Intermec Technologies Corporation

IM4

September 12, 2005

Report No. ITRM0099

Report Prepared By

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

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: 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

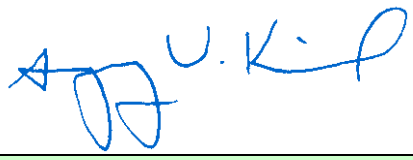
Test Facility

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 Number	Description	Date	Page Number
00	None		

Accreditations and Authorizations

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

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

200629-0
200630-0
200676-0

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

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

TÜV Product Service: Included in TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories, available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV's CARAT Program requirements. Certificate No. USA0401C.

TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.

NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Technology International: Assessed in accordance with ISO Guide 25 defining the general international requirements for the competence of calibration and testing laboratories and with ITI assessment criteria LACO196. Based upon that assessment, Interference Technology International, Ltd., has granted approval for specifications implementing the EU Directive on EMC (89/336/EEC and amendments). The scope of the approval was provided on a Schedule of Assessment supplied with the certificate and is available upon request.

Australia/New Zealand: The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071 and R-1025, Irvine: C-2094 and R-1943, Newberg: C-1877 and R-1760, Sultan: R-871, C-1784 and R-1761).*

BSMI: Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement. License No.SL2-IN-E-1017.

GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

SCOPE

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

What is measurement uncertainty?

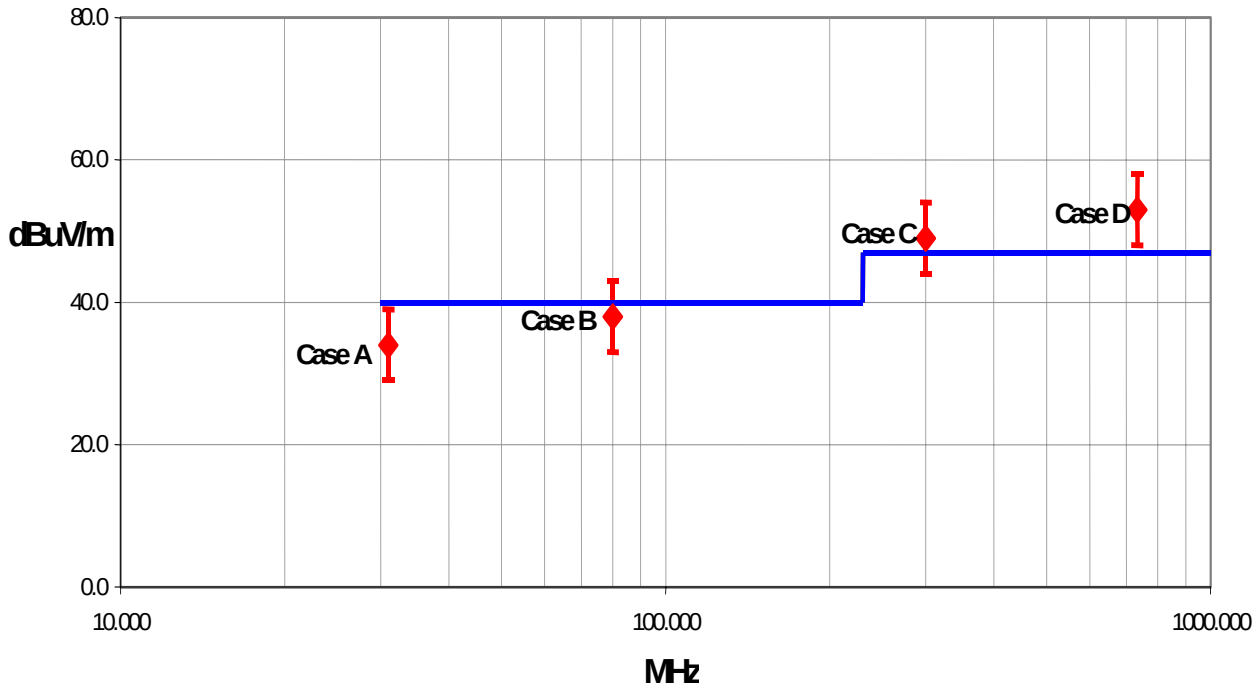
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following statement of measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" value. In the case of transient tests (ESD, EFT, Surge, Voltage Dips and Interruptions), the test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements.

The following documents were the basis for determining the uncertainty levels of our measurements:

- "ISO Guide to the Expression of Uncertainty in Measurements", October 1993
- "NIS81: The Treatment of Uncertainty in EMC Measurements", May 1994
- "IEC CISPR 16-3 A1 f1 Ed.1: Radio-interference measurements and statistical techniques", December 2000

How might measurement uncertainty be applied to test results?

If the diamond marks the measured value for the test and the vertical bars bracket the range of + and – measurement uncertainty, then test results can be interpreted from the diagram below.



Test Result Scenarios:
Case A: Product complies.
Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.
Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.
Case D: Product does not comply.

Radiated Emissions ≤ 1 GHz		Value (dB)					
	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
Test Distance		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25
Expanded uncertainty ***U*** (level of confidence ≈ 95%)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 -2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49

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

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

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

Conducted Immunity		
	Probability Distribution	Value (+/- dB)
Combined standard uncertainty ***uc(y)***	normal	1.05
Expanded uncertainty ***U*** (level of confidence ≈ 95 %)	normal (k = 2)	2.10

Legend

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

U = combined standard uncertainty multiplied by the coverage factor: **k**. This defines an interval about the measured result that will encompass the true value with a confidence level of approximately 95%. If a higher level of confidence is required, then k=3 (CL of 99.7%) can be used. Please note that with a coverage factor of one, uc(y) yields a confidence level of only 68%.

California

Orange County Facility

Labs OC01 – OC13

41 Tesla Ave.
Irvine, CA 92618
(888) 364-2378
FAX (503) 844-3826

Oregon

Evergreen Facility

Labs EV01 – EV10

22975 NW Evergreen Pkwy.
Suite 400
Hillsboro, OR 97124
(503) 844-4066
FAX (503) 844-3826

Oregon

Trails End Facility

Labs TE01 – TE03

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

Washington

Sultan Facility

Labs SU01 – SU07

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

Party Requesting the Test	
Company Name:	Intermec Technologies Corporation
Address:	550 Second St. SE
City, State, Zip:	Cedar Rapids, IA 52401-2023
Test Requested By:	Scott Holub
Model:	IM4
First Date of Test:	August 23, 2005
Last Date of Test:	August 26, 2005
Receipt Date of Samples:	August 23, 2005
Equipment Design Stage:	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.

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 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.					

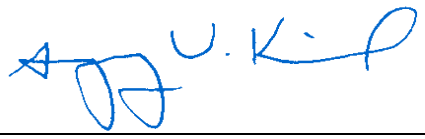
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8593E	AAA	12/06/2004	13 mo

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:



NORTHWEST EMC

CHANNEL SPACING

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(a)(1)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Frequency hopping systems operating in the 902 - 928 MHz band shall have carrier frequencies separated by a minimum of 25 kHz, or the 20 dB bandwidths of the hopping channel, whichever is greater.

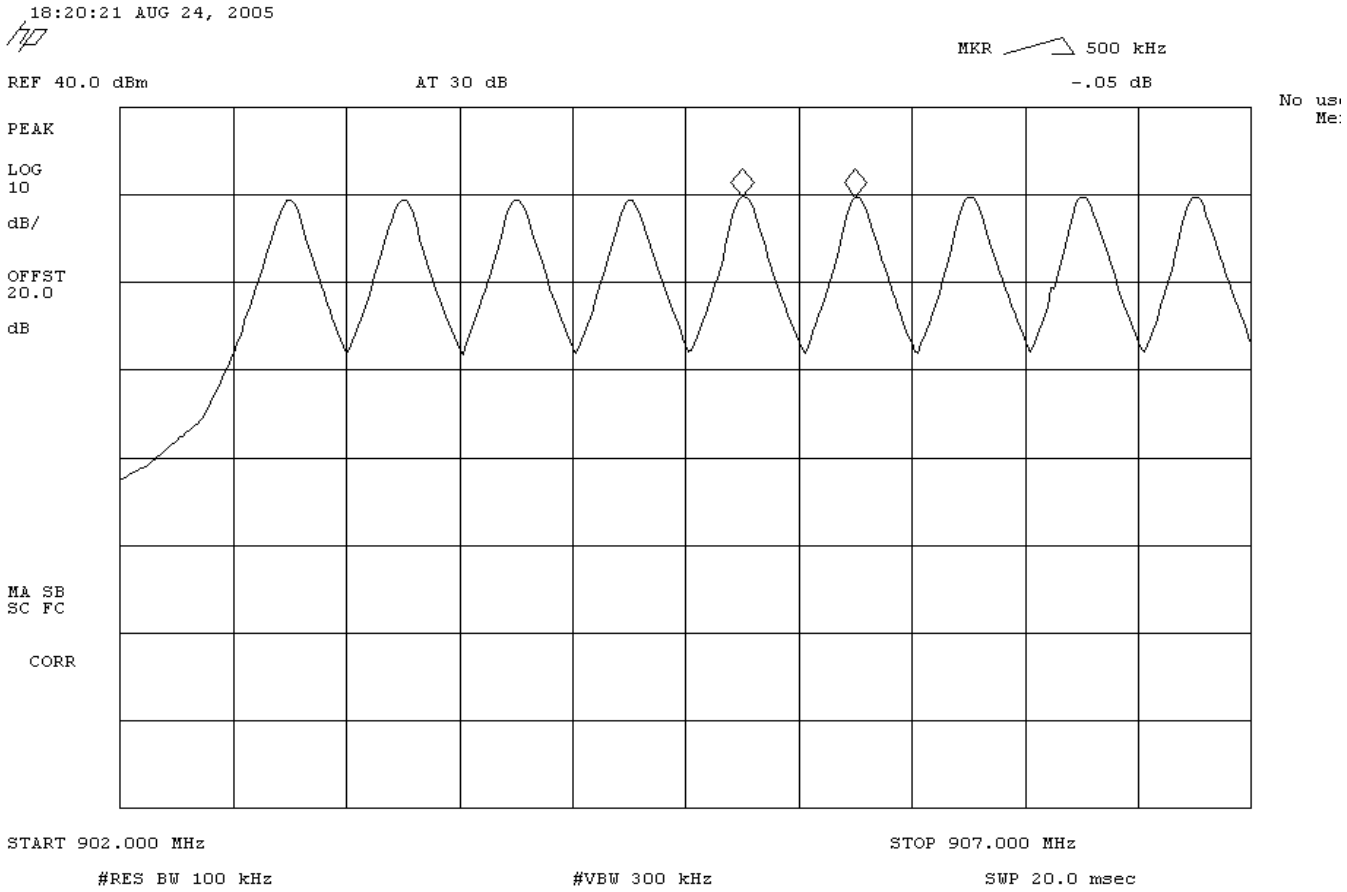
RESULTS	CHANNEL SPACING
Pass	500 kHz

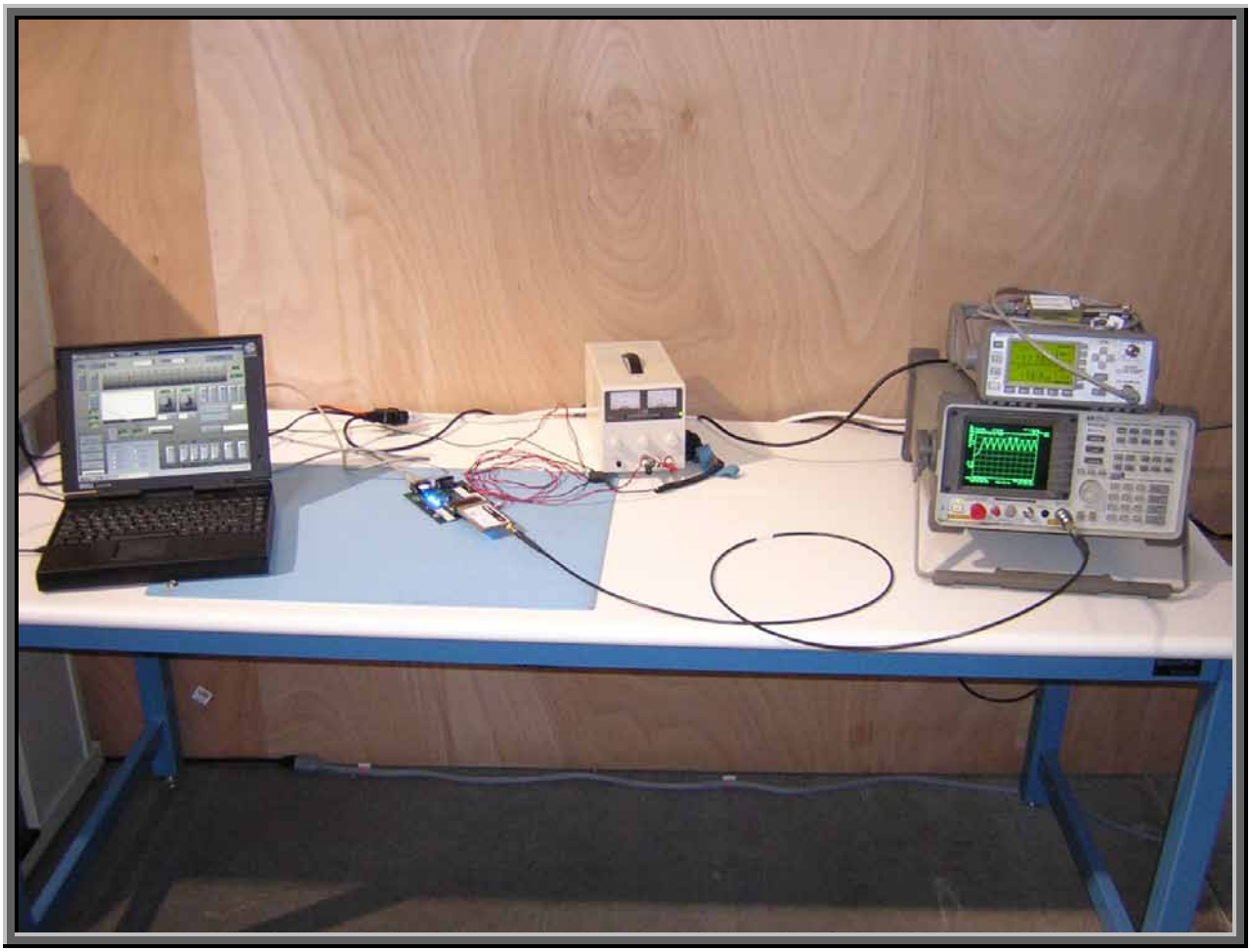
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

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:
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

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

DWELL TIME

Rev BETA 01/30/01

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/25/05
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(a)(1)(ii)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

Total Dwell time = (Dwell Time during a single transmission)) X (Number of transmissions in a 20 second period) = 0.4 sec

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20 second period

RESULTS	DWELL TIME DURING A SINGLE TRANSMISSION
Pass	100 mS

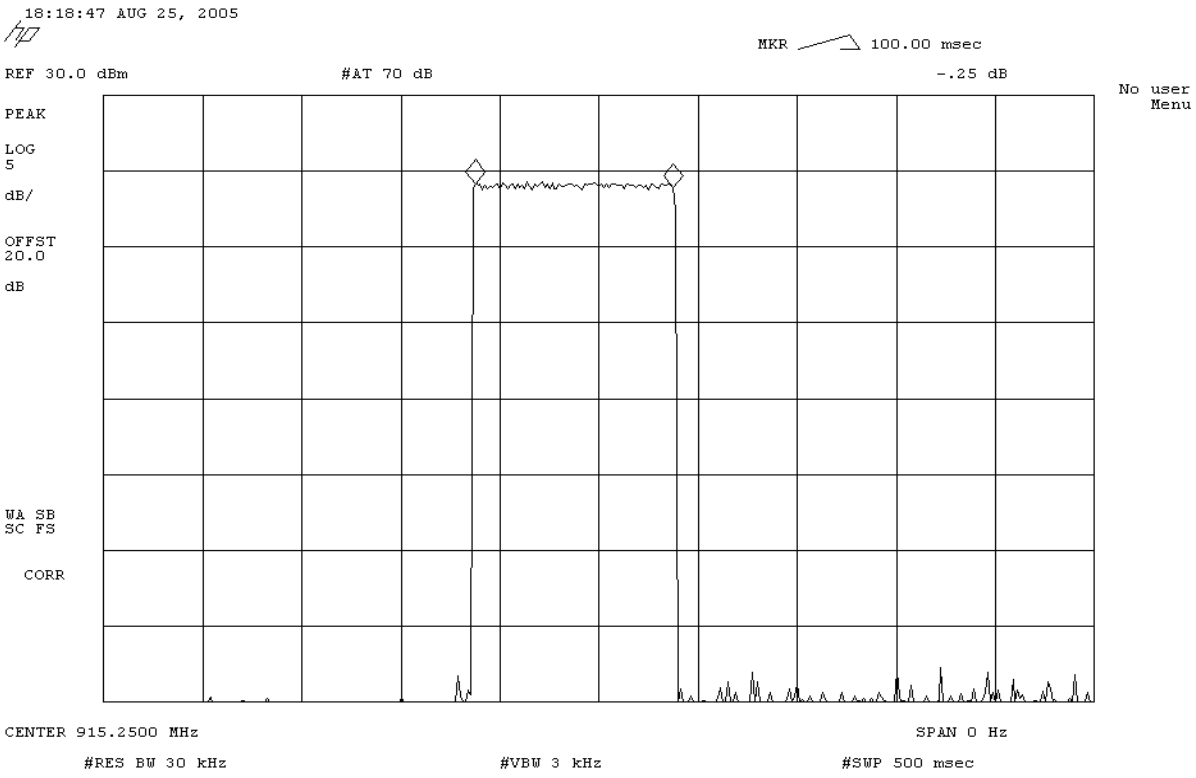
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Time of Occupancy (Dwell Time) - Single Transmission

405



NORTHWEST EMC

DWELL TIME

Rev BETA 01/30/01

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/25/05
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(a)(1)(ii)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

Total Dwell time = (Dwell Time during a single transmission)) X (Number of transmissions in a 20 second period) = 0.4 sec

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20 second period

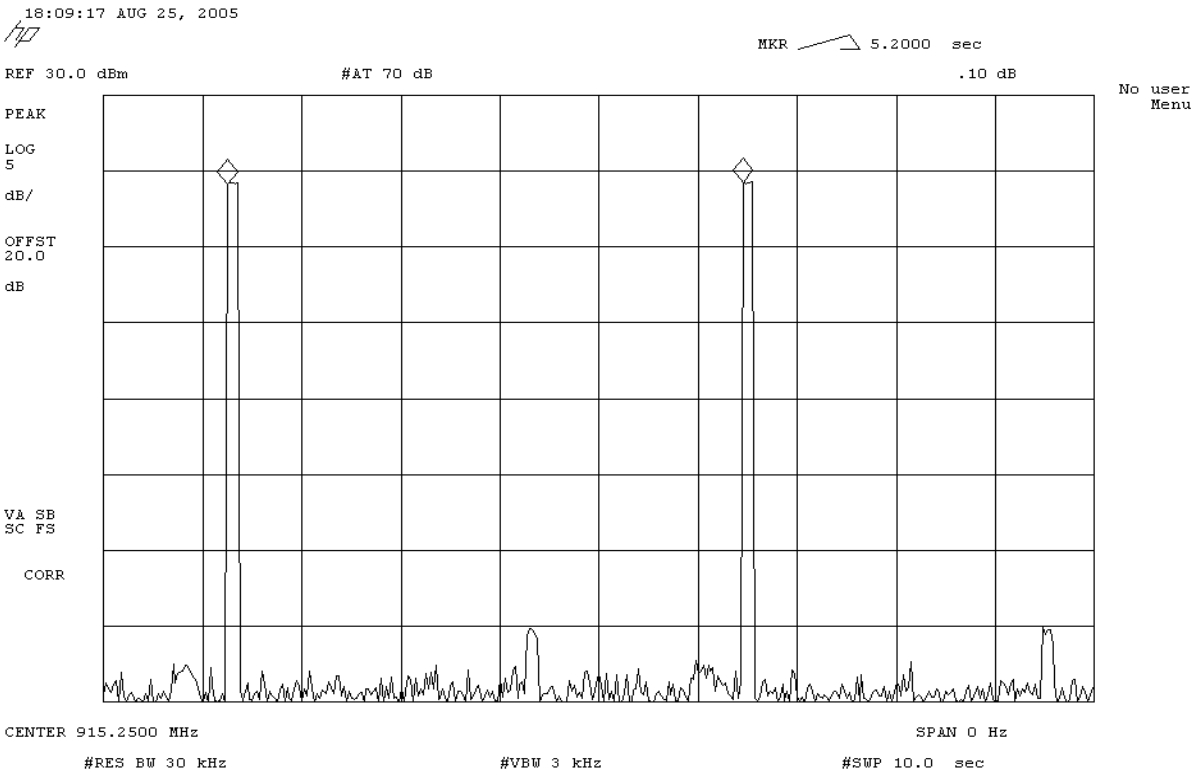
RESULTS	PERIOD
Pass	5.2 sec

SIGNATURE

Tested By: A. U. K.

DESCRIPTION OF TEST

Time of Occupancy (Dwell Time) - Period



NORTHWEST EMC

DWELL TIME

Rev BETA 01/30/01

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/25/05
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(a)(1)(ii)	Year: 2005	Method:	DA 00-705, ANSI C63.4	Year: 2003

SAMPLE CALCULATIONS

Total Dwell time = (Dwell Time during a single transmission)) X (Number of transmissions in a 20 second period) = 0.4 sec

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20 second period

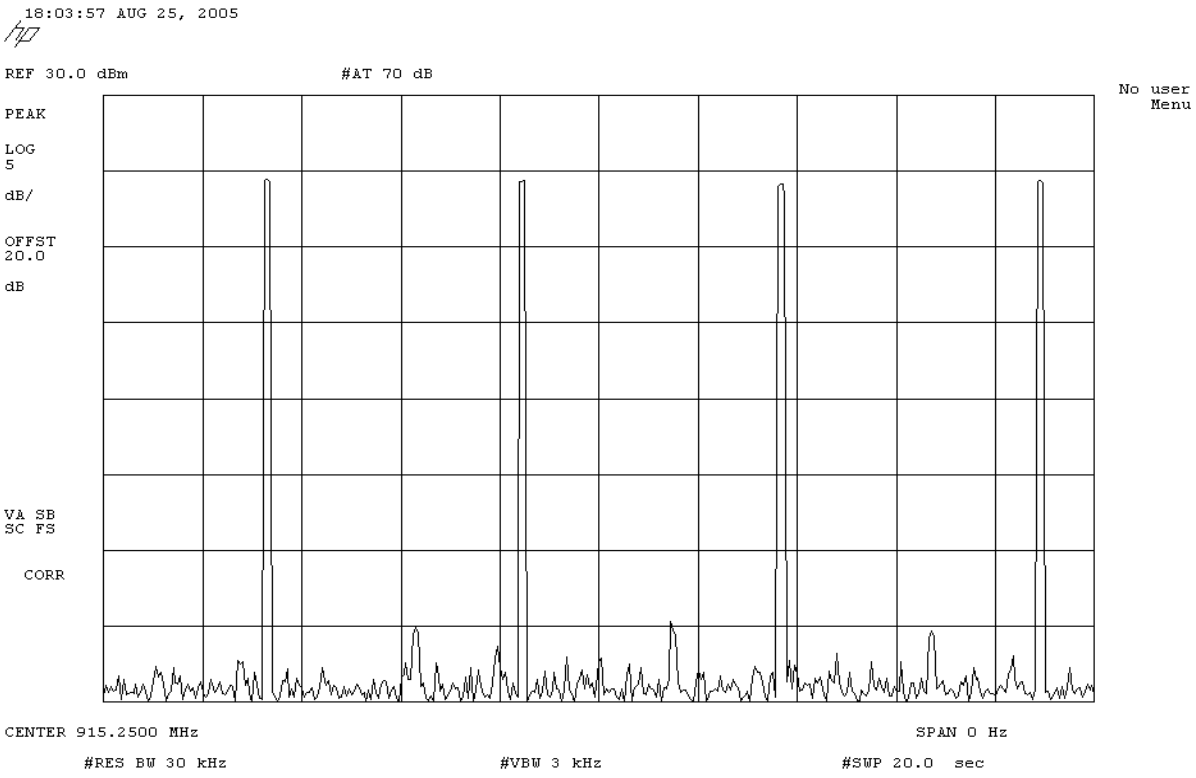
RESULTS	NUMBER OF TRANSMISSIONS DURING A 20 SECOND PERIOD
Pass	4

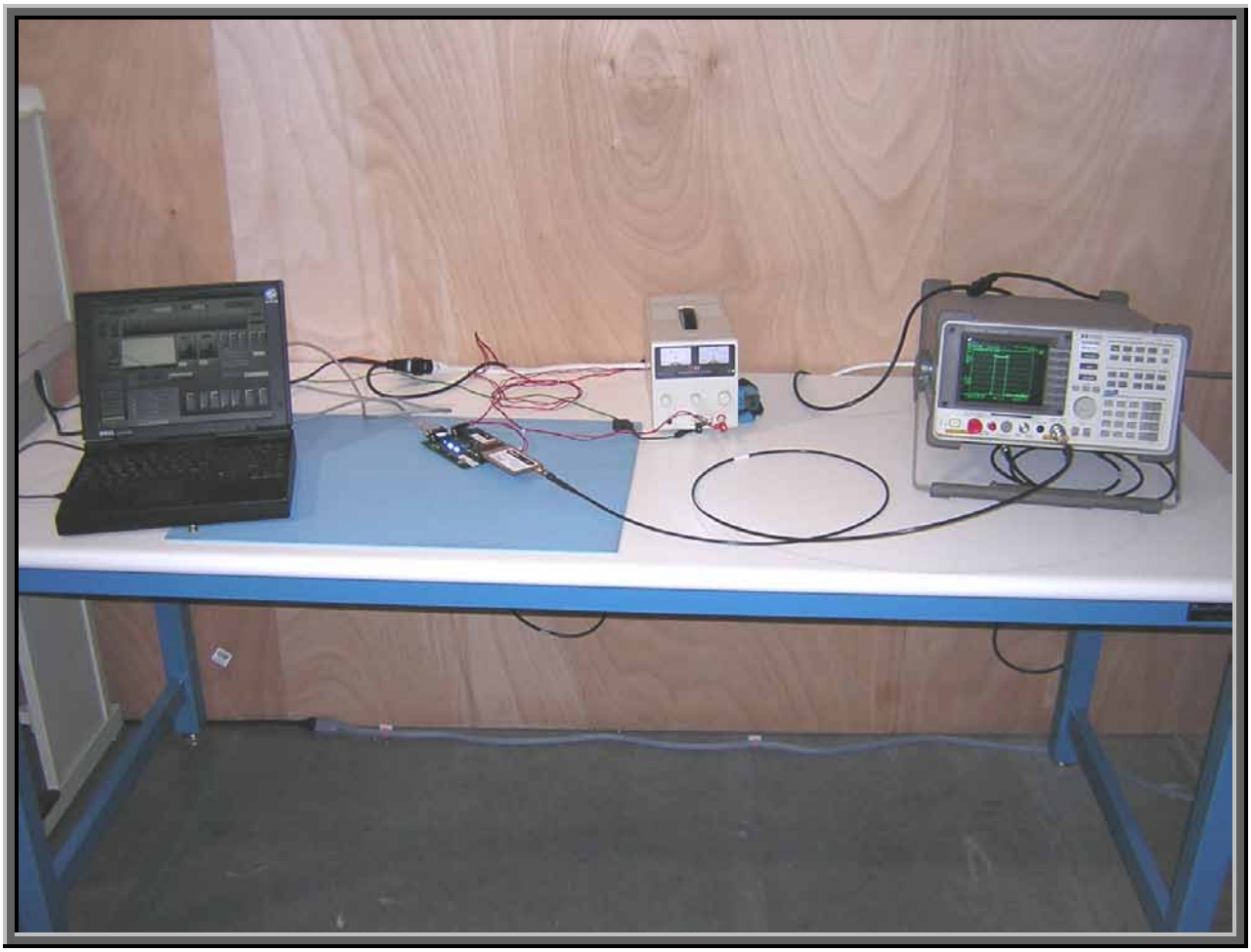
SIGNATURE

Tested By: A.U.K.

DESCRIPTION OF TEST

Time of Occupancy (Dwell Time) - Number of transmissions during a 20 second period





Number of Hopping Frequencies

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:
All

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

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

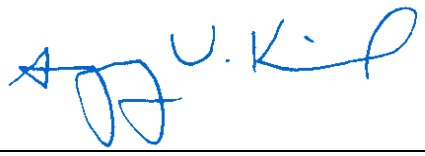
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8593E	AAA	12/06/2004	13 mo

Test Description

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

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

Completed by:



NORTHWEST EMC

NUMBER OF HOPPING FREQUENCIES

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(a)(1)(i)	Year:	2005	Method:	ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated at maximum data rate, at maximum output power

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Frequency hopping systems in the 902 - 928 MHz band shall use at least 25 hopping channels if the 20 dB bandwidth of the hopping channel is 250 kHz or greater. If it is less than 250 kHz, the system shall use at least 50 hopping frequencies.

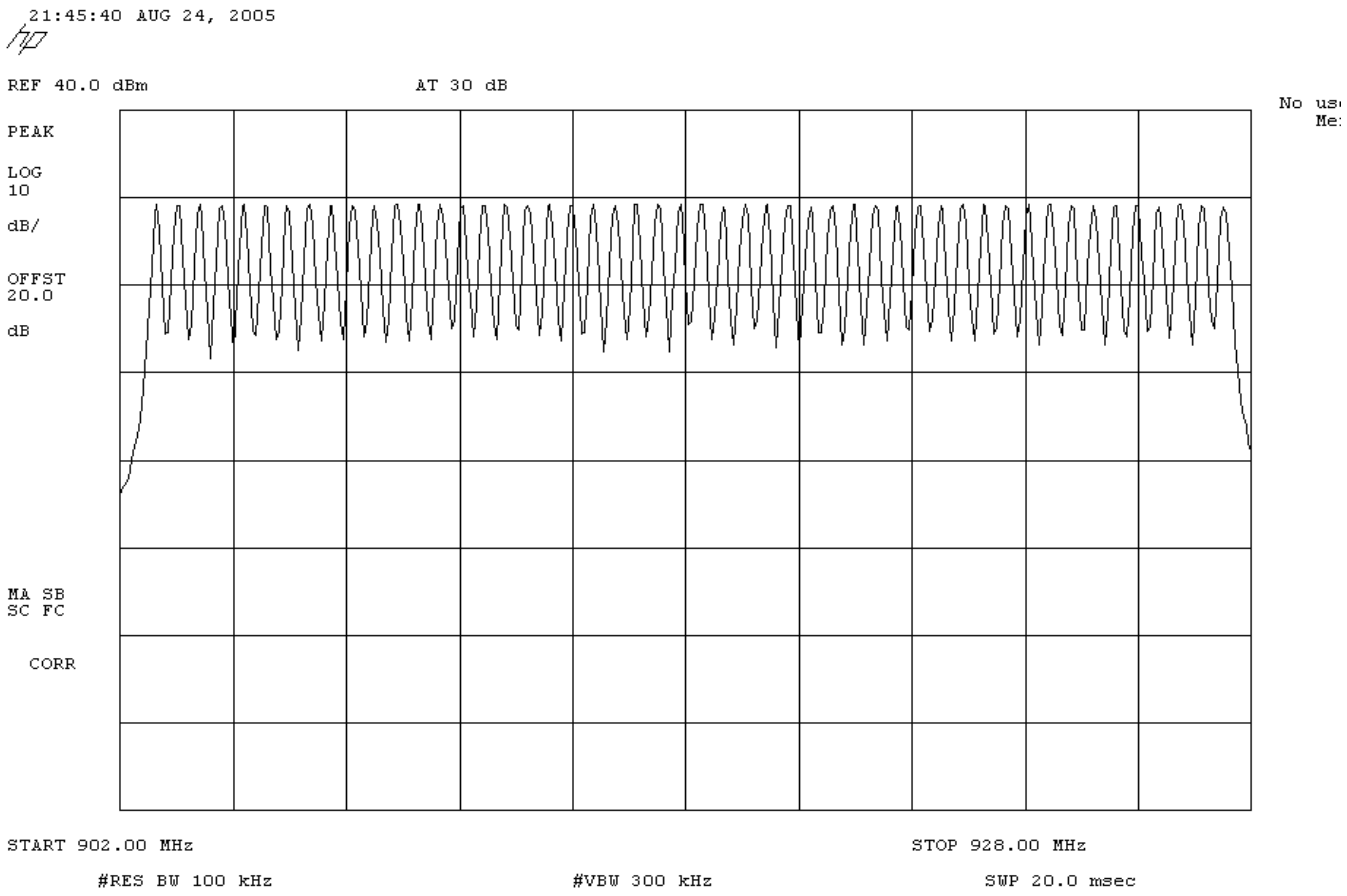
NUMBER OF HOPPING FREQUENCIES	
Pass	50

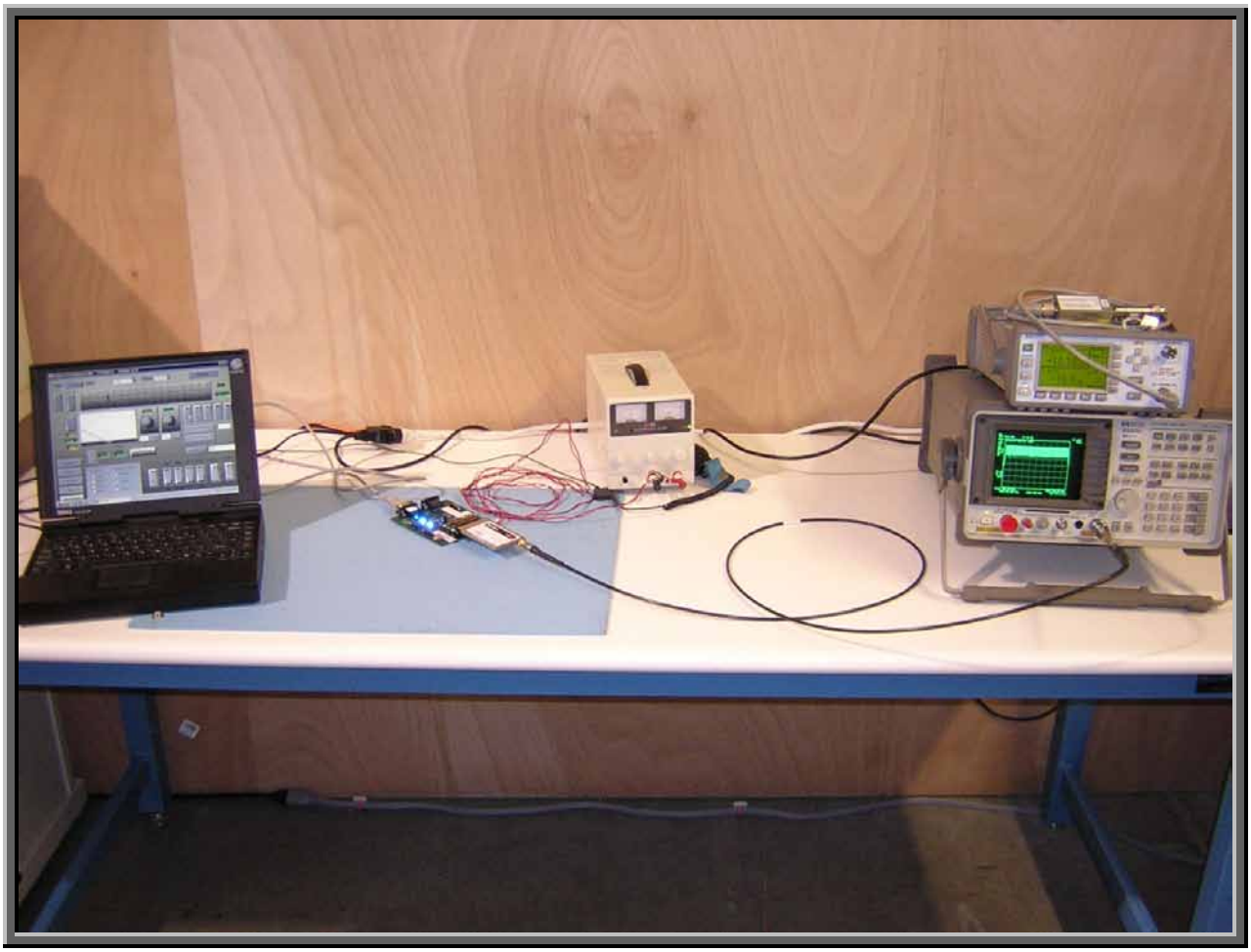
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Number of Hopping Frequencies





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 Test Fixture	MAGTECH	SPU24-104	023436980448
Power Supply for Notebook PC	Dell	TSA8	None

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

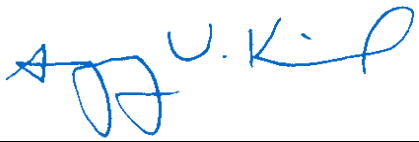
Requirement: Per 47 CFR 15.247(a)(1), the 20 dB bandwidth of a hopping channel must be less than or equal to the channel separation. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have 20 dB bandwidths up to 1.5 times the channel separation, provided the systems operate 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.

Configuration: 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:



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

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 of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no case can it be greater than 500 kHz.

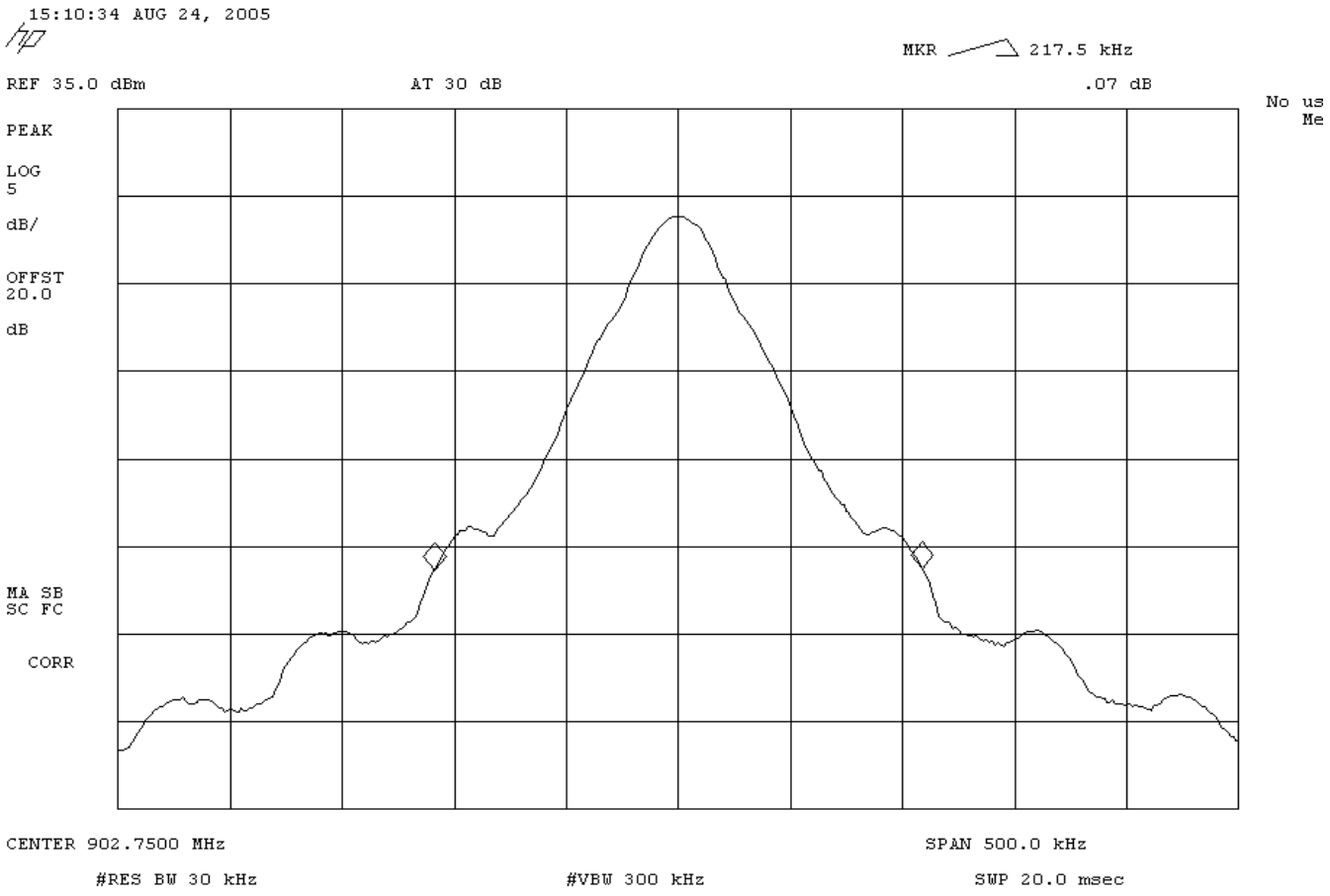
RESULTS	BANDWIDTH
Pass	217.5 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Low Channel - 32 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

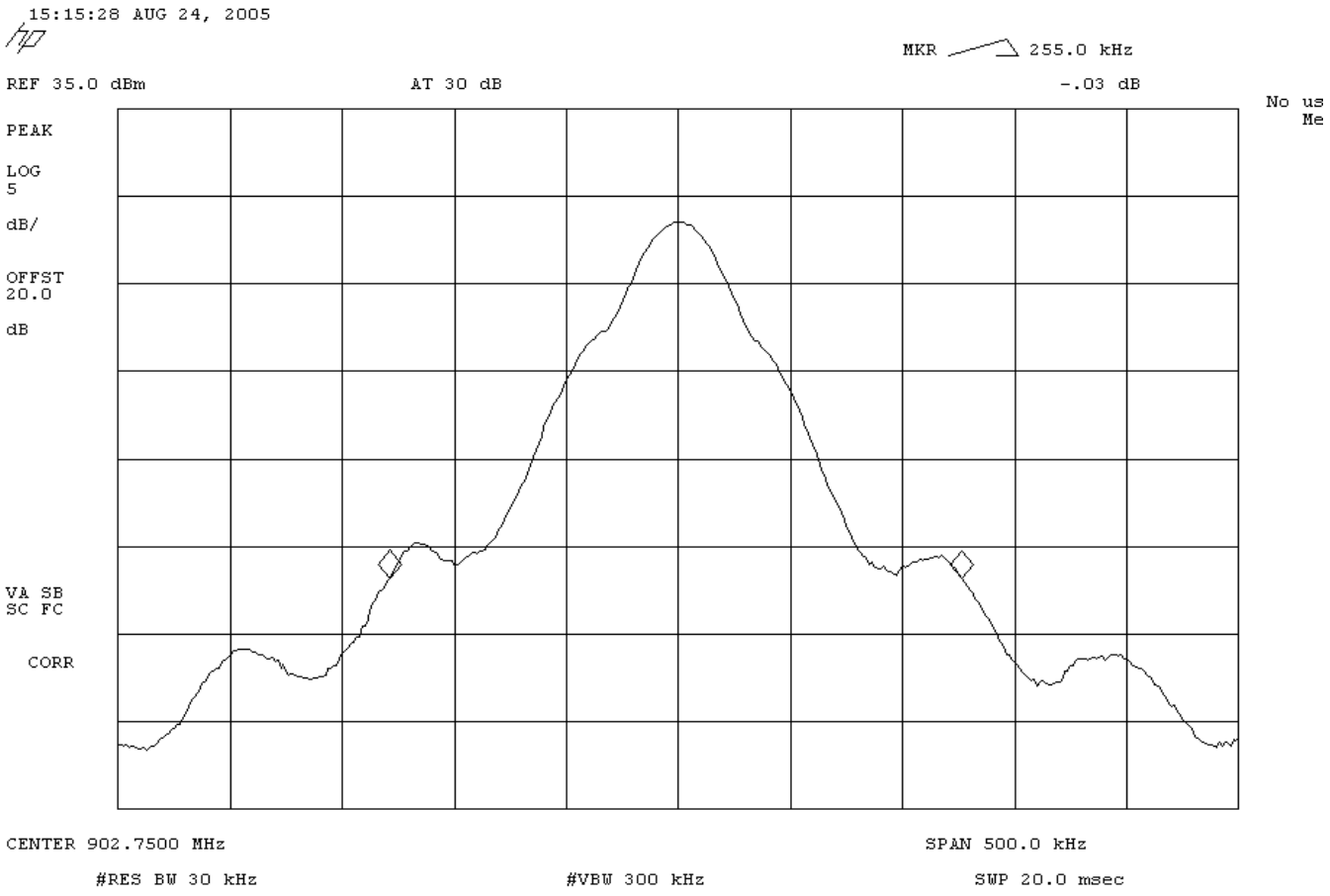
RESULTS	BANDWIDTH
Pass	255 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Low Channel - 38 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

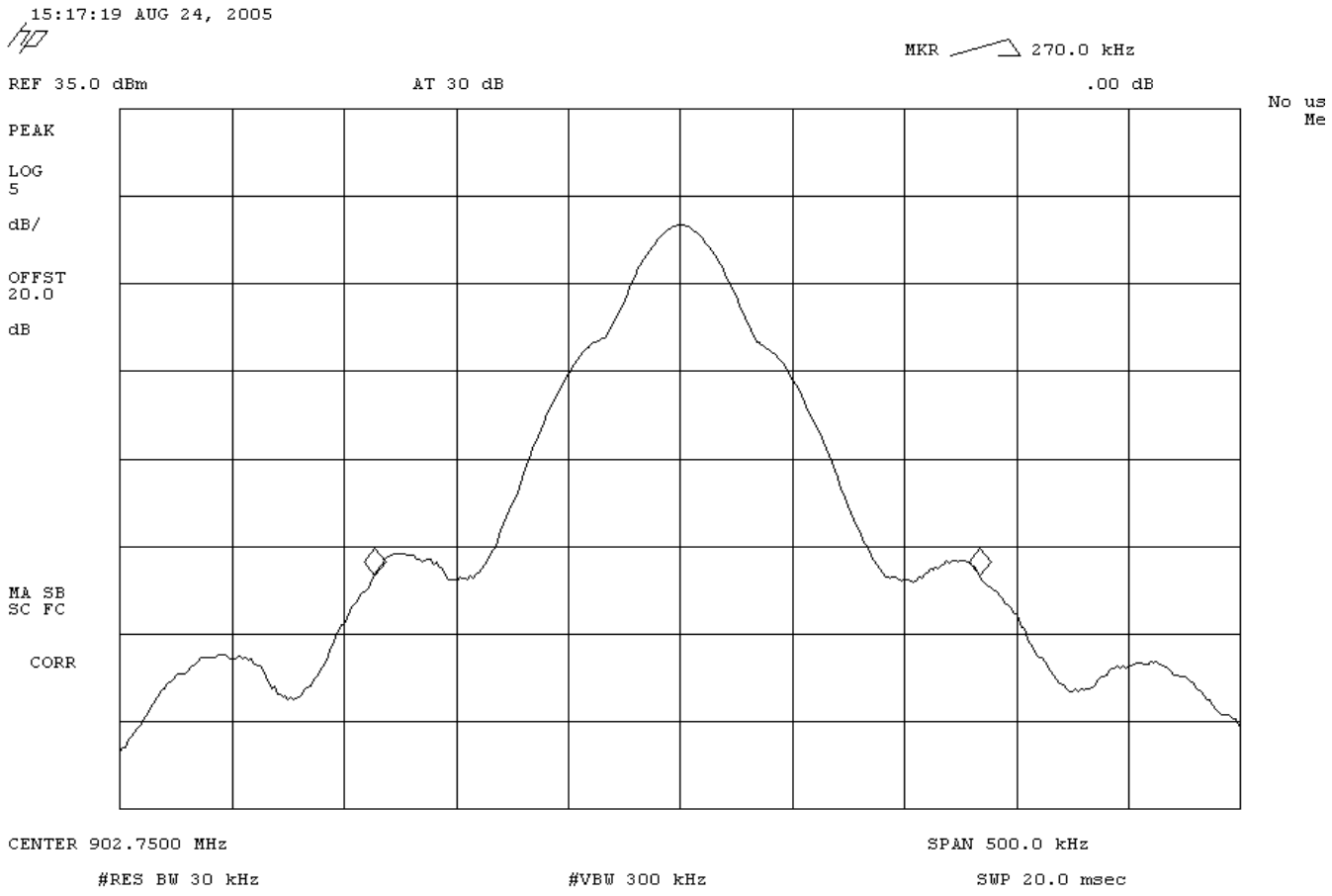
RESULTS	BANDWIDTH
Pass	270 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Low Channel - 40 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

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 of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no case can it be greater than 500 kHz.

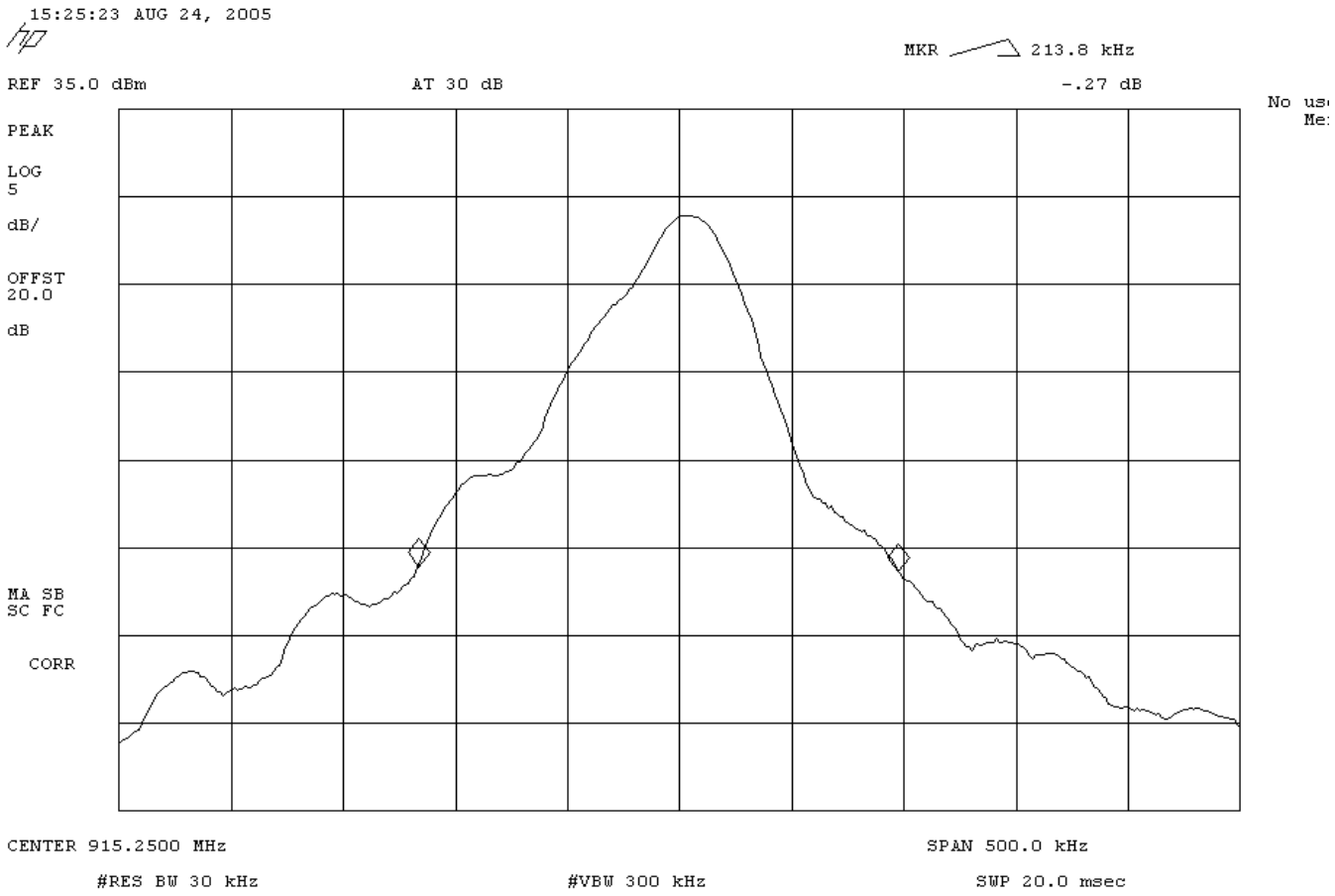
RESULTS	BANDWIDTH
Pass	213.8 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Mid Channel - 32 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

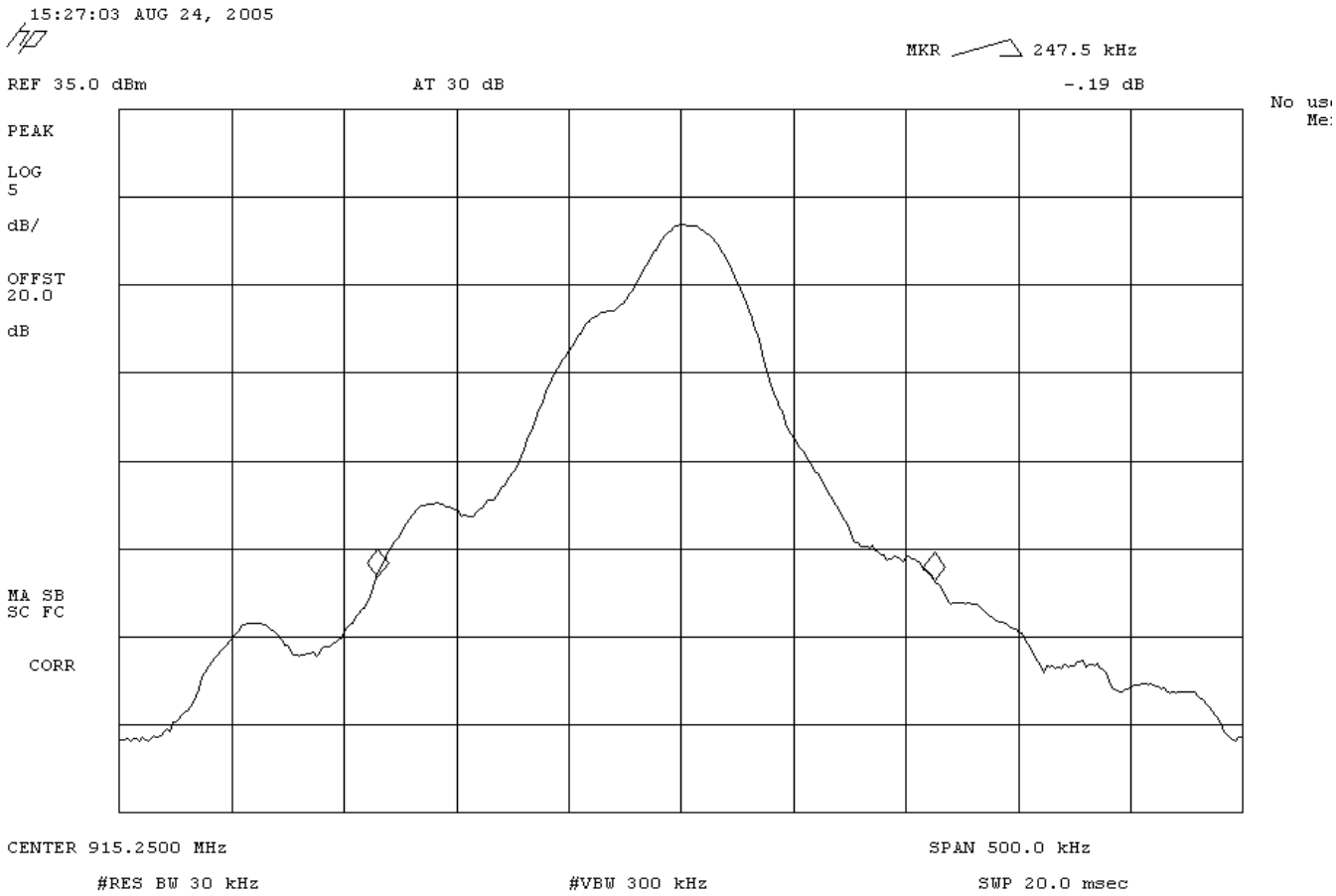
RESULTS	BANDWIDTH
Pass	247.5 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Mid Channel - 38 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

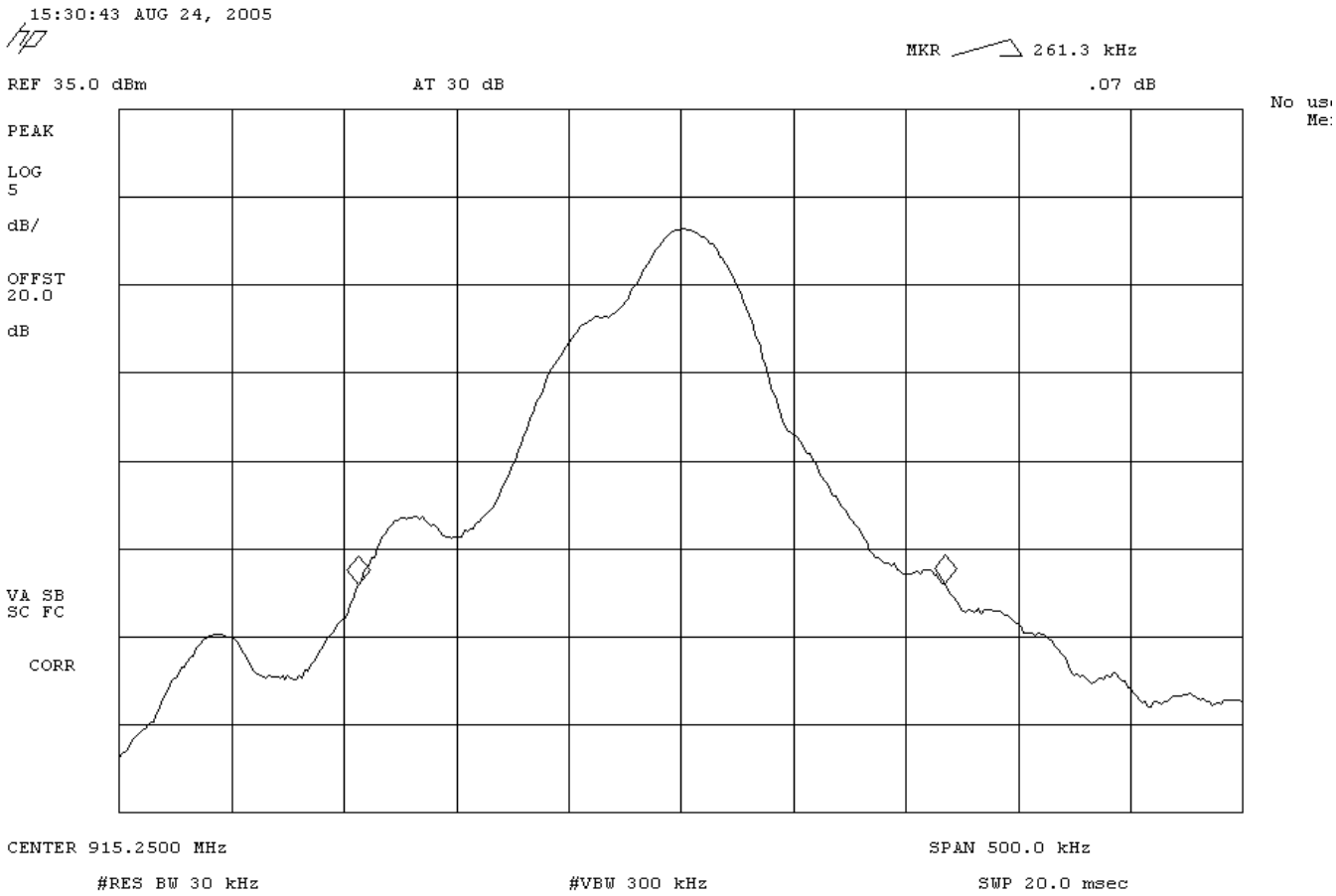
RESULTS	BANDWIDTH
Pass	261.3 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - Mid Channel - 40 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

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 of the frequency hopping channels in the 902 - 928 MHz band shall be less than or equal to the carrier frequency separation. In no case can it be greater than 500 kHz.

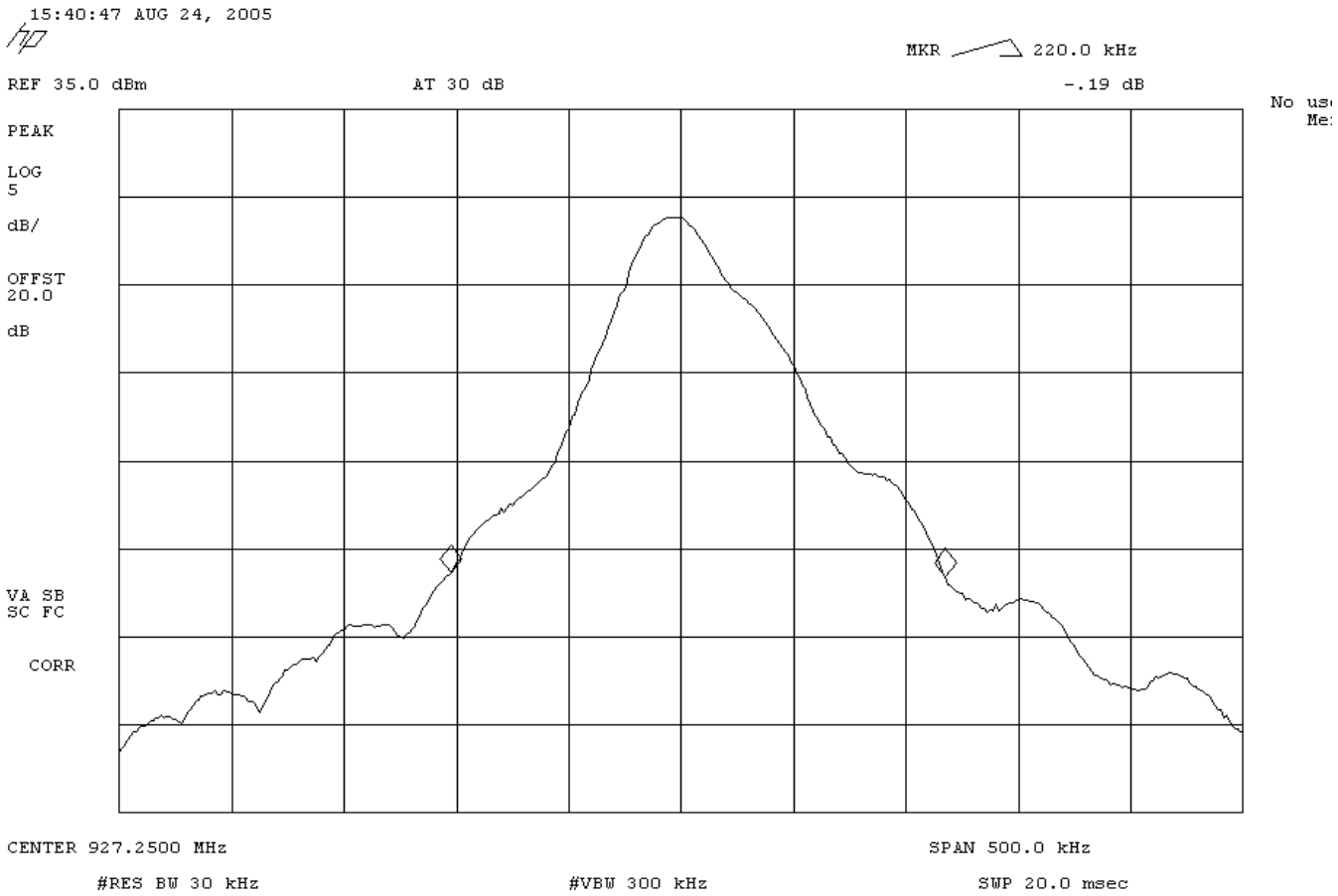
RESULTS	BANDWIDTH
Pass	220 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - High Channel - 32 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

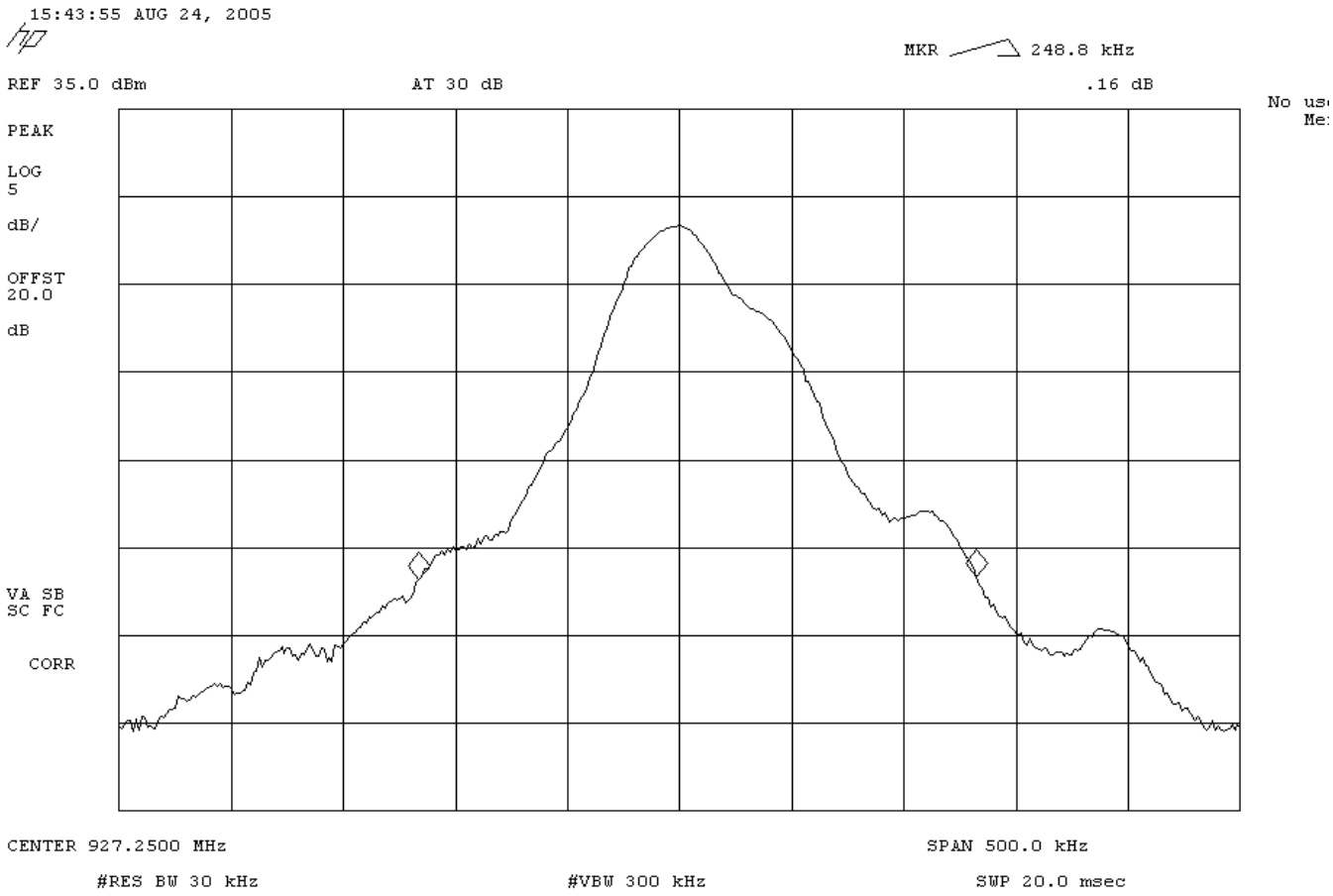
RESULTS	BANDWIDTH
Pass	248.8 kHz

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - High Channel - 38 kbps Data Rate



NORTHWEST EMC

OCCUPIED BANDWIDTH

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(a)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

Measured with a direct connection between the RF output and a spectrum analyzer.

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

Per 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 case can it be greater than 500 kHz.

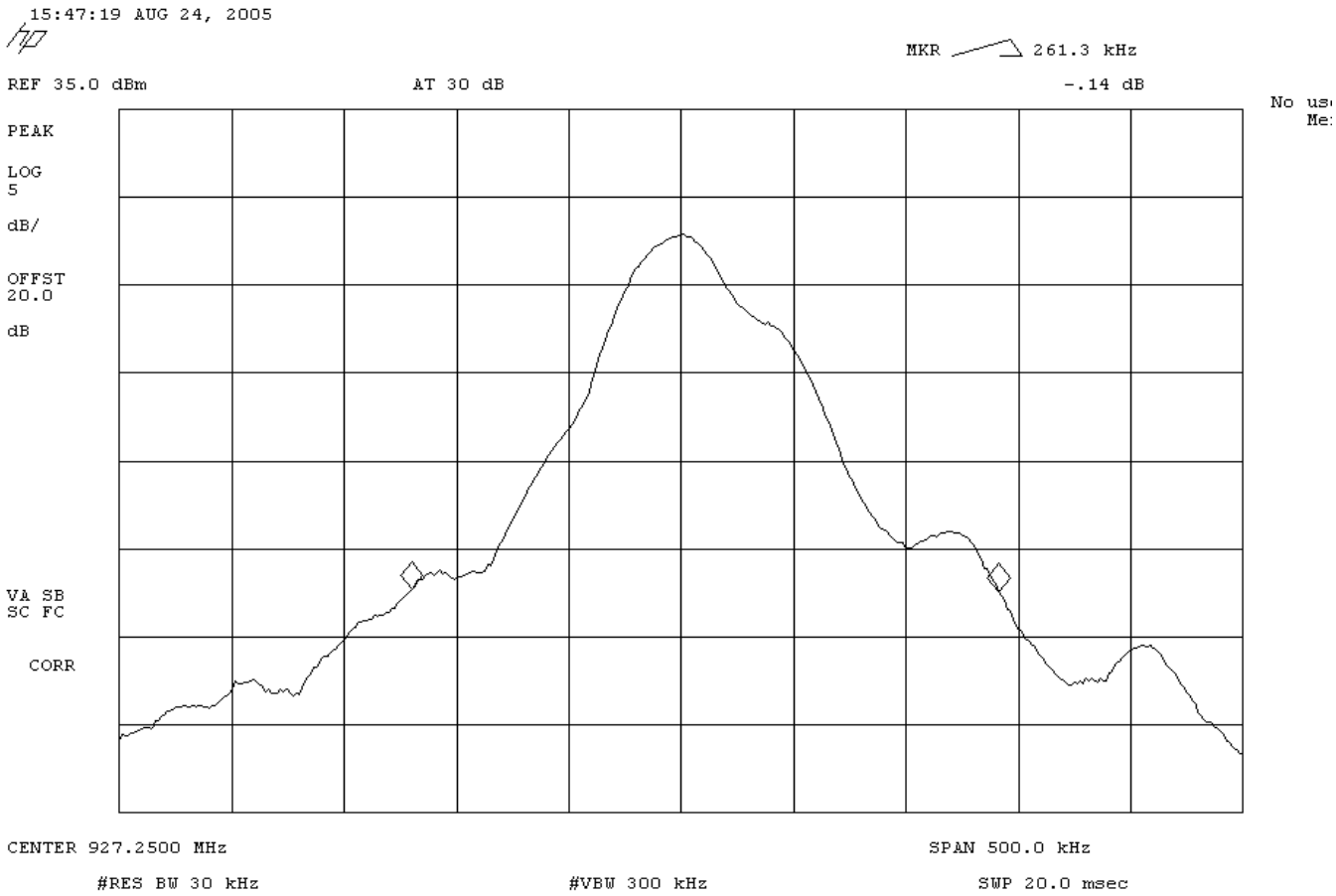
RESULTS	BANDWIDTH
Pass	261.3 kHz

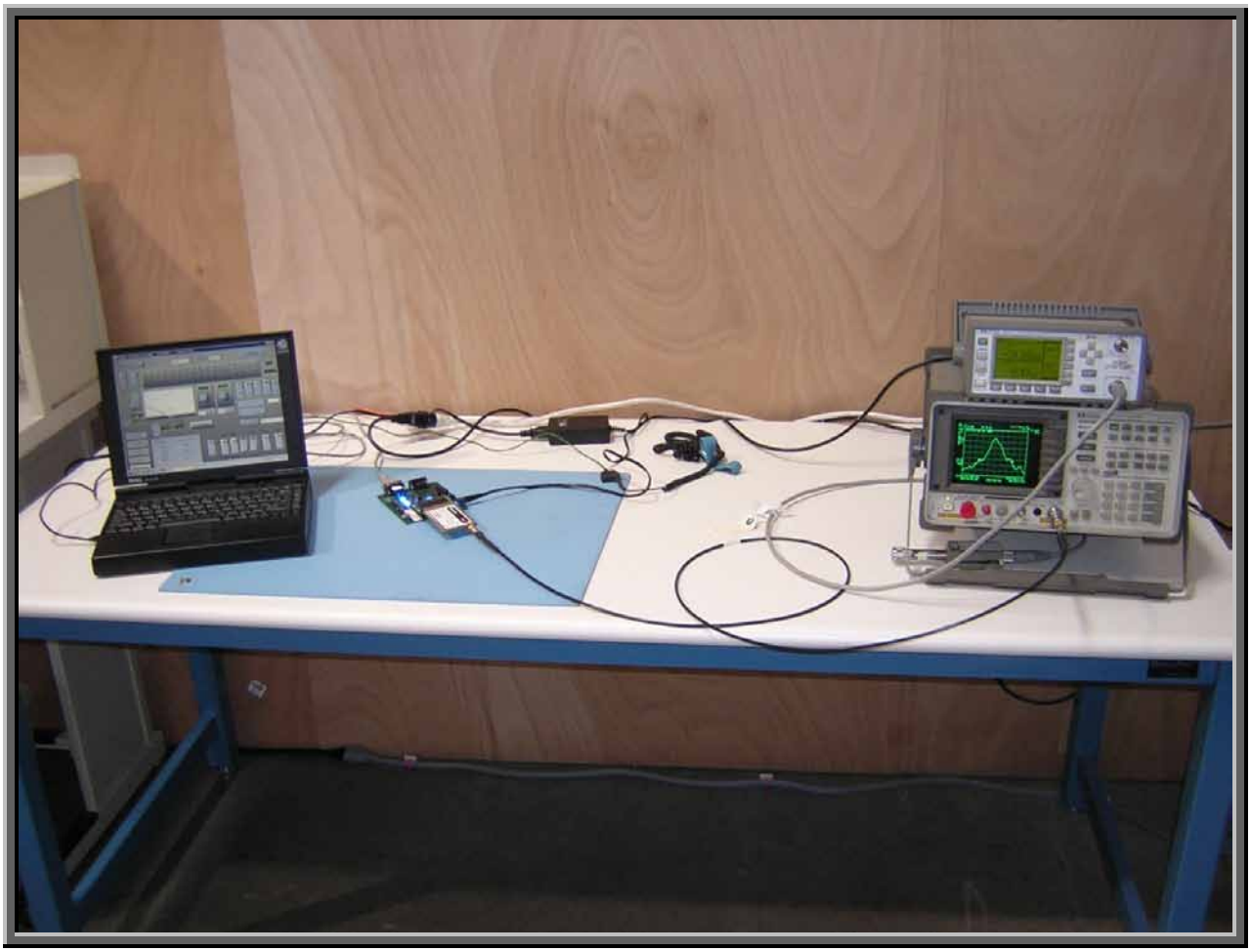
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

20dB Bandwidth - High Channel - 40 kbps Data Rate





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

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:

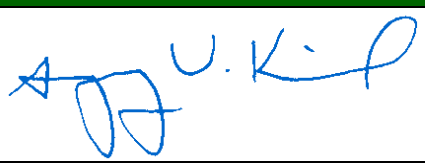
- Resolution bandwidth set to greater than the 6 dB bandwidth of the modulated carrier, and
- The video bandwidth set to greater than or equal to the resolution bandwidth.

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

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

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

Completed by:



NORTHWEST
EMC

OUTPUT POWER

Rev BETA
01/30/01

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523230			Date:	08/25/05
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(b)	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

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

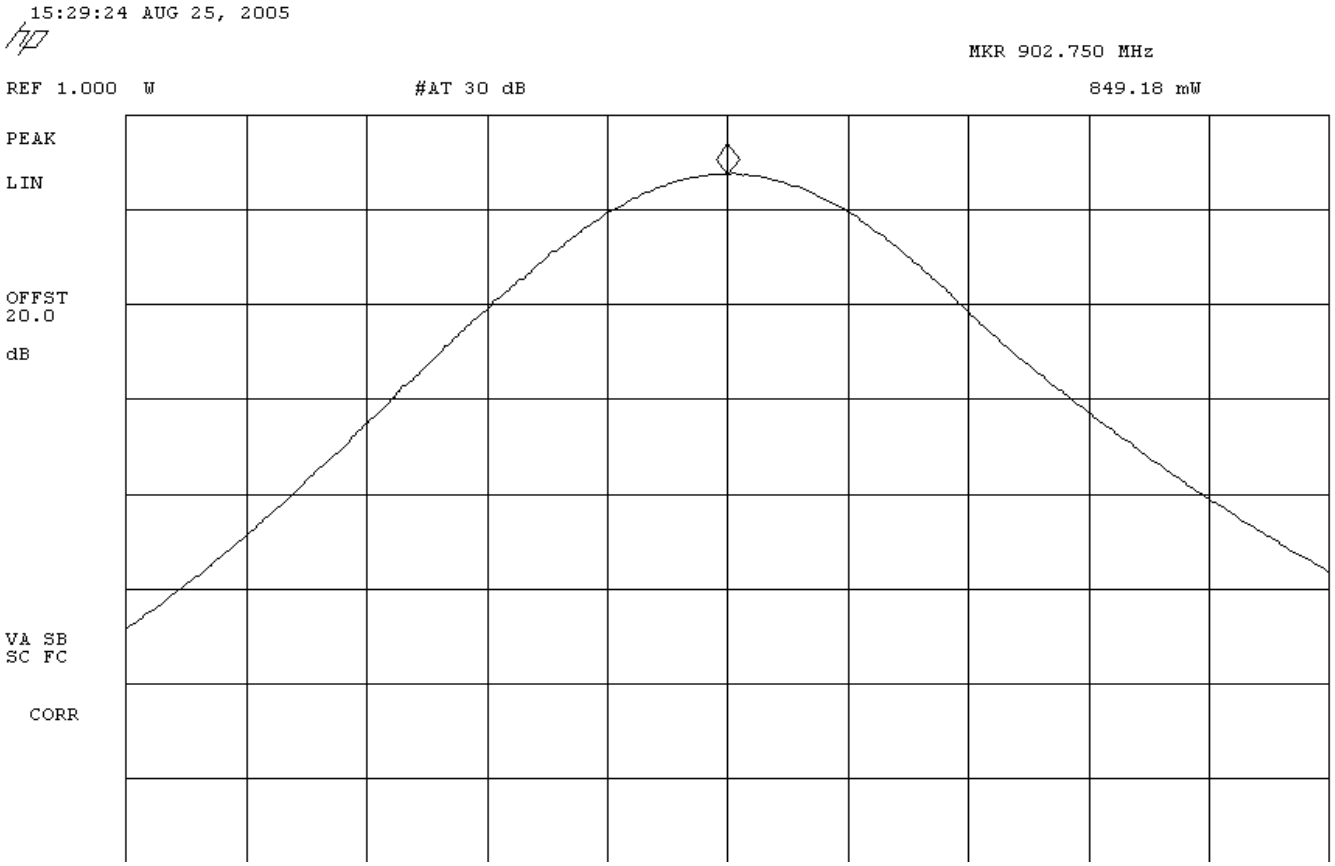
RESULTS	AMPLITUDE
Pass	849.18 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Low Channel - 32 kbps 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 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(b)	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

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

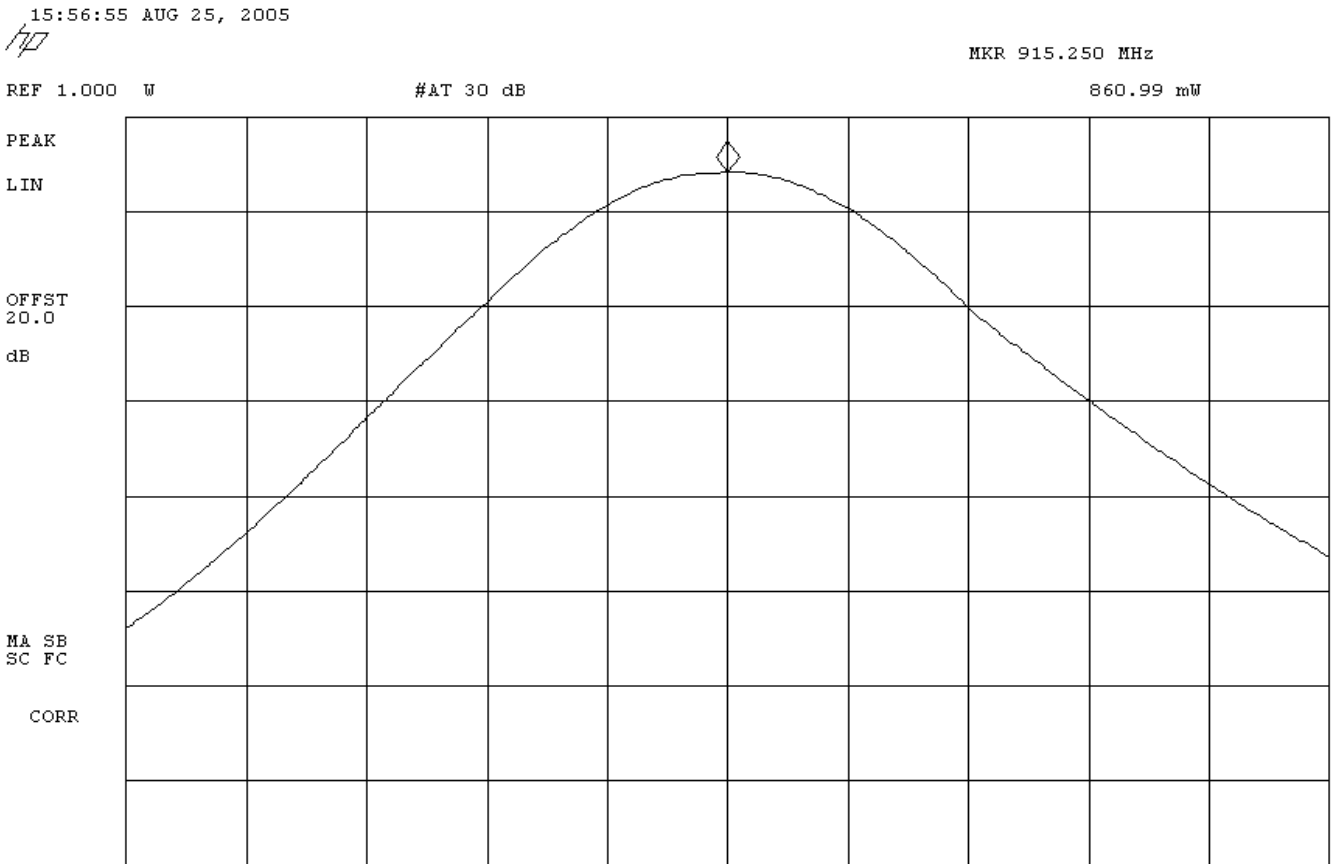
RESULTS	AMPLITUDE
Pass	860.99 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Mid Channel - 32 kbps 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 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(b)	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

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

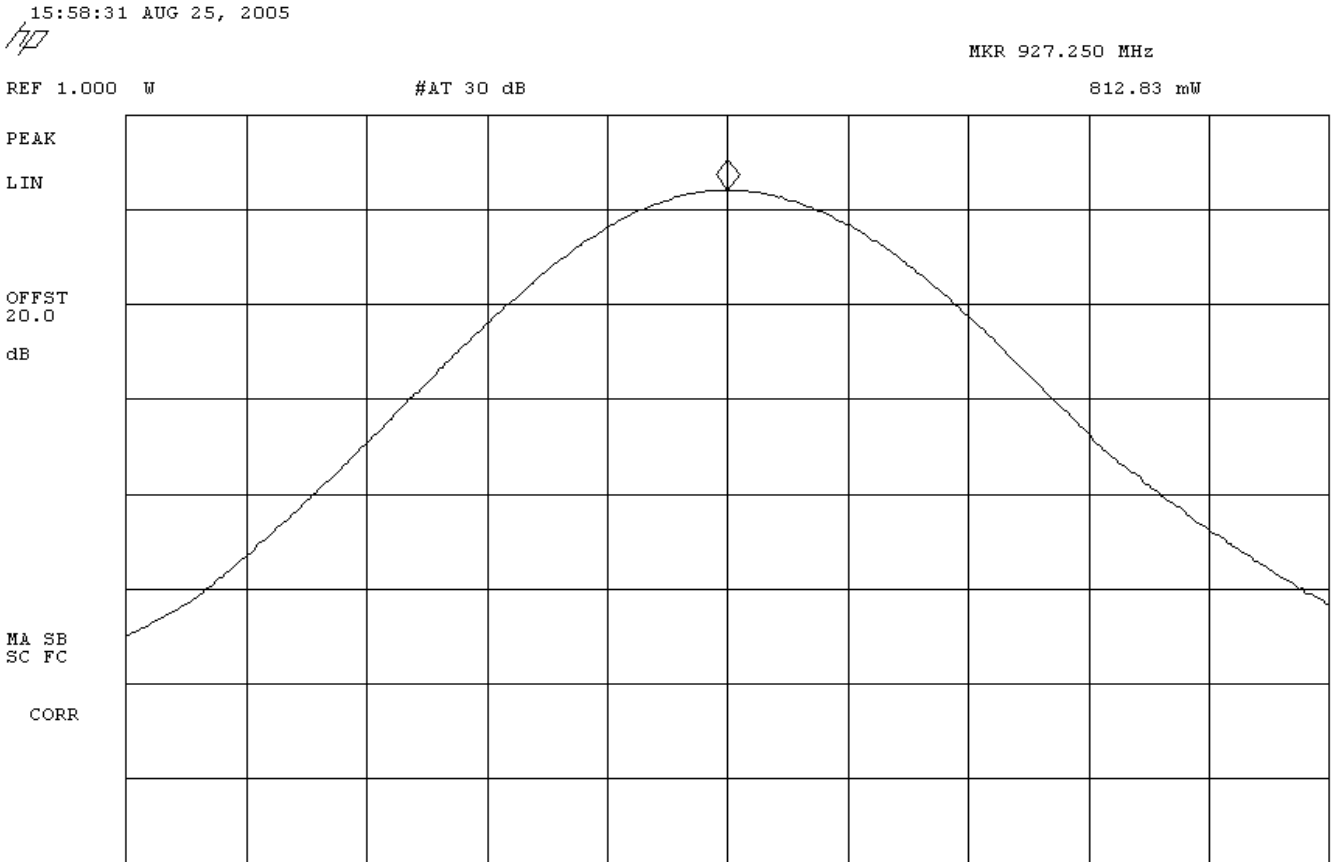
RESULTS	AMPLITUDE
Pass	812.83 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - High Channel - 32 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

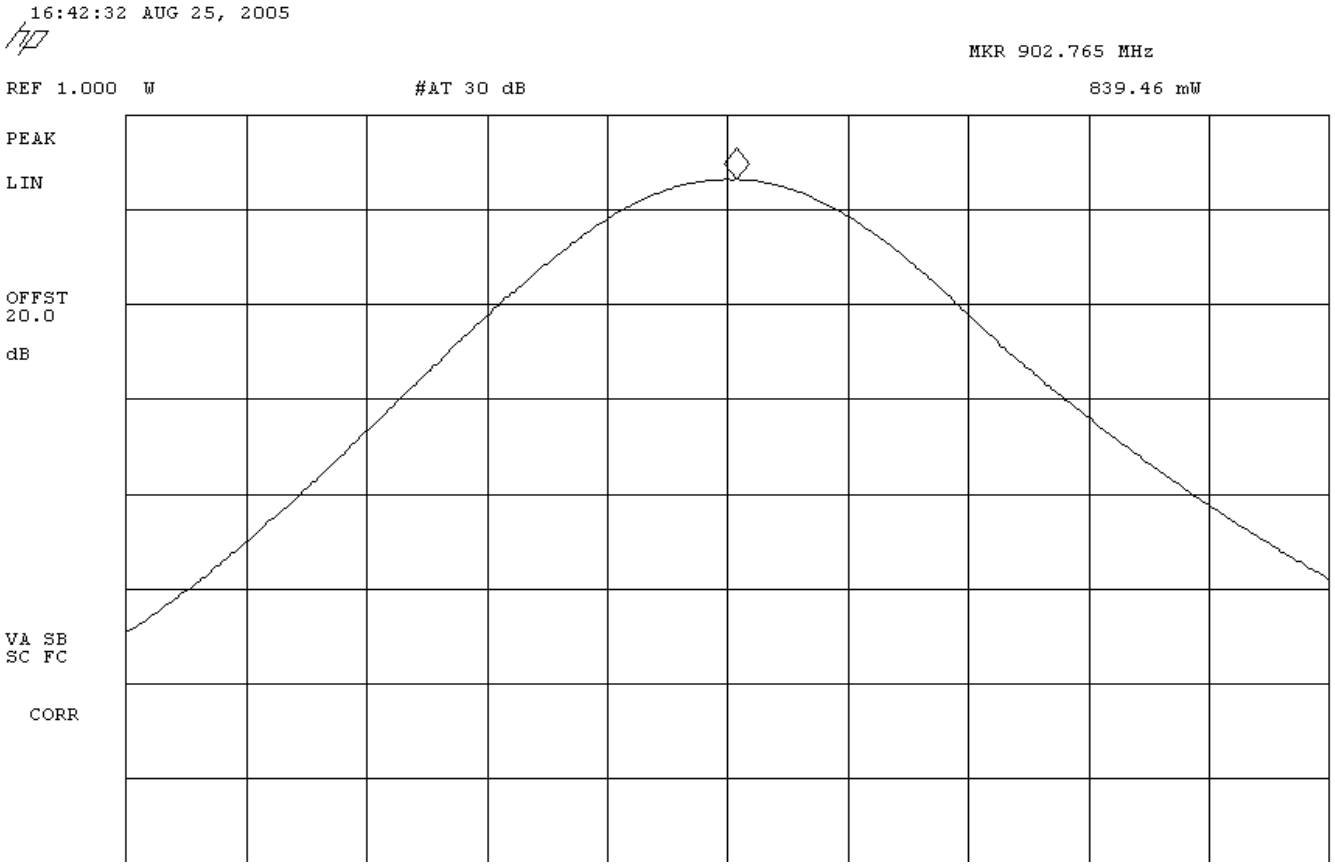
RESULTS	AMPLITUDE
Pass	839.46 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Low Channel - 38 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

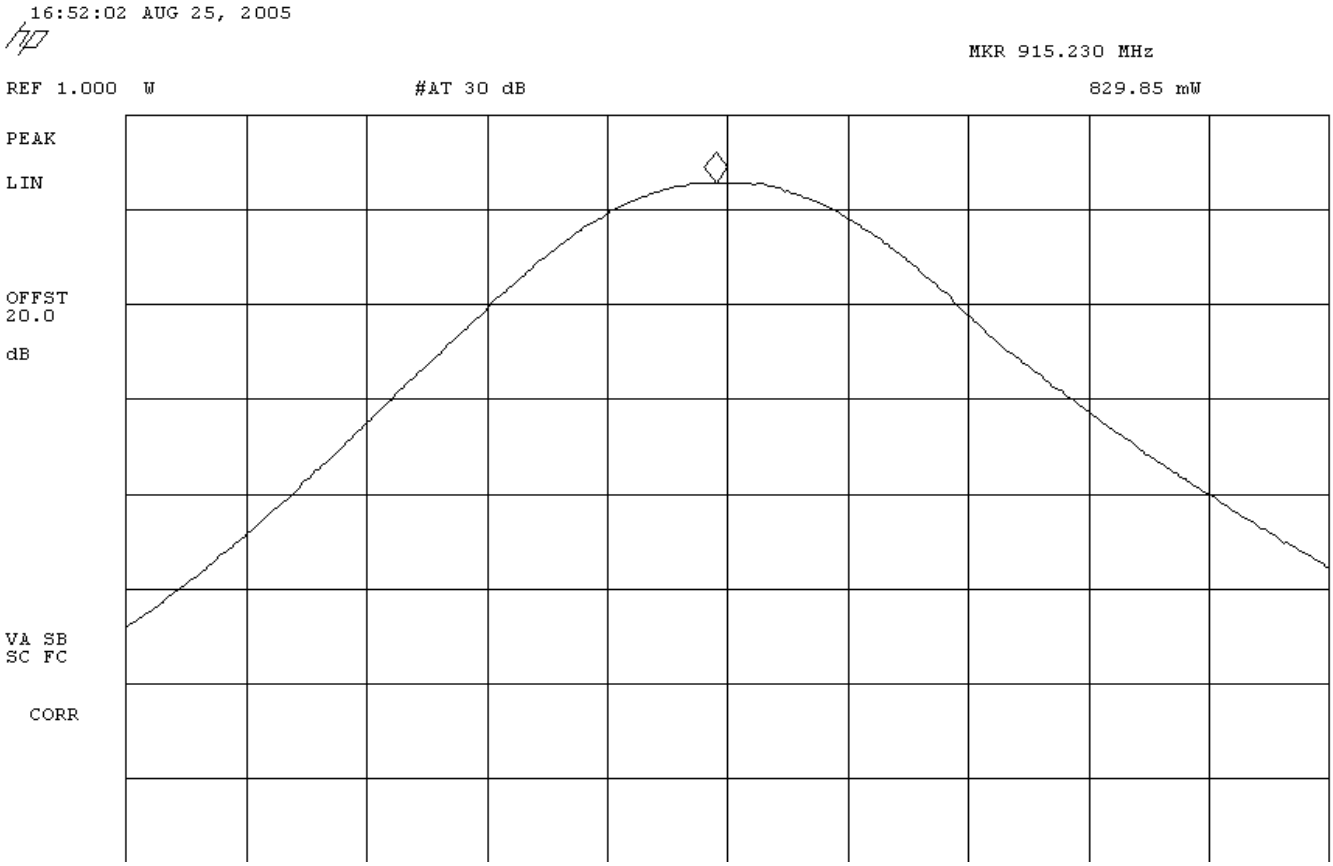
RESULTS	AMPLITUDE
Pass	829.85 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Mid Channel - 38 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 38 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

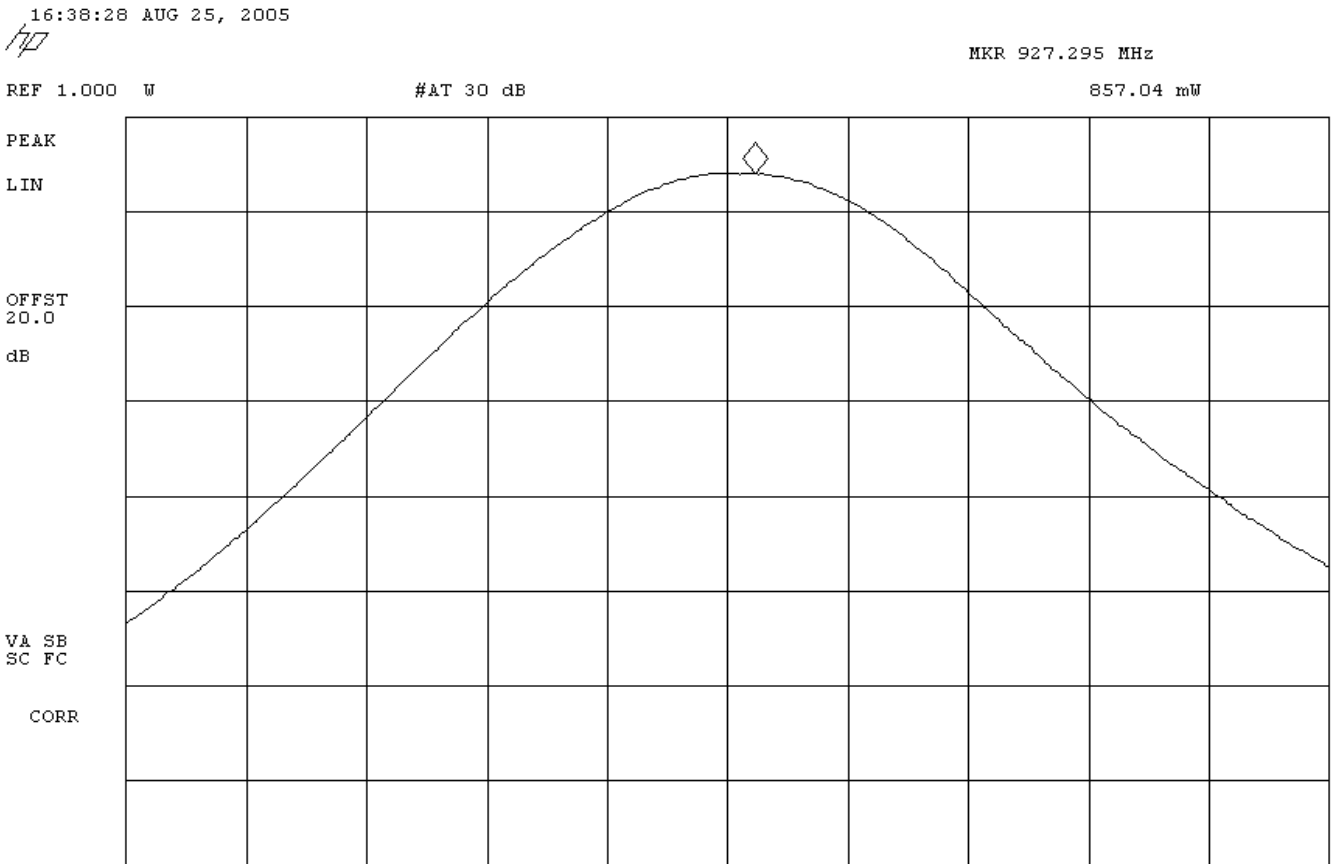
RESULTS	AMPLITUDE
Pass	857.04 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - High Channel - 38 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

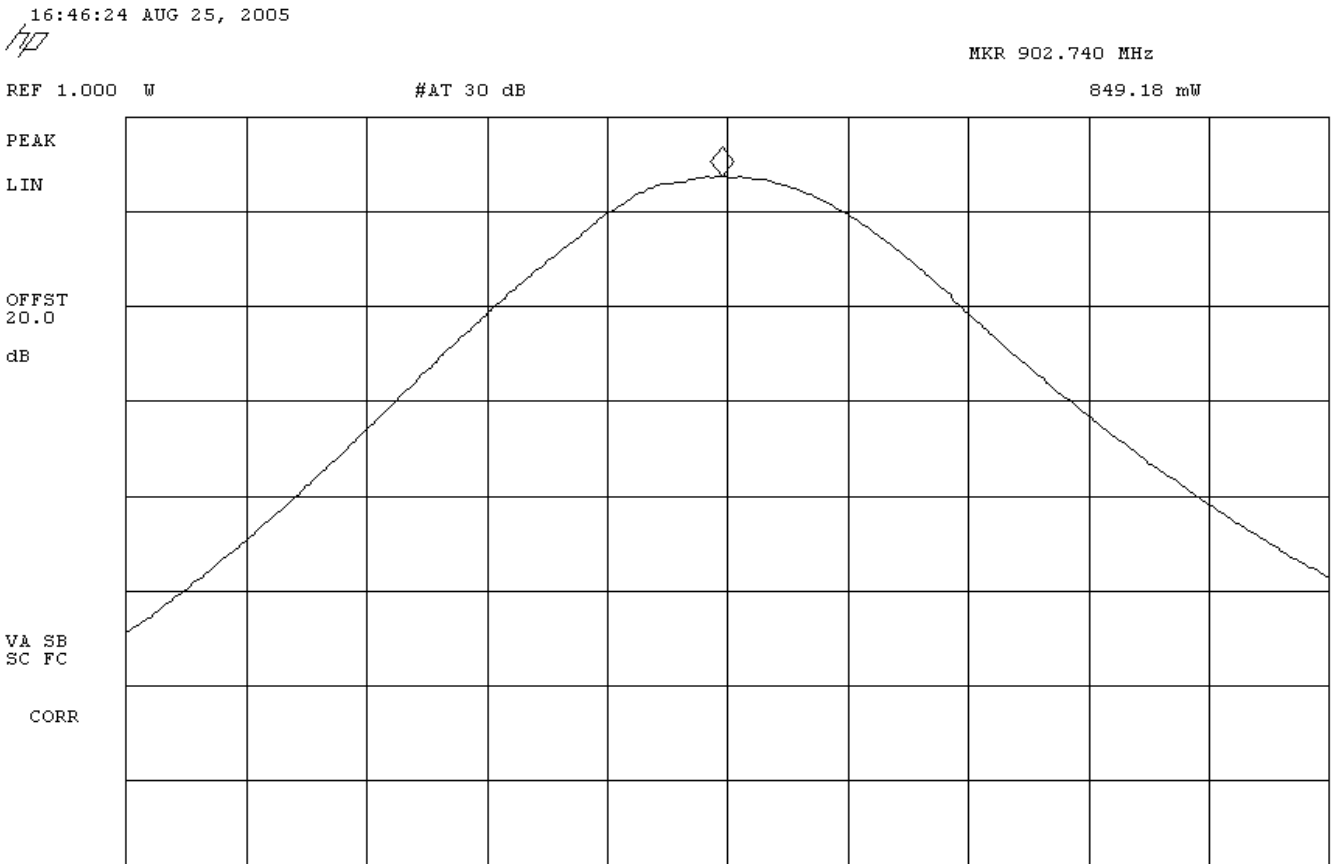
RESULTS	AMPLITUDE
Pass	849.18 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Low Channel - 40 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

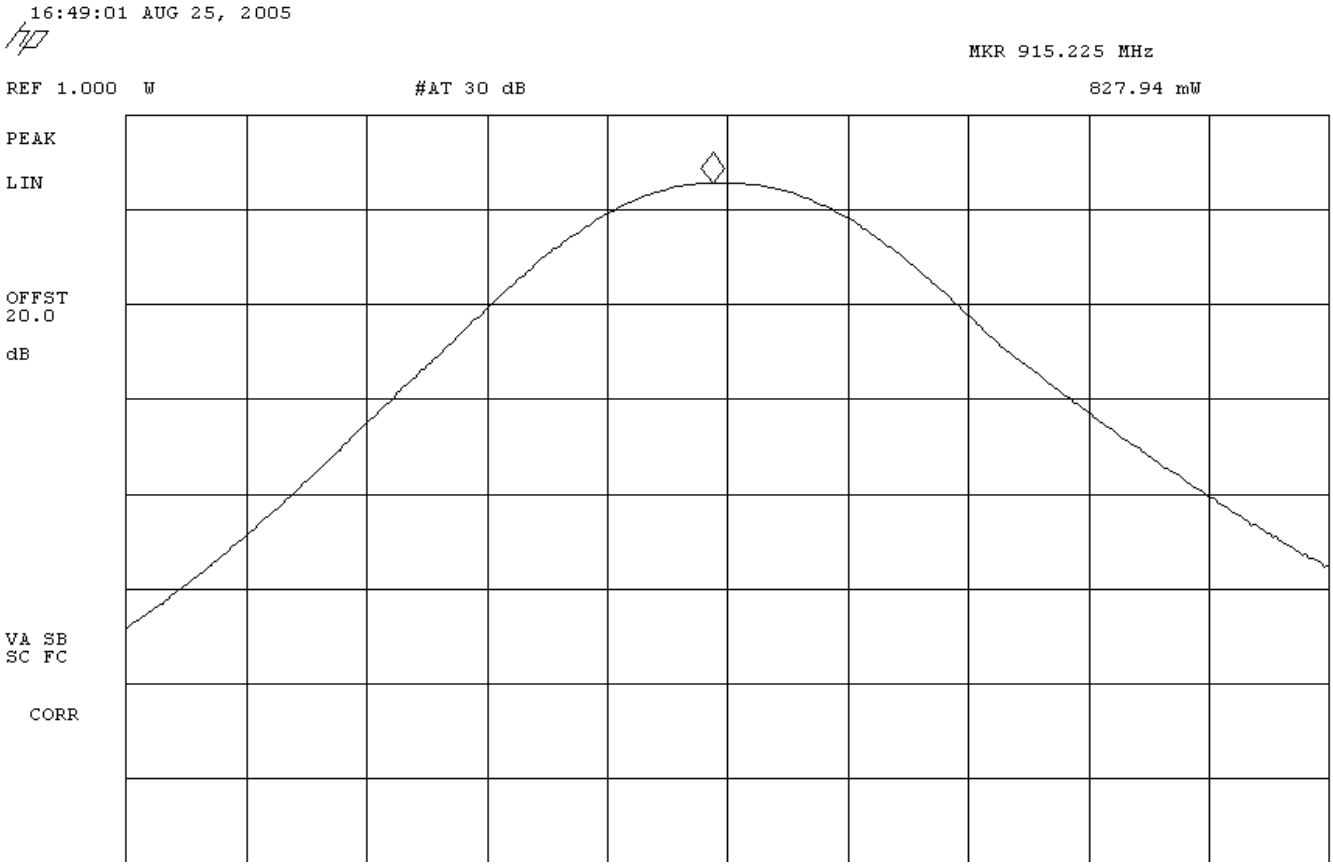
RESULTS	AMPLITUDE
Pass	827.94 mW

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - Mid Channel - 40 kbps 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 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(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

EUT OPERATING MODES

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

None

REQUIREMENTS

The maximum peak conducted output power for frequency hopping systems operating in the 902 - 928 MHz band, with at least 50 hopping channels, shall not excced 1 watt.

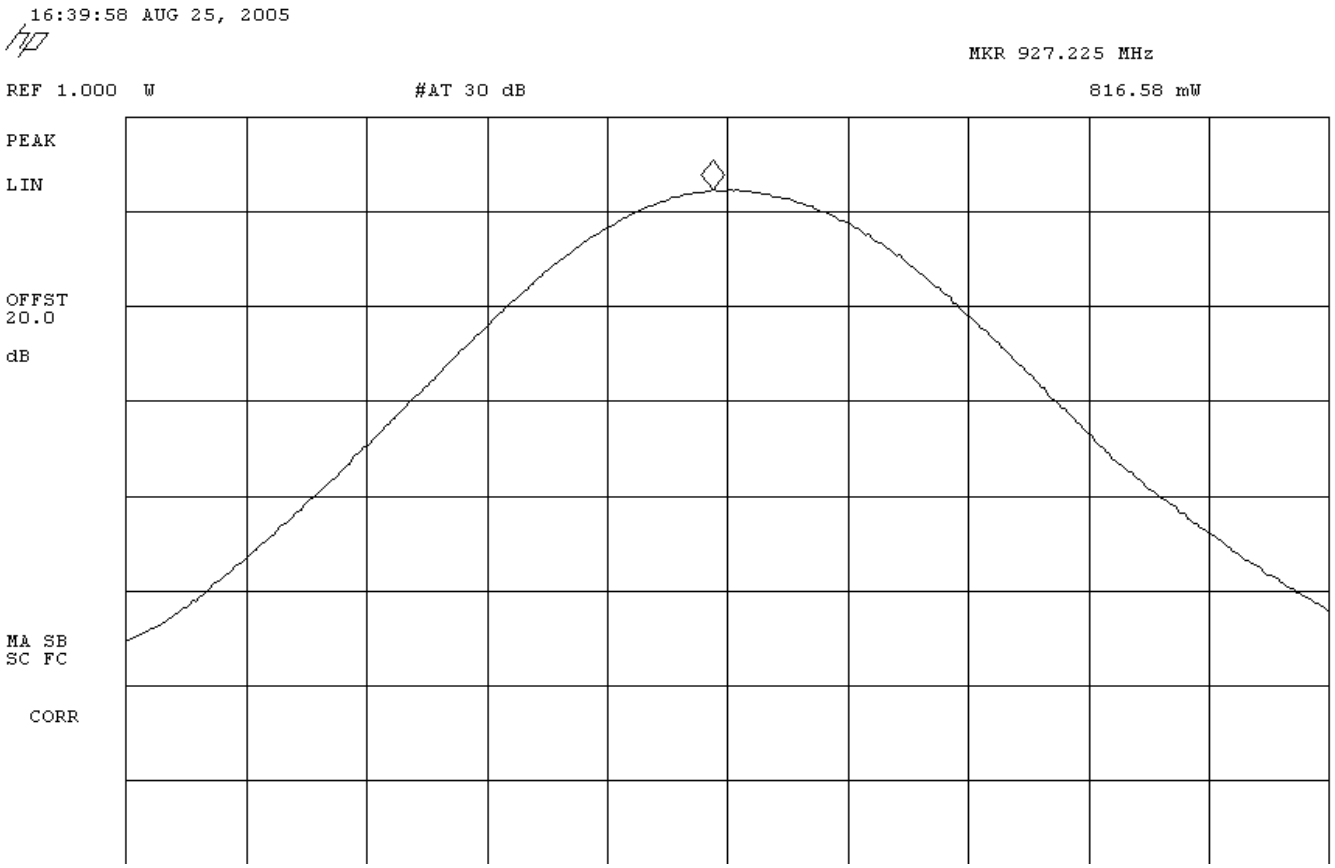
RESULTS	AMPLITUDE
Pass	816.58 mW

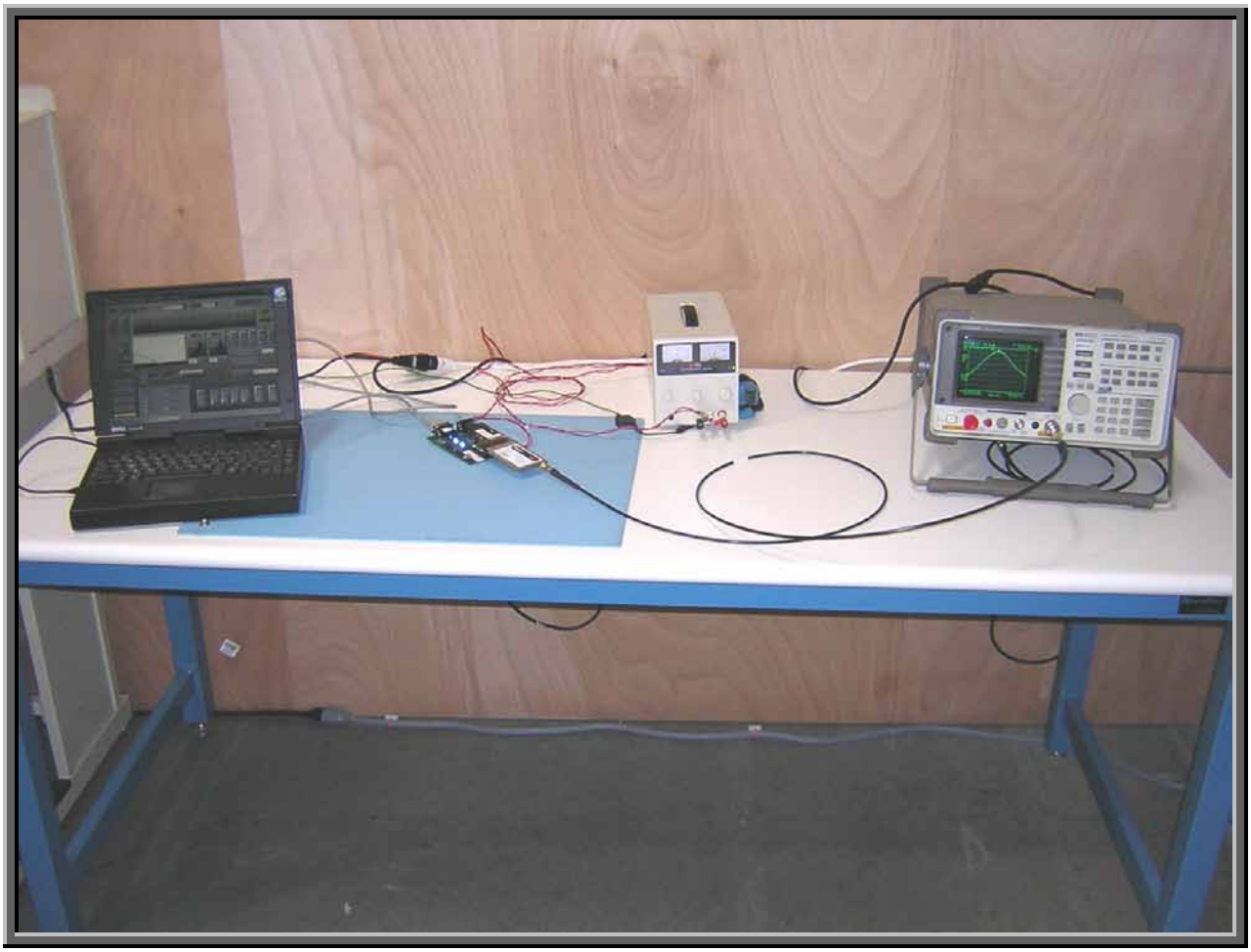
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Output Power - High Channel - 40 kbps Data Rate





Justification

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

Channels in Specified Band Investigated:
Low
High

Operating Modes Investigated:
No Hop

Data Rates Investigated:
32 kbps
38 kbps
40 kbps

Output Power Setting(s) Investigated:
Maximum

Power Input Settings Investigated:
120 VAC, 60 Hz.

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

EUT and Peripherals			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT-RFID Reader	Intermec Technologies Corporation	IM4	19510523230
Test Fixture	Intermec Technologies Corporation	Interrogator	None
Notebook PC	Dell	TS30GI	K8175A
Power Supply for 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.					

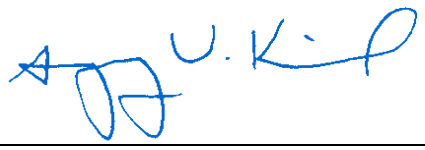
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8593E	AAA	12/06/2004	13 mo

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:



NORTHWEST EMC

BAND EDGE COMPLIANCE

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 edge of the authorized band is 20 dB down from the fundamental

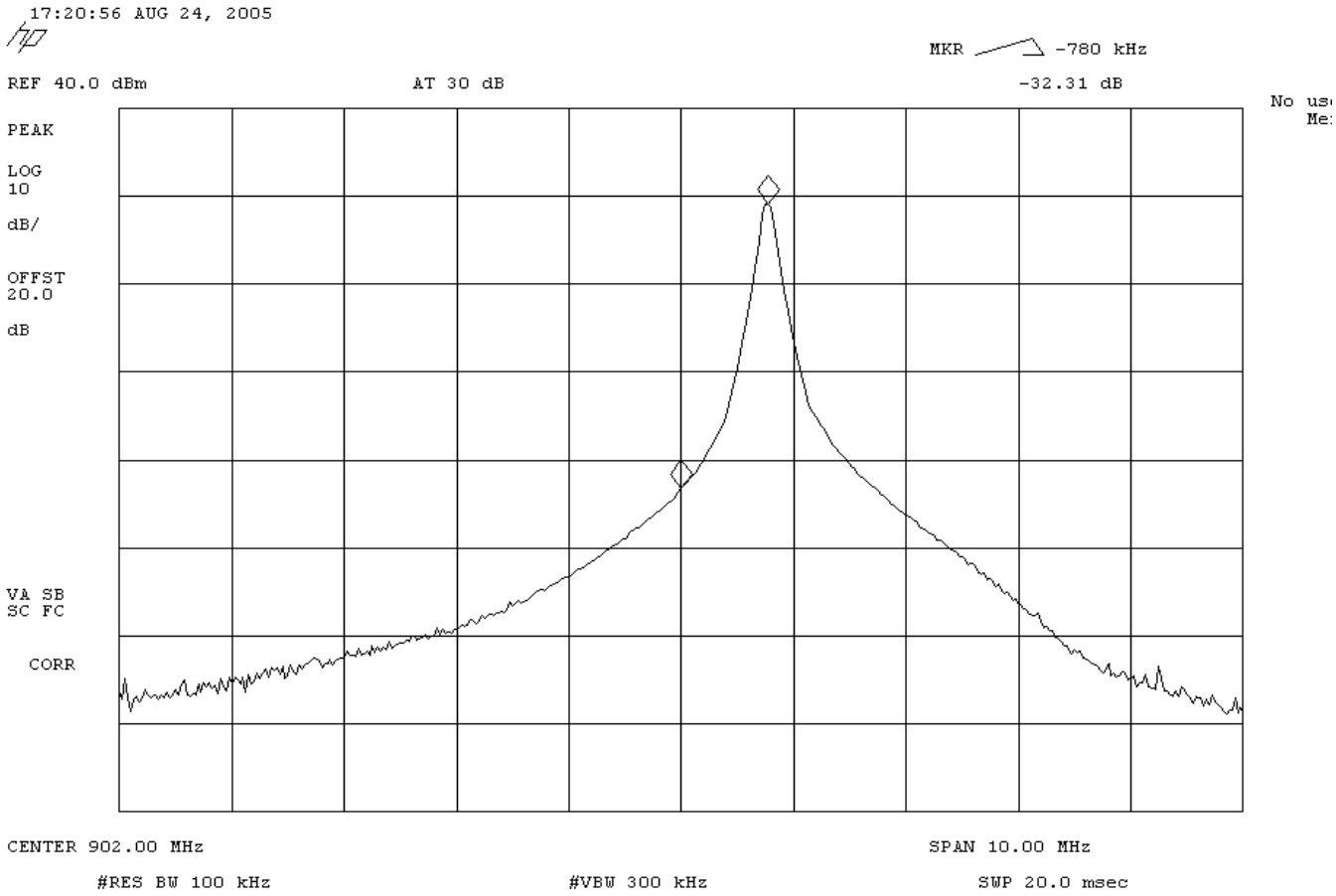
RESULTS	AMPLITUDE
Pass	-32.31 dB

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - Low Channel - 32 kbps Data Rate



NORTHWEST EMC

BAND EDGE COMPLIANCE

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 edge of the authorized band is 20 dB down from the fundamental

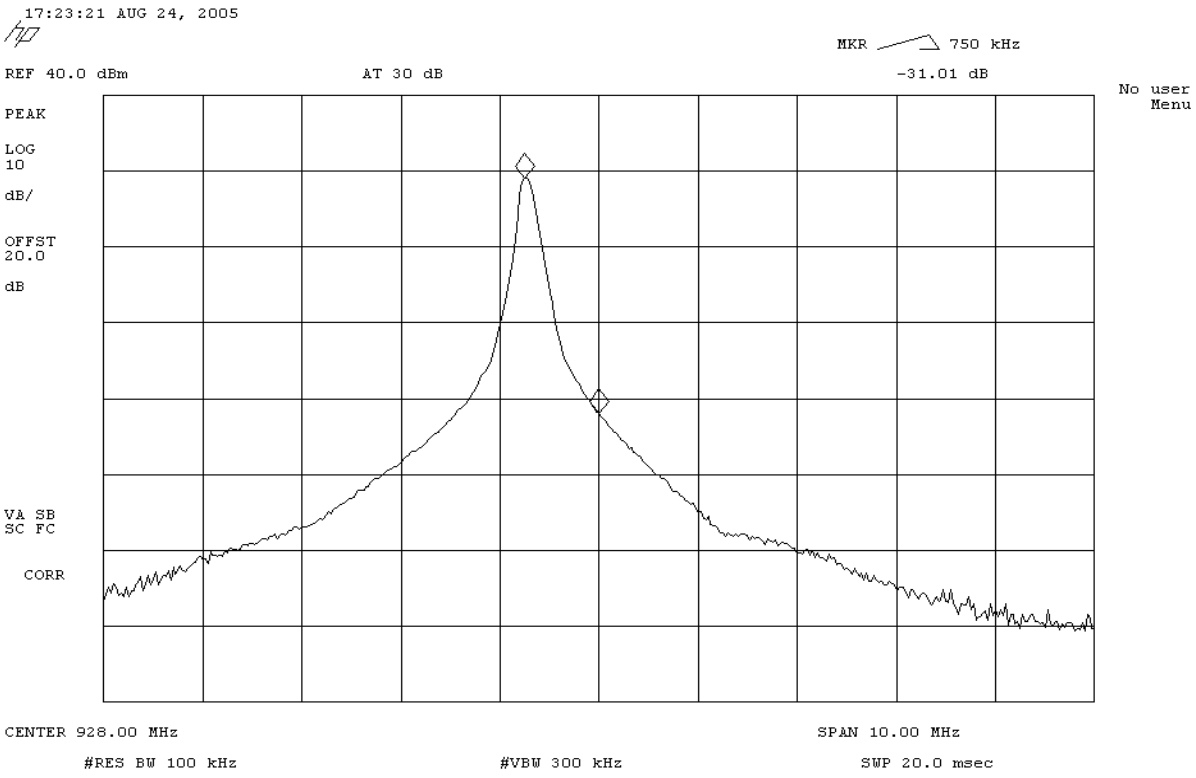
RESULTS	AMPLITUDE
Pass	-31.01 dB

SIGNATURE

Tested By: A. U. Kiemel

DESCRIPTION OF TEST

Band Edge Compliance - High Channel - 32 kbps Data Rate



NORTHWEST
EMC

BAND EDGE COMPLIANCE

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 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

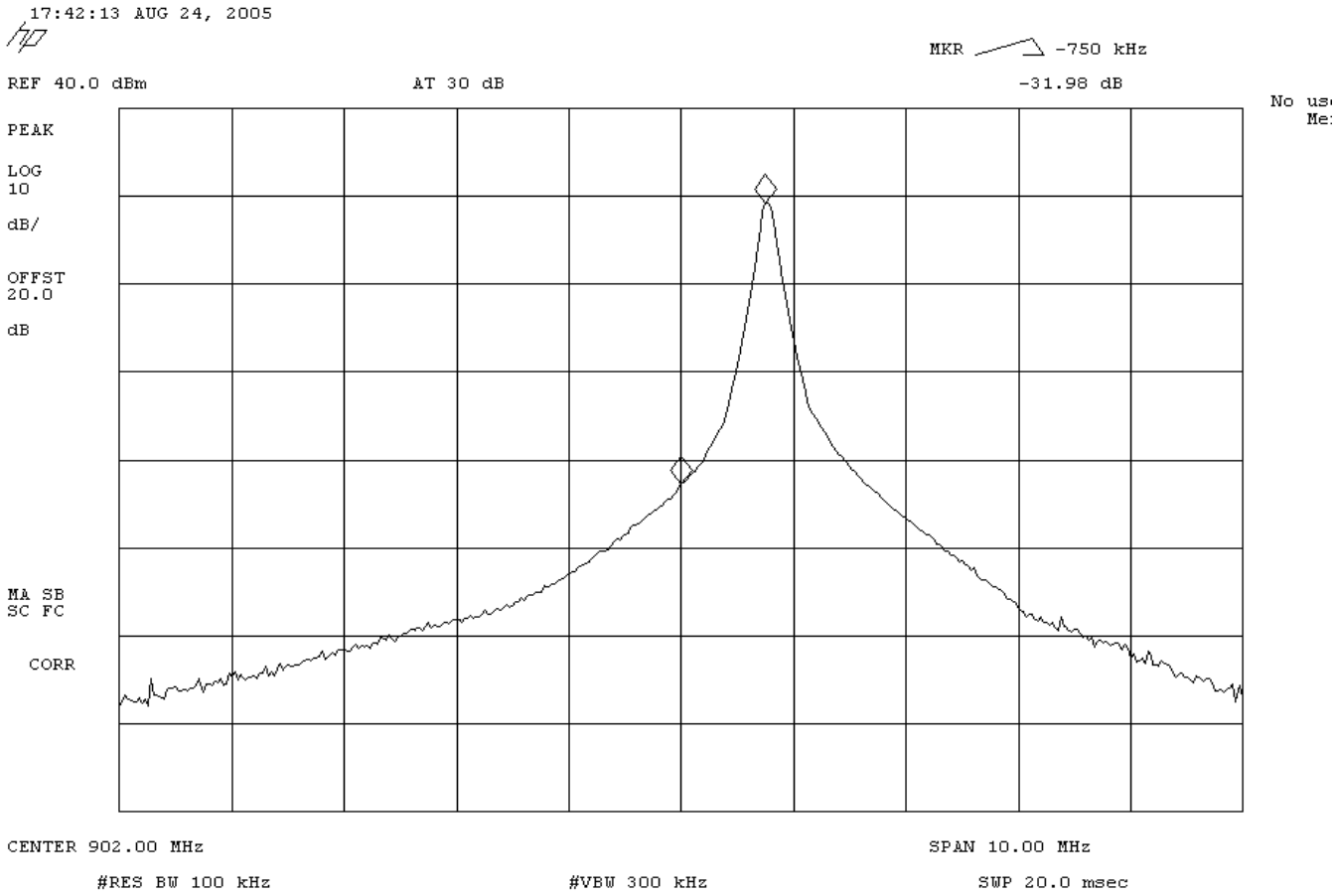
RESULTS	AMPLITUDE
Pass	-31.98 dB

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - Low Channel - 38 kbps Data Rate



NORTHWEST EMC

BAND EDGE COMPLIANCE

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 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

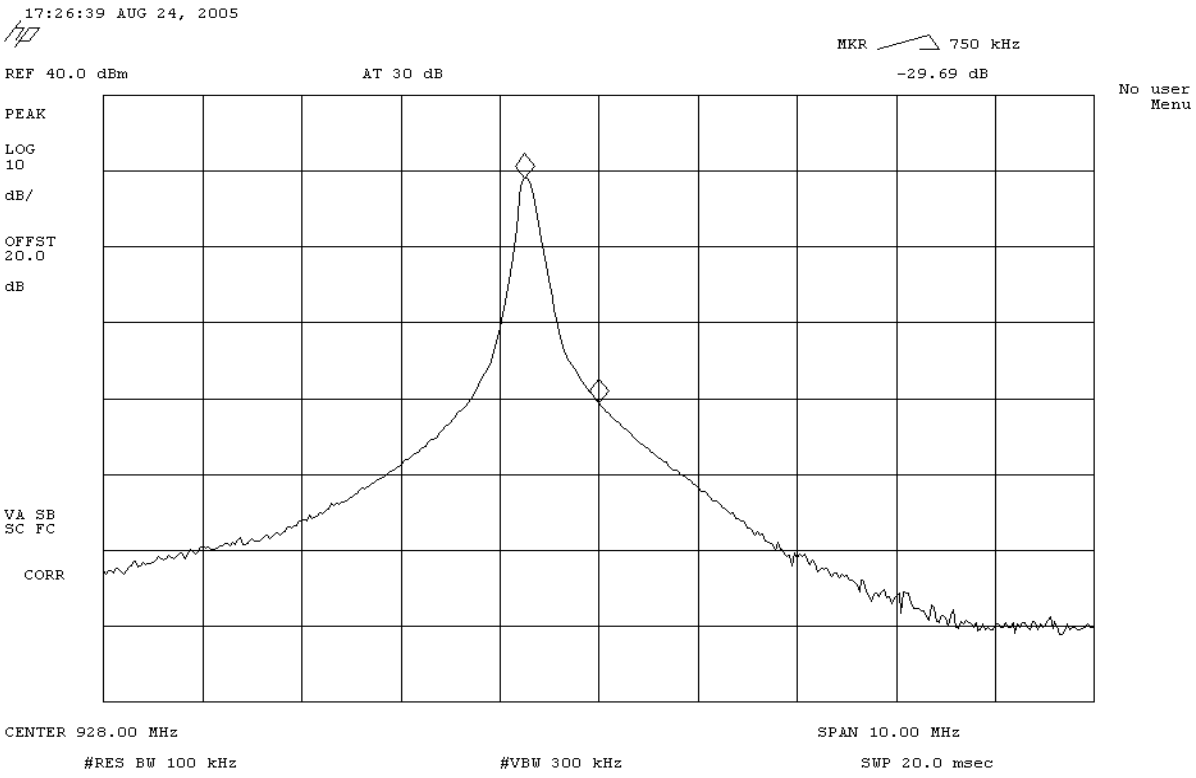
RESULTS	AMPLITUDE
Pass	-29.69 dB

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - High Channel - 38 kbps Data Rate



NORTHWEST EMC

BAND EDGE COMPLIANCE

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 40 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

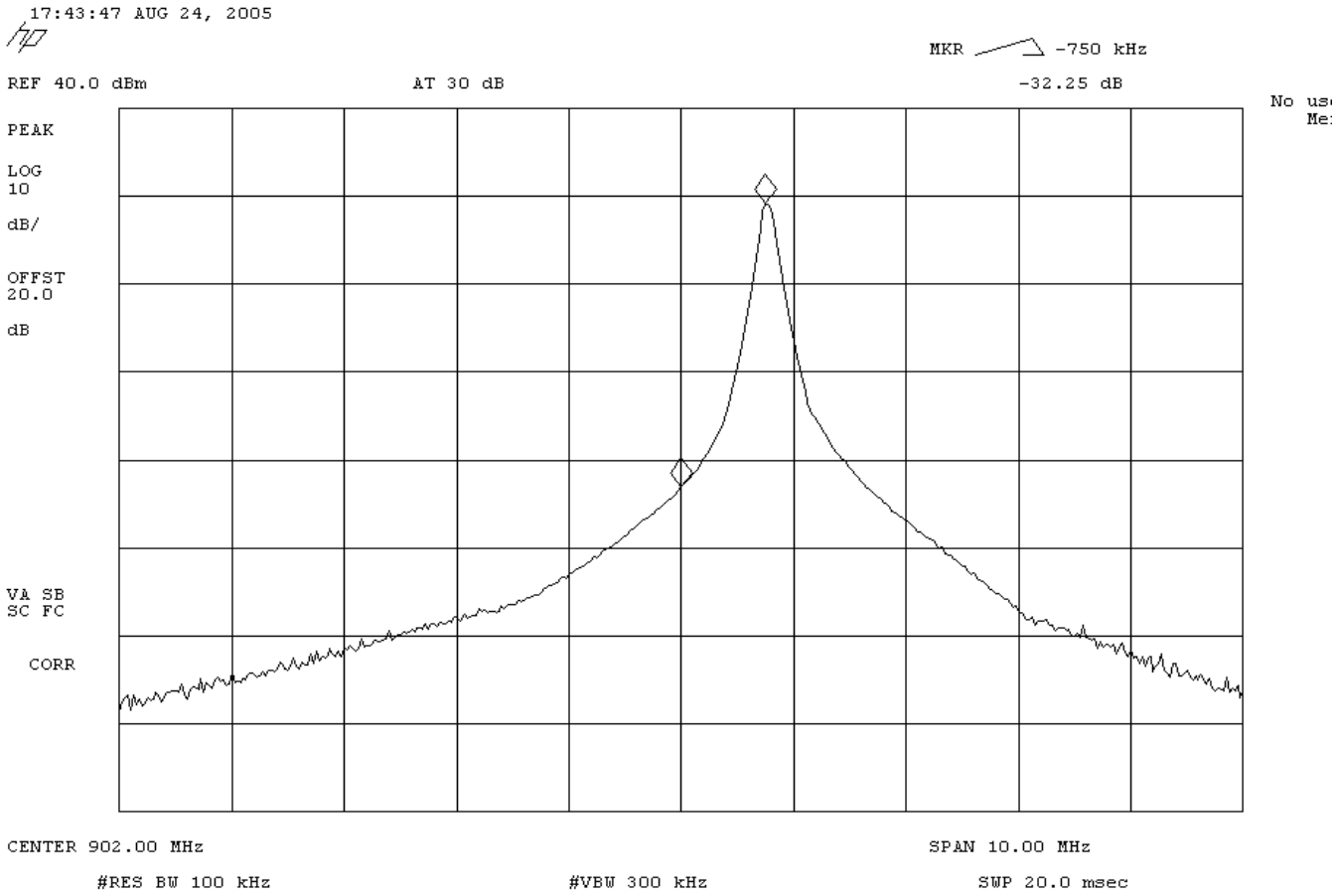
RESULTS	AMPLITUDE
Pass	-32.25 dB

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - Low Channel - 40 kbps Data Rate



NORTHWEST EMC

BAND EDGE COMPLIANCE

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 40 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

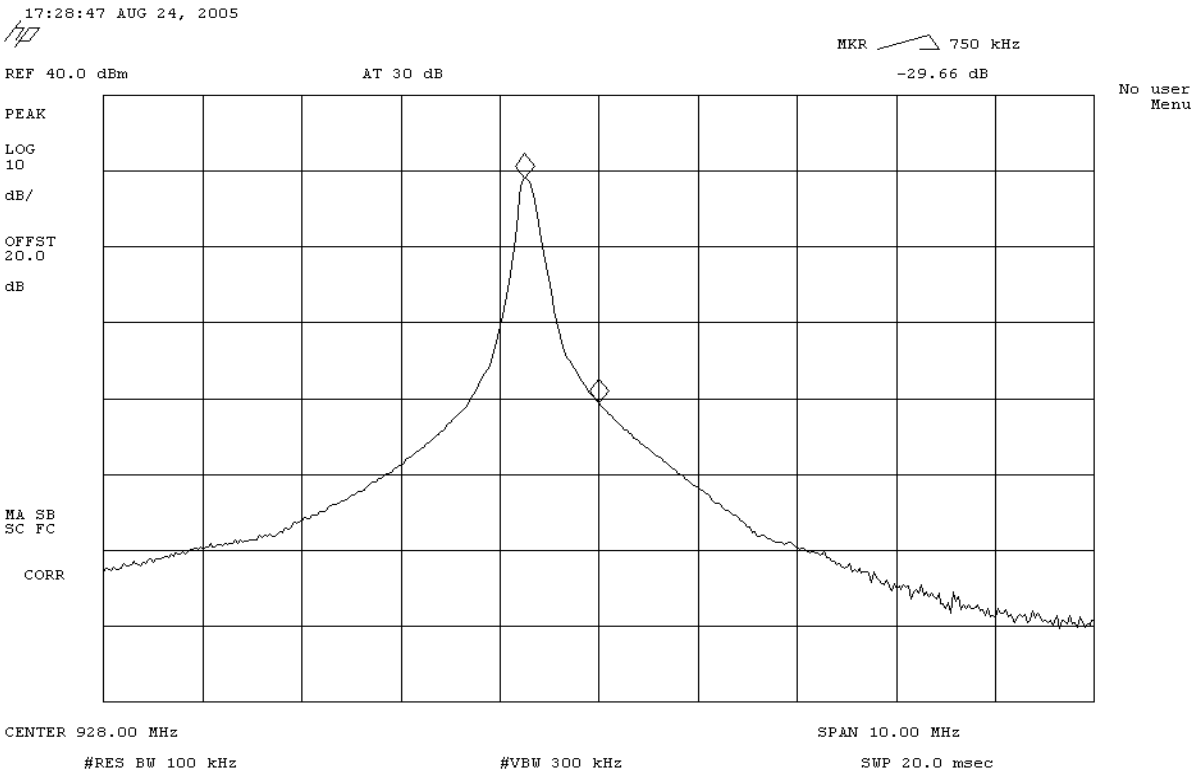
RESULTS	AMPLITUDE
Pass	-29.66 dB

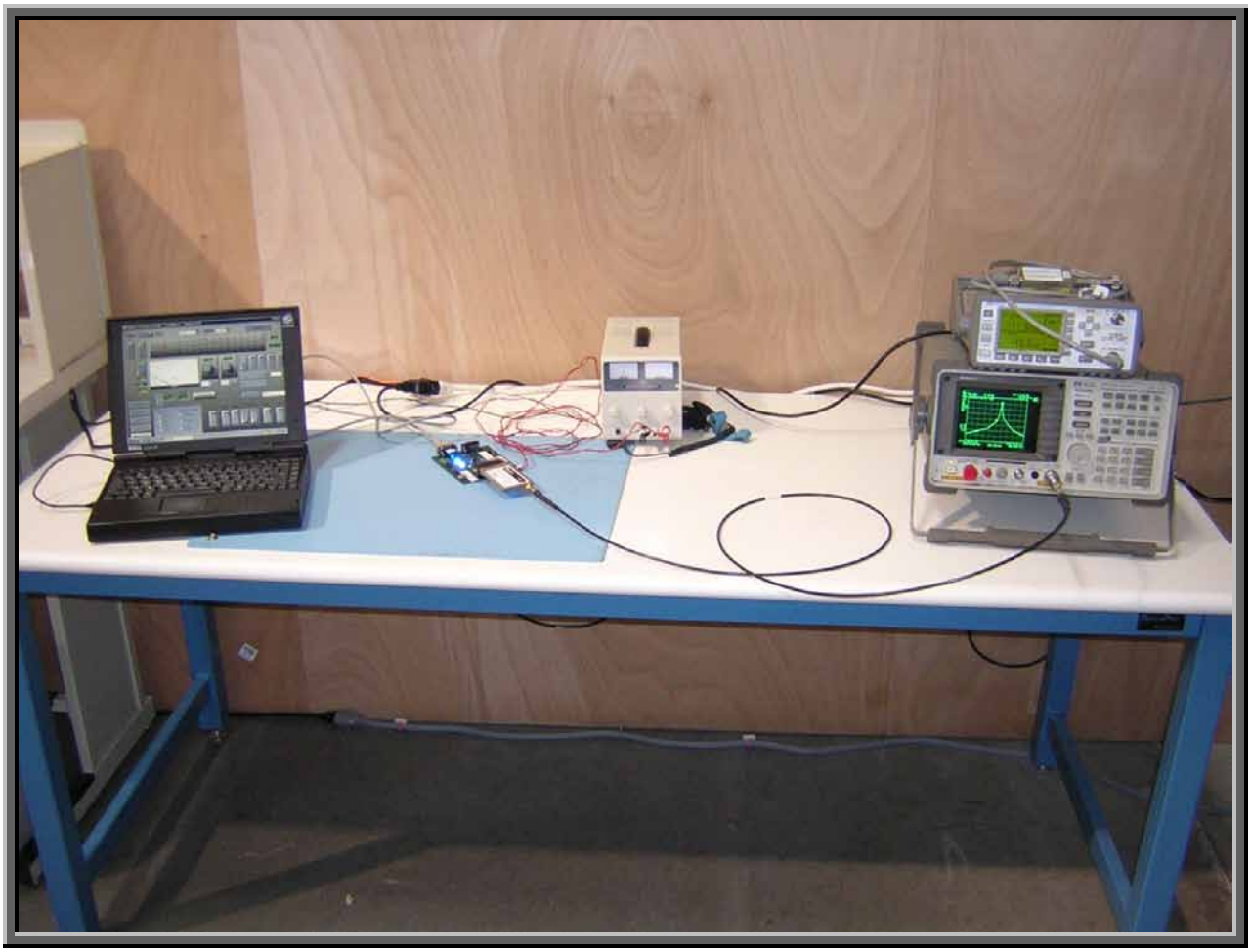
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Band Edge Compliance - High Channel - 40 kbps Data Rate





Justification

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

Operating Modes Investigated:
Receive Mode

Power Input Settings Investigated:
120 VAC, 60 Hz

Software\Firmware Applied During Test			
Operating system	Windows	**Version**	XP
Exercise software	Common Test Interface for IM4	**Version**	1.2.0 Build 11
Description			
The system was tested 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

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 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.

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:

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.107 Class B:2005-04	ANSI C63.4:2003

TEST PARAMETERS	
Cable or Line Tested	L1

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

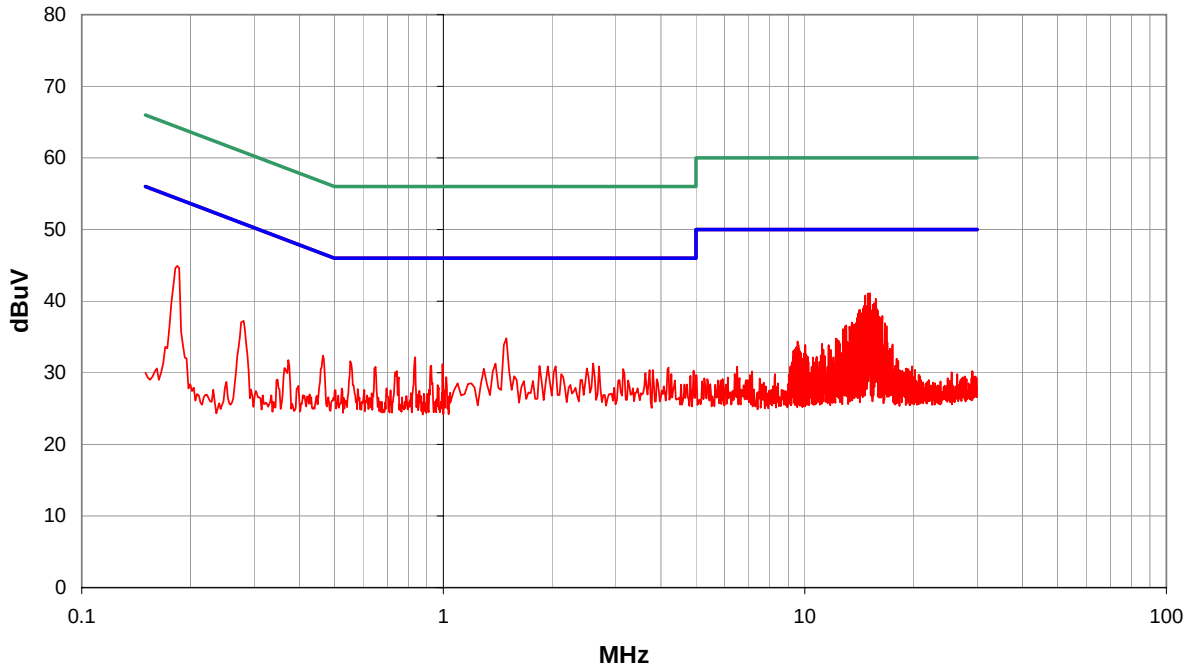
Receive Mode

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
15.150	20.0			0.0	1.1	20.0				41.1	50.0	-8.9
14.970	20.0			0.0	1.1	20.0				41.1	50.0	-8.9
14.700	19.7			0.0	1.1	20.0				40.8	50.0	-9.2
0.184	24.8			0.0	0.1	20.0				44.9	54.3	-9.4
15.720	19.2			0.0	1.1	20.0				40.3	50.0	-9.7
15.540	18.6			0.0	1.1	20.0				39.7	50.0	-10.3
15.420	18.4			0.0	1.1	20.0				39.5	50.0	-10.5
14.610	18.3			0.0	1.1	20.0				39.4	50.0	-10.6
14.790	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
14.490	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
15.810	17.8			0.0	1.1	20.0				38.9	50.0	-11.1
1.495	14.4			0.0	0.4	20.0				34.8	46.0	-11.2
14.220	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
14.130	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
15.900	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
15.330	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
14.880	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
14.430	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
15.240	17.2			0.0	1.1	20.0				38.3	50.0	-11.7

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.107 Class B:2005-04	ANSI C63.4:2003

TEST PARAMETERS	
Cable or Line Tested	N

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

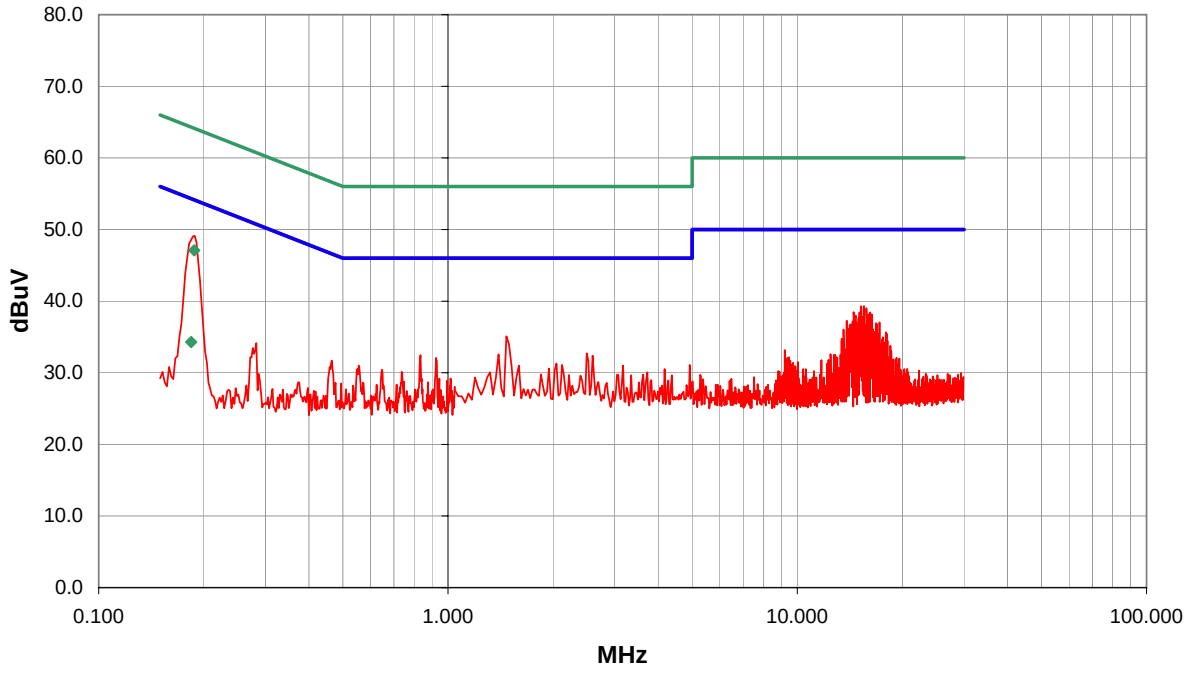
Receive Mode

DEVIATIONS FROM TEST STANDARD

No deviations.

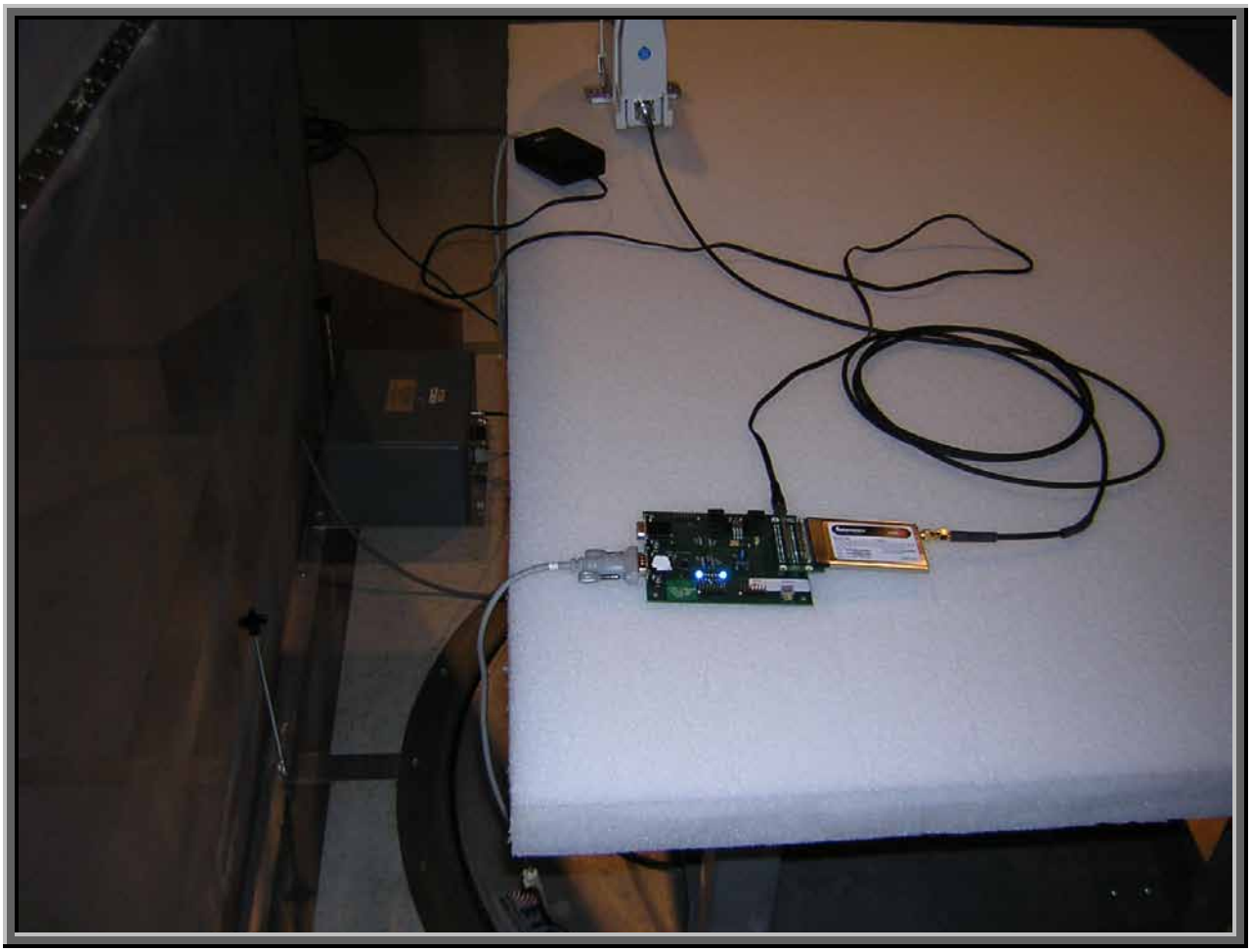
Run #	8
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.188	27.1			0.0	0.0	20.0		QP		47.1	64.1	-17.0
0.184	14.3			0.0	0.0	20.0		AV		34.3	54.3	-20.0
0.188	29.0			0.0	0.1	20.0				49.1	54.1	-5.0
15.510	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
15.240	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
1.470	14.7			0.0	0.4	20.0				35.1	46.0	-10.9
15.780	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
14.490	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
16.170	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
15.060	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
16.080	17.1			0.0	1.1	20.0				38.2	50.0	-11.8
16.350	17.0			0.0	1.1	20.0				38.1	50.0	-11.9
15.900	16.9			0.0	1.1	20.0				38.0	50.0	-12.0
14.700	16.9			0.0	1.1	20.0				38.0	50.0	-12.0
16.260	16.8			0.0	1.1	20.0				37.9	50.0	-12.1
15.360	16.7			0.0	1.1	20.0				37.8	50.0	-12.2
14.970	16.5			0.0	1.1	20.0				37.6	50.0	-12.4
14.580	16.4			0.0	1.1	20.0				37.5	50.0	-12.5
15.150	16.3			0.0	1.1	20.0				37.4	50.0	-12.6


RAMTECH



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

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.					

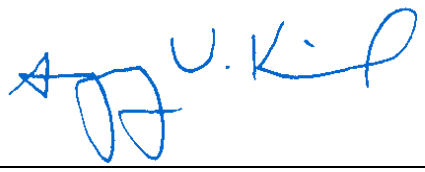
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett-Packard	8593E	AAA	12/06/2004	13 mo

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 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:



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

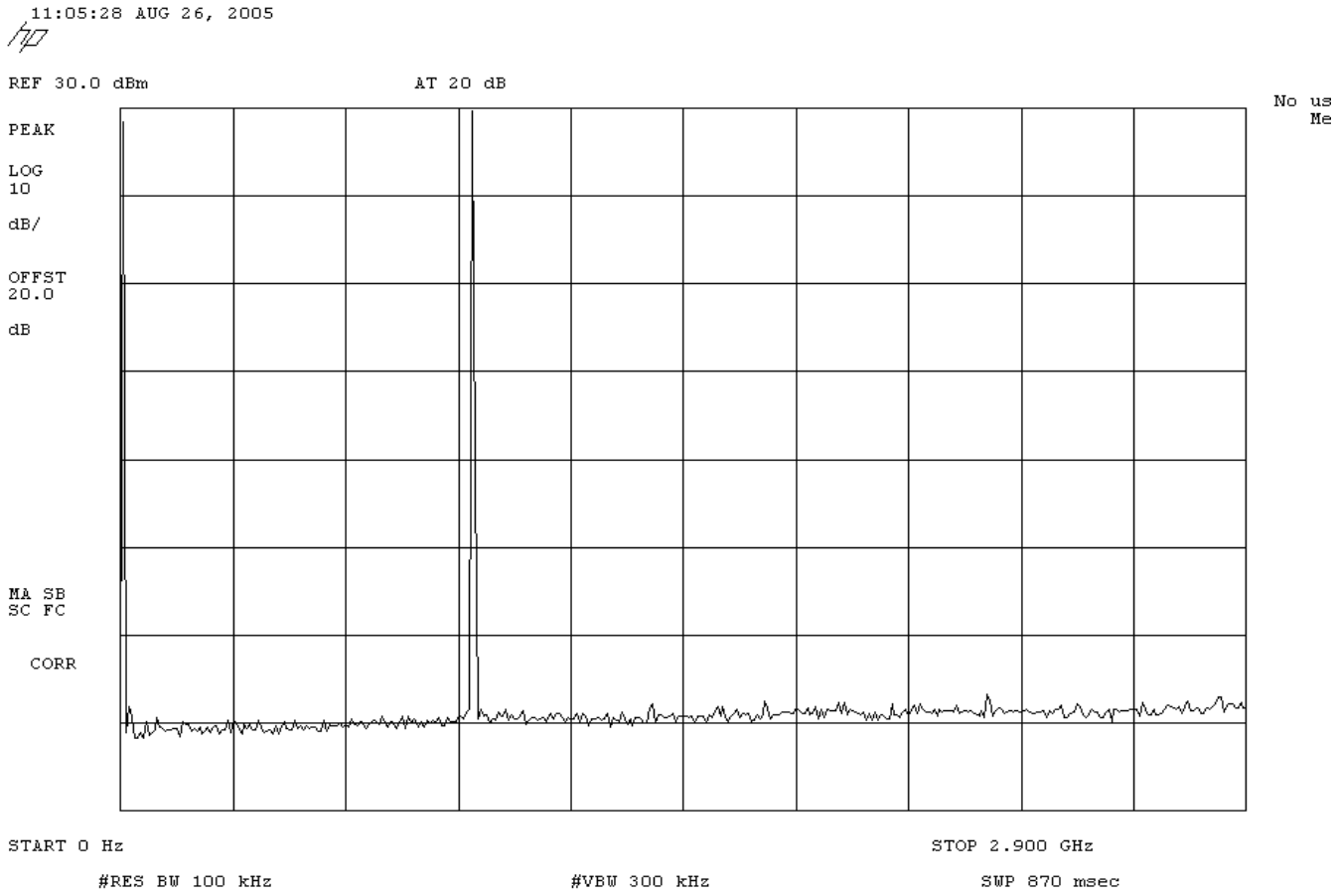
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

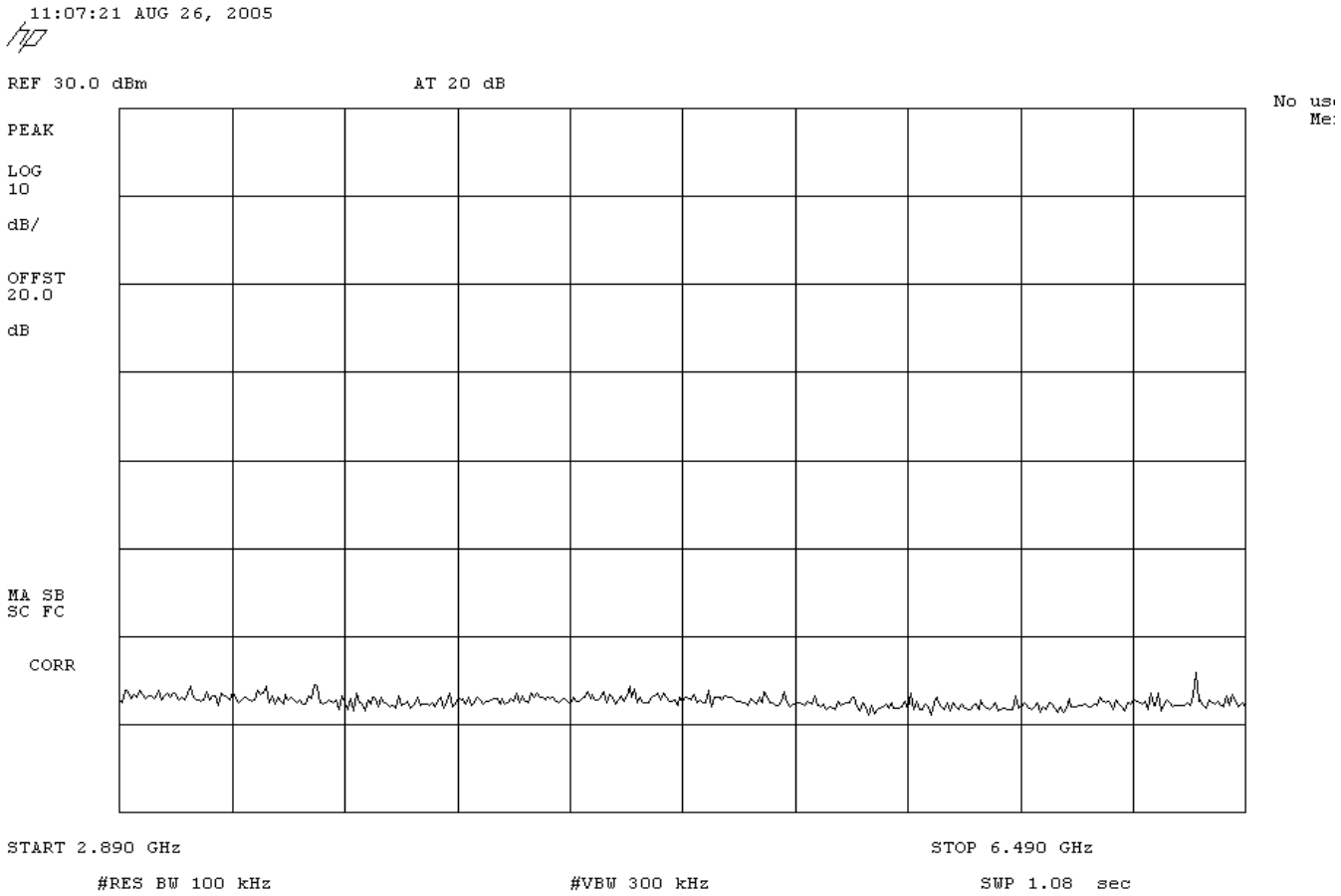
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

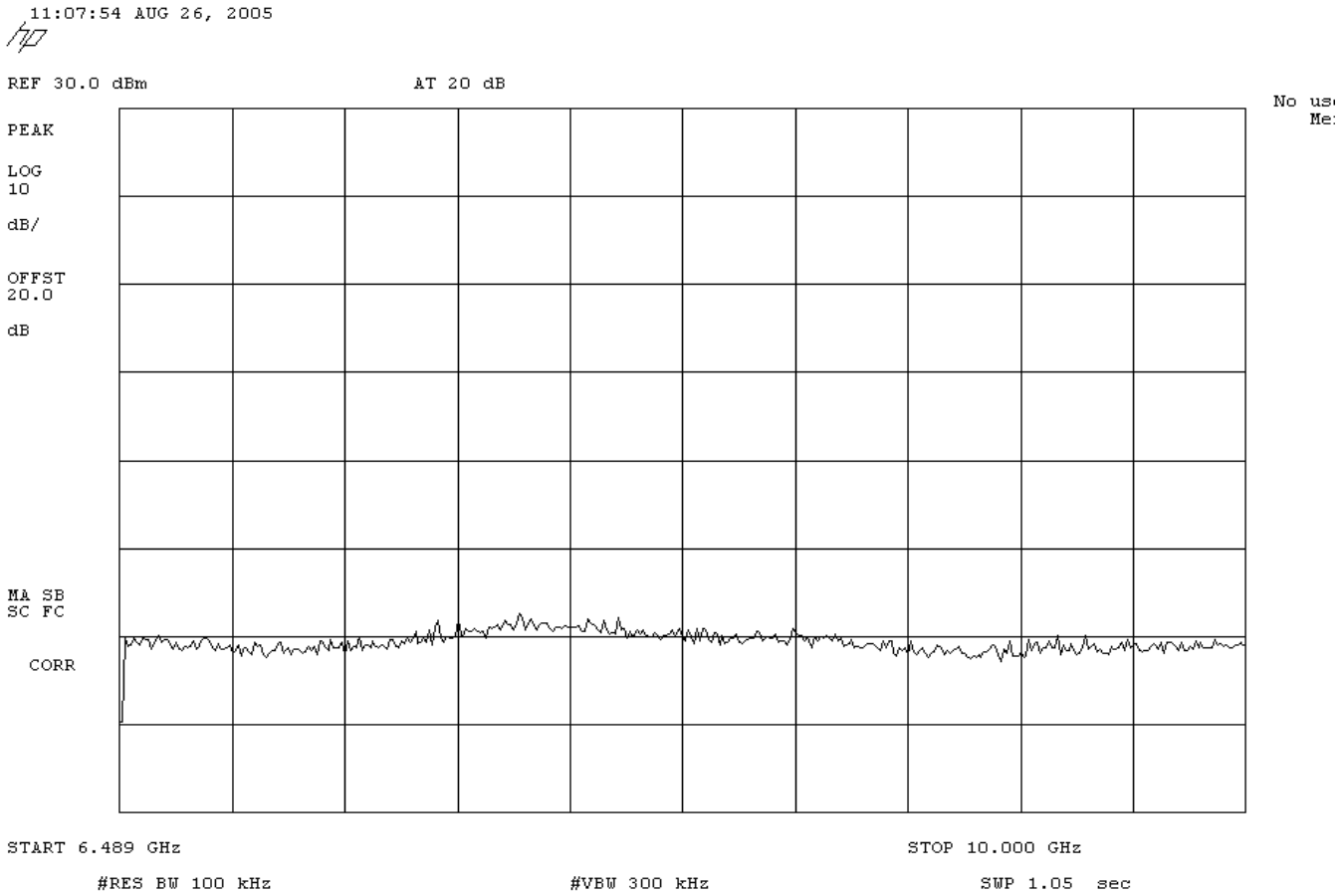
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

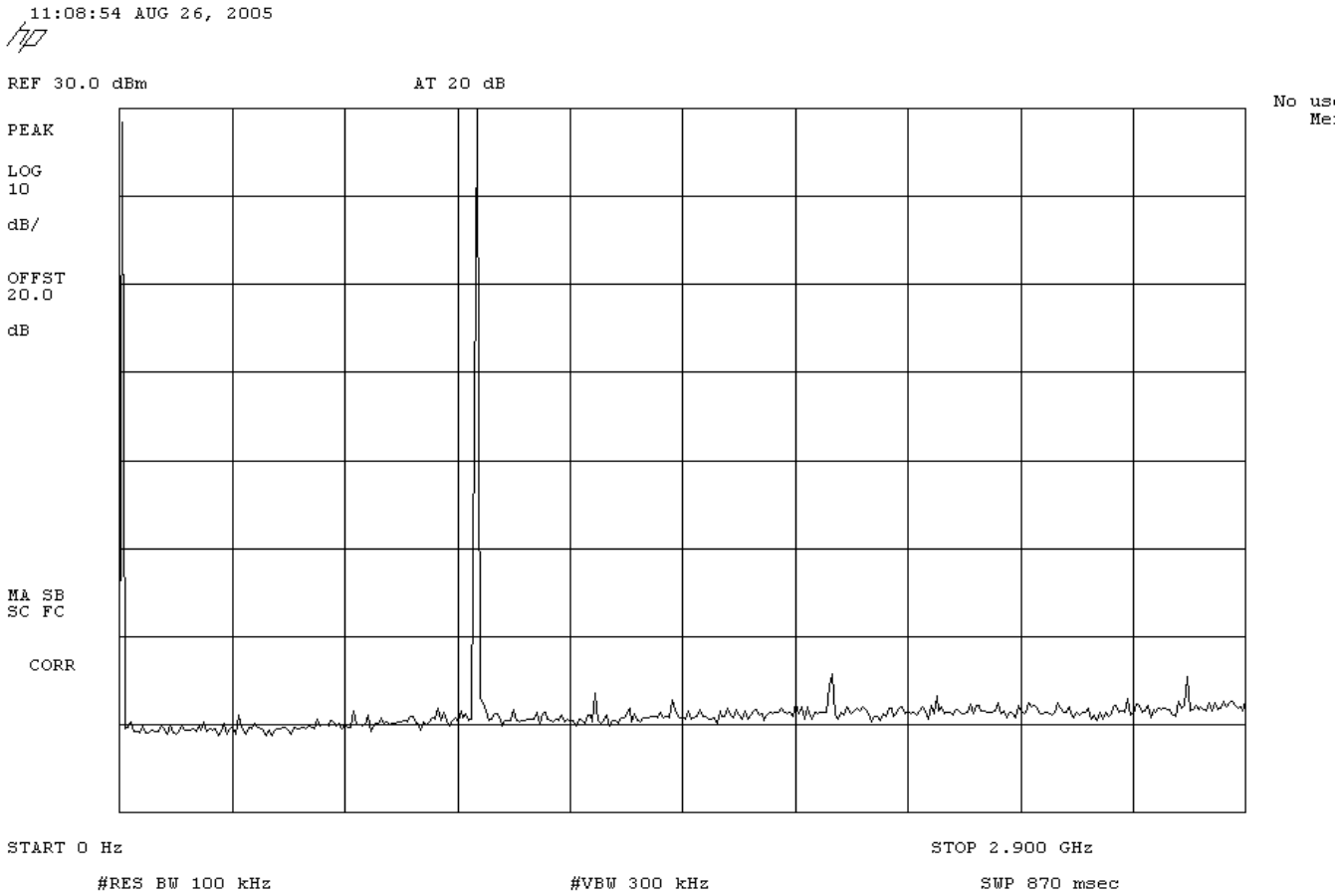
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

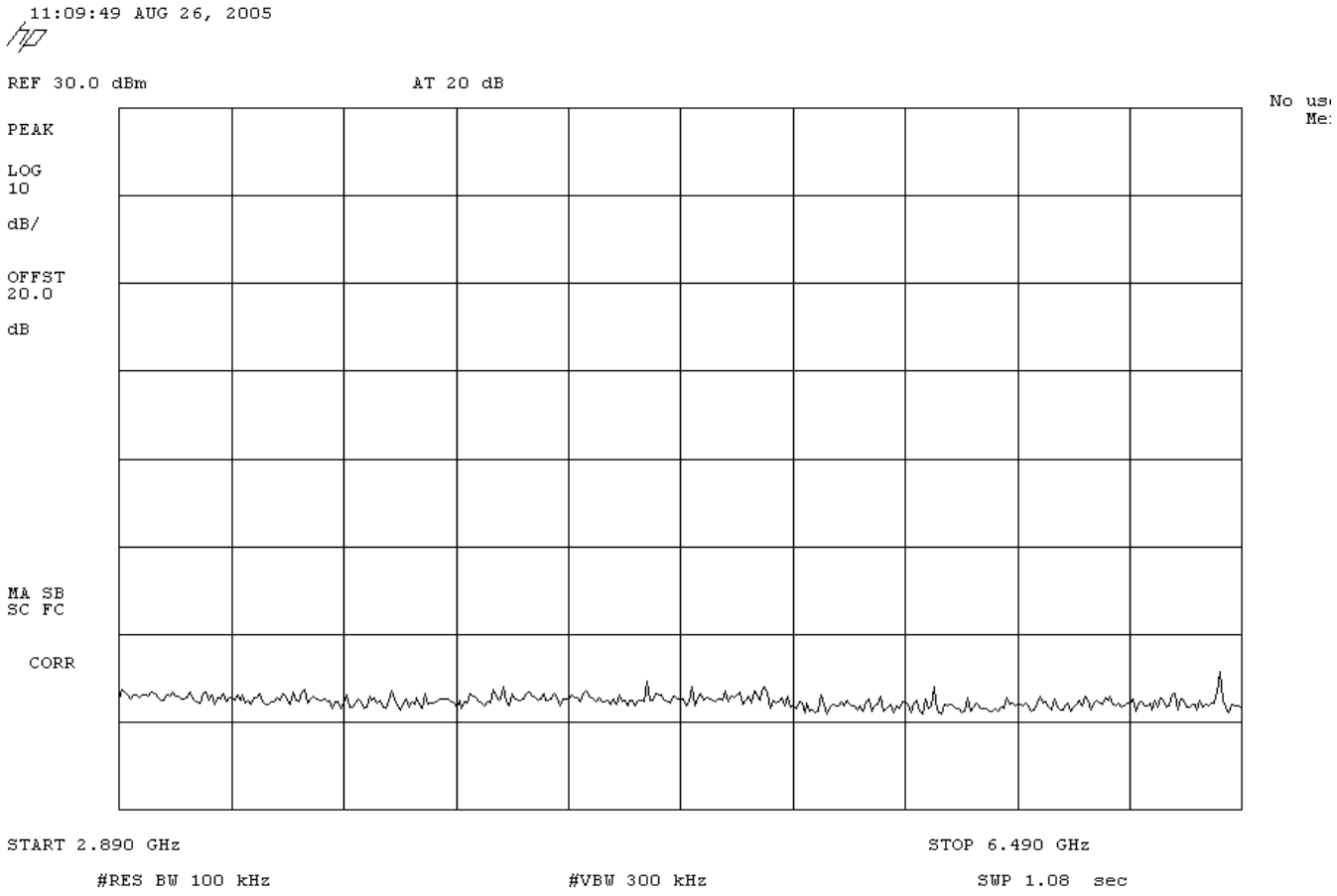
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

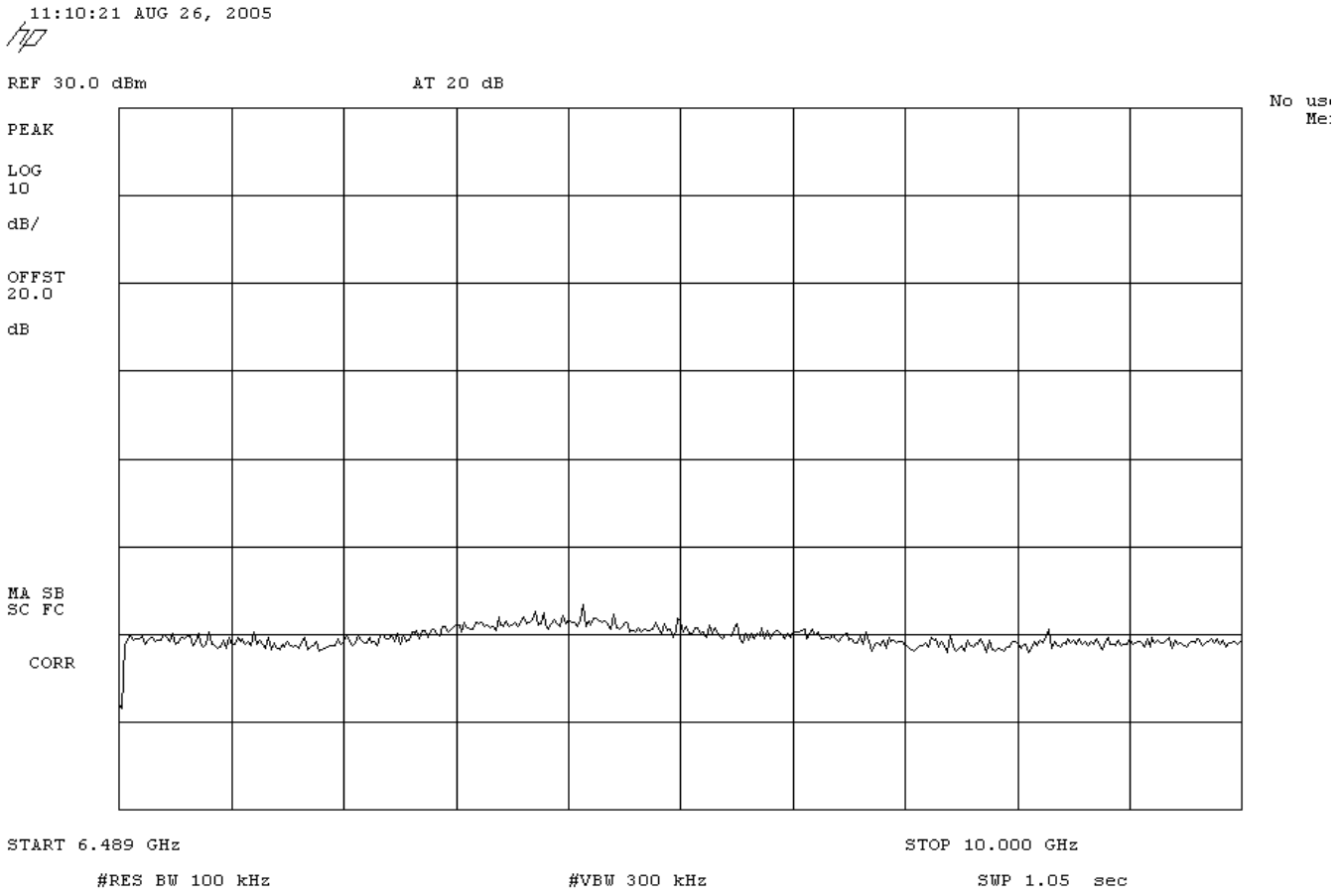
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

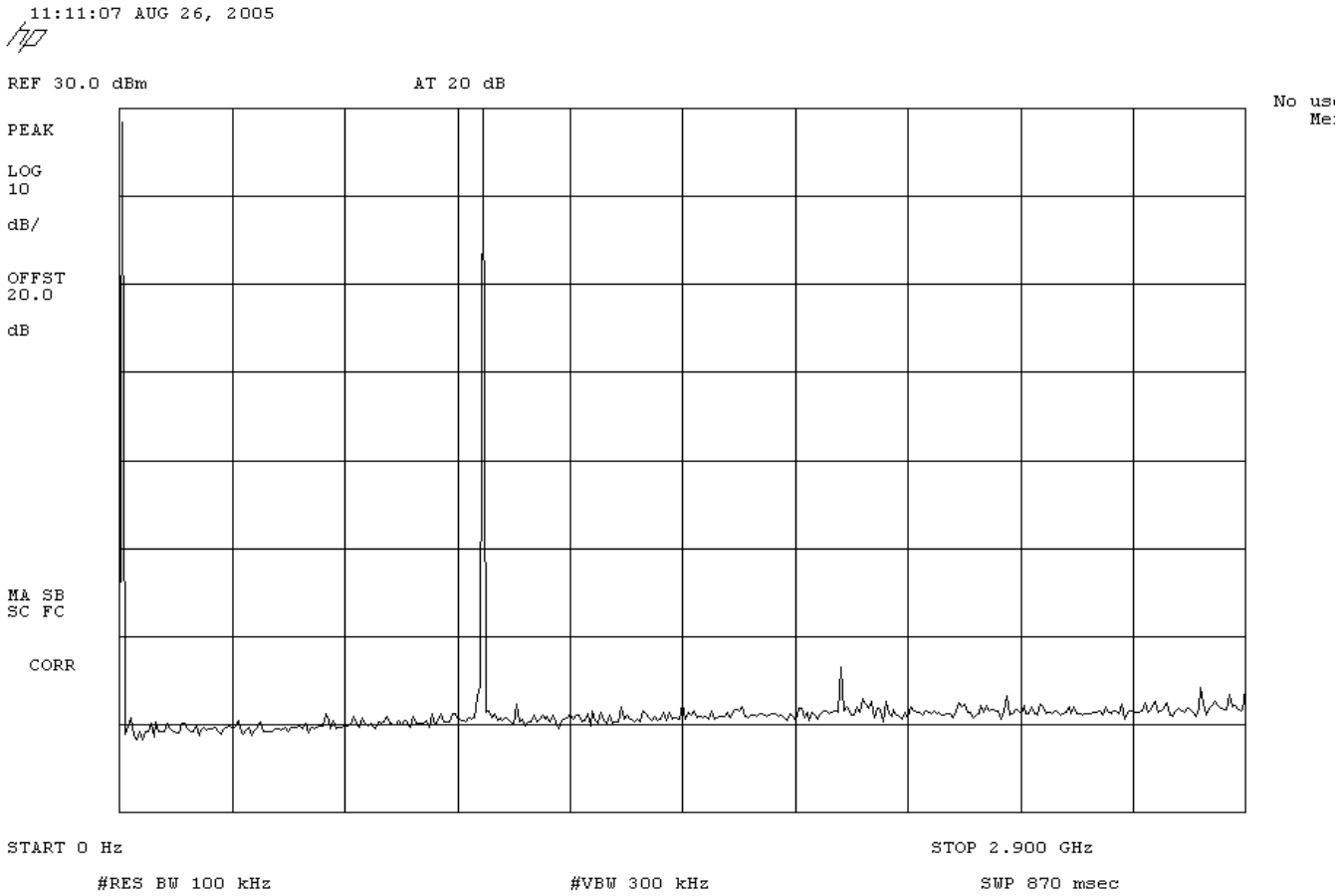
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

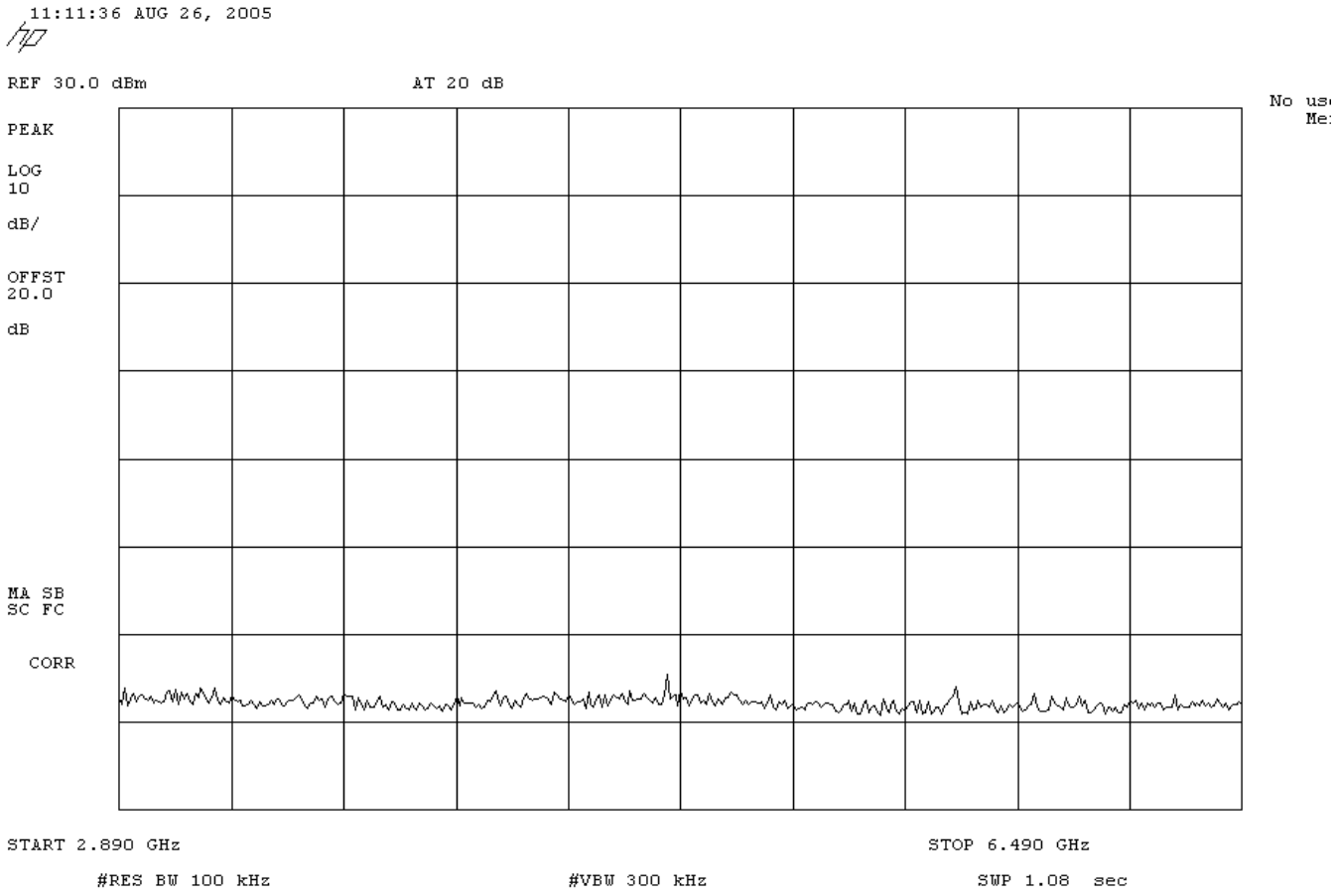
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

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

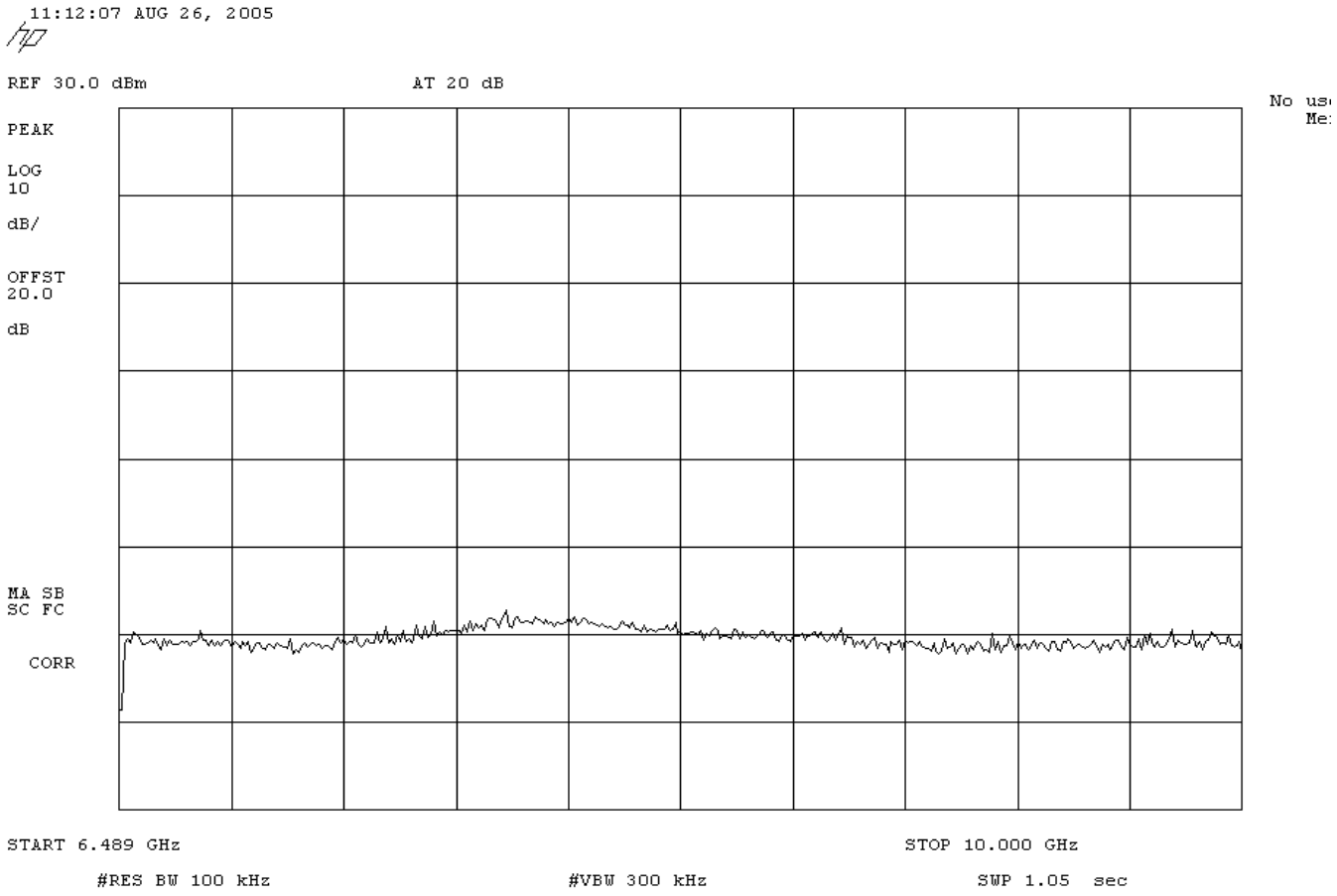
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

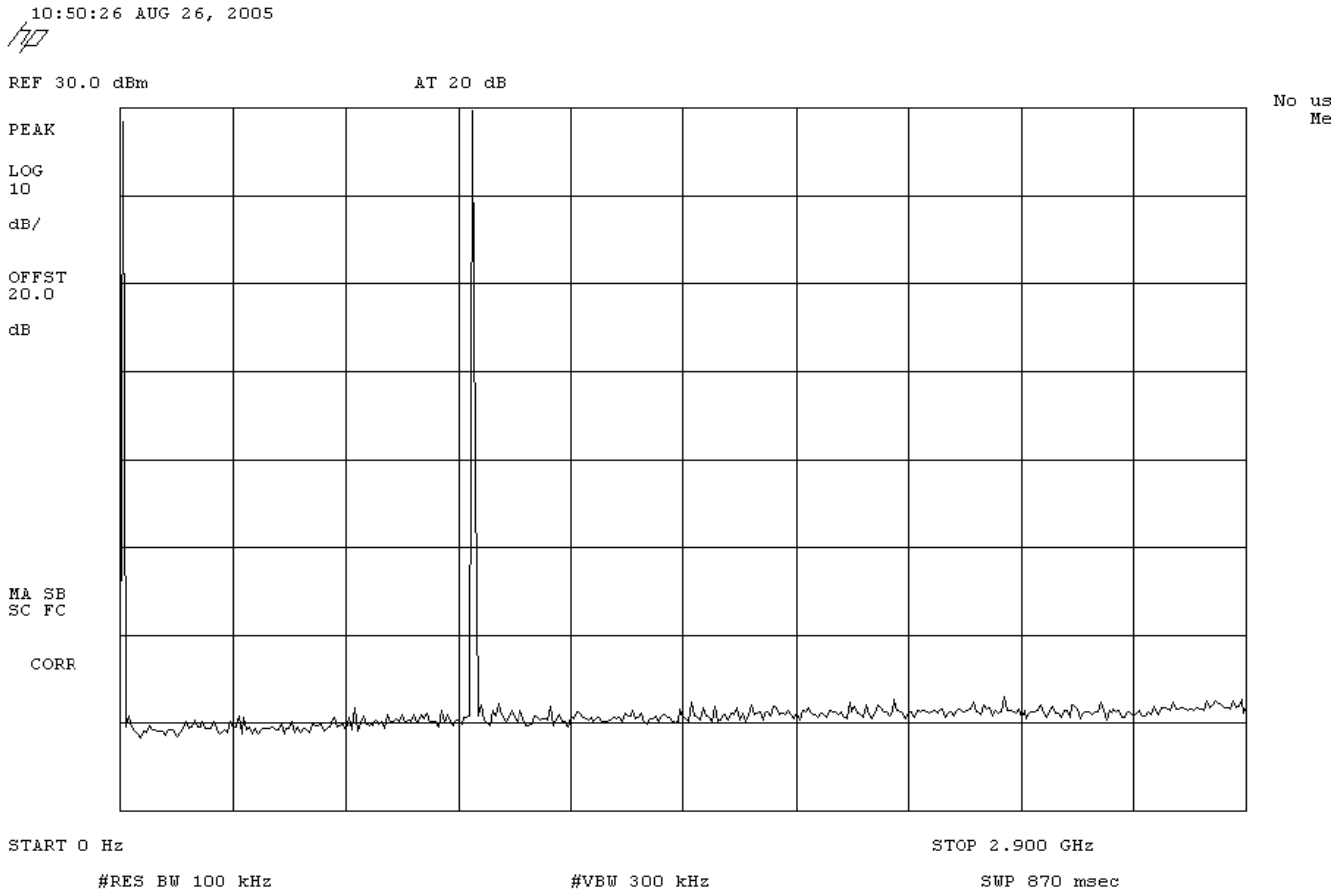
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

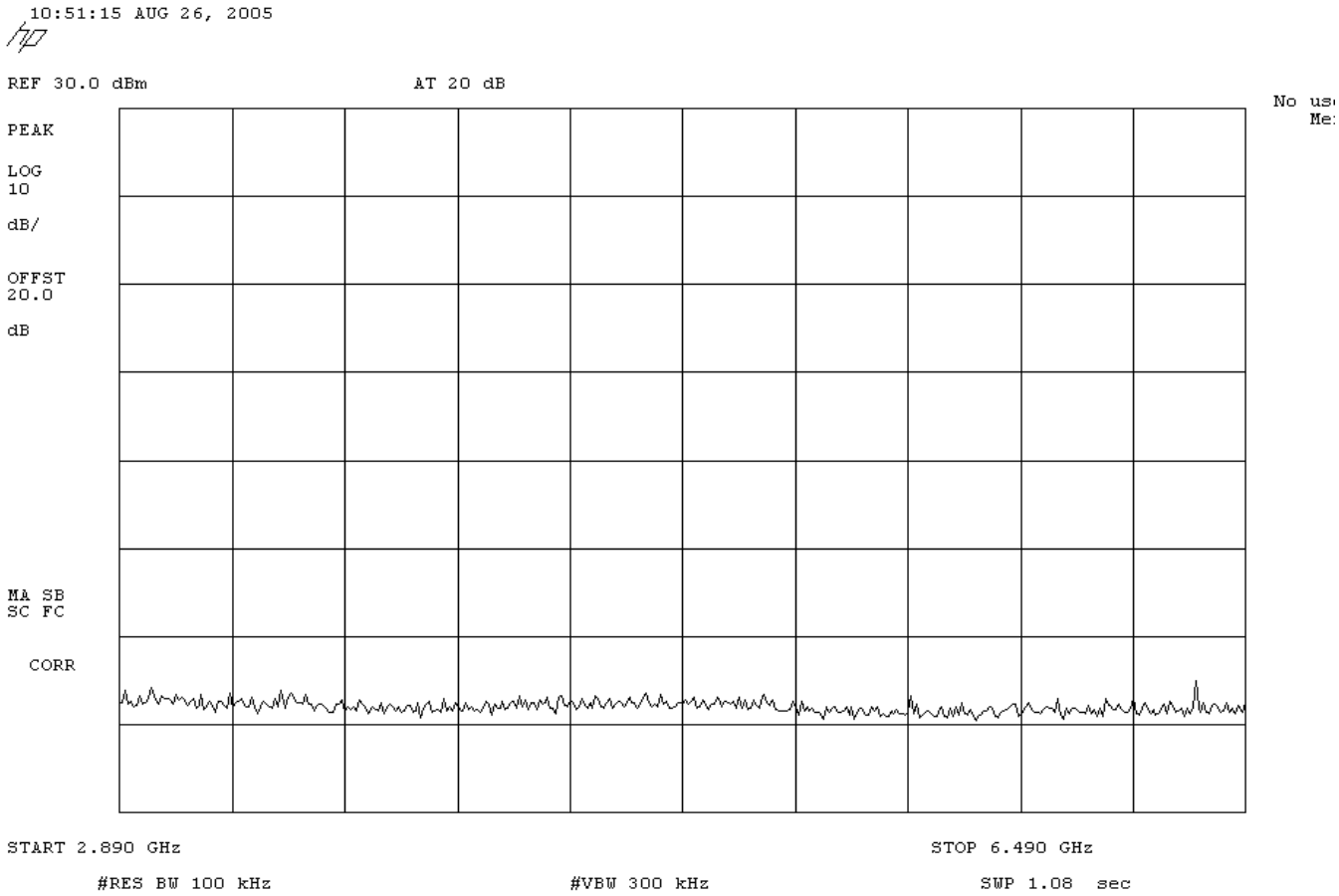
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

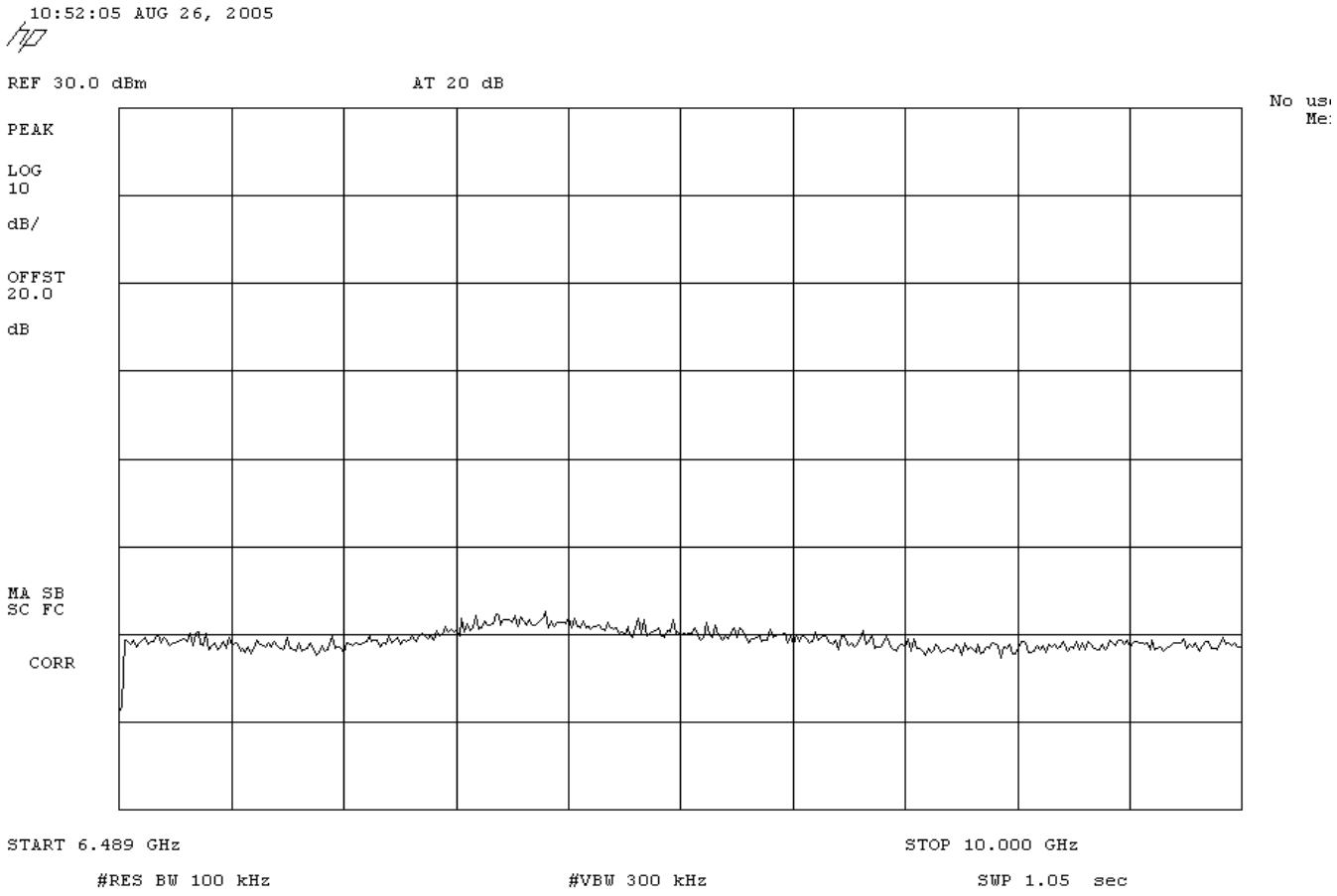
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

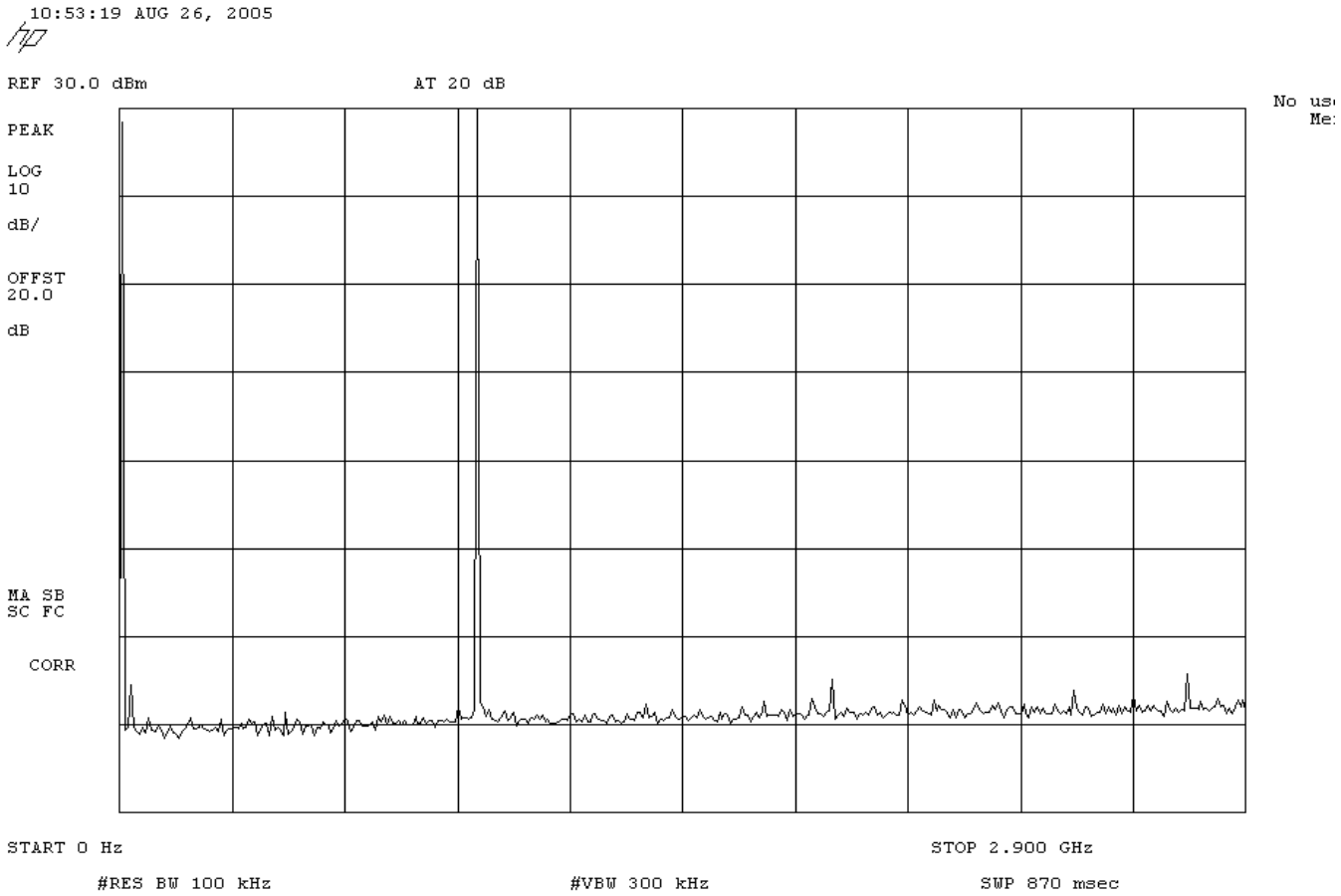
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

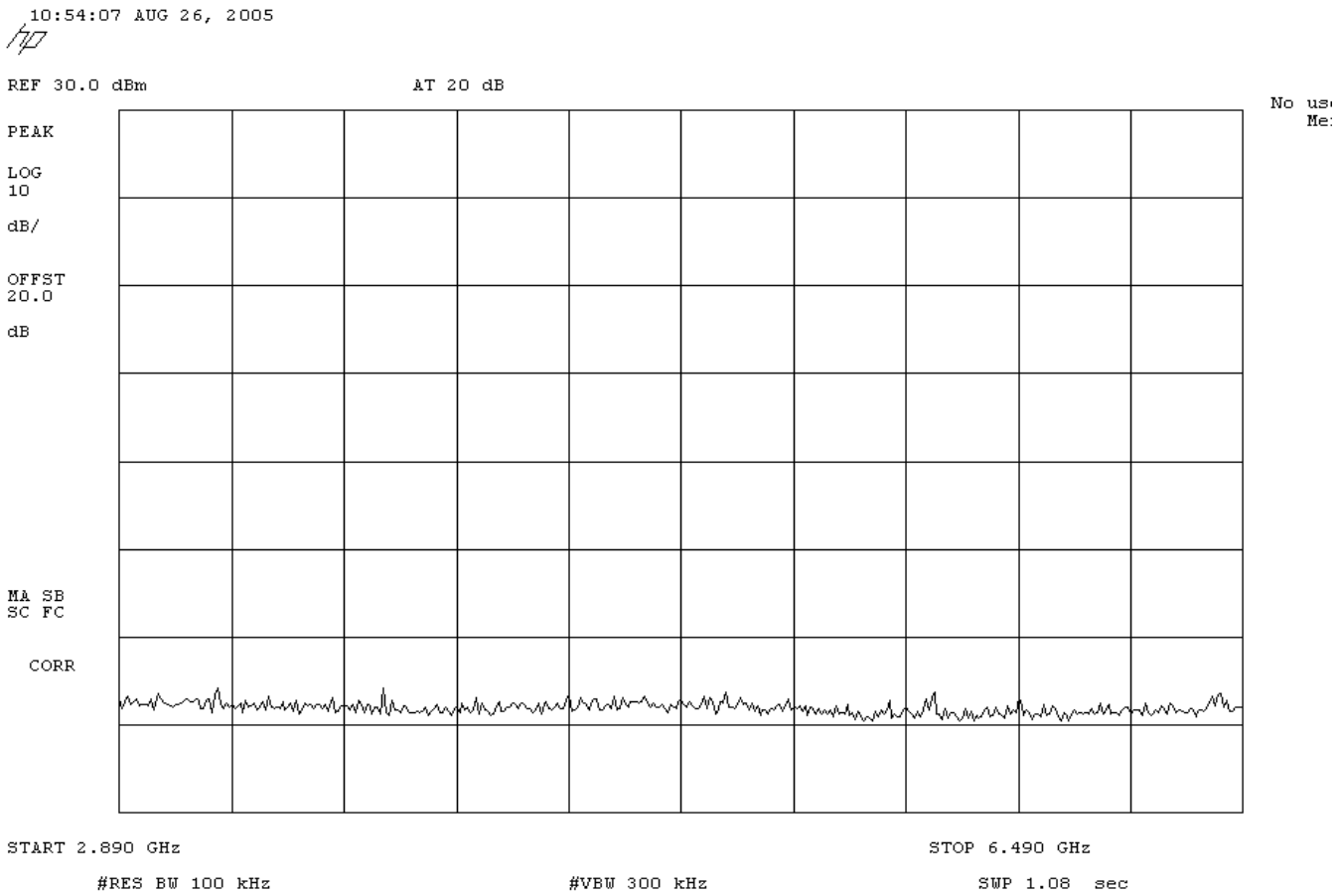
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

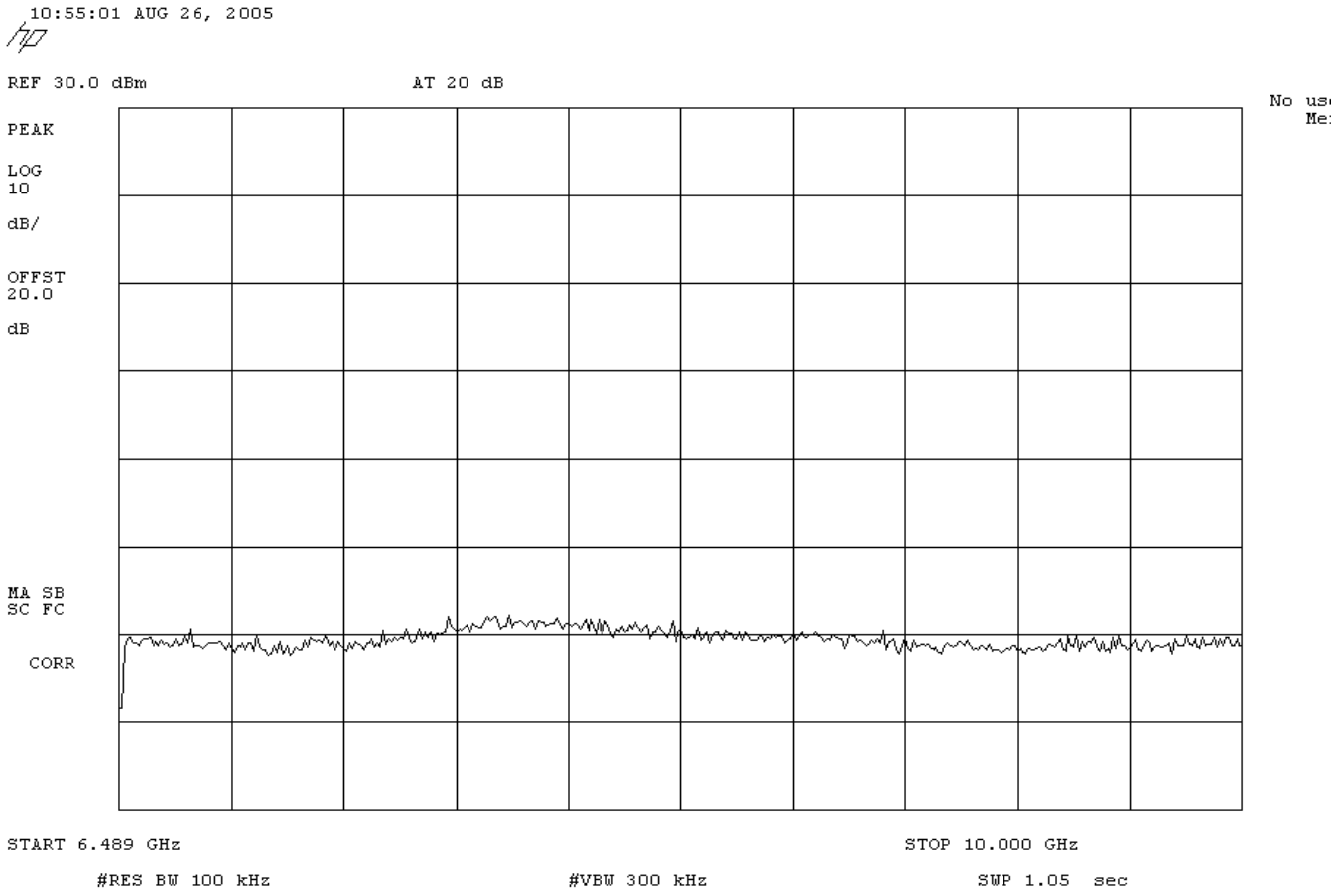
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

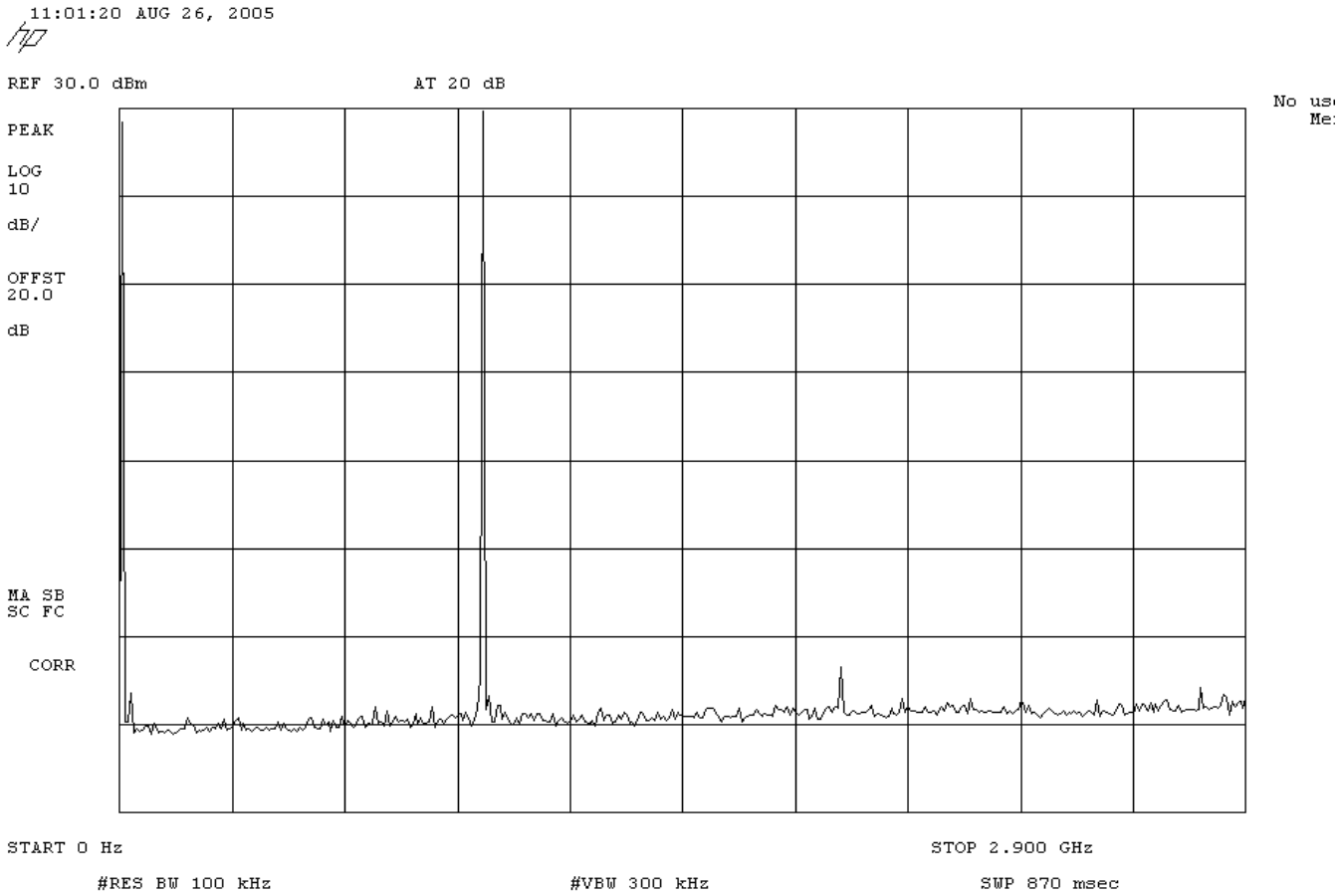
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

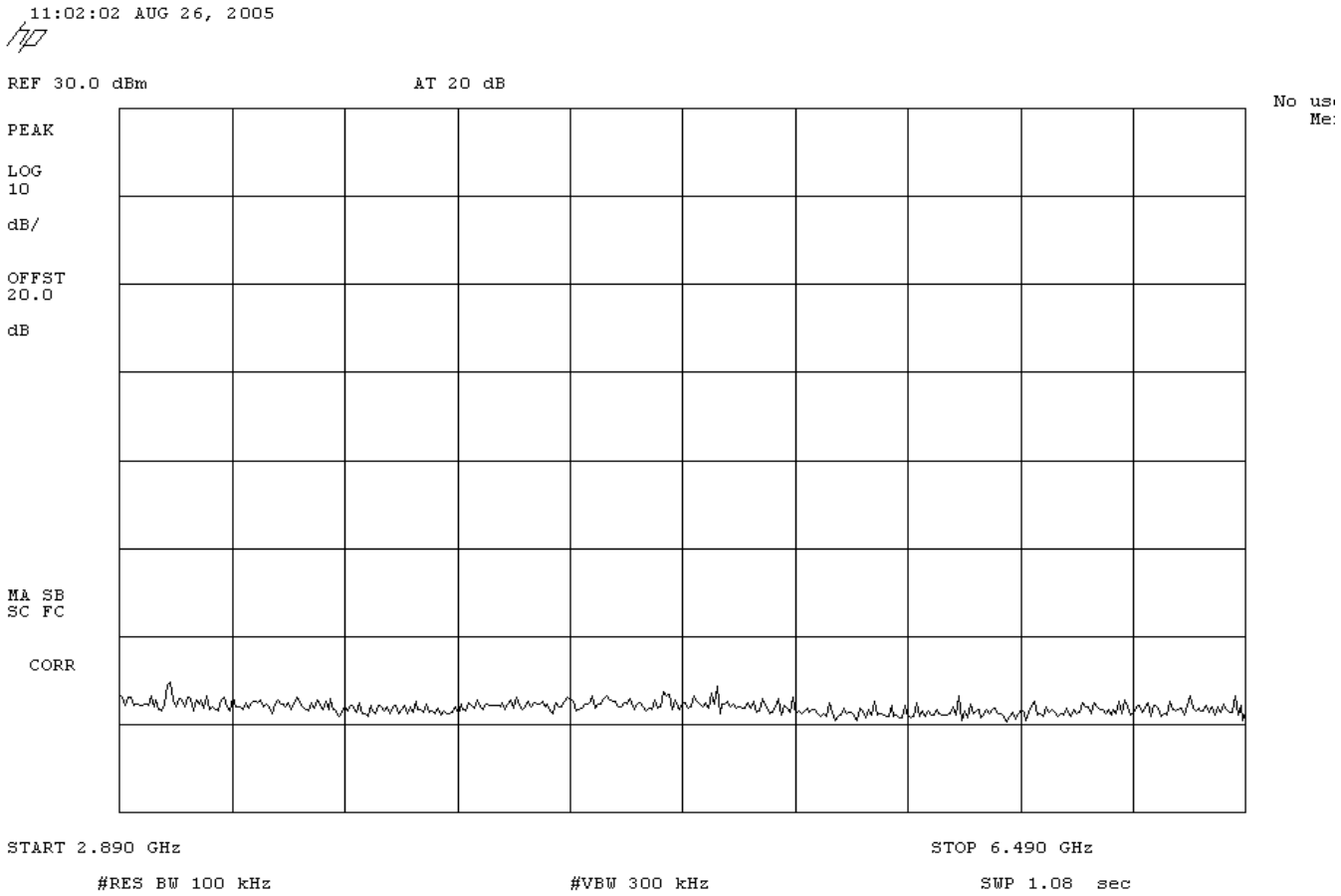
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	Method:	DA 00-705, ANSI C63.4	Year:	2003

SAMPLE CALCULATIONS

COMMENTS

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 from the fundamental

RESULTS

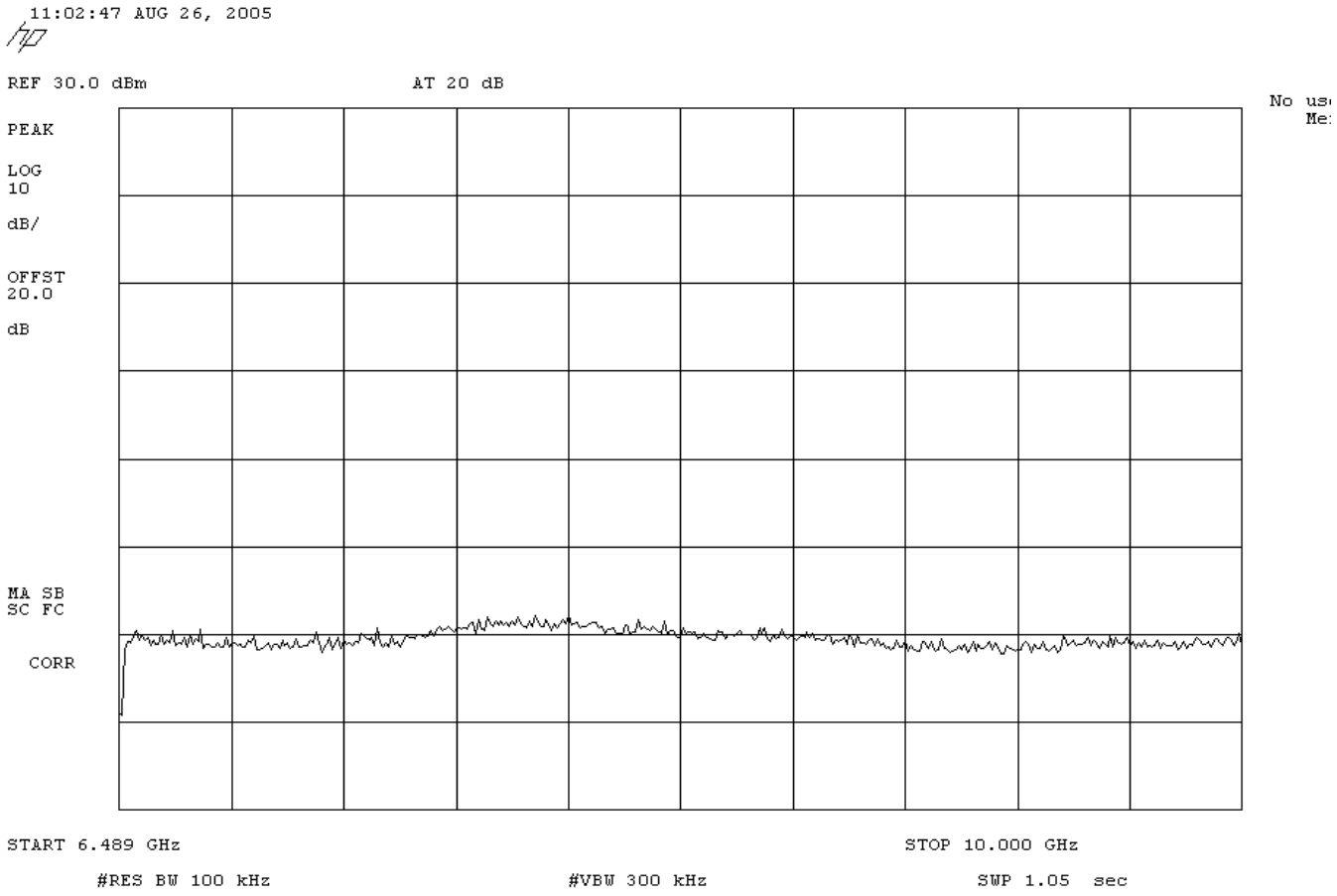
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

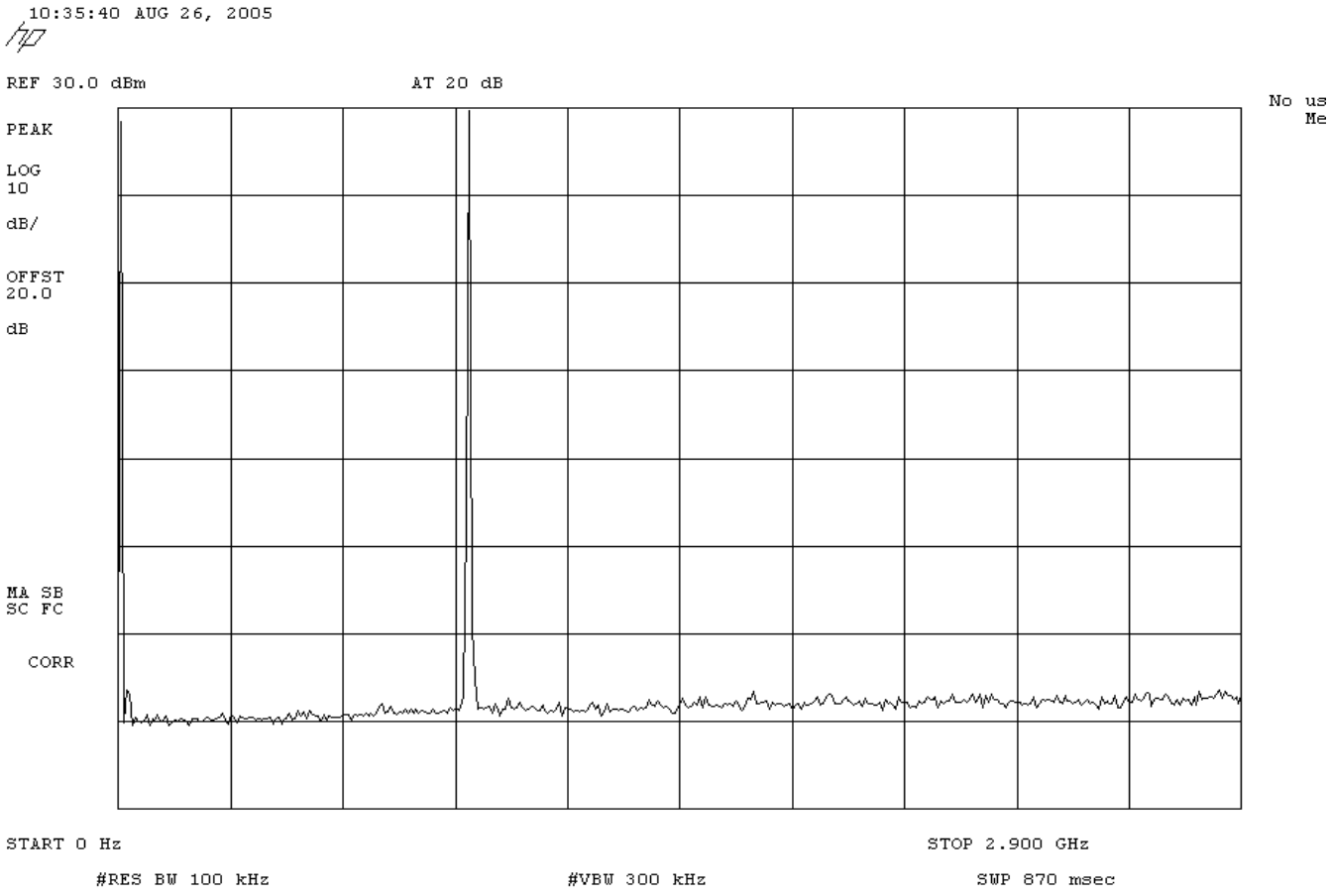
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

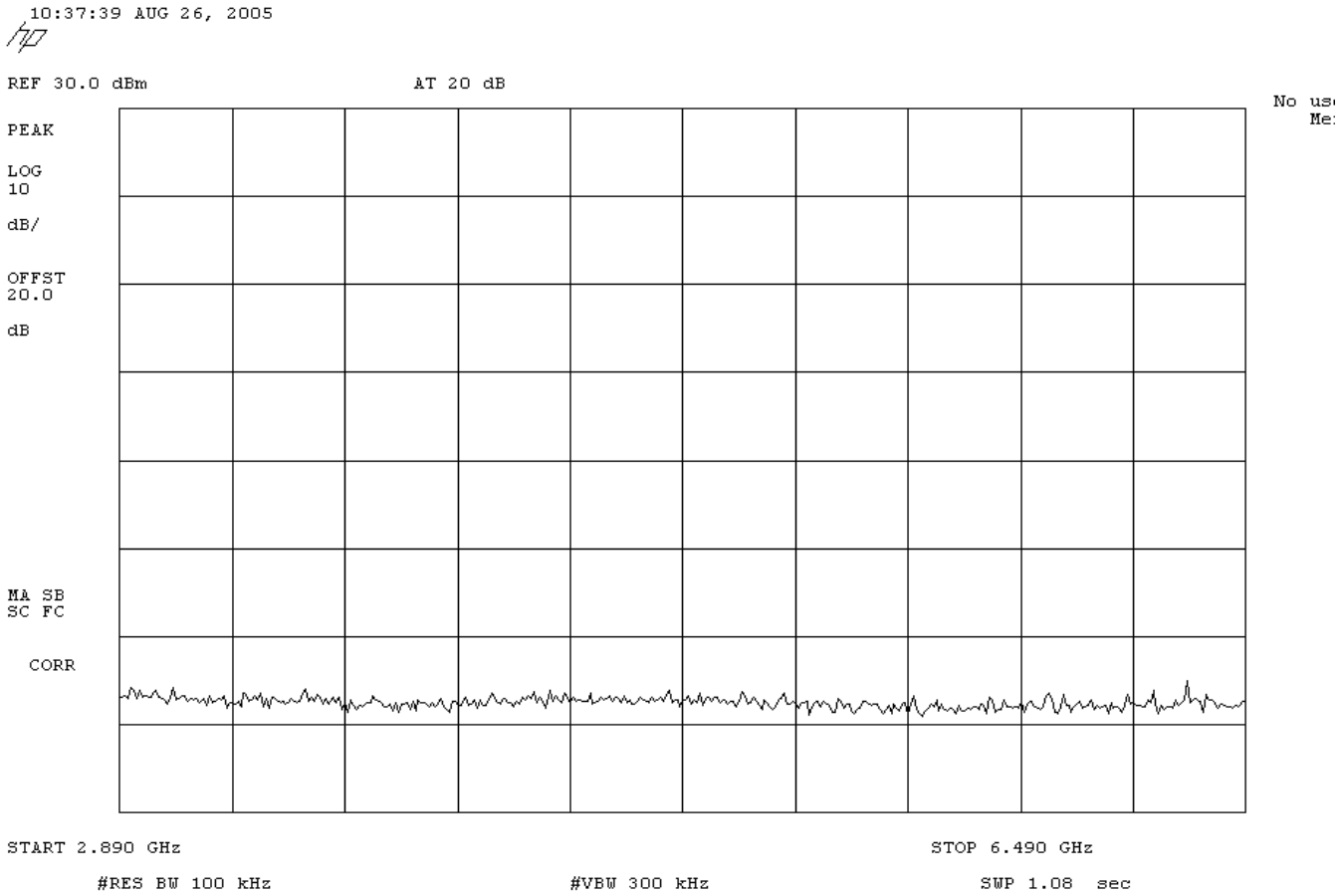
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

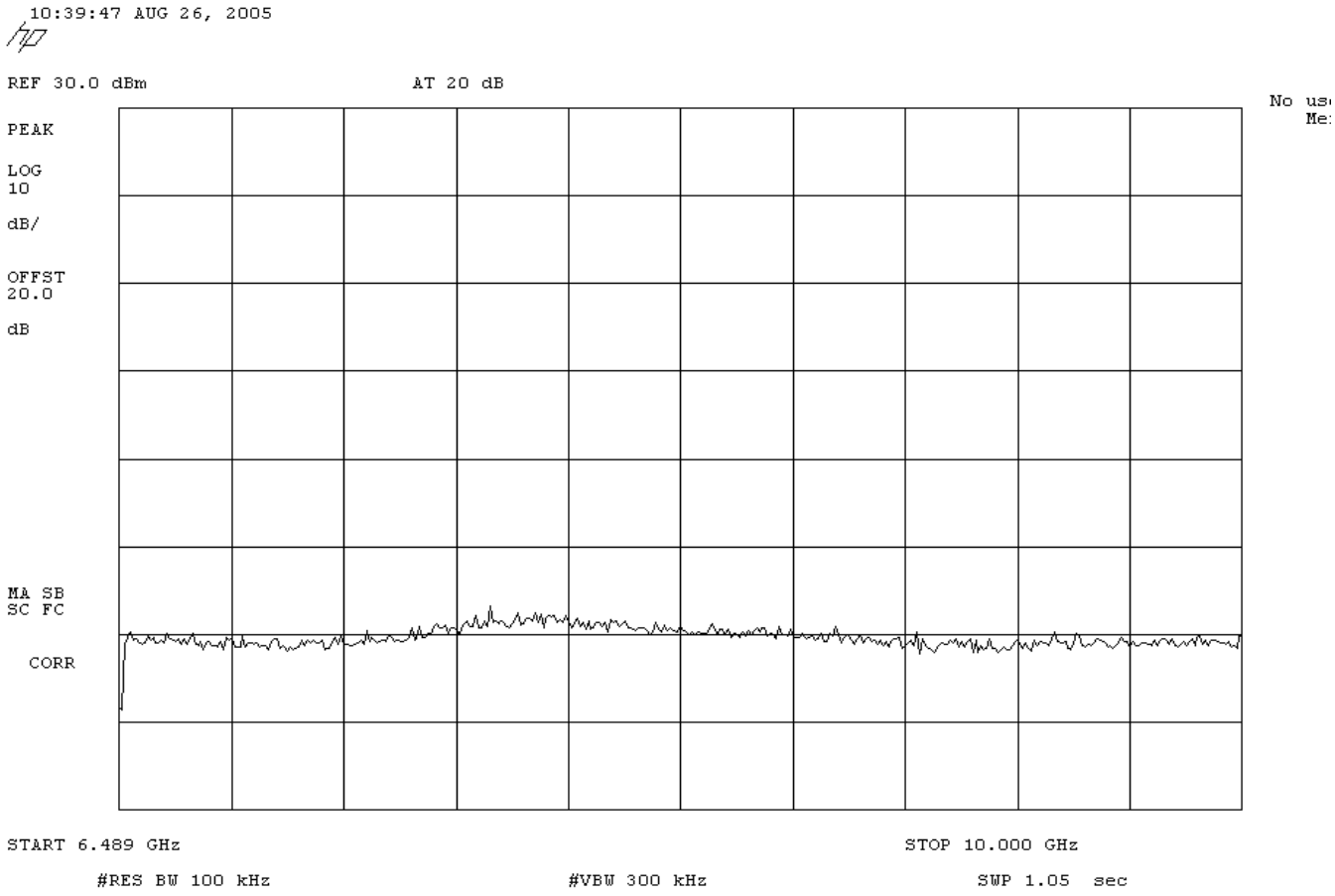
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Low Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

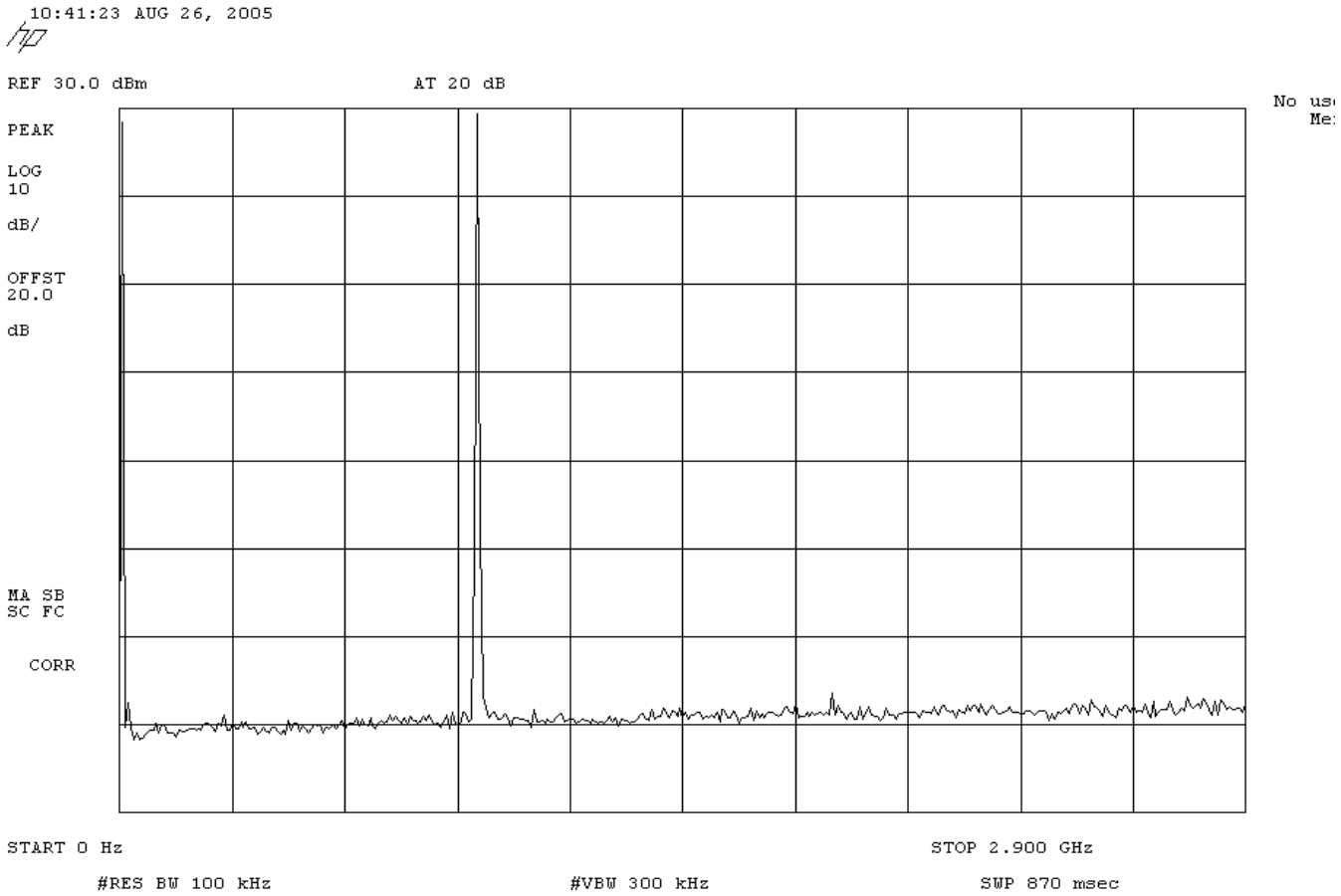
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

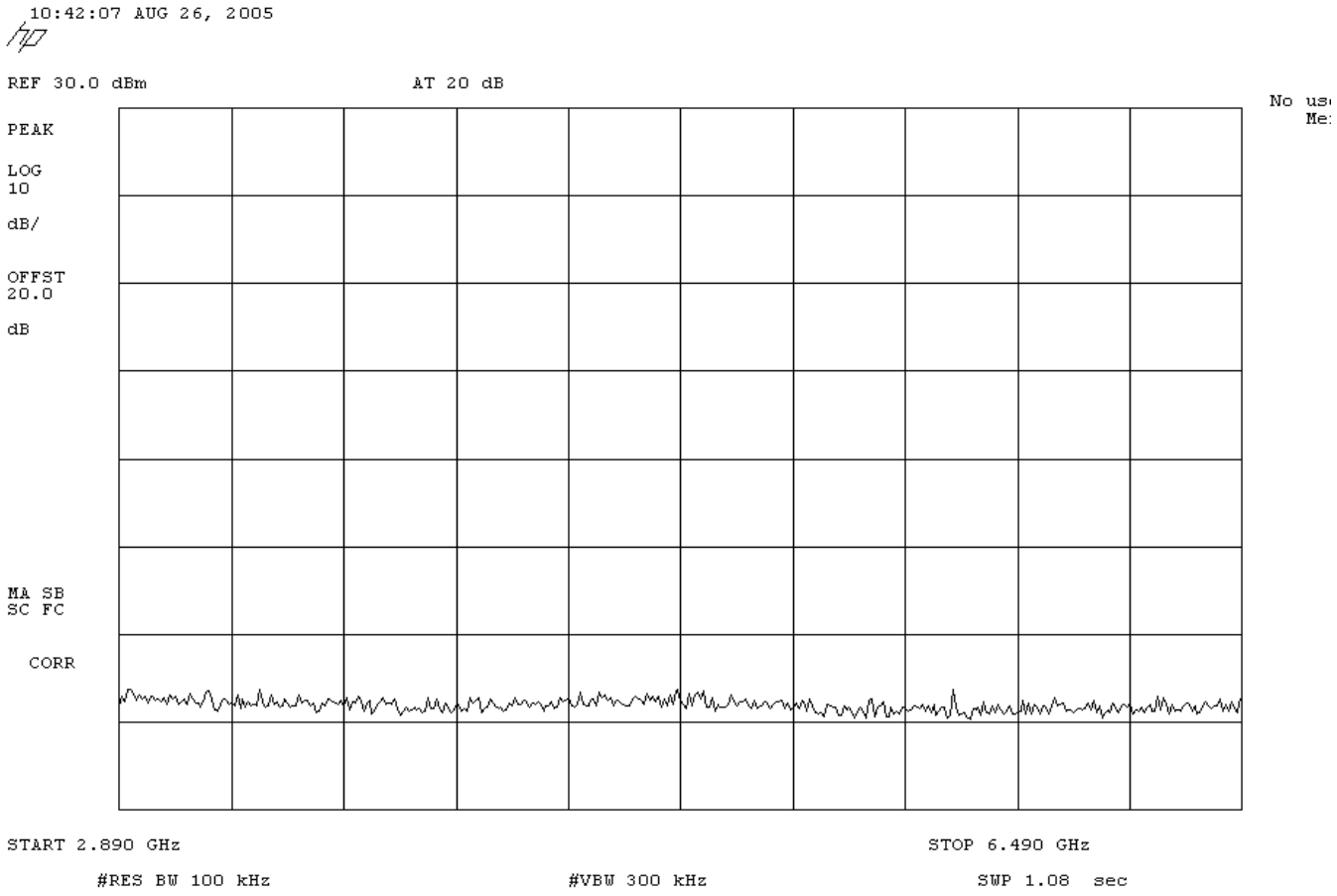
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

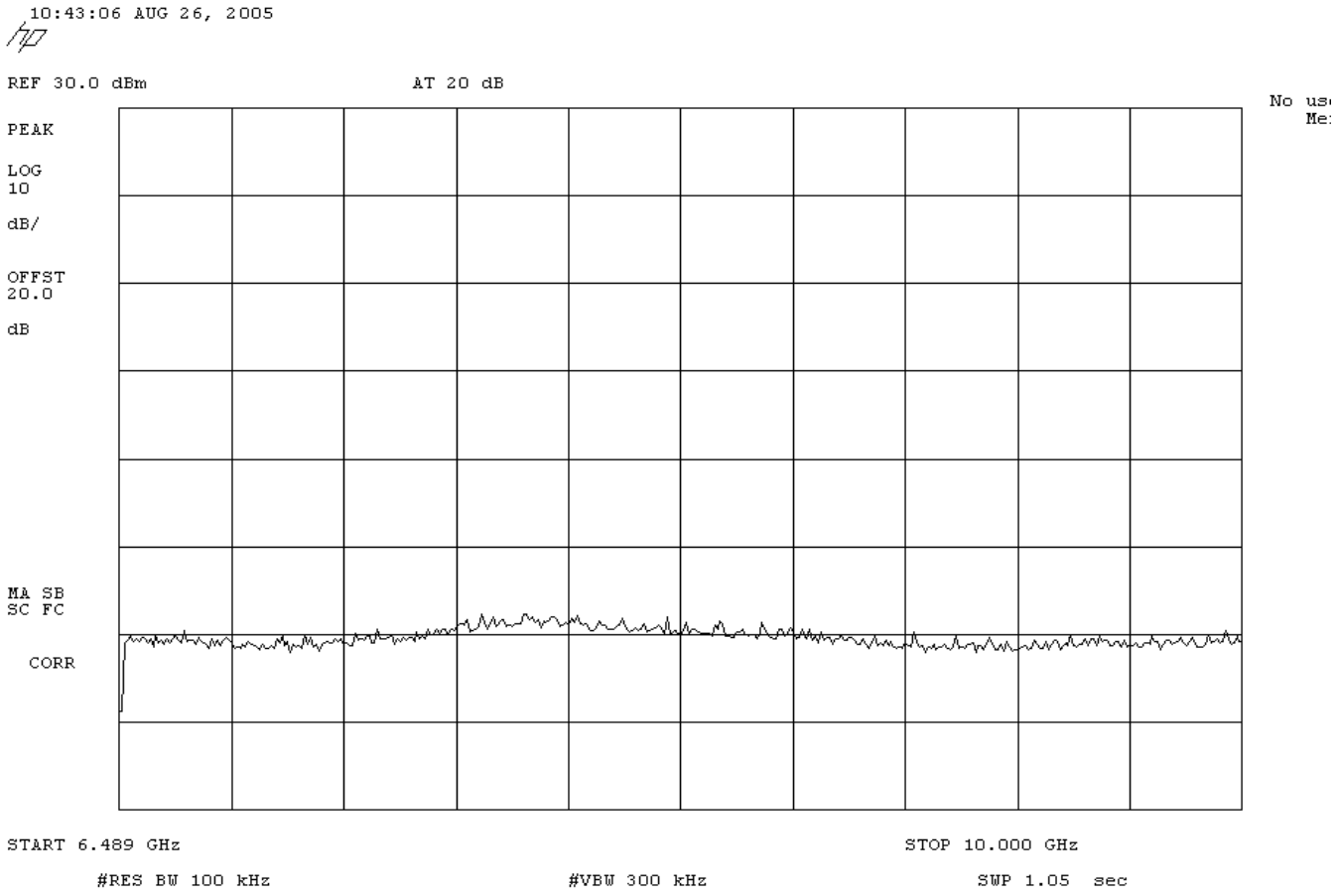
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - Mid Channel 6.5GHz-10GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

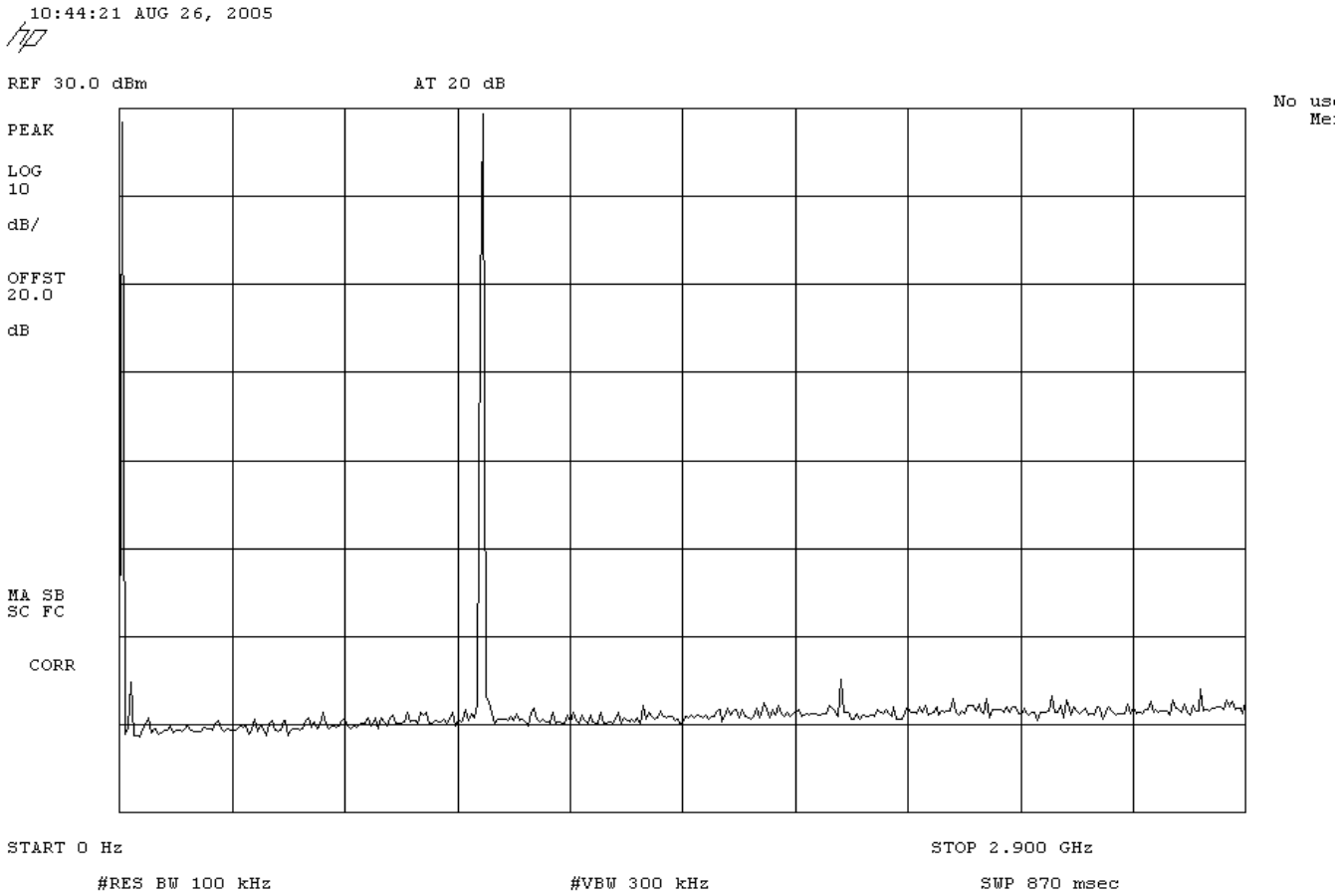
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 0MHz-3GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

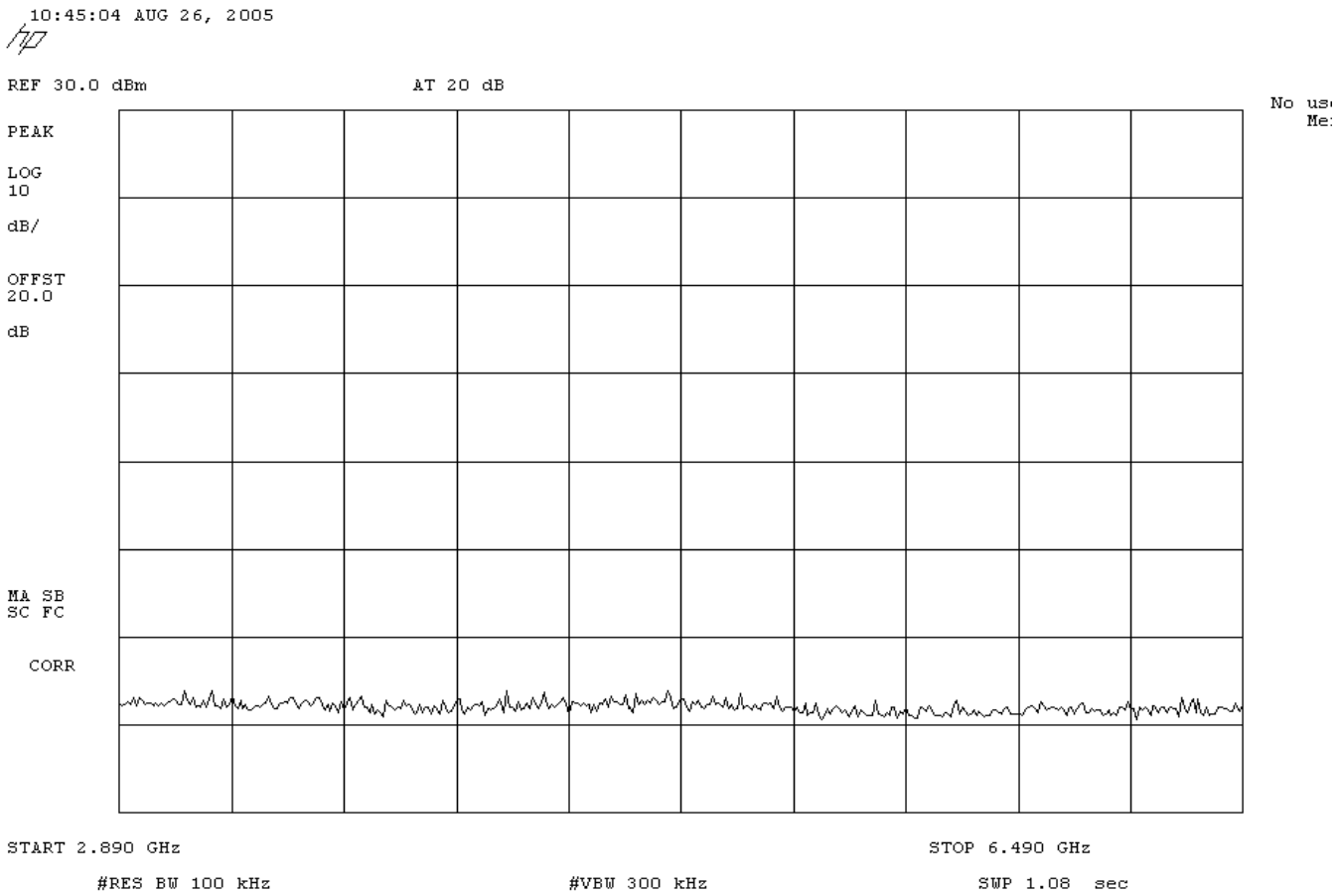
Pass

SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 3GHz-6.5GHz



NORTHWEST EMC

EMISSIONS DATA SHEET

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 SPECIFICATIONS

Specification:	47 CFR 15.247(d)	Year:	2005-04	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 outside of the authorized band is 20 dB down from the fundamental

RESULTS

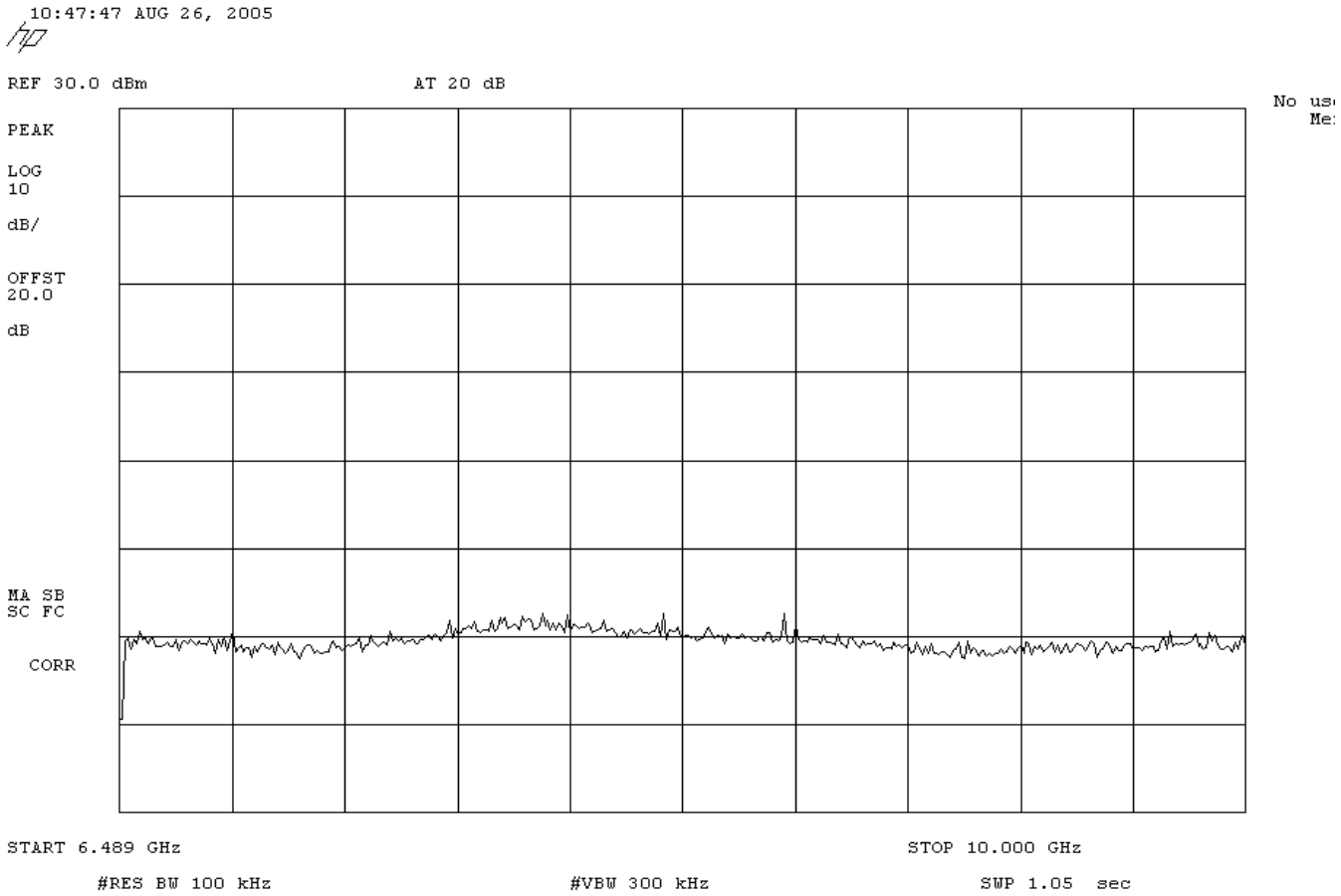
Pass

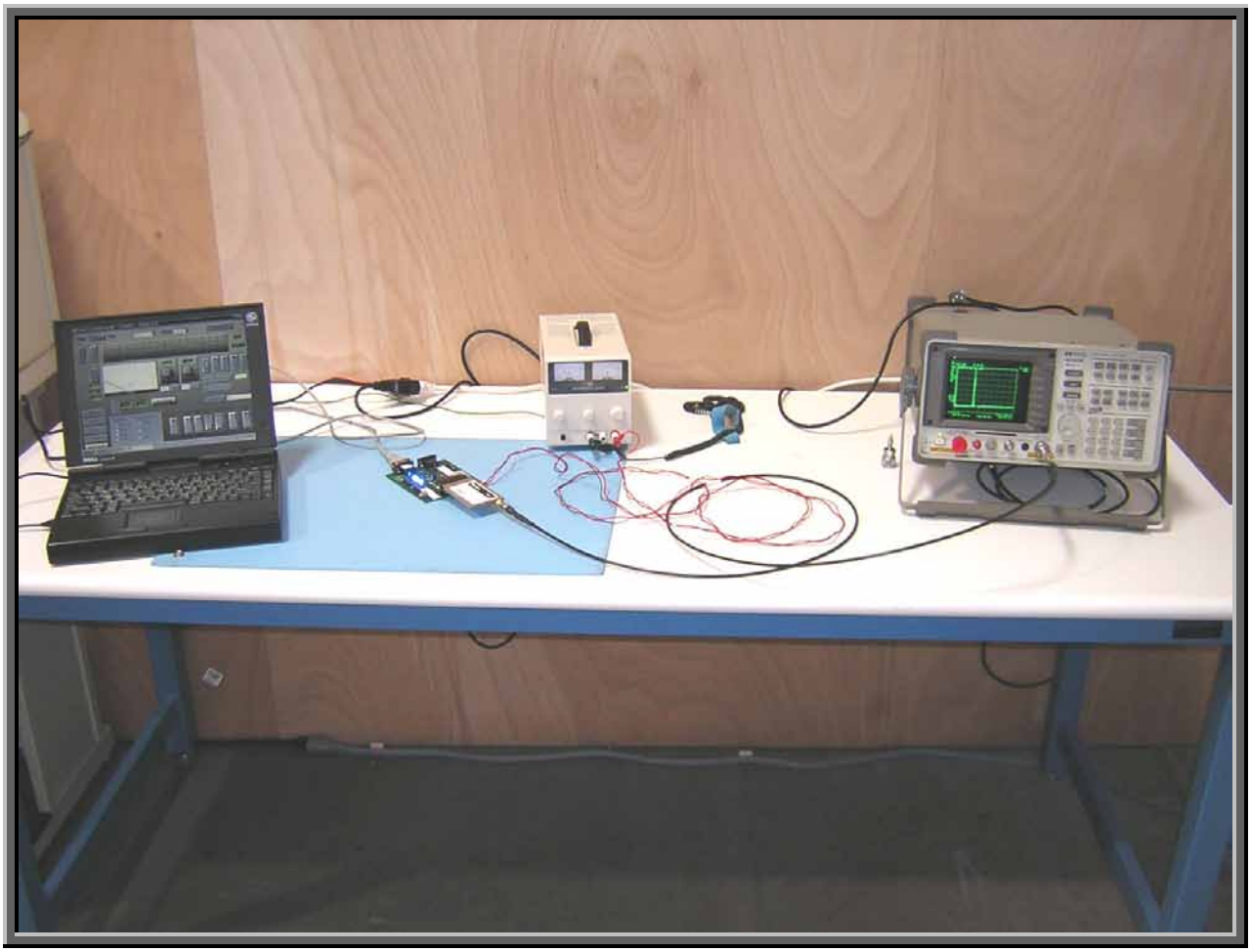
SIGNATURE

Tested By: _____

DESCRIPTION OF TEST

Antenna Conducted Spurious Emissions - High Channel 6.5GHz-10GHz





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
Input Power Setting used for Final Test:
120 VAC, 60 Hz

Frequency Range Investigated			
Start Frequency	30 MHz	**Stop Frequency**	1GHz

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

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

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

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Serial	Yes	2.0	No	Test Fixture	Notebook PC
DC Leads	PA	2.0	PA	Power Supply for Test Fixture	Test Fixture
AC Power	No	2.0	No	Power Supply for Test Fixture	AC Mains
DC Leads	No	1.6	No	Power Supply for Notebook PC	Notebook PC
AC Power	No	2.0	No	Power Supply for Notebook PC	AC Mains
PA = 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
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 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:

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.109(a) Class B:2005-04	ANSI C63.4:2003

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

COMMENTS

Mobile Mark PN10-915RCPI

EUT OPERATING MODES

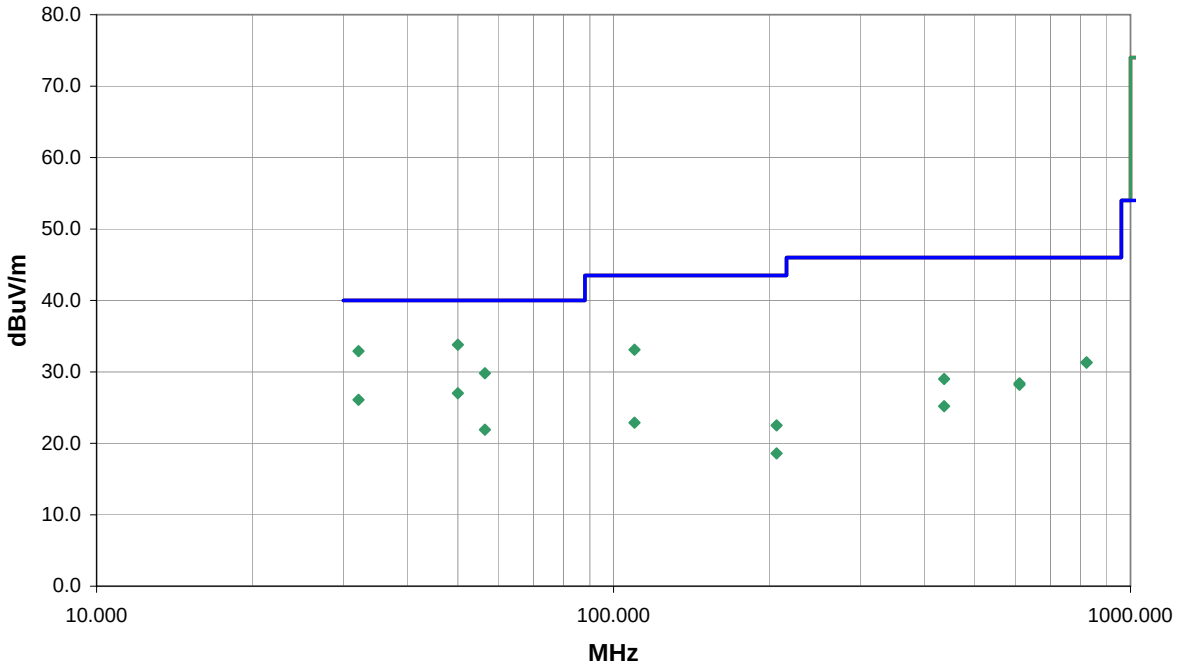
Receive Mode

DEVIATIONS FROM TEST STANDARD

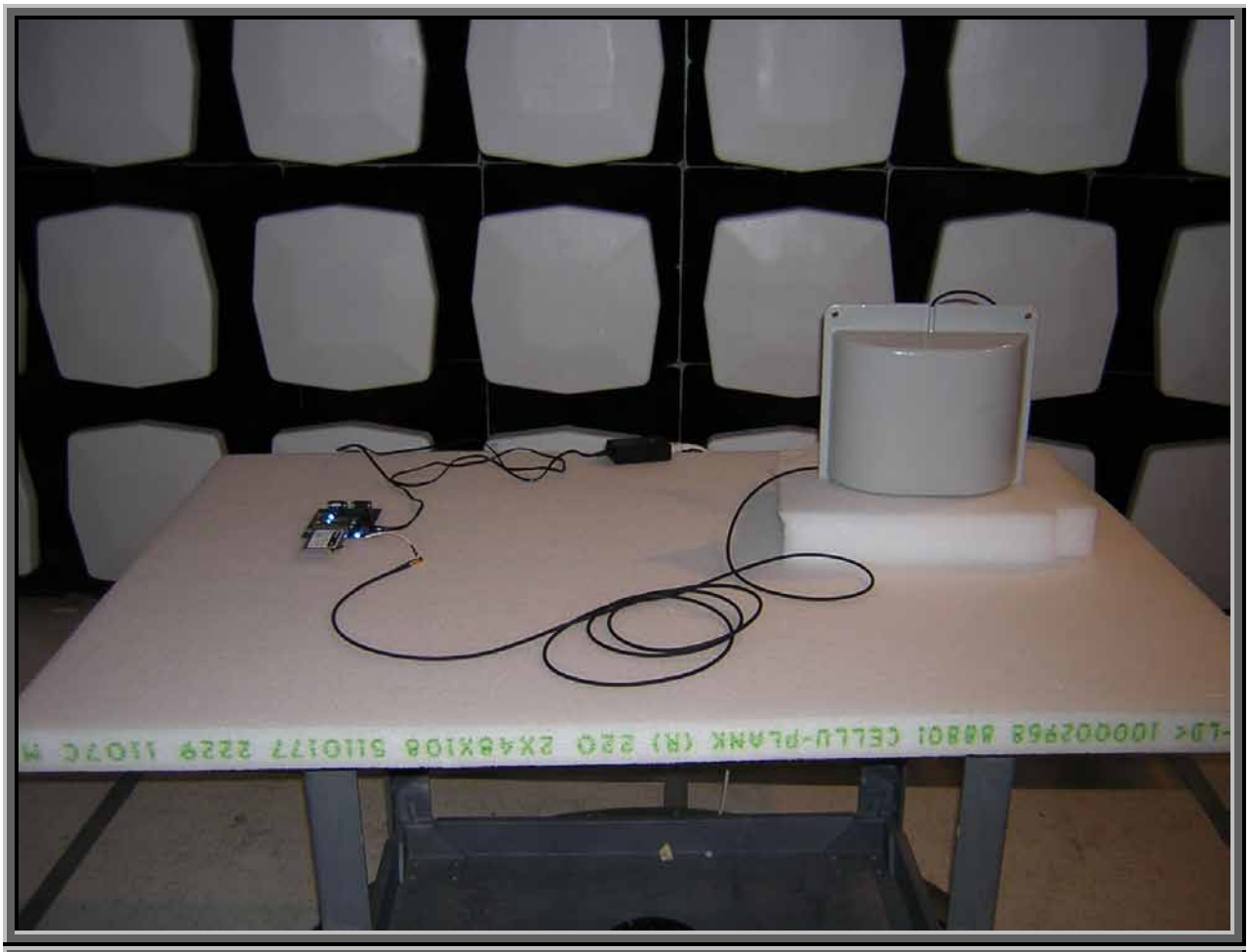
No deviations.

Run #	1
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
50.000	39.5	-5.7	278.0	1.0	3.0	0.0	V-Bilog	PK	0.0	33.8	40.0	-6.2
32.113	30.1	2.8	219.0	1.0	3.0	0.0	V-Bilog	PK	0.0	32.9	40.0	-7.1
56.400	36.6	-6.8	92.0	1.0	3.0	0.0	V-Bilog	PK	0.0	29.8	40.0	-10.2
109.820	39.4	-6.3	165.0	2.5	3.0	0.0	H-Bilog	PK	0.0	33.1	43.5	-10.4
50.000	32.7	-5.7	161.0	4.0	3.0	0.0	H-Bilog	PK	0.0	27.0	40.0	-13.0
32.113	23.3	2.8	65.0	1.0	3.0	0.0	H-Bilog	PK	0.0	26.1	40.0	-13.9
821.914	22.2	9.1	301.0	1.0	3.0	0.0	V-Bilog	PK	0.0	31.3	46.0	-14.7
821.914	22.2	9.1	118.0	1.0	3.0	0.0	H-Bilog	PK	0.0	31.3	46.0	-14.7
435.880	26.2	2.8	18.0	1.0	3.0	0.0	H-Bilog	PK	0.0	29.0	46.0	-17.0
609.710	21.7	6.7	69.0	2.6	3.0	0.0	H-Bilog	PK	0.0	28.4	46.0	-17.6
609.710	21.5	6.7	100.0	1.0	3.0	0.0	V-Bilog	PK	0.0	28.2	46.0	-17.8
56.400	28.7	-6.8	41.0	3.6	3.0	0.0	H-Bilog	PK	0.0	21.9	40.0	-18.1
109.820	29.2	-6.3	294.0	1.0	3.0	0.0	V-Bilog	PK	0.0	22.9	43.5	-20.6
435.880	22.4	2.8	275.0	1.0	3.0	0.0	V-Bilog	PK	0.0	25.2	46.0	-20.8
206.760	26.3	-3.8	205.0	1.5	3.0	0.0	H-Bilog	PK	0.0	22.5	43.5	-21.0
206.760	22.4	-3.8	252.0	1.0	3.0	0.0	V-Bilog	PK	0.0	18.6	43.5	-24.9



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. 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
Antenna1	Sinclair	SRL-441U	Unknown
Antenna2	Kathrein	25-578	Unknown
Antenna3	Radiall	ROS-915	Unknown
Antenna4	Mobile Mark	PN10-915RCPI	Unknown

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

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Serial	Yes	2.0	No	Test Fixture	Notebook PC
DC Leads	PA	2.0	PA	Power Supply for Test Fixture	Test Fixture
AC Power	No	2.0	No	Power Supply for Test Fixture	AC Mains
DC Leads	No	1.6	No	Power Supply for Notebook PC	Notebook PC
AC Power	No	2.0	No	Power Supply for Notebook PC	AC Mains
50Ohm Coax	Yes	3.0	No	RFID Reader (EUT)	Antenna
PA = Cable is 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
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

Test Description

Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: The highest gain of each type of antenna, 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 Measurements			
Frequency Range (MHz)	**Peak Data (kHz)**	**Quasi-Peak Data (kHz)**	**Average Data (kHz)**
0.01 – 0.15	1.0	0.2	0.2
0.15 – 30.0	10.0	9.0	9.0
30.0 – 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
Measurements were made using the bandwidths and detectors specified. No video filter was used.			

Completed by:

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523240			Date:	08/23/05
Customer:	Intermec Technologies Corporation			Temperature:	22
Attendees:	Scott Holub			Humidity:	48%
Project:	None			Barometric Pressure	28.97
Tested by:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Sinclair SRL-441U, X-axis

EUT OPERATING MODES

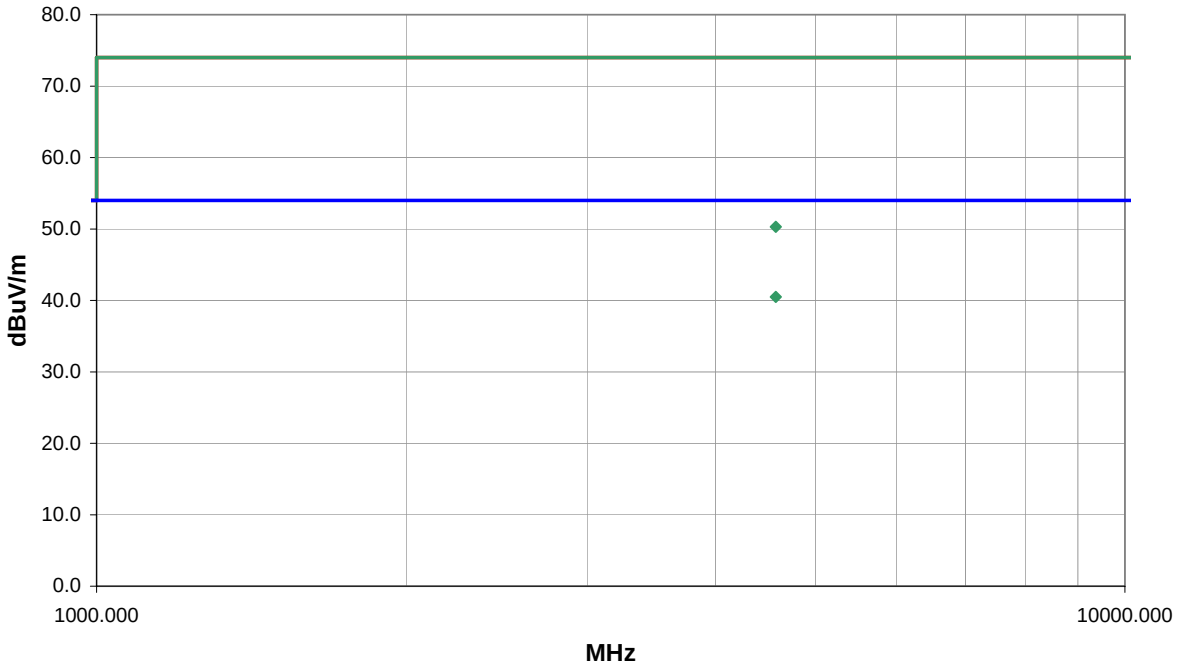
Mid 915.25, Data rate 40kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4576.250	35.2	5.3	85.0	1.0	3.0	0.0	H-Horn	AV	0.0	40.5	54.0	-13.5
4576.250	45.0	5.3	267.0	1.5	3.0	0.0	V-Horn	PK	0.0	50.3	74.0	-23.7

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Sinclair SRL-441U, X-axis

EUT OPERATING MODES

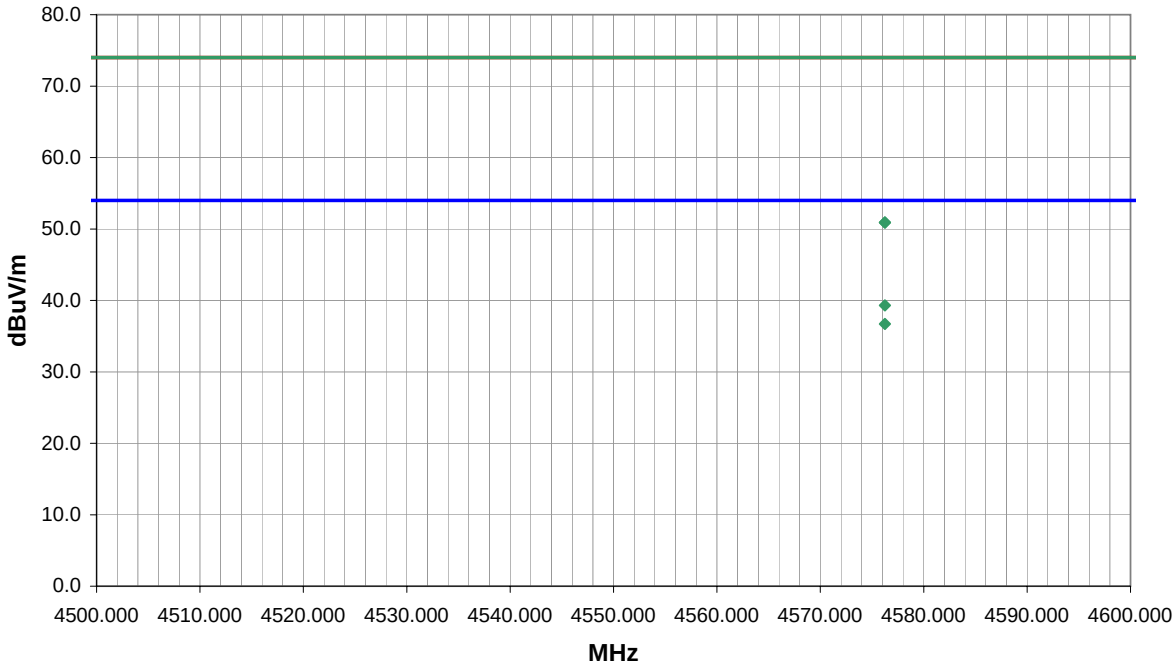
Mid 915.25, Data rate 38kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4576.250	34.0	5.3	107.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.3	54.0	-14.7
4576.250	31.4	5.3	247.0	1.5	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3
4576.250	45.6	5.3	107.0	1.0	3.0	0.0	H-Horn	PK	0.0	50.9	74.0	-23.1
4576.250	45.6	5.3	247.0	1.5	3.0	0.0	V-Horn	PK	0.0	50.9	74.0	-23.1

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Sinclair SRL-441U. Antenna at X-axis.

EUT OPERATING MODES

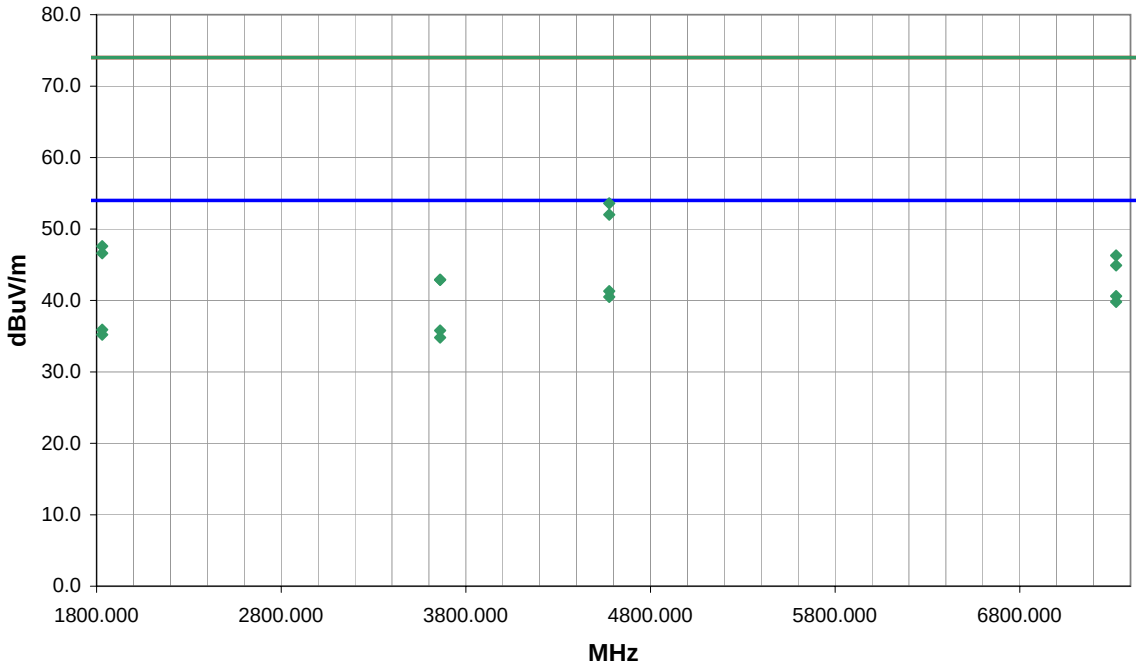
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	8
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4576.255	36.0	5.3	103.0	1.0	3.0	0.0	H-Horn	AV	0.0	41.3	54.0	-12.7
7322.010	29.1	11.5	76.0	1.9	3.0	0.0	H-Horn	AV	0.0	40.6	54.0	-13.4
4576.255	35.2	5.3	249.0	1.0	3.0	0.0	V-Horn	AV	0.0	40.5	54.0	-13.5
7322.010	28.3	11.5	329.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.8	54.0	-14.2
1830.450	38.5	-2.6	37.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.9	54.0	-18.1
3661.000	32.1	3.7	355.0	1.4	3.0	0.0	V-Horn	AV	0.0	35.8	54.0	-18.2
1830.450	37.8	-2.6	16.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.2	54.0	-18.8
3661.000	31.1	3.7	304.0	1.0	3.0	0.0	H-Horn	AV	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	PK	0.0	52.0	74.0	-22.0
1830.450	50.2	-2.6	16.0	1.0	3.0	0.0	H-Horn	PK	0.0	47.6	74.0	-26.4
1830.450	49.2	-2.6	37.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.6	74.0	-27.4
7322.010	34.8	11.5	76.0	1.9	3.0	0.0	H-Horn	PK	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	0.0	44.9	74.0	-29.1
3661.000	39.2	3.7	304.0	1.0	3.0	0.0	H-Horn	PK	0.0	42.9	74.0	-31.1
3661.000	39.2	3.7	355.0	1.4	3.0	0.0	V-Horn	PK	0.0	42.9	74.0	-31.1

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523240			Date:	08/23/05
Customer:	Intermec Technologies Corporation			Temperature:	22
Attendees:	Scott Holub			Humidity:	48%
Project:	None			Barometric Pressure	28.97
Tested by:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

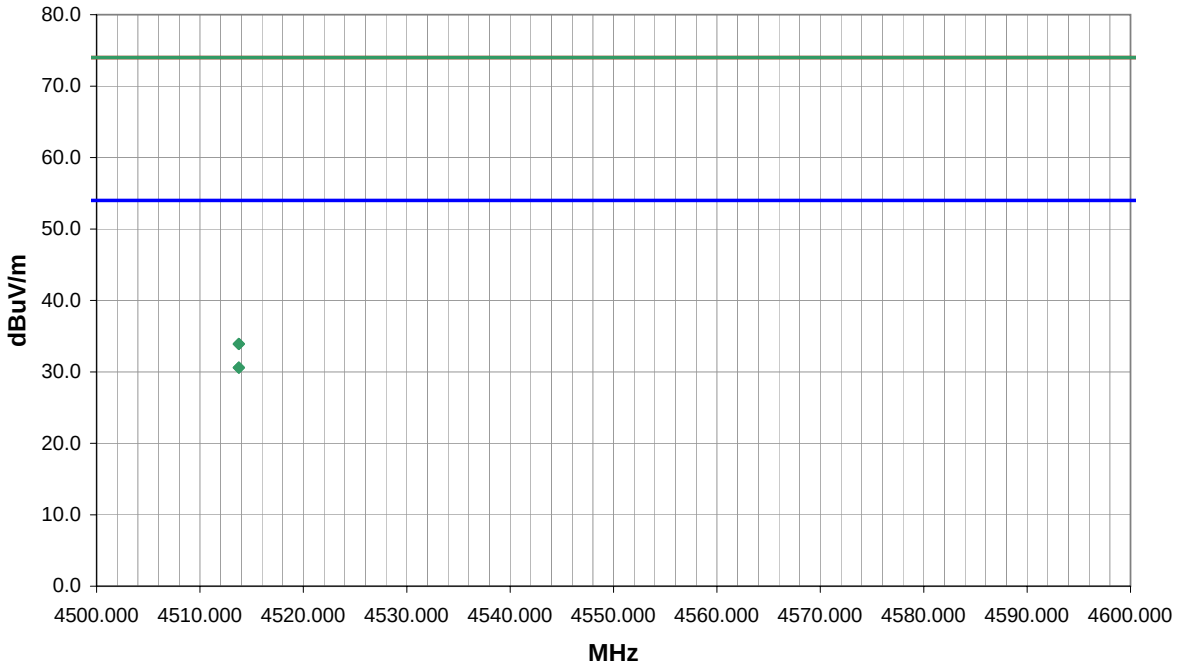
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4513.750	25.5	5.1	275.0	1.0	3.0	0.0	H-Horn	AV	0.0	30.6	54.0	-23.4
4513.750	25.5	5.1	208.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.6	54.0	-23.4
4513.750	28.8	5.1	275.0	1.0	3.0	0.0	H-Horn	PK	0.0	33.9	74.0	-40.1
4513.750	28.8	5.1	208.0	1.0	3.0	0.0	V-Horn	PK	0.0	33.9	74.0	-40.1

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

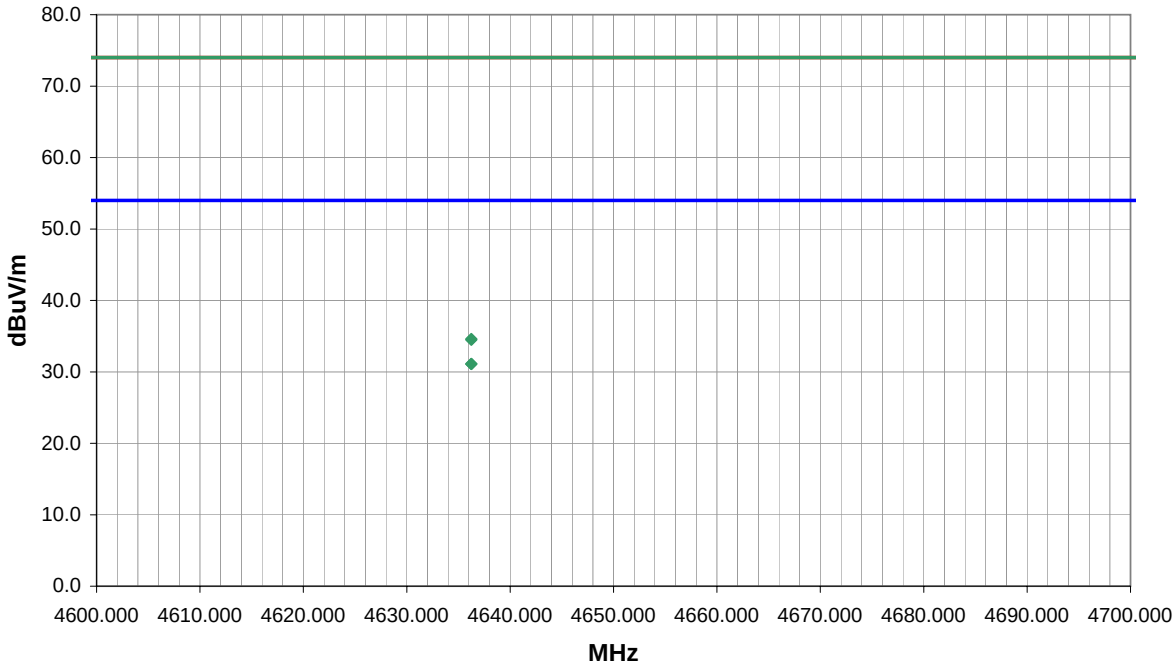
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4636.250	25.7	5.4	220.0	1.0	3.0	0.0	H-Horn	AV	0.0	31.1	54.0	-22.9
4636.250	25.7	5.4	234.0	2.3	3.0	0.0	V-Horn	AV	0.0	31.1	54.0	-22.9
4636.250	29.2	5.4	220.0	1.0	3.0	0.0	H-Horn	PK	0.0	34.6	74.0	-39.4
4636.250	29.1	5.4	234.0	2.3	3.0	0.0	V-Horn	PK	0.0	34.5	74.0	-39.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

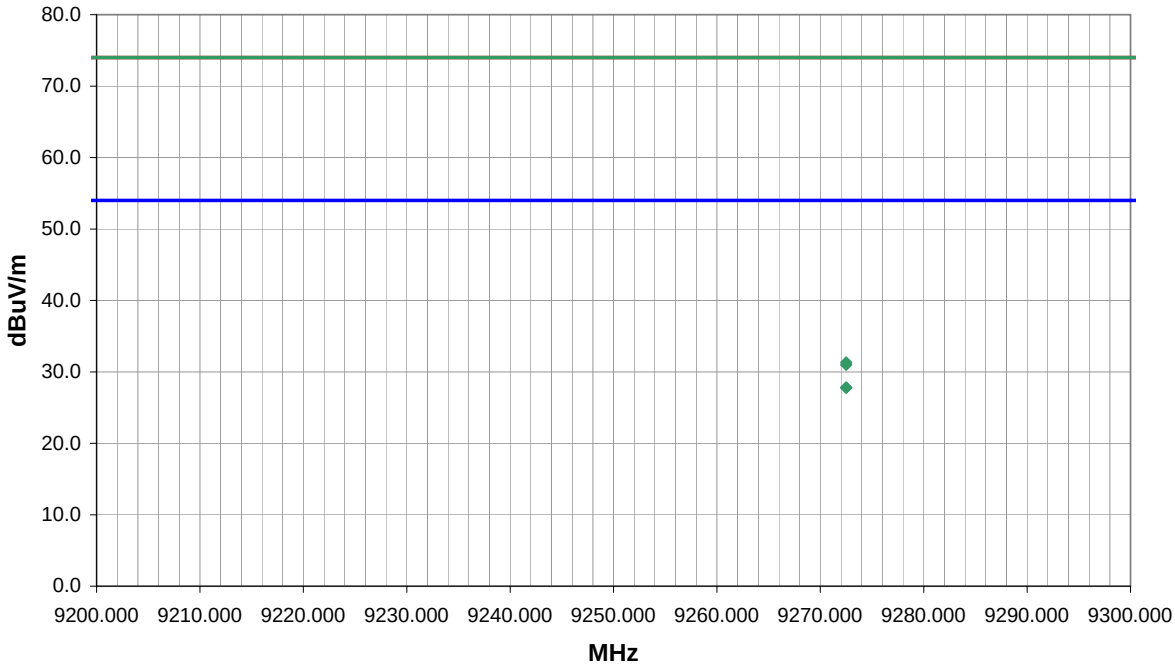
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	
Results	Pass

Signature



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

NORTHWEST
EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			**Work Order:**	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

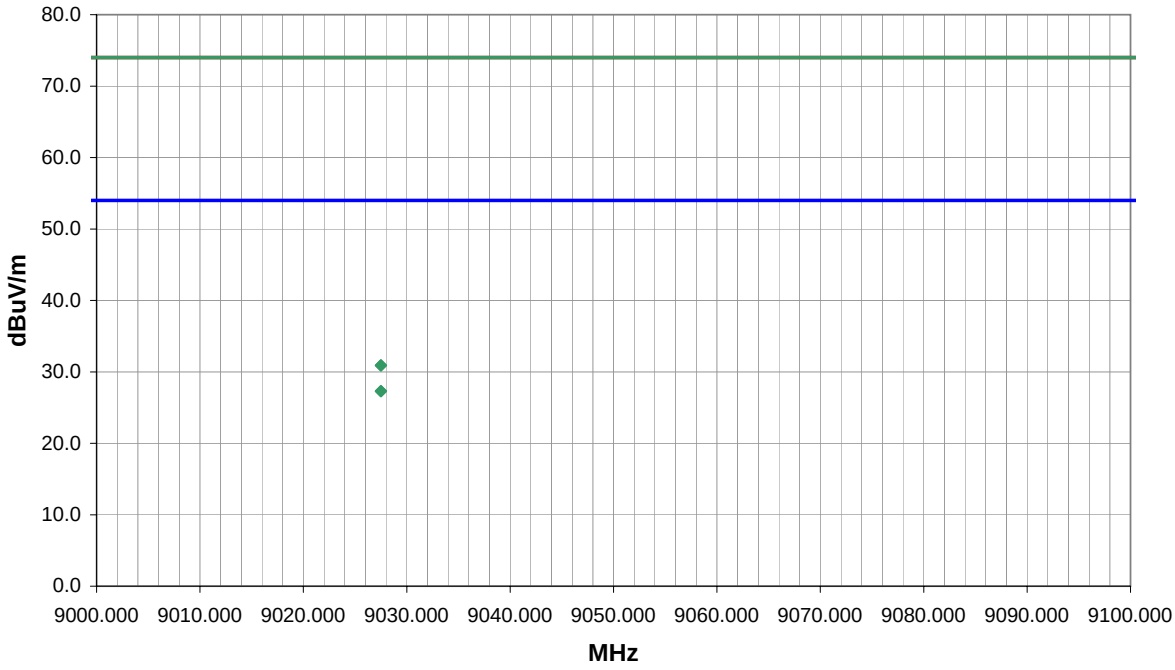
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9027.500	35.1	-7.8	287.0	3.1	3.0	0.0	H-Horn	AV	0.0	27.3	54.0	-26.7
9027.500	35.1	-7.8	249.0	3.8	3.0	0.0	V-Horn	AV	0.0	27.3	54.0	-26.7
9027.500	38.7	-7.8	287.0	3.1	3.0	0.0	H-Horn	PK	0.0	30.9	74.0	-43.1
9027.500	38.7	-7.8	249.0	3.8	3.0	0.0	V-Horn	PK	0.0	30.9	74.0	-43.1

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

TEST PARAMETERS

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

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

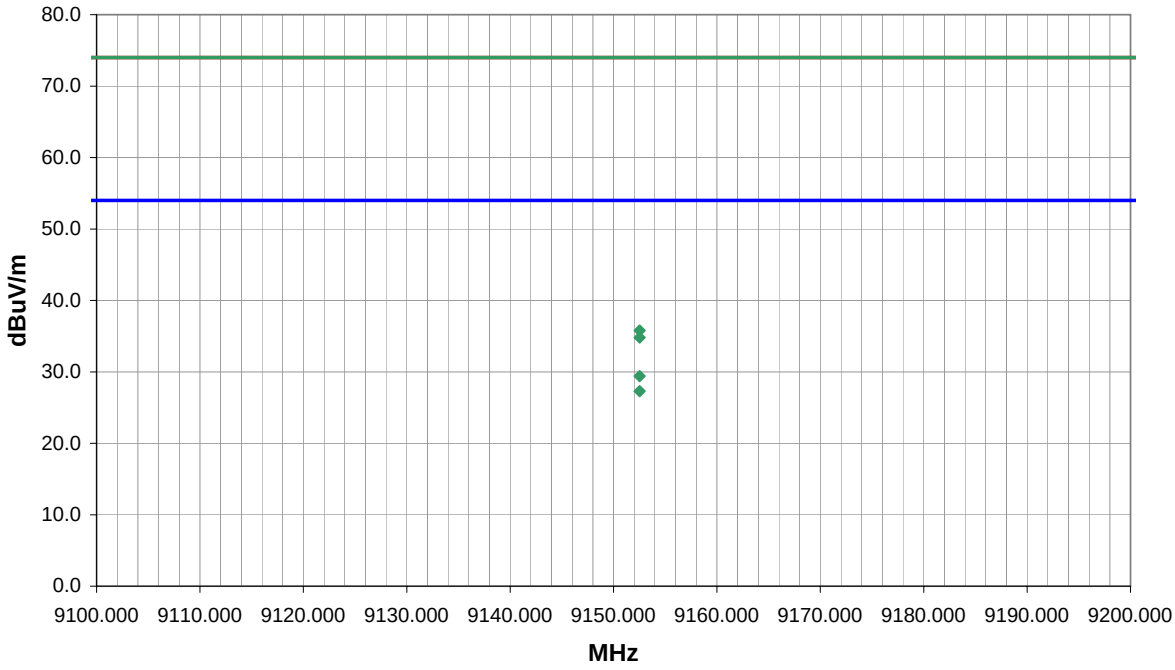
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.515	37.1	-7.7	210.0	1.0	3.0	0.0	V-Horn	AV	0.0	29.4	54.0	-24.6
9152.515	35.0	-7.7	348.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.3	54.0	-26.7
9152.515	43.5	-7.7	210.0	1.0	3.0	0.0	V-Horn	PK	0.0	35.8	74.0	-38.2
9152.515	42.5	-7.7	348.0	1.0	3.0	0.0	H-Horn	PK	0.0	34.8	74.0	-39.2

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Kathrein 25-578 LP

EUT OPERATING MODES

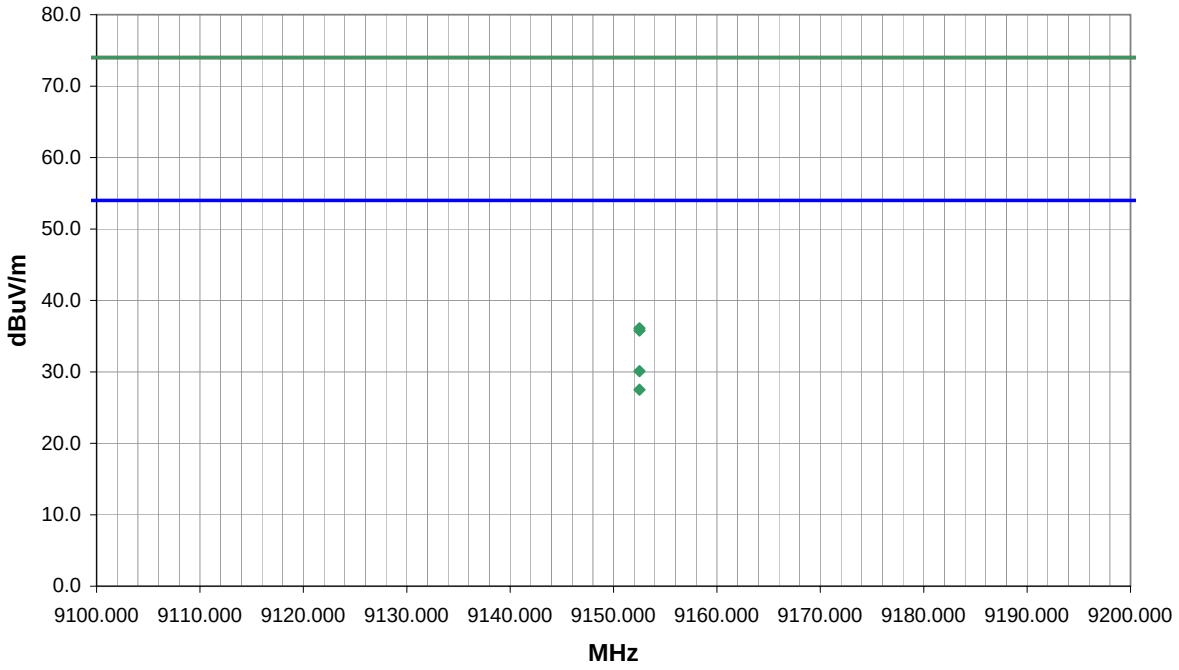
Mid 915.25, Data rate 38kBs

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.500	37.8	-7.7	106.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.1	54.0	-23.9
9152.500	35.2	-7.7	83.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.5	54.0	-26.5
9152.500	43.8	-7.7	106.0	1.0	3.0	0.0	V-Horn	PK	0.0	36.1	74.0	-37.9
9152.500	43.5	-7.7	83.0	1.0	3.0	0.0	H-Horn	PK	0.0	35.8	74.0	-38.2

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
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 SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

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

COMMENTS

Kathrein 25-578 LP

EUT OPERATING MODES

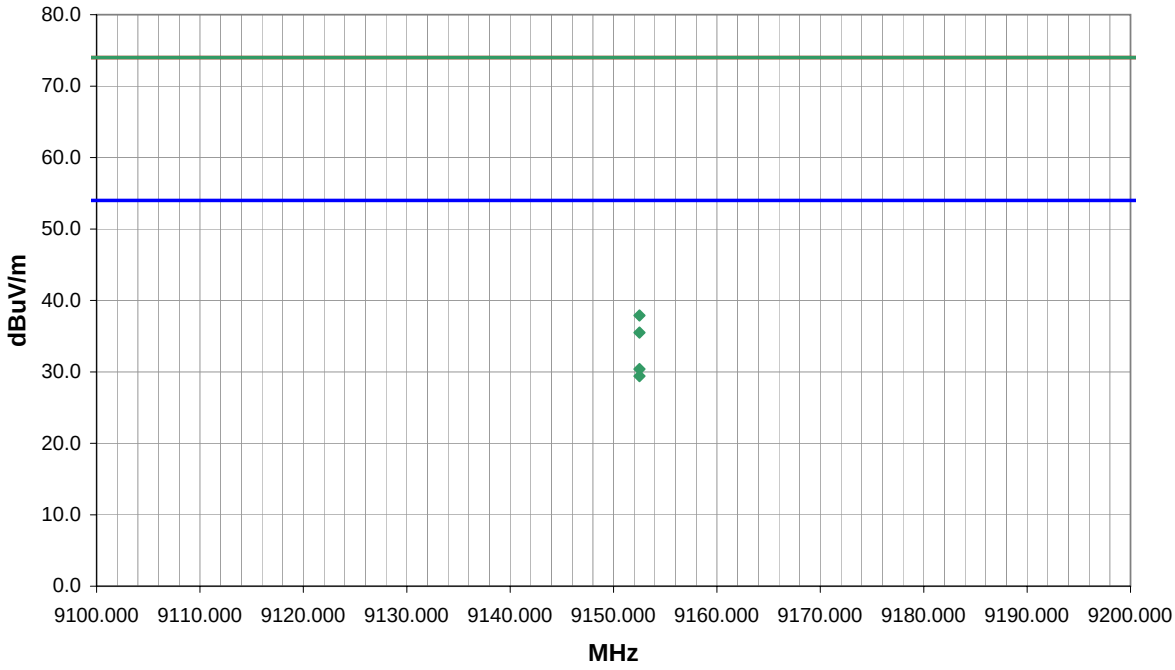
Mid 915.25, Data rate 40kBs

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.500	38.1	-7.7	217.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.4	54.0	-23.6
9152.500	37.1	-7.7	87.0	1.0	3.0	0.0	H-Horn	AV	0.0	29.4	54.0	-24.6
9152.500	45.6	-7.7	217.0	1.0	3.0	0.0	V-Horn	PK	0.0	37.9	74.0	-36.1
9152.500	43.2	-7.7	87.0	1.0	3.0	0.0	H-Horn	PK	0.0	35.5	74.0	-38.5

NORTHWEST
EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	**Power:**	120VAC/60Hz	**Job Site:**	OC10

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

TEST PARAMETERS

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

COMMENTS

Radiall ROS-915, Y-axis

EUT OPERATING MODES

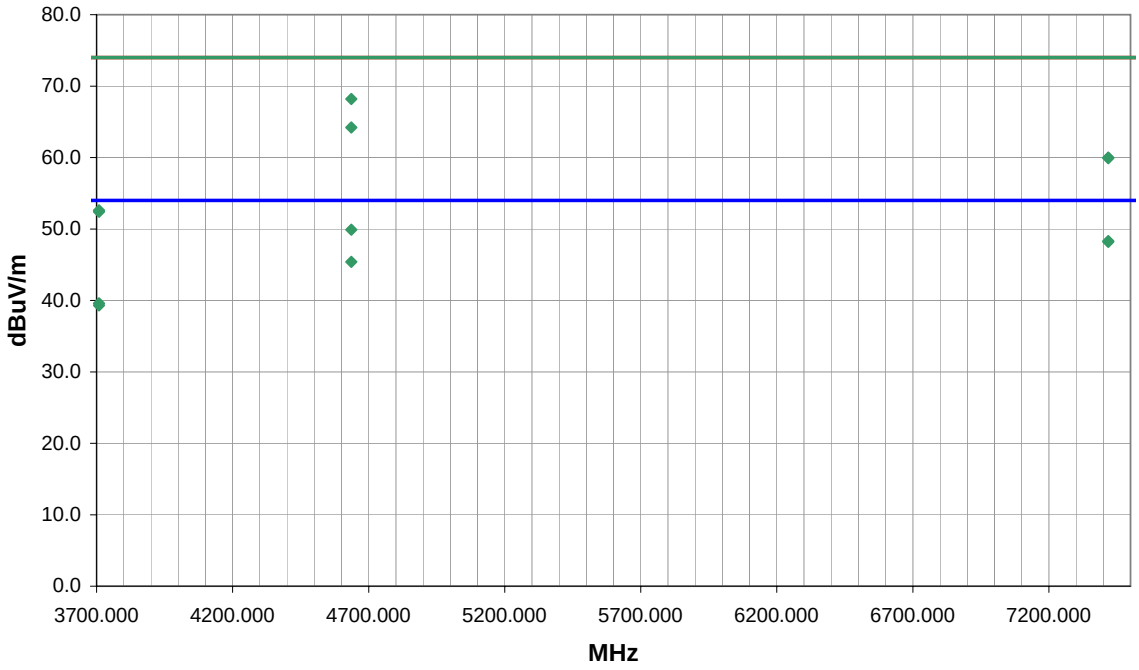
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	17
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4636.250	44.5	5.4	18.0	1.9	3.0	0.0	H-Horn	AV	0.0	49.9	54.0	-4.1
7418.000	36.4	11.9	91.0	1.5	3.0	0.0	V-Horn	AV	0.0	48.3	54.0	-5.7
7418.000	36.3	11.9	35.0	1.0	3.0	0.0	H-Horn	AV	0.0	48.2	54.0	-5.8
4636.250	62.8	5.4	18.0	1.9	3.0	0.0	H-Horn	PK	0.0	68.2	74.0	-5.8
4636.250	40.0	5.4	357.0	2.5	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6
4636.250	58.8	5.4	357.0	2.5	3.0	0.0	V-Horn	PK	0.0	64.2	74.0	-9.8
7418.000	48.1	11.9	35.0	1.0	3.0	0.0	H-Horn	PK	0.0	60.0	74.0	-14.0
7418.000	48.0	11.9	91.0	1.5	3.0	0.0	V-Horn	PK	0.0	59.9	74.0	-14.1
3709.000	35.8	3.8	28.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.6	54.0	-14.4
3709.000	35.5	3.8	257.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.3	54.0	-14.7
3709.000	48.8	3.8	28.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.6	74.0	-21.4
3709.000	48.6	3.8	257.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.4	74.0	-21.6

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Radiall ROS-915, Y-axis

EUT OPERATING MODES

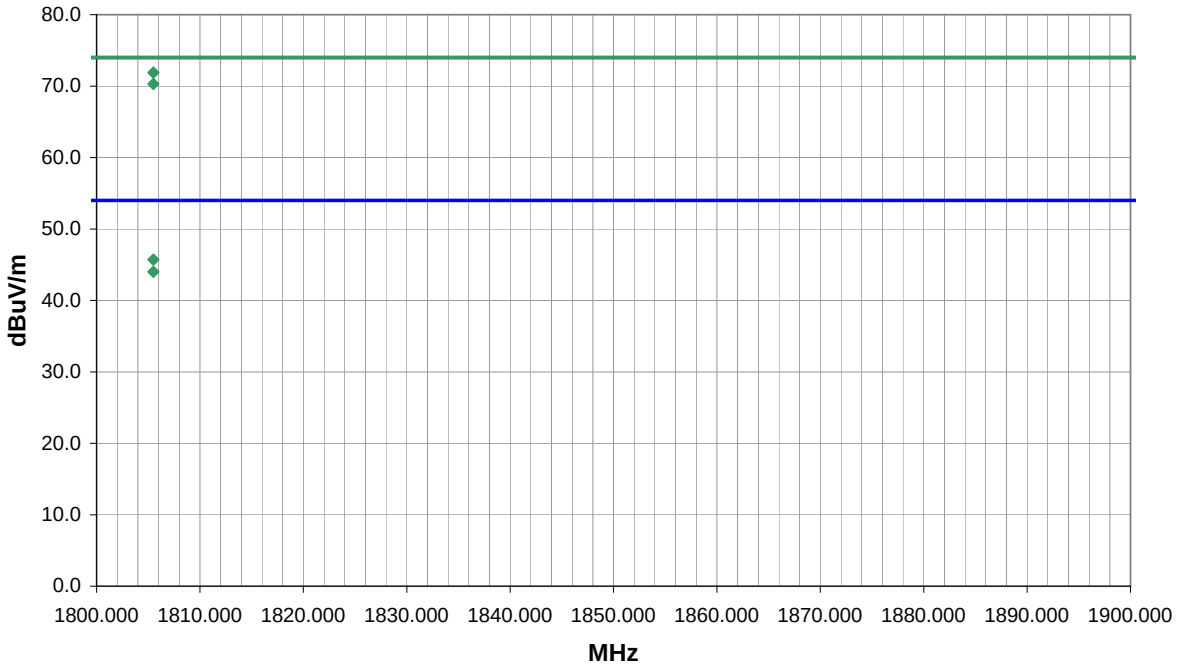
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	18
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
1805.500	74.6	-2.7	170.0	1.5	3.0	0.0	H-Horn	PK	0.0	71.9	74.0	-2.1
1805.500	73.0	-2.7	201.0	1.6	3.0	0.0	V-Horn	PK	0.0	70.3	74.0	-3.7
1805.500	48.4	-2.7	170.0	1.5	3.0	0.0	H-Horn	AV	0.0	45.7	54.0	-8.3
1805.500	46.7	-2.7	201.0	1.6	3.0	0.0	V-Horn	AV	0.0	44.0	54.0	-10.0

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Radiall ROS-915, Y-axis

EUT OPERATING MODES

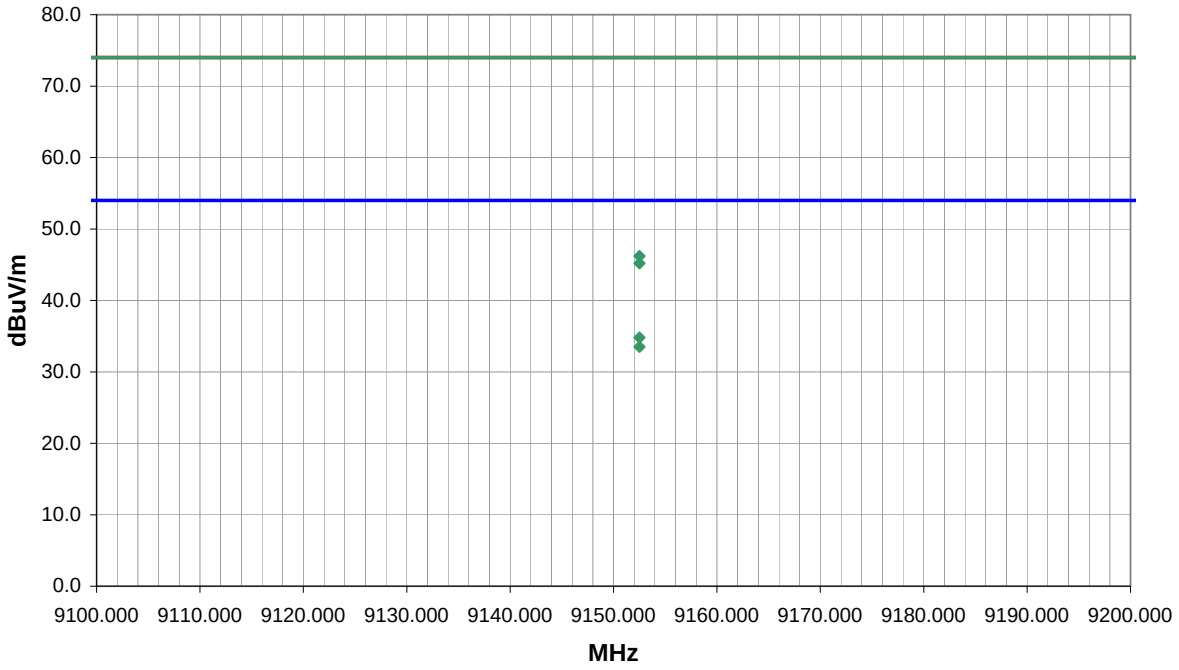
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	19
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.500	42.5	-7.7	338.0	1.0	3.0	0.0	H-Horn	AV	0.0	34.8	54.0	-19.2
9152.500	41.2	-7.7	103.0	1.0	3.0	0.0	V-Horn	AV	0.0	33.5	54.0	-20.5
9152.500	53.9	-7.7	338.0	1.0	3.0	0.0	H-Horn	PK	0.0	46.2	74.0	-27.8
9152.500	52.9	-7.7	103.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.2	74.0	-28.8

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Radiall ROS-915, Y-axis

EUT OPERATING MODES

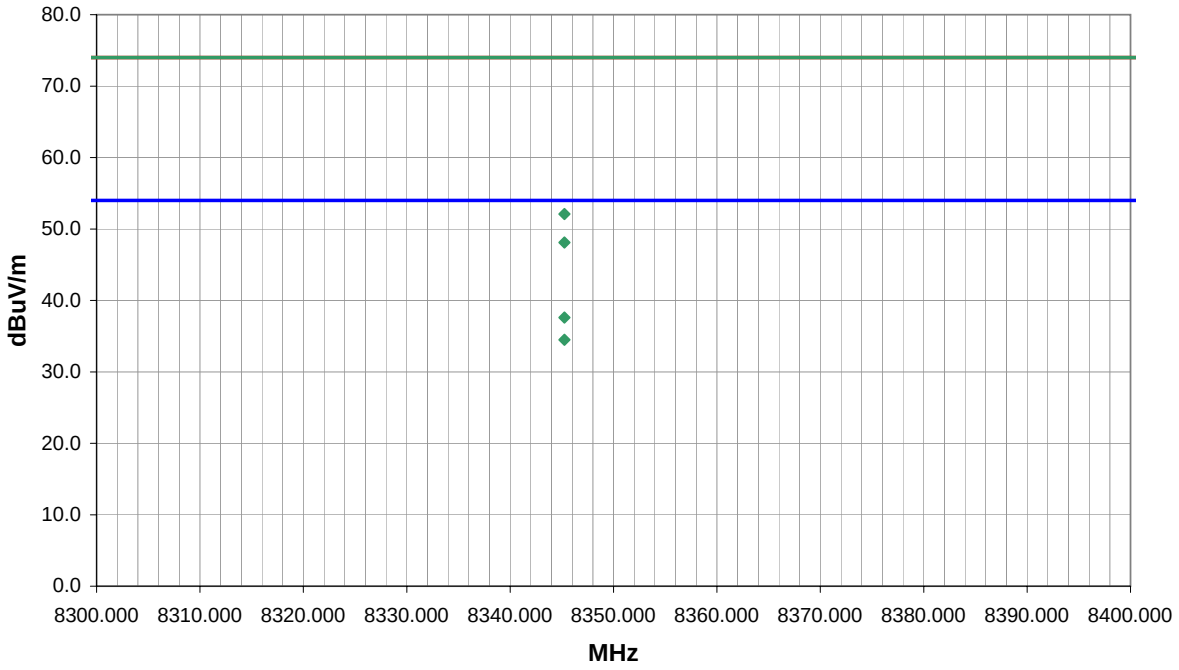
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	20
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
8345.250	46.3	-8.7	338.0	1.0	3.0	0.0	H-Horn	AV	0.0	37.6	54.0	-16.4
8345.250	43.2	-8.7	149.0	1.0	3.0	0.0	V-Horn	AV	0.0	34.5	54.0	-19.5
8345.250	60.8	-8.7	338.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.1	74.0	-21.9
8345.250	56.8	-8.7	149.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.1	74.0	-25.9

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Sinclair SRL-441U, X-axis

EUT OPERATING MODES

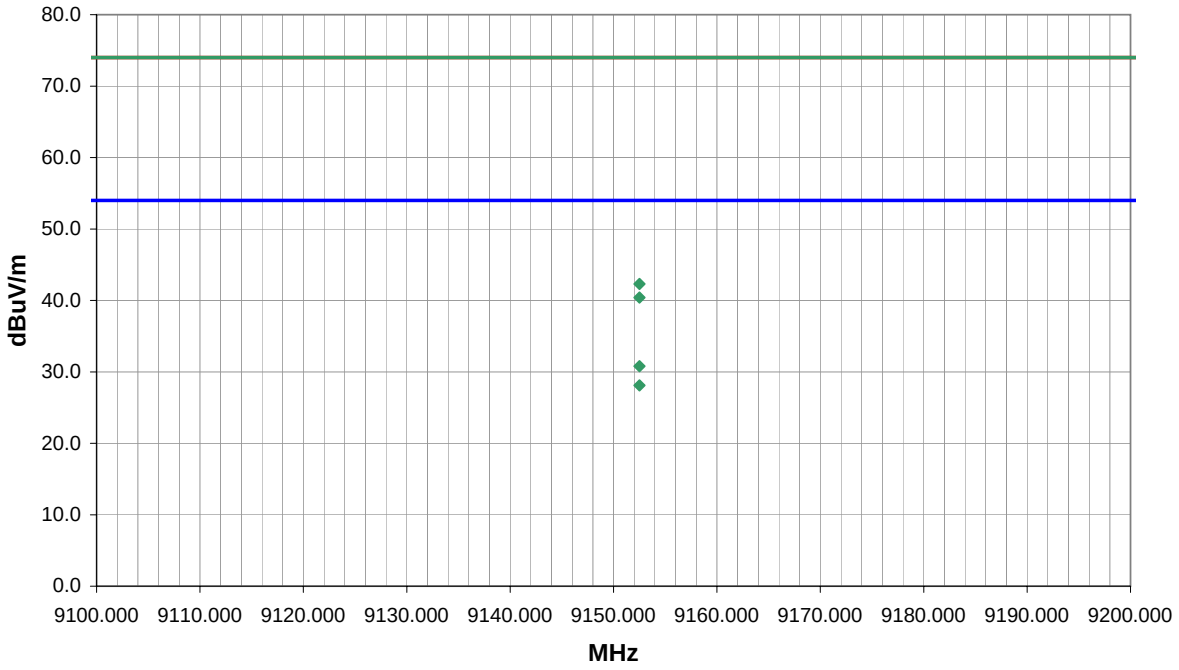
Mid 915.25, Data rate 38kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	21
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.500	38.5	-7.7	109.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.8	54.0	-23.2
9152.500	35.8	-7.7	257.0	1.0	3.0	0.0	H-Horn	AV	0.0	28.1	54.0	-25.9
9152.500	50.0	-7.7	109.0	1.0	3.0	0.0	V-Horn	PK	0.0	42.3	74.0	-31.7
9152.500	48.1	-7.7	257.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.4	74.0	-33.6

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Sinclair SRL-441U, X-axis

EUT OPERATING MODES

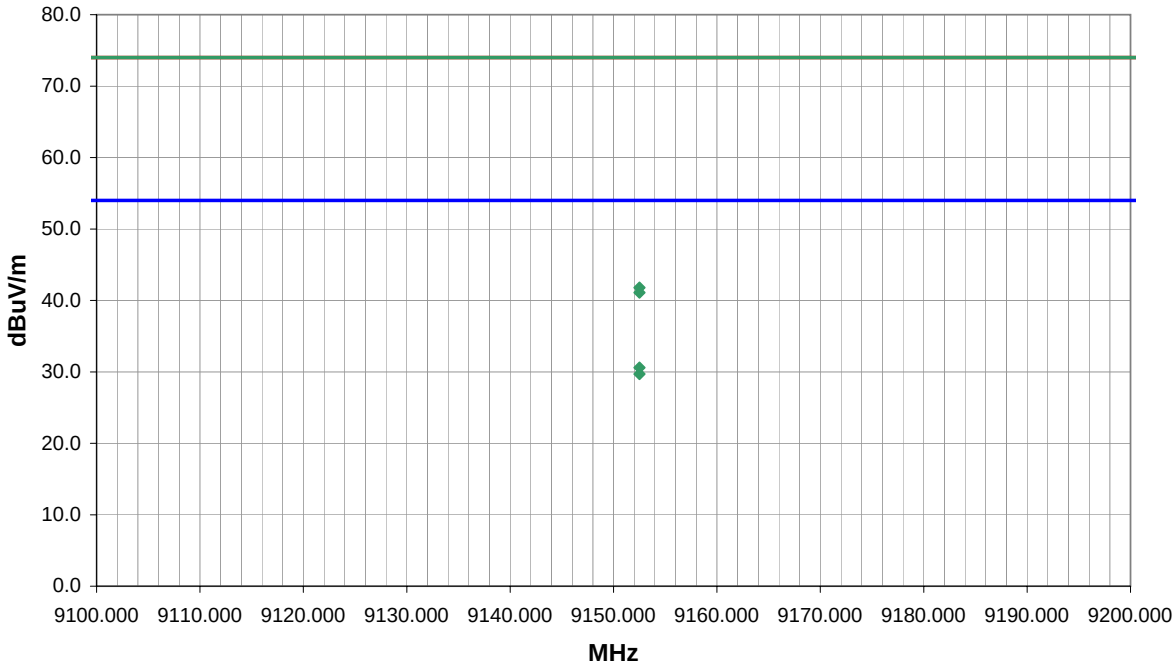
Mid 915.25, Data rate 40kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	22
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9152.500	38.3	-7.7	111.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.6	54.0	-23.4
9152.500	37.4	-7.7	281.0	1.0	3.0	0.0	H-Horn	AV	0.0	29.7	54.0	-24.3
9152.500	49.5	-7.7	111.0	1.0	3.0	0.0	V-Horn	PK	0.0	41.8	74.0	-32.2
9152.500	48.8	-7.7	281.0	1.0	3.0	0.0	H-Horn	PK	0.0	41.1	74.0	-32.9

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			Work Order:	ITRM0098
Serial Number:	19510523240			Date:	08/24/05
Customer:	Intermec Technologies Corporation			Temperature:	22
Attendees:	Scott Holub			Humidity:	48%
Project:	None			Barometric Pressure	28.97
Tested by:	Jeremiah Darden	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Kathrein 25-578, X-axis

EUT OPERATING MODES

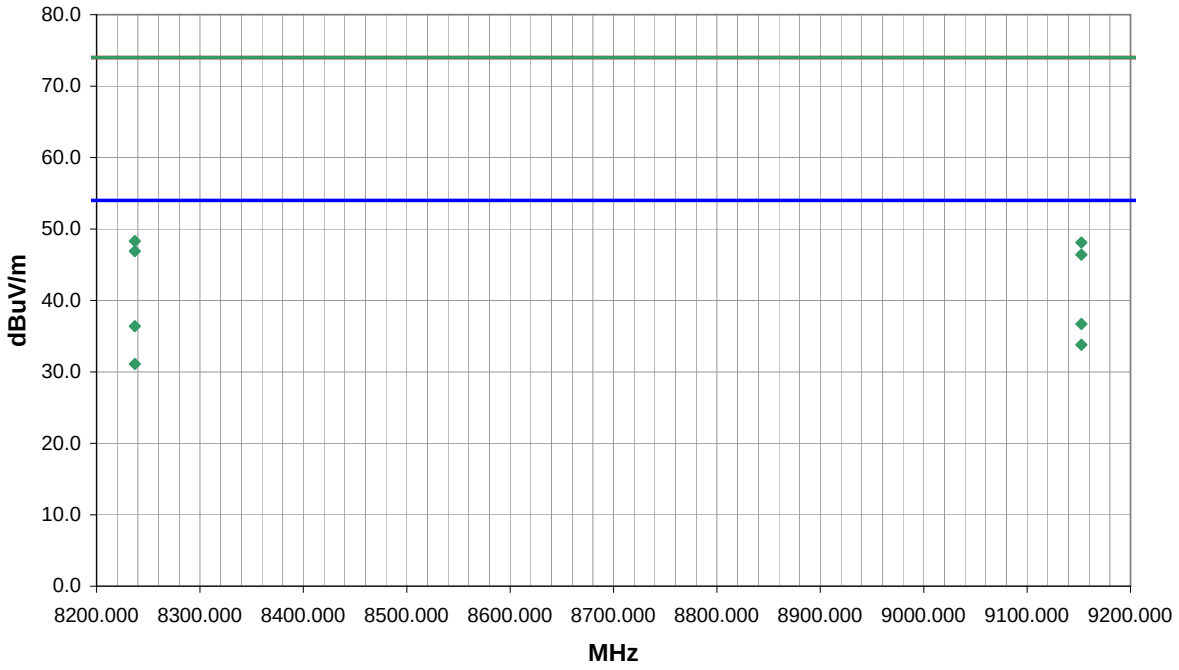
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	23
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
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

NORTHWEST
EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

EUT:	IM4			**Work Order:**	ITRM0098
Serial Number:	19510523240			**Date:**	08/24/05
Customer:	Intermec Technologies Corporation			**Temperature:**	22
Attendees:	Scott Holub			**Humidity:**	48%
Project:	None			**Barometric Pressure**	28.97
Tested by:	Jeremiah Darden	**Power:**	120VAC/60Hz	**Job Site:**	OC10

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

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

COMMENTS

Kathrein 25-578, X-axis

EUT OPERATING MODES

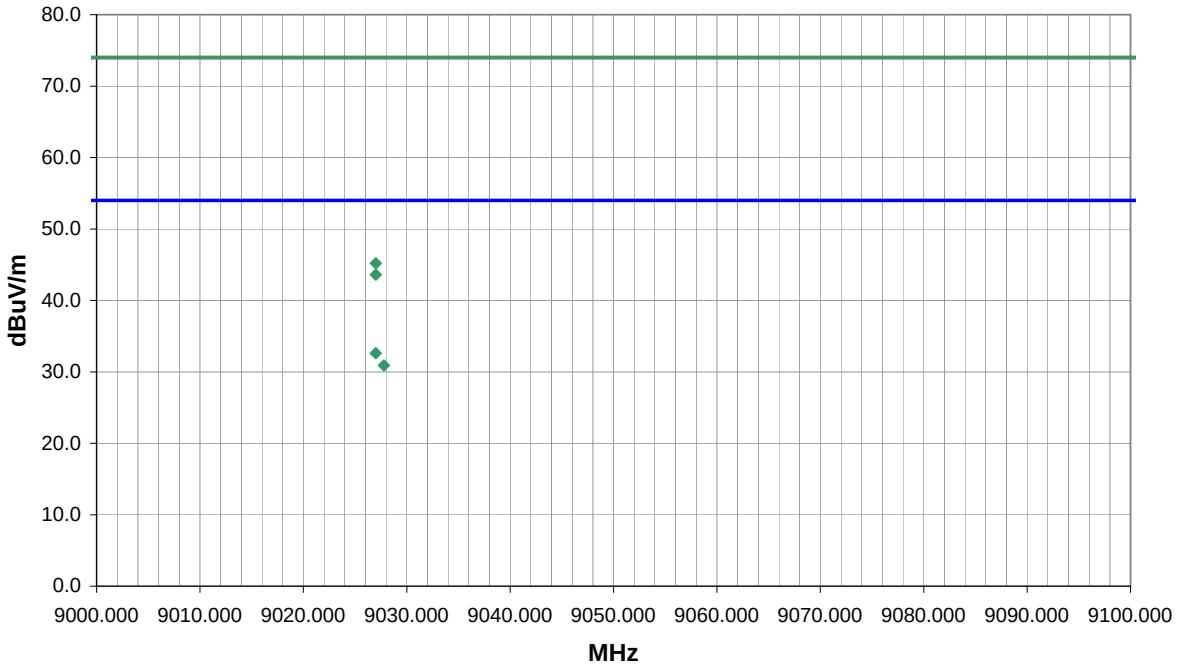
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	24
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9027.000	40.4	-7.8	78.0	1.0	3.0	0.0	H-Horn	AV	0.0	32.6	54.0	-21.4
9027.800	38.7	-7.8	100.0	1.0	3.0	0.0	V-Horn	AV	0.0	30.9	54.0	-23.1
9027.000	53.0	-7.8	78.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.2	74.0	-28.8
9027.000	51.4	-7.8	100.0	1.0	3.0	0.0	V-Horn	PK	0.0	43.6	74.0	-30.4

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Kathrein 25-578, X-axis

EUT OPERATING MODES

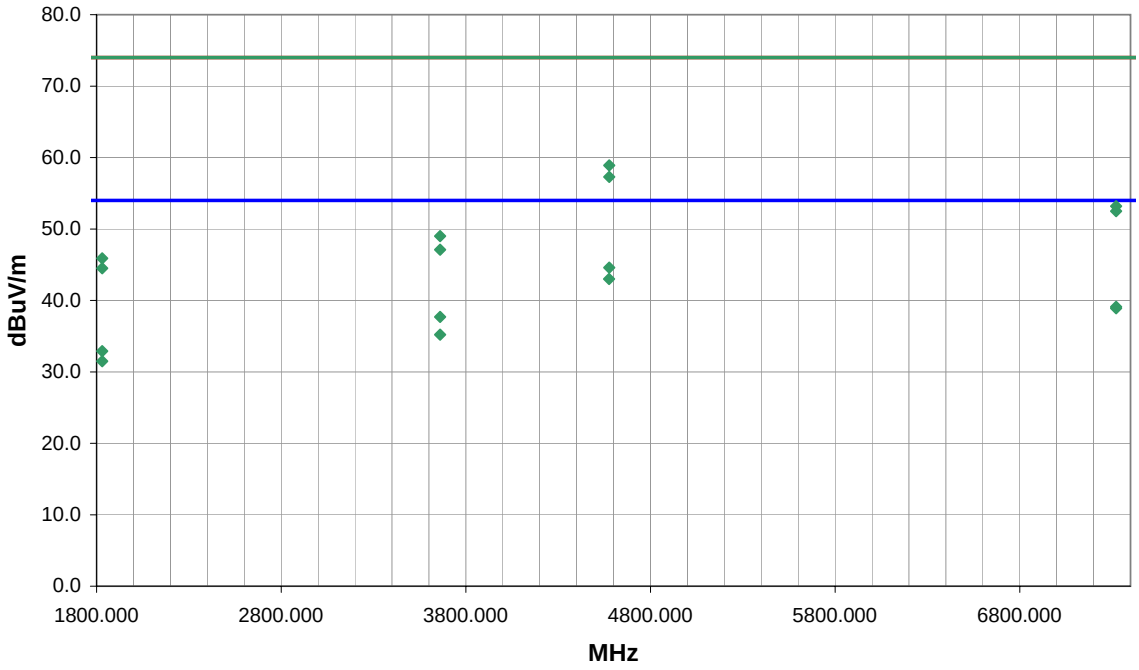
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	25
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4576.255	39.3	5.3	298.0	1.0	3.0	0.0	H-Horn	AV	0.0	44.6	54.0	-9.4
4576.060	37.7	5.3	359.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.0	54.0	-11.0
7322.010	27.6	11.5	214.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.1	54.0	-14.9
7322.010	27.4	11.5	218.0	1.0	3.0	0.0	V-Horn	AV	0.0	38.9	54.0	-15.1
4576.255	53.6	5.3	298.0	1.0	3.0	0.0	H-Horn	PK	0.0	58.9	74.0	-15.1
3661.000	34.0	3.7	301.0	1.0	3.0	0.0	H-Horn	AV	0.0	37.7	54.0	-16.3
4576.255	52.0	5.3	359.0	1.0	3.0	0.0	V-Horn	PK	0.0	57.3	74.0	-16.7
3661.000	31.5	3.7	44.0	1.5	3.0	0.0	V-Horn	AV	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	AV	0.0	32.9	54.0	-21.1
7322.010	41.0	11.5	218.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.5	74.0	-21.5
1830.450	34.1	-2.6	359.0	1.0	3.0	0.0	V-Horn	AV	0.0	31.5	54.0	-22.5
3661.000	45.3	3.7	301.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.0	74.0	-25.0
3661.000	43.4	3.7	44.0	1.5	3.0	0.0	V-Horn	PK	0.0	47.1	74.0	-26.9
1830.450	48.5	-2.6	176.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.9	74.0	-28.1
1830.450	47.1	-2.6	359.0	1.0	3.0	0.0	V-Horn	PK	0.0	44.5	74.0	-29.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Kathrein 25-578, X-axis

EUT OPERATING MODES

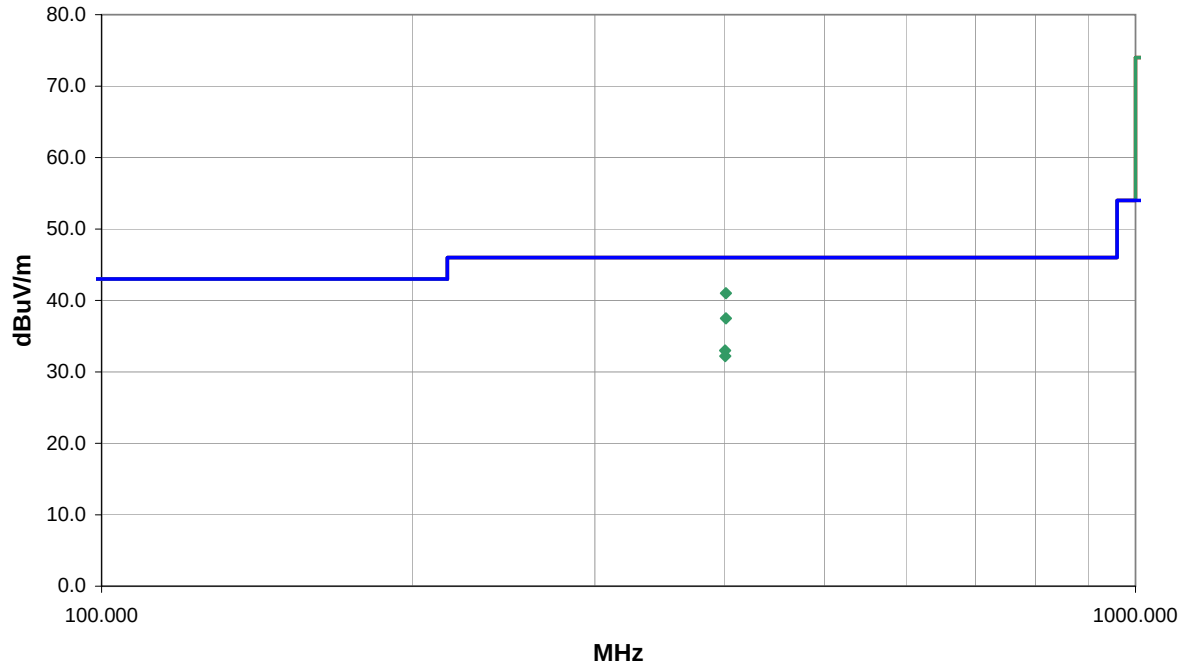
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	26
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
401.591	38.6	2.4	182.0	1.0	3.0	0.0	H-Bilog	PK	0.0	41.0	46.0	-5.0
401.591	35.1	2.4	133.0	1.0	3.0	0.0	V-Bilog	PK	0.0	37.5	46.0	-8.5
400.856	30.6	2.4	182.0	1.0	3.0	0.0	H-Bilog	QP	0.0	33.0	46.0	-13.0
401.051	29.8	2.4	133.0	1.0	3.0	0.0	V-Bilog	QP	0.0	32.2	46.0	-13.8

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Radiall ROS-915, Y-axis

EUT OPERATING MODES

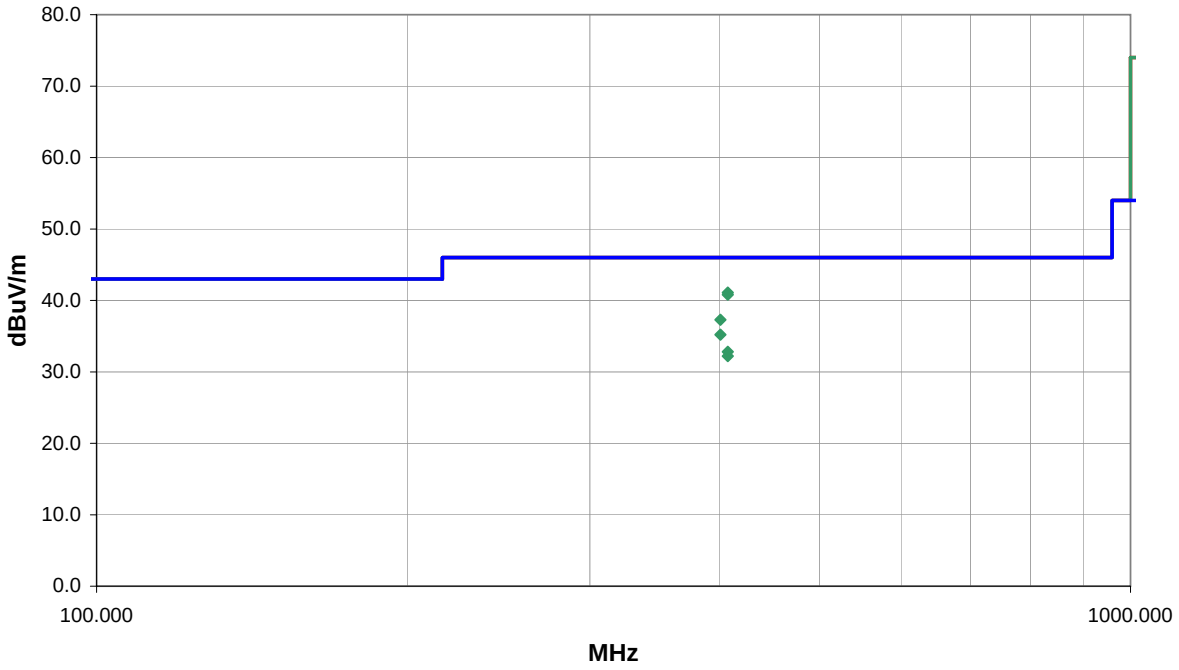
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	27
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
407.900	38.7	2.4	159.0	1.0	3.0	0.0	H-Bilog	PK	0.0	41.1	46.0	-4.9
407.900	38.4	2.4	244.0	1.5	3.0	0.0	V-Bilog	PK	0.0	40.8	46.0	-5.2
401.200	34.9	2.4	24.0	1.5	3.0	0.0	V-Bilog	PK	0.0	37.3	46.0	-8.7
401.200	32.8	2.4	89.0	1.0	3.0	0.0	H-Bilog	PK	0.0	35.2	46.0	-10.8
407.900	30.4	2.4	159.0	1.0	3.0	0.0	H-Bilog	QP	0.0	32.8	46.0	-13.2
407.900	29.8	2.4	244.0	1.5	3.0	0.0	V-Bilog	QP	0.0	32.2	46.0	-13.8

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Mobile Mark PN10-915RCPI, X-axis

EUT OPERATING MODES

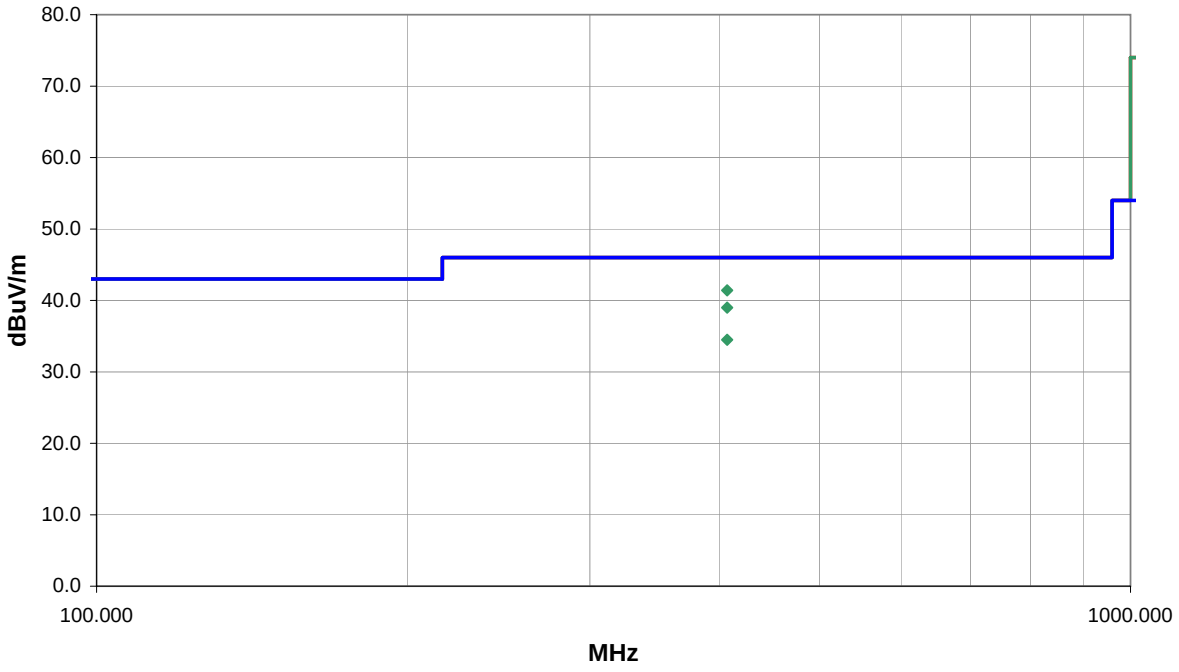
High 927.25, Data rate 32kpbs

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	30
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
407.200	39.0	2.4	323.0	3.2	3.0	0.0	H-Bilog	PK	0.0	41.4	46.0	-4.6
407.200	36.6	2.4	193.0	2.2	3.0	0.0	V-Bilog	PK	0.0	39.0	46.0	-7.0
407.200	32.1	2.4	323.0	3.2	3.0	0.0	H-Bilog	QP	0.0	34.5	46.0	-11.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Mobile Mark PN10-915RCPI, X-axis

EUT OPERATING MODES

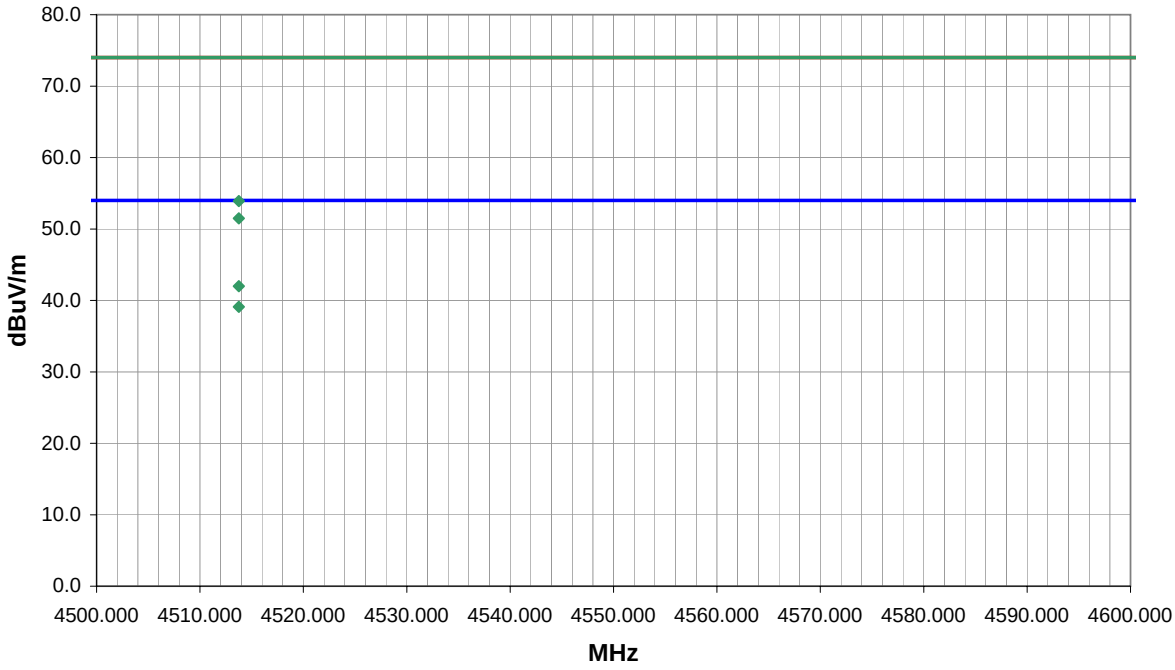
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	31
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4513.750	36.9	5.1	35.0	2.4	3.0	0.0	H-Horn	AV	0.0	42.0	54.0	-12.0
4513.750	34.0	5.1	39.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.1	54.0	-14.9
4513.750	48.8	5.1	35.0	2.4	3.0	0.0	H-Horn	PK	0.0	53.9	74.0	-20.1
4513.750	46.4	5.1	39.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.5	74.0	-22.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

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

COMMENTS

Mobile Mark PN10-915RCPI, X-axis

EUT OPERATING MODES

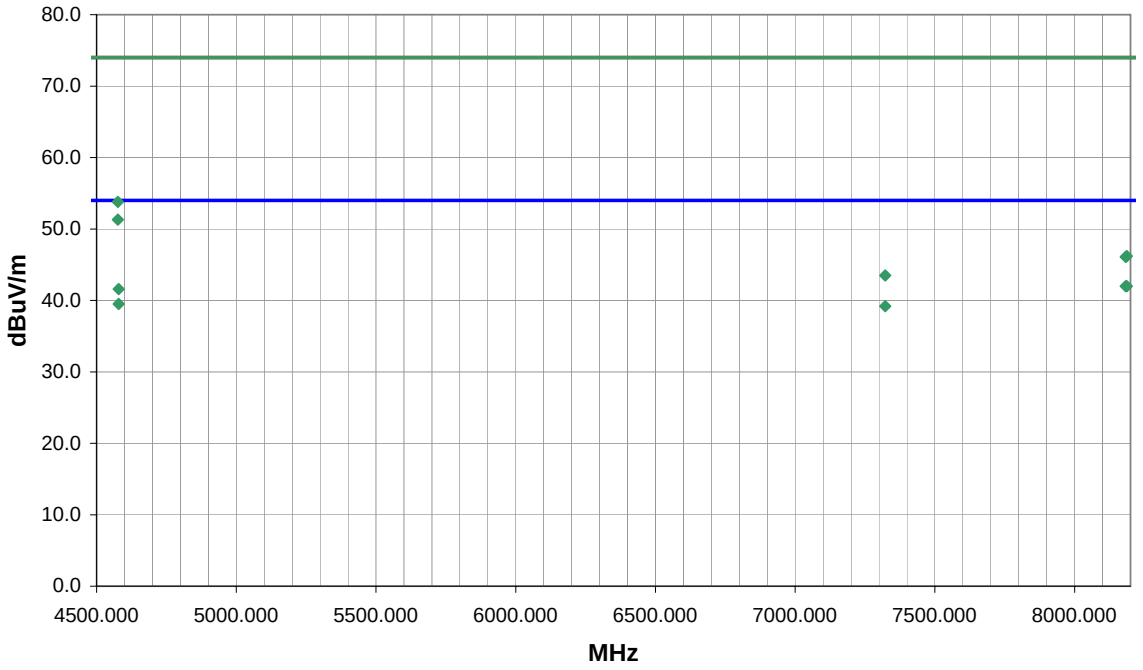
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	32
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
8187.000	28.6	13.4	203.0	1.0	3.0	0.0	V-Horn	AV	0.0	42.0	54.0	-12.0
8183.000	28.6	13.4	46.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.0	54.0	-12.0
4578.760	36.3	5.3	308.0	1.7	3.0	0.0	H-Horn	AV	0.0	41.6	54.0	-12.4
4578.775	34.2	5.3	314.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.5	54.0	-14.5
7322.010	27.7	11.5	17.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.2	54.0	-14.8
4576.255	48.5	5.3	308.0	1.7	3.0	0.0	H-Horn	PK	0.0	53.8	74.0	-20.2
4576.255	46.0	5.3	314.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.3	74.0	-22.7
8187.000	32.8	13.4	203.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.2	74.0	-27.8
8183.000	32.7	13.4	46.0	1.0	3.0	0.0	H-Horn	PK	0.0	46.1	74.0	-27.9
7322.010	32.0	11.5	17.0	1.0	3.0	0.0	H-Horn	PK	0.0	43.5	74.0	-30.5

NORTHWEST EMC

RADIATED EMISSIONS DATA SHEET

ACQ 2005.8.11
EMI 2005.8.3

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:	Jaemi Suh	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS

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

COMMENTS

Mobile Mark PN10-915RCPI, X-axis

EUT OPERATING MODES

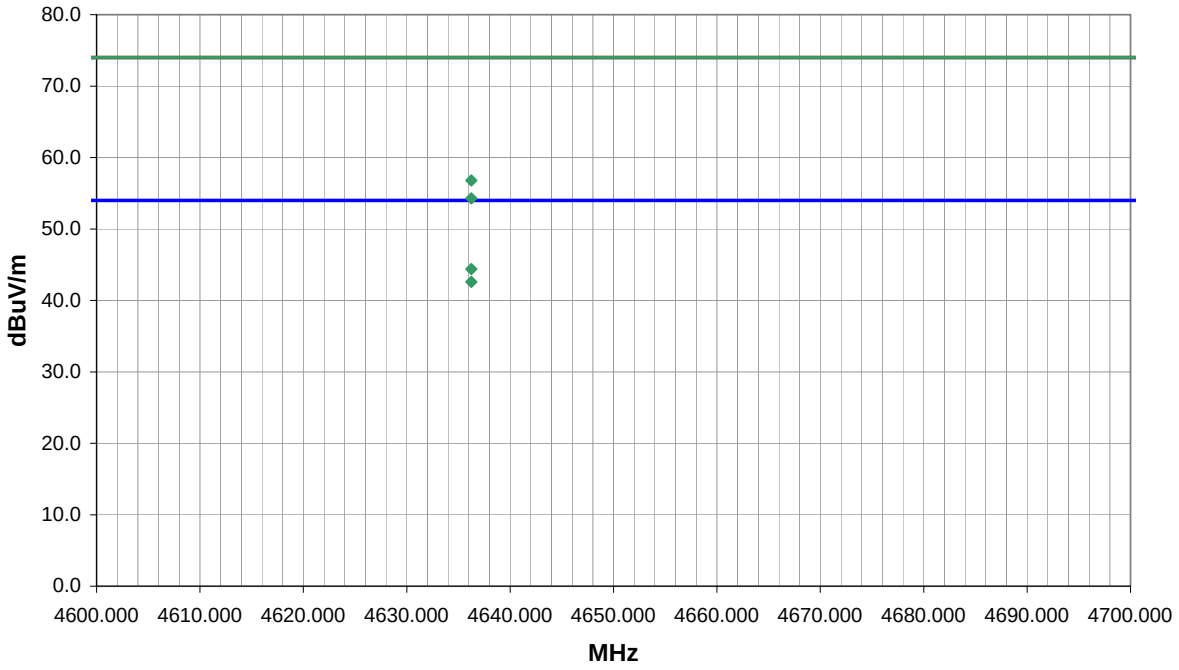
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

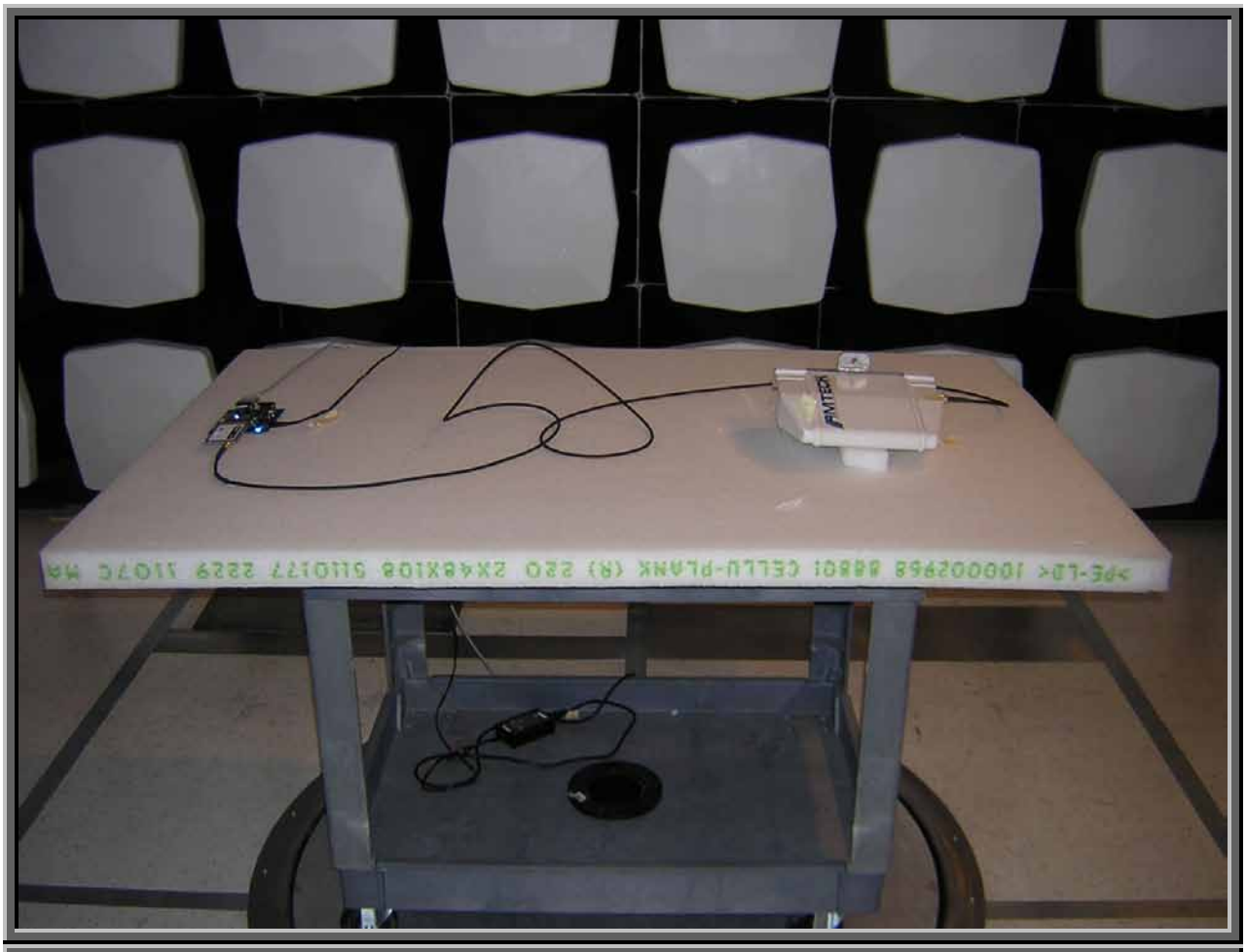
No deviations.

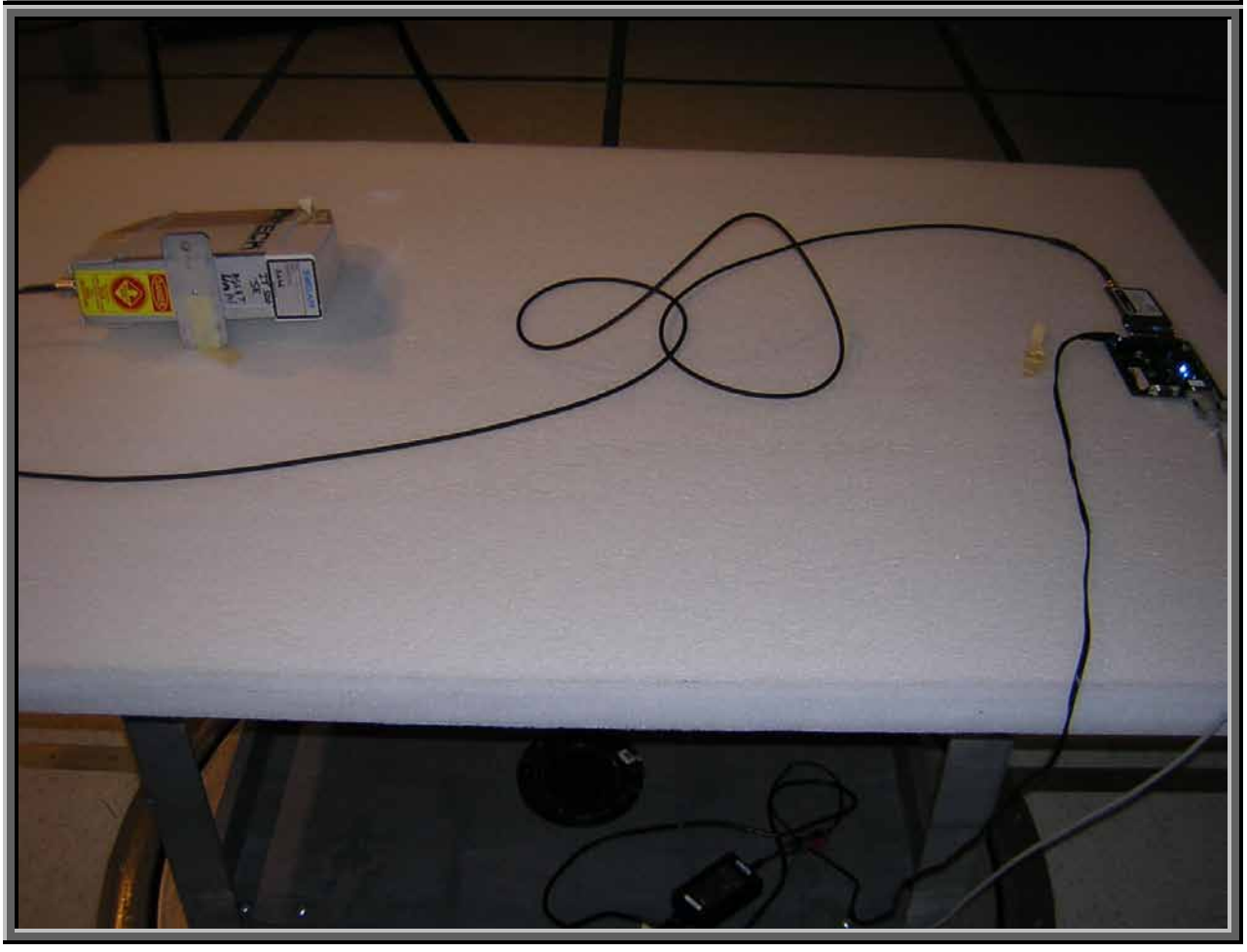
Run #	33
Configuration #	
Results	Pass

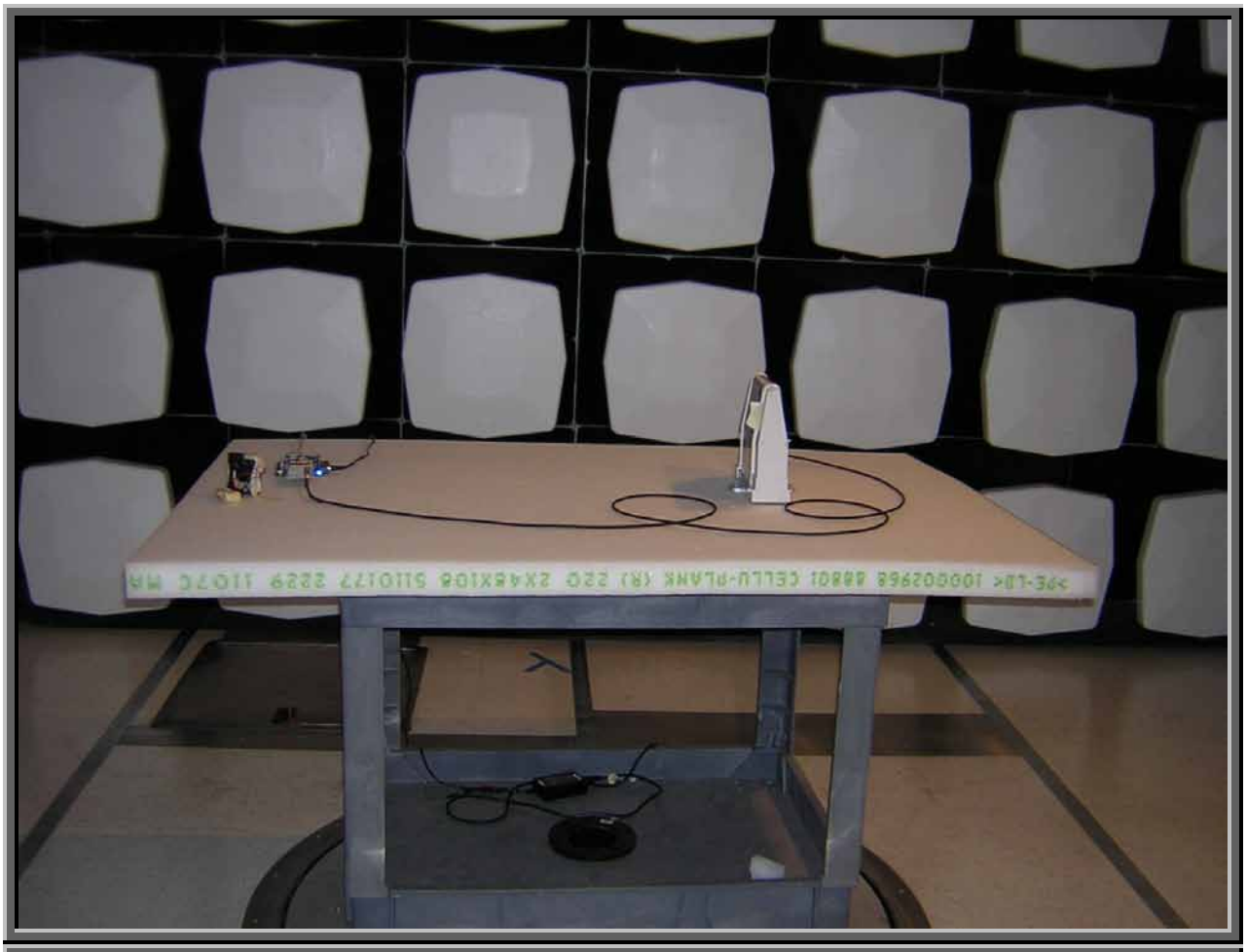
Signature

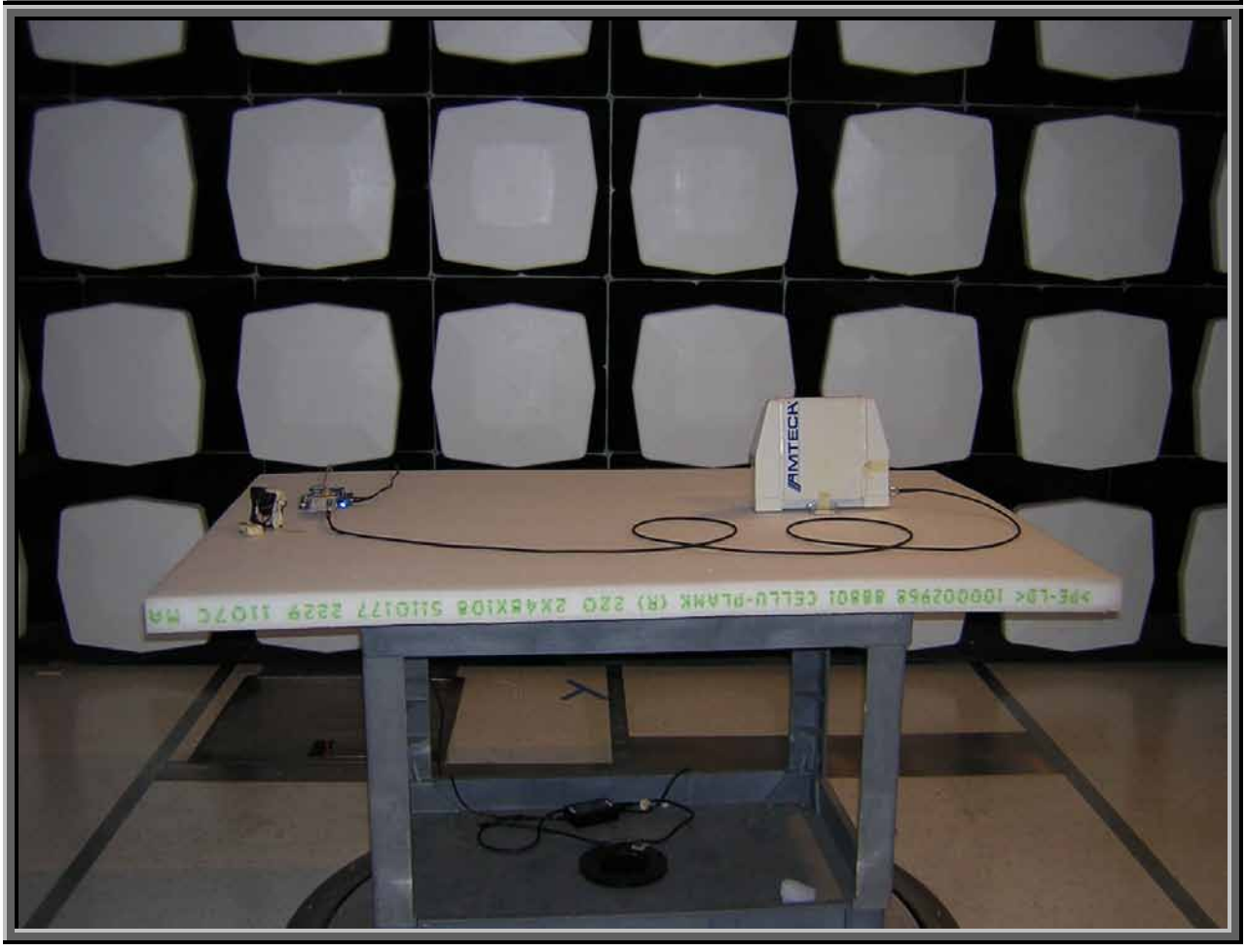


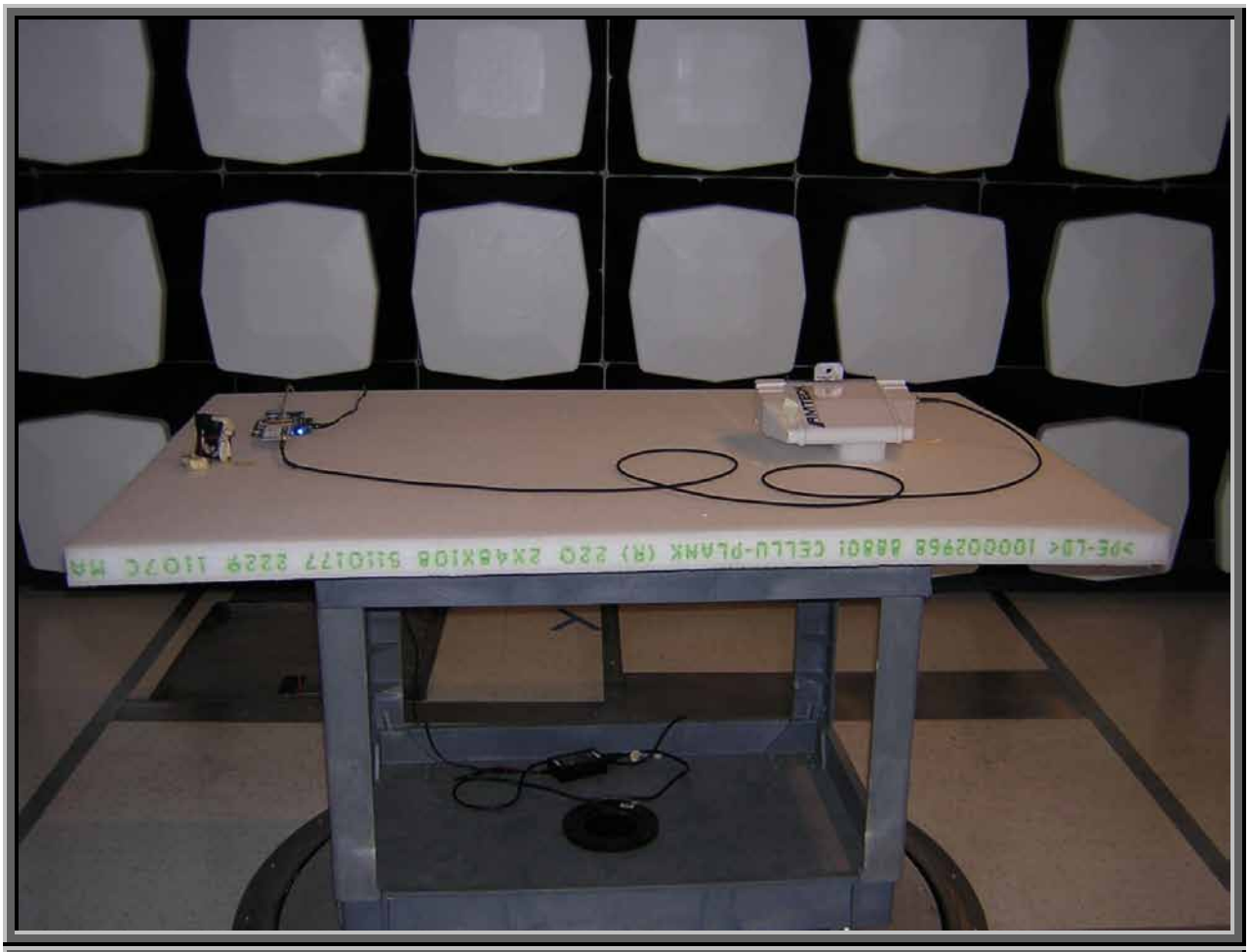
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
4636.250	39.0	5.4	44.0	1.0	3.0	0.0	V-Horn	AV	0.0	44.4	54.0	-9.6
4636.250	37.2	5.4	283.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.6	54.0	-11.4
4636.250	51.4	5.4	44.0	1.0	3.0	0.0	V-Horn	PK	0.0	56.8	74.0	-17.2
4636.250	48.9	5.4	283.0	1.0	3.0	0.0	H-Horn	PK	0.0	54.3	74.0	-19.7

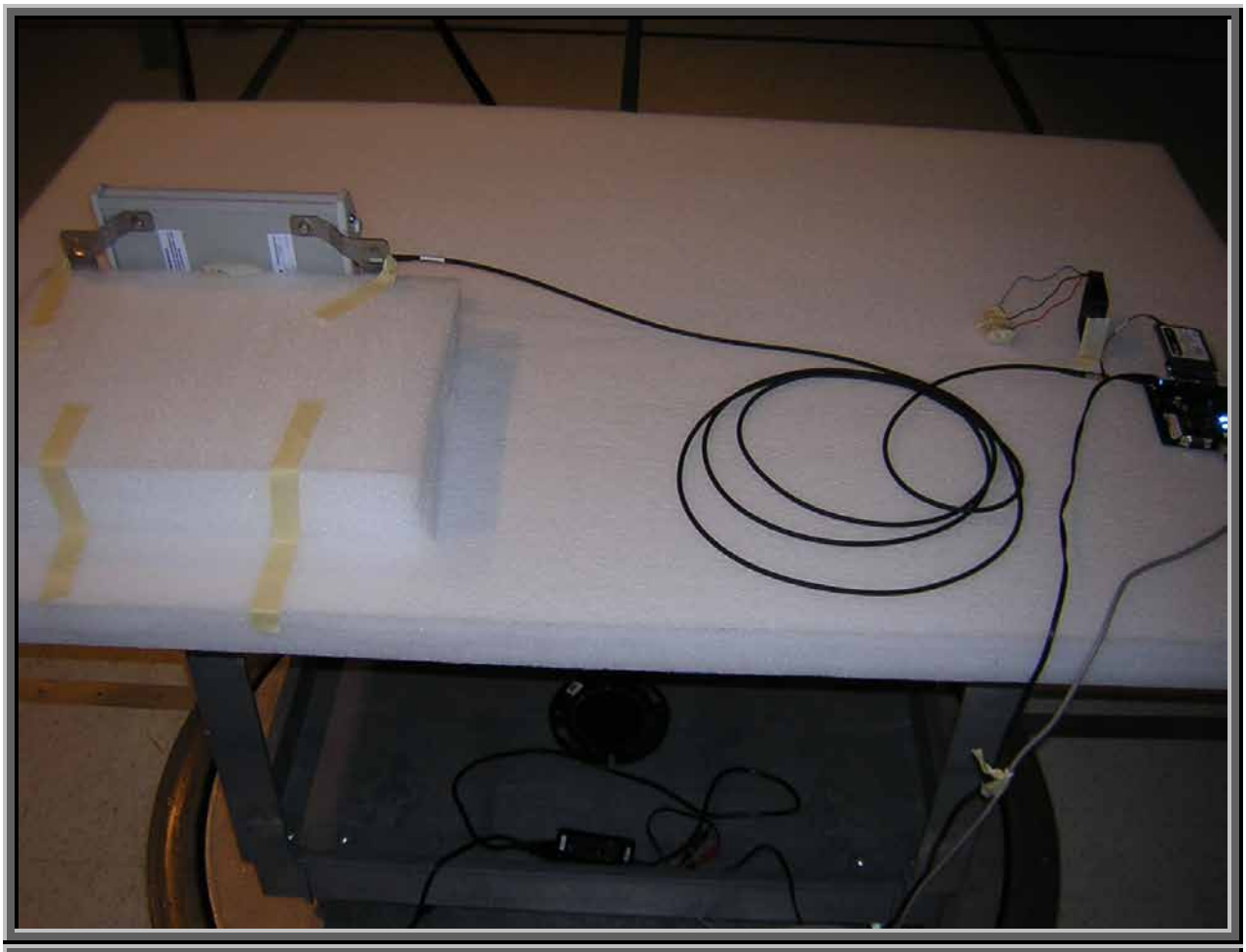


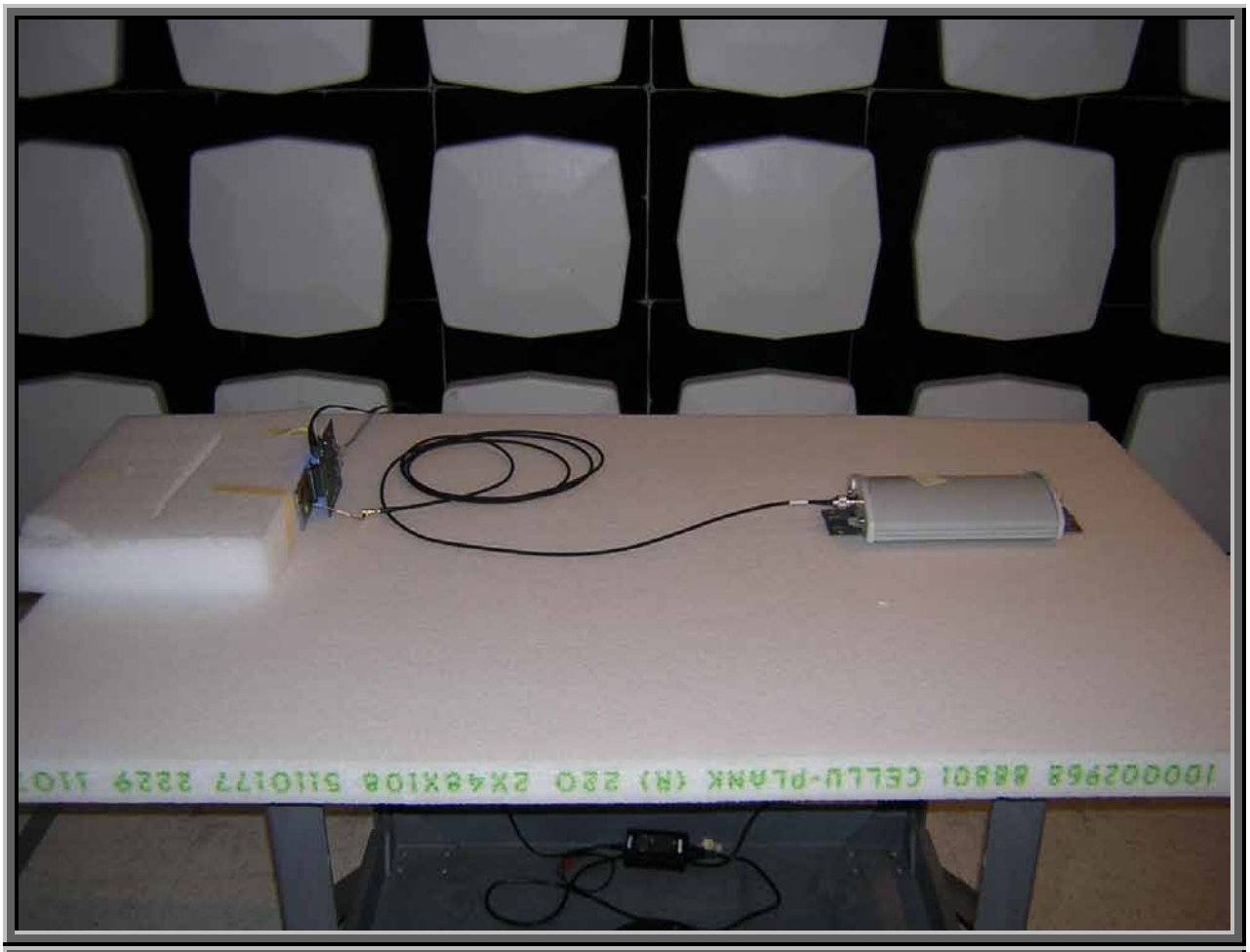


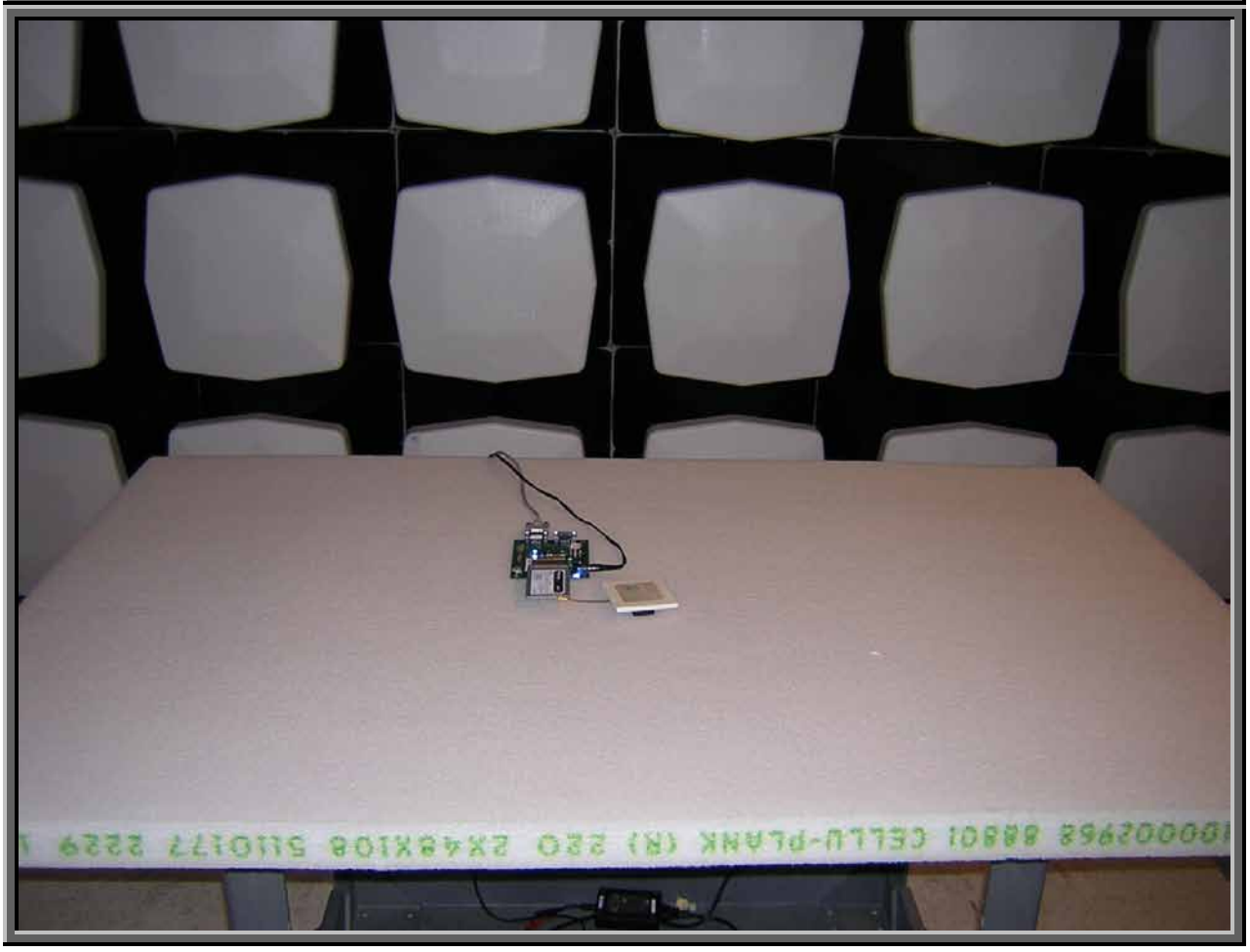


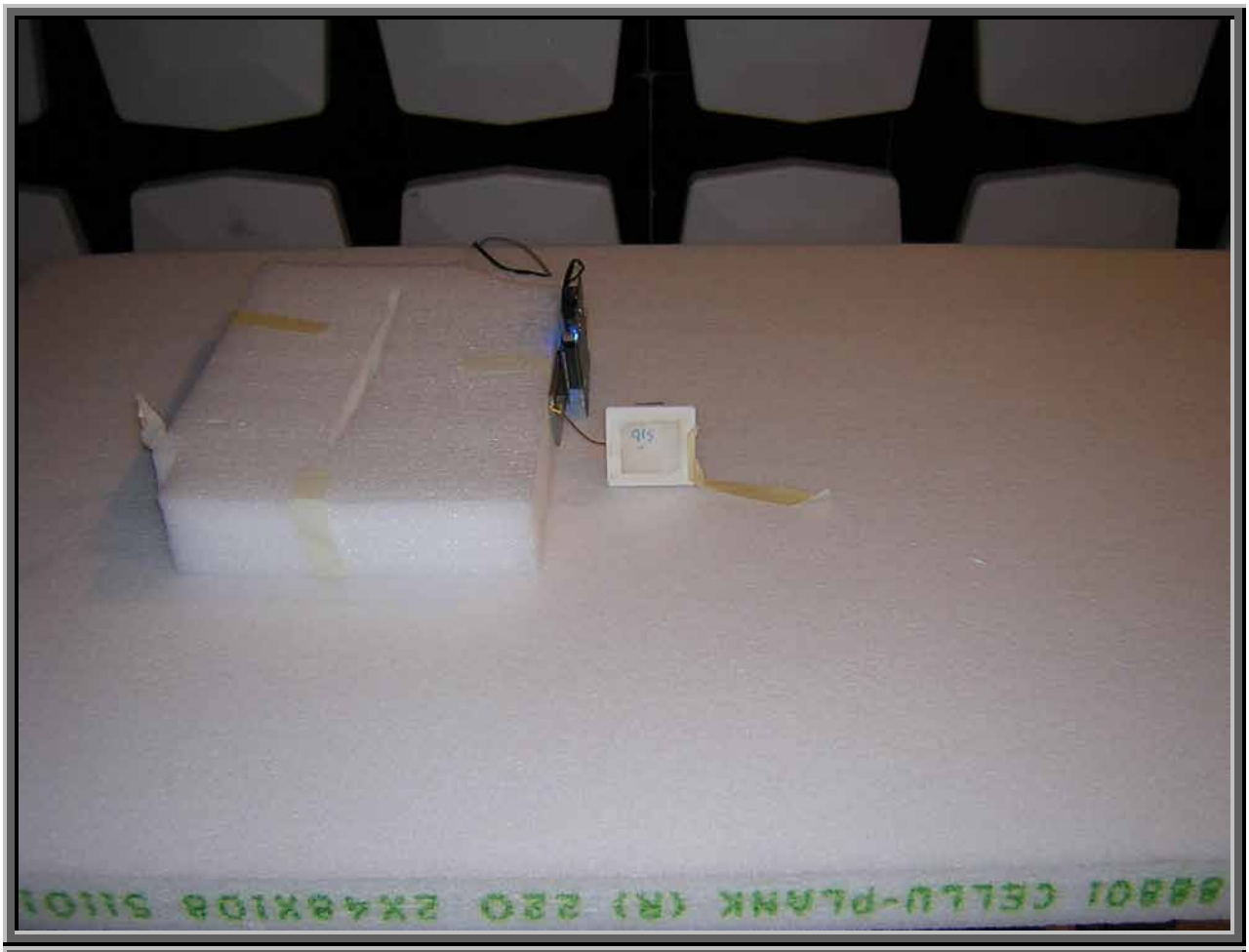

AMTECH

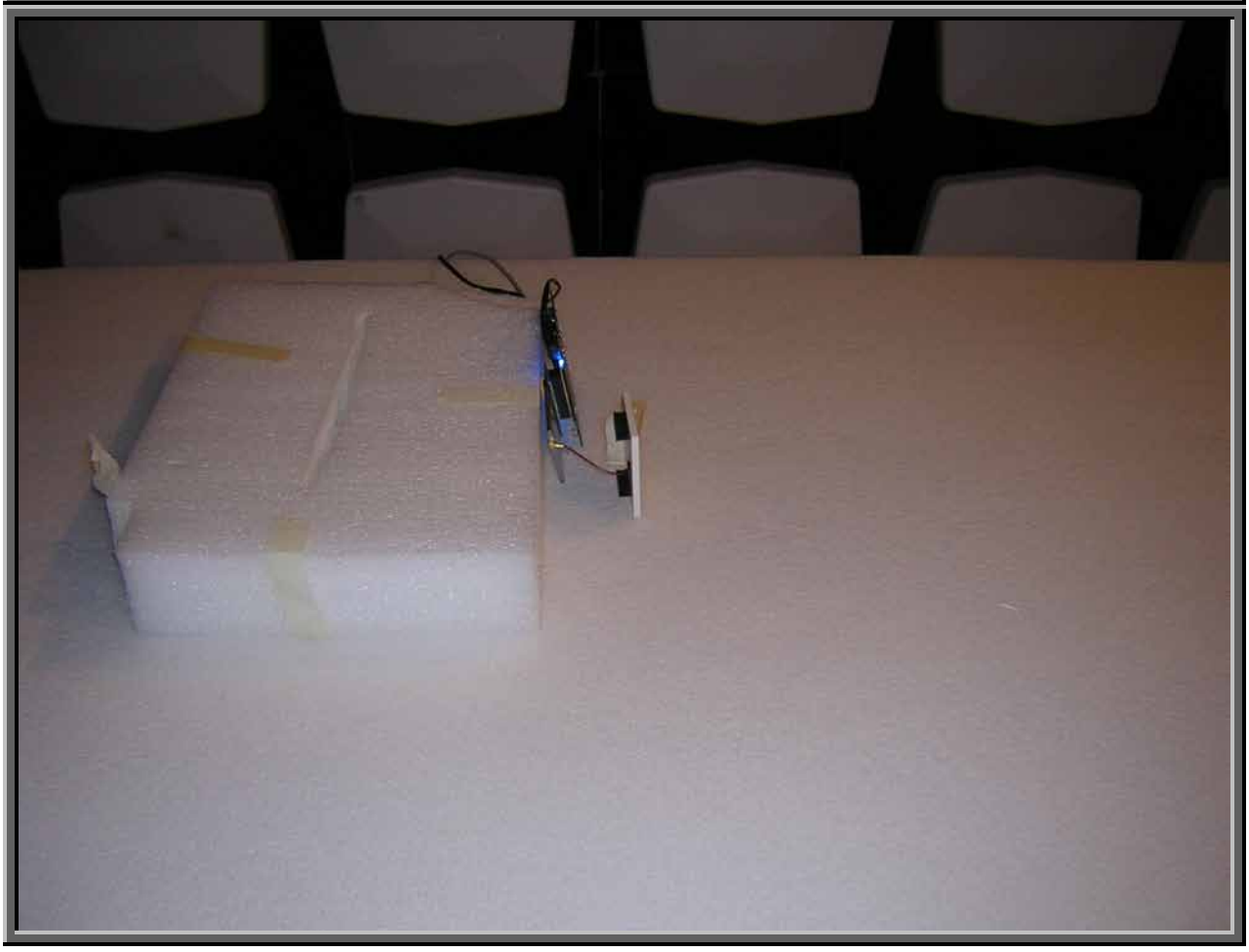


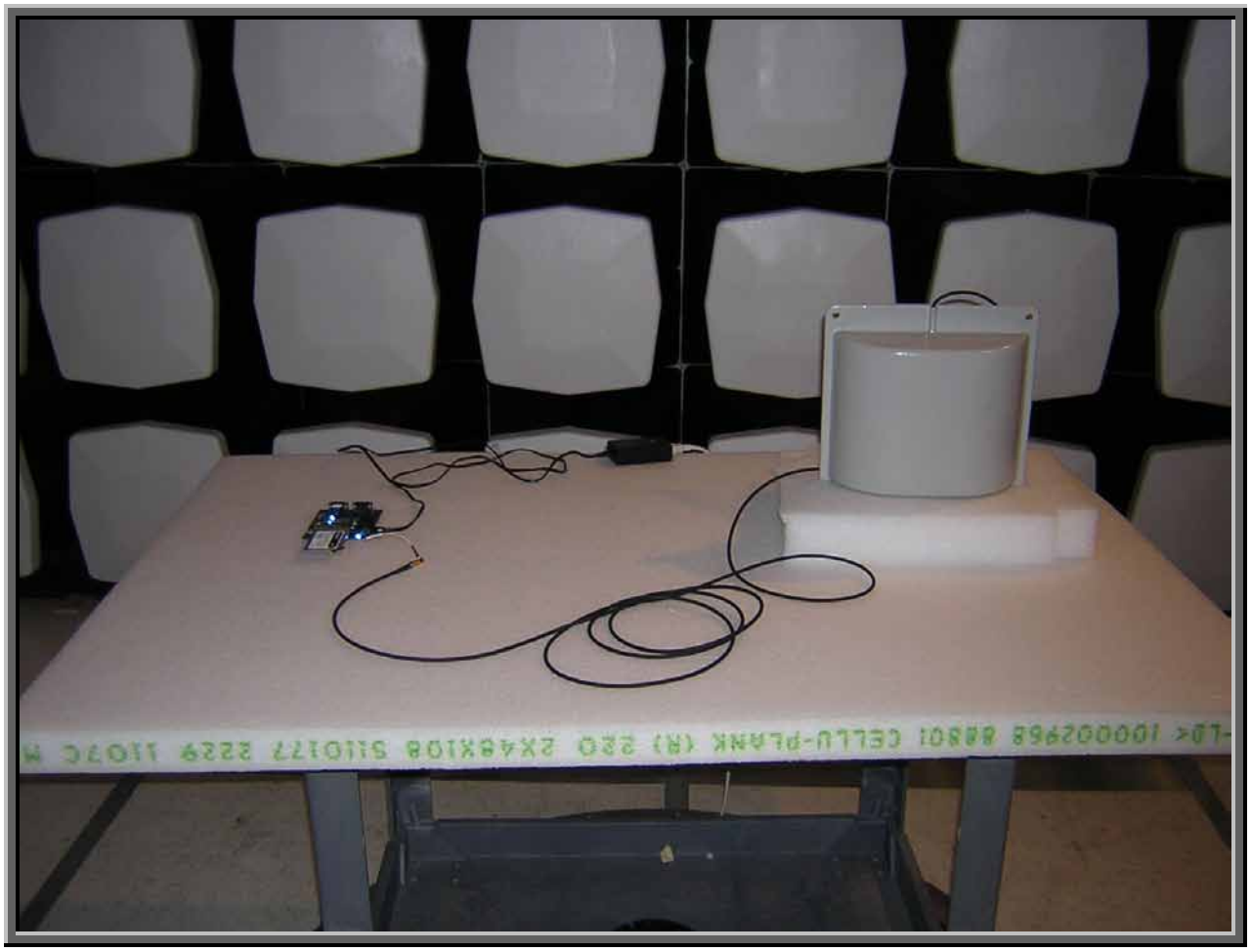












Justification

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

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

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

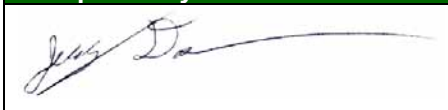
Measurement Equipment					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Cal**	**Interval**
Spectrum Analyzer	Hewlett Packard	8593E	AAP	12/07/2004	13 mo
Receiver	Schaffner	SCR 3101	ARC	05/04/2005	13 mo
LISN	Solar	9252-50-24-BNC	LIB	02/16/2005	13 mo

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.

Configuration: The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

Completed by:



NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
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

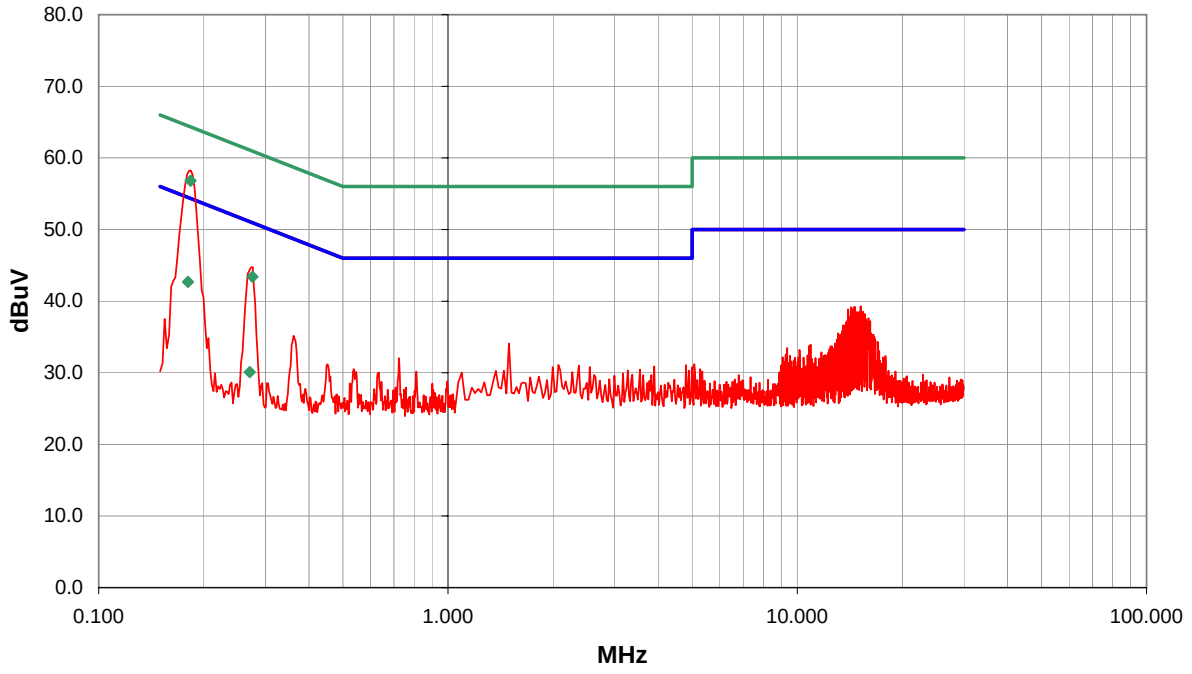
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.183	36.8			0.0	0.0	20.0		QP		56.8	64.3	-7.5
0.180	22.7			0.0	0.0	20.0		AV		42.7	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		AV		30.1	51.1	-21.0
0.276	24.6			0.0	0.1	20.0				44.7	50.9	-6.2
15.180	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
14.640	18.1			0.0	1.1	20.0				39.2	50.0	-10.8
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	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
15.090	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
14.820	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
14.880	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
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	17.0			0.0	1.1	20.0				38.1	50.0	-11.9
1.495	13.7			0.0	0.4	20.0				34.1	46.0	-11.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS	
Cable or Line Tested	N

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

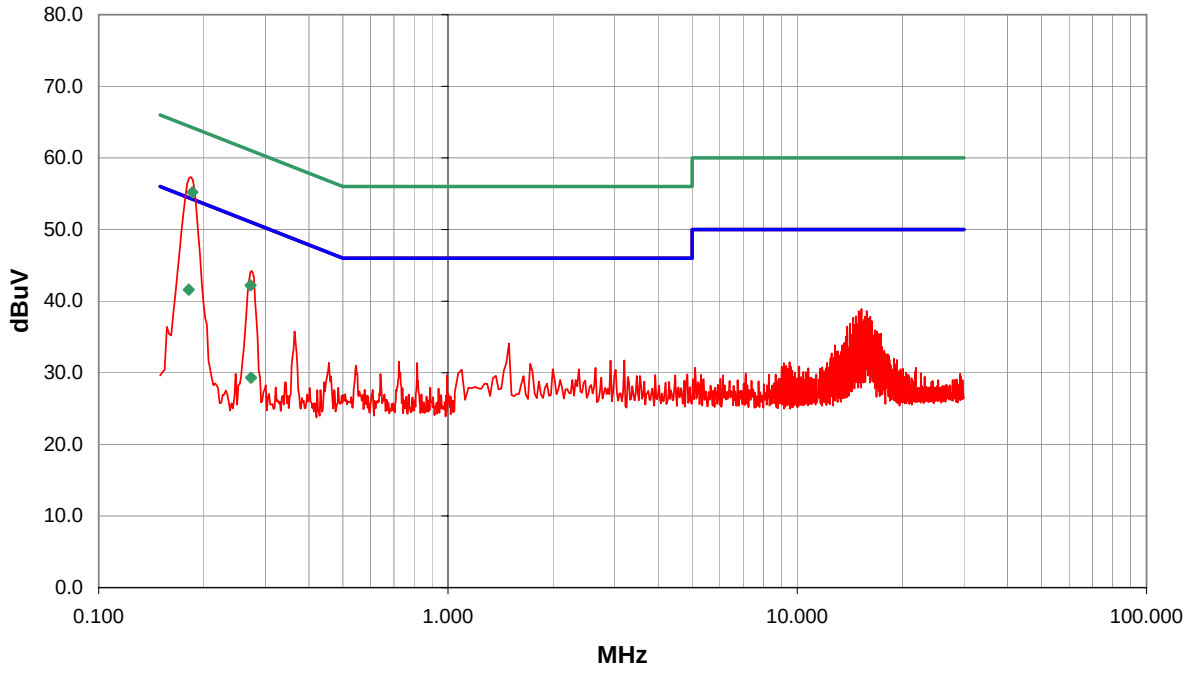
Low 902.75, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.185	35.2			0.0	0.0	20.0		QP		55.2	64.2	-9.0
0.181	21.6			0.0	0.0	20.0		AV		41.6	54.4	-12.8
0.272	22.2			0.0	0.0	20.0		QP		42.2	61.1	-18.9
0.273	9.3			0.0	0.0	20.0		AV		29.3	51.0	-21.7
0.274	24.1			0.0	0.1	20.0				44.2	51.0	-6.8
15.270	17.8			0.0	1.1	20.0				38.9	50.0	-11.1
15.810	17.5			0.0	1.1	20.0				38.6	50.0	-11.4
15.000	17.5			0.0	1.1	20.0				38.6	50.0	-11.4
15.090	17.2			0.0	1.1	20.0				38.3	50.0	-11.7
1.495	13.7			0.0	0.4	20.0				34.1	46.0	-11.9
14.730	16.8			0.0	1.1	20.0				37.9	50.0	-12.1
16.170	16.7			0.0	1.1	20.0				37.8	50.0	-12.2
15.630	16.7			0.0	1.1	20.0				37.8	50.0	-12.2
14.460	16.6			0.0	1.1	20.0				37.7	50.0	-12.3
16.080	16.5			0.0	1.1	20.0				37.6	50.0	-12.4
15.540	16.3			0.0	1.1	20.0				37.4	50.0	-12.6
15.900	16.2			0.0	1.1	20.0				37.3	50.0	-12.7
16.350	16.1			0.0	1.1	20.0				37.2	50.0	-12.8
0.364	15.6			0.0	0.2	20.0				35.8	48.6	-12.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS	
Cable or Line Tested	N

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

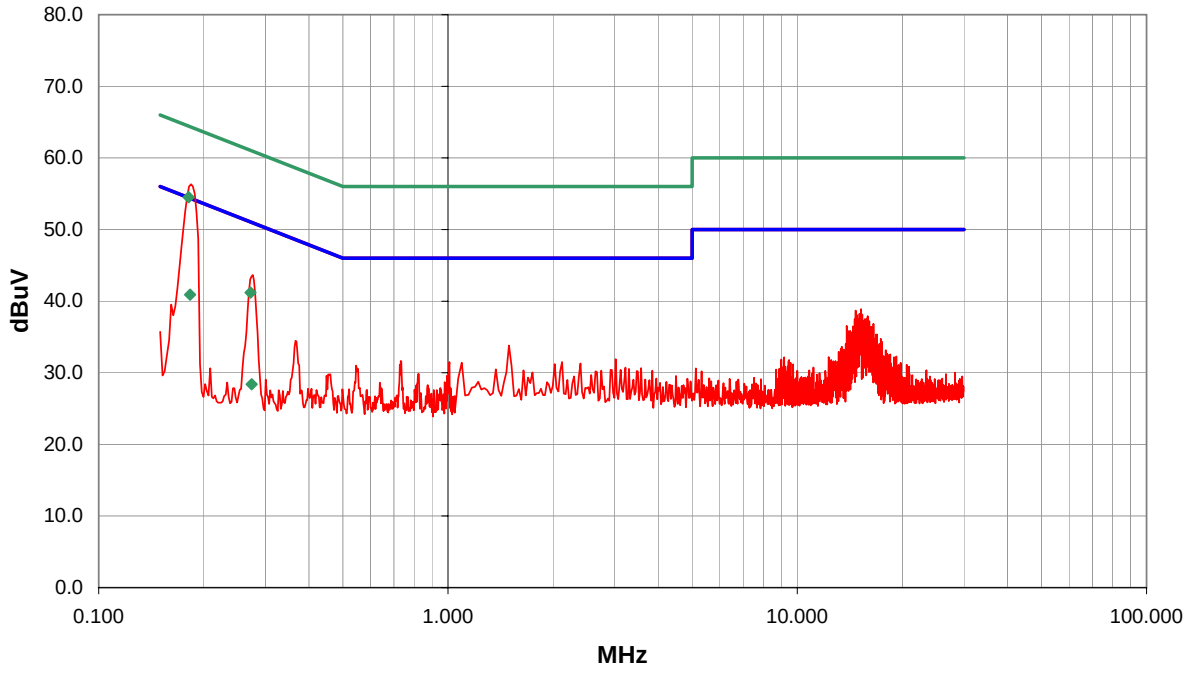
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.181	34.5			0.0	0.0	20.0		QP		54.5	64.4	-9.9
0.183	20.9			0.0	0.0	20.0		AV		40.9	54.4	-13.5
0.272	21.2			0.0	0.0	20.0		QP		41.2	61.1	-19.9
0.274	8.4			0.0	0.0	20.0		AV		28.4	51.0	-22.6
0.276	23.5			0.0	0.1	20.0				43.6	50.9	-7.3
15.240	17.8			0.0	1.1	20.0				38.9	50.0	-11.1
14.700	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
15.060	17.1			0.0	1.1	20.0				38.2	50.0	-11.8
15.360	17.0			0.0	1.1	20.0				38.1	50.0	-11.9
14.790	17.0			0.0	1.1	20.0				38.1	50.0	-11.9
15.900	16.8			0.0	1.1	20.0				37.9	50.0	-12.1
1.495	13.4			0.0	0.4	20.0				33.8	46.0	-12.2
15.810	16.4			0.0	1.1	20.0				37.5	50.0	-12.5
15.630	16.4			0.0	1.1	20.0				37.5	50.0	-12.5
14.970	16.4			0.0	1.1	20.0				37.5	50.0	-12.5
14.610	16.4			0.0	1.1	20.0				37.5	50.0	-12.5
15.540	16.2			0.0	1.1	20.0				37.3	50.0	-12.7
16.080	16.1			0.0	1.1	20.0				37.2	50.0	-12.8
16.530	15.7			0.0	1.1	20.0				36.8	50.0	-13.2

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
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

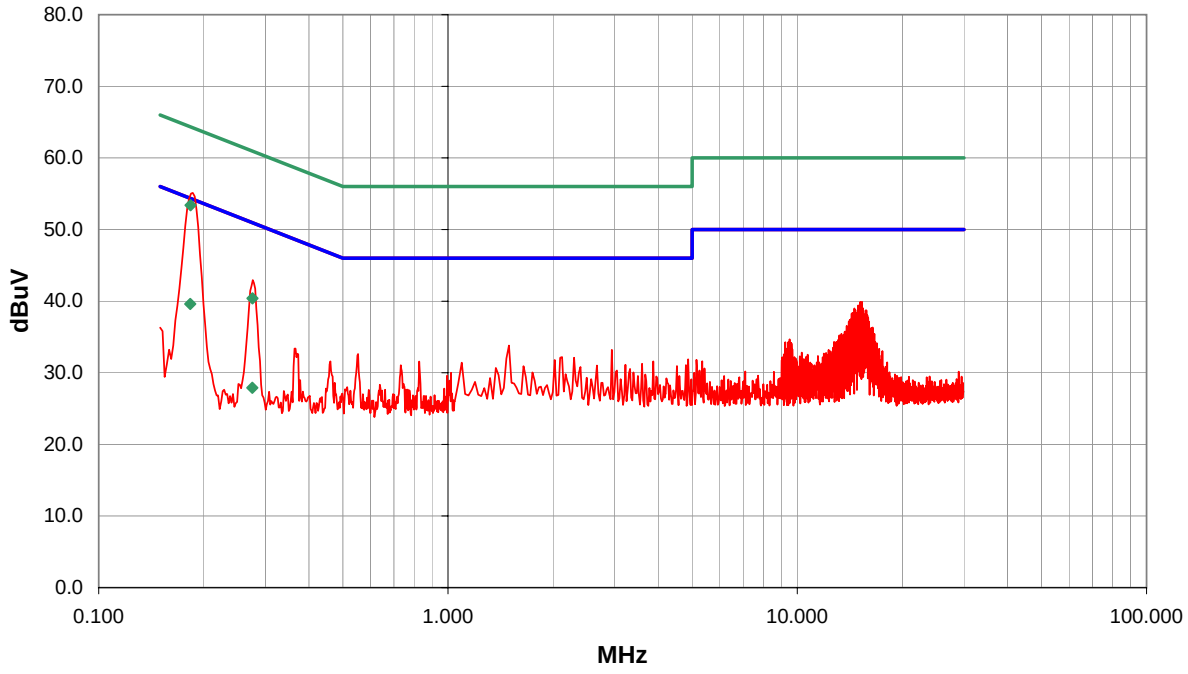
Mid 915.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.183	33.4			0.0	0.0	20.0		QP		53.4	64.3	-10.9
0.183	19.6			0.0	0.0	20.0		AV		39.6	54.4	-14.8
0.275	20.4			0.0	0.0	20.0		QP		40.4	61.0	-20.6
0.275	7.9			0.0	0.0	20.0		AV		27.9	51.0	-23.1
0.276	22.8			0.0	0.1	20.0				42.9	50.9	-8.0
15.330	18.8			0.0	1.1	20.0				39.9	50.0	-10.1
15.150	18.8			0.0	1.1	20.0				39.9	50.0	-10.1
15.240	18.7			0.0	1.1	20.0				39.8	50.0	-10.2
14.940	18.3			0.0	1.1	20.0				39.4	50.0	-10.6
15.420	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
14.580	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
14.670	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
15.780	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
15.690	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
14.850	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
14.400	17.3			0.0	1.1	20.0				38.4	50.0	-11.6
14.310	17.2			0.0	1.1	20.0				38.3	50.0	-11.7
15.510	17.1			0.0	1.1	20.0				38.2	50.0	-11.8
14.790	17.0			0.0	1.1	20.0				38.1	50.0	-11.9

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

TEST SPECIFICATIONS	Test Method
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

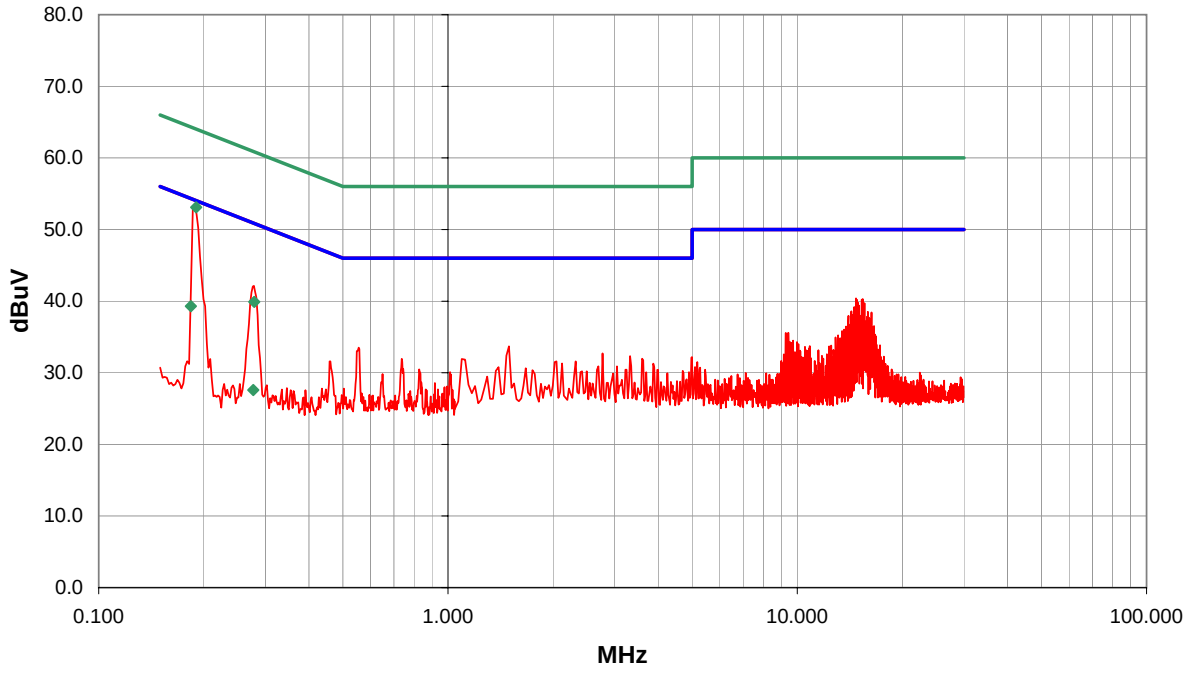
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.190	33.1			0.0	0.0	20.0		QP		53.1	64.0	-10.9
0.184	19.3			0.0	0.0	20.0		AV		39.3	54.3	-15.0
0.279	19.9			0.0	0.0	20.0		QP		39.9	60.8	-20.9
0.277	7.6			0.0	0.0	20.0		AV		27.6	50.9	-23.3
0.188	32.9			0.0	0.1	20.0				53.0	54.1	-1.1
0.278	22.0			0.0	0.1	20.0				42.1	50.9	-8.7
14.730	19.3			0.0	1.1	20.0				40.4	50.0	-9.6
15.390	19.2			0.0	1.1	20.0				40.3	50.0	-9.7
15.300	19.1			0.0	1.1	20.0				40.2	50.0	-9.8
14.820	19.1			0.0	1.1	20.0				40.2	50.0	-9.8
14.910	18.7			0.0	1.1	20.0				39.8	50.0	-10.2
15.570	18.6			0.0	1.1	20.0				39.7	50.0	-10.3
15.000	18.3			0.0	1.1	20.0				39.4	50.0	-10.6
14.550	18.1			0.0	1.1	20.0				39.2	50.0	-10.8
15.480	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
14.280	17.5			0.0	1.1	20.0				38.6	50.0	-11.4
15.930	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
14.640	17.4			0.0	1.1	20.0				38.5	50.0	-11.5
16.320	17.3			0.0	1.1	20.0				38.4	50.0	-11.6

NORTHWEST EMC

CONDUCTED EMISSIONS DATA SHEET

ACQ 2005.8.22
EMI 2005.8.3

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	Power:	120VAC/60Hz	Job Site:	OC10

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

TEST PARAMETERS	
Cable or Line Tested	N

COMMENTS

Sinclair SRL-441U

EUT OPERATING MODES

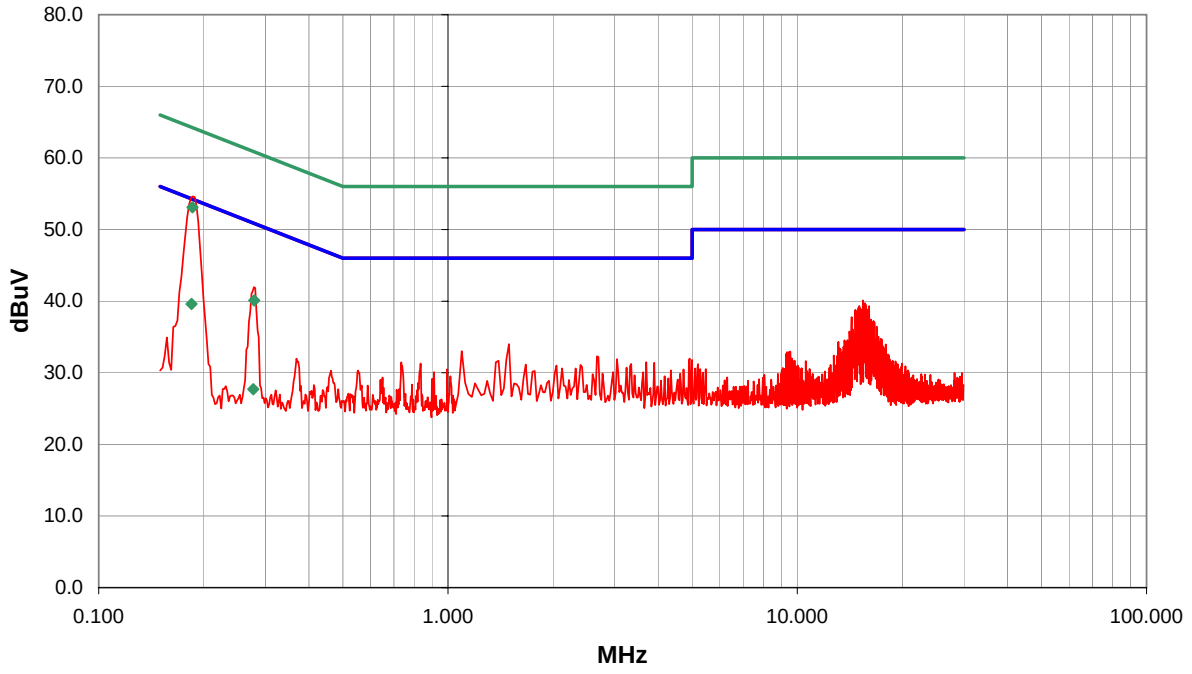
High 927.25, Data rate 32kbps

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Configuration #	
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
0.185	33.1			0.0	0.0	20.0		QP		53.1	64.2	-11.1
0.184	19.6			0.0	0.0	20.0		AV		39.6	54.3	-14.7
0.279	20.1			0.0	0.0	20.0		QP		40.1	60.8	-20.7
0.277	7.7			0.0	0.0	20.0		AV		27.7	50.9	-23.2
0.278	21.8			0.0	0.1	20.0				41.9	50.9	-8.9
15.420	19.0			0.0	1.1	20.0				40.1	50.0	-9.9
15.600	18.6			0.0	1.1	20.0				39.7	50.0	-10.3
15.690	18.4			0.0	1.1	20.0				39.5	50.0	-10.5
16.050	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
15.060	18.2			0.0	1.1	20.0				39.3	50.0	-10.7
14.970	18.0			0.0	1.1	20.0				39.1	50.0	-10.9
15.150	17.9			0.0	1.1	20.0				39.0	50.0	-11.0
15.870	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
15.210	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
14.670	17.7			0.0	1.1	20.0				38.8	50.0	-11.2
15.330	17.6			0.0	1.1	20.0				38.7	50.0	-11.3
15.960	17.5			0.0	1.1	20.0				38.6	50.0	-11.4
14.760	17.5			0.0	1.1	20.0				38.6	50.0	-11.4
14.850	17.4			0.0	1.1	20.0				38.5	50.0	-11.5


AMTECH