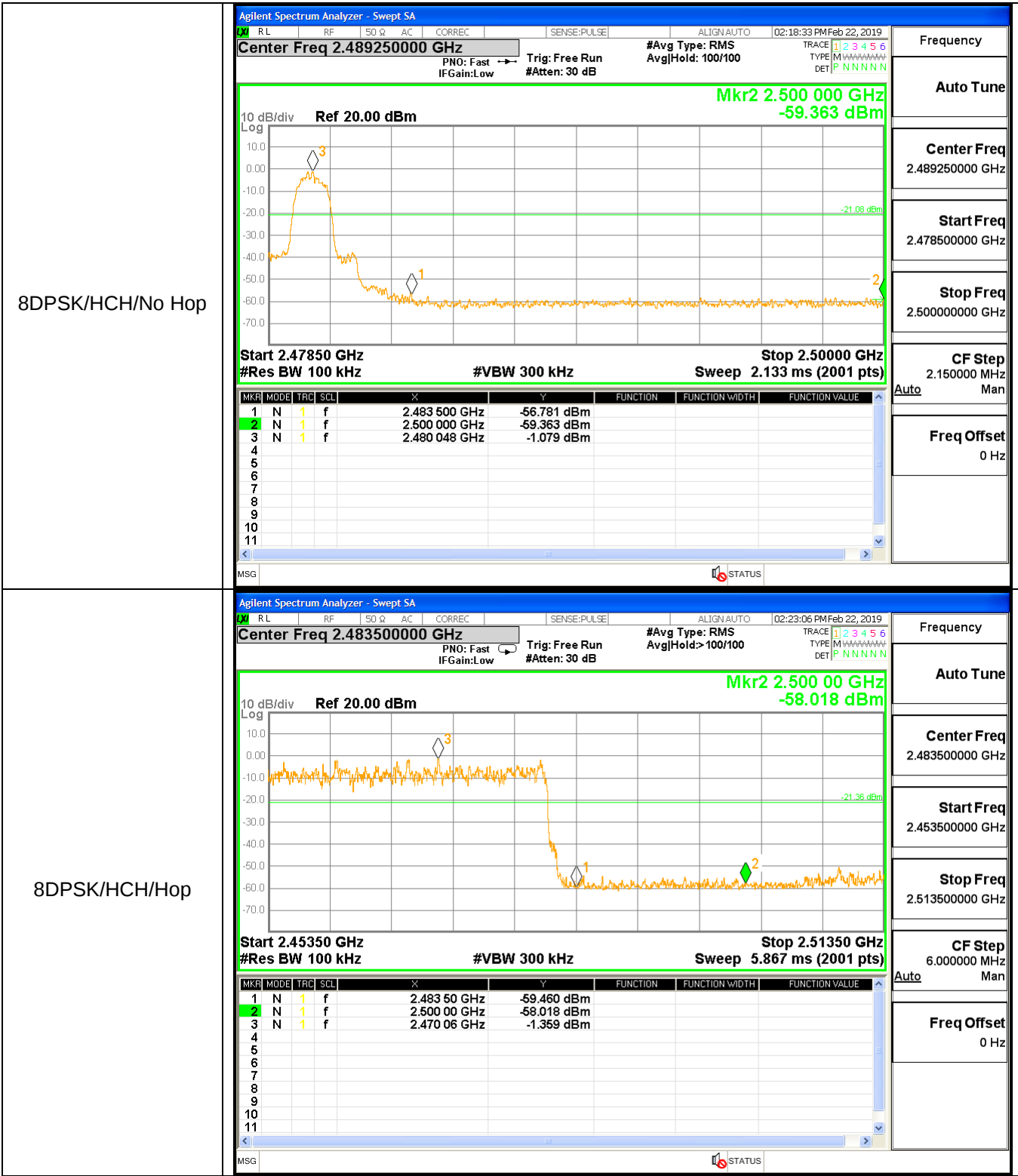
Frequency
Auto Tune
Center Freq
2.489250000 GHz
Start Freq
2.478500000 GHz
Stop Freq
2.500000000 GHz
CF Step
2.150000 MHz
Auto
Freq Offset
0 Hz

$\pi/4$ DQPSK/HCH/Hop

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 50 GHz	-60.473 dBm			
2	N	1	f	2.500 00 GHz	-59.255 dBm			
3	N	1	f	2.460 07 GHz	-2.007 dBm			

Frequency
Auto Tune
Center Freq
2.483500000 GHz
Start Freq
2.453500000 GHz
Stop Freq
2.513500000 GHz
CF Step
6.000000 MHz
Auto
Freq Offset
0 Hz

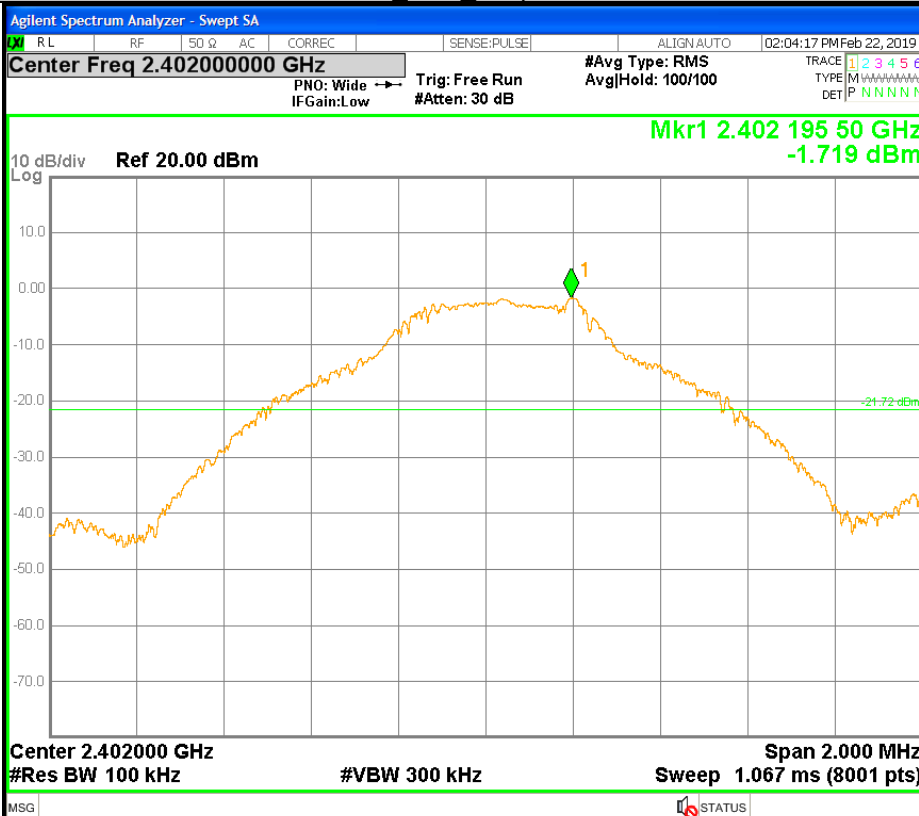




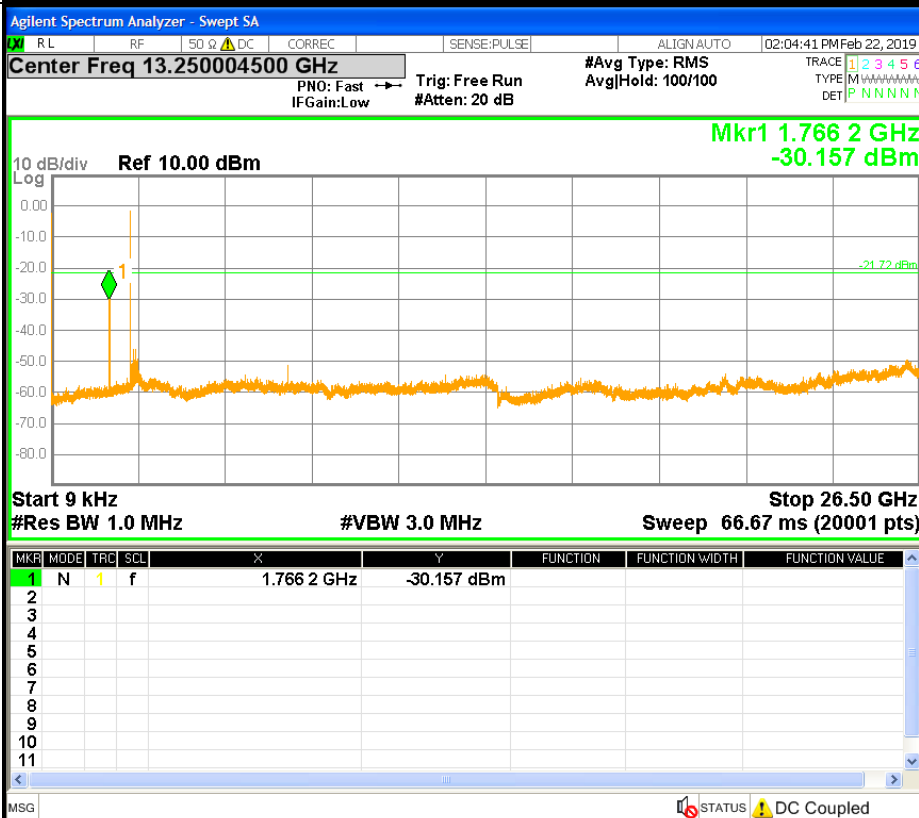
Test Graph

GFSK LCH Graphs

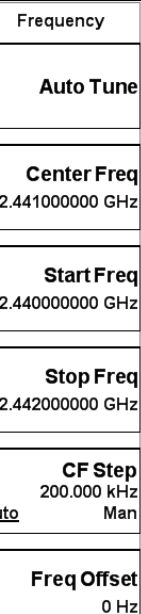
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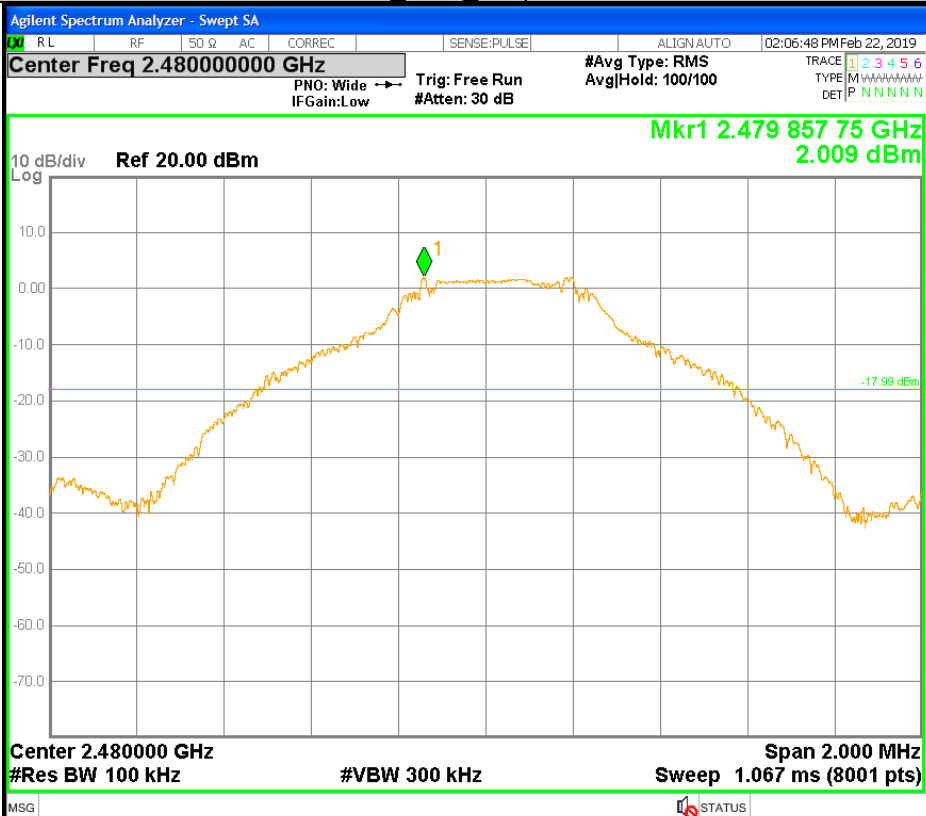
Puw



GFSK_MCH_Graphs

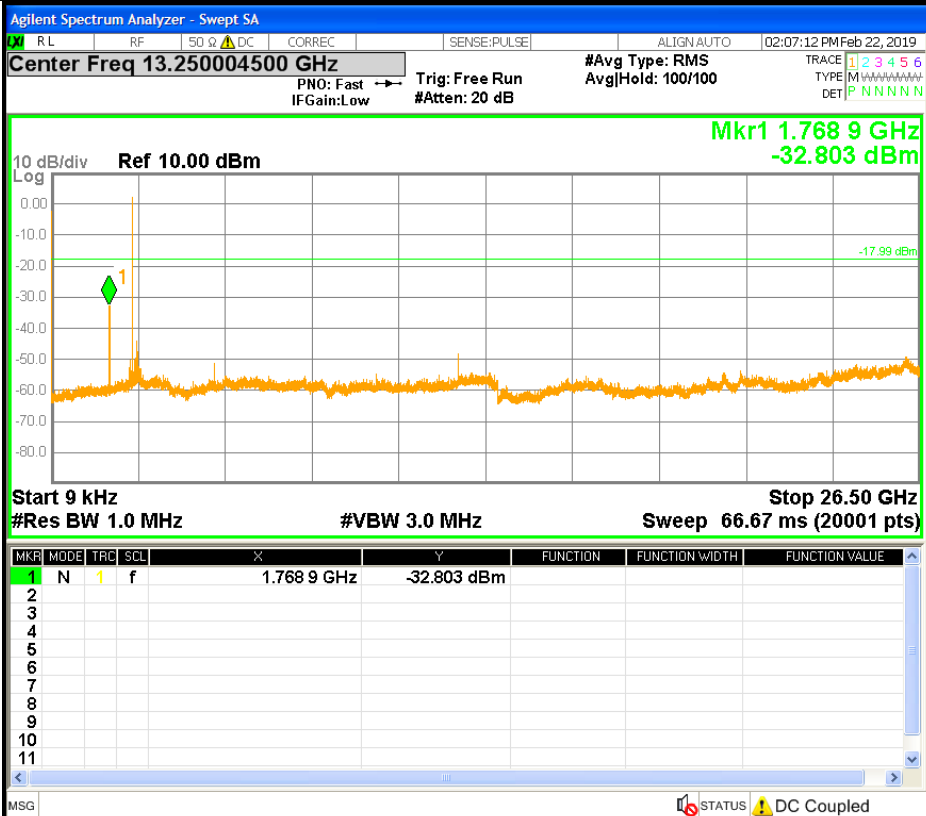


GFSK HCH Graphs



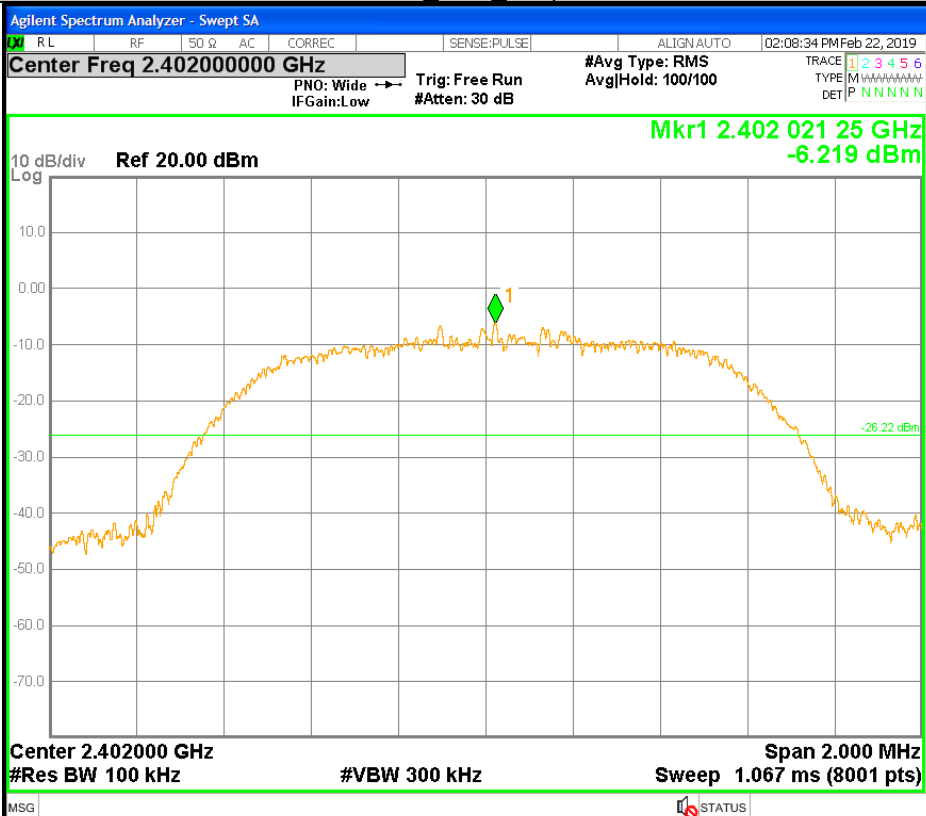
Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.479000000 GHz
Stop Freq 2.481000000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

PuW

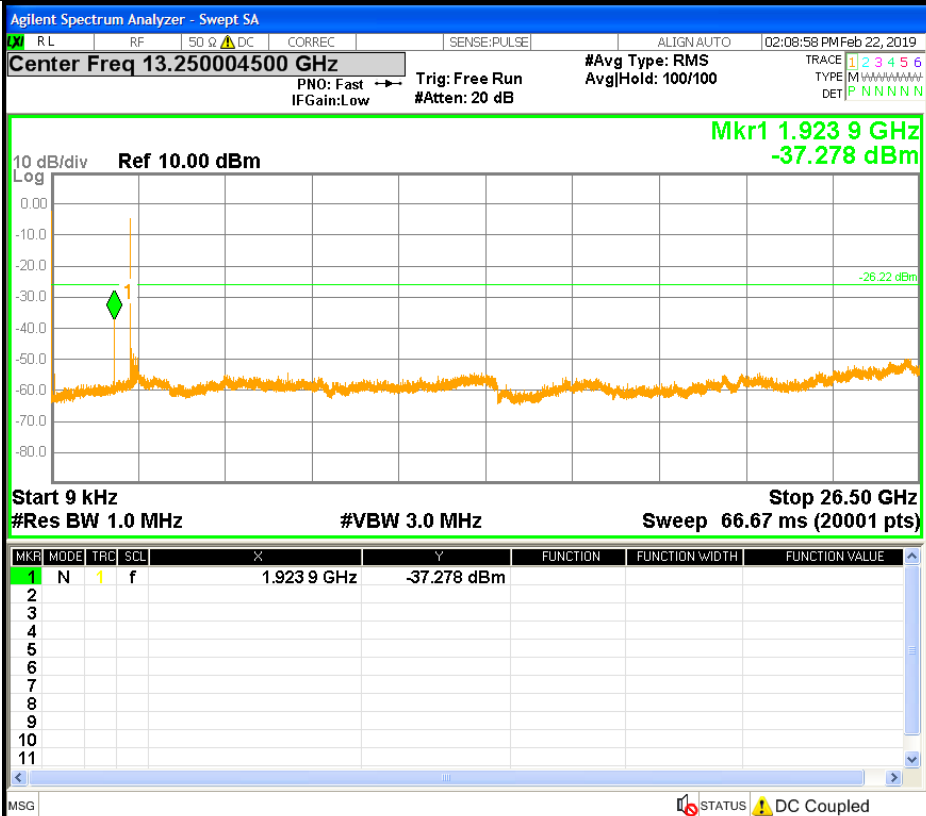


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK LCH Graphs

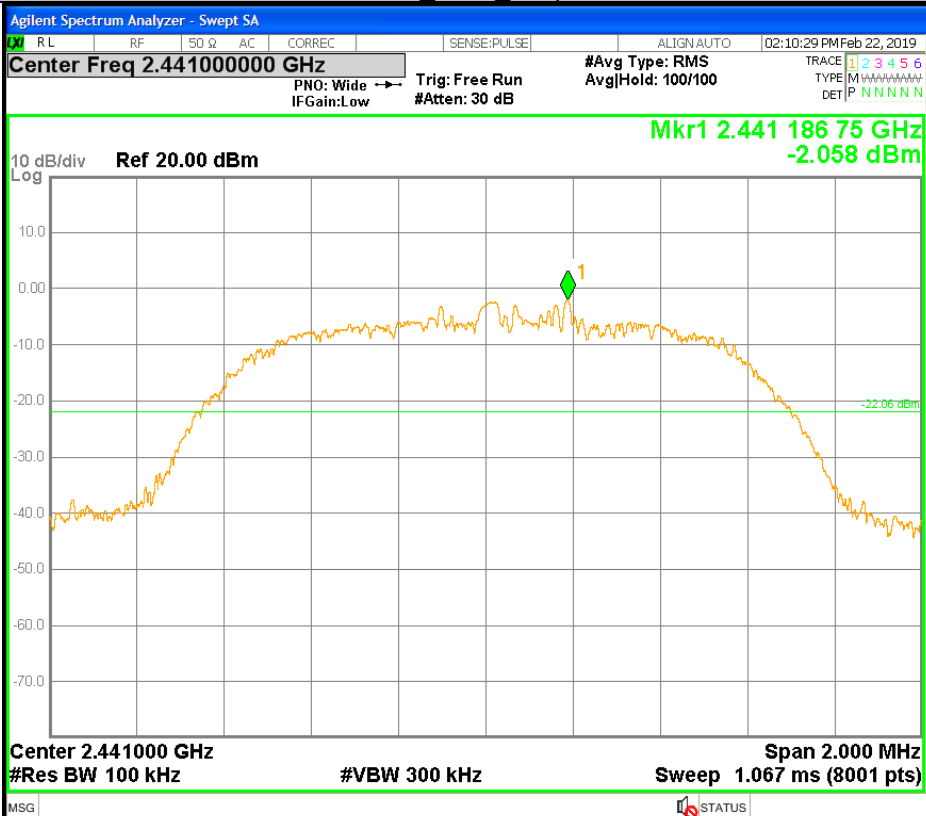


Frequency
Auto Tune
Center Freq 2.402000000 GHz
Start Freq 2.401000000 GHz
Stop Freq 2.403000000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz



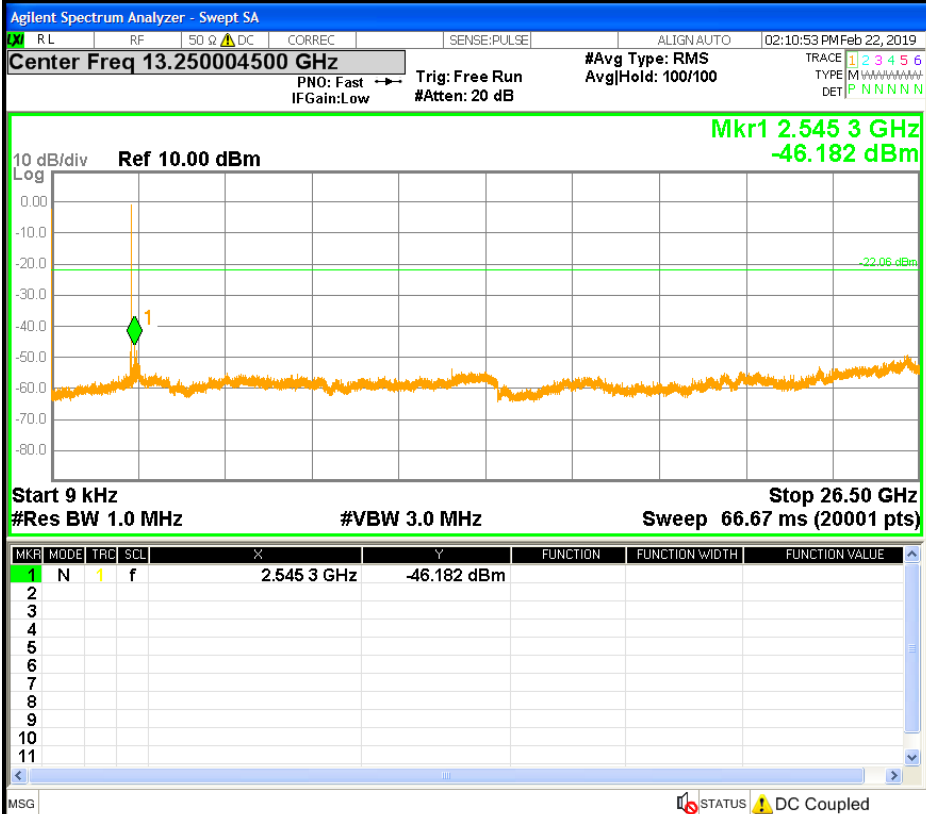
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

$\pi/4$ DQPSK MCH Graphs



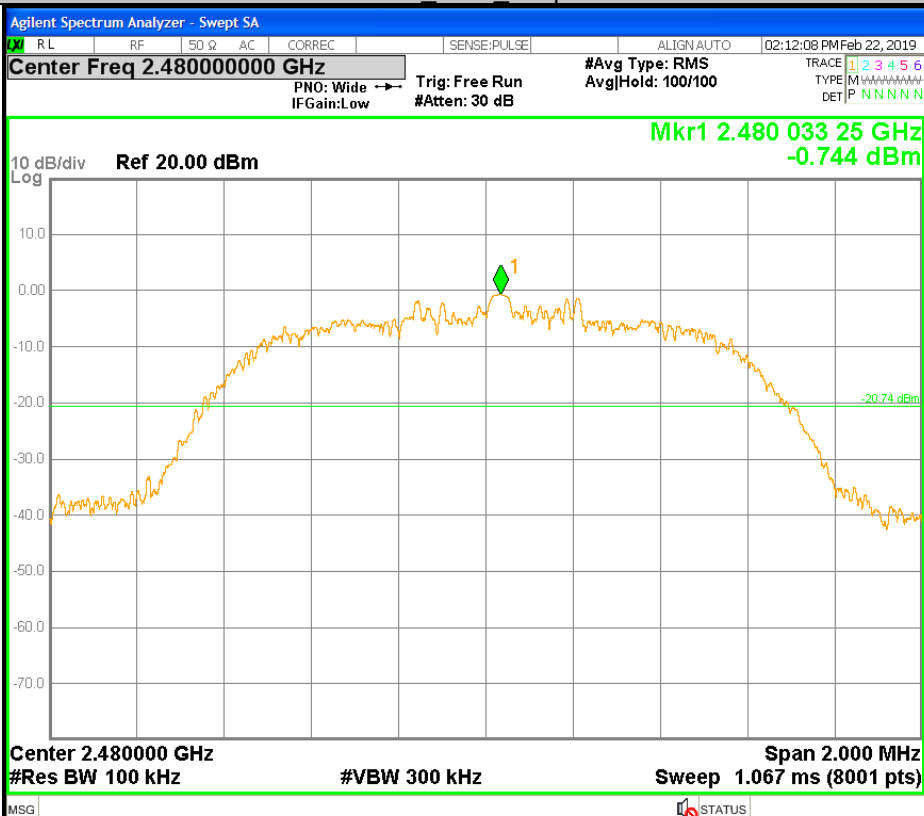
Frequency	
Auto Tune	
Center Freq	2.441000000 GHz
Start Freq	2.440000000 GHz
Stop Freq	2.442000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

Puw



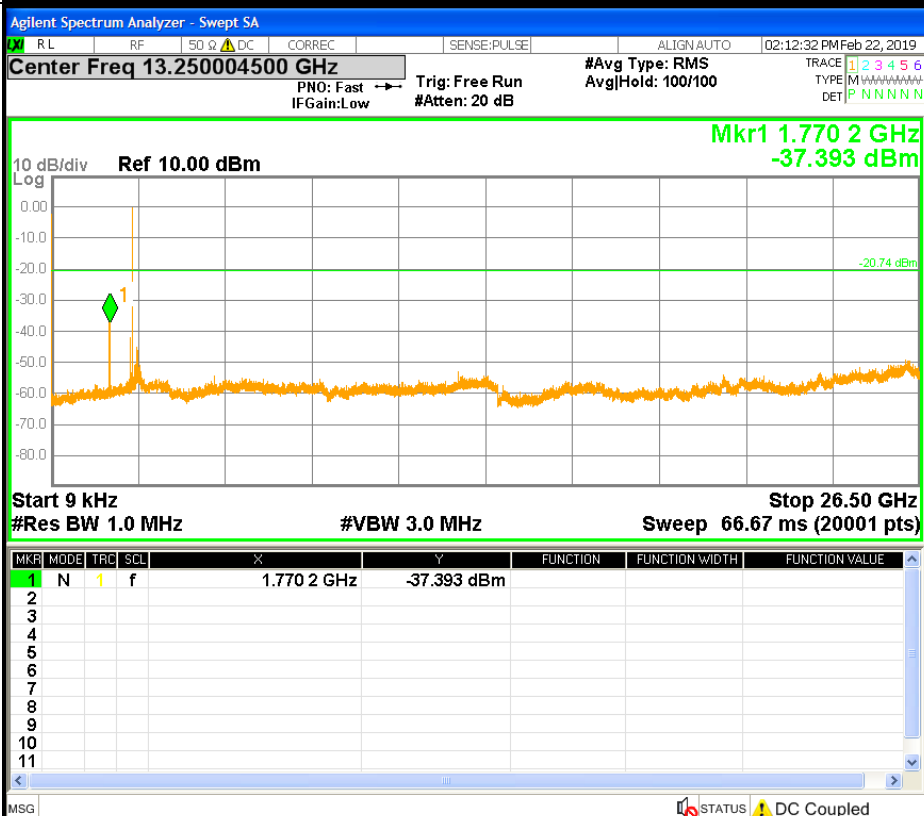
Frequency	
Auto Tune	
Center Freq	13.250004500 GHz
Start Freq	9.000 kHz
Stop Freq	26.500000000 GHz
CF Step	2.649999100 GHz
<u>Auto</u>	Man
Freq Offset	0 Hz

$\pi/4$ DQPSK HCH Graphs

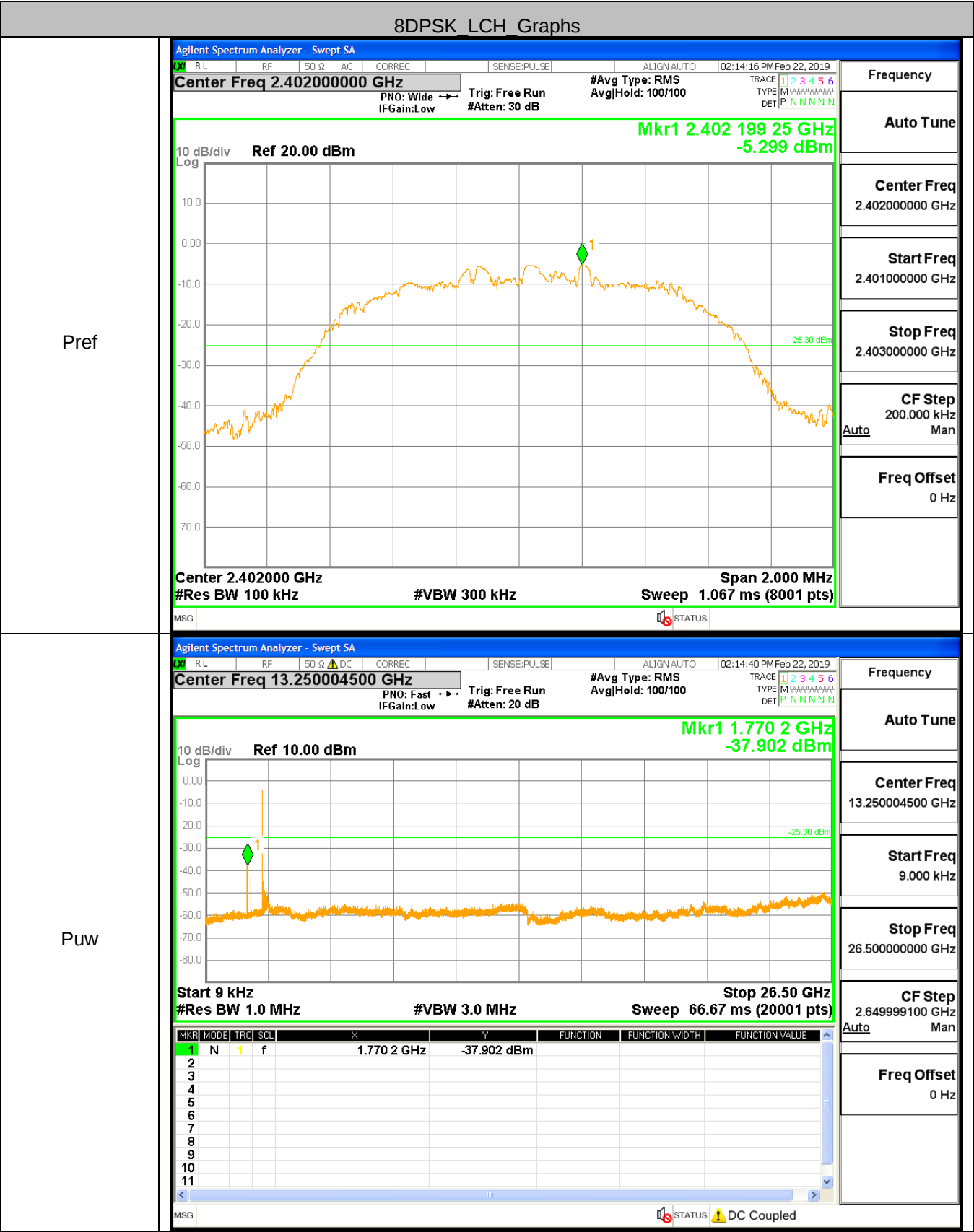


Frequency	
Auto Tune	
Center Freq	2.480000000 GHz
Start Freq	2.479000000 GHz
Stop Freq	2.481000000 GHz
CF Step	200.000 kHz
Auto	Man
Freq Offset	0 Hz

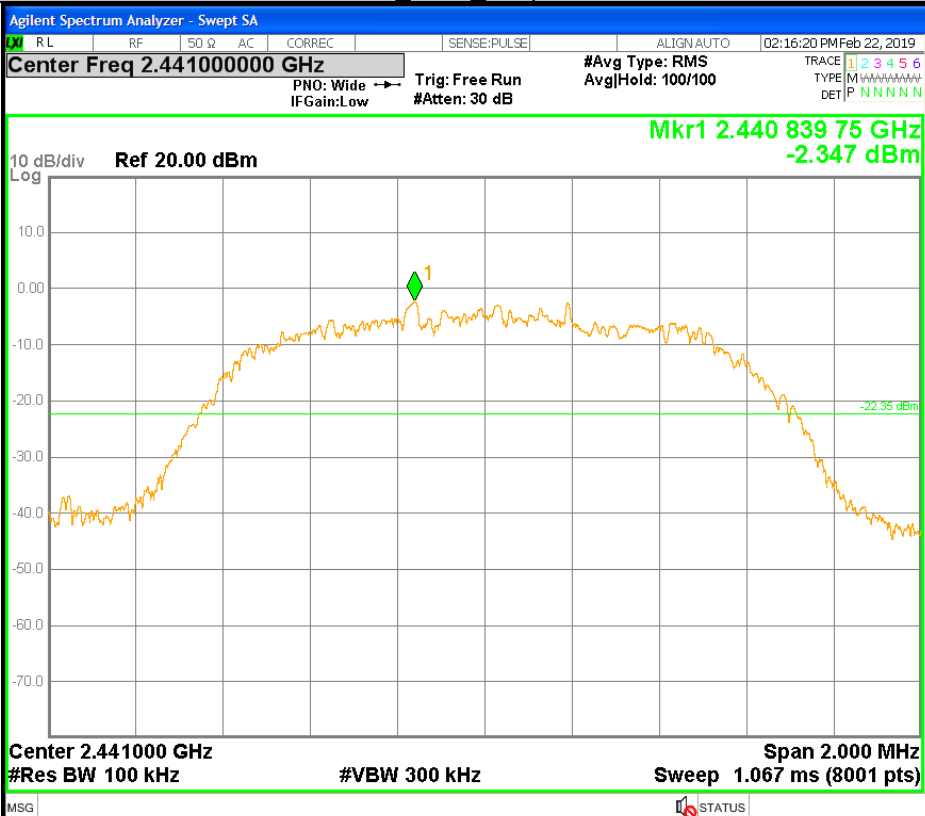
Puw



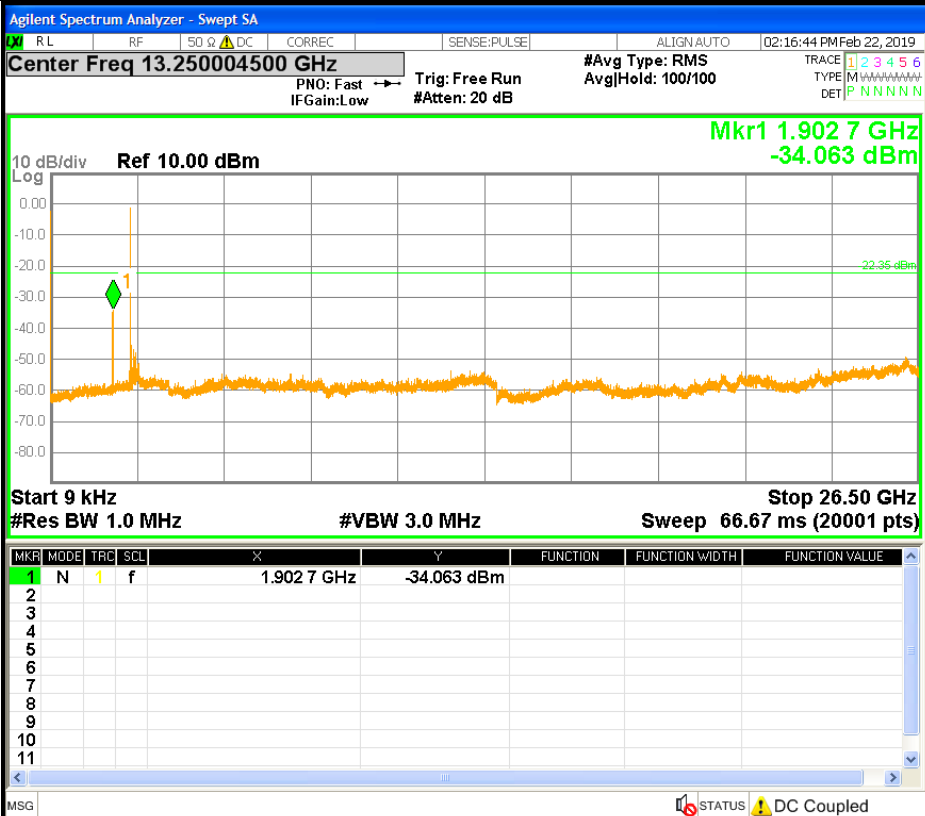
Frequency	
Auto Tune	
Center Freq	13.250004500 GHz
Start Freq	9.000 kHz
Stop Freq	26.500000000 GHz
CF Step	2.649999100 GHz
Auto	Man
Freq Offset	0 Hz



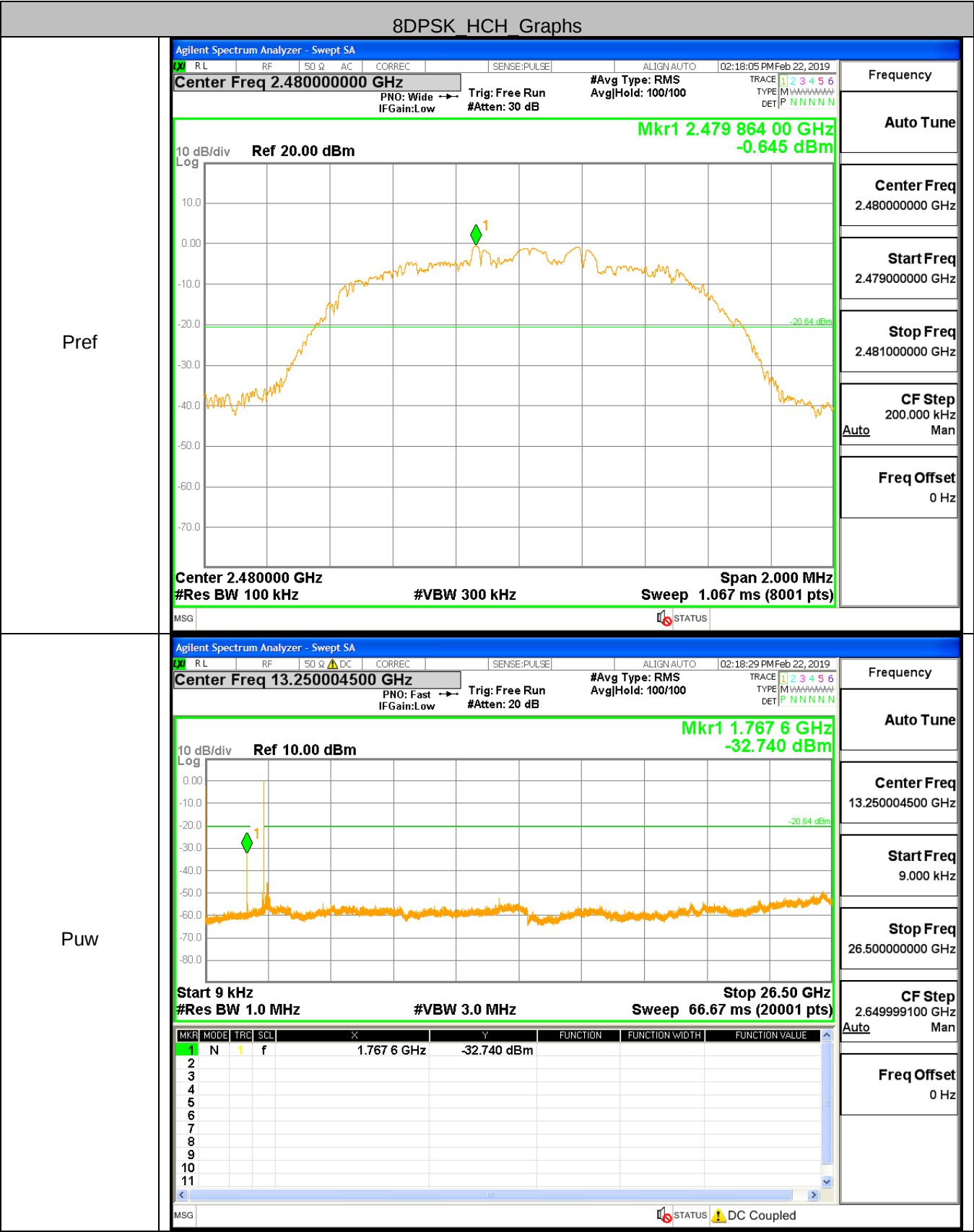
8DPSK MCH Graphs



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



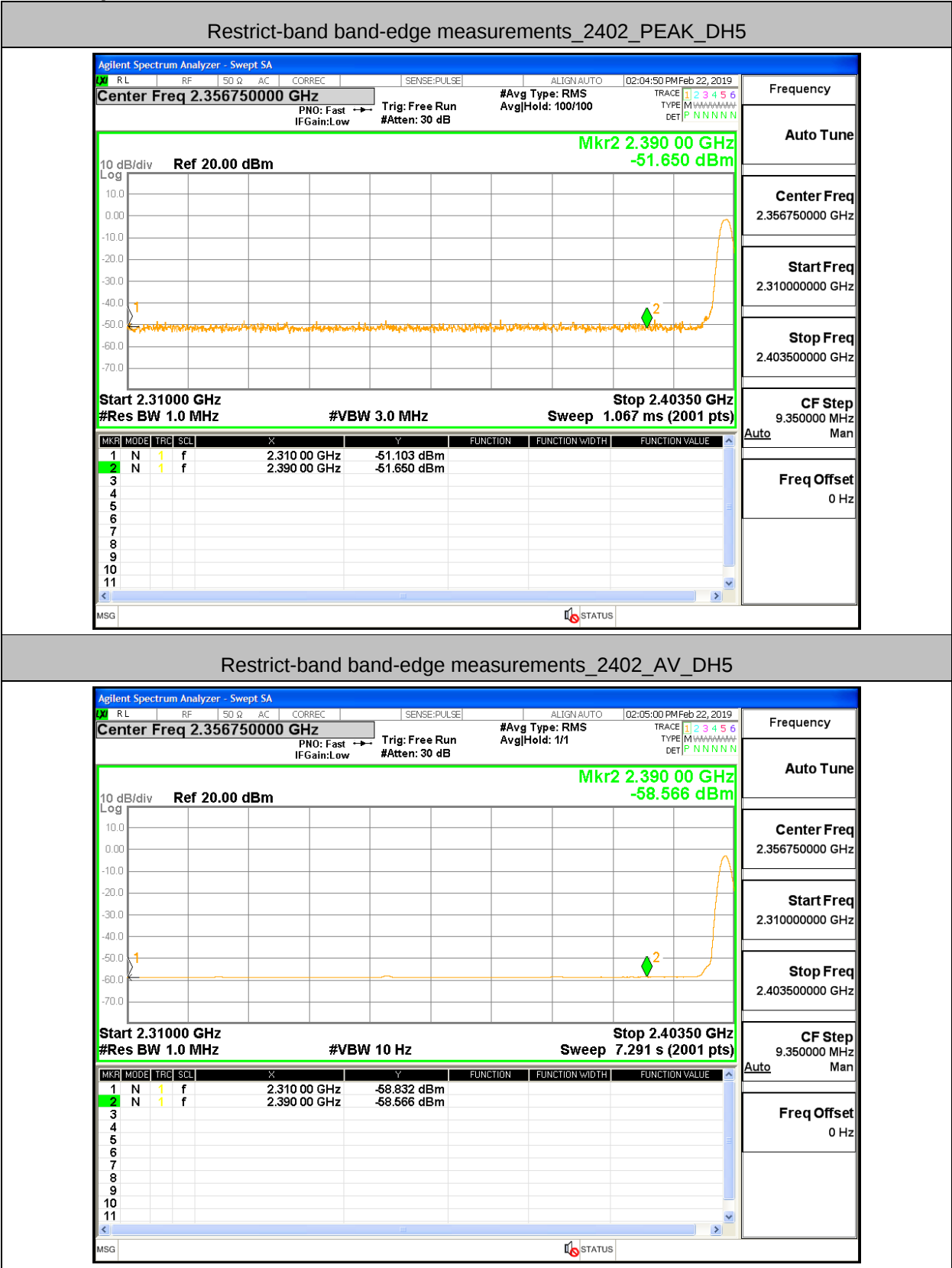
Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz <u>Auto</u> Man
Freq Offset 0 Hz



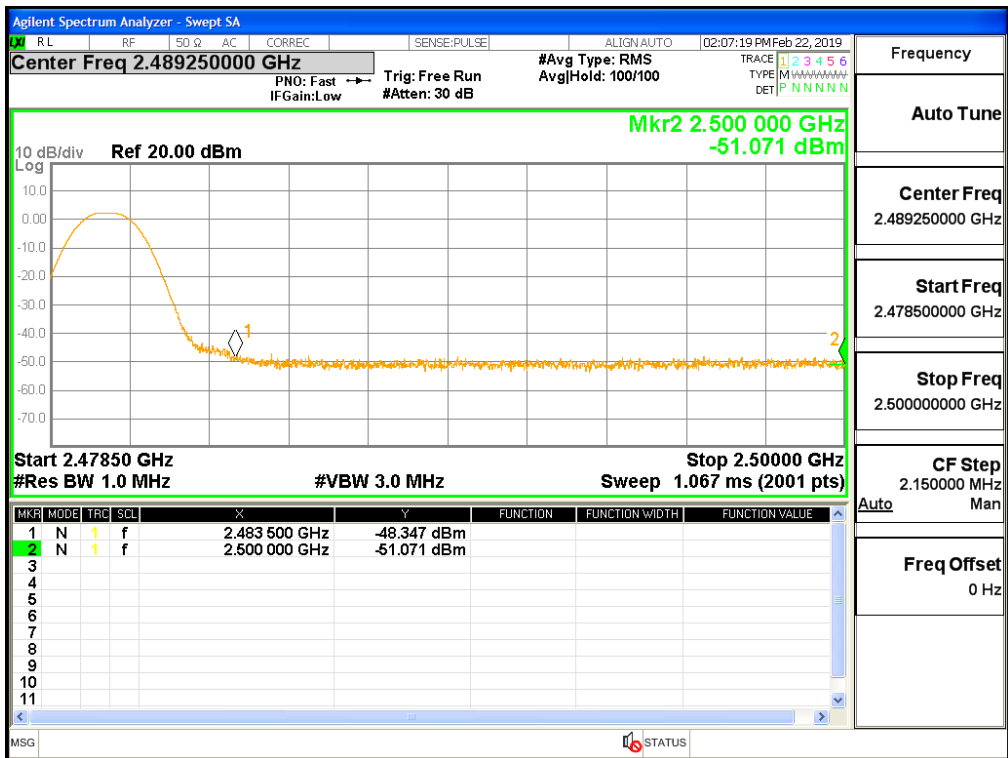
A.8 Restrict-band measurements

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	-51.1	46.1	74	-58.83	38.37	54	Pass
1DH5	2402	2390	2.00	0.00	-51.65	45.55	74	-58.57	38.63	54	Pass
1DH5	2480	2483.5	2.00	0.00	-48.35	48.85	74	-54.3	42.9	54	Pass
1DH5	2480	2500	2.00	0.00	-51.07	46.13	74	-58.03	39.17	54	Pass
2DH5	2402	2310	2.00	0.00	-52.49	44.71	74	-58.85	38.35	54	Pass
2DH5	2402	2390	2.00	0.00	-50.78	46.42	74	-58.59	38.61	54	Pass
2DH5	2480	2483.5	2.00	0.00	-49.95	47.25	74	-55.38	41.82	54	Pass
1DH5	2480	2500	2.00	0.00	-51.03	46.17	74	-58.01	39.19	54	Pass
3DH5	2402	2310	2.00	0.00	-51.64	45.56	74	-58.87	38.33	54	Pass
3DH5	2402	2390	2.00	0.00	-51.76	45.44	74	-58.6	38.6	54	Pass
3DH5	2480	2483.5	2.00	0.00	-50.12	47.08	74	-55.34	41.86	54	Pass
3DH5	2480	2500	2.00	0.00	-50.76	46.44	74	-58	39.2	54	Pass

Test Graph



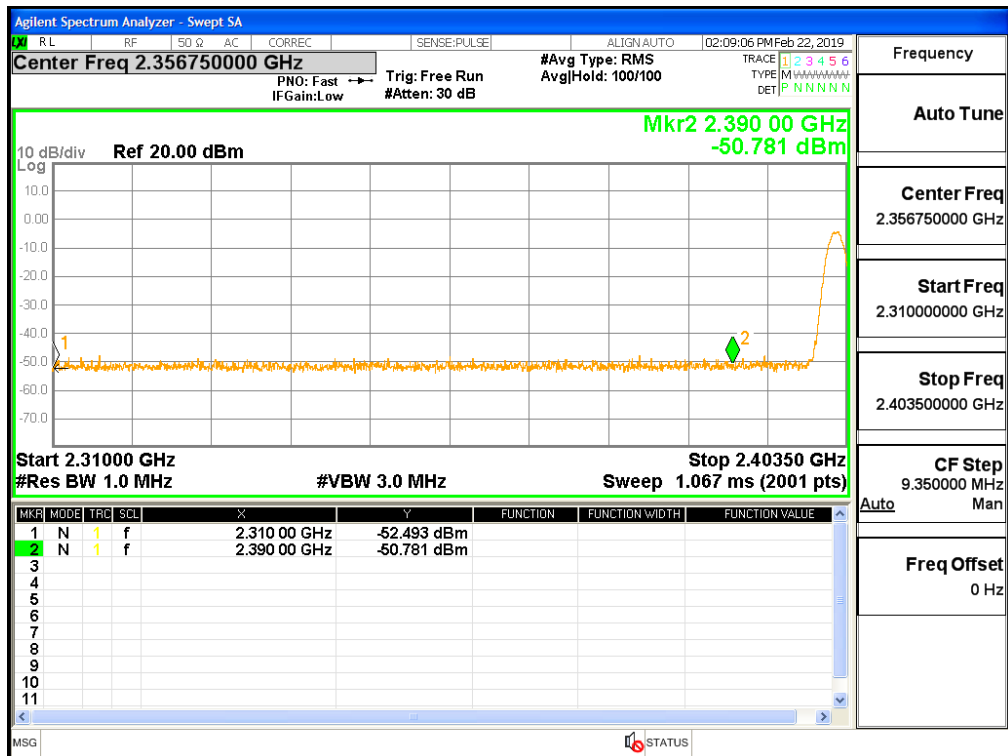
Restrict-band band-edge measurements_2480_PEAK_DH5



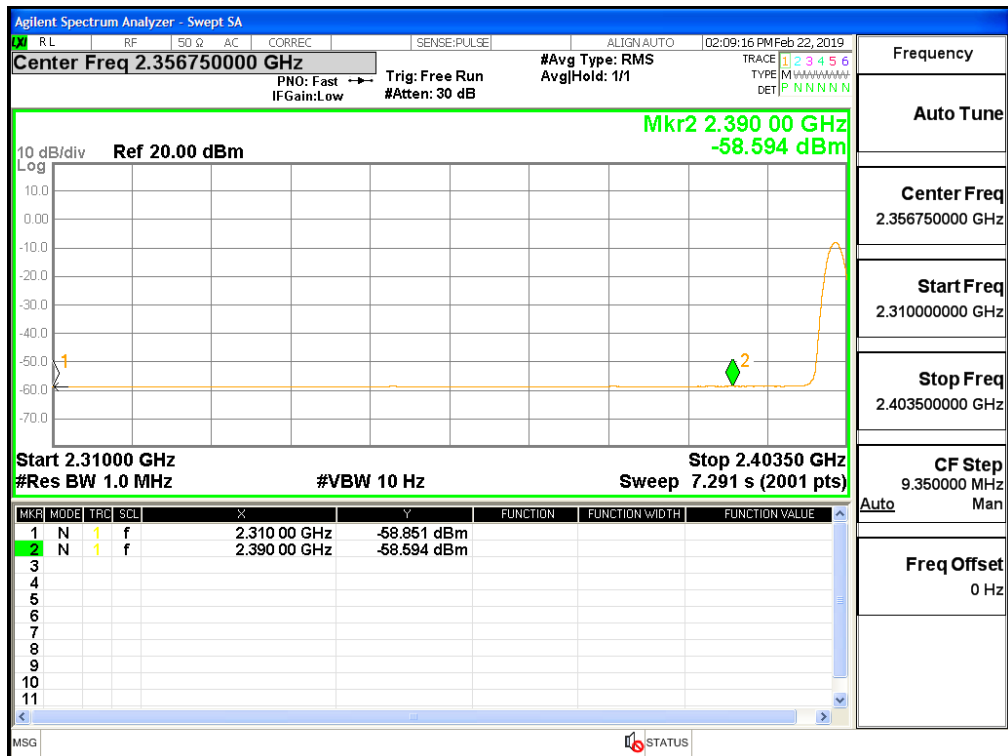
Restrict-band band-edge measurements_2480_AV_DH5



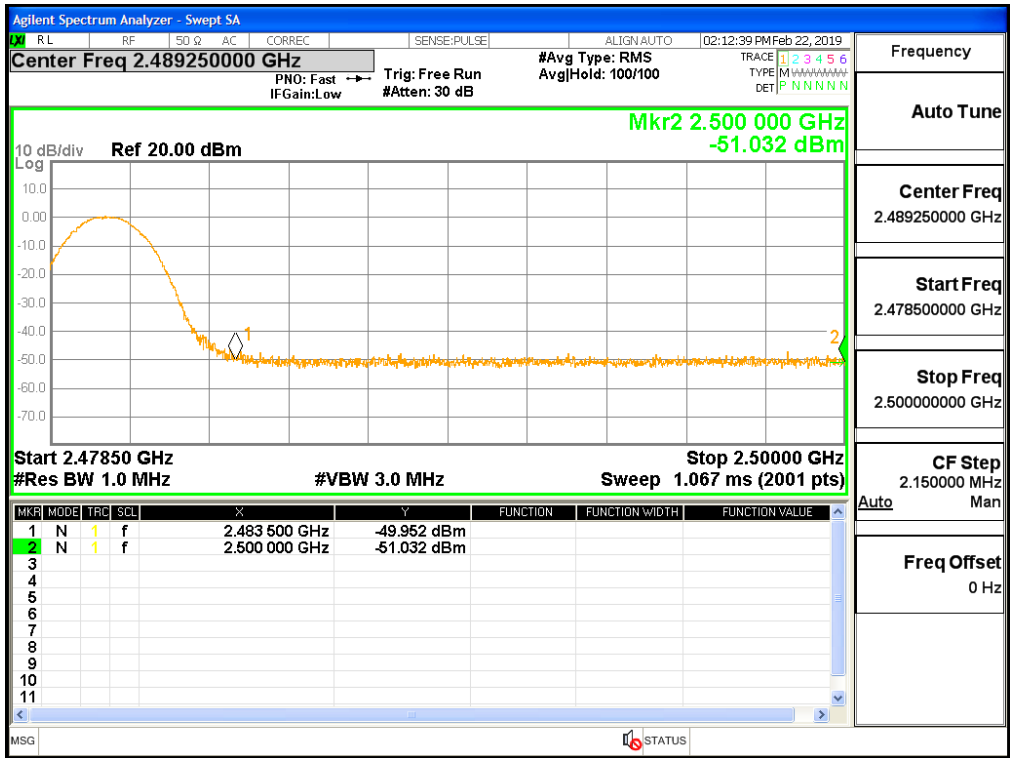
Restrict-band band-edge measurements_2402_PEAK_2DH5



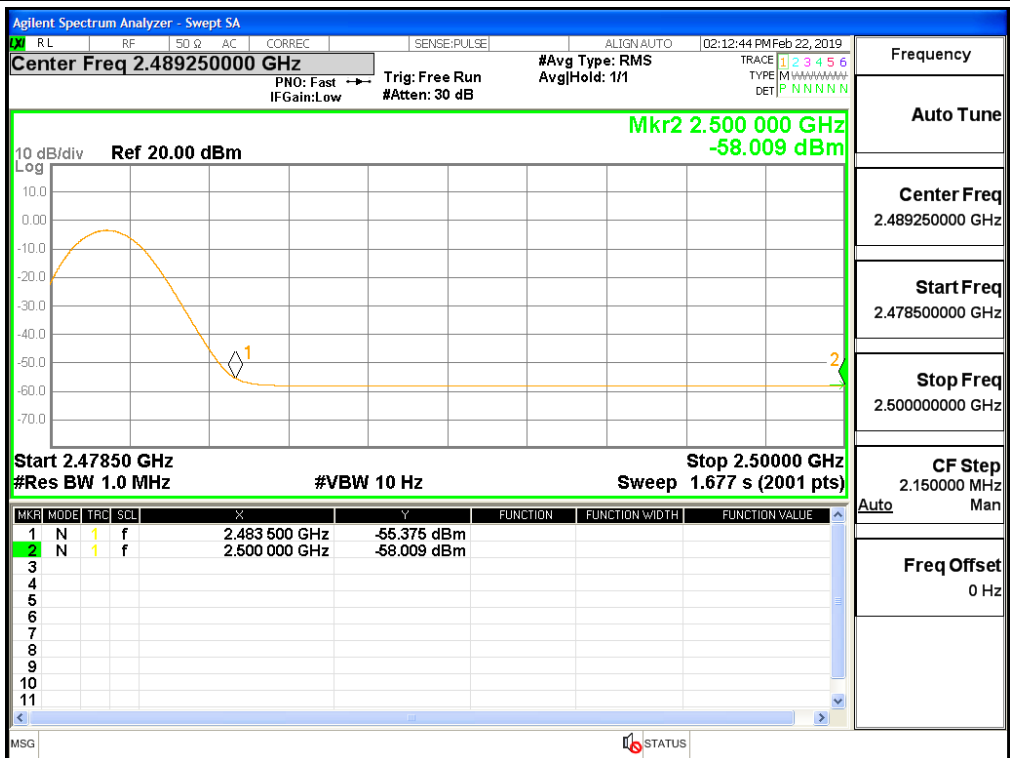
Restrict-band band-edge measurements_2402_AV_2DH5



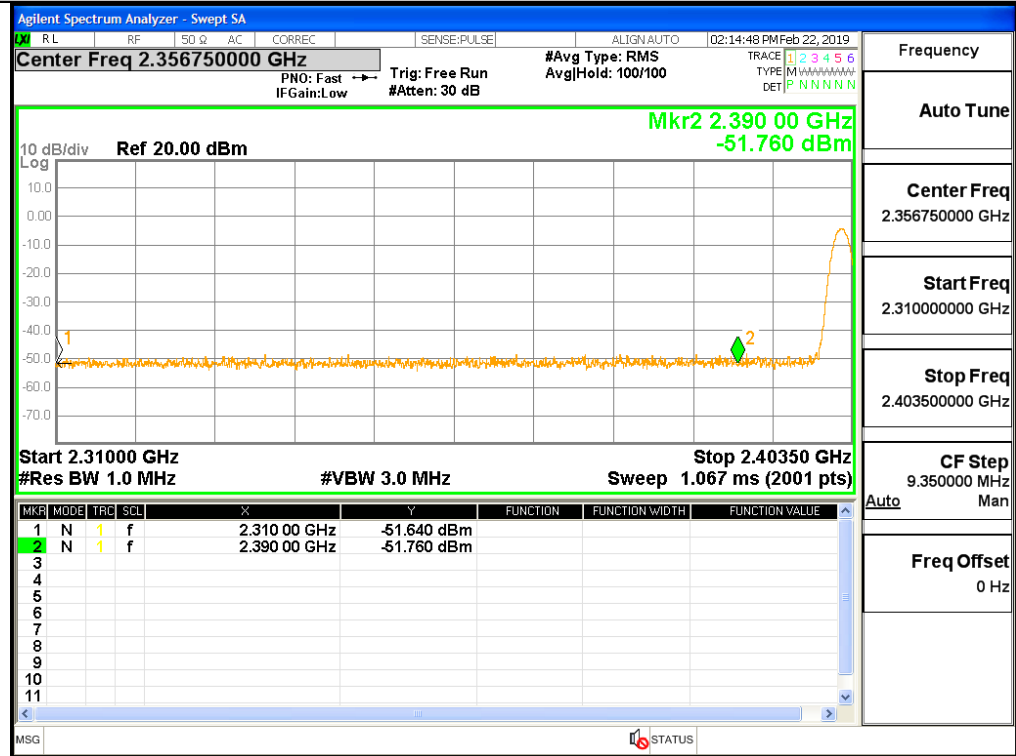
Restrict-band band-edge measurements_2480_PEAK_2DH5



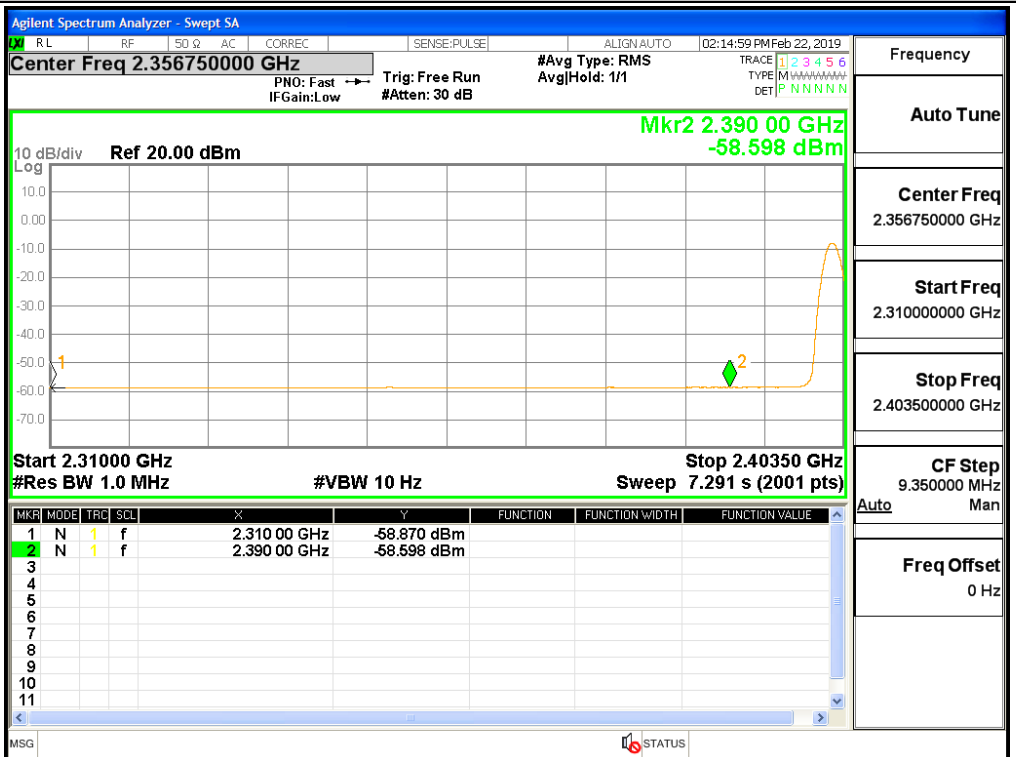
Restrict-band band-edge measurements_2480_AV_2DH5



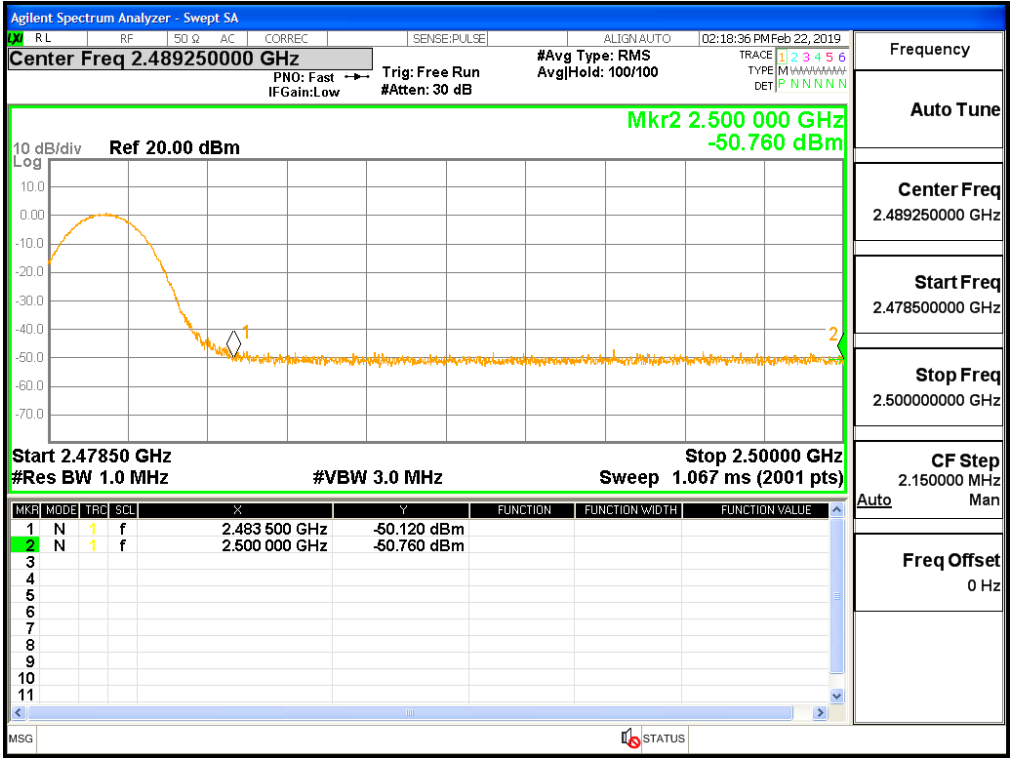
Restrict-band band-edge measurements_2402_PEAK_3DH5



Restrict-band band-edge measurements_2402_AV_3DH5



Restrict-band band-edge measurements_2480_PEAK_3DH5



Restrict-band band-edge measurements_2480_AV_3DH5

