

---

## **REPORT ON**

Limited FCC CFR 47: Parts 22 and 24  
and Industry Canada RSS-132 and 133 Testing  
of a Intermec CN3 Mobile Computer

**COMMERCIAL-IN-CONFIDENCE**

**Report No OR615435/01 Issue 3**

**September 2006**

---



Product Service

Competence. Certainty. Quality

COMMERCIAL-IN-CONFIDENCE

TUV Product Service Ltd, Octagon House, Concorde Way, Segensworth North,  
Fareham, Hampshire, United Kingdom, PO15 5RL  
Tel: +44 (0) 1489 558100. Website: [www.tuvps.co.uk](http://www.tuvps.co.uk); [www.babt.com](http://www.babt.com)

**REPORT ON**

Limited FCC CFR 47: Parts 22 and 24 and Industry Canada  
RSS-132 and 133 Testing of an Intermec CN3 Mobile Computer.

Report No OR615435/01 Issue 3

September 2006


**PREPARED FOR**

Intermec Technologies Corporation  
550 Second Street S.E.  
CEDAR RAPIDS  
Iowa 52401  
USA

**PREPARED BY**

  
J Plummer  
Technical Author

**APPROVED BY**

  
J Adams  
Authorised Signatory

**DATED**

28<sup>th</sup> September 2006


**This report has been re-issued as Issue 3 to include additional testing.**

---

**ENGINEERING STATEMENT**

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47: Parts 22 and 24. The sample tested was found to comply with the requirements defined in the applied rules.


Test Engineers;

  
R Carr

  
A Guy



  
P Harrison

  
A Hubbard

## CONTENTS

Section	Page No
<b>1</b>	<b>REPORT SUMMARY</b>
1.1	Status ..... 4
1.2	Introduction..... 5
1.3	Brief Summary of Results ..... 7
1.4	Product Information ..... 9
1.5	Test Conditions ..... 11
1.6	Deviations from the Standard ..... 11
1.7	Modification Record ..... 11
1.8	Alternative Test Site ..... 11
<b>2</b>	<b>TEST DETAILS</b>
	<b>FCC Part 22 and Industry Canada RSS-132</b>
2.1	Effective Radiated Power (Radiated) ..... 13
2.2	Radiated Spurious Emissions ..... 15
	<b>FCC Part 24 and Industry Canada RSS-133</b>
2.3	Maximum Peak Output Power (Radiated) ..... 18
2.4	Radiated Spurious Emissions ..... 20
<b>3</b>	<b>TEST EQUIPMENT</b>
3.1	Test Equipment ..... 24
3.2	Measurement Uncertainty ..... 26
<b>4</b>	<b>ACCREDITATION, DISCLAIMERS AND COPYRIGHT</b>
4.1	Accreditation, Disclaimers and Copyright ..... 28

## **SECTION 1**

### **REPORT SUMMARY**

Limited FCC CFR 47: Parts 22 and 24  
and Industry Canada RSS-132 and 133 Testing  
of a Intermec CN3 Mobile Computer

## 1.1 STATUS

<b>Equipment Under Test</b>	CN3 Mobile Computer.
<b>Objective</b>	To undertake measurements to determine the Equipment Under Test's (EUT's) compliance with the specification.
<b>Name and Address of Client</b>	Intermec Technologies Corporation 550 Second Street S.E. CEDAR RAPIDS Iowa 52401 USA
<b>Type</b>	Reference platform for system integrators
<b>Part Number</b>	CN3
<b>Serial Number</b>	21590600241
<b>Hardware Version</b>	004
<b>Software Version</b>	15096
<b>Declared Variants</b>	None
<b>Test Specification/Issue/Date</b>	FCC CFR 47: Part 22, Subpart H: 2004 FCC CFR 47: Part 24, Subpart D: 2004 RSS-132: Issue 3: 2002 RSS-133: Issue 3: 2005
<b>Number of Items Tested</b>	One
<b>Security Classification of EUT</b>	Commercial-in-Confidence
<b>Incoming Release Date</b>	Declaration of Build Status 20 <sup>th</sup> February 2006
<b>Disposal Reference Number Date</b>	Held pending disposal Not Applicable Not Applicable
<b>Order Number Date</b>	7500004765 10 <sup>th</sup> August 2006
<b>Start of Test</b>	22 <sup>nd</sup> August 2006
<b>Finish of Test</b>	5 <sup>th</sup> September 2006
<b>Related Documents</b>	ANSI C63.4: 2001 RSS-212, Issue 3: 1999 SRSP-503, Issue 6: 2003 SRSP-510, Issue 3: 2003

## 1.2 INTRODUCTION

The information contained within this report is intended to show limited verification of compliance of the Intermec CN3 Mobile Computer to the requirements of FCC Specification Parts 22 and 24 and Industry Canada Radio Specifications RSS-132 and RSS-133.

Testing has been performed under the following site accreditations

FCC Accreditation  
90987 Maplewood, Basingstoke Test Laboratory

Industry Canada Accreditation  
IC5208 Maplewood, Basingstoke Test Laboratory

## 1.2 INTRODUCTION

### 1.2.1 Declaration of Build Status

MAIN EUT			
MANUFACTURING DESCRIPTION	Mobile Computer		
MANUFACTURER	Intermec Technologies Corporation		
TYPE	CN3		
PART NUMBER	CN3		
SERIAL NUMBER	TBD		
HARDWARE VERSION	004		
SOFTWARE VERSION	15096		
TRANSMITTER OPERATING RANGE	Quad band GSM, 802.11b/g, Bluetooth radios		
RECEIVER OPERATING RANGE	Quad band GSM, 802.11b/g, Bluetooth radios		
COUNTRY OF ORIGIN	Singapore		
INTERMEDIATE FREQUENCIES			
ITU DESIGNATION OF EMISSION	GXW or G7W, 26M0G1D, 1M00Q1D		
HIGHEST INTERNALLY GENERATED FREQUENCY	400 MHz for processor		
OUTPUT POWER (W or dBm)	2W/1W, 100 mW, 11 mW		
FCC ID	EHA05CN3		
INDUSTRY CANADA ID	1223A-05CN3		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	CN3 mobile computer, used for inventory control applications.		
BATTERY/POWER SUPPLY			
MANUFACTURING DESCRIPTION	Lithium Ion Battery Pack		
MANUFACTURER	Intermec Technologies		
TYPE	Lithium Ion		
PART NUMBER	318-016-001 Std. Capacity - 318-016-002 High Capacity		
VOLTAGE	+3.7V		
COUNTRY OF ORIGIN	USA		
MODULES (if applicable)			
MANUFACTURING DESCRIPTION	Quad band GSM/GPRS/EDGE radio module	802.11g/Bluetooth radio card	
MANUFACTURER	Siemens AG	Wistron	
TYPE	MC75	DHIB	
POWER	2 Watts or 1 Watt	100/5 mW	
FCC ID	QIPMC75	EHADHIB	
COUNTRY OF ORIGIN	Germany	Taiwan	
INDUSTRY CANADA ID	267W-MC75	1223A-DHIB	
EMISSION DESIGNATOR	GXW-GSM G7W-EDGE	26M0G1D/1M00Q1D	
DHSS/FHSS/COMBINED OR OTHER	GSM/GPRS/EDGE	DSSS/FHSS	

TUV Product Service Limited formally certifies that the manufacturer's declaration as reproduced in this report is a true and accurate record of the original received from the applicant.

Signature

Date 20-FEB-06

Declaration of Build Status Serial Number 0001

### 1.3 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out is shown below.

FCC CFR 47: Part 22, Subpart H and RSS-132

Test	Spec Clause		Test Description	Result	Comments
	FCC	Industry Canada			
	Part 2.1046 Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power – Conducted	N/R	
2.1	Part 2.1046 Part 22.913 (a)	RSS-132, 4.4	Effective Radiated Power – Radiated	Pass	
	Part 2.1047(d)	RSS-132, 4.2	Modulation Characteristics	N/R	
	Part 22.1049, Part 22.917 (b)	RSS-132, 4.5	Occupied Bandwidth	N/R	
	Part 2.1051, Part 22.905 Part 22.917	RSS-132, 4.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	N/R	
2.2	Part 2.1053, Part 22.917	RSS-132, 4.5	Radiated Spurious Emissions	Pass	
	Part 2.1051, Part 22.917(a)	RSS-132, 4.5	Conducted Spurious Emissions	N/R	
	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Temperature Variations	N/R	
	Part 2.1055, Part 22.355	RSS-132, 4.3	Frequency Stability Under Voltage Variations	N/R	

N/R Not Requested.



### 1.3 BRIEF SUMMARY OF RESULTS

FCC CFR 47: Part 24, Subpart E and RSS-133

Test	Spec Clause		Test Description	Result	Comments
	FCC	Industry Canada			
2.3	Part 2.1046 Part 24.232 (b)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Radiated	Pass	
	Part 2.1046 Part 24.232 (a)	RSS-133, 4.3/6.4	Maximum Peak Output Power - Conducted	N/R	
	Part 2.1047(d)	RSS-133, 6.2	Modulation Characteristics	N/R	
	Part 2.1049, Part 24.238 (b)	RSS-133, 2.6/6.5 RSS-Gen 4.4	Occupied Bandwidth	N/R	
	Part 2.1051, Part 24.229 Part 24.238	RSS-133, 4.4/6.5	Spurious Emissions at Antenna Terminals (+/- 1MHz)	N/R	
2.4	Part 2.1053, Part 24.238	RSS-133, 4.4/6.5	Radiated Spurious Emissions	Pass	
	Part 2.1051, Part 24.238 (a)	RSS-133, 4.4/6.5	Conducted Spurious Emissions	N/R	
	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Temperature Variations	N/R	
	Part 2.1055, Part 24.235	RSS-133, 4.2/6.3	Frequency Stability Under Voltage Variations	N/R	

N/R Not Requested.

## **1.4 PRODUCT INFORMATION**

### **1.4.1 Technical Description**

The Equipment Under Test (EUT) was a Intermec CN3 Mobile Computer PDA with integral Barcode scanner.

### **1.4.2 Modes of Operation**

Modes of operation of the EUT during testing were as given in section 1.4.3:

Applicable testing was carried out with the EUT transmitting at maximum power or receiving as detailed in section 1.4.3.

Maximum Output Powers and Classes were;

GSM (Class 4) GSM 850/EGSM900 = 32.0dBm  
GSM (Class 1) DCS 1800 / PCS 1900 = 29.3dBm  
GPRS (Class 10) Class B operation  
EGPRS (Class E2) GSM 850/EGSM900 = 26.0dBm  
DCS 1800/PCS 1900 = 25.0dBm

### **1.4.3 Test Configuration**

Test Configuration – GSM 850 Mode

850MHz transmitting on the following channels and frequencies;

Bottom Channel 128: 824.20MHz

Middle Channel 189: 836.63MHz

Top Channel 251: 848.8MHz

Test Configuration – GPRS 850 Mode

850MHz transmitting on the following channels and frequencies;

Bottom Channel 128: 824.20MHz

Middle Channel 189: 836.63MHz

Top Channel 251: 848.8MHz

Test Configuration – EGPRS 850 Mode

850MHz transmitting on the following channels and frequencies;

Bottom Channel 128: 824.20MHz

Middle Channel 189: 836.63MHz

Top Channel 251: 848.8MHz

## 1.4 PRODUCT INFORMATION

### 1.4.3 Test Configuration – continued

Test Configuration – PCS 1900 Mode

1900MHz transmitting on the following channels and frequencies;

Bottom Channel 512: 1850.2MHz

Middle Channel 661: 1880.0MHz

Top Channel 810: 1909.8MHz

Test Configuration – GPRS 1900 Mode

1900MHz transmitting on the following channels and frequencies;

Bottom Channel 512: 1850.2MHz

Middle Channel 661: 1880.0MHz

Top Channel 810: 1909.8MHz

Test Configuration – EGPRS 1900 Mode

1900MHz transmitting on the following channels and frequencies;

Bottom Channel 512: 1850.2MHz

Middle Channel 661: 1880.0MHz

Top Channel 810: 1909.8MHz

For Radiated Emissions testing the “worst case” mode was selected for testing. The “worst case” mode was derived by measuring the ERP or EIRP in each band as appropriate. When the measurements had been made a comparison of the levels showed that GSM mode was “worst case” and therefore this was selected for Radiated Emissions testing.

## **1.5 TEST CONDITIONS**

The EUT was set-up simulating a typical user installation at the Test Laboratory, as listed in Section 1.2 and tested in accordance with the applicable specification.

For all tests, the Intermec CN3 Mobile Computer was powered via its internal battery.

## **1.6 DEVIATIONS FROM THE STANDARD**

No deviations from the applicable test standards were made.

## **1.7 MODIFICATION RECORD**

No modifications were made to the EUT during testing.

## **1.8 ALTERNATIVE TEST SITE**

Under our group UKAS Accreditation, TUV Product Service Ltd conducted the test programme at our Maplewood, Basingstoke test facility.

## **SECTION 2**

### **TEST RESULTS**

Limited FCC CFR 47: Parts 22 and 24  
and Industry Canada RSS-132 and 133 Testing  
of a Intermec CN3 Mobile Computer

## **2.1 EFFECTIVE RADIATED POWER (RADIATED)**

### **2.1.1 Specification Reference**

FCC CFR 47: Part 22 Subpart H, Section 22.913(a), 2.1046 and Industry Canada RSS-132, 4.4

### **2.1.2 Equipment Under Test**

CN3

### **2.1.3 Date of Test**

22<sup>nd</sup> August 2006 and 2<sup>nd</sup> September

### **2.1.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.1.5 Test Procedure**

Test Performed in accordance with ANSI C63.4.

The Spectrum Analyser was tuned to the test frequency. The device Output Power setting was controlled as specified in the Product Information, Section 1.5 of this document. The device was then rotated through 360 degrees until the highest power level was observed in both horizontal and vertical polarisation. The device was then replaced with a substitution antenna and the input signal to this antenna was adjusted until the received level matched that of the previously detected emission.

## 2.1 EFFECTIVE RADIATED POWER (RADIATED)

### 2.1.6 Test Results

The EUT met the requirements of FCC CFR 47: Part 22 Subpart H, Section 22.913, 2.1046 and Industry Canada RSS-132, 4.4 for Effective Radiated Power.

#### GSM 850

Frequency (MHz)	Result ERP (dBm)	Result ERP (mW)
824.2	26.3	427.6
836.4	27.3	537.0
848.8	28.3	676.1
Spec Limit	38.45	7000.00

#### GPRS 850

Frequency (MHz)	Result ERP (dBm)	Result ERP (mW)
824.2	19.6	91.2
836.4	21.1	128.8
848.8	22.5	177.8
Spec Limit	38.45	7000.00

#### EGPRS 850

Frequency (MHz)	Result ERP (dBm)	Result ERP (mW)
824.2	20.7	117.5
836.4	22.3	158.5
848.8	23.5	223.9
Spec Limit	38.45	7000.00

## **2.2 RADIATED SPURIOUS EMISSIONS**

### **2.2.1 Equipment Reference**

FCC CFR 47: Part 22 Subpart H, Section 22.917 and Industry Canada RSS-132, 6.5

### **2.2.2 Equipment Under Test**

CN3

### **2.2.3 Date of Test**

27<sup>th</sup> September 2006 and 28<sup>th</sup> September 2006

### **2.2.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.2.5 Test Procedure**

Test Performed in accordance with ANSI C63.4.

A preliminary profile of the Spurious Radiated Emissions was obtained by operating the EUT on a remotely controlled turntable within the Anechoic Chamber. Measurements of emissions from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT. The list of emissions was then confirmed or updated in the Anechoic Chamber (3 metres). Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a Peak detector.

Emissions identified within the range 1GHz – 9GHz were then formally measured using Peak and Average Detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.



## **2.2 RADIATED SPURIOUS EMISSIONS**

### **2.2.6 Test Results**

#### **30MHz – 1GHz Frequency Range**

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H, 22.917 and Industry Canada RSS-132, 6.5 for Radiated Emissions (30MHz – 1GHz).

Measurements were made with the EUT in GSM 850 Mode.

#### **EUT Transmitting on Bottom Channel (824.26MHz)**

No emissions were detected below 1GHz.

#### **EUT Transmitting on Middle Channel (836.68MHz)**

No emissions were detected below 1GHz.

#### **EUT Transmitting on Top Channel (848.87MHz)**

No emissions were detected below 1GHz.

## 2.2 RADIATED SPURIOUS EMISSIONS

### 2.2.6 Test Results - continued

#### 1GHz – 9GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC CFR 47: Part 22, Subpart H, 22.917 and Industry Canada RSS-132, 6.5 for Radiated Emissions (1GHz – 9GHz).

Measurements were made with the EUT in GSM 850 Mode

#### **EUT Transmitting on Bottom Channel (824.20MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz		cm	degree	dBm	dBm
3296.0	Vertical	100	166	-54.5	-13.0
6597.0	Vertical	103	090	-38.9	-13.0
7418.0	Vertical	100	214	-46.3	-13.0

No other emissions were detected.

#### **EUT Transmitting on Middle Channel (836.68MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz		cm	degree	dBm	dBm
5414.0	Vertical	100	090	-42.2	-13.0
6697.0	Vertical	100	090	-31.1	-13.0

No other emissions were detected.

#### **EUT Transmitting on Top Channel (848.80MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Result	Peak Limit
MHz		cm	degree	dBm	dBm
6790.0	Vertical	100	138	-33.6	-13.0
7639.0	Horizontal	100	255	-46.4	-13.0

No other emissions were detected.

## **2.3 MAXIMUM PEAK OUTPUT POWER (RADIATED)**

### **2.3.1 Specification Reference**

FCC CFR 47: Part 24 Subpart E, Section 24.232(b), 2.1046 and  
Industry Canada RSS-133, 4.3/6.4

### **2.3.2 Equipment Under Test**

CN3

### **2.3.3 Date of Test**

23<sup>rd</sup> August 2006 and 2<sup>nd</sup> September 2006

### **2.3.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.3.5 Test Procedure**

Test Performed in accordance with ANSI C63.4.

The EUT is equipped with an antenna connector, therefore the maximum peak output power was performed using a conducted method.

The EUT was connected to a digital storage oscilloscope via an attenuator and a crystal detector. The DC output from the crystal detector was measured on the oscilloscope and the EUT was then substituted for a signal generator. The signal generator frequency was adjusted to that of the EUT and the amplitude was increased to produce the same DC level on the oscilloscope as measured previously from the EUT. The resulting amplitude of the signal generator was recorded and therefore equal to the maximum output power of the EUT.

## 2.3 MAXIMUM PEAK OUTPUT POWER (RADIATED)

### 2.3.6 Test Results

The EUT met the requirements of FCC Part 24 Subpart E, Section 24.232(b), 2.1046 and Industry Canada RSS-133, 4.3/6.4

#### GSM 1900

Frequency (MHz)	Result EIRP (dBm)	Result EIRP (mW)
1850.20	31.9	1514.0
1880.00	31.7	1479.0
1909.80	31.8	1514.0
Spec Limit	33.00	2000.00

#### GPRS 1900

Frequency (MHz)	Result EIRP (dBm)	Result EIRP (mW)
1850.20	27.8	602.6
1880.00	27.4	549.5
1909.80	27.3	537.0
Spec Limit	33.00	2000.00

#### EGPRS 1900

Frequency (MHz)	Result EIRP (dBm)	Result EIRP (mW)
1850.20	26.5	446.7
1880.00	27.5	562.3
1909.80	28.1	645.7
Spec Limit	33.00	2000.00

## **2.4 RADIATED SPURIOUS EMISSIONS**

### **2.4.1 Specification Reference**

FCC CFR 47: Part 24 Subpart E, Section 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5

### **2.4.2 Equipment Under Test**

CN3

### **2.4.3 Date of Test**

27<sup>th</sup> September 2006 and 28<sup>th</sup> September 2006

### **2.4.4 Test Equipment Used**

The major items of test equipment used for the above tests are identified in Section 3.1.

### **2.4.5 Test Procedure**

Test Performed in accordance with ANSI C63.4.

In order to determine the radiated emission limits, measurements of transmitter power (P) were first carried out on the top and bottom channels using a peak detector and the results are shown in the following table.

A preliminary profile of the spurious radiated emissions was obtained by operating the EUT on a remotely controlled turntable within a semi-anechoic chamber. Measurements of emissions from the EUT were obtained with the measurement antenna in both horizontal and vertical polarisations. The profiling produced a list of the worst-case emissions together with the EUT azimuth and antenna polarisation.

Using the information from the preliminary profiling of the EUT, the list of emissions was then confirmed or updated under alternative open site conditions. Emission levels were maximised by adjusting the antenna height, antenna polarisation and turntable azimuth.

Emissions identified within the range 30MHz – 1GHz were then formally measured using a CISPR quasi-peak detector.

Emissions identified within the range 1GHz – 20GHz were then formally measured using peak and average detectors, as appropriate.

The measurements were performed at a 3m distance unless otherwise stated.

## **2.4 RADIATED SPURIOUS EMISSIONS**

### **2.4.6 Test Results**

#### **30MHz – 1GHz Frequency Range**

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions

#### **EUT Transmitting on Bottom Channel (1850.20MHz)**

No emissions were detected.

#### **EUT Transmitting on Middle Channel (1880.00MHz)**

No emissions were detected.

#### **EUT Transmitting on Top Channel (1909.80MHz)**

No emissions were detected.

## 2.4 RADIATED EMISSIONS

### 2.4.6 Test Results - continued

#### 1GHz – 20GHz Frequency Range

Equipment Designation: Intentional Radiator.

The EUT met the requirements of FCC Part 24.238, 2.1053 and Industry Canada RSS-133, 4.4/6.5 for Radiated Emissions (1GHz – 20GHz).

#### **EUT Transmitting on Bottom Channel (1850.20MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
MHz		cm	degree	dBm	dBm
3700.0	Horizontal	100	225	-45.5	-13.0
555.0	Horizontal	133	124	-49.5	-13.0
7408.0	Vertical	100	088	-44.4	-13.0
9251.0	Vertical	100	238	-38.1	-13.0

No other emissions were detected.

#### **EUT Transmitting on Middle Channel (1879.90MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
MHz		cm	degree	dBm	dBm
3760.2	Horizontal	100	227	-43.7	-13.0
7520.0	Vertical	100	012	-45.8	-13.0
9400.0	Vertical	100	181	-41.4	-13.0

No other emissions were detected.

#### **EUT Transmitting on Top Channel (1909.80MHz)**

Frequency	Antenna Polarisation	Height	Azimuth	Peak Field Strength	Limit
GHz		cm	degree	dBm	dBm
3818.0	Horizontal	106	201	-42.8	-13.0
9549.0	Vertical	100	264	-41.5	-13.0

No other emissions were detected.

### **SECTION 3**

### **TEST EQUIPMENT**



### 3.1 TEST EQUIPMENT

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No	TE Number	Calibration Due
<b>Sections 2.1 and 2.3 EMC - Radiated Emissions</b>				
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	35	18/04/2007
Antenna (Bilog)	Schaffner	CBL6143	287	13/01/2008
EMI Test Receiver	Rohde & Schwarz	ESI26	1505	02/05/2007
Bilog Antenna	Chase	CBL6111B	1508	TU
DRG Antenna	EMCO	3115	1510	03/11/2006
DRG Antenna	Q-Par Angus Ltd	QSH 180K	1511	TU
PRE Amplifier	Phase One	PS04-0085	1532	TU
PRE Amplifier	Phase One	PS04-0086	1533	TU
PRE Amplifier	Phase One	PS04-0087	1534	TU
3m N-N RF Cable	Rosenberger	3899	1871	11/04/2007
15m N-N RF Cable	Rosenberger	FA210A-150M	2026	11/04/2007
3GHz HPF	Sematron	E100-3000-5-R	2244	TU
4GHz HPF	Sematron	F-100-4000-5-R	2245	TU
Bilog Antenna	Chase	CBL6141	3121	24/05/2008

TU Traceability Unscheduled

### 3.1 TEST EQUIPMENT

Instrument	Manufacturer	Type No	TE Number	Calibration Due
<b>Sections 2.2 and 2.4 EMC - Radiated Emissions</b>				
Spectrum Analyser	Hewlett Packard	8542E	18	09/02/2007
Antenna (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	22/06/2008
Amplifier	Miteq Corp	AMF-3D-001080-18-13P	231	TU
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	29/06/2007
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	235	29/06/2007
Amplifier (Low Noise, 18GHz-40GHz)	Narda	NARDA DB02-0447	240	15/06/2007
GSM Test Set	Hewlett Packard	8922M	256	TU
DCS Test Set	Hewlett Packard	83220E	257	TU
Filter (High Pass, 3GHz)	RLC Electronics	F-100-3000-5-R	563	01/11/2006
Mast Controller	Inn-Co GmbH	CO 1000	1606	TU
Turntable/Mast Controller	EMCO	2090	1607	TU
EMI Test Receiver	Rohde & Schwarz	ESIB40	1934	02/05/2007
Amplifier (8GHz-18GHz)	Avantec	AWT-18036	2821	TU
Bilog Antenna	Chase	CBL6143	2904	10/11/2007
Comb Generator	Schaffner	RSG1000	3034	TU
Radio Communications Test Set	Rohde & Schwarz	CMU 200	3035	11/03/2007
Signal Generator: 10MHz to 40GHz	Rohde & Schwarz	SMR40	3171	29/06/2007

TU Traceability Unscheduled

### 3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU
Radiated Emissions, Bilog Antenna, AOATS	30MHz to 1GHz Amplitude	5.1dB*
Radiated Emissions, Horn Antenna, AOATS	1GHz to 40GHz Amplitude	6.3dB*

Worst case error for both Time and Frequency measurement 12 parts in  $10^6$ .

\* In accordance with CISPR 16-4

† In accordance with UKAS Lab 34

## **SECTION 4**

### **ACCREDITATION, DISCLAIMERS AND COPYRIGHT**

#### 4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA  
(Not UKAS Accredited).

This report must not be reproduced, except in its entirety, without the written permission of  
TUV Product Service Limited

© 2006 TUV Product Service Limited