# Intermec Technologies Corporation

Simultaneous Transmission - FCC Part 15.247

Testing for Class II Permissive Change of FCC ID: EHABTS080 to authorize co-location with FCC ID: EHA2610CF and EHASMC46

700C configured with three internal radio modules: CDMA (FCC ID: EHAEM3420) or GSM (FCC ID: EHASMC46) 802.11b/g (FCC ID: EHA2610CF) Bluetooth (FCC ID: EHABTS080)

March 30, 2005

Report No. ITRM0073.2

Report Prepared By



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

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22975 NW Evergreen Parkway Suite 400 Hillsboro, Oregon 97124

### **Certificate of Test**

Issue Date: March 30, 2005
Intermec Technologies Corporation

700C configured with three internal radio modules:

CDMA (FCC ID: EHAEM3420) or GSM (FCC ID: EHASMC46) 802.11b/g (FCC ID: EHA2610CF) Bluetooth (FCC ID: EHABTS080)

	Emissions		
Specification	Test Method	Pass	Fail
FCC 15.247(d) Spurious Radiated Emissions:2004 (Simultaneous Transmit)	ANSI C63.4:2003	$\boxtimes$	

## 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:

Don Facteau, IS Manager

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

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

## **Revision History**

Revision 05/05/03

Revision Number	Description	Date	Page Number
00	None		

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





**NVLAP:** Northwest EMC, Inc. is recognized under the United States Department of Commerce, National Institute of Standards and Technology, 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. Accreditation has been granted to Northwest EMC, Inc. under Certificate Numbers: 200629-0, 200630-0, and 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 Nos. - Evergreen: C-1071 and R-1025, Trails End: 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

#### What is measurement uncertainty?

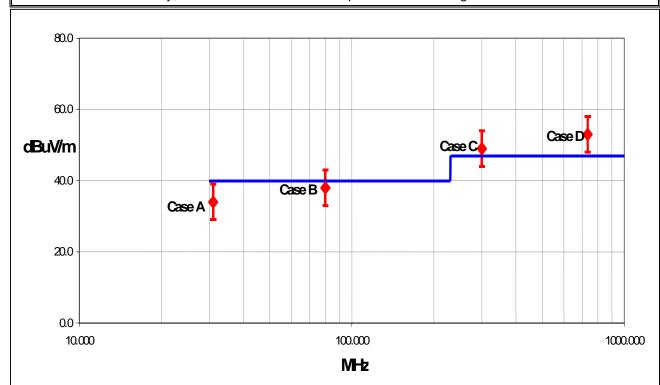
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following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

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

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

#### How might measurement uncertainty be applied to test results?

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



#### **Test Result Scenarios:**

Case A: Product complies.

Case B: Product conditionally complies. It is not possible to say with 95% confidence that the product complies.

Case C: Product conditionally does not comply. It is not possible to say with 95% confidence that the product does not comply.

Case D: Product does not comply.

## **Measurement Uncertainty**

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

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

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

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

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

#### Legend

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

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

## **Facilities**



### California

### **Orange County Facility**

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



### Oregon

## **Evergreen Facility**

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



### Oregon

## Trails End Facility

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



## Washington

## Sultan Facility

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

## **Product Description**

Revision 10/3/03

Party Requesting the Test	
Company Name:	Intermec Technologies Corporation
Address:	550 Second St. SE
City, State, Zip:	Cedar Rapids, IA 52401-2023
Test Requested By:	Scott Holub
Model:	700C configured with three internal radio modules: CDMA (FCC ID: EHAEM3420) or GSM (FCC ID: EHASMC46) 802.11b/g (FCC ID: EHA2610CF) Bluetooth (FCC ID: EHABTS080)
First Date of Test:	2-2-2005
Last Date of Test:	3-16-2005
Receipt Date of Samples:	2-2-2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

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

Clocks/Oscillators:	Not provided at the time of test.
I/O Ports:	Serial

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

Intermec's Handheld Computer, Model 700C was configured with three co-located radios. The 700C contained a CDMA radio (FCC ID: EHAEM3420) or GSM radio (FCC ID: EHASMC46), an 802.11(b)/(g) radio (FCC ID: EHA2610CF), and a Bluetooth radio (FCC ID: EHABTS080). The CDMA and GSM radios are never installed in the same 700C.

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

Not Provided

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

This test demonstrated compliance with FCC Part 15.247 emissions limits while the co-located radios were transmitting simultaneously. Each radio transmits through its own antenna. This report will be used as part of a Class II Permissive Change to authorize the co-location of the 802.11b/g radio and GSM radio with the Bluetooth radio.

#### **EUT Photo**



## **Modifications**

Revision 4/28/03

			<b>Equipment modification</b>	ons	
Item	Test	Date	Modification	Note	Disposition of EUT
	Spurious	02/02/2005	No EMI suppression	Same	EUT remained at Northwest EMC.
1	Radiated	to	devices were added or	configuration as	
	Emissions	03/16/2005	modified during this test.	delivered.	NOITHWEST LIVIC.



#### **Justification**

Intermec's Handheld Computer, Model 700C was configured with three co-located radios. The 700C contained a CDMA radio (FCC ID: EHAEM3420), an 802.11(b)/(g) radio (FCC ID: EHA2610CF), and a Bluetooth radio (FCC ID: EHABTS080). This test demonstrated compliance with FCC Part 15.247 emissions limits while the co-located radios were transmitting simultaneously. Each radio transmits through its own antenna.

All possible combinations of harmonic emissions from the CDMA, 802.11(b)/(g), and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. All the radios were configured for simultaneous transmission at the channels specified below.

Channels in Specif	Channels in Specified Band Investigated:			
802.11(b):	1,11			
CDMA (Cellular):	54, 55, 395, 467			
CDMA (PCS):	1, 35, 1153			
Bluetooth:	5, 11, 62, 68, 79			

Operating Modes Investigated:
Bluetooth Radio in PW40 with 700C in cradle:
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA PCS Channel 1
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA PCS Channel 1153
Simultaneous transmission of Bluetooth Channel 68, 802.11(b) Channel 11, & CDMA PCS Channel 35
Simultaneous transmission of Bluetooth Channel 62, 802.11(b) Channel 11, & CDMA PCS Channel 1153
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA Cellular Channel 467
Simultaneous transmission of Bluetooth Channel 5, 802.11(b) Channel 1, & CDMA Cellular Channel 395
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & CDMA Cellular Channel 55
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & CDMA Cellular Channel 54

Antennas Investigated:								
<b>802.11(b):</b> Folded Monopole internal to 700C, P/N 805-608-104								
CDMA:	Tri-band Antenna external to 700C, P/N 805-624-001							
Bluetooth:	Chip antenna integral to Bluetooth module inside 700C							

Data Rates Investigated:	
Data Nates investigated.	
Maximum	

Power Input Settings Investigated:	
120 VAC, 60 Hz.	

Frequency Range Investi	gated		
Start Frequency	1 GHz	Stop Frequency	25 GHz

Revision 10/1/03

Software\Firmware Applied During Test									
	FCC Tests		Unknown						
Exercise software	Blue Test	Version	Unknown						
	Test Utility		0.4						
Description									

This system was tested using special test software to exercise the functions of the device during the testing such as channels, power, and modulation during simultaneous transmission.

EUT and Peripherals			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computer	Intermec Technologies Corporation	700C	13790400011
AC Adapter	Elpac Power Systems	FW1812	011025

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	1.3	PA	Handheld Computer	AC Adapter
AC Power	No	2.0	No	AC Adapter	AC Mains
PA = Cable is pe	rmanently	attached to the de	evice. Shie	ding and/or presence of ferrite ma	y be unknown.

Measurement Equipme	nt				
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26- 8P	APU	10/08/2003	24 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	02/05/2004	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24- 10P	APJ	01/05/2004	13 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	04/13/2004	13 mo
Attenuator		2082-6148-20	ATE	02/03/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/02/2004	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/02/2004	13 mo
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	AMF-4D-005180-24- 10P	APC	10/08/2003	15 mo

Revision 10/1/03

#### **Test Description**

**Requirement:** Per 15.247(d), the field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

<u>Configuration</u>: Intermec's Handheld Computer, Model 700C was configured with three co-located radios. The 700C contained a CDMA radio (FCC ID: EHAEM3420), an 802.11(b)/(g) radio (FCC ID: EHA2610CF), and a Bluetooth radio (FCC ID: EHABTS080). This test demonstrated compliance with FCC Part 15.247 emissions limits while the co-located radios were transmitting simultaneously. Each radio transmits through its own antenna.

**Simultaneous Transmission**: For co-located radios, it is necessary to measure the field strength of spurious emissions, while co-located radios are transmitting simultaneously. The following is an excerpt from the FCC/TCB training Q & A, October 2002, Day 2, Question 7:

Assuming that the radios do not share an antenna, only radiated tests for simultaneous transmission is required. If the radios share an antenna, antenna conducted measurements would also be required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even if the FCC requests one set of data, they are responsible for compliance for all modes of simultaneous transmission.

All possible combinations of harmonic emissions from the CDMA, 802.11(b), and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. The frequency range from 1 GHZ to 25 GHz was investigated for channel combinations that would produce coincidental harmonics. Compliance with the restricted band at 2483.5 – 2500 MHz was also measured.

All the radios were configured for simultaneous transmission at the channels specified in the previous pages. The highest gain antennas to be used with the radios were tested. The spectrum was scanned throughout the specified range. While scanning, emissions from the radios were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antennas in three orthogonal axes, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Me	asurements		
Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
Above 1000	1000.0	N/A	1000.0
Measurements were m	ade using the bandwidths	and detectors specified. No	video filter was used.

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#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 70 Attendees: None Humidity: 38% Cust. Ref. No.: N/A Barometric Pressure 30.15 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS EUT OPERATING MODES Bluetooth 11, 802.11b 11, CDMA 1153 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations.

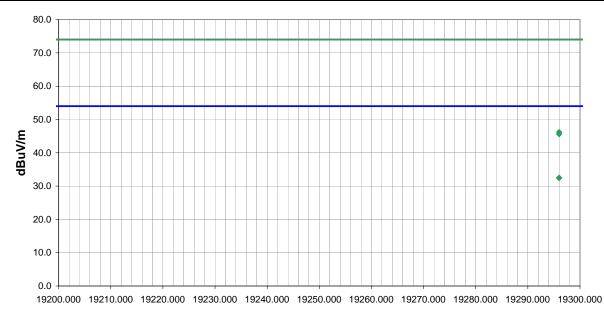
RESULTS Pass

Other

Holy Aligh

Tested By:

30



						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
19296.000	24.5	8.0	360.0	1.0	3.0	0.0	√-High Horr	AV	0.0	32.5	54.0	-21.5
19296.000	24.4	8.0	-1.0	1.0	3.0	0.0	H-High Horr	AV	0.0	32.4	54.0	-21.6
19296.000	38.2	8.0	360.0	1.0	3.0	0.0	√-High Horr	PK	0.0	46.2	74.0	-27.8
19296.000	37.6	8.0	-1.0	1.0	3.0	0.0	H-High Horr	PK	0.0	45.6	74.0	-28.4

MHz

### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 70 Attendees: None Humidity: 38% Cust. Ref. No.: N/A Barometric Pressure 30.15 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS EUT OPERATING MODES Bluetooth 68, 802.11b 11, CDMA 35 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS 31 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0

22200.000 22210.000 22220.000 22230.000 22240.000 22250.000 22260.000 22270.000 22280.000 22290.000 22300.000 **MHz** 

10.0

0.0

						External			Distance			Compared to	ı
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.	
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)	
22221.000	26.9	9.0	-1.0	1.0	3.0	0.0	√-High Horr	AV	0.0	35.9	54.0	-18.1	
22221.000	26.7	9.0	360.0	1.0	3.0	0.0	√-High Horr	AV	0.0	35.7	54.0	-18.3	
22221.000	39.6	9.0	360.0	1.0	3.0	0.0	√-High Horr	PK	0.0	48.6	74.0	-25.4	
22221.000	39.6	9.0	-1.0	1.0	3.0	0.0	√-High Horr	PK	0.0	48.6	74.0	-25.4	

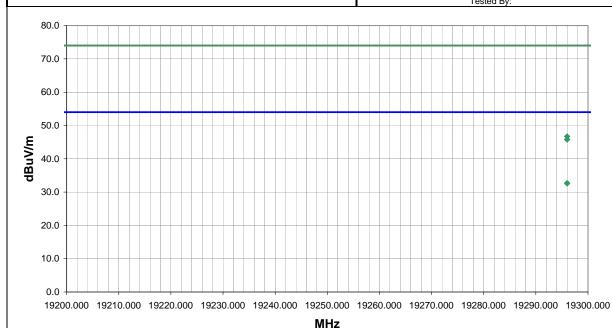
#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 70 Attendees: None Humidity: 38% Cust. Ref. No.: N/A Barometric Pressure 30.15 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator EUT OPERATING MODES Bluetooth 11, 802.11b 1, CDMA 467 (cellular) on 700C DEVIATIONS FROM TEST STANDARD No deviations.

Pass Other

RESULTS

Holy Arling Tested By:

32



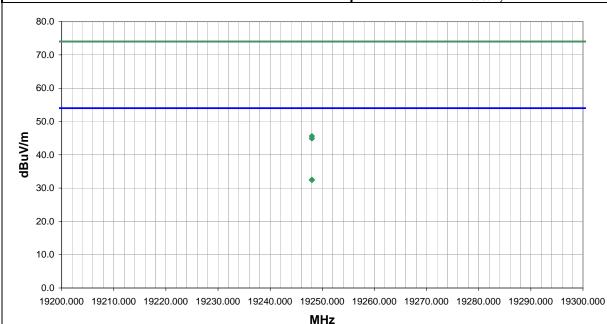
						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
19296.000	24.7	8.0	360.0	1.0	3.0	0.0	H-High Horr	AV	0.0	32.7	54.0	-21.3
19296.000	24.6	8.0	-1.0	1.0	3.0	0.0	H-High Horr	AV	0.0	32.6	54.0	-21.4
19296.000	38.7	8.0	360.0	1.0	3.0	0.0	H-High Horr	PK	0.0	46.7	74.0	-27.3
19296 000	37.8	8.0	-1 0	1.0	3.0	0.0	H-High Horr	PK	0.0	45.8	74 0	-28.2

#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Serial Number: Unknown Work Order: ITRM0054 Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 70 Attendees: None Humidity: 38% Cust. Ref. No.: N/A Barometric Pressure 30.15 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator **EUT OPERATING MODES** Bluetooth 5, 802.11b 1, CDMA 395 (cellular) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS

Pass Other

Holy Arling Tested By:

33



						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
19248.000	24.7	7.8	-1.0	1.0	3.0	0.0	H-High Horr	AV	0.0	32.5	54.0	-21.5
19248.000	24.6	7.8	360.0	1.0	3.0	0.0	V-High Horr	AV	0.0	32.4	54.0	-21.6
19248.000	37.8	7.8	360.0	1.0	3.0	0.0	√-High Horr	PK	0.0	45.6	74.0	-28.4
19248.000	37.1	7.8	-1.0	1.0	3.0	0.0	H-High Horr	PK	0.0	44.9	74.0	-29.1

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 70 Attendees: None Humidity: 38% Cust. Ref. No.: N/A Barometric Pressure 30.15 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 SPECIFICATIONS Method: ANSI C63.4:2003 Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation EUT OPERATING MODES Bluetooth 79, 802.11b 11, CDMA 55 (cellular) on 700C DEVIATIONS FROM TEST STANDARD RESULTS 34 Pass Other Holy Salingha Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 19800.000 20300.000 20800.000 21300.000 21800.000 22300.000 MHz External Distance Compared to Amplitude Factor Azimuth Height Distance Spec, Limit Freq Attenuation Polarity Detector Adjustment Adjusted Spec. (dBuV) (dB) (degrees) (meters) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) 22320.000 26.8 9.2 -1.0 1.0 3.0 0.0 H-High Horr ΑV 0.0 36.0 54.0 -18.0

22320.000

19840.000

19840.000

22320.000

22320.000

19840.000

19840.000

26.8

23.2

23.2

40.2

39.8

36.6

36.5

9.2

8.9

8.9

9.2

9.2

8.9

8.9

360.0

360.0

360.0

-1.0

360.0

-1.0

-1.0

1.0

1.0

1.0

1.0

1.0

1.0

1.0

3.0

3.0

3.0

3.0

3.0

3.0

3.0

0.0 √-High Horr

0.0 H-High Horr

0.0 √-High Horr

0.0 √-High Horr

0.0 H-High Horr

0.0 H-High Horr

0.0 √-High Horr

ΑV

 $\mathsf{AV}$ 

ΑV

PΚ

PΚ

PΚ

PΚ

0.0

0.0

0.0

0.0

0.0

0.0

0.0

36.0

32.1

32.1

49.4

49.0

45.5

45.4

54.0

54.0

54.0

74.0

74.0

74.0

74.0

-18.0

-21.9

-21.9

-24.6

-25.0

-28.5

-28.6

### NORTHWEST **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No.: Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator **EUT OPERATING MODES** Bluetooth 62, 802.11b 11, CDMA 1153 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS 35 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0

							External			Distance			Compared to
ı	Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
	(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
	2483.500	12.6	32.0	165.0	1.2	1.0	0.0	V-Horn	AV	-9.5	35.1	54.0	-18.9
	2483.500	12.2	32.0	327.0	1.2	1.0	0.0	H-Horn	AV	-9.5	34.7	54.0	-19.3
	2483.500	27.0	32.0	165.0	1.2	1.0	0.0	V-Horn	PK	-9.5	49.5	74.0	-24.5
	2483.500	26.0	32.0	327.0	1.2	1.0	0.0	H-Horn	PK	-9.5	48.5	74.0	-25.5

2400.000 2410.000 2420.000 2430.000 2440.000 2450.000 2460.000 2470.000 2480.000 2490.000 2500.000 **MHz** 

0.0

#### RADIATED EMISSIONS DATA SHEET **EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 20 Attendees: None Humidity: 35% Cust. Ref. No.: Barometric Pressure 30.38 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 **TEST SPECIFICATIONS** Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation EUT OPERATING MODES Bluetooth 11, 802.11b 1, CDMA 1 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations RESULTS 36 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 12500.000 13500.000 14500.000 15500.000 16500.000 17500.000 MHz External Distance Compared to

Amplitude

(dBuV)

26.6

26.6

40.4

40.2

Freq

(MHz) 14472.000

14472.000

14472.000

14472.000

Factor

(dB)

13.8

13.8

13.8

13.8

Azimuth

(degrees)

26.0

193.0

193.0

26.0

Height

(meters)

2.9

1.4

1.4

2.9

Distance

(meters)

3.0

3.0

3.0

3.0

Attenuation

(dB)

0.0

0.0

0.0

0.0

Polarity

V-Horn

H-Horn

H-Horn

V-Horn

Detector

ΑV

 $\mathsf{AV}$ 

PΚ

Adjustment

(dB)

0.0

0.0

0.0

0.0

Spec, Limit

dBuV/m

54.0

54.0

74.0

74.0

Spec.

(dB)

-13.6

-13.6

-19.8

-20.0

Adjusted

dBuV/m

40.4

40.4

54.2

54.0

### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No.: Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS EUT OPERATING MODES Bluetooth 11, 802.11b 1, CDMA 467 (cellular) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS 37 Pass Other Holy Saligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 12500.000 13500.000 14500.000 15500.000 16500.000 17500.000 MHz

							External			Distance			Compared to
F	req	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(N	ЛHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
	14472.000	26.6	13.8	253.0	1.9	3.0	0.0	H-Horn	AV	0.0	40.4	54.0	-13.6
	14472.000	26.6	13.8	278.0	1.2	3.0	0.0	V-Horn	AV	0.0	40.4	54.0	-13.6
	14472.000	40.1	13.8	253.0	1.9	3.0	0.0	H-Horn	PK	0.0	53.9	74.0	-20.1
	14472 000	39.9	13.8	278.0	12	3.0	0.0	V-Horn	PK	0.0	53.7	74 0	-20.3

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 22 Attendees: None Humidity: 37% Cust. Ref. No. Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 **TEST SPECIFICATIONS** Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation **EUT OPERATING MODES** Bluetooth 11, 802.11b 1, CDMA 467 (Cellular) on 700C DEVIATIONS FROM TEST STANDARD No deviations RESULTS 38 Pass Other Holy Soling Tested By: 80.0 70.0 60.0 50.0 dBuV/m \$ 40.0 \$ 30.0 20.0 10.0 0.0 4000.000 4100.000 4200.000 4300.000 4400.000 4500.000 4600.000 4700.000 4800.000 4900.000 MHz External Distance Compared to Amplitude Factor Azimuth Height Distance Spec, Limit Freq Attenuation Polarity Detector Adjustment Adjusted Spec. (dBuV) (dB) (degrees) (meters) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) 4823.973 30.9 3.3 144.0 1.2 3.0 0.0 H-Horn 0.0 34.2 54.0 -19.8 4823.973 29.2 3.3 209.0 0.0 V-Horn ΑV 0.0 32.5 -21.5 4075.981 29.0 2.4 360.0 1.3 3.0 0.0 H-Horn $\mathsf{AV}$ 0.0 31.4 54.0 -22.6

V-Horn

H-Horn

V-Horn

H-Horn

V-Horn

ΑV

PΚ

PΚ

PΚ

PΚ

0.0

0.0

0.0

0.0

0.0

29.7

46.4

45.9

45.1

43.9

54.0

74.0

74.0

74.0

74.0

-24.3

-27.6

-28.1

-28.9

-30.1

0.0

0.0

0.0

0.0

0.0

4075.981

4823.973

4823.973

4075.981

4075.981

27.3

43.1

42.6

42.7

41.5

2.4

3.3

3.3

2.4

2.4

125.0

144.0

209.0

350.0

125.0

1.2

1.2

1.2

1.3

1.2

3.0

3.0

3.0

3.0

3.0

#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Date: 02/02/05 Serial Number: Unknown Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No.: Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS

EUT OPERATING MODES
Bluetooth 79, 802.11b 11, CDMA 55 (Cellular) on 700C

#### DEVIATIONS FROM TEST STANDARD

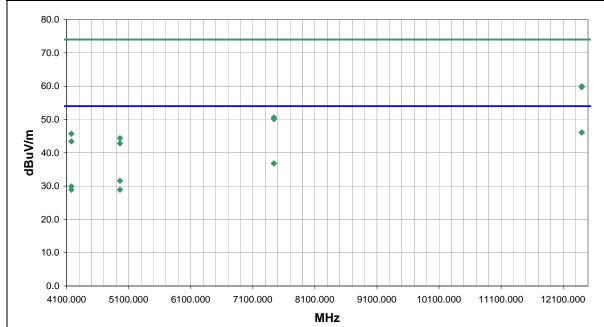
No deviations.

 RESULTS
 Run #

 Pass
 39

Other

Holy Arling



						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
12400.000	25.3	20.8	293.0	1.5	3.0	0.0	H-Horn	AV	0.0	46.1	54.0	-7.9
12400.000	25.3	20.8	275.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.1	54.0	-7.9
12400.000	39.2	20.8	293.0	1.5	3.0	0.0	H-Horn	PK	0.0	60.0	74.0	-14.0
12400.000	38.9	20.8	275.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.7	74.0	-14.3
7440.000	25.7	11.1	295.0	1.2	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2
7440.000	25.7	11.1	40.0	2.8	3.0	0.0	H-Horn	AV	0.0	36.8	54.0	-17.2
4959.969	28.0	3.6	209.0	1.1	3.0	0.0	V-Horn	AV	0.0	31.6	54.0	-22.4
7440.000	39.5	11.1	40.0	2.8	3.0	0.0	H-Horn	PK	0.0	50.6	74.0	-23.4
7440.000	39.0	11.1	295.0	1.2	3.0	0.0	V-Horn	PK	0.0	50.1	74.0	-23.9
4175.990	27.5	2.4	224.0	1.3	3.0	0.0	H-Horn	AV	0.0	29.9	54.0	-24.1
4175.990	26.5	2.4	131.0	1.2	3.0	0.0	V-Horn	AV	0.0	28.9	54.0	-25.1
4959.969	25.3	3.6	-1.0	1.3	3.0	0.0	H-Horn	AV	0.0	28.9	54.0	-25.1
4175.990	43.3	2.4	224.0	1.3	3.0	0.0	H-Horn	PK	0.0	45.7	74.0	-28.3
4959.969	40.8	3.6	209.0	1.1	3.0	0.0	V-Horn	PK	0.0	44.4	74.0	-29.6
4175.990	41.0	2.4	131.0	1.2	3.0	0.0	V-Horn	PK	0.0	43.4	74.0	-30.6
4959.969	39.2	3.6	-1.0	1.3	3.0	0.0	H-Horn	PK	0.0	42.8	74.0	-31.2

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No. Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation **EUT OPERATING MODES** Bluetooth 11, 802.11b 1, CDMA 1 (PCS) on 700C **DEVIATIONS FROM TEST STANDARD** RESULTS 40 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 4000.000 4500.000 5000.000 5500.000 6000.000 6500.000 7000.000 MHz External Distance Compared to Amplitude Factor Height Distance Spec. Limit Freq Azimuth Attenuation Polarity Detector Adjustment Adjusted Spec. (dBuV) (dB) (degrees) (meters) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) 4075.990 40.2 2.4 263.0 3.0 0.0 V-Horn 0.0 42.6 54.0 -11.4 4075.990 40.1 2.4 250.0 3.0 0.0 H-Horn ΑV 0.0 42.5 -11.5 7236.000 25.6 10.1 32.0 1.3 3.0 0.0 H-Horn $\mathsf{AV}$ 0.0 35.7 -18.3 7236.000 25.5 V-Horn 35.6

10.1

10.1

10.1

2.4

2.4

39.4

39.2

44.6

43.2

7236.000

7236.000

4075.990

4075.990

253.0

32.0

253.0

250.0

263.0

1.5

1.3

1.5

1.5

1.5

3.0

3.0

3.0

3.0

3.0

0.0

0.0

0.0

0.0

0.0

H-Horn

V-Horn

H-Horn

V-Horn

ΑV

PΚ

PΚ

PΚ

PΚ

0.0

0.0

0.0

0.0

0.0

49.5

49.3

47.0

45.6

54.0

74.0

74.0

74.0

74.0

-18.4

-24.5

-24.7

-27.0

-28.4

#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Date: 02/02/05 Serial Number: Unknown Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No.: Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS EUT OPERATING MODES Bluetooth 11, 802.11b 1, CDMA 1153 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS 41 Pass Holy Aligh Other Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 8000.000 4000.000 5000.000 6000.000 7000.000 9000.000 10000.000 11000.000 12000.000

						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
12060.000	26.6	20.2	145.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.8	54.0	-7.2
12060.000	26.5	20.2	232.0	1.3	3.0	0.0	H-Horn	AV	0.0	46.7	54.0	-7.3
12060.000	39.7	20.2	232.0	1.3	3.0	0.0	H-Horn	PK	0.0	59.9	74.0	-14.1
12060.000	39.6	20.2	145.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.8	74.0	-14.2
4823.940	29.8	3.3	204.0	1.2	3.0	0.0	V-Horn	AV	0.0	33.1	54.0	-20.9
4823.940	29.6	3.3	257.0	1.3	3.0	0.0	H-Horn	AV	0.0	32.9	54.0	-21.1
4823.940	43.7	3.3	204.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.0	74.0	-27.0
4823.940	43.0	3.3	257.0	1.3	3.0	0.0	H-Horn	PK	0.0	46.3	74.0	-27.7

MHz

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/02/05 Customer: Intermec Technologies Corporation Temperature: 21 Attendees: None Humidity: 38% Cust. Ref. No. Barometric Pressure 30.47 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 **TEST SPECIFICATIONS** Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation **EUT OPERATING MODES** Bluetooth 68, 802.11b 11, CDMA 35 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations RESULTS 42 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 4100.000 4600.000 5100.000 5600.000 6100.000 6600.000 7100.000 MHz External Distance Compared to Amplitude Factor Height Distance Spec, Limit Freq Azimuth Attenuation Polarity Detector Adjustment Adjusted Spec. (dBuV) (dB) (degrees) (meters) (meters) (dB) (dB) dBuV/m dBuV/m (dB) (MHz) 7407.000 35.2 11.1 121.0 3.0 0.0 V-Horn 0.0 46.3 54.0 -7.7

3.0

3.0

3.0

3.0

3.0

3.0

3.0

1.5

1.1

1.1

1.6

1.5

1.1

0.0

0.0

0.0

0.0

0.0

0.0

0.0

H-Horn

H-Horn

H-Horn

V-Horn

H-Horn

H-Horn

H-Horn

ΑV

 $\mathsf{AV}$ 

ΑV

PΚ

PΚ

PΚ

PΚ

0.0

0.0

0.0

0.0

0.0

0.0

0.0

46.1

41.0

40.9

58.0

57.3

46.5

45.6

-7.9

-13.0

-13.1

-16.0

-16.7

-27.5

-28.4

54.0

74.0

74.0

74.0

74.0

7407.000

4175.987

4175.987

7407.000

7407.000

4175.987

4175.987

35.0

38.6

38.5

46.9

46.2

44.1

43.2

11.1

2.4

2.4

11.1

11.1

2.4

2.4

212.0

259.0

300.0

121.0

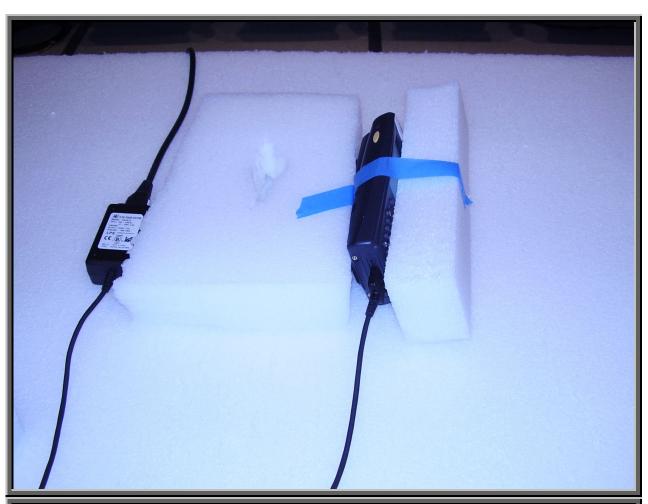
212.0

259.0

300.0











#### **Justification**

Intermec's Handheld Computer, Model 700C was configured with three co-located radios. The 700C contained a GSM radio (FCC ID: EHASMC46), an 802.11(b)/(g) radio (FCC ID: EHA2610CF), and a Bluetooth radio (FCC ID: EHABTS080). This test demonstrated compliance with FCC Part 15.247 emissions limits while the co-located radios were transmitting simultaneously. Each radio transmits through its own antenna.

All possible combinations of harmonic emissions from the GSM, 802.11(b)/(g), and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. All the radios were configured for simultaneous transmission at the channels specified below.

Channels in Specified Band Investigated:							
802.11(b):	1,11						
GSM (Cellular):	140, 141, 191, 202						
GSM (PCS):	516, 606						
Bluetooth:	2, 11, 67, 80						

Operating Modes Investigated:
Bluetooth Radio in PW40 with 700C in cradle:
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & GSM PCS Channel 516
Simultaneous transmission of Bluetooth Channel 67, 802.11(b) Channel 11, & GSM PCS Channel 516
Simultaneous transmission of Bluetooth Channel 2, 802.11(b) Channel 1, & GSM PCS Channel 606
Simultaneous transmission of Bluetooth Channel 80, 802.11(b) Channel 11, & GSM PCS Channel 606
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & GSM cellular Channel 202
Simulteneous transmission of Bluetooth Channel 5, 802.11(b) Channel 1, & GSM cellular Channel 191
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & GSM cellular Channel 141
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & GSM cellular Channel 140

Antennas Investigated:							
<b>802.11(b):</b> Folded Monopole internal to 700C, P/N 805-608-104							
GSM:	Tri-band Antenna external to 700C, P/N 805-624-001						
Bluetooth:	Chip antenna integral to Bluetooth module inside 700C						

Data Rates Investigated:	
Maximum	

Power Input Settings Investigated:	
120 VAC, 60 Hz.	

Frequency Range Investigated								
Start Frequency	1 GHz	Stop Frequency	25 GHz					

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Software\Firmware Applied During Test									
	Phone		Unknown						
Exercise software	Blue Test	Version	Unknown						
	Test Utility		0.4						
Description	Description								
This system was tested using special test software to exercise the functions of the device during the									
testing such as channels,	power, and modulation dur	ing simultaneous transmiss	ion.						

EUT and Peripherals			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computer	Intermec Technologies Corporation	700C	18190400041
AC Adapter	Elpac Power Systems	FW1812	014868
GSM Radio in 700C	Intermec Technologies Corporation	SMC46	Unknown
Bluetooth Radio in 700C	Intermec Technologies Corporation	BTS080	Unknown
802.11(b)/(g) radio in 700C	Intermec Technologies Corporation	2601CF	Unknown

Description	Manufacturer	Model/Part Number	Serial Number
GSM/DCS/PCS MS Test Set	Hewlett Packard	8922M	3829U02903
GSM/DCS/PCS RF Interface	Hewlett Packard	83220E	3842U05679
Wireless Communications Test Set	Agilent	8960 Series 10 E5515C	QB44051960

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Leads	PA	1.3	PA	Handheld Computer	AC Adapter
AC Power	No	2.0	No	AC Adapter	AC Mains

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Measurement Equipme	nt				
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26- 8P	APU	10/08/2003	24 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	02/05/2004	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24- 10P	APJ	01/05/2004	13 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	04/13/2004	13 mo
Attenuator		2082-6148-20	ATE	02/03/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/02/2004	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/02/2004	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/02/2004	13 mo
Spectrum Analyzer	Tektronix	2784	AAO	01/02/2005	12 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Pre-Amplifier	Miteq	AMF-4D-005180-24- 10P	APC	10/08/2003	15 mo

#### **Test Description**

**Requirement:** Per 15.247(d), the field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

<u>Configuration</u>: Intermec's Handheld Computer, Model 700C was configured with three co-located radios. The 700C contained a GSM radio (FCC ID: EHASMC46), an 802.11(b)/(g) radio (FCC ID: EHA2610CF), and a Bluetooth radio (FCC ID: EHABTS080). This test demonstrated compliance with FCC Part 15.247 emissions limits while the co-located radios were transmitting simultaneously. Each radio transmits through its own antenna.

**Simultaneous Transmission**: For co-located radios, it is necessary to measure the field strength of spurious emissions, while co-located radios are transmitting simultaneously. The following is an excerpt from the FCC/TCB training Q & A, October 2002, Day 2, Question 7:

Assuming that the radios do not share an antenna, only radiated tests for simultaneous transmission is required. If the radios share an antenna, antenna conducted measurements would also be required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even if the FCC requests one set of data, they are responsible for compliance for all modes of simultaneous transmission.

All possible combinations of harmonic emissions from the GSM, 802.11(b), and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. The frequency range from 1 GHZ to 25 GHz was investigated for channel combinations that would

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produce coincidental harmonics. Compliance with the restricted band at 2483.5 – 2500 MHz was also measured.

All the radios were configured for simultaneous transmission at the channels specified in the previous pages. The highest gain antennas to be used with the radios were tested. The spectrum was scanned throughout the specified range. While scanning, emissions from the radios were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antennas in three orthogonal axes, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Me	asurements		
Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
Above 1000	1000.0	N/A	1000.0
Measurements were m	nade using the bandwidths	and detectors specified. No	video filter was used.

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#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 02/07/05 Customer: Intermec Technologies Corporation Temperature: 20 Attendees: None Humidity: 34% Cust. Ref. No.: Barometric Pressure 30.24 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003

#### SAMPLE CALCULATIONS

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

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

EUT OPERATING MODES
Bluetooth 11, 802.11b 1, GSM 516 (PCS) on 700C

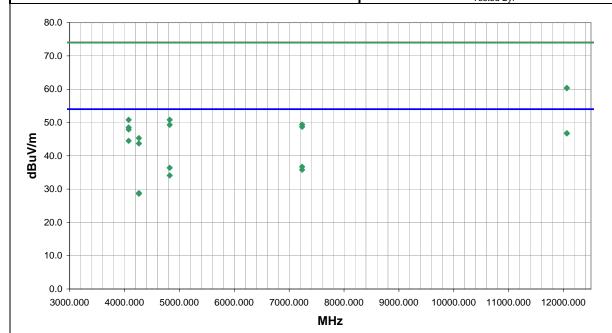
#### DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS 75 Pass

Other

Holy Aligh Tested By:



F===	A 124 1	F	A i	I I a l'ante d	Distance	External	Delegie	<b>.</b>	Distance	Authoritani	0	Compared to
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	Attenuation (dB)	Polarity	Detector	Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Spec. (dB)
	,	, ,	, ,	, ,	, ,	, ,	IIIIama	A\/				
4075.975	46.1	2.4	50.0	1.3	3.0	0.0	H-Horn	AV	0.0	48.5	54.0	
12060.000	26.6	20.2	186.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.8	54.0	
12060.000	26.5	20.2	239.0	1.3	3.0	0.0	H-Horn	AV	0.0	46.7	54.0	
4075.975	42.1	2.4	47.0	1.3	3.0	0.0	V-Horn	AV	0.0	44.5	54.0	
12060.000	40.2	20.2	186.0	1.2	3.0	0.0	V-Horn	PK	0.0	60.4	74.0	-13.6
12060.000	40.1	20.2	239.0	1.3	3.0	0.0	H-Horn	PK	0.0	60.3	74.0	-13.7
7236.000	26.6	10.1	306.0	1.3	3.0	0.0	H-Horn	AV	0.0	36.7	54.0	-17.3
4824.000	33.1	3.3	344.0	1.2	3.0	0.0	H-Horn	AV	0.0	36.4	54.0	-17.6
7236.000	25.7	10.1	127.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.8	54.0	-18.2
4824.000	30.8	3.3	116.0	1.5	3.0	0.0	V-Horn	AV	0.0	34.1	54.0	-19.9
4075.975	48.4	2.4	50.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.8	74.0	-23.2
4824.000	47.5	3.3	344.0	1.2	3.0	0.0	H-Horn	PK	0.0	50.8	74.0	-23.2
7236.000	39.3	10.1	306.0	1.3	3.0	0.0	H-Horn	PK	0.0	49.4	74.0	-24.6
4824.000	46.0	3.3	116.0	1.5	3.0	0.0	V-Horn	PK	0.0	49.3	74.0	-24.7
4263.005	26.3	2.5	358.0	1.2	3.0	0.0	H-Horn	AV	0.0	28.8	54.0	-25.2
7236.000	38.6	10.1	127.0	1.2	3.0	0.0	V-Horn	PK	0.0	48.7	74.0	
4263.005	26.1	2.5	288.0	1.2	3.0	0.0	V-Horn	AV	0.0	28.6	54.0	
4075.975	45.5	2.4	47.0	1.3	3.0	0.0	V-Horn	PK	0.0	47.9	74.0	
4263.005	42.8	2.5	358.0	1.2	3.0	0.0	H-Horn	PK	0.0	45.3	74.0	
4263.005	41.2	2.5	288.0	1.2	3.0	0.0	V-Horn	PK	0.0	43.7	74.0	

### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Customer: Intermec Technologies Corporation Date: 02/07/05 Temperature: 20 Attendees: None Humidity: 35% Cust. Ref. No.: Barometric Pressure 30.24 Tested by: Holly Ashkannejhad TEST SPECIFICATIONS Power: 120VAC/60Hz Job Site: EV01 Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS EUT OPERATING MODES Bluetooth 67, 802.11b 11, GSM 516 (PCS) on 700C DEVIATIONS FROM TEST STANDARD No deviations. RESULTS Pass Holy Arling O Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 3000.000 4000.000 5000.000 6000.000 7000.000 8000.000 9000.000 10000.000 11000.000 12000.000 MHz

						External			Distance			Compared to	
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.	
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)	Comments
7403.952	26.7	11.1	280.0	1.4	3.0	0.0	H-Horn	AV	0.0	37.8	54.0	-16.2	EUT vertical.
7404.000	26.3	11.1	54.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.4	54.0	-16.6	EUT on side
7404.000	42.6	11.1	280.0	1.4	3.0	0.0	H-Horn	PK	0.0	53.7	74.0	-20.3	EUT vertical.
7404.000	41.5	11.1	54.0	1.2	3.0	0.0	V-Horn	PK	0.0	52.6	74.0	-21.4	EUT on side
4319.007	26.1	2.5	194.0	1.3	3.0	0.0	H-Horn	AV	0.0	28.6	54.0	-25.4	EUT vertical.
4319.007	26.0	2.5	123.0	1.5	3.0	0.0	V-Horn	AV	0.0	28.5	54.0	-25.5	EUT vertical.
4319.007	39.4	2.5	194.0	1.3	3.0	0.0	H-Horn	PK	0.0	41.9	74.0	-32.1	EUT vertical.
4319.007	39.3	2.5	123.0	1.5	3.0	0.0	V-Horn	PK	0.0	41.8	74.0	-32.2	EUT vertical.
	(MHz) 7403.952 7404.000 7404.000 7404.000 4319.007 4319.007	(MHz) (dBuV) 7403.952 26.7 7404.000 26.3 7404.000 42.6 7404.000 41.5 4319.007 26.1 4319.007 39.4	(MHz)         (dBuV)         (dB)           7403.952         26.7         11.1           7404.000         26.3         11.1           7404.000         42.6         11.1           7404.000         41.5         11.1           4319.007         26.1         2.5           4319.007         39.4         2.5	(MHz)         (dBuV)         (dB)         (degrees)           7403.952         26.7         11.1         280.0           7404.000         26.3         11.1         54.0           7404.000         42.6         11.1         280.0           7404.000         41.5         11.1         54.0           4319.007         26.1         2.5         194.0           4319.007         39.4         2.5         194.0	(MHz)         (dBuV)         (dB)         (degrees)         (meters)           7403.952         26.7         11.1         280.0         1.4           7404.000         26.3         11.1         54.0         1.2           7404.000         42.6         11.1         280.0         1.4           7404.000         41.5         11.1         54.0         1.2           4319.007         26.1         2.5         194.0         1.3           4319.007         39.4         2.5         194.0         1.3	(MHz)         (dBuV)         (dB)         (degrees)         (meters)         (meters)           7403.952         26.7         11.1         280.0         1.4         3.0           7404.000         26.3         11.1         54.0         1.2         3.0           7404.000         42.6         11.1         280.0         1.4         3.0           7404.000         41.5         11.1         54.0         1.2         3.0           4319.007         26.1         2.5         194.0         1.3         3.0           4319.007         39.4         2.5         194.0         1.3         3.0	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)           7403.952         26.7         11.1         280.0         1.4         3.0         0.0           7404.000         26.3         11.1         54.0         1.2         3.0         0.0           7404.000         42.6         11.1         280.0         1.4         3.0         0.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0           4319.007         26.1         2.5         194.0         1.3         3.0         0.0           4319.007         26.0         2.5         123.0         1.5         3.0         0.0           4319.007         39.4         2.5         194.0         1.3         3.0         0.0	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity           7403.952         26.7         11.1         280.0         1.4         3.0         0.0         H-Horn           7404.000         26.3         11.1         54.0         1.2         3.0         0.0         V-Horn           7404.000         42.6         11.1         280.0         1.4         3.0         0.0         V-Horn           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn           4319.007         26.1         2.5         194.0         1.3         3.0         0.0         V-Horn           4319.007         26.0         2.5         123.0         1.5         3.0         0.0         V-Horn           4319.007         39.4         2.5         194.0         1.3         3.0         0.0         V-Horn	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity         Detector           7403.952         26.7         11.1         280.0         1.4         3.0         0.0         H-Horn         AV           7404.000         26.3         11.1         54.0         1.2         3.0         0.0         V-Horn         AV           7404.000         42.6         11.1         280.0         1.4         3.0         0.0         H-Horn         PK           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK           4319.007         26.1         2.5         194.0         1.3         3.0         0.0         V-Horn         AV           4319.007         39.4         2.5         194.0         1.3         3.0         0.0         V-Horn         AV	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)           7403.952         26.7         11.1         280.0         1.4         3.0         0.0         H-Horn         AV         0.0           7404.000         26.3         11.1         54.0         1.2         3.0         0.0         V-Horn         AV         0.0           7404.000         42.6         11.1         280.0         1.4         3.0         0.0         H-Horn         PK         0.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK         0.0           4319.007         26.1         2.5         194.0         1.3         3.0         0.0         V-Horn         AV         0.0           4319.007         26.0         2.5         123.0         1.5         3.0         0.0         V-Horn         AV         0.0           4319.007         39.4         2.5         194.0         1.3         3.0         0.0         H-Horn         PK         0.0	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB) </th <th>Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Spec. Limit (dB)           7403.952         26.7         11.1         280.0         1.4         3.0         0.0         V-Horn         AV         0.0         37.8         54.0           7404.000         42.6         11.1         280.0         1.4         3.0         0.0         V-Horn         AV         0.0         37.4         54.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK         0.0         53.7         74.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK         0.0         52.6         74.0           4319.007         26.1         2.5         194.0         1.3         3.0         0.0         V-Horn         AV         0.0         28.6         54.0           4319.007         26.0         2.5         123.0         1.5<!--</th--><th>Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB)<!--</th--></th></th>	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Adjustment (dB)         Spec. Limit (dB)           7403.952         26.7         11.1         280.0         1.4         3.0         0.0         V-Horn         AV         0.0         37.8         54.0           7404.000         42.6         11.1         280.0         1.4         3.0         0.0         V-Horn         AV         0.0         37.4         54.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK         0.0         53.7         74.0           7404.000         41.5         11.1         54.0         1.2         3.0         0.0         V-Horn         PK         0.0         52.6         74.0           4319.007         26.1         2.5         194.0         1.3         3.0         0.0         V-Horn         AV         0.0         28.6         54.0           4319.007         26.0         2.5         123.0         1.5 </th <th>Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB)<!--</th--></th>	Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Attenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment (dB) </th

Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Atlenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment dBuV/m         Adjustment dBuV/m         Spec. Limit dBuV/m         Spec. (dB)           14472.000         26.6         13.8         230.0         1.2         3.0         0.0         V-Horn V-Horn         AV         0.0         40.4         54.0         -13.6           14472.000         40.4         13.8         230.0         1.3         3.0         0.0         H-Horn V-Horn         PK         0.0         54.2         74.0         -19.6		ORTHWEST EMC			F	RA	DI	A <sup>-</sup>	ΤE	D	Ε	V	IS	SI	Ol	NS	3	DA	T/	<b>A</b> :	SI	ΗE	ΕT	•			ACQ 2005.1.3 EMI 2005.1.3
Description				2601CF																			W	ork Order	: ITRN	И0054	
### Attendees None   ### Atten	S																									9/05	
Tester   Property   Floring   Property   Tester   Property					ec T	echno	ologie	es Co	orpora	tion													Te				
Tested by   Holly Ashkanne had				None																							
Specification   FCC 15.247(d) Spurious Radiated Emissions: 2004   Method:   ANSI C63.4:2003   Specification   FCC 15.247(d) Spurious Radiated Emissions: 2004   Method:   ANSI C63.4:2003   SAMPLE CALCULATIONS   Radiated Emissions: Fall Strength - Measured Level + Antenne Factor + Cable Factor - Ampliter Gain - Distance Adjustment Factor + External Attenuation   Conducted Emissions: Adjust Level - Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuation   Conducted Emissions: Adjustment Statist   Cable Factor - Cable Attenuation Factor + External Attenuation   Conducted Emissions: Adjustment Statist   Cable Factor - Cable Attenuation Factor + External Attenuation   Conducted Emissions: Adjustment Statist   Cable Factor - Cable Attenuation Factor + External Attenuation   Conducted Emissions: Adjustment Factor + External Attenuation   Conducted Emissions:	C			Hally A	oble	onnoi	hod								-		.142	01/40/	cou-			Baro	metri				
Specification: FCC 15.427(d) Spurious Radiated Emissions: 2004   Method:   ANSI C53.4:2003	TEST				Snk	annej	nau								F	ower	: 12	UVACA	OUFIZ					Job Site	: EVU	1	
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Angifier Cain + Distance Afjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuation Comments					.247	(d) Sp	purio	us R	adiate	ed E	missi	ions	:2004					Method	d: AN	ISI C	63.	4:2003					
### Page   Marginated Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS  #### Page   Marginated Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator    ###################################	SAMPL	E CAL	CULA	ATIONS																							
### Programmer   Polish   Poli																				nt Fac	tor +	Externa	I Atten	uation			
EUT OPERATING MODES   Billustock II 1, 802,110 1, 1 69M 616 (PCS) on 700C	Condu	cted Emis	ssions:	Adjusted	Level	= Meas	sured l	Level -	+ Trans	ducer	Facto	r + C	able Att	enuat	tion Fa	ctor +	Exte	mal Atter	nuator								
Selection   1, 902.11   1, 63M 516 (PCS) on 700C	COMINI	ENIS																									
Run #	EUT OF	PERATI h 11, 802	ING N	MODES , GSM 516	(PC	S) on 70	00C																				
RESULTS   Total Pass   T7	DEVIA	TIONS I																									
Agust   Agusted   Spec. Limit   Classification   Freq   Amplitude   Factor   (alignized   Mitz)   (alignized   M	No devia	tions.																									
Note	RESUL	.TS																							Run		77
Rested By:   Tested By:   Tes	rass																									7	1
Rested By:   Tested By:   Tes	Othor																7										
Treq	Ounci																		1	fo	ly				2		-
Freq   Amplitude   Factor   Azimuth   Height   Distance   (neters)   Testernal   (dB)   (dB		80.0 -																									
Freq   Amplitude   Factor   Azimuth   Height   Distance   (neters)   Testernal   (dB)   (dB		_																									Ц
Freq		70.0																									
Solution   Freq   Amplitude   Factor   Azimuth   Height   Distance   (meters)   (meters)   (meters)   (meters)   (meters)   (dB)   (d		10.0 -																									
Solution   Freq   Amplitude   Factor   Azimuth   Height   Distance   (meters)   (meters)   (meters)   (meters)   (meters)   (dB)   (d																											
40.0   30.0   10.0   12500.000   13500.000   14500.000   15500.000   16500.000   17500.0		60.0 -			-																						
## 40.0    30.0		_																									
## 40.0    30.0																											
30.0		50.0 -																									
30.0	ےِ																										
30.0	≥	40 O -																									
30.0	30	40.0 -																	T	T							
20.0  10.0  12500.000  13500.000  14500.000  15500.000  16500.000  17500.000  MHz   Freq (MHz)  (dBuV)  (dB)  14472.000  26.6  13.8  219.0  1.2  3.0  0.0  H-Horn  AV  0.0  40.4  54.0  -13.6  14472.000  40.4  13.8  230.0  1.3  3.0  0.0  H-Horn  PK  0.0  54.2  74.0  -19.6	퓜																										
20.0  10.0  12500.000  13500.000  14500.000  15500.000  16500.000  17500.000  MHz   Freq (MHz)  (dBuV)  (dB)  14472.000  26.6  13.8  219.0  1.2  3.0  0.0  H-Horn  AV  0.0  40.4  54.0  -13.6  14472.000  40.4  13.8  230.0  1.3  3.0  0.0  H-Horn  PK  0.0  54.2  74.0  -19.6		30.0 -			-			-					-		-				_	-							
10.0																											
10.0																											
No.		20.0 -																	_	_							
No.																											
No.		10.0																									
Test		10.0 -																	Т	Т							
Test																											
Freq (MHz)		0.0 -	$\vdash$				+															$\vdash$			-		
Freq (MHz)		1250	0.000	)		1350	00.00	0			14500	0.00	00		1	5500	0.00	00		16	650	0.000		17	500.0	00	
Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         External Attenuation (dB)         Polarity         Detector (dB)         Distance Adjustment (dB)         Adjusted dBuV/m (dB)         Spec. Limit (dB)         Spec. (dB)           14472.000         26.7         13.8         219.0         1.2         3.0         0.0         V-Horn V-Ho		50		-		.000	. 3.00	-										-			-00				_ 00.0		
Freq (MHz)         Amplitude (dBuV)         Factor (dB)         Azimuth (degrees)         Height (meters)         Distance (meters)         Atlenuation (dB)         Polarity (dB)         Detector (dB)         Adjustment (dB)         Adjustment dBuV/m         Adjustment dBuV/m         Spec. Limit dBuV/m         Spec. (dB)           14472.000         26.6         13.8         230.0         1.2         3.0         0.0         V-Horn V-Horn         AV         0.0         40.4         54.0         -13.6           14472.000         40.4         13.8         230.0         1.3         3.0         0.0         H-Horn V-Horn         PK         0.0         54.2         74.0         -19.6															МН	Z											
(MHz)         (dBuV)         (dB)         (degrees)         (meters)         (meters)         (dB)         -         (dB)         dBuV/m         dBuV/m         dBuV/m         (dB)           14472.000         26.7         13.8         219.0         1.2         3.0         0.0         V-Horn         AV         0.0         40.5         54.0         -13.6           14472.000         26.6         13.8         230.0         1.3         3.0         0.0         H-Horn         AV         0.0         40.4         54.0         -13.6           14472.000         40.4         13.8         230.0         1.3         3.0         0.0         H-Horn         PK         0.0         54.2         74.0         -19.6					П					Π		T			Ext	ernal	T		T			Dista	nce				Compared to
14472.000 26.7 13.8 219.0 1.2 3.0 0.0 V-Horn AV 0.0 40.5 54.0 -13.5 14472.000 26.6 13.8 230.0 1.3 3.0 0.0 H-Horn AV 0.0 40.4 54.0 -13.6 14472.000 40.4 13.8 230.0 1.3 3.0 0.0 H-Horn PK 0.0 54.2 74.0 -19.6															Atten	uation	1	Polarity	[	Detect	or	Adjusti	ment				Spec.
14472.000 26.6 13.8 230.0 1.3 3.0 0.0 H-Horn AV 0.0 40.4 54.0 -13.6 14472.000 40.4 13.8 230.0 1.3 3.0 0.0 H-Horn PK 0.0 54.2 74.0 -19.6						_							(meter		(0	_	<u>Ц</u>					(dE					
14472.000 40.4 13.8 230.0 1.3 3.0 0.0 H-Horn PK 0.0 54.2 74.0 -19.8																											
							13.8		219.0					3.0						PK			0.0			74.0	

NORTHWEST <b>EMC</b>	R	RADI	ATE	D EN	IISS	SIC	ONS	DA	TA S	HEET			ACQ 2005.1. EMI 2005.1.
EU	T: 2601CF									W		ITRM0054	
Serial Number	er: Unknown er: Intermec Te	chnologie	s Cornora	tion						To	Date: mperature:	02/09/05	
Attendee		eciniologic	3 Corpora	LIOII						16	Humidity:		
Cust. Ref. No										Barometri	c Pressure		
Tested b EST SPECIFICA	y: Holly Ashk	annejhad					Power:	120VAC/6	0Hz		Job Site:	EV01	
	n: FCC 15.247	(d) Spurio	us Radiate	d Emissio	ns:2004			Method	ANSI C63	.4:2003			
Radiated Emission	s: Field Strength									+ External Atter	nuation		
Conducted Emission OMMENTS	ns: Adjusted Level	= Measured L	evel + Transd	lucer Factor +	Cable Atte	enuatio	on Factor + E	-xternal Atten	uator				
UT OPERATING uetooth 67, 802.11b		CS) on 700C											
EVIATIONS FRO deviations. ESULTS	OM TEST STA	NDARD										Run #	
ass												7	9
ther									-/ 1	Λ /.	` / (	)	
									Holy	Teste	d By:		
80.0													
													+
70.0													
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0.0 12500.000	135	500.000	1	14500.000			15500.00	00	16500	0.000	1750	00.000	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters		External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared t Spec. (dB)
14808.00 14808.00 14808.00 14808.00	00 26.7 00 40.1	14.0 14.0 14.0 14.0	31.0 105.0 105.0 31.0	1.2 4.0 4.0 1.2	;	3.0 3.0 3.0 3.0	0.0 0.0 0.0 0.0	V-Horn H-Horn H-Horn V-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	40.7 40.7 54.1 53.9	54.0 54.0 74.0 74.0	-13. -13. -19. -20.

NORTHWEST <b>EMC</b>	F	RADI	ATE	D EM	ISSI	ONS	DAT	ra s	HEET			ACQ 2005.1.3 EMI 2005.1.3
El	JT: 2601CF								W		ITRM0054	
	er: Unknown er: Intermec 1	Foobnologio	s Cornora	lion					To	Date: mperature:	02/09/05	
	es: None	rechnologie	s Corpora	11011					Te	Humidity:		
Cust. Ref. N	o.:								Barometri	c Pressure	30.14	
Tested I	y: Holly Ashl	kannejhad				Power:	120VAC/60	)Hz		Job Site:	EV01	
	on: FCC 15.24	7(d) Spurio	us Radiate	d Emission	s:2004		Method:	ANSI C63.	4:2003			
Radiated Emission Conducted Emission	ns: Field Strength								+ External Atten	uation		
COMMENTS	ns. Adjusted Leve	er = ivieasureu L	ever+ mansu	ucer Factor + C	Cable Attenua	IIOII FACIOI # E	xternal Attent	atoi				
EUT OPERATING Bluetooth 2, 802.11b		S) on 700C										
DEVIATIONS FR No deviations. RESULTS	OM TEST STA	ANDARD									Run #	
Pass											Kuii # 8	0
Other						-						
								Holy	Add	N C	) 	
									16266	а Бу.		
80.0												]
70.0												
60.0												
50.0												
40.0									•			
30.0												
20.0												
10.0												
12500.000	13	500.000	1	4500.000		15500.00	0	16500	.000	1750	00.000	
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)
16821.0 16821.0 16821.0 16821.0	00 26.2 00 40.1	14.9 14.9	279.0 160.0 279.0 160.0	1.3 1.2 1.3 1.2	3.0 3.0 3.0 3.0	0.0 0.0 0.0 0.0	H-Horn V-Horn H-Horn V-Horn	AV AV PK PK	0.0 0.0 0.0 0.0	41.1 41.1 55.0 54.6	54.0 54.0 74.0 74.0	-12.9 -12.9 -19.0 -19.4

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 02/09/05 Customer: Intermec Technologies Corporation Temperature: 20 Attendees: None Humidity: 34% Barometric Pressure 30.24 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 Method: ANSI C63.4:2003 Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator EUT OPERATING MODES Bluetooth 11, 802.11b 1, GSM 516 (PCS) on 700C **DEVIATIONS FROM TEST STANDARD** No deviations RESULTS 81 Pass Other Holy Salingha Tested By: 80.0 70.0 60.0 50.0 ٠ 40.0 . • 30.0 20.0 10.0 0.0 18000.000 19000.000 20000.000 21000.000 22000.000 23000.000 24000.000 25000.000 External Distance Compared to Amplitude Factor Azimuth Height Distance Polarity Spec, Limit Frea Attenuation Detector Adjustment Adjusted dBuV/m (dBuV) (dB) (degrees) (meters) (meters) (dB) (dB) dBuV/m (dB) (MHz) 23612.000 27.3 10.3 239.0 3.0 0.0 √-High Horr ΑV 0.0 37.6 54.0 -16.4 23612.000 27.0 10.3 281.0 0.0 H-High Horr ΑV 0.0 37.3 54.0 -16.7 19310.000 26.1 8.0 84.0 3.0 0.0 H-High Horr ΑV 0.0 34.1 54.0 -19.9 1.1 0.0 √-High Horr 19310.000 25.8 8.0 306.0 1.1 3.0 ΑV 0.0 33.8 54.0 -20.2 19296.000 25.4 8.0 -1.0 3.0 0.0 H-High Horr ΑV 33.4 54.0 -20.6 1.0 0.0 360.0 0.0 √-High Horr -20.7 19296.000 25.3 3.0 33.3 54.0 8.0 1.0 ΑV 0.0 0.0 H-High Horr 19674.000 24.3 8.6 299.0 1.1 3.0 ΑV 0.0 32 9 54.0 -21.1 19674.000 24.3 8.6 245.0 1.1 3.0 0.0 √-High Horr ΑV 0.0 32.9 54.0 -21.1 23612.000 41.3 10.3 239.0 1.1 3.0 0.0 √-High Horr PΚ 0.0 51.6 74.0 -22.4 23612.000 40.7 10.3 281.0 3.0 0.0 H-High Horr PΚ 0.0 51.0 74.0 -23.0 1.1 0.0 H-High Horr 19310.000 40.2 8.0 84.0 1.1 3.0 PΚ 0.0 48.2 74.0 -25.8 19310.000 39.3 8.0 306.0 0.0 √-High Horr PK 47.3 74.0 -26.7 1.1 3.0 0.0 0.0 H-High Horr PΚ 19674.000 37.6 8.6 299.0 1.1 3.0 0.0 46.2 74.0 -27.8 0.0 √-High Horr 19296 000 37.9 8.0 360.0 1.0 3.0 PK 45.9 74 0 -28 1 0.0 0.0 √-High Horr 19674.000 37.2 8.6 245.0 1.1 3.0 PK 0.0 45.8 74.0 -28.2

19296.000

37.4

8.0

-1.0

1.0

3.0

0.0 H-High Horr

0.0

45.4

74.0

-28.6

#### **RADIATED EMISSIONS DATA SHEET EMC** EUT: 2601CF Work Order: ITRM0054 Serial Number: Unknown Date: 03/12/05 Customer: Intermec Technologies Corporation Temperature: 18 Attendees: None Humidity: 36% Cust. Ref. No.: Barometric Pressure 30.01 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS

#### **EUT OPERATING MODES**

Bluetooth 11, 802.11b 1, GSM 202 (cellular) on 700C

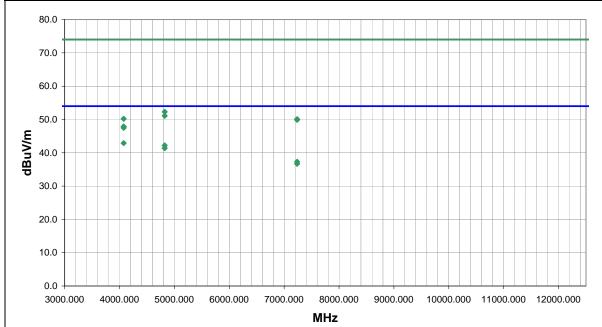
#### DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS 92 Pass

Other

Holy Saligh



_						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
4075.975	45.5	2.4	237.0	1.1	3.0	0.0	H-Horn	AV	0.0	47.9	54.0	-6.1
4075.975	40.5	2.4	268.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.9	54.0	-11.1
4823.954	38.9	3.3	258.0	1.1	3.0	0.0	H-Horn	AV	0.0	42.2	54.0	-11.8
4823.954	38.1	3.3	288.0	1.6	3.0	0.0	V-Horn	AV	0.0	41.4	54.0	-12.6
7236.000	27.2	10.1	230.0	1.3	3.0	0.0	H-Horn	AV	0.0	37.3	54.0	-16.7
7236.000	26.6	10.1	232.0	1.6	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3
4823.954	49.0	3.3	258.0	1.1	3.0	0.0	H-Horn	PK	0.0	52.3	74.0	-21.7
4823.954	47.8	3.3	288.0	1.6	3.0	0.0	V-Horn	PK	0.0	51.1	74.0	-22.9
4075.975	47.8	2.4	237.0	1.1	3.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8
7236.000	40.0	10.1	230.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.1	74.0	-23.9
7236.000	39.8	10.1	232.0	1.6	3.0	0.0	V-Horn	PK	0.0	49.9	74.0	-24.1
4075.975	45.1	2.4	268.0	1.3	3.0	0.0	V-Horn	PK	0.0	47.5	74.0	-26.5

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 03/12/05 Customer: Intermec Technologies Corporation Temperature: 18 Attendees: None Humidity: 36% Cust. Ref. No.: Barometric Pressure 30.01 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003

#### SAMPLE CALCULATIONS

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

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

EUT OPERATING MODES
Bluetooth 79, 802.11b 11, GSM 141 (cellular) on 700C

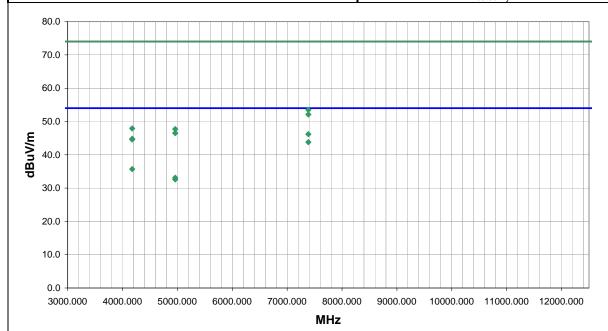
#### DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS 93 Pass

Other

Holy Saligh Tested By:



							External			Distance			Compared to
Fre	eq p	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MH	łz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
	7386.210	35.4	10.8	276.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.2	54.0	-7.8
	4175.967	42.2	2.4	233.0	1.1	3.0	0.0	H-Horn	AV	0.0	44.6	54.0	-9.4
	7386.210	33.0	10.8	319.0	1.6	3.0	0.0	H-Horn	AV	0.0	43.8	54.0	-10.2
	4175.967	33.3	2.4	276.0	1.2	3.0	0.0	V-Horn	AV	0.0	35.7	54.0	-18.3
	7386.210	42.7	10.8	276.0	1.2	3.0	0.0	V-Horn	PK	0.0	53.5	74.0	-20.5
	4959.963	29.5	3.6	86.0	1.3	3.0	0.0	H-Horn	AV	0.0	33.1	54.0	-20.9
	4959.963	29.0	3.6	13.0	1.3	3.0	0.0	V-Horn	AV	0.0	32.6	54.0	-21.4
	7386.210	41.3	10.8	319.0	1.6	3.0	0.0	H-Horn	PK	0.0	52.1	74.0	-21.9
	4175.967	45.5	2.4	233.0	1.1	3.0	0.0	H-Horn	PK	0.0	47.9	74.0	-26.1
	4959.963	44.1	3.6	86.0	1.3	3.0	0.0	H-Horn	PK	0.0	47.7	74.0	-26.3
	4959.963	42.9	3.6	13.0	1.3	3.0	0.0	V-Horn	PK	0.0	46.5	74.0	-27.5
	4175.967	42.4	2.4	276.0	1.2	3.0	0.0	V-Horn	PK	0.0	44.8	74.0	-29.2

#### **RADIATED EMISSIONS DATA SHEET EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 03/13/05 Customer: Intermec Technologies Corporation Temperature: 18 Attendees: None Humidity: 36% Cust. Ref. No.: Barometric Pressure 30.01 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 TEST SPECIFICATIONS Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator COMMENTS

EUT OPERATING MODES
Bluetooth 5, 802.11b 1, GSM 191 (cellular) on 700C

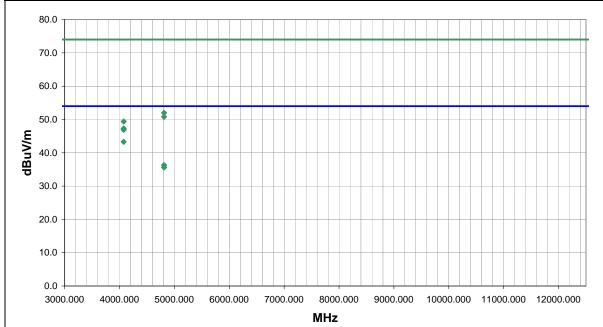
#### DEVIATIONS FROM TEST STANDARD

No deviations.

RESULTS 98 Pass

Other

Holy Saligh Tested By:



						External			Distance			Compared to	
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.	
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)	
4075.922	44.5	2.4	246.0	1.8	3.0	0.0	H-Horn	AV	0.0	46.9	54.0	-7.1	
4075.922	40.9	2.4	279.0	1.2	3.0	0.0	V-Horn	AV	0.0	43.3	54.0	-10.7	
4811.954	33.0	3.3	274.0	1.1	3.0	0.0	H-Horn	AV	0.0	36.3	54.0	-17.7	
4811.954	32.3	3.3	113.0	1.1	3.0	0.0	V-Horn	AV	0.0	35.6	54.0	-18.4	
4811.954	48.7	3.3	274.0	1.1	3.0	0.0	H-Horn	PK	0.0	52.0	74.0	-22.0	
4811.954	47.5	3.3	113.0	1.1	3.0	0.0	V-Horn	PK	0.0	50.8	74.0	-23.2	
4075.922	47.0	2.4	246.0	1.8	3.0	0.0	H-Horn	PK	0.0	49.4	74.0	-24.6	
4075.922	44.9	2.4	279.0	1.2	3.0	0.0	V-Horn	PK	0.0	47.3	74.0	-26.7	

#### RADIATED EMISSIONS DATA SHEET **EMC** Work Order: ITRM0054 EUT: 2601CF Serial Number: Unknown Date: 03/13/05 Customer: Intermec Technologies Corporation Temperature: 18 Attendees: None Humidity: 36% Cust. Ref. No.: Barometric Pressure 30.01 Tested by: Holly Ashkannejhad Power: 120VAC/60Hz Job Site: EV01 **TEST SPECIFICATIONS** Specification: FCC 15.247(d) Spurious Radiated Emissions:2004 Method: ANSI C63.4:2003 SAMPLE CALCULATIONS Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation **EUT OPERATING MODES** Bluetooth 11, 802.11b 1, GSM 202 (cellular) on 700C DEVIATIONS FROM TEST STANDARD No deviations RESULTS 99 Pass Other Holy Aligh Tested By: 80.0 70.0 60.0 50.0 dBuV/m 40.0 30.0 20.0 10.0 0.0 12500.000 13500.000 14500.000 15500.000 16500.000 17500.000 MHz External Distance Compared to

Amplitude

(dBuV)

26.7

26.6

39.9

39.9

Freq

(MHz) 14472.000

14472.000

14472.000

14472.000

Factor

(dB)

14.3

14.3

14.3

14.3

Azimuth

(degrees)

318.0

109.0

318.0

109.0

Height

(meters)

1.3

1.2

1.3

1.2

Distance

(meters)

3.0

3.0

3.0

3.0

Attenuation

(dB)

0.0

0.0

0.0

0.0

Polarity

H-Horn

V-Horn

H-Horn

V-Horn

Detector

ΑV

 $\mathsf{AV}$ 

PΚ

Adjustment

(dB)

0.0

0.0

0.0

0.0

Spec, Limit

dBuV/m

54.0

54.0

74.0

74.0

Spec.

(dB)

-13.0

-13.1

-19.8

-19.8

Adjusted

dBuV/m

41.0

40.9

54.2

54.2

NORTHWEST EMC			R	Αľ	)l	ΑT	ΈΙ	D	E۱	ΛI	S	S	Ю	N	S	D	ΑT	ГΑ	S	HI	E	Т				,		2005.1.3 MI A2.13
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Custo	mer:	Interme	с Те	chnol	ogie	s Coi	pora	tion														Tem	pera	ture:	21			
		None																						dity:				
Cust. Ref.																				Ba	arome				30.12			
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TEST SPECIFI			0.47	" 0											_	NA - 1		4410		1.00	•							
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Freq		Amplitud (dBuV		Facto (dB)					-					enuat (dB)	ion	Pola	rity	Det	ector		istmer (dB)		Adjus dBuV		Spec.			pec. (dB)
(MHz) 2483	3 500		2.3					(IIIE		_	1111011	3.0			0.0	H-H	orn	ь,	٩V	<u> </u>	(uв) О			42.7	ubu	54.0	(	-11.3
2483			2.3 2.0									3.0			0.0	V-H			٩V		0.			42. <i>1</i> 42.4		54.0		-11.6
2483			0.0									3.0			0.0	H-H			Y Y		0.			60.4		74.0		-13.6
2483			6.0		0.4		30.0		1.6			3.0			0.0	V-H			PK		0			56.4		74.0		-17.6

