

Nederlands Meetinstituut

FCC ID: CGD MIMI FSK ISO

Testing, certification, consultancy and research in  
electronic and electric appliances, systems,  
installations and (radio) frequency technology.

Accredited by STERLAB  
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Accredited by FCC  
Accreditationnumber 31040/SIT 1300B3  
(March 3, 1993)

**EMISSION MEASUREMENTS IN  
ACCORDANCE WITH FCC PART 15 AND  
ANSI C63.4-1992 ON A  
CATTLE CODE IDENTIFICATION  
SYSTEM, BRAND NEDAP,  
TYPE MIMI FSK ISO FDX-B WITH  
ID CONTROLLER.**

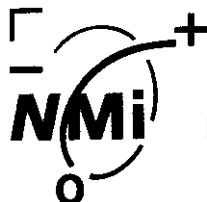
FCC report layout endorsed by the FCC by Public  
Notice of March 11, 1992.

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Nederlands Meetinstituut

FCC ID: CGD MIMI FSK ISO

## MEASUREMENT/TECHNICAL REPORT

### NEDAP N.V.

### FCC ID: CGD MIMI FSK ISO

February 20th, 1998

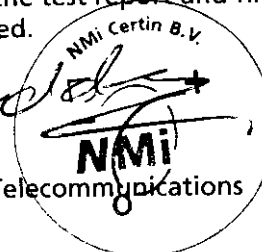
This report concerns (check one):		Original grant	<del>Class II permissive change</del>
Equipment type: Cattle code identification system			
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?		yes	no
If yes defer until: not applicable			
Nedap N.V. agrees to notify the Commission by letter of the intended date of announcement of the product so that the grant can be issued on that date			
Transition Rules Request per 15.37		yes	no
If no, assumed Part 15, Subpart B for unintentional radiators - the new 47 CFR (10-1-92 Edition) provision.			
Report prepared by:	Name	:	P.A.J.M. Robben, B.Sc.
	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

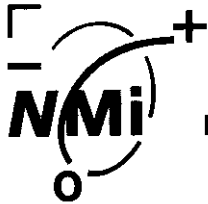
The data taken for this test and report herein was done in accordance with FCC Part 15 and ANSI C63.4-1992 measurements. NMI Certin B.V., location Niekerk, The Netherlands, certifies that the data is accurate and contains a true representation of the emission-profile of the Equipment Under Test (EUT) 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: February 20th, 1998

Signature:

R. Middelkoop, M.Sc.  
Department of EMC and Telecommunications

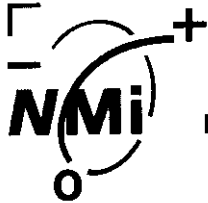




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## **1 General Information.**

### **1.1 Product description.**

#### **1.1.1 Introduction.**

The MIMI FSK ISO FDX-B system has been developed as a cattle code identification system intended for use on farms. A miniature transponder is attached to the cattle. The MIMI FSK ISO FDX-B with ID controller is used to read a code which is stored in the transponder. The cattle can thus be identified by means of an individual code while walking past the antennas.

#### **1.1.2 Choice of frequency.**

The operating frequency of the MIMI FSK ISO FDX-B system is 134.2 kHz (continuous carrier).

#### **1.1.3 Operating principles.**

The MIMI FSK ISO FDX-B system is a DC powered system with integrated antenna for Nedap "FDX-B" transponders, designed for easy animal identification in the field. The MIMI FSK ISO FDX-B generates an RF-field at a frequency of 134.2 kHz (continuous carrier) which activates the electronics in the miniature transponder. The activated miniature transponder then sends an identification code to the MIMI FSK ISO FDX-B by modulating the RF-field which is generated by the MIMI FSK ISO FDX-B. The modulation of the 134.2 kHz RF-field can be detected and then the code is demodulated. The code received can be downloaded into a personal computer by means of a serial connection cable. A control box, brand Nedap, type ID Controller was connected to the MIMI FSK ISO FDX-B during all measurements.

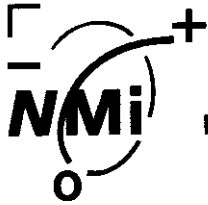
### **1.2 Related Submittal(s)/grant(s).**

Not applicable.

### **1.3 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, has 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.



#### 1.4 List of measurement equipment.

NMI number	Description	Marketing name	Type
01-8809	Antennamast 1-4 metres	Poelstra	-
01-8801	Biconical 20-200 MHz	EATON	94455-1
01-8808	Antennamast	EMCO	TR3
01-8803	Log-per 200-1000 MHz	EATON	96005
01-8901	Active loop antenna 30 cm.	EMCO	6507
02-8803	Meas. receiver 20-1000 MHz	R&S	ESVP
02-8803	Meas. receiver 0.01-30 MHz	R&S	ESH2
03-8804	Impulslimiter	R&S	ESH3-Z2
03-8810	LISN FCC	EMCO	3725/2
06-8802	Meas. cable 10 metres	-	-
08-8803	Regulating transformer	RFT	LSS020
09-8802	Controller opt. EZM	R&S	PCA-Z1
15-8801	OATS	WOLFF	-
16-8801	Shielded room	EUROSHIELD	6x4x2.5

#### 1.5 Bandwidth and antenna factors

The utilized test equipment is stated in § 1.4. The bandwidth of the receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antennafactors 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.

## **2 System test configuration.**

### **2.1 Justification.**

In accordance with § 11.2.4. of ANSI C63.4-1992 the placing and manipulation of the various connection cables has been carried out. In photographs 1 and 2 (page 9) the measuring set-ups for the disturbance voltage measurements are given. In photographs 3 and 4 (page 10) the measuring set-up is given for the radiated field strength measurements. The system includes of the following equipment:

Transmitter/receiver:	Brand Nedap, type MIMI FSK ISO FDX-B (134.2 kHz)
Control box:	Brand Nedap, type ID Controller
Power supply:	Brand Nedap, type 9839208

### **2.2 EUT mode of operation.**

Radiated and conducted emission measurements were carried out when the system was active and was generating a continuous transmitting signal. A RS232 data cable was connected to the system and a communications link was established with a personal computer

### **2.3 Special accessories.**

Not applicable.

### **2.4 Equipment modifications.**

Not applicable.

### **2.5 Marking and labeling.**

The layout of the model label with the FCC ID can be found in appendix C of this testreport.

## 2.6 Configuration of the tested system.

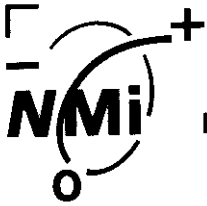
Unit title	:	MIMI FSK ISO FDX-B
Model number	:	-
Part number	:	9867589
FCC ID number	:	CGD MIMI FSK ISO
Frequency range	:	134.2 kHz (continuous carrier)
Description/details	:	see § 1.1 of this report
Power supply	:	brand Nedap, type 9839208, 100-120 Volts AC 3A 50-60 Hz, +27 Volts DC
Clock Oscillator(s)	:	9.83 MHz, 3.84 MHz
Cabinet & Screening	:	Plastic/Metal
Interface Cable(s)	:	Shielded data cable, unshielded DC power supply connection cable, coaxial cable between MIMI FSK ISO FDX-B and ID controller
Method of screening	:	Not applicable
Method of grounding	:	Not applicable
Operating configuration	:	Transmitter/receiver: MIMI FSK ISO FDX-B Control box: ID Controller
Applicant's representative	:	J.A.M. Hulshof
Company	:	N.V. Nedap
Address	:	Oude Winterwijkseweg 7
Postal code and city	:	7141 DE Groenlo
Country	:	The Netherlands
Telephone number	:	+31 (0)544 471111
Telefax number	:	+31 (0)544 465232

### **3 Conducted and radiated measurement photographs.**

On pages 9 and 10 the conducted and radiated measurements photographs are given:

- Page 9      Top photograph:      Disturbance voltage measurements: front  
                 Bottom photograph:      Disturbance voltage measurements: back
- Page 10    Top photograph:      Radiated field strength measurements: front  
                 Bottom photograph:      Radiated field strength measurements: back





### 4 Conducted emission data.

#### 4.1 Conducted emission data.

Frequency (MHz)	Measurement results (QP)		Limits (QP) (dBµV)
	Line (dBµV)	Neutral (dBµV)	
0.47	31.5	32.2	48.0
0.50	30.1	30.3	48.0
0.53	34.3	34.5	48.0
0.59	33.6	33.6	48.0
0.62	26.6	26.8	48.0
0.65	32.0	31.7	48.0
0.70	27.3	26.4	48.0
0.70 - 30.00	< 25.0	< 25.0	48.0

QP = quasi-peak values

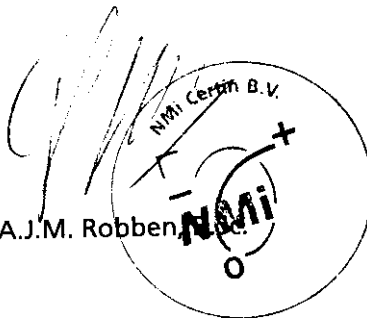
Levels of frequencies not stated in this table have been found below 25 dBµV

Table 1

Results of the disturbance voltage measurements, carried out in accordance with FCC Part 15, § 207 (Edition 10-1-1993), on the mains connection terminals of a power supply, brand Nedap, type 9839208, connected to a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with Control box, brand Nedap, type ID Controller.

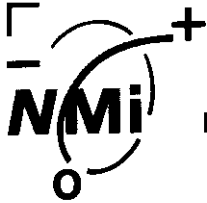
Test engineer:

Tester signature :



Date: February 20th, 1998

Typed/Printed name : P.A.J.M. Robben



## 5 Radiated emission data.

### 5.1 Radiated field strength measurements (frequency range of 30 MHz to 1000 MHz, E-Field).

Frequency (MHz)	Measurement results (QP)		Limits (QP) FCC Part 15 § 209 (dBµV/m)
	Vertical *) (dBµV/m)	Horizontal *) (dBµV/m)	
42.02	34.3	27.8	40.0
157.93	28.4	24.3	43.5
207.17	30.1	28.0	43.5
209.97	30.4	27.9	43.5
226.78	27.1	33.0	46.0
235.17	21.9	26.7	46.0
244.77	26.3	30.1	46.0
246.37	25.9	34.0	46.0
284.16	28.0	37.2	46.0
368.05	26.3	26.0	46.0
368.05 - 650.00	< 25.0	< 25.0	46.0
650.00 - 960.00	< 30.0	< 30.0	46.0
994.73 - 1000.00	< 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

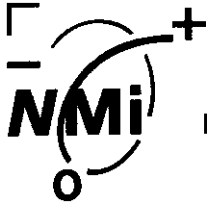
Results of the radiated field strength (E-field) measurements, carried out in accordance with FCC Part 15, § 209 (Edition 10-1-93) and ANSI C63.4-1992, on a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with Control box, brand Nedap, type ID Controller, including a power supply, brand Nedap, type 9839208.

Test engineer:

Tester signature :

Date: February 20th, 1998

Typed/Printed name : P.A.J.M. Robben, B.Sc.



**5.2 Radiated field strength measurements (frequency range of 9 kHz to 30 MHz, H-Field).**

Frequency	Measurement results (QP) 3m	Measurement results (QP) 10m	Antenna factor	Cable loss	Measurement results (QP) calculated	Limits FCC Part 15 § 209
(MHz)	dB $\mu$ V	dB $\mu$ V	dB	dB	(dB $\mu$ V/m)	(dB $\mu$ V/m)
0.009 - 0.1342	<30.0	< 30.0	17	1	<10.0	48.5 - 25.0 (300 m.)
0.1342	89.1	48.6	17	1	<10.0	25.0 (300 m.)
0.2684	36.4	36.0	17	1	<10.0	19.0 (300 m.)
0.4026	32.6	32.4	17	1	<10.0	15.5 (300 m.)
0.4026 - 0.490	<30.0	< 30.0	17	1	<10.0	15.5 - 13.8 (300 m.)
0.490 - 1.705	<30.0	< 30.0	17	1	<20.0	33.8 - 22.9 (30 m.)
1.705 - 30.000	<30.0	< 30.0	17	1	<20.0	29.5 (30 m.)

QP = Quasi-peak

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

Table 3

Results of the radiated field strength (H-field) measurements, carried out in accordance with FCC Part 15, § 209 (Edition 10-1-93) and ANSI C63.4-1992, on a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with Control box, brand Nedap, type ID Controller, including a power supply, brand Nedap, type 9839208.

**Notes:** -Frequency range: 9-90 kHz Average detector used during measurements  
 110-490 kHz Average detector used during measurements

-The radiated field strengths were measured at a distance of 3 and 10 metres. The method for calculating the field strengths at other distances can be found in appendix A.

-A plot of the carrier bandwidth can be found in appendix B.

Test engineer:

Tester signature :

Date: February 20th, 1998

Typed/Printed name : P.A.J.M. Robben,

## **6 Photos of tested EUT.**

Not applicable, see § 3 of this report

**APPENDIX A**  
Method of field strength calculations

General formula:

$$(d_1/d_2)^n = H_{d2}/H_{d1}$$
$$n \log(d_1/d_2) = \log(H_{d2}/H_{d1})$$

Measured field strength at 134.2 kHz:

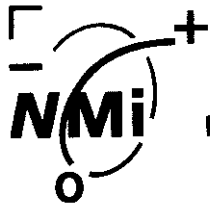
$$H_{3m} = 89.1 \text{ dB}\mu\text{V/m} = 28510.2 \mu\text{V/m}$$

$$H_{10m} = 48.6 \text{ dB}\mu\text{V/m} = 269.2 \mu\text{V/m}$$

$$n = 3.87$$

Calculated field strength at 134.2 kHz (10m --> 300m):

$$H_{300m} = 517.1 \cdot 10^{-6} \mu\text{V/m} = -65.7 \text{ dB}\mu\text{V/m}$$



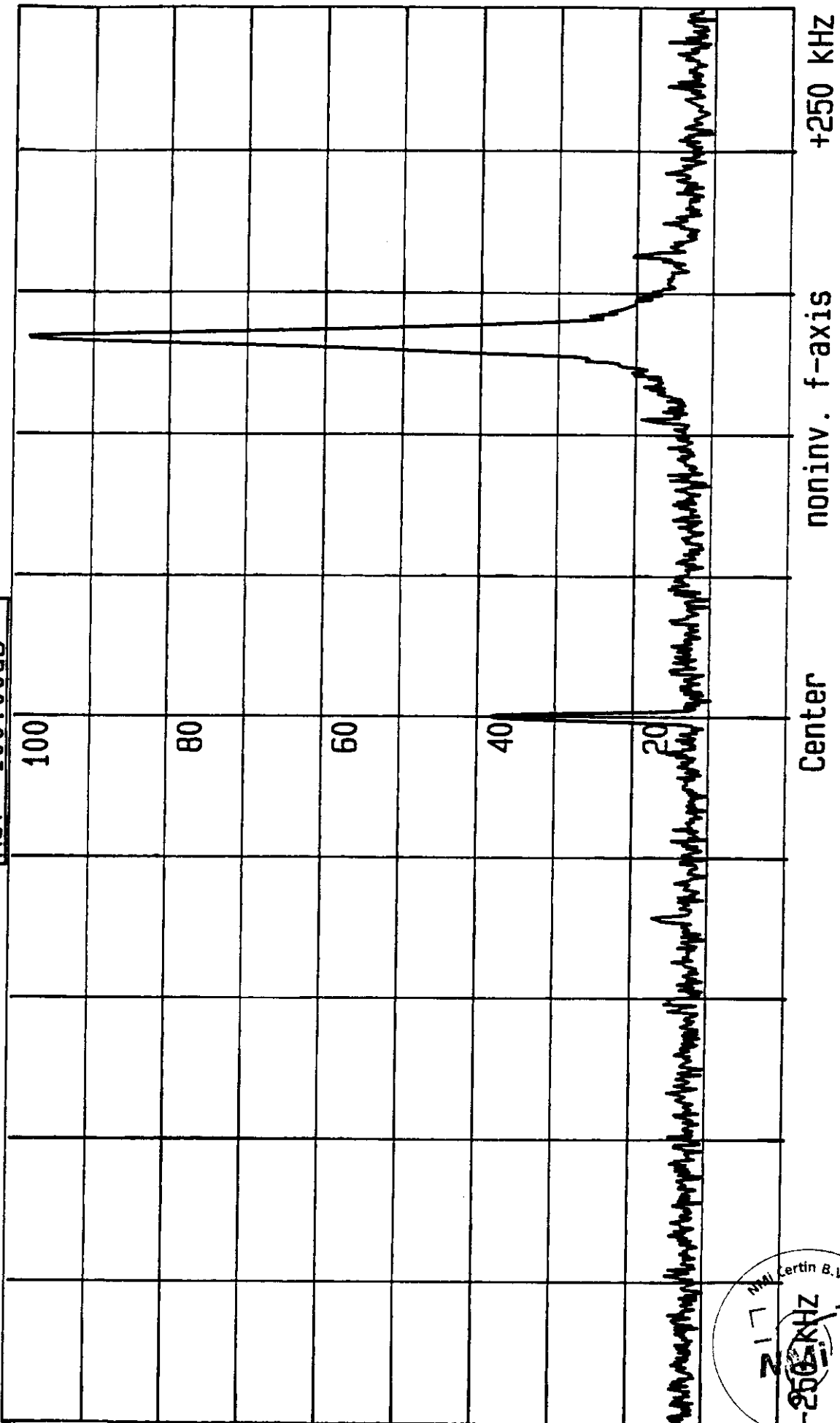
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## **APPENDIX B**

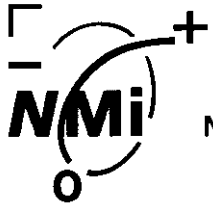
Plot of carrier bandwidth

Ref 100.00dB



217  
-250 KHZ  
MML Certin B.V.





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## **APPENDIX C**

Description of FCC ID label

1 2 3 4

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**SURGE** MADE IN HOLLAND

MIMI FSK ISO FDX-B  
 ART.NR : 9870849  
 PROM : ----  
 SERIAL NR: ---- - ----

FCC ID: CGD MIMI FSK ISO

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

CE

70

**nedap**<sup>®</sup>

MADE IN HOLLAND

MIMI FSK ISO FDX-B  
 ART.NR : 9867589  
 PROM : ----  
 SERIAL NR: ---- - ----

FCC ID: CGD MIMI FSK ISO

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

CE

R1.5

50

**SURGE** MADE IN HOLLAND

MIMI FSK 120  
 ART.NR : 9870857  
 PROM : ----  
 SERIAL NR: ---- - ----

aansluiting van verkoper en volwassend  
 NL 00000000

CE

55

**nedap**<sup>®</sup>

MADE IN HOLLAND

MIMI FSK 120  
 ART.NR : 9869336  
 PROM : ----  
 SERIAL NR: ---- - ----

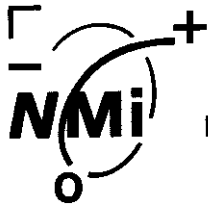
aansluiting van verkoper en volwassend  
 NL 00000000

CE

	E			
	D			
	C			
	B			
	A			

Wijz. Nr.	Index	Datum	Omschrijving	Gel.:
	/users/veecode/jane/single2/MIMI		Ruwh.: ISO 1302 in µm	Maateenheid: mm Onlw.: OZ d.d.: 970828
		TOLERANTIE. Linear ±0.0	Schaal: 1 : 1	Gel.: JE d.d.: 971003
		tenzij anders vermeld: Hoek ±0°	Formaat: A	d.d.:
MIMI FSK				1e Hogere niveau: T0000-000
				Nr.: 1250-500
				Blaai 10.02 Van: 2
				Artikelnummer:

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(March 3, 1993)

**EMISSION MEASUREMENTS IN  
ACCORDANCE WITH FCC PART 15 AND  
ANSI C63.4-1992 ON A CATTLE CODE  
IDENTIFICATION SYSTEM, BRAND  
NEDAP, TYPE MIMI FSK ISO FDX-B  
WITH ID CONTROLLER.**

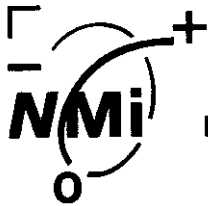
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## MEASUREMENT/TECHNICAL REPORT

### NEDAP N.V.

### FCC ID: CGD MIMI FSK ISO

February 20th, 1998

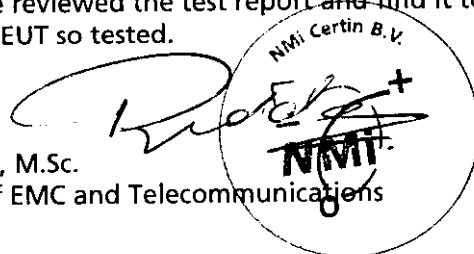
This report concerns (check one):		Original grant	<del>Class II permissive change</del>
Equipment type: Cattle code identification system			
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?		yes	no
If yes defer until: not applicable			
Nedap N.V. agrees to notify the Commission by letter of the intended date of announcement of the product so that the grant can be issued on that date			
Transition Rules Request per 15.37		yes	no
If no, assumed Part 15, Subpart B for unintentional radiators - the new 47 CFR (10-1-92 Edition) provision.			
Report prepared by:	Name	:	P.A.J.M. Robben, B.Sc.
	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

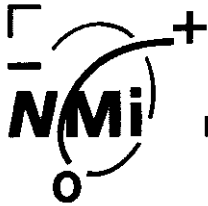
The data taken for this test and report herein was done in accordance with FCC Part 15 and ANSI C63.4-1992 measurements. NMI Certin B.V., location Niekerk, The Netherlands, certifies that the data is accurate and contains a true representation of the emission-profile of the Equipment Under Test (EUT) 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: February 20th, 1998

Signature:

R. Middelkoop, M.Sc.  
 Department of EMC and Telecommunications





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## **1 General Information.**

### **1.1 Product description.**

#### **1.1.1 Introduction.**

The MIMI FSK ISO FDX-B system has been developed as a cattle code identification system intended for use on farms. A miniature transponder is attached to the cattle. The MIMI FSK ISO FDX-B with ID controller is used to read a code which is stored in the transponder. The cattle can thus be identified by means of an individual code while walking past the antennas.

#### **1.1.2 Choice of frequency.**

The operating frequency of the MIMI FSK ISO FDX-B system is 134.2 kHz (continuous carrier).

#### **1.1.3 Operating principles.**

The MIMI FSK ISO FDX-B system is a DC powered system with integrated antenna for Nedap "FDX-B" transponders, designed for easy animal identification in the field. The MIMI FSK ISO FDX-B generates an RF-field at a frequency of 134.2 kHz (continuous carrier) which activates the electronics in the miniature transponder. The activated miniature transponder then sends an identification code to the MIMI FSK ISO FDX-B by modulating the RF-field which is generated by the MIMI FSK ISO FDX-B. The modulation of the 134.2 kHz RF-field can be detected and then the code is demodulated. The code received can be downloaded into a personal computer by means of a serial connection cable. A control box, brand Nedap, type ID Controller was connected to the MIMI FSK ISO FDX-B during all measurements.

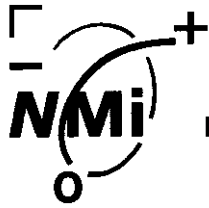
### **1.2 Related Submittal(s)/grant(s).**

Not applicable.

### **1.3 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, has 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.

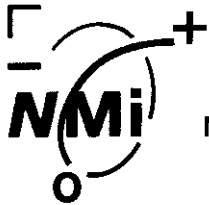


#### 1.4 List of measurement equipment.

NMI number	Description	Marketing name	Type
01-8809	Antennamast 1-4 metres	Poelstra	-
01-8801	Biconical 20-200 MHz	EATON	94455-1
01-8808	Antennamast	EMCO	TR3
01-8803	Log-per 200-1000 MHz	EATON	96005
01-8901	Active loop antenna 30 cm.	EMCO	6507
02-8803	Meas. receiver 20-1000 MHz	R&S	ESVP
02-8803	Meas. receiver 0.01-30 MHz	R&S	ESH2
03-8804	Impulslimiter	R&S	ESH3-Z2
03-8810	LISN FCC	EMCO	3725/2
06-8802	Meas. cable 10 metres	-	-
08-8803	Regulating transformer	RFT	LSS020
09-8802	Controller opt. EZM	R&S	PCA-Z1
15-8801	OATS	WOLFF	-
16-8801	Shielded room	EUROSHIELD	6x4x2.5

#### 1.5 Bandwidth and antenna factors

The utilized test equipment is stated in § 1.4. The bandwidth of 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.



## **2 System test configuration.**

### **2.1 Justification.**

In accordance with § 11.2.4. of ANSI C63.4-1992 the placing and manipulation of the various connection cables has been carried out. In photographs 1 and 2 (page 9) the measuring set-ups for the disturbance voltage measurements are given. In photographs 3 and 4 (page 10) the measuring set-up is given for the radiated field strength measurements. The system includes of the following equipment:

Transmitter/receiver:	Brand Nedap, type MIMI FSK ISO FDX-B (134.2 kHz)
Control box:	Brand Nedap, type ID Controller
Power supply:	Brand Babson, type 36950

### **2.2 EUT mode of operation.**

Radiated and conducted emission measurements were carried out when the system was active and was generating a continuous transmitting signal. A RS232 data cable was connected to the system and a communications link was established with a personal computer

### **2.3 Special accessories.**

Not applicable.

### **2.4 Equipment modifications.**

Not applicable.

### **2.5 Marking and labeling.**

The layout of the model label with the FCC ID can be found in appendix C of this testreport.



## 2.6 Configuration of the tested system.

Unit title	:	MIMI FSK ISO FDX-B
Model number	:	-
Part number	:	9870849
FCC ID number	:	CGD MIMI FSK ISO
Frequency range	:	134.2 kHz (continuous carrier)
Description/details	:	see § 1.1 of this report
Power supply	:	power supply 100-120 VAC/230-240 VAC, 50/ 60 Hz, 6/3.5 Amp +27 Volts DC
Clock Oscillator(s)	:	9.83 MHz, 3.84 MHz
Cabinet & Screening	:	Plastic/Metal
Interface Cable(s)	:	Shielded data cable, unshielded DC power supply connection cable, coaxial cable between MIMI FSK ISO FDX-B and ID controller  Mains cable used: brand Almor Corp., type LL27936
Method of screening	:	Not applicable
Method of grounding	:	Not applicable
Operating configuration	:	Transmitter/receiver: MIMI FSK ISO FDX-B Control box: ID Controller, Power supply: brand Babson, type 36950.
Applicant's representative	:	J.A.M. Hulshof
Company	:	N.V. Nedap
Address	:	Oude Winterwijkseweg 7
Postal code and city	:	7141 DE Groenlo
Country	:	The Netherlands
Telephone number	:	+31 (0)544 471111
Telefax number	:	+31 (0)544 465232

### **3 Conducted and radiated measurement photographs.**

On pages 9 and 10 the conducted and radiated measurements photographs are given:

- Page 9      Top photograph:      Disturbance voltage measurements: front  
                 Bottom photograph:      Disturbance voltage measurements: back
- Page 10    Top photograph:      Radiated field strength measurements: front  
                 Bottom photograph:      Radiated field strength measurements: back

## 4 Conducted emission data.

### 4.1 Conducted emission data.

Frequency	Measurement results (QP)		Limits (QP)
	Line	Neutral	
(MHz)	(dB $\mu$ V)	(dB $\mu$ V)	(dB $\mu$ V)
0.45	42.3	41.7	48.0
9.87	26.4	25.5	48.0
9.87 - 30.00	< 25.0	< 25.0	48.0

QP = quasi-peak values

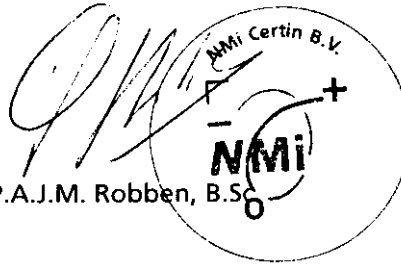
Levels of frequencies not stated in this table have been found below 25 dB $\mu$ V

Table 1

Results of the disturbance voltage measurements, carried out in accordance with FCC Part 15, § 207 (Edition 10-1-1993), on the mains connection terminals of a power supply, brand Babson, type 36950, connected to a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with Control box, brand Nedap, type ID Controller.

Test engineer:

Tester signature :



Date: February 20th, 1998

Typed/Printed name : P.A.J.M. Robben, B.Sc

## 5 Radiated emission data.

### 5.1 Radiated field strength measurements (frequency range of 30 MHz to 1000 MHz, E-Field).

Frequency (MHz)	Measurement results (QP)		Limits (QP) FCC Part 15 § 209 (dBµV/m)
	Vertical *) (dBµV/m)	Horizontal *) (dBµV/m)	
42.02	21.5	24.6	40.0
157.93	29.1	27.3	43.5
226.78	29.0	31.1	46.0
235.17	32.0	34.1	46.0
244.77	28.7	24.7	46.0
246.37	28.3	26.0	46.0
284.16	29.8	33.3	46.0
368.05	27.6	26.0	46.0
368.05 - 650.00	< 25.0	< 25.0	46.0
650.00 - 960.00	< 30.0	< 30.0	46.0
994.73 - 1000.00	< 31.0	< 31.0	54.0

QP = Quasi-peak

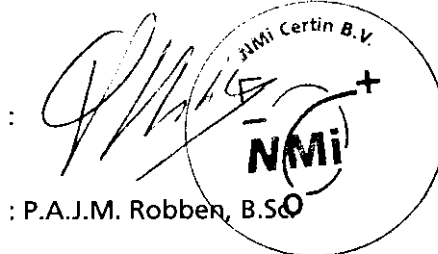
Measured levels on frequencies not stated in this report have been measured more than 20 dB below the applicable limit.

Table 2

Results of the radiated field strength (E-field) measurements, carried out in accordance with FCC Part 15, § 209 (Edition 10-1-93) and ANSI C63.4-1992, on a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with Control box, brand Nedap, type ID Controller, including a power supply, brand Babson, type 36950.

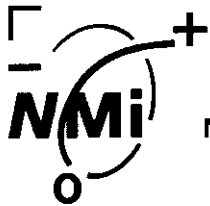
Test engineer:

Tester signature :



Date: February 20th, 1998

Typed/Printed name : P.A.J.M. Robben, B.S.O



**5.2 Radiated field strength measurements (frequency range of 9 kHz to 30 MHz, H-Field).**

Frequency	Measurement results (QP) 3m	Measurement results (QP) 10m	Antenna factor	Cable loss	Measurement results (QP) calculated	Limits FCC Part 15 § 209
(MHz)	dB $\mu$ V	dB $\mu$ V	dB	dB	(dB $\mu$ V/m)	(dB $\mu$ V/m)
0.009 - 0.1342	<30.0	< 30.0	17	1	<10.0	48.5 - 25.0 (300 m.)
0.1342	88.1	47.7	17	1	<10.0	25.0 (300 m.)
0.2684	36.0	35.5	17	1	<10.0	19.0 (300 m.)
0.4026	33.2	31.9	17	1	<10.0	15.5 (300 m.)
0.4026 - 0.490	<30.0	< 30.0	17	1	<10.0	15.5 - 13.8 (300 m.)
0.490 - 1.705	<30.0	< 30.0	17	1	<20.0	33.8 - 22.9 (30 m.)
1.705 - 30.000	<30.0	< 30.0	17	1	<20.0	29.5 (30 m.)

QP = Quasi-peak

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

Table 3

Results of the radiated field strength (H-field) measurements, carried out in accordance with FCC Part 15, § 209 (Edition 10-1-93) and ANSI C63.4-1992, on a cattle code identification system, brand Nedap, type MIMI FSK ISO FDX-B with a Control box, brand Nedap, type ID Controller, including a power supply, brand Babson, type 36950.

**Notes:** -Frequency range: 9-90 kHz Average detector used during measurements  
 110-490 kHz Average detector used during measurements

-The radiated field strengths were measured at a distance of 3 and 10 metres. The method for calculating the field strengths at other distances can be found in appendix A.

-A plot of the carrier bandwidth can be found in appendix B.

Test engineer:

Tester signature :

Date: February 20th, 1998

Typed/Printed name :

P.A.J.M. Robben, B.Sc

## **6 Photos of tested EUT.**

Not applicable, see § 3 of this report

**APPENDIX A**  
Method of field strength calculations

General formula:

$$(d_1/d_2)^n = H_{d2}/H_{d1}$$
$$n \log(d_1/d_2) = \log(H_{d2}/H_{d1})$$

Measured field strength at 134.2 kHz:

$$H_{3m} = 88.1 \text{ dB}\mu\text{V/m} = 25409.7 \mu\text{V/m}$$

$$H_{10m} = 47.9 \text{ dB}\mu\text{V/m} = 248.3 \mu\text{V/m}$$

$$n = 3.84$$

Calculated field strength at 134.2 kHz (10m --> 300m):

$$H_{300m} = 528.2 \cdot 10^{-6} \mu\text{V/m} = -65.5 \text{ dB}\mu\text{V/m}$$





FCC ID: CGD MIMI FSK ISO

**APPENDIX B**  
Plot of carrier bandwidth





FCC ID: CGD MIMI FSK ISO

**APPENDIX C**  
Description of FCC ID label

