TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: LCD Reader / 380-127

To: FCC Part 15.215, FCC Part 15.207 and FCC 15.209: 2008 Subpart C

Test Report Serial No:
RFI/RPT2/RP75386JD07A

Supersedes Test Report Serial No:
RFI/RPT1/RP75386JD07A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director: 	
Checked By:	Nigel Davison
Signature: 	
Date of Issue:	24 August 2009

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1. Customer Information

Company Name:	Paxton Access Ltd
Address:	Paxton House Home Farm Brighton Sussex BN1 9HU United Kingdom

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 C (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.
Test Dates:	23 June 2009 to 15 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	✓
FCC Part 15.215 & 15.209	Transmitter Fundamental Field Strength	Antenna	✓
Part 15.209	Transmitter Radiated Spurious Emissions	Enclosure	✓
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 Name:	LCD Reader
Model Name or Number:	380-127
Serial Number:	None Stated
Hardware Version Number:	z-Ic01 Rev. 11, ppc-lcd Rev. H
Software Version Number:	None Stated
FCC ID Number:	USE380127

3.2. Description of EUT

The equipment under test was a proximity reader with a TFT display, built into the unit. It has functionality for reading tokens with 125KHz carrier frequencies. The reader also has a wireless 2.4 GHz connection that conforms to the IEEE 802.15.4 standard. The wireless connection is used to remotely download images from the USB dongle.

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 Frequency:	125 kHz

3.5. Support Equipment

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

Description:	Net2 1 door ACU with 2A PSU
Brand Name:	Paxton Access
Model Name or Number:	411-381
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 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.

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:

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

Environmental Conditions:

Temperature (°C):	30
Relative Humidity (%):	32

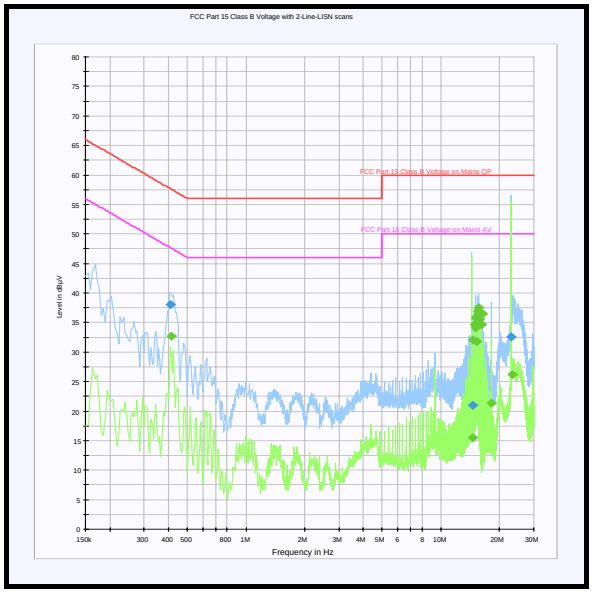
Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.411000	Neutral	38.0	57.6	19.6	Complied
14.487000	Neutral	21.0	60.0	39.0	Complied
23.064000	Neutral	32.5	60.0	27.5	Complied

Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.415500	Neutral	32.7	47.5	14.8	Complied
14.487000	Neutral	15.5	50.0	34.5	Complied
14.626500	Live	32.1	50.0	17.9	Complied
14.874000	Neutral	34.6	50.0	15.4	Complied
15.000000	Neutral	34.1	50.0	15.9	Complied
15.126000	Live	35.8	50.0	14.2	Complied
15.252000	Neutral	31.8	50.0	18.2	Complied
15.373500	Neutral	36.9	50.0	13.1	Complied
15.499500	Neutral	36.3	50.0	13.7	Complied
15.625500	Neutral	37.5	50.0	12.5	Complied
15.873000	Live	35.6	50.0	14.4	Complied
16.125000	Live	34.7	50.0	15.3	Complied
16.377000	Neutral	36.5	50.0	13.5	Complied
18.123000	Neutral	21.4	50.0	28.6	Complied
23.091000	Neutral	26.2	50.0	23.8	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.

5.2.2. Transmitter Fundamental Field Strength

Test Summary:

FCC Part:	FCC 15.215 and 15.209
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature Range (°C):	23
Relative Humidity Range (%):	31

Results:

Frequency (MHz)	Antenna Polarity	Q-P Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
0.125	90° to EUT	4.9	19.2 (at 300 m)	14.3	Complied

5.2.3. Transmitter Radiated Spurious Emissions

Test Summary:

FCC Part:	15.209
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):	26
Relative Humidity (%):	30

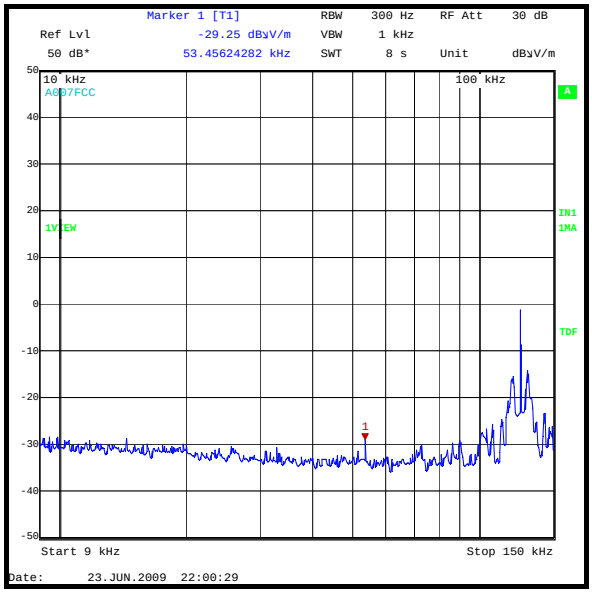
Results:

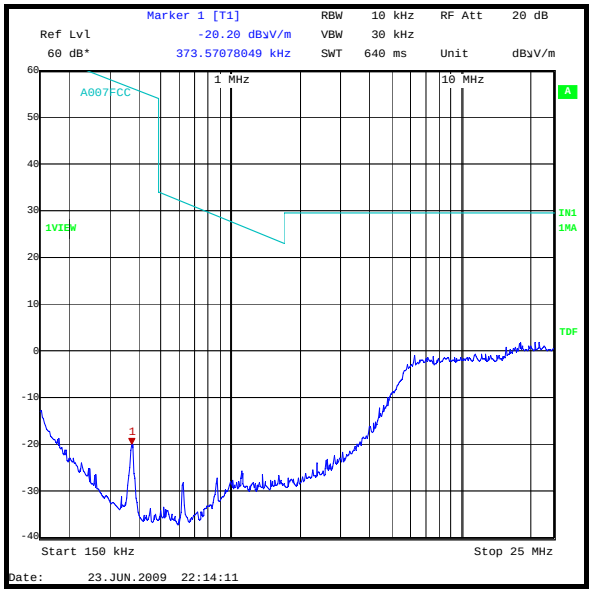
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
207.977	Vertical	32.7	43.5 (at 3 m)	10.8	Complied
239.977	Vertical	39.4	46.0 (at 3 m)	6.6	Complied
255.985	Vertical	36.0	46.0 (at 3 m)	10.0	Complied
303.984	Horizontal	38.4	46.0 (at 3 m)	7.6	Complied
513.040	Horizontal	36.3	46.0 (at 3 m)	9.7	Complied
583.787	Vertical	35.8	46.0 (at 3 m)	10.2	Complied
655.980	Vertical	37.5	46.0 (at 3 m)	8.5	Complied
719.978	Horizontal	39.5	46.0 (at 3 m)	6.5	Complied
783.987	Horizontal	39.9	46.0 (at 3 m)	6.1	Complied

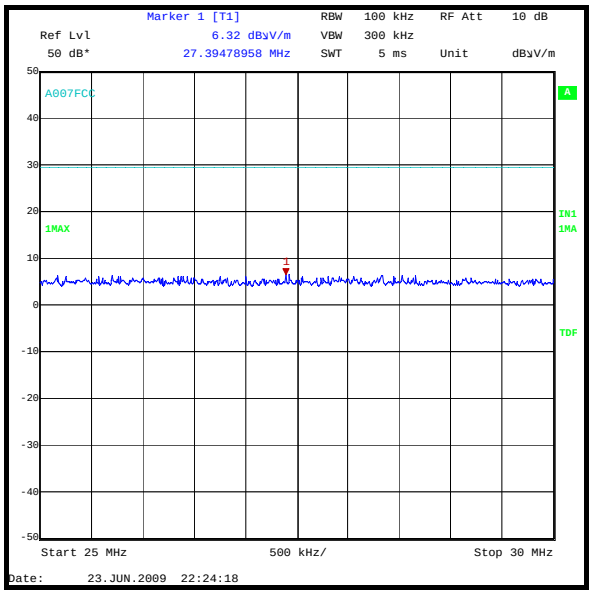
Note(s):

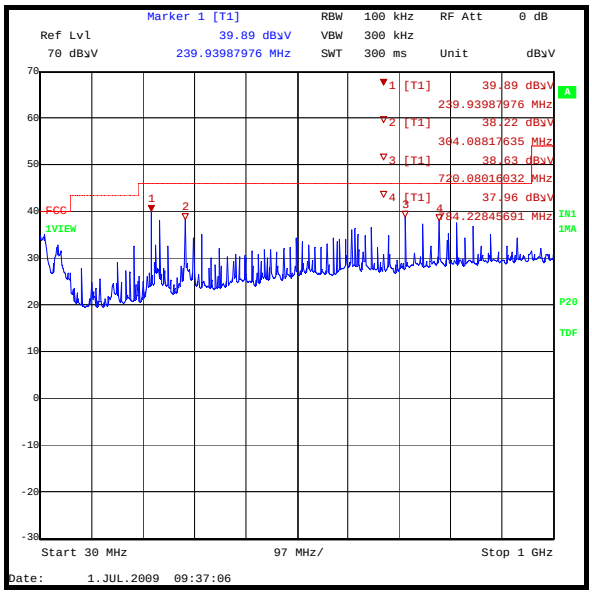
1. Limits below 30 MHz are specified at test distance of 30 metres, whilst below 0.49 MHz they are specified at a test distance of 300 metres. However as specified by section 15.31 (f)(2), measurements may be performed at a closer distance, and the measured level corrected to the specified measurement 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. 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 table.

5.3. Transmitter 20 dB Bandwidth

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:

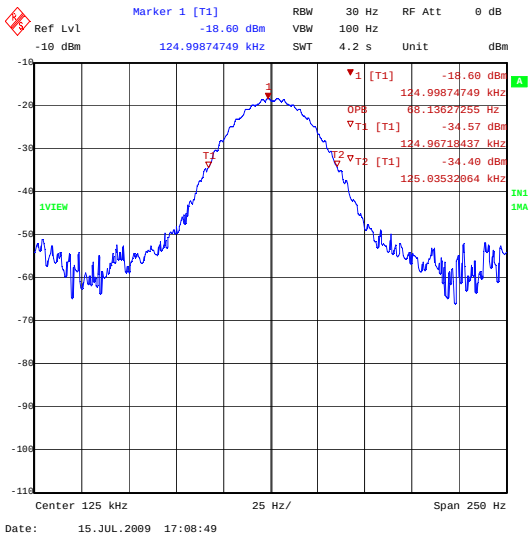
Temperature (°C):	30
Relative Humidity (%):	37

Results:

Transmitter 20 dB Bandwidth (Hz)
68

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
Transmitter Fundamental Field Strength	30 MHz to 1000 MHz	95%	±4.64 dB
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)
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A649	Single Phase 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
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 Apr 2009	12

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