

Welch Allyn Protocol, Inc.

Propaq 802 LTRN Radio

Testing Conducted According to
Test Plan: FCC, Propaq 802 LTRN
Part No.: 830-0861-00, Rev. A

November 21, 2005

Report No. PROT0266

Report Prepared By



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

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FCC Test Report

Certificate of Test
Issue Date: November 21, 2005
Welch Allyn Protocol, Inc.
Model: Propaq 802 LTRN

Emissions				
Test Description	Specification	Test Method	Pass	Fail
AC Powerline Conducted Emissions	FCC 15.207 AC Powerline Conducted Emissions:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Occupied Bandwidth	FCC 15.247(a) Occupied Bandwidth:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Channel Spacing	FCC 15.247(a)(1) Channel Spacing:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dwell Time	FCC 15.247(a)(1) Dwell Time:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Number of Hopping Frequencies	FCC 15.247(a)(1) Number of Hopping Frequencies:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Output Power	FCC 15.247(b) Output Power:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Band Edge Compliance	FCC 15.247(d) Band Edge Compliance:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Conducted Emissions	FCC 15.247(d) Spurious Conducted Emissions:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Radiated Emissions	FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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:



Greg Kiemel, Director of Engineering

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 recognized 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 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. 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.



200629-0
200630-0
200676-0

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. USA0401C.



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).



Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.



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 and R-1025, Irvine: C-2094 and R-1943, Newberg: C-1877 and R-1760, Sultan: R-871, C-1784 and R-1761).



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>

What is measurement uncertainty?

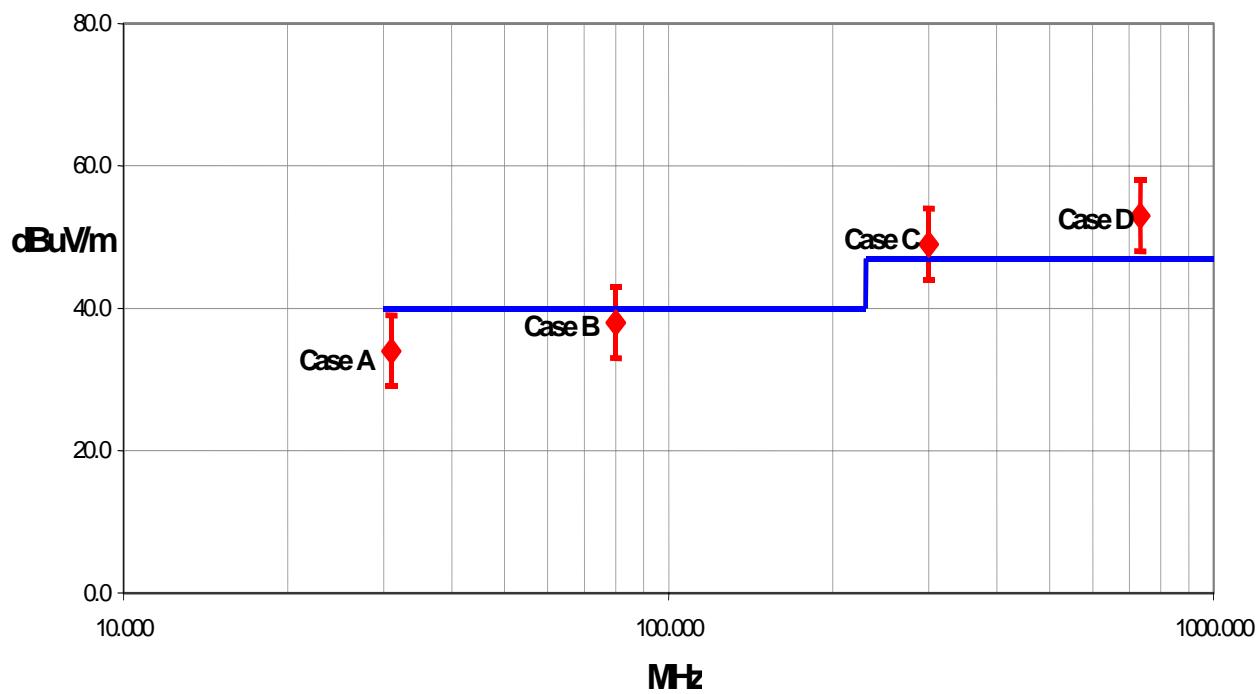
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below.



Test Result Scenarios:

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

Radiated Emissions ≤ 1 GHz		Value (dB)							
Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna		3m	10m
		3m	10m	3m	10m	3m	10m		
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25		
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 - 2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49		

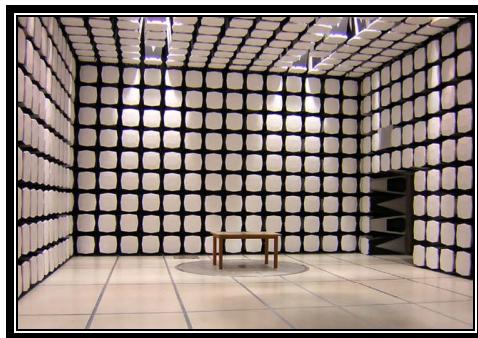
Radiated Emissions > 1 GHz		Value (dB)							
	Probability Distribution	Without High Pass Filter				With High Pass Filter			
		3m	10m	3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25		+ 1.29 - 1.25		+ 1.38 - 1.35			
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)		+ 2.57 - 2.51		+ 2.57 - 2.51	+ 2.76 - 2.70			

Conducted Emissions		
	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $uc(y)$	normal	1.48
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.97

Radiated Immunity		
	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $uc(y)$	normal	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.11

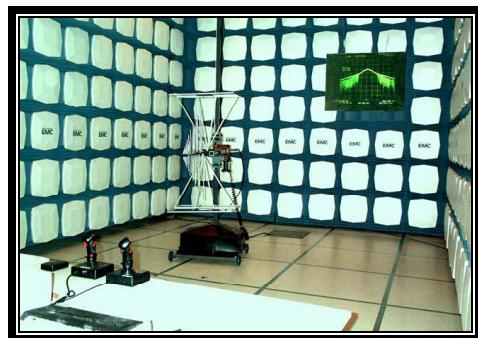
Conducted Immunity		
	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $uc(y)$	normal	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.10

Legend		
$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties		
U = combined standard uncertainty multiplied by the coverage factor: k . This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then $k=3$ (CL of 99.7%) can be used. Please note that with a coverage factor of one, $uc(y)$ yields a confidence level of only 68%.		



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 – EV10

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:	Propaq 802 LTRN
First Date of Test:	November 10, 2005
Last Date of Test:	November 16, 2005
Receipt Date of Samples:	November 10, 2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	PCMCIA Interface and RF Port

Functional Description of the EUT (Equipment Under Test):

Monet is the project name used during development and referred to in initial documentation. The product being evaluated is marketed as the Propaq 802 LTRN. The radio in Propaq 802 LTRN is a FHSS device based upon approved transmitter module manufactured by Symbol Technology. This radio will be installed inside a patient monitoring unit that can be body-worn on a neck strap (non metallic). The Propaq 802 LTRN and will be marketed by Welch Allyn. Propaq 802 LTRN is battery operated only with integral antenna. The max. RF conducted output power of radio is 100mW and the antenna gain is -6.8 dBi.

The data gathered by Monet can only be communicated with a Welch Allyn Acuity Central Monitoring Station via a Symbol FHSS Access point. The Monet firmware and communication protocol are controlled exclusively by Welch Allyn. The communication protocol has redundant controls that limit the maximum duty cycle at 14%.

Client Justification for EUT Selection:

Representative of production units.

Client Justification for Test Selection:

These tests are required for the FCC certification of the Propaq 802 LTRN under FCC 15.247.

EUT Photo

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	11/10/2005	Spurious Conducted Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	11/10/2005	Band Edge Compliance	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	11/10/2005	Occupied Bandwidth	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	11/10/2005	Channel Spacing	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	11/10/2005	Number of Hopping Frequencies	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	11/10/2005	Dwell Time	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	11/10/2005	Output Power	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	11/14/2005	Spurious Radiated Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
9	11/16/2005	AC Power Line Conducted Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	The scheduled testing was completed.

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

5 channels at mid-band

Operating Modes Investigated:

Hopping

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	12/15/2004	12 mo

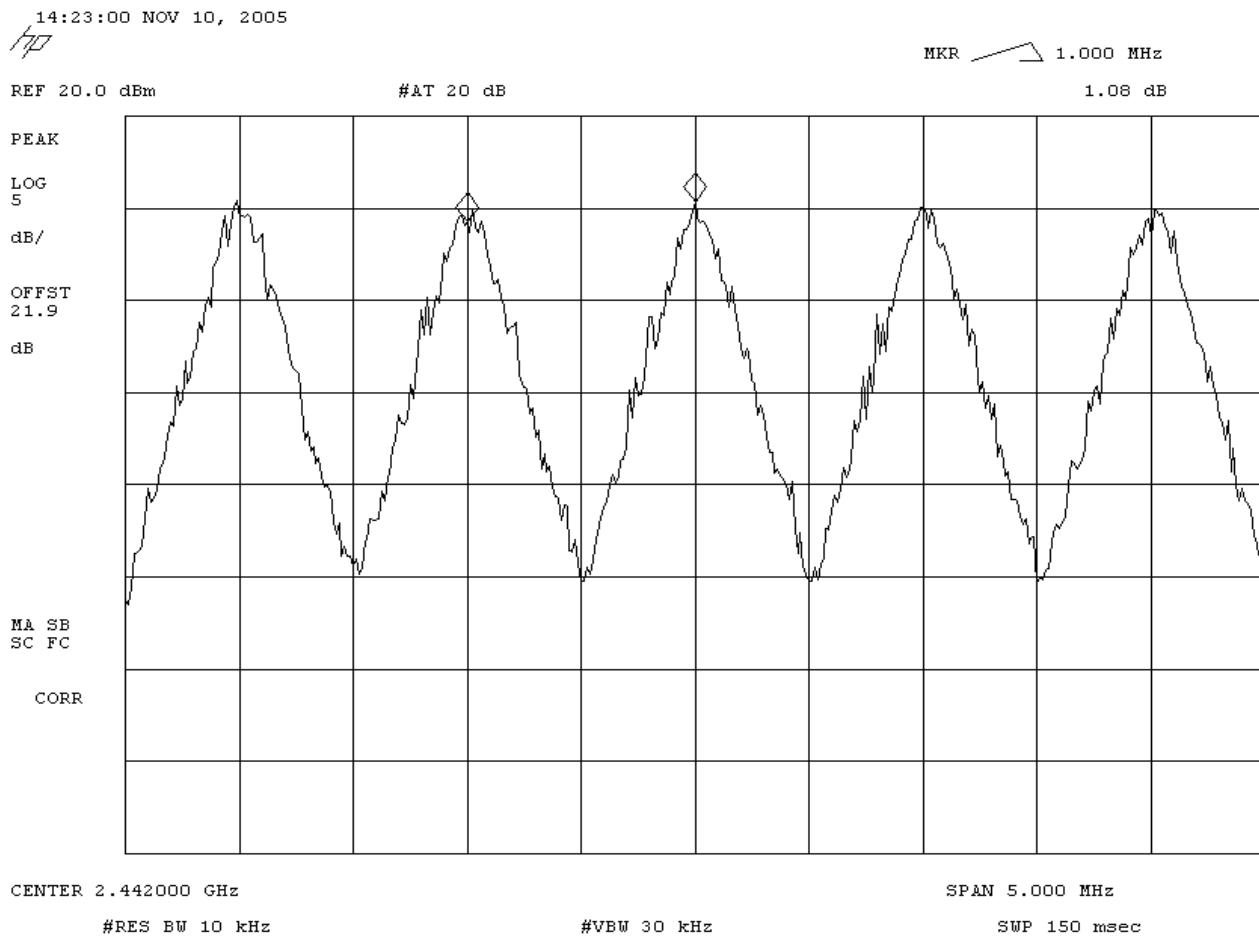
Test Description

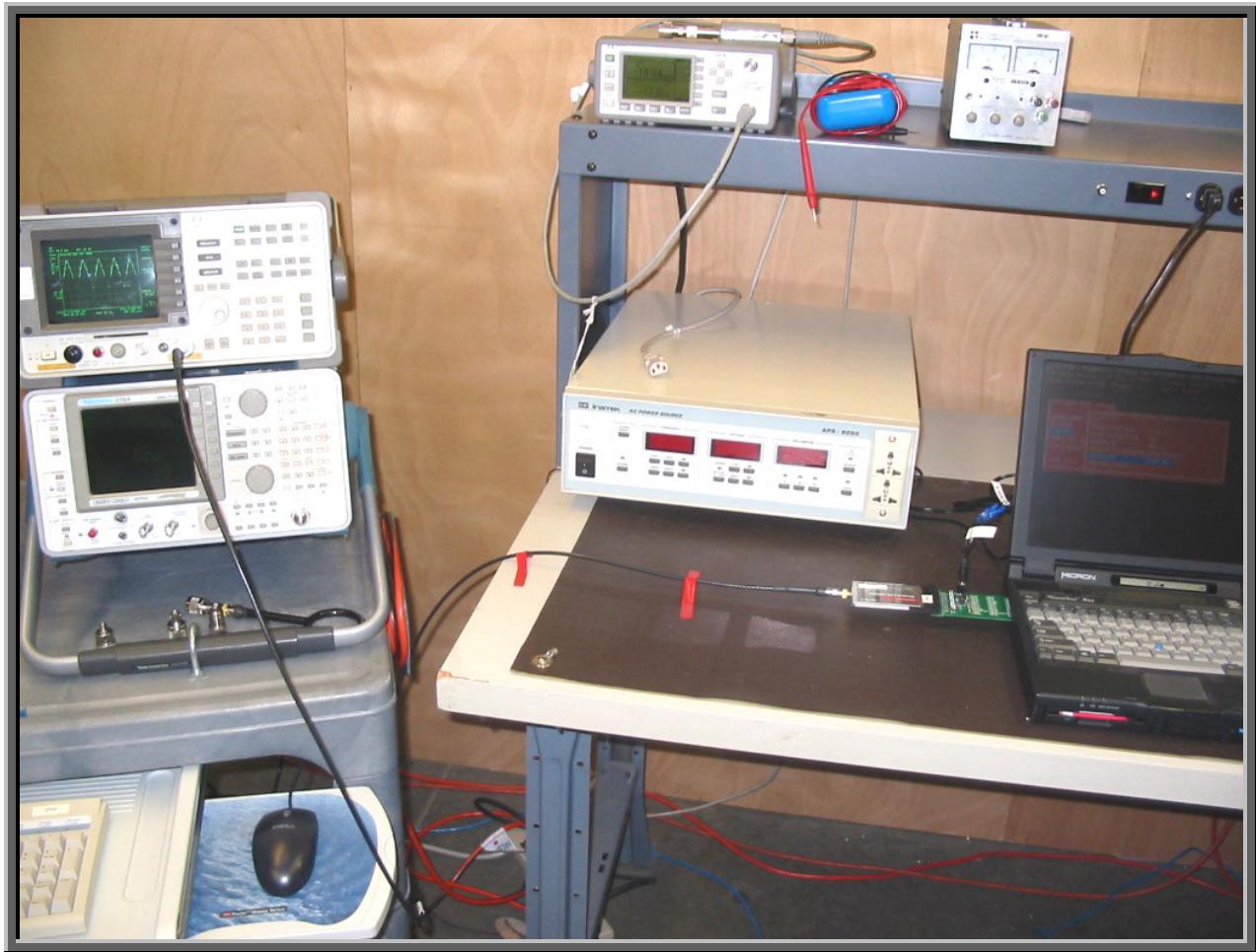
Requirement: Per 47 CFR 15.247(a)(1), the hopping channel carrier frequencies must be separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The measurement is made with the spectrum analyzer's resolution bandwidth set to greater than or equal to 1% of the span, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The carrier frequency separation was measured between each of 5 hopping channels in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

Completed by:A handwritten signature in blue ink, appearing to read "U. K. P.", is placed over a white rectangular box. The box is part of a larger form with a green header and a green footer.

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(a)(1) Channel Spacing		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
The hopping channel carrier frequencies must be separated by the 20dB bandwidth of the hopping channel.			
RESULTS			
Pass			
Other		 Tested By:	
Channel Spacing			





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Mid

Operating Modes Investigated:

Hopping

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(a)(1), the average dwell time per hopping channel is measured. For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

Frequency hopping systems operating in the 5725-5850 MHz band shall use at least 75 hopping frequencies. The maximum 20 dB bandwidth of the hopping channel is 1 MHz. The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Configuration: The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

Completed by:

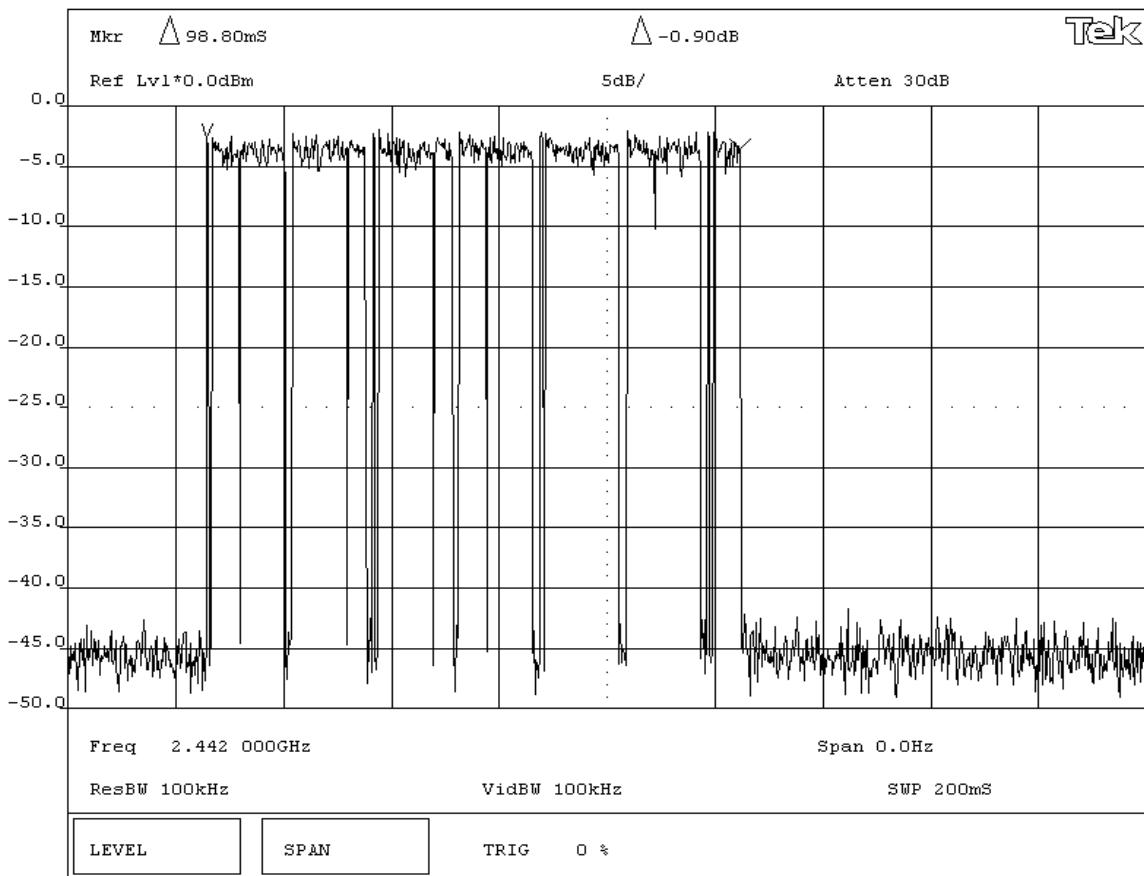
A handwritten signature in blue ink, appearing to read "U. K. J." followed by a stylized surname.

NORTHWEST
EMC

Dwell Time

Rev BETA
01/30/01

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Customer Ref. No.:	Monet	Power:	5VDC
		Job Site:	EV06
TEST SPECIFICATIONS			
Specification: 47 CFR 15.247(a)(1)		Year: 2005-9	Method: ANSI C63.4
Year: 2003			
SAMPLE CALCULATIONS			
Total Dwell time = (Dwell Time during a single transmission) X (Number of transmissions during a period), where period = 0.4 s X number of channels			
COMMENTS			
There are 79 hopping channels. Therefore, period is equal to 0.4s X 79 channels = 31.6 seconds			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate. Hopping carrier.			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period equal to: 0.4 seconds multiplied by the number of hopping channels employed.			
RESULTS		DWELL TIME DURING A SINGLE TRANSMISSION	
Pass		98.8 mS	
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Time of Occupancy (Dwell Time) - Single Transmission 200mS			



KNOB 2

KNOB 1

KEYPAD

Tektronix 2784

NORTHWEST
EMC

Dwell Time

Rev BETA
01/30/01

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Tested by:	Greg Kiemel
Customer Ref. No.:	Monet	Power:	5VDC

TEST SPECIFICATIONS

Specification: 47 CFR 15.247(a)(1) Year: 2005-9 Method: ANSI C63.4 Year: 2003

SAMPLE CALCULATIONS

Total Dwell time = (Dwell Time during a single transmission) X (Number of transmissions during a period), where period = 0.4 s X number of channels

COMMENTS

There are 79 hopping channels. Therefore, period is equal to 0.4s X 79 channels = 31.6 seconds

EUT OPERATING MODES

Modulated by PRBS at maximum data rate. Hopping carrier.

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period equal to: 0.4 seconds multiplied by the number of hopping channels employed.

RESULTS	Number of Transmissions	Time of Occupance During 31.6 second period
Pass	4	0.3952 seconds

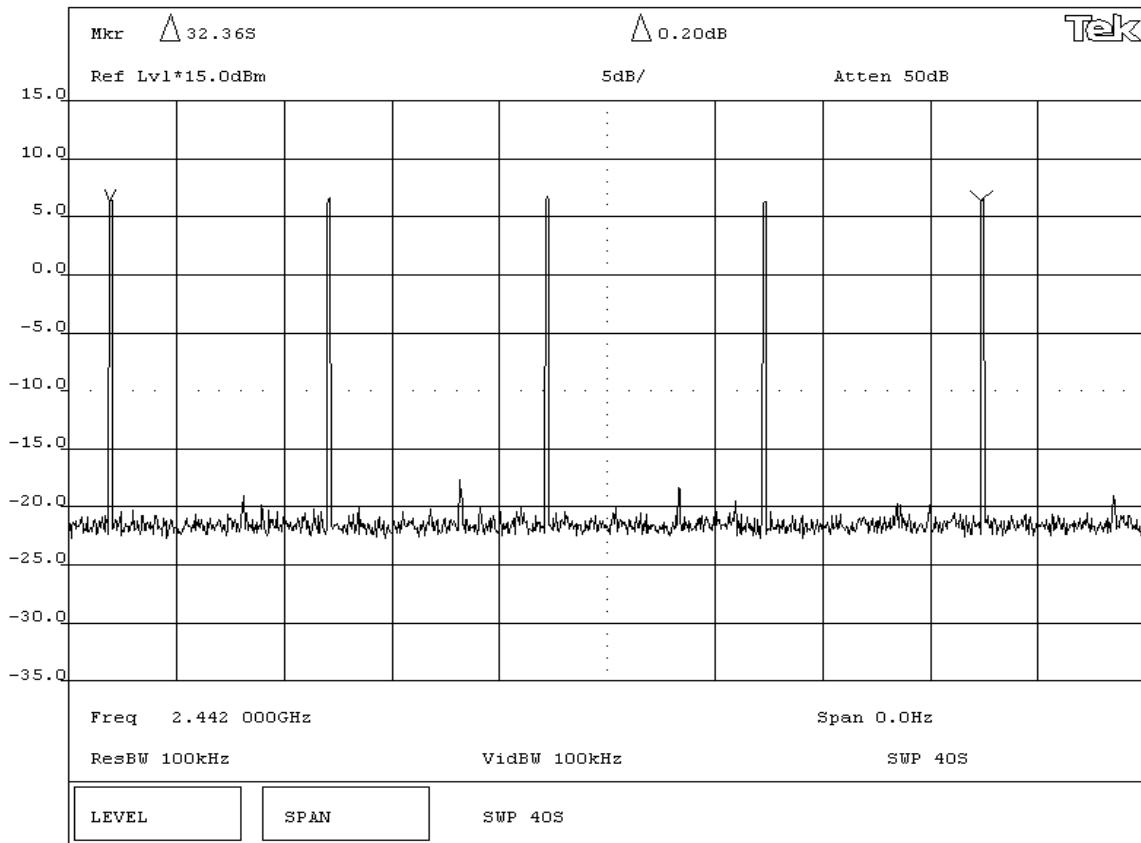
SIGNATURE



Tested By: _____

DESCRIPTION OF TEST

Time of Occupancy (Dwell Time) - Number of transmissions during a 40 S period



KNOB 2

KNOB 1

KEYPAD

Tektronix 2784



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

All

Operating Modes Investigated:

Hopping

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
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AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	12/15/2004	12 mo

Test Description

Requirement: Per 47 CFR 15.247(a)(1)(iii), the number of hopping channels must be at least 75. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

Completed by:

NORTHWEST
EMC

Number of Hopping Frequencies

REV
df1.0
11/17/2003

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(a)(1) Number of Hopping Frequencies	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

Method: ANOVA

COMMENTS

Comments

EUT OPERATING MODES

DEVIATIONS FROM TEST STANDARD

No deviations

REQUIREMENTS

Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.

RESULTS

Page

Other

U.K. 1

Tested By:

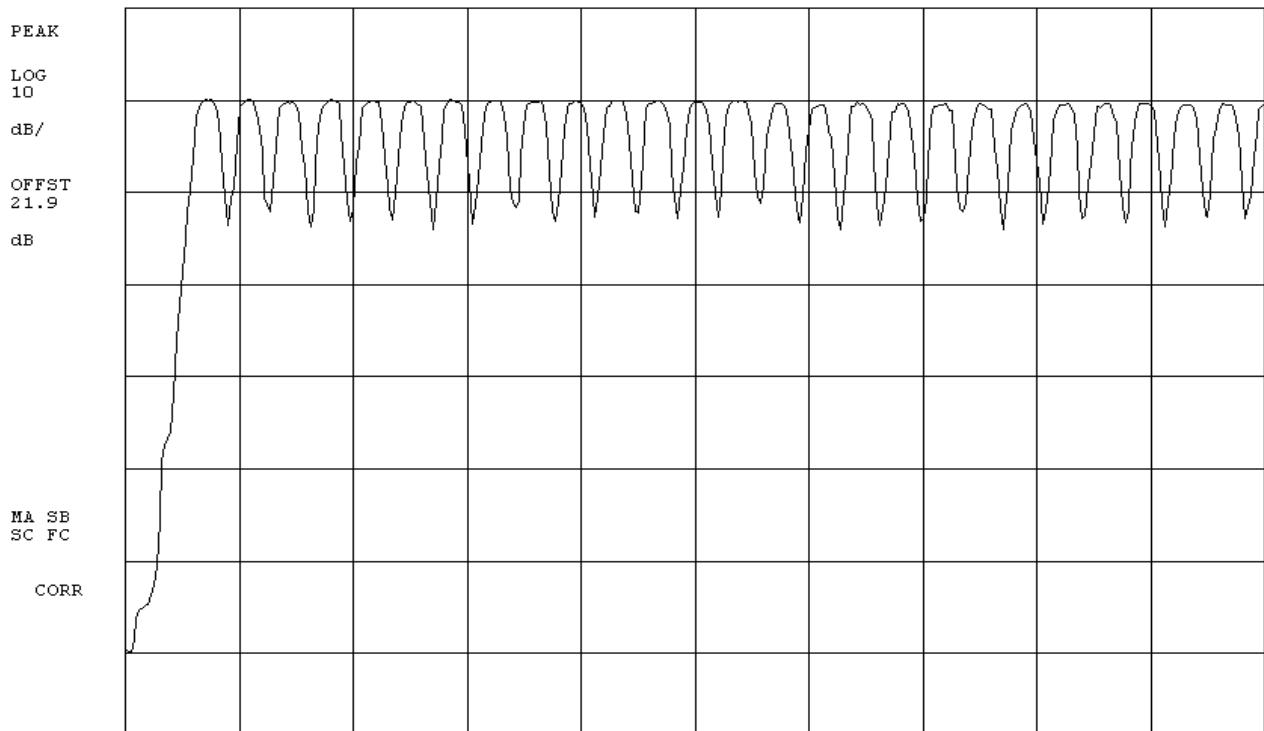
Number of Hopping Frequencies

2.4 GHz - 2.428 GHz

14:48:28 NOV 10, 2005

REF 30.0 dBm

#AT 20 dB



START 3 40000 CU-

STOP 3 43888 CU-

#PFS BW 100 kHz

#VBW 300 kHz

SWR 30.0 msec

Number of Hopping Frequencies

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(a)(1) Number of Hopping Frequencies		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.			
RESULTS			
Pass			
Other	 Tested By: _____		
Number of Hopping Frequencies 2.4275 GHz - 2.4560 GHz			

15:29:56 NOV 10, 2005



REF 30.0 dBm

#AT 20 dB

PEAK

LOG

10

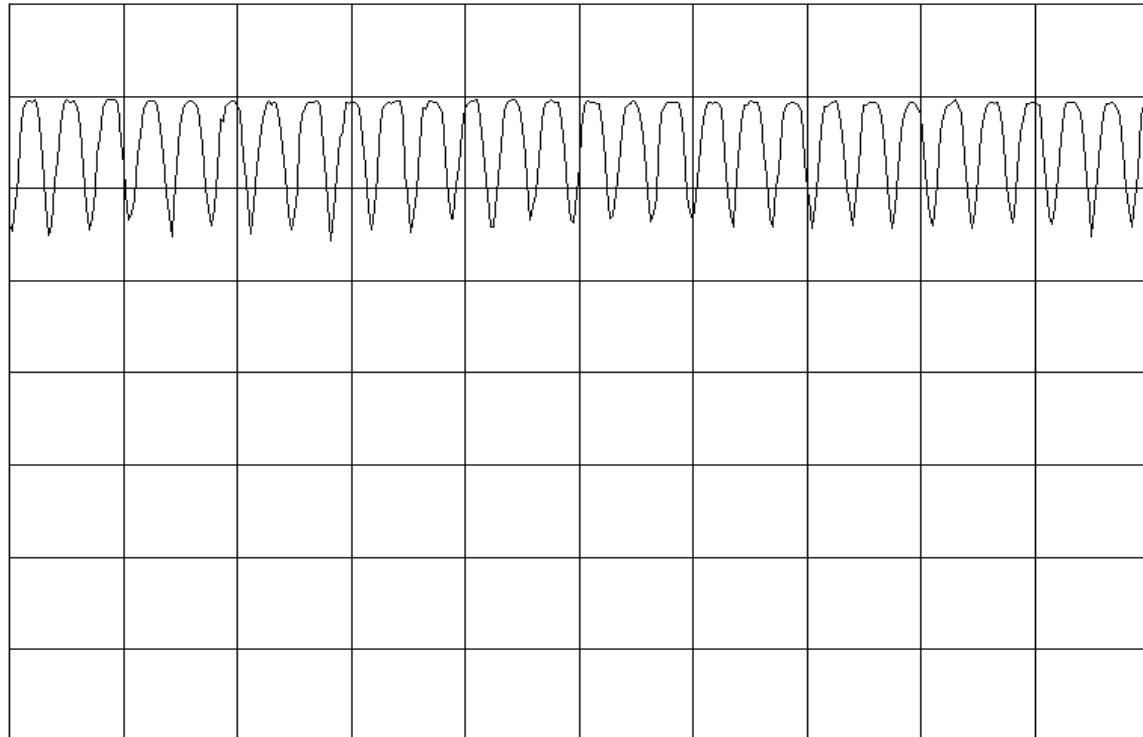
dB/

OFFST
21.9

dB

MA SB
SC FC

CORR



START 2.42750 GHz

STOP 2.45600 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 20.0 msec

Number of Hopping Frequencies

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(a)(1) Number of Hopping Frequencies		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.			
RESULTS			
Pass			
Other	 Tested By:		
Number of Hopping Frequencies 2.4555 GHz - 2.4840 GHz			

15:34:29 NOV 10, 2005



REF 30.0 dBm

#AT 20 dB

PEAK

LOG

10

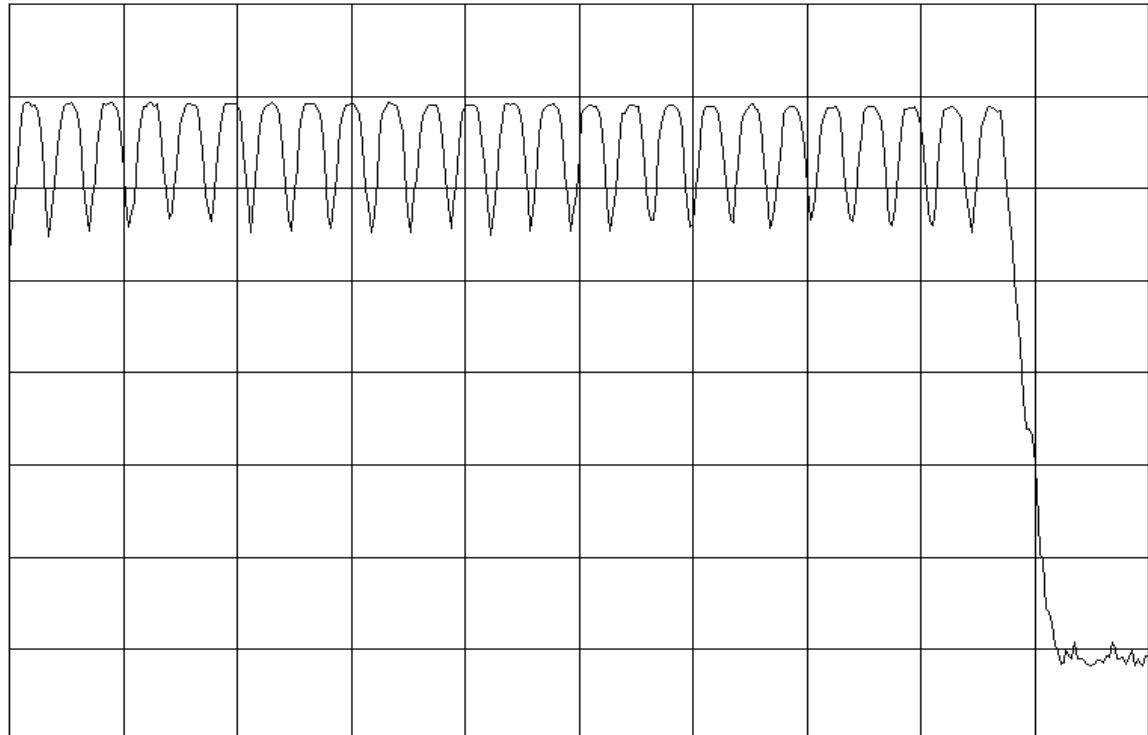
dB/

OFFST
21.9

dB

MA SB
SC FC

CORR



START 2.45550 GHz

STOP 2.48400 GHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 20.0 msec



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Low

Mid

High

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	12/15/2004	12 mo

Test Description

Requirement: Per 47 CFR 15.247(a)(1), the 20 dB bandwidth of a hopping channel must be less than or equal to the channel separation. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have 20 dB bandwidths up to 1.5 times the channel separation, provided the systems operate with an output power no greater than 125 mW.

Per 47 CFR 15.247(a)(1)(i-iii), the maximum 20 dB bandwidth for frequency hopping systems operating in the 902-928 MHz band is 500 kHz. The maximum 20 dB bandwidth for frequency hopping systems operating in the 5725 – 5850 MHz band is 1 MHz.

The measurement is made with the spectrum analyzer's resolution bandwidth set to $\geq 1\%$ of the 20dB bandwidth, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: 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 in a no hop mode.

Completed by:

NORTHWEST
EMC

Occupied Bandwidth

Rev BETA
01/30/01

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Customer Ref. No.:	Monet	Power:	5VDC

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(a)	Year:	2005-9	Method:	ANSI C63.4	Year:	2003
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SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, 802.11 modulation

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Frequency hopping systems operating in the 2400 - 2483.5 MHz band may have 20 dB bandwidths up to 1.5 times the channel separation, provided the systems operate with an output power no greater than 125 mW

RESULTS

	BANDWIDTH
Pass	1.015 MHz

SIGNATURE

Greg Kiemel

Tested By: _____

DESCRIPTION OF TEST

Occupied Bandwidth - Low Channel

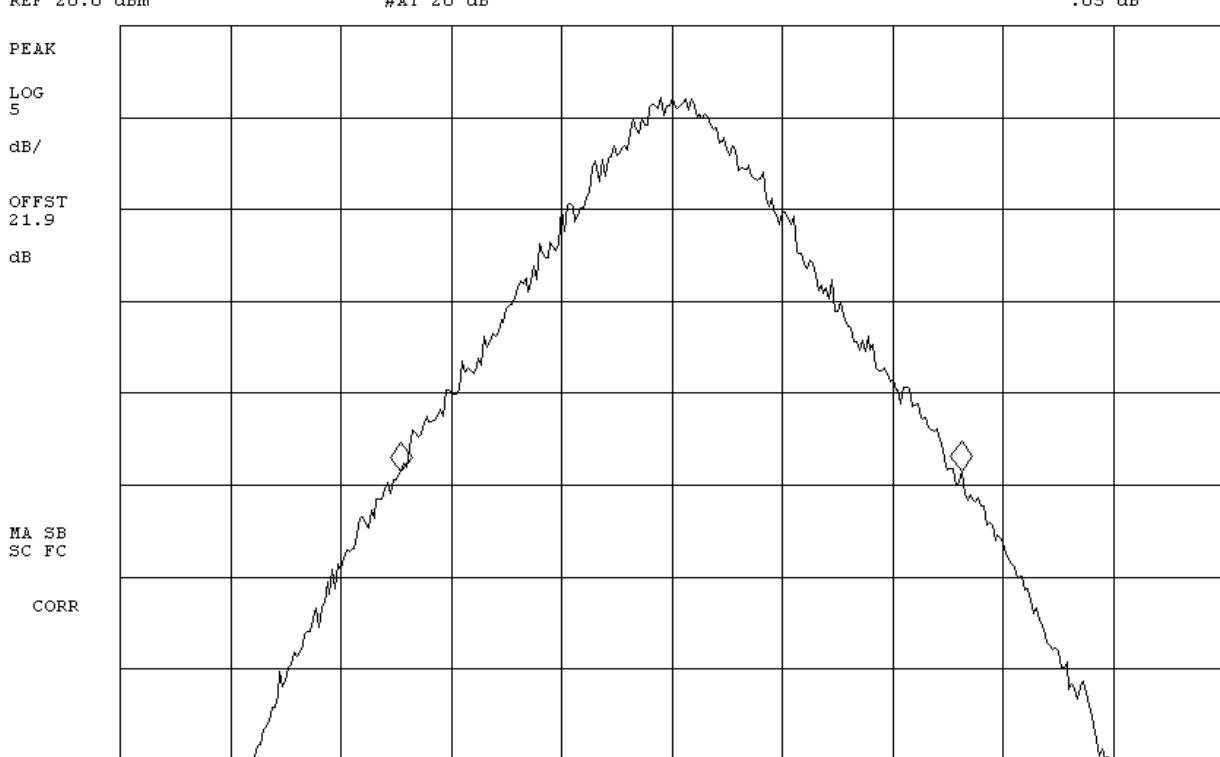
13:09:51 NOV 10, 2005

HP

MKR 1.015 MHz

.05 dB

No



NORTHWEST
EMC

Occupied Bandwidth

Rev BETA
01/30/01

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Customer Ref. No.:	Monet	Power:	5VDC

TEST SPECIFICATIONS

Specification:	47 CFR 15.247(a)	Year:	2005-9	Method:	ANSI C63.4	Year:	2003
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SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, 802.11 modulation

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Frequency hopping systems operating in the 2400 - 2483.5 MHz band may have 20 dB bandwidths up to 1.5 times the channel separation, provided the systems operate with an output power no greater than 125 mW

RESULTS	BANDWIDTH
Pass	995 kHz

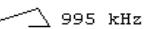
SIGNATURE

Greg Kiemel
Tested By: _____

DESCRIPTION OF TEST

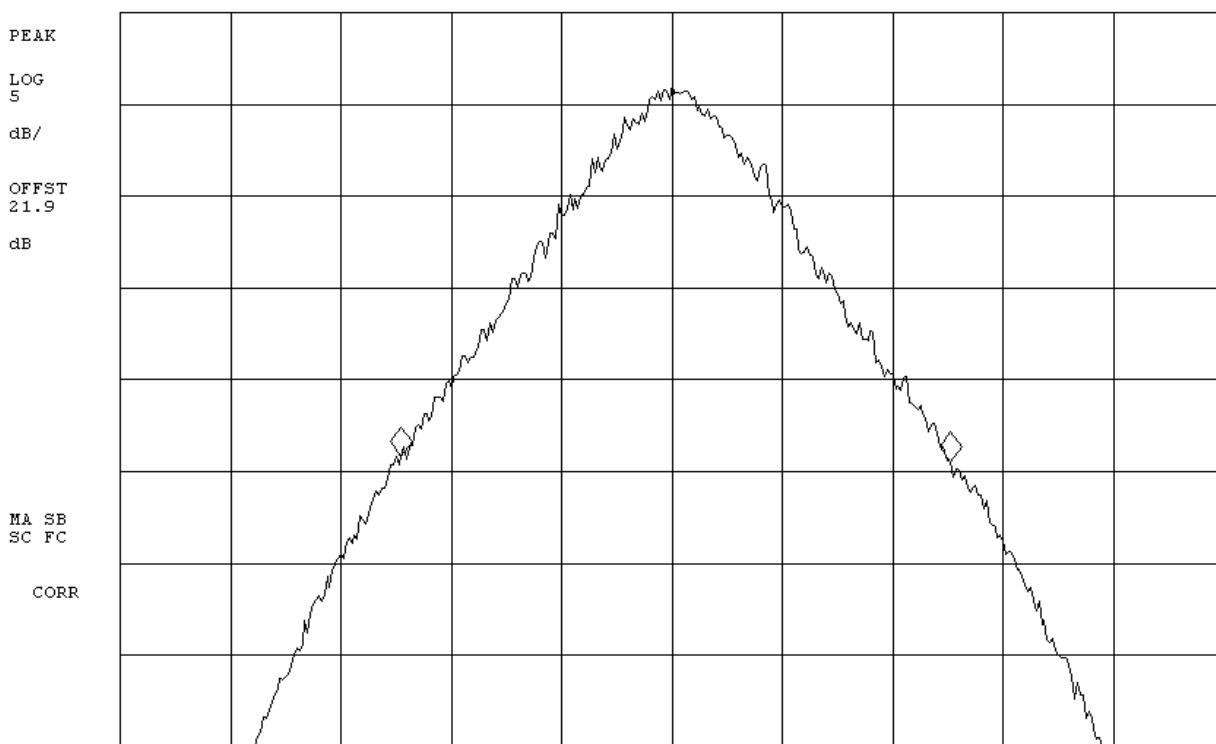
Occupied Bandwidth - Mid Channel

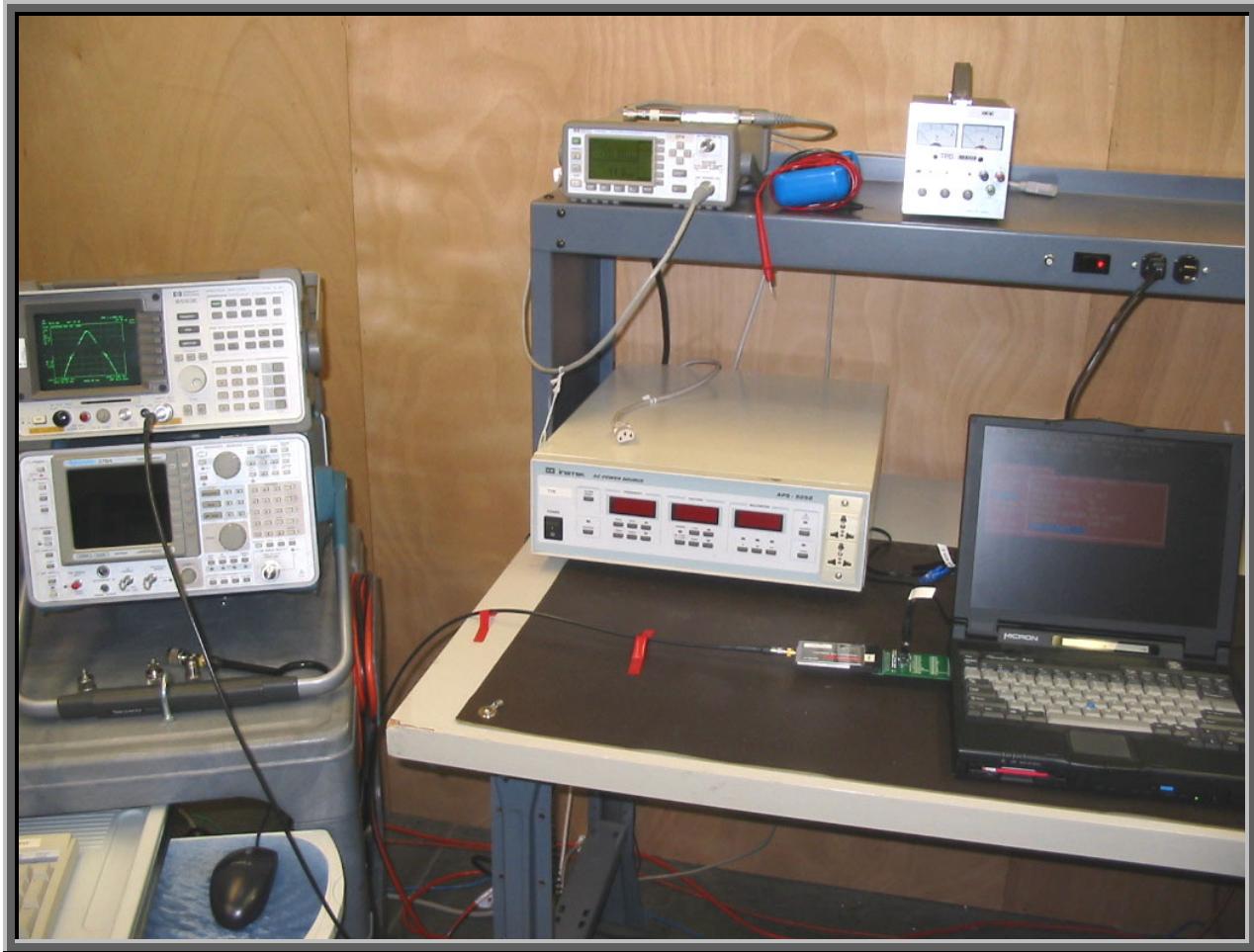
14:07:27 NOV 10, 2005

*HP*MKR  995 kHz

-.26 dB

No





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Mid

Low

High

Operating Modes Investigated:

Hopping

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	12/15/2004	12 mo

Test Description

Requirement: Per 47 CFR 15.247(b)(1-2), the peak output power shall be measured. For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

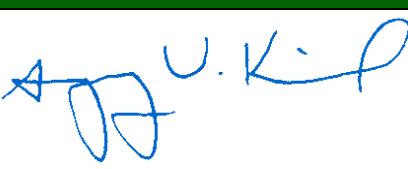
For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

The measurement is made using a spectrum analyzer using the following settings:

- Resolution bandwidth set to greater than the 6 dB bandwidth of the modulated carrier, and
- The video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The peak output power 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 a spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

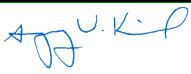
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

Completed by:


NORTHWEST
EMC

Output Power

Rev BETA
01/30/01

EUT: Propaq 802 LTRN	Work Order: PROT0266		
Serial Number: PG28B9	Date: 11/10/05		
Customer: Welch Allyn Protocol, Inc.	Temperature: 22°		
Attendees: None	Humidity: 38%		
Customer Ref. No.: Monet	Power: 5VDC		
TEST SPECIFICATIONS			
Specification: 47 CFR 15.247(b)	Year: 2005-9	Method: ANSI C63.4	Year: 2003
SAMPLE CALCULATIONS			
COMMENTS			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
Maximum peak conducted output power does not exceed 1 Watt			
RESULTS		AMPLITUDE	
Pass	109.7 mW		
SIGNATURE			
 Tested By: _____			
DESCRIPTION OF TEST			
Output Power - Low Channel			

16:57:45 NOV 10, 2005



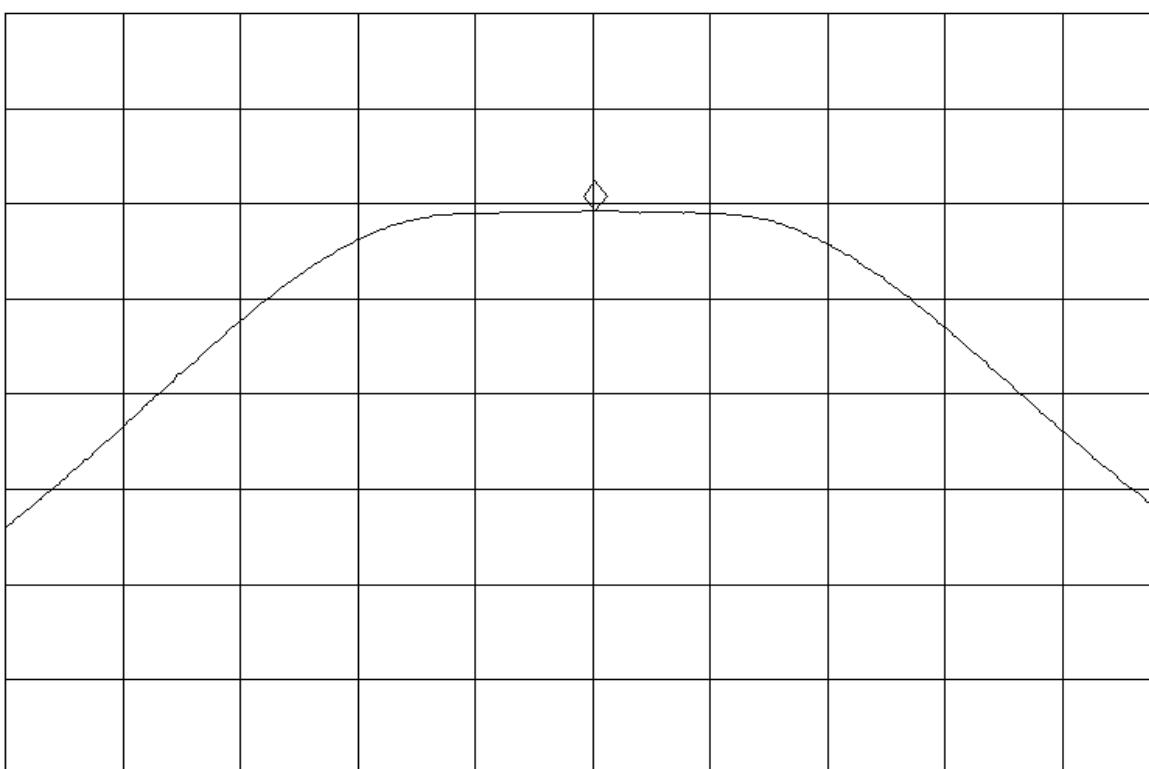
MKR 2.402005 GHz

REF 200.0 mW

#AT 20 dB

109.65 mW

PEAK

MA SB
SC FC

CORR

CENTER 2.402000 GHz

SPAN 2.000 MHz

#RES BW 1.0 MHz

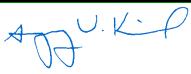
#VBW 3 MHz

#SWP 200 msec

NORTHWEST
EMC

Output Power

Rev BETA
01/30/01

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Customer Ref. No.:	Monet	Power:	5VDC
TEST SPECIFICATIONS		Job Site: EV06	
Specification:	47 CFR 15.247(b)	Year:	2005-9
Method: ANSI C63.4			
Year: 2003			
SAMPLE CALCULATIONS			
COMMENTS			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate			
DEVIATIONS FROM TEST STANDARD			
None			
REQUIREMENTS			
Maximum peak conducted output power does not exceed 1 Watt			
RESULTS		AMPLITUDE	
Pass		101.9 mW	
SIGNATURE			
			
Tested By: _____			
DESCRIPTION OF TEST			
Output Power - Mid Channel			

16:59:05 NOV 10, 2005



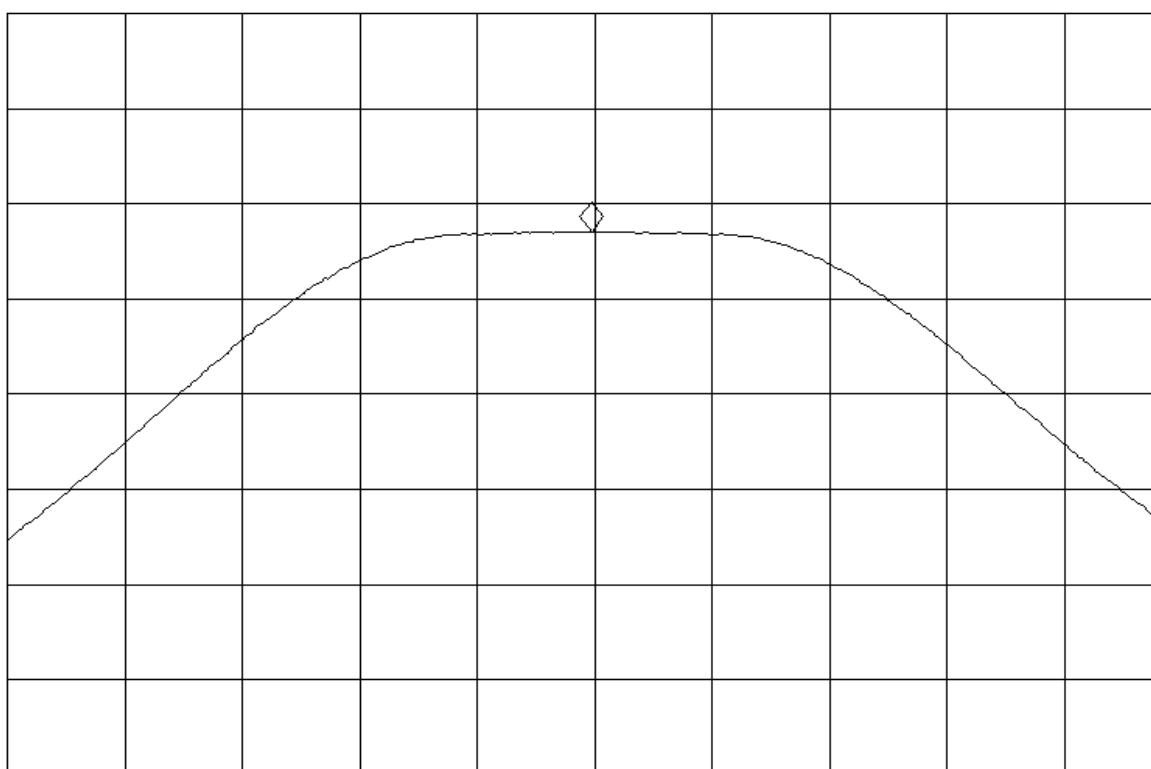
MKR 2.441995 GHz

REF 200.0 mW

#AT 20 dB

101.86 mW

PEAK



LIN

OFFST

21.9

dB

MA SB
SC FC

CORR

CENTER 2.442000 GHz

SPAN 2.000 MHz

#RES BW 1.0 MHz

#VBW 3 MHz

#SWP 200 msec

NORTHWEST
EMC

Output Power

Rev BETA
01/30/01

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/10/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 22°
Attendees: None	Humidity: 38%
Customer Ref. No.: Monet	Power Site: EV06

TEST SPECIFICATIONS

Specification: 47 CFR 15.247(b) Year: 2005-9 Method: ANSI C63.4 Year: 2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated by PRBS at maximum data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Maximum peak conducted output power does not exceed 1 Watt

RESULTS

Pass AMPLITUDE

88.1 mW

SIGNATURE



Tested By: _____

DESCRIPTION OF TEST

Output Power - High Channel

17:00:30 NOV 10, 2005



MKR 2.479995 GHz

REF 200.0 mW

#AT 20 dB

88.105 mW

PEAK

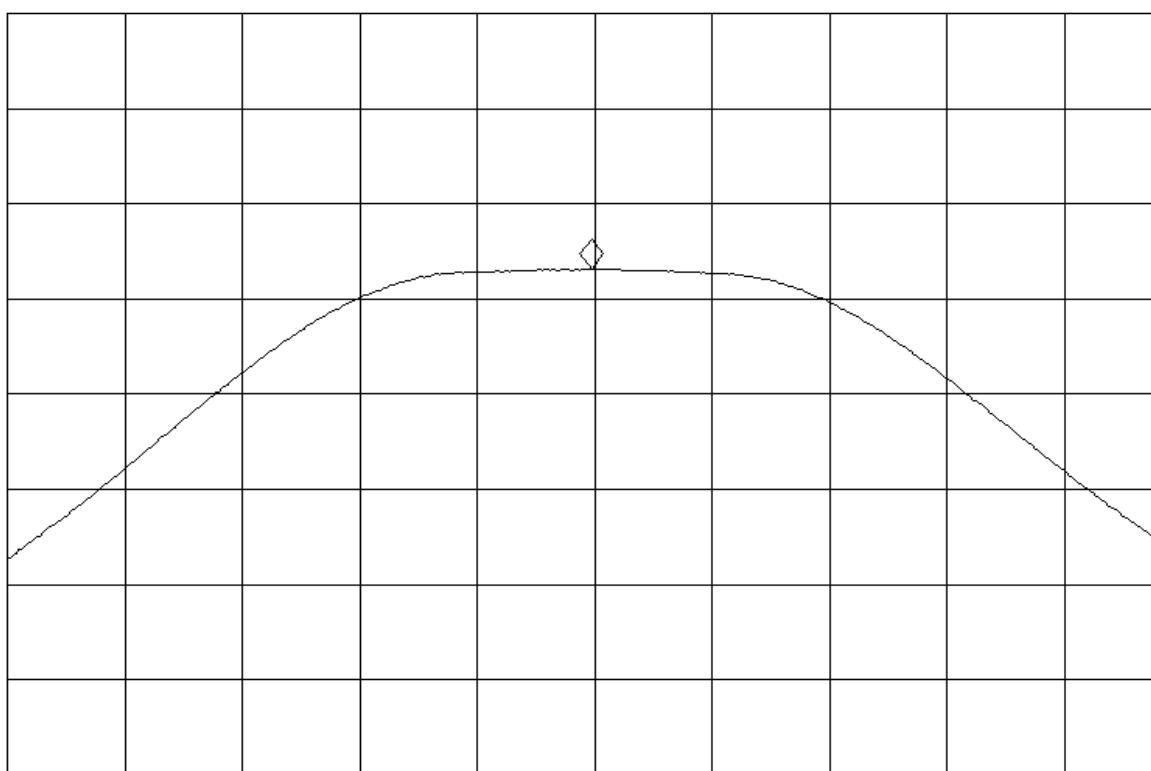
LIN

OFFST
21.9

dB

MA SB
SC FC

CORR



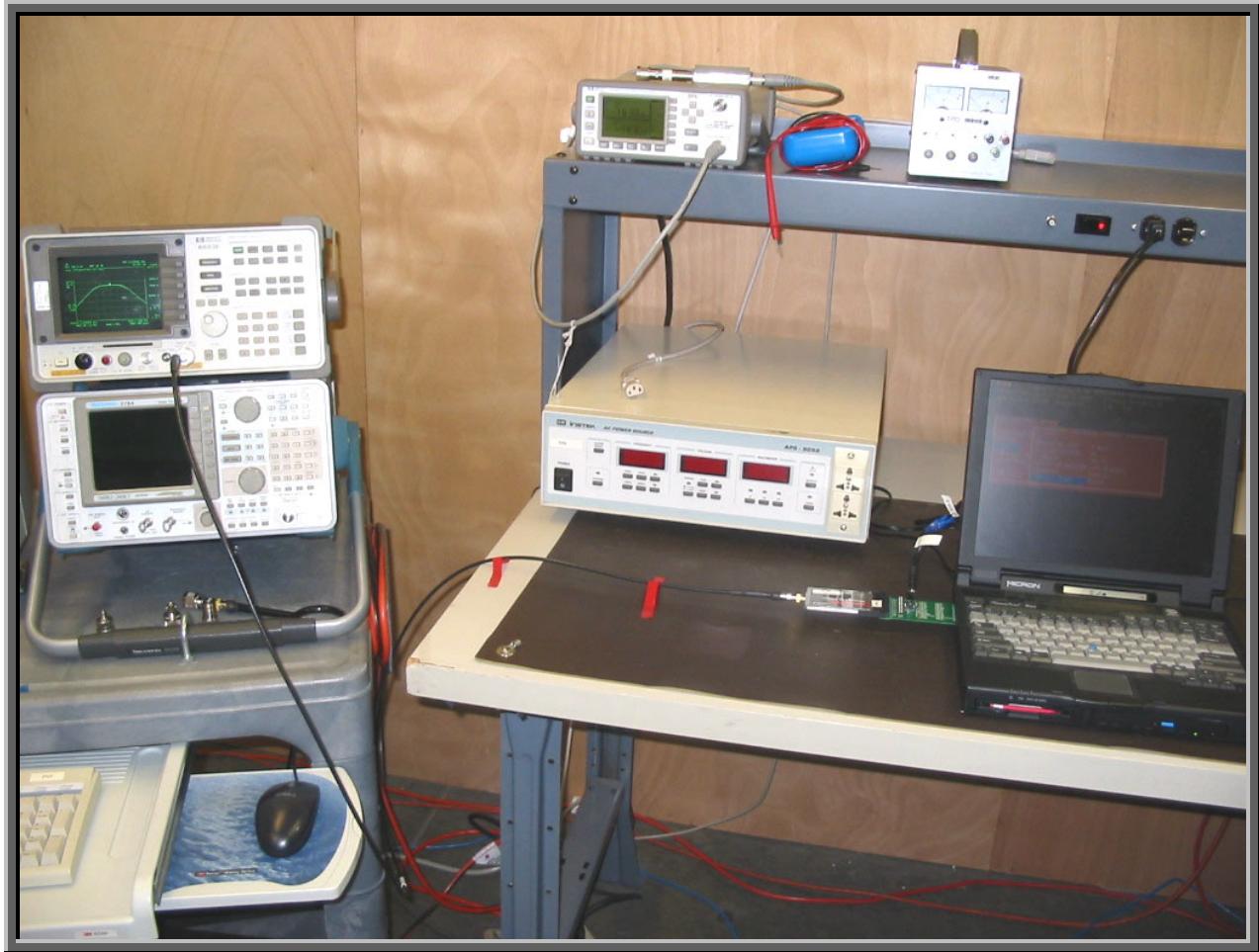
CENTER 2.480000 GHz

SPAN 2.000 MHz

#RES BW 1.0 MHz

#VBW 3 MHz

#SWP 200 msec



Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Low
High

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

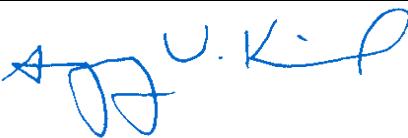
Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8593E	AAN	12/15/2004	12 mo

Test Description

Requirement: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: The spurious RF conducted emissions at the edges of the authorized band were 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 in a no hop mode. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 5 MHz below the band edge to 5 MHz above the band edge.

Completed by:


Band Edge Compliance

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Band Edge Compliance		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
No hop, low channel			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission at the edge of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 <hr/> Tested By:		
Band Edge Compliance Low Channel			

11:49:08 NOV 10, 2005

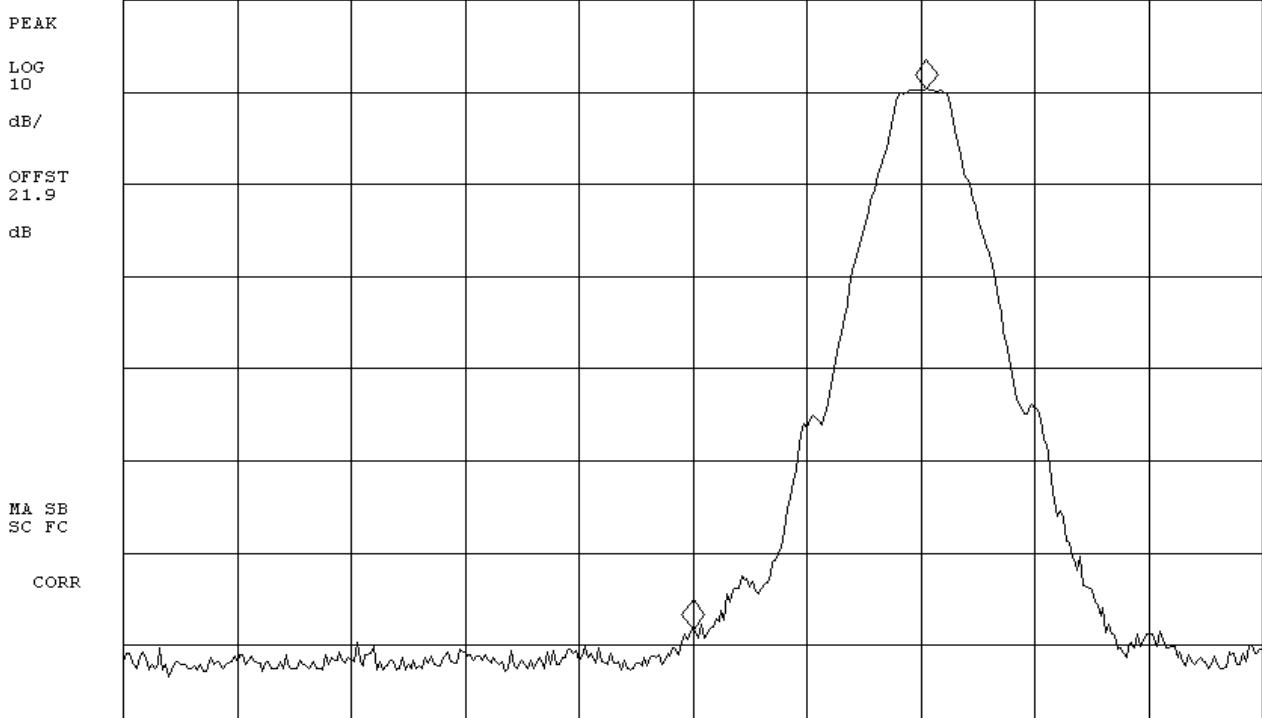


REF 30.0 dBm

#AT 20 dB

MKR  -2.05 MHz

-58.64 dB



CENTER 2.40000 GHz

SPAN 10.00 MHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 20.0 msec

Band Edge Compliance

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Band Edge Compliance		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
No hop, high channel			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission at the edge of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By: _____		
Band Edge Compliance High Channel			

11:52:07 NOV 10, 2005

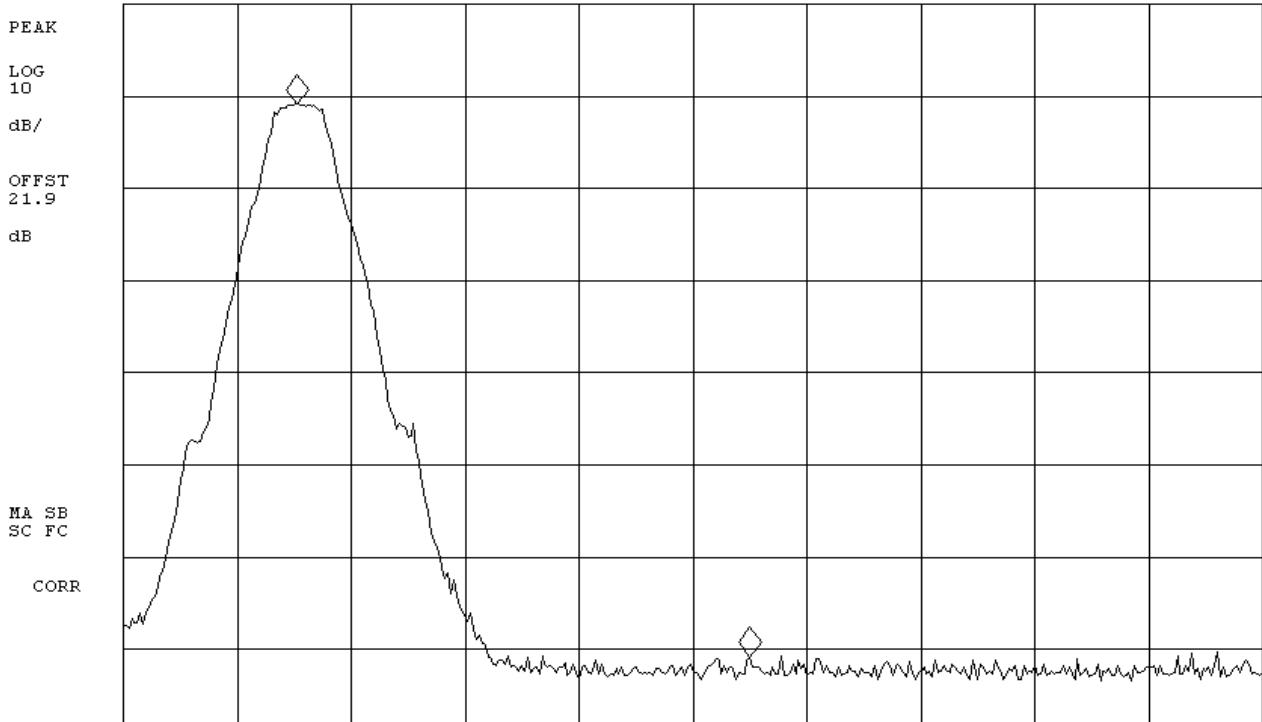


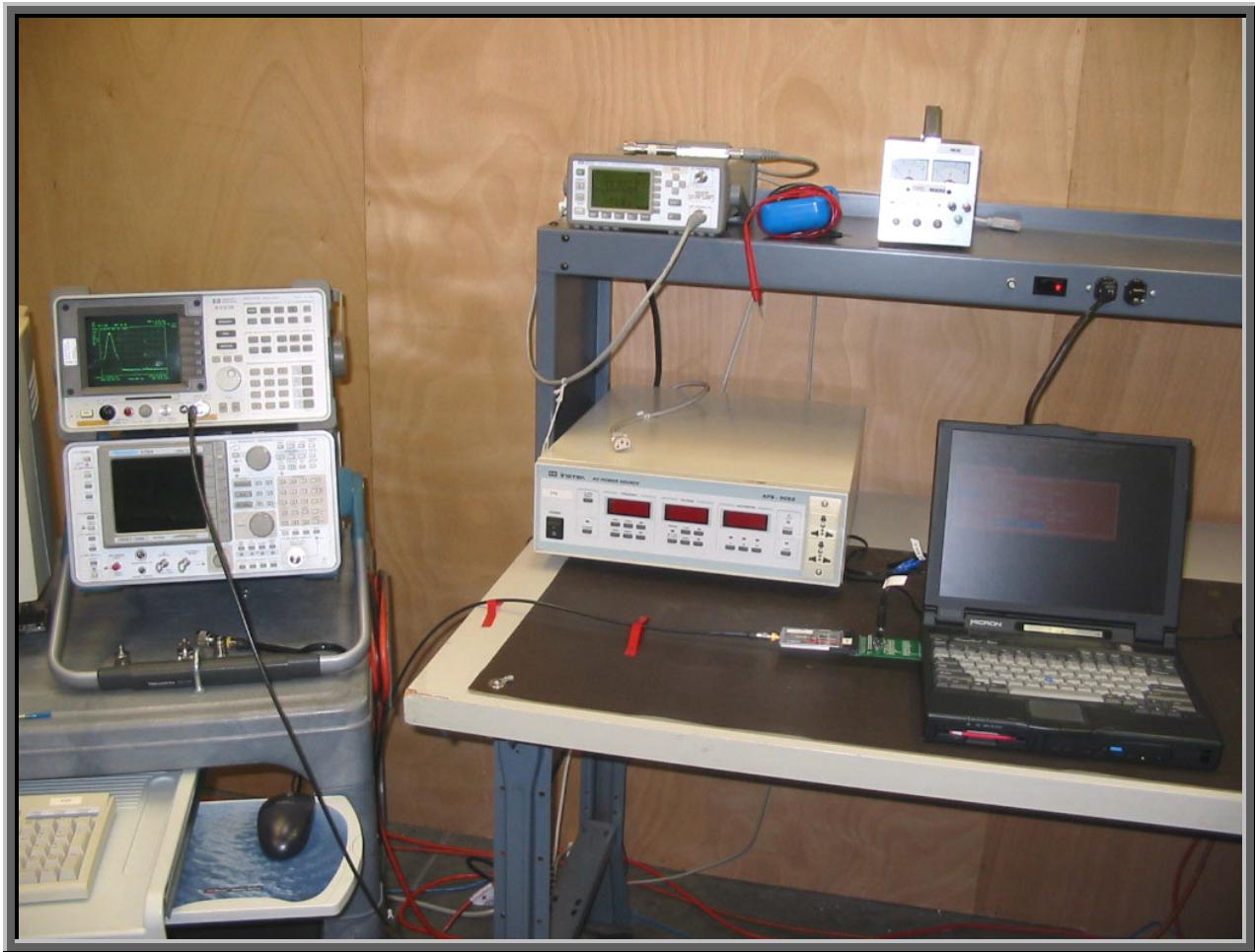
REF 30.0 dBm

#AT 20 dB

MKR  3.98 MHz

-59.98 dB





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Low

Mid

High

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5 Vdc

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo

Test Description

Requirement: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set to 100 kHz, and the video bandwidth set to greater than or equal to the resolution bandwidth.

Configuration: 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 in a no hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency.

Completed by:



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

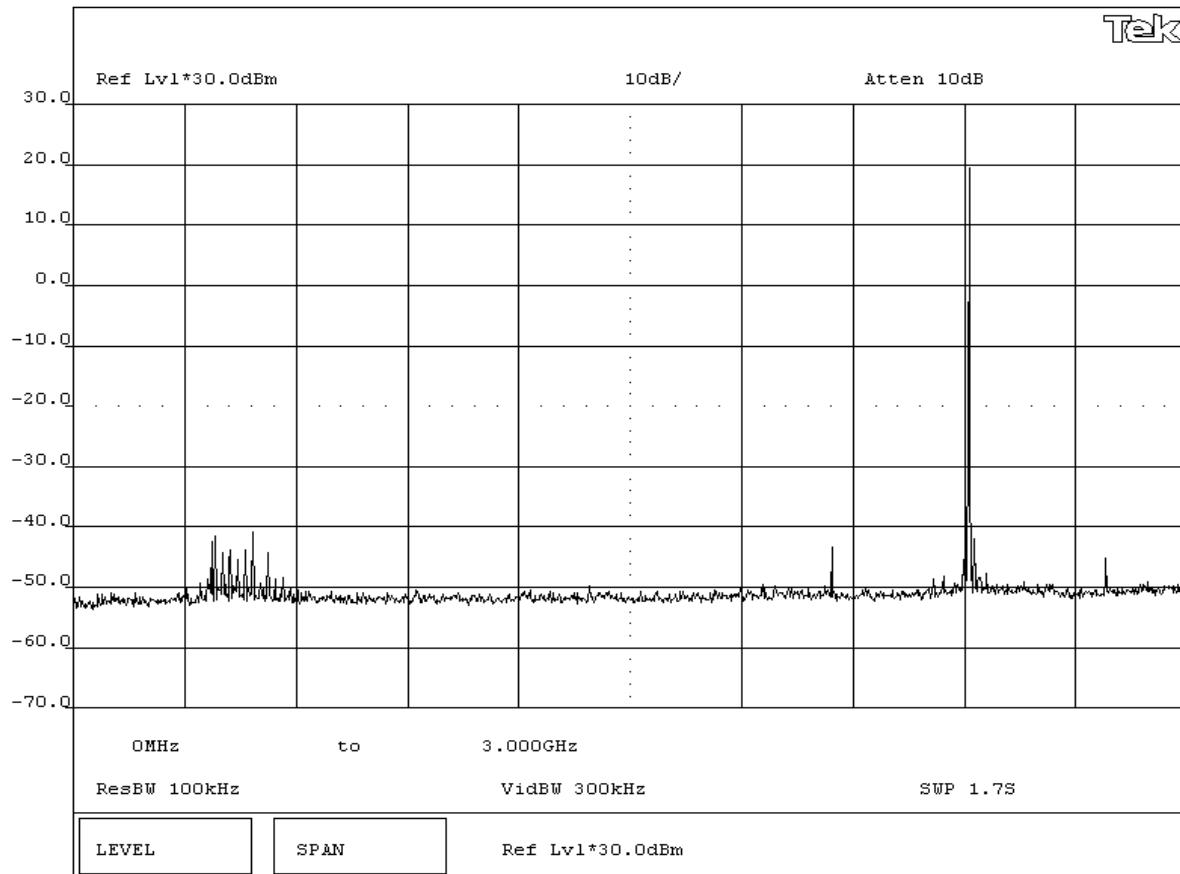
RESULTS

Pass

Other

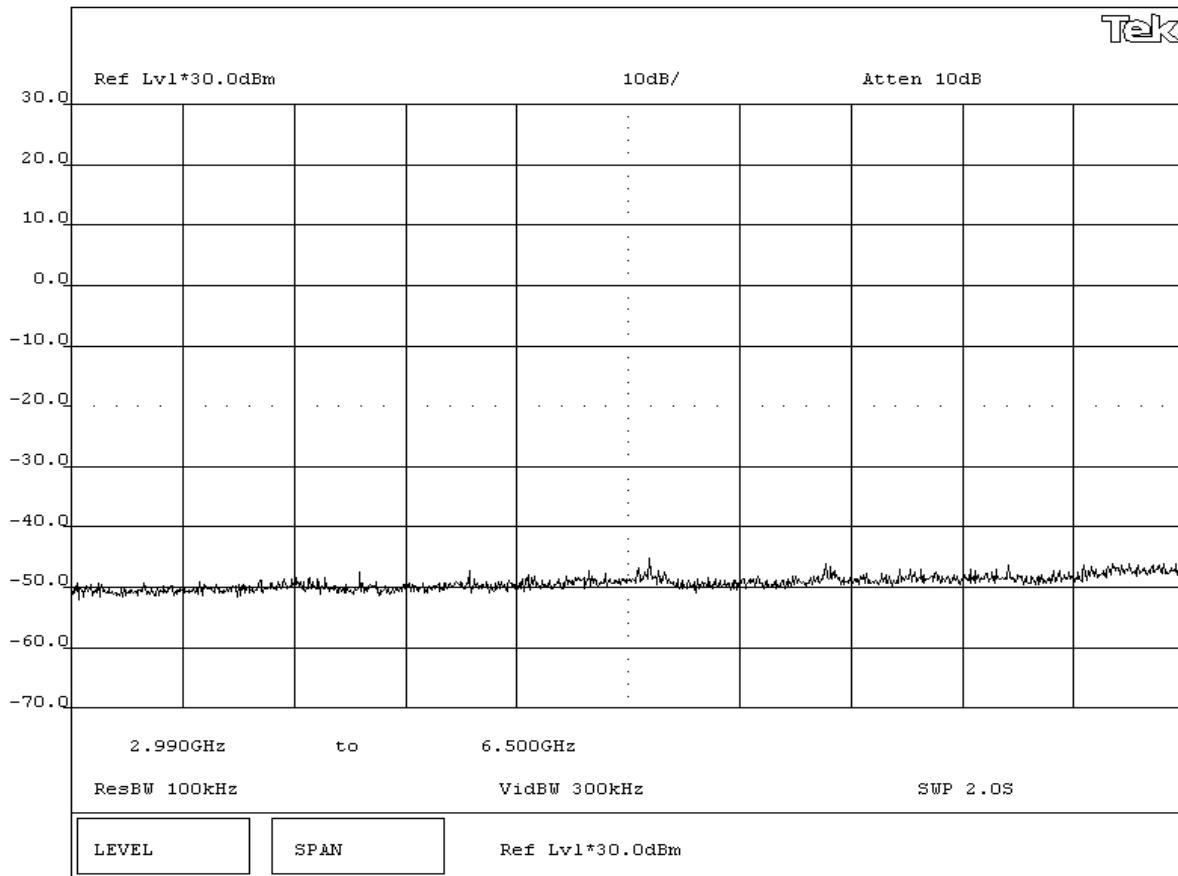
Greg Kiemel

Tested By:

Spurious Conducted Emissions
Low Channel 0MHz-3GHz

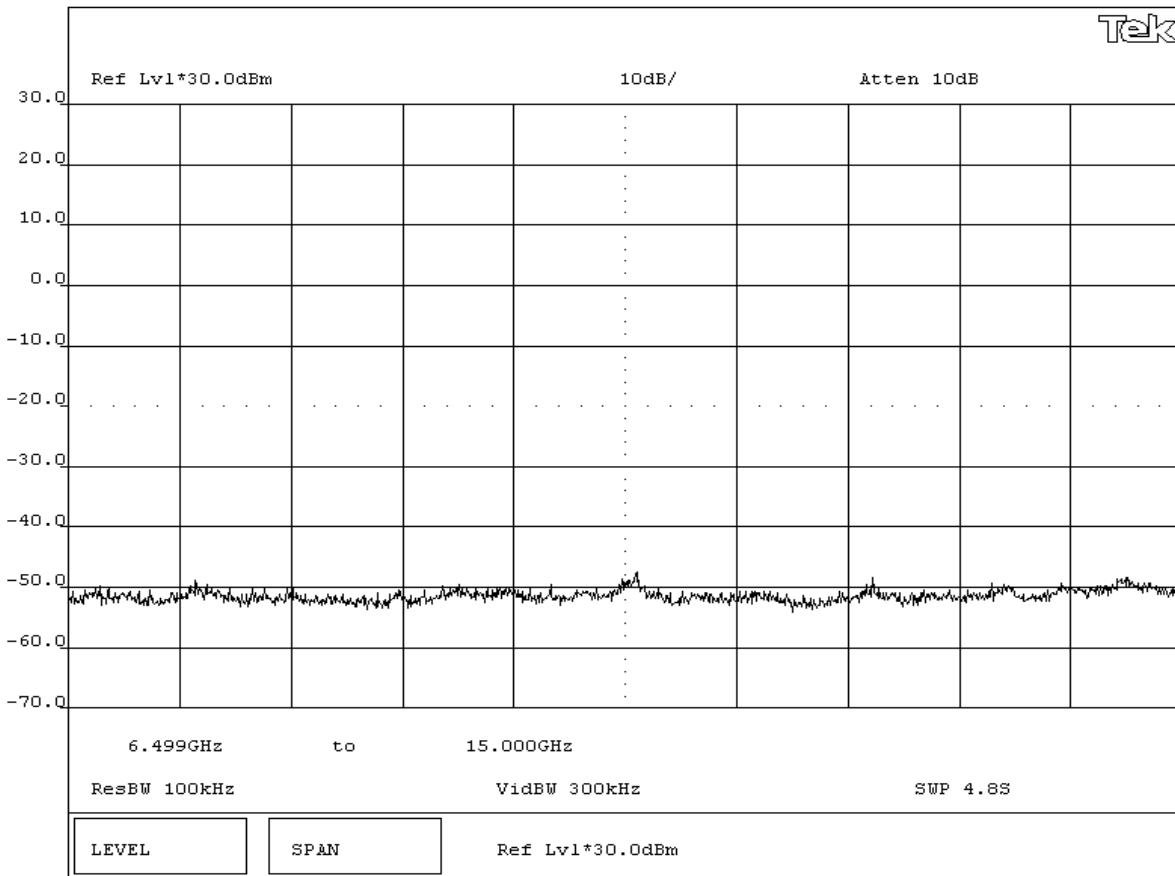
Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Spurious Conducted Emissions		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate, at maximum output power.			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By:		
Spurious Conducted Emissions Low Channel 3GHz-6.5GHz			



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Spurious Conducted Emissions		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate, at maximum output power.			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By:		
Spurious Conducted Emissions Low Channel 6.5GHz-15GHz			



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

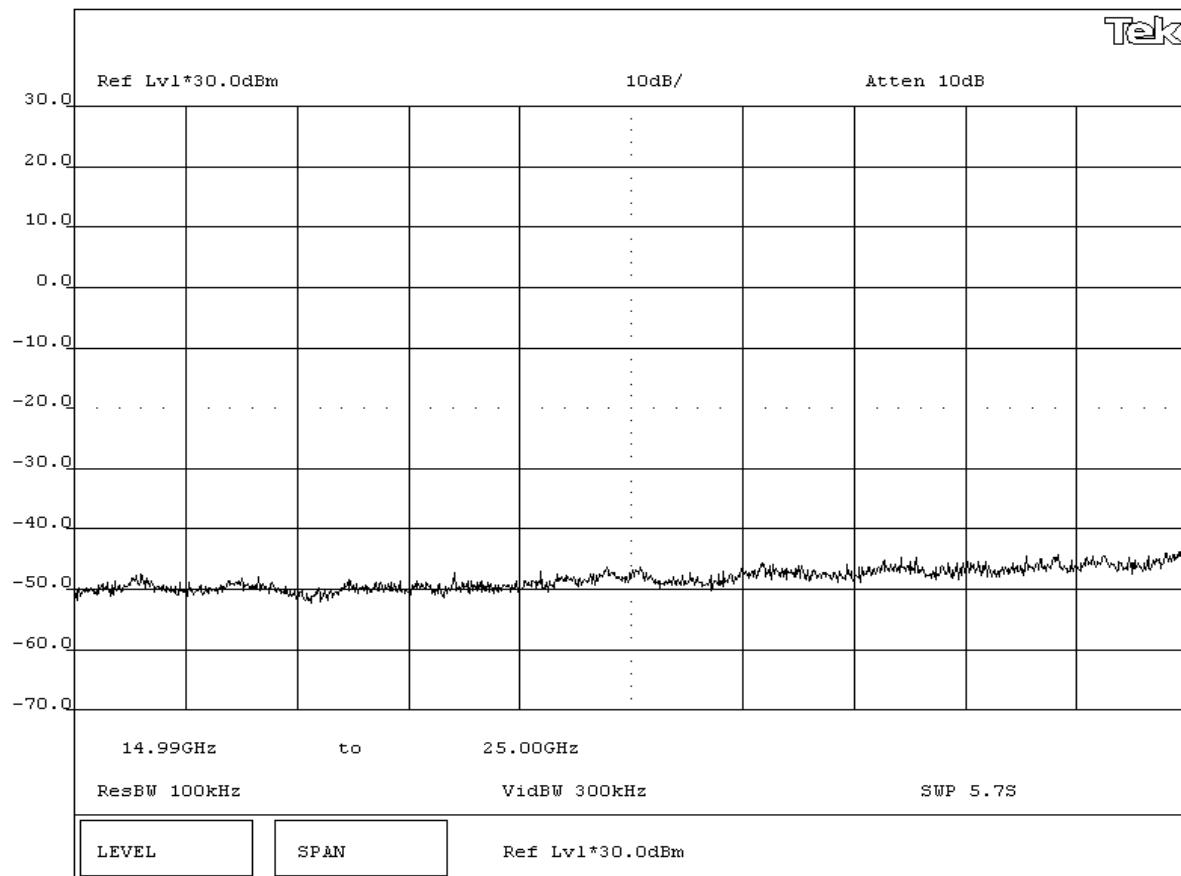
RESULTS

Pass

Other



Tested By:

Spurious Conducted Emissions
Low Channel 15GHz-25GHz

Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

Pass

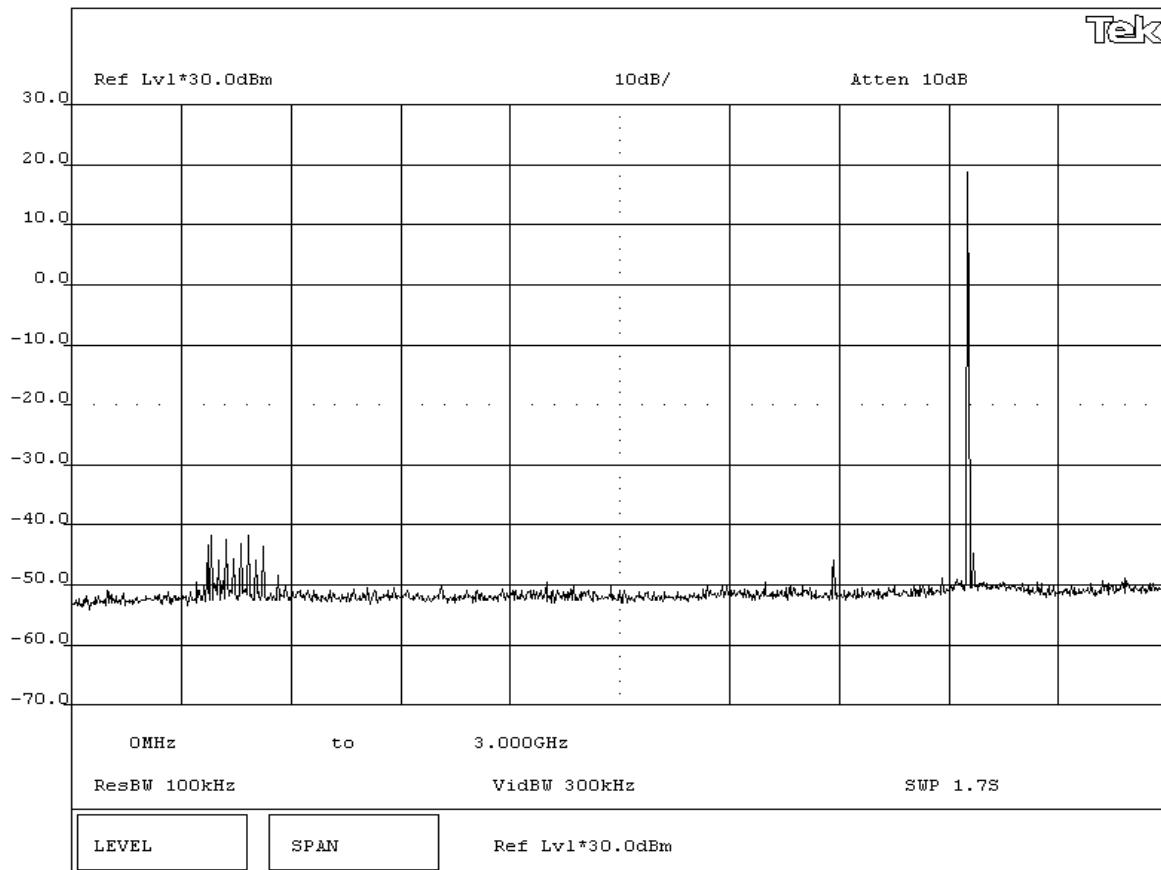
Other



Tested By:

Spurious Conducted Emissions

Mid Channel 0MHz-3GHz



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

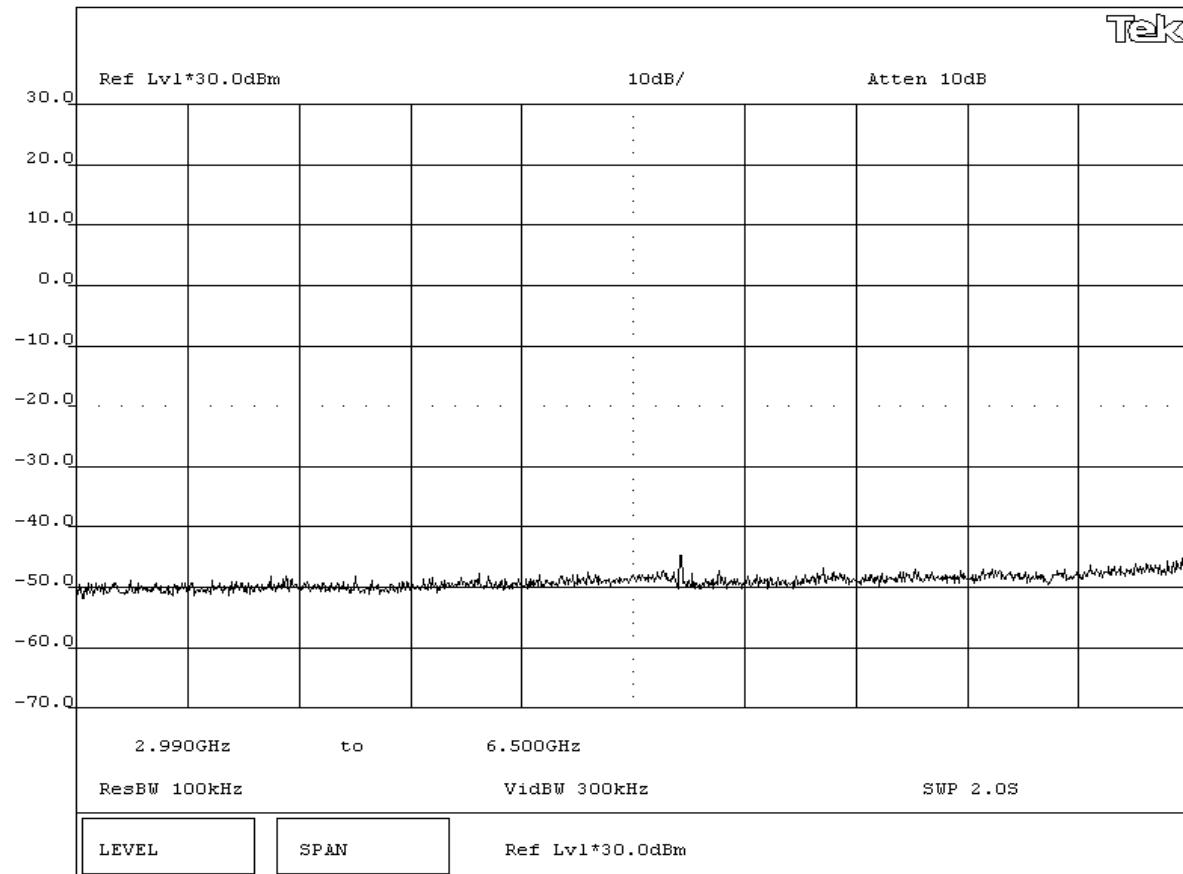
RESULTS

Pass

Other

Greg Kiemel

Tested By:

Spurious Conducted Emissions
Mid Channel 3GHz-6.5GHz

Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

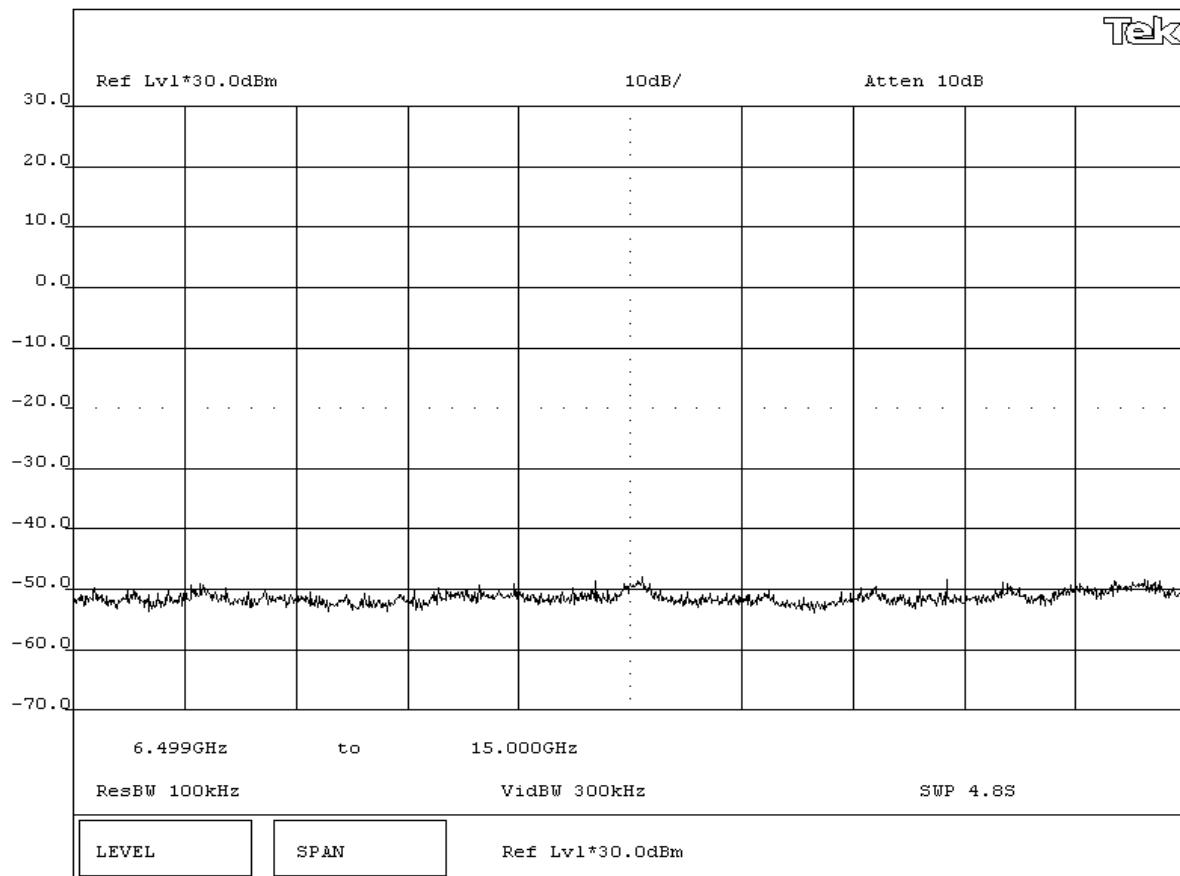
RESULTS

Pass

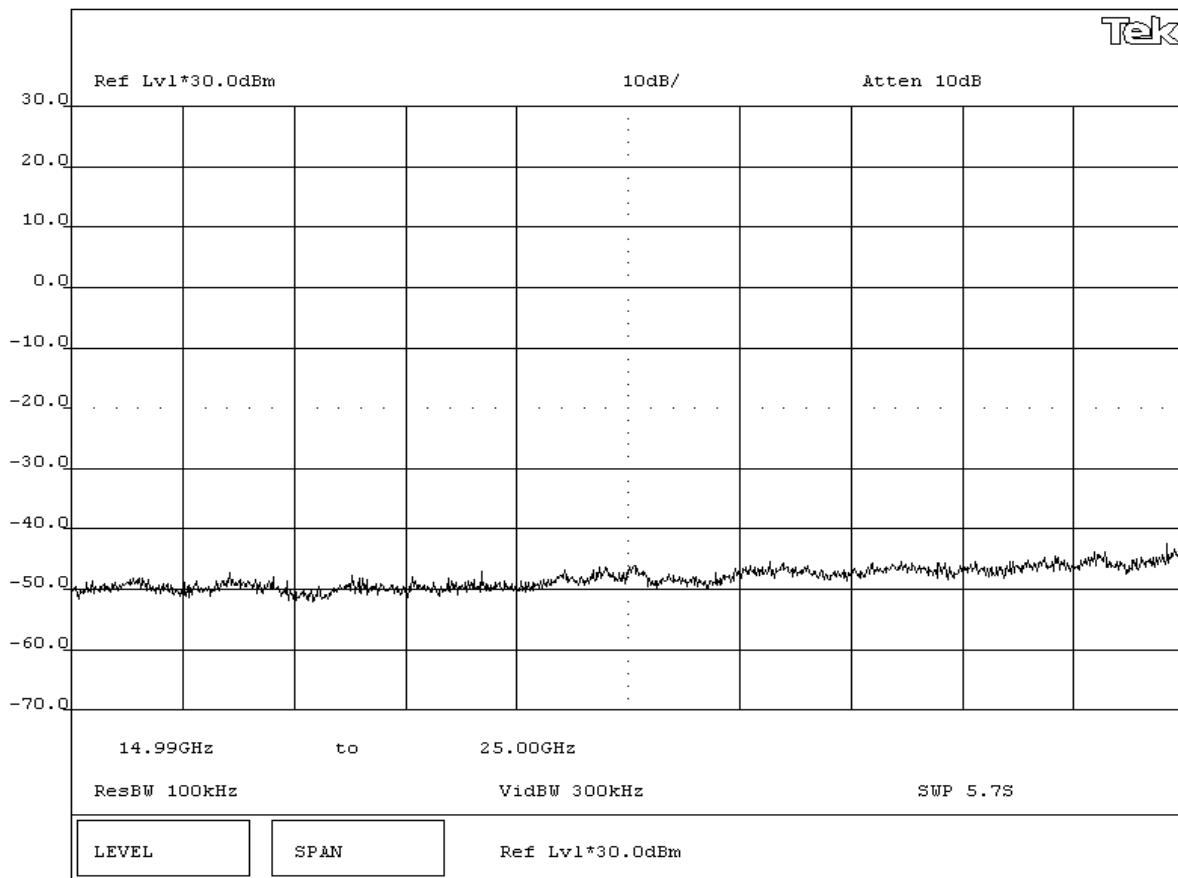
Other



Tested By:

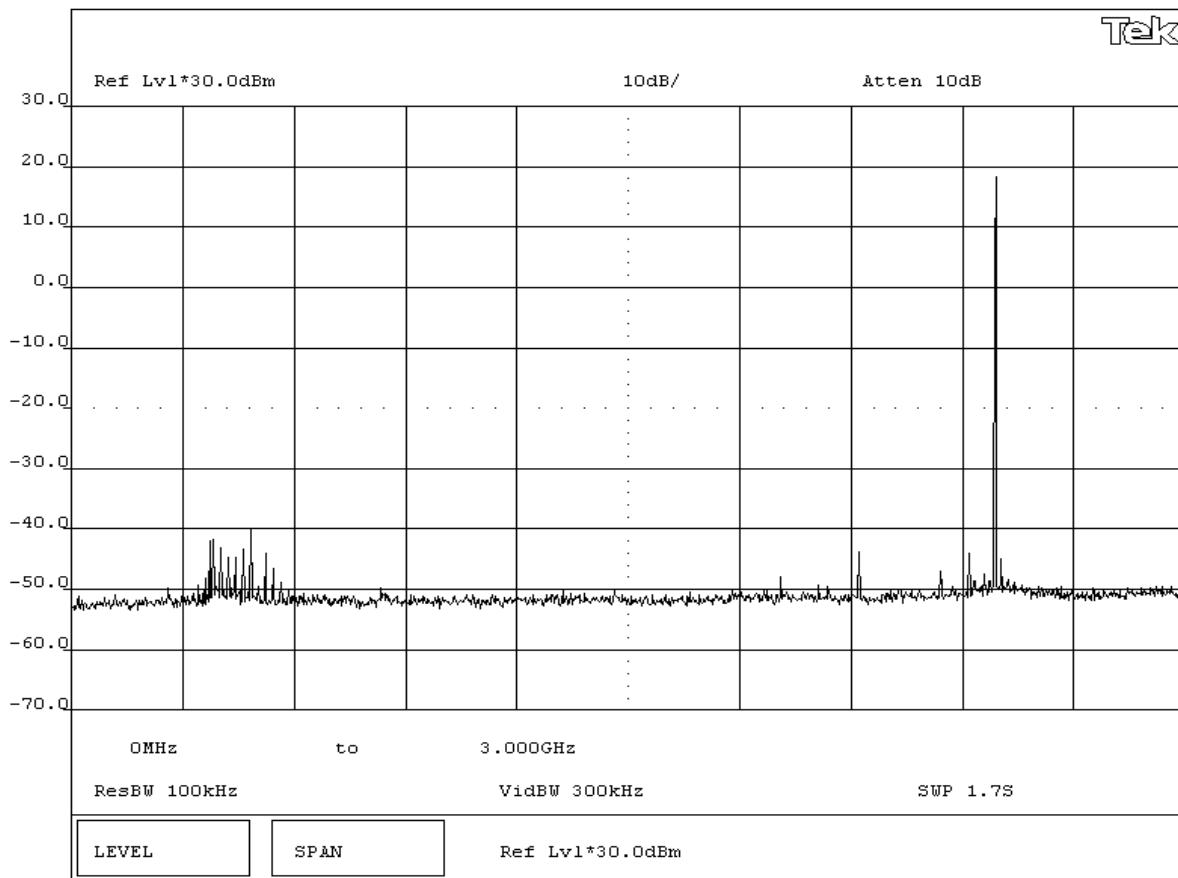
Spurious Conducted Emissions
Mid Channel 6.5GHz-15GHz

EUT:	Propaq 802 LTRN		Work Order:	PROT0266
Serial Number:	PG28B9		Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.		Temperature:	22°
Attendees:	None		Humidity:	38%
Client Number:	Monet		Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power: 5 VDC	Job Site:	EV06
TEST SPECIFICATIONS				
Specification:	FCC 15.247(d) Spurious Conducted Emissions		Year:	2005-9
Method:	ANSI C63.4		Year:	2003
SAMPLE CALCULATIONS				
COMMENTS				
Radio on PCMCIA extender card, External 5 VDC				
EUT OPERATING MODES				
Modulated by PRBS at maximum data rate, at maximum output power.				
DEVIATIONS FROM TEST STANDARD				
No deviations.				
REQUIREMENTS				
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental				
RESULTS				
Pass				
Other	 <hr/> Tested By:			
Spurious Conducted Emissions Mid Channel 15GHz-25GHz				



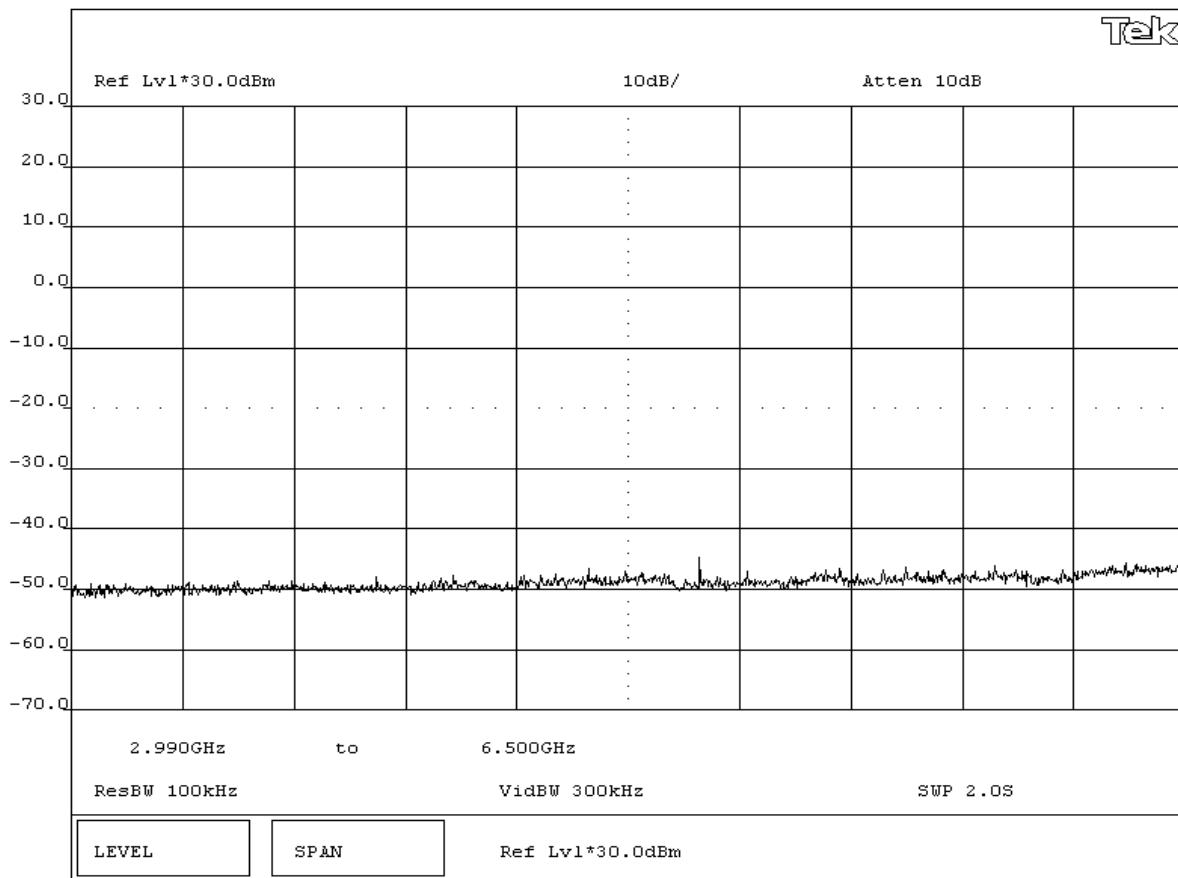
Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Spurious Conducted Emissions		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate, at maximum output power.			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By:		
Spurious Conducted Emissions High Channel 0MHz-3GHz			



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Spurious Conducted Emissions		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate, at maximum output power.			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By:		
Spurious Conducted Emissions High Channel 3GHz-6.5GHz			



Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
			Job Site: EV06

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Conducted Emissions	Year:	2005-9
Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Radio on PCMCIA extender card, External 5 VDC

EUT OPERATING MODES

Modulated by PRBS at maximum data rate, at maximum output power.

DEVIATIONS FROM TEST STANDARD

No deviations.

REQUIREMENTS

Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

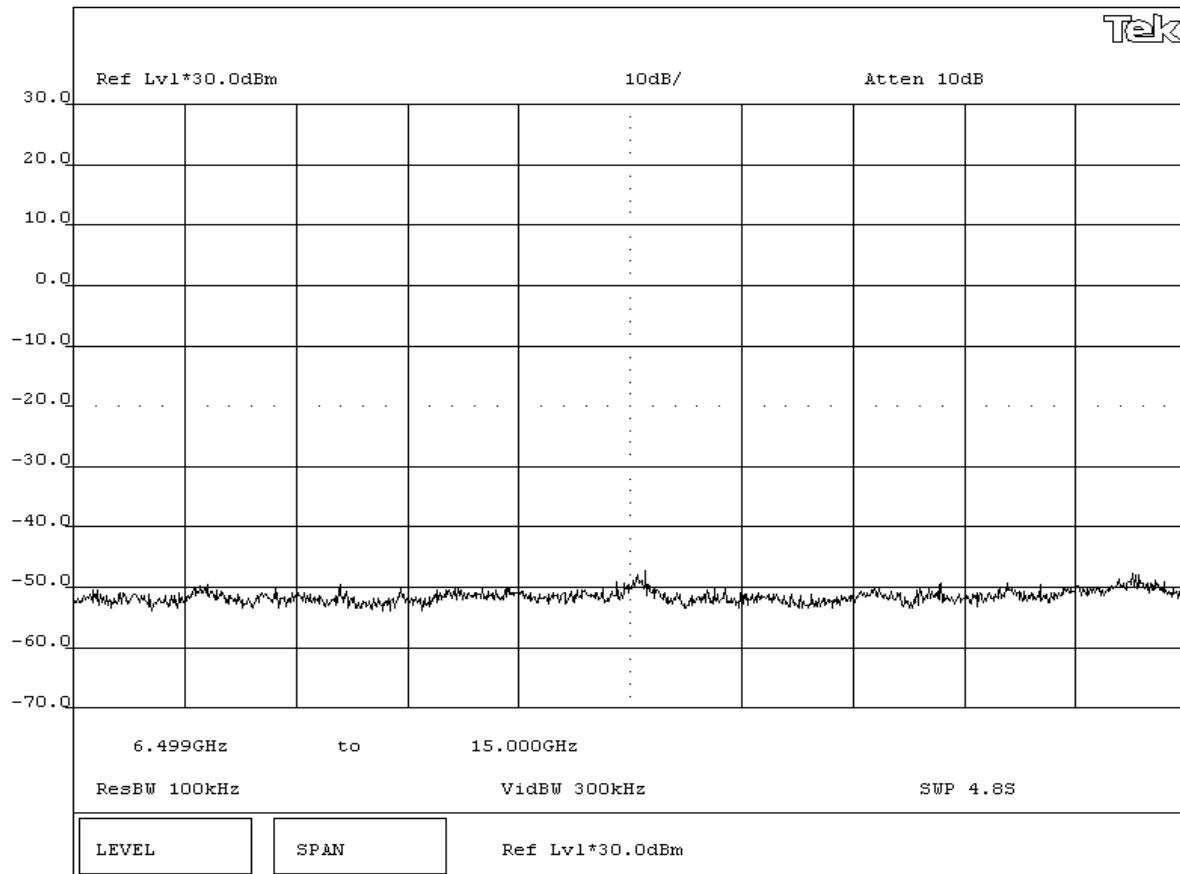
RESULTS

Pass

Other

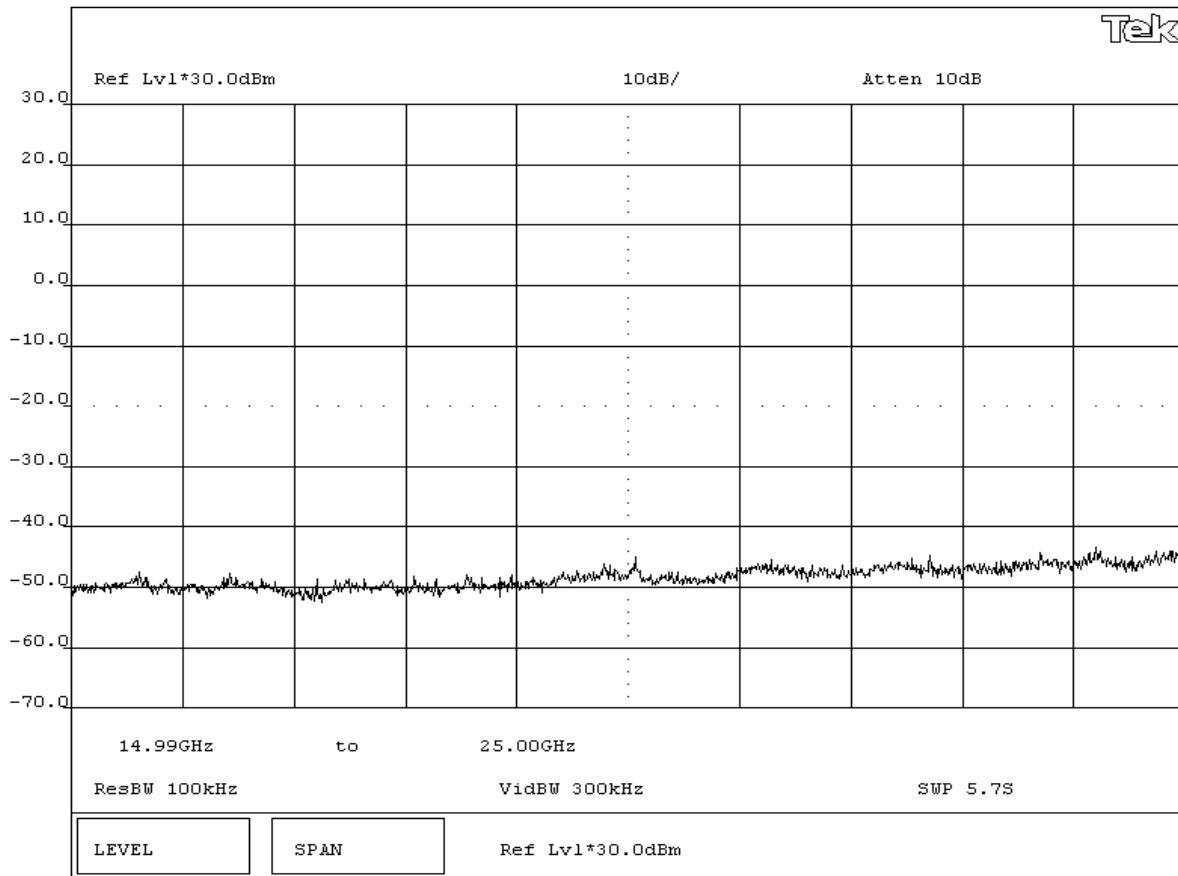


Tested By:

Spurious Conducted Emissions
High Channel 6.5GHz-15GHz

Spurious Conducted Emissions

EUT:	Propaq 802 LTRN	Work Order:	PROT0266
Serial Number:	PG28B9	Date:	11/10/05
Customer:	Welch Allyn Protocol, Inc.	Temperature:	22°
Attendees:	None	Humidity:	38%
Client Number:	Monet	Barometric Pressure:	30.04
Tested by:	Greg Kiemel	Power:	5 VDC
TEST SPECIFICATIONS		Job Site:	
Specification: FCC 15.247(d) Spurious Conducted Emissions		Year: 2005-9	
Method: ANSI C63.4		Year: 2003	
SAMPLE CALCULATIONS			
COMMENTS			
Radio on PCMCIA extender card, External 5 VDC			
EUT OPERATING MODES			
Modulated by PRBS at maximum data rate, at maximum output power.			
DEVIATIONS FROM TEST STANDARD			
No deviations.			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental			
RESULTS			
Pass			
Other	 Tested By:		
Spurious Conducted Emissions High Channel 15GHz-25GHz			





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Mid

Low

High

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5VDC

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
802 RF Antenna	Welch Allyn, Inc	660-0219-03 Rev C	None
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment						
Description	Manufacturer	Model	Identifier	Last Cal	Interval	
Spectrum Analyzer	Agilent	E4446A	AAQ	06/15/2005	13 mo	
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	26 mo	
Pre-Amplifier	Miteq	AM-1616-1000	AOL	08/02/2005	13 mo	
Antenna, Horn	EMCO	3115	AHC	08/30/2005	12 mo	
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	08/02/2005	13 mo	
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA	
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	02/15/2005	13 mo	
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	02/17/2005	13 mo	
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA	

Test Description

Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. 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 the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Measurements			
Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (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.

Completed by:

Rockey L. Reling

RADIATED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/14/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 21
Attendees: None	Humidity: 39%
Project: Monet	Barometric Pressure: 29.85
Tested by: Rod Peloquin	Power: 5VDC
	Job Site: EV01

TEST SPECIFICATIONS

Test Method

FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003
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TEST PARAMETERS

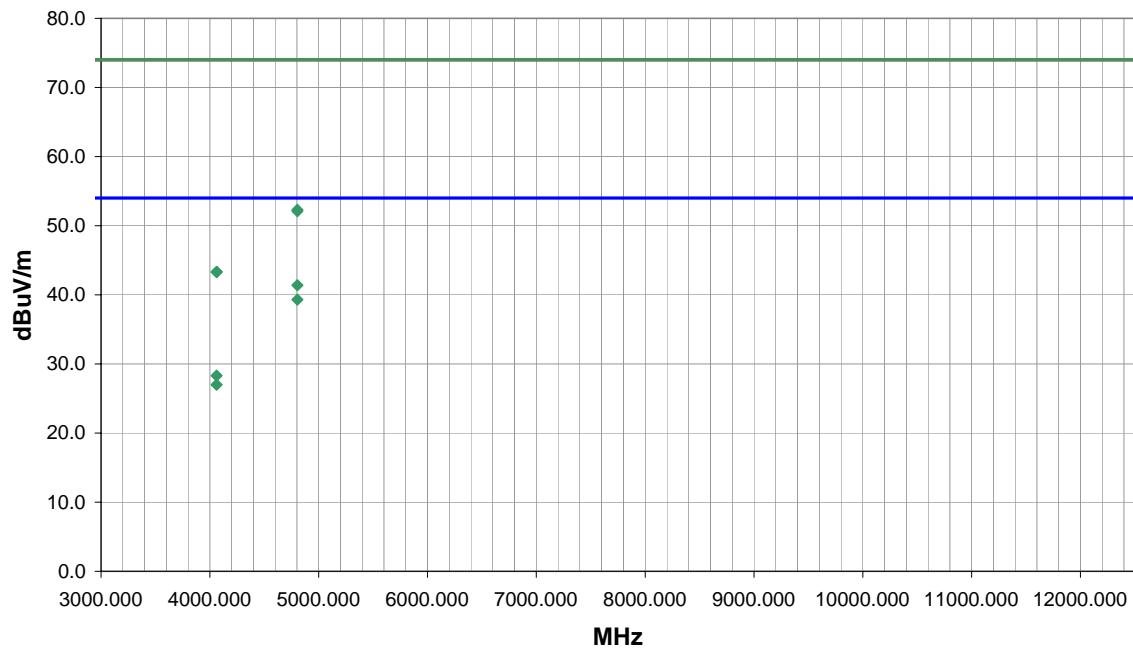
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3
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COMMENTS

EUT OPERATING MODES	Low channel, no hop
DEVIATIONS FROM TEST STANDARD	No deviations.
Run #	2
Configuration #	1
Results	Pass

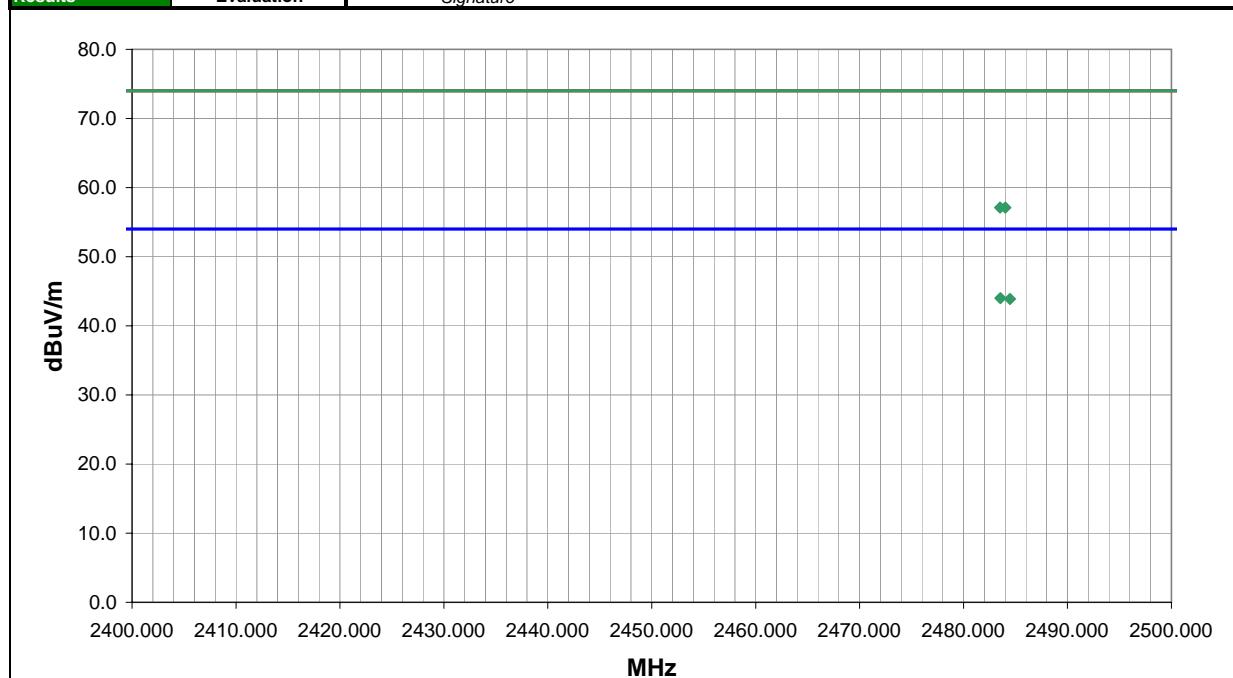
Rod Peloquin

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4804.027	43.6	6.3	291.0	1.3	8.5	0.0	H-Horn	AV	0.0	41.4	54.0	-12.6
4804.005	41.5	6.3	182.0	1.5	8.5	0.0	V-Horn	AV	0.0	39.3	54.0	-14.7
4803.525	46.0	6.3	291.0	1.3	0.0	0.0	H-Horn	PK	0.0	52.3	74.0	-21.7
4803.937	45.8	6.3	182.0	1.5	0.0	0.0	V-Horn	PK	0.0	52.1	74.0	-21.9
4061.980	31.0	5.8	177.0	1.8	8.5	0.0	V-Horn	AV	0.0	28.3	54.0	-25.7
4062.009	29.7	5.8	185.0	1.3	8.5	0.0	H-Horn	AV	0.0	27.0	54.0	-27.0
4061.847	37.5	5.8	177.0	1.8	0.0	0.0	V-Horn	PK	0.0	43.3	74.0	-30.7
4062.568	37.5	5.8	129.0	3.8	0.0	0.0	V-Horn	PK	0.0	43.3	74.0	-30.7

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/16/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 21
Attendees: None	Humidity: 39%
Project: Monet	Barometric Pressure: 29.85
Tested by: Rod Peloquin	Power: 5VDC
TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003
TEST PARAMETERS	
Antenna Height(s) (m)	1 - 4
Test Distance (m)	3
COMMENTS	



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)
2483.541	23.5	0.5	135.0	1.5	3.0	20.0	H-Horn	AV	0.0	44.0	54.0	-10.0
2484.462	23.4	0.5	170.0	3.2	3.0	20.0	V-Horn	AV	0.0	43.9	54.0	-10.1
2483.519	36.6	0.5	135.0	1.5	3.0	20.0	H-Horn	PK	0.0	57.1	74.0	-16.9
2484.027	36.6	0.5	170.0	3.2	3.0	20.0	V-Horn	PK	0.0	57.1	74.0	-16.9

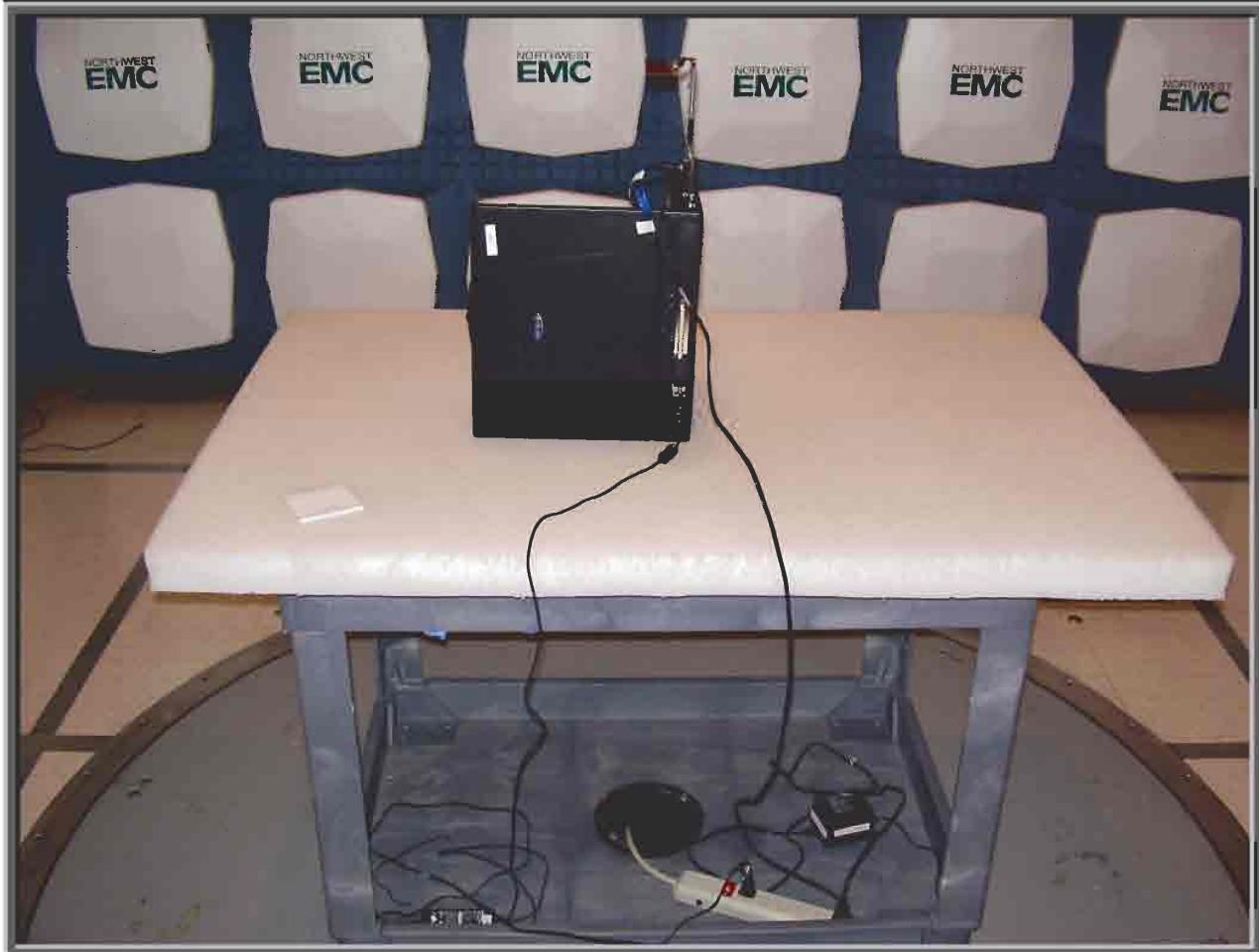
NORTHWEST
EMC

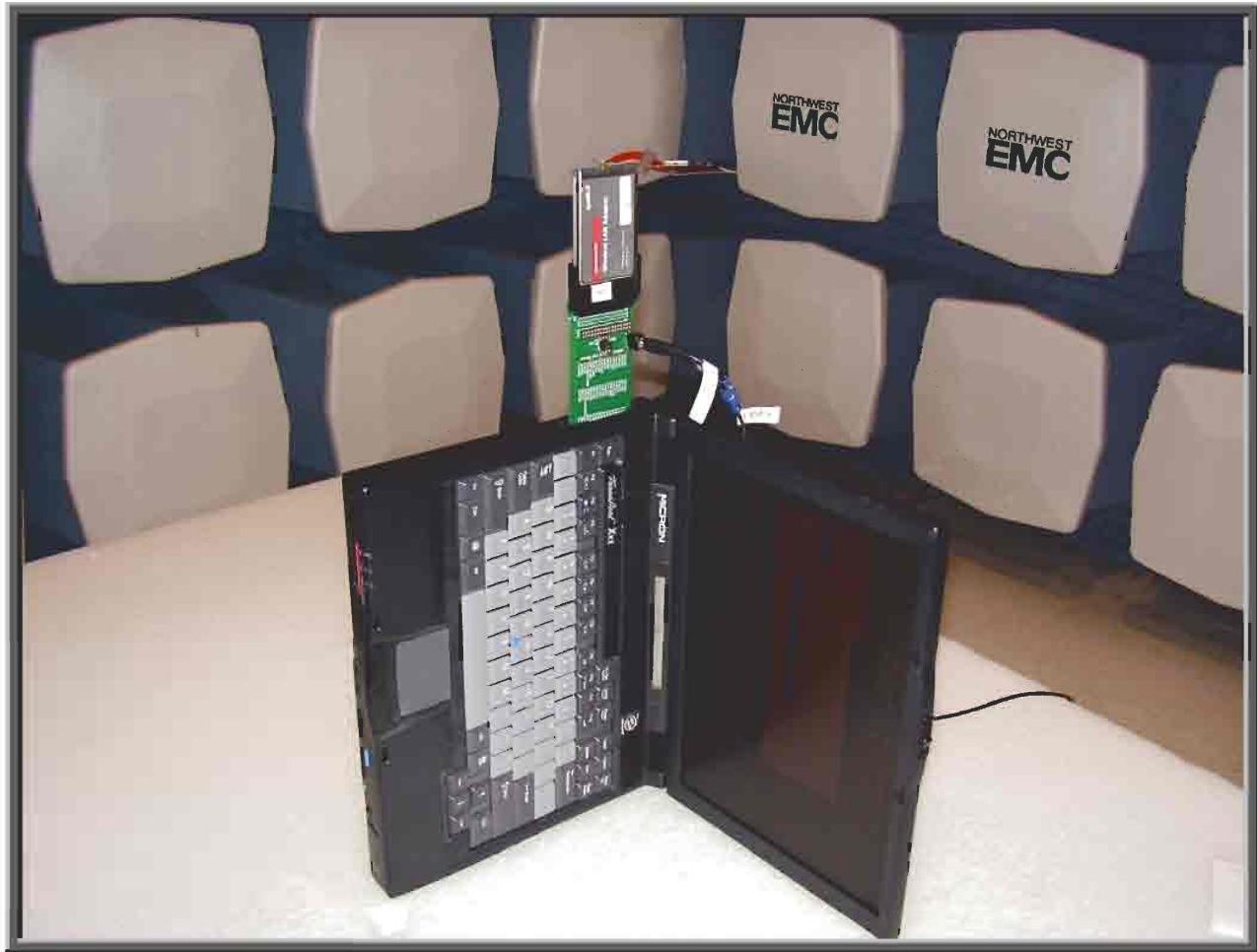
RADIATED EMISSIONS DATA SHEET

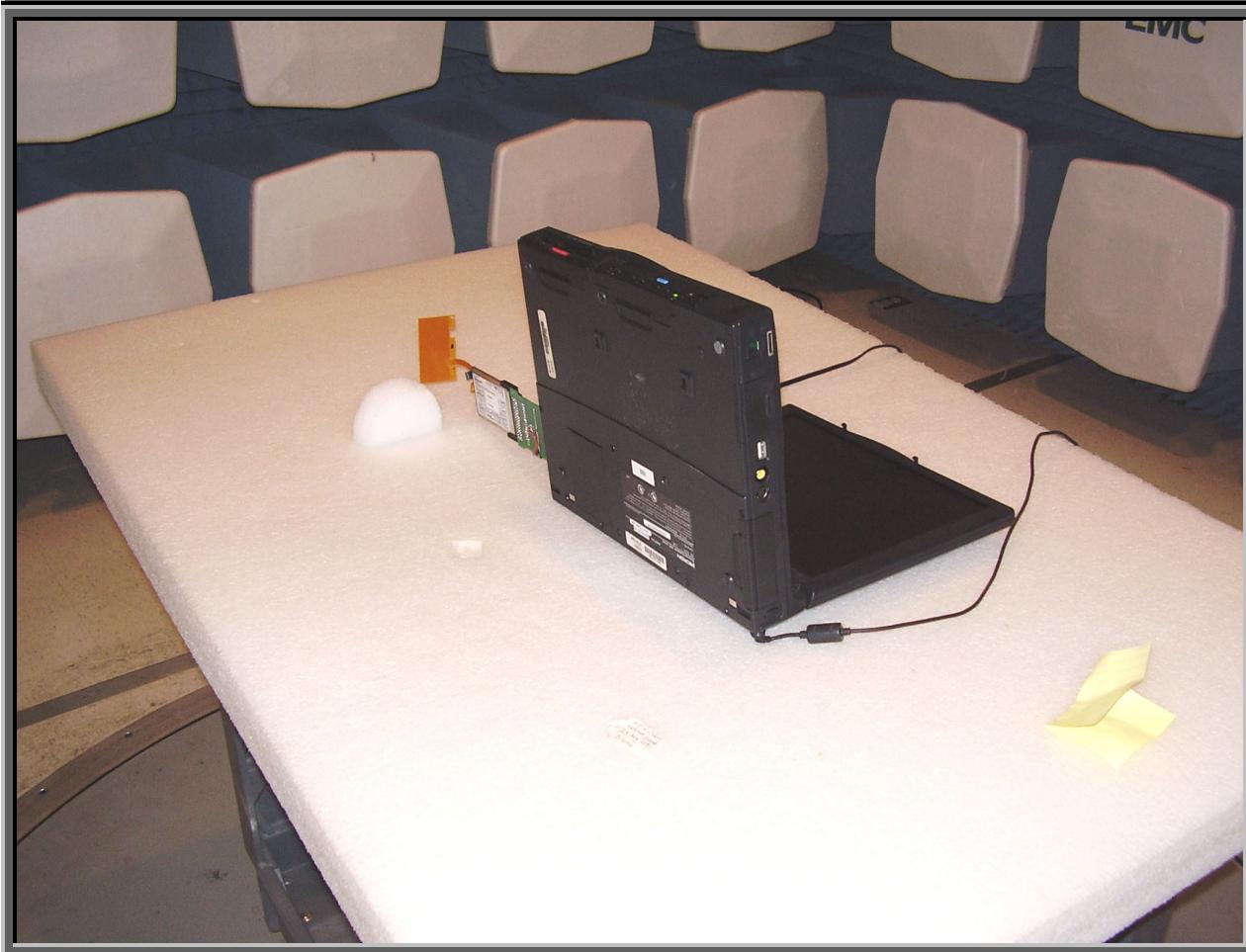
PSA 2005.10.04
EMI 2005.11.14

EUT: Propaq 802 LTRN	Work Order: PROT0266											
Serial Number: PG28B9	Date: 11/16/05											
Customer: Welch Allyn Protocol, Inc.	Temperature: 21											
Attendees: None	Humidity: 39%											
Project: Monet	Barometric Pressure: 29.85											
Tested by: Rod Peloquin	Power: 5VDC											
TEST SPECIFICATIONS	Test Method											
FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003											
TEST PARAMETERS												
Antenna Height(s) (m)	1 - 4											
Test Distance (m)	3											
COMMENTS												
EUT OPERATING MODES High channel, no hop												
DEVIATIONS FROM TEST STANDARD No deviations.												
Run #	7											
Configuration #	1											
Results	Pass											
Signature												
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4960.008	46.8	6.7	187.0	1.3	8.5	0.0	V-Horn	AV	0.0	45.0	54.0	-9.0
4960.000	46.3	6.7	50.0	1.6	8.5	0.0	H-Horn	AV	0.0	44.5	54.0	-9.5
4960.315	48.9	6.7	48.0	1.6	0.0	0.0	H-Horn	PK	0.0	55.6	74.0	-18.4
4959.918	48.7	6.7	47.0	1.3	0.0	0.0	V-Horn	PK	0.0	55.4	74.0	-18.6
4217.997	32.7	5.7	23.0	1.6	8.5	0.0	H-Horn	AV	0.0	29.9	54.0	-24.1
4218.003	30.0	5.7	32.0	1.3	8.5	0.0	V-Horn	AV	0.0	27.2	54.0	-26.8
4217.837	38.6	5.7	23.0	1.6	0.0	0.0	H-Horn	PK	0.0	44.3	74.0	-29.7
4217.768	37.8	5.7	32.0	1.3	0.0	0.0	V-Horn	PK	0.0	43.5	74.0	-30.5

RADIATED EMISSIONS DATA SHEET												PSA 2005.10.04	EMI 2005.11.14
NORTHWEST EMC													
EUT: Propaq 802 LTRN						Work Order: PROT0266							
Serial Number: PG28B9						Date: 11/16/05							
Customer: Welch Allyn Protocol, Inc.						Temperature: 21							
Attendees: None						Humidity: 39%							
Project: Monet						Barometric Pressure: 29.85							
Tested by: Rod Peloquin			Power: 5VDC			Job Site: EV01			Test Method				
TEST SPECIFICATIONS													
FCC 15.247(d) Spurious Radiated Emissions:2005-9						ANSI C63.4:2003							
TEST PARAMETERS													
Antenna Height(s) (m) 1 - 4			Test Distance (m) 3										
COMMENTS													
EUT OPERATING MODES													
Mid channel, no hop													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #	8		<i>Rod Peloquin</i>										
Configuration #	1												
Results	Pass					Signature							
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Duty Cycle Correction Factor	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	
4883.969	48.9	6.6	65.0	1.4	8.5	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	
4884.042	45.5	6.6	47.0	1.7	8.5	0.0	H-Horn	AV	0.0	43.6	54.0	-10.4	
4884.009	42.8	6.6	38.0	1.3	8.5	0.0	V-Horn	AV	0.0	40.9	54.0	-13.1	
4883.969	50.7	6.6	65.0	1.4	0.0	0.0	V-Horn	PK	0.0	57.3	74.0	-16.7	
4884.221	47.4	6.6	47.0	1.6	0.0	0.0	H-Horn	PK	0.0	54.0	74.0	-20.0	
7325.948	29.0	13.4	128.0	1.3	8.5	0.0	V-Horn	AV	0.0	33.9	54.0	-20.1	
4884.287	45.3	6.6	38.0	1.3	0.0	0.0	V-Horn	PK	0.0	51.9	74.0	-22.1	
7325.998	37.1	13.4	136.0	1.4	0.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5	
7326.468	35.4	13.4	126.0	2.8	0.0	0.0	H-Horn	PK	0.0	48.8	74.0	-25.2	
7325.928	23.3	13.4	126.0	2.8	8.5	0.0	H-Horn	AV	0.0	28.2	54.0	-25.8	
4142.020	30.6	5.7	14.0	1.6	8.5	0.0	H-Horn	AV	0.0	27.8	54.0	-26.2	
4141.996	29.8	5.7	173.0	1.5	8.5	0.0	V-Horn	AV	0.0	27.0	54.0	-27.0	
4142.003	38.7	5.7	167.0	1.5	0.0	0.0	V-Horn	PK	0.0	44.4	74.0	-29.6	
4141.936	38.1	5.7	14.0	1.6	0.0	0.0	H-Horn	PK	0.0	43.8	74.0	-30.2	







Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

Mid

Low

High

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

5VDC via 120VAC/60Hz adapter

Software\Firmware Applied During Test

Exercise software	Bench-24	Version	2.77
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
FHSS Radio Card (EUT)	Welch Allyn, Inc.	Propaq 802 LTRN	PG28B9
802 RF Antenna	Welch Allyn, Inc.	660-0219-03 Rev C	None
Host PC	Micron	NBK001337-00	5122110006281
AC Adapter for PC	Micron	NBP001049-00	5111542200081
DC Power Supply for EUT	CUI Stack	DTR050100-P1	0601
PCMCIA Extender Card	Vector Electronics, Inc.	31-00157 Rev.A	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	PA	1.0	PA	DC Power Supply for EUT	AC Mains
DC Leads	PA	1.8	PA	DC Power Supply for EUT	PCMCIA Extender Card
DC Leads	PA	1.2	PA	AC Adapter for PC	Host PC
AC Power	PA	1.0	PA	AC Adapter for PC	AC Mains

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

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	06/15/2005	13 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/29/2004	13 mo
LISN	Solar	9252-50-R-24-BNC	LIP	12/29/2004	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/29/2004	13 mo
Attenuator	Tektronix	011-0059-02	ATB	01/17/2005	13 mo

Test Description

Requirement: Per 47 15.207(c), in addition to devices which are powered directly from the AC power line, conducted emissions measurements shall also be made on battery operated devices that can transmit while charging, as well as on devices that are powered from AC adaptors, or devices that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines. All of these devices shall be tested to demonstrate compliance with the conducted limits of 15.207.

Configuration: The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

Completed by:



CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN

Work Order: PROT0266

Serial Number: PG28B9

Date: 11/16/05

Customer: Welch Allyn Protocol, Inc.

Temperature: 21

Attendees: None

Humidity: 39%

Project: Monet

Barometric Pressure: 29.85

Tested by: Rod Peloquin

Power: 5VDC via 120VAC/60Hz

Job Site: EV01

TEST SPECIFICATIONS

Test Method

FCC 15.207 AC Powerline Conducted Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

Cable or Line Tested L1

COMMENTS

EUT OPERATING MODES

Low channel, no hop

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #

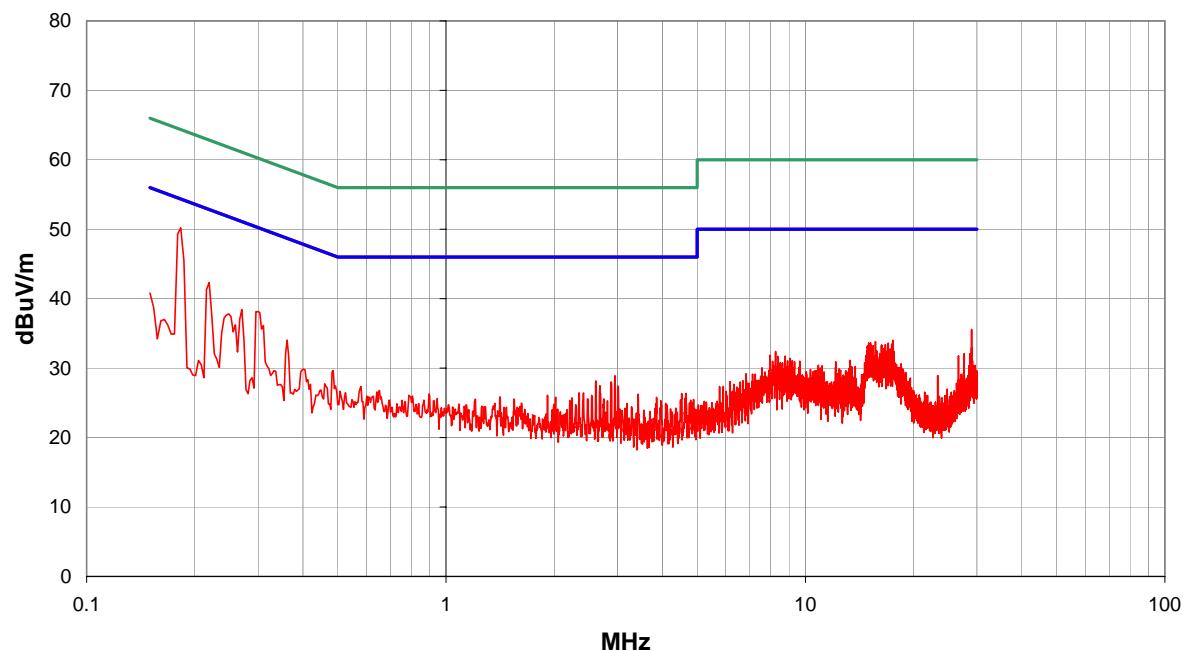
1

Configuration #

1

Results

Pass

Rod Peloquin
Signature

Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.183	30.0			0.0	0.2	20.0				50.2	54.4	-4.1
0.219	22.1			0.0	0.2	20.0				42.3	52.8	-10.5
0.299	17.9			0.0	0.2	20.0				38.1	50.3	-12.1
0.270	18.2			0.0	0.2	20.0				38.4	51.1	-12.7
0.248	17.6			0.0	0.2	20.0				37.8	51.8	-14.0
28.996	13.8			0.0	1.7	20.0				35.5	50.0	-14.5
0.361	13.8			0.0	0.2	20.0				34.0	48.7	-14.7
0.150	20.6			0.0	0.2	20.0				40.8	56.0	-15.2
17.522	12.7			0.0	1.3	20.0				34.0	50.0	-16.0
15.660	12.6			0.0	1.2	20.0				33.8	50.0	-16.2
15.164	12.4			0.0	1.2	20.0				33.6	50.0	-16.4
15.000	12.4			0.0	1.2	20.0				33.6	50.0	-16.4
16.990	12.3			0.0	1.3	20.0				33.6	50.0	-16.4
17.387	12.2			0.0	1.3	20.0				33.5	50.0	-16.5
0.485	9.4			0.0	0.2	20.0				29.6	46.2	-16.6
16.687	12.1			0.0	1.3	20.0				33.4	50.0	-16.6
16.301	12.1			0.0	1.2	20.0				33.3	50.0	-16.7
15.251	12.1			0.0	1.2	20.0				33.3	50.0	-16.7
16.279	12.0			0.0	1.2	20.0				33.2	50.0	-16.8

CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/16/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 21
Attendees: None	Humidity: 39%
Project: Monet	Barometric Pressure: 29.85
Tested by: Rod Peloquin	Power: 5VDC via 120VAC/60Hz
	Job Site: EV01

TEST SPECIFICATIONS

FCC 15.207 AC Powerline Conducted Emissions:2005-9		Test Method
ANSI C63.4:2003		

TEST PARAMETERS

Cable or Line Tested

COMMENTS

EUT OPERATING MODES

Low channel, no hop

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #

2

Configuration #

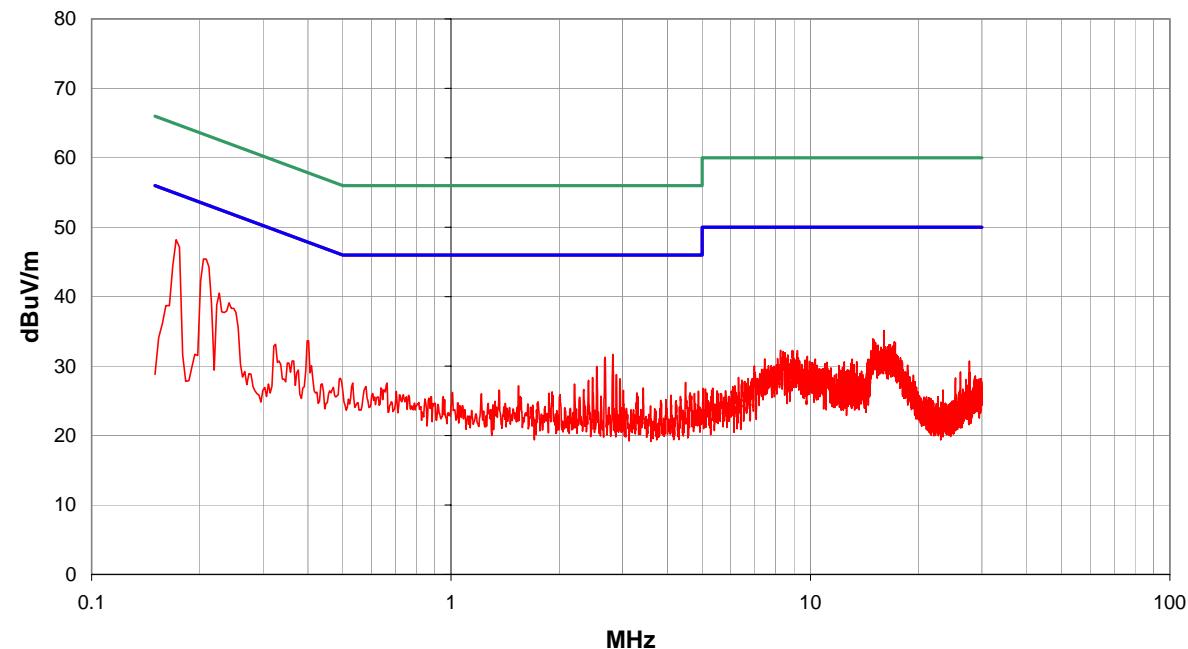
1

Results

Pass

Roddy L. Peloquin

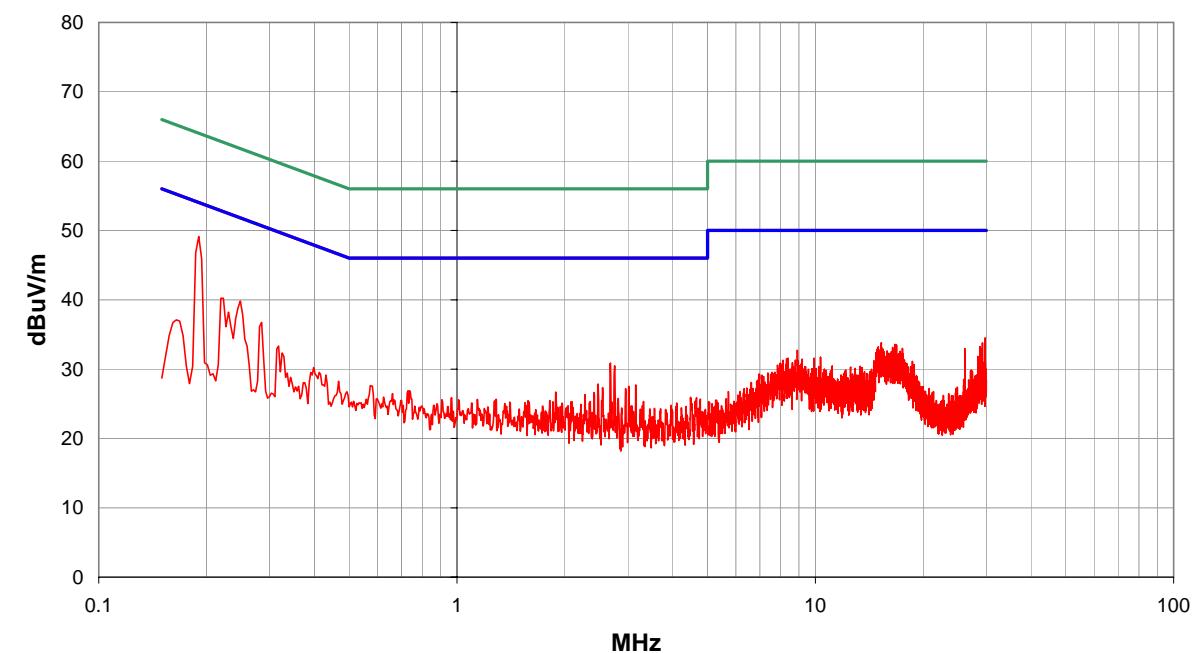
Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.172	28.0			0.0	0.2	20.0				48.2	54.9	-6.7
0.208	25.2			0.0	0.2	20.0				45.4	53.3	-7.9
0.227	20.3			0.0	0.2	20.0				40.5	52.6	-12.1
0.401	13.4			0.0	0.2	20.0				33.6	47.8	-14.2
2.821	11.2			0.0	0.5	20.0				31.7	46.0	-14.3
2.686	10.8			0.0	0.5	20.0				31.3	46.0	-14.7
15.995	13.9			0.0	1.2	20.0				35.1	50.0	-14.9
2.544	9.5			0.0	0.5	20.0				30.0	46.0	-16.0
14.920	12.7			0.0	1.2	20.0				33.9	50.0	-16.1
15.022	12.6			0.0	1.2	20.0				33.8	50.0	-16.2
0.325	12.9			0.0	0.2	20.0				33.1	49.6	-16.5
17.117	12.2			0.0	1.3	20.0				33.5	50.0	-16.5
15.168	12.2			0.0	1.2	20.0				33.4	50.0	-16.6
17.220	12.1			0.0	1.3	20.0				33.4	50.0	-16.6
16.691	11.8			0.0	1.3	20.0				33.1	50.0	-16.9
16.578	11.8			0.0	1.2	20.0				33.0	50.0	-17.0
15.419	11.8			0.0	1.2	20.0				33.0	50.0	-17.0
15.270	11.7			0.0	1.2	20.0				32.9	50.0	-17.1
16.961	11.6			0.0	1.3	20.0				32.9	50.0	-17.1

CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/16/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 21
Attendees: None	Humidity: 39%
Project: Monet	Barometric Pressure: 29.85
Tested by: Rod Peloquin	Power: 5VDC via 120VAC/60Hz
Job Site: EV01	Test Method
TEST SPECIFICATIONS	
FCC 15.207 AC Powerline Conducted Emissions:2005-9	
ANSI C63.4:2003	
TEST PARAMETERS	
Cable or Line Tested L1	
COMMENTS	
EUT OPERATING MODES	
Mid channel, no hop	
DEVIATIONS FROM TEST STANDARD	
No deviations.	
Run #	3
Configuration #	1
Results	Pass
<i>Roddy L. Peloquin</i> Signature	



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.190	28.9			0.0	0.2	20.0				49.1	54.0	-4.9
0.248	19.6			0.0	0.2	20.0				39.8	51.8	-12.0
0.223	20.0			0.0	0.2	20.0				40.2	52.7	-12.5
0.285	16.5			0.0	0.2	20.0				36.7	50.7	-13.9
0.230	18.0			0.0	0.2	20.0				38.2	52.4	-14.2
2.679	10.4			0.0	0.5	20.0				30.9	46.0	-15.1
29.780	12.7			0.0	1.8	20.0				34.5	50.0	-15.5
2.756	10.0			0.0	0.5	20.0				30.5	46.0	-15.5
15.273	12.6			0.0	1.2	20.0				33.8	50.0	-16.2
29.277	12.0			0.0	1.8	20.0				33.8	50.0	-16.2
0.318	13.1			0.0	0.2	20.0				33.3	49.8	-16.4
16.676	12.3			0.0	1.3	20.0				33.6	50.0	-16.4
16.851	12.2			0.0	1.3	20.0				33.5	50.0	-16.5
28.781	11.5			0.0	1.7	20.0				33.2	50.0	-16.8
14.985	12.0			0.0	1.2	20.0				33.2	50.0	-16.8
16.443	11.9			0.0	1.2	20.0				33.1	50.0	-16.9
28.887	11.3			0.0	1.7	20.0				33.0	50.0	-17.0
17.497	11.7			0.0	1.3	20.0				33.0	50.0	-17.0
26.139	11.3			0.0	1.6	20.0				32.9	50.0	-17.1

CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN	Work Order: PROT0266
Serial Number: PG28B9	Date: 11/16/05
Customer: Welch Allyn Protocol, Inc.	Temperature: 21
Attendees: None	Humidity: 39%
Project: Monet	Barometric Pressure: 29.85
Tested by: Rod Peloquin	Job Site: EV01

TEST SPECIFICATIONS

FCC 15.207 AC Powerline Conducted Emissions:2005-9		Test Method
ANSI C63.4:2003		

TEST PARAMETERS

Cable or Line Tested	N
COMMENTS	

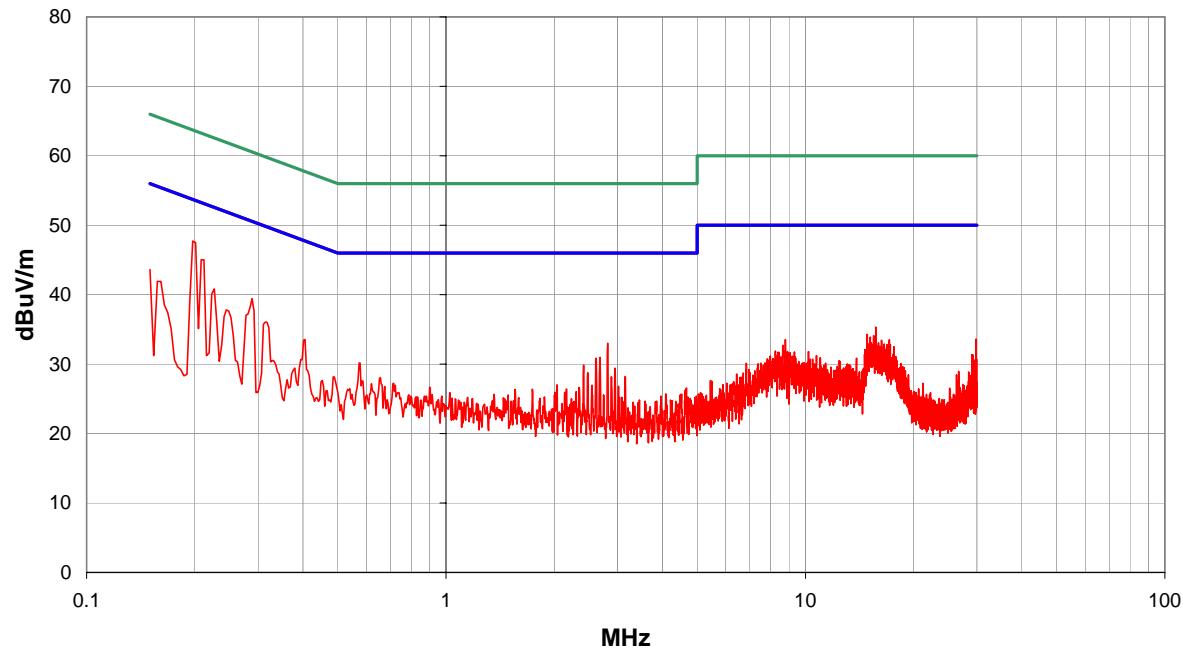
EUT OPERATING MODES

Mid channel, no hop

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4	Roddy L. Peloquin Signature
Configuration #	1	
Results	Pass	



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.197	27.5			0.0	0.2	20.0				47.7	53.7	-6.0
0.212	24.8			0.0	0.2	20.0				45.0	53.1	-8.1
0.288	19.2			0.0	0.2	20.0				39.4	50.6	-11.1
0.227	20.6			0.0	0.2	20.0				40.8	52.6	-11.8
0.150	23.4			0.0	0.2	20.0				43.6	56.0	-12.4
2.818	12.5			0.0	0.5	20.0				33.0	46.0	-13.0
0.161	21.7			0.0	0.2	20.0				41.9	55.4	-13.5
0.318	15.8			0.0	0.2	20.0				36.0	49.8	-13.7
0.245	17.6			0.0	0.2	20.0				37.8	51.9	-14.1
0.405	13.3			0.0	0.2	20.0				33.5	47.7	-14.2
15.700	14.1			0.0	1.2	20.0				35.3	50.0	-14.7
2.683	10.5			0.0	0.5	20.0				31.0	46.0	-15.0
2.617	10.4			0.0	0.5	20.0				30.9	46.0	-15.1
14.851	13.1			0.0	1.2	20.0				34.3	50.0	-15.7
0.576	9.9			0.0	0.3	20.0				30.2	46.0	-15.8
15.477	12.9			0.0	1.2	20.0				34.1	50.0	-15.9
15.146	12.7			0.0	1.2	20.0				33.9	50.0	-16.1
2.413	9.4			0.0	0.4	20.0				29.8	46.0	-16.2
29.824	11.8			0.0	1.8	20.0				33.6	50.0	-16.4

CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN

Work Order: PROT0266

Serial Number: PG28B9

Date: 11/16/05

Customer: Welch Allyn Protocol, Inc.

Temperature: 21

Attendees: None

Humidity: 39%

Project: Monet

Barometric Pressure: 29.85

Tested by: Rod Peloquin

Power: 5VDC via 120VAC/60Hz

Job Site: EV01

TEST SPECIFICATIONS

Test Method

FCC 15.207 AC Powerline Conducted Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

Cable or Line Tested L1

COMMENTS

EUT OPERATING MODES

High channel, no hop

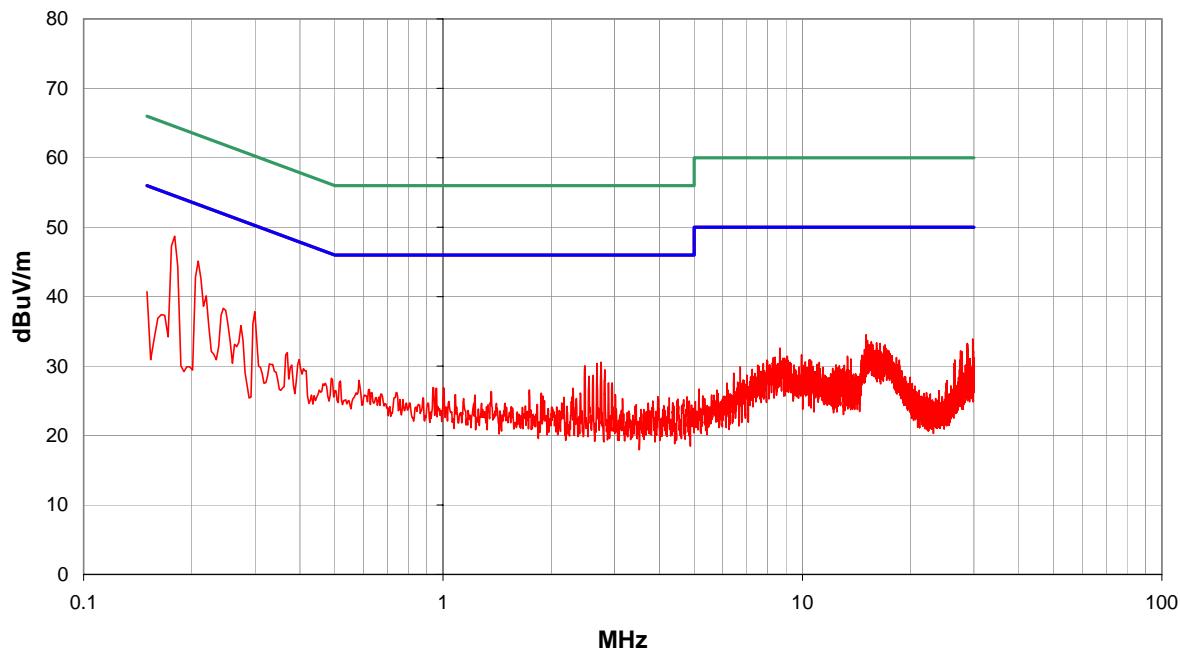
DEVIATIONS FROM TEST STANDARD

No deviations.

Run # 5

Configuration # 1

Results Pass

Rod Peloquin
Signature

Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.179	28.5			0.0	0.2	20.0				48.7	54.5	-5.8
0.208	24.9			0.0	0.2	20.0				45.1	53.3	-8.2
0.299	17.6			0.0	0.2	20.0				37.8	50.3	-12.4
0.245	18.1			0.0	0.2	20.0				38.3	51.9	-13.6
0.274	15.6			0.0	0.2	20.0				35.8	51.0	-15.2
0.150	20.5			0.0	0.2	20.0				40.7	56.0	-15.3
2.752	10.1			0.0	0.5	20.0				30.6	46.0	-15.4
15.040	13.3			0.0	1.2	20.0				34.5	50.0	-15.5
2.683	9.9			0.0	0.5	20.0				30.4	46.0	-15.6
2.482	9.6			0.0	0.4	20.0				30.0	46.0	-16.0
29.769	12.1			0.0	1.8	20.0				33.9	50.0	-16.1
15.164	12.5			0.0	1.2	20.0				33.7	50.0	-16.3
15.550	12.3			0.0	1.2	20.0				33.5	50.0	-16.5
2.821	9.0			0.0	0.5	20.0				29.5	46.0	-16.5
0.369	11.7			0.0	0.2	20.0				31.9	48.5	-16.6
16.082	12.1			0.0	1.2	20.0				33.3	50.0	-16.7
16.443	12.0			0.0	1.2	20.0				33.2	50.0	-16.8
28.756	11.5			0.0	1.7	20.0				33.2	50.0	-16.8
28.770	11.4			0.0	1.7	20.0				33.1	50.0	-16.9

CONDUCTED EMISSIONS DATA SHEET

EUT: Propaq 802 LTRN

Work Order: PROT0266

Serial Number: PG28B9

Date: 11/16/05

Customer: Welch Allyn Protocol, Inc.

Temperature: 21

Attendees: None

Humidity: 39%

Project: Monet

Barometric Pressure: 29.85

Tested by: Rod Peloquin

Power: 5VDC via 120VAC/60Hz

Job Site: EV01

TEST SPECIFICATIONS

Test Method

FCC 15.207 AC Powerline Conducted Emissions:2005-9

ANSI C63.4:2003

TEST PARAMETERS

Cable or Line Tested

N

COMMENTS

EUT OPERATING MODES

High channel, no hop

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #

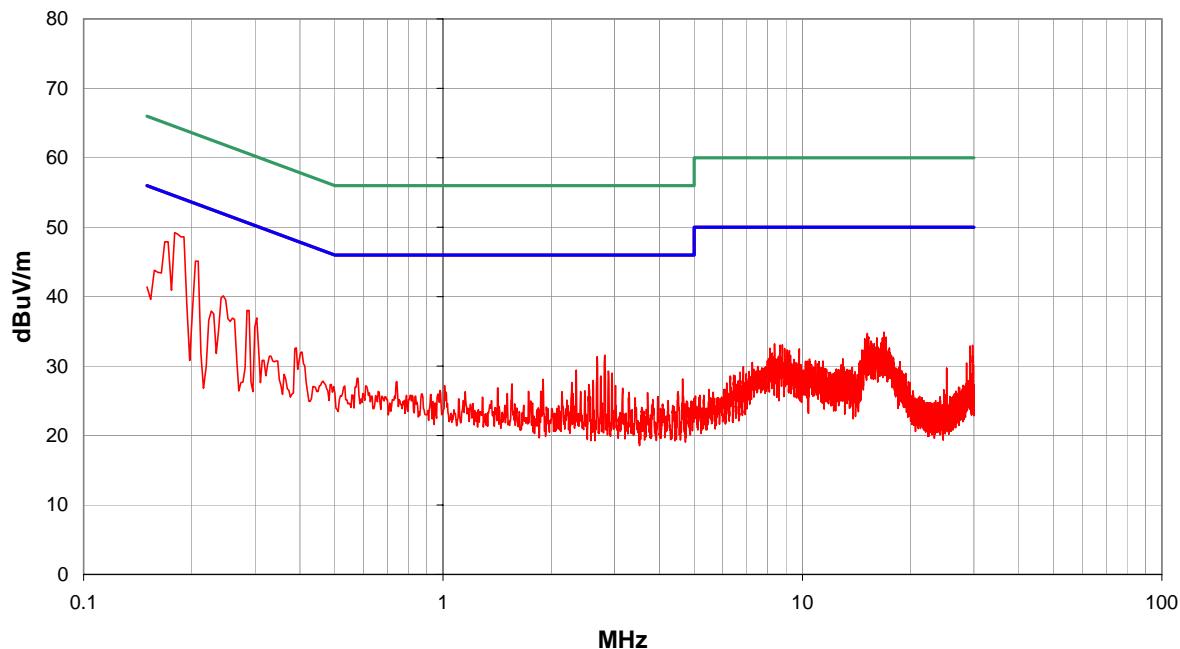
6

Configuration #

1

Results

Pass

Rod Peloquin
Signature

Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks (PK) from scan)		Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
0.179	29.0			0.0	0.2	20.0				49.2	54.5	-5.3
0.172	27.7			0.0	0.2	20.0				47.9	54.9	-7.0
0.208	24.9			0.0	0.2	20.0				45.1	53.3	-8.2
0.245	19.9			0.0	0.2	20.0				40.1	51.9	-11.8
0.288	17.8			0.0	0.2	20.0				38.0	50.6	-12.5
0.303	16.7			0.0	0.2	20.0				36.9	50.2	-13.2
2.821	11.1			0.0	0.5	20.0				31.6	46.0	-14.4
2.686	10.9			0.0	0.5	20.0				31.4	46.0	-14.6
0.227	17.7			0.0	0.2	20.0				37.9	52.6	-14.7
16.859	13.6			0.0	1.3	20.0				34.9	50.0	-15.1
15.149	13.5			0.0	1.2	20.0				34.7	50.0	-15.3
0.391	12.4			0.0	0.2	20.0				32.6	48.1	-15.4
0.405	11.8			0.0	0.2	20.0				32.0	47.7	-15.7
15.266	13.0			0.0	1.2	20.0				34.2	50.0	-15.8
17.088	12.9			0.0	1.3	20.0				34.2	50.0	-15.8
16.702	12.8			0.0	1.3	20.0				34.1	50.0	-15.9
16.108	12.8			0.0	1.2	20.0				34.0	50.0	-16.0
16.720	12.7			0.0	1.3	20.0				34.0	50.0	-16.0
14.902	12.7			0.0	1.2	20.0				33.9	50.0	-16.1

