## 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 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?

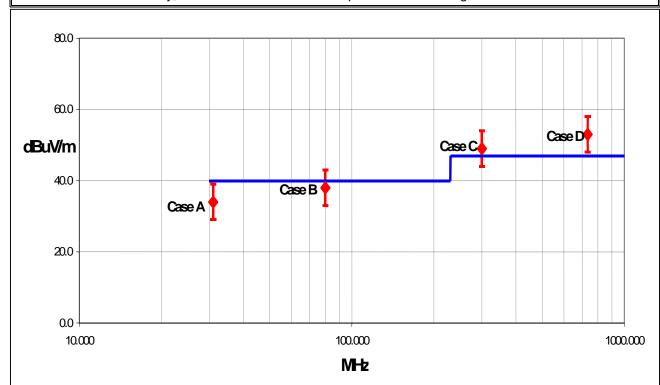
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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	Bico	nical	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 Distribution	Without High Pass Filter	With High Pass Filter
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.38 - 1.35
Expanded uncertainty <i>U</i> (level of confidence ≈ 95%)	normal (k=2)	+ 2.57 - 2.51	+ 2.76 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 <i>U</i> (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 Radiated 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 Radiated 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 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 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 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 Hopping 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 Radiated 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 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 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 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 per Hopping 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 Conducted 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 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**

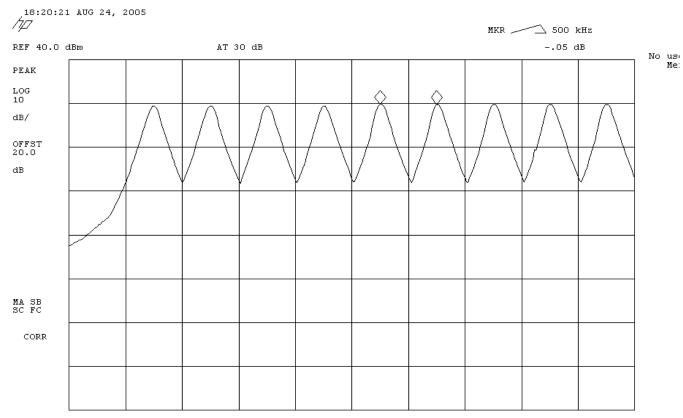
**Requirement**: Per 47 CFR 15.247(a)(1), the hopping channel carrier frequencies must be separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier 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 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 Modulated 40 kbps data rate DEVIATIONS FROM TEST STANDARD Jone REQUIREMENTS 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	Chanr	nel Spacing		



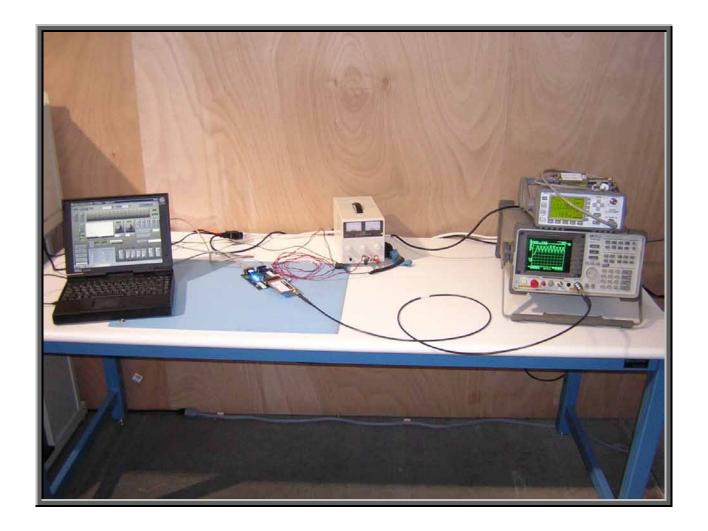
START 902.000 MHz

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 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

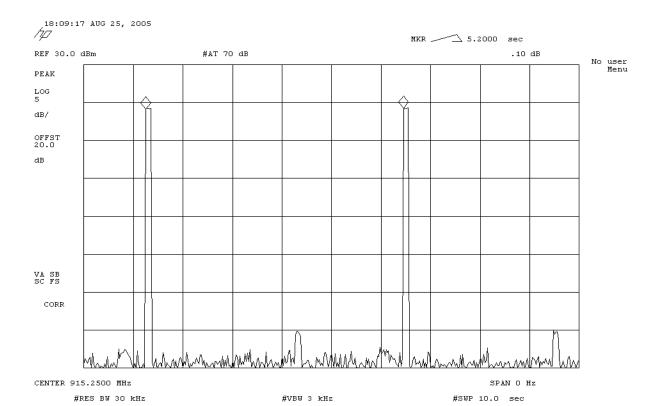
CENTER 915.2500 MHz #RES BW 30 kHz

#VBW 3 kHz

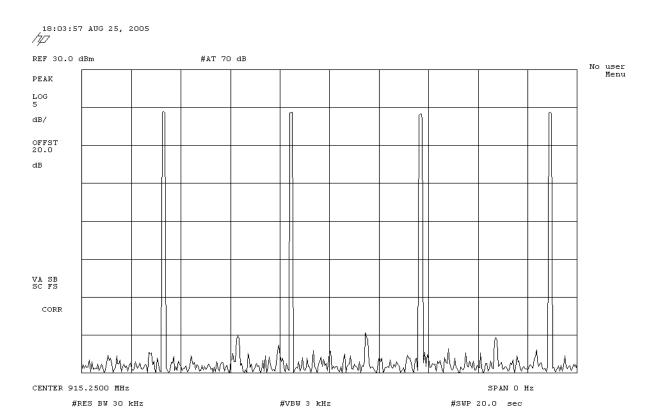
#SWP 500 msec

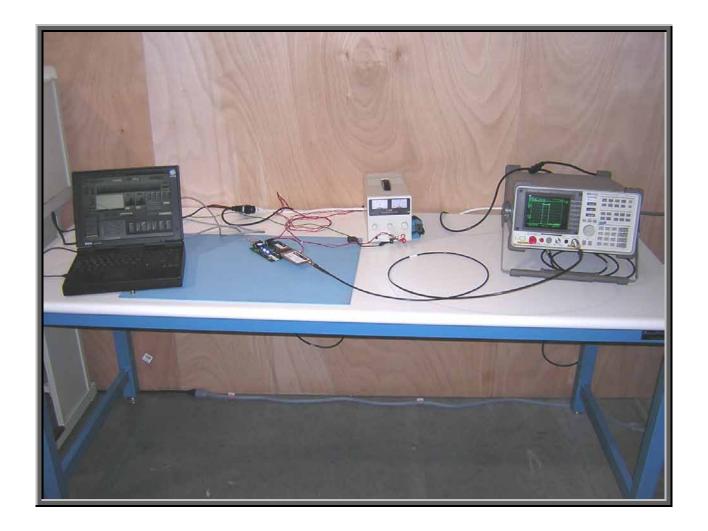
405

NORTHWEST		DWFI	L TIME		Rev BETA
EMC		DWLL			01/30/01
	: IM4			Work Order: ITRN	
	19510523230			Date: 08/2	
	: Intermec Technologies Corpora	tion		Temperature: 70 °F	
	Scott Holub		Tested by: Greg Kiemel	Humidity: 43%	
Customer Ref. No.			Power: 120 V, 60 Hz	Job Site: OC0	3
TEST SPECIFICATION					
	: 47 CFR 15.247(a)(1)(ii)	Year: 2005	Method: DA 00-705, ANSI C63.4	Year: 2003	
SAMPLE CALCULATI	IONS				
COMMENTS  EUT OPERATING MO	DES				
Modulated 40 kbps da					
DEVIATIONS FROM T					
None	EST STANDARD				
REQUIREMENTS					
Average time of occu	pancy on any channel shall not b	e greater than 0.4 seconds within a	20 second period		
RESULTS			PERIOD		
Pass 5.2 sec					
SIGNATURE					
	ADU.K.P				
Tested By		<del></del>			
Tested By DESCRIPTION OF TE	<u> </u>				



NORTHWEST EMC		DWEL	L TIME		Rev BETA 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
Total Dwell time = (Dw		sion)) X (Number of transmissions	in a 20 second period) = 0.4 sec		
EUT OPERATING MOD Modulated 40 kbps dat					
DEVIATIONS FROM TE	ST STANDARD				
None					
REQUIREMENTS					
Average time of occup	ancy on any channel shall not be	greater than 0.4 seconds within a	20 second period		
RESULTS			NUMBER OF TRANSMISSIONS DURING A 20	SECOND PERIOD	
Pass 4					
SIGNATURE	. 11/: 0				
Tested By:	A DU.K.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 Notebook PC	Dell	TSA8	None			
Power Supply for 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**

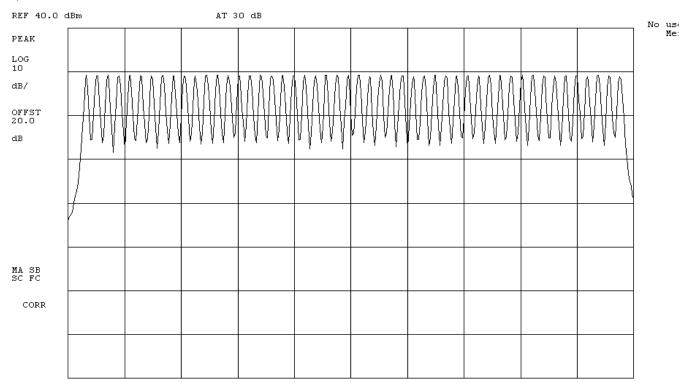
**Requirement**: Per 47 CFR 15.247(a)(1)(i), frequency hopping systems operating in the 902-928 MHz band shall use at least 50 hopping frequencies if the 20 dB bandwidth of the hopping channel is less than 250 kHz. If it is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

**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.



EMC	NUM	<b>BER OF HOP</b>	PPING FRE	QUENCIE	ES	Rev BETA 01/30/01
EUT:	IM4				Work Order:	
Serial Number:	19510523230				Date:	08/24/05
Customer:	Customer: Intermec Technologies Corporation					
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(a)(1)(i)	Year: 2005	Method:	ANSI C63.4	Year:	2003
COMMENTS						
	t connection between the RF o	utput and a spectrum analyzer.				
EUT OPERATING MOD	DES					
Modulated at maximur	n data rate, at maximum outpu	t power				
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS						
	stems in the 902 - 928 MHz ba em shall use at least 50 hoppir	nd shall use at least 25 hopping ng frequencies.	channels if the 20 dB bandy	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	T					
		Number of Ho	opping Frequen	cies	·	

21:45:40 AUG 24, 2005



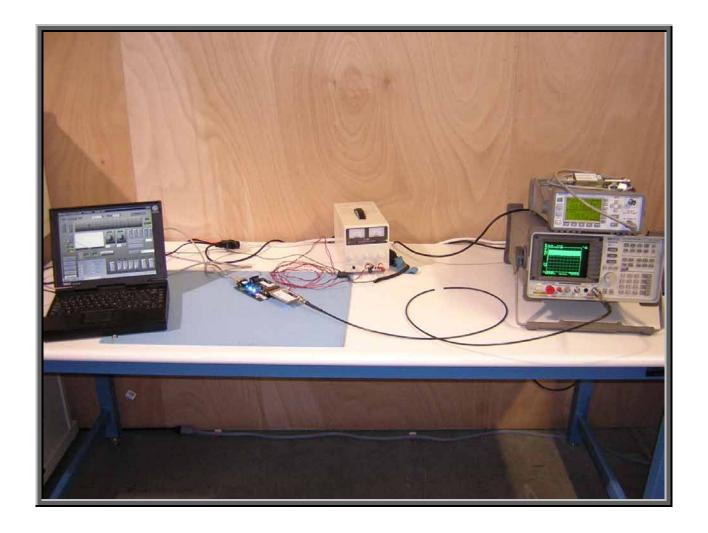
START 902.00 MHz

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 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.

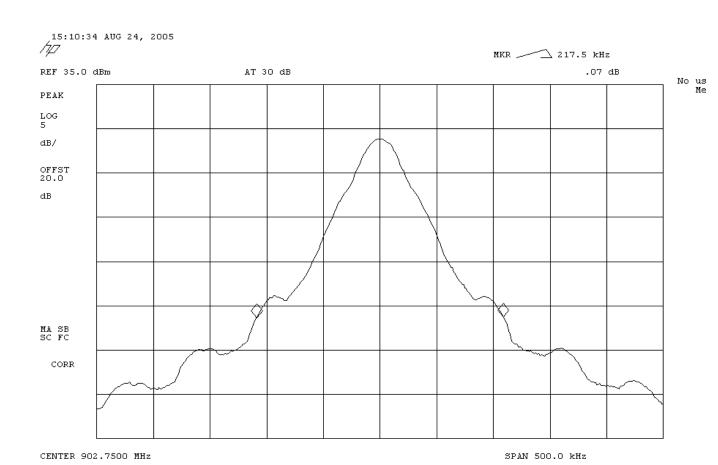
<u>Configuration</u>: The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at various data rates in a no hop mode.

#### Completed by:

EMC		OCCUPIED	BANDWIC	OTH		Rev BETA 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	\$					
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	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	Т					
20dB Bandwidth - Low Channel - 32 kbps Data Rate						

NORTHWEST

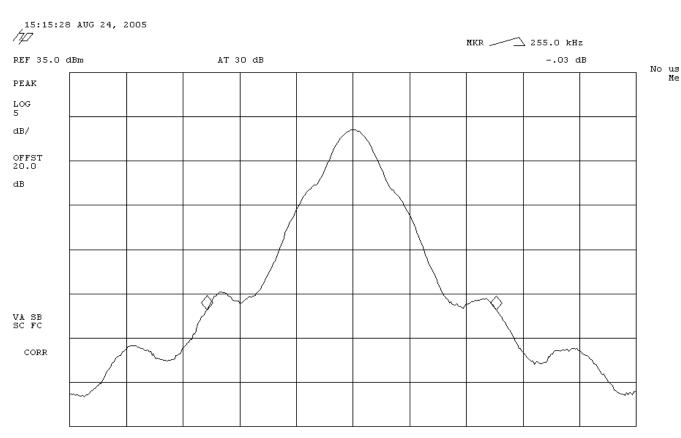
#RES BW 30 kHz



#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 Ideasured with a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured with a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured with a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct connection between the RF output and a spectrum analyzer.  UT OPERATING MODES Ideasured With a direct c	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   Year:   2003   AMPLE CALCULATIONS   Year:   2005   Year:   2005   Year:   2005   Year:   2005   Year:   2005   Year:   2005   Year:   2007   Year:   2003   Year:   20			OCCUPIED I	BANDWID	TH			Rev BETA 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  Fordulated 38 kbps data rate  EVALUTIONS FROM TEST STANDARD  Ione  REQUIREMENTS  Feer 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  ass   255 kHz    Tested 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  Report To FR 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 calculated as it be greater than 500 kHz.  RESULTS  RESULTS  RANDWIDTH  RESULTS  RE	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  JESULTS  BANDWIDTH  JESULTS								
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 th	ne carrier freque	ency separation. I	n no case
Tested By:  DESCRIPTION OF TEST	RESULTS			BANDWIDTH				
Tested By:	Pass	ass 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

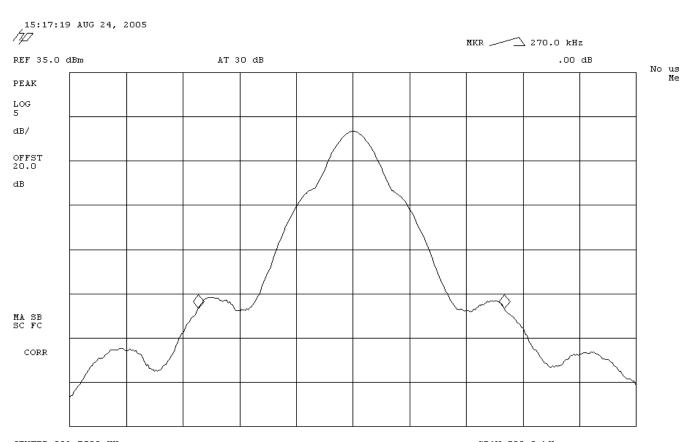
SWP 20.0 msec

SPAN 500.0 kHz

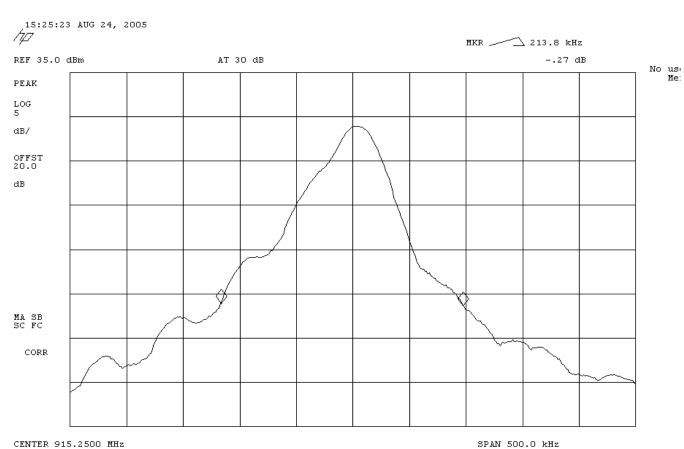
#RES BW 30 kHz

EMC		OCCUPIED I	BANDWID	TH		Rev BETA 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 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 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		



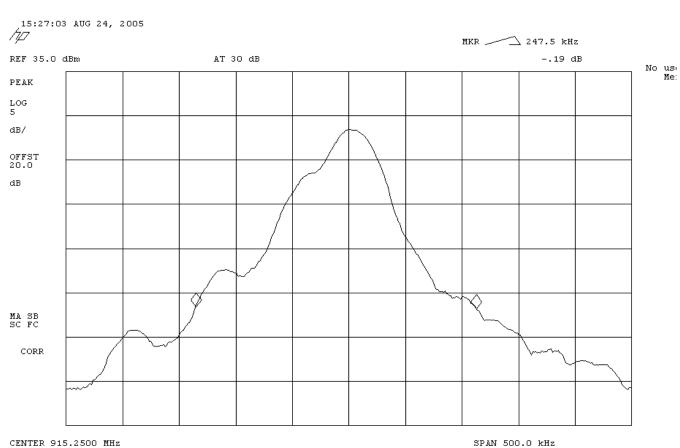
CENTER 915.2500 MHz

SWP 20.0 msec

#RES BW 30 kHz

#VBW 300 kHz

NORTHWEST EMC		OCCUPIED I	BANDWIDTH		Rev BETA 01/30/01		
EUT: IM4				Work Order:			
Serial Number: 19510	Serial Number: 19510523230						
Customer: Intern	nec 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 CF	R 15.247(a)	Year: 2005	Method: DA 00-705, ANSI C63.4	Year:	2003		
EUT OPERATING MODES Modulated 38 kbps data rate DEVIATIONS FROM TEST ST None REQUIREMENTS	TANDARD		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 5		0	·				
RESULTS BANDWIDTH							
ass	ass 247.5 kHz						
SIGNATURE  Tested By:	ADU.K.P						
DESCRIPTION OF TEST							
	20dB E	Bandwidth - Mid Ch	annel - 38 kbps Data Rate				



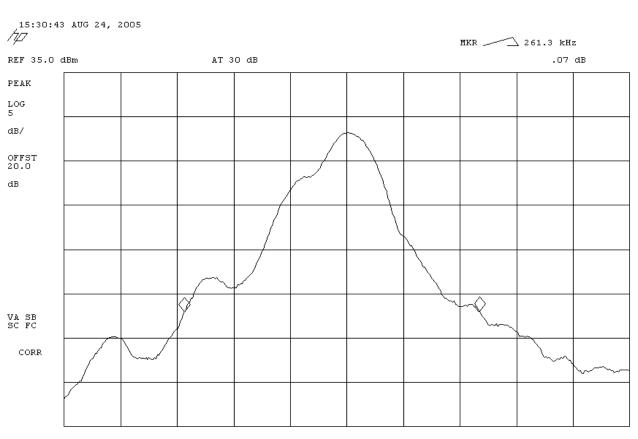
CENTER 915.2500 MHz

#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

NORTHWEST EMC		OCCUPIED I	BANDWIDTH		Rev BETA 01/30/01			
EUT: IM-	4			Work Order:				
Serial Number: 19	510523230			Date:	08/24/05			
Customer: Int	ermec Technologies Corporation	on		Temperature:	70 °F			
Attendees: Sc	ott Holub		Tested by: Greg Kiemel	Humidity:	43% RH			
Customer Ref. No.: No.	ne		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			
EUT OPERATING MODES Modulated 40 kbps data r DEVIATIONS FROM TEST Mone REQUIREMENTS	ate STANDARD		02 - 928 MHz band shall be less than or equal t	o the carrier frequency	v separation. In no			
ase can it be greater tha	n 500 kHz.							
RESULTS BANDWIDTH								
Pass	ass 261.3 kHz							
SIGNATURE  Tested By:	ADU.K.P							
DESCRIPTION OF TEST								
	20dB E	Bandwidth - Mid Ch	annel - 40 kbps Data Rate					



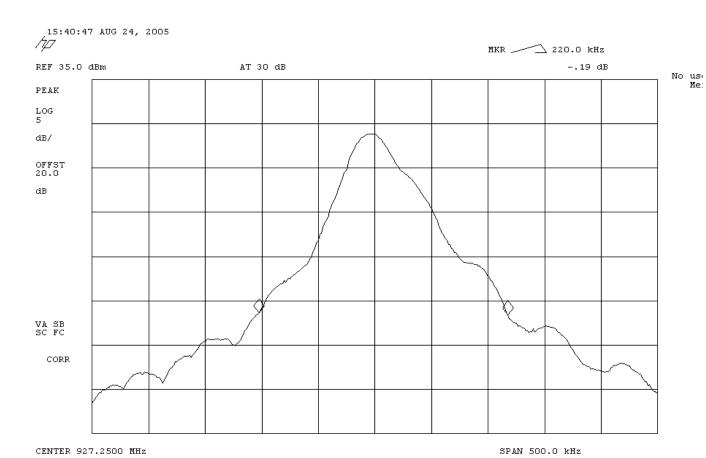
CENTER 915.2500 MHz

SPAN 500.0 kHz

 SWP 20.0 msec

No us Me:

NORTHWEST EMC		OCCUPIED	BANDWIE	)TH		Rev BETA 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 Modulated 32 kbps dat DEVIATIONS FROM TE None REQUIREMENTS	a rate 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 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>	

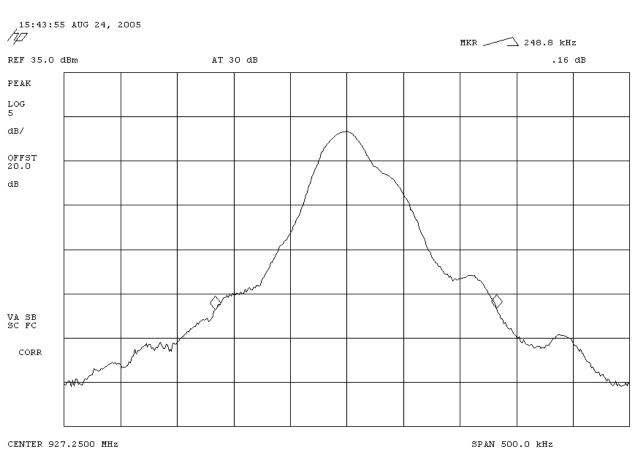


#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

EMC	OCCUPIED	BANDWIDTH		Rev BETA 01/30/01			
EUT: IM4			Work Order:				
Serial Number: 19510523230	erial Number: 19510523230						
Customer: Intermec Tec	hnologies 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 15.24	7(a) Year: 2005	Method: DA 00-705, ANSI C63.4	Year:	2003			
EUT OPERATING MODES Modulated 38 kbps data rate DEVIATIONS FROM TEST STANDAI HONE REQUIREMENTS	poetween the RF output and a spectrum analyzer.  RD  pandwidth of the frequency hopping channels in the S	902 - 928 MHz band shall be less than or equal t	o the carrier frequency	v separation. In no			
ase can it be greater than 500 kHz.		·		-			
RESULTS BANDWIDTH							
Pass	ass 248.8 kHz						
SIGNATURE  Tested By:	JU.K.P						
DESCRIPTION OF TEST							
	20dB Bandwidth - High C	hannel - 38 kbps Data Rate	<u> </u>				



CENTER 927.2500 MHz

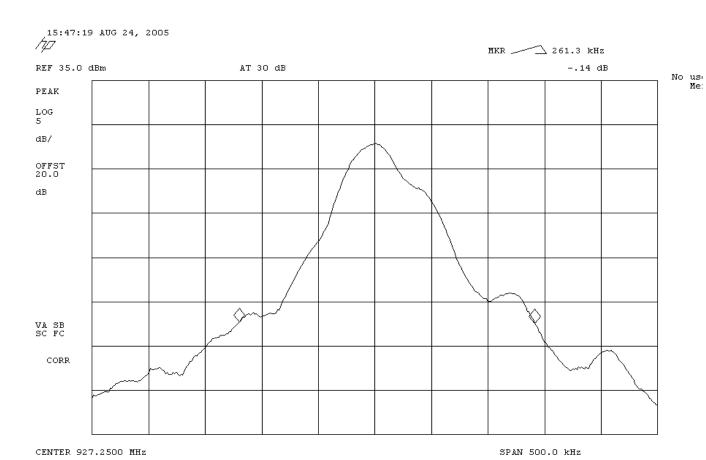
#VBW 300 kHz

SWP 20.0 msec

#RES BW 30 kHz

No us Me:

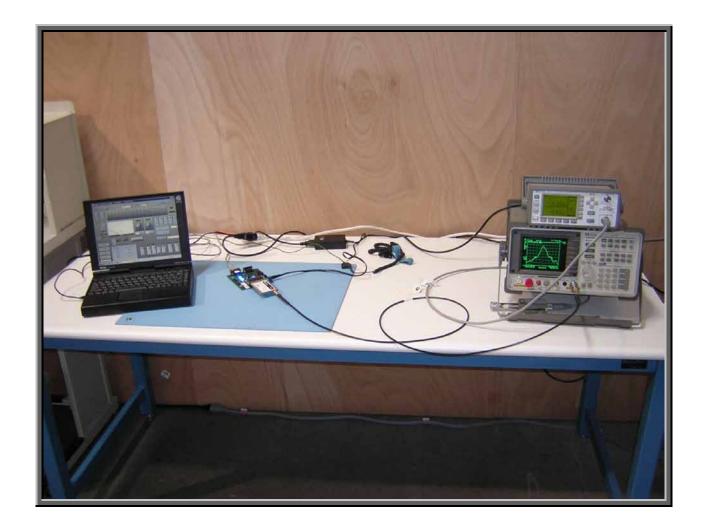
NORTHWEST EMC		OCCUPIED I	BANDWIE	OTH		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:	19510523230				Date:	08/24/05
Customer:	Intermec Technologies Corporat	ion			Temperature:	70 °F
Attendees:				Greg Kiemel	Humidity:	43% RH
Customer Ref. No.:			Power:	120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION						
Specification: SAMPLE CALCULATION	47 CFR 15.247(a)	Year: 2005	Method:	DA 00-705, ANSI C63.4	Year:	2003
EUT OPERATING MOD Modulated 40 kbps dat DEVIATIONS FROM TE None 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.

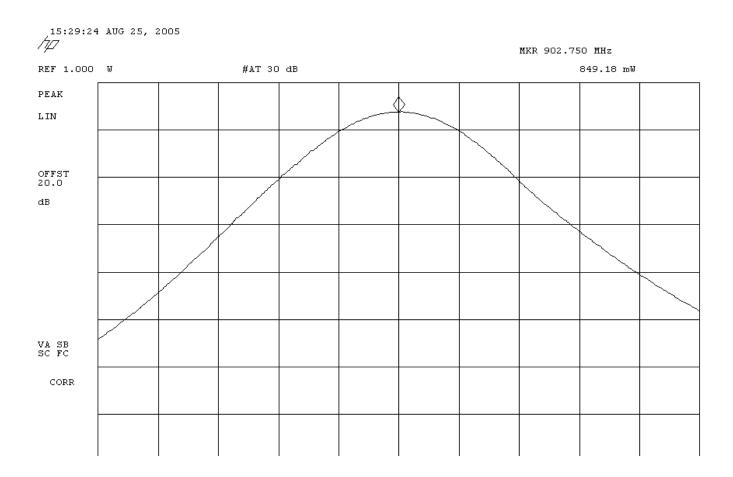
<u>Configuration</u>: The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its various data rates in a no hop mode.

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.

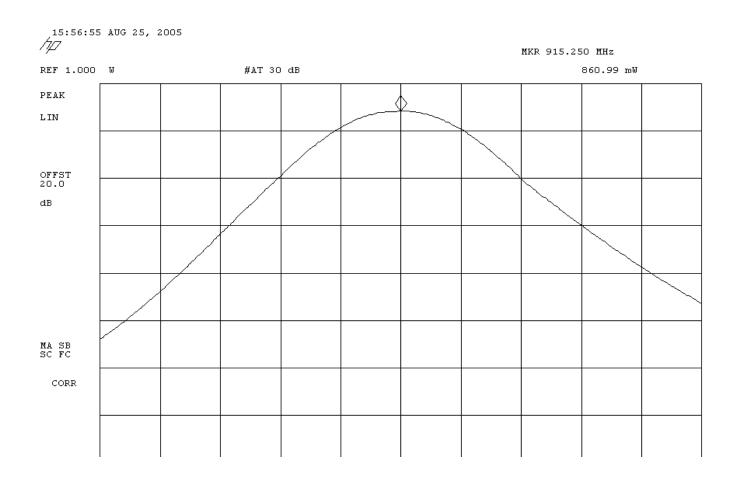
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-2), the EUT meets the de facto EIRP limit of +36dBm.

# Completed by:

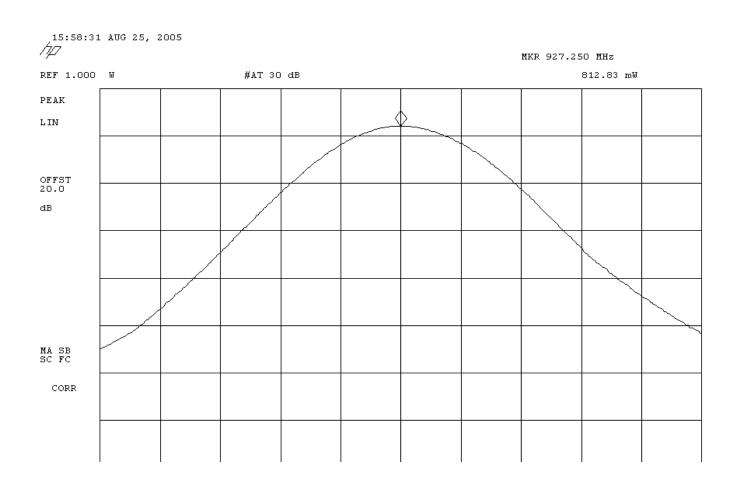
EMC		OUTPUT	POWER				Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098	
Serial Number:	19510523230				Date:	08/25/05	
Customer:	Intermec Technologies Corporat	tion			Temperature:	70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH	
Customer Ref. No.:			Power:	120 V, 60 Hz	Job Site:	OC03	
TEST 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 32 kbps da	ata rate						
<b>DEVIATIONS FROM T</b>							
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	849.18 mW				
SIGNATURE							
Tested By:	ADU.KIP						
DESCRIPTION OF TE	ST						
	Outp	ut Power - Low Chai	nnel - 32 kbp	s Data Rate			



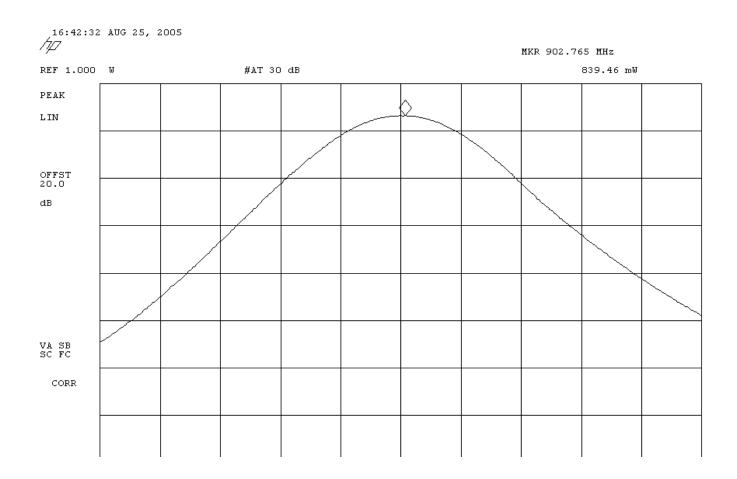
EMC		OUTPUT	POWER				Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098	
Serial Number:	19510523230				Date:	08/25/05	
Customer:	Intermec Technologies Corporat	tion			Temperature:	70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH	
Customer Ref. No.:			Power:	120 V, 60 Hz	Job Site:	OC03	
TEST 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 32 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	i 1 watt.
RESULTS			AMPLITUDE				
Pass		8	860.99 mW				
SIGNATURE							
Tested By:	ADU.KIP						
DESCRIPTION OF TE	ST						
	Outp	out Power - Mid Char	nnel - 32 kbp	s Data Rate			



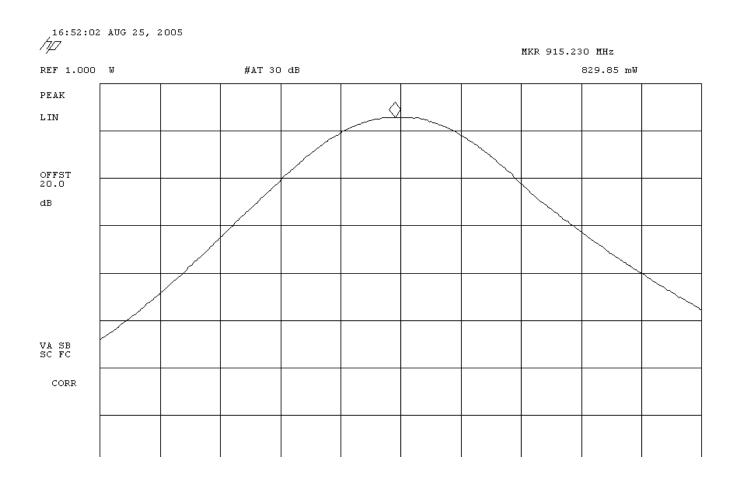
EMC		OUTPUT	<b>POWER</b>			Rev BETA 01/30/01
EUT:	IM4				Work Order: ITRM009	98
Serial Number:	19510523230				Date: 08/25/05	i
Customer:	Intermec Technologies Corpora	tion			Temperature: 70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity: 43% RH	
Customer Ref. No.:	None		Power:	120 V, 60 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	ONS	· · · · · · · · · · · · · · · · · · ·				
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	ping channels, shall not exco	ed 1 watt.
RESULTS			AMPLITUDE			
Pass			812.83 mW			
SIGNATURE						
Tested By:	ADU.KIP					
<b>DESCRIPTION OF TE</b>	ST					
	Outp	ut Power - High Cha	nnel - 32 kbp	s Data Rate		



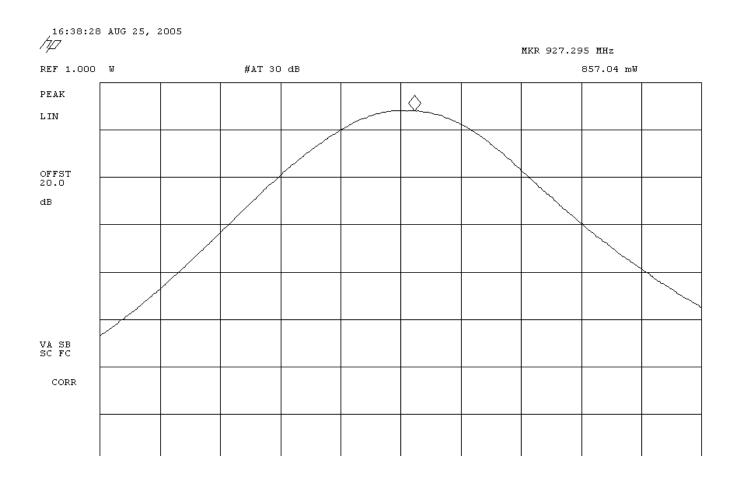
EMC		OUTPUT	POWER				Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098	
Serial Number:	19510523230				Date:	08/25/05	
Customer:	Intermec Technologies Corporat	tion			Temperature:	70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH	
Customer Ref. No.:	None		Power:	120 V, 60 Hz	Job Site:	OC03	
TEST SPECIFICATION	NS						
Specification:	47 CFR 15.247(b)	Year: 2005	Method:	DA 00-705, ANSI C63.4	4 Year:	2003	
SAMPLE CALCULATI	ONS						
COMMENTS							
EUT OPERATING MO	DES						
Modulated 38 kbps da							
DEVIATIONS FROM T							
None							
REQUIREMENTS							
The maximum peak c	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	339.46 mW				
SIGNATURE							
Tested By:	ADU.KIP						
DESCRIPTION OF TE	ST						
	Outp	ut Power - Low Chai	nnel - 38 kbp	s Data Rate			



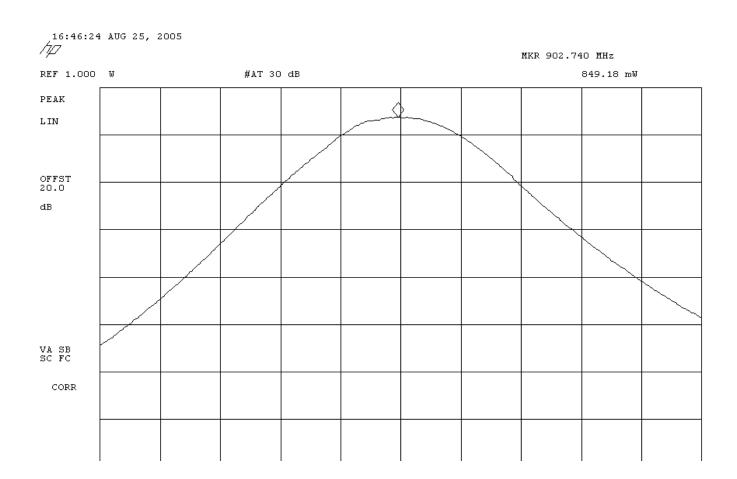
NORTHWEST						
EMC		OUTPUT	POWER			Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:	19510523230				Date:	08/25/05
Customer:	Intermec Technologies Corpora	ition			Temperature:	70 °F
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH
Customer Ref. No.:			Power:	120 V, 60 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 38 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 b	and, with at least 50 hop	pping channels, shall	not excced 1 watt.
RESULTS			AMPLITUDE			
Pass			829.85 mW			
SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TE						
	Out	put Power - Mid Char	nnel - 38 kbp	s Data Rate		



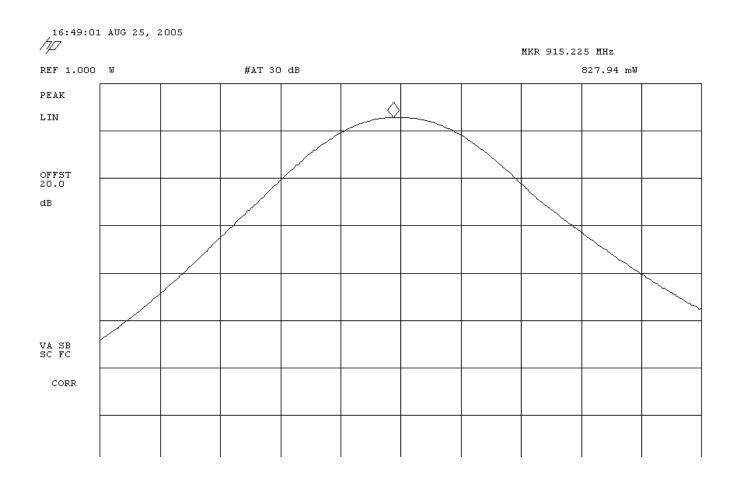
EMC		OUTPUT	POWER				Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098	
Serial Number:	19510523230				Date:	08/25/05	
Customer:	Intermec Technologies Corporat	tion			Temperature:	70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH	
Customer Ref. No.:			Power:	120 V, 60 Hz	Job Site:	OC03	
TEST 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						
<b>DEVIATIONS FROM T</b>							
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	857.04 mW				
SIGNATURE							
Tested By:	ADU.KIP						
DESCRIPTION OF TE							
	Outp	ut Power - High Cha	nnel - 38 kbp	s Data Rate			



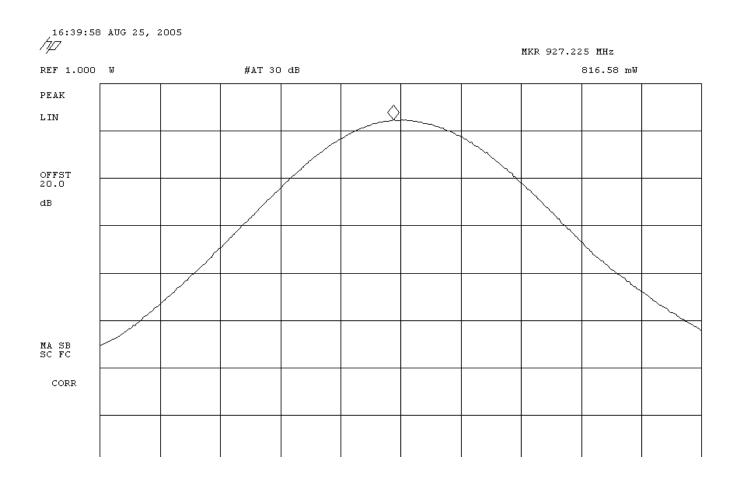
EMC		OUTPUT	<b>POWER</b>			Rev BETA 01/30/01
EUT:	IM4				Work Order: ITRM009	98
Serial Number:	19510523230				Date: 08/25/05	
Customer:	Intermec Technologies Corpora	tion			Temperature: 70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity: 43% RH	
Customer Ref. No.:	None		Power:	120 V, 60 Hz	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	ons					
COMMENTS						
<b>EUT OPERATING MO</b>	DES					
Modulated 40 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 i	n the 902 - 928 MHz ba	and, with at least 50 hop	ping channels, shall not exco	ed 1 watt.
RESULTS			AMPLITUDE			
Pass		;	849.18 mW			
SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TE	ST					
	Outp	ut Power - Low Cha	nnel - 40 kbp	s Data Rate		

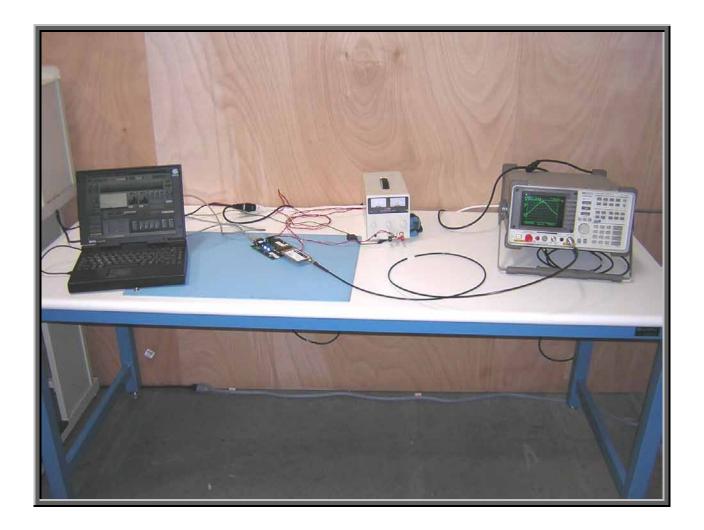


NORTHWEST						
EMC		OUTPUT	POWER			Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:	19510523230				Date:	08/25/05
Customer:	Intermec Technologies Corpora	ition			Temperature:	70 °F
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH
Customer Ref. No.:			Power:	120 V, 60 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 b	and, with at least 50 hop	oping channels, shall	not exceed 1 watt.
RESULTS			AMPLITUDE			
Pass			827.94 mW			
SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TE						
	Out	put Power - Mid Char	nnel - 40 kbp	s Data Rate		



EMC		OUTPUT	POWER				Rev BETA 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.:			Power:	120 V, 60 Hz	Job Site:	OC03	
TEST 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	ata rate						
<b>DEVIATIONS FROM T</b>							
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	816.58 mW				
SIGNATURE							
Tested By:	ADU.KIP						
DESCRIPTION OF TE							
	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.						

<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

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**

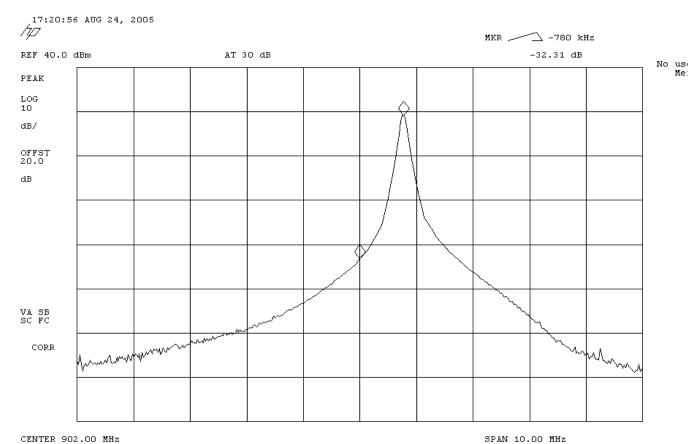
**Requirement**: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set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

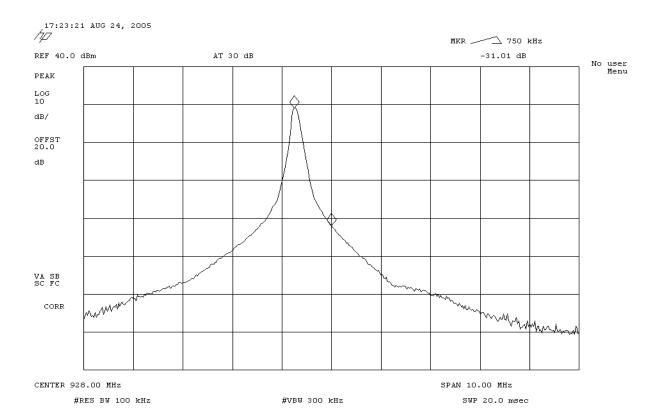
#### Completed by:

U.K.f

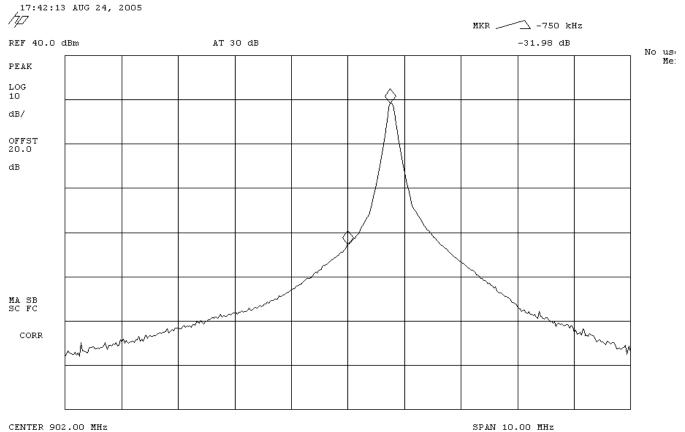
EMC	BAND EDGE	E COMPLIA	NCE		Rev BETA 01/30/01
EUT: IM4				Work Order:	ITRM0098
Serial Number: 19510523230				Date:	08/24/05
Customer: Intermec Technologies	Corporation			Temperature:	70 °F
Attendees: Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH
Customer Ref. No.: None		Power:	120 V, 60 Hz	Job Site:	OC03
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					
REQUIREMENTS  Maximum level of any spurious emission at the	and an of the quitherized hand in 20 dB	dawn from the fundamenta	1		
Maximum level of any spurious emission at the RESULTS	e edge of the authorized band is 20 db (	AMPLITUDE	ı		
Pass		-32.31 dB			
SIGNATURE		02101 02			
Tested By:	_				
DESCRIPTION OF TEST					
Band	Edge Compliance - Lo	ow Channel - 3	2 kbps Data F	Rate	



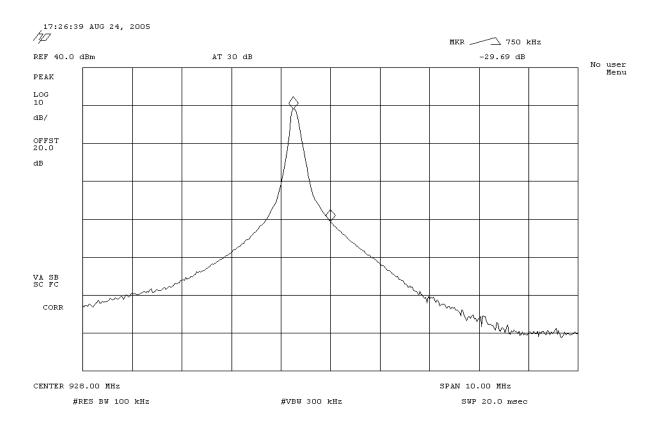
EMC BAND EDGE COMPLIANCE					Rev BETA 01/30/01
EUT: IM4				Work Order:	
Serial Number: 19510523230				Date:	08/24/05
Customer: Intermec Technologies Corpora	ition			Temperature:	
Attendees: Scott Holub		Tested by:	Greg Kiemel	Humidity:	
Customer Ref. No.: None		Power:	120 V, 60 Hz	Job Site:	OC03
TEST 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	



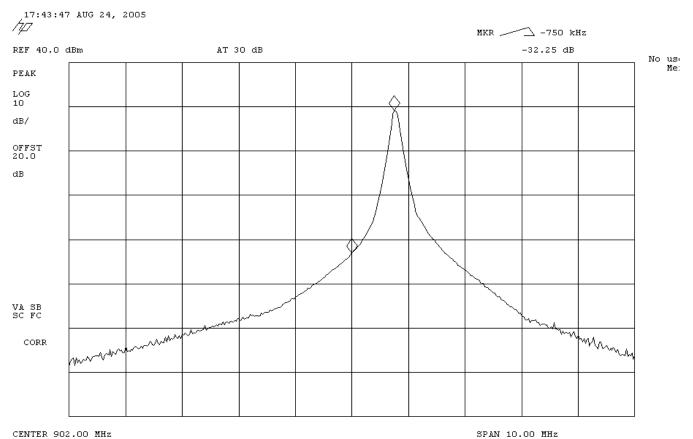
EMC		BAND EDGE	COMPLIA	NCE		Rev B 01/30/	
EUT:	IM4				Work Order:		
Serial Number:	19510523230				Date:	08/24/05	
Customer:	Intermec Technologies Corpora	tion			Temperature:	70 °F	
Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH	
Customer Ref. No.:	None		Power:	120 V, 60 Hz	Job Site:	OC03	
TEST SPECIFICATION	s						
Specification:	47 CFR 15.247(d)	Year: 2005	Method:	DA 00-705, ANSI C63.4	Year:	2003	
SAMPLE CALCULATION	DNS						
COMMENTS  EUT OPERATING MOD  Modulated 38 kbps dat							
DEVIATIONS FROM TE							
None							
REQUIREMENTS							
Maximum level of any	spurious emission at the edge o	f the authorized band is 20 dB dow	n from the fundamenta	l			
RESULTS			AMPLITUDE				
Pass			-31.98 dB				
SIGNATURE							
Tested By: _	ADU.KIP						
DESCRIPTION OF TES							
	Band Edg	e Compliance - Low	/ Channel - 3	8 kbps Data F	Rate		_



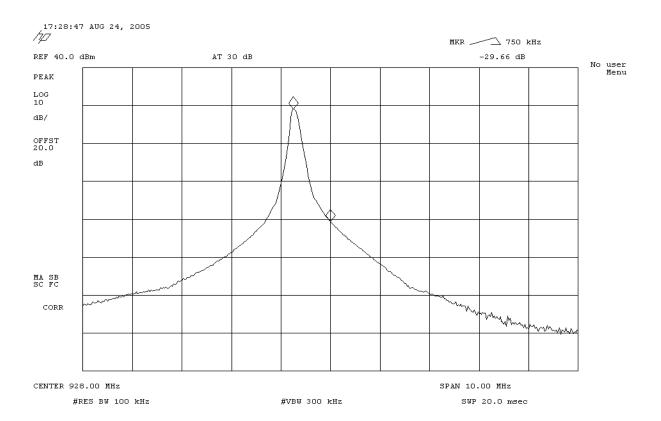
NORTHWEST BAND EDGE COMPLIANCE REVBETA (173001)						
EUT: IM4			Work Order:	ITRM0098		
Serial Number: 19510523230				08/24/05		
Customer: Intermec Technologies Corporat	ion		Temperature:			
Attendees: Scott Holub		Tested by: Greg Kiemel	Humidity	43% RH		
Customer Ref. No.: None		Power: 120 V, 60 Hz	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						

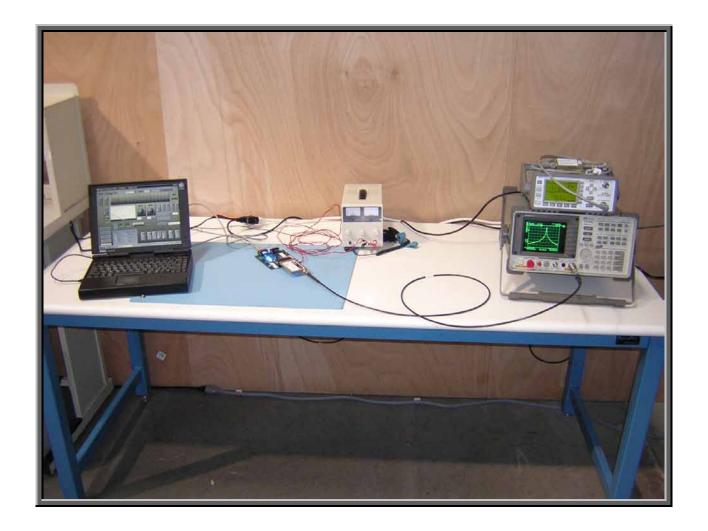


EMC BAND EDGE COMPLIANCE						
EUT: IM4			Work Order:			
Serial Number: 19510523230			Date:	08/24/05		
Customer: Intermec Technologies Corp	oration		Temperature:	70 °F		
Attendees: Scott Holub		Tested by: Greg Kiemel	Humidity:	43% RH		
Customer Ref. No.: None		Power: 120 V, 60 Hz	Job Site:	OC03		
TEST 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 REVBETA (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		
Pass -29.66 dB					
SIGNATURE  Tested By:					
резодиртиом о∓ тезт 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					
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 = 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**

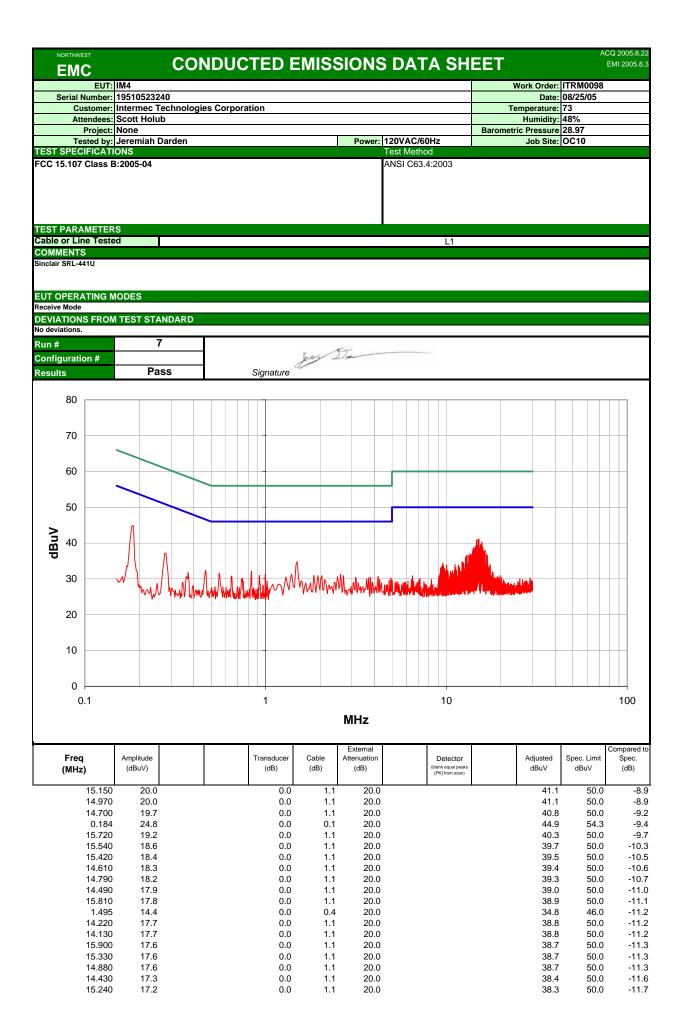
Revision 1/4/2005

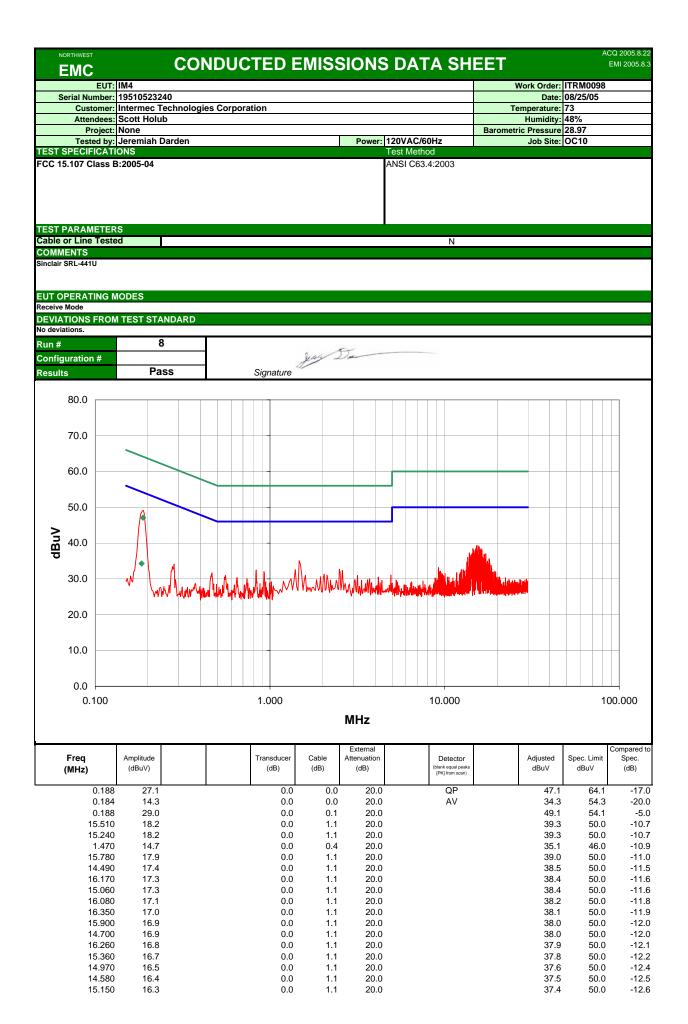
#### **Test Description**

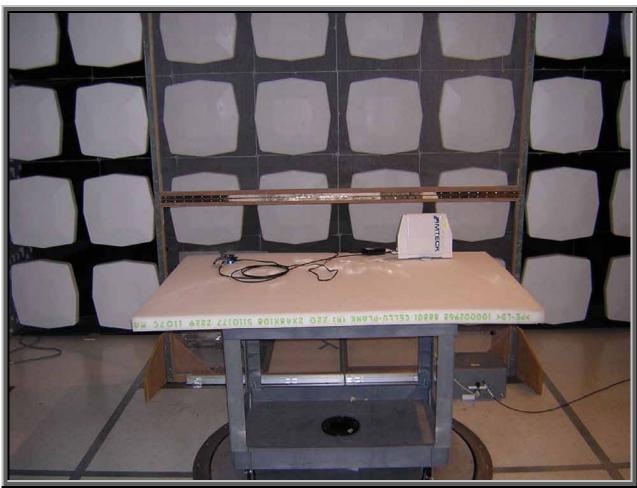
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 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 (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)		
0.01 – 0.15	1.0	0.2	0.2		
0.15 - 30.0	10.0	9.0	9.0		
30.0 - 1000	100.0	120.0	120.0		
Above 1000	1000.0	N/A	1000.0		
Measurements were made using the bandwidths and detectors specified. No video filter was used.					

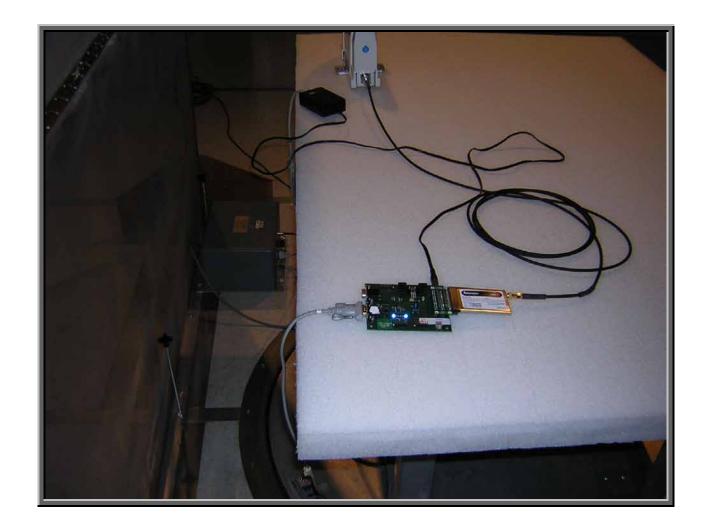
Completed by	
Completed by:	
July Da	











# **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 p	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**

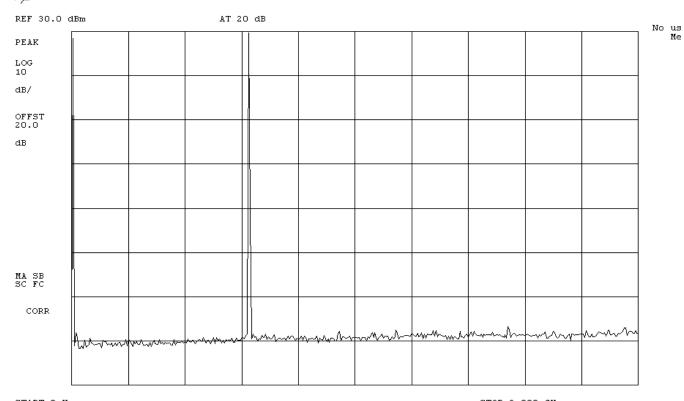
**Requirement**: Per 47 CFR 15.247(d), in any 100 kHz bandwidth outside the authorized band, the maximum level of radio frequency power must be at least 20dB down from the highest emission level within the authorized band. The measurement is made with the spectrum analyzer's resolution bandwidth set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

**Configuration**: The spurious RF conducted emissions 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:

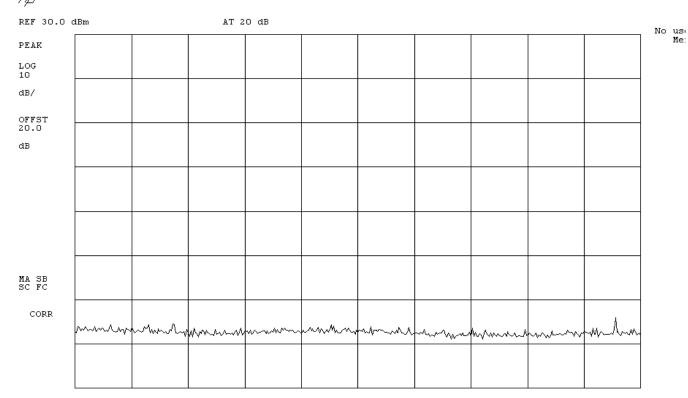
EMC EMISS  EUT:  M4  Serial Number: 19510523230	ONS DATA SH			
			Work Order:	01/30/01 ITPM0008
				08/26/05
Customer: Intermec Technologies Corporation			Temperature:	
Attendees: Scott Holub	Tested by	: Greg Kiemel	Humidity:	
Customer Ref. No.: None	-	: 120 V, 60 Hz	Job Site:	
TEST SPECIFICATIONS	1 Owe	. 120 4, 00 112	OOD ORC.	0000
Specification: 47 CFR 15.247(d) Year: 2005-04	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 outside of the authorized band is 20	B down from the fundamental			
RESULTS				
Pass				
SIGNATURE				
Tested By:				
DESCRIPTION OF TEST				
Antenna Conducted Spur	ous Emissions - Low	/ Channel 0MI	lz-3GHz	

11:05:28 AUG 26, 2005



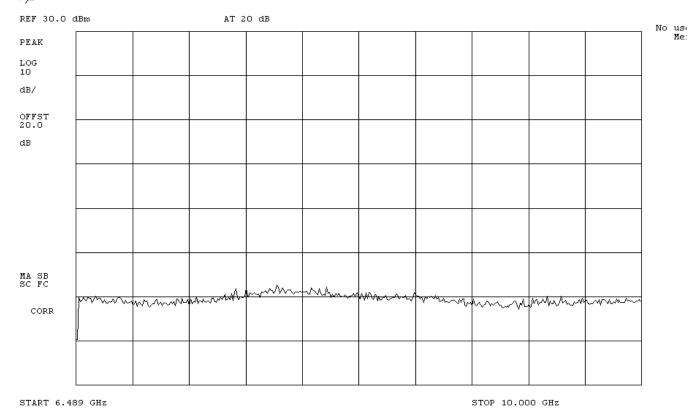
NORTHWEST EMC	EMISSIONS	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/26/05
Customer:	Intermec Technologies Corporation			Temperature:	70 °F
Attendees:	Scott Holub		Greg Kiemel	Humidity:	43% RH
Customer Ref. No.:		Power:	120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION					
Specification:	47 CFR 15.247(d) Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
UT OPERATING MOD Modulated 40 kbps da	ta rate				
DEVIATIONS FROM TE None	ST STANDARD				
REQUIREMENTS					
	spurious emission outside of the authorized band is 20 dB down fr	om the fundamental			
RESULTS					
Pass					
SIGNATURE					
Tested By:	ADU.K.P				
DESCRIPTION OF TES	ST .				
	Antenna Conducted Spurious Emis	ssions - Low	Channel 3GF	Iz-6.5GHz	

11:07:21 AUG 26, 2005



NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 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 40 kbps dat						
DEVIATIONS FROM TE None	EST STANDARD					
REQUIREMENTS						
	spurious emission outside of the	authorized band is 20 dB down fr	om the fundamental			
RESULTS	opanious simosion sutolius si ali		om the fundamental			
Pass						
SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TES	т					
	Antenna Condu	cted Spurious Emis	sions - Low	Channel 6.5G	Hz-10GHz	

11:07:54 AUG 26, 2005

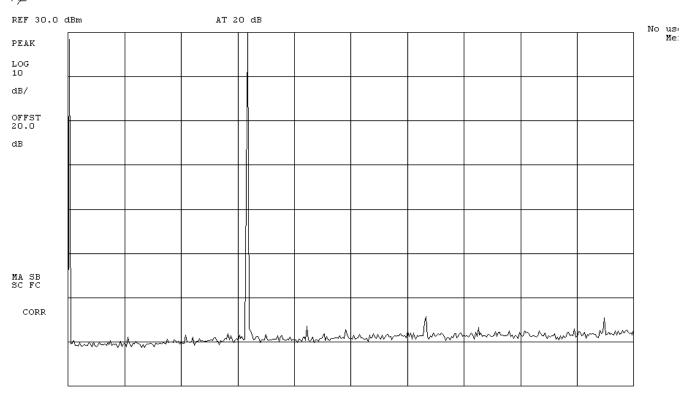


START 6.489 GHz

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

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SHEET		Rev BETA 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	a rate				
DEVIATIONS FROM TE	ST STANDARD				
None					
REQUIREMENTS					
Maximum level of any	spurious emission outside of the	authorized band is 20 dB down fr	rom the fundamental		
RESULTS					
Pass					
SIGNATURE					
Tested By:	ATU.K.P				
DESCRIPTION OF TES	Т				
	Antenna Cond	lucted Spurious Em	nissions - Mid Channel 0M	Hz-3GHz	

11:08:54 AUG 26, 2005

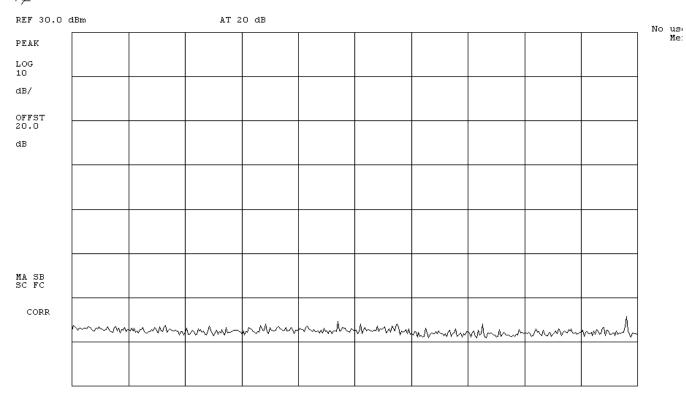


START O Hz STOP 2.900 GHz

SWP 870 msec

NORTHWEST EMC		<b>EMISSIONS I</b>	DATA SHEET		Rev BETA
			3.4.1.2.1.		01/30/01
EUT:				Work Order:	
Serial Number:					08/26/05
	Intermec Technologies Corporati	ion		Temperature:	
	Scott Holub		Tested by: Greg Kiemel	Humidity:	
Customer Ref. No.:			Power: 120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION					
Specification:   SAMPLE CALCULATION	47 CFR 15.247(d)	Year: 2005-04	Method: DA 00-705, ANSI C63	3.4 Year:	2003
EUT OPERATING MOD Modulated 40 kbps date					
DEVIATIONS FROM TE					
None	OT 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:	ATU.K.P				
DESCRIPTION OF TES	Т				
		ıcted Spurious Emi	ssions - Mid Channel 3G	Hz-6.5GHz	

11:09:49 AUG 26, 2005

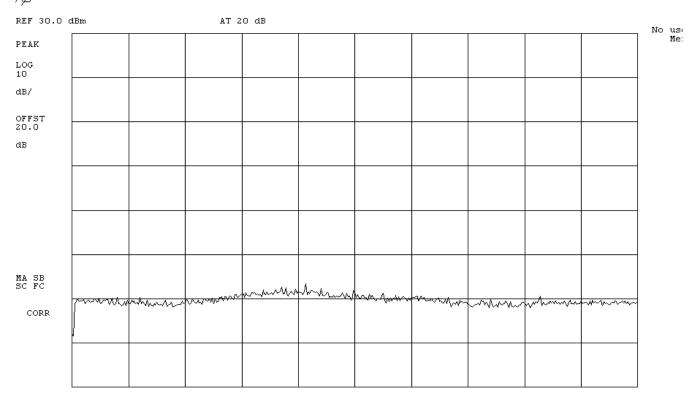


START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

#RES BW 100 kHz #VBW 300 kHz

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:						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						
EUT OPERATING MOD						
Modulated 40 kbps da						
DEVIATIONS FROM T	EST STANDARD					
None						
REQUIREMENTS		11 11 11 00 10 1				
	spurious emission outside of the	authorized band is 20 dB down fr	om the fundamental			
RESULTS						
Pass						
SIGNATURE  Tested By:	ADU.K.P					
DESCRIPTION OF TES	ST					
	Antenna Condu	cted Spurious Emis	ssions - Mid (	Channel 6.5G	Hz-10GHz	

11:10:21 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

EUT: IM4  Serial Number: 19510523230  Customer: Intermec Technologies Corporation  Attendees: Scott Holub Tested by: Greg Kier  Customer Ref. No.: None Power: 120 V, 60  TEST SPECIFICATIONS  Specification: 47 CFR 15.247(d) Year: 2005-04 Method: DA 00-705  SAMPLE CALCULATIONS  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 from the fundamental RESULTS  Pass	MC		<b>EMISSIONS</b>	<b>DATA SH</b>	EET		Rev BET/ 01/30/01
Customer Ref. No.: None Power: 120 V, 60  EST SPECIFICATIONS  Specification: 147 CFR 15.247(d) Year: 2005-04 Method: DA 00-705  SAMPLE CALGULATIONS  COMMENTS  EUT OPERATING MODES  Windulated 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 from the fundamental RESULTS  Pass  SIGNATURE		IM4				Work Order:	ITRM0098
Attendees: Scott Holub  Customer Ref. No.: None  Power: 120 V, 60  FEST SPECIFICATIONS  Specification: 47 CFR 15.247(d)  SAMPLE CALCULATIONS  COMMENTS  EUT OPERATING MODES  Modulated 40 kbps data rate  DEVIATIONS FROM TEST STANDARD  Mone  REQUIREMENTS  Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental RESULTS  Pass  BIGNATURE	Serial Number:	19510523230				Date:	08/26/05
CUSTOMER Ref. No.:  None  FOWER: 120 V, 60  TEST SPECIFICATIONS  Specification: 47 CFR 15.247(d)  SAMPLE CALCULATIONS  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 from the fundamental RESULTS  Pass  BIGNATURE	Customer:	Intermec Technologies Corporati	ion			Temperature:	70 °F
Specification: 47 CFR 15.247(d)  Specification: 47 CFR 15.247(d)  SAMPLE CALCULATIONS  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 from the fundamental RESULTS Pass BIGNATURE  ATTACH  ATTACH  BIGNATURE  ATTACH  Method: DA 00-705  Method: DA 00-705	Attendees:	Scott Holub		Tested by:	Greg Kiemel	Humidity:	43% RH
Specification: 47 CFR 15.247(d)  SAMPLE CALCULATIONS  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 from the fundamental RESULTS Pass BIGNATURE	ustomer Ref. No.:	None		Power:	120 V, 60 Hz	Job Site:	OC03
COMMENTS  EUT OPERATING MODES  Modulated 40 kbps data rate  DEVIATIONS FROM TEST STANDARD  Jone  REQUIREMENTS  Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental RESULTS  Pass  BIGNATURE	T SPECIFICATION	is					
COMMENTS  SUIT OPERATING MODES  Modulated 40 kbps data rate  DEVIATIONS FROM TEST STANDARD  JOINE  REQUIREMENTS  Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental  TESULTS  Pass  SIGNATURE	Specification:	47 CFR 15.247(d)	Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
UT OPERATING MODES  Idoulated 40 kbps data rate  IEVIATIONS 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	IPLE CALCULATION	ONS					
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental RESULTS Pass SIGNATURE	lulated 40 kbps dat IATIONS FROM TE e	ita rate					
RESULTS Pass SIGNATURE		spurious omission outside of the	authorized band is 20 dP down	from the fundamental			
Pass SIGNATURE		spurious erifission outside of the	autionized band is 20 dB down	nom me midamentai			
SIGNATURE ATTACHER OF THE STATE							
ATTU. KIP							
		1/1/1					
DESCRIPTION OF TEST	CRIPTION OF TES	ST					
Antenna Conducted Spurious Emissions - High Char		Antenna Condu	ucted Spurious En	niesions - Hial	Channel 0M	Hz-3GHz	

11:11:07 AUG 26, 2005



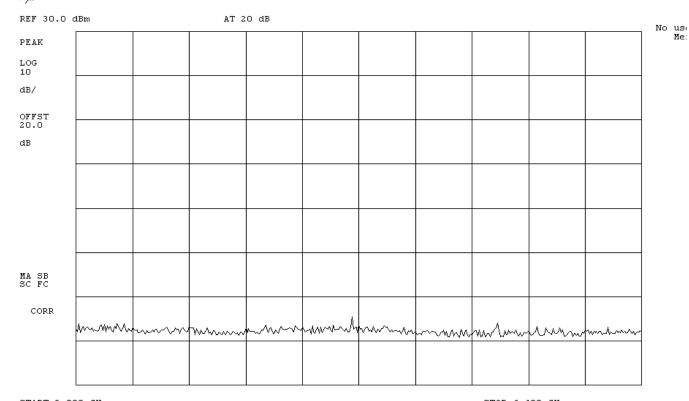
#VBW 300 kHz

SWP 870 msec

STOP 2.900 GHz START O Hz #RES BW 100 kHz

NORTHWEST EMC	EMIS	SIONS DATA SH	IEET		Rev BETA 01/30/01
EUT:				Work Order:	
Serial Number:					08/26/05
	Intermec Technologies Corporation		_	Temperature:	
Attendees:			: Greg Kiemel	Humidity:	
Customer Ref. No.:		Power	: 120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION					1
Specification: SAMPLE CALCULATION	47 CFR 15.247(d) Year: 200	5-04 Method	: DA 00-705, ANSI C63.4	Year:	2003
EUT OPERATING MOD Modulated 40 kbps da DEVIATIONS FROM TE None	a rate				
	spurious emission outside of the authorized ban-	d is 20 dB down from the fundamental			
RESULTS Pass					
SIGNATURE  Tested By:	ATU.KIP				
DESCRIPTION OF TES	Antenna Conducted Spu	rious Emissions - High	Channel 3Gl	Hz-6.5GHz	

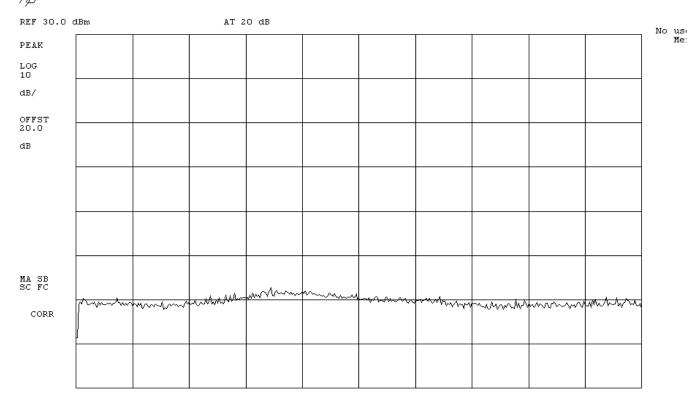
11:11:36 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SHI	EET		Rev BETA 01/30/01
EUT:					Work Order:	
Serial Number:						08/26/05
	Intermec Technologies Corpora	tion			Temperature:	
	Scott Holub		Tested by:		Humidity:	
Customer Ref. No.:			Power: 1	120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION						
Specification: SAMPLE CALCULATION	47 CFR 15.247(d)	Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
EUT OPERATING MOD Modulated 40 kbps da DEVIATIONS FROM TE	ta rate					
None						
REQUIREMENTS		e authorized band is 20 dB down f	nom the femaless antel			
RESULTS	spurious emission outside of the	e authorized band is 20 dB down i	rom the fundamental			
Pass						
SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TES						
	Antenna Condu	cted Spurious Emis	ssions - High (	Channel 6.5G	Hz-10GHz	

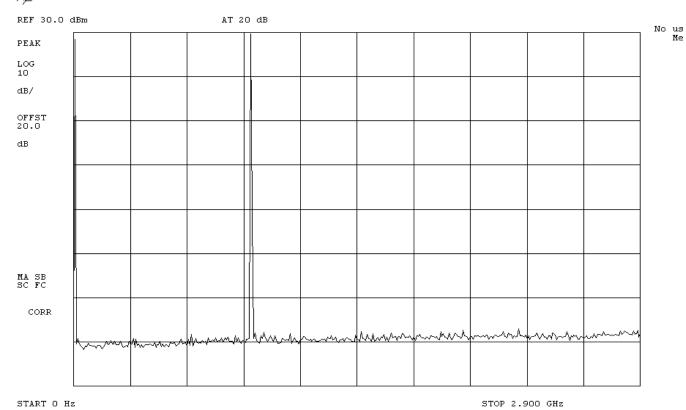
11:12:07 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

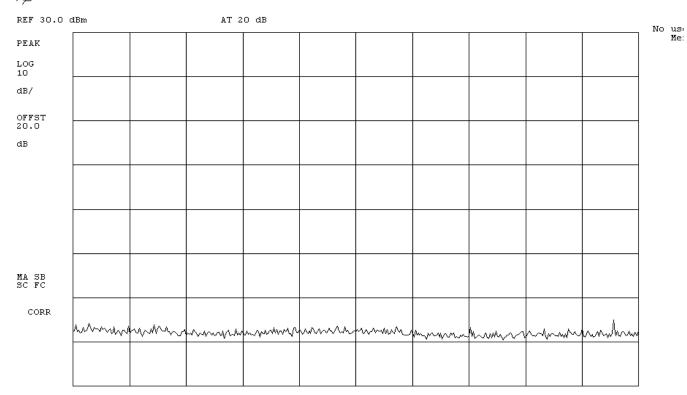
EMC  EUT: IM4  Serial Number: 19510523230  Customer: Intermec Technologies Corporation  Attendees: Scott Holub	DATA SHEET	Work Order:	01/30/01 ITRM0098
Serial Number: 19510523230 Customer: Intermec Technologies Corporation			TTIVIOUSU
Customer: Intermec Technologies Corporation			08/26/05
v .		Temperature:	
	Tested by: Greg Kiemel	Humidity:	
Customer Ref. No.: None	Power: 120 V, 60 Hz	Job Site:	
EST SPECIFICATIONS	1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
Specification: 47 CFR 15.247(d) Year: 2005-04	Method: DA 00-705, ANSI C63.4	4 Year:	2003
SAMPLE CALCULATIONS			
EUT OPERATING MODES Modulated 38 kbps data rate DEVIATIONS FROM TEST STANDARD None			
REQUIREMENTS			
Maximum level of any spurious emission outside of the authorized band is 20 dB down fro	om the fundamental		
RESULTS			
Pass			
Tested By:			
DESCRIPTION OF TEST			
Antenna Conducted Spurious En	missions - Low Channel 0MI	Hz-3GHz	

10:50:26 AUG 26, 2005



NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:						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	S					
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						
	spurious amission outside of the	authorized band is 20 dB down f	rom the fundamental			
RESULTS	sparious emission outside of the	authorized band is 20 dB down	on the fundamental			
Pass						
SIGNATURE						
Tested By:	ADU.KIP					
DESCRIPTION OF TES	ST T					
	Antenna Condu	icted Spurious Emi	ssions - Low	Channel 3GH	lz-6.5GHz	

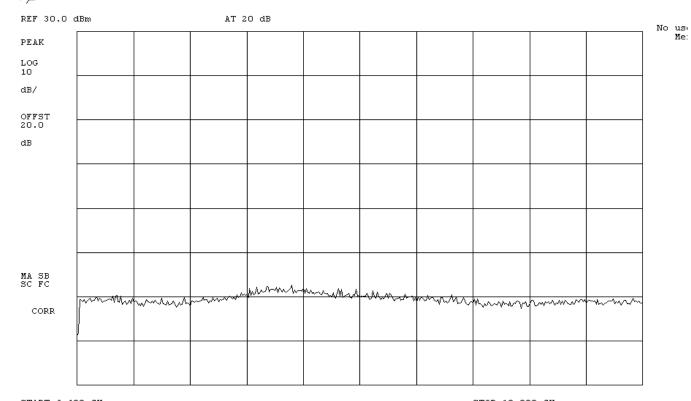
10:51:15 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:						08/26/05
Customer:	Intermec Technologies Corporati	ion			Temperature:	70 °F
Attendees:				Greg Kiemel	Humidity:	
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
COMMENTS						
EUT OPERATING MOD Modulated 38 kbps date						
DEVIATIONS FROM TE						
None	ST STANDARD					
REQUIREMENTS						
	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 Conduc	cted Spurious Emis	sions - Low	Channel 6.5G	Hz-10GHz	

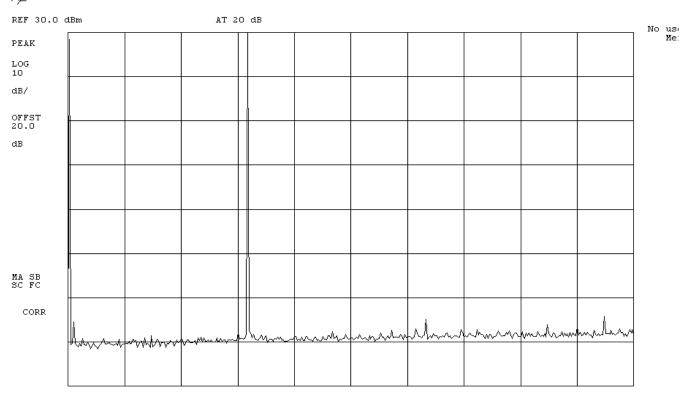
10:52:05 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

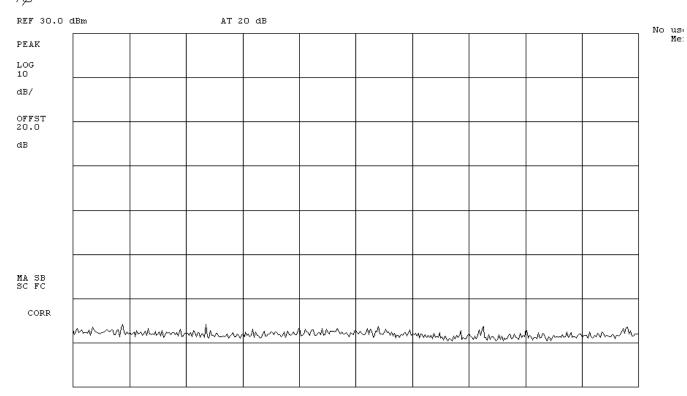
NORTHWEST EMC	EMISSIONS	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/26/05
Customer:	Intermec Technologies Corporation			Temperature:	70 °F
Attendees:	Scott Holub	Tested by:	Greg Kiemel	Humidity:	43% RH
Customer Ref. No.:	None	Power:	120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION	S				
Specification:	47 CFR 15.247(d) Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
COMMENTS  EUT OPERATING MOD  Modulated 38 kbps da  DEVIATIONS FROM TI	ta rate				
None	201 OTANDARD				
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.K.P				
DESCRIPTION OF TES	ST .				
	Antenna Conducted Spurious Em	nissions - Mid	Channel 0M	Hz-3GHz	

10:53:19 AUG 26, 2005



NORTHWEST EMC		<b>EMISSIONS I</b>	DATA SHEET		Rev BETA
					01/30/01
EUT:				Work Order:	
Serial Number:					08/26/05
	Intermec Technologies Corporati	ion		Temperature:	
Attendees:			Tested by: Greg Kiemel	Humidity:	
Customer Ref. No.:			Power: 120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION					
Specification:   SAMPLE CALCULATION	47 CFR 15.247(d)	Year: 2005-04	Method: DA 00-705, ANSI C63.	4 Year:	2003
EUT OPERATING MOD Modulated 38 kbps date					
DEVIATIONS FROM TE					
None					
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.K.P				
DESCRIPTION OF TES	т				
DESCRIPTION OF TES		ıcted Spurious Emi	ssions - Mid Channel 3Gl	Hz-6.5GHz	

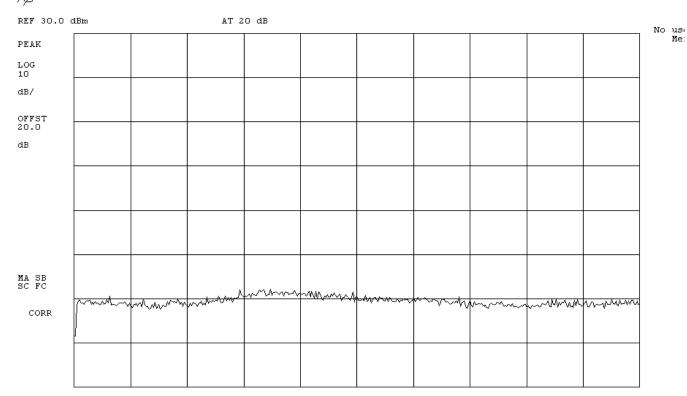
10:54:07 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:						08/26/05
Customer:	Intermec Technologies Corporate	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						
Modulated 38 kbps da						
DEVIATIONS FROM TE	EST STANDARD					
None						
REQUIREMENTS		e authorized band is 20 dB down	in a mark that from all a market			
RESULTS	spurious emission outside of the	e authorized band is 20 dB down	rom the fundamental			
Pass SIGNATURE						
Tested By:	ADU.KIP					
DESCRIPTION OF TES	ST T					
	Antenna Condu	icted Spurious Emi	ssions - Mid (	Channel 6.5G	Hz-10GHz	

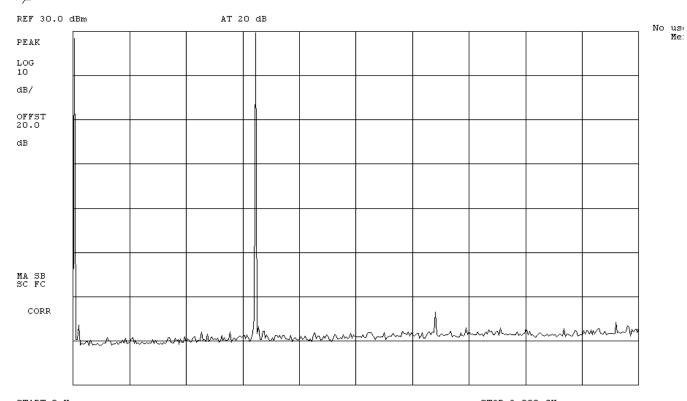
10:55:01 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

EMC	<b>EMISSIONS</b>	DATA SH	EET		Rev BET. 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: 1	120 V, 60 Hz	Job Site:	OC03
EST SPECIFICATIONS					
Specification: 47 CFR 15.247(d)	Year: 2005-04	Method: I	DA 00-705, ANSI C63.4	Year:	2003
AMPLE CALCULATIONS					
OMMENTS					
COMMENTS					
UT OPERATING MODES					
Modulated 38 kbps data rate					
DEVIATIONS FROM TEST STANDARD					
None					
REQUIREMENTS					
Maximum level of any spurious emission outs	ide of the authorized band is 20 dB down f	rom the fundamental			
RESULTS					
Pass		_			
SIGNATURE					
	0				
AMU.K	$\mathcal{L}$				
Tested By:	<del></del>				
DESCRIPTION OF TEST					
	Conducted Couries Co	inniana Iliah	Channal OM	II- 20II-	
Antenna (	Conducted Spurious Em	ussions - Hign	Channel UN	MZ-3GHZ	

11:01:20 AUG 26, 2005



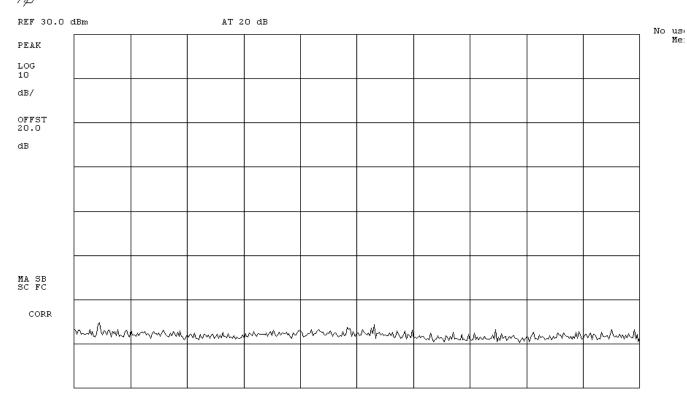
STOP 2.900 GHz START O Hz #RES BW 100 kHz

#VBW 300 kHz

SWP 870 msec

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:					Work Order:	
Serial Number:						08/26/05
	Intermec Technologies Corporat	ion	1		Temperature:	
	Scott Holub			Greg Kiemel	Humidity:	
Customer Ref. No.:			Power:	120 V, 60 Hz	Job Site:	OC03
TEST SPECIFICATION			1			1
Specification: SAMPLE CALCULATION	47 CFR 15.247(d)	Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
EUT OPERATING MOD Modulated 38 kbps dat DEVIATIONS FROM TO None	ta rate					
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		uotod Spurious Emir	oione High	Channal 2Cl	J- 6 ECU-	
	Antenna Condu	cted Spurious Emis	ssions - mign	Chamilei 3Gr	12-0.3GHZ	

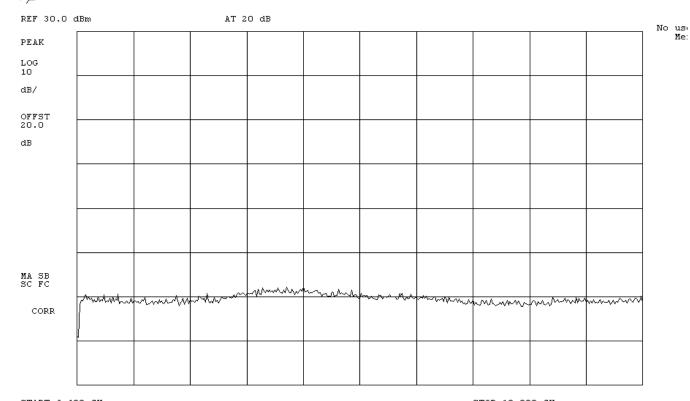
11:02:02 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:	19510523230					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						
Modulated 38 kbps da						
DEVIATIONS FROM TE	EST STANDARD					
None						
REQUIREMENTS		e authorized band is 20 dB down	forms the foundamental			
	spurious emission outside of th	e authorized band is 20 dB down	from the fundamental			
RESULTS						
Pass SIGNATURE						
Tested By:	ADU.K.P					
DESCRIPTION OF TES						
	Antenna Condu	cted Spurious Emi	ssions - High	Channel 6.5G	Hz-10GHz	

11:02:47 AUG 26, 2005

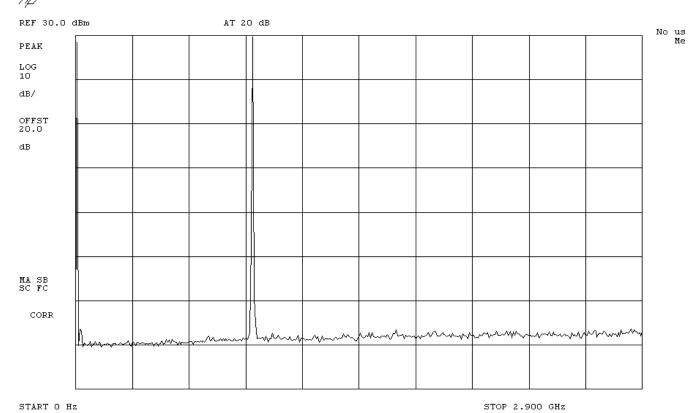


SWP 1.05 sec

START 6.489 GHz STOP 10.000 GHz

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SHEET		Rev BETA 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 Modulated 32 kbps data	a rate				
DEVIATIONS FROM TE	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	Т				
	Antenna Cond	ducted Spurious Em	issions - Low Channel 0Ml	Hz-3GHz	

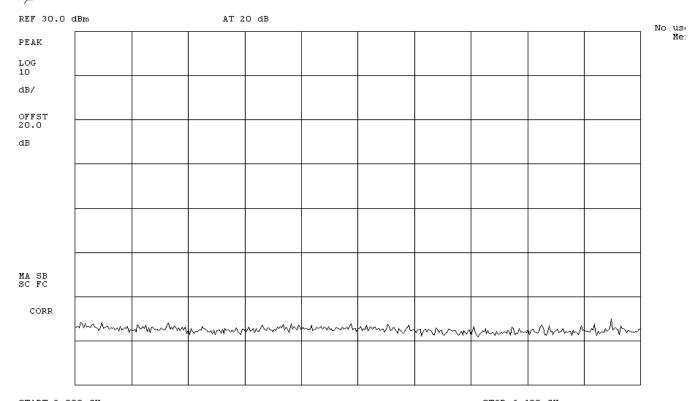
10:35:40 AUG 26, 2005



#RES BW 100 kHz #VBW 300 kHz SWP 870 msec

EMC	EMISSIONS	DATA SH	EET		Rev BET 01/30/01
EUT: IM4				Work Order:	ITRM0098
Serial Number: 19510523230				Date:	08/26/05
Customer: Intermec Technolog	jies 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(d)	Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
AMPLE CALCULATIONS					
EUT OPERATING MODES  Modulated 32 kbps data rate  DEVIATIONS FROM TEST STANDARD					
PEVIATIONS FROM TEST STANDARD					
lone REQUIREMENTS					
lone EQUIREMENTS Maximum level of any spurious emission o	outside of the authorized band is 20 dB down	from the fundamental			
None REQUIREMENTS Maximum level of any spurious emission o	outside of the authorized band is 20 dB down	from the fundamental			
None REQUIREMENTS Maximum level of any spurious emission o RESULTS Pass	outside of the authorized band is 20 dB down	from the fundamental			
None REQUIREMENTS	outside of the authorized band is 20 dB down	from the fundamental			
lone REQUIREMENTS Maximum level of any spurious emission o RESULTS Pass		from the fundamental			
Ione REQUIREMENTS Askimum level of any spurious emission o RESULTS Pass BIGNATURE		from the fundamental			

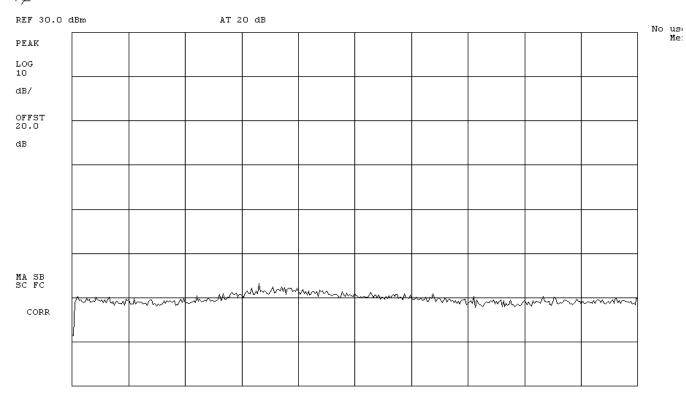
10:37:39 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz

NORTHWEST EMC	EMISSIONS I	DATA SH	EET		Rev BETA 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 Modulated 32 kbps da	ta rate				-
DEVIATIONS FROM TI None	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.K.P				
DESCRIPTION OF TES	ST				
	Antenna Conducted Spurious Emis	sions - Low	Channel 6.5G	Hz-10GHz	

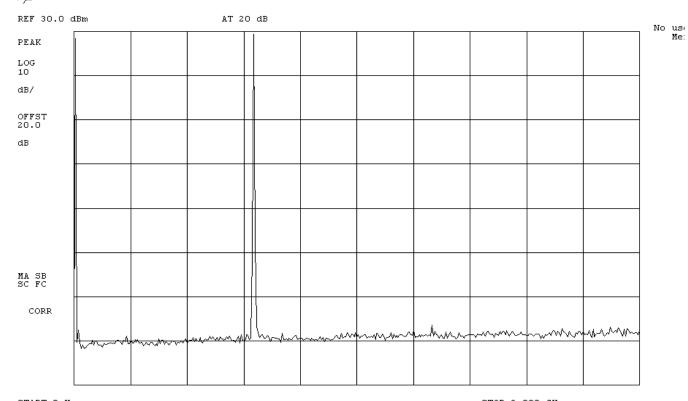
10:39:47 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

EMC	EMISSION	S DATA SHEET		Rev BET		
EUT: IM4			Work Order: ITR	RM0098		
Serial Number: 19510523230			Date: 08/	26/05		
Customer: Intermec Tech	nnologies 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: OC	:03		
TEST SPECIFICATIONS						
Specification: 47 CFR 15.247	7(d) Year: 2005-04	Method: DA 00-705, ANSI C6	3.4 Year: 200	)3		
SAMPLE CALCULATIONS						
EUT OPERATING MODES Modulated 32 kbps data rate DEVIATIONS FROM TEST STANDAR	RD.					
None						
	REQUIREMENTS					
REQUIREMENTS						
REQUIREMENTS Maximum level of any spurious emis	ssion outside of the authorized band is 20 dB do	wn from the fundamental				
REQUIREMENTS  Maximum level of any spurious emis  RESULTS	ssion outside of the authorized band is 20 dB do	wn from the fundamental				
REQUIREMENTS Maximum level of any spurious emis RESULTS Pass	ssion outside of the authorized band is 20 dB do	wn from the fundamental				
REQUIREMENTS Maximum level of any spurious emis RESULTS Pass SIGNATURE	ssion outside of the authorized band is 20 dB do	own from the fundamental				
REQUIREMENTS Maximum level of any spurious emis RESULTS Pass SIGNATURE		own from the fundamental				

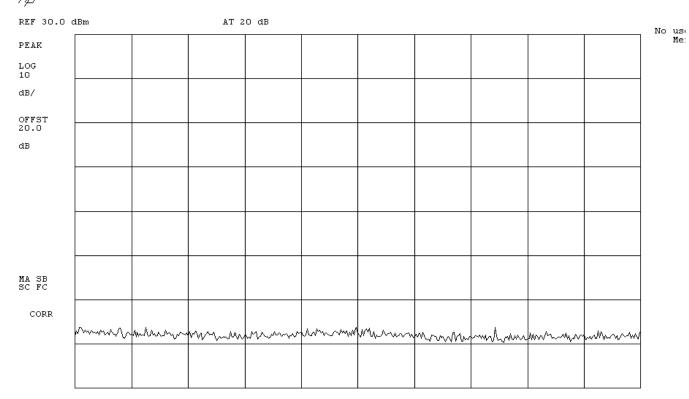
10:41:23 AUG 26, 2005



START 0 Hz STOP 2.900 GHz

EMC		<b>EMISSIONS</b>	<b>DATA SH</b>	EET		Rev BET/ 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	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 Modulated 32 kbps da DEVIATIONS FROM TI None REQUIREMENTS	ta rate					
	spurious emission outside of t	ne authorized band is 20 dB down	from the fundamental			
iaximum ievei of anv						
RESULTS						
MAXIMUM level of any RESULTS Pass SIGNATURE						
RESULTS Pass	ADU.K.P					
RESULTS Pass SIGNATURE						

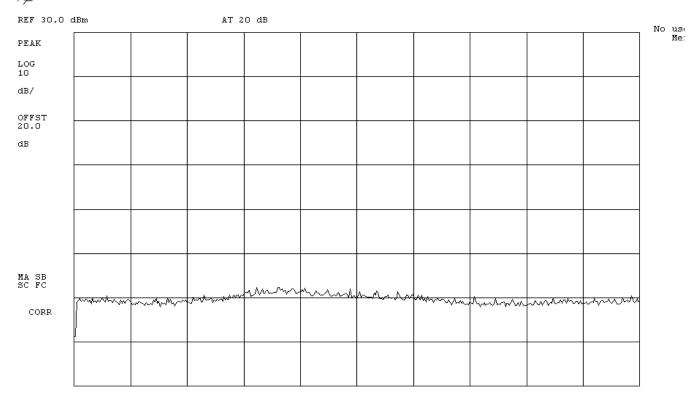
10:42:07 AUG 26, 2005



START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:						08/26/05
Customer:	Intermec Technologies Corporate	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						
UT OPERATING MOD						
Modulated 32 kbps da						
DEVIATIONS FROM TE	EST STANDARD					
None						
REQUIREMENTS	spurious omission outside of the	e authorized band is 20 dB down f	rom the fundamental			
RESULTS	spurious emission outside of the	e authorized band is 20 dB down i	Tom the fundamental			
Pass						
SIGNATURE						
Tested By:	ADU.KIP					
DESCRIPTION OF TES	ST T					
	Antenna Condu	icted Spurious Emi	ssions - Mid (	Channel 6.5G	Hz-10GHz	

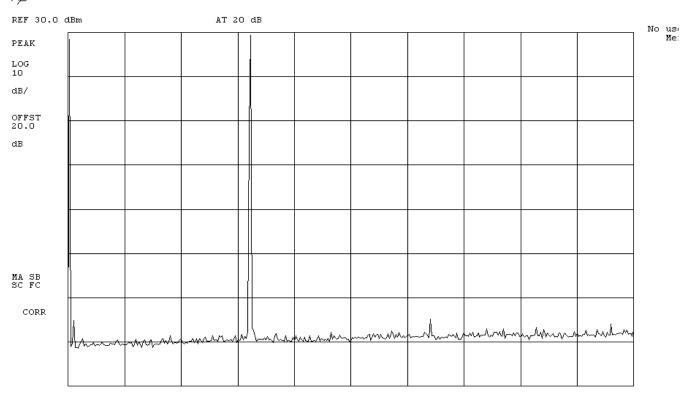
10:43:06 AUG 26, 2005



START 6.489 GHz STOP 10.000 GHz

NORTHWEST EMC	EMISSIONS I	DATA SH	EET		Rev BETA 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	IS .				
Specification:	47 CFR 15.247(d) Year: 2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003
EUT OPERATING MOD Modulated 32 kbps da	ta rate				
DEVIATIONS FROM TI None	EST STANDARD				
REQUIREMENTS					
	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 Conducted Spurious Em	issions - Higl	n Channel 0M	IHz-3GHz	•

10:44:21 AUG 26, 2005



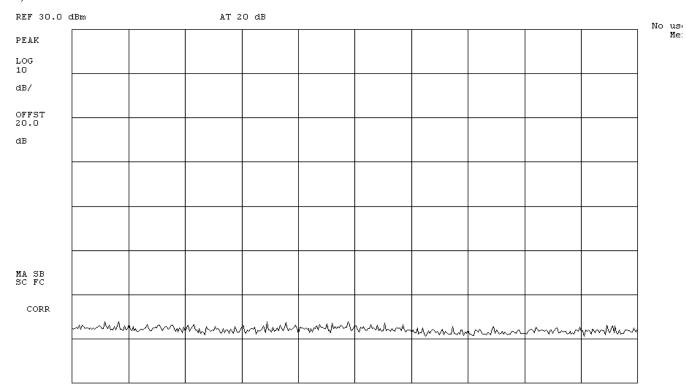
START O Hz STOP 2.900 GHz

#VBW 300 kHz

SWP 870 msec

NORTHWEST EMC	EMISSIONS I	DATA SH	EET		Rev BETA 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 Modulated 32 kbps da					
DEVIATIONS FROM TI	EST STANDARD				
None					
REQUIREMENTS					
	spurious emission outside of the authorized band is 20 dB down from	om the fundamental			
RESULTS					
Pass					
SIGNATURE  Tested By:	ARU.K.P				
DESCRIPTION OF TES	Antenna Conducted Spurious Emis	ssions - High	Channel 3GI	Hz-6 5GHz	

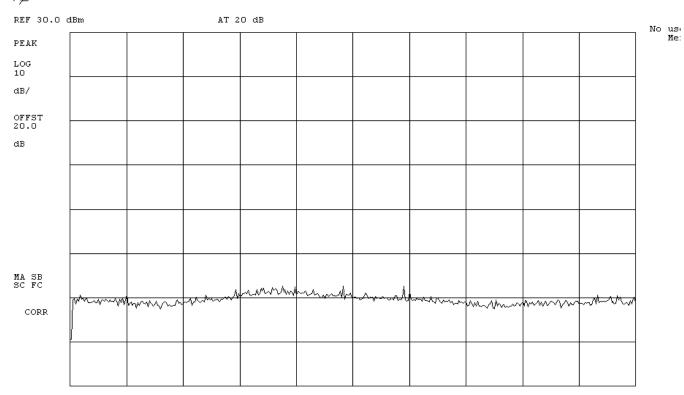
10:45:04 AUG 26, 2005



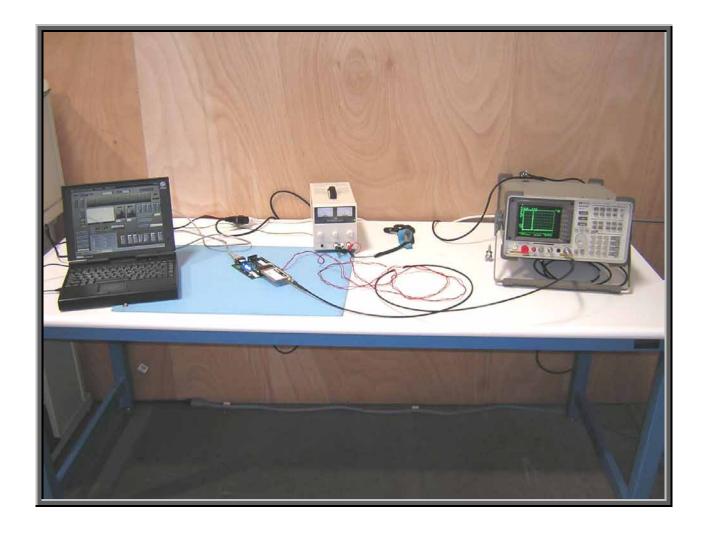
START 2.890 GHz STOP 6.490 GHz SWP 1.08 sec

NORTHWEST EMC		<b>EMISSIONS</b>	DATA SH	EET		Rev BETA 01/30/01
EUT:	IM4				Work Order:	ITRM0098
Serial Number:	19510523230					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						
UT OPERATING MOD						
Modulated 32 kbps da						
DEVIATIONS FROM TE	EST STANDARD					
None						
REQUIREMENTS	spurious amission outside of the	authorized band is 20 dB down fi	om the fundamental			
RESULTS	spurious emission outside or the	authorized band is 20 dB down in	on the fundamental			
Pass						
SIGNATURE						
Tested By:	ADU.KIP					
DESCRIPTION OF TES						
	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

<b>Power Input Settings Invention</b>	estigated:
120 VAC, 60 Hz	
<b>Input Power Setting used</b>	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		
<b>Exercise software</b>	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 measurem	ent 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.				

### **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- 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.

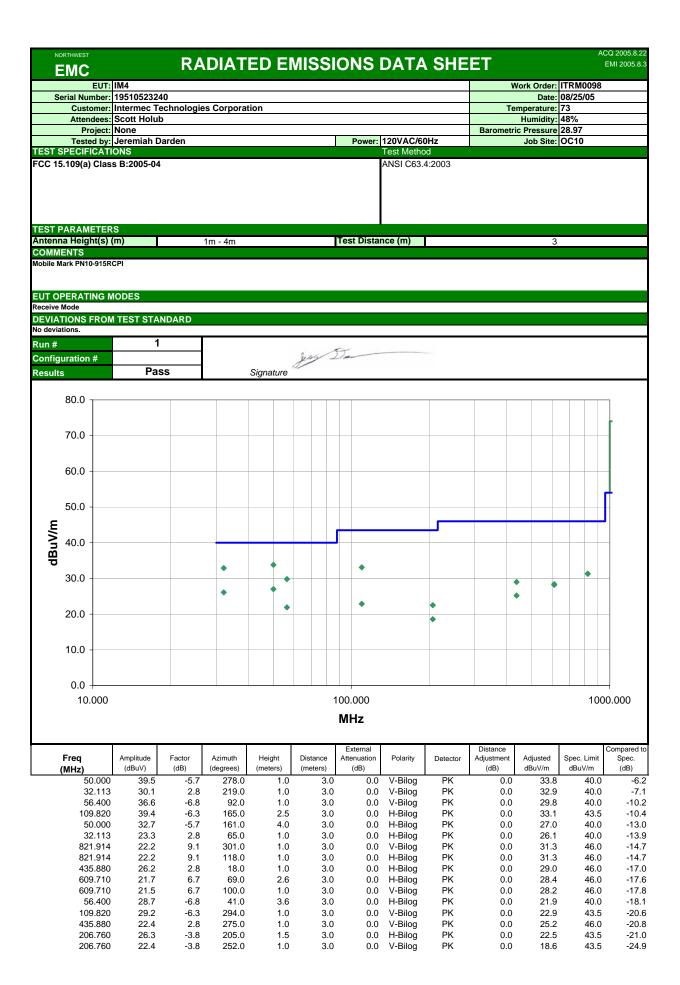
Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated 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.

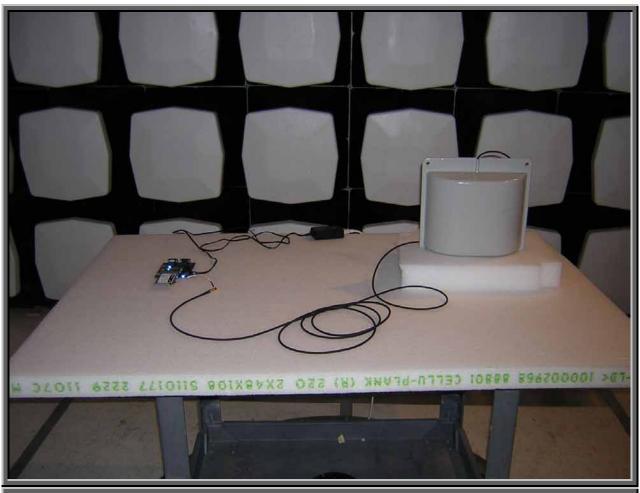
Note: The specified distance is the horizontal separation between the closest periphery of the EUT and the center of the axis of the elements of the receiving antenna. However, if the receiving antenna is a log-periodic array, the specified distance shall be the distance between the closest periphery 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 (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
Measurements were i	made using the bandwidths	and detectors specified. No	video filter was used.

Completed by:		
Jens 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**

<b>EUT and Peripherals</b>			
Description	Manufacturer	Model/Part Number	Serial Number
RFID Reader (EUT)	Intermec Technologies Corporation	IM4	19510523240
Test Fixture	Intermec Technologies Corporation	Interrogator	None
Power Supply for Test 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 cor	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 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-005180-24- 10P	APP	05/07/2004	16 mo
Antenna, Horn	EMCO	3160-07	AHP	NCR	NA
Pre-Amplifier	Miteq	AMF-6F-08001200-30- 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- Packard	84300-80037	HFE	04/20/2005	13 mo

### **Spurious Radiated Emissions**

Revision 10/1/03

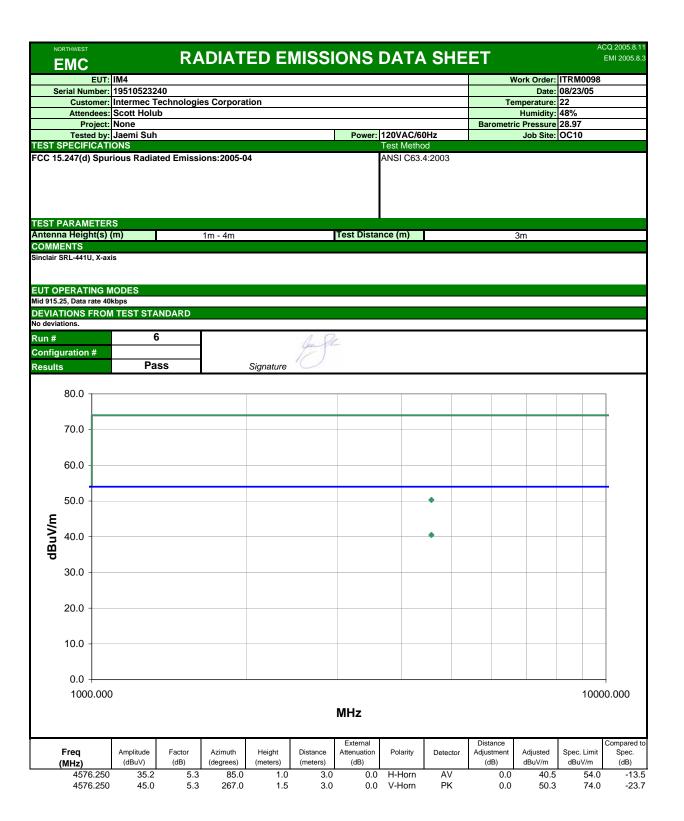
#### **Test Description**

**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 (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 – 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
Measurements were n	nade using the bandwidths	and detectors specified. No	video filter was used.

Completed by:	
Jeny Da	



NORTHWEST EMC			R <i>A</i>	DIAT	ED EI	MISSI	ONS	DATA	SHE	ΕT			CQ 2005.8 EMI 2005.
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		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 lair SRL-441U, )													
T OPERATING 915.25, Data rate VIATIONS FR	38kbps	3	NDARD										
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							MHz						
Freq (MHz)	(	nplitude dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec (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 4576.2 4576.2	250	31.4 45.6 45.6	5.3 5.3 5.3	107.0	1.5 1.0 1.5	3.0 3.0 3.0	0.0	V-Horn H-Horn V-Horn	AV PK PK	0.0 0.0 0.0	36.7 50.9 50.9	54.0 74.0 74.0	-1 -2 -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

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Freq (MHz)		Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared t Spec. (dB)
45 45	13.750 13.750 13.750 13.750	25.5 25.5 28.8 28.8	5.1 5.1 5.1 5.1	275.0 208.0 275.0 208.0	1.0 1.0 1.0 1.0	3.0 3.0 3.0 3.0	0.0 0.0	H-Horn V-Horn H-Horn V-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	30.6 30.6 33.9 33.9	54.0 74.0	-23.4 -23.4 -40. -40.

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	Scott Holub									Humidity:		
Project:	None								Barometr	ic Pressure	28.97	
	Jaemi Suh					Power:	120VAC/60			Job Site:	OC10	
T SPECIFICATI	ONS						Test Metho					
: 15.247(d) Spur	Tous Radiate	a Emissic	ons:2005-0	14			ANSI C63.4	1:2003				
T PARAMETER												
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec (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 4636.250	25.7	5.4	234.0	2.3	3.0	0.0	V-Horn	AV	0.0	31.1	54.0	-2

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	Tested by:	Jaemi Suh					Power:	120VAC/60			Job Site:		
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	Freq MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
	9272.500 9272.500 9272.500 9272.500	35.4 35.4 38.9 38.6	-7.6 -7.6 -7.6 -7.6	229.0 199.0 229.0 199.0	1.8 3.7 1.8 3.7	3.0 3.0 3.0 3.0	0.0 0.0	H-Horn V-Horn H-Horn V-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	27.8 27.8 31.3 31.0	54.0 74.0	-26.2 -26.2 -42.7 -43.0

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	/: Jaemi Suh	1				Power:	120VAC/60	)Hz	Daronieu	Job Site:		
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C 15.247(d) Sp	urious Radia	ted Emissi	ons:2005-0	04			ANSI C63.4	1:2003				
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec (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 9027.50		-7.8 -7.8	287.0 249.0	3.1 3.8	3.0 3.0			PK PK	0.0	30.9 30.9	74.0 74.0	-4

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		Scott Holub	)								Humidity:		
	Project:							400)/40/06	NI I	Barometr	ic Pressure		
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	ARAMETER a Height(s) (			1m - 4m			Test Distar	nce (m)			3m		
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	Freq MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)		Polarity	Detector		Adjusted dBuV/m		
							Attenuation (dB)	Polarity V-Horn	Detector	Adjustment		Spec. Limit	Spec. (dB)
	9152.515 9152.515	(dBuV) 37.1 35.0	(dB) -7.7 -7.7	(degrees) 210.0 348.0	(meters) 1.0 1.0	(meters) 3.0 3.0	Attenuation (dB)  0.0 0.0	V-Horn H-Horn	AV AV	Adjustment (dB) 0.0 0.0	dBuV/m 29.4 27.3	Spec. Limit dBuV/m 54.0 54.0	Spec. (dB) -24.6
	MHz) 9152.515	(dBuV) 37.1	(dB)	(degrees) 210.0 348.0 210.0	(meters)	(meters)	Attenuation (dB)  0.0 0.0 0.0	V-Horn	AV	Adjustment (dB)	dBuV/m	Spec. Limit dBuV/m 54.0	Spec.

NORTHWEST <b>EMC</b>			R <i>A</i>	DIAT	ED EI	MISSI	IONS I	DATA	SHE	ΕT			CQ 2005.8 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 rein 25-578 LF													
T OPERATII 915.25, Data ra VIATIONS F	ate 38k	Bs	NDARD										
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							MHz						
Freq (MHz)		Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec (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 9152		35.2 43.8	-7.7 -7.7	83.0 106.0	1.0 1.0	3.0 3.0	0.0		AV PK	0.0	27.5 36.1	54.0 74.0	-2 -3

NORTHWEST EMC		RA	DIAT	ED EI	MISSI	ONS	DATA	SHE	EΤ			Q 2005.8.1 EMI 2005.8.
EUT: Serial Number:	1951052324		Corner	tion						Date:	ITRM0098 08/23/05	
Attendees:	Intermec Te Scott Holub	cnnologie	s Corpora	tion						mperature: Humidity:	48%	
Project: Tested by:	None Jaemi Suh					Power:	120VAC/60	Hz	Barometr	ic Pressure Job Site:		
EST SPECIFICATI CC 15.247(d) Spur	ONS	d Emissis	no.200E 0	4			Test Metho ANSI C63.4	d				
oo lo.E-i (a) opal	ious madiate			•			7.11.01.000.1	2000				
EST PARAMETER Intenna Height(s) (		1	m - 4m			Test Distar	nce (m)			3m		
OMMENTS athrein 25-578 LP												
UT OPERATING M												
d 915.25, Data rate 401 EVIATIONS FROM deviations.		IDARD										
un #	2				Cen Pl							
onfiguration #	Pas			0'	(0)							
esults	Pas	S		Signature								
80.0												
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0.0 9100.000	9110.000	9120.0	00 9130	0.000 914	0.000 9	150.000	9160.000	9170.000	9180.0	000 9190	0.000 920	0.000
						MHz						
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared t Spec. (dB)
9152.500 9152.500 9152.500 9152.500	38.1 37.1 45.6 43.2	-7.7 -7.7 -7.7 -7.7	217.0 87.0 217.0 87.0	1.0 1.0 1.0 1.0	3.0 3.0 3.0 3.0	0.0 0.0	V-Horn H-Horn V-Horn H-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	30.4 29.4 37.9 35.5	54.0 74.0	-23.6 -24.6 -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

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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 EMC		RA	DIAT	ED EI	MISSI	ONS	DATA	SHE	ĒΤ			CQ 2005.8 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 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	*											
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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 (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec. (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 -2.7 -2.7	201.0 170.0 201.0	1.6 1.5 1.6		0.0 0.0				70.3 45.7 44.0		- -1

NORTHWEST			R <i>A</i>	DIAT	ED EI	MISSI	IONS	DATA	SHE	ET			CQ 2005.8 EMI 2005.
LIVIO		IM4									Nork Ord	ITDM0000	
Caul-1 M	EUT:		40								Nork Order:		
		195105232		00 Corno	tion							08/24/05	
		Intermec I Scott Holu		es Corpora	LIUII					16	emperature: 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 iall ROS-915,													
T OPERAT 915.25, Data VIATIONS deviations.	rate 32k	bps	NDARD										
n #		1	9			1	fr						
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sults		Pa	SS		Signature	art d							
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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 (MHz)		Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec. (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
915 915	2.500 2.500 2.500	41.2 53.9 52.9	-7.7 -7.7 -7.7	338.0	1.0 1.0 1.0	3.0 3.0 3.0	0.0	V-Horn H-Horn V-Horn	AV PK PK	0.0 0.0 0.0	33.5 46.2 45.2	74.0	-2 -2 -2

NORTHWEST EMC		RA	DIAT	ED EI	MISSI	ONS	DATA	SHE	ΕT			CQ 2005.8 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: 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 all ROS-915, Y-axis												
T OPERATING In 927.25, Data rate : VIATIONS FROI	32kbps	NDARD										
າ #	20	)				F -						
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sults	Pa	ss		Signature								
70.0												
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<b>W/\ng</b> p 40.0					•							
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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 (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec. (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 -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 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 MMENTS		m)		1m - 4m			Test Distar	nce (m)			3m		
T OPERA 915.25, Date	TING M a rate 38	ODES	NDARD										
deviations.	FROM	2°											
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nfiguratio	n#					1							
sults		Pas	SS		Signature								
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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 (MHz)		Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec (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 52.500	50.0 48.1	-7.7 -7.7	109.0 257.0	1.0 1.0	3.0 3.0	0.0	V-Horn H-Horn	PK PK	0.0 0.0	42.3 40.4	74.0	-3 -3

NORTHWEST EMC		RA	DIAT	ED EI	MISSI	ONS	DATA	SHEE	ΕT			Q 2005.8 EMI 2005.
EUT:	IM4								v	Vork Order:	ITDM0000	
Serial Number:		n							<u>v</u>		08/24/05	
	Intermec Te		s Cornora	tion					Te	mperature:		
	Scott Holub	ciliologic	3 Ooi poi a						- 10	Humidity:		
Project:									Barometr	ic Pressure		
Tested by:	Jeremiah Da	rden				Power:	120VAC/60	Hz		Job Site:		
T SPECIFICATI	ONS						Test Metho	d				
315.247(d) Spur	ious Radiate	ed Emissio	ons:2005-0	04			ANSI C63.4	1:2003				
T PARAMETER	-					Total Distan	(m)					
enna Height(s) ( MMENTS	m)		1m - 4m			Test Distar	nce (m)			3m		
OPERATING M	IODES kbps	IDARD										
IATIONS FROM eviations.	22	IDARD										
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ults	Pas	S		Signature								
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9100.000	9110.000	9120.0	000 9130	).000 914	0.000 9	150.000 <b>MHz</b>	9160.000	9170.000	9180.0	000 9190	.000 920	0.000
	Amplitude	Factor	Azimuth	Height	Distance	External Attenuation	Polarity	Detector	Distance Adjustment	Adjusted	Spec. Limit	Compare Spec.
Freq (MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
(MHz) 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 H-Horn V-Horn	AV AV PK				-2: -2: -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	

	THWEST MC		RA	DIAT	ED EI	MISSI	ONS	DATA	SHE	ΞT			CQ 2005.8 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 MME	Height(s) (	m)		1m - 4m			Test Distar	nce (m)			3m		
Г ОРЕ 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												-
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⊑				2									
dBuV/m ₁	40.0			•									
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2	20.0												
1	10.0												
	0.0												1
	9000.000	9010.000	9020.0	9030	).000 904	0.000 9	050.000 <b>MHz</b>	9060.000	9070.000	9080.0	00 9090	.000 910	0.000
	Freq MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity		Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compare Spec. (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 9027.000	53.0 51.4	-7.8 -7.8	78.0 100.0	1.0 1.0	3.0 3.0	0.0 0.0	H-Horn V-Horn	PK PK	0.0	45.2 43.6	74.0 74.0	-2: -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 PΚ 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

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1830.450

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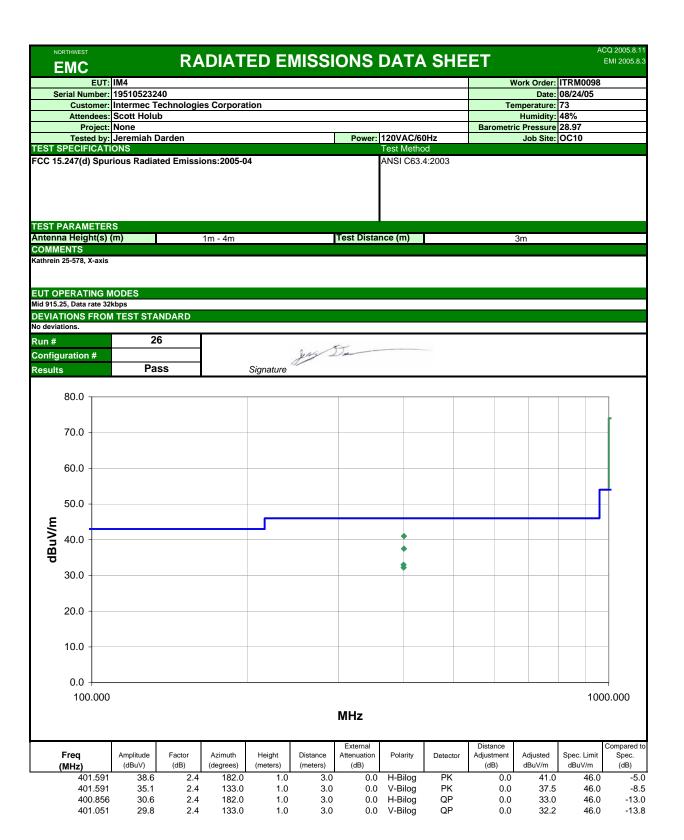
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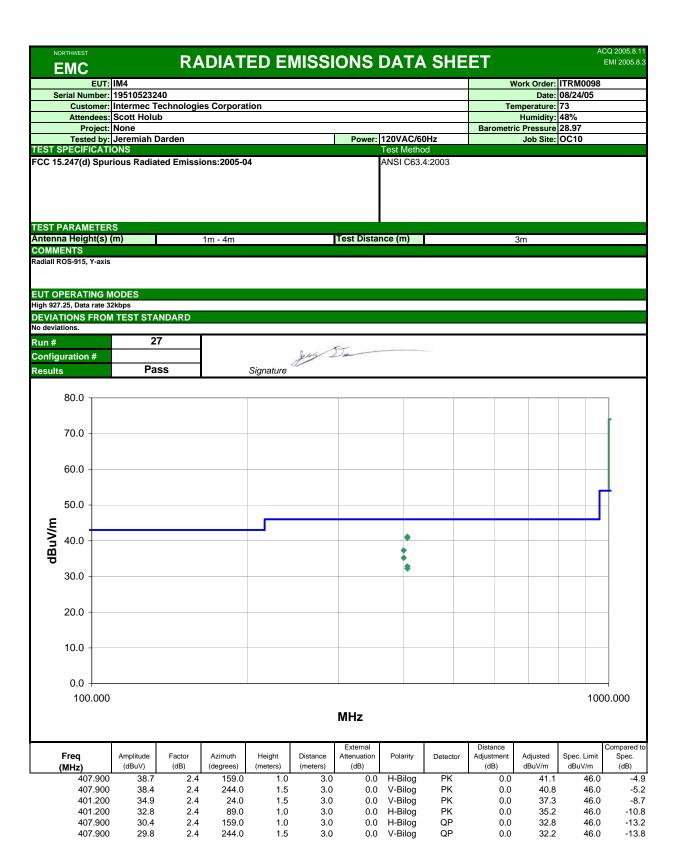
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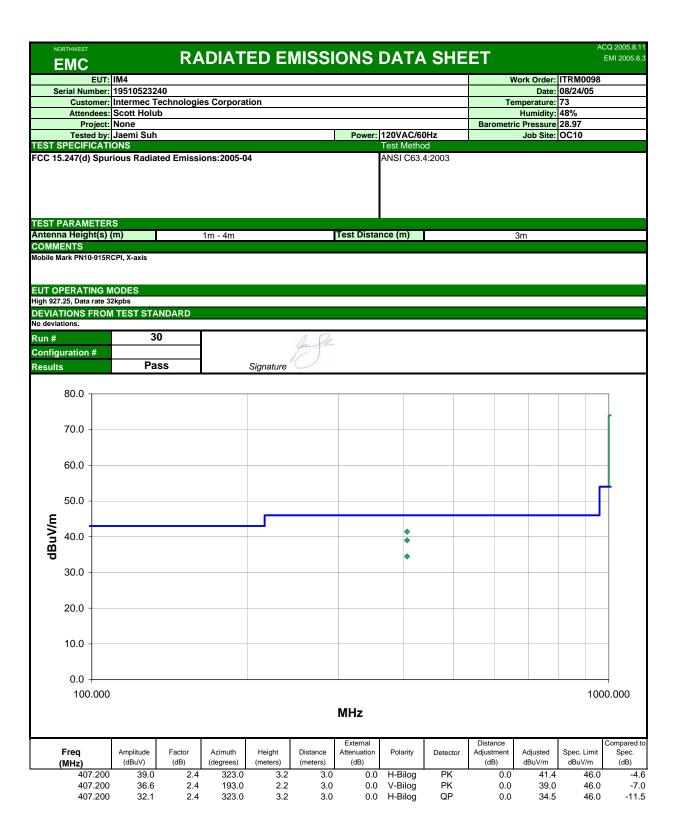
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-28.1

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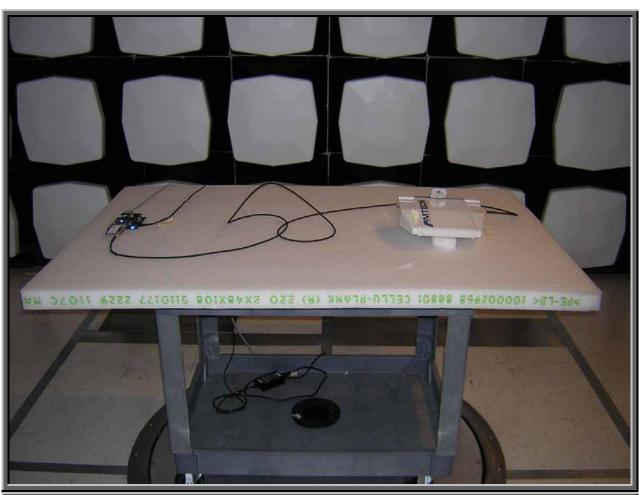




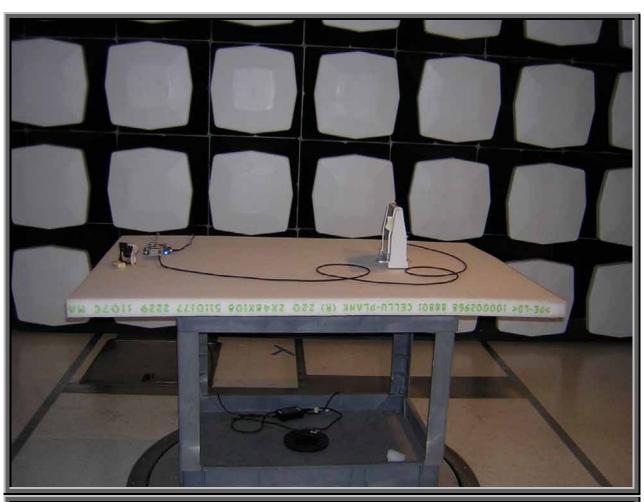
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	PECIFICATION				,			Test Metho	d		Job Site:	OC10	
GG 15.2	247(a) Spur	ious Radiat	ea Emissi	ions:2005-0	<b>14</b>			ANSI C63.4	4:2003				
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OMMEN								, ,					
w 902.75 EVIATION			NDARD										
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	req (Hz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared t Spec. (dB)
	4513.750 4513.750 4513.750 4513.750	36.9 34.0 48.8 46.4	5.1 5.1 5.1 5.1	35.0 39.0 35.0 39.0	2.4 1.0 2.4 1.0	3.0 3.0 3.0 3.0	0.0 0.0	H-Horn V-Horn H-Horn V-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	42.0 39.1 53.9 51.5	54.0 54.0 74.0 74.0	-12.0 -14.9 -20.1 -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 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												_
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Solidation   Freq   Amplitude   Factor   (degrees)   (meters)   (meters)   (dB)   (d	70.0												
Solidation   Freq   Amplitude   Factor   (degrees)   (meters)   (meters)   (dB)   (d													
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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 (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjusted dBuV/m         Spec. Limit dBuV/m         Spec. (dB)           8187.000         28.6         13.4         203.0         1.0         3.0         0.0         V-Horn 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 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 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 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 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) -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 -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 -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.

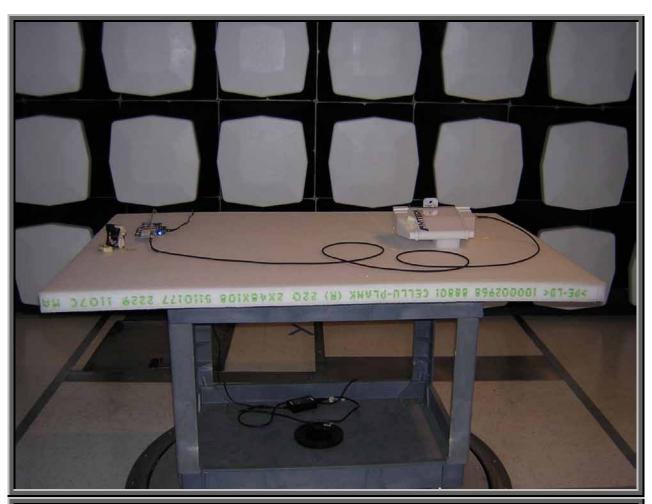
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EUT:		•							v		ITRM0098	
Serial Number: Customer:	Intermec Te		s Corpora	tion					Te	mperature:	08/24/05 73	
	Scott Holub									Humidity:		
Project:									Barometr	ic Pressure		
Tested by: ST SPECIFICAT	Jaemi Suh						120VAC/60 Test Metho			Job Site:	OC10	
C 15.247(d) Spu		ed Emissio	ons:2005-0	4			ANSI C63.4					
ST PARAMETER						Total Distan						
enna Height(s) MMENTS	(m)		1m - 4m			Test Distar	ice (m)			3m		
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_						External		_	Distance			Compare
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	Attenuation (dB)	Polarity	Detector	Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Spec. (dB)
4636.250	39.0	5.4	44.0	1.0	3.0	0.0	V-Horn	AV	0.0	44.4	54.0	-
	37.2	5.4 5.4 5.4	44.0 283.0 44.0	1.0 1.0 1.0	3.0 3.0 3.0	0.0 0.0 0.0	V-Horn H-Horn V-Horn	AV AV PK	0.0 0.0 0.0	44.4 42.6 56.8	54.0 54.0 74.0	-1 -1 -1



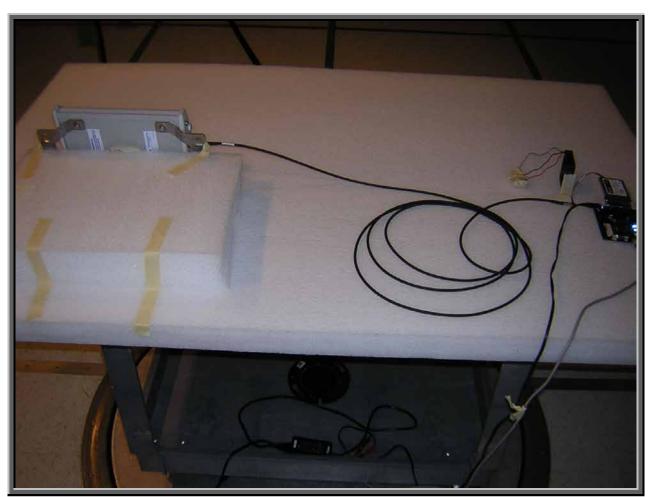


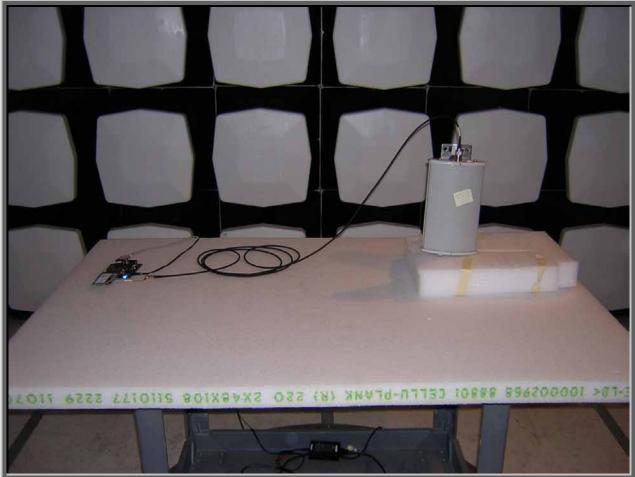


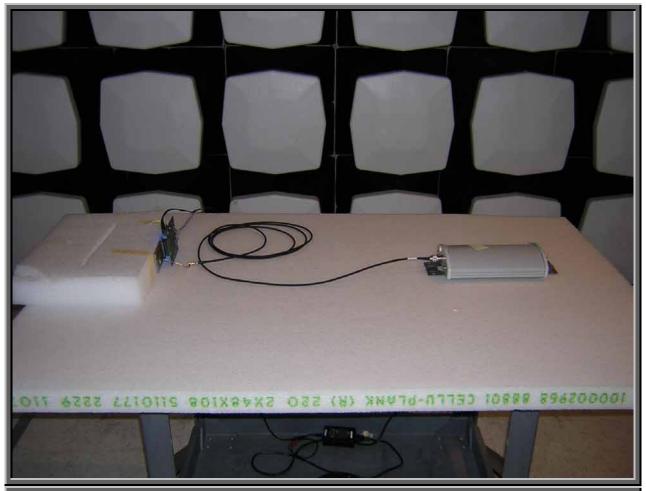


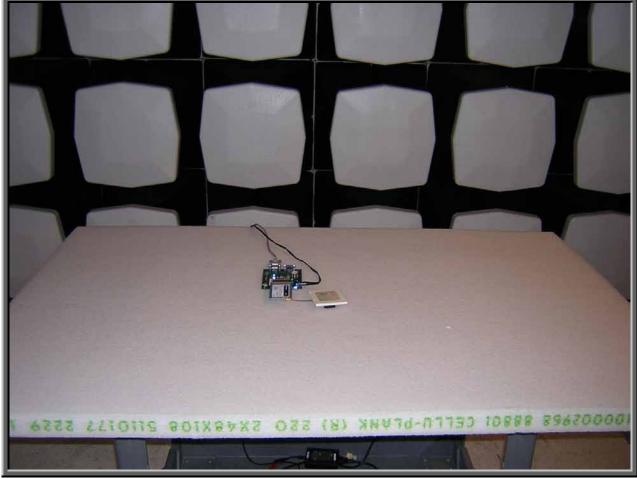


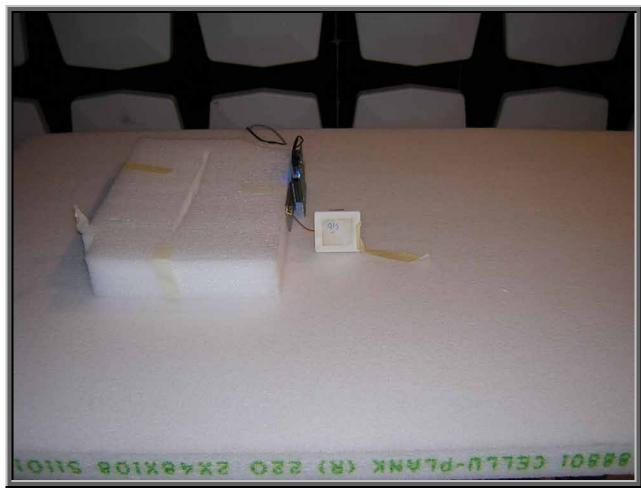


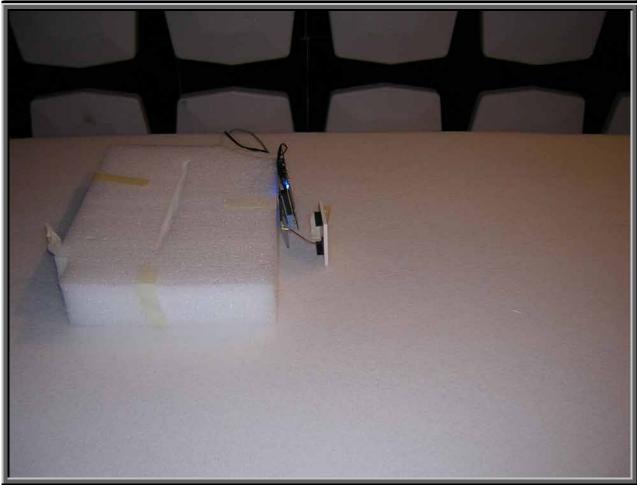


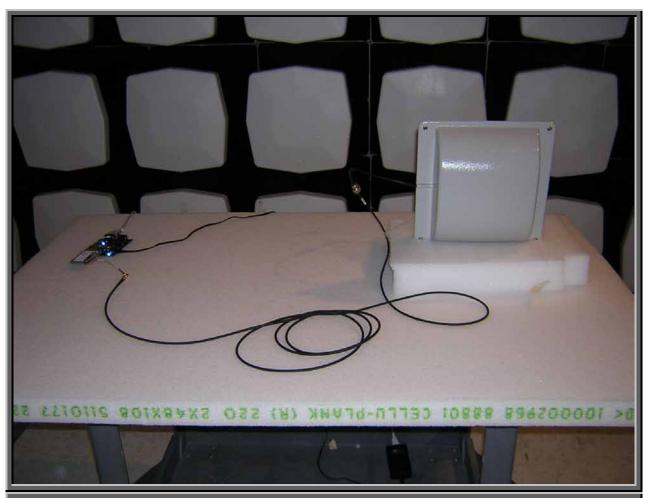




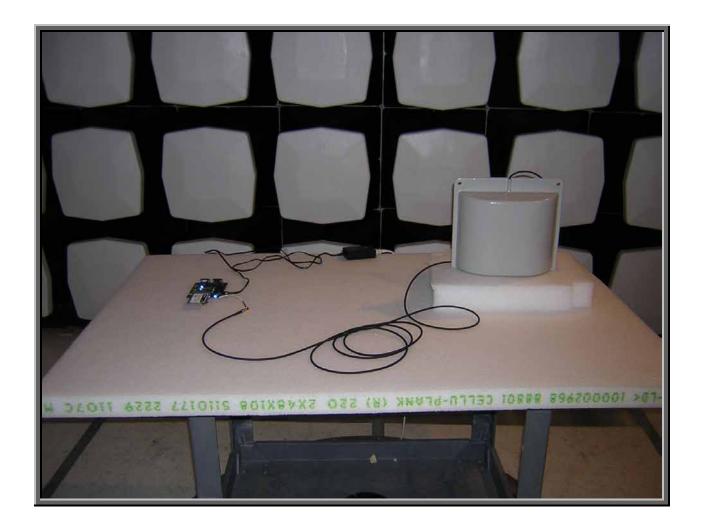












# **AC Powerline Conducted Emissions**

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 Number	Serial Number				
RFID Reader (EUT)	Intermec Technologies Corporation	IM4	19510523240				
Test Fixture	Intermec Technologies Corporation	Interrogator	None				
Power Supply for Test 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

