

EMC TEST REPORT

COMPANY: PAXTON ACCESS LTD

PRODUCT: PROXIMITY P50 READER

REPORT NO. 06022772a

D A Legge

D Feasey

D Legge

ISSUE: 2

WRITTEN BY:

REVIEWED BY:

TEST ENGINEER:

DATE: November 2006

TOTAL PAGES: 12

Opinions and interpretations based on test results are outside our scope of UKAS Accreditation.

This report shall not be reproduced, except in full, without written approval of Intertek ETL Semko

Intertek Testing & Certification Ltd Intertek House, Cleeve Road, Leatherhead, Surrey KT22 7SB Telephone: +44 (0)1372 370900 Fax: +44 (0)1372 370999 Web: www.uk.intertek-etlsemko.com

Registered No. 3272281 Registered Office: 25 Savile Row, London W1S 2ES For Terms & Conditions please see reverse Report No.: Product: Model No.:

EM06022772a Proximity P50 Reader 353-110-US Page: Issue Date: 2 of 13 Issue No.: 2

Contents

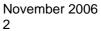
Page No.

| 1. JO | B DESCRIPTION | 3 |
|---------------|---|---|
| 2. TE | ST SUMMARY | 4 |
| 3. EQ 3.1. | UIPMENT UNDER TEST (EUT) Description of the EUT | |
| 3.2. | EUT's Modes of Operation | |
| 3.3. | EUT Configuration Diagram | |
| 3.4. 3.5. | EUT Support Equipment Cables Associated With the EUT | |
| | | |
| 4. CO | NDUCTED EMISSIONS | |
| 4.1. | Conducted Emissions Test Method | |
| 4.2. | Conducted Emissions Test Results | |
| 4.3. | Modification Performed During Testing | 6 |
| 4.4. | Conducted Emissions Conclusions | 6 |
| 4.5. | Measurement Uncertainty | 6 |
| 5. EM | IISSIONS RADIATED 1 | |
| 5.1. | Radiated Emissions Test Method1 | |
| 5.2. | Radiated H Field Test Results 1 | |
| 5.3. | Radiated Spurious Emissions 1 | 1 |
| 5.4. | Measurement Uncertainty 1 | |
| 6. TE | ST EQUIPMENT 1 | 2 |

TABLES

| Table 1- 2 Conducted Emissions Test Results |
|---|
|---|

GRAPHS



Page:3Issue Date:1Issue No.:2

3 of 13 November 2006 2

1. JOB DESCRIPTION

| Equipment: | Proximity P50 Reader |
|-----------------------|--|
| Equipment Model No.: | 353-110-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: | 7 th November 2006 |
| Test Work Completed: | 13 th November 2006 |

| Report No.: | EM06022772a |
|-------------|----------------------|
| Product: | Proximity P50 Reader |
| Model No.: | 353-110-US |

Page:4 of 13Issue Date:November 2006Issue No.:2

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 purpose of the Proximity P50 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 and Access Control Unit. The P50 reader (remote unit) was in turn connected to the Access Control Unit. The key component of the Paxton Access Proximity P50 reader is the Philips HTRC110 Hitag reader 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 using the client software "Net2". Also used was the RS232/485 comms converter to provide the connection back to the PC/Software

| Report No.: | EM06022772a |
|-------------|----------------------|
| Product: | Proximity P50 Reader |
| Model No.: | 353-110-US |

Page:5 of 13Issue Date:November 2006Issue No.:2

3.5. Cables Associated With the EUT

| EUT PORT | TYPE | LENGTH (m) | TERMINATION/LOAD | |
|----------|-----------|---------------|---------------------|--|
| DC | Twin core | 3< | Access control unit | |
| DC | 8 Core | 3< | Reader | |
| AC Mains | 2 Core | 3< | Comms Converter | |

Page: Issue Date: Issue No.: 2

6 of 13 November 2006

4. CONDUCTED EMISSIONS

4.1. Conducted Emissions Test Method

The testing was performed in accordance with FCC Part 15.33, and Part15.109.

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 guasi-peak limit lines are measured with the average and quasi-peak detectors respectively are given in Tables 1 - 2. The emissions signatures ares 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%.

| Report No.: | EM06022772a | Page: | 7 of 13 |
|-------------|----------------------|-------------|---------------|
| Product: | Proximity P50 Reader | Issue Date: | November 2006 |
| Model No.: | 353-110-US | Issue No.: | 2 |

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: | dBµV | | |
| Bandwidths: | 10kHz | | | | |
| Mode of operation: | Active Reading Card | | | | |
| Comment: | Running client Software | | | | |

| Paxton A 120vac 6 D Legge CFR47 P Active - F Positive L 2772u.da (1 Range Frequencie Stop 30MHz | imity Reader ccess 0Hz art 15:107 Reading Card Line tt : P50 Proximi | | Detector PK+AV Name LISN7474 8157 | nducted Emir Receiver Se M-Time 20msec | | Preamp ON | OpRge 60dB | |
|---|---|--|---|---|--|--|--|--|
| Paxton A 120vac 6 D Legge CFR47 P Active - R Positive L 2772u.da (1 Range Frequencie Stop 30MHz | ccess OHz art 15:107 Reading Card .ine tt : P50 Proximi op ss Ste 5kl start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| 120vac 6 D Legge CFR47 P Active - R Positive L 2772u.da (1 Range Frequencie Stop 30MHz S | OHz art 15:107 Reading Card Line t : P50 Proximi b) Ste Ski Ski ski | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| D Legge CFR47 P Active - R Positive L 2772u.da (1 Range Frequencie Stop 30MHz S | aart 15:107 Reading Card Line tit : P50 Proximi e) Ste Ste Start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| CFR47 P Active - R Positive L 2772u.da (1 Range Frequencie Stop 30MHz S | Reading Card Line tt : P50 Proximi a) Ste Start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| Active - F Positive L 2772u.da (1 Range Frequencie Stop 30MHz S | Reading Card Line tt : P50 Proximi a) Ste Start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| Positive L 2772u.da (1 Range Frequencie Stop 30MHz S | Line Line Line PO Solution Step Start SkHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| 2772u.da (1 Range Frequencie Stop 30MHz S | it : P50 Proximi e) Ste Ste Ski Start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| (1 Range Frequencie Stop 30MHz S | e) Ste Ski Start 9kHz | Pp IF BW Hz 10kHz Stop 30MHz | Detector PK+AV Name LISN7474 | Receiver Se M-Time | ttings Atten | | | |
| Frequencie Stop 30MHz S | s Ste 5ki start 9kHz | Hz 10kHz Stop 30MHz | PK+AV Name LISN7474 | M-Time | Atten | | | |
| Stop 30MHz S | Ste 5kl itart 9kHz | Hz 10kHz Stop 30MHz | PK+AV Name LISN7474 | M-Time | Atten | | | |
| 30MHz S | 5kl itart 9kHz | Hz 10kHz Stop 30MHz | PK+AV Name LISN7474 | | | | | |
| s | itart 9kHz | Stop 30MHz | Name LISN7474 | 20msec | Auto | ON | 60dB | |
| | 9kHz | 30MHz | LISN7474 | | | | | |
| | | | | | | | | |
| | 9kHz | 30MHz | 9167 | | | | | |
| | | | 0107 | | | | | |
| nt: D | etectors: | X PK / + AV | | | | | | |
| N | leas Time: | see scan settings | | | | | | |
| S | ubranges: | 25 | | | | | | |
| A | cc Margin: | 10 dB | | | | | | |
| | | | | | | | | |
| Level | PK Limit | PK Delta | Phase | PE | | | | |
| μV | dBµV | dB | - | - | | | | |
| | | | | | | | | |
| Level | AV Limit | AV Delta | Phase | PE | | | | |
| JV | dBµV | dB | - | - | | | | |
| | Level JV Level | Subranges: Acc Margin: Level PK Limit JV dBµV | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta JV dBµV dB | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta Phase IV dBµV dB - | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta Phase PE JV dBµV dB | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta Phase PE IV dBµV dB | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta Phase PE JV dBµV dB | Subranges: 25 Acc Margin: 10 dB Level PK Limit PK Delta Phase PE IV dBµV dB |

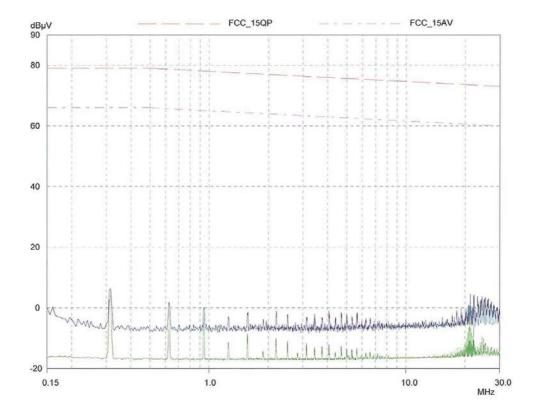
* limit exceeded

Indicated Phase/PE shows Configuration of max. Emission

| Report No.: | EM06022772a | Page: | 8 of 13 |
|-------------|----------------------|-------------|---------------|
| Product: | Proximity P50 Reader | Issue Date: | November 2006 |
| Model No.: | 353-110-US | Issue No.: | 2 |

Graph 1 Conducted Emissions Test Results

| EM060227 | 772 | | | | | | | 16 | Nov 2006 |
|---------------|-----------|---------------------------|---------------|---------------|-----------------|-------------|----------|--------|----------|
| Conducted | d Emissio | ns | | | | | | | |
| EUT: | P50 P | Proximity Read | er | | | | | | |
| Manuf: | Paxto | n Access | | | | | | | |
| Op Cond: | 120va | c 60Hz | | | | | | | |
| Operator: | D Leg | ige | | | | | | | |
| Test Spec: | CFR4 | 7 Part 15:107 | | | | | | | |
| Comment: | | e - Reading Ca ve Line | rd | | | | | | |
| Result File: | 2772u | .dat : P50 Pro | ximity Card I | Reader - Pax | ton Access - Co | nducted Emi | ssions | | |
| Scan Settings | (1 Ra | inge) | | | | | | | |
| | Frequer | ncies | | 1 | | Receiver Se | ttings - | | |
| Start | Stop | | Step | IF BW | Detector | M-Time | Atten | Preamp | OpRge |
| 150kHz | 30MHz | 2 | 5kHz | 10kHz | PK+AV | 20msec | Auto | ON | 60dB |
| ransducer | No. | Start | Stop | | Name | | | | |
| 1 | 20 | 9kHz | 3 | 30MHz | LISN7474 | | | | |
| | 21 | 9kHz | 3 | BOMHz | 8157 | | | | |
| | irement: | Detectors: | XP | K / + AV | | | | | |
| Prescan Measu | | Meas Time: | see | scan settings | 6 | | | | |
| Prescan Measu | | weas time. | | | | | | | |
| Prescan Measu | | Subranges: | 25 | | | | | | |





| Report No.: | EM06022772a | Page: | 9 of 13 |
|-------------|----------------------|-------------|---------------|
| Product: | Proximity P50 Reader | Issue Date: | November 2006 |
| Model No.: | 353-110-US | Issue No.: | 2 |

Table 2 Conducted Emissions Test Results

| Standard: | FCC Part 15:109 Class A and B | | | | |
|---|---|------------|------|--|--|
| Test: | Conducted Emis | | | | |
| Port: | 120vac 60Hz | | | | |
| Units of measuremen | nt: | | | | |
| Frequency: | MHz | Amplitude: | dBμV | | |
| Bandwidths: Mode of operation: Comment: | 10kHz Active reading C Running Client S | | | | |

| EM060227 | 72 | | | | | | 16 | Nov 2006 | 2 |
|-----------------|-----------|-------------------|---------------------|-----------------|-------------|----------|--------|----------|---|
| Conducted | Emissio | ns | | | | | | | |
| EUT: | P50 P | roximity Reader | | | | | | | |
| Manuf: | | Access | | | | | | | |
| Op Cond: | 120va | c 60Hz | | | | | | | |
| Operator: | D Lege | ae | | | | | | | |
| Test Spec: | CFR4 | 7 Part15:107 | | | | | | | |
| Comment: | Active | - Reading Card | | | | | | | |
| Result File: | 2772v | dat : P50 Card Re | ader - Paxton Acces | s - Conducted I | Emissions | | | | |
| Scan Settings | (1 Ra | nge) | | | | | | | |
| 1223 | - Frequer | icies | 1 | | Receiver Se | ttings — | | | |
| Start | Stop | Ste | | Detector | M-Time | Atten | Preamp | OpRge | |
| 150kHz | 30MHz | 5kl | Hz 10kHz | PK+AV | 20msec | Auto | ON | 60dB | |
| Transducer | No. | Start | Stop | Name | | | | | |
| 1 | 20 | 9kHz | 30MHz | LISN7474 | | | | | |
| | 21 | 9kHz | 30MHz | 8157 | | | | | |
| Prescan Measure | ement: | Detectors: | X PK / + AV | | | | | | |
| | | Meas Time: | see scan setting | 8 | | | | | |
| | | Subranges: | 25 | | | | | | |
| | | Acc Margin: | 10 dB | | | | | | |
| Peak Search Res | sults | | | | | | | | |
| Frequency | PK Level | PK Limit | PK Delta | Phase | PE | | | | |
| MHz | dBµV | dBµV | dB | - | - | | | | |
| No results | | | | | | | | | |
| Frequency | AV Level | AV Limit | AV Delta | Phase | PE | | | | |
| MHz | dBµV | dBµV | dB | - | - | | | | |
| | | | | | | | | | |

* limit exceeded

Indicated Phase/PE shows Configuration of max. Emission

| Report No.: | EM06022772a | Page: | 10 of 13 |
|-------------|----------------------|-------------|---------------|
| Product: | Proximity P50 Reader | Issue Date: | November 2006 |
| Model No.: | 353-110-US | Issue No.: | 2 |

Graph 2 Conducted Emissions Test Results

| EM06022 | | | | | | | | 16 | Nov 2006 |
|-------------------------|------------|----------------------------------|-------------|---------------|-------------------|-------------|-------|--------|----------|
| | d Emissior | | | | | | | | |
| EUT: | | oximity Reade | r | | | | | | |
| Manuf: | | Access | | | | | | | |
| Op Cond: | 120vac | : 60Hz | | | | | | | |
| Operator: | D Legg | | | | | | | | |
| fest Spec: | | Part15:107 | | | | | | | |
| Comment: | | Reading Care | d | | | | | | |
| | Neutra | | | | | | | | |
| Result File: | 2772v. | dat : P50 Card | Reader - Pa | axton Access | - Conducted | Emissions | | | |
| Scan Settings | (1 Rar | nge) | | | | | | | |
| | Frequen | | | 1 | | Receiver Se | | | 1 |
| Start | Stop | | Step | IF BW | Detector | M-Time | Atten | Preamp | OpRge |
| 150kHz | 30MHz | | 5kHz | 10kHz | PK+AV | 20msec | Auto | ON | 60dB |
| Fransducer | No. | Start | Stop | | Name | | | | |
| 1 | 20 | 9kHz | | OMHz | LISN7474 | | | | |
| | 21 | 9kHz | | OMHz | 8157 | | | | |
| | | | | | | | | | |
| Prescan Measu | urement: | Detectors: | X PK | (/ + AV | | | | | |
| | | Meas Time: | | scan settings | | | | | |
| | | Subranges: Acc Margin: | 25 10 d | | | | | | |
| | | 1.27 | | | | | | | |
| | | | | | | | | | |
| ВµV 0 | - | | — — FCC | _15QP | = | | FCC_1 | I5AV | |
| вµV 0 | - | | — — FCC | C_15QP | | | FCC_1 | I5AV | |
| 0 | - | | — — FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | - | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | – – FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | C_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 5_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 5_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 0_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | D_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | D_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | C_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | - FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC |)_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | C_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| ВµV 0 0 0 0 | | | FCC |)_15QP | | | FCC_1 | 15AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | I5AV | |
| 0 | | | FCC | 2_15QP | | | FCC_1 | 15AV | |
| | | | - FCC | 2_15QP | | | FCC_1 | | |
| | | | - FCC | 2_15QP | sipilariydydatado | | FCC_1 | | |
|)) | | | - FCC | 2_15QP | | | FCC_1 | | |
| μ ν | | unn haum | - FCC | 2_15QP | | | FCC_1 | | |

PAGE 1

Page: Issue Date: Issue No.: 2

11 of 13 November 2006

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

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

| Frequency kHz | Set Rdg dBµV | Distance Corr dB | | Correction E field | Total dBµv/m | Limit 10m |
|------------------|-----------------|---------------------|-------|-----------------------|-----------------|--------------|
| 125.01 | 54.52 | -10 | -28.8 | +51.5 | 67.22 | 85.1 |
| | | | | | | |

5.3. Radiated Spurious Emissions

| Frequency kHz | Set Rdg dBµV | Distance Corr dB | | Correction E field | Total dBµv/m | Limit 10m |
|------------------|-----------------|---------------------|-------|-----------------------|-----------------|--------------|
| 375.553 | 26.23 | -10 | -32.5 | +51.5 | 35.23 | 85.1 |
| | | | | | | |

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

5.4. Measurement Uncertainty

0.09 MHz to 30MHz ± 3.3 dB

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

Report No.:EM06022772aProduct:Proximity P50 ReaderModel No.:353-110-US

Page:12 of 13Issue Date:November 2006Issue No.:2

6. TEST EQUIPMENT

| Equipment | Туре | 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 |

Report No.: Product: Model No.: EM06022772a Proximity P50 Reader 353-110-US Page: Issue Date: Issue No.: 13 of 13 November 2006 2

Annex A

OATS Test Site Set up





3m Test Site