

Intermec Technologies Corporation

802MIAG-CV60

September 23, 2004

Report No. ITRM0039.1

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Issue Date: September 23, 2004
Intermec Technologies Corporation
Model: 802MIAG-CV60

Emissions			
Specification	Test Method	Pass	Fail
FCC 15.109(a) Class B:2003	ANSI C63.4:2001 Radiated Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.107 Class B:2003	ANSI C63.4:2001 Conducted Emissions	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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:

Greg Kiemel, Director of Engineering

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		

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 TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV'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. - Hillsboro: C-1071 and R-1025, Irvine: C-2094 and R-1943, Newberg: 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

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

<http://www.nwemc.com/scope.asp>

What is measurement uncertainty?

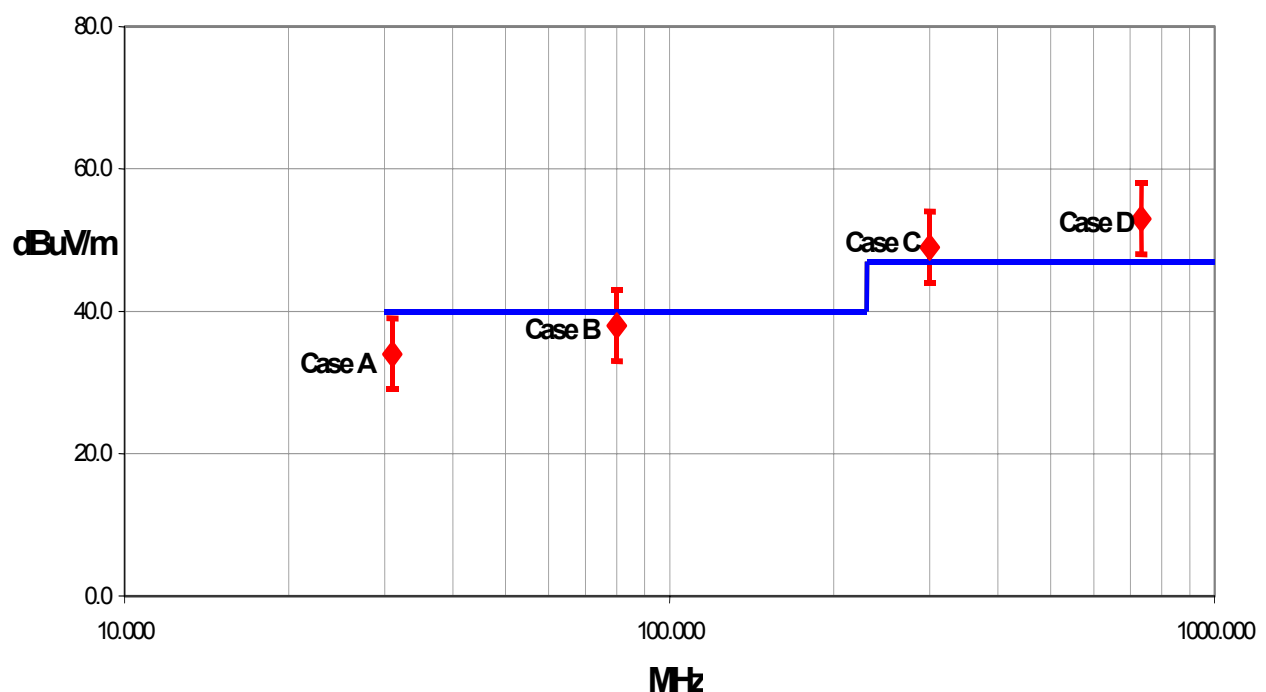
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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.

Radiated Emissions ≤ 1 GHz

Value (dB)

Test Distance	Probability Distribution	Biconical Antenna		Log Periodic Antenna		Dipole Antenna	
		3m	10m	3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.86 - 1.88	+ 1.82 - 1.87	+ 2.23 - 1.41	+ 1.29 - 1.26	+ 1.31 - 1.27	+ 1.25 - 1.25
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 3.72 - 3.77	+ 3.64 - 3.73	+ 4.46 - 2.81	+ 2.59 - 2.52	+ 2.61 - 2.55	+ 2.49 - 2.49

Radiated Emissions > 1 GHz

Value (dB)

Test Distance	Probability Distribution	Without High Pass Filter		With High Pass Filter	
		3m	10m	3m	10m
Combined standard uncertainty $u_c(y)$	normal	+ 1.29 - 1.25	+ 1.29 - 1.25	+ 1.38 - 1.35	+ 1.38 - 1.35
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k=2)	+ 2.57 - 2.51	+ 2.57 - 2.51	+ 2.76 - 2.70	+ 2.76 - 2.70

Conducted Emissions

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.48	1.48
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.97	2.97

Radiated Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.11	2.11

Conducted Immunity

Test Distance	Probability Distribution	Value (+/- dB)	
		3m	10m
Combined standard uncertainty $u_c(y)$	normal	1.05	1.05
Expanded uncertainty U (level of confidence $\approx 95\%$)	normal (k = 2)	2.10	2.10

Legend

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

U = combined standard uncertainty multiplied by the coverage factor: 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 $k=3$ (CL of 99.7%) can be used. Please note that with a coverage factor of one, $u_c(y)$ yields a confidence level of only 68%.

**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 339th Ave. SE
Sultan, WA 98294
(888) 364-2378
FAX (360) 793-2536

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:	802MIAG-CV60
First Date of Test:	9-1-04
Last Date of Test:	9-7-04
Receipt Date of Samples:	9-1-04
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided
I/O Ports:	Keyboard, Serial (2), USB (2), Ethernet, Audio Out, Microphone

Functional Description of the EUT (Equipment Under Test):

Forklift mounted data collection PC

Client Justification for EUT Selection:

Production sample

Client Justification for Test Selection:

These tests satisfy the requirements for FCC 15B.

EUT Photo

Equipment modifications

Item	Test	Date	Modification	Note	Disposition of EUT
1	AC Powerline Conducted Emissions	09/07/2004	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.
2	Radiated Emissions	09/07/2004	No EMI suppression devices were added or modified during this test.	Same configuration as in previous test.	EUT remained at Northwest EMC.

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

Operating Modes Investigated:

Typical operating mode with Single Channel Continuous Transmit

Worst Case Operating Mode used for Final Test:

Typical operating mode (designated by client or system limitations)

Power Input Settings Investigated:

120 VAC, 60 Hz

Worst Case Input Power Setting used for Final Test:

120 VAC, 60 Hz

Frequency Range Investigated

Start Frequency	30 MHz	Stop Frequency	1 GHz
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Software\Firmware Applied During Test

Operating system	Windows XP	Version	2002
Exercise software	cTxRx	Version	2.3.0.0

Description

The system was tested using special test software to exercise the functions of the device during the testing.

EUT and Peripherals in Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
EUT- 802.11(a)/(b)/(g) radio 802MIAG-CV60	PRISM	3886	Unknown
Host PC	Intermec Technologies Corporation	CV60	23100400645
Headset	Unknown	Unknown	Unknown
Headphones	Sony	Unknown	Unknown
External Floppy Drive	TEAC	FC-05PU	0045708
USB Mouse	Belkin	F8E201-USB	211006039
Keyboard	Cherry	hL4186	C000435J50
Power Supply	Kynet	SNP-PA57	5228227

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Audio	No	1.2	No	Host PC	Headset
AC Power	No	1.0	No	Host PC	Headphones
USB	Yes	0.2	Yes	Host PC	External Floppy Drive
Serial (x2)	Yes	1.8	No	Host PC	Termination
USB	Yes	1.1	No	Host PC	USB Mouse
Keyboard	PA	1.5	PA	Host PC	Keyboard
LAN (10BT)	No	1.6	No	Host PC	Termination
DC Leads	PA	1.0	PA	Host PC	Power Supply
AC Power	No	2.0	No	Power Supply	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Measurement Equipment					
Description	Manufacturer	Model	Identifier	Last Cal	Interval
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	02/05/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/23/2003	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/23/2003	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/23/2003	13 mo

Test Description

The final radiated emissions test was performed using the parameters described above as worst case. That final test was conducted at a facility that meets the ANSI C63.4 NSA requirements. The frequency range noted in the data sheets was scanned/tested at that facility. Emissions were maximized as specified, by maximizing table azimuth, antenna height, and cable manipulation.

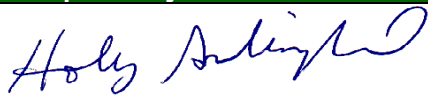
Using the mode of operation and configuration noted within this report, a final radiated emissions test was performed. The frequency range investigated (scanned), is also noted in this report. Radiated emissions measurements were made at the EUT azimuth and antenna height such that the maximum radiated emissions level will be detected. This requires the use of a turntable and an antenna positioner. The preferred method of a continuous azimuth search is utilized for frequency scans of the EUT field strength with both polarities of the measuring antenna. A calibrated, linearly polarized antenna was positioned at the specified distance from the periphery of the EUT.


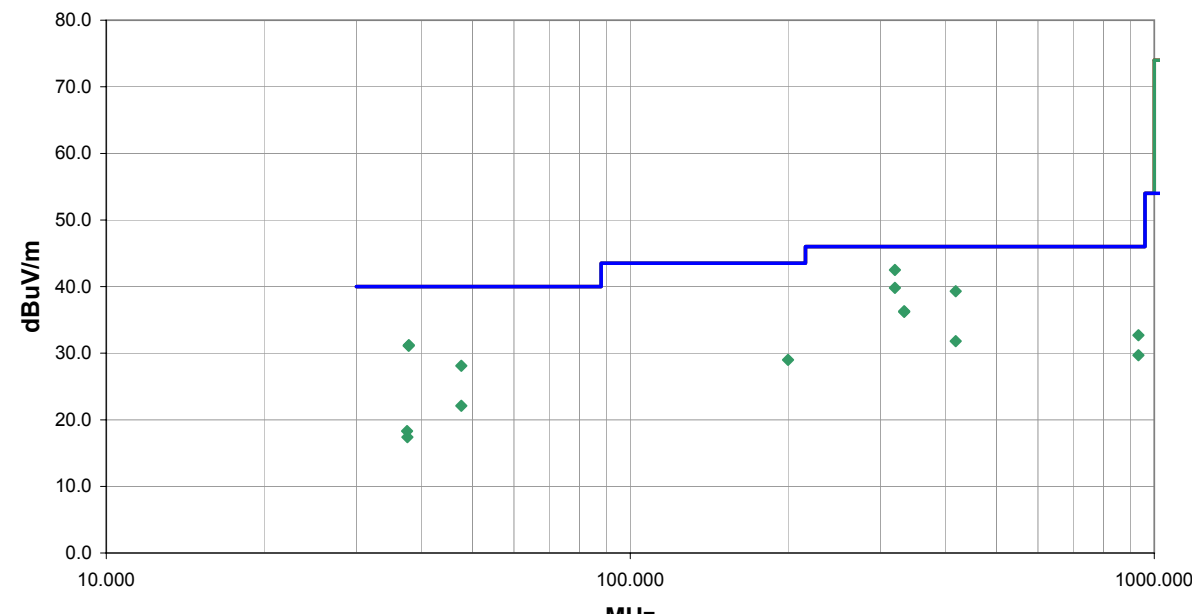
Note: The specified distance is the horizontal separation between the closest periphery of the EUT and the center of the axis of the elements of the receiving antenna. However, if the receiving antenna is a log-periodic array, the specified distance shall be the distance between the closest periphery of the EUT and the front-to-back center of the array of elements.

Tests were made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement was varied in height above the conducting ground plane to obtain the maximum signal strength. Though specified in the report, the measurement distance shall be 1 meter, 3 meters, 5 meters, 10 meters, or 30 meters. At any measurement distance, the antenna height was varied from 1 meter to 4 meters. These height scans apply for both horizontal and vertical polarization, except that for vertical polarization the minimum height of the center of the antenna shall be increased so that the lowest point of the bottom of the antenna clears the ground surface by at least 25 cm.

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
<i>Measurements were made using the bandwidths and detectors specified. No video filter was used.</i>			

Completed by:



NORTHWEST EMC										RADIATED EMISSIONS DATA SHEET				REV d4.2 08/10/2004	
EUT: 802MIAG-CV60						Work Order: ITRM0039									
Serial Number:						Date: 09/07/04									
Customer: Intermec Technologies Corporation						Temperature: 75									
Attendees: none						Humidity: 41%									
Cust. Ref. No.:						Barometric Pressure: 30.02									
Tested by: Holly Ashkannejhad				Power: 120VAC, 60Hz		Job Site: EV01									
TEST SPECIFICATIONS															
Specification: FCC 15.109(a) Class B						Year: 2003									
Method: ANSI C63.4						Year: 2001									
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															
Radio in Host PC															
EUT OPERATING MODES															
Transmitting 802.11(g), 6Mbps, High Channel.															
DEVIATIONS FROM TEST STANDARD															
No deviations.															
RESULTS										Run #					
Pass										1					
Other															
										 Tested By:					
															
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)			
320.028	49.5	-7.0	149.0	1.0	3.0	0.0	H-Bilog	QP	0.0	42.5	46.0	-3.5			
320.028	46.8	-7.0	104.0	1.6	3.0	0.0	V-Bilog	QP	0.0	39.8	46.0	-6.2			
417.860	43.7	-4.4	117.0	1.1	3.0	0.0	V-Bilog	QP	0.0	39.3	46.0	-6.7			
37.795	39.7	-8.5	39.0	1.0	3.0	0.0	V-Bilog	QP	0.0	31.2	40.0	-8.8			
37.770	39.6	-8.5	44.0	1.0	3.0	0.0	V-Bilog	QP	0.0	31.1	40.0	-8.9			
333.314	42.8	-6.5	124.0	1.3	3.0	0.0	V-Bilog	QP	0.0	36.3	46.0	-9.7			
333.313	42.7	-6.5	169.0	1.0	3.0	0.0	H-Bilog	QP	0.0	36.2	46.0	-9.8			
47.595	40.4	-12.3	151.0	1.0	3.0	0.0	V-Bilog	QP	0.0	28.1	40.0	-11.9			
932.896	29.7	3.0	179.0	1.2	3.0	0.0	V-Bilog	QP	0.0	32.7	46.0	-13.3			
417.858	36.2	-4.4	54.0	1.0	3.0	0.0	H-Bilog	QP	0.0	31.8	46.0	-14.2			
200.010	39.5	-10.5	129.0	1.8	3.0	0.0	H-Bilog	QP	0.0	29.0	43.5	-14.5			
932.898	26.7	3.0	55.0	1.0	3.0	0.0	H-Bilog	QP	0.0	29.7	46.0	-16.3			
47.594	34.4	-12.3	80.0	3.5	3.0	0.0	H-Bilog	QP	0.0	22.1	40.0	-17.9			
37.509	26.7	-8.4	291.0	3.5	3.0	0.0	H-Bilog	QP	0.0	18.3	40.0	-21.7			
37.567	25.8	-8.4	223.0	2.2	3.0	0.0	H-Bilog	QP	0.0	17.4	40.0	-22.6			





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. All of the EUT parameters listed below were investigated. This includes, but may not be limited to, CPU speeds, video resolution settings, operational modes, and input voltages.

Operating Modes Investigated:

Typical operating mode with single channel continuous transmit

Power Input Settings Investigated:

230 VAC, 50 Hz

120 VAC, 60 Hz

Software\Firmware Applied During Test

Operating system	Windows XP	Version	2002
Exercise software	cTxRx	Version	2.3.0.0

Description

The system was tested using special test software to exercise the functions of the device during the testing.

EUT and Peripherals in Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
EUT- 802.11(a)/(b)/(g) radio 802MIAG-CV60	PRISM	3886	Unknown
Host PC	Intermec Technologies Corporation	CV60	23100400645
Headset	Unknown	Unknown	Unknown
Headphones	Sony	Unknown	Unknown
External Floppy Drive	TEAC	FC-05PU	0045708
USB Mouse	Belkin	F8E201-USB	211006039
Keyboard	Cherry	hL4186	C000435J50
Power Supply	Kynet	SNP-PA57	5228227

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Audio	No	1.2	No	Host PC	Headset
AC Power	No	1.0	No	Host PC	Headphones
USB	Yes	0.2	Yes	Host PC	External Floppy Drive
Serial (x2)	Yes	1.8	No	Host PC	Termination
USB	Yes	1.1	No	Host PC	USB Mouse
Keyboard	PA	1.5	PA	Host PC	Keyboard
LAN (10BT)	No	1.6	No	Host PC	Termination
DC Leads	PA	1.0	PA	Host PC	Power Supply
AC Power	No	2.0	No	Power Supply	AC Mains

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
LISN	Solar	9252-50-R-24-BNC	LIN	12/16/2003	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	02/01/2004	13 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	12/23/2003	13 mo
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/23/2003	13 mo
Spectrum Analyzer Display	Hewlett Packard	85662A	AALD	12/23/2003	13 mo

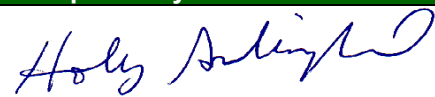
Test Description


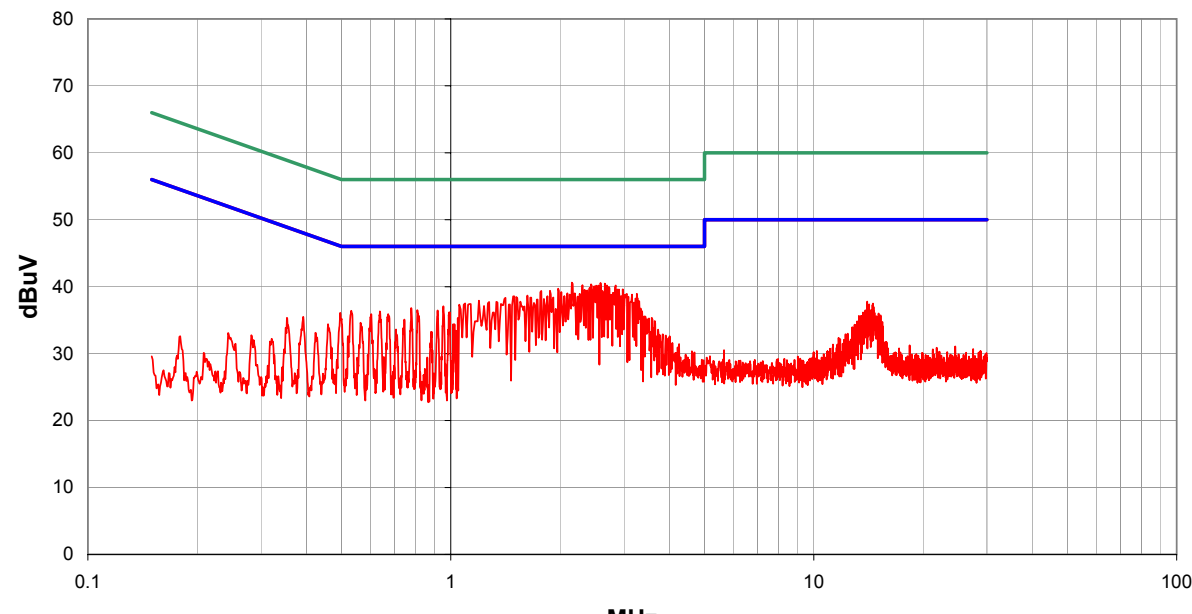
Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

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.

Completed by:


NORTHWEST EMC		CONDUCTED EMISSIONS DATA SHEET				REV df4.2 08/10/2004						
EUT: 802MIAG-CV60 (802.11(a)/(b)/(g) radio)					Work Order: ITRM0039							
Serial Number:					Date: 09/07/04							
Customer: Intermec Technologies Corporation					Temperature: 75							
Attendees: none					Humidity: 41%							
Cust. Ref. No.:					Barometric Pressure: 30.02							
Tested by: Holly Ashkannejhad				Power: 120VAC, 60Hz	Job Site: EV01							
TEST SPECIFICATIONS												
Specification: FCC 15.107 Class B					Year: 2003							
Method: ANSI C63.4					Year: 2001							
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												
Radio in Host PC												
EUT OPERATING MODES												
Transmitting 802.11(g), 6Mbps, Low Channel.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS					Line	Run #						
Pass					L1	1						
Other					 Tested By:							
												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
2.156	20.2			0.0	0.4	20.0				40.6	46.0	-5.4
2.586	20.1			0.0	0.5	20.0				40.6	46.0	-5.4
2.656	20.0			0.0	0.5	20.0				40.5	46.0	-5.5
2.436	19.9			0.0	0.4	20.0				40.3	46.0	-5.7
2.306	19.8			0.0	0.4	20.0				40.2	46.0	-5.8
2.846	19.7			0.0	0.5	20.0				40.2	46.0	-5.8
2.696	19.7			0.0	0.5	20.0				40.2	46.0	-5.8
2.556	19.7			0.0	0.5	20.0				40.2	46.0	-5.8
2.726	19.5			0.0	0.5	20.0				40.0	46.0	-6.0
2.416	19.4			0.0	0.4	20.0				39.8	46.0	-6.2
1.975	19.3			0.0	0.4	20.0				39.7	46.0	-6.3
2.976	19.1			0.0	0.5	20.0				39.6	46.0	-6.4
2.906	19.1			0.0	0.5	20.0				39.6	46.0	-6.4
2.876	19.1			0.0	0.5	20.0				39.6	46.0	-6.4
2.336	19.1			0.0	0.4	20.0				39.5	46.0	-6.5
2.376	19.0			0.0	0.4	20.0				39.4	46.0	-6.6
1.875	19.0			0.0	0.4	20.0				39.4	46.0	-6.6
1.775	19.0			0.0	0.4	20.0				39.4	46.0	-6.6
2.616	18.9			0.0	0.5	20.0				39.4	46.0	-6.6

NORTHWEST		CONDUCTED EMISSIONS DATA SHEET				REV df4.2 08/10/2004						
EMC												
EUT: 802MIAG-CV60 (802.11(a)/(b)/(g) radio)		Work Order: ITRM0039										
Serial Number:		Date: 09/07/04										
Customer: Intermec Technologies Corporation		Temperature: 75										
Attendees: none		Humidity: 41%										
Cust. Ref. No.:		Barometric Pressure: 30.02										
Tested by: Holly Ashkannejhad		Power: 120VAC, 60Hz		Job Site: EV01								
TEST SPECIFICATIONS												
Specification: FCC 15.107 Class B		Year: 2003										
Method: ANSI C63.4		Year: 2001										
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												
Radio in Host PC												
EUT OPERATING MODES												
Transmitting 802.11(g), 6Mbps, Low Channel.												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
RESULTS												
Pass		Line N		Run # 2								
Other												
				<div>Holly Ashkannejhad</div> <div>Tested By:</div>								
<div><div>80</div><div>70</div><div>60</div><div>50</div><div>40</div><div>30</div><div>20</div><div>10</div><div>0</div></div> <div><div>0.1</div><div>1</div><div>10</div><div>100</div></div> <div><div>dBuV</div><div>MHz</div></div>												
Freq (MHz)	Amplitude (dBuV)			Transducer (dB)	Cable (dB)	External Attenuation (dB)		Detector (blank equal peaks [PK] from scan)		Adjusted dBuV	Spec. Limit dBuV	Compared to Spec. (dB)
2.446	20.9			0.0	0.4	20.0				41.3	46.0	-4.7
2.586	20.3			0.0	0.5	20.0				40.8	46.0	-5.2
2.516	20.2			0.0	0.5	20.0				40.7	46.0	-5.3
2.836	20.0			0.0	0.5	20.0				40.5	46.0	-5.5
2.696	20.0			0.0	0.5	20.0				40.5	46.0	-5.5
2.126	19.9			0.0	0.4	20.0				40.3	46.0	-5.7
2.736	19.7			0.0	0.5	20.0				40.2	46.0	-5.8
2.306	19.7			0.0	0.4	20.0				40.1	46.0	-5.9
2.156	19.7			0.0	0.4	20.0				40.1	46.0	-5.9
2.766	19.6			0.0	0.5	20.0				40.1	46.0	-5.9
2.016	19.3			0.0	0.4	20.0				39.7	46.0	-6.3
1.985	19.2			0.0	0.4	20.0				39.6	46.0	-6.4
2.906	19.0			0.0	0.5	20.0				39.5	46.0	-6.5
2.976	18.9			0.0	0.5	20.0				39.4	46.0	-6.6
2.556	18.9			0.0	0.5	20.0				39.4	46.0	-6.6
2.946	18.7			0.0	0.5	20.0				39.2	46.0	-6.8
1.875	18.8			0.0	0.4	20.0				39.2	46.0	-6.8
1.945	18.7			0.0	0.4	20.0				39.1	46.0	-6.9
2.266	18.6			0.0	0.4	20.0				39.0	46.0	-7.0



