



## TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Proximity mullion HID reader/345-220

FCC ID: USE345220

To: FCC Parts 15.207, 15.209 and 15.215(c)

**Test Report Serial No:**  
RFI-RPT-RP81268JD05A

<b>This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:</b>		
<b>Checked By:</b>	Ian Watch	
<b>Signature:</b>		
<b>Date of Issue:</b>	14 June 2011	

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 not be reproduced other than in full, except with the prior written approval of RFI Global Services Ltd. The results in this report apply only to the sample(s) tested.

**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](mailto:info@rfi-global.com) Website: [www.rfi-global.com](http://www.rfi-global.com)

Registered in England and Wales. Company number: 2117901

This page has been left intentionally blank.

**Table of Contents**

<b>1. Customer Information .....</b>	<b>4</b>
<b>2. Summary of Testing .....</b>	<b>5</b>
2.1. General Information	5
2.2. Summary of Test Results	5
2.3. Methods and Procedures	5
2.4. Deviations from the Test Specification	5
<b>3. Equipment Under Test (EUT) .....</b>	<b>6</b>
3.1. Identification of Equipment Under Test (EUT)	6
3.2. Description of EUT	6
3.3. Modifications Incorporated in the EUT	6
3.4. Additional Information Related to Testing	6
3.5. Support Equipment	6
<b>4. Operation and Monitoring of the EUT during Testing .....</b>	<b>7</b>
4.1. Operating Modes	7
4.2. Configuration and Peripherals	7
<b>5. Measurements, Examinations and Derived Results .....</b>	<b>8</b>
5.1. General Comments	8
5.2. Test Results	9
5.2.1. Transmitter AC Conducted Spurious Emissions	9
5.2.2. Transmitter Fundamental Field Strength	12
5.2.3. Transmitter Radiated Spurious Emissions	13
5.2.4. Transmitter 20 dB Bandwidth	15
<b>6. Measurement Uncertainty .....</b>	<b>16</b>
<b>Appendix 1. Test Equipment Used .....</b>	<b>17</b>

**1. Customer Information**







<b>Company Name:</b>	Paxton Ltd.
<b>Address:</b>	Paxton House Home Farm Brighton Sussex BN1 9HU United Kingdom

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR15.207, 47CFR15.209 and 47CFR15.215
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Sections 15.207, 15.209 & 15.215
<b>Site Registration:</b>	FCC: 209735
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	08 June to 11 June 2011

### **2.2. Summary of Test Results**

FCC Reference (47CFR)	Measurement	Result
Part 15.207	Transmitter AC Conducted Emissions	
Part 15.209	Transmitter Fundamental Field Strength	
Part 15.209	Transmitter Radiated Emissions	
Part 15.215(c)	Transmitter 20 dB Bandwidth	
<b>Key to Results</b>	 = Complied  = Did not comply	

### **2.3. Methods and Procedures**

<b>Reference:</b>	ANSI C63.4 (2009)
<b>Title:</b>	American National Standard for Methods of Measurement of Radio-Noise 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)**

<b>Brand Name:</b>	Paxton
<b>Model Name or Number:</b>	345-220
<b>Serial Number:</b>	Not stated
<b>Hardware Version Number:</b>	z-hd02 rev 2
<b>Software Version Number:</b>	Not stated
<b>FCC ID:</b>	USE345220

#### **3.2. Description of EUT**

The equipment under test was a Proximity mullion HID reader with 119 kHz carrier frequency.

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

No modifications were applied to the EUT during testing.

#### **3.4. Additional Information Related to Testing**

<b>Tested Technology:</b>	RFID	
<b>Power Supply Requirement:</b>	Nominal	12 V
<b>Type of Unit:</b>	Transceiver	
<b>Modulation:</b>	AM	
<b>Transmit Frequency:</b>	119 kHz	

#### **3.5. Support Equipment**

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

<b>Description:</b>	Net2 1 door ACU with 2A PSU in plastic cabinet
<b>Brand Name:</b>	Net2 1 door ACU with 2A PSU in plastic cabinet
<b>Model Name or Number:</b>	411-501
<b>Serial Number:</b>	Not marked or stated

## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating mode(s):

- Constantly transceiving.

### **4.2. Configuration and Peripherals**

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

- Connected via a 5 metre multicore cable to a Net2 ACU reader port contained inside a 2A PSU cabinet. Net2 1 door ACU was connected to a 120 VAC 50 Hz supply for all tests

## **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 for details.



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

Test Engineer:	Patrick Jones	Test Date:	08 Junes 2011
Test Sample:	Not Stated		

FCC Part:	15.207
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

**Environmental Conditions:**

Temperature (°C):	25
Relative Humidity (%):	24

**Results: Live/Quasi Peak**

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.150000	Live	45.1	66.0	20.9	Complied
0.163500	Live	37.9	65.3	27.4	Complied
0.208500	Live	36.8	63.3	26.5	Complied
0.276000	Live	31.1	60.9	29.8	Complied
0.429000	Live	37.5	57.3	19.8	Complied
24.225000	Live	30.3	60.0	29.7	Complied

**Results: Live/Average**

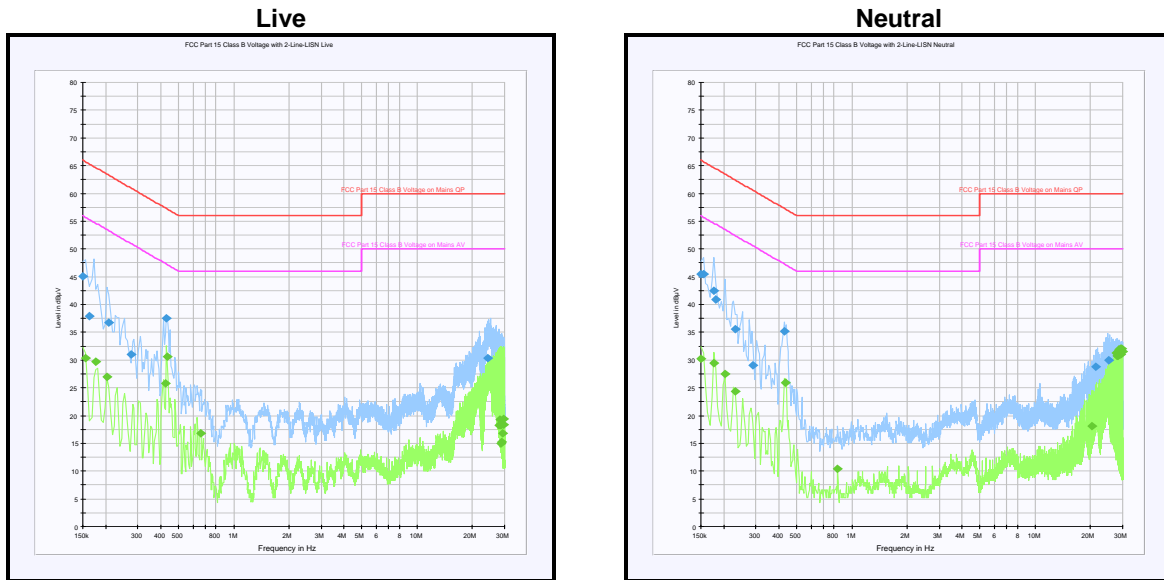
Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.154500	Live	30.4	55.8	25.4	Complied
0.177000	Live	29.7	54.6	24.9	Complied
0.204000	Live	26.9	53.4	26.5	Complied
0.424500	Live	25.8	47.4	21.6	Complied
0.433500	Live	30.6	47.2	16.6	Complied
0.658500	Live	16.8	46.0	29.2	Complied
27.816000	Live	18.3	50.0	31.7	Complied
28.293000	Live	19.2	50.0	30.8	Complied
28.536000	Live	18.3	50.0	31.7	Complied
28.774500	Live	15.0	50.0	35.0	Complied
29.013000	Live	15.3	50.0	34.7	Complied
29.251500	Live	16.8	50.0	33.2	Complied
29.490000	Live	19.5	50.0	30.5	Complied
29.733000	Live	18.4	50.0	31.6	Complied

**Results: Neutral/Quasi Peak**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.150000	Neutral	45.4	66.0	20.6	Complied
0.154500	Neutral	45.4	65.8	20.4	Complied
0.177000	Neutral	42.4	64.6	22.2	Complied
0.181500	Neutral	40.9	64.4	23.5	Complied
0.231000	Neutral	35.6	62.4	26.8	Complied
0.289500	Neutral	29.0	60.5	31.5	Complied
0.429000	Neutral	35.2	57.3	22.1	Complied
21.327000	Neutral	28.8	60.0	31.2	Complied
25.165500	Neutral	30.0	60.0	30.0	Complied

**Results: Neutral/Average**

Frequency (MHz)	Line	Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.150000	Neutral	30.2	56.0	25.8	Complied
0.177000	Neutral	29.4	54.6	25.2	Complied
0.204000	Neutral	27.5	53.4	25.9	Complied
0.231000	Neutral	24.3	52.4	28.1	Complied
0.433500	Neutral	25.9	47.2	21.3	Complied
0.838500	Neutral	10.4	46.0	35.6	Complied
20.490000	Neutral	18.1	50.0	31.9	Complied
27.798000	Neutral	31.2	50.0	18.8	Complied
28.041000	Neutral	30.8	50.0	19.2	Complied
28.279500	Neutral	30.8	50.0	19.2	Complied
28.518000	Neutral	31.7	50.0	18.3	Complied
28.756500	Neutral	31.9	50.0	18.1	Complied
28.999500	Neutral	31.4	50.0	18.6	Complied
29.238000	Neutral	31.1	50.0	18.9	Complied
29.476500	Neutral	32.0	50.0	18.0	Complied
29.715000	Neutral	32.1	50.0	17.9	Complied
29.958000	Neutral	31.6	50.0	18.4	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 Fundamental Field Strength****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	11 June 2011
<b>Test Sample Serial No:</b>	345-220		

<b>FCC Part:</b>	15.209
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.4

**Environmental Conditions:**

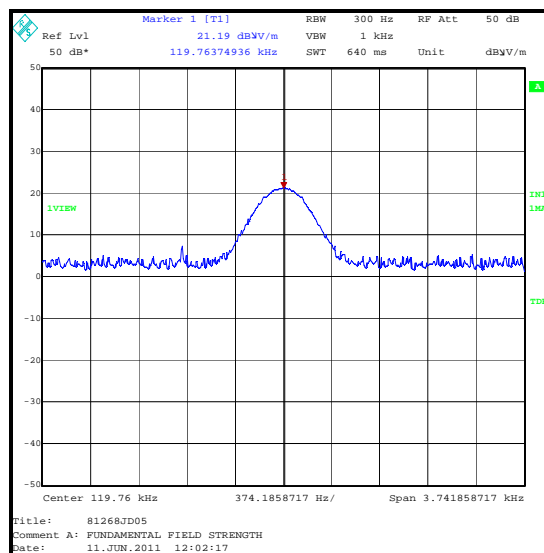
<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	22

**Results: Quasi Peak**

Frequency (kHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit at 30 m (dB $\mu$ V/m)	Margin (dB)	Result
119.764	90° to EUT	20.4	84.0	63.6	Complied

**Note(s):**

1. The limit is specified at a test distance of 30 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 using the square of an inverse linear distance extrapolation factor (40dB/decade).
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres. A distance extrapolation factor of 40 dB was used.



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

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	11 June 2011
<b>Test sample serial No</b>	Not Stated		

<b>FCC Part:</b>	15.209
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.3 and 6.5 referencing ANSI C63.4
<b>Frequency Range:</b>	30 MHz to 1000 MHz

**Environmental Conditions:**

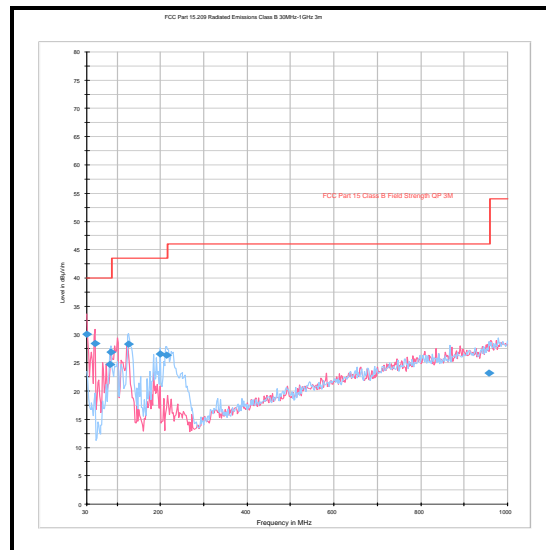
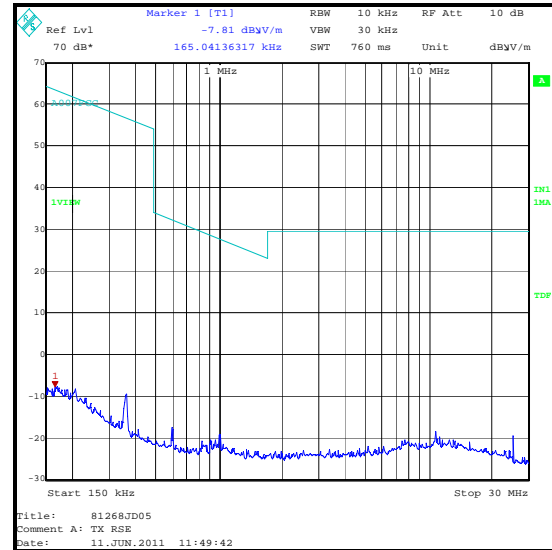
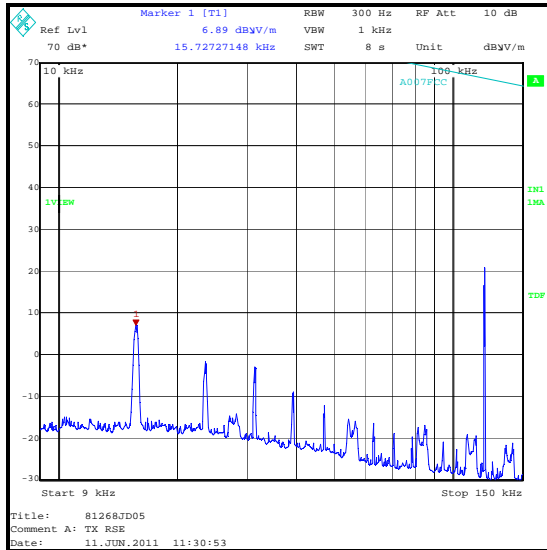
<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	22

**Results: Quasi Peak**

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
30.197	Vertical	30.0	40.0	10.0	Complied
49.232	Vertical	28.5	40.0	11.5	Complied
82.942	Horizontal	24.7	40.0	15.3	Complied
86.012	Horizontal	26.9	40.0	13.1	Complied
126.353	Horizontal	28.3	43.5	15.2	Complied
199.085	Horizontal	26.6	43.5	16.9	Complied
213.817	Horizontal	26.3	43.5	17.2	Complied
957.634	Horizontal	23.1	46.0	22.9	Complied

**Note(s):**

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
4. 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 using the square of an inverse linear distance extrapolation factor (40dB/decade).
5. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required. A distance extrapolation factor of 40 dB was used.
6. The emission shown at approximately 119 kHz is the fundamental.

**Transmitter Radiated Spurious Emissions (continued)**

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

**5.2.4. Transmitter 20 dB Bandwidth****Test Summary:**

<b>Test Engineer:</b>	Andrew Edwards	<b>Test Date:</b>	11 June 2011
<b>Test Sample Serial No:</b>	Not Stated		

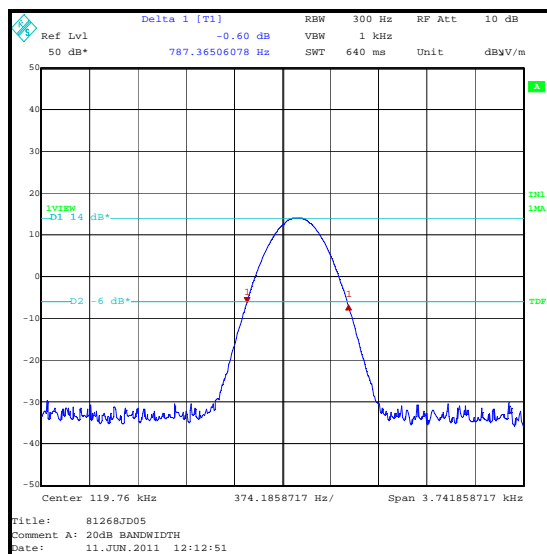
<b>FCC Part:</b>	15.215(c)
<b>Test Method Used:</b>	As detailed in ANSI C63.10 Section 6.9.1

**Environmental Conditions:**

<b>Temperature (°C):</b>	27
<b>Relative Humidity (%):</b>	22

**Results:**

<b>20 dB Bandwidth (Hz)</b>
787



## **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 Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
20 dB Bandwidth	119 kHz	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 Calibration Due	Cal. Interval
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	30 Jun 2011	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	05 Apr 2012	12
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
K0001	5m Semi-Anechoic Chamber	Rainford EMC	N/A	N/A	29 May 2012	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12
M1568	Antenna	Rohde & Schwarz	HFH2-Z2	879284/2	27 Jan 2012	12

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