

# TEST REPORT

ACCORDING TO: FCC 47 CFR part 27

FOR:

**Alvarion Ltd.**

**Microbase station**

**Model: BreezeMAX Micro Outdoor**

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## 1 Applicant information

**Client name:** Alvarion Ltd.  
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**Telephone:** 972 3645 7859  
**Fax:** 972 3645 6222  
**E-mail:** Moti.Ezra@alvarion.com  
**Contact name:** Mr. Moti Ezra

## 2 Equipment under test attributes

**Product name:** Microbase station  
**Product type:** Transciever  
**Model(s):** BreezeMAX Micro Outdoor  
**Serial number:** 90068294  
**Hardware version:** TA0125-01  
**Software release:** 3.0.5.33  
**Receipt date** 4/15/2010

## 3 Manufacturer information

**Manufacturer name:** Alvarion Ltd.  
**Address:** 21A Habarzel street, Ramat Hachayal, Tel Aviv 69710, Israel  
**Telephone:** 972 3645 7859  
**Fax:** 972 3645 6222  
**E-Mail:** Moti.Ezra@alvarion.com  
**Contact name:** Mr. Moti Ezra

## 4 Test details

**Project ID:** 20709  
**Location:** Hermon Laboratories Ltd. Harakevet Industrial Zone, Binyamina 30500, Israel  
**Test started:** 4/15/2010  
**Test completed:** 7/25/2010  
**Test specification(s):** FCC 47 CFR part 27



## 5 Tests summary

Test	Status
<b>Transmitter characteristics</b>	
Section 27.50(h), Peak output power at RF antenna connector	Pass
Section 27.50(h)(4), Spectral power density	Pass
Section 2.1091, 27.52, RF safety	Pass, exhibit provided in Application for certification
Section 27.53(m)(2), Spurious emissions at RF antenna connector	Pass
Section 27.53(m)(2), Band edge emissions at RF antenna connector	Pass
Section 27.53(m)(2), Radiated spurious emissions	Pass
Section 27.54, Frequency stability	Pass
Section 2.1049, Occupied bandwidth	Pass

Testing was not completed against all relevant requirements of the test standard. However, results obtained indicate that the product under test complies in full with the requirements tested.

The test results relate only to the items tested. Pass/ fail decision was based on nominal values.

	Name and Title	Date	Signature
<b>Tested by:</b>	Mr. L. Markel, test engineer	July 19, 2010	
<b>Reviewed by:</b>	Mrs. M. Cherniavsky, certification engineer	July 27, 2010	
<b>Approved by:</b>	Mr. M. Nikishin, EMC and Radio group manager	July 28, 2010	



## 6 EUT description

### 6.1 General information

The EUT, BreezeMAX Micro Outdoor base station is a high capacity, IP services oriented Broadband Wireless Access system. The BreezeMAX Micro Outdoor is digital modulated TDD system covering 2483.5 MHz up to 2690 MHz range. The system contains a base station unit and a subscriber unit. The basic base station system configuration is an all outdoor-box configuration that contain power supply, modem and the radio.

### 6.2 Ports and lines

Port type	Port description	Connected from	Connected to	Qty.	Cable type	Cable length	Indoor / outdoor
Power	DC power	EUT	DC power supply	1	Unshielded	3 m	Outdoor
Signal	Ethernet	EUT	Ethernet switch	1	Shielded	10 m	Outdoor
RF*	Antenna	EUT	CPE (subscriber)	2	Coax	10 m	Outdoor

\* - connected to external antenna in normal use

### 6.3 Support and test equipment

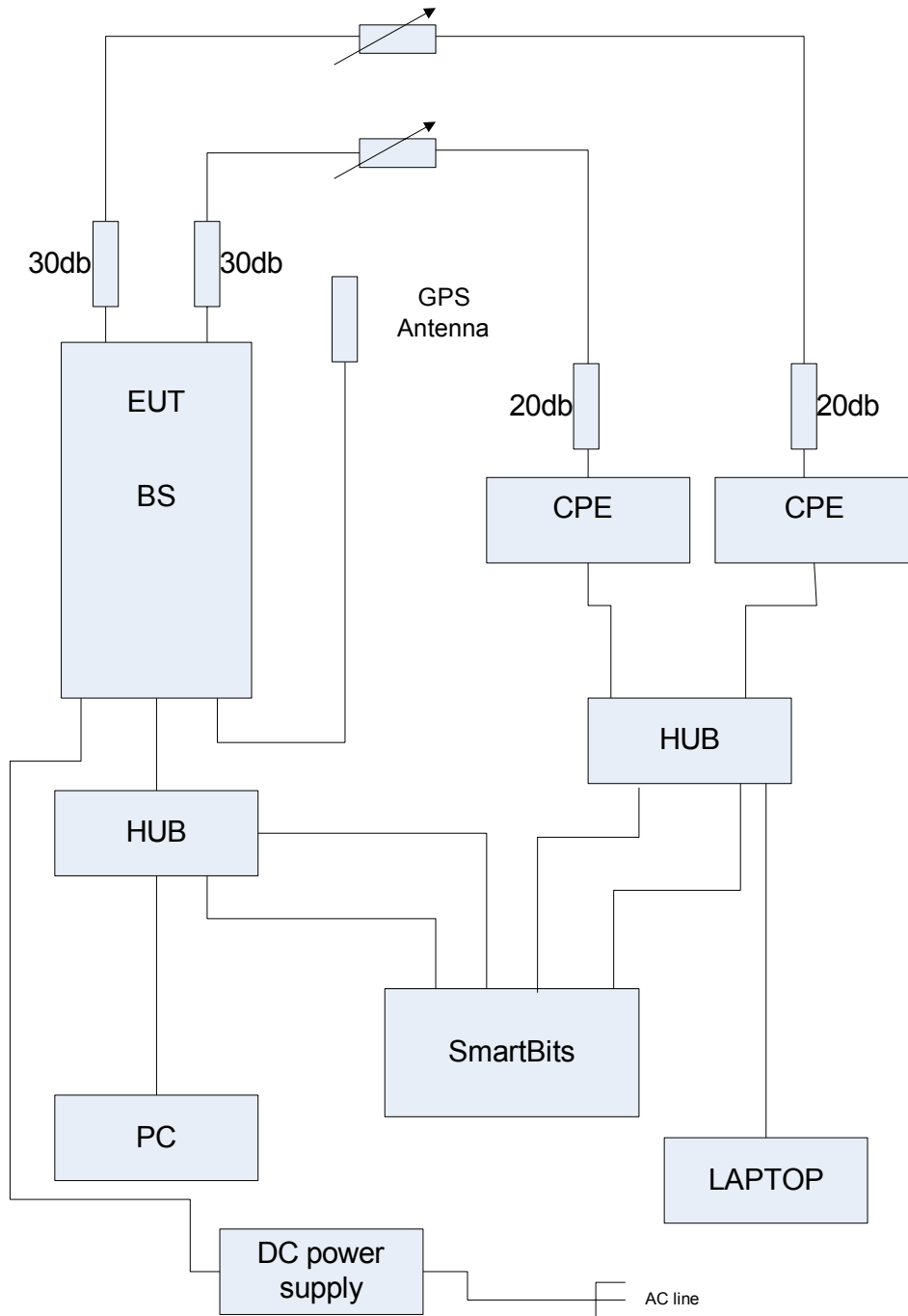
Description	Manufacturer	Model number	Serial number
Smartbits	Spirent Communications	SmartBits 2000	63673610
ETH SWITCH X 2	Dynamode	SW80010-M	NA
CPE X 2	Alvarion	4M-K2-CPE-Si-1D-2.5	NA
PC	Lenovo	NA	9637W1N LMVR4K
Laptop	Lenovo	T60	L3-DZK37-07/01
DC power supply	Horizon	DHR3655D-10	773352 (Alvarion internal)

### 6.4 Changes made in the EUT

No changes were implemented in the EUT.



### 6.5 Test configuration





### 6.6 Transmitter characteristics

<b>Type of equipment</b>						
<b>V</b>	Stand-alone (Equipment with or without its own control provisions)					
	Combined equipment (Equipment where the radio part is fully integrated within another type of equipment)					
	Plug-in card (Equipment intended for a variety of host systems)					
<b>Intended use</b>		<b>Condition of use</b>				
<b>V</b>	fixed	Always at a distance more than 2 m from all people				
	mobile	Always at a distance more than 20 cm from all people				
	portable	May operate at a distance closer than 20 cm to human body				
<b>Assigned frequency range</b>		2496.0 – 2690.0 MHz				
<b>Operating frequency</b>		2498.5 - 2687.5 MHz				
<b>RF channel spacing</b>		5 MHz, 10 MHz				
<b>Maximum rated output power</b>		At transmitter 50 Ω RF output connector			37 dBm	
<b>Is transmitter output power variable?</b>		No				
		<b>V</b>	Yes	continuous variable		
				stepped variable with stepsize		1 dB
				minimum RF power		27 dBm
maximum RF power		37.27 dBm				
<b>Antenna connection</b>						
unique coupling	<b>V</b>	standard connector	Integral	<b>V</b> with temporary RF connector without temporary RF connector		
<b>Antenna/s technical characteristics</b>						
Type	Manufacturer		Model number		Gain	
External Omni	MTI		P/N 300650		9 dBi	
External Tilt Panel	Argus		T-085-S4		18 dBi	
<b>Transmitter 99% power bandwidth</b>		<b>Transmitter aggregate data rate/s, MBps</b>		<b>Type of modulation</b>		
5 MHz		1.64		QPSK		
		8.22		64QAM		
10 MHz		3.34		QPSK		
		16.64		64QAM		
<b>Type of multiplexing</b>			TDD			
<b>Modulating test signal (baseband)</b>			PRBS			
<b>Maximum transmitter duty cycle in normal use</b>		66%				
<b>Transmitter power source</b>						
		<b>Nominal rated voltage</b>		<b>Battery type</b>		
<b>V</b>	DC	<b>Nominal rated voltage</b>		Via 48 VDC power supply from mains		
	AC mains	<b>Nominal rated voltage</b>		<b>Frequency</b>	60 Hz	
<b>Common power source for transmitter and receiver</b>		<b>V</b>		yes	no	



<b>Test specification:</b>		<b>Section 90.209, Occupied bandwidth</b>	
<b>Test procedure:</b>		47 CFR, Section 2.1049	
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/18/2010		
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48 VDC
<b>Remarks:</b>			

## 7 Transmitter tests according to 47CFR part 27 requirements

### 7.1 Occupied bandwidth test

#### 7.1.1 General

This test was performed to measure transmitter occupied bandwidth. Specification test limits are given in Table 7.1.1.

Table 7.1.1 Occupied bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points, dBc	Maximum allowed bandwidth, kHz
2496.0 – 2690.0	26	NA

#### 7.1.2 Test procedure

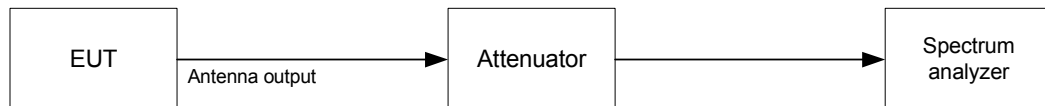
7.1.2.1 The EUT was set up as shown in Figure 7.1.1, energized and its proper operation was checked.

7.1.2.2 The EUT was set to transmit the modulated carrier and the output power was measured.

7.1.2.3 The EUT was set to transmit the normally modulated carrier.

7.1.2.4 The transmitter occupied bandwidth was measured with spectrum analyzer as a frequency delta between the reference points on modulation envelope and provided in Table 7.1.2 and the associated plots.

Figure 7.1.1 Occupied bandwidth test setup







<b>Test specification:</b> Section 90.209, Occupied bandwidth	
<b>Test procedure:</b> 47 CFR, Section 2.1049	
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS
<b>Date:</b> 4/18/2010	
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa
<b>Relative Humidity:</b> 42 %	
<b>Power Supply:</b> 48 VDC	
<b>Remarks:</b>	

Table 7.1.2 Occupied bandwidth test results

DETECTOR USED: Average  
 RESOLUTION BANDWIDTH: 51 kHz (0.5-2% of OBW)  
 VIDEO BANDWIDTH: 510 kHz  
 MODULATION ENVELOPE REFERENCE POINTS: 99%  
 MODULATING SIGNAL: PRBS  
 CHANNEL BW: 5 MHz

Carrier frequency, MHz	Modulation	26 dBc bandwidth, kHz	99% power bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
2498.50	QPSK	4718.0	4560.6	NA	NA	Pass
2498.50	64QAM	4752.0	4542.3	NA	NA	Pass
2593.00	QPSK	4719.0	4553.0	NA	NA	Pass
2593.00	64QAM	4740.0	4542.9	NA	NA	Pass
2687.50	QPSK	4734.0	4554.3	NA	NA	Pass
2687.50	64QAM	4688.0	4540.4	NA	NA	Pass

DETECTOR USED: Average  
 RESOLUTION BANDWIDTH: 110 kHz (0.5-2% of OBW)  
 VIDEO BANDWIDTH: 1100 kHz  
 MODULATION ENVELOPE REFERENCE POINTS: 99%  
 MODULATION: QPSK  
 MODULATING SIGNAL: PRBS  
 CHANNEL BW: 10 MHz

Carrier frequency, MHz	Modulation	Occupied bandwidth, kHz	99% power bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
2501.00	QPSK	9466.0	9091.6	NA	NA	Pass
2501.00	64QAM	9441.0	9076.2	NA	NA	Pass
2593.00	QPSK	9458.0	9088.2	NA	NA	Pass
2593.00	64QAM	9481.0	9094.6	NA	NA	Pass
2685.00	QPSK	9478.0	9070.5	NA	NA	Pass
2685.00	64QAM	9456.0	9070.0	NA	NA	Pass

Reference numbers of test equipment used

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

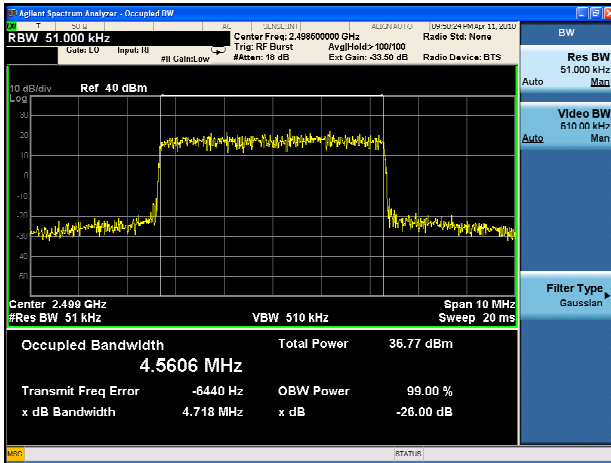


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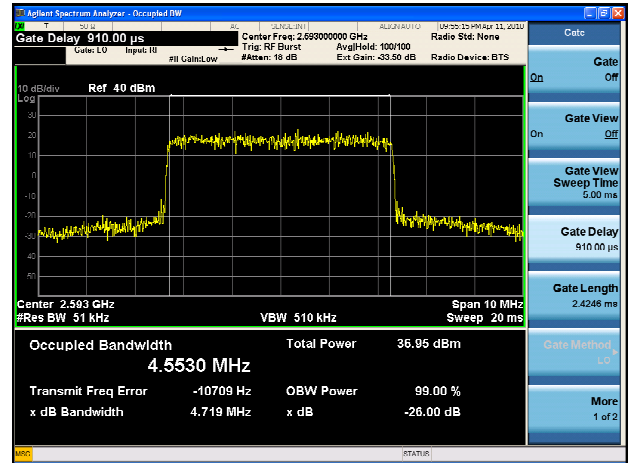
<b>Test specification:</b> Section 90.209, Occupied bandwidth			
<b>Test procedure:</b> 47 CFR, Section 2.1049			
<b>Test mode:</b> Compliance		<b>Verdict:</b> PASS	
<b>Date:</b> 4/18/2010			
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48 VDC
<b>Remarks:</b>			

Plot 7.1.1 Occupied bandwidth test result for 5 MHz CBW, QPSK

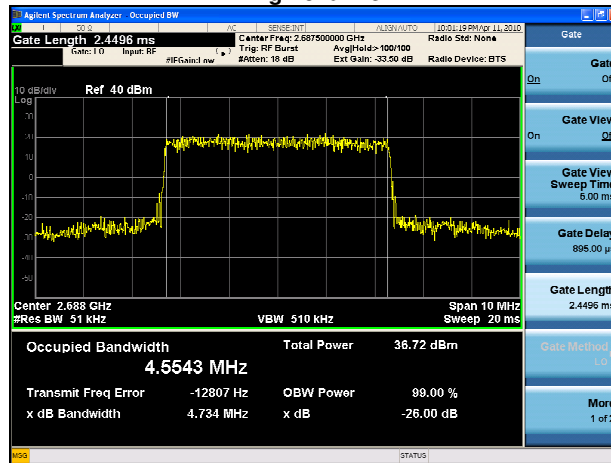
Low channel



Mid channel



High channel





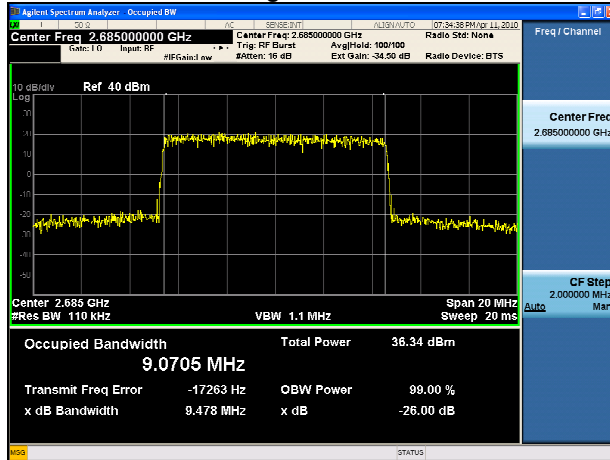
HERMON LABORATORIES

<b>Test specification:</b> Section 90.209, Occupied bandwidth			
<b>Test procedure:</b> 47 CFR, Section 2.1049			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date:</b> 4/18/2010			
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48 VDC
<b>Remarks:</b>			

Plot 7.1.2 Occupied bandwidth test result for 10 MHz BW, QPSK



High channel



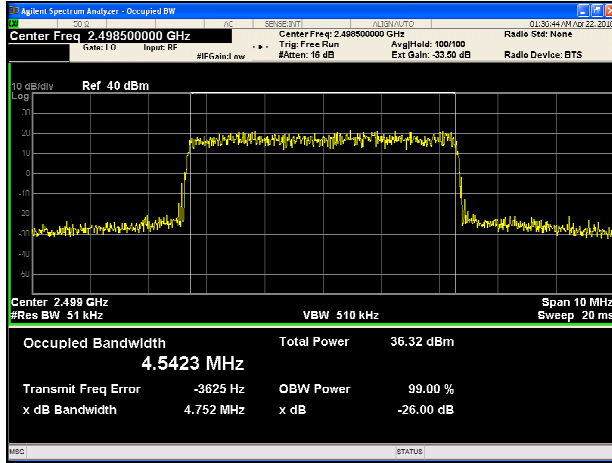


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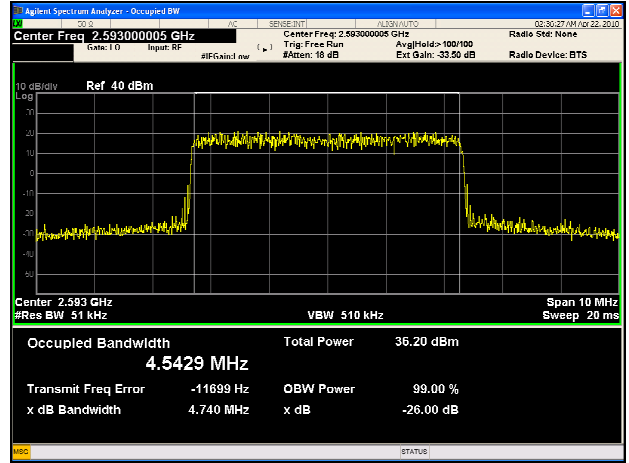
<b>Test specification:</b> Section 90.209, Occupied bandwidth			
<b>Test procedure:</b> 47 CFR, Section 2.1049			
<b>Test mode:</b> Compliance			<b>Verdict:</b> PASS
<b>Date:</b> 4/18/2010			
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48 VDC
<b>Remarks:</b>			

Plot 7.1.3 Occupied bandwidth test result for 5 MHz BW, 64QAM

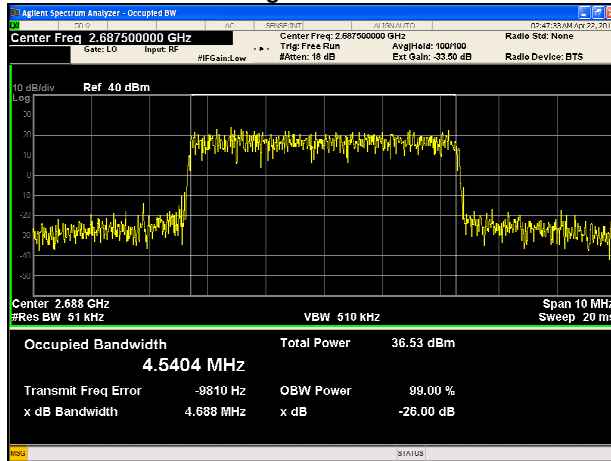
Low channel



Mid channel



High channel

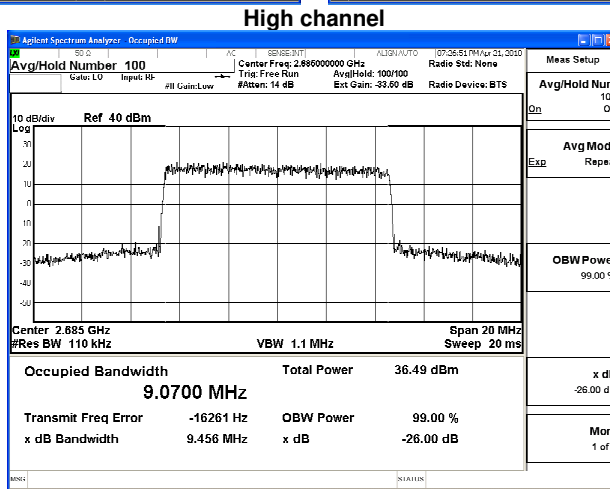
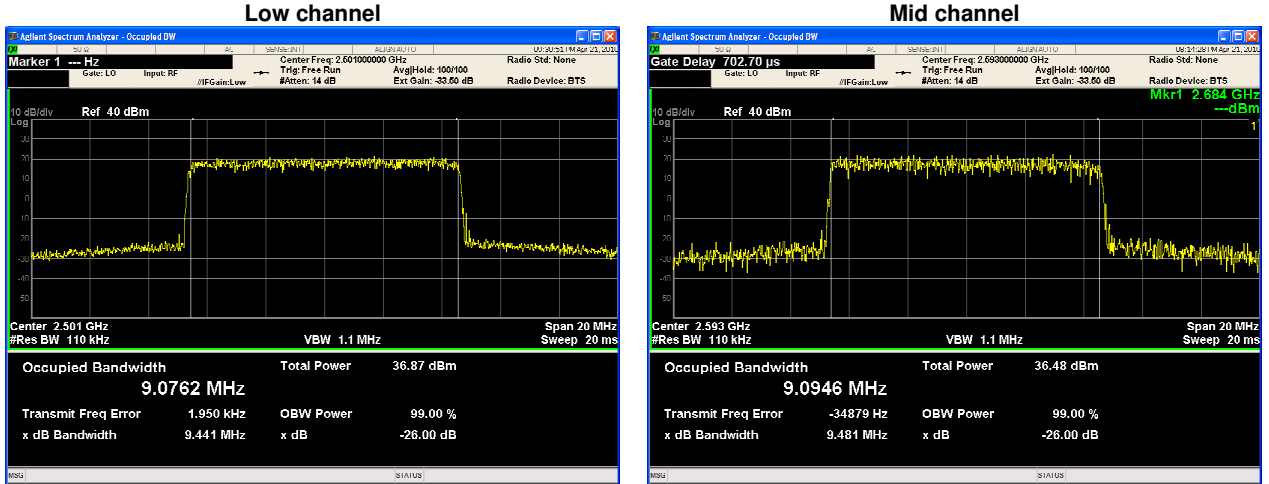




HERMON LABORATORIES

<b>Test specification:</b> Section 90.209, Occupied bandwidth			
<b>Test procedure:</b> 47 CFR, Section 2.1049			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date:</b> 4/18/2010			
<b>Temperature:</b> 23.8 °C	<b>Air Pressure:</b> 1015 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48 VDC
<b>Remarks:</b>			

Plot 7.1.4 Occupied bandwidth test result at low frequency, 10 MHz BW, 64QAM





<b>Test specification:</b> Section 27.50(h), Peak output power			
<b>Test procedure:</b> Section 27.50(h)			
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS		
<b>Date:</b> 4/14/2010			
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

## 7.2 Peak output power test

### 7.2.1 General

This test was performed to measure the peak output power at RF antenna connector. Specification test limits are given in Table 7.2.1.

Table 7.2.1 Peak output power limits

Assigned frequency range, MHz	Maximum peak output power dBm
2496.0 – 2690.0	$63+10\log(OBW^*/CBW^{**})+10\log(360/\text{beamwidth})$
	Maximum peak power density dBm/100 kHz
	$EIRP+10\log(0.1/CBW^{**})$

\*OBW – actual channel width (occupied bandwidth)

\*\*CBW – channel bandwidth.

NOTE: For 5 MHz EUT transmission bandwidth the limit was calculated according to 6 MHz Channel Bandwidth and for EUT transmission bandwidth 10 MHz the limit was calculated according to dual block 12 MHz Channel Bandwidth as the worst case scenario.

### 7.2.2 Test procedure

7.2.2.1 The EUT was set up as shown in Figure 7.2.1, energized and its proper operation was checked.

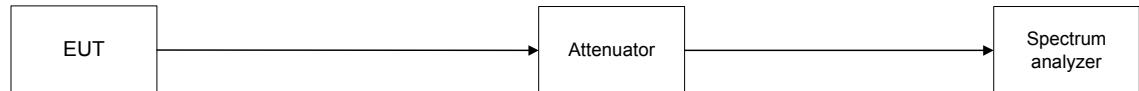
7.2.2.2 The EUT was adjusted to produce maximum available to the end user RF output power.

7.2.2.3 The resolution bandwidth of spectrum analyzer was set about 1% of the emission bandwidth and the average power was integrated over EBW with spectrum analyzer.

7.2.2.4 The resolution bandwidth was changed to 100 kHz and power spectral density was measured.

7.2.2.5 The test results are provided in the tables below and associated plots.

Figure 7.2.1 Peak output power test setup





<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b> PASS	
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Table 7.2.2 Peak output power test results for 5 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 51 kHz  
VIDEO BANDWIDTH: 510 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 18 dBi with 65° horizontal beamwidth  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2498.50	4.72	36.73	18.00	54.73	69.39	-14.66	Pass
2593.00	4.72	36.88	18.00	54.88	69.39	-14.51	Pass
2687.50	4.73	36.68	18.00	54.68	69.40	-14.72	Pass

MODULATION: 64QAM

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2498.50	4.72	36.37	18.00	54.37	69.39	-15.02	Pass
2593.00	4.72	36.22	18.00	54.22	69.39	-15.17	Pass
2687.50	4.73	36.67	18.00	54.67	69.40	-14.73	Pass

Total EIRP, dBm = Pmeas, dBm + Antenna Gain, dBi

Table 7.2.3 Peak output power spectral density test results for 5 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 100 kHz  
VIDEO BANDWIDTH: 1000 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 18 dBi with 65° horizontal beamwidth  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2498.50	23.15	18.00	41.15	51.61	-10.45	Pass
2593.00	22.52	18.00	40.52	51.61	-11.09	Pass
2687.50	22.09	18.00	40.09	51.62	-11.53	Pass

MODULATION: 64QAM

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2498.50	21.82	18.00	39.82	51.61	-11.79	Pass
2593.00	22.74	18.00	40.74	51.61	-10.87	Pass
2687.50	22.26	18.00	40.26	51.62	-11.36	Pass

Total EIRP, dBm/100 kHz = Pmeas, dBm/100 kHz + Antenna Gain, dBi



<b>Test specification:</b> Section 27.50(h), Peak output power	
<b>Test procedure:</b> Section 27.50(h)	
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS
<b>Date:</b> 4/14/2010	
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa
<b>Relative Humidity:</b> 42 %	
<b>Power Supply:</b> 48VDC	
<b>Remarks:</b>	

Table 7.2.4 Power output power test results for 10 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 110 kHz  
VIDEO BANDWIDTH: 1100 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 18 dBi with 65° horizontal beamwidth  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2501.00	9.466	36.87	18.00	54.87	69.40	-14.53	Pass
2593.00	9.458	37.27	18.00	55.27	69.40	-14.13	Pass
2685.00	9.478	36.39	18.00	54.39	69.41	-15.02	Pass

MODULATION: 64QAM

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2501.00	9.466	36.86	18.00	54.86	69.40	-14.54	Pass
2593.00	9.458	36.88	18.00	54.88	69.40	-14.52	Pass
2685.00	9.478	36.60	18.00	54.60	69.41	-14.81	Pass

Total EIRP, dBm = Pmeas (A),dBm + Antenna Gain, dBi

Table 7.2.5 Peak output power spectral density test results for 10 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 100 kHz  
VIDEO BANDWIDTH: 1000 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 18 dBi with 65° horizontal beamwidth  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2501.00	21.10	18.00	39.10	48.61	-9.51	Pass
2593.00	21.80	18.00	39.80	48.61	-8.81	Pass
2685.00	21.10	18.00	39.10	48.62	-9.52	Pass

MODULATION: 64QAM

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2501.00	19.37	18.00	37.37	48.61	-11.25	Pass
2593.00	20.03	18.00	38.03	48.61	-10.57	Pass
2685.00	19.68	18.00	37.68	48.62	-10.93	Pass

Total EIRP, dBm/100 kHz = Pmeas, dBm/100 kHz + Antenna Gain, dBi





<b>Test specification:</b> Section 27.50(h), Peak output power	
<b>Test procedure:</b> Section 27.50(h)	
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS
<b>Date:</b> 4/14/2010	
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa
<b>Relative Humidity:</b> 42 %	
<b>Power Supply:</b> 48VDC	
<b>Remarks:</b>	

Table 7.2.6 Peak output power test results for 5 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 51 kHz  
VIDEO BANDWIDTH: 510 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 9 dBi Omni  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2498.50	4.72	36.73	9.00	45.73	61.96	-16.23	Pass
2593.00	4.72	36.88	9.00	45.88	61.96	-16.08	Pass
2687.50	4.73	36.68	9.00	45.68	61.97	-16.29	Pass

MODULATION: 64QAM

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2498.50	4.72	36.37	9.00	45.37	61.96	-16.59	Pass
2593.00	4.72	36.22	9.00	45.22	61.96	-16.74	Pass
2687.50	4.73	36.67	9.00	45.67	61.97	-16.30	Pass

Total EIRP, dBm = Pmeas (A),dBm + Antenna Gain, dBi

Table 7.2.7 Peak output power spectral density test results for 5 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 100 kHz  
VIDEO BANDWIDTH: 1000 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 9 dBi Omni  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2498.50	23.15	9.00	32.15	44.17	-12.02	Pass
2593.00	22.52	9.00	31.52	44.18	-12.66	Pass
2687.50	22.09	9.00	31.09	44.19	-13.10	Pass

MODULATION: 64QAM

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2498.50	21.82	9.00	30.82	44.17	-13.36	Pass
2593.00	22.74	9.00	31.74	44.18	-12.44	Pass
2687.50	22.26	9.00	31.26	44.19	-12.93	Pass

Total EIRP, dBm/100 kHz = Pmeas, dBm/100 kHz + Antenna Gain, dBi



<b>Test specification:</b> Section 27.50(h), Peak output power	
<b>Test procedure:</b> Section 27.50(h)	
<b>Test mode:</b> Compliance	<b>Verdict:</b> PASS
<b>Date:</b> 4/14/2010	
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa
<b>Relative Humidity:</b> 42 %	
<b>Power Supply:</b> 48VDC	
<b>Remarks:</b>	

Table 7.2.8 Power output power test results for 10 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 110 kHz  
VIDEO BANDWIDTH: 1100 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 9 dBi Omni  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2501.00	9.466	36.87	9.00	45.87	61.97	-16.10	Pass
2593.00	9.458	37.27	9.00	46.27	61.97	-15.70	Pass
2685.00	9.478	36.39	9.00	45.39	61.98	-16.59	Pass

MODULATION: 64QAM

Channel, MHz	OBW, MHz	Pmeas, dBm	Antenna gain, dBi	EIRP, dBm	Limit, dBm	Margin, dB	Verdict
2501.00	9.466	36.86	9.00	45.86	61.97	-16.11	Pass
2593.00	9.458	36.88	9.00	45.88	61.97	-16.09	Pass
2685.00	9.478	36.60	9.00	45.60	61.98	-16.38	Pass

Total EIRP, dBm = Pmeas (A),dBm + Antenna Gain, dBi

Table 7.2.9 Peak output power spectral density test results for 10 MHz RF channel BW

ASSIGNED FREQUENCY RANGE: 2496.0 – 2690.0 MHz  
DETECTOR USED: Average  
RESOLUTION BANDWIDTH: 100 kHz  
VIDEO BANDWIDTH: 1000 kHz  
MODULATING SIGNAL: PRBS  
DEDICATED ANTENNA: 9 dBi Omni  
DUTY CYCLE: 66%

MODULATION: QPSK

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2501.00	21.10	9.00	30.10	41.18	-11.08	Pass
2593.00	21.80	9.00	30.80	41.17	-10.37	Pass
2685.00	21.10	9.00	30.10	41.18	-11.08	Pass

MODULATION: 64QAM

Channel, MHz	Pmeas, dBm/100 kHz	Antenna gain, dBi	EIRP, dBm/100kHz	Limit, dBm/100 kHz	Margin, dB	Verdict
2501.00	19.37	9.00	28.37	41.18	-12.81	Pass
2593.00	20.03	9.00	29.03	41.17	-12.14	Pass
2685.00	19.68	9.00	28.68	41.18	-12.50	Pass

Total EIRP, dBm/100 kHz = Pmeas, dBm/100 kHz + Antenna Gain, dBi

## Reference numbers of test equipment used

#1	#2	#3				

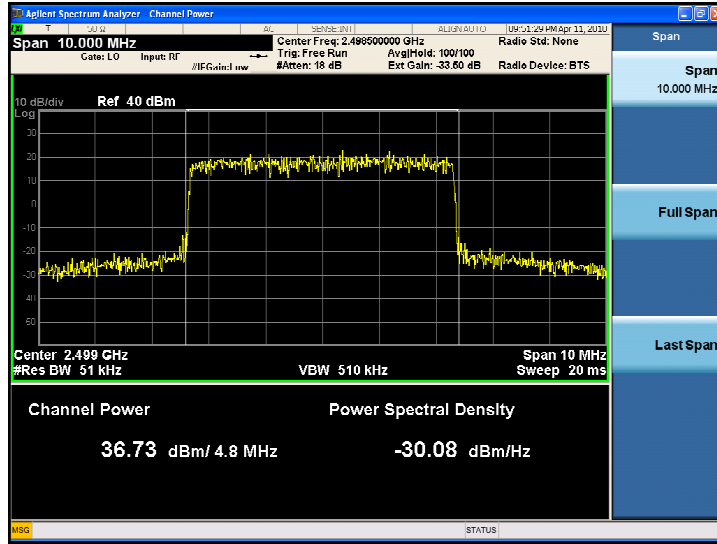
Full description is given in Appendix A.



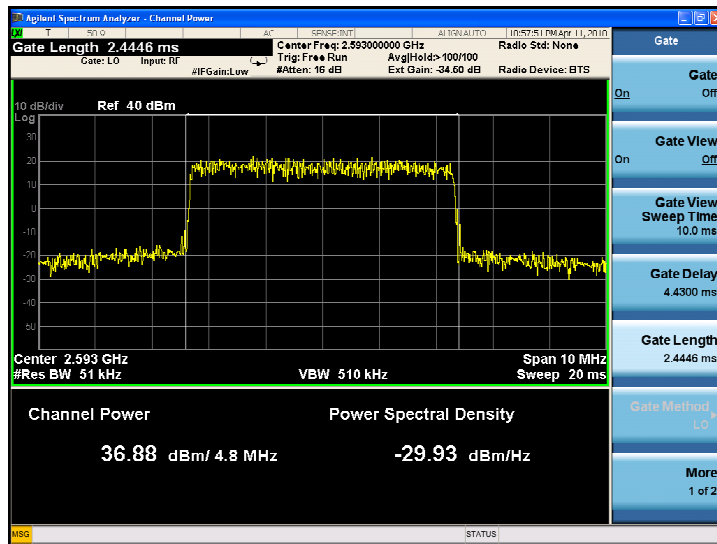
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.1 Peak output power test results at low frequency, 5 MHz, QPSK



Plot 7.2.2 Peak output power test results at mid frequency, 5 MHz, QPSK

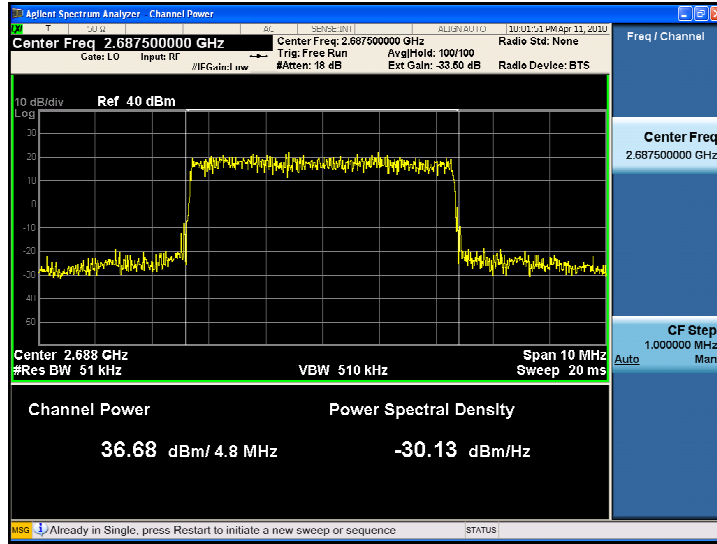




HERMON LABORATORIES

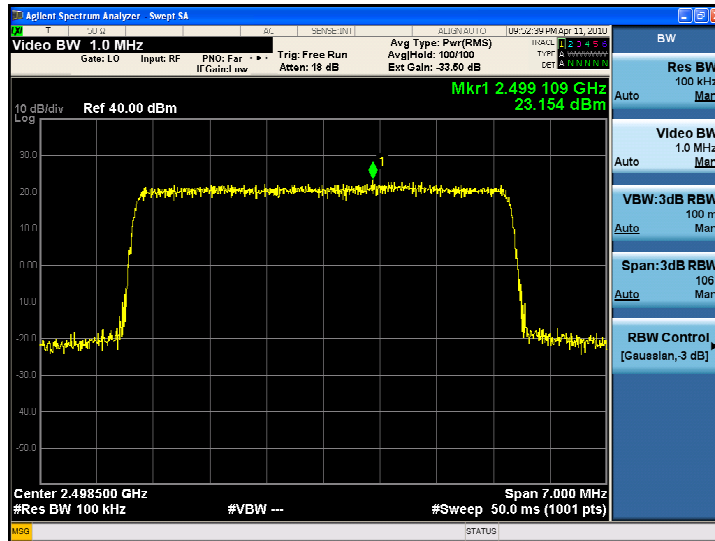
<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.3 Peak output power test results at high frequency, 5 MHz, QPSK

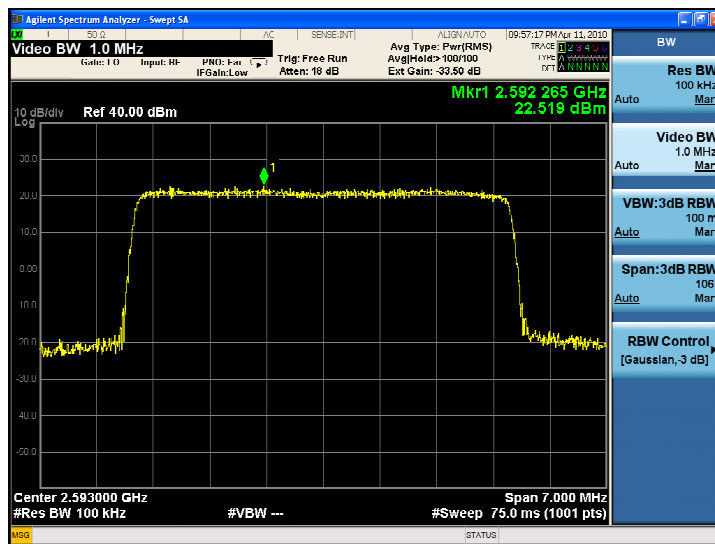


<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b> PASS	
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.4 Peak output power density test results at low frequency, 5 MHz, QPSK



Plot 7.2.5 Peak output power density test results at mid frequency, 5 MHz, QPSK

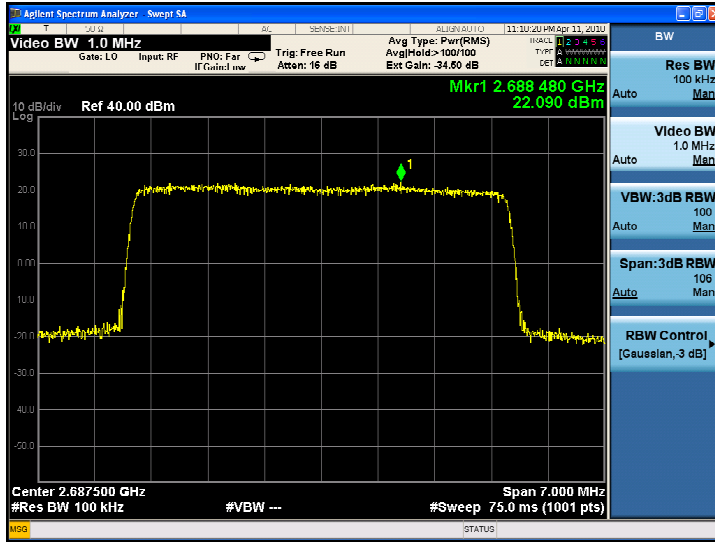




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.6 Peak output power density test results at high frequency, 5 MHz, QPSK

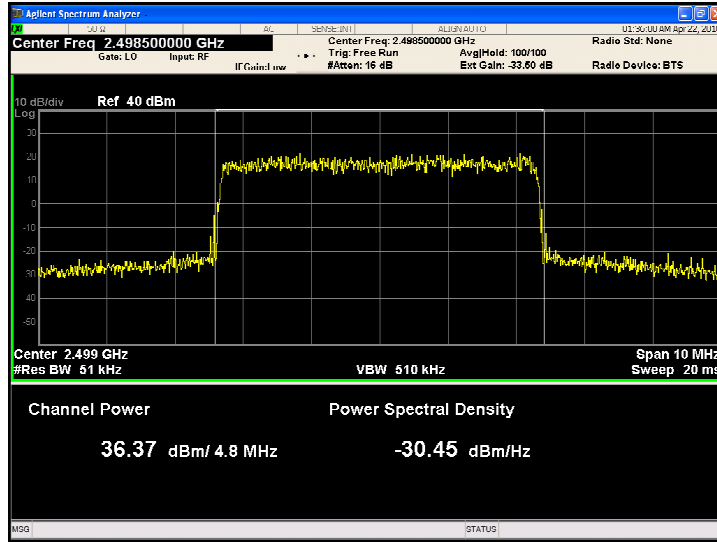




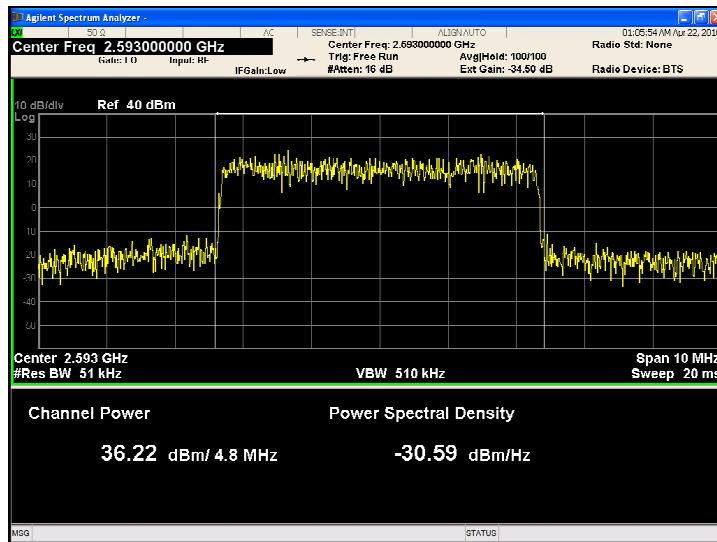
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.7 Peak output power test results at low frequency, 5 MHz, 64QAM



Plot 7.2.8 Peak output power test results at mid frequency, 5 MHz, 64QAM

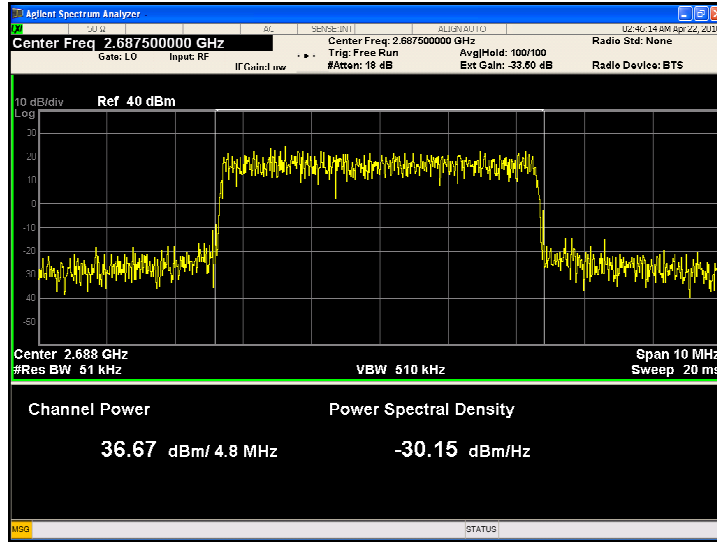




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

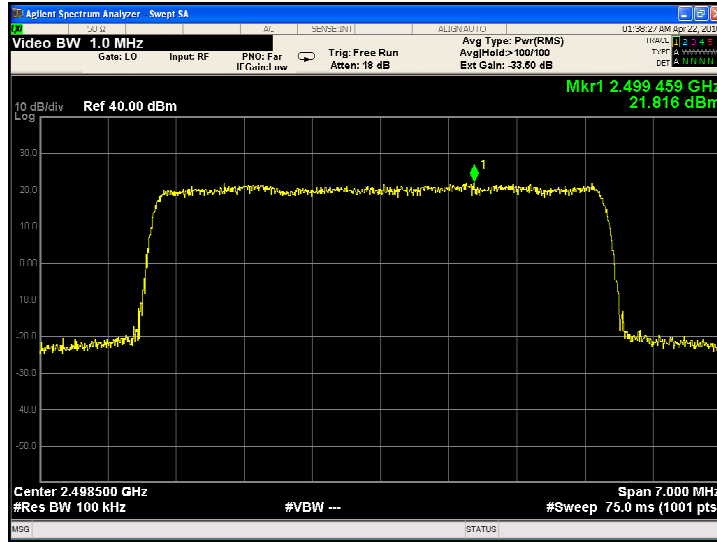
Plot 7.2.9 Peak output power test results at high frequency, 5 MHz, 64QAM



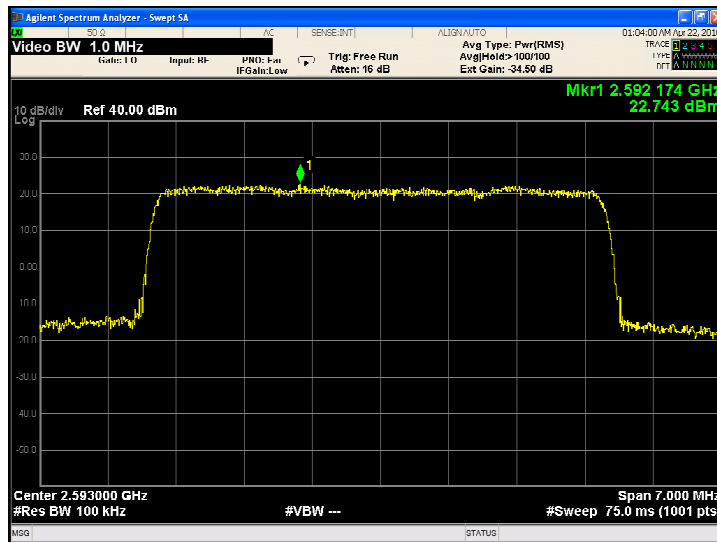


<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.10 Peak output power density test results at low frequency, 5 MHz, 64QAM



Plot 7.2.11 Peak output power density test results at mid frequency, 5 MHz, 64QAM

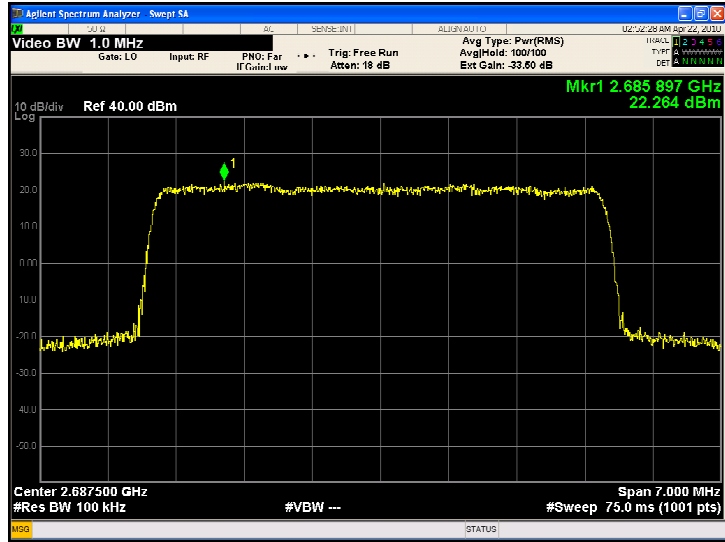




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.12 Peak output power density test results at high frequency, 5 MHz, 64QAM

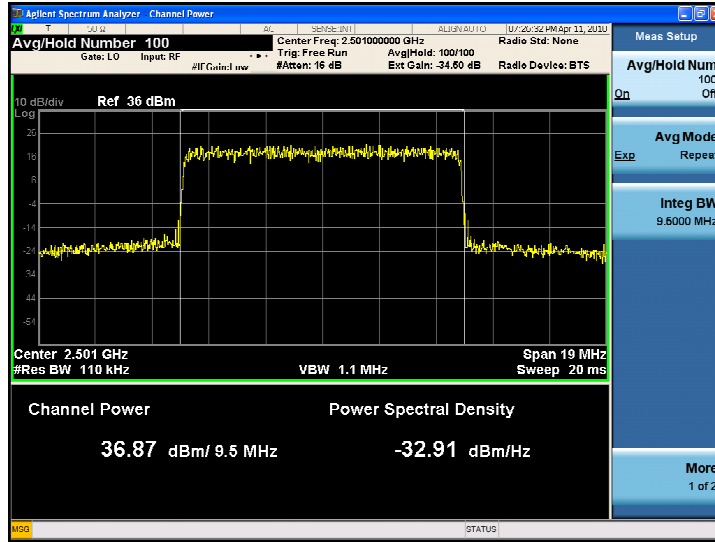




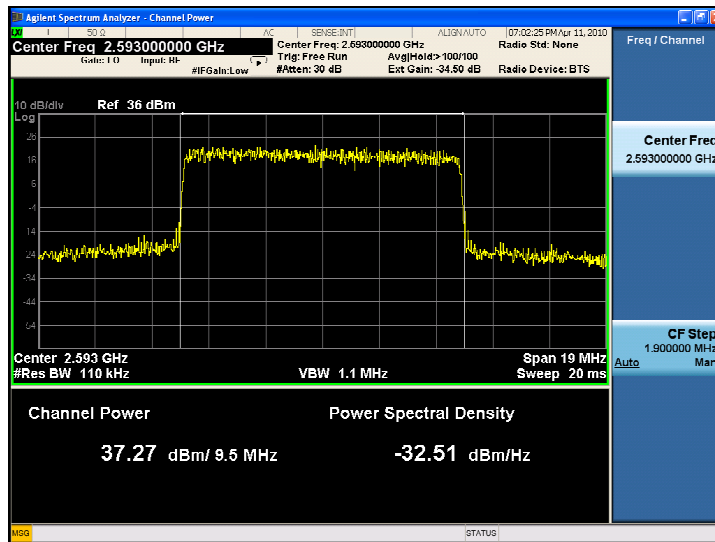
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.13 Peak output power test results at low frequency, 10 MHz, QPSK



Plot 7.2.14 Peak output power test results at mid frequency, 10 MHz, QPSK

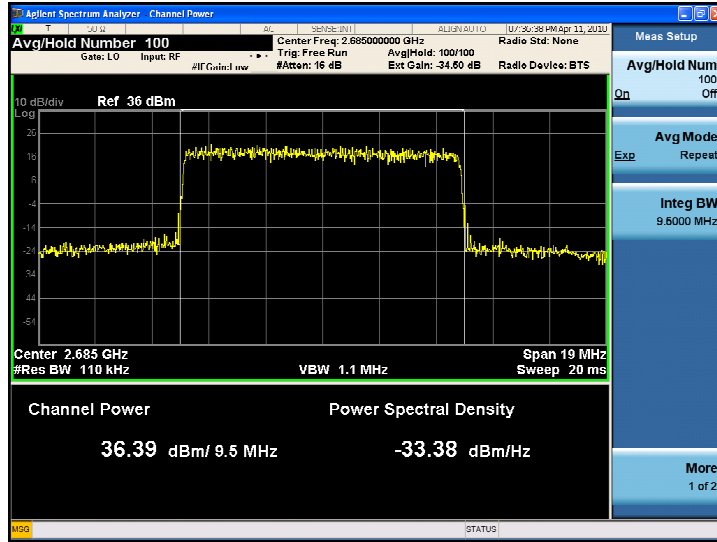




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.15 Peak output power test results at high frequency, 10 MHz, QPSK

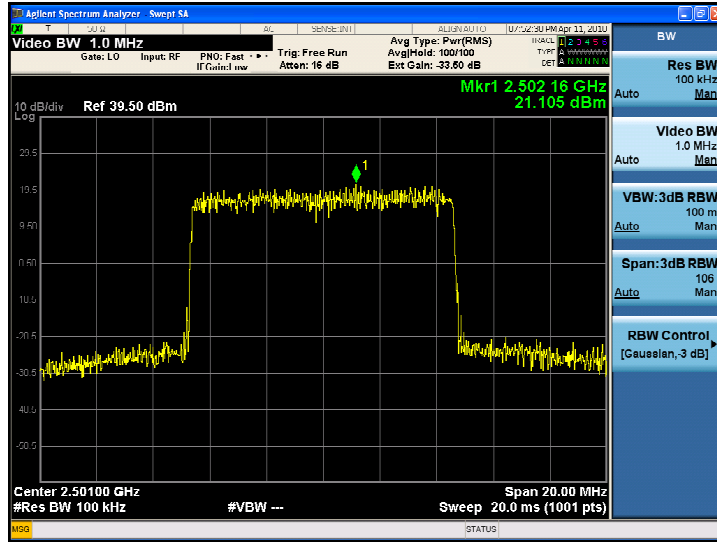




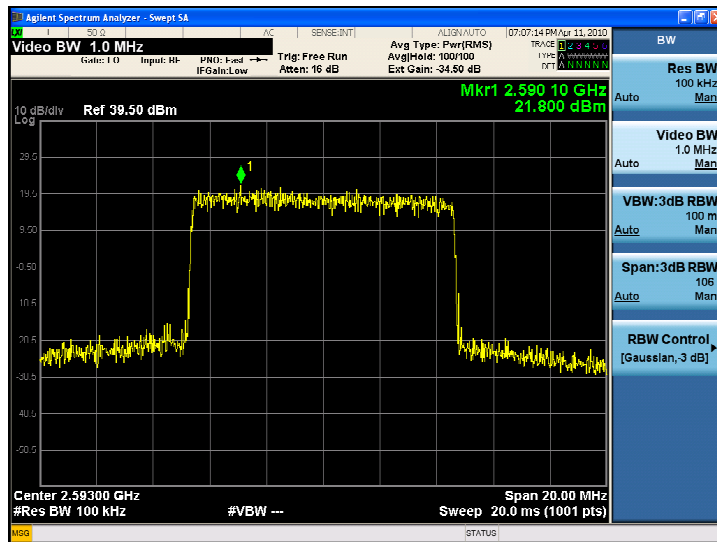
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.16 Peak output power density test results at low frequency, 10 MHz, QPSK



Plot 7.2.17 Peak output power density test results at mid frequency, 10 MHz, QPSK

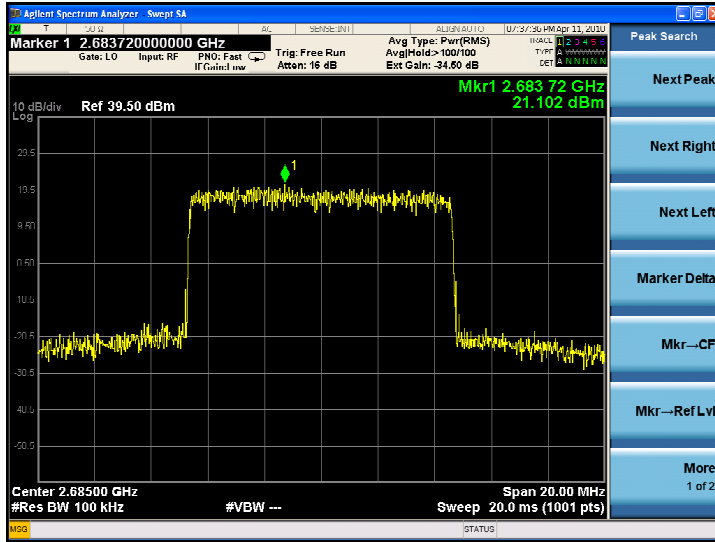




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.18 Peak output power density test results at high frequency, 10 MHz, QPSK

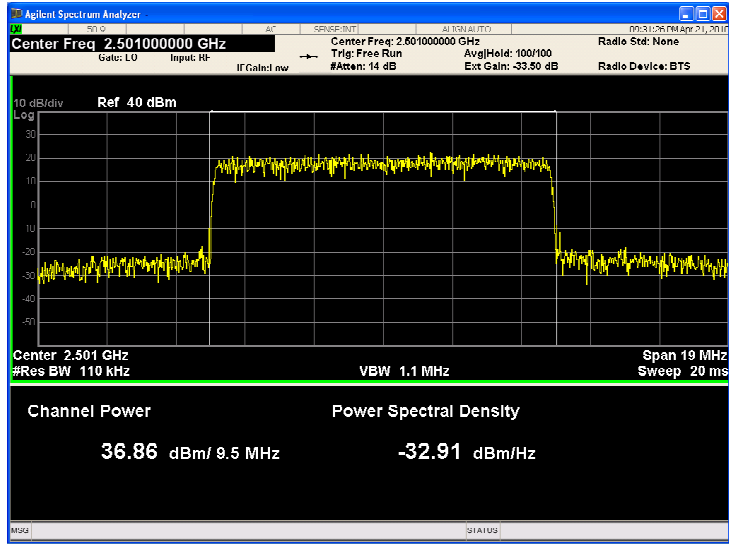




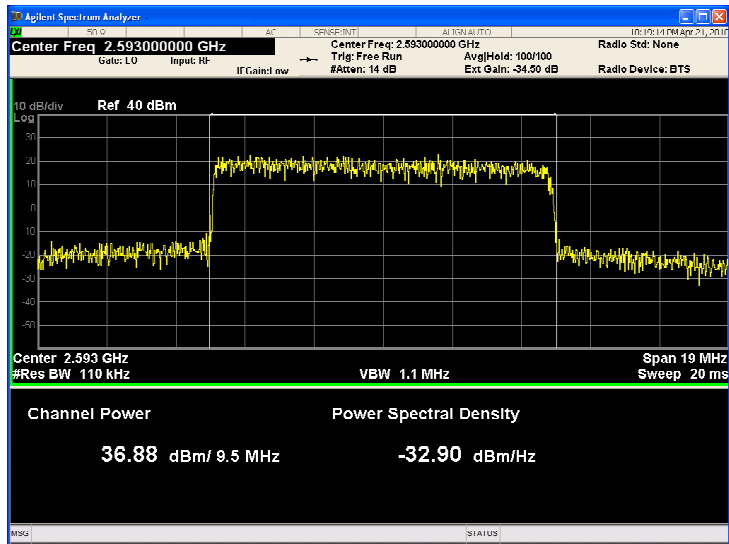
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.19 Peak output power test results at low frequency, 10 MHz, 64QAM



Plot 7.2.20 Peak output power test results at mid frequency, 10 MHz, 64QAM

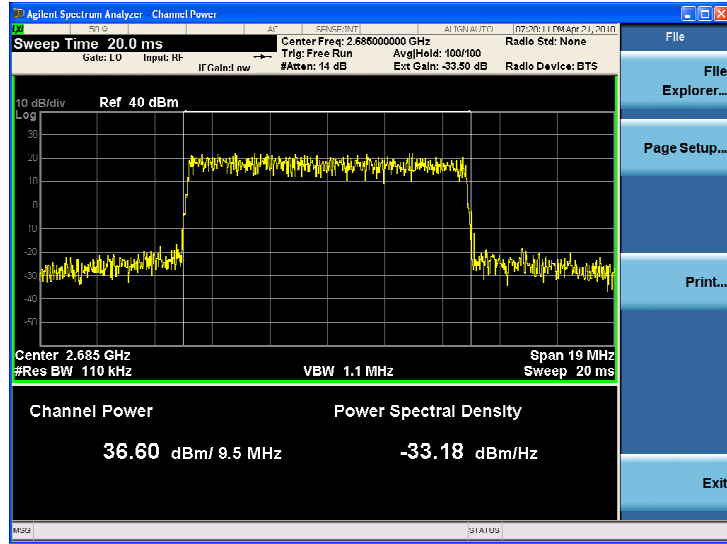




HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.21 Peak output power test results at high frequency, 10 MHz, 64QAM



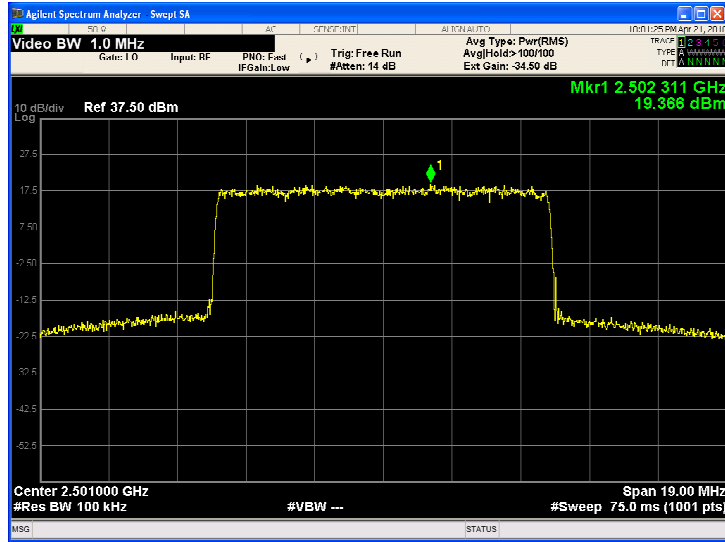




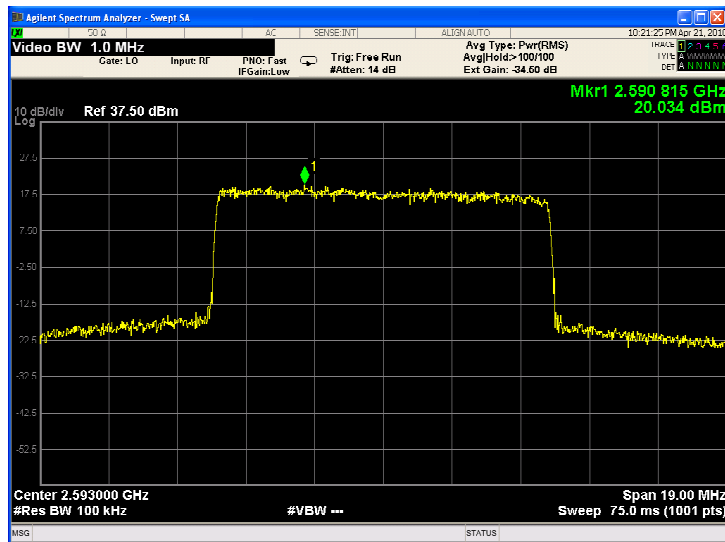
HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	<b>PASS</b>
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.22 Peak output power density test results at low frequency, 10 MHz, 64QAM



Plot 7.2.23 Peak output power density test results at mid frequency, 10 MHz, 64QAM





HERMON LABORATORIES

<b>Test specification:</b>	Section 27.50(h), Peak output power		
<b>Test procedure:</b>	Section 27.50(h)		
<b>Test mode:</b>	Compliance	<b>Verdict:</b>	PASS
<b>Date:</b>	4/14/2010		
<b>Temperature:</b> 23.1 °C	<b>Air Pressure:</b> 1001 hPa	<b>Relative Humidity:</b> 42 %	<b>Power Supply:</b> 48VDC
<b>Remarks:</b>			

Plot 7.2.24 Peak output power density test results at high frequency, 10 MHz, 64QAM

