TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Omitec Ltd
OmiDetect 50, Omitec Part Number: OM504/1

To: FCC Part 15.109 and 15.209

Test Report Serial No:
RFI/RPTE2/RP48828JD01A

Supersedes Test Report Serial No:
RFI/RPTE2/RP48828JD01A

This Test Report Is Issued Under The Authority Of Andrew Brown, Operations Manager: **pp.** 	
Tested By: Petr Hajek 	**Checked By: Michael Derby** 
Report Copy No: PDF 01	
Issue Date: 15 January 2007	**Test Dates: 13 December 2006 to 14 December 2006**

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Test of: Omitec Ltd
OmiDetect 50, Omitec Part Number: OM504/1
To: FCC Part 15.109 and 15.209

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1. Client Information

Company Name:	Omitec Instrumentation Ltd
Address:	Hopton Industrial Estate London Road Devizes Wiltshire SN10 2EU UK
Contact Name:	Mr P Parks

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:	Tyre Pressure Monitor
Brand Name:	Omitec
Model Name or Number:	OmiDetect 50
Part Number	OM504/1
Serial Number:	RFI Test 2
FCC ID:	SV4-OM504
Country of Manufacture:	UK
Date of Receipt:	13 December 2006

2.2. Accessories

No accessories were supplied with the EUT.

2.3. Description of EUT

The equipment under test is an OmiDetect 50, which allows a technician to check that the basic function of an RF Transmitter in a Tyre pressure monitoring sensor is working correctly. The OmiDetect 50 achieves this by activating the valve with a 125 kHz signal for a period of 11 seconds. The signal will be continuous. The OmiDetect will then monitor the 315 MHz and 433.92 MHz ISM bands for activity.

2.4. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

2.5. Additional Information Related to Testing

Power Supply Requirement:	Internal battery supply of 9 V (PP3 Battery)		
Intended Operating Environment:	Commercial Light Industry		
Equipment Category:	RF Inductive		
Type of Unit:	Portable (Standalone Battery Powered Device)		
Transmit Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency**
	Activation	'Tyre Symbol'	125 kHz
Highest Unintentionally Generated Frequency:	433.92 MHz		
Receive Channels Tested:	**Channel ID**	**Channel Number**	**Channel Frequency**
	315	1	315 MHz
	433	2	433.92 MHz
Highest Unintentionally Generated Frequency:	433.92 MHz		
Highest Fundamental Frequency:	125 kHz		

2.6. Support Equipment

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

3. Test Specification, Methods and Procedures

3.1. Test Specifications

Reference:	FCC Part 15 Subpart B: 2006 (Sections 15.209).
Title:	Code of Federal Regulations, Part 15 (47CFR215) Radio Frequency Devices.

3.2. Methods and Procedures

The methods and procedures used were as detailed in:

ANSI C63.2 (1987)
Title: American National Standard for Instrumentation - Electromagnetic noise and field strength.

ANSI C63.4 (2001)
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.

DA00-705 (2000)
Title: Filing and Frequency Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

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.

4. Deviations from the Test Specification

There were no deviations from the test specification.

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 and receive mode.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

Stand alone.

6. Summary of Test Results

Range of Measurements	Section Reference	Port Type	Compliancy Status
Receiver Radiated Spurious Emissions	Section 15.109	Enclosure	Complied
Transmitter Radiated Spurious Emissions	Section 15.209	Enclosure	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.

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.

7.2. Test Results

7.2.1. Receiver Radiated Spurious Emissions: Section 15.109

7.2.2. Electric Field Strength Measurements (Frequency Range: 30 MHz to 1000 MHz)

7.2.2.1. The EUT was configured for radiated emissions testing as described in Section 9 of this report.

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

Results:

Bottom Channel

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
294.468	Vertical	23.5	46.0	22.5	Complied
301.281	Vertical	23.5	46.0	22.5	Complied
304.969	Vertical	23.6	46.0	22.4	Complied
307.293	Vertical	24.1	46.0	21.9	Complied
311.863	Vertical	25.5	46.0	20.5	Complied

Top Channel

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
312.985	Vertical	26.5	46.0	19.5	Complied
314.107	Vertical	27.8	46.0	18.2	Complied
315.310	Vertical	28.5	46.0	17.5	Complied
316.436	Vertical	28.2	46.0	17.8	Complied
318.676	Vertical	26.5	46.0	19.5	Complied

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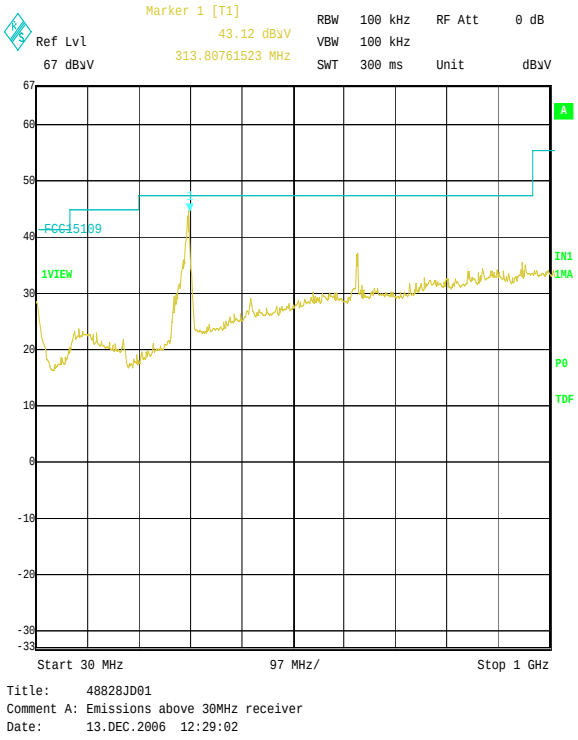
Receiver Radiated Spurious Emissions: Section 15.109 (Continued)



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

Test of: **Omitec Ltd**
OmiDetect 50, Omitec Part Number: OM504/1
To: **FCC Part 15.109 and 15.209**

Receiver Radiated Spurious Emissions: Section 15.109 (Continued)

7.2.3. Electric Field Strength Measurements (Frequency Range: 1 GHz to 2.5 GHz)

Results:

Bottom Channel - Highest Peak Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Antenna Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1.1891	Horizontal	48.2	-12.8	35.4	74.0	38.6	Complied
1.2302	Horizontal	47.9	-12.7	35.2	74.0	38.8	Complied
2.1673	Horizontal	46.2	-11.8	34.4	74.0	39.6	Complied

Bottom Channel - Highest Average Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Antenna Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1.1891	Horizontal	48.2	-12.8	35.4	54.0	18.6	Complied
1.2302	Horizontal	47.9	-12.7	35.2	54.0	18.8	Complied
2.1673	Horizontal	46.2	-11.8	34.4	54.0	19.6	Complied

Top Channel - Highest Peak Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Antenna Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1.2598	Horizontal	50.7	-12.6	38.1	74.0	35.9	Complied
1.3029	Horizontal	52.9	-12.4	40.5	74.0	33.5	Complied
2.2184	Horizontal	44.6	-12.0	32.6	74.0	41.4	Complied

Top Channel - Highest Average Level:

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Antenna Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.2184	Horizontal	44.6	-12.0	32.6	54.0	21.4	Complied

Note(s):

1. *Both receivers active during this test.*

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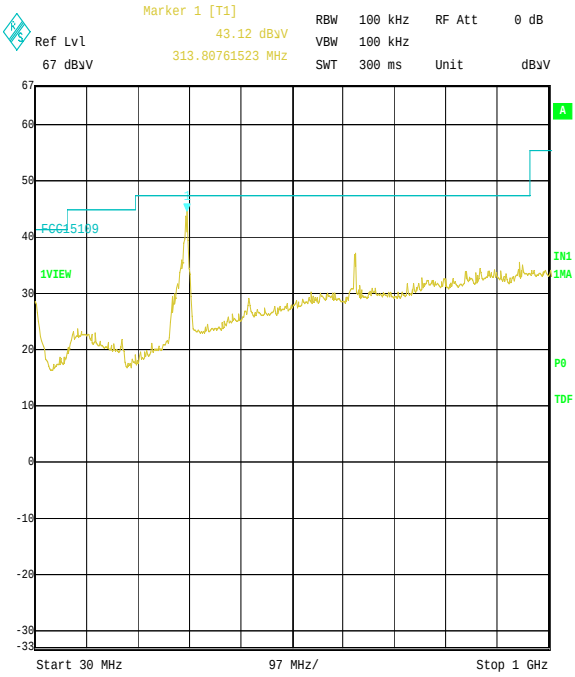
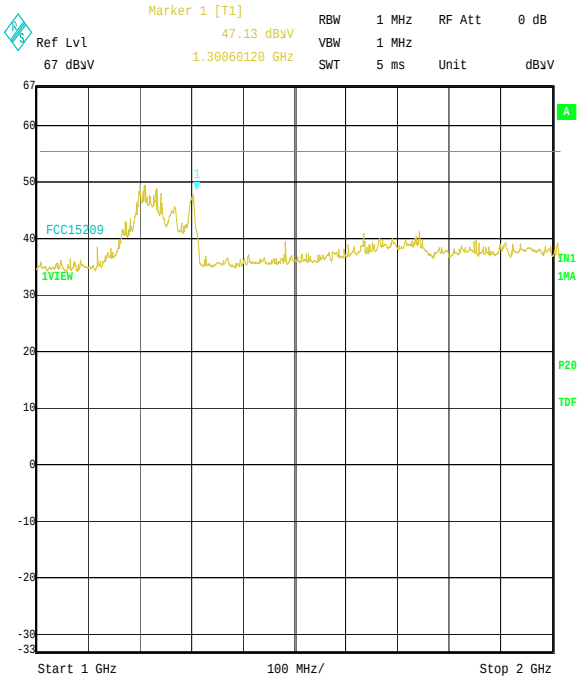
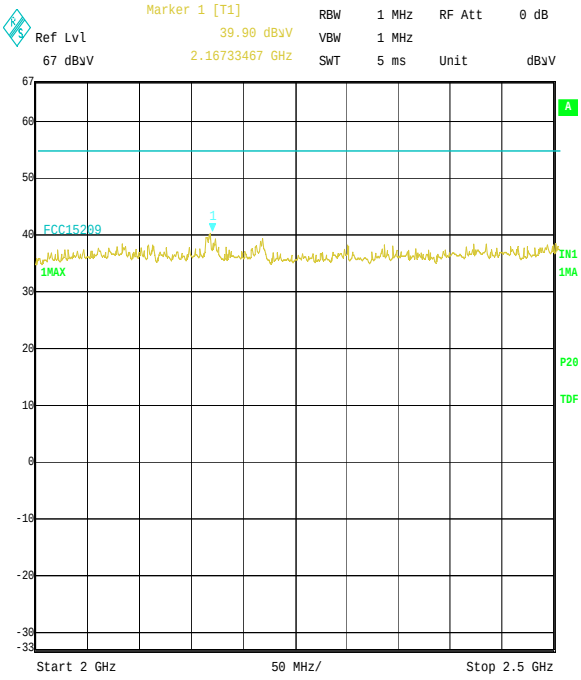
Receiver Radiated Spurious Emissions: Section 15.109 (Continued)



Title: 48828JD01
Comment A: Emissions above 30MHz receiver
Date: 13.DEC.2006 12:29:02



Title: 48828JD01
Comment A: Emissions above 30MHz receiver
Date: 13.DEC.2006 12:57:57



Title: 48828JD01
Comment A: Emissions above 30MHz receiver
Date: 13.DEC.2006 13:11:19

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

7.2.4. Transmitter Radiated Spurious Emissions: Section 15.209

7.2.5. Electric Field Strength Measurements (Frequency Range: 0.009 to 30 MHz)

7.2.5.1. The EUT was configured for radiated emissions testing, as described in Section 9 of this report.

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

7.2.5.3. Limits below 30 MHz are specified at test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However as specified by section 15.31 (f)(2), measurements may be performed at a closer distance, and the measured level corrected to the specified measurement distance by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

Results:

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Measurement Distance (m)	Margin (dB)	Result
0.198	N/A	-5.1	126.7	10	131.8	Complied
0.250	N/A	-2.8	126.7	10	129.5	Complied
0.374	N/A	-1.7	126.7	10	128.4	Complied
0.626	N/A	-7.4	106.7	10	114.1	Complied
0.502	N/A	-11.1	106.7	10	117.8	Complied
0.694	N/A	-12.5	106.7	10	119.2	Complied

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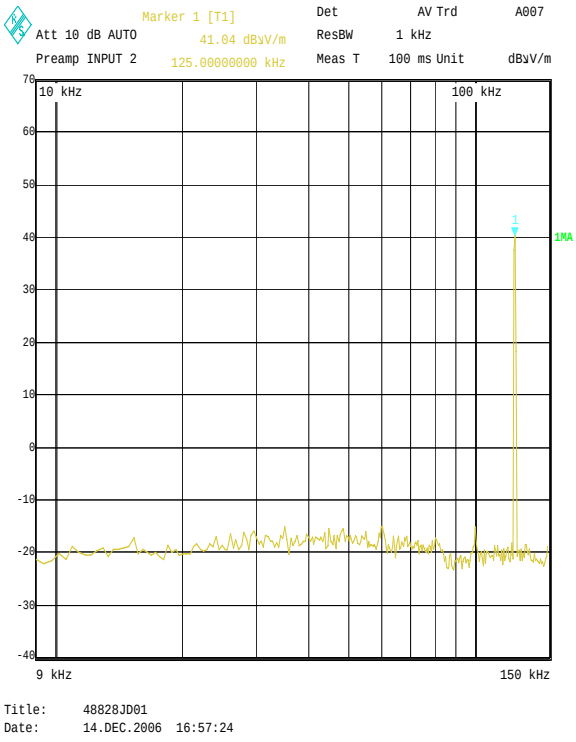
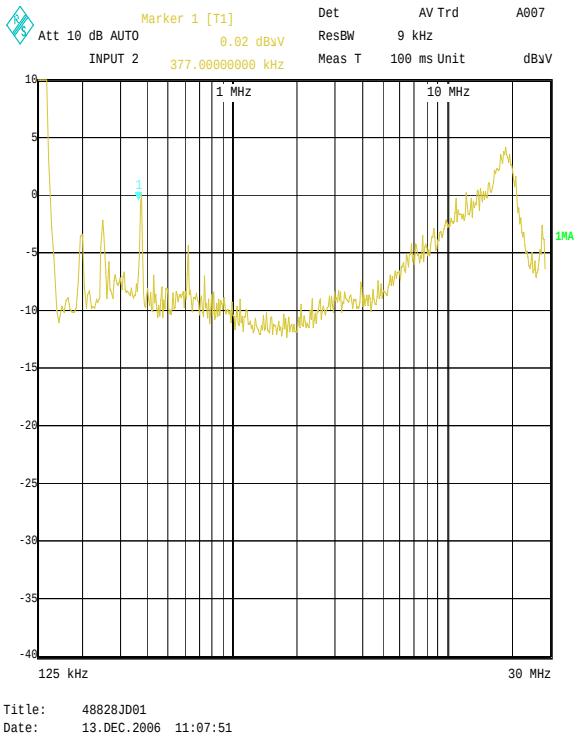
Transmitter Radiated Spurious Emissions: Section 15.209 (Continued)





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

8. Measurement Uncertainty

8.1. 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.

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

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

8.4. 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
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	+/- 3.25 dB
Radiated Spurious Emissions	30 MHz to 1000 MHz	95%	+/- 5.26 dB
Radiated Spurious Emissions	1 GHz to 18 GHz	95%	+/- 4.18 dB

8.5. 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.

9. Measurement Methods

9.1. 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 110V 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:

Receiver Function	**Initial Scan**	**Final Measurements**
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

9.2. Receiver Radiated Emissions

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

Initial pre-scans covering the entire measurement band from the lowest generated frequency declared up to the upper frequency detailed in Section 15.33(b) were performed within a screened chamber in order to identify frequencies on which the EUT was generating interference. This determined the frequencies from the EUT, which required further examination. In order to minimise the time taken for the swept measurements, a peak detector was used in conjunction with the appropriate detector measuring bandwidth (see table below). Repetitive scans were performed to allow for emissions with low repetition rates, and for the duty cycle of the EUT.

The initial scans were performed using an antenna height of 1.5 m and a measurement distance of 3 m. A limit line was set to the specification limit. Levels within 20 dB of this limit were measured where possible, on occasion, the receiver noise floor came within the 20 dB boundary. On these occasions, the system noise floor may have been recorded.

An open area test site using the appropriate test distance and measuring receiver with a Quasi-Peak detector was used for measurements below 1000 MHz, for measurements above 1000 MHz average and peak detectors were used.

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.

On the open area test site, at each frequency where a signal was found, the levels were maximised by initially rotating the turntable through 360° and then varying the antenna height between 1 m and 4 m in the horizontal polarisation. 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. The procedure was repeated for the vertical polarisation.

The final field strength was determined as the indicated level in dBμV 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	Not applicable
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

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval
A007	10 kHz to 30 MHz H-Field Antenna	Rohde & Schwarz	HFH2-Z2	880 458/020	07 Feb 2006	12
A027	1-2 GHz Horn Antenna	Eaton	9188-2	301	08 Jun 2006	36
A1037	Green Bilog Antenna	Chase EMC Ltd	CBL6112B	2413	20 Sep 2006	12
A1534	Preamplifier 1-26.5 GHz	Hewlett Packard	8449B OPT H02	3008A00405	6 Oct 2006	12
A259	Bilog Antenna	Chase	CBL6111	1513	03 Mar 2006	12
C1081	UFA210A Rosenberger Cable	Rosenberger	FA210A1020 M5050	28463-2	14 Feb 2006	12
C151	Cable	Rosenberger	UFA210A-1-1181-70x70	None	22 Sept 2006	12
C160	Cables	Rosenberger	UFA210A-1-1181-70x70	None	29 Jan 2006	12
C363	3m	Rosenberger	RG142	None	29 Jan 2006	12
C461	DC to 18GHz Rosenberger	Rosenberger	UFA210A-1-1182-704704	98H0305	30 Jan 2006	12
C468	10m Cable	Rosenberger	UFA210A-1-3937-504504	98L0440	29 Jan 2006	12
M023	ESVP Receiver	Rohde & Schwarz	ESVP	872 991/027	10 Apr 2006	12
M024	EZM Spectrum Monitor	Rohde & Schwarz	EZM	873 952/006	Calibration not required	-
M1242	Spectrum Analyser	Rohde & Schwarz, Inc.	FSEM30	845986_022	08 Sep 2006	12
M1263	EMI Test Receiver	Rohde & Schwarz	ESIB7	100265	12 Jan 2006	12

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

Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\48828JD01A\EMICON	Test configuration for measurement of conducted emissions.
DRG\48828JD01A\EMIRAD	Test configuration for measurement of radiated emissions.

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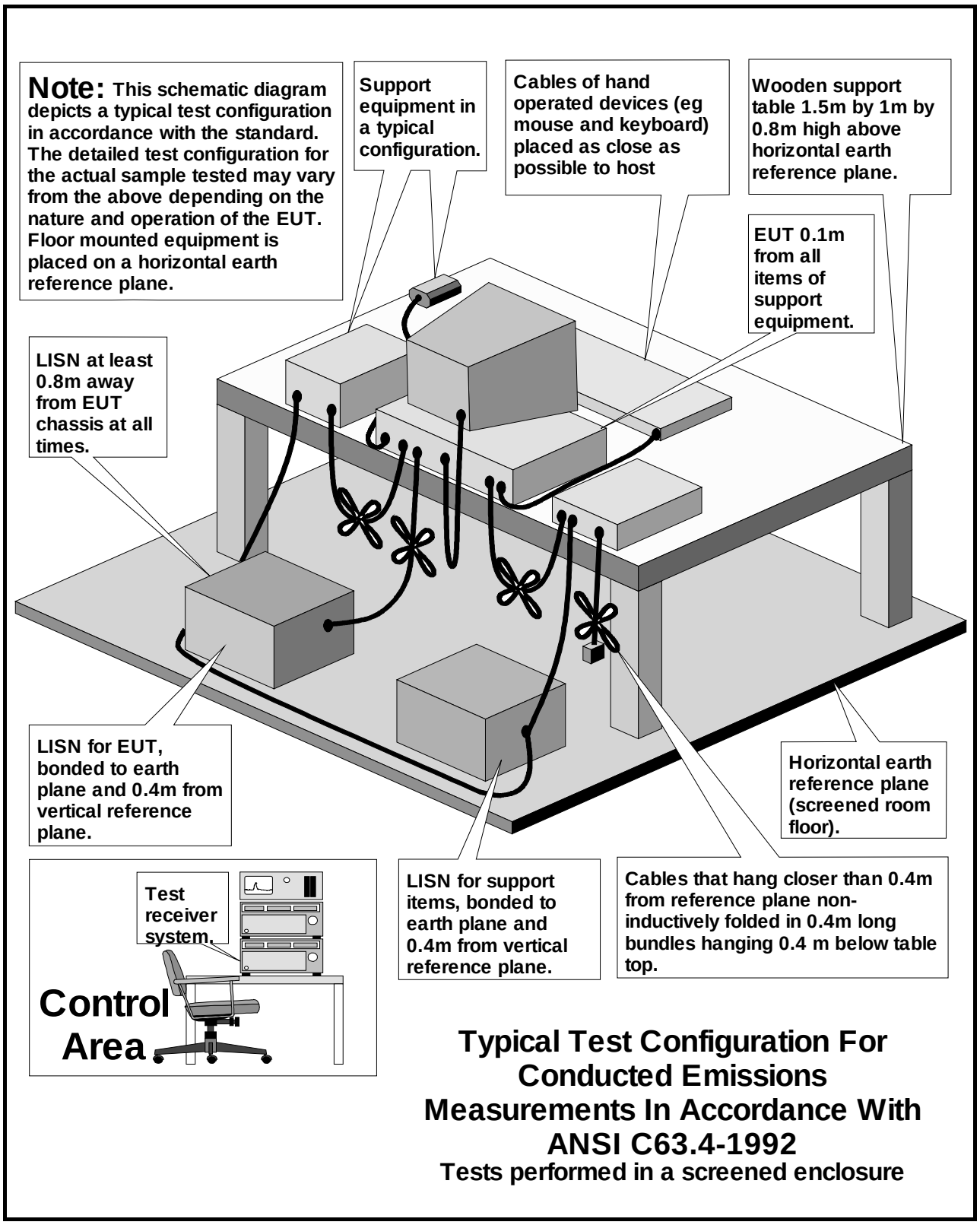
DRG\48828JD01A\EMICON



Typical Test Configuration For Conducted Emissions Measurements In Accordance With ANSI C63.4-1992

Tests performed in a screened enclosure

Test of: Omitec Ltd
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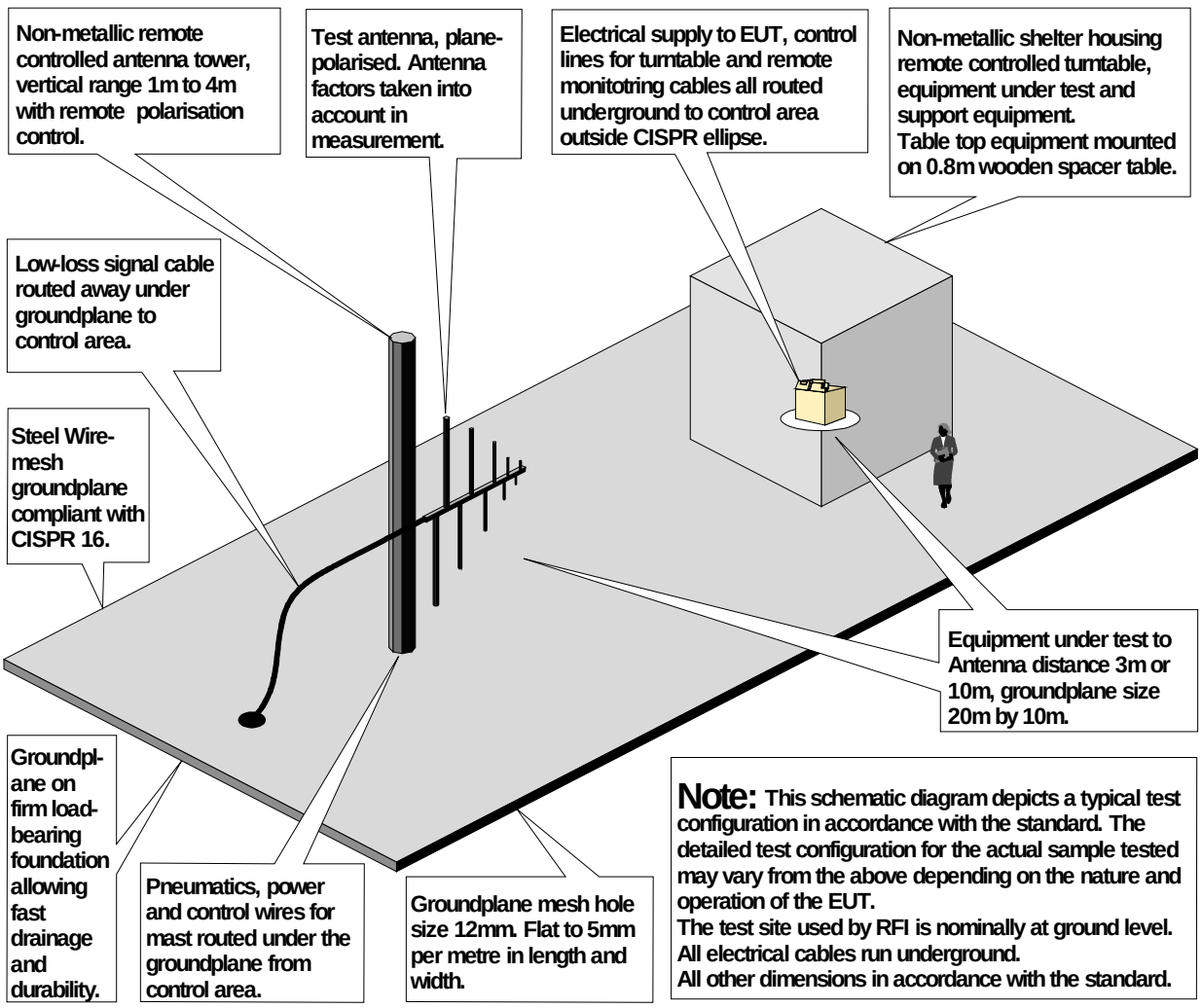
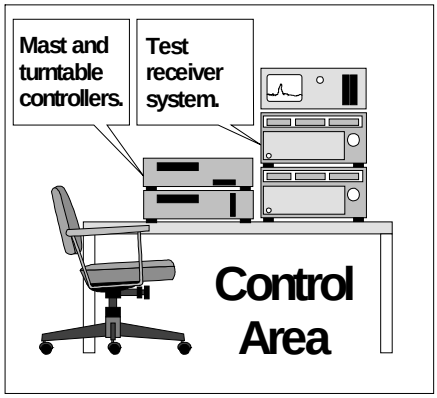
DRG\48828JD01A\EMIRAD



Note: This schematic diagram depicts a typical test configuration in accordance with the standard. The detailed test configuration for the actual sample tested may vary from the above depending on the nature and operation of the EUT.
The test site used by RFI is nominally at ground level.
All electrical cables run underground.
All other dimensions in accordance with the standard.

Test Configuration For Radiated Emissions Measurements

Reflection-free area: >60m by 52m (CISPR ellipse)
Groundplane Earthed
Control room outside CISPR ellipse



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