TEST REPORT

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

Testing performed on the
323-110, Class II Permissive Changes

FCC ID: USE323110
Industry Canada ID: 10217A-323110

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)

Model:	323-110 (P200)
Type of EUT:	Security door access reader
Serial Number:	3858860
FCC ID:	USE323110
Industry Canada ID:	10217A-323110
Related Submittal(s) Grants:	Class II Permissive Changes
Company:	Paxton Access Ltd
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Test Standards:	☒ 47 CFR, Part 15:2015, §15.209, §15.215 ☒ RSS-210, Issue 8, 2010 +Amendment 1, 2015 ☒ RSS-Gen, Issue 4, 2014
Type of radio:	☐ Stand -alone ☐ Module ☐ Hybrid
Date Sample Submitted:	February 16, 2016
Test Work Started:	February 23, 2016
Test Work Completed:	February 25, 2016
Test Sample Conditions:	☐ Damaged ☐Poor (Usable) ☒ Good ☐ Prototype ☒Production ☐ Used

1.1 Product Description; Test Facility

Product Description:	Transmitter
Operating Frequency	125 kHz
Modulation:	ASK
Emission Designator:	29K0K1D
Antenna(s) Info:	Integral antenna
Antenna Installation:	☐ User ☐ Professional ☒ Factory
Transmitter power configuration:	☐ Internal battery ☒ External power source ☐ 120VAC ☐ 230VAC ☐ 400VAC ☒ 13.8 VDC ☐ Other: Amp. ☐ 50Hz ☐ 60Hz
Special Test Arrangement:	The transmitter was tested while connected to and powered through the Net 2 Plus Controller.
Test Facility Accreditation:	A2LA (Certificate No. 1427.01)
Test Methodology:	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.

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: ±4 dB at 10m and ±5.4 dB at 3m

The expanded uncertainty (k = 2) for conducted emissions from 150 kHz to 30 MHz has been determined to be:
±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(µV/m)
RA = Receiver Amplitude in dB(µV)
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(µV) 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(µV/m).

RA = 48.1 dB(µV)
AF = 7.4 dB(m^{-1})
CF = 1.6 dB
AG = 16.0 dB
FS = RA + AF + CF - AG
FS = 48.1 + 7.4 + 1.6 – 16.0
FS = 41.1 dB(µV/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.

3.0 TEST CONDITIONS AND RESULTS

3.1 Field Strength of Fundamental and Spurious Emissions

Test location: ☒ OATS ☒ Anechoic Chamber ☐ Other

Test distance: ☒ 10 meters ☒ 3 meters

Test result: **Pass**

Max. Emissions margin at fundamental: 12.6 dB below the limits

Max. margin of harmonics and spurious emissions: 12.7 dB below the limits

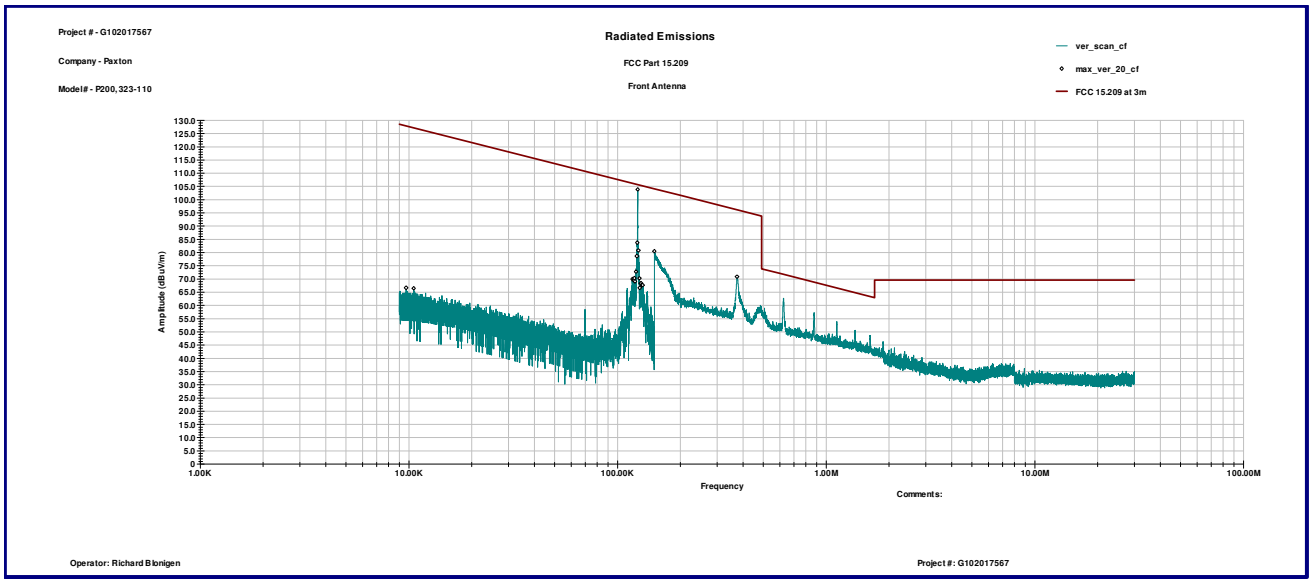
Notes:

1. The Emissions pre-scan was performed in the Anechoic chamber at 3m measurement distance (Graphs 3.1.1); final measurements were performed in the Open Area Test Site at 10m measurement distance (see Tables 3.1.1).
2. Field Strength of Fundamental and Spurious Emissions measurements were made at Fundamental frequency of 125kHz; Spurious Emissions were tested up to 30MHz.
3. Measurements were taken using Peak detector with RBW=200kHz (below 150kHz), RBW=9kHz (above 150kHz).

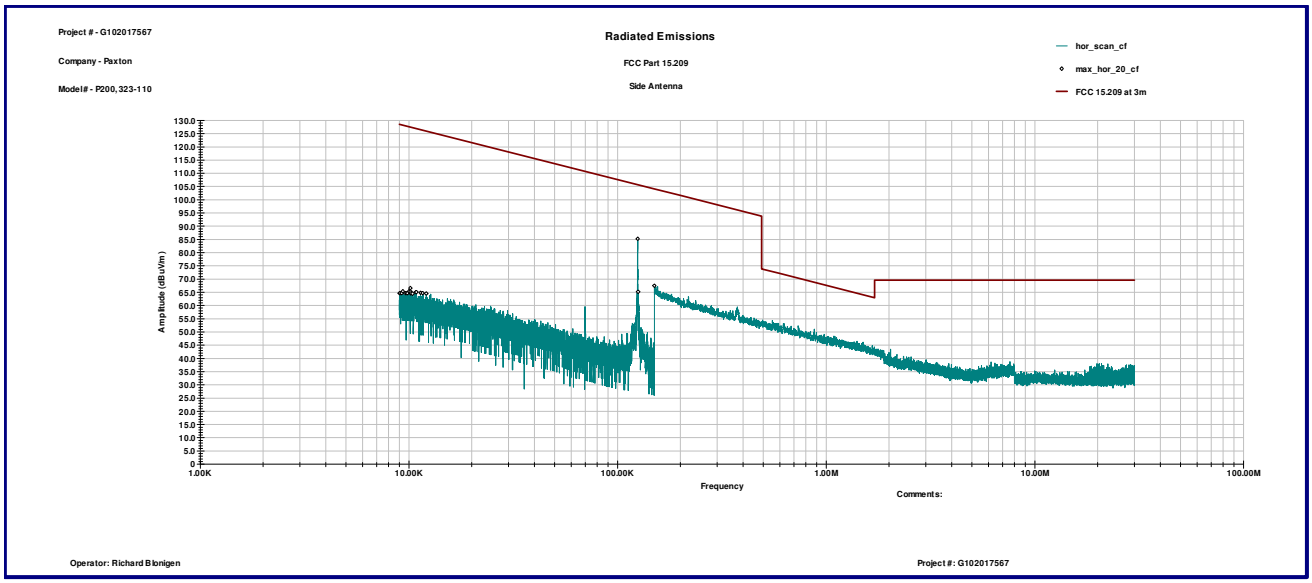
Date:	February 25, 2016	**Result:** **Pass**
Standard:	FCC 15.209 / RSS-210 A1.1.2	
Tested by:	Richard Blonigen	
Test Point:	Enclosure with antenna	
Operation mode:	See Page 5	
Note:	None	

Table 3.1.1

Frequency MHz	Antenna Orient.	Ant. CF dB1/m	Cable loss dB	Pre-amp Gain (dB)	QP Reading dBµV	Total @ 10m dBµV/m	15.209 Limit dBµV/m	Distance Factor (dB)	Margin dB	Comments
0.125	Front	63.5	0.1	28.8	37.3	72.1	25.7	59.1	-12.6	
0.125	Side	63.5	0.1	28.8	11.9	46.7	25.7	59.1	-38.0	
0.069	Front	68.3	0.1	28.8	3.1	42.7	30.8	59.1	-47.2	
0.375	Front	54.2	0.1	28.7	17.2	42.7	16.1	59.1	-32.5	
0.610	Front	50.0	0.1	28.7	16.9	38.3	31.9	19.1	-12.7	
0.012	Side	82.9	0.0	28.0	3.6	58.6	46.0	59.1	-46.5	
0.015	Side	81.7	0.0	28.2	3.5	57.0	44.1	59.1	-46.2	
0.069	Side	68.3	0.1	28.8	2.5	42.1	30.8	59.1	-47.8	



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	☒
Loop Antenna	ETS	6512	00060486	19942	12/28/2016	☒
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	☒

5.0 Revision History

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