

**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: Paxton Access Ltd
Magstripe and Proximity Desktop Model 350-910

To: FCC Part 15 Subpart C: 2007 (Sections 15.207 and 15.209)

Test Report Serial No:
RFI/RPTE3/RP72982JD07A

Supersedes Test Report Serial No:
RFI/RPTE2/RP72982JD07A

This Test Report Is Issued Under The Authority Of Steve Flooks, Radio Performance Group Service Leader:	
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RFI Global Services Ltd

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1. Client Information

Company Name:	Paxton Access Ltd
Address:	Paxton House Home Farm Brighton Sussex BN1 9HU
Contact Name:	Mr B Glass

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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)

Description:	Desktop Card Reader
Brand Name:	Paxton Access
Model Name or Number:	350-910
Serial Number:	Not stated
FCC ID Number:	USE350910
Country of Manufacture:	UK
Date of Receipt:	05 March 2008

2.2. Description of EUT

The equipment under test was a magstripe and proximity desktop reader operating at 125 kHz.

2.3. Modifications Incorporated in the EUT

During the course of testing the EUT was not modified.

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2.4. Additional Information Related to Testing

Power Supply Requirement:	USB Powered	
Intended Operating Environment:	Light Industry	
Equipment Category:	Short Range Device	
Type of Unit:	Base Station (Fixed Use)	
Transmit Frequency Range:	125 kHz	
Transmit Channels Tested:	Channel ID	Frequency (MHz)
	Single Channel	125 kHz

2.5. Interface Ports on EUT

Port	Description	Type / Length	Applicability
1	USB < 3m	USB Cable < 3m	Yes

2.6. Support Equipment

The following support equipment was used to set up the EUT prior to testing:

Description:	Acer Laptop
Brand Name:	ACER
Model Name or Number:	MS2177
Serial Number:	LXTAC061446170E7992000
Cable Length and Type:	USB, approx. 3m
Connected to Port:	USB

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3. Test Specification, Methods and Procedures

3.1. Test Specifications

Reference:	FCC Part 15 Subpart C: 2007 (Sections 15.207 and 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/TIA-603-B-2003

Land Mobile Communications Equipment, Measurements and Performance Standards.

ANSI C63.2 (1996)

Title: American National Standard for Instrumentation - Electromagnetic Noise and Field Strength Instrumentation, 10 Hz to 40 GHz.

ANSI C63.4 (2003)

Title: American National Standard Methods of Measurement of radio-Noise 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 and 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:

- Transmit mode.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration:

- Stand alone and powered via PIDU plus.
- Connected to a laptop via USB cable.

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6. Summary of Test Results

Range of Measurements	Section Reference	Port Type	Compliance Status
Transmitter AC Mains Conducted Emissions (150 kHz to 30 MHz)	C.F.R. 47 FCC Part 15: 2007 Section 15.207	AC Mains	Complied
Transmitter Radiated Spurious Emissions	C.F.R. 47 FCC Part 15: 2007 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.

- FCC Site Registration Number: 90895

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7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

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.

As the EUT is a transceiver and not capable of being put into "receive only" mode. Only transmitter tests were performed.

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7.2. Test Results

7.2.1. Transmitter AC Mains Conducted Emissions

Tests were performed using the test methods detailed in ANSI C63.4 Section 7.

Results:

Quasi-Peak Detector Measurements on Live and Neutral Lines

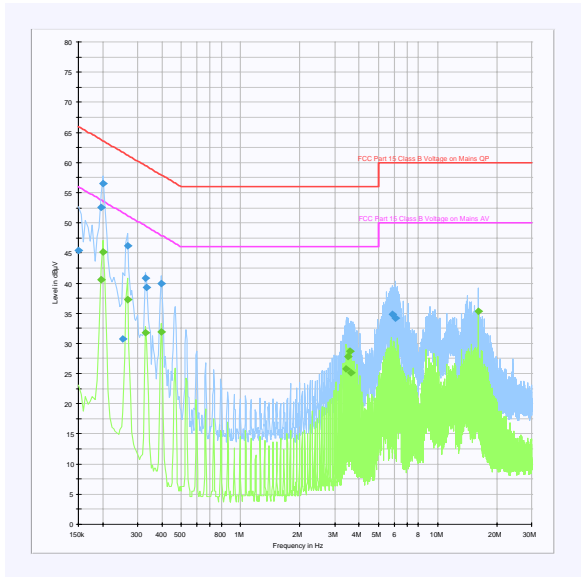
Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150000	Live	45.4	66.0	20.6	Complied
0.195000	Live	52.6	63.8	11.2	Complied
0.199500	Live	56.5	63.6	7.1	Complied
0.253500	Live	30.7	61.6	30.9	Complied
0.267000	Live	46.2	61.2	15.0	Complied
0.330000	Live	40.8	59.5	18.7	Complied
0.334500	Live	39.3	59.3	20.0	Complied
0.397500	Live	39.9	57.9	18.0	Complied
5.896500	Neutral	34.8	60.0	25.2	Complied
6.094500	Live	34.2	60.0	25.8	Complied

Average Detector Measurements on Live and Neutral Lines

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.195000	Neutral	40.6	53.8	13.2	Complied
0.199500	Neutral	45.1	53.6	8.5	Complied
0.267000	Neutral	37.3	51.2	13.9	Complied
0.330000	Live	31.8	49.5	17.7	Complied
0.397500	Live	31.8	47.9	16.1	Complied
3.444000	Neutral	25.8	46.0	20.2	Complied
3.511500	Neutral	27.8	46.0	18.2	Complied
3.579000	Neutral	28.7	46.0	17.3	Complied
3.642000	Live	25.1	46.0	20.9	Complied
15.999000	Live	35.4	50.0	14.6	Complied

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Transmitter AC Mains Conducted Emissions (Continued)



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

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7.2.2. Transmitter Radiated Emissions

7.2.3. Electric Field Strength Measurements (Frequency Range: 0.009 to 1000 MHz)

Tests were performed using the test methods detailed in ANSI C63.4 Section 8.

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:

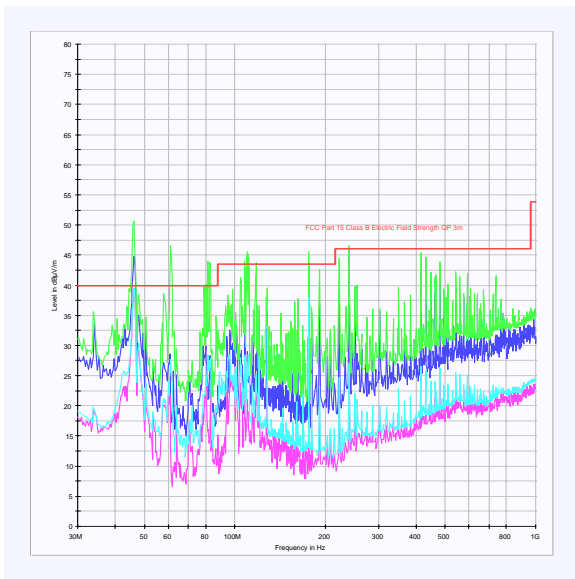
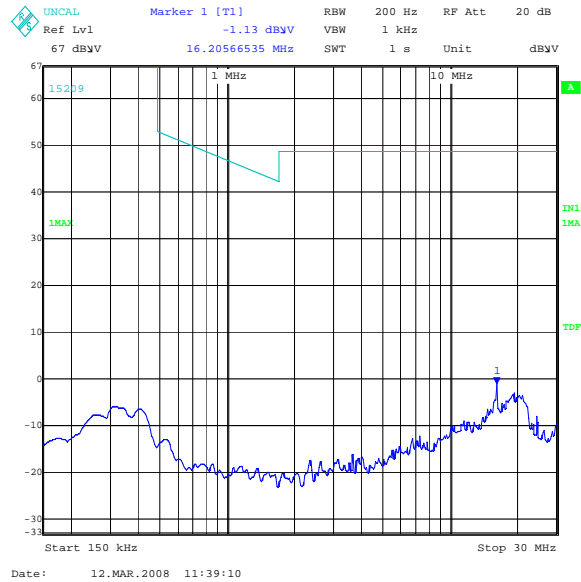
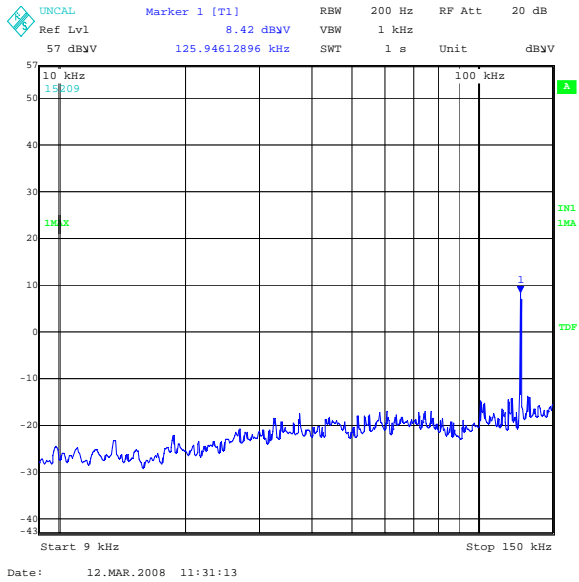
Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Measurement Distance (m)	Margin (dB)	Result
0.125	Loop Ant	13.27	99.2	3.0	85.7	Complied
16.250	Loop Ant	-0.19	Noise floor, note 1			
46.243	Vertical	20.3	40.0	3.0	19.7	Complied
50.481	Vertical	23.7	40.0	3.0	16.3	Complied
79.992	Horizontal	26.4	40.0	3.0	13.6	Complied
107.991	Vertical	31.9	43.5	3.0	11.6	Complied
117.392	Vertical	20.5	43.5	3.0	23.0	Complied
175.982	Horizontal	17.9	43.5	3.0	25.6	Complied
191.978	Horizontal	12.7	43.5	3.0	30.8	Complied
239.975	Vertical	16.5	46.0	3.0	29.5	Complied
447.962	Vertical	36.1	46.0	3.0	9.9	Complied
479.964	Horizontal	28.8	46.0	3.0	17.2	Complied

Note(s):

1. No emissions was observed, the noise floor level only was therefore recorded.

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Transmitter Radiated Emissions (Continued)



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

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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 (dB)
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95	±3.25
Radiated Spurious Emissions	30 MHz to 1000 MHz	95	±5.26

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.

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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

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9.2. 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 that 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 dB μ V plus cable loss and antenna factor.

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Radiated Emissions (Continued)

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

Receiver Function	Initial Scan (Below 30 MHz)	Final Measurements (Below 30 MHz)
Detector Type:	Peak	Quasi-Peak (CISPR) or Average
Mode:	Max Hold	Not applicable
Bandwidth:	200 Hz or 9 kHz	200 Hz or 9 kHz
Amplitude Range:	60 dB	20 dB
Step Size:	Continuous sweep	Not applicable
Sweep Time:	Coupled	Not applicable

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

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Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A004	Line Impedance Stabilization Network	Rohde & Schwarz	ESH3-Z5	890 604/027	23 Apr 2007	12
A007	Antenna	Rohde & Schwarz	HFH2-Z2	880 458/020	28 Feb 2008	12
A1037	Antenna	Chase EMC Ltd	CBL6112B	2413	13 Feb 2008	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	16 Jan 2008	12
C1268	Cable	Rosenberger	FA210A0075008080	49356-1	Calibrated before use	-
C151	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-
C160	Cable	Rosenberger	UFA210A-1-1181-70x70	None	Calibrated before use	-
C363	Cable	Rosenberger	RG142	None	Calibrated before use	-
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	06 Feb 2008	12

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

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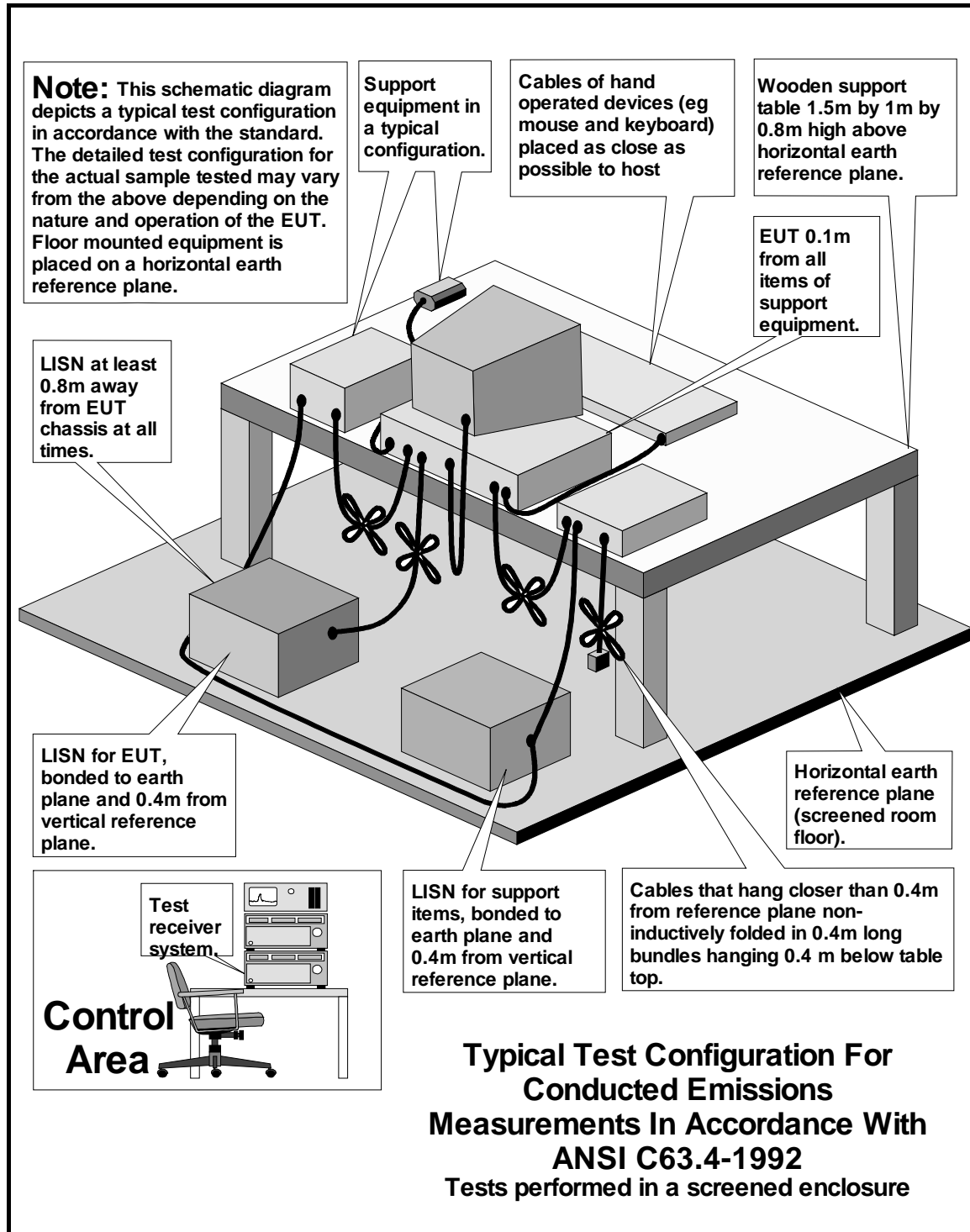
Appendix 2. Test Configuration Drawings

This appendix contains the following drawings:

Drawing Reference Number	Title
DRG\72982JD07\EMICON	Test configuration for measurement of conducted emissions.
DRG\72982JD07\EMIRAD	Test configuration for measurement of radiated emissions.

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DRG\72982JD07\EMICON



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DRG\72982JD07\EMIRAD

