



TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: OEM Plastic Reader Keypad / 162-739

To: FCC Parts 15.207, 15.209 and 15.215: 2008

Test Report Serial No:
RFI/RPT3/RP75733JD01A

Supersedes Test Report Serial No:
RFI/RPT2/RP75733JD01A

| | |
|---|---|
| This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: | pp  |
| Checked By: | Robert Graham |
| Signature: |  |
| Date of Issue: | 23 September 2009 |

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RFI Global Services Ltd

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG
Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001
Email: info@rfi-global.com Website: www.rfi-global.com

Registered in England and Wales. Company number:2117901

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Table of Contents

1. Customer Information 4

2. Summary of Testing 5

3. Equipment Under Test (EUT) 6

4. Operation and Monitoring of the EUT during Testing 7

5. Measurements, Examinations and Derived Results 8

6. Measurement Uncertainty 15

Appendix 1. Test Equipment Used 16

1. Customer Information







| | |
|----------------------|--|
| Company Name: | Paxton Access Ltd |
| Address: | Paxton House Home Farm Brighton Sussex BN1 9HU England |

2. Summary of Testing

2.1. General Information

| | |
|---------------------------------|---|
| Specification Reference: | 47CFR15.207, 47CFR15.209 & 47CFR15.215 |
| Specification Title: | Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart B (Radio Frequency Devices) - Sections 15.207, 15.209 & 15.215 |
| Site Registration: | FCC: 209735 |
| Location of Testing: | RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH, England |
| Test Dates: | 30 July 2009 |

2.2. Summary of Test Results

| FCC Reference (47CFR) | Measurement | Port Type | Result |
|---|---|-----------|---|
| Part 15.207 | Transmitter AC Conducted Spurious Emissions | AC Mains |  |
| Part 15.209 | Transmitter Radiated Spurious Emissions (Fundamental) | Antenna |  |
| Part 15.209 | Transmitter Radiated Spurious Emissions | Antenna |  |
| Part 15.215(c) | Transmitter 20 dB Bandwidth | Antenna |  |
| Key to Results | | | |
|  = Complied  = Did not comply | | | |

2.3. Methods and Procedures

| | |
|-------------------|--|
| Reference: | 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. |

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

| | |
|---------------------------------|-------------------------------|
| Brand / Model Name: | OEM plastic reader keypad |
| Model Number: | 162-739 |
| Serial Number: | 554226 |
| Hardware Version Number: | z-4550 Rev. 8, ppc-pck Rev. B |
| Software Version Number: | N/A |
| FCC ID Number: | USE162739 |

3.2. Description of EUT

The equipment under test was a proximity reader/keypad for access control. It has dual functionality for reading tokens at 125 kHz and code entry via the keypad.

3.3. Modifications Incorporated in the EUT

No modifications were applied to the EUT during testing.

3.4. Additional Information Related to Testing

| | |
|--------------------------------------|----------------------|
| Tested Technology: | RFID |
| Modulation Type: | Amplitude Modulation |
| Transmit / Receive Frequency: | 125 kHz |

3.5. Support Equipment

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

| | |
|------------------------------|---|
| Description: | 12 VDC 1A power supply in black plastic housing |
| Brand Name: | Paxton Access |
| Model Name or Number: | 998-241-US |
| Serial Number: | None stated |

| | |
|------------------------------|--|
| Description: | 12 VDC Door lock |
| Brand Name: | RINGDALE |
| Model Name or Number: | Pulse Door Strike ANSI 00-16-0437-1151 |
| Serial Number: | 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):

- Transceive mode
- The reader has only one mode of operation as it is constantly transmitting and receiving when in operation. It does not have a dedicated 'receive only' mode.

4.2. Configuration and Peripherals

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

- Connected to a 12 VDC 1A power supply in black plastic housing. This provided power to the EUT.
- A 12 VDC load was connected to the EUT to act as a load.
- AC conducted emissions were performed with the EUT connected to the 12 VDC 1A power supply. The 12 VDC 1A power supply input was connected to a 120 VAC 60 Hz supply through a LISN.

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*.

5.2. Test Results**5.2.1. Transmitter AC Conducted Spurious Emissions****Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 15.207(a) |
| Test Method Used: | As detailed in ANSI C63.4 Section 7 and relevant annexes |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 34 |

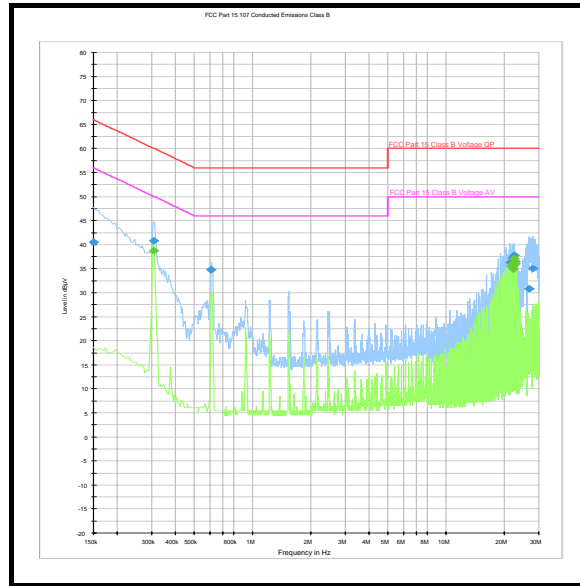
Results: Quasi Peak Detector Measurements

| Frequency (MHz) | Line | Quasi Peak Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|-------------------------------|--------------------|-------------|----------|
| 0.150000 | Neutral | 40.5 | 66.0 | 25.5 | Complied |
| 0.307500 | Live | 40.8 | 60.0 | 19.2 | Complied |
| 0.609000 | Neutral | 34.8 | 56.0 | 21.2 | Complied |
| 21.376500 | Live | 36.3 | 60.0 | 23.7 | Complied |
| 21.876000 | Live | 37.2 | 60.0 | 22.8 | Complied |
| 22.249500 | Live | 37.8 | 60.0 | 22.2 | Complied |
| 26.758500 | Neutral | 30.9 | 60.0 | 29.1 | Complied |
| 28.059000 | Live | 35.0 | 60.0 | 25.0 | Complied |

Results: Average Detector Measurements

| Frequency (MHz) | Line | Average Level (dB μ V) | Limit (dB μ V) | Margin (dB) | Result |
|-----------------|---------|----------------------------|--------------------|-------------|----------|
| 0.307500 | Live | 38.8 | 50.0 | 11.2 | Complied |
| 21.624000 | Neutral | 35.5 | 50.0 | 14.5 | Complied |
| 21.750000 | Neutral | 35.4 | 50.0 | 14.6 | Complied |
| 21.876000 | Live | 35.9 | 50.0 | 14.1 | Complied |
| 22.002000 | Neutral | 35.0 | 50.0 | 15.0 | Complied |
| 22.123500 | Neutral | 35.7 | 50.0 | 14.3 | Complied |
| 22.249500 | Live | 37.1 | 50.0 | 12.9 | Complied |
| 22.375500 | Live | 36.3 | 50.0 | 13.7 | Complied |
| 22.501500 | Live | 36.5 | 50.0 | 13.5 | Complied |
| 22.749000 | Live | 36.0 | 50.0 | 14.0 | Complied |

Transmitter AC Conducted Spurious Emissions (continued)



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

5.2.2. Transmitter Radiated Emissions (Fundamental)**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | FCC 15.209 |
| Test Method Used: | As detailed in ANSI C63.4 Section 8 and relevant annexes |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 39 |

Results:

| Frequency (MHz) | Antenna Polarity | Q-P Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Result |
|-----------------|------------------|--------------------------|----------------------|-------------|----------|
| 0.125 | 90° to EUT | -15.4 | 19.2 (at 300m) | 34.2 | Complied |

Note(s):

- Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by making the measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
- A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to the required test distance.

5.2.3. Transmitter Radiated Spurious Emissions**Test Summary:**

| | |
|--------------------------|--|
| FCC Part: | 15.209 (a) |
| Test Method Used: | As detailed in ANSI C63.4 Section 8 and relevant annexes |
| Frequency Range: | 9 kHz to 1000 MHz |

Environmental Conditions:

| | |
|-------------------------------|----|
| Temperature (°C): | 27 |
| Relative Humidity (%): | 39 |

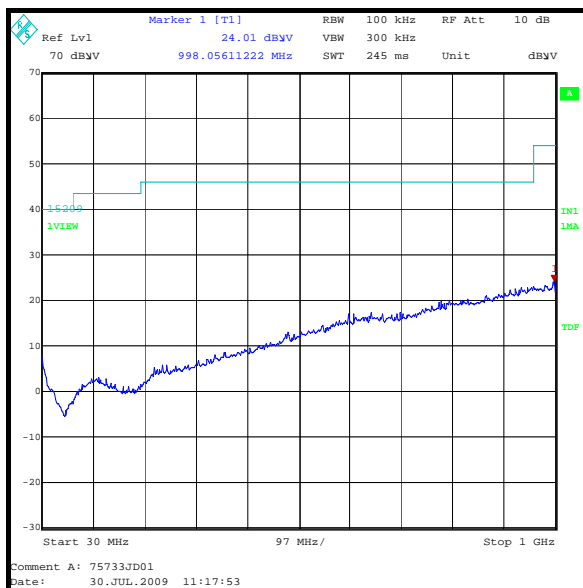
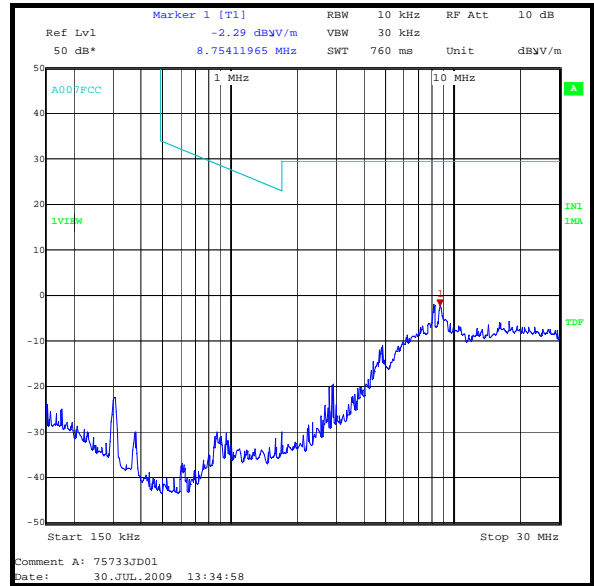
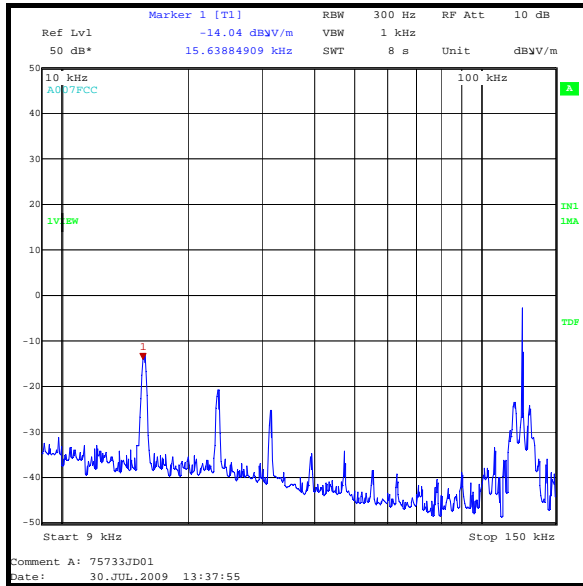
Results: Electric Field Strength Measurements

| Frequency (MHz) | Antenna Polarity | Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Result |
|------------------------|-------------------------|--------------------------------------|--------------------------------------|--------------------|---------------|
| 998.056 | Vertical | 24.0 | 54.0 | 30.0 | Complied |

Note(s):

- Limits below 30 MHz are specified at a test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by making the measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.
- All emissions noted on the pre-scan pots were investigated and found to be ambient, therefore the highest level of the noise floor was recorded in the above table.
- The carrier is shown on the 9 kHz to 150 kHz pre-scan plot at approximately 125 kHz.

Transmitter Radiated Spurious Emissions (continued)



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

5.2.4. Transmitter 20 dB Bandwidth

Test Summary:

| | |
|--------------------------|--|
| FCC Part: | 15.215(c) |
| Test Method Used: | As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes (see note below) |

Environmental Conditions:

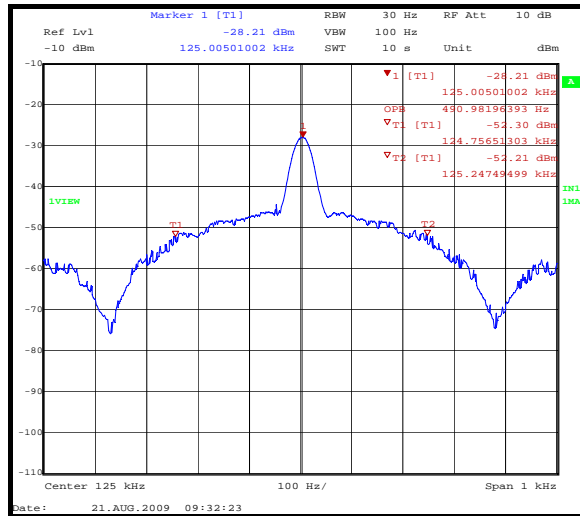
| | |
|-------------------------------|----|
| Temperature (°C): | 25 |
| Relative Humidity (%): | 32 |

Results:

| |
|---|
| Transmitter 20 dB Bandwidth (Hz) |
| 491 |

Note(s):

- In lieu of the test method detailed in ANSI C63.4 Section 13.1.7 the 20 dB bandwidth was measured using the Occupied Bandwidth function of the spectrum analyser.



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 |
|-----------------------------|--------------------|-----------------------------|-------------------------------|
| AC Conducted Emissions | 0.15 MHz to 30 MHz | 95% | ±3.25 dB |
| 20 dB Bandwidth | N/A | 95% | ±0.92 ppm |
| Radiated Spurious Emissions | 9 kHz to 30 MHz | 95% | ±3.53 dB |
| Radiated Spurious Emissions | 30 MHz to 1000 MHz | 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) |
|---------|-------------------|-----------------|----------|-------------|----------------------|------------------------|
| A007 | Antenna | Rohde & Schwarz | HFH2-Z2 | 880 458/020 | 29 Mar 2009 | 12 |
| A1299 | Antenna | Schaffner | CBL6143 | 5094 | 13 Aug 2008 | 12 |
| A1069 | LISN | Rohde & Schwarz | ESH3-Z5 | 837469/012 | 03 Apr 2009 | 12 |
| A1829 | Pulse Limiter | Rhode & Schwarz | ESH3-Z2 | 100671 | 28 Nov 2008 | 12 |
| K0001 | 5m SA Chamber | Rainford EMC | N/A | N/A | 04 May 2009 | 12 |
| K0002 | 3m RSE Chamber | Rainford EMC | N/A | N/A | 26 Aug 2008 | 12 |
| M127 | Spectrum Analyser | Rhode & Schwarz | FSEB 30 | 842 659/016 | 12 Aug 2008 | 12 |
| M1273 | Test Receiver | Rhode & Schwarz | ESIB 26 | 100275 | 01 Apr 2009 | 12 |

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