Intermec Technologies Corporation

2610CF

July 12, 2005

Report No. ITRM0085

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: July 12, 2005
Intermec Technologies Corporation
Model: 2610CF

Emissions			
Specification	**Test Method**	**Pass**	**Fail**
FCC 15.207 AC Powerline Conducted Emissions:2005-04	ANSI C63.4:2003	☒	☐
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003	☒	☐

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

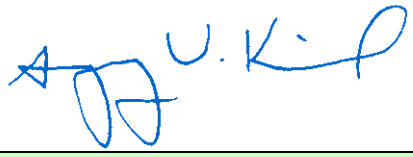
Test Facility

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.

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 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, 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?

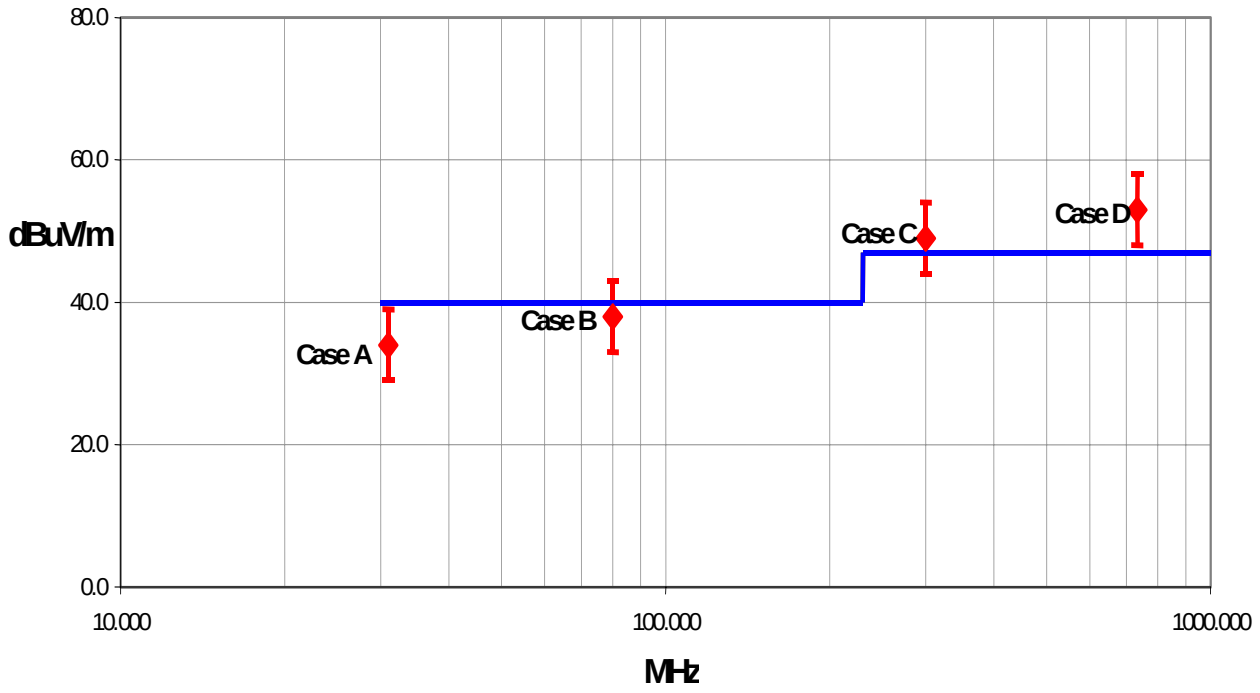
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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)					
	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
Test Distance		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 ≈ 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
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.38 - 1.35
Expanded uncertainty ***U*** (level of confidence ≈ 95%)	normal (k=2)	+ 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 ≈ 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 ≈ 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 ≈ 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

Oregon

Trails End Facility

Labs TE01 – TE03

30475 NE Trails End Lane
Newberg, OR 97132
(503) 844-4066
FAX (503) 537-0735

Washington

Sultan Facility

Labs SU01 – SU07

14128 339th Ave. SE
Sultan, WA 98294
(888) 364-2378
FAX (360) 793-2536

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:	2610CF
First Date of Test:	07-06-2005
Last Date of Test:	07-11-2005
Receipt Date of Samples:	07-06-2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

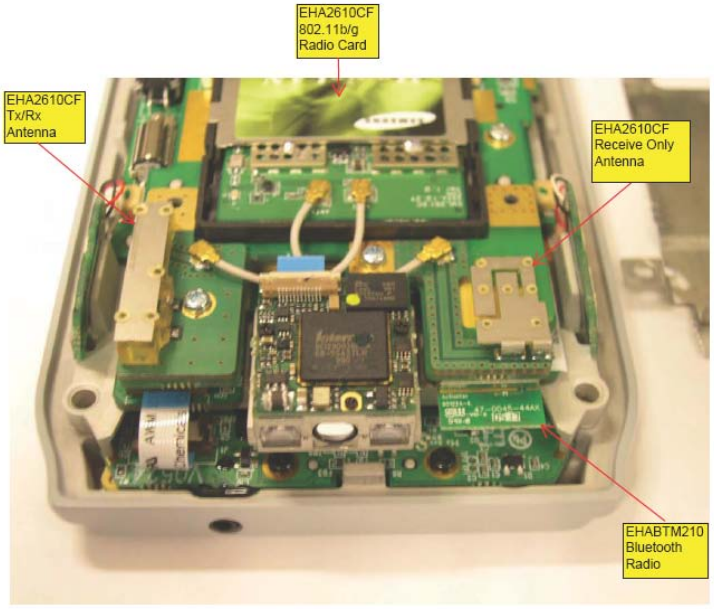
Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	USB and Serial on the docking cradle

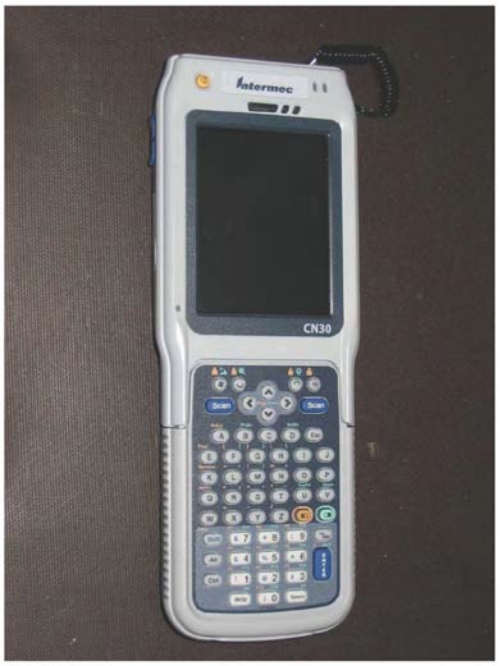
Functional Description of the EUT (Equipment Under Test):
The 2610CF is an 802.11(b)/(g) radio module.

Client Justification for EUT Selection:
The product is an engineering sample, representative of the final product.

Client Justification for Test Selection:
The 2610CF and BTM210 radio modules are installed in Intermec's CN30 handheld computer. The radios can transmit simultaneously. The BTM210 is a Bluetooth module that has full modular approval so it does not require EMC testing in the CN30. The 2610CF has limited modular approval (EHA2610CF) so it needs to be tested in the new host device (Intermec CN30). It also has a new antenna that needs to be tested.



CN30 Radio/Antenna Placement



Front of CN30 with 56 key keyboard attached

Equipment modifications					
Item	Test	Date	Modification	Note	Disposition of EUT
1	Spurious Radiated Emissions	07/06/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.
2	AC Powerline Conducted emissions	07/07/2005	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
3	Spurious Radiated Emissions	07/11/2005	Radio installed in modified CN30, SN: 17710517044 with new internal shielding. CN30 standalone with 56 button keypad attached.	Tested Hi channel only to 18GHz. Maximized highest emission.	EUT remained at Northwest EMC.

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
Mid

Operating Modes Investigated:
Continuous transmit

Data Rates Investigated:
1 Mbps (802.11b)
11 Mbps (802.11b)
6 Mbps (802.11g)
36 Mbps (802.11g)
54 Mbps (802.11g)

Output Power Setting(s) Investigated:
Maximum default

Power Input Settings Investigated:
120 VAC, 60 Hz.

Other Settings Investigated:
EUT standalone with 56 button keypad
EUT standalone with 14 button keypad
EUT charging in docking cradle

Frequency Range Investigated			
Start Frequency	30 MHz	**Stop Frequency**	25 GHz

Software\Firmware Applied During Test			
Exercise software	Test Utility	**Version**	0.4
Description			
The system was tested using special software developed to test all functions of the device during the test including channel, data rate, and mode.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT- 2610CF	Intermec Technologies Corporation	2610CF	Unknown
Host Device	Intermec Technologies Corporation	CN30	16710517055
Keyboard module, 14 key	Intermec Technologies Corporation	VE0009-60029	N/A
Keyboard module, 56 key	Intermec Technologies Corporation	VE0009-60028	N/A
Docking Station	Intermec Technologies Corporation	AD9	168B0500160
AC Adapter	Elpac Power Systems	073573-003	6132256

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	PA	1.9	Yes	AC Power Adapter	Docking Station
AC Power	No	1.8	No	AC Power Adapter	AC Mains
USB	Yes	1.6	No	Docking Station	Unterminated
Serial	Yes	1.2	No	Docking Station	Unterminated
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**
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	02/15/2005	13 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	02/17/2005	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	05/05/2005	3 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	03/01/2005	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/02/2004	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/02/2004	13 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	03/09/2005	13 mo
Attenuator	Coaxicom	66702 5910-20	RBJ	02/25/2005	13 mo

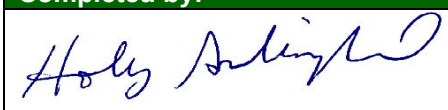
Test Description

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 EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter 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:



NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0085
Serial Number:				Date:	07/06/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

transmitting low channel, 802.11(b) 11Mbps

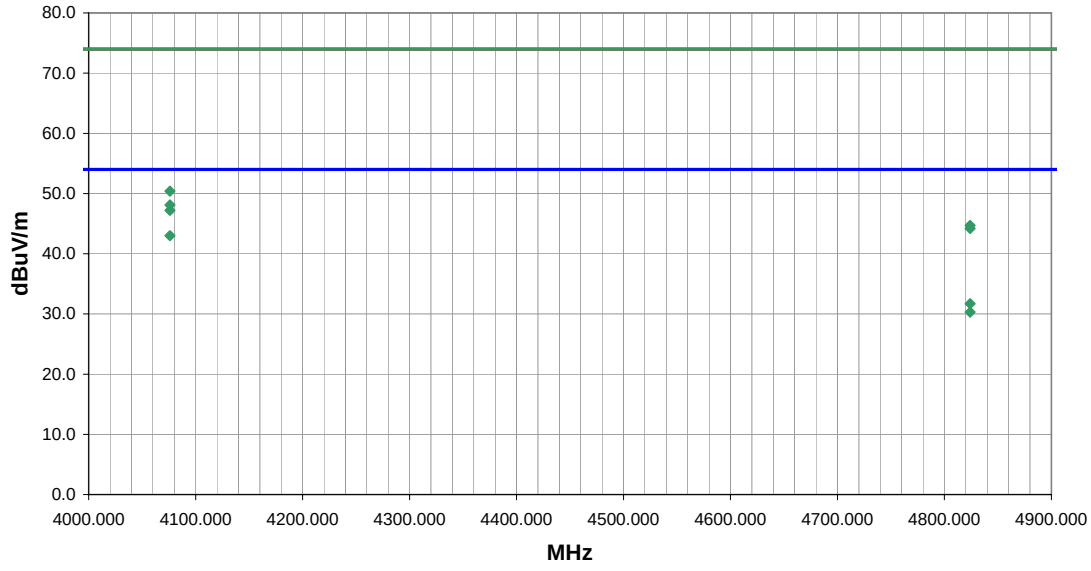
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	1

Other

Tested By:



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
4076.000	44.0	4.1	206.0	1.7	3.0	0.0	V-Horn	AV	0.0	48.1	54.0	-5.9	EUT in cradle
4076.000	38.9	4.1	270.0	1.6	3.0	0.0	H-Horn	AV	0.0	43.0	54.0	-11.0	EUT in cradle
4824.000	25.9	5.8	226.0	2.0	3.0	0.0	V-Horn	AV	0.0	31.7	54.0	-22.3	EUT in cradle
4076.000	46.3	4.1	206.0	1.7	3.0	0.0	V-Horn	PK	0.0	50.4	74.0	-23.6	EUT in cradle
4824.000	24.5	5.8	348.0	1.3	3.0	0.0	H-Horn	AV	0.0	30.3	54.0	-23.7	EUT in cradle
4076.000	43.1	4.1	270.0	1.6	3.0	0.0	H-Horn	PK	0.0	47.2	74.0	-26.8	EUT in cradle
4824.000	38.9	5.8	226.0	2.0	3.0	0.0	V-Horn	PK	0.0	44.7	74.0	-29.3	EUT in cradle
4824.000	38.4	5.8	348.0	1.3	3.0	0.0	H-Horn	PK	0.0	44.2	74.0	-29.8	EUT in cradle

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/06/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz or battery	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

Powered via 120VAC/60Hz when EUT is in cradle, and powered by battery in standalone mode.

EUT OPERATING MODES

Transmitting high channel, see comments for data rate and configuration.

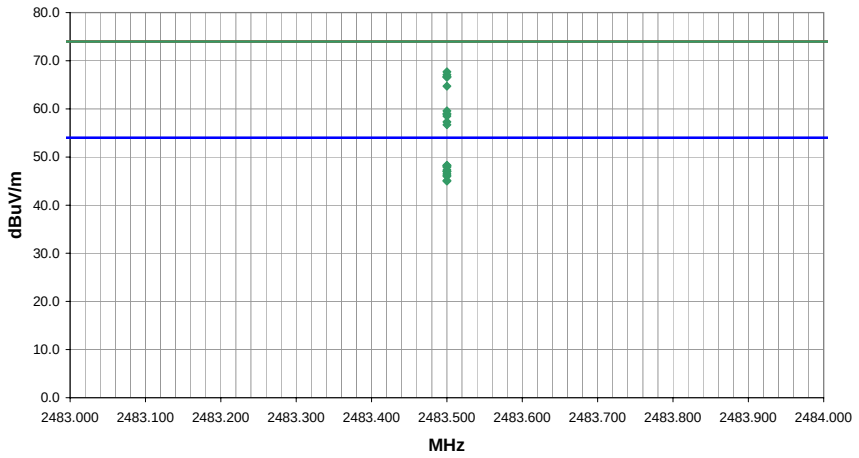
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Tested By:



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	30.6	-2.3	171.0	1.1	3.0	20.0	H-Horn	AV	0.0	48.3	54.0	-5.7	Standalone w/ 56 keys, On side, 802.11(g) 54Mbps
2483.500	30.5	-2.3	190.0	1.1	3.0	20.0	H-Horn	AV	0.0	48.2	54.0	-5.8	Standalone w/ 56 keys, On side, 802.11(g) 6Mbps
2483.500	30.4	-2.3	189.0	1.1	3.0	20.0	H-Horn	AV	0.0	48.1	54.0	-5.9	Standalone w/ 56 keys, On side, 802.11(b) 1Mbps
2483.500	30.2	-2.3	186.0	1.1	3.0	20.0	H-Horn	AV	0.0	47.9	54.0	-6.1	Standalone w/ 56 keys, On side, 802.11(g) 36Mbps
2483.500	50.0	-2.3	171.0	1.1	3.0	20.0	H-Horn	PK	0.0	67.7	74.0	-6.3	Standalone w/ 56 keys, On side, 802.11(g) 54Mbps
2483.500	29.6	-2.3	253.0	1.1	3.0	20.0	V-Horn	AV	0.0	47.3	54.0	-6.7	Standalone w/ 56 keys, Vertical, 802.11(g) 54Mbps
2483.500	49.4	-2.3	186.0	1.1	3.0	20.0	H-Horn	PK	0.0	67.1	74.0	-6.9	Standalone w/ 56 keys, On side, 802.11(g) 36Mbps
2483.500	29.3	-2.3	146.0	1.3	3.0	20.0	V-Horn	AV	0.0	47.0	54.0	-7.0	Standalone w/ 56 keys, Vertical, 802.11(b) 1Mbps
2483.500	29.3	-2.3	227.0	1.0	3.0	20.0	V-Horn	AV	0.0	47.0	54.0	-7.0	Standalone w/ 56 keys, Vertical, 802.11(g) 36Mbps
2483.500	49.0	-2.3	190.0	1.1	3.0	20.0	H-Horn	PK	0.0	66.7	74.0	-7.3	Standalone w/ 56 keys, On side, 802.11(g) 6Mbps
2483.500	48.9	-2.3	227.0	1.0	3.0	20.0	V-Horn	PK	0.0	66.6	74.0	-7.4	Standalone w/ 56 keys, Vertical, 802.11(g) 36Mbps
2483.500	48.9	-2.3	253.0	1.1	3.0	20.0	V-Horn	PK	0.0	66.6	74.0	-7.4	Standalone w/ 56 keys, Vertical, 802.11(g) 54Mbps
2483.500	28.8	-2.3	234.0	1.3	3.0	20.0	V-Horn	AV	0.0	46.5	54.0	-7.5	Standalone w/ 56 keys, Vertical, 802.11(g) 6Mbps
2483.500	28.5	-2.3	177.0	1.1	3.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	Standalone w/ 56 keys, On side, 802.11(b) 11Mbps
2483.500	28.3	-2.3	79.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.0	54.0	-8.0	EUT in cradle, 802.11(b) 1Mbps
2483.500	27.4	-2.3	243.0	1.3	3.0	20.0	V-Horn	AV	0.0	45.1	54.0	-8.9	Standalone w/ 56 keys, Vertical, 802.11(b) 11Mbps
2483.500	27.3	-2.3	232.0	1.0	3.0	20.0	V-Horn	AV	0.0	45.0	54.0	-9.0	EUT in cradle, 802.11(b) 1Mbps
2483.500	47.0	-2.3	234.0	1.3	3.0	20.0	V-Horn	PK	0.0	64.7	74.0	-9.3	Standalone w/ 56 keys, Vertical, 802.11(g) 6Mbps
2483.500	41.9	-2.3	146.0	1.3	3.0	20.0	V-Horn	PK	0.0	59.6	74.0	-14.4	Standalone w/ 56 keys, Vertical, 802.11(b) 1Mbps
2483.500	41.3	-2.3	189.0	1.1	3.0	20.0	H-Horn	PK	0.0	59.0	74.0	-15.0	Standalone w/ 56 keys, On side, 802.11(b) 1Mbps

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0085
Serial Number:				Date:	07/06/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.11
Tested by:	Holly Ashkannejhad	Power:	Battery	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT standalone with 56 key attachment.

EUT OPERATING MODES

Transmitting low channel, 802.11(g), 54Mbps

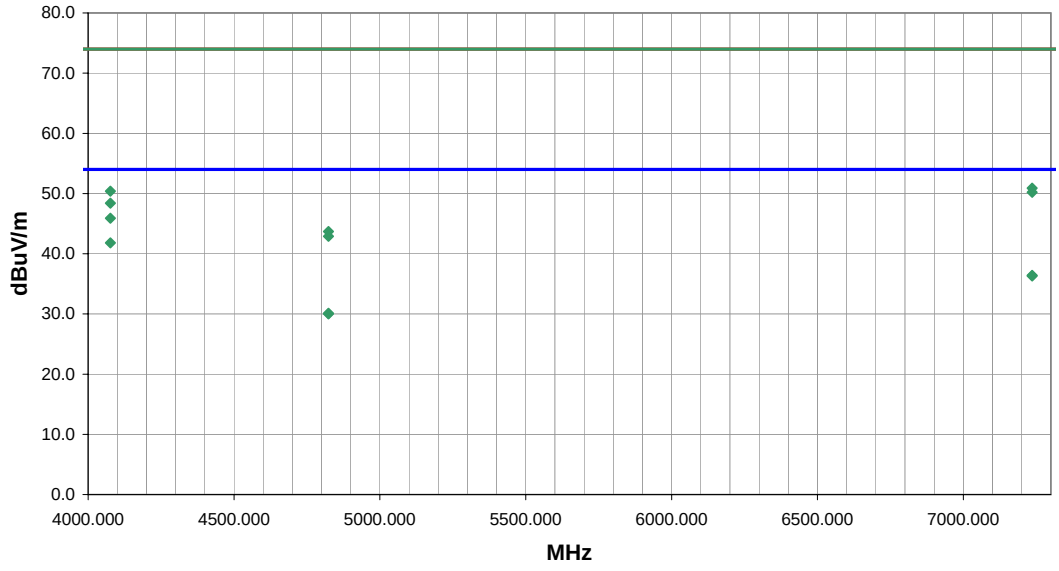
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	3

Other

Tested By:



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
4076.000	41.8	4.1	93.0	1.1	3.0	0.0	H-Horn	AV	0.0	45.9	54.0	-8.1	EUT on side
4076.000	37.7	4.1	222.0	1.2	3.0	0.0	V-Horn	AV	0.0	41.8	54.0	-12.2	EUT vertical
7236.000	24.7	11.7	20.0	2.5	3.0	0.0	V-Horn	AV	0.0	36.4	54.0	-17.6	EUT vertical
7236.000	24.6	11.7	280.0	1.3	3.0	0.0	H-Horn	AV	0.0	36.3	54.0	-17.7	EUT on side
7236.000	39.2	11.7	20.0	2.5	3.0	0.0	V-Horn	PK	0.0	50.9	74.0	-23.1	EUT vertical
4076.000	46.3	4.1	93.0	1.1	3.0	0.0	H-Horn	PK	0.0	50.4	74.0	-23.6	EUT on side
7236.000	38.5	11.7	280.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8	EUT on side
4824.000	24.3	5.8	264.0	1.2	3.0	0.0	V-Horn	AV	0.0	30.1	54.0	-23.9	EUT vertical
4824.000	24.2	5.8	229.0	1.3	3.0	0.0	H-Horn	AV	0.0	30.0	54.0	-24.0	EUT on side
4076.000	44.3	4.1	222.0	1.2	3.0	0.0	V-Horn	PK	0.0	48.4	74.0	-25.6	EUT vertical
4824.000	37.9	5.8	264.0	1.2	3.0	0.0	V-Horn	PK	0.0	43.7	74.0	-30.3	EUT vertical
4824.000	37.1	5.8	229.0	1.3	3.0	0.0	H-Horn	PK	0.0	42.9	74.0	-31.1	EUT on side

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0085
Serial Number:				Date:	07/06/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.11
Tested by:	Holly Ashkannejhad	Power:	Battery	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT standalone with 56 key attachment.

EUT OPERATING MODES

Transmitting mid channel, 802.11(g) 54Mbps

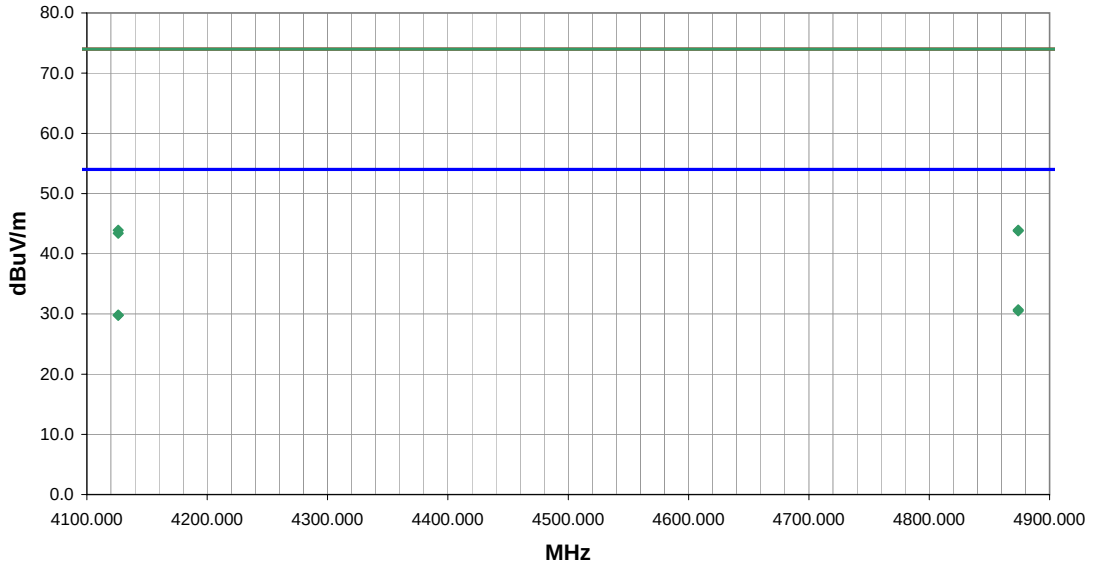
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	4

Other

Tested By:



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
4874.000	24.7	6.0	257.0	1.3	3.0	0.0	H-Horn	AV	0.0	30.7	54.0	-23.3	EUT on side
4874.000	24.5	6.0	111.0	3.4	3.0	0.0	V-Horn	AV	0.0	30.5	54.0	-23.5	EUT Vertical
4126.000	25.7	4.1	199.0	3.1	3.0	0.0	H-Horn	AV	0.0	29.8	54.0	-24.2	EUT on side
4126.000	25.7	4.1	332.0	1.7	3.0	0.0	V-Horn	AV	0.0	29.8	54.0	-24.2	EUT Vertical
4126.000	39.8	4.1	332.0	1.7	3.0	0.0	V-Horn	PK	0.0	43.9	74.0	-30.1	EUT Vertical
4874.000	37.9	6.0	111.0	3.4	3.0	0.0	V-Horn	PK	0.0	43.9	74.0	-30.1	EUT Vertical
4874.000	37.8	6.0	257.0	1.3	3.0	0.0	H-Horn	PK	0.0	43.8	74.0	-30.2	EUT on side
4126.000	39.3	4.1	199.0	3.1	3.0	0.0	H-Horn	PK	0.0	43.4	74.0	-30.6	EUT on side

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0085
Serial Number:				Date:	07/06/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.11
Tested by:	Holly Ashkannejhad	Power:	Battery	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT standalone with 56 key attachment.

EUT OPERATING MODES

Transmitting high channel, 802.11(g) 54Mbps

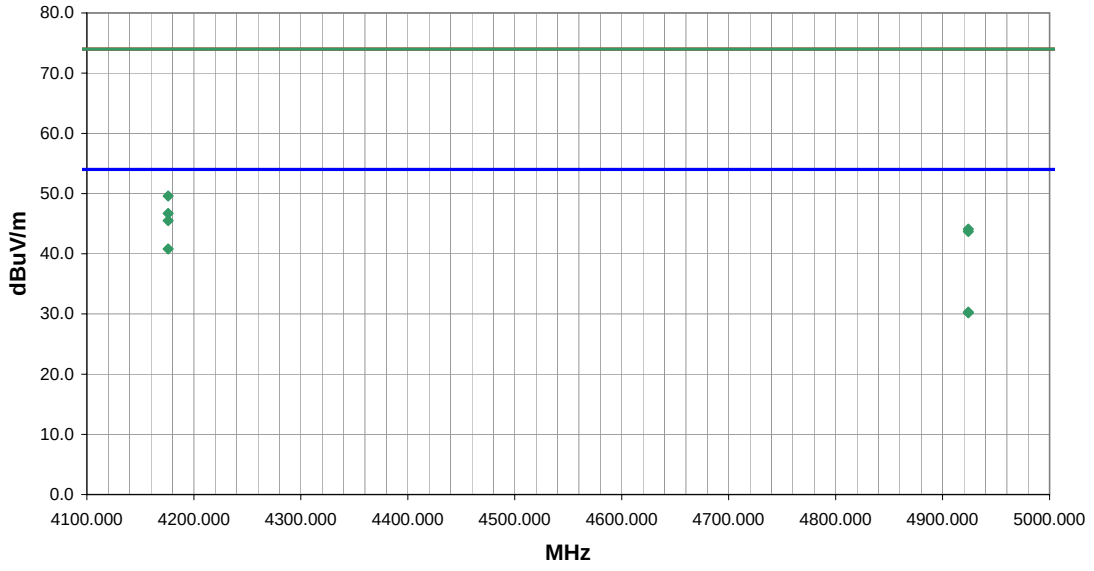
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	5

Other

Tested By:



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
4176.000	41.3	4.2	358.0	1.6	3.0	0.0	H-Horn	AV	0.0	45.5	54.0	-8.5	EUT on side
4176.000	36.6	4.2	21.0	1.2	3.0	0.0	V-Horn	AV	0.0	40.8	54.0	-13.2	EUT Vertical
4924.000	24.0	6.3	129.0	1.3	3.0	0.0	H-Horn	AV	0.0	30.3	54.0	-23.7	EUT on side
4924.000	23.9	6.3	161.0	1.2	3.0	0.0	V-Horn	AV	0.0	30.2	54.0	-23.8	EUT Vertical
4176.000	45.4	4.2	358.0	1.6	3.0	0.0	H-Horn	PK	0.0	49.6	74.0	-24.4	EUT on side
4176.000	42.5	4.2	21.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.7	74.0	-27.3	EUT Vertical
4924.000	37.8	6.3	161.0	1.2	3.0	0.0	V-Horn	PK	0.0	44.1	74.0	-29.9	EUT Vertical
4924.000	37.4	6.3	129.0	1.3	3.0	0.0	H-Horn	PK	0.0	43.7	74.0	-30.3	EUT on side

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0089
Serial Number:				Date:	07/11/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.01
Tested by:	Holly Ashkannejhad	Power:	Battery	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

Radio installed in modified CN30, SN: 17710517044 with new internal shielding. CN30 standalone with 56 button keypad attached.

EUT OPERATING MODES

Transmitting high channel, see comments for mode.

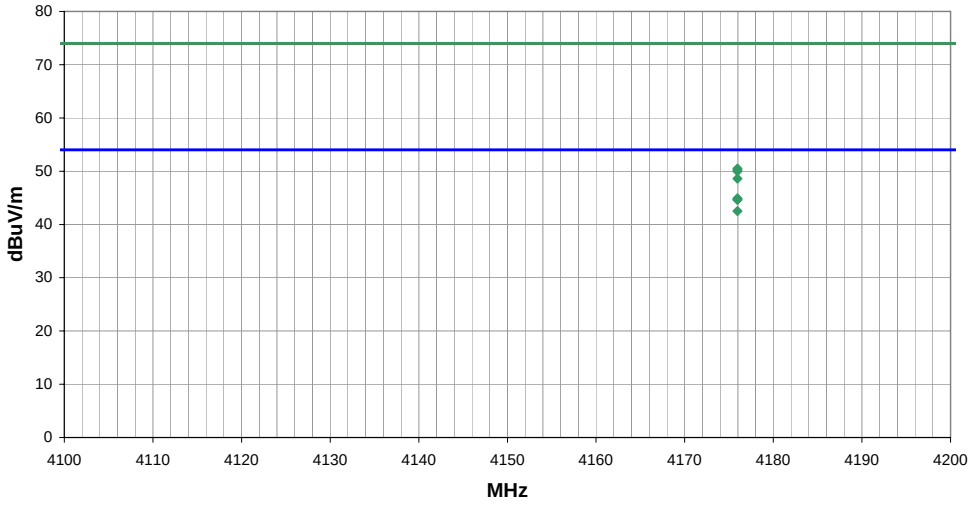
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	1

Other

Tested By: 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
4175.945	40.7	4.2	55.0	1.4	3.0	0.0	V-Horn	AV	0.0	44.9	54.0	-9.1	EUT vertical, 802.11(b) 11Mbps
4175.945	40.5	4.2	49.0	1.4	3.0	0.0	V-Horn	AV	0.0	44.7	54.0	-9.3	EUT vertical, 802.11(g) 54Mbps
4175.945	40.4	4.2	147.0	1.3	3.0	0.0	H-Horn	AV	0.0	44.6	54.0	-9.4	EUT on side, 802.11(g) 54Mbps
4175.945	38.3	4.2	145.0	1.3	3.0	0.0	H-Horn	AV	0.0	42.5	54.0	-11.5	EUT on side, 802.11(b) 11Mbps
4175.945	46.3	4.2	49.0	1.4	3.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5	EUT vertical, 802.11(g) 54Mbps
4175.945	46.0	4.2	147.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8	EUT on side, 802.11(g) 54Mbps
4175.945	45.8	4.2	55.0	1.4	3.0	0.0	V-Horn	PK	0.0	50.0	74.0	-24.0	EUT vertical, 802.11(b) 11Mbps
4175.945	44.4	4.2	145.0	1.3	3.0	0.0	H-Horn	PK	0.0	48.6	74.0	-25.4	EUT on side, 802.11(b) 11Mbps

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0089
Serial Number:		Date:	07/11/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.01
Tested by:	Holly Ashkannejhad	Power: Battery	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.247(d) Spurious Radiated Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

Radio installed in modified CN30, SN: 17710517044 with new internal shielding. CN30 standalone with 56 button keypad attached.

EUT OPERATING MODES

Transmitting high channel, see comments for mode.

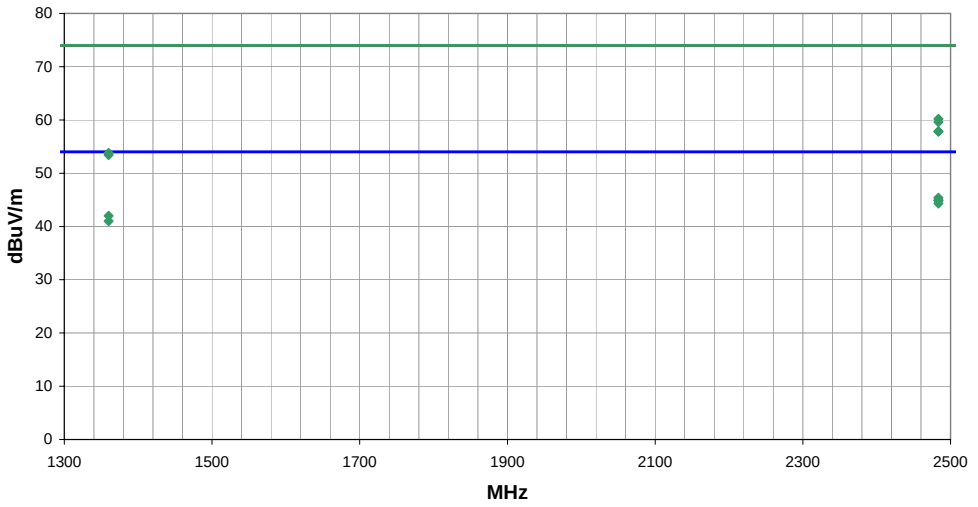
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Run #
Pass	2

Other

Tested By: 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	27.7	-2.3	45.0	1.1	3.0	20.0	H-Horn	AV	0.0	45.4	54.0	-8.6	EUT on side, 802.11(g) 54Mbps
2483.500	27.2	-2.3	140.0	1.1	3.0	20.0	H-Horn	AV	0.0	44.9	54.0	-9.1	EUT on side, 802.11(b) 11Mbps
2483.500	27.2	-2.3	175.0	1.1	3.0	20.0	V-Horn	AV	0.0	44.9	54.0	-9.1	EUT vertical, 802.11(g) 54Mbps
2483.500	26.6	-2.3	188.0	1.1	3.0	20.0	V-Horn	AV	0.0	44.3	54.0	-9.7	EUT vertical, 802.11(b) 11Mbps
1359.947	29.3	-7.3	305.0	1.9	3.0	20.0	V-Horn	AV	0.0	42.0	54.0	-12.0	EUT vertical, 802.11(g) 54Mbps
1359.947	28.3	-7.3	278.0	1.3	3.0	20.0	H-Horn	AV	0.0	41.0	54.0	-13.0	EUT on side, 802.11(g) 54Mbps
2483.500	42.5	-2.3	45.0	1.1	3.0	20.0	H-Horn	PK	0.0	60.2	74.0	-13.8	EUT on side, 802.11(g) 54Mbps
2483.500	41.9	-2.3	175.0	1.1	3.0	20.0	V-Horn	PK	0.0	59.6	74.0	-14.4	EUT vertical, 802.11(g) 54Mbps
2483.500	40.2	-2.3	140.0	1.1	3.0	20.0	H-Horn	PK	0.0	57.9	74.0	-16.1	EUT on side, 802.11(b) 11Mbps
2483.500	40.1	-2.3	188.0	1.1	3.0	20.0	V-Horn	PK	0.0	57.8	74.0	-16.2	EUT vertical, 802.11(b) 11Mbps
1359.947	41.1	-7.3	305.0	1.9	3.0	20.0	V-Horn	PK	0.0	53.8	74.0	-20.2	EUT vertical, 802.11(g) 54Mbps
1359.947	40.7	-7.3	278.0	1.3	3.0	20.0	H-Horn	PK	0.0	53.4	74.0	-20.6	EUT on side, 802.11(g) 54Mbps


NORTHWEST
EMC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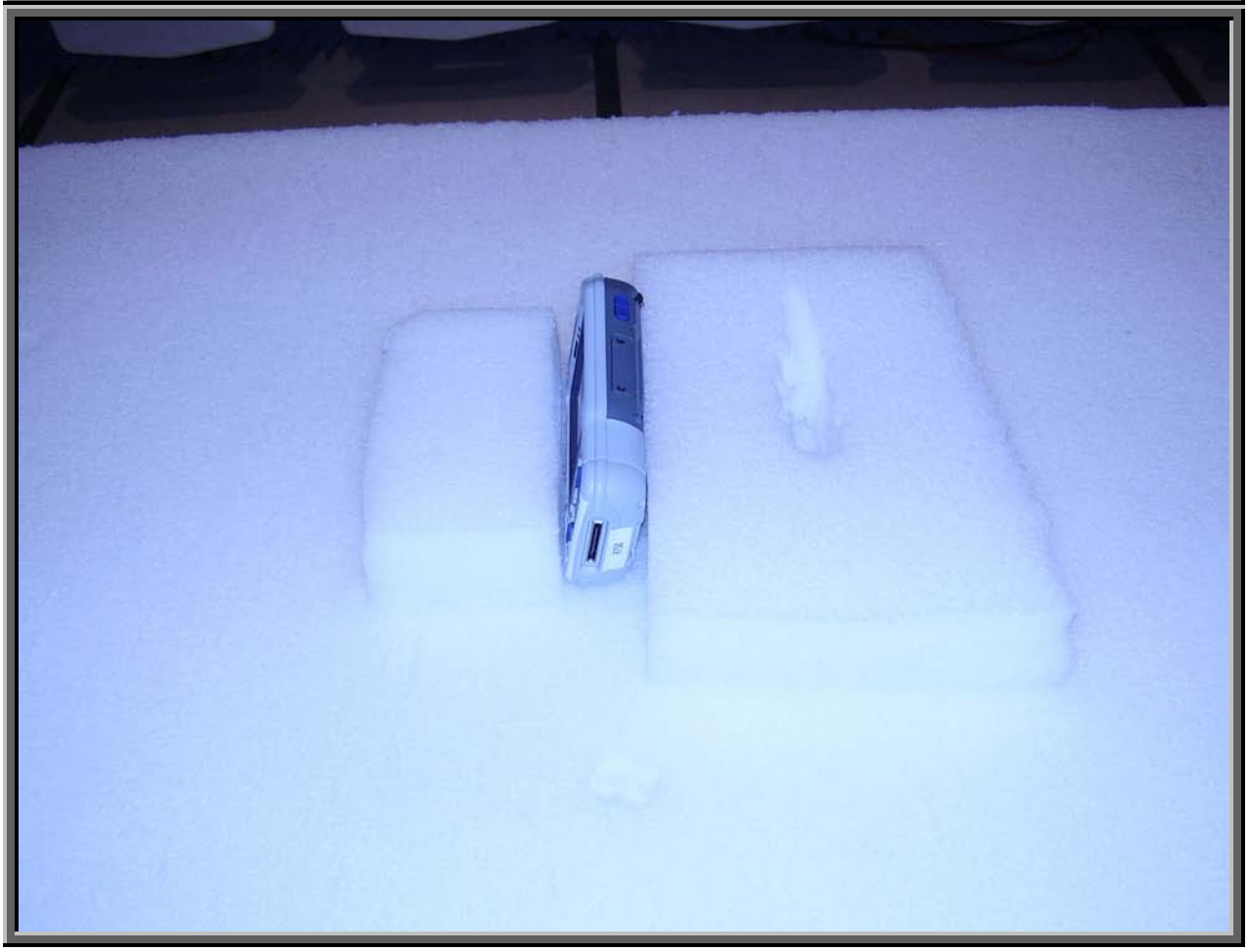
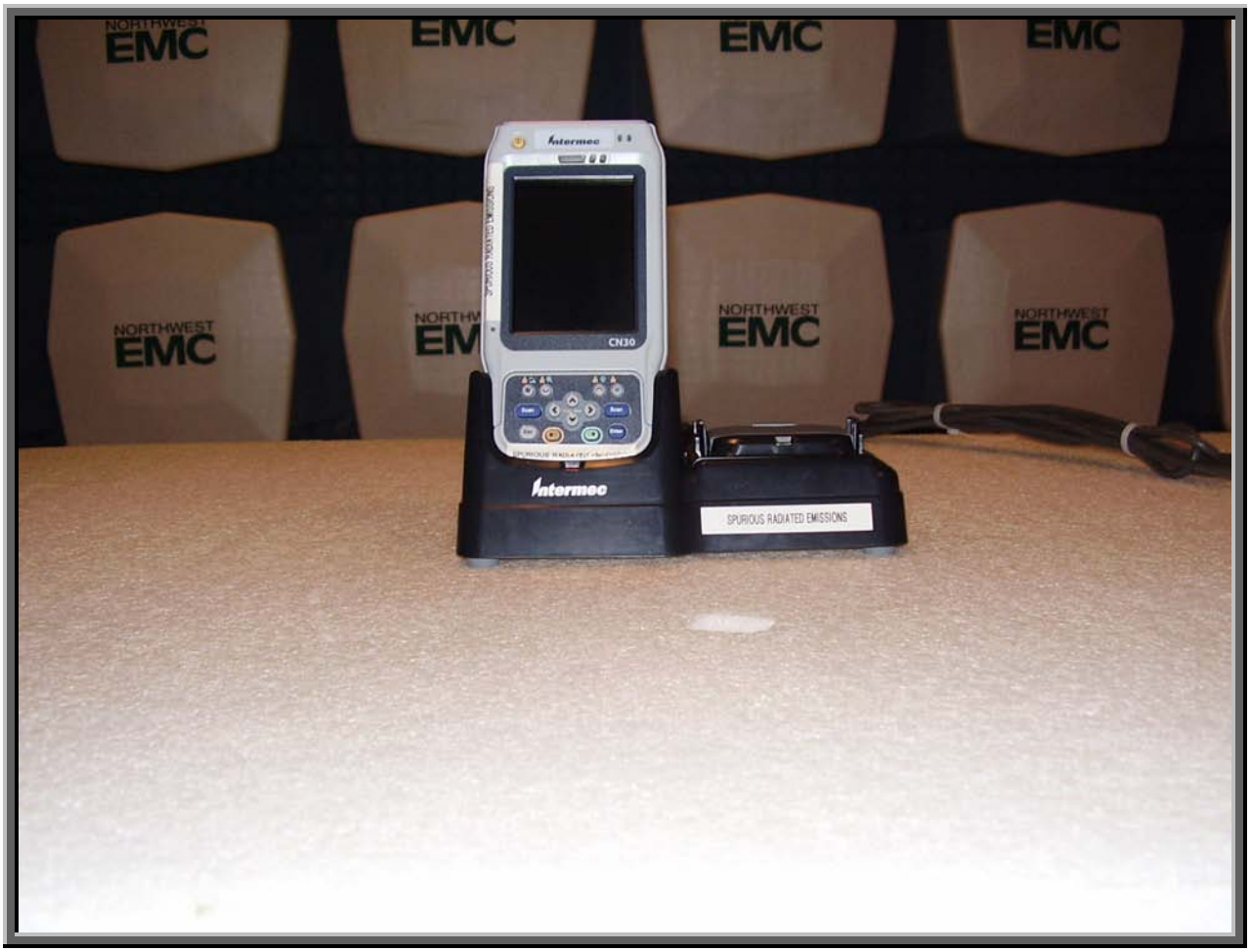
EMC


Intermec
CN30


Intermec
CN30
SPURIOUS RADIATED EMISSIONS


Intermec
CN30




NORTHWEST EMC
Intermec
CN30
Intermec
SPURIOUS RADIATED EMISSIONS

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
Mid

Operating Modes Investigated:
Continuous transmit

Data Rates Investigated:
54 Mbps (802.11g)

Output Power Setting(s) Investigated:
Maximum default

Power Input Settings Investigated:
120 VAC, 60 Hz.

Other Settings Investigated:
EUT charging in docking cradle

Software\Firmware Applied During Test			
Exercise software	Test Utility	**Version**	0.4
Description			
The system was tested using special software developed to test all functions of the device during the test including channel, data rate, and mode.			

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT- 2610CF	Intermec Technologies Corporation	2610CF	Unknown
Host Device	Intermec Technologies Corporation	CN30	16710517055
Keyboard module, 56 key	Intermec Technologies Corporation	VE0009-60028	N/A
Docking Station	Intermec Technologies Corporation	AD9	168B0500160
AC Adapter	Elpac Power Systems	073573-003	6132256

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Leads	PA	1.9	Yes	AC Power Adapter	Docking Station
AC Power	No	1.8	No	AC Power Adapter	AC Mains
USB	Yes	1.6	No	Docking Station	Unterminated
Serial	Yes	1.2	No	Docking Station	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

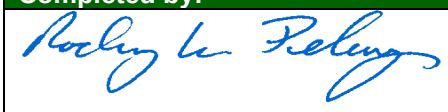
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo
LISN	Solar	9252-50-R-24-BNC	LIN	12/29/2004	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/29/2004	13 mo

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:



NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/07/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

low channel, 802.11(g) 54 Mbps

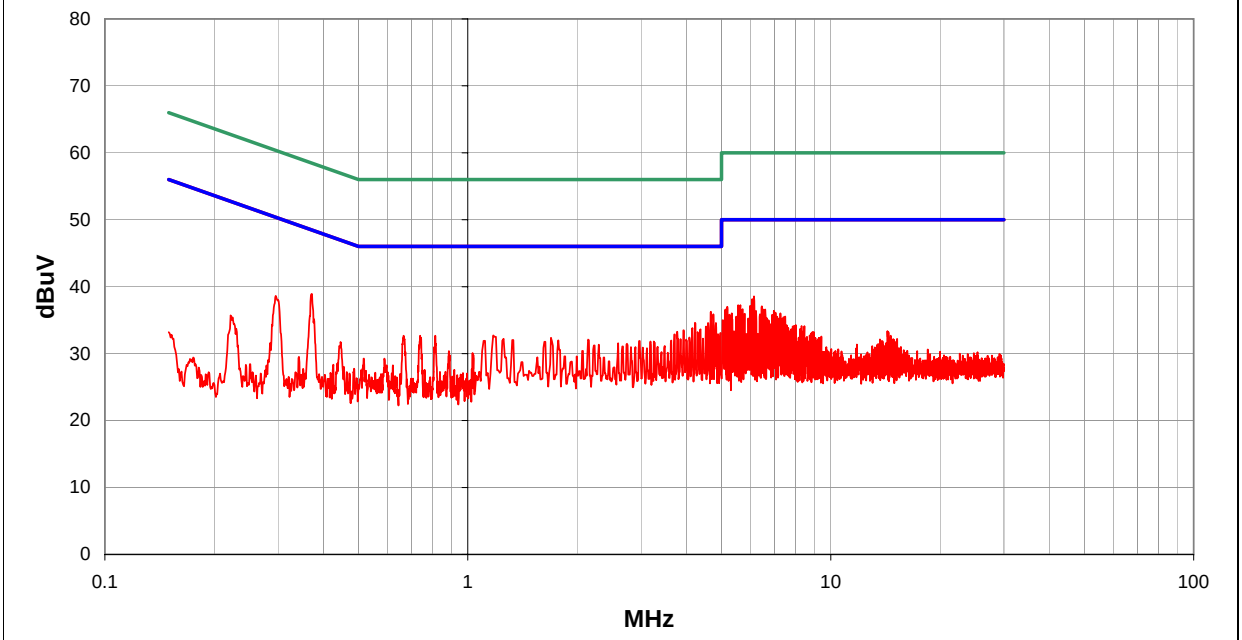
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	1

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.371	18.7			0.0	0.2	20.0				38.9	48.5	-9.5
4.677	15.6			0.0	0.7	20.0				36.3	46.0	-9.7
4.747	15.2			0.0	0.7	20.0				35.9	46.0	-10.1
4.227	14.0			0.0	0.6	20.0				34.6	46.0	-11.4
4.827	13.9			0.0	0.7	20.0				34.6	46.0	-11.4
6.148	17.8			0.0	0.8	20.0				38.6	50.0	-11.4
4.597	13.9			0.0	0.7	20.0				34.6	46.0	-11.4
0.296	18.4			0.0	0.2	20.0				38.6	50.4	-11.7
6.078	17.4			0.0	0.8	20.0				38.2	50.0	-11.8
4.537	13.4			0.0	0.6	20.0				34.0	46.0	-12.0
4.157	13.2			0.0	0.6	20.0				33.8	46.0	-12.2
4.377	13.0			0.0	0.6	20.0				33.6	46.0	-12.4
3.936	12.9			0.0	0.6	20.0				33.5	46.0	-12.5
3.776	12.7			0.0	0.6	20.0				33.3	46.0	-12.7
5.637	16.5			0.0	0.7	20.0				37.2	50.0	-12.8
5.557	16.5			0.0	0.7	20.0				37.2	50.0	-12.8
4.297	12.6			0.0	0.6	20.0				33.2	46.0	-12.8
5.997	16.4			0.0	0.8	20.0				37.2	50.0	-12.8
4.977	12.4			0.0	0.7	20.0				33.1	46.0	-12.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/07/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

low channel, 802.11(g) 54 Mbps

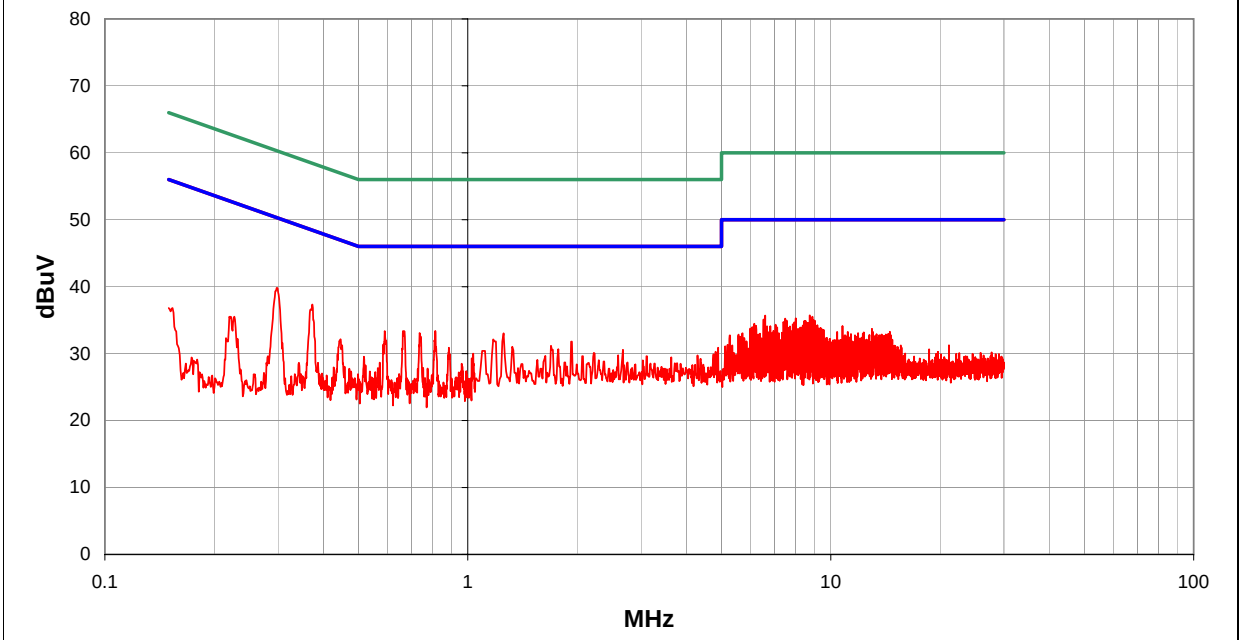
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	2

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.299	19.6			0.0	0.2	20.0				39.8	50.3	-10.5
0.373	17.1			0.0	0.2	20.0				37.3	48.4	-11.1
0.813	13.1			0.0	0.3	20.0				33.4	46.0	-12.6
0.668	13.1			0.0	0.3	20.0				33.4	46.0	-12.6
0.590	13.1			0.0	0.3	20.0				33.4	46.0	-12.6
0.737	12.8			0.0	0.3	20.0				33.1	46.0	-12.9
1.255	12.7			0.0	0.3	20.0				33.0	46.0	-13.0
1.175	11.8			0.0	0.3	20.0				32.1	46.0	-13.9
1.935	11.4			0.0	0.4	20.0				31.8	46.0	-14.2
8.759	14.8			0.0	0.9	20.0				35.7	50.0	-14.3
6.598	14.9			0.0	0.8	20.0				35.7	50.0	-14.3
8.899	14.6			0.0	0.9	20.0				35.5	50.0	-14.5
8.009	14.4			0.0	0.9	20.0				35.3	50.0	-14.7
7.488	14.4			0.0	0.8	20.0				35.2	50.0	-14.8
0.446	11.9			0.0	0.2	20.0				32.1	46.9	-14.8
1.695	10.8			0.0	0.4	20.0				31.2	46.0	-14.8
6.538	14.3			0.0	0.8	20.0				35.1	50.0	-14.9
1.325	10.7			0.0	0.3	20.0				31.0	46.0	-15.0
8.969	14.1			0.0	0.9	20.0				35.0	50.0	-15.0

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/07/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

mid channel, 802.11(g) 54 Mbps

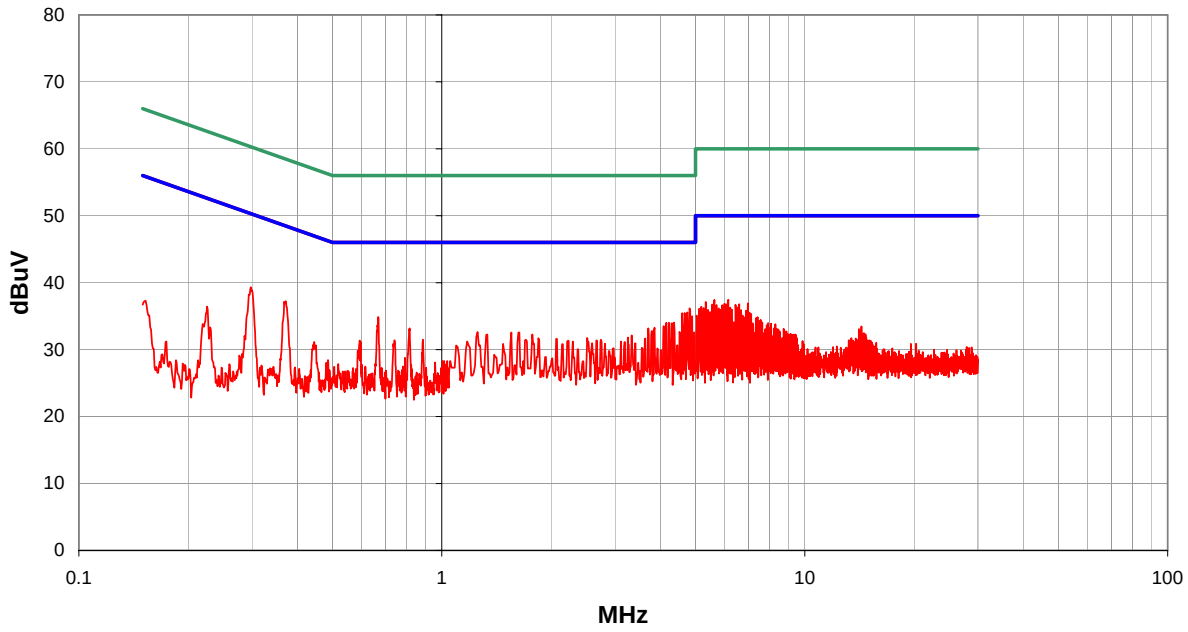
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	3

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
4.817	15.5			0.0	0.7	20.0				36.2	46.0	-9.8
4.747	14.9			0.0	0.7	20.0				35.6	46.0	-10.4
4.667	14.8			0.0	0.7	20.0				35.5	46.0	-10.5
4.597	14.8			0.0	0.7	20.0				35.5	46.0	-10.5
0.298	19.1			0.0	0.2	20.0				39.3	50.3	-11.0
4.897	14.3			0.0	0.7	20.0				35.0	46.0	-11.0
0.668	14.6			0.0	0.3	20.0				34.9	46.0	-11.1
0.371	17.0			0.0	0.2	20.0				37.2	48.5	-11.2
4.367	13.4			0.0	0.6	20.0				34.0	46.0	-12.0
4.227	13.4			0.0	0.6	20.0				34.0	46.0	-12.0
4.157	13.4			0.0	0.6	20.0				34.0	46.0	-12.0
4.317	13.3			0.0	0.6	20.0				33.9	46.0	-12.1
4.087	12.9			0.0	0.6	20.0				33.5	46.0	-12.5
6.158	16.7			0.0	0.8	20.0				37.5	50.0	-12.5
5.637	16.7			0.0	0.7	20.0				37.4	50.0	-12.6
3.856	12.7			0.0	0.6	20.0				33.3	46.0	-12.7
0.815	12.9			0.0	0.3	20.0				33.2	46.0	-12.8
3.706	12.6			0.0	0.6	20.0				33.2	46.0	-12.8
5.337	16.4			0.0	0.7	20.0				37.1	50.0	-12.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/07/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

mid channel, 802.11(g) 54 Mbps

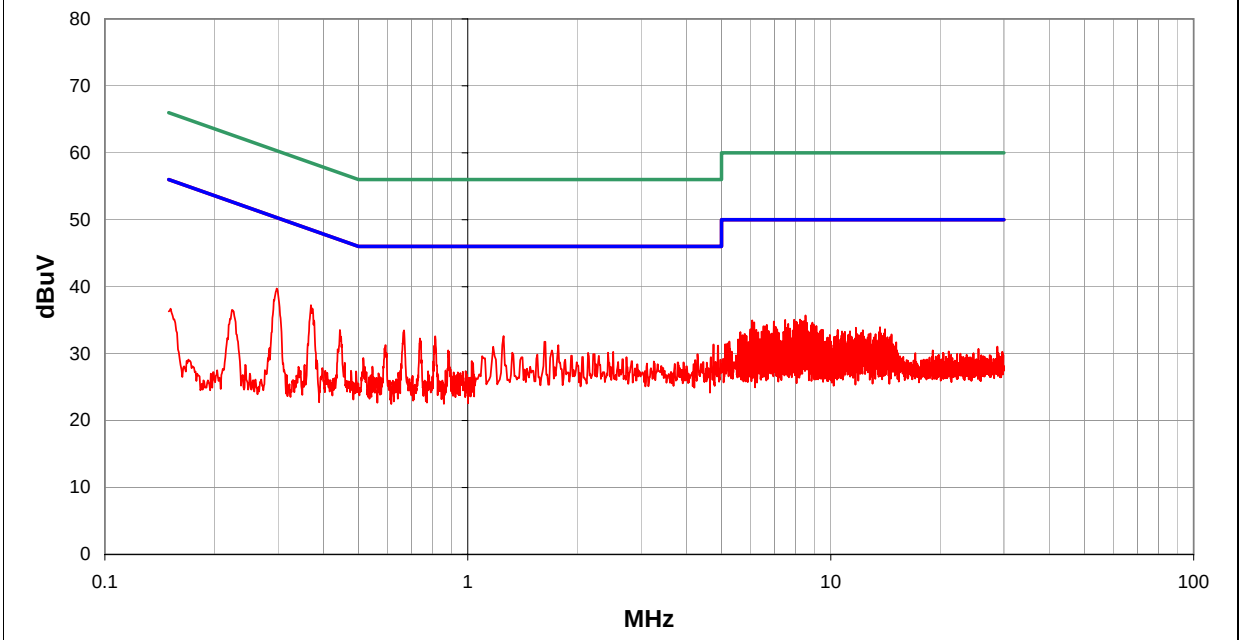
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	N	4

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.298	19.5			0.0	0.2	20.0				39.7	50.3	-10.6
0.370	17.0			0.0	0.2	20.0				37.2	48.5	-11.3
0.667	13.2			0.0	0.3	20.0				33.5	46.0	-12.5
1.255	12.3			0.0	0.3	20.0				32.6	46.0	-13.4
0.813	12.3			0.0	0.3	20.0				32.6	46.0	-13.4
0.444	13.3			0.0	0.2	20.0				33.5	47.0	-13.4
0.738	12.0			0.0	0.3	20.0				32.3	46.0	-13.7
1.635	11.4			0.0	0.4	20.0				31.8	46.0	-14.2
8.519	14.8			0.0	0.9	20.0				35.7	50.0	-14.3
4.757	10.7			0.0	0.7	20.0				31.4	46.0	-14.6
1.775	10.9			0.0	0.4	20.0				31.3	46.0	-14.7
0.594	11.0			0.0	0.3	20.0				31.3	46.0	-14.7
4.897	10.5			0.0	0.7	20.0				31.2	46.0	-14.8
8.229	14.2			0.0	0.9	20.0				35.1	50.0	-14.9
7.928	14.2			0.0	0.9	20.0				35.1	50.0	-14.9
7.488	14.2			0.0	0.8	20.0				35.0	50.0	-15.0
1.175	10.7			0.0	0.3	20.0				31.0	46.0	-15.0
6.078	14.2			0.0	0.8	20.0				35.0	50.0	-15.0
8.449	14.0			0.0	0.9	20.0				34.9	50.0	-15.1

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF	Work Order:	ITRM0085
Serial Number:		Date:	07/07/05
Customer:	Intermec Technologies Corporation	Temperature:	24
Attendees:	None	Humidity:	46%
Cust. Ref. No.:		Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

high channel, 802.11(g) 54 Mbps

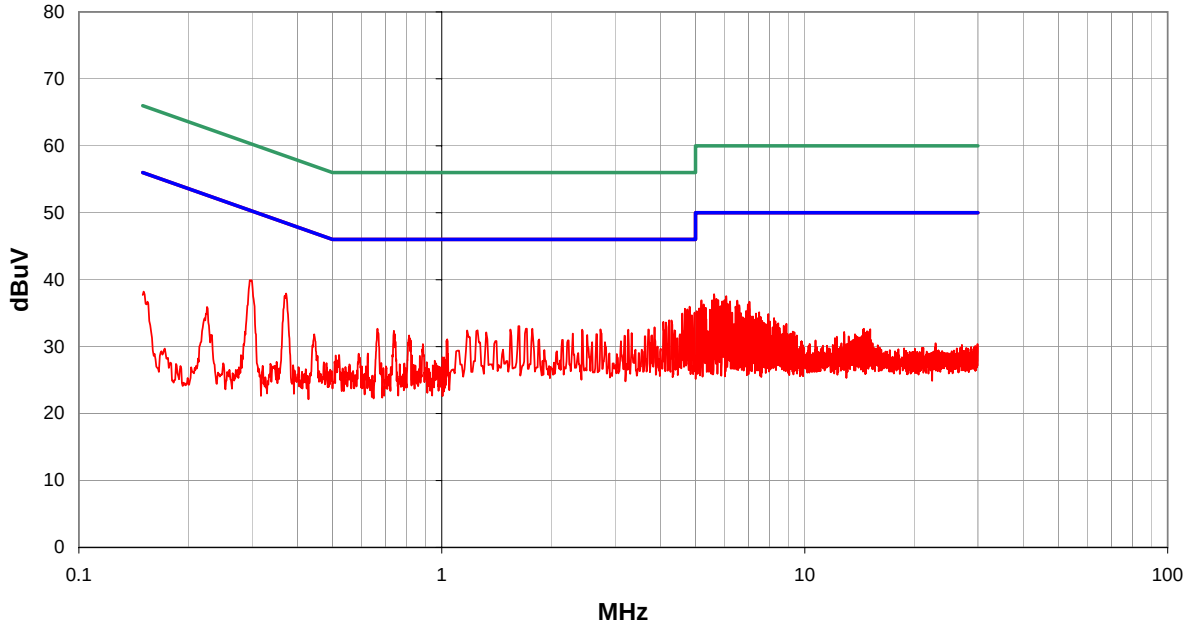
DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS	Line	Run #
Pass	L1	5

Other

Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
4.817	15.3			0.0	0.7	20.0				36.0	46.0	-10.0
0.299	19.7			0.0	0.2	20.0				39.9	50.3	-10.3
4.677	15.0			0.0	0.7	20.0				35.7	46.0	-10.3
4.747	14.9			0.0	0.7	20.0				35.6	46.0	-10.4
0.372	17.7			0.0	0.2	20.0				37.9	48.4	-10.5
4.977	14.4			0.0	0.7	20.0				35.1	46.0	-10.9
4.597	14.3			0.0	0.7	20.0				35.0	46.0	-11.0
4.887	14.0			0.0	0.7	20.0				34.7	46.0	-11.3
4.297	13.3			0.0	0.6	20.0				33.9	46.0	-12.1
4.237	13.3			0.0	0.6	20.0				33.9	46.0	-12.1
5.627	17.1			0.0	0.7	20.0				37.8	50.0	-12.2
4.077	13.1			0.0	0.6	20.0				33.7	46.0	-12.3
4.147	13.0			0.0	0.6	20.0				33.6	46.0	-12.4
6.078	16.8			0.0	0.8	20.0				37.6	50.0	-12.4
5.707	16.4			0.0	0.7	20.0				37.1	50.0	-12.9
1.635	12.7			0.0	0.4	20.0				33.1	46.0	-12.9
6.008	16.2			0.0	0.8	20.0				37.0	50.0	-13.0
5.777	16.2			0.0	0.7	20.0				36.9	50.0	-13.1
5.557	16.2			0.0	0.7	20.0				36.9	50.0	-13.1

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.6.24
EMI 2005.5.05

EUT:	2610CF			Work Order:	ITRM0085
Serial Number:				Date:	07/07/05
Customer:	Intermec Technologies Corporation			Temperature:	24
Attendees:	None			Humidity:	46%
Cust. Ref. No.:				Barometric Pressure	30.11
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS

Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

SAMPLE CALCULATIONS

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

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

COMMENTS

EUT OPERATING MODES

high channel, 802.11(g) 54 Mbps

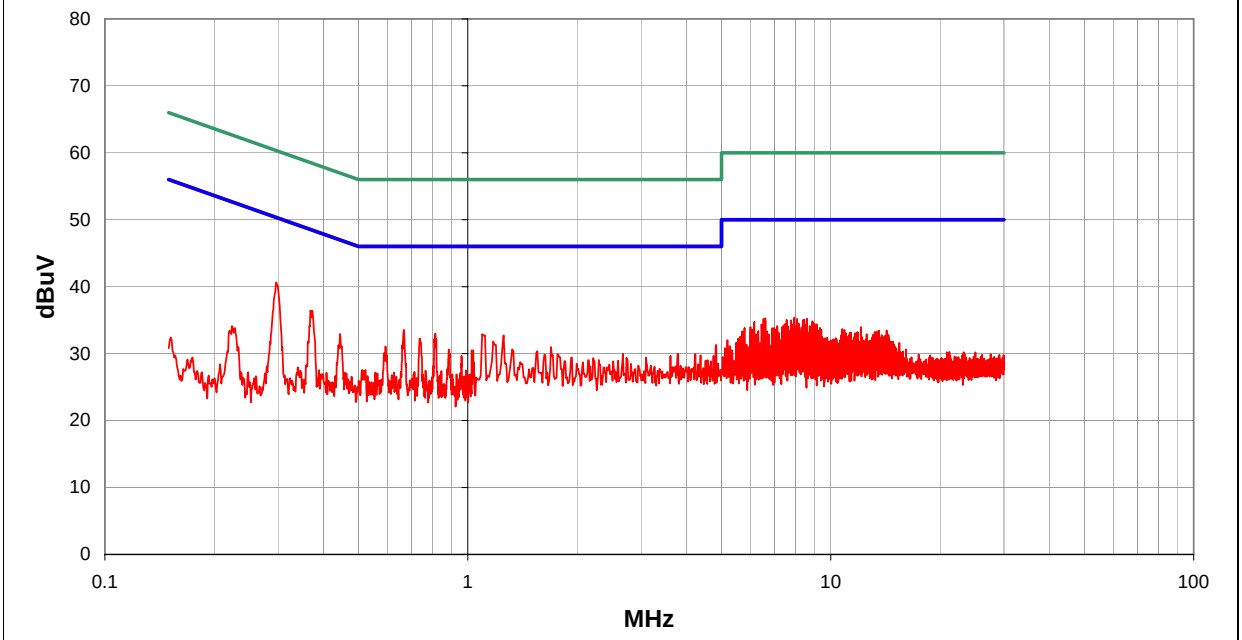
DEVIATIONS FROM TEST STANDARD

No deviations.

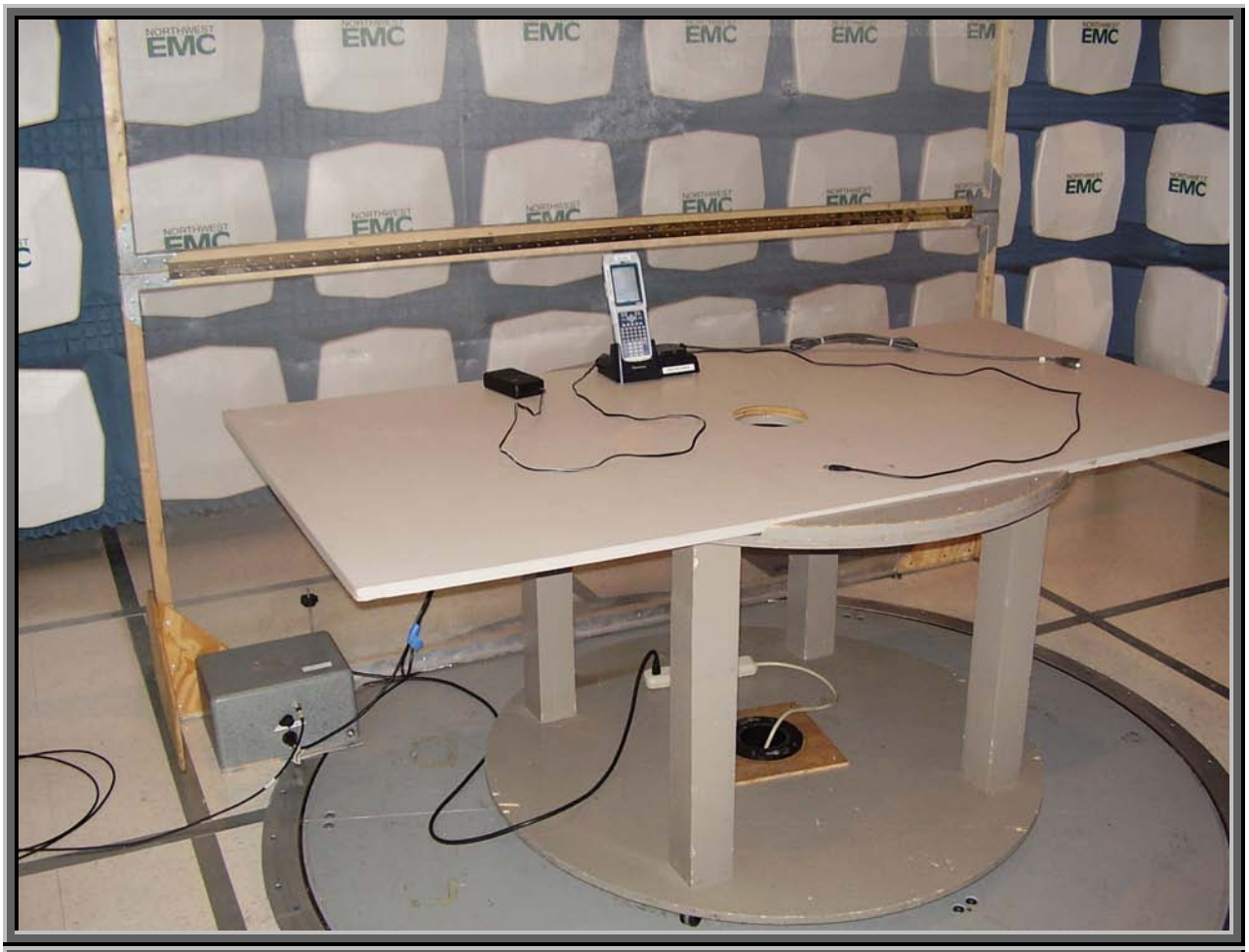
RESULTS	Line	Run #
Pass	N	6

Other

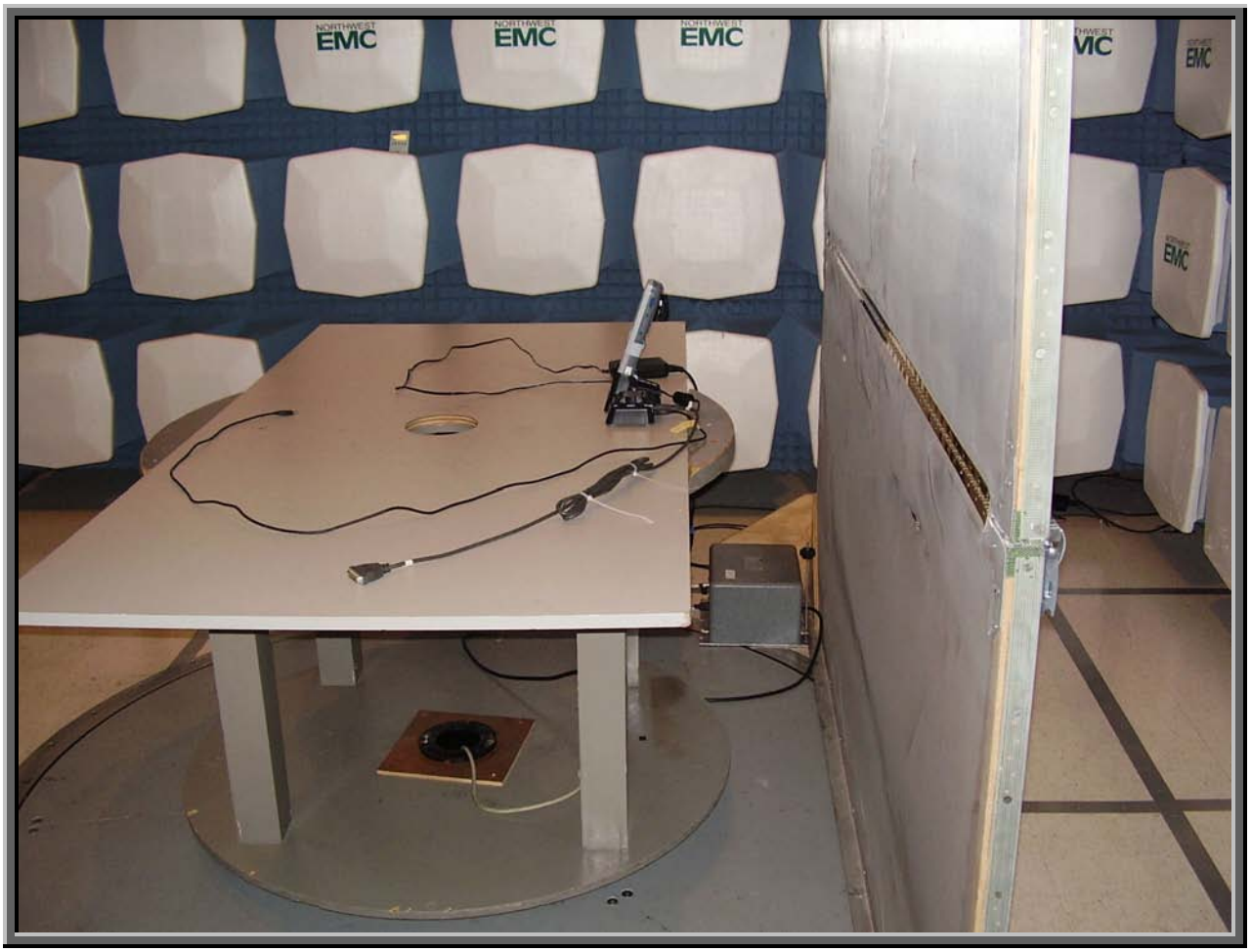
Tested By:



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.297	20.4			0.0	0.2	20.0				40.6	50.3	-9.7
0.372	16.2			0.0	0.2	20.0				36.4	48.4	-12.0
0.667	13.3			0.0	0.3	20.0				33.6	46.0	-12.4
0.813	12.7			0.0	0.3	20.0				33.0	46.0	-13.0
1.095	12.6			0.0	0.3	20.0				32.9	46.0	-13.1
1.255	12.4			0.0	0.3	20.0				32.7	46.0	-13.3
0.739	12.0			0.0	0.3	20.0				32.3	46.0	-13.7
0.444	12.7			0.0	0.2	20.0				32.9	47.0	-14.0
1.175	11.5			0.0	0.3	20.0				31.8	46.0	-14.2
7.938	14.5			0.0	0.9	20.0				35.4	50.0	-14.6
6.598	14.5			0.0	0.8	20.0				35.3	50.0	-14.7
4.837	10.6			0.0	0.7	20.0				31.3	46.0	-14.7
8.599	14.3			0.0	0.9	20.0				35.2	50.0	-14.8
6.528	14.4			0.0	0.8	20.0				35.2	50.0	-14.8
8.079	14.3			0.0	0.9	20.0				35.2	50.0	-14.8
8.449	14.2			0.0	0.9	20.0				35.1	50.0	-14.9
0.594	10.8			0.0	0.3	20.0				31.1	46.0	-14.9
7.558	14.2			0.0	0.8	20.0				35.0	50.0	-15.0
8.379	14.1			0.0	0.9	20.0				35.0	50.0	-15.0


NORTHWEST
EMC


NORTHWEST
EMC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