

# Intermec Technologies Corporation

**1000CP01UO  
1000CP02UO  
1001CP01UO**

**Tested to the following Specifications:**

**FCC 15.247:2011  
802.11b/g/n Portion**

**Report No. INMC0661**

Report Prepared By



[www.nwemc.com](http://www.nwemc.com)  
1-888-EMI-CERT

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**EMC Test Report**



22975 NW Evergreen Parkway  
Suite 400  
Hillsboro, Oregon 97124

### Certificate of Test

Last Date of Test: January 10, 2011  
Intermec Technologies Corporation  
Models: 1000CP01UO, 1000CP02UO, 1001CP01UO

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions	FCC 15.247:2011	ANSI C63.10:2009	Pass

**Modifications made to the product**  
See the Modifications section of this report

#### Test Facility

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

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

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

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-2).

Approved By:

Tim O'Shea, Operations Manager



NVLAP Lab Code: 200630-0

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

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

Revision Number	Description	Date	Page Number
00	None		

**Barometric Pressure**

The recorded barometric pressure has been normalized to sea level.



# Accreditations and Authorizations

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## 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.

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## NVLAP

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

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## 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-Gen, Issue 2 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. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)

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## 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.

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## 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).

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# Accreditations and Authorizations

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## VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634.*)

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## 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 (US0017).

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## 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

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## KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175*)

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## VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

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## SCOPE

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

<http://www.nwemc.com/accreditations/>



# Northwest EMC Locations



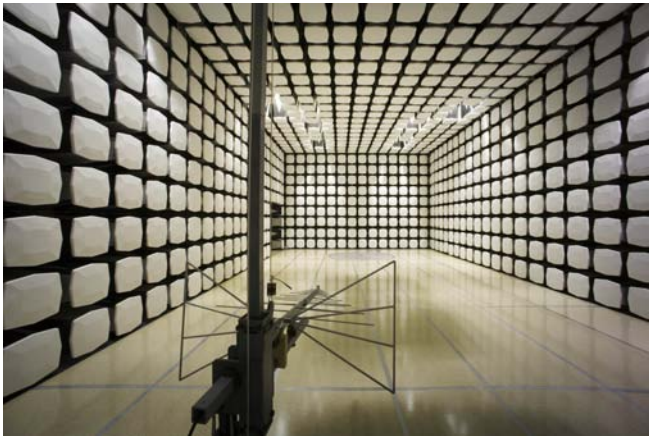
Oregon  
Labs EV01-EV12  
22975 NW Evergreen Pkwy  
Suite 400  
Hillsboro, OR 97124  
(503) 844-4066

California  
Labs OC01-OC13  
41 Tesla  
Irvine, CA 92618  
(949) 861-8918

Minnesota  
Labs MN01-MN08  
9349 W Broadway Ave.  
Brooklyn Park,  
MN 55445  
(763) 425-2281

Washington  
Labs SU01-SU07  
14128 339<sup>th</sup> Ave. SE  
Sultan, WA 98294  
(360) 793-8675

New York  
Labs WA01-WA04  
4939 Jordan Rd.  
Elbridge, NY 13060  
(315) 685-0796



## Party Requesting the Test

<b>Company Name:</b>	Intermec Technologies Corporation
<b>Address:</b>	6001 36th Avenue West
<b>City, State, Zip:</b>	Everett, WA 98203-1264
<b>Test Requested By:</b>	Wayne Rieger
<b>Model:</b>	1000CP01UO, 1000CP02UO, 1001CP01UO
<b>First Date of Test:</b>	January 10, 2011
<b>Last Date of Test:</b>	January 10, 2011
<b>Receipt Date of Samples:</b>	January 10, 2011
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

## Information Provided by the Party Requesting the Test

**Functional Description of the EUT (Equipment Under Test):**

Handheld computers containing the Intermec Model RC12 radio module. The module is an 802.11a/b/g/n – Bluetooth radio.

The handheld computers also contain a UMTS radio module.

**Testing Objective:**

To demonstrate compliance with FCC 15.247 spurious radiated emissions requirements for the 802.11b/g/n portion of the radio. The RC12 radio module has been previously tested in a stand-alone configuration using a higher gain antenna of the same type. This testing in the Models 100CP01UO, 1000CP02UO, and 1001CP01UO handheld computers was done for an additional assurance of compliance.

**CONFIGURATION 1 INMC0661**

Software/Firmware Running during test	
Description	Version
Windows Mobile	6.5
Regulatory Test Tool	RTT_1.01.00.0014

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computer, A1	Intermec Technologies Corp	1000CP01UO	24411047041

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Intermec Technologies Corp	AE39	02061000875
USB SNAPON	Intermec Technologies Corp	225-773-001	HDIP D-SUB, A3
Battery Pack	Intermec Technologies Corp	1000AB01	16961002196

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Leads	No	1.8m	Yes	SNAPON	Power Supply
Serial/USB	Yes	0.5	Yes	SNAPON	Unterminated

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

**CONFIGURATION 2 INMC0661**

Software/Firmware Running during test	
Description	Version
Windows Mobile	6.5
Regulatory Test Tool	RTT_1.01.00.0014

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computer, B1	Intermec Technologies Corp	1000CP02UO	24411047146

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Intermec Technologies Corp	AE39	02061000875
USB SNAPON	Intermec Technologies Corp	225-773-001	HDIP D-SUB, A3
Battery Pack	Intermec Technologies Corp	1000AB01	16961002196

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Leads	No	1.8m	Yes	SNAPON	Power Supply
Serial/USB	Yes	0.5	Yes	SNAPON	Unterminated

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



**CONFIGURATION 3 INMC0661****Software/Firmware Running during test**

Description	Version
Windows Mobile	6.5
Regulatory Test Tool	RTT_1.01.00.0014

**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computer, C1	Intermec Technologies Corp	1001CP01UO	25411047063

**Peripherals in test setup boundary**

Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Intermec Technologies Corp	AE39	02061000875
USB SNAPON	Intermec Technologies Corp	225-773-001	HDIP D-SUB, A3
Battery Pack	Intermec Technologies Corp	1000AB01	16961002196
Battery Pack	Intermec Technologies Corp	1001AB01	16661001916

**Cables**

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Leads	No	1.8m	Yes	SNAPON	Power Supply
Serial/USB	Yes	0.5	Yes	SNAPON	Unterminated

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

**Equipment modifications**

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/10/2011	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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

**MODES OF OPERATION**

802.11 1 Mbps
802.11 6 Mbps
802.11 11 Mbps
802.11 36 Mbps
802.11 54Mbps
802.11 MCS0
802.11 MCS7

**FREQUENCIES INVESTIGATED**

Low Channel, 2412 MHz
Mid Channel, 2437 MHz
High Channel, 2462 MHz

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz
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**FREQUENCY RANGE INVESTIGATED**

Start Frequency	30 MHz	Stop Frequency	26 GHz
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**SAMPLE CALCULATIONS**

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

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	7/14/2010	24
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/8/2010	13
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	9/29/2010	13
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	9/29/2010	13
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	4/2/2010	13
OC Cable	ESM Cable Corp.	KMKM-72	OCV	11/3/2009	16
Cable	ESM Cable Corp.	KMKM-72	EVY	11/3/2009	16
EV12 Cables	N/A	Standard Gain Horn Cables	EVU	7/14/2010	13
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	11/22/2010	13
EV12 Cables	N/A	Bilog Cables	EVS	7/14/2010	13
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	6/22/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	12/15/2010	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	7/14/2010	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	7/14/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Antenna, Horn	ETS	3160-08	AIA	NCR	0
Antenna, Horn	ETS	3160.07	AHZ	9/8/2010	24
Antenna, Horn	ETS	3115	AIB	9/8/2010	24
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12

**MEASUREMENT BANDWIDTHS**

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

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

**MEASUREMENT UNCERTAINTY**

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

**TEST DESCRIPTION**

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 axes, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

EUT: 1000CP01UO	Work Order: INMC0661
Serial Number: 24411047041	Date: 01/10/11
Customer: Intermec Technologies Corporation	Temperature: 23.1 °C
Attendees: none	Humidity: 29%
Project: None	Barometric Pres.: 1020.4 mb
Tested by: Rod Peloquin	Power: 120VAC/60Hz
	Job Site: EV12

TEST SPECIFICATIONS	Test Method
FCC 15.247:2011	ANSI C63.10:2009

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

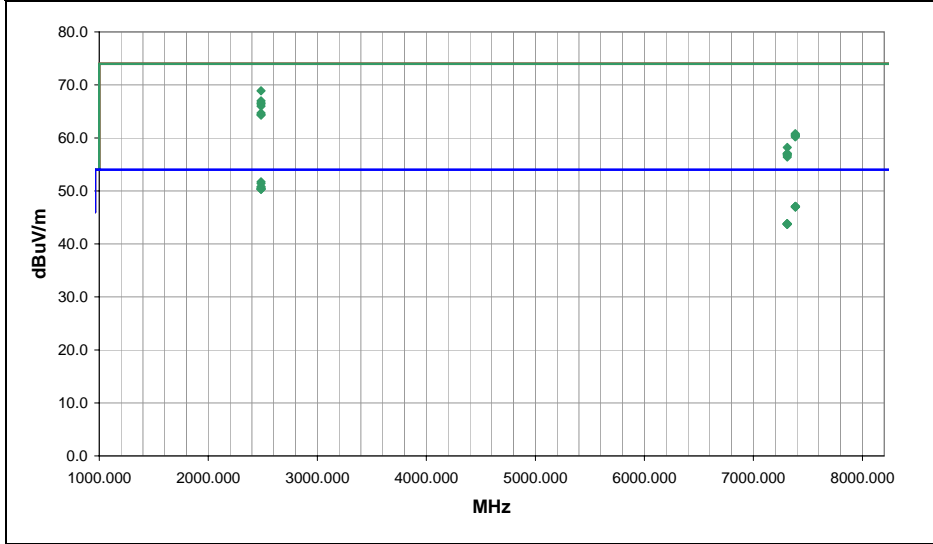
COMMENTS  
None

EUT OPERATING MODES  
Transmitting 802.11

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)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.533	31.8	-0.1	44.0	1.1	3.0	20.0	H-Horn	AV	0.0	51.7	54.0	-2.3	High channel, 802.11n MCS0, EUT on side
2483.507	31.5	-0.1	134.0	1.1	3.0	20.0	V-Horn	AV	0.0	51.4	54.0	-2.6	High channel, 802.11n MCS0, EUT vertical
2483.500	30.9	-0.1	138.0	1.1	3.0	20.0	V-Horn	AV	0.0	50.8	54.0	-3.2	High channel, 802.11g 6 Mbps, EUT vertical
2483.597	30.8	-0.1	73.0	1.2	3.0	20.0	H-Horn	AV	0.0	50.7	54.0	-3.3	High channel, 802.11n MCS7, EUT on side
2483.500	30.5	-0.1	160.0	1.1	3.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	High channel, 802.11n MCS7, EUT vertical
2483.500	30.5	-0.1	140.0	1.1	3.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	High channel, 802.11g 36 Mbps, EUT vertical
2483.703	30.5	-0.1	47.0	1.2	3.0	20.0	H-Horn	AV	0.0	50.4	54.0	-3.6	High channel, 802.11g 6 Mbps, EUT on side
2483.605	30.4	-0.1	48.0	1.2	3.0	20.0	H-Horn	AV	0.0	50.3	54.0	-3.7	High channel, 802.11g 36 Mbps, EUT on side
2484.243	49.0	-0.1	44.0	1.1	3.0	20.0	H-Horn	PK	0.0	68.9	74.0	-5.1	High channel, 802.11n MCS0, EUT on side
7385.174	28.7	18.4	1.0	2.5	3.0	0.0	V-Horn	AV	0.0	47.1	54.0	-6.9	High channel, 802.11g 54 Mbps, EUT on side
7384.133	28.6	18.4	53.0	1.0	3.0	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 36 Mbps, EUT on side
7384.150	28.6	18.4	156.0	1.0	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 54 Mbps, EUT on side
7385.110	28.6	18.4	59.0	1.0	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11b 11 Mbps, EUT on side
7385.316	28.6	18.4	51.0	1.0	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 36 Mbps, EUT on side
7386.533	28.6	18.4	232.0	2.4	3.0	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11b 11 Mbps, EUT on side
2483.682	47.1	-0.1	134.0	1.1	3.0	20.0	V-Horn	PK	0.0	67.0	74.0	-7.0	High channel, 802.11n MCS0, EUT vertical
2484.325	46.7	-0.1	47.0	1.2	3.0	20.0	H-Horn	PK	0.0	66.6	74.0	-7.4	High channel, 802.11g 6 Mbps, EUT on side
2483.768	46.5	-0.1	73.0	1.2	3.0	20.0	H-Horn	PK	0.0	66.4	74.0	-7.6	High channel, 802.11n MCS7, EUT on side
2484.135	46.1	-0.1	160.0	1.1	3.0	20.0	V-Horn	PK	0.0	66.0	74.0	-8.0	High channel, 802.11n MCS7, EUT vertical
2484.233	44.8	-0.1	138.0	1.1	3.0	20.0	V-Horn	PK	0.0	64.7	74.0	-9.3	High channel, 802.11g 6 Mbps, EUT vertical
2483.595	44.5	-0.1	140.0	1.1	3.0	20.0	V-Horn	PK	0.0	64.4	74.0	-9.6	High channel, 802.11g 36 Mbps, EUT vertical
2483.500	44.4	-0.1	48.0	1.2	3.0	20.0	H-Horn	PK	0.0	64.3	74.0	-9.7	High channel, 802.11g 36 Mbps, EUT on side
7309.130	25.7	18.1	249.0	1.7	3.0	0.0	H-Horn	AV	0.0	43.8	54.0	-10.2	Mid channel, 802.11b 1 Mbps, EUT vertical
7309.340	25.7	18.1	340.0	1.0	3.0	0.0	H-Horn	AV	0.0	43.8	54.0	-10.2	Mid channel, 802.11b 1 Mbps, EUT on side
7311.040	25.7	18.1	194.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.8	54.0	-10.2	Mid channel, 802.11b 1 Mbps, EUT horizontal
7308.694	25.6	18.1	269.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.7	54.0	-10.3	Mid channel, 802.11b 1 Mbps, EUT vertical
7310.693	25.6	18.1	68.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.7	54.0	-10.3	Mid channel, 802.11b 1 Mbps, EUT on side
7310.953	25.6	18.1	360.0	1.0	3.0	0.0	H-Horn	AV	0.0	43.7	54.0	-10.3	Mid channel, 802.11b 1 Mbps, EUT horizontal
7384.427	42.4	18.4	156.0	1.0	3.0	0.0	H-Horn	PK	0.0	60.8	74.0	-13.2	High channel, 802.11g 54 Mbps, EUT on side
7384.680	42.2	18.4	232.0	2.4	3.0	0.0	V-Horn	PK	0.0	60.6	74.0	-13.4	High channel, 802.11b 11 Mbps, EUT on side
7384.300	42.1	18.4	53.0	1.0	3.0	0.0	V-Horn	PK	0.0	60.5	74.0	-13.5	High channel, 802.11g 36 Mbps, EUT on side
7385.780	42.1	18.4	1.0	2.5	3.0	0.0	V-Horn	PK	0.0	60.5	74.0	-13.5	High channel, 802.11g 54 Mbps, EUT on side
7385.833	41.9	18.4	59.0	1.0	3.0	0.0	H-Horn	PK	0.0	60.3	74.0	-13.7	High channel, 802.11b 11 Mbps, EUT on side
7384.633	41.8	18.4	51.0	1.0	3.0	0.0	H-Horn	PK	0.0	60.2	74.0	-13.8	High channel, 802.11g 36 Mbps, EUT on side
7310.434	40.1	18.1	340.0	1.0	3.0	0.0	H-Horn	PK	0.0	58.2	74.0	-15.8	Mid channel, 802.11b 1 Mbps, EUT on side
7310.287	39.0	18.1	269.0	1.6	3.0	0.0	V-Horn	PK	0.0	57.1	74.0	-16.9	Mid channel, 802.11b 1 Mbps, EUT vertical
7309.160	38.9	18.1	194.0	1.6	3.0	0.0	V-Horn	PK	0.0	57.0	74.0	-17.0	Mid channel, 802.11b 1 Mbps, EUT horizontal
7310.180	38.8	18.1	249.0	1.7	3.0	0.0	H-Horn	PK	0.0	56.9	74.0	-17.1	Mid channel, 802.11b 1 Mbps, EUT vertical
7310.187	38.6	18.1	68.0	1.0	3.0	0.0	V-Horn	PK	0.0	56.7	74.0	-17.3	Mid channel, 802.11b 1 Mbps, EUT on side
7310.083	38.3	18.1	360.0	1.0	3.0	0.0	H-Horn	PK	0.0	56.4	74.0	-17.6	Mid channel, 802.11b 1 Mbps, EUT horizontal

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

**MODES OF OPERATION**

802.11 1 Mbps
802.11 6 Mbps
802.11 11 Mbps
802.11 36 Mbps
802.11 54Mbps
802.11 MCS0
802.11 MCS7

**FREQUENCIES INVESTIGATED**

Low Channel, 2412 MHz
Mid Channel, 2437 MHz
High Channel, 2462 MHz

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz
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**FREQUENCY RANGE INVESTIGATED**

Start Frequency	30 MHz	Stop Frequency	26 GHz
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**SAMPLE CALCULATIONS**

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

**TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	7/14/2010	24
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/8/2010	13
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	9/29/2010	13
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	9/29/2010	13
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	4/2/2010	13
OC Cable	ESM Cable Corp.	KMKM-72	OCV	11/3/2009	16
Cable	ESM Cable Corp.	KMKM-72	EVY	11/3/2009	16
EV12 Cables	N/A	Standard Gain Horn Cables	EVU	7/14/2010	13
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	11/22/2010	13
EV12 Cables	N/A	Bilog Cables	EVS	7/14/2010	13
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	6/22/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	12/15/2010	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	7/14/2010	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	7/14/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Antenna, Horn	ETS	3160-08	AIA	NCR	0
Antenna, Horn	ETS	3160.07	AHZ	9/8/2010	24
Antenna, Horn	ETS	3115	AIB	9/8/2010	24
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12

**MEASUREMENT BANDWIDTHS**

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

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

**MEASUREMENT UNCERTAINTY**

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

**TEST DESCRIPTION**

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 C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

EUT: 1000CP02UO	Work Order: INMC0661
Serial Number: 24411047146	Date: 01/10/11
Customer: Intermec Technologies Corporation	Temperature: 23.1 °C
Attendees: none	Humidity: 29%
Project: None	Barometric Pres.: 1020.4 mb
Tested by: Rod Peloquin	Power: 120VAC/60Hz
	Job Site: EV12

<b>TEST SPECIFICATIONS</b>	Test Method
FCC 15.247:2011	ANSI C63.10:2009

<b>TEST PARAMETERS</b>	
Antenna Height(s) (m) 1 - 4	Test Distance (m) 3

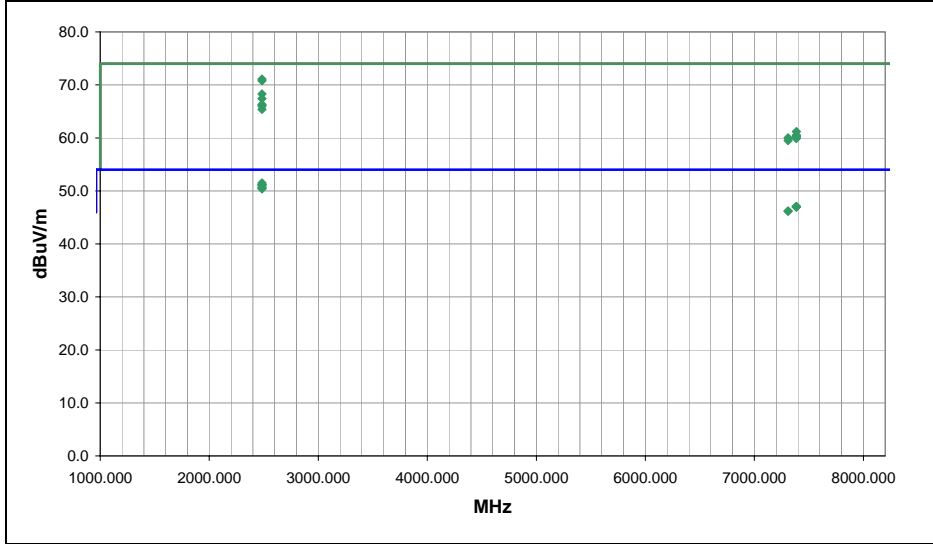
**COMMENTS**  
None

**EUT OPERATING MODES**  
Transmitting 802.11

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	3
Configuration #	2
Results	Pass

*Rod Peloquin*  
Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2484.007	31.6	-0.1	64.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.5	54.0	-2.5	High channel, 802.11n MCS0, EUT on side
2483.342	31.3	-0.1	64.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.2	54.0	-2.8	High channel, 802.11g 36 Mbps, EUT on side
2483.935	31.3	-0.1	64.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.2	54.0	-2.8	High channel, 802.11n MCS7, EUT on side
2483.768	31.2	-0.1	74.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.1	54.0	-2.9	High channel, 802.11g 6 Mbps, EUT on side
2483.782	51.2	-0.1	64.0	1.2	3.0	20.0	H-Horn	PK	0.0	71.1	74.0	-2.9	High channel, 802.11n MCS0, EUT on side
2483.840	31.0	-0.1	101.0	1.1	3.0	20.0	V-Horn	AV	0.0	50.9	54.0	-3.1	High channel, 802.11n MCS0, EUT vertical
2483.838	50.9	-0.1	101.0	1.1	3.0	20.0	V-Horn	PK	0.0	70.8	74.0	-3.2	High channel, 802.11n MCS0, EUT vertical
2483.308	30.7	-0.1	98.0	1.2	3.0	20.0	V-Horn	AV	0.0	50.6	54.0	-3.4	High channel, 802.11g 36Mbps, EUT vertical
2483.678	30.6	-0.1	137.0	1.1	3.0	20.0	V-Horn	AV	0.0	50.5	54.0	-3.5	High channel, 802.11n MCS7, EUT vertical
2483.535	30.5	-0.1	105.0	1.2	3.0	20.0	V-Horn	AV	0.0	50.4	54.0	-3.6	High channel, 802.11g 6Mbps, EUT vertical
2483.570	48.4	-0.1	74.0	1.2	3.0	20.0	H-Horn	PK	0.0	68.3	74.0	-5.7	High channel, 802.11g 6 Mbps, EUT on side
2483.622	47.5	-0.1	64.0	1.2	3.0	20.0	H-Horn	PK	0.0	67.4	74.0	-6.6	High channel, 802.11g 36 Mbps, EUT on side
7384.750	28.6	18.4	123.0	2.4	3.0	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 54 Mbps, EUT on side
7385.177	28.6	18.4	0.0	3.8	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 54 Mbps, EUT on side
7385.187	28.6	18.4	306.0	1.0	3.0	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11b 11 Mbps, EUT on side
7385.304	28.6	18.4	186.0	1.2	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 36 Mbps, EUT on side
7385.623	28.6	18.4	331.0	2.4	3.0	0.0	V-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11g 36 Mbps, EUT on side
7385.720	28.6	18.4	186.0	1.1	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	High channel, 802.11b 11 Mbps, EUT on side
2483.642	46.4	-0.1	64.0	1.2	3.0	20.0	H-Horn	PK	0.0	66.3	74.0	-7.7	High channel, 802.11n MCS7, EUT on side
7309.090	28.1	18.1	334.0	1.0	3.0	0.0	H-Horn	AV	0.0	46.2	54.0	-7.8	Mid channel, 802.11g 6 Mbps, EUT on side
7309.556	28.1	18.1	166.0	1.0	3.0	0.0	V-Horn	AV	0.0	46.2	54.0	-7.8	Mid channel, 802.11g 6 Mbps, EUT on side
2483.593	46.3	-0.1	105.0	1.2	3.0	20.0	V-Horn	PK	0.0	66.2	74.0	-7.8	High channel, 802.11g 6Mbps, EUT vertical
2483.807	46.1	-0.1	98.0	1.2	3.0	20.0	V-Horn	PK	0.0	66.0	74.0	-8.0	High channel, 802.11g 36Mbps, EUT vertical
2484.225	45.5	-0.1	137.0	1.1	3.0	20.0	V-Horn	PK	0.0	65.4	74.0	-8.6	High channel, 802.11n MCS7, EUT vertical
7385.777	42.8	18.4	186.0	1.2	3.0	0.0	H-Horn	PK	0.0	61.2	74.0	-12.8	High channel, 802.11g 36 Mbps, EUT on side
7385.106	42.1	18.4	123.0	2.4	3.0	0.0	V-Horn	PK	0.0	60.5	74.0	-13.5	High channel, 802.11g 54 Mbps, EUT on side
7384.780	42.0	18.4	186.0	1.1	3.0	0.0	H-Horn	PK	0.0	60.4	74.0	-13.6	High channel, 802.11b 11 Mbps, EUT on side
7384.960	41.8	18.4	306.0	1.0	3.0	0.0	V-Horn	PK	0.0	60.2	74.0	-13.8	High channel, 802.11b 11 Mbps, EUT on side
7309.396	41.9	18.1	334.0	1.0	3.0	0.0	H-Horn	PK	0.0	60.0	74.0	-14.0	Mid channel, 802.11g 6 Mbps, EUT on side
7385.633	41.6	18.4	0.0	3.8	3.0	0.0	H-Horn	PK	0.0	60.0	74.0	-14.0	High channel, 802.11g 54 Mbps, EUT on side
7384.086	41.5	18.4	331.0	2.4	3.0	0.0	V-Horn	PK	0.0	59.9	74.0	-14.1	High channel, 802.11g 36 Mbps, EUT on side
7309.780	41.4	18.1	166.0	1.0	3.0	0.0	V-Horn	PK	0.0	59.5	74.0	-14.5	Mid channel, 802.11g 6 Mbps, EUT on side

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

**MODES OF OPERATION**

802.11 1 Mbps
802.11 6 Mbps
802.11 11 Mbps
802.11 36 Mbps
802.11 54Mbps
802.11 MCS0
802.11 MCS7

**FREQUENCIES INVESTIGATED**

Low Channel, 2412 MHz
Mid Channel, 2437 MHz
High Channel, 2462 MHz

**POWER SETTINGS INVESTIGATED**

120VAC/60Hz
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**FREQUENCY RANGE INVESTIGATED**

Start Frequency	30 MHz	Stop Frequency	26 GHz
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**SAMPLE CALCULATIONS**

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

**TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4407B	AAU	7/14/2010	24
High Pass Filter	Micro-Tronics	HPM50112	HGA	10/8/2010	13
5.725-5.875 Notch Filter	Micro-Tronics	BRC50705	HGJ	9/29/2010	13
5.47-5.725 Notch Filter	Micro-Tronics	BRC50704	HGI	9/29/2010	13
5.25 GHz Notch Filter	K&L Microwave	8N50-5250/X200-0/0	HFK	4/2/2010	13
OC Cable	ESM Cable Corp.	KMKM-72	OCV	11/3/2009	16
Cable	ESM Cable Corp.	KMKM-72	Evy	11/3/2009	16
EV12 Cables	N/A	Standard Gain Horn Cables	EVU	7/14/2010	13
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	11/22/2010	13
EV12 Cables	N/A	Bilog Cables	EVS	7/14/2010	13
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVR	6/22/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	12/15/2010	13
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	7/14/2010	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	7/14/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13
Antenna, Horn	ETS Lindgren	3160-10	AIW	NCR	0
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Antenna, Horn	ETS	3160-08	AIA	NCR	0
Antenna, Horn	ETS	3160.07	AHZ	9/8/2010	24
Antenna, Horn	ETS	3115	AIB	9/8/2010	24
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12

**MEASUREMENT BANDWIDTHS**

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

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

**MEASUREMENT UNCERTAINTY**

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

**TEST DESCRIPTION**

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 axes, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

EUT: 1001CP01UO	Work Order: INMC0661
Serial Number: 25411047063	Date: 01/10/11
Customer: Intermec Technologies Corporation	Temperature: 23.1 °C
Attendees: none	Humidity: 29%
Project: None	Barometric Pres.: 1020.4 mb
Tested by: Rod Peloquin	Power: 120VAC/60Hz
	Job Site: EV12

<b>TEST SPECIFICATIONS</b>	Test Method
FCC 15.247:2011	ANSI C63.10:2009

<b>TEST PARAMETERS</b>	
Antenna Height(s) (m) 1 - 4	Test Distance (m) 3

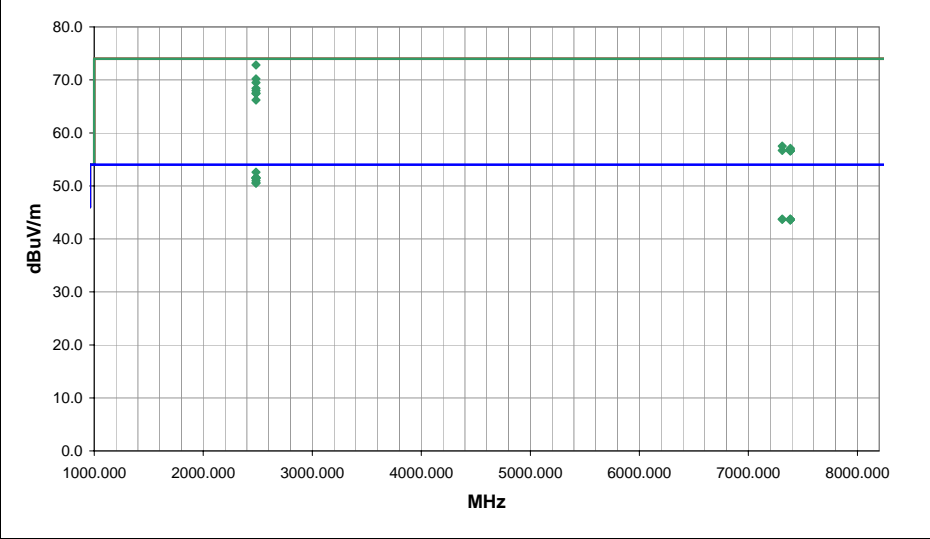
**COMMENTS**  
None

**EUT OPERATING MODES**  
Transmitting 802.11

**DEVIATIONS FROM TEST STANDARD**  
No deviations.

Run #	4
Configuration #	3
Results	Pass

*Rod Peloquin*  
Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.975	52.9	-0.1	76.0	1.2	3.0	20.0	H-Horn	PK	0.0	72.8	74.0	-1.2	High channel, 802.11n MCS0, EUT on side
2483.528	32.7	-0.1	76.0	1.2	3.0	20.0	H-Horn	AV	0.0	52.6	54.0	-1.4	High channel, 802.11n MCS0, EUT on side
2483.535	31.7	-0.1	74.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.6	54.0	-2.4	High channel, 802.11g 6 Mbps, EUT on side
2483.508	31.6	-0.1	76.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.5	54.0	-2.5	High channel, 802.11n MCS7, EUT on side
2483.620	31.6	-0.1	153.0	1.3	3.0	20.0	V-Horn	AV	0.0	51.5	54.0	-2.5	High channel, 802.11n MCS0, EUT vertical
2483.523	31.5	-0.1	76.0	1.2	3.0	20.0	H-Horn	AV	0.0	51.4	54.0	-2.6	High channel, 802.11g 36 Mbps, EUT on side
2483.543	31.1	-0.1	153.0	1.3	3.0	20.0	V-Horn	AV	0.0	51.0	54.0	-3.0	High channel, 802.11g 6 Mbps, EUT vertical
2483.640	30.7	-0.1	153.0	1.3	3.0	20.0	V-Horn	AV	0.0	50.6	54.0	-3.4	High channel, 802.11g 36 Mbps, EUT vertical
2484.012	30.6	-0.1	153.0	1.3	3.0	20.0	V-Horn	AV	0.0	50.5	54.0	-3.5	High channel, 802.11n MCS7, EUT vertical
2483.723	50.3	-0.1	76.0	1.2	3.0	20.0	H-Horn	PK	0.0	70.2	74.0	-3.8	High channel, 802.11n MCS7, EUT on side
2484.178	49.6	-0.1	74.0	1.2	3.0	20.0	H-Horn	PK	0.0	69.5	74.0	-4.5	High channel, 802.11g 6 Mbps, EUT on side
2483.582	48.5	-0.1	76.0	1.2	3.0	20.0	H-Horn	PK	0.0	68.4	74.0	-5.6	High channel, 802.11g 36 Mbps, EUT on side
2484.050	48.1	-0.1	153.0	1.3	3.0	20.0	V-Horn	PK	0.0	68.0	74.0	-6.0	High channel, 802.11n MCS0, EUT vertical
2483.562	47.6	-0.1	153.0	1.3	3.0	20.0	V-Horn	PK	0.0	67.5	74.0	-6.5	High channel, 802.11n MCS7, EUT vertical
2483.582	47.5	-0.1	153.0	1.3	3.0	20.0	V-Horn	PK	0.0	67.4	74.0	-6.6	High channel, 802.11g 6 Mbps, EUT vertical
2483.785	46.3	-0.1	153.0	1.3	3.0	20.0	V-Horn	PK	0.0	66.2	74.0	-7.8	High channel, 802.11g 36 Mbps, EUT vertical
7310.723	25.6	18.1	250.0	1.0	3.0	0.0	H-Horn	AV	0.0	43.7	54.0	-10.3	Mid channel, 802.11b 1 Mbps, EUT on side
7311.190	25.6	18.1	115.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.7	54.0	-10.3	Mid channel, 802.11b 1 Mbps, EUT on side
7384.707	25.3	18.4	210.0	1.1	3.0	0.0	H-Horn	AV	0.0	43.7	54.0	-10.3	High channel, 802.11g 36 Mbps, EUT on side
7384.753	25.3	18.4	173.0	1.7	3.0	0.0	V-Horn	AV	0.0	43.7	54.0	-10.3	High channel, 802.11g 36 Mbps, EUT on side
7385.430	25.3	18.4	244.0	1.1	3.0	0.0	H-Horn	AV	0.0	43.7	54.0	-10.3	High channel, 802.11b 11 Mbps, EUT on side
7383.613	25.2	18.4	257.0	1.7	3.0	0.0	V-Horn	AV	0.0	43.6	54.0	-10.4	High channel, 802.11b 11 Mbps, EUT on side
7383.866	25.2	18.4	230.0	1.7	3.0	0.0	V-Horn	AV	0.0	43.6	54.0	-10.4	High channel, 802.11g 54 Mbps, EUT on side
7385.380	25.2	18.4	110.0	1.2	3.0	0.0	H-Horn	AV	0.0	43.6	54.0	-10.4	High channel, 802.11g 54 Mbps, EUT on side
7309.957	39.4	18.1	115.0	1.0	3.0	0.0	V-Horn	PK	0.0	57.5	74.0	-16.5	Mid channel, 802.11b 1 Mbps, EUT on side
7385.773	38.7	18.4	230.0	1.7	3.0	0.0	V-Horn	PK	0.0	57.1	74.0	-16.9	High channel, 802.11g 54 Mbps, EUT on side
7310.917	38.6	18.1	250.0	1.0	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	Mid channel, 802.11b 1 Mbps, EUT on side
7385.137	38.3	18.4	257.0	1.7	3.0	0.0	V-Horn	PK	0.0	56.7	74.0	-17.3	High channel, 802.11b 11 Mbps, EUT on side
7385.847	38.3	18.4	210.0	1.1	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	High channel, 802.11g 36 Mbps, EUT on side
7385.997	38.3	18.4	244.0	1.1	3.0	0.0	H-Horn	PK	0.0	56.7	74.0	-17.3	High channel, 802.11b 11 Mbps, EUT on side
7384.203	38.2	18.4	173.0	1.7	3.0	0.0	V-Horn	PK	0.0	56.6	74.0	-17.4	High channel, 802.11g 36 Mbps, EUT on side
7384.850	38.2	18.4	110.0	1.2	3.0	0.0	H-Horn	PK	0.0	56.6	74.0	-17.4	High channel, 802.11g 54 Mbps, EUT on side