Intermec Technologies Corporation

Bluetooth (8520-00080) in 6820 with GSM, CDMA, 802.11b in 700C and 730

May 17, 2004

Report No. ITRM0026

Report Prepared By:



1-888-EMI-CERT

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Certificate of Test

Issue Date: May 17, 2004

Intermec Technologies Corporation

Model: Bluetooth (8520-00080) in 6820 with GSM, CDMA, 802.11b in 700C and 730

	Emissions		
Description		Pass	Fail
FCC 15.247(c) Spurious Radiated Emissions:2003		\boxtimes	

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:
ADU.K.P
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 and 200630-0.

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 TUV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TUV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TUV's current Listing of CARAT Laboratories available from TUV. A certificate was issued to represent that this laboratory continues to meet TUV'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.









CE







Accreditations and Authorizations

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. -Evergreen: C-1071 and R-1025, Trails End: C-1877 and R-1760, Sultan: C-905, R-871, C-1784 and R-1761, North Sioux City C-1246 and R-1217*)

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















What is measurement uncertainty?

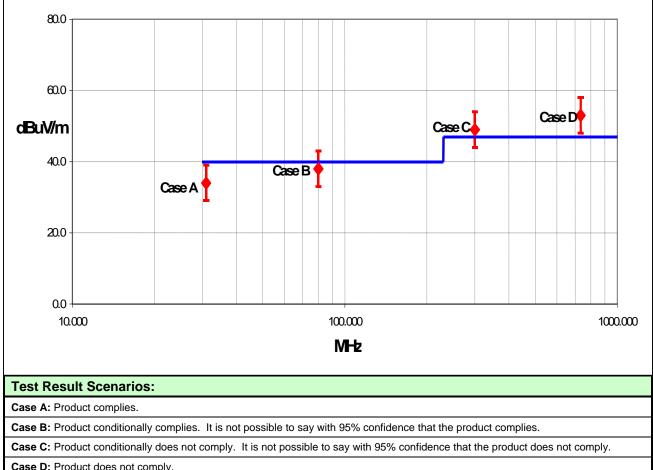
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. The following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



Case D: Product does not comply.



Radiated Emissions ≤ 1 GHz		Value (dB)				
	Probability	Bico	nical	Log Pe	eriodic	D	ipole
	Distribution	Ante	enna	Ante	enna	An	tenna
Test Distance		3m	10m	3m	10m	3m	10m
Combined standard	normal	+ 1.86	+ 1.82	+ 2.23	+ 1.29	+ 1.31	+ 1.25
uncertainty <i>u_c(y)</i>		- 1.88	- 1.87	- 1.41	- 1.26	- 1.27	- 1.25
Expanded uncertainty U	normal (k=2)	+ 3.72	+ 3.64	+ 4.46	+ 2.59	+ 2.61	+ 2.49
(level of confidence \approx 95%)		- 3.77	- 3.73	-2.81	- 2.52	- 2.55	- 2.49

Radiated Emissions > 1 GHz	Value (dB)		
	Probability	Without High	With High
	Distribution	Pass Filter	Pass Filter
Combined standard uncertainty <i>u_c(y)</i>	normal	+ 1.29 - 1.25	+ 1.38 - 1.35
Expanded uncertainty U	normal (k=2)	+ 2.57	+ 2.76
(level of confidence $\approx 95\%$)		- 2.51	2.70

Conducted Emissions		
	Probability	Value
	Distribution	(+/- dB)
Combined standard uncertainty <i>uc(y)</i>	normal	1.48
Expanded uncertainty <i>U</i> (level of confidence ≈ 95 %)	normal (k = 2)	2.97

Radiated Immunity		
	Probability	Value
	Distribution	(+/- dB)
Combined standard uncertainty <i>uc(y)</i>	normal	1.05
Expanded uncertainty U (level of confidence ≈ 95 %)	normal (k = 2)	2.11

Conducted Immunity		
	Probability	Value
	Distribution	(+/- dB)
Combined standard uncertainty <i>uc(y</i>)	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, uc(y) yields a confidence level of only 68%.



Facilities











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

South Dakota

North Sioux City Facility

745 N. Derby Lane P.O. Box 217 North Sioux City, SD 57049 (605) 232-5267 FAX (605) 232-3873

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
Equipment Under Test:	Bluetooth in 6820 printer with CDMA, GSM, 802.11b in 700C and 730
Model:	8520-00080
First Date of Test:	05-13-2004
Last Date of Test:	05-17-2004
Receipt Date of Samples:	05-13-2004
Equipment Design Stage:	Production
Equipment Condition:	No visual damage.

Information Provided by the Party Requesting the Test

Clocks/Oscillators:	Not provided at the time of test.	
I/O Ports:	Serial on printer.	

Functional Description of the EUT (Equipment Under Test):

Bluetooth radio installed in a 6820 Printer. Printer includes a docking station for 700C or 730.

Client Justification for EUT Selection:

The EUT is a representative production sample.

Client Justification for Test Selection:

These tests satisfy the requirements FCC 15.247 (c) for co-located transmitters.

EUT Photo





Modifications

	Equipment modifications				
Item	Test	Date	Modification	Note	Disposition of EUT
	Spurious		No EMI suppression	Same	EUT was returned
1	Radiated	05/17/2004	devices were added or	configuration as	to client following
	Emissions		modified during this test.	delivered.	testing.



Justification

The EUT is a Bluetooth radio module installed inside Intermec's mobile printer, Model 6820 (FCC ID: EHABTS0080). The 6820 includes a docking station for Intermec's handheld computers, Models 700C and 730. With the hand-held scanners, the EUT contains co-located radio modules (CDMA, GSM, 802.11(b), and Bluetooth). This test demonstrates compliance with FCC 15.247(c) emissions limits while the EUT is co-located with the previously certified radios in the 700C (FCC ID: HN2SB555-2, HN22011B-2, EHA700C-SMC45-1, EHABTS0080 for the CDMA, 802.11(b), GSM, and Bluetooth radios, respectively) and 730 hand-held computers (FCC ID: EHABTM210, EHA802CF13 for the Bluetooth and 802.11(b) radios, respectively). Each radio transmits through its own antenna.

All possible combinations of harmonic emissions from the CDMA, 802.11(b), GSM, and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. All the radios were configured for simultaneous transmission at the channels specified below:

Channels in Specif	Channels in Specified Band Investigated:		
802.11(b):	1,11		
CDMA (Cellular):	54, 55, 395, 467		
CDMA (PCS):	1, 35, 1153		
Bluetooth: 5, 11, 62, 68, 79, 80			
High (2480MHz), Mid (2442MHz), Low (2402MHz)			
GSM:	516, 606		

Operating Modes Investigated:

Bluetooth Radio in 6820 with 700C in docking station:
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA PCS Channel 1
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA PCS Channel 1153
Simultaneous transmission of Bluetooth Channel 68, 802.11(b) Channel 11, & CDMA PCS Channel 35
Simultaneous transmission of Bluetooth Channel 62, 802.11(b) Channel 11, & CDMA PCS Channel 1153
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & CDMA Cellular Channel 467
Simultaneous transmission of Bluetooth Channel 5, 802.11(b) Channel 1, & CDMA Cellular Channel 395
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & CDMA Cellular Channel 55
Simultaneous transmission of Bluetooth Channel 79, 802.11(b) Channel 11, & CDMA Cellular Channel 54
Simultaneous transmission of Bluetooth Channel 11, 802.11(b) Channel 1, & GSM Channel 516
Simultaneous transmission of Bluetooth Channel 67, 802.11(b) Channel 11, & GSM Channel 516
Simultaneous transmission of Bluetooth Channel 2, 802.11(b) Channel 1, & GSM Channel 606
Simultaneous transmission of Bluetooth Channel 80, 802.11(b) Channel 11, & GSM Channel 606
Bluetooth Radio in 6820:
Bluetooth Low Channel only
Bluetooth Mid Channel only
Bluetooth High Channel only
Bluetooth Radio in 6820 with 730 in docking station:
Circulture across transmission of Directs of the Channel 00 and 000 44/h) Channel 44

Simultaneous transmission of Bluetooth Channel 80 and 802.11(b) Channel 11.

Data Rates Investigated:

Maximum



Antennas Investiga	ated:
802.11(b):	2011B integral antenna (internal to 700C and 730)
CDMA (Cellular):	805-606-102 Dual Band CDMA 900/1900MHz Antenna (SB555) (external to 700C)
CDMA (PCS):	805-666-204 Single Band CDMA 1900MHz Antenna (SB555) (external to 700C)
Bluetooth:	Integral PCB trace (internal to 6820, 700C, and 730)
GSM:	SMC45

Output Power Setting(s) Investigated:

Maximum

Power Input Settings Investigated: 120 VAC, 60 Hz.

Frequency Range Invest	igated		
Start Frequency	30 MHz	Stop Frequency	26 GHz

Software\Firmware Appl	ied During Test		
Exercise software	Blue Test FCC_Smart 802.11 Agency Test PhoneUtility	Version	Unknown
Description			
		exercise the functions of th ing simultaneous transmiss	

EUT and Peripherals			
Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth Radio in Printer	Intermec Technologies Corporation	8520-00080	Unknown
Printer	Intermec Technologies Corporation	6820	N/A
AC Adapter	Intermec Technologies Corporation	851-064-001	0001771
Handheld Computer with CDMA option	Intermec Technologies Corporation	700C	05400400868
Handheld Computer with GSM option	Intermec Technologies Corporation	700C	05400400636
Handheld Computer with Bluetooth and 802.11(b) only	Intermec Technologies Corporation	730	28010300022
Bluetooth Radio	Intermec Technologies Corporation	8520-00080	N/A
802.11(b) Radio	Intermec Technologies Corporation	2011B	N/A
CDMA Radio	Intermec Technologies Corporation	SB555	N/A
GSM Radio	Intermec Technologies Corporation	SMC45	N/A

Remote Equipment Outside of Test Setup Boundary											
Description Manufacturer Model/Part Number Serial Number											
Remote laptop	Dell	TS30G	7247346BYK0204A								
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						
AC Power	No	2.0	No	AC Adapter	AC Mains						
DC Leads	PA	1.8	PA	Printer	AC Adapter						
Serial	Yes	4.0	No	Printer	Remote laptop						
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.											

Measurement Equipment Manufacturer Identifier Description Model Last Cal Interval AHG NA Antenna, Horn EMCO 3160-09 NCR JSD4-18002600-26-**Pre-Amplifier** APU 10/08/2003 Miteq 12 mo 8P AMF-4D-005180-24-APC 10/08/2003 **Pre-Amplifier** Miteq 12 mo 10P Antenna, Horn EMCO 3160-08 AHK NCR NA Antenna, Horn EMCO AHC 09/18/2003 3115 12 mo AMF-4D-005180-24-**Pre-Amplifier** Miteq APJ 01/05/2004 13 mo 10P Amplifier LN1000A APS **Pre-Amplifier** 02/05/2004 13 mo Research Antenna, Biconilog EMCO 3141 AXE 12/03/2003 24 mo Spectrum Analyzer Hewlett-Packard 8566B 12/23/2003 AAL 13 mo Spectrum Analyzer Hewlett Packard 85662A AALD 12/23/2003 13 mo Display Quasi-Peak Adapter AQF 12/23/2003 Hewlett-Packard 85650A 13 mo AAO 02/26/2003 24 mo Spectrum Analyzer Tektronix 2784 High Pass Filter Micro-Tronics HPM50111 HFO 04/13/2004 13 mo GSM/DCS/PCS MS Hewlett-Packard 8922M N/A NCR NA Test Set GSM/DCS/PCS RF Hewlett-Packard 83220E N/A NCR NA Interface

Test Description

Requirement: Per 15.247(c), the field strength of any spurious emissions or modulation products that fall in a restricted band, as defined in 15.205, is measured. The peak level must comply with the limits specified in 15.35(b). The average level (taken with a 10Hz VBW) must comply with the limits specified in 15.209.



Configuration for Simultaneous Transmission: The EUT is an Bluetooth radio module installed inside Intermec's mobile printer, Model 6820 (FCC ID: EHABTS0080). The printer can have co-located radio modules when an Intermec Handheld Computer, 700C or 730, is installed in the docking station. The 700C (FCC ID: HN2SB555-2, HN22011B-2, EHA700C-SMC45-1, EHABTS0080 for the CDMA, 802.11(b), GSM, and Bluetooth radios, respectively) and 730 (FCC ID: EHABTM210, EHA802CF13 for the Bluetooth and 802.11(b) radios, respectively) have been previously certified. With a handheld computer installed in the printer, the Bluetooth radio module can simultaneously transmit with four other co-located radios (CDMA, GSM, Bluetooth, and 802.11(b)). This test demonstrates compliance with FCC 15.247(c) emissions limits while the EUT is co-located with another previously certified mobile radio. The EUT can transmit simultaneously with CDMA, 802.11(b), and Bluetooth or with GSM, 802.11(b), and Bluetooth in the 730. Each radio transmits through its own antenna.

The following is an excerpt from the FCC / TCB Training Q & A, October 2002, Day 2, Question 7:

Assuming that the radios do not share an antenna, only radiated tests for simultaneous transmission is required. If the radios share an antenna, antenna conducted measurements would also be required. Only one set of worst case simultaneous transmission data is going to be requested to be submitted at this time. The test engineer should indicate the worst case condition and provide justification as to why the worst case condition was chosen. The grantee should be reminded that even if the FCC requests one set of data, they are responsible for compliance for all modes of simultaneous transmission.

All possible combinations of harmonic emissions from the CDMA, 802.11(b), GSM, and Bluetooth radios were compared numerically. It was determined that there were no possible coincidental harmonics below 1 GHz. The frequency range from 1 GHz to 26 GHz was investigated for channel combinations that would produce coincidental harmonics. Compliance with the restricted band at 2483.5 – 2500 MHz was also measured.

All the radios were configured for simultaneous transmission at the channels specified in the previous pages. The highest gain antennas to be used with the radios were tested. The spectrum was scanned throughout the specified range. While scanning, emissions from the radios were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antennas in three orthogonal axes, and adjusting the measurement antenna height and polarization (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Bandwidths Used for Mea	surements											
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.												

Holy Aligh Completed by:

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Se	erial Num	ber:										Date:	05/17/04	
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	Attend		None									Humidity:		
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	Freq		Amplitude	Factor	Azimuth	Height (meters)	Distance (meters)	Attenuation	Polarity	Detector	Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Spec. (dB)
	(MHz)	769	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)	V-Bilog					
	895. 895.		35.0 30.4	2.5 2.5					0	QP QP	0.0 0.0	37.5 32.9	46.0 46.0	-8. -13.1
	895.	00	30.4	2.5	204.0	1.5	3.0	0.0	H-Bilog	QP	0.0	32.9	40.0	-13.

	DRTHWEST		RA	DIAT	ED	EMIS	SIO	NS D	ΑΤΑ	SHE	ET		REV df4.13 05/06/2004	
		8520-00080								W		ITRM0026		
S	erial Number:	luterus e Te								T		05/17/04		
-	Attendees:	Intermec Te	echnologie	s Corpora	tion					Ter	mperature: Humidity:			
C	ust. Ref. No.:	None								Barometri	c Pressure			
		Holly Ashka	annejhad				Power:	120 V, 60 H	lz	20.01100				
TEST S	SPECIFICATI							,			Job Site:			
ę	Specification:	FCC 15.247	(c) Spuriou	us Radiate	d Emissior	าร					Year:	2003		
		ANSI C63.4				Year:	2001							
	E CALCULA													
	ated Emissions: Icted Emissions:	-								External Atten	uation			
COMM		Aujusted Level	= Measureu L		ucer Facior +	Cable Attenua		ziemai Allenu	alui					
	EUT installed in Intermec Model 6820 printer. Intermec handheld computer 730 in docking station.													
FUT O	PERATING M													
	h 80 and 802.11		Bluetooth 80 i	n 6820										
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	Freq	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	Attenuation (dB)	Polarity	Detector	Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Spec. (dB)	
	(MHz) 4959.976	(aBuV) 57.1	(dB) 3.8	(degrees) 130.0	(meters) 1.2	(meters) 3.0		V-Horn	PK	(dB) 0.0	авиv/m 60.9	авиv/m 74.0	(aB) -13.1	
	4924.003	37.1	3.8	103.0	1.2	3.0			AV	0.0	40.8	54.0	-13.1	
	4959.976	56.9	3.8	208.0	1.1	3.0		H-Horn	PK	0.0	60.7	74.0	-13.3	
	4959.976	36.4	3.8	208.0	1.1	3.0			AV	0.0	40.2	54.0	-13.8	
	4959.976 36.4 3.8 208.0 1.1 3.0 0.0 H-Horn AV 4959.976 36.2 3.8 130.0 1.2 3.0 0.0 V-Horn AV										40.0	54.0	-14.0	

4959.976	57.1	3.8	130.0	1.2	3.0	0.0 V-Hom	Ph	0.0	60.9	74.0	-13.1
4924.003	37.1	3.7	103.0	1.1	3.0	0.0 H-Horn	AV	0.0	40.8	54.0	-13.2
4959.976	56.9	3.8	208.0	1.1	3.0	0.0 H-Horn	PK	0.0	60.7	74.0	-13.3
4959.976	36.4	3.8	208.0	1.1	3.0	0.0 H-Horn	AV	0.0	40.2	54.0	-13.8
4959.976	36.2	3.8	130.0	1.2	3.0	0.0 V-Horn	AV	0.0	40.0	54.0	-14.0
4924.003	32.2	3.7	79.0	1.2	3.0	0.0 V-Horn	AV	0.0	35.9	54.0	-18.1
4924.003	43.0	3.7	103.0	1.1	3.0	0.0 H-Horn	PK	0.0	46.7	74.0	-27.3
4924.003	40.0	3.7	79.0	1.2	3.0	0.0 V-Horn	PK	0.0	43.7	74.0	-30.3

	orthwest					F	R/	4[D	A	Т	E	D		Ξ	M	K	S	S	IC)	15	5	D	A	Τ	A	S	SH	łE	I						0	REV df4.13 5/06/2004
		EUT:	852	0-00	080																										Wor					026		
s	erial Nu						- 1 -																							_			Date	-		04		
		omer: ndees:		rme	CIE	cnn	010	gies	s Co	orpc	orat	on																					ture idity					
	Cust. Re		1401																									E	Baro	met			sure					
		ed by:	Hol	ly As	shka	inne	jha	d											F	Powe	er:	120	V ,	60 H	łz								Site					
TEST	SPECIF						<i>.</i>																í															
	Specific					(c) S	Spur	iou	s R	adia	ated	l En	niss	sior	۱S																		Year					
		ethod:			53.4																											1	Year	20	01		_	
Rac Conde COMN	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 EUT installed in Intermec Model 6820 printer. Intermec handheld computer 730 in docking station.																																					
	PERAT				320 pi	rinte	r. Int	term	ec h	andł	neld	com	pute	er 73	80 in	doc	ckin	g st	atio	on.																		
Bluetoo	th 80 and	1 802.1 <i>′</i>	1b 11,	in 7:				80 ir	n 682	20																												
DEVIA No devi	TIONS	FROM	ΙTE	ST S	TAN	ÌDA	RD																															
No devis																																		Ru	ın #			
Pass	_10																																	IX.u			80	
																																					Ť	
Other																																		\sim				
		Holy Arlinghi Tested By:															~				-																	
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m//																																						
dBuV/m	40.0																																					
	30.0																																					
	20.0																																			_		
	10.0								_			_	-			_										-	-	_			_					+		
	0.0																						_														Ц	
	248	3.000	2	483.	100	2	2483	3.20	0	24	83.	300	J	24	83.4	400	J		83 MH	.500 -1z	J	248	53.6	600	2	:48	3.7	JÜ	24	183	.800	J	248	33.9	00	24	184	.000
	Freq (MHz)		(c	nplitud dBuV)			ctor IB)		(deg	muth grees)		eight eters	5)	Distance (meters)				External Attenuation (dB)			Polarity		Detector		Distance Adjustment (dB)			c	Adjusted dBuV/m			Spec. Limit dBuV/m			mpared to Spec. (dB)		
		3.500			.0		-2			261				1.1			3.			20			Ho			AV				0.0			48.5			54.0		-5.5
		3.500			.0		-2			206				1.2			3.			20			Ho			AV				0.0			48.5			54.0		-5.5
		3.500 3.500			5.4 5.0		-2 -2			261 206				1.1 1.2			3. 3.).0).0		Hoi Hoi			PK PK				0.0			63.9 63.5			74.0 74.0		-10.1 -10.5
	240	0.000		40			-2			200	.0			· .∠			э.	0		20		11-	1 10			- 1				0.0	,		00.0	,	4	, 4 .0		-10.5

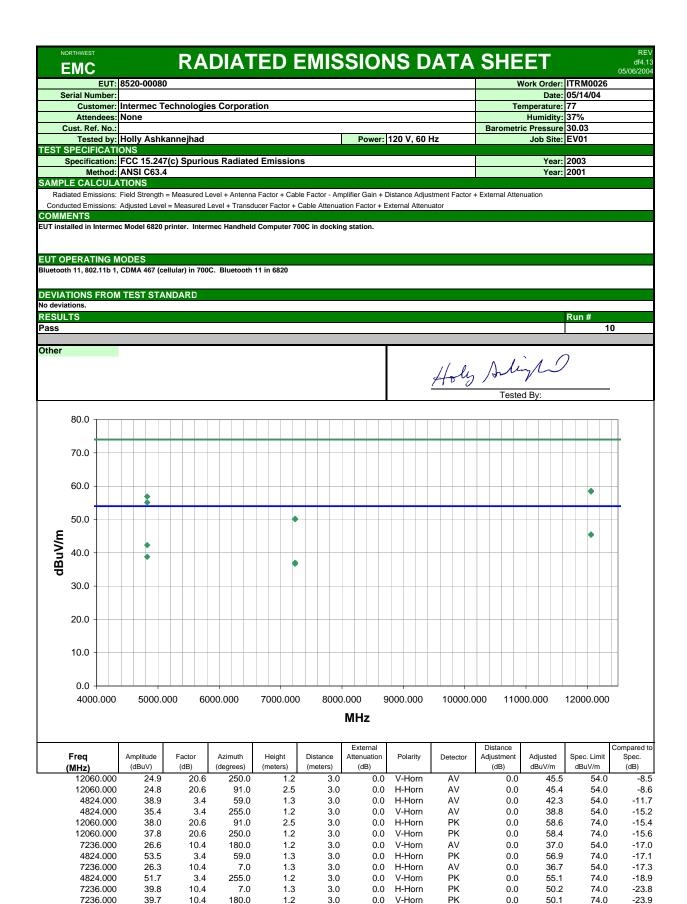
				F	2 4	DIA	[ED_	E	MI	S	SIO	Ν	SD	ΑΤ	Ά	S	-115	ET.		REV df4.13
	EMC		0.505 51							2	ere				-					05/06/2004
	avial Nu		8520-000	80													v		ITRM0026 05/14/04	
3	erial Nu Cust		Intermec	Techn	ologie	es Corpora	tion										Te	emperature:		
			None	reenn	ologic													Humidity		
c	Cust. Re															Bar	ometr	ic Pressure		
			Holly As	hkanne	jhad						Power	: 12	20 V, 60	Hz				Job Site:	EV01	
	SPECIF																		0000	
			FCC 15.2 ANSI C63		purio	us Radiate	ed Emissio	ons											2003	
SAMP				3.4														Year:	2001	
				th = Mea	sured L	.evel + Antenr	a Factor + Ca	able	Factor - A	Ampl	lifier Gain +	· Dist	tance Adju	stment Fa	actor -	- Extern	al Atte	nuation		
Condu	ucted Emi	ssions:	Adjusted Le	vel = Mea	asured I	Level + Trans	ducer Factor -	+ Ca	able Atten	iuatio	on Factor +	Exte	ernal Atten	uator						
COMM																				
EUT inst	talled in I	nterme	c Model 682	20 printer	. Inter	mec Handhel	d Computer	700	C in docl	king	station.									
EUT O	PERAT	ING N	IODES																	
Bluetoot	th 11, 802	.11b 1,	CDMA 467	(cellular)	in 700	C. Bluetooth	11 in 6820													
		FRON	I TEST ST	FANDA	RD															
No devia																			D "	
RESUI Pass	_15																		Run #	5
r ass																			· · · · ·	5
Other		_								_		Т			_					
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	1250	0.000	1	135	00.00	0	14500.	000	0		15500	0.00	00	1	650	0.000		175	00.000	
										N	MHz									
										1	VII 12									
								-												
	Freq		Amplitude	Fac	tor	Azimuth	Height	Γ	Distance		External Attenuation		Polarity	Date	tor	Dista Adjust		Adjusted	Spec. Limit	Compared to Spec.
	(MHz)		(dBuV)	Fac		(degrees)	(meters)		(meters)	ſ	(dB)	1	rolanty	Detec	loi	Adjust (dl		dBuV/m	dBuV/m	(dB)
L		2.000	(0.5017)		9.9	72.0	1.2	2	3.	.0	0.0) '	V-Horn	AV	/	(31	0.0	36.8		
		2.000	26.		9.9	168.0	3.2		3.		0.0		H-Horn	AV			0.0	36.7		
		2.000	40.	9	9.9	72.0	1.2	2	3.	.0	0.0	' כ	V-Horn	PK	(0.0	50.8	74.0	-23.2
	1447	2.000	40.	3	9.9	168.0	3.2	2	3.	.0	0.0	וכ	H-Horn	PK	(0.0	50.2	74.0	-23.8

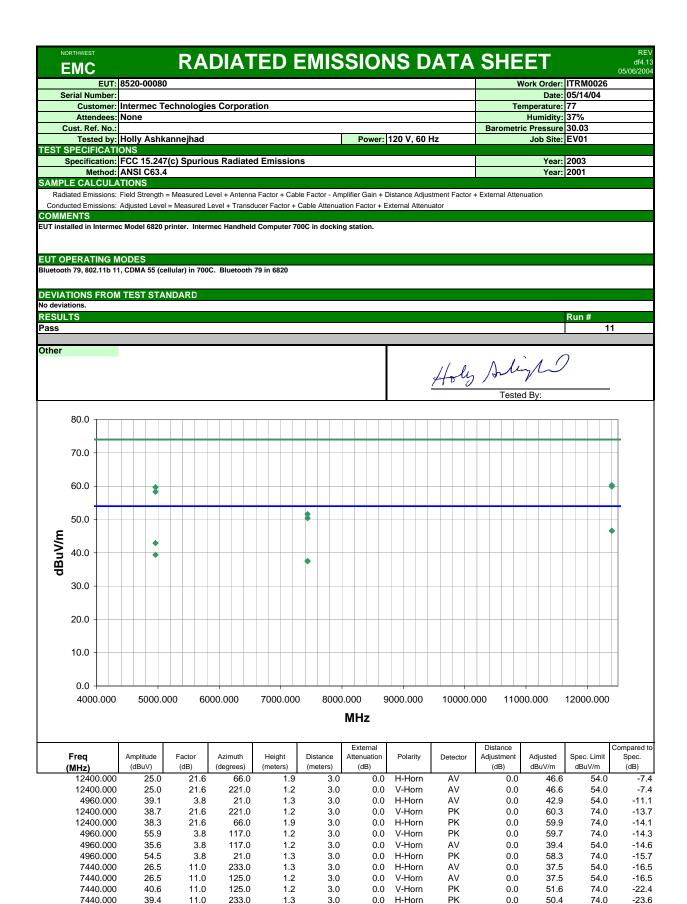
	orthwest				RA	DIA	TED	E	EM	IS	S	0	NS	D	AT	Ά	S	HE	ET			REV df4.13 05/06/2004
			8520-00	080														٧			TRM0026	
S	erial Nu		Intormo	Took	nologi	es Corpor	ation											т			05/14/04	
			None	rech	nologi	es corpor	ation											16	emperatu Humid			
C	Cust. Ref	. No.:															Bar	ometr	ic Press	ure	30.03	
TFOT	Teste SPECIF		Holly As	shkanr	nejhad						I	Power:	120 V,	60 H	lz				Job S	ite:	EV01	
				247(c)	Spuric	ous Radiat	ed Emiss	ion	s										Ye	ear: 2	2003	
	Me	thod:	ANSI C6																		2001	
	LE CAL			ath – M	oogurod I	_evel + Anten	na Factor I	Cobl	o Footo	r Arr	polifior	Coin I	Distance	Adiug	tmont Ea	ator i	Extorn		nuction			
				-		Level + Trans								-		ICIOT +	Exterr	iai Alle	nuation			
COMM	IENTS																					
EUT inst	talled in l	nterme	c Model 68	20 print	ter. Inter	mec Handhe	Id Compute	er 70	0C in d	lockin	ng sta	ion.										
	PERAT																					
Bluetoo	th 11, 802	.11b 1,	CDMA 1 (F	PCS) in	700C. B	luetooth 11 i	n 6820															
DEVIA	TIONS	FROM	TEST S	TAND	ARD																	
No devia			12010																			
RESU	LTS																			l	Run #	
Pass																						6
Other								-		-	-		<u> </u>	-		-						
															11	0	Δ	1	-))	
															Ho	ly	14		γ	<u> </u>		
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	80.0 -																					
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S S	40.0 -				_									-								
dBuV/m							•															
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	0.0 -																					
	1250	0.000		13	500.00	00	14500	0.00	00			15500	.000		1	6500	0.000			1750	00.000	
											М⊦	lz										
				<u> </u>		1		Т			F۲	ternal	1			1	Dista	ance		Т		Compared to
	Freq		Amplitude		actor	Azimuth	Height		Distar		Atter	nuation	Polar	ity	Detec	tor	Adjus	tment	Adjuste		Spec. Limit	Spec.
	(MHz)	2 000	(dBuV)		(dB)	(degrees)	(meters		(mete	,	(dB)				,	(d		dBuV/i		dBuV/m	(dB)
	1447: 1447:		26 26		9.9 9.9			2.2 2.4		3.0 3.0		0.0 0.0			AV AV			0.0 0.0		6.8 6.8	54.0 54.0	-17.2 -17.2
	1447		40		9.9			2.2		3.0		0.0			PK			0.0		0.4	74.0	-23.6
	1447	2.000	40	.5	9.9	18.0) 2	2.4		3.0		0.0	V-Ho	orn	PK			0.0	5	0.4	74.0	-23.6

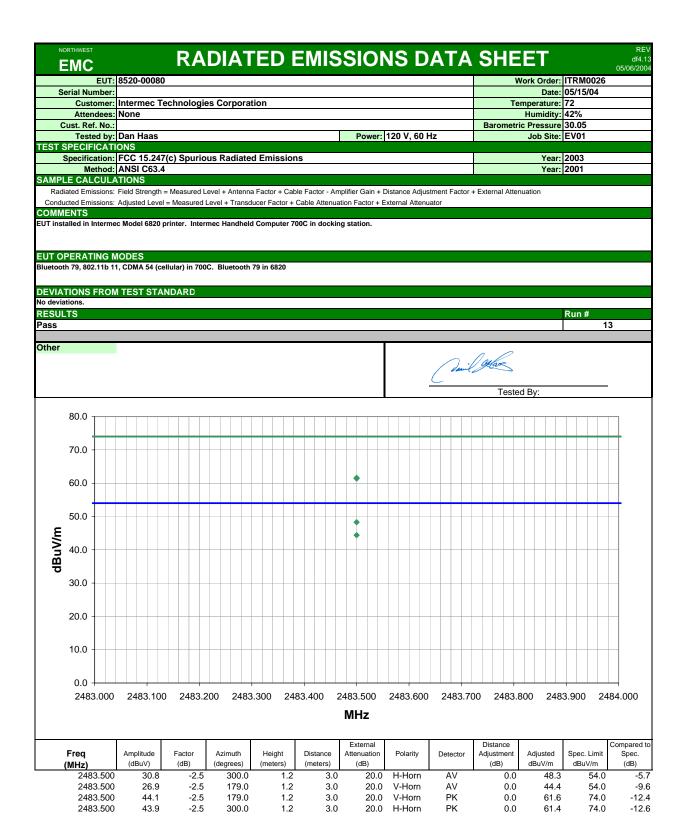
	orthwest					R/	4[)I	AT	Έ	D	EI	MIS	S	SIC)	NS D	ΑΤΑ	N SH	E	E	Г			REV df4.13 05/06/2004
			8520-	0008	80															W	/ork (ITRM0		
S	erial Nu		Intorr		Tooh	nala	~!~~	Car		lian										Te			05/14/0)4	
			Interr None		rech	noio	gies	COI	pora	lion										Te		ature: nidity:			
C	Cust. Re																		Baron	netri			30.03		
			Holly	Ash	kanr	nejha	d								Pow	er:	120 V, 60	Hz					EV01		
TEST S	SPECIF	ICATI	ONS																						
	Specific					Spu	riou	s Ra	diate	d Em	issio	าร											2003		
			ANSI		.4																	Year:	2001		
	LE CAL										0.1									A					
																	Sistance Adju External Atter	stment Facto	r + External	Atten	nuation	1			
COMM		13310113.	Aujusie	U Lev		leasure		VCIT	Transc	uceri	actor +	Cabi	ie Allen	ualio	ni i actor	τL	Alemai Allei	luator							
	talled in	Interme	c Mode	l 6820) print	ter. In	terme	ec Ha	ndhele	d Com	puter 7	00C	in docl	ing	station.										
				_																					
	PERAT th 11, 80				(C) in	7000	Dive	40.044	. 44 in	6020															
Bluetoo	un 11, ou	2.110 1	CDIVIA	T (PC	.5) in	/000.	Dine	10011	1 1 1 10	0020															
	TIONS	FROM		гет																					
No devia		FROM	IIES	131/	AND	AKU																			
RESU																							Run #		
Pass																								7	,
Other																							\mathbf{r}		
																		Holy	Δ	h.	~1	'			
																		Hou	2 /2	~	1				
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																				55101	u Dy.				
	80.0	-																							
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		1 000	_	.000	000		<u> </u>	0.00		70/		<u>`</u>	0.00		200			40000	000 4	4.00		~	40000	000	_
	400	0.000	5	6000.	.000		000	0.00	JU	700	00.00	J	800			9	000.000	10000	.000 1	100	00.00	JU	12000.	000	
														Ν	ИНz										
							1							1	Externa			т	Distanc						Compared to
	Freq		Ampl	itude	F	actor		Azim	nuth	He	ight	Di	istance	A	Externa Attenuati		Polarity	Detector	Distance		Adiu	usted	Spec. L	imit	Compared to Spec.
	(MHz)		(dB			(dB)		(degr			ters)		neters)		(dB)				(dB)			ıV/m	dBuV/		(dB)
	723	6.000		27.3		10	.4		63.0		1.2		3.		(0.0	H-Horn	AV		0.0		37.7		54.0	-16.3
		6.000		27.2		10			99.0		1.3		3.			0.0	V-Horn	AV		0.0		37.6		54.0	-16.4
		6.000		40.5		10			63.0		1.2		3.			0.0	H-Horn	PK		0.0		50.9		4.0	-23.1
	723	6.000		40.4		10	.4	1	99.0		1.3		3.	υ	(0.0	V-Horn	PK		0.0		50.8	7	′ 4.0	-23.2

	IORTHWEST		RA	DIAT	ED E	EMIS	SIO	NS D	ΑΤΑ	SHE	ET		REV df4.13 05/06/2004
	EUT:	8520-00080)							V	Nork Order:	ITRM0026	
S	erial Number:										Date:	05/14/04	
		Intermec Te	echnologi	es Corporat	tion					T€	emperature:		
	Attendees:	None									Humidity:		
0	Cust. Ref. No.:							1		Barometr	ic Pressure		
		Holly Ashka	annejhad				Power:	120 V, 60	Hz		Job Site:	EV01	
	SPECIFICATI												
	Specification:			ous Radiate	d Emission	S					Year:		
		ANSI C63.4									Year:	2001	
	LE CALCULA				E . 0.1					E			
	liated Emissions:	0								External Atte	nuation		
COMM	UCTED Emissions:	Adjusted Level	= Measured	Level + Transo	ucer Factor +	Jable Attenua	ation Factor + E	External Atten	Jator				
	talled in Interme	c Model 6820 r	orinter. Inter	mec Handheld	d Computer 70	0C in docki	ng station						
		-											
	PERATING N th 11, 802.11b 1,		PCS) in 700C	. Bluetooth 11	1 in 6820								
DEVIA No devia	TIONS FROM	I TEST STA	NDARD										
RESU												Run #	
Pass													3
24													
Other									Holy	Ale	m)	7	
									/ 0	Teste	ed By:		
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	00.0												
	70.0												
	60.0												_
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dBuV/m	40.0												_
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σ													
	30.0												
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	0.0												
	4000.000	5000.0	60 60	000.000	7000.000	8000	0.000 9	9000.000	10000.0	00 110	00.000	12000.000	
							MHz						
							1411 12						
								-		1			
	From	Anonlitude	Fester	Aminesette	Linicht	Dieto	External	Delaste	D -1	Distance	المحاج بنام ا	Casa Limit	Compared to
	Freq	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	Attenuation (dB)	Polarity	Detector	Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Spec. (dB)
L	(MHz) 12060.000							V-Horn	AV			авиv/m 54.0	
	12060.000		20.6 20.6	97.0 160.0	3.3 4.0	3.0 3.0			AV AV	0.0 0.0	45.8 45.5	54.0 54.0	-8.2 -8.5
	4824.000		20.6 3.4	126.0	4.0	3.0 3.0		H-Horn V-Horn	AV	0.0	45.5 42.9	54.0 54.0	-8.5 -11.1
	12060.000		3.4 20.6	97.0	3.3	3.0			PK	0.0	42.9 59.5	54.0 74.0	-11.1
	12060.000		20.6	97.0 160.0	3.3 4.0	3.0 3.0			PK PK	0.0	59.5 59.3	74.0	-14.5 -14.7
	4824.000		3.4	81.0	4.0	3.0			AV	0.0	38.4	54.0	-14.7
	4824.000		3.4	81.0	1.3	3.0			PK	0.0	56.1	54.0 74.0	-15.0
	4824.000		3.4		1.3	3.0			PK	0.0	56.0	74.0	-18.0
	.52 1.000	02.0	0.7	120.0		0.0	0.0			0.0	00.0	7 1.0	10.0

	IORTHWEST					R	A	D	A	L E	ED	E	EN	115	SS	SIC	10	NS [DAT	Ά	SH	E	ΕÌ				REV df4.13 05/06/2004
			8520	-0008	BO																	Wo			ITRM		
S	Serial Nu	imber: tomer:	Intor	mac	Tool	hnol	onio	e C	ornor	ation	.											Tom		Date: ture:	05/14	/04	
-		ndees:			100		ogie	3 01	por																37%		
(Cust. Re			-																	Barom						
		ed by:		Ash	Ikan	nejh	ad									Pov	ver:	120 V, 6	0 Hz				Job	Site:	EV01		
	SPECIF																										
	Specific	cation: ethod:) Spi	ILIO	us R	adiat	ed E	missi	ion	S												2003 2001		
SAMP					.4																			rear:	2001		
					:h = N	leasur	red Le	evel +	- Anteni	na Fa	ctor + C	Cabl	e Fac	tor - Ai	mplifi	ier Ga	in + D	Distance Ad	justment F	actor	+ External A	ttenu	ation				
																		xternal Atte									
	IENTS																										
	talled in				0 prir	iter. I	ntern	nec F	landhe		ompute	r 70	UC IN	docki	ng s	tation											
	of ERA 1				PCS)	in 70	0C. I	Bluet	ooth 68	3 in 6	820																
	TIONS	FROM	I TES	T ST	AND	DAR	ו																				
No devi																_					_				D		
RESU Pass	LTS																								Run #)
r ass																											2
Other			_	-	_	-	_	_		_		_	_		_					_		_	-	-			
																			Ho	ly	A	lin	\mathcal{N})		
																					Tes	sted	By:				
	80.0																										
		+			_	-		_		-		-			-					_			_				++
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dBuV/m																											
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	10.0																										
	10.0																										
	0.0							_							-					-		-					
	400	0.000	5	5000	.000)	60	00.0	000	7	0.000	000		800	0.00	00	g	000.000	100	00.0	000 11	1000	0.000)	12000	0.000	
															Μ	lHz											
<u> </u>					1					T		T				Extern			- T		Distance	<u> </u>					Compared to
	Freq		Ampl	litude		Factor	r	Az	imuth	1	Height		Dist	ance		Extern ttenua		Polarity	Dete	ctor	Adjustmer		Adjus	sted	Spec.	Limit	Spec.
	(MHz)		(dB	uV)		(dB)		(de	grees)	(r	meters)		(me	eters)		(dB)					(dB)		dBu\	//m	dBu		(dB)
		07.000		26.7			1.0		47.0			.9		3.0			0.0	V-Horn				.0		37.7		54.0	-16.3
		07.000		26.5			1.0		163.0			.3		3.0			0.0	H-Horn				.0		37.5		54.0	-16.5
)7.000)7.000		40.3 40.0			1.0 1.0		163.0 47.0			.3 .9		3.0 3.0			0.0 0.0	H-Horn V-Horn				.0 .0		51.3 51.0		74.0 74.0	-22.7 -23.0





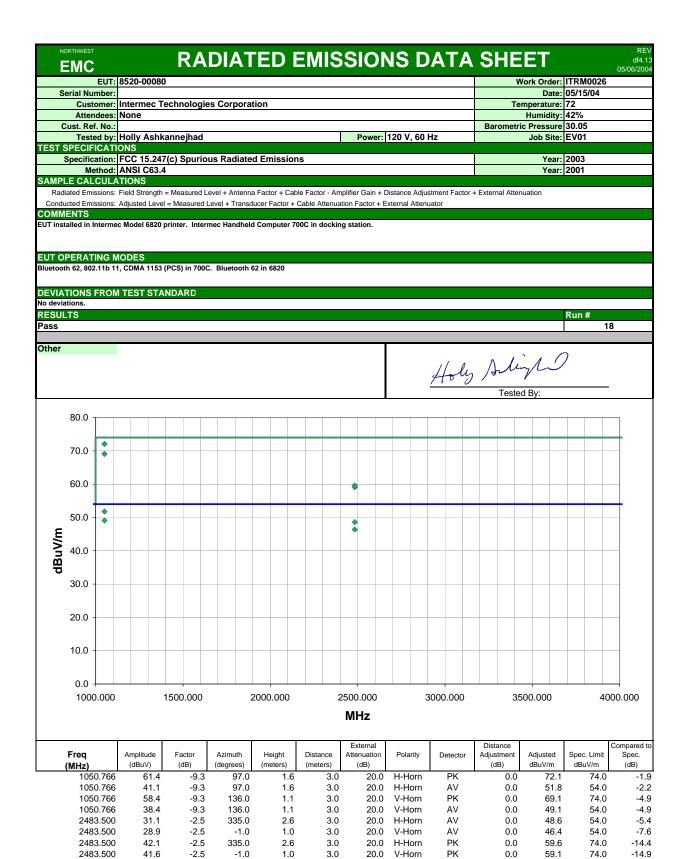


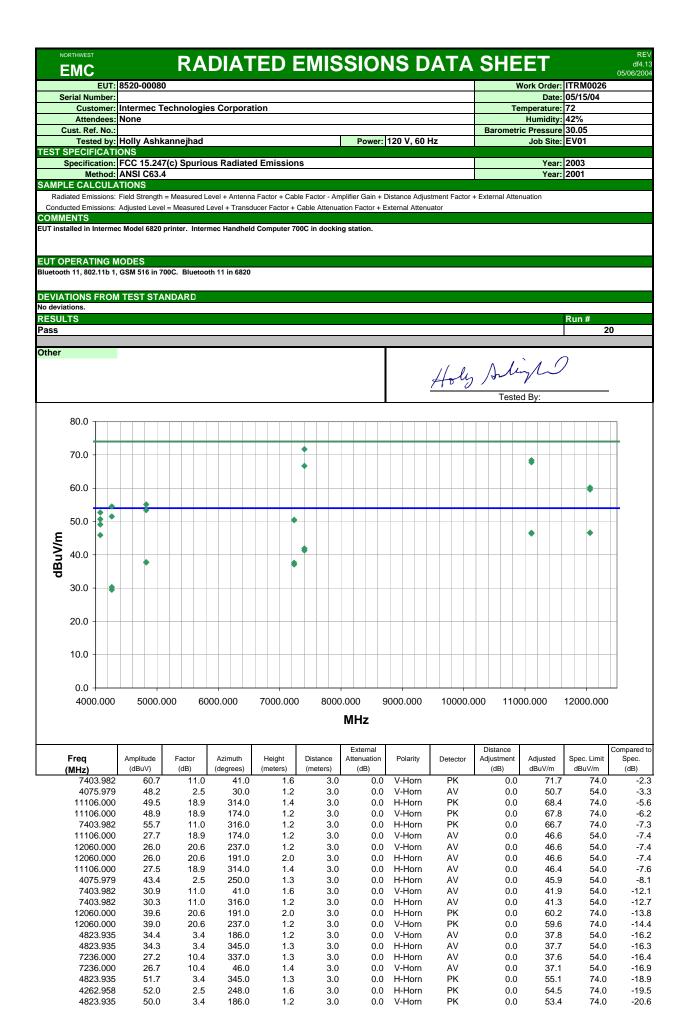
NORTHWEST				F	RA	DIA	TEC) E	EMIS	SS	SIC	DI	NS	S	D	AT	Ά	SH		E				REV df4.13 05/06/2004
E	UT:	8520-	00080)															V	Vork O	rder:	ITRM00	26	
Serial Num																						05/15/0	4	
				echno	ologie	es Corpor	ation												Те	mpera				
Attende		None																Barra				42%		
Cust. Ref. Tested		Don L	Jaac								Bou		120	NV	60 H	-		Baror	netr			30.05 EV01		
TEST SPECIFIC			laas								Pov	ver:	120	, v ,	00 F	Z				JOD	Site:	EVUI		
Specificat			Part 1	5.247	(c)															,	(ear:	2003		
			C63.4		(•)																	1992		
SAMPLE CALC																								
Radiated Emiss	ions:	Field St	trength	= Meas	sured L	evel + Anten	na Factor ·	+ Cabl	e Factor - A	mpli	fier Ga	in + I	Dista	nce	Adjust	ment F	actor -	F External	Atter	nuation				
Conducted Emiss	ions:	Adjuste	ed Leve	= Mea	sured	Level + Trans	ducer Fac	tor + C	Cable Attenu	Jatio	n Facto	or + E	Exterr	nal A	Attenua	ator								
COMMENTS																								
EUT installed in Inte	erme	c Mode	el 6820	printer	. Inter	mec Handhe	ld Compu	iter 70	0C in dock	ing s	station													
EUT OPERATIN Bluetooth 79, 802.1				ellular)	in 700	C. Bluetoot	h 79 in 68	20																
DEVIATIONS F	ROM	TEST	T STA	NDA	RD																			
No deviations.								_														-		
RESULTS																						Run #	4.4	
Pass																							14	,
Other	-												<u> </u>						_					
																/.	Janit.	1 april	2					
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	ſ		I								Extern				Ţ			Distan						Compared to
Freq		Ampli		Fac		Azimuth	Heigh		Distance	A	ttenuat	tion	P	Polari	ity	Dete	ctor	Adjustm	ent	Adjus		Spec. Lir		Spec.
(MHz)	0000	(dBi		(dl		(degrees)	(meter		(meters)		(dB)	0.0	L		11-		,	(dB)	<u> </u>	dBu\		dBuV/n		(dB)
22320.			26.5		9.2	0.0		1.0	3.0						Horr	A\			0.0		35.7		4.0	-18.3
22320. 19840.			26.4 23.4		9.2 8.9	0.0 0.0		1.0 1.0	3.0 3.0						Horr Horr	A۱ A۱			0.0 0.0		35.6 32.3		4.0 4.0	-18.4 -21.7
19840. 19840.			23.4 23.4		8.9 8.9	0.0		1.0	3.0						Horr	A\ A\			0.0		32.3 32.3		4.0 4.0	-21.7
22320.			23.4 36.5		8.9 9.2	0.0		1.0	3.0						Horr	Pł			0.0		32.3 45.7		4.0 4.0	-21.7
22320.			36.5		9.2 9.2	0.0		1.0	3.0						Horr	Pł			0.0		45.7 45.7		4.0 4.0	-28.3
			33.1		8.9	0.0		1.0	3.0					-	Horr	Pł			0.0		42.0		4.0	-32.0
	19840.00033.119840.00032.9					0.0		1.0	3.0						Horr	Pł			0.0		41.8		4.0	-32.2

	THWEST MC					RA	DI	A 1	٢E	D	ΞN		55	SIC	10	١S	Ē)/	ATA	S	HI	Ē	T				R df4 05/06/20	
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Ser	ial Numbe)5/15	/04		
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C	Attendee st. Ref. No		lone																	Be			umidi Pressi					
Cu	Tested b		an H	226										Bou	or	120 \	/ 60	H7		Ба	ome		lob Si					
TEST SP	PECIFICA			aas										FUW	er.	120	7,00	112					00 3	ite. L				
	ecificatio	_		art 1	5.24	7(c)																	Ye	ar: 2	2003			_
·	Metho					. ,																		ar: 1				
SAMPLE	CALCU	LAT	IONS																									
	ed Emissior			-													-			+ Exter	nal Att	enua	ion					
	ed Emissior	ns: A	djusted	Level	= Me	asured	Level +	Trans	ducer F	actor +	Cable	Attenu	atio	n Facto	r + E	xterna	l Atter	nuato	or									_
COMME EUT install		mec	Model	6820 1	arinto	r into	rmec Ha	ndhol	d Com	puter 7	00C in	docki	ina e	station														
LOT mstan		nec	Model	0020	Jinte	i. inte		nunei	u com	puter /	50C III	UUUK	ing a	station	•													
EUT OPE																												
Bluetooth	11, 802.11b	o 1, C	DMA 4	67 (ce	ellular) in 70	OC. Blue	etooth	n 11 in (6820																		
DEVIATI		ом -	rest	STA	NDA	RD																						
No deviatio																												_
RESULT Pass	S																							F	Run #	‡ 1{		
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1600	0.000	1	9000	.000		200	00.000		210	50.000	,	220	500	.000		∠30	00.0	00	240	.00.00	0	2	2000		,	200	00.000	
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-	req		Amplitu	Ide	Fo	ctor	Azim	utb	ЦA	ight	Diet	ance		Externat		Dol	arity	1	Detector		ance stment		djuste	d	Spec.	Limit	Compared Spec.	1 to
	/Hz)		(dBu			dB)	(degre			ters)		ters)		(dB)	1011	FUI	ыну		Delector		iB)		iBuV/n		dBu'		(dB)	
(14	19296.00	00		24.4	(*	8.0		0.0		1.0	,0	3.0)		0.0	H-Hig	h Ho	rr	AV		0.0			2.4		54.0		1.6
	19296.00			24.3		8.0		0.0		1.0		3.0				/-Higl			AV		0.0			2.3		54.0	-21	
	19296.00	00		34.7		8.0		0.0		1.0		3.0			0.0	/-Higl	h Ho	rr	PK		0.0			2.7		74.0	-31	
	19296.00	00	3	34.4		8.0		0.0		1.0		3.0)		0.0·	H-Hig	h Ho	rr	PK		0.0)	42	2.4		74.0	-31	1.6

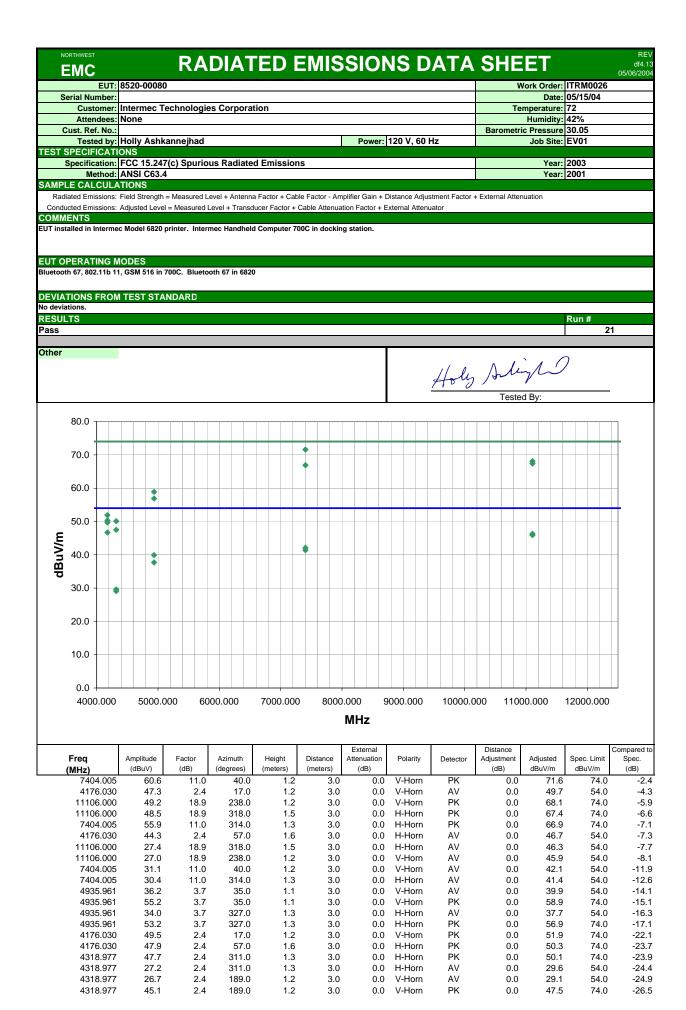
	THWEST					R	RA	D		\ T	Έ	D	E	Μ	15	SS	IC)	15	5	D	4	ΓА	S	H	E	E				0	REV df4.13 5/06/2004
		UT: 8	520·	-000	80																					W				M0026	i	
Ser	ial Numb Custor		ntor	mer	Ter	hnc	logi	<u> </u>	orn	ora	tion															То		Date: ature:		5/04		
	Attende									<u></u>																		nidity:		2		
Cu	st. Ref. N	_																						В	arom	netri		ssure				
TEST SP	Tested			наа	s												Pow	er:	120	۷,	60 H	z					Job	Site:	EVO	1		
	pecificati	on: F	CC			247((c)																					Year:	2003	3		
CAMPLE	Meth				3.4																							Year:	1992	2	_	
SAMPLE Radiat	ed Emissi				th =	Meas	ured	Level	+ Ant	tenna	a Fact	or + Ca	able	Facto	r - Ai	nplifie	r Gai	n + D	Distar	nce /	Adiust	nent	Factor	+ Exte	ernal /	Atten	uation					
Conduct	ed Emissi																															
COMME EUT instal		rmoo	Mode	1 6 9 1	0 pri	ntor	Into	rmoo	Hond	ihold	d Com	putor	700	Cind	ooki	ng ct	otion															
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				-																											_	
EUT OP Bluetooth					(PCS	5) in 7	700C.	Blue	etooth	n 68	in 682	20																				
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								1		-			Т			E	xterna	al						Di	stance	е					Cor	npared to
	req		Amp			Fact			zimut			eight		Distar		Atte	enuati		P	olari	ty	Det	ector	Adj	ustme			sted		c. Limit		Spec.
(N	/Hz) 22221.0	000	(dB	uV) 26.	6	(dB	³⁾ 9.0		egree (s) 0.0	(me	eters) 1.0		(mete	ers) 3.0		(dB)	0.0	/-Hi	ah I	Horr		٩V	I	(dB)	0.0	dBu	V/m 35.6		3uV/m 54.0	<u> </u>	(dB) -18.4
	22221.0			20. 26.			9.0			0.0		1.0			3.0						Horr		٩V).0).0		35.6		54.0		-18.4
				37.	8		9.0		(0.0		1.0	C		3.0)	(0.0	/-Hi	gh I	Horr	F	ΡK		C	0.0		46.8		74.0)	-27.2
	22221.000 37.8 22221.000 37.3						9.0		(0.0		1.0	J		3.0)	(U.O -	1-Hi	gh l	Horr	F	٩K		0	0.0		46.3		74.0		-27.7

	THWEST					R	A	DI/	1	Ē	D	ΞN	115	58	SIC	10	٧S	5 C)/	ATA	S	H	E	ΕT				05/	REV df4.13 06/2004
			8520-	0008	30																		W				10026		
Ser	ial Numb Custor		Intorn	200	Tool	anolo	aior	Corr	012	tion													Ton	D Inperat		05/15	5/04		
	Attende				Teci	more	gies	Corp	Jora	uon														Humi					
Cu	st. Ref. N	_																			Ba	rome				30.05	5		
	Tested			laas											Pov	ver:	120 \	/, 60) Hz					Job	Site:	EV01			
TEST SF																													
Sp	ecificati Moth		ANSI			47(C))																			2003 1992			
SAMPLE					.4																			- 1	ear.	1332			
	ed Emissi				h = N	leasure	ed Lev	vel + Ar	ntenn	a Facto	r + Cab	le Fac	tor - A	mpli	ifier Ga	in + [Distanc	e Adj	ustm	ent Factor	+ Exte	nal At	ttenu	uation					
	ed Emissi	ons: /	Adjuste	ed Lev	el = N	Aeasu	ed Le	evel + T	ranso	lucer F	actor +	Cable	Attenu	uatio	n Facto	or + E	xterna	I Atter	nuato	or									
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_						_									Extern		_			_		tance				_			pared to
	req		Ampli (dBi			Factor (dB)		Azimu (degree		Hei (me	ght ters)		ance ters)	A	Attenua (dB)	tion	Pol	arity		Detector		stmen dB)	nt	Adjus dBuV			. Limit uV/m		pec. dB)
(N	/Hz) 19296.0	000	(ubl	24.6	1;		3.0	(uegi ei	es) 0.0	(iiie	1.0	(ine	3.0)	()	0.0	H-Hig	h Ho	orr	AV	(лы) 0.	.0		32.6	UDU	54.0	(-21.4
	19296.0			24.0			3.0 3.0		0.0		1.0		3.0				/-Hig			AV		0.			32.5		54.0		-21.4
				35.1			3.0		0.0		1.0		3.0			0.0	/-Hig	h Ho	orr	PK		0.			43.1		74.0		-30.9
	19296.00035.19296.00034.						3.0		0.0		1.0		3.0	C		0.0	-Hig	h Ho	orr	PK		0.	0		42.9		74.0		-31.1



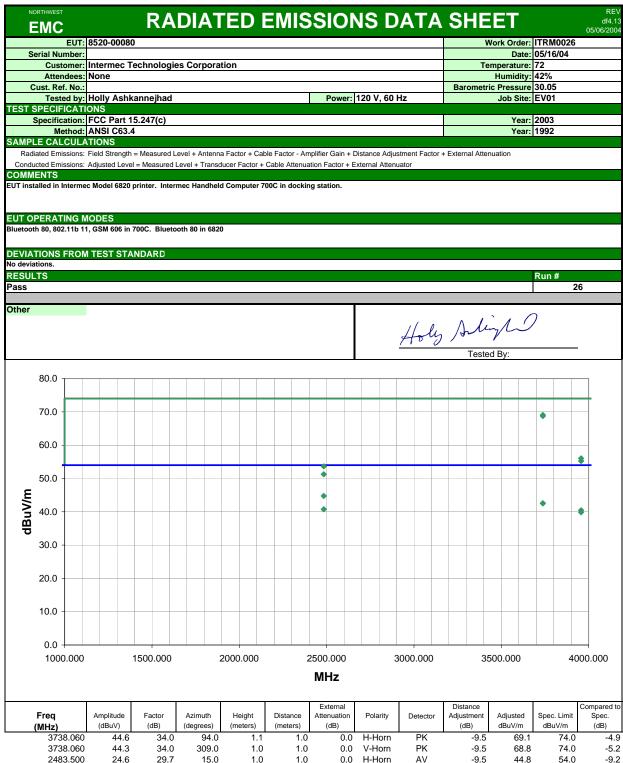


						External			Distance			Compared to
Freq	Amplitude	Factor	Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(MHz)	(dBuV)	(dB)	(degrees)	(meters)	(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
4075.979	50.2	2.5	30.0	1.2	3.0	0.0	V-Horn	PK	0.0	52.7	74.0	-21.3
4262.958	49.0	2.5	65.0	1.5	3.0	0.0	V-Horn	PK	0.0	51.5	74.0	-22.5
7236.000	40.1	10.4	46.0	1.4	3.0	0.0	V-Horn	PK	0.0	50.5	74.0	-23.5
7236.000	40.0	10.4	337.0	1.3	3.0	0.0	H-Horn	PK	0.0	50.4	74.0	-23.6
4262.958	27.8	2.5	248.0	1.6	3.0	0.0	H-Horn	AV	0.0	30.3	54.0	-23.7
4262.958	27.0	2.5	65.0	1.5	3.0	0.0	V-Horn	AV	0.0	29.5	54.0	-24.5
4075.979	46.6	2.5	250.0	1.3	3.0	0.0	H-Horn	PK	0.0	49.1	74.0	-24.9

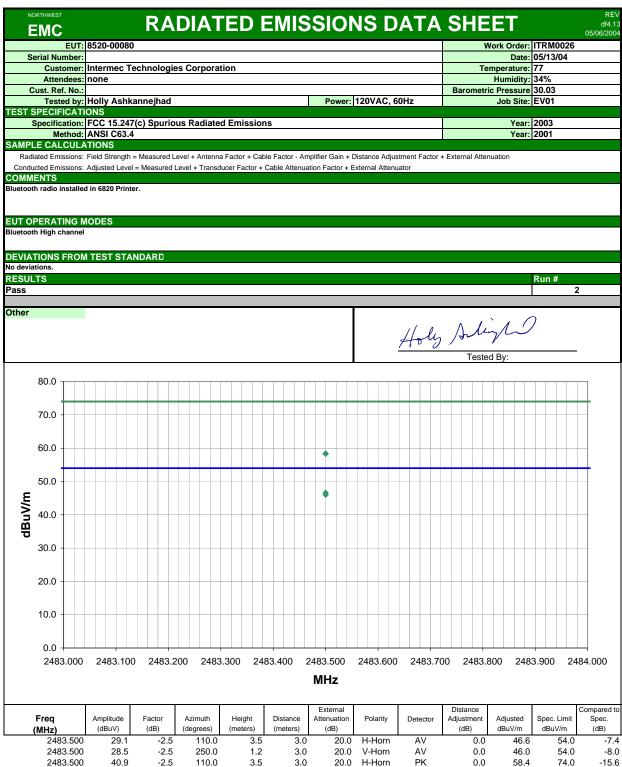


	THWEST MC		R/	ADIA	TED	EMIS	SSIO	NS C	ΑΤΑ	SHE	ET		REV df4.13 05/06/2004
	EUT	8520-00	080							V	Vork Order:	ITRM0026	
Ser	ial Number		T							-		05/15/04	
	Attendees		c lechnolo	gies Corpo	ration					Te	mperature: Humidity:		
Cu	st. Ref. No.									Barometr	ic Pressure		
			hkannejha	d			Power	: 120 V, 60	Hz		Job Site:	EV01	
	ECIFICAT		247(0) 6 mu	rious Radio	tod Emissio						Veen	2003	
5		ANSI C6		nous Raula	ted Emissio	15						2003	
SAMPLE	CALCUL												
			-		nna Factor + Ca					+ External Atter	nuation		
COMME		: Adjusted L	evel = Measure	ed Level + Tran	sducer Factor +	Cable Attenu	uation Factor +	External Atter	nuator				
		ec Model 68	20 printer. In	termec Handh	eld Computer 7	00C in dock	ing station.						
	ERATING I	MODES											
			n 700C. Blue	tooth 11 in 682	20								
		M TEST S	TANDARD										
No deviation RESULT												Run #	
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	00.000		13500.000		14500.000		15500.0	00	16500	0.000	1750	00.000	
1200									10000				
							External			Distance			Compared to
	req	Amplitud		Azimuth	Height	Distance	Attenuation	Polarity	Detector	Adjustment	Adjusted	Spec. Limit	Spec.
(N	14472.000	(dBuV)	(dB)	(degrees)		(meters)	(dB)			(dB)	dBuV/m	dBuV/m	(dB)
	14472.000 14472.000					3.(3.(AV AV	0.0 0.0	37.8 37.8	54.0 54.0	-16.2 -16.2
	14472.000) 41							PK	0.0	52.0		-22.0
	14472.000								PK	0.0	51.8	74.0	-22.2

	rhwest MC					R	A	DIAT	ΓEΓ)	ΞN	115	SS)[NS	5	D	A	T/	4	S	H	E	ΕÌ	Γ			05	REV df4.13 5/06/2004
Ser	l ial Num		8520	0-000	080										_									Wo			ITRM 05/15			
Ser			Inter	med	: Te	chnol	ogie	s Corpora	tion																pera	ature:	72	/04		
Cur	Attend st. Ref.		Non	е																	_	Ba	rom			hidity:	42% 30.05			
	Teste	d by:		y As	hka	innejh	ad							Pow	er:	120	۷,	60 H	łz			Dd	TOTILE	suric			EV01			
TEST SP	ECIFIC ecifica			Par	t 15	247(0	<u>۱</u>																			Voar	2003			
	Met	hod:	ANS	I C6		.247(0	/																				1992			
SAMPLE					ath =	Measu	edle	evel + Antenn	a Factor	+ Cah	le Eac	tor - Ai	mplifie	er Gai	n + [Dista	nce A	Adius	tmen	t Fac	or +	Exter	nal A	Itenu	ation					
Conducte	ed Emiss				-			evel + Transo										-		t i aci	101 +	LAIG	nai A	lienu	auon					
COMME EUT install		terme	ec Mod	lel 68	20 p	rinter.	ntern	nec Handhel	d Compu	uter 7	DOC in	docki	ng st	ation.																
EUT OPE					n 701	OC. Blu	etoot	h 11 in 6820																						
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RESULT	S																										Run		~	
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	0.000					_			2.00															-				200		
F	req			olitude	9	Facto	r	Azimuth	Heig			ance		Externation		Р	olarit	ty	De	etecto	r	Adju	tance stmer	nt	Adju		Spec.		5	npared to Spec.
	IHz) 19314	200		BuV) 27.	3	(dB)	8.0	(degrees) 28.0	(mete	rs) 1.0	(me	ters) 3.0		(dB)	0.0	Hi	ah I	Horr		AV		(0	dB) 0.	0	dBu	V/m 35.3	dBu	V/m 54.0		(dB) -18.7
	19314	.200		25	.8		8.0	31.0		1.1		3.0)	(0.0	√-Hi	gh ł	Horr		AV			0.	0		33.8		54.0		-20.2
	19675 19296			25 25			8.6 8.0	15.0 361.0		1.1 1.0		3.0 3.0						Horr Horr		AV AV			0. 0.			33.8 33.3		54.0 54.0		-20.2 -20.7
	20361			24			8.9	-1.0		1.0		3.0						Horr		AV			0.			33.1		54.0		-20.7
	20361	.140		24	.1		8.9	18.0		1.0		3.0)	(0.0	H-Hi	igh I	Horr		AV			0.	0		33.0		54.0		-21.0
	19296 19675			24 24			8.0 8.6	95.0 -1.0		1.1 1.0		3.0 3.0						Horr Horr		AV AV			0. 0.			32.8 32.7		54.0 54.0		-21.2 -21.3
	18522			24			8.6 7.0	-1.0		1.0		3.0						Horr		AV AV			0.			32.7 32.0		54.0 54.0		-21.3 -22.0
	18522	.350		24	.7		7.0	-1.0		1.0		3.0)	(0.0	-l−Hi	igh I	Horr		AV			0.	0		31.7		54.0		-22.3
	19675			40			8.6	15.0		1.1		3.0						Horr		PK			0.			49.2		74.0		-24.8
	20361 19675			38. 38.			8.9 8.6	-1.0 -1.0		1.0 1.0		3.0 3.0						Horr Horr		PK PK			0. 0.			47.7 47.2		74.0 74.0		-26.3 -26.8
	19296	.000		38	.8		8.0	95.0		1.1		3.0)	(0.0	-l−Hi	igh I	Horr		ΡK			0.	0		46.8		74.0		-27.2
	19314			38			8.0	31.0		1.1		3.0					•	Horr		PK			0.			46.7		74.0		-27.3
	19296 19314			38. 38.			8.0 8.0	361.0 28.0		1.0 1.0		3.0 3.0						Horr Horr		PK PK			0. 0.			46.3 46.3		74.0 74.0		-27.7 -27.7
	20361			36			8.9	18.0		1.0		3.0						Horr		PK			0.			45.8		74.0		-28.2
	18522			38			7.0	-1.0		1.0		3.0					•	Horr		PK			0.			45.4		74.0		-28.6
	18522	.350		37.	.7		7.0	-1.0		1.0		3.0	,	(U.U	п-Нi	gn I	Horr		ΡK			0.	U		44.7		74.0		-29.3



3738.060	44.6	34.0	94.0	1.1	1.0	0.0	H-Horn	PK	-9.5	69.1	74.0	-4.9
3738.060	44.3	34.0	309.0	1.0	1.0	0.0	V-Horn	PK	-9.5	68.8	74.0	-5.2
2483.500	24.6	29.7	15.0	1.0	1.0	0.0	H-Horn	AV	-9.5	44.8	54.0	-9.2
3738.060	18.1	34.0	309.0	1.0	1.0	0.0	V-Horn	AV	-9.5	42.6	54.0	-11.4
3738.060	18.1	34.0	94.0	1.1	1.0	0.0	H-Horn	AV	-9.5	42.6	54.0	-11.4
2483.500	20.6	29.7	336.0	1.1	1.0	0.0	V-Horn	AV	-9.5	40.8	54.0	-13.2
3957.060	15.1	34.9	-2.0	1.0	1.0	0.0	V-Horn	AV	-9.5	40.5	54.0	-13.5
3957.060	14.5	34.9	321.0	1.0	1.0	0.0	H-Horn	AV	-9.5	39.9	54.0	-14.1
3957.060	30.7	34.9	-2.0	1.0	1.0	0.0	V-Horn	PK	-9.5	56.1	74.0	-17.9
3957.060	29.9	34.9	321.0	1.0	1.0	0.0	H-Horn	PK	-9.5	55.3	74.0	-18.7
2483.500	33.5	29.7	15.0	1.0	1.0	0.0	H-Horn	PK	-9.5	53.7	74.0	-20.3
2483.500	31.1	29.7	336.0	1.1	1.0	0.0	V-Horn	PK	-9.5	51.3	74.0	-22.7



V-Horn

20.0

ΡK

0.0

2483.500

40.8

-2.5

250.0

1.2

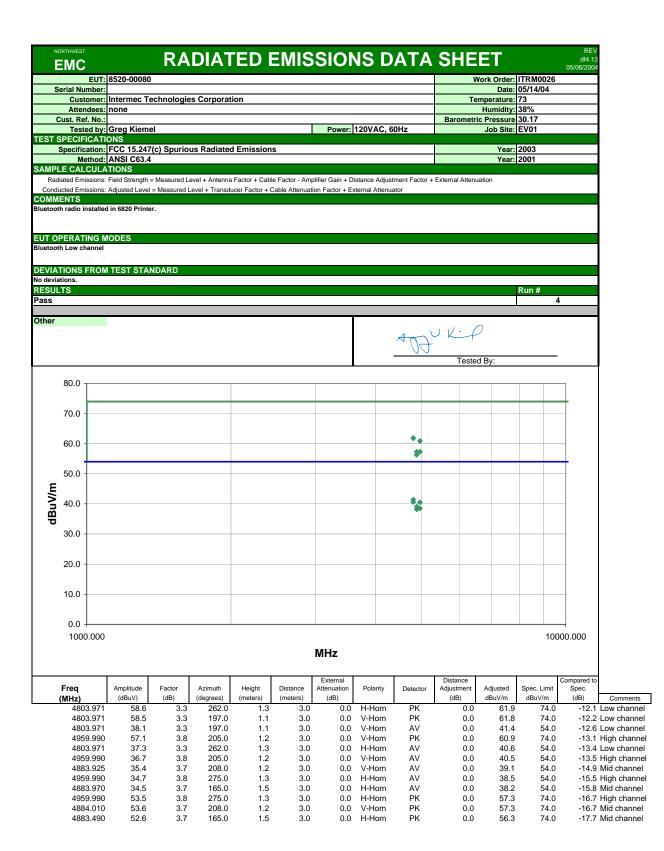
3.0

58.4 74.0

74.0

-15.7

58.3



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Intermec 6820 Printer with 700C





