




**TEST REPORT  
FROM  
RFI GLOBAL SERVICES LTD**

Test of: Satellite Tracking of People LLC  
BluHome®

To: FCC Part 15.249

**Test Report Serial No:**  
RFI/RTPTE2/RP48869JD01A

**Supersedes Test Report Serial No:**  
RFI/RPTE1/RP48869JD01A

<b>This Test Report Is Issued Under The Authority Of Andrew Brown, Operations Manager:</b> 	
<b>Tested By: Petr Hajek</b> 	<b>Checked By: Michael Derby</b>  pp
<b>Report Copy No: PDF01</b>	
<b>Issue Date: 21 February 2007</b>	<b>Test Dates: 08 December 2006 to 19 January 2007</b>

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The results in this report apply only to the sample(s) tested.

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**RFI GLOBAL SERVICES LTD**

**TEST REPORT**

**S.No.**

**RFI/RTPTE2/RP48869JD01A**

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## 1. Client Information

<b>Company Name:</b>	Satellite Tracking of People LLC
<b>Address:</b>	4801 Woodway Drive Suite 110W Houston Texas 77056-1828
<b>Contact Name:</b>	Mr S Freathy

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## **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)**

<b>Description:</b>	Base Station for People Tracking
<b>Brand Name:</b>	STOP
<b>Model Name or Number:</b>	BluHome®
<b>Unique Type Identification:</b>	HMU
<b>Serial Number:</b>	None stated
<b>Country of Manufacture:</b>	None stated
<b>FCC ID Number:</b>	S5EBH0107A
<b>Date of Receipt:</b>	8 <sup>th</sup> December 2006

### **2.2. Accessories**

The following accessories were supplied with the EUT:

<b>Description:</b>	AC Switching Adaptor
<b>Brand Name:</b>	Sunny
<b>Model Name or Number:</b>	SYS 1298-1812-W2
<b>Serial Number:</b>	0602 138 125
<b>Cable Length and Type:</b>	1.5m, two core
<b>Connected to Port:</b>	Input Voltage Supply

<b>Description:</b>	Telephone cable
<b>Brand Name:</b>	Not stated
<b>Model Name or Number:</b>	Not stated
<b>Serial Number:</b>	Not applicable
<b>Cable Length and Type:</b>	2.5m Multi core telephone cable with RJ45 connector
<b>Connected to Port:</b>	Permanently attached to unit

### **2.3. Description of EUT**

The equipment under test is a 915 MHz home monitoring unit.

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

During the course of testing the EUT was not modified.

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## 2.5. Additional Information Related to Testing

Power Supply Requirement:	Nominal 115 V 60 Hz AC Mains supply and Internal battery		
Intended Operating Environment:	Commercial		
Equipment Category:	Short Range (Low Power)		
Type of Unit:	Base Station(Fixed Use)		
Interface Ports:	AC Adaptor 1.5m core cable directly to unit and 4 core telephone cable with RJ45 (not connected)		
Transmit Frequency Range:	915 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	-	915
Receive Frequency Range:	915 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Single	-	915
Highest Fundamental Frequency:	915 MHz		
Occupied Bandwidth:	332.665 kHz		

## 2.6. Support Equipment

No support equipment was used to exercise the EUT during testing.

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### **3. Test Specification, Methods and Procedures**

#### **3.1. Test Specifications**

<b>Reference:</b>	FCC Part 15 Subpart C: 2006 (Sections 15.249).
<b>Title:</b>	Code of Federal Regulations, Part 15 (47CFR15) Radio Frequency Devices.
<b>Comments:</b>	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.

#### **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.

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

There were no deviations from the test specification.



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## **5. Operation of the EUT During Testing**

### **5.1. Operating Modes**

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

Transmitter and Receiver continuous modes.

### **5.2. Configuration and Peripherals**

The EUT was tested in the following configuration:

Telephone cable was not connected.

AC supply connected to 110 V, 60 Hz.

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## **6. Summary of Test Results**

<b>Range of Measurements</b>	<b>Section Reference</b>	<b>Port Type</b>	<b>Compliance Status</b>
Receiver AC Conducted Spurious Emissions (150 kHz to 30 MHz)	Section 15.107	AC Mains	Complied
Receiver Radiated Spurious Emissions	Section 15.109	Enclosure	Complied
Transmitter Fundamental Field strength	Section 15.249(a)	Antenna	Complied
Transmitter 20 dB Bandwidth	Section 2.1049	Antenna	Complied
Transmitter Radiated Spurious Emissions	Section 15.249(a)(d)(e) & 15.209	Antenna	Complied
Transmitter Band Edge Radiated Emissions	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.

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## **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 8 for details of measurement uncertainties.

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## 7.2. Test Results

### 7.2.1. Receiver AC Conducted Spurious Emissions: Section 15.107

7.2.1.1. The EUT was configured for AC conducted emissions measurements, as described in Section 8 of this report.

7.2.1.2. Tests were performed to identify the maximum emission levels on the AC mains line of the EUT.

#### Results:

#### Quasi-Peak Detector Measurements on Live and Neutral Lines

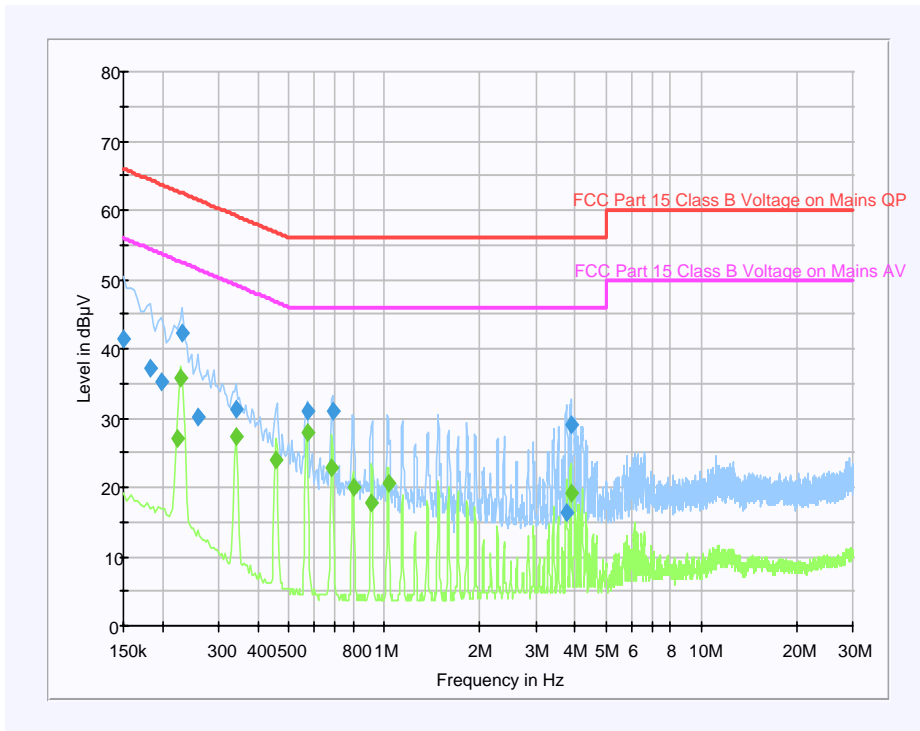
Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.150000	Neutral	41.3	66.0	24.7	Complied
0.182000	Live	37.1	64.4	27.3	Complied
0.198000	Live	35.2	63.7	28.5	Complied
0.230000	Live	42.2	62.4	20.2	Complied
0.258000	Neutral	30.0	61.5	31.5	Complied
0.342000	Live	31.3	59.2	27.9	Complied
0.570000	Live	30.9	56.0	25.1	Complied
0.686000	Neutral	31.0	56.0	25.0	Complied
3.742000	Live	16.4	56.0	39.6	Complied
3.878000	Neutral	29.1	56.0	26.9	Complied

#### Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.222000	Live	27.0	52.7	25.7	Complied
0.226000	Live	35.8	52.6	16.8	Complied
0.342000	Live	27.4	49.2	21.8	Complied
0.454000	Live	23.9	46.8	22.9	Complied
0.570000	Live	27.8	46.0	18.2	Complied
0.682000	Live	22.7	46.0	23.3	Complied
0.798000	Live	20.1	46.0	25.9	Complied
0.910000	Live	17.6	46.0	28.4	Complied
1.026000	Live	20.5	46.0	25.5	Complied
3.878000	Live	19.2	46.0	26.8	Complied

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**Receiver AC Conducted Spurious Emissions: Section 15.107 (Continued)**



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

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## **7.2.2. Receiver Radiated Spurious Emissions: Section 15.109**

### **7.2.3. Electric Field Strength Measurements (Frequency Range: 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.

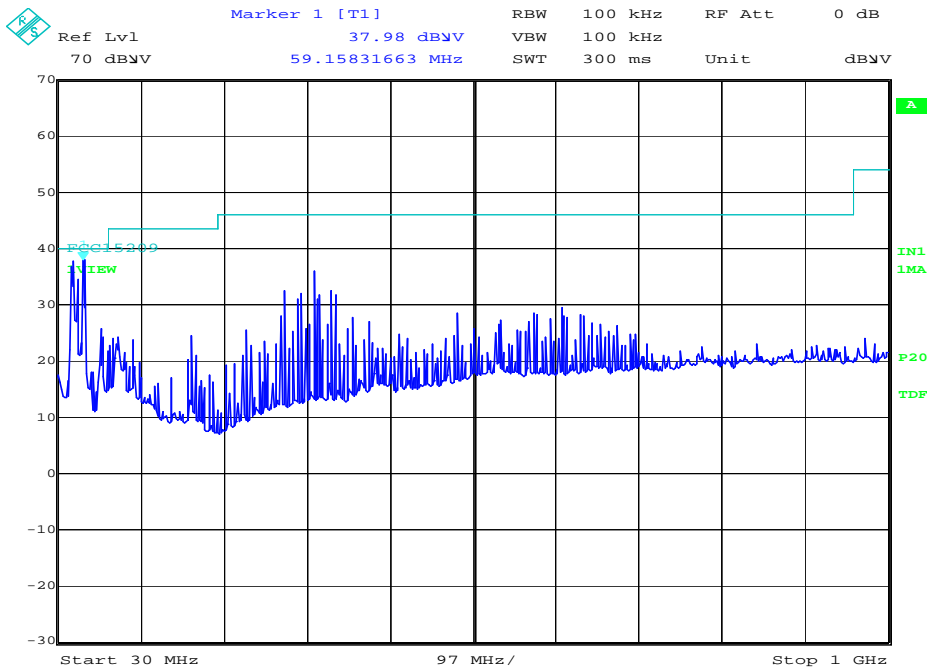
7.2.3.2. Tests were performed to identify the maximum receiver or standby radiated emission levels.

#### **Results:**

<b>Frequency (MHz)</b>	<b>Antenna Polarity</b>	<b>Q-P Level (dB<math>\mu</math>V/m)</b>	<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
47.917	Vertical	20.0	40.0	20.0	Complied
60.520	Vertical	17.3	40.0	22.7	Complied
294.949	Horizontal	25.7	46.0	20.3	Complied
314.588	Horizontal	28.7	46.0	17.3	Complied
329.337	Horizontal	28.3	46.0	17.7	Complied
496.472	Vertical	29.8	46.0	16.2	Complied

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**Receiver Radiated Spurious Emissions: Section 15.109 (Continued)**



Title: 48869JD01  
Comment A: RX RADIATED EMISSIONS  
Date: 8.DEC.2006 10:40:25

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

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#### **7.2.4. Receiver Radiated Spurious Emissions: Section 15.109 (Continued)**

#### **7.2.5. Electric Field Strength Measurements (Frequency Range: 1 GHz to 5 GHz)**

##### **Results:**

##### **Highest Peak Level:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
1829.9	Horizontal	43.2	-11.6	31.6	74.0	42.4	Complied
3295.8	Vertical	49.2	-11.0	38.2	74.0	35.8	Complied
4627.5	Vertical	41.3	-5.9	35.4	74.0	38.6	Complied

##### **Highest Average Level:**

Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Antenna Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
1829.9	Horizontal	42.0	-11.6	30.4	54.0	23.6	Complied

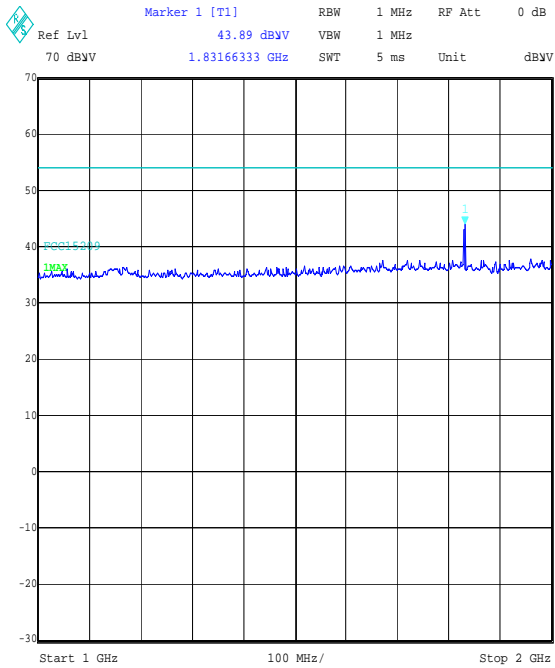
##### **Note(s):**

1. Peak levels were below the average limit.

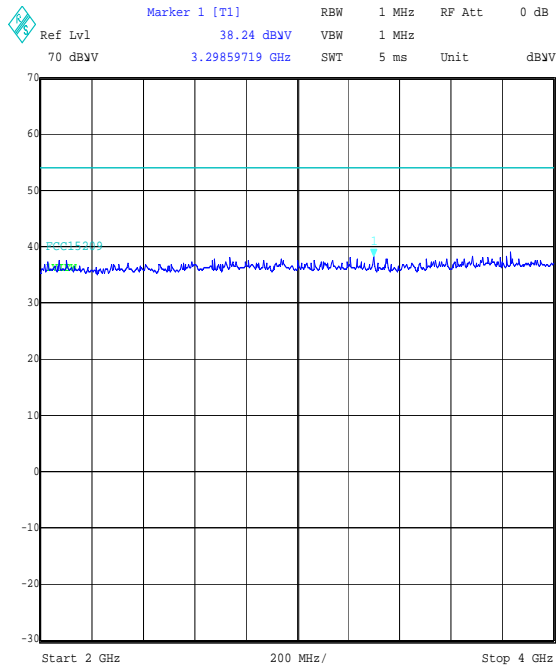


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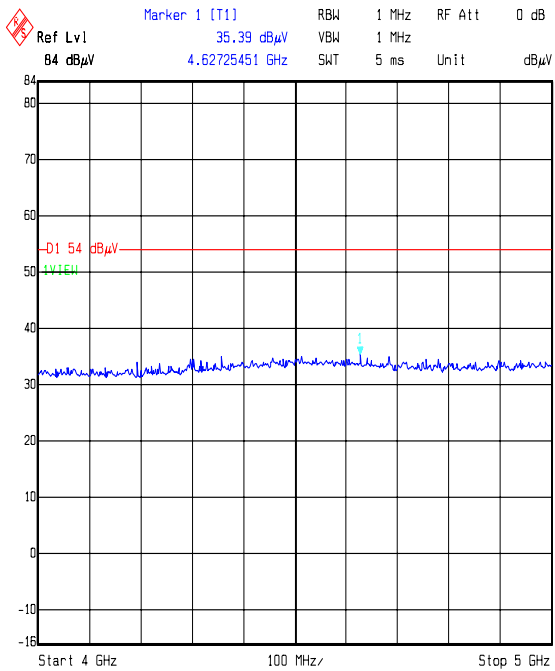
**Receiver Radiated Spurious Emissions: Section 15.109 (Continued)**



Title: 48869JD01  
 Comment A: RX RADIATED EMISSIONS  
 Date: 8.DEC.2006 10:56:41



Title: 48869JD01  
 Comment A: RX RADIATED EMISSIONS  
 Date: 8.DEC.2006 11:17:32



Title: 48869JD01  
 Comment A: Emissions  
 Date: 12.DEC.2006 12:23:39

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

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### **7.2.6. Transmitter Fundamental Fieldstrength Section 15.249(a)**

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

7.2.6.2. 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 $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
915	Horizontal	92.9	94.0	1.1	Complied

##### **AC Powered Devices**

Frequency (MHz)	Antenna Polarity	Input Voltage (AC)	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
915	Horizontal	110.0	92.7	94.0	1.3	Complied
915	Horizontal	93.5	92.7	94.0	1.3	Complied
915	Horizontal	126.5	92.7	94.0	1.3	Complied

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**7.2.7. Transmitter 20 dB Bandwidth: Section 2.1049**

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

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

**Results:**

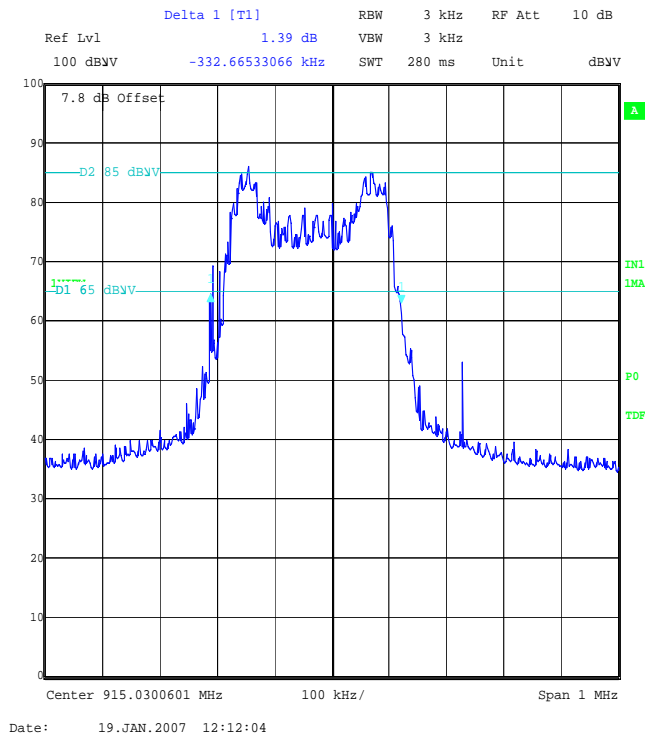
Transmitter 20 dB Bandwidth (kHz)
332.665

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**Transmitter 20 dB Bandwidth: Section 2.1049 (Continued)**



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### **7.2.8. Transceiver AC Conducted Spurious Emissions: Section 15.107**

7.2.8.1. The EUT was configured for AC conducted emissions measurements, as described in Section 8 of this report.

7.2.8.2. Tests were performed to identify the maximum emission levels on the AC mains line of the EUT.

#### **Results:**

##### **Quasi-Peak Detector Measurements on Live and Neutral Lines**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.15000	Neutral	41.9	66.0	24.2	Complied
0.174000	Live	38.4	64.8	26.4	Complied
0.222000	Live	42.8	62.7	19.9	Complied
0.226000	Live	40.5	62.6	22.1	Complied
0.266000	Live	29.8	61.2	31.4	Complied
0.334000	Live	31.4	59.4	28.0	Complied
0.446000	Live	30.3	56.9	26.6	Complied
0.550000	Live	26.1	56.0	29.9	Complied
0.662000	Neutral	27.1	56.0	28.9	Complied
3.778000	Neutral	28.3	56.0	27.7	Complied

##### **Average Detector Measurements on Live and Neutral Lines**

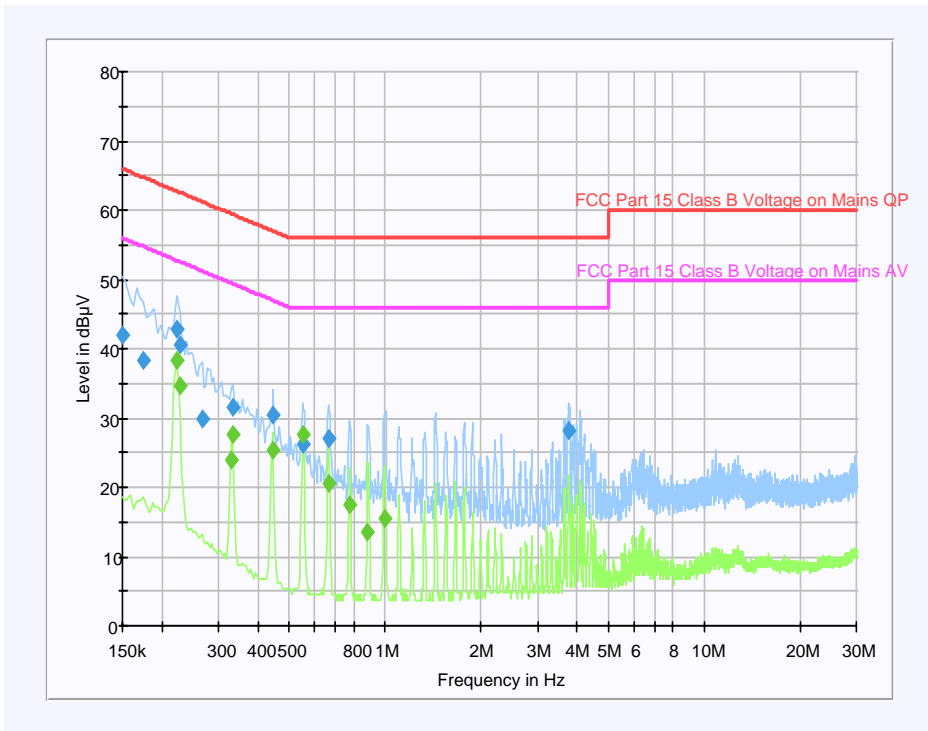
Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.222000	Live	38.4	52.7	14.3	Complied
0.226000	Live	34.6	52.6	18.0	Complied
0.330000	Live	24.0	49.5	25.5	Complied
0.334000	Live	27.6	49.4	21.8	Complied
0.442000	Live	25.3	47.0	21.7	Complied
0.554000	Live	27.7	46.0	18.3	Complied
0.662000	Live	20.6	46.0	25.4	Complied
0.774000	Live	17.4	46.0	28.6	Complied
0.882000	Live	13.5	46.0	32.5	Complied
0.994000	Live	15.4	46.0	30.6	Complied

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**Transceiver AC Conducted Spurious Emissions: Section 15.107 (Continued)**



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

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### **7.2.9. Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209**

#### **7.2.10. Electric Field Strength Measurements: 30 MHz to 1000 MHz**

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

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

#### **Results:**

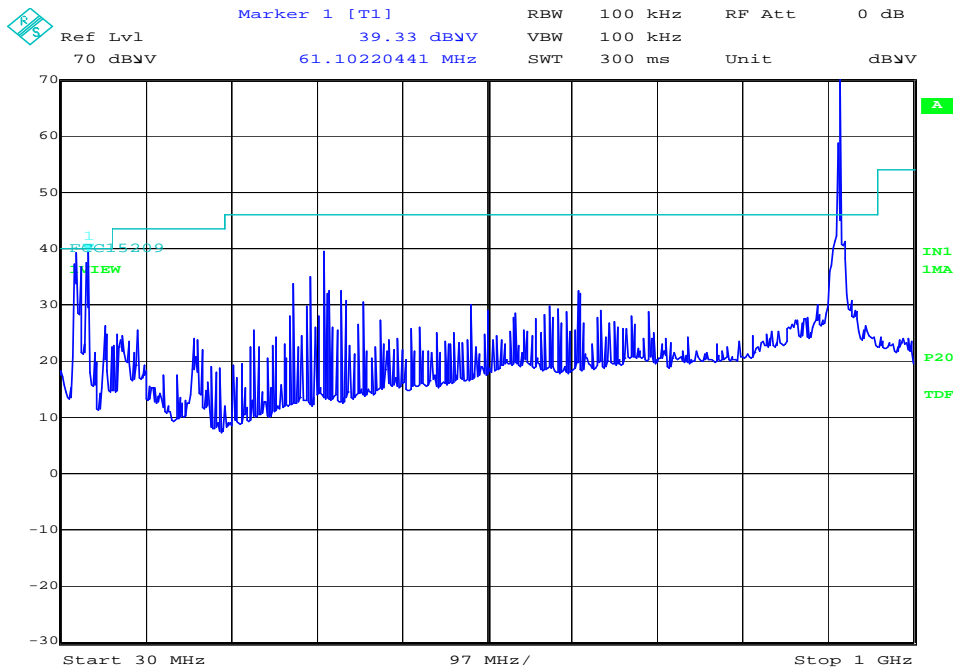
Frequency (MHz)	Antenna Polarity	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
47.917	Vertical	20.1	40.0	19.9	Complied
60.520	Vertical	17.2	40.0	22.8	Complied
294.949	Horizontal	25.8	46.0	20.2	Complied
314.588	Horizontal	28.5	46.0	17.5	Complied
329.337	Horizontal	28.5	46.0	17.5	Complied
496.472	Horizontal	30.0	46.0	16.0	Complied

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**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**



Title: 48869JD01  
Comment A: TX RADIATED EMISSIONS  
Date: 8.DEC.2006 10:26:06

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



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**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**

**7.2.11. Electric Field Strength Measurements (Frequency Range: 1 GHz to 10 GHz)**

**Results:**

**Highest Peak Level:**

Frequency (GHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
3.6633	Vertical	49.4	-10.2	39.2	74.0	34.8	Complied
5.4909	Vertical	42.2	-5.6	36.6	74.0	37.4	Complied
7.8036	Vertical	40.8	-3.2	37.6	74.0	36.4	Complied
9.7615	Vertical	41.7	-1.0	40.7	74.0	33.3	Complied

**Highest Average Level:**

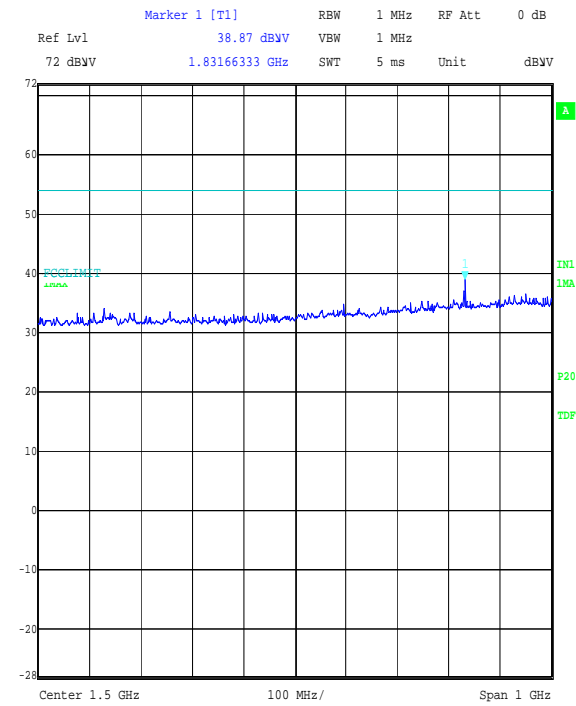
Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
5.4909	Vertical	38.3	-5.6	32.7	74.0	21.3	Complied

**Note(s):**

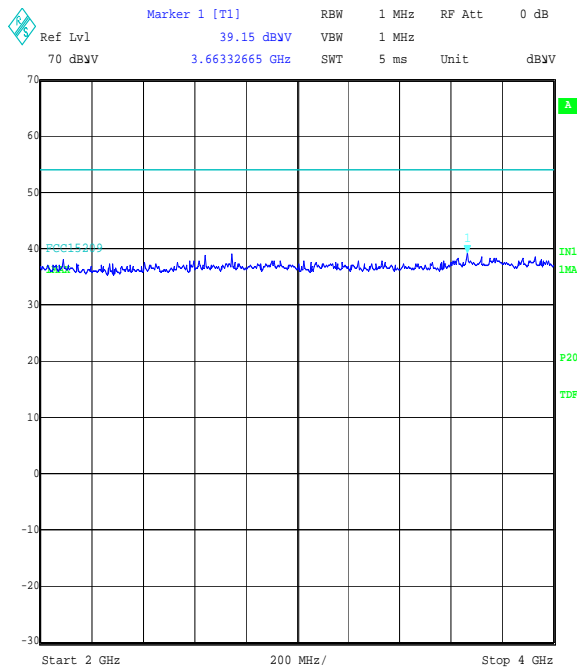
1. Peak levels were below the average limit.

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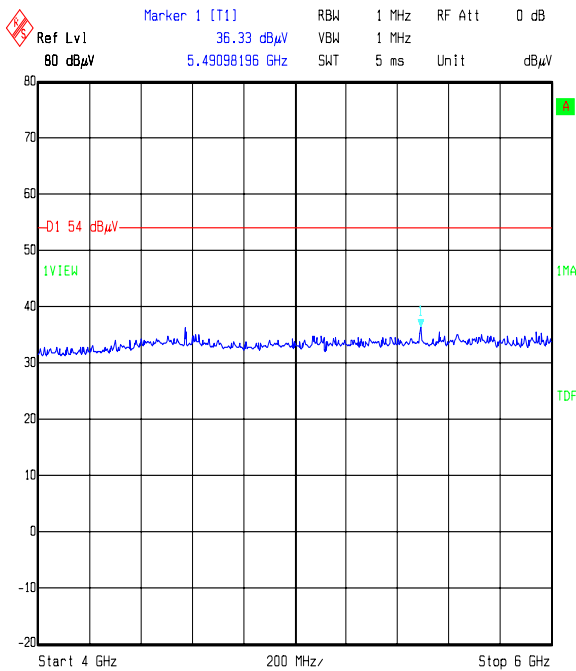
**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**



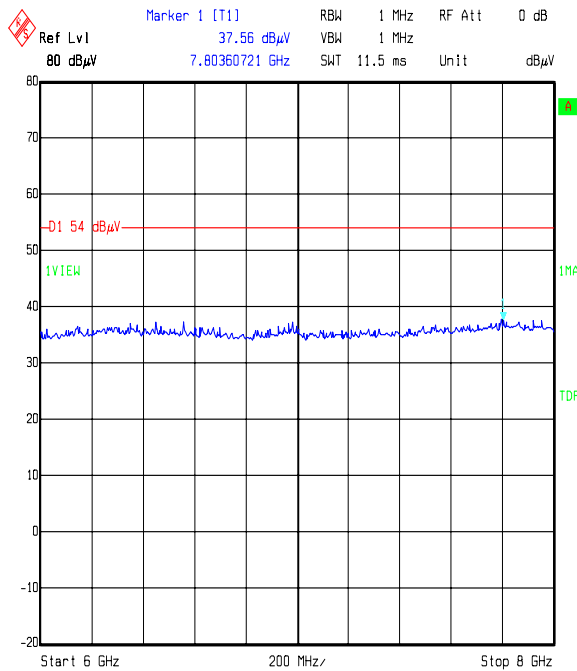
Date: 19.JAN.2007 11:46:32



Title: 48869JD01  
 Comment A: TX RADIATED EMISSIONS  
 Date: 8.DEC.2006 11:12:45



Title: 48869JD01  
 Comment A: Emissions  
 Date: 12.DEC.2006 12:29:15



Title: 48869JD01  
 Comment A: Emissions  
 Date: 12.DEC.2006 12:36:37

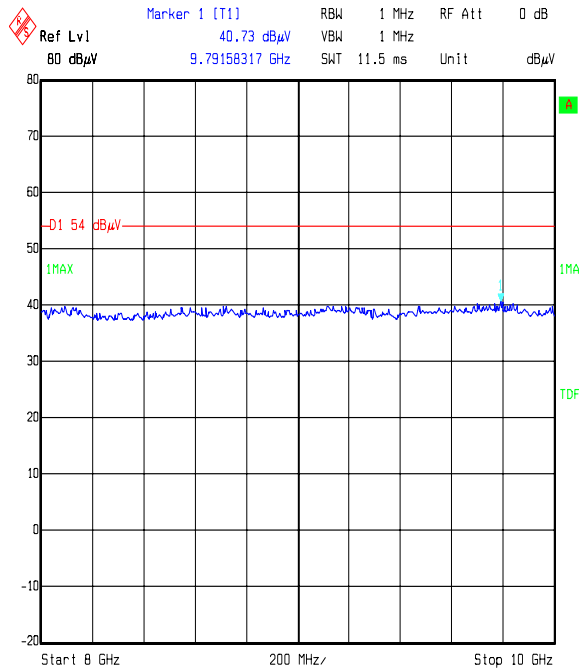
Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

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**Transmitter Radiated Emissions: Section 15.249(a)(d)(e) & Section 15.209 (Continued)**



Title: 48869JD01  
Comment A: Emissions  
Date: 12.DEC.2006 12:47:20

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

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### **7.2.12. Transmitter Radiated Emissions at Band Edges: Section 15.249(d) & 15.209**

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

7.2.12.2. 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**

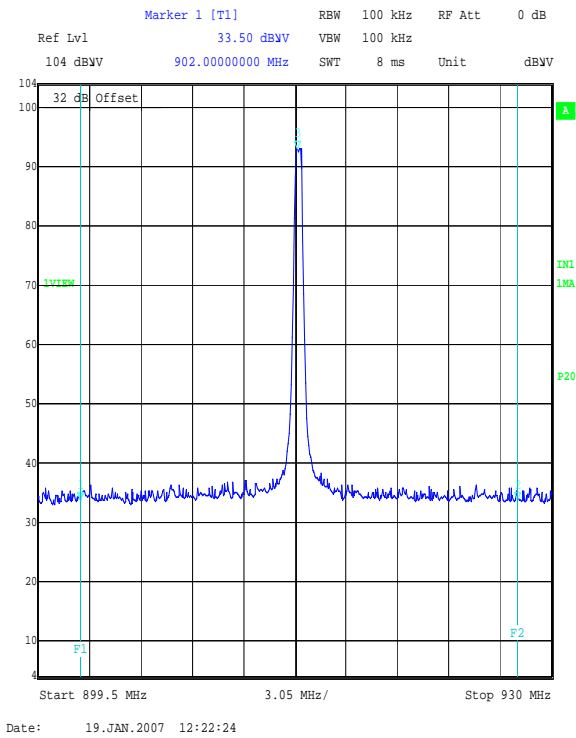
Frequency (MHz)	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
902	33.5	46.0	12.5	Complied

##### **Top Band Edge**

Frequency (MHz)	Q-P Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
928	33.7	46.0	12.3	Complied

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**Transmitter Radiated Emissions at Band Edges: Section 15.249(d) & 15.209 (Continued)**



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## **8. Measurement Methods**

### **8.1. AC Mains Conducted Emissions**

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

The test was performed in a shielded enclosure with the equipment arranged as detailed in the standard on a wooden bench using the floor of the screened enclosure as the ground reference plane. The EUT was powered with 115V 60 Hz AC mains supplied via a Line Impedance Stabilisation Network (LISN).

Initial measurements in the form of swept scans covering the entire measurement band were performed in order to identify frequencies on which the EUT was generating interference. In order to minimise the time taken for these swept measurements, a Peak detector was used in conjunction with the appropriate detector IF measuring bandwidths (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and the duty cycle of the EUT. The test configuration was the same for the initial scans as for the final measurements.

Following the initial scans, a graph was produced giving an overview of the emissions from the EUT plotted against the appropriate specification limit. A tolerance line was set 6 dB below the specification limit and levels above the tolerance line were re-tested (at individual frequencies) using the appropriate detector function.

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

<b>Receiver Function</b>	<b>Initial Scan</b>	<b>Final Measurements</b>
Detector Type:	Peak	Quasi-Peak (CISPR)/Average
Mode:	Max Hold	Not applicable
Bandwidth:	10 kHz*	9 kHz*
Amplitude Range:	60 dB	20 dB
Measurement Time:	Not applicable	> 1 s
Observation Time:	Not applicable	> 15 s
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

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## **8.2. 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 $\mu$ V plus cable loss and antenna factor.

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

<b>Receiver Function</b>	<b>Initial Scan</b>	<b>Final Measurements Below 1 GHz</b>	<b>Final Measurements Above 1 GHz</b>
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

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### **8.3. 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.



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## **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”.

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	+/- 3.25 dB
Occupied Bandwidth	N/A	95%	+/- 0.12 %
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.

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### Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
A027	1-2 GHz Horn Antenna	Eaton	9188-2	301	08 Jun 2006	36
A031	2 to 4 GHz Eaton Horn Antenna	Eaton	91889-2	557	08 Jun 2006	36
A1037	Green Bilog Antenna	Chase EMC Ltd	CBL611 2B	2413	20 Sep 2006	12
A1069	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	837469/012	31 Jan 2006	12
A254	WG 14 Microwave Horn	Flann Microwave	14240-20	139	17 Nov 2006	36
A255	WG 16 Microwave Horn	Flann Microwave	16240-20	519	17 Nov 2006	36
A259	Bilog Antenna	Chase	CBL611 1	1513	03 Mar 2006	12
A428	WG 12 Microwave Horn Antenna	Flann	12240-20	134	17 Nov 2006	36
C151	Cable	Rosenberger	UFA210 A-1-1181-70x70	None	Cal Before Use	-
C160	Cables	Rosenberger	UFA210 A-1-1181-70x70	None	Cal Before Use	-
C348	Cable (was C527)	Rosenberger	UFA210 A-1-1181-70x70	2993	Cal Before Use	-

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**Test Equipment Used (Continued)**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
C363	3m cable	Rosenberger	RG142	None	Cal Before Use	-
C464	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	837469/012	31 Jan 2006	12
C475	Cable				Cal Before Use	-
M023	ESVP Receiver	Rohde & Schwarz	ESVP	872 991/027	10 Apr 2006	12
M024	EZM Spectrum Monitor	Rohde & Schwarz	EZM	873 952/006	None	-
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986_022	08 Sep 2006	12
M1263	EMI Test Receiver	Rohde & Schwarz	ESIB7	100265	19 Jan 2006	12
S212	Emissions Screened Room	RFI	12		None	-

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

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## **Appendix 2. Test Configuration Drawings**

This appendix contains the following drawings:

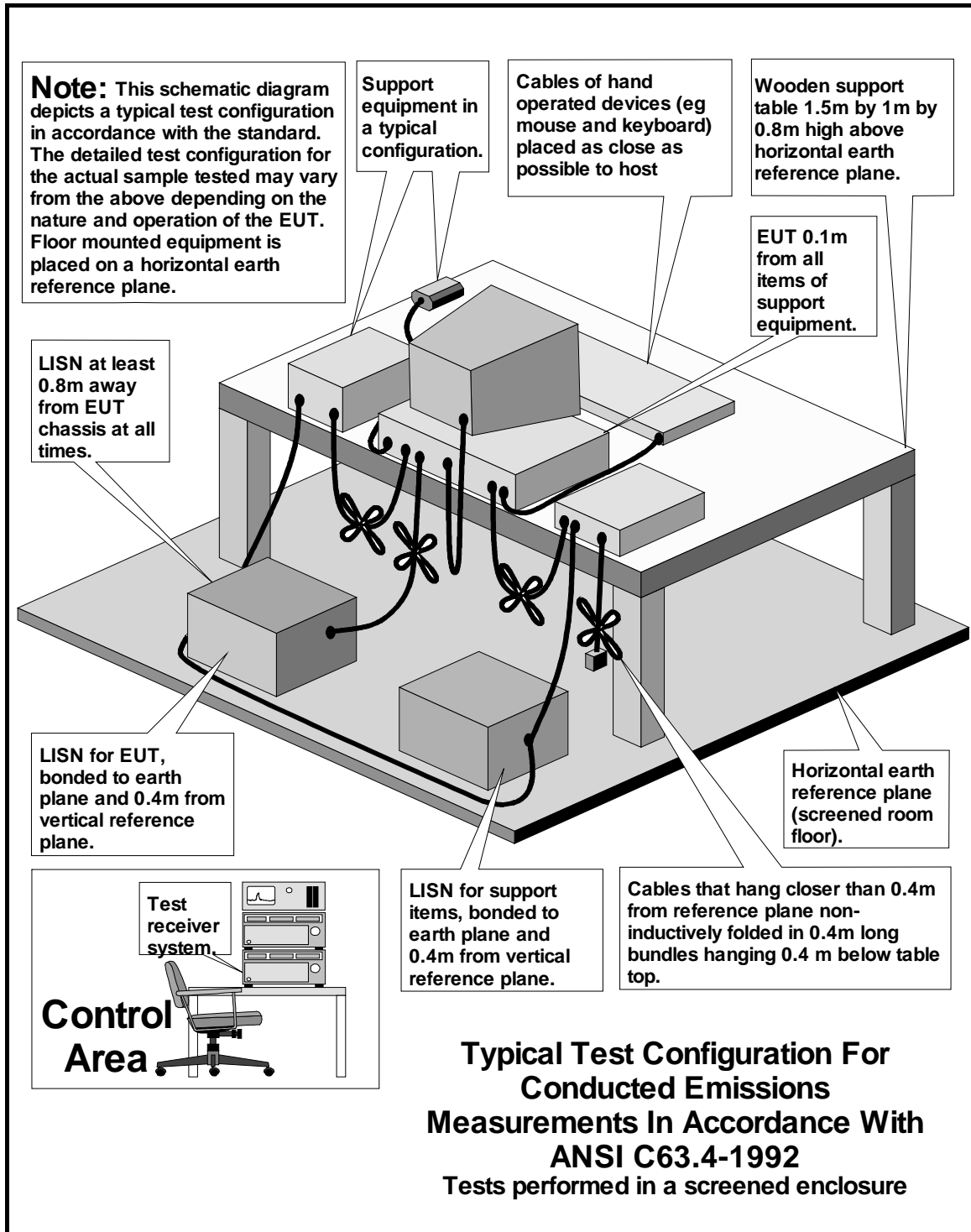
<b>Drawing Reference Number</b>	<b>Title</b>
DRG\48869JD01\EMICON	Test configuration for measurement of conducted emissions.
DRG\48869JD01\EMIRAD	Test configuration for measurement of radiated emissions.

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DRG48869JD01\EMICON



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DRG48869JD01\EMIRAD

