Intermec Technologies Corporation

CN3 Long Keyboard

August 21, 2007

Report No. ITRM0163.1

Report Prepared By

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

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: August 21, 2007
Intermec Technologies Corporation
Model: CN3 Long Keyboard

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Effective Radiated Power (ERP)	FCC 22H:2006	ANSI/TIA/EIA-603-B-2002	**Pass**
Effective Radiated Power (EIRP)	FCC 24E:2006	ANSI/TIA/EIA-603-B-2002	**Pass**
Out of Band Emissions	FCC 22H:2006	ANSI/TIA/EIA-603-B-2002	**Pass**
Out of Band Emissions	FCC 24E:2006	ANSI/TIA/EIA-603-B-2002	**Pass**

Modifications made to the product
See the Modifications section of this report

Test Facility

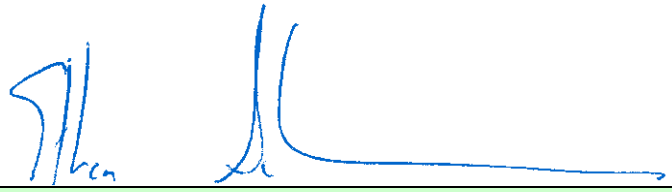
The measurement facility used to collect the data is located at:

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:



Ethan Schoonover, Sultan Lab Manager

NVLAP Lab Code: 200630-0

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

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

Revision Number	Description	Date	Page Number
00	None		

Accreditations and Authorizations

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

NVLAP: Northwest EMC, Inc. is accredited 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 2004/108/EC, and ANSI C63.4. 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.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0

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. USA0604C.

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).

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).

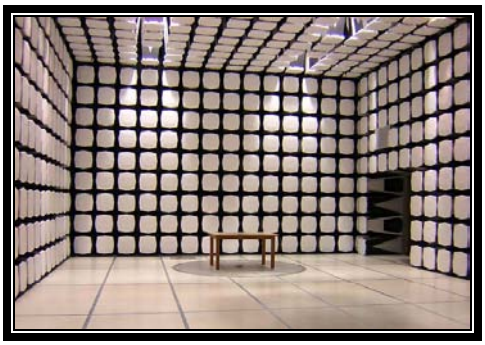
VCCI: Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. *(Registration Numbers. - Hillsboro: C-1071, R-1025, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).*

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

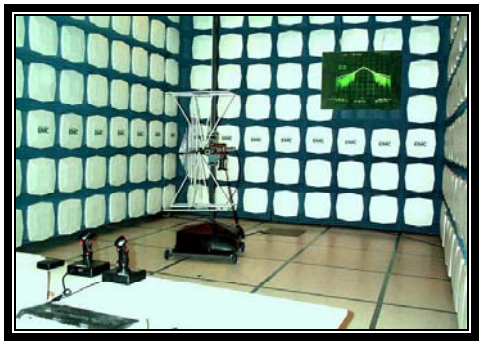
SCOPE

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



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 – EV11

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:	CN3 Long Keyboard
First Date of Test:	July 16, 2007
Last Date of Test:	August 7, 2007
Receipt Date of Samples:	July 16, 2007
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
EM5625 CDMA radio in the CN3.

Testing Objective:
To demonstrate compliance to FCC Parts 22H and 24E requirements.

CONFIGURATION 1 ITRM0163

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
CDMA / EVDO Radio Module	Sierra Wireless	EM5625	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Handheld Computer (EVDO enabled)	Intermec Technologies Corporation	CN3E	17890701002
Charging Cradle	Intermec Technologies Corporation	AD10	Unknown
AC Adapter	Intermec Technologies Corporation	073573	515299

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC	No	1.3m	Yes	AC Adapter	Charging Cradle
AC	No	1.8m	No	AC Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 ITRM0163

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
CDMA / EVDO Radio Module	Sierra Wireless	EM5625	Unknown

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Handheld Computer (CDMA enabled)	Intermec Technologies Corporation	CN3E	17890701001
Charging Cradle	Intermec Technologies Corporation	AD10	Unknown
AC Adapter	Intermec Technologies Corporation	073573	515299

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC	No	1.3m	Yes	AC Adapter	Charging Cradle
AC	No	1.8m	No	AC Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	7/16/2007	Effective Radiated Power- 22H	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	7/17/2007	Out of Band Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	8/7/2007	Effective Radiated Power-24E	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Out of Band Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION INVESTIGATED
Transmitting CDMA 1xRRT RC3, S02 PCS band (low, mid, and high channels)
Transmitting CDMA 1xRRT RC3, S02 Cell band (low, mid, and high channels)

CONFIGURATIONS INVESTIGATED
Stretch CN3 in charging cradle
Stretch CN3 standalone

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	20 GHz

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	12/29/2006	13
Low Pass Filter 0-425 MHz	Micro-Tronics	LPM50003	LFB	12/29/2006	13
High Pass Filter 1.2 - 18 GHz	Micro-Tronics	HPM50108	HFV	12/29/2006	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	12/29/2006	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13
Signal Generator	Agilent	E8257D	TGX	1/25/2007	13
Antenna, Horn	EMCO	3115	AHE	10/3/2005	24
Antenna, Dipole (part of ADA)	ETS	3121C-DB4	ADAA	12/28/2006	24
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	12/28/2006	24
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/10/2007	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	12/29/2006	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
EV01 cables g,h,j			EVB	5/10/2007	13
EV01 cables c,g, h			EVA	12/29/2006	13

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	BWI (kHz)
0.15 - 30.0	1.0
30.0 - 400.0	10.0
400.0 - 1000.0	100.0
1000.0 - 6000.0	1000.0

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.4:2003). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is place on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 82.5 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above.

NORTHWEST EMC

Out of Band Emissions

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard	Work Order:	ITRM0163
Serial Number:	None	Date:	07/17/07
Customer:	Intermec Technologies Corporation	Temperature:	23
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

CN3 in cradle

EUT OPERATING MODES

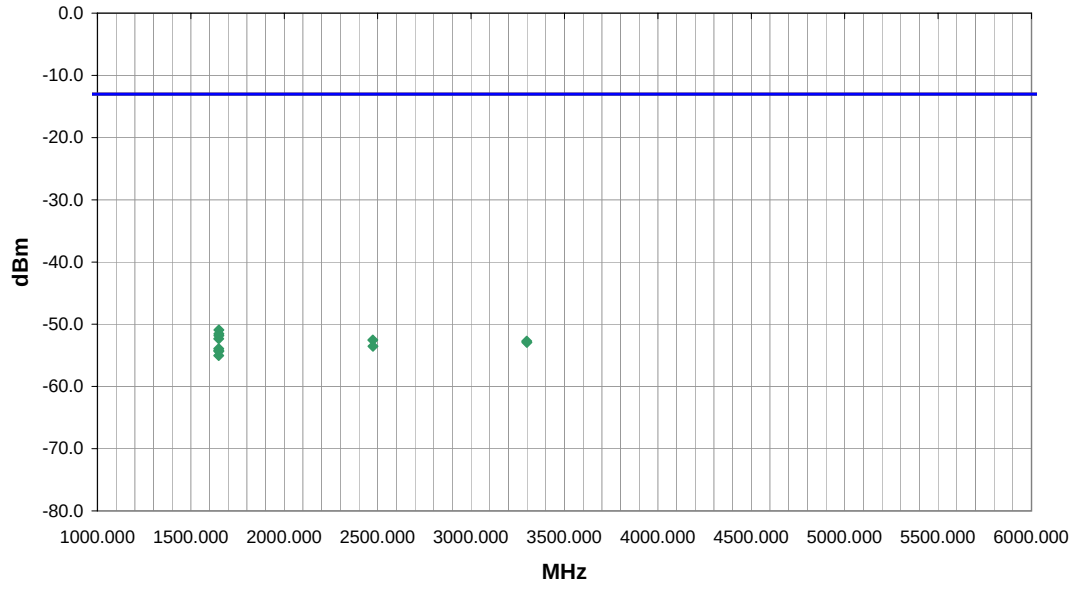
Transmitting CDMA 1xRRT RC3, S02 Cell band, low channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector		EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1650.050			225.0	1.2			H-Horn	PK		-50.9	-13.0	-37.9	EUT on side
1649.910			232.0	1.4			H-Horn	PK		-51.5	-13.0	-38.5	EUT in Cradle
1649.847			150.0	1.0			V-Horn	PK		-51.8	-13.0	-38.8	EUT in Cradle
1648.883			212.0	1.2			H-Horn	PK		-52.3	-13.0	-39.3	EUT horizontal
2474.383			230.0	1.0			H-Horn	PK		-52.5	-13.0	-39.5	EUT in Cradle
3297.617			77.0	1.0			H-Horn	PK		-52.7	-13.0	-39.7	EUT in Cradle
3299.133			130.0	1.0			V-Horn	PK		-52.9	-13.0	-39.9	EUT in Cradle
2474.662			194.0	1.2			V-Horn	PK		-53.5	-13.0	-40.5	EUT in Cradle
1649.430			356.0	1.2			H-Horn	PK		-53.9	-13.0	-40.9	EUT vertical
1649.103			152.0	1.0			V-Horn	PK		-54.2	-13.0	-41.2	EUT on side
1649.727			151.0	1.2			V-Horn	PK		-54.3	-13.0	-41.3	EUT horizontal
1649.623			25.0	1.3			V-Horn	PK		-55.0	-13.0	-42.0	EUT vertical

NORTHWEST EMC

Out of Band Emissions

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	07/17/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	41%
Project:	None			Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

CN3 in cradle

EUT OPERATING MODES

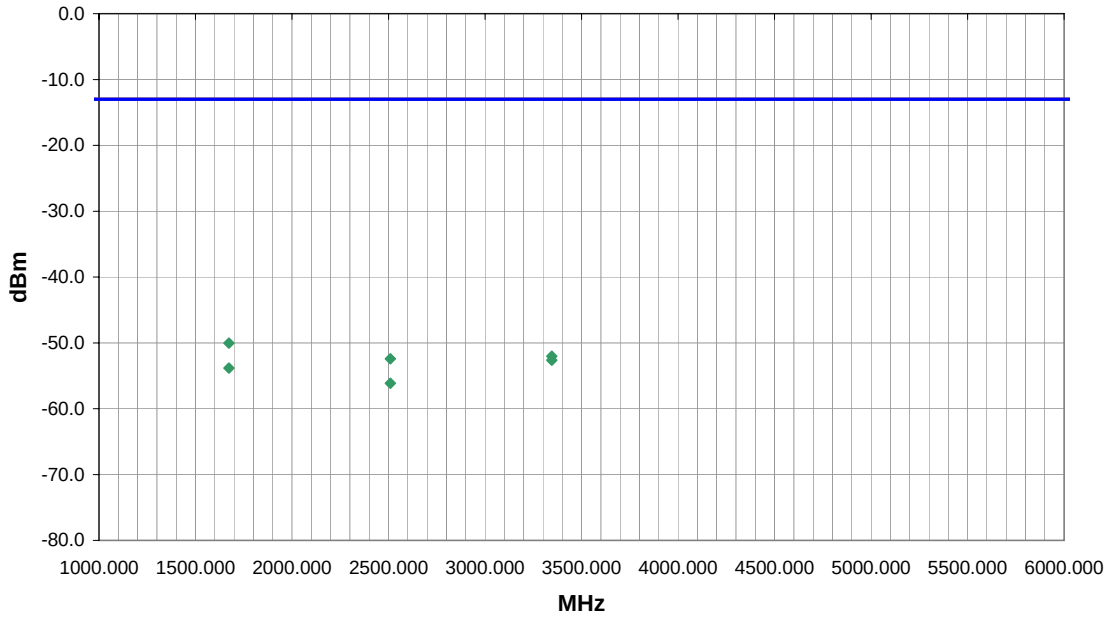
Transmitting CDMA 1xRRT RC3, S02 Cell band, mid channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector		EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
1672.743			218.0	1.2			V-Horn	PK		-50.0	-13.0	-37.0
3345.911			158.0	1.9			H-Horn	PK		-52.0	-13.0	-39.0
2509.087			356.0	1.2			H-Horn	PK		-52.4	-13.0	-39.4
3345.948			132.0	1.0			V-Horn	PK		-52.6	-13.0	-39.6
1672.970			339.0	1.0			H-Horn	PK		-53.8	-13.0	-40.8
2509.479			212.0	1.0			V-Horn	PK		-56.1	-13.0	-43.1

NORTHWEST EMC

Out of Band Emissions

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	07/17/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	41%
Project:	None			Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

CN3 in cradle

EUT OPERATING MODES

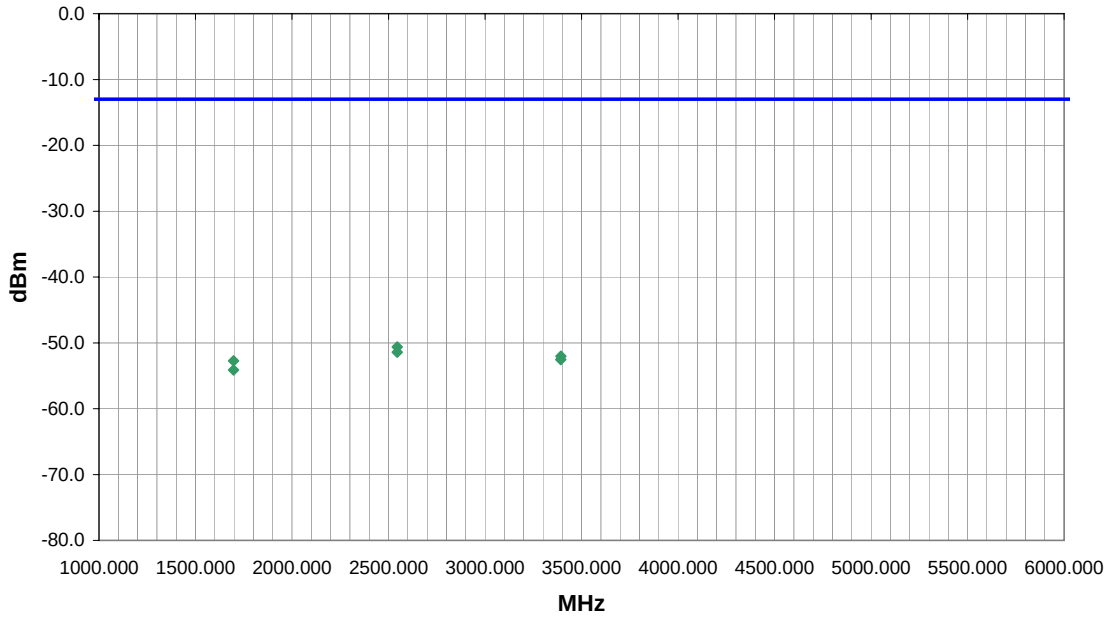
Transmitting CDMA 1xRRT RC3, S02 Cell band, high channel

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	7
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector		EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
2545.410			186.0	1.1			V-Horn	PK		-50.6	-13.0	-37.6
2545.193			36.0	1.3			H-Horn	PK		-51.4	-13.0	-38.4
3393.127			123.0	1.0			V-Horn	PK		-52.0	-13.0	-39.0
3392.144			26.0	1.0			H-Horn	PK		-52.5	-13.0	-39.5
1696.904			209.0	1.1			V-Horn	PK		-52.7	-13.0	-39.7
1696.758			75.0	1.2			H-Horn	PK		-54.1	-13.0	-41.1

NORTHWEST EMC

Out of Band Emissions

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	07/17/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	41%
Project:	None			Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

CN3 in cradle

EUT OPERATING MODES

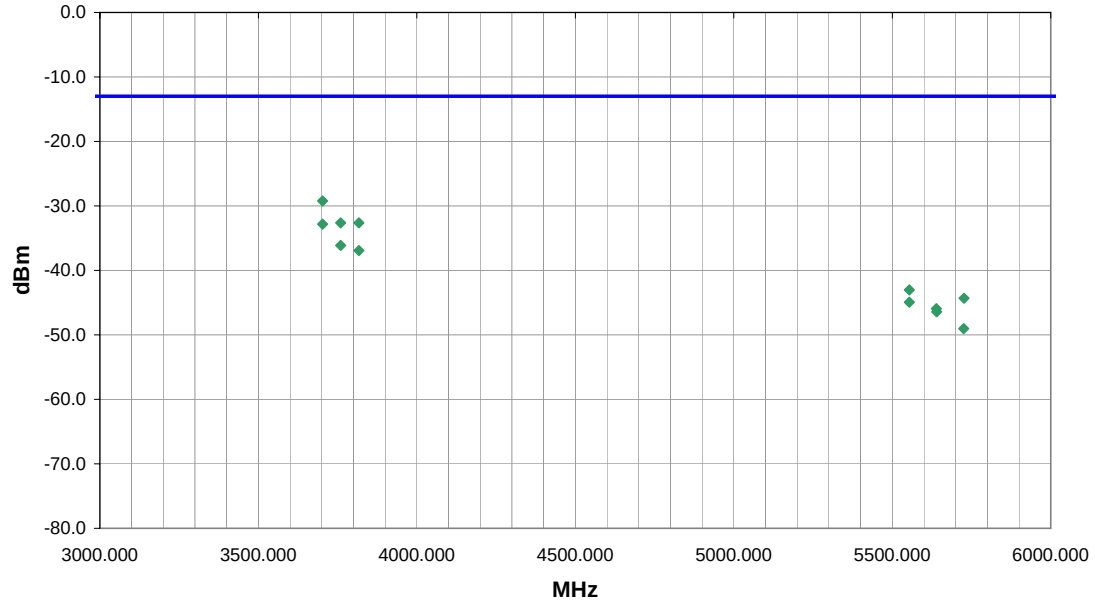
Transmitting CDMA 1xRRT RC3, S02 PCS band (See comments for channel)

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	8
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector		EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
3702.596			240.0	1.0			H-Horn	PK		-29.2	-13.0	-16.2	Low channel
3759.542			236.0	1.0			H-Horn	PK		-32.6	-13.0	-19.6	Mid channel
3817.100			194.0	1.0			V-Horn	PK		-32.6	-13.0	-19.6	High channel
3702.712			225.0	1.0			V-Horn	PK		-32.8	-13.0	-19.8	Low channel
3759.858			198.0	1.0			V-Horn	PK		-36.1	-13.0	-23.1	Mid channel
3817.208			181.0	1.4			H-Horn	PK		-36.9	-13.0	-23.9	High channel
7635.008			72.0	1.0			H-Horn	PK		-40.0	-13.0	-27.0	High channel
7634.200			160.0	1.0			V-Horn	PK		-40.7	-13.0	-27.7	High channel
7520.938			176.0	1.0			H-Horn	PK		-40.8	-13.0	-27.8	Mid channel
7405.292			113.0	1.0			V-Horn	PK		-41.4	-13.0	-28.4	Low channel
7520.117			120.0	1.0			V-Horn	PK		-41.7	-13.0	-28.7	Mid channel
7404.242			101.0	1.0			H-Horn	PK		-42.9	-13.0	-29.9	Low channel
5553.604			78.0	1.0			H-Horn	PK		-43.0	-13.0	-30.0	Low channel
5726.454			137.0	1.0			V-Horn	PK		-44.3	-13.0	-31.3	High channel
5553.792			125.0	1.0			V-Horn	PK		-44.9	-13.0	-31.9	Low channel
5638.921			281.0	1.0			V-Horn	PK		-45.9	-13.0	-32.9	Mid channel
5640.304			130.0	1.0			H-Horn	PK		-46.4	-13.0	-33.4	Mid channel
5725.533			108.0	1.0			H-Horn	PK		-49.0	-13.0	-36.0	High channel


NORTHWEST
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Out of Band Emissions

Effective Radiated Power (EIRP)

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION INVESTIGATED
Transmitting 1xEV-DO Rev. A, PCS band
Transmitting 1xEV-DO Rev. 0, PCS band
Transmitting CDMA 1xRRT RC3, S055 PCS band
Transmitting CDMA 1xRRT RC3, S02 PCS band

CONFIGURATIONS INVESTIGATED
Stretch CN3 in a charging cradle
Stretch CN3 standalone

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	1851.25MHz	Stop Frequency	1908.75MHz

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHE	10/3/2005	24
Signal Generator	Agilent	E8257D	TGX	1/25/2007	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
EV01 cables g,h,j			EVB	5/10/2007	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13

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

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and/or receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003).

The amplitude and frequency of the highest emissions were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the dipole antenna and its gain (dBi); the effective radiated power for each radiated spurious emission was determined.

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard	Work Order:	ITRM0163
Serial Number:	None	Date:	07/16/07
Customer:	Intermec Technologies Corporation	Temperature:	23
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in Stretch CN3

EUT OPERATING MODES

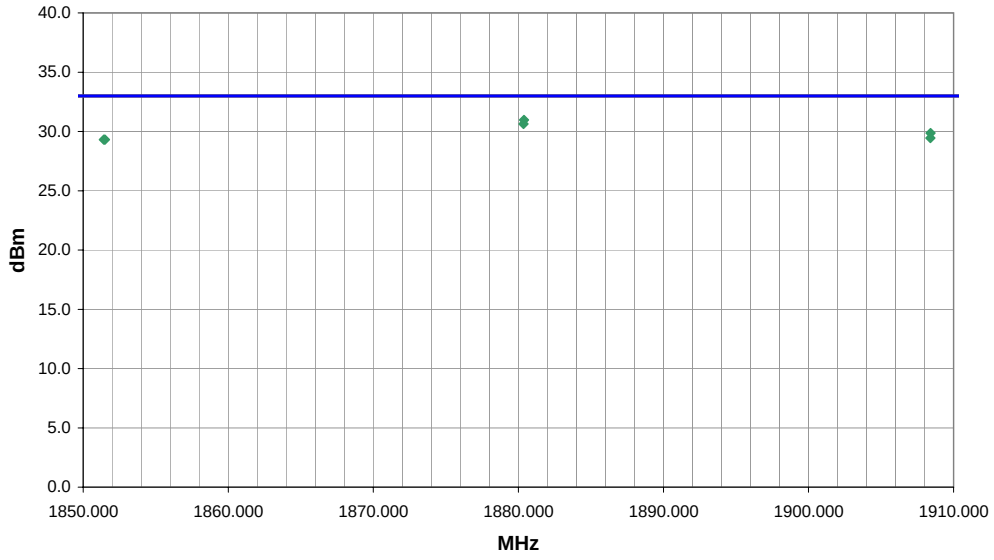
Transmitting CDMA 1xRRT RC3, S02 PCS band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1880.390			249.0	1.1			H-Horn	PK	1.25E+00	31.0	33.0	-2.0	Mid channel, EUT on side
1880.353			250.0	1.1			V-Horn	PK	1.16E+00	30.6	33.0	-2.4	Mid channel, EUT in cradle
1908.410			268.0	1.1			V-Horn	PK	9.71E-01	29.9	33.0	-3.1	High channel, EUT in cradle
1908.400			258.0	1.1			H-Horn	PK	8.80E-01	29.4	33.0	-3.6	High channel, EUT on side
1851.503			264.0	1.2			H-Horn	PK	8.53E-01	29.3	33.0	-3.7	Low channel, EUT on side
1851.427			237.0	1.5			V-Horn	PK	8.53E-01	29.3	33.0	-3.7	Low channel, EUT in cradle

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	07/16/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	41%
Project:	None			Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in Stretch CN3

EUT OPERATING MODES

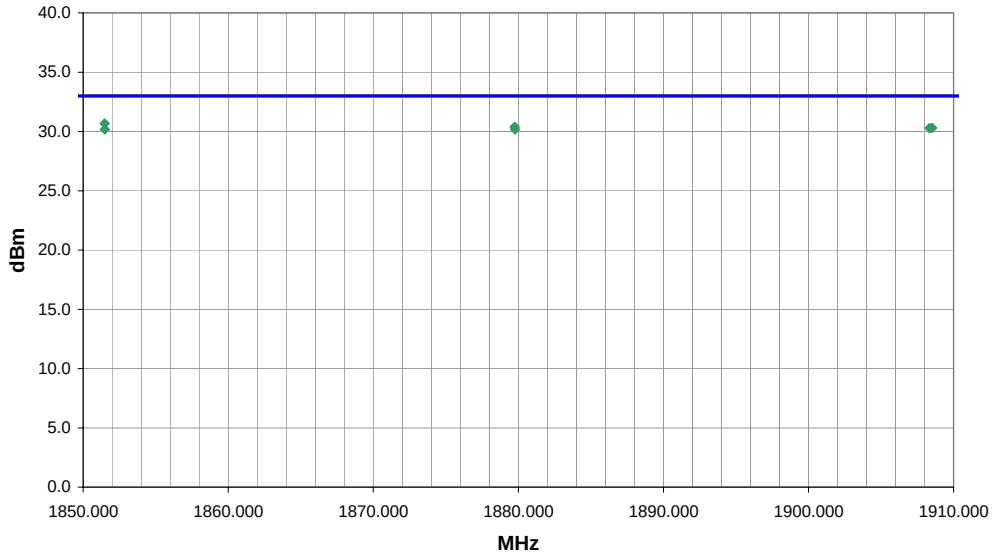
Transmitting CDMA 1xRRT RC3, S055 PCS band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1851.483			201.0	1.2			V-Horn	PK	1.17E+00	30.7	33.0	-2.3	Low channel, EUT in cradle
1879.750			233.0	1.1			V-Horn	PK	1.09E+00	30.4	33.0	-2.6	Mid channel, EUT in cradle
1908.517			250.0	1.1			H-Horn	PK	1.07E+00	30.3	33.0	-2.7	High channel, EUT on side
1908.343			203.0	1.1			V-Horn	PK	1.07E+00	30.3	33.0	-2.7	High channel, EUT in cradle
1851.493			246.0	1.1			H-Horn	PK	1.04E+00	30.2	33.0	-2.8	Low channel, EUT on side
1879.767			254.0	1.2			H-Horn	PK	1.04E+00	30.2	33.0	-2.8	Mid channel, EUT on side

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2007.05.07
EMI 2006.11.29

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	08/07/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	38%
Project:	None			Barometric Pres.:	30.02
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in Stretch CN3

EUT OPERATING MODES

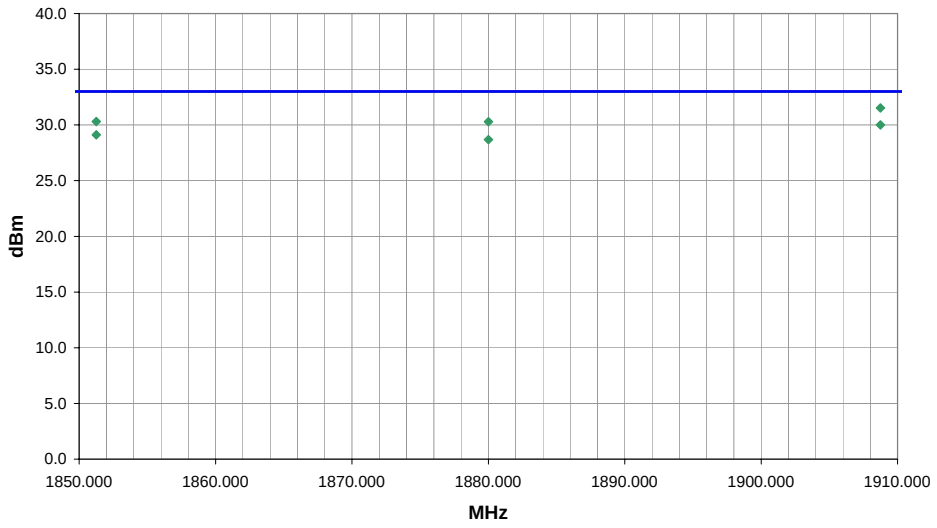
Transmitting 1xEV-DO Rev. 0, PCS band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	15
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1908.750			37.0	1.2			V-Horn	PK	1.42E+00	31.5	33.0	-1.5	High channel. EUT vertical, in cradle.
1851.250			361.0	1.1			V-Horn	PK	1.07E+00	30.3	33.0	-2.7	Low channel. EUT vertical, in cradle.
1880.000			316.0	1.1			V-Horn	PK	1.07E+00	30.3	33.0	-2.7	Mid channel. EUT vertical, in cradle.
1908.750			94.0	1.1			H-Horn	PK	1.00E+00	30.0	33.0	-3.0	High channel. EUT on side
1851.250			145.0	1.1			H-Horn	PK	8.15E-01	29.1	33.0	-3.9	Low channel. EUT on side
1880.000			316.0	1.1			H-Horn	PK	7.39E-01	28.7	33.0	-4.3	Mid channel. EUT on side

NORTHWEST EMC

Effective Radiated Power (EIRP)

PSA 2007.05.07
EMI 2006.11.29

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	08/07/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	35%
Project:	None			Barometric Pres.:	30.02
Tested by:	Holly Ashkannejhad	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 24E:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in Stretch CN3

EUT OPERATING MODES

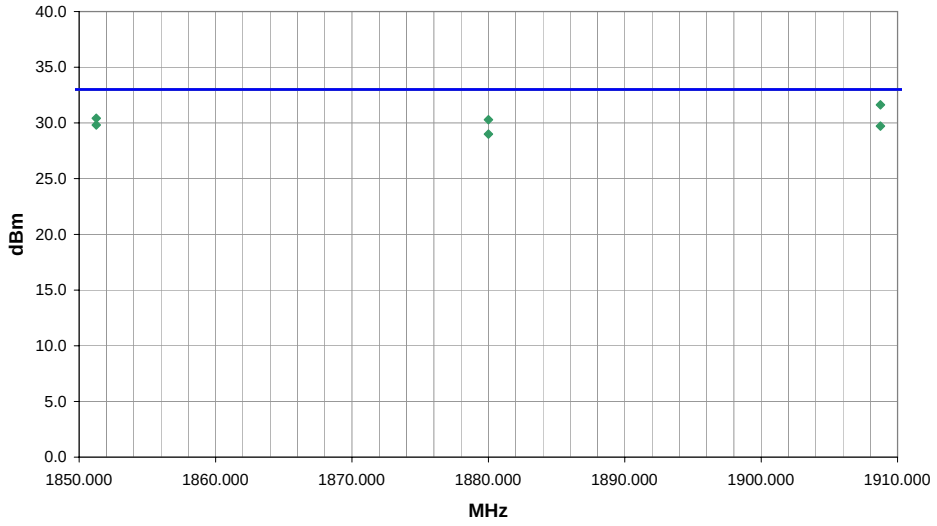
Transmitting 1xEV-DO Rev. A, PCS band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	16
Configuration #	1
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1908.750			-1.0	1.2			V-Horn	PK	1.45E+00	31.6	33.0	-1.4	High channel. EUT vertical, in cradle.
1851.250			360.0	1.2			V-Horn	PK	1.10E+00	30.4	33.0	-2.6	Low channel. EUT vertical, in cradle.
1880.000			360.0	1.2			V-Horn	PK	1.07E+00	30.3	33.0	-2.7	Mid channel. EUT vertical, in cradle.
1851.250			112.0	1.2			H-Horn	PK	9.57E-01	29.8	33.0	-3.2	Low channel. EUT on side.
1908.750			110.0	1.2			H-Horn	PK	9.37E-01	29.7	33.0	-3.3	High channel. EUT on side.
1880.000			121.0	1.2			H-Horn	PK	7.94E-01	29.0	33.0	-4.0	Mid channel. EUT on side.

Effective Radiated Power (EIRP)


EMC

Effective Radiated Power (EIRP)

Effective Radiated Power (ERP)

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION INVESTIGATED
Transmitting 1xEV-DO Rev. A, Cell band
Transmitting 1xEV-DO Rev. 0, Cell band
Transmitting CDMA 1xRRT RC3, S055 Cell band
Transmitting CDMA 1xRRT RC3, S03 Cell band

CONFIGURATIONS INVESTIGATED
Stretch CN3 in charging cradle
Stretch CN3 standalone

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	824.7MHz	Stop Frequency	848.31MHz

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

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Dipole (part of ADA)	ETS	3121C-DB4	ADAA	12/28/2006	24
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	12/28/2006	24
EV01 cables c,g, h			EVA	12/29/2006	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Signal Generator	Agilent	E8257D	TGX	1/25/2007	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13

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

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarizationThe amplitude and frequency of the highest emission were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined.

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard	Work Order:	ITRM0163
Serial Number:	None	Date:	07/16/07
Customer:	Intermec Technologies Corporation	Temperature:	23
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in the Stretch CN3

EUT OPERATING MODES

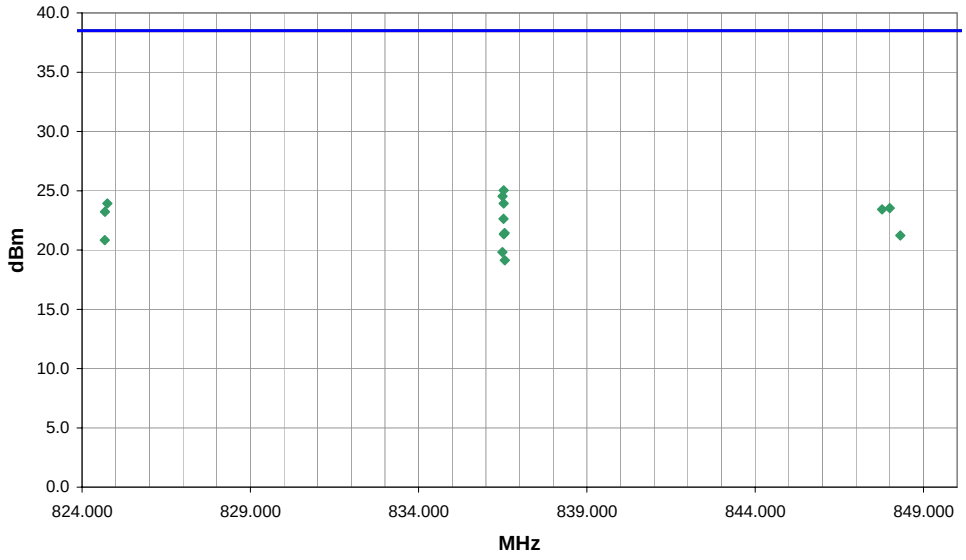
Transmitting CDMA 1xRRT RC3, S03 Cell band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.528			234.0	1.0			H-Bilog	PK	3.19E-01	25.0	38.5	-13.5	Mid channel, EUT on side
836.493			329.0	1.2			V-Bilog	PK	2.84E-01	24.5	38.5	-14.0	Mid channel, EUT in cradle
824.749			85.0	1.0			H-Bilog	PK	2.47E-01	23.9	38.5	-14.6	Low channel, EUT on side
836.528			236.0	1.0			H-Bilog	PK	2.47E-01	23.9	38.5	-14.6	Mid channel, EUT horizontal
847.997			326.0	1.2			V-Bilog	PK	2.25E-01	23.5	38.5	-15.0	High channel, EUT in cradle
847.771			102.0	1.0			H-Bilog	PK	2.20E-01	23.4	38.5	-15.1	High channel, EUT on side
824.681			325.0	1.2			V-Bilog	PK	2.10E-01	23.2	38.5	-15.3	Low channel, EUT in cradle
836.523			6.0	1.2			V-Bilog	PK	1.83E-01	22.6	38.5	-15.9	Mid channel, EUT vertical
836.555			80.0	1.0			H-Bilog	PK	1.39E-01	21.4	38.5	-17.1	Mid channel, EUT in cradle
836.534			166.0	1.7			V-Bilog	PK	1.36E-01	21.3	38.5	-17.2	Mid channel, EUT on side
848.310			0.0	1.2			V-Bilog	PK	1.33E-01	21.2	38.5	-17.3	High channel, EUT vertical
824.673			298.0	1.0			H-Bilog	PK	1.21E-01	20.8	38.5	-17.7	Low channel, EUT in cradle
836.487			117.0	1.0			H-Bilog	PK	9.62E-02	19.8	38.5	-18.7	Mid channel, EUT vertical
836.561			166.0	2.2			V-Bilog	PK	8.19E-02	19.1	38.5	-19.4	Mid channel, EUT horizontal

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2007.05.07
EMI 2006.12.20

EUT:	CN3 Long Keyboard			Work Order:	ITRM0163
Serial Number:	None			Date:	07/16/07
Customer:	Intermec Technologies Corporation			Temperature:	23
Attendees:	None			Humidity:	41%
Project:	None			Barometric Pres.:	29.97
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in the Stretch CN3

EUT OPERATING MODES

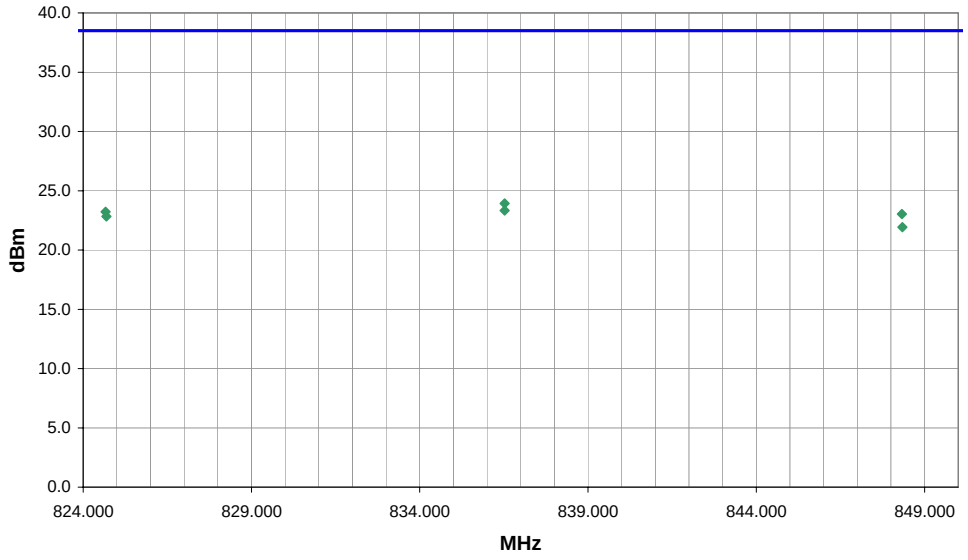
Transmitting CDMA 1xRRT RC3, S055 Cell band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Configuration #	2
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.523			89.0	1.1			H-Bilog	PK	2.47E-01	23.9	38.5	-14.6	Mid channel, EUT on side
836.520			334.0	1.2			V-Bilog	PK	2.15E-01	23.3	38.5	-15.2	Mid channel, EUT in cradle
824.666			91.0	1.1			H-Bilog	PK	2.10E-01	23.2	38.5	-15.3	Low channel, EUT on side
848.325			324.0	1.2			V-Bilog	PK	2.01E-01	23.0	38.5	-15.5	High channel, EUT in cradle
824.691			328.0	1.2			V-Bilog	PK	1.92E-01	22.8	38.5	-15.7	Low channel, EUT in cradle
848.341			92.0	1.1			H-Bilog	PK	1.56E-01	21.9	38.5	-16.6	High channel, EUT on side

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2007.05.07
EMI 2007.7.24

EUT:	CN3 Long Keyboard			**Work Order:**	ITRM0163
Serial Number:	None			**Date:**	07/30/07
Customer:	Intermec Technologies Corporation			**Temperature:**	23
Attendees:	None			**Humidity:**	35%
Project:	None			**Barometric Pres.:**	30.09
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

TEST PARAMETERS

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

COMMENTS

EM5625 in the Stretch CN3

EUT OPERATING MODES

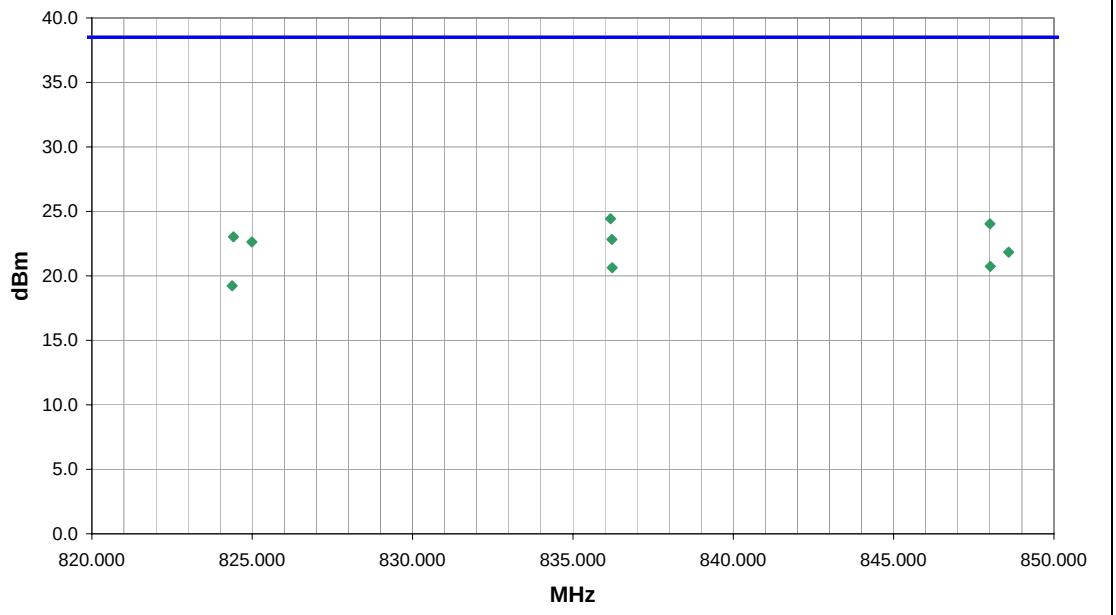
Transmitting 1xEV-DO Rev. 0, Cell band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	9
Configuration #	1
Results	Pass

Signature



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
836.177			112.0	1.0			H-Bilog	PK	2.77E-01	24.4	38.5	-14.1	EUT on side
848.003			102.0	1.0			H-Bilog	PK	2.53E-01	24.0	38.5	-14.5	EUT on side
824.413			113.0	1.0			H-Bilog	PK	2.01E-01	23.0	38.5	-15.5	EUT on side
836.213			2.0	1.1			V-Bilog	PK	1.92E-01	22.8	38.5	-15.7	EUT in cradle
824.987			360.0	1.2			V-Bilog	PK	1.83E-01	22.6	38.5	-15.9	EUT in cradle
848.587			7.0	1.2			V-Bilog	PK	1.52E-01	21.8	38.5	-16.7	EUT in cradle
848.013			291.0	1.0			H-Bilog	PK	1.18E-01	20.7	38.5	-17.8	EUT in cradle
836.223			286.0	1.0			H-Bilog	PK	1.16E-01	20.6	38.5	-17.9	EUT in cradle
824.377			60.0	1.0			H-Bilog	PK	8.38E-02	19.2	38.5	-19.3	EUT in cradle

NORTHWEST EMC

Effective Radiated Power (ERP)

PSA 2007.05.07
EMI 2007.7.24

EUT:	CN3 Long Keyboard	Work Order:	ITRM0163
Serial Number:	None	Date:	07/30/07
Customer:	Intermec Technologies Corporation	Temperature:	23
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	29.97
Tested by:	Holly Ashkannejhad	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 22H:2006	ANSI/TIA/EIA-603-B-2002

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

COMMENTS

EM5625 in the Stretch CN3

EUT OPERATING MODES

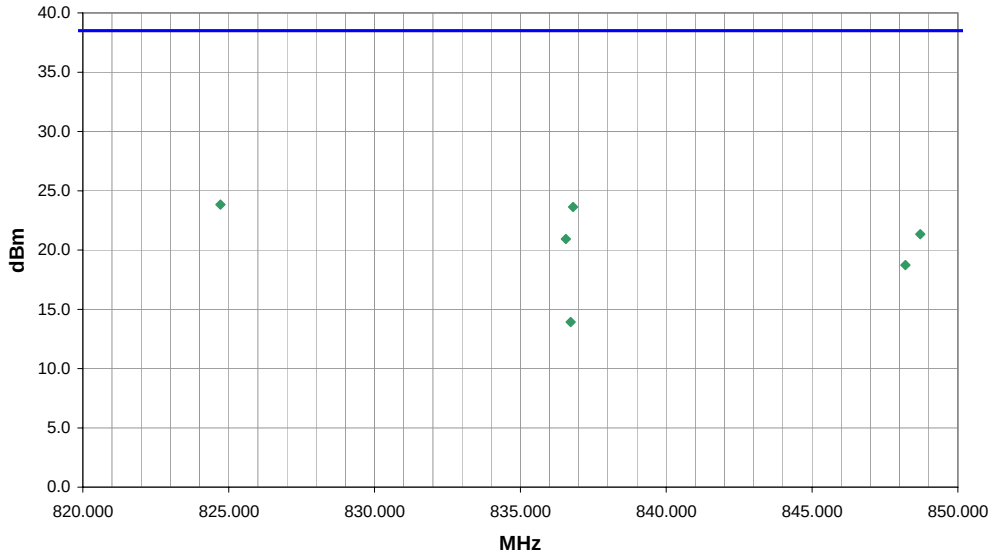
Transmitting 1xEV-DO Rev. A, Cell band

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	10
Configuration #	1
Results	Pass

Signature Holly Ashkannejhad



Freq (MHz)			Azimuth (degrees)	Height (meters)			Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
824.720			243.0	1.0			H-Bilog	PK	2.42E-01	23.8	38.5	-14.7	Low channel, EUT on side
836.807			242.0	1.0			H-Bilog	PK	2.31E-01	23.6	38.5	-14.9	Mid channel, EUT on side
848.710			240.0	1.0			H-Bilog	PK	1.36E-01	21.3	38.5	-17.2	High channel, EUT on side
836.560			30.0	1.2			V-Bilog	PK	1.24E-01	20.9	38.5	-17.6	Mid channel, EUT in cradle
848.203			325.0	1.0			V-Bilog	PK	7.47E-02	18.7	38.5	-19.8	High channel, EUT in cradle
836.723			175.0	1.0			V-Bilog	PK	2.47E-02	13.9	38.5	-24.6	Mid channel, EUT on side


NORTHWEST
EMC


EMC

Effective Radiated Power (ERP)