

Welch Allyn Protocol, Inc.

Welch Allyn 802.11a Wireless PC Card

FCC 15.407 Test Report

Testing Conducted According to
Test Plan: EMC, Lamarr Product Implementations
Part No.: 830-1412-00 Rev A

August 27, 2007

Report No. PROT0295

Report Prepared By



www.nwemc.com
1-888-EMI-CERT

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: August 27, 2007

Welch Allyn Protocol, Inc.

Model: Welch Allyn 802.11a Wireless PC Card

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
AC Power line Conducted Emissions	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
Peak Transmit Power	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
Peak Power Spectral Density	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
Emission Bandwidth	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
Peak Excursion of the Modulation Envelope	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass
Frequency Stability	FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002	Pass

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Ethan Schoonover, Sultan Lab Manager



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

FCC: Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.



NVLAP: Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0

Industry Canada: Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.



CAB: Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



TÜV Product Service: Included in TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV's CARAT Program requirements. Certificate No. USA0604C.



TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294*).



BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.



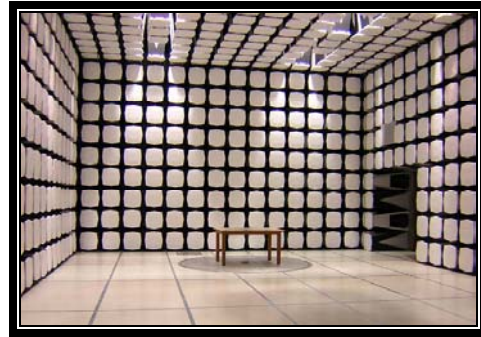
GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



SCOPE

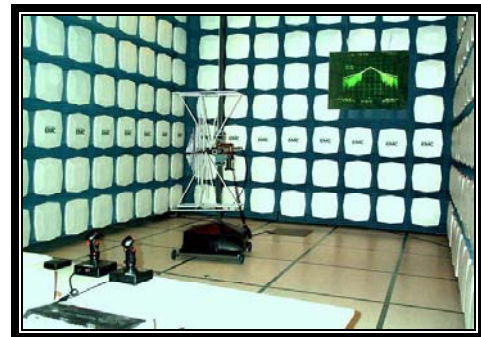
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/scope.asp>



**California – Orange County Facility
Labs OC01 – OC13**

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



**Oregon – Evergreen Facility
Labs EV01 – EV11**

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826



**Washington – Sultan Facility
Labs SU01 – SU07**

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	Welch Allyn Protocol, Inc.
Address:	8500 SW Creekside Place
City, State, Zip:	Beaverton, OR 97008-7107
Test Requested By:	Bob Jenkins
Model:	Welch Allyn 802.11a Wireless PC Card
First Date of Test:	August 13, 2007
Last Date of Test:	August 21, 2007
Receipt Date of Samples:	August 13, 2007
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

802.11a radio

Testing Objective:

These tests were selected to satisfy the EMC requirements for FCC 15.407.

EUT Photo



CONFIGURATION 1 PROT0295**Software/Firmware Running during test**

Description	Version
Prism Engineering Tool	2:5:14:0

EUT

Description	Manufacturer	Model/Part Number	Serial Number
EUT - 802.11a radio	Welch Allyn Protocol Inc.	Welch Allyn 802.11a Wireless PC Card	001AFA0000CE

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
TCC Test Fixture	Welch Allyn Protocol Inc.	851-0034-01 Rev. 02	20
AC Adapter 1	CUI Inc.	EPAS-101W-05	None

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 2	IBM	08K8212	11S08K8212Z1Z7UB4172NK
Laptop	IBM	2366-83U	KP-ZMDVL

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet/Serial	No	1.2m	No	TCC Test Fixture	Laptop
DC	No	1.6m	No	TCC Test Fixture	AC Adapter 1
DC	No	1.3m	Yes	Laptop	AC Adapter 2
AC	No	1.8m	No	AC Adapter 2	AC Mains

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

CONFIGURATION 2 PROT0295**Software/Firmware Running during test**

Description	Version
Prism Engineering Tool	2:5:14:0

EUT

Description	Manufacturer	Model/Part Number	Serial Number
EUT - 802.11a radio	Welch Allyn Protocol Inc.	Welch Allyn 802.11a Wireless PC Card	001AFA0000CE

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
TCC Test Fixture	Welch Allyn Protocol Inc.	851-0034-01 Rev. 02	20
AC Adapter 1	CUI Inc.	EPAS-101W-05	None

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 2	IBM	08K8212	11S08K8212Z1Z7UB4172NK
Laptop	IBM	2366-83U	KP-ZMDVL

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet/Serial	No	1.2m	No	TCC Test Fixture	Laptop
DC	No	1.6m	No	TCC Test Fixture	AC Adapter 1
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 PROT0295**Software/Firmware Running during test**

Description	Version
Prism Engineering Tool	2:5:14:0

EUT

Description	Manufacturer	Model/Part Number	Serial Number
EUT - 802.11a radio	Welch Allyn Protocol Inc.	Welch Allyn 802.11a Wireless PC Card	001AFA0000CE

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
TCC Test Fixture	Welch Allyn Protocol Inc.	851-0034-01 Rev. 02	20
Linear Power Supply	CUI Inc.	DTR050100-P1	None

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter 2	IBM	08K8212	11S08K8212Z1Z7UB4172NK
Laptop	IBM	2366-83U	KP-ZMDVL

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Ethernet/Serial	No	1.2m	No	TCC Test Fixture	Laptop
DC	No	1.6m	No	TCC Test Fixture	AC Adapter 1
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	8/13/2007	Emission Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	8/13/2007	Peak Excursion of the Modulation Envelope	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	8/13/2007	Peak Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	8/13/2007	Peak Transmit Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	8/15/2007	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	8/21/2007	Spurious Radiated Emissions	Modified from delivered configuration. Initial or No Modification	Copper tape was added in two pieces around the antenna cable end of the card covering the rubber end cap. Modification done by Steve Baker.	EUT remained at Northwest EMC following the test.
7	8/21/2007	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting 802.11(a), 6 Mbps, Channel 120

Transmitting 802.11(a), 6 Mbps, Channel 60

Transmitting 802.11(a), 6 Mbps, Channel 40

POWER SETTINGS INVESTIGATED

120VAC/60Hz

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwartz	ESCI	ARG	12/7/2006	13
LISN	Solar	9252-50-R-24-BNC	LIR	11/20/2007	13
LISN	Solar	9252-50-R-24-BNC	LIP	12/20/2006	13
Attenuator	Tektronix	011-0059-02	ATC	12/27/2006	13
High Pass Filter	TTE	H97-100K-50-720B	HFX	8/22/2006	24
EV07 cable d			EVG	4/17/2007	13

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

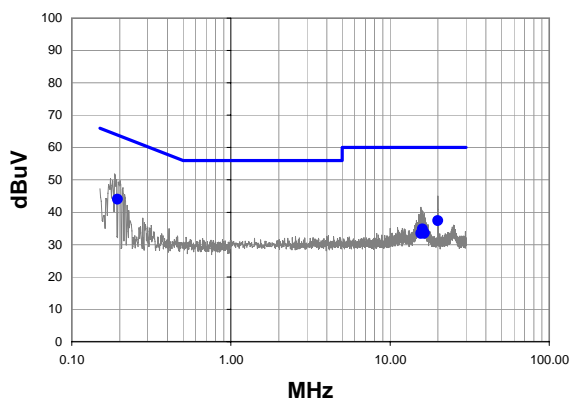
TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

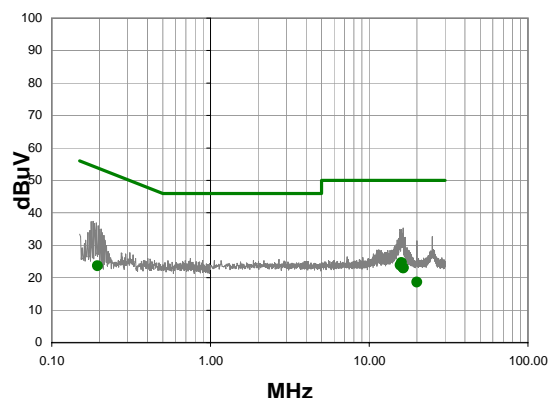
EMC AC POWERLINE CONDUCTED EMISSIONS

Work Order:	PROT0295	Date:	08/21/07	<i>Rod Peloquin</i>	
Project:	None	Temperature:	23		
Job Site:	EV07	Humidity:	46		
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95	Tested by:	Rod Peloquin
EUT:	Welch Allyn 802.11a Wireless PC Card				
Configuration:	3 - AC Powerline Conducted Emissions				
Customer:	Welch Allyn Protocol, Inc.				
Attendees:	None				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 40				
Deviations:	No deviations.				
Comments:					
Test Specifications FCC 15.407:2006			Test Method ANSI C63.4:2003 DA 02-2138:2002		
Run #	9	Line:	High Line	Ext. Attenuation:	20
				Results	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	22.9	1.1	44.0	63.9	-19.8
20.000	16.9	0.5	37.4	60.0	-22.6
15.980	14.3	0.5	34.8	60.0	-25.2
16.390	13.1	0.5	33.6	60.0	-26.4
16.454	13.1	0.5	33.6	60.0	-26.4
15.654	13.0	0.5	33.5	60.0	-26.5

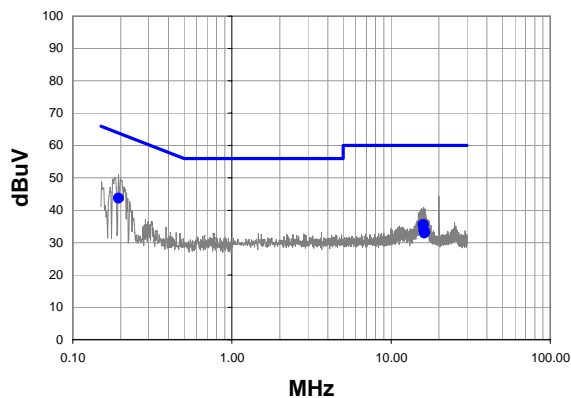
Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
15.980	4.2	0.5	24.7	50.0	-25.3
15.654	3.4	0.5	23.9	50.0	-26.1
16.390	2.6	0.5	23.1	50.0	-26.9
16.454	2.5	0.5	23.0	50.0	-27.0
0.194	2.5	1.1	23.6	53.9	-30.2
20.000	-1.8	0.5	18.7	50.0	-31.3

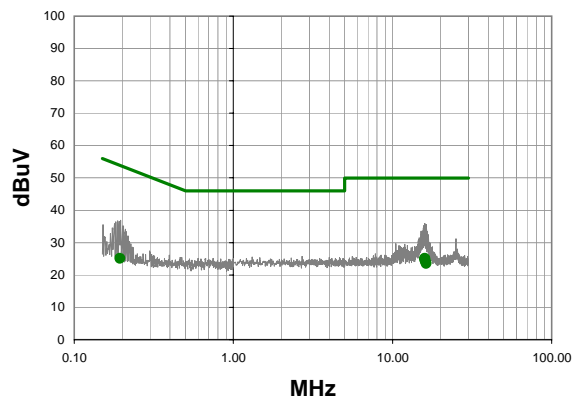
EMC AC POWERLINE CONDUCTED EMISSIONS

Work Order:	PROT0295	Date:	08/21/07	<i>Roddy Le Pelouin</i>			
Project:	None	Temperature:	23				
Job Site:	EV07	Humidity:	46				
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95				
EUT:	Welch Allyn 802.11a Wireless PC Card						
Configuration:	3 - AC Powerline Conducted Emissions						
Customer:	Welch Allyn Protocol, Inc.						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 40						
Deviations:	No deviations.						
Comments:							
Test Specifications FCC 15.407:2006			Test Method ANSI C63.4:2003 DA 02-2138:2002				
Run #	10	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	22.6	1.1	43.7	63.9	-20.1
15.910	15.0	0.5	35.5	60.0	-24.5
15.978	15.0	0.5	35.5	60.0	-24.5
16.032	13.5	0.5	34.0	60.0	-26.0
16.318	12.9	0.5	33.4	60.0	-26.6
16.238	12.5	0.5	33.0	60.0	-27.0

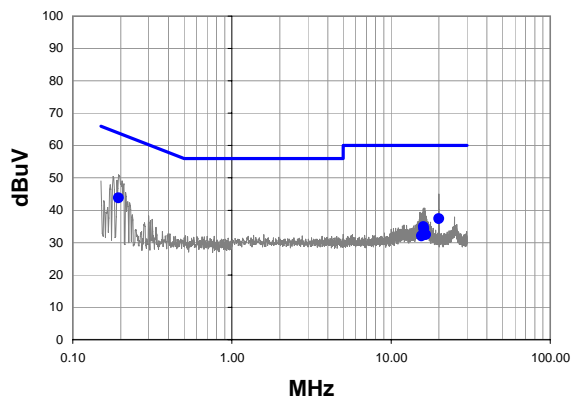
Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
15.978	4.7	0.5	25.2	50.0	-24.8
15.910	4.5	0.5	25.0	50.0	-25.0
16.032	3.9	0.5	24.4	50.0	-25.6
16.238	3.6	0.5	24.1	50.0	-25.9
16.318	3.1	0.5	23.6	50.0	-26.4
0.194	4.0	1.1	25.1	53.9	-28.7

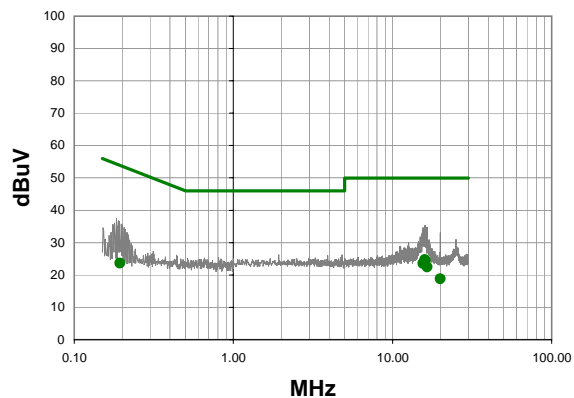
EMC AC POWERLINE CONDUCTED EMISSIONS

Work Order:	PROT0295	Date:	08/21/07	<i>Rod Peloquin</i>			
Project:	None	Temperature:	23				
Job Site:	EV07	Humidity:	46				
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95				
Tested by: Rod Peloquin							
EUT:	Welch Allyn 802.11a Wireless PC Card						
Configuration:	3 - AC Powerline Conducted Emissions						
Customer:	Welch Allyn Protocol, Inc.						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 60						
Deviations:	No deviations.						
Comments:							
Test Specifications FCC 15.407:2006			Test Method ANSI C63.4:2003 DA 02-2138:2002				
Run #	11	Line:	High Line	Ext. Attenuation:	20	Results	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit




Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	22.7	1.1	43.8	63.9	-20.0
20.000	16.9	0.5	37.4	60.0	-22.6
15.982	14.4	0.5	34.9	60.0	-25.1
16.046	13.8	0.5	34.3	60.0	-25.7
16.518	12.0	0.5	32.5	60.0	-27.5
15.570	11.6	0.5	32.1	60.0	-27.9

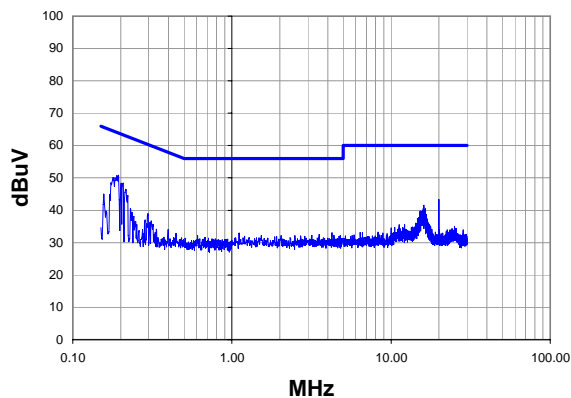
Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
15.982	4.3	0.5	24.8	50.0	-25.2
16.046	4.0	0.5	24.5	50.0	-25.5
15.570	3.1	0.5	23.6	50.0	-26.4
16.518	2.0	0.5	22.5	50.0	-27.5
0.194	2.5	1.1	23.6	53.9	-30.2
20.000	-1.7	0.5	18.8	50.0	-31.2

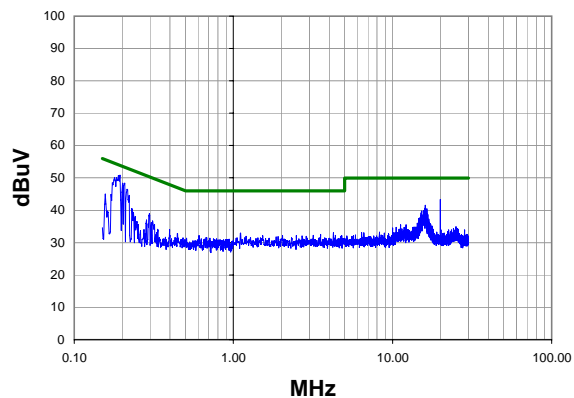
EMC AC POWERLINE CONDUCTED EMISSIONS

Work Order:	PROT0295	Date:	08/21/07				
Project:	None	Temperature:	23				
Job Site:	EV07	Humidity:	46				
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95	Tested by: Rod Peloquin			
EUT:	Welch Allyn 802.11a Wireless PC Card						
Configuration:	3 - AC Powerline Conducted Emissions						
Customer:	Welch Allyn Protocol, Inc.						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 60						
Deviations:	No deviations.						
Comments:							
Test Specifications FCC 15.407:2006			Test Method ANSI C63.4:2003 DA 02-2138:2002				
Run #	12	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	29.7	1.1	50.8	63.9	-13.0
0.208	27.4	1.0	48.4	63.3	-14.9
0.201	27.4	1.0	48.4	63.6	-15.2
0.215	25.5	1.0	46.5	63.0	-16.5
20.000	22.9	0.5	43.4	60.0	-16.6
16.040	21.1	0.5	41.6	60.0	-18.4
15.990	20.1	0.5	40.6	60.0	-19.4
15.900	20.0	0.5	40.5	60.0	-19.5
16.460	20.0	0.5	40.5	60.0	-19.5
16.380	19.6	0.5	40.1	60.0	-19.9
15.720	19.4	0.5	39.9	60.0	-20.1
15.230	19.3	0.5	39.8	60.0	-20.2
15.650	19.2	0.5	39.7	60.0	-20.3
16.270	19.1	0.5	39.6	60.0	-20.4
0.157	23.1	1.9	45.0	65.6	-20.7
15.090	18.7	0.5	39.2	60.0	-20.8
16.530	18.2	0.5	38.7	60.0	-21.3
16.670	18.2	0.5	38.7	60.0	-21.3
0.296	18.0	0.9	38.9	60.3	-21.4
16.590	18.1	0.5	38.6	60.0	-21.4

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	29.7	1.1	50.8	53.9	-3.0
0.208	27.4	1.0	48.4	53.3	-4.9
0.201	27.4	1.0	48.4	53.6	-5.2
0.215	25.5	1.0	46.5	53.0	-6.5
20.000	22.9	0.5	43.4	50.0	-6.6
16.040	21.1	0.5	41.6	50.0	-8.4
15.990	20.1	0.5	40.6	50.0	-9.4
15.900	20.0	0.5	40.5	50.0	-9.5
16.460	20.0	0.5	40.5	50.0	-9.5
16.380	19.6	0.5	40.1	50.0	-9.9
15.720	19.4	0.5	39.9	50.0	-10.1
15.230	19.3	0.5	39.8	50.0	-10.2
15.650	19.2	0.5	39.7	50.0	-10.3
16.270	19.1	0.5	39.6	50.0	-10.4
0.157	23.1	1.9	45.0	55.6	-10.7
15.090	18.7	0.5	39.2	50.0	-10.8
16.530	18.2	0.5	38.7	50.0	-11.3
16.670	18.2	0.5	38.7	50.0	-11.3
0.296	18.0	0.9	38.9	50.3	-11.4
16.590	18.1	0.5	38.6	50.0	-11.4

EMC AC POWERLINE CONDUCTED EMISSIONS

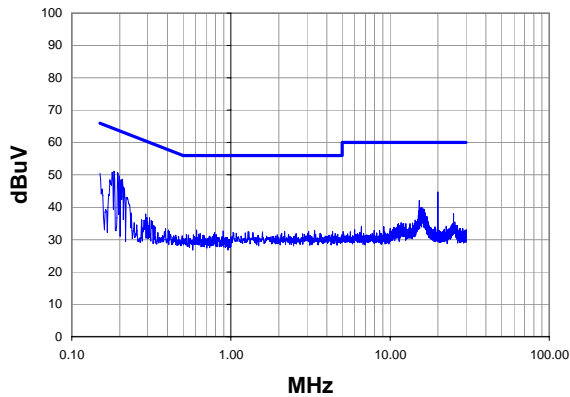
Work Order:	PROT0295	Date:	08/21/07	<i>Rod Peloquin</i>
Project:	None	Temperature:	23	
Job Site:	EV07	Humidity:	46	
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95	Tested by: Rod Peloquin
EUT:	Welch Allyn 802.11a Wireless PC Card			
Configuration:	3 - AC Powerline Conducted Emissions			
Customer:	Welch Allyn Protocol, Inc.			
Attendees:	None			
EUT Power:	120VAC/60Hz			
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 120			
Deviations:	No deviations.			
Comments:				

Test Specifications
FCC 15.407:2006

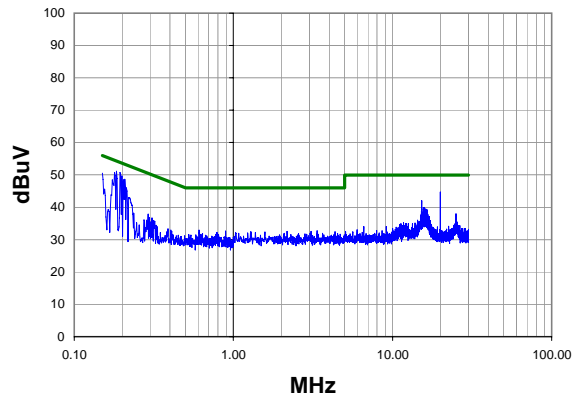
Test Method
ANSI C63.4:2003 DA 02-2138:2002

Run #	13	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	29.6	1.1	50.7	63.9	-13.1
0.184	29.8	1.3	51.1	64.3	-13.2
0.179	29.3	1.4	50.7	64.5	-13.8
0.199	28.6	1.0	49.6	63.6	-14.0
0.208	27.7	1.0	48.7	63.3	-14.6
0.204	27.5	1.0	48.5	63.4	-14.9
20.000	24.2	0.5	44.7	60.0	-15.3
0.150	28.5	2.0	50.5	66.0	-15.5
0.213	25.0	1.0	46.0	63.1	-17.1
15.230	21.6	0.5	42.1	60.0	-17.9
0.223	22.0	1.0	43.0	62.7	-19.7
15.850	19.5	0.5	40.0	60.0	-20.0
15.650	19.4	0.5	39.9	60.0	-20.1
15.800	19.4	0.5	39.9	60.0	-20.1
15.600	19.0	0.5	39.5	60.0	-20.5
16.160	19.0	0.5	39.5	60.0	-20.5
16.330	18.9	0.5	39.4	60.0	-20.6
16.040	18.8	0.5	39.3	60.0	-20.7
16.450	18.8	0.5	39.3	60.0	-20.7
16.400	18.6	0.5	39.1	60.0	-20.9

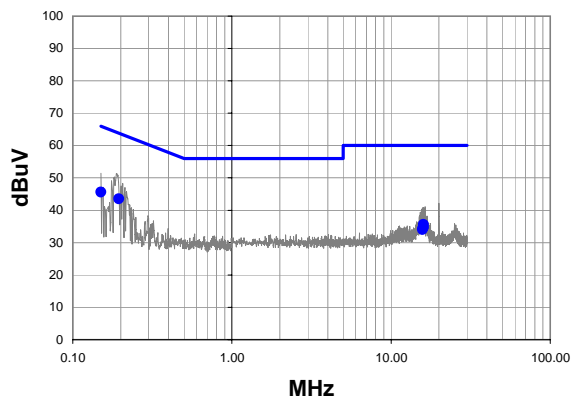
Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.194	29.6	1.1	50.7	53.9	-3.1
0.184	29.8	1.3	51.1	54.3	-3.2
0.179	29.3	1.4	50.7	54.5	-3.8
0.199	28.6	1.0	49.6	53.6	-4.0
0.208	27.7	1.0	48.7	53.3	-4.6
0.204	27.5	1.0	48.5	53.4	-4.9
20.000	24.2	0.5	44.7	50.0	-5.3
0.150	28.5	2.0	50.5	56.0	-5.5
0.213	25.0	1.0	46.0	53.1	-7.1
15.230	21.6	0.5	42.1	50.0	-7.9
0.223	22.0	1.0	43.0	52.7	-9.7
15.850	19.5	0.5	40.0	50.0	-10.0
15.650	19.4	0.5	39.9	50.0	-10.1
15.800	19.4	0.5	39.9	50.0	-10.1
15.600	19.0	0.5	39.5	50.0	-10.5
16.160	19.0	0.5	39.5	50.0	-10.5
16.330	18.9	0.5	39.4	50.0	-10.6
16.040	18.8	0.5	39.3	50.0	-10.7
16.450	18.8	0.5	39.3	50.0	-10.7
16.400	18.6	0.5	39.1	50.0	-10.9

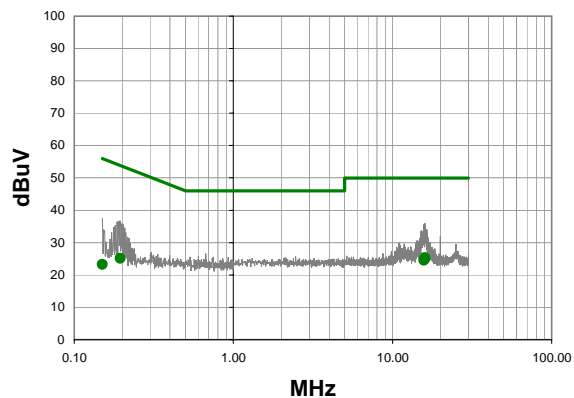
EMC AC POWERLINE CONDUCTED EMISSIONS

Work Order:	PROT0295	Date:	08/21/07	<i>Rod Le Pelouin</i>			
Project:	None	Temperature:	23				
Job Site:	EV07	Humidity:	46				
Serial Number:	001AFA0000CE	Barometric Pres.:	29.95				
Tested by: Rod Pelouin							
EUT:	Welch Allyn 802.11a Wireless PC Card						
Configuration:	3 - AC Powerline Conducted Emissions						
Customer:	Welch Allyn Protocol, Inc.						
Attendees:	None						
EUT Power:	120VAC/60Hz						
Operating Mode:	Transmitting 802.11(a), 6 Mbps, Channel 120						
Deviations:	No deviations.						
Comments:							
Test Specifications FCC 15.407:2006			Test Method ANSI C63.4:2003 DA 02-2138:2002				
Run #	14	Line:	Neutral	Ext. Attenuation:	20	Results	Pass

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



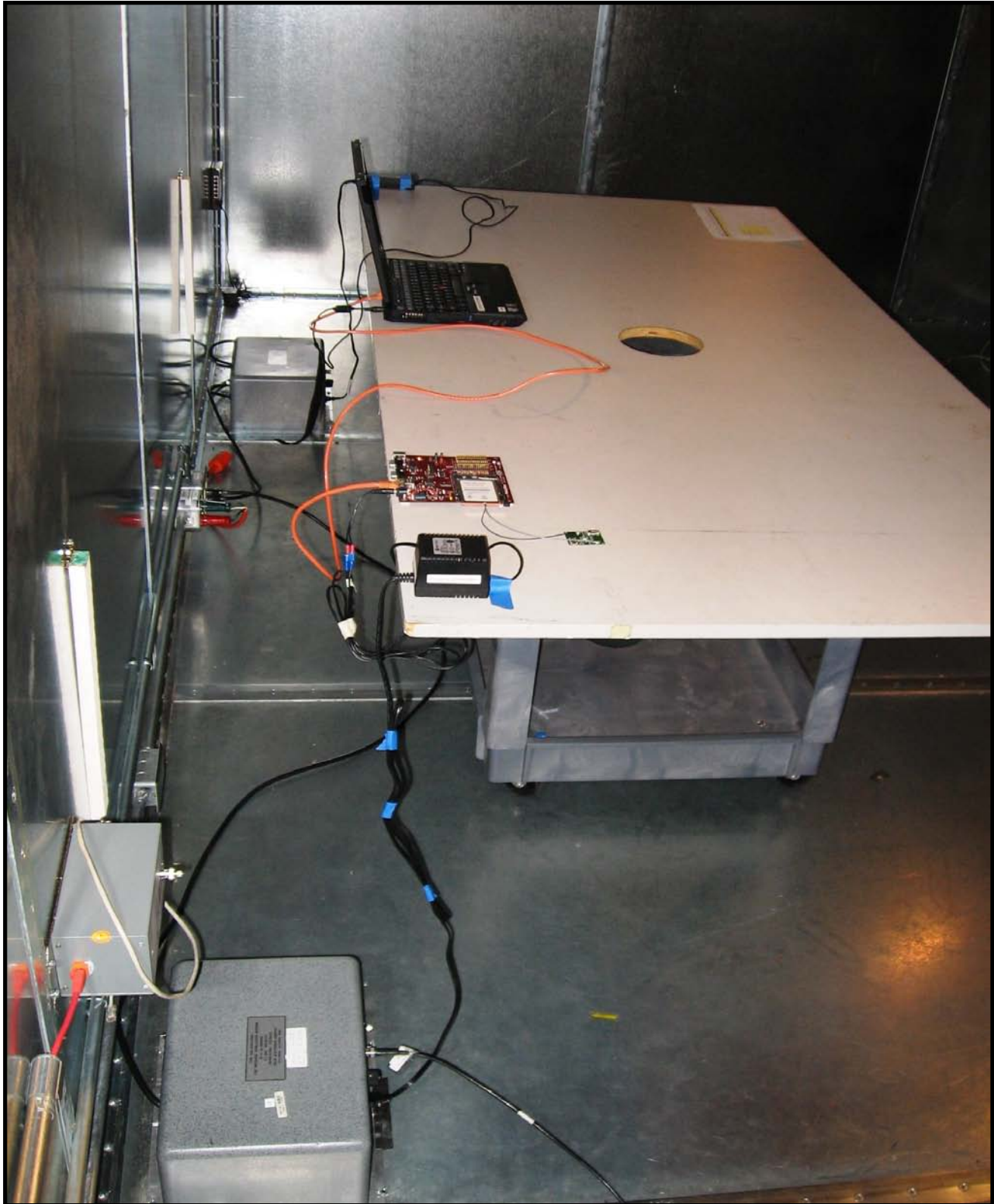
Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.195	22.4	1.1	43.5	63.8	-20.3
0.150	23.6	2.0	45.6	66.0	-20.4
15.978	15.1	0.5	35.6	60.0	-24.4
15.988	14.2	0.5	34.7	60.0	-25.3
15.918	14.0	0.5	34.5	60.0	-25.5
15.784	13.6	0.5	34.1	60.0	-25.9

Average Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
15.978	4.8	0.5	25.3	50.0	-24.7
15.988	4.6	0.5	25.1	50.0	-24.9
15.918	4.4	0.5	24.9	50.0	-25.1
15.784	4.1	0.5	24.6	50.0	-25.4
0.195	4.0	1.1	25.1	53.8	-28.7
0.150	1.2	2.0	23.2	56.0	-32.8





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/8/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

FCC Public Notice DA 02-2138 was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The EUT's only data rate was measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

- Span = approximately 1.5 to 2 times the emission bandwidth, centered on the transmit channel.
- RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process where an exact match of 1% may not be achieved. The largest value of RBW that came close to 1% of the emission bandwidth was used.
- A peak detector was used.
- The marker-delta function was then used to measure 26 dB emission bandwidth.

EMC

Emission Bandwidth

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/13/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	24°C
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	1020.4mb
Tested by:	Holly Ashkannejhad	Power:	5VDC nominal
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002

COMMENTS

DEVIATIONS FROM TEST STANDARD

Configuration #	1	Signature <i>Holly Ashkannejhad</i>
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	Value	Limit	Results
802.11(a), 6Mbps			
5150-5250MHz band			
Low channel, 5180MHz	29.2931 MHz	N/A	N/A
Mid channel, 5200MHz	29.6766 MHz	N/A	N/A
High channel, 5240MHz	29.7099 MHz	N/A	N/A
5250-5350MHz band			
Low channel, 5260MHz	33.7279 MHz	N/A	N/A
Mid channel, 5300MHz	29.7266 MHz	N/A	N/A
High channel, 5320MHz	30.4268 MHz	N/A	N/A
5470-5725MHz Band			
Low channel, 5500MHz	32.9443 MHz	N/A	N/A
Mid channel, 5600MHz	34.3114 MHz	N/A	N/A
High channel, 5700MHz	38.3961 MHz	N/A	N/A

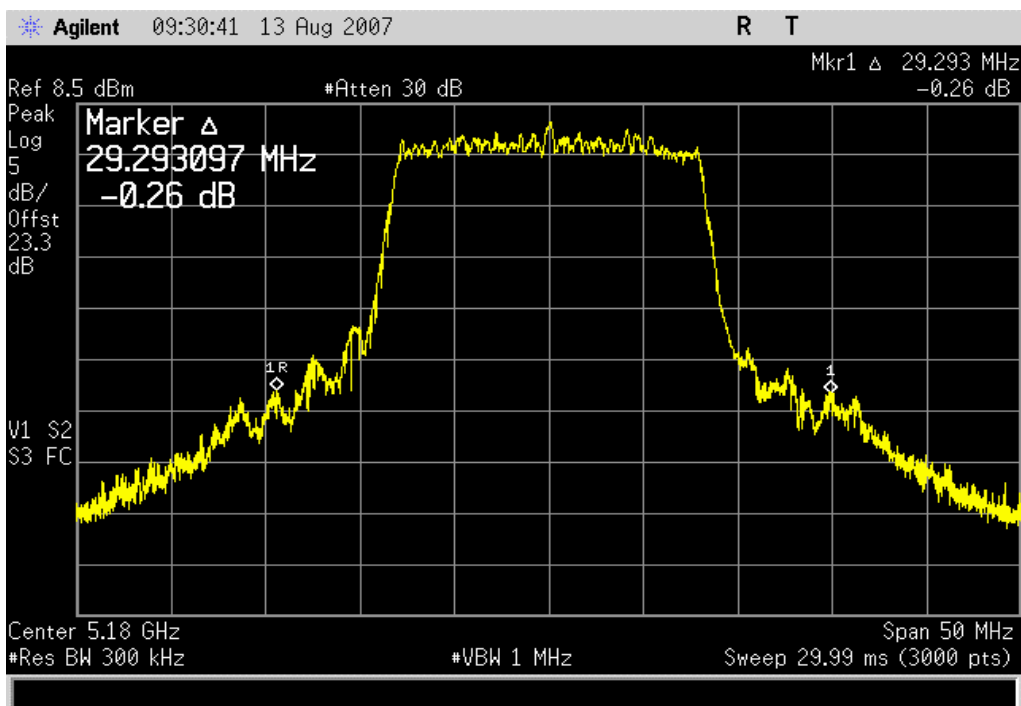
Emission Bandwidth

802.11(a), 6Mbps, 5150-5250MHz band, Low channel, 5180MHz

Result: N/A

Value: 29.2931 MHz

Limit: N/A

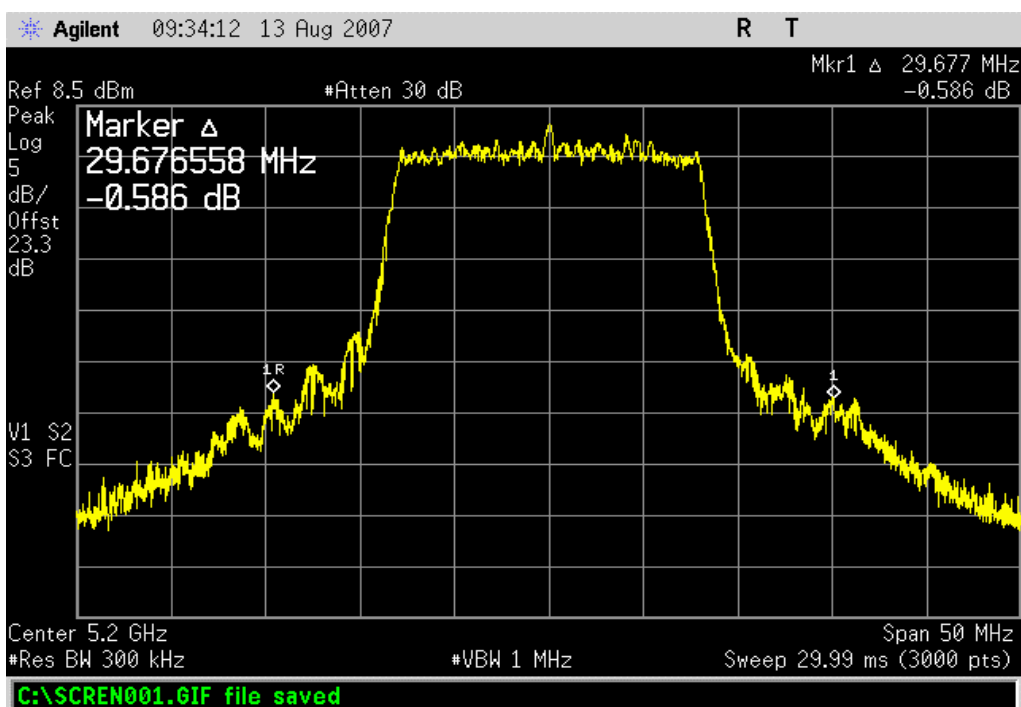


802.11(a), 6Mbps, 5150-5250MHz band, Mid channel, 5200MHz

Result: N/A

Value: 29.6766 MHz

Limit: N/A

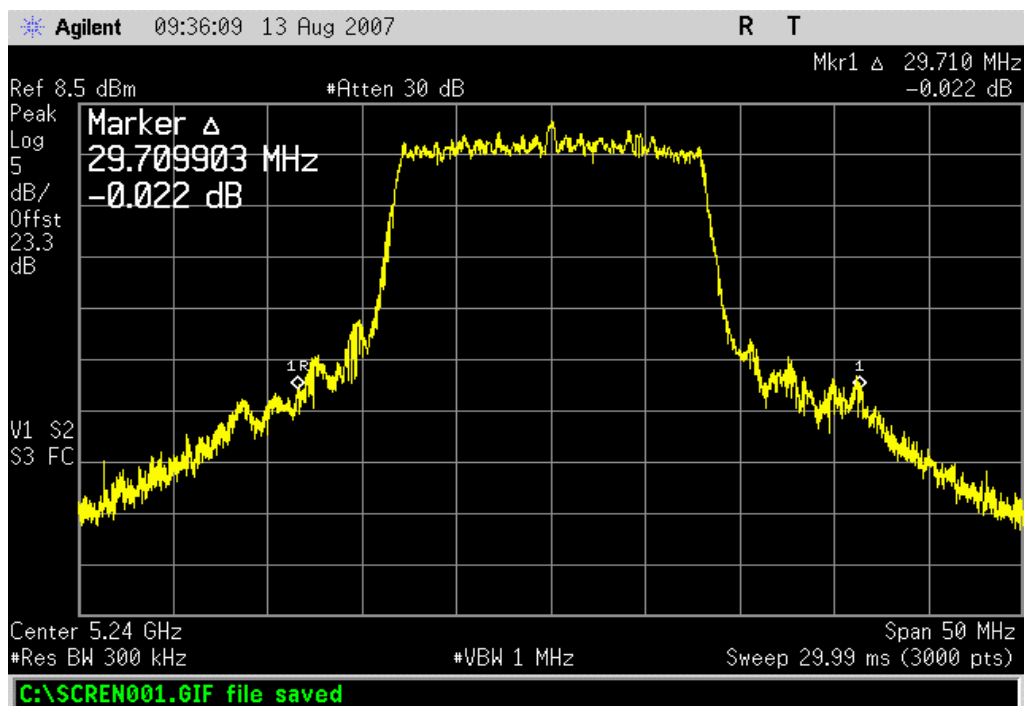


802.11(a), 6Mbps, 5150-5250MHz band, High channel, 5240MHz

Result: N/A

Value: 29.7099 MHz

Limit: N/A

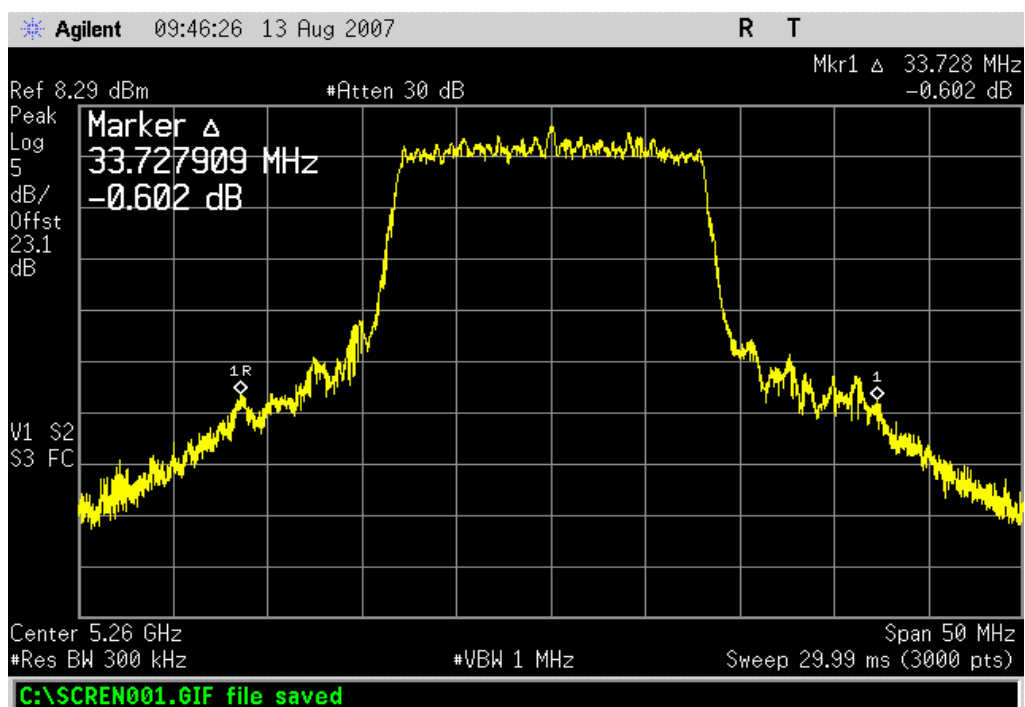


802.11(a), 6Mbps, 5250-5350MHz band, Low channel, 5260MHz

Result: N/A

Value: 33.7279 MHz

Limit: N/A



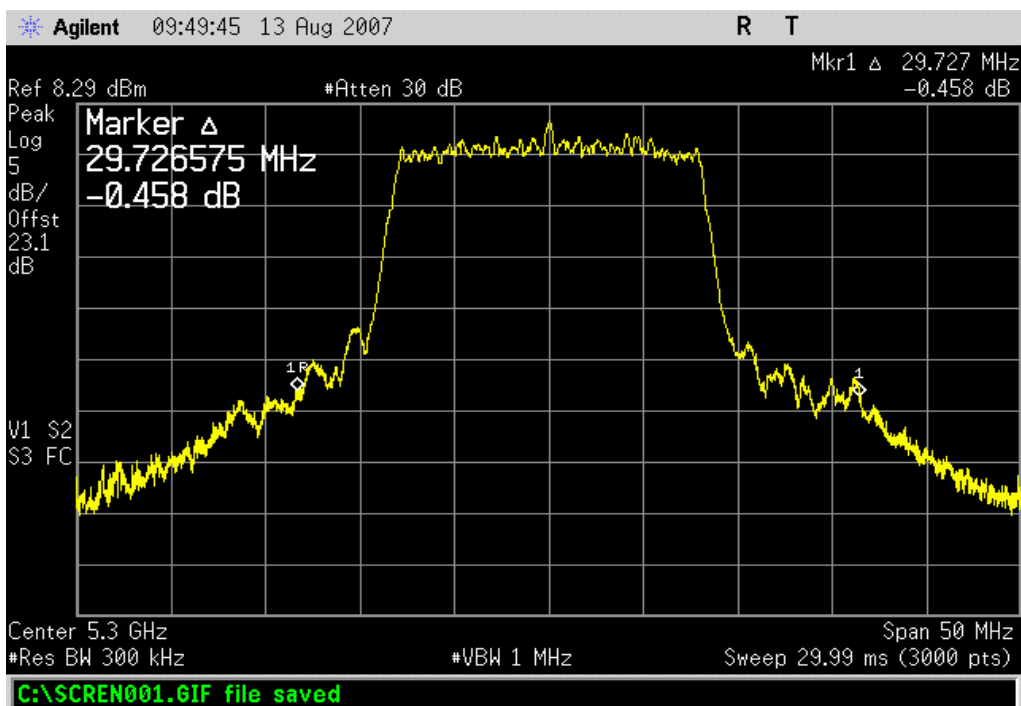
Emission Bandwidth

802.11(a), 6Mbps, 5250-5350MHz band, Mid channel, 5300MHz

Result: N/A

Value: 29.7266 MHz

Limit: N/A

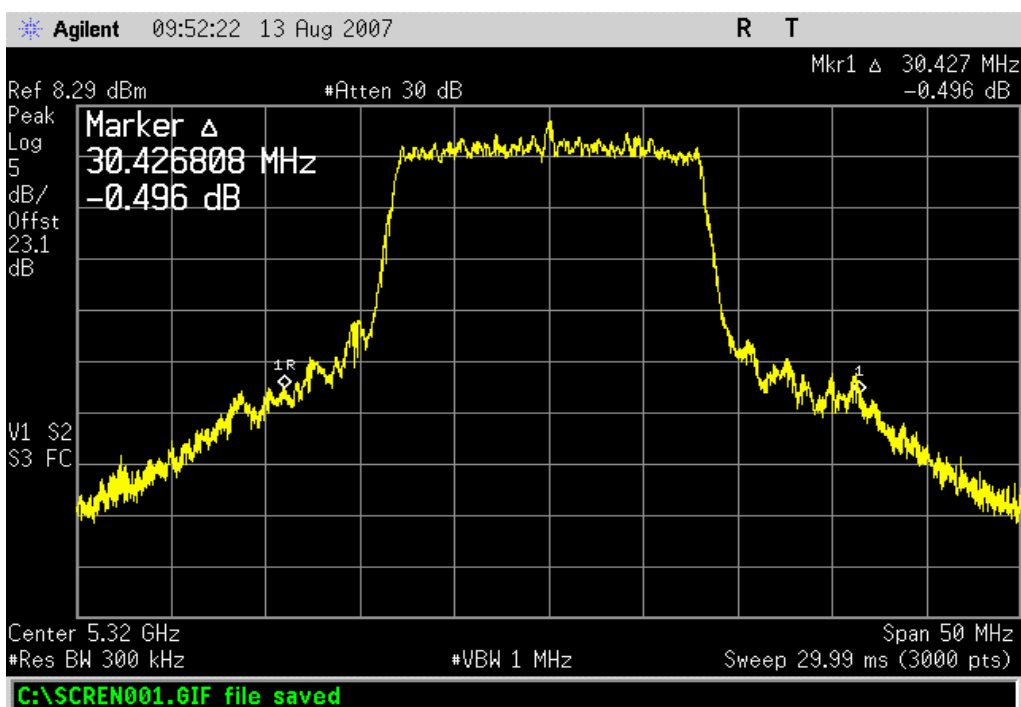


802.11(a), 6Mbps, 5250-5350MHz band, High channel, 5320MHz

Result: N/A

Value: 30.4268 MHz

Limit: N/A



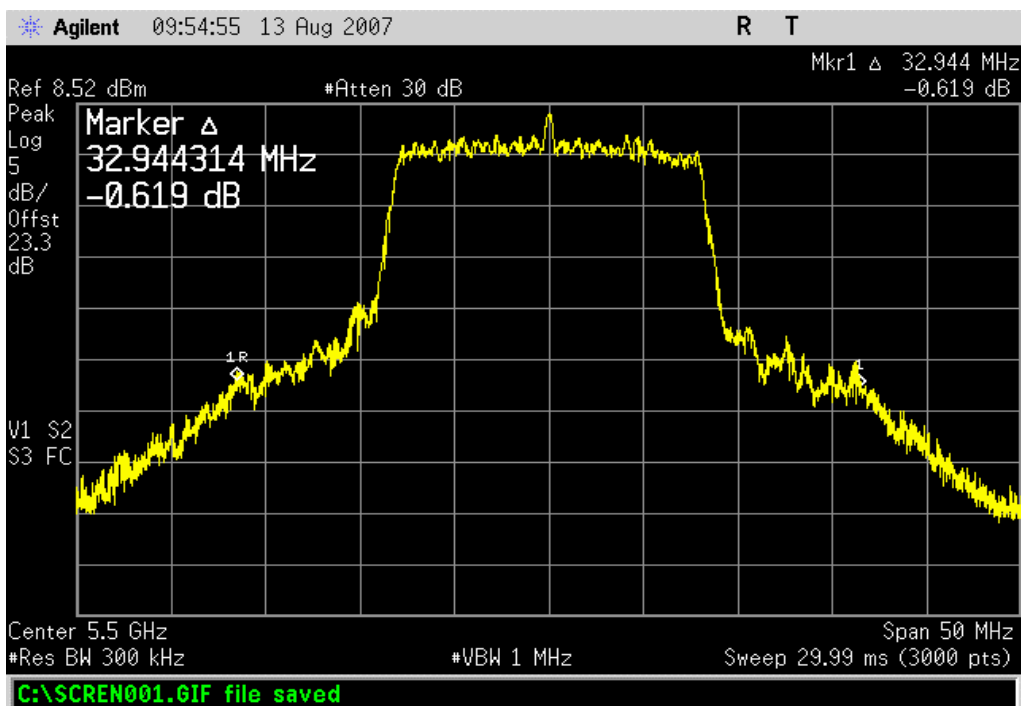
Emission Bandwidth

802.11(a), 6Mbps, 5470-5725MHz Band, Low channel, 5500MHz

Result: N/A

Value: 32.9443 MHz

Limit: N/A

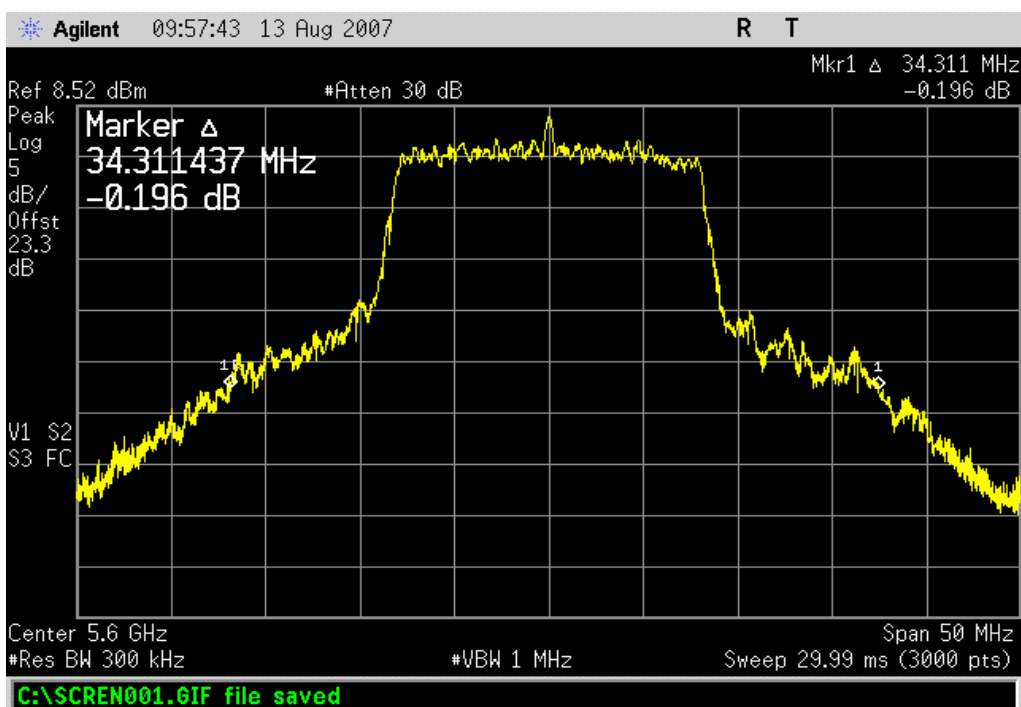


802.11(a), 6Mbps, 5470-5725MHz Band, Mid channel, 5600MHz

Result: N/A

Value: 34.3114 MHz

Limit: N/A



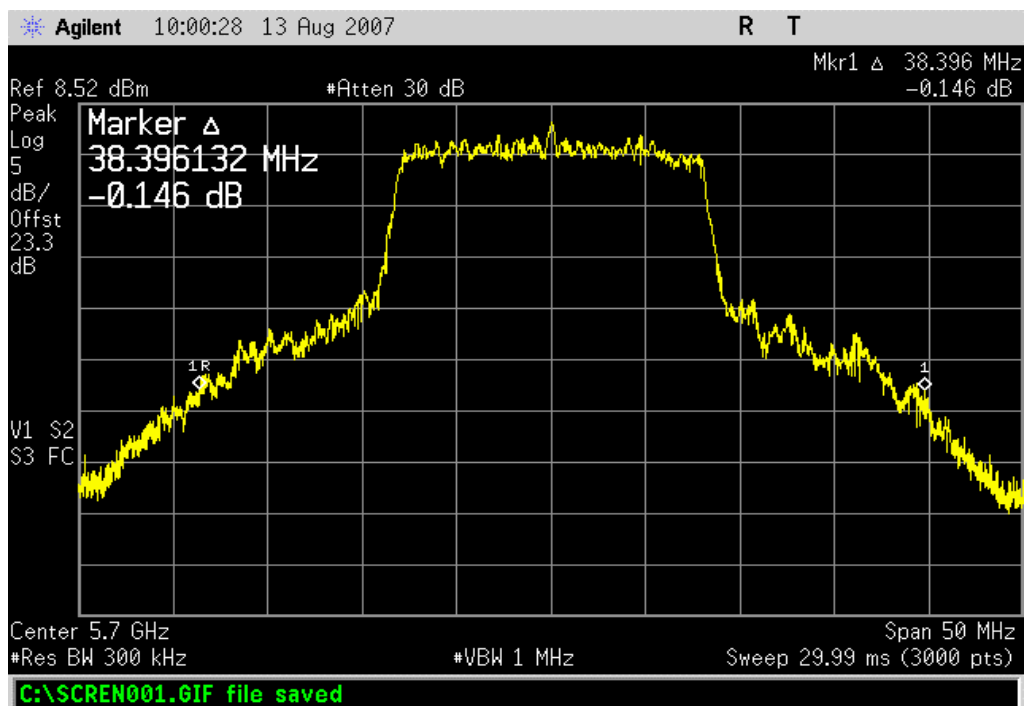
Emission Bandwidth

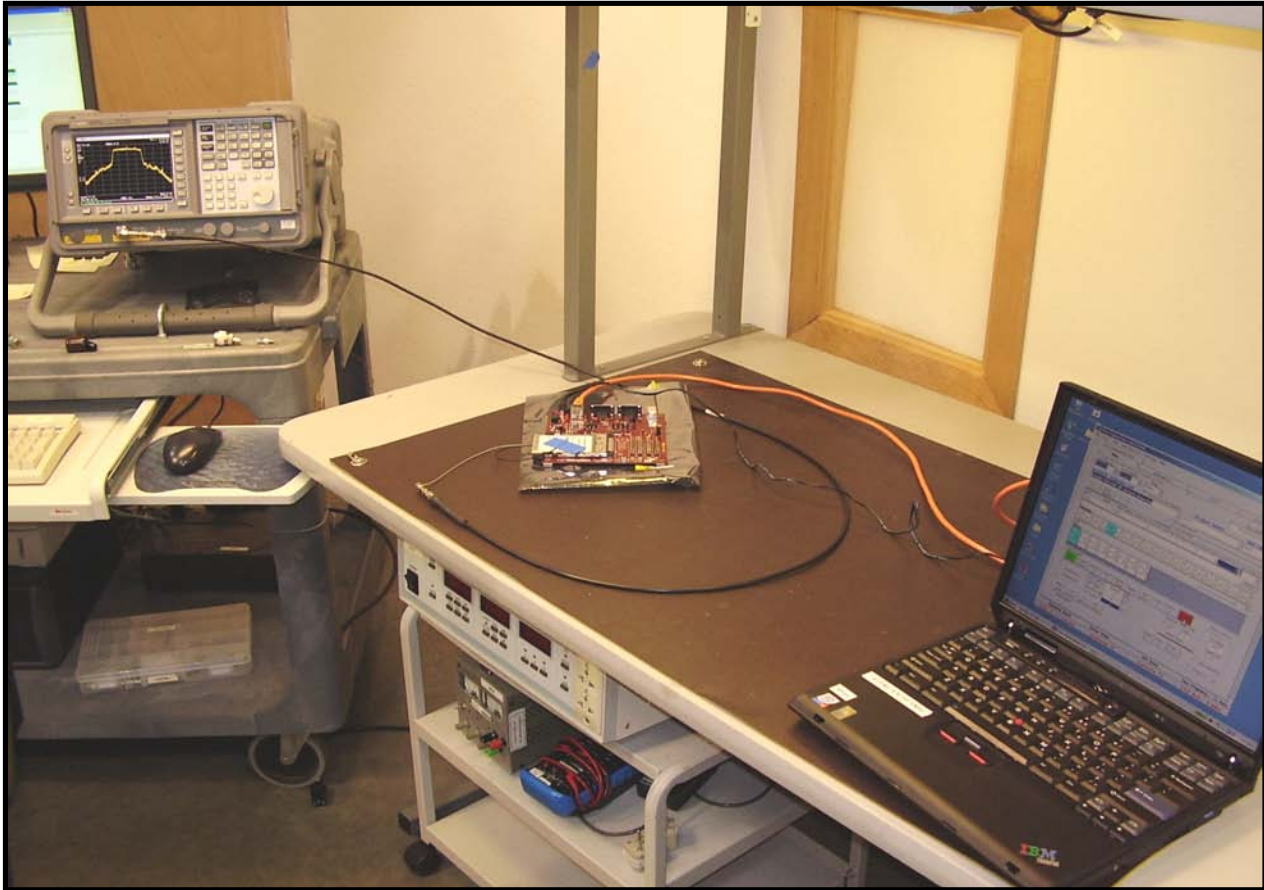
802.11(a), 6Mbps, 5470-5725MHz Band, High channel, 5700MHz

Result: N/A

Value: 38.3961 MHz

Limit: N/A





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Multimeter	Tektronix	DMM912	MMH	12/7/2006	13
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/8/2007	13
Chamber, Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZH-32-2-2-H/AC	TBA	7/7/2007	13
Spectrum Analyzer	Agilent	E4407B	AAU	12/8/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied over the range specified by the client. Per the client, the chip only works over this voltage range; it will shut off if the voltage is outside the specified range.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT. Measurements were made at the mid channel of each band to determine frequency stability. If the frequency variation is less than 100 ppm, the EUT will meet the requirement of 15.407(g), that the emissions are maintained within the band of operation.

NORTHWEST		Frequency Stability		XMI# 2007.06.13	
EMC		EUT: Welch Allyn 802.11a Wireless PC Card		Work Order: PROT0295	
Serial Number: 001AFA0000CE				Date: 08/15/07	
Customer: Welch Allyn Protocol, Inc.				Temperature: 24°C	
Attendees: None				Humidity: 35%	
Project: None				Barometric Pres.: 1020.4mb	
Tested by: Holly Ashkannejhad		Power: 5.0VDC nominal		Job Site: EV06	
TEST SPECIFICATIONS		Test Method			
FCC 15.407:2006		ANSI C63.4:2003 DA 02-2138:2002			
COMMENTS					
DEVIATIONS FROM TEST STANDARD					
Configuration #	1	Signature <i>Holly Ashkannejhad</i>			

Normal Test Conditions

Temp (°C)	Power (Vdc)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
24	5.0	5200.000000	5199.971244	5.53	100
24	5.0	5300.000000	5299.970916	5.49	100
24	5.0	5600.000000	5599.969933	5.37	100

Extreme power source conditions

Power (Vdc)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
4.7	5200.000000	5199.972765	5.24	100
4.7	5300.000000	5299.971985	5.29	100
4.7	5600.000000	5599.970137	5.33	100

Power (Vdc)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Specification (ppm)
5.25	5200.000000	5199.975210	4.77	100
5.25	5300.000000	5299.975366	4.65	100
5.25	5600.000000	5599.975280	4.41	100

Extreme temperature conditions

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
-30	5200.000000	5200.017989	3.46	100
-30	5300.000000	5300.018308	3.45	100
-30	5600.000000	5600.019121	3.41	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
-20	5200.000000	5200.017969	3.46	100
-20	5300.000000	5300.018107	3.42	100
-20	5600.000000	5600.019023	3.40	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
-10	5200.000000	5200.013435	2.58	100
-10	5300.000000	5300.013645	2.57	100
-10	5600.000000	5600.014175	2.53	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
0	5200.000000	5200.002153	0.41	100
0	5300.000000	5300.002320	0.44	100
0	5600.000000	5600.002391	0.43	100

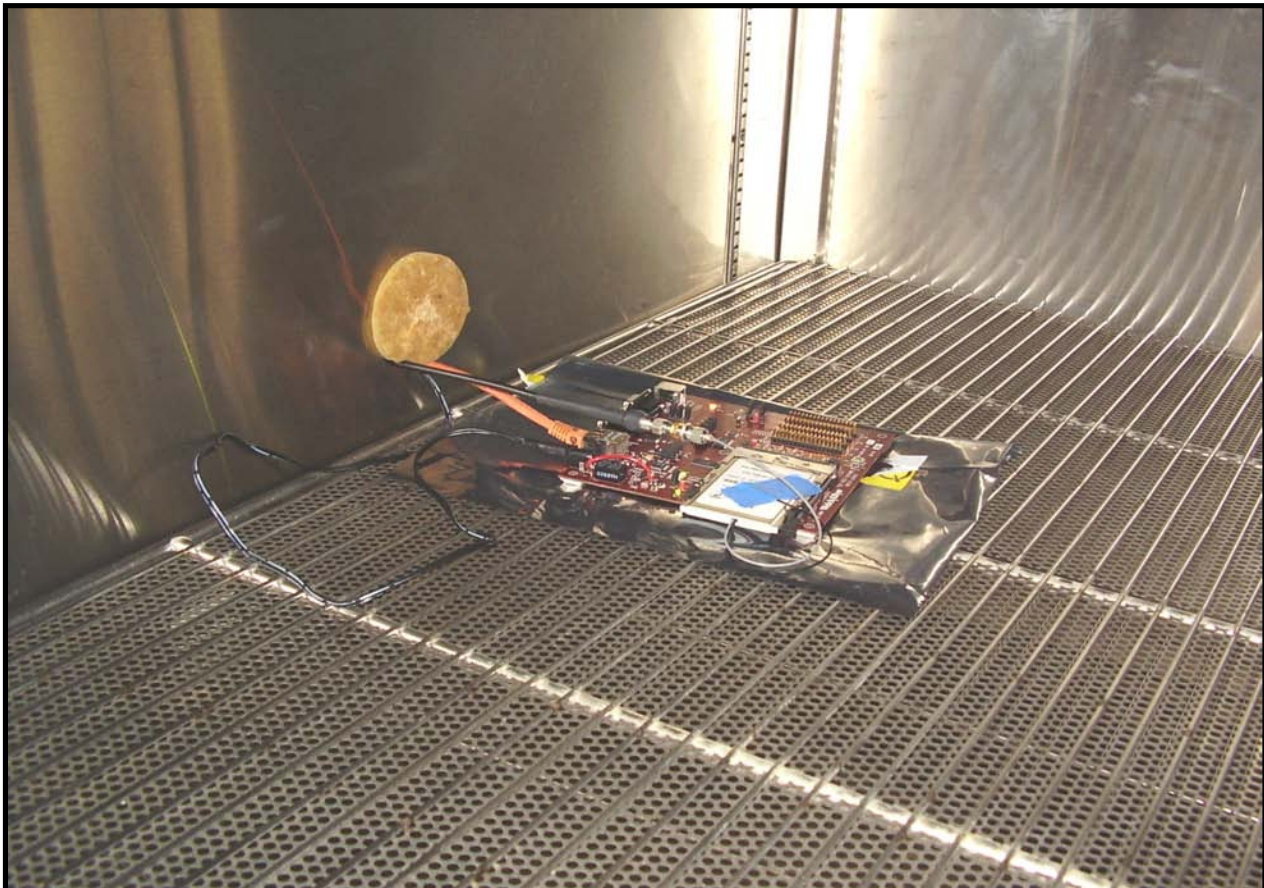
Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
10	5200.000000	5199.987075	2.49	100
10	5300.000000	5299.986376	2.57	100
10	5600.000000	5599.986807	2.36	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
20	5200.000000	5199.975863	4.64	100
20	5300.000000	5299.975406	4.64	100
20	5600.000000	5599.973793	4.68	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
30	5200.000000	5199.962696	7.17	100
30	5300.000000	5299.962121	7.15	100
30	5600.000000	5599.959984	7.15	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
40	5200.000000	5199.958686	7.95	100
40	5300.000000	5299.957834	7.96	100
40	5600.000000	5599.955367	7.97	100

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Tolerance (ppm)	Limit (ppm)
50	5200.000000	5199.957954	8.09	100
50	5300.000000	5299.957051	8.10	100
50	5600.000000	5599.954491	8.13	100



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/8/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

FCC Public Notice DA 02-2138 was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The EUT's only data rate was measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Peak Transmit Power. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report.

Method #1 found in FCC Public Notice DA02-2138 was used because the analyzer sweep time was less than or equal to T.

The spectrum analyzer settings were as follows:

- The span was set to encompass entire emission bandwidth (B), centered on the transmit channel.
- The RBW = 1 MHz, VBW \geq 3 MHz
- Sample detector mode because the bin width (span / number of spectral points) < 0.5 RBW.
- Trace average 100 traces in power averaging mode (not video averaging).
- Power was integrated across "B", by using the channel power function of the analyzer.

EMC

Peak Transmit Power

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/13/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	25°C
Attendees:	None	Humidity:	34%
Project:	None	Barometric Pres.:	1020.4mb
Tested by:	Holly Ashkannejhad	Power:	5VDC nominal
		Job Site:	EV06

TEST SPECIFICATIONS

Test Method

FCC 15.407:2006

ANSI C63.4:2003 DA 02-2138:2002

COMMENTS

DEVIATIONS FROM TEST STANDARD

Configuration

1

Signature

Holly Ashkannejhad

Value

Limit

Results

Transmission Burst Duration

Transmission Burst Duration

1.0272 msec

N/A

N/A

802.11(a), 6Mbps

5150 - 5250 MHz Band

Low Channel, 5180 MHz

14.86 dBm

17 dBm

Pass

Mid channel, 5200 MHz

14.79 dBm

17 dBm

Pass

High channel, 5240 MHz

14.31 dBm

17 dBm

Pass

5250 - 5350 MHz Band

Low channel, 5260 MHz

14.48 dBm

24 dBm

Pass

Mid channel, 5300 MHz

13.92 dBm

24 dBm

Pass

High channel, 5320 MHz

14.27 dBm

24 dBm

Pass

5470-5725 MHz Band

Low channel, 5500 MHz

14.37 dBm

24 dBm

Pass

Mid channel, 5600 MHz

13.95 dBm

24 dBm

Pass

High channel, 5700 MHz

13.99 dBm

24 dBm

Pass

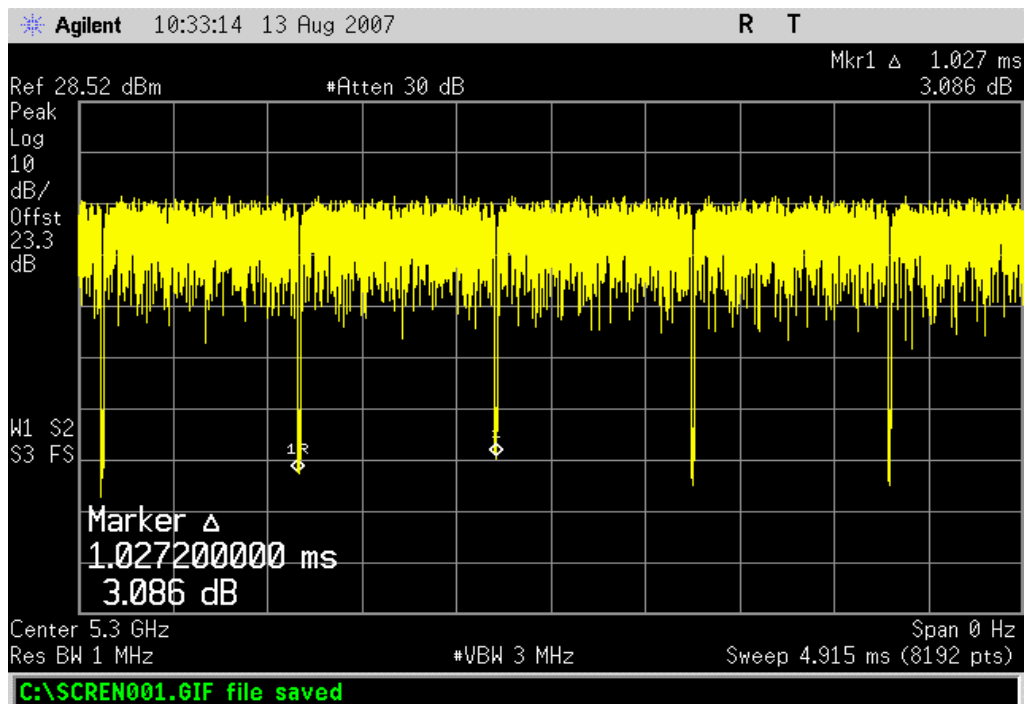
Peak Transmit Power

Transmission Burst Duration

Result: N/A

Value: 1.0272 msec

Limit: N/A

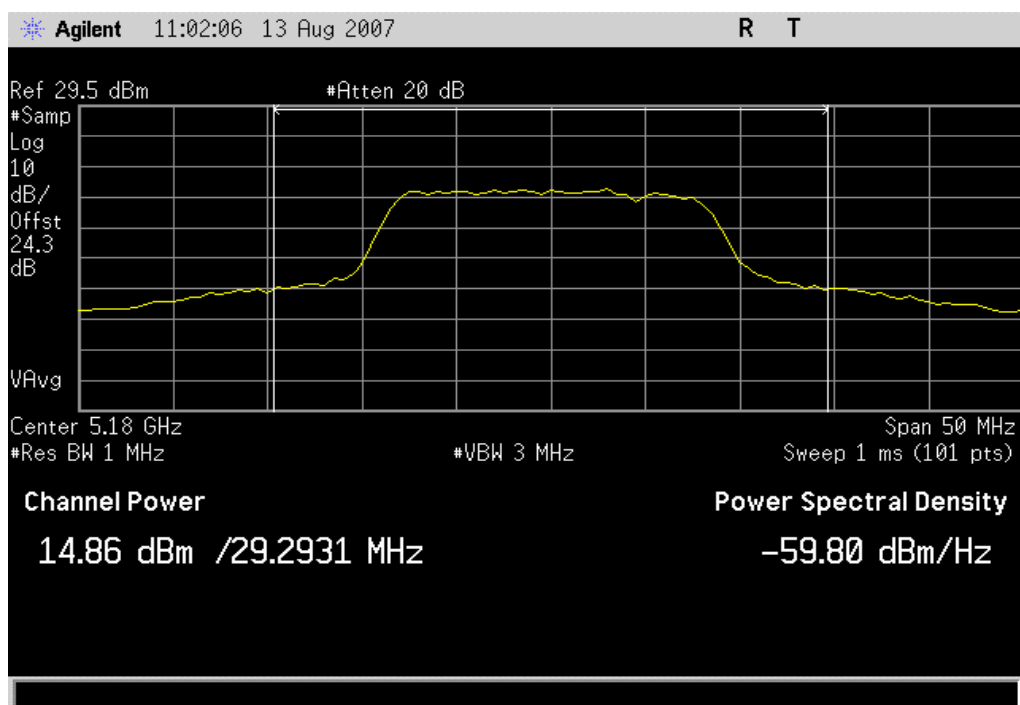


802.11(a), 6Mbps, 5150 - 5250 MHz Band, Low Channel, 5180 MHz

Result: Pass

Value: 14.86 dBm

Limit: 17 dBm

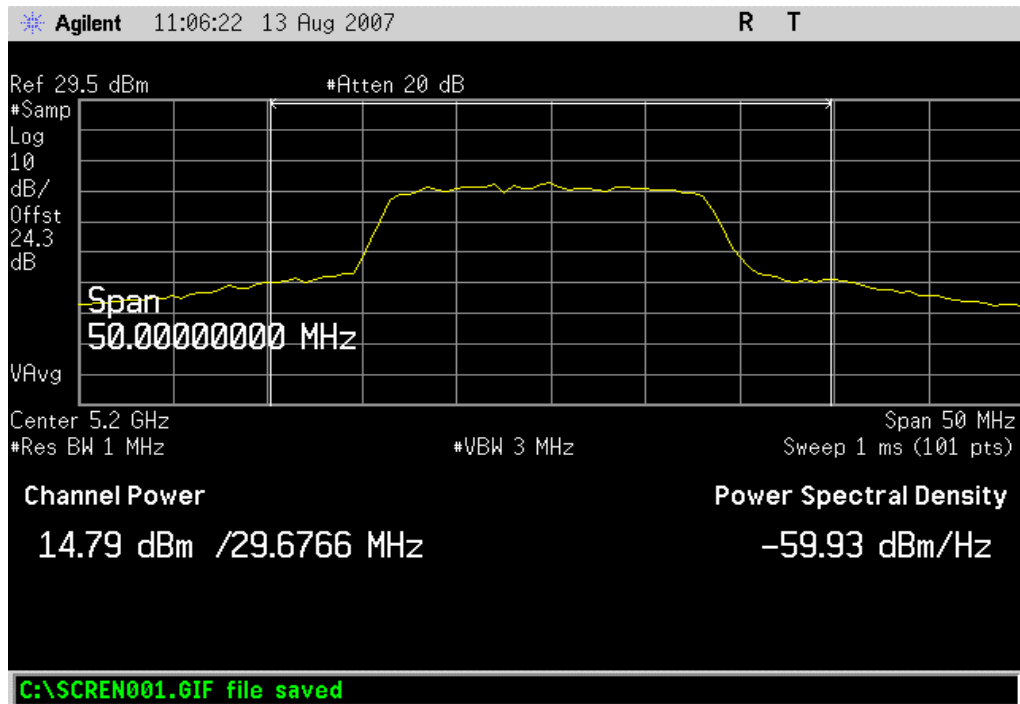


802.11(a), 6Mbps, 5150 - 5250 MHz Band, Mid channel, 5200 MHz

Result: Pass

Value: 14.79 dBm

Limit: 17 dBm

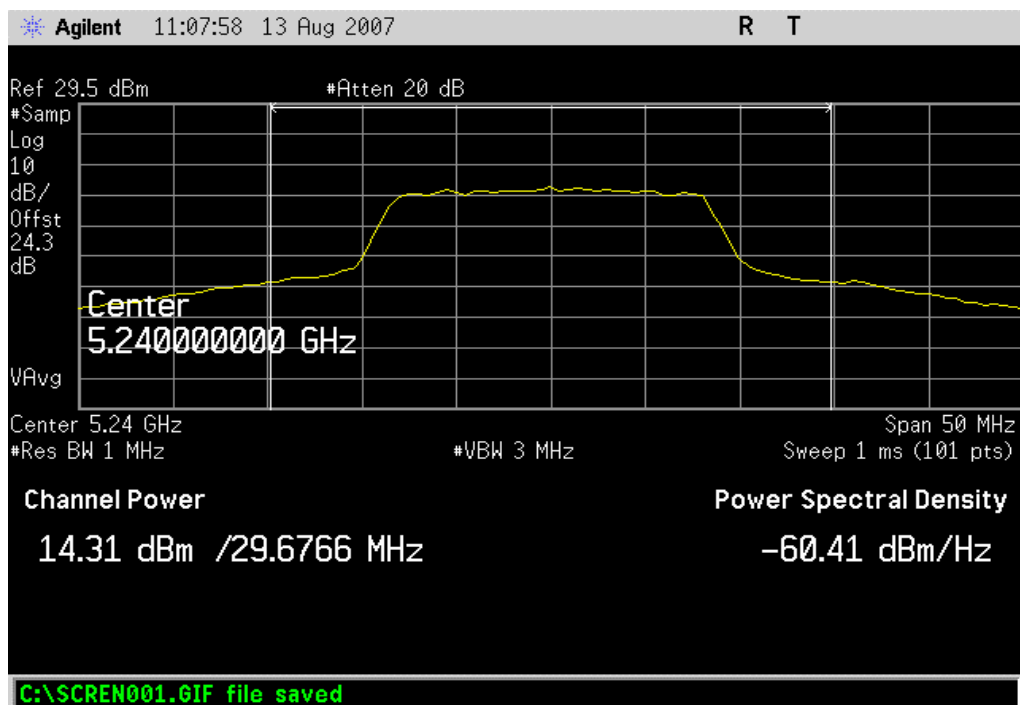


802.11(a), 6Mbps, 5150 - 5250 MHz Band, High channel, 5240 MHz

Result: Pass

Value: 14.31 dBm

Limit: 17 dBm

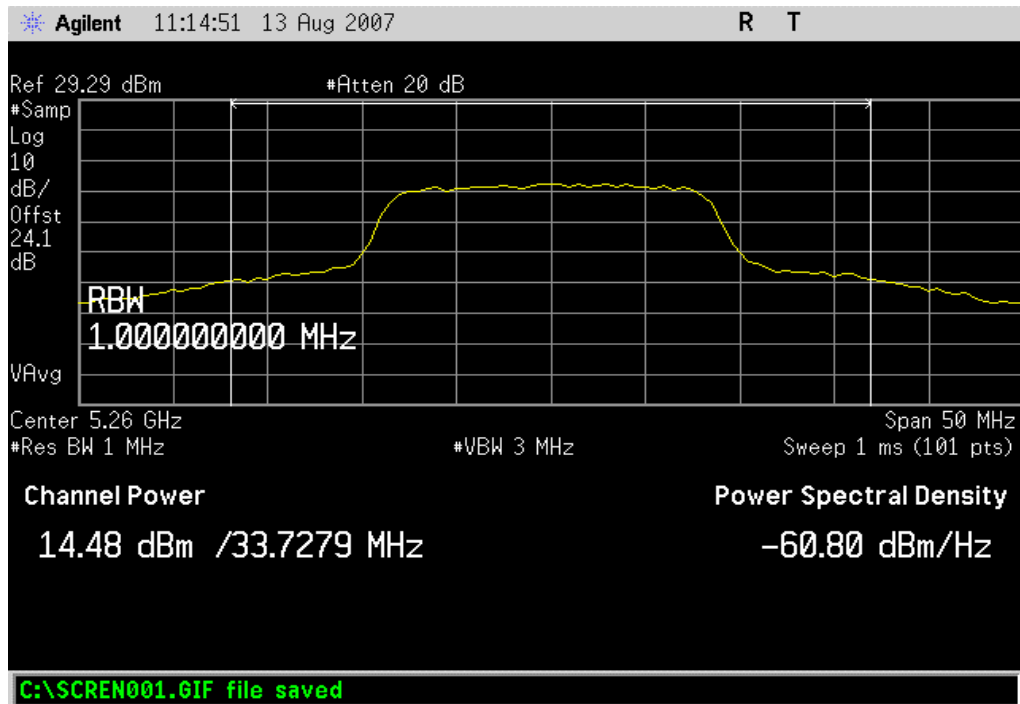


802.11(a), 6Mbps, 5250 - 5350 MHz Band, Low channel, 5260 MHz

Result: Pass

Value: 14.48 dBm

Limit: 24 dBm

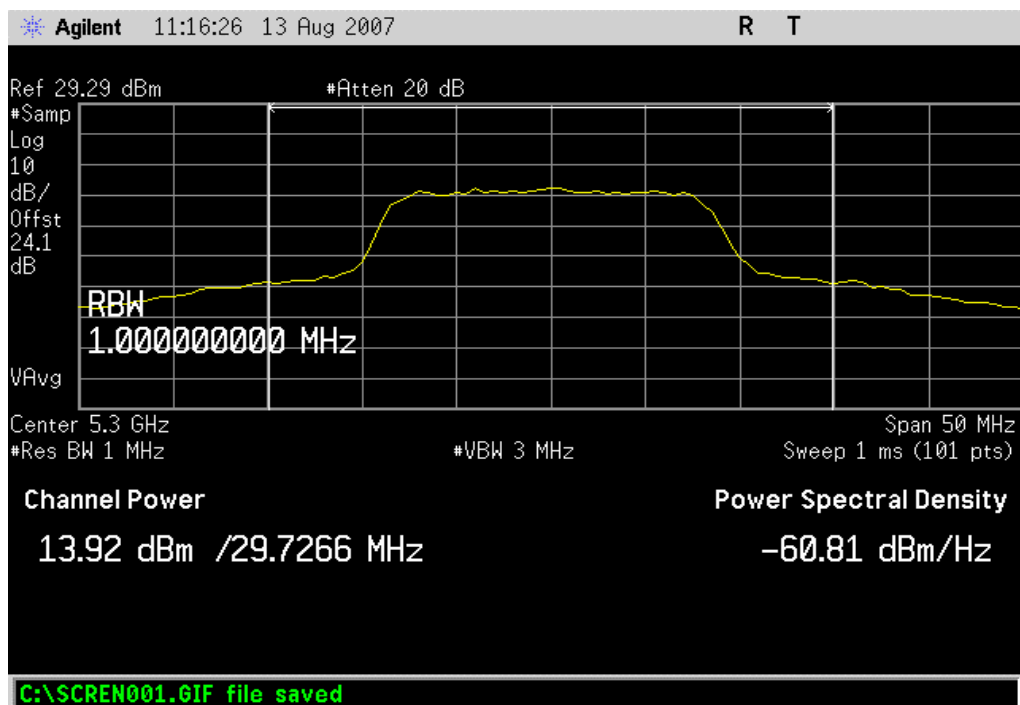


802.11(a), 6Mbps, 5250 - 5350 MHz Band, Mid channel, 5300 MHz

Result: Pass

Value: 13.92 dBm

Limit: 24 dBm



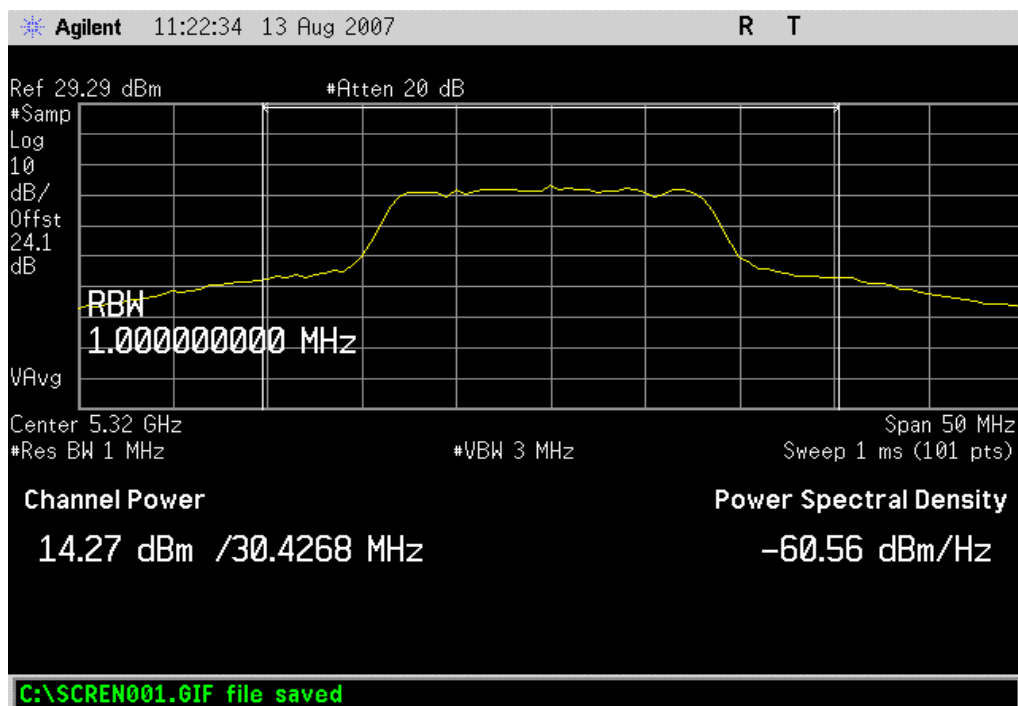
Peak Transmit Power

802.11(a), 6Mbps, 5250 - 5350 MHz Band, High channel, 5320 MHz

Result: Pass

Value: 14.27 dBm

Limit: 24 dBm

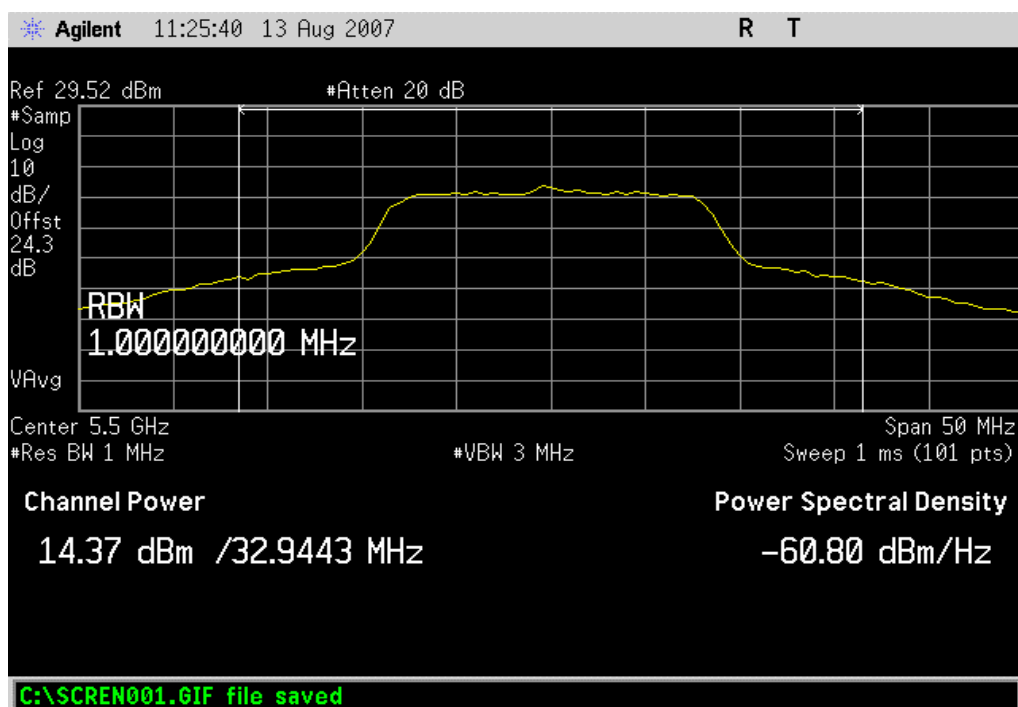


802.11(a), 6Mbps, 5470-5725 MHz Band, Low channel, 5500 MHz

Result: Pass

Value: 14.37 dBm

Limit: 24 dBm

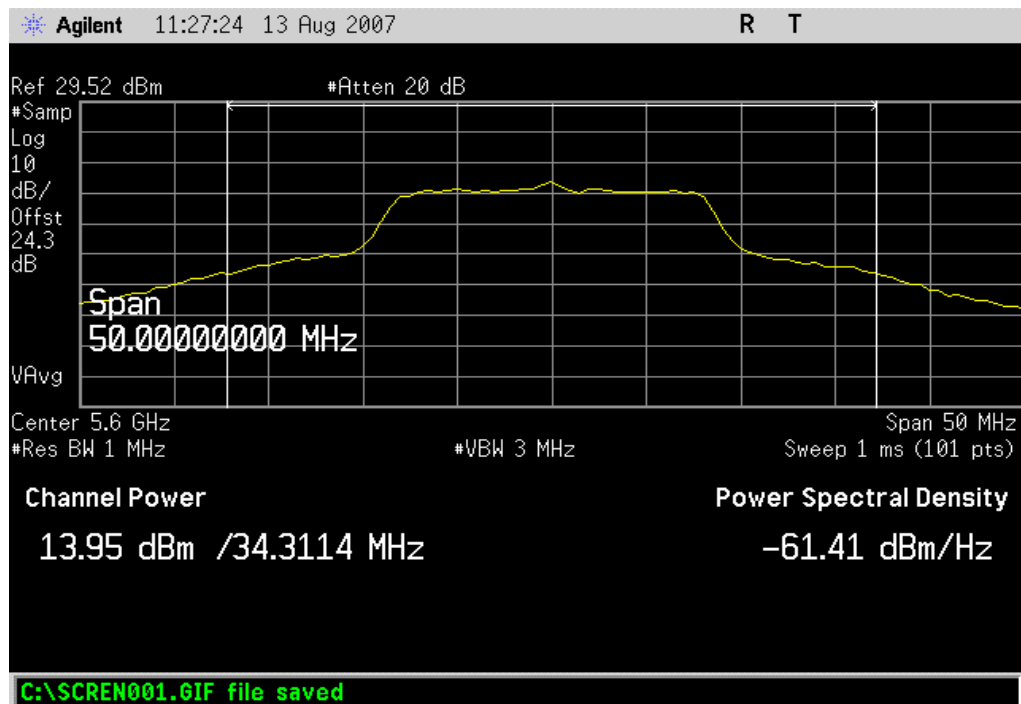


802.11(a), 6Mbps, 5470-5725 MHz Band, Mid channel, 5600 MHz

Result: Pass

Value: 13.95 dBm

Limit: 24 dBm

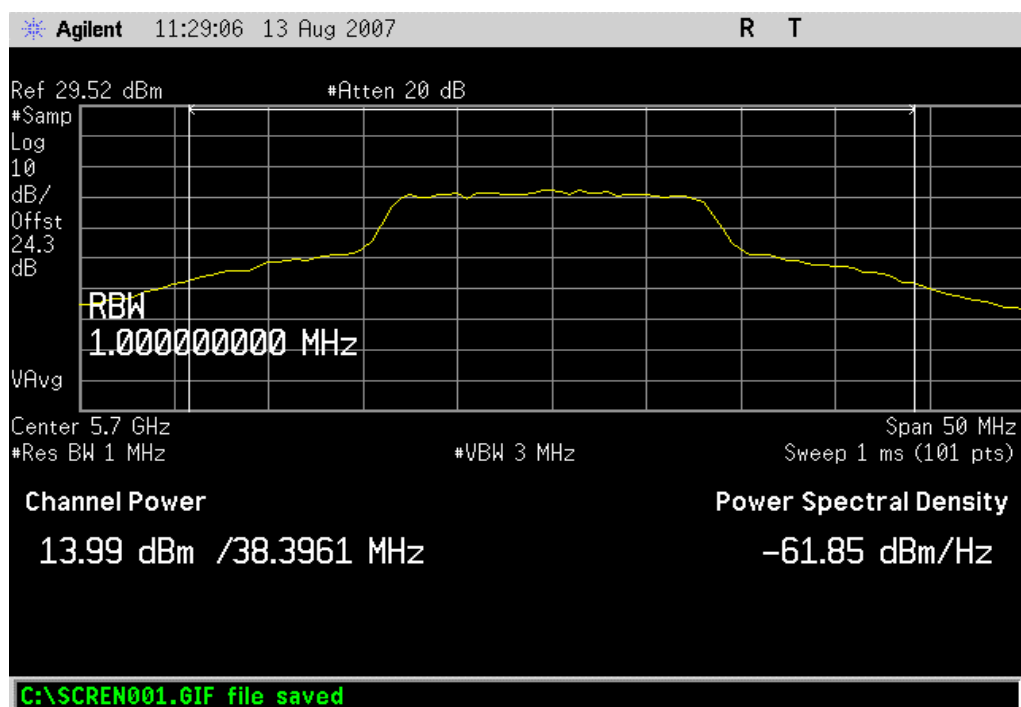


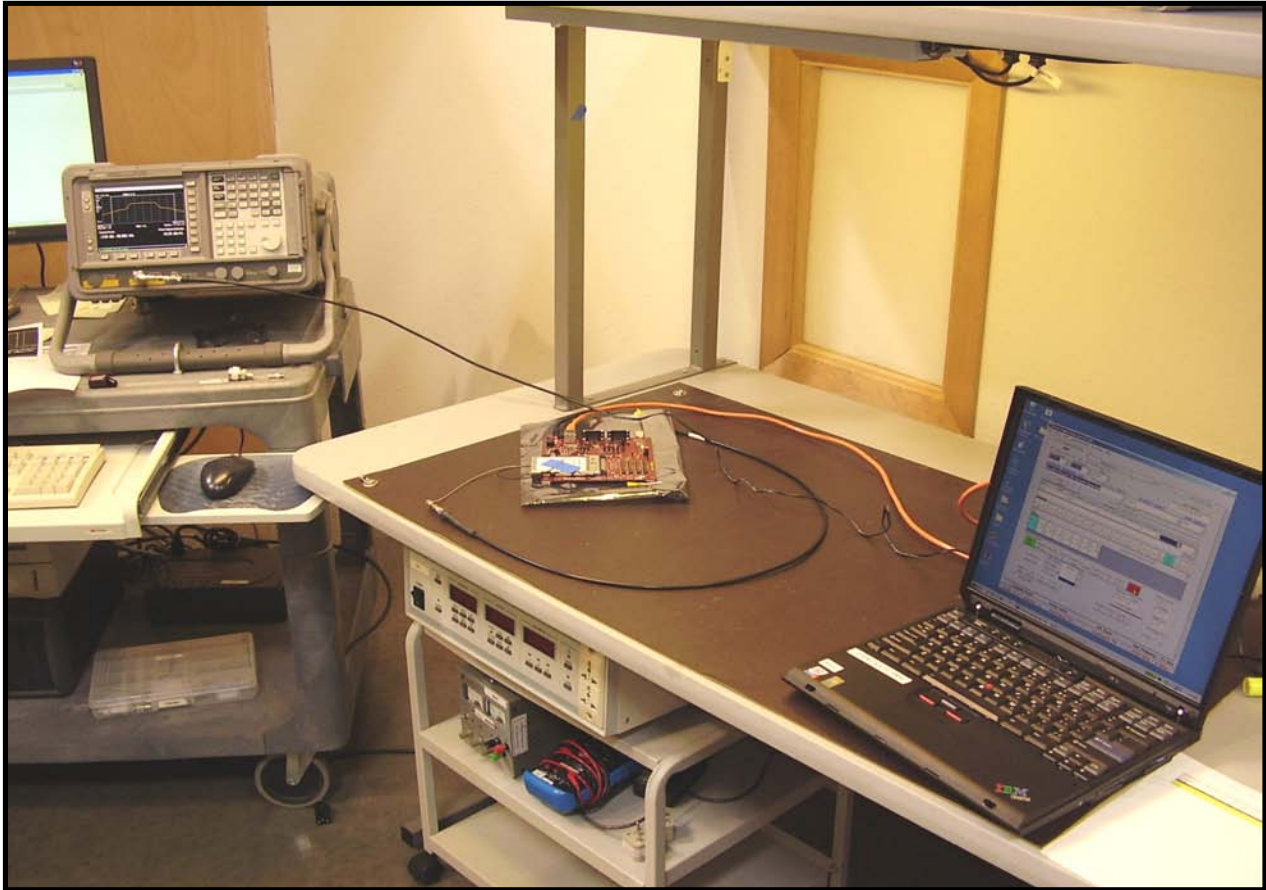
802.11(a), 6Mbps, 5470-5725 MHz Band, High channel, 5700 MHz

Result: Pass

Value: 13.99 dBm

Limit: 24 dBm





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/8/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

FCC Public Notice DA 02-2138 was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The EUT's only data rate was measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

- Span set to encompass the entire emission bandwidth (B), centered on the transmit channel.
- Using the marker delta function, the largest difference between the following two traces was measured:
 - 1st Trace: RBW = 1 MHz, VBW \geq 3 MHz with peak detector and max-hold settings.
 - 2nd Trace: Use same settings as were used for peak conducted transmit power.

EMC

Peak Excursion of the Modulation Envelope

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/13/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	24°C
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	1020.4mb
Tested by:	Holly Ashkannejhad	Power:	5.0VDC nominal
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002

COMMENTS

DEVIATIONS FROM TEST STANDARD

Configuration #	1	Signature <i>Holly Ashkannejhad</i>
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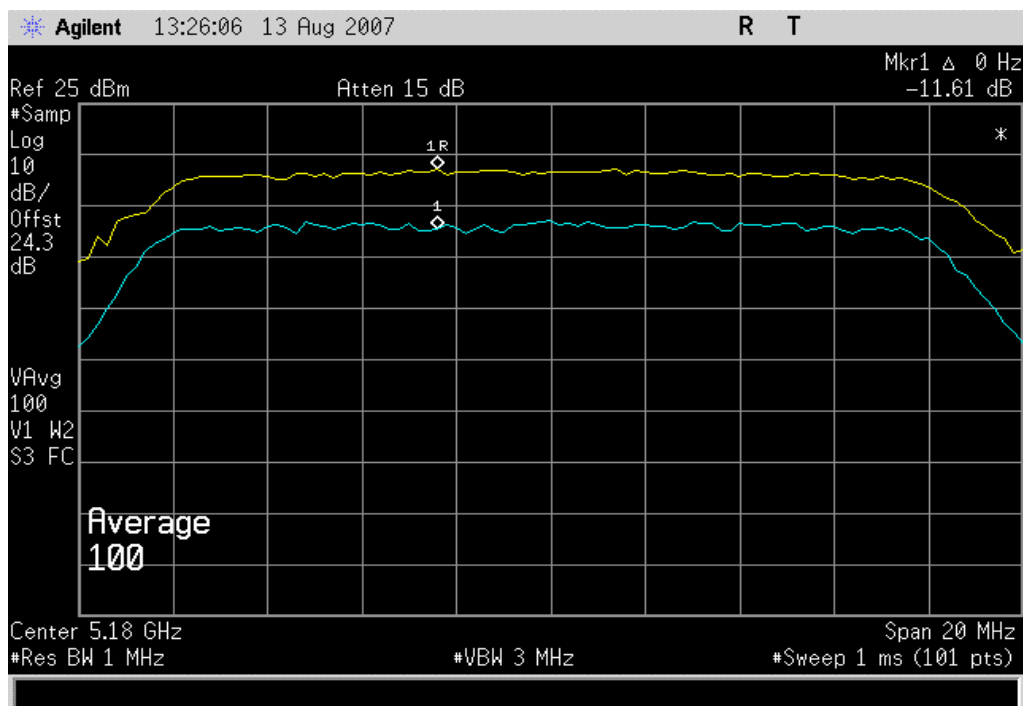
		Value	Limit	Results
802.11(a), 6Mbps	5150 - 5250 MHz band			
	Low channel, 5180MHz	11.61 dB	≤ 13 dB	Pass
	Mid channel, 5200MHz	10.58 dB	≤ 13 dB	Pass
	High channel, 5240MHz	11.15 dB	≤ 13 dB	Pass
	5250 - 5350 MHz band			
	Low channel, 5260MHz	11.3 dB	≤ 13 dB	Pass
	Mid channel, 5300MHz	11.25 dB	≤ 13 dB	Pass
	High channel 5320MHz	11.32 dB	≤ 13 dB	Pass
	5470 - 5725 MHz band			
	Low channel, 5500MHz	9.052 dB	≤ 13 dB	Pass
	Mid channel, 5600MHz	9.287 dB	≤ 13 dB	Pass
	High channel, 5700MHz	8.99 dB	≤ 13 dB	Pass

Peak Excursion of the Modulation Envelope

802.11(a), 6Mbps, 5150 - 5250 MHz band, Low channel, 5180MHz

Result: Pass

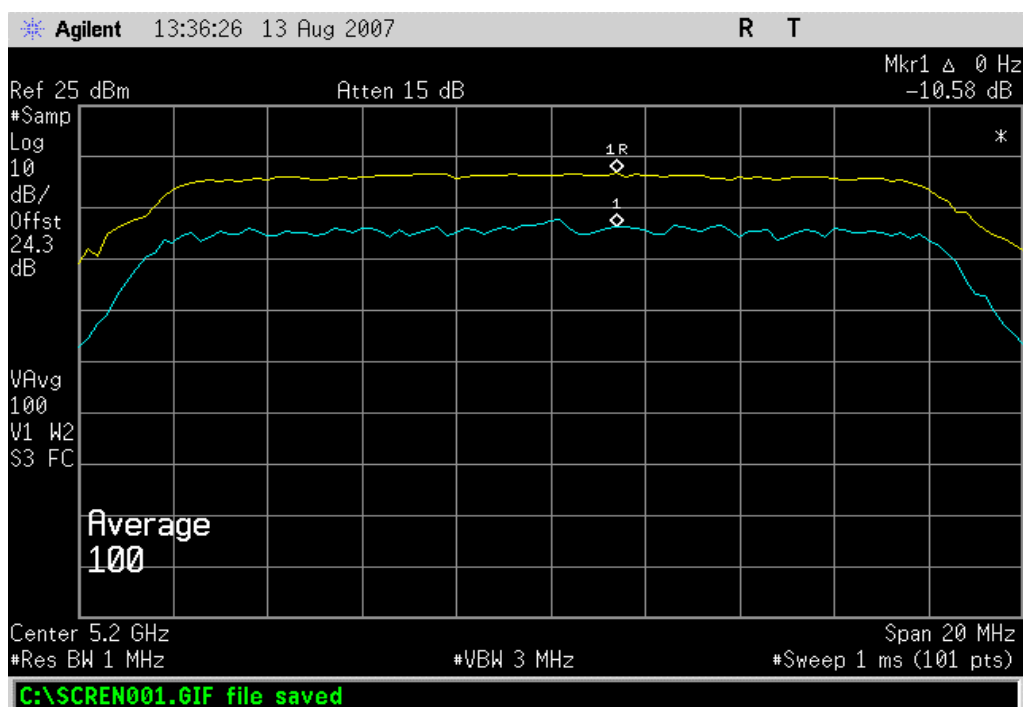
Value: 11.61 dB

Limit: ≤ 13 dB

802.11(a), 6Mbps, 5150 - 5250 MHz band, Mid channel, 5200MHz

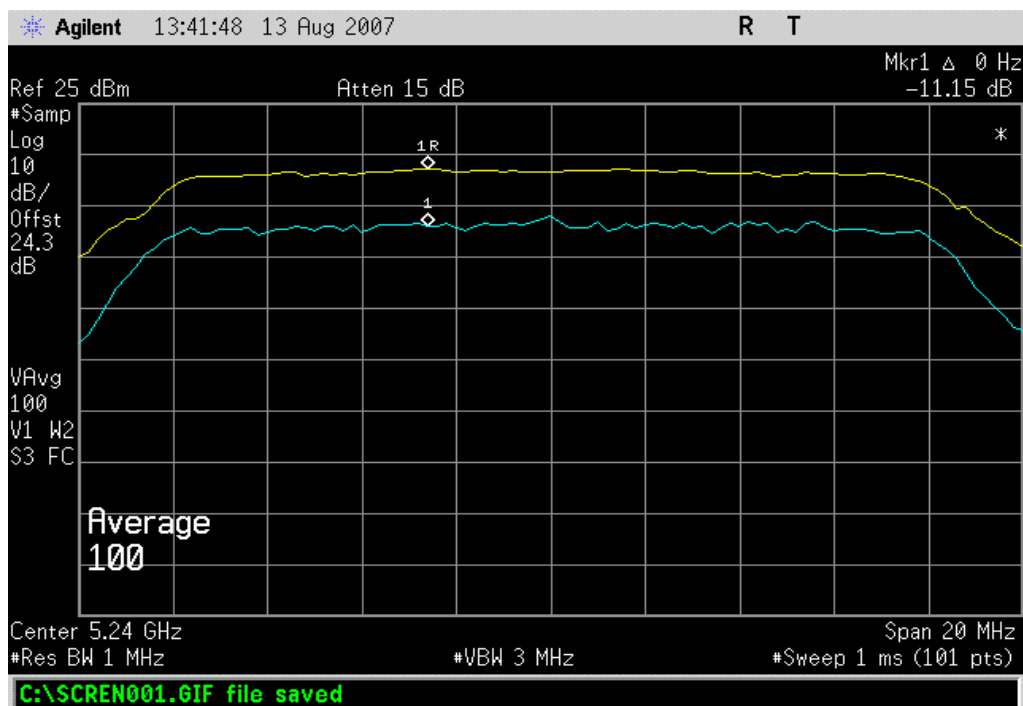
Result: Pass

Value: 10.58 dB

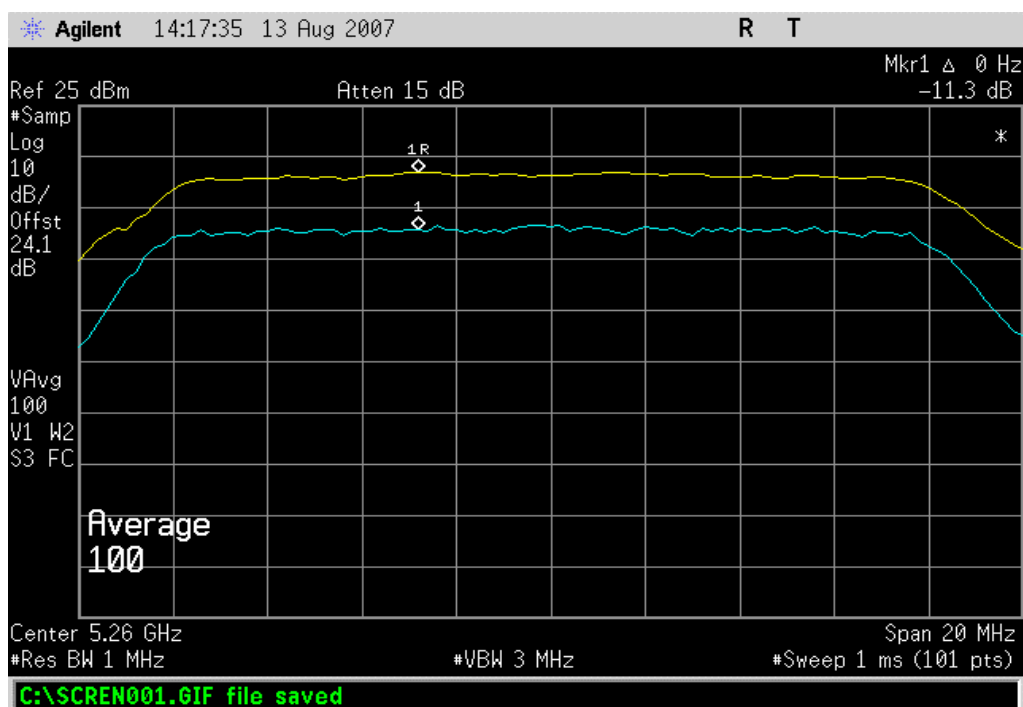
Limit: ≤ 13 dB

Peak Excursion of the Modulation Envelope

802.11(a), 6Mbps, 5150 - 5250 MHz band, High channel, 5240MHz

Result: Pass**Value:** 11.15 dB**Limit:** ≤ 13 dB

802.11(a), 6Mbps, 5250 - 5350 MHz band, Low channel, 5260MHz

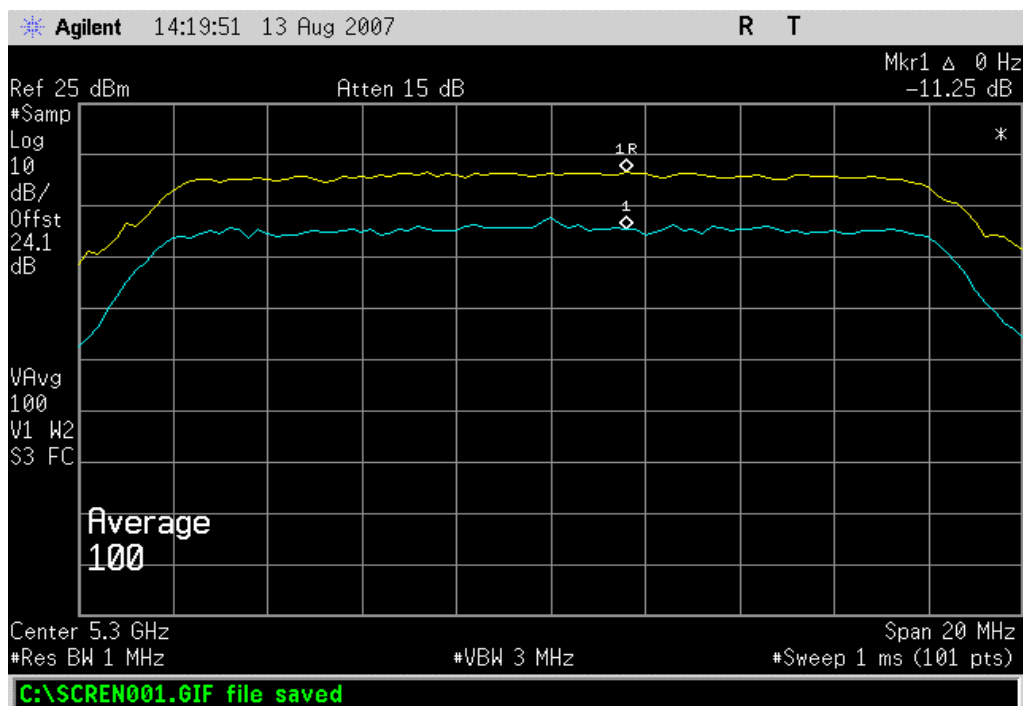
Result: Pass**Value:** 11.3 dB**Limit:** ≤ 13 dB

Peak Excursion of the Modulation Envelope

802.11(a), 6Mbps, 5250 - 5350 MHz band, Mid channel, 5300MHz

Result: Pass

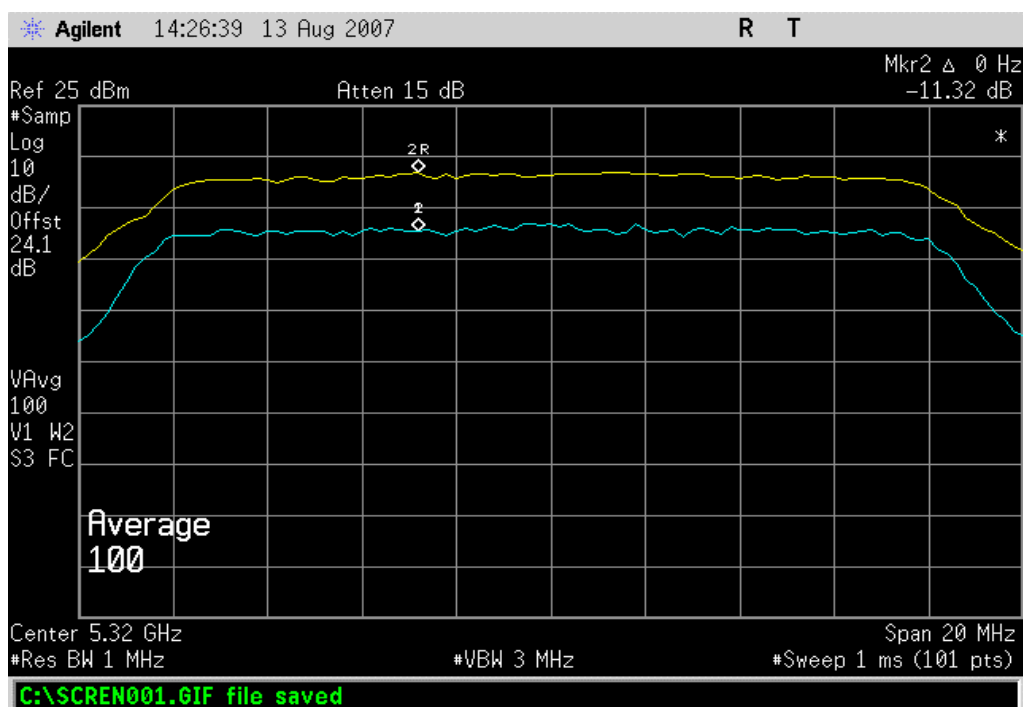
Value: 11.25 dB

Limit: ≤ 13 dB

802.11(a), 6Mbps, 5250 - 5350 MHz band, High channel 5320MHz

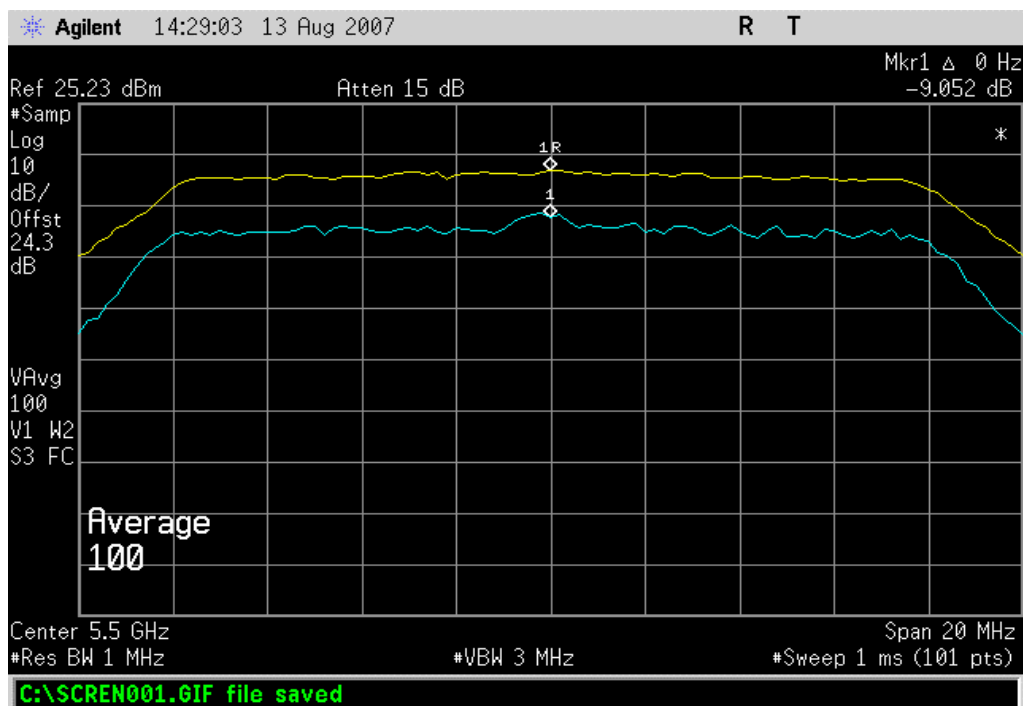
Result: Pass

Value: 11.32 dB

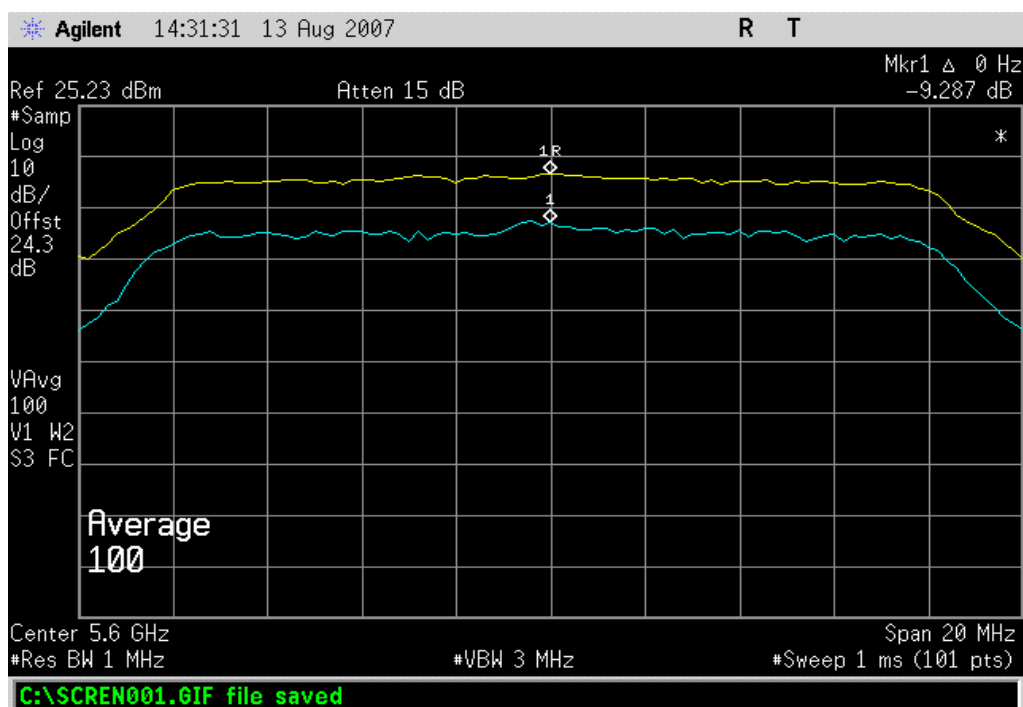
Limit: ≤ 13 dB

Peak Excursion of the Modulation Envelope

802.11(a), 6Mbps, 5470 - 5725 MHz band, Low channel, 5500MHz

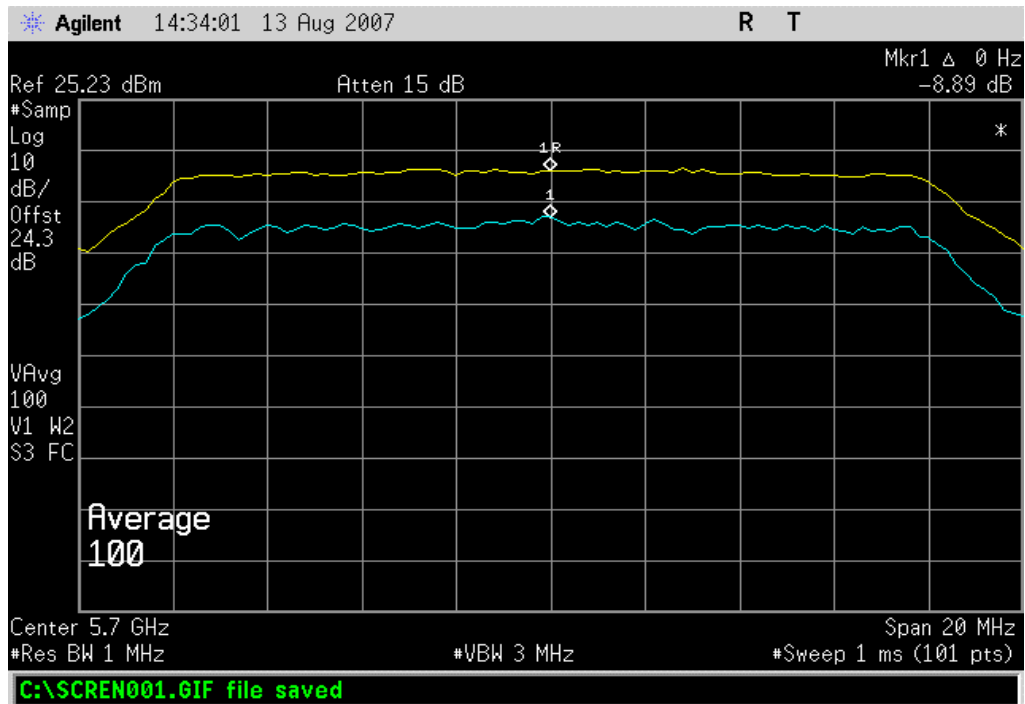
Result: Pass**Value:** 9.052 dB**Limit:** ≤ 13 dB

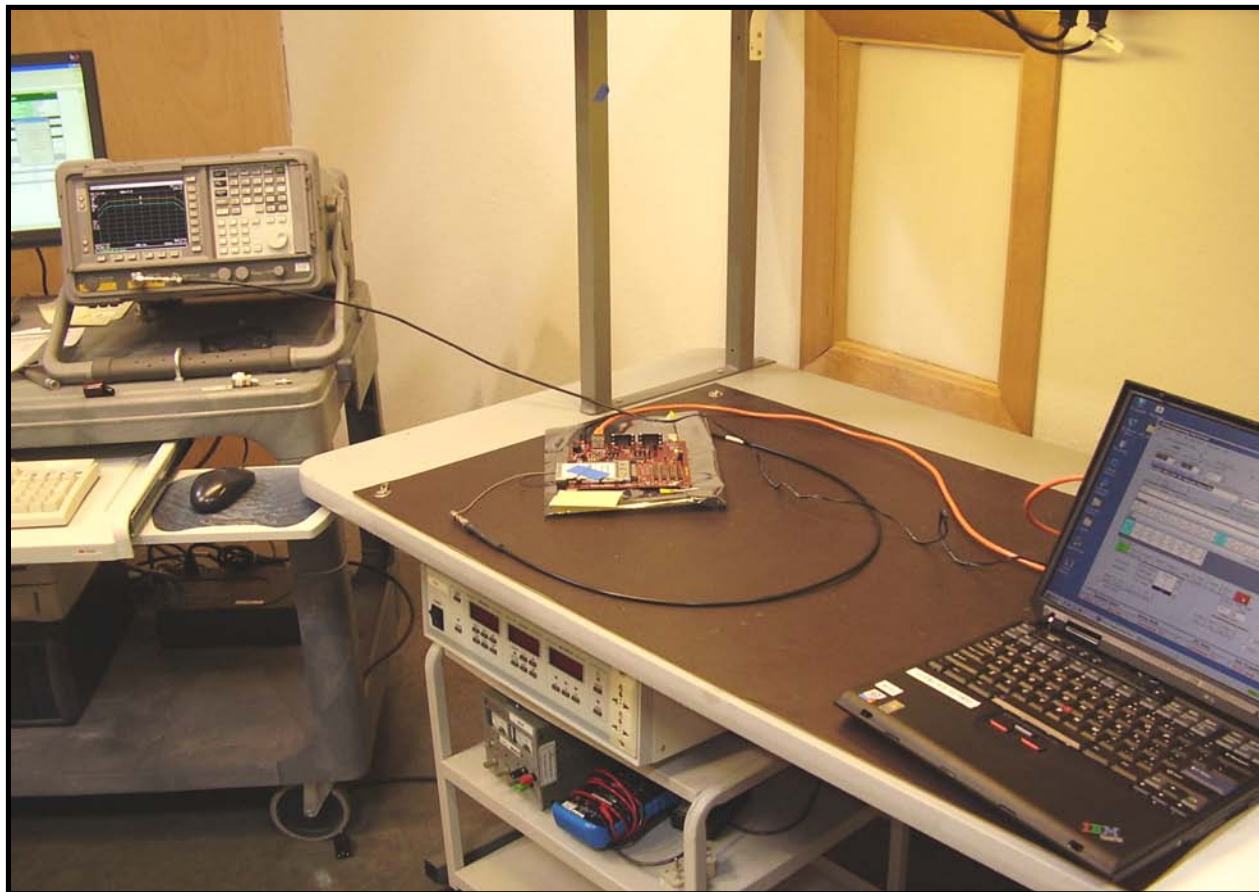
802.11(a), 6Mbps, 5470 - 5725 MHz band, Mid channel, 5600MHz

Result: Pass**Value:** 9.287 dB**Limit:** ≤ 13 dB

Peak Excursion of the Modulation Envelope

802.11(a), 6Mbps, 5470 - 5725 MHz band, High channel, 5700MHz

Result: Pass**Value:** 8.99 dB**Limit:** ≤ 13 dB



Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	12/8/2006	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

FCC Public Notice DA 02-2138 was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The EUT's only data rate was measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input. The amplitude accuracy of the spectrum analyzer was further enhanced by calibrating the setup using the power meter and synthesized signal generator.

Prior to measuring peak power spectral density, the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring peak power spectral density. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured across a constant amplitude pulse using an RF detector diode and an oscilloscope. The scope photos are found with the peak power measurement data elsewhere in this report.

Method #2 found in FCC Public Notice DA02-2138 was used because the analyzer sweep time was less than or equal to T.

The spectrum analyzer settings were as follows:

- The span was set to encompass entire emission bandwidth (B), centered on the transmit channel.
- RBW = 1 MHz, VBW \geq 3 MHz because the emission bandwidth (B) is greater than 1 MHz
- Sample detector mode because the bin width (span / number of spectral points) $<$ 0.5 RBW.
- Trace average 100 traces in power averaging mode (not video averaging).

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).

EMC

Peak Power Spectral Density

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/13/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	24°C
Attendees:	None	Humidity:	35%
Project:	None	Barometric Pres.:	1020.4mb
Tested by:	Holly Ashkannejhad	Power:	5VDC nominal
		Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2006	ANSI C63.4:2003 DA 02-2138:2002

COMMENTS

DEVIATIONS FROM TEST STANDARD

Configuration #	1	Signature <i>Holly Ashkannejhad</i>
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		Value	Limit	Results
802.11(a), 6Mbps	5150 - 5250 MHz Band			
	Low Channel, 5180 MHz	3.632 dBm	4 dBm	Pass
	Mid channel, 5200 MHz	3.22 dBm	4 dBm	Pass
	High channel, 5240 MHz	3.987 dBm	4 dBm	Pass
	5250 - 5350 MHz Band			
	Low channel, 5260 MHz	3.503 dBm	11 dBm	Pass
	Mid channel, 5300 MHz	4.552 dBm	11 dBm	Pass
	High channel, 5320 MHz	3.707 dBm	11 dBm	Pass
	5470-5725 MHz Band			
	Low channel, 5500 MHz	5.461 dBm	11 dBm	Pass
	Mid channel, 5600 MHz	4.609 dBm	11 dBm	Pass
	High channel, 5700 MHz	3.348 dBm	11 dBm	Pass

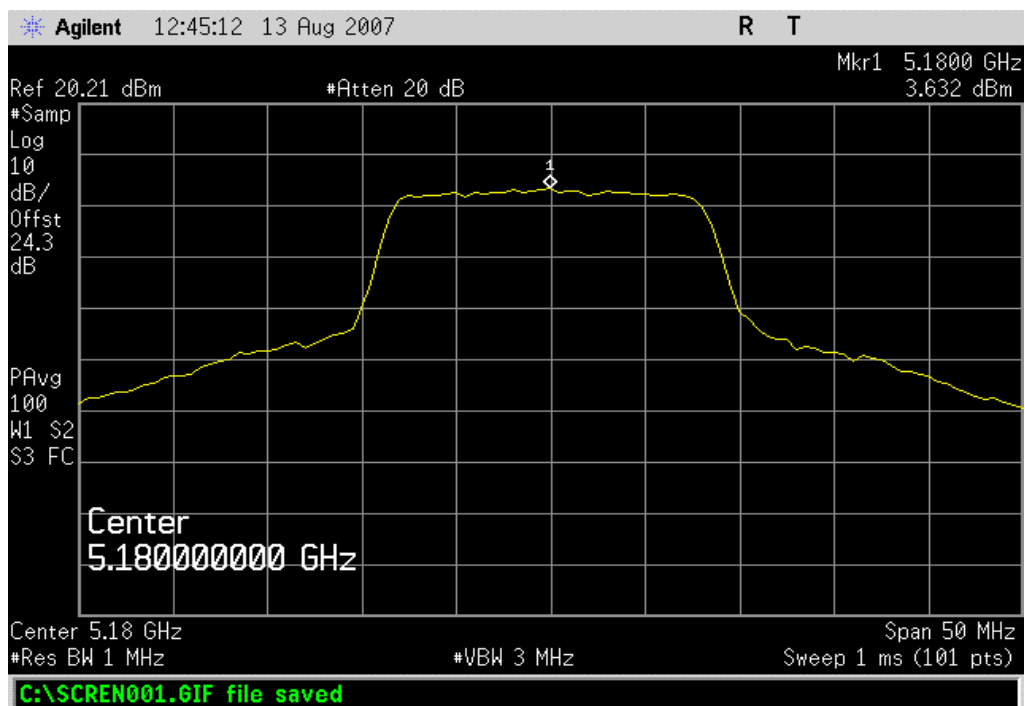
Peak Power Spectral Density

802.11(a), 6Mbps, 5150 - 5250 MHz Band, Low Channel, 5180 MHz

Result: Pass

Value: 3.632 dBm

Limit: 4 dBm

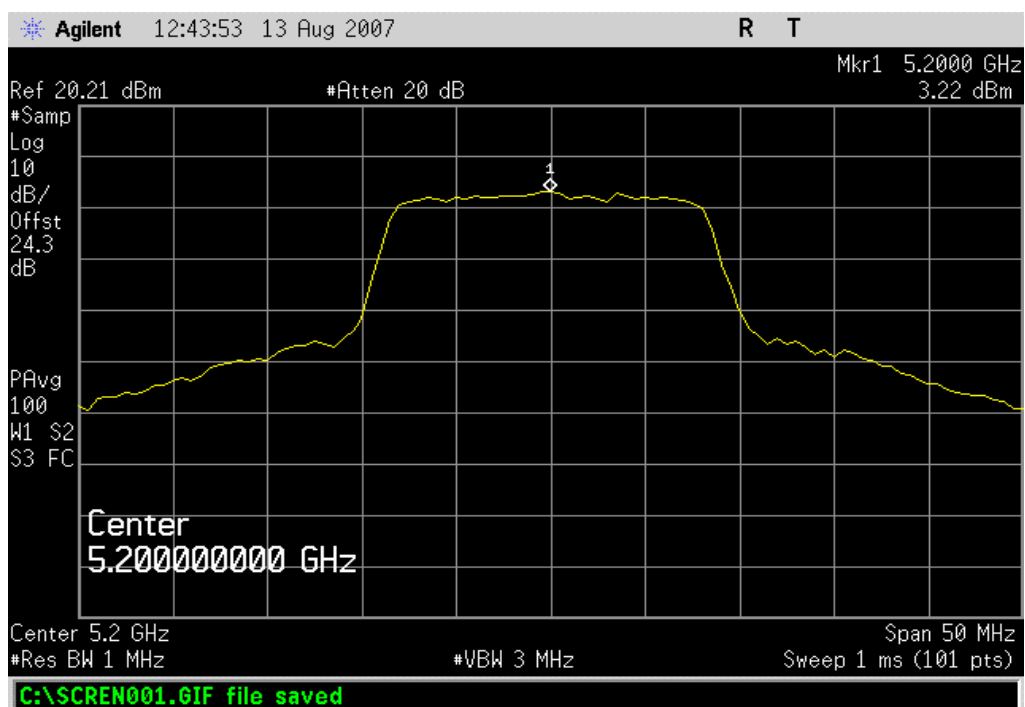


802.11(a), 6Mbps, 5150 - 5250 MHz Band, Mid channel, 5200 MHz

Result: Pass

Value: 3.22 dBm

Limit: 4 dBm

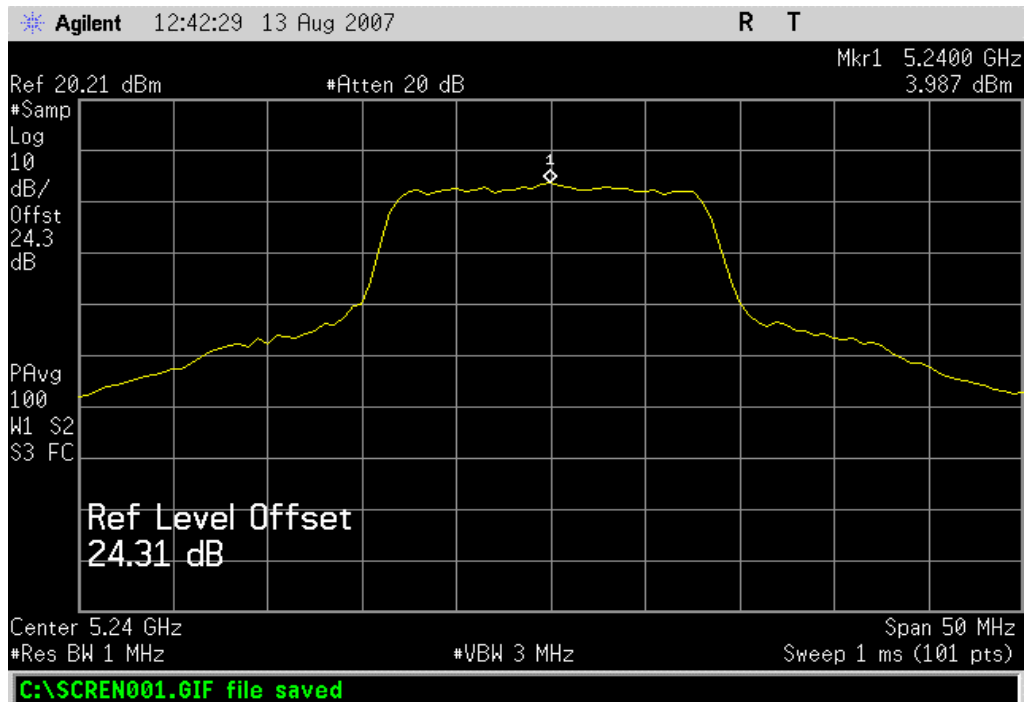


802.11(a), 6Mbps, 5150 - 5250 MHz Band, High channel, 5240 MHz

Result: Pass

Value: 3.987 dBm

Limit: 4 dBm

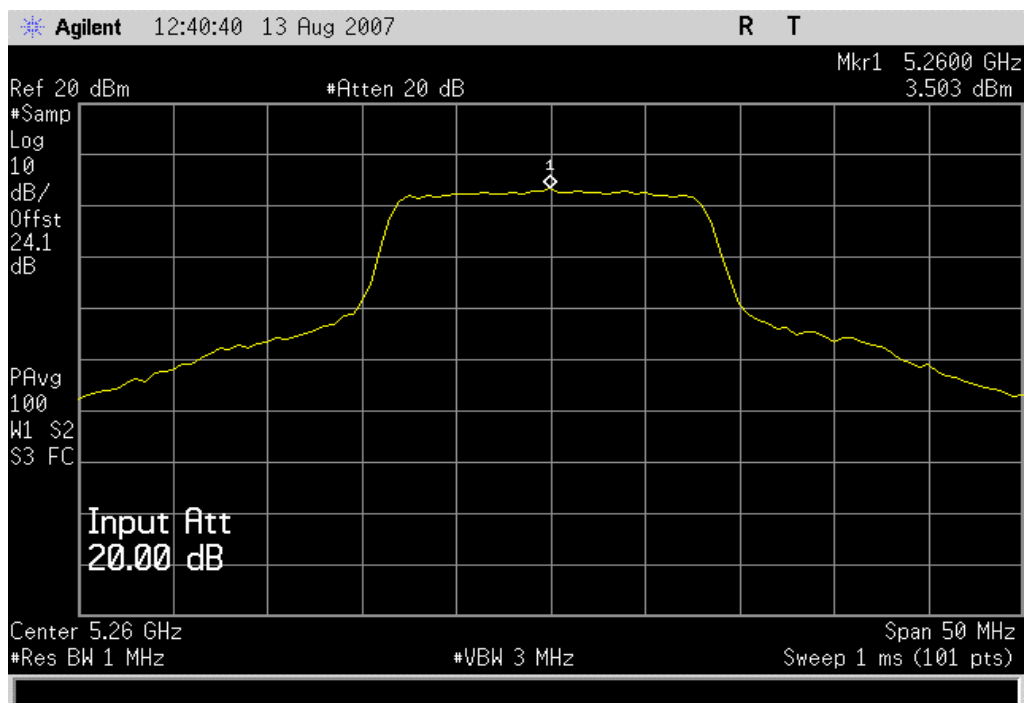


802.11(a), 6Mbps, 5250 - 5350 MHz Band, Low channel, 5260 MHz

Result: Pass

Value: 3.503 dBm

Limit: 11 dBm



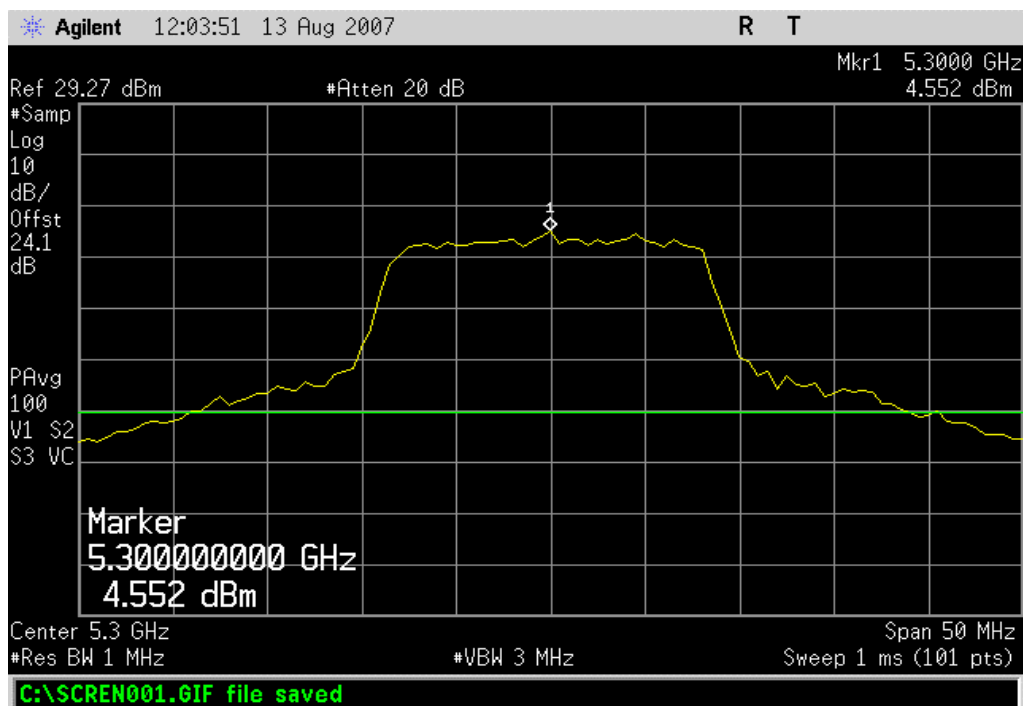
Peak Power Spectral Density

802.11(a), 6Mbps, 5250 - 5350 MHz Band, Mid channel, 5300 MHz

Result: Pass

Value: 4.552 dBm

Limit: 11 dBm

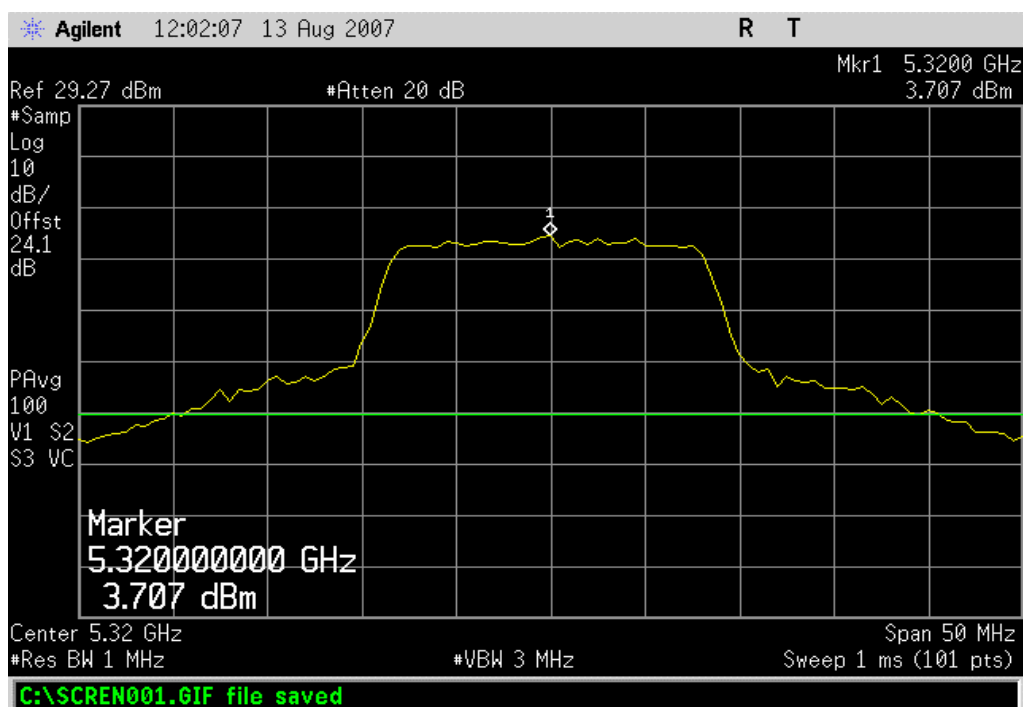


802.11(a), 6Mbps, 5250 - 5350 MHz Band, High channel, 5320 MHz

Result: Pass

Value: 3.707 dBm

Limit: 11 dBm



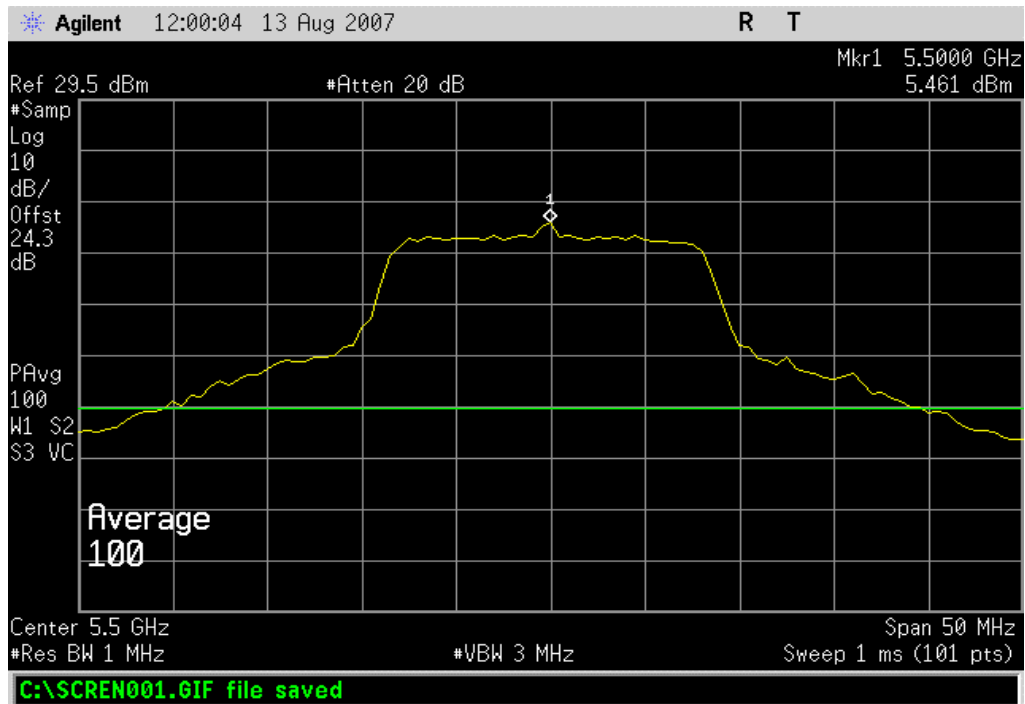
Peak Power Spectral Density

802.11(a), 6Mbps, 5470-5725 MHz Band, Low channel, 5500 MHz

Result: Pass

Value: 5.461 dBm

Limit: 11 dBm

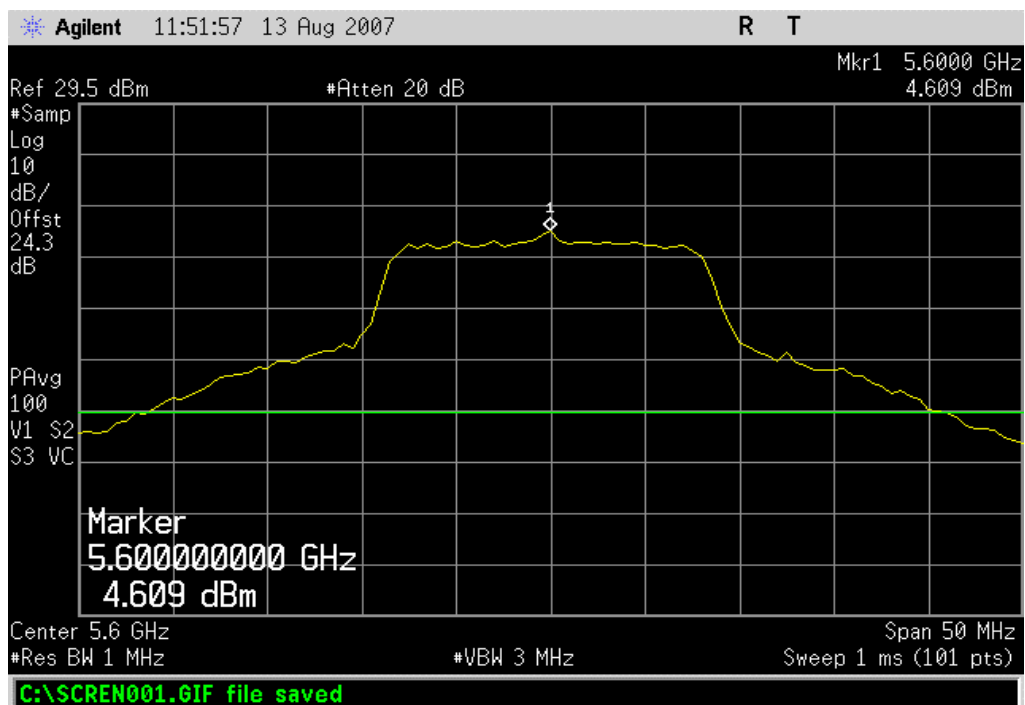


802.11(a), 6Mbps, 5470-5725 MHz Band, Mid channel, 5600 MHz

Result: Pass

Value: 4.609 dBm

Limit: 11 dBm



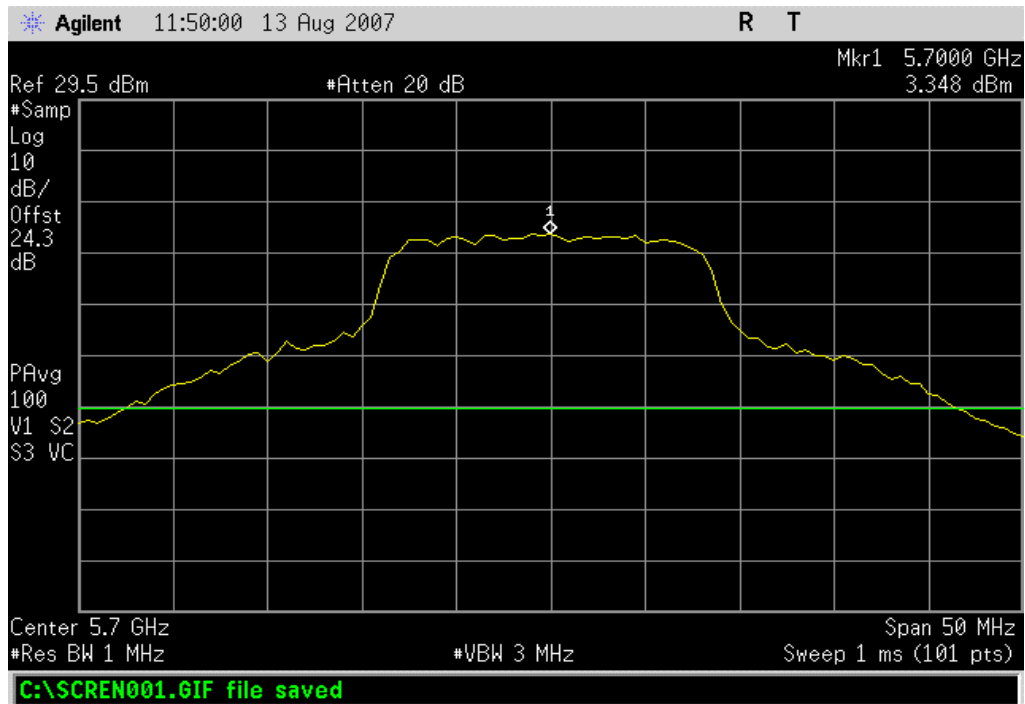
Peak Power Spectral Density

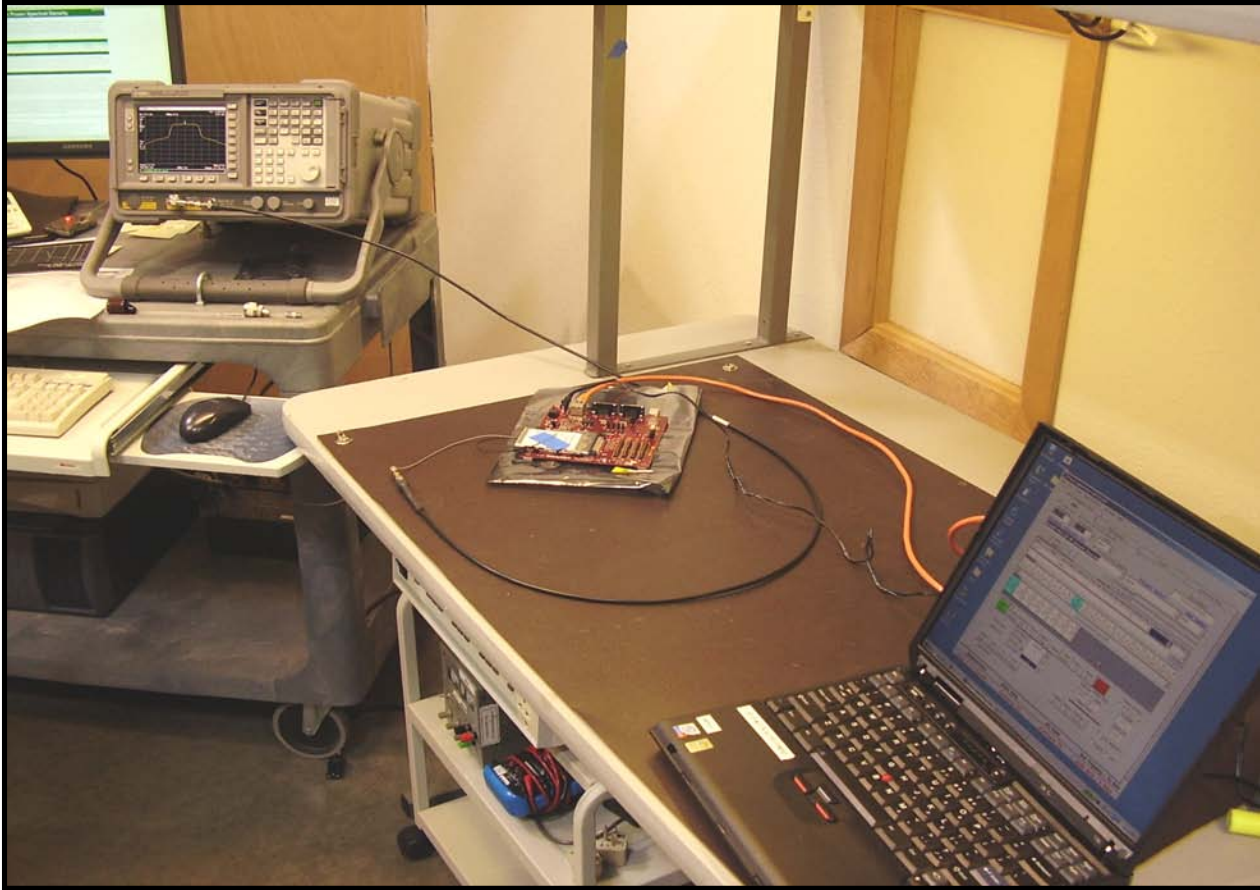
802.11(a), 6Mbps, 5470-5725 MHz Band, High channel, 5700 MHz

Result: Pass

Value: 3.348 dBm

Limit: 11 dBm





Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting 802.11(a), 6 Mbps

CHANNELS TESTED

Channel 36

Channel 48

Channel 52

Channel 64

Channel 100

Channel 120

Channel 140

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz
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CLOCKS AND OSCILLATORS

None Provided

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	12/29/2006	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/10/2007	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	24
EV01 cables g,h,j			EVB	5/10/2007	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	6/22/2007	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	7/25/2007	13
EV01 cables g,h,i			EVF	5/10/2007	13
EV01 Cable D			EVD	7/25/2007	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	6/22/2007	13
Pre-Amplifier	Miteq	JS4-26004000-50-5A	AON	7/25/2007	13
Pre-Amplifier	Miteq	JS4-26004000-40-8P	APV	7/25/2007	13
Antenna, Horn	EMCO	3160-10	AHI	NCR	0
EV01 cable B			EVE	7/25/2007	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Pre-Amplifier	Hewlett-Packard	8447-F Option 10	APM	NCR	0
Pre-Amplifier	Hewlett-Packard	83017A	APL	10/24/2006	13
Signal Generator	Agilent	E8257D	TGX	1/25/2007	13
6.4 GHz High Pass Filter	Micro-Tronics	HPM50112	HGA		
5.8 GHz Notch Filter	Micro-Tronics	BRC50704	HGB		
5.8 GHz Notch Filter	Micro-Tronics	BRC50705	HFQ	1/12/2007	13
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	4/3/2006	24

MEASUREMENT BANDWIDTHS

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The only antenna to be used with the EUT was tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST

EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.05.07
EMI 2006.11.29

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/16/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	24
Attendees:	None	Humidity:	39%
Project:	None	Barometric Pres.:	29.95
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS

FCC 15.407:2006

Test Method

ANSI C63.4:2003 DA 02-2138:2002

TEST PARAMETERS

Antenna Height(s) (m)

1 - 4

Test Distance (m)

3

COMMENTS

EUT OPERATING MODES

Transmitting 802.11(a), 6 Mbps,

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #

1

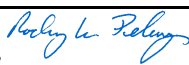
Configuration #

2

Results

Pass

Signature



dBuV/m

120.0

100.0

80.0

60.0

40.0

20.0

0.0

12500.000

13500.000

14500.000

15500.000

16500.000

17500.000

MHz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
15539.500	47.7	2.9	280.0	1.6	0.0	0.0	H-Horn	AV	0.0	50.6	54.0	-3.4	Ch. 36, EUT horizontal, antenna on side
15539.550	47.4	2.9	99.0	1.5	0.0	0.0	V-Horn	AV	0.0	50.3	54.0	-3.7	Ch. 36, EUT horizontal, antenna on side
15539.500	46.4	2.9	235.0	1.8	0.0	0.0	H-Horn	AV	0.0	49.3	54.0	-4.7	Ch. 36, EUT horizontal, antenna horizontal
15539.600	46.4	2.9	225.0	1.4	0.0	0.0	V-Horn	AV	0.0	49.3	54.0	-4.7	Ch. 36, EUT horizontal, antenna horizontal
15539.600	46.1	2.9	9.0	1.6	0.0	0.0	H-Horn	AV	0.0	49.0	54.0	-5.0	Ch. 36, EUT vertical, antenna vertical
15719.450	44.6	3.0	301.0	1.7	0.0	0.0	H-Horn	AV	0.0	47.6	54.0	-6.4	Ch. 48, EUT horizontal, antenna on side
15539.450	44.5	2.9	227.0	1.5	0.0	0.0	V-Horn	AV	0.0	47.4	54.0	-6.6	Ch. 36, EUT vertical, antenna vertical
15719.450	43.8	3.0	99.0	1.4	0.0	0.0	V-Horn	AV	0.0	46.8	54.0	-7.2	Ch. 48, EUT horizontal, antenna on side
15779.500	43.4	3.0	300.0	1.7	0.0	0.0	H-Horn	AV	0.0	46.4	54.0	-7.6	Ch. 52, EUT horizontal, antenna on side
15959.450	43.3	3.1	304.0	1.4	0.0	0.0	V-Horn	AV	0.0	46.4	54.0	-7.6	Ch. 64, EUT horizontal, antenna on side
15959.650	43.2	3.1	295.0	1.7	0.0	0.0	H-Horn	AV	0.0	46.3	54.0	-7.7	Ch. 64, EUT horizontal, antenna on side
15779.450	42.1	3.0	305.0	1.4	0.0	0.0	V-Horn	AV	0.0	45.1	54.0	-8.9	Ch. 52, EUT horizontal, antenna on side
15542.000	60.3	2.9	280.0	1.6	0.0	0.0	H-Horn	PK	0.0	63.2	74.0	-10.8	Ch. 36, EUT horizontal, antenna on side
15542.650	60.0	2.9	99.0	1.5	0.0	0.0	V-Horn	PK	0.0	62.9	74.0	-11.1	Ch. 36, EUT horizontal, antenna horizontal
15538.800	58.9	2.9	225.0	1.4	0.0	0.0	V-Horn	PK	0.0	61.8	74.0	-12.2	Ch. 36, EUT horizontal, antenna horizontal
15542.250	58.9	2.9	238.0	1.7	0.0	0.0	H-Horn	PK	0.0	61.8	74.0	-12.2	Ch. 36, EUT horizontal, antenna horizontal
15542.500	58.5	2.9	9.0	1.6	0.0	0.0	H-Horn	PK	0.0	61.4	74.0	-12.6	Ch. 36, EUT vertical, antenna vertical
15719.200	57.8	3.0	301.0	1.7	0.0	0.0	H-Horn	PK	0.0	60.8	74.0	-13.2	Ch. 48, EUT horizontal, antenna on side
15716.550	56.8	3.0	99.0	1.4	0.0	0.0	V-Horn	PK	0.0	59.8	74.0	-14.2	Ch. 48, EUT horizontal, antenna on side
15534.400	56.7	2.9	227.0	1.5	0.0	0.0	V-Horn	PK	0.0	59.6	74.0	-14.4	Ch. 36, EUT vertical, antenna vertical

NORTHWEST

EMC

SPURIOUS RADIATED EMISSIONS

PSA 2007.05.07
EMI 2006.11.29

EUT:	Welch Allyn 802.11a Wireless PC Card	Work Order:	PROT0295
Serial Number:	001AFA0000CE	Date:	08/16/07
Customer:	Welch Allyn Protocol, Inc.	Temperature:	24
Attendees:	None	Humidity:	39%
Project:	None	Barometric Pres.:	29.95
Tested by:	Rod Peloquin	Power:	120VAC/60Hz
		Job Site:	EV01

TEST SPECIFICATIONS

FCC 15.407:2006

Test Method

ANSI C63.4:2003 DA 02-2138:2002

TEST PARAMETERS

Antenna Height(s) (m)

1 - 4

Test Distance (m)

3

COMMENTS

EUT OPERATING MODES

Transmitting 802.11(a), 6 Mbps,

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1	<div><div>Signature</div><div><i>Rodney Le Peloquin</i></div></div>
Configuration #	2	
Results	Pass	

0.0

-10.0

-20.0

-30.0

-40.0

-50.0

-60.0

-70.0

-80.0

12500.000

13500.000

14500.000

15500.000


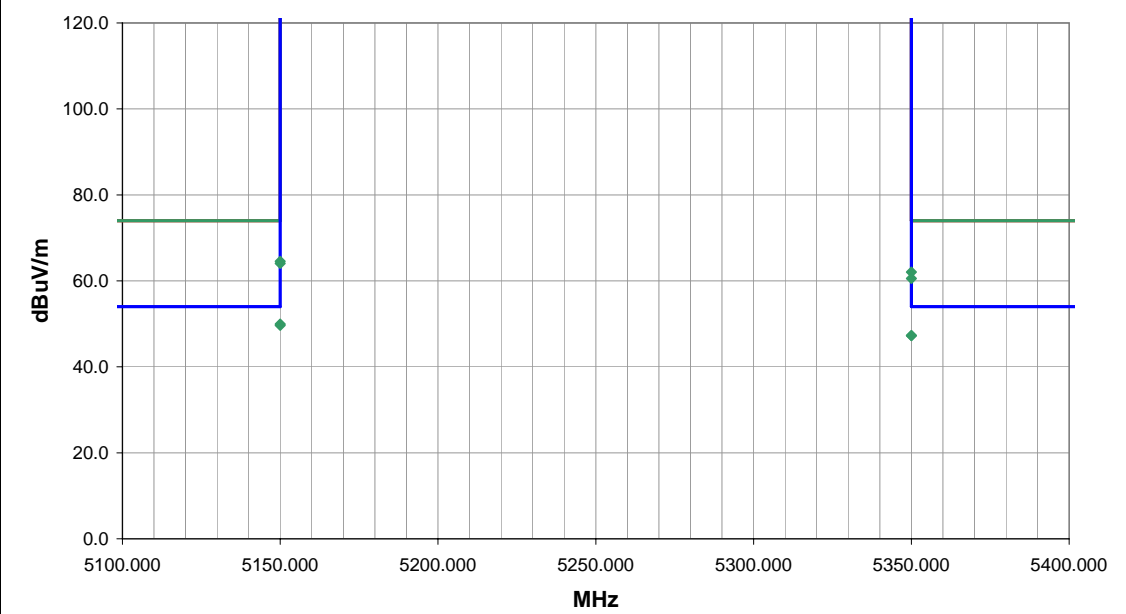
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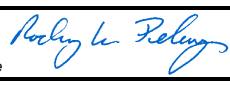
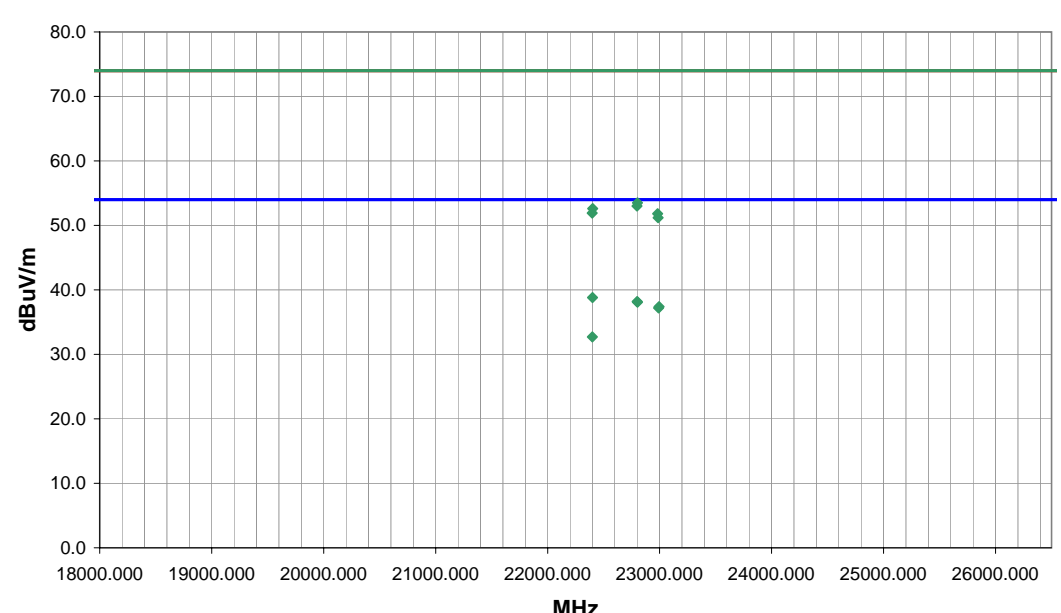
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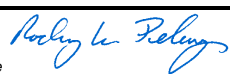
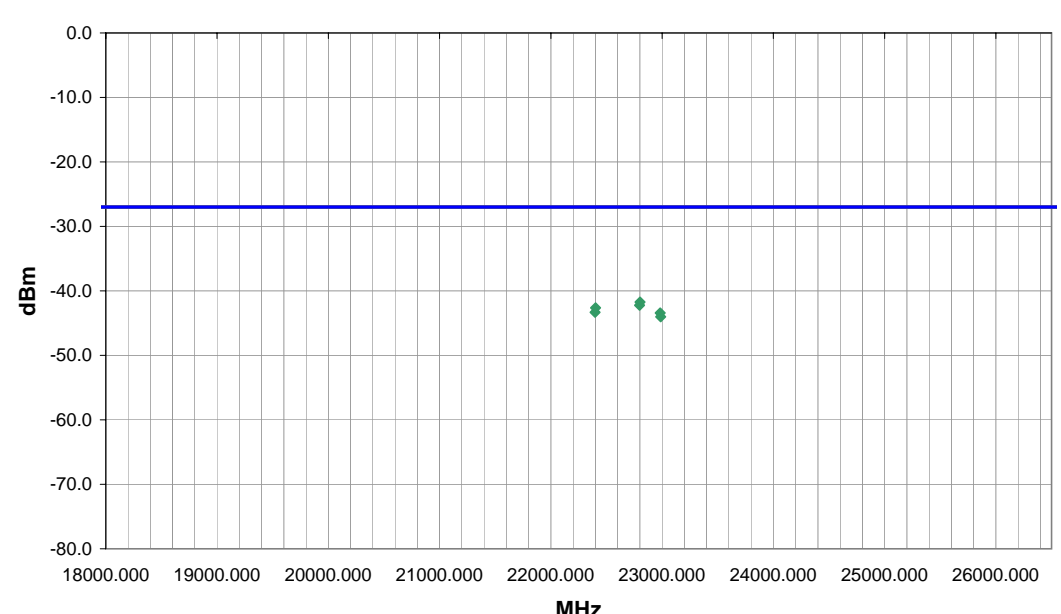
dBm


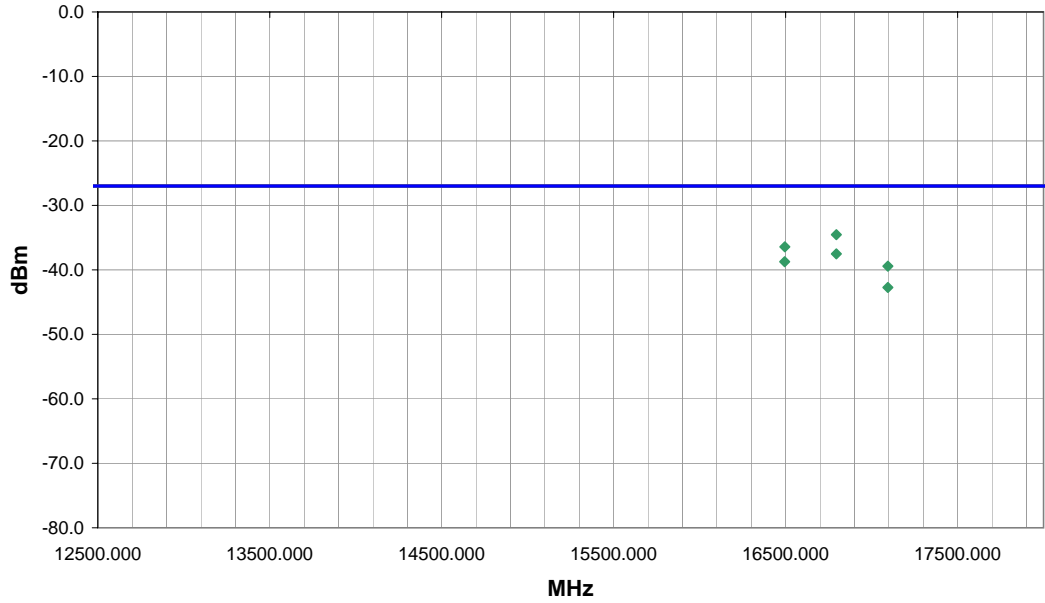
MHz

Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
15542.000			280.0	1.6			H-Horn	PK	6.27E-07	-32.0	-27.0	-5.0	Ch. 36, EUT horizontal, antenna on side
15542.650			99.0	1.5			V-Horn	PK	5.85E-07	-32.3	-27.0	-5.3	Ch. 36, EUT horizontal, antenna on side
15538.800			225.0	1.4			V-Horn	PK	4.54E-07	-33.4	-27.0	-6.4	Ch. 36, EUT horizontal, antenna horizontal
15542.250			238.0	1.7			H-Horn	PK	4.54E-07	-33.4	-27.0	-6.4	Ch. 36, EUT horizontal, antenna horizontal
15542.500			9.0	1.6			H-Horn	PK	4.14E-07	-33.8	-27.0	-6.8	Ch. 36, EUT vertical, antenna vertical
15719.200			301.0	1.7			H-Horn	PK	3.61E-07	-34.4	-27.0	-7.4	Ch. 48, EUT horizontal, antenna on side
15716.550			99.0	1.4			V-Horn	PK	2.86E-07	-35.4	-27.0	-8.4	Ch. 48, EUT horizontal, antenna on side
15534.400			227.0	1.5			V-Horn	PK	2.74E-07	-35.6	-27.0	-8.6	Ch. 36, EUT vertical, antenna vertical

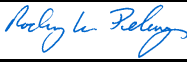
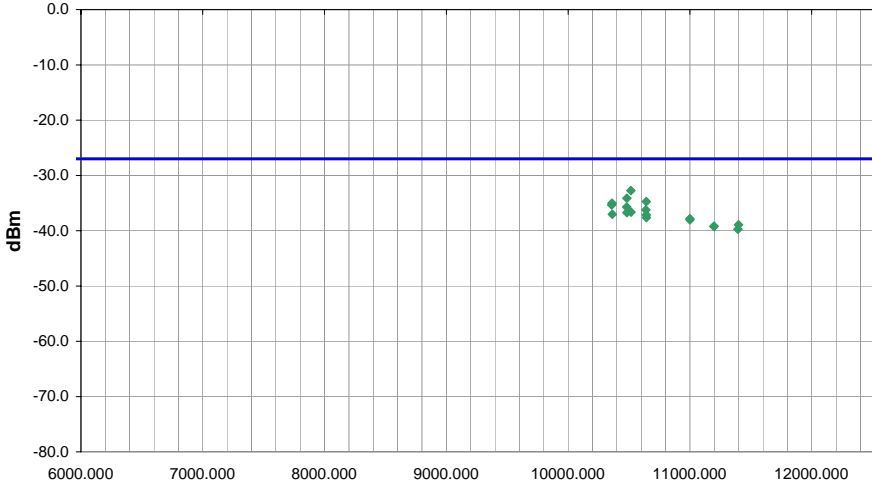
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Project: None		Barometric Pres.: 29.95																																																																																																																												
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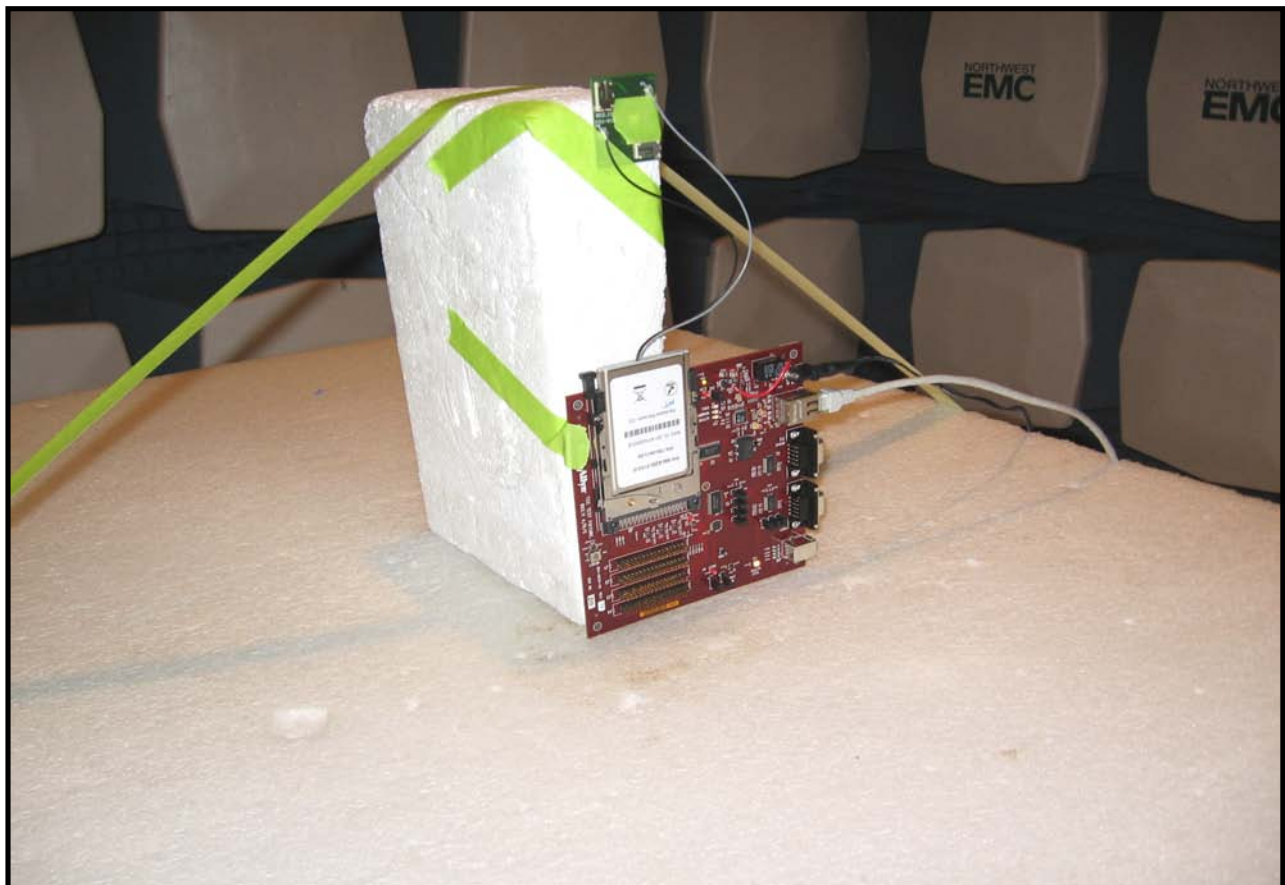
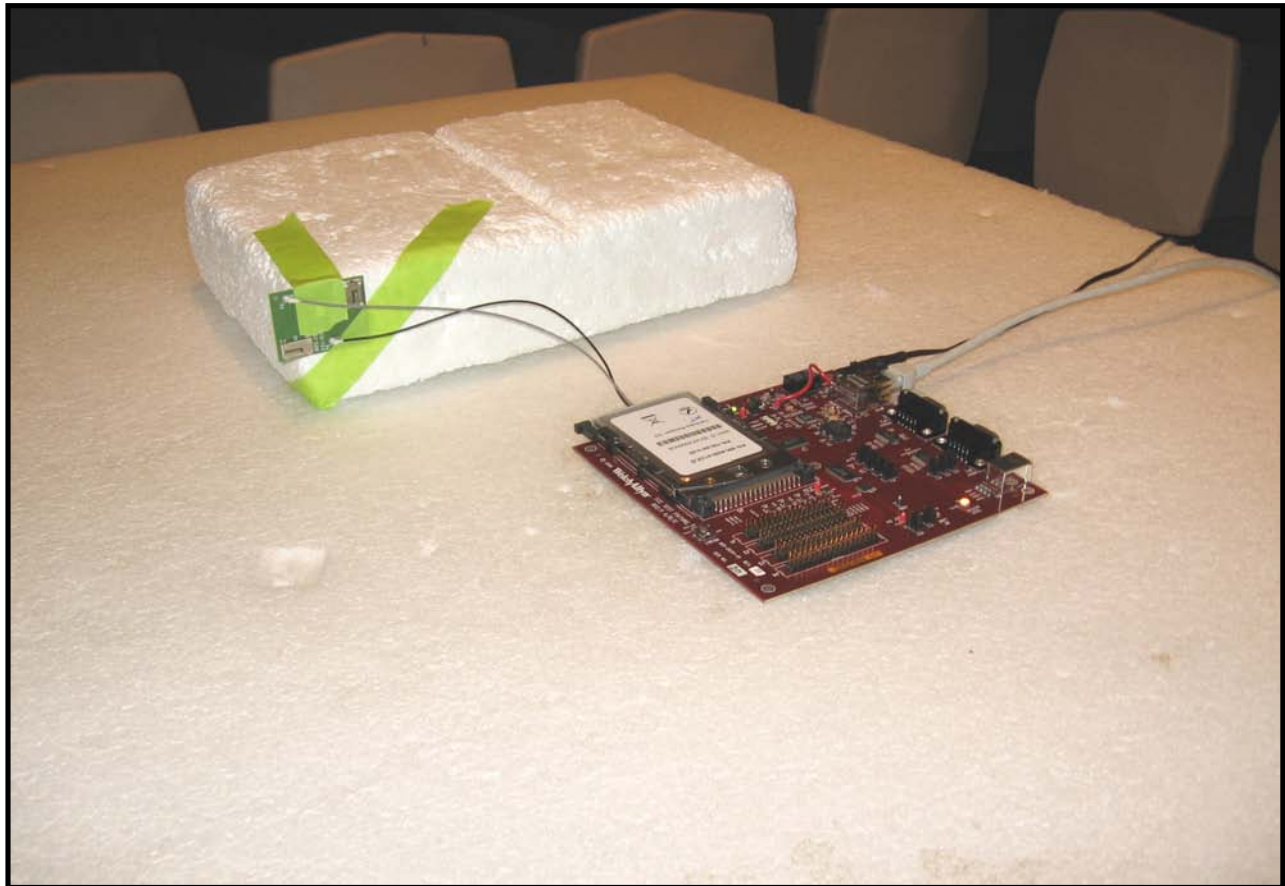
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<table border="1" style="width:100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> <th>Comments</th> </tr> </thead> <tbody> <tr><td>22400.300</td><td>29.0</td><td>9.8</td><td>226.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>AV</td><td>0.0</td><td>38.8</td><td>54.0</td><td>-15.2</td><td>Channel 120</td></tr> <tr><td>22799.870</td><td>28.5</td><td>9.7</td><td>250.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>AV</td><td>0.0</td><td>38.2</td><td>54.0</td><td>-15.8</td><td>Channel 140</td></tr> <tr><td>22801.870</td><td>28.4</td><td>9.7</td><td>238.0</td><td>1.4</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>AV</td><td>0.0</td><td>38.1</td><td>54.0</td><td>-15.9</td><td>Channel 140</td></tr> <tr><td>22994.470</td><td>27.7</td><td>9.7</td><td>-1.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>AV</td><td>0.0</td><td>37.4</td><td>54.0</td><td>-16.6</td><td>Channel 149</td></tr> <tr><td>22990.700</td><td>27.5</td><td>9.7</td><td>-1.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>AV</td><td>0.0</td><td>37.2</td><td>54.0</td><td>-16.8</td><td>Channel 149</td></tr> <tr><td>22801.800</td><td>43.8</td><td>9.7</td><td>250.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>PK</td><td>0.0</td><td>53.5</td><td>74.0</td><td>-20.5</td><td>Channel 140</td></tr> <tr><td>22797.500</td><td>43.3</td><td>9.7</td><td>238.0</td><td>1.4</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>PK</td><td>0.0</td><td>53.0</td><td>74.0</td><td>-21.0</td><td>Channel 140</td></tr> <tr><td>22399.500</td><td>22.9</td><td>9.8</td><td>211.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>AV</td><td>0.0</td><td>32.7</td><td>54.0</td><td>-21.3</td><td>Channel 120</td></tr> <tr><td>22401.930</td><td>42.8</td><td>9.8</td><td>211.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>PK</td><td>0.0</td><td>52.6</td><td>74.0</td><td>-21.4</td><td>Channel 120</td></tr> <tr><td>22397.270</td><td>42.1</td><td>9.8</td><td>226.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>PK</td><td>0.0</td><td>51.9</td><td>74.0</td><td>-22.1</td><td>Channel 120</td></tr> <tr><td>22982.230</td><td>42.1</td><td>9.7</td><td>-1.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>√-High Horr</td><td>PK</td><td>0.0</td><td>51.8</td><td>74.0</td><td>-22.2</td><td>Channel 149</td></tr> <tr><td>22986.430</td><td>41.5</td><td>9.7</td><td>-1.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>+-High Horr</td><td>PK</td><td>0.0</td><td>51.2</td><td>74.0</td><td>-22.8</td><td>Channel 149</td></tr> </tbody> </table>				Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments	22400.300	29.0	9.8	226.0	1.2	3.0	0.0	+-High Horr	AV	0.0	38.8	54.0	-15.2	Channel 120	22799.870	28.5	9.7	250.0	1.1	3.0	0.0	√-High Horr	AV	0.0	38.2	54.0	-15.8	Channel 140	22801.870	28.4	9.7	238.0	1.4	3.0	0.0	+-High Horr	AV	0.0	38.1	54.0	-15.9	Channel 140	22994.470	27.7	9.7	-1.0	1.0	3.0	0.0	+-High Horr	AV	0.0	37.4	54.0	-16.6	Channel 149	22990.700	27.5	9.7	-1.0	1.0	3.0	0.0	√-High Horr	AV	0.0	37.2	54.0	-16.8	Channel 149	22801.800	43.8	9.7	250.0	1.1	3.0	0.0	√-High Horr	PK	0.0	53.5	74.0	-20.5	Channel 140	22797.500	43.3	9.7	238.0	1.4	3.0	0.0	+-High Horr	PK	0.0	53.0	74.0	-21.0	Channel 140	22399.500	22.9	9.8	211.0	1.1	3.0	0.0	√-High Horr	AV	0.0	32.7	54.0	-21.3	Channel 120	22401.930	42.8	9.8	211.0	1.1	3.0	0.0	√-High Horr	PK	0.0	52.6	74.0	-21.4	Channel 120	22397.270	42.1	9.8	226.0	1.2	3.0	0.0	+-High Horr	PK	0.0	51.9	74.0	-22.1	Channel 120	22982.230	42.1	9.7	-1.0	1.0	3.0	0.0	√-High Horr	PK	0.0	51.8	74.0	-22.2	Channel 149	22986.430	41.5	9.7	-1.0	1.0	3.0	0.0	+-High Horr	PK	0.0	51.2	74.0	-22.8	Channel 149
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments																																																																																																																																																																												
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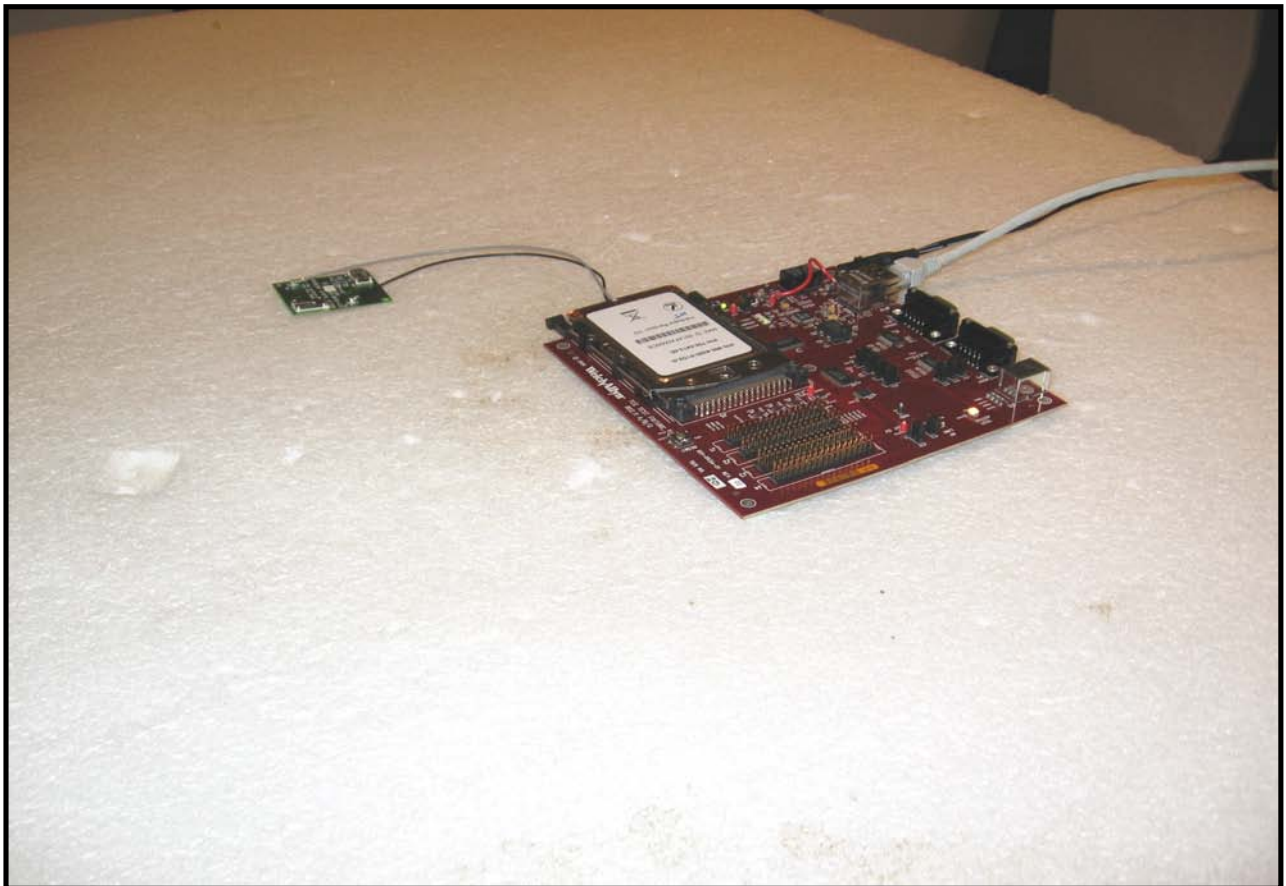
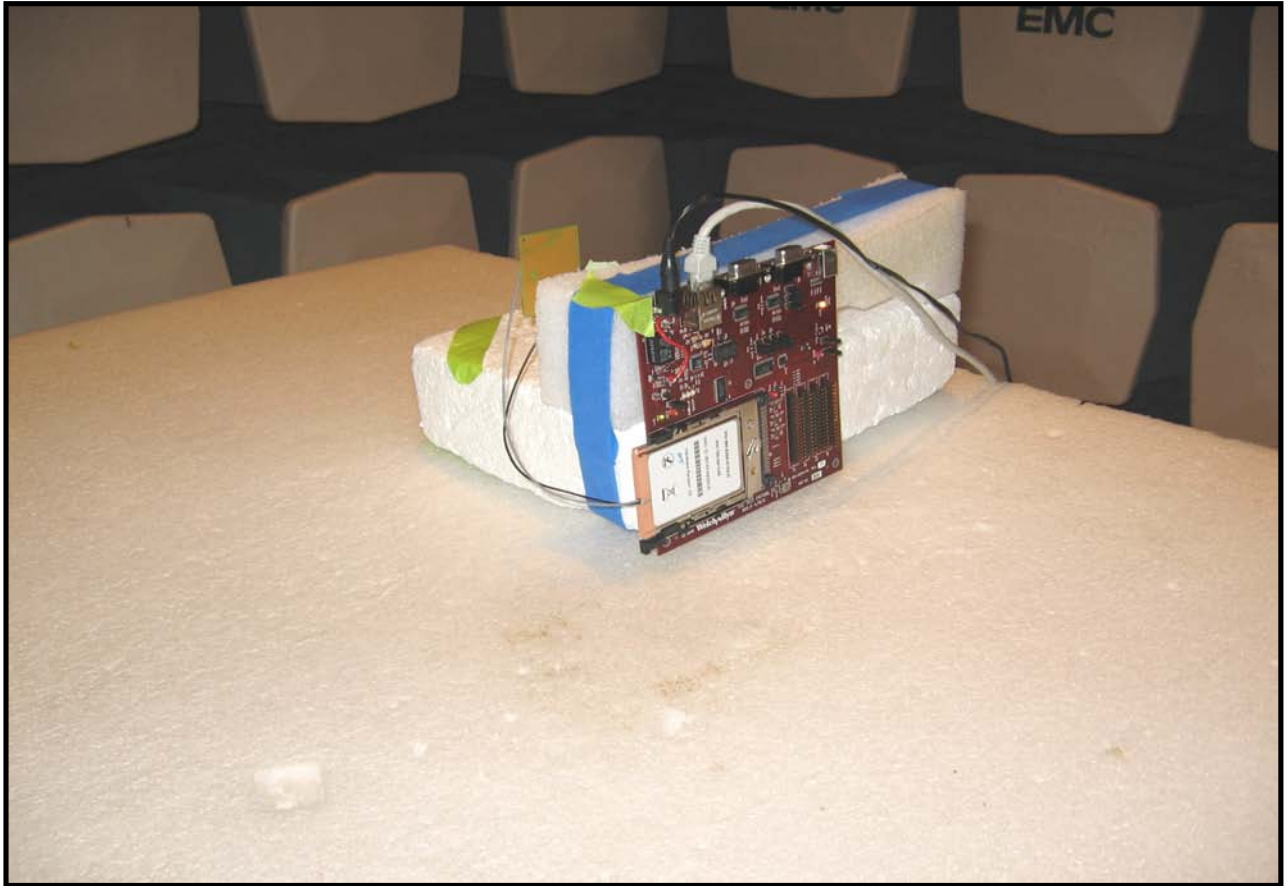
NORTHWEST		PSA 2007.05.07									
EMC		SPURIOUS RADIATED EMISSIONS									
EUT: Welch Allyn 802.11a Wireless PC Card		Work Order: PROT0295									
Serial Number: 001AFA0000CE		Date: 08/20/07									
Customer: Welch Allyn Protocol, Inc.		Temperature: 24									
Attendees: None		Humidity: 39%									
Project: None		Barometric Pres.: 29.95									
Tested by: Rod Peloquin		Power: 120VAC/60Hz	Job Site: EV01								
TEST SPECIFICATIONS											
FCC 15.407:2006		Test Method ANSI C63.4:2003 DA 02-2138:2002									
TEST PARAMETERS											
Antenna Height(s) (m)	1 - 2	Test Distance (m)	3								
COMMENTS											
EUT OPERATING MODES											
Transmitting 802.11(a), 6 Mbps											
DEVIATIONS FROM TEST STANDARD											
No deviations.											
Run #	5	 Signature									
Configuration #	2										
Results	Pass										
											
Freq (MHz)		Azimuth (degrees)	Height (meters)		Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
22801.800		250.0	1.1		V-High Horr	PK	6.72E-08	-41.7	-27.0	-14.7	Channel 140
22797.500		238.0	1.4		H-High Horr	PK	5.99E-08	-42.2	-27.0	-15.2	Channel 140
22401.930		211.0	1.1		V-High Horr	PK	5.46E-08	-42.6	-27.0	-15.6	Channel 120
22397.270		226.0	1.2		H-High Horr	PK	4.65E-08	-43.3	-27.0	-16.3	Channel 120
22982.230		-1.0	1.0		V-High Horr	PK	4.54E-08	-43.4	-27.0	-16.4	Channel 149
22986.430		-1.0	1.0		H-High Horr	PK	3.95E-08	-44.0	-27.0	-17.0	Channel 149

NORTHWEST		SPURIOUS RADIATED EMISSIONS				PSA 2007.05.07 EMI 2006.11.29																																																																							
EMC																																																																													
EUT: Welch Allyn 802.11a Wireless PC Card				Work Order: PROT0295																																																																									
Serial Number: 001AFA0000CE				Date: 08/20/07																																																																									
Customer: Welch Allyn Protocol, Inc.				Temperature: 23																																																																									
Attendees: Steve Baker				Humidity: 45%																																																																									
Project: None				Barometric Pres.: 29.99																																																																									
Tested by: Rod Peloquin				Power: 120VAC/60Hz		Job Site: EV01																																																																							
TEST SPECIFICATIONS																																																																													
FCC 15.407:2006				Test Method ANSI C63.4:2003 DA 02-2138:2002																																																																									
TEST PARAMETERS																																																																													
Antenna Height(s) (m)		1 - 4		Test Distance (m)		3																																																																							
COMMENTS																																																																													
Copper tape over end of card																																																																													
EUT OPERATING MODES																																																																													
Transmitting 802.11(a), 6 Mbps																																																																													
DEVIATIONS FROM TEST STANDARD																																																																													
No deviations.																																																																													
Run #		7		 Signature																																																																									
Configuration #		2																																																																											
Results		Pass																																																																											
																																																																													
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Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments																																																																				
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NORTHWEST		SPURIOUS RADIATED EMISSIONS		PSA 2007.05.07 EMI 2006.11.29									
EMC													
EUT: Welch Ailyn 802.11a Wireless PC Card		Work Order: PROT0295											
Serial Number: 001AFA0000CE		Date: 08/21/07											
Customer: Welch Ailyn Protocol, Inc.		Temperature: 23											
Attendees: None		Humidity: 46%											
Project: None		Barometric Pres.: 29.95											
Tested by: Rod Peloquin		Power: 120VAC/60Hz		Job Site: EV01									
TEST SPECIFICATIONS		Test Method											
FCC 15.407:2006		ANSI C63.4:2003 DA 02-2138:2002											
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4		Test Distance (m) 3									
COMMENTS													
EUT OPERATING MODES													
Transmitting 802.11(a), 6 Mbps													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		8											
Configuration #		2											
Results		Pass											
Signature													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
10480.000	32.4	16.1	296.0	1.6	3.0	0.0	H-Horn	AV	0.0	48.5	54.0	-5.5	Ch. 48
10360.030	31.7	16.2	273.0	1.4	3.0	0.0	V-Horn	AV	0.0	47.9	54.0	-6.1	Ch. 36, EUT on side, antenna on vertical
10639.970	31.3	16.5	260.0	1.1	3.0	0.0	V-Horn	AV	0.0	47.8	54.0	-6.2	Ch. 64, EUT on side, antenna on vertical
10359.970	31.2	16.2	282.0	1.5	3.0	0.0	V-Horn	AV	0.0	47.4	54.0	-6.6	Ch. 36
10480.000	30.8	16.1	306.0	1.3	3.0	0.0	V-Horn	AV	0.0	46.9	54.0	-7.1	Ch. 48
10480.000	29.6	16.1	280.0	1.2	3.0	0.0	V-Horn	AV	0.0	45.7	54.0	-8.3	Ch. 48, EUT on side, antenna on vertical
10520.030	29.4	16.2	78.0	1.3	3.0	0.0	H-Horn	AV	0.0	45.6	54.0	-8.4	Ch. 52
10359.970	29.2	16.2	72.0	1.3	3.0	0.0	H-Horn	AV	0.0	45.4	54.0	-8.6	Ch. 36
10640.000	28.8	16.5	84.0	1.2	3.0	0.0	H-Horn	AV	0.0	45.3	54.0	-8.7	Ch. 64, EUT horizontal, antenna on side
10519.970	28.8	16.2	317.0	1.1	3.0	0.0	V-Horn	AV	0.0	45.0	54.0	-9.0	Ch. 52
10639.970	28.4	16.5	284.0	1.2	3.0	0.0	V-Horn	AV	0.0	44.9	54.0	-9.1	Ch. 64, EUT horizontal, antenna on side
10640.000	28.3	16.5	297.0	1.2	3.0	0.0	H-Horn	AV	0.0	44.8	54.0	-9.2	Ch. 64, EUT on side, antenna on vertical
10997.630	27.0	17.6	4.0	1.7	3.0	0.0	H-Horn	AV	0.0	44.6	54.0	-9.4	Ch. 100, EUT on side, antenna on vertical
10997.400	26.9	17.6	111.0	1.0	3.0	0.0	V-Horn	AV	0.0	44.5	54.0	-9.5	Ch. 100, EUT on side, antenna on vertical
11197.200	26.5	17.0	33.0	1.6	3.0	0.0	H-Horn	AV	0.0	43.5	54.0	-10.5	Ch. 120, EUT on side, antenna on vertical
11197.230	26.2	17.1	254.0	1.3	3.0	0.0	V-Horn	AV	0.0	43.3	54.0	-10.7	Ch. 120, EUT on side, antenna on vertical
11396.800	26.2	16.4	303.0	1.1	3.0	0.0	V-Horn	AV	0.0	42.6	54.0	-11.4	Ch. 140, EUT on side, antenna on vertical
10515.570	46.3	16.2	317.0	1.1	3.0	0.0	V-Horn	PK	0.0	62.5	74.0	-11.5	Ch. 52
11399.930	25.7	16.4	29.0	1.4	3.0	0.0	H-Horn	AV	0.0	42.1	54.0	-11.9	Ch. 140, EUT on side, antenna on vertical
10482.500	45.0	16.1	296.0	1.6	3.0	0.0	H-Horn	PK	0.0	61.1	74.0	-12.9	Ch. 48

NORTHWEST		EMC		SPURIOUS RADIATED EMISSIONS		PSA 2007.05.07 EMI 2006.11.29													
EUT: Welch Ailyn 802.11a Wireless PC Card				Work Order: PROT0295															
Serial Number: 001AFA0000CE				Date: 08/21/07															
Customer: Welch Ailyn Protocol, Inc.				Temperature: 23															
Attendees: None				Humidity: 46%															
Project: None				Barometric Pres.: 29.95															
Tested by: Rod Peloquin				Power: 120VAC/60Hz		Job Site: EV01													
TEST SPECIFICATIONS				Test Method															
FCC 15.407:2006				ANSI C63.4:2003 DA 02-2138:2002															
TEST PARAMETERS																			
Antenna Height(s) (m)		1 - 4		Test Distance (m)		3													
COMMENTS																			
EUT OPERATING MODES																			
Transmitting 802.11(a), 6 Mbps																			
DEVIATIONS FROM TEST STANDARD																			
No deviations.																			
Run #		8		 Signature															
Configuration #		2																	
Results		Pass																	
																			
Freq (MHz)		Azimuth (degrees)		Height (meters)		Polarity		Detector		EIRP (Watts)		EIRP (dBm)		Spec. Limit (dBm)		Compared to Spec. (dB)		Comments	
10515.570		317.0		1.1		V-Horn		PK		5.33E-07		-32.7		-27.0		-5.7		Ch. 52	
10482.500		296.0		1.6		H-Horn		PK		3.86E-07		-34.1		-27.0		-7.1		Ch. 48	





Spurious Radiated Emissions

