

## MEASUREMENT/TECHNICAL REPORT



*Technologies Corporation*  
*EMC Test Laboratory*  
*Cedar Rapids, IA*

### Intermec Technologies Corporation RFID 915 PC Card

**REPORT NO: 20040707-1**

**DATE: July 7, 2004**

<p>This report concerns: Original Grant _____ Class II change <u>  X  </u></p> <p>This report concerns: Class II Permissive Change to add antennas to this FHSS radio certified under FCC 15.247. All antennas are lower in gain compared to currently approved antennas and include a listing of the description, gain and RF exposure.</p> <p>CE: This device has shown compliance with the conducted emissions limits in 15.107, 15.207, or 18.307 adopted under FCC 02-157 (ET Docket 98-80). The device may be marketed after July 11, 2005, and is not affected by the 15.37(j) or 18.123 transition provisions.</p>	
<p>FCC Part 15.247 for FCC ID: EHARFID915PCC-6</p>	
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## APPENDIXES (may be file attachments for electronic applications of approval)

- A. 040707A1.xxx Antenna Photographs
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- C. 040707C1.xxx RF Exposure, MPE Calculation

## 1.0 COMPLIANCE CERTIFICATION

**The electromagnetic compatibility test and data evaluations findings of this report have been prepared by the EMC Test Lab, Intermec Technologies Corporation, in accordance with applicable specifications instructions required per-**

FCC Rules 47CFR Part 15 Subpart C,  
15.203  
15.207  
15.247

Antenna Requirement  
Conducted Limits (AC Wireline)  
Operation in the band 902-928 MHz

FCC Rules 47CFR Parts 1.1307  
FCC Rules 47CFR Parts 2.1091

Environmental Assessments  
RF Radiation Exposure Evaluation: Mobile Devices

**The data and equipment configuration represented herein are related only to the sample tested. The data presented herein is traceable to the National Institute of Standards and Technology.**

**This report is not an endorsement of the tested product by NVLAP, NIST or any agency of the U.S. Government.**



NVLAP LAB CODE 100269-0

Accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program.

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The scope of accreditations addressed in this report is limited to NVLAP codes:

[12/FCC15c] ANSI C63.4 (2001) with FCC Method - 47 CFR Part 15, Subpart C: Intentional Radiators

[12/RSS210] RSS-210, Issue 5 (November 2001) Low Power Licence-Exempt Radiocommunication Devices

[12/RSS210a] RSS-210, Issue 5, Amendment 2 (April 26, 2003)



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National Association of Radio and  
Telecommunications Engineers

## 2.0 GENERAL INFORMATION

### 2.1 Product Description

The RFID 915 MHz PC Card continues to operate as a FHSS transmitter operating within the 902-928 MHz band. The reader is used in industrial, warehouse and commercial locations to track products through the manufacturing and supply chain.

This report addresses the addition of two antennas to support RFID identification cards and RFID label printing and programming. The new antennas contain the unique antenna connector currently approved to meet the requirements in 15.203.

### 3.0 Antenna Requirements

#### 3.1 Added Antenna Description; Photos and/or Diagrams in Appendix A.

Intermec Technologies EasyCoder® Printer Antenna      -3.2 dBi panel  
Intermec PN 1-206589-00  
Gain -3.4 dBi worst case configuration.

The printer antenna uses a low gain panel antenna with a minimum 40-cm of RG 58 cable to introduce 0.2 dB loss in the antenna path. The net gain of this antenna system will be -3.4 dBi gains.

Intermec Card Programming Station -5 dBi panel      Intermec PN ITA915017  
Gain -5.7 dBi worst case configuration.

The programming station uses a low gain panel antenna with a minimum 6 feet of RG 58 cable to introduce 0.7 dB loss in the antenna path. The net gain of this antenna system will be -5.7 dBi gain.

### 4.0 AC Wireline Conducted Emissions

The emissions contained within the original application did not show compliance with the CISPR 22 emissions limits defined for Class B products. These emissions limits are now specified with the FCC rules changes in sections 15.107, 15.207, or 18.307 adopted under FCC 02-157 (ET Docket 98-80). The device may be marketed after July 11, 2005, and is not affected by the 15.37(j) or 18.123 transition provisions.

Please review the appendix B that shows photographs of the 915 MHz PC Card tested within a laptop. The transmitter integration testing shows compliance to new limits set by the FCC. The conducted emissions testing photo and data show the PC Card meets the CISPR 22 emissions limits now specified.

A summary of the results is tabulated below.

CISPR Average Data Compared to CISPR Average Class A/B Limit.  
 CISPR Quasi-Peak Data Compared to CISPR Quasi-Peak Class A/B Limit.  
 120 VAC, 60 Hz  
 Conducted emissions results obtained with a Rohde and Schwarz LISN.

MEASUREMENT RESULT: "CE L1\_fin AV"

10/24/01 11:32AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	36.20	10.10	53.70	17.50	L1	GND
0.262000	35.60	10.10	51.40	15.80	L1	GND
0.462000	38.80	9.90	46.70	7.80	L1	GND
0.654000	40.00	10.20	46.00	6.00	L1	GND
1.046000	38.80	10.20	46.00	7.20	L1	GND
1.446000	36.10	10.10	46.00	9.90	L1	GND
2.166000	34.00	10.10	46.00	12.00	L1	GND
3.478000	32.20	10.40	46.00	13.80	L1	GND
5.382000	27.70	10.50	50.00	22.30	L1	GND
9.382000	29.10	10.80	50.00	20.90	L1	GND
14.302000	26.90	11.30	50.00	23.10	L1	GND
21.062000	22.00	11.60	50.00	28.00	L1	GND

MEASUREMENT RESULT: "CE L1\_fin QP"

10/24/01 11:32AM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.198000	47.50	10.10	63.70	16.20	L1	GND
0.262000	45.70	10.10	61.40	15.70	L1	GND
0.526000	39.40	10.30	56.00	16.60	L1	GND
0.590000	37.10	10.20	56.00	18.90	L1	GND
0.982000	36.80	10.30	56.00	19.20	L1	GND
1.446000	36.30	10.10	56.00	19.70	L1	GND
2.166000	36.10	10.10	56.00	19.90	L1	GND
3.350000	30.10	10.40	56.00	25.90	L1	GND
5.254000	22.60	10.50	60.00	37.40	L1	GND
10.318000	20.00	10.80	60.00	40.00	L1	GND
13.998000	22.80	11.30	60.00	37.20	L1	GND
21.534000	20.50	11.70	60.00	39.50	L1	GND

**MEASUREMENT RESULT: "CE N\_fin AV"**

10/24/01 11:55AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.198000	37.30	10.10	53.70	16.40	N	GND
0.326000	38.30	10.00	49.60	11.20	N	GND
0.526000	40.50	10.30	46.00	5.50	N	GND
0.854000	40.00	10.00	46.00	6.00	N	GND
1.246000	40.70	10.00	46.00	5.30	N	GND
1.838000	40.10	10.20	46.00	5.90	N	GND
2.230000	39.70	10.10	46.00	6.30	N	GND
4.262000	37.60	10.40	46.00	8.40	N	GND
5.574000	36.90	10.50	50.00	13.10	N	GND
8.654000	35.40	10.70	50.00	14.60	N	GND
12.654000	33.80	11.00	50.00	16.20	N	GND
21.894000	28.00	11.60	50.00	22.00	N	GND

**MEASUREMENT RESULT: "CE N\_fin QP"**

10/24/01 11:55AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.198000	46.90	10.10	63.70	16.80	N	GND
0.262000	48.70	10.10	61.40	12.70	N	GND
0.526000	42.00	10.30	56.00	14.00	N	GND
0.590000	37.10	10.20	56.00	18.90	N	GND
0.918000	40.90	10.10	56.00	15.10	N	GND
1.702000	40.40	10.10	56.00	15.60	N	GND
3.014000	40.30	10.30	56.00	15.70	N	GND
3.734000	39.90	10.40	56.00	16.10	N	GND
5.310000	37.60	10.50	60.00	22.40	N	GND
7.998000	35.80	10.70	60.00	24.20	N	GND
15.998000	35.30	11.40	60.00	24.70	N	GND
21.054000	33.20	11.50	60.00	26.80	N	GND

## 5.0 RF Exposure

The 20-cm spacing limit for antenna safe distance remains effective when using the additional antennas. All have a lower gain than those currently approved. The warnings to the user remain unchanged. See Appendix B for antenna list and RF Exposure calculations.