Intermec Technologies Corporation

Wistron 802.11(b)/(g) radio

February 02, 2006

Report No. ITRM0112

Report Prepared By

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

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: February 02, 2006
Intermec Technologies Corporation
Model: Wistron 802.11(b)/(g) radio

Emissions				
Test Description	**Specification**	**Test Method**	**Pass**	**Fail**
Spurious Radiated Emissions	FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003	☒	☐

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		

Accreditations and Authorizations

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.

NVLAP Lab code :200629-0
NVLAP Lab code :200630-0
NVLAP Lab code :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 TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV'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).

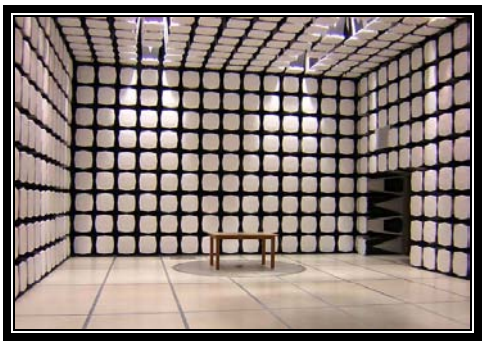
VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071 and R-1025, Irvine: C-2094 and R-1943, Sultan: 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

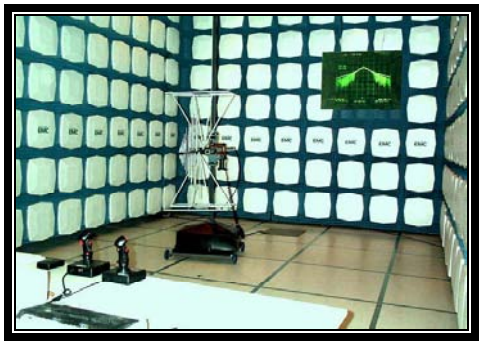
SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/scope.asp



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:	Intermec Technologies Corporation
Address:	550 Second St. SE
City, State, Zip:	Cedar Rapids, IA 52401-2023
Test Requested By:	Scott Holub
Model:	Wistron 802.11(b)/(g) radio
First Date of Test:	January 30, 2006
Last Date of Test:	January 31, 2006
Receipt Date of Samples:	January 30, 2006
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	

Functional Description of the EUT (Equipment Under Test):

Wistron 802.11b/g radio in CN2B co-located with BTM210

Client Justification for EUT Selection:

The product is a representative production sample.

Client Justification for Test Selection:

The Wistron 802.11b/g radio module will replace the Samsung 2610CF in various Intermec handheld devices. This project is required for the limited modular approval of the Wistron radio in the CN2B handheld. A previously certified (full modular approval) Bluetooth module, the BTM210 (FCC ID:EHABTM210) will be co-located with the Wistron radio in the CN2B handheld. The Wistron radio is seeking limited modular approval under FCC 15.247 while co-located with the BTM210 in the CN2B. Intermec has requested that Northwest EMC test the Wistron radio for spurious radiated emissions in the CN2B. A Wistron test report will be used for antenna port direct connect measurements.

CONFIGURATION 1 ITRM0112

Software/Firmware Running during test	
Description	**Version**
FCC Test Utility	**1.01**

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
802.11(b)/(g) radio	Wistron	Unknown	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Bluetooth Radio	Intermec Technologies Corporation	BTM210	Unknown
Host Handheld Computer	Intermec Technologies Corporation	CN2B	33290500210
Docking Station	Intermec Technologies Corporation	AD7	168H0591029
AC Adapter	Intermec Technologies Corporation	074246	425556

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	1.8m	No	Docking Station	Unterminated
DC	No	1.8m	Yes	Docking Station	AC Adapter
AC	No	1.8m	No	AC Adapter	AC Mains
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	1/31/2006	Spurious Radiated Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Spurious Radiated Emissions

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(b), 1Mbps and 11Mbps
802.11(g), 6Mbps, 36Mbps, and 54Mbps

CHANNELS INVESTIGATED
Low Channel, 2412MHz
Mid Channel, 2442MHz
High Channel, 2462MHz

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	26 GHz

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	7/15/2005	12
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2/15/2005	13
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	2/17/2005	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	9/28/2005	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	8/2/2005	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	1/4/2006	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Antenna, Horn	EMCO	3115	AHC	8/30/2005	12
High Pass Filter	Micro-Tronics	HPM50111	HFO	3/9/2005	13

MEASUREMENT BANDWIDTHS

	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.				

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The 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.

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

PSA 2006.01.20
EMI 2006.1.20

EUT:	Wistron 802.11(b)/(g) radio	Work Order:	ITRM0112
Serial Number:	Unknown	Date:	01/30/06
Customer:	Intermec Technologies Corporation	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

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)	0

COMMENTS

Handheld computer in docking station.

EUT OPERATING MODES

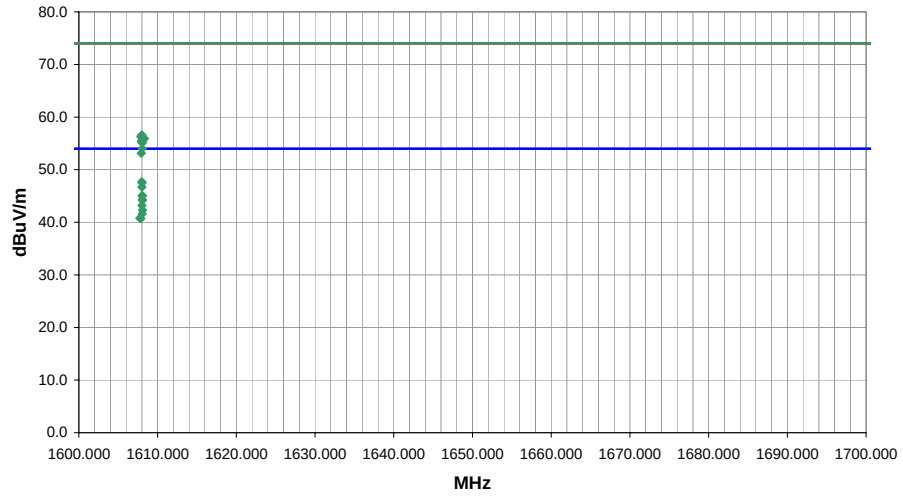
Transmitting 802.11(b), 11Mbps, Low Channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



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
1607.989	30.4	-2.7	181.0	1.2	0.0	20.0	H-Horn	AV	0.0	47.7	54.0	-6.3	802.11(b), 1Mbps, handheld in docking station
1608.028	30.2	-2.7	85.0	1.0	0.0	20.0	V-Horn	AV	0.0	47.5	54.0	-6.5	802.11(b), 1Mbps, handheld in docking station
1608.017	29.4	-2.7	177.0	1.2	0.0	20.0	H-Horn	AV	0.0	46.7	54.0	-7.3	802.11(g), 6Mbps, handheld in docking station
1608.048	27.8	-2.7	118.0	1.2	0.0	20.0	H-Horn	AV	0.0	45.1	54.0	-8.9	802.11(b), 11Mbps, Handheld in Docking Station
1608.047	27.7	-2.7	81.0	1.0	0.0	20.0	V-Horn	AV	0.0	45.0	54.0	-9.0	802.11(g), 6Mbps, handheld in docking station
1608.044	27.0	-2.7	225.0	1.0	0.0	20.0	V-Horn	AV	0.0	44.3	54.0	-9.7	802.11(b), 11Mbps, Handheld in Docking Station
1608.064	26.9	-2.7	141.0	1.2	0.0	20.0	H-Horn	AV	0.0	44.2	54.0	-9.8	802.11(g), 36Mbps, handheld in docking station
1608.010	25.9	-2.7	211.0	1.2	0.0	20.0	H-Horn	AV	0.0	43.2	54.0	-10.8	802.11(g), 54Mbps, handheld in docking station
1608.095	25.0	-2.7	238.0	1.0	0.0	20.0	V-Horn	AV	0.0	42.3	54.0	-11.7	802.11(g), 36Mbps, handheld in docking station
1608.043	24.3	-2.7	67.0	1.0	0.0	20.0	V-Horn	AV	0.0	41.6	54.0	-12.4	802.11(g), 54Mbps, handheld in docking station
1607.743	23.5	-2.7	333.0	1.8	0.0	20.0	H-Horn	AV	0.0	40.8	54.0	-13.2	802.11(b), 1Mbps, handheld standalone
1607.871	23.4	-2.7	318.0	1.0	0.0	20.0	V-Horn	AV	0.0	40.7	54.0	-13.3	802.11(b), 1Mbps, handheld standalone
1608.005	39.3	-2.7	81.0	1.0	0.0	20.0	V-Horn	PK	0.0	56.6	74.0	-17.4	802.11(g), 6Mbps, handheld in docking station
1607.868	39.0	-2.7	85.0	1.0	0.0	20.0	V-Horn	PK	0.0	56.3	74.0	-17.7	802.11(b), 1Mbps, handheld in docking station
1608.084	39.0	-2.7	177.0	1.2	0.0	20.0	H-Horn	PK	0.0	56.3	74.0	-17.7	802.11(g), 6Mbps, handheld in docking station
1608.008	38.8	-2.7	181.0	1.2	0.0	20.0	H-Horn	PK	0.0	56.1	74.0	-17.9	802.11(b), 1Mbps, handheld in docking station
1608.326	38.6	-2.7	238.0	1.0	0.0	20.0	V-Horn	PK	0.0	55.9	74.0	-18.1	802.11(g), 36Mbps, handheld in docking station
1608.080	38.4	-2.7	225.0	1.0	0.0	20.0	V-Horn	PK	0.0	55.7	74.0	-18.3	802.11(b), 11Mbps, Handheld in Docking Station
1608.111	38.4	-2.7	67.0	1.0	0.0	20.0	V-Horn	PK	0.0	55.7	74.0	-18.3	802.11(g), 54Mbps, handheld in docking station
1607.931	38.1	-2.7	118.0	1.2	0.0	20.0	H-Horn	PK	0.0	55.4	74.0	-18.6	802.11(b), 11Mbps, Handheld in Docking Station
1608.050	37.9	-2.7	211.0	1.2	0.0	20.0	H-Horn	PK	0.0	55.2	74.0	-18.8	802.11(g), 54Mbps, handheld in docking station
1608.053	37.8	-2.7	141.0	1.2	0.0	20.0	H-Horn	PK	0.0	55.1	74.0	-18.9	802.11(g), 36Mbps, handheld in docking station
1608.028	36.7	-2.7	333.0	1.8	0.0	20.0	H-Horn	PK	0.0	54.0	74.0	-20.0	802.11(b), 1Mbps, handheld standalone
1607.921	35.8	-2.7	318.0	1.0	0.0	20.0	V-Horn	PK	0.0	53.1	74.0	-20.9	802.11(b), 1Mbps, handheld standalone

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

PSA 2006.01.20
EMI 2006.1.20

EUT:	Wistron 802.11(b)/(g) radio	Work Order:	ITRM0112
Serial Number:	Unknown	Date:	01/30/06
Customer:	Intermec Technologies Corporation	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

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

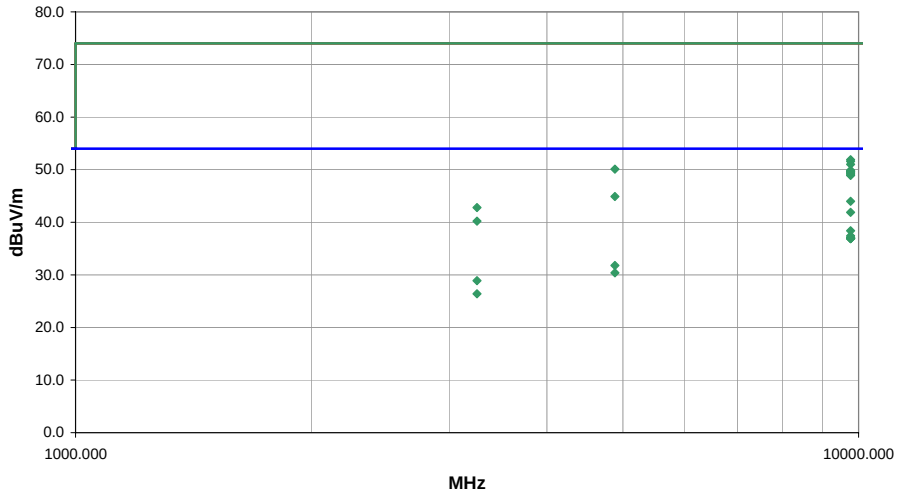
Transmitting 802.11, mid channel. See comments for mode and data rate.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



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
9768.174	28.2	15.8	313.0	1.0	3.0	0.0	H-Horn	AV	0.0	44.0	54.0	-10.0	802.11(b), 1Mbps, handheld in docking station
9768.171	26.1	15.8	233.0	1.3	3.0	0.0	V-Horn	AV	0.0	41.9	54.0	-12.1	802.11(b), 1Mbps, handheld in docking station
9768.138	22.6	15.8	233.0	1.0	3.0	0.0	H-Horn	AV	0.0	38.4	54.0	-15.6	802.11(b), 11Mbps, handheld in docking station
9768.329	21.6	15.8	247.0	1.3	3.0	0.0	V-Horn	AV	0.0	37.4	54.0	-16.6	802.11(g), 6Mbps, handheld in docking station
9768.182	21.3	15.8	271.0	1.1	3.0	0.0	V-Horn	AV	0.0	37.1	54.0	-16.9	802.11(b), 11Mbps, handheld in docking station
9768.233	21.2	15.8	70.0	1.0	3.0	0.0	H-Horn	AV	0.0	37.0	54.0	-17.0	802.11(g), 6Mbps, handheld in docking station
9768.297	21.2	15.8	117.0	1.1	3.0	0.0	H-Horn	AV	0.0	37.0	54.0	-17.0	802.11(g), 54Mbps, handheld in docking station
9768.281	21.1	15.8	335.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.9	54.0	-17.1	802.11(g), 36Mbps, handheld in docking station
9768.506	21.1	15.8	79.0	2.4	3.0	0.0	V-Horn	AV	0.0	36.9	54.0	-17.1	802.11(g), 36Mbps, handheld in docking station
9769.072	21.1	15.8	107.0	2.4	3.0	0.0	V-Horn	AV	0.0	36.9	54.0	-17.1	802.11(g), 54Mbps, handheld in docking station
9768.158	36.1	15.8	233.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.9	74.0	-22.1	802.11(b), 11Mbps, handheld in docking station
4884.508	24.9	6.9	350.0	1.6	3.0	0.0	H-Horn	AV	0.0	31.8	54.0	-22.2	802.11(b), 11Mbps, handheld in docking station
9768.174	35.8	15.8	313.0	1.0	3.0	0.0	H-Horn	PK	0.0	51.6	74.0	-22.4	802.11(b), 1Mbps, handheld in docking station
9767.896	35.2	15.8	233.0	1.3	3.0	0.0	V-Horn	PK	0.0	51.0	74.0	-23.0	802.11(b), 1Mbps, handheld in docking station
4883.872	23.5	6.9	94.0	1.2	3.0	0.0	V-Horn	AV	0.0	30.4	54.0	-23.6	802.11(b), 11Mbps, handheld in docking station
4884.406	43.2	6.9	350.0	1.6	3.0	0.0	H-Horn	PK	0.0	50.1	74.0	-23.9	802.11(b), 11Mbps, handheld in docking station
9768.514	34.1	15.8	247.0	1.3	3.0	0.0	V-Horn	PK	0.0	49.9	74.0	-24.1	802.11(g), 6Mbps, handheld in docking station
9767.788	33.9	15.8	335.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.7	74.0	-24.3	802.11(g), 36Mbps, handheld in docking station
9768.942	33.8	15.8	117.0	1.1	3.0	0.0	H-Horn	PK	0.0	49.6	74.0	-24.4	802.11(g), 54Mbps, handheld in docking station
9768.701	33.6	15.8	70.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.4	74.0	-24.6	802.11(g), 6Mbps, handheld in docking station
9767.248	33.5	15.8	271.0	1.1	3.0	0.0	V-Horn	PK	0.0	49.3	74.0	-24.7	802.11(b), 11Mbps, handheld in docking station
9768.488	33.2	15.8	107.0	2.4	3.0	0.0	V-Horn	PK	0.0	49.0	74.0	-25.0	802.11(g), 54Mbps, handheld in docking station
3255.997	25.2	3.7	299.0	1.0	3.0	0.0	H-Horn	AV	0.0	28.9	54.0	-25.1	802.11(b), 11Mbps, handheld in docking station
9768.090	33.1	15.8	79.0	2.4	3.0	0.0	V-Horn	PK	0.0	48.9	74.0	-25.1	802.11(g), 36Mbps, handheld in docking station
3255.910	22.7	3.7	25.0	3.9	3.0	0.0	V-Horn	AV	0.0	26.4	54.0	-27.6	802.11(b), 11Mbps, handheld in docking station
4883.239	38.0	6.9	94.0	1.2	3.0	0.0	V-Horn	PK	0.0	44.9	74.0	-29.1	802.11(b), 11Mbps, handheld in docking station
3255.390	39.1	3.7	299.0	1.0	3.0	0.0	H-Horn	PK	0.0	42.8	74.0	-31.2	802.11(b), 11Mbps, handheld in docking station
3255.718	36.5	3.7	25.0	3.9	3.0	0.0	V-Horn	PK	0.0	40.2	74.0	-33.8	802.11(b), 11Mbps, handheld in docking station

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

PSA 2006.01.20
EMI 2006.1.20

EUT:	Wistron 802.11(b)/(g) radio	Work Order:	ITRM0112
Serial Number:	Unknown	Date:	01/31/06
Customer:	Intermec Technologies Corporation	Temperature:	20
Attendees:	None	Humidity:	33%
Project:	None	Barometric Pres.:	29.73
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

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

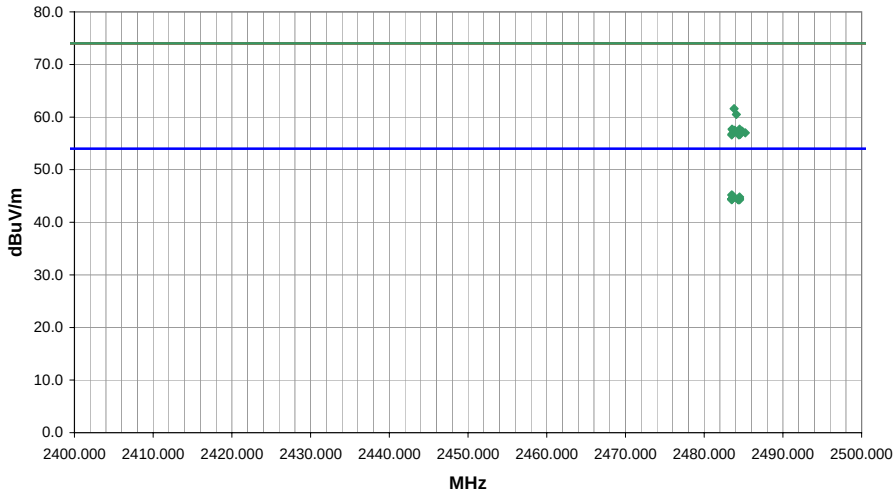
Transmitting 802.11, High Channel. See comments for data rate/mode.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



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
2483.500	24.1	1.1	154.0	1.0	3.0	20.0	H-Horn	AV	0.0	45.2	54.0	-8.8	802.11(g), 6Mbps, Handheld in docking station
2483.575	24.0	1.1	207.0	1.0	3.0	20.0	H-Horn	AV	0.0	45.1	54.0	-8.9	802.11(b), 1Mbps, Handheld in docking station
2484.500	23.7	1.1	165.0	1.0	3.0	20.0	H-Horn	AV	0.0	44.8	54.0	-9.2	802.11(b), 11Mbps, Handheld in docking station
2484.500	23.4	1.1	310.0	1.3	3.0	20.0	V-Horn	AV	0.0	44.5	54.0	-9.5	802.11(b), 1Mbps, Handheld in docking station
2483.500	23.3	1.1	323.0	2.7	3.0	20.0	V-Horn	AV	0.0	44.4	54.0	-9.6	802.11(g), 6Mbps, Handheld standalone
2483.500	23.3	1.1	358.0	1.0	3.0	20.0	H-Horn	AV	0.0	44.4	54.0	-9.6	802.11(g), 36Mbps, Handheld in docking station
2483.500	23.3	1.1	149.0	1.0	3.0	20.0	V-Horn	AV	0.0	44.4	54.0	-9.6	802.11(g), 54Mbps, Handheld in docking station
2483.500	23.3	1.1	126.0	2.1	3.0	20.0	V-Horn	AV	0.0	44.4	54.0	-9.6	802.11(g), 6Mbps, Handheld in docking station
2483.500	23.2	1.1	289.0	1.3	3.0	20.0	V-Horn	AV	0.0	44.3	54.0	-9.7	802.11(g), 36Mbps, Handheld in docking station
2484.307	23.2	1.1	189.0	3.5	3.0	20.0	V-Horn	AV	0.0	44.3	54.0	-9.7	802.11(g), 54Mbps, Handheld in docking station
2484.398	23.2	1.1	266.0	1.0	3.0	20.0	H-Horn	AV	0.0	44.3	54.0	-9.7	802.11(g), 6Mbps, Handheld standalone
2484.500	23.2	1.1	290.0	1.3	3.0	20.0	V-Horn	AV	0.0	44.3	54.0	-9.7	802.11(b), 11Mbps, Handheld in docking station
2483.797	40.5	1.1	154.0	1.0	3.0	20.0	H-Horn	PK	0.0	61.6	74.0	-12.4	802.11(g), 6Mbps, Handheld in docking station
2484.084	39.4	1.1	149.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.5	74.0	-13.5	802.11(g), 54Mbps, Handheld in docking station
2483.535	36.6	1.1	165.0	1.0	3.0	20.0	H-Horn	PK	0.0	57.7	74.0	-16.3	802.11(b), 11Mbps, Handheld in docking station
2484.490	36.6	1.1	358.0	1.0	3.0	20.0	H-Horn	PK	0.0	57.7	74.0	-16.3	802.11(g), 36Mbps, Handheld in docking station
2483.660	36.4	1.1	126.0	2.1	3.0	20.0	V-Horn	PK	0.0	57.5	74.0	-16.5	802.11(g), 6Mbps, Handheld in docking station
2483.882	36.4	1.1	207.0	1.0	3.0	20.0	H-Horn	PK	0.0	57.5	74.0	-16.5	802.11(b), 1Mbps, Handheld in docking station
2484.846	36.2	1.1	310.0	1.3	3.0	20.0	V-Horn	PK	0.0	57.3	74.0	-16.7	802.11(b), 1Mbps, Handheld in docking station
2485.232	35.9	1.1	290.0	1.3	3.0	20.0	V-Horn	PK	0.0	57.0	74.0	-17.0	802.11(b), 11Mbps, Handheld in docking station
2483.537	35.7	1.1	323.0	2.7	3.0	20.0	V-Horn	PK	0.0	56.8	74.0	-17.2	802.11(g), 6Mbps, Handheld standalone
2484.558	35.6	1.1	266.0	1.0	3.0	20.0	H-Horn	PK	0.0	56.7	74.0	-17.3	802.11(g), 6Mbps, Handheld standalone
2483.500	35.5	1.1	289.0	1.3	3.0	20.0	V-Horn	PK	0.0	56.6	74.0	-17.4	802.11(g), 36Mbps, Handheld in docking station
2484.406	35.5	1.1	189.0	3.5	3.0	20.0	V-Horn	PK	0.0	56.6	74.0	-17.4	802.11(g), 54Mbps, Handheld in docking station

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

PSA 2006.01.20
EMI 2006.1.20

EUT:	Wistron 802.11(b)/(g) radio	Work Order:	ITRM0112
Serial Number:	Unknown	Date:	01/31/06
Customer:	Intermec Technologies Corporation	Temperature:	21
Attendees:	None	Humidity:	37%
Project:	None	Barometric Pres.:	29.98
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

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

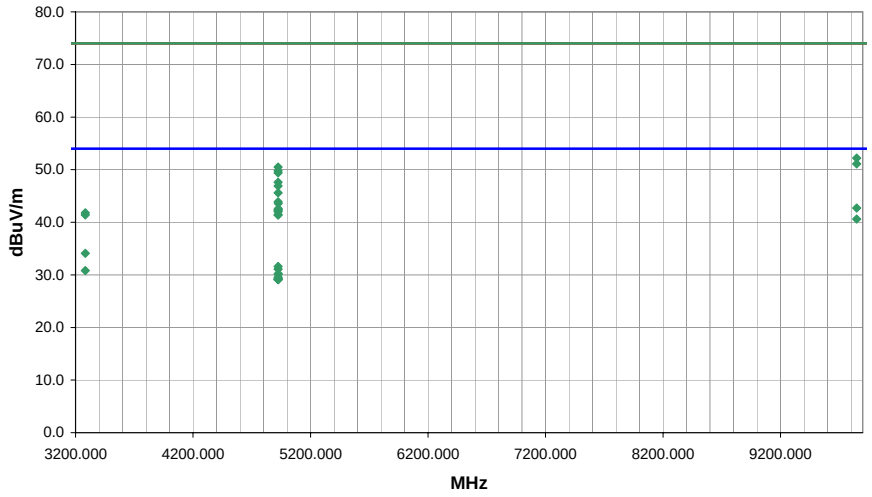
Transmitting 802.11, High Channel. See comments for data rate/mode.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



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
4924.062	40.0	6.9	333.0	1.6	3.0	0.0	H-Horn	AV	0.0	46.9	54.0	-7.1	802.11(b), 1Mbps, handheld in docking station
4924.019	38.7	6.9	345.0	1.2	3.0	0.0	V-Horn	AV	0.0	45.6	54.0	-8.4	802.11(b), 1Mbps, handheld in docking station
9848.176	26.7	16.0	73.0	1.3	3.0	0.0	H-Horn	AV	0.0	42.7	54.0	-11.3	802.11(b), 1Mbps, handheld in docking station
9848.139	24.6	16.0	142.0	2.2	3.0	0.0	V-Horn	AV	0.0	40.6	54.0	-13.4	802.11(b), 1Mbps, handheld in docking station
3282.765	30.4	3.7	170.0	1.3	3.0	0.0	H-Horn	AV	0.0	34.1	54.0	-19.9	802.11(b), 1Mbps, handheld in docking station
9848.569	36.2	16.0	73.0	1.3	3.0	0.0	H-Horn	PK	0.0	52.2	74.0	-21.8	802.11(b), 1Mbps, handheld in docking station
4923.710	24.7	6.9	338.0	1.6	3.0	0.0	H-Horn	AV	0.0	31.6	54.0	-22.4	802.11(b), 11Mbps, handheld in docking station
4923.984	24.2	6.9	336.0	1.2	3.0	0.0	V-Horn	AV	0.0	31.1	54.0	-22.9	802.11(b), 11Mbps, handheld in docking station
9848.274	35.1	16.0	142.0	2.2	3.0	0.0	V-Horn	PK	0.0	51.1	74.0	-22.9	802.11(b), 1Mbps, handheld in docking station
3282.697	27.1	3.7	235.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.8	54.0	-23.2	802.11(b), 1Mbps, handheld in docking station
4924.106	43.6	6.9	333.0	1.6	3.0	0.0	H-Horn	PK	0.0	50.5	74.0	-23.5	802.11(b), 1Mbps, handheld in docking station
4924.736	23.3	6.9	45.0	1.6	3.0	0.0	V-Horn	AV	0.0	30.2	54.0	-23.8	802.11(g), 6Mbps, handheld in docking station
4923.961	23.1	7.0	311.0	1.8	3.0	0.0	H-Horn	AV	0.0	30.1	54.0	-23.9	802.11(g), 6Mbps, handheld in docking station
4923.751	42.9	6.9	338.0	1.6	3.0	0.0	H-Horn	PK	0.0	49.8	74.0	-24.2	802.11(b), 11Mbps, handheld in docking station
4924.084	22.6	6.9	87.0	2.3	3.0	0.0	H-Horn	AV	0.0	29.5	54.0	-24.5	802.11(g), 54Mbps, handheld in docking station
4923.693	22.4	7.0	331.0	1.5	3.0	0.0	H-Horn	AV	0.0	29.4	54.0	-24.6	802.11(g), 36Mbps, handheld in docking station
4924.210	42.5	6.9	345.0	1.2	3.0	0.0	V-Horn	PK	0.0	49.4	74.0	-24.6	802.11(b), 1Mbps, handheld in docking station
4924.034	22.3	6.9	13.0	2.3	3.0	0.0	H-Horn	AV	0.0	29.2	54.0	-24.8	802.11(b), 1Mbps, handheld standalone
4923.726	22.2	6.9	109.0	1.6	3.0	0.0	V-Horn	AV	0.0	29.1	54.0	-24.9	802.11(g), 36Mbps, handheld in docking station
4923.772	22.2	6.9	111.0	1.6	3.0	0.0	V-Horn	AV	0.0	29.1	54.0	-24.9	802.11(b), 1Mbps, handheld standalone
4923.908	22.2	6.9	67.0	1.6	3.0	0.0	V-Horn	AV	0.0	29.1	54.0	-24.9	802.11(g), 54Mbps, handheld in docking station
4923.967	40.7	6.9	336.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.6	74.0	-26.4	802.11(b), 11Mbps, handheld in docking station
4923.413	37.0	6.9	45.0	1.6	3.0	0.0	V-Horn	PK	0.0	43.9	74.0	-30.1	802.11(g), 6Mbps, handheld in docking station
4925.064	36.7	6.9	311.0	1.8	3.0	0.0	H-Horn	PK	0.0	43.6	74.0	-30.4	802.11(g), 6Mbps, handheld in docking station
4925.064	35.7	6.9	331.0	1.5	3.0	0.0	H-Horn	PK	0.0	42.6	74.0	-31.4	802.11(g), 36Mbps, handheld in docking station
4923.265	35.4	6.9	109.0	1.6	3.0	0.0	V-Horn	PK	0.0	42.3	74.0	-31.7	802.11(g), 36Mbps, handheld in docking station
4924.835	35.4	6.9	111.0	1.6	3.0	0.0	V-Horn	PK	0.0	42.3	74.0	-31.7	802.11(b), 1Mbps, handheld standalone
4923.861	35.1	6.9	87.0	2.3	3.0	0.0	H-Horn	PK	0.0	42.0	74.0	-32.0	802.11(g), 54Mbps, handheld in docking station
3283.053	38.1	3.7	170.0	1.3	3.0	0.0	H-Horn	PK	0.0	41.8	74.0	-32.2	802.11(b), 1Mbps, handheld in docking station
3282.973	37.7	3.7	235.0	1.0	3.0	0.0	V-Horn	PK	0.0	41.4	74.0	-32.6	802.11(b), 1Mbps, handheld in docking station
4923.937	34.5	6.9	67.0	1.6	3.0	0.0	V-Horn	PK	0.0	41.4	74.0	-32.6	802.11(g), 54Mbps, handheld in docking station
4924.261	34.5	6.9	13.0	2.3	3.0	0.0	H-Horn	PK	0.0	41.4	74.0	-32.6	802.11(b), 1Mbps, handheld standalone