



**Intermec Technologies Corporation**

**1000AA09 & 1000AA09-NI**

**FCC 15.209:2013**

**Report #: INMC0819**



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – [www.nwemc.com](http://www.nwemc.com)

California – Minnesota – Oregon – New York – Washington

**Last Date of Test: August 28, 2013**  
**Intermec Technologies Corporation**  
**Model: 1000AA09 & 1000AA09-NI**

## Emissions

Test Description	Specification	Test Method	Pass/Fail
Field Strength of Fundamental	FCC 15.209:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions Below 30MHz	FCC 15.209:2013	ANSI C63.10:2009	Pass

## Deviations From Test Standards

None



### Approved By:

A handwritten signature in blue ink, appearing to read "Timothy P. O'Shea", is written over a light blue background.

Tim O'Shea, Operations 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 HISTORY

Revision Number	Description	Date	Page Number
00	None		

## **Barometric Pressure**

The recorded barometric pressure has been normalized to sea level.

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## United States

**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

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## Canada

**IC** - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

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## European Union

**European Commission** – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

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## Australia/New Zealand

**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

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## Korea

**KCC / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

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## Japan

**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

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## Taiwan

**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

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## Singapore

**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

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## Hong Kong

**OFTA** – Recognized by OFTA as a CAB for the acceptance of test data.

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## Vietnam

**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

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## Russia

**GOST** – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

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## SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>

## 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. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

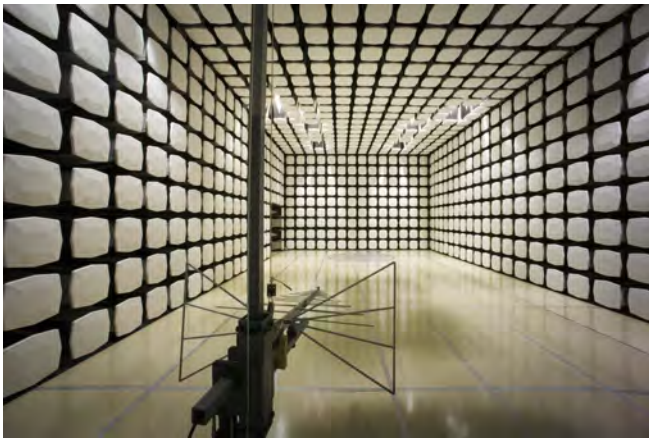
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

<b>Test</b>	<b>+ MU</b>	<b>- MU</b>
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94



<b>Oregon</b> Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	<b>California</b> Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	<b>New York</b> Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	<b>Minnesota</b> Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	<b>Washington</b> Labs NC01-05, SU02, SU07 19201 120 <sup>th</sup> Ave. NE Bothell, WA 98011 (425) 984-6600
<b>VCCI</b>				
A-0108	A-0029		A-0109	A-0110
<b>Industry Canada</b>				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1
<b>NVLAP</b>				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0





WTD 12.5.23

# PRODUCT DESCRIPTION

## Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	Intermec Technologies Corporation
<b>Address:</b>	6001 36th Ave West
<b>City, State, Zip:</b>	Everett, WA 98203
<b>Test Requested By:</b>	Sean Mackellar
<b>Model:</b>	1000AA09 & 1000AA09-NI
<b>First Date of Test:</b>	August 28, 2013
<b>Last Date of Test:</b>	August 28, 2013
<b>Receipt Date of Samples:</b>	August 28, 2013
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

## Information Provided by the Party Requesting the Test

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

Inductive radio device with 1 antenna. There is no difference between model numbers, except for labeling and NI safety certification. Designed to be a snap-on accessory to the CN70 and CN70e handheld computers.

### Testing Objective:

To demonstrate compliance of the inductive portion of the device to FCC Part 15.209 specifications.



WTD 12.5.23

# CONFIGURATIONS

## Configuration INMC0819- 1

Software/Firmware Running during test	
Description	Version
Mini Reader App	1.0
Window Embedded	6.5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hand-Held Computer	Intermec Technologies Corporation	1000CP01	28311047092
RFID Snap-On Adapter	Intermec Technologies Corporation	1000AA09-NI	NW1



## Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	8/28/2013	Field Strength of Fundamental	Modified from delivered configuration.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	8/28/2013	Spurious Radiated Emissions Below 30 MHz	Modified from delivered configuration.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

## Field Strength of Fundamental

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

### MODES OF OPERATION

Transmitting, 134 kHz

### POWER SETTINGS INVESTIGATED

Battery

### CONFIGURATIONS INVESTIGATED

INMC0819 - 1

### FREQUENCY RANGE INVESTIGATED

Start Frequency	9 kHz	Stop Frequency	490 kHz
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### 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
EV11 Cables	N/A	3m Test Distance Cables	EVM	3/13/2013	12 mo
Antenna, Loop	EMCO	6502	AOA	6/28/2011	36 mo
Spectrum Analyzer	Agilent	E4443A	AFB	1/31/2012	24 mo

### 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

### TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

As outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

If there are no detectable emissions above the noise floor, the data included will show noise floor measurements for reference only.

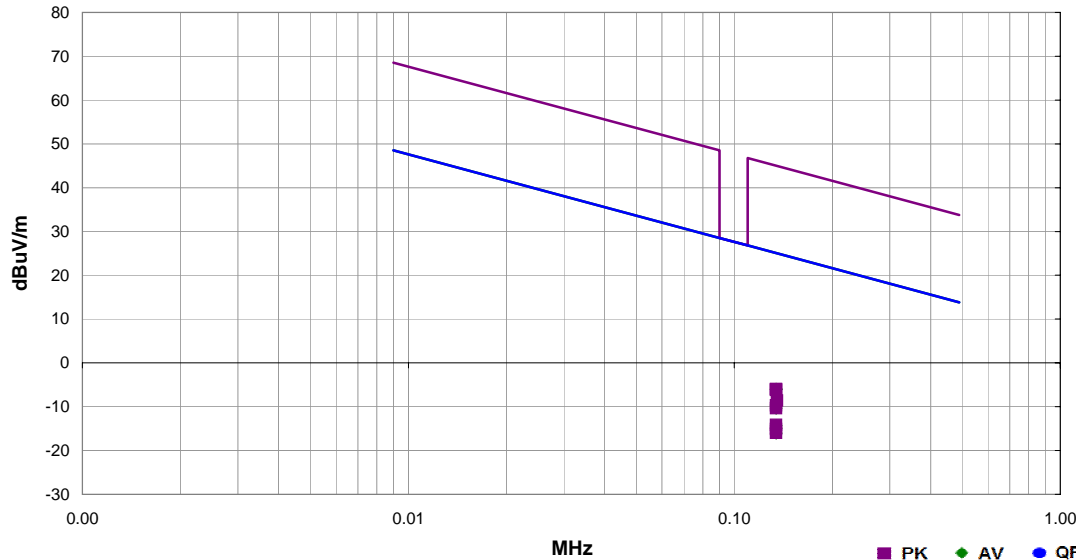


# Field Strength of Fundamental

Work Order:	INMC0819	Date:	08/28/13	
Project:	None	Temperature:	22.7 °C	
Job Site:	EV11	Humidity:	50.1% RH	
Serial Number:	NW1	Barometric Pres.:	1011 mbar	
EUT:	1000AA09-NI			
Configuration:	1			
Customer:	Intermec Technologies Corporation			
Attendees:	Sean Mackellar			
EUT Power:	Battery			
Operating Mode:	Transmitting, 134 kHz			
Deviations:	None			
Comments:	Please reference the data comments for Antenna and EUT position.			

<b>Test Specifications</b>	<b>Test Method</b>
FCC 15.209:2013	ANSI C63.10:2009

Run #	3	Test Distance (m)	3	Antenna Height(s)	1m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.134	63.4	10.6	1.0	187.0	3.0	0.0	Horz	AV	-80.0	-6.0	25.1	-31.0	Ant perp to grd and para to EUT, EUT Vert
0.134	63.3	10.6	1.0	6.0	3.0	0.0	Horz	AV	-80.0	-6.1	25.1	-31.1	Ant para to grd and perp to EUT, EUT Horz
0.134	63.3	10.6	1.0	7.0	3.0	0.0	Horz	AV	-80.0	-6.1	25.1	-31.1	Ant perp to grd and para to EUT, EUT Horz
0.134	59.8	10.6	1.0	112.0	3.0	0.0	Horz	AV	-80.0	-9.6	25.1	-34.6	Ant perp to grd and para to EUT, EUT Vert
0.134	59.6	10.6	1.0	280.0	3.0	0.0	Horz	AV	-80.0	-9.8	25.1	-34.8	Ant para to grd and perp to EUT, EUT Horz
0.134	59.0	10.6	1.0	285.0	3.0	0.0	Horz	AV	-80.0	-10.4	25.1	-35.4	Ant perp to grd and perp to EUT, EUT Horz
0.134	55.1	10.6	1.0	182.0	3.0	0.0	Vert	AV	-80.0	-14.3	25.1	-39.3	Ant perp to grd and para to EUT, EUT Horz
0.134	54.4	10.6	1.0	196.0	3.0	0.0	Vert	AV	-80.0	-15.0	25.1	-40.0	Ant perp to grd and perp to EUT, EUT Horz
0.134	53.3	10.6	1.0	180.0	3.0	0.0	Vert	AV	-80.0	-16.1	25.1	-41.1	Ant perp to grd and para to EUT, EUT On Side
0.134	63.4	10.6	1.0	187.0	3.0	0.0	Horz	PK	-80.0	-6.0	45.1	-51.0	Ant perp to grd and perp to EUT, EUT On Side
0.134	63.3	10.6	1.0	7.0	3.0	0.0	Horz	PK	-80.0	-6.1	45.1	-51.1	Ant para to grd and perp to EUT, EUT Vert
0.134	63.2	10.6	1.0	6.0	3.0	0.0	Horz	PK	-80.0	-6.2	45.1	-51.2	Ant perp to grd and para to EUT, EUT Vert
0.135	60.8	10.6	1.0	280.0	3.0	0.0	Horz	PK	-80.0	-8.6	45.0	-53.6	Ant para to grd and perp to EUT, EUT On Side
0.134	59.7	10.6	1.0	112.0	3.0	0.0	Horz	PK	-80.0	-9.7	45.1	-54.7	Ant perp to grd and para to EUT, EUT On Side
0.134	59.0	10.6	1.0	285.0	3.0	0.0	Horz	PK	-80.0	-10.4	45.1	-55.4	Ant para to grd and perp to EUT, EUT Vert
0.134	55.2	10.6	1.0	182.0	3.0	0.0	Vert	PK	-80.0	-14.2	45.1	-59.2	Ant perp to grd and perp to EUT, EUT On Side
0.134	54.3	10.6	1.0	196.0	3.0	0.0	Vert	PK	-80.0	-15.1	45.1	-60.1	Ant perp to grd and perp to EUT, EUT Vert
0.134	53.4	10.6	1.0	180.0	3.0	0.0	Vert	PK	-80.0	-16.0	45.1	-61.0	Ant para to grd and perp to EUT, EUT On Side

## Spurious Radiated Emissions - Below 30 MHz

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

### MODES OF OPERATION

Transmitting, 134 kHz

### POWER SETTINGS INVESTIGATED

Battery

### CONFIGURATIONS INVESTIGATED

INMC0819 - 1

### FREQUENCY RANGE INVESTIGATED

Start Frequency	9 kHz	Stop Frequency	30 MHz
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### 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
EV11 Cables	N/A	3m Test Distance Cables	EVM	3/13/2013	12 mo
Antenna, Loop	EMCO	6502	AOA	6/28/2011	36 mo
Spectrum Analyzer	Agilent	E4443A	AFB	1/31/2012	24 mo

### 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

### TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal planes, the EUT and/or associated antenna is positioned in 3 orthogonal planes (per ANSI C63.10). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

For measurements below 30 MHz, as outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

If there are no detectable emissions above the noise floor, the data included will show noise floor measurements for reference only.



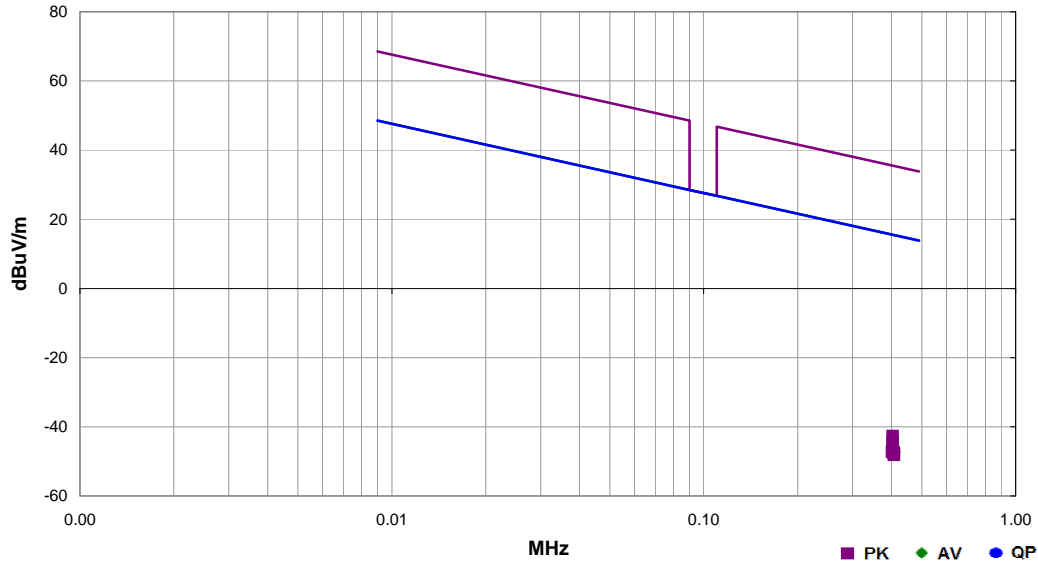
# Spurious Radiated Emissions - Below 30 MHz

PSA-ESCI 2012.12.14  
EmiR5 2013.08.07

Work Order:	INMC0819	Date:	08/28/13	
Project:	None	Temperature:	23.9 °C	
Job Site:	EV11	Humidity:	48% RH	
Serial Number:	NW1	Barometric Pres.:	1011 mbar	
EUT:	1000AA09-NI			
Configuration:	1			
Customer:	Intermec Technologies Corporation			
Attendees:	Sean Mackellar			
EUT Power:	Battery			
Operating Mode:	Transmitting, 134 kHz			
Deviations:	None			
Comments:	Please reference the data comments for Antenna and EUT position.			

<b>Test Specifications</b>	<b>Test Method</b>
FCC 15.209:2013	ANSI C63.10:2009

Run #	8	Test Distance (m)	3	Antenna Height(s)	1m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.403	26.3	10.4	1.0	19.0	3.0	0.0	Horz	AV	-80.0	-43.3	15.5	-58.8	Ant perp to grd and para to EUT, EUT On Side
0.403	26.3	10.4	1.0	347.0	3.0	0.0	Horz	AV	-80.0	-43.3	15.5	-58.8	Ant perp to grd and para to EUT, EUT Vert
0.403	24.2	10.4	1.0	263.0	3.0	0.0	Horz	AV	-80.0	-45.4	15.5	-60.9	Ant perp to grd and perp to EUT, EUT Vert
0.403	22.9	10.4	1.0	205.0	3.0	0.0	Horz	AV	-80.0	-46.7	15.5	-62.2	Ant perp to grd and para to EUT, EUT Horz
0.405	22.8	10.4	1.0	61.0	3.0	0.0	Vert	AV	-80.0	-46.8	15.5	-62.2	Ant para to grd and perp to EUT, EUT Horz
0.402	22.8	10.4	1.0	119.0	3.0	0.0	Vert	AV	-80.0	-46.8	15.5	-62.3	Ant para to grd and perp to EUT, EUT Vert
0.405	22.5	10.4	1.0	6.0	3.0	0.0	Vert	AV	-80.0	-47.1	15.4	-62.5	Ant para to grd and perp to EUT, EUT On Side
0.403	22.5	10.4	1.0	251.0	3.0	0.0	Horz	AV	-80.0	-47.1	15.5	-62.6	Ant perp to grd and perp to EUT, EUT On Side
0.408	22.2	10.4	1.0	5.0	3.0	0.0	Horz	AV	-80.0	-47.4	15.4	-62.8	Ant perp to grd and perp to EUT, EUT Horz
0.403	26.9	10.4	1.0	19.0	3.0	0.0	Horz	PK	-80.0	-42.7	35.5	-78.2	Ant perp to grd and para to EUT, EUT On Side
0.403	25.3	10.4	1.0	347.0	3.0	0.0	Horz	PK	-80.0	-44.3	35.5	-79.8	Ant perp to grd and para to EUT, EUT Vert
0.403	24.0	10.4	1.0	251.0	3.0	0.0	Horz	PK	-80.0	-45.6	35.5	-81.1	Ant perp to grd and perp to EUT, EUT On Side
0.404	22.7	10.4	1.0	6.0	3.0	0.0	Vert	PK	-80.0	-46.9	35.5	-82.4	Ant para to grd and perp to EUT, EUT On Side
0.404	22.6	10.4	1.0	263.0	3.0	0.0	Horz	PK	-80.0	-47.0	35.5	-82.4	Ant perp to grd and perp to EUT, EUT Vert
0.402	22.3	10.4	1.0	205.0	3.0	0.0	Horz	PK	-80.0	-47.3	35.5	-82.8	Ant perp to grd and para to EUT, EUT Horz
0.407	22.1	10.4	1.0	5.0	3.0	0.0	Horz	PK	-80.0	-47.5	35.4	-82.9	Ant perp to grd and perp to EUT, EUT Horz
0.407	21.8	10.4	1.0	119.0	3.0	0.0	Vert	PK	-80.0	-47.8	35.4	-83.2	Ant para to grd and perp to EUT, EUT Vert
0.407	21.4	10.4	1.0	61.0	3.0	0.0	Vert	PK	-80.0	-48.2	35.4	-83.6	Ant para to grd and perp to EUT, EUT Horz



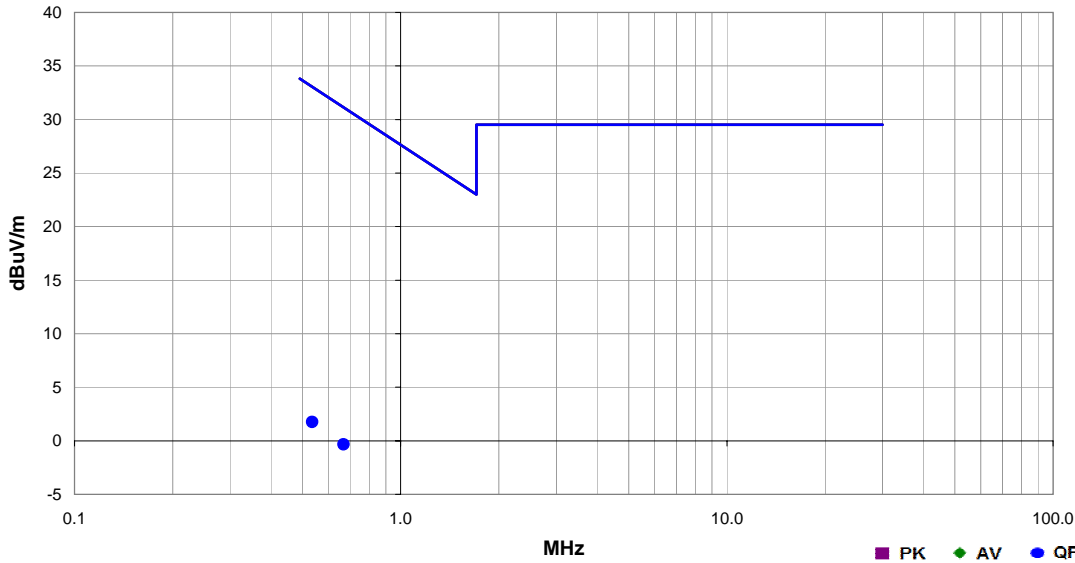
# Spurious Radiated Emissions - Below 30 MHz

PSA-ESCI 2012.12.14  
EmiR5 2013.08.07

<b>Work Order:</b>	INMC0819	<b>Date:</b>	08/28/13	
<b>Project:</b>	None	<b>Temperature:</b>	23.9 °C	
<b>Job Site:</b>	EV11	<b>Humidity:</b>	48% RH	
<b>Serial Number:</b>	NW1	<b>Barometric Pres.:</b>	1011 mbar	
<b>EUT:</b>	1000AA09-NI			
<b>Configuration:</b>	1			
<b>Customer:</b>	Intermec Technologies Corporation			
<b>Attendees:</b>	Sean Mackellar			
<b>EUT Power:</b>	Battery			
<b>Operating Mode:</b>	Transmitting, 134 kHz			
<b>Deviations:</b>	None			
<b>Comments:</b>	Please reference the data comments for Antenna and EUT position.			

<b>Test Specifications</b>	<b>Test Method</b>
FCC 15.209:2013	ANSI C63.10:2009

<b>Run #</b>	9	<b>Test Distance (m)</b>	3	<b>Antenna Height(s)</b>	1m	<b>Results</b>	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.536	31.3	10.4	1.0	97.0	3.0	0.0	Horz	QP	-40.0	1.7	33.0	-31.3	Ant perp to grd and para to EUT, EUT Vert
0.669	29.2	10.5	1.0	177.0	3.0	0.0	Horz	QP	-40.0	-0.3	31.1	-31.4	Ant perp to grd and para to EUT, EUT Vert