

FCC and Industry Canada Testing of the
Paxton Access Ltd
Access control unit, Model: Net2 Entry Touchpanel
In accordance with FCC 47 CFR Part 15C and
Industry Canada RSS-210 and Industry Canada
RSS-GEN

Prepared for: Paxton Access Ltd
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Product Service

Choose certainty.
Add value.

FCC ID: USE337620
IC: 10217A-337620

COMMERCIAL-IN-CONFIDENCE

Date: January 2017
Document Number: 75935869-03 | Issue: 01

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Authorised Signatory	Simon Bennett	24 January 2017	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Product Service document control rules.

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C and Industry Canada RSS-210 and Industry Canada RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Dan Ralley	24 January 2017	
Testing	Matthew Russell	24 January 2017	
Testing	Graeme Lawler	24 January 2017	
Testing	Jack Tuckwell	24 January 2017	

FCC Accreditation

90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation

IC2932B-1 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be in compliance with FCC 47 CFR Part 15C: 2015, Industry Canada RSS-210: 2015, Issue 09 (08-2016) and Industry Canada RSS-GEN: Issue 04 (11-2014).



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1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	24 January 2017

Table 1

1.2 Introduction

Applicant	Paxton Access Ltd
Manufacturer	Paxton Access Ltd
Model Number(s)	Net2 Entry Touchpanel
Serial Number(s)	4532451 and Not serialised (75935869-TSR0007)
Hardware Version(s)	z-n2tp ppc-n2tp
Software Version(s)	2.16 5523
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2015 Industry Canada RSS-210: Issue 09 (08-2016) Industry Canada RSS-GEN: Issue 04 (11-2014)
Order Number	158355
Date	01-August-2016
Date of Receipt of EUT	07-November-2016
Start of Test	08-November-2016
Finish of Test	10-January-2017
Name of Engineer(s)	Dan Ralley, Matthew Russell, Graeme Lawler and Jack Tuckwell
Related Document(s)	ANSI C63.10 (2013)



Product Service

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C and Industry Canada RSS-210 and Industry Canada RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-210	RSS-GEN			
Configuration: MiFare - 13.56 MHz RFID Transceiver						
2.1	15.215 (c)	-	6.6	20 dB Bandwidth	Pass	ANSI C63.10
2.2	15.225 (a)(b)(c)(d)	B.6	6.4 and 6.5	Field Strength of any Emission	Pass	ANSI C63.10
2.3	15.225 (e)	B.6	6.11	Frequency Tolerance Under Temperature Variations	Pass	ANSI C63.10

Table 2



1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	Net2 Entry Touchpanel (13.56MHz)
Part Number	337-620
Hardware Version	z-n2tp ppc-n2tp
Software Version	2.16 5523
FCC ID (if applicable)	USE337620
Industry Canada ID (if applicable)	10217A-337620
Technical Description (Please provide a brief description of the intended use of the equipment)	The Net2 Entry Touchpanel will be the first point of contact for a visitor to a premises or entranceway allowing them to gain communication with the occupant so that they may then be allowed entrance.

POWER SOURCE	
<input type="checkbox"/> AC mains	State voltage
AC supply frequency (Hz)	
VAC	
Max Current	
Hz	
<input type="checkbox"/> Single phase	<input type="checkbox"/> Three phase
And / Or	
<input checked="" type="checkbox"/> External DC supply	
Nominal voltage	PoE 48V Max Current 1.25 A
Extreme upper voltage	V
Extreme lower voltage	V
Battery	
<input type="checkbox"/> Nickel Cadmium	<input type="checkbox"/> Lead acid (Vehicle regulated)
<input type="checkbox"/> Alkaline	<input type="checkbox"/> Leclanche
<input type="checkbox"/> Lithium	<input type="checkbox"/> Other Details :
Volts nominal.	
End point voltage as quoted by equipment manufacturer	V

FREQUENCY INFORMATION	
Frequency Range	13.533 to13.567 MHz
Channel Spacing (where applicable)	Single channel
Receiver Frequency Range (if different)	to MHz
Channel Spacing (if different)	
Test Frequencies*	Bottom MHz Channel Number (if applicable)
	Middle MHz Channel Number (if applicable)
	Top MHz Channel Number (if applicable)
Intermediate Frequencies	MHz
Highest Internally Generated Frequency :	800 MHz



POWER CHARACTERISTICS			
Maximum TX power	<1mW	W	
Minimum TX power		W (if variable)	
Is transmitter intended for :			
Continuous duty		<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Intermittent duty		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If intermittent state DUTY CYCLE			
Transmitter ON		seconds	
Transmitter OFF		seconds	

ANTENNA CHARACTERISTICS			
<input type="checkbox"/>	Antenna connector		State impedance Ohm
<input type="checkbox"/>	Temporary antenna connector		State impedance Ohm
<input checked="" type="checkbox"/>	Integral antenna	Type PCB Trace	State gain dBi
<input type="checkbox"/>	External antenna	Type	State gain dBi

MODULATION CHARACTERISTICS			
<input checked="" type="checkbox"/>	Amplitude	<input type="checkbox"/>	Frequency
<input type="checkbox"/>	Phase	<input type="checkbox"/>	Other (please provide details):
Can the transmitter operate un-modulated?			<input type="checkbox"/> Yes <input type="checkbox"/> No

CLASS OF EMISSION USED	
ITU designation or Class of Emission:	
1 Non XX	
(if applicable) 2	
(if applicable) 3	
If more than three classes of emission, list separately:	

BATTERY POWER SUPPLY	
Model name/number	Identification/Part number
Manufacturer	Country of Origin

ANCILLARIES (If applicable)	
Model name/number	Identification/Part number
Manufacturer	Country of Origin

EXTREME CONDITIONS			
Extreme test voltages (Max)	V	Extreme test voltages (Min)	V
Nominal DC Voltage	48 V	DC Maximum Current	1.25 A
Maximum temperature	55 °C	Minimum temperature	-20 °C



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I hereby declare that that the information supplied is correct and complete.

Name: Walter Riche

Position held:

Compliance Engineer

Date: 11/08/2016

1.5 Product Information

1.5.1 Technical Description

The Net2 Entry Touchpanel will be the first point of contact for a visitor to a premises or entrance way allowing them to gain communication with the occupant so that they may then be allowed entrance.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.
The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: 4532451			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: Not serialised (75935869-TSR0007)			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

1.8 Test Location

TÜV SÜD Product Service conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration: MiFare - 13.56 MHz RFID Transceiver		
20 dB Bandwidth	Dan Ralley and Matthew Russell	UKAS
Field Strength of any Emission	Graeme Lawler and Jack Tuckwell	UKAS
Frequency Tolerance Under Temperature Variations	Matthew Russell	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom



2 Test Details

2.1 20 dB Bandwidth

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.215 (c)
Industry Canada RSS-GEN, Clause 6.6

2.1.2 Equipment Under Test and Modification State

Net2 Entry Touchpanel, S/N: 4532451 - Modification State 0
Net2 Entry Touchpanel, S/N: Not serialised (75935869-TSR0007) - Modification State 0

2.1.3 Date of Test

10-January-2017

2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.9.1.

2.1.5 Environmental Conditions

Ambient Temperature 21.0 - 23.6 °C
Relative Humidity 24.8 - 42.6 %

2.1.6 Test Results

MiFare - 13.56 MHz RFID Transceiver

Frequency (MHz)	20 dB Bandwidth (Hz)	99% Occupied Bandwidth (Hz)	F _{LOWER}	F _{UPPER}
13.56	302.885	1112	13.56036	13.56066

Table 5

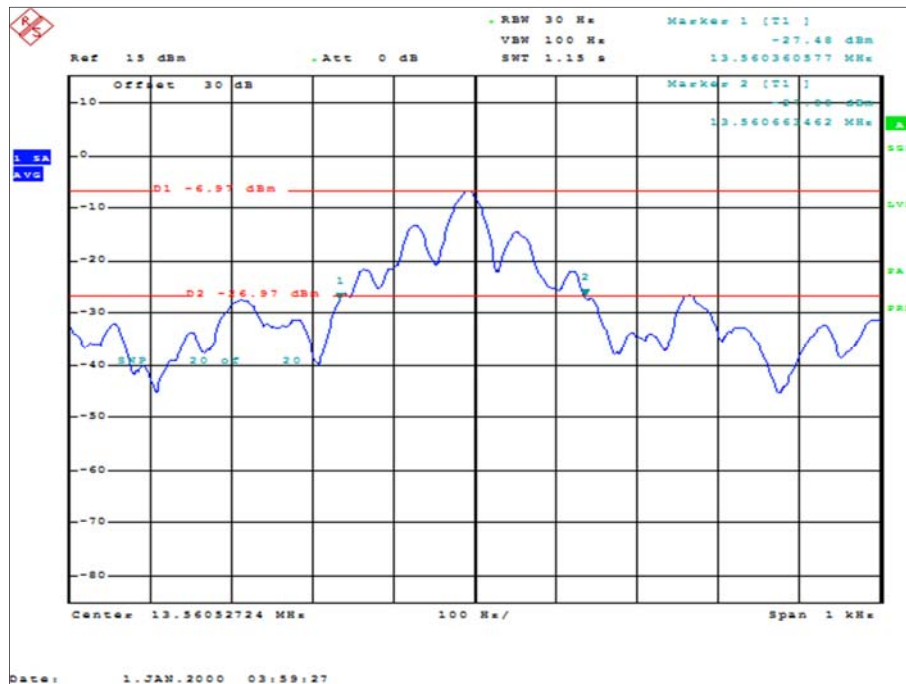


Figure 1 - 20 dB Bandwidth

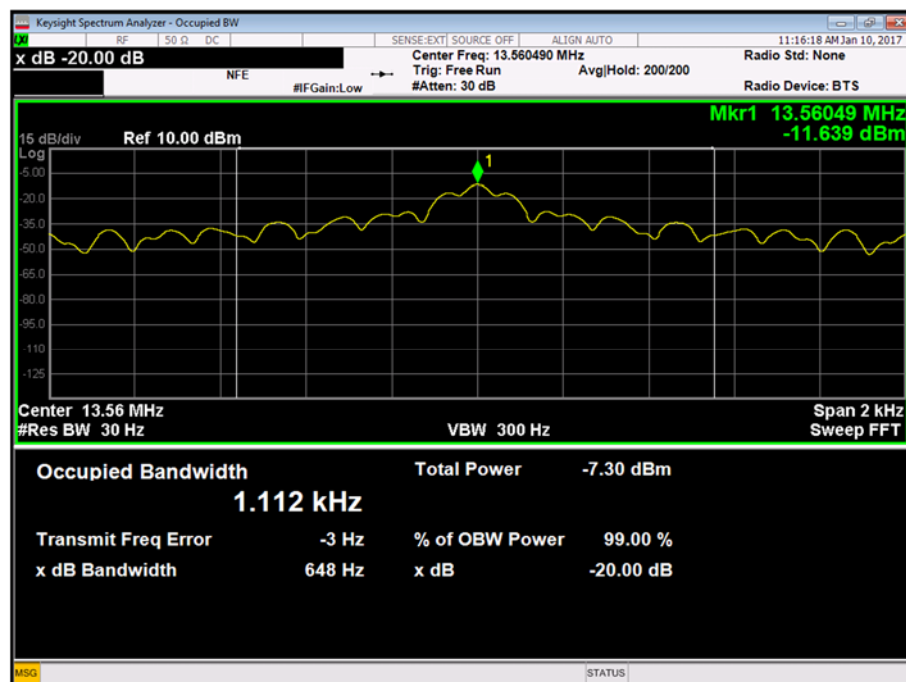


Figure 2 - 99% Occupied Bandwidth

FCC 47 CFR Part 15, Limit Clause 15.215 (c)

The 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Industry Canada RSS 210 and Industry Canada RSS GEN Limit Clause

None specified.

2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Multimeter	Fluke	75 Mk3	455	12	14-Sep-2017
Near Field Probe set	Electrometrics	7405	677	-	TU
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	05-Mar-2017
Hygrometer	Rotronic	I-1000	3220	12	23-Aug-2017
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	05-Mar-2017
PXA Signal Analyser	Keysight Technologies	N9030A	4654	12	06-Oct-2017
4 Channel PSU	Rohde & Schwarz	HMP4040	4736	-	O/P Mon

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored

2.2 Field Strength of any Emission

2.2.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.225 (a)(b)(c)(d)
Industry Canada RSS-210, Clause B.6
Industry Canada RSS-GEN, Clause 6.4 and 6.5

2.2.2 Equipment Under Test and Modification State

Net2 Entry Touchpanel, S/N: 4532451 - Modification State 0

2.2.3 Date of Test

16-December-2016

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.3, 6.4 and 6.5.

Measurements were made at a distance of 3 m. The limit lines shown on the plot were extrapolated from either 300 m or 30 m to the measurement distance of 3 m in accordance with ANSI C63.10 Clause 6.4.4.2.

2.2.5 Environmental Conditions

Ambient Temperature 19.1 - 19.7 °C
Relative Humidity 30.0 - 47.0 %

2.2.6 Test Results

MiFare - 13.56 MHz RFID Transceiver, Carrier Results

Frequency (MHz)	Quasi-Peak Level (dBμV/m) at 3 m	Quasi-Peak Level (dBμV/m) at 30 m	Quasi-Peak Level (μV/m) at 3 m	Quasi-Peak Level (μV/m) at 30 m
13.56	60.03	38.65	1003.46	85.61

Table 7



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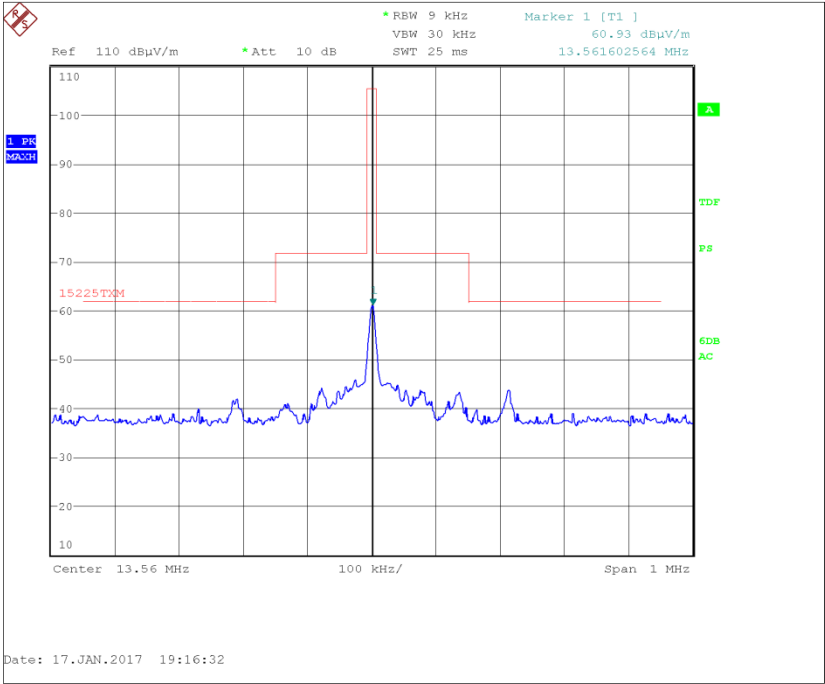


Figure 3 - Plot of the Fundamental (13.56 MHz)

MiFare - 13.56 MHz RFID Transceiver, Field Strength of any Emission Results, 9 kHz to 30 MHz

Frequency	Quasi-Peak Level (dBμV/m) at 3m	Quasi-Peak Level (dBμV/m) at 30m	Quasi-Peak Level (μV/m) at 3m	Quasi-Peak Level (μV/m) at 30m
*				

Table 8

* No emissions were detected within 20 dB of the limit.

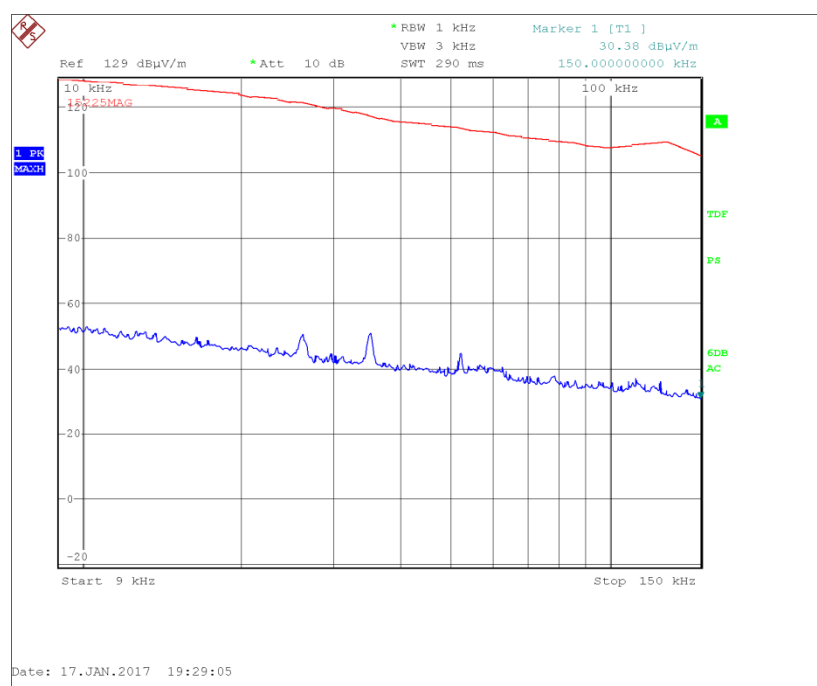


Figure 4 - MiFare - 13.56 MHz RFID Transceiver, 9 kHz to 150 kHz

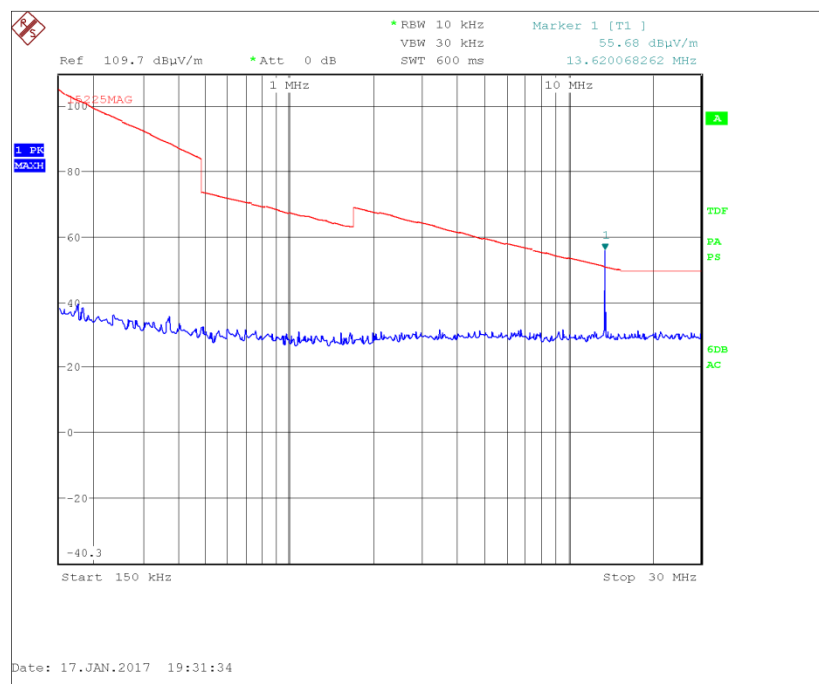


Figure 5 - MiFare - 13.56 MHz RFID Transceiver, 150 kHz to 30 MHz

MiFare - 13.56 MHz RFID Transceiver, Field Strength of any Emission Results, 30 MHz to 1 GHz

Frequency (MHz)	QP Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dBμV/m)	Angle(Deg)	Height(m)	Polarity
31.359	29.7	40.0	-10.3	103	1.00	Horizontal
58.513	26.2	40.0	-13.8	87	1.00	Vertical
77.987	28.9	40.0	-11.1	168	1.00	Vertical
390.009	40.4	46.0	-5.6	353	1.28	Vertical
429.016	37.5	46.0	-8.5	0	1.00	Vertical
500.070	36.3	46.0	-9.7	183	1.00	Vertical
750.284	32.6	46.0	-13.4	16	1.00	Horizontal
875.175	38.4	46.0	-7.6	121	1.00	Horizontal

Table 9

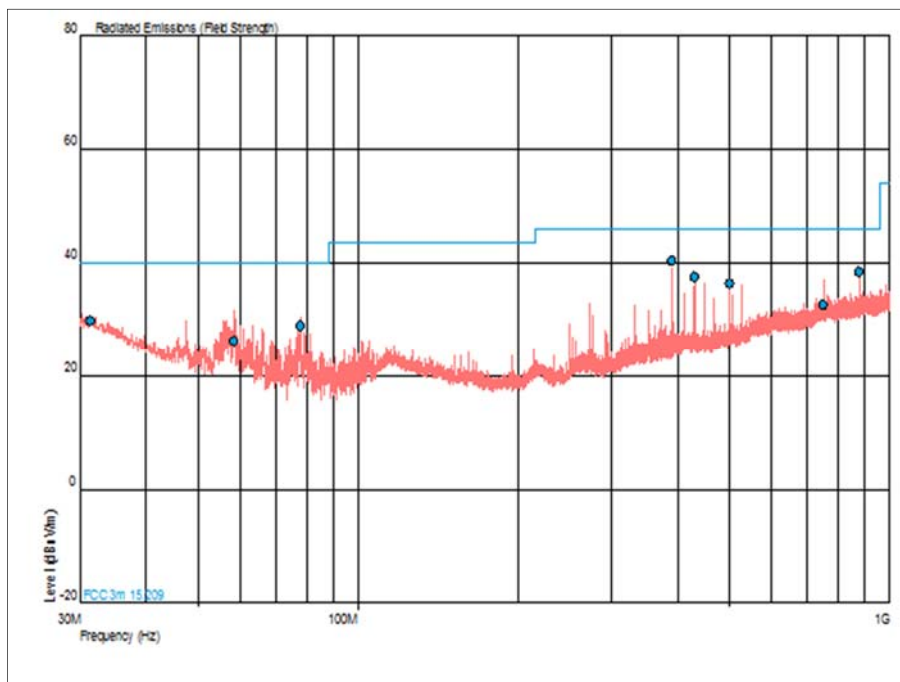


Figure 6 - MiFare - 13.56 MHz RFID Transceiver, 30 MHz to 1 GHz
Polarity: Horizontal and Vertical

FCC 47 CFR Part 15, Limit Clause 15.225 (a)(b)(c)(d)

- (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
- (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
- (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
- (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 to 0.490	2400/F (kHz)	300
0.490 to 1.705	24000/F (kHz)	30
1705 to 30	30	30
30 to 88	100**	3
88 to 216	150**	3
216 to 960	200**	3
Above 960	500	5

Industry Canada RSS-210, Limit Clause B.6

The field strength of any emission shall not exceed the following limits:

- (a) 15.848 mW/m (84 dB $\mu\text{V/m}$) at 30 m, within the band 13.553 – 13.567 MHz.
- (b) 334 $\mu\text{V/m}$ (50.5 dB $\mu\text{V/m}$) at 30 m, withing the bands 13.410 – 13.553 MHz and 13.567 – 13.710 MHz.
- (c) 106 $\mu\text{V/m}$ (40.5 dB $\mu\text{V/m}$) at 30 m, within the bands 13.110 – 13.410 MHz and 13.710 – 14.010 MHz.
- (d) RSS-GEN general field strength limits for frequencies outside the band 13.110 – 14.010 MHz.

Industry Canada RSS-GEN, Limit Clause 8.9

Below 30 MHz

Frequency	Electric Field Strength ($\mu\text{V/m}$)	Magnetic Field Strength (H-Field) ($\mu\text{A/m}$)	Measurement Distance (m)
9 - 490 kHz	2,400/F (F in kHz)	2,400/377F (F in kHz)	300
490 - 1,705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1,705 kHz - 30 MHz	30	N/A	30

30 MHz to 1 GHz

Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3 m)
30 - 88	100
88 - 216	150
216 - 960	200
> 960	500



2.2.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	09-Dec-2018
Antenna (Dish/Tripod/Adaptor, 1GHz-18GHz)	Rohde & Schwarz	AC-008	334	-	TU
Screened Room (5)	Rainford	Rainford	1545	36	20-Dec-2017
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HYGROPALM 1	2338	12	21-Sep-2017
Antenna (Bilog)	Chase	CBL6143	2904	24	11-Jun-2017
Compliance 5 Emissions	Schaffner	C5e Software	3275	-	Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU

Table 10

TU - Traceability Unscheduled

2.3 Frequency Tolerance Under Temperature Variations

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.225 (e)
Industry Canada RSS-210, Clause B.6
Industry Canada RSS-GEN, Clause 6.11

2.3.2 Equipment Under Test and Modification State

Net2 Entry Touchpanel, S/N: 4532451 - Modification State 0

2.3.3 Date of Test

08-November-2016 to 09-November-2016

2.3.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.8.

2.3.5 Environmental Conditions

Ambient Temperature 21.5 °C
Relative Humidity 36.2 %

2.3.6 Test Results

MiFare - 13.56 MHz RFID Transceiver

Temperature	Voltage	Measured Frequency (MHz)	Frequency Deviation (%)	Frequency Error (ppm)
-30 °C	48.0 V DC	13.56064744	0.0477	47.7437
-20 °C	48.0 V DC	13.56060256	0.0444	44.4348
-10 °C	48.0 V DC	13.56061859	0.0456	45.6167
0 °C	48.0 V DC	13.56054487	0.0402	40.1807
10 °C	48.0 V DC	13.56056090	0.0414	41.3624
20 °C	44.5 V DC	13.56054968	0.0405	40.5352
20 °C	55.2 V DC	13.56050481	0.0407	40.6826
30 °C	48.0 V DC	13.56050641	0.0373	37.3445
40 °C	48.0 V DC	13.56053205	0.0392	39.2353
50 °C	48.0 V DC	13.56050900	0.0414	41.3624

Table 11

Note: The EUT does not operate at -15 %, therefore, testing was carried out at the minimum operating voltage.

FCC 47 CFR Part 15, Limit Clause 15.225 (e)

The frequency tolerance of the carrier signal shall be maintained within ± 0.01 % of the operating frequency.

Industry Canada RSS-210, Limit Clause B.6

Carrier frequency stability shall be maintained to $\pm 0.01\%$ (± 100 ppm).

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
Multimeter	Fluke	75 Mk3	455	12	14-Sep-2017
Temperature Chamber	Montford	2F3	467	6	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	05-Mar-2017
Digital Temperature Indicator	Fluke	51	1385	12	13-Oct-2017
Spectrum Analyser	Rohde & Schwarz	FSU26	2747	12	29-Jan-2017
Hygrometer	Rotronic	I-1000	3220	12	23-Aug-2017
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	05-Mar-2017
4 Channel PSU	Rohde & Schwarz	HMP4040	4736	-	O/P Mon

Table 12

O/P Mon - Output Monitored using calibrated equipment



3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
20 dB Bandwidth	$\pm 172.31\text{ Hz}$
Field Strength of any Emission	9 kHz to 30 MHz: $\pm 3.4\text{ dB}$ 30 MHz to 1 GHz: $\pm 5.1\text{ dB}$
Frequency Tolerance Under Temperature Variations	$\pm 127.59\text{ Hz}$

Table 13