TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: Net2 Desktop Reader USB, Multi-format z99-2910

To: FCC Part 15.225: 2008 Subpart C

Test Report Serial No:
RFI/RPT3/RP75097JD05A

Supersedes Test Report Serial No:
RFI/RPT2/RP75097JD05A

This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:	pp R. Graham
Checked By:	R. Graham
Signature:	R. Graham
Date of Issue:	10 July 2009

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1. Customer Information

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

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.225
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart C (Radio Frequency Devices) - Section 15.225
Site Registration:	FCC: 209735; Industry Canada: 3245B-2
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	21 May 2009 to 27 May 2009

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Port Type	Result
Part 15.207	Transmitter AC Conducted Emissions	AC Mains	✓
Part 15.225(a)(b)(c)(d)	Transmitter Fundamental Field Strength	Antenna	✓
Part 15.209(a), 15.225(d)	Transmitter Radiated Spurious Emissions	Antenna	✓
Part 15.209(a) 15.225(c)(d)	Transmitter Band Edge Radiated Emissions	Antenna	✓
Part 2.1049	Transmitter 20 dB Bandwidth	Antenna	✓
Part 15.225(e)	Transmitter Frequency Stability (Temperature & Voltage Variation)	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:	Net2 Desktop Reader USB, Multi-format
Model Number:	z99-2910
Serial Number:	None stated
Hardware Version Number:	z-dfdr rev 4, ppc-ddr rev C
Software Version Number:	Not stated
FCC ID Number:	USEZ992910

IMPORTANT NOTE: This unit was originally tested as the *NET2 desktop reader USB*, Model No. 514-326 and was recorded in RFI Test Report RFI/RPT2/RP75097JD05A as such. The customer has subsequently declared (Appendix 2) that these details have now been changed to those specified above.

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

Tested Technology:	RFID	
Channel Spacing:	N/A, EUT is a single channel device	
Transmit Frequency:	13.56 MHz	
Power Supply Requirement:	Nominal	5 V
	Minimum	4.25 V
	Maximum	5.75 V
Tested Temperature:	Minimum	-20°C
	Maximum	50°C

3.5. Support Equipment

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

Description:	Laptop
Brand Name:	Dell
Model Name or Number:	Inspiron 510m
Serial Number:	CN-0H1908-48643-4CA-1988

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Constantly transmitting at 13.56 MHz with a modulated carrier at maximum power.
- Connected to a laptop PC running Net2 software application.

4.2. Configuration and Peripherals

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

- A 13.56 MHz tag was presented to the EUT in order to enable the transmitter.
- The EUT power was supplied through a USB cable connected to the laptop PC. A modified USB cable with breakout for the 5V power supply was used for the frequency stability tests. The power cables were connected to a bench power supply in order to allow variation of the supply voltage to the EUT.
- AC conducted emissions were performed with the EUT connected to the laptop PC via the USB and the laptop PC power supply connected to a LISN. The LISN was connected to a 120VAC 60 Hz mains supply.
- All tests were performed with the sample marked “Radio sample”. In addition, the AC conducted emissions test was also performed on the second sample marked as “FCC conducted emissions sample”. This sample had a 50 Ohm load fitted by the customer in accordance with FCC KDB 174176 and tests with this dummy load were performed in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.
- There is no ‘receive only’ condition as the device, when in operation, continuously transceives therefore no measurements of receive mode emissions was performed.

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

5.3. 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):	26
Relative Humidity (%):	36

Results: Quasi Peak Detector Measurements

Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.181500	Live	47.5	64.4	16.9	Complied

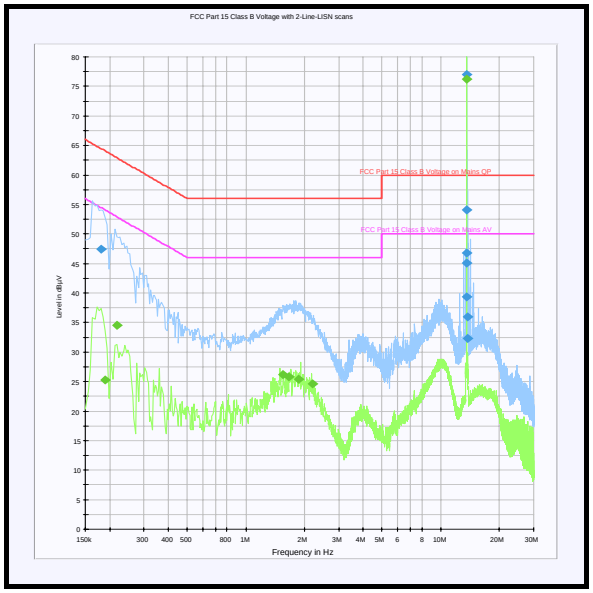
Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.190500	Live	25.2	54.0	28.8	Complied
0.217500	Live	34.6	52.9	18.3	Complied
1.540500	Neutral	26.2	46.0	19.8	Complied
1.662000	Neutral	25.8	46.0	20.2	Complied
1.869000	Neutral	25.4	46.0	20.6	Complied
2.202000	Neutral	24.6	46.0	21.4	Complied

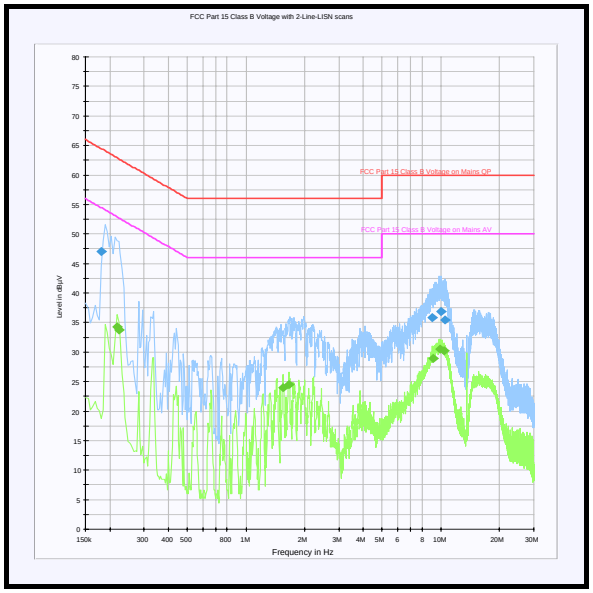
Note(s):

1. Tests were performed on a sample with a permanent antenna connection and results taken for emissions outside the transmitter's fundamental emission band. Tests were then reperformed on a second sample fitted with a suitable dummy load in accordance with FCC KDB 174176 to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.
2. When retesting was performed with the dummy load fitted it was determined that all emissions within the transmitter's fundamental emission band were greater than 20 dB below the appropriate limit.

Transmitter AC Conducted Spurious Emissions (continued)



Permanent antenna connected



Dummy Load fitted in place of permanent antenna

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

5.4. Transmitter Fundamental Field Strength

Test Summary:

FCC Part:	15.225 (a)(b)(c)(d)
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

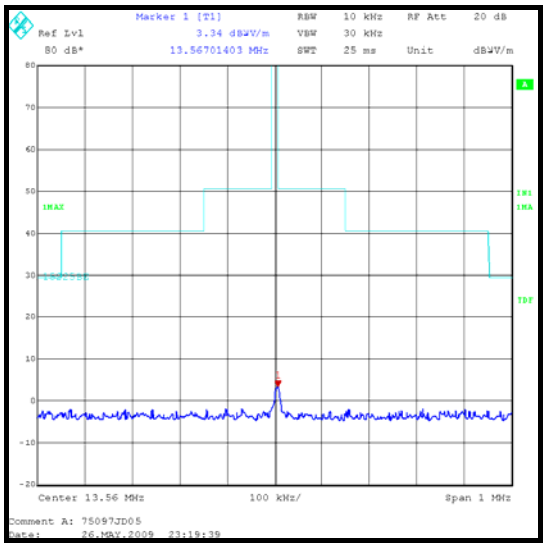
Temperature (°C):	28
Relative Humidity (%):	36

Results:

Frequency (MHz)	Antenna Polarity	Q-P Level (dBµV/m)	Limit at 30 m (dBµV/m)	Margin (dB)	Result
13.56	90˚ to EUT	-7.5	84.0	91.5	Complied

Note(s):

1. Measurements were performed at 3 metres and results extrapolated to 30 metres.
2. 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 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 test equipment was used to extrapolate the result obtained at 3 metres to the required measurement distance.



5.5. Transmitter Radiated Spurious Emissions

Test Summary:

FCC Part:	15.209 (a), 15.225(d)
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes
Frequency Range:	9 kHz to 1 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	31

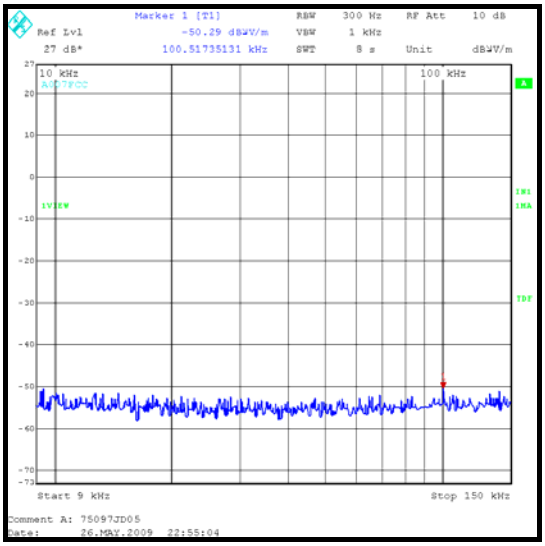
Results: Electric Field Strength Measurements

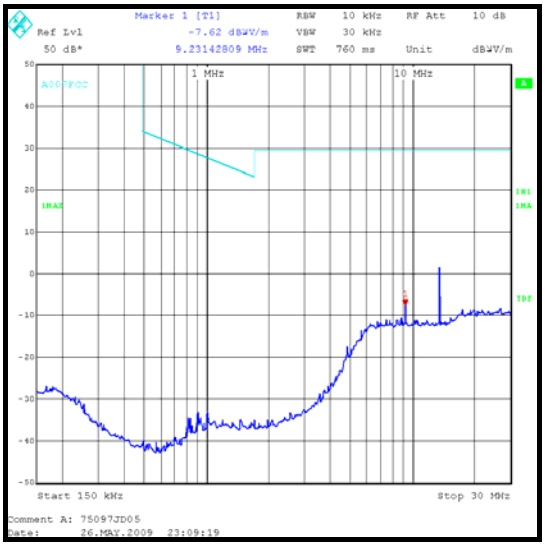
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
943.627	Horizontal	24.0	46.0	22.0	Complied

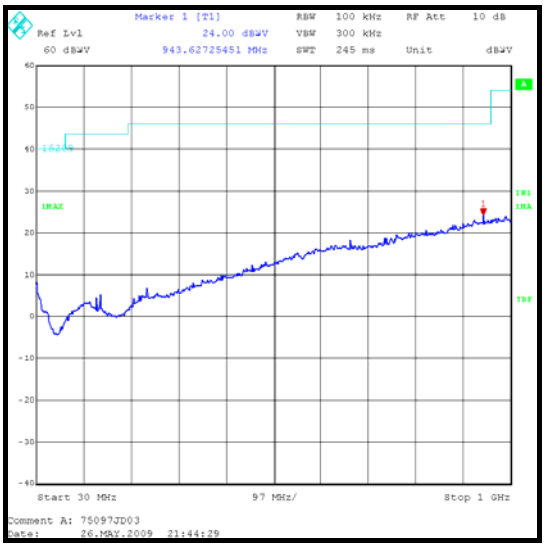
Note(s):

1. 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.
2. A transducer factor on the test equipment was used to extrapolate the result obtained at 3 metres to the required measurement distance.
3. The fundamental is displayed on the pre-scan 150 kHz to 30 MHz plot at approximately 13.5 MHz.

Transmitter Radiated Spurious Emissions (continued)







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

5.6. Transmitter Radiated Emissions at Band Edges

Test Summary:

FCC Part:	15.209(a) 15.225(c)(d)
Test Method Used:	As detailed in ANSI C63.4 Section 8 and relevant annexes

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	36

Results: Lower Band Edge

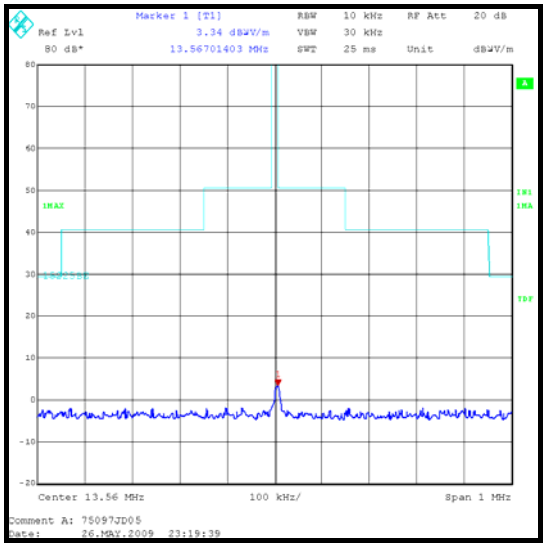
Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
13.11	-2.0	40.5	42.5	Complied

Results: Upper Band Edge

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
14.01	-2.0	40.5	42.5	Complied

Note(s):

1. Measurements were performed at 3 metres and results extrapolated to 30 metres.
2. A transducer factor on the measuring instrument was used to extrapolate the results at 3 metres to a distance of 30 metres where required.



5.7. Transmitter 20 dB Bandwidth:

Test Summary:

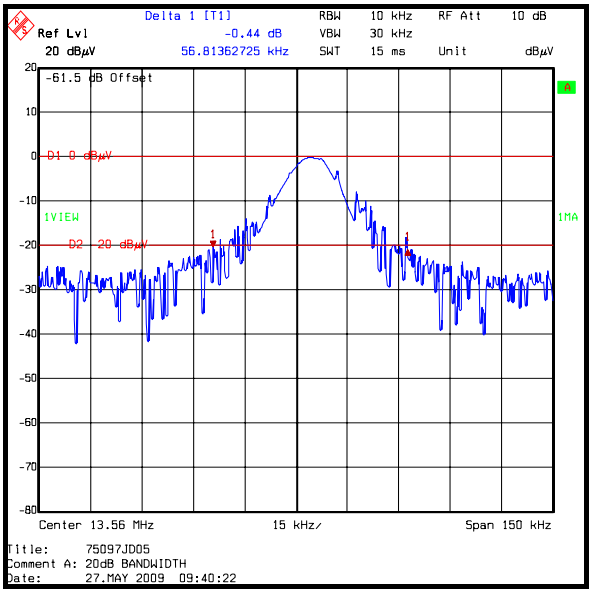
FCC Part:	2.1049
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.7 and relevant annexes

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	31

Results:

Transmitter 20 dB Bandwidth (kHz)
56.814



5.8. Transmitter Frequency Stability (Temperature & Voltage Variation)

Test Summary:

FCC Part:	15.225 (e)
Test Method Used:	As detailed in ANSI C63.4 Section 13.1.6 and relevant annexes

Environmental Conditions:

Temperature (°C):	20
Relative Humidity (%):	31

Results: Maximum frequency error of the EUT with variations in ambient temperature

Temp (°C)	Operating Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
-20	13.563957	13.563332	625	0.004608	0.01	0.005392	Complied
20	13.563957	13.563957	0	0	-	-	-
50	13.563957	13.563332	625	0.004608	0.01	0.005392	Complied

Results: Maximum frequency error of the EUT with variations in nominal operating voltage at an ambient temperature of 20°C

Supply Voltage (V)	Operating Frequency (MHz)	Measured Frequency (MHz)	Frequency Error (Hz)	Frequency Error (%)	Limit (%)	Margin (%)	Result
4.25	13.563957	13.563907	50	0.000369	0.01	0.009631	Complied
5.0	13.563957	13.563957	0	0	-	-	-
5.75	13.563957	13.563808	149	0.001098	0.01	0.008902	Complied

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
Occupied Bandwidth	13 MHz to 14 MHz	95%	±0.12 %
Frequency Stability	13 MHz to 14 MHz	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
E013	Environmental Chamber	Sanyo	ATMOS chamber	None	Calibration not required	12
K0001	5m SA Chamber	Rainford EMC	N/A	N/A	04 May 2009	12
M1068	Thermometer	Iso-Tech	RS55	93102884	09 Jul 2008	12
M122	Digital Voltmeter	Fluke	77	64910017	11 Jun 2008	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	22 Apr 2009	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	21 Aug 2008	12

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

Appendix 2. Customer's Official Declaration of Name Change

This appendix contains a copy of the customer's official declaration detailing the change of Brand Name, Model Number and FCC ID Number.

The appendix contains 1 page and is not included in the total number of pages of this report.

Paxton Access

R F I Global Services Ltd
Pavilion A
Ashwood Park, Ashwood Way
Basingstoke
Hampshire
RG23 8BG

8 July, 2009

RE: RFI ref 75097 - Official declaration of model number and name change of EUT.

We,
Paxton Access Ltd, Paxton House, Home Farm Road, Brighton, BN1 9HU, UK.
Declare that the sample originally tested as:

Name:	Net2 Desktop Reader USB
Model No:	514-326
FCC ID:	USE514326

Will now be known and marketed as the following, but remains technically identical to the sample originally tested at RFI:

Name:	Net2 Desktop Reader USB, Multi-format
Model No:	z99-2910
FCC ID:	USEZ992910

Please keep this letter on your files as an official notice for traceability.

Regards,

B. D. Glass

Brett Glass
Quality Manager
Paxton Access Ltd