MEASUREMENT/TECHNICAL REPORT

Intermec
Technologies Corporation
EMC Test Laboratory
Cedar Rapids, IA

Intermec Technologies Corporation
2100 UAP RFID Reader

REPORT NO: 20040504-1

DATE: May 4, 2004

This report concerns: Original Grant _____ Class II change ___X_____

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.

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.

FCC Part 15.247, Industry Canada Industry Canada RSP-100, RSS-210, RSS-102

Universal Access Point with 915 MHz RFID Radio
FCC ID: HN2UAPRFID-900

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APPENDIXES (may be file attachments for electronic applications of approval)

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	Antenna Requirement
15.207	Conducted Limits (AC Wireline)
15.247	Operation in the band 902-928 MHz
FCC Rules 47CFR Parts 1.1307	Environmental Assessments
FCC Rules 47CFR Parts 2.1091	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.

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NVLAP LAB CODE 100269-0

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

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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EMC 017

Technology International (Europe) Ltd.

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EMC Engineer III mm/dd/yy

Date
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Print/Type Name and Position

CERTIFIED NARTE ENGINEER

National Association of Radio and Telecommunications Engineers

2.0 GENERAL INFORMATION

2.1 Product Description

The 2100 UAP RFID reader 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 three antennas to support various installations and change of the antenna connector. The original application utilized RFID tagging of the antennas to eliminate use of un-authorized antennas. The new antennas as well as a cost reduction program have required a change to add a unique antenna connector to meet the requirements in 15.203.

3.0 Antenna Requirements

Unique Connector

Intermec Technologies will now use a reverse polarity TNC connector. This connector satisfies all conditions outlined in 15.203. Field units that upgrade antennas will be sent to an Intermec Technologies service center and fitted with the reverse polarity TNC connector.

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

Kathrien 6 dBi panel Intermec PN 805-622-002
Gain 5.3 dBi in final worst case configuration.

The Kathrien 25-1000 antenna is a 9 dBic-gain antenna. Applying a -3 dB linear isolation calculation the antenna has a horizontal or vertical gain of 6 dBi. Intermec will use 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 5.3 dBi gain.

Cushcraft 4 dBi panel Intermec PN A270002-05
Gain 4 dBi in final worst case configuration.

The Cushcraft S9028PC12NF antenna is a 7.5 dBic-gain antenna. Applying a -3 dB linear isolation calculation the antenna has a horizontal or vertical gain of 4.5 dBi. Intermec will use 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 3.8 dBi gain.

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 comply 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 original application file FCC ID: HN2UAPRFID-900 that was FCC granted 03/21/2000. The application file contains the original report, the AC conducted emissions section is in the file Report 4 of 4. Copied below are the AC wireline conducted emissions data for review.

Section 5.6 CONDUCTED POWERLINE EMISSIONS 5.6.1 Measurement Procedure
The power line conducted emissions were measured at 110 V. In each case the EUT was put into a hopping mode. The source of the emissions (digital circuitry or transmitter) was confirmed by turning the transmitter off. The emissions were measured in the hot and neutral sides of the power line. 5.6.2 Measurement Results
All emissions were caused by the digital circuitry and all were below the limit. CISPR 22 Class B limits were used. The emissions found are listed below.

Line	Frequency (MHz)	Peak Level (dBµV)	QP -Level (dBµV)	Avg. Level (dBµV)	Limit (*) (dBµV)	Margin (dB)
Neutral	.155	52.4	38.5	32.4	56	23.6
Neutral	.180	47.6	33.1	28.8	55	26.2
Neutral	.648	32.5	24.8	23.2	46	22.8
Neutral	9.3	31.2	26.1	24.0	60	36
Neutral	11.1	29.1	25.3	25.1	60	34.9
Neutral	22.3	30.4	26.4	23.8	60	36.2
Neutral	23.7	30.6	24.3	22.7	60	37.3
Hot	.155	52.3	38.1	31.7	56	24.3
Hot	.180	46.2	32.9	28.9	55	26.1
Hot	.640	33.1	23.7	22.7	46	23.3
Hot	11.1	29.4	25.8	24.6	60	35.4
Hot	18.7	30.9	23.9	22.4	60	37.6
Hot	22.3	31.1	26.1	22.7	60	37.3
Hot	27.1	33.9	28.4	26.2	60	33.8

(*) Limits for average measurement

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.