

FCC and Industry Canada Testing of the
SenseAnywhere B.V.
Access Point, Model: 20-01-10
ClimateSensor PIR, Model: 20-20-51
AiroSensor, Model: 20-20-41
AiroSensor ER, Model: 20-10-21
In accordance with FCC 47 CFR Part 15B and ICES-003

Prepared for: SenseAnywhere B.V.
Emmerblok 18
4751 XE
Oud Gastel
NETHERLANDS

FCC/IC ID:
Access Point: 2ANN200 / 2242600
ClimateSensor: 2ANN203 / 2242603
AiroSensor: 2ANN201 / 2242601
AiroSensor ER: 2ANN202 / 2242602



Product Service

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Date: December 2017
Document Number: 75937736-01 | Issue: 02

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Project Management	Steven White	05 December 2017	
Authorised Signatory	Nic Forsyth	05 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 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Graeme Lawler	05 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 in compliance with FCC 47 CFR Part 15B: 2016 and ICES-003: 2016.



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TÜV SÜD Product Service
is a trading name of TÜV SÜD Ltd
Registered in Scotland at East Kilbride,
Glasgow G75 0QF, United Kingdom
Registered number: SC215164

TÜV SÜD Ltd is a
TÜV SÜD Group Company

Phone: +44 (0) 1489 558100
Fax: +44 (0) 1489 558101
www.tuv-sud.co.uk

TÜV SÜD Product Service
Octagon House
Concorde Way
Fareham
Hampshire PO15 5RL
United Kingdom



Product Service

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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	15 November 2017
2	Amended Application Forms	

Table 1

1.2 Introduction

Applicant	SenseAnywhere B.V.
Manufacturer	SenseAnywhere B.V.
Model Number(s)	1) Access Point: 20-01-10 2) ClimateSensor PIR: 20-20-51 3) AiroSensor: 20-20-41 4) AiroSensor ER: 20-20-21
Serial Number(s)	1) 5B:07:D2:28:B1 2) 10:0F:C7:E2:5D 3) 10:0F:CE:01:66 4) 10:0F:D7:85:68
Hardware Version(s)	1) 1 2) 1 3) 3 4) 1
Software Version(s)	1) 0.1 2) 0.1 3) 0.1 4) 0.1
Number of Samples Tested	4
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2016 ICES-003: 2016
Order Number	Proforma
Date	27-January-2017
Date of Receipt of EUT	24-February-2017
Start of Test	13-March-2017
Finish of Test	13-March-2017
Name of Engineer(s)	Graeme Lawler
Related Document(s)	ANSI C63.4 (2014)



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B and ICES-003 is shown below.

Section	Specification Clause		Test Description	Result	Comments/Base Standard
	Part 15B	ICES-003			
Configuration: Idle (All Units)					
2.1	15.109	6.2	Radiated Emissions	Pass	ANSI C63.4

Table 2



Product Service

1.4 Application Form

EQUIPMENT DESCRIPTION	
Model Name/Number	Access Point / 20-01-10
Part Number	n/a
Hardware Version	1
Software Version	0.1
FCC ID (if applicable)	2ANN200
Industry Canada ID (if applicable)	2242600
Technical Description (Please provide a brief description of the intended use of the equipment)	Gateway between the proprietary wireless network and a server on the Internet, through 10base-T wired Ethernet

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
Sense Anywhere SWP (ISM SRD Proprietary)	902 -928	+12dBm peak, <1% duty cycle, <-8dBm avg	4dBi	0.1	GFSK 19.2 kbaud	19K2F1D		915.3	

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	400 MHz

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
	5.0V		300mA
Battery	Nominal Voltage		Battery Operating End Point Voltage
Can EUT transmit whilst being charged?			Yes ☐ No ☒



Product Service

EXTREME CONDITIONS			
Maximum temperature	+85	°C	Minimum temperature
			-40 °C

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	PCB monopole
☐	External antenna	Type	

I hereby declare that the information supplied is correct and complete

Name: W.E.S. Couzijn
Position held: designer

Date: Feb. 11th 2017



Product Service

EQUIPMENT DESCRIPTION	
Model Name/Number	ClimateSensor
Part Number	20-20-50 / 20-20-51
Hardware Version	1
Software Version	0.1
FCC ID (if applicable)	2ANN203
Industry Canada ID (if applicable)	2242603
Technical Description (Please provide a brief description of the intended use of the equipment)	Wireless sensor with CO2, 3-axis accelerometer and temperature/humidity, with/without PIR

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
Sense Anywhere SWP (ISM SRD Proprietary)	915	+12dBm peak, <1% duty cycle, <-8dBm avg	-1dBi	0.1	GFSK 19.2 kbaud	19K2F1D		915.3	

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	26 MHz

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
Battery	Nominal Voltage		Battery Operating End Point Voltage
	3.0V (fixed, non-rechargeable)		2.0V
Can EUT transmit whilst being charged?		Yes ☐ No ☐	

EXTREME CONDITIONS			
Maximum temperature	+85 °C	Minimum temperature	-40 °C



Product Service

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	2x ceramic chip on PCB (diversity)
☐	External antenna	Type	

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

Name: W.E.S. Couzijn

Position held: designer

Date: Feb. 11th 2017



Product Service

EQUIPMENT DESCRIPTION	
Model Name/Number	Asset / AiroSensor ER (extended range)
Part Number	20-10-21 / 20-20-21 / 20-20-23 / 20-20-25 / 20-20-31 / 20-20-33
Hardware Version	1
Software Version	0.1
FCC ID (if applicable)	2ANN202
Industry Canada ID (if applicable)	2242602
Technical Description (Please provide a brief description of the intended use of the equipment)	Wireless sensor with 3-axis accelerometer, temperature/humidity, magnetic reed and/or external switch contact

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
Sense Anywhere SWP (ISM SRD Proprietary)	915	+12dBm peak, <1% duty cycle, <-8dBm avg	4dBi	0.1	GFSK 19.2 kbaud	19K2F1D		915.3	

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

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
Battery	Nominal Voltage		Battery Operating End Point Voltage
	3.0V (fixed, non-rechargeable)		2.0V
Can EUT transmit whilst being charged?		Yes ☐ No ☐	



Product Service

EXTREME CONDITIONS			
Maximum temperature	+85	°C	Minimum temperature
			-40 °C

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	wire whip monopole
☐	External antenna	Type	

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

Name: W.E.S. Couzijn
Position held: designer

Date: Feb. 11th 2017



Product Service

EQUIPMENT DESCRIPTION	
Model Name/Number	Asset / AiroSensor (normal range)
Part Number	20-10-10 / 20-10-20 / 20-10-30 / 20-20-10 / 20-20-20 / 20-20-22 / 20-20-24 / 20-11-20 / 20-20-30 / 20-20-32 / 20-FF-20 / 20-FF-30 / 20-10-40 / 20-20-40 / 20-FF-50
Hardware Version	3
Software Version	0.1
FCC ID (if applicable)	2ANN201
Industry Canada ID (if applicable)	2242601
Technical Description (Please provide a brief description of the intended use of the equipment)	Wireless sensor with 3-axis accelerometer, temperature/humidity, magnetic reed and/or external switch contact

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
Sense Anywhere SWP (ISM SRD Proprietary)	915	+12dBm peak, <1% duty cycle, <-8dBm avg	-1dBi	0.1	GFSK 19.2 kbaud	19K2F1D		915.3	

UN-INTENTIONAL RADIATOR	
Highest frequency generated or used in the device or on which the device operates or tunes	26 MHz

Power Source			
AC	Single Phase	Three Phase	Nominal Voltage
External DC	Nominal Voltage		Maximum Current
Battery	Nominal Voltage		Battery Operating End Point Voltage
	3.0V (fixed, non-rechargeable)		2.0V
Can EUT transmit whilst being charged?			Yes ☐ No ☐



Product Service

EXTREME CONDITIONS			
Maximum temperature	+85	°C	Minimum temperature
			-40 °C

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 ceramic chip on PCB	
☐	External antenna	Type	

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

Name: W.E.S. Couzijn
Position held: designer

Date: Feb. 11th 2017

1.5 Product Information

1.5.1 Technical Description

Access Point: Gateway between the proprietary wireless network and a server on the Internet, through 10base-T wired Ethernet

Climate Sensor: Wireless sensor with CO2, 3-axis accelerometer and temperature/humidity, with/without PIR

AiroSensor: Wireless sensor with 3-axis accelerometer, temperature/humidity, magnetic reed and/or external switch contact

AiroSensor ER: Wireless sensor with 3-axis accelerometer, temperature/humidity, magnetic reed and/or external switch contact

For the purposes of this report, all units were tested inside the chamber together as requested by the manufacturer.

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: 5B:07:D2:28:B1			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: 10:0F:C7:E2:5D			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: 10:0F:D7:85:68			
0	As supplied by the customer	Not Applicable	Not Applicable
Serial Number: 10:0F:CE:01:66			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3



Product Service

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: Idle (All Units)		
Radiated 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 Radiated Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109
ICES-003, Clause 6.2

2.1.2 Equipment Under Test and Modification State

Access Point: 20-01-10, S/N: 5B:07:D2:28:B1 - Modification State 0
ClimateSensor PIR: 20-20-51, S/N: 10:0F:C7:E2:5D - Modification State 0
AiroSensor: 20-20-41, S/N: 10:0F:CE:01:66 - Modification State 0
AiroSensor ER: 20-20-21, S/N: 10:0F:D7:85:68 - Modification State 0

2.1.3 Date of Test

13-March-2017

2.1.4 Test Method

The test was performed in accordance with ANSI C63.4, clause 8.

2.1.5 Environmental Conditions

Ambient Temperature	17.2 °C
Relative Humidity	40.0 %

2.1.6 Test Results

Idle (All Units)

Highest frequency generated or used within the EUT: 915.3 MHz

Upper frequency test limit: 5 GHz

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
39.999	34.3	40.0	-5.7	65	1.00	Vertical
59.993	36.0	40.0	-4.0	360	1.00	Vertical
75.005	37.9	40.0	-2.1	140	1.00	Vertical
79.990	36.2	40.0	-3.8	172	1.00	Vertical
99.997	40.7	43.5	-2.8	152	1.00	Vertical
399.984	43.6	46.0	-2.4	12	1.51	Horizontal
399.990	42.9	46.0	-3.1	46	1.16	Vertical
479.975	43.9	46.0	-2.1	53	1.00	Vertical
479.983	44.4	46.0	-1.6	20	1.00	Horizontal
519.969	38.1	46.0	-7.9	340	1.00	Horizontal

Table 5 - 30 MHz to 1 GHz

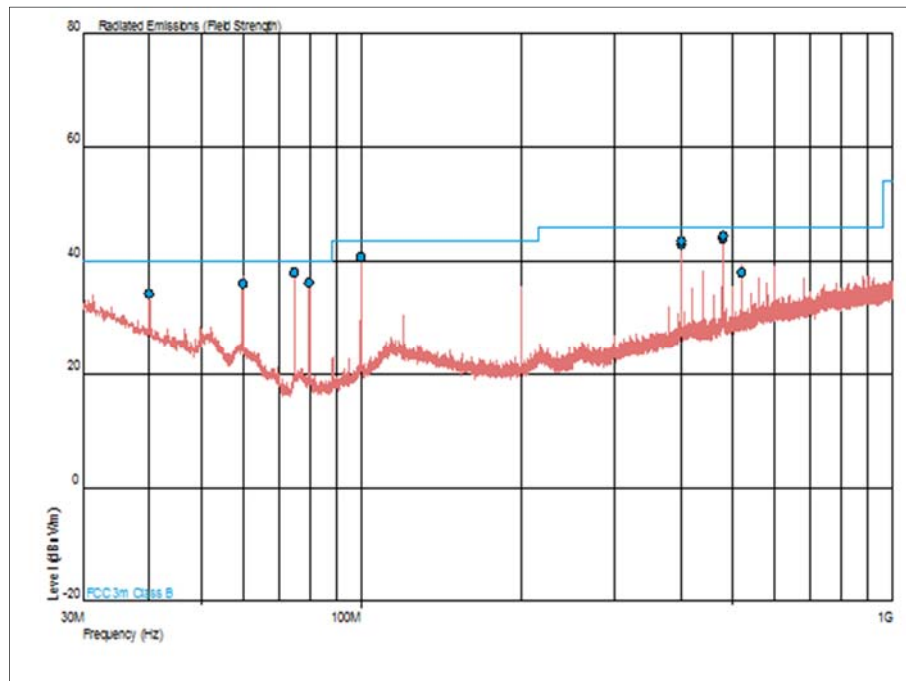


Figure 1 - 30 MHz to 1 GHz - Horizontal and Vertical



Frequency (GHz)	Result (μV/m)		Limit (μV/m)		Margin (μV/m)		Angle (°)	Height (m)	Polarisation
	Peak	Average	Peak	Average	Peak	Average			
*									

Table 6 - 1 GHz to 5 GHz

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

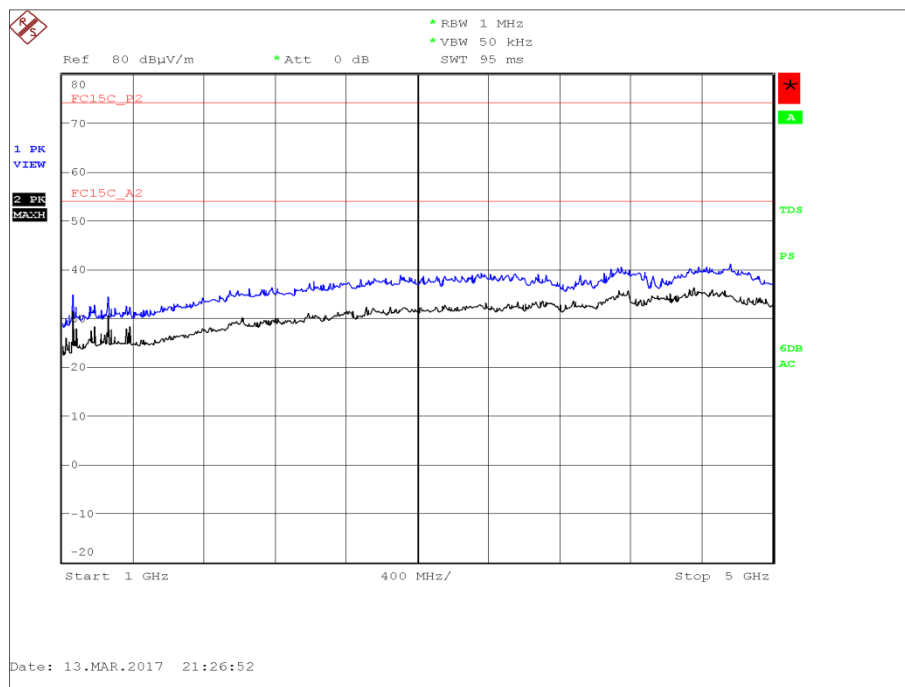


Figure 2 - 1 GHz to 5 GHz - Horizontal and Vertical

FCC 47 CFR Part 15B, Limit Clause 15.109

Frequency of Emission (MHz)	Field Strength (μV/m)
30 to 88	100.0
88 to 216	150.0
216 to 960	200.0
Above 960	500.0

ICES-003, Limit Clause 6.2

Frequency of Emission (MHz)	Quasi-Peak (dBμV/m)
30 to 88	40.0
88 to 216	43.5
216 to 960	46.0
960 to 1000	54.0

Frequency of Emission (MHz)	Field Strength (dB μ V/m)	
	Linear Average Detector	Peak Detector
Above 1000	54.0	74.0

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
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
Cable (N-N, 8m)	Rhophase	NPS-2302-8000-NPS	3248	-	TU
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	12-Nov-2017
Multimeter	Fluke	177	3813	12	14-Sep-2017
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	17-Oct-2017
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	-	TU
Cable (Rx, SMAm-SMAm 0.5m)	Scott Cables	SLSLL18-SMSM-00.50M	4528	6	03-Feb-2017
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	17-Feb-2018

Table 7

TU - Traceability Unscheduled



3 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB

Table 8