

ATTACHMENT TO TEST REPORT MOBFCC_16608_rev1

ACCORDING TO: FCC part 15 subpart C §15.247

FOR:

Mobile Access Networks Ltd.
RF distribution amplifier
Model:MA850

This report is in conformity with ISO/IEC 17025. The A2LA logo endorsement applies only to the test methods and the standards that are listed in the scope of Hermon Laboratories accreditation. The test results relate only to the items tested. This test report shall not be reproduced in any form except in full with the written approval of Hermon Laboratories Ltd.

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1 Applicant information

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Telephone: +972 8918 3888
Fax: +972 8918 3844
E-mail: kochavy@mobileaccess.com
Contact name: Mr. Kochav Yadid, QA and Integration director

2 Equipment under test attributes

Product name: RF distribution amplifier
Model(s): MA850
Receipt date 4/26/2006

3 Manufacturer information

Manufacturer name: Mobile Access Networks Ltd.
Address: Ofek One Center Building 2, Northern Industrial Zone, Lod 71293, Israel
Telephone: +972 8918 3888
Fax: +972 8918 3844
E-Mail: kochavy@mobileaccess.com
Contact name: Mr. Kochav Yadid, QA and Integration director




4 Test details

Project ID: 16608
Location: Hermon Laboratories Ltd. P.O.Box 23, Binyamina 30500, Israel
Test started: 7/12/2006
Test completed: 7/13/2006
Test specification(s): FCC part 15 subpart C, §15.247

5 Tests summary

Test	Status
Transmitter characteristics for test configuration consisting of 802.11b/g, 802.11a and parts 22, 24	
Section 15.247(a)2, 6 dB bandwidth	Pass
Section 15.247(b)3, Peak output power	Pass
Section 15.247(d), Peak power density	Pass
Section 15.247(c), Conducted spurious emissions	Pass, see MOB FCC.16608_rev1
Section 15.247(c), Radiated spurious emissions	Pass, see MOB FCC.16608_rev1

Testing was completed against all relevant requirements of the test standard. 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
Tested by:	Mr. A. Lane, test engineer	July 13, 2006	
Reviewed by:	Mrs. M. Cherniavsky, certification engineer	July 13, 2006	
Approved by:	Mr. M. Nikishin, EMC and radio group leader	July 13, 2006	

6 EUT description

6.1 General information

The EUT, MobileAccess 850 provides secure and centralized connection for a number of 802.11a/b/g Access Points, significantly expands 802.11 coverage and enables distributing the data services over the same coax and antenna infrastructure used for distributing voice services through other MobileAccess products.

6.2 Ports and lines

Port type	Port description	Connected		Connector type	Qty.	Cable type	Cable length
		From	To				
Power	48 V DC	adapter	EUT	Power plug	1	unshielded	1.5 m
Power	AC power	mains	adapter	IEC 60320	1	unshielded	1.5 m
Signal	RS232	Open circuit	D-type	1	NA	NA	NA
Signal	Ethernet	Open circuit	RJ-45	1	NA	NA	NA
Conducted measurements							
Signal	802.11b/g	EUT	Access point	TNC modified	1	coax	0.7 m
Signal	802.11b/g	EUT	50 Ω termination	TNC modified	3	NA	NA
Signal	802.11a	EUT	Access point	TNC modified	1	coax	0.7 m
Signal	802.11a	EUT	50 Ω termination	TNC modified	3	NA	NA
RF	Antenna	EUT	50 Ω termination	n-type female	4	NA	NA
RF	CELL mobile services	EUT	Signal generators via divider/splitter	SMA female	1	coax	0.7 m
RF	CELL mobile services	EUT	50 Ω termination	SMA female	1	NA	NA
RF	PCS mobile services	EUT	50 Ω termination	SMA female	2	NA	NA
Radiated measurements							
Signal	802.11b/g	EUT	Access point	TNC modified	4	coax	0.7 m
Signal	802.11a	EUT	Access point	TNC modified	4	coax	0.7 m
RF	Antenna	EUT	antenna	n-type female	4	coax	0.7 m
RF	CELL mobile services	EUT	Signal generators via divider/splitter	SMA female	2	coax	0.7 m
RF	PCS mobile services	EUT	Signal generators via divider/splitter	SMA female	2	coax	0.7 m

6.3 Support and test equipment

Description	Manufacturer	Model number	Serial number
Aironet 1200 – a,b,g Wireless Access Point	Cisco Systems	AIR-AP1232AG-A-K9	FTX0922E380
			FTX0922E380
			FTX0922E394
			FTX0923R01B
Adapter (Access Point)	Cisco Systems		PHI09050DEC
			PHI08280RGY
			PHI090803G3
			PHI0828126A
4 Sencity@Art Ultra-broadband antennas	Huber+Suhner	SWA 0859/360/4/10/V	Art. No. 23040329
Adapter (EUT)	NA	SB-480A7F-11	006291
Signal generator	HP	E4431B	U538220140
Signal generator	HP	8656A	2228A03615
Laptop	IBM	2645-4A0	5515FL6
Adapter (laptop)	IBM	N79	02K6543
Splitter	HL	NA	NA
Divider	HL	NA	NA

6.4 Operating frequencies

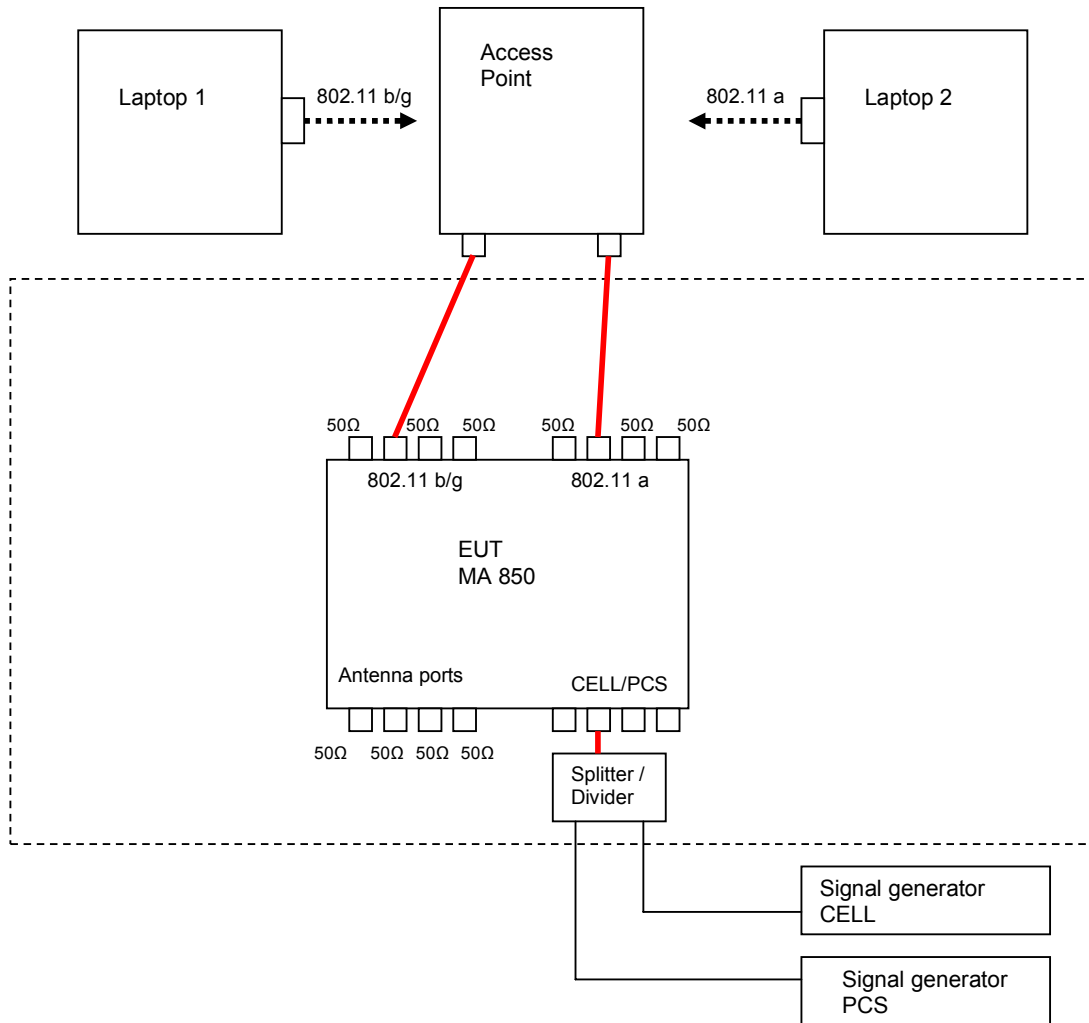
Frequency, MHz
800-1000
1800-2000
2500
5100

6.5 Changes made in the EUT

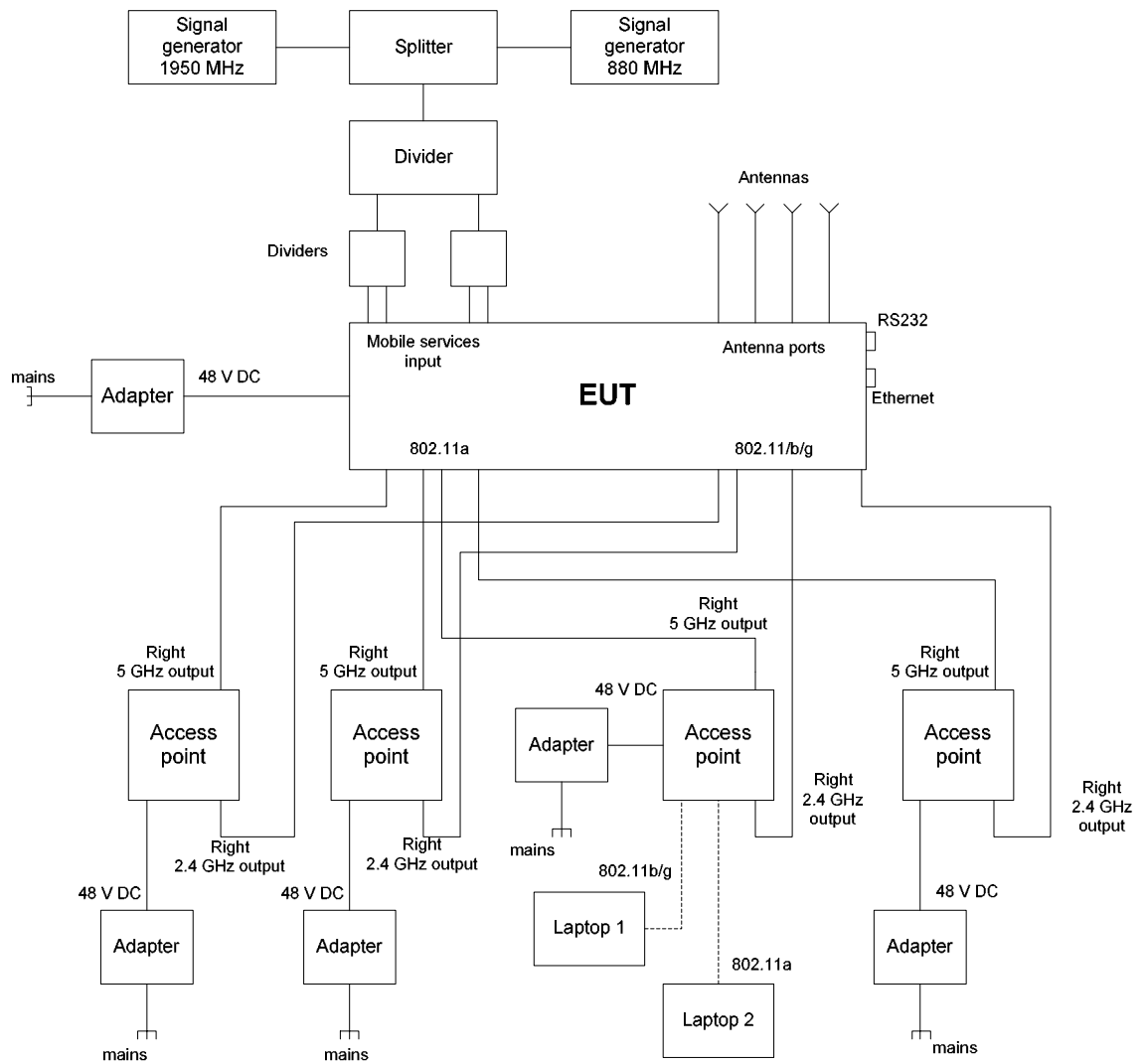
No changes were implemented.

6.6 Test configuration

6.6.1 EUT setup for conducted measurements



6.6.2 EUT setup for radiated measurements



6.7 Transmitter characteristics

Type of equipment			
	Stand-alone (Equipment with or without its own control provisions)		
X	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)		
Intended use		Condition of use	
X	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	
Assigned frequency range		1) 5150 – 5825 MHz; 2) 2400 – 2483.5 MHz	
Operating frequency range		1) 5015 – 5250 MHz, 5250 – 5350 MHz, 5725 - 5825 MHz; 2) 2412 -2462 MHz	
Maximum rated output power		At transmitter 50 Ω RF output connector	25.5 dBm
		Effective radiated power (for equipment with no RF connector)	
Is transmitter output power variable?		No	
		continuous variable	
		stepped variable with stepsize	
		minimum RF power	
		maximum RF power	
		X	Yes
Antenna connection			
unique coupling	X	standard connector	integral
			with temporary RF connector
			X without temporary RF connector
Antenna/s technical characteristics			
Type	Manufacturer	Model number	Gain
ultra-broadband antenna	HUBER+SUHNER	SWA 0859/360/4/10/V SENCITY-ART	7 dBi
Type of modulation			
16QAM, QPSK, BPSK			
Type of multiplexing			
TDMA			
Transmitter power source			
	Battery	Nominal rated voltage	Battery type
X	DC	Nominal rated voltage	48 V
	AC mains	Nominal rated voltage	Frequency

Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

7 Transmitter tests according to 47CFR part 15 subpart C requirements (802.11 b/g, 802.11a and licensed Tx testing)

7.1 Minimum 6 dB bandwidth

7.1.1 General

This test was performed to measure 6 dB bandwidth of the EUT carrier frequency. Specification test limits are given in Table 7.1.1.

Table 7.1.1 The 6 dB bandwidth limits

Assigned frequency, MHz	Modulation envelope reference points*, dBc	Minimum bandwidth, kHz
902.0 – 928.0	6.0	500.0
2400.0 – 2483.5		
5725.0 – 5850.0		

* - Modulation envelope reference points provided in terms of attenuation below the peak of modulated carrier.

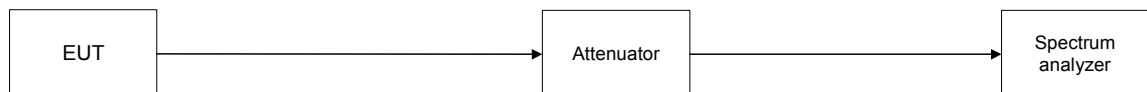
7.1.2 Test procedure

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 modulated carrier.

7.1.2.3 The transmitter minimum 6 dB bandwidth was measured with spectrum analyzer as frequency delta between reference points on modulation envelope and provided in Table 7.1.2 and associated plot.

Figure 7.1.1 The 6 dB bandwidth test setup



Photograph 7.1.1 The 6 dB bandwidth test setup



Test specification:		Section 15.247(a)2, 6 dB bandwidth	
Test procedure:		FR Vol.62, page 26243, Section 15.247(a)2	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Table 7.1.2 The 6 dB bandwidth test results

ASSIGNED FREQUENCY BAND: 2400 – 2483.5 MHz
DETECTOR USED: Peak
RESOLUTION BANDWIDTH: 100 kHz
VIDEO BANDWIDTH: 300 kHz
MODULATION ENVELOPE REFERENCE POINTS: -6.0 dBc
MODULATION: DSSS:
DBPSK @ 1 Mbps
CCK @ 11 Mbps
OFDM:
BPSK @ 6 Mbps
64QAM @ 54 Mbps

MODULATING SIGNAL: PRBS

Carrier frequency, MHz	6 dB bandwidth, kHz	Limit, kHz	Margin, kHz	Verdict
DSSS, 1 Mbps				
2412	12525.0	500	12025.0	Pass
2437	12525.0	500	12025.0	Pass
2462	12525.0	500	12025.0	Pass
DSSS, 11 Mbps				
2412	12075.0	500	11575.0	Pass
2437	12075.0	500	11575.0	Pass
2462	12337.5	500	11837.5	Pass
DSSS, 6 Mbps				
2412	11562.5	500	11062.5	Pass
2437	11250.0	500	10750.0	Pass
2462	12167.5	500	11667.5	Pass
DSSS, 54 Mbps				
2412	16375.0	500	15875.0	Pass
2437	16437.5	500	15937.5	Pass
2462	16062.5	500	15562.5	Pass

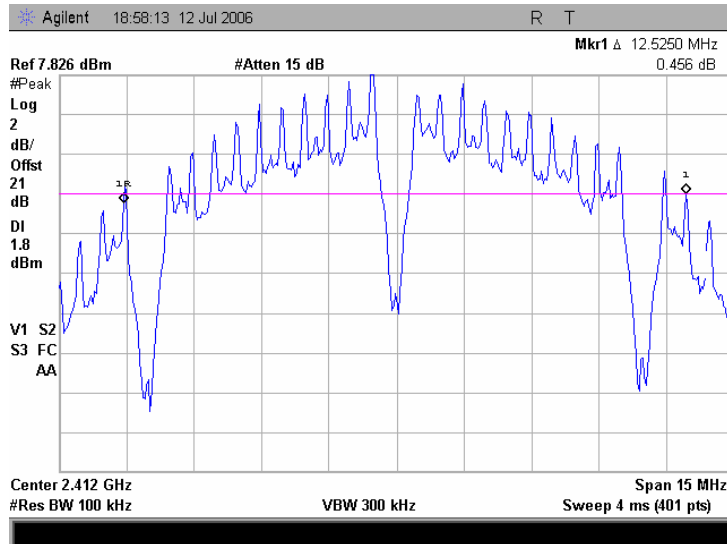
Reference numbers of test equipment used

HL 1650	HL 2867	HL 2909					
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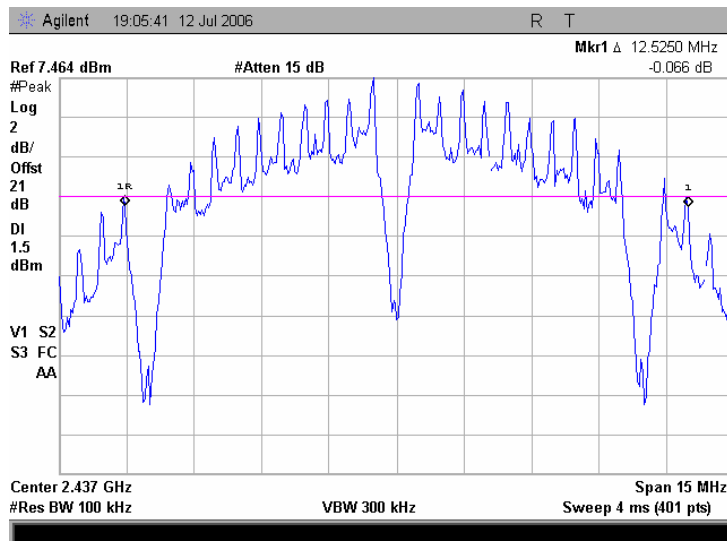
Full description is given in Appendix A.

Test specification:		Section 15.247(a)2, 6 dB bandwidth	
Test procedure:		FR Vol.62, page 26243, Section 15.247(a)2	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.1 The 6 dB bandwidth test result at low frequency, DSSS, 1 Mbps

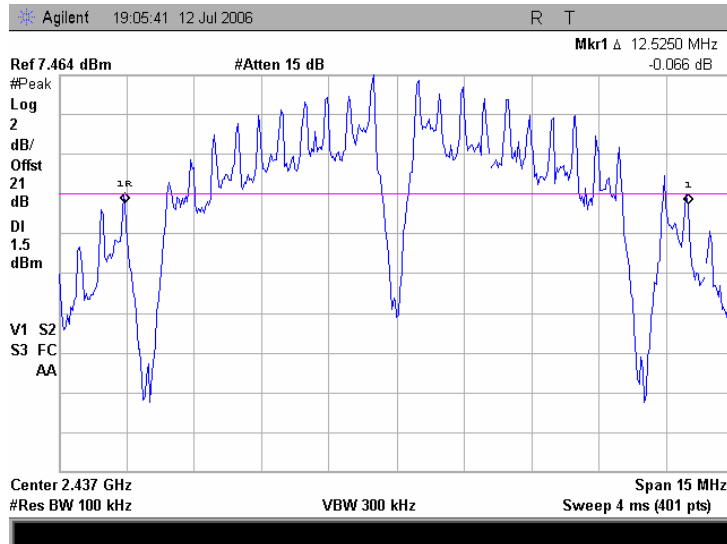


Plot 7.1.2 The 6 dB bandwidth test result at mid frequency, DSSS, 1 Mbps

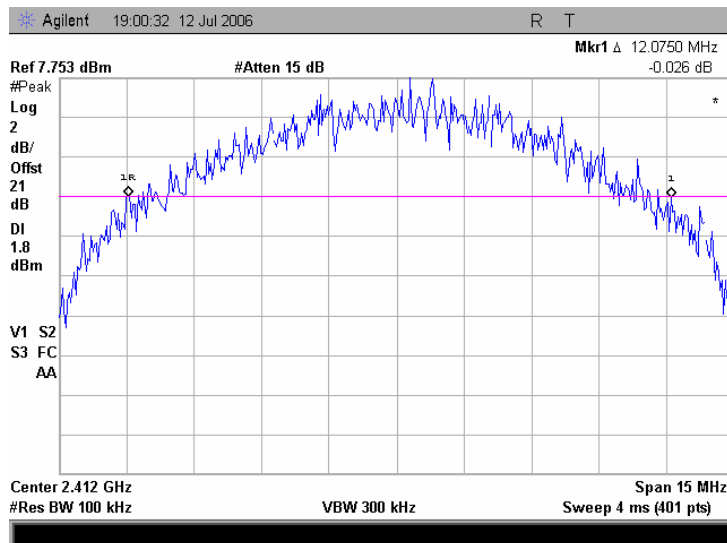


Test specification:		Section 15.247(a)2, 6 dB bandwidth	
Test procedure:		FR Vol.62, page 26243, Section 15.247(a)2	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.3 The 6 dB bandwidth test result at high frequency, DSSS, 1 Mbps

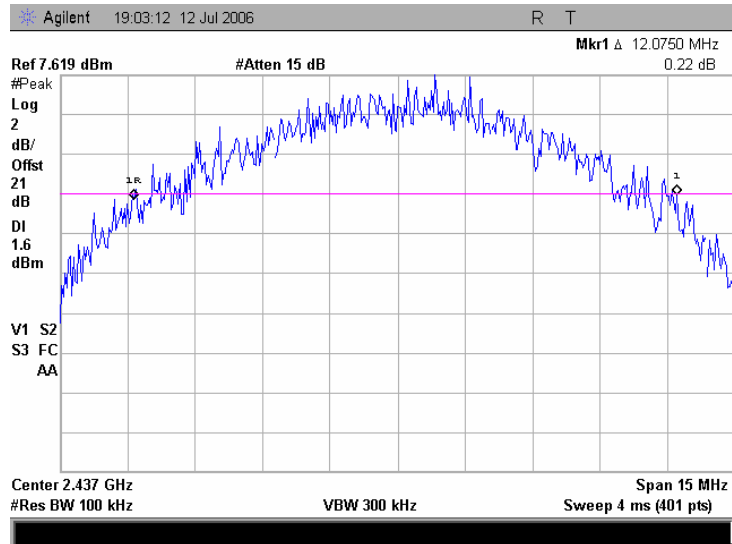


Plot 7.1.4 The 6 dB bandwidth test result at low frequency, DSSS, 11 Mbps

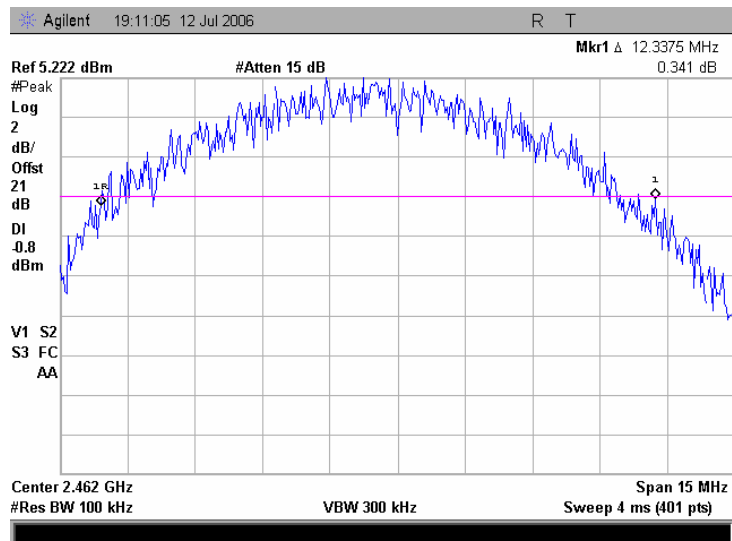


Test specification: Section 15.247(a)2, 6 dB bandwidth			
Test procedure: FR Vol.62, page 26243, Section 15.247(a)2			
Test mode: Compliance	Verdict: PASS		
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.5 The 6 dB bandwidth test result at mid frequency, DSSS, 11 Mbps

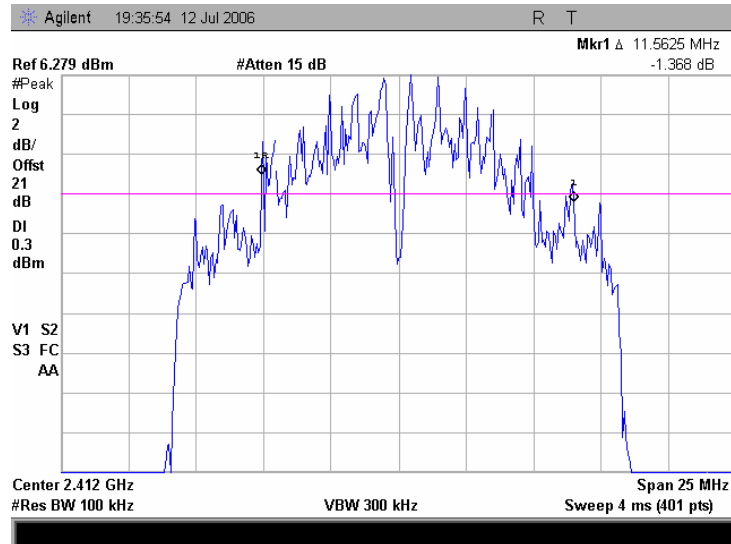


Plot 7.1.6 The 6 dB bandwidth test result at high frequency, DSSS, 11 Mbps

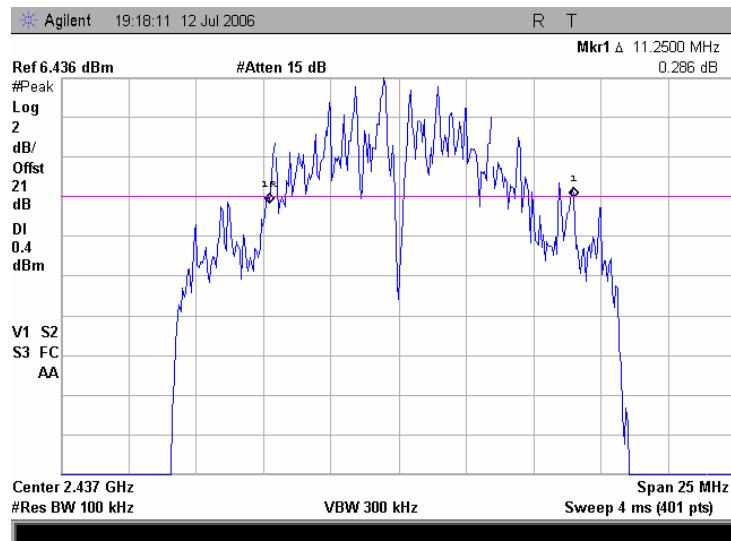


Test specification: Section 15.247(a)2, 6 dB bandwidth			
Test procedure: FR Vol.62, page 26243, Section 15.247(a)2			
Test mode: Compliance			Verdict: PASS
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.7 The 6 dB bandwidth test result at low frequency, OFDM, 6 Mbps

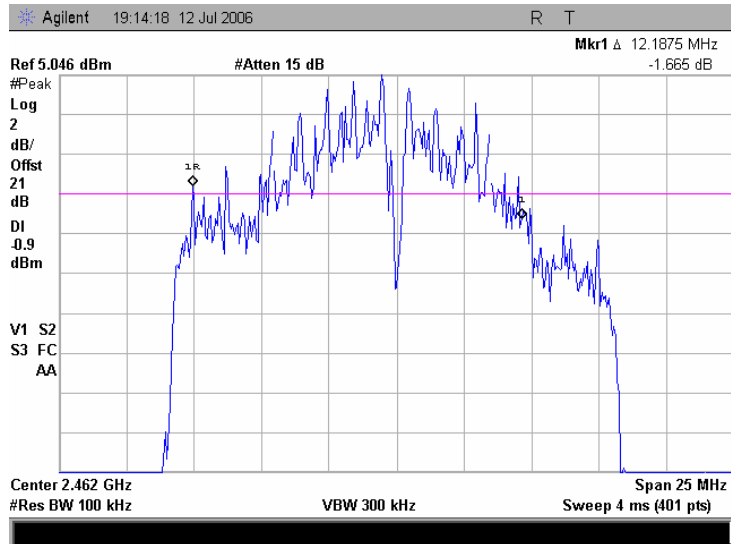


Plot 7.1.8 The 6 dB bandwidth test result at mid frequency, OFDM, 6 Mbps

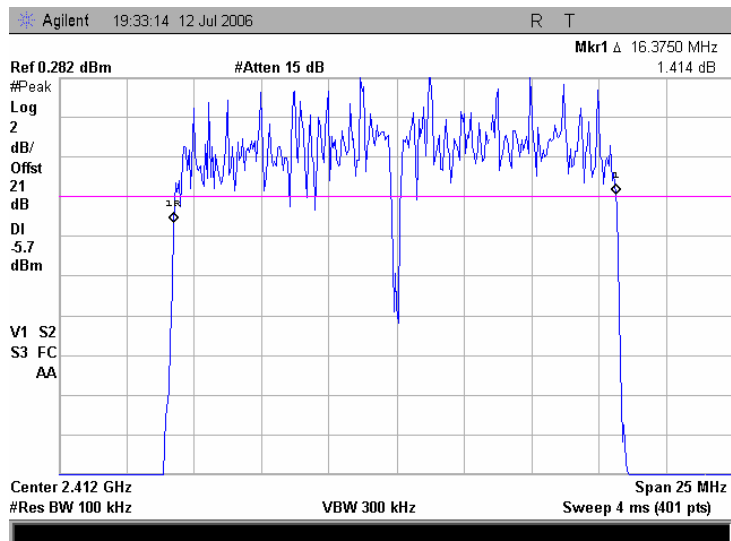


Test specification:		Section 15.247(a)2, 6 dB bandwidth	
Test procedure:		FR Vol.62, page 26243, Section 15.247(a)2	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.9 The 6 dB bandwidth test result at high frequency, OFDM, 6 Mbps

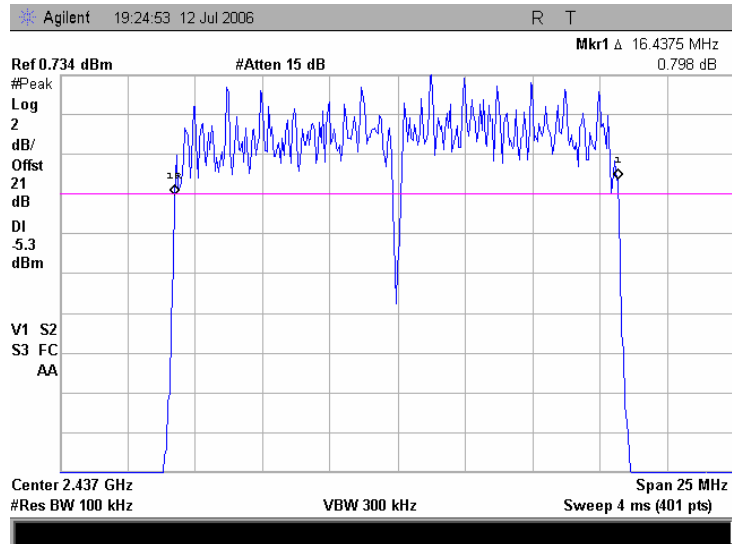


Plot 7.1.10 The 6 dB bandwidth test result at low frequency, OFDM, 54 Mbps

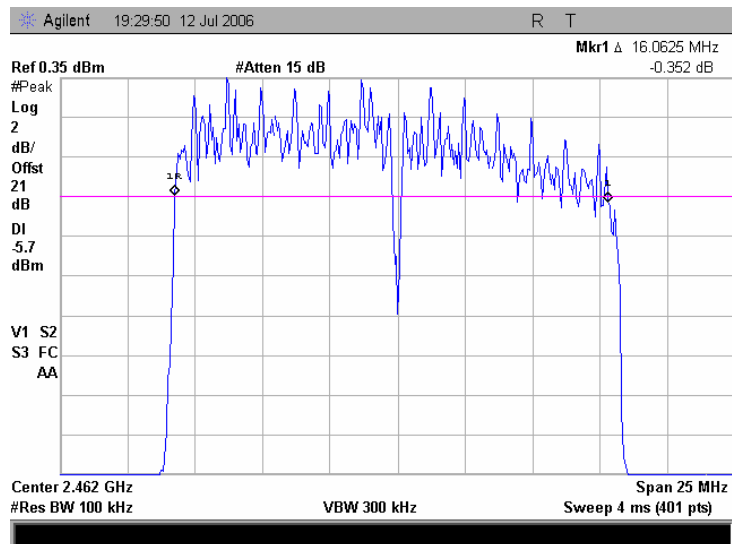


Test specification:	Section 15.247(a)2, 6 dB bandwidth		
Test procedure:	FR Vol.62, page 26243, Section 15.247(a)2		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.1.11 The 6 dB bandwidth test result at mid frequency, OFDM, 54 Mbps



Plot 7.1.12 The 6 dB bandwidth test result at high frequency, OFDM, 54 Mbps



Test specification:		Section 15.247(b)3, Peak output power	
Test procedure:		FR Vol.62, page 26243, Section 15.247(b)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

7.2 Peak output power

7.2.1 General

This test was performed to measure the maximum peak output power at the transmitter RF antenna connector. Specification test limits are given in **Error! Reference source not found.**

Table 7.2.1 Peak output power limits

Assigned frequency range, MHz	Maximum antenna gain, dBi	Peak output power*	
		W	dBm
902.0 – 928.0	6.0	1.0	30.0
2400.0 – 2483.5			
5725.0 – 5850.0			

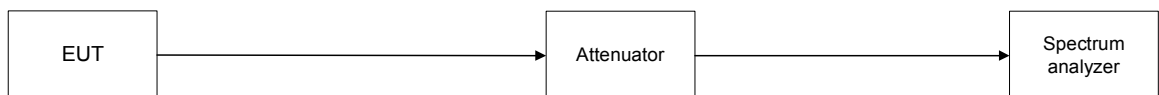
*- If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power limit shall be reduced below the stated value as follows:

- by 1 dB for every 3 dB that the directional gain of antenna exceeds 6 dBi for fixed point-to-point transmitters operate in 2400-2483.5 MHz band;
- without any corresponding reduction for fixed point-to-point transmitters operate in 5725-5850 MHz band;
- by the amount in dB that the directional gain of antenna exceeds 6 dBi for the rest of transmitters.

7.2.2 Test procedure

- 7.2.2.1 The EUT was set up as shown in **Error! Reference source not found.**, energized and its proper operation was checked.
- 7.2.2.2 The EUT was adjusted to produce maximum available for end user RF output power.
- 7.2.2.3 The resolution bandwidth of spectrum analyzer was set wider than 6 dB bandwidth of the EUT and the maximum peak output power was measured as provided in Table 7.2.2 and associated plots.

Figure 7.2.1 Peak output power test setup



Photograph 7.2.1 Peak output power test setup



Test specification:		Section 15.247(b)3, Peak output power	
Test procedure:		FR Vol.62, page 26243, Section 15.247(b)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Table 7.2.2 Peak output power test results

ASSIGNED FREQUENCY: 2400.0 – 2483.5 MHz
 MODULATION: DBPSK, CCK, BPSK, 64QAM
 MODULATING SIGNAL: PRBS
 BIT RATE: 1, 11, 6, 54 Mbps
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 DETECTOR USED: Peak
 EUT 6 dB BANDWIDTH: 12.5 MHz (DSSS) / 16.4 MHz (OFDM)
 RESOLUTION BANDWIDTH: 100 kHz
 VIDEO BANDWIDTH: 300 kHz

Carrier frequency, MHz	Spectrum analyzer reading, dBm	External attenuation, dB	Cable loss, dB	Peak output power, dBm	Limit, dBm	Margin*, dB	Verdict
DSSS, 1 Mbps							
2412	24.77	Included	Included	24.77	30.0	-5.23	Pass
2437	24.70	Included	Included	24.70	30.0	-5.30	Pass
2462	24.70	Included	Included	24.70	30.0	-5.30	Pass
DSSS, 11 Mbps							
2412	25.50	Included	Included	25.50	30.0	-5.23	Pass
2437	24.94	Included	Included	24.94	30.0	-5.30	Pass
2462	24.84	Included	Included	24.84	30.0	-5.30	Pass
OFDM, 6 Mbps							
2412	22.99	Included	Included	22.99	30.0	-7.01	Pass
2437	22.28	Included	Included	22.28	30.0	-7.72	Pass
2462	23.83	Included	Included	23.83	30.0	-6.17	Pass
OFDM, 54 Mbps							
2412	20.32	Included	Included	20.32	30.0	-9.68	Pass
2437	19.92	Included	Included	19.92	30.0	-10.08	Pass
2462	19.91	Included	Included	19.91	30.0	-10.09	Pass

* - Margin = Peak output power – specification limit.

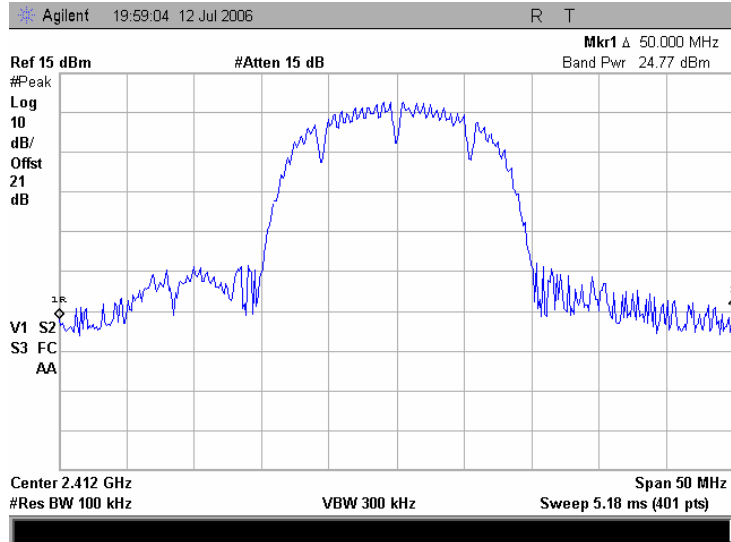
Reference numbers of test equipment used

HL 1650	HL 2867	HL 2909				
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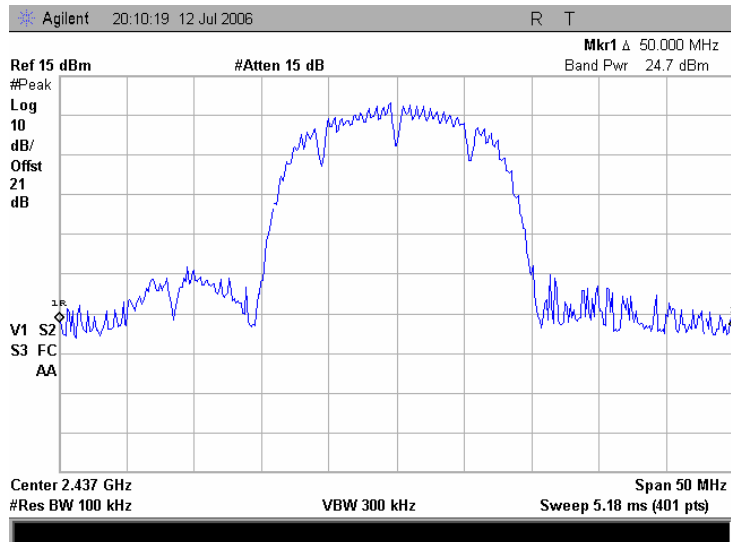
Full description is given in Appendix A.

Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.1 Peak output power at low frequency, DSSS, 1 Mbps

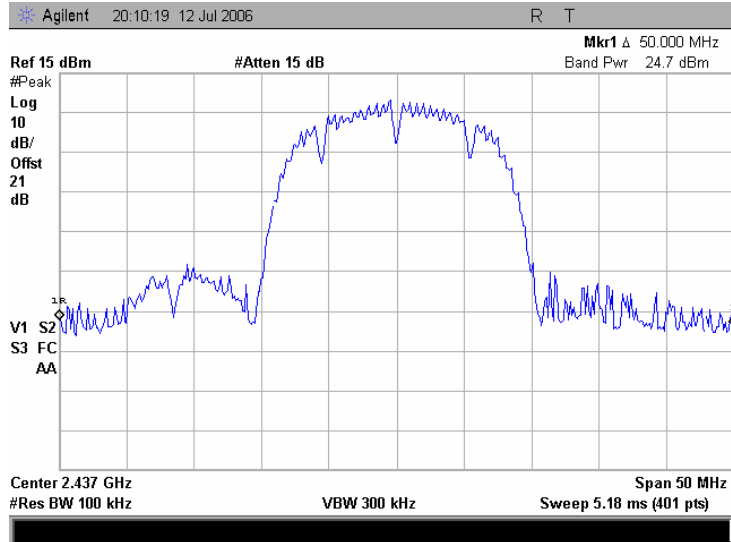


Plot 7.2.2 Peak output power at mid frequency, DSSS, 1 Mbps

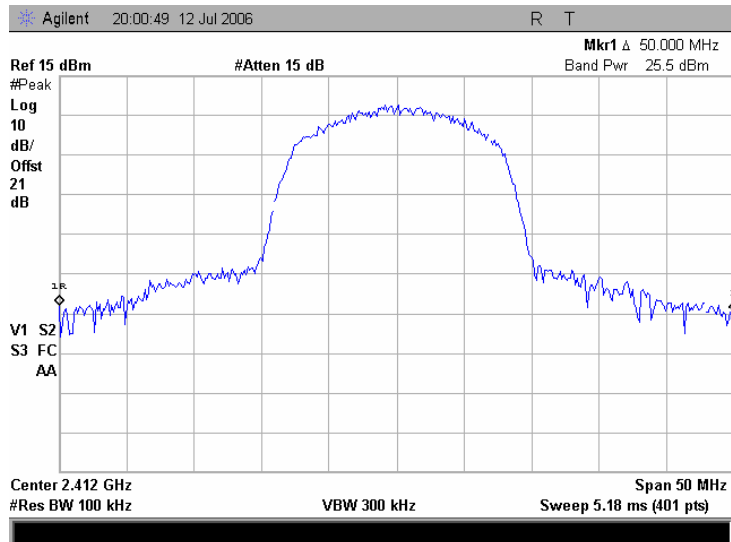


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.3 Peak output power at high frequency, DSSS, 1 Mbps

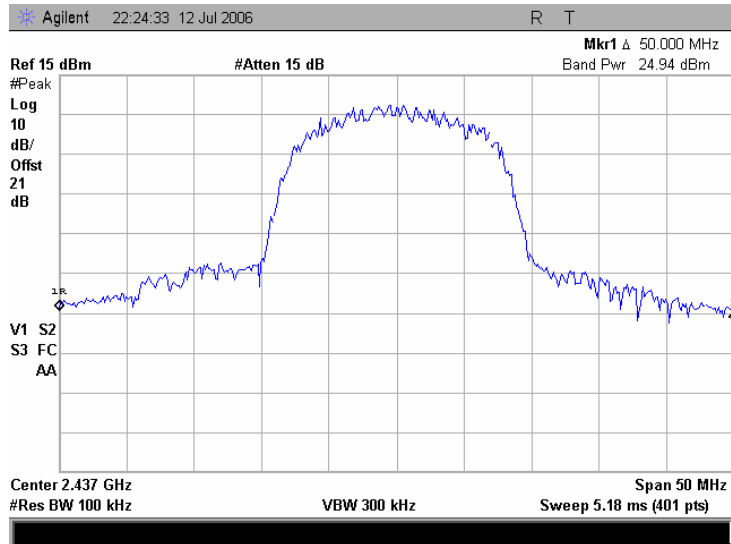


Plot 7.2.4 Peak output power at low frequency, DSSS, 11 Mbps

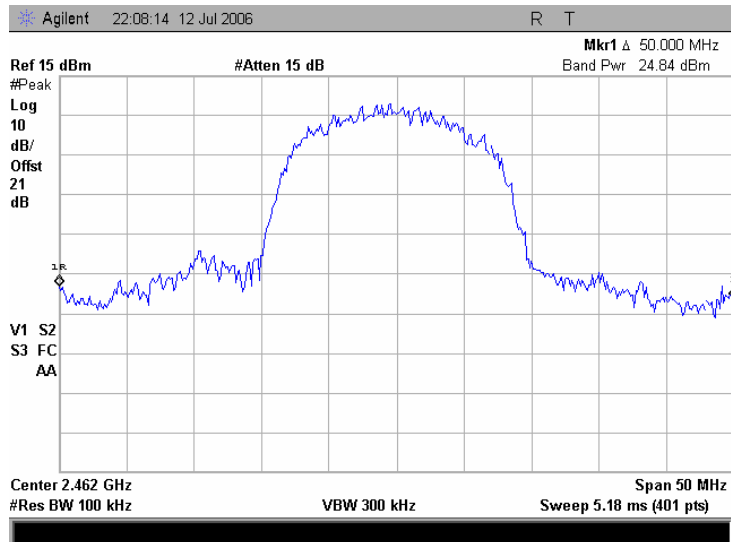


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.5 Peak output power at mid frequency, DSSS, 11 Mbps

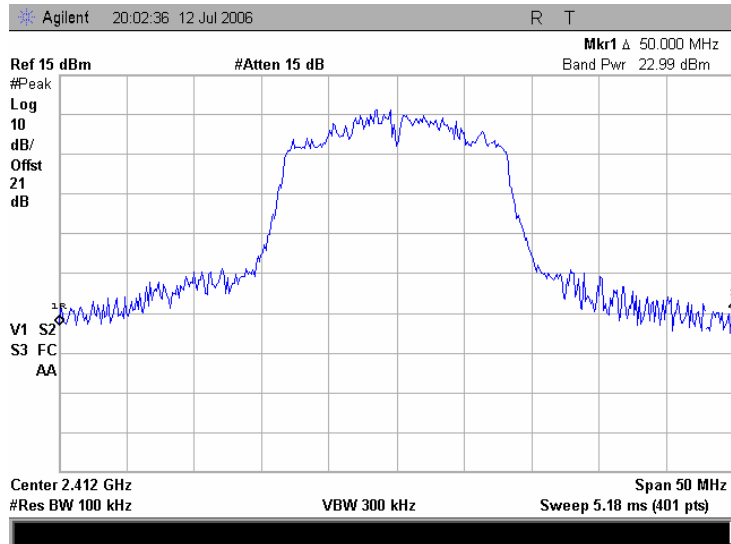


Plot 7.2.6 Peak output power at high frequency, DSSS, 11 Mbps

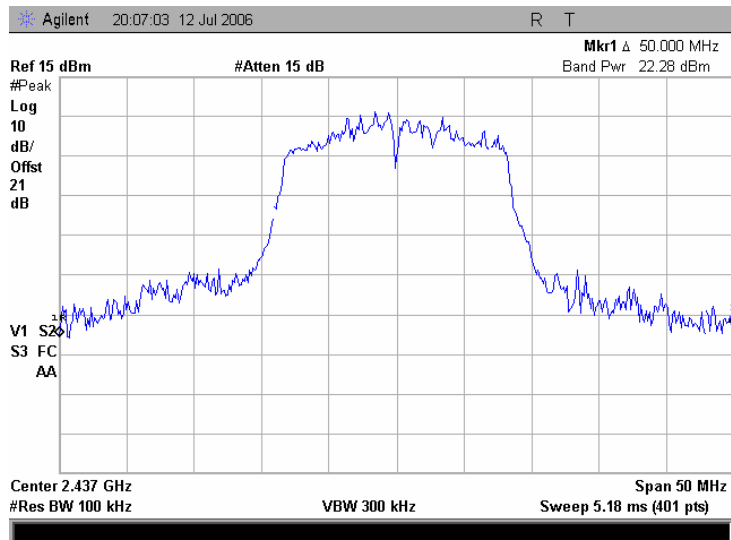


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.7 Peak output power at low frequency, OFDM, 6 Mbps

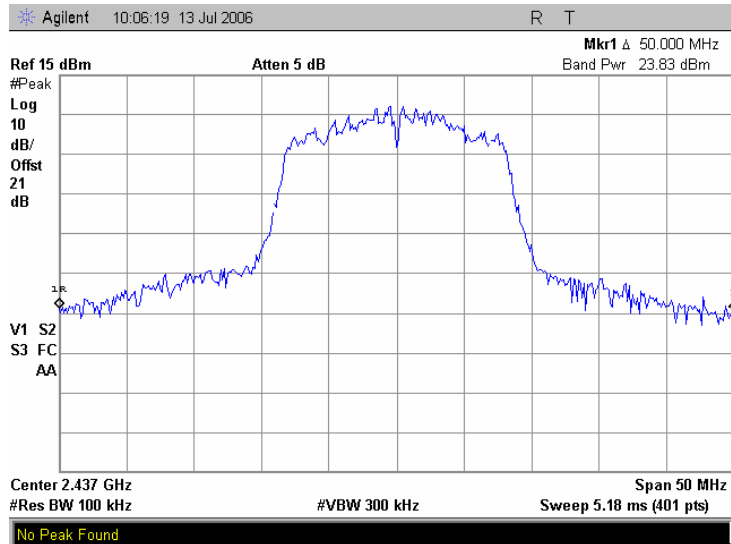


Plot 7.2.8 Peak output power at mid frequency, OFDM, 6 Mbps

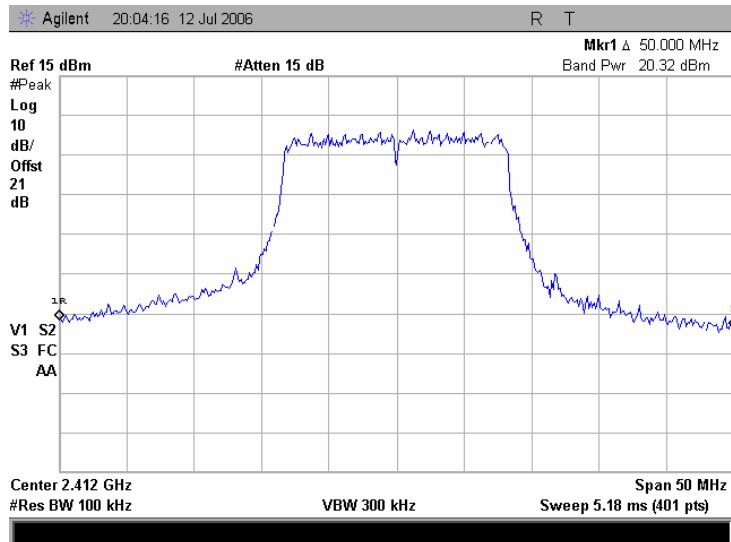


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.9 Peak output power at high frequency, OFDM, 6 Mbps

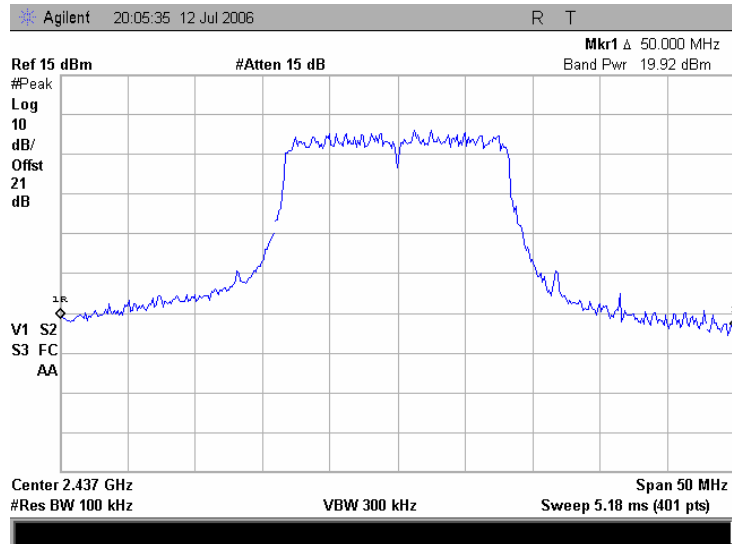


Plot 7.2.10 Peak output power at low frequency, OFDM, 54 Mbps

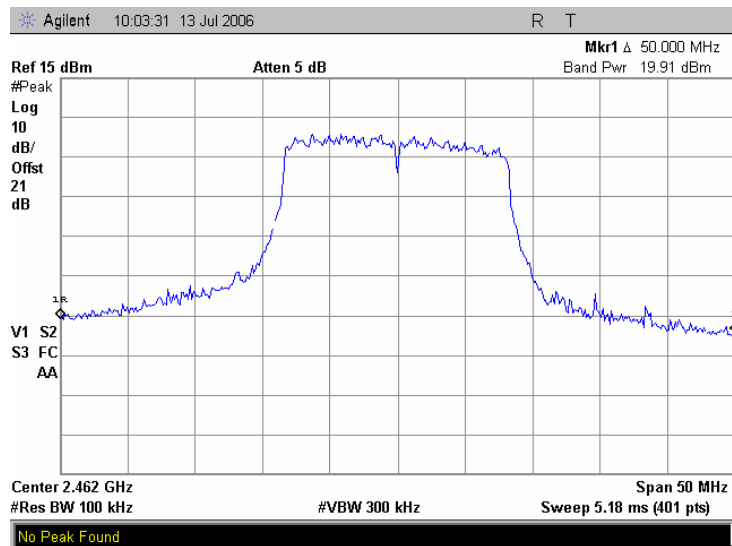


Test specification:	Section 15.247(b)3, Peak output power		
Test procedure:	FR Vol.62, page 26243, Section 15.247(b)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.2.11 Peak output power at mid frequency, OFDM, 54 Mbps



Plot 7.2.12 Peak output power at high frequency, OFDM, 54 Mbps



Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

7.3 Peak spectral power density

7.3.1 General

This test was performed to measure the peak spectral power density at the transmitter RF antenna connector. Specification test limits are given in Table 7.3.1.

Table 7.3.1 Peak spectral power density limits

Assigned frequency range, MHz	Measurement bandwidth, kHz	Peak spectral power density, dBm
2400 – 2483.5	3.0	8.0

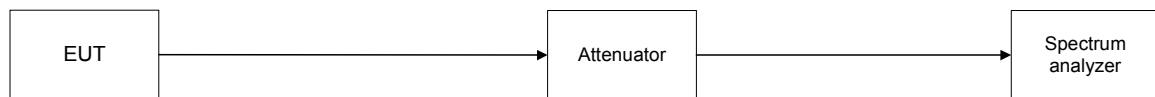
7.3.2 Test procedure

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

7.3.2.3 The frequency span of spectrum analyzer was set to capture the entire band of the transmission, in peak hold mode. The peak spectral power density was measured and calculated as provided in Table 7.3.2.

Figure 7.3.1 Peak spectral power density test setup



Photograph 7.3.1 Peak spectral power density test setup



Test specification:		Section 15.247(d), Peak power density	
Test procedure:		FR Vol. 62, page 26243, Section 15.247(d)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Table 7.3.2 Peak spectral power density test results

ASSIGNED FREQUENCY: 2400.0 – 2483.5 MHz
 MODULATION: DBPSK, CCK, BPSK, 64QAM
 MODULATING SIGNAL: PRBS
 BIT RATE: 1, 11, 6, 54 Mbps
 TRANSMITTER OUTPUT POWER SETTINGS: Maximum
 DETECTOR USED: Peak

Carrier frequency, MHz	Spectrum analyzer reading, dBm/Hz	External attenuation, dB	Cable loss, dB	Peak power density, dB(mW/3 kHz)**	Limit, dBm	Margin*, dB	Verdict
DSSS, 1 Mbps							
2412	-39.53	Included	Included	-4.53	8.0	-12.53	Pass
2437	-40.10	Included	Included	-5.10	8.0	-13.10	Pass
2462	-41.33	Included	Included	-6.33	8.0	-14.33	Pass
DSSS, 11 Mbps							
2412	-40.81	Included	Included	-5.81	8.0	-13.81	Pass
2437	-41.08	Included	Included	-6.08	8.0	-14.08	Pass
2462	-43.27	Included	Included	-8.27	8.0	-16.27	Pass
OFDM, 6 Mbps							
2412	-10.05	Included	Included	-10.05	8.0	-18.05	Pass
2437	-9.121	Included	Included	-9.12	8.0	-17.12	Pass
2462	-10.78	Included	Included	-10.78	8.0	-18.78	Pass
OFDM, 54 Mbps							
2412	-12.45	Included	Included	-12.45	8.0	-20.45	Pass
2437	-13.09	Included	Included	-13.09	8.0	-21.09	Pass
2462	-13.20	Included	Included	-13.20	8.0	-21.20	Pass

* - Margin = Peak power density – specification limit.

** - DSSS measurements: Peak power density = Spectrum analyzer reading + BW factor = Spectrum analyzer reading + 10log(3kHz / 1 Hz) = Spectrum analyzer reading + 35 dB

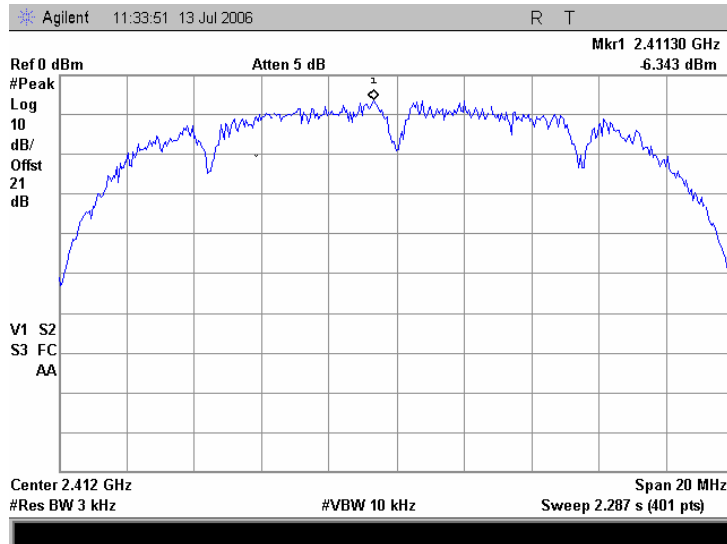
Reference numbers of test equipment used

HL 1650	HL 2867	HL 2909					
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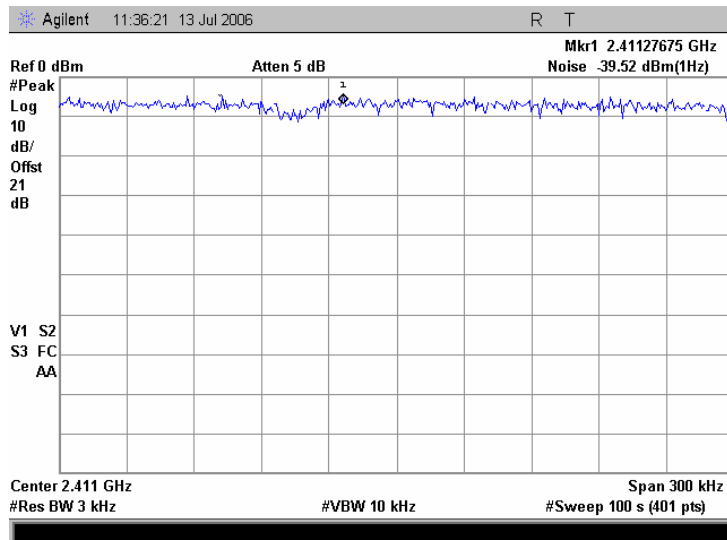
Full description is given in Appendix A.

Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.1 Peak spectral power density at low frequency within 6 dB band at 1 Mbps DSSS

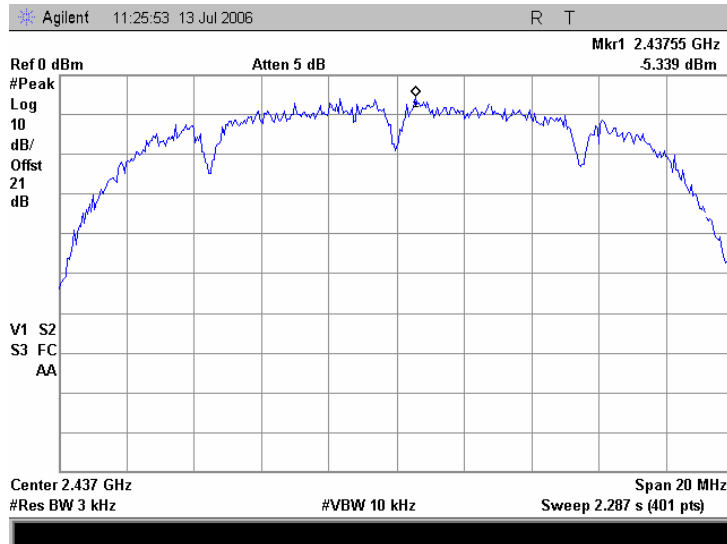


Plot 7.3.2 Peak spectral power density at low frequency zoomed at the peak at 1 Mbps DSSS

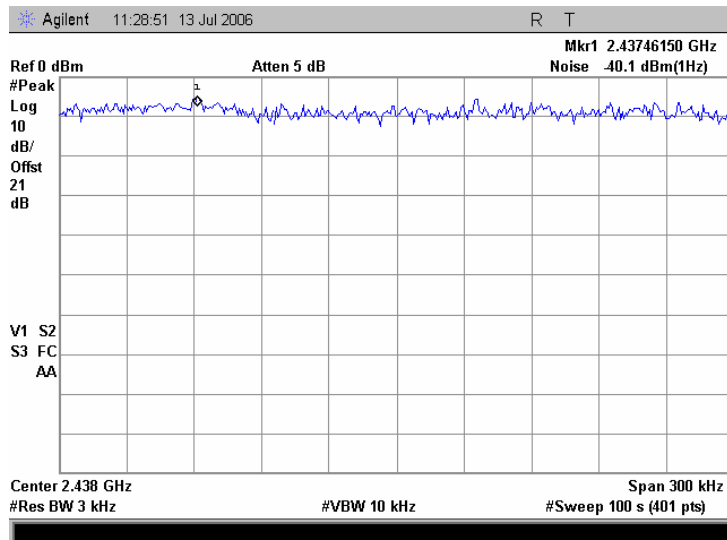


Test specification: Section 15.247(d), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance	Verdict: PASS		
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.3 Peak spectral power density at mid frequency within 6 dB band at 1 Mbps DSSS

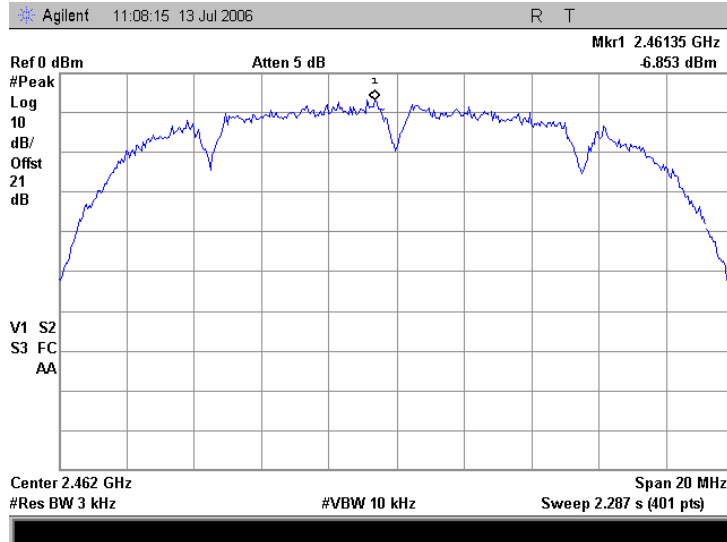


Plot 7.3.4 Peak spectral power density at mid frequency zoomed at the peak at 1 Mbps DSSS

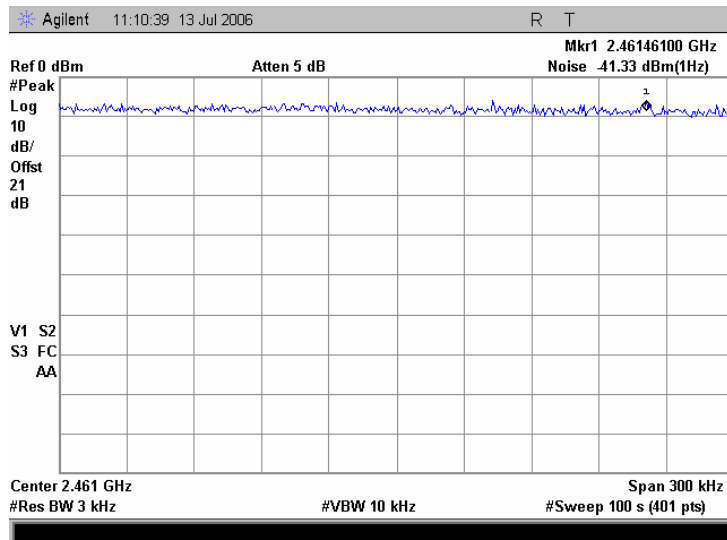


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.5 Peak spectral power density at high frequency within 6 dB band at 1 Mbps DSSS

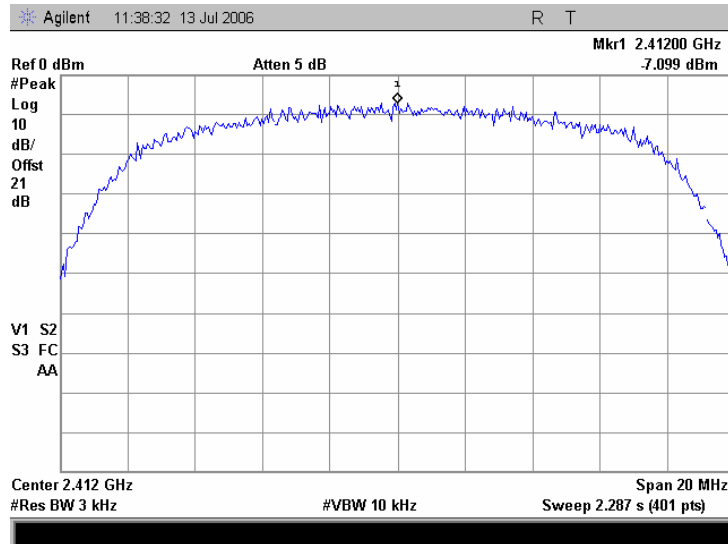


Plot 7.3.6 Peak spectral power density at high frequency zoomed at the peak at 1 Mbps DSSS

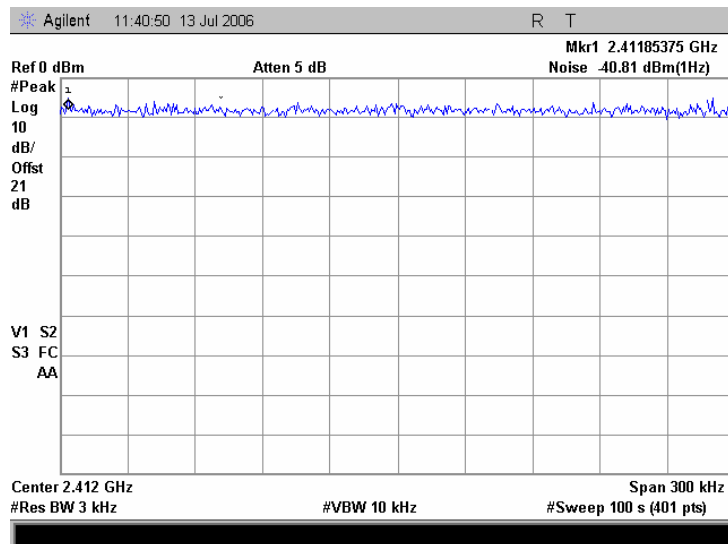


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.7 Peak spectral power density at low frequency within 6 dB band at 11 Mbps DSSS

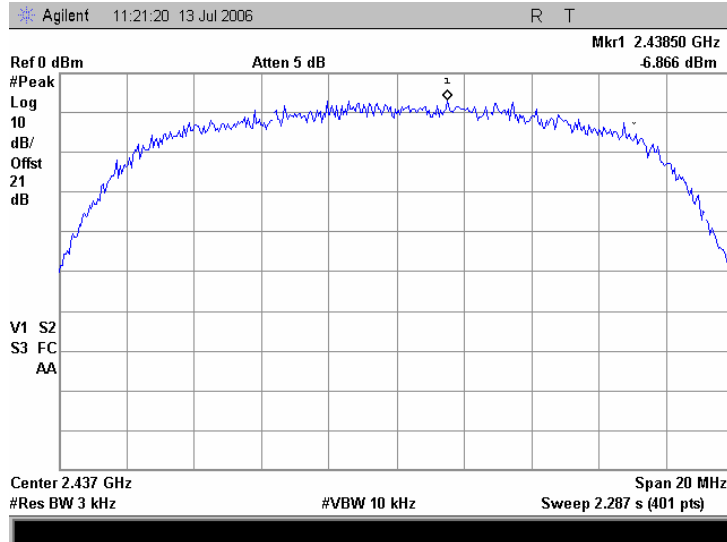


Plot 7.3.8 Peak spectral power density at low frequency zoomed at the peak at 11 Mbps DSSS

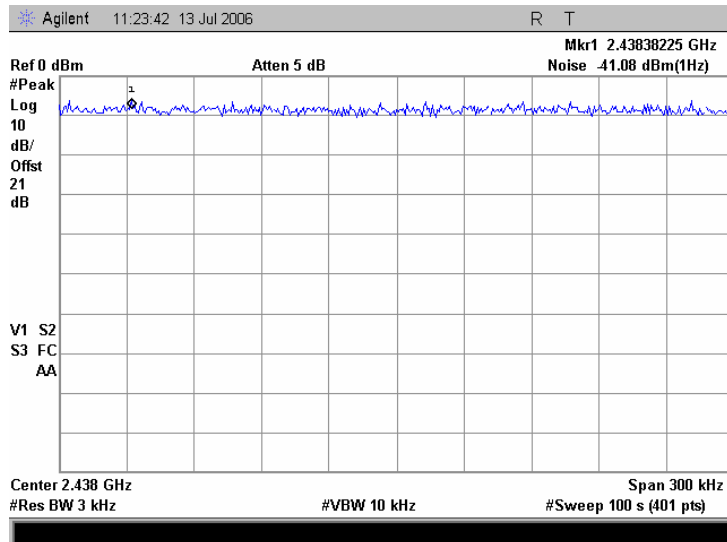


Test specification: Section 15.247(d), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance			Verdict: PASS
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.9 Peak spectral power density at mid frequency within 6 dB band at 11 Mbps DSSS

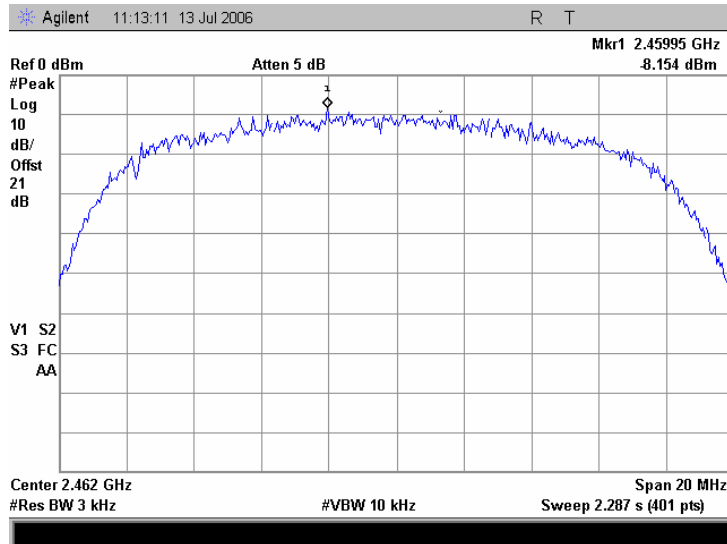


Plot 7.3.10 Peak spectral power density at mid frequency zoomed at the peak at 11 Mbps DSSS

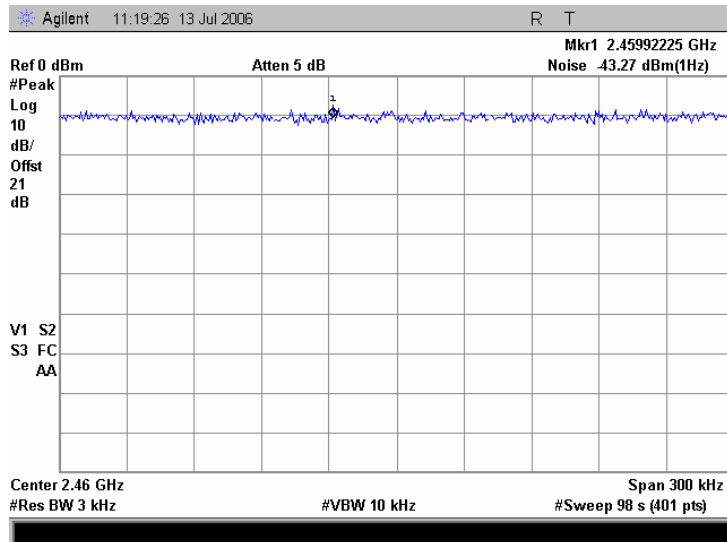


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.11 Peak spectral power density at high frequency within 6 dB band at 11 Mbps DSSS

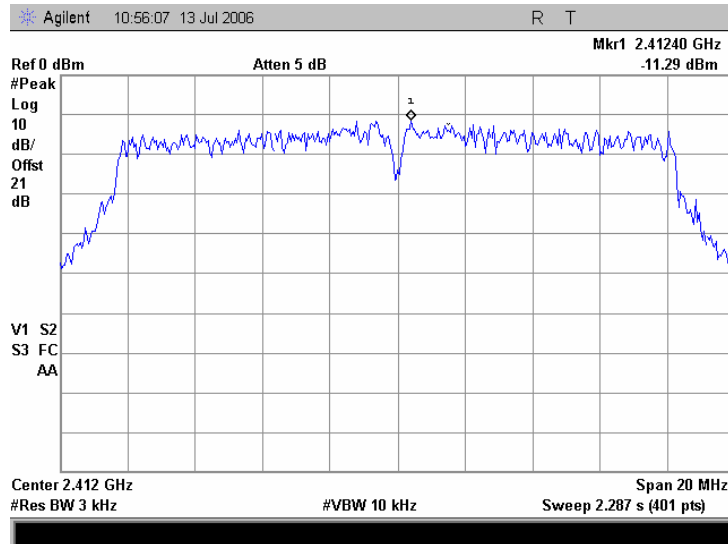


Plot 7.3.12 Peak spectral power density at high frequency zoomed at the peak at 11 Mbps DSSS

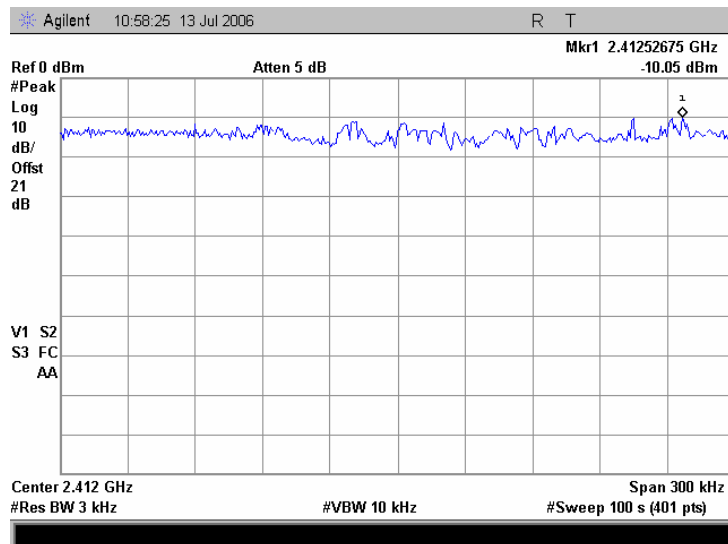


Test specification:		Section 15.247(d), Peak power density	
Test procedure:		FR Vol. 62, page 26243, Section 15.247(d)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.13 Peak spectral power density at low frequency within 6 dB band at 6 Mbps OFDM

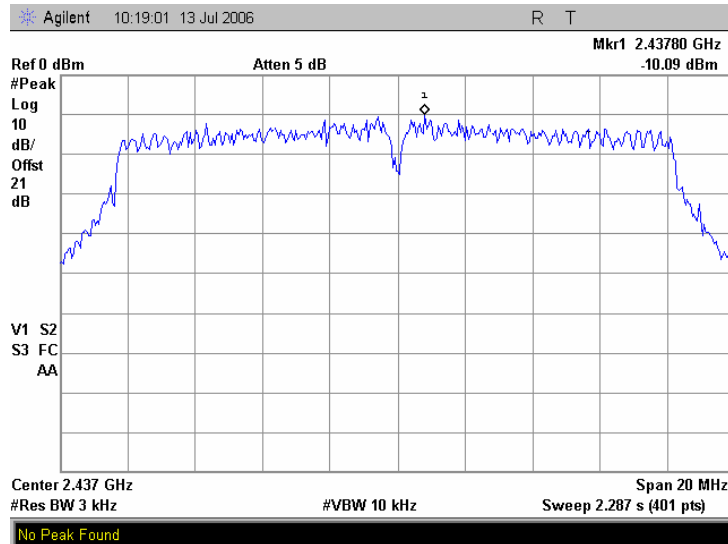


Plot 7.3.14 Peak spectral power density at low frequency zoomed at the peak at 6 Mbps OFDM

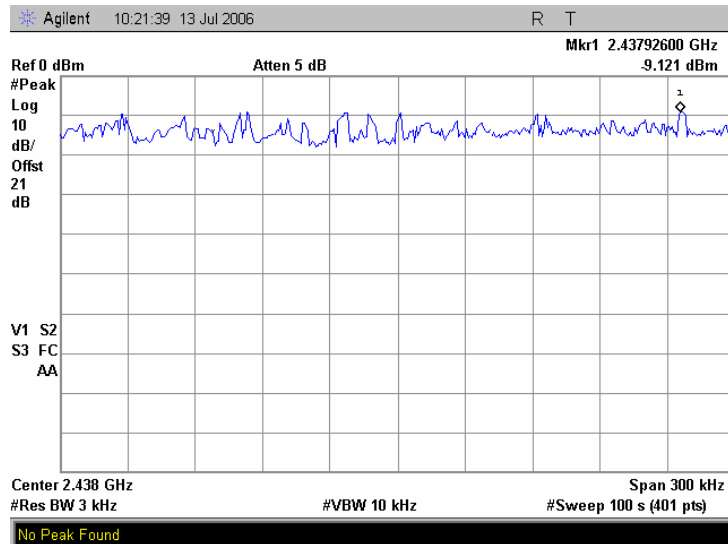


Test specification:		Section 15.247(d), Peak power density	
Test procedure:		FR Vol. 62, page 26243, Section 15.247(d)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.15 Peak spectral power density at mid frequency within 6 dB band at 6 Mbps OFDM

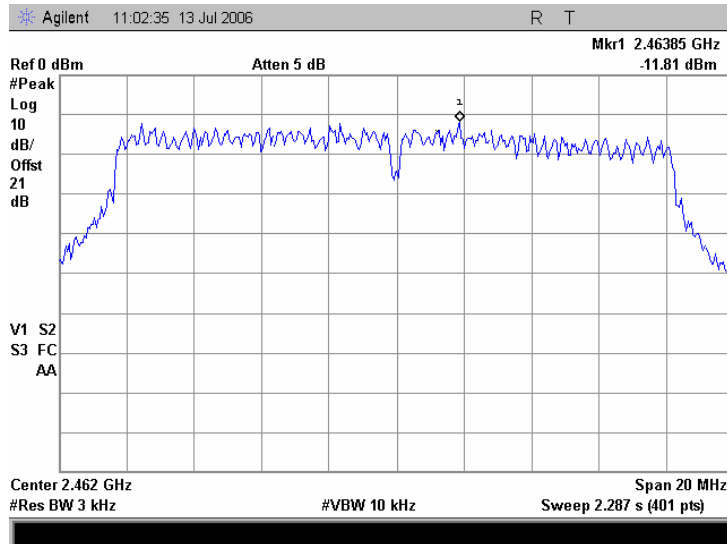


Plot 7.3.16 Peak spectral power density at mid frequency zoomed at the peak at 6 Mbps OFDM

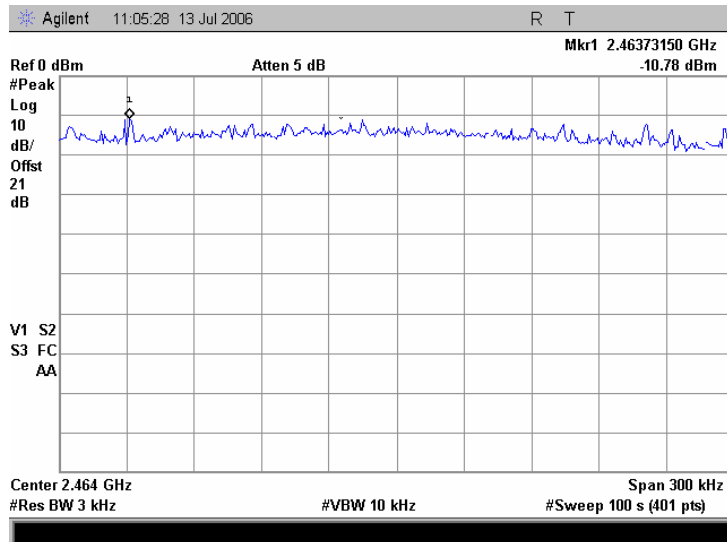


Test specification: Section 15.247(d), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance	Verdict: PASS		
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.17 Peak spectral power density at high frequency within 6 dB band at 6 Mbps OFDM

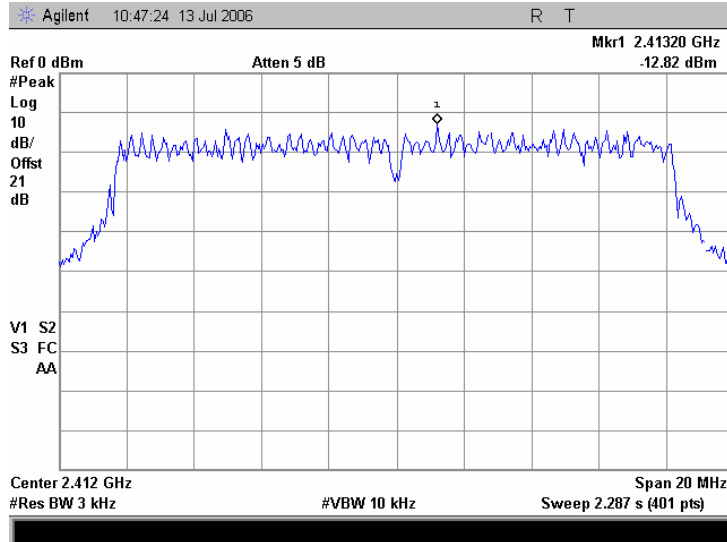


Plot 7.3.18 Peak spectral power density at high frequency zoomed at the peak at 6 Mbps OFDM

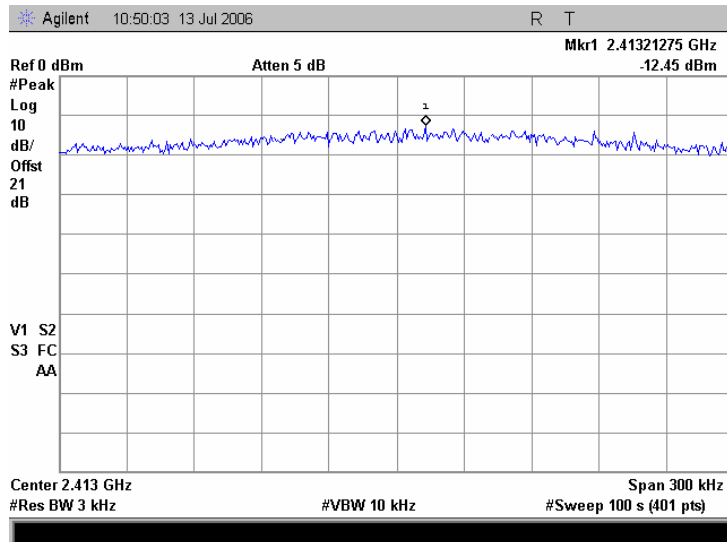


Test specification:	Section 15.247(d), Peak power density		
Test procedure:	FR Vol. 62, page 26243, Section 15.247(d)		
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.19 Peak spectral power density at low frequency within 6 dB band at 54 Mbps OFDM

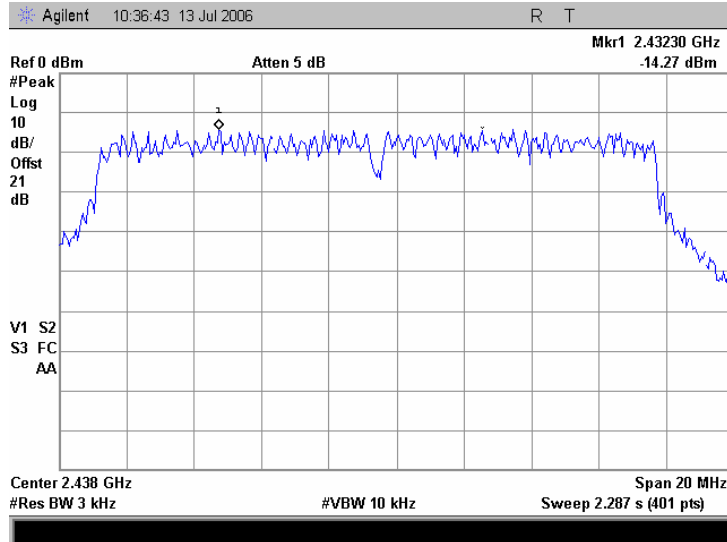


Plot 7.3.20 Peak spectral power density at low frequency zoomed at the peak at 54 Mbps OFDM

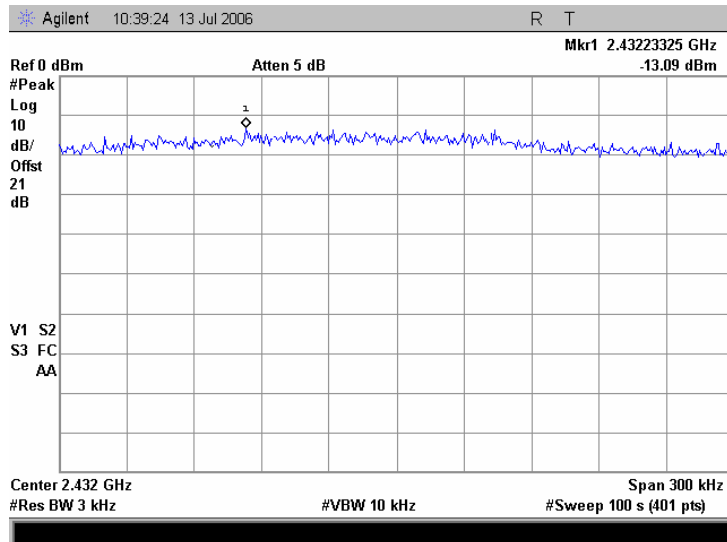


Test specification: Section 15.247(d), Peak power density			
Test procedure: FR Vol. 62, page 26243, Section 15.247(d)			
Test mode: Compliance	Verdict: PASS		
Date: 5/18/2006			
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.21 Peak spectral power density at mid frequency within 6 dB band at 54 Mbps OFDM

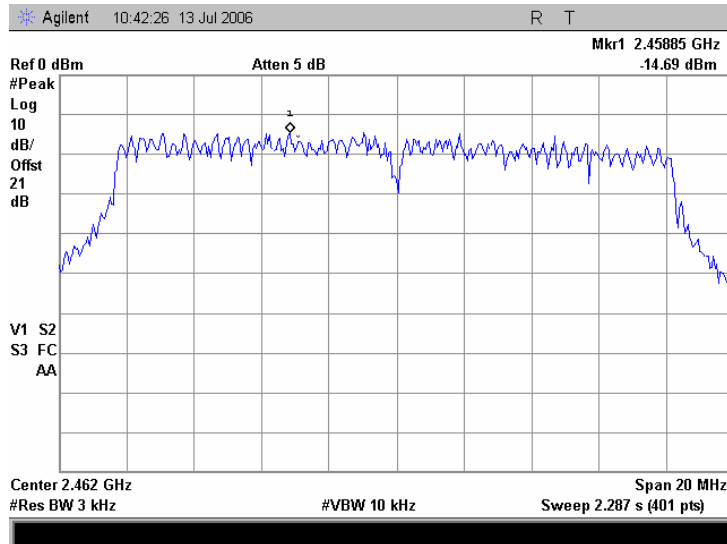


Plot 7.3.22 Peak spectral power density at mid frequency zoomed at the peak at 54 Mbps OFDM

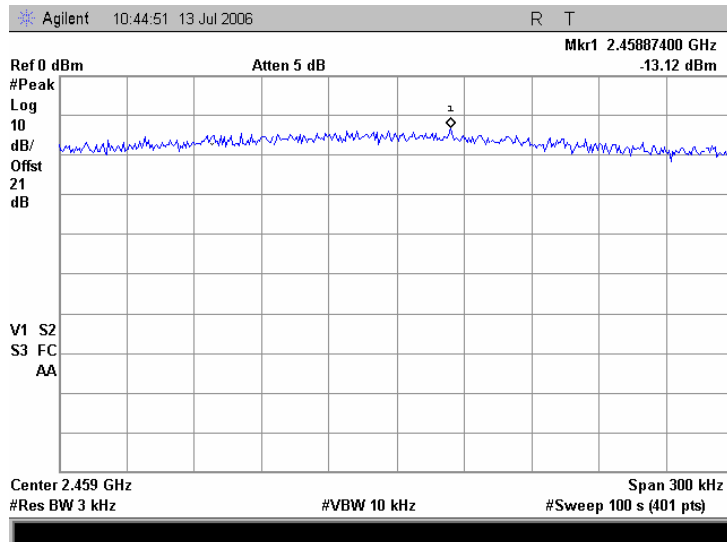


Test specification:		Section 15.247(d), Peak power density	
Test procedure:		FR Vol. 62, page 26243, Section 15.247(d)	
Test mode:	Compliance	Verdict:	PASS
Date:	5/18/2006		
Temperature: 22 °C	Air Pressure: 1010 hPa	Relative Humidity: 42 %	Power Supply: 120 V AC
Remarks:			

Plot 7.3.23 Peak spectral power density at high frequency within 6 dB band at 54 Mbps OFDM



Plot 7.3.24 Peak spectral power density at high frequency zoomed at the peak at 54 Mbps OFDM



8 APPENDIX A Test equipment and ancillaries used for tests

HL No	Description	Manufacturer	Model	Ser. No.	Last Cal.	Due Cal.
1650	Attenuators Set (2, 3, 5, 20 dB), DC-18 GHz	M/A-COM	2082	1650	03-Jan-06	03-Jan-07
2867	Cable, 18 GHz, 0.9 m, SMA - SMA, Right Angle	Gore	NA	91P72076	16-Feb-06	16-Feb-07
2909	Spectrum analyzer, ESA-E, 100 Hz to 26.5 GHz	Agilent Technologies	E4407B	MY41444762	10-Apr-06	10-Apr-07

9 APPENDIX B Measurement uncertainties

Expanded uncertainty at 95% confidence in Hermon Labs EMC measurements

Test description	Expanded uncertainty
Conducted carrier power at RF antenna connector	Below 12.4 GHz: ± 1.7 dB 12.4 GHz to 40 GHz: ± 2.3 dB
Conducted emissions at RF antenna connector	9 kHz to 2.9 GHz: ± 2.6 dB 2.9 GHz to 6.46 GHz: ± 3.5 dB 6.46 GHz to 13.2 GHz: ± 4.3 dB 13.2 GHz to 22.0 GHz: ± 5.0 dB 22.0 GHz to 26.8 GHz: ± 5.5 dB 26.8 GHz to 40.0 GHz: ± 4.8 dB
Occupied bandwidth	± 8.0 %
Duty cycle, timing (Tx ON / OFF) and average factor measurements	± 1.0 %

The test equipment has been calibrated according to its recommended procedures and is within the manufacturer's published limit of error. The standards and instruments used in the calibration system conform to the present requirements of ISO/IEC 17025 (or alternately ANSI/NC SL Z540-1).

The laboratory calibrates its measurement standards by a third party (traceable to NIST, USA) on a regular basis according to equipment manufacturer requirements. The Hermon Labs EMC measurements uncertainty is given in the table above.

10 APPENDIX C Test facility description

Tests were performed at Hermon Laboratories Ltd., which is a fully independent, private, EMC, safety, environmental and telecommunication testing facility. Hermon Laboratories is listed by the Federal Communications Commission (USA) for all parts of Code of Federal Regulations 47 (CFR 47) and by Industry Canada for electromagnetic emissions (file numbers IC 2186-1 for OATS and IC 2186-2 for anechoic chamber), certified by VCCI, Japan (the registration numbers are R-808 for OATS, R-1082 for anechoic chamber, C-845 for conducted emissions site), assessed by TNO Certification EP&S (Netherlands) for a number of EMC, telecommunications, environmental, safety standards, and by AMTAC (UK) for safety of medical devices. The laboratory is accredited by American Association for Laboratory Accreditation (USA) according to ISO/IEC 17025 for electromagnetic compatibility, product safety, telecommunications testing and environmental simulation (for exact scope please refer to Certificate No. 839.01).

Address: P.O. Box 23, Binyamina 30500, Israel.
Telephone: +972 4628 8001
Fax: +972 4628 8277
e-mail: mail@hermonlabs.com
website: www.hermonlabs.com

Person for contact: Mr. Alex Usoskin, CEO.

11 APPENDIX D Specification references

47CFR part 15: 2005	Radio Frequency Devices.
FCC Public Notice DA 02-2138 August 30, 2002	Measurement procedure updated for peak transmit power in U-NII bands
47CFR part 22:2005	Public Mobile Services
47CFR part 24: 2005	Personal Communications Services
ANSI C63.2: 1996	American National Standard for Instrumentation-Electromagnetic Noise and Field Strength, 10 kHz to 40 GHz-Specifications.
ANSI C63.4: 2003	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

12 APPENDIX E Abbreviations and acronyms

A	ampere
AC	alternating current
A/m	ampere per meter
AM	amplitude modulation
AVRG	average (detector)
cm	centimeter
dB	decibel
dBm	decibel referred to one milliwatt
dB(μV)	decibel referred to one microvolt
dB(μV/m)	decibel referred to one microvolt per meter
dB(μA)	decibel referred to one microampere
dBΩ	decibel referred to one Ohm
DC	direct current
DTS	digital transmission system
EIRP	equivalent isotropically radiated power
ERP	effective radiated power
EUT	equipment under test
F	frequency
FHSS	frequency hopping spread spectrum
GHz	gigahertz
GND	ground
H	height
HL	Hermon laboratories
Hz	hertz
ITE	information technology equipment
k	kilo
kHz	kilohertz
LISN	line impedance stabilization network
LO	local oscillator
m	meter
MHz	megahertz
min	minute
mm	millimeter
ms	millisecond
μs	microsecond
NA	not applicable
NT	not tested
OATS	open area test site
Ω	Ohm
PCB	printed circuit board
PM	pulse modulation
PS	power supply
ppm	part per million (10 ⁻⁶)
QP	quasi-peak
RE	radiated emission
RF	radio frequency
rms	root mean square
Rx	receive
s	second
T	temperature
Tx	transmit
V	volt
VA	volt-ampere

13 APPENDIX F Test equipment correction factors

Cable loss
Cable coaxial, Gore, 18 GHz, 0.9 m, SMA - SMA, model Right Angle,
HL 2867

Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB	Frequency, GHz	Cable loss, dB
10	0.06	5750	0.68	12000	1.06
30	0.04	6000	0.69	12250	1.07
100	0.07	6250	0.70	12500	1.09
250	0.14	6500	0.73	12750	1.09
500	0.19	6750	0.74	13000	1.15
750	0.22	7000	0.78	13250	1.17
1000	0.26	7250	0.77	13500	1.16
1250	0.27	7500	0.79	13750	1.17
1500	0.31	7750	0.81	14000	1.14
1750	0.35	8000	0.86	14250	1.13
2000	0.38	8250	0.86	14500	1.06
2250	0.41	8500	0.87	14750	1.12
2500	0.43	8750	0.87	15000	1.16
2750	0.46	9000	0.88	15250	1.11
3000	0.48	9250	0.89	15500	1.06
3250	0.51	9500	0.90	15750	1.12
3500	0.53	9750	0.94	16000	1.20
3750	0.55	10000	1.00	16250	1.25
4000	0.56	10250	1.01	16500	1.24
4250	0.58	10500	1.02	16750	1.34
4500	0.60	10750	1.01	17000	1.35
4750	0.62	11000	1.01	17250	1.35
5000	0.64	11250	1.01	17500	1.36
5250	0.67	11500	1.01	17750	1.40
5500	0.68	11750	1.05	18000	1.51