



## EMISSION -- TEST REPORT

Testreport file no. : **T 20558-1-01 KJ** Date : November 27, 2001  
of issue

Model / Type No. : MICROSCAN

Kind of product : Radio Frequency Identification

Applicant : DTE Automation GmbH

Manufacturer : DTE Automation GmbH

Licence holder : DTE Automation GmbH

Address : Heidestrasse 38

32051 Herford, Germany

**Test result** accr. to the regulation(s) at page 3 : **POSITIVE**

This testreport with appendix consists of 32 pages.  
The testresult only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the testlaboratory.

**DIRECTORY**

	<b>Page</b>
<b>A) Documentation</b>	
Directory	2
Testregulations	3
General information	4-5
Discovery of worst case condition	6
Equipment under Test	17
Summary	18
<b>B) Testdata</b>	
Conducted emissions 10/150 kHz - 30 MHz	7
Spurious emissions (magnetic field) 10 kHz - 30 MHz	8-9
Spurious emissions (electric field) 30 MHz - 1000 MHz	10-11
Spurious emissions (electric field) 1 GHz - 18 GHz	12-13
Radiated power of the fundamental wave	14-15
Conducted power of the fundamental wave measured on the antenna terminals	16
<b>Attachment</b>	
A) Testdata / Bandwidth plots	A1-A3
B) List of Test Equipment	B1
C) Photos of the test setup	C1
D) Technical description of the test sample (e.g.CDF, Declaration)	D1-D3
E) Photos of the EUT	E1-E6
F) Measurement Protocol for FCC, VCCI and AUSTEL	--

**TEST REGULATIONS**

The tests were performed according to following regulations :

- o - EN 50081-1 / 2.1991
- o - EN 50081-2 / 7.1993

---

o - EN 55011 / 3.1991	o - Group 1	o - Group 2
	o - class A	o - class B
o - EN 55014 / 4.1993	o - Household appliances and similar	
	o - tools	
	o - Semiconductor devices	
o - EN 55014 / A2:1990		
o - EN 55104 / 5.1995	Category:	
o - EN 55015 / A1:1990		
o - EN 55015 / 12.1993		
o - EN 55022 / 5.1995	o - class A	o - class B
o - prEN 55103-1 / 3.1995		
o - prEN 50121-3-2 / 3.1995		
o - EN 60601-1-2 / 4.1994		
o - VCCI	o - class 1	o - class 2
■ - Part 15 Subpart C (15.209)		
o - Part 15 Subpart C (15.231)		

**ADDRESS OF THE TEST LABORATORY**

- - MIKES BABT PRODUCT SERVICE GmbH  
Ohmstrasse 2-4  
D - 94342 Strasskirchen

- - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**ENVIRONMENTAL CONDITIONS**

Temperature: 15-35 ° C  
Humidity 45-60 %  
Atmospheric pressure 860-1060 mbar

**POWER SUPPLY SYSTEM UTILIZED**

Power supply system : Unom = 5 V DC

**STATEMENT OF MEASUREMENT UNCERTAINTY**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error of  $\pm 4$ dB. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

**SHORT DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)**

The EuT is a transponder read/write device.

Number of received/tested samples: 1 / 1

Serial Number: 01516

**DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT**

- - Black box indicates that the listed condition, standard or equipment is applicable for this Report.
- - Blank box indicates that the listed condition, standard or equipment was not applicable for this Report.

**M E A S U R E M E N T   P R O T O C O L   F O R   F C C ,   V C C I**  
**A N D   A U S T E L**

**Test Methodology**

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-1992 procedures and using the FCC limits or the CISPR 22 Limits.

**Measurement Error**

The test system for conducted emissions is defined as the LISN, tuned receiver and coaxial cable. The test system for spurious emissions is defined as the antenna, the pre-amplifier, the tuned receiver and the coaxial cable. These test systems have an expected error of  $\pm 3$  dB. The equipment comprising the test systems are calibrated on an annual basis.

**Justification**

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into its characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

**General Standard Information**

The test methods used comply with CISPR Publication 22 (1993), EN 55022 (1987) and AS 3548 (1992) - "Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment" and with ANSI C63.4-1992 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

For detailed description of each measurement please refer to section testresults.

**DISCOVERY OF WORST CASE MEASUREMENT CONDITION:**

The MICROSCAN is designed for the operation on the fixed transmitter frequency range of approx. 133.7 kHz to 134.7 kHz.

To find out the worst case conditions for the complete measurement the following tests have been performed:

- Measurement of the radiated fieldstrength of the operating frequency measured in permanent operation mode in the specified channel. This measurement have been performed in order to find out the maximum transmitted fieldstrength of the MICROSCAN.
- Measurement of the radiated spurious emissions measured in permanent operation mode in the specified channel. This measurement have been performed in order to find out the maximum spurious emissions of the MICROSCAN.

Based on this testresults, the measurements have been performed completely on the specified channel. This testresults are documented in the following sections of the testreport.

**TEST RESULT****CONDUCTED EMISSIONS - 10/150 kHz - 30 MHz**

■ - Test not applicable

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

-----

**Description of Measurement**

The final level, expressed in dB $\mu$ V, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the FCC Limit or to the CISPR limit, which is equivalent to the Australian AS 3548 limit.

To convert between dB $\mu$ V and  $\mu$ V, the following conversions apply:

$$\text{dB}\mu\text{V} = 20(\log \mu\text{V})$$

$$\mu\text{V} = \text{Inverse log}(\text{dB}\mu\text{V}/20)$$

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasipeak detection, and a Line Impedance Stabilization Network (LISN), with  $50\Omega$  /  $50 \mu\text{H}$  (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasipeak and average detection and recorded on the data sheets.

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

Min. limit margin \_\_\_\_\_ dB at \_\_\_\_\_ MHz

Max. limit exceeding \_\_\_\_\_ dB at \_\_\_\_\_ MHz

Remarks: NOT APPLICABLE

**SPURIOUS EMISSION**

File No. T 20558-1-01 KJ , Page 7 of 18

Spurious emissions from the EUT are measured in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The antenna was positioned 3, 10 or 30 meters horizontally from the EUT. Measurements have been made in all three orthogonal axes and the shielded loop antenna was rotated to locate the maximum of the emissions.

Spurious emissions from the EUT are measured in the frequency range of 30 MHz to 10 times the highest used frequency using a tuned receiver and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasipeak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection, remeasurement of results which may be critical will be repeated in average mode. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna was positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees.

**SPURIOUS EMISSION (MAGNETIC FIELD) 9 kHz - 30 MHz**

**[o - Test not applicable]**

- o - in a shielded room
- - in a Open-site 1 and
- - in a testdistance of 3 meters.
- - in a testdistance of 10 meters.
- - in a testdistance of 30 meters.

For TEST EQUIPMENT USED please refer to ATTACHMENT B: SER1

-----

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived at by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the antenna correction factor and cable loss factor (Factor dB) to it. This result then has to be compared with the relevant FCC limit.

The resolution bandwidth during the measurement is as follows:

9 kHz - 150 kHz: ResBW: 200 Hz

150 kHz - 30 MHz: ResBW: 10 kHz

Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	=	Delta (dB)
1.705	5	+	20	=	25	30	=	5

Testresult in detail:

Testdistance 3 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
402.7	27.2	19.8	26.2	20	47.2	39.8	46.2	95.5
671.1	19.0	11.3	18.4	20	39.0	31.3	38.4	71.1
935.6	13.8	5.7	14.0	20	33.8	25.7	34.0	68.2
1207.9	9.5	1.2	10.9	20	29.5	21.2	30.9	66.0
1476.4	7.2	-1.3	8.8	20	27.2	18.7	28.8	64.2

Testdistance 10 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]
402.7	<0	<0	<0	20	<20	<20	<20
671.1	<0	<0	<0	20	<20	<20	<20
935.6	<0	<0	<0	20	<20	<20	<20
1207.9	<0	<0	<0	20	<20	<20	<20
1476.4	<0	<0	<0	20	<20	<20	<20

Testdistance 30 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
402.7	<0	<0	<0	20	<20	<20	<20	55.5
671.1	<0	<0	<0	20	<20	<20	<20	31.5
935.6	<0	<0	<0	20	<20	<20	<20	28.2
1207.9	<0	<0	<0	20	<20	<20	<20	26.0
1476.4	<0	<0	<0	20	<20	<20	<20	24.2

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

32.7 dB

671.1 kHz

Min. limit margin

dB

kHz

Remarks: The limits are kept.

The measurement was performed up to the 10<sup>th</sup> harmonic.

SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz**■ - Test not applicable**

- o - Open-site 1
- o - Open-site 2

- o - 3 meters
- o - 10 meters
- o - 30 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

-----

Description of Measurement

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	=	Delta (dB)
719	75	+	32.6	=	107.6	110	=	-2.4

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: NOT APPLICABLE.

Transmission frequency 134.24 kHz.

---

---

---

**SPURIOUS EMISSION 1 GHz - 18 GHz**

■ - Test not applicable
-------------------------

**Testlocation :**

- - Open-site 1
- - Open-site 2
- - Anechoic chamber
- - Full compact chamber
  
- - 1 meters
- - 3 meters
- - 10 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

-----

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the Spectrumanalyzer in dB $\mu$ V and adding the correction factors of the test setup incl. cables.

Example of the correction value at 1.8 GHz

Level reading at 1.8 GHz	Correction EMCO 3115	correction Amplifier AWT 4534 + cable	Correction factor (summarized)	corrected level
56 dB $\mu$ V	+27.3 dB	-41.2 dB	-15.8 dB	42.1 dB $\mu$ V/m

**Testresult in detail:**

Frequency [MHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Min. limit margin

\_\_\_\_\_ dB

\_\_\_\_\_ MHz

Remarks: NOT APPLICABLE

Transmission frequency 134.24 kHz.

**FIELD STRENGTH OF THE FUNDAMENTAL WAVE**

**○ - Test not applicable**

- - Open-site 1
- - Open-site 2
- - 3 meters
- - 10 meters
- - 30 meters

For TEST EQUIPMENT USED please refer to ATTACHMENT B: CPR1

-----

**Description of Measurement**

The final level, expressed in dB $\mu$ V/m, is arrived by taking the reading from the EMI receiver (Level dB $\mu$ V) and adding the correction factors and cable loss factor (Factor dB) to it. This is done automatically in the EMI receiver, where the correction factors are stored. This result then has the FCC or CISPR limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets at page 24 - 25. The CISPR 22 limit is equivalent to the Australian AS 3548 limit.

Example:

Frequency (MHz)	Level (dB $\mu$ V)	+	Factor (dB)	=	Level (dB $\mu$ V/m)	-	Limit (dB $\mu$ V/m)	=	Delta (dB)
315	45	+	22.5	=	67.5	-	74.3	=	-6.8

**Testresult in detail:**

Testdistance 3 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
134.24	61.5	53.5	59.7	20	81.5	73.5	79.7	105.1

Testdistance 10 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]
134.24	37.4	28.8	33.5	20	57.4	48.8	53.5

Testdistance 30 m

Frequency [kHz]	L: PK [dB $\mu$ V]	L: AV [dB $\mu$ V]	L: QP [dB $\mu$ V]	Correct. [dB]	L: PK [dB $\mu$ V/m]	L: AV [dB $\mu$ V/m]	L: QP [dB $\mu$ V/m]	Limit [dB $\mu$ V/m]
134.24	<20	<20	<20	20	<40	<40	<40	65.1

**Testresult**

The requirements are

■ - MET      O - NOT MET

Min. limit margin      31.6 dB      134.24 kHzMin. limit margin                 dB                 kHzRemarks: The limits are kept.

**CONDUCTED POWER OF THE FUNDAMENTAL WAVE MEASURED  
ON THE ANTENNA TERMINALS**

**■ - Test not applicable**

**Testlocation :**

- - Shielded room no. 1
- - Shielded room no. 2
- - Shielded room no. 3
- - Shielded room no. 4
- - Shielded room no. 5
- - Shielded room no. 6
- - Shielded room no. 7
- - Anechoic chamber
- - Full compact chamber
- - Climatic test chamber VLK

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

-----

**Description of Measurement**

The conducted power of the fundamental wave measured on the antenna terminals in a climatic test chamber. The antenna jack was connected to the input of a communication test receiver. The internal batteries have been removed also and a variable DC power supply was used instead. The measurements have been made with the EUT unmodulated. During the test the supply voltage and the temperature were varied and applied simultaneously. The lower supply voltage was given by the manufacturer. In case the equipment was switching off before, the switch off voltage was used instead.

**Testresult**

The requirements are

**O - MET**

**O - NOT MET**

Frequency range of equipment								
Tempera-ture/°C	DC supply voltage/V	Power/dBm						
-30								
-20								
-10								
0								
+10								
+20								
+30								
+40								
+50								

Remarks: NOT APPLICABLE

**EQUIPMENT UNDER TEST**

**Operation - mode of the EUT.:**

The equipment under test was operated during the measurement under following conditions:

- Standby
- Testprogram (H - Pattern)
- Testprogram (color bar)
- Testprogram (customer specific)
- Transmit in the frequency range from 133.7 kHz to 134.7 kHz.

- \_\_\_\_\_
- \_\_\_\_\_

**Configuration of the equipment under test:**

Following periphery devices and interface cables were connected during the measurement:

- \_\_\_\_\_ Type : \_\_\_\_\_

- unshielded power cable

- unshielded cables

- shielded cables MPS.No. : \_\_\_\_\_

- customer specific cables

- \_\_\_\_\_
- \_\_\_\_\_

## **S U M M A R Y**

### **GENERAL REMARKS:**

The product MICROSCAN has been tested on the following frequency:  
TX-Mode: 134.2 kHz

The unit measurements mets also the bandwidth requirements.

### **FINAL JUDGEMENT:**

The requirements according to the technical regulations and tested operation modes are

- - met.
- - **not** met.

The equipment under test

- - **Fulfills** the general approval requirements cited on page 3.
- - **Does not** fulfill the general approval requirements cited on page 3.

Date of receipt of test sample : accdg. to storage record

Testing Start Date : April 19, 2001

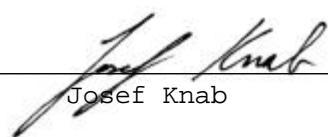
Testing End Date : November 22, 2001

- MIKES BABT PRODUCT SERVICE GmbH -

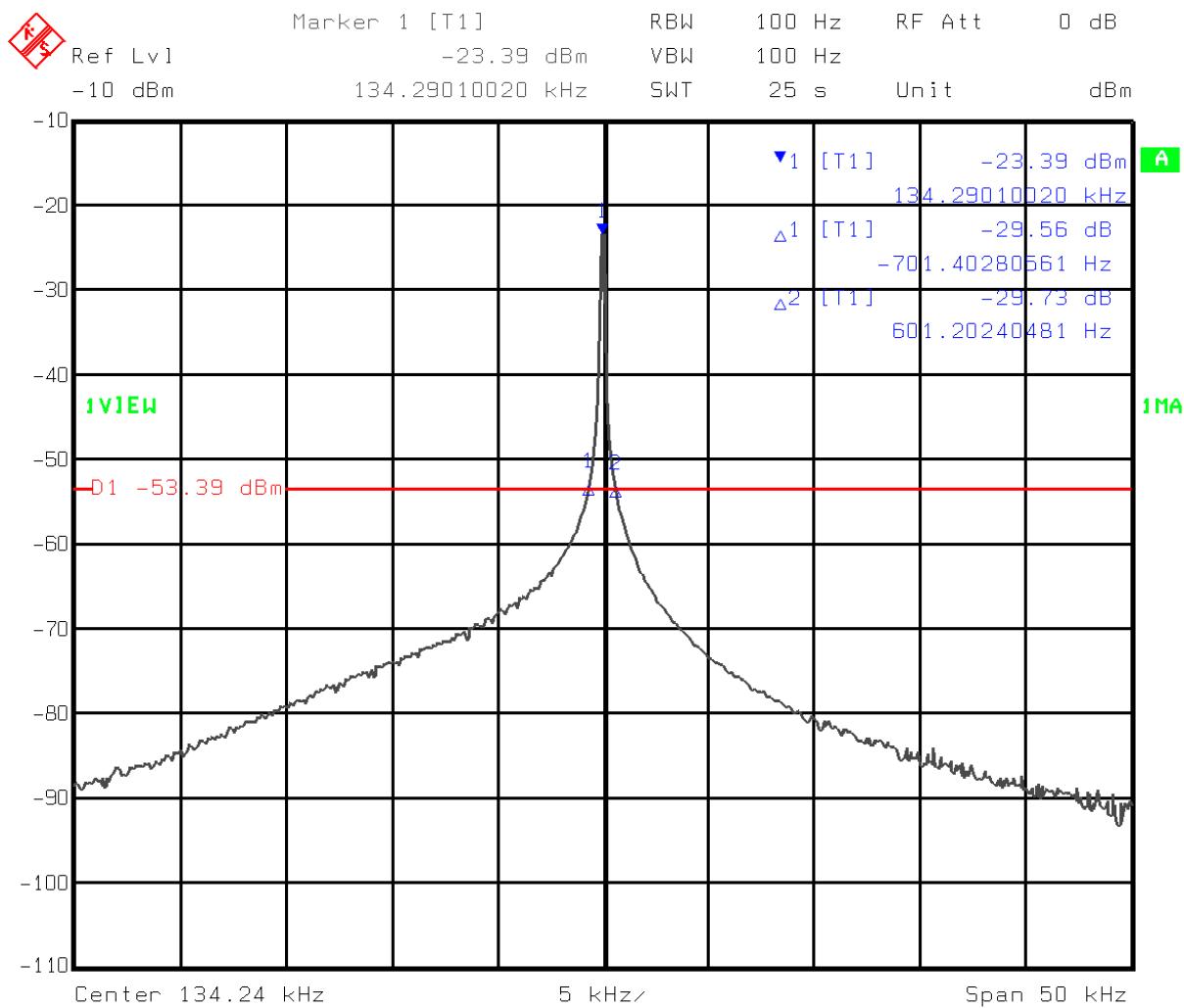
Test-engineer



Günter Mikes  
Dipl.-Ing.(FH)



Josef Knab

**Attachment A 1****FCC ID: PMF-MI-TR-201****MICROSCAN****File-No. T 20558-01 KJ**

Title: FCC ID: PMF-MI-TR-201

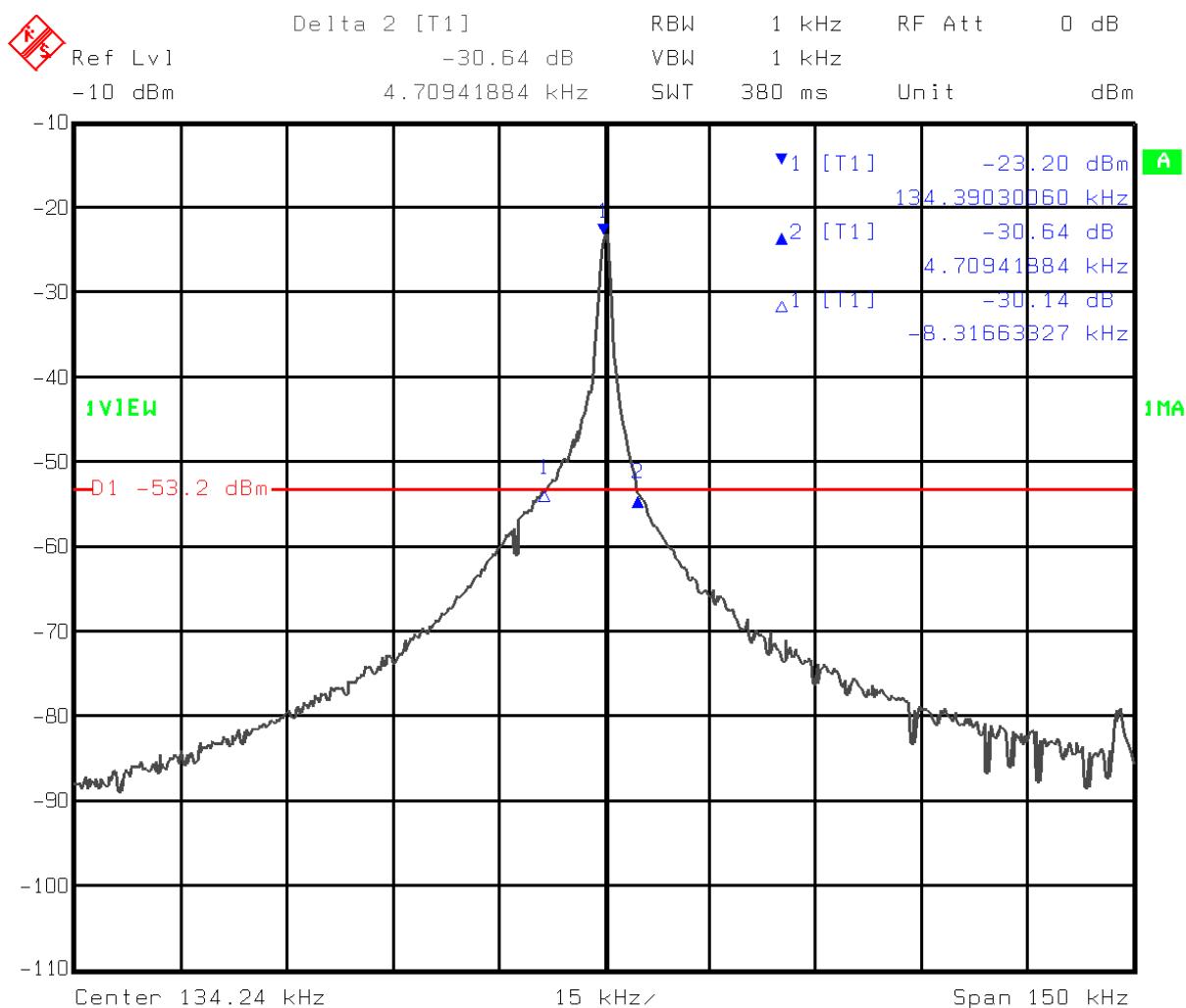
Comment A: MICROSCAN

Bandwidth = 1.3 kHz

Date: 8.MAY.2001 13:54:07

## MICROSCAN

File-No. T 20558-01 KJ

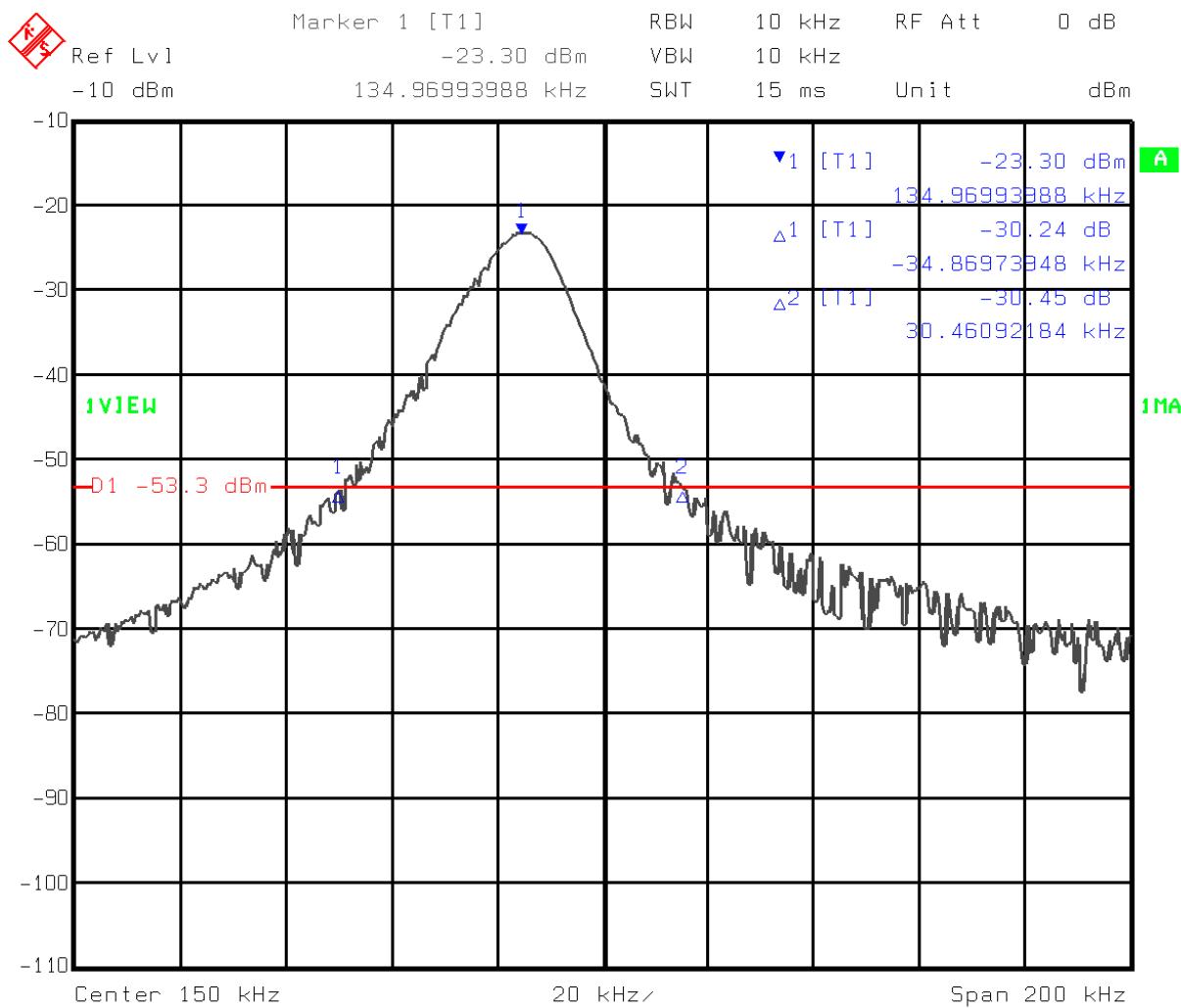


Title: FCC ID: PMF-MI-TR-201

Comment A: MICROSCAN

Bandwidth = 13.2 kHz

Date: 8.MAY.2001 13:59:06

**Attachment A 3****FCC ID: PMF-MI-TR-201****MICROSCAN****File-No. T 20558-01 KJ**

Title: FCC ID: PMF-MI-TR-201

Comment A: MICROSCAN

Bandwidth = 65.3 kHz

Date: 8.MAY.2001 14:07:53

## Attachment : B

### List of Test Equipment

All test instruments used, in addition to the test accessories, are calibrated and verified regularly.

Test Report No:	T 20558-1-01 KJ
Beginning of Testing:	22-November-2001

Test ID	Model Type	Kind of Equipment	Manufacturer	Equipment No.
CPR1	FMZB 1516	Antenna	Schwarzbeck G.	04-07/62-90-018
	ESHS 30	Test Receiver	Rohde & Schwarz München	04-07/63-92-045
SER1	FMZB 1516	Antenna	Schwarzbeck G.	04-07/62-90-018
	ESHS 30	Test Receiver	Rohde & Schwarz München	04-07/63-92-045

# CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT

Licence holder:	DTE Automation GmbH		
Address:	Heidestrasse 38, 32051 Herford, Germany, Tel. +49 5221 101 2200		
Manufacturer:	DTE Automation GmbH		
Address:	Heidestrasse 38, 32051 Herford, Germany, Tel. +49 5221 101 2200		
Type:	Radio Frequency Identification		
Model:	MICROSCAN		
Serial-No.:	01516	Protection class:	IP43

## Additional informations to the above named model:

<b>Antenna:</b> transmitter:	Type: Air coil 47 uH +/- 5 % @ 134.2 kHz +/- 0.5 kHz		
	Length/size: 40.7 mm x 15.2 mm x 1.4 mm		
<b>Power supply of the transmitter:</b> Type:	Type: same		
	Length/size:		
<b>Power supply of the receiver:</b> Type:	5 V linear regulator	nominal voltage:	5 V
		lowest voltage:	4.5 V
		highest voltage:	5.5 V
		current consumption	
	nominal voltage:	5 V	
	MICROSCAN total	current consumption	0.150 A

## Ancillary equipment:

Description:	External Power Supply	Type:	UL listed Direct Plug-In Unit	Serial-no.:
Description:		Type:		Serial-no.:
Description:		Type:		Serial-no.:

## Extreme temperature range in which the approval test should be performed:

Category I: General (-20°C to +55°C)  
 Category II: Portable (-10°C to +55°C)  
 Category III: Equipment for normal indoor use (0°C to +55°C)

## Connectable cables:

Name of the cable	Digital	Length/m	shielded
Interface & Power Supply	<input checked="" type="checkbox"/> yes <input type="radio"/> no	2 m	<input type="radio"/> yes <input checked="" type="checkbox"/> no
	<input type="radio"/> yes <input checked="" type="checkbox"/> no		<input type="radio"/> yes <input checked="" type="checkbox"/> no
	<input type="radio"/> yes <input checked="" type="checkbox"/> no		<input type="radio"/> yes <input checked="" type="checkbox"/> no
	<input type="radio"/> yes <input checked="" type="checkbox"/> no		<input type="radio"/> yes <input checked="" type="checkbox"/> no
	<input type="radio"/> yes <input checked="" type="checkbox"/> no		<input type="radio"/> yes <input checked="" type="checkbox"/> no

If applicable, if necessary complete overleaf

Page D1

<b>Type designation:</b> <b>MICROSCAN Radio Frequency Identifier</b>																																																																																							
<b>Name and type designation of individual units comprising the radio equipment:</b> <b>Micro-reader</b> <b>RI-STU-MRD1 (vendor Texas Instruments)</b>																																																																																							
<b>Type of equipment:</b> <table> <tr> <td><input type="checkbox"/> Radiotelephone equipment</td> <td><input type="checkbox"/> Remote-control equipment</td> <td><input type="checkbox"/> Radiomaritime equipment</td> <td><input type="checkbox"/> LPD</td> </tr> <tr> <td><input type="checkbox"/> One-way radiotelephone equipment</td> <td><input type="checkbox"/> Inductive loop system</td> <td><input type="checkbox"/> Inland waterways equipment</td> <td><input type="checkbox"/> RLAN</td> </tr> <tr> <td><input type="checkbox"/> Personal paging system</td> <td><input type="checkbox"/> Radio-relay system</td> <td><input type="checkbox"/> Radionavigation equipm.</td> <td><input checked="" type="checkbox"/> <b>Short Range Device</b></td> </tr> <tr> <td><input type="checkbox"/> Satellite earth station</td> <td><input type="checkbox"/> CB radiotelephone equipment</td> <td><input type="checkbox"/> Antenna</td> <td><input type="checkbox"/></td> </tr> <tr> <td><input type="checkbox"/> Data transmission equipment</td> <td><input type="checkbox"/> Movement detector</td> <td><input type="checkbox"/> Aeronautical equipment</td> <td><input type="checkbox"/></td> </tr> </table>				<input type="checkbox"/> Radiotelephone equipment	<input type="checkbox"/> Remote-control equipment	<input type="checkbox"/> Radiomaritime equipment	<input type="checkbox"/> LPD	<input type="checkbox"/> One-way radiotelephone equipment	<input type="checkbox"/> Inductive loop system	<input type="checkbox"/> Inland waterways equipment	<input type="checkbox"/> RLAN	<input type="checkbox"/> Personal paging system	<input type="checkbox"/> Radio-relay system	<input type="checkbox"/> Radionavigation equipm.	<input checked="" type="checkbox"/> <b>Short Range Device</b>	<input type="checkbox"/> Satellite earth station	<input type="checkbox"/> CB radiotelephone equipment	<input type="checkbox"/> Antenna	<input type="checkbox"/>	<input type="checkbox"/> Data transmission equipment	<input type="checkbox"/> Movement detector	<input type="checkbox"/> Aeronautical equipment	<input type="checkbox"/>																																																																
<input type="checkbox"/> Radiotelephone equipment	<input type="checkbox"/> Remote-control equipment	<input type="checkbox"/> Radiomaritime equipment	<input type="checkbox"/> LPD																																																																																				
<input type="checkbox"/> One-way radiotelephone equipment	<input type="checkbox"/> Inductive loop system	<input type="checkbox"/> Inland waterways equipment	<input type="checkbox"/> RLAN																																																																																				
<input type="checkbox"/> Personal paging system	<input type="checkbox"/> Radio-relay system	<input type="checkbox"/> Radionavigation equipm.	<input checked="" type="checkbox"/> <b>Short Range Device</b>																																																																																				
<input type="checkbox"/> Satellite earth station	<input type="checkbox"/> CB radiotelephone equipment	<input type="checkbox"/> Antenna	<input type="checkbox"/>																																																																																				
<input type="checkbox"/> Data transmission equipment	<input type="checkbox"/> Movement detector	<input type="checkbox"/> Aeronautical equipment	<input type="checkbox"/>																																																																																				
<b>Technical characteristics:</b> <table> <tr> <td>Frequency range</td> <td>Transmitter-receiver <b>134.2 kHz +/- 0.5 kHz</b></td> <td>Transmitter</td> <td>Receiver</td> </tr> <tr> <td>Maximum no. of channels</td> <td><b>1</b></td> <td></td> <td></td> </tr> <tr> <td>Channel spacing</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Class of emission (type of modulation)</td> <td><b>134K2 P0D</b></td> <td></td> <td></td> </tr> <tr> <td>Maximum RF output power</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maximum effective radiated power (ERP)</td> <td><b>40 dB<math>\mu</math>A/m at 10m</b></td> <td></td> <td></td> </tr> <tr> <td>Output power variable</td> <td><b>no</b></td> <td></td> <td></td> </tr> <tr> <td>Channel switching frequency range</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Method of frequency generation</td> <td><input type="checkbox"/> Synthesizer</td> <td><input checked="" type="checkbox"/> <b>Crystal</b></td> <td><input type="checkbox"/> Other</td> </tr> <tr> <td>Frequency generation TX</td> <td colspan="3"><b>17.177 MHz</b></td> </tr> <tr> <td>Frequency generation RX</td> <td colspan="3"><b>17.177 MHz</b></td> </tr> <tr> <td>IF</td> <td>1st IF</td> <td>2nd IF</td> <td>3rd IF</td> </tr> <tr> <td>Integral selective calling</td> <td colspan="3"></td> </tr> <tr> <td>Audio-frequency interface level at external data socket</td> <td colspan="3"></td> </tr> <tr> <td>Modes of operation</td> <td><input type="checkbox"/> Duplex mode</td> <td><input checked="" type="checkbox"/> <b>Semi-duplex mode</b></td> <td><input type="checkbox"/> Simplex mode</td> </tr> <tr> <td>Power source</td> <td><input checked="" type="checkbox"/> <b>Mains</b></td> <td><input type="checkbox"/> Vehicle-regulated</td> <td><input type="checkbox"/> Integral</td> </tr> <tr> <td>Antenna socket</td> <td><input type="checkbox"/> BNC</td> <td><input type="checkbox"/> TNC</td> <td><input type="checkbox"/> N</td> </tr> <tr> <td></td> <td><input type="checkbox"/> M</td> <td><input type="checkbox"/> UHF</td> <td><input type="checkbox"/> Adapter</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> <b>None</b></td> <td><input type="checkbox"/></td> <td></td> </tr> <tr> <td><b>Test specifications:</b></td> <td colspan="3"></td> </tr> <tr> <td colspan="4"><b>FCC Part 15.209</b></td> </tr> </table>				Frequency range	Transmitter-receiver <b>134.2 kHz +/- 0.5 kHz</b>	Transmitter	Receiver	Maximum no. of channels	<b>1</b>			Channel spacing				Class of emission (type of modulation)	<b>134K2 P0D</b>			Maximum RF output power				Maximum effective radiated power (ERP)	<b>40 dB<math>\mu</math>A/m at 10m</b>			Output power variable	<b>no</b>			Channel switching frequency range				Method of frequency generation	<input type="checkbox"/> Synthesizer	<input checked="" type="checkbox"/> <b>Crystal</b>	<input type="checkbox"/> Other	Frequency generation TX	<b>17.177 MHz</b>			Frequency generation RX	<b>17.177 MHz</b>			IF	1st IF	2nd IF	3rd IF	Integral selective calling				Audio-frequency interface level at external data socket				Modes of operation	<input type="checkbox"/> Duplex mode	<input checked="" type="checkbox"/> <b>Semi-duplex mode</b>	<input type="checkbox"/> Simplex mode	Power source	<input checked="" type="checkbox"/> <b>Mains</b>	<input type="checkbox"/> Vehicle-regulated	<input type="checkbox"/> Integral	Antenna socket	<input type="checkbox"/> BNC	<input type="checkbox"/> TNC	<input type="checkbox"/> N		<input type="checkbox"/> M	<input type="checkbox"/> UHF	<input type="checkbox"/> Adapter		<input checked="" type="checkbox"/> <b>None</b>	<input type="checkbox"/>		<b>Test specifications:</b>				<b>FCC Part 15.209</b>			
Frequency range	Transmitter-receiver <b>134.2 kHz +/- 0.5 kHz</b>	Transmitter	Receiver																																																																																				
Maximum no. of channels	<b>1</b>																																																																																						
Channel spacing																																																																																							
Class of emission (type of modulation)	<b>134K2 P0D</b>																																																																																						
Maximum RF output power																																																																																							
Maximum effective radiated power (ERP)	<b>40 dB<math>\mu</math>A/m at 10m</b>																																																																																						
Output power variable	<b>no</b>																																																																																						
Channel switching frequency range																																																																																							
Method of frequency generation	<input type="checkbox"/> Synthesizer	<input checked="" type="checkbox"/> <b>Crystal</b>	<input type="checkbox"/> Other																																																																																				
Frequency generation TX	<b>17.177 MHz</b>																																																																																						
Frequency generation RX	<b>17.177 MHz</b>																																																																																						
IF	1st IF	2nd IF	3rd IF																																																																																				
Integral selective calling																																																																																							
Audio-frequency interface level at external data socket																																																																																							
Modes of operation	<input type="checkbox"/> Duplex mode	<input checked="" type="checkbox"/> <b>Semi-duplex mode</b>	<input type="checkbox"/> Simplex mode																																																																																				
Power source	<input checked="" type="checkbox"/> <b>Mains</b>	<input type="checkbox"/> Vehicle-regulated	<input type="checkbox"/> Integral																																																																																				
Antenna socket	<input type="checkbox"/> BNC	<input type="checkbox"/> TNC	<input type="checkbox"/> N																																																																																				
	<input type="checkbox"/> M	<input type="checkbox"/> UHF	<input type="checkbox"/> Adapter																																																																																				
	<input checked="" type="checkbox"/> <b>None</b>	<input type="checkbox"/>																																																																																					
<b>Test specifications:</b>																																																																																							
<b>FCC Part 15.209</b>																																																																																							

**O If applicable, if necessary complete overleaf**

**Page D 2**

## **Declarations:**

- We declare that the above information are correct and the named model was supplied with the maximum configuration to the accredited test laboratory.

**Herford, Germany**  
**12 April, 2001**

**place of issue**

DTE Automation GmbH

Heidestr. 38

32051 Herford

~~Telefon 05221 / 101-2200~~

Telefax 05221 / 101-2201

Andreas Rehsöft

## **Executive Director of Engineering**

**Seal and signature of applicant**

**O If applicable, if necessary complete overleaf**

Page D 3