



Accredited testing-laboratory

DAR registration number: TTI-P-G-081/94-D0

**Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97**

Test report no. : 4-1685-01-01/05
Type identification : Client Desktop
Applicant : TESgrosser
Test standards : EN 55022:1998+A1:2000+A2:2003 2003-01-01



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1 General Information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

Test Laboratory Manager:

2005-05-04

Michael Schnedler



Date

Name

Signature

Technical Responsibility for Area of Testing:

2005-05-04

Bernd Rebmann



Date

Name

Signature

1.2 Testing Laboratory

CETECOM ICT Services GmbH

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State of accreditation: The test laboratory (area of testing) is accredited according to
DIN EN ISO/IEC 17025
DAR registration number: TTI-P-G 081/94-D0

Accredited by: Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of Applicant

Name:	TESgrosser
Street:	Elstersteinstr. 47a
Town:	66386 St. Ingbert
Country:	Germany
Telephone:	+49 6894 38 66 79
Fax:	+49 6894 38 66 84
Contact:	
Telephone:	

1.4 Application Details

Date of receipt of order:	2005-04-29
Date of receipt of test item:	2005-04-29
Date of start test:	2005-04-29
Date of end test:	2005-04-29
Persons(s) who have been present during the test:	Mr Michael Grosser

1.5 Information about test item

1.5.1 Test item

Kind of test item	: Computer	fixed use
typical use	: Residential, commercial and light industry	table-top
Details of Manufacturer:	TESgrosser Elstersteinstr. 47a 66386 St. Ingbert Germany	
Power supply	: 230 V AC	
Ports possible total cable length (declared by manufacturer)	Typical ports at the backside of the computer (Keyboard, Mouse, Printer, USB 1.0.) Additional RS232 (Com-port) Additional USB 2.0	
Does EUT contain devices susceptible to magnetic fields, e.g. Hall elements, electrodynamic microphones, etc.?		no
Is mounting position / usual operating position defined?		no
In case of Immunity testing (EMS): Observing or/and recording following functions:		

Set-up / Operating mode		
Backup completely		
Additional information:		
The Monitor (TFT) was switched off, to prevent wrong measurements results.		

1.5.2 EUT: Type, S/N etc. and short descriptions used in this test report

short description*)	EUT	Type	S/N serial number
EUT A	Desktop Computer	GROCODI P4 3000	J1929W308764A
EUT B			

*) EUT short description is used to simplify the identification of the EUT in this test report.

1.6 Test standard/s:

EN 55022:1998+A1:2000+A2:2003 2003-01-01 **Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement**
Amendment A1: 2000
Amendment A2: 2003

2 Technical Tests

2.1 Summary of Test Results

- No deviations from the technical specifications were ascertained
 There were deviations from the technical specifications ascertained

2.1.1 Emission

2.1.1.1 Enclosure

EMI Phenomenon	Frequency range	Emission level (Limit) Class B		Basic standard	Operating mode	Result
		Quasi-peak	Average			
Radiated Interference Field Strength	30 – 230 MHz 230 - 1000 MHz	30 dB μ V/m 37 dB μ V/m		EN 55022: 1998 + A1: 2000 + A2: 2003	Backup completely	complies

2.1.1.2 AC mains power input/output ports

EMI Phenomenon	Frequency range	Emission level (Limit) Class B		Basic standard	Operating mode	Result
		Quasi-peak	Average			
conducted interference voltage	0,15 – 0,5 MHz 0,5 – 5 MHz 5 – 30 MHz	66 – 56 dB μ V 56 dB μ V 60 dB μ V	56 – 46 dB μ V 46 dB μ V 50 dB μ V	EN 55022: 1998 + A1: 2000 + A2: 2003		NA5
Harmonic current emission	0 – 2 kHz			EN 61000-3-2		NA5
Voltage fluctuations and flicker				EN 61000-3-3		NA5

2.1.1.3 Telecommunication port

EMI Phenomenon	Frequency range	Emission level (Limit) Class B		Basic standard	Operating mode	Result
		Quasi-peak	Average			
conducted interference voltage	0,15 – 0,5 MHz 0,5 – 30 MHz	84 – 74 dB μ V 74 dB μ V	74 – 64 dB μ V 64 dB μ V	EN 55022: 1998 + A1: 2000 + A2: 2003		NA5

Remarks:

NA1	Test not applicable because port does not exists
NA2	Test not applicable because port only for services
NA3	Test not applicable because port lengths not longer than 3m
NA4	Test not applicable because no vehicular environment
NA5	Not tested because not required by customer

2.2 Test Environment

Temperature	:22 C
Relative humidity content	:55 %
Air pressure	:92 kPa
Details of power supply	:230 V +/- 5%
Other parameters	:

2.3 Measurement and Test set-up

Note: The test configuration is in accordance with the requirements given in the standards in point 1.6

2.4 Test results

Measurement uncertainty

The uncertainty of the measurement equipment fulfils CISPR 16 and the related European and national standards.

The semi anechoic chamber fulfils the requirements of CISPR 16-1 (ANSI C63.4) for a test volume of 3m Ø.

Notes

The test are carried out first as a preview measurement in peak mode. These results are documented as plot file. In this graphic the limit lines are corrected by the transducer factors of antennas, cables etc. The values shown in this graphics are not finally maximized.

These values are stored in a table, maximized and remeasured in quasi peak mode. The used mode is shown in the table. The limits used are shown in the column "spec limit" and the difference to the limit in the column "dLim". This table is plotted as a graphic. The frequency range is automatically adapted to the listed frequencies.

The test are carried out in different operating modes and the worst case is documented in this test report.

2.5 Test Equipment utilised

To simplify the identification of the test equipment used on each page of the test report, each item of test equipment and ancillaries such as probes are identified throughout the report by numbers in brackets according to the table below.

ICT-Nr	Model/ Typ	Typ:	Serial No.	Spezifikation
0210	Flicker, Harmonics Analyzer PHE4500/B/D	Spitzenberger & Spies	B5976	EN 60555/IEC 555
0211	HF-Power Amplifier HP 83006	Hewlett Packard	3104 A 00499	0.01-26 MHz
0213	Horn Antenna 3115	EMCO	5289	1-18 GHz
0217	Adjustable transformer RT 5A	Grundig	01005	25-260 Volt
0237	Feeding bridge B	Bosse	no	-
0324 0358	Spectrum-Analyzer 8566 OB No.1 No.2	Hewlett Packard	2637 A 03480 2747 A 05349	100 Hz- 22 GHz
0325 2446	Quasi-Peak-Adapter 85650 A No.1 No.2	Hewlett Packard	2521 A 00806 2811 A 01145	
0327	AC/DC Power Supply	Zentro		
0346	Power Sensor 8482 A	Hewlett Packard	2652 A 18811	0.1-4.2 GHz
0347	Power Sensor 8481 A	Hewlett Packard	2702 A 71333	0.01-18 GHz
0353	Synthesized-Signal-Generator 8662 A	Hewlett Packard	2811 A 03269	10 kHz-1.2GHz
0355	HF-Generator 8671 B	Hewlett Packard	2823 A 00656	2-18 GHz
0357	Dual Power Meter 438	Hewlett Packard	2804 U 01015	
0369	Signal-Generator 8657 A	Hewlett Packard	2838 A 00638	10 kHz - 1040 MHz
0372	Multimeter	Hewlett Packard	2619 A 44829	
0385	Power-Meter 437 B	Hewlett Packard	2861 A 00774	
0386	Power Sensor 8482 B	Hewlett Packard	2703 A 03024	0.01-4.2 GHz
0524	Isotropic-Field-Probe EMCO 7122	EMCO	9305-1160	10 kHz - 1 GHz
0527	Ferrit Clamp MDS 21	Rohde & Schwarz	301404-038	20 - 1000 MHz
0528	Logper Antenna AT 1080	EMCO		80 - 1000 MHz
0529	RF-Amplifier 100 W 1000 M1	ar	13161	80 - 1000 MHz
0530	Logper Antenna HL 223	Rohde & Schwarz	832727/007	0.2-1.3 GHz
0532	Bicon Antenna HK 116	Rohde & Schwarz	833162/004	20-300 MHz
0534	CDN L801-M2/M3	Lüth	9350105	
0538	Injection Probe F-120-4	FCC	23	10-100 MHz
0549	RF-Amplifier 220 - 200 LD	ar	910 130 06	0.01 -220 MHz
0552	Ferrit Clamp MDS 21	Rohde & Schwarz	301404-039	20 - 1000 MHz
0552	Audio-Analyzer UPA	Rohde & Schwarz	883.864/014	10 Hz - 100 kHz
0561	PC Siemens Scenic 4T PCI	Siemens	S26361-K345V	
0567	DC-NNBM 8125	Rohde & Schwarz	8125401	
0568	EMI Receiver 8542 E	Hewlett Packard	3617A00170	9 kHz-2,9 GHz
0573	Bilog Antenne CBL 6112	Rohde & Schwarz	2110	0.03-2 GHz
0574	CDN 801-S9	FCC	56	
0575	Bicon Antenne 3109	EMCO	8906-2309	20-300 MHz
0577	Oscilloscope HM 303-4	HAMEG	Z 30948	
0578	Logper Antenne 3146	EMCO	8905-2435	0.2-1 GHz
0580	Power Supply 6032 A	Hewlett Packard	2920 A 04466	0-60 Volt
0582	V-ISN ESH 3-Z5	Rohde & Schwarz	893045/002	230V/AC
0584	V-ISN ESH 3-Z5	Rohde & Schwarz	893045/003	230V/AC
0585	V-ISN ESH 3-Z5	Rohde & Schwarz	893045/004	230V/AC
0589	Capacity Coupling Clamp	MWB		
0591	ESD 30 incl. 2x P 18	EM-Test	6089-18+26	-
0600	Camera - System	Scout		
0611	4-Wire T-ISN EZ 10	Rohde & Schwarz	828757/009	9 KHz -150MHz
0612	Power Sensor 8481 D	Hewlett Packard	2928 A 03607	0.01-18 GHz
0625	Turn-table , - Antenna-Tower Controller	EMCO	1061-3M 1218	

ICT-Nr	Model/ Typ	Typ:	Serial No.	Spezifikation
0626	CDN- EM-Injection Clamp 203i			
0627	CDN 801-M3-16	FCC	237	
0629	CDN 801-T2	FCC	78	
0631	CDN 801-AF 4	FCC		
0632	RF-Amplifier 25S1G4	ar	20452	0.8 - 1 Ghz
0906	Power Sensor URV 5-Z-4	R&S	840310/71	100KHz-2GHz
1505	Synthesizer 8904 A	Hewlett Packard	2822 A 01153	DC - 600 kHz
2439	Spectrum-Analyzer-Display 8566 2A	Hewlett Packard	2542 A 13175 No.1	
2444			2816 A 16665 No.2	
2441	RF-Preselector 85685 A	Hewlett Packard	2620 A 00354 No.1	20 Hz - 2 GHz
2448			2837 A 00778 No.2	
2453	4-Wire T-ISN EZ 10	Rohde & Schwarz	828757/009	9 KHz -150MHz
2454	4-Wire T-ISN EZ 10	Rohde & Schwarz	828757/009	9 KHz -150MHz
2563	PC Extensa 711TE	Acer		
2599	Hybrid-Generator UCS 500M6	EM-Test	0399-07	-
2623	PC Satellite 4090XCDT	Toshiba	10442626G PCN037	
2643	PC Lifetec	Medion		
2657	Surges Coupling-decoupling CNV 504	EM-Test		
2658	Coupling-decoupling RFTVS	EM-Test		
2660	Coupling-decoupling CN	EM-Test		
2661	Coupling-decoupling MV	EM-Test		
2662	Coupling-decoupling TN	EM-Test		
2844	Power Meter URV 5	R&S	837723/025	
3052	DSL-Simulator Pres-link 2.1	Siemens		
F 001	2-Wire T1-ISN T1	BOSSE	EMV-Labor Nr. 1-10	10 - 30 MHz
F 011	2 -Wire T2-ISN T2	BOSSE	EMV-Labor Nr. 1-10	30 -150 MHz
F030	Power Sensor URV5-Z-4	R&S	839080/005	9KHz-3GHz 10Volt
F031	Power Sensor URV5-Z-4	R&S	838314/030	100KHz-3GHz 100Volt
F032	Power Sensor URV5-Z-4	R&S	830755/057	9KHz-3GHz 10Volt
F033	Power Meter NRV	R&S	860327/024	
F034	PABX T-Concept XI 321	Telekom		
F035	T-ISN	UNI Dortmund		
F036	PC EMV+ analoge Modem	F+W, Creatix		
	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	901,9-903,1MHz
	Notch Filter TTR 750-3EE1	Telonic	90177-1	
2862	CMU 200	R&S	832221/0055	850,900,1800,1900
3078	CMD 55	R&S	839352/005	900,1800

3 Test performed

3.1 Emission tests

3.1.1 Results of the electromagnetic radiated emissions (distance 10 m)

3.1.1.1 Instrumentation for test (see equipment list)

F	0358	2446	0582	2448	2444	0573	0575	F 20			
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Radiated limits

Frequency- range	EN 55022 Class B	EN 55022 Class A
30 MHz - 230 MHz	30 dB(µV/m)	40 dB(µV/m)
230 MHz -1000 MHz	37 dB(µV/m)	47 dB(µV/m)

EUT set-up	GROCODI P4 3000	
Operation mode	<input type="checkbox"/> stand-by	<input type="checkbox"/> selection
	<input type="checkbox"/> special function	<input type="checkbox"/> data transfer
	<input type="checkbox"/> transmitting	<input type="checkbox"/> test software
	<input checked="" type="checkbox"/> Backup completely	<input type="checkbox"/>

Results

Frequency range	Class B		Class A		Effect
	complies	failed	complies	failed	
30 MHz - 1000 MHz	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	no
1 GHz – 2 GHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	no

Test result:

- normal performance within the specification limits

3.1.1.2 List of the results of radiated emission
(horizontal and vertical polarisation)

Data File : /41685_05.doc 29 Apr 1905 11:31:50

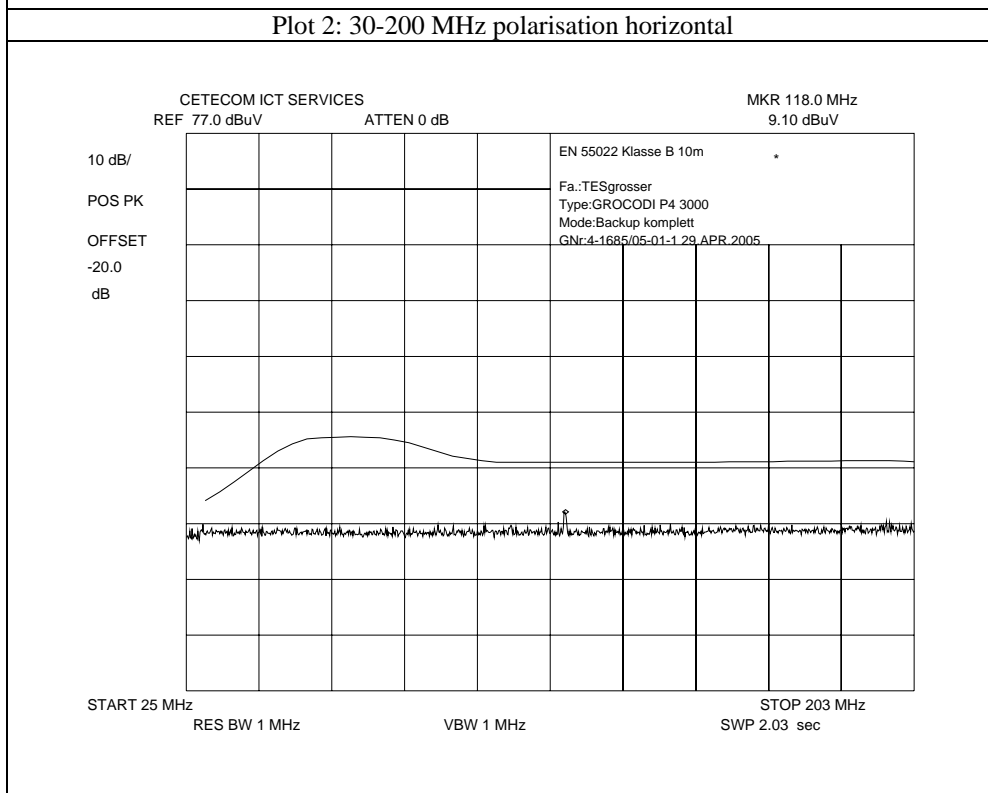
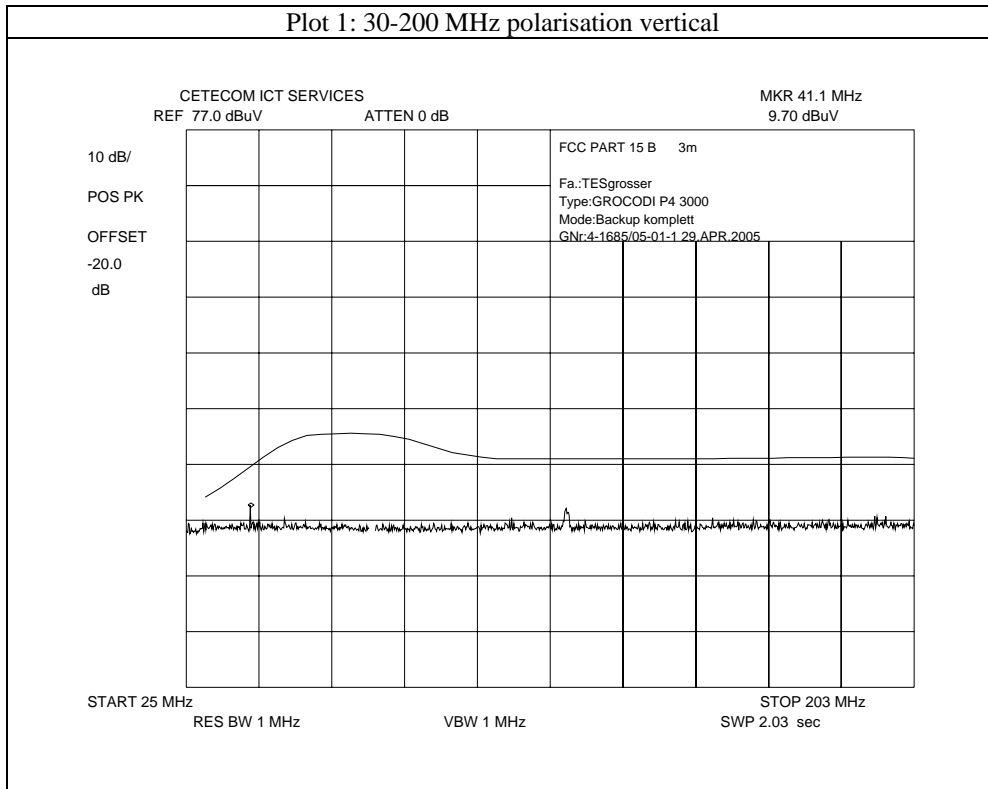
No	EMISSION	SPEC LIMIT dBuV/m	MEASUREMENTS			SITE		CORR FACTOR dB	COMMENTS
	FREQUENCY MHz		ABS	dLIM	MODE	POL	HGT AZM cm deg		
1	41.1	30.0	23.1	-7.0	PK	V	96 0	N/T	
2	118.0	30.0	21.1	-8.9	PK	H	287 360	N/T	
3	118.4	30.0	21.1	-8.9	PK	V	96 0	N/T	
4	232.6	37.0	23.8	-13.2	PK	H	285 360	N/T	
5	298.7	37.0	27.0	-10.0	PK	H	285 360	N/T	
6	299.6	37.0	25.5	-11.5	PK	V	96 0	N/T	
7	364.9	37.0	27.1	-9.9	PK	H	285 360	N/T	
8	498.7	37.0	29.5	-7.5	PK	H	285 360	N/T	
9	658.637	37.0	30.5	-6.5	QP	V	106 209	22.5	
10	794.159	37.0	24.6	-12.5	QP	V	102 122	N/T	
11	794.9	37.0	32.3	-4.7	PK	H	285 360	N/T	

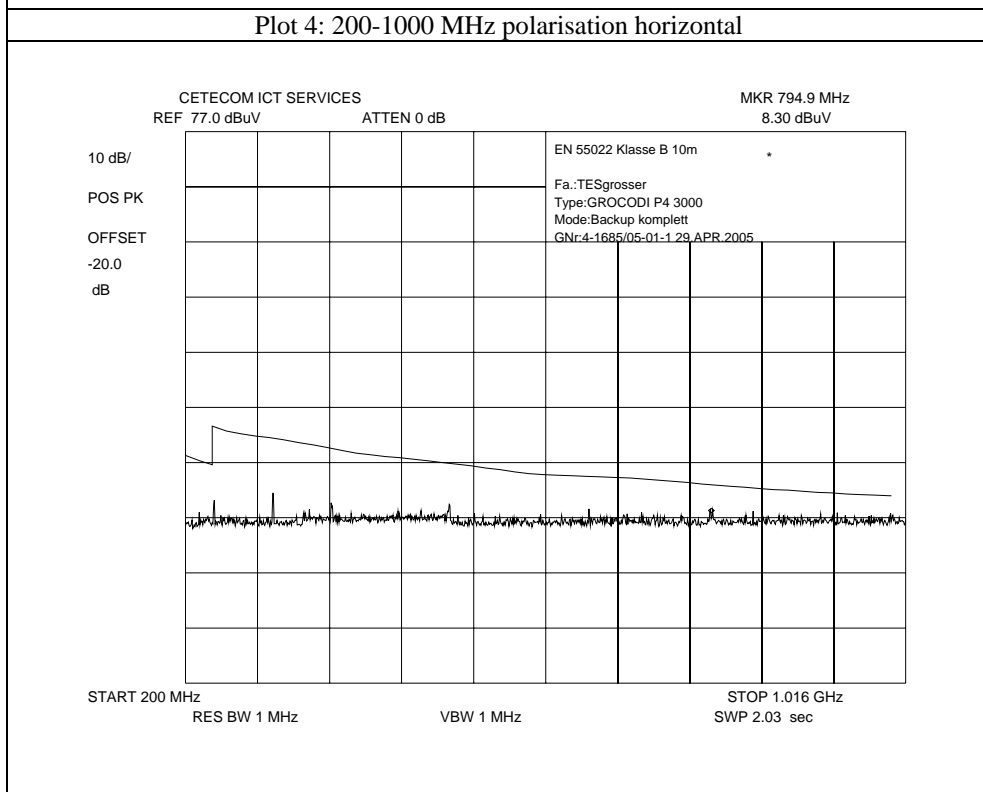
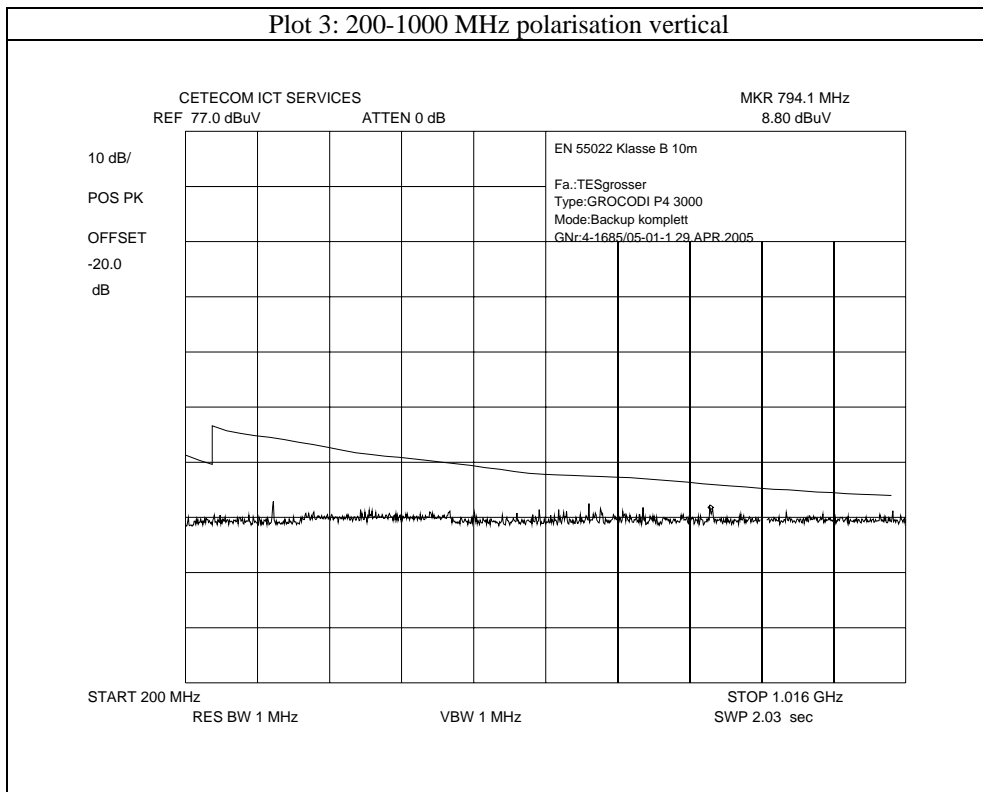
N/T in CORR FACTOR column denotes a non-traceable signal.

Remarks:

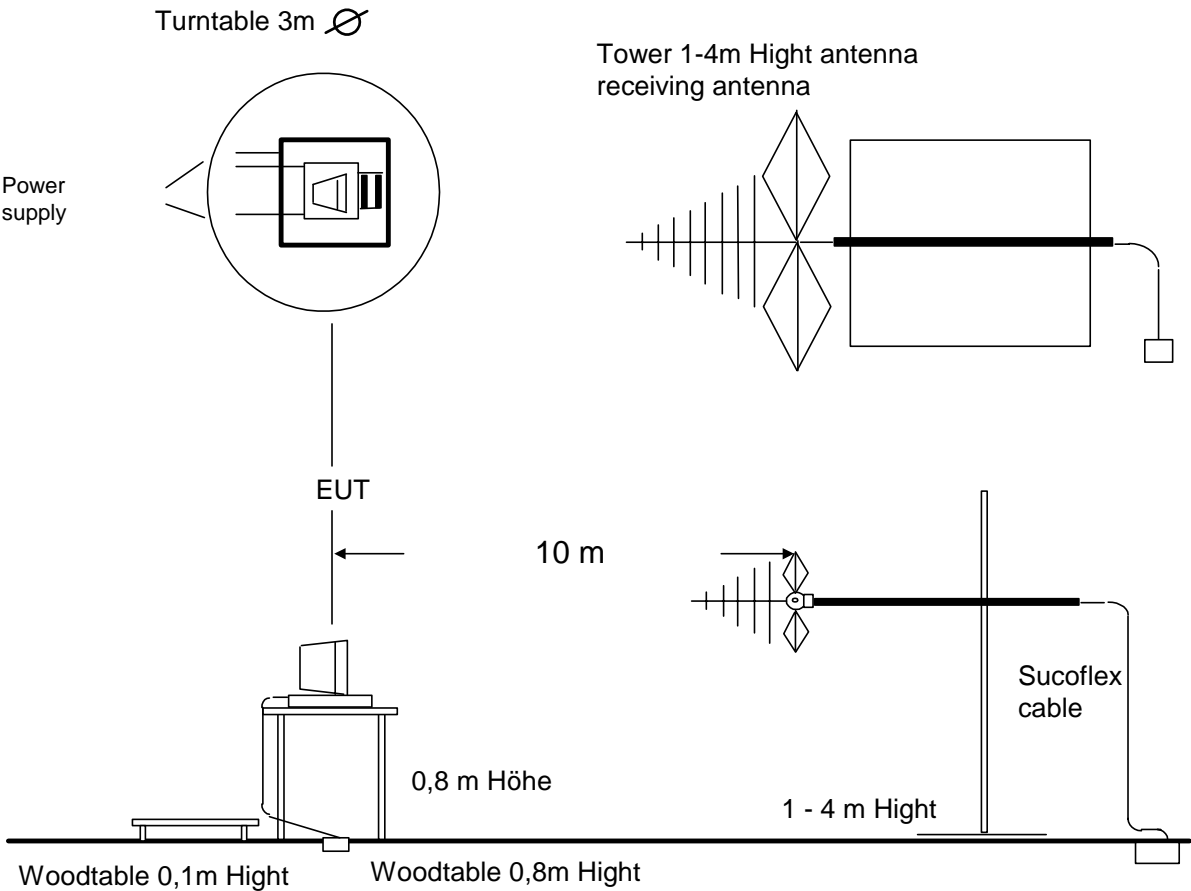
A measurement with spectrum analyzer and peak-detector is performed. If no limit exceeding of specified limits occur, the measurement is concluded at this stage. If the limit exceeding occur, measurement are carried out with the quasi-peak detector at the frequencies at which the exceeding occur.

3.1.1.3 Chart of the results of radiated emission





3.1.1.4 Drawing of test set-up



3.1.1.5 Photo documentation of the test set up

Photo 1: Messaufbau



Photo 2: Messaufbau

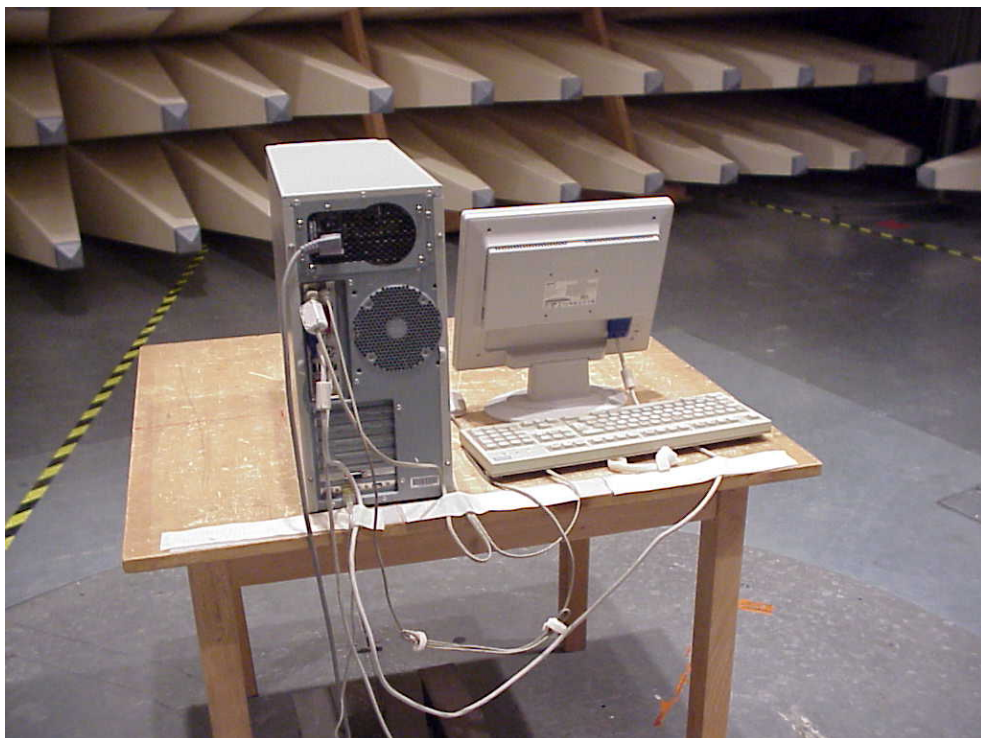


Photo 3: EUT

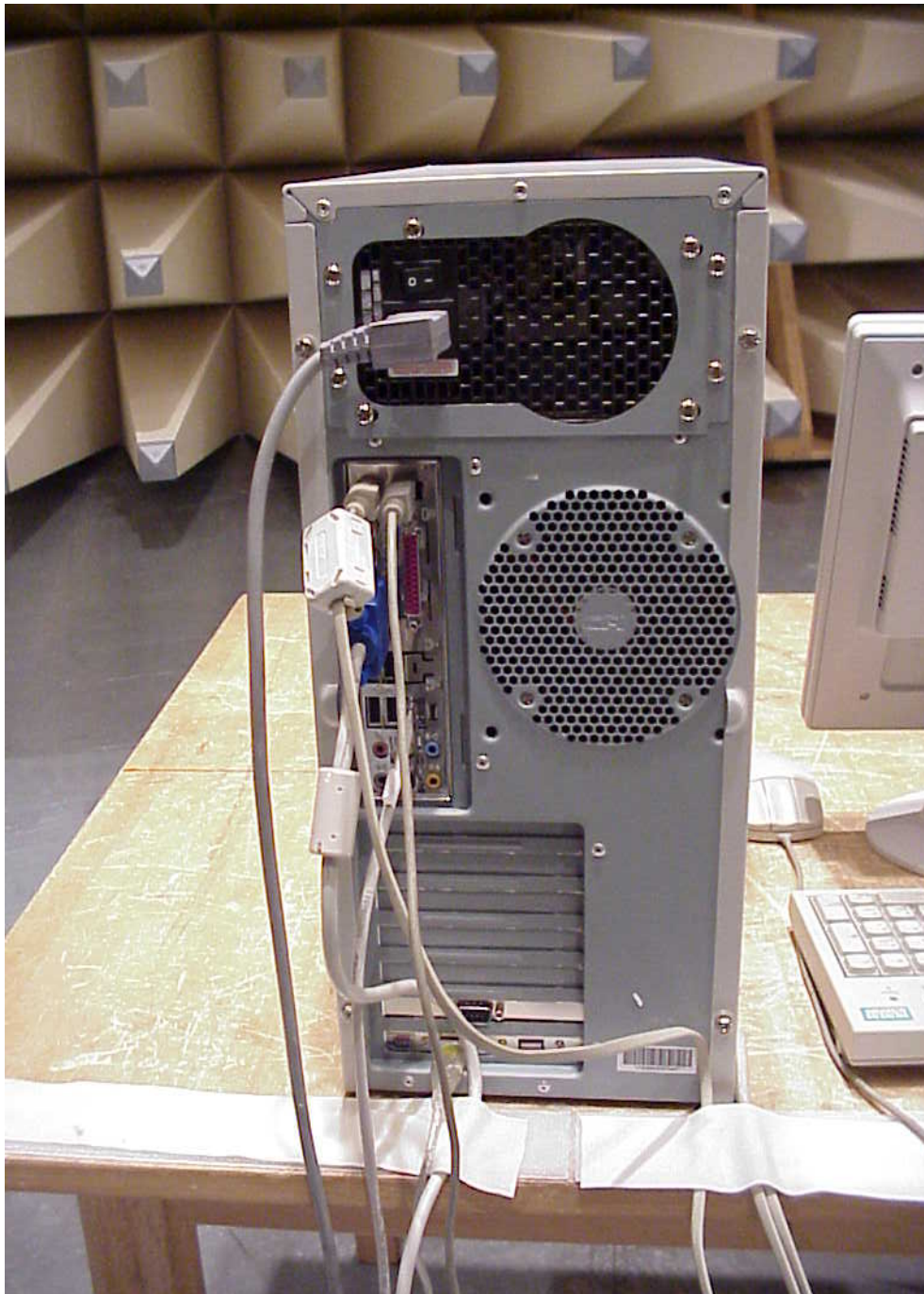


Photo 4: Serial number

