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

### COMMERCIAL-IN-CONFIDENCE

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

RESPONSIBLE FOR	SPONSIBLE FOR NAME		SIGNATURE	
Project Management	Steven White	05 December 2017	Radehte.	
Authorised Signatory	Nic Forsyth	05 December 2017	NoFsgel	

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	Gandar.
FCC Accreditation 90987 Octagon House, Fa	reham Test Laboratory	Industry Canad IC2932B-1 Oc	da Accreditation tagon House, Fareham T	est 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.



#### DISCLAIMER AND COPYRIGHT

This non-binding report has been prepared by TÜV SÜD Product Service with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD Product Service. No part of this document may be reproduced without the prior written approval of TÜV SÜD Product Service. © 2017 TÜV SÜD Product Service.

ACCREDITATION

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation. Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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



Choose certainty. Add value.

# TÜV SÜD Product Service





# Contents

1	Report Summary	2
1.1	Report Modification Record	2
1.2	Introduction	
1.3	Brief Summary of Results	
1.4	Application Form	4
1.5	Product Information	
1.6	Deviations from the Standard	
1.7	EUT Modification Record	
1.8	Test Location	13
2	Test Details	14
2.1	Radiated Emissions	14
3	Measurement Uncertainty	



## 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 Date	Proforma 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	n Specification Clause		Test Description	Result	Comments/Base Standard
	Part 15B	ICES-003			
Configuratio	n: Idle (All Ur	nits)			
2.1	15.109	6.2	Radiated Emissions	Pass	ANSI C63.4

Table 2



### 1.4 Application Form

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

INTENTIONAL RADIATORS									
Technology	Frequency Declared	Antenna	Supported	Modulation	ITU	Test Channels (MHz)			
rechnology	(MHz)	Power (dBm)	(dBi)	(MHz)	Scheme(s)	Designator	Bottom	Middle	Тор
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						
10	Single Phase	Three Phase		Nominal Voltage		
AC						
External DC	Nominal Voltage			Maximum Current		
External DC	5.0V		300mA			
Potton	Nominal Voltage		Batte	ery Operating End Point Voltage		
Ballery						
Can EUT transmit	whilst being charged?		Yes 🗌 No 🖂			



 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			
$\bowtie$	Integral antenna	Туре	PCB monopole					
	External antenna	Туре						

I hereby declare that the information supplied is correct and complete

Name:W.E.S. CouzijnPosition held:designerDate:Feb. 11th 2017



EQUIPMENT DESCRIPTION					
Model Name/Number	ClimateSe	nsor			
Part Number	20-20-50 / 20-20-51				
Hardware Version	1				
Software Version	0.1	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 Declared		Antenna	ntenna Supported	Modulation	ITU	Test Channels (MHz)			
Technology	(MHz)	Power (dBm)	(dBi)	(MHz)	Scheme(s)	Designator	Bottom	Middle	Тор	
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							
	Single Phase	Three Phase		Nominal Voltage			
AC	Nominal Voltage						
External DO	Nominal Voltage	Nominal Voltage		Maximum Current			
External DC							
Detter/	Nominal Voltage		Battery Operating End Point Voltage				
Ballery	3.0V (fixed, non-recharg	eable)	2.0V				
Can EUT transmit whilst being charged?		Yes 🗌 No 🗌					

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	Туре	2x ceramic chip on PCB (diversity)						
External antenna	Туре							

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

Name:W.E.S. CouzijnPosition held:designerDate:Feb. 11th 2017



EQUIPMENT DESCRIPTION					
Model Name/Number	Asset / Air	oSensor ER (extended range)			
Part Number	20-10-21 /	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	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									
Taskaslasu	Frequency	Conducted Declared	Antenna	enna Supported ain Bandwidth (s) Bi) (MHz) Scheme(s) Er De	Modulation	ITU	Test Channels (MHz)			
Technology	(MHz)	Power (dBm)	(dBi)		Designator	Bottom	Middle	Тор		
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							
10	Single Phase	Three F	Phase	Nominal Voltage			
AC							
Estamol DO	Nominal Voltage		Maximum Current				
External DC							
Batton	Nominal Voltage		Battery Operating End Point Voltage				
Ballery	3.0V (fixed, non-recharg	eable)	2.0V				
Can EUT transmit	whilst being charged?		Yes 🗌 No 🗌				



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	Туре	wire whip monopole						
	External antenna	Туре							

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

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

Date:

e: Feb. 11th 2017



EQUIPMENT DESCRIPTION				
Model Name/Number	Asset / Air	oSensor (normal range)		
Part Number	20-10-10 / 20-20-30 /	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 Declared Antenna Su Band Output Gain Ban		Supported Bandwidth (s) Modulation		ITU Emission	Test Channels (MHz)			
rechnology	(MHz)	Power (dBm)	(dBi)	(MHz)	Scheme(s)	eme(s) Designator	Bottom	Middle	Тор
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	
AC					
External DC	Nominal Voltage		Maximum Current		
External DC					
Detter/	Nominal Voltage		Battery Operating End Point Voltage		
Dallery	3.0V (fixed, non-recharg	geable)		2.0V	
Can EUT transmit whilst being charged?			Yes 🗌 No 🗌		



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	Туре	ceramic chip on PCB				
External antenna	Туре					

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

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

Date:

e: 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



### 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 Temperature17.2 °CRelative Humidity40.0 %



### 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	Result	(µV/m)	Limit (µV/m)		Margin (µV/m)		Angle	Height	Polarisation
(GHZ)	Peak	Average	Peak	Average	Peak	Average	(*)	(m)	
*									

Table 6 - 1 GHz to 5 GHz

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





### 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



Fraguency of Emission (MHz)	Field Strength (dBµV/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	-	ти
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