

**TEST REPORT CONCERNING THE COMPLIANCE OF A
DIGITAL TRANSMISSION SYSTEM OPERATING IN THE
FREQUENCY RANGE 2408 – 2475 MHz,
BRAND NEDAP SENZAFIL, MODEL PCB SENSOR BRIDGE**

WITH 47 CFR PART 15 (10-1-09 Edition).

**10052701.fcc01
January 13, 2011**

FCC listed : 90828
Industry Canada : 2932G-1
VCCI Registered : R-1518, C-1598
R&TTE, LVD, EMC Notified Body : 1856

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MEASUREMENT/TECHNICAL REPORT

N.V. Nederlandsche Apparatenfabriek "Nedap"
Model : PCB Sensor Bridge

FCC ID: CGDSFSB

January 13, 2011

This report concerns: Limited Modular Approval ~~Class 2 change~~ ~~Verification~~
Equipment type: Digital Transmission System

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The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-09 Edition) and the measurement procedures of ANSI C63.4-2009. 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 13, 2011

Signature:



O. Hoekstra
Senior Engineer Telecom TÜV Rheinland EPS B.V.

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

Description of test item


Test item : Digital Transmission System operating in the range 2408-2475 MHz
Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand : Nedap Luxon
Model(s) : PCB Sensor Bridge
Serial number(s) : n.a.
Revision : n.a.

Applicant information

Applicant's representative : Mr. L. Hones
Company : N.V. Nederlandsche Apparatenfabriek "Nedap"
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Test(s) performed

Location : Niekerk
Test(s) started : September 02, 2010
Test(s) completed : September 29, 2010
Purpose of test(s) : Equipment Authorization (Limited Modular Approval)
Test specification(s) : 47 CFR Part 15 (10-1-09 Edition)

Test engineer(s) : R. van der Meer 

Report written by : R. van der Meer 

Report date : January 13, 2011

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The test results relate only to the item(s) tested.

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1 General information.

1.1 Product description.

1.1.1 Introduction.

The brand Nedap Luxon, model PCB Sensor Bridge (hereafter referred to as EUT), is designed to operate in the 2.4 GHz frequency band (2408 MHz to 2475 MHz). The EUT is introduced to add commercially available sensors to Nedap's Luxon light control system. Once installed the PCB Sensor Bridge is part of a Mesh Network. Sensor data is transferred by this RF network to minimize wiring efforts. Amongst the validated sensors you will find sensors to detect light level, movement or room occupancy.

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 Limited Modular Approval in equipment authorization files under FCC ID: CGDSFSB.

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.

Test item (EUT)	:	Digital Transmission System
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap Luxon
Model	:	PCB Sensor Bridge
Serial number	:	n.a.
Voltage input rating	:	12 to 24 Vdc
Voltage output rating	:	12 to 24 Vdc
Current input rating	:	300 mA max
Current output rating	:	200 mA max
Antenna	:	Internal
Remarks	:	--

Auxilliary equipment 1 (AUX1)	:	Switching power supply
Brand	:	MW (ME AN WELL)
Model	:	GS15E-6P1J
Serial number	:	EJ261538 B0925R
Voltage input rating	:	100-240Vac 50/60Hz
Current input rating	:	0.5 A
Voltage output rating	:	24 Vdc
Current output rating	:	0.62 Adc
Remarks	:	connects to EUT

Auxiliary equipment 2 (AUX2)	:	Notebook computer
Brand	:	Hewlett-Packard
Model	:	Compaq nc8000
Serial number	:	CNU 435 FBKD
Voltage input rating	:	18.5 Vdc
Current input rating	:	3.50 A
Remarks	:	For frequency programming only

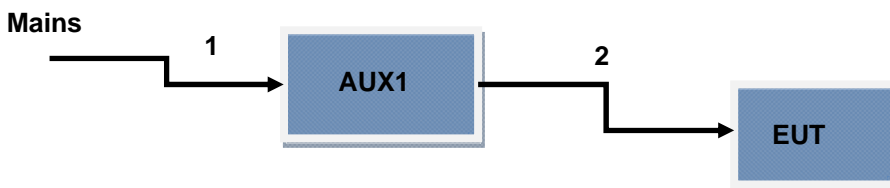
Auxiliary equipment 3 (AUX3) : AC Adaptor for AUX 2
 Brand : Hewlett-Packard
 Series : PPP012HA
 Voltage input rating : 100 - 240 Vac
 Current input rating : 1.5 Aac
 Voltage output rating : 18.5 Vdc
 Current output rating : 4.9A
 Remarks : For frequency programming only

Auxilliary equipment 4 (AUX4) : USB stick Senzafil
 Brand : Nedap
 Series : Senzafil
 Remarks : For frequency programming only

The 'PC ControlUnit V2.4.44' software (as installed on AUX1) is used to programm the operating frequency of the EUT. Once the EUT is programmed for a certain frequency it can be set by a dip-switch on the EUT to transmit continously.

1.3.1 Description of input and output ports.

Number	Terminal	From	To	Remarks
1	Mains	Mains	AUX1	---
2	Output	AUX1	EUT	---



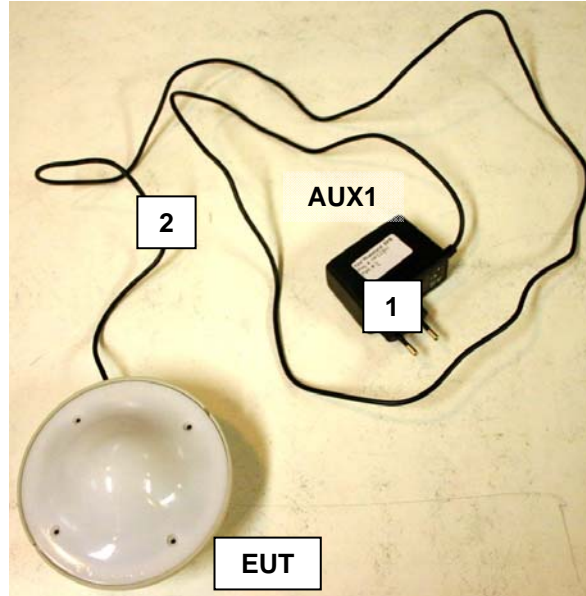


Figure 1. Basic set-up

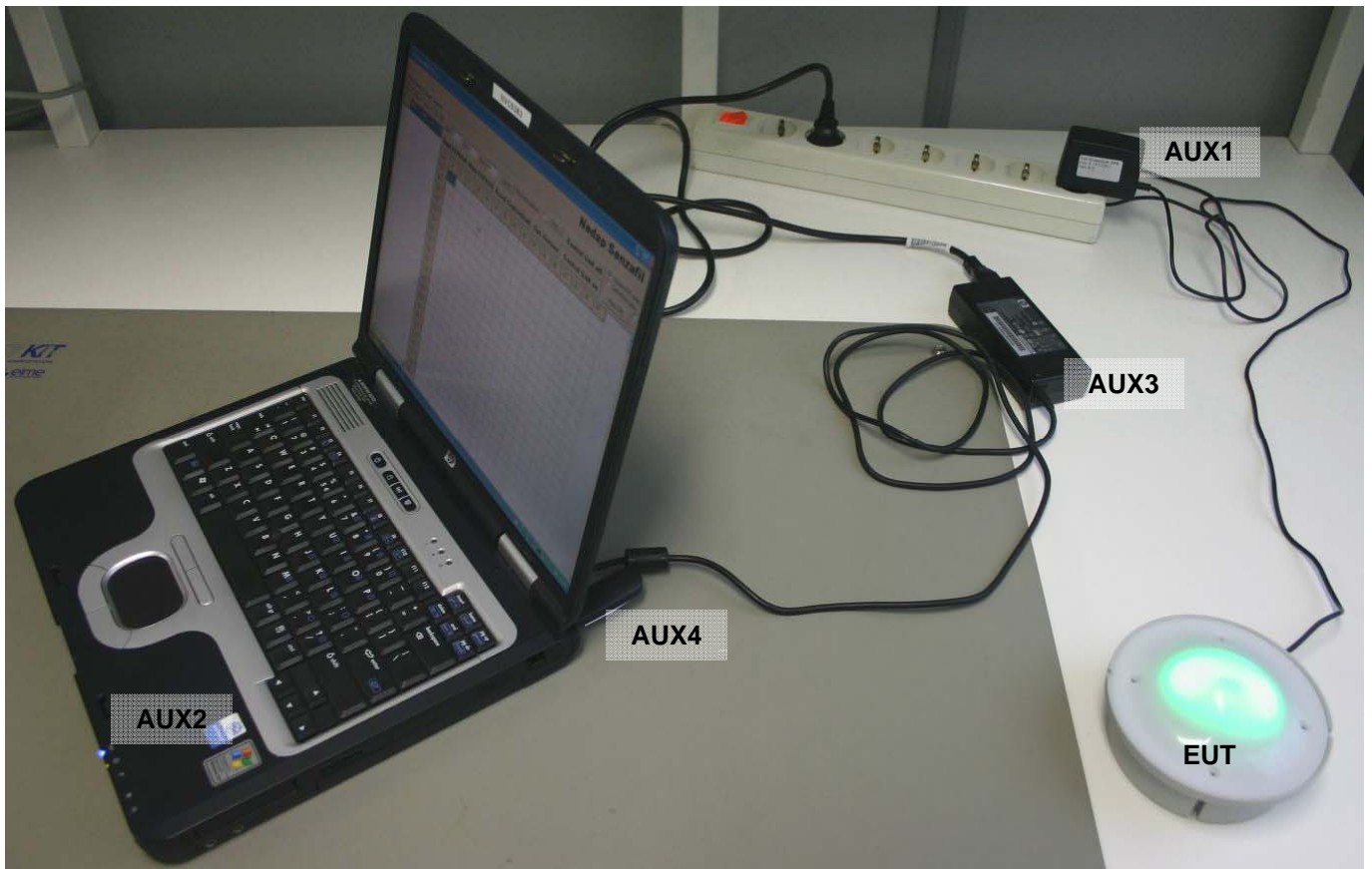


Figure 2: Setup for frequency programming

1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-09 Edition), sections 15.31, 15.207, 15.209 and 15.249.

The test methods, which have been used, are based on ANSI C63.4: 2003.

Radiated emission tests above 30 MHz were performed at a measurement distance of 3 meters.
Radiated emission tests below 30 MHz 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 October 23, 2000.

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	: 120VAC/60Hz to the AC/DC Power Supply – the DC output was varied across the voltage range specified by the manufacturer
Air pressure	: 950 – 1050 hPa

When it 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.

2 System test configuration.

2.1 Justification.

The system was configured for testing in a typical situation as a customer would normally use it.

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: 2009.

2.2 EUT mode of operation.

The EUT has been tested in continues transmit mode with a modulated carrier. The output power was set for maximum output by the applicant. The intentional radiator tests (47 CFR Part 15 sections, 15.207, 15.209 and 15.249) have been performed with a complete functioning EUT and interconnections.

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 in the technical documentation package.

2.6 Block diagram of the EUT.

The block diagram is available in the technical documentation package.

2.7 Schematics of the EUT.

The schematics are available in the technical documentation package.

2.8 Part list of the EUT.

The part list is available in the technical documentation package.

3 Radiated emission data.

3.1 Radiated field strength measurements (frequency range 30 MHz – 25 GHz, E-field), Av and QP values

3.1.1 Radiated field strength measurements (frequency range 30 MHz – 25 GHz, E-field), EUT's TX Frequency 2408 MHz

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Detector	Correction factor (dB)	Results after correction Vertical (dBµV/m)	Results after correction Horizontal (dBµV/m)	Limits @3m (dBµV/m)	Pass /Fail
44.8	17.3	15	QP	12.0	30.3	29.3	40	Pass
51.6	21.2	20	QP	8.9	31.1	28.9	40	Pass
294.0	13.2	13	QP	17.5	31.7	30.5	46	Pass
446.2	13.2	13	QP	22.7	36.9	35.7	46	Pass
581.9	14.0	14	QP	26.9	41.9	41.9	46	Pass
709.9	14.0	14	QP	29.2	43.2	43.2	46	Pass
2408 (fundamental)	72.7	72.7	Av	18.6	91.3	91.3	94	Pass
4816 (h)	6.2	3.8	Av	20.2	26.2	24.0	54	Pass
7224 (h)	5.2	14.4	Av	22.8	28.0	42.4	54	Pass
9632 (h)	14.6	9.4	Av	23.7	38.3	33.1	54	Pass
12040 (h)	4.9	4.7	Av	24.9	29.8	29.6	54	Pass
14448 (h)	5.5	5.4	Av	28.6	34.1	34.0	54	Pass
16856 (h)	8.3	8.5	Av	25.9	34.2	34.4	54	Pass
19264 (h)	28.4	28.8	Av	16.4	44.8	45.2	54	Pass
21672 (h)	27.8	27.9	Av	16.4	44.2	44.3	54	Pass
24080 (h)	27.8	27.9	Av	16.4	44.2	44.3	54	Pass
2761	14.2	10.7	Av	18.6	32.8	29.3	54	Pass
3353	1.6	6.7	Av	18.6	20.2	25.3	54	Pass
4133	4.3	4.0	Av	18.6	22.9	22.6	54	Pass
9746	5.5	5.6	Av	23.7	29.2	29.3	54	Pass
9799	5.5	5.7	Av	23.7	29.2	29.4	54	Pass
9907	6.5	6.5	Av	23.7	30.2	30.2	54	Pass

Table 1a Radiated emissions of the EUT at 2408 MHz QP and Av levels

See notes on page 13.

**3.1.2 Radiated field strength measurements (frequency range 30 MHz – 25 GHz, E-field),
 EUT's TX Frequency 2437 MHz**

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Detector	Correction factor (dB)	Results after correction Vertical (dBµV/m)	Results after correction Horizontal (dBµV/m)	Limits @3m (dBµV/m)	Pass /Fail
52.30	23.6	20	QP	8.9	32.5	28.9	40	Pass
81.46	21.8	20	QP	9.6	31.4	29.6	40	Pass
132.49	18.7	17	QP	14.2	32.9	31.2	43.5	Pass
171.37	18.8	17	QP	12.1	30.9	29.1	43.5	Pass
195.67	17.9	16	QP	12.1	30.0	28.1	43.5	Pass
222.40	19.5	15	QP	13.1	32.5	28.1	46	Pass
241.84	19.4	16	QP	15.3	34.7	31.3	46	Pass
266.14	15.0	14	QP	16.8	31.8	30.8	46	Pass
545.59	12.0	10	QP	26.9	38.9	36.9	46	Pass
2437 (fundamental)	73.8	73.8	Av	18.6	92.4	92.4	94	Pass
4874 (h)	4.0	8.0	Av	20.2	24.2	28.2	54	Pass
7311 (h)	4.2	14.8	Av	22.8	27.0	37.6	54	Pass
9748 (h)	7.3	6.5	Av	23.7	31.0	30.2	54	Pass
12185 (h)	5.6	4.6	Av	24.6	30.2	29.2	54	Pass
14622 (h)	4.1	4.4	Av	28.6	32.7	33.0	54	Pass
17059 (h)	8.0	8.3	Av	25.9	33.9	34.2	54	Pass
19496 (h)	28.4	28.8	Av	16.4	44.3	44.4	54	Pass
21933 (h)	27.8	27.9	Av	16.4	44.2	44.3	54	Pass
24370 (h)	27.8	27.9	Av	16.4	44.2	44.3	54	Pass
2782	13.3	13.6	Av	18.6	31.9	32.2	54	Pass
3379	12.3	12.4	Av	18.6	30.9	31.0	54	Pass
3671	1.6	1.4	Av	18.6	20.2	20.0	54	Pass

Table 1b Radiated emissions of the EUT at 2437 MHz QP and Av levels

See notes on page 13.

3.1.3 Radiated field strength measurements (frequency range 30 MHz – 25 GHz, E-field), EUT's TX Frequency 2475 MHz

Frequency (MHz)	Measurement results @3m Vertical (dB μ V)	Measurement results @3m Horizontal (dB μ V)	Detector	Correction factor (dB)	Results after correction Vertical (dB μ V/m)	Results after correction Horizontal (dB μ V/m)	Limits @3m (dB μ V/m)	Pass/Fail
52.30	22.4	21	QP	8.9	31.3	29.9	40	Pass
81.46	22.4	20	QP	9.6	32.0	29.6	40	Pass
132.49	18.8	17	QP	14.2	32.8	31.2	43.5	Pass
171.37	18.7	17	QP	12.1	30.8	29.1	43.5	Pass
195.67	17.6	16	QP	12.1	29.7	28.1	43.5	Pass
222.40	19.4	15	QP	13.1	32.5	28.1	46	Pass
241.84	19.4	16	QP	15.3	34.7	31.3	46	Pass
266.14	15	14	QP	16.8	31.8	30.8	46	Pass
545.59	12	10	QP	26.9	38.9	36.9	46	Pass
2475 (fundamental)	70.0	68.8	Av	18.6	88.6	87.4	94	Pass
4950 (h)	4.0	4.2	Av	20.2	24.2	24.4	54	Pass
7425 (h)	4.2	4.4	Av	22.8	27.0	27.2	54	Pass
9900 (h)	5.3	5.5	Av	23.7	29.0	29.2	54	Pass
12375 (h)	5.8	5.6	Av	24.6	30.4	30.2	54	Pass
14850 (h)	3.3	3.8	Av	28.6	31.9	32.4	54	Pass
17325 (h)	16.3	12.3	Av	25.9	42.2	38.2	54	Pass
19800 (h)	28.0	28.8	Av	16.4	44.4	45.2	54	Pass
22275 (h)	27.8	27.9	Av	16.4	44.2	44.3	54	Pass
24750 (h)	27.8	27.9	Av	16.4	44.2	44.2	54	Pass
2828	14.2	10.9	Av	18.6	32.8	29.5	54	Pass
3353	10.9	10.1	Av	18.6	29.5	28.7	54	Pass
3380	8.9	6.9	Av	18.6	27.5	25.2	54	Pass

Table 1c Radiated emissions of the EUT at 2475 MHz QP and Av levels

See notes on page 13.

The results (Quasi Peak and Average values) of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.249 with the EUT operating in continues transmit mode (Cont. TX) are depicted in Table 1a,1b and 1c.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. (h) indicates harmonic component of the fundamental
3. Measurement uncertainty is ± 5.0 dB
4. The reported field strength values are the worst case values at the indicated frequency. The EUT was varied in three positions, the antenna was varied in horizontal and vertical orientations and also in height (between 1m and 4m).
5. The EUT was tested in on the lowest frequency (2408 MHz), a middle frequency (2437 MHz) and the highest frequency (2475 MHz) in the 2408 – 2475 MHz band wherein it operates.
6. A Quasi-peak detector was used with a resolution bandwidth of 120 kHz, except for frequencies above 1000 MHz where an Average detector was used with a resolution bandwidth of 1 MHz.

3.1.4 Test equipment used (for reference see test equipment listing).

99699	99547	99071	99070	99069	99174	12483
99733	99606	99580	99608	99742	99107	12476
12477	15633	99161				

Test engineer

Signature :



Name : Richard van der Meer

Date : September 29, 2010

3.2 Radiated field strength measurements (frequency range 30 MHz – 25 GHz, E-field), Peak values

3.2.1 Radiated field strength measurements (above 30 MHz, E-field), EUT's TX Frequency 2408 MHz

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Correction factor (dB)	Results after correction Vertical (dBµV/m)	Results after correction Horizontal (dBµV/m)	Limits @3m (dBµV/m)	Pass/Fail
2408 (fundamental)	72.7	72.1	18.6	91.3	90.7	114	Pass
4816 (h)	14.3	14.9	20.2	34.5	35.1	74	Pass
7224 (h)	34.5	25.4	22.8	57.3	48.2	74	Pass
9632 (h)	18.6	18.6	23.7	40.0	42.3	74	Pass
12040 (h)	14.4	14.6	24.9	39.3	39.5	74	Pass
14448 (h)	15.4	15.9	28.6	44.0	44.5	74	Pass
16856 (h)	19.1	18.2	25.9	45.0	44.1	74	Pass
19264 (h)	38.6	38.8	16.4	55.0	55.2	74	Pass
21672 (h)	38.6	38.7	16.4	55.0	55.1	74	Pass
24080 (h)	38.6	38.7	16.4	55.0	55.1	74	Pass
2761	30.7	26.3	18.6	49.3	44.9	74	Pass
3353	20.9	29.3	18.6	39.5	47.9	74	Pass
4133	16.3	15.3	18.6	34.9	33.9	74	Pass
9746	22.2	20.6	23.7	45.9	44.3	74	Pass
9799	28.9	19.3	23.7	52.6	43.0	74	Pass
9907	6.5	28.5	23.7	30.2	52.2	74	Pass

Table 2d Radiated emissions of the EUT at 2408 MHz Pk levels

See notes on page 16.

3.2.2 Radiated field strength measurements (above 30 MHz, E-field), EUT's TX Frequency 2437 MHz

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Correction factor (dB)	Results after correction Vertical (dBµV/m)	Results after correction Horizontal (dBµV/m)	Limits @3m (dBµV m)	Pass/Fail
2437 (fundamental)	77.9	73.8	18.6	96.5	92.4	114	Pass
4874 (h)	8.5	9.4	20.2	28.7	29.6	74	Pass
7311 (h)	22.9	22.9	22.8	45.7	45.7	74	Pass
9748 (h)	6.5	7.5	23.7	30.2	31.2	74	Pass
12185 (h)	5.6	5.6	24.6	30.2	30.2	74	Pass
14622 (h)	14.5	14.8	28.6	43.1	43.4	74	Pass
17059 (h)	18.9	18.8	25.9	44.8	44.7	74	Pass
19496 (h)	38.6	38.2	16.4	55.0	54.6	74	Pass
21933 (h)	38.6	38.7	16.4	55.0	55.1	74	Pass
24370 (h)	38.6	38.7	16.4	55.0	55.1	74	Pass
2782	10.1	10.6	18.6	28.7	29.2	74	Pass
3379	9.8	20.3	18.6	28.4	38.9	74	Pass
3671	3.9	3.9	18.6	22.5	22.5	74	Pass

Table 1e Radiated emissions of the EUT at 2437 MHz Pk levels

See notes on page 16.

3.2.3 Radiated field strength measurements (above 30 MHz, E-field), EUT's TX Frequency 2475 MHz

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Correction factor (dB)	Results after correction Vertical (dBµV /m)	Results after correction Horizontal (dBµV /m)	Limits @3m (dBµV/m)	Pass/Fail
2475 (fundamental)	78.6	72.8	18.6	97.2	91.4	114	Pass
4950 (h)	27.8	15.1	20.2	48.0	35.3	74	Pass
7425 (h)	27.5	14.3	22.8	50.3	37.1	74	Pass
9900 (h)	31.1	26.5	23.7	54.8	50.2	74	Pass
12375 (h)	24.1	17.0	24.6	40.7	41.6	74	Pass
14850 (h)	14.3	13.1	28.6	42.9	41.7	74	Pass
17325 (h)	23.2	22.8	25.9	49.1	48.7	74	Pass
19800 (h)	39.5	37.8	16.4	55.5	54.2	74	Pass
22275 (h)	38.7	38.6	16.4	55.1	55.0	74	Pass
24750 (h)	38.8	38.7	16.4	55.2	55.1	74	Pass
2828	30.5	30.5	18.6	49.1	29.5	74	Pass
3353	39.3	10.1	18.6	57.9	28.7	74	Pass
3380	23.6	6.6	18.6	42.2	25.2	74	Pass

Table 1f Radiated emissions of the EUT at 2475 MHz Pk levels

See notes on page 16.

The results (peak values) of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.249 with the EUT operating in continuous transmit mode (Cont. TX) are depicted in Table 1d, 1e and 1f.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ± 5.0 dB
3. (h) indicates harmonic component of the fundamental.
4. The reported field strength values are the worst case values at the indicated frequency. The EUT was varied in three positions, the antenna was varied in horizontal and vertical orientations and also in height (between 1m and 4m).
5. The EUT was tested in on the lowest frequency (2408 MHz), a middle frequency (2437 MHz) and the highest frequency (2475 MHz) in the 2408 – 2475 MHz band wherein it operates.
6. A Peak detector was used with a resolution bandwidth of 1 MHz.

3.2.4 Test equipment used (for reference see test equipment listing).

99699	99547	99071	99070	99069	99174	12483
99733	99606	99580	99608	99742	99107	12476
12477	15633	99161				

Test engineer

Signature :



Name : Richard van der Meer

Date : September 29, 2010

3.3 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field).

Frequency (MHz)	(a) Measurement results (dB μ V)	Detector	(b) Antenna factor	(c) Cable loss	(d) Distance Extrapolation factor	Measurement results (calculated a+b+c-d) dB(μ V)/m	Limits
	3 meters		dB	dB	dB		dB(μ V)/m
0.170	38.4	Av	20.1	1	80	-20.5 @300m	22.96 @300m
0.240	22.1	Av	20.1	1	80	-36.8 @300m	20.00 @300m
0.329	21.9	Av	20.1	1	80	-37.0 @300m	18.88 @300m
0.401	17.9	Av	20.1	1	80	-41.0 @300m	17.86 @300m
1.420	32.7	Qp	20.7	1	40	14.5 @30m	29.5 @30m
1.588	33.0	Qp	20.7	1	40	14.7 @30m	29.5 @30m
6.032	26.6	Qp	20.5	1	40	8.1 @30m	29.5 @30m

Table 2 Radiated emissions of the EUT.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT operating in continuous transmit mode are depicted in Table 2.

Notes:

1. Calculated measurement results are obtained by using the 40 dB/decade correction factor and the antenna factor and cable loss is included.
2. Frequency range:
 except for a. and b. below a Quasi-Peak detector was used during testing.
 - a. 9- 90 kHz Average detector used during measurements
 - b. 110-490 kHz Average detector used during measurements
3. A resolution bandwidth of 200 Hz and 9 kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 2 are more than 20 dB below the applicable limit
5. The EUT was varied in three positions, 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.
6. The EUT was tested in on the lowest frequency (2408 MHz), a middle frequency (2437 MHz) and the highest frequency (2475 MHz) in the 2408 – 2475 MHz band wherein it operates. Maximum values noted.
7. Measurement uncertainty is ± 5.0 dB

3.3.1 Test equipment used (for reference see test equipment listing).

99699	99547	99071	99070	99069	15453	99161
99580	99608					

Test engineer

Signature :



Name : R. van der Meer

Date : September 06, 2010

4 Conducted emission data.

4.1 Conducted emission data of the EUT.

Frequency (MHz)	Measurement results dB(μV) Neutral		Measurement results dB(μV) Line 1		Limits dB(μV)		Result
	QP	AV	QP	AV	QP	AV	
0.154	32.9	29.8	39.5	12.0	66	56	PASS
0.178	46.3	33.9	<25	29.4	64.5	54.5	PASS
0.206	42.8	31.9	38.7	25.4	63.2	53.2	PASS
0.234	33.2	29.6	36.7	14.0	62.4	52.4	PASS
0.290	35.5	27.3	33.0	18.5	60.5	50.5	PASS
0.322	33.9	<25	31.8	19.4	59.7	49.7	PASS
0.378	28.0	<25	26.7	12.1	58.3	48.3	PASS
0.494	30.8	<25	24.1	19.0	56.2	46.2	PASS
0.506	32.1	<25	28.1	20.2	56	46	PASS
4.266	26.7	<25	<25	<25	56	46	PASS
4.324	28.5	22.7	<25	<25	56	46	PASS
4.430	28.5	24.7	<25	<25	56	46	PASS
4.474	28.4	23.5	<25	<25	56	46	PASS
4.574	26.4	23.5	25.6	<25	56	46	PASS
5.010	32.0	26.7	28.4	21.1	60	50	PASS
5.026	31.7	<25	28.4	21.1	60	50	PASS
5.098	29.9	26.7	28.3	21.5	60	50	PASS
5.278	25.5	<25	25.6	18.9	60	50	PASS
5.370	28.1	<25	25.0	17.1	60	50	PASS
5.414	28.2	<25	23.9	16.8	60	50	PASS

Table 3 Conducted emission measurements

The results of the conducted emission tests, carried out in accordance with 47 CFR Part 15 section 15.207 at the 120 Volts AC mains connection terminals of the AUX3 that supplies the EUT, are depicted in Table 3. Maximum values recorded.

Notes:

- Field strength values of radiated emissions at frequencies not listed in Table 3 are more than 20 dB below the applicable limit.
- The EUT was tested in on the lowest frequency (2408 MHz), a middle frequency (2437 MHz) and the highest frequency (2475 MHz) in the 2408 – 2475 MHz band wherein it operates. Maximum values noted.
- The resolution bandwidth used was 9 kHz.
- Measurement uncertainty is ±3.5dB.
- The results in Table 3 were obtained with AUX3 as power supply to the EUT. AUX3 was provided by the applicant.

4.1.1 Test equipment used (for reference see test equipment listing).

99699	12512	99161	99548			
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Test engineer

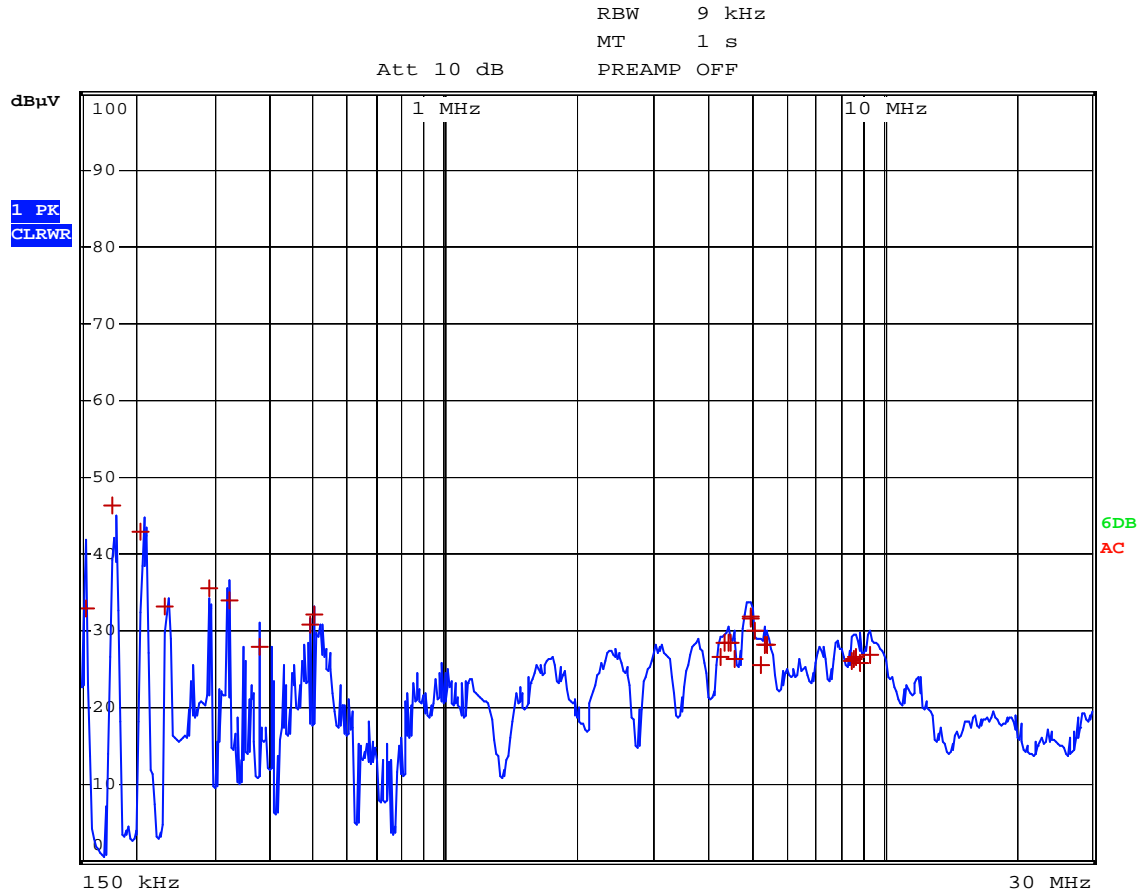
Signature : 

Name : R. van der Meer

Date : September 07, 2010

5 Plots of the emissions

5.1 Conducted emissions



Date: 7.SEP.2010 12:42:49

Plot 1: Conducted emissions of the EUT (L1 QP shown)

5.2 Emissions at the band edges

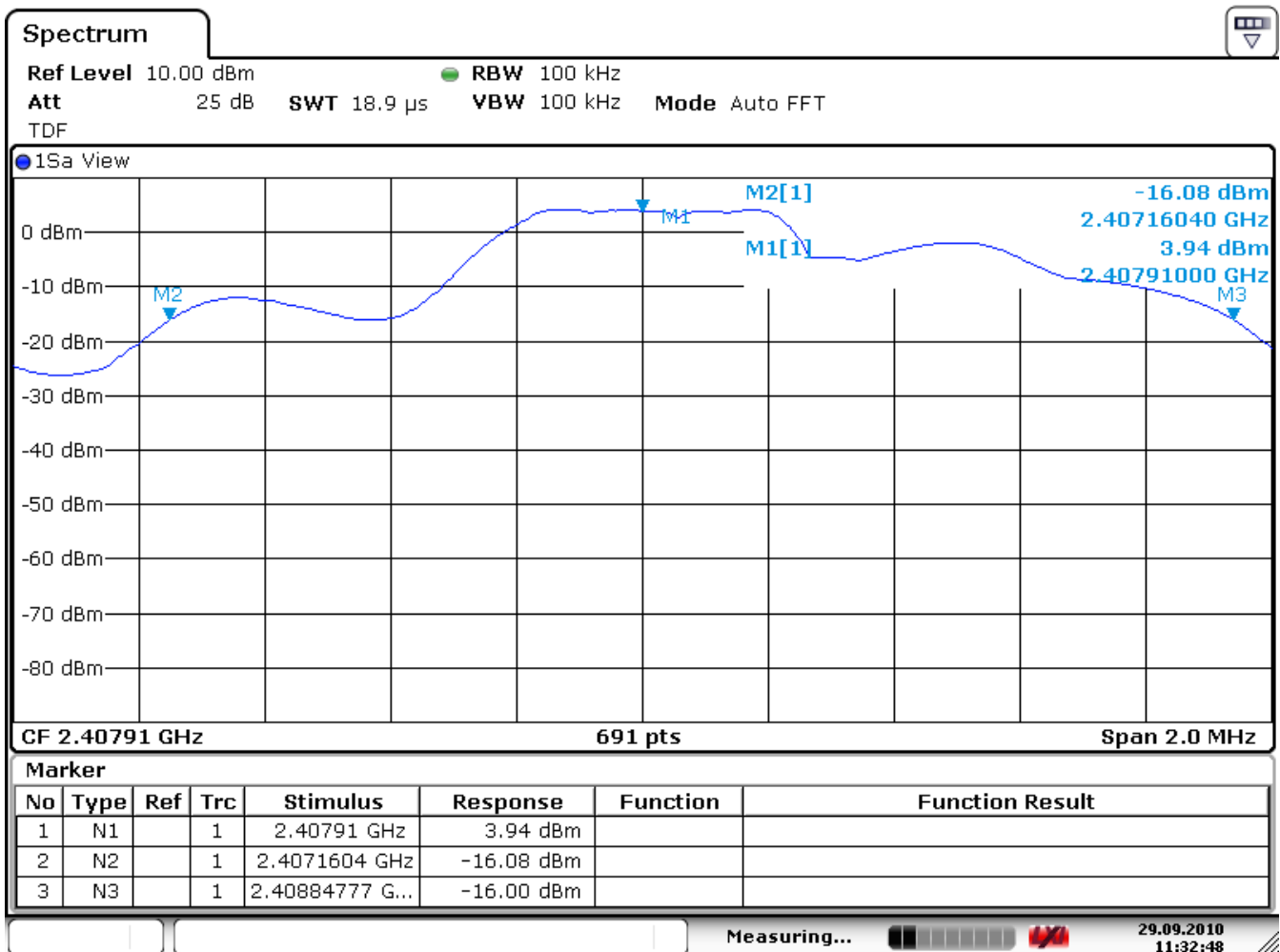
The plots below show compliance with the 47 CFR Part 15 section 15.209(d), this section requires the emissions at the 2400 and 2483.5 MHz band edges to be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in section 15.209, whichever is the lower attenuation. For this application the emissions are compared to the general radiated emission limits in section 15.209.

Frequency (MHz)	Level Av (dBµV/m)	Limit 15.209 Av (dBµV/m)	Level Pk (dBµV/m)	Limit 15.209 Pk (dBµV/m)	Pass / Fail
2400	25.44	54	67.78	74	Pass
2483.5	28.41	54	65.56	74	Pass

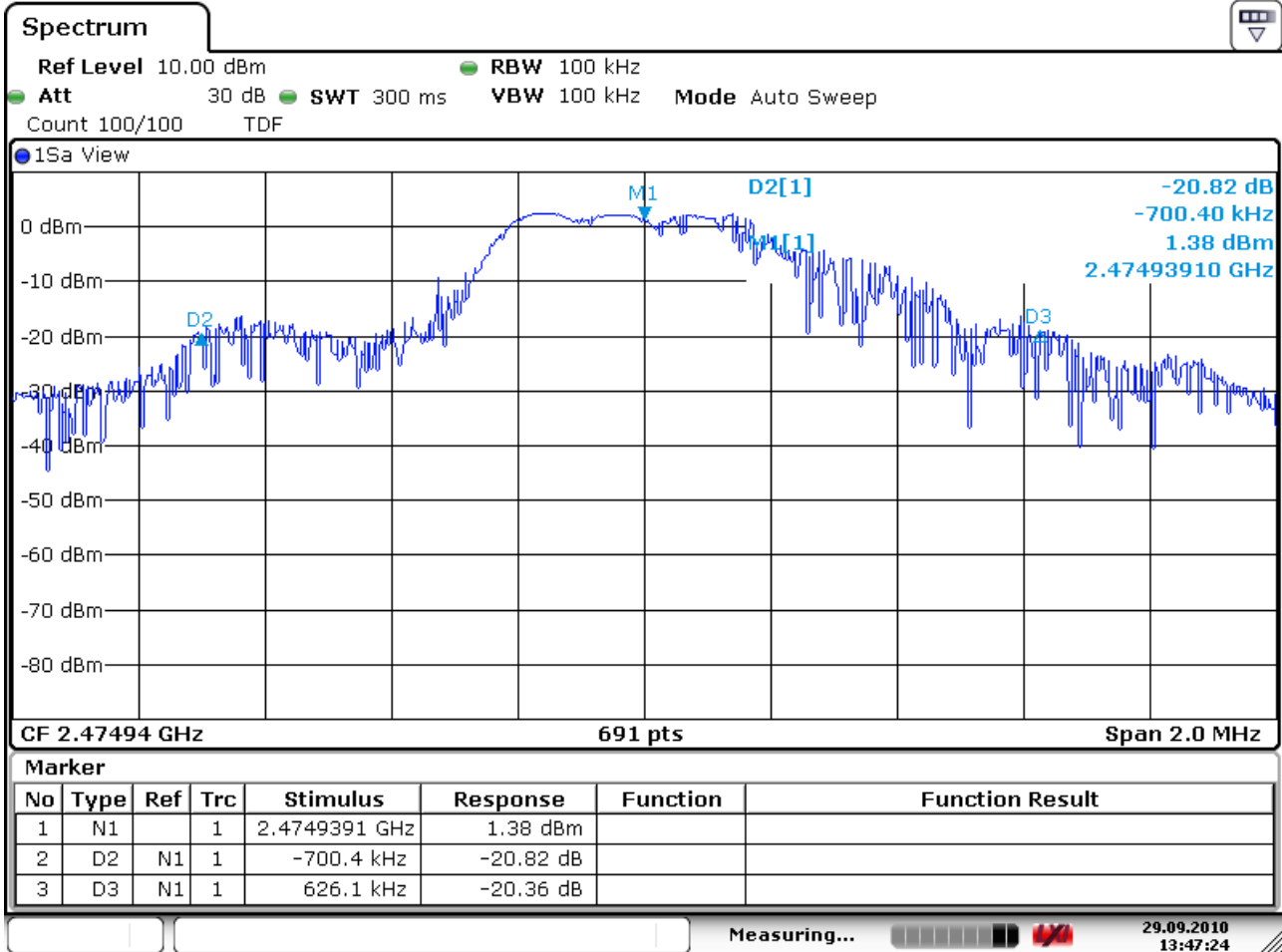
Table 4 emissions at the band edges.

6 Bandwidth of the emission

The plots below show compliance with the 47 CFR Part 15 section 15.215(c), this section requires the 20 dB emission bandwidth is within the frequencyband designated in section 15.249.



Plot 2: the lowest channel, occupied bandwidth is 1.687 MHz



Plot 3: the highest channel, occupied bandwidth is 1.327 MHz

7 List of utilized test equipment.

Inventory number	Description	Brand	Model	Last cal.	Next cal.
12476	Antenna mast	EMCO	TR3	NA	NA
12477	Antenna mast 1-4 mtr	Poelstra	NA	NA	NA
12512	LISN	EMCO	3625/2	01/2010	01/2012
15453	Active loopant. 60 cm	Chase	HLA6120	05/2010	05/2011
15633	Biconilog Testantenna	Chase	CBL 6111B	02/2010	02/2011
12640	Temperature chamber	Heraeus	VEM03/500	10/2009	10/2010
99045	Power supply	Delta	E030-3	04/2010	04/2011
99069	Coax 5m RG213 OATS	NMi Certin B.V.	CABLE 5M OATS	11/2009	11/2010
99070	Coax 15m RG213 OATS	NMi Certin B.V.	CABLE 15M OATS	11/2009	11/2010
99071	Coax OATS ground	NMi Certin B.V.	CABLE OATS	11/2009	11/2010
99161	Variac 120Vac	RFT	LTS001	NA	NA
99107	Controller OATS	Heinrich Deisel	4630-100	NA	NA
99538	Spectrum analyzer	R&S	FSP40	05/2010	05/2011
99547	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2009	10/2010
99580	OATS	Comtest	FCC listed: 90828	08/2008	08/2011
99606	Pretest Setup Emission	EMCS	RFS06S	10/2009	10/2010
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	12/2009	12/2010
99733	Spectrum Analyzer	R&S	FSV30	05/2010	05/2011
99734	Cable RF	Huber + Suhner	Sucotest 18/Sucoflex 102	05/2010	05/2011
99742	Cable RF	Huber + Suhner	Sucotest 18/Sucoflex 102	05/2010	05/2011

NA= Not Applicable