

# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: Proximity P50 Mifare CSN Reader / 353-467

To: FCC Parts 15.207, 15.209 and 15.215: 2008

**Test Report Serial No:**  
RFI/RPT2/RP74714JD08A

**Supersedes Test Report Serial No:**  
RFI/RPT1/RP74714JD08A

**This Test Report Is Issued Under The Authority  
Of Brian Watson, Operations Director:**



<b>Checked By:</b>	A. HENRIQUES
<b>Signature:</b>	
<b>Date of Issue:</b>	08 July 2009

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## **1. Customer Information**

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

## 2. Summary of Testing

### 2.1. General Information

<b>Specification Reference:</b>	47CFR15.207, 47CFR15.209 & 47CFR15.215
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart C (Radio Frequency Devices) - 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>	19 May 2009 to 08 July 2009

### 2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Port Type	Result
Part 15.207(a)	Transmitter AC Conducted Spurious Emissions	AC Mains	
Part 15.209(a)	Transmitter Radiated Spurious Emissions	Enclosure	
Part 15.215(c)	Transmitter 20 dB Bandwidth	Antenna	
<b>Key to Results</b>			
	= Complied		= Did not comply

### 2.3. Methods and Procedures

<b>Reference:</b>	ANSI C63.4 (2003)
<b>Title:</b>	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)**

<b>Brand / Model Name:</b>	Proximity P50 Mifare CSN Reader
<b>Model Number:</b>	353-467
<b>Serial Number:</b>	None Stated
<b>Hardware Version Number:</b>	z-df50 rev3, ppc-df50 rev C
<b>Software Version Number:</b>	None Stated
<b>FCC ID Number:</b>	USE353467

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

The equipment under test was a proximity reader for access control. It has dual frequency functionality for reading tokens with 125 kHz and 13.56 MHz carrier frequencies.

#### **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>Modulation Type:</b>	Amplitude Modulation
<b>Transmit Frequency:</b>	125 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>	Paxton Access
<b>Model Name or Number:</b>	411-501
<b>Serial Number:</b>	None Stated

<b>Description:</b>	ID card
<b>Brand Name:</b>	Paxton Access
<b>Model Name or Number:</b>	125 kHz
<b>Serial Number:</b>	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 via a 5 meter multicore cable to a Net2 ACU reader port contained inside a 2A PSU cabinet. The ACU was powered by the same power supply. The input to the 2A PSU was connected to a 120 VAC 60 Hz supply.
- AC conducted emissions were performed with the EUT connected to the Net2 ACU and the Net2 ACU mains cable connected to a LISN. The LISN was connected to a 120 V AC 60 Hz mains supply.
- A 125 kHz tag was presented to the EUT in order to enable the transmitter. The EUT constantly transmitted at maximum power with a modulated carrier.

## **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 for details.

## **5.2. Test Results**

### **5.3. 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:**

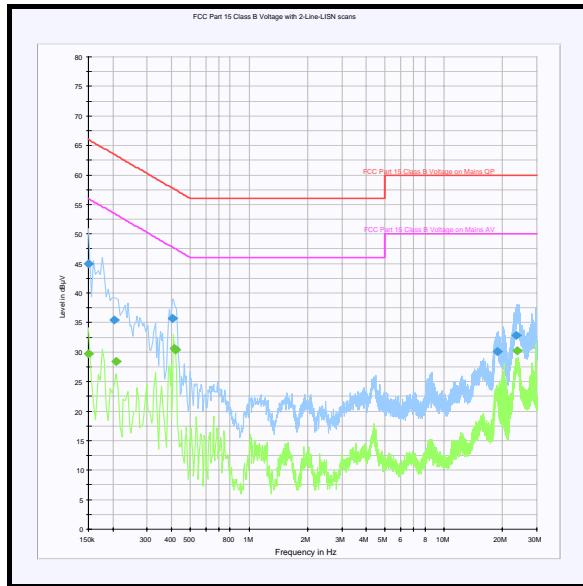
Temperature (°C):	21
Relative Humidity (%):	42

#### **Results: Quasi Peak Detector Measurements**

Frequency (MHz)	Line	Quasi Peak Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.150000	Live	44.9	66.0	21.1	Complied
0.204000	Neutral	35.5	63.4	27.9	Complied
0.406500	Neutral	35.7	57.7	22.0	Complied
18.748500	Neutral	30.0	60.0	30.0	Complied
23.473500	Neutral	32.8	60.0	27.2	Complied

#### **Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
0.150000	Live	29.7	56.0	26.3	Complied
0.208500	Neutral	28.4	53.3	24.9	Complied
0.415500	Neutral	30.6	47.5	16.9	Complied
0.420000	Neutral	30.3	47.4	17.1	Complied
23.739000	Neutral	30.2	50.0	19.8	Complied

**Transmitter AC Conducted Spurious Emissions (continued)**

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

## **5.4. Transmitter Fundamental Field Strength**

### **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):	23
Relative Humidity (%):	31

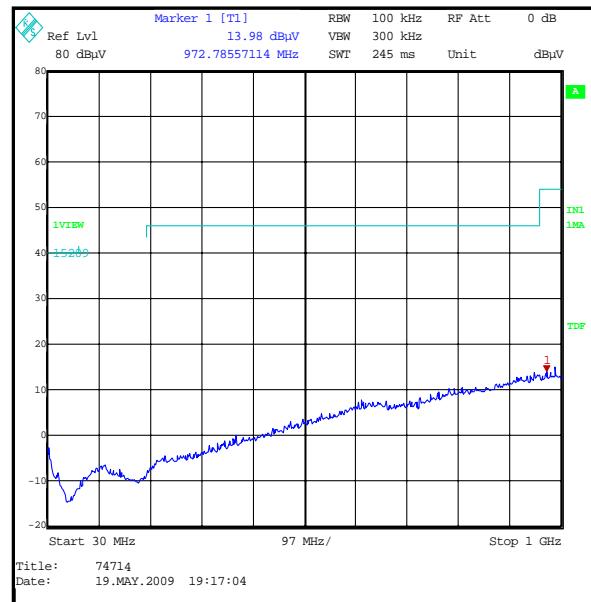
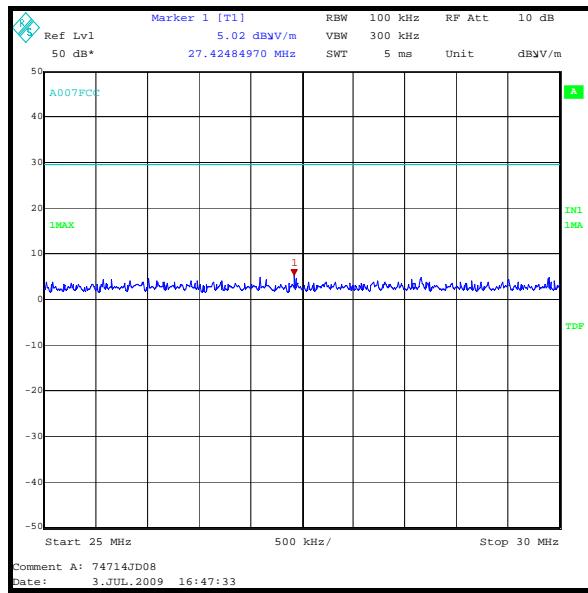
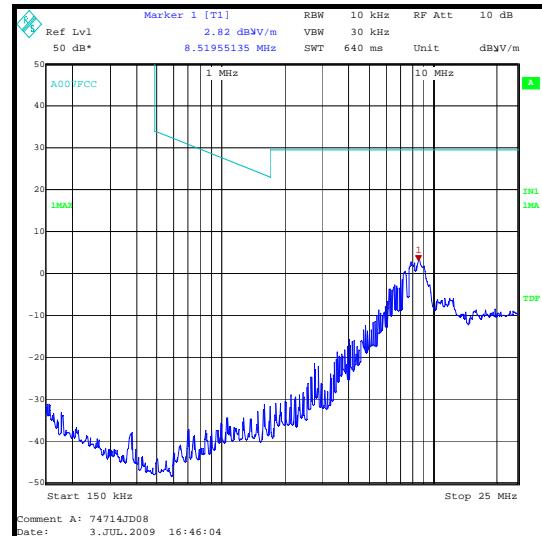
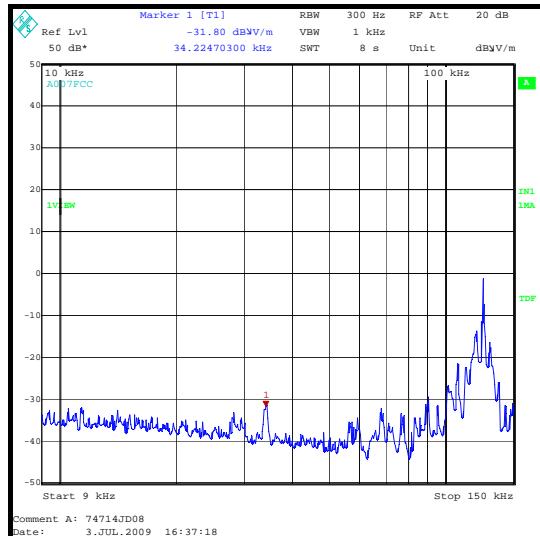
#### **Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
0.125	90° to EUT	-16.3	19.2 (at 300 m)	35.5	Complied
972.876	Vertical	14.0	54.0 (at 3 m)	40.0	Complied

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

1. 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).
2. The measurement distance was 3 metres for all emissions in the range 9 kHz to 30 MHz in addition to 3 metres for the range 30 MHz to 1000 MHz. The limits below 30 MHz were extrapolated to the 3 metre test distance.
3. A transducer factor on the test equipment was used to extrapolate the result obtained at 3 metres to the required measurement distance.
4. No emissions were observed above the noise floor of the measurement system in the range 30 MHz to 1 GHz therefore the highest level of the noise floor was recorded in the above table.

## Transmitter Radiated Spurious Emissions (continued)



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

### **5.4.1. Transmitter 20 dB Bandwidth**

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

#### **Environmental Conditions:**

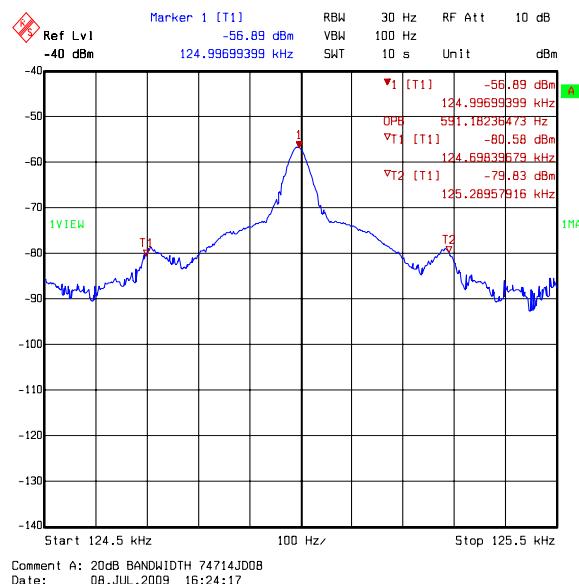
<b>Temperature (°C):</b>	31
<b>Relative Humidity (%):</b>	34

#### **Results:**

<b>Transmitter 20 dB Bandwidth (Hz)</b>	
	591

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

1. 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
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A259	Antenna	Chase	CBL6111	1513	25 Jul 2008	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
K0001	5m SA Chamber	Rainford EMC	N/A	N/A	04 May 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	09 Dec 2008	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 Apr 2009	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	14 Aug 2008	12

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