

Testing and certification of, consultancy and research concerning, electronic and electric appliances, systems, installations and telecommunication systems

TEST REPORT CONCERNING THE COMPLIANCE OF A WIRELESS SPACE COUNT, BRAND NEDAP, MODEL SENSIT IR WITH 47 CFR PART 15 (JULY 10, 2008).

09122201.fcc02 January 07, 2010

> FCC listed : 90828 Industry Canada : 2932G-1 VCCI Registered : R-1518, C-1598

R&TTE, LVD, EMC Notified Body : 1856

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

### MEASUREMENT/TECHNICAL REPORT

# N.V. Nederlandsche Apparatenfabriek "Nedap" Model: SENSIT IR

January 07, 2010

Original grant/certification Class 1 permissive change Verification This report concerns: Equipment type: Spread Spectrum Transmitter (DSS) Deferred grant requested per 47 CFR 0.457(d)(1)(ii) ? No Vac n.a. Report prepared by: : Richard van der Meer Name : TÜV Rheinland EPS B.V. Company name Address : Smidshornerweg 18 Postal code/city : 9822 TL Niekerk Mailing address : P.O. Box 15 Postal code/city : 9822 ZG Niekerk Country : The Netherlands Telephone number : + 31 594 505 005 Telefax number : + 31 594 504 804 E-mail : info@tuv-eps.com

The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (july 10, 2008) and the measurement procedures of ANSI C63.4-2003 and FCC Public Notice DA 00-705. TÜV Rheinland EPS B.V. at Niekerk, The Netherlands, certifies that the data is accurate and contains a true representation of the emission profile of the Equipment Under Test (EUT) on the date of the test as noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

Date: January 07, 2010 Signature:

O. Hoekstra

Senior Engineer Telecom TÜV Rheinland EPS B.V.

M Hubb

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand mark: Nedap

Model: SENSIT IR

FCC ID: CGDSENSNODE

### **Description of test item**

Test item : Wireless Space Count Node

Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand : Nedap Model(s) : SENSIT IR

Serial number(s) : --

ID : 523F

### **Applicant information**

Applicant's representative : Mr. J. Hulshof

Company : N.V. Nederlandsche Apparatenfabriek "Nedap"

Address : Parallelweg 2
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 The Netherlands

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#### Test(s) performed

Location : Niekerk

Test(s) started : November 02, 2009 Test(s) completed : January 07, 2010

Purpose of test(s) : Equipment Authorization (Original grant/certification)

Test specification(s) : 47 CFR Part 15 (July 10, 2008) and FCC Public Notice DA 00-705

Test engineer(s) : R. van der Meer

Report written by : R. van der Meer

Report date : January 07, 2010

This report is in conformity with NEN-EN-ISO/IEC 17025: 2005
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The test results relate only to the item(s) tested.

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Test specification(s): FCC Part 15
Description of EUT: Node for Win N.V. Nederla

EUT: Node for Wireless Space Count turer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Manufacturer: N.V. Nederlandson
Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

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Test specification(s): FCC Part 15
Description of EUT: Node for Will

scription of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand mark: Nedap

Model: SENSIT IR

FCC ID: CGDSENSNODE

#### 1 General information.

### 1.1 Product description.

#### 1.1.1 Introduction.

The Wireless Space Counter, brand Nedap, consisting of a SENSIT Node and a Data Collector is a system to efficiently measure the occupancy of individual parking spaces in parking lots. It is a network of sensors that can easily be mounted in the road surface of a parking space. The system consists of a data collector and nodes. The data collector is connected to the mains and to a computer. The nodes in the floor are battery operated and communicate with each other wireless in the frequency band 902-928 MHz. This test report concerns the Node and will be referred to as EUT for the purpose of this test report.

The content of this report and measurement results have not been changed other than the way of presenting the data.

### 1.2 Related submittal(s) and/or Grant(s).

#### 1.2.1 General.

This test report supports the original certification in equipment authorization files under FCC ID: CGDSENSNODE.

### 1.3 Tested system details.

Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT : Node of the Wireless Space Count System

Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand : Nedap
Model : SENSIT IR
Serial number : n.a.
Voltage input rating : n.a.
Voltage output rating : n.a.

Current input rating : not provided Antenna : internal

Remarks : senses cars on parking place and transmits data to AUX1, battery operated

AUX1 : SENSIT DATACOLLECTOR with FCC ID: CGDSENSDATA

Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand : Nedap

Model : SENSIT DATACOLLECTOR

Serial number : n.a.

Voltage input rating : 5Vdc

Voltage output rating : n.a.

Current input rating : 1A

Antenna : External

Remarks : collects data wireless

AUX2 : Mains Power Supply Adapter Brand : Power-Win Technology Corp.

Model : PW-015A-1Y050K1

Serial number : --

Voltage input rating : 100-240V-1A, 50-60Hz
Voltage output rating : 5Vdc 3A, 15W max.
Remark : power supply for AUX1

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

AUX3 : Laptop Computer

Brand : HP

Model : Compaq nc6400

Serial number : --

Remark : Supplied by the applicant

AUX4 : Mains Power Supply Adapter

Brand : HP

Model : Series PPP009L Serial number : 7301591201

Remark : Rev:A02, power supply for AUX3

AUX5 : RS-232-USB cable or LAN cable

Manufacturer : -Brand : -Model : -Serial number : --

Remark : either a RS232 port is connected to AUX3 or a LAN-cable

### 1.3.1 Description of input and output ports.

Number	Terminal	From	То	Remarks	
1	Mains	Mains power supply	AUX1 (through AUX2)		
2	LAN	EUT	Computer	shielded	
3	RS 232 port	EUT	Computer	shielded cable RS232 to USB	

Table 1: Interconnection between EUT and auxiliary equipment

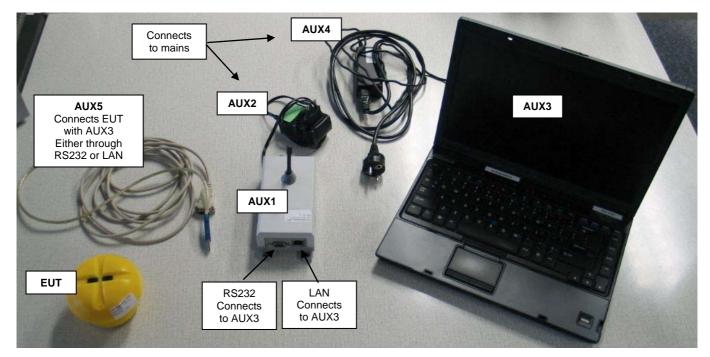


Photo 1: Basic testsetup and connections

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### 1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (july 10, 2008), sections 15.31, 15.209 and 15.247.

The test methods, which have been used, are based on ANSI C63.4: 2003 and FCC Public Notice DA 00-705.

Radiated emission tests were performed at a measurement distance of 3 meters.

The receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antenna factors are programmed in the test receiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate antenna factor for the cable loss. The total correction is automatically added to the measured value.

### 1.5 Test facility.

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland EPS B.V., located in Niekerk, 9822 TL Smidshornerweg 18, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948, per (10-1-06 Edition).

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-1. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

#### 1.6 Test conditions.

Normal test conditions:

Temperature (\*) : +15°C to +35°C
Relative humidity(\*) : 20 % to 75 %
Supply voltage : 115VAC/60Hz
Air pressure : 950 – 1050 hPa

\*When is was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.

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# 2 System test configuration.

#### 2.1 Justification.

The system was configured for testing in a typical fashion (as a customer would normally use it). Software was provided by the applicant to enable continues transmit mode or normal mode. Also frequency could be set by the software application as installed on AUX3.

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4: 2003.

#### 2.2 EUT mode of operation.

The EUT has been tested in continues transmit mode and in receive mode.

### 2.3 Special accessories.

No special accessories are used and/or needed to achieve compliance.

### 2.4 Equipment modifications.

No modifications have been made to the equipment in order to achieve compliance.

### 2.5 Product Labelling

The product labeling information is available at N.V. Nederlandsche Apparatenfabriek "Nedap".

### 2.6 Schematics of the EUT.

The schematics are available at N.V. Nederlandsche Apparatenfabriek "Nedap".

### 2.7 Part list of the EUT.

The part list is available at N.V. Nederlandsche Apparatenfabriek "Nedap".

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## 3 Radiated emission data E-field.

# 3.1 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in transmit mode EUT set for 902.4 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/ Fail
59	13	11	7.0	20	18	40.0	Pass
434	10	9	22.4	32.4	31.4	46.0	Pass
902.4 fundamental	69.3	53.9	32.9	102.2	86.8	114.0	Pass
1804	35	32.1	7.2	42.1	39.3	54.0	Pass
2602	22.4	22.1	10.3	32.7	32.4	54.0	Pass
3609	21.7	21.1	10.3	32.0	31.4	54.0	Pass
4412	22.3	22.0	11.5	33.8	33.5	54.0	Pass

Table 1a Radiated emissions of the EUT

# 3.2 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in receive mode EUT set for 902.4 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/F ail
59	12	10	7.0	19	17	40.0	Pass
434	10	9	22.4	32.4	31.4	43.5	Pass
1804	22.1	22.1	7.2	29.1	29.1	54.0	Pass
2602	22.4	22.1	10.3	32.7	32.4	54.0	Pass
3609	21.7	21.1	10.3	32.0	31.4	54.0	Pass
4412	22.3	22.0	11.5	33.8	33.5	54.0	Pass

Table 1b Radiated emissions of the EUT in receive mode

The results of the radiated emission tests in the range 30 MHz – 10 GHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the system operating in transmit mode are depicted in table 1a and table 1b in receive mode. See Notes on page 11.

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Description of EUT: Node for Wireless Space Count

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Model: SENSIT IR

FCC ID: CGDSENSNODE

# 3.3 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in transmit mode EUT set for 915 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/ Fail
59	12	11	7.0	19	18	40.0	Pass
434	10	9	22.4	32.4	31.4	46.0	Pass
915 fundamental	67.3	55.9	33.3	100.6	89.2	114.0	Pass
1830	35	32	7.2	42.2	39.2	54.0	Pass
2745	22	22	10.3	32.3	32.3	54.0	Pass
3660	21	20	10.3	31.3	30.3	54.0	Pass
4575	23	20	11.5	33.5	31.5	54.0	Pass

Table 2c Radiated emissions of the EUT

# 3.4 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in receive mode EUT set for 915 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/F ail
59	12	10	7.0	19	17	40.0	Pass
434	10	9	22.4	32.4	31.4	43.5	Pass
1830	21	21	7.2	28.2	28.2	54.0	Pass
2745	24	22	10.3	34.3	32.3	54.0	Pass
3660	21	19	10.3	31.3	29.3	54.0	Pass
4575	23	22	11.5	34.5	33.5	54.0	Pass

Table 1d Radiated emissions of the EUT in receive mode

The results of the radiated emission tests in the range 30 MHz – 10 GHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the system operating in transmit mode are depicted in table 1c and table 1d in receive mode. See Notes on page 11

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Description of EUT: Node for Wireless Space Count

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Model: SENSIT IR

FCC ID: CGDSENSNODE

# 3.5 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in transmit mode EUT set for 927.2 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/ Fail
59	13	11	7.0	20	18	40.0	Pass
434	10	9	22.4	32.4	31.4	46.0	Pass
927.2 fundamental	66.1	54.0	33.8	99.9	87.8	114.0	Pass
1854	34	32	7.2	41.2	39.2	54.0	Pass
2782	22	22	10.3	32.3	32.3	54.0	Pass
3709	22	20	10.3	32.3	30.3	54.0	Pass
4636	22	21	11.5	33.5	32.5	54.0	Pass

Table 3e Radiated emissions of the EUT

# 3.6 Radiated field strength measurements (30 MHz – 10 GHz, E-field) in receive mode EUT set for 927.2 MHz

Frequency (MHz)	Measure- ment results @3m Vertical (dBuV/m)	Measure- ment results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results after correction @3m Vertical (dBuV/m)	Measurement results after correction @3m Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/F ail
59	12	10	7.0	19	17	40.0	Pass
434	10	9	22.4	32.4	31.4	43.5	Pass
1854	22	22	7.2	29.2	29.2	54.0	Pass
2782	22	22	10.3	32.3	32.3	54.0	Pass
3709	21	20	10.3	31.3	30.3	54.0	Pass
4636	22	22	11.5	33.5	33.5	54.0	Pass

Table 1f Radiated emissions of the EUT in receive mode

The results of the radiated emission tests in the range 30 MHz – 10 GHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the system operating in transmit mode are depicted in table 1e and table 1f in receive mode.

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Manufacturer: N.V. Nederlandson
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## Notes (applicable for 3.1 through 3.6):

- 1. Field strength values of radiated emissions at frequencies in the range 30 MHz 10 GHz not listed in the table above are more than 20 dB below the applicable limit.
- 2. Measurement uncertainty is ±5.0dB
- 3. The reported field strength values are the worst case values at the indicated frequency. The receiving antenna was varied in horizontal and vertical orientations and also in height (between 1m and 4m).
- 4. A Quasi-peak detector was used with a resolution bandwidth of 120 kHz.
- 5. Correction factor includes: antenna factor and cable loss.

### Test engineer

Signature :

Name : Richard van der Meer

Date : November 03, 2009 & January 07,2010 (927.2 MHz)

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Manufacturer: N.V. Nederlandson
Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

# 4 Radiated emissions data, H-field

## 4.1 Radiated field strength measurements (0.009-30 MHz, H-field), EUT at 902.4 MHz.

Frequency (MHz)	(a) Measurement results (dBµV)	Detector	(b) Antenna factor		(d) Distance Extrapolation factor	Measurement results (calculated: a+b+c-d)	Limits
	3 meters		dB	dB	dB/decade	dB(μV)/m	dB(µV)/m
0.009 - 0.490	<20	Av	20.1	1	80	n.i	48.5 down to 13.8 @300m
0.490 - 1.705	<20	Qp	19.7	1	40	n.i	33.8 down to 22.9 @30m
1.705 – 30.0 Except:	<30	Av	19.5	1	40	<10.5	40 @30m
2.6	18	Av	19.6	1	40	n.i	40 @30m
10	17	Av	19.6	1	40	n.i	40 @30m
19	16	Av	19.6	1	40	n.i	40 @30m
24	16	Av	19.6	1	40	n.i	40 @30m
28	17	Av	19.6	1	40	n.i	40 @30m
29	18	Av	19.6	1	40	n.i	40 @30m

Table 2a Radiated emissions of the EUT operating at 902.4 MHz

The results of the radiated emission tests in the range 0.009 - 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT operating in continuous transmit mode, are depicted in table 2a.

### Notes:

- 1. A resolution bandwidth of 9kHz was used during testing
- 2. n.i. Indicates that no field strength values could be measured on the listed frequencies or in the listed frequency range. N.m. means not measured.
- 3. Field strength values of radiated emissions at frequencies in the range 0.009 30 MHz not listed in table 2a are more than 20 dB below the applicable limit
- 4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
- 5. The EUT was tested in both transmit mode and in receive mode (i.e. not transmitting). Hardly any difference in values, highest values noted.
- 6. Measurement uncertainty is ±5.0dB

### Test engineer

Signature

Name : R. van der Meer Date : November 03, 2009

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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Manufacturer: N.V. Nederlandson
Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

### 4.2 Radiated field strength measurements (0.009-30 MHz, H-field), EUT at 915 MHz.

(a) Measurement results (dBµV)	Detector	(b) Antenna factor	(c ) Cable loss	(d) Distance Extrapolation factor	Measurement results (calculated: a+b+c-d)	Limits
3 meters		dB	dB	dB/decade	dΒ(μV)/m	dB(μV)/m
<20	Av	20.1	1	80	n.i	48.5 down to 13.8 @300m
<20	Qp	19.7	1	40	n.i	33.8 down to 22.9 @30m
<30	Av	19.5	1	40	<10.5	40 @30m
18	Av	19.6	1	40	n.i	40 @30m
17	Av	19.6	1	40	n.i	40 @30m
16	Av	19.6	1	40	n.i	40 @30m
16	Av	19.6	1	40	n.i	40 @30m
17	Av	19.6	1	40	n.i	40 @30m
18	Av	19.6	1	40	n.i	40 @30m
	Measurement results (dBμV)  3 meters  <20  <20  <30  18 17 16 16 16 17	Measurement results (dBμV)         Detector           3 meters         Av           <20	Measurement results (dBμV)         Detector Antenna factor           3 meters         dB           <20	Measurement results (dBμV)         Detector         (b) Antenna factor         (c) Cable loss           3 meters         dB         dB           <20	Measurement results (dBμV)         Detector (dBμV)         (b) Antenna factor         (c) Cable loss         Distance Extrapolation factor           3 meters         dB         dB         dB/decade           <20	Measurement results (dBμV)         Detector (dBμV)         (b) Antenna factor         (c) Cable loss         Distance Extrapolation factor         (calculated: a+b+c-d)           3 meters         dB         dB         dB/decade         dB(μV)/m           <20

Table 2b Radiated emissions of the EUT operating at 915 MHz

The results of the radiated emission tests in the range 0.009 - 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT operating in continuous transmit mode, are depicted in table 2b.

## Notes:

- 1. A resolution bandwidth of 9kHz was used during testing
- 2. n.i. Indicates that no field strength values could be measured on the listed frequencies or in the listed frequency range. N.m. means not measured.
- 3. Field strength values of radiated emissions at frequencies in the range 0.009 30 MHz not listed in table 2b are more than 20 dB below the applicable limit
- 4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
- 5. The EUT was tested in both transmit mode and in receive mode (i.e. not transmitting). Hardly any difference in values, highest values noted.
- 6. Measurement uncertainty is ±5.0dB

## Test engineer

Signature :

Name : R. van der Meer Date : November 03, 2009

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FCC ID: CGDSENSNODE

## 4.3 Radiated field strength measurements (0.009-30 MHz, H-field), EUT at 927.2 MHz.

Frequency (MHz)	(a) Measurement results (dBµV)	Detector	(b) Antenna factor		(d) Distance Extrapolation factor	Measurement results (calculated: a+b+c-d)	Limits
	3 meters		dB	dB	dB/decade	dB(μV)/m	dB(μV)/m
0.009 - 0.490	<20	Av	20.1	1	80	n.i	48.5 down to 13.8 @300m
0.490 - 1.705	<20	Qp	19.7	1	40	n.i	33.8 down to 22.9 @30m
1.705 – 30.0 Except:	<30	Av	19.5	1	40	<10.5	40 @30m
2.6	15	Av	19.6	1	40	n.i	40 @30m
10	17	Av	19.6	1	40	n.i	40 @30m
20	16	Av	19.6	1	40	n.i	40 @30m
24	17	Av	19.6	1	40	n.i	40 @30m
26	17	Av	19.6	1	40	n.i	40 @30m
28	18	Av	19.6	1	40	n.i	40 @30m

Table 2c Radiated emissions of the EUT operating at 927.2 MHz

The results of the radiated emission tests in the range 0.009 - 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT operating in continuous transmit mode, are depicted in table 2c.

### Notes:

- 1. A resolution bandwidth of 9kHz was used during testing
- 2. n.i. Indicates that no field strength values could be measured on the listed frequencies or in the listed frequency range. N.m. means not measured.
- 3. Field strength values of radiated emissions at frequencies in the range 0.009 30 MHz not listed in table 2c are more than 20 dB below the applicable limit
- 4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
- 5. The EUT was tested in both transmit mode and in receive mode (i.e. not transmitting). Hardly any difference in values, highest values noted.
- 6. Measurement uncertainty is ±5.0dB

### Test engineer

Signature :

Name : R. van der Meer

Date : November 03, 2009 & January 07,2010 (927.2 MHz)

Project number: 09122201.fcc02 Page 15 of 23



Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

# 5 Peak conducted output power

Since the EUT has no connectorport available for conducted measurements the testresults are obtained by radiated measurement using the setup for radiated emissions. From the measured radiated fieldstrenght at a distance of 3m and the antenna gain (as provided by the applicant, see attachement for datasheet) the peak conducted output power value is calculated. This value is calculated using the formula:

 $P = (Ed)^2/30G)$ 

Frequency (MHz)	Measured radiated fieldstrength (dBuv/m)	Antenna Gain (dB)	EIRP Calculated Peak conducted output power (W)	Limit (W)
902.4	102.4 (=0.132 V/m)	-2 (*)	0.00828	1
915.0	101.0 (=0.112 V/m)	-2	0.00596	1
927.2	99.9 (=0.100 V/m)	-2 (*)	0.00475	1

Table 5 Peak conducted output power

The results of the peak conducted output power measurements on the EUT, carried out in accordance with 47 CFR Part 15 section 15.247(b) and FCC Public Notice DA 00-705.

### Notes:

- 1. Antenna gain specified at 915MHz, this value is also used for 902.4 MHz and 927.2 MHz calculations
- 2. Calculation formula derived from:  $E = \frac{\sqrt{30PG}}{d}$  as given in FCC Public Notice DA 00-705

### Test engineer

Signature

Name

Date : November 03, 2009 & January 07,2010 (927.2 MHz)

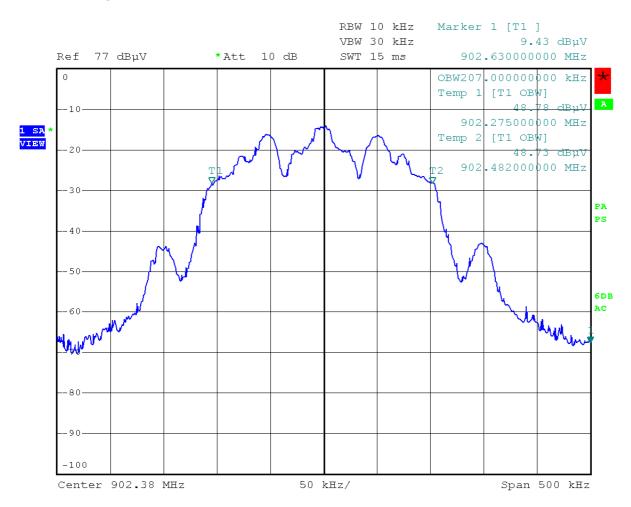
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FCC ID: CGDSENSNODE

# 6 Occupied bandwidth



Date: 2.NOV.2009 13:34:37

Plot 1: Occupied 20dB Bandwidth (= 207kHz) of the EUT transmitting at 902.4 MHz

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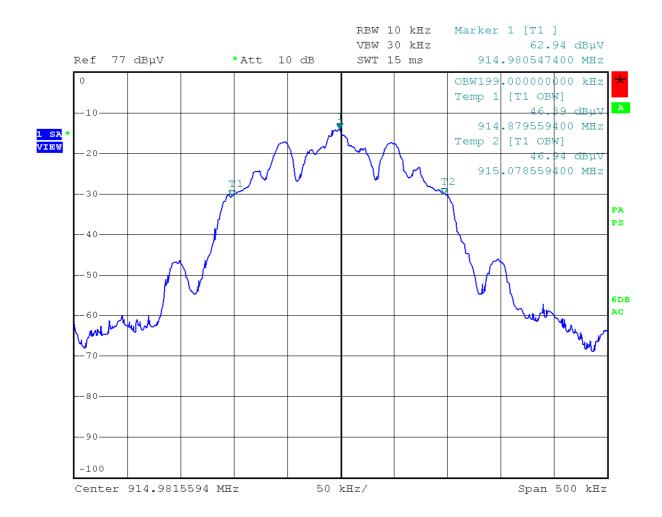


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FCC ID: CGDSENSNODE



Date: 2.NOV.2009 13:22:18

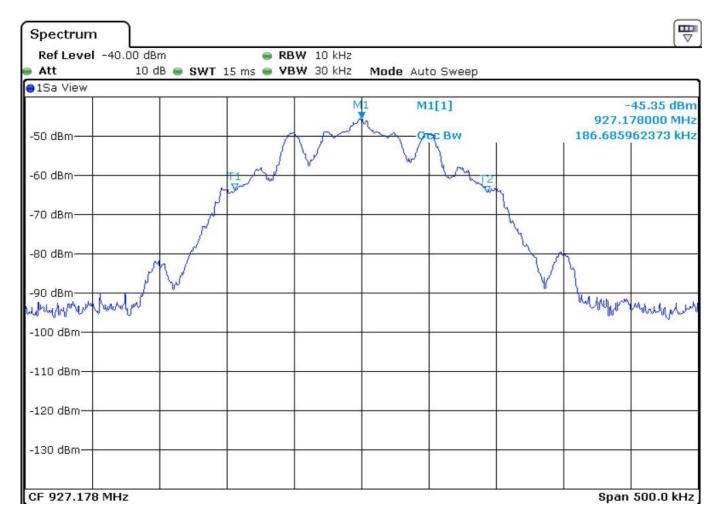
Plot 2: Occupied 20dB Bandwidth (= 199kHz) of the EUT transmitting at 915 MHz

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Description of EUT: Node for Wireless Space Count
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Plot 3: Occupied 20dB Bandwidth (= 186.7 kHz) of the EUT transmitting at 927.2 MHz

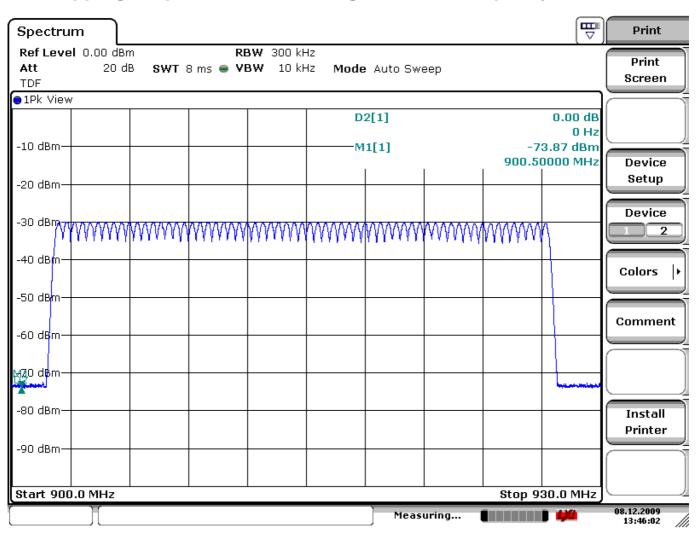
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Description of EUT: Node for Wireless Space Count
Manufacturer: N.V. Nederlandsche Apparatenfabriek "Nedap"

Manufacturer: N.V. Nederlandson
Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE

# 7 Hopping frequencies and Average time of occupancy



Date: 8.DEC.2009 13:46:02

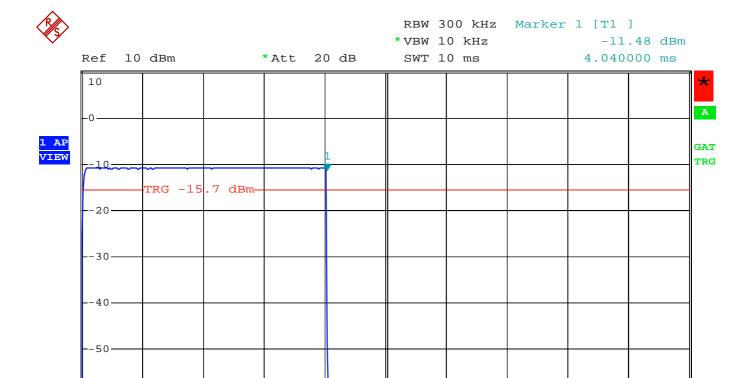
Plot 4: more than 50 hopping frequencies as required by section 15.247 (1) I, as measured on a spectrum analyzer

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Description of EUT: Node for Wireless Space Count
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Manufacturer: N.V. Nederlandson
Brand mark: Nedap
Model: SENSIT IR
FCC ID: CGDSENSNODE



Center 908.4 MHz 1 ms/

Date: 12.NOV.2009 09:54:31

-60

-70

-80

-90

Plot 5: showing Average time of occupancy < 0.4 s within a 20 sec period as required by section 15.247 (1) i

Average time of occupancy as measure on a spectrum analyzer. Plot 5 shows a hoplenght of 4.04 ms for 1 channel. The EUT has 63 channels for which each channel can transmit once per 254.52 ms period (63 \* 4.04 ms). During an observation of 20 seconds, the channel may there for transmit 78.58 times. The average time of occupancy would therefore be 78.58 \* 4.04 ms = 317.46 ms, which is below the 400 ms limit.

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stated in the technical documentation.

Test specification(s): FCC Part 15

Description of EUT: Node for Wireless Space Count
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Plot 6: showing approximately 400 kHz spacing between channels as measured on a spectrum analyzer, 400kHz is

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Description of EUT: Node for Wireless Space Count
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Brand mark: Nedap

Model: SENSIT IR

FCC ID: CGDSENSNODE

# 8 List of utilized test equipment.

Inventory number	Description	Brand	Model	Last cal.	Next cal.
12512	LISN	EMCO	3625/2	01/2008	01/2010
15453	Active loopant. 60 cm	Chase	HLA6120	05/2009	05/2010
15633	Biconilog Testantenna	Chase	CBL 6111B	02/2009	02/2010
15667	Measuring receiver	Rohde & Schwarz	ESCS30	04/2009	04/2010
99069	Coax 5m RG213 OATS	NMi Certin B.V.	KABEL 5M OATS	11/2009	11/2010
99070	Coax 15m RG213 OATS	NMi Certin B.V.	KABEL 15M OATS	11/2009	11/2010
99071	Coax OATS ground	NMi Certin B.V.	KABEL GROND OATS	11/2009	11/2010
99107	Controller OATS	Heinrich Deisel	4630-100	NA	NA
99161	Variac 250V 6A	RFT	LTS006	NA	NA
99547	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2009	10/2010
99548	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2009	10/2010
99576	Peak Power meter	Agilent	N1911A	09/2009	09/2010
99577	Peak Power sensor	Agilent	N1912A	09/2009	09/2010
99580	OATS	Comtest	FCC listed: 90828	08/2008	08/2011
99608	Controller (OATS)	EMCS	DOC202	NA	NA
99609	Antenna mast	EMCS	AP-4702C	NA	NA
99651	Variac	NA	Vast Activa: 08-9510	NA	NA
99699	Measuring receiver	R&S	ESCI	11/2009	11/2010
99733	Spectrum analyzer	R&S	FSV30	05/2009	05/2010

NA= Not Applicable

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