

Intermec Technologies Corporation

IM5

October 26, 2005

Report No. ITRM0091

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Issue Date: October 26, 2005
Intermec Technologies Corporation
Model: IM5

Emissions				
Test Description	Specification	Test Method	Pass	Fail
Band Edge Compliance	FCC 15.247(d) Band Edge Compliance:2005-9	ANSI C63.4:2003	☒	☐
Occupied Bandwidth	FCC 15.247(a) Occupied Bandwidth:2005-04	ANSI C63.4:2003	☒	☐
Output Power	FCC 15.247(b) Output Power:2005-9	ANSI C63.4:2003	☒	☐
Spurious Conducted Emissions	FCC 15.247(d) Spurious Conducted Emissions:2005-9	ANSI C63.4:2003	☒	☐
Spurious Radiated Emissions	FCC 15.247(d) Spurious Radiated Emissions:2005-9	ANSI C63.4:2003	☒	☐

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400; Hillsboro, OR 97124
Phone: (503) 844-4066
Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Greg Kiemel, Director of Engineering

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested, the specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

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 TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV'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?

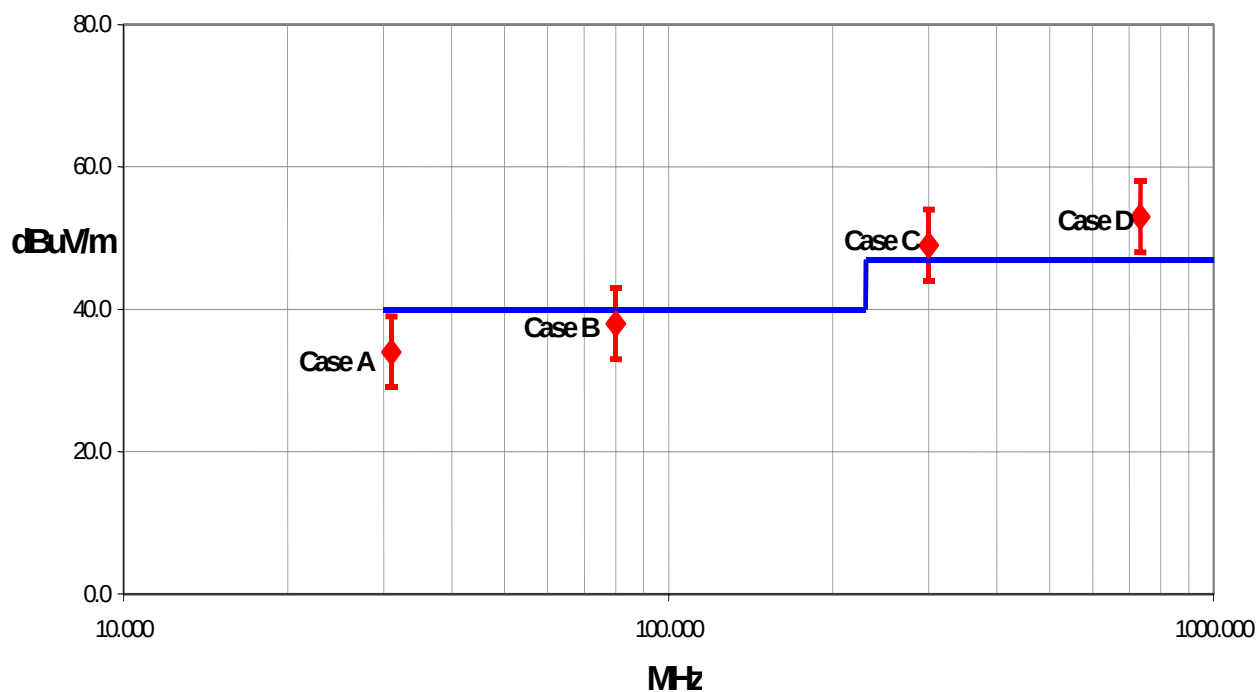
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following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

Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
		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 $\approx 95\%$)	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)

Test Distance	Probability Distribution	Without High Pass Filter		With High Pass Filter	
		3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.29 - 1.25	+ 1.38 - 1.35	+ 1.38 - 1.35
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 2.57 - 2.51	+ 2.57 - 2.51	+ 2.76 - 2.70	+ 2.76 - 2.70

Conducted Emissions

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.48	1.48
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.97	2.97

Radiated Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.11	2.11

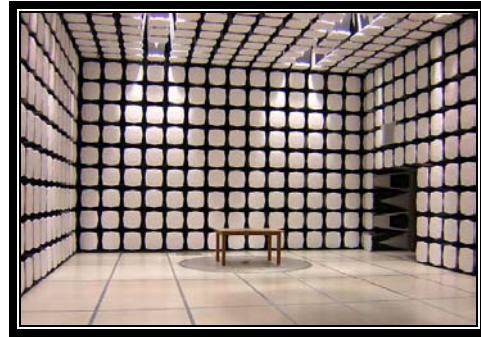
Conducted Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.10	2.10

Legend

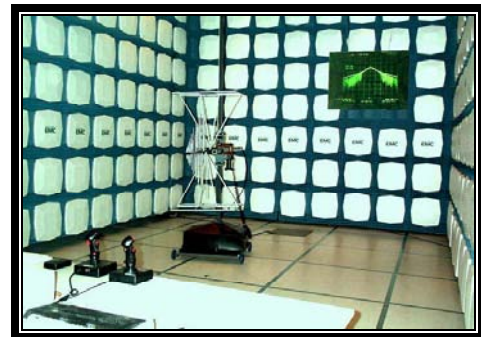
$u_c(y)$ = square root of the sum of squares of the individual standard uncertainties

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, $u_c(y)$ 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



**Washington – Sultan Facility
Labs SU01 – SU07**

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

Party Requesting the Test

Company Name:	Intermec Technologies Corporation
Address:	550 Second St. SE
City, State, Zip:	Cedar Rapids, IA 52401-2023
Test Requested By:	Scott Holub
Model:	IM5
First Date of Test:	October 17, 2005
Last Date of Test:	October 20, 2005
Receipt Date of Samples:	October 17, 2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

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

Functional Description of the EUT (Equipment Under Test):

RFID Reader operating in the 902-928MHz bands.

Client Justification for EUT Selection:

Not Provided

Client Justification for Test Selection:

These tests satisfy the requirements for a Class 2 Permissive Change to approve software changes to the previously certified IM5, FCC ID: EHARFID915IM5. The EUT has full modular approval as a mobile device.

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	10/17/2005	Occupied Bandwidth	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	10/17/2005	Band Edge Compliance	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	10/17/2005	Spurious Conducted Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	10/18/2005	Output Power	Modified from delivered configuration.	This was on a second test sample, customer had to adjust the power lookup table within the firmware to adjust down the power for passing data. Modification done by Scott Holub.	EUT remained at Northwest EMC following the test.
5	10/18/2005	Spurious Radiated Emissions	Modified from delivered configuration.	No EMI modifications were performed. However, testing was performed on a different unit than was initially used, due to equipment problems. Modification done by Scott Holub	EUT remained at Northwest EMC following the test.
6	10/20/2005	Spurious Radiated Emissions	Same configuration as delivered.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.

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:

Maximum (40kBps)

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Software\Firmware Applied During Test

Exercise software	CTI AppVer 1.2.1 Build 25	Version	Firmware v3.09
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT - RFiD reader	Intermec Technologies Corporation	IM5	19210509078
Notebook PC	Dell	Latitude LM TS30G	K0204A
Notebook PC Power Supply	Dell	TSA8	None
DC Power Supply	MagTech	SPU24-104	01290800

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.0	No	DC Power Supply	EUT - RFiD reader
AC Power	No	1.8	No	DC Power Supply	AC Mains
Serial	Yes	1.75	No	EUT - RFiD reader	Notebook PC
DC Leads	No	1.2	PA	Notebook PC Power Supply	Notebook PC
AC Power	No	1.9	No	Notebook PC Power Supply	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	AAN	12/15/2004	12 mo

Test Description

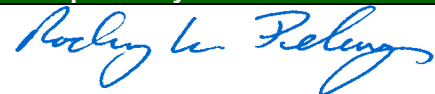
Requirement: Per 47 CFR 15.247(a)(1), the 20 dB bandwidth of a hopping channel must be less than or equal to the channel separation. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have 20 dB bandwidths up to 1.5 times the channel separation, provided the systems operate 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 $\geq 1\%$ 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 its maximum data rate in a no hop mode.

Completed by:



NORTHWEST
EMC

OCCUPIED BANDWIDTH

Rev BETA
01/30/01

EUT:	IM5	Work Order:	ITRM0091
Serial Number:	19210509078	Date:	10/17/05
Customer:	Intermec Technologies Corporation	Temperature:	70 °F
Attendees:	Scott Holub	Tested by:	Rod Peloquin
Customer Ref. No.:	None	Humidity:	49% RH
		Power:	120VAC/60Hz
		Job Site:	EV06

TEST SPECIFICATIONS

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

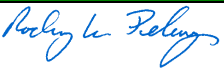
RESULTS

BANDWIDTH

Pass

177.5 kHz

SIGNATURE

Tested By: 

DESCRIPTION OF TEST

20dB Bandwidth - Low Channel - 40 kbps Data Rate

09:24:23 OCT 17, 2005

HP

MKR  177.5 kHz

REF 35.0 dBm

#AT 30 dB

-.09 dB

PEAK

LOG
5

dB/

OFFST
21.6

dB

MA SB
SC FC

CORR

CENTER 902.5160 MHz

SPAN 500.0 kHz

#RES BW 30 kHz

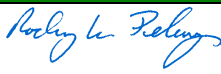
#VBW 100 kHz

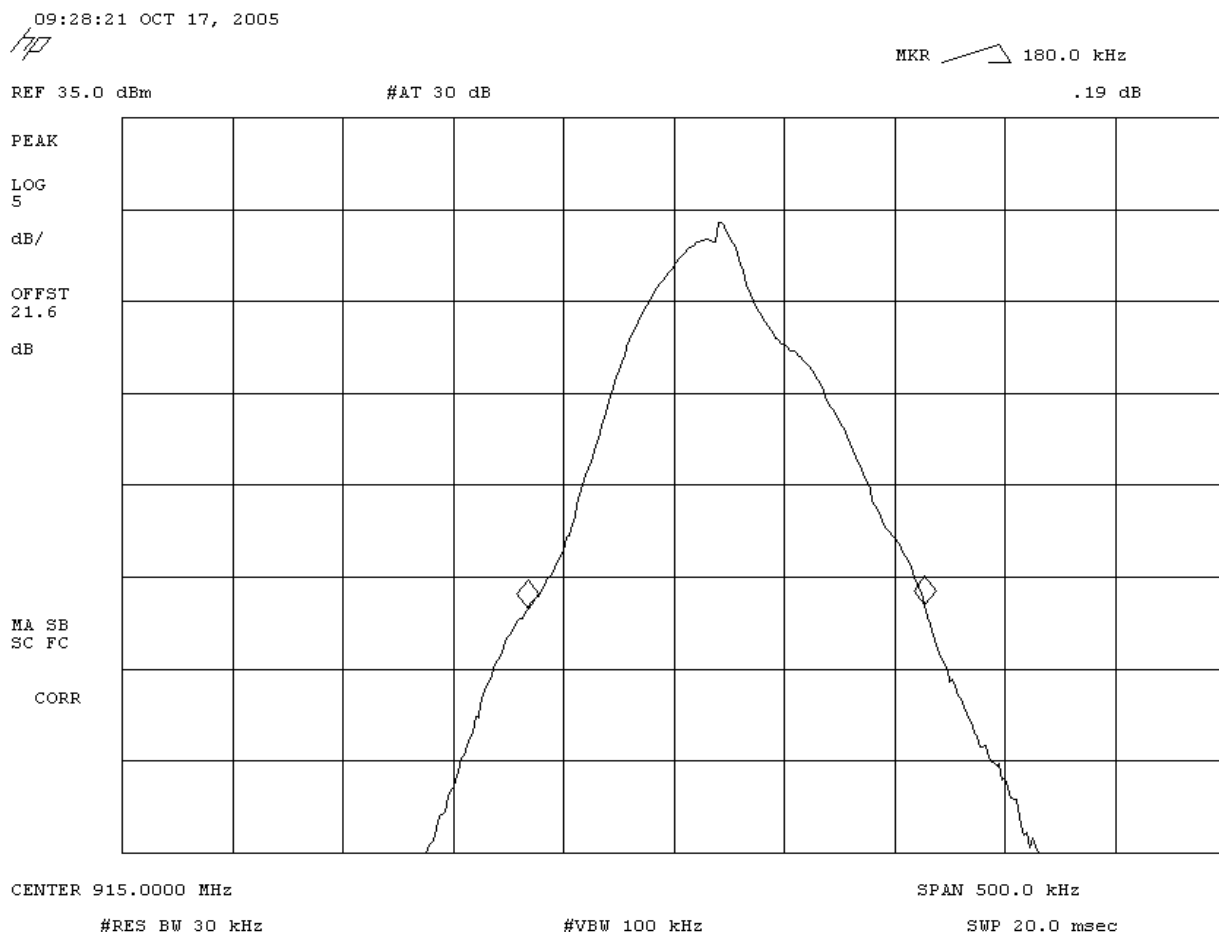
SWP 20.0 msec

#RES BW 30 kHz

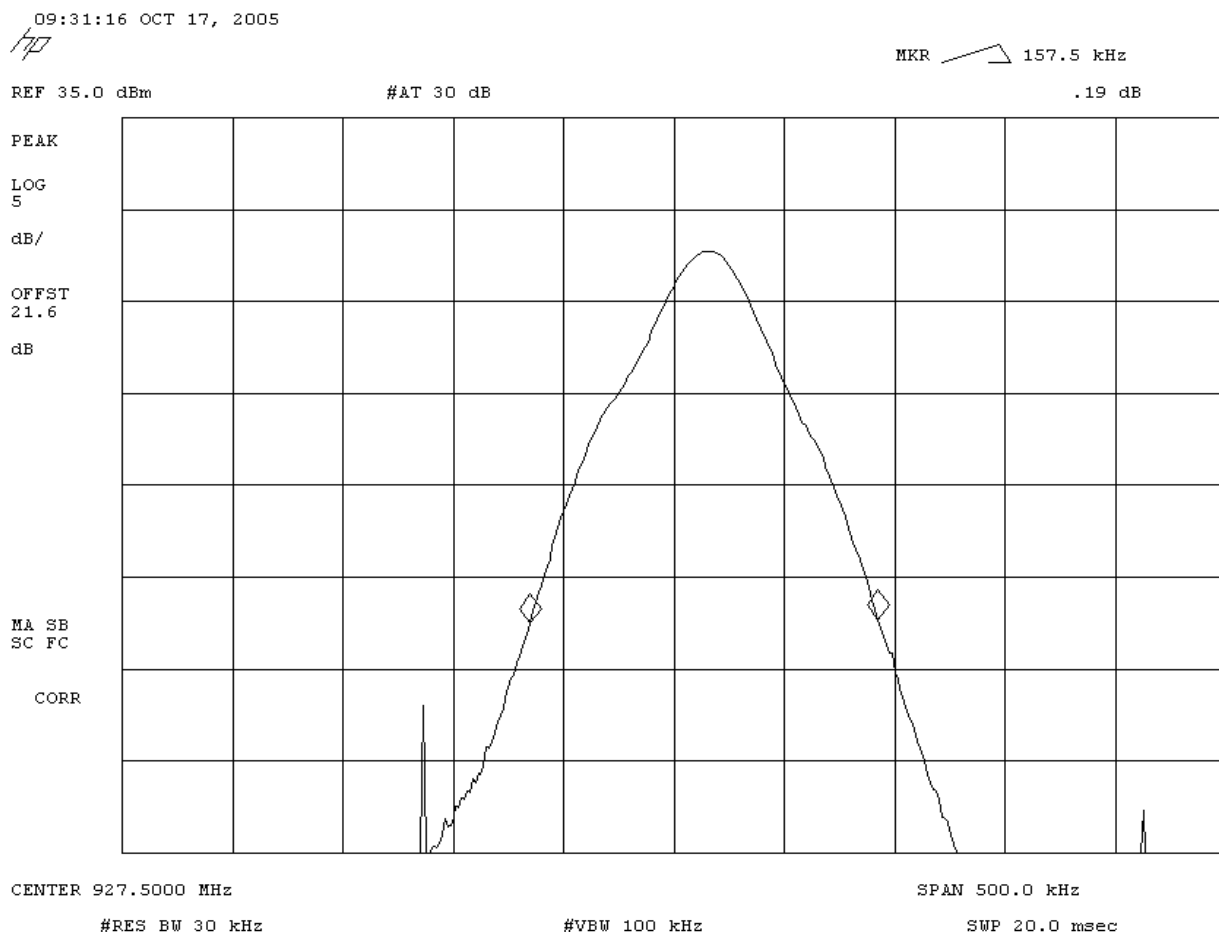
#VBW 100 kHz

SWP 20.0 msec

NORTHWEST EMC		OCCUPIED BANDWIDTH		Rev BETA 01/30/01	
EUT: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
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			180 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: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
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			157.5 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:

Maximum (40kBps)

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Software\Firmware Applied During Test

Exercise software	CTI AppVer 1.2.1 Build 25	Version	Firmware v3.09
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT - RFiD reader	Intermec Technologies Corporation	IM5	19210509018
Notebook PC	Dell	Latitude LM TS30G	K0204A
Notebook PC Power Supply	Dell	TSA8	None
DC Power Supply	MagTech	SPU24-104	01290800

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.0	No	DC Power Supply	EUT - RFiD reader
AC Power	No	1.8	No	DC Power Supply	AC Mains
Serial	Yes	1.75	No	EUT - RFiD reader	Notebook PC
DC Leads	No	1.2	PA	Notebook PC Power Supply	Notebook PC
AC Power	No	1.9	No	Notebook PC Power Supply	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	AAN	12/15/2004	12 mo
Signal Generator	Hewlett Packard	8341B	TGN	02/07/2005	13 mo
Power Meter	Hewlett Packard	E4418A	SPA	07/23/2004	24 mo
Power Sensor	Hewlett-Packard	8481H	SPB	07/23/2004	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.

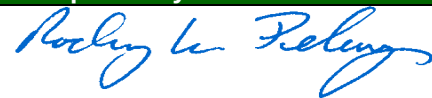
The measurement is made using a spectrum analyzer using the following settings:

- 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 maximum data rate in a no hop mode.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

Completed by:



NORTHWEST EMC		OUTPUT POWER		Rev BETA 01/30/01
EUT:	IM5	Work Order:	ITRM0091	
Serial Number:	19210509078	Date:	10/18/05	
Customer:	Intermec Technologies Corporation	Temperature:	70 °F	
Attendees:	Scott Holub	Tested by:	Rod Peloquin	Humidity:
Customer Ref. No.:	None	Power:	120VAC/60Hz	Job Site:
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 exceed 1 watt.				
RESULTS				
Pass		AMPLITUDE 979.49 mW		
SIGNATURE				
 Tested By: _____				
DESCRIPTION OF TEST				
Output Power - Low Channel - 40 kbps Data Rate				

11:09:46 OCT 18, 2005

hp

MKR 902.490 MHz

REF 1.500 W

#AT 20 dB

979.49 mW

PEAK

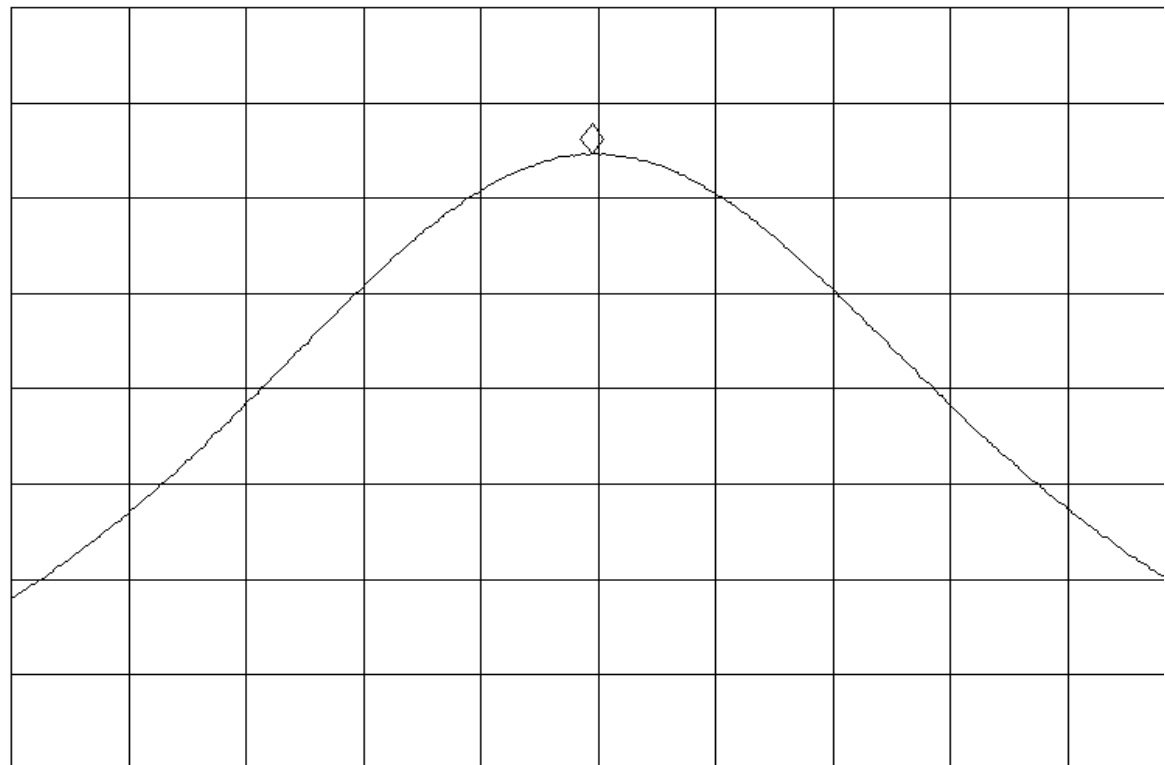
LIN

OFFST
29.7

dB

MA SB
SC FC

CORR



CENTER 902.500 MHz

SPAN 2.000 MHz

EMC		OUTPUT POWER		Rev BETA 01/30/01	
EUT:	IM5			Work Order:	ITRM0091
Serial Number:	19210509078			Date:	10/18/05
Customer:	Intermec Technologies Corporation			Temperature:	70 °F
Attendees:	Scott Holub	Tested by:	Rod Peloquin	Humidity:	49% RH
Customer Ref. No.:	None	Power:	120VAC/60Hz	Job Site:	EV06
TEST SPECIFICATIONS					
Specification:	47 CFR 15.247(b)	Year:	2005	Method:	DA 00-705, ANSI C63.4
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 exceed 1 watt.					
RESULTS					
Pass			AMPLITUDE 990.83 mW		
SIGNATURE					
 Tested By: _____					
DESCRIPTION OF TEST					
Output Power - Mid Channel - 40 kbps Data Rate					

10:55:22 OCT 18, 2005

hp

MKR 914.970 MHz

REF 1.500 W

#AT 20 dB

990.83 mW

PEAK

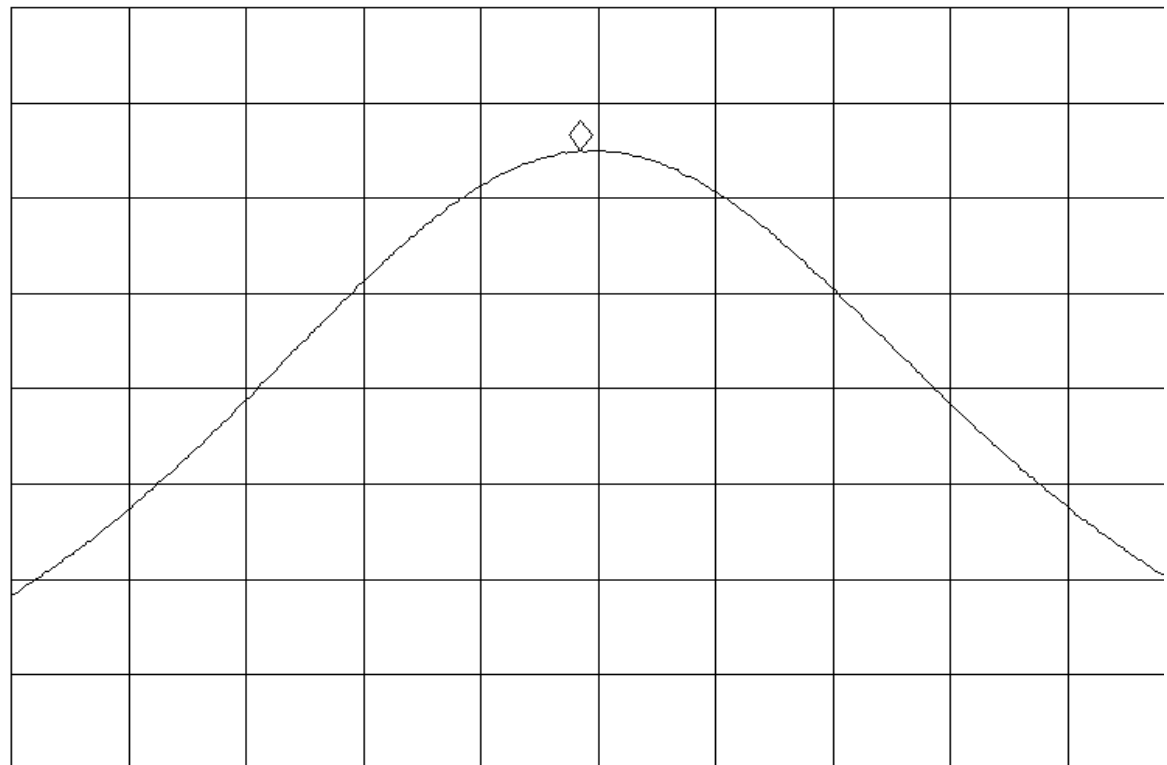
LIN

OFFST
29.7

dB

MA SB
SC FC

CORR



CENTER 915.000 MHz

SPAN 2.000 MHz

NORTHWEST EMC		OUTPUT POWER		Rev BETA 01/30/01
EUT:	IM5	Work Order:	ITRM0091	
Serial Number:	19210509078	Date:	10/18/05	
Customer:	Intermec Technologies Corporation	Temperature:	70 °F	
Attendees:	Scott Holub	Tested by:	Rod Peloquin	Humidity:
Customer Ref. No.:	None	Power:	120VAC/60Hz	Job Site:
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 exceed 1 watt.				
RESULTS				
Pass		AMPLITUDE 981.75 mW		
SIGNATURE				
 Tested By: _____				
DESCRIPTION OF TEST				
Output Power - High Channel - 40 kbps Data Rate				

11:27:05 OCT 18, 2005

HP

MKR 927.490 MHz

REF 1.500 W

#AT 20 dB

981.75 mW

PEAK

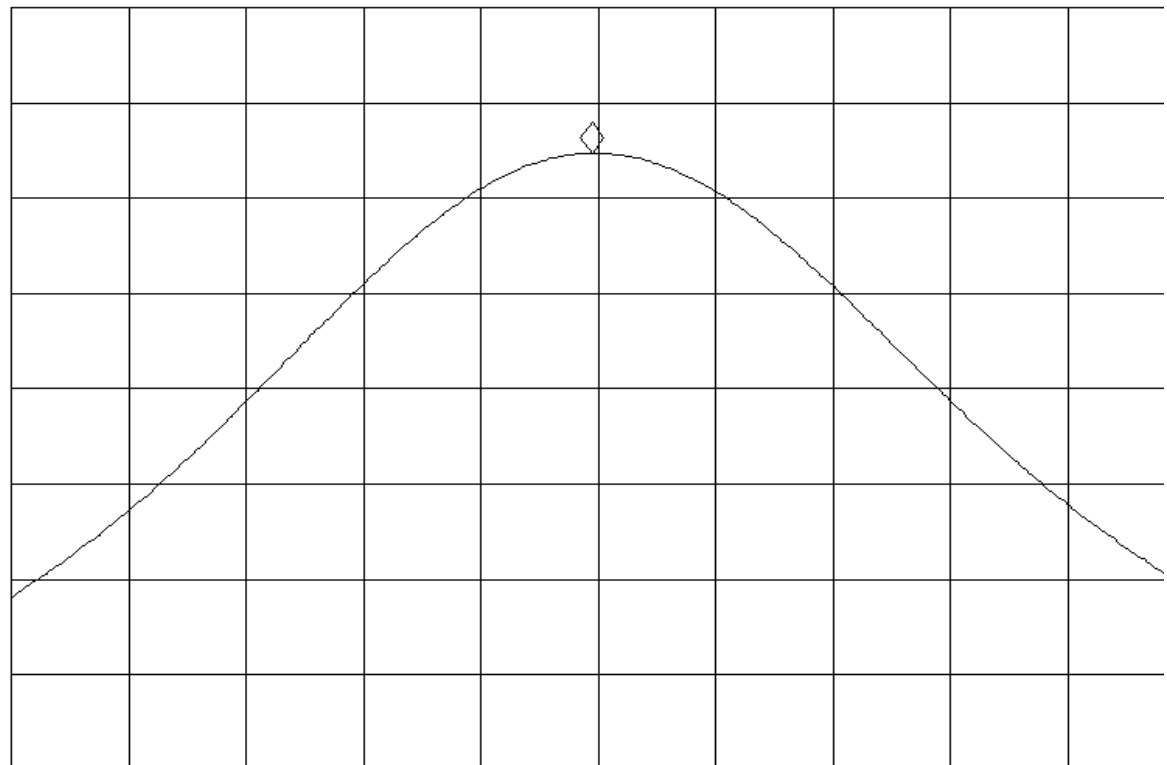
LIN

OFFST
29.7

dB

MA SB
SC FC

CORR



CENTER 927.500 MHz

SPAN 2.000 MHz

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:

Maximum (40kBps)

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Software\Firmware Applied During Test

Exercise software	CTI AppVer 1.2.1 Build 25	Version	Firmware v3.09
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT - RFiD reader	Intermec Technologies Corporation	IM5	19210509078
Notebook PC	Dell	Latitude LM TS30G	K0204A
Notebook PC Power Supply	Dell	TSA8	None
DC Power Supply	MagTech	SPU24-104	01290800

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.0	No	DC Power Supply	EUT - RFiD reader
AC Power	No	1.8	No	DC Power Supply	AC Mains
Serial	Yes	1.75	No	EUT - RFiD reader	Notebook PC
DC Leads	No	1.2	PA	Notebook PC Power Supply	Notebook PC
AC Power	No	1.9	No	Notebook PC Power Supply	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	AAN	12/15/2004	12 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: IM5		Work Order: ITRM0091	
Serial Number: 19210509078		Date: 10/17/05	
Customer: Intermec Technologies Corporation		Temperature: 70 °F	
Attendees: Scott Holub		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz	
		Job Site: EV06	

TEST SPECIFICATIONS

Specification: 47 CFR 15.247(d)	Year: 2005	Method: DA 00-705, ANSI C63.4	Year: 2003
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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	-48.03 dB

SIGNATURETested By: **DESCRIPTION OF TEST****Band Edge Compliance - Low Channel - 40 kbps Data Rate**

09:49:14 OCT 17, 2005

MKR  -500 kHz

REF 35.0 dBm

#AT 30 dB

-48.03 dB

PEAK

LOG
10

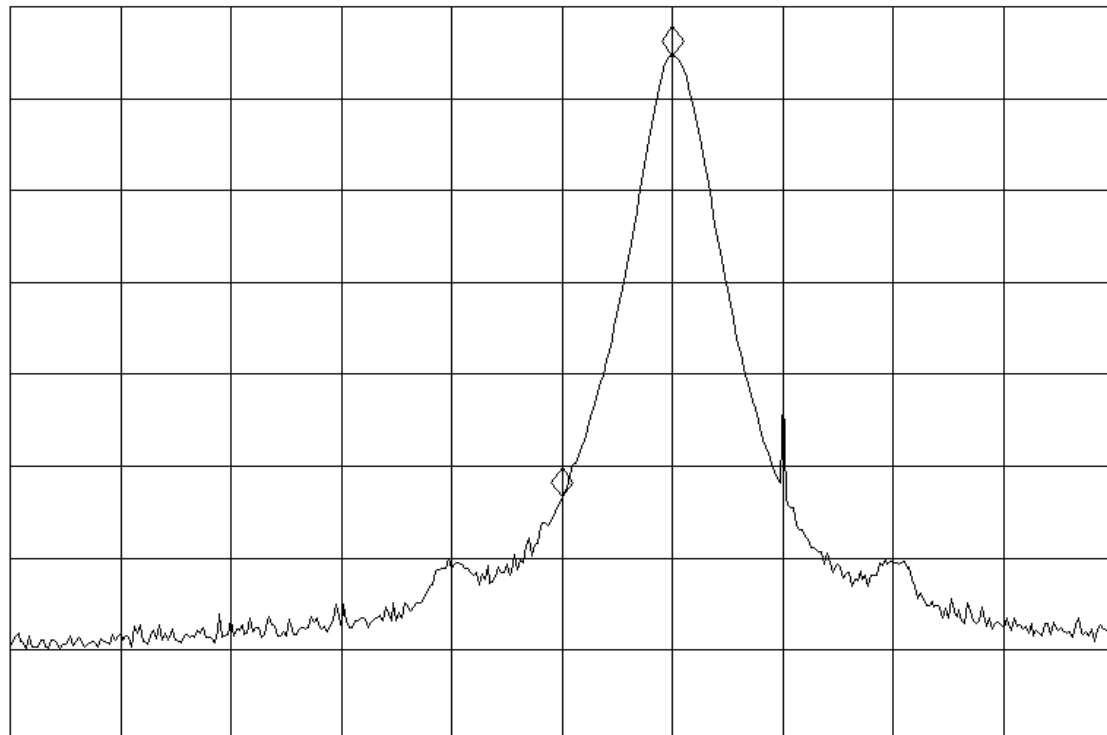
dB/

OFFST
21.6

dB

MA SB
SC FC

CORR



CENTER 902.000 MHz

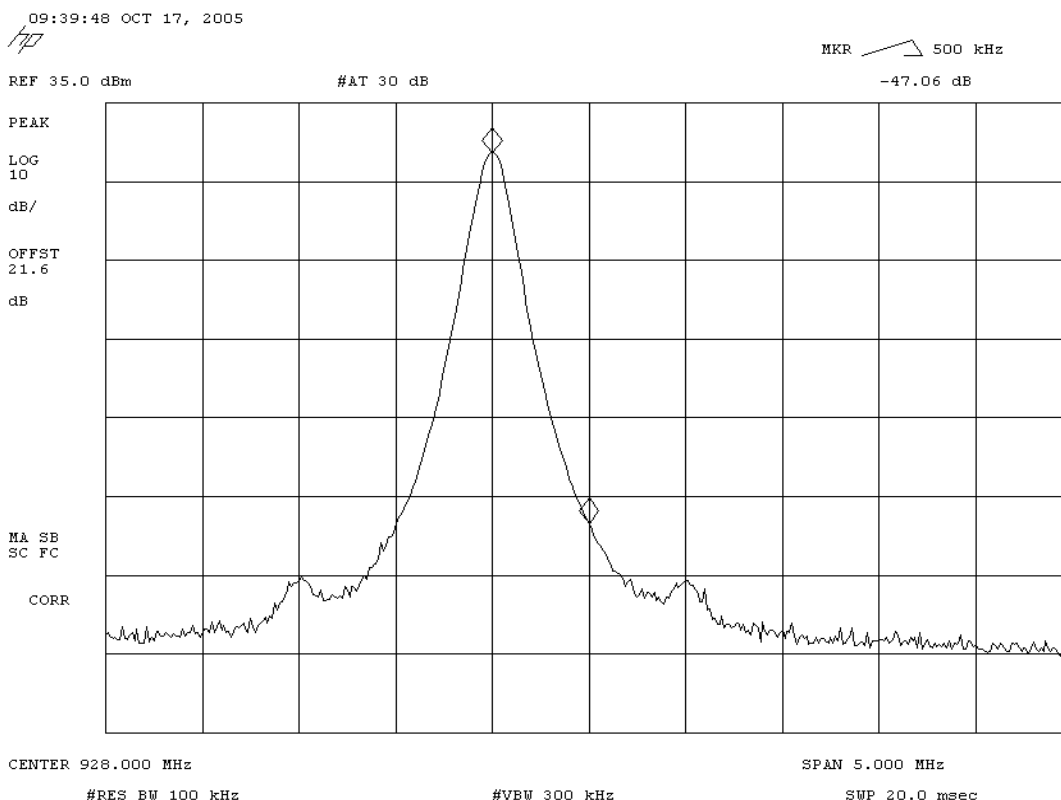
SPAN 5.000 MHz

#RES BW 100 kHz

#VBW 300 kHz

SWP 20.0 msec

NORTHWEST EMC				BAND EDGE COMPLIANCE		Rev BETA 01/30/01	
EUT: IMS				Work Order: ITRM0091			
Serial Number: 19210509078				Date: 10/17/05			
Customer: Intermec Technologies Corporation				Temperature: 70 °F			
Attendees: Scott Holub				Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None				Power: 120VAC/60Hz		Job Site: EV06	
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				-47.06 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. 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:

Maximum (40kBps)

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Software\Firmware Applied During Test

Exercise software	CTI AppVer 1.2.1 Build 25	Version	Firmware v3.09
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT - RFiD reader	Intermec Technologies Corporation	IM5	19210509078
Notebook PC	Dell	Latitude LM TS30G	K0204A
Notebook PC Power Supply	Dell	TSA8	None
DC Power Supply	MagTech	SPU24-104	01290800

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	No	2.0	No	DC Power Supply	EUT - RFiD reader
AC Power	No	1.8	No	DC Power Supply	AC Mains
Serial	Yes	1.75	No	EUT - RFiD reader	Notebook PC
DC Leads	No	1.2	PA	Notebook PC Power Supply	Notebook PC
AC Power	No	1.9	No	Notebook PC Power Supply	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	Tektronix	2784	AAO	01/02/2005	12 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 maximum data rate 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: IM5	Work Order: ITRM0091
Serial Number: 19210509078	Date: 10/17/05
Customer: Intermec Technologies Corporation	Temperature: 70 °F
Attendees: Scott Holub	Tested by: Rod Peloquin
Customer Ref. No.: None	Humidity: 49% RH
	Power: 120VAC/60Hz
	Job Site: EV06

TEST SPECIFICATIONS

Specification: 47 CFR 15.247(d)	Year: 2005-04	Method: DA 00-705, ANSI C63.4	Year: 2003
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SAMPLE CALCULATIONS**COMMENTS****EUT OPERATING MODES**

Modulated 40 kbps data rate

DEVIATIONS FROM TEST STANDARD

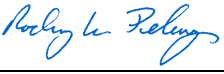
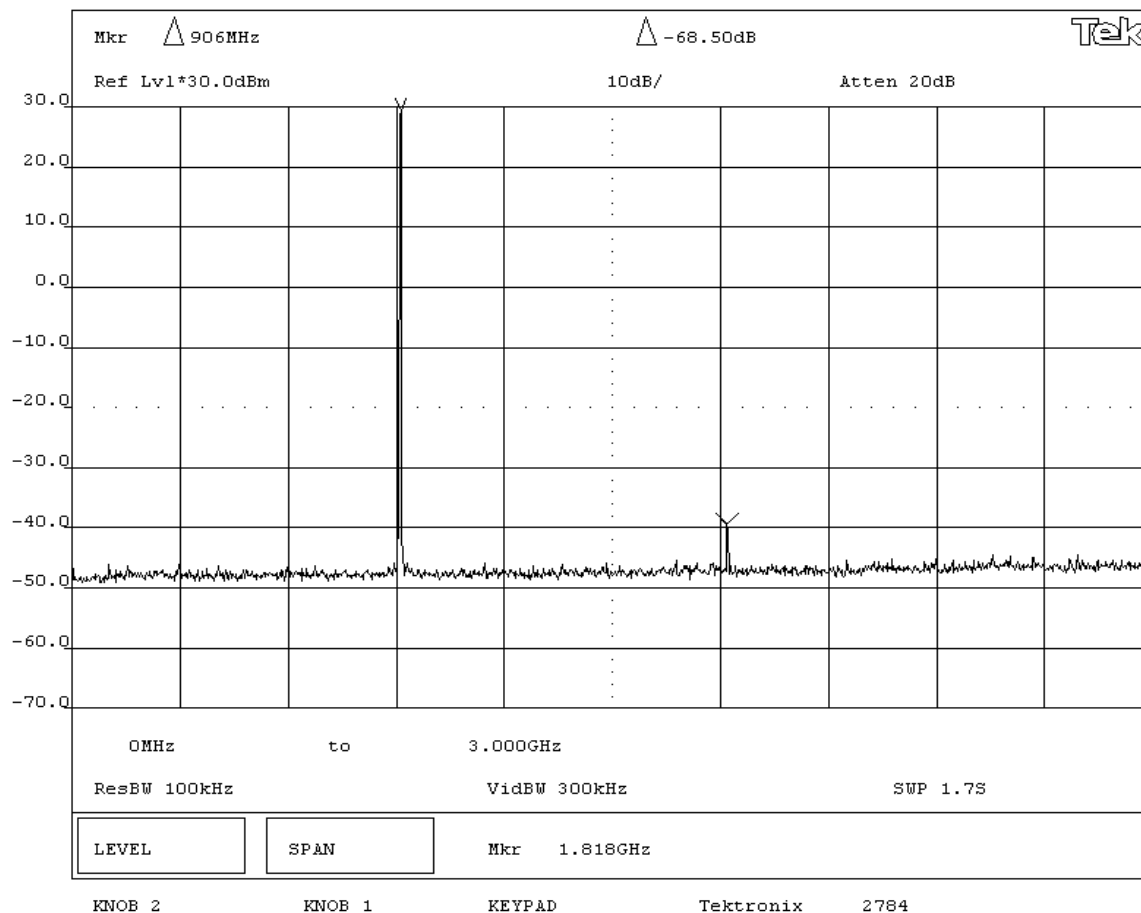
None

REQUIREMENTS

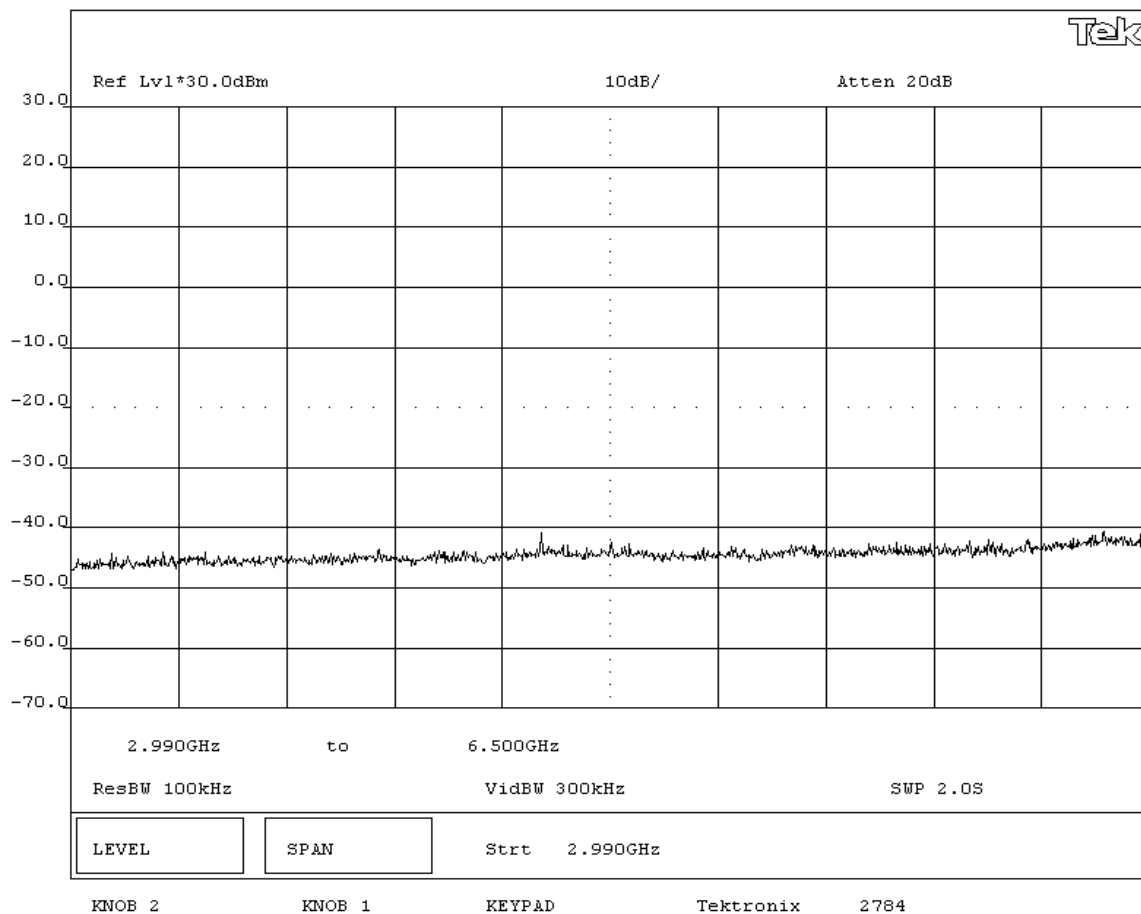
Maximum level of any spurious emission outside of the authorized band is 20 dB down from the fundamental

RESULTS

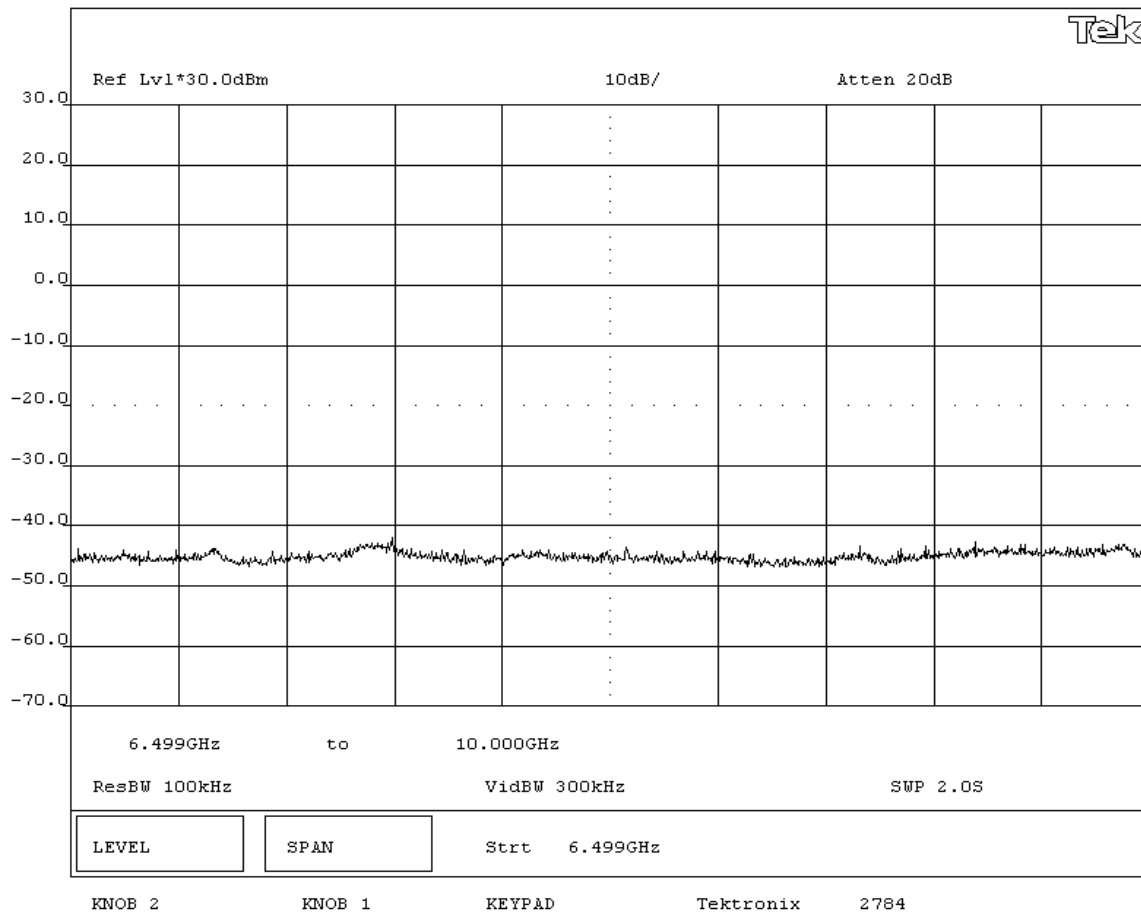
Pass

SIGNATURETested By: **DESCRIPTION OF TEST****Antenna Conducted Spurious Emissions - Low Channel 0MHz-3GHz**

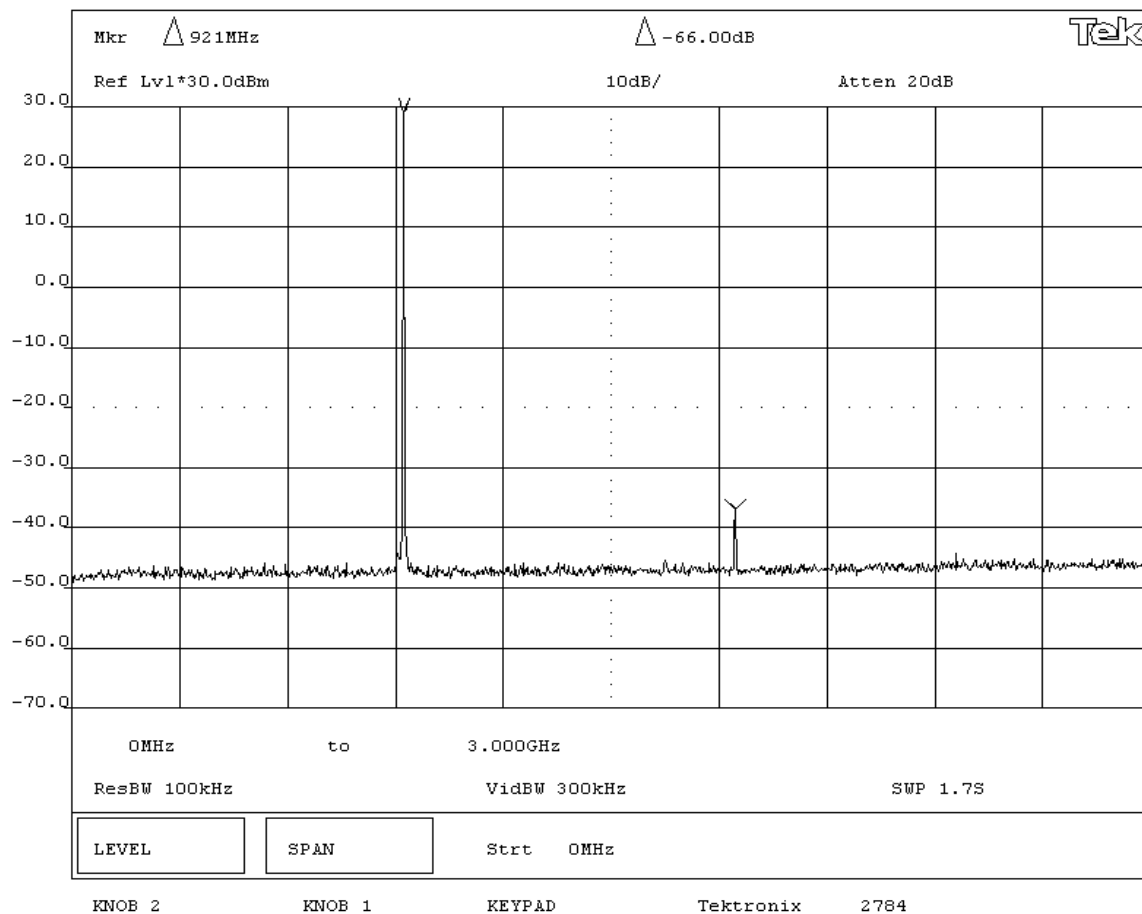
NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: IM5				Work Order: ITRM0091					
Serial Number: 19210509078				Date: 10/17/05					
Customer: Intermec Technologies Corporation				Temperature: 70 °F					
Attendees: Scott Holub				Tested by: Rod Peloquin				Humidity: 49% RH	
Customer Ref. No.: None				Power: 120VAC/60Hz				Job Site: EV06	
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									



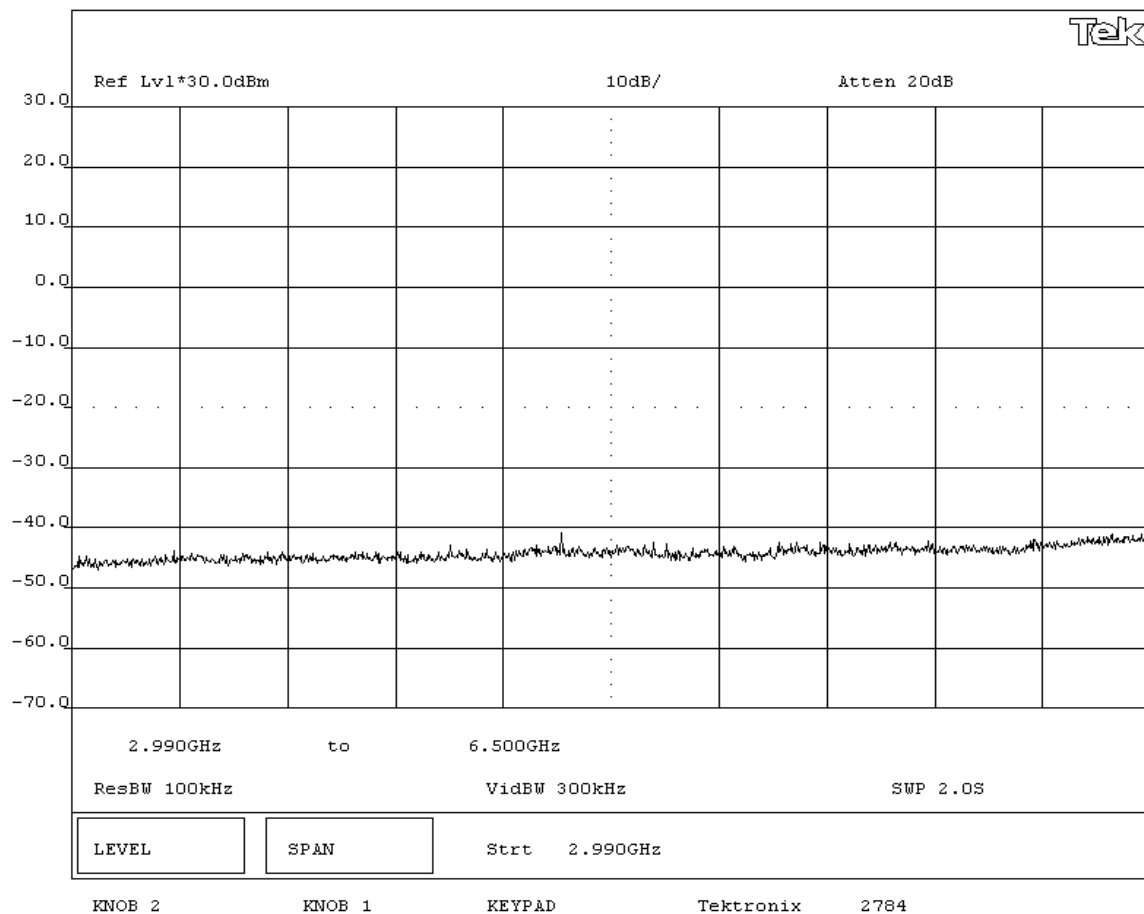
NORTHWEST EMC		EMISSIONS DATA SHEET		Rev BETA 01/30/01	
EUT: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
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					



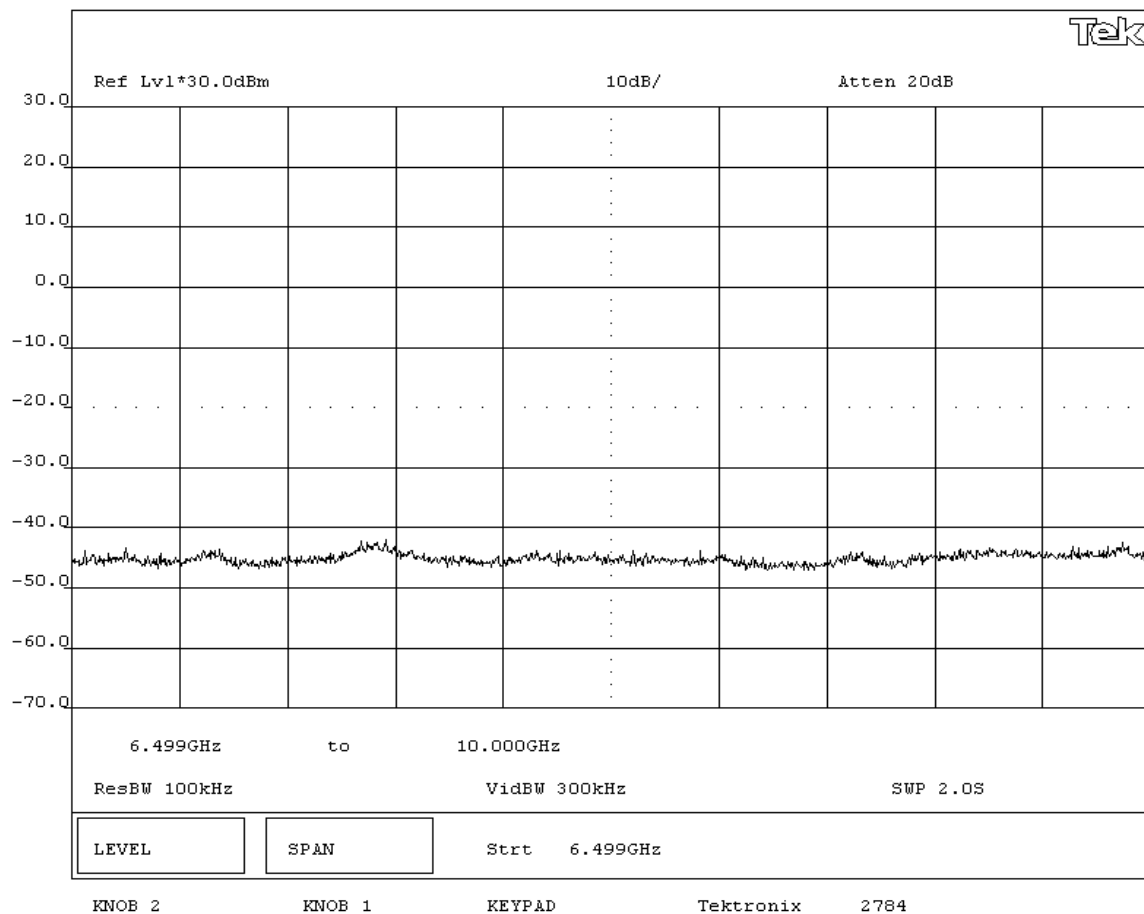
NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: IM5				Work Order: ITRM0091					
Serial Number: 19210509078				Date: 10/17/05					
Customer: Intermec Technologies Corporation				Temperature: 70 °F					
Attendees: Scott Holub				Tested by: Rod Peloquin		Humidity: 49% RH			
Customer Ref. No.: None				Power: 120VAC/60Hz		Job Site: EV06			
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: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
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: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin		Humidity: 49% RH	
Customer Ref. No.: None		Power: 120VAC/60Hz		Job Site: EV06	
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: IM5			Work Order: ITRM0091		
Serial Number: 19210509078			Date: 10/17/05		
Customer: Intermec Technologies Corporation			Temperature: 70 °F		
Attendees: Scott Holub		Tested by: Rod Peloquin	Humidity: 49% RH		
Customer Ref. No.: None		Power: 120VAC/60Hz	Job Site: EV06		

TEST SPECIFICATIONS

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

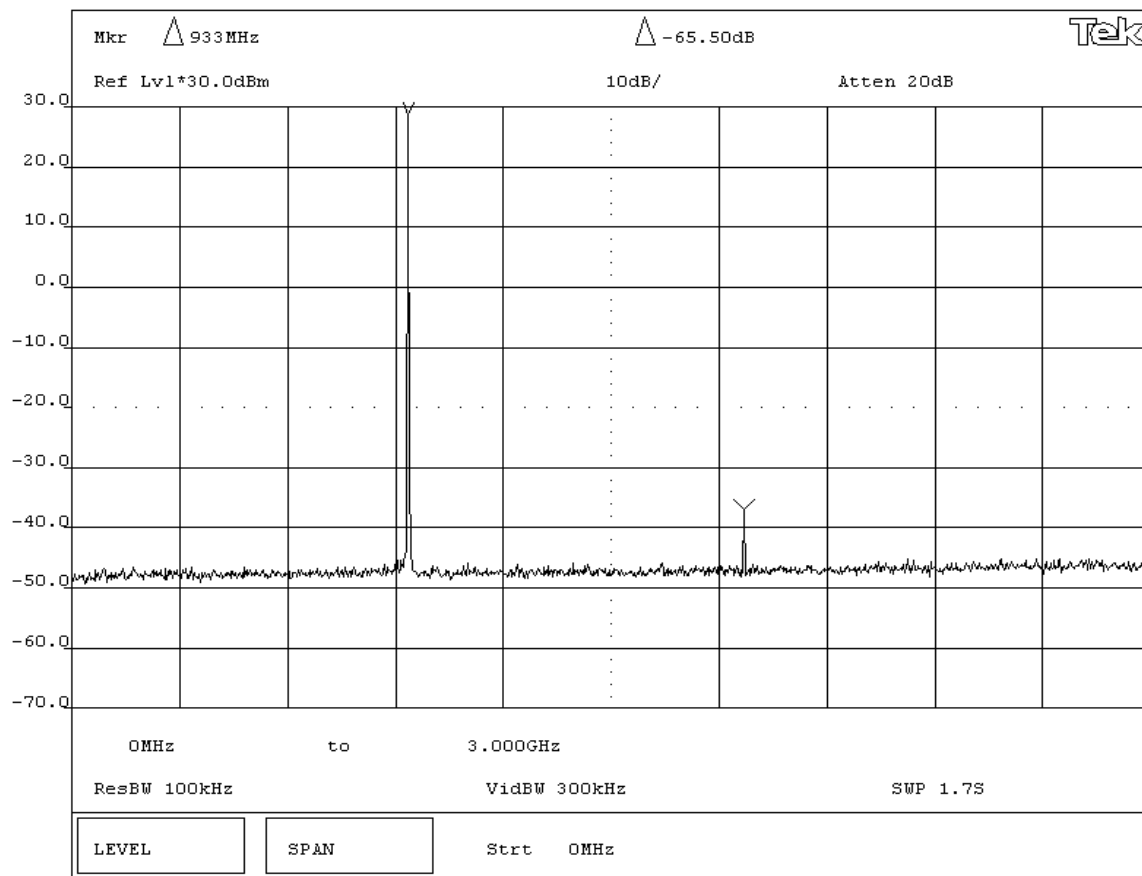
Pass

SIGNATURE

Tested By: 

DESCRIPTION OF TEST

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



KNOB 2

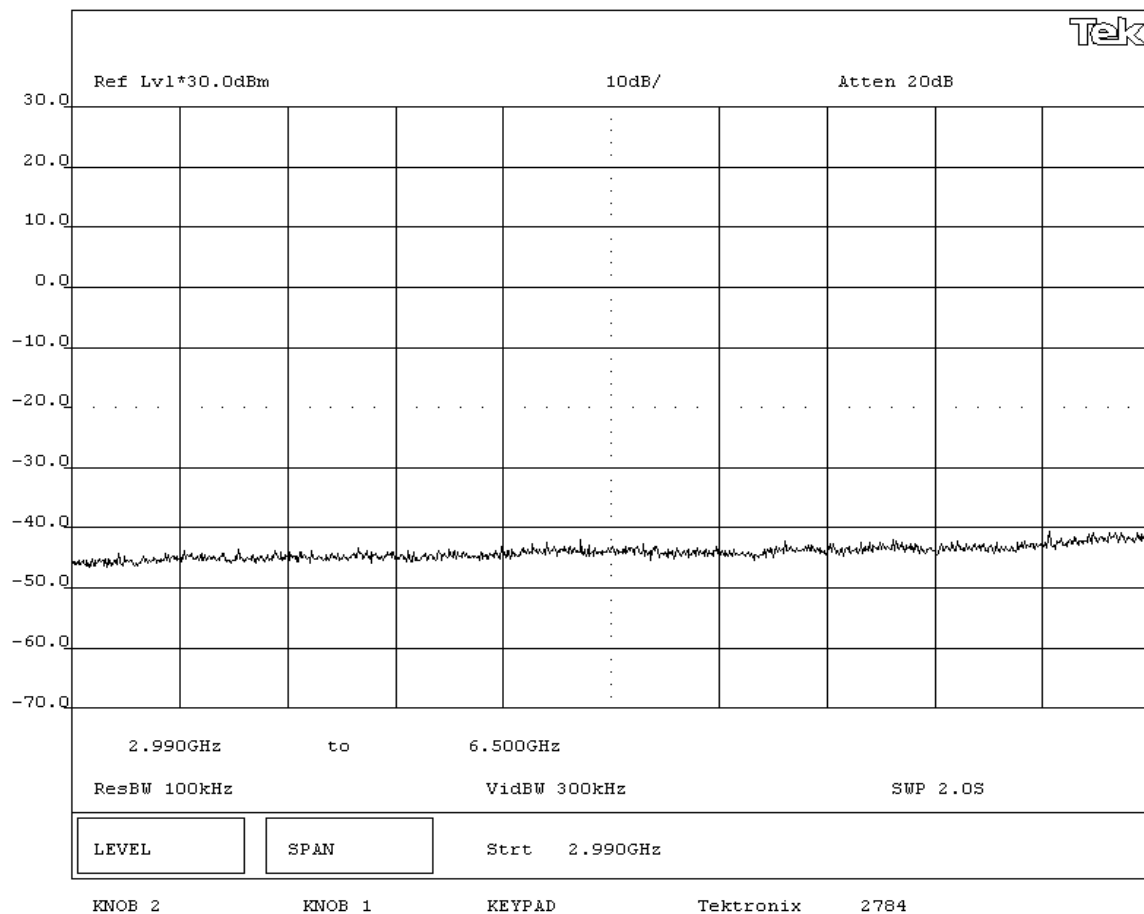
KNOB 1

KEYPAD

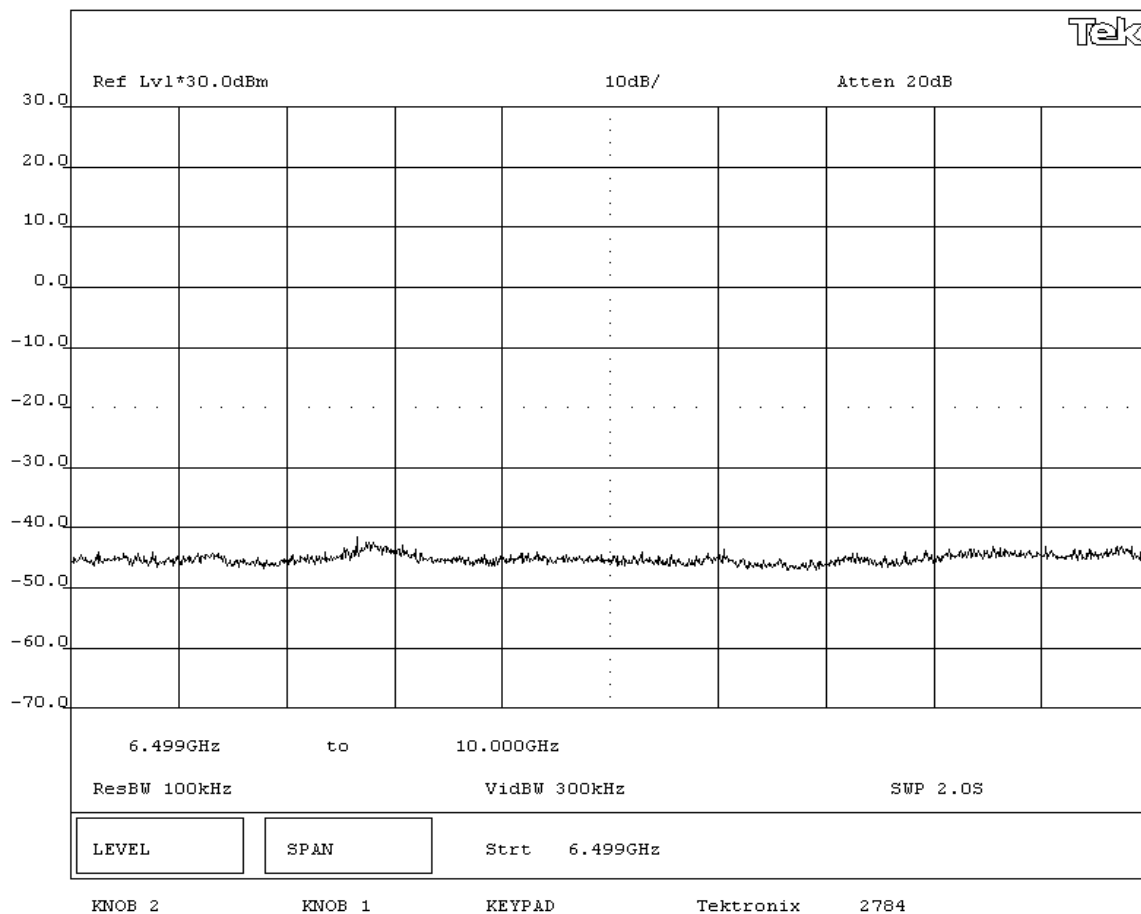
Tektronix

2784

NORTHWEST EMC				EMISSIONS DATA SHEET				Rev BETA 01/30/01	
EUT: IM5				Work Order: ITRM0091					
Serial Number: 19210509078				Date: 10/17/05					
Customer: Intermec Technologies Corporation				Temperature: 70 °F					
Attendees: Scott Holub				Tested by: Rod Peloquin				Humidity: 49% RH	
Customer Ref. No.: None				Power: 120VAC/60Hz				Job Site: EV06	
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: IM5				Work Order: ITRM0091					
Serial Number: 19210509078				Date: 10/17/05					
Customer: Intermec Technologies Corporation				Temperature: 70 °F					
Attendees: Scott Holub				Tested by: Rod Peloquin				Humidity: 49% RH	
Customer Ref. No.: None				Power: 120VAC/60Hz				Job Site: EV06	
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									



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:

Mobile Mark Patch Antenna, M/N: PN10-915RCP1, Intermec Part # 805-629-001
Maxrad Patch Antenna, M/N: MP8906, Intermec Part #805-610-001
Intermec Patch Antenna, M/N: ITA915017, Intermec Part #ITA915017

Data Rates Investigated:

Maximum (40kBps)

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120VAC/60Hz

Frequency Range Investigated

Start Frequency	30 MHz	Stop Frequency	10 GHz
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Software\Firmware Applied During Test

Exercise software	CTI AppVer 1.2.1 Build 25	Version	Firmware v3.09
Description			
The system was tested using special software developed to test all functions of the device during the test.			

EUT and Peripherals			
Description	Manufacturer	Model/Part Number	Serial Number
EUT - RFiD reader	Intermec Technologies Corporation	IM5	19210509018
DC Power Supply	MagTech	SPU24-104	01290800
Patch Antenna	Mobile Mark	PN10-915RCPI (Intermec Part #805-62)	Unknown
Patch Antenna	Maxrad	MP8906 (Intermec Part #805-610-001)	Unknown
Antenna - Card programmer	Intermec Technologies Corporation	ITA915017	Unknown

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Notebook PC	Dell	Latitude LM TS30G	K0204A
Notebook PC Power Supply	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
DC Leads	No	2.0	No	DC Power Supply	EUT - RFiD reader
AC Power	No	1.8	No	DC Power Supply	AC Mains
Serial	Yes	3.0	No	EUT - RFiD reader	Notebook PC
DC Leads	No	1.2	PA	Notebook PC Power Supply	Notebook PC
AC Power	No	1.9	No	Notebook PC Power Supply	AC Mains
Antenna	Yes	3.3	No	EUT - RFID reader	Patch Antenna (Mobile Mark)
Antenna	Yes	1.4	No	EUT - RFID reader	Patch Antenna (Maxrad)
Antenna	Yes	1.4	No	EUT - RFID reader	Card reader (Intermec)
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	Agilent	E4446A	AAQ	06/15/2005	13 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Antenna, Horn	EMCO	3115	AHC	08/30/2005	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	08/02/2005	13 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	08/02/2005	13 mo
Low Pass Filter 0-425 MHz	Micro-Tronics	LPM50003	LFB	09/28/2005	13 mo
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	09/28/2005	13 mo
.5-1 GHz Notch Filter	K&L Microwave	3TNF-500/1000-N/N	HFT	08/04/2005	13 mo

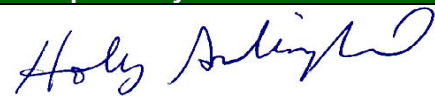
Test Description

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

Configuration: The highest gain of each type of antenna to be used and the lowest gain overall were tested with the EUT. Previous FCC testing of Sinclair SRL-441U Log antenna excluded it from being tested at this time. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

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
<i>Measurements were made using the bandwidths and detectors specified. No video filter was used.</i>			

Completed by:



NORTHWEST EMC		RADIATED EMISSIONS DATA SHEET		PSA 2005.10.04 EMI 2005.10.11								
EUT: IM5			Work Order: JTRM0091									
Serial Number: 19210509078			Date: 10/18/05									
Customer: Intermec Technologies Corporation			Temperature: 23									
Attendees: None			Humidity: 45%									
Project: None			Barometric Pressure: 30.05									
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS			Test Method									
FCC 15.247(d) Spurious Radiated Emissions:2005-9			ANSI C63.4:2003									
TEST PARAMETERS												
Antenna Height(s) (m)		1 - 4		Test Distance (m) 3								
COMMENTS												
Mobile Mark Patch Antenna, Intermec Part # 805-629-001.												
EUT OPERATING MODES												
Transmit low channel, no hop.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #		1										
Configuration #												
Results		Pass										
Signature <i>Holly Ashkannejhad</i>												
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)
2707.572	43.5	1.4	79.0	1.9	3.0	0.0	V-Horn	AV	0.0	44.9	54.0	-9.1
2707.552	42.8	1.4	92.0	1.9	3.0	0.0	V-Horn	AV	0.0	44.2	54.0	-9.8
2707.609	42.3	1.4	96.0	1.9	3.0	0.0	V-Horn	AV	0.0	43.7	54.0	-10.3
4512.626	35.7	5.7	124.0	1.8	3.0	0.0	H-Horn	AV	0.0	41.4	54.0	-12.6
4512.624	33.1	5.7	129.0	1.8	3.0	0.0	H-Horn	AV	0.0	38.8	54.0	-15.2
4512.625	32.9	5.7	23.0	1.8	3.0	0.0	V-Horn	AV	0.0	38.6	54.0	-15.4
2707.597	37.1	1.4	142.0	3.6	3.0	0.0	H-Horn	AV	0.0	38.5	54.0	-15.5
2707.601	36.1	1.4	136.0	3.6	3.0	0.0	H-Horn	AV	0.0	37.5	54.0	-16.5
4512.630	31.6	5.7	63.0	1.8	3.0	0.0	H-Horn	AV	0.0	37.3	54.0	-16.7
4512.571	31.3	5.7	168.0	1.8	3.0	0.0	V-Horn	AV	0.0	37.0	54.0	-17.0
2707.523	35.4	1.4	132.0	3.6	3.0	0.0	H-Horn	AV	0.0	36.8	54.0	-17.2
4512.637	30.8	5.7	38.0	1.8	3.0	0.0	V-Horn	AV	0.0	36.5	54.0	-17.5
2707.654	52.6	1.4	79.0	1.9	3.0	0.0	V-Horn	PK	0.0	54.0	74.0	-20.0
2707.440	51.3	1.4	92.0	1.9	3.0	0.0	V-Horn	PK	0.0	52.7	74.0	-21.3
2707.508	50.9	1.4	96.0	1.9	3.0	0.0	V-Horn	PK	0.0	52.3	74.0	-21.7
4512.582	43.6	5.7	124.0	1.8	3.0	0.0	H-Horn	PK	0.0	49.3	74.0	-24.7
4512.496	42.5	5.7	129.0	1.8	3.0	0.0	H-Horn	PK	0.0	48.2	74.0	-25.8
4512.540	41.9	5.7	23.0	1.8	3.0	0.0	V-Horn	PK	0.0	47.6	74.0	-26.4
4512.626	41.7	5.7	63.0	1.8	3.0	0.0	H-Horn	PK	0.0	47.4	74.0	-26.6
4512.271	41.0	5.7	168.0	1.8	3.0	0.0	V-Horn	PK	0.0	46.7	74.0	-27.3
2707.422	45.1	1.4	142.0	3.6	3.0	0.0	H-Horn	PK	0.0	46.5	74.0	-27.5

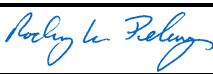
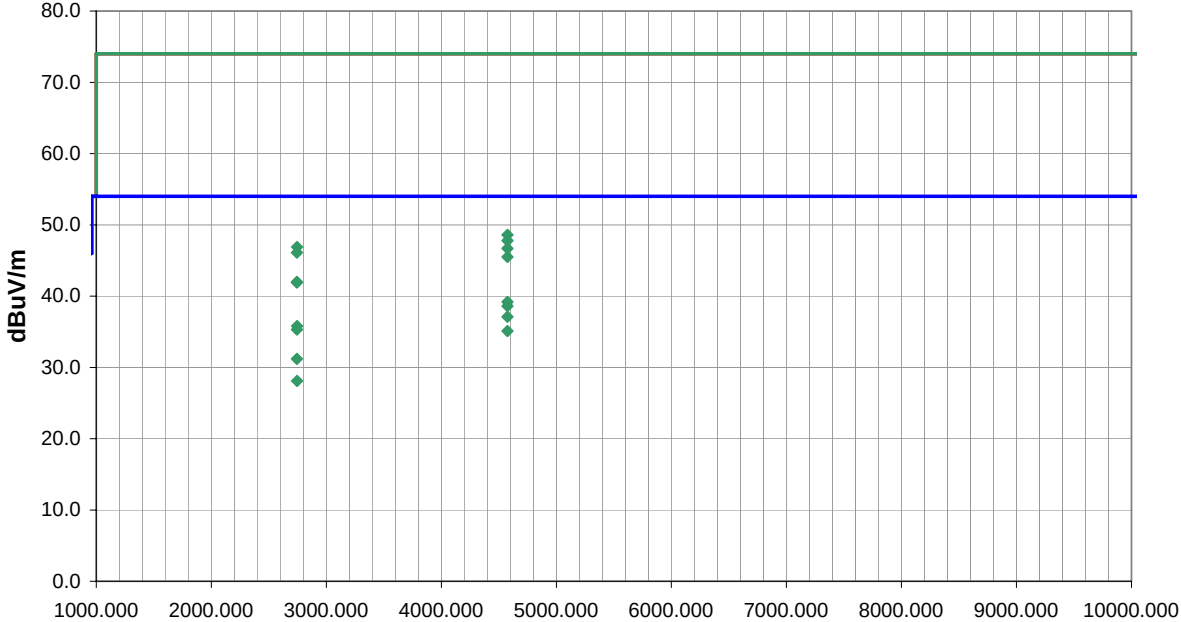
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
2707.569	44.6	1.4	136.0	3.6	3.0	0.0	H-Horn	PK	0.0	46.0	74.0	-28.0
4512.613	40.0	5.7	38.0	1.8	3.0	0.0	V-Horn	PK	0.0	45.7	74.0	-28.3
2707.350	43.7	1.4	132.0	3.6	3.0	0.0	H-Horn	PK	0.0	45.1	74.0	-28.9

NORTHWEST EMC		RADIATED EMISSIONS DATA SHEET										PSA 2005.10.04 EMI 2005.10.11	
EUT: IM5						Work Order: ITRM0091							
Serial Number: 19210509078						Date: 10/18/05							
Customer: Intermec Technologies Corporation						Temperature: 23							
Attendees: None						Humidity: 45%							
Project: None						Barometric Pressure: 30.05							
Tested by: Holly Ashkannejhad				Power: 120VAC, 60Hz		Job Site: EV01							
TEST SPECIFICATIONS						Test Method							
FCC 15.247(d) Spurious Radiated Emissions:2005-9						ANSI C63.4:2003							
TEST PARAMETERS													
Antenna Height(s) (m)				1 - 4		Test Distance (m)		3					
COMMENTS													
Mobile Mark Patch Antenna, Intermec Part # 805-629-001.													
EUT OPERATING MODES													
Transmit mid channel, no hop.													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		2		Signature <i>Holly Ashkannejhad</i>									
Configuration #													
Results		Pass											
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)	
4575.122	35.1	5.8	212.0	1.8	3.0	0.0	H-Horn	AV	0.0	40.9	54.0	-13.1	
4575.163	32.8	5.8	84.0	1.8	3.0	0.0	V-Horn	AV	0.0	38.6	54.0	-15.4	
2745.090	33.3	1.5	77.0	2.2	3.0	0.0	V-Horn	AV	0.0	34.8	54.0	-19.2	
4575.029	44.8	5.8	212.0	1.8	3.0	0.0	H-Horn	PK	0.0	50.6	74.0	-23.4	
2745.072	29.0	1.5	5.0	2.8	3.0	0.0	H-Horn	AV	0.0	30.5	54.0	-23.5	
4574.978	42.3	5.8	84.0	1.8	3.0	0.0	V-Horn	PK	0.0	48.1	74.0	-25.9	
2745.231	43.5	1.5	77.0	2.2	3.0	0.0	V-Horn	PK	0.0	45.0	74.0	-29.0	
2744.863	39.1	1.5	5.0	2.8	3.0	0.0	H-Horn	PK	0.0	40.6	74.0	-33.4	

NORTHWEST		PSA 2005.10.04 EMI 2005.10.11										
EMC		RADIATED EMISSIONS DATA SHEET										
EUT: IM5		Work Order: JTRM0091										
Serial Number: 19210509078		Date: 10/18/05										
Customer: Intermec Technologies Corporation		Temperature: 23										
Attendees: None		Humidity: 45%										
Project: None		Barometric Pressure: 30.05										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz	Job Site: EV01									
TEST SPECIFICATIONS		Test Method										
FCC 15.247(d) Spurious Radiated Emissions:2005-9		ANSI C63.4:2003										
TEST PARAMETERS												
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3									
COMMENTS												
Mobile Mark Patch Antenna, Intermec Part # 805-629-001.												
EUT OPERATING MODES												
Transmit high channel, no hop.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	3	Signature <i>Holly Ashkannejhad</i>										
Configuration #												
Results	Pass											
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)
4637.639	31.2	5.9	84.0	2.6	3.0	0.0	V-Horn	AV	0.0	37.1	54.0	-16.9
2782.529	33.7	1.7	59.0	1.9	3.0	0.0	V-Horn	AV	0.0	35.4	54.0	-18.6
4637.657	29.5	5.9	29.0	2.0	3.0	0.0	H-Horn	AV	0.0	35.4	54.0	-18.6
2782.583	27.8	1.7	15.0	2.9	3.0	0.0	H-Horn	AV	0.0	29.5	54.0	-24.5
4637.419	42.3	5.9	84.0	2.6	3.0	0.0	V-Horn	PK	0.0	48.2	74.0	-25.8
4637.713	40.5	5.9	29.0	2.0	3.0	0.0	H-Horn	PK	0.0	46.4	74.0	-27.6
2782.469	42.6	1.7	59.0	1.9	3.0	0.0	V-Horn	PK	0.0	44.3	74.0	-29.7
2782.638	38.4	1.7	15.0	2.9	3.0	0.0	H-Horn	PK	0.0	40.1	74.0	-33.9

NORTHWEST EMC										RADIATED EMISSIONS DATA SHEET										PSA 2005.10.04 EMI 2005.10.11																																																																																																																																																																																																																																																																																													
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<table border="1" style="width: 100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> </tr> </thead> <tbody> <tr><td>2707.530</td><td>44.0</td><td>1.4</td><td>67.0</td><td>1.6</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>45.4</td><td>54.0</td><td>-8.6</td></tr> <tr><td>2707.583</td><td>41.7</td><td>1.4</td><td>91.0</td><td>1.6</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>43.1</td><td>54.0</td><td>-10.9</td></tr> <tr><td>2707.599</td><td>41.5</td><td>1.4</td><td>237.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>42.9</td><td>54.0</td><td>-11.1</td></tr> <tr><td>2707.514</td><td>41.1</td><td>1.4</td><td>270.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>42.5</td><td>54.0</td><td>-11.5</td></tr> <tr><td>5415.095</td><td>31.3</td><td>7.9</td><td>148.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>39.2</td><td>54.0</td><td>-14.8</td></tr> <tr><td>5415.125</td><td>30.4</td><td>7.9</td><td>318.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>38.3</td><td>54.0</td><td>-15.7</td></tr> <tr><td>5415.136</td><td>30.1</td><td>7.9</td><td>126.0</td><td>1.4</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>38.0</td><td>54.0</td><td>-16.0</td></tr> <tr><td>4512.613</td><td>31.9</td><td>5.7</td><td>161.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>37.6</td><td>54.0</td><td>-16.4</td></tr> <tr><td>5415.098</td><td>28.8</td><td>7.9</td><td>140.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>36.7</td><td>54.0</td><td>-17.3</td></tr> <tr><td>2707.573</td><td>35.3</td><td>1.4</td><td>-1.0</td><td>3.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>36.7</td><td>54.0</td><td>-17.3</td></tr> <tr><td>5415.069</td><td>28.0</td><td>7.9</td><td>214.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>35.9</td><td>54.0</td><td>-18.1</td></tr> <tr><td>3610.078</td><td>31.0</td><td>4.3</td><td>291.0</td><td>3.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>35.3</td><td>54.0</td><td>-18.7</td></tr> <tr><td>4512.596</td><td>29.5</td><td>5.7</td><td>103.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>35.2</td><td>54.0</td><td>-18.8</td></tr> <tr><td>4512.585</td><td>28.3</td><td>5.7</td><td>137.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>34.0</td><td>54.0</td><td>-20.0</td></tr> <tr><td>4512.577</td><td>28.0</td><td>5.7</td><td>155.0</td><td>2.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>33.7</td><td>54.0</td><td>-20.3</td></tr> <tr><td>2707.507</td><td>51.5</td><td>1.4</td><td>67.0</td><td>1.6</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>52.9</td><td>74.0</td><td>-21.1</td></tr> <tr><td>2707.244</td><td>50.3</td><td>1.4</td><td>91.0</td><td>1.6</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>51.7</td><td>74.0</td><td>-22.3</td></tr> <tr><td>2707.542</td><td>49.3</td><td>1.4</td><td>237.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>50.7</td><td>74.0</td><td>-23.3</td></tr> <tr><td>2707.472</td><td>49.1</td><td>1.4</td><td>270.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>50.5</td><td>74.0</td><td>-23.5</td></tr> <tr><td>3610.009</td><td>25.3</td><td>4.3</td><td>85.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>29.6</td><td>54.0</td><td>-24.4</td></tr> <tr><td>5415.196</td><td>39.7</td><td>7.9</td><td>318.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>47.6</td><td>74.0</td><td>-26.4</td></tr> </tbody> </table>																				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)	2707.530	44.0	1.4	67.0	1.6	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6	2707.583	41.7	1.4	91.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.1	54.0	-10.9	2707.599	41.5	1.4	237.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.9	54.0	-11.1	2707.514	41.1	1.4	270.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.5	54.0	-11.5	5415.095	31.3	7.9	148.0	1.2	3.0	0.0	V-Horn	AV	0.0	39.2	54.0	-14.8	5415.125	30.4	7.9	318.0	1.2	3.0	0.0	V-Horn	AV	0.0	38.3	54.0	-15.7	5415.136	30.1	7.9	126.0	1.4	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0	4512.613	31.9	5.7	161.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.6	54.0	-16.4	5415.098	28.8	7.9	140.0	1.2	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3	2707.573	35.3	1.4	-1.0	3.0	3.0	0.0	H-Horn	AV	0.0	36.7	54.0	-17.3	5415.069	28.0	7.9	214.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.9	54.0	-18.1	3610.078	31.0	4.3	291.0	3.0	3.0	0.0	H-Horn	AV	0.0	35.3	54.0	-18.7	4512.596	29.5	5.7	103.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.2	54.0	-18.8	4512.585	28.3	5.7	137.0	1.2	3.0	0.0	V-Horn	AV	0.0	34.0	54.0	-20.0	4512.577	28.0	5.7	155.0	2.2	3.0	0.0	H-Horn	AV	0.0	33.7	54.0	-20.3	2707.507	51.5	1.4	67.0	1.6	3.0	0.0	V-Horn	PK	0.0	52.9	74.0	-21.1	2707.244	50.3	1.4	91.0	1.6	3.0	0.0	V-Horn	PK	0.0	51.7	74.0	-22.3	2707.542	49.3	1.4	237.0	1.3	3.0	0.0	V-Horn	PK	0.0	50.7	74.0	-23.3	2707.472	49.1	1.4	270.0	1.3	3.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5	3610.009	25.3	4.3	85.0	1.2	3.0	0.0	V-Horn	AV	0.0	29.6	54.0	-24.4	5415.196	39.7	7.9	318.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.6	74.0	-26.4
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)																																																																																																																																																																																																																																																																																																					
2707.530	44.0	1.4	67.0	1.6	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6																																																																																																																																																																																																																																																																																																					
2707.583	41.7	1.4	91.0	1.6	3.0	0.0	V-Horn	AV	0.0	43.1	54.0	-10.9																																																																																																																																																																																																																																																																																																					
2707.599	41.5	1.4	237.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.9	54.0	-11.1																																																																																																																																																																																																																																																																																																					
2707.514	41.1	1.4	270.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.5	54.0	-11.5																																																																																																																																																																																																																																																																																																					
5415.095	31.3	7.9	148.0	1.2	3.0	0.0	V-Horn	AV	0.0	39.2	54.0	-14.8																																																																																																																																																																																																																																																																																																					
5415.125	30.4	7.9	318.0	1.2	3.0	0.0	V-Horn	AV	0.0	38.3	54.0	-15.7																																																																																																																																																																																																																																																																																																					
5415.136	30.1	7.9	126.0	1.4	3.0	0.0	H-Horn	AV	0.0	38.0	54.0	-16.0																																																																																																																																																																																																																																																																																																					
4512.613	31.9	5.7	161.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.6	54.0	-16.4																																																																																																																																																																																																																																																																																																					
5415.098	28.8	7.9	140.0	1.2	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3																																																																																																																																																																																																																																																																																																					
2707.573	35.3	1.4	-1.0	3.0	3.0	0.0	H-Horn	AV	0.0	36.7	54.0	-17.3																																																																																																																																																																																																																																																																																																					
5415.069	28.0	7.9	214.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.9	54.0	-18.1																																																																																																																																																																																																																																																																																																					
3610.078	31.0	4.3	291.0	3.0	3.0	0.0	H-Horn	AV	0.0	35.3	54.0	-18.7																																																																																																																																																																																																																																																																																																					
4512.596	29.5	5.7	103.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.2	54.0	-18.8																																																																																																																																																																																																																																																																																																					
4512.585	28.3	5.7	137.0	1.2	3.0	0.0	V-Horn	AV	0.0	34.0	54.0	-20.0																																																																																																																																																																																																																																																																																																					
4512.577	28.0	5.7	155.0	2.2	3.0	0.0	H-Horn	AV	0.0	33.7	54.0	-20.3																																																																																																																																																																																																																																																																																																					
2707.507	51.5	1.4	67.0	1.6	3.0	0.0	V-Horn	PK	0.0	52.9	74.0	-21.1																																																																																																																																																																																																																																																																																																					
2707.244	50.3	1.4	91.0	1.6	3.0	0.0	V-Horn	PK	0.0	51.7	74.0	-22.3																																																																																																																																																																																																																																																																																																					
2707.542	49.3	1.4	237.0	1.3	3.0	0.0	V-Horn	PK	0.0	50.7	74.0	-23.3																																																																																																																																																																																																																																																																																																					
2707.472	49.1	1.4	270.0	1.3	3.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5																																																																																																																																																																																																																																																																																																					
3610.009	25.3	4.3	85.0	1.2	3.0	0.0	V-Horn	AV	0.0	29.6	54.0	-24.4																																																																																																																																																																																																																																																																																																					
5415.196	39.7	7.9	318.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.6	74.0	-26.4																																																																																																																																																																																																																																																																																																					

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)
5414.868	39.3	7.9	140.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.2	74.0	-26.8
5414.852	39.1	7.9	148.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.0	74.0	-27.0
5415.428	39.0	7.9	126.0	1.4	3.0	0.0	H-Horn	PK	0.0	46.9	74.0	-27.1
5415.243	38.6	7.9	214.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.5	74.0	-27.5
4512.596	40.8	5.7	103.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.5	74.0	-27.5
4512.487	40.7	5.7	161.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.4	74.0	-27.6
3610.091	40.5	4.3	291.0	3.0	3.0	0.0	H-Horn	PK	0.0	44.8	74.0	-29.2
2707.569	43.2	1.4	-1.0	3.0	3.0	0.0	H-Horn	PK	0.0	44.6	74.0	-29.4
4512.686	38.4	5.7	137.0	1.2	3.0	0.0	V-Horn	PK	0.0	44.1	74.0	-29.9
4512.329	38.3	5.7	155.0	2.2	3.0	0.0	H-Horn	PK	0.0	44.0	74.0	-30.0
3610.009	38.2	4.3	85.0	1.2	3.0	0.0	V-Horn	PK	0.0	42.5	74.0	-31.5

NORTHWEST EMC										RADIATED EMISSIONS DATA SHEET										PSA 2005.10.04 EMI 2005.10.11				
EUT: IM5										Work Order: ITRM0091														
Serial Number: 19210509078										Date: 10/19/05														
Customer: Intermec Technologies Corporation										Temperature: 23														
Attendees: None										Humidity: 45%														
Project: None										Barometric Pressure: 30.05														
Tested by: Rod Peloquin					Power: 120VAC/60Hz					Job Site: EV01														
TEST SPECIFICATIONS															Test Method									
FCC 15.247(d) Spurious Radiated Emissions:2005-9															ANSI C63.4:2003									
TEST PARAMETERS																								
Antenna Height(s) (m)										1 - 4					Test Distance (m)					3				
COMMENTS																								
Card Reader Antenna, Intermec Part # ITA915017																								
EUT OPERATING MODES																								
Transmit Mid channel, no hop																								
DEVIATIONS FROM TEST STANDARD																								
No deviations.																								
Run #		5			 Signature																			
Configuration #																								
Results		Pass																						
																								
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)												
4575.097	33.4	5.8	72.0	1.2	3.0	0.0	V-Horn	AV	0.0	39.2	54.0	-14.8												
4575.103	32.8	5.8	93.0	1.1	3.0	0.0	V-Horn	AV	0.0	38.6	54.0	-15.4												
4575.114	31.3	5.8	65.0	1.8	3.0	0.0	H-Horn	AV	0.0	37.1	54.0	-16.9												
2745.077	34.3	1.5	73.0	1.5	3.0	0.0	V-Horn	AV	0.0	35.8	54.0	-18.2												
2745.052	33.8	1.5	78.0	1.3	3.0	0.0	V-Horn	AV	0.0	35.3	54.0	-18.7												
4575.120	29.3	5.8	156.0	1.8	3.0	0.0	H-Horn	AV	0.0	35.1	54.0	-18.9												
2745.047	29.7	1.5	131.0	2.3	3.0	0.0	H-Horn	AV	0.0	31.2	54.0	-22.8												
4575.172	42.8	5.8	72.0	1.2	3.0	0.0	V-Horn	PK	0.0	48.6	74.0	-25.4												
2745.061	26.6	1.5	127.0	2.7	3.0	0.0	H-Horn	AV	0.0	28.1	54.0	-25.9												
4575.269	42.0	5.8	103.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.8	74.0	-26.2												
2745.092	45.4	1.5	78.0	1.3	3.0	0.0	V-Horn	PK	0.0	46.9	74.0	-27.1												
4575.120	40.9	5.8	65.0	1.8	3.0	0.0	H-Horn	PK	0.0	46.7	74.0	-27.3												
2744.785	44.6	1.5	73.0	1.5	3.0	0.0	V-Horn	PK	0.0	46.1	74.0	-27.9												
4574.800	39.7	5.8	156.0	1.8	3.0	0.0	H-Horn	PK	0.0	45.5	74.0	-28.5												
2744.684	40.5	1.5	127.0	2.7	3.0	0.0	H-Horn	PK	0.0	42.0	74.0	-32.0												
2744.797	40.4	1.5	131.0	2.3	3.0	0.0	H-Horn	PK	0.0	41.9	74.0	-32.1												

NORTHWEST EMC										RADIATED EMISSIONS DATA SHEET										PSA 2005.10.04 EMI 2005.10.11																																																																																																																																																																																																																																																																																
EUT: IM5										Work Order: ITRM0091																																																																																																																																																																																																																																																																																										
Serial Number: 19210509078										Date: 10/19/05																																																																																																																																																																																																																																																																																										
Customer: Intermec Technologies Corporation										Temperature: 23																																																																																																																																																																																																																																																																																										
Attendees: None										Humidity: 45%																																																																																																																																																																																																																																																																																										
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<table border="1" style="width:100%; border-collapse: collapse; font-size: 0.8em;"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> </tr> </thead> <tbody> <tr><td>4637.643</td><td>39.5</td><td>5.9</td><td>76.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>45.4</td><td>54.0</td><td>-8.6</td></tr> <tr><td>2782.574</td><td>40.3</td><td>1.7</td><td>82.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>42.0</td><td>54.0</td><td>-12.0</td></tr> <tr><td>4637.562</td><td>34.9</td><td>5.9</td><td>79.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>40.8</td><td>54.0</td><td>-13.2</td></tr> <tr><td>4637.613</td><td>34.7</td><td>5.9</td><td>101.0</td><td>1.4</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>40.6</td><td>54.0</td><td>-13.4</td></tr> <tr><td>4637.605</td><td>53.1</td><td>5.9</td><td>76.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>59.0</td><td>74.0</td><td>-15.0</td></tr> <tr><td>2782.610</td><td>36.4</td><td>1.7</td><td>62.0</td><td>2.1</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>38.1</td><td>54.0</td><td>-15.9</td></tr> <tr><td>2782.570</td><td>33.7</td><td>1.7</td><td>124.0</td><td>2.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>35.4</td><td>54.0</td><td>-18.6</td></tr> <tr><td>4637.650</td><td>28.0</td><td>5.9</td><td>143.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>33.9</td><td>54.0</td><td>-20.1</td></tr> <tr><td>3710.029</td><td>29.1</td><td>4.7</td><td>91.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>AV</td><td>0.0</td><td>33.8</td><td>54.0</td><td>-20.2</td></tr> <tr><td>2782.560</td><td>30.9</td><td>1.7</td><td>342.0</td><td>2.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>32.6</td><td>54.0</td><td>-21.4</td></tr> <tr><td>4637.459</td><td>46.4</td><td>5.9</td><td>101.0</td><td>1.4</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>52.3</td><td>74.0</td><td>-21.7</td></tr> <tr><td>4637.653</td><td>46.4</td><td>5.9</td><td>79.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>52.3</td><td>74.0</td><td>-21.7</td></tr> <tr><td>3710.051</td><td>25.9</td><td>4.7</td><td>145.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>AV</td><td>0.0</td><td>30.6</td><td>54.0</td><td>-23.4</td></tr> <tr><td>2782.618</td><td>48.2</td><td>1.7</td><td>82.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>49.9</td><td>74.0</td><td>-24.1</td></tr> <tr><td>2782.093</td><td>45.4</td><td>1.7</td><td>62.0</td><td>2.1</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>47.1</td><td>74.0</td><td>-26.9</td></tr> <tr><td>3710.083</td><td>42.2</td><td>4.7</td><td>91.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>46.9</td><td>74.0</td><td>-27.1</td></tr> <tr><td>4637.431</td><td>39.8</td><td>5.9</td><td>143.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>45.7</td><td>74.0</td><td>-28.3</td></tr> <tr><td>2782.360</td><td>42.4</td><td>1.7</td><td>124.0</td><td>2.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>44.1</td><td>74.0</td><td>-29.9</td></tr> <tr><td>3709.655</td><td>38.0</td><td>4.7</td><td>145.0</td><td>1.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>42.7</td><td>74.0</td><td>-31.3</td></tr> <tr><td>2782.535</td><td>40.3</td><td>1.7</td><td>342.0</td><td>2.2</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>42.0</td><td>74.0</td><td>-32.0</td></tr> </tbody> </table>																				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)	4637.643	39.5	5.9	76.0	1.2	3.0	0.0	V-Horn	AV	0.0	45.4	54.0	-8.6	2782.574	40.3	1.7	82.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.0	54.0	-12.0	4637.562	34.9	5.9	79.0	1.3	3.0	0.0	H-Horn	AV	0.0	40.8	54.0	-13.2	4637.613	34.7	5.9	101.0	1.4	3.0	0.0	V-Horn	AV	0.0	40.6	54.0	-13.4	4637.605	53.1	5.9	76.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.0	74.0	-15.0	2782.610	36.4	1.7	62.0	2.1	3.0	0.0	V-Horn	AV	0.0	38.1	54.0	-15.9	2782.570	33.7	1.7	124.0	2.2	3.0	0.0	H-Horn	AV	0.0	35.4	54.0	-18.6	4637.650	28.0	5.9	143.0	1.3	3.0	0.0	H-Horn	AV	0.0	33.9	54.0	-20.1	3710.029	29.1	4.7	91.0	1.2	3.0	0.0	V-Horn	AV	0.0	33.8	54.0	-20.2	2782.560	30.9	1.7	342.0	2.2	3.0	0.0	H-Horn	AV	0.0	32.6	54.0	-21.4	4637.459	46.4	5.9	101.0	1.4	3.0	0.0	V-Horn	PK	0.0	52.3	74.0	-21.7	4637.653	46.4	5.9	79.0	1.3	3.0	0.0	H-Horn	PK	0.0	52.3	74.0	-21.7	3710.051	25.9	4.7	145.0	1.2	3.0	0.0	H-Horn	AV	0.0	30.6	54.0	-23.4	2782.618	48.2	1.7	82.0	1.3	3.0	0.0	V-Horn	PK	0.0	49.9	74.0	-24.1	2782.093	45.4	1.7	62.0	2.1	3.0	0.0	V-Horn	PK	0.0	47.1	74.0	-26.9	3710.083	42.2	4.7	91.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.9	74.0	-27.1	4637.431	39.8	5.9	143.0	1.3	3.0	0.0	H-Horn	PK	0.0	45.7	74.0	-28.3	2782.360	42.4	1.7	124.0	2.2	3.0	0.0	H-Horn	PK	0.0	44.1	74.0	-29.9	3709.655	38.0	4.7	145.0	1.2	3.0	0.0	H-Horn	PK	0.0	42.7	74.0	-31.3	2782.535	40.3	1.7	342.0	2.2	3.0	0.0	H-Horn	PK	0.0	42.0	74.0	-32.0
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)																																																																																																																																																																																																																																																																																								
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2782.570	33.7	1.7	124.0	2.2	3.0	0.0	H-Horn	AV	0.0	35.4	54.0	-18.6																																																																																																																																																																																																																																																																																								
4637.650	28.0	5.9	143.0	1.3	3.0	0.0	H-Horn	AV	0.0	33.9	54.0	-20.1																																																																																																																																																																																																																																																																																								
3710.029	29.1	4.7	91.0	1.2	3.0	0.0	V-Horn	AV	0.0	33.8	54.0	-20.2																																																																																																																																																																																																																																																																																								
2782.560	30.9	1.7	342.0	2.2	3.0	0.0	H-Horn	AV	0.0	32.6	54.0	-21.4																																																																																																																																																																																																																																																																																								
4637.459	46.4	5.9	101.0	1.4	3.0	0.0	V-Horn	PK	0.0	52.3	74.0	-21.7																																																																																																																																																																																																																																																																																								
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2782.618	48.2	1.7	82.0	1.3	3.0	0.0	V-Horn	PK	0.0	49.9	74.0	-24.1																																																																																																																																																																																																																																																																																								
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3710.083	42.2	4.7	91.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.9	74.0	-27.1																																																																																																																																																																																																																																																																																								
4637.431	39.8	5.9	143.0	1.3	3.0	0.0	H-Horn	PK	0.0	45.7	74.0	-28.3																																																																																																																																																																																																																																																																																								
2782.360	42.4	1.7	124.0	2.2	3.0	0.0	H-Horn	PK	0.0	44.1	74.0	-29.9																																																																																																																																																																																																																																																																																								
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)																																																																																																																																																																
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)																																																																																																												
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7420.111	25.7	13.8	182.0	1.4	3.0	0.0	V-Horn	AV	0.0	39.5	54.0	-14.5												
4637.640	31.3	5.9	131.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.2	54.0	-16.8												
7420.101	21.9	13.8	78.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.7	54.0	-18.3												
4637.587	29.2	5.9	88.0	1.4	3.0	0.0	H-Horn	AV	0.0	35.1	54.0	-18.9												
2782.603	30.7	1.7	84.0	1.5	3.0	0.0	V-Horn	AV	0.0	32.4	54.0	-21.6												
7419.215	37.6	13.8	182.0	1.4	3.0	0.0	V-Horn	PK	0.0	51.4	74.0	-22.6												
7420.420	34.6	13.8	78.0	1.0	3.0	0.0	H-Horn	PK	0.0	48.4	74.0	-25.6												
4637.688	41.4	5.9	131.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.3	74.0	-26.7												
2782.538	25.4	1.7	210.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.1	54.0	-26.9												
4637.415	39.2	5.9	88.0	1.4	3.0	0.0	H-Horn	PK	0.0	45.1	74.0	-28.9												
2782.490	39.2	1.7	84.0	1.5	3.0	0.0	V-Horn	PK	0.0	40.9	74.0	-33.1												
2782.315	36.5	1.7	210.0	1.0	3.0	0.0	H-Horn	PK	0.0	38.2	74.0	-35.8												