

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

Product Name: Bluetooth headset

Trade Mark: sentry

Test Model: BT930

FCC ID: 2ACP4BT930

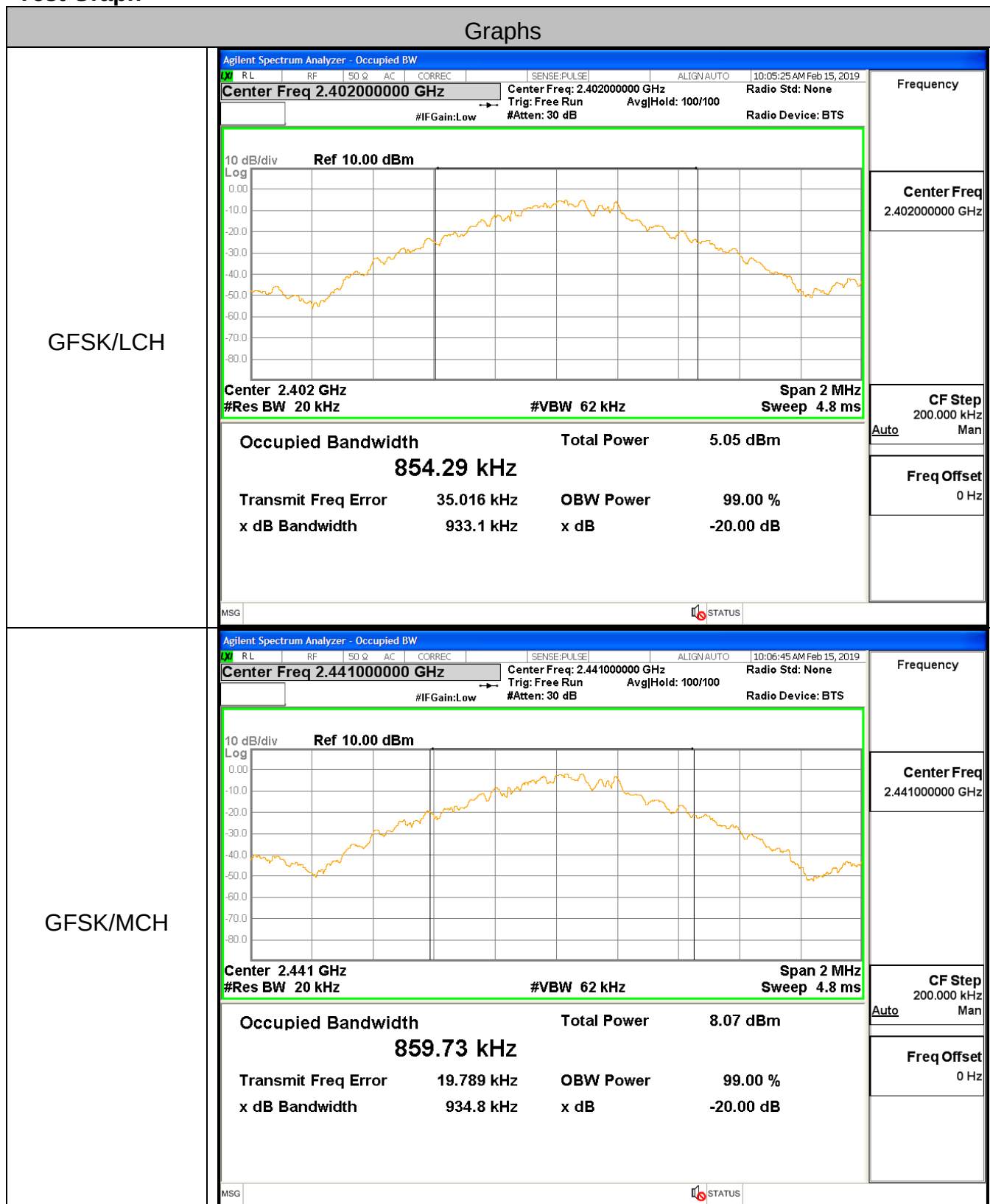
Environmental Conditions

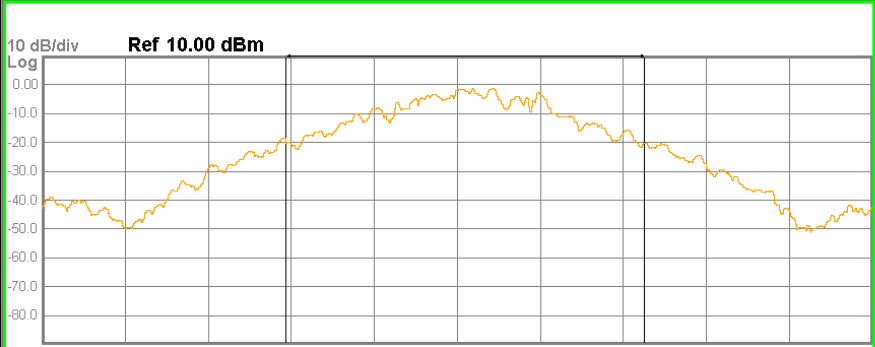
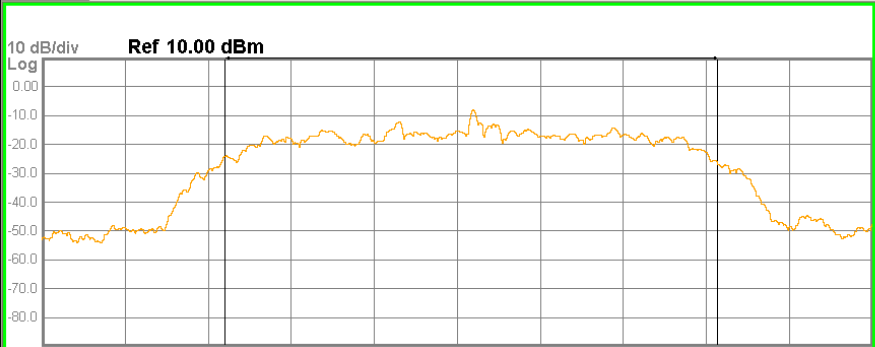
Temperature:	23.1 °C
Relative Humidity:	55%
ATM Pressure:	100.0 kPa
Test Engineer:	Gary Qian
Supervised by:	Eden Hu

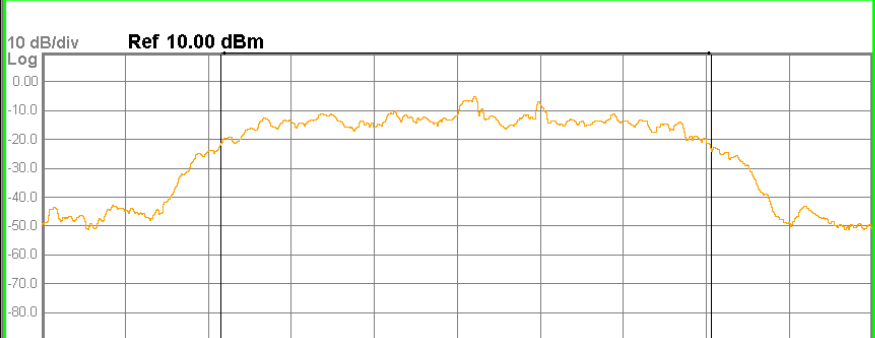
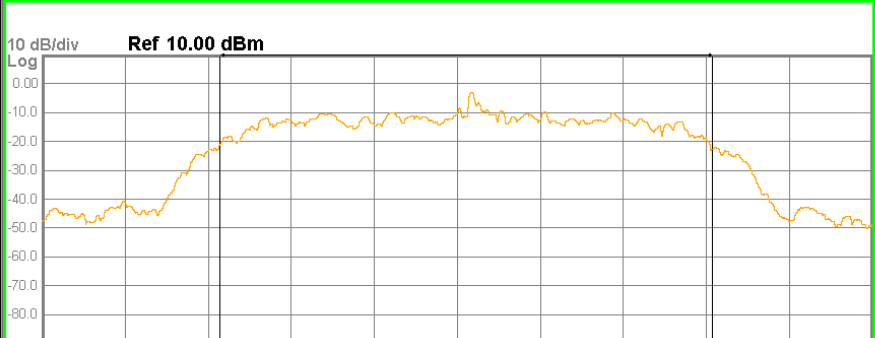
A.1 20 dB Bandwidth

Mode	Channel.	20dB Bandwidth [MHz]	Limit(MHz)	Verdict
GFSK	LCH	0.933	Not Specified	PASS
GFSK	MCH	0.935	Not Specified	PASS
GFSK	HCH	0.939	Not Specified	PASS
$\pi/4$ DQPSK	LCH	1.240	Not Specified	PASS
$\pi/4$ DQPSK	MCH	1.279	Not Specified	PASS
$\pi/4$ DQPSK	HCH	1.229	Not Specified	PASS

Test Graph



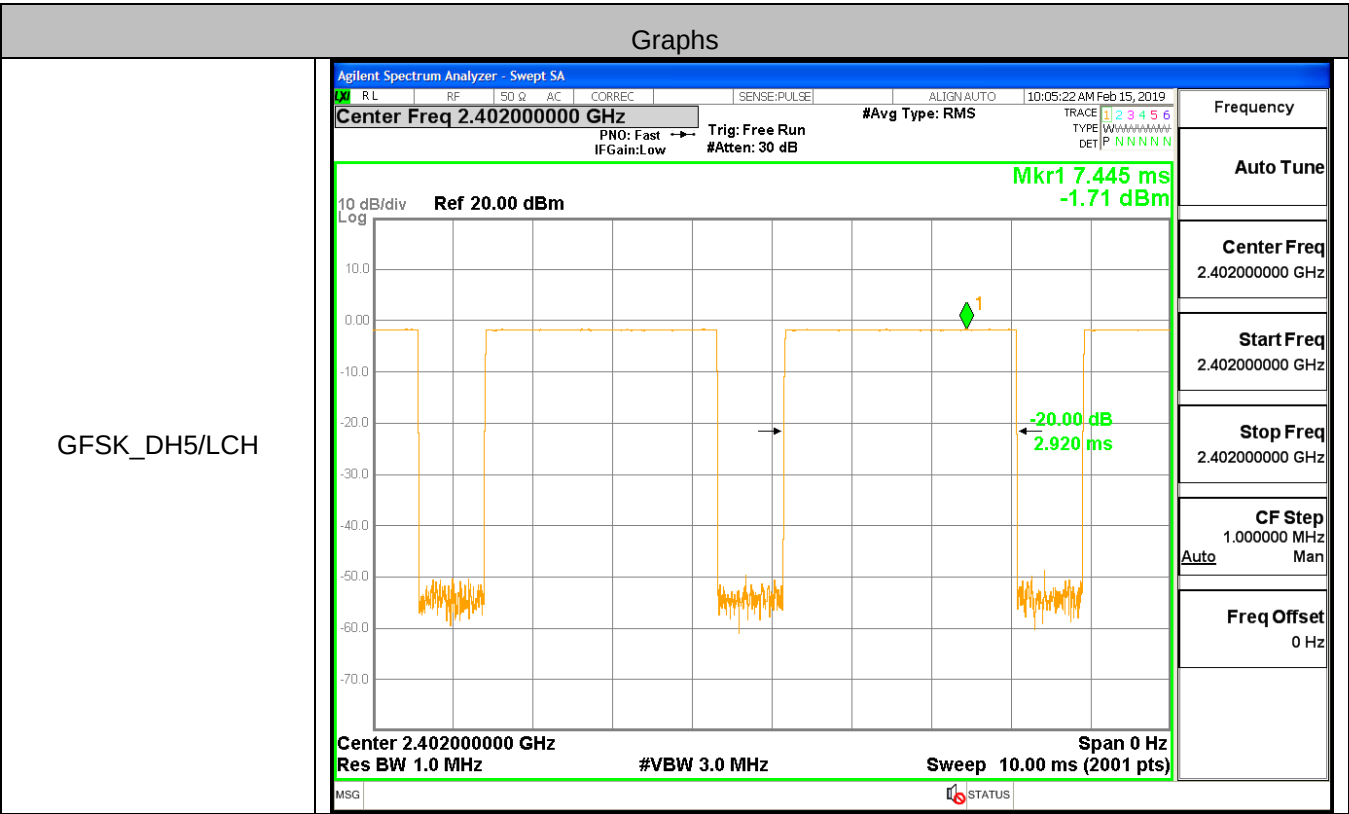
GFSK/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.480000000 GHz #IFGain:Low Center Freq: 2.480000000 GHz Trig: Free Run #Atten: 30 dB Align: AUTO Radio Std: None Radio Device: BTS 10 dB/div Ref 10.00 dBm  Center 2.48 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 860.43 kHz Total Power 8.84 dBm Transmit Freq Error 20.657 kHz OBW Power 99.00 % x dB Bandwidth 939.4 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 Center Freq 2.402000000 GHz #IFGain:Low Center Freq: 2.402000000 GHz Trig: Free Run #Atten: 30 dB Align: AUTO Radio Std: None 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 1.1840 MHz Total Power 0.64 dBm Transmit Freq Error 33.114 kHz OBW Power 99.00 % x dB Bandwidth 1.240 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

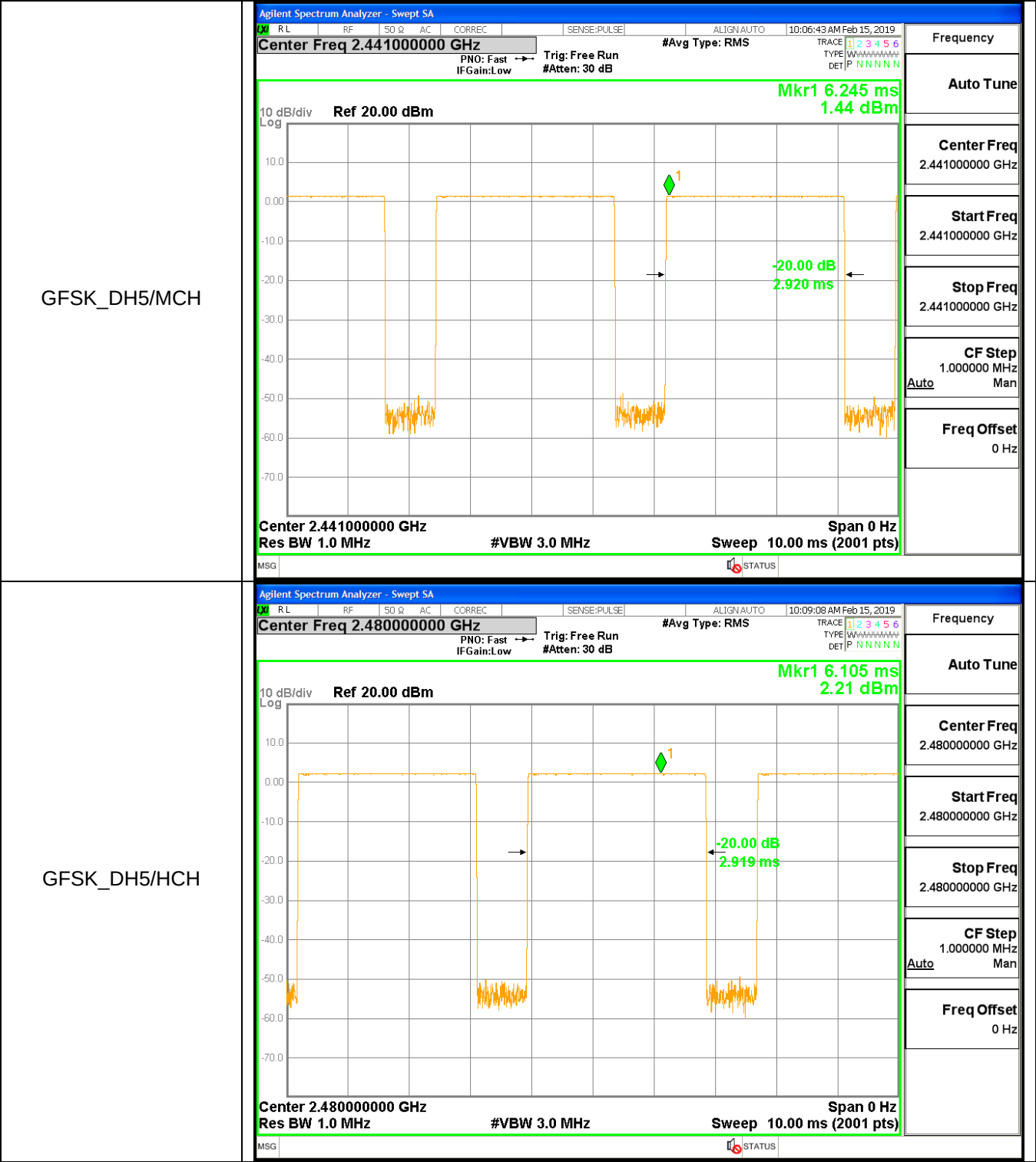
π/4DQPSK/MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.441000000 GHz Center Freq: 2.441000000 GHz Trig: Free Run #IFGain: Low #Atten: 30 dB Radio Std: None Avg/Hold: 100/100 Radio Device: BTS 10 dB/div Ref 10.00 dBm  Center 2.441 GHz #Res BW 20 kHz #VBW 62 kHz Span 2 MHz Sweep 4.8 ms Occupied Bandwidth 1.1768 MHz Total Power 4.40 dBm Transmit Freq Error 21.714 kHz OBW Power 99.00 % x dB Bandwidth 1.279 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 #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 1.1830 MHz Total Power 5.22 dBm Transmit Freq Error 23.121 kHz OBW Power 99.00 % x dB Bandwidth 1.229 MHz x dB -20.00 dB MSG STATUS

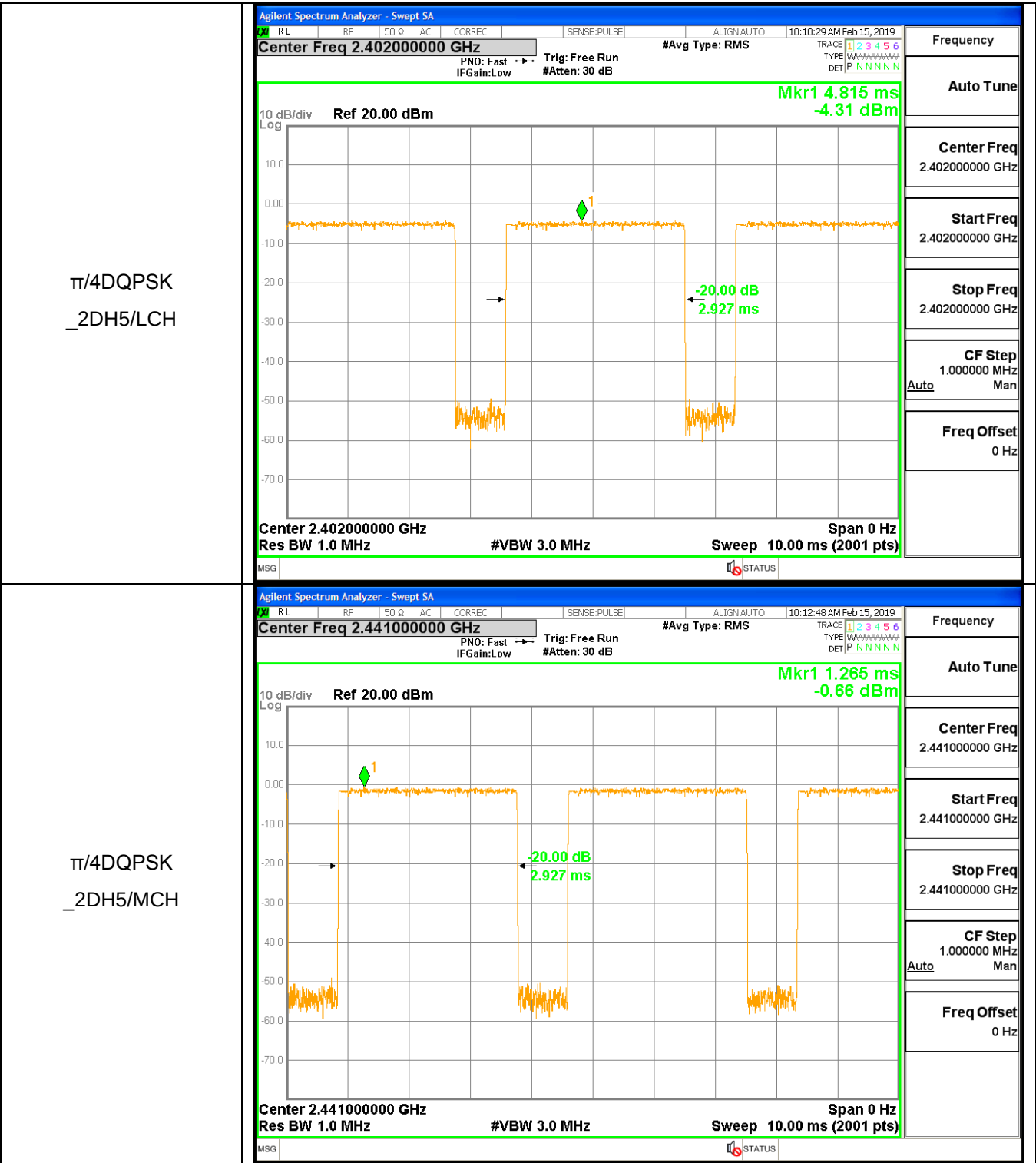
A.2 Dwell Time

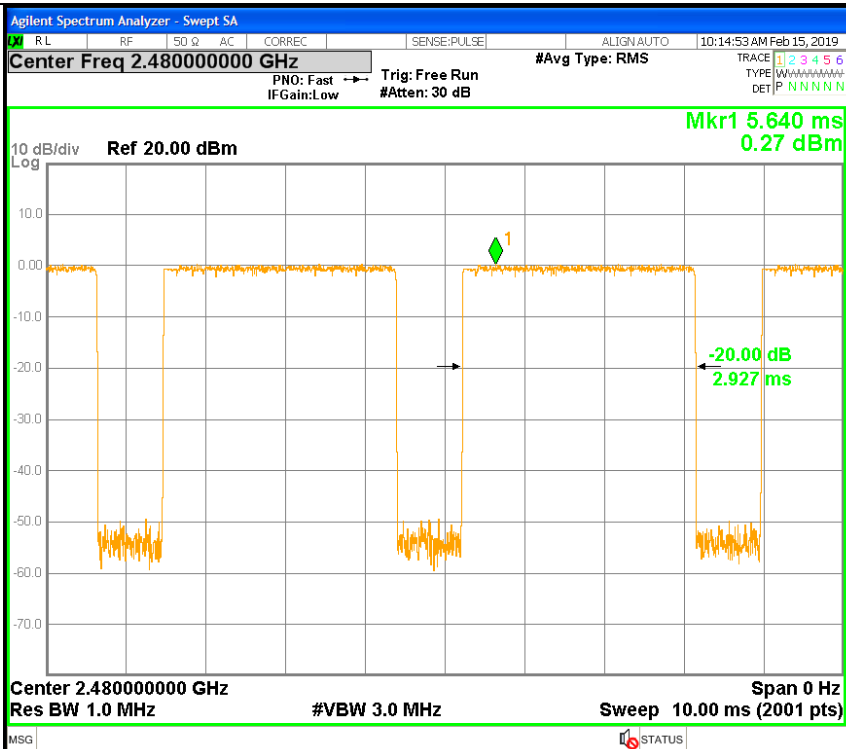
Mode	Packet	Channel	Burst Width [s/hop/ch]	Total Hops[hop*ch]	Dwell Time[s]	Limit [s]	Verdict
GFSK	DH5	LCH	0.002918	106.7	0.3114	0.4	PASS
GFSK	DH5	MCH	0.00292	106.7	0.311548	0.4	PASS
GFSK	DH5	HCH	0.00292	106.7	0.311542	0.4	PASS
$\pi/4$ DQPSK	2DH5	LCH	0.002919	106.7	0.311488	0.4	PASS
$\pi/4$ DQPSK	2DH5	MCH	0.002927	106.7	0.312344	0.4	PASS
$\pi/4$ DQPSK	2DH5	HCH	0.002927	106.7	0.31233	0.4	PASS

Test Graph





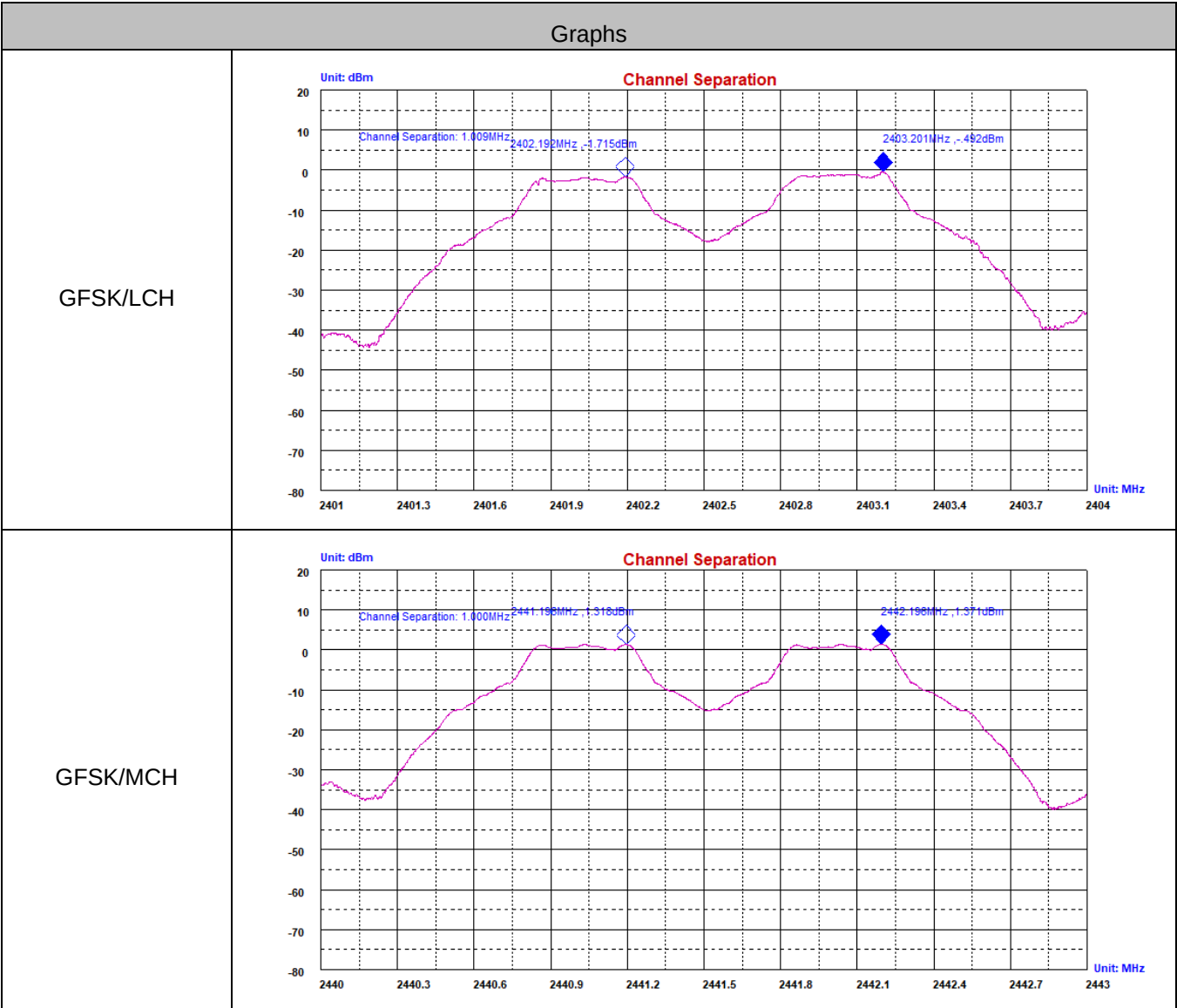


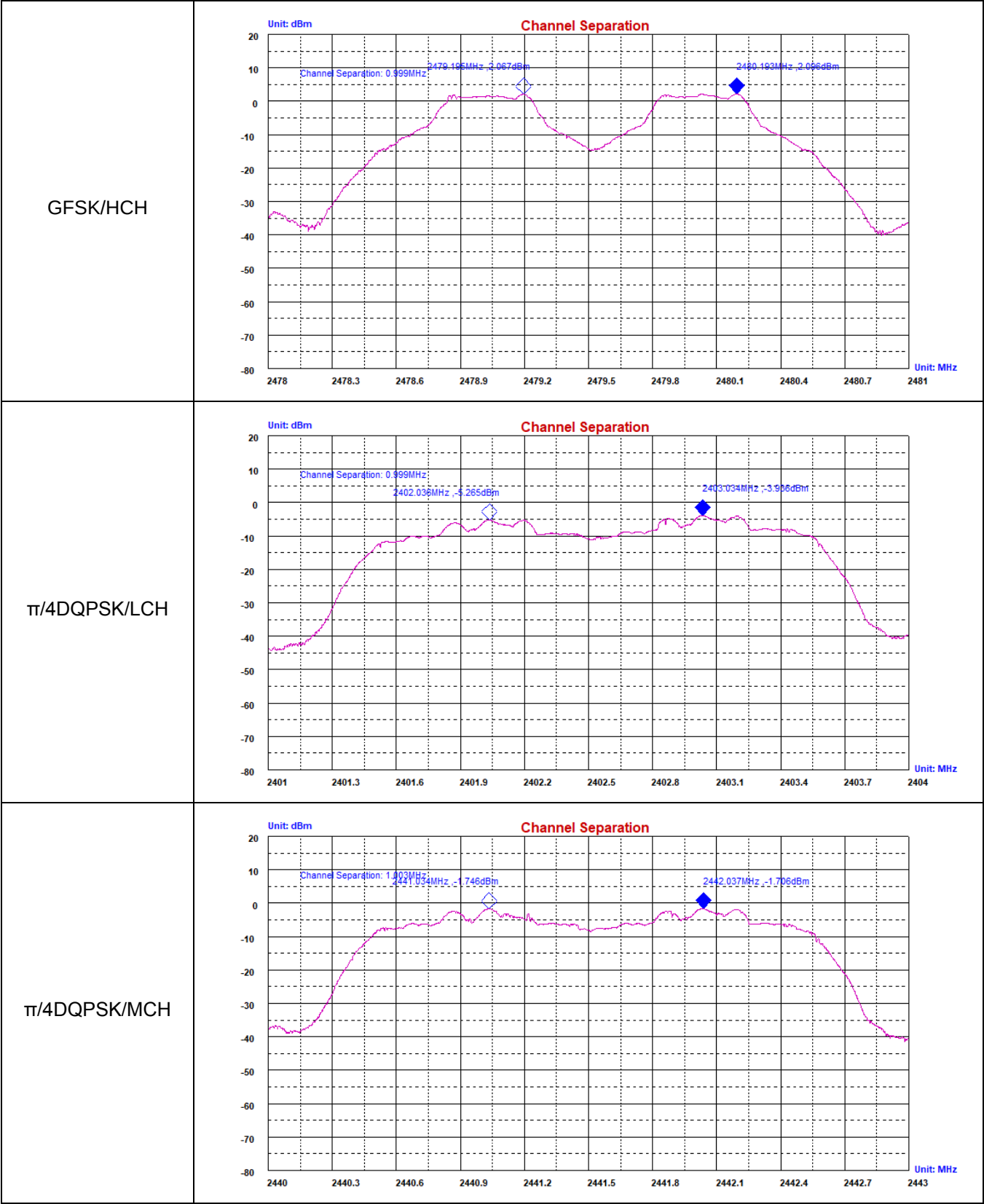


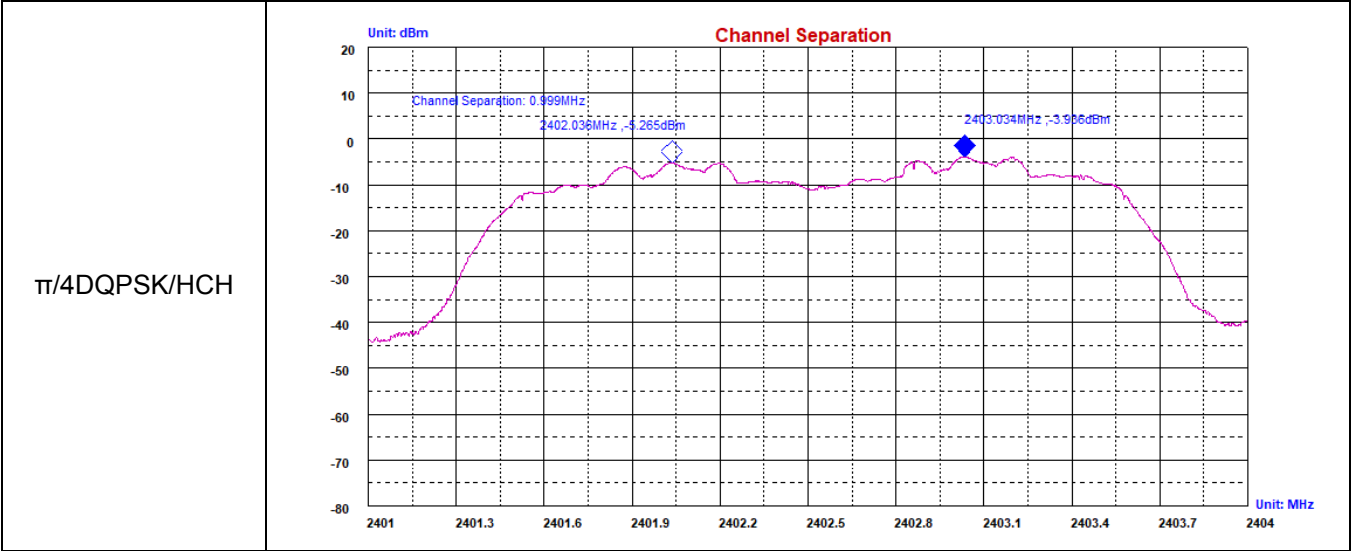
A.3 Carrier Frequency Separation

Mode	Channel.	Carrier Frequency Separation [MHz]	Limit [MHz]	Verdict
GFSK	LCH	1.009	0.622	PASS
GFSK	MCH	1.000	0.623	PASS
GFSK	HCH	0.999	0.626	PASS
π /4DQPSK	LCH	0.999	0.817	PASS
π /4DQPSK	MCH	1.003	0.853	PASS
π /4DQPSK	HCH	1.001	0.819	PASS

Test Graph



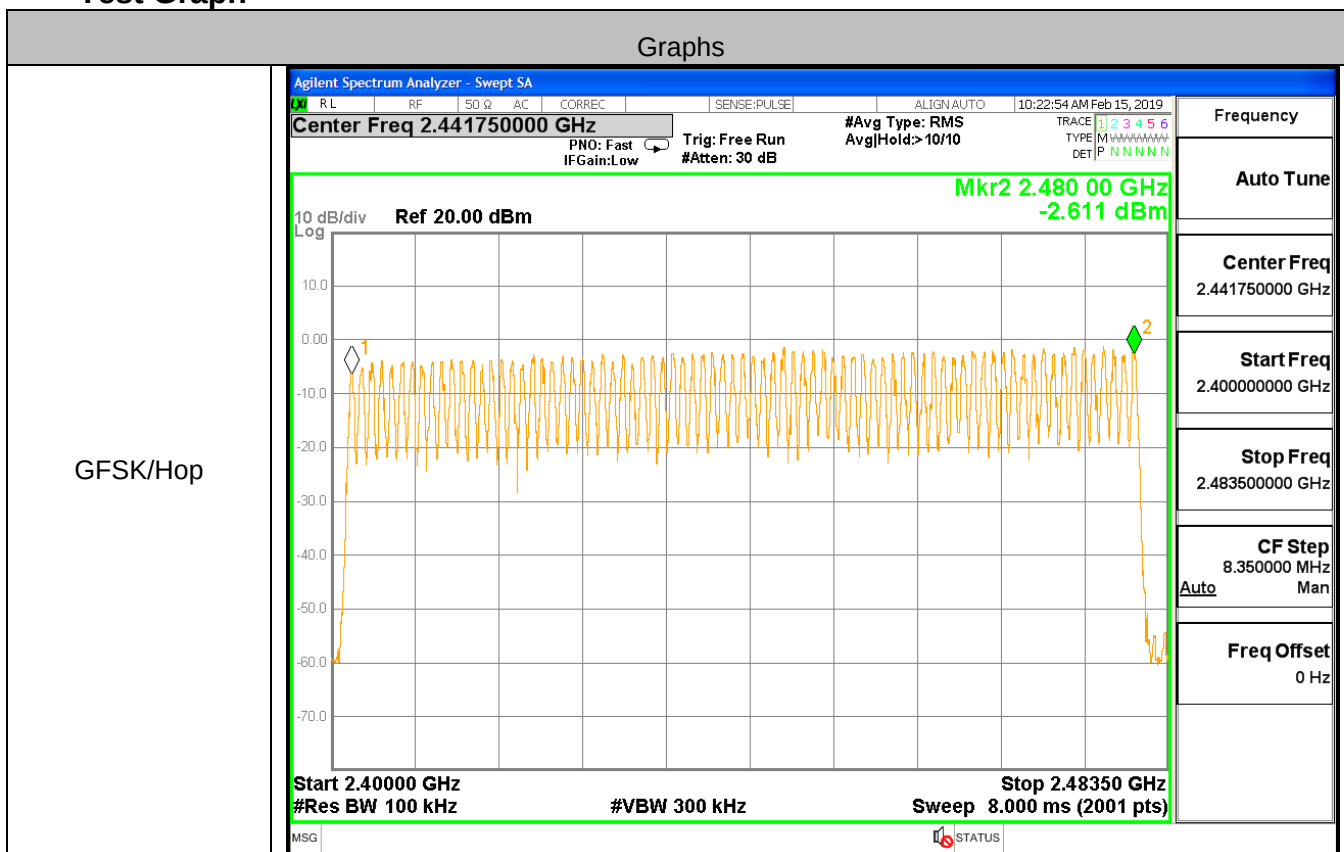


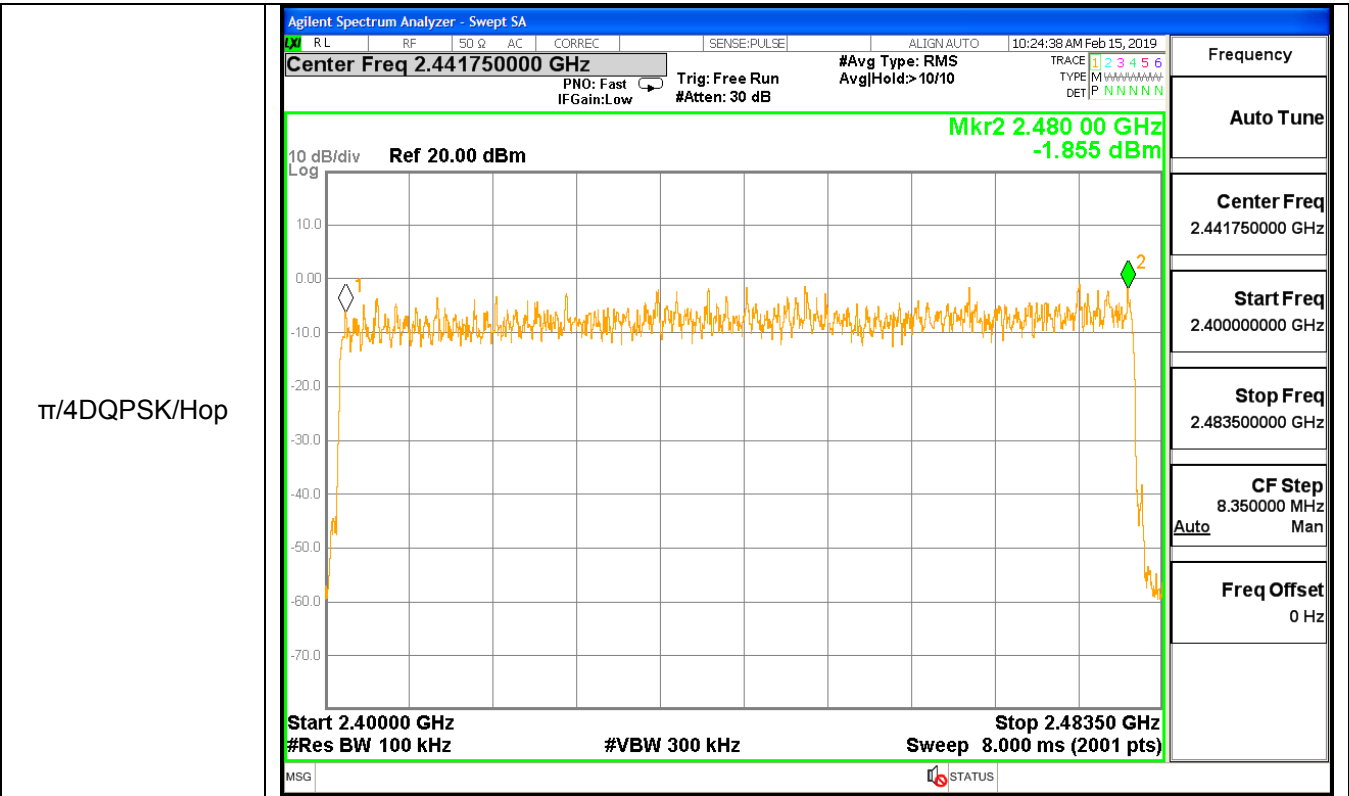


A.4 Hopping Channel Number

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

Test Graph

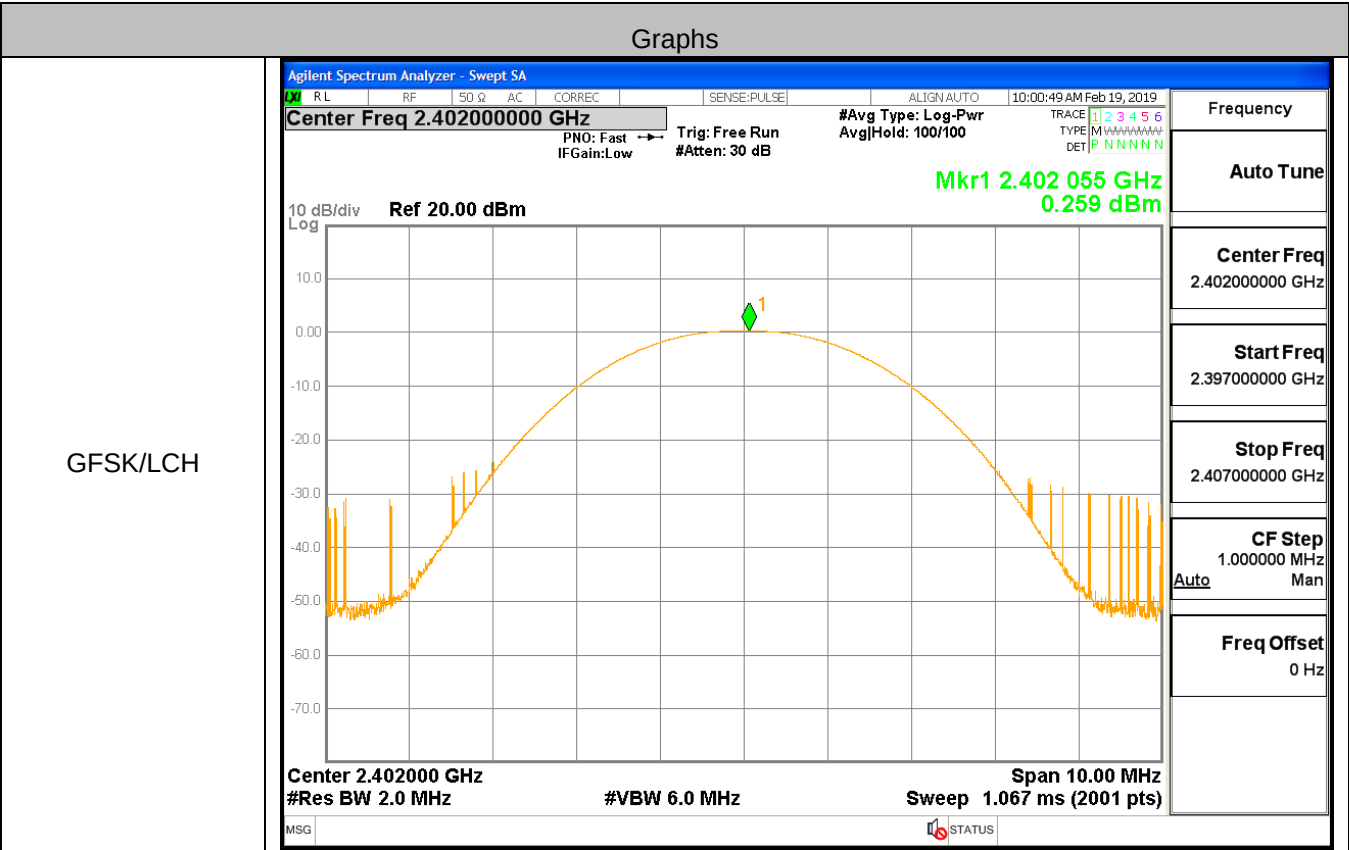


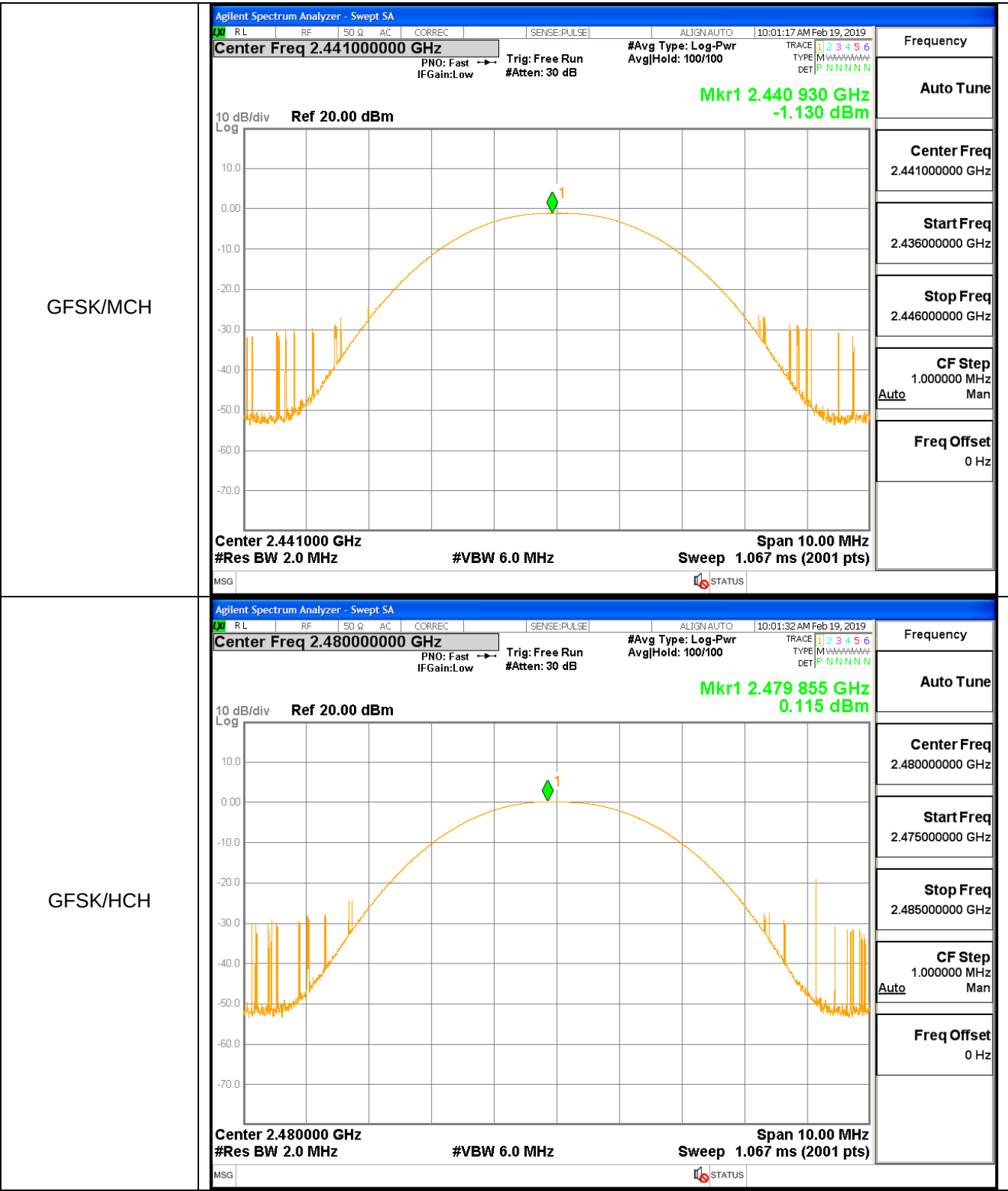


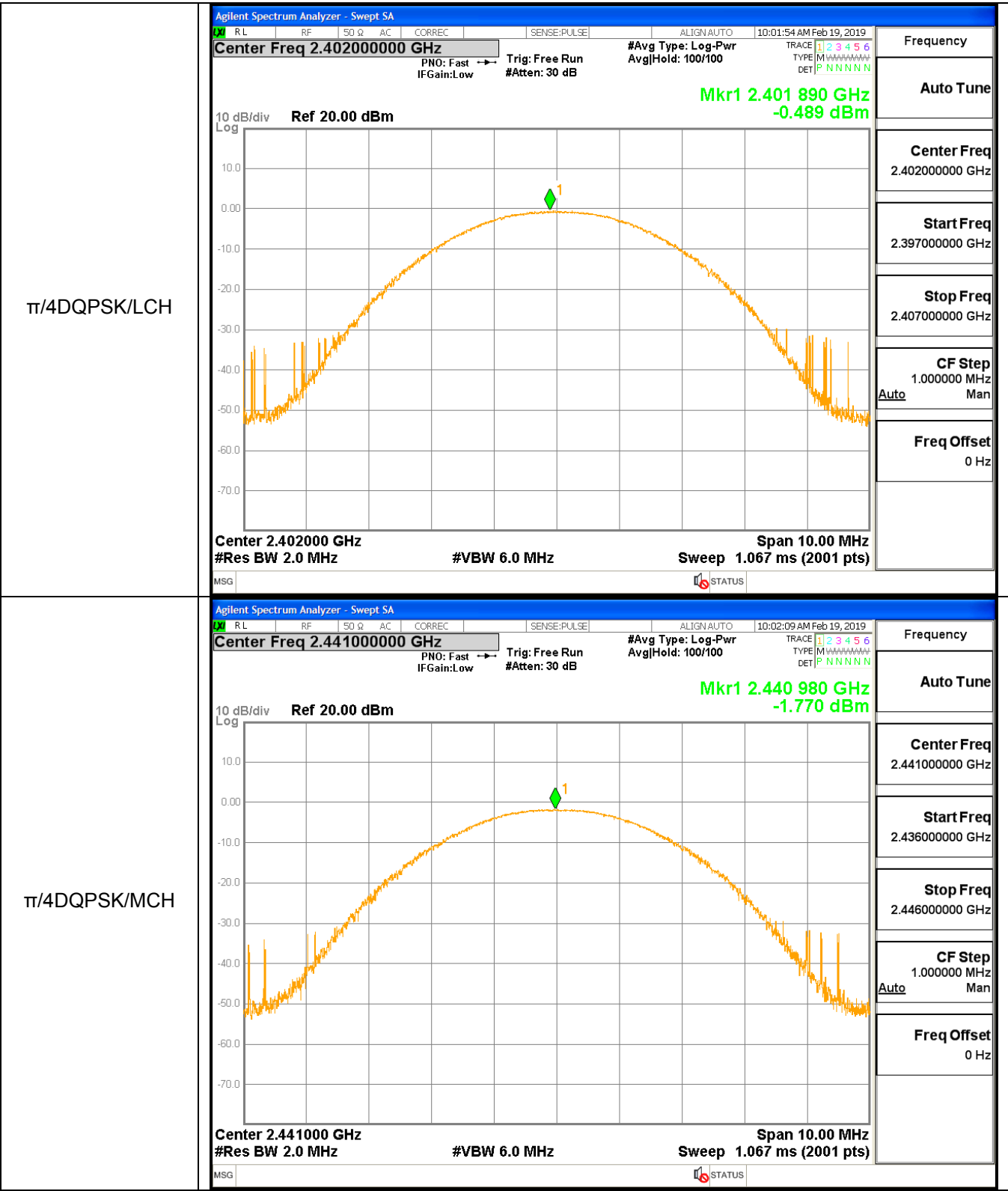
A.5 Conducted Peak Output Power

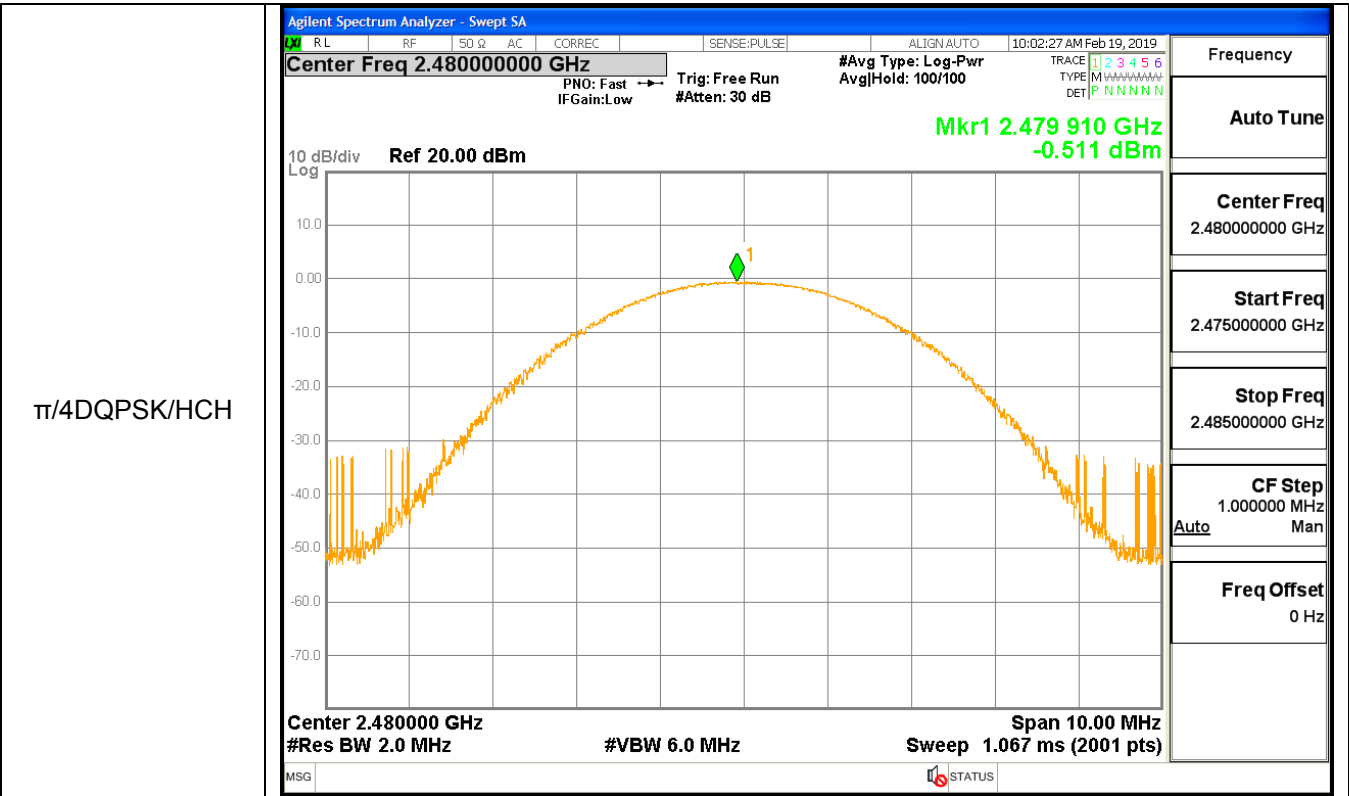
Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
GFSK	LCH	0.259	21	PASS
GFSK	MCH	-1.130	21	PASS
GFSK	HCH	0.115	21	PASS
$\pi/4$ DQPSK	LCH	-0.489	21	PASS
$\pi/4$ DQPSK	MCH	-1.770	21	PASS
$\pi/4$ DQPSK	HCH	-0.511	21	PASS

Test Graph





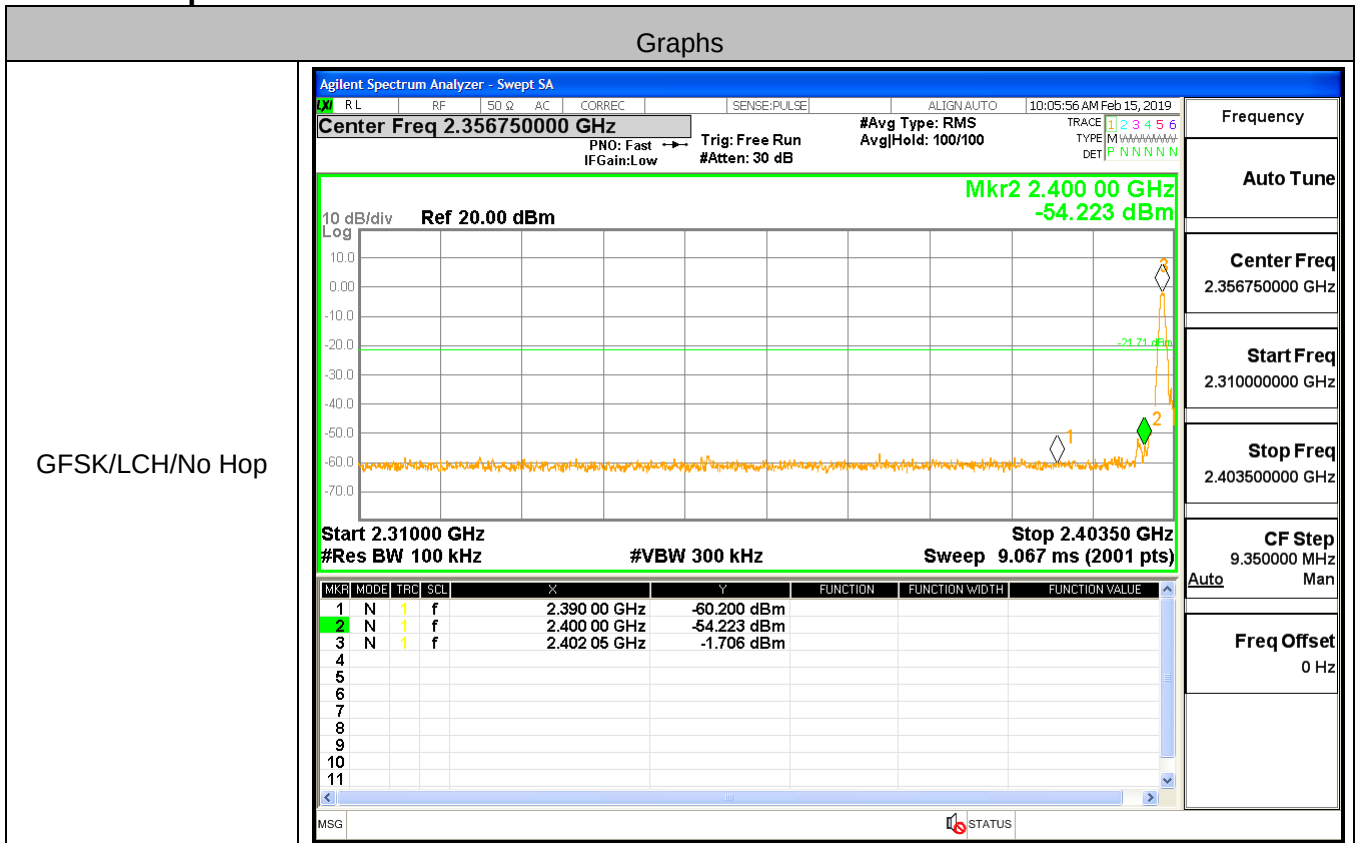


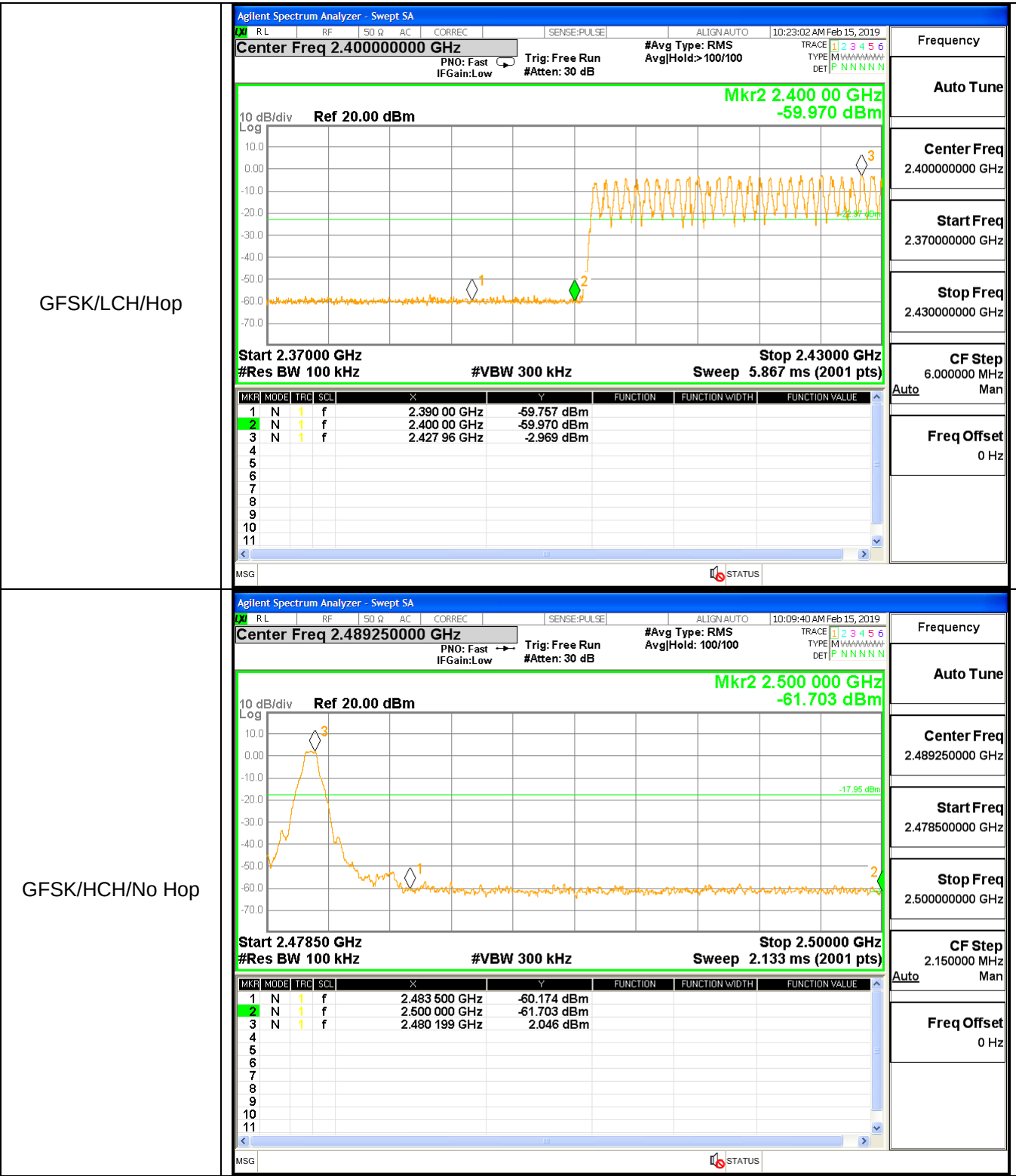


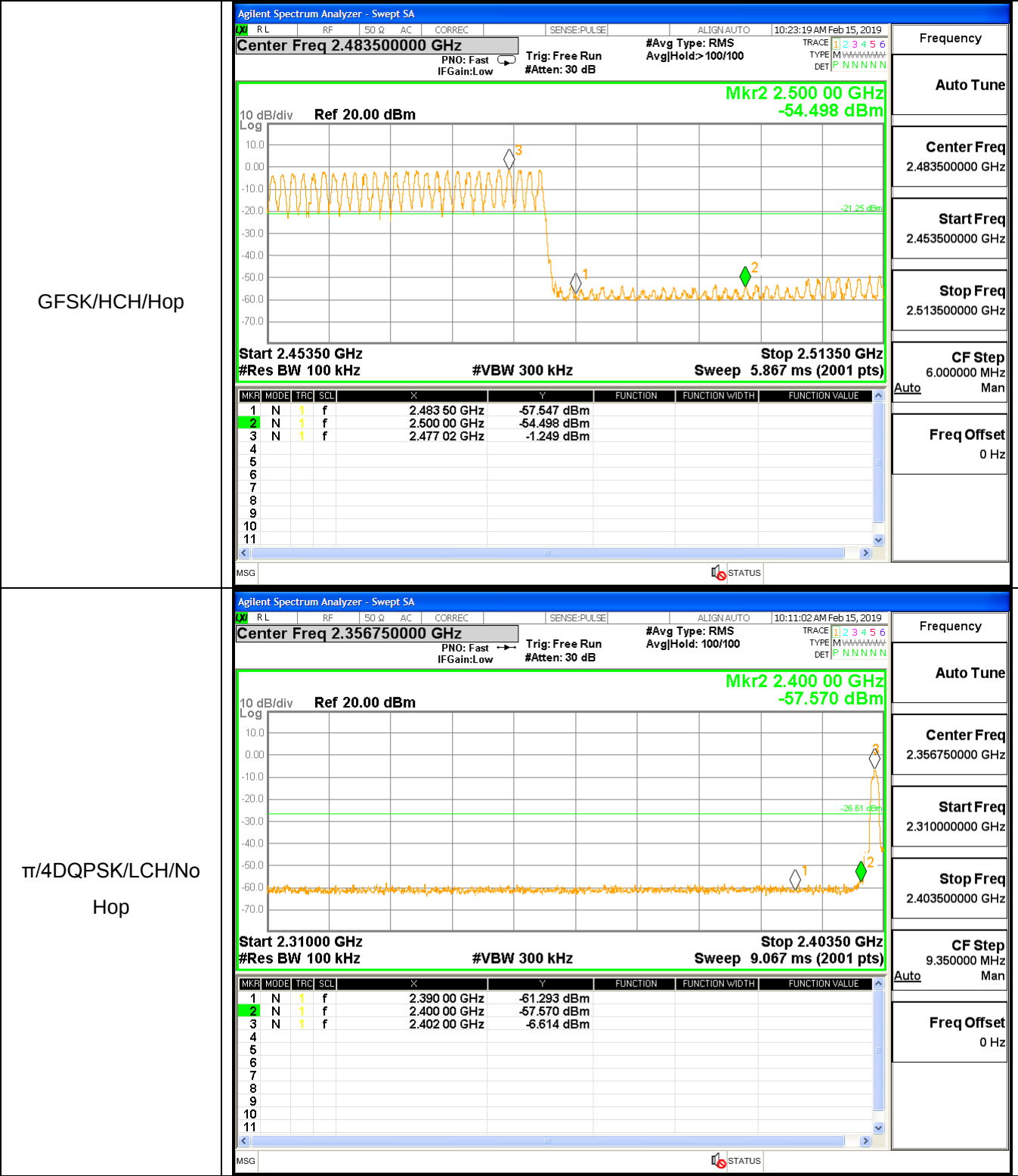
A.6 Band-edge for RF Conducted Emissions

Type	Carrier Frequency(MHz)	Frequency(MHz)	Carrier Frequency Power [dBm]	Bandedge Peak(dBm)	Upper limit(dBm)	Conclusion
1DH5	2402	2390	-1.706	-60.2	-21.706	Pass
1DH5	2402	2400	-1.706	-54.22	-21.706	Pass
1DH5-Hopping	2402	2390	-2.969	-59.76	-22.969	Pass
1DH5-Hopping	2402	2400	-2.969	-59.97	-22.969	Pass
1DH5	2480	2483.5	2.046	-60.17	-17.954	Pass
1DH5	2480	2500	2.046	-61.7	-17.954	Pass
1DH5-Hopping	2480	2483.5	-1.249	-57.55	-21.249	Pass
1DH5-Hopping	2480	2500	-1.249	-54.5	-21.249	Pass
2DH5	2402	2390	-6.614	-61.29	-26.614	Pass
2DH5	2402	2400	-6.614	-57.57	-26.614	Pass
2DH5-Hopping	2480	2483.5	-3.284	-59.98	-23.284	Pass
2DH5-Hopping	2480	2500	-3.284	-58.87	-23.284	Pass
2DH5	2480	2483.5	-4.004	-60.64	-24.004	Pass
2DH5	2480	2500	-4.004	-60	-24.004	Pass
2DH5-Hopping	2402	2390	-3.87	-60.24	-23.87	Pass
2DH5-Hopping	2402	2400	-3.87	-60.86	-23.87	Pass

est Graph







The figure displays two screenshots of an Agilent Spectrum Analyzer interface, showing signal spectra for different modulation schemes.

Screenshot 1 (Top): $\pi/4$ DQPSK/LCH/Hop

- Center Freq:** 2.40000000 GHz
- Mkr2:** 2.400 00 GHz, -59.443 dBm
- Start:** 2.37000 GHz
- Stop:** 2.43000 GHz
- #Res BW:** 100 kHz
- #VBW:** 300 kHz
- Sweep:** 5.867 ms (2001 pts)
- Ref:** 20.00 dBm
- Y-axis:** Log scale, 10 dB/div
- Table Data:**

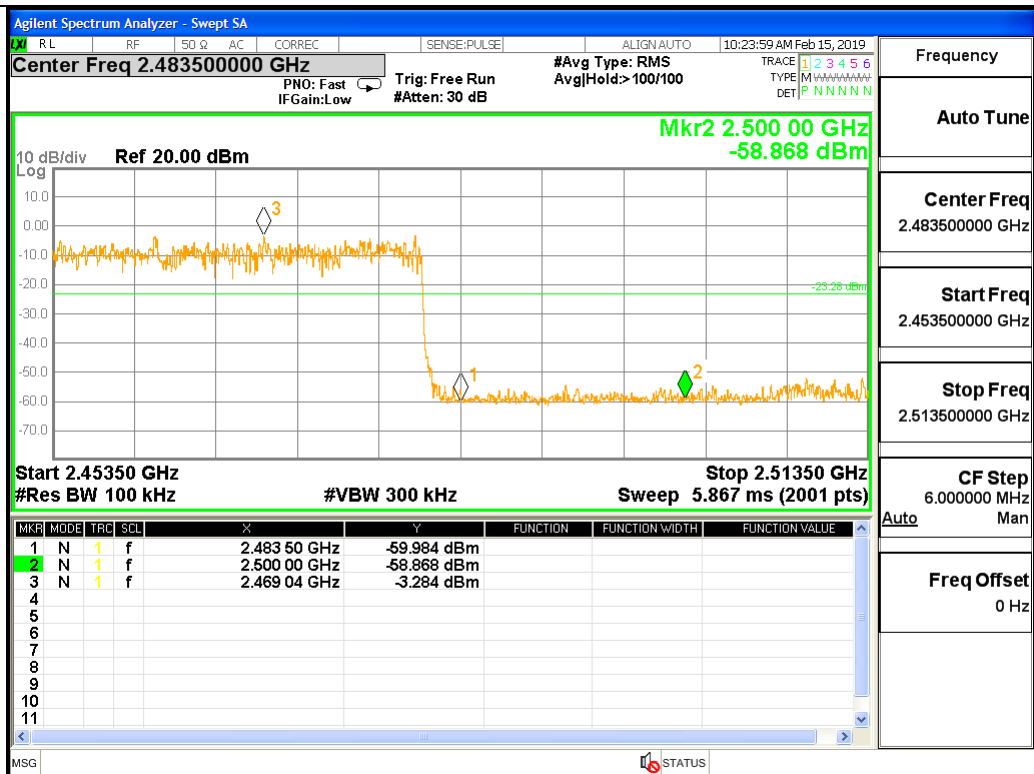
MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.390 00 GHz	-60.235 dBm			
2	N	1	f	2.400 00 GHz	-59.443 dBm			
3	N	1	f	2.415 06 GHz	-3.870 dBm			

Screenshot 2 (Bottom): $\pi/4$ DQPSK/HCH/No Hop

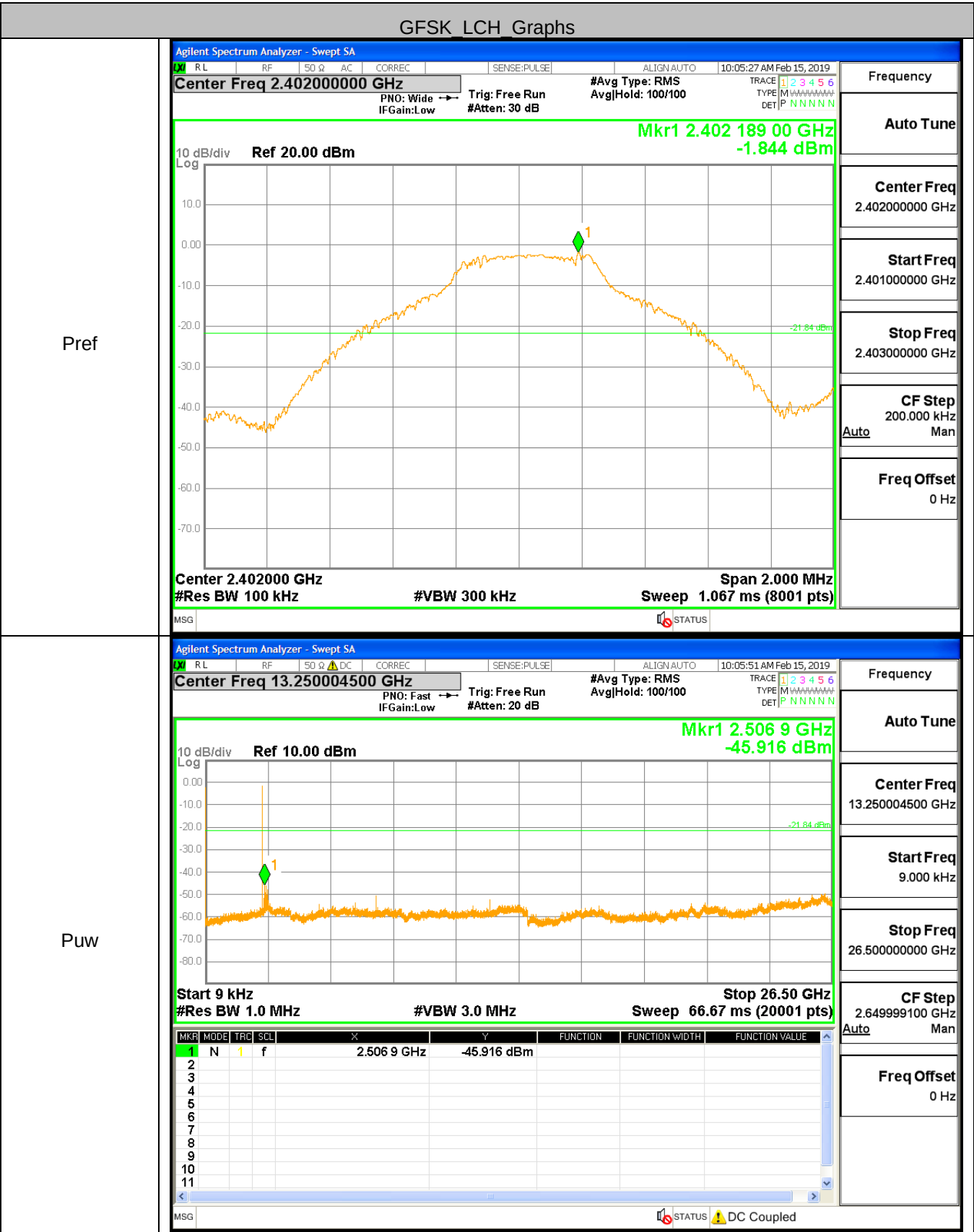
- Center Freq:** 2.489250000 GHz
- Mkr2:** 2.500 000 GHz, -60.001 dBm
- Start:** 2.47850 GHz
- Stop:** 2.50000 GHz
- #Res BW:** 100 kHz
- #VBW:** 300 kHz
- Sweep:** 2.133 ms (2001 pts)
- Ref:** 20.00 dBm
- Y-axis:** Log scale, 10 dB/div
- Table Data:**

MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.483 500 GHz	-60.638 dBm			
2	N	1	f	2.500 000 GHz	-60.001 dBm			
3	N	1	f	2.479 919 GHz	-4.004 dBm			

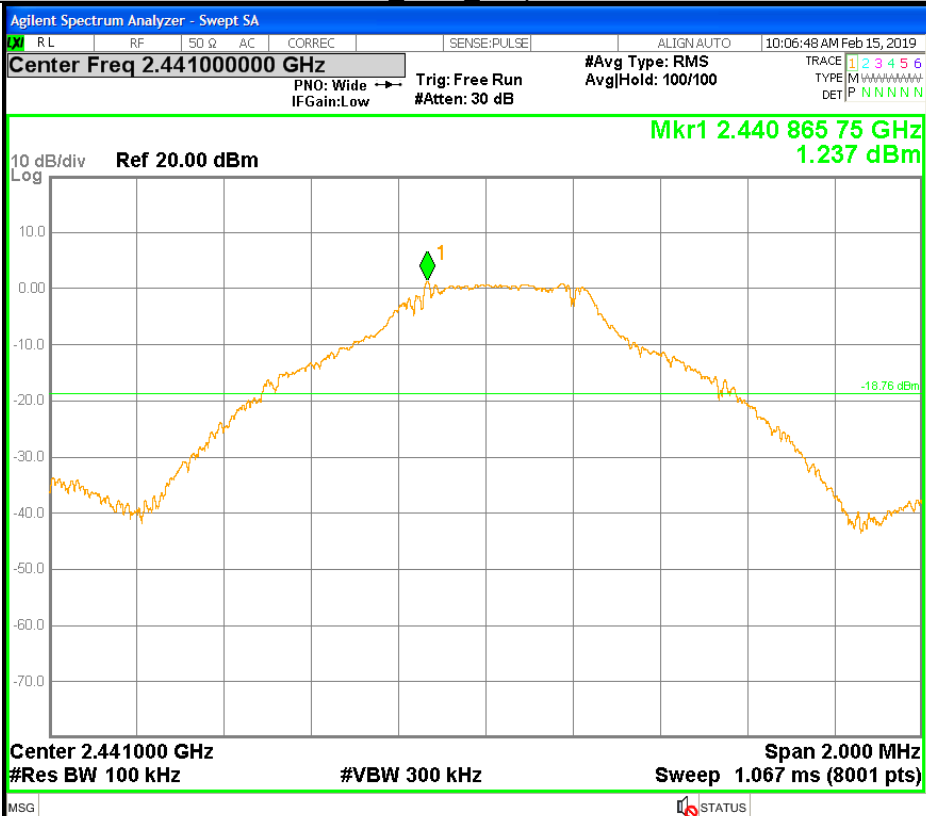
$\pi/4$ DQPSK/HCH/Hop



A.7 RF Conducted Spurious Emissions
Test Graph

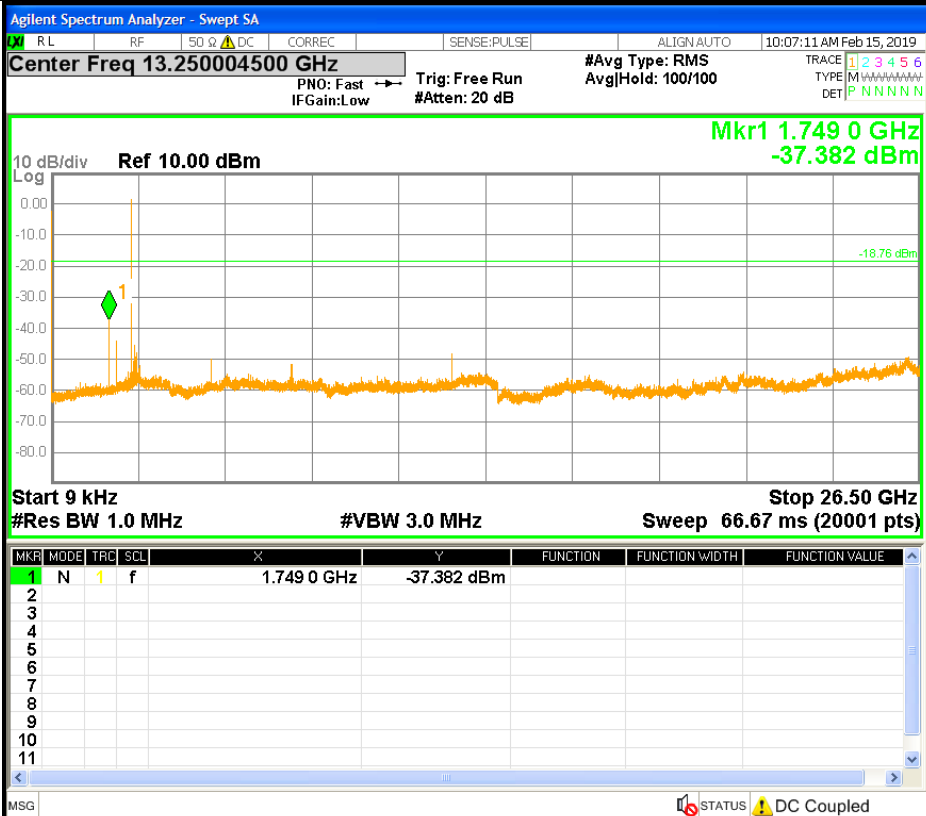


GFSK MCH Graphs



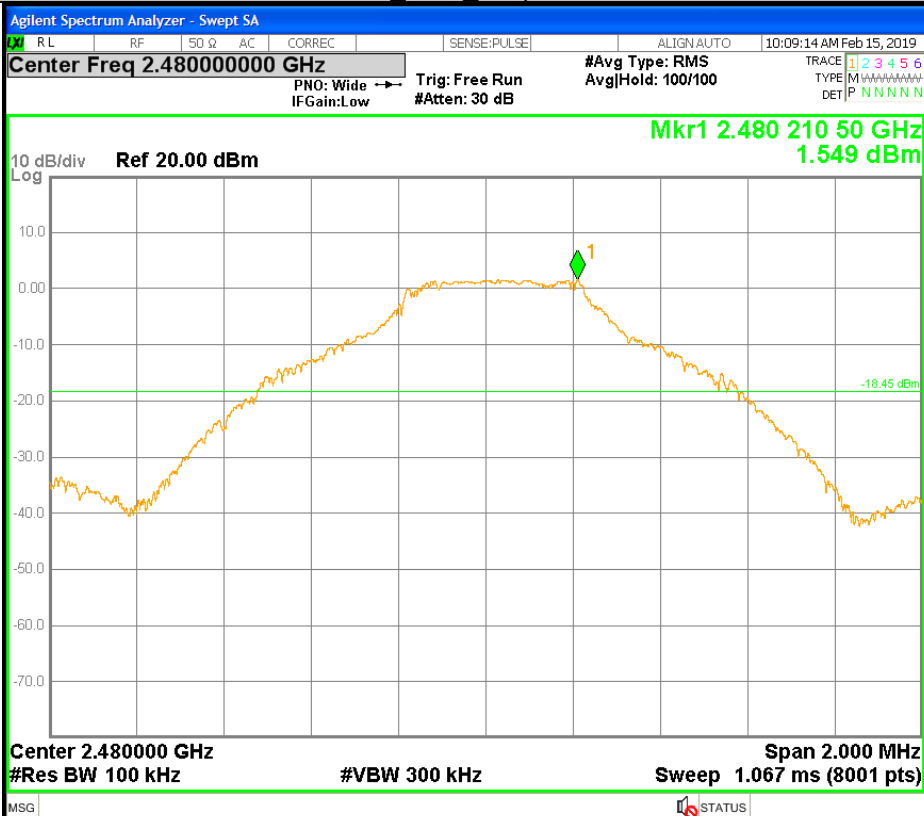
Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.440000000 GHz
Stop Freq 2.442000000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

Puw

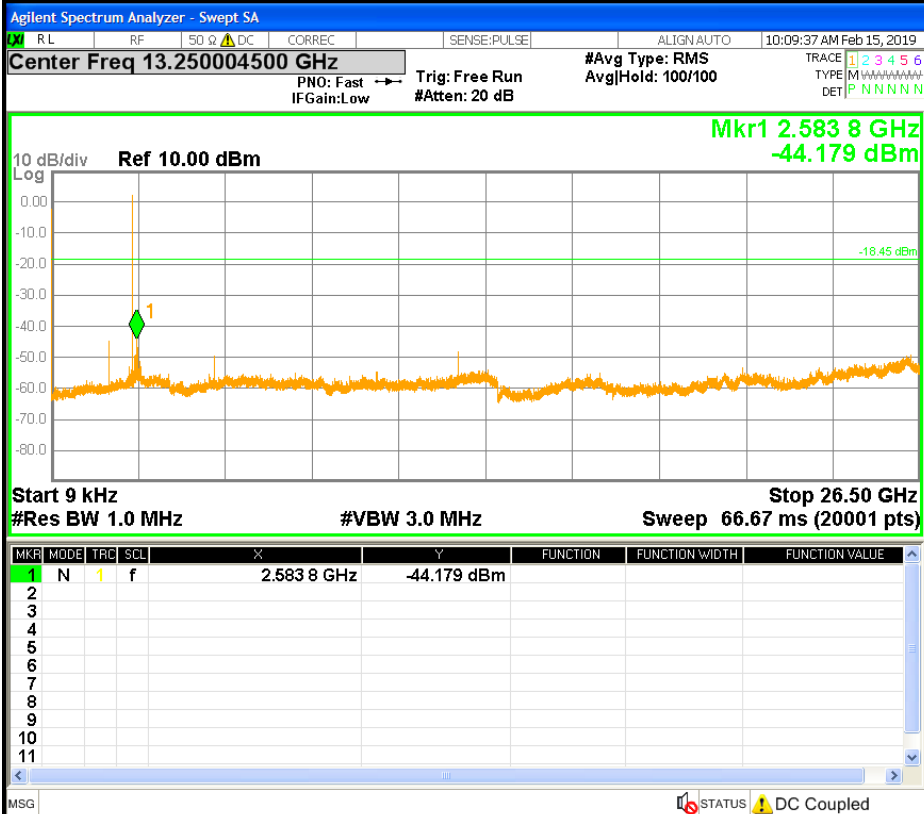


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz Auto Man
Freq Offset 0 Hz

GFSK HCH Graphs

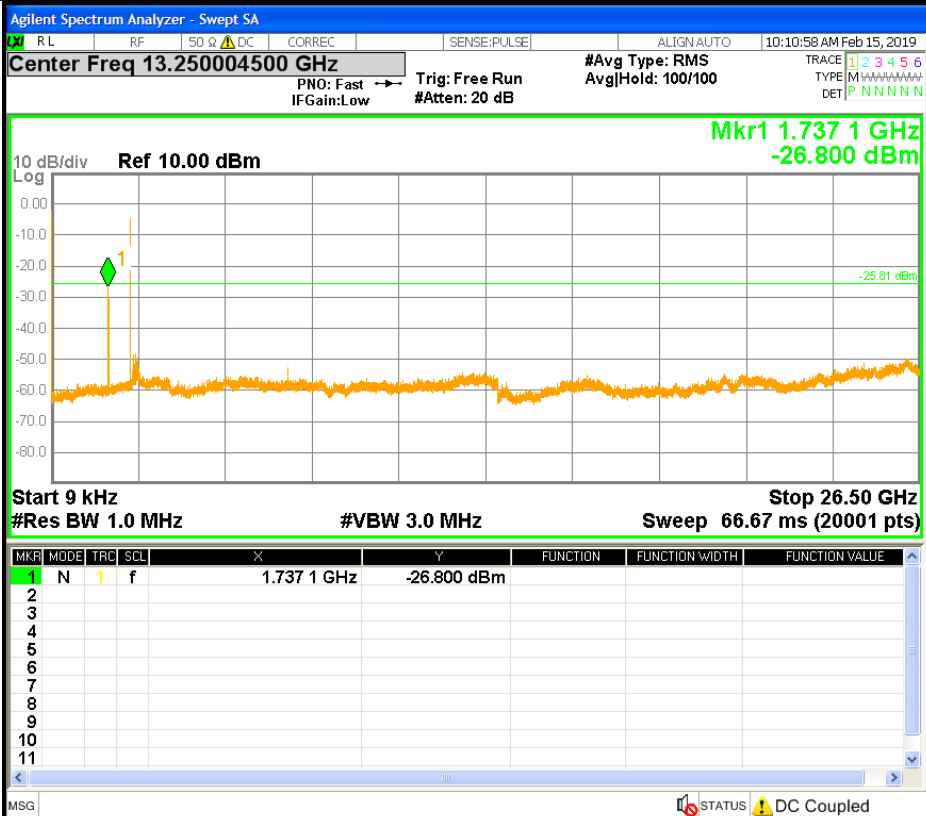
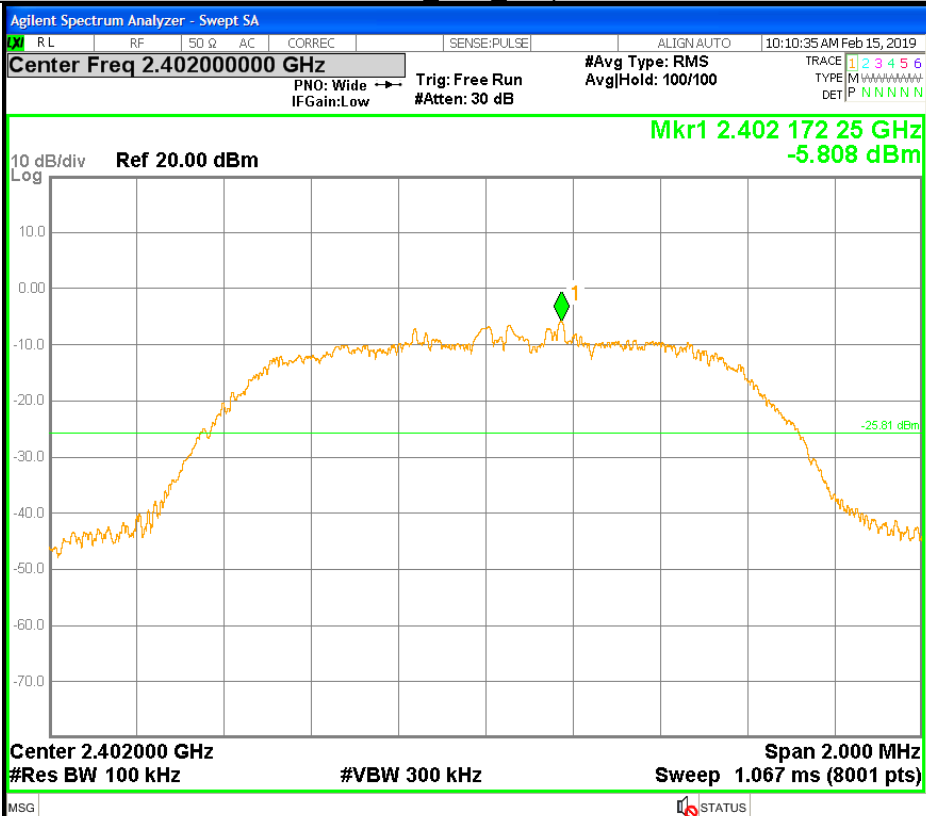


Frequency
Auto Tune
Center Freq 2.480000000 GHz
Start Freq 2.479000000 GHz
Stop Freq 2.481000000 GHz
CF Step 200.000 kHz
Auto Man
Freq Offset 0 Hz

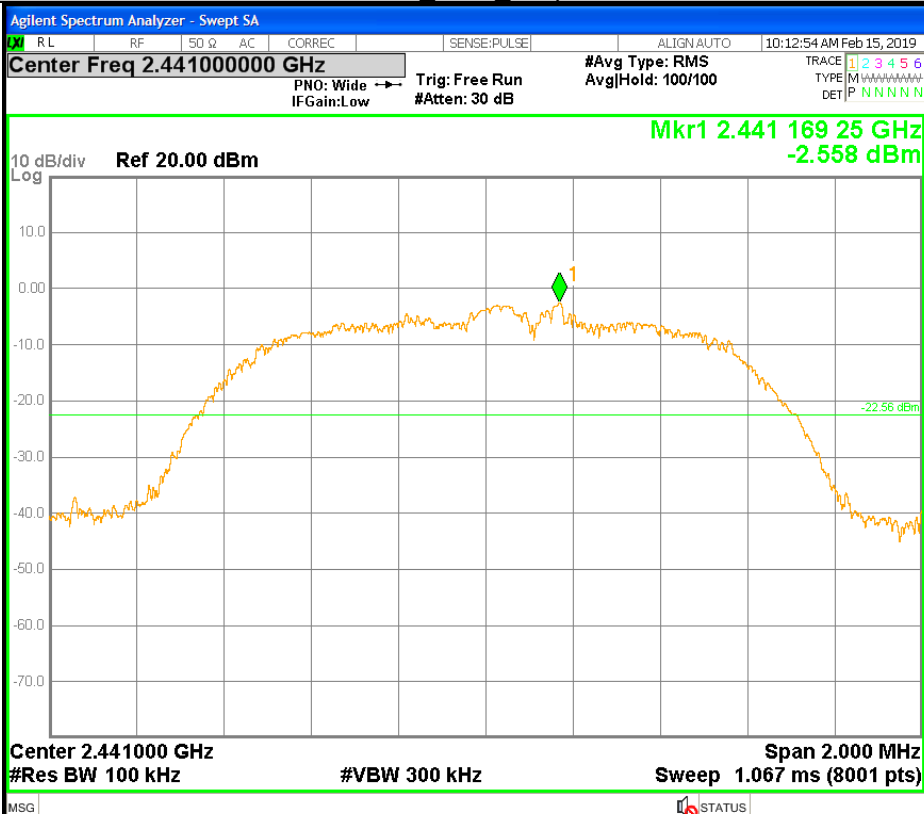


Frequency
Auto Tune
Center Freq 13.250004500 GHz
Start Freq 9.000 kHz
Stop Freq 26.500000000 GHz
CF Step 2.649999100 GHz
Auto Man
Freq Offset 0 Hz

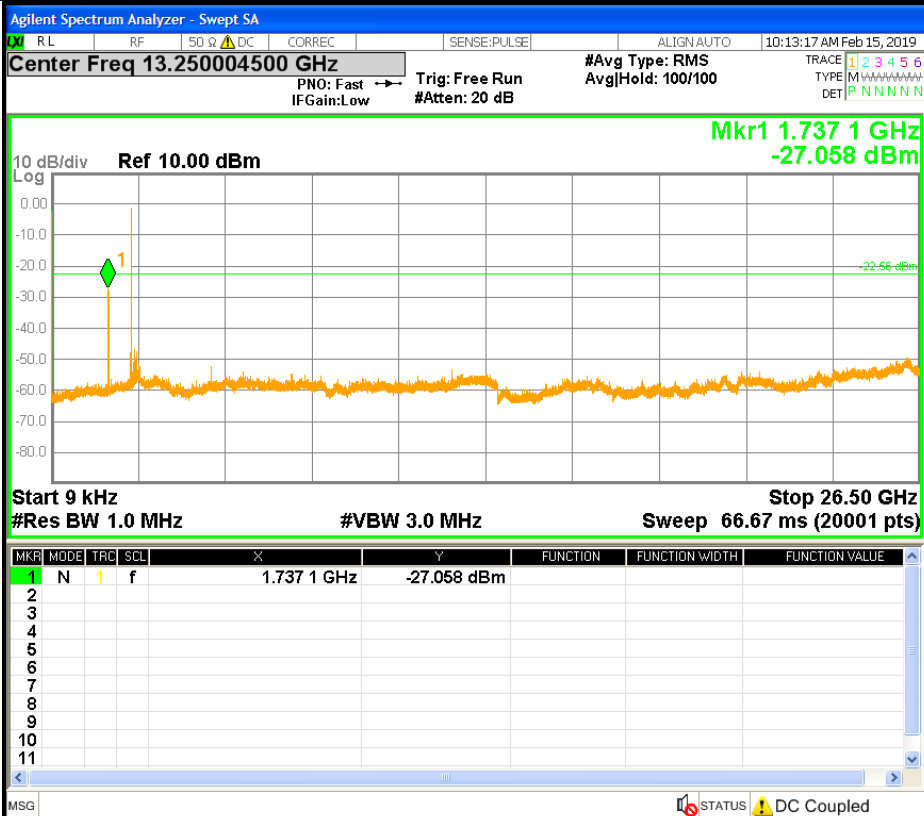
$\pi/4$ DQPSK LCH Graphs



$\pi/4$ DQPSK MCH Graphs

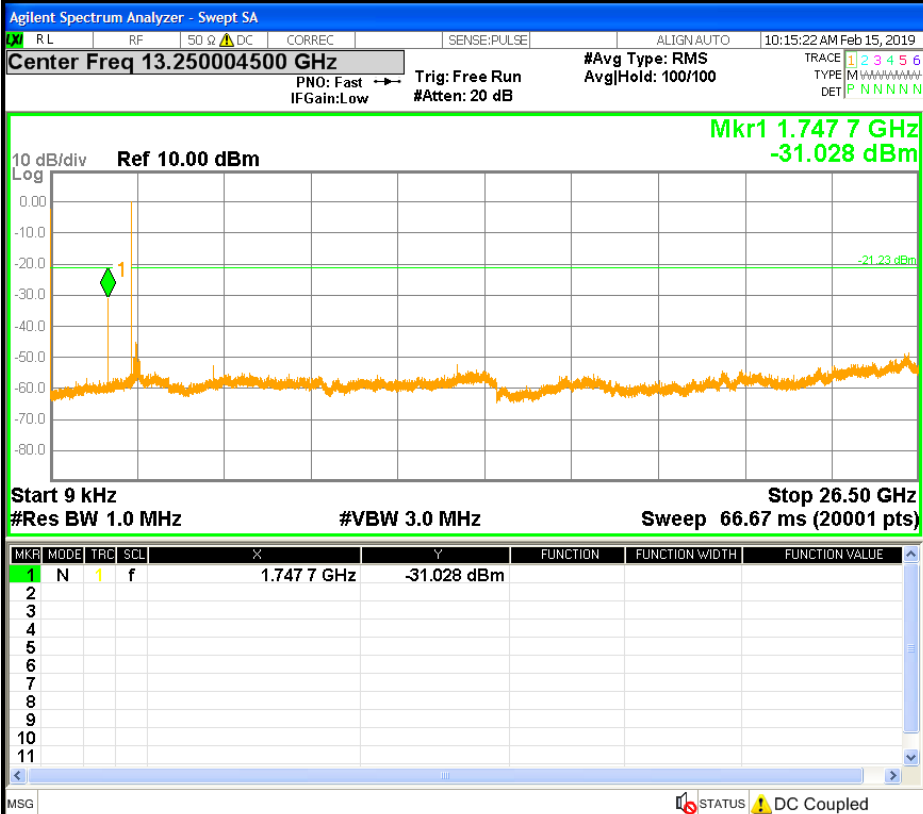
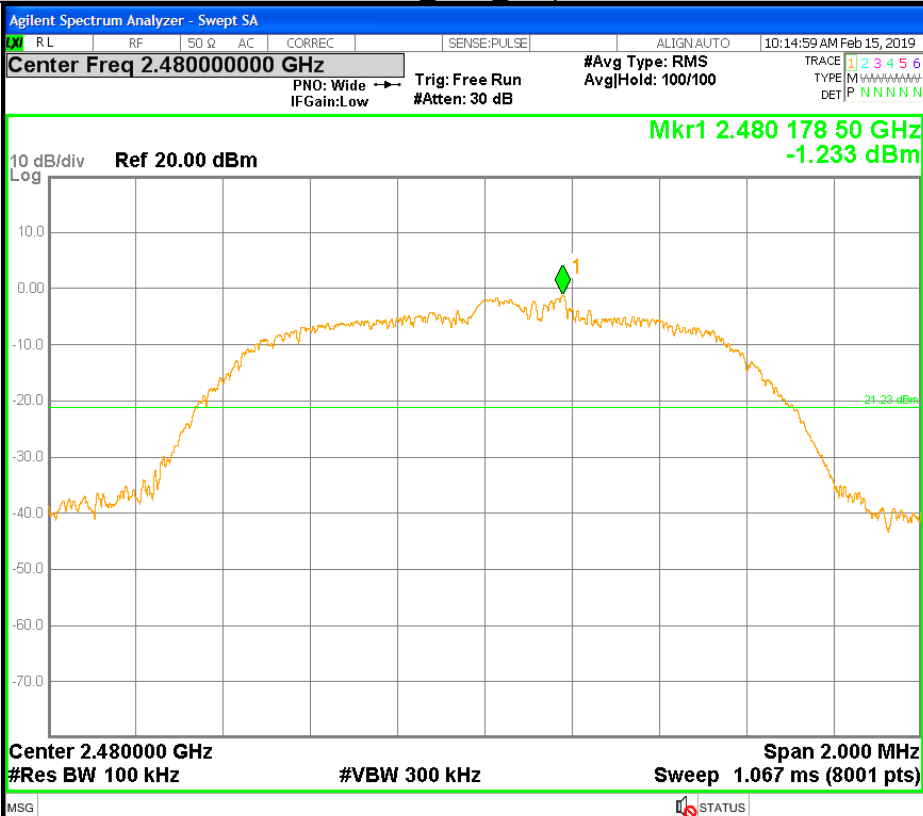


Frequency
Auto Tune
Center Freq 2.441000000 GHz
Start Freq 2.440000000 GHz
Stop Freq 2.442000000 GHz
CF Step 200.000 kHz <u>Auto</u> Man
Freq Offset 0 Hz



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 HCH Graphs



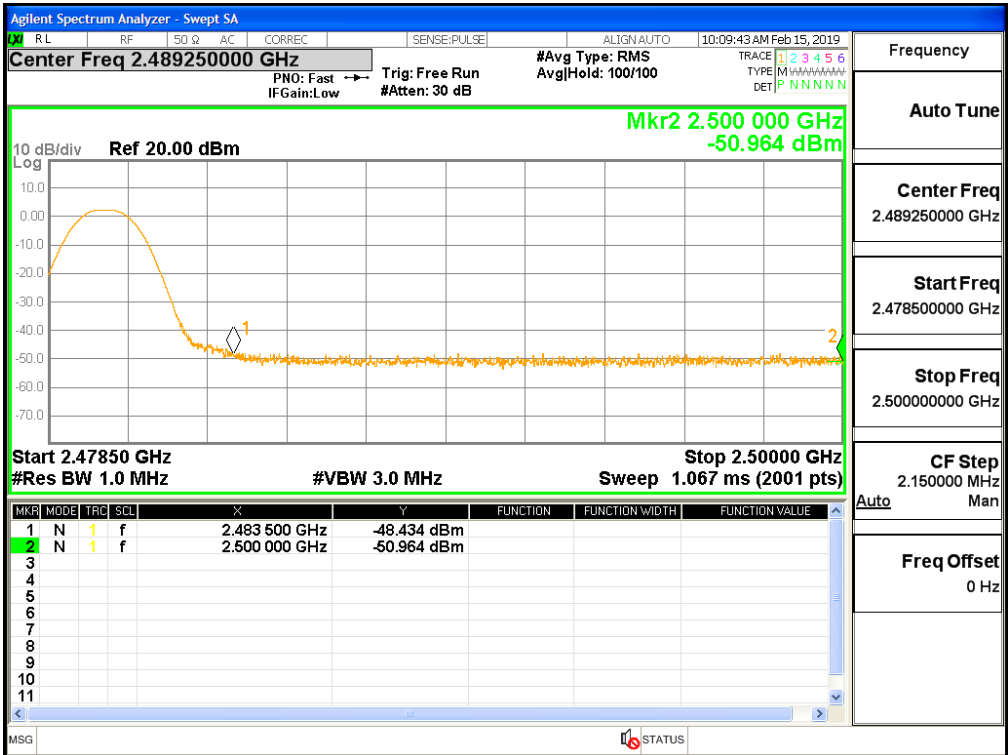
A.8 Restrict-band measurements

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	-50.73	46.98	74	-58.84	38.66	54	Pass
1DH5	2402	2390	2.00	0.00	-50.24	44.88	74	-58.55	38.7	54	Pass
1DH5	2480	2483.5	2.00	0.00	-48.43	52.06	74	-54.37	46.7	54	Pass
1DH5	2480	2500	2.00	0.00	-50.96	46.34	74	-58.01	39.22	54	Pass
2DH5	2402	2310	2.00	0.00	-52.42	45.46	74	-58.84	38.42	54	Pass
2DH5	2402	2390	2.00	0.00	-52.46	46.04	74	-58.59	38.65	54	Pass
2DH5	2480	2483.5	2.00	0.00	-48.64	48.4	74	-55.36	42.92	54	Pass
1DH5	2402	2310	2.00	0.00	-50.73	46.98	74	-58.84	38.66	54	Pass

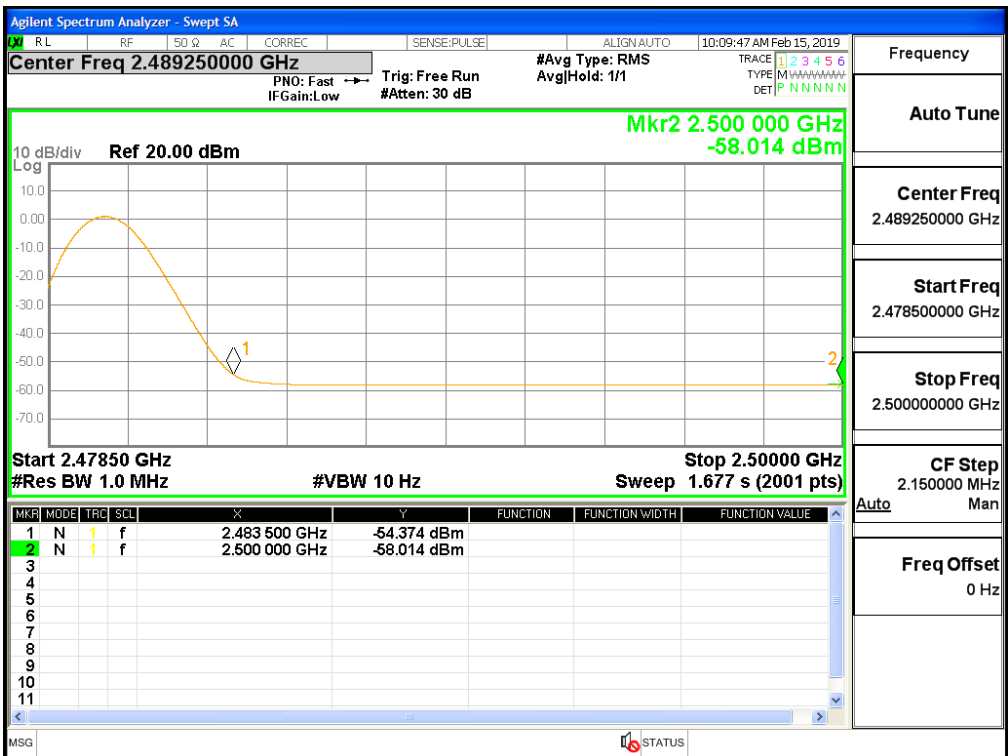
Test Graph



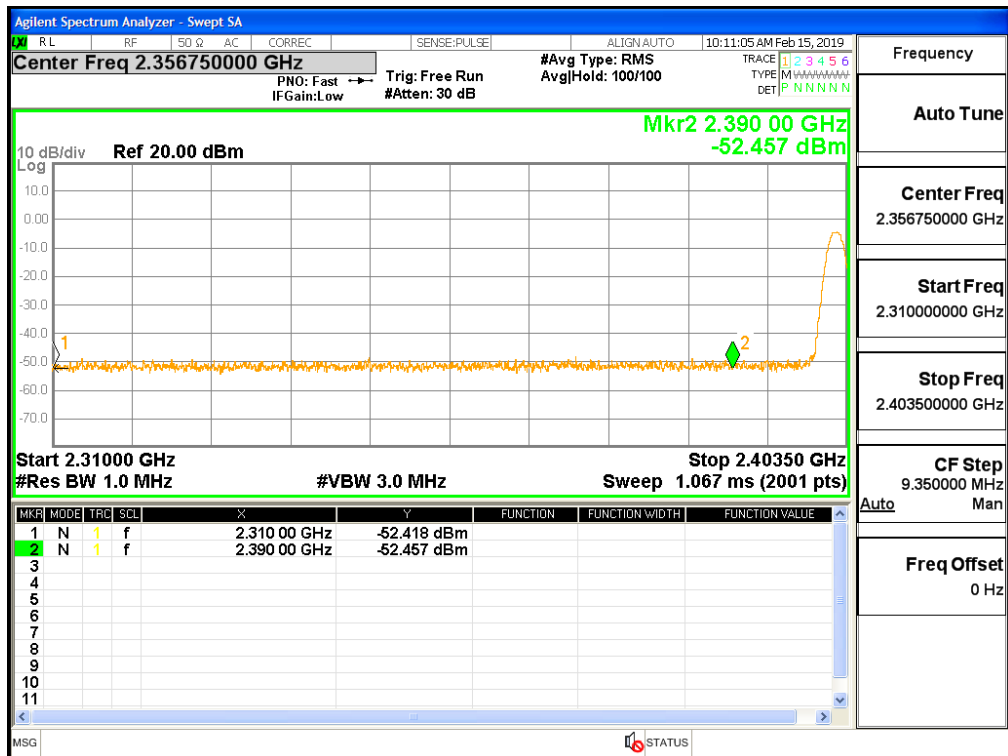
Restrict-band band-edge measurements_2480_PEAK_DH5



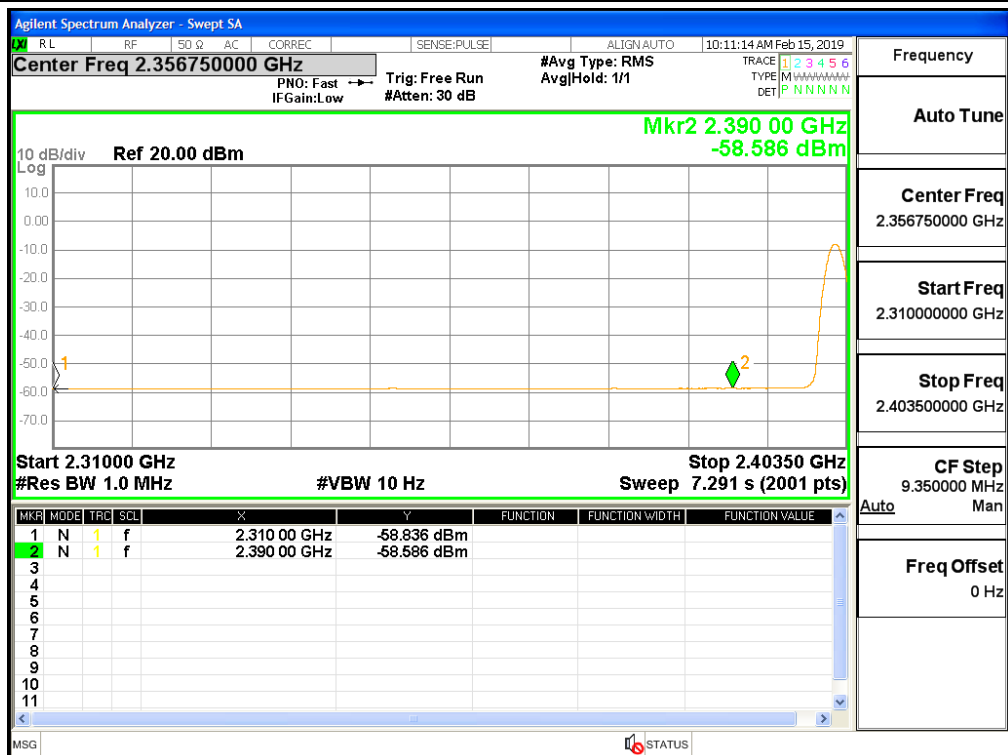
Restrict-band band-edge measurements_2480_AV_DH5



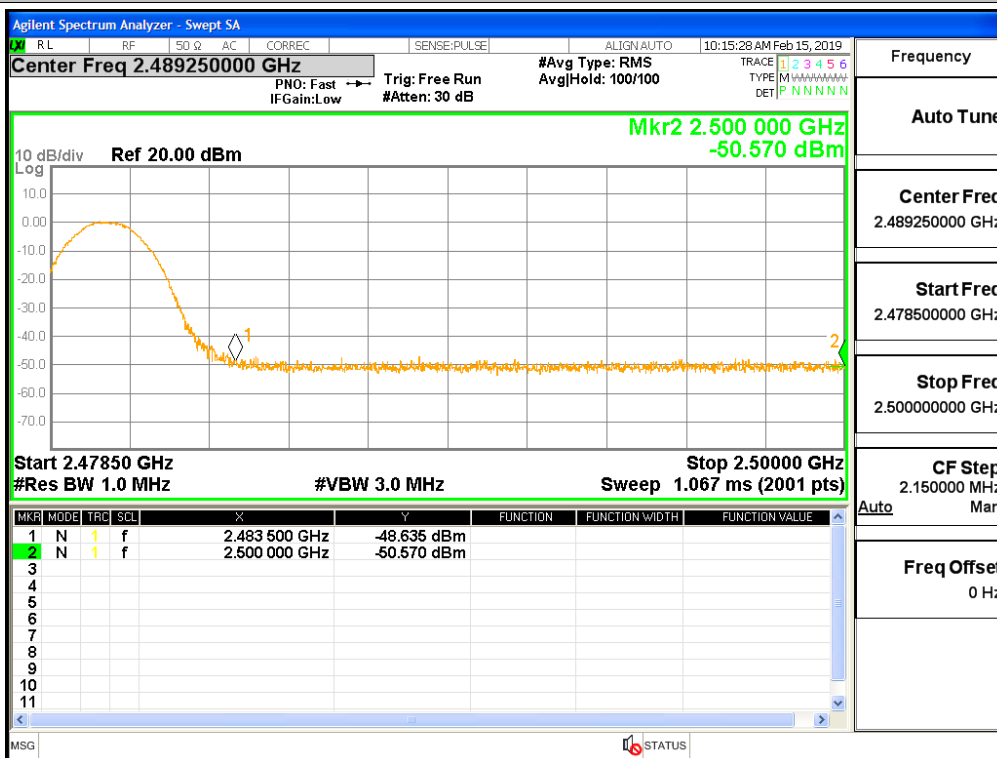
Restrict-band band-edge measurements_2402_PEAK_2DH5



Restrict-band band-edge measurements_2402_AV_2DH5



Restrict-band band-edge measurements 2480 PEAK 2DH5



Restrict-band band-edge measurements 2480 AV 2DH5

