

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

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**EMISSION MEASUREMENTS IN ACCORDANCE WITH FCC PART 15 AND ANSI C63.4-1992 ON A DECODING RECEIVER, INTENDED FOR USE IN AN INDUCTIVE LAPTIMING SYSTEM, BRAND AMB PRODUCTS, TYPE TRANX DECODER.**

**FCC ID: NXYTRANXREC**

FCC report layout endorsed by the FCC by Public Notice of March 11, 1992.

Accredited by	:STERLAB accreditation number L029 D.A.R., TTI-P-G.127/96-00
Competent body	:Article 10-2 EMC Directive
Notified body nr. 0122	:Article 10-5 EMC Directive Low Voltage Directive TTE Directive
Certification body	:Electrical Products Safety regulation, Hong Kong
Designated laboratory	:TTE Directive
Notified test service	:Automotive Directive
FCC listed	:31040/SIT
VCCI registered	:R-592 C-607

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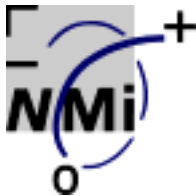
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Description of EUT: Decoding receiver  
 Manufacturer: AMB i.t. B.V.  
 Brand mark: AMB products  
 Type: TranX decoder  
 FCC ID: NXYTRANXREC

## MEASUREMENT/TECHNICAL REPORT

**AMB i.t. B.V.**

**FCC ID: NXYTRANXREC**

Date: July 23, 1999

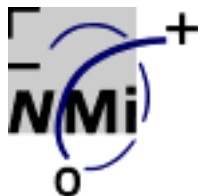
This report concerns: <del>Verification</del> / <del>Notification</del> / Certification	
Equipment type: unintentional radiator, receiver	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii) No	
If yes defer until: not applicable	
Transition Rules Request per 15.37: No	
Report prepared by:	Name : P.A.J.M. Robben, B.Sc.E.E. Company name : NMI Certin B.V. Address : Smidshornerweg 18 Telephone number : + 31 594 505005 Telefax number : + 31 594 504804 Mailing address : P.O. Box 15 City/Place/Postal cd. : 9822 ZG NIEKERK Country : The Netherlands Email : et-desk@nmi.nl

The data taken for this test and report herein was done in accordance with FCC Part 15 and ANSI C63.4-1992 measurements. NMI Certin B.V., location 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 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: July 23, 1999

Signature:

J.S. Sikkema, B.Sc.E.E.  
 Department EMC and Telecommunication

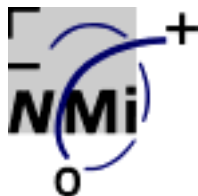


Description of EUT: Decoding receiver  
Manufacturer: AMB i.t. B.V.  
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## **Table of contents**

1	General Information.....	4
1.1	Product description.....	4
1.2	Related Submittal(s)/grant(s).....	4
1.3	Test Methodology.....	4
1.4	Test facility.....	4
1.5	List of measurement equipment.....	4
1.6	Bandwidth and antenna factors.....	5
2	Product labelling.....	5
3	System test configuration.....	6
3.1	Justification.....	6
3.2	Equipment modifications.....	6
3.3	Description of tested EUT.....	7
3.3.1	TranX decoder.....	7
4	Conducted and radiated measurement photos.....	8
5	Conducted emission data.....	13
6	Radiated emission data.....	14
6.1	Radiated field strength measurement (30 MHz - 1000 MHz, E-field).....	14
7	Photos of tested EUT.....	15



Description of EUT: Decoding receiver  
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## 1 General Information.

### 1.1 Product description.

The product tested is part of an inductive laptiming system. This inductive laptiming system includes a decoding receiver having an operating frequency of 3.58 MHz, brand AMB products, type AMB TranX decoder.

### 1.2 Related Submittal(s)/grant(s).

The related similar submittals are: FCC ID: NXYTRANKART (transponder type TranX 120) and NXYTRANX (transponder types TranX 160 and TranX 260).

### 1.3 Test Methodology.

The Test methodology of ANSI C63.4-1992 has been applied to provide adequate measuring data.

Complete data of the tested model has been recorded.

According to FCC Part 15, § 101 the EUT shall be classified as an unintentional radiator (receiver).

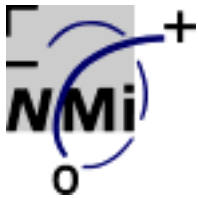
### 1.4 Test facility.

The FCC has per Public Notice declared that the measurement facilities located at the NMI Certin B.V. testsite Niekerk, Smidshornerweg 18, The Netherlands, have been reviewed and found to be in compliance with the requirements of section 2.948 (previously section 15.38) of the FCC rules per August 4, 1994.

The description of the measuring facilities have been filed with reference 31040/SIT, 1300B3 at the FCC's Offices.

### 1.5 List of measurement equipment.

<b>NMI number</b>	<b>Description</b>	<b>Marketing name</b>	<b>Type</b>
14277	Antennamast 4m	Heinrich Deisel	HD100
14278	Controller OATS	Heinrich Deisel	MA240
14340	Biconilog antenna 20MHz - 1100MHz	EMCO	3143
12473	Log-per antenna 200MHz - 1000MHz	Eaton	96005
12471	Biconical antenna 20MHz - 200MHz	Eaton	94455-1
12636	Plastic measurement room	Polyforce	-
13886	Open Area Test Site	Comtest	-
99108	Turntable OATS	Heinrich Deisel	HD050
15667	Measuring receiver 9kHz - 2750MHz	Rohde & Schwarz	ESCS30
12507	Artificial mains network 3-phase	Rohde & Schwarz	ESH2-Z5
13313	Impuls limiter	Rohde & Schwarz	ESH3Z2.357...
99115	Voltage probe	Schwarzbeck	TK9416



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## 1.6 Bandwidth and antenna factors.

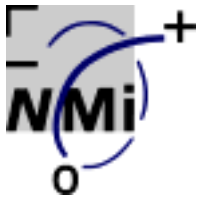
The utilized measuring equipment is stated in § 1.5. The bandwidth of the receiver switches automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. Also the antennafactors are included in the testreceiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate correction factor for the cable loss. The total correction is automatically added to the measured value.

## 2 Product labelling.

The following text shall be attached to the EUT, by means of a label, or -in case the enclosure is too small- on a prominent location in the users manual.

**This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.**

The dimensions of the label, the location of the label and the type of font can be found in the FCC regulation book CFR 47, parts 0 to 19, revised as per October 1, 1997.



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### **3 System test configuration.**

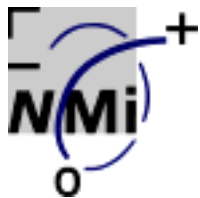
#### **3.1 Justification.**

The measurements on the TranX decoder were carried out in combination with the TranX 260 transponder in order to simulate a real-life application. The TranX decoder was constantly active during all measurements. During radiated emission measurements the turntable was rotated in order to find the maximum radiated emission on each frequency.

In accordance with § 11.2.4. of ANSI C63.4-1992 the placing and manipulation of interface cables has been carried out.

#### **3.2 Equipment modifications.**

Not applicable.



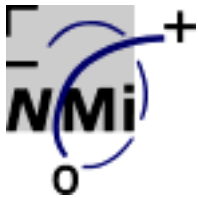
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### 3.3 Description of tested EUT.

#### 3.3.1 TranX decoder

Unit title	:	AMB TranX Decoder
Model number	:	-
Part number	:	-
FCC ID number	:	NXYTRANXREC
Frequency range	:	3.58 MHz
Description/details	:	see section 3.1 of this report and the exhibits to the application
Clock Oscillator(s)	:	28.720 MHz, 20 MHz
Cabinet & Screening	:	Metal enclosure (Decoder).
Interface Cable(s)	:	Shielded antenna cable, headphone, +12 VDC, RS-232 and Auxiliary
Method of screening	:	Not applicable
Method of grounding	:	Not applicable
Operating configuration	:	Decoding received signal from transponder type TranX 260
Applicant's representative	:	F. Hin
Company	:	AMB i.t. B.V.
Address	:	Herenweg 29A
Postal code and city	:	2105 MB HEEMSTEDE
Country	:	The Netherlands
Telephone number	:	+31 (0)23 5291893
Telefax number	:	+31 (0)23 5290156



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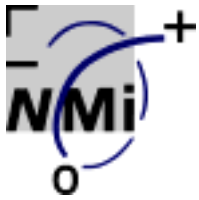
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## 4 Conducted and radiated measurement photos.

On pages 9 to 12 the conducted and radiated emission measurements photos are given:

- Page 9: TranX decoder (radiated emission, front)
- Page 10: TranX decoder (radiated emission, back)
- Page 11: TranX decoder (conducted emission, front)
- Page 12: TranX decoder (conducted emission, back)

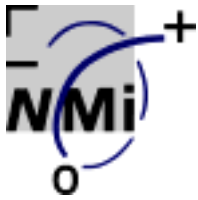




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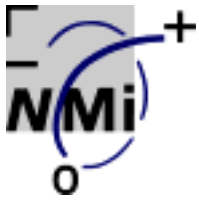




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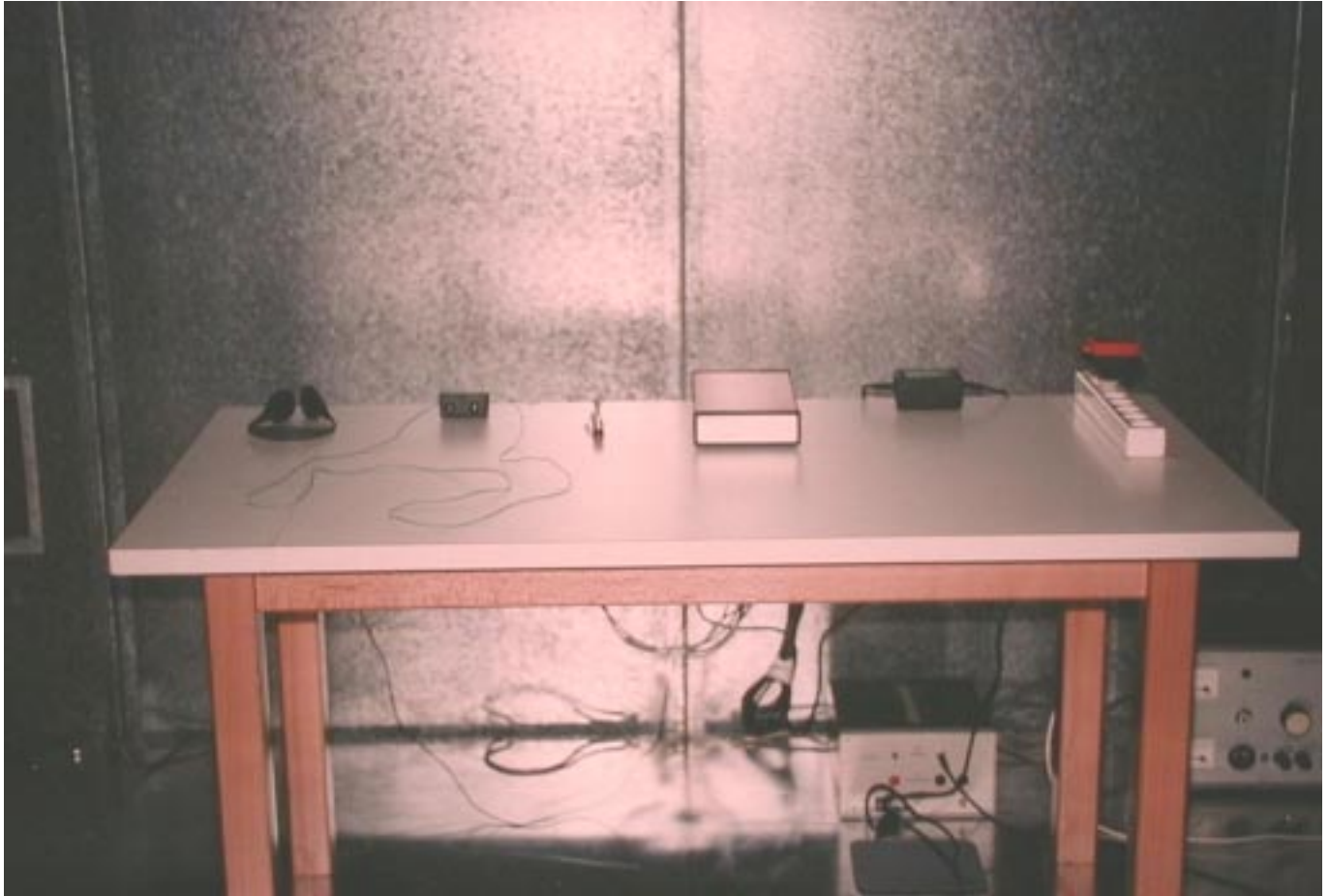
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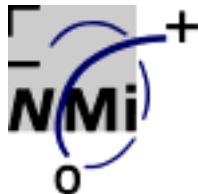




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## 5 Conducted emission data.

Frequency (MHz)	Measurement results dB( $\mu$ V) Neutral	Measurement results dB( $\mu$ V) Line 1	Limits dB( $\mu$ V) section 207	Result
	QP	QP	QP	
0.45 - 30.0	< 20.0	< 20.0	48.0	PASS

QP = Quasi-peak

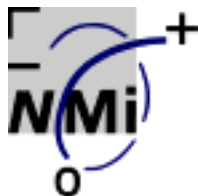
Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 1

The results of the disturbance voltage level measurements at the AC mains connection terminal **LINE and NEUTRAL** of the receiver/decoder, brand AMB products, type TranX decoder, carried out in accordance with FCC Part 15, section 207 and ANSI C63.4-1992, are depicted in table 1. Measurement results are quasi-peak results.

Test engineer : J.G. Mozes

Tester signature : Date: July 23, 1999



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## 6 Radiated emission data.

### 6.1 Radiated field strength measurement (30 MHz - 1000 MHz, E-field).

Frequency (MHz)	Measurement results dB( $\mu$ V)/m 3 metres QP		Limits dB( $\mu$ V)/m @ 3 metres QP section 209
	Vertical	Horizontal	
30.0 - 88.0	< 20.0	< 20.0	40,0
100.0	32.9	< 20.0	43.5
140.0	30.4	29.7	43,5
180.0	24.9	23.4	43,5
216.0 - 425.0	< 20.0	< 20.0	46.0
425.0 - 630.0	< 25.0	< 25.0	46.0
630.0 - 960.0	< 30.0	< 30.0	46.0
960.0 - 1000.0	< 31.0	< 31.0	54.0

QP = Quasi-peak

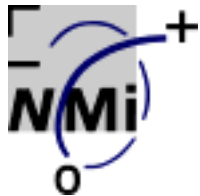
Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 2

Results of the radiated field strength (E-field) measurements on the receiver/decoder, brand AMB products, type TranX decoder, carried out in accordance with FCC Part 15, section 209 and ANSI C63.4-1992 in the configuration and operation mode(s) as stated in this testreport, are depicted in table 2. Measurement results are quasi-peak results.

Test engineer : J.G. Mozes

Tester signature : Date: July 23, 1999



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## 7 Photos of tested EUT.

Not applicable, see § 4 of this report.