

## EMISSION -- TESTREPORT

Testreport file no. : **T 19352-1-00 MN** Date : Sept. 28, 2000  
of issue

Model : RI-STU-251B (Reader Control Unit)

Type : Tiris Reader System

Applicant : Texas Instruments Deutschland GmbH

Manufacturer : Texas Instruments Deutschland GmbH

Licence holder : Texas Instruments Deutschland GmbH

Address : Haggertystr. 1  
D-85356 Freising  
Germany

**Test result** accrdg. to the  
regulation(s) at page 3

:

**POSITIVE**

This testreport with appendix consists of **49** 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.

# FCC ID: A92S251B

## DIRECTORY

	Page
<b><u>A) Documentation</u></b>	
Directory	2
Testregulations	3
General information	4-5
Discovery of worst case condition	6
Equipment under Test	18
Summary	19
<b><u>B) Testdata</u></b>	
Conducted emissions 10/150 kHz - 30 MHz	7-8
Spurious emissions (magnetic field) 10 kHz - 30 MHz	9-10
Spurious emissions (electric field) 30 MHz - 1000 MHz	11-12
Spurious emissions (electric field) 1 GHz - 18 GHz	13-14
Raiated power of the fundamental wave	15-16
Conducted power of the fundamental wave measured on the antenna terminals	17
<b><u>Attachment</u></b>	
A) Testdata	A1-A9
B) List of Test Equipment	B1
C) Photos of the test setup	C1-C5
D) Technical description of the test sample (e.g.CDF, Declaration)	D1-D3
E) Photos of the EuT	E1-E12
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 - EN 55014 / 4.1993
  - o - EN 55014 / A2:1990
  - o - EN 55104 / 5.1995
  - o - EN 55015 / A1:1990
  - o - EN 55015 / 12.1993
  - o - EN 55022 / 5.1995
  - o - prEN 55103-1 / 3.1995
  - o - prEN 50121-3-2 / 3.1995
  - o - EN 60601-1-2 / 4.1994
  - o - VCCI
  - - Part 15 Subpart C (15.209)
  - o - Part 15 Subpart C (15.231)
- o - Group 1
  - o - class A
  - o - Household appliances and similar
  - o - tools
  - o - Semiconductor devices
  - Category:
  - o - class A
  - o - class B
  - o - class 1
  - o - class 2
- o - Group 2
  - o - class B



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 Reader is designed for the operation on the fixed transmitter frequency of approx. 134.2 kHz.

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

- Measurement of the conducted emissions measured in permanent operation mode in the specified channel with the frame antenna: RI-ANT-G01E and with the stick antenna: RI-ANT-S01C. This measurement have been performed in order to find out the maximum transmitted fieldstrength of the Reader.
- Measurement of the radiated fieldstrength of the operating frequency measured in permanent operation mode in the specified channel with the frame antenna: RI-ANT-G01E and with the stick antenna: RI-ANT-S01C. This measurement have been performed in order to find out the maximum transmitted fieldstrength of the Reader.
- Measurement of the radiated spurious emissions measured in permanent operation mode in the specified channel with the frame antenna: RI-ANT-G01E and with the stick antenna: RI-ANT-S01C. This measurement have been performed in order to find out the maximum spurious emissions of the Reader.

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 D: A4

**Description of Measurement**

The final level, expressed in dBµV, 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 dBµV and µV, 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 50Ω/50 µH (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**

**1)with the stick antenna: RI-ANT-S01C**

The requirements are	■ - MET		○ - NOT MET
Min. limit margin	8.4	dB at	28.98 MHz
Max. limit exceeding	_____	dB at	_____ MHz

Remarks:     The limits are met.

2) with the frame antenna: RI-ANT-G01E

The requirements are

■ - MET

○ - NOT MET

Min. limit margin

2.2

dB

at

17.18 MHz

Max. limit exceeding

dB

at

         MHz

Remarks:         The limits are met.



**SPURIOUS EMISSION**

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**

- Test not applicable

- in a shielded room
  - at a non - reflecting open-site
- and
- in a testdistance of 3 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	Level	+	Factor	=	Level	Limit	=	Delta
(MHz)	(dB $\mu$ V)		(dB)		(dB $\mu$ V/m)	(dB $\mu$ V/m)	(dB)	
1.705	5	+	20	=	25	30	=	5

**Testresult in detail:**

**1)with the stick antenna: RI-ANT-S01C**

Frequency [MHz]	L: PK [dBµV]	L: QP [dBµV]	L: AV [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: QP [dBµV/m]	L: AV [dBµV/m]	Limit [dBµV/m]
0.268	41.7	37.0	33.2	-20	21.7	17.0	13.2	19

The requirements are  - MET  - NOT MET

Min. limit margin 2.0 dB at 0.268 MHz

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

Remarks: The limits are met.

Measurement has been performed up to the 10<sup>th</sup> harmonic.

**2)with the frame antenna: RI-ANT-G01E**

Frequency [MHz]	L: PK [dBµV]	L: QP [dBµV]	L: AV [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: QP [dBµV/m]	L: AV [dBµV/m]	Limit [dBµV/m]
0.268	40.3	34.4	32.3	-20	20.3	14.4	12.3	19

The requirements are  - MET  - NOT MET

Min. limit margin 4.6 dB at 0.268 MHz

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

Remarks: The limits are met.

Measurement has been performed up to the 10<sup>th</sup> harmonic.

**SPURIOUS EMISSIONS (electric field) 30 MHz - 1000 MHz**

- Test not applicable

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

## FCC ID: A92S251B

For TEST EQUIPMENT USED please refer to ATTACHMENT B:

SER2  
-----

### Description of Measurement

The final level, expressed in dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) 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 (dBµV)	+	Factor (dB)	=	Level (dBµV/m)	Limit (dBµV/m)	-	Delta (dB)
719	75	+	32.6	=	107.6	110	-	-2.4

### 1)with the stick antenna: RI-ANT-S01C

Frequency [MHz]	L: PK [dBµV]	L: QP [dBµV]	L: AV [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: QP [dBµV/m]	L: AV [dBµV/m]	Limit [dBµV/m]
31.67	32.2	26.8	19.6	9	41.2	35.8	28.6	40
33.18	31.7	28.1	26.4	9.5	41.2	37.6	35.9	40
38.71	29.8	22.9	18	10	39.8	32.9	28	40
55.3	18.4	12.4	21.6	13.2	31.6	25.6	34.8	40
66.36	15.4	11.2	9.8	15.3	30.7	26.5	25.1	40
68.71	24.6	20.5	16.4	15.3	39.9	35.8	31.7	40
171.78	28.5	23.3	19.9	15.9	44.4	39.2	35.8	43.5
206.13	16.5	13.3	11.1	16.3	32.8	29.6	27.4	43.5



**SPURIOUS EMISSION 1 GHz - 18 GHz**

■ - Test not applicable

**Testlocation :**

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

For TEST EQUIPMENT USED please refer to ATTACHMENT B: -----

**Description of Measurement**

The final level, expressed in dBµV/m, is arrived by taking the reading from the Spectrumalyzer in dBµV and adding the correction factors of the test setup incl. cables.

Example of the correction value at 1.8 GHz

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

**Testresult in detail:**

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]

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

**Testresult**

The requirements are

O - MET

O - NOT MET

Min. limit margin

\_\_\_\_\_

dB

\_\_\_\_\_

MHz

Min. limit margin

\_\_\_\_\_

dB

\_\_\_\_\_

MHz

Remarks: \_\_\_\_\_ NOT APPLICABLE \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**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 dBµV/m, is arrived by taking the reading from the EMI receiver (Level dBµV) 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	Level	+	Factor	=	Level	-	Limit	=	Delta
(MHz)	(dBµV)		(dB)		(dBµV/m)		(dBµV/m) (dB)		
315	45	+	22.5	=	67.5	-	74.3	=	-6.8

**Testresult in detail:**

**1)with the stick antenna: RI-ANT-S01C**

Frequency [MHz]	L: PK [dBµV]	L: AV [dBµV]	L: QP [dBµV]	Correct. [dB]	L: PK [dBµV/m]	L: AV [dBµV/m]	L: QP [dBµV/m]	Limit [dBµV/m]
0.134	45.7	39.7	42.4	-20	25.7	19.7	22.4	25

**Testresult**

The requirements are

- MET                       - NOT MET

Min. limit margin                        2.6   dB                        0.134   MHz

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

Remarks:       The limits are met.





CONDUCTED POWER OF THE FUNDAMENTAL WAVE MEASURED  
ON THE ANTENNA TERMINALS

- Test not applicable

**Testlocation :**

- o - Shielded room no. 1
- o - Shielded room no. 2
- o - Shielded room no. 3
- o - Shielded room no. 4
- o - Shielded room no. 5
- o - Shielded room no. 6
- o - Shielded room no. 7
- o - Anechoic chamber
- o - Full compact chamber
- o - 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								
Temperature/°C	DC supply voltage/V	Power/dBm	Power/dBm	Power/dBm	Power/dBm	Power/dBm	Power/dBm	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:

- o - Standby
- o - Testprogram (H - Pattern)
- o - Testprogram (color bar)
- o - Testprogram (customer specific)
- - Transmit at the frequency 134.2 kHz. \_\_\_\_\_
- o - \_\_\_\_\_
- o = \_\_\_\_\_

**Configuration of the equipment under test:**

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

- o = \_\_\_\_\_ Type : \_\_\_\_\_
- o = \_\_\_\_\_ Type : \_\_\_\_\_
- o = \_\_\_\_\_ Type : \_\_\_\_\_
- o = \_\_\_\_\_ Type : \_\_\_\_\_
- o = \_\_\_\_\_ Type : \_\_\_\_\_
- o = \_\_\_\_\_ Type : \_\_\_\_\_

- - unshielded power cable
- o - unshielded cables
- o - shielded cables MPS.No.:
- o- customer specific cables
- o - \_\_\_\_\_
- o - \_\_\_\_\_

FCC ID: A92S251B

**SUMMARY**

**GENERAL REMARKS:**

The Reader RI-STU-251B has been tested with the frame antenna: RI-ANT-G01E and with the stick antenna: RI-ANT-S01C, on the following frequency:  
TX-Mode: 134.2 kHz

**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 : September 18, 2000

Testing End Date : September 22, 2000

- MIKES BABT PRODUCT SERVICE GmbH -

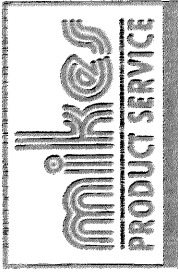
Test-engineer

  
\_\_\_\_\_  
Günter Mikes  
Dipl.-Ing. (FH)

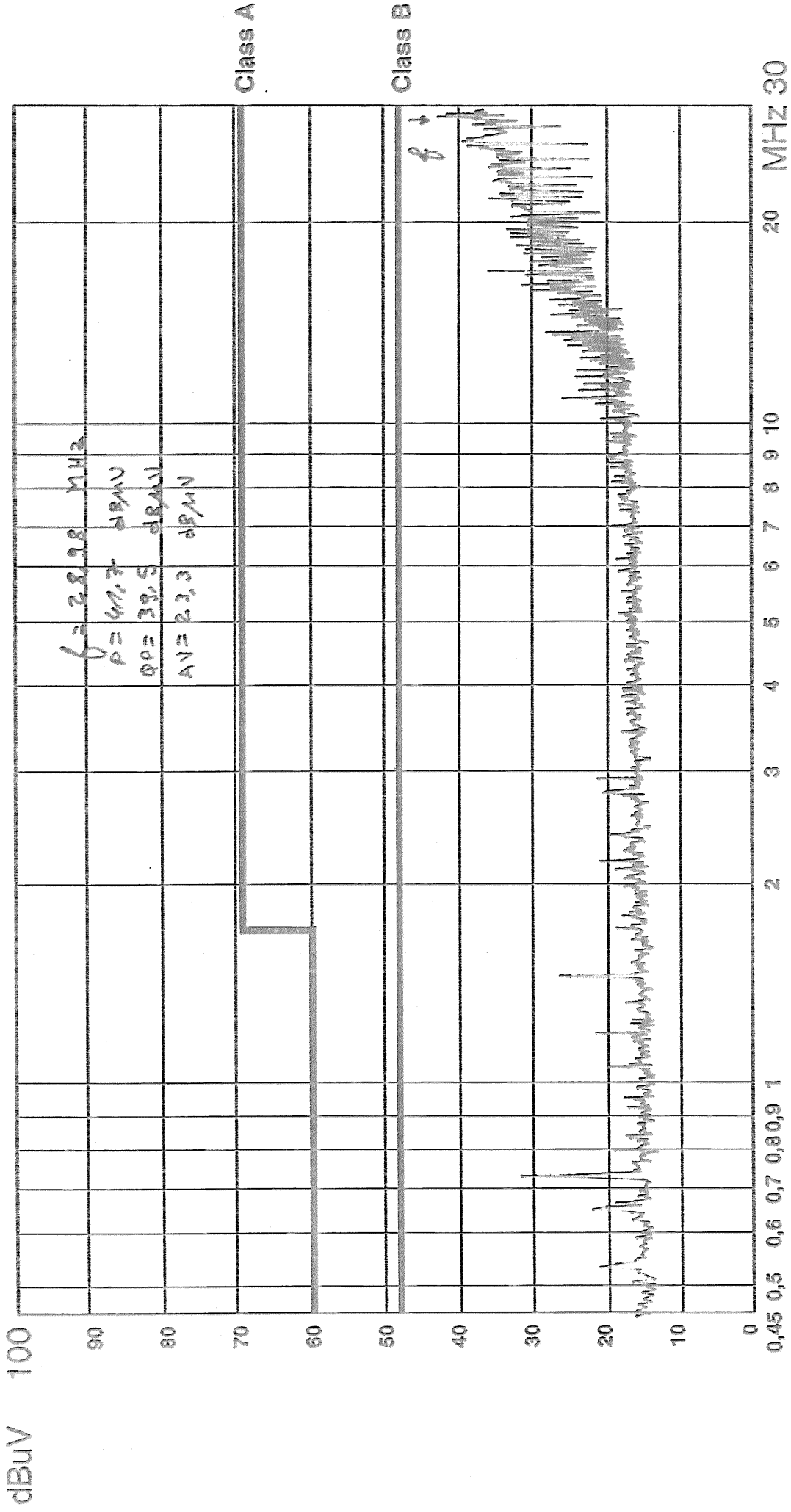
  
\_\_\_\_\_  
Mahmoud Nouri  
Dipl. Ing

INTERFERENCE VOLTAGE - TEST 450 kHz - 30 MHz  
 FCC Part 15 Subpart B

ID. : \_\_\_\_\_  
S 251 B  
Texas Instruments  
SLICA ANB



Type/Model:  
 Ser. No.:  
 Client:  
 Test mode:  
 Test point:



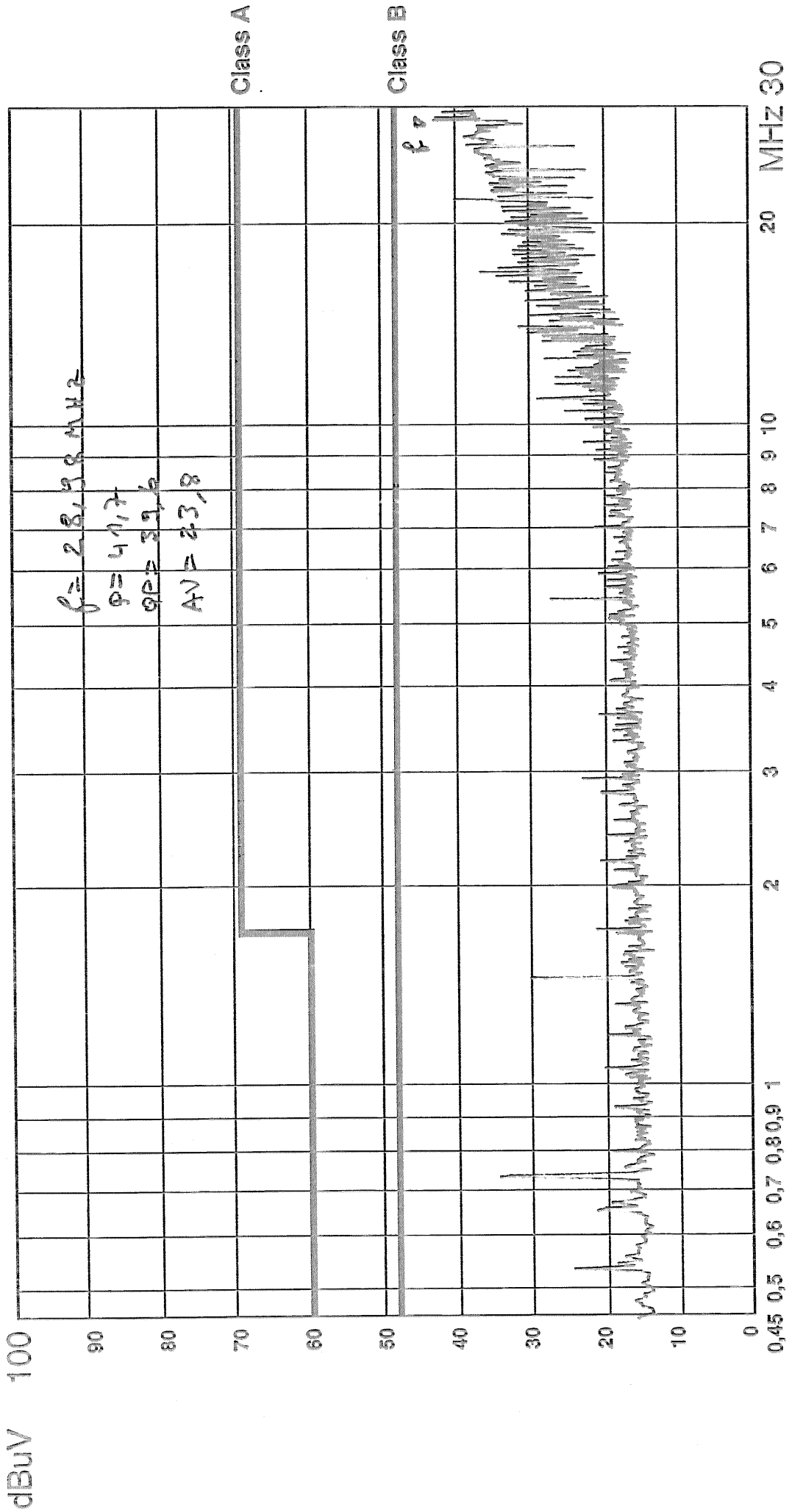
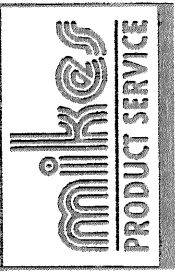
Test receiver:  P  QP  
 Test Result:  o.k.  n.o.k.

Tag	Name	Blatt
Gemessen	date	page
27.9.00	MN	A1 of 6

INTERFERENCE VOLTAGE -- TEST 450 kHz -- 30 MHz  
 FCC Part 15 Subpart B

ID: \_\_\_\_\_  
 S 254 B  
 Texas Instruments  
 Stick Ant.  
 N

Type/Model:  
 Ser. No.:  
 Client:  
 Test mode:  
 Test point:



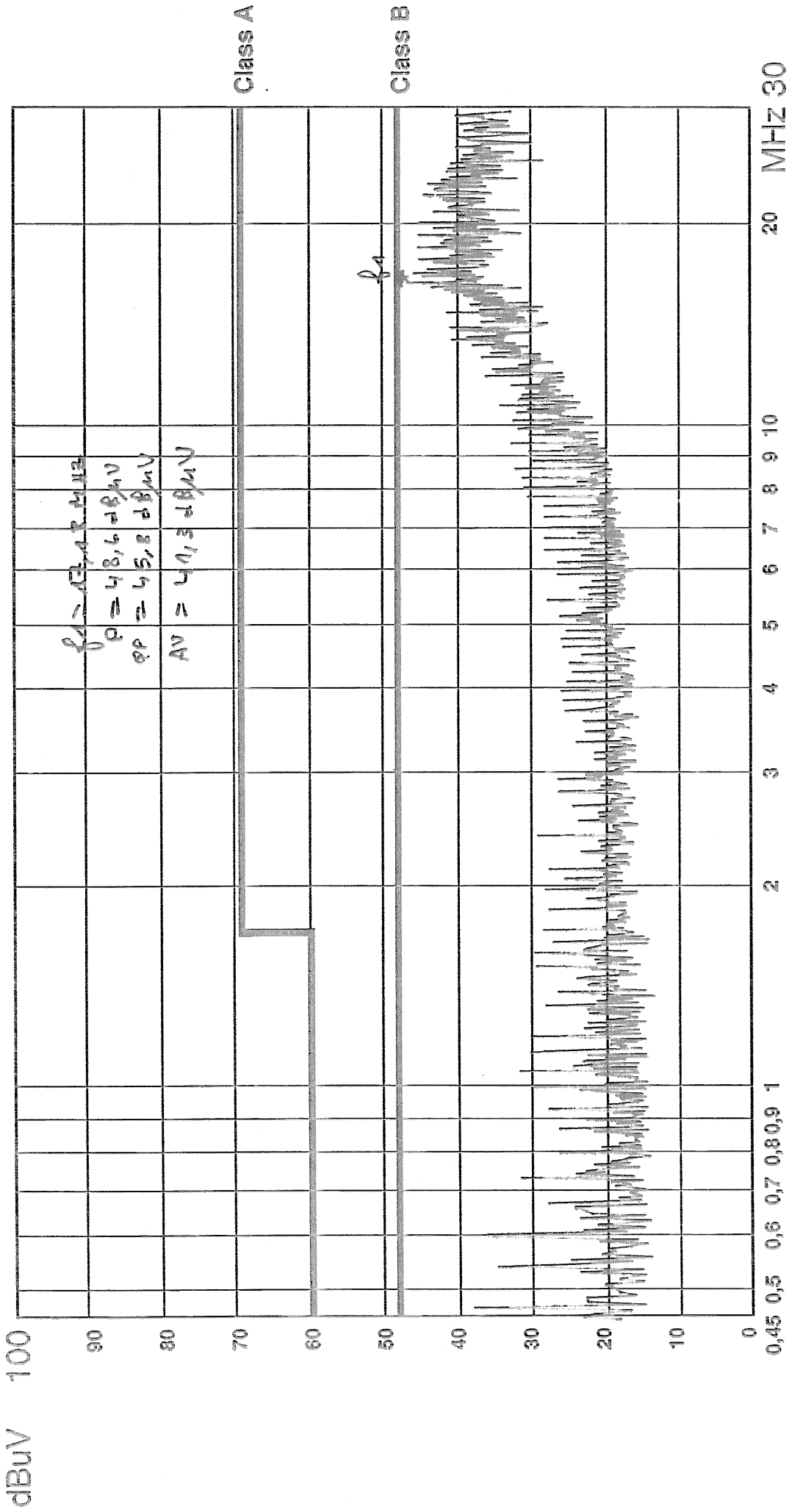
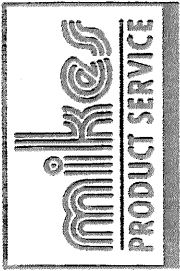
Test receiver:  P  QP  
 Test Result:  o.k.  n.o.k.

Tag	Name	Blatt
Gemessen	date	page
21.9.00	MN	A2 of 6

INTERFERENCE VOLTAGE - TEST 450 MHz - 30 MHz  
 FCC Part 15 Subpart B

ID : \_\_\_\_\_  
 S 2548  
 Texas Instruments  
 Frame 001  
 N

Type/Model:  
 Ser. No.:  
 Client:  
 Test mode:  
 Test point:



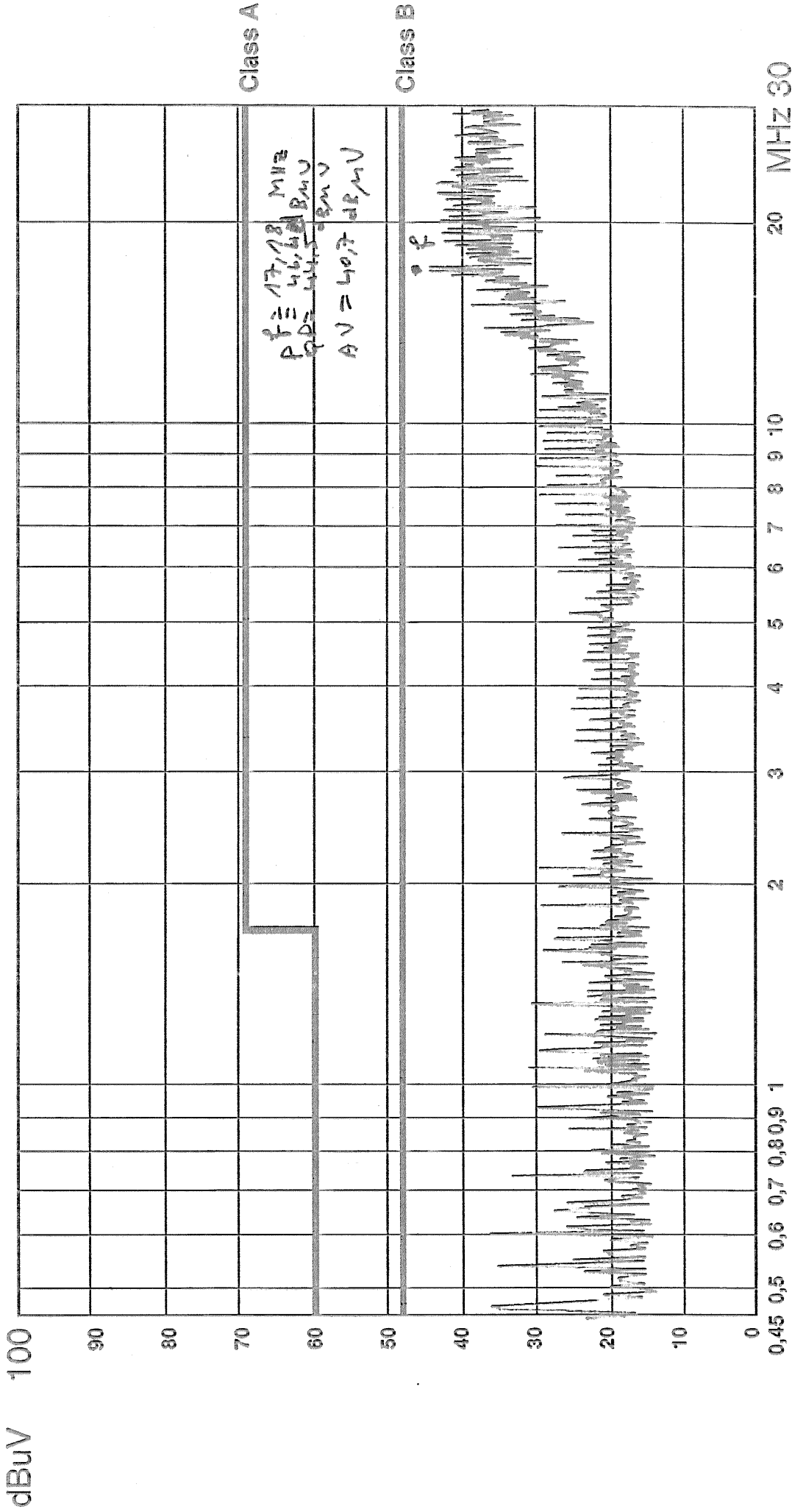
Test receiver:  P  QP  
 Test Result:  o.k.  n.o.k.

Tag	Name	Blatt
	name	page
Gemessen	date	
21.2.00	MN	A3 of 6
testert		

INTERFERENCE VOLTAGE - TEST 450 kHz - 30 MHz  
 FCC Part 15 Subpart B

ID# : \_\_\_\_\_  
 S 251 B  
 Texas Instruments  
 Frame Ant.

Type/Model:  
 Ser. No.:  
 Client:  
 Test mode:  
 Test point:



Test receiver:  P  QP  
 n.o.k.

Test Result:  o.k.  n.o.k.

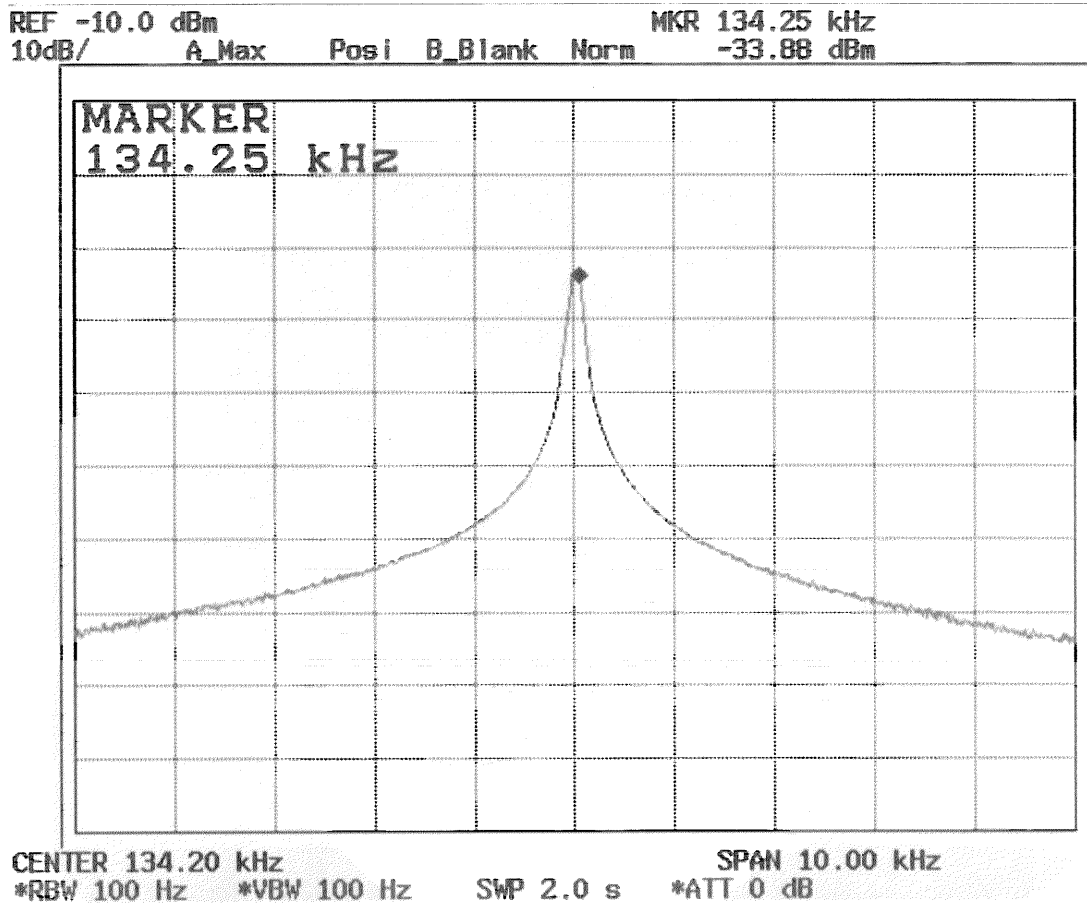
Tag	Name	Blatt
Gemessen	date	page
21.9.00	MN	14 of 6
tested		

FCC ID: A92S251B

Attachment A7

File No: T 19352-1-00 MN

Band width plot



File No. T 19352-1-00 MN;

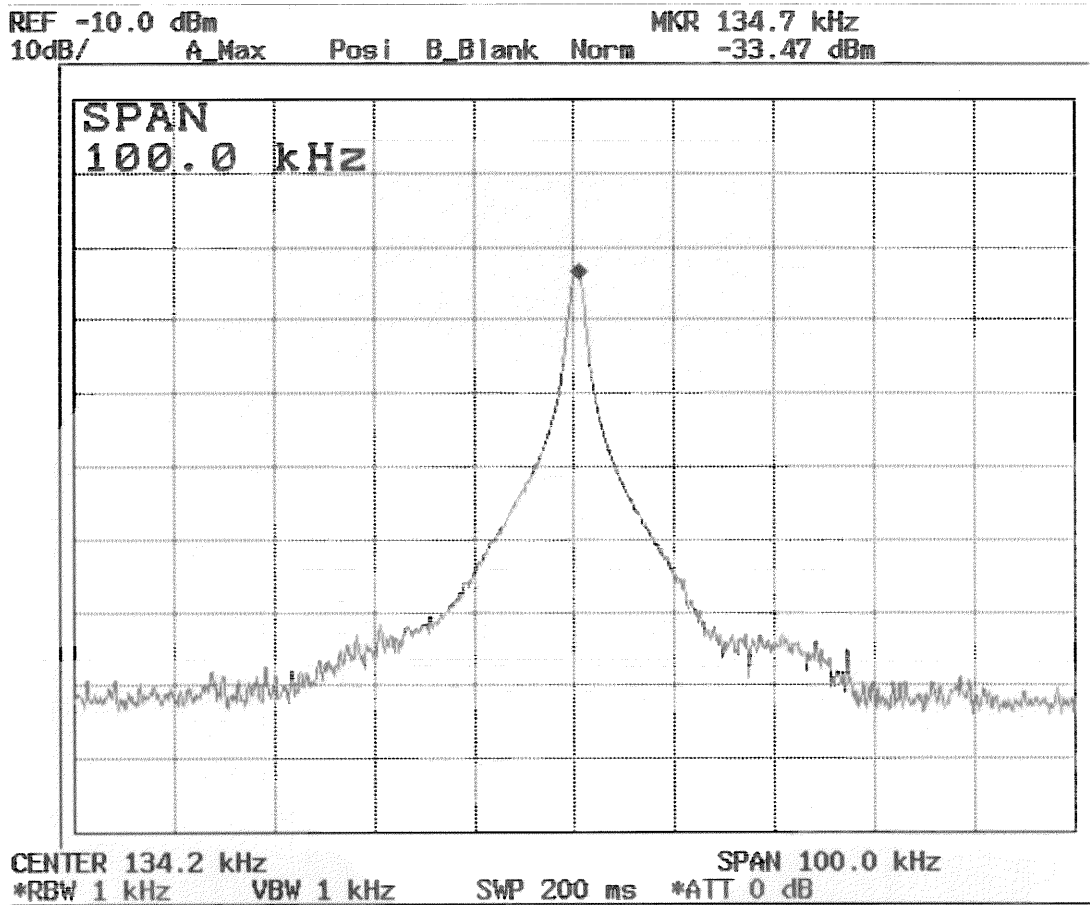


FCC ID: A92S251B

Attachment A8

File No: T 19352-1-00 MN

Band width plot



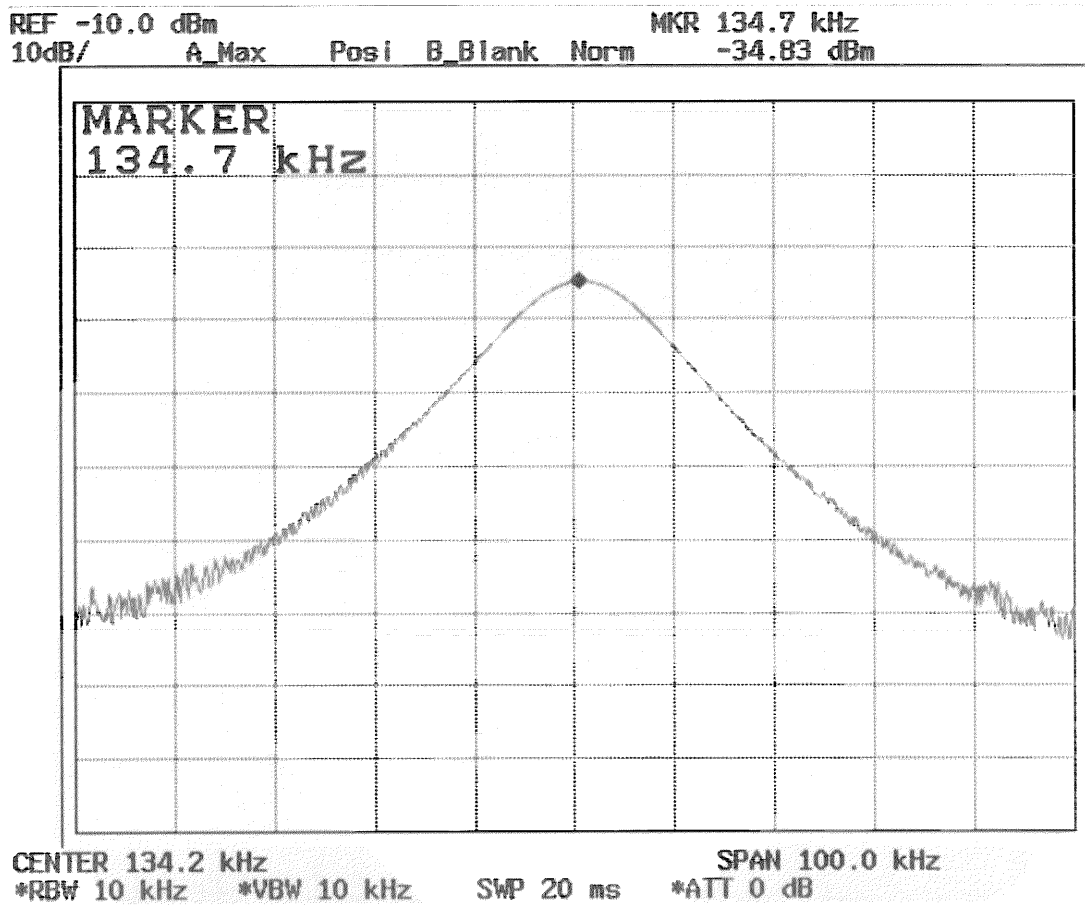
File No. T 19352-1-00 MN:

FCC ID: A92S251B

Attachment A9

File No: T 19352-1-00 MN

Band width plot



File No. T 19352-1-00 MN:

## 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 19352-1-00 MN

Beginning of Testing: 18-September-2000

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	04-07/63-92-045
SER1	FMZB 1516	Antenna	Schwarzbeck G.	04-07/62-90-018
	ESHS 30	Test Receiver	Rohde & Schwarz	04-07/63-92-045
SER2	VULB - 9165	Super-Broadband-Anten	Schwarzbeck G.	04-07/62-00-001
	ESVP	Test Receiver	Rohde & Schwarz	04-07/63-89-008

# CONSTRUCTIONAL DATAFORM FOR TESTING OF RADIO EQUIPMENT

Licence holder:	Texas Instruments Deutschland GmbH		
Address:	Haggertystr.1		
Manufacturer:	Texas Instruments Deutschland GmbH		
Address:	Haggertystr.1		
Type:	Tiris Reader System		
Model:	RI-STU-251B		
Serial-No.:		Protection class:	

**Application for getting**

- national approval in the following countries: \_\_\_\_\_
- EC-type examination

**Additional informations to the above named model:**

<b>Antenna:</b>																					
<b>transmitter:</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Type:</td> <td style="width: 20%;">Size</td> <td style="width: 40%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td>RI-ANT-S02E</td> <td>l= 140 d=20</td> <td>Stabantenne</td> <td>3m cable</td> </tr> <tr> <td>RI-ANT-G01E</td> <td>714 x 269 mm</td> <td>Rahmenantenne</td> <td>1m cable</td> </tr> <tr> <td>RI-ANT-G02E</td> <td>200 x 200 mm</td> <td>Rahmenantenne</td> <td>1m cable</td> </tr> <tr> <td>RI-ANT-G04E</td> <td>1020x 520 mm</td> <td>Rahmenantenne</td> <td>1m cable</td> </tr> </table>	Type:	Size			RI-ANT-S02E	l= 140 d=20	Stabantenne	3m cable	RI-ANT-G01E	714 x 269 mm	Rahmenantenne	1m cable	RI-ANT-G02E	200 x 200 mm	Rahmenantenne	1m cable	RI-ANT-G04E	1020x 520 mm	Rahmenantenne	1m cable
Type:	Size																				
RI-ANT-S02E	l= 140 d=20	Stabantenne	3m cable																		
RI-ANT-G01E	714 x 269 mm	Rahmenantenne	1m cable																		
RI-ANT-G02E	200 x 200 mm	Rahmenantenne	1m cable																		
RI-ANT-G04E	1020x 520 mm	Rahmenantenne	1m cable																		
<b>receiver:</b>	same as transmitter																				
<b>Power supply of the transmitter:</b>																					
Type: DC ,external																					
	nominal voltage: <u>24 V</u>																				
	lowest voltage: <u>15 V</u>																				
	highest voltage: <u>27.6 V</u>																				
<b>Power supply of the receiver:</b>																					
Type: same as transmitter	nominal voltage: <u>24 V</u>																				

**Ancillary equipment:**

Description: <u>none</u>	Type: _____	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 Cable RS232/ RS422/ RS485	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	> 3m	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Power supply	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	> 3m	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
Antenna cable	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	> 3m	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
I/O Interface	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	< 3m	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no
	<input type="checkbox"/> yes <input type="checkbox"/> no		<input type="checkbox"/> yes <input checked="" type="checkbox"/> no

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

Page D1

<b>Type designation: RI-STU-251B</b>			
<b>Name and type designation of individual units comprising the radio equipment:</b>			
Radio Identification unit for goods and persons			
<b>Type of equipment:</b>			
<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 checked="" 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 type="checkbox"/>
<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>			
	Transmitter-receiver	Transmitter	Receiver
Frequency range	134.2 kHz		
Maximum no. of channels	1		
Channel spacing	n.a.		
Class of emission (type of modulation)	N0N		
Maximum RF output power	n.a.		
Maximum effective radiated power (ERP)	n.a.		
Output power variable	yes		
Channel switching frequency range	no switching		
Method of frequency generation	<input type="checkbox"/> Synthesizer	<input checked="" type="checkbox"/> Crystal	<input type="checkbox"/> Other
Frequency generation TX			
Frequency generation RX	Direct receiver		
IF	1 <sup>st</sup> IF no IF	2nd IF	3rd IF
Integral selective calling	no		
Audio-frequency interface level at external data socket	no IF		
Modes of operation	<input checked="" type="checkbox"/> Duplex mode	<input type="checkbox"/> Semi-duplex mode	<input type="checkbox"/> Simplex mode
Power source	<input checked="" type="checkbox"/> Mains	<input type="checkbox"/> Vehicle-regulated	<input type="checkbox"/> Integral
Antenna socket	<input type="checkbox"/> BNC <input type="checkbox"/> M <input type="checkbox"/> None	<input type="checkbox"/> TNC <input type="checkbox"/> UHF <input checked="" type="checkbox"/> Screws	<input type="checkbox"/> N <input type="checkbox"/> Adapter <input type="checkbox"/>
<b>Type approval specifications: EN 300330</b>			

0 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.

Freising ,date Feb 8, 2001 i.v. [Signature]  
place of issue Seal and signature of applicant

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

**Page D 3**