

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Partial Testing of: Tempus IC 00-1001

To: FCC Part 22: 2008 Subpart H, FCC Part 24: 2008 Subpart E,  
RSS 132 Issue 2 September 2005 and RSS-133 Issue 5 February 2009

**Test Report Serial No:**  
RFI/RPT2/RP75697JD03A

**Version 2 Supersedes all Previous Versions**

**This Test Report Is Issued Under The Authority  
Of Brian Watson, Operations Director:**



<b>Checked By:</b>	Rob Graham
<b>Signature:</b>	 pp
<b>Date of Issue:</b>	21 January 2010

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## **1. Customer Information**

<b>Company Name:</b>	Remote Diagnostic Technologies Ltd
<b>Address:</b>	The Old Coach House The Avenue Farleigh Wallop Basingstoke Hampshire RG25 2HT United Kingdom

## 2. Summary of Testing

### 2.1. General Information – FCC Part 22

<b>Specification Reference:</b>	47CFR22
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 22 Subpart H (Public Mobile Services)
<b>Specification Reference:</b>	47CFR24
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 24 Subpart E (Personal Communication Services)
<b>Specification Reference:</b>	RSS-132 Issue 2 Sep 2005
<b>Specification Title:</b>	Cellular Telephones Employing New Technologies Operating in the Bands 824-849 MHz and 869-894 MHz
<b>Specification Reference:</b>	RSS-133 Issue 5 Feb 2009
<b>Specification Title:</b>	2 GHz Personal Communications Services
<b>Specification Reference:</b>	SRSP-503 Issue 7 Sep 2008
<b>Specification Title:</b>	Technical Requirements for Cellular Radiotelephone Systems Operating in the Bands 824 – 849 MHz and 869 – 894 MHz
<b>Specification Reference:</b>	SRSP-510 Issue 5 Feb 2009
<b>Specification Title:</b>	Technical Requirements for Personal Communications Services (PCS) in the Bands 1850-1915 MHz and 1930-1995 MHz
<b>Site Registration:</b>	FCC: 209735; Industry Canada: 3245B-2
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	06 October 2009 to 07 October 2009

### 2.2. Summary of Test Results – FCC Part 22

FCC Reference (47CFR )	IC Reference	Measurement	Port Type	Result
Part 22.913(a)	RSS-132 4.4 SRSP-503 5.1.3	Transmitter Effective Radiated Power (ERP)	Antenna	
Part 24.232	RSS-133 6.4 SRSP-510 5.1.2	Transmitter Equivalent Isotropic Radiated Power (EIRP)	Antenna	
<b>Key to Results</b>				
= Complied		= Did not comply		

### **2.3. Methods and Procedures**

<b>Reference:</b>	ANSI/TIA-603-C-2004
<b>Title:</b>	Land Mobile Communications Equipment, Measurements and performance Standards

### **2.4. Deviations from the Test Specification**

Only measurements of ERP in the GSM850 band and EIRP in the PCS1900 band were performed

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

<b>Description:</b>	Patient Monitor
<b>Brand Name:</b>	Tempus IC™
<b>Model Name or Number:</b>	00-1001
<b>Serial Number:</b>	000233
<b>IMEI Number:</b>	35202402170957505
<b>Industry Canada Certification Number:</b>	7845A-TEMPUSIC
<b>FCC ID Number:</b>	ROSTEMPUSIC-1

<b>Description:</b>	AC Charger
<b>Brand Name:</b>	Cincon Electronics
<b>Model Name or Number:</b>	TR60M12
<b>Serial Number:</b>	60120-0001218

#### **3.2. Description of EUT**

The equipment under test was a patient monitor which comprises off-the-shelf modules for wireless communications; these include a WiFi SD card (Socket Communications GoWiFi P320), *Bluetooth* module (Bluegiga WT11) and a MC55i Wireless Quad-Band GSM/GPRS module.

#### **3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

**3.4. Additional Information Related to Testing**

<b>Technology Tested:</b>	GSM850		
<b>Mode:</b>	GSM/GPRS		
<b>Maximum Output Power (ERP):</b>	GSM	20.5 dBm	
	GPRS	19.1 dBm	
<b>Transmit Frequency Range:</b>	824 to 849 MHz		
<b>Transmit Channels Tested:</b>	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	128	824.2
	Middle	190	836.6
	Top	251	848.8

<b>Technology Tested:</b>	PCS1900		
<b>Mode:</b>	GSM/GPRS		
<b>Maximum Output Power (EIRP):</b>	GSM	26.6 dBm	
	GPRS	26.6 dBm	
<b>Transmit Frequency Range:</b>	1850 to 1910 MHz		
<b>Transmit Channels Tested:</b>	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	512	1850.2
	Middle	660	1879.8
	Top	810	1909.8

### **3.5. Support Equipment**

The following support equipment was used to exercise the EUT during testing:

<b>Description:</b>	Laptop
<b>Brand Name:</b>	Dell
<b>Model Name or Number:</b>	Latitude D610
<b>Serial Number:</b>	None Stated

<b>Description:</b>	USB Keyboard
<b>Brand Name:</b>	None Stated
<b>Model Name or Number:</b>	None Stated
<b>Serial Number:</b>	None Stated

<b>Description:</b>	USB Mouse
<b>Brand Name:</b>	None Stated
<b>Model Name or Number:</b>	None Stated
<b>Serial Number:</b>	None Stated

<b>Description:</b>	Ethernet Router
<b>Brand Name:</b>	Belkin
<b>Model Name or Number:</b>	None Stated
<b>Serial Number:</b>	None Stated

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Constantly transmitting at full power on bottom, centre and top channels as required.

### **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- . EUT was tested standalone with all the ports terminated with accessories.

## **5. Measurements, Examinations and Derived Results**

### **5.1. General Comments**

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

## **5.2. Test Results**

### **5.2.1. Transmitter Effective Radiated Power (ERP)**

#### **Test Summary:**

FCC Part:	22.913(a)
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

#### **Environmental Conditions:**

Temperature (°C):	28
Relative Humidity (%):	33

#### **Results: GSM**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	16.5	38.5	22.0	Complied
Middle	836.4	Vertical	17.2	38.5	21.3	Complied
Top	848.8	Vertical	20.5	38.5	18.0	Complied

#### **Results: GPRS**

Channel	Frequency (MHz)	Antenna Polarity	ERP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	824.2	Vertical	15.1	38.5	23.4	Complied
Middle	836.4	Vertical	16.4	38.5	22.1	Complied
Top	848.8	Vertical	19.1	38.5	19.4	Complied

**5.2.2. Transmitter Equivalent Isotropic Radiated Power (EIRP)****Test Summary:**

FCC Part:	24.232
Test Method Used:	As detailed in ANSI TIA-603-C-2004 Section 2.2.17.2

**Environmental Conditions:**

Temperature (°C):	27
Relative Humidity (%):	41

**Results: GSM**

Channel	Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	26.6	33.0	6.4	Complied
Middle	1879.8	Horizontal	25.3	33.0	7.7	Complied
Top	1909.8	Horizontal	22.7	33.0	10.3	Complied

**Results: GPRS**

Channel	Measured Frequency (MHz)	Antenna Polarity	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	1850.2	Horizontal	26.6	33.0	6.4	Complied
Middle	1879.8	Horizontal	25.3	33.0	7.7	Complied
Top	1909.8	Horizontal	22.7	33.0	10.3	Complied

## **6. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
Effective Radiated Power (ERP)	Not applicable	95%	±2.94 dB
Equivalent Isotropic Radiated Power (EIRP)	Not applicable	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

## Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A1392	Attenuator	Huber + Suhner	757456	6820.17.B	Calibrated before use	-
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
A288	Antenna	Chase	CBL6111A	1589	13 Mar 2009	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 Sep 2009	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.