

Welch Allyn Protocol, Inc.

Welch Allyn 802.11a Wireless PC Card

FCC 15.247 Test Report

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

September 12, 2007

Report No. PROT0295.2

Report Prepared By



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

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EMC Test Report

Certificate of Test
Issue Date: September 12, 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 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |
| Spurious Conducted Emissions | FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |
| AC Power line Conducted Emissions | FCC 15.207:2006 | ANSI C63.4:2003 | Pass |
| Band Edge Compliance | FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |
| Occupied Bandwidth | FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |
| Output Power | FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |
| Power Spectral Density | FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074 | Pass |

Modifications made to the product

See the Modifications section of this report

Test Facility

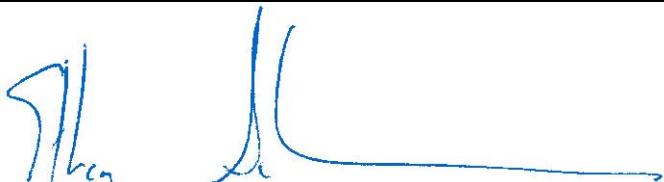
The measurement facility used to collect the data is located at:

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.



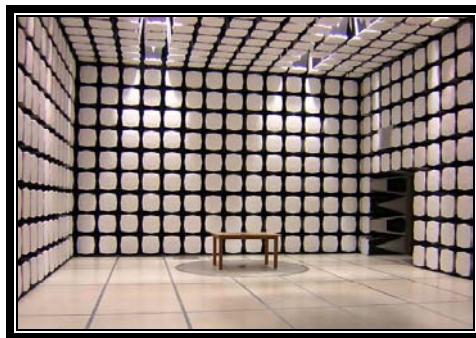
GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from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



SCOPE

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

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



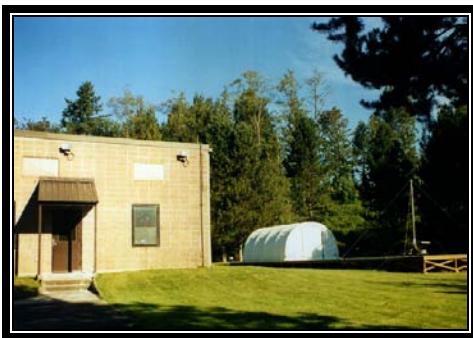
**California – Orange County Facility
Labs OC01 – OC13**

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 22, 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 15.247.

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 | Occupied 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 | 8/14/2007 | Output 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. |
| 3 | 8/14/2007 | 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 | 8/14/2007 | Band Edge Compliance | 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 | 8/21/2007 | 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. |
| 6 | 8/21/2007 | AC Powerline Conducted Emissions | 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. |
| 7 | 8/22/2007 | Spurious Conducted Emissions | Tested as delivered to Test Station. | No EMI suppression devices were added or modified during this test. | Scheduled testing was completed. |

Occupied Bandwidth

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

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate.

EMC

Occupied 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: 5.0VDC nominal

Job Site: EV06

Test Method

TEST SPECIFICATIONS

FCC 15.247 (DTS):2006

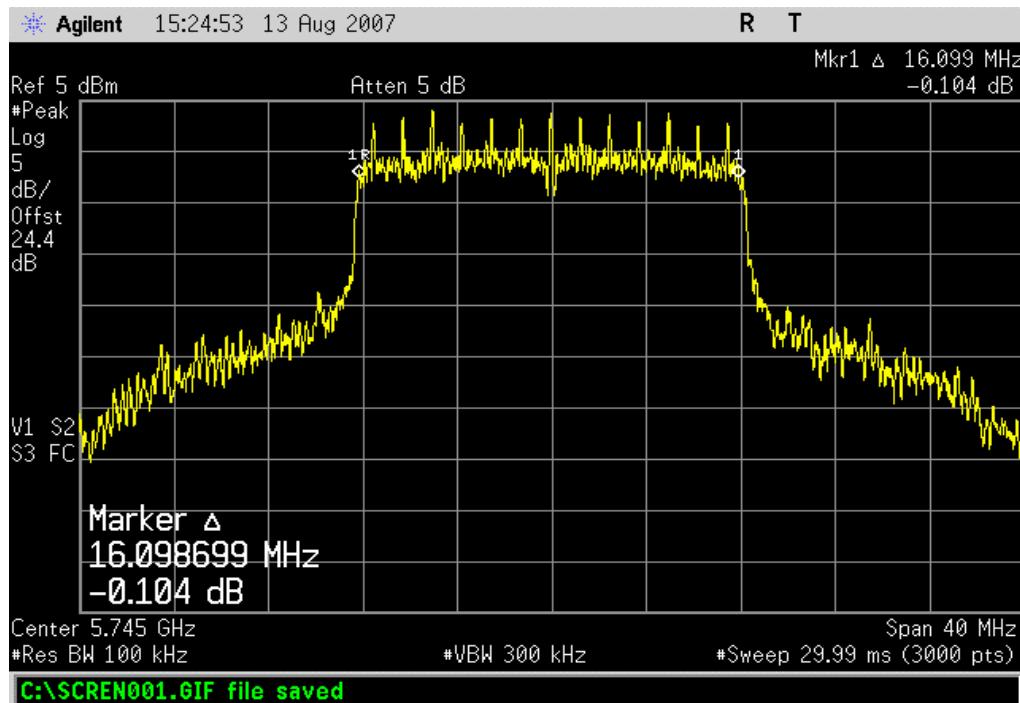
ANSI C63.4:2003 KDB No. 558074

COMMENTS

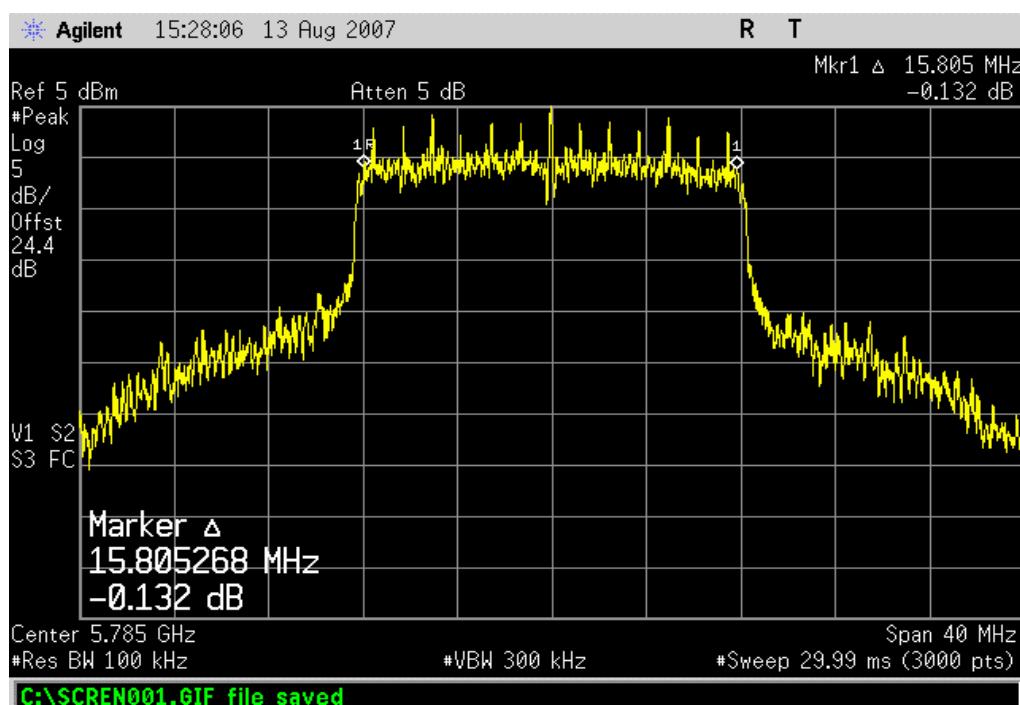
DEVIATIONS FROM TEST STANDARD

| Configuration # | 1 | Signature | Value | Limit | Results |
|------------------------|---|-----------|-------------|----------|---------|
| 802.11(a), 6Mbps | | | | | |
| 5725 - 5850 MHz band | | | | | |
| Low channel, 5745 MHz | | | 16.0987 MHz | ≥ 500kHz | Pass |
| Mid channel, 5785 MHz | | | 15.8053 MHz | ≥ 500kHz | Pass |
| High channel, 5825 MHz | | | 15.8586 MHz | ≥ 500kHz | Pass |

| | | |
|---|--------------------|-----------------------------|
| 802.11(a), 6Mbps, 5725 - 5850 MHz band, Low channel, 5745 MHz | | |
| Result: Pass | Value: 16.0987 MHz | Limit: $\geq 500\text{kHz}$ |



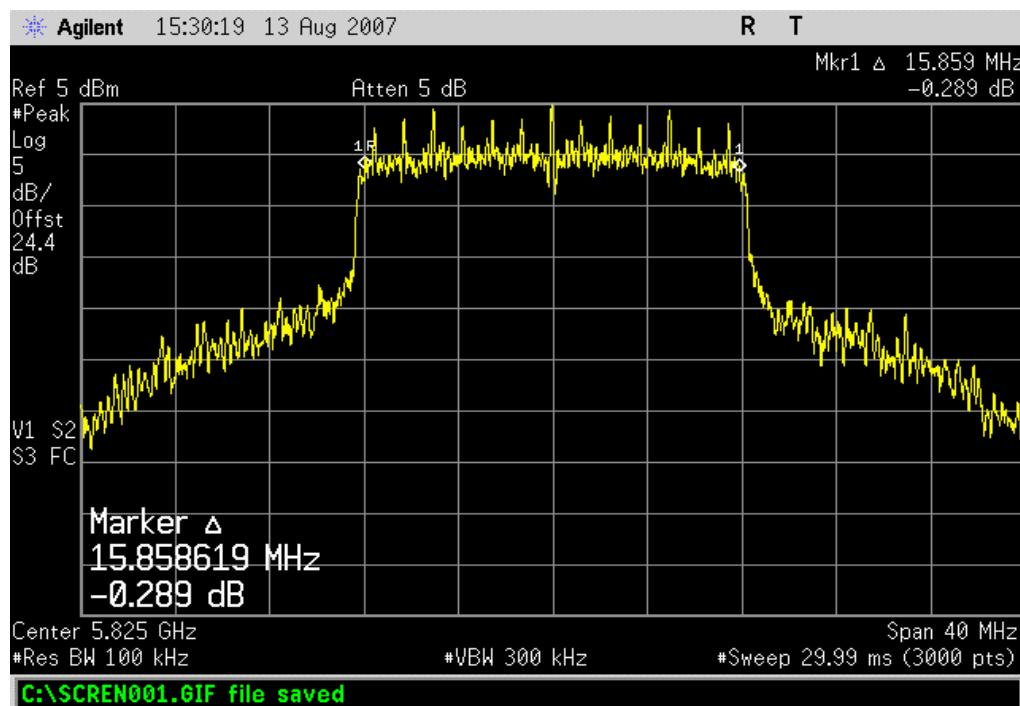
| | | |
|---|--------------------|-----------------------------|
| 802.11(a), 6Mbps, 5725 - 5850 MHz band, Mid channel, 5785 MHz | | |
| Result: Pass | Value: 15.8053 MHz | Limit: $\geq 500\text{kHz}$ |

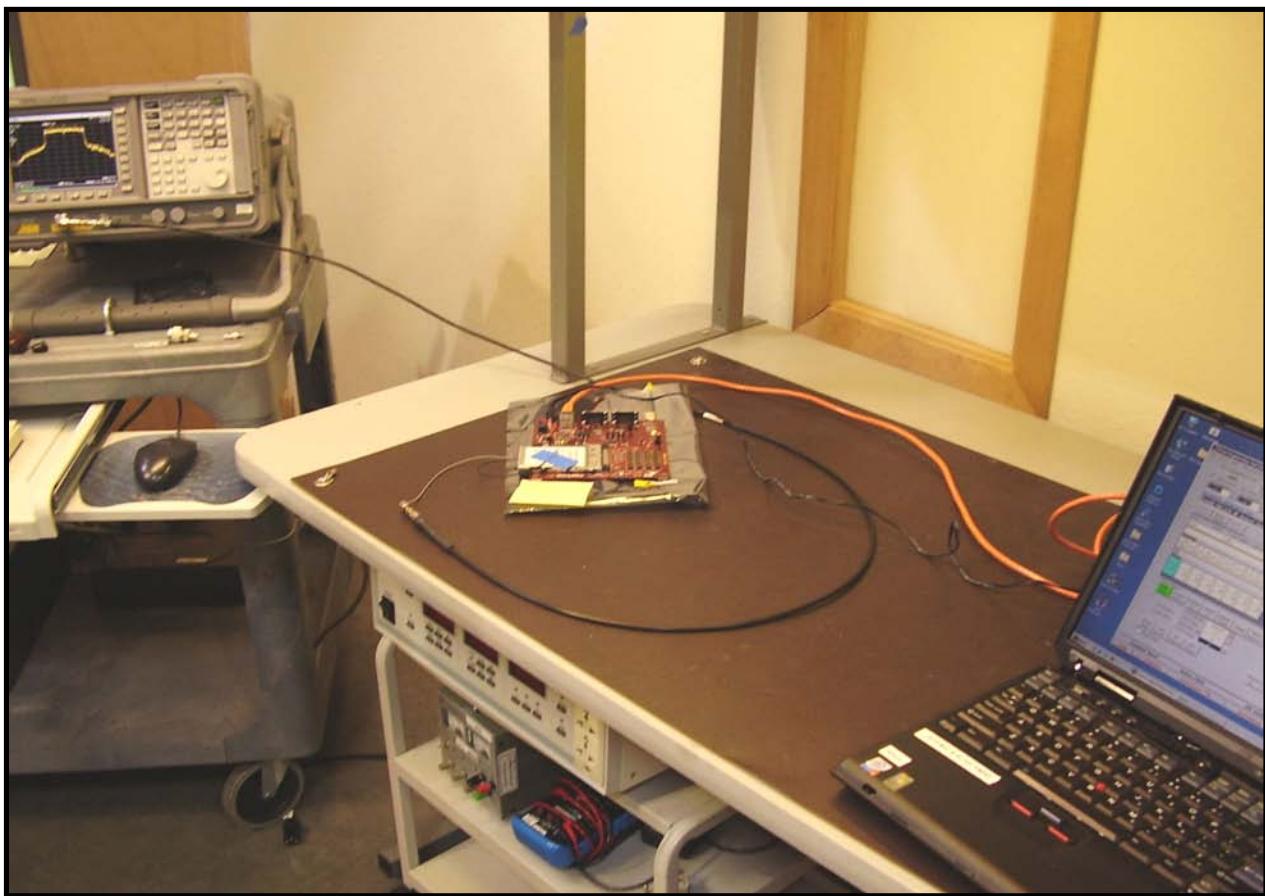


802.11(a), 6Mbps, 5725 - 5850 MHz band, High channel, 5825 MHz

Result: Pass

Value: 15.8586 MHz

Limit: $\geq 500\text{kHz}$ 



Output Power

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 |
|---------------------------------|------------------|---------------|-----|-----------|----------|
| Oscilloscope | Agilent | DS06052A | TOK | 3/9/2007 | 13 |
| Power Sensor | Gigatronics | 80701A | SPL | 9/19/2006 | 12 |
| Power Meter | Gigatronics | 8651A | SPM | 9/19/2006 | 12 |
| Signal Generator | Agilent | E8257D | TGX | 1/25/2007 | 13 |
| Attenuator | | 93459 3330A-6 | AUF | 1/22/2007 | 13 |
| Attenuator 20 dB, SMA M/F 26GHz | S.M. Electronics | SA26B-20 | AUY | 6/8/2007 | 13 |
| RF Detector | RLC Electronics | CR-133-R | ZZA | NCR | 0 |

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 peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The EUT was transmitting at its maximum output power. The data rate of the radio was varied to determine the level that produced the highest output power.

The measurement was made using a direct connection between the RF output of the EUT and a RF detector diode. The DC output of the diode was measured with the oscilloscope. The signal generator, tuned to the transmit frequency, was then substituted for the EUT. The CW output of the signal generator was adjusted until the DC output of the RF detector diode match the peak level produced when connected to the EUT. To further reduce measurement error, the power meter and sensor were then used to measure the output power level of the signal generator.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

Output Power

EUT: Welch Allyn 802.11a Wireless PC Card

Work Order: PROTO295

Serial Number: 001AFA0000CE

Date: 08/14/07

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 15.247 (DTS):2006

ANSI C63.4:2003 KDB No. 558074

COMMENTS

DEVIATIONS FROM TEST STANDARD

Configuration # 1

Signature *Holly Ashkannejhad*

802.11(a), 6Mbps

5725-5850 MHz band

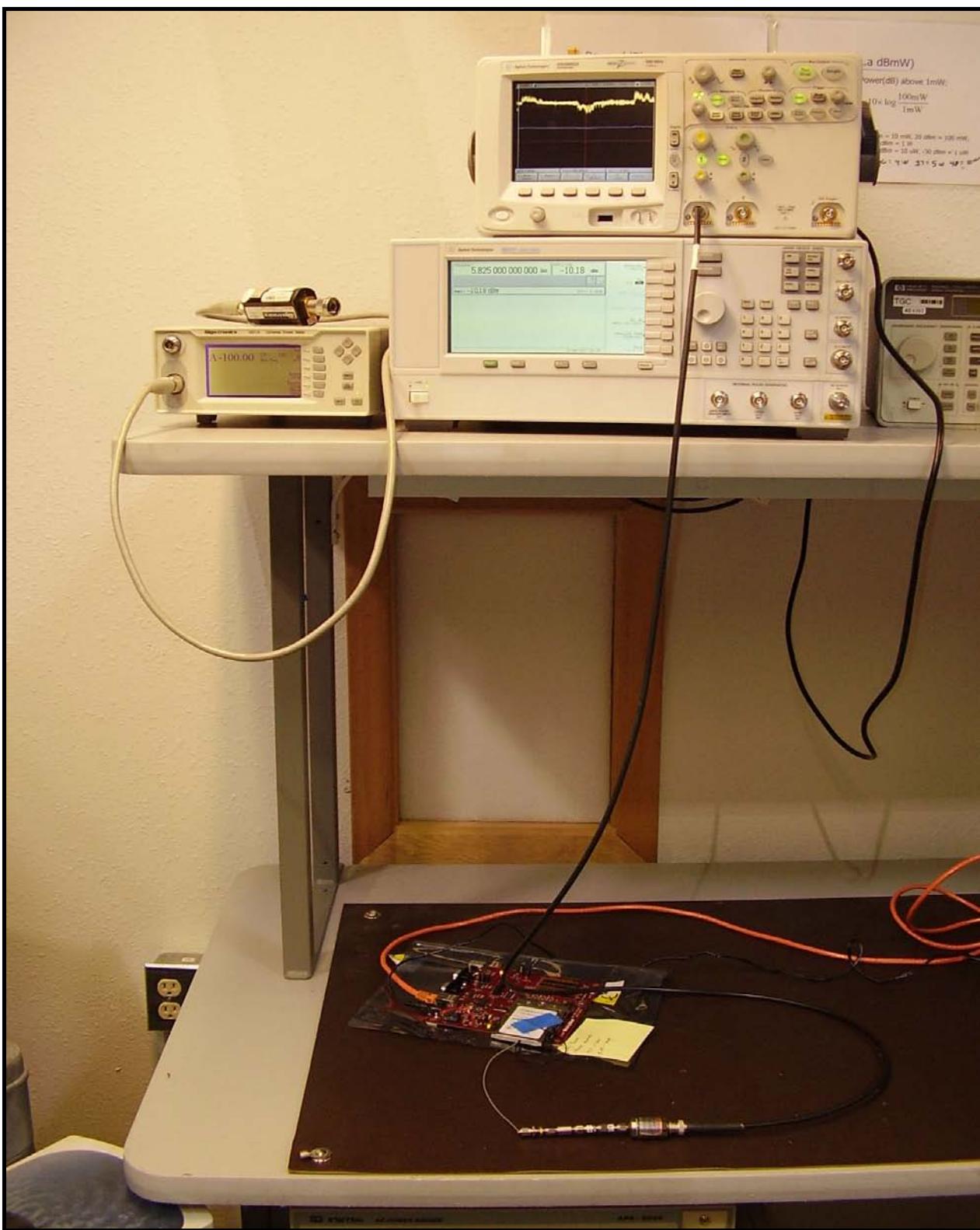
| Xmit Frequency (MHz) | Channel | DC on Scope (mV) | Attenuator Specific Ref. Offset (dB) | Sig Gen Output (dBm) | Power Meter (dBm) | Value | |
|-------------------------|---------|---------------------|---|-------------------------|----------------------|---------------------|---------------|
| | | | | | | Power Meter (mW) | Limit (mW) |
| 5745 | 149 | -38.5 | 26.3 | -10.35 | 15.89 | 38.82 | 1000 |
| 5785 | 157 | -39.5 | 26.29 | -10.18 | 16.04 | 40.18 | 1000 |
| 5825 | 165 | -39.5 | 26.29 | -10.18 | 16.04 | 40.18 | 1000 |

Pass

Pass

Pass

Output Power



Band Edge Compliance

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

The requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

EMC

Band Edge Compliance

EUT: Welch Allyn 802.11a Wireless PC Card

Work Order: PROT0295

Serial Number: 001AFA0000CE

Date: 08/14/07

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 Method

TEST SPECIFICATIONS

FCC 15.247 (DTS):2006

ANSI C63.4:2003 KDB No. 558074

COMMENTS

DEVIATIONS FROM TEST STANDARD

None

Configuration #

1

Signature

Holly Ashkannejhad

802.11(a), 6Mbps

5725 MHz - 5850 MHz

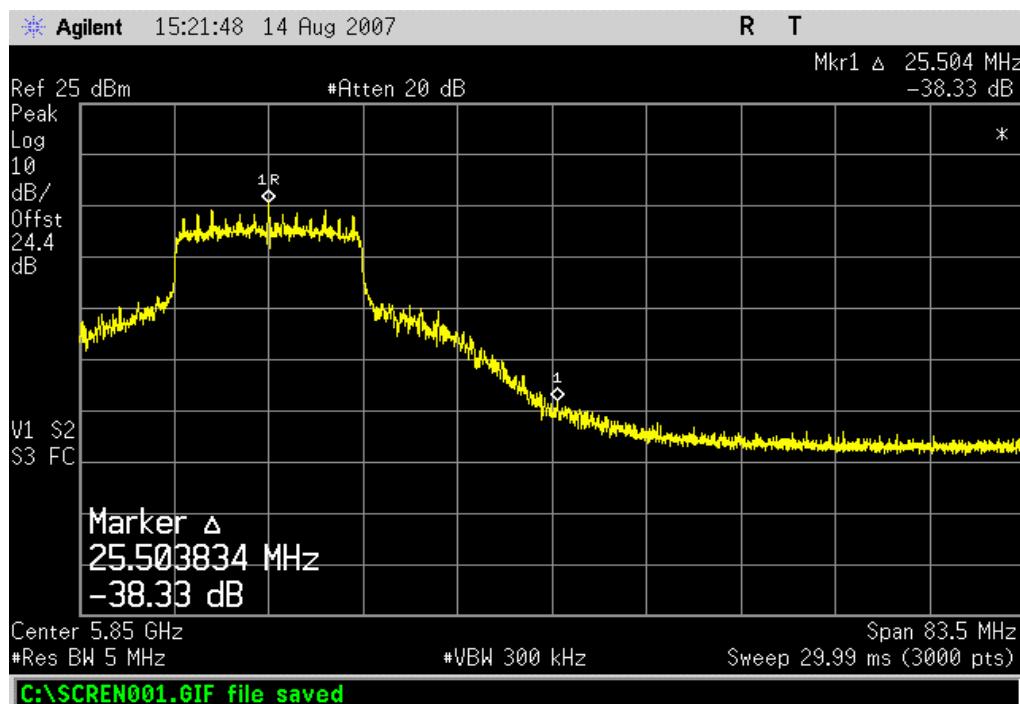
Low channel, 5745 MHz
High channel, 5825 MHz

| | | Value | Limit | Results |
|--|--|--------------------------|------------------------|--------------|
| | | -38.33 dBc -29.07 dBc | ≤ -20 dBc ≤ -20 dBc | Pass Pass |

802.11(a), 6Mbps, 5725 MHz - 5850 MHz, Low channel, 5745 MHz

Result: Pass

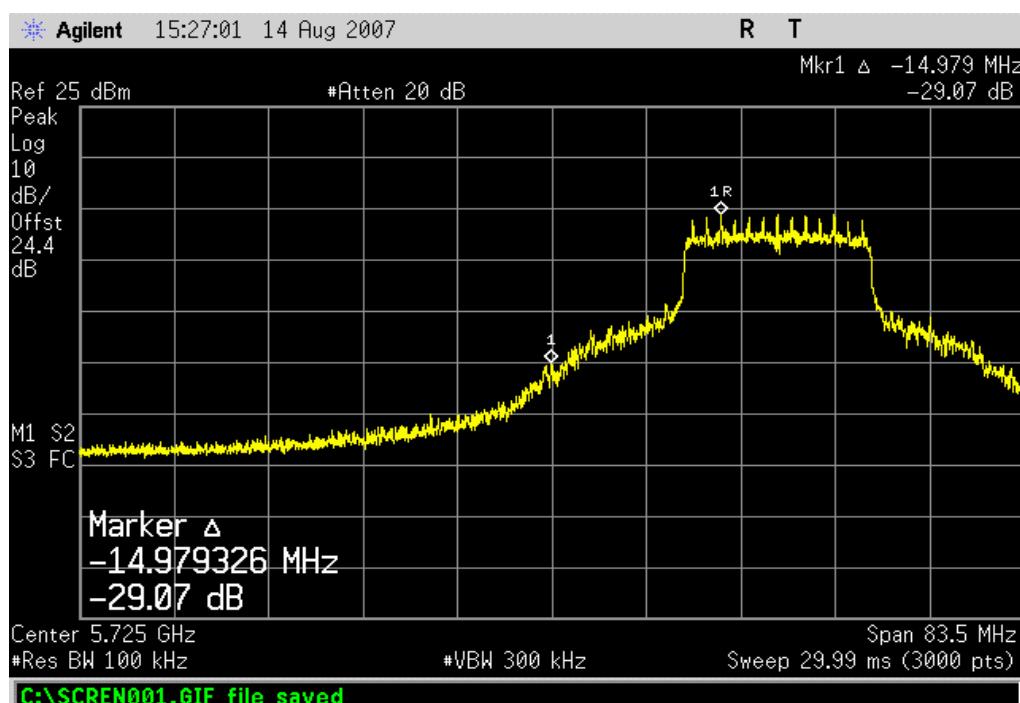
Value: -38.33 dBc

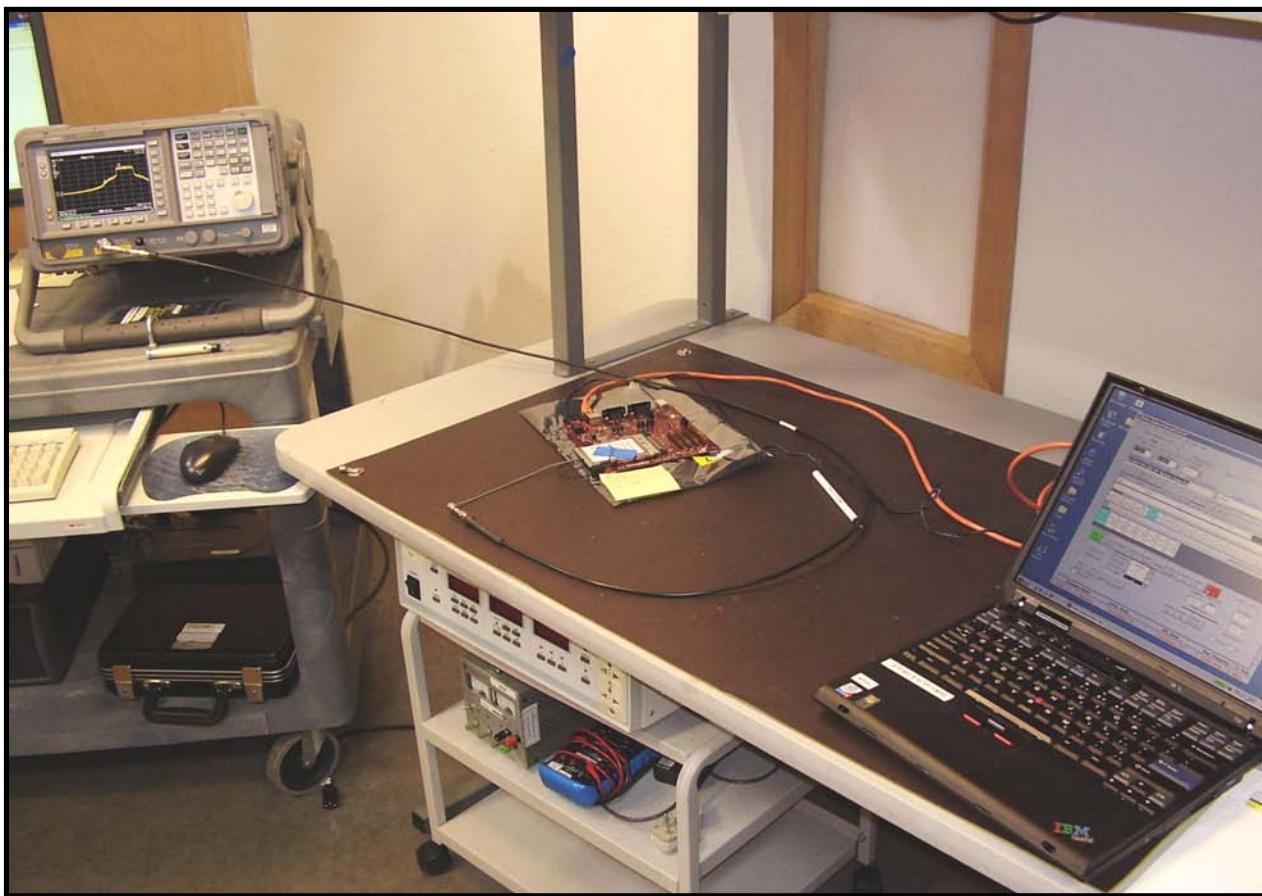
Limit: \leq -20 dBc

802.11(a), 6Mbps, 5725 MHz - 5850 MHz, High channel, 5825 MHz

Result: Pass

Value: -29.07 dBc

Limit: \leq -20 dBc



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 | E4446A | AAT | 12/7/2006 | 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

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

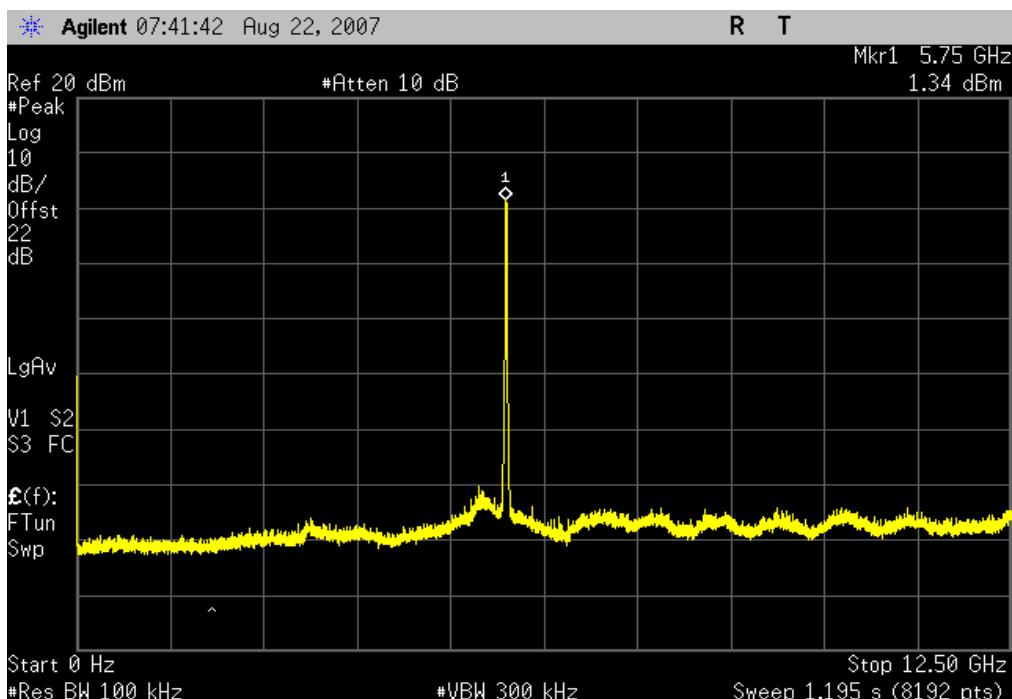
| EUT: Welch Allyn 802.11a Wireless PC Card | | Work Order: PROT0295 | | |
|---|--------------------|--|-----------|---------|
| Serial Number: 001AFA0000CE | | Date: 08/22/07 | | |
| Customer: Welch Allyn Protocol, Inc. | | Temperature: 22°C | | |
| Attendees: None | | Humidity: 43% | | |
| Project: None | | Barometric Pres.: 30.05 | | |
| Tested by: Rod Peloquin | Power: 120VAC/60Hz | Job Site: EV01 | | |
| TEST SPECIFICATIONS | | | | |
| FCC 15.247 (DTS):2006 | | Test Method: ANSI C63.4:2003 KDB No. 558074 | | |
| COMMENTS | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | |
| None | | | | |
| Configuration # | 1 |  Signature | | |
| | | Value | Limit | Results |
| Low Channel, 149 | | < -40 dBc | ≤ -20 dBc | Pass |
| 0MHz - 12.5GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 12.4 GHz - 24 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 23.5 GHz - 31 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 30.5 GHz - 40 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| Mid Channel, 157 | | < -40 dBc | ≤ -20 dBc | Pass |
| 0MHz - 12.5GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 12.4 GHz - 24 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 23.5 GHz - 31 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 30.5 GHz - 40 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| High Channel, 165 | | < -40 dBc | ≤ -20 dBc | Pass |
| 0MHz - 12.5GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 12.4 GHz - 24 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 23.5 GHz - 31 GHz | | < -40 dBc | ≤ -20 dBc | Pass |
| 30.5 GHz - 40 GHz | | < -40 dBc | ≤ -20 dBc | Pass |

Low Channel 149, 0MHz - 12.5 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

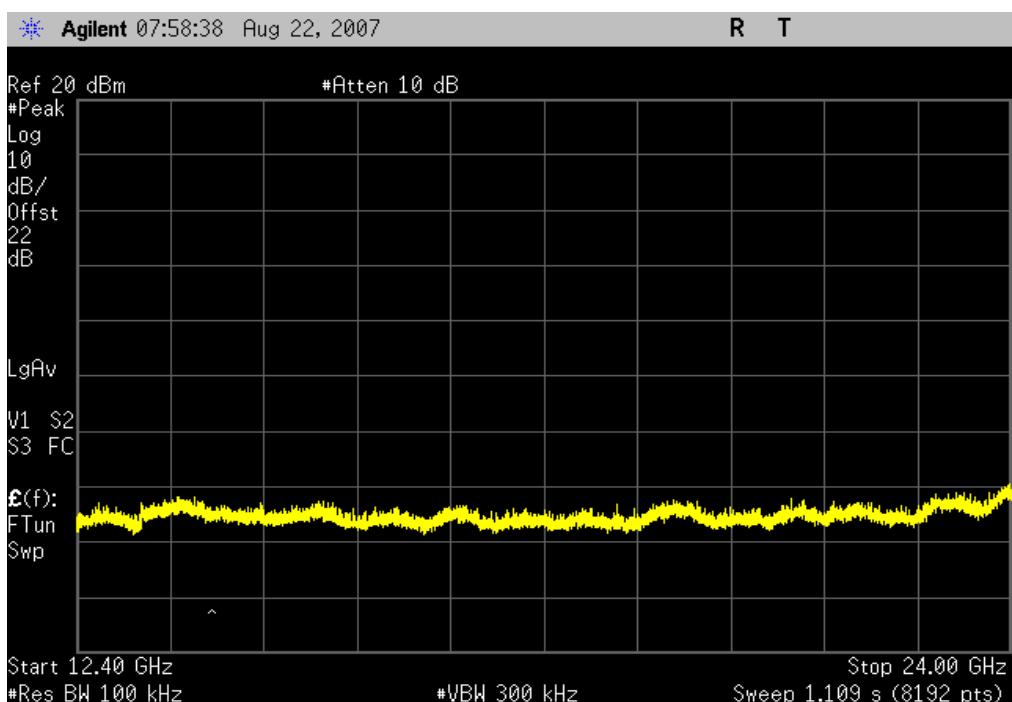


Low Channel 149, 12.4 GHz - 24 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

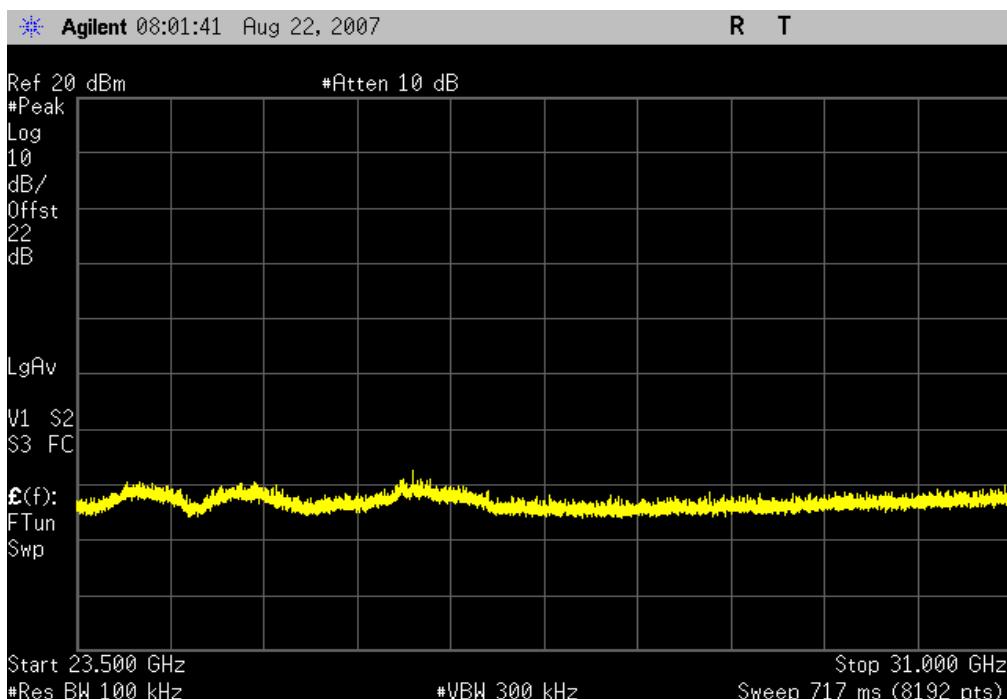


Low Channel 149, 23.5 GHz - 31 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

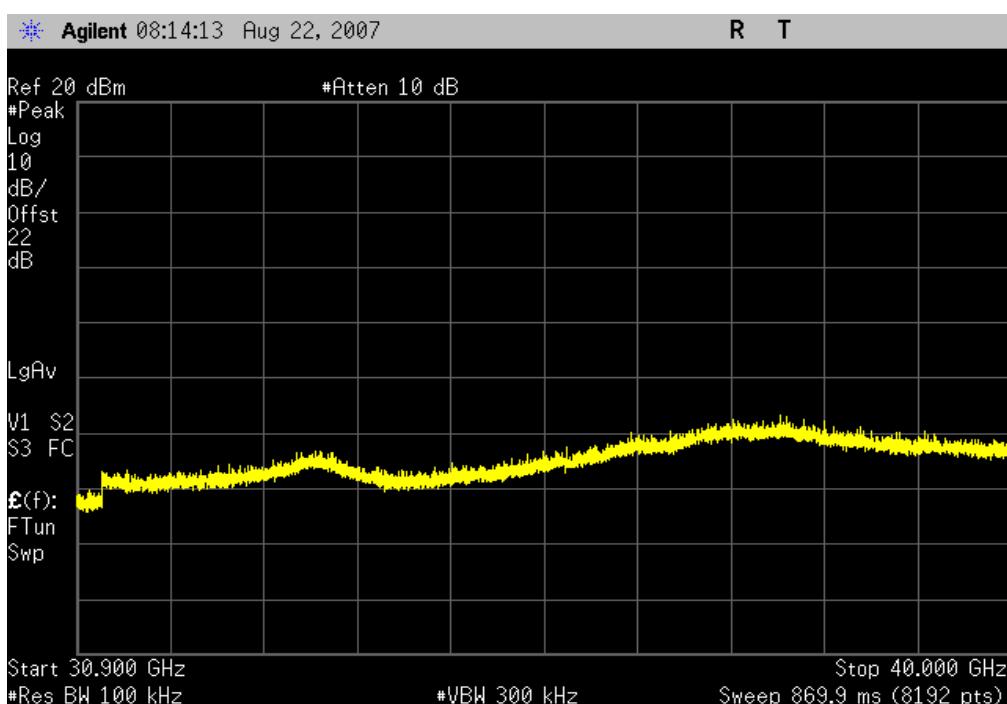


Low Channel 149, 30.5 GHz - 40 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

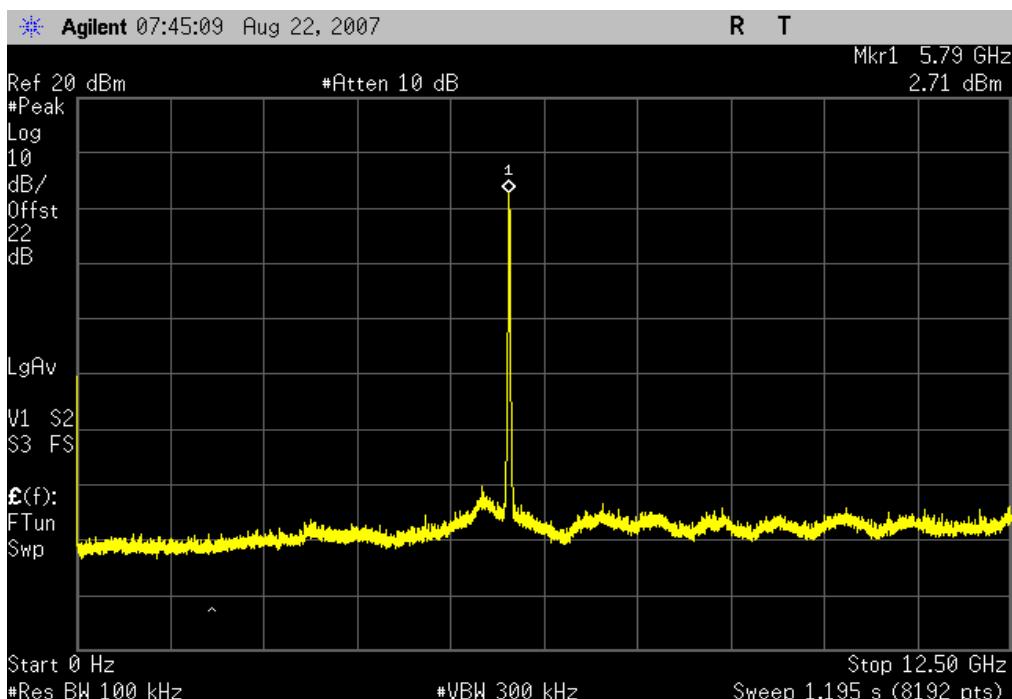


Mid Channel 157, 0MHz - 12.5GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

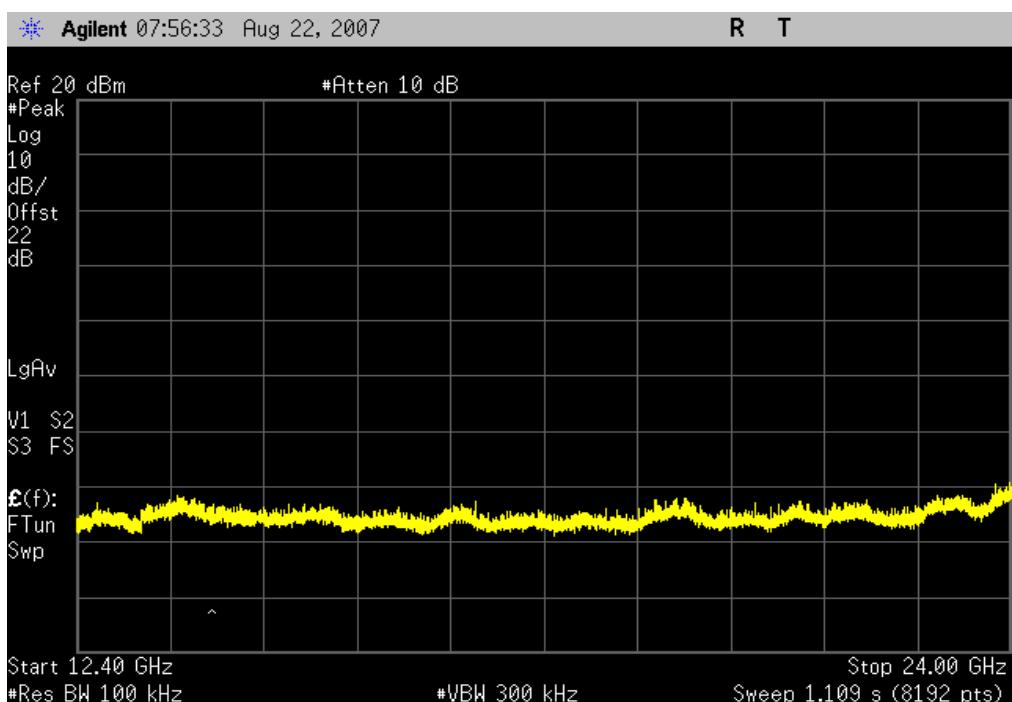


Mid Channel 157, 12.4 GHz - 24 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

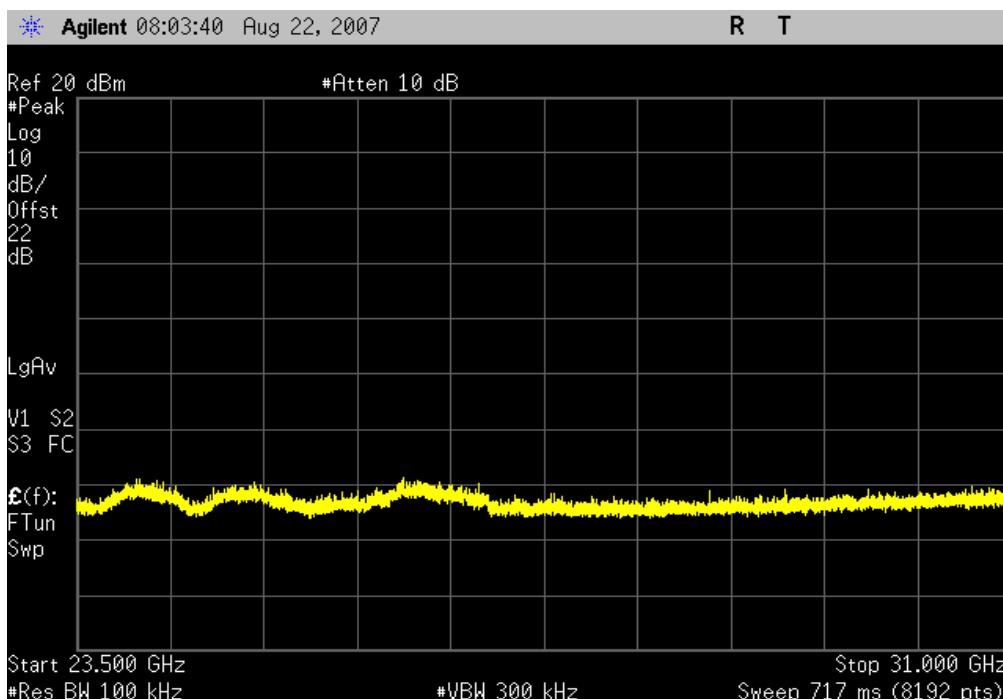


Mid Channel 157, 23.5 GHz - 31 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

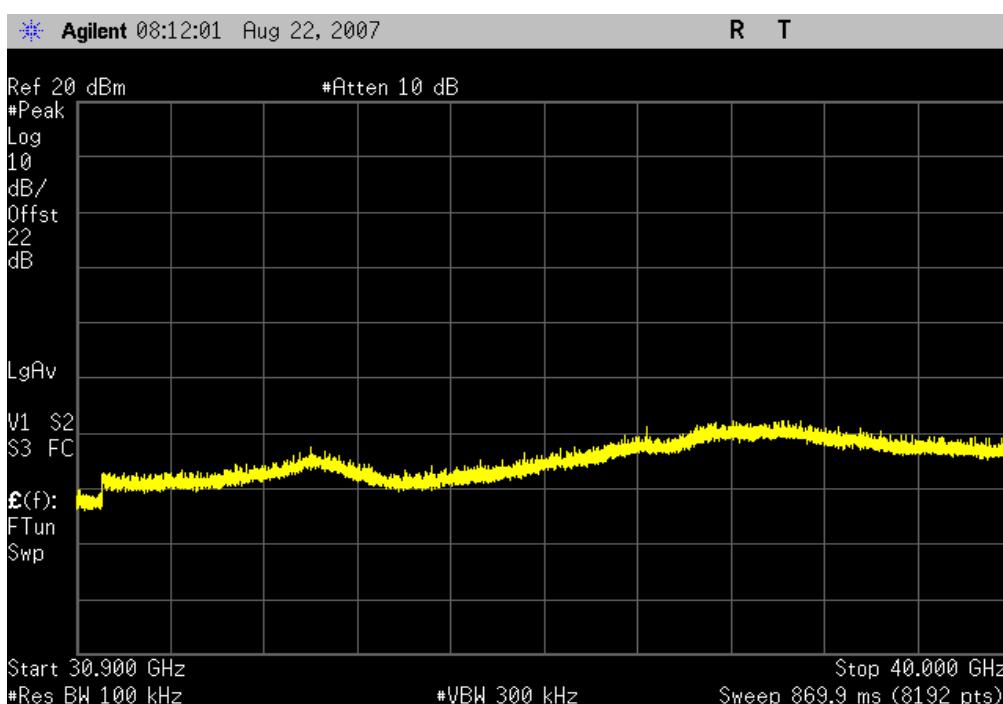


Mid Channel 157, 30.5 GHz - 40 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

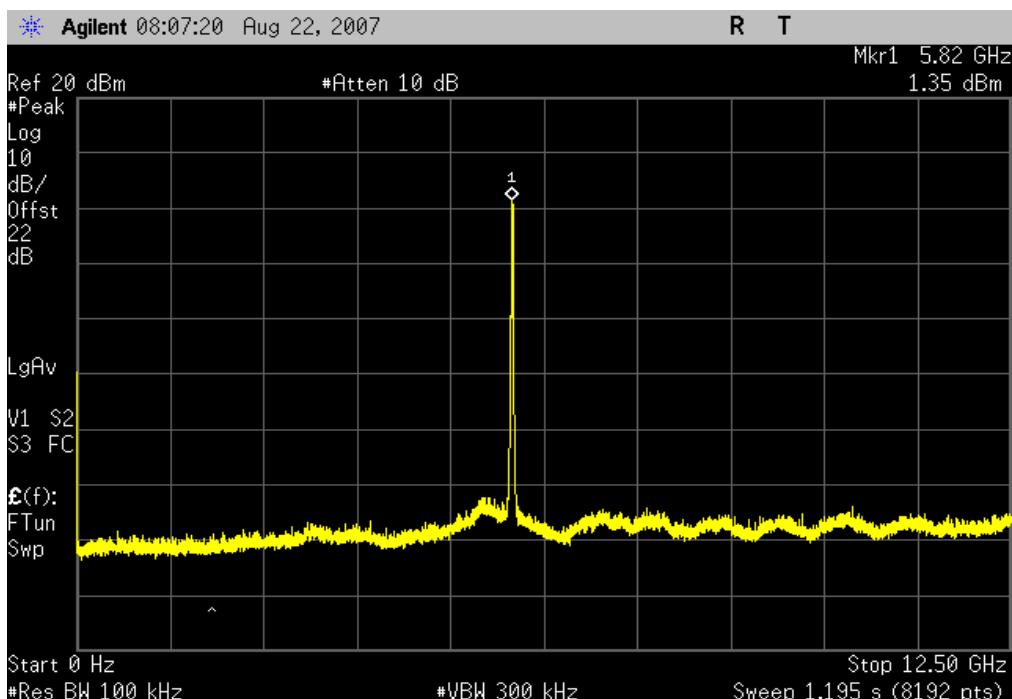


High Channel 165, 0MHz - 12.5GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

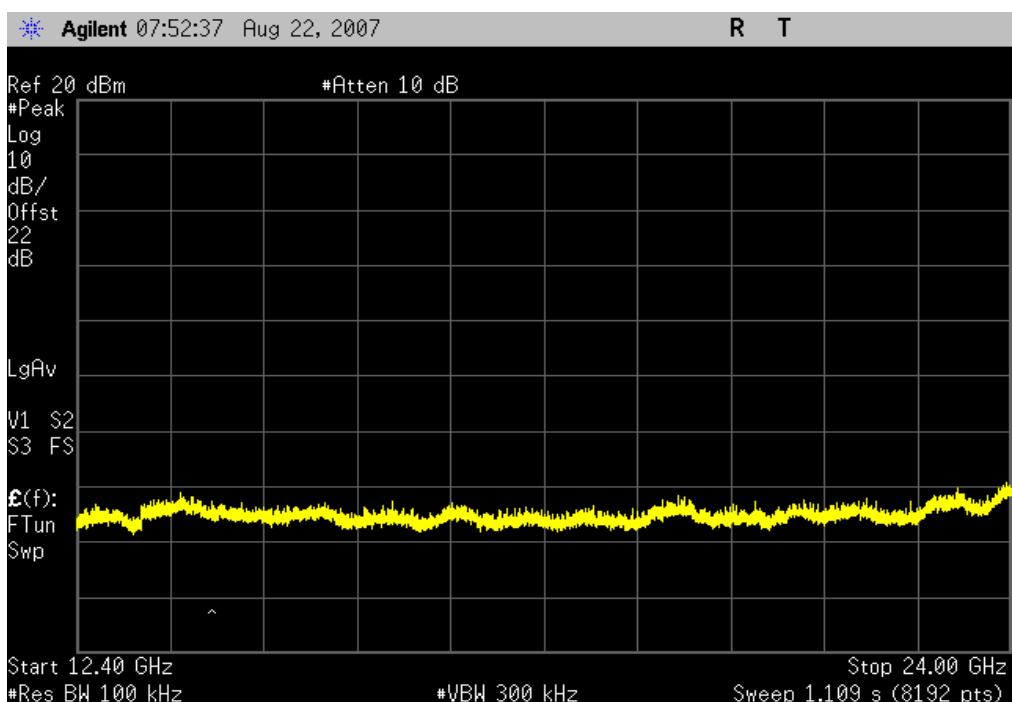


High Channel 165, 12.4 GHz - 24 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

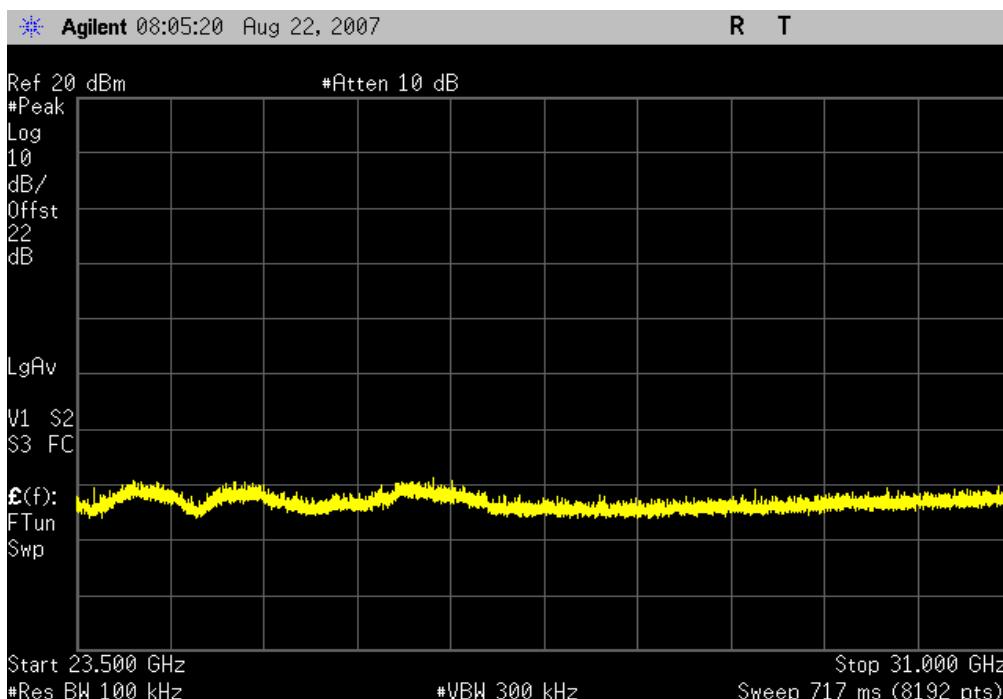


High Channel 165, 23.5 GHz - 31 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc

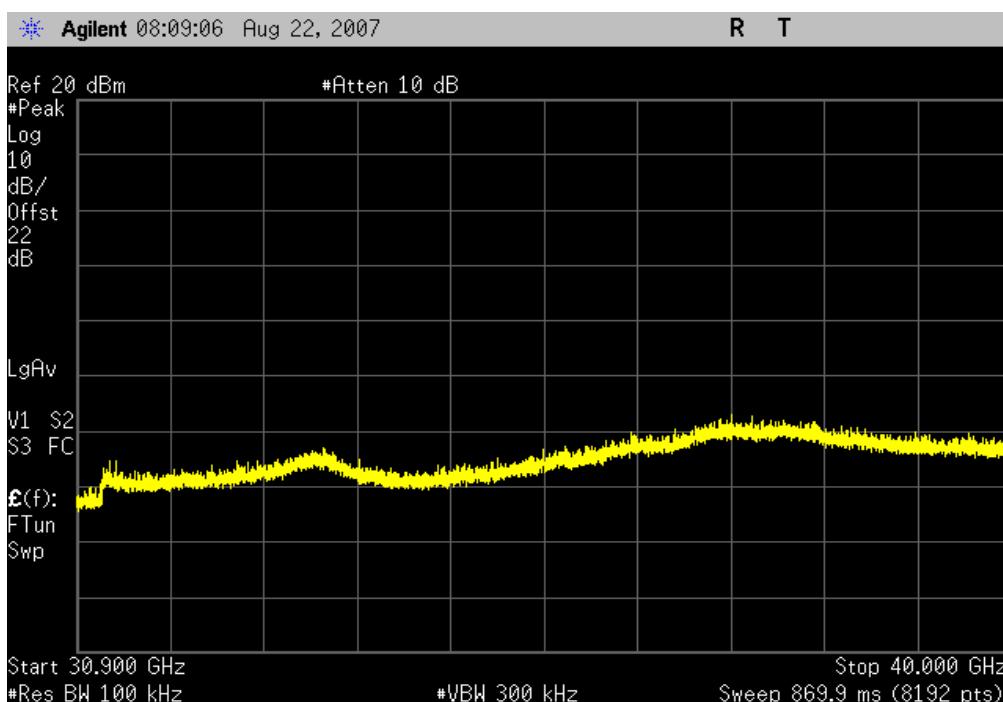


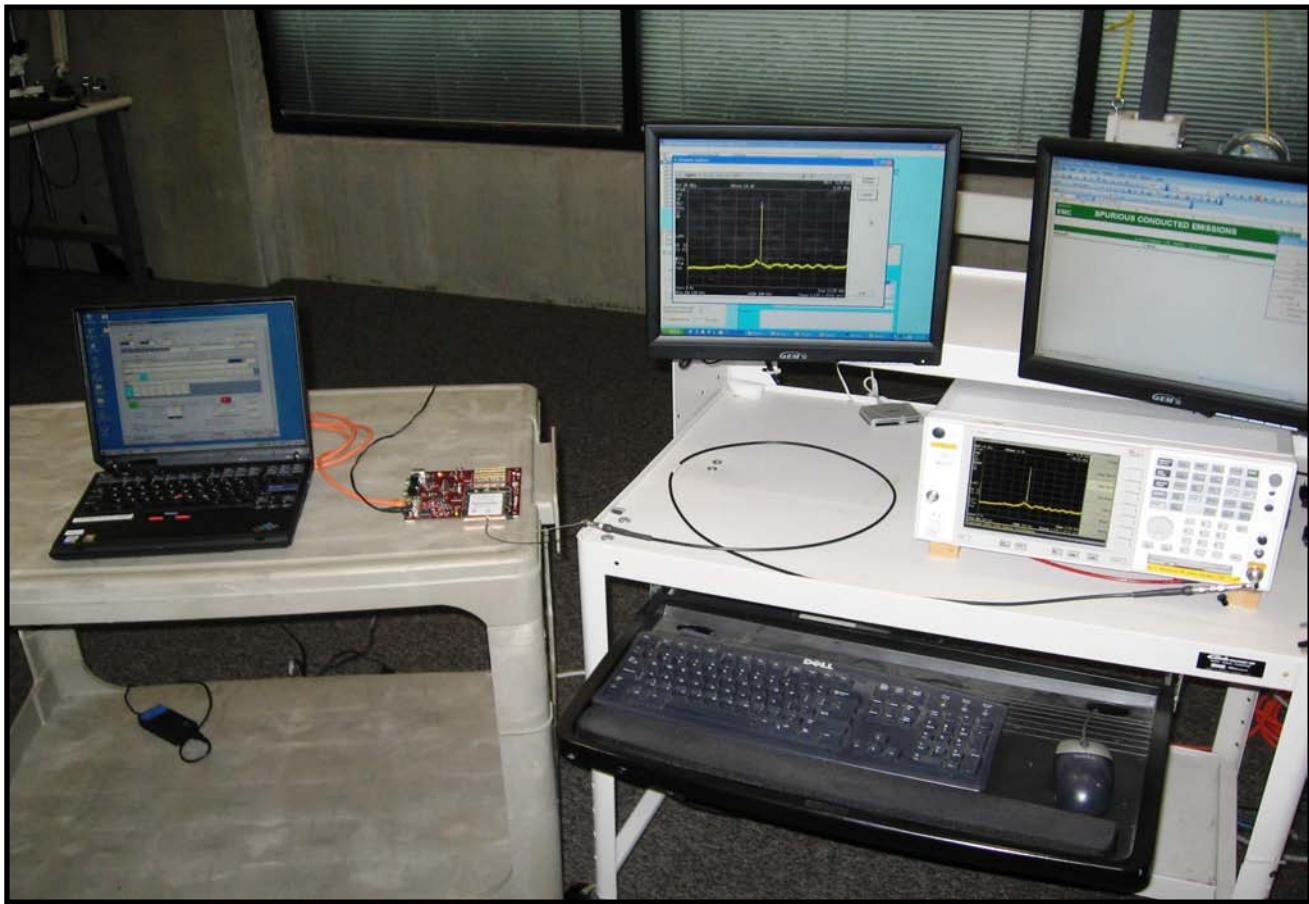
High Channel 165, 30.5 GHz - 40 GHz

Result: Pass

Value: < -40 dBc

Limit: ≤ - 20 dBc





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 149

Channel 157

Channel 165

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

| | | | |
|-----------------|--------|----------------|--------|
| Start Frequency | 30 MHz | Stop Frequency | 40 GHz |
|-----------------|--------|----------------|--------|

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,l | | | 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 | | SPURIOUS RADIATED EMISSIONS | | | | | | | | | | PSA 2007.05.07 | | |
|--------------------------------------|------------------|---|-------------------|-------------------|-------------------|---------------------------|-------------------------|----------|--------------------------|-----------------|--------------------|------------------------|---------------------------|--|
| EMC | | EUT: Welch Allyn 802.11a Wireless PC Card | | | | | Work Order: PROT0295 | | | | | EMI 2006.11.29 | | |
| 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 | | Test Method | | | | | | | | | | | | |
| FCC 15.247 (DTS):2006 | | ANSI C63.4:2003 KDB No. 558074 | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | <i>Rodney L. Peloquin</i> | |
| 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 | |
| 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 | |
| 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 | |

SPURIOUS RADIATED EMISSIONS

| | | | |
|----------------|--------------------------------------|-------------------|-------------|
| EUT: | Welch Allyn 802.11a Wireless PC Card | Work Order: | PROT0295 |
| Serial Number: | 001AFA0000CE | Date: | 08/21/07 |
| Customer: | Welch Allyn 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

FCC 15.247 (DTS):2006 | ANSI C63.4:2003 KDB No. 558074

TEST PARAMETERS

Antenna Height(s) (m) | 1 - 4 | Test Distance (m) | 3

COMMENTS

EUT OPERATING MODES

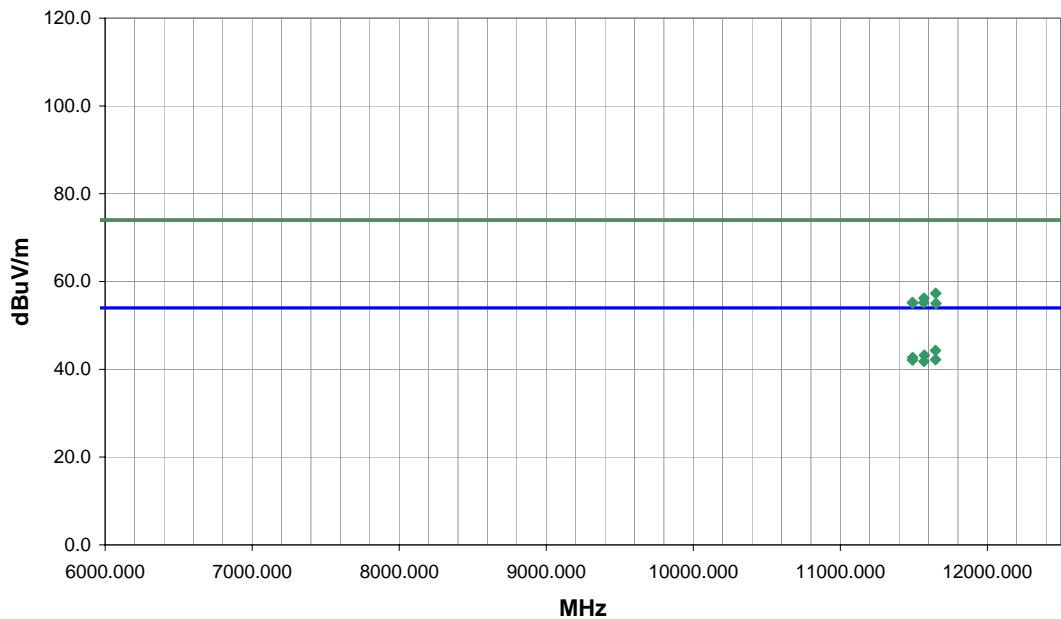
Transmitting 802.11(a), 6 Mbps

DEVIATIONS FROM TEST STANDARD

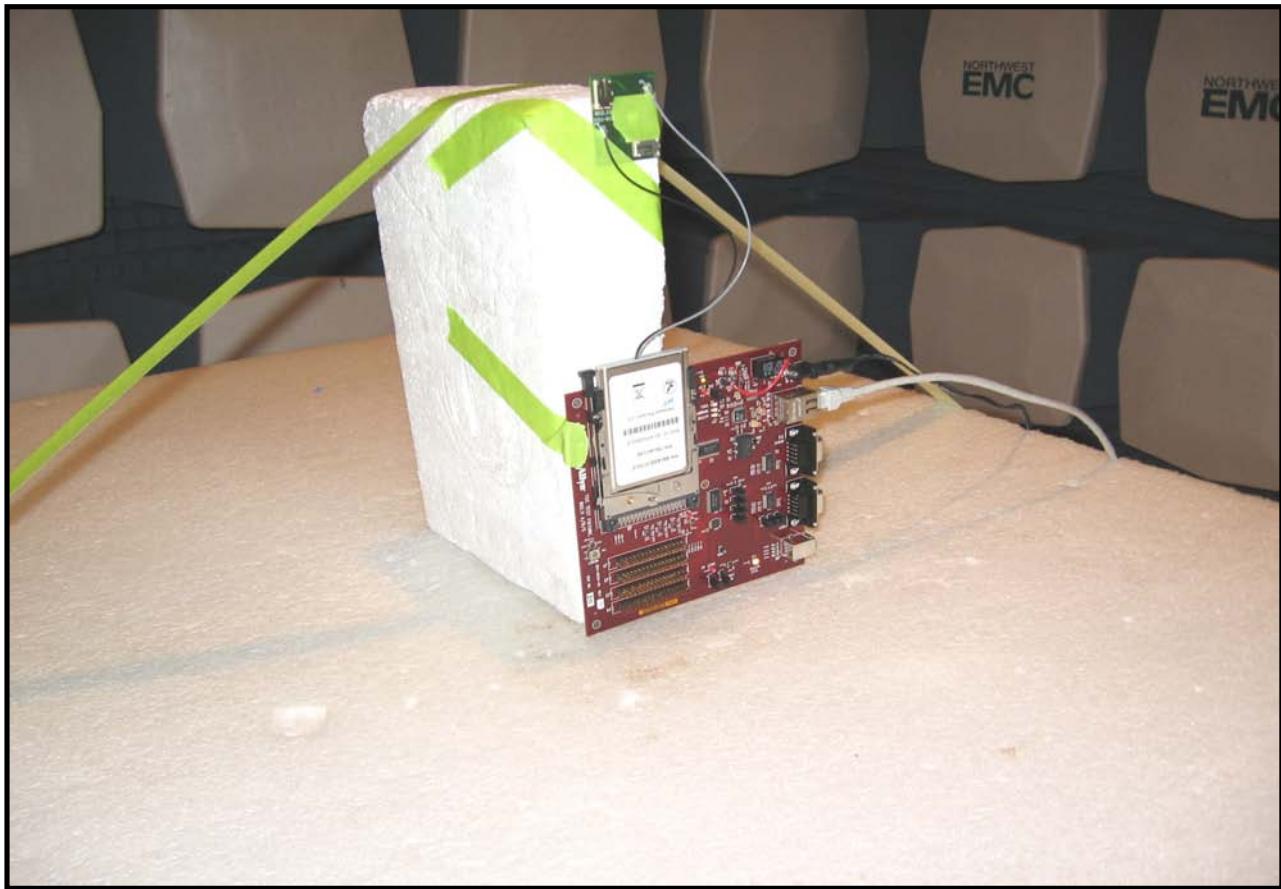
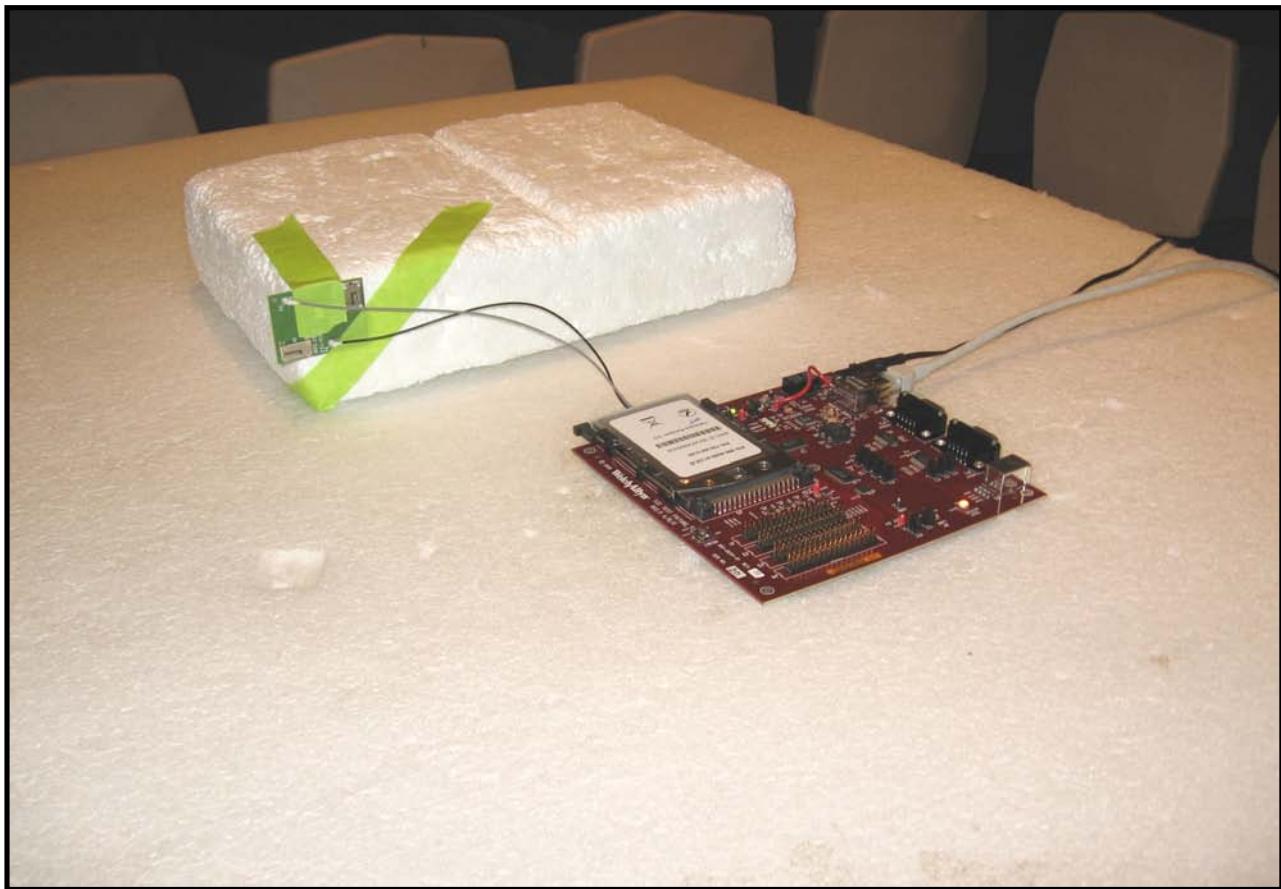
No deviations.

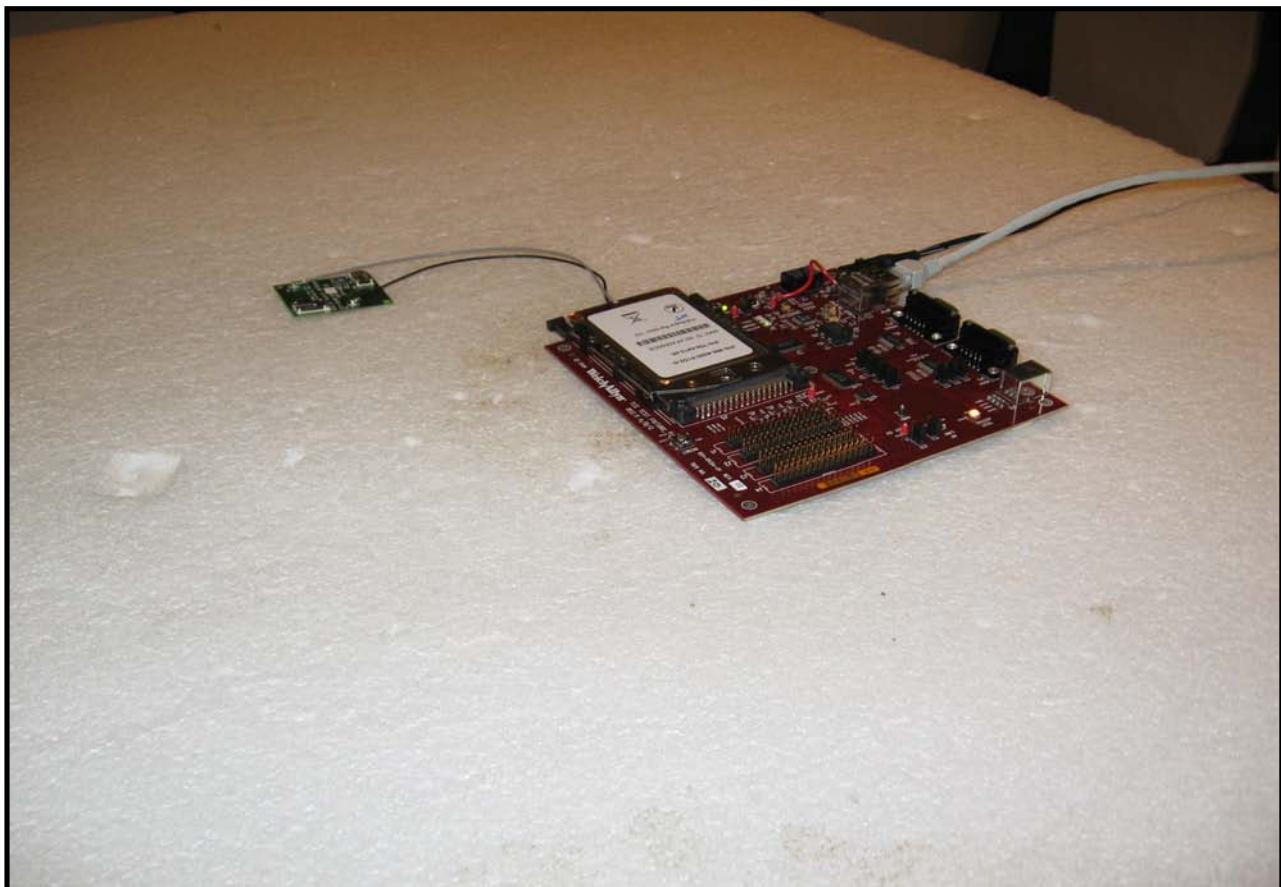
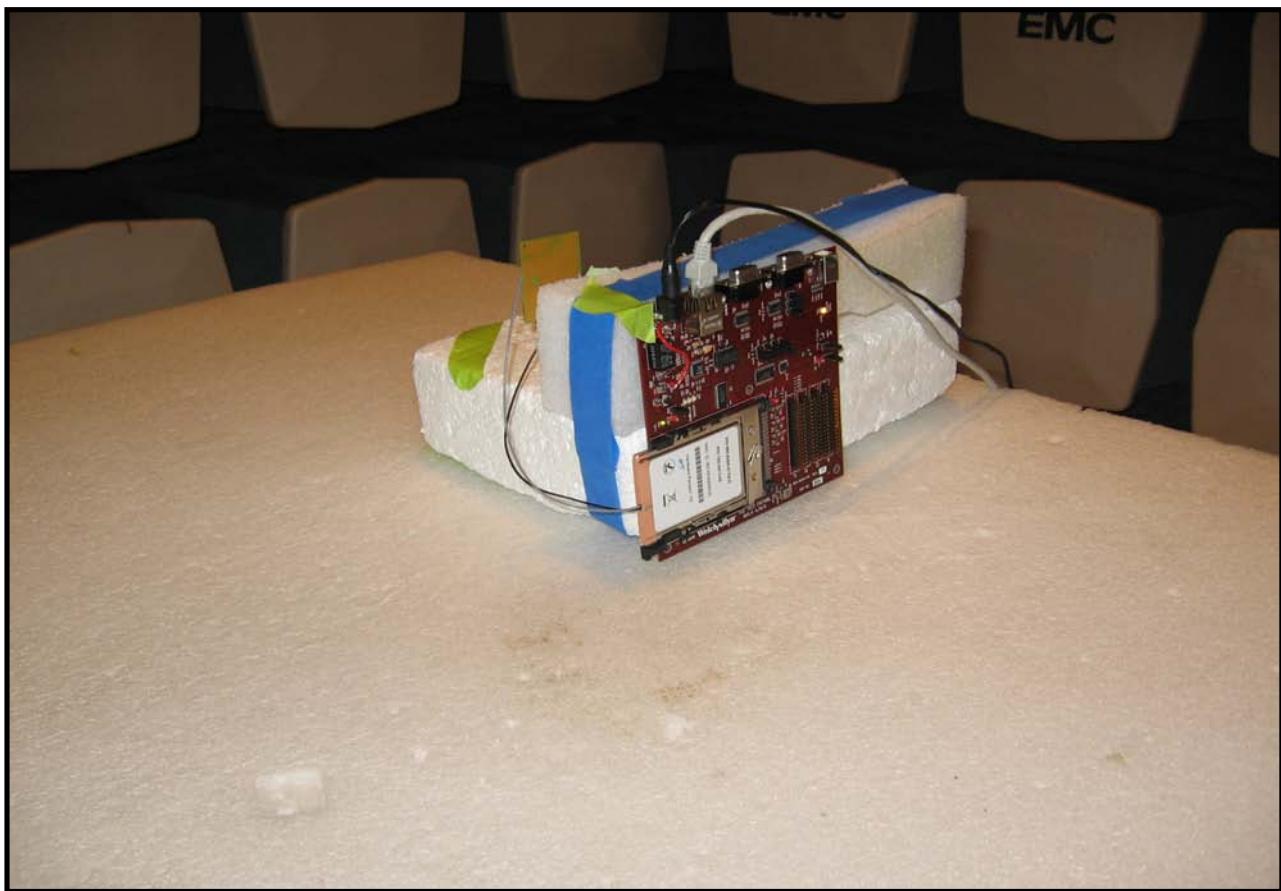
| | |
|-----------------|------|
| Run # | 9 |
| Configuration # | 2 |
| Results | Pass |

Signature

Rod Peloquin

| 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 |
|------------|------------------|-------------|-------------------|-----------------|-------------------|---------------------------|----------|----------|--------------------------|-----------------|--------------------|------------------------|----------|
| 11647.670 | 28.2 | 16.1 | 96.0 | 1.1 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 44.3 | 54.0 | -9.7 | Ch. 165 |
| 11571.670 | 27.2 | 16.0 | 280.0 | 1.5 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 43.2 | 54.0 | -10.8 | Ch. 157 |
| 11491.870 | 26.6 | 16.1 | 324.0 | 1.4 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 42.7 | 54.0 | -11.3 | Ch. 149 |
| 11648.100 | 26.2 | 16.0 | 351.0 | 1.3 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 42.2 | 54.0 | -11.8 | Ch. 165 |
| 11491.230 | 26.0 | 16.1 | 32.0 | 1.3 | 3.0 | 0.0 | H-Horn | AV | 0.0 | 42.1 | 54.0 | -11.9 | Ch. 149 |
| 11569.630 | 25.8 | 16.0 | 86.0 | 1.1 | 3.0 | 0.0 | V-Horn | AV | 0.0 | 41.8 | 54.0 | -12.2 | Ch. 157 |
| 11648.530 | 41.3 | 16.0 | 96.0 | 1.1 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 57.3 | 74.0 | -16.7 | Ch. 165 |
| 11569.100 | 40.2 | 16.0 | 280.0 | 1.5 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 56.2 | 74.0 | -17.8 | Ch. 157 |
| 11567.400 | 39.2 | 16.0 | 86.0 | 1.1 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 55.2 | 74.0 | -18.8 | Ch. 157 |
| 11490.400 | 39.1 | 16.1 | 32.0 | 1.3 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 55.2 | 74.0 | -18.8 | Ch. 149 |
| 11493.870 | 39.0 | 16.1 | 324.0 | 1.4 | 3.0 | 0.0 | V-Horn | PK | 0.0 | 55.1 | 74.0 | -18.9 | Ch. 149 |
| 11651.170 | 39.0 | 16.0 | 351.0 | 1.3 | 3.0 | 0.0 | H-Horn | PK | 0.0 | 55.0 | 74.0 | -19.0 | Ch. 165 |







Power Spectral Density

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

The peak power spectral density measurements were measured with the EUT set to low, mid, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate using direct sequence modulation. Per the procedure outlined in FCC 97-114, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. External attenuation was used and added to the reading. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 34.8 dB for correction to 3 kHz."

EMC

Power Spectral Density

EUT: Welch Allyn 802.11a Wireless PC Card

Work Order: PROT0295

Serial Number: 001AFA0000CE

Date: 08/14/07

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 15.247 (DTS):2006

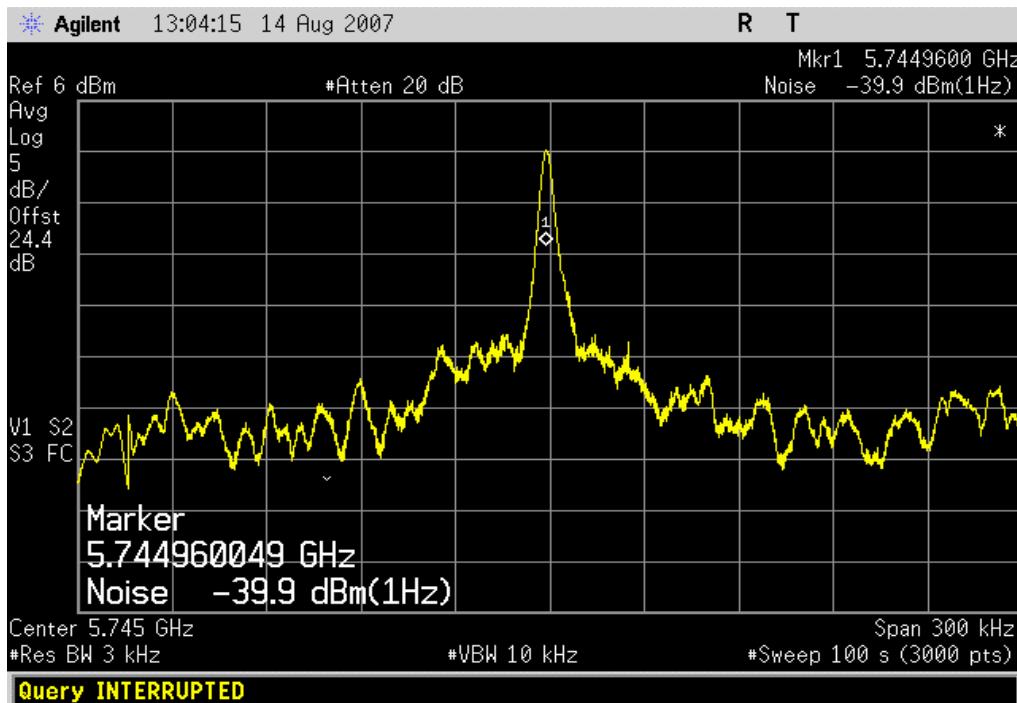
ANSI C63.4:2003 KDB No. 558074

COMMENTS

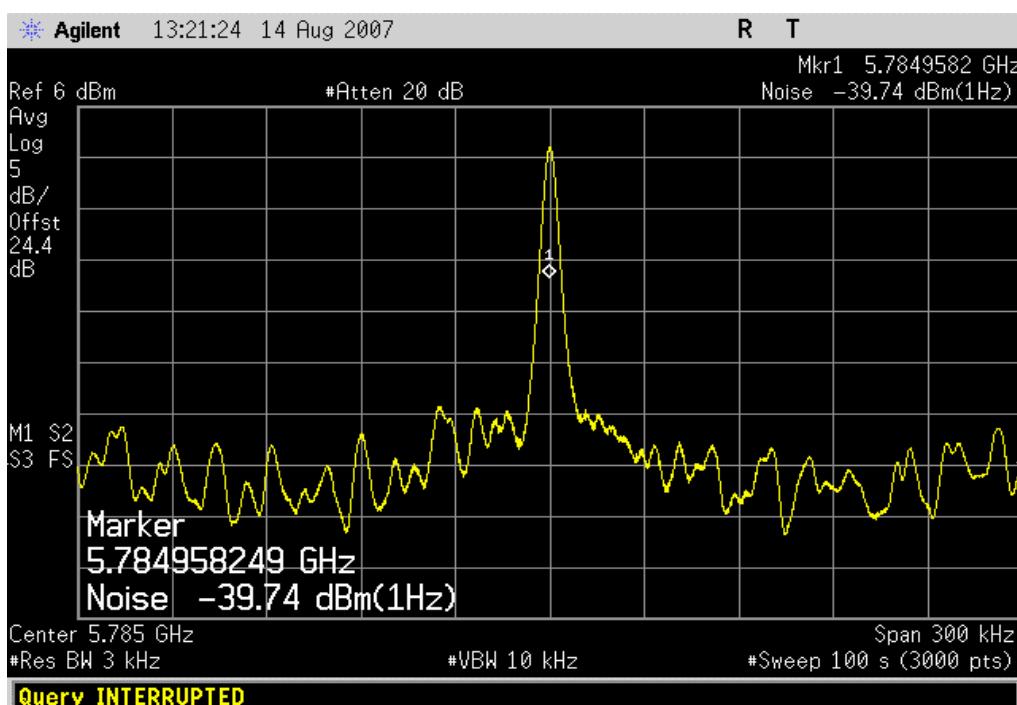
DEVIATIONS FROM TEST STANDARD

| Configuration # | 1 | Signature | Value | Limit | Results |
|-----------------------|---|-----------|-------------------|---------------|---------|
| 802.11(a), 6Mbps | | | | | |
| 5725MHz - 5850MHz | | | | | |
| Low channel, 5745MHz | | | -5.1 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |
| Mid channel, 5785MHz | | | -4.94 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |
| High channel, 5825MHz | | | -5.39 dBm / 3 kHz | 8 dBm / 3 kHz | Pass |

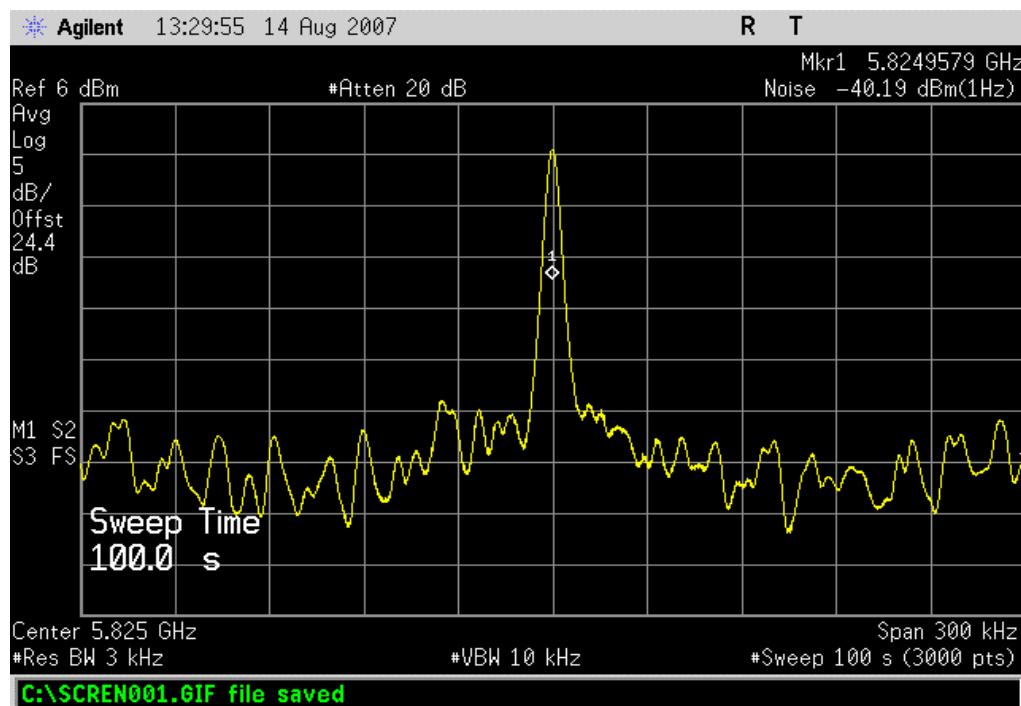
| | | |
|---|-------------------------|----------------------|
| 802.11(a), 6Mbps, 5725MHz - 5850MHz, Low channel, 5745MHz | | |
| Result: Pass | Value: -5.1 dBm / 3 kHz | Limit: 8 dBm / 3 kHz |

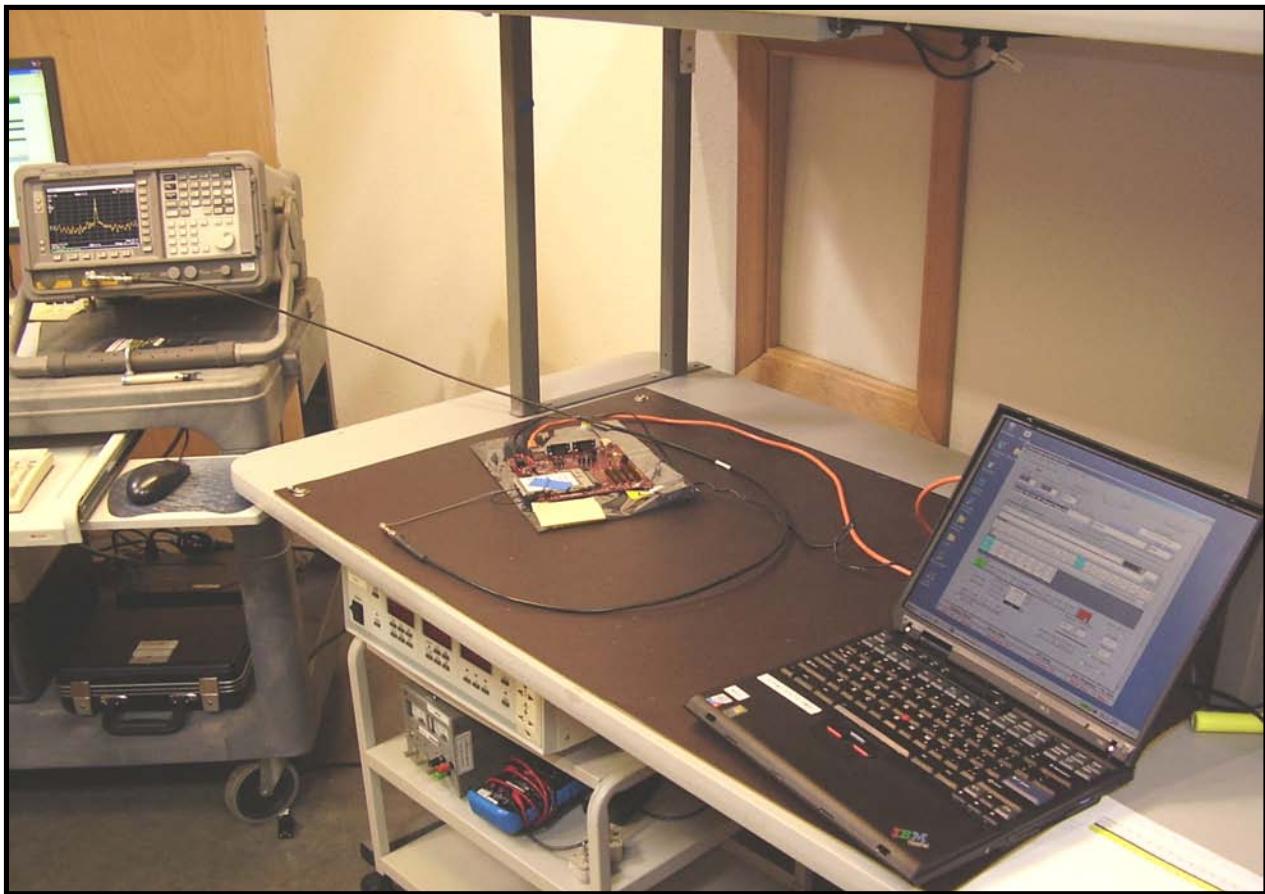


| | | |
|---|--------------------------|----------------------|
| 802.11(a), 6Mbps, 5725MHz - 5850MHz, Mid channel, 5785MHz | | |
| Result: Pass | Value: -4.94 dBm / 3 kHz | Limit: 8 dBm / 3 kHz |



| | | |
|--|--------------------------|----------------------|
| 802.11(a), 6Mbps, 5725MHz - 5850MHz, High channel, 5825MHz | | |
| Result: Pass | Value: -5.39 dBm / 3 kHz | Limit: 8 dBm / 3 kHz |





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 149

Transmitting 802.11(a), 6 Mbps, Channel 157

Transmitting 802.11(a), 6 Mbps, Channel 165

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 | 0.2 |
| 0.15 - 30.0 | 10.0 | 9.0 | 9.0 | 9.0 |
| 30.0 - 1000 | 100.0 | 120.0 | 120.0 | 120.0 |
| Above 1000 | 1000.0 | N/A | N/A | 1000.0 |

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

MEASUREMENT UNCERTAINTY

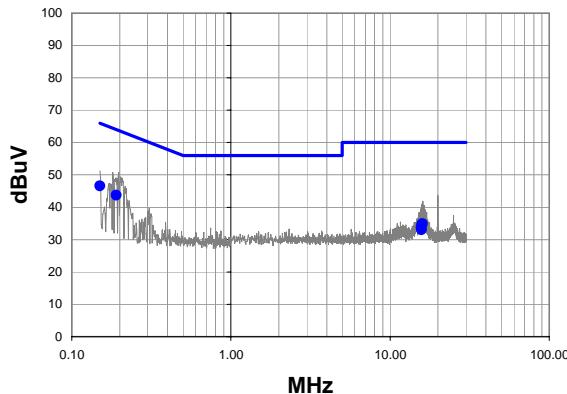
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated 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

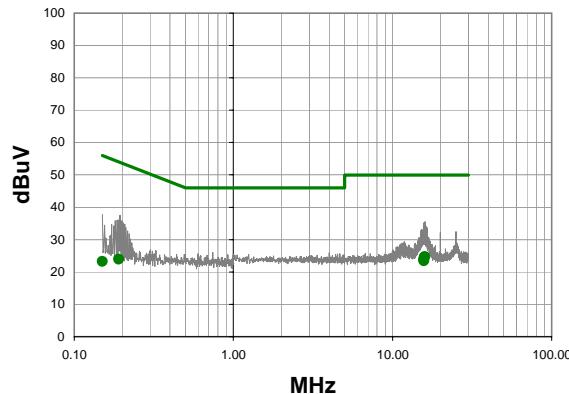
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 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 50Ω.

| | | | | |
|---------------------|---|-------------------|-----------|-------------------------|
| 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 157 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 15 | 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

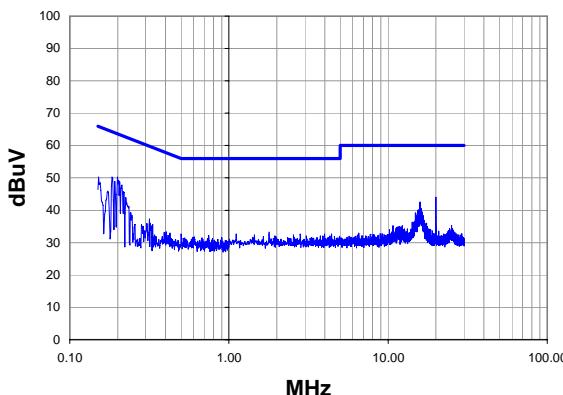
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.150 | 24.6 | 2.0 | 46.6 | 66.0 | -19.4 |
| 0.190 | 22.5 | 1.2 | 43.7 | 64.0 | -20.3 |
| 15.982 | 14.4 | 0.5 | 34.9 | 60.0 | -25.1 |
| 15.844 | 14.1 | 0.5 | 34.6 | 60.0 | -25.4 |
| 15.712 | 13.3 | 0.5 | 33.8 | 60.0 | -26.2 |
| 15.772 | 12.6 | 0.5 | 33.1 | 60.0 | -26.9 |

Average Data - vs - Average Limit

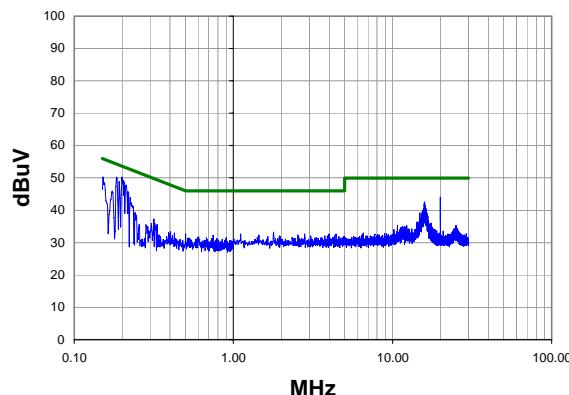
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 15.982 | 4.3 | 0.5 | 24.8 | 50.0 | -25.2 |
| 15.844 | 4.1 | 0.5 | 24.6 | 50.0 | -25.4 |
| 15.712 | 3.3 | 0.5 | 23.8 | 50.0 | -26.2 |
| 15.772 | 3.0 | 0.5 | 23.5 | 50.0 | -26.5 |
| 0.190 | 2.7 | 1.2 | 23.9 | 54.0 | -30.1 |
| 0.150 | 1.2 | 2.0 | 23.2 | 56.0 | -32.8 |

| | | | | |
|---------------------|---|-------------------|----------|-------------------------|
| 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 157 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 16 | Line: | Neutral | Ext. Attenuation: |
| | | | 20 | Results |
| | | | | Pass |

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

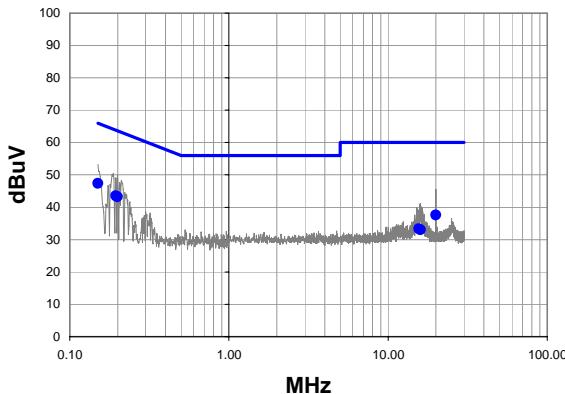
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.199 | 29.2 | 1.0 | 50.2 | 63.6 | -13.4 |
| 0.184 | 28.9 | 1.3 | 50.2 | 64.3 | -14.1 |
| 0.206 | 27.8 | 1.0 | 48.8 | 63.4 | -14.6 |
| 0.193 | 27.7 | 1.2 | 48.9 | 63.9 | -15.1 |
| 0.213 | 26.8 | 1.0 | 47.8 | 63.1 | -15.3 |
| 0.152 | 28.3 | 2.0 | 50.3 | 65.9 | -15.6 |
| 20.000 | 23.6 | 0.5 | 44.1 | 60.0 | -15.9 |
| 0.218 | 24.7 | 1.0 | 45.7 | 62.9 | -17.2 |
| 15.920 | 22.1 | 0.5 | 42.6 | 60.0 | -17.4 |
| 15.850 | 21.9 | 0.5 | 42.4 | 60.0 | -17.6 |
| 15.870 | 21.4 | 0.5 | 41.9 | 60.0 | -18.1 |
| 15.980 | 21.2 | 0.5 | 41.7 | 60.0 | -18.3 |
| 0.225 | 22.9 | 1.0 | 43.9 | 62.6 | -18.8 |
| 0.174 | 24.4 | 1.5 | 45.9 | 64.8 | -18.9 |
| 15.790 | 20.1 | 0.5 | 40.6 | 60.0 | -19.4 |
| 16.190 | 20.1 | 0.5 | 40.6 | 60.0 | -19.4 |
| 15.650 | 19.7 | 0.5 | 40.2 | 60.0 | -19.8 |
| 15.400 | 19.5 | 0.5 | 40.0 | 60.0 | -20.0 |
| 16.150 | 19.5 | 0.5 | 40.0 | 60.0 | -20.0 |
| 16.010 | 19.4 | 0.5 | 39.9 | 60.0 | -20.1 |

Peak Data - vs - Average Limit

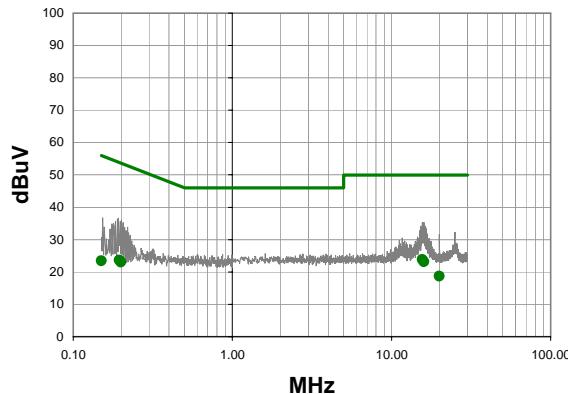
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.199 | 29.2 | 1.0 | 50.2 | 53.6 | -3.4 |
| 0.184 | 28.9 | 1.3 | 50.2 | 54.3 | -4.1 |
| 0.206 | 27.8 | 1.0 | 48.8 | 53.4 | -4.6 |
| 0.193 | 27.7 | 1.2 | 48.9 | 53.9 | -5.1 |
| 0.213 | 26.8 | 1.0 | 47.8 | 53.1 | -5.3 |
| 0.152 | 28.3 | 2.0 | 50.3 | 55.9 | -5.6 |
| 20.000 | 23.6 | 0.5 | 44.1 | 50.0 | -5.9 |
| 0.218 | 24.7 | 1.0 | 45.7 | 52.9 | -7.2 |
| 15.920 | 22.1 | 0.5 | 42.6 | 50.0 | -7.4 |
| 15.850 | 21.9 | 0.5 | 42.4 | 50.0 | -7.6 |
| 15.870 | 21.4 | 0.5 | 41.9 | 50.0 | -8.1 |
| 15.980 | 21.2 | 0.5 | 41.7 | 50.0 | -8.3 |
| 0.225 | 22.9 | 1.0 | 43.9 | 52.6 | -8.8 |
| 0.174 | 24.4 | 1.5 | 45.9 | 54.8 | -8.9 |
| 15.790 | 20.1 | 0.5 | 40.6 | 50.0 | -9.4 |
| 16.190 | 20.1 | 0.5 | 40.6 | 50.0 | -9.4 |
| 15.650 | 19.7 | 0.5 | 40.2 | 50.0 | -9.8 |
| 15.400 | 19.5 | 0.5 | 40.0 | 50.0 | -10.0 |
| 16.150 | 19.5 | 0.5 | 40.0 | 50.0 | -10.0 |
| 16.010 | 19.4 | 0.5 | 39.9 | 50.0 | -10.1 |

| | | | | |
|---------------------|---|-------------------|-----------|-------------------------|
| 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 165 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 17 | 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

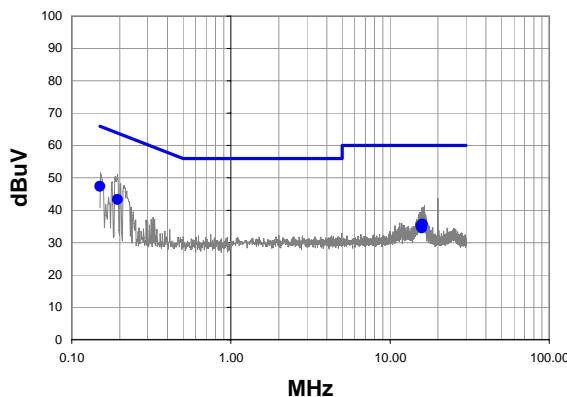
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.150 | 25.4 | 2.0 | 47.4 | 66.0 | -18.6 |
| 0.195 | 22.4 | 1.1 | 43.5 | 63.8 | -20.3 |
| 0.199 | 22.2 | 1.0 | 43.2 | 63.7 | -20.4 |
| 20.000 | 17.1 | 0.5 | 37.6 | 60.0 | -22.4 |
| 15.586 | 12.9 | 0.5 | 33.4 | 60.0 | -26.6 |
| 15.962 | 12.6 | 0.5 | 33.1 | 60.0 | -26.9 |

Average Data - vs - Average Limit

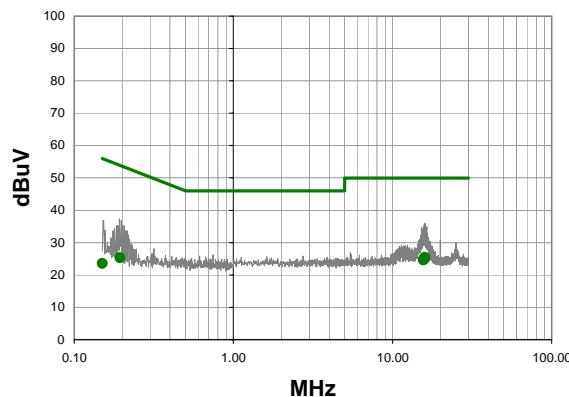
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 15.586 | 3.4 | 0.5 | 23.9 | 50.0 | -26.1 |
| 15.962 | 2.7 | 0.5 | 23.2 | 50.0 | -26.8 |
| 0.195 | 2.5 | 1.1 | 23.6 | 53.8 | -30.2 |
| 0.199 | 2.0 | 1.0 | 23.0 | 53.7 | -30.6 |
| 20.000 | -1.8 | 0.5 | 18.7 | 50.0 | -31.3 |
| 0.150 | 1.4 | 2.0 | 23.4 | 56.0 | -32.6 |

| | | | | |
|---------------------|---|-------------------|----------|-------------------------|
| 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 165 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 18 | 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

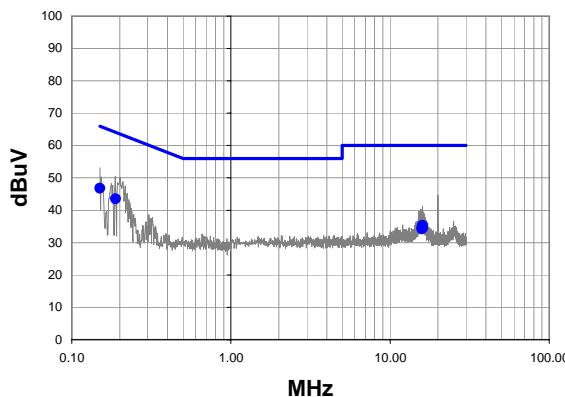
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.150 | 25.4 | 2.0 | 47.4 | 66.0 | -18.6 |
| 0.194 | 22.2 | 1.1 | 43.3 | 63.9 | -20.5 |
| 15.984 | 15.2 | 0.5 | 35.7 | 60.0 | -24.3 |
| 15.912 | 15.0 | 0.5 | 35.5 | 60.0 | -24.5 |
| 15.648 | 14.6 | 0.5 | 35.1 | 60.0 | -24.9 |
| 15.848 | 14.0 | 0.5 | 34.5 | 60.0 | -25.5 |

Average Data - vs - Average Limit

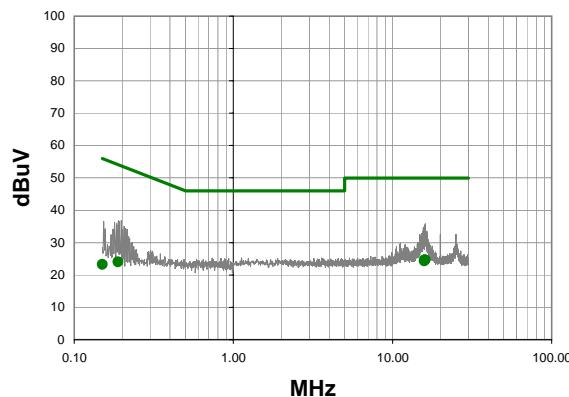
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 15.984 | 4.9 | 0.5 | 25.4 | 50.0 | -24.6 |
| 15.912 | 4.6 | 0.5 | 25.1 | 50.0 | -24.9 |
| 15.848 | 4.4 | 0.5 | 24.9 | 50.0 | -25.1 |
| 15.648 | 4.2 | 0.5 | 24.7 | 50.0 | -25.3 |
| 0.194 | 4.2 | 1.1 | 25.3 | 53.9 | -28.5 |
| 0.150 | 1.5 | 2.0 | 23.5 | 56.0 | -32.5 |

| | | | | |
|---------------------|---|-------------------|-----------|-------------------------|
| 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 149 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 19 | 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

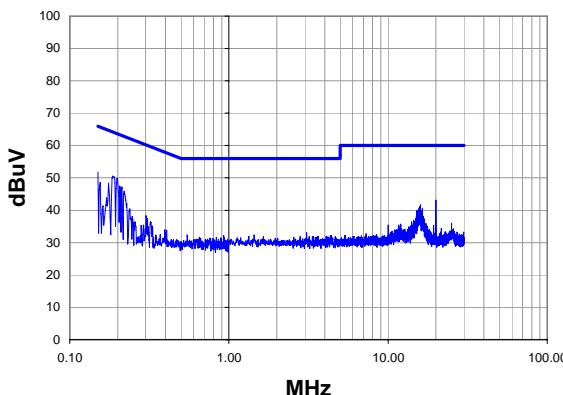
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.150 | 24.8 | 2.0 | 46.8 | 66.0 | -19.2 |
| 0.189 | 22.3 | 1.2 | 43.5 | 64.1 | -20.6 |
| 15.982 | 14.8 | 0.5 | 35.3 | 60.0 | -24.7 |
| 15.914 | 14.2 | 0.5 | 34.7 | 60.0 | -25.3 |
| 16.046 | 14.0 | 0.5 | 34.5 | 60.0 | -25.5 |
| 15.852 | 13.8 | 0.5 | 34.3 | 60.0 | -25.7 |

Average Data - vs - Average Limit

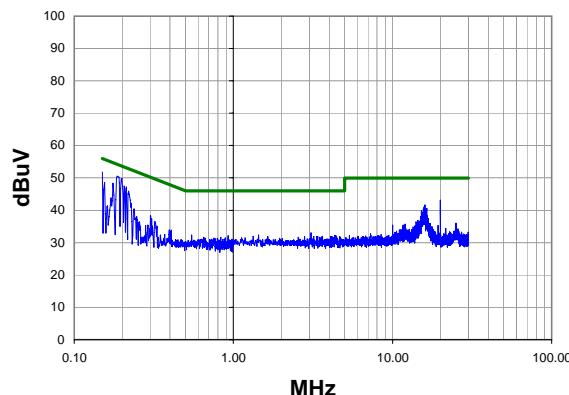
| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 15.982 | 4.2 | 0.5 | 24.7 | 50.0 | -25.3 |
| 16.046 | 4.2 | 0.5 | 24.7 | 50.0 | -25.3 |
| 15.914 | 4.1 | 0.5 | 24.6 | 50.0 | -25.4 |
| 15.852 | 3.9 | 0.5 | 24.4 | 50.0 | -25.6 |
| 0.189 | 2.8 | 1.2 | 24.0 | 54.1 | -30.1 |
| 0.150 | 1.2 | 2.0 | 23.2 | 56.0 | -32.8 |

| | | | | |
|---------------------|---|-------------------|----------|-------------------------|
| 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 149 | | | |
| Deviations: | No deviations. | | | |
| Comments: | | | | |
| Test Specifications | | Test Method | | |
| FCC 15.207:2006 | | ANSI C63.4:2003 | | |
| Run # | 20 | 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) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.186 | 29.3 | 1.3 | 50.6 | 64.2 | -13.6 |
| 0.199 | 28.8 | 1.0 | 49.8 | 63.6 | -13.8 |
| 0.150 | 29.8 | 2.0 | 51.8 | 66.0 | -14.2 |
| 0.206 | 26.5 | 1.0 | 47.5 | 63.4 | -15.9 |
| 0.213 | 26.2 | 1.0 | 47.2 | 63.1 | -15.9 |
| 0.176 | 26.9 | 1.5 | 48.4 | 64.7 | -16.3 |
| 20.000 | 22.7 | 0.5 | 43.2 | 60.0 | -16.8 |
| 0.220 | 24.9 | 1.0 | 45.9 | 62.8 | -16.9 |
| 0.155 | 26.7 | 1.9 | 48.6 | 65.7 | -17.1 |
| 15.970 | 21.2 | 0.5 | 41.7 | 60.0 | -18.3 |
| 15.820 | 20.7 | 0.5 | 41.2 | 60.0 | -18.8 |
| 15.710 | 20.3 | 0.5 | 40.8 | 60.0 | -19.2 |
| 16.400 | 20.1 | 0.5 | 40.6 | 60.0 | -19.4 |
| 15.650 | 19.9 | 0.5 | 40.4 | 60.0 | -19.6 |
| 15.170 | 19.5 | 0.5 | 40.0 | 60.0 | -20.0 |
| 15.790 | 19.4 | 0.5 | 39.9 | 60.0 | -20.1 |
| 16.040 | 19.3 | 0.5 | 39.8 | 60.0 | -20.2 |
| 16.260 | 19.3 | 0.5 | 39.8 | 60.0 | -20.2 |
| 16.100 | 19.2 | 0.5 | 39.7 | 60.0 | -20.3 |
| 15.480 | 18.9 | 0.5 | 39.4 | 60.0 | -20.6 |

Peak Data - vs - Average Limit

| Freq (MHz) | Amplitude (dBuV) | Factor (dB) | Adjusted dBuV | Spec. Limit dBuV | Compared to Spec. (dB) |
|------------|------------------|-------------|---------------|------------------|------------------------|
| 0.186 | 29.3 | 1.3 | 50.6 | 54.2 | -3.6 |
| 0.199 | 28.8 | 1.0 | 49.8 | 53.6 | -3.8 |
| 0.150 | 29.8 | 2.0 | 51.8 | 56.0 | -4.2 |
| 0.206 | 26.5 | 1.0 | 47.5 | 53.4 | -5.9 |
| 0.213 | 26.2 | 1.0 | 47.2 | 53.1 | -5.9 |
| 0.176 | 26.9 | 1.5 | 48.4 | 54.7 | -6.3 |
| 20.000 | 22.7 | 0.5 | 43.2 | 50.0 | -6.8 |
| 0.220 | 24.9 | 1.0 | 45.9 | 52.8 | -6.9 |
| 0.155 | 26.7 | 1.9 | 48.6 | 55.7 | -7.1 |
| 15.970 | 21.2 | 0.5 | 41.7 | 50.0 | -8.3 |
| 15.820 | 20.7 | 0.5 | 41.2 | 50.0 | -8.8 |
| 15.710 | 20.3 | 0.5 | 40.8 | 50.0 | -9.2 |
| 16.400 | 20.1 | 0.5 | 40.6 | 50.0 | -9.4 |
| 15.650 | 19.9 | 0.5 | 40.4 | 50.0 | -9.6 |
| 15.170 | 19.5 | 0.5 | 40.0 | 50.0 | -10.0 |
| 15.790 | 19.4 | 0.5 | 39.9 | 50.0 | -10.1 |
| 16.040 | 19.3 | 0.5 | 39.8 | 50.0 | -10.2 |
| 16.260 | 19.3 | 0.5 | 39.8 | 50.0 | -10.2 |
| 16.100 | 19.2 | 0.5 | 39.7 | 50.0 | -10.3 |
| 15.480 | 18.9 | 0.5 | 39.4 | 50.0 | -10.6 |



