



## TEST REPORT

Report Number: 102017567MIN-004D  
Project Number: G102017567

Testing performed on the  
500-010-USDV, Class II Permissive Changes

FCC ID: USE500010  
Industry Canada ID: 10217A-500010

to  
47 CFR Part 15:2015, §15.209 and §15.215  
RSS-210, Issue 8, 2010 +Amendment 1, 2015  
RSS- Gen, Issue 4, 2014

For  
Paxton Access Ltd

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Date of issue: February 25, 2016

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## 1.0 DESCRIPTION OF THE SAMPLE (EUT)

<b>Model:</b>	500-010-USDV (Marine Reader)
<b>Type of EUT:</b>	Security door access reader
<b>Serial Number:</b>	3859096
<b>FCC ID:</b>	USE500010
<b>Industry Canada ID:</b>	10217A-500010
<b>Related Submittal(s) Grants:</b>	Class II Permissive Changes
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<b>Test Standards:</b>	<input checked="" type="checkbox"/> 47 CFR, Part 15:2015, §15.209, §15.215 <input checked="" type="checkbox"/> RSS-210, Issue 8, 2010 +Amendment 1, 2015 <input checked="" type="checkbox"/> RSS-Gen, Issue 4, 2014
<b>Type of radio:</b>	<input type="checkbox"/> Stand -alone <input type="checkbox"/> Module <input type="checkbox"/> Hybrid
<b>Date Sample Submitted:</b>	February 16, 2016
<b>Test Work Started:</b>	February 23, 2016
<b>Test Work Completed:</b>	February 25, 2016
<b>Test Sample Conditions:</b>	<input type="checkbox"/> Damaged <input type="checkbox"/> Poor (Usable) <input checked="" type="checkbox"/> Good <input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production <input type="checkbox"/> Used



### 1.1 Product Description; Test Facility

<b>Product Description:</b>	Transmitter
<b>Operating Frequency</b>	125 kHz
<b>Modulation:</b>	ASK
<b>Emission Designator:</b>	29K0K1D
<b>Antenna(s) Info:</b>	Integral antenna
<b>Antenna Installation:</b>	<input type="checkbox"/> User <input type="checkbox"/> Professional <input checked="" type="checkbox"/> Factory
<b>Transmitter power configuration:</b>	<input type="checkbox"/> Internal battery <input checked="" type="checkbox"/> External power source <input type="checkbox"/> 120VAC <input type="checkbox"/> 230VAC <input type="checkbox"/> 400VAC <input checked="" type="checkbox"/> 13.8 VDC <input type="checkbox"/> Other: <span style="background-color: gray; color: gray;">          </span> <span style="background-color: gray; color: gray;">          </span> Amp. <input type="checkbox"/> 50Hz <input type="checkbox"/> 60Hz
<b>Special Test Arrangement:</b>	The transmitter was tested while connected to and powered through the Net 2 Plus Controller.
<b>Test Facility Accreditation:</b>	A2LA (Certificate No. 1427.01)
<b>Test Methodology:</b>	Measurements performed according to the procedures in ANSI C63.10-2013



## 1.2 EUT Configuration

The equipment under test was operated during the measurement under the following conditions:

- Standby
- Continuous
- Continuous un-modulated
- Test program (customer specific)
- Below

### Operating modes of the EUT:

No.	Description
1	The transmitter was set to transmit continuously.

### Cables:

No.	Type	Length	Designation	Note
1	Communication cable	>1m	Reader cable, not shielded	

### Support equipment/Services:

No.	Item	Description
1	Paxton Access Net 2 plus	Door access control unit

**General notes:** Mullion LF card reader is transmitter only, and has no receiver portion.

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## 1.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal

**Temperature:** 15-35 °C

**Humidity:** 30-60 %

**Atmospheric pressure:** 86-106 kPa



## 1.4 Measurement uncertainty

The expanded uncertainty ( $k = 2$ ) for radiated emissions from 30 to 1000 MHz has been determined to be:  $\pm 4$  dB at 10m and  $\pm 5.4$  dB at 3m

The expanded uncertainty ( $k = 2$ ) for conducted emissions from 150 kHz to 30 MHz has been determined to be:  
 $\pm 2.6$  dB

## 1.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured emissions reading on the EMI Receiver.

The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where: FS = Field Strength in dB( $\mu$ V/m)

RA = Receiver Amplitude in dB( $\mu$ V)

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB( $m^{-1}$ )

AG = Amplifier Gain in dB

Assume a receiver reading of 48.1 dB( $\mu$ V) is obtained. The antenna factor of 7.4 dB( $m^{-1}$ ) and cable factor of 1.6 dB is added and amplifier gain of 16.0 dB is subtracted giving field strength of 41.1 dB( $\mu$ V/m).

$$RA = 48.1 \text{ dB}(\mu\text{V})$$

$$AF = 7.4 \text{ dB}(m^{-1})$$

$$CF = 1.6 \text{ dB}$$

$$AG = 16.0 \text{ dB}$$

$$FS = RA + AF + CF - AG$$

$$FS = 48.1 + 7.4 + 1.6 - 16.0$$

$$FS = 41.1 \text{ dB}(\mu\text{V}/\text{m})$$



## 2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST SPECIFICATION	TEST PARAMETERS	RESULT
15.209, 15.215(b) / RSS-Gen 4.11	Field Strength of Fundamental and Spurious Emissions	Pass
15.215(c) / RSS-Gen 4.6.3	Bandwidth of the emission	N/A
15.207/RSS-Gen 7.2.4	Transmitter Power Line conducted emissions	N/A
15.109/ICES-003/ RSS-Gen 4.10	Receiver/digital device radiated emissions	N/A
15.107/ ICES-003	Digital device conducted emissions	N/A

**Notes:** For a new crystal oscillator and new microcontroller Field Strength of Fundamental and Spurious Emissions performed only for Class II Permissive changes.

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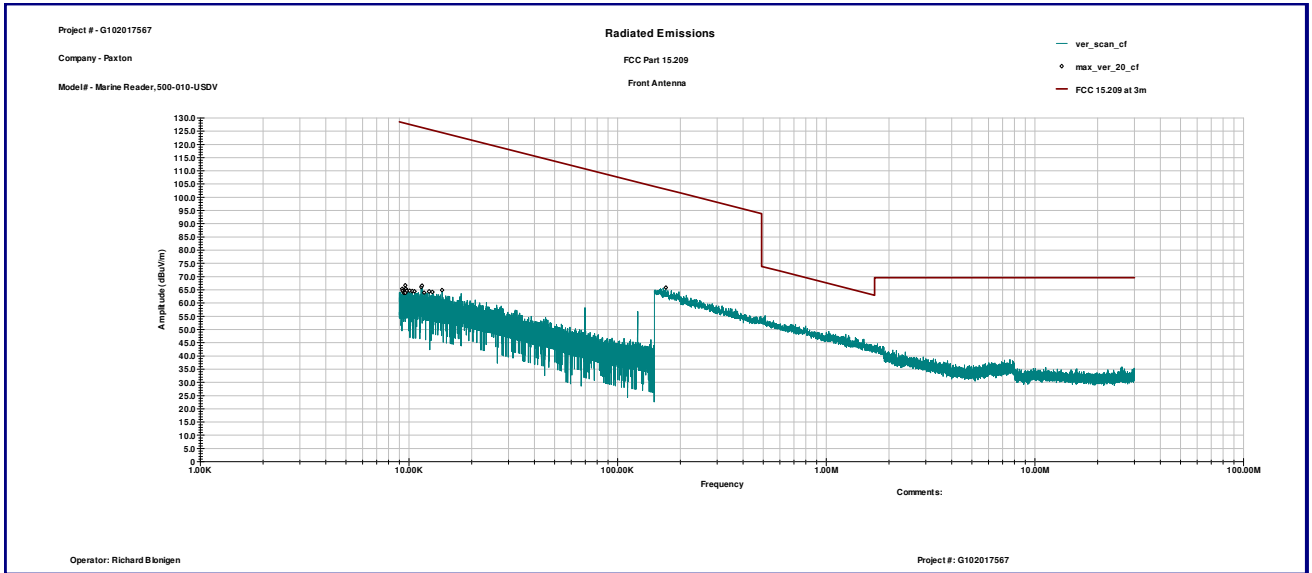




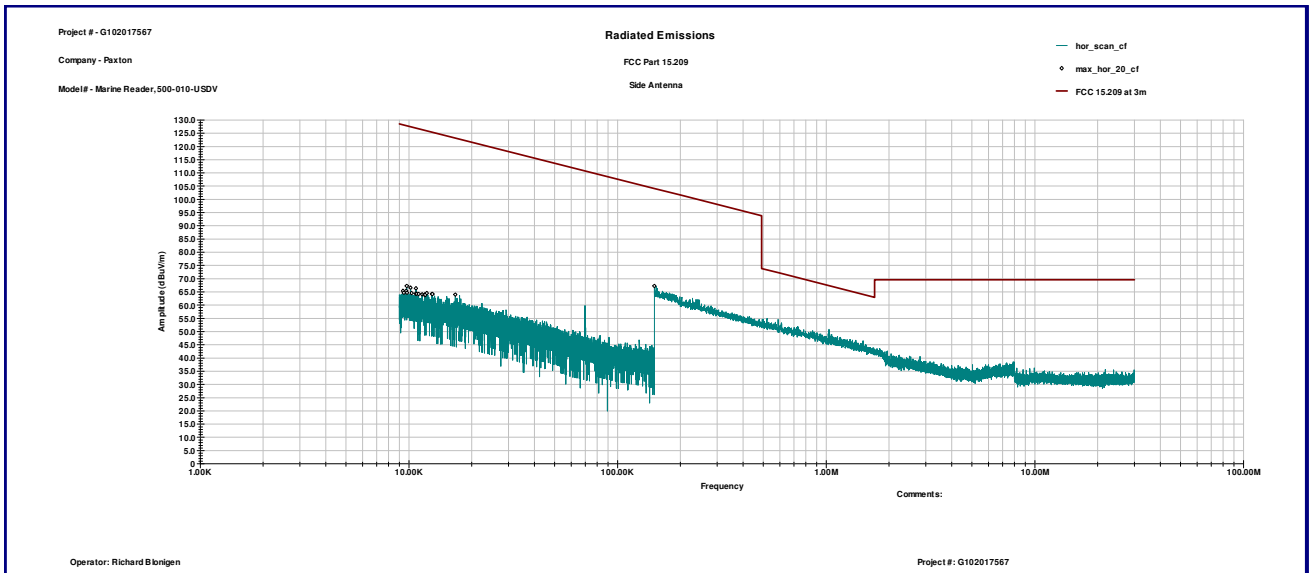
<b>Date:</b>	February 25, 2016	<b>Result: Pass</b>
<b>Standard:</b>	FCC 15.209 / RSS-210 A1.1.2	
<b>Tested by:</b>	Richard Blonigen	
<b>Test Point:</b>	Enclosure with antenna	
<b>Operation mode:</b>	See Page 5	
<b>Note:</b>	None	

**Table 3.1.1**

Frequency MHz	Antenna Orient.	Ant. CF dB1/m	Cable loss dB	Pre-amp Gain (dB)	QP Reading dB $\mu$ V	Total @ 10m dB $\mu$ V/m	15.209 Limit dB $\mu$ V/m	Distance Factor (dB)	Margin dB	Comments
0.125	Front	63.5	0.1	28.8	3.5	38.3	25.7	59.1	-46.4	
0.125	Side	63.5	0.1	28.8	3.2	38.0	25.7	59.1	-46.7	
0.010	Front	83.7	0.0	27.8	3.9	59.9	47.6	59.1	-46.8	
0.012	Front	82.9	0.0	28.0	3.7	58.7	46.0	59.1	-46.4	
0.013	Front	82.5	0.0	28.1	3.6	58.1	45.3	59.1	-46.4	
0.010	Side	83.7	0.0	27.8	3.8	59.8	47.6	59.1	-46.9	
0.011	Side	83.3	0.0	27.9	3.7	59.2	46.8	59.1	-46.7	
0.013	Side	82.5	0.0	28.1	3.7	58.2	45.3	59.1	-46.3	



Graph 3.1.1



Graph 3.1.2



#### 4.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R & S	ESCI	100358	12909	10/20/2016	<input checked="" type="checkbox"/>
Loop Antenna	ETS	6512	00060486	19942	12/28/2016	<input checked="" type="checkbox"/>
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	<input checked="" type="checkbox"/>



## 5.0 Revision History

REVISION LEVEL	DATE	REPORT NUMBER	PREPARED	REVIEWED	NOTES
0	2-25-2016	102017567MIN-004D	RB	NS	Original Issue