# Intermec Technologies Corporation

## **IM4**

**September 12, 2005** 

Report No. ITRM0099

Report Prepared By



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

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22975 NW Evergreen Parkway Suite 400 Hillsboro, Oregon 97124

#### **Certificate of Test**

Issue Date: September 12, 2005 Intermec Technologies Corporation Model: IM4

| Emissions   |                 |      |      |  |  |  |
|---|-----------------|------|------|--|--|--|
| Specification   | Test Method     | Pass | Fail |  |  |  |
| FCC 15.207 AC Powerline Conducted Emissions:2005-04       | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(a) Occupied Bandwidth:2005-04                  | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(a)(1) Channel Spacing:2005-04                  | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(a)(1)(ii) Dwell Time:2005-04                   | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(a)(1)(i) Number of Hopping Frequencies:2005-04 | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(b) Output Power:2005-04                        | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(d) Band Edge Compliance:2005-04                | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(d) Spurious Conducted Emissions:2005-04        | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.247(d) Spurious Radiated Emissions:2005-04         | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.109(a) Class B Radiated Emissions:2005-04          | ANSI C63.4:2003 |      |      |  |  |  |
| FCC 15.107 Class B Conducted 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. 41 Tesla Ave. Irvine, CA 92618 (888) 364-2378

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 History**

Revision 05/05/03

| Revision<br>Number | Description | Date | Page Number |
|--------------------|-------------|------|-------------|
|                    |             |      |             |
| 00                 | None        |      |             |

**FCC:** Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.





**NVLAP:** Northwest EMC, Inc. is recognized under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, ANSI C63.4, MIL-STD 461E, DO-160D and SAE J1113. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



200629-0 200630-0 200676-0

**Industry Canada:** Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS 212, Issue 1 (Provisional) and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements.



**CAB:** Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



**TÜV Product Service:** Included in 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?

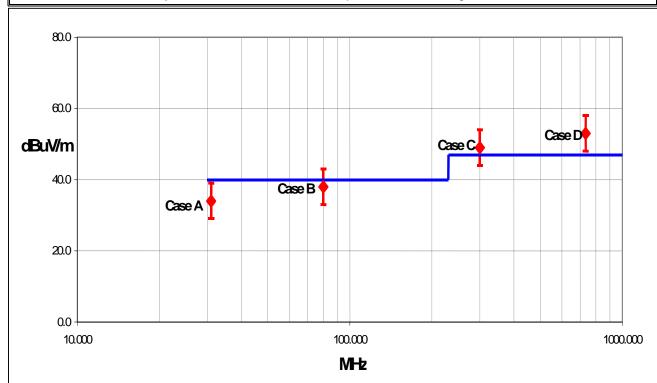
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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.

## **Measurement Uncertainty**

| Radiated Emissions ≤ 1 GHz            |                       | Value ( | dB)    |         |        |        |        |
|---------------------------------------|-----------------------|---------|--------|---------|--------|--------|--------|
|                                       | Probability Biconical |         | Log Pe | eriodic | D      | ipole  |        |
|                                       | Distribution          | Ante    | enna   | Ante    | enna   | An     | tenna  |
| Test Distance                         |                       | 3m      | 10m    | 3m      | 10m    | 3m     | 10m    |
| Combined standard                     | normal                | + 1.86  | + 1.82 | + 2.23  | + 1.29 | + 1.31 | + 1.25 |
| uncertainty <b>u</b> <sub>c</sub> (y) |                       | - 1.88  | - 1.87 | - 1.41  | - 1.26 | - 1.27 | - 1.25 |
| Expanded uncertainty <i>U</i>         | normal (k=2)          | + 3.72  | + 3.64 | + 4.46  | + 2.59 | + 2.61 | + 2.49 |
| (level of confidence ≈ 95%)           |                       | - 3.77  | - 3.73 | -2.81   | - 2.52 | - 2.55 | - 2.49 |

| Radiated Emissions > 1 GHz                                | Value (dB)                  |                             |                          |
|---|-----------------------------|-----------------------------|--------------------------|
|   | Probability<br>Distribution | Without High<br>Pass Filter | With High<br>Pass Filter |
| Combined standard uncertainty $u_c(y)$                    | normal                      | + 1.29<br>- 1.25            | + 1.38<br>- 1.35         |
| Expanded uncertainty <i>U</i> (level of confidence ≈ 95%) | normal (k=2)                | + 2.57<br>- 2.51            | + 2.76<br>2.70           |

| Conducted Emissions  |                |          |  |  |  |
|--|----------------|----------|--|--|--|
|  | Probability    | Value    |  |  |  |
|  | Distribution   | (+/- dB) |  |  |  |
| Combined standard uncertainty <i>uc(y)</i>                 | normal         | 1.48     |  |  |  |
| Expanded uncertainty <b>U</b> (level of confidence ≈ 95 %) | normal (k = 2) | 2.97     |  |  |  |

| Radiated Immunity  |                |          |  |  |  |  |
|--|----------------|----------|--|--|--|--|
|  | Probability    | Value    |  |  |  |  |
|  | Distribution   | (+/- dB) |  |  |  |  |
| Combined standard uncertainty uc(y)                        | normal         | 1.05     |  |  |  |  |
| Expanded uncertainty <b>U</b> (level of confidence ≈ 95 %) | normal (k = 2) | 2.11     |  |  |  |  |

| Conducted Immunity                          |                 |          |  |  |  |
|---|-----------------|----------|--|--|--|
|   | Probability     | Value    |  |  |  |
|   | Distribution    | (+/- dB) |  |  |  |
| Combined standard uncertainty <i>uc(y</i> ) | normal          | 1.05     |  |  |  |
| Expanded uncertainty <b>U</b>               | normal (k = 2)  | 2.10     |  |  |  |
| (level of confidence ≈ 95 %)                | Horriai (K = 2) | 2.10     |  |  |  |

#### Legend

 $u_c(y)$  = square root of the sum of squares of the individual standard uncertainties

 $\it U$  = combined standard uncertainty multiplied by the coverage factor:  $\it k$ . 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  $\it k$ =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%.

#### **Facilities**



#### 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 339<sup>th</sup> Ave. SE Sultan, WA 98294 (888) 364-2378 FAX (360) 793-2536

## **Product Description**

Revision 10/3/03

| 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:                         | IM4                               |
| First Date of Test:            | August 23, 2005                   |
| Last Date of Test:             | August 26, 2005                   |
| Receipt Date of Samples:       | August 23, 2005                   |
| <b>Equipment Design Stage:</b> | Prototype                         |
| Equipment Condition:           | No visual damage.                 |

#### Information Provided by the Party Requesting the Test

| Clocks/Oscillators: | Not provided. |
|---------------------|---------------|
| I/O Ports:          | Serial        |

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

The IM4 is a 915MHz RFID radio module (FHSS). It has three data rates: 32kbps, 38 kbps and 40 kbps that were tested. Four antennas were also tested. The antennas represent the highest gain of each type, plus the lowest gain overall.

#### **Client Justification for EUT Selection:**

Not Provided

#### **Client Justification for Test Selection:**

Seeking full modular approval under FCC Part 15.247.

#### **EUT Photo**



|      | Equipment modifications                |            |   |   |                                |  |  |
|------|--|------------|---|---|--------------------------------|--|--|
| Item | Test                                   | Date       | Modification  | Note                                    | Disposition of EUT             |  |  |
| 1    | Spurious<br>Radiated<br>Emissions      | 08/23/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as delivered.        | EUT remained at Northwest EMC. |  |  |
| 2    | Spurious<br>Radiated<br>Emissions      | 08/24/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 3    | Occupied<br>Bandwidth                  | 08/24/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 4    | Band Edge<br>Compliance                | 08/24/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 5    | Channel<br>Spacing                     | 08/24/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 6    | Number of<br>Hopping<br>Frequencies    | 08/24/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 7    | Spurious<br>Radiated<br>Emissions      | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 8    | Conducted<br>Emissions                 | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 9    | AC Powerline Conducted Emissions       | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 10   | Radiated<br>Emissions                  | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 11   | Output<br>Power                        | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 12   | Dwell Time<br>per Hopping<br>Frequency | 08/25/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |
| 13   | Spurious<br>Conducted<br>Emissions     | 08/26/2005 | No EMI suppression devices were added or modified during this test. | Same configuration as in previous test. | EUT remained at Northwest EMC. |  |  |



## **Channel Spacing**

#### **Justification**

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

#### **Channels in Specified Band Investigated:**

Multiple adjacent channels

#### **Operating Modes Investigated:**

Hopping

#### **Data Rates Investigated:**

40 kbps

#### **Output Power Setting(s) Investigated:**

Maximum

#### **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test |  |         |                |  |  |  |
|---------------------------------------|--|---------|----------------|--|--|--|
| Exercise software                     | Common Test Interface for IM4  | Version | 1.2.0 Build 11 |  |  |  |
| Description                           |  |         |                |  |  |  |
| The system was tested us              | The system was tested using special software developed to test all functions of the device during the test |         |                |  |  |  |

The system was tested using special software developed to test all functions of the device during the test. This included channel selection, data rate, and hopping vs. no hopping modes.

| EUT and Peripherals             |                                   |                   |               |
|---------------------------------|-----------------------------------|-------------------|---------------|
| Description                     | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader                 | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                    | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                     | Dell                              | TS30GI            | K8175A        |
| Power Supply for<br>Notebook PC | Dell                              | TSA8              | None          |
| Power Supply for Test Fixture   | EZ                                | GP-4303A          | 010700709     |

| Cables   |        |            |         |                               |              |
|--|--------|------------|---------|-------------------------------|--------------|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |

| Measurement Equipment |                 |       |            |            |          |
|-----------------------|-----------------|-------|------------|------------|----------|
| Description           | Manufacturer    | Model | Identifier | Last Cal   | Interval |
| Spectrum Analyzer     | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |

#### **Test Description**

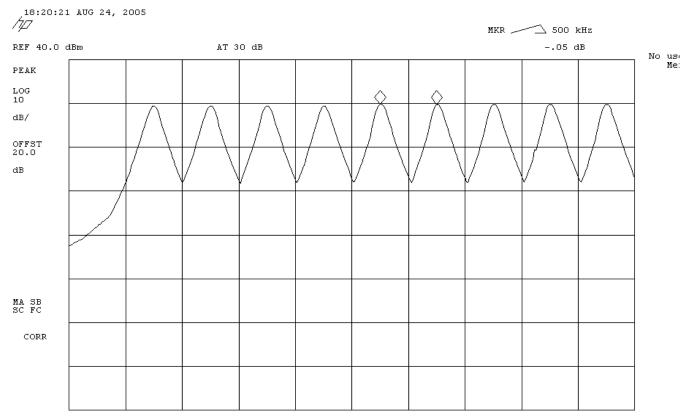
**Requirement**: Per 47 CFR 15.247(a)(1), the hopping channel carrier frequencies must be separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier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

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

Completed by:

J. Kit

| EMC   | CHANNE     | EL SPACING  |                       | Rev BETA<br>01/30/01 |
|---|------------|---|-----------------------|----------------------|
| EUT: IM4  |            |   | Work Order:           | ITRM0098             |
| Serial Number: 19510523230  |            |   | Date:                 | 08/24/05             |
| Customer: Intermec Technologies Co  | rporation  |   | Temperature:          | 70 °F                |
| Attendees: Scott Holub  |            | Tested by: Greg Kiemel                            | Humidity:             | 43% RH               |
| Customer Ref. No.: None   |            | Power: 120 V, 60 Hz                               | Job Site:             | OC03                 |
| EST SPECIFICATIONS  |            |   |                       |                      |
| Specification: 47 CFR 15.247(a)(1)  | Year: 2005 | Method: DA 00-705, ANSI C63.4                     | Year:                 | 2003                 |
| Measured with a direct connection between the F EUT OPERATING MODES flodulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD lone ECQUIREMENTS Frequency hopping systems operating in the 902 |            | equencies separated by a minimum of 25 kHz, or th | ne 20 dB bandwidths o | of the hopping       |
| hannel, whichever is greater.   |            | - <b> </b>  |                       |                      |
| ESULTS  |            | CHANNEL SPACING                                   |                       |                      |
| ass   | ·-         | 500 kHz   |                       |                      |
| Tested By:  |            |   |                       |                      |
| DESCRIPTION OF TEST   | Chann      | nel Spacing                                       |                       |                      |



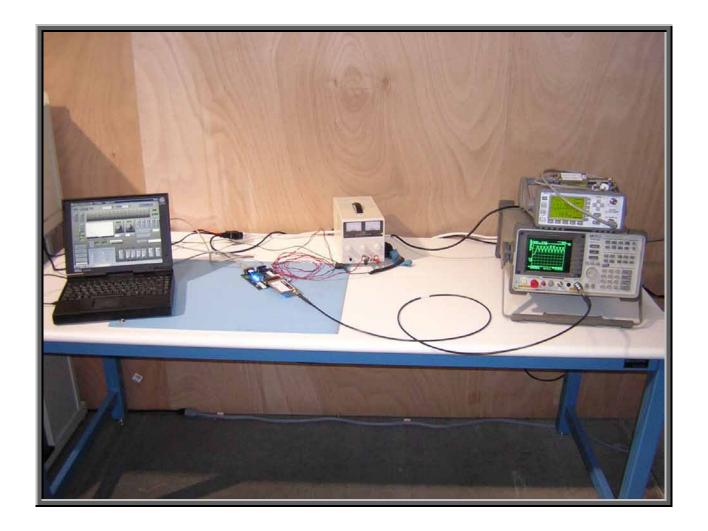
START 902.000 MHz

STOP 907.000 MHz

#VBW 300 kHz

#RES BW 100 kHz

SWP 20.0 msec



Revision 10/1/03

#### **Justification**

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

#### **Channels in Specified Band Investigated:**

Mid

#### **Operating Modes Investigated:**

Hopping

#### **Data Rates Investigated:**

40 kbps

#### **Output Power Setting(s) Investigated:**

Maximum

#### **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test |                               |         |                |  |  |
|---------------------------------------|-------------------------------|---------|----------------|--|--|
| Exercise software                     | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |
| Description                           |                               |         |                |  |  |

The system was tested using special software developed to test all functions of the device during the test. This included channel selection, data rate, and hopping vs. no hopping modes.

| EUT and Peripherals           |                                   |                   |               |
|-------------------------------|-----------------------------------|-------------------|---------------|
| Description                   | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader               | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                  | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                   | Dell                              | TS30GI            | K8175A        |
| Power Supply for Notebook PC  | Dell                              | TSA8              | None          |
| Power Supply for Test Fixture | EZ                                | GP-4303A          | 010700709     |

#### **Dwell Time**

Revision 10/1/03

| Cables   |        |            |         |                               |              |
|--|--------|------------|---------|-------------------------------|--------------|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |

| Measurement Equipment |                 |       |            |            |          |
|-----------------------|-----------------|-------|------------|------------|----------|
| Description           | Manufacturer    | Model | Identifier | Last Cal   | Interval |
| Spectrum Analyzer     | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |

#### **Test Description**

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

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

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

The measurement is made with the spectrum analyzer's span set to zero. The measurement is made in two steps. First, the sweep speed is adjusted to capture the pulse width or dwell time of a single transmission. Then, the sweep speed is set to 20 seconds to count the number of transmissions during that period. The dwell time of a single transmission multiplied by the number of transmissions during a 20 second period equals the average time of occupancy during a 20 second period.

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

# Completed by:

| NORTHWEST<br>EMC                   |  |                                     |                       |                       |              |          |
|------------------------------------|--|-------------------------------------|-----------------------|-----------------------|--------------|----------|
| EUT:                               |  |                                     |                       |                       | Work Order:  | ITRM0098 |
| Serial Number:                     | 19510523230  |                                     |                       |                       |              | 08/25/05 |
| Customer:                          | Intermec Technologies Corporati                      | on                                  |                       |                       | Temperature: | 70 °F    |
|                                    | Scott Holub  |                                     |                       |                       | Humidity:    |          |
| Customer Ref. No.:                 | None   |                                     | Power:                | 120 V, 60 Hz          | Job Site:    | OC03     |
| TEST SPECIFICATION                 | S  |                                     |                       |                       |              |          |
| Specification:                     | 47 CFR 15.247(a)(1)(ii)                              | Year: 2005                          | Method:               | DA 00-705, ANSI C63.4 | Year:        | 2003     |
| SAMPLE CALCULATION                 | ONS  |                                     |                       |                       |              |          |
| Total Dwell time = (Dwell COMMENTS | ell Time during a single transmiss                   | ion)) X (Number of transmissions i  | n a 20 second period) | = 0.4 sec             |              |          |
| COMMENTS                           |  |                                     |                       |                       |              |          |
| EUT OPERATING MOD                  | FS   |                                     |                       |                       |              |          |
| Modulated 40 kbps dat              |  |                                     |                       |                       |              |          |
| DEVIATIONS FROM TE                 |  |                                     |                       |                       |              |          |
| None                               |  |                                     |                       |                       |              |          |
| REQUIREMENTS                       |  |                                     |                       |                       |              |          |
| Average time of occup              | ancy on any channel shall not be                     | greater than 0.4 seconds within a 2 | 20 second period      |                       |              |          |
| RESULTS                            |  | -                                   | DWELL TIME DURING     | A SINGLE TRANSMISS    | ION          |          |
| Pass                               | 100 mS   |                                     |                       |                       |              |          |
| SIGNATURE                          |  |                                     |                       |                       |              |          |
| Tested By:                         |  |                                     |                       |                       |              |          |
| DESCRIPTION OF TES                 | DESCRIPTION OF TEST                                  |                                     |                       |                       |              |          |
|                                    | Time of Occupancy (Dwell Time) - Single Transmission |                                     |                       |                       |              |          |

18:18:47 AUG 25, 2005 ħΠ MKR \_\_\_\_\_\_ 100.00 msec REF 30.0 dBm #AT 70 dB -.25 dB No user Menu PEAK LOG 5 dB/ OFFST dB WA SB SC FS CORR CENTER 915.2500 MHz SPAN O Hz

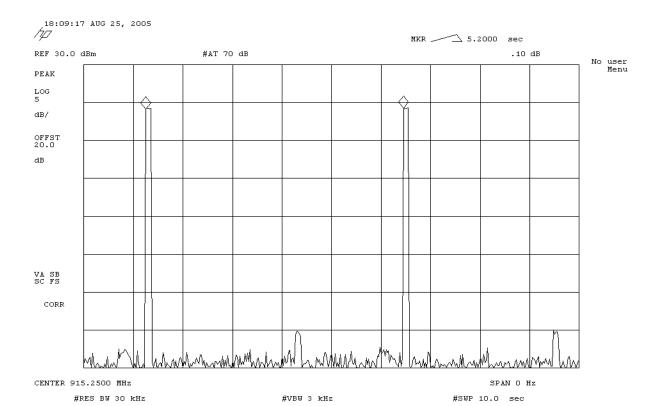
CENTER 915.2500 MHz #RES BW 30 kHz

#VBW 3 kHz

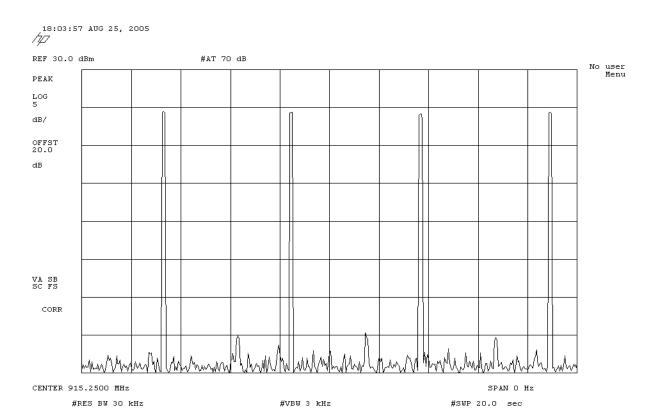
#SWP 500 msec

405

| NORTHWEST                                 |                                | DWFI                                 | L TIME                        |                    | Rev BETA |
|---|--------------------------------|--------------------------------------|-------------------------------|--------------------|----------|
| <b>EMC</b>                                |                                | DWEE                                 |                               |                    | 01/30/01 |
| EUT:                                      | IM4                            |                                      |                               | Work Order: ITRM   | 0098     |
| Serial Number:                            | 19510523230                    |                                      |                               | Date: 08/25/       | 05       |
| Customer                                  | Intermec Technologies Corpor   | ation                                |                               | Temperature: 70 °F |          |
| Attendees                                 | Scott Holub                    |                                      | Tested by: Greg Kiemel        | Humidity: 43% F    | RH       |
| Customer Ref. No.:                        | None                           |                                      | Power: 120 V, 60 Hz           | Job Site: OC03     |          |
| TEST SPECIFICATION                        |                                |                                      |                               |                    |          |
| Specification                             | : 47 CFR 15.247(a)(1)(ii)      | Year: 2005                           | Method: DA 00-705, ANSI C63.4 | Year: 2003         |          |
| SAMPLE CALCULATION                        | ONS                            |                                      |                               |                    |          |
| COMMENTS                                  | DEC                            |                                      |                               |                    |          |
| EUT OPERATING MOI<br>Modulated 40 kbps da |                                |                                      |                               |                    |          |
| DEVIATIONS FROM T                         |                                |                                      |                               |                    |          |
| None                                      | LST STANDARD                   |                                      |                               |                    |          |
| REQUIREMENTS                              |                                |                                      |                               |                    |          |
| Average time of occur                     | pancy on any channel shall not | be greater than 0.4 seconds within a | 20 second period              |                    |          |
| RESULTS                                   |                                | •                                    | PERIOD                        |                    |          |
| Pass 5.2 sec                              |                                |                                      |                               |                    |          |
| SIGNATURE                                 |                                |                                      |                               |                    |          |
| Tested By                                 | · ADU.K.P                      |                                      |                               |                    |          |
| DESCRIPTION OF TES                        | ST                             |                                      |                               |                    |          |
| Time of Occupancy (Dwell Time) - Period   |                                |                                      |                               |                    |          |



| NORTHWEST<br>EMC   |                                  | DWEL                              | L TIME                              |               | Rev BETA<br>01/30/01   |  |  |  |  |
|--|----------------------------------|-----------------------------------|-------------------------------------|---------------|--|--|--|--|--|
| EUT:   |                                  |                                   |                                     | Work Order:   |  |  |  |  |  |
| Serial Number:   | 19510523230                      |                                   |                                     | Date:         | 08/25/05   |  |  |  |  |
| Customer:  | Intermec Technologies Corporati  | on                                |                                     | Temperature:  | 70 °F  |  |  |  |  |
| Attendees:   | Scott Holub                      |                                   | Tested by: Greg Kiemel              | Humidity:     | 43% RH   |  |  |  |  |
| Customer Ref. No.:   | None                             |                                   | Power: 120 V, 60 Hz                 | Job Site:     | OC03   |  |  |  |  |
| TEST SPECIFICATION   |                                  |                                   |                                     |               |  |  |  |  |  |
| Specification:   | 47 CFR 15.247(a)(1)(ii)          | Year: 2005                        | Method: DA 00-705, ANSI C63.4       | Year:         | 2003   |  |  |  |  |
| SAMPLE CALCULATION   | ONS                              |                                   |                                     |               |  |  |  |  |  |
| COMMENTS  EUT OPERATING MOD  Modulated 40 kbps dat  DEVIATIONS FROM TE  None | a rate                           |                                   |                                     |               |  |  |  |  |  |
| REQUIREMENTS   |                                  |                                   |                                     |               |  |  |  |  |  |
|  | ancy on any channel shall not be | greater than 0.4 seconds within a |                                     |               |  |  |  |  |  |
| RESULTS  |                                  |                                   | NUMBER OF TRANSMISSIONS DURING A 20 | SECOND PERIOD |  |  |  |  |  |
| Pass<br>SIGNATURE  |                                  |                                   | 4                                   |               |  |  |  |  |  |
| Tested By:   | ADU.KIP                          |                                   |                                     |               |  |  |  |  |  |
|  |                                  | ell Time) - Number                | of transmissions during a           | 20 second p   | Time of Occupancy (Dwell Time) - Number of transmissions during a 20 second period |  |  |  |  |





## **Number of Hopping Frequencies**

Revision 10/1/03

#### **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:**

ΑII

#### **Operating Modes Investigated:**

Hopping

#### **Data Rates Investigated:**

40 kbps

#### **Output Power Setting(s) Investigated:**

Maximum

#### **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test |                               |         |                |  |  |
|---------------------------------------|-------------------------------|---------|----------------|--|--|
| Exercise software                     | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |
| Description                           |                               |         |                |  |  |

The system was tested using special software developed to test all functions of the device during the test. This included channel selection, data rate, and hopping vs. no hopping modes.

| EUT and Peripherals              |                                   |                   |               |  |  |  |
|----------------------------------|-----------------------------------|-------------------|---------------|--|--|--|
| Description                      | Manufacturer                      | Model/Part Number | Serial Number |  |  |  |
| EUT-RFID Reader                  | Intermec Technologies Corporation | IM4               | 19510523230   |  |  |  |
| Test Fixture                     | Intermec Technologies Corporation | Interrogator      | None          |  |  |  |
| Notebook PC                      | Dell                              | TS30GI            | K8175A        |  |  |  |
| Power Supply for<br>Notebook PC  | Dell                              | TSA8              | None          |  |  |  |
| Power Supply for<br>Test Fixture | EZ                                | GP-4303A          | 010700709     |  |  |  |

## **Number of Hopping Frequencies**

Revision 10/1/03

| Cables   |        |            |         |                               |              |  |
|--|--------|------------|---------|-------------------------------|--------------|--|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |  |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |  |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |  |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |  |

| Measurement Equipment |                 |       |            |            |          |  |
|-----------------------|-----------------|-------|------------|------------|----------|--|
| Description           | Manufacturer    | Model | Identifier | Last Cal   | Interval |  |
| Spectrum Analyzer     | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |  |

#### **Test Description**

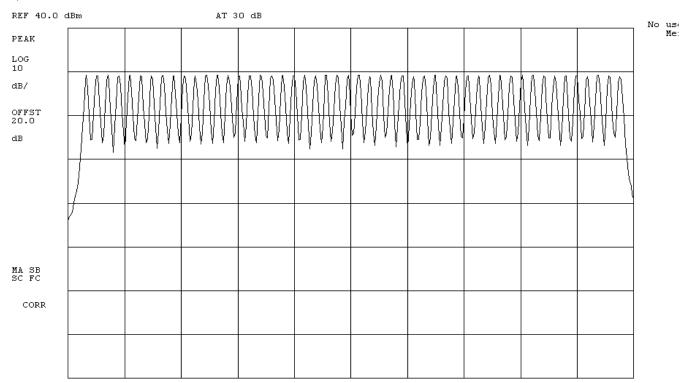
**Requirement**: Per 47 CFR 15.247(a)(1)(i), frequency hopping systems operating in the 902-928 MHz band shall use at least 50 hopping frequencies if the 20 dB bandwidth of the hopping channel is less than 250 kHz. If it is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

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

## Completed by:

| EMC                  | NUM  | <b>BER OF HOP</b>                                   | PPING FRE                   | QUENCIE                | ES                      | Rev BETA<br>01/30/01 |
|----------------------|--|---|-----------------------------|------------------------|-------------------------|----------------------|
| EUT:                 | IM4  |   |                             |                        | Work Order:             |                      |
| Serial Number:       | 19510523230  |   |                             |                        | Date:                   | 08/24/05             |
| Customer:            | Intermec Technologies Corpo                                      | ration  |                             |                        | Temperature:            | 70 °F                |
| Attendees:           | Scott Holub  |   | Tested by:                  | Greg Kiemel            | Humidity:               |                      |
| Customer Ref. No.:   | None   |   | Power:                      | 120 V, 60 Hz           | Job Site:               | OC03                 |
| TEST SPECIFICATION   | s  |   |                             |                        |                         |                      |
| Specification:       | 47 CFR 15.247(a)(1)(i)   | Year: 2005  | Method:                     | ANSI C63.4             | Year:                   | 2003                 |
|                      |  |   |                             |                        |                         |                      |
| COMMENTS             |  |   |                             |                        |                         |                      |
|                      | t connection between the RF of                                   | utput and a spectrum analyzer.                      |                             |                        |                         |                      |
| EUT OPERATING MOD    | DES  |   |                             |                        |                         |                      |
| Modulated at maximur | n data rate, at maximum outpu                                    | t power   |                             |                        |                         |                      |
| DEVIATIONS FROM TE   | EST STANDARD   |   |                             |                        |                         |                      |
| None                 |  |   |                             |                        |                         |                      |
| REQUIREMENTS         |  |   |                             |                        |                         |                      |
|                      | stems in the 902 - 928 MHz ba<br>em shall use at least 50 hoppii | nd shall use at least 25 hopping<br>ng frequencies. | channels if the 20 dB bands | vidth of the hopping o | hannel is 250 kHz or gr | eater. If it is less |
|                      |  |   | NUMBER OF HOPPING           | FREQUENCIES            |                         |                      |
| Pass                 |  | ·-  | 50                          |                        |                         | ·                    |
| SIGNATURE            |  |   |                             |                        |                         |                      |
| Tested By:           | ADU.KIP  |   |                             |                        |                         |                      |
| DESCRIPTION OF TES   | iT .   |   |                             |                        |                         |                      |
|                      |  | Number of Ho  | opping Frequen              | cies                   |                         |                      |

21:45:40 AUG 24, 2005



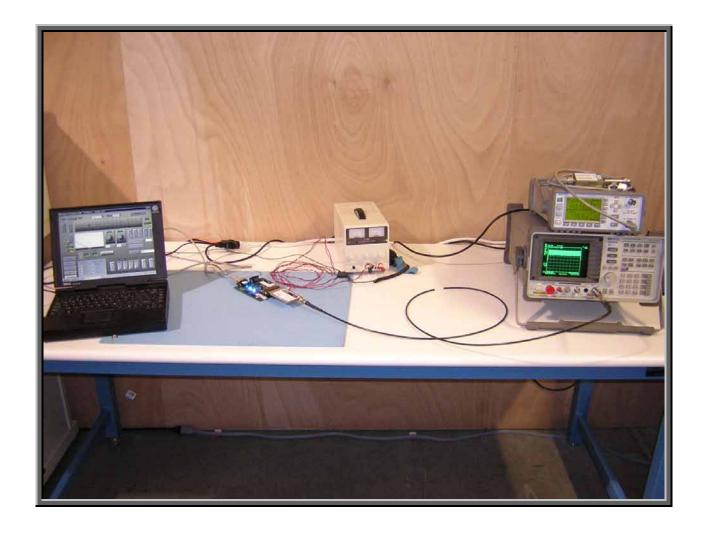
START 902.00 MHz

STOP 928.00 MHz

#VBW 300 kHz

#RES BW 100 kHz

SWP 20.0 msec



Revision 10/1/03



#### **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| Mid                                      |
| High                                     |

#### **Operating Modes Investigated:**

No Hop

| Data Rates Investigated: |  |
|--------------------------|--|
| 32 kbps                  |  |
| 38 kbps                  |  |
| 40 kbps                  |  |

#### **Output Power Setting(s) Investigated:**

Maximum

#### **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test   |                               |         |                |  |  |  |  |
|---|-------------------------------|---------|----------------|--|--|--|--|
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |  |
| Description   |                               |         |                |  |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |  |  |  |
| This included channel selection, data rate, and hopping vs. no hopping modes.                               |                               |         |                |  |  |  |  |

| <b>EUT and Peripherals</b>      |                                   |                   |               |
|---------------------------------|-----------------------------------|-------------------|---------------|
| Description                     | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader                 | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                    | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                     | Dell                              | TS30GI            | K8175A        |
| Power Supply for Test Fixture   | MAGTECH                           | SPU24-104         | 023436980448  |
| Power Supply for<br>Notebook PC | Dell                              | TSA8              | None          |

### **Occupied Bandwidth**

Revision 10/1/03

| Cables   |        |            |         |                               |              |  |
|--|--------|------------|---------|-------------------------------|--------------|--|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |  |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |  |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |  |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |  |

| Measurement Equipment |                 |       |            |            |          |  |  |
|-----------------------|-----------------|-------|------------|------------|----------|--|--|
| Description           | Manufacturer    | Model | Identifier | Last Cal   | Interval |  |  |
| Spectrum Analyzer     | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |  |  |

#### **Test Description**

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

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

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

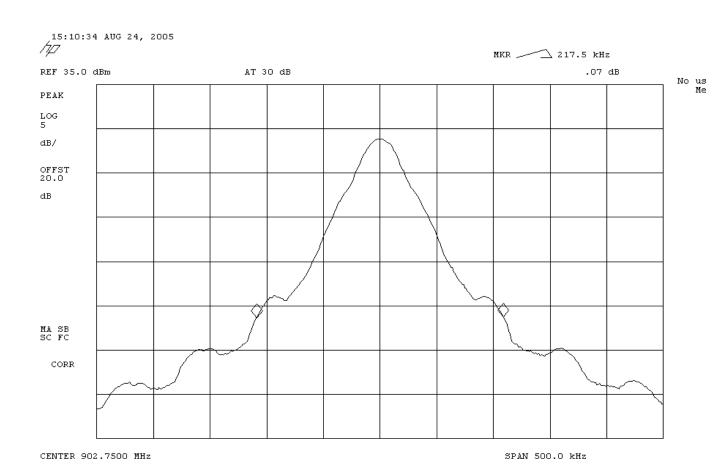
<u>Configuration</u>: The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at various data rates in a no hop mode.

#### Completed by:

| EMC  |                                   | OCCUPIED                         | BANDWIC                   | OTH                         |                         | Rev BETA<br>01/30/01 |
|--|-----------------------------------|----------------------------------|---------------------------|-----------------------------|-------------------------|----------------------|
| EUT:   | IM4                               |                                  |                           |                             | Work Order:             | ITRM0098             |
| Serial Number:                                   | 19510523230                       |                                  |                           |                             | Date:                   | 08/24/05             |
| Customer:  | Intermec Technologies Corporation | on                               |                           |                             | Temperature:            | 70 °F                |
| Attendees:                                       | Scott Holub                       |                                  | Tested by:                | Greg Kiemel                 | Humidity:               | 43% RH               |
| Customer Ref. No.:                               | None                              |                                  | Power:                    | 120 V, 60 Hz                | Job Site:               | OC03                 |
| TEST SPECIFICATIONS                              | 6                                 |                                  |                           |                             |                         |                      |
| Specification:                                   | 47 CFR 15.247(a)                  | Year: 2005                       | Method:                   | DA 00-705, ANSI C63.4       | Year:                   | 2003                 |
|  |                                   |                                  |                           |                             |                         |                      |
| COMMENTS   |                                   |                                  |                           |                             |                         |                      |
| Measured with a direct                           | connection between the RF outpu   | t and a spectrum analyzer.       |                           |                             |                         |                      |
| <b>EUT OPERATING MOD</b>                         | ES                                |                                  |                           |                             |                         |                      |
| Modulated 32 kbps dat                            | a rate                            |                                  |                           |                             |                         |                      |
| <b>DEVIATIONS FROM TE</b>                        | ST STANDARD                       |                                  |                           |                             |                         |                      |
| None   |                                   |                                  |                           |                             |                         |                      |
| REQUIREMENTS                                     |                                   |                                  |                           |                             |                         |                      |
| Per 47 CFR 15.247(a)(1) can it be greater than 5 |                                   | ency hopping channels in the 902 | ? - 928 MHz band shall be | e less than or equal to the | ne carrier frequency se | paration. In no case |
| RESULTS  |                                   |                                  | BANDWIDTH                 |                             |                         |                      |
| Pass   |                                   |                                  | 217.5 kHz                 |                             |                         |                      |
| Tested By:                                       |                                   |                                  |                           |                             |                         |                      |
| DESCRIPTION OF TEST                              | Г                                 |                                  |                           |                             |                         |                      |
| 20dB Bandwidth - Low Channel - 32 kbps Data Rate |                                   |                                  |                           |                             |                         |                      |

NORTHWEST

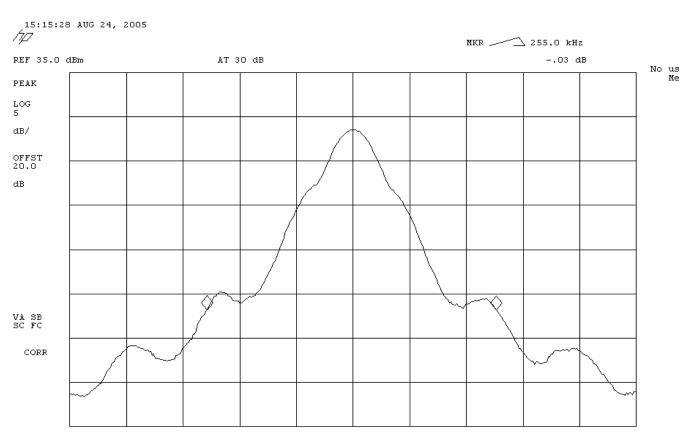
#RES BW 30 kHz



#VBW 300 kHz

SWP 20.0 msec

| EUT: IM4 Work Order: ITRM0098 Serial Number: 19510523230 Date: 08/24/05 Customer: Intermec Technologies Corporation Temperature: 70 °F Attendees: Scott Holub Tested by: Greg Kiemel Humidity: 43% RH Customer Ref. No.: None Power: 120 V, 60 Hz Job Site: OC03 EST SPECIFICATIONS Specification: 47 CFR 15.247(a) Year: 2005 Method: DA 00-705, ANSI C63.4 Year: 2003 AMPLE CALCULATIONS  COMMENTS Ideasured with a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideal and Ask bys data rate EVIATIONS FROM TEST STANDARD Ideas In the Standard  | NORTHWEST              |                                   |                                  |                         |                           |                   |                    |                      |
|--|------------------------|-----------------------------------|----------------------------------|-------------------------|---------------------------|-------------------|--------------------|----------------------|
| Serial Number:   19510523230   Date:   08024/05   Customer: Intermec Technologies Corporation   Temperature: 70 °F   Attendees:   Scott Holub   Tested by:   Greg Kiemel   Humidity: 43% RH   Customer Ref. No.:   None   Power: 120 V, 60 Hz   Job Site:   OC03   EST SPECIFICATIONS   Specification:   47 CFR 15.247(a)   Year:   2005   Method:   DA 00-705, ANSI C63.4   Year:   2003   AMPLE CALCULATIONS   Specification:   47 CFR 15.247(a)   Year:   2005   Method:   DA 00-705, ANSI C63.4   Year:   2003   AMPLE CALCULATIONS   Specification:   47 CFR 15.247(a)   Year:   2005   Method:   DA 00-705, ANSI C63.4   Year:   2003   AMPLE CALCULATIONS   Specification:   47 CFR 15.247(a)   Year:   2003   AMPLE CALCULATIONS   Year:   2005   Method:   2003   Year:   2003   AMPLE CALCULATIONS   Year:   2005   Method:   2003   Year:   2003   AMPLE CALCULATIONS   Year:   2005   Year:   2005   Year:   2005   Year:   2005   Year:   2005   AMPLE CALCULATIONS   Year:   2005   Year:   2005   Year:   2005   Year:   2007   Year:   2007   Year:   2003   AMPLE CALCULATIONS   Year:   2005   Year:   2005   Year:   2007   Year:   2007   AMPLE CALCULATIONS   Year:   2007   Year:   2007   Year:   2007  |                        |                                   | OCCUPIED I                       | BANDWID                 | TH                        |                   |                    | Rev BETA<br>01/30/01 |
| Customers   Intermec Technologies Corporation   Tented by:   Greg Kiemel   Humidity:   43% RH   Customer Ref. No.:   None   Power:   120 V, 60 Hz   Job Site:   OC03   EST SPECIFICATIONS Specification:   47 CFR 15.247(a)   Year:   2005   Method:   DA 00-705, ANSI C63.4   Year:   2003   AMPLE CALCULATIONS  COMMENTS Reasured with a direct connection between the RF output and a spectrum analyzer. UTO OPERATING MODES Rodulated 38 kbps data rate  EVALUTIONS FROM TEST STANDARD Ione REQUIREMENTS Ref 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no can it be greater than 500 kHz.  ESULTS BANDWIDTH Rested By:  |                        | IM4                               |                                  |                         |                           | Work              | k Order: ITRM0098  |                      |
| Attendees: Scott Holub  Customer Ref. No.: None  Power: 120 V, 60 Hz  Job Site: OC03  EST SPECIFICATIONS  Specification: 47 CFR 15.247(a)  Year: 2005  Method: DA 00-705, ANSI C63.4  Year: 2003  AMPLE CALCULATIONS  COMMENTS  Reasured with a direct connection between the RF output and a spectrum analyzer.  LUT OPERATING MODES  Rodulated 38 kbps data rate  EVILVATIONS FROM TEST STANDARD  Rone  REQUIREMENTS  Reasured with a direct connection between the RF output and a spectrum analyzer.  RESULTS  BANDWIDTH  ass  255 kHz  Results  BANDWIDTH  Sessed By:  Tested By:  Tested By:  DESCRIPTION OF TEST  | Serial Number:         | 19510523230                       |                                  |                         |                           |                   | Date: 08/24/05     |                      |
| Customer Ref. No.:   None  | Customer:              | Intermec Technologies Corporation | n                                |                         |                           | Tempe             | erature: 70 °F     |                      |
| Specification:  47 CFR 15.247(a)   | Attendees:             | Scott Holub                       |                                  | Tested by:              | Greg Kiemel               | Hu                | umidity: 43% RH    |                      |
| Specification: 47 CFR 15.247(a)  Year: 2005  Method: DA 00-705, ANSI C63.4  Year: 2003  AMPLE CALCULATIONS  COMMENTS  Researed with a direct connection between the RF output and a spectrum analyzer.  UIT OPERATING MODES  RODULATIONS  ROUGHLAND SPROM TEST STANDARD  RODULATIONS  REQUIREMENTS  Requirements  Requirements  Requirements  Requirements  Requirements  Requirements  Requirements  Requirements  Report Tested By:  Tested By:  Tested By:  Tested By:  Responding the standard of the frequency of the standard of the sta | Customer Ref. No.:     | None                              |                                  | Power:                  | 120 V, 60 Hz              | Je                | ob Site: OC03      |                      |
| COMMENTS  Tested By:  COMMENTS  Tested By:  COME | TEST SPECIFICATIONS    | 5                                 |                                  |                         |                           |                   |                    |                      |
| COMMENTS  Reasured with a direct connection between the RF output and a spectrum analyzer.  FUT OPERATING MODES  REQUIREMENTS  REQUIREMENTS  Red 47 CFR 15.247(a)(1), the 20 dlB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no cannot be greater than 500 kHz.  RESULTS  BANDWIDTH  Rass  255 kHz  RESULTS  BANDWIDTH  RESULTS  BENDAMING  Tested By:  Tested By:   | Specification:         | 47 CFR 15.247(a)                  | Year: 2005                       | Method:                 | DA 00-705, ANSI C63.4     |                   | Year: 2003         |                      |
| leasured with a direct connection between the RF output and a spectrum analyzer.  EUT OPERATING MODES  Iodulated 38 kbps data rate  EVEVIATIONS FROM TEST STANDARD  Ione  REQUIREMENTS  Fer 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no ca an it be greater than 500 kHz.  ESSULTS  BANDWIDTH  Fass  255 kHz  IGNATURE  Tested By:  Tested By:   | SAMPLE CALCULATIO      | NS                                |                                  |                         |                           |                   |                    |                      |
| leasured with a direct connection between the RF output and a spectrum analyzer.  EUT OPERATING MODES  Iodulated 38 kbps data rate  EVEVIATIONS FROM TEST STANDARD  Ione  REQUIREMENTS  Fer 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no ca an it be greater than 500 kHz.  ESSULTS  BANDWIDTH  Fass  255 kHz  IGNATURE  Tested By:  Tested By:   |                        |                                   |                                  |                         |                           |                   |                    |                      |
| leasured with a direct connection between the RF output and a spectrum analyzer.  EUT OPERATING MODES  Iodulated 38 kbps data rate  EVEVIATIONS FROM TEST STANDARD  Ione  REQUIREMENTS  Fer 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no ca an it be greater than 500 kHz.  ESSULTS  BANDWIDTH  Fass  255 kHz  IGNATURE  Tested By:  Tested By:   |                        |                                   |                                  |                         |                           |                   |                    |                      |
| COUTOPERATING MODES INCIDIONS FROM TEST STANDARD INCIDIONS INCIDIONS FROM TEST STANDARD INCIDIONS INCIDION | COMMENTS               |                                   |                                  |                         |                           |                   |                    |                      |
| Identified By:   | Measured with a direct | connection between the RF output  | t and a spectrum analyzer.       |                         |                           |                   |                    |                      |
| DEVIATIONS FROM TEST STANDARD  Jone  JEQUIREMENTS  Let 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no calculate the property of the standard of the greater than 500 kHz.  JESULTS  BANDWIDTH  JESULTS  JE |                        |                                   |                                  |                         |                           |                   |                    |                      |
| Tested By:  Tested By:  Description of TEST  | Modulated 38 kbps data | a rate                            |                                  |                         |                           |                   |                    |                      |
| REQUIREMENTS  Tested By:  TestCIPTION OF TEST  | DEVIATIONS FROM TE     | ST STANDARD                       |                                  |                         |                           |                   |                    |                      |
| ter 47 CFR 15.247(a)(1), the 20 dB bandwidth of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no calcan it be greater than 500 kHz.  IESULTS  BANDWIDTH  Jass  255 kHz  IGNATURE  Tested By:  Tested By:  | None                   |                                   |                                  |                         |                           |                   |                    |                      |
| an it be greater than 500 kHz.  IESULTS BANDWIDTH  JASS 255 kHz  IGNATURE  Tested By:  DESCRIPTION OF TEST   | REQUIREMENTS           |                                   |                                  |                         |                           |                   |                    |                      |
| Tested By:  DESCRIPTION OF TEST  |                        |                                   | ency hopping channels in the 902 | - 928 MHz band shall be | less than or equal to the | ne carrier freque | ency separation. I | n no case            |
| Tested By:  DESCRIPTION OF TEST  | RESULTS                |                                   |                                  | BANDWIDTH               |                           |                   |                    |                      |
| Tested By:   | Pass                   | ss 255 kHz                        |                                  |                         |                           |                   |                    |                      |
| Tested By:   | SIGNATURE              |                                   |                                  |                         |                           |                   |                    |                      |
| DESCRIPTION OF TEST  |                        | ADU.KIP                           |                                  |                         |                           |                   |                    |                      |
|  | ,                      |                                   |                                  |                         |                           |                   |                    |                      |
| 20dB Bandwidth - Low Channel - 38 kbps Data Rate   | DESCRIPTION OF TEST    |                                   |                                  |                         |                           |                   |                    |                      |
|  |                        | 20dB                              | Bandwidth - Low Ch               | annel - 38 kb           | ps Data Rate              |                   |                    |                      |



CENTER 902.7500 MHz

#VBW 300 kHz

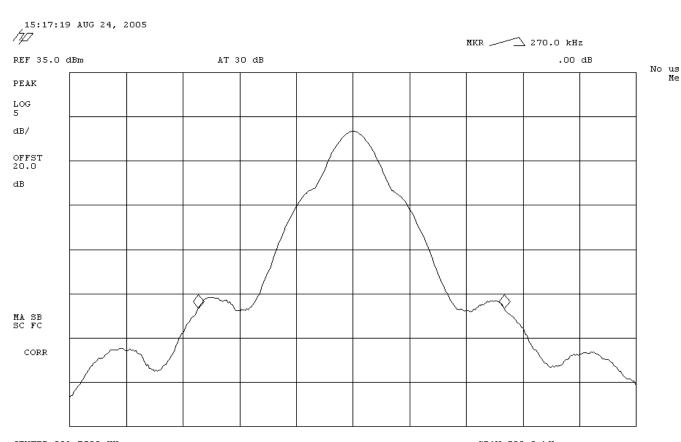
SWP 20.0 msec

SPAN 500.0 kHz

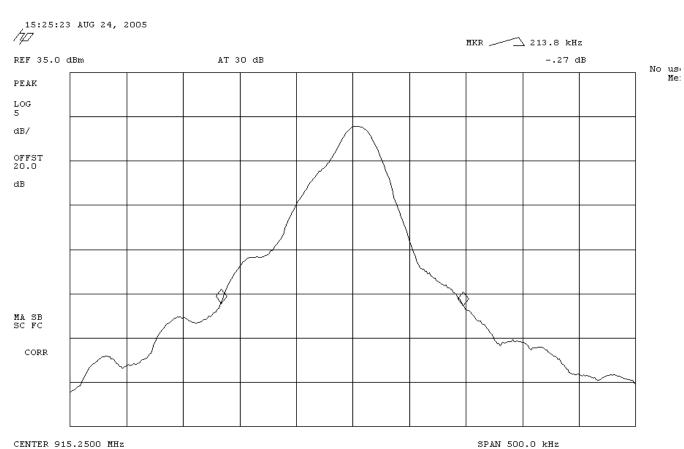
#RES BW 30 kHz

| EMC                      |                                   | OCCUPIED I                        | BANDWID        | TH                       |                         | Rev BETA<br>01/30/01 |
|--------------------------|-----------------------------------|-----------------------------------|----------------|--------------------------|-------------------------|----------------------|
| EUT:                     | IM4                               |                                   |                |                          | Work Order:             | ITRM0098             |
| Serial Number:           | 19510523230                       |                                   |                |                          | Date:                   | 08/24/05             |
| Customer:                | Intermec Technologies Corporation | on                                |                |                          | Temperature:            | 70 °F                |
| Attendees:               | Scott Holub                       | cott Holub Tested by: Greg Kiemel |                |                          |                         |                      |
| Customer Ref. No.:       | None Power: 120 V, 60 Hz          |                                   |                |                          |                         | OC03                 |
| TEST SPECIFICATIONS      | 5                                 |                                   |                |                          |                         |                      |
| Specification:           | 47 CFR 15.247(a)                  | Year: 2005                        | Method:        | DA 00-705, ANSI C63.4    | Year:                   | 2003                 |
|                          |                                   |                                   |                |                          |                         |                      |
| COMMENTS                 |                                   |                                   |                |                          |                         |                      |
| Measured with a direct   | connection between the RF outpu   | t and a spectrum analyzer.        |                |                          |                         |                      |
| <b>EUT OPERATING MOD</b> | ES                                |                                   |                |                          |                         |                      |
| Modulated 40 kbps data   | a rate                            |                                   |                |                          |                         |                      |
| DEVIATIONS FROM TE       | ST STANDARD                       |                                   |                |                          |                         |                      |
| None                     |                                   |                                   |                |                          |                         |                      |
| REQUIREMENTS             |                                   |                                   |                |                          |                         |                      |
| can it be greater than 5 |                                   | ency hopping channels in the 902  |                | less than or equal to th | e carrier frequency sep | paration. In no case |
| RESULTS                  |                                   |                                   | BANDWIDTH      |                          |                         |                      |
| Pass                     |                                   |                                   | 270 kHz        |                          |                         |                      |
| SIGNATURE  Tested By:    | ADU.K.P                           |                                   |                |                          |                         |                      |
| DESCRIPTION OF TEST      |                                   |                                   |                |                          |                         |                      |
|                          | 20dB                              | Bandwidth - Low Ch                | nannel - 40 kb | ps Data Rate             |                         |                      |

NORTHWEST



| EMC  | OCCUPIED                              | <b>BANDWIE</b>  | OTH                      |                        | Rev BETA<br>01/30/01 |
|--|---------------------------------------|-----------------|--------------------------|------------------------|----------------------|
| EUT: IM4   |                                       |                 |                          | Work Order:            | ITRM0098             |
| Serial Number: 19510523230   |                                       |                 |                          | Date:                  | 08/24/05             |
| Customer: Intermec Technologies C  | orporation                            |                 |                          | Temperature:           | 70 °F                |
| Attendees: Scott Holub   |                                       | Tested by:      | Greg Kiemel              | Humidity:              | 43% RH               |
| Customer Ref. No.: None  |                                       | Power:          | 120 V, 60 Hz             | Job Site:              | OC03                 |
| TEST SPECIFICATIONS  |                                       |                 |                          |                        |                      |
| Specification: 47 CFR 15.247(a)  | Year: 2005                            | Method:         | DA 00-705, ANSI C63.4    | Year:                  | 2003                 |
|  |                                       |                 |                          |                        |                      |
| COMMENTS   |                                       |                 |                          |                        |                      |
| Measured with a direct connection between the  | RF output and a spectrum analyzer.    |                 |                          |                        |                      |
| EUT OPERATING MODES  |                                       |                 |                          |                        |                      |
| Modulated 32 kbps data rate  |                                       |                 |                          |                        |                      |
| DEVIATIONS FROM TEST STANDARD  |                                       |                 |                          |                        |                      |
| None   |                                       |                 |                          |                        |                      |
| REQUIREMENTS   |                                       |                 |                          |                        |                      |
| Per 47 CFR 15.247(a)(1), the 20 dB bandwidth o<br>case can it be greater than 500 kHz. | f the frequency hopping channels in t |                 | be less than or equal to | o the carrier frequenc | y separation. In no  |
| RESULTS  |                                       | BANDWIDTH       |                          |                        |                      |
| Pass   |                                       | 213.8 kHz       |                          |                        |                      |
| SIGNATURE  Tested By:  | 0                                     |                 |                          |                        |                      |
| DESCRIPTION OF TEST  | DdB Bandwidth - Mid                   | Channal - 32 kh | ne Data Bata             |                        |                      |



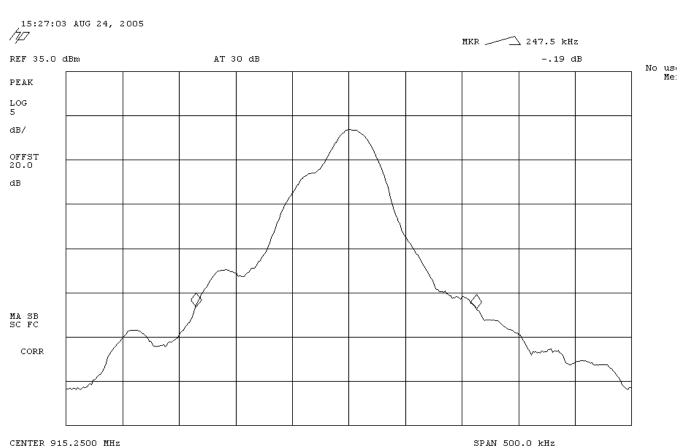
CENTER 915.2500 MHz

SWP 20.0 msec

#RES BW 30 kHz

#VBW 300 kHz

| EMC  |                               | OCCUPIED I         | BANDWIDTH                                       |                         | Rev BET#<br>01/30/01 |  |  |  |
|--|-------------------------------|--------------------|---|-------------------------|----------------------|--|--|--|
| EUT: IM4   |                               |                    |   | Work Order:             |                      |  |  |  |
| Serial Number: 195   | Serial Number: 19510523230    |                    |   |                         |                      |  |  |  |
| Customer: Inte   | rmec Technologies Corporation | on                 |   | Temperature:            | 70 °F                |  |  |  |
| Attendees: Sco   | ott Holub                     |                    | Tested by: Greg Kiemel                          | Humidity:               | 43% RH               |  |  |  |
| Customer Ref. No.: Nor   | ne                            |                    | Power: 120 V, 60 Hz                             | Job Site:               | OC03                 |  |  |  |
| TEST SPECIFICATIONS  |                               |                    |   |                         |                      |  |  |  |
| Specification: 47 0  | CFR 15.247(a)                 | Year: 2005         | Method: DA 00-705, ANSI C63.4                   | Year:                   | 2003                 |  |  |  |
| EUT OPERATING MODES<br>Modulated 38 kbps data ra<br>DEVIATIONS FROM TEST<br>None<br>REQUIREMENTS | STANDARD                      |                    | 02 - 928 MHz band shall be less than or equal t | o the carrier frequence | v separation. In no  |  |  |  |
| ase can it be greater than   | 1 500 kHz.                    |                    | ·   |                         |                      |  |  |  |
| RESULTS BANDWIDTH  |                               |                    |   |                         |                      |  |  |  |
| Pass   | ass 247.5 kHz                 |                    |   |                         |                      |  |  |  |
| SIGNATURE  Tested By:  | ARU.K.P                       |                    |   |                         |                      |  |  |  |
| DESCRIPTION OF TEST  |                               |                    |   |                         |                      |  |  |  |
| ·  | 20dB E                        | Bandwidth - Mid Ch | annel - 38 kbps Data Rate                       |                         |                      |  |  |  |



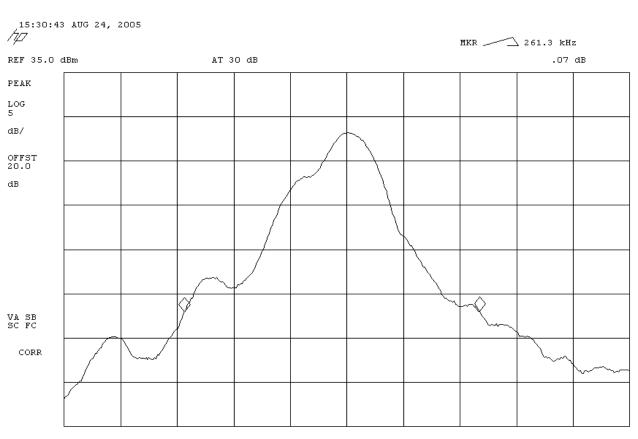
CENTER 915.2500 MHz

#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

| NORTHWEST<br>EMC  |                                | OCCUPIED           | BANDWIDTH  |                         | Rev BETA<br>01/30/01 |  |  |  |
|---|--------------------------------|--------------------|--|-------------------------|----------------------|--|--|--|
| EUT: I  | M4                             |                    |  | Work Order:             |                      |  |  |  |
| Serial Number:  | 19510523230                    | Date:              | 08/24/05   |                         |                      |  |  |  |
| Customer: I   | ntermec Technologies Corporati | on                 |  | Temperature:            | 70 °F                |  |  |  |
| Attendees:  | Scott Holub                    |                    | Tested by: Greg Kiemel                           | Humidity:               | 43% RH               |  |  |  |
| Customer Ref. No.:  | None                           |                    | Power: 120 V, 60 Hz                              | Job Site:               | OC03                 |  |  |  |
| TEST SPECIFICATIONS   | ;                              |                    |  |                         |                      |  |  |  |
| Specification: 4  | 17 CFR 15.247(a)               | Year: 2005         | Method: DA 00-705, ANSI C63.4                    | Year:                   | 2003                 |  |  |  |
| EUT OPERATING MOD<br>Modulated 40 kbps data<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS | a rate<br>ST STANDARD          |                    | 102 - 928 MHz band shall be less than or equal ( | o the carrier frequency | v separation. In no  |  |  |  |
| ase can it be greater t   | han 500 kHz.                   |                    |  |                         |                      |  |  |  |
| RESULTS BANDWIDTH   |                                |                    |  |                         |                      |  |  |  |
| Pass  | ass 261.3 kHz                  |                    |  |                         |                      |  |  |  |
| SIGNATURE  Tested By: _   | ATU.K.P                        |                    |  |                         |                      |  |  |  |
| DESCRIPTION OF TEST   | г                              |                    |  |                         |                      |  |  |  |
|   | 20dB E                         | Bandwidth - Mid Ch | nannel - 40 kbps Data Rate                       |                         |                      |  |  |  |



CENTER 915.2500 MHz

SPAN 500.0 kHz

 SWP 20.0 msec

No us Me:

| NORTHWEST<br>EMC   |                               | OCCUPIED                     | BANDWIE                | )TH                     |                          | Rev BETA<br>01/30/01 |
|--|-------------------------------|------------------------------|------------------------|-------------------------|--------------------------|----------------------|
| EUT:   | IM4                           |                              |                        |                         | Work Order:              | ITRM0098             |
| Serial Number:   | 19510523230                   |                              |                        |                         | Date:                    | 08/24/05             |
| Customer:  | Intermec Technologies Corpora | tion                         |                        |                         | Temperature:             | 70 °F                |
| Attendees:   |                               |                              |                        | Greg Kiemel             | Humidity:                | 43% RH               |
| Customer Ref. No.:   |                               |                              | Power:                 | 120 V, 60 Hz            | Job Site:                | OC03                 |
| TEST SPECIFICATION   |                               |                              |                        |                         |                          |                      |
| Specification:   | 47 CFR 15.247(a)              | Year: 2005                   | Method:                | DA 00-705, ANSI C63.4   | Year:                    | 2003                 |
| EUT OPERATING MOD<br>Modulated 32 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS | a rate<br>EST STANDARD        | put and a spectrum analyzer. | 02 - 928 MHz band shal | be less than or equal t | to the carrier frequency | y separation. In no  |
| ase can it be greater t  | than 500 kHz.                 |                              |                        |                         |                          |                      |
| RESULTS  | BANDWIDTH                     |                              |                        |                         |                          |                      |
| Pass<br>SIGNATURE  |                               |                              | 220 kHz                |                         |                          |                      |
| Tested By: _   | ARU.KIP                       |                              |                        |                         |                          |                      |
| DESCRIPTION OF TES   |                               |                              |                        |                         |                          |                      |
|  | <b>20</b> dB l                | Bandwidth - High Cl          | nannel - 32 kk         | ps Data Rate            | <del>)</del>             |                      |

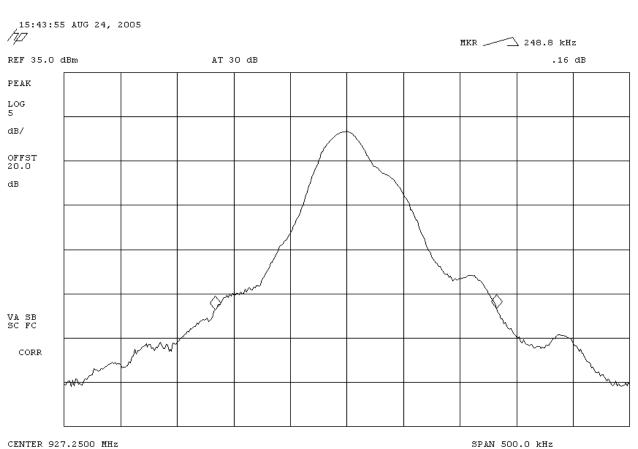


#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

| EMC   | OCCUPIED                   | BANDWIDTH   |                        | Rev BETA<br>01/30/01 |  |  |  |
|---|----------------------------|---|------------------------|----------------------|--|--|--|
| EUT: IM4  |                            |   | Work Order:            | ITRM0098             |  |  |  |
| Serial Number: 19510523230  | Serial Number: 19510523230 |   |                        |                      |  |  |  |
| Customer: Intermec Technologies Corpor  | ation                      |   | Temperature:           | 70 °F                |  |  |  |
| Attendees: Scott Holub  |                            | Tested by: Greg Kiemel                              | Humidity:              | 43% RH               |  |  |  |
| Customer Ref. No.: None   |                            | Power: 120 V, 60 Hz                                 | Job Site:              | OC03                 |  |  |  |
| EST SPECIFICATIONS  |                            |   |                        |                      |  |  |  |
| Specification: 47 CFR 15.247(a)   | Year: 2005                 | Method: DA 00-705, ANSI C63.4                       | Year:                  | 2003                 |  |  |  |
| COMMENTS Measured with a direct connection between the RF or EUT OPERATING MODES Modulated 38 kbps data rate DEVIATIONS FROM TEST STANDARD Hone REQUIREMENTS For 47 CFR 15.247(a)(1), the 20 dB bandwidth of the fr |                            | re 902 - 928 MHz band shall be less than or equal t | o the carrier frequenc | v separation. In no  |  |  |  |
| ase can it be greater than 500 kHz.   | . ,                        | ·   |                        |                      |  |  |  |
| RESULTS   |                            | BANDWIDTH   |                        |                      |  |  |  |
| Pass  | ss 248.8 kHz               |   |                        |                      |  |  |  |
| Tested By:  |                            |   |                        |                      |  |  |  |
| DESCRIPTION OF TEST   |                            |   |                        |                      |  |  |  |
| 20dB  | Randwidth - High           | Channel - 38 kbps Data Rate                         |                        |                      |  |  |  |



CENTER 927.2500 MHz

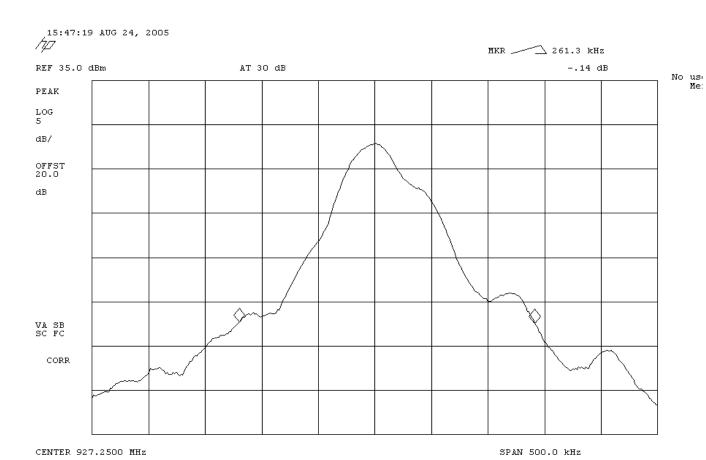
#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

No us Me:

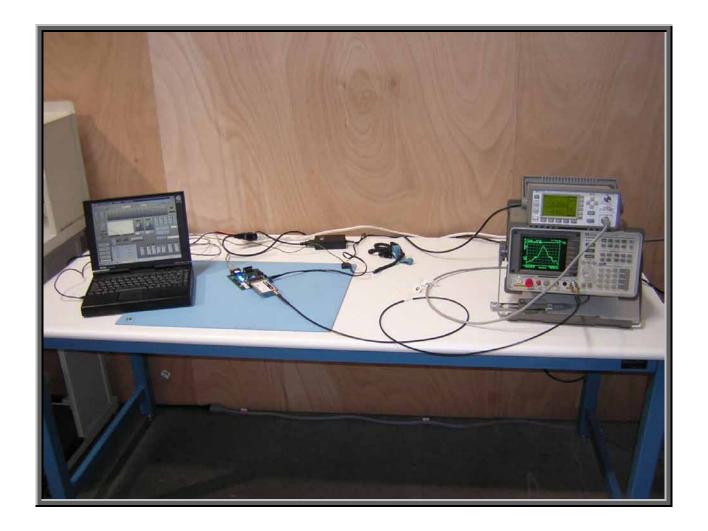
| NORTHWEST<br>EMC   |   | OCCUPIED I                   | BANDWIE                 | OTH                       |                          | Rev BETA<br>01/30/01 |
|--|---|------------------------------|-------------------------|---------------------------|--------------------------|----------------------|
| EUT:   | IM4   |                              |                         |                           | Work Order:              | ITRM0098             |
| Serial Number:   | 19510523230   |                              |                         |                           | Date:                    | 08/24/05             |
| Customer:  | Intermec Technologies Corporat                        | ion                          |                         |                           | Temperature:             | 70 °F                |
| Attendees:   |   |                              |                         | Greg Kiemel               | Humidity:                | 43% RH               |
| Customer Ref. No.:   |   |                              | Power:                  | 120 V, 60 Hz              | Job Site:                | OC03                 |
| TEST SPECIFICATION   |   |                              |                         |                           |                          |                      |
| Specification: SAMPLE CALCULATION  | 47 CFR 15.247(a)                                      | Year: 2005                   | Method:                 | DA 00-705, ANSI C63.4     | Year:                    | 2003                 |
| EUT OPERATING MOD<br>Modulated 40 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS | a rate ST STANDARD  ), the 20 dB bandwidth of the fre | out and a spectrum analyzer. | 02 - 928 MHz band shall | l be less than or equal ( | to the carrier frequency | y separation. In no  |
| RESULTS  | inan 500 kmz.   |                              | BANDWIDTH               |                           |                          |                      |
| Pass   | 261.3 kHz   |                              |                         |                           |                          |                      |
| SIGNATURE  Tested By:  | ADU.K.P   |                              |                         |                           |                          |                      |
| DESCRIPTION OF TES   |   | Danduridth Link Ch           | annol 40 kk             | no Doto Boto              |                          |                      |
|  | 20aB E  | Bandwidth - High Ch          | nannei - 40 Kr          | ops Data Rate             | <del>)</del>             |                      |



#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz



Revision 10/1/03

## **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| Mid                                      |
| High                                     |

## **Operating Modes Investigated:**

No Hop

| Data Rates Investigated: |  |
|--------------------------|--|
| 32 kbps                  |  |
| 38 kbps                  |  |
| 40 kbps                  |  |

## **Output Power Setting(s) Investigated:**

Maximum

## **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test   |                               |         |                |  |  |  |  |
|---|-------------------------------|---------|----------------|--|--|--|--|
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |  |
| Description   |                               |         |                |  |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |  |  |  |
| This included channel selection, data rate, and hopping vs. no hopping modes.                               |                               |         |                |  |  |  |  |

| EUT and Peripherals           |                                   |                   |               |
|-------------------------------|-----------------------------------|-------------------|---------------|
| Description                   | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader               | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                  | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                   | Dell                              | TS30GI            | K8175A        |
| Power Supply for Notebook PC  | Dell                              | TSA8              | None          |
| Power Supply for Test Fixture | EZ                                | GP-4303A          | 010700709     |

## **Output Power**

Revision 10/1/03

| Cables   |        |            |         |                               |              |  |
|--|--------|------------|---------|-------------------------------|--------------|--|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |  |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |  |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |  |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |  |

| Measurement Equipment |                 |        |            |            |          |  |  |  |
|-----------------------|-----------------|--------|------------|------------|----------|--|--|--|
| Description           | Manufacturer    | Model  | Identifier | Last Cal   | Interval |  |  |  |
| Spectrum Analyzer     | Hewlett-Packard | 8593E  | AAA        | 12/06/2004 | 13 mo    |  |  |  |
| Power Meter           | Hewlett Packard | E4418A | SPA        | 07/23/2004 | 24 mo    |  |  |  |
| Power Sensor          | Hewlett-Packard | 8481H  | SPB        | 07/23/2004 | 24 mo    |  |  |  |
| Signal Generator      | Hewlett Packard | 8341B  | TGM        | 06/09/2004 | 24 mo    |  |  |  |

#### **Test Description**

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

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

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

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

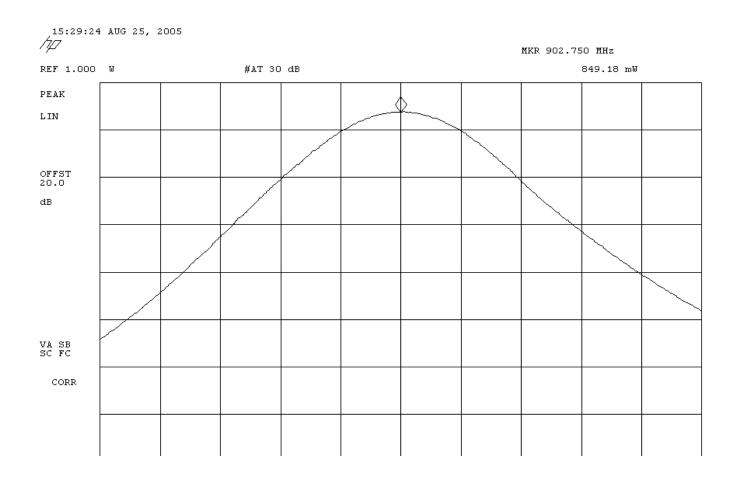
<u>Configuration</u>: The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its various data rates in a no hop mode.

Prior to making the output power measurements, the amplitude offset of the spectrum analyzer was adjusted based upon the substitution measurements made using a power meter and signal generator. This greatly improved the measurement accuracy of the spectrum analyzer.

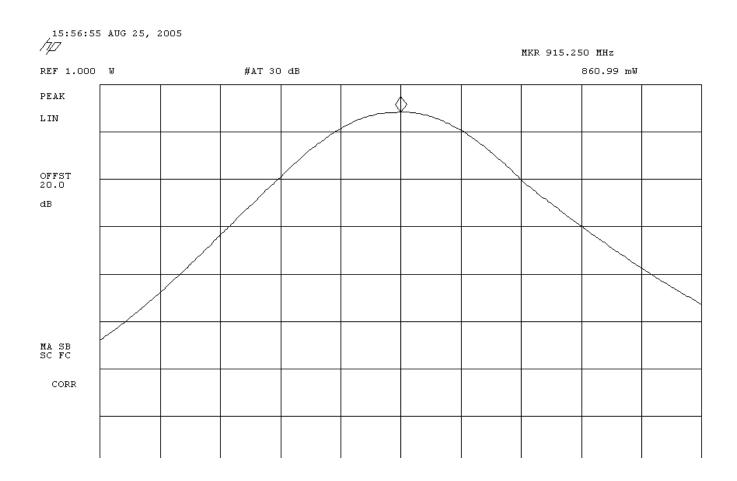
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-2), the EUT meets the de facto EIRP limit of +36dBm.

# Completed by:

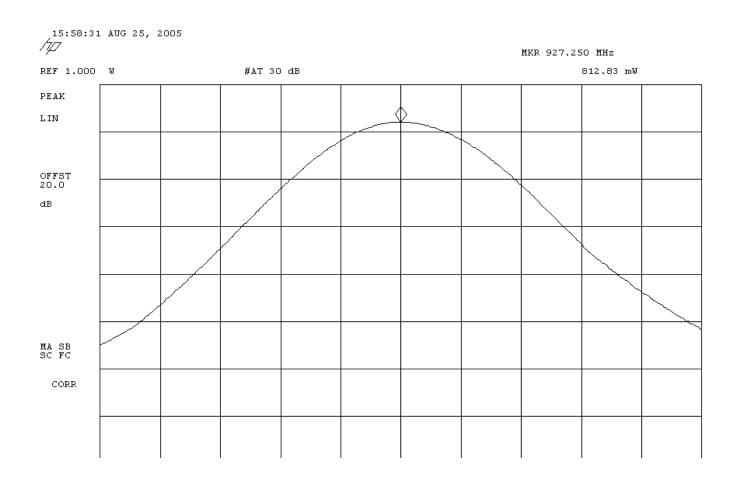
| NORTHWEST EMC          |                                | OUTPUT                            | POWER                 |                          |                        | Rev BETA<br>01/30/01 |
|------------------------|--------------------------------|-----------------------------------|-----------------------|--------------------------|------------------------|----------------------|
| EUT: IM                | 14                             |                                   |                       |                          | Work Order:            |                      |
| Serial Number: 19      |                                |                                   |                       |                          |                        | 08/25/05             |
|                        | termec Technologies Corporat   | tion                              |                       |                          | Temperature:           |                      |
| Attendees: So          |                                |                                   | Tested by:            | Greg Kiemel              | Humidity               |                      |
| Customer Ref. No.: No. | one                            |                                   | Power:                | 120 V, 60 Hz             | Job Site:              | OC03                 |
| TEST SPECIFICATIONS    |                                |                                   |                       | ,                        |                        |                      |
| Specification: 47      | 7 CFR 15.247(b)                | Year: 2005                        | Method:               | DA 00-705, ANSI C63.     | 4 Year:                | 2003                 |
| SAMPLE CALCULATION     | IS                             |                                   |                       |                          |                        |                      |
| COMMENTS               |                                |                                   |                       |                          |                        |                      |
| COMMENTO               |                                |                                   |                       |                          |                        |                      |
| EUT OPERATING MODE     | S                              |                                   |                       |                          |                        |                      |
| Modulated 32 kbps data | rate                           |                                   |                       |                          |                        |                      |
| DEVIATIONS FROM TES    | ST STANDARD                    |                                   |                       |                          |                        |                      |
| None                   |                                |                                   |                       |                          |                        |                      |
| REQUIREMENTS           |                                |                                   |                       |                          |                        |                      |
| The maximum peak con   | ducted output power for freque | ency hopping systems operating ir | n the 902 - 928 MHz b | and, with at least 50 ho | opping channels, shall | not excced 1 watt.   |
| RESULTS                |                                |                                   | AMPLITUDE             |                          |                        |                      |
| Pass                   |                                |                                   | 849.18 mW             |                          |                        |                      |
| SIGNATURE              |                                |                                   |                       |                          |                        |                      |
| Tested By:             | ADU.K.P                        |                                   |                       |                          |                        |                      |
| DESCRIPTION OF TEST    |                                |                                   |                       |                          |                        |                      |
|                        | Outp                           | ut Power - Low Char               | nnel - 32 kbp         | s Data Rate              |                        |                      |



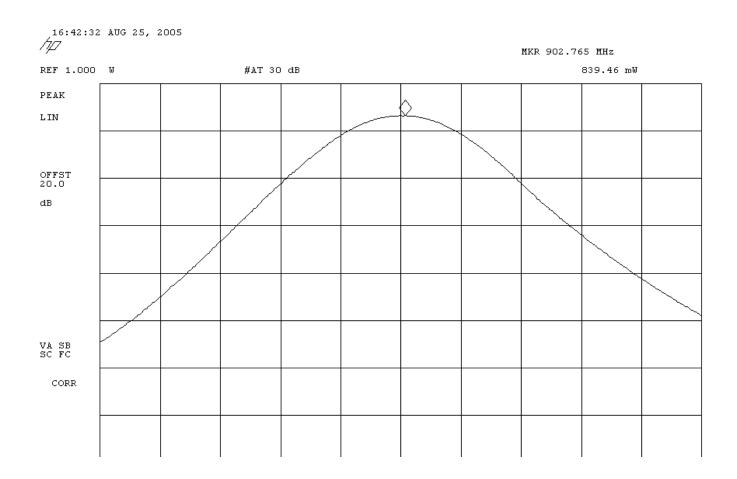
| NORTHWEST            |                                     |                                   |                        |                           |                      |                      |
|----------------------|-------------------------------------|-----------------------------------|------------------------|---------------------------|----------------------|----------------------|
| EMC                  |                                     | OUTPUT                            | <b>POWER</b>           |                           |                      | Rev BETA<br>01/30/01 |
| EUT:                 | IM4                                 |                                   |                        |                           | Work Order:          | ITRM0098             |
| Serial Number:       | 19510523230                         |                                   |                        |                           | Date:                | 08/25/05             |
| Customer:            | Intermec Technologies Corporate     | tion                              |                        |                           | Temperature:         | 70 °F                |
| Attendees:           | Scott Holub                         |                                   | Tested by:             | Greg Kiemel               | Humidity:            | 43% RH               |
| Customer Ref. No.:   | None                                |                                   | Power:                 | 120 V, 60 Hz              | Job Site:            | OC03                 |
| TEST SPECIFICATION   |                                     |                                   |                        |                           |                      |                      |
| Specification:       | 47 CFR 15.247(b)                    | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4     | Year:                | 2003                 |
| SAMPLE CALCULATI     | ONS                                 |                                   |                        |                           |                      |                      |
| COMMENTS             |                                     |                                   |                        |                           |                      |                      |
| COMMENTO             |                                     |                                   |                        |                           |                      |                      |
| EUT OPERATING MO     | DES                                 |                                   |                        |                           |                      |                      |
| Modulated 32 kbps da | ata rate                            |                                   |                        |                           |                      |                      |
| DEVIATIONS FROM T    | EST STANDARD                        |                                   |                        |                           |                      |                      |
| None                 |                                     |                                   |                        |                           |                      |                      |
| REQUIREMENTS         |                                     |                                   |                        |                           |                      |                      |
| The maximum peak c   | onducted output power for frequency | ency hopping systems operating in | n the 902 - 928 MHz ba | and, with at least 50 hop | ping channels, shall | not exceed 1 watt.   |
| RESULTS              |                                     |                                   | AMPLITUDE              |                           |                      |                      |
| Pass                 |                                     |                                   | 860.99 mW              |                           |                      |                      |
| SIGNATURE            |                                     |                                   |                        |                           |                      |                      |
| Tested By:           | ADU.KIP                             |                                   |                        |                           |                      |                      |
| DESCRIPTION OF TE    | ST                                  |                                   |                        |                           |                      |                      |
|                      | Outp                                | out Power - Mid Char              | nnel - 32 kbp          | s Data Rate               |                      |                      |



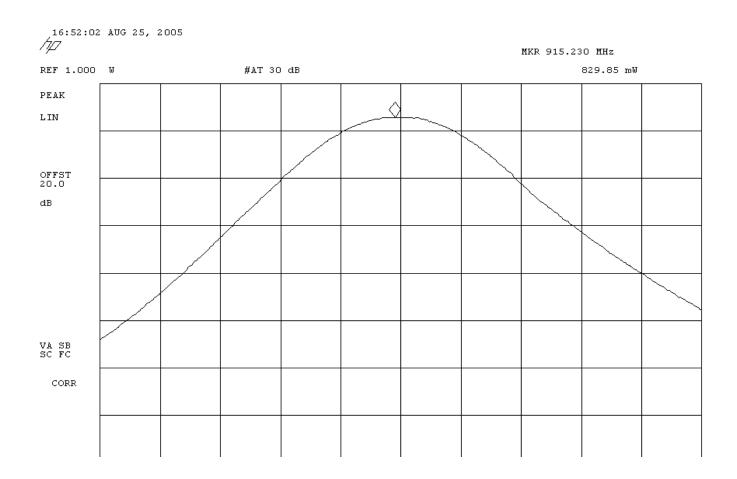
| EMC                      |                                 | OUTPUT                            | <b>POWER</b>           |                           |                               | Rev BETA<br>01/30/01 |
|--------------------------|---------------------------------|-----------------------------------|------------------------|---------------------------|-------------------------------|----------------------|
| EUT:                     | IM4                             |                                   |                        |                           | Work Order: ITRM009           | 8                    |
| Serial Number:           | 19510523230                     |                                   |                        |                           | Date: 08/25/05                |                      |
| Customer:                | Intermec Technologies Corpora   | tion                              |                        |                           | Temperature: 70 °F            |                      |
| Attendees:               | Scott Holub                     |                                   | Tested by:             | Greg Kiemel               | Humidity: 43% RH              |                      |
| Customer Ref. No.:       | None                            |                                   | Power:                 | 120 V, 60 Hz              | Job Site: OC03                |                      |
| TEST SPECIFICATION       | NS                              |                                   |                        |                           |                               |                      |
| Specification:           | 47 CFR 15.247(b)                | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4     | Year: 2003                    |                      |
| SAMPLE CALCULATI         | IONS                            |                                   |                        |                           |                               |                      |
| COMMENTS                 |                                 |                                   |                        |                           |                               |                      |
|                          |                                 |                                   |                        |                           |                               |                      |
| <b>EUT OPERATING MO</b>  | DES                             |                                   |                        |                           |                               |                      |
| Modulated 32 kbps da     | ata rate                        |                                   |                        |                           |                               |                      |
| <b>DEVIATIONS FROM T</b> | EST STANDARD                    |                                   |                        |                           |                               |                      |
| None                     |                                 |                                   |                        |                           |                               |                      |
| REQUIREMENTS             |                                 |                                   |                        |                           |                               |                      |
| The maximum peak c       | onducted output power for frequ | ency hopping systems operating in | n the 902 - 928 MHz ba | and, with at least 50 hop | oing channels, shall not excc | ed 1 watt.           |
| RESULTS                  |                                 |                                   | AMPLITUDE              |                           |                               |                      |
| Pass                     |                                 | i                                 | 812.83 mW              |                           |                               |                      |
| SIGNATURE                |                                 |                                   |                        |                           |                               |                      |
| Tested By:               | ADU.KIP                         |                                   |                        |                           |                               |                      |
| DESCRIPTION OF TE        | ST                              |                                   |                        |                           |                               |                      |
|                          | Outp                            | ut Power - High Cha               | nnel - 32 kbp          | s Data Rate               |                               |                      |



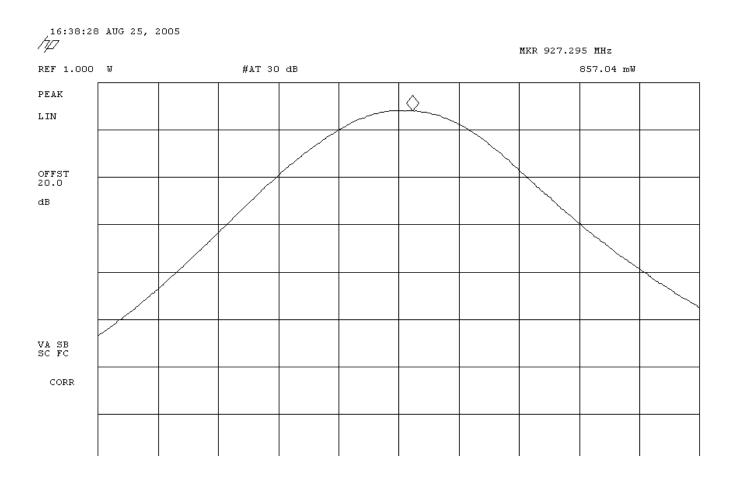
| EMC                      |                                   | OUTPUT                           | <b>POWER</b>           |                            |                        | Rev BETA<br>01/30/01 |
|--------------------------|-----------------------------------|----------------------------------|------------------------|----------------------------|------------------------|----------------------|
| EUT:                     | IM4                               |                                  |                        |                            | Work Order:            | ITRM0098             |
| Serial Number:           | 19510523230                       |                                  |                        |                            | Date:                  | 08/25/05             |
| Customer:                | Intermec Technologies Corporat    | tion                             |                        |                            | Temperature:           | 70 °F                |
| Attendees:               | Scott Holub                       |                                  | Tested by:             | Greg Kiemel                | Humidity:              | 43% RH               |
| Customer Ref. No.:       | None                              |                                  | Power:                 | 120 V, 60 Hz               | Job Site:              | OC03                 |
| TEST SPECIFICATION       | NS                                |                                  |                        |                            |                        |                      |
| Specification:           | 47 CFR 15.247(b)                  | Year: 2005                       | Method:                | DA 00-705, ANSI C63.4      | Year:                  | 2003                 |
| SAMPLE CALCULAT          | IONS                              |                                  |                        |                            |                        |                      |
| COMMENTS                 |                                   |                                  |                        |                            |                        |                      |
|                          |                                   |                                  |                        |                            |                        |                      |
| <b>EUT OPERATING MO</b>  | DES                               |                                  |                        |                            |                        |                      |
| Modulated 38 kbps da     | ata rate                          |                                  |                        |                            |                        |                      |
| <b>DEVIATIONS FROM T</b> | EST STANDARD                      |                                  |                        |                            |                        |                      |
| None                     |                                   |                                  |                        |                            |                        |                      |
| REQUIREMENTS             |                                   |                                  |                        |                            |                        |                      |
| The maximum peak o       | conducted output power for freque | ency hopping systems operating i | n the 902 - 928 MHz ba | and, with at least 50 hopp | oing channels, shall i | not excced 1 watt.   |
| RESULTS                  |                                   |                                  | AMPLITUDE              |                            |                        |                      |
| Pass                     |                                   |                                  | 839.46 mW              |                            |                        |                      |
| SIGNATURE                |                                   |                                  |                        |                            |                        |                      |
| Tested By:               | ADU.KIP                           |                                  |                        |                            |                        |                      |
| DESCRIPTION OF TE        |                                   |                                  |                        |                            |                        |                      |
|                          | Outp                              | ut Power - Low Cha               | nnel - 38 kbp          | s Data Rate                |                        |                      |



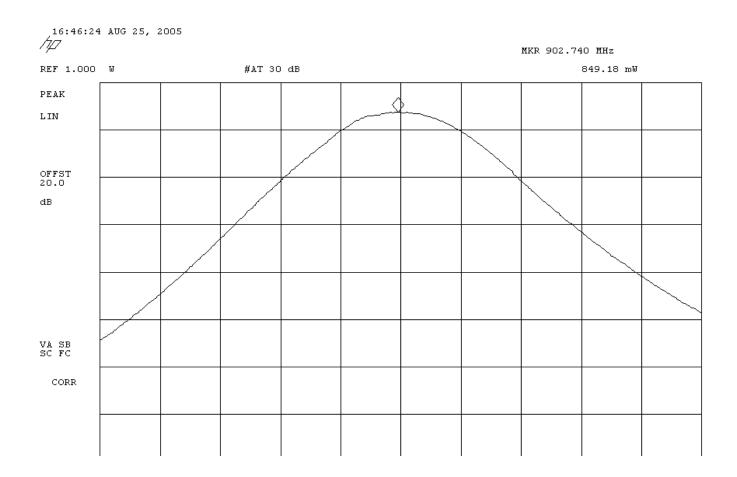
| EMC                  |                                  | OUTPUT                            | POWER                  |                          |                       |              | ev BETA<br>1/30/01 |
|----------------------|----------------------------------|-----------------------------------|------------------------|--------------------------|-----------------------|--------------|--------------------|
| EUT:                 | IM4                              |                                   |                        |                          | Work Order:           | ITRM0098     |                    |
| Serial Number:       | 19510523230                      |                                   |                        |                          | Date:                 | 08/25/05     |                    |
| Customer:            | Intermec Technologies Corporat   | tion                              |                        |                          | Temperature:          | 70 °F        |                    |
| Attendees:           | Scott Holub                      |                                   | Tested by:             | Greg Kiemel              | Humidity:             | 43% RH       |                    |
| Customer Ref. No.:   | None                             |                                   | Power:                 | 120 V, 60 Hz             | Job Site:             | OC03         |                    |
| TEST SPECIFICATION   | NS                               |                                   |                        |                          |                       |              |                    |
| Specification:       | 47 CFR 15.247(b)                 | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4    | 4 Year:               | 2003         |                    |
| SAMPLE CALCULATI     | ONS                              |                                   |                        |                          |                       |              |                    |
| COMMENTS             |                                  |                                   |                        |                          |                       |              |                    |
|                      |                                  |                                   |                        |                          |                       |              |                    |
| EUT OPERATING MO     | DES                              |                                   |                        |                          |                       |              |                    |
| Modulated 38 kbps da |                                  |                                   |                        |                          |                       |              |                    |
| DEVIATIONS FROM T    |                                  |                                   |                        |                          |                       |              |                    |
| None                 |                                  |                                   |                        |                          |                       |              |                    |
| REQUIREMENTS         |                                  |                                   |                        |                          |                       |              |                    |
|                      | onducted output power for freque | ency hopping systems operating ir | n the 902 - 928 MHz ba | and, with at least 50 ho | pping channels, shall | not excced 1 | watt.              |
| RESULTS              |                                  |                                   | AMPLITUDE              |                          |                       |              |                    |
| Pass                 |                                  | 8                                 | 329.85 mW              |                          |                       |              |                    |
| SIGNATURE            |                                  |                                   |                        |                          |                       |              |                    |
| Tested By:           | ADU.KIP                          |                                   |                        |                          |                       |              |                    |
| DESCRIPTION OF TE    | ST                               |                                   |                        |                          |                       |              |                    |
|                      | Outp                             | out Power - Mid Char              | nel - 38 kbp           | s Data Rate              |                       |              |                    |



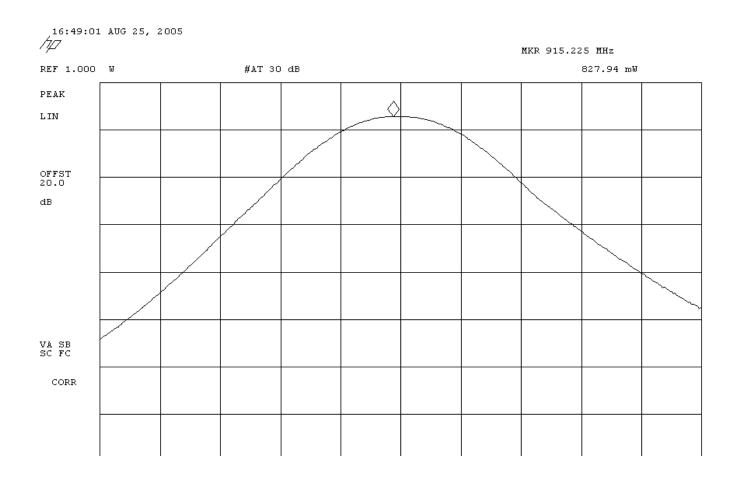
| EMC                  |                                  | OUTPUT                            | POWER                  |                          |                       | Rev  <br>01/30 | BETA<br>30/01 |
|----------------------|----------------------------------|-----------------------------------|------------------------|--------------------------|-----------------------|----------------|---------------|
| EUT:                 | IM4                              |                                   |                        |                          | Work Order:           | ITRM0098       |               |
| Serial Number:       | 19510523230                      |                                   |                        |                          | Date:                 | 08/25/05       |               |
| Customer:            | Intermec Technologies Corporat   | tion                              |                        |                          | Temperature:          | 70 °F          |               |
| Attendees:           | Scott Holub                      |                                   | Tested by:             | Greg Kiemel              | Humidity:             | 43% RH         |               |
| Customer Ref. No.:   | None                             |                                   | Power:                 | 120 V, 60 Hz             | Job Site:             | OC03           |               |
| TEST SPECIFICATION   | NS                               |                                   |                        |                          |                       |                |               |
| Specification:       | 47 CFR 15.247(b)                 | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4    | 4 Year:               | 2003           |               |
| SAMPLE CALCULATI     | ONS                              |                                   |                        |                          |                       |                |               |
| COMMENTS             |                                  |                                   |                        |                          |                       |                |               |
|                      |                                  |                                   |                        |                          |                       |                |               |
| EUT OPERATING MO     | DES                              |                                   |                        |                          |                       |                |               |
| Modulated 38 kbps da | ata rate                         |                                   |                        |                          |                       |                |               |
| DEVIATIONS FROM T    | EST STANDARD                     |                                   |                        |                          |                       |                |               |
| None                 |                                  |                                   |                        |                          |                       |                |               |
| REQUIREMENTS         |                                  |                                   |                        |                          |                       |                |               |
| ·                    | onducted output power for freque | ency hopping systems operating ir | n the 902 - 928 MHz ba | and, with at least 50 ho | pping channels, shall | not excced 1 w | vatt.         |
| RESULTS              |                                  |                                   | AMPLITUDE              |                          |                       |                |               |
| Pass                 |                                  |                                   | 857.04 mW              |                          |                       |                |               |
| SIGNATURE            |                                  |                                   |                        |                          |                       |                |               |
| Tested By:           | ADU.KIP                          |                                   |                        |                          |                       |                |               |
| DESCRIPTION OF TE    |                                  |                                   |                        |                          |                       |                |               |
|                      | Outp                             | ut Power - High Cha               | nnel - 38 kbp          | s Data Rate              |                       |                |               |



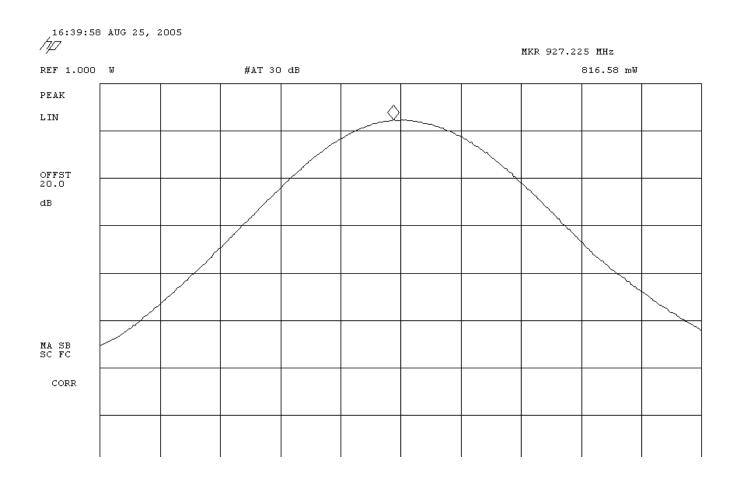
| NORTHWEST            |                                 |                                    |                        |                           |                       |                      |
|----------------------|---------------------------------|------------------------------------|------------------------|---------------------------|-----------------------|----------------------|
| EMC                  |                                 | OUTPUT                             | POWER                  |                           |                       | Rev BETA<br>01/30/01 |
| EUT:                 | IM4                             |                                    |                        |                           | Work Order:           | ITRM0098             |
| Serial Number:       | 19510523230                     |                                    |                        |                           | Date:                 | 08/25/05             |
| Customer:            | Intermec Technologies Corpora   | ition                              |                        |                           | Temperature:          | 70 °F                |
| Attendees:           | Scott Holub                     |                                    | Tested by:             | Greg Kiemel               | Humidity:             | 43% RH               |
| Customer Ref. No.:   |                                 |                                    | Power:                 | 120 V, 60 Hz              | Job Site:             | OC03                 |
| TEST SPECIFICATION   |                                 |                                    |                        |                           |                       |                      |
|                      | 47 CFR 15.247(b)                | Year: 2005                         | Method:                | DA 00-705, ANSI C63.4     | Year:                 | 2003                 |
| SAMPLE CALCULATI     | ONS                             |                                    |                        |                           |                       |                      |
| COMMENTO             |                                 |                                    |                        |                           |                       |                      |
| COMMENTS             |                                 |                                    |                        |                           |                       |                      |
| EUT OPERATING MO     | DES                             |                                    |                        |                           |                       |                      |
| Modulated 40 kbps da |                                 |                                    |                        |                           |                       |                      |
| DEVIATIONS FROM T    |                                 |                                    |                        |                           |                       |                      |
| None                 |                                 |                                    |                        |                           |                       |                      |
| REQUIREMENTS         |                                 |                                    |                        |                           |                       |                      |
| The maximum peak c   | onducted output power for frequ | uency hopping systems operating in | n the 902 - 928 MHz ba | and, with at least 50 hop | oping channels, shall | not exceed 1 watt.   |
| RESULTS              |                                 |                                    | AMPLITUDE              |                           |                       |                      |
| Pass                 |                                 |                                    | 849.18 mW              |                           |                       |                      |
| SIGNATURE            |                                 |                                    |                        |                           |                       |                      |
| Tested By:           | ATU.K.P                         |                                    |                        |                           |                       |                      |
| DESCRIPTION OF TE    |                                 |                                    |                        |                           |                       |                      |
|                      | Outp                            | out Power - Low Cha                | nnel - 40 kbp          | s Data Rate               |                       |                      |

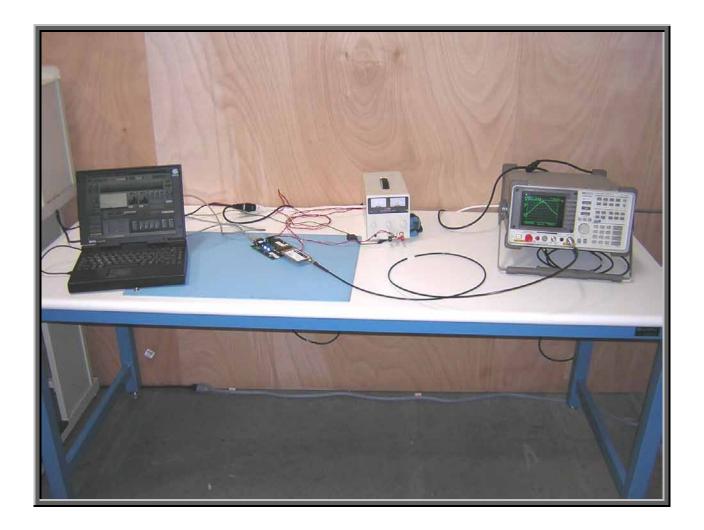


| EMC                  |                                  | OUTPUT                            | POWER                  |                          |                       | Rev B<br>01/30/ |      |
|----------------------|----------------------------------|-----------------------------------|------------------------|--------------------------|-----------------------|-----------------|------|
| EUT:                 | IM4                              |                                   |                        |                          | Work Order:           | ITRM0098        |      |
| Serial Number:       | 19510523230                      |                                   |                        |                          | Date:                 | 08/25/05        |      |
| Customer:            | Intermec Technologies Corporat   | tion                              |                        |                          | Temperature:          | 70 °F           |      |
| Attendees:           | Scott Holub                      |                                   | Tested by:             | Greg Kiemel              | Humidity:             | 43% RH          |      |
| Customer Ref. No.:   | None                             |                                   | Power:                 | 120 V, 60 Hz             | Job Site:             | OC03            |      |
| TEST SPECIFICATION   | NS                               |                                   |                        |                          |                       |                 |      |
| Specification:       | 47 CFR 15.247(b)                 | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4    | 4 Year:               | 2003            |      |
| SAMPLE CALCULATI     | ONS                              |                                   |                        |                          |                       |                 |      |
| COMMENTS             |                                  |                                   |                        |                          |                       |                 |      |
|                      |                                  |                                   |                        |                          |                       |                 |      |
| EUT OPERATING MO     | DES                              |                                   |                        |                          |                       |                 |      |
| Modulated 40 kbps da |                                  |                                   |                        |                          |                       |                 |      |
| DEVIATIONS FROM T    |                                  |                                   |                        |                          |                       |                 |      |
| None                 |                                  |                                   |                        |                          |                       |                 |      |
| REQUIREMENTS         |                                  |                                   |                        |                          |                       |                 |      |
|                      | onducted output power for freque | ency hopping systems operating in | n the 902 - 928 MHz ba | and, with at least 50 ho | pping channels, shall | not excced 1 wa | att. |
| RESULTS              |                                  | ,                                 | AMPLITUDE              |                          |                       |                 |      |
| Pass                 |                                  |                                   | 827.94 mW              |                          |                       |                 |      |
| SIGNATURE            |                                  |                                   |                        |                          |                       |                 |      |
| Tested By:           | ADU.KIP                          |                                   |                        |                          |                       |                 |      |
| DESCRIPTION OF TE    | ST                               |                                   |                        |                          |                       |                 |      |
|                      | Outp                             | out Power - Mid Char              | nnel - 40 kbp          | s Data Rate              |                       |                 |      |



| EMC                      |                                  | OUTPUT                            | POWER                  |                          |                       | Rev  <br>01/30 | BETA<br>30/01 |
|--------------------------|----------------------------------|-----------------------------------|------------------------|--------------------------|-----------------------|----------------|---------------|
| EUT:                     | IM4                              |                                   |                        |                          | Work Order:           | ITRM0098       |               |
| Serial Number:           | 19510523230                      |                                   |                        |                          | Date:                 | 08/25/05       |               |
| Customer:                | Intermec Technologies Corporat   | ion                               |                        |                          | Temperature:          | 70 °F          |               |
| Attendees:               | Scott Holub                      |                                   | Tested by:             | Greg Kiemel              | Humidity:             | 43% RH         |               |
| Customer Ref. No.:       | None                             |                                   | Power:                 | 120 V, 60 Hz             | Job Site:             | OC03           |               |
| TEST SPECIFICATION       | NS                               |                                   |                        |                          |                       |                |               |
| Specification:           | 47 CFR 15.247(b)                 | Year: 2005                        | Method:                | DA 00-705, ANSI C63.4    | 4 Year:               | 2003           |               |
| SAMPLE CALCULATI         | ONS                              |                                   |                        |                          |                       |                |               |
| COMMENTS                 |                                  |                                   |                        |                          |                       |                |               |
|                          |                                  |                                   |                        |                          |                       |                |               |
| <b>EUT OPERATING MO</b>  | DES                              |                                   |                        |                          |                       |                |               |
| Modulated 40 kbps da     | ata rate                         |                                   |                        |                          |                       |                |               |
| <b>DEVIATIONS FROM T</b> | EST STANDARD                     |                                   |                        |                          |                       |                |               |
| None                     |                                  |                                   |                        |                          |                       |                |               |
| REQUIREMENTS             |                                  |                                   |                        |                          |                       |                |               |
| ·                        | onducted output power for freque | ency hopping systems operating ir | n the 902 - 928 MHz ba | and, with at least 50 ho | pping channels, shall | not excced 1 w | vatt.         |
| RESULTS                  |                                  |                                   | AMPLITUDE              |                          |                       |                |               |
| Pass                     |                                  | 8                                 | 816.58 mW              |                          |                       |                |               |
| SIGNATURE                |                                  |                                   |                        |                          |                       |                |               |
| Tested By:               | ADU.K.P                          |                                   |                        |                          |                       |                |               |
| DESCRIPTION OF TE        | ST                               |                                   |                        |                          |                       |                |               |
|                          | Outp                             | ut Power - High Cha               | nnel - 40 kbp          | s Data Rate              |                       |                |               |





# **Band Edge Compliance**

Revision 10/1/03

## **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| High                                     |

## **Operating Modes Investigated:**

No Hop

| Data Rates Investigated: |  |
|--------------------------|--|
| 32 kbps                  |  |
| 38 kbps                  |  |
| 40 kbps                  |  |

## **Output Power Setting(s) Investigated:**

Maximum

## **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test   |                               |         |                |  |  |  |
|---|-------------------------------|---------|----------------|--|--|--|
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |
| Description   |                               |         |                |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |  |  |
| This included channel selection, data rate, and hopping vs. no hopping modes.                               |                               |         |                |  |  |  |

| EUT and Peripherals             |                                   |                   |               |
|---------------------------------|-----------------------------------|-------------------|---------------|
| Description                     | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader                 | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                    | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                     | Dell                              | TS30GI            | K8175A        |
| Power Supply for<br>Notebook PC | Dell                              | TSA8              | None          |
| Power Supply for Test Fixture   | EZ                                | GP-4303A          | 010700709     |

## **Band Edge Compliance**

Revision 10/1/03

| Cables          |  |            |         |                               |              |  |  |
|-----------------|--|------------|---------|-------------------------------|--------------|--|--|
| Cable Type      | Shield   | Length (m) | Ferrite | Connection 1                  | Connection 2 |  |  |
| Serial          | Yes  | 2.0        | No      | Test Fixture                  | Notebook PC  |  |  |
| DC Leads        | PA   | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |  |  |
| AC Power        | No   | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |  |  |
| DC Leads        | No   | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |  |  |
| AC Power        | No   | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |  |  |
| PA = Cable is r | PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |            |         |                               |              |  |  |

| Measurement Equipment |                 |       |            |            |          |  |
|-----------------------|-----------------|-------|------------|------------|----------|--|
| Description           | Manufacturer    | Model | Identifier | Last Cal   | Interval |  |
| Spectrum Analyzer     | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |  |

## **Test Description**

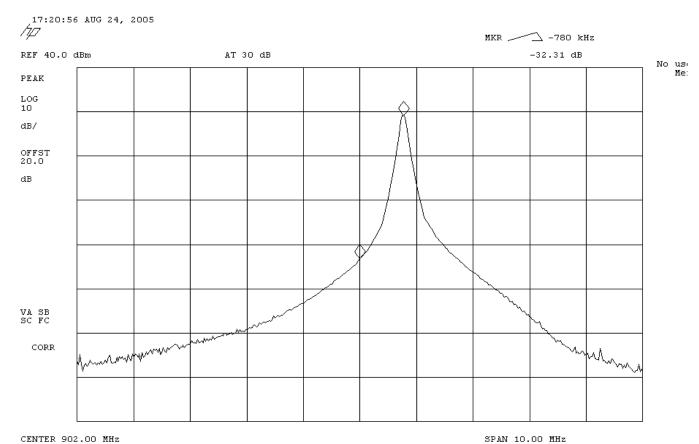
**Requirement**: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set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

**Configuration**: The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 5 MHz below the band edge to 5 MHz above the band edge.

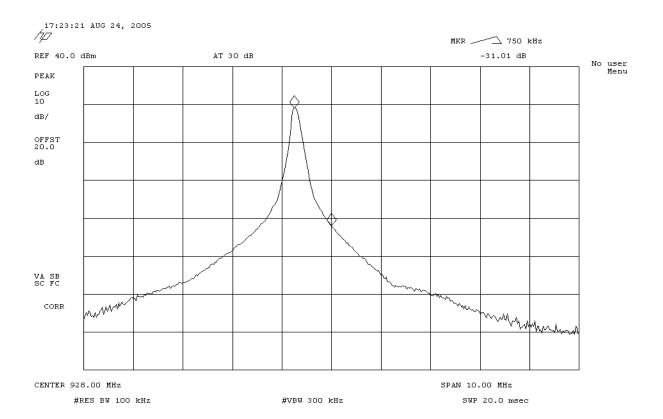
#### Completed by:

U.K.f

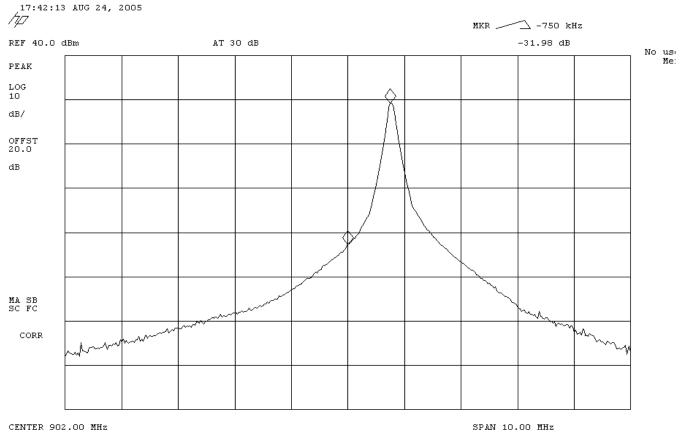
| EMC   | BAND EDGE                                   | E COMPLIA                | NCE                   |              | Rev BETA<br>01/30/01 |  |
|---|---|--------------------------|-----------------------|--------------|----------------------|--|
| EUT: IM4  |   |                          |                       | Work Order:  | ITRM0098             |  |
| Serial Number: 19510523230  |   |                          |                       | Date:        | 08/24/05             |  |
| Customer: Intermec Technologies C   | orporation                                  |                          |                       | Temperature: | 70 °F                |  |
| Attendees: Scott Holub  |   | Tested by:               | Greg Kiemel           | Humidity:    | 43% RH               |  |
| Customer Ref. No.: None   |   | Power:                   | 120 V, 60 Hz          | Job Site:    | OC03                 |  |
| TEST SPECIFICATIONS   |   |                          |                       |              |                      |  |
| Specification: 47 CFR 15.247(d)   | Year: 2005                                  | Method:                  | DA 00-705, ANSI C63.4 | Year:        | 2003                 |  |
| SAMPLE CALCULATIONS   |   |                          |                       |              |                      |  |
| COMMENTS  EUT OPERATING MODES  Modulated 32 kbps data rate  DEVIATIONS FROM TEST STANDARD |   |                          |                       |              |                      |  |
| None<br>REQUIREMENTS  |   |                          |                       |              |                      |  |
| Maximum level of any spurious emission at the   | edge of the authorized hand is 20 dB        | down from the fundamenta | ı                     |              |                      |  |
| RESULTS   | 3 2 3 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | AMPLITUDE                |                       |              |                      |  |
| Pass  |   |                          |                       |              |                      |  |
| SIGNATURE   |   |                          |                       |              |                      |  |
| Tested By:  |   |                          |                       |              |                      |  |
| DESCRIPTION OF TEST   |   |                          |                       |              |                      |  |
| Band  | <b>Edge Compliance - Le</b>                 | ow Channel - 3           | 2 kbps Data F         | Rate         |                      |  |



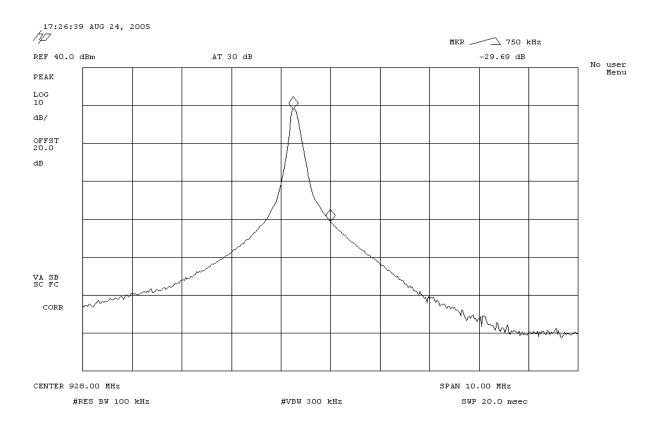
| NORTHWEST   | BAND EDGE                            | COMPLIA       | NCE                   |              | Rev BETA<br>01/30/01 |
|---|--------------------------------------|---------------|-----------------------|--------------|----------------------|
| EUT: IM4  |                                      |               |                       | Work Order:  |                      |
| Serial Number: 19510523230  |                                      |               |                       | Date:        | 08/24/05             |
| Customer: Intermec Technologies Corpora   | ition                                |               |                       | Temperature: |                      |
| Attendees: Scott Holub  |                                      | Tested by:    | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.: None   |                                      | Power:        | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATIONS   |                                      |               |                       |              |                      |
| Specification: 47 CFR 15.247(d)   | Year: 2005                           | Method:       | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS  EUT OPERATING MODES  Modulated 32 kbps data rate  DEVIATIONS FROM TEST STANDARD  None  REQUIREMENTS |                                      |               |                       |              |                      |
| Maximum level of any spurious emission at the edge of   | of the authorized band is 20 dB down |               |                       |              |                      |
| RESULTS   |                                      | AMPLITUDE     |                       |              |                      |
| Pass  |                                      | -31.01 dB     |                       |              |                      |
| SIGNATURE  Tested By:   |                                      |               |                       |              |                      |
| DESCRIPTION OF TEST   |                                      |               |                       |              |                      |
| Band Edg  | ge Compliance - Hig                  | h Channel - 3 | 2 kbps Data           | Rate         |                      |



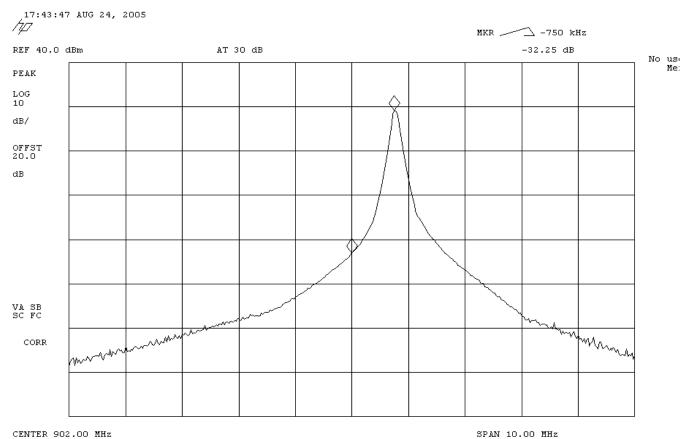
| EMC  |                                 | BAND EDGE                          | COMPLIA               | NCE                   |              | Rev BE<br>01/30/0 |   |
|--|---------------------------------|------------------------------------|-----------------------|-----------------------|--------------|-------------------|---|
| EUT:   | IM4                             |                                    |                       |                       | Work Order:  |                   |   |
| Serial Number:                                     | 19510523230                     |                                    |                       |                       | Date:        | 08/24/05          |   |
| Customer:  | Intermec Technologies Corporate | tion                               |                       |                       | Temperature: | 70 °F             |   |
| Attendees:   | Scott Holub                     |                                    | Tested by:            | Greg Kiemel           | Humidity:    | 43% RH            |   |
| Customer Ref. No.:                                 | None                            |                                    | Power:                | 120 V, 60 Hz          | Job Site:    | OC03              |   |
| TEST SPECIFICATION:                                | s                               |                                    |                       |                       |              |                   |   |
| Specification:                                     | 47 CFR 15.247(d)                | Year: 2005                         | Method:               | DA 00-705, ANSI C63.4 | Year:        | 2003              |   |
| SAMPLE CALCULATION                                 | ONS                             |                                    |                       |                       |              |                   |   |
| COMMENTS  EUT OPERATING MOD  Modulated 38 kbps dat |                                 |                                    |                       |                       |              |                   |   |
| DEVIATIONS FROM TE                                 |                                 |                                    |                       |                       |              |                   |   |
| DEVIATIONS FROM TE<br>None                         | STSTANDARD                      |                                    |                       |                       |              |                   |   |
| REQUIREMENTS                                       |                                 |                                    |                       |                       |              |                   |   |
|  | spurious emission at the edge o | f the authorized band is 20 dB dow | n from the fundamenta | ı                     |              |                   | _ |
| RESULTS  | .,                              |                                    | AMPLITUDE             |                       |              |                   |   |
| Pass   |                                 |                                    |                       |                       |              |                   |   |
| SIGNATURE  |                                 |                                    |                       |                       |              |                   |   |
| Tested By: _                                       | ADU.KIP                         |                                    |                       |                       |              |                   |   |
| DESCRIPTION OF TES                                 | Т                               |                                    |                       |                       |              |                   |   |
|  | Band Edg                        | e Compliance - Low                 | / Channel - 3         | 8 kbps Data F         | Rate         | ·                 |   |



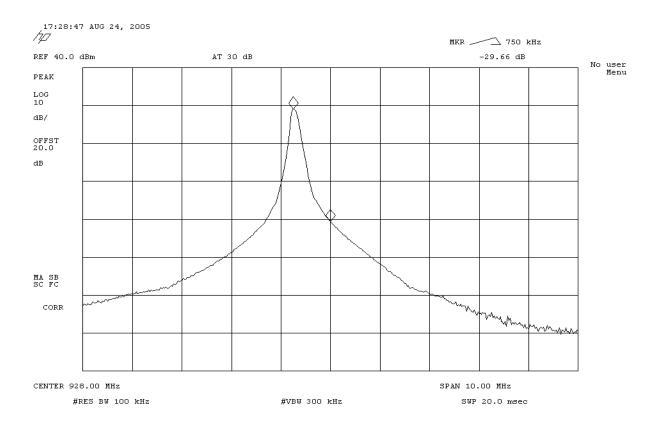
| NORTHWEST BAND EDGE COMPLIANCE REVBETA (173001)         |                                   |                               |              |          |  |  |
|---|-----------------------------------|-------------------------------|--------------|----------|--|--|
| EUT: IM4  |                                   |                               | Work Order:  | ITRM0098 |  |  |
| Serial Number: 19510523230                              |                                   |                               |              | 08/24/05 |  |  |
| Customer: Intermec Technologies Corporat                | ion                               |                               | Temperature: |          |  |  |
| Attendees: Scott Holub                                  |                                   | Tested by: Greg Kiemel        | Humidity     | 43% RH   |  |  |
| Customer Ref. No.: None                                 |                                   | Power: 120 V, 60 Hz           | Job Site:    | OC03     |  |  |
| TEST SPECIFICATIONS                                     |                                   |                               |              |          |  |  |
| Specification: 47 CFR 15.247(d)                         | Year: 2005                        | Method: DA 00-705, ANSI C63.4 | Year:        | 2003     |  |  |
| SAMPLE CALCULATIONS                                     |                                   |                               |              |          |  |  |
|   |                                   |                               |              |          |  |  |
| COMMENTS  |                                   |                               |              |          |  |  |
| COMMENTS  |                                   |                               |              |          |  |  |
| EUT OPERATING MODES                                     |                                   |                               |              |          |  |  |
| Modulated 38 kbps data rate                             |                                   |                               |              |          |  |  |
| DEVIATIONS FROM TEST STANDARD                           |                                   |                               |              |          |  |  |
| None  |                                   |                               |              |          |  |  |
| REQUIREMENTS  |                                   |                               |              |          |  |  |
| Maximum level of any spurious emission at the edge of   | the authorized band is 20 dB down | from the fundamental          |              |          |  |  |
| RESULTS   |                                   | AMPLITUDE                     |              |          |  |  |
| ass -29.69 dB   |                                   |                               |              |          |  |  |
| SIGNATURE   |                                   |                               |              |          |  |  |
| Tested By:  |                                   |                               |              |          |  |  |
| DESCRIPTION OF TEST                                     |                                   |                               |              |          |  |  |
| Band Edge Compliance - High Channel - 38 kbps Data Rate |                                   |                               |              |          |  |  |

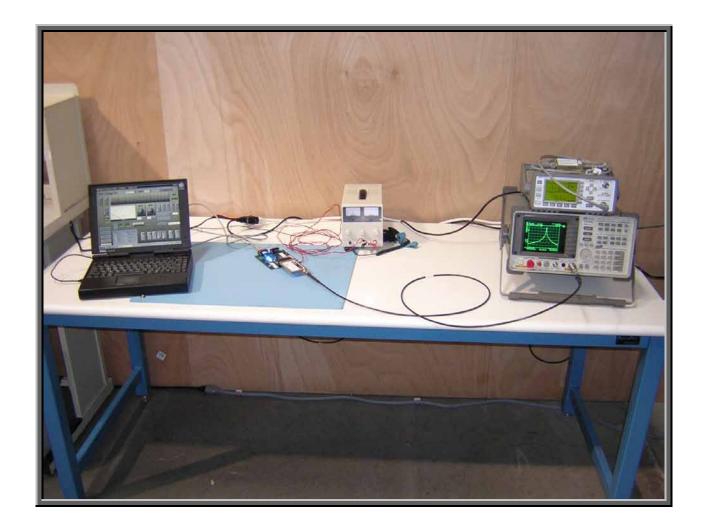


| EMC BAND EDGE COMPLIANCE RevE 01/30  |  |                             |              |          |  |  |
|--|--|-----------------------------|--------------|----------|--|--|
| EUT: IM4   |  |                             | Work Order:  |          |  |  |
| Serial Number: 19510523230   |  |                             | Date:        | 08/24/05 |  |  |
| Customer: Intermec Technologies Corp   | oration  |                             | Temperature: | 70 °F    |  |  |
| Attendees: Scott Holub   |  | Tested by: Greg Kiemel      | Humidity:    | 43% RH   |  |  |
| Customer Ref. No.: None  |  | Power: 120 V, 60 Hz         | Job Site:    | OC03     |  |  |
| TEST SPECIFICATIONS  |  |                             |              |          |  |  |
| Specification: 47 CFR 15.247(d)  | Year: 2005   | Method: DA 00-705, ANSI C63 | .4 Year:     | 2003     |  |  |
| SAMPLE CALCULATIONS  |  |                             |              |          |  |  |
| EUT OPERATING MODES  Modulated 40 kbps data rate  DEVIATIONS FROM TEST STANDARD  None  REQUIREMENTS  Maximum level of any spurious emission at the edd | ue of the authorized band is 20 dB do                  | wn from the fundamental     |              |          |  |  |
| RESULTS  | <u>, , , , , , , , , , , , , , , , , , , </u>          | AMPLITUDE                   |              |          |  |  |
| Pass -32.25 dB   |  |                             |              |          |  |  |
| SIGNATURE  |  |                             |              |          |  |  |
| Tested By:   |  |                             |              |          |  |  |
| DESCRIPTION OF TEST  |  |                             |              |          |  |  |
| Band Fo  | Band Edge Compliance - Low Channel - 40 kbps Data Rate |                             |              |          |  |  |



| NORTHWEST BAND EDGE COMPLIANCE REV BETA (1/2001)   |                                  |                                   |                               |              |          |
|--|----------------------------------|-----------------------------------|-------------------------------|--------------|----------|
| EUT:   |                                  |                                   |                               | Work Order:  | ITRM0098 |
| Serial Number:   | 19510523230                      |                                   |                               | Date:        | 08/24/05 |
|  | Intermec Technologies Corporati  | on                                |                               | Temperature: |          |
| Attendees:   |                                  |                                   | Tested by: Greg Kiemel        | Humidity:    |          |
| Customer Ref. No.:   |                                  |                                   | Power: 120 V, 60 Hz           | Job Site:    | OC03     |
| TEST SPECIFICATIONS  |                                  |                                   | <u> </u>                      |              |          |
|  | 47 CFR 15.247(d)                 | Year: 2005                        | Method: DA 00-705, ANSI C63.4 | Year:        | 2003     |
| SAMPLE CALCULATIO  | NS                               |                                   |                               |              |          |
| COMMENTS  EUT OPERATING MOD  Modulated 40 kbps dat  DEVIATIONS FROM TE  None  REQUIREMENTS | a rate                           |                                   |                               |              |          |
|  | spurious emission at the edge of | the authorized band is 20 dB down | from the fundamental          |              |          |
| RESULTS  |                                  |                                   | AMPLITUDE                     |              |          |
| ass -29.66 dB  |                                  |                                   |                               |              |          |
| SIGNATURE  Tested By:  |                                  |                                   |                               |              |          |
| резоклетіом оғ тезт<br>Band Edge Compliance - High Channel - 40 kbps Data Rate             |                                  |                                   |                               |              |          |





## **Conducted Emissions**

Revision 1/4/2005

## **Justification**

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

## **Operating Modes Investigated:**

Receive Mode

## **Power Input Settings Investigated:**

120 VAC, 60 Hz

| Software\Firmware Applied During Test                                  |   |         |    |  |  |
|--|---|---------|----|--|--|
| Operating system   | Windows   | Version | XP |  |  |
| Exercise software Common Test Interface for IM4 Version 1.2.0 Build 11 |   |         |    |  |  |
| Description  |   |         |    |  |  |
| The system was tested  | The system was tested using special software developed to test all functions of the device during the test. |         |    |  |  |

| EUT and Peripherals in Test Setup Boundary |                                   |                   |               |  |  |  |
|--|-----------------------------------|-------------------|---------------|--|--|--|
| Description                                | Manufacturer                      | Model/Part Number | Serial Number |  |  |  |
| EUT-RFID Reader                            | Intermec Technologies Corporation | IM4               | 19510523240   |  |  |  |
| Test Fixture                               | Intermec Technologies Corporation | Interrogator      | None          |  |  |  |
| Power Supply for Test Fixture              | MAGTECH                           | SPU24-104         | 023436980448  |  |  |  |

| Remote Equipment Outside of Test Setup Boundary  |              |                   |               |  |  |  |
|--|--------------|-------------------|---------------|--|--|--|
| Description  | Manufacturer | Model/Part Number | Serial Number |  |  |  |
| Notebook PC  | Dell         | TS30GI            | K8175A        |  |  |  |
| Power Supply for Notebook PC Dell TSA8 None  |              |                   |               |  |  |  |
| Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary. |              |                   |               |  |  |  |

| Cables     |  |            |         |                               |              |
|------------|--|------------|---------|-------------------------------|--------------|
| Cable Type | Shield   | Length (m) | Ferrite | Connection 1                  | Connection 2 |
| Serial     | Yes  | 2.0        | No      | Test Fixture                  | Notebook PC  |
| DC Leads   | PA   | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |
| AC Power   | No   | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |
| DC Leads   | No   | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |
| AC Power   | No   | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |
| PA = Ca    | PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |            |         |                               |              |

| Measurement Equipment |                 |                |            |            |          |  |
|-----------------------|-----------------|----------------|------------|------------|----------|--|
| Description           | Manufacturer    | Model          | Identifier | Last Cal   | Interval |  |
| Spectrum Analyzer     | Hewlett Packard | 8593E          | AAP        | 12/07/2004 | 13 mo    |  |
| Receiver              | Schaffner       | SCR 3101       | ARC        | 05/04/2005 | 13 mo    |  |
| LISN                  | Solar           | 9252-50-24-BNC | LIB        | 02/16/2005 | 13 mo    |  |

## **Conducted Emissions**

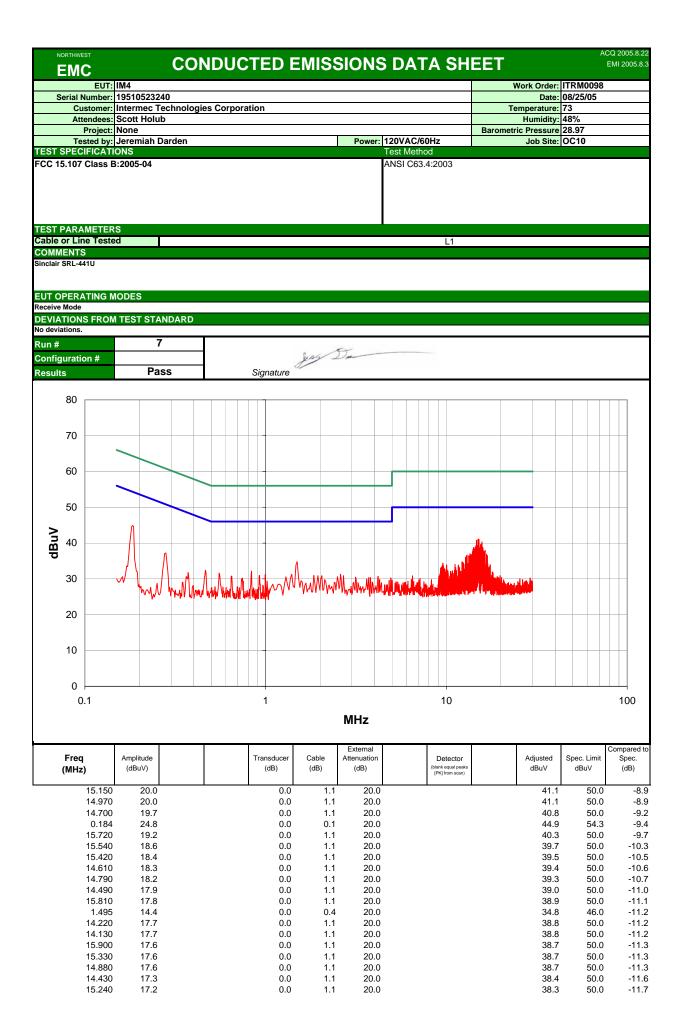
Revision 1/4/2005

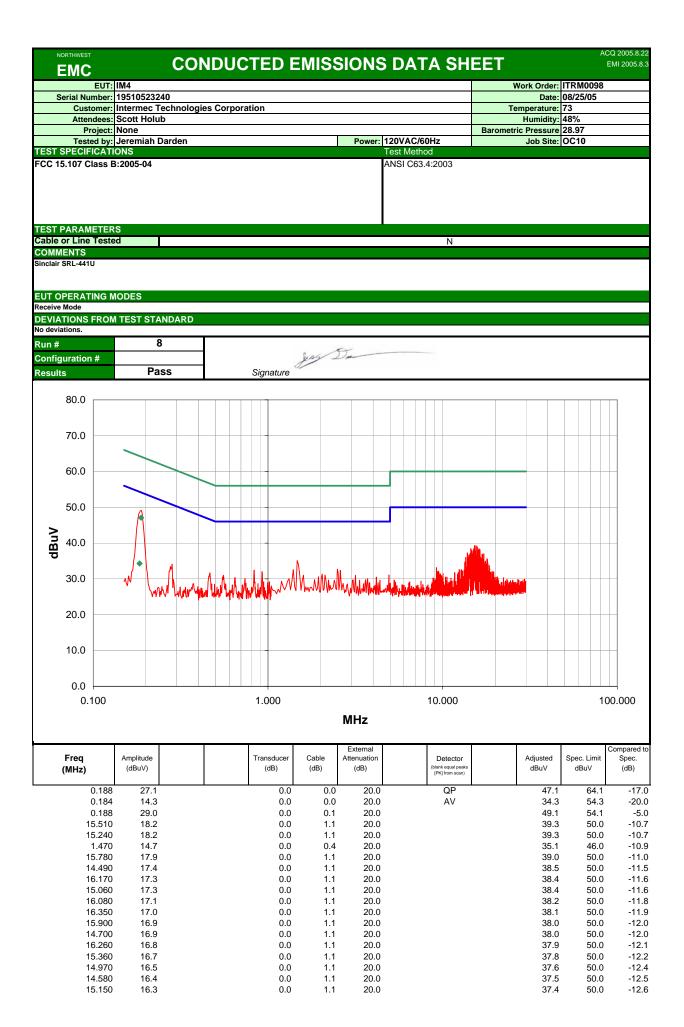
#### **Test Description**

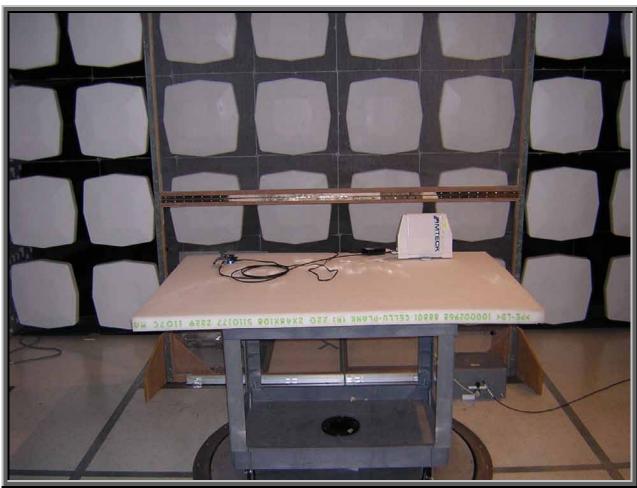
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50  $\Omega$  measuring port is terminated by a 50  $\Omega$  EMI meter or a 50  $\Omega$  resistive load. All 50  $\Omega$  measuring ports of the LISN are terminated by 50 $\Omega$ .

| Measurement Bandwidths   |                    |                          |                       |  |  |
|--|--------------------|--------------------------|-----------------------|--|--|
| Frequency Range<br>(MHz)   | Peak Data<br>(kHz) | Quasi-Peak Data<br>(kHz) | Average Data<br>(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. |                    |                          |                       |  |  |

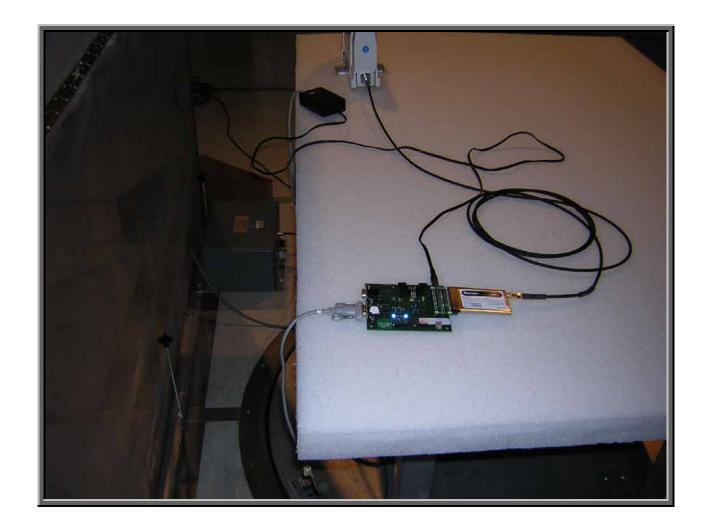
| Completed by: |  |
|---------------|--|
| Completed by: |  |
| July Da       |  |
| 0/            |  |











## **Spurious Conducted Emissions**

Revision 10/1/03

## **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| Mid                                      |
| High                                     |

## **Operating Modes Investigated:**

No Hop

| Data Rates Investigated: |  |
|--------------------------|--|
| 32 kbps                  |  |
| 38 kbps                  |  |
| 40 kbps                  |  |

## **Output Power Setting(s) Investigated:**

Maximum

## **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test   |                               |         |                |  |  |  |  |
|---|-------------------------------|---------|----------------|--|--|--|--|
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |  |
| Description   |                               |         |                |  |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |  |  |  |
| This included channel selection, data rate, and hopping vs. no hopping modes.                               |                               |         |                |  |  |  |  |

| <b>EUT and Peripherals</b>    |                                   |                   |               |
|-------------------------------|-----------------------------------|-------------------|---------------|
| Description                   | Manufacturer                      | Model/Part Number | Serial Number |
| EUT-RFID Reader               | Intermec Technologies Corporation | IM4               | 19510523230   |
| Test Fixture                  | Intermec Technologies Corporation | Interrogator      | None          |
| Notebook PC                   | Dell                              | TS30GI            | K8175A        |
| Power Supply for Notebook PC  | Dell                              | TSA8              | None          |
| Power Supply for Test Fixture | EZ                                | GP-4303A          | 010700709     |

## **Spurious Conducted Emissions**

Revision 10/1/03

| Cables   |        |            |         |                               |              |
|--|--------|------------|---------|-------------------------------|--------------|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |

| Measurement Equipmen | nt              |       |            |            |          |
|----------------------|-----------------|-------|------------|------------|----------|
| Description          | Manufacturer    | Model | Identifier | Last Cal   | Interval |
| Spectrum Analyzer    | Hewlett-Packard | 8593E | AAA        | 12/06/2004 | 13 mo    |

#### **Test Description**

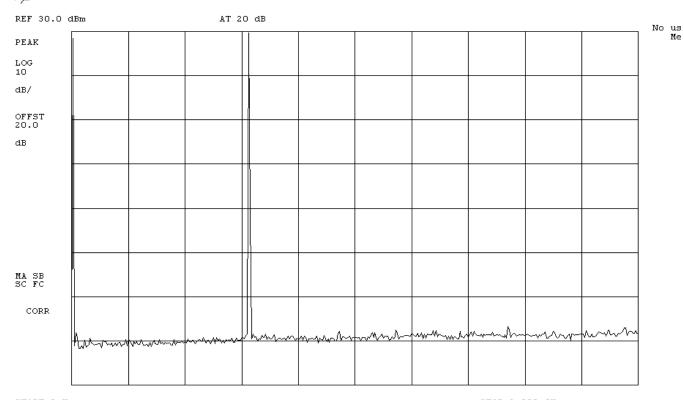
**Requirement**: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set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

**Configuration**: The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its various data rates in a no hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency.

#### Completed by:

| EMC  |                                    | <b>EMISSIONS</b>                | S DATA SH            | EET                   |              | Rev BETA             |
|--|------------------------------------|---------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:   | lima.                              |                                 |                      |                       | Work Order:  | 01/30/01<br>ITPM0008 |
| Serial Number:   |                                    |                                 |                      |                       |              | 08/26/05             |
|  | Intermec Technologies Corporation  | on                              |                      |                       | Temperature: |                      |
|  | Scott Holub                        | ···                             | Tested by:           | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:   |                                    |                                 |                      | 120 V, 60 Hz          | Job Site:    |                      |
| TEST SPECIFICATIONS  |                                    |                                 |                      |                       |              |                      |
|  | 47 CFR 15.247(d)                   | Year: 2005-04                   | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| SAMPLE CALCULATIO  | ONS                                |                                 |                      |                       |              |                      |
| EUT OPERATING MOD<br>Modulated 40 kbps dat<br>DEVIATIONS FROM TE<br>None | ta rate                            |                                 |                      |                       |              |                      |
| REQUIREMENTS   |                                    |                                 |                      |                       |              |                      |
|  | spurious emission outside of the a | authorized band is 20 dB down f | from the fundamental |                       |              |                      |
| RESULTS  |                                    |                                 |                      |                       |              |                      |
| Pass<br>SIGNATURE  |                                    |                                 |                      |                       |              |                      |
| Tested By:   | ADU.K.P                            |                                 |                      |                       |              |                      |
| DESCRIPTION OF TES   | T .                                |                                 |                      |                       |              |                      |
|  | Antenna Cond                       | ducted Spurious E               | missions - Low       | Channel OME           | 1z-3GHz      |                      |

11:05:28 AUG 26, 2005



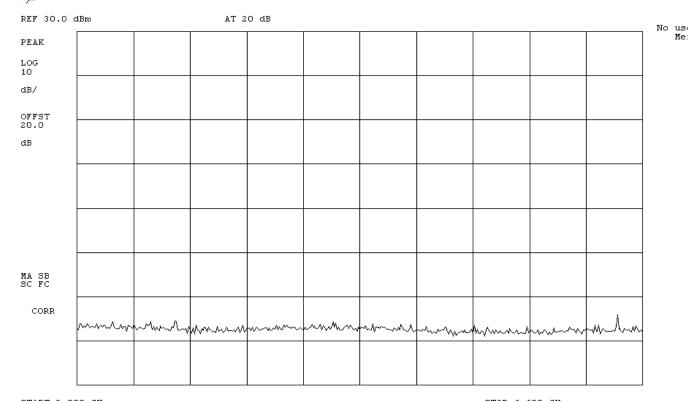
START O Hz STOP 2.900 GHz SWP 870 msec

#VBW 300 kHz

#RES BW 100 kHz

| NORTHWEST EMC                                  | <b>EMISSIONS</b>                       | DATA SH             | EET                   |              | Rev BETA<br>01/30/01   |
|--|--|---------------------|-----------------------|--------------|--|
| EUT: IM4                                       |  |                     |                       | Work Order:  | ITRM0098   |
| Serial Number: 19510523230                     |  |                     |                       | Date:        | 08/26/05   |
| Customer: Intermec Technologies Cor            | poration                               |                     |                       | Temperature: | 70 °F  |
| Attendees: Scott Holub                         |  | Tested by:          | Greg Kiemel           | Humidity:    | 43% RH   |
| Customer Ref. No.: None                        |  | Power:              | 120 V, 60 Hz          | Job Site:    | OC03   |
| TEST SPECIFICATIONS                            |  |                     |                       |              |  |
| Specification: 47 CFR 15.247(d)                | Year: 2005-04                          | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003   |
| COMMENTS EUT OPERATING MODES                   |  |                     |                       |              |  |
| Modulated 40 kbps data rate                    |  |                     |                       |              |  |
| DEVIATIONS FROM TEST STANDARD None             |  |                     |                       |              |  |
| REQUIREMENTS                                   |  |                     |                       |              |  |
| Maximum level of any spurious emission outside | of the authorized band is 20 dB down f | rom the fundamental |                       |              |  |
| RESULTS  |  |                     |                       |              |  |
| Pass   |  | _                   |                       |              |  |
| SIGNATURE                                      |  |                     |                       |              | The state of the s |
| Tested By:                                     |  |                     |                       |              |  |
| DESCRIPTION OF TEST                            |  |                     |                       |              |  |
| Antenna Cor                                    | nducted Spurious Emi                   | ssions - Low        | Channel 3GF           | lz-6.5GHz    |  |

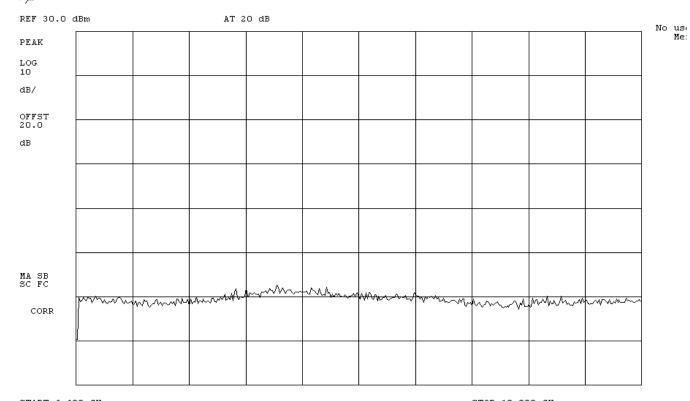
11:07:21 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

| NORTHWEST<br>EMC                                   |                                  | <b>EMISSIONS</b>                 | DATA SHEET                    |              | Rev BETA<br>01/30/01 |
|--|----------------------------------|----------------------------------|-------------------------------|--------------|----------------------|
| EUT:   | IM4                              |                                  |                               | Work Order:  | ITRM0098             |
| Serial Number:                                     | 19510523230                      |                                  |                               | Date:        | 08/26/05             |
| Customer:  | Intermec Technologies Corporat   | ion                              |                               | Temperature: | 70 °F                |
| Attendees:   | Scott Holub                      |                                  | Tested by: Greg Kiemel        | Humidity:    | 43% RH               |
| Customer Ref. No.:                                 | None                             |                                  | Power: 120 V, 60 Hz           | Job Site:    | OC03                 |
| TEST SPECIFICATION                                 | S                                |                                  |                               |              |                      |
| Specification:                                     | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method: DA 00-705, ANSI C63.4 | Year:        | 2003                 |
|  |                                  |                                  |                               |              |                      |
| COMMENTS  EUT OPERATING MOD  Modulated 40 kbps dat | a rate                           |                                  |                               |              |                      |
| DEVIATIONS FROM TE<br>None                         | ST STANDARD                      |                                  |                               |              |                      |
| REQUIREMENTS                                       |                                  |                                  |                               |              |                      |
| Maximum level of any                               | spurious emission outside of the | authorized band is 20 dB down fr | om the fundamental            |              |                      |
| RESULTS  |                                  |                                  |                               |              |                      |
| Pass   | _                                | _                                | _                             |              |                      |
| SIGNATURE  |                                  |                                  |                               |              |                      |
| Tested By:   | ATU.K.P                          |                                  |                               |              |                      |
| DESCRIPTION OF TES                                 | Т                                |                                  |                               |              |                      |
|  | Antenna Condu                    | cted Spurious Emis               | sions - Low Channel 6.5G      | Hz-10GHz     |                      |

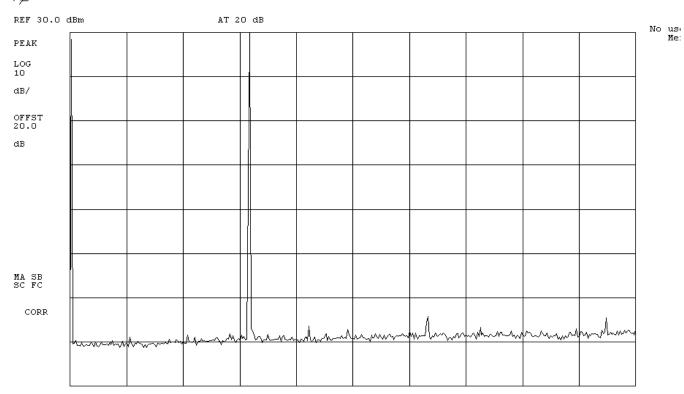
11:07:54 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| NORTHWEST<br>EMC      |                                  | <b>EMISSIONS</b>                   | DATA SHEET                   |              | Rev BETA<br>01/30/01 |
|-----------------------|----------------------------------|------------------------------------|------------------------------|--------------|----------------------|
| EUT:                  | IM4                              |                                    |                              | Work Order:  | ITRM0098             |
| Serial Number:        | 19510523230                      |                                    |                              | Date:        | 08/26/05             |
| Customer:             | Intermec Technologies Corporat   | ion                                |                              | Temperature: | 70 °F                |
| Attendees:            | Scott Holub                      |                                    | Tested by: Greg Kiemel       | Humidity:    | 43% RH               |
| Customer Ref. No.:    |                                  |                                    | Power: 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION    |                                  |                                    |                              |              |                      |
| Specification:        | 47 CFR 15.247(d)                 | Year: 2005-04                      | Method: DA 00-705, ANSI C63. | 4 Year:      | 2003                 |
|                       |                                  |                                    |                              |              |                      |
| COMMENTS              |                                  |                                    |                              |              |                      |
| EUT OPERATING MOD     | DES                              |                                    |                              |              |                      |
| Nodulated 40 kbps dat | a rate                           |                                    |                              |              |                      |
| DEVIATIONS FROM TE    | ST STANDARD                      |                                    |                              |              |                      |
| None                  |                                  |                                    |                              |              |                      |
| REQUIREMENTS          |                                  |                                    |                              |              |                      |
| Maximum level of any  | spurious emission outside of the | e authorized band is 20 dB down fr | om the fundamental           |              |                      |
| RESULTS               |                                  |                                    |                              |              |                      |
| Pass                  |                                  |                                    |                              |              |                      |
| SIGNATURE             |                                  |                                    |                              |              |                      |
| Tested By:            | ADU.K.P                          |                                    |                              |              |                      |
| DESCRIPTION OF TES    | Т                                |                                    |                              |              |                      |
|                       | Antenna Cond                     | lucted Spurious Em                 | nissions - Mid Channel 0M    | Hz-3GHz      |                      |

11:08:54 AUG 26, 2005



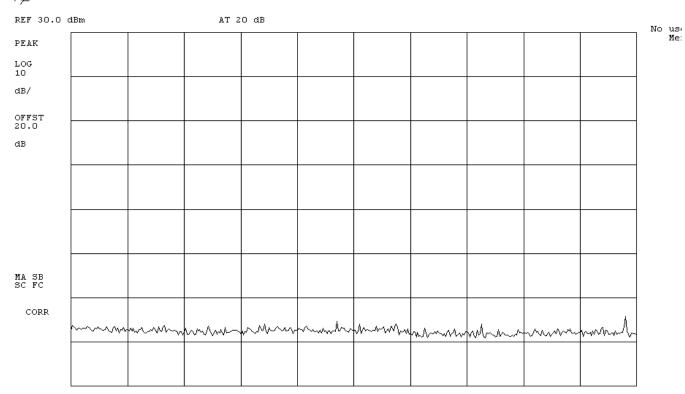
STOP 2.900 GHz START O Hz #RES BW 100 kHz

#VBW 300 kHz

SWP 870 msec

| NORTHWEST<br>EMC      |                                  | <b>EMISSIONS</b>                 | DATA SHEET                    |              | Rev BETA<br>01/30/01 |
|-----------------------|----------------------------------|----------------------------------|-------------------------------|--------------|----------------------|
| EUT:                  | IM4                              |                                  |                               | Work Order:  | ITRM0098             |
| Serial Number:        | 19510523230                      |                                  |                               | Date:        | 08/26/05             |
| Customer:             | Intermec Technologies Corporat   | ion                              |                               | Temperature: | 70 °F                |
| Attendees:            | Scott Holub                      |                                  | Tested by: Greg Kiemel        | Humidity:    | 43% RH               |
| Customer Ref. No.:    |                                  |                                  | Power: 120 V, 60 Hz           | Job Site:    | OC03                 |
| TEST SPECIFICATION    |                                  |                                  |                               |              |                      |
| Specification:        | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method: DA 00-705, ANSI C63.4 | Year:        | 2003                 |
|                       |                                  |                                  |                               |              |                      |
| COMMENTS              |                                  |                                  |                               |              |                      |
| EUT OPERATING MOD     | DES                              |                                  |                               |              |                      |
| Modulated 40 kbps dat | ta rate                          |                                  |                               |              |                      |
| DEVIATIONS FROM TE    | ST STANDARD                      |                                  |                               |              |                      |
| None                  |                                  |                                  |                               |              |                      |
| REQUIREMENTS          |                                  |                                  |                               |              |                      |
|                       | spurious emission outside of the | authorized band is 20 dB down fi | rom the fundamental           |              |                      |
| RESULTS               | <u> </u>                         | <u> </u>                         | _                             |              |                      |
| Pass                  |                                  |                                  |                               |              |                      |
| SIGNATURE             |                                  |                                  |                               |              |                      |
| Tested By:            | ATU.K.P                          |                                  |                               |              |                      |
| DESCRIPTION OF TES    | т                                |                                  |                               |              |                      |
|                       |                                  | ucted Spurious Em                | issions - Mid Channel 3GF     | lz-6.5GHz    |                      |

11:09:49 AUG 26, 2005



START 2.890 GHz

STOP 6.490 GHz

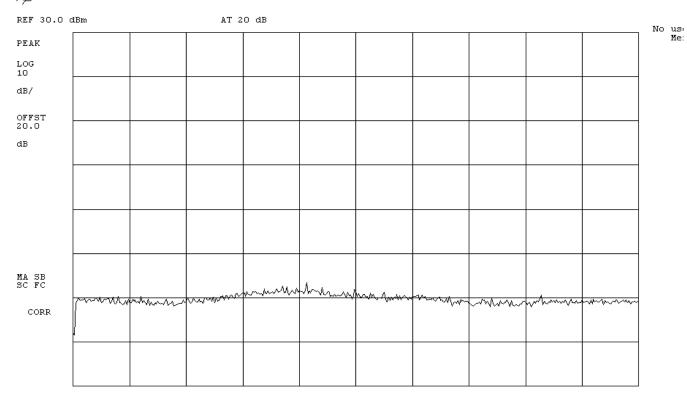
#VBW 300 kHz

#RES BW 100 kHz

SWP 1.08 sec

| EUT: IM4  | EMC                    |                                 | <b>EMISSIONS</b>                  | DATA SH             | EET                   |              | Rev BET<br>01/30/01 |
|---|------------------------|---------------------------------|-----------------------------------|---------------------|-----------------------|--------------|---------------------|
| Customer: Intermec Technologies Corporation Temperature: 70 °F Attendees: Scott Holub Tested by: Greg Kiemel Humidity: 43% RH Customer Ref. No.: None Power: 120 V, 60 Hz Job Site: OC03 ST SPECIFICATIONS Specification: 47 CFR 15.247(d) Year: 2005-04 Method: DA 00-705, ANSI C63.4 Year: 2003 MPLE CALGULATIONS  T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SPACTIFION OF TEST  Tested By:  Tested By:  SCRIPTION OF TEST  Tested By:  SCRIPTION OF TEST |                        | M4                              |                                   |                     |                       | Work Order:  | ITRM0098            |
| Attendees: Scott Holub  Tested by: Greg Kiemel Humidity: 43% RH Customer Ref. No.: None Power: 120 V, 60 Hz Job Site: OC03  ST SPECIFICATIONS  Specification: 47 CFR 15.247(d) Year: 2005-04 Method: DA 00-705, ANSI C63.4 Year: 2003  MPLE CALCULATIONS  TOPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD  Toperating Modes  CUIREMENTS  ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS  SSNATURE  Tested By:  SCRIPTION OF TEST   | Serial Number: 1       | 9510523230                      |                                   |                     |                       | Date:        | 08/26/05            |
| Customer Ref. No.: None Power: 120 V, 60 Hz Job Site: OC03 ST SPECIFICATIONS Specification: 47 CFR 15.247(d) Year: 2005-04 Method: DA 00-705, ANSI C63.4 Year: 2003 MPLE CALCULATIONS  MMENTS T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  SCRIPTION OF TEST  | Customer: I            | ntermec Technologies Corporat   | tion                              |                     |                       | Temperature: | 70 °F               |
| Specification: 47 CFR 15.247(d)  Year: 2005-04  Method: DA 00-705, ANSI C63.4  Year: 2003  MPLE CALCULATIONS  MMENTS  T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS  ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  SCRIPTION OF TEST   | Attendees: S           | Scott Holub                     |                                   | Tested by:          | Greg Kiemel           | Humidity:    | 43% RH              |
| Specification: 47 CFR 15.247(d)  Year: 2005-04  Method: DA 00-705, ANSI C63.4  Year: 2003  MPLE CALCULATIONS   T OPERATING MODES dulated 40 kbps data rate  VIATIONS FROM TEST STANDARD  ne QUIREMENTS  ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental  SULTS  ss ss ssATURE  Tested By:  Tested By:  SCRIPTION OF TEST   | Customer Ref. No.: N   | lone                            |                                   | Power:              | 120 V, 60 Hz          | Job Site:    | OC03                |
| MMENTS  T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD  ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss. SNATURE  Tested By:  SCRIPTION OF TEST  | EST SPECIFICATIONS     |                                 |                                   |                     |                       |              |                     |
| T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  Tested By:  SCRIPTION OF TEST  | Specification: 4       | 7 CFR 15.247(d)                 | Year: 2005-04                     | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003                |
| T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  SCRIPTION OF TEST  |                        |                                 |                                   |                     |                       |              |                     |
| T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  SCRIPTION OF TEST  |                        |                                 |                                   |                     |                       |              |                     |
| T OPERATING MODES dulated 40 kbps data rate VIATIONS FROM TEST STANDARD ne QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS ss SNATURE  Tested By:  SCRIPTION OF TEST  | OMMENTS                |                                 |                                   |                     |                       |              |                     |
| dulated 40 kbps data rate  VIATIONS FROM TEST STANDARD  ne  QUIREMENTS  ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental  SULTS  SS  SNATURE  Tested By:  Tested By:  SCRIPTION OF TEST   | OWWENTS                |                                 |                                   |                     |                       |              |                     |
| VIATIONS FROM TEST STANDARD  ne  QUIREMENTS  ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental  SULTS  SS  SS  SNATURE  Tested By:  SCRIPTION OF TEST  | UT OPERATING MODE      | ES                              |                                   |                     |                       |              |                     |
| Tested By:  SCRIPTION OF TEST   | Nodulated 40 kbps data | rate                            |                                   |                     |                       |              |                     |
| QUIREMENTS ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental SULTS SS SNATURE  Tested By:  SCRIPTION OF TEST   | DEVIATIONS FROM TES    | ST STANDARD                     |                                   |                     |                       |              |                     |
| ximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental  SULTS SS SNATURE  Tested By:  SCRIPTION OF TEST   | None                   |                                 |                                   |                     |                       |              |                     |
| SULTS SS SINATURE  Tested By:  SCRIPTION OF TEST  | REQUIREMENTS           |                                 |                                   |                     |                       |              |                     |
| Tested By:SCRIPTION OF TEST   | laximum level of any s | purious emission outside of the | e authorized band is 20 dB down f | rom the fundamental |                       |              |                     |
| Tested By:  SCRIPTION OF TEST   | RESULTS                |                                 |                                   |                     |                       |              |                     |
| Tested By:SCRIPTION OF TEST   | Pass                   |                                 |                                   |                     |                       |              |                     |
| Tested By:SCRIPTION OF TEST   | SIGNATURE              |                                 |                                   |                     |                       |              |                     |
| Tested By:SCRIPTION OF TEST   |                        | . 01.0                          |                                   |                     |                       |              |                     |
| SCRIPTION OF TEST   |                        | AM                              |                                   |                     |                       |              |                     |
|   | Tested By:             |                                 |                                   |                     |                       |              |                     |
| A   | ESCRIPTION OF TEST     |                                 |                                   |                     |                       |              |                     |
| Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz   |                        | Antenna Condu                   | cted Spurious Emi                 | esions - Mid (      | Channel 6 5G          | Hz-10GHz     |                     |

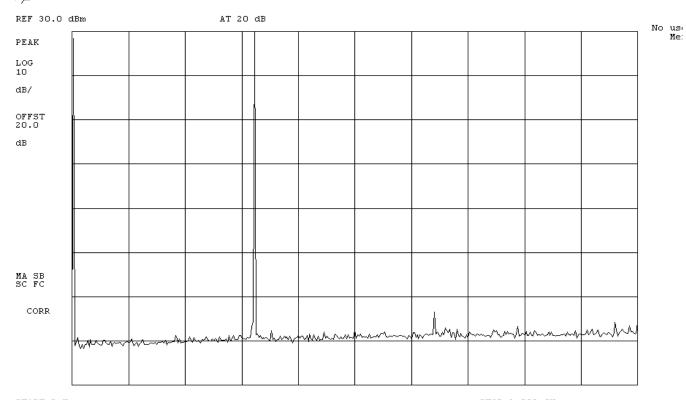
11:10:21 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| NORTHWEST<br>EMC                                       |                                  | <b>EMISSIONS</b>                 | DATA SHEET                   |              | Rev BETA<br>01/30/01 |
|--|----------------------------------|----------------------------------|------------------------------|--------------|----------------------|
| EUT:   | IM4                              |                                  |                              | Work Order:  | ITRM0098             |
| Serial Number:   | 19510523230                      |                                  |                              | Date:        | 08/26/05             |
| Customer:  | Intermec Technologies Corporat   | ion                              |                              | Temperature: | 70 °F                |
| Attendees:   | Scott Holub                      |                                  | Tested by: Greg Kiemel       | Humidity:    | 43% RH               |
| Customer Ref. No.:                                     | None                             |                                  | Power: 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION                                     | S                                |                                  |                              |              |                      |
| Specification:   | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method: DA 00-705, ANSI C63. | 4 Year:      | 2003                 |
|  |                                  |                                  |                              |              |                      |
| COMMENTS<br>EUT OPERATING MOD<br>Modulated 40 kbps dat | ta rate                          |                                  |                              |              |                      |
| DEVIATIONS FROM TE<br>None                             | EST STANDARD                     |                                  |                              |              |                      |
| REQUIREMENTS   |                                  |                                  |                              |              |                      |
| Maximum level of any                                   | spurious emission outside of the | authorized band is 20 dB down fr | om the fundamental           |              |                      |
| RESULTS  |                                  |                                  |                              |              |                      |
| Pass   |                                  |                                  |                              |              |                      |
| SIGNATURE  |                                  |                                  |                              |              |                      |
| Tested By:   | ADU.KIP                          |                                  |                              |              |                      |
| DESCRIPTION OF TES                                     | т                                |                                  |                              |              |                      |
|  | Antenna Cond                     | ucted Spurious Em                | issions - High Channel 0N    | //Hz-3GHz    |                      |

11:11:07 AUG 26, 2005

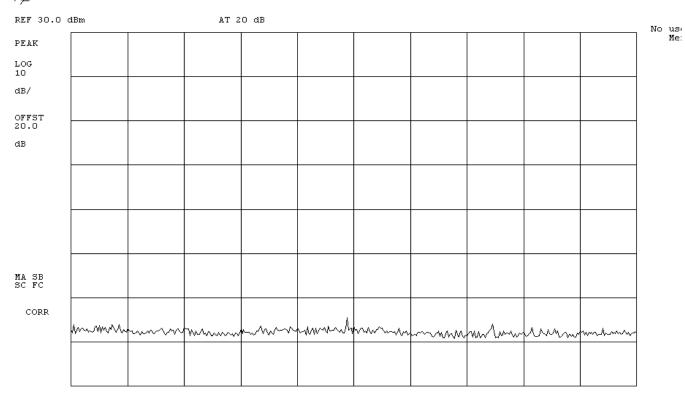


START O Hz STOP 2.900 GHz

SWP 870 msec

| NORTHWEST<br>EMC     |                                  | <b>EMISSIONS</b>                | DATA SH              | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|----------------------------------|---------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                              |                                 |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:       | 19510523230                      |                                 |                      |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corporat   | tion                            |                      |                       | Temperature: | 70 °F                |
| Attendees:           | Scott Holub                      |                                 | Tested by:           | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:   | None                             |                                 | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                  |                                 |                      |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                 | Year: 2005-04                   | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                  |                                 |                      |                       |              |                      |
| EUT OPERATING MOD    | DES                              |                                 |                      |                       |              |                      |
| Modulated 40 kbps da | a rate                           |                                 |                      |                       |              |                      |
| DEVIATIONS FROM T    | EST STANDARD                     |                                 |                      |                       |              |                      |
| None                 |                                  |                                 |                      |                       |              |                      |
| REQUIREMENTS         |                                  |                                 |                      |                       |              |                      |
|                      | spurious emission outside of the | e authorized band is 20 dB down | from the fundamental |                       |              |                      |
| RESULTS              |                                  |                                 |                      |                       |              |                      |
| Pass                 |                                  |                                 |                      |                       |              |                      |
| SIGNATURE            |                                  |                                 |                      |                       |              |                      |
|                      | ATTU.K.P                         |                                 |                      |                       |              |                      |
| Tested By:           |                                  |                                 |                      |                       |              |                      |
| DESCRIPTION OF TES   |                                  |                                 |                      |                       |              |                      |
|                      | Antenna Condu                    | icted Spurious Em               | issions - High       | Channel 3GF           | łz-6.5GHz    |                      |

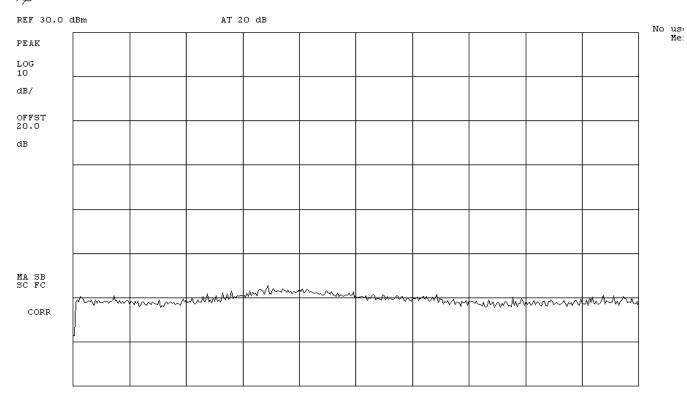
11:11:36 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

| EMC  | EMISSIONS                            | <b>DATA SHEE</b>     | Τ               |              | Rev BET<br>01/30/01 |
|--|--------------------------------------|----------------------|-----------------|--------------|---------------------|
| EUT: IM4   |                                      |                      |                 | Work Order:  | ITRM0098            |
| Serial Number: 19510523230   |                                      |                      |                 | Date:        | 08/26/05            |
| Customer: Intermec Technologies Cor  | rporation                            |                      |                 | Temperature: | 70 °F               |
| Attendees: Scott Holub   |                                      | Tested by: Greg F    | liemel          | Humidity:    | 43% RH              |
| Customer Ref. No.: None  |                                      | Power: 120 V,        | 60 Hz           | Job Site:    | OC03                |
| EST SPECIFICATIONS   |                                      |                      |                 |              |                     |
| Specification: 47 CFR 15.247(d)  | Year: 2005-04                        | Method: DA 00-       | 705, ANSI C63.4 | Year:        | 2003                |
|  |                                      |                      |                 |              |                     |
|  |                                      |                      |                 |              |                     |
|  |                                      |                      |                 |              |                     |
| OMMENTS  |                                      |                      |                 |              |                     |
|  |                                      |                      |                 |              |                     |
|  |                                      |                      |                 |              |                     |
| EUT OPERATING MODES  |                                      |                      |                 |              |                     |
|  |                                      |                      |                 |              |                     |
| Modulated 40 kbps data rate  |                                      |                      |                 |              |                     |
| Modulated 40 kbps data rate<br>DEVIATIONS FROM TEST STANDARD   |                                      |                      |                 |              |                     |
| Modulated 40 kbps data rate<br>DEVIATIONS FROM TEST STANDARD<br>None   |                                      |                      |                 |              |                     |
| Modulated 40 kbps data rate<br>DEVIATIONS FROM TEST STANDARD<br>None<br>REQUIREMENTS   | of the authorized band is 20 dB down | from the fundamental |                 |              |                     |
| Modulated 40 kbps data rate<br>DEVIATIONS FROM TEST STANDARD<br>None<br>REQUIREMENTS<br>Maximum level of any spurious emission outside   | of the authorized band is 20 dB down | from the fundamental |                 |              |                     |
| EUT OPERATING MODES Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD None REQUIREMENTS Maximum level of any spurious emission outside RESULTS Pass                        | of the authorized band is 20 dB down | from the fundamental |                 |              |                     |
| Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD Vone REQUIREMENTS Maximum level of any spurious emission outside RESULTS   | of the authorized band is 20 dB down | from the fundamental |                 |              |                     |
| Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD None REQUIREMENTS Maximum level of any spurious emission outside RESULTS Pass SIGNATURE                                  |                                      | from the fundamental |                 |              |                     |
| Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD None REQUIREMENTS Maximum level of any spurious emission outside RESULTS Pass  |                                      | from the fundamental |                 |              |                     |
| Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD None REQUIREMENTS Maximum level of any spurious emission outside RESULTS Pass BIGNATURE  Tested By:  DESCRIPTION OF TEST |                                      |                      |                 |              |                     |

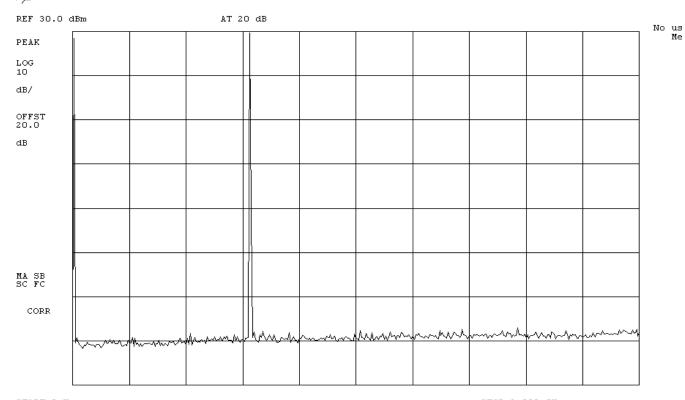
11:12:07 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| EMC  EUT: M4  Serial Number: 19510523230  Customer: Intermec Technologies Corporation  Attendees: Scott Holub  Customer Ref. No.: None  TEST SPECIFICATIONS  Specification: 47 CFR 15.247(d)  SAMPLE CALCULATIONS  FINANCIAN SAMPLE CALCULATIONS | Tested by: Greg Kiemel Power: 120 V, 60 Hz  Method: DA 00-705, ANSI C63.4 | Work Order: I  Date: 0  Temperature: 7  Humidity: 4  Job Site: C | 08/26/05<br>70 °F<br>43% RH<br>DC03 |
|--|---|--|-------------------------------------|
| Serial Number:   19510523230   Customer:   Internec Technologies Corporation   | Power: 120 V, 60 Hz   | Date: 0<br>Temperature: 7<br>Humidity: 4<br>Job Site: 0          | 08/26/05<br>70 °F<br>43% RH<br>DC03 |
| Customer: Intermec Technologies Corporation  Attendees: Scott Holub  Customer Ref. No.: None  TEST SPECIFICATIONS  Specification: 47 CFR 15.247(d)  Year: 2005-04  | Power: 120 V, 60 Hz   | Temperature: 7<br>Humidity: 4<br>Job Site: 0                     | 70 °F<br>13% RH<br>DC03             |
| Attendees: Scott Holub  Customer Ref. No.: None  TEST SPECIFICATIONS  Specification: 47 CFR 15.247(d)  Year: 2005-04   | Power: 120 V, 60 Hz   | Humidity: 4<br>Job Site: C                                       | 13% RH<br>DC03                      |
| Customer Ref. No.:         None           TEST SPECIFICATIONS         Year:           Specification:         47 CFR 15.247(d)           Year:         2005-04  | Power: 120 V, 60 Hz   | Job Site: C  | OC03                                |
| TEST SPECIFICATIONS   Specification:   47 CFR 15.247(d)   Year:   2005-04  |   |  |                                     |
|  | Method: DA 00-705, ANSI C63.4   | Year: 2  | 2003                                |
|  |   |  |                                     |
|  |   |  |                                     |
| EUT OPERATING MODES<br>Modulated 38 kbps data rate<br>DEVIATIONS FROM TEST STANDARD<br>None  |   |  |                                     |
| REQUIREMENTS   |   |  |                                     |
| Maximum level of any spurious emission outside of the authorized band is 20 dB down from the   | e fundamental   |  |                                     |
| RESULTSPass  |   |  |                                     |
| SIGNATURE  |   |  |                                     |
| Tested By:   |   |  |                                     |
| DESCRIPTION OF TEST  |   |  |                                     |
| Antenna Conducted Spurious Emiss   | sions - Low Channel 0MH   | Iz-3GHz  | •                                   |

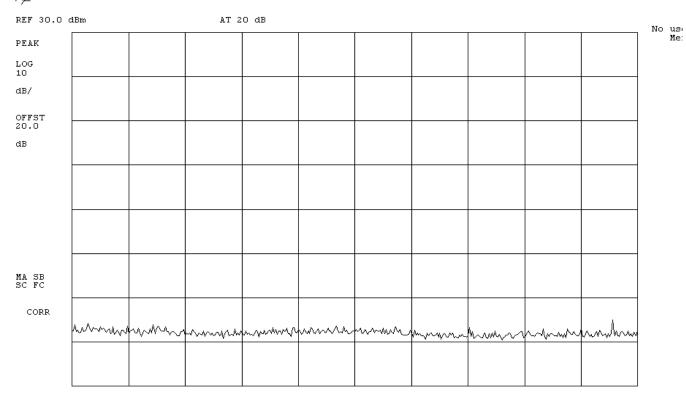
10:50:26 AUG 26, 2005



START O Hz STOP 2.900 GHz

| EMC   |                                  | <b>EMISSIONS</b>                  | DATA SH             | EET                   |              | Rev BET#<br>01/30/01 |
|---|----------------------------------|-----------------------------------|---------------------|-----------------------|--------------|----------------------|
| EUT:  | IM4                              |                                   |                     |                       | Work Order:  | ITRM0098             |
| Serial Number:  | 19510523230                      |                                   |                     |                       | Date:        | 08/26/05             |
| Customer:   | Intermec Technologies Corpora    | ation                             |                     |                       | Temperature: | 70 °F                |
| Attendees:  | Scott Holub                      |                                   | Tested by:          | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:  | None                             |                                   | Power:              | 120 V, 60 Hz          | Job Site:    | OC03                 |
| EST SPECIFICATION   | s                                |                                   |                     |                       |              |                      |
| Specification:  | 47 CFR 15.247(d)                 | Year: 2005-04                     | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| SAMPLE CALCULATION  | ONS                              |                                   |                     |                       |              |                      |
| EUT OPERATING MOD<br>Modulated 38 kbps da<br>DEVIATIONS FROM TE<br>None | ta rate                          |                                   |                     |                       |              |                      |
| REQUIREMENTS  |                                  |                                   |                     |                       |              |                      |
|   | spurious emission outside of the | e authorized band is 20 dB down f | rom the fundamental |                       |              |                      |
| RESULTS   |                                  |                                   |                     |                       |              |                      |
| Pass<br>SIGNATURE   |                                  |                                   |                     |                       |              |                      |
| Tested By:  | ADU.K.P                          |                                   |                     |                       |              |                      |
| DESCRIPTION OF TES  | ST .                             |                                   |                     |                       |              |                      |
|   |                                  | ucted Spurious Emi                | esions - Low        | Channel 3GH           | z-6 5GHz     |                      |
|   | Antenna Cond                     | ucteu opunious Liin               | SSICIIS - LUW       | Chambel 3011          | Z-0.5011Z    |                      |

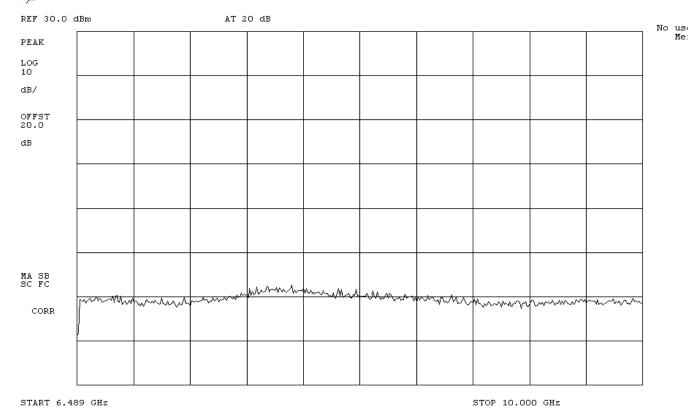
10:51:15 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

| NORTHWEST<br>EMC      |                                  | <b>EMISSIONS</b>                 | DATA SH             | EET                   |              | Rev BETA<br>01/30/01 |
|-----------------------|----------------------------------|----------------------------------|---------------------|-----------------------|--------------|----------------------|
| EUT:                  | IM4                              |                                  |                     |                       | Work Order:  | ITRM0098             |
| Serial Number:        |                                  |                                  |                     |                       |              | 08/26/05             |
| Customer:             | Intermec Technologies Corporat   | ion                              |                     |                       | Temperature: | 70 °F                |
| Attendees:            |                                  |                                  |                     | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:    |                                  |                                  | Power:              | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION    |                                  |                                  |                     |                       |              |                      |
| Specification:        | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS              |                                  |                                  |                     |                       |              |                      |
| EUT OPERATING MOD     |                                  |                                  |                     |                       |              |                      |
| Modulated 38 kbps dat |                                  |                                  |                     |                       |              |                      |
| DEVIATIONS FROM TE    | ST STANDARD                      |                                  |                     |                       |              |                      |
| REQUIREMENTS          |                                  |                                  |                     |                       |              |                      |
|                       | enurious amission outside of the | authorized band is 20 dB down f  | rom the fundamental |                       |              |                      |
| RESULTS               | spurious emission outside or the | addionized band is 20 dB down in | Tom the fundamental |                       |              |                      |
| Pass                  |                                  |                                  |                     |                       |              |                      |
| SIGNATURE             |                                  |                                  |                     |                       |              |                      |
| Tested By:            | ADU.KIP                          |                                  |                     |                       |              |                      |
| DESCRIPTION OF TES    | т                                |                                  |                     |                       |              |                      |
|                       | Antenna Condu                    | cted Spurious Emis               | ssions - Low        | Channel 6.5G          | Hz-10GHz     |                      |

10:52:05 AUG 26, 2005

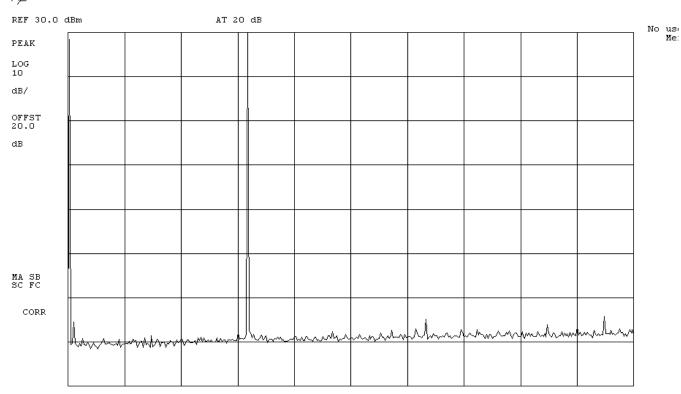


START 6.489 GHz

SWP 1.05 sec #RES BW 100 kHz #VBW 300 kHz

| NORTHWEST<br>EMC   |                                  | <b>EMISSIONS</b> I               | DATA SH            | EET                   |              | Rev BETA<br>01/30/01 |
|--|----------------------------------|----------------------------------|--------------------|-----------------------|--------------|----------------------|
| EUT:   | IM4                              |                                  |                    |                       | Work Order:  | ITRM0098             |
| Serial Number:   | 19510523230                      |                                  |                    |                       | Date:        | 08/26/05             |
| Customer:  | Intermec Technologies Corporati  | on                               |                    |                       | Temperature: | 70 °F                |
| Attendees:   | Scott Holub                      |                                  | Tested by:         | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:   |                                  |                                  | Power:             | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   | s                                |                                  |                    |                       |              |                      |
| Specification:   | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method:            | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| UT OPERATING MOI<br>lodulated 38 kbps da<br>EVIATIONS FROM T | ta rate                          |                                  |                    |                       |              |                      |
| None   |                                  |                                  |                    |                       |              |                      |
| REQUIREMENTS   |                                  |                                  |                    |                       |              |                      |
| Maximum level of any   | spurious emission outside of the | authorized band is 20 dB down fr | om the fundamental |                       |              |                      |
| RESULTS  |                                  |                                  |                    |                       |              |                      |
| Pass   |                                  |                                  |                    |                       |              |                      |
| SIGNATURE  |                                  |                                  |                    |                       |              |                      |
| Tested By:   | ADU.KIP                          |                                  |                    |                       |              |                      |
| DESCRIPTION OF TES   | ST                               |                                  |                    |                       |              |                      |
|  | Antenna Cond                     | ucted Spurious Em                | issions - Mid      | Channel 0M            | Hz-3GHz      | •                    |

10:53:19 AUG 26, 2005

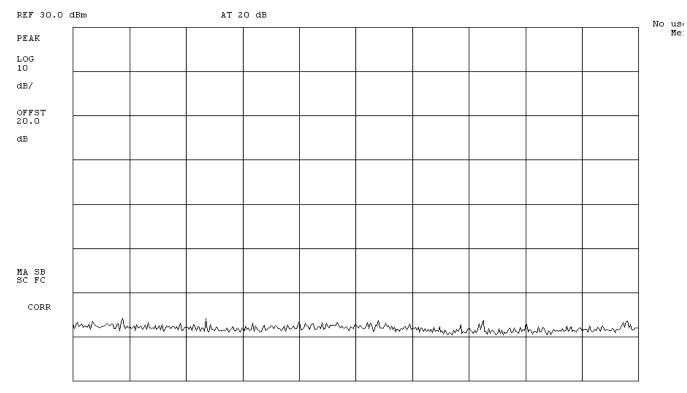


START O Hz STOP 2.900 GHz

SWP 870 msec

| NORTHWEST<br>EMC     |                                  | <b>EMISSIONS</b>                | DATA SH              | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|----------------------------------|---------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                              |                                 |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:       |                                  |                                 |                      |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corpora    | tion                            | -                    |                       | Temperature: | 70 °F                |
|                      | Scott Holub                      |                                 |                      | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:   |                                  |                                 | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                  |                                 |                      |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                 | Year: 2005-04                   | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                  |                                 |                      |                       |              |                      |
| EUT OPERATING MOD    | DES                              |                                 |                      |                       |              |                      |
| Modulated 38 kbps da | ta rate                          |                                 |                      |                       |              |                      |
| DEVIATIONS FROM TI   | EST STANDARD                     |                                 |                      |                       |              |                      |
| None                 |                                  |                                 |                      |                       |              |                      |
| REQUIREMENTS         |                                  |                                 |                      |                       |              |                      |
|                      | spurious emission outside of the | e authorized band is 20 dB down | from the fundamental |                       |              |                      |
| RESULTS              |                                  |                                 |                      |                       |              |                      |
| Pass                 |                                  |                                 |                      |                       |              |                      |
| SIGNATURE            |                                  |                                 |                      |                       |              |                      |
| T 1 D.               | ADU.K.P                          |                                 |                      |                       |              |                      |
| Tested By:           | * *                              |                                 |                      |                       |              |                      |
| DESCRIPTION OF TES   |                                  |                                 |                      |                       |              |                      |
|                      | Antenna Cond                     | ucted Spurious Em               | issions - Mid        | Channel 3GH           | z-6.5GHz     |                      |

10:54:07 AUG 26, 2005



#VBW 300 kHz

START 2.890 GHz

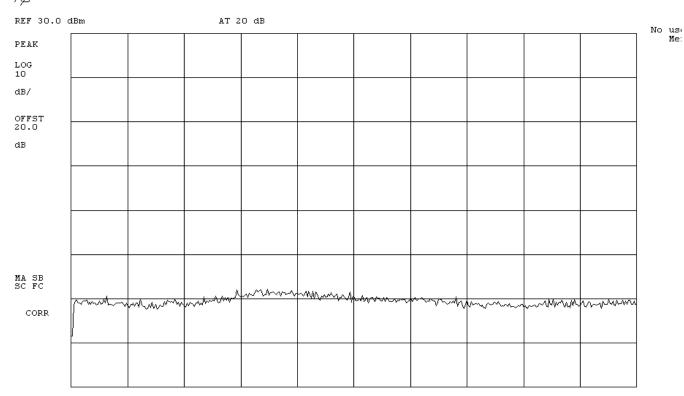
#RES BW 100 kHz

STOP 6.490 GHz

SWP 1.08 sec

| NORTHWEST<br>EMC     |                                  | <b>EMISSIONS</b>                 | DATA SH             | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|----------------------------------|----------------------------------|---------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                              |                                  |                     |                       | Work Order:  | ITRM0098             |
| Serial Number:       |                                  |                                  |                     |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corporat   | ion                              |                     |                       | Temperature: | 70 °F                |
| Attendees:           | Scott Holub                      |                                  |                     | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:   | None                             |                                  | Power:              | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                  |                                  |                     |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                  |                                  |                     |                       |              |                      |
| EUT OPERATING MOD    |                                  |                                  |                     |                       |              |                      |
| Modulated 38 kbps da |                                  |                                  |                     |                       |              |                      |
| DEVIATIONS FROM TE   | EST STANDARD                     |                                  |                     |                       |              |                      |
| None                 |                                  |                                  |                     |                       |              |                      |
| REQUIREMENTS         | courious amission outside of the | authorized band is 20 dB down fr | om the fundamental  |                       |              |                      |
| RESULTS              | sparious emission outside of the | authorized band is 20 dB down in | oni the fundamental |                       |              |                      |
| Pass                 |                                  |                                  |                     |                       |              |                      |
| SIGNATURE            |                                  |                                  |                     |                       |              |                      |
| Tested By:           | ADU.KIP                          |                                  |                     |                       |              |                      |
| DESCRIPTION OF TES   | T                                |                                  |                     |                       |              |                      |
|                      | Antenna Condu                    | cted Spurious Emis               | ssions - Mid (      | Channel 6.5G          | Hz-10GHz     |                      |

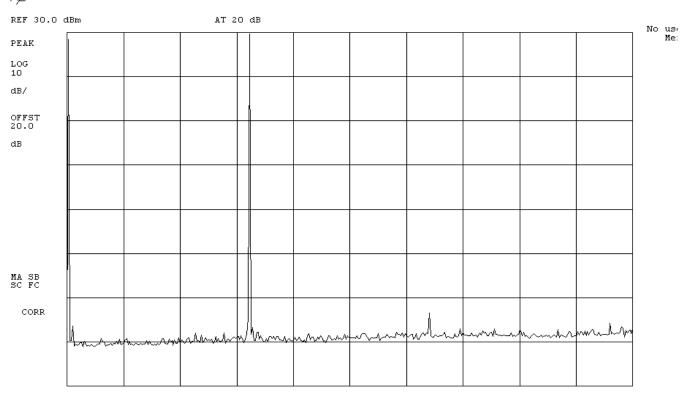
10:55:01 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

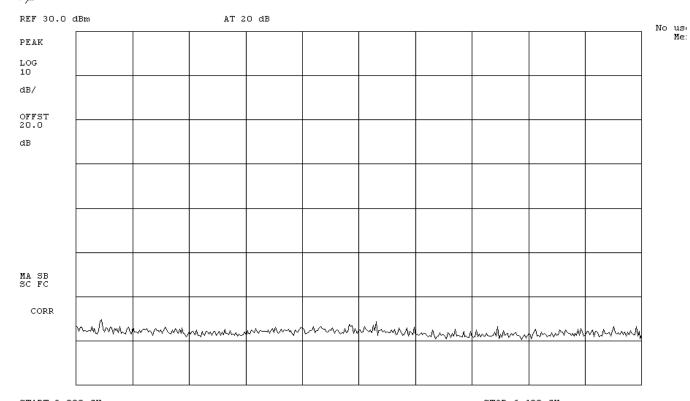
| EMC   | <b>EMISSIONS</b>                  | DATA SH              | EET                   |              | Rev BET.<br>01/30/01 |
|---|-----------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT: IM4  |                                   |                      |                       | Work Order:  | ITRM0098             |
| Serial Number: 19510523230                        |                                   |                      |                       | Date:        | 08/26/05             |
| Customer: Intermec Technologies Corpo             | oration                           |                      |                       | Temperature: | 70 °F                |
| Attendees: Scott Holub                            |                                   | Tested by:           | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.: None                           |                                   | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| EST SPECIFICATIONS                                |                                   |                      |                       |              |                      |
| Specification: 47 CFR 15.247(d)                   | Year: 2005-04                     | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
|   |                                   |                      |                       |              |                      |
|   |                                   |                      |                       |              |                      |
|   |                                   |                      |                       |              |                      |
| OMMENTS   |                                   |                      |                       |              |                      |
|   |                                   |                      |                       |              |                      |
| UT OPERATING MODES                                |                                   |                      |                       |              |                      |
| lodulated 38 kbps data rate                       |                                   |                      |                       |              |                      |
| EVIATIONS FROM TEST STANDARD                      |                                   |                      |                       |              |                      |
| one   |                                   |                      |                       |              |                      |
| EQUIREMENTS                                       |                                   |                      |                       |              |                      |
| laximum level of any spurious emission outside of | the authorized band is 20 dB down | from the fundamental |                       |              |                      |
| ESULTS  |                                   |                      |                       |              |                      |
| ass   |                                   |                      |                       |              |                      |
| IGNATURE  |                                   |                      |                       |              |                      |
| AMU.Kip   |                                   |                      |                       |              |                      |
| Tested By:  |                                   |                      |                       |              |                      |
| ESCRIPTION OF TEST                                |                                   |                      |                       |              |                      |
| Antenna Con                                       |                                   |                      |                       |              |                      |

11:01:20 AUG 26, 2005



| NORTHWEST<br>EMC                          | EMISSIONS I   | DATA SH            | EET                   |              | Rev BETA<br>01/30/01 |
|---|---|--------------------|-----------------------|--------------|----------------------|
| EUT:                                      | IM4   |                    |                       | Work Order:  | ITRM0098             |
| Serial Number:                            | 19510523230   |                    |                       | Date:        | 08/26/05             |
| Customer:                                 | Intermec Technologies Corporation                                   |                    |                       | Temperature: | 70 °F                |
| Attendees:                                | Scott Holub   | Tested by:         | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:                        | None  | Power:             | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION                        | S   |                    |                       |              |                      |
| Specification:                            | 47 CFR 15.247(d) Year: 2005-04                                      | Method:            | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| EUT OPERATING MOD<br>Modulated 38 kbps da | ta rate   |                    |                       |              |                      |
| DEVIATIONS FROM TI                        | EST STANDARD  |                    |                       |              |                      |
| REQUIREMENTS                              |   |                    |                       |              |                      |
| Maximum level of any                      | spurious emission outside of the authorized band is 20 dB down from | om the fundamental |                       |              |                      |
| RESULTS                                   |   |                    |                       |              |                      |
| Pass                                      |   |                    |                       |              |                      |
| SIGNATURE                                 |   |                    |                       |              |                      |
| Tested By:                                | ADU.KIP   |                    |                       |              |                      |
| DESCRIPTION OF TES                        | ST .  |                    |                       |              |                      |
|   | Antenna Conducted Spurious Emis                                     | ssions - High      | <b>Channel 3GH</b>    | Hz-6.5GHz    |                      |

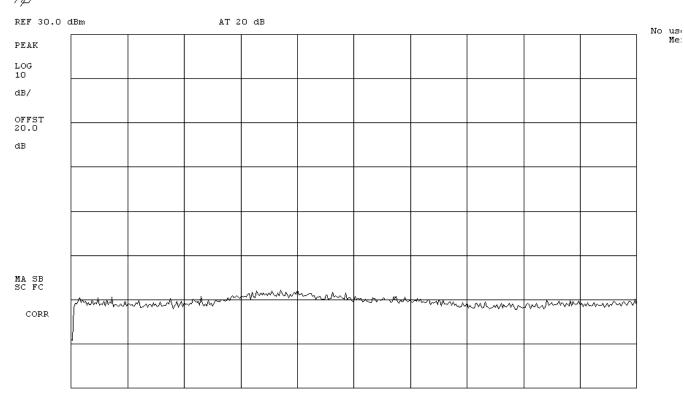
11:02:02 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

|   |  | <b>EMISSIONS</b>                  | DATA SH              | EET                   |              | Rev BET/<br>01/30/01 |
|---|--|-----------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:  | IM4  |                                   |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:  | 19510523230  |                                   |                      |                       | Date:        | 08/26/05             |
| Customer:   | Intermec Technologies Corpo                        | ration                            |                      |                       | Temperature: | 70 °F                |
| Attendees:  | Scott Holub  |                                   | Tested by:           | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:  | None   |                                   | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| EST SPECIFICATION   | IS   |                                   |                      |                       |              |                      |
| Specification:  | 47 CFR 15.247(d)                                   | Year: 2005-04                     | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| AMPLE CALCULATION   | ONS  |                                   |                      |                       |              |                      |
| EUT OPERATING MOD   | DES .  |                                   |                      |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None   | ta rate  |                                   |                      |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS   | ta rate<br>EST STANDARD                            | the outbasing band is 20 dB dawn  | from the fundamental |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS<br>Maximum level of any                                 | ta rate<br>EST STANDARD                            | the authorized band is 20 dB down | from the fundamental |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS<br>Maximum level of any<br>RESULTS                      | ta rate<br>EST STANDARD                            | the authorized band is 20 dB down | from the fundamental |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS   | ta rate<br>EST STANDARD                            | the authorized band is 20 dB down | from the fundamental |                       |              |                      |
| Modulated 38 kbps dat<br>DEVIATIONS FROM TE<br>None<br>REQUIREMENTS<br>Maximum level of any<br>RESULTS<br>Pass              | ta rate<br>EST STANDARD                            | the authorized band is 20 dB down | from the fundamental |                       |              |                      |
| dodulated 38 kbps dat<br>DEVIATIONS FROM TE<br>lone<br>REQUIREMENTS<br>Maximum level of any<br>RESULTS<br>Pass<br>RIGNATURE | ta rate EST STANDARD  spurious emission outside of | the authorized band is 20 dB down | from the fundamental |                       |              |                      |

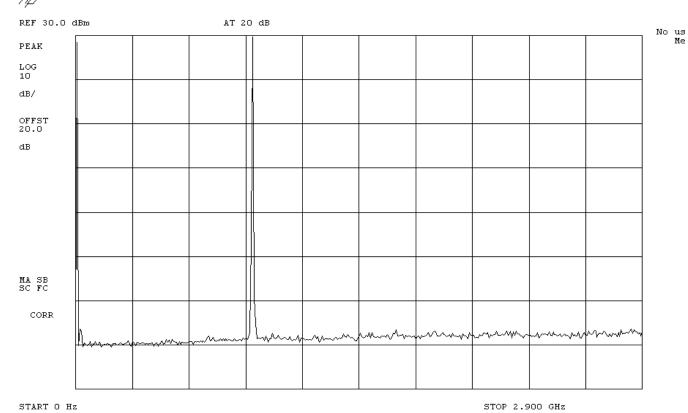
11:02:47 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| NORTHWEST<br>EMC                            |                                    | <b>EMISSIONS</b>                   | DATA SHEET                    |              | Rev BETA<br>01/30/01 |
|---|------------------------------------|------------------------------------|-------------------------------|--------------|----------------------|
| EUT:  | IM4                                |                                    |                               | Work Order:  | ITRM0098             |
| Serial Number:                              | 19510523230                        |                                    |                               | Date:        | 08/26/05             |
| Customer:                                   | Intermec Technologies Corporation  | on                                 |                               | Temperature: | 70 °F                |
| Attendees:                                  | Scott Holub                        |                                    | Tested by: Greg Kiemel        | Humidity:    | 43% RH               |
| Customer Ref. No.:                          | None                               |                                    | Power: 120 V, 60 Hz           | Job Site:    | OC03                 |
| TEST SPECIFICATIONS                         | ;                                  |                                    |                               |              |                      |
| Specification:                              | 47 CFR 15.247(d)                   | Year: 2005-04                      | Method: DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| SAMPLE CALCULATIO                           | NS                                 |                                    |                               |              |                      |
| EUT OPERATING MOD<br>Modulated 32 kbps data | a rate                             |                                    |                               |              |                      |
| DEVIATIONS FROM TE<br>None                  | SISIANDARD                         |                                    |                               |              |                      |
| REQUIREMENTS                                |                                    |                                    |                               |              |                      |
| Maximum level of any s                      | spurious emission outside of the a | authorized band is 20 dB down from | the fundamental               |              |                      |
| RESULTS                                     |                                    |                                    |                               |              |                      |
| Pass  |                                    |                                    |                               |              |                      |
| SIGNATURE                                   |                                    |                                    |                               |              |                      |
| Tested By:                                  | ATU.K.P                            |                                    |                               |              |                      |
| DESCRIPTION OF TEST                         | Г                                  |                                    |                               |              |                      |
|   | Antenna Cond                       | ducted Spurious Em                 | issions - Low Channel 0MI     | Hz-3GHz      |                      |

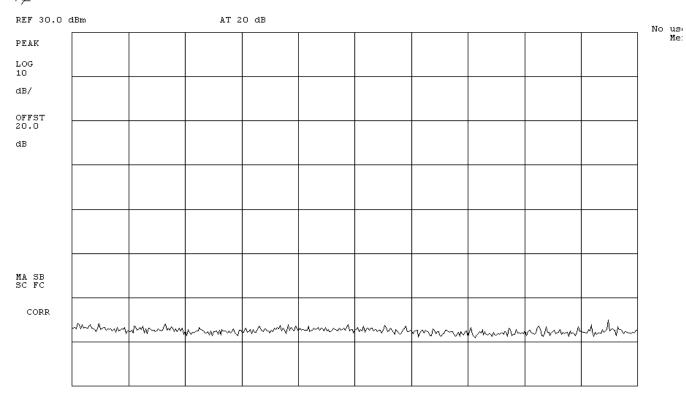
10:35:40 AUG 26, 2005



SWP 870 msec

| NORTHWEST<br>EMC      |                                  | <b>EMISSIONS</b> I                 | DATA SHEET                                     |              | Rev BETA<br>01/30/01 |
|-----------------------|----------------------------------|------------------------------------|--|--------------|----------------------|
| EUT:                  | IM4                              |                                    |  | Work Order:  | ITRM0098             |
| Serial Number:        | 19510523230                      |                                    |  | Date:        | 08/26/05             |
| Customer:             | Intermec Technologies Corporat   | ion                                | <u>,                                      </u> | Temperature: | 70 °F                |
| Attendees:            | Scott Holub                      |                                    | Tested by: Greg Kiemel                         | Humidity:    | 43% RH               |
| Customer Ref. No.:    |                                  |                                    | Power: 120 V, 60 Hz                            | Job Site:    | OC03                 |
| TEST SPECIFICATION    |                                  |                                    |  |              |                      |
| Specification:        | 47 CFR 15.247(d)                 | Year: 2005-04                      | Method: DA 00-705, ANSI C63.4                  | Year:        | 2003                 |
| COMMENTS              |                                  |                                    |  |              |                      |
| OWINENTS              |                                  |                                    |  |              |                      |
| EUT OPERATING MOD     |                                  |                                    |  |              |                      |
| Modulated 32 kbps dat |                                  |                                    |  |              |                      |
| DEVIATIONS FROM TE    | EST STANDARD                     |                                    |  |              |                      |
| None                  |                                  |                                    |  |              |                      |
| REQUIREMENTS          |                                  |                                    |  |              |                      |
|                       | spurious emission outside of the | authorized band is 20 dB down from | om the fundamental                             |              |                      |
| RESULTS               |                                  |                                    |  |              |                      |
| Pass                  |                                  |                                    |  |              |                      |
| SIGNATURE  Tested By: | ADU.KIP                          |                                    |  |              |                      |
| DESCRIPTION OF TES    |                                  |                                    |  |              |                      |
|                       | Antenna Condu                    | cted Spurious Emis                 | ssions - Low Channel 3GH                       | łz-6.5GHz    |                      |

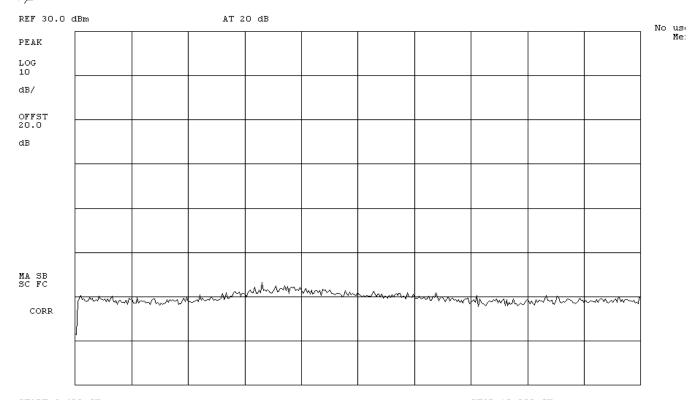
10:37:39 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

| ЕМС   |                                  | <b>EMISSIONS</b>                  | DATA SH             | EET                   |              | Rev BET/<br>01/30/01 |
|---|----------------------------------|-----------------------------------|---------------------|-----------------------|--------------|----------------------|
| EUT:  | IM4                              |                                   |                     |                       | Work Order:  | ITRM0098             |
| Serial Number:  | 19510523230                      |                                   |                     |                       | Date:        | 08/26/05             |
| Customer:   | Intermec Technologies Corpora    | tion                              |                     |                       | Temperature: | 70 °F                |
| Attendees:  | Scott Holub                      |                                   | Tested by:          | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:  | None                             |                                   | Power:              | 120 V, 60 Hz          | Job Site:    | OC03                 |
| EST SPECIFICATION   | s                                |                                   |                     |                       |              |                      |
| Specification:  | 47 CFR 15.247(d)                 | Year: 2005-04                     | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| AMPLE CALCULATION   | DNS                              |                                   |                     |                       |              |                      |
| EUT OPERATING MOD<br>Modulated 32 kbps da<br>DEVIATIONS FROM TE<br>None | ta rate                          |                                   |                     |                       |              |                      |
| REQUIREMENTS  |                                  |                                   |                     |                       |              |                      |
|   | spurious emission outside of the | e authorized band is 20 dB down f | rom the fundamental |                       |              |                      |
| RESULTS   |                                  |                                   |                     |                       |              |                      |
| Pass<br>SIGNATURE   |                                  |                                   |                     |                       |              |                      |
| JONATORE  | 111/20                           |                                   |                     |                       |              |                      |
| Tested By:  | ADU.KIP                          |                                   |                     |                       |              |                      |
| Tested By:  |                                  |                                   |                     |                       |              |                      |

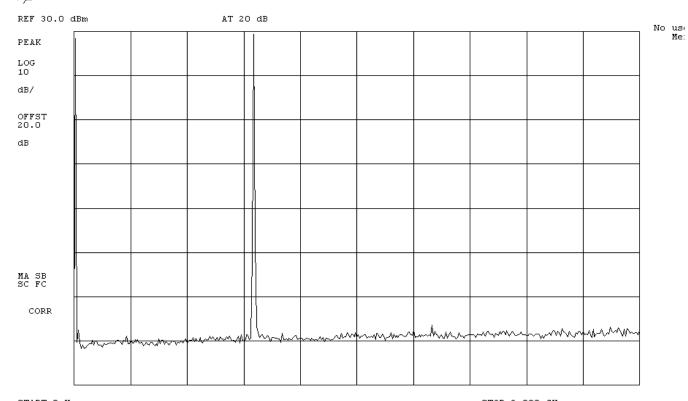
10:39:47 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| NORTHWEST<br>EMC     |                                  | <b>EMISSIONS</b>                | DATA SH              | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|----------------------------------|---------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                              |                                 |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:       |                                  |                                 |                      |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corporat   | tion                            |                      |                       | Temperature: | 70 °F                |
|                      | Scott Holub                      |                                 |                      | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:   |                                  |                                 | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                  |                                 |                      |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                 | Year: 2005-04                   | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                  |                                 |                      |                       |              |                      |
| COMMENTS             |                                  |                                 |                      |                       |              |                      |
| EUT OPERATING MOD    | DES                              |                                 |                      |                       |              |                      |
| Modulated 32 kbps da | ta rate                          |                                 |                      |                       |              |                      |
| DEVIATIONS FROM T    | EST STANDARD                     |                                 |                      |                       |              |                      |
| None                 |                                  |                                 |                      |                       |              |                      |
| REQUIREMENTS         |                                  |                                 |                      |                       |              |                      |
|                      | spurious emission outside of the | e authorized band is 20 dB down | from the fundamental |                       |              |                      |
| RESULTS              |                                  |                                 |                      |                       |              |                      |
| Pass                 |                                  |                                 |                      |                       |              |                      |
| SIGNATURE            |                                  |                                 |                      |                       |              |                      |
| Tested By:           | ADU.K.P                          |                                 |                      |                       |              |                      |
| * 1                  | •                                |                                 |                      |                       |              |                      |
| DESCRIPTION OF TES   |                                  |                                 |                      |                       |              |                      |
|                      | Antenna Conc                     | lucted Spurious Er              | nissions - Mid       | Channel 0MI           | Hz-3GHz      |                      |

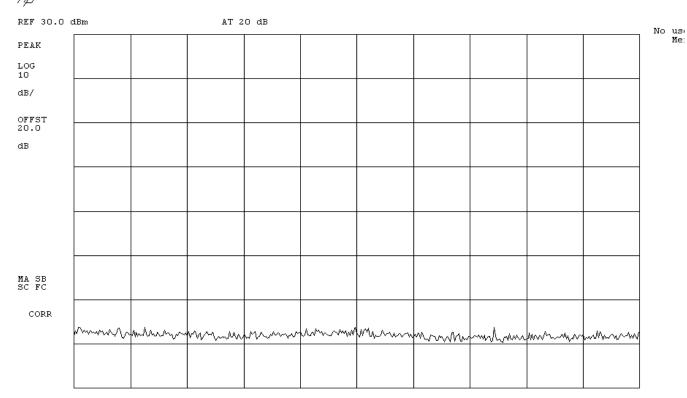
10:41:23 AUG 26, 2005



START O Hz STOP 2.900 GHz

| NORTHWEST<br>EMC           |                                   | <b>EMISSIONS</b> I               | DATA SH            | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------------|-----------------------------------|----------------------------------|--------------------|-----------------------|--------------|----------------------|
| EUT:                       | IM4                               |                                  |                    |                       | Work Order:  | ITRM0098             |
| Serial Number:             | 19510523230                       |                                  |                    |                       | Date:        | 08/26/05             |
| Customer:                  | Intermec Technologies Corporation | on                               |                    |                       | Temperature: | 70 °F                |
| Attendees:                 | Scott Holub                       |                                  |                    | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:         |                                   |                                  | Power:             | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION         |                                   |                                  |                    |                       |              |                      |
| Specification:             | 47 CFR 15.247(d)                  | Year: 2005-04                    | Method:            | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| UT OPERATING MOI           | ta rate                           |                                  |                    |                       |              |                      |
| DEVIATIONS FROM TI<br>None | EST STANDARD                      |                                  |                    |                       |              |                      |
| REQUIREMENTS               |                                   |                                  |                    |                       |              |                      |
| Maximum level of any       | spurious emission outside of the  | authorized band is 20 dB down fr | om the fundamental |                       |              |                      |
| RESULTS                    |                                   |                                  |                    |                       |              |                      |
| Pass                       |                                   |                                  |                    |                       |              |                      |
| SIGNATURE                  |                                   |                                  |                    |                       |              |                      |
| Tested By:                 | ATU. KIP                          |                                  |                    |                       |              |                      |
| DESCRIPTION OF TES         | ST                                |                                  |                    |                       |              |                      |
| · ·                        | Antenna Condu                     | cted Spurious Emi                | ssions - Mid       | Channel 3GH           | lz-6.5GHz    |                      |

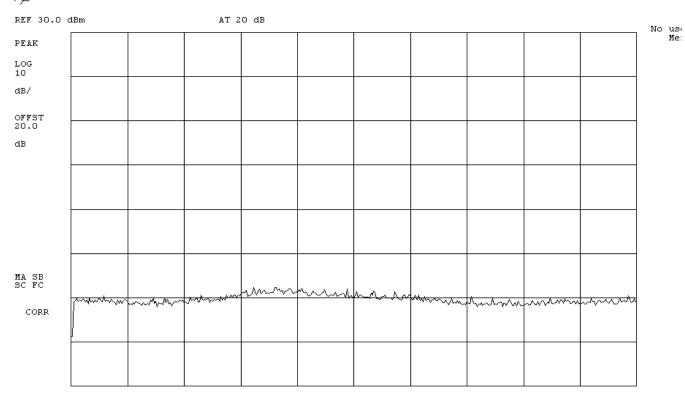
10:42:07 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

| NORTHWEST<br>EMC     |                                 | <b>EMISSIONS</b>                | DATA SH              | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|---------------------------------|---------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                             |                                 |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:       |                                 |                                 |                      |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corpora   | tion                            |                      |                       | Temperature: | 70 °F                |
|                      | Scott Holub                     |                                 |                      | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:   |                                 |                                 | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                 |                                 |                      |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                | Year: 2005-04                   | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                 |                                 |                      |                       |              |                      |
| EUT OPERATING MOD    | DES                             |                                 |                      |                       |              |                      |
| Modulated 32 kbps da | ta rate                         |                                 |                      |                       |              |                      |
| DEVIATIONS FROM TE   | EST STANDARD                    |                                 |                      |                       |              |                      |
| None                 |                                 |                                 |                      |                       |              |                      |
| REQUIREMENTS         |                                 |                                 |                      |                       |              |                      |
| Maximum level of any | spurious emission outside of th | e authorized band is 20 dB down | from the fundamental |                       |              |                      |
| RESULTS              |                                 |                                 |                      |                       |              |                      |
| Pass                 |                                 |                                 |                      |                       |              |                      |
| SIGNATURE            |                                 |                                 |                      |                       |              |                      |
| Tested By:           | ADU.K.P                         |                                 |                      |                       |              |                      |
| Tested By:           | •                               |                                 |                      |                       |              |                      |
| DESCRIPTION OF TES   |                                 |                                 |                      |                       |              |                      |
|                      | Antenna Condu                   | ucted Spurious Emi              | issions - Mid (      | Channel 6.5G          | Hz-10GHz     |                      |

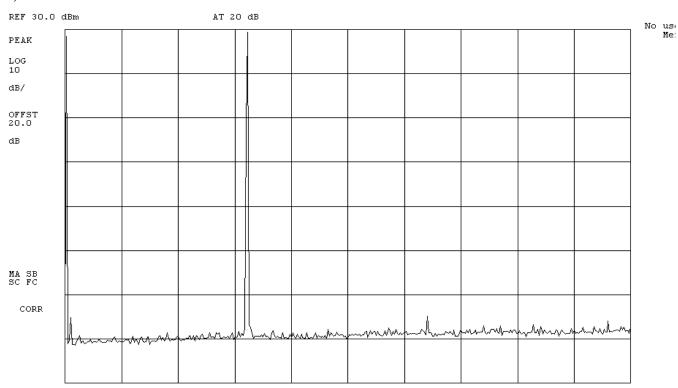
10:43:06 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

| NORTHWEST<br>EMC                         |                                  | <b>EMISSIONS</b>              | DATA SH              | EET                   |              | Rev BETA<br>01/30/01 |
|--|----------------------------------|-------------------------------|----------------------|-----------------------|--------------|----------------------|
| EUT:                                     | IM4                              |                               |                      |                       | Work Order:  | ITRM0098             |
| Serial Number:                           | 19510523230                      |                               |                      |                       | Date:        | 08/26/05             |
| Customer:                                | Intermec Technologies Corporati  | on                            |                      |                       | Temperature: | 70 °F                |
| Attendees:                               | Scott Holub                      |                               | Tested by:           | Greg Kiemel           | Humidity:    | 43% RH               |
| Customer Ref. No.:                       |                                  |                               | Power:               | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION                       | NS .                             |                               |                      |                       |              |                      |
| Specification:                           | 47 CFR 15.247(d)                 | Year: 2005-04                 | Method:              | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| UT OPERATING MOI<br>lodulated 32 kbps da | nta rate                         |                               |                      |                       |              |                      |
| DEVIATIONS FROM TI<br>None               | EST STANDARD                     |                               |                      |                       |              |                      |
| REQUIREMENTS                             |                                  |                               |                      |                       |              |                      |
|  | spurious emission outside of the | authorized band is 20 dB down | from the fundamental |                       |              |                      |
| RESULTS                                  |                                  |                               |                      |                       |              |                      |
| Pass                                     |                                  |                               |                      |                       |              |                      |
| SIGNATURE                                |                                  |                               |                      |                       |              |                      |
| Tested By:                               | ADU.K.P                          |                               |                      |                       |              |                      |
|  |                                  |                               |                      |                       |              |                      |
| DESCRIPTION OF TES                       | ST                               |                               |                      |                       |              |                      |

10:44:21 AUG 26, 2005

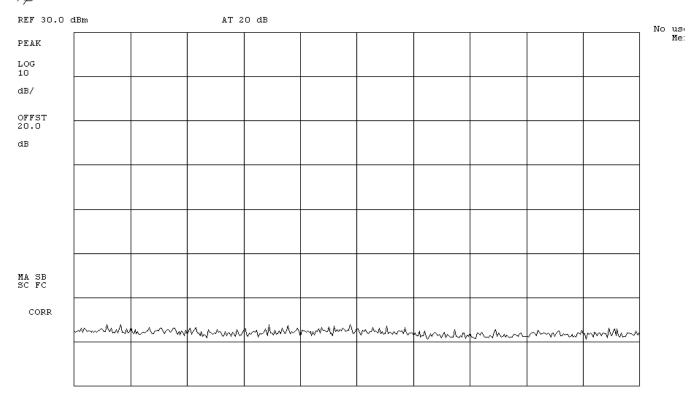


START O Hz STOP 2.900 GHz

SWP 870 msec

| EMC EMISSIONS DATA SHEET                                   |   |                     |                       |              |          |  |  |
|--|---|---------------------|-----------------------|--------------|----------|--|--|
| EUT: IM4   |   |                     |                       | Work Order:  | ITRM0098 |  |  |
| Serial Number: 19510523230                                 |   |                     |                       | Date:        | 08/26/05 |  |  |
| Customer: Intermec Technologies Corp                       | oration   |                     |                       | Temperature: | 70 °F    |  |  |
| Attendees: Scott Holub                                     |   | Tested by:          | Greg Kiemel           | Humidity:    | 43% RH   |  |  |
| Customer Ref. No.: None                                    |   | Power:              | 120 V, 60 Hz          | Job Site:    | OC03     |  |  |
| TEST SPECIFICATIONS  |   |                     |                       |              |          |  |  |
| Specification: 47 CFR 15.247(d)                            | Year: 2005-04   | Method:             | DA 00-705, ANSI C63.4 | Year:        | 2003     |  |  |
| COMMENTS  EUT OPERATING MODES  Modulated 32 kbps data rate |   |                     |                       |              |          |  |  |
| DEVIATIONS FROM TEST STANDARD                              |   |                     |                       |              |          |  |  |
| None   |   |                     |                       |              |          |  |  |
| REQUIREMENTS   |   |                     |                       |              |          |  |  |
| Maximum level of any spurious emission outside o           | f the authorized band is 20 dB down f                           | rom the fundamental |                       |              |          |  |  |
| RESULTS  |   |                     |                       |              |          |  |  |
| Pass   |   |                     |                       |              |          |  |  |
| SIGNATURE  Tested By:                                      |   |                     |                       |              |          |  |  |
| DESCRIPTION OF TEST  |   |                     |                       |              |          |  |  |
| Antenna Con  | Antenna Conducted Spurious Emissions - High Channel 3GHz-6.5GHz |                     |                       |              |          |  |  |

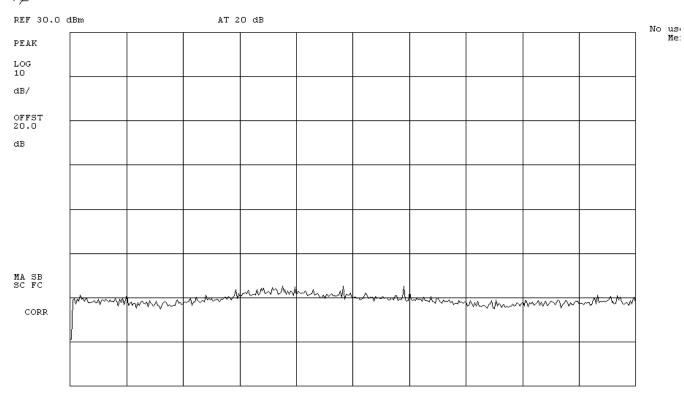
10:45:04 AUG 26, 2005



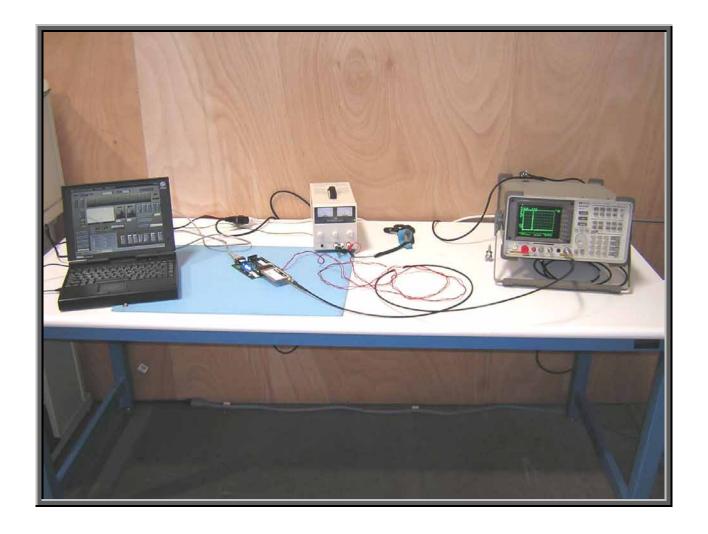
START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

| NORTHWEST<br>EMC     |                                  | <b>EMISSIONS</b>                 | DATA SH            | EET                   |              | Rev BETA<br>01/30/01 |
|----------------------|----------------------------------|----------------------------------|--------------------|-----------------------|--------------|----------------------|
| EUT:                 | IM4                              |                                  |                    |                       | Work Order:  | ITRM0098             |
| Serial Number:       | 19510523230                      |                                  |                    |                       |              | 08/26/05             |
| Customer:            | Intermec Technologies Corporat   | ion                              |                    |                       | Temperature: | 70 °F                |
|                      | Scott Holub                      |                                  |                    | Greg Kiemel           | Humidity:    |                      |
| Customer Ref. No.:   |                                  |                                  | Power:             | 120 V, 60 Hz          | Job Site:    | OC03                 |
| TEST SPECIFICATION   |                                  |                                  |                    |                       |              |                      |
| Specification:       | 47 CFR 15.247(d)                 | Year: 2005-04                    | Method:            | DA 00-705, ANSI C63.4 | Year:        | 2003                 |
| COMMENTS             |                                  |                                  |                    |                       |              |                      |
| UT OPERATING MOD     |                                  |                                  |                    |                       |              |                      |
| Modulated 32 kbps da | ta rate                          |                                  |                    |                       |              |                      |
| DEVIATIONS FROM T    | EST STANDARD                     |                                  |                    |                       |              |                      |
| None                 |                                  |                                  |                    |                       |              |                      |
| REQUIREMENTS         |                                  |                                  |                    |                       |              |                      |
|                      | spurious emission outside of the | authorized band is 20 dB down fr | om the fundamental |                       |              |                      |
| RESULTS              |                                  |                                  |                    |                       |              |                      |
| Pass<br>SIGNATURE    |                                  |                                  |                    |                       |              |                      |
| Tested By:           | ADU.KIP                          |                                  |                    |                       |              |                      |
| DESCRIPTION OF TES   | ST T                             |                                  |                    |                       |              |                      |
|                      | Antenna Conduc                   | cted Spurious Emis               | sions - High       | Channel 6.5G          | Hz-10GHz     |                      |

10:47:47 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz



### **Radiated Emissions**

Revision 1/4/2005

#### **Justification**

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

#### **Operating Modes Investigated:**

Receive Mode

| Power Input Settings Inv | vestigated:       |
|--------------------------|-------------------|
| 120 VAC, 60 Hz           |                   |
| Input Power Setting use  | d for Final Test: |
| 120 VAC, 60 Hz           |                   |

| Frequency Range Investigated |        |                |      |  |  |
|------------------------------|--------|----------------|------|--|--|
| Start Frequency              | 30 MHz | Stop Frequency | 1GHz |  |  |

| Software\Firmware Applied During Test   |                               |         |                |  |  |  |
|---|-------------------------------|---------|----------------|--|--|--|
| Operating system  | Windows                       | Version | XP             |  |  |  |
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |
| Description   |                               |         |                |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |  |  |

| EUT and Peripherals in Test Setup Boundary |                                   |                   |               |  |  |  |  |
|--|-----------------------------------|-------------------|---------------|--|--|--|--|
| Description                                | Manufacturer                      | Model/Part Number | Serial Number |  |  |  |  |
| EUT-RFID Reader                            | Intermec Technologies Corporation | IM4               | 19510523230   |  |  |  |  |
| Test Fixture                               | Intermec Technologies Corporation | Interrogator      | None          |  |  |  |  |
| Power Supply for Test Fixture              | MAGTECH                           | SPU24-104         | 023436980448  |  |  |  |  |

| Remote Equipment Outside of Test Setup Boundary  |              |                   |               |  |  |
|--|--------------|-------------------|---------------|--|--|
| Description  | Manufacturer | Model/Part Number | Serial Number |  |  |
| Notebook PC  | Dell         | TS30GI            | K8175A        |  |  |
| Power Supply for Notebook PC   | Dell         | TSA8              | None          |  |  |
| Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary. |              |                   |               |  |  |

| Cables     |               |                    |             |   |              |
|------------|---------------|--------------------|-------------|---|--------------|
| Cable Type | Shield        | Length (m)         | Ferrite     | Connection 1                                | Connection 2 |
| Serial     | Yes           | 2.0                | No          | Test Fixture                                | Notebook PC  |
| DC Leads   | PA            | 2.0                | PA          | Power Supply for Test Fixture               | Test Fixture |
| AC Power   | No            | 2.0                | No          | Power Supply for Test Fixture               | AC Mains     |
| DC Leads   | No            | 1.6                | No          | Power Supply for Notebook PC                | Notebook PC  |
| AC Power   | No            | 2.0                | No          | Power Supply for Notebook PC                | AC Mains     |
| PA = Ca    | able is perma | nently attached to | the device. | Shielding and/or presence of ferrite may be | e unknown.   |

### **Radiated Emissions**

Revision 1/4/2005

| Measurement Equipment    |                 |                          |            |            |          |
|--------------------------|-----------------|--------------------------|------------|------------|----------|
| Description              | Manufacturer    | Model                    | Identifier | Last Cal   | Interval |
| Spectrum Analyzer        | Hewlett Packard | 8593E                    | AAP        | 12/07/2004 | 13 mo    |
| Receiver                 | Schaffner       | SCR 3101                 | ARC        | 05/04/2005 | 13 mo    |
| Pre-Amplifier            | Miteq           | AM-1616-1000             | AOM        | 10/20/2004 | 13 mo    |
| Antenna, Biconilog       | EMCO            | 3142                     | AXJ        | 07/31/2005 | 24 mo    |
| Antenna, Horn            | EMCO            | 3115                     | AHB        | 08/01/2005 | 24 mo    |
| Pre-Amplifier 0.5-18 GHz | Miteq           | AMF-4D-<br>005180-24-10P | APP        | 05/07/2004 | 16 mo    |
| Antenna, Horn            | EMCO            | 3160-07                  | AHP        | NCR        | NA       |
| Pre-Amplifier            | Miteq           | AM-1551                  | AOX        | 08/02/2005 | 13 mo    |

#### **Test Description**

The final radiated emissions test was performed using the parameters described above as worst case. That final test was conducted at a facility that meets the ANSI C63.4 NSA requirements. The frequency range noted in the data sheets was scanned/tested at that facility. Emissions were maximized as specified, by maximizing table azimuth, antenna height, and cable manipulation.

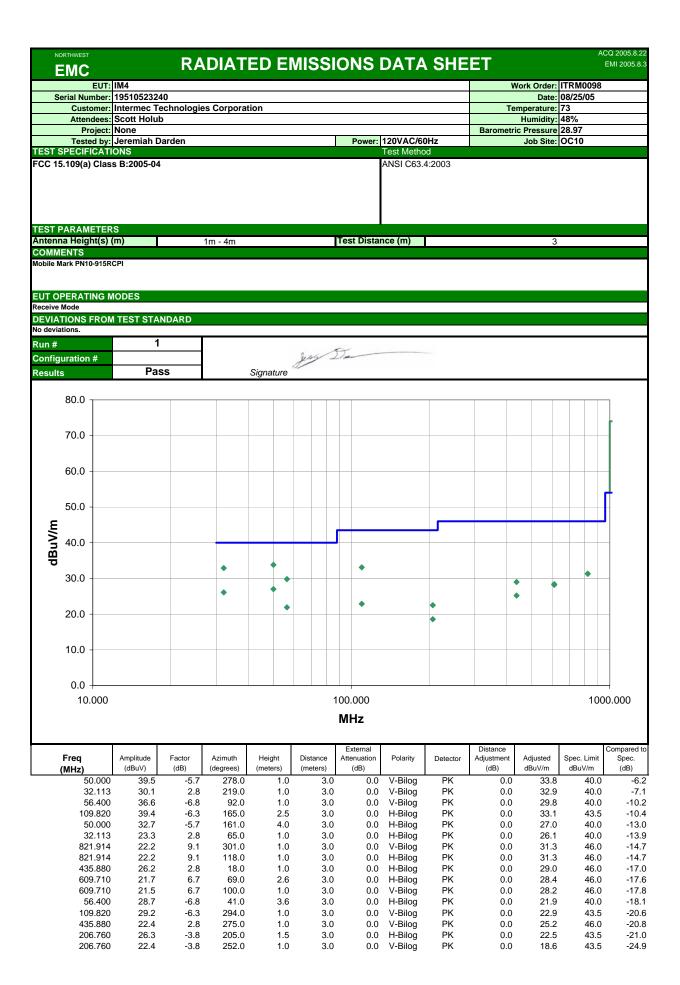
Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.

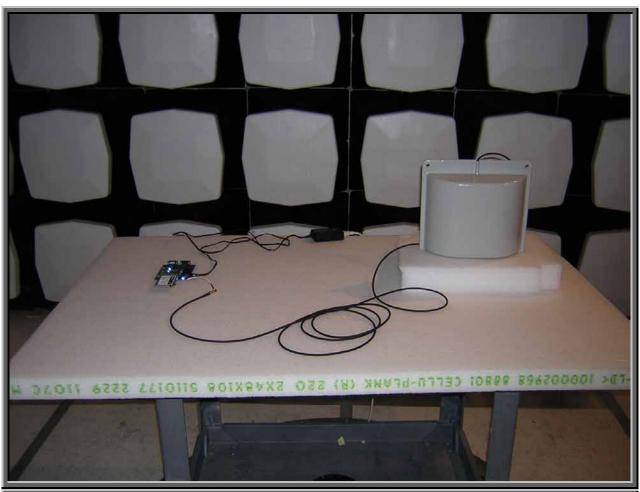
Note: The specified distance is the horizontal separation between the closest periphery of the EUT and the center of the axis of the elements of the receiving antenna. However, if the receiving antenna is a log-periodic array, the specified distance shall be the distance between the closest periphery of the EUT and the front-to-back center of the array of elements.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 1 meter, 3 meters, 5 meters, 10 meters, or 30 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

| Measurement Bandwidt     | hs                        |                             |                        |
|--------------------------|---------------------------|-----------------------------|------------------------|
| Frequency Range<br>(MHz) | Peak Data<br>(kHz)        | Quasi-Peak Data<br>(kHz)    | Average Data<br>(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 i      | made using the bandwidths | and detectors specified. No | video filter was used. |

| Completed by: |  |  |
|---------------|--|--|
| Jeny Da       |  |  |







## **Spurious Radiated Emissions**

Revision 10/1/03

#### **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| Mid                                      |
| High                                     |

#### **Operating Modes Investigated:**

No Hop

| Antennas Investigated:   |
|--------------------------|
| Sinclair SRL-441U        |
| Radiall ROS-915          |
| Kathrein 25-578          |
| Mobile Mark PN10-915RCPI |

| Data Rates Investigated: |  |
|--------------------------|--|
| 32 kbps                  |  |
| 38 kbps                  |  |
| 40 kbps                  |  |

#### **Output Power Setting(s) Investigated:**

Maximum

#### **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Frequency Range Investigated |        |                |        |  |
|------------------------------|--------|----------------|--------|--|
| Start Frequency              | 30 MHz | Stop Frequency | 10 GHz |  |

| Software\Firmware Applied During Test   |                               |         |                |  |
|---|-------------------------------|---------|----------------|--|
| Exercise software   | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |
| Description   |                               |         |                |  |
| The system was tested using special software developed to test all functions of the device during the test. |                               |         |                |  |

The system was tested using special software developed to test all functions of the device during the test. This included channel selection, data rate, and hopping vs. no hopping modes.

# **Spurious Radiated Emissions**

| EUT and Peripherals              |                                   |                      |                  |  |
|----------------------------------|-----------------------------------|----------------------|------------------|--|
| Description                      | Manufacturer                      | Model/Part<br>Number | Serial<br>Number |  |
| RFID Reader (EUT)                | Intermec Technologies Corporation | IM4                  | 19510523240      |  |
| Test Fixture                     | Intermec Technologies Corporation | Interrogator         | None             |  |
| Power Supply for Test<br>Fixture | MAGTECH                           | SPU24-104            | 023436980448     |  |
| Antenna1                         | Sinclair                          | SRL-441U             | Unknown          |  |
| Antenna2                         | Kathrein                          | 25-578               | Unknown          |  |
| Antenna3                         | Radiall                           | ROS-915              | Unknown          |  |
| Antenna4                         | Mobile Mark                       | PN10-915RCPI         | Unknown          |  |

| Remote Equipment Outside of Test Setup Boundary   |              |                   |               |  |  |
|---|--------------|-------------------|---------------|--|--|
| Description   | Manufacturer | Model/Part Number | Serial Number |  |  |
| Notebook PC   | Dell         | TS30GI            | K8175A        |  |  |
| Power Supply for Notebook PC  | Dell         | TSA8              | none          |  |  |
| Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary |              |                   |               |  |  |

| Cables           |           |                 |            |  |              |
|------------------|-----------|-----------------|------------|--|--------------|
| Cable Type       | Shield    | Length (m)      | Ferrite    | Connection 1                           | Connection 2 |
| Serial           | Yes       | 2.0             | No         | Test Fixture                           | Notebook PC  |
| DC Leads         | PA        | 2.0             | PA         | Power Supply for Test Fixture          | Test Fixture |
| AC Power         | No        | 2.0             | No         | Power Supply for Test Fixture          | AC Mains     |
| DC Leads         | No        | 1.6             | No         | Power Supply for Notebook PC           | Notebook PC  |
| AC Power         | No        | 2.0             | No         | Power Supply for Notebook PC           | AC Mains     |
| 50Ohm Coax       | Yes       | 3.0             | No         | RFID Reader (EUT)                      | Antenna      |
| PA = Cable is pe | rmanently | attached to the | device. Sh | ielding and/or presence of ferrite may | be unknown.  |

| Measurement Equipme         | nt                  |                            |            |            |          |
|-----------------------------|---------------------|----------------------------|------------|------------|----------|
| Description                 | Manufacturer        | Model                      | Identifier | Last Cal   | Interval |
| Spectrum Analyzer           | Hewlett<br>Packard  | 8593E                      | AAP        | 12/07/2004 | 13 mo    |
| Receiver                    | Schaffner           | SCR 3101                   | ARC        | 05/04/2005 | 13 mo    |
| Pre-Amplifier               | Miteq               | AM-1616-1000               | AOM        | 10/20/2004 | 13 mo    |
| Antenna, Biconilog          | EMCO                | 3142                       | AXJ        | 07/31/2005 | 24 mo    |
| Antenna, Horn               | EMCO                | 3115                       | AHB        | 08/01/2005 | 24 mo    |
| Pre-Amplifier 0.5-18<br>GHz | Miteq               | AMF-4D-005180-24-<br>10P   | APP        | 05/07/2004 | 16 mo    |
| Antenna, Horn               | EMCO                | 3160-07                    | AHP        | NCR        | NA       |
| Pre-Amplifier               | Miteq               | AMF-6F-08001200-30-<br>10P | AOK        | 12/26/2004 | 13 mo    |
| .5-1GHz Notch Filter        | K&L Microwave       | 3TNF-500/1000-N/N          | HFR        | 08/03/2005 | 13 mo    |
| High Pass Filter            | Hewlett-<br>Packard | 84300-80037                | HFE        | 04/20/2005 | 13 mo    |

### **Spurious Radiated Emissions**

Revision 10/1/03

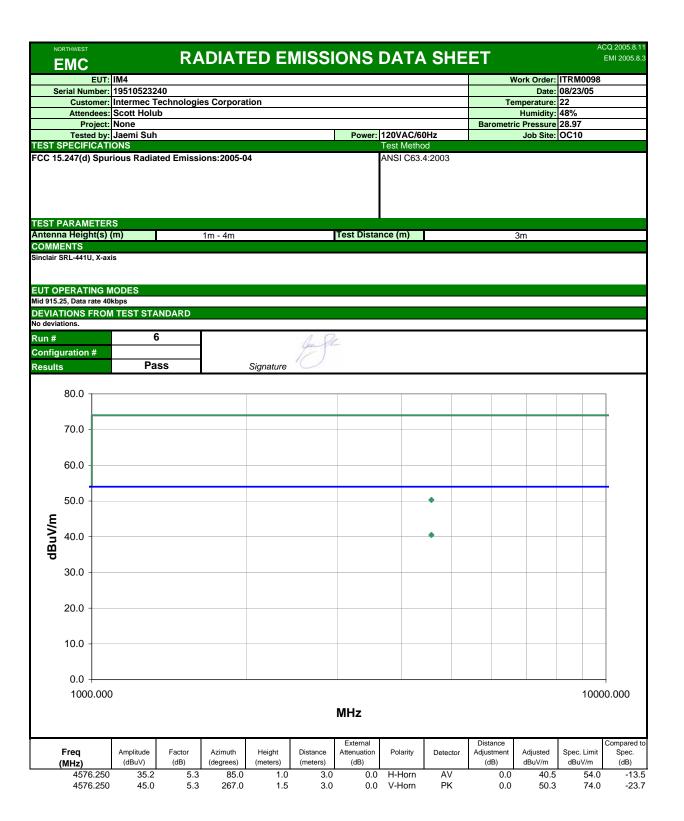
#### **Test Description**

**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.

<u>Configuration</u>: The highest gain of each type of antenna, plus the lowest gain antenna overall 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 Me   | asurements                |                             |                        |
|--------------------------|---------------------------|-----------------------------|------------------------|
| Frequency Range<br>(MHz) | Peak Data<br>(kHz)        | Quasi-Peak Data<br>(kHz)    | Average Data<br>(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 n      | nade using the bandwidths | and detectors specified. No | video filter was used. |

| Completed by |  |  |
|--------------|--|--|
| 1.45         |  |  |
| July 22      |  |  |



| NORTHWEST EMC                             |         |                      | R <i>A</i>        | DIAT              | ED EI             | MISSI                | ONS                             | DATA                       | SHE            | ΕT                             |                      |                       | CQ 2005.8<br>EMI 2005.  |
|---|---------|----------------------|-------------------|-------------------|-------------------|----------------------|---------------------------------|----------------------------|----------------|--------------------------------|----------------------|-----------------------|-------------------------|
|   | JT: IM4 |                      |                   |                   |                   |                      |                                 |                            |                |                                | Vork Cada            | ITDMOOO               |                         |
|   |         |                      |                   |                   |                   |                      |                                 |                            |                | V                              | Vork Order:          |                       |                         |
| Serial Numb                               |         |                      |                   | C                 | 41                |                      |                                 |                            |                | -                              | mperature:           | 08/23/05              |                         |
|   |         | ott Holuk            |                   | es Corpora        | tion              |                      |                                 |                            |                | 16                             | Humidity:            |                       |                         |
|   | es. Sci |                      | ,                 |                   |                   |                      |                                 |                            |                | Barometr                       | ic Pressure          |                       |                         |
|   |         | emi Suh              |                   |                   |                   |                      | Power:                          | 120VAC/60                  | Hz             | Daronieu                       | Job Site:            |                       |                         |
| ST SPECIFIC                               |         |                      |                   |                   |                   |                      | T OWEL.                         | Test Metho                 |                |                                | OOD OILC.            | 0010                  |                         |
| C 15.247(d) S                             | puriou  | s Radiat             | ed Emissi         | ions:2005-0       | 04                |                      |                                 | ANSI C63.4                 | 1:2003         |                                |                      |                       |                         |
| ST PARAMET                                |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| enna Height                               | s) (m)  |                      |                   | 1m - 4m           |                   |                      | Test Distar                     | nce (m)                    |                |                                | 3m                   |                       |                         |
| MMENTS<br>lair SRL-441U, )                |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| T OPERATING 915.25, Data rate VIATIONS FR | 38kbps  | 3                    | NDARD             |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| n #                                       |         | 7                    |                   |                   |                   | Cen fr               | -                               |                            |                |                                |                      |                       |                         |
| nfiguration #                             |         |                      |                   |                   |                   | 1-1                  |                                 |                            |                |                                |                      |                       |                         |
| sults                                     |         | Pas                  | ss                |                   | Signature         |                      |                                 |                            |                |                                |                      |                       |                         |
| 70.0                                      |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 60.0                                      |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       | _                       |
| 50.0 <del> </del>                         |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 40.0 <b>B</b>                             |         |                      |                   |                   |                   |                      |                                 |                            |                | *                              |                      |                       |                         |
| 30.0                                      |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 20.0                                      |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 10.0                                      |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 0.0                                       |         | 1540.05              | 1.505             | 000 455           | 2000 45           | 10.000               | 550 633                         | 4500 225                   | 4570.05        | 0 4500                         | .00 1757             | 000 455               |                         |
| 4500.0                                    | JUU 4   | 1510.000             | J 4520.0          | UUU 4530          | 0.000 454         | iu.000 4             | 550.000                         | 4560.000                   | 45/0.00        | u 4580.0                       | 000 4590             | .000 460              | 0.000                   |
|   |         |                      |                   |                   |                   |                      | MHz                             |                            |                |                                |                      |                       |                         |
| Freq<br>(MHz)                             | (       | nplitude<br>dBuV)    | Factor<br>(dB)    | Azimuth (degrees) | Height (meters)   | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity                   | Detector       | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m   | Spec. Limit<br>dBuV/m | Compare<br>Spec<br>(dB) |
| 4576.2                                    |         | 34.0                 | 5.3               |                   | 1.0               | 3.0                  | 0.0                             | H-Horn                     | AV             | 0.0                            | 39.3                 | 54.0                  | -1                      |
|   |         |                      |                   |                   |                   |                      |                                 |                            |                |                                |                      |                       |                         |
| 4576.2                                    |         | 31.4                 | 5.3               |                   | 1.5               | 3.0                  |                                 | V-Horn                     | AV             | 0.0                            | 36.7                 | 54.0                  |                         |
| 4576.2<br>4576.2<br>4576.2                | 250     | 31.4<br>45.6<br>45.6 | 5.3<br>5.3<br>5.3 | 107.0             | 1.5<br>1.0<br>1.5 | 3.0<br>3.0<br>3.0    | 0.0                             | V-Horn<br>H-Horn<br>V-Horn | AV<br>PK<br>PK | 0.0<br>0.0<br>0.0              | 36.7<br>50.9<br>50.9 | 54.0<br>74.0<br>74.0  | -1<br>-2<br>-2          |

#### NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0098 EUT: IM4 Serial Number: 19510523240 Date: 08/23/05 Customer: Intermec Technologies Corporation Temperature: 73 Attendees: Scott Holub Humidity: 48% Project: None Barometric Pressure 28.97 Tested by: Jaemi Suh Power: 120VAC/60Hz Job Site: OC10 Test Method FCC 15.247(d) Spurious Radiated Emissions:2005-04 ANSI C63.4:2003 TEST PARAMETERS Test Distance (m) Antenna Height(s) (m) 1m - 4m 3m COMMENTS Sinclair SRL-441U. Antenna at X-axis. **EUT OPERATING MODES** Mid 915.25, Data rate 32kbps **DEVIATIONS FROM TEST STANDARD** 8 Configuration # Pass Results Signature 0.08 70.0 60.0 50.0 \$ dBuV/m • 40.0 \$ 30.0 20.0 10.0 0.0 1800.000 2800.000 3800.000 4800.000 5800.000 6800.000 MHz External Distance Compared to Frea Amplitude Factor Azimuth Height Distance Polarity Detector Adjusted Spec. Limit Attenuation Adjustment Spec. (dBuV) (dB) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) (degrees) (meters) 4576.255 36.0 5.3 103.0 1.0 3.0 0.0 H-Horn ΑV 0.0 41.3 54.0 -12.7 7322.010 29.1 11.5 76.0 3.0 0.0 H-Horn ΑV 0.0 40.6 54.0 -13.4 4576.255 35.2 249.0 1.0 3.0 0.0 V-Horn ΑV 0.0 40.5 54.0 -13.5 5.3 7322.010 V-Horn 28.3 11.5 329.0 1.0 3.0 0.0 ΑV 0.0 39.8 54.0 -14.2 1830.450 38.5 -2.6 37.0 3.0 0.0 V-Horn ΑV 35.9 54.0 -18.1 1.0 0.0 V-Horn 35.8 3661.000 32.1 3.7 355.0 3.0 0.0 -18.2 ΑV 0.0 54.0 1.4 -2.6 -18.8 1830.450 37.8 16.0 1.0 H-Horn ΑV 35.2 54.0 3.0 0.0 0.0 3661.000 31.1 3.7 304.0 1.0 3.0 0.0 H-Horn ΑV 0.0 34.8 54.0 -19.2 4576.255 48.3 5.3 103.0 1.0 3.0 0.0 H-Horn PK 0.0 53.6 74.0 -20.4 4576.255 46.7 5.3 249.0 1.0 3.0 0.0 V-Horn PΚ 0.0 52.0 74.0 -22.0 1830.450 50.2 -2.6 0.0 H-Horn PΚ 0.0 47.6 74.0 -26.4 16.0 1.0 3.0 1830.450 PK 46.6 49.2 -2.6 37.0 1.0 3.0 0.0 V-Horn 0.0 74.0 -27.4 H-Horn PΚ 7322.010 34.8 11.5 76.0 1.9 3.0 0.0 0.0 46.3 74.0 -27.7 7322 010 33 4 11.5 329 0 1.0 3.0 0.0 V-Horn PK 44 9 74 0 0.0 -29 1

3661.000

3661.000

39.2

39.2

3.7

3.7

304.0

355.0

1.0

1.4

3.0

3.0

0.0

0.0

H-Horn

V-Horn

PK

PΚ

0.0

0.0

42.9

42.9

74.0

74.0

-31.1

-31.1

| NORTHWE                |                                       |                                       | R/                       | ADIAT                            | ED EI                    | MISSI                    | ONS                             | DATA                                 | SHE                  | ET                             |                                   |                       | Q 2005.8.1<br>EMI 2005.8.3     |
|------------------------|---------------------------------------|---------------------------------------|--------------------------|----------------------------------|--------------------------|--------------------------|---------------------------------|--------------------------------------|----------------------|--------------------------------|-----------------------------------|-----------------------|--------------------------------|
| Serial N<br>Cu:        | EUT:<br>lumber:<br>stomer:<br>endees: | 195105232<br>Intermec T<br>Scott Holu | echnologi                | es Corpora                       | tion                     |                          |                                 |                                      |                      | Te                             | Date:<br>emperature:<br>Humidity: | 48%                   |                                |
|                        | Project:<br>sted by:                  | None<br>Jaemi Suh                     | ı                        |                                  |                          |                          | Power:                          | 120VAC/60                            | )Hz                  | Barometr                       | ic Pressure<br>Job Site:          |                       |                                |
| EST SPEC               |                                       |                                       | ted Emise                | ions:2005-0                      | <b>M</b>                 |                          |                                 | Test Metho<br>ANSI C63.4             |                      |                                |                                   |                       |                                |
| 00 13.247(             | u) Opui                               | ious Raula                            | ieu Lilliss              | 10113.2003-0                     | <b>, -</b>               |                          |                                 | ANGI 000                             | +.2003               |                                |                                   |                       |                                |
| EST PARA<br>ntenna Hei |                                       |                                       |                          | 4.00 4.00                        |                          |                          | Test Distar                     | 200 (m)                              |                      |                                | 2.00                              |                       |                                |
|                        |                                       | 111)                                  |                          | 1m - 4m                          |                          |                          | Test Distai                     | ice (III)                            |                      |                                | 3m                                |                       |                                |
| UT OPERA               | TING M                                |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| EVIATIONS deviations.  | FROM                                  | TEST STA                              | NDARD                    |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| un #                   |                                       | Ę                                     | 5                        |                                  |                          | 10                       |                                 |                                      |                      |                                |                                   |                       |                                |
| onfiguratio            | n#                                    |                                       |                          | ]                                |                          | year gre                 |                                 |                                      |                      |                                |                                   |                       |                                |
| esults                 |                                       | Pa                                    | SS                       |                                  | Signature                |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 80.0                   | ) [                                   |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 70.0                   | )                                     |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 60.0                   | )                                     |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       | -                              |
| 50.0                   |                                       |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       | _                              |
| <b>W//Ngp</b>          |                                       |                                       | <u> </u>                 |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 30.0                   |                                       |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 20.0                   |                                       |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 0.0                    |                                       |                                       |                          |                                  |                          |                          |                                 |                                      |                      |                                |                                   |                       |                                |
| 45                     | 00.000                                | 4510.00                               | 00 4520.                 | 000 4530                         | 0.000 454                | 10.000 4                 | 550.000<br><b>MHz</b>           | 4560.000                             | 4570.00              | 0 4580.0                       | 000 4590                          | .000 460              | 0.000                          |
| Freq<br>(MHz)          |                                       | Amplitude<br>(dBuV)                   | Factor<br>(dB)           | Azimuth (degrees)                | Height (meters)          | Distance<br>(meters)     | External<br>Attenuation<br>(dB) | Polarity                             | Detector             | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m                | Spec. Limit<br>dBuV/m | Compared t<br>Spec.<br>(dB)    |
| 45<br>45               | 13.750<br>13.750<br>13.750<br>13.750  | 25.5<br>25.5<br>28.8<br>28.8          | 5.1<br>5.1<br>5.1<br>5.1 | 275.0<br>208.0<br>275.0<br>208.0 | 1.0<br>1.0<br>1.0<br>1.0 | 3.0<br>3.0<br>3.0<br>3.0 | 0.0<br>0.0                      | H-Horn<br>V-Horn<br>H-Horn<br>V-Horn | AV<br>AV<br>PK<br>PK | 0.0<br>0.0<br>0.0<br>0.0       | 30.6<br>30.6<br>33.9<br>33.9      | 54.0<br>74.0          | -23.4<br>-23.4<br>-40.<br>-40. |

| EMC  |                     |                |                   |                 |                      |                                 |            | SHEE     |                                |                    |                       |                         |
|--|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------|----------|--------------------------------|--------------------|-----------------------|-------------------------|
|  | IM4                 |                |                   |                 |                      |                                 |            |          | V                              | Vork Order         | ITRM0098              |                         |
| Serial Number:                                       |                     | )              |                   |                 |                      |                                 |            |          | •                              |                    | 08/23/05              |                         |
|  | Intermec Te         |                | s Corpora         | tion            |                      |                                 |            |          | Te                             | mperature:         |                       |                         |
|  | Scott Holub         |                |                   |                 |                      |                                 |            |          |                                | Humidity:          |                       |                         |
| Project:   | None                |                |                   |                 |                      |                                 |            |          | Barometr                       | ic Pressure        | 28.97                 |                         |
|  | Jaemi Suh           |                |                   |                 |                      | Power:                          | 120VAC/60  |          |                                | Job Site:          | OC10                  |                         |
| T SPECIFICATI  | ONS                 |                |                   |                 |                      |                                 | Test Metho |          |                                |                    |                       |                         |
| 315.247(d) Spur                                      | Tous Radiate        | a Emissic      | ons:2005-0        | 14              |                      |                                 | ANSI C63.4 | 1:2003   |                                |                    |                       |                         |
| T PARAMETER  |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| enna Height(s) (                                     | (m)                 | 1              | 1m - 4m           |                 |                      | Test Distar                     | nce (m)    |          |                                | 3m                 |                       |                         |
| MMENTS<br>air SRL-441U                               |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| OPERATING M<br>927.25, Data rate 32<br>VIATIONS FROM | 2kbps               | DARD           |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| eviations.<br>#                                      | 3                   |                |                   |                 | 10                   | 2                               |            |          |                                |                    |                       |                         |
| figuration #   |                     |                |                   |                 | Gen                  |                                 |            |          |                                |                    |                       |                         |
| ults   | Pas                 |                |                   | Signature       | (                    |                                 |            |          |                                |                    |                       |                         |
| uits   | ras                 | _              |                   | Jigrialure      |                      |                                 |            |          |                                |                    |                       |                         |
| 70.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | -                       |
| 60.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | _                       |
| 50.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 40.0   |                     |                |                   | •               |                      |                                 |            |          |                                |                    |                       | _                       |
| 30.0   |                     |                |                   | •               |                      |                                 |            |          |                                |                    |                       |                         |
| 20.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 10.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 0.0  |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | 1                       |
|  | 4610.000            | 4620.0         | 00 4630           | 0.000 46        | 40.000 4             | 1650.000                        | 4660.000   | 4670.000 | 4680.0                         | 000 4690           | .000 470              | 0.000                   |
|  |                     |                |                   |                 |                      | MHz                             |            |          |                                |                    |                       |                         |
| Freq<br>(MHz)  | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity   | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit<br>dBuV/m | Compare<br>Spec<br>(dB) |
| 4636.250   | 25.7                | 5.4            | 220.0             | 1.0             | 3.0                  |                                 |            | AV       | 0.0                            | 31.1               | 54.0                  | -2                      |
|  | 25.7                | E 4            | 234.0             | 2.3             | 2.0                  | 0.0                             | 1/11       | AV       | 0.0                            | 31.1               | 54.0                  | -2                      |
| 4636.250<br>4636.250                                 | 25.7                | 5.4            | 234.0             | 2.3             | 3.0                  | 0.0                             | V-Horn     | AV       | 0.0                            | 31.1               | 54.0                  | -2                      |

|                      | RTHWEST                                      |  | RA                           | DIAT                             | ED EI                    | MISSI                    | ONS                             | DATA                                 | SHE                  | ET                             |                              |                       | Q 2005.8.11<br>EMI 2005.8.3      |
|----------------------|--|--|------------------------------|----------------------------------|--------------------------|--------------------------|---------------------------------|--------------------------------------|----------------------|--------------------------------|------------------------------|-----------------------|----------------------------------|
|                      | EUT:<br>rial Number:<br>Customer:            | 1951052324<br>Intermec Te<br>Scott Holub |                              | es Corpora                       | tion                     |                          |                                 |                                      |                      | Te                             |                              | 48%                   |                                  |
|                      | Tested by:                                   | Jaemi Suh                                |                              |                                  |                          |                          | Power:                          | 120VAC/60                            |                      |                                | Job Site:                    |                       |                                  |
|                      | PECIFICATI<br>.247(d) Spui                   | ons<br>ious Radiate                      | ed Emissi                    | ons:2005-0                       | 4                        |                          |                                 | Test Metho<br>ANSI C63.4             |                      |                                |                              |                       |                                  |
|                      | ARAMETER<br>a Height(s)                      |  |                              | 1m - 4m                          |                          |                          | Test Distar                     | nce (m)                              |                      |                                | 3m                           |                       |                                  |
| СОММЕ                |  | /  |                              | 411                              |                          |                          |                                 | (III)                                |                      |                                | OIII                         |                       |                                  |
| ligh 927.:<br>DEVIAT |  |  | IDARD                        |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       |                                  |
| o deviat<br>Run #    | ions.  | 3  |                              |                                  |                          | 1. De                    |                                 |                                      |                      |                                |                              |                       |                                  |
|                      | ıration #                                    | Pas                                      |                              |                                  | Cianatura                | 10                       |                                 |                                      |                      |                                |                              |                       |                                  |
| Results              |  | Fas                                      | 5                            |                                  | Signature                |                          |                                 |                                      |                      |                                |                              |                       |                                  |
|                      | 80.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       | ]                                |
|                      | 70.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       |                                  |
|                      | 60.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       |                                  |
|                      | 50.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       |                                  |
| dBuV/m               | 40.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       | _                                |
|                      | 30.0   |  |                              |                                  |                          |                          |                                 |                                      | •                    | •                              |                              |                       |                                  |
|                      | 20.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       | -                                |
|                      | 10.0   |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       | -                                |
|                      | 0.0  |  |                              |                                  |                          |                          |                                 |                                      |                      |                                |                              |                       |                                  |
|                      | 9200.000                                     | 9210.000                                 | 9220.0                       | 000 9230                         | 0.000 924                | :0.000 9                 | MHz                             | 9260.000                             | 9270.00              | o 9280.0                       | 000 9290                     | 0.000 930             | U.000                            |
|                      | Freq<br>MHz)                                 | Amplitude<br>(dBuV)                      | Factor<br>(dB)               | Azimuth (degrees)                | Height (meters)          | Distance<br>(meters)     | External<br>Attenuation<br>(dB) | Polarity                             | Detector             | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m           | Spec. Limit<br>dBuV/m | Compared to<br>Spec.<br>(dB)     |
|                      | 9272.500<br>9272.500<br>9272.500<br>9272.500 | 35.4<br>35.4<br>38.9<br>38.6             | -7.6<br>-7.6<br>-7.6<br>-7.6 | 229.0<br>199.0<br>229.0<br>199.0 | 1.8<br>3.7<br>1.8<br>3.7 | 3.0<br>3.0<br>3.0<br>3.0 | 0.0<br>0.0                      | H-Horn<br>V-Horn<br>H-Horn<br>V-Horn | AV<br>AV<br>PK<br>PK | 0.0<br>0.0<br>0.0<br>0.0       | 27.8<br>27.8<br>31.3<br>31.0 | 54.0<br>74.0          | -26.2<br>-26.2<br>-42.7<br>-43.0 |

| NORTHWEST<br>EMC                               |                     | RA             | DIAT              | ED EI           | MISSI                | IONS                            | DATA       | SHE      | ΕT                             |                    |                       | CQ 2005.8<br>EMI 2005.  |
|--|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------|----------|--------------------------------|--------------------|-----------------------|-------------------------|
|  | .IIM4               |                |                   |                 |                      |                                 |            |          |                                | Newly Cords        | ITDM0000              |                         |
|  | : IM4               | 10             |                   |                 |                      |                                 |            |          | v                              |                    | ITRM0098              |                         |
| Serial Number                                  |                     |                |                   | 41              |                      |                                 |            |          | -                              | mperature:         | 08/23/05              |                         |
|  | : Intermec T        |                | es Corpora        | tion            |                      |                                 |            |          | 16                             | Humidity:          |                       |                         |
|  | : None              | ID .           |                   |                 |                      |                                 |            |          | Rarometr                       | ic Pressure        |                       |                         |
|  | /: Jaemi Suh        | 1              |                   |                 |                      | Power:                          | 120VAC/60  | )Hz      | Daronieu                       | Job Site:          |                       |                         |
| ST SPECIFICA                                   |                     |                |                   |                 |                      | 1 Ower:                         | Test Metho |          |                                | oob onc.           | 0010                  |                         |
| C 15.247(d) Sp                                 | urious Radia        | ted Emissi     | ons:2005-0        | 04              |                      |                                 | ANSI C63.4 | 1:2003   |                                |                    |                       |                         |
| ST PARAMETE                                    |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| enna Height(s                                  | ) (m)               |                | 1m - 4m           |                 |                      | Test Distar                     | nce (m)    |          |                                | 3m                 |                       |                         |
| MMENTS   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| OPERATING<br>902.75, Data rate<br>VIATIONS FRO | 32kbps              | ANDARD         |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| eviations.                                     | 3                   | 3              |                   |                 | 1. (                 | 21                              |            |          |                                |                    |                       |                         |
| nfiguration #                                  |                     |                |                   |                 | year                 | 76-                             |            |          |                                |                    |                       |                         |
| sults  | Pa                  | ss             |                   | Signature       | (                    |                                 |            |          |                                |                    |                       |                         |
| uns  | ı-a                 |                |                   | Signature       |                      |                                 |            |          |                                |                    |                       |                         |
| 70.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 60.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 50.0 <b>E</b>                                  |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 40.0 H   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 30.0   |                     |                | •                 |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 20.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 10.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 0.0  |                     |                |                   |                 |                      |                                 |            | 00=1     |                                |                    |                       | 1                       |
| 9000.00  | 00 9010.00          | 00 9020.0      | 000 9030          | 0.000 904       | 10.000 9             |                                 | 9060.000   | 9070.00  | 9080.0                         | 000 9090           | .000 910              | 0.000                   |
|  |                     |                |                   |                 |                      | MHz                             |            |          |                                |                    |                       |                         |
| Freq<br>(MHz)                                  | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity   | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit<br>dBuV/m | Compare<br>Spec<br>(dB) |
| 9027.50  |                     | -7.8           | 287.0             | 3.1             | 3.0                  |                                 |            | AV       | 0.0                            | 27.3               | 54.0                  | -2                      |
| 9027.50  |                     | -7.8           | 249.0             | 3.8             | 3.0                  | 0.0                             | V-Horn     | AV       | 0.0                            | 27.3               | 54.0                  | -2                      |
|  |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 9027.50<br>9027.50                             |                     | -7.8<br>-7.8   | 287.0<br>249.0    | 3.1<br>3.8      | 3.0<br>3.0           |                                 |            | PK<br>PK | 0.0                            | 30.9<br>30.9       | 74.0<br>74.0          | -4                      |

|                  | RTHWEST                       |                        | R.A                  | DIAT                                 | ED EI                  | MISSI                  | ONS I                         | DATA                    | SHE      | ΕT                      |                        |                                       | Q 2005.8.1<br>EMI 2005.8.3 |
|------------------|-------------------------------|------------------------|----------------------|--------------------------------------|------------------------|------------------------|-------------------------------|-------------------------|----------|-------------------------|------------------------|---------------------------------------|----------------------------|
|                  | EUT:                          | IM4                    |                      |                                      |                        |                        |                               |                         |          | V                       | Vork Order:            | ITRM0098                              |                            |
| Ser              | rial Number:                  |                        | 0                    |                                      |                        |                        |                               |                         |          |                         |                        | 08/23/05                              |                            |
|                  | Customer:                     | Intermec Te            | chnologi             | es Corpora                           | tion                   |                        |                               |                         |          | Te                      | mperature:             | 73                                    | _                          |
|                  |                               | Scott Holub            | )                    |                                      |                        |                        |                               |                         |          |                         | Humidity:              |                                       |                            |
|                  | Project:                      |                        |                      |                                      |                        |                        |                               | 400)/40/06              | NI I     | Barometr                | ic Pressure            |                                       |                            |
| EST SE           | Tested by:<br>PECIFICATION    | Jaemi Suh              |                      |                                      |                        |                        | Power:                        | 120VAC/60<br>Test Metho |          |                         | Job Site:              | OC10                                  |                            |
|                  | .247(d) Spur                  |                        | ad Emicei            | one:2005_0                           | 14                     |                        |                               | ANSI C63.4              |          |                         |                        |                                       |                            |
|                  | (-)-1                         |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | ARAMETER<br>a Height(s) (     |                        |                      | 1m - 4m                              |                        |                        | Test Distar                   | nce (m)                 |          |                         | 3m                     |                                       |                            |
| ОММЕ             |                               |                        |                      |                                      |                        |                        |                               | , ,                     |          |                         |                        |                                       |                            |
| inclair SI       | RL-441U                       |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | PERATING M<br>5, Data rate 32 |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| EVIAT<br>deviati | IONS FROM ions.               |                        | NDARD                |                                      |                        |                        | _                             |                         |          |                         |                        |                                       |                            |
| un #             |                               | 3                      |                      |                                      | <u> </u>               | Cent                   | 1                             | ·                       | ·        |                         |                        | · <u> </u>                            | _                          |
| onfigu           | ıration #                     |                        |                      |                                      |                        | 1-1                    |                               |                         |          |                         |                        |                                       |                            |
| esults           |                               | Pas                    | ss                   |                                      | Signature              |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 80.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | 1                          |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | †                          |
|                  | 70.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | -                          |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 60.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | 1                          |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 50.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | Ī                          |
|                  | 50.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| ٦                |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| dBuV/m           | 40.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| B                | 40.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| ᄝ                |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 30.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        | •                             |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
| :                | 20.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | -                          |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 10.0                          |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | 1                          |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  | 0.0                           |                        |                      |                                      |                        | 40.00-                 | 450.555                       | 0400                    | 0.1====  |                         |                        |                                       | 1                          |
|                  | 9100.000                      | 9110.00                | 9120.                | 000 9130                             | 0.000 914              | 40.000 9               | 150.000                       | 9160.000                | 9170.00  | 0 9180.0                | 00 9190                | .000 920                              | 0.000                      |
|                  |                               |                        |                      |                                      |                        |                        | MHz                           |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        | Forteneral 1                  | -                       | -        | Distance                |                        | 1.                                    | Compared t                 |
|                  | ı                             |                        |                      |                                      |                        |                        |                               |                         |          |                         |                        |                                       | Junivared t                |
| F                | Freq                          | Amplitude              | Factor               | Azimuth                              | Height                 | Distance               | External<br>Attenuation       | Polarity                | Detector | Adjustment              | Adjusted               | Spec. Limit                           | Spec.                      |
|                  | Freq<br>MHz)                  | Amplitude<br>(dBuV)    | Factor<br>(dB)       | Azimuth (degrees)                    | Height (meters)        | Distance<br>(meters)   |                               | Polarity                | Detector |                         | Adjusted<br>dBuV/m     |                                       |                            |
|                  |                               |                        |                      |                                      |                        |                        | Attenuation (dB)              | Polarity<br>V-Horn      | Detector | Adjustment              |                        | Spec. Limit                           | Spec.<br>(dB)              |
|                  | 9152.515<br>9152.515          | (dBuV)<br>37.1<br>35.0 | (dB)<br>-7.7<br>-7.7 | (degrees)<br>210.0<br>348.0          | (meters)<br>1.0<br>1.0 | (meters)<br>3.0<br>3.0 | Attenuation (dB) 0.0 0.0      | V-Horn<br>H-Horn        | AV<br>AV | Adjustment (dB) 0.0 0.0 | dBuV/m<br>29.4<br>27.3 | Spec. Limit<br>dBuV/m<br>54.0<br>54.0 | Spec.<br>(dB)<br>-24.6     |
|                  | MHz)<br>9152.515              | (dBuV) 37.1            | (dB)                 | (degrees)<br>210.0<br>348.0<br>210.0 | (meters)               | (meters)               | Attenuation (dB)  0.0 0.0 0.0 | V-Horn                  | AV       | Adjustment (dB)         | dBuV/m                 | Spec. Limit<br>dBuV/m<br>54.0         | Spec.                      |

| NORTHWEST <b>EMC</b>                  |          |                     | R <i>A</i>     | DIAT              | ED EI           | MISSI                | IONS I                          | DATA       | SHE      | ΕT                             |                    |                       | CQ 2005.8<br>EMI 2005.  |
|---------------------------------------|----------|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------|----------|--------------------------------|--------------------|-----------------------|-------------------------|
|                                       | EUT:     | IM4                 |                |                   |                 |                      |                                 |            |          |                                | Nork Orde          | ITRM0098              |                         |
|                                       |          | 195105232           | 40             |                   |                 |                      |                                 |            |          | ,                              |                    | 08/23/05              |                         |
|                                       |          |                     |                | es Corpora        | tion            |                      |                                 |            |          | т.                             | emperature:        |                       |                         |
|                                       |          | Scott Holu          |                | es corpora        | lion            |                      |                                 |            |          |                                | Humidity:          |                       |                         |
|                                       | oject:   |                     |                |                   |                 |                      |                                 |            |          | Barometr                       | ic Pressure        |                       |                         |
|                                       |          | Jaemi Suh           |                |                   |                 |                      | Power:                          | 120VAC/60  | )Hz      | 24.0                           | Job Site:          |                       |                         |
| ST SPECIFIC                           |          |                     |                |                   |                 |                      |                                 | Test Metho |          |                                |                    |                       |                         |
| C 15.247(d)                           | Spuri    | ious Radia          | ted Emissi     | ions:2005-0       | )4              |                      |                                 | ANSI C63.4 | 4:2003   |                                |                    |                       |                         |
| ST PARAME                             |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| enna Heigh                            | nt(s) (ı | m)                  |                | 1m - 4m           |                 |                      | Test Distar                     | nce (m)    |          |                                | 3m                 |                       |                         |
| MMENTS<br>rein 25-578 LF              |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| T OPERATII 915.25, Data ra VIATIONS F | ate 38k  | Bs                  | NDARD          |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| n #                                   |          | 2                   | !              |                   |                 | 1. 0                 | 2                               |            |          |                                |                    |                       |                         |
| nfiguration                           | #        |                     |                |                   |                 | Jan Ja               |                                 |            |          |                                |                    |                       |                         |
| sults                                 |          | Pa                  | SS             |                   | Signature       | (                    |                                 |            |          |                                |                    |                       |                         |
|                                       |          |                     | -              |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 80.0 7<br>70.0 -                      |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | 1                       |
| 60.0 -                                |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| -                                     |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | +                       |
| 50.0 -                                |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| <b>₩//ngp</b>                         |          |                     |                |                   |                 |                      | •                               |            |          |                                |                    |                       |                         |
| 30.0 -                                |          |                     |                |                   |                 |                      | •                               |            |          |                                |                    |                       |                         |
| 20.0 -                                |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       | -                       |
| 10.0 -                                |          |                     |                |                   |                 |                      |                                 |            |          |                                |                    |                       |                         |
| 0.0                                   |          |                     |                |                   |                 | +                    |                                 |            |          |                                |                    |                       | 4                       |
| 9100                                  | 0.000    | 9110.00             | 0 9120.        | 000 9130          | 0.000 914       | 10.000 9             | 150.000                         | 9160.000   | 9170.00  | 0 9180.0                       | 000 9190           | .000 920              | 0.000                   |
|                                       |          |                     |                |                   |                 |                      | MHz                             |            |          |                                |                    |                       |                         |
| Freq<br>(MHz)                         |          | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity   | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit<br>dBuV/m | Compare<br>Spec<br>(dB) |
|                                       | 2.500    | 37.8                | -7.7           | 106.0             | 1.0             | 3.0                  |                                 | V-Horn     | AV       | 0.0                            |                    | 54.0                  | -2                      |
|                                       |          |                     |                |                   | -               |                      |                                 |            |          |                                |                    |                       |                         |
|                                       | 2.500    | 35.2                | -7.7           | 83.0              | 1.0             | 3.0                  |                                 | H-Horn     | AV       | 0.0                            | 27.5               | 54.0                  | -2                      |
| 9152<br>9152                          |          | 35.2<br>43.8        | -7.7<br>-7.7   | 83.0<br>106.0     | 1.0<br>1.0      | 3.0<br>3.0           | 0.0                             |            | AV<br>PK | 0.0                            | 27.5<br>36.1       | 54.0<br>74.0          | -2<br>-3                |

| NORTHWEST<br>EMC                             |                              | RA                           | DIAT                           | ED EI                    | MISSI                    | ONS                             | DATA                                  | SHE                  | ĒΤ                             |                              |                            | Q 2005.8.1<br>EMI 2005.8. |
|--|------------------------------|------------------------------|--------------------------------|--------------------------|--------------------------|---------------------------------|---------------------------------------|----------------------|--------------------------------|------------------------------|----------------------------|---------------------------|
| EUT:<br>Serial Number:                       |                              |                              | s Corpora                      | tion                     |                          |                                 |                                       |                      |                                |                              | ITRM0098<br>08/23/05<br>73 |                           |
| Attendees:<br>Project:                       | Scott Holub<br>None          |                              |                                |                          |                          |                                 | 420\/ A C/C0                          |                      |                                | Humidity:<br>ic Pressure     | 48%<br>28.97               |                           |
| EST SPECIFICATI CC 15.247(d) Spui            |                              | ed Emissio                   | ns:2005-0                      | 4                        |                          |                                 | 120VAC/60<br>Test Metho<br>ANSI C63.4 | d                    |                                | Job Site:                    | 0010                       |                           |
| (7,7)  |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| EST PARAMETER                                |                              | 1                            | m - 4m                         |                          |                          | Test Distar                     | nce (m)                               |                      |                                | 3m                           |                            |                           |
| OMMENTS<br>athrein 25-578 LP                 |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| UT OPERATING N                               |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| EVIATIONS FROM deviations.                   |                              | IDARD                        |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| un #<br>onfiguration #                       | 2                            |                              |                                |                          | Genfl                    | *                               |                                       |                      |                                |                              |                            |                           |
| esults                                       | Pas                          | s                            |                                | Signature                |                          |                                 |                                       |                      |                                |                              |                            |                           |
| 80.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| 70.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| 60.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            | _                         |
| 50.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            | -                         |
| 40.0 H                                       |                              |                              |                                |                          |                          | *                               |                                       |                      |                                |                              |                            | _                         |
| 30.0   |                              |                              |                                |                          |                          | *                               |                                       |                      |                                |                              |                            |                           |
| 20.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            |                           |
| 10.0   |                              |                              |                                |                          |                          |                                 |                                       |                      |                                |                              |                            | -                         |
| 9100.000                                     | 9110.000                     | 9120.0                       | 00 9130                        | .000 914                 | 0.000 9                  | 150.000<br><b>MHz</b>           | 9160.000                              | 9170.000             | 9180.0                         | 000 9190                     | 0.000 920                  | 0.000                     |
| Freq<br>(MHz)                                | Amplitude<br>(dBuV)          | Factor<br>(dB)               | Azimuth (degrees)              | Height (meters)          | Distance<br>(meters)     | External<br>Attenuation<br>(dB) | Polarity                              | Detector             | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m           | Spec. Limit<br>dBuV/m      | Compared Spec.            |
| 9152.500<br>9152.500<br>9152.500<br>9152.500 | 38.1<br>37.1<br>45.6<br>43.2 | -7.7<br>-7.7<br>-7.7<br>-7.7 | 217.0<br>87.0<br>217.0<br>87.0 | 1.0<br>1.0<br>1.0<br>1.0 | 3.0<br>3.0<br>3.0<br>3.0 | 0.0<br>0.0                      | V-Horn<br>H-Horn<br>V-Horn<br>H-Horn  | AV<br>AV<br>PK<br>PK | 0.0<br>0.0<br>0.0<br>0.0       | 30.4<br>29.4<br>37.9<br>35.5 | 54.0<br>74.0               | -23.6<br>-24.6<br>-36.1   |

### NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** EUT: IM4 Work Order: ITRM0098 Serial Number: 19510523240 Date: 08/24/05 Customer: Intermec Technologies Corporation Temperature: 23 Attendees: Scott Holub Humidity: 50% Project: None Barometric Pressure 28.97 Tested by: Jeremiah Darden TEST SPECIFICATIONS Power: 120VAC/60Hz Job Site: OC10 Test Method FCC 15.247(d) Spurious Radiated Emissions:2005-04 ANSI C63.4:2003 TEST PARAMETERS Test Distance (m) Antenna Height(s) (m) 1m - 4m 3m COMMENTS Radiall ROS-915, Y-axis **EUT OPERATING MODES** High 927.25, Data rate 32kbps **DEVIATIONS FROM TEST STANDARD** 17 Run# Jun Da Configuration # Results **Pass** Signature 0.08 70.0 • • 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 3700.000 4200.000 4700.000 5200.000 5700.000 6200.000 6700.000 7200.000 MHz External Distance Compared to Frea Amplitude Factor Azimuth Height Distance Polarity Detector Adjusted Spec. Limit Attenuation Adjustment Spec. (dBuV) (dB) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) (degrees) (meters) 4636.250 44.5 5.4 18.0 1.9 3.0 0.0 H-Horn ΑV 0.0 49.9 54.0 -4.1 7418.000 36.4 11.9 91.0 3.0 0.0 V-Horn ΑV 0.0 48.3 54.0 -5.7 7418.000 36.3 11.9 35.0 1.0 3.0 0.0 H-Horn ΑV 0.0 48.2 54.0 -5.8 4636.250 H-Horn PK -5.8 62.8 5.4 18.0 1.9 3.0 0.0 0.0 68.2 74.0 4636.250 40.0 5.4 357.0 2.5 3.0 0.0 V-Horn ΑV 0.0 45.4 54.0 -8.6 4636.250 357.0 V-Horn PΚ -9.8 58.8 2.5 3.0 0.0 64.2 74.0 5.4 0.0 PK 7418.000 48.1 11.9 1.0 3.0 H-Horn 60.0 74.0 -14.0 35.0 0.0 0.0 V-Horn 7418.000 PK 48.0 11.9 91.0 1.5 3.0 0.0 0.0 59.9 74.0 -14.1 3709.000 35.8 3.8 28.0 1.0 3.0 0.0 H-Horn AV0.0 39.6 54.0 -14.4

3709.000

3709.000

3709.000

35.5

48.8

48.6

3.8

3.8

3.8

257.0

28.0

257.0

1.0

1.0

1.0

3.0

3.0

3.0

0.0

0.0

0.0

V-Horn

H-Horn

V-Horn

 $\mathsf{AV}$ 

0.0

0.0

0.0

39.3

52.4

54.0

74.0

74.0

-14.7

-21.4

-21.6

| NORTHWEST<br>EMC              |                     | RA                   | DIAT                    | ED EI             | MISSI                | ONS                             | DATA       | SHE      | ĒΤ                             |                      |                       | CQ 2005.8<br>EMI 2005.   |
|-------------------------------|---------------------|----------------------|-------------------------|-------------------|----------------------|---------------------------------|------------|----------|--------------------------------|----------------------|-----------------------|--------------------------|
|                               | : IM4               |                      |                         |                   |                      |                                 |            |          |                                | Nork Ordon           | ITRM0098              |                          |
| Serial Number                 |                     | 40                   |                         |                   |                      |                                 |            |          | <u> </u>                       |                      | 08/24/05              |                          |
|                               | Intermec T          |                      | s Cornora               | tion              |                      |                                 |            |          | Te                             | emperature:          |                       |                          |
|                               | : Scott Holu        |                      | 3 Corpora               | LIOII             |                      |                                 |            |          | 16                             | Humidity:            |                       |                          |
| Project                       |                     |                      |                         |                   |                      |                                 |            |          | Barometr                       | ic Pressure          |                       |                          |
|                               | Jeremiah [          | arden                |                         |                   |                      | Power:                          | 120VAC/60  | Hz       |                                | Job Site:            |                       |                          |
| T SPECIFICAT                  |                     |                      |                         |                   |                      |                                 | Test Metho |          |                                |                      |                       |                          |
| : 15.247(d) Spu               | ırious Radia        | ted Emissio          | ons:2005-0              | <b>14</b>         |                      |                                 | ANSI C63.4 | 1:2003   |                                |                      |                       |                          |
| T PARAMETE                    |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| enna Height(s)                | (m)                 | 1                    | 1m - 4m                 |                   |                      | Test Distar                     | nce (m)    |          |                                | 3m                   |                       |                          |
| IMENTS<br>III ROS-915, Y-axis |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| OPERATING 902.75, Data rate 3 | 2kbps               | NDARD                |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| #                             | 1                   | 8                    |                         |                   |                      | A -                             |            |          |                                |                      |                       |                          |
| figuration #                  |                     |                      |                         |                   | Jus -                | 100                             |            |          |                                |                      |                       |                          |
| ults                          | Pa                  | ss                   |                         | Signature         | 11                   |                                 |            |          |                                |                      |                       |                          |
| 80.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       | ]                        |
| 70.0                          | *                   |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 60.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       | 1                        |
| 50.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| _                             |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 40.0                          | *                   |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 30.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 20.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 10.0                          |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 0.0                           |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       | _                        |
| 1800.00                       | 0 1810.00           | 0 1820.0             | 00 1830                 | 0.000 184         | 0.000 1              |                                 | 1860.000   | 1870.00  | 0 1880.0                       | 000 1890             | .000 190              | 0.000                    |
|                               |                     |                      |                         |                   |                      | MHz                             |            |          |                                |                      |                       |                          |
| Freq<br>(MHz)                 | Amplitude<br>(dBuV) | Factor<br>(dB)       | Azimuth (degrees)       | Height (meters)   | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity   | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m   | Spec. Limit<br>dBuV/m | Compare<br>Spec.<br>(dB) |
|                               | 74.6                | -2.7                 | 170.0                   | 1.5               | 3.0                  | 0.0                             | H-Horn     | PK       | 0.0                            | 71.9                 | 74.0                  | -                        |
| 1805.500                      |                     |                      |                         |                   |                      |                                 |            |          |                                |                      |                       |                          |
| 1805.500                      |                     | -2.7                 | 201.0                   | 1.6               | 3.0                  | 0.0                             | V-Horn     | PK       | 0.0                            | 70.3                 | 74.0                  | -:                       |
|                               | 48.4                | -2.7<br>-2.7<br>-2.7 | 201.0<br>170.0<br>201.0 | 1.6<br>1.5<br>1.6 |                      | 0.0<br>0.0                      |            |          |                                | 70.3<br>45.7<br>44.0 |                       | -<br>-<br>1              |

| NORTHWEST   |                         |                          | R <i>A</i>           | DIAT              | ED EI             | MISSI                | IONS                            | DATA                       | SHE            | ET                             |                          |                       | CQ 2005.8<br>EMI 2005.   |
|---|-------------------------|--------------------------|----------------------|-------------------|-------------------|----------------------|---------------------------------|----------------------------|----------------|--------------------------------|--------------------------|-----------------------|--------------------------|
| LIVIO   |                         | IM4                      |                      |                   |                   |                      |                                 |                            |                |                                | Nork Ord                 | ITDM0000              |                          |
| Caul-1 M  | EUT:                    |                          | 40                   |                   |                   |                      |                                 |                            |                |                                | Nork Order:              |                       |                          |
|   |                         | 195105232                |                      | 00 Corno          | tion              |                      |                                 |                            |                |                                |                          | 08/24/05              |                          |
|   |                         | Intermec I<br>Scott Holu |                      | es Corpora        | LIUII             |                      |                                 |                            |                | 16                             | emperature:<br>Humidity: |                       |                          |
|   | oject:                  |                          | D .                  |                   |                   |                      |                                 |                            |                | Rarometr                       | ic Pressure              |                       |                          |
|   |                         | Jeremiah I               | Darden               |                   |                   |                      | Power:                          | 120VAC/60                  | )Hz            | Daronieu                       | Job Site:                |                       |                          |
| ST SPECIF   |                         |                          | - 4. 4011            |                   |                   |                      | 1 0 11 0 11                     | Test Metho                 |                |                                | CON CRO                  | 56.6                  |                          |
| C 15.247(d  | ) Spur                  | ious Radia               | ted Emissi           | ions:2005-0       | 04                |                      |                                 | ANSI C63.4                 | 4:2003         |                                |                          |                       |                          |
| ST PARAM  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| enna Heig   | ht(s) (                 | m)                       |                      | 1m - 4m           |                   |                      | Test Distar                     | nce (m)                    |                |                                | 3m                       |                       |                          |
| MMENTS<br>iall ROS-915,                             |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| T OPERAT<br>915.25, Data<br>VIATIONS<br>deviations. | rate 32k                | bps                      | NDARD                |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| n #   |                         | 1                        | 9                    |                   |                   | 1                    | fr                              |                            |                |                                |                          |                       |                          |
| nfiguration   | #                       |                          |                      | I                 |                   | Juny -               |                                 |                            |                |                                |                          |                       |                          |
| sults   |                         | Pa                       | ss                   |                   | Signature         | art d                |                                 |                            |                |                                |                          |                       |                          |
| 70.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| 60.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       | -                        |
| 50.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| ₩ <b>//ngp</b>                                      |                         |                          |                      |                   |                   |                      | *                               |                            |                |                                |                          |                       |                          |
| 30.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
| 20.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       | -                        |
| 10.0  |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       | -                        |
| 0.0   | $\coprod$               |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       | _                        |
| 910   | 0.000                   | 9110.00                  | 00 9120.             | 000 9130          | 0.000 914         | 10.000 9             | 150.000                         | 9160.000                   | 9170.00        | 0 9180.0                       | 000 9190                 | .000 920              | 0.000                    |
|   |                         |                          |                      |                   |                   |                      | MHz                             |                            |                |                                |                          |                       |                          |
| Freq<br>(MHz)                                       |                         | Amplitude<br>(dBuV)      | Factor<br>(dB)       | Azimuth (degrees) | Height (meters)   | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity                   | Detector       | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m       | Spec. Limit<br>dBuV/m | Compare<br>Spec.<br>(dB) |
|   | 2.500                   | 42.5                     | -7.7                 | 338.0             | 1.0               | 3.0                  | 0.0                             | H-Horn                     | AV             | 0.0                            | 34.8                     | 54.0                  | -1                       |
| 910   |                         |                          |                      |                   |                   |                      |                                 |                            |                |                                |                          |                       |                          |
|   | 2.500                   | 41.2                     | -7.7                 | 103.0             | 1.0               | 3.0                  | 0.0                             | V-Horn                     | AV             | 0.0                            | 33.5                     | 54.0                  | -2                       |
| 915<br>915  | 2.500<br>2.500<br>2.500 | 41.2<br>53.9<br>52.9     | -7.7<br>-7.7<br>-7.7 | 338.0             | 1.0<br>1.0<br>1.0 | 3.0<br>3.0<br>3.0    | 0.0                             | V-Horn<br>H-Horn<br>V-Horn | AV<br>PK<br>PK | 0.0<br>0.0<br>0.0              | 33.5<br>46.2<br>45.2     | 74.0                  | -2<br>-2<br>-2           |

| NORTHWEST<br>EMC                                 |                     | RA             | DIAT              | ED EI           | MISSI                | ONS                             | DATA       | SHE      | ΕT                             |                         |                       | CQ 2005.8<br>EMI 2005.   |
|--|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------|----------|--------------------------------|-------------------------|-----------------------|--------------------------|
|  | IIM4                |                |                   |                 |                      |                                 |            |          |                                | Manle Cords             | ITDM0000              |                          |
|  | IM4                 | 10             |                   |                 |                      |                                 |            |          | V                              | Vork Order:             |                       |                          |
| Serial Number                                    |                     |                | e Cornor-         | tion            |                      |                                 |            |          |                                |                         | 08/24/05              |                          |
|  | Intermec T          |                | s corpora         | uon             |                      |                                 |            |          | 16                             | mperature:<br>Humidity: |                       |                          |
| Project  |                     | ,              |                   |                 |                      |                                 |            |          | Barometr                       | ic Pressure             |                       |                          |
|  | Jeremiah D          | arden          |                   |                 |                      | Power:                          | 120VAC/60  | )Hz      | Daronieu                       | Job Site:               |                       |                          |
| ST SPECIFICAT                                    |                     | araon          |                   |                 |                      | i ower.                         | Test Metho |          |                                | OOD OILC.               | 0010                  |                          |
| C 15.247(d) Spu                                  | rious Radia         | ed Emissio     | ons:2005-0        | 04              |                      |                                 | ANSI C63.4 | 4:2003   |                                |                         |                       |                          |
| ST PARAMETER                                     |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
| enna Height(s)                                   | (m)                 |                | 1m - 4m           |                 |                      | Test Distar                     | nce (m)    |          |                                | 3m                      |                       |                          |
| MMENTS<br>all ROS-915, Y-axis                    |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
| T OPERATING In 927.25, Data rate : VIATIONS FROI | 32kbps              | NDARD          |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
| າ #  | 20                  | )              |                   |                 |                      | F -                             |            |          |                                |                         |                       |                          |
| nfiguration #                                    |                     |                |                   |                 | Jus -                | 0                               |            |          |                                |                         |                       |                          |
| sults  | Pa                  | ss             |                   | Signature       |                      |                                 |            |          |                                |                         |                       |                          |
| 70.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
|  |                     |                |                   |                 | •                    |                                 |            |          |                                |                         |                       | +                        |
| 50.0   |                     |                |                   |                 | •                    |                                 |            |          |                                |                         |                       |                          |
| <b>W/\ng</b> p 40.0                              |                     |                |                   |                 | •                    |                                 |            |          |                                |                         |                       |                          |
| 30.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       | -                        |
| 20.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       | -                        |
| 10.0   |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
| 0.0  |                     |                |                   |                 |                      |                                 |            |          |                                |                         |                       |                          |
| 8300.00  | 0 8310.00           | 0 8320.0       | 000 8330          | 0.000 834       | 0.000 8              | 350.000                         | 8360.000   | 8370.00  | 0 8380.0                       | 000 8390                | .000 840              | 0.000                    |
|  |                     |                |                   |                 |                      | MHz                             |            |          |                                |                         |                       |                          |
| Freq<br>(MHz)                                    | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity   | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m      | Spec. Limit<br>dBuV/m | Compare<br>Spec.<br>(dB) |
|  | 1                   | 0.7            | 338.0             | 1.0             | 2.0                  | - 0.0                           | IIIIawa    | AV       | 0.0                            | 37.6                    | 54.0                  | -1                       |
| 8345.250   | 46.3                | -8.7           | 330.0             | 1.0             | 3.0                  | 0.0                             | H-Horn     | AV       | 0.0                            | 37.0                    | 54.0                  |                          |
|  |                     | -8.7<br>-8.7   | 149.0             | 1.0             | 3.0                  |                                 | V-Horn     | AV       | 0.0                            | 34.5                    | 54.0                  | -1                       |
| 8345.250   | 43.2                |                |                   |                 |                      | 0.0                             |            |          |                                |                         |                       |                          |

| NORTHWES             |                     |                     | R <i>A</i>     | DIAT              | ED EI           | MISSI                | ONS                             | DATA             | SHE      | ET                             |                    |                       | CQ 2005.8<br>EMI 2005.  |
|----------------------|---------------------|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------------|----------|--------------------------------|--------------------|-----------------------|-------------------------|
|                      | EUT:                | IM4                 |                |                   |                 |                      |                                 |                  |          | ,                              | Vork Ordon         | ITRM0098              |                         |
| Sorial N             |                     | 195105232           | 10             |                   |                 |                      |                                 |                  |          | v                              |                    | 08/24/05              |                         |
|                      |                     | Intermec To         |                | es Corpora        | tion            |                      |                                 |                  |          | Te                             | mperature:         |                       |                         |
|                      |                     | Scott Holul         |                | o oo pora         |                 |                      |                                 |                  |          |                                | Humidity:          |                       |                         |
|                      | Project:            |                     | -              |                   |                 |                      |                                 |                  |          | Barometr                       | ic Pressure        |                       |                         |
| Tes                  | ted by:             | Jeremiah D          | arden          |                   |                 |                      | Power:                          | 120VAC/60        | Hz       |                                | Job Site:          |                       |                         |
| ST SPECI             | FICATI              | ONS                 |                |                   |                 |                      |                                 | Test Metho       | d        |                                |                    |                       |                         |
| C 15.247(            | d) Spur             | ious Radia          | ed Emissi      | ons:2005-0        | 04              |                      |                                 | ANSI C63.4       | 1:2003   |                                |                    |                       |                         |
| ST PARA              |                     | -                   |                |                   |                 |                      | <b>T</b> (5) (                  |                  |          |                                |                    |                       |                         |
| enna Hei<br>MMENTS   |                     | m)                  |                | 1m - 4m           |                 |                      | Test Distar                     | nce (m)          |          |                                | 3m                 |                       |                         |
| T OPERA 915.25, Date | TING M<br>a rate 38 | ODES                | NDARD          |                   |                 |                      |                                 |                  |          |                                |                    |                       |                         |
| deviations.          | FROM                | 2°                  |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                         |
| n#<br>nfiguratio     | n #                 |                     | •              |                   |                 | Just -               | 55                              |                  |          |                                |                    |                       |                         |
| nfiguratio           | n#                  |                     |                |                   |                 | 1                    |                                 |                  |          |                                |                    |                       |                         |
| sults                |                     | Pas                 | SS             |                   | Signature       |                      |                                 |                  |          |                                |                    |                       |                         |
| 70.0<br>60.0         | )                   |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                         |
|                      |                     |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | 1                       |
| 50.0                 | )                   |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | 1                       |
| <b>W//ngp</b> 40.0   |                     |                     |                |                   |                 |                      | *                               |                  |          |                                |                    |                       |                         |
| 30.0                 | )                   |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                         |
| 20.0                 | ) 🕌                 |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | -                       |
| 10.0                 |                     |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                         |
| 0.0                  |                     |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | _                       |
| 910                  | 00.000              | 9110.00             | 0 9120.0       | 000 9130          | 0.000 914       | 0.000 9              | 150.000                         | 9160.000         | 9170.00  | 0 9180.0                       | 000 9190           | .000 920              | 0.000                   |
|                      |                     |                     |                |                   |                 |                      | MHz                             |                  |          |                                |                    |                       |                         |
| Freq<br>(MHz)        |                     | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity         | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit<br>dBuV/m | Compare<br>Spec<br>(dB) |
|                      | 52.500              | 38.5                | -7.7           | 109.0             | 1.0             | 3.0                  | 0.0                             | V-Horn           | AV       | 0.0                            | 30.8               | 54.0                  | -2                      |
|                      | 52.500              | 35.8                | -7.7           | 257.0             | 1.0             | 3.0                  |                                 | H-Horn           | AV       | 0.0                            | 28.1               | 54.0                  | -2                      |
| 91                   | 0=.000              |                     |                |                   |                 | 0.0                  | 0.0                             | 11110111         | 7.0      | 0.0                            | 20.1               | 34.0                  | _                       |
| 91                   | 52.500<br>52.500    | 50.0<br>48.1        | -7.7<br>-7.7   | 109.0<br>257.0    | 1.0<br>1.0      | 3.0<br>3.0           | 0.0                             | V-Horn<br>H-Horn | PK<br>PK | 0.0<br>0.0                     | 42.3<br>40.4       | 74.0                  | -3<br>-3                |

| NORTHWEST EMC                       |               | RA         | DIAT       | ED EI     | MISSI    | ONS                     | DATA                       | SHEE           | ΞT                     |             |             | Q 2005.8<br>EMI 2005 |
|-------------------------------------|---------------|------------|------------|-----------|----------|-------------------------|----------------------------|----------------|------------------------|-------------|-------------|----------------------|
| EUT:                                | IM4           |            |            |           |          |                         |                            |                | v                      | Vork Order: | ITDM0000    |                      |
| Serial Number:                      |               | n          |            |           |          |                         |                            |                | <u>v</u>               |             | 08/24/05    |                      |
|                                     | Intermec Te   |            | s Corpora  | tion      |          |                         |                            |                | Te                     | mperature:  |             |                      |
|                                     | Scott Holub   | omiologic  | о острога  |           |          |                         |                            |                |                        | Humidity:   |             |                      |
| Project:                            |               |            |            |           |          |                         |                            |                | Barometr               | ic Pressure |             |                      |
| Tested by:                          | Jeremiah Da   | arden      |            |           |          | Power:                  | 120VAC/60                  | Hz             |                        | Job Site:   |             |                      |
| T SPECIFICATI                       | ONS           |            |            |           |          |                         | Test Metho                 | d              |                        |             |             |                      |
| : 15.247(d) Spur                    | rious Radiate | ed Emissio | ons:2005-0 | 14        |          |                         | ANSI C63.4                 | 1:2003         |                        |             |             |                      |
| T PARAMETER                         |               |            |            |           |          | Took Diotor             | (m)                        |                |                        |             |             |                      |
| enna Height(s) (<br>MMENTS          | (m)           |            | 1m - 4m    |           |          | Test Distar             | nce (m)                    |                |                        | 3m          |             |                      |
| OPERATING M<br>115.25, Data rate 40 | IODES<br>kbps | IDARD      |            |           |          |                         |                            |                |                        |             |             |                      |
| eviations.                          | 22            |            |            |           |          |                         |                            |                |                        |             |             |                      |
| figuration #                        |               |            |            |           | Just -   | D                       |                            |                |                        |             |             |                      |
|                                     | Pas           | _          |            | Cionat    | 1        |                         |                            |                |                        |             |             |                      |
| ults                                | Pas           | <b>ა</b>   |            | Signature |          |                         |                            |                |                        |             |             |                      |
| 70.0                                |               |            |            |           |          |                         |                            |                |                        |             |             | -                    |
| 50.0                                |               |            |            |           |          |                         |                            |                |                        |             |             |                      |
| 40.0                                |               |            |            |           |          | *                       |                            |                |                        |             |             | _                    |
| 30.0                                |               |            |            |           |          | *                       |                            |                |                        |             |             |                      |
| 20.0                                |               |            |            |           |          |                         |                            |                |                        |             |             |                      |
| 10.0                                |               |            |            |           |          |                         |                            |                |                        |             |             |                      |
| 0.0                                 |               |            |            |           | +        |                         |                            |                |                        |             |             | 1                    |
| 9100.000                            | 9110.000      | 9120.0     | 000 9130   | ).000 914 | 0.000 9  | 150.000<br><b>MHz</b>   | 9160.000                   | 9170.000       | 9180.0                 | 000 9190    | .000 920    | 0.000                |
|                                     | Amplitude     | Factor     | Azimuth    | Height    | Distance | External<br>Attenuation | Polarity                   | Detector       | Distance<br>Adjustment | Adjusted    | Spec. Limit | Compare<br>Spec.     |
| Freq<br>(MHz)                       | (dBuV)        | (dB)       | (degrees)  | (meters)  | (meters) | (dB)                    |                            |                | (dB)                   | dBuV/m      | dBuV/m      | (dB)                 |
| (MHz)<br>9152.500                   | (dBuV) 38.3   | -7.7       | 111.0      | 1.0       | 3.0      | 0.0                     | V-Horn                     | AV             | 0.0                    | 30.6        | 54.0        | -2                   |
| (MHz)                               | (dBuV)        |            |            |           |          |                         | V-Horn<br>H-Horn<br>V-Horn | AV<br>AV<br>PK |                        |             |             | -2<br>-2<br>-3       |

## NORTHWEST RADIATED EMISSIONS DATA SHEET **EMC** Work Order: ITRM0098 EUT: IM4 Serial Number: 19510523240 Date: 08/24/05 Customer: Intermec Technologies Corporation Temperature: 22 Attendees: Scott Holub Humidity: 48% Project: None Tested by: Jeremiah Darden TEST SPECIFICATIONS Barometric Pressure 28.97 Power: 120VAC/60Hz Job Site: OC10 Test Method FCC 15.247(d) Spurious Radiated Emissions:2005-04 ANSI C63.4:2003 TEST PARAMETERS Antenna Height(s) (m) Test Distance (m) 1m - 4m 3m COMMENTS Kathrein 25-578, X-axis EUT OPERATING MODES Mid 915.25, Data rate 32kbps DEVIATIONS FROM TEST STANDARD No deviations. 23 Run# Just Da Configuration # Pass Results Signature 0.08 70.0 60.0 50.0 \$ \$ dBuV/m 40.0 • 30.0 20.0 10.0 0.0 $8200.000 \quad 8300.000 \quad 8400.000 \quad 8500.000 \quad 8600.000 \quad 8700.000 \quad 8800.000 \quad 8900.000 \quad 9000.000 \quad 9100.000 \quad 9200.000 \quad 9200.0000$ MHz

|          |           |        |           |          |          | External    |          |          | Distance   |          |             | Compared to |   |
|----------|-----------|--------|-----------|----------|----------|-------------|----------|----------|------------|----------|-------------|-------------|---|
| Freq     | Amplitude | Factor | Azimuth   | Height   | Distance | Attenuation | Polarity | Detector | Adjustment | Adjusted | Spec. Limit | Spec.       |   |
| (MHz)    | (dBuV)    | (dB)   | (degrees) | (meters) | (meters) | (dB)        |          |          | (dB)       | dBuV/m   | dBuV/m      | (dB)        |   |
| 9152.500 | 44.4      | -7.7   | 254.0     | 1.7      | 3.0      | 0.0         | H-Horn   | AV       | 0.0        | 36.7     | 54.0        | -17.3       | _ |
| 8237.000 | 45.3      | -8.9   | 328.0     | 1.5      | 3.0      | 0.0         | V-Horn   | AV       | 0.0        | 36.4     | 54.0        | -17.6       |   |
| 9152.500 | 41.5      | -7.7   | 99.0      | 1.0      | 3.0      | 0.0         | V-Horn   | AV       | 0.0        | 33.8     | 54.0        | -20.2       |   |
| 8237.000 | 40.0      | -8.9   | 37.0      | 1.0      | 3.0      | 0.0         | H-Horn   | AV       | 0.0        | 31.1     | 54.0        | -22.9       |   |
| 8237.000 | 57.2      | -8.9   | 328.0     | 1.5      | 3.0      | 0.0         | V-Horn   | PK       | 0.0        | 48.3     | 74.0        | -25.7       |   |
| 9152.500 | 55.8      | -7.7   | 254.0     | 1.7      | 3.0      | 0.0         | H-Horn   | PK       | 0.0        | 48.1     | 74.0        | -25.9       |   |
| 8237.000 | 55.8      | -8.9   | 37.0      | 1.0      | 3.0      | 0.0         | H-Horn   | PK       | 0.0        | 46.9     | 74.0        | -27.1       |   |
| 9152.500 | 54.1      | -7.7   | 99.0      | 1.0      | 3.0      | 0.0         | V-Horn   | PK       | 0.0        | 46.4     | 74.0        | -27.6       |   |
|          |           |        |           |          |          |             |          |          |            |          |             |             |   |

|                 | MC                        |                     | RA             | DIAT              | ED EI           | MISSI                | ONS                             | DATA             | SHE      | ΞT                             |                    |                       | CQ 2005.8<br>EMI 2005.   |
|-----------------|---------------------------|---------------------|----------------|-------------------|-----------------|----------------------|---------------------------------|------------------|----------|--------------------------------|--------------------|-----------------------|--------------------------|
| 44              | EUT:                      | IM4                 |                |                   |                 |                      |                                 |                  |          | v                              | Vork Ordon         | ITRM0098              |                          |
| Sor             |                           | 1951052324          | 0              |                   |                 |                      |                                 |                  |          | <u>v</u>                       |                    | 08/24/05              |                          |
| 361             |                           | Intermec Te         |                | s Cornorat        | tion            |                      |                                 |                  |          | Te                             | mperature:         |                       |                          |
|                 |                           | Scott Holub         |                | o oo pora         |                 |                      |                                 |                  |          |                                | Humidity:          |                       |                          |
|                 | Project:                  |                     |                |                   |                 |                      |                                 |                  |          | Barometr                       | ic Pressure        |                       |                          |
|                 | Tested by:                | Jeremiah Da         | arden          |                   |                 |                      | Power:                          | 120VAC/60        | Hz       |                                | Job Site:          | OC10                  |                          |
| ST SP           | PECIFICATION              | ONS                 |                |                   |                 |                      |                                 | Test Metho       | d        |                                |                    |                       |                          |
| C 15.2          | 247(d) Spur               | ious Radiate        | ed Emissio     | ons:2005-0        | 4               |                      |                                 | ANSI C63.4       | l:2003   |                                |                    |                       |                          |
|                 | ARAMETER                  |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| enna<br>MME     | Height(s) (               | m)                  |                | 1m - 4m           |                 |                      | Test Distar                     | nce (m)          |          |                                | 3m                 |                       |                          |
| Г ОРЕ<br>902.75 | ERATING M 5, Data rate 32 |                     | IDARD          |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| leviation       |                           | 24                  |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| _               | ration #                  |                     |                |                   |                 | De saint             | D                               |                  |          |                                |                    |                       |                          |
|                 | ration #                  | De-                 |                |                   | 0               | Just -               |                                 |                  |          |                                |                    |                       |                          |
| ults            |                           | Pas                 | S              |                   | Signature       |                      |                                 |                  |          |                                |                    |                       |                          |
|                 | 70.0                      |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | -                        |
| 5               | 50.0                      |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| ⊑               |                           |                     |                | 2                 |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| dBuV/m<br>₁     | 40.0                      |                     |                | •                 |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| _               | 30.0                      |                     |                | •                 |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| 2               | 20.0                      |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
| 1               | 10.0                      |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
|                 | 0.0                       |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       | 1                        |
|                 | 9000.000                  | 9010.000            | 9020.0         | 9030              | ).000 904       | 0.000 9              | 050.000<br><b>MHz</b>           | 9060.000         | 9070.000 | 9080.0                         | 00 9090            | .000 910              | 0.000                    |
|                 | Freq<br>MHz)              | Amplitude<br>(dBuV) | Factor<br>(dB) | Azimuth (degrees) | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity         |          | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit<br>dBuV/m | Compare<br>Spec.<br>(dB) |
|                 | 9027.000                  | 40.4                | -7.8           | 78.0              | 1.0             | 3.0                  | 0.0                             | H-Horn           | AV       | 0.0                            | 32.6               | 54.0                  | -2                       |
|                 | 9027.800                  | 38.7                | -7.8           | 100.0             | 1.0             | 3.0                  | 0.0                             | V-Horn           | AV       | 0.0                            | 30.9               | 54.0                  | -2                       |
|                 |                           |                     |                |                   |                 |                      |                                 |                  |          |                                |                    |                       |                          |
|                 | 9027.000<br>9027.000      | 53.0<br>51.4        | -7.8<br>-7.8   | 78.0<br>100.0     | 1.0<br>1.0      | 3.0<br>3.0           | 0.0<br>0.0                      | H-Horn<br>V-Horn | PK<br>PK | 0.0                            | 45.2<br>43.6       | 74.0<br>74.0          | -2:<br>-3:               |

#### NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** EUT: IM4 Work Order: ITRM0098 Serial Number: 19510523240 Date: 08/24/05 Customer: Intermec Technologies Corporation Temperature: 73 Attendees: Scott Holub Humidity: 48% Project: None Barometric Pressure 28.97 Tested by: Jeremiah Darden TEST SPECIFICATIONS Power: 120VAC/60Hz Job Site: OC10 Test Method FCC 15.247(d) Spurious Radiated Emissions:2005-04 ANSI C63.4:2003 TEST PARAMETERS Test Distance (m) Antenna Height(s) (m) 1m - 4m 3m COMMENTS Kathrein 25-578, X-axis **EUT OPERATING MODES** Mid 915.25, Data rate 32kbps **DEVIATIONS FROM TEST STANDARD** 25 Jun Da Configuration # Pass Results Signature 0.08 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 1800.000 2800.000 3800.000 4800.000 5800.000 6800.000 MHz External Distance Compared to Frea Amplitude Factor Azimuth Height Distance Polarity Detector Adjusted Spec. Limit Attenuation Adjustment Spec. (dBuV) (dB) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) (degrees) (meters) 4576.255 39.3 5.3 298.0 1.0 3.0 0.0 H-Horn ΑV 0.0 44.6 54.0 -9.4 4576.060 37.7 5.3 359.0 1.0 3.0 0.0 V-Horn ΑV 0.0 43.0 54.0 -11.0 7322.010 27.6 11.5 214.0 1.0 3.0 0.0 H-Horn ΑV 0.0 39.1 54.0 -14.9 7322.010 V-Horn 27.4 11.5 218.0 1.0 3.0 0.0 ΑV 0.0 38.9 54.0 -15.1 4576.255 53.6 298.0 3.0 0.0 H-Horn PK 0.0 58.9 74.0 -15.1 5.3 1.0 3661.000 34.0 3.7 301.0 3.0 0.0 H-Horn ΑV 37.7 -16.3 1.0 0.0 54.0 PK 4576.255 52.0 359.0 3.0 V-Horn 74.0 -16.7 5.3 1.0 0.0 0.0 57.3 V-Horn 3661.000 ΑV 31.5 3.7 44.0 1.5 3.0 0.0 0.0 35.2 54.0 -18.8 7322.010 41.7 11.5 214.0 1.0 3.0 0.0 H-Horn PK 0.0 53.2 74.0 -20.8 1830.450 35.5 -2.6 176.0 1.0 3.0 0.0 H-Horn ΑV 0.0 32.9 54.0 -21.1 7322.010 41.0 11.5 218.0 0.0 V-Horn 0.0 52.5 74.0 -21.5 1.0 3.0 1830.450 V-Horn ΑV 34.1 -2.6 359.0 1.0 3.0 0.0 0.0 31.5 54.0 -22.5 301.0 H-Horn 3661.000 45.3 3.7 1.0 3.0 0.0 PΚ 0.0 49.0 74.0 -25.0

3661 000

1830.450

1830.450

43 4

48.5

47.1

37

-2.6

-2.6

44 0

176.0

359.0

1.5

1.0

1.0

3.0

3.0

3.0

0.0

0.0

0.0

V-Horn

H-Horn

V-Horn

PK

PK

PΚ

47 1

45.9

44.5

0.0

0.0

0.0

74 0

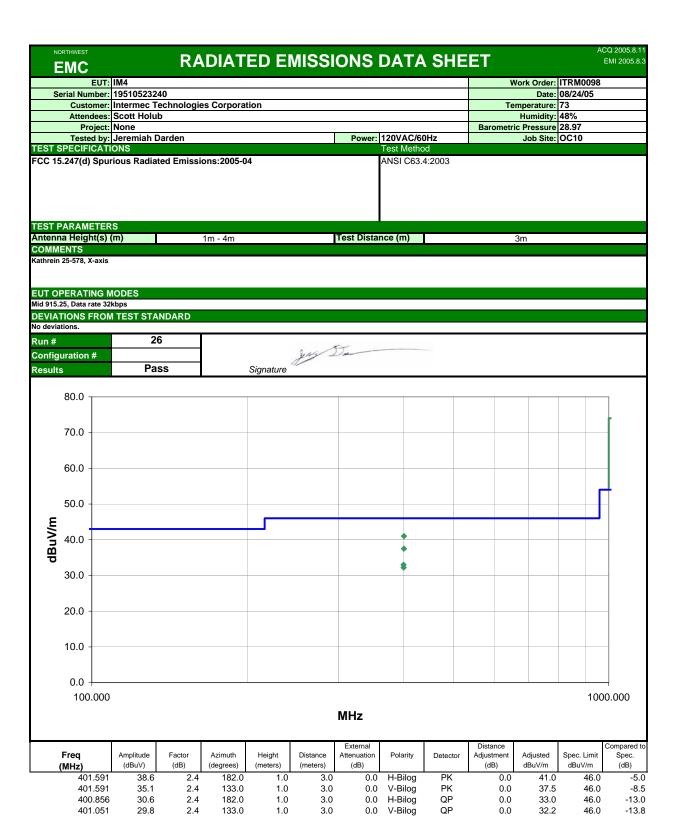
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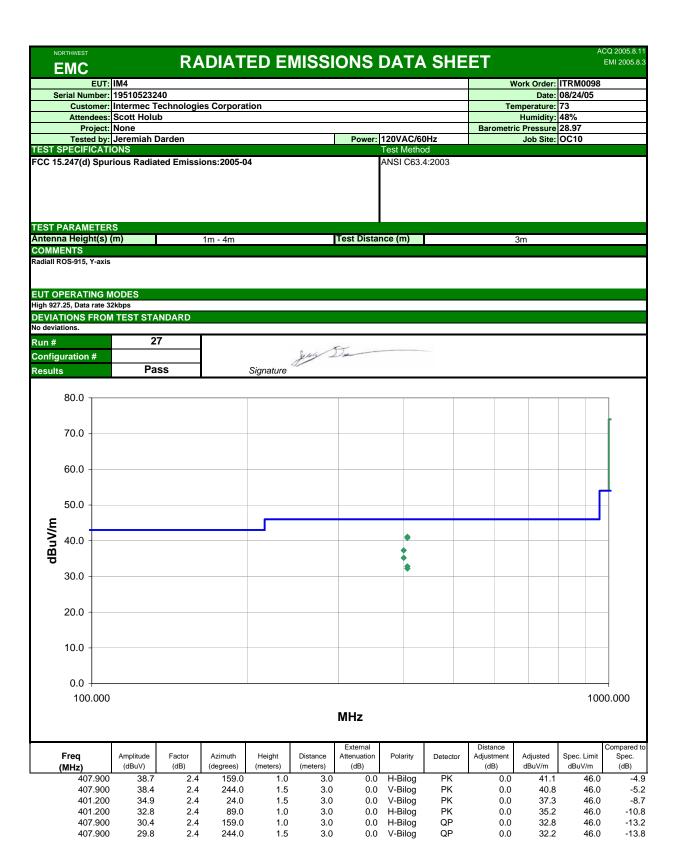
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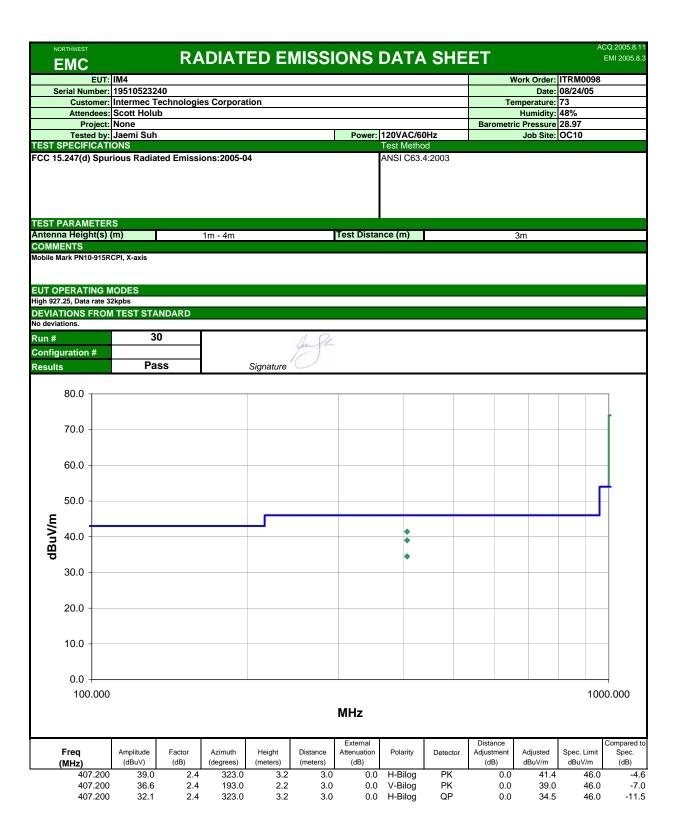
-26.9

-28.1

-29.5



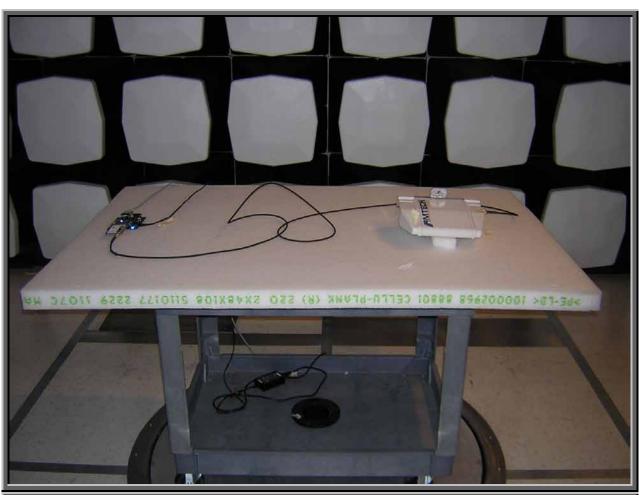


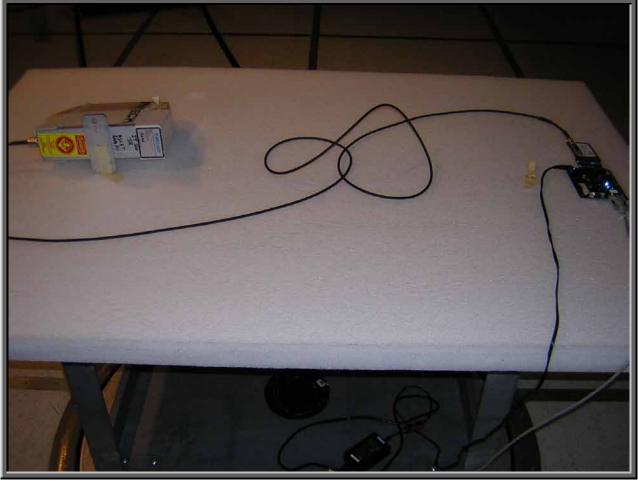


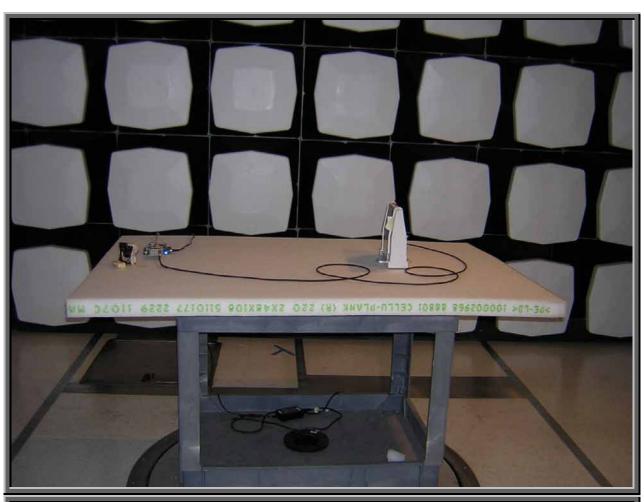
|                      | THWEST<br>MC                                   |  | R <i>A</i>               | DIAT                         | ED EI                    | MISSI                    | ONS                             | DATA                                 | SHE                  | ΕT                             |                              |                              | CQ 2005.8.1<br>EMI 2005.8.       |
|----------------------|--|--|--------------------------|------------------------------|--------------------------|--------------------------|---------------------------------|--------------------------------------|----------------------|--------------------------------|------------------------------|------------------------------|----------------------------------|
| Seri                 | EUT: ial Number: Customer: Attendees: Project: | 1951052324<br>Intermec Te<br>Scott Holul<br>None | chnologi                 | es Corpora                   | tion                     |                          | Dawer 1                         | 120\\&@@@                            | NU-                  | Те                             |                              | 48%<br>28.97                 |                                  |
|                      | PECIFICATI                                     |  |                          |                              | ,                        |                          |                                 | Test Metho                           | d                    |                                | Job Site:                    | OC10                         |                                  |
| GG 15.2              | 247(a) Spur                                    | ious Radiat                                      | ea Emissi                | ions:2005-0                  | <b>14</b>                |                          |                                 | ANSI C63.4                           | 4:2003               |                                |                              |                              |                                  |
|                      | RAMETER<br>Height(s) (                         |  |                          | 1m - 4m                      |                          |                          | Test Distar                     | nce (m)                              |                      |                                | 3m                           |                              |                                  |
| OMMEN                |  |  |                          |                              |                          |                          |                                 | , ,                                  |                      |                                |                              |                              |                                  |
| w 902.75<br>EVIATION |  |  | NDARD                    |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
| deviatio<br>un #     | ons.   | 31   |                          |                              |                          | 10                       |                                 |                                      |                      |                                |                              |                              |                                  |
|                      | ration #                                       |  |                          |                              |                          | Gen Ja                   |                                 |                                      |                      |                                |                              |                              |                                  |
| sults                |  | Pas  | SS                       |                              | Signature                |                          |                                 |                                      |                      |                                |                              |                              |                                  |
| 8                    | 30.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
| 7                    | 70.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
| 6                    | 60.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              | -                                |
|                      | 50.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
| ф                    | 40.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
|                      | 20.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
|                      | 10.0   |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
|                      | 0.0  |  |                          |                              |                          |                          |                                 |                                      |                      |                                |                              |                              |                                  |
|                      | 4500.000                                       | 4510.00  | 0 4520.                  | 000 4530                     | ).000 454                | 0.000 4                  | 550.000<br><b>MHz</b>           | 4560.000                             | 4570.00              | 0 4580.0                       | 000 4590                     | .000 460                     | 0.000                            |
|                      | req<br>(Hz)                                    | Amplitude<br>(dBuV)                              | Factor<br>(dB)           | Azimuth (degrees)            | Height (meters)          | Distance<br>(meters)     | External<br>Attenuation<br>(dB) | Polarity                             | Detector             | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m           | Spec. Limit<br>dBuV/m        | Compared t<br>Spec.<br>(dB)      |
|                      | 4513.750<br>4513.750<br>4513.750<br>4513.750   | 36.9<br>34.0<br>48.8<br>46.4                     | 5.1<br>5.1<br>5.1<br>5.1 | 35.0<br>39.0<br>35.0<br>39.0 | 2.4<br>1.0<br>2.4<br>1.0 | 3.0<br>3.0<br>3.0<br>3.0 | 0.0<br>0.0                      | H-Horn<br>V-Horn<br>H-Horn<br>V-Horn | AV<br>AV<br>PK<br>PK | 0.0<br>0.0<br>0.0<br>0.0       | 42.0<br>39.1<br>53.9<br>51.5 | 54.0<br>54.0<br>74.0<br>74.0 | -12.0<br>-14.9<br>-20.1<br>-22.9 |

| Serial Number: 19510923240   Date: 195109232 | NORTHWEST                       |               |             | DIAT        | CD E      | 41001  | ONO         |          |          | <b></b>    |            |             | Q 2005.8.11    |
|--|---------------------------------|---------------|-------------|-------------|-----------|--------|-------------|----------|----------|------------|------------|-------------|----------------|
| Serial Number   195106232404   Temperature   175106232405   Temperature   175106232405   Temperature   175106232405   Temperature   175106232405   Temperature   17510623405   Temperature   1751062 |                                 |               | RA          | DIAT        | ED EN     | MISSI  | ONS         | DAT      | SHE      |            |            |             | EMI 2005.8.3   |
| Customer   Intermet Pichnologies Corporation   Femperature;   48%  |                                 |               | 240         |             |           |        |             |          |          | W          |            |             |                |
| Project    None     Prower    120VACR0Nt   | Custome                         | r: Intermec   | Technologi  | es Corporat | tion      |        |             |          |          | Те         | mperature: | 73          |                |
| Tested by   Jaemit Suh   |                                 |               | ub          |             |           |        |             |          |          | Barometri  |            |             |                |
| Section   Page   Page | Tested b                        | y: Jaemi Su   | h           |             |           |        | Power:      |          |          |            | Job Site:  | OC10        |                |
| Total Control  |                                 |               | ated Emissi | ons:2005-0  | 4         |        |             |          |          |            |            |             |                |
| Compared   Compared  |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| Mark PMIO-915RCPI, X-axis  |                                 |               |             | 1m - 4m     |           |        | Test Dista  | nce (m)  |          |            | 3m         |             |                |
| Marging   Section   Sect | COMMENTS<br>Mobile Mark PN10-91 | SRCPI, X-axis |             |             |           |        |             |          |          |            |            |             |                |
| Pass   Signature   Signature |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| Pass   Signature   | EVIATIONS FRO                   |               | ANDARD      |             |           |        |             |          |          |            |            |             |                |
| Signature   Sign | Run #                           | ;             | 32          |             |           | Gen fr |             |          |          |            |            |             |                |
| Total   Tota | Configuration # Results         | P             | ass         |             | Signature | 0      |             |          |          |            |            |             |                |
| Total   Tota | 80.0                            |               |             |             |           |        |             |          |          |            |            |             | _              |
| Freq   Amplitude   Factor   Azimuth   Height   Gegress)   Compared   MHz   M | 00.0                            |               |             |             |           |        |             |          |          |            |            |             |                |
| Solidation   Freq   Amplitude   Factor   (degrees)   (meters)   (meters)   (dB)   (d | 70.0                            |               |             |             |           |        |             |          |          |            |            |             |                |
| Solidation   Freq   Amplitude   Factor   (degrees)   (meters)   (meters)   (dB)   (d |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| Aprilitude   Factor   (degrees)   (meters)   (meters) | 60.0                            |               |             |             |           |        |             |          |          |            |            |             | -              |
| Aprilitude   Factor   (degrees)   (meters)   (meters) | 50.0                            |               |             |             |           |        |             |          |          |            |            |             | †              |
| Treq   |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| Treq   | ₹ <sub>40.0</sub> ↓             |               |             |             |           |        |             |          |          |            |            | •           |                |
| Treq   Amplitude   Factor   Azimuth   Height   Distance   Attenuation   Polarity   Detector   Adjustment   Adjusted   GBUV/m    | g P                             |               |             |             |           |        |             |          |          |            |            |             |                |
| Total   Tota | 30.0                            |               |             |             |           |        |             |          |          |            |            |             | -              |
| Total   Tota |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| NHz   Freq   | 20.0                            |               |             |             |           |        |             |          |          |            |            |             | -              |
| NHz   Freq   |                                 |               |             |             |           |        |             |          |          |            |            |             |                |
| A500.000   5000.000   5500.000   6000.000   6500.000   7000.000   7500.000   8000.000  | 10.0                            |               |             |             |           |        |             |          |          |            |            |             | 1              |
| A500.000   5000.000   5500.000   6000.000   6500.000   7000.000   7500.000   8000.000  | 0.0                             |               |             |             |           |        |             |          |          |            |            |             |                |
| Freq (MHz)         Amplitude (dB) (dB)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         External Attenuation (dB)         Polarity         Detector         Distance Adjustment (dB)         Adjusted dBuV/m dBuV/m dBuV/m         Spec. Limit dBuV/m dBuV/m         Compared Spec. (dB)           8187.000         28.6         13.4         203.0         1.0         3.0         0.0         V-Horn AV         0.0         42.0         54.0         -12           4578.760         36.3         5.3         308.0         1.7         3.0         0.0         H-Horn AV         0.0         41.6         54.0         -12           4578.775         34.2         5.3         314.0         1.0         3.0         0.0         H-Horn AV         0.0         39.5         54.0         -14           7322.010         27.7         11.5         17.0         1.0         3.0         0.0         H-Horn AV         0.0         39.2         54.0         -14           4576.255         48.5         5.3         308.0         1.7         3.0         0.0         H-Horn AV         0.0         39.2         54.0         -14           4576.255         48.5         5.3         308.0         1.7   |                                 | 00 50         | 00.000      | 5500.00     | 0 600     | 00.000 | 6500.0      | 000      | 7000.000 | 7500.      | 000        | 8000.000    |                |
| Freq<br>(MHz)         Amplitude<br>(dBuV)         Factor<br>(dB)         Azimuth<br>(degrees)         Height<br>(meters)         Distance<br>(meters)         Attenuation<br>(dB)         Polarity<br>(dB)         Detector<br>(dB)         Adjustment<br>(dB)         Adjusted<br>dBuV/m         Spec. Limit<br>dBuV/m         Spec.<br>(dB)           8187.000         28.6         13.4         203.0         1.0         3.0         0.0         V-Horn<br>N-Horn         AV         0.0         42.0         54.0         -12           4578.760         36.3         5.3         308.0         1.7         3.0         0.0         H-Horn<br>N-Horn         AV         0.0         41.6         54.0         -12           4578.775         34.2         5.3         314.0         1.0         3.0         0.0         V-Horn<br>N-Horn         AV         0.0         41.6         54.0         -12           4576.255         48.5         5.3         308.0         1.7         3.0         0.0         H-Horn<br>N-Horn         AV         0.0         39.5         54.0         -14           4576.255         48.5         5.3         308.0         1.7         3.0         0.0         H-Horn<br>N-Horn         AV         0.0         39.2         54.0         -14           4576.255         48   |                                 |               |             |             |           |        | MHz         |          |          |            |            |             |                |
| 8187.000 28.6 13.4 203.0 1.0 3.0 0.0 V-Horn AV 0.0 42.0 54.0 -12 8183.000 28.6 13.4 46.0 1.0 3.0 0.0 H-Horn AV 0.0 42.0 54.0 -12 4578.760 36.3 5.3 308.0 1.7 3.0 0.0 H-Horn AV 0.0 41.6 54.0 -12 4578.775 34.2 5.3 314.0 1.0 3.0 0.0 V-Horn AV 0.0 39.5 54.0 -14 7322.010 27.7 11.5 17.0 1.0 3.0 0.0 H-Horn AV 0.0 39.5 54.0 -14 4576.255 48.5 5.3 308.0 1.7 3.0 0.0 H-Horn AV 0.0 53.8 74.0 -20 4576.255 46.0 5.3 314.0 1.0 3.0 0.0 V-Horn PK 0.0 51.3 74.0 -22 8187.000 32.8 13.4 203.0 1.0 3.0 0.0 V-Horn PK 0.0 46.2 74.0 -27 8183.000 32.7 13.4 46.0 1.0 3.0 0.0 H-Horn PK 0.0 46.1 74.0 -27  | •                               |               |             |             |           |        | Attenuation | Polarity | Detector | Adjustment |            | Spec. Limit |                |
| 8183.000       28.6       13.4       46.0       1.0       3.0       0.0       H-Horn       AV       0.0       42.0       54.0       -12         4578.760       36.3       5.3       308.0       1.7       3.0       0.0       H-Horn       AV       0.0       41.6       54.0       -12         4578.775       34.2       5.3       314.0       1.0       3.0       0.0       V-Horn       AV       0.0       39.5       54.0       -14         7322.010       27.7       11.5       17.0       1.0       3.0       0.0       H-Horn       AV       0.0       39.2       54.0       -14         4576.255       48.5       5.3       308.0       1.7       3.0       0.0       H-Horn       PK       0.0       53.8       74.0       -20         4576.255       46.0       5.3       314.0       1.0       3.0       0.0       V-Horn       PK       0.0       51.3       74.0       -22         8187.000       32.8       13.4       203.0       1.0       3.0       0.0       V-Horn       PK       0.0       46.2       74.0       -27         8183.000       32.7       13.4       46.0   |                                 |               |             |             |           |        |             | V-Horn   | AV       |            |            |             | (dB)<br>-12.0  |
| 4578.775     34.2     5.3     314.0     1.0     3.0     0.0     V-Horn     AV     0.0     39.5     54.0     -14       7322.010     27.7     11.5     17.0     1.0     3.0     0.0     H-Horn     AV     0.0     39.2     54.0     -14       4576.255     48.5     5.3     308.0     1.7     3.0     0.0     H-Horn     PK     0.0     53.8     74.0     -20       4576.255     46.0     5.3     314.0     1.0     3.0     0.0     V-Horn     PK     0.0     51.3     74.0     -22       8187.000     32.8     13.4     203.0     1.0     3.0     0.0     V-Horn     PK     0.0     46.2     74.0     -27       8183.000     32.7     13.4     46.0     1.0     3.0     0.0     H-Horn     PK     0.0     46.1     74.0     -27   | 8183.00                         | 0 28.6        | 3 13.4      | 46.0        | 1.0       | 3.0    | 0.0         | H-Horn   | AV       | 0.0        | 42.0       | 54.0        | -12.0          |
| 7322.010 27.7 11.5 17.0 1.0 3.0 0.0 H-Horn AV 0.0 39.2 54.0 -14 4576.255 48.5 5.3 308.0 1.7 3.0 0.0 H-Horn PK 0.0 53.8 74.0 -20 4576.255 46.0 5.3 314.0 1.0 3.0 0.0 V-Horn PK 0.0 51.3 74.0 -22 8187.000 32.8 13.4 203.0 1.0 3.0 0.0 V-Horn PK 0.0 46.2 74.0 -27 8183.000 32.7 13.4 46.0 1.0 3.0 0.0 H-Horn PK 0.0 46.1 74.0 -27   |                                 |               |             |             |           |        |             |          |          |            |            |             | -12.4<br>-14.  |
| 4576.255 46.0 5.3 314.0 1.0 3.0 0.0 V-Horn PK 0.0 51.3 74.0 -22 8187.000 32.8 13.4 203.0 1.0 3.0 0.0 V-Horn PK 0.0 46.2 74.0 -27 8183.000 32.7 13.4 46.0 1.0 3.0 0.0 H-Horn PK 0.0 46.1 74.0 -27   | 7322.01                         | 0 27.7        | 7 11.5      | 17.0        | 1.0       | 3.0    | 0.0         | H-Horn   | AV       | 0.0        | 39.2       | 54.0        | -14.8          |
| 8187.000 32.8 13.4 203.0 1.0 3.0 0.0 V-Horn PK 0.0 46.2 74.0 -27 8183.000 32.7 13.4 46.0 1.0 3.0 0.0 H-Horn PK 0.0 46.1 74.0 -27   |                                 |               |             |             |           |        |             |          |          |            |            |             | -20.2          |
| 8183.000 32.7 13.4 46.0 1.0 3.0 0.0 H-Horn PK 0.0 46.1 74.0 -27  |                                 |               |             |             |           |        |             |          |          |            |            |             | -22.1<br>-27.8 |
| 7322.010 32.0 11.5 17.0 1.0 3.0 0.0 H-Horn PK 0.0 43.5 74.0 -30  | 8183.00                         | 0 32.7        | 7 13.4      | 46.0        | 1.0       | 3.0    | 0.0         | H-Horn   | PK       | 0.0        | 46.1       | 74.0        | -27.9          |
|  | 7322.01                         | U 32.0        | 11.5        | 17.0        | 1.0       | 3.0    | 0.0         | H-Horn   | PK       | 0.0        | 43.5       | 74.0        | -30.           |

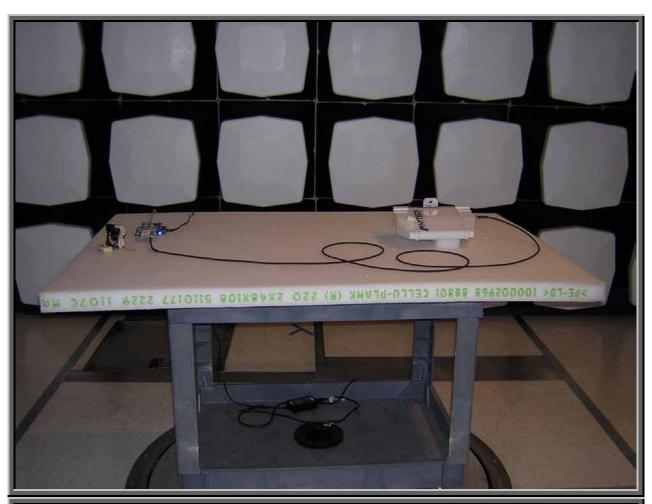
| NORTHWEST<br>EMC  |                   | RADIATE               | ED EN           | IISS <u>I</u>        | ONS                             | DATA                    | SHE      | ĒΤ                             |                    |                    | Q 2005.8<br>EMI 2005    |
|---|-------------------|-----------------------|-----------------|----------------------|---------------------------------|-------------------------|----------|--------------------------------|--------------------|--------------------|-------------------------|
|   | IM4               |                       |                 |                      |                                 |                         |          |                                | lork Ordon         | ITRM0098           |                         |
|   | 19510523240       |                       |                 |                      |                                 |                         |          | V                              |                    | 08/24/05           |                         |
| Customer:   | Intermec Techno   | ologies Corporati     | ion             |                      |                                 |                         |          | Te                             | mperature:         | 73                 |                         |
|   | Scott Holub       |                       |                 |                      |                                 |                         |          |                                | Humidity:          |                    |                         |
| Project:  |                   |                       |                 |                      | Dawari                          | 120\/ \ C/60            | .u_      | Barometri                      | c Pressure         |                    |                         |
| ST SPECIFICAT   | Jaemi Suh         |                       |                 |                      |                                 | 120VAC/60<br>Test Metho |          |                                | Job Site:          | 0010               |                         |
| C 15.247(d) Spu   | rious Radiated Er | missions:2005-04      | ı               |                      | ,                               | ANSI C63.4              | 1:2003   |                                |                    |                    |                         |
| ST PARAMETER  |                   | 4 4                   |                 |                      | Toot Dietar                     | 200 (m)                 |          |                                | 2.00               |                    |                         |
| enna Height(s) MMENTS   | (m)               | 1m - 4m               |                 |                      | Test Distan                     | ice (m)                 |          |                                | 3m                 |                    |                         |
| bile Mark PN10-915F<br>T OPERATING I<br>h 927.25, Data rate 3 | MODES             |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| VIATIONS FROM leviations.                                     | M TEST STANDAF    | RD                    |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| n #<br>nfiguration #  | 33                |                       |                 | Gen                  | De                              |                         |          |                                |                    |                    |                         |
| ntiguration #<br>sults  | Pass              | ,                     | Signature       | 10                   | 1                               |                         |          |                                |                    |                    |                         |
|   |                   | •                     |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 80.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 70.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 60.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    | _                       |
|   |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    | -                       |
| 50.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    | -                       |
| F   |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 40.0 40.0   |                   |                       | *               |                      |                                 |                         |          |                                |                    |                    | -                       |
| 30.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    | _                       |
| 20.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    | -                       |
| 10.0  |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 0.0   |                   |                       |                 |                      |                                 |                         |          |                                |                    |                    |                         |
| 4600.000  | 0 4610.000 46     | 620.000 4630.         | .000 4640       | 0.000 4              | 650.000                         | 4660.000                | 4670.00  | 0 4680.0                       | 00 4690            | .000 4700          | 0.000                   |
|   |                   |                       |                 |                      | MHz                             |                         |          |                                |                    |                    |                         |
| Freq<br>(MHz)   | Amplitude Fac     |                       | Height (meters) | Distance<br>(meters) | External<br>Attenuation<br>(dB) | Polarity                | Detector | Distance<br>Adjustment<br>(dB) | Adjusted<br>dBuV/m | Spec. Limit dBuV/m | Compare<br>Spec<br>(dB) |
| 4636.250<br>4636.250  | 39.0              | 5.4 44.0<br>5.4 283.0 | 1.0             | 3.0<br>3.0           | 0.0                             | V-Horn<br>H-Horn        | AV<br>AV | 0.0                            | 44.4<br>42.6       | 54.0<br>54.0       | -1                      |
|   |                   | 5.4 44.0              | 1.0             | 3.0                  |                                 |                         | PK       | 0.0                            | 56.8               | 74.0               | -1                      |
| 4636.250<br>4636.250  |                   | 5.4 283.0             | 1.0             | 3.0                  | 0.0<br>0.0                      | V-Horn<br>H-Horn        | PK       | 0.0                            | 54.3               | 74.0               | -1<br>-1                |



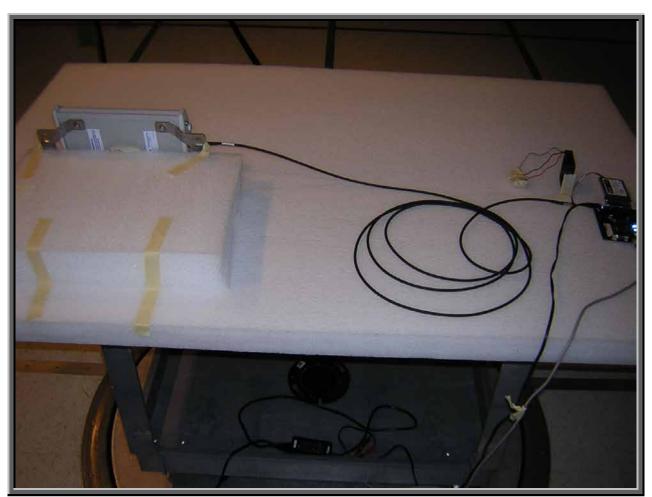


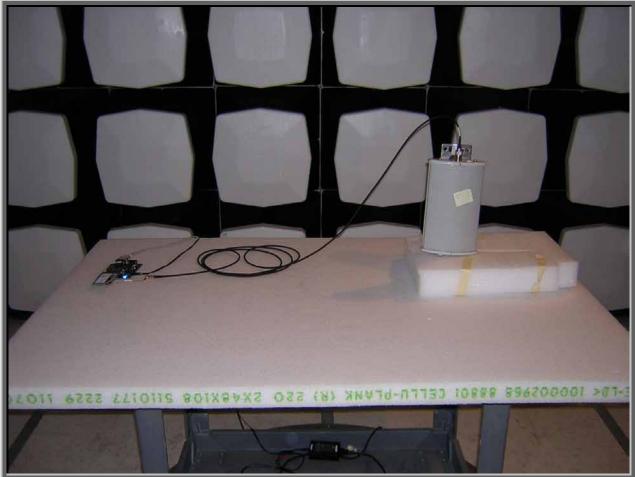


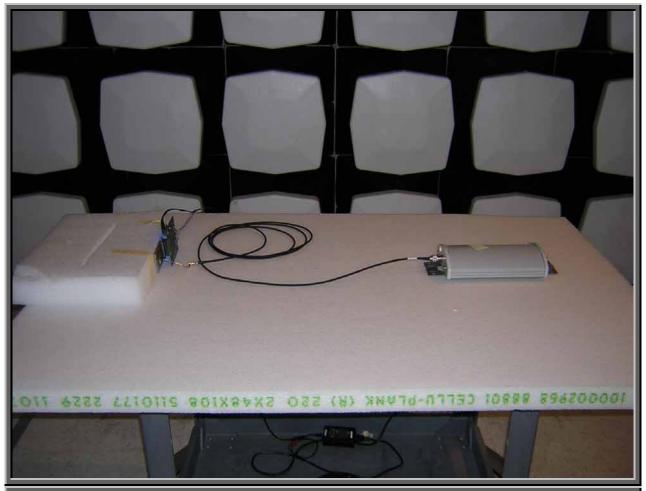


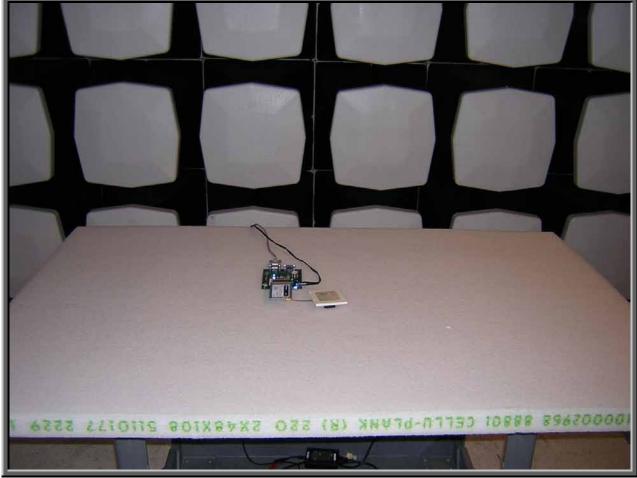


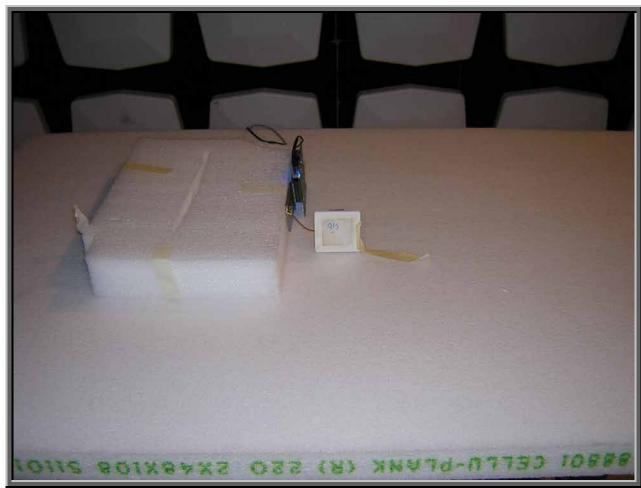


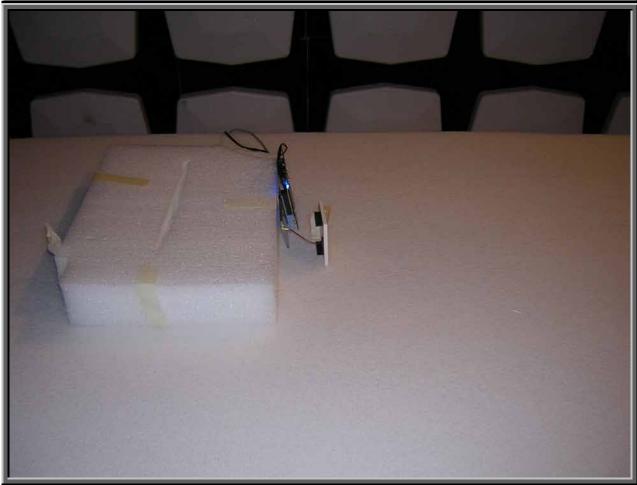


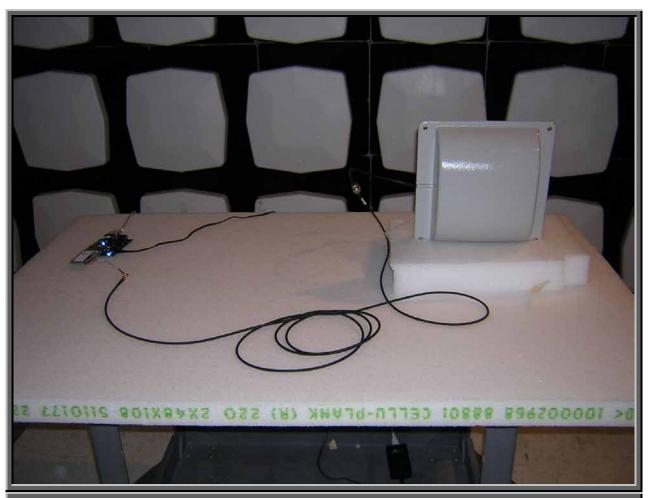
















# **AC Powerline Conducted Emissions**

Revision 10/1/03

# **Justification**

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

| Channels in Specified Band Investigated: |
|--|
| Low                                      |
| Mid                                      |
| High                                     |

# **Operating Modes Investigated:**

No Hop

# Data Rates Investigated:

32 kbps

# **Output Power Setting(s) Investigated:**

Maximum

# **Power Input Settings Investigated:**

120 VAC, 60 Hz.

| Software\Firmware Applied During Test  |                               |         |                |  |  |  |  |
|--|-------------------------------|---------|----------------|--|--|--|--|
| Exercise software  | Common Test Interface for IM4 | Version | 1.2.0 Build 11 |  |  |  |  |
| Description  |                               |         |                |  |  |  |  |
| The system was tested using special software developed to test all functions of the device during the test.  This included channel selection, data rate, and hopping vs. no hopping modes. |                               |         |                |  |  |  |  |

| EUT and Peripherals              |                                   |                      |                  |  |  |  |  |
|----------------------------------|-----------------------------------|----------------------|------------------|--|--|--|--|
| Description                      | Manufacturer                      | Model/Part<br>Number | Serial<br>Number |  |  |  |  |
| RFID Reader (EUT)                | Intermec Technologies Corporation | IM4                  | 19510523240      |  |  |  |  |
| Test Fixture                     | Intermec Technologies Corporation | Interrogator         | None             |  |  |  |  |
| Power Supply for Test<br>Fixture | MAGTECH                           | SPU24-104            | 023436980448     |  |  |  |  |
| Antenna                          | Sinclair                          | SRL-441U             | Unknown          |  |  |  |  |

# **AC Powerline Conducted Emissions**

Revision 10/1/03

| Remote Equipment Outside of Test Setup Boundary   |              |                   |               |  |  |  |  |
|---|--------------|-------------------|---------------|--|--|--|--|
| Description   | Manufacturer | Model/Part Number | Serial Number |  |  |  |  |
| Notebook PC   | Dell         | TS30GI            | K8175A        |  |  |  |  |
| Power Supply for Notebook PC  | Dell         | TSA8              | none          |  |  |  |  |
| Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary |              |                   |               |  |  |  |  |

| Cables   |        |            |         |                               |              |  |
|--|--------|------------|---------|-------------------------------|--------------|--|
| Cable Type   | Shield | Length (m) | Ferrite | Connection 1                  | Connection 2 |  |
| Serial   | Yes    | 2.0        | No      | Test Fixture                  | Notebook PC  |  |
| DC Leads   | PA     | 2.0        | PA      | Power Supply for Test Fixture | Test Fixture |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Test Fixture | AC Mains     |  |
| DC Leads   | No     | 1.6        | No      | Power Supply for Notebook PC  | Notebook PC  |  |
| AC Power   | No     | 2.0        | No      | Power Supply for Notebook PC  | AC Mains     |  |
| 500hm Coax   | Yes    | 3.0        | No      | RFID Reader (EUT)             | Antenna      |  |
| PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown. |        |            |         |                               |              |  |

| Measurement Equipment |                 |                |            |            |          |  |  |  |
|-----------------------|-----------------|----------------|------------|------------|----------|--|--|--|
| Description           | Manufacturer    | Model          | Identifier | Last Cal   | Interval |  |  |  |
| Spectrum Analyzer     | Hewlett Packard | 8593E          | AAP        | 12/07/2004 | 13 mo    |  |  |  |
| Receiver              | Schaffner       | SCR 3101       | ARC        | 05/04/2005 | 13 mo    |  |  |  |
| LISN                  | Solar           | 9252-50-24-BNC | LIB        | 02/16/2005 | 13 mo    |  |  |  |

## **Test Description**

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

<u>Configuration:</u> 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.



### NORTHWEST **CONDUCTED EMISSIONS DATA SHEET EMC** EUT: IM4 Work Order: ITRM0098 Serial Number: 19510523240 Date: 08/25/05 Customer: Intermec Technologies Corporation Temperature: 73 Attendees: Scott Holub Humidity: 48% Project: None Barometric Pressure 28.97 Tested by: Jeremiah Darden TEST SPECIFICATIONS Power: 120VAC/60Hz Job Site: OC10 FCC 15.207 AC Powerline Conducted Emissions:2005-04 ANSI C63.4:2003 TEST PARAMETERS Cable or Line Tested L1 COMMENTS Sinclair SRL-441U **EUT OPERATING MODES** Low 902.75, Data rate 32kbps **DEVIATIONS FROM TEST STANDARD** Run# Just Da Configuration # Results **Pass** Signature 80.0 70.0 60.0 50.0 dBuV 40.0 30.0 20.0 10.0 0.0 0.100 1.000 10.000 100.000 MHz External compared to Amplitude Frea Transducer Cable Attenuation Detector Adjusted Spec. Limit Spec. (dBuV) (dB) (dB) (dB) blank equal peak [PK] from scan) dBuV dBuV (dB) (MHz) ΩP 0.183 20.0 56.8 36.8 0.0 0.0 64.3 -7.5 0.180 22.7 0.0 0.0 20.0 AV42.7 54.5 -11.8 0.275 23.4 0.0 0.0 20.0 QP 43.4 61.0 -17.6 0.271 10.1 0.0 0.0 20.0 ΑV 30.1 51.1 -21.0 0.276 24.6 0.0 20.0 44.7 50.9 -6.2 0.1 0.0 50.0 -10.7 15.180 18.2 20.0 39.3 1.1 14 640 -10.8 0.0 1.1 20.0 39 2 50.0 18 1 14.550 18.1 0.0 1.1 20.0 39.2 50.0 -10.8 14.250 18.1 0.0 1.1 20.0 39.2 50.0 -10.8 14.370 17.8 0.0 1.1 20.0 38.9 50.0 -11.1 13.980 17.8 0.0 1.1 20.0 38.9 50.0 -11.1 15.450 -11.5 17.4 0.0 1.1 20.0 38.5 50.0 15.090 17.4 0.0 20.0 38.5 50.0 -11.5 1.1 14.820 0.0 20.0 38.5 50.0 -11.5 17.4 1.1 14.880 50.0 17.3 0.0 20.0 38 4 -11.6 1.1 14.970 17.2 0.0 1.1 20.0 38.3 50.0 -11.7 15.630 17.1 0.0 1.1 20.0 38.2 50.0 -11.8

15.540

1.495

17.0

13.7

0.0

0.0

1.1

0.4

20.0

20.0

38.1

34.1

50.0

46.0

-11.9

-11.9

