

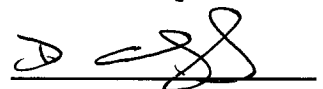
EMC TEST REPORT

COMPANY: PAXTON ACCESS LTD
PRODUCT: PROXIMITY VANDAL PROOF
READER
REPORT NO. 06022772c

WRITTEN BY: D A Legge



REVIEWED BY: D Griffin



TEST ENGINEER: D A Legge



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Contents	Page No.
1. JOB DESCRIPTION	3
2. TEST SUMMARY	4
3. EQUIPMENT UNDER TEST (EUT)	4
3.1. Description of the EUT	4
3.2. EUT's Modes of Operation	4
3.3. EUT Configuration Diagram	4
3.4. EUT Support Equipment	4
3.5. Cables Associated With the EUT	5
4. CONDUCTED EMISSIONS	6
4.1. Conducted Emissions Test Method	6
4.2. Conducted Emissions Test Results	6
4.3. Modification Performed During Testing	6
4.4. Conducted Emissions Conclusions	6
4.5. Measurement Uncertainty	6
5. EMISSIONS RADIATED	11
5.1. Radiated Emissions Test Method	11
5.2. Radiated H Field Test Results	11
5.3. Radiated Spurious Emissions	11
5.4. Measurement Uncertainty	11
6. TEST EQUIPMENT	12
 TABLES	
Table 1- 2 Conducted Emissions Test Results	7
 GRAPHS	
Graph 1-2 Conducted Emissions Test Results	8

1. JOB DESCRIPTION

Equipment: Proximity Vandal Proof Reader

Equipment Model No.: 568-855-US

Equipment Serial No.: None

Phase: Compliance

Customer: Paxton Access Ltd

Test Plan Reference: -

Test Standards: CFR47 Part 15: 209

Test Location: Intertek ETL Semko
Unit D Randalls Way
Leatherhead
Surrey
KT22 7SB

Test Work Started: 7th November 2006

Test Work Completed: 13th November 2006

2. TEST SUMMARY

PRODUCT REFERENCE STANDARDS

ANSI C63.4-2003, ETSI EN300 330-1: Annex A:A1.2.1

TEST STANDARD	TEST	COMMENT
CFR 47 Part 15:107	Conducted Emissions	Pass
CFR 47 Part 15:209	Radiated Emissions	Pass

3. EQUIPMENT UNDER TEST (EUT)

3.1. Description of the EUT

The the purpose of the Proximity Vandal Proof Reader is to receive a radio signal from a passive proximity token(card or keyfob) in order to provide a digital output for access control. The power was derived from a 120vac 60Hz power supply which delivered 12vdc to an Access control unit. The Vandal Proof Reader (remote unit) was in turn connected to the Accesscontrol unit. The key component of the Paxton Access Proximity Vandal Proof Reader is the Phillips HTRC110 Hitag chip.

The EUT was tested as received with no external visible signs of damage and was of production quality.

3.2. EUT's Modes of Operation

Standby and active

3.3. EUT Configuration Diagram

See photographs in Annex A

3.4. EUT Support Equipment

The reader system was monitored for functionality client software"Net2". A RS232/485 comms converter was used to provide the connection back to thePC/software.

3.5. Cables Associated With the EUT

EUT PORT	TYPE	LENGTH (m)	TERMINATION/LOAD
DC	Twin core	< 3	Access control unit
dc	Twin core	< 3	Reader
dc	Twin core	< 3	Comms converter

4. CONDUCTED EMISSIONS

4.1. Conducted Emissions Test Method

The testing was performed in accordance with FCC Part 15.33, and Part 15.109.

The test was performed in a screened room using a Line Impedance Stabilising Network (LISN).

4.2. Conducted Emissions Test Results

Any measurements within 10dB below the average and quasi-peak limit lines are measured with the average and quasi-peak detectors respectively are given in Tables 1 - 2. The emissions signatures are given in Graphs 1 - 2.

4.3. Modification Performed During Testing

None

4.4. Conducted Emissions Conclusions

The EUT complied with FCC Part 15:33 and 15:109, Class A and B.

4.5. Measurement Uncertainty

150kHz to 30MHz \pm 2.9 dB

The measurement uncertainties have been determined at a confidence level of not less than 95%.

Table 1 Conducted Emissions Test Results

Standard: FCC Part 15:109 Class A and B

Test: Conducted Emissions

Port: 120vac 60Hz

Units of measurement:

Frequency: MHz **Amplitude:** dB μ V

Bandwidths: 10kHz

Mode of operation: Active Reading Card

Comment: Running client Software

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Conducted Emissions

EUT: Proximity Vandal Proof Reader
 Manuf: Paxton Access
 Op Cond: 120vac 60Hz
 Operator: D Legge
 Test Spec: CFR47 Part15:107
 Comment: Active - Reading Card
 Positive Line
 Result File: 2772y.dat : Vandal Proof proximity Reader - Paxton Access - Conducted Emissions

Scan Settings		(1 Range) Frequencies			Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	20msec	Auto	ON	60dB
Transducer	No.	Start	Stop	Name				
1	20	9kHz	30MHz	LISN7474				
	21	9kHz	30MHz	8157				
Prescan Measurement:	Detectors:	X PK / + AV						
	Meas Time:	see scan settings						
	Subranges:	25						
	Acc Margin:	10 dB						
Peak Search Results								
Frequency	PK Level	PK Limit	PK Delta	Phase	PE			
MHz	dB μ V	dB μ V	dB	-	-			
No results								
Frequency	AV Level	AV Limit	AV Delta	Phase	PE			
MHz	dB μ V	dB μ V	dB	-	-			
No results								

* limit exceeded
 Indicated Phase/PE shows Configuration of max. Emission

Graph 1 Conducted Emissions Test Results

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Conducted Emissions

EUT: Proximity Vandal Proof Reader
 Manuf: Paxton Access
 Op Cond: 120vac 60Hz
 Operator: D Legge
 Test Spec: CFR47 Part15:107
 Comment: Active - Reading Card
 Positive Line
 Result File: 2772y.dat : Vandal Proof proximity Reader - Paxton Access - Conducted Emissions

Scan Settings			(1 Range)		Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	5kHz	10kHz	PK+AV	20msec	Auto	ON	60dB

Transducer	No.	Start	Stop	Name
1	20	9kHz	30MHz	LISN7474
	21	9kHz	30MHz	8157

Prescan Measurement: Detectors: X PK / + AV
 Meas Time: see scan settings
 Subranges: 25
 Acc Margin: 10 dB

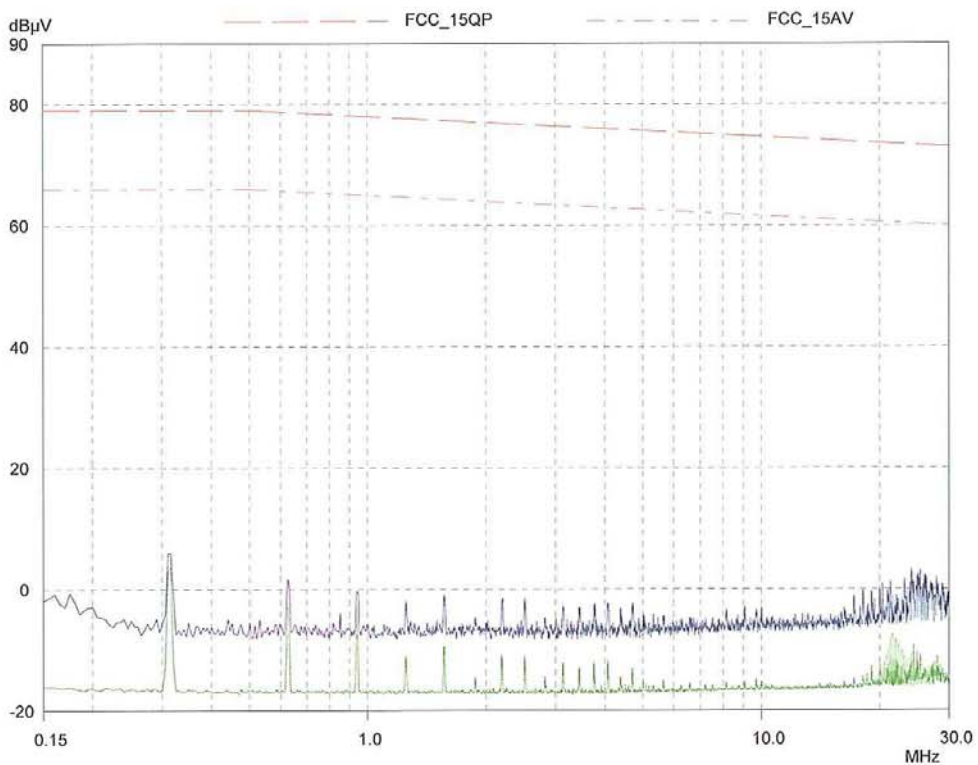


Table 2 Conducted Emissions Test Results

Standard: FCC Part 15:109 Class A and B

Test: Conducted Emissions

Port: 120vac 60Hz

Units of measurement:

Frequency: MHz **Amplitude:** dB μ V

Bandwidths: 10kHz
Mode of operation: Active reading Card
Comment: Running Client Software

```

EM06022772
Conducted Emissions
EUT: Proximity Vandal Proof Reader
Manuf: Paxton Access
Op Cond: 120vac 60Hz
Operator: D Legge
Test Spec: CFR47 Part15:107
Comment: Active - Reading Card
Neutral Line
Result File: 2772z.dat : Vandal Proof proximity Reader - Paxton Access - Conducted Emissions

Scan Settings (1 Range)
Start Stop Step IF BW Detector M-Time Atten Preamp OpRge
150kHz 30MHz 5kHz 10kHz PK+AV 20msec Auto ON 60dB

Transducer No. Start Stop Name
1 20 9kHz 30MHz LISN7474
21 9kHz 30MHz 8157

Prescan Measurement: Detectors: X PK / + AV
Meas Time: see scan settings
Subranges: 25
Acc Margin: 10 dB

Peak Search Results
Frequency PK Level PK Limit PK Delta Phase PE
MHz dB $\mu$ V dB $\mu$ V dB - -
No results

Frequency AV Level AV Limit AV Delta Phase PE
MHz dB $\mu$ V dB $\mu$ V dB - -
No results
  
```

* limit exceeded
 Indicated Phase/PE shows Configuration of max. Emission

Graph 2 Conducted Emissions Test Results

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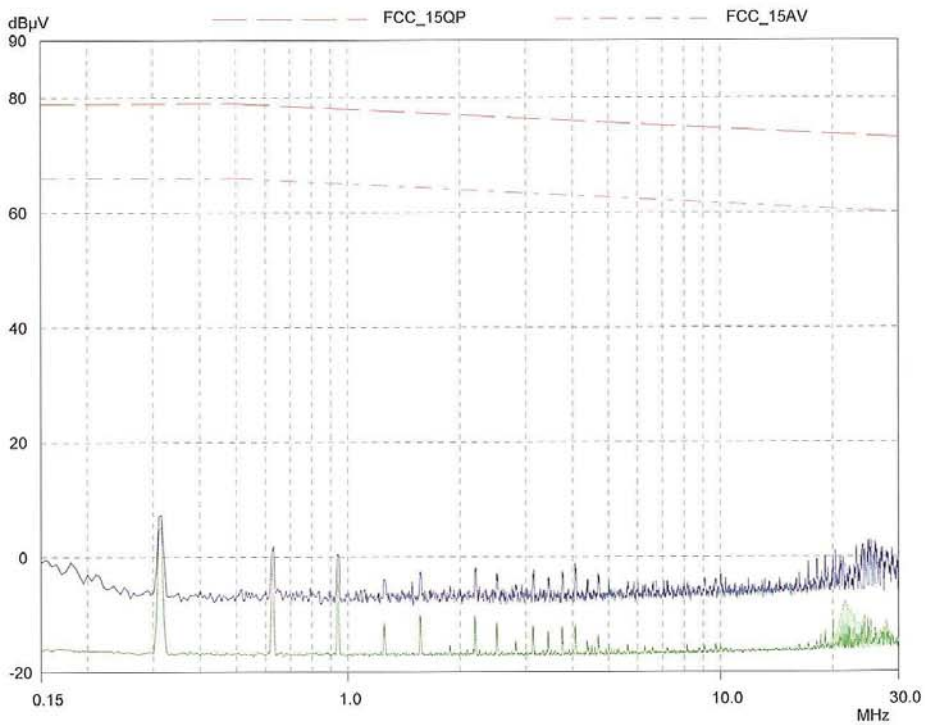
Conducted Emissions

EUT: Proximity Vandal Proof Reader
 Manuf: Paxton Access
 Op Cond: 120vac 60Hz
 Operator: D Legge
 Test Spec: CFR47 Part15:107
 Comment: Active - Reading Card
 Neutral Line
 Result File: 2772z.dat : Vandal Proof proximity Reader - Paxton Access - Conducted Emissions

Scan Settings				Receiver Settings			
(1 Range) Frequencies							
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150kHz	30MHz	5kHz	10kHz	PK+AV	20msec	Auto	ON
							OpRge
							60dB

Transducer	No.	Start	Stop	Name
1	20	9kHz	30MHz	LISN7474
	21	9kHz	30MHz	8157

Prescan Measurement: Detectors: X PK / + AV
 Meas Time: see scan settings
 Subranges: 25
 Acc Margin: 10 dB



5. EMISSIONS RADIATED

5.1. Radiated Emissions Test Method

The testing was performed in accordance with ANSI C63.4-2003 and ETSI 300 330-2 V1.3.1:2006. Annex A1

The testing was carried out over a grassed area(OATS) which was free of external objects which might cause parasitic reflections. The test distance was three metres due to the low transmitter power of the EUT.

Prior to testing on the OATS tests were carried out in a screened chamber to determine any frequencies of interest.

5.2. Radiated H Field Test Results

$$E \text{ [dB}\mu\text{V/m]} = \text{dB}\mu\text{V} + K(\text{antenna correction}) + 51.5$$

Frequency kHz	Set Rdg dB μ V	Distance Corr dB	Antenna Corr dB	Correction E field	Total dB μ v/m	Limit 10m
125.01	35.92	-10	-28.8	+51.5	48.62	85.1

5.3. Radiated Spurious Emissions

Frequency kHz	Set Rdg dB μ V	Distance Corr dB	Antenna Corr dB	Correction E field	Total dB μ v/m	Limit 10m
375.553	11.67	-10	-32.5	+51.5	20.67	85.1

The EUT complied with FCC Part 15:209, Class A and B

5.4. Measurement Uncertainty

0.09 MHz to 30MHz \pm 3.3 dB

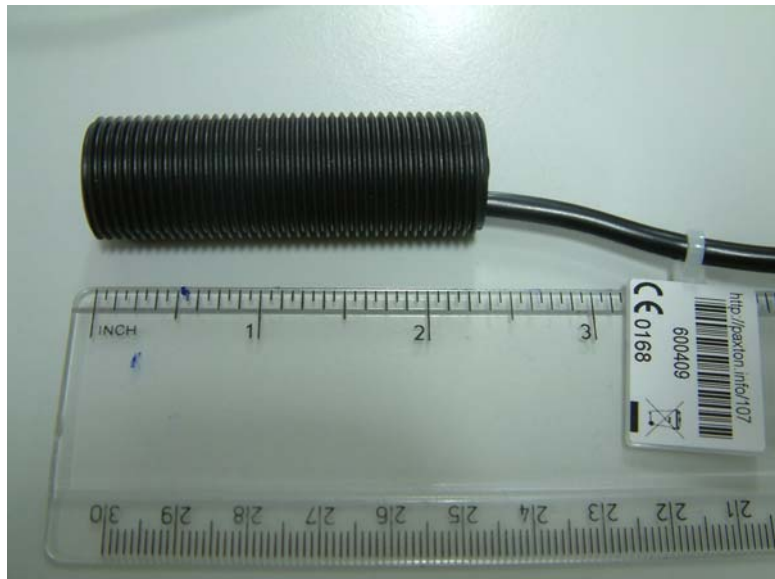
The measurement uncertainties have been determined at a confidence level of not less than 95%.

6. TEST EQUIPMENT

Equipment	Type	ID
Advantest R3271 Spectrum	Analyser	7770
Rohde & Schwarz HFH Z2	Loop Antenna	7480
Rohde & Schwarz ESHS10	Receiver	7463
Rohde & Schwarz ESHS-Z5	Lisn	7473
02m N to N	Cable	8157
OATS	Environment	-
GSM A	Environment	7286
Test Bay 5	Environment	7404
High Accuracy TH	Environment Monitor	7516

Annex A

OATS Test Site Set up



Vandal Proof Reader



3m Test Site