



**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: Satellite Tracking of People LLC
BluBand

To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

Test Report Serial No:
RFI/RPTE1/RP73051JD01A

This Test Report Is Issued Under The Authority Of Steve Flocks, Service Leader Radio Performance Group:		
Checked By: Steve Flocks		Report Copy No: PDF01
Issue Date: 20 March 2008	Test Dates: 20 February 2008 to 27 February 2008	

This report is issued in Adobe Acrobat portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields. This report may be copied in full. The results in this report apply only to the sample(s) tested.

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

This page has been left intentionally blank.

Test of: **Satellite Tracking of People LLC**
 BluBand
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

Table of Contents

1. Client Information4

2. Equipment Under Test (EUT)5

3. Test Specification, Methods and Procedures7

4. Deviations from the Test Specification8

5. Operation of the EUT During Testing.....9

6. Summary of Test Results10

7. Measurements, Examinations and Derived Results11

8. Measurement Methods20

9. Measurement Uncertainty22

Appendix 1. Test Equipment Used23

Appendix 2. Test Configuration Drawings.....25

Test of: **Satellite Tracking of People LLC**
BluBand
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

1. Client Information

Company Name:	Satellite Tracking of People LLC
Address:	4801 Woodway Drive Suite 110W Houston Texas 77056
Contact Name:	Mr S Freathy

Test of: Satellite Tracking of People LLC
 BluBand
 To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

2. Equipment Under Test (EUT)

The following information (with the exception of the Date of Receipt) has been supplied by the client:

2.1. Identification of Equipment Under Test (EUT)

Description:	RF ankle worn transmitter
Brand Name:	BluBand
Model Name or Number:	07
Serial Number:	Sample 2 – SCJ0805
Hardware Version Number:	DD27 Issue 2
Software Version Number:	13
FCC ID:	S5EBB02158
Country of Manufacture:	USA
Date of Receipt:	20 February 2008

Description:	Lithium Inorganic Battery
Brand Name:	TADIRAN
Model Name or Number:	None Stated
Serial Number:	None Stated
Country of Manufacture:	USA
Date of Receipt:	20 February 2008

2.2. Accessories

No accessories were supplied with the EUT.

2.3. Description of EUT

The equipment under test is a tracking device.

2.4. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

Test of: Satellite Tracking of People LLC
 BluBand
 To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

2.5. Additional Information Related to Testing

Power Supply Requirement:	Internal battery of 3.6 V	
Intended Operating Environment:	Residential	
Equipment Category:	Short Range (902MHz to 928MHz)	
Type of Unit:	Portable (Standalone battery powered device)	
Transmitter Frequency Range:	Not Applicable (Single Channel)	
Transmitter Channels Tested:	Channel ID	Channel Frequency (MHz)
	Single	915
Receiver Frequency Range:	Not Applicable (Single Channel)	
Receiver Channels Tested:	Channel ID	Channel Frequency (MHz)
	Single	915

Test of: **Satellite Tracking of People LLC
BluBand**
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

3. Test Specification, Methods and Procedures

3.1. Test Specifications

Reference:	FCC Part 15 Subpart C: 2007 (Sections 15.249).
Title:	Code of Federal Regulations, Part 15 (47CFR215) Radio Frequency Devices.
Comments:	A description of the test facility used for this test is on file with, and has been accepted by, the Federal Communications Commission as required by Section 2.948 of Federal Rules.
Purpose of Test:	To determine whether the equipment complied with the requirements of the specification for the purposes of certification.

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.5 (1988)

Title: American National Standard for the Calibration of antennas used for Radiated Emission measurements in Electromagnetic Interference (EMI) control.

ANSI C63.7 (1988)

Title: American National Standard Guide for Construction of Open Area Test Sites for performing Radiated Emission Measurements.

CISPR 16-1: (1999)

Title: Specification For Radio Disturbance and Immunity Measuring Apparatus and Methods. Part 1: Radio Disturbance and Immunity Measuring Apparatus.

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the Methods & Procedures section above. Appendix 1 contains a list of the test equipment used.

Test of: **Satellite Tracking of People LLC**
 BluBand

To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

4. Deviations from the Test Specification

There were no deviations from the test specification.

Test of: **Satellite Tracking of People LLC**
 BluBand
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

5. Operation of the EUT During Testing

5.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated.

- Transmit mode only.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- Stand alone battery powered device.

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

6. Summary of Test Results

Range of Measurements	Section Reference	Port Type	Compliance Status
Transmitter Fundamental Fieldstrength	FCC Part 15: 2007 Section 15.249(a)	Antenna	Complied
Transmitter 20 dB Bandwidth	FCC Part 2: 2007	Antenna	Complied
Transmitter Radiated Spurious Emissions	FCC Part 15: 2007 Section 15.249(a)(d)(e) & 15.209	Antenna	Complied
Transmitter Band Edge Radiated Emissions	FCC Part 15: 2007 Section 15.249(d) & 15.209	Antenna	Complied

6.1. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Ewhurst Park, Ramsdell, Basingstoke, Hampshire, RG26 5RQ, England.

FCC Site Registration Number: 90895

Test of: Satellite Tracking of People LLC
BluBand

To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

7. Measurements, Examinations and Derived Results

7.1. General Comments

7.1.1. This section contains test results only.

7.1.2. 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 9 for details of measurement uncertainties.

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

7.2. Test Results

7.2.1. Transmitter Fundamental Fieldstrength

7.2.1.1. The EUT was configured for radiated emissions testing, as described in Section 8 of this report.

7.2.1.2. Tests were performed to identify the maximum field strength of the fundamental frequency.

Results:

Battery Powered Devices

Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
915.194	Vertical	88.9	94.0	5.1	Complied

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

7.2.2. Transmitter 20 dB Bandwidth

7.2.2.1. The EUT was configured for 20 dB bandwidth measurements, as described in Section 8 of this report.

7.2.2.2. Tests were performed to identify the 20 dB bandwidth.

Results:

Transmitter 20 dB Bandwidth (kHz)
309.369



Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

7.2.3. Transmitter Radiated Emissions

Electric Field Strength Measurements: 30 MHz to 1000 MHz

7.2.3.1. The EUT was configured for radiated emissions testing, as described in Section 8 of this report.

7.2.3.2. Tests were performed to identify the maximum radiated spurious emission levels.

Results:

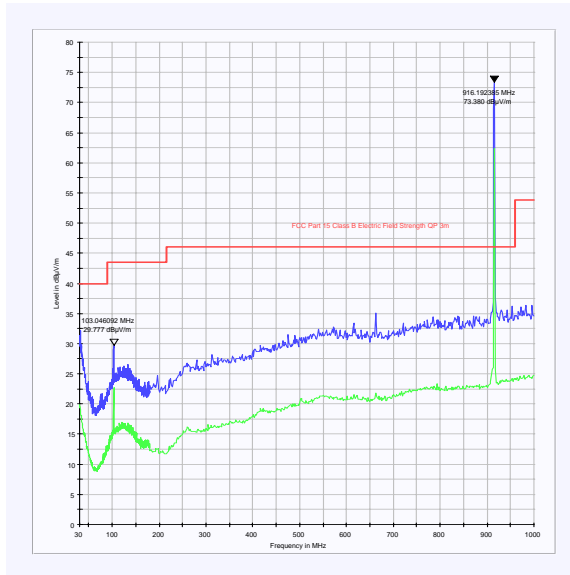
Frequency (MHz)	Antenna Polarity	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
Note 1					

Note(s):

1. There were no emissions shown within 20dB of the limit during final measurements.

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

Transmitter Radiated Emissions (Continued)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test of: Satellite Tracking of People LLC
 BluBand
 To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

Transmitter Radiated Emissions (Continued)**Electric Field Strength Measurements (Frequency Range: 1 to 10 GHz)****Results:****Highest Peak Level:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1829.600	Horizontal	41.75	-8.65	50.40	74.0	23.60	Complied
2098.500	Horizontal	35.67	-8.59	44.26	74.0	29.74	Complied
4573.100	Horizontal	40.45	-4.17	44.62	74.0	29.38	Complied
6957.900	Horizontal	44.36	0.13	44.23	74.0	29.77	Complied
7160.300	Horizontal	43.29	0.13	43.16	74.0	30.84	Complied
8913.800	Horizontal	49.22	3.34	45.88.	74.0	28.12	Complied

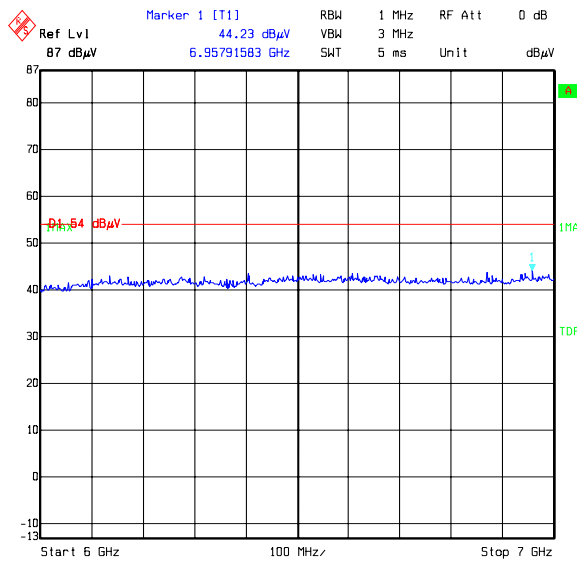
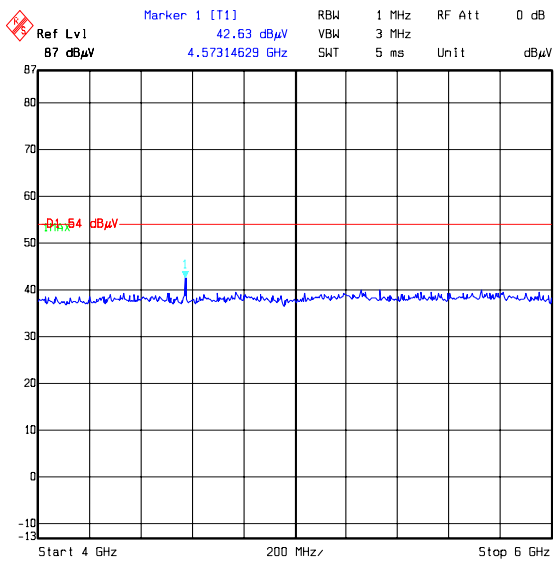
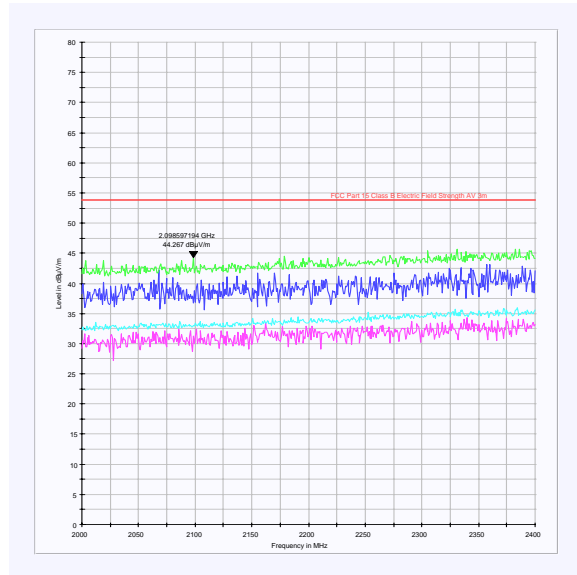
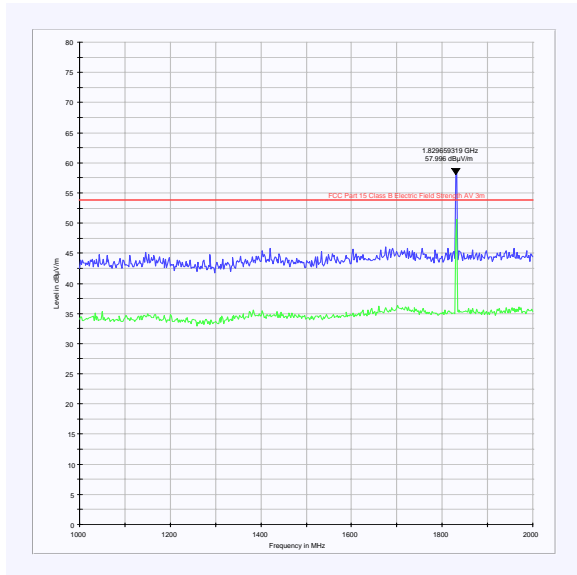
**Note: -50 dBc limit*

Highest Average Level:

Frequency (MHz)	Antenna Polarity	Detector Level (dB μ V)	Antenna Factor (dB)	Actual Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
1829.600	Horizontal	33.05	-8.65	41.70	54.0	12.30	Complied
2098.500	Horizontal	24.77	-8.59	33.36	54.0	20.64	Complied
4573.140	Horizontal	37.07	-4.17	41.24	54.0	18.35	Complied
6957.900	Horizontal	35.78	0.13	35.65	54.0	18.35	Complied
7160.300	Horizontal	33.49	0.13	33.36	54.0	20.64	Complied
8913.800	Horizontal	39.38	3.34	36.04	54.0	17.96	Complied

Test of: **Satellite Tracking of People LLC
 BluBand**
 To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

Transmitter Radiated Emissions (Continued)



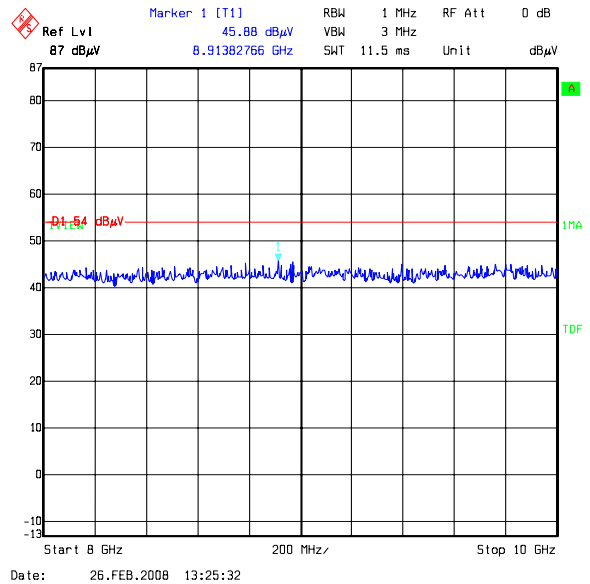
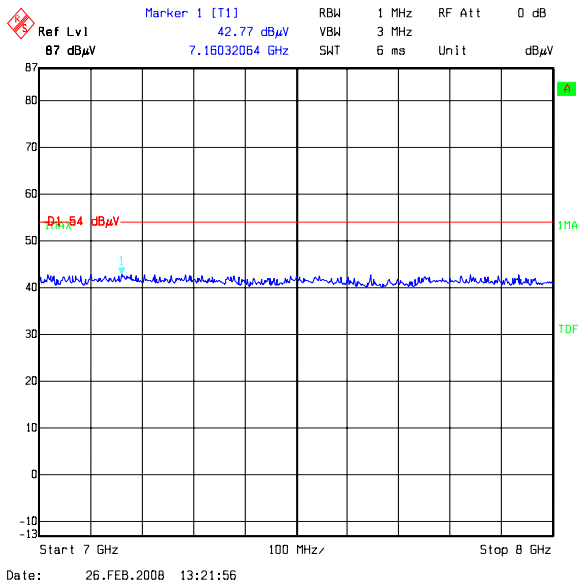
Date: 26.FEB.2008 11:56:55

Date: 26.FEB.2008 12:21:04

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: **Satellite Tracking of People LLC
BluBand**
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

Transmitter Radiated Emissions (Continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test of: Satellite Tracking of People LLC
BluBand
To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

7.2.4. Transmitter Radiated Emissions at Band Edges

7.2.4.1. The EUT was configured for transmitter radiated emissions testing, as described in Section 8 of this report.

7.2.4.2. Tests were performed to identify the maximum emissions level at the band edges of the frequency band that the EUT will operate over.

Results:

Bottom Band Edge

Frequency (MHz)	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
902	31.5	46.0	14.5	Complied

Top Band Edge

Frequency (MHz)	Q-P Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
928	39.4	46.0	6.6	Complied

Test of: **Satellite Tracking of People LLC**
BluBand
 To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

8. Measurement Methods

8.1. Radiated Emissions

Radiated emissions measurements were performed in accordance with the standard, against appropriate limits for each detector function.

Initial measurements covering the entire measurement band in the form of swept scans in a shielded enclosure were performed in order to identify frequencies on which the EUT was generating interference. This determined the frequencies on which the EUT should be re-measured in full on the open area test site. In order to minimise the time taken for the swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. Following the initial scans, graphs were produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. Any emission within 20 dB of the limit were then measured on the open area test site, except in cases where the noise floor was within 20 dB of the limit, in these cases the highest point of the noise floor was measured.

In either case the measurement was made at the appropriate distance using a measuring receiver with a Quasi-Peak detector for measurements below 1000 MHz and an Average detector for measurements above 1000 MHz. For the final measurements the EUT was arranged on a non-conducting turn table on a standard test site compliant with ANSI C63.4 – 2001 Clause 5.4.

All measurements on the open area test site were performed using broadband antennas.

On the open area test site, at each frequency where a signal was to be measured, the trace was maximised by rotating a turntable through 360°. The angle at which the maximum signal was observed was locked out. For frequencies below 1000 MHz the test antenna was varied in height between 1 m and 4 m in order to further maximise the target emission.

For frequencies above 1000 MHz where a horn antenna was used, height searching was performed to locate the optimal height of the horn with respect to the EUT. At this point the horn was locked off and the turntable was again rotated through 360° to maximise the target signal. It should be noted that the received signal from the EUT would diminish very quickly after it exits the beam width of the horn antenna, for this reason it may not be necessary to fully height search with the horns.

At this point, any signals found to be between the limit and a level 6 dB below it were further maximised by changing the configuration of the EUT, e.g. re-routing cables to peripherals and moving peripherals with respect to the EUT.

Scans were performed to the upper frequency limits as stated in Section 15.33

The final field strength was determined as the indicated level in dB μ V plus cable loss and antenna factor.

The test equipment settings for radiated emissions measurements were as follows:

Receiver Function	Initial Scan	Final Measurements Below 1 GHz	Final Measurements Above 1 GHz
Detector Type:	Peak	Quasi-Peak (CISPR)	Peak / Average
Mode:	Max Hold	Not applicable	Max Hold
Bandwidth:	(120 kHz < 1 GHz) (1 MHz > 1 GHz)	120 kHz	1 MHz
Amplitude Range:	100 dB	100 dB	100 dB
Step Size:	Continuous sweep	Not applicable	Not applicable
Sweep Time:	Coupled	Not applicable	Not applicable

Test of: **Satellite Tracking of People LLC**
BluBand
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

8.2. Transmitter 20 dB Bandwidth

The EUT and spectrum analyser was configured for transmitter radiated emissions measurements.

To determine the occupied bandwidth, a resolution bandwidth of 10 kHz was used, which is greater than 1% of the 20 dB bandwidth. A video bandwidth of at least the same value was used. The analyser was set for a maximum hold scan to capture the profile of the signal. The peak level was then determined, and a reference line was drawn 20 dB below the peak level. The bandwidth was determined at the points where the 20 dB reference crossed the profile of the emission.

Measurements were performed to determine the Occupied Bandwidth in accordance with FCC Part 2.1049. The Occupied Bandwidth was measured from the fundamental emission at the bottom and top channels. The Occupied Bandwidth was measured in line with the requirements of 2.1049 i.e. with the EUT modulated with a signal representing the maximum rated conditions under which it will operate (worst case)

Test of: **Satellite Tracking of People LLC**
BluBand
 To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

9. Measurement Uncertainty

9.1. 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.

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

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

9.4. 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
Occupied Bandwidth	N/A	95%	+/- 0.12 %
Transmitter Fundamental Field strength	N/A	95%	+/- 5.26 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 40 GHz	95%	+/- 1.78 dB

9.5. 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.

Test of: **Satellite Tracking of People LLC**
BluBand
 To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1241	Power Meter	Rohde & Schwarz	NRVD	857.8008.02	Calibrated as part of system	-
C460	Cable	Rosenberger	UFA210A-1-1182-704704	98H0304	22 Apr 2007	12
C461	Cable	Rosenberger	UFA210A-1-1182-704704	98H0305	22 Apr 2007	12
M023	Test Receiver	Rohde & Schwarz	ESVP	872 991/027	24 Apr 2007	12
A259	Antenna	Chase	CBL6111	1513	13 Mar 2007	12
A392	Attenuator	Suhner	6803.17.B	None	Calibration not required	-
M173	Turntable Controller	R.H.Electrical Services	RH351	3510020	Calibration not required	-
S207	Site 7	RFI	7	None	Calibration not required	-
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	18 Feb 2008	12
C1191	SMA Cable	Rosenburg	FA210A1015M3030	27141-06	Calibrated before use	-
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	06 Feb 2008	12
C348	Cable	Rosenberger	UFA210A-1-1181-70x70	2993	Calibrated before use	-
A037	Low Power Filter	RFI Ltd Basingstoke	004	A037	Calibrated before use	-
A028	Antenna	Eaton	91888-2	304	08 Jun 2006	36
C160	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-
C151	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-

Test of: Satellite Tracking of People LLC
 BluBand
 To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

Test Equipment Used (Continued)

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986/022	29 Nov 2007	12
C1065	Cable	Rosenberger	UFA210-1-7872	0985	Calibrated before use	-
A019	Controller	EMCO	1050	1191	Calibration not required	-
A253	Antenna	Flann Microwave	12240-20	128	17 Nov 2006	36
A254	Antenna	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	Antenna	Flann Microwave	16240-20	519	17 Nov 2006	36
C1164	Cable	Rosenberger Micro-Coax	FA210A1015007 070	43188-1	Calibrated before use	-
C1167	Cable	Rosenberger Micro-Coax	FA210A1030007 070	43190-01	Calibrated before use	-

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

Test of: **Satellite Tracking of People LLC**
 BluBand
To: **FCC Part 15 Subpart C: 2007 (Sections 15.249)**

Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\73051JD01\EMIRAD	Test configuration for measurement of radiated emissions.

Test of: Satellite Tracking of People LLC
 BluBand
 To: FCC Part 15 Subpart C: 2007 (Sections 15.249)

DRG\73051JD01\EMIRAD

