



**TEST REPORT CONCERNING THE COMPLIANCE OF AN
INDUCTIVE LOOP VEHICLE DETECTOR,
BRAND NORTECH , MODEL PD131 AND PD134
WITH 47 CFR PART 15 (10-1-09 Edition)
FCC ID: OW9PD130TD136**

10051001.fcc01
August 30, 2010

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

TÜV Rheinland EPS B.V.
P.O. Box 15
9822 ZG Niekerk (NL)
Smidshornerweg 18
9822 TL Niekerk (NL)

Telephone: +31 594 505005
Telefax: +31 594 504804

E-mail: info@tuv-eps.com
Web: www.tuv-eps.com

MEASUREMENT/TECHNICAL REPORT

Model Summary: This report covers only 2 transmitter models – the applicant states: differences are explained within the Attestation of Similarity found in Appendix 1. All models incorporate the identical circuitry and integral RF Section and PWB embedded antenna housed on the device. From all product geometric differences the worst case units were tested and shown in this report. Refer to Appendix 1 for more information.

Brand: Nortech
Model : PD131 and PD134
FCC ID: OW9PD130TD136

August 30, 2010

This report concerns: Original grant/certification Class 2 Permissive Change Verification

Equipment type: DSC - Part 15 Security/Remote Control Transmitter

Report prepared by:	Name : Richard van der Meer
Address:	Company name : TÜV Rheinland EPS B.V.
Postal:	ss : Smidshornerweg 18
Mailing:	code/city : 9822 TL Niekerk
Postal:	address : P.O. Box 15
	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 (10-1-09 Edition), and the measurement procedures of ANSI C63.4-2003. 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: August 30, 2010

Signature:



O. Hoekstra

Engineer Telecom TÜV Rheinland EPS B.V.

Senior

Description of test item

Test item (EUT) : Inductive Loop Vehicle Detector
Manufacturer : Nortech International (Pty) Ltd.
Brand : Nortech
Model(s) : PD131 and PD134
Serial number(s) : 020100115684 (PD131) and 020100115687 (PD134)
Receipt date : July 12, 2010

Applicant information

Applicant's representative : Mr. Mike Maggs
Company : Nortech International (Pty) Ltd.
Address : 32A Wiganthorpe Road
Postal code : 3201
City : Pietermaritzburg
Country : South Africa
Telephone number : +27 33 34553456
Telefax number : +27 33 3946449
e-mail address : m.maggs@nortech.co.za

Test(s) performed

Location : Niekerk
Test(s) started : July 28, 2010
Test(s) completed : August 18, 2010
Purpose of test(s) : Equipment Authorization (original certification)
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 : August 30, 2010

This report is in conformity with NEN-EN-ISO/IEC 17025: 2005
This report shall not be reproduced, except in full, without the written permission of TÜV Rheinland EPS B.V.
The test results relate only to the item(s) tested.

Table of contents

1	General information.	5
1.1	Product description.	5
1.1.1	Introduction.	5
1.2	Related submittal(s) and/or Grant(s).	5
1.2.1	General.	5
1.3	Tested system details.	5
1.3.1	Description of input and output ports.	7
1.4	Test methodology.	7
1.5	Test facility.	7
1.6	Test conditions.	7
2	System test configuration.	8
2.1	Justification.	8
2.2	EUT mode of operation.	8
2.3	Special accessories.	8
2.4	Equipment modifications.	8
2.5	Product Labeling.	8
2.6	Block diagram of the EUT.	8
2.7	Schematics of the EUT.	8
2.8	Part list of the EUT.	8
3	Radiated emission data.	9
3.1	Radiated field strength measurements (30 MHz – 1 GHz, E-field) of the PD131.	9
3.2	Radiated field strength measurements (30 MHz – 1 GHz, E-field) of the PD134.	10
3.3	Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD131.	11
3.4	Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD131, Peak values.	12
3.5	Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD134.	13
3.6	Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD134, Peak values.	14
4	Conducted emission data.	15
4.1	Conducted emission data of the EUT (PD131).	15
4.2	Conducted emission data of the EUT (PD134).	16
5	Plots of measurement data.	17
5.1	Conducted emissions.	17
6	List of utilized test equipment.	19

Appendix-1 Attestation of Similarity

1 General information.

1.1 Product description.

1.1.1 Introduction.

The PD130/TD136 family Enhanced Vehicle Detector is a single channel microprocessor based detector designed specifically for parking and vehicle access control applications. The primary function of the detector is to detect vehicle presence by means of an inductance change, caused by the vehicle passing over a wire loop buried under the road surface. The PD130/TD136 Enhanced Vehicle single channel parking detector is designed to be shelf or DIN rail mounted, with the controls and visual indicators at the front, and wiring at the rear of the enclosure.

In the case of this test report – 2 of 120 different models are covered. The applicant states that the tested model is representative for the other models as noted in the AoS, but it's outside the scope of TÜV Rheinland EPS B.V. to have any judgment on this.

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

1.2.1 General.

This test report supports the original grant/certification in equipment authorization files under registration number. **FCC ID: OW9PD130TD136**.

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	:	Inductive Loop Vehicle Detector
Manufacturer	:	Nortech International (Pty) Ltd
Brand :	:	Nortech
Model	:	PD131 and PD134
Serial number	:	020100115684 (PD131) and 020100115687 (PD134)
Voltage input rating	:	120V ac ±10% (PD131) and 12-24V ac-dc ±10% (PD134)
Voltage output rating	:	n.a.
Current input rating	:	40 mA
Antenna :	:	External
Operating frequency	:	12 – 80 kHz
Remarks :	:	n.a.

AUX :	:	Testjig
Manufacturer	:	Nortech International (Pty) Ltd
Brand :	:	--
Model :	:	--
Serial number	:	--
Voltage input rating	:	--
Voltage output rating	:	--
Current input rating	:	--
Antenna :	:	--
Operating frequency	:	--
Remarks	:	To make easy connections possible for testing purposes only.



Photo 1: EUT

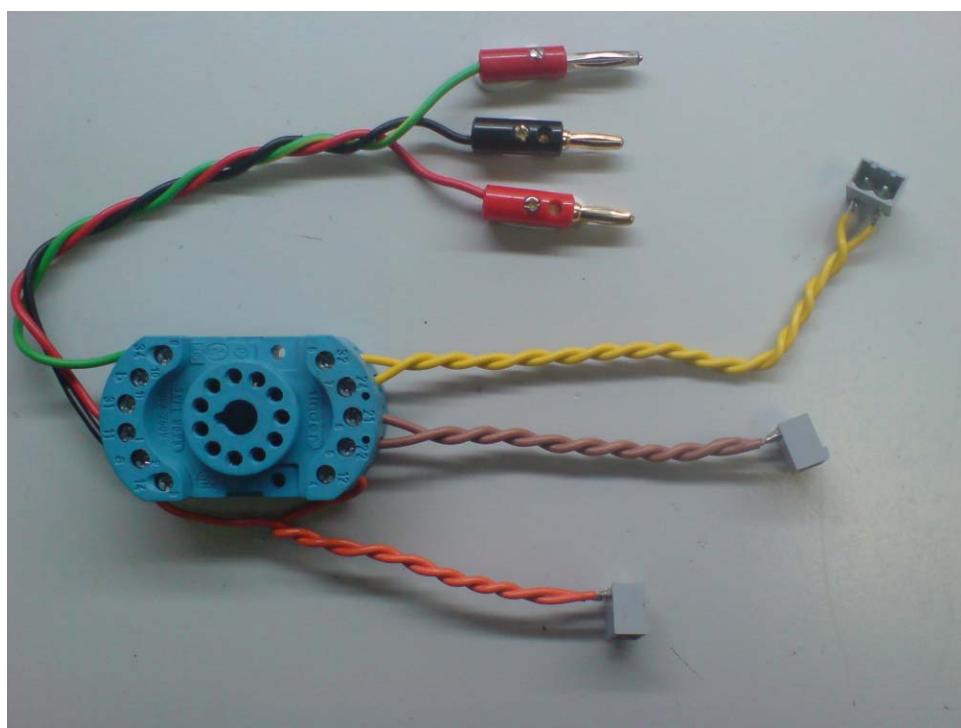


Photo 2. AUX (Testjig)

1.3.1 Description of input and output ports.

Number	Ports	From	To	Shielding	Remarks
1-2	AC mains	AC mains	--	yes / no	--
3 Pulse	relay	--	--		--
4	Earth	AC mains earth	--	yes / no --	
5-6 Presence	relay	--	--		--
7-8 Loop	p	Loop coil	--	yes / no	--
9	Pulse relay common	--	--		--
10	Presence relay N/C	--	--		--
11	Pulse relay N/C	--	--		--

AE = Auxiliary equipment

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, 15.35, 15.205, 15.207 and 15.209.

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.

To calculate the field strength level from these results to the appropriate distance at which the limit is specified, the appropriate extrapolation factor is used.

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(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 : 12 -24 Vdc and Vdc, 120Vac
 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 fashion (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: 2003.

2.2 EUT mode of operation.

The intentional radiator tests (47 CFR Part 15 sections, 15.207, 15.209 and 15.225) 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 Labeling

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 (30 MHz – 1 GHz, E-field) of the PD131

Frequency (MHz)	Measurement results @3m Vertical (dBuV)	Measurement results @3m Horizontal (dBuV)	Correction factor (dB)	Results after correction Vertical (dBuV/m)	Results after correction Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/Fail
33.44	16.4	17.2	17.9	34.8	35.1	40	Pass
39.32	17.3	17.2	15.0	32.3	32.2	40	Pass
40.68	16.8	20.2	14.0	30.8	34.2	40	Pass
52.44	16.1	18.8	8.9	25.0	27.7	40	Pass
53.20	16.8	17.9	8.6	25.4	26.5	40	Pass
63.68	16.7	18.4	7.0	23.7	25.4	40	Pass
120.32	20.3	19.9	13.7	34.0	33.6	43.5	Pass
169.72	23.5	26.7	12.1	35.6	38.8	43.5	Pass

Table 1a Radiated emissions of the EUT (PD131)

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.205, 15.209 are depicted in Table 1a.

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. The EUT was varied in three positions, the loop antenna was varied in horizontal and vertical orientations and also around its axis. The reported value is the worst case found at the reported frequency
4. The EUT was tested in both normal mode (i.e. without a label in its proximity) and in activated mode (i.e. with a label in its proximity).
5. A Quasi-peak detector was used with a bandwidth of 1 MHz.

Test engineer

Signature :



Name : Richard van der Meer
 Date : August 18, 2010

3.2 Radiated field strength measurements (30 MHz – 1 GHz, E-field) of the PD134

Frequency (MHz)	Measurement results @3m Vertical (dBuV)	Measurement results @3m Horizontal (dBuV)	Correction factor (dB)	Results after correction Vertical (dBuV/m)	Results after correction Horizontal (dBuV/m)	Limits @3m (dBuV/m)	Pass/Fail
33.44	17.8	17.5	17.9	35.7	35.4	40	Pass
39.32	17.1	17.9	15.0	32.1	32.9	40	Pass
40.68	15.8	20.2	14.0	29.8	34.2	40	Pass
52.44	16.6	18.2	8.9	25.5	27.1	40	Pass
53.20	17.2	17.6	8.6	25.8	26.2	40	Pass
63.68	16.0	18.8	7.0	23.0	25.8	40	Pass
120.32	20.6	20.4	13.7	34.3	34.1	43.5	Pass
169.72	23.6	27.2	12.1	35.7	39.3	43.5	Pass

Table 2b Radiated emissions of the EUT (PD134)

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.205, 15.209 are depicted in Table 1b.

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. The EUT was varied in three positions, the loop antenna was varied in horizontal and vertical orientations and also around its axis. The reported value is the worst case found at the reported frequency
4. The EUT was tested in both normal mode (i.e. without a label in its proximity) and in activated mode (i.e. with a label in its proximity).
5. A Quasi-peak detector was used with a bandwidth of 1 MHz.

Test engineer

Signature :



Name : Richard van der Meer
 Date : August 18, 2010

3.3 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD131.

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)	Limits
						dB(μ V)/m @300m	
3 meters			dB	dB	dB	dB(μ V)/m @300m	dB(μ V)/m @300m
0.03413 (fundamental)	85.6	Av	20.4	1	80	27.0	36.94
0.06826	43.9	Av	20.4	1	80	-15.7	30.92
0.10239	42.8	Av	20.1	1	80	-16.1	27.40
0.1365	41.1	Av	20.1	1	80	-17.8	24.90
0.1706	36.2	Av	20.1	1	80	-22.7	22.96
0.2047	26.7	Av	20.1	1	80	-32.2	21.38
0.2388	20.2	Av	20.1	1	80	-38.7	20.00
0.2729	21.4	Av	20.1	1	80	-37.5	18.88
0.3070	17.6	Av	20.1	1	80	-41.3	17.86
0.3411	7.3	Av	20.1	1	80	-51.6	16.95
1.27	28.3	Qp	20.7	1	40	9.0	29.5
1.39	33.6	Qp	20.7	1	40	14.3	29.5
1.60	33.0	Qp	20.7	1	40	13.7	29.5
6.07	24.3	Qp	20.5	1	40	4.8	29.5

Table 2a Radiated emissions of the EUT, in the frequency range 0.009 – 30 MHz

The results of the radiated emission tests in the frequency range 0.009 – 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 are depicted in Table 2a.

Notes:

1. Values in Table 2a are of the PD131.
2. Calculated measurement results are obtained by using the 80dB/decade factor (antenna factor and cable loss is included). i.e at 0.03413 MHz: $85.6\text{dB}\mu\text{V} + 20.4\text{dB} + 1\text{dB} - 80\text{dB} = 27.0\text{dB}\mu\text{V/m}$.
3. A resolution bandwidth of 200Hz and 9 kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 2a are more than 20 dB below the applicable limit
5. The loop antenna was varied in horizontal and vertical orientations and also around its axis. The reported value is the worst case found at the reported frequency.
6. The EUT was tested in horizontal orientation being the normal use orientation.
7. Measurement uncertainty is $\pm 5.0\text{dB}$

Test engineer

Signature :



Name : R. van der Meer
 Date : July 28, 2010

3.4 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD131, Peak values.

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)	Limits
						dB(μ V)/m @300m	
3 meters			dB	dB	dB	dB(μ V)/m @300m	dB(μ V)/m @300m
0.03413 (fundamental)	85.9	Pk	20.4	1	80	27.0	56.94
0.06826	45.6	Pk	20.4	1	80	-13.0	50.92
0.10239	44.2	Pk	20.1	1	80	-14.7	47.40
0.1365	41.9	Pk	20.1	1	80	-17.0	44.90
0.1706	39.3	Pk	20.1	1	80	-19.6	42.96
0.2047	29.7	Pk	20.1	1	80	-29.2	41.38
0.2388	22.2	Pk	20.1	1	80	-36.7	40.00
0.2729	22.7	Pk	20.1	1	80	-36.2	38.88
0.3070	19.4	Pk	20.1	1	80	-39.5	37.86
0.3411	9.4	Pk	20.1	1	80	-49.5	36.95

Table 2b Radiated emissions of the EUT, in the frequency range 0.009 – 30 MHz

The results of the radiated emission tests in the frequency range 0.009 – 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 for Peak levels are depicted in Table 2b.

Notes:

1. Values in Table 2b are Peak detector levels of the PD131.
2. Calculated measurement results are obtained by using the 80dB/decade factor (antenna factor and cable loss is included). i.e at 0.03413 MHz: $85.6\text{dBuV} + 20.4\text{dB} + 1\text{dB} - 80\text{dB} = 27.0\text{dBuV/m}$.
3. A resolution bandwidth of 200Hz and 9 kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 2b are more than 20 dB below the applicable limit
5. The loop antenna was varied in horizontal and vertical orientations and also around its axis. The reported value is the worst case found at the reported frequency.
6. The EUT was tested in horizontal orientation being the normal use orientation.
7. Measurement uncertainty is $\pm 5.0\text{dB}$

Test engineer

Signature :



Name : R. van der Meer
 Date : July 28, 2010

3.5 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD134.

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)	Limits
						dB(μ V)/m @300m	
3 meters			dB	dB	dB	dB(μ V)/m @300m	dB(μ V)/m @300m
0.03401 (fundamental)	85.9	Av	20.9	1	80	27.8	37.0
0.068	45.8	Av	20.9	1	80	-12.3	31.0
0.102	41.9	Av	20.9	1	80	16.2	27.0
0.136	41.2	Av	20.9	1	80	-16.9	24.90
0.170	36.6	Av	20.9	1	80	-21.5	22.96
0.204	27.4	Av	20.9	1	80	-30.7	21.38
0.238	19.0	Av	20.9	1	80	-39.1	20.00
0.272	15.7	Av	20.9	1	80	-42.4	18.88
0.306	17.6	Av	20.9	1	80	-40.5	17.86
0.340	8.3	Av	20.9	1	80	-49.8	16.95
1.27	28.3	Qp	19.7	1	40	9.0	29.5
1.39	33.6	Qp	19.7	1	40	14.3	29.5
1.60	33.0	Qp	19.7	1	40	13.7	29.5
6.07	24.3	Qp	19.5	1	40	4.8	29.5

Table 2c Radiated emissions of the EUT, in the frequency range 0.009 – 30 MHz

The results of the radiated emission tests in the frequency range 0.009 – 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 are depicted in Table 2c.

Notes:

1. Values in Table 2c are of the PD134.
2. Calculated measurement results are obtained by using the 80dB/decade factor (antenna factor and cable loss is included). i.e at 0.03401 MHz: $85.9\text{dB}_{\mu}\text{V} + 20.9\text{dB} + 1\text{dB} - 80\text{dB} = 27.8\text{dB}_{\mu}\text{V/m}$.
3. A resolution bandwidth of 200Hz and 9 kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 2c are more than 20 dB below the applicable limit
5. 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 horizontal orientation being the normal use orientation.
7. Measurement uncertainty is $\pm 5.0\text{dB}$

Test engineer

Signature :



Name : R. van der Meer
 Date : August 18, 2010

3.6 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) for the PD134, Peak values.

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)	Limits
						dB(μ V)/m @300m	
3 meters			dB	dB	dB	dB(μ V)/m @300m	dB(μ V)/m @300m
0.03401 (fundamental)	85.9	Pk	20.9	1	80	27.8	57
0.068	45.9	Pk	20.9	1	80	-12.2	51.0
0.102	46.1	Pk	20.9	1	80	-12.0	47.0
0.136	41.5	Pk	20.9	1	80	-16.6	44.90
0.170	36.7	Pk	20.9	1	80	-21.4	42.96
0.204	27.9	Pk	20.9	1	80	-30.2	41.38
0.238	20.8	Pk	20.9	1	80	-37.3	40.00
0.272	16.8	Pk	20.9	1	80	-41.3	38.88
0.306	18.7	Pk	20.9	1	80	-39.4	37.86
0.340	12.2	Pk	20.9	1	80	-45.9	36.95

Table 2d Radiated emissions of the EUT, in the frequency range 0.009 – 30 MHz

The results of the radiated emission tests in the frequency range 0.009 – 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 are depicted in Table 2d.

Notes:

1. Values in Table 2d are of the PD134.
2. Calculated measurement results are obtained by using the 80dB/decade factor (antenna factor and cable loss is included). i.e at 0.03413 MHz: $85.6\text{dBuV} + 20.4\text{dB} + 1\text{dB} - 80\text{dB} = 27.0\text{dBuV/m}$.
3. A resolution bandwidth of 200Hz and 9 kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 2d are more than 20 dB below the applicable limit
5. 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 horizontal orientation being the normal use orientation.
7. Measurement uncertainty is $\pm 5.0\text{dB}$.

Test engineer

Signature :



Name : R. van der Meer
 Date : August 18, 2010

4 Conducted emission data.

4.1 Conducted emission data of the EUT (PD131).

Frequency (MHz)	Measurement results dB(µV) Neutral		Measurement results dB(µV) Line 1		Limits dB(µV)		Result
	QP	AV	QP	AV	QP	AV	
0.15	24.8	-	26.8	-	66	56	PASS
3.26	16.0	-	17.9	-	56	46	PASS
4.19	<10	-	11.6	-	56	46	PASS
5.14	<10	-	10.2	-	60	50	PASS
12.095	15.1	-	17.9	-	60	50	PASS
14.445	12.0	-	12.1	-	60	50	PASS
14.975	14.0	-	14.8	-	60	50	PASS
16.570	19.2	-	18.1	-	60	50	PASS
17.205	<15	-	15.6	-	60	50	PASS
18.905	27.8	-	27.1	-	60	50	PASS
19.435	28.3	-	28.4	-	60	50	PASS
20.000	34.5	-	34.6	-	60	50	PASS
21.030	27.0	-	27.0	-	60	50	PASS
21.665	<20	-	20.8	-	60	50	PASS
22.940	<14	-	14.6	-	60	50	PASS
24.110	10.9	-	12.1	-	60	50	PASS
26.130	<9	-	9.4	-	60	50	PASS
26.750	<8	-	8.1	-	60	50	PASS
28.465	<7	-	7.5	-	60	50	PASS
28.990	6	-	6.3	-	60	50	PASS

Table 3a Conducted emission measurements of the PD131

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 EUT, are depicted in table 3a. Maximum values recorded.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in Table 3a are more than 20 dB below the applicable limit.
2. Values obtained with Quasi Peak detector were already within Average limits, therefor average values not measured.
3. The test data shown above is of the worst case EUT.
4. The resolution bandwidth used was 9 kHz.
5. Measurement uncertainty is ± 3.5 dB

Test engineer

Signature :



Name : R. van der Meer

Date : July 30, 2010

4.2 Conducted emission data of the EUT (PD134).

Supply Voltage (V)	Frequency (MHz)	Measurement results dB(µV) Neutral		Measurement results dB(µV) Line 1		Limits dB(µV)		Result
		QP	AV	QP	AV	QP	AV	
12	0.150	40.8	-	40.7	-	66	56	PASS
	0.825	40.0	-	39.5	-	56	46	PASS
	1.775	22.6	-	<20	-	56	46	PASS
	3.175	22.1	-	15.3	-	56	46	PASS
	13.700	24.1	-	25.5	-	60	50	PASS
	14.550	25.2	-	26.4	-	60	50	PASS
	14.975	25.9	-	27.1	-	60	50	PASS
	15.400	25.0	-	25.5	-	60	50	PASS
	15.825	22.4	-	22.7	-	60	50	PASS
	16.675	19.4	-	19.6	-	60	50	PASS
	20.000	23.6	-	21.7	-	60	50	PASS
	0.150	38.3	-	37.3	-	60	50	PASS
18	0.775	<20	-	39.0	-	56	46	PASS
	0.825	38.7	-	<20	-	56	46	PASS
	3.275	11.9	-	17.0	-	56	46	PASS
	13.700	23.6	-	<20	-	60	50	PASS
	14.550	26.0	-	26.6	-	60	50	PASS
	14.975	28.3	-	29.0	-	60	50	PASS
	15.400	26.9	-	27.3	-	60	50	PASS
	15.825	23.1	-	23.4	-	60	50	PASS
	16.675	20.1	-	20.6	-	60	50	PASS
	20.000	23.8	-	21.7	-	60	50	PASS
	0.150	37.5	-	37.0	-	60	50	PASS
	0.800	38.9	-	38.7	-	56	46	PASS
24	3.175	12.1	-	17.2	-	56	46	PASS
	14.550	27.2	-	27.8	-	60	50	PASS
	14.975	28.9	-	29.7	-	60	50	PASS
	15.400	27.2	-	27.4	-	60	50	PASS
	15.825	22.8	-	23.3	-	60	50	PASS
	16.675	19.9	-	20.2	-	60	50	PASS
	20.000	23.9	-	21.7	-	60	50	PASS
	20.075	17.9	-	16.4	-	60	50	PASS
	20.500	15.5	-	<15	-	60	50	PASS

Table 3b 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 AC/DC power supply which was connected to the EUT, are depicted in table 3b. Maximum values recorded.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in Table 3b are more than 20 dB below the applicable limit.
2. Values obtained with Quasi Peak detector were already within Average limits, therefor average values not measured.
3. The test data shown above is of the worst case EUT.
4. Measurement uncertainty is $\pm 3.5\text{dB}$

Test engineer

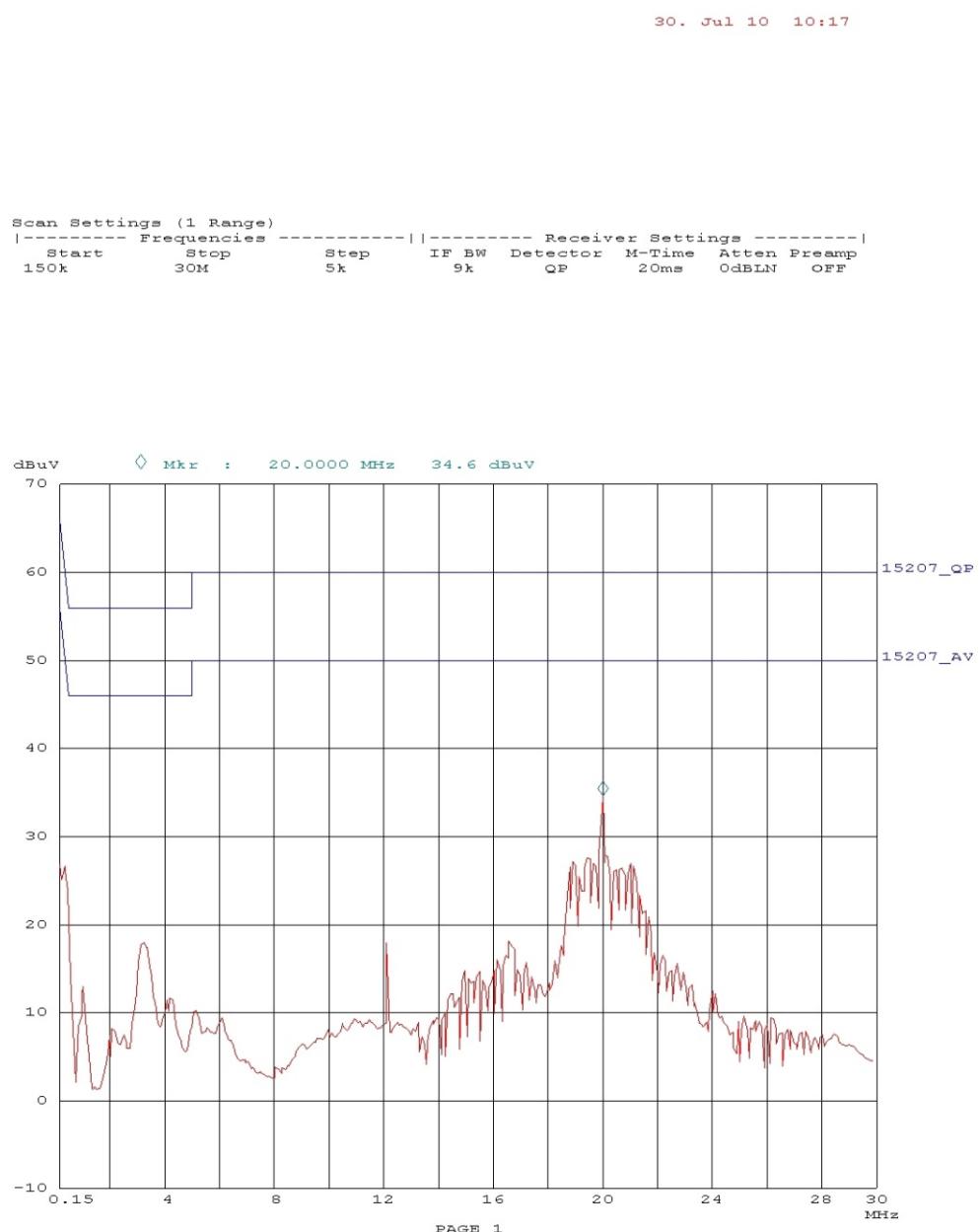
Signature :



Name : R. van der Meer
 Date : August 02, 2010

5 Plots of measurement data

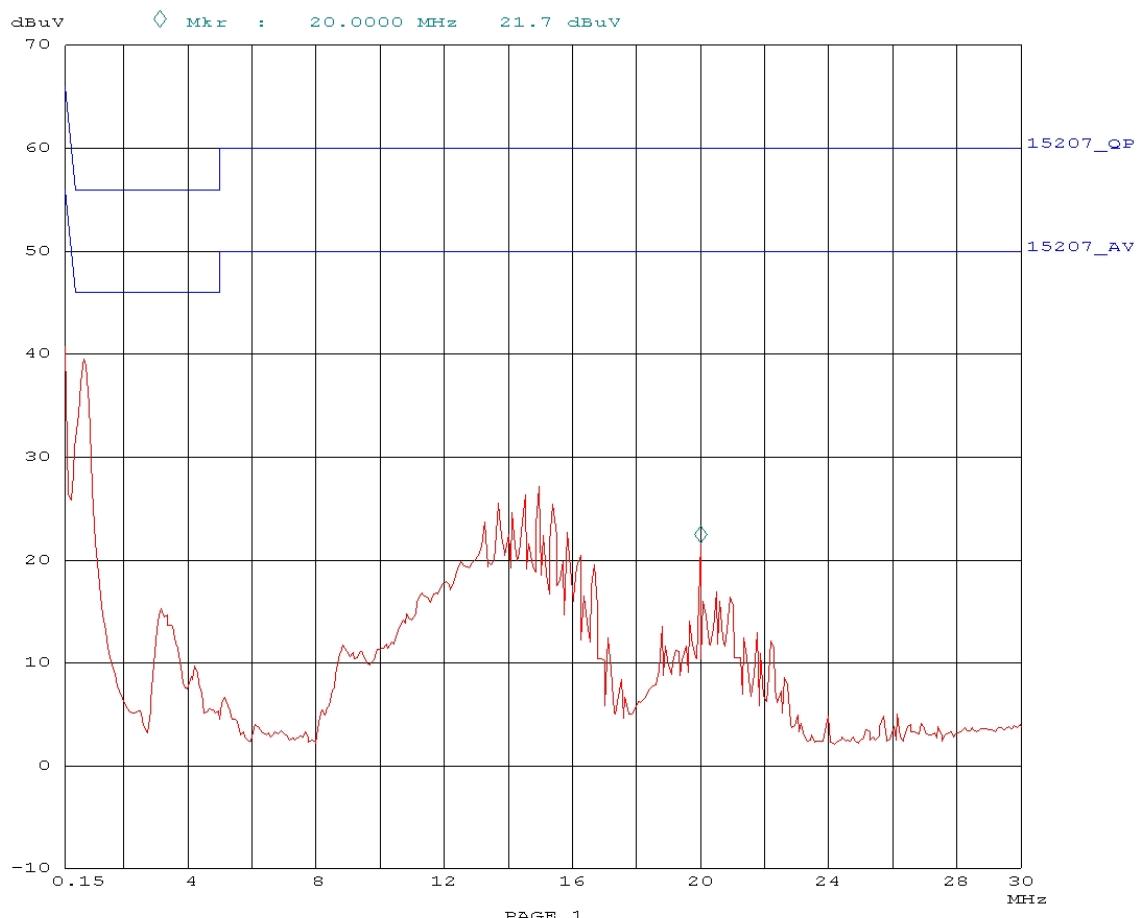
5.1 Conducted emissions



Plot 1: Conducted emissions of the PD131 (L1 shown)

30. Jul 10 14:10

Scan Settings (1 Range)
 Frequencies | Receiver Settings |
 Start Stop Step IF BW Detector M-Time Atten Preamp
 150k 30M 25k 9k QP 20ms OdbLN OFF

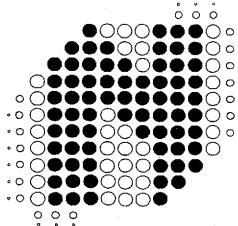


Plot 2: Conducted emissions of the PD134 (L1 at 12V shown)

6 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
12513 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	01/2010	01/2011
99045 Power supply		Delta	E030-3	04/2010	04/2011
99069	Coax 5m RG213 OATS	NMi Certin B.V.	CABLE 5M OATS	11/2009 1	1/2010
99070	Coax 15m RG213 OATS	NMi Certin B.V.	CABLE 15M OATS	11/2009 1	1/2010
99071	Coax OATS ground	NMi Certin B.V.	CABLE OATS	11/2009 1	1/2010
99161 V	Barriac 120Vac	RFT	LTS001	NA	NA
99107	Controller OATS	Heinrich Deisel	4630-100	NA NA	
99547	Temperature-Humidymeter	Europe supplies	WS-7082	10/2009 10/2010	0
99580	OATS	Comtest	FCC listed: 90828	08/2008 08/20	11
99608	Controller (OATS)	EMCS	DOC202	NA NA	
99609	Antenna mast	EMCS	AP-4702C	NA NA	
99699	Measuring receiver	R&S	ESCI	12/2009	12/2010

NA= Not Applicable



Appendix-1

PD130 / TD136 Family –Description

There are more than:-

120 members of the PD130 / TD136 Family

- b) All the members of the PD130 / TD136 Family use the same PCB - PCB No. 305AW0004 Rev 03
- c) Different languages on the labels
- d) Different connector pin assignment
- e) Re-Badged for major OEMs (Labels with OEM's Logo and Model No.)
- f) There are three supply voltage versions:- 120 Vac, 230Vac and Low voltage version 12 to 24V ac or dc

Model No.	Supply Voltage
PD131	120 Vac
PD132	230 Vac
PD134	12 to 24V ac or dc
TD134	12 to 24V ac or dc
TD136	230 Vac

Power Supplies

Refer to the Block diagrams below

PD131 Models

Block A is populated (120 V transformer used)

Block B is not populated

PD132 and TD136 Models

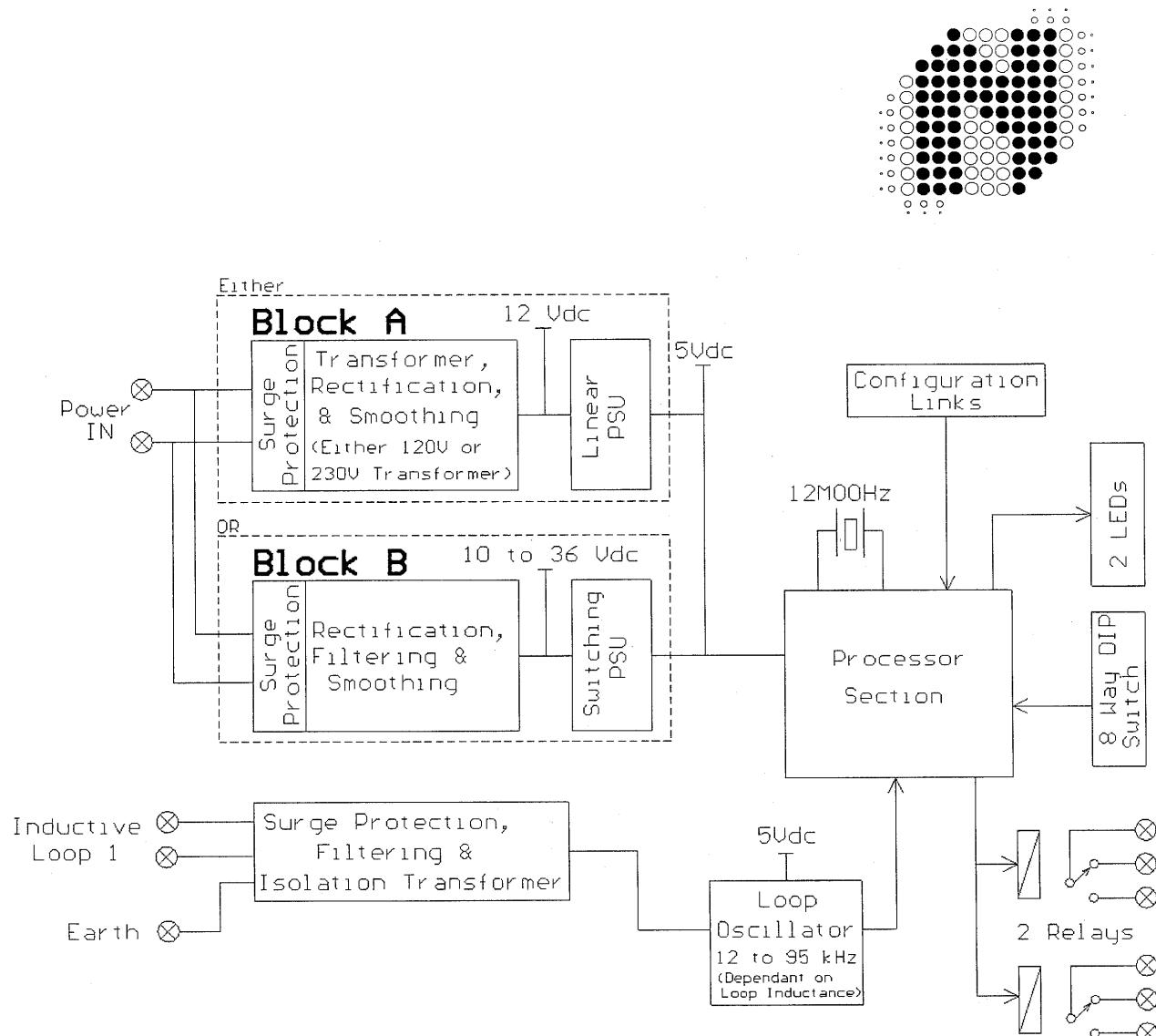
Block A is populated (230 V transformer used)

Block B is not populated

PD134 and TD134 Models

Block A is not populated

Block B is populated



PD130/TD136 Family Block Diagram

Signed by:

Full name: Barry Kemp

Function: Managing Director
 Components Division
 Nortech International (Pty) Ltd.