EMC Technologies (NZ) Ltd

Test Report No **60530.1**
Report date: 30 May 2006

TEST REPORT

ICT PRT-NPRX Proximity Card Reader

tested to

47 Code of Federal Regulations

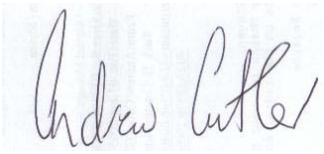
Part 15 - Radio Frequency Devices

Subpart C – Intentional Radiators

for

Parkside Laboratories Ltd

This Test Report is issued with the authority of:



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1. STATEMENT OF COMPLIANCE

The **ICT PRT-NPRX Proximity Card Reader** complies with FCC Part 15 Subpart C as an Intentional Radiator when the methods, as described in ANSI C63.4 - 2003, are applied.

2. RESULTS SUMMARY

Clause	Parameter	Result
15.201	Equipment authorisation requirement	Certification required.
15.203	Antenna requirement	Complies. Antenna integral to device.
15.204	External PA and antenna modifications	Not applicable. No external devices.
15.205	Restricted bands of operation	Complies. Device transmits on 125.0 kHz
15.207	Conducted limits	Testing not requested by the client.
15.209	Radiated emission limits - Fundamental	Complies with a 37.9 dB margin
15.209	Radiated emission limits - Spurious emissions <30 MHz	Complies. No emissions detected.
15.209	Radiated emission limits – Spurious emissions >30 MHz	Testing not requested by the client.

3. INTRODUCTION

This report describes the tests and measurements performed on the **ICT PRT-NPRX Proximity Card Reader** for the purpose of determining compliance with the specification.

The client selected the test sample.

This report relates only to the sample tested.

This report contains no corrections or erasures.

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both Class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

4. CLIENT INFORMATION

Company Name	Parkside Laboratories Ltd
Address	10 Vanadium Place
City	Christchurch
Country	New Zealand
Contact	Mr Brian Drumm

5. DESCRIPTION OF TEST SAMPLE

Brand Name	ICT
Model Number	PRT-NPRX
Product	Proximity Card Reader
Manufacturer	Integrated Control Technology Ltd
Country of Origin	New Zealand
Serial Number	000019

6. RESULTS

Standard

The sample was tested in accordance with 47 CFR Part 15 Subpart C.

Methods and Procedures

The measurement methods and procedures as described in ANSI C63.4 - 2003 were used.

Section 15.201: Equipment authorisation requirement

Certification as detailed in Subpart J of Part 2 is required for this device.

Section 15.203: Antenna requirement

As can be seen from the attached photographs the device has an integral antenna which would be classed as being unique.

Result: Complies.

Section 15.204: External radio frequency power amplifiers and antenna modifications

From the attached photographs it can be seen that it is not possible to attach an external power amplifier to this transmitter.

Result: Complies.

Section 15.205: Restricted bands of operation

The transmitter transmits on 125.0 kHz.

This falls between the restricted bands of 90 –110 kHz and 495 – 505 kHz.

Result: Complies.

Section 15.209: Radiated emission limits, general requirements

Radiated emissions testing was carried out over the frequency range of 100 kHz to 30 MHz.

Testing was carried out at the laboratory's open area test site - located at Driving Creek, Orere Point, Auckland, New Zealand.

This site conforms to the requirements of CISPR 16, Part 1, Clause 16, and ANSI C63.4 - 2003.

The device was placed in the centre of the test tabletop, which is a total of 0.8 m above the test site ground plane.

The emission level was determined in field strength by taking the following into consideration:

> Level (dBμV/m) = Receiver Reading (dBμV) + Antenna Factor (dB) + Coax Loss (dB)

Fundamental emission:

Measurements on this device were carried while it was transmitting continuously with a sample access card being interrogated and when the card was not being interrogated.

Measurements were attempted at a distance of 10 metres however no significant emissions were detected so all measurements were performed at a distance of 3 metres.

As allowed by section 15.31(f)(2) measurements were made at 3 metres with the 300 metre limit being extrapolated by a factor of 40 dB per decade.

The 300 metre limit of 19.2 uV/m has been converted to 25.7 dBuV/m and this limit has been extrapolated by 80 dB's as 300 metres to 3 metres is 2 decades.

Measurements were made using a magnetic loop antenna and a receiver with an average detector and a 9 kHz bandwidth.

The dc supply to the device was varied between 85% and 115%.

Card interrogated with supply voltage varied.

Frequency kHz	Voltage Vdc	Level dBuV/m	Limit dBuV/m	Margin dB
125.0	10.2	67.8	105.7	37.9
125.0	12.0	67.8	105.7	37.9
125.0	13.8	67.8	105.7	37.9

Card not being interrogated with supply voltage varied.

Frequency kHz	Voltage Vdc	Level dBuV/m	Limit dBuV/m	Margin dB
125.0	10.2	66.8	105.7	38.9
125.0	12.0	66.8	105.7	38.9
125.0	13.8	66.8	105.7	38.9

Result: Complies with a 37.9 dB margin

Measurement uncertainty with a confidence interval of 95% is:
- Free radiation tests (100 kHz – 30 MHz) ± 4.8 dB

Section 15.209: Spurious Emissions (below 30 MHz)

Frequency kHz	Level dBuV/m	Limit dBuV/m	Margin dB
250.0	> 42.8	99.6	< 56.8
375.0	> 39.8	96.1	< 56.3
500.0	> 40.9	73.6	< 30.8
625.0	> 40.6	71.7	< 29.5
750.0	> 38.2	70.1	< 31.9
875.0	> 39.1	68.8	< 29.7
1000.0	> 37.4	67.6	< 30.2
1125.0	> 34.5	66.6	< 32.1
1250.0	> 33.9	65.7	< 31.8
1375.0	> 34.1	64.8	< 30.7
1500.0	> 32.9	64.1	< 31.2
1625.0	> 31.4	63.4	< 32.0
1750.0	> 31.4	69.5	< 38.1

Magnetic loop measurements were attempted at a distance of 3 metres.

No spurious emissions were detected from the device.

Measurements were made while the device was being powered using a 12 Vdc lead acid battery.

A receiver with an average detector and a 9 kHz bandwidth was used between 125 – 490 kHz and a quasi peak detector with a 9 kHz bandwidth was used between 490 kHz – 30.0 MHz.

The 300 metre limit between 125 – 490 kHz has been scaled by a factor of 40 dB per decade, as per section 15.31 (f) (2) and the 30 metre limit between 490 – 1705 kHz has been scaled by a factor of 40 dB per decade, as per section 15.31 (f) (2).

Result: Complies.

Measurement uncertainty with a confidence interval of 95% is:
- Free radiation tests (100 kHz – 30 MHz) ± 4.8 dB

7. TEST EQUIPMENT USED

Instrument	Manufacturer	Model	Serial No	Asset Ref
Aerial Controller	EMCO	1090	9112-1062	RFS 3710
Measurement Receiver	Rohde & Schwarz	ESCS 30	847124/020	E1595
Loop Antenna	EMCO	6502	9311-2801	A-231
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709

8. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies Ltd registration with the Federal Communications Commission as a listed facility, registration number: 90838, which was last updated on February 17th, 2004.

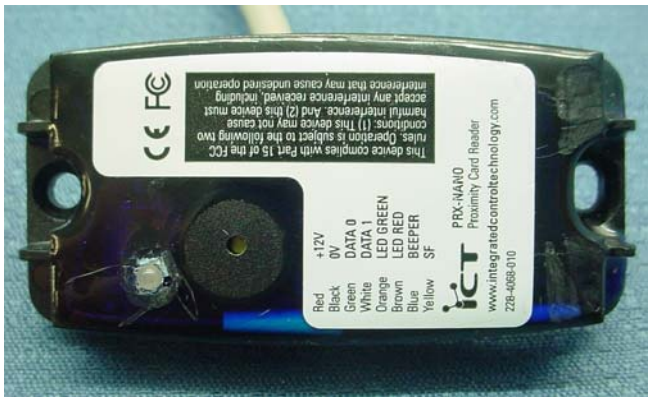
All testing was carried out in accordance with the terms of EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

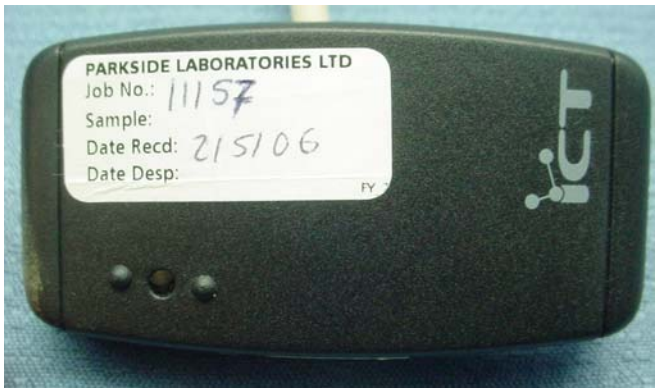
All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.1999.

International Accreditation New Zealand has Mutual Recognition Arrangements for testing and calibration with 46 accreditation bodies in 34 economies. This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden). Further details can be supplied on request.

9. PHOTOGRAPH (S)

External Views





Radiated Emissions Test Set Up