

FCC and Industry Canada Testing of the
SureFlap Ltd
Universal Handheld Microchip Reader,
Model: HRxyyy**
In accordance with FCC 47 CFR Part 15C,
Industry Canada RSS-310 and
Industry Canada RSS-GEN

Prepared for: SureFlap Ltd
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FCC ID: XO9 - HRUNI
IC: 8906A - HRUNI

COMMERCIAL-IN-CONFIDENCE

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Natalie Bennett	13 December 2017	
Authorised Signatory	Matthew Russell	13 December 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-310 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	Graeme Lawler	13 December 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 compliant with FCC 47 CFR Part 15C: 2016, Industry Canada RSS-310: Issue 04 (2015-07) and Industry Canada RSS-GEN: Issue 04 (2014-11).



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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	13 December 2017

Table 1

1.2 Introduction

Applicant	SureFlap Ltd
Manufacturer	SureFlap Ltd
Model Number(s)	HRxyyy** (** represent the colour variation of the product.)
Serial Number(s)	Not Serialised (75940672-TSR0001) Not Serialised (75940672-TSR0004)
Hardware Version(s)	01075-FG_01
Software Version(s)	22.22
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2016 Industry Canada RSS-310: Issue 04 (2015-07) Industry Canada RSS-GEN: Issue 04 (2014-11)
Order Number	PO2210
Date	25-October-2017
Date of Receipt of EUT	25-October-2017
Start of Test	25-October-2017
Finish of Test	09-November-2017
Name of Engineer(s)	Graeme Lawler
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, Industry Canada RSS-310 and Industry Canada RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-310	RSS-GEN			
Configuration and Mode: 125 kHz - RFiD Transceiver						
2.1	15.209	2.6	6.13	Transmitter Unwanted Emissions	Pass	ANSI C63.10
Configuration and Mode: 134 kHz - RFiD Transceiver						
2.1	15.209	2.6	6.13	Transmitter Unwanted Emissions	Pass	ANSI C63.10

Table 2



1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	UNIVERSAL HANDHELD READER
Part Number	HRxyyy** ** to allow for different brand options
Hardware Version	01075-FG_01
Software Version	22.22
FCC ID (if applicable)	XO9 - HRUNI
Industry Canada ID (if applicable)	8906A - HRUNI
Technical Description (Please provide a brief description of the intended use of the equipment)	Handheld Reader for reading RFID microchip implants in animals

INTENTIONAL RADIATORS									
Technology	Frequency Band (MHz)	Conducted Declared Output Power (dBm)	Antenna Gain (dBi)	Supported Bandwidth (s) (MHz)	Modulation Scheme(s)	ITU Emission Designator	Test Channels (MHz)		
							Bottom	Middle	Top
RFID	0.125							0.125	
RFID	0.134							0.134	

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	32 MHz

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
Battery	Nominal Voltage		Battery Operating End Point Voltage
	3.0 V		2.3 V
Can EUT transmit whilst being charged?			Yes ☐ No ☐

EXTREME CONDITIONS			
Maximum temperature	+70 °C	Minimum temperature	-10 °C



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Ancillaries
Please list all ancillaries which will be used with the device.

ANTENNA CHARACTERISTICS			
☐	Antenna connector	State impedance	Ohm
☐	Temporary antenna connector	State impedance	Ohm
☐	Integral antenna	Type	Inductive Loop
☐	External antenna	Type	

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

Name: Chris Cowdery
Position held: Head of Embedded Systems Date: 25/10/2017

1.5 Product Information

1.5.1 Technical Description

Handheld Reader for reading RFID microchip implants in animals.

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: Not Serialised (75940672-TSR0001)			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: Not Serialised (75940672-TSR0004)			
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 and Mode: 125 kHz - RFID Transceiver		
Transmitter Unwanted Emissions	Graeme Lawler	UKAS
Configuration and Mode: 134 kHz - RFID Transceiver		
Transmitter Unwanted Emissions	Graeme Lawler	UKAS

Table 4

Office Address:

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

2 Test Details

2.1 Transmitter Unwanted Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.209
Industry Canada RSS-310, Clause 2.6
Industry Canada RSS-GEN, Clause 6.13

2.1.2 Equipment Under Test and Modification State

HRxyyy**, S/N: Not Serialised (75940672-TSR0004)- Modification State 0
HRxyyy**, S/N: Not Serialised (75940672-TSR0001) - Modification State 0

2.1.3 Date of Test

25-October-2017 to 09-November-2017

2.1.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.3, 6.4 and 6.5. and Industry Canada RSS-Gen clause 6.13.

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.

For any emissions detected within 20 dB of the limit, a final measurement was made and recorded in the table below. The detector used for these measurements was a quasi-peak detector except for emissions within the bands 9 kHz to 90 kHz and 110 kHz to 490 kHz where a CISPR average detector was used.

2.1.5 Environmental Conditions

Ambient Temperature 17.4 - 20.4 °C
Relative Humidity 53.0 %

2.1.6 Test Results

125 kHz - RFiD Transceiver

Frequency (MHz)	CISPR Average Level (µV/m) at 3m	Limit (µV/m) at 3m	CISPR Average Level (µV/m) at 300m	Limit (µV/m) at 300m
0.125	92257.14	192087.90	9.23	19.21

Table 5 - Emissions Results - 9 kHz to 30 MHz

*No emissions were detected within 10 dB of the limit.



Product Service

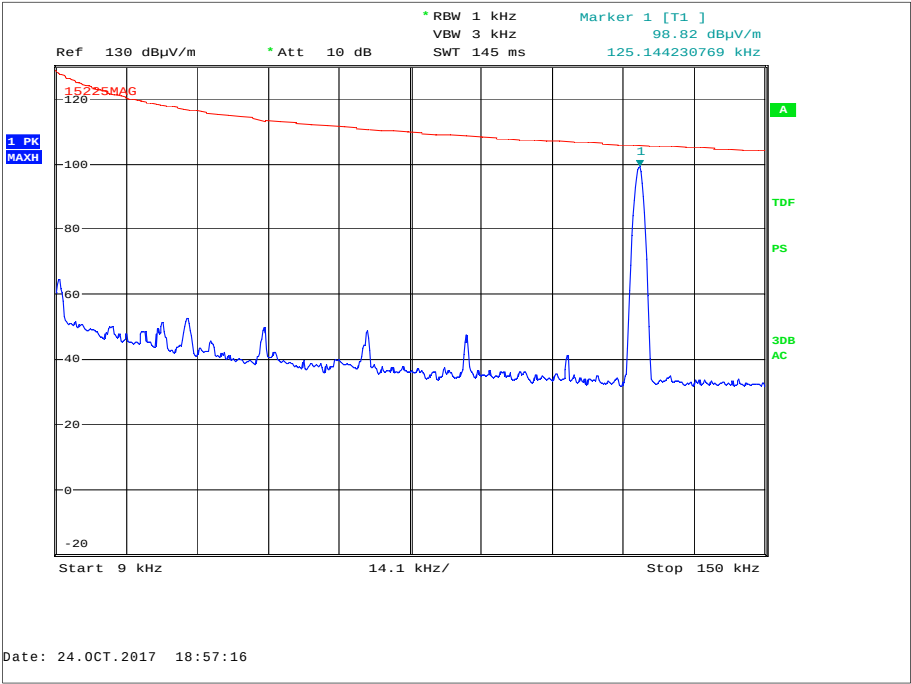


Figure 1 - 9 kHz to 150 kHz

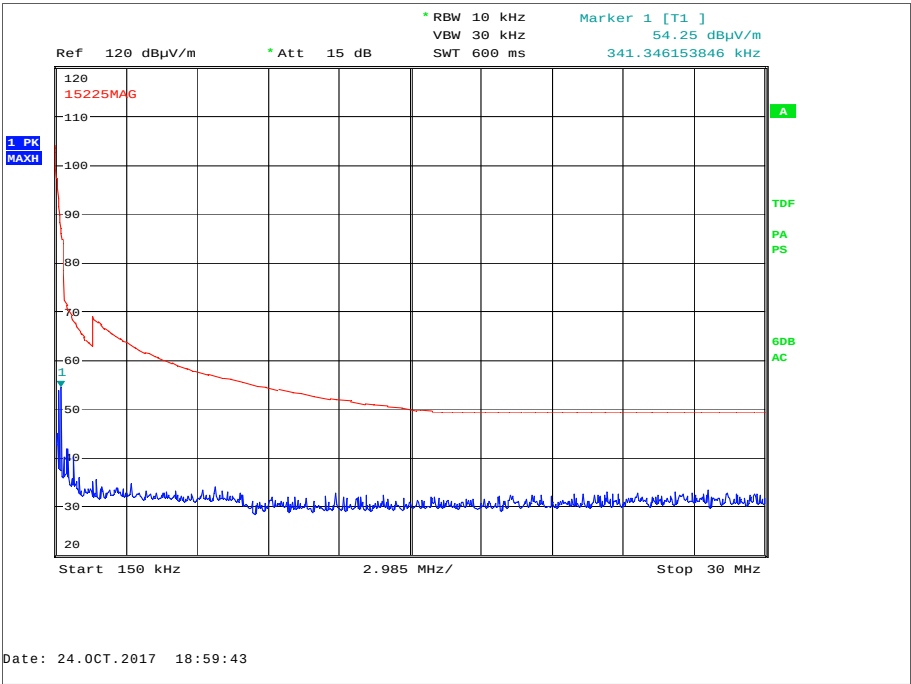


Figure 2 - 150 kHz to 30 MHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
31.461	29.8	40.0	-10.2	170	2.31	Vertical
287.985	37.2	46.0	-8.8	264	1.00	Vertical
287.990	37.1	46.0	-8.9	208	1.18	Horizontal
351.988	35.4	46.0	-10.6	253	1.00	Vertical
351.999	33.8	46.0	-12.2	214	1.00	Horizontal
479.981	36.4	46.0	-9.6	221	1.00	Vertical
479.988	33.3	46.0	-12.7	260	1.00	Horizontal
543.963	32.7	46.0	-13.3	279	1.00	Horizontal
543.989	32.6	46.0	-13.4	104	1.00	Vertical
960.000	33.8	46.0	-12.2	69	1.37	Vertical

Table 6 - Emissions Results - 30 MHz to 1 GHz

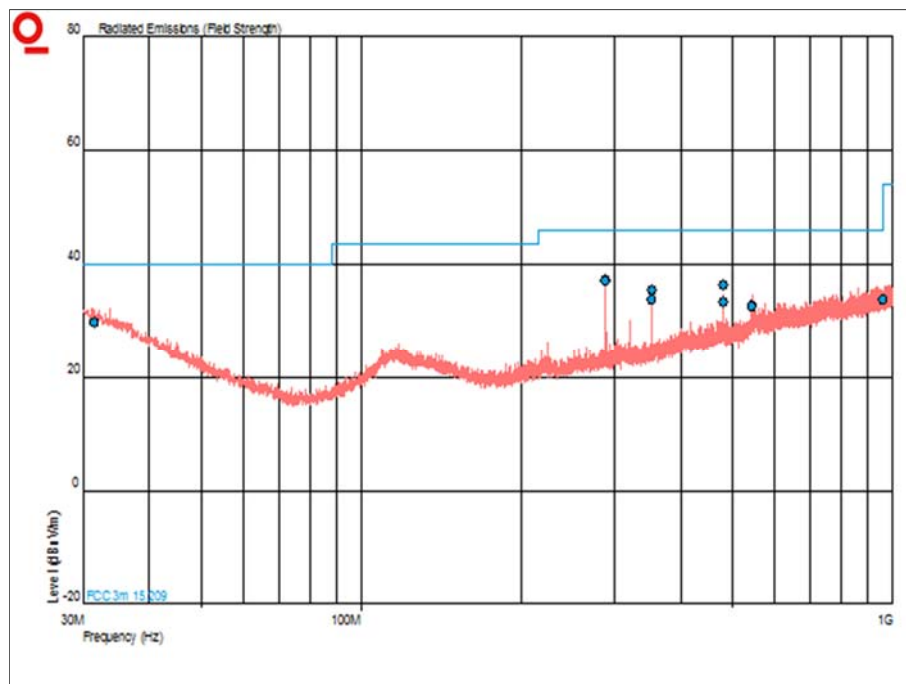


Figure 3 - 30 MHz to 1 GHz

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	3

Table 7 - FCC Limit

Industry Canada RSS-Gen, Limit Clause 8.9

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

Table 8 - IC Limit, Below 30 MHz

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

Table 9 - IC Limit, Above 30 MHz



134 kHz - RFiD Transceiver

Frequency (MHz)	CISPR Average Level (µV/m) at 3m	Limit (µV/m) at 3m	CISPR Average Level (µV/m) at 300m	Limit (µV/m) at 300m
.134	93325.43	192087.90	9.33	19.21

Table 10 - Emissions Results - 9 kHz to 30 MHz

*No emissions were detected within 10 dB of the limit.

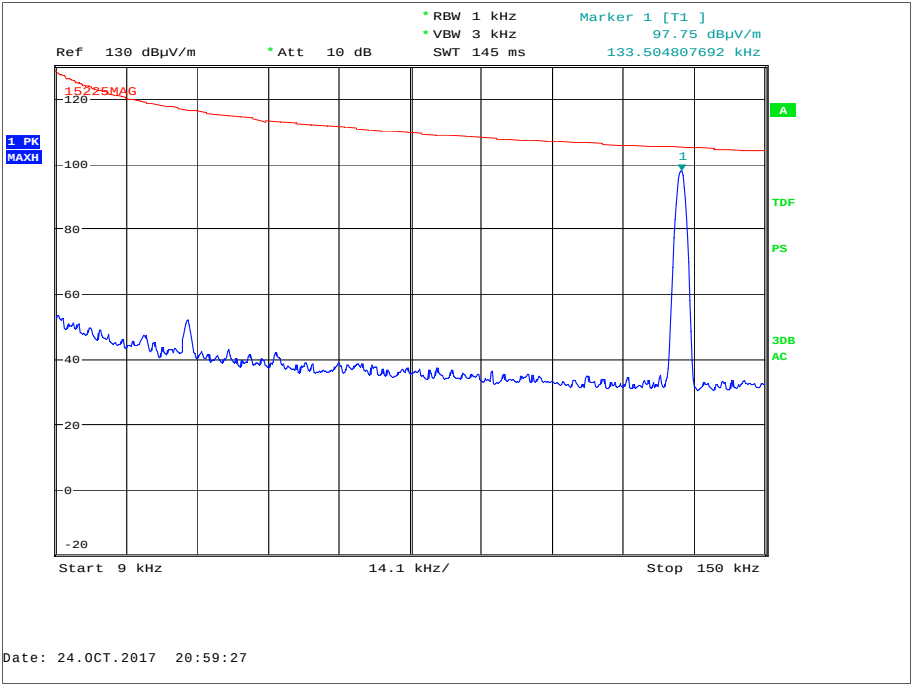


Figure 4 - 9 kHz to 150 kHz

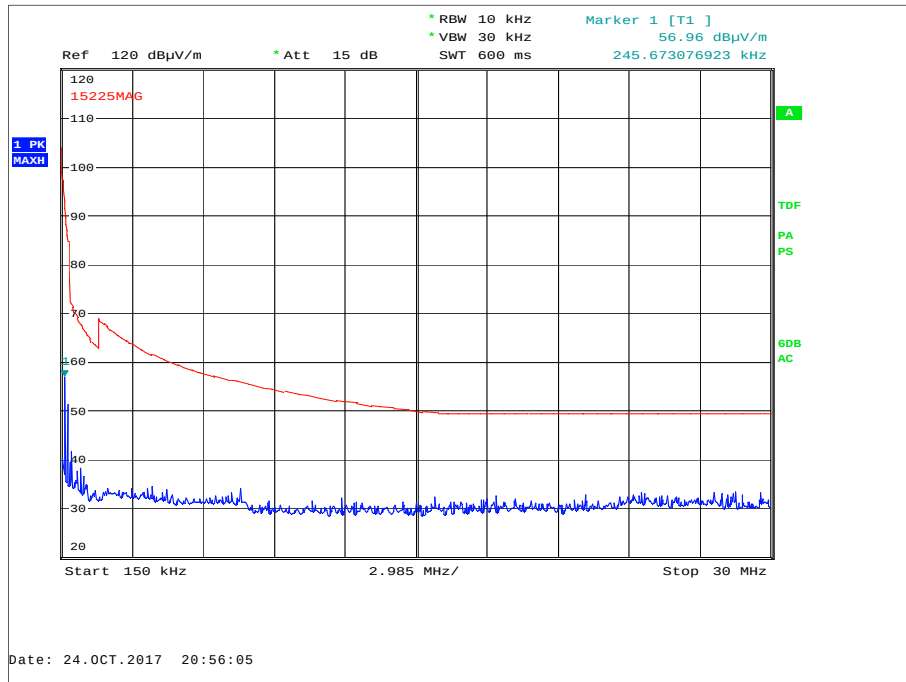


Figure 5 - 150 kHz to 30 MHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
288.008	41.2	46.0	-4.8	310	1.00	Vertical
288.014	40.6	46.0	-5.4	86	1.18	Horizontal
320.005	34.7	46.0	-11.3	278	1.00	Vertical
320.014	35.1	46.0	-10.9	256	1.00	Horizontal
351.988	37.0	46.0	-9.0	82	1.00	Horizontal
352.016	38.0	46.0	-8.0	84	1.00	Vertical
480.021	38.8	46.0	-7.2	14	1.00	Vertical
544.009	37.8	46.0	-8.2	301	1.00	Vertical
904.588	33.7	46.0	-12.3	9	1.00	Vertical

Table 11 - Emissions Results - 30 MHz to 1 GHz



Product Service

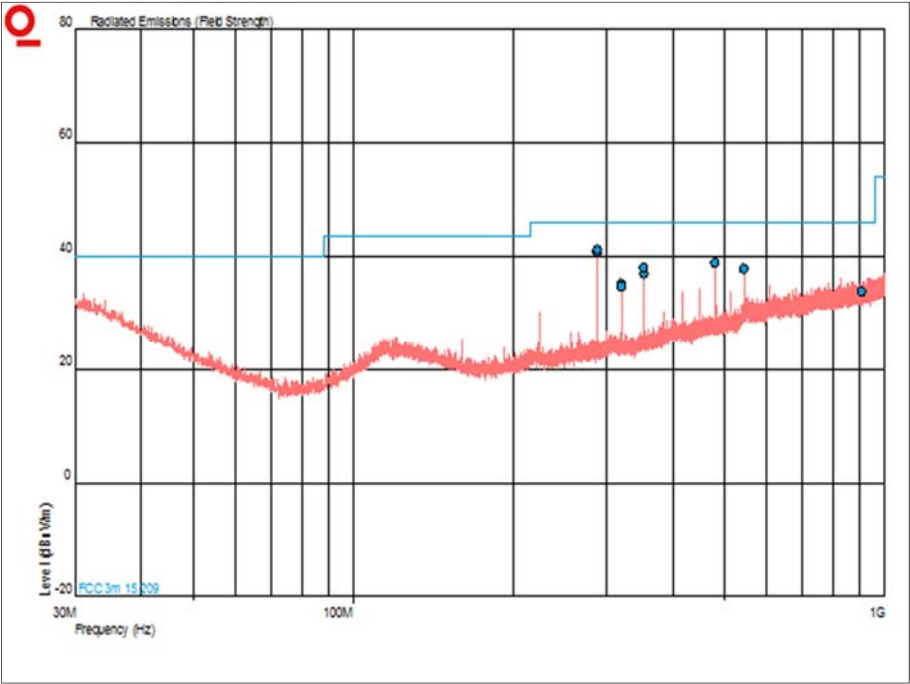


Figure 6 - 30 MHz to 1 GHz

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	3

Table 12 - FCC Limit

Industry Canada RSS-Gen, Limit Clause 8.9

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

Table 13 - IC Limit, Below 30 MHz

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

Table 14 - IC Limit, Above 30 MHz

2.1.7 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 (Bilog)	Schaffner	CBL6143	287	24	18-Apr-2018
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	9-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
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	12	2-May-2018
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
Hygropalm Temperature and Humidity Meter	Rotronic	HP21	4410	12	4-May-2018
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	9-Nov-2017
Antenna (Bilog)	Schaffner	CBL6143	287	24	18-Apr-2018
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	9-Dec-2018
Antenna (Dish/Tripod/Adaptor, 1GHz-18GHz)	Rohde & Schwarz	AC-008	334	-	TU

Table 15

TU – Traceability Unscheduled



3 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Transmitter Unwanted Emissions	9 kHz to 30 MHz: ± 3.4 dB 30 MHz to 1 GHz: ± 5.2 dB

Table 16