

Intermec Technologies Corporation

6820 Printer

July 10, 2005

Report No. ITRM0084

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: July 10, 2005
Intermec Technologies Corporation
Model: 6820 Printer

Emissions			
Specification	Test Method	Pass	Fail
FCC 15.207 AC Powerline Conducted Emissions:2005-04	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003	<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, 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 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.



200629-0
200630-0
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 Numbers. - 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?

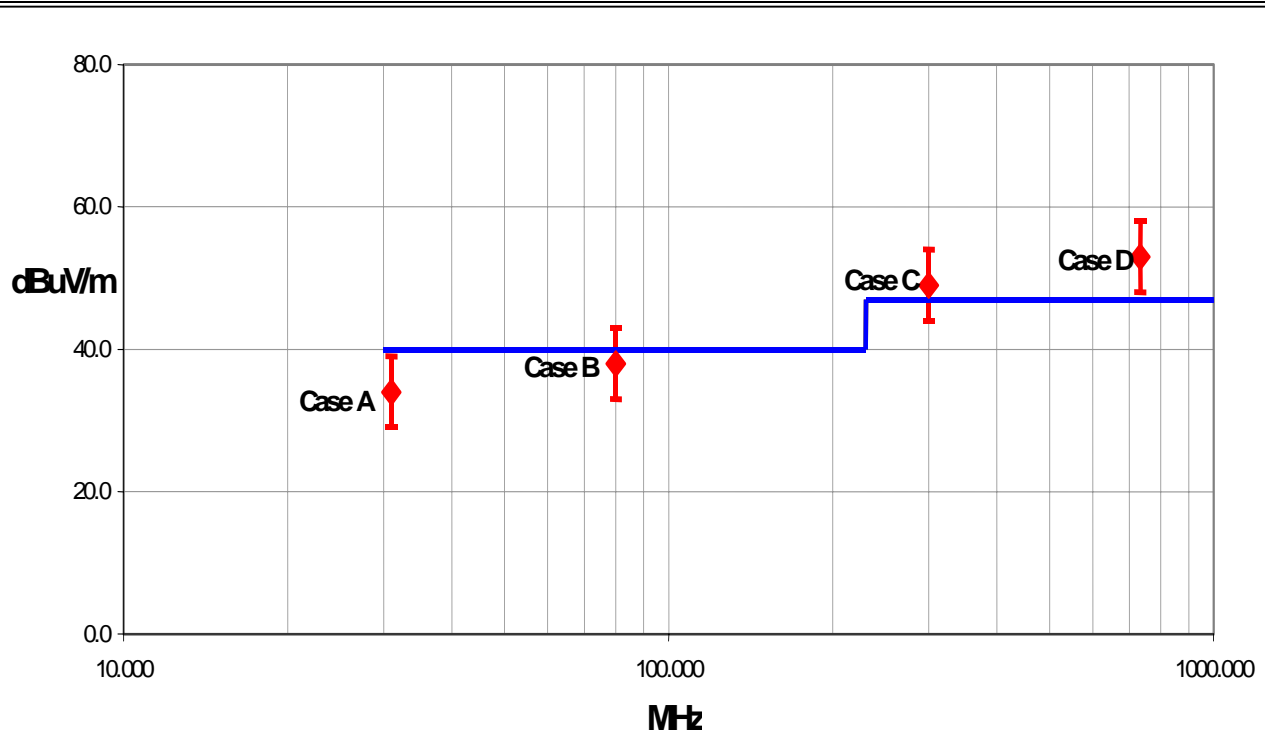
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following 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	+ 1.82	+ 2.23	+ 1.29	+ 1.31	+ 1.25
		- 1.88	- 1.87	- 1.41	- 1.26	- 1.27	- 1.25
Expanded uncertainty U (level of confidence ≈ 95%)	normal (k=2)	+ 3.72	+ 3.64	+ 4.46	+ 2.59	+ 2.61	+ 2.49
		- 3.77	- 3.73	- 2.81	- 2.52	- 2.55	- 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	+ 1.29	+ 1.38	+ 1.38
		- 1.25	- 1.25	- 1.35	- 1.35
Expanded uncertainty U (level of confidence ≈ 95%)	normal (k=2)	+ 2.57	+ 2.57	+ 2.76	+ 2.76
		- 2.51	- 2.51	- 2.70	- 2.70

Conducted Emissions

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.48
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.97

Radiated Immunity

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.05
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.11

Conducted Immunity

	Probability Distribution	Value (+/- dB)
Combined standard uncertainty $u_c(y)$	normal	1.05
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	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

Labs OC01 – OC13

41 Tesla Ave.
Irvine, CA 92618
(888) 364-2378
FAX (503) 844-3826



Oregon

Evergreen Facility

Labs EV01 – EV10

22975 NW Evergreen Pkwy.
Suite 400
Hillsboro, OR 97124
(503) 844-4066
FAX (503) 844-3826



Oregon

Trails End Facility

Labs TE01 – TE03

30475 NE Trails End Lane
Newberg, OR 97132
(503) 844-4066
FAX (503) 537-0735



Washington

Sultan Facility

Labs SU01 – SU07

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:	6820 Printer
First Date of Test:	06-20-2005
Last Date of Test:	06-24-2005
Receipt Date of Samples:	06-20-2005
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided.
I/O Ports:	Serial

Functional Description of the EUT (Equipment Under Test):

Bluetooth Enabled Printer.

Client Justification for EUT Selection:

Representative of a production sample

Client Justification for Test Selection:

This printer was previously certified under FCC 15.247 (FCC ID: EHABTS080-1). Now the enclosure has been modified to accept a larger docking port required by a new hand-held terminal, the Intermec CK60. No other changes have been made to the radio or its antenna. So only spurious radiated emissions and AC powerline conducted emissions were measured. No other tests were affected.

EUT Photo

Equipment modifications					
Item	Test	Date	Modification	Note	Disposition of EUT
1	Spurious Radiated Emissions	06/20/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.
2	AC Powerline Conducted Emissions	06/24/2005	No EMI suppression devices were added or modified during this test.	Same configuration as delivered.	EUT remained at Northwest EMC.

Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High
Mid
Low

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Frequency Range Investigated

Start Frequency	30 MHz	Stop Frequency	26 GHz
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Software\Firmware Applied During Test

Exercise software	Bluetest	Version	Unknown
Description			
The system was tested using special test software to exercise the functions of the device during the testing including transmit mode, channel frequency, and power.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT- 6820 Printer	Intermec Technologies Corporation	6820	unknown
AC Adapter	Intermec Technologies Corporation	851-064-001	0001771
Handheld Computer	Intermec Technologies Corporation	CK61	33390400263

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
Laptop PC	Dell	TS30GI	Unknown
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial	Yes	5.0	No	EUT- 6820 Printer	Laptop PC
DC Leads	No	1.6	No	EUT- 6820 Printer	AC Adapter
AC Power	No	2.0	No	AC Adapter	AC Mains

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo
Antenna, Biconilog	EMCO	3141	AXE	12/03/2003	24 mo
Pre-Amplifier	Amplifier Research	LN1000A	APS	03/01/2005	13 mo
Antenna, Horn	EMCO	3115	AHC	09/07/2004	12 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APJ	05/05/2005	3 mo
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	02/17/2005	13 mo
Antenna, Horn	EMCO	3160-08	AHK	NCR	NA
Antenna, Horn	EMCO	3160-09	AHG	NCR	NA
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	02/15/2005	13 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	03/09/2005	13 mo
Attenuator	Coaxicom	66702 5910-20	RBJ	02/25/2005	13 mo

Test Description

Requirement: The field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 47 CFR 15.205, is measured. The peak level must comply with the limits specified in 47 CFR 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.

Configuration: The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Measurements			
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** **RADIATED EMISSIONS DATA SHEET** PSA 2005.6.17 BETA EMI 2005.6.19

EUT: 6820 Printer	Work Order: ITRM0084
Serial Number:	Date: 06/20/05
Customer: Intermec Technologies Corporation	Temperature: 24
Attendees: None	Humidity: 43%
Project:	Barometric Pressure: 29.96
Tested by: Holly Ashkannejhad	Power: 120VAC, 60Hz
	Job Site: EV01

ANSI C63.4:2003

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

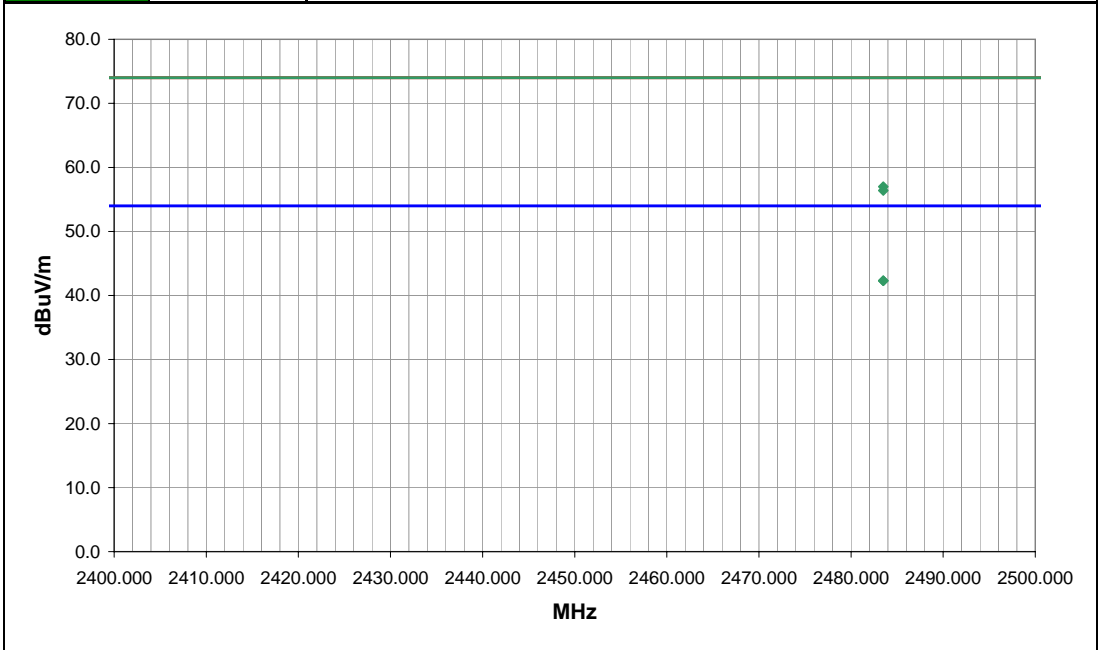
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS

EUT OPERATING MODES
Transmitting Bluetooth High Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	1	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



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)	Comments
2483.500	24.6	-2.3	147.0	1.1	3.0	20.0	H-Horn	AV	0.0	42.3	54.0	-11.7	EUT Horizontal
2483.500	24.6	-2.3	149.0	1.5	3.0	20.0	V-Horn	AV	0.0	42.3	54.0	-11.7	EUT Vertical
2483.500	39.3	-2.3	149.0	1.5	3.0	20.0	V-Horn	PK	0.0	57.0	74.0	-17.0	EUT Vertical
2483.500	38.7	-2.3	147.0	1.1	3.0	20.0	H-Horn	PK	0.0	56.4	74.0	-17.6	EUT Horizontal

NORTHWEST **EMC** **RADIATED EMISSIONS DATA SHEET** PSA 2005.6.17 BETA
EMI 2005.6.19

EUT: 6820 Printer	Work Order: ITRM0084
Serial Number:	Date: 06/20/05
Customer: Intermec Technologies Corporation	Temperature: 24
Attendees: None	Humidity: 43%
Project:	Barometric Pressure: 29.96
Tested by: Holly Ashkannejhad	Power: 120VAC, 60Hz
	Job Site: EV01

ANSI C63.4:2003

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

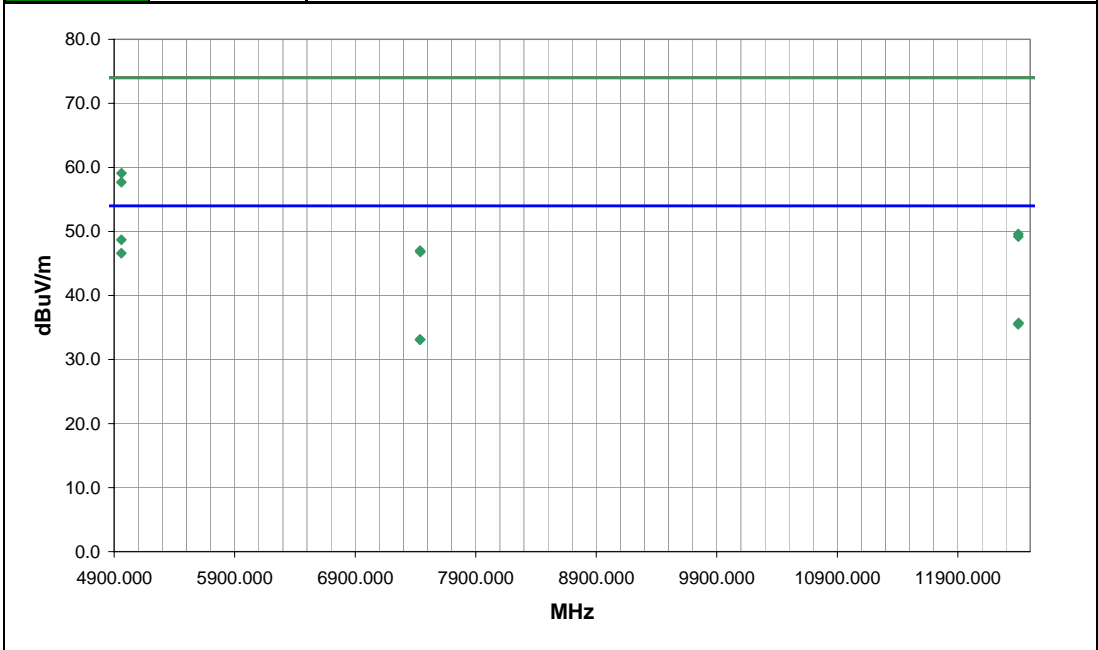
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS

EUT OPERATING MODES
Transmitting Bluetooth High Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	3	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



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)	Comments
4960.023	42.3	6.4	79.0	1.1	3.0	0.0	V-Horn	AV	0.0	48.7	54.0	-5.3	EUT Vertical
4959.891	40.2	6.4	159.0	1.0	3.0	0.0	H-Horn	AV	0.0	46.6	54.0	-7.4	EUT Horizontal
4961.649	52.7	6.4	79.0	1.1	3.0	0.0	V-Horn	PK	0.0	59.1	74.0	-14.9	EUT Vertical
4959.531	51.3	6.4	159.0	1.0	3.0	0.0	H-Horn	PK	0.0	57.7	74.0	-16.3	EUT Horizontal
12403.890	18.6	17.1	53.0	2.1	3.0	0.0	H-Horn	AV	0.0	35.7	54.0	-18.3	EUT Horizontal
12400.720	18.4	17.1	40.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.5	54.0	-18.5	EUT Vertical
7436.676	21.1	12.0	298.0	3.2	3.0	0.0	H-Horn	AV	0.0	33.1	54.0	-20.9	EUT Horizontal
7439.087	21.1	12.0	207.0	1.0	3.0	0.0	V-Horn	AV	0.0	33.1	54.0	-20.9	EUT Vertical
12402.210	32.5	17.1	40.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.6	74.0	-24.4	EUT Vertical
12402.270	32.1	17.1	53.0	2.1	3.0	0.0	H-Horn	PK	0.0	49.2	74.0	-24.8	EUT Horizontal
7437.748	35.0	12.0	207.0	1.0	3.0	0.0	V-Horn	PK	0.0	47.0	74.0	-27.0	EUT Vertical
7440.964	34.8	12.0	298.0	3.2	3.0	0.0	H-Horn	PK	0.0	46.8	74.0	-27.2	EUT Horizontal

NORTHWEST **EMC** **RADIATED EMISSIONS DATA SHEET** PSA 2005.6.17 BETA EMI 2005.6.19

EUT: 6820 Printer	Work Order: ITRM0084
Serial Number:	Date: 06/20/05
Customer: Intermec Technologies Corporation	Temperature: 24
Attendees: None	Humidity: 43%
Project:	Barometric Pressure: 29.96
Tested by: Holly Ashkannejhad	Power: 120VAC, 60Hz
	Job Site: EV01

ANSI C63.4:2003

TEST SPECIFICATIONS	Test Method
FCC 15.247(d) Spurious Radiated Emissions:2005-04	ANSI C63.4:2003

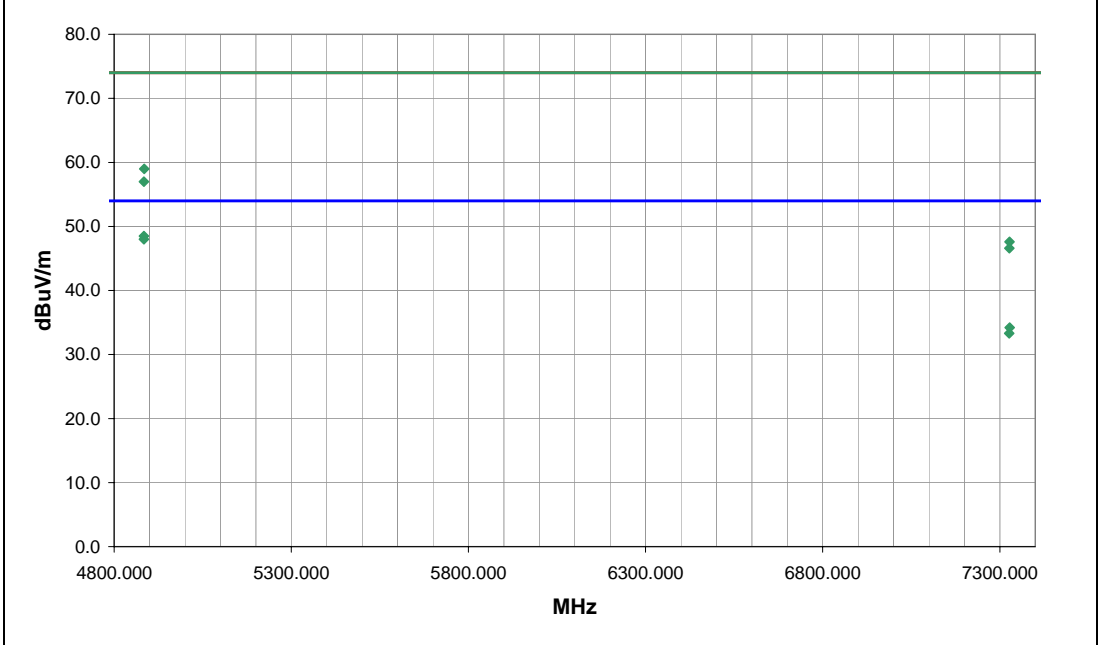
TEST PARAMETERS
Antenna Height(s) (m) 1 - 4 Test Distance (m) 3

COMMENTS

EUT OPERATING MODES
Transmitting Bluetooth Mid Channel

DEVIATIONS FROM TEST STANDARD
No deviations.

Run #	4	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



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)	Comments
4883.933	42.3	6.2	66.0	1.2	3.0	0.0	V-Horn	AV	0.0	48.5	54.0	-5.5	EUT Vertical
4884.042	41.8	6.2	49.0	1.1	3.0	0.0	H-Horn	AV	0.0	48.0	54.0	-6.0	EUT Horizontal
4884.987	52.8	6.2	66.0	1.2	3.0	0.0	V-Horn	PK	0.0	59.0	74.0	-15.0	EUT Vertical
4884.042	50.8	6.2	49.0	1.1	3.0	0.0	H-Horn	PK	0.0	57.0	74.0	-17.0	EUT Horizontal
7327.671	22.3	11.9	93.0	1.9	3.0	0.0	H-Horn	AV	0.0	34.2	54.0	-19.8	EUT Horizontal
7326.225	21.4	11.9	261.0	1.2	3.0	0.0	V-Horn	AV	0.0	33.3	54.0	-20.7	EUT Vertical
7327.141	35.8	11.8	93.0	1.9	3.0	0.0	H-Horn	PK	0.0	47.6	74.0	-26.4	EUT Horizontal
7326.959	34.8	11.8	261.0	1.2	3.0	0.0	V-Horn	PK	0.0	46.6	74.0	-27.4	EUT Vertical

EUT: 6820 Printer	Work Order: ITRM0084
Serial Number:	Date: 06/20/05
Customer: Intermec Technologies Corporation	Temperature: 24
Attendees: None	Humidity: 43%
Project:	Barometric Pressure: 29.96
Tested by: Holly Ashkannejhad	Power: 120VAC, 60Hz
	Job Site: EV01

ANSI C63.4:2003

TEST SPECIFICATIONS		Test Method	
FCC 15.247(d) Spurious Radiated Emissions:2005-04		ANSI C63.4:2003	

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

COMMENTS	

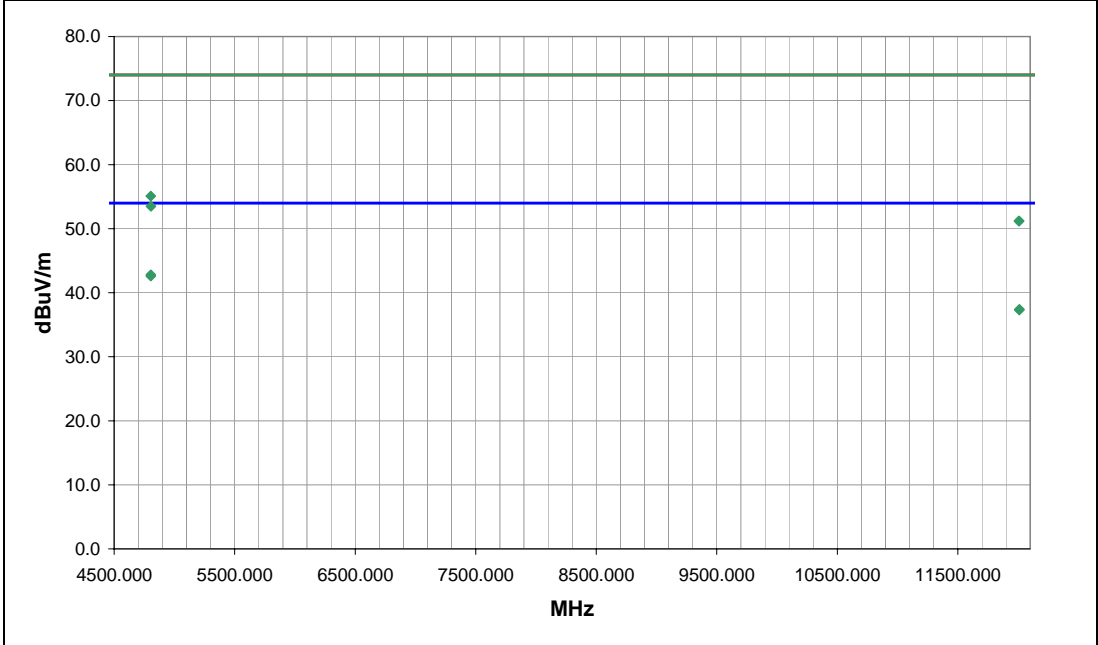
EUT OPERATING MODES

Transmitting Bluetooth Low Channel

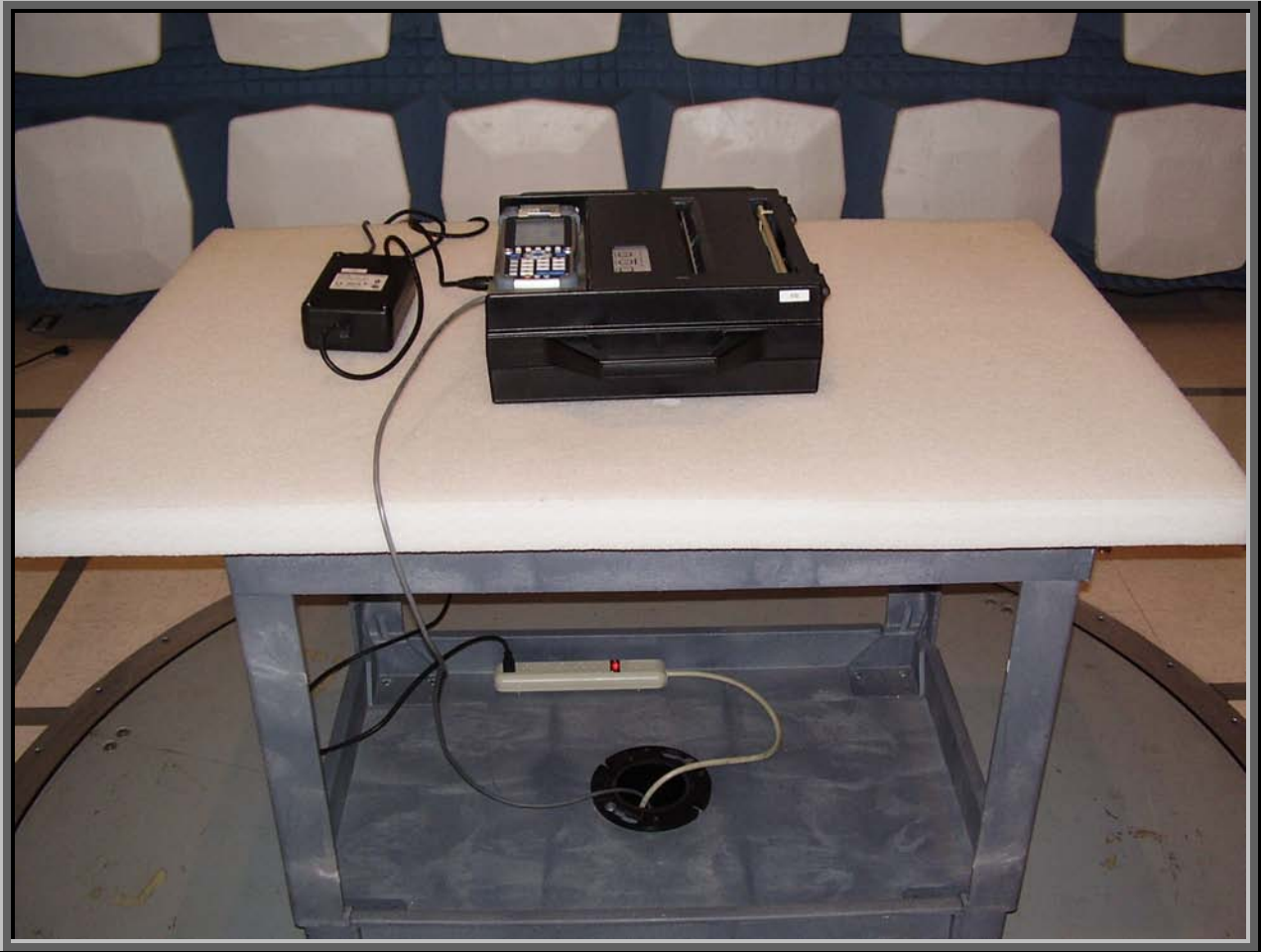
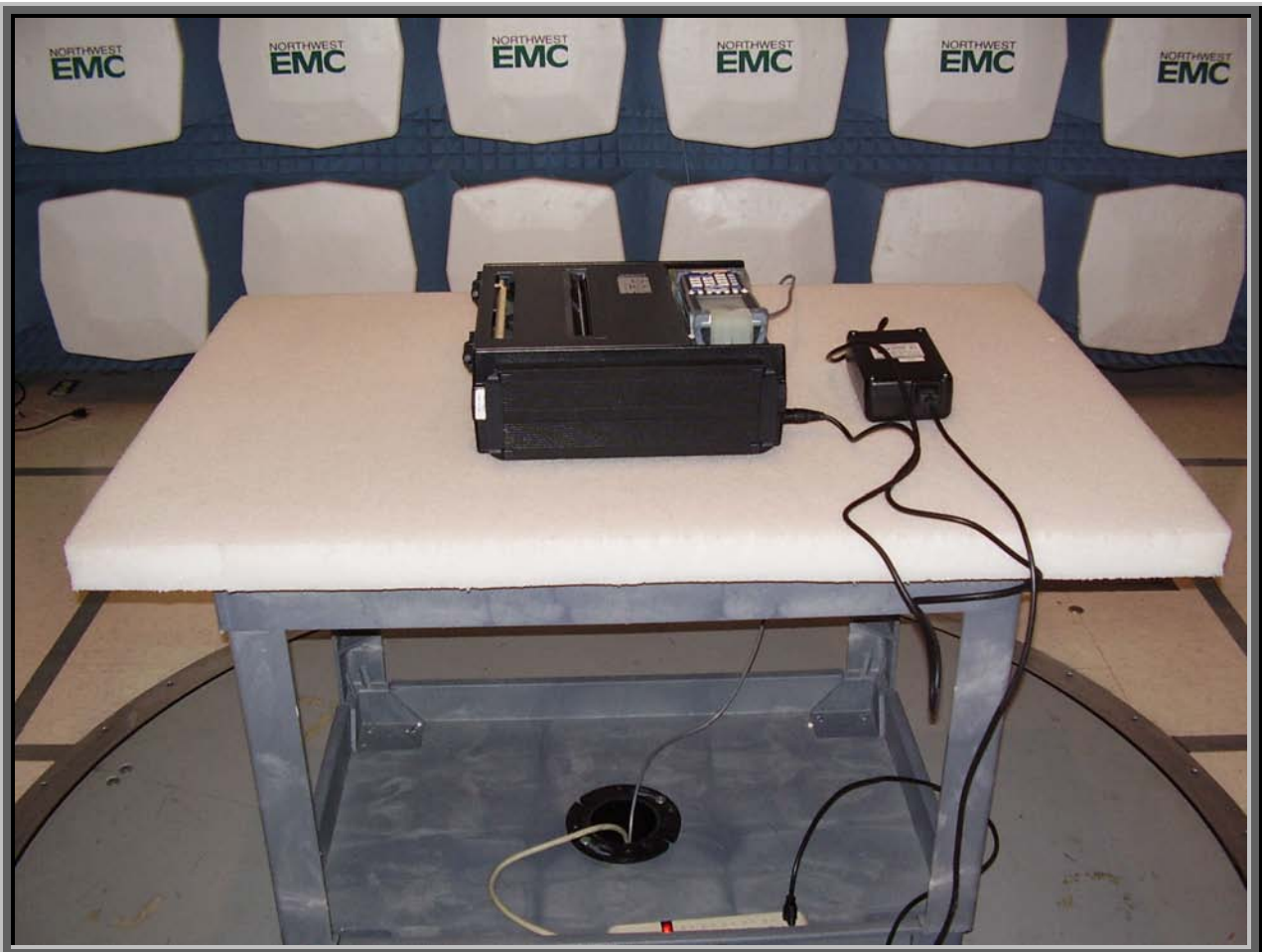
DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5	Signature <i>Holly Ashkannejhad</i>
Configuration #		
Results	Pass	



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)	Comments
4803.942	37.0	5.8	82.0	1.3	3.0	0.0	V-Horn	AV	0.0	42.8	54.0	-11.2	EUT Vertical
4803.594	36.8	5.8	103.0	1.8	3.0	0.0	H-Horn	AV	0.0	42.6	54.0	-11.4	EUT Horizontal
12011.190	20.1	17.3	189.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.4	54.0	-16.6	EUT Vertical
12009.340	20.0	17.3	151.0	1.3	3.0	0.0	H-Horn	AV	0.0	37.3	54.0	-16.7	EUT Horizontal
4804.531	49.3	5.8	82.0	1.3	3.0	0.0	V-Horn	PK	0.0	55.1	74.0	-18.9	EUT Vertical
4805.429	47.7	5.8	103.0	1.8	3.0	0.0	H-Horn	PK	0.0	53.5	74.0	-20.5	EUT Horizontal
12007.530	33.9	17.3	189.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.2	74.0	-22.8	EUT Vertical
12008.080	33.9	17.3	151.0	1.3	3.0	0.0	H-Horn	PK	0.0	51.2	74.0	-22.8	EUT Horizontal





Justification

The individuals and/or the organization requesting the test provided the modes, configurations and settings available to evaluate. While scanning the radiated emissions, all of the EUT parameters listed below were investigated. This includes, but may not be limited to, antennas, tuned transmit frequency ranges, operating modes, and data rates.

Channels in Specified Band Investigated:

High

Mid

Low

Operating Modes Investigated:

No Hop

Data Rates Investigated:

Maximum

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated:

120 VAC, 60 Hz.

Software\Firmware Applied During Test

Exercise software	Bluetest	Version	Unknown
Description			
The system was tested using special test software to exercise the functions of the device during the testing including transmit mode, channel frequency, and power.			

EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT- 6820 Printer	Intermec Technologies Corporation	6820	Unknown
AC Adapter	Intermec Technologies Corporation	851-064-001	0000413
Handheld Computer	Intermec Technologies Corporation	CK61	33390400263

Remote Equipment Outside of Test Setup Boundary

Description	Manufacturer	Model/Part Number	Serial Number
Laptop PC	Dell	TS30GI	Unknown
Equipment isolated from the EUT so as not to contribute to the measurement result is considered to be outside the test setup boundary			

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Serial	Yes	5.0	No	EUT- 6820 Printer	Laptop PC
DC Leads	No	1.6	No	EUT- 6820 Printer	AC Adapter
AC Power	No	2.0	No	AC Adapter	AC Mains

Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
LISN	Solar	9252-50-R-24-BNC	LIP	12/29/2004	13 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/29/2004	13 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	04/08/2005	13 mo

Test Description

Requirement: Per 47 15.207(d), if the EUT is connected to the AC power line indirectly, obtaining its power from another device that is connected to the AC power line, then it should be tested to demonstrate compliance with the conducted limits of 15.207.

Configuration: The EUT will be powered from a device that could be connected to the AC power line. Therefore, the measurements were made on the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

Completed by:


EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS			
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

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
 New AC Adaptor: MN: 851-064-001. SN: 0000413.

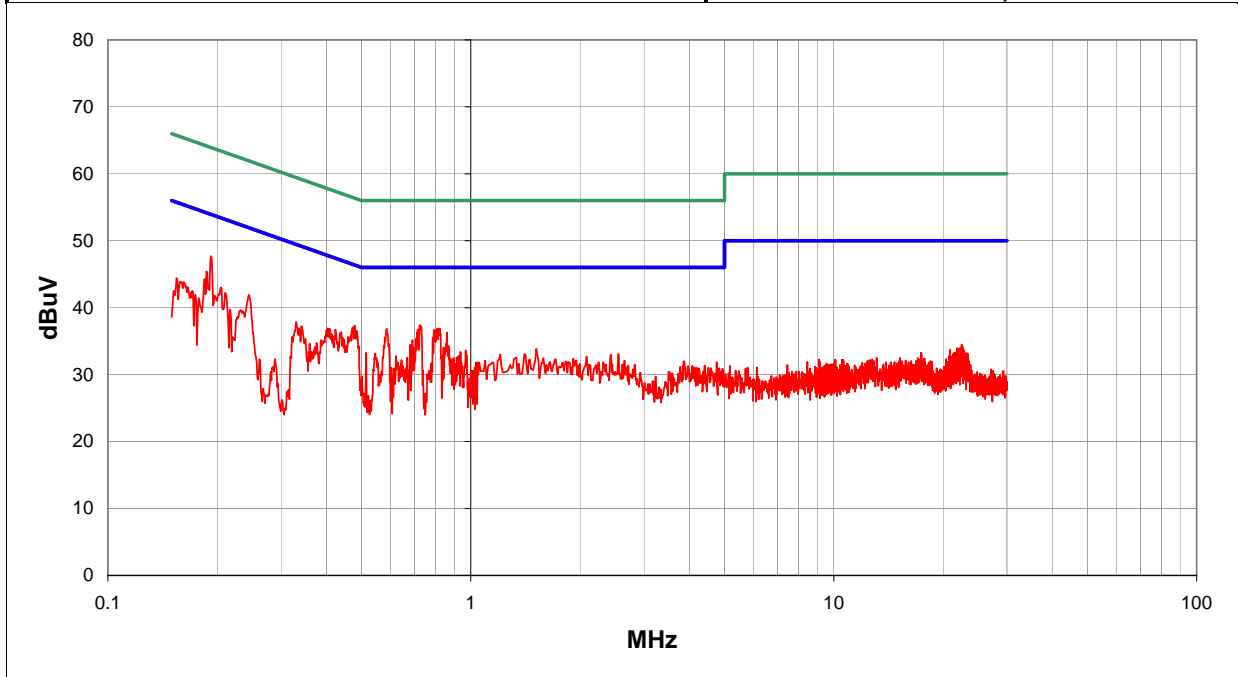
EUT OPERATING MODES
 Transmitting Bluetooth Low Channel

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)
0.192	27.5	0.0	0.2	20.0		47.7	53.9	-6.2
0.726	17.1	0.0	0.3	20.0		37.4	46.0	-8.6
0.187	25.2	0.0	0.2	20.0		45.4	54.2	-8.8
0.479	17.1	0.0	0.2	20.0		37.3	46.4	-9.0
0.821	16.6	0.0	0.3	20.0		36.9	46.0	-9.1
0.586	16.6	0.0	0.3	20.0		36.9	46.0	-9.1
0.717	16.5	0.0	0.3	20.0		36.8	46.0	-9.2
0.859	16.0	0.0	0.3	20.0		36.3	46.0	-9.7
0.245	21.7	0.0	0.2	20.0		41.9	51.9	-10.0
0.185	24.0	0.0	0.2	20.0		44.2	54.3	-10.0
0.205	22.8	0.0	0.2	20.0		43.0	53.4	-10.4
0.786	15.3	0.0	0.3	20.0		35.6	46.0	-10.4
0.424	16.5	0.0	0.2	20.0		36.7	47.4	-10.6
0.440	16.1	0.0	0.2	20.0		36.3	47.1	-10.7
0.691	14.9	0.0	0.3	20.0		35.2	46.0	-10.8
0.404	16.7	0.0	0.2	20.0		36.9	47.8	-10.8
0.210	22.0	0.0	0.2	20.0		42.2	53.2	-11.0
0.155	24.2	0.0	0.2	20.0		44.4	55.8	-11.3
0.681	14.2	0.0	0.3	20.0		34.5	46.0	-11.5

EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS			
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:	ANSI C63.4:2003

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
 New AC Adaptor: MN: 851-064-001. SN: 0000413.

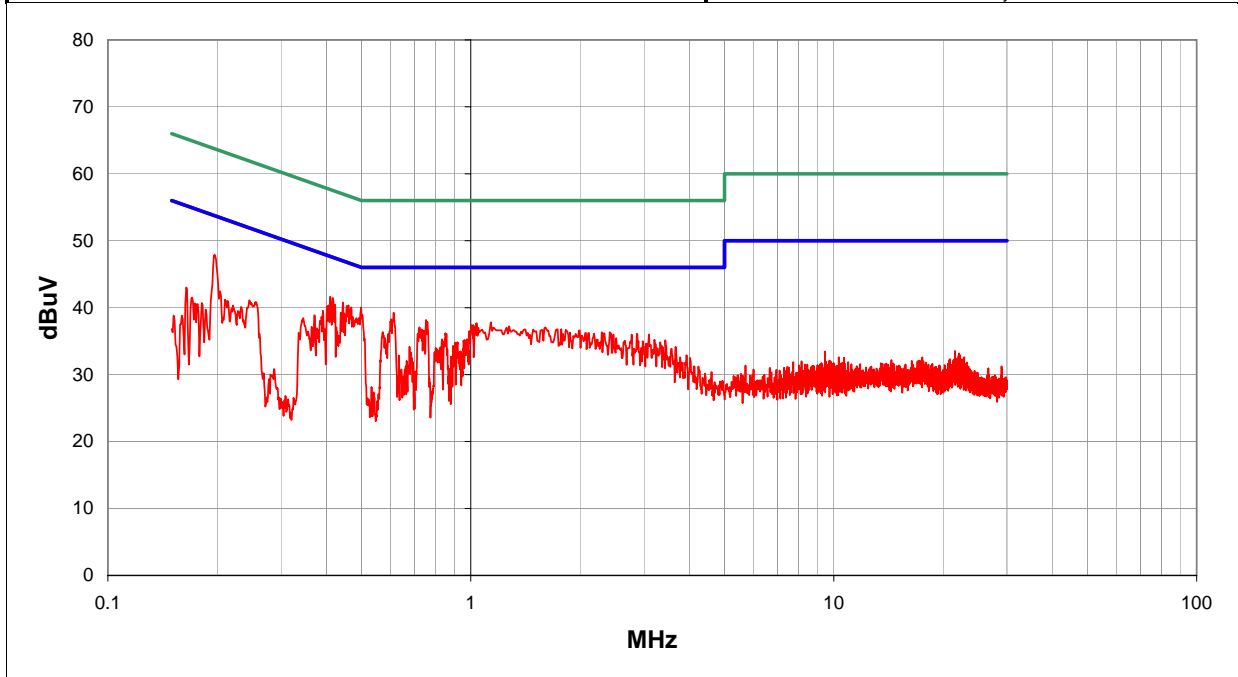
EUT OPERATING MODES
 Transmitting Bluetooth Low Channel

DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Line	Run #
Pass	N	2

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)
0.197	27.7	0.0	0.2	20.0		47.9	53.7	-5.8
0.498	19.8	0.0	0.2	20.0		40.0	46.0	-6.0
0.410	21.4	0.0	0.2	20.0		41.6	47.6	-6.0
0.416	21.2	0.0	0.2	20.0		41.4	47.5	-6.1
0.444	20.5	0.0	0.2	20.0		40.7	47.0	-6.2
0.461	20.1	0.0	0.2	20.0		40.3	46.7	-6.3
0.469	19.8	0.0	0.2	20.0		40.0	46.5	-6.5
0.613	19.0	0.0	0.3	20.0		39.3	46.0	-6.7
0.423	20.2	0.0	0.2	20.0		40.4	47.4	-7.0
0.407	20.1	0.0	0.2	20.0		40.3	47.7	-7.4
0.402	20.0	0.0	0.2	20.0		40.2	47.8	-7.6
0.603	18.0	0.0	0.3	20.0		38.3	46.0	-7.7
0.448	18.9	0.0	0.2	20.0		39.1	46.9	-7.8
0.753	17.9	0.0	0.3	20.0		38.2	46.0	-7.8
0.439	19.0	0.0	0.2	20.0		39.2	47.1	-7.8
1.135	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
1.037	17.4	0.0	0.3	20.0		37.7	46.0	-8.3
0.391	19.3	0.0	0.2	20.0		39.5	48.0	-8.5
1.015	17.1	0.0	0.3	20.0		37.4	46.0	-8.6

EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS		
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:
		ANSI C63.4:2003

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
 New AC Adaptor: MN: 851-064-001. SN: 0000413.

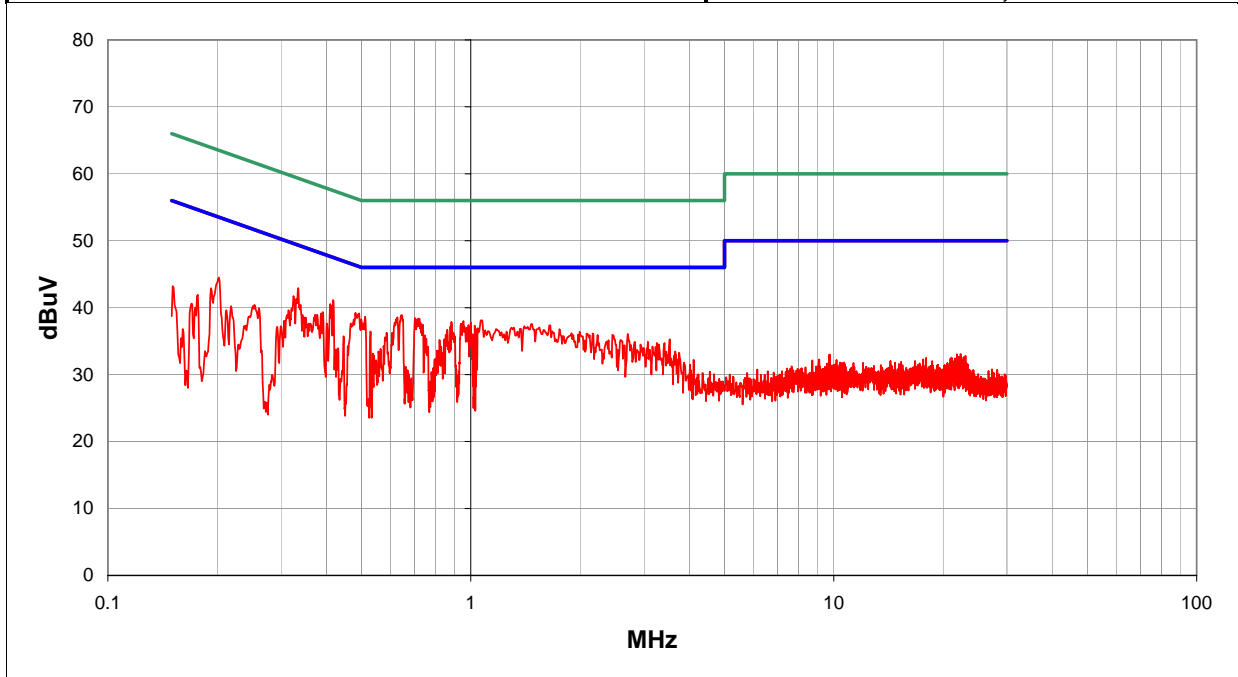
EUT OPERATING MODES
 Transmitting Bluetooth Mid Channel

DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Line	Run #
Pass	N	3

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)
0.417	20.9	0.0	0.2	20.0		41.1	47.5	-6.4
0.335	22.7	0.0	0.2	20.0		42.9	49.3	-6.4
0.481	19.0	0.0	0.2	20.0		39.2	46.3	-7.1
0.410	20.3	0.0	0.2	20.0		40.5	47.6	-7.1
0.647	18.6	0.0	0.3	20.0		38.9	46.0	-7.1
0.511	18.4	0.0	0.2	20.0		38.6	46.0	-7.4
0.628	18.3	0.0	0.3	20.0		38.6	46.0	-7.4
0.702	18.2	0.0	0.3	20.0		38.5	46.0	-7.5
0.325	21.5	0.0	0.2	20.0		41.7	49.6	-7.9
1.075	17.8	0.0	0.3	20.0		38.1	46.0	-7.9
0.954	17.7	0.0	0.3	20.0		38.0	46.0	-8.0
0.884	17.6	0.0	0.3	20.0		37.9	46.0	-8.1
1.000	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
1.475	17.2	0.0	0.3	20.0		37.5	46.0	-8.5
0.985	17.1	0.0	0.3	20.0		37.4	46.0	-8.6
1.655	17.0	0.0	0.4	20.0		37.4	46.0	-8.6
1.025	17.0	0.0	0.3	20.0		37.3	46.0	-8.7
0.391	19.1	0.0	0.2	20.0		39.3	48.0	-8.7
0.879	16.9	0.0	0.3	20.0		37.2	46.0	-8.8

EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS	
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04
Method:	ANSI C63.4:2003

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
 New AC Adaptor: MN: 851-064-001. SN: 0000413.

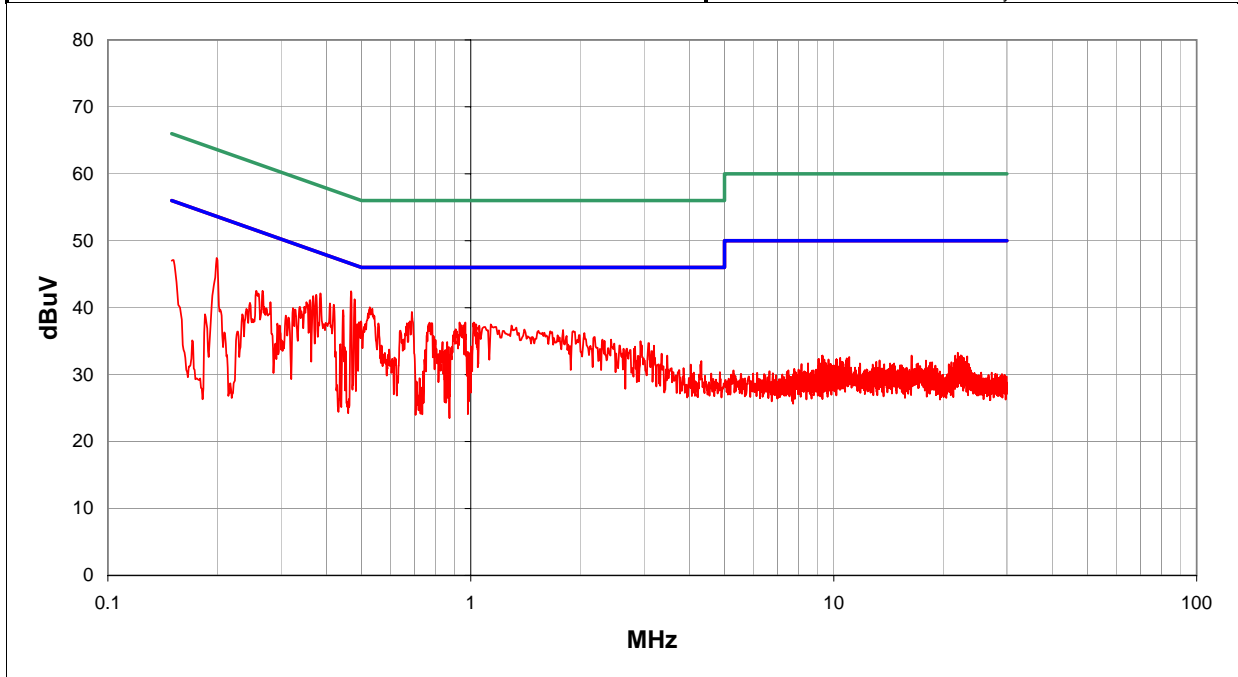
EUT OPERATING MODES
 Transmitting Bluetooth Mid Channel

DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Line	Run #
Pass	L1	4

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)
0.468	22.2	0.0	0.2	20.0		42.4	46.6	-4.1
0.479	21.0	0.0	0.2	20.0		41.2	46.4	-5.1
0.527	19.8	0.0	0.2	20.0		40.0	46.0	-6.0
0.385	21.9	0.0	0.2	20.0		42.1	48.2	-6.0
0.200	27.2	0.0	0.2	20.0		47.4	53.6	-6.2
0.375	21.7	0.0	0.2	20.0		41.9	48.4	-6.5
0.688	19.1	0.0	0.3	20.0		39.4	46.0	-6.6
0.368	21.5	0.0	0.2	20.0		41.7	48.6	-6.8
0.409	20.4	0.0	0.2	20.0		40.6	47.7	-7.0
0.419	20.2	0.0	0.2	20.0		40.4	47.5	-7.0
0.445	19.4	0.0	0.2	20.0		39.6	47.0	-7.3
0.361	20.9	0.0	0.2	20.0		41.1	48.7	-7.6
0.353	20.6	0.0	0.2	20.0		40.8	48.9	-8.1
0.498	17.7	0.0	0.2	20.0		37.9	46.0	-8.1
1.019	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
0.965	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
0.931	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
0.769	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
0.492	17.6	0.0	0.2	20.0		37.8	46.1	-8.3

EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS		
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:
		ANSI C63.4:2003

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
 New AC Adaptor: MN: 851-064-001. SN: 0000413.

EUT OPERATING MODES
 Transmitting Bluetooth High Channel

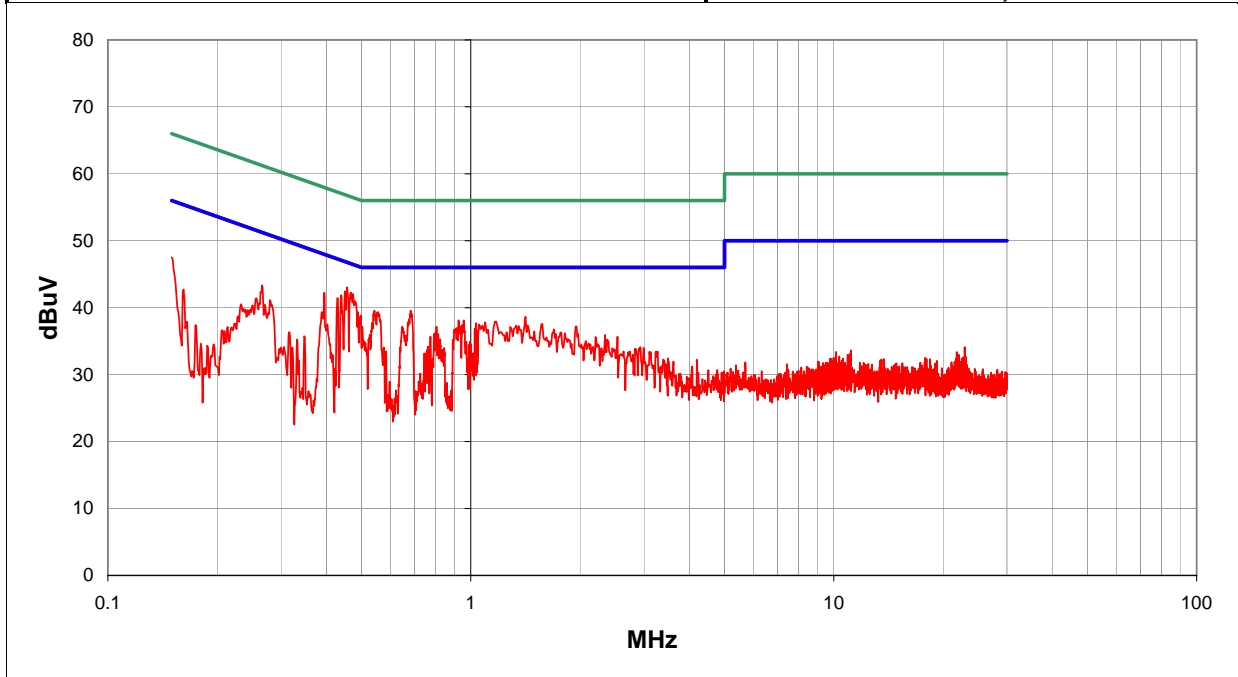
DEVIATIONS FROM TEST STANDARD
 No deviations.

RESULTS	Line	Run #
Pass	L1	5

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)
0.456	22.8	0.0	0.2	20.0		43.0	46.8	-3.7
0.468	22.0	0.0	0.2	20.0		42.2	46.6	-4.3
0.450	22.2	0.0	0.2	20.0		42.4	46.9	-4.4
0.440	21.6	0.0	0.2	20.0		41.8	47.1	-5.2
0.395	22.0	0.0	0.2	20.0		42.2	48.0	-5.7
0.429	21.2	0.0	0.2	20.0		41.4	47.3	-5.8
0.683	19.3	0.0	0.3	20.0		39.6	46.0	-6.4
0.542	19.3	0.0	0.3	20.0		39.6	46.0	-6.4
0.488	19.1	0.0	0.2	20.0		39.3	46.2	-6.8
0.497	18.6	0.0	0.2	20.0		38.8	46.0	-7.2
1.415	18.3	0.0	0.3	20.0		38.6	46.0	-7.4
0.956	17.8	0.0	0.3	20.0		38.1	46.0	-7.9
0.926	17.8	0.0	0.3	20.0		38.1	46.0	-7.9
0.266	23.1	0.0	0.2	20.0		43.3	51.2	-7.9
1.175	17.6	0.0	0.3	20.0		37.9	46.0	-8.1
1.095	17.5	0.0	0.3	20.0		37.8	46.0	-8.2
1.035	17.4	0.0	0.3	20.0		37.7	46.0	-8.3
1.575	17.2	0.0	0.4	20.0		37.6	46.0	-8.4
0.150	27.3	0.0	0.2	20.0		47.5	56.0	-8.5

EUT:	6820 Printer	Work Order:	ITRM0084
Serial Number:		Date:	06/24/05
Customer:	Intermec Technologies Corporation	Temperature:	26
Attendees:	None	Humidity:	39%
Cust. Ref. No.:		Barometric Pressure:	29.96
Tested by:	Holly Ashkannejhad	Power:	120VAC, 60Hz
		Job Site:	EV01

TEST SPECIFICATIONS		
Specification:	FCC 15.207 AC Powerline Conducted Emissions:2005-04	Method:
		ANSI C63.4:2003

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	

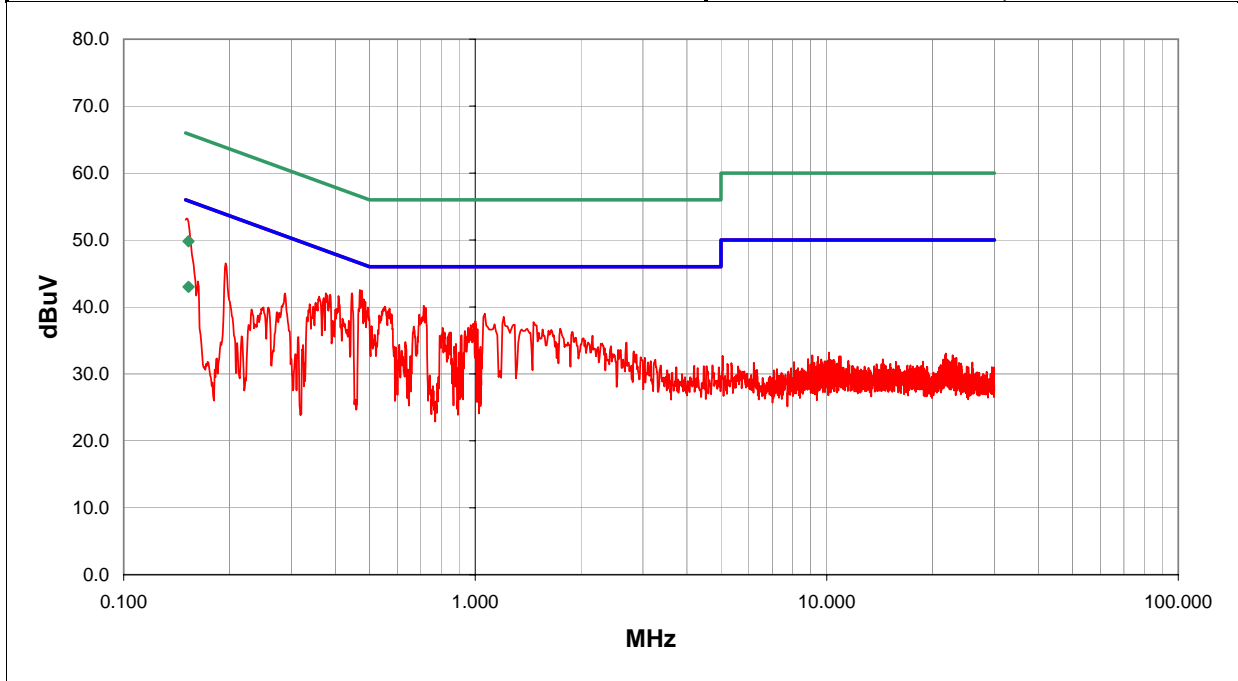
COMMENTS	
New AC Adaptor: MN: 851-064-001. SN: 0000413.	

EUT OPERATING MODES	
Transmitting Bluetooth High Channel	

DEVIATIONS FROM TEST STANDARD	
No deviations.	

RESULTS		
Pass	Line	Run #
	N	6

Other	 Tested By:
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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)
0.153	23.0	0.0	0.0	20.0	AV	43.0	55.8	-12.8
0.153	29.8	0.0	0.0	20.0	QP	49.8	65.8	-16.0
0.152	33.0	0.0	0.2	20.0		53.2	55.9	-2.7
0.476	22.2	0.0	0.2	20.0		42.4	46.4	-4.0
0.470	22.3	0.0	0.2	20.0		42.5	46.5	-4.0
0.446	21.8	0.0	0.2	20.0		42.0	46.9	-4.9
0.482	20.9	0.0	0.2	20.0		41.1	46.3	-5.2
0.487	20.5	0.0	0.2	20.0		40.7	46.2	-5.5
0.714	19.9	0.0	0.3	20.0		40.2	46.0	-5.8
0.553	19.8	0.0	0.3	20.0		40.1	46.0	-5.9
0.408	21.4	0.0	0.2	20.0		41.6	47.7	-6.0
0.496	19.7	0.0	0.2	20.0		39.9	46.1	-6.1
0.723	19.6	0.0	0.3	20.0		39.9	46.0	-6.1
0.570	19.5	0.0	0.3	20.0		39.8	46.0	-6.2
0.387	21.6	0.0	0.2	20.0		41.8	48.1	-6.3
0.376	21.8	0.0	0.2	20.0		42.0	48.4	-6.3
1.065	18.7	0.0	0.3	20.0		39.0	46.0	-7.0
0.371	21.1	0.0	0.2	20.0		41.3	48.5	-7.2
0.360	21.3	0.0	0.2	20.0		41.5	48.7	-7.2

