

# **Exhibit L: AC Powerline Conducted Emissions**

**FCC ID: HN2PC24-11**

## 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:

Low
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Mid
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High
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### Operating Modes Investigated:

Continuous transmit with modulation
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### Data Rates Investigated:

Maximum
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### Output Power Setting(s) Investigated:

Maximum
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### Power Input Settings Investigated:

5VDC input to module from AC Adapter attached to 120V/60Hz mains
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### Frequency Range Investigated

Start Frequency	150 kHz	Stop Frequency	30 MHz
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### Software\Firmware Applied During Test

Exercise software	FCCTST24.BIN	Version	Unknown
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#### Description

The system was tested using the FCCTST24.BIN software to exercise the functions of the device during the testing.
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## Equipment Modifications

No EMI suppression devices were added or modified. The EUT was tested as delivered.

## EUT and Peripherals

Description	Manufacturer	Model/Part Number	Serial Number
EUT-PCMCIA Card	INTERMEC	P24-11-FC/R	02UT34371446
Extender Card	Swart Interconnect	EXT-PCM-68-SM3	060501-212
Host Device	INTERMEC	2435	27300200205
5VDC Adapter	INTERMEC	0-302029-01	N/A
Antenna	INTERMEC	070143-001	N/A

## Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
5VDC power	No	1.9	PA	5VDC Adapter	EUT

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

## Measurement Equipment

Description	Manufacturer	Model	Identifier	Last Cal	Interval
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	03/19/2002	12 mo
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQF	03/19/2002	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	06/04/2002	12 mo
High Pass Filter	TTE	H97-100k-50-720B	HFC	12/11/2001	12 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 host equipment that could be connected to the AC power line. Therefore, the measurements were made on the 5VDC adapter used to power the EUT. The 5VDC adapter contained no EMC suppression devices. 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 C63.4-1992.

Completed by:



EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
Year:	1997
Year:	1992

**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**

Antenna 070143-001. Tested 120VAC/60Hz power to 5VDC converter.

**EUT OPERATING MODES**

modulated, low channel

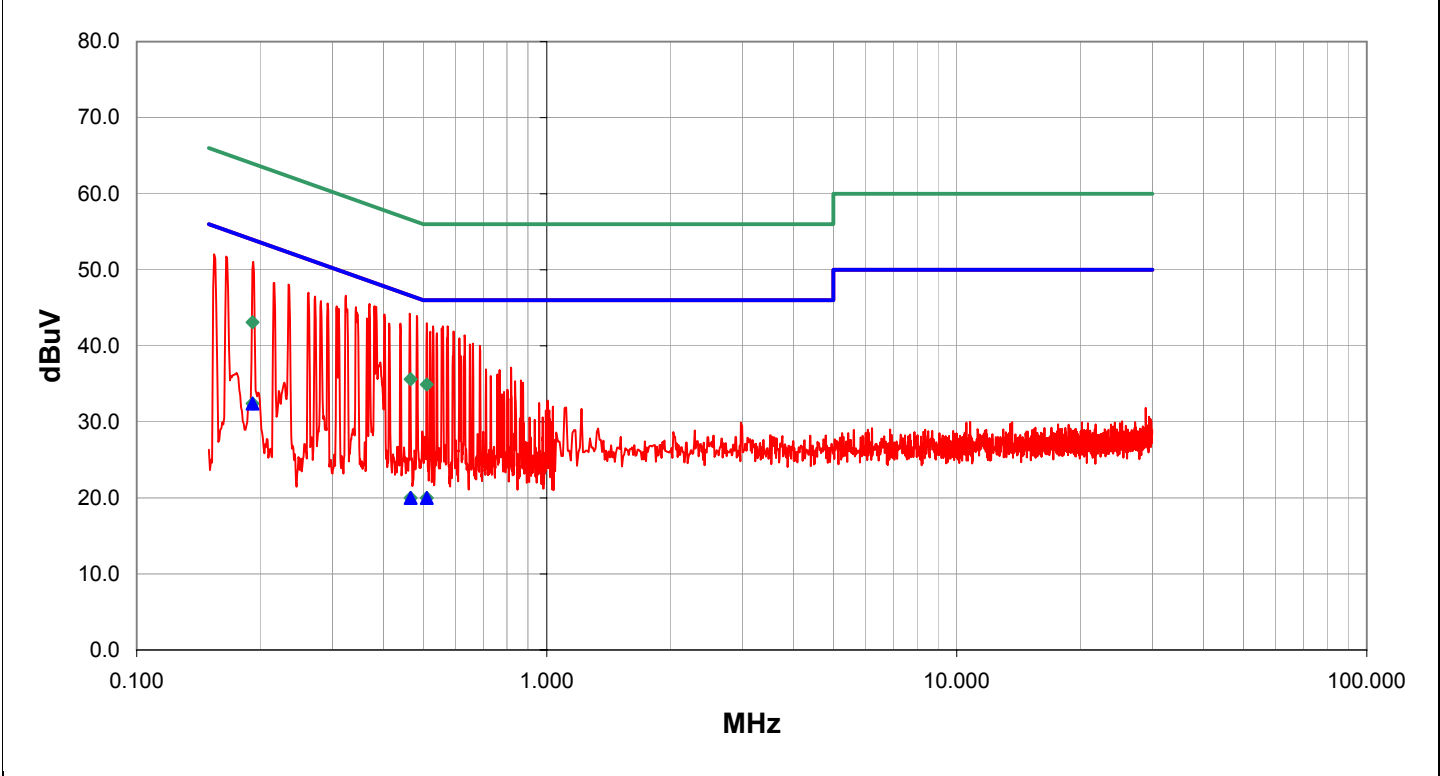
**DEVIATIONS FROM TEST STANDARD**

No deviations.

<b>RESULTS</b>	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	12.4	0.0	0.0	20.0	AV	32.4	54.0	-21.6
0.510	0.0	0.0	0.0	20.0	AV	20.0	46.0	-26.0
0.466	0.0	0.0	0.0	20.0	AV	20.0	46.6	-26.6
0.192	23.1	0.0	0.0	20.0	QP	43.1	64.0	-20.9
0.466	15.6	0.0	0.0	20.0	QP	35.6	56.6	-21.0
0.510	14.9	0.0	0.0	20.0	QP	34.9	56.0	-21.1

EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
Year:	1997
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**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**

Antenna 070143-001. Tested 120VAC/60Hz power to 5VDC converter.

**EUT OPERATING MODES**

modulated, low channel

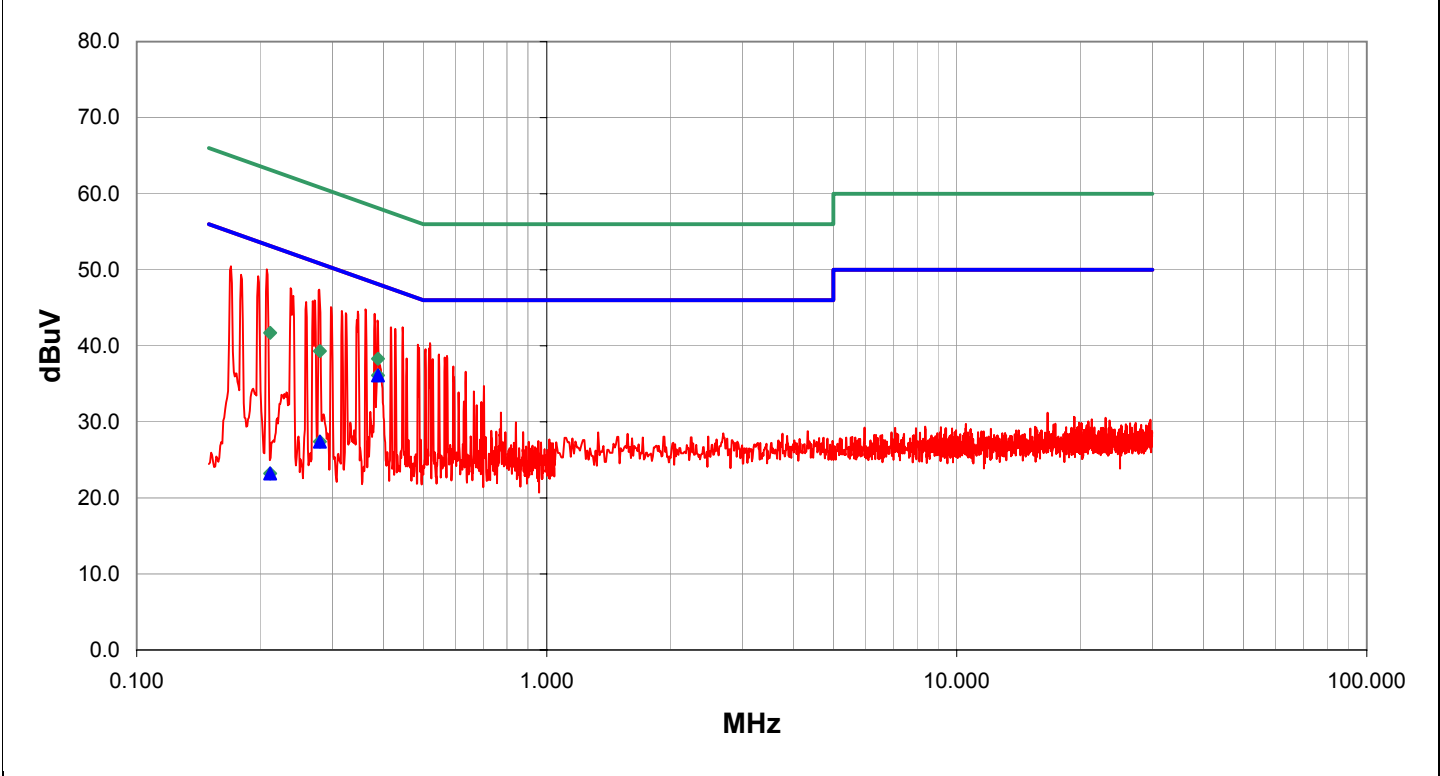
**DEVIATIONS FROM TEST STANDARD**

No deviations.

<b>RESULTS</b>	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)
0.388	16.1	0.0	0.0	20.0	AV	36.1	48.1	-12.0
0.280	7.4	0.0	0.0	20.0	AV	27.4	50.8	-23.4
0.211	3.2	0.0	0.0	20.0	AV	23.2	53.1	-29.9
0.388	18.3	0.0	0.0	20.0	QP	38.3	58.1	-19.8
0.211	21.7	0.0	0.0	20.0	QP	41.7	63.1	-21.4
0.280	19.3	0.0	0.0	20.0	QP	39.3	60.8	-21.5

# CONDUCTED EMISSIONS DATA SHEET

EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
Year:	1997
Year:	1992

**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**

Antenna 070143-001. Tested 120VAC/60Hz power to 5VDC converter.

**EUT OPERATING MODES**

modulated, mid channel

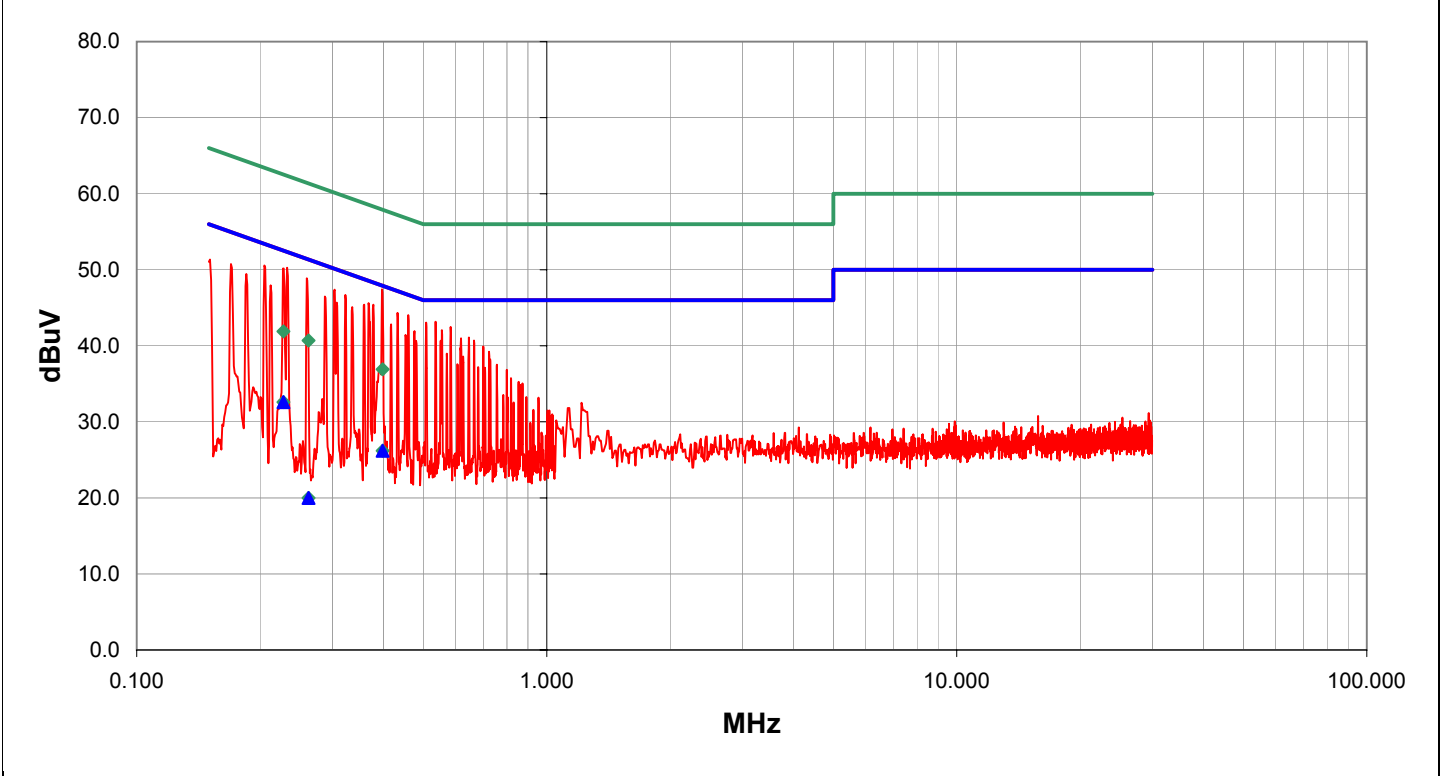
**DEVIATIONS FROM TEST STANDARD**

No deviations.

<b>RESULTS</b>	Line	Run #
Pass	L1	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)
0.228	12.6	0.0	0.0	20.0	AV	32.6	52.5	-19.9
0.398	6.2	0.0	0.0	20.0	AV	26.2	47.9	-21.7
0.262	0.0	0.0	0.0	20.0	AV	20.0	51.4	-31.4
0.228	21.9	0.0	0.0	20.0	QP	41.9	62.5	-20.6
0.262	20.7	0.0	0.0	20.0	QP	40.7	61.4	-20.7
0.398	16.9	0.0	0.0	20.0	QP	36.9	57.9	-21.0

EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
Year:	1997
Year:	1992

**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**  
 Antenna 070143-001. Tested 120VAC/60Hz power to 5VDC converter.

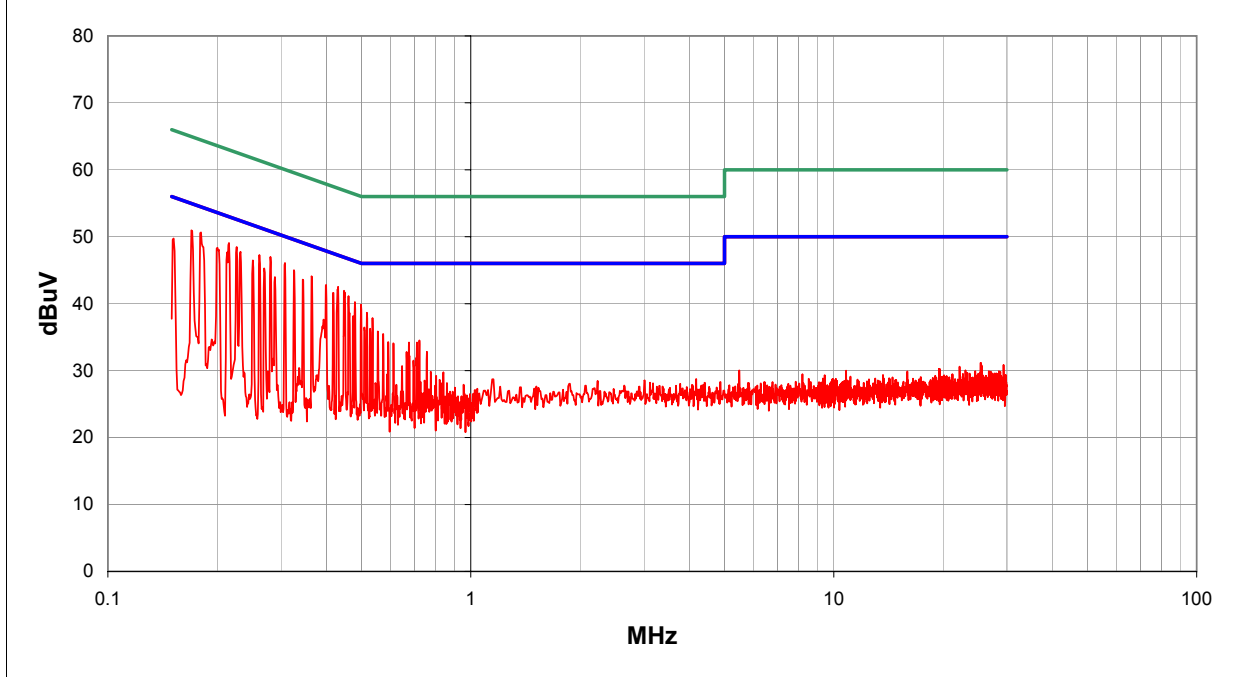
**EUT OPERATING MODES**  
 modulated, mid channel

**DEVIATIONS FROM TEST STANDARD**  
 No deviations.

<b>RESULTS</b>	Line	Run #
Pass	N	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)
0.181	30.5	0.0	0.2	20.0		50.7	54.5	-3.8
0.281	26.8	0.0	0.2	20.0		47.0	50.8	-3.8
0.216	28.9	0.0	0.2	20.0		49.1	53.0	-3.9
0.308	25.9	0.0	0.2	20.0		46.1	50.0	-3.9
0.170	30.8	0.0	0.1	20.0		50.9	55.0	-4.0
0.262	27.1	0.0	0.2	20.0		47.3	51.4	-4.1
0.227	28.3	0.0	0.2	20.0		48.5	52.6	-4.1
0.364	23.9	0.0	0.2	20.0		44.1	48.6	-4.5
0.326	24.8	0.0	0.2	20.0		45.0	49.6	-4.6
0.232	27.6	0.0	0.2	20.0		47.8	52.4	-4.6
0.431	22.3	0.0	0.2	20.0		42.5	47.2	-4.7
0.448	21.7	0.0	0.2	20.0		41.9	46.9	-5.0
0.399	22.6	0.0	0.2	20.0		42.8	47.9	-5.0
0.200	28.2	0.0	0.2	20.0		48.4	53.6	-5.2
0.251	26.3	0.0	0.2	20.0		46.5	51.7	-5.3
0.344	23.4	0.0	0.2	20.0		43.6	49.1	-5.5
0.461	20.9	0.0	0.2	20.0		41.1	46.7	-5.5
0.270	25.1	0.0	0.2	20.0		45.3	51.1	-5.8
0.418	21.4	0.0	0.2	20.0		41.6	47.5	-5.9
0.479	20.0	0.0	0.2	20.0		40.2	46.3	-6.1

# CONDUCTED EMISSIONS DATA SHEET

EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
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**COMMENTS**

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**EUT OPERATING MODES**

modulated, high channel

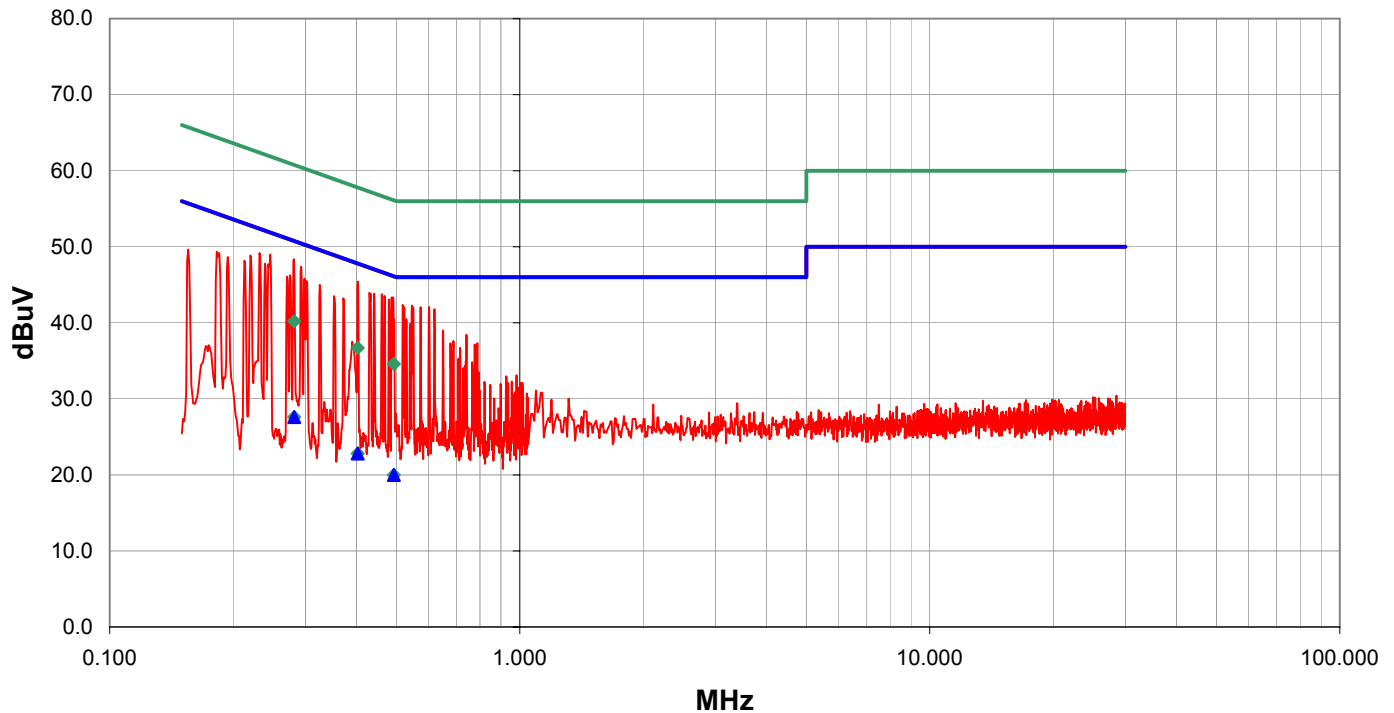
**DEVIATIONS FROM TEST STANDARD**

No deviations.

<b>RESULTS</b>	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)
0.282	7.6	0.0	0.0	20.0	AV	27.6	50.8	-23.2
0.403	2.8	0.0	0.0	20.0	AV	22.8	47.8	-25.0
0.493	0.0	0.0	0.0	20.0	AV	20.0	46.1	-26.1
0.282	20.2	0.0	0.0	20.0	QP	40.2	60.8	-20.6
0.403	16.7	0.0	0.0	20.0	QP	36.7	57.8	-21.1
0.493	14.6	0.0	0.0	20.0	QP	34.6	56.1	-21.5



EUT:	PC24-11-FC/R	Work Order:	INMC0036
Serial Number:	02UT34371446	Date:	11/21/02
Customer:	INTERMEC Corporation	Temperature:	72
Attendees:	None	Humidity:	41%
Cust. Ref. No.:	None	Barometric Pressure:	30.12
Tested by:	Dan Haas	Power:	5VDC
		Job Site:	EV01

<b>TEST SPECIFICATIONS</b>	
Specification:	CISPR22 Class B
Method:	ANSI C63.4
Year:	1997
Year:	1992

**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**

Antenna 070143-001. Tested 120VAC/60Hz power to 5VDC converter.

**EUT OPERATING MODES**

modulated, high channel

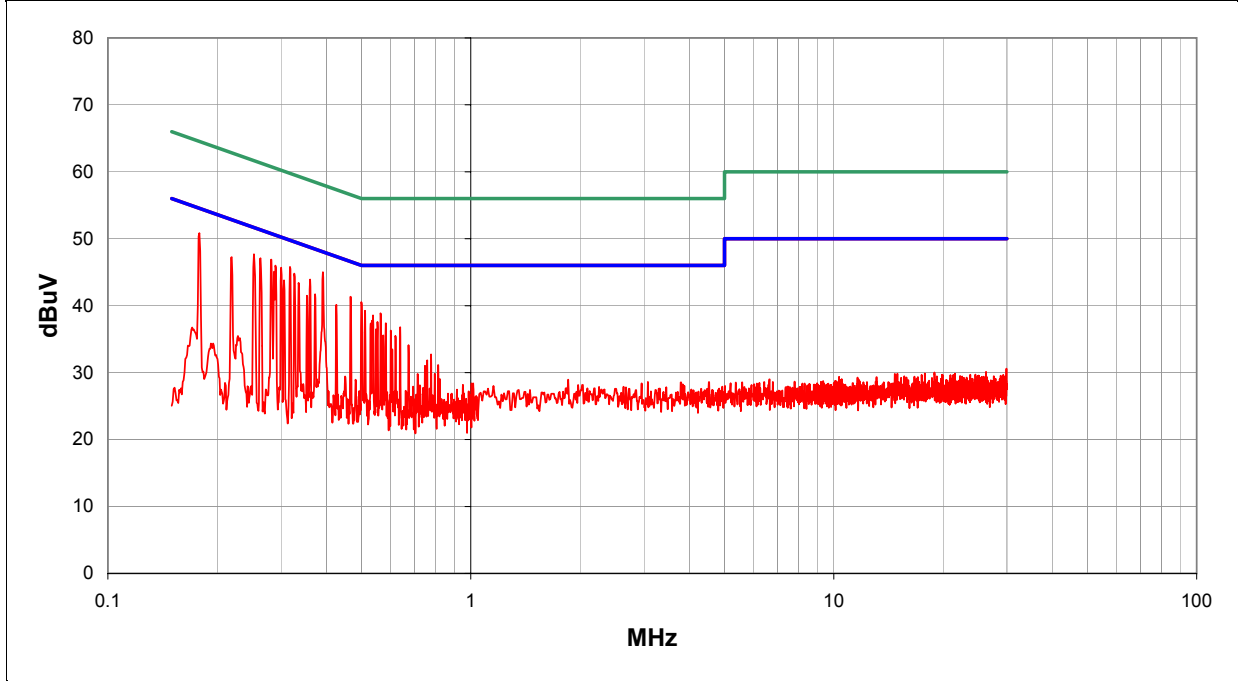
**DEVIATIONS FROM TEST STANDARD**

No deviations.

<b>RESULTS</b>	Line	Run #
Pass	N	6

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)
0.391	24.8	0.0	0.2	20.0		45.0	48.0	-3.0
0.179	30.7	0.0	0.2	20.0		50.9	54.5	-3.7
0.282	26.7	0.0	0.2	20.0		46.9	50.7	-3.9
0.317	25.6	0.0	0.2	20.0		45.8	49.8	-4.0
0.253	27.5	0.0	0.2	20.0		47.7	51.7	-4.0
0.263	26.9	0.0	0.2	20.0		47.1	51.3	-4.2
0.300	25.5	0.0	0.2	20.0		45.7	50.2	-4.5
0.290	25.8	0.0	0.2	20.0		46.0	50.5	-4.6
0.326	24.6	0.0	0.2	20.0		44.8	49.5	-4.7
0.361	23.7	0.0	0.2	20.0		43.9	48.7	-4.8
0.467	21.1	0.0	0.2	20.0		41.3	46.6	-5.2
0.499	20.3	0.0	0.2	20.0		40.5	46.0	-5.5
0.287	24.9	0.0	0.2	20.0		45.1	50.6	-5.5
0.219	27.1	0.0	0.2	20.0		47.3	52.8	-5.6
0.335	23.2	0.0	0.2	20.0		43.4	49.3	-5.9
0.306	23.6	0.0	0.2	20.0		43.8	50.1	-6.3
0.372	21.5	0.0	0.2	20.0		41.7	48.4	-6.7
0.511	19.0	0.0	0.3	20.0		39.3	46.0	-6.7
0.564	18.6	0.0	0.3	20.0		38.9	46.0	-7.1
0.426	19.9	0.0	0.2	20.0		40.1	47.3	-7.2