



Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

7.3 Conducted spurious emissions at the band edges (emission mask)

7.3.1 General

This test was performed to measure spurious emissions at RF antenna connector at the band edges. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Spurious emission limits

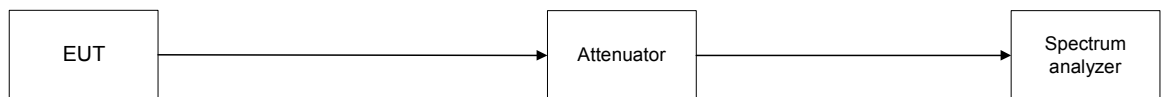
Channel, MHz	Frequency range, MHz	Attenuation below carrier, dBc
Channel bandwidth 5 MHz		
2498.50	2490.0 – 2496.0 & 2502.0 – 2507.0	43 + 10*Log (P*)
2593.00	2584.5 - 2590.5 & 2595.5 – 2602.5	43 + 10*Log (P*)
2687.50	2679.0 – 2685.0 & 2690.0 – 2696.0	43 + 10*Log (P*)
Channel bandwidth 10 MHz		
2501.00	2490.0 – 2496.0 & 2507.5 – 2513.5	43 + 10*Log (P*)
2593.00	2584.0 – 2590.0 & 2602.0 – 2608.0	43 + 10*Log (P*)
2685.00	2673.0 – 2679.0 & 2690.0 – 2696.0	43 + 10*Log (P*)

* - P is transmitter output power in Watts

7.3.2 Test procedure

- 7.3.2.1 The EUT was set up as shown in Figure 7.3.1, energized and its proper operation was checked.
- 7.3.2.2 The spurious emissions were measured with spectrum analyzer as provided in the associated plots.
- 7.3.2.3 The worst case results are were provided in Table 7.3.2 and shown in the associated plots.

Figure 7.3.1 Conducted spurious emission test setup





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Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.2 Spurious emission test results

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 RBW: 1 % of EBW
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 MODULATION: QPSK

Frequency offset, ± MHz	SA reading, dBc low range	SA reading, dBc high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
5 MHz EBW						
Low carrier frequency 2498.5 MHz, QPSK (Output power = 36.73 dBm)						
2.5-3.5	-17.46	-17.40	100	NA	-13.00	Pass
3.5-4.5	-13.04	-13.83	51	1000	-13.00	Pass
4.5-5.5	-15.84	-16.20				
5.5-6.5	-17.76	-18.75				
6.5-7.5	-20.00	-20.48				
7.5-8.5	-21.84	-22.41				
Mid carrier frequency 2593.0 MHz, QPSK (Output power = 36.83 dBm)						
2.5-3.5	-16.46	-18.33	100	NA	-13.00	Pass
3.5-4.5	-13.14	-14.37	51	1000		Pass
4.5-5.5	-15.16	-15.44				
5.5-6.5	-17.91	-18.07				
6.5-7.5	-20.06	-20.38				
7.5-8.5	-22.01	-22.87				
High carrier frequency 2687.5 MHz, QPSK (Output power = 36.62 dBm)						
2.5-3.5	-16.44	-19.17	100	NA	-13.00	Pass
3.5-4.5	-14.35	-15.12	51	1000		Pass
4.5-5.5	-16.54	-16.98				
5.5-6.5	-18.69	-19.52				
6.5-7.5	-20.97	-22.12				
7.5-8.5	-23.02	-24.27				



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Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.2 Spurious emission test results (continued)

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 RBW: 1 % of EBW
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 MODULATION: QPSK

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBc high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
10 MHz EBW						
Low carrier frequency 2501.75 MHz, QPSK (Output power = 37.26 dBm)						
5 - 6	-16.30	-18.37	100	NA	-13.00	Pass
6 - 7	-13.48	-14.27	110	1000	-13.00	Pass
7 - 8	-14.28	-15.58				
8 - 9	-15.46	-16.51				
9 - 10	-16.33	-16.98				
10 - 11	-17.26	-18.07				
11 - 12	-18.44	-19.11				
Mid carrier frequency 2596.0 MHz, QPSK (Output power = 37.16 dBm)						
5 - 6	-18.42	-19.55	100	NA	-13.00	Pass
6 - 7	-13.20	-14.43	110	1000	-13.00	Pass
7 - 8	-14.02	-15.66				
8 - 9	-15.43	-16.63				
9 - 10	-15.97	-17.21				
10 - 11	-16.95	-18.56				
11 - 12	-18.77	-20.44				
Mid carrier frequency 2684.5 MHz, QPSK (Output power = 37.02 dBm)						
5 - 6	-19.37	-20.05	100	NA	-13.00	Pass
6 - 7	-14.21	-15.55	110	1000	-13.00	Pass
7 - 8	-15.25	-16.60				
8 - 9	-16.68	-17.79				
9 - 10	-17.30	-18.27				
10 - 11	-18.14	-19.66				
11 - 12	-19.13	-21.33				



HERMON LABORATORIES

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.2 Spurious emission test results (continued)

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 RBW: 1 % of EBW
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 MODULATION: 64QAM

Frequency offset, ± MHz	SA reading, dBc low range	SA reading, dBc high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
5 MHz EBW						
Low carrier frequency 2498.5 MHz, 64QAM (Output power = 37.02 dBm)						
2.5-3.5	-17.37	-16.66	100	NA	-13.00	Pass
3.5-4.5	-14.23	-13.88	51	1000	-13.00	Pass
4.5-5.5	-17.04	-16.62				
5.5-6.5	-18.40	-19.65				
6.5-7.5	-21.19	-22.31				
7.5-8.5	-23.60	-24.30				
8.5-9.5	-25.96	-25.95				
Mid carrier frequency 2593.0 MHz, 64QAM (Output power = 36.40 dBm)						
2.5-3.5	-18.59	-18.14	100	NA	-13.00	Pass
3.5-4.5	-15.74	-15.29	51	1000		Pass
4.5-5.5	-18.27	-17.50				
5.5-6.5	-19.35	-20.76				
6.5-7.5	-22.16	-22.76				
7.5-8.5	-24.28	-25.36				
8.5-9.5	-26.58	-26.91				
High carrier frequency 2687.5 MHz, 64QAM (Output power = 36.23 dBm)						
2.5-3.5	-15.24	-15.31	100	NA	-13.00	Pass
3.5-4.5	-13.51	-13.03	51	1000		Pass
4.5-5.5	-16.65	-16.00				
5.5-6.5	-18.24	-20.06				
6.5-7.5	-21.68	-22.86				
7.5-8.5	-23.90	-25.56				
8.5-9.5	-26.03	-27.40				



HERMON LABORATORIES

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Table 7.3.2 Spurious emission test results (continued)

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 INVESTIGATED FREQUENCY RANGE: See Table 7.3.1
 RBW: 1 % of EBW
 DETECTOR USED: Average
 VIDEO BANDWIDTH: ≥ Resolution bandwidth
 MODULATING SIGNAL: PRBS
 MODULATION: 64QAM

Frequency offset, ± MHz	SA reading, dBm low range	SA reading, dBc high range	RBW, kHz	Integration BW, kHz	Limit, dBm	Verdict
10 MHz EBW						
Low carrier frequency 2501.75 MHz, 64QAM (Output power = 36.78 dBm)						
5 - 6	-19.55	-16.83	100	NA	-13.00	Pass
6 - 7	-15.22	-14.21	110	1000	-13.00	Pass
7 - 8	-16.42	-15.47				
8 - 9	-17.76	-16.16				
9 - 10	-18.65	-16.91				
10 - 11	-19.63	-18.44				
11 - 12	-20.41	-20.51				
Mid carrier frequency 2596.0 MHz, 64QAM (Output power = 36.49 dBm)						
5 - 6	-20.05	-18.19	100	NA	-13.00	Pass
6 - 7	-16.20	-15.64	110	1000	-13.00	Pass
7 - 8	-17.41	-17.00				
8 - 9	-18.87	-17.47				
9 - 10	-19.68	-18.40				
10 - 11	-20.47	-19.92				
11 - 12	-21.25	-21.88				
Mid carrier frequency 2684.5 MHz, 64QAM (Output power = 36.36 dBm)						
5 - 6	-19.15	-18.48	100	NA	-13.00	Pass
6 - 7	-15.16	-15.69	110	1000	-13.00	Pass
7 - 8	-16.38	-17.12				
8 - 9	-18.23	-17.75				
9 - 10	-19.22	-18.88				
10 - 11	-20.29	-20.30				
11 - 12	-21.21	-22.74				

Reference numbers of test equipment used

#1	#2	#3						
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Full description is given in Appendix A.

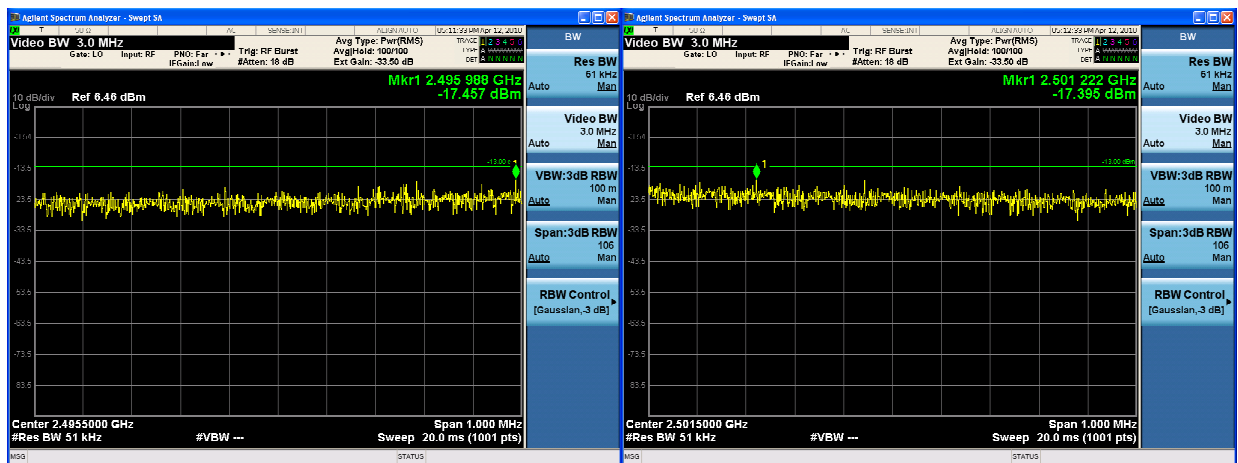
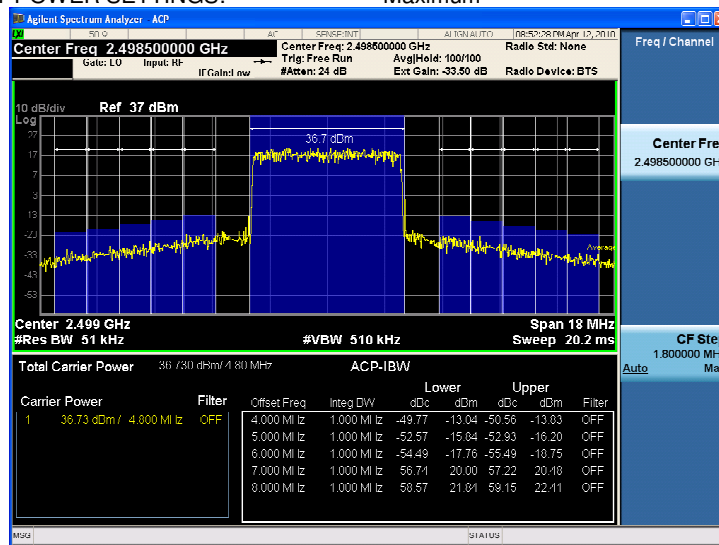


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Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.1 Emission mask test results at low carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



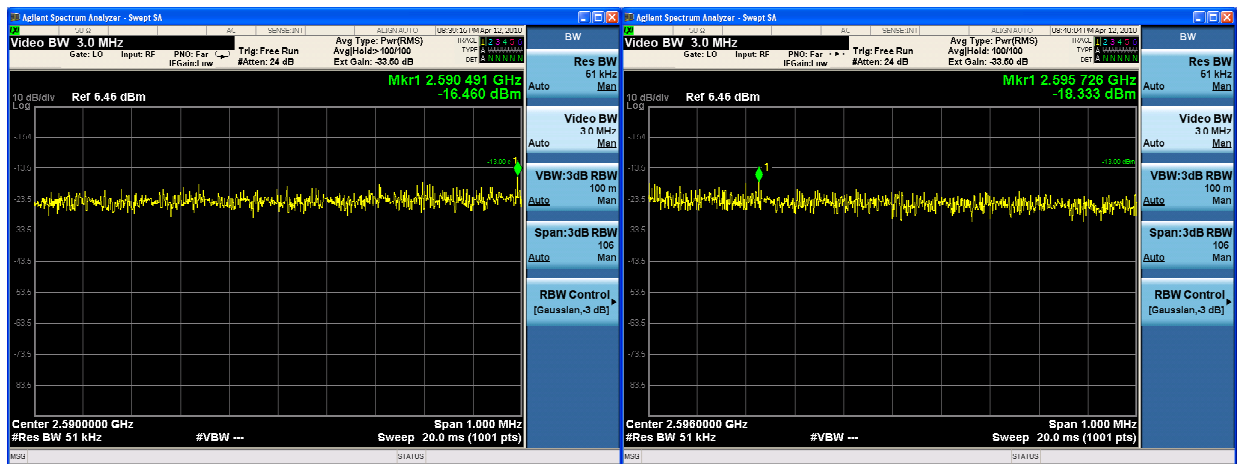
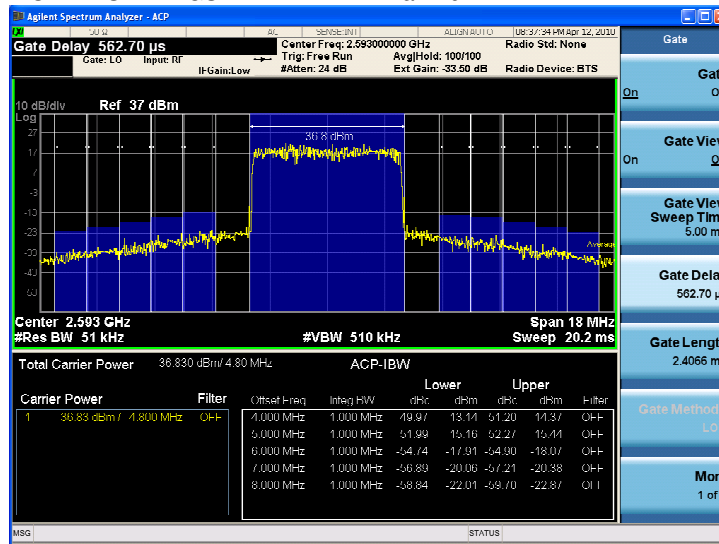


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Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance	Verdict: PASS		
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.2 Emission mask test results at mid carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



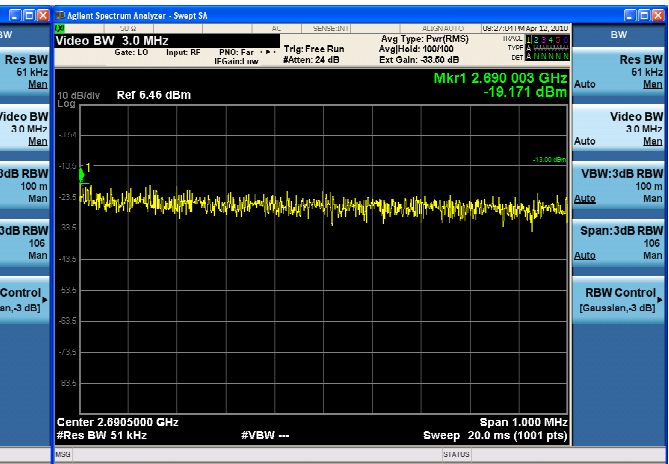
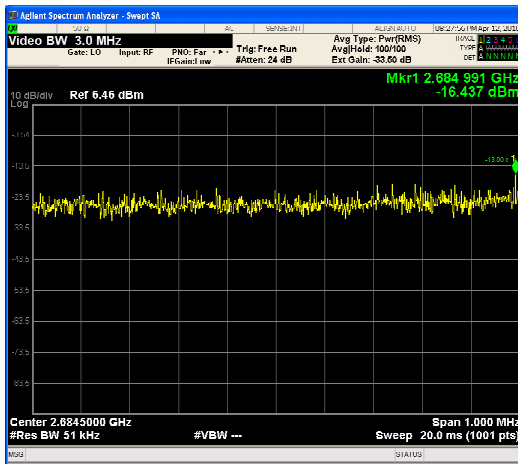
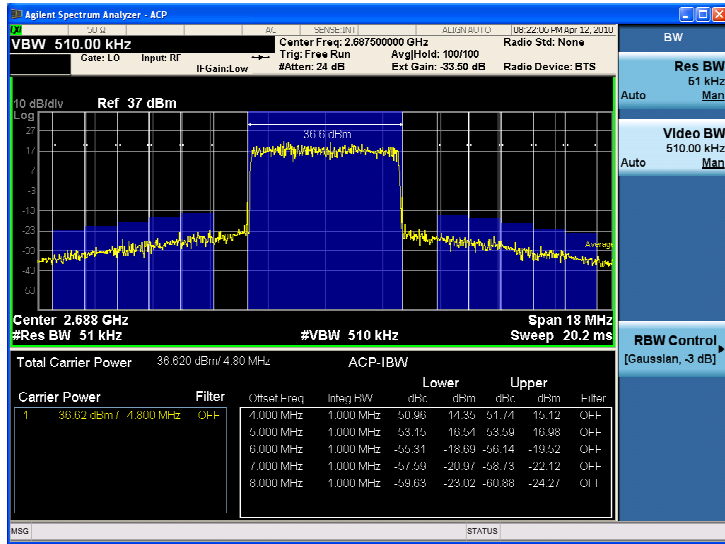


HERMON LABORATORIES

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.3 Emission mask test results at high carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



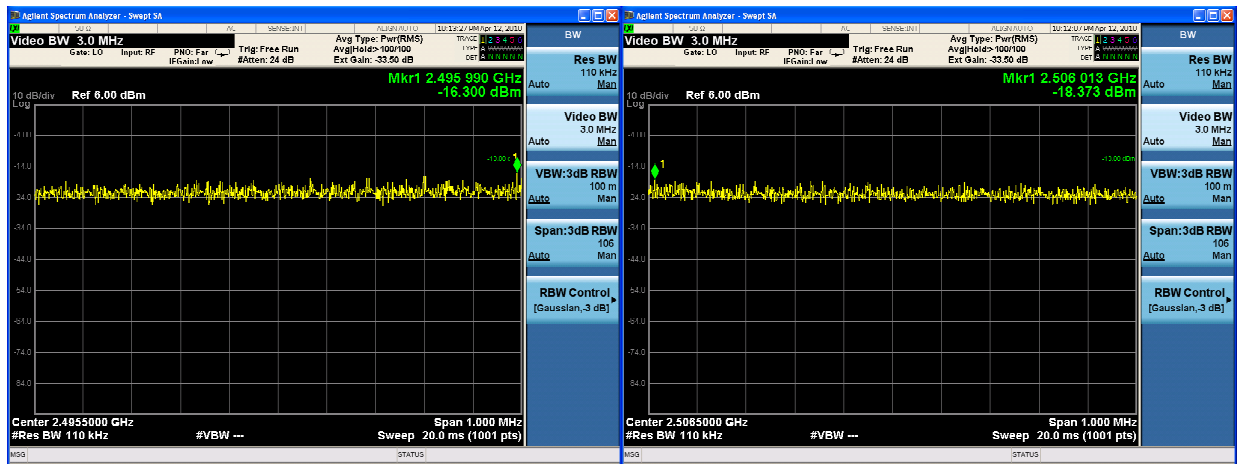
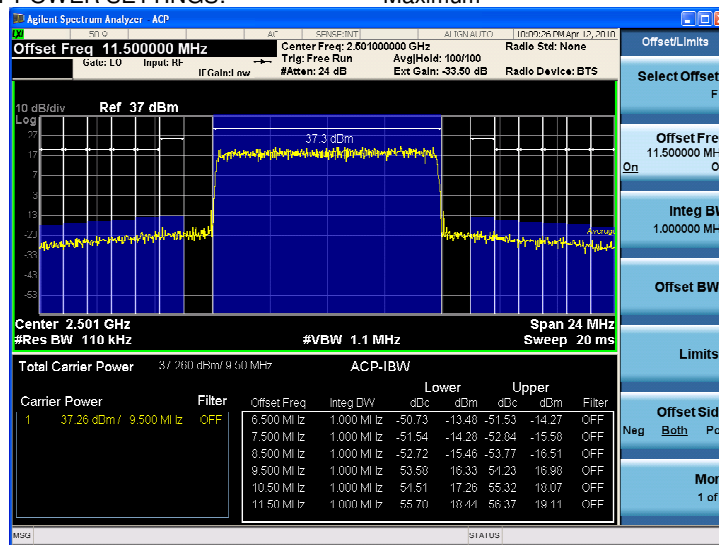


HERMON LABORATORIES

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.4 Emission mask test results at low carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 DETECTOR USED: Average
 MODULATION: QPSK
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum



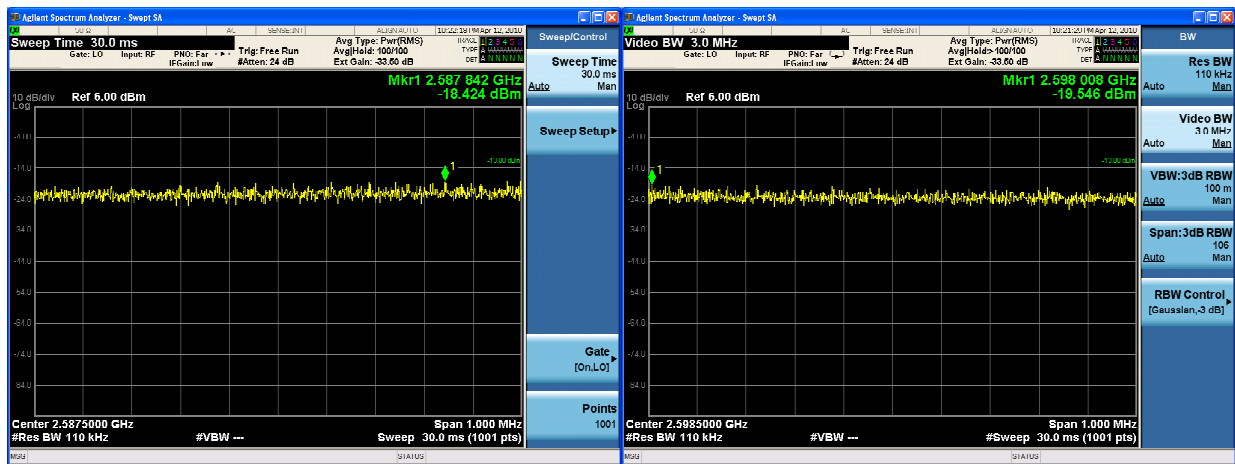
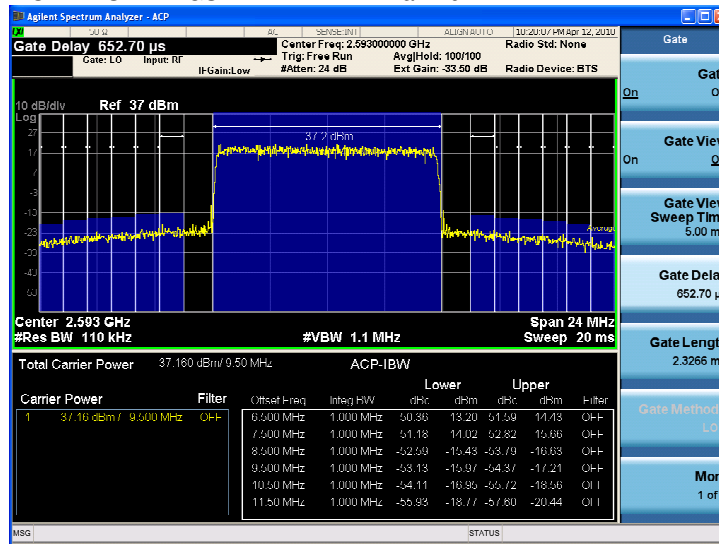


HERMON LABORATORIES

Test specification:	Section 27.53(m)(2), Conducted spurious emissions at the band edges		
Test procedure:	Section 27.53(m)(2)		
Test mode:	Compliance	Verdict:	PASS
Date:	4/25/2010		
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.5 Emission mask test results at mid carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 DETECTOR USED: Average
 MODULATION: QPSK
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum



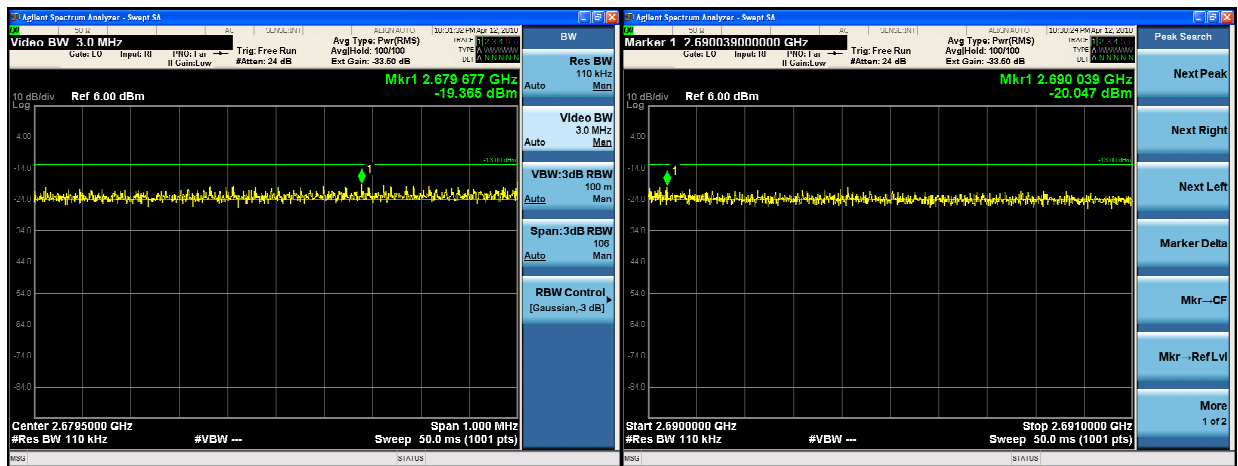
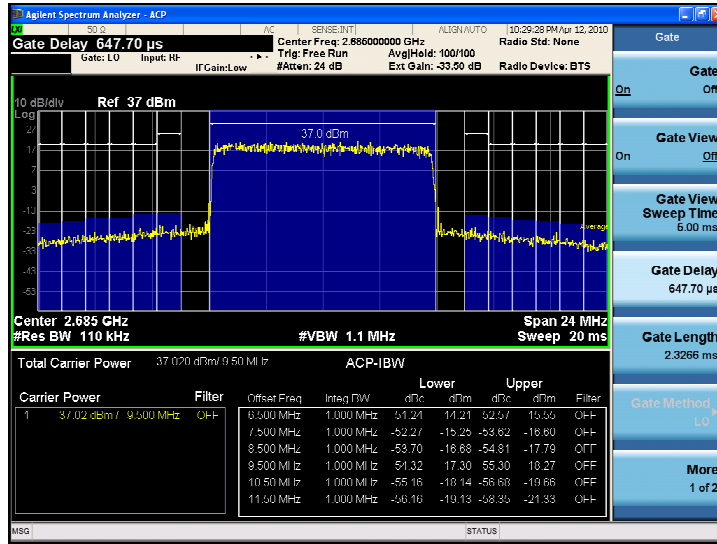


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance		Verdict: PASS	
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.6 Emission mask test results at high carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: QPSK
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



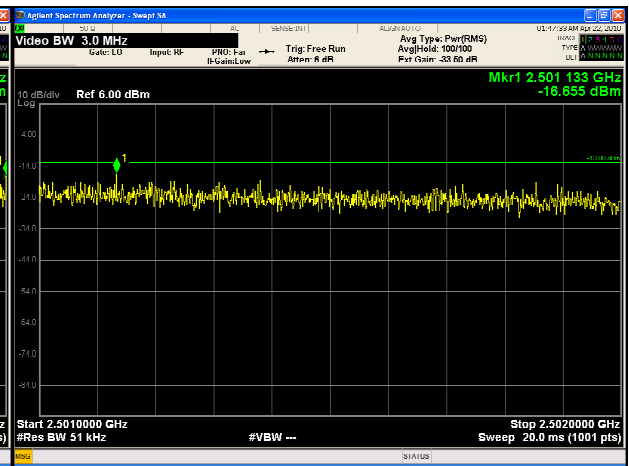
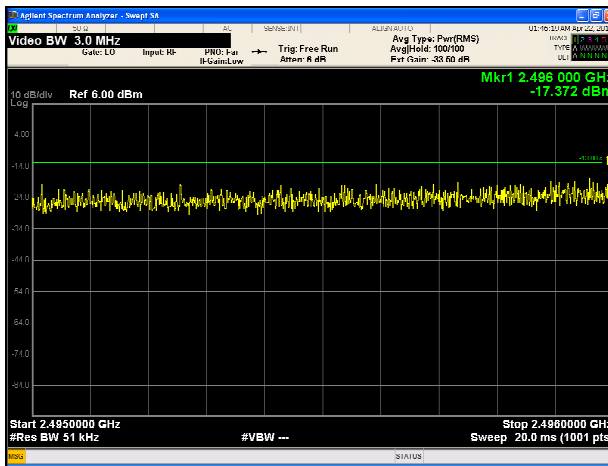
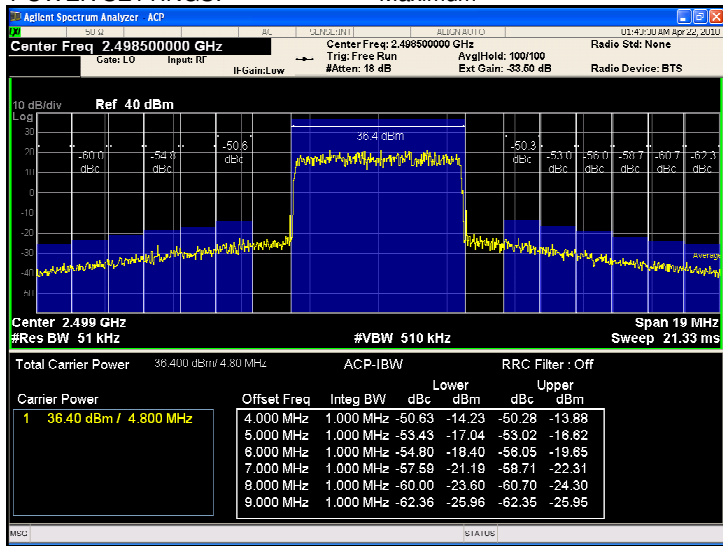


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance		Verdict: PASS	
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.7 Emission mask test results at low carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



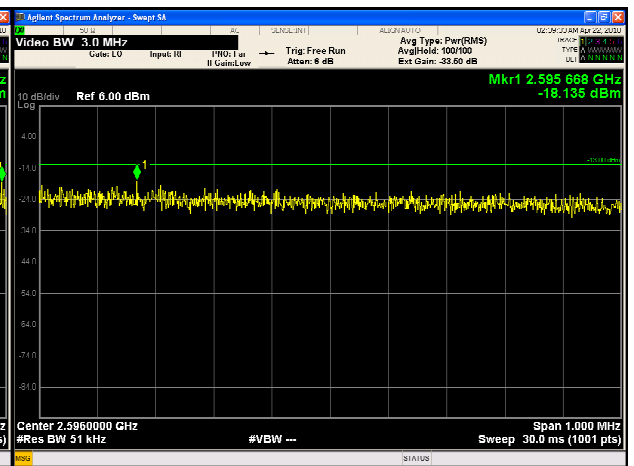
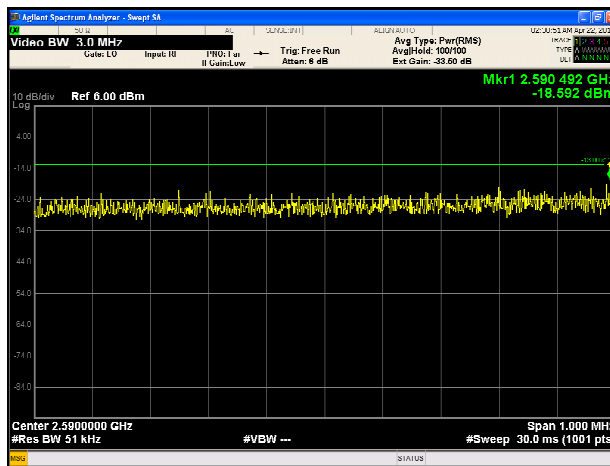
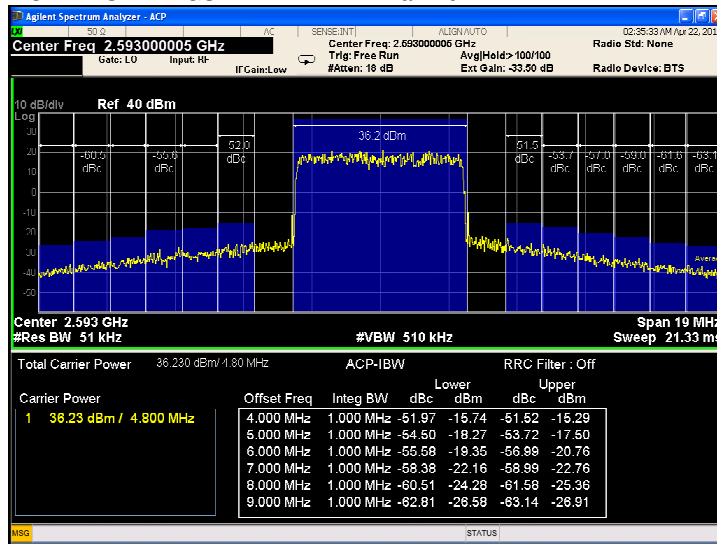


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance		Verdict: PASS	
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.8 Emission mask test results at mid carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



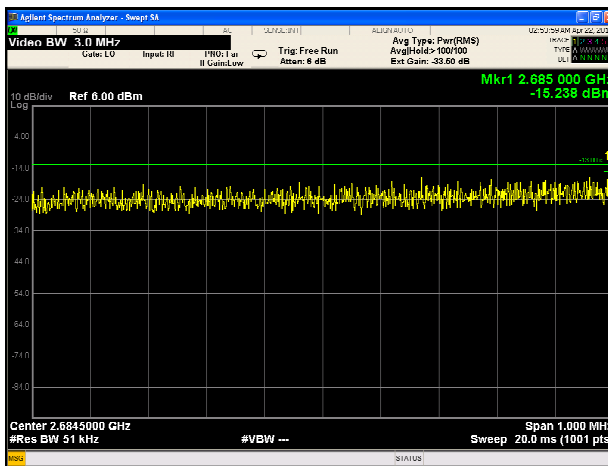
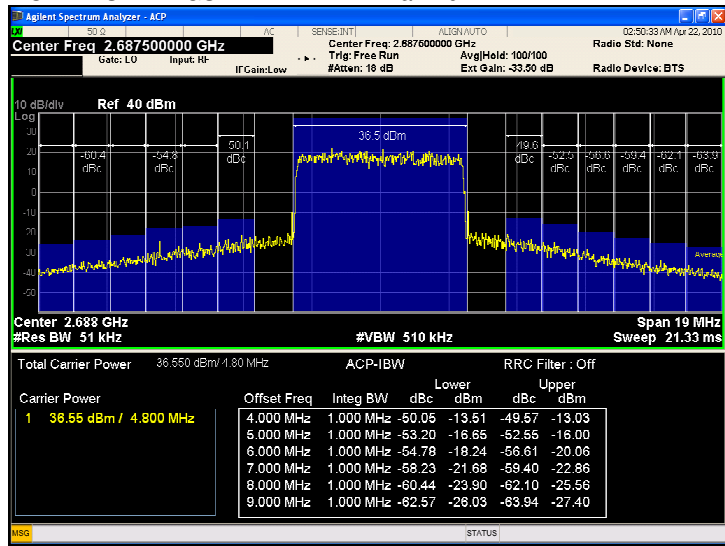


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance	Verdict: PASS		
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.9 Emission mask test results at high carrier frequency, 5 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
 DETECTOR USED: Average
 MODULATION: 64QAM
 MODULATING SIGNAL: PRBS
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum



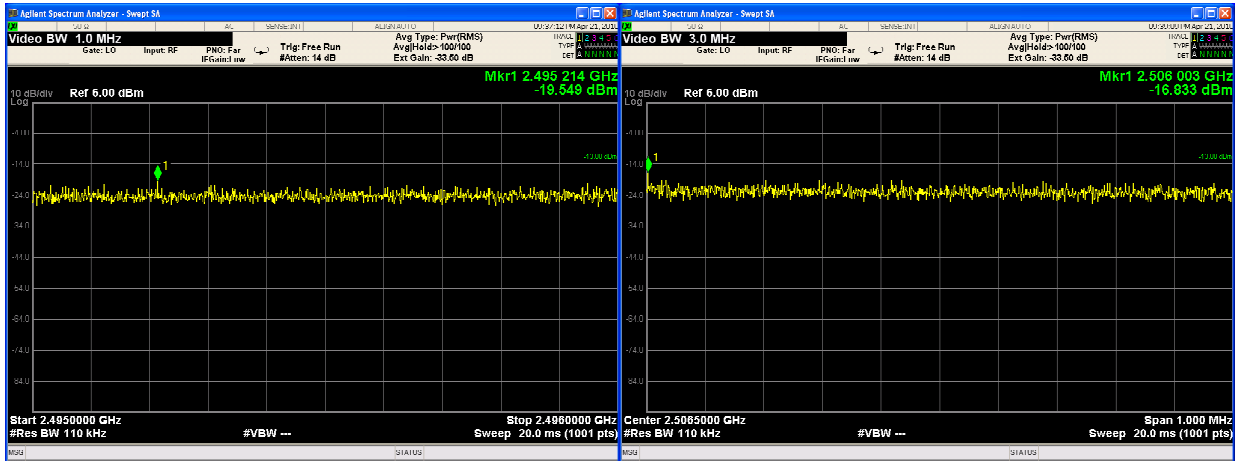
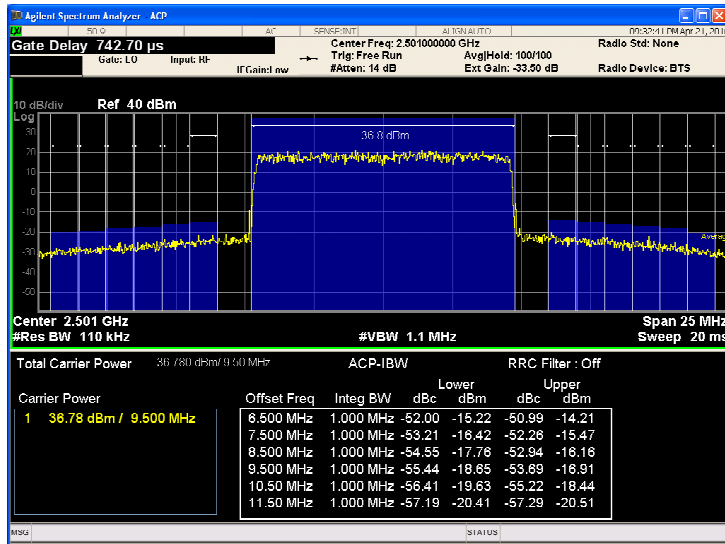


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance	Verdict: PASS		
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.10 Emission mask test results at low carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum



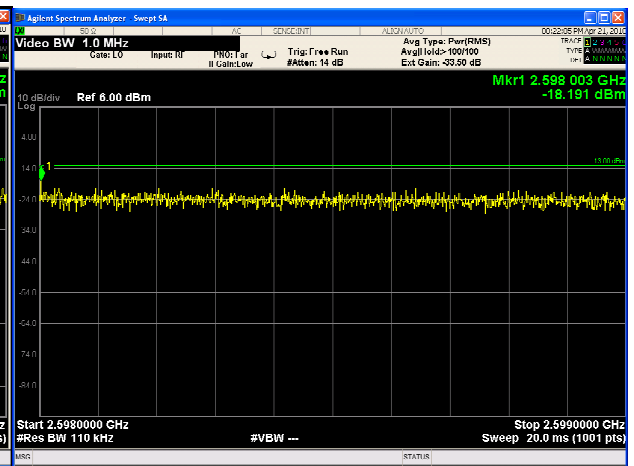
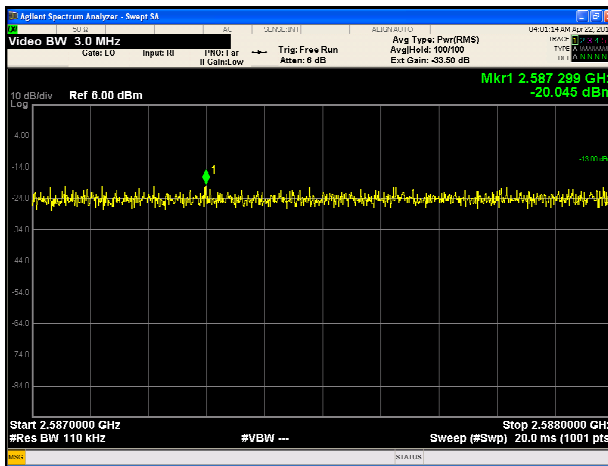
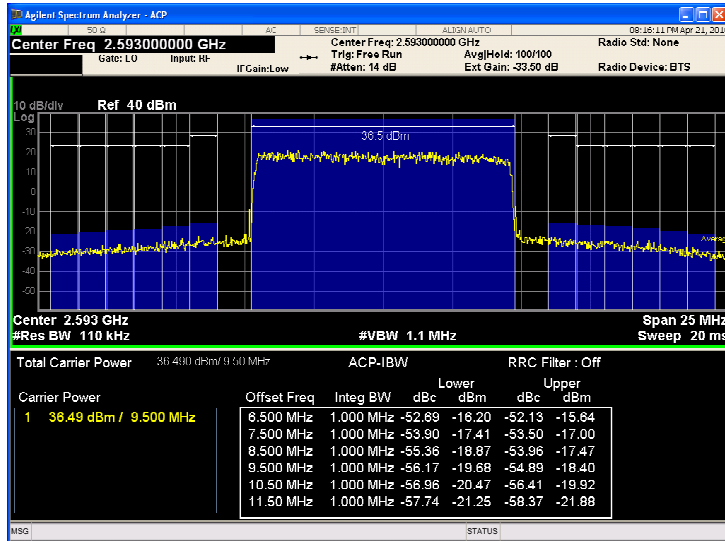


HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance	Verdict: PASS		
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.11 Emission mask test results at mid carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum





HERMON LABORATORIES

Test specification: Section 27.53(m)(2), Conducted spurious emissions at the band edges			
Test procedure: Section 27.53(m)(2)			
Test mode: Compliance		Verdict: PASS	
Date: 4/25/2010			
Temperature: 24.6 °C	Air Pressure: 1014 hPa	Relative Humidity: 46 %	Power Supply: 48 VDC
Remarks:			

Plot 7.3.12 Emission mask test results at high carrier frequency, 10 MHz EBW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz
DETECTOR USED: Average
MODULATION: 64QAM
MODULATING SIGNAL: PRBS
TRANSMITTER OUTPUT POWER SETTINGS: Maximum

