MEASUREMENT / TECHNICAL REPORT

SIEMENS AG

Model: Personal Computer Scenic DT6

FCC ID: HSSSCENIC6201

Feb. 25, 1999

This report concerns:	Original grant	☐ Class II change
Equipment type:	Personal Computer	

Request issue of grant:

Immediately upon completion of review

☐ Defer grant per 47 CFR 0.457(d)(1)(ii) until _____ date _____. Company Name agrees to notify the Commission by _____ date _____ of the intended date of announcement of the product so that the grant can be issued on that date.

Measurement procedure used:

ANSI C63.4-1992

☐ FCC/OET MP-4(1987)

☐ other _____

Limits on compliance with: CISPR 22 resp. FCC class B

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1 GENERAL INFORMATION

1.1 Product Description

The Siemens Computer Scenic DT6 is a compact desktop personal computer. The system board integrates the Celeron Processor, memory, and I/O-technologies. The main system unit is assembled with the Processor Intel Celeron 433 MHz.

Description of the power supplies:

- Power supplies:

ASTEC, model	AA20650 S26113-E425-V30
Minebea, model	SPW1553 S26113-E425-V20

Features Overview:

CPU

- Vendor: Intel
- Type: 300, 333, 366, 400 or 433 MHz PGA370 Celeron with 66 MHz FSB
  ready for PGA370 Celeron with 100 MHz FSB
- 1st Level cache: Internal in CPU (32 kB); cachable address space up to 4 GB
- 2nd Level cache: Internal in CPU (128 kB); cachable address space up to 4 GB
- Voltage regulator: On board voltage regulator for CPU VRM 8.2

Chip Set

- Vendor: Intel
- Type: 82440BX
  PAC 82443BX & PIIX4E 82371EB

Universal serial bus (USB) interface

- Support: 12 Mbits/s
  Connector: Two external USB connectros

Serial port interface

- Connector: One external standard and one internal connector for chip card reader

Main memory

- Support: The system needs at least one module and can manage at most two SDRAM modules.
- Size: From 16 Mbytes up to 512 Mbytes SDRAM
- Technology: 100 MHz unbuffered DIMM modules.

LAN – Ethernet controller

- Support: Wake on LAN by interesting packets, link status change and Magic-Packet™
  InCom LAN boot and Intel LANdesk Service Agent (LSA)

The personal computer is assembled by Siemens AG, Bürgermeister-Ulrich-Str. 100, 86199 Augsburg.

1.2 Related Submittal Grant

N/A

1.3 Tested System Details

The FCC IDs for all equipment, plus description of all cables used in the tested system are:

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
1	Siemens Scenic 620 (DT6)	HSSSCENIC6201	PC **EUT**	unshielded power cord [292]
2a	Siemens MCM 2110 NTD S26361-K500-V150	M9U9705C97BMD	Monitor	unshielded power cord [175] shielded video cable [168]
2b	Siemens MCM 1707 NTD	A3LCS762	Monitor	unshielded power cord [175] shielded video cable [168]
2c	Siemens MCM 1705 NTD	A3LCGH760	Monitor	unshielded power cord [175] shielded video cable [168]

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
2d	Siemens MCM 1703 NTD	A3KM053	Monitor	unshielded power cord [175] shielded video cable [168]
3	Siemens S26381-K210	HSS01TASTK210	Keyboard	shielded keyboard cable [143]
4	Microsoft MS 2.1A	C3KKMP3	Mouse	shielded mouse cable [183]
5	Microsoft Intelli mouse 1.1A	DOC: PN X03-29688	USB mouse	shielded mouse cable [197]
6	Hewlett Packard HP 2225C+ (3019S70991)	894C2655X	Printer, parallel I/F	unshielded AC cable [180], shielded centronics cable [190]
7	Hewlett Packard HP 2225D+ (2952S61299)	DSI6XU2225	Printer, serial I/F	unshielded power cord [185], shielded serial cable [190]
8	Siemens	N/A	USB cable	shielded cable, terminated [192]
	Pos 1 contains:			
a_1	ASTEC (UK), AA20650 SNI: S26113-E425-V30	N/A	Power supply	

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
a_2	Minebea SPW1553 SNI: S26113-E425-V20	N/A	Power supply	
b	Siemens S26361-D1132-A11 WGS 01	N/A	System board	
c	Hyundai HYM7V75A400 PC100-322-620	N/A	SDRAM	
d	Intel PGA 370 Celeron	N/A	Processor 433 MHz	
e	Matrox G100 AGP	DOC: G100A/4/OEM	Graphic controller board	
f	S26361-D960-V1	N/A	Cheap card reader	
g	Fujitsu MPC3064AT	N/A	Hard disk drive	
h	NEC CDR-1900A S26361-H375-V500	A3DCDR-1900A	CD-ROM drive	
i	SONY MPF920-C	N/A	Floppy disk drive	

Remark: position 2a / 2b / 2c / 2d / $1a_1$ / $1a_2$ optional

1.4 Test Methodology

Both, conducted and radiated tests were performed according to the procedures in ANSI C63.4-1992. Radiated testing below 1 GHz was performed at an antenna to EUT distance of 10 meters above 1 GHz at an antenna to EUT distance of 3 meters. All radiated emission measurements were done in an anechoic chamber. Limits for radiated and conducted emission are in compliance with CISPR 22 resp FCC class B.

1.5 Test Facility

The anechoic chamber and conducted measurement facility used to collect the emission data is located at Siemens AG, Bürgermeister Ulrich Str. 100, 86199 Augsburg, Germany. This site has been fully described in a report dated January 24, 1997 submitted to your office, and accepted in a letter dated March 03, 1997 (31040/SIT).

1.6 Referenced Rules Sections

N/A

2 PRODUCT LABELING

2.1 FCC ID Label

FCC ID: HSSSCENIC6201

This device complies with part 15 of the FCC Rules and meets all requirements of the Canadian Interference-Causing-Equipment Regulations. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.2 Location of Label on EUT: see attached files

3 SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a maximum fashion (as a customer can use it). Each type of external ports was connected with a peripheral unit (e.g. serial port connected to a serial printer, external keyboard port connected to a keyboard and so on). During radiated emission the monitor was powered via system unit, during conducted emission also the external monitor supply was tested.
The system clock is 66,6 MHz, the clock frequency was tested with the corresponding worst case processor:

66,6 MHz clock: Intel Celeron 433 MHz

The system is provided with two kinds of power supplies:

– ASTEC, AA20650 SNI: S26113-E425-V30

– Minebea, SPW1553 SNI: S26113-E425-V20

Each power supply has been measured with each video resolution (worst case).
Referring to radiated emission the following (worst case) results are applicable:
ASTEC PSU:
Frequency range 30 MHz - 1 GHz:
66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:
66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1600 x 1200/100 Hz

Minebea PSU:
Frequency range 30 MHz - 1 GHz:
66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:
66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Referring to conducted emission the following (worst case) results are applicable:

ASTEC PSU:
66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz, monitor power external

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz, monitor power via system unit

Minebea PSU:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz, monitor power via system unit
66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz, monitor power external

3.2 Video mode Justification

The system was tested in video graphic modes 1024 x 768 and 1600 x 1200. To get comparable results when measuring different video resolutions it is necessary to carry out the test with one monitor which is capable to drive all high resolutions. Such a high performance monitor has a special ferrite loaded video cable. To prove the compliance of the EUT without ferrite on the host side, we additionally tested the system with a representative standard 21" monitor provided with a cable without any ferrite in a video resolution which is usual for standard monitors (1600 x 1200). The worst case combination (with clock frequency, video mode and power supply) of the system was used to collect the included data.

The following data are applicable:

radiated emission:

ASTEC PSU:

Frequency range 30 MHz - 1 GHz:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

Minebea PSU:

Frequency range 30 MHz - 1 GHz:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

conducted emission:

ASTEC PSU:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz, monitor power external

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz, monitor power via system unit

Minebea PSU:

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz, monitor power via system unit

66,6 MHz clock/ Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz, monitor power external

3.3 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to typical use.

The used sequence is:

- scrolling ”H” with applicable video mode (see 3.2)
- internal Floppy drive writes to the HD and reads back
- internal CD-ROM writes to the HD
- ”H`s” are sent to the printer ports
- data is sent to USB ports
- LAN / Ethernet data communication

3.4 Special Accessories

As shown in Figure 3.1, all interface cables used for compliance testing are shielded like normally supplied by the manufacturer. All cable connectors feature integral metal hoods for shielding.

3.5 Equipment Modifications

To achieve compliance to Class B levels, the following modifications were made during compliance testing:

no modifications

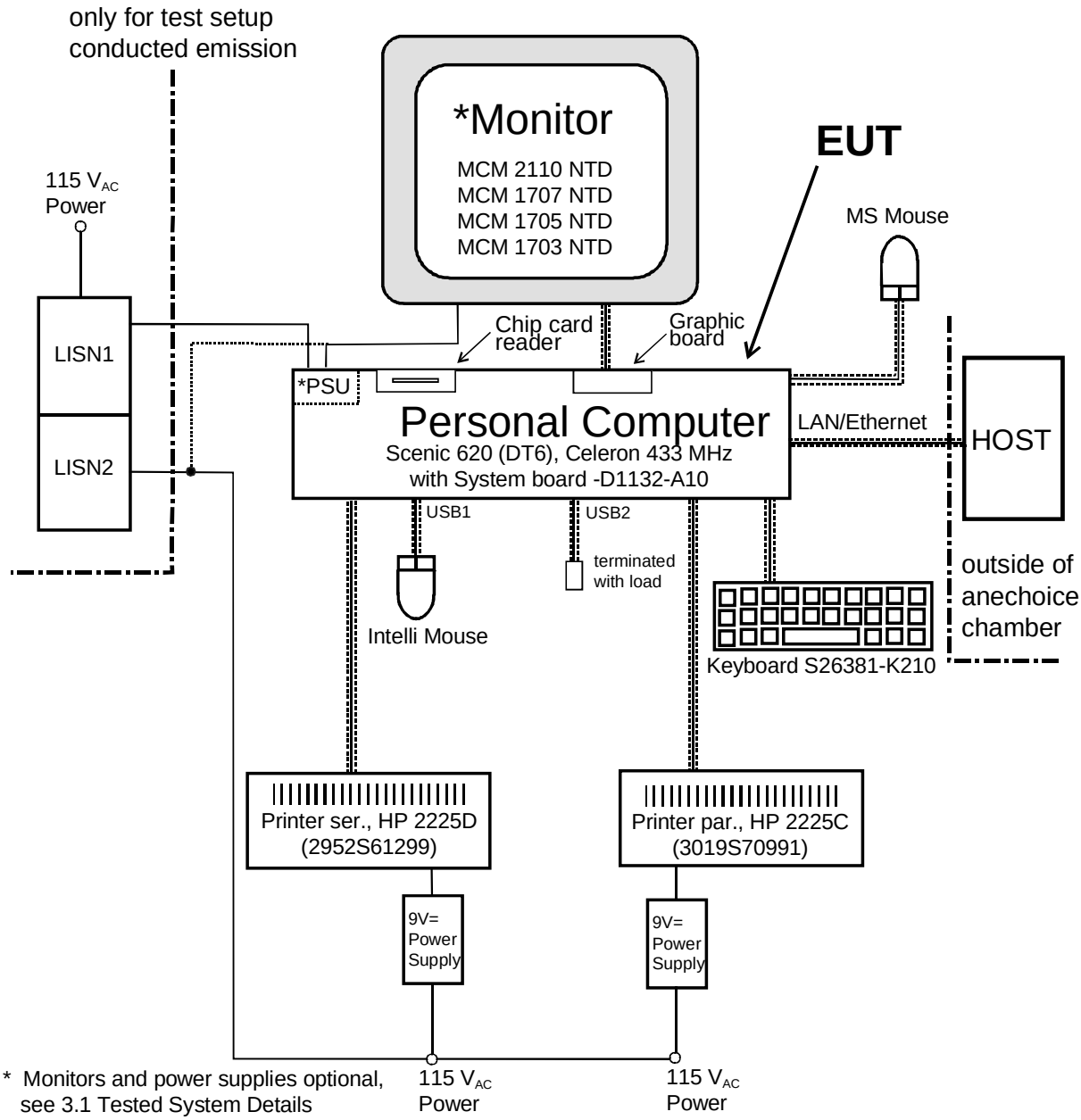
Applicant Signature _____ Date _____

Typed/Printed Name _____ Position _____

3.6 Configuration of Tested System

All necessary tests were carried out like figure 3.1. The system was used according to paragraph 1.1. During test for conducted emission the EUT was connected to a LISN. All peripherals were supplied by a second LISN. The equipment was configured according to ANSI C63.4-1992 Fig 11.

Figure 3.1 Configuration of Tested System



4 BLOCK DIAGRAM OF EUT

see fig 4.1 page 22

4.1 Block Diagram Description (see fig. 4.1)

The major parts of the system are (fig 4.1).

- System board
- Power supply
- Floppy disk drive
- Hard disk drive
- CD-ROM drive
- Chip card reader
- Peripheral connector area (Keyboard, Mouse, Ser. 1, Parallel Port LAN/Ethernet and USB)

The detailed diagram of the system board is shown in fig 4.1

The personal computer works exactly like a traditional P.C..

4.2 Clockfrequencies of EUT

Clock synthesizer	14,318 MHz
Front side bus	66,6 MHz
Memory	66,6 MHz
PCI-bus	33,3 MHz
PIIX4 to IDE and USB	33,3 MHz
ISA Bus	8,2 MHz
I/O controller	14,3 MHz
USB	48 MHz
AGP bus	66,6 MHz

4.3 Theory of Operation

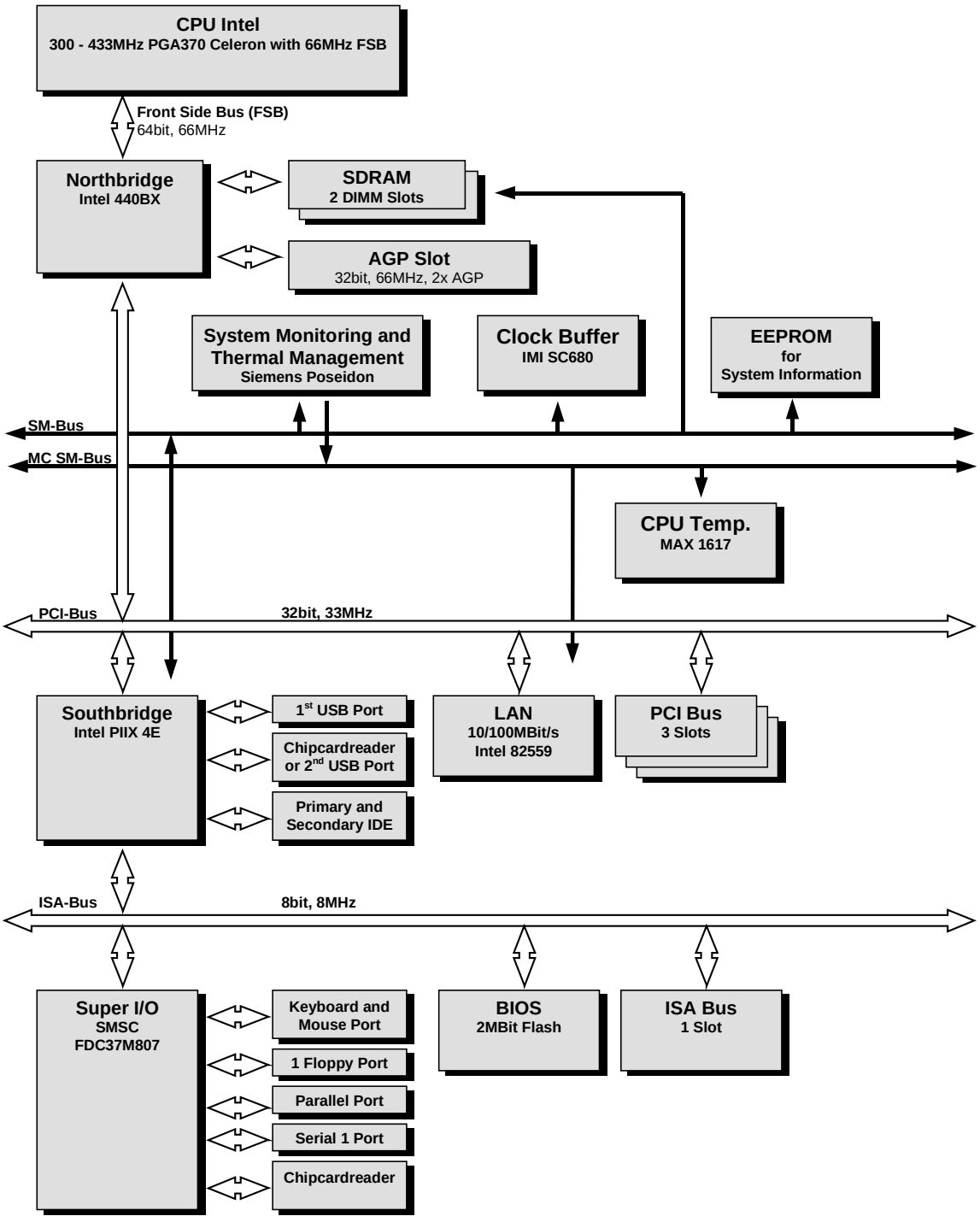
The compact desktop PC works exactly as a traditional PC.

The processors run internally between 300 and 433 MHz, the system clock is 66,6 MHz and is multiplied by the processors internally by 4,5, 5,0 5,5, 6,0 or 6,5 (only with 66,6 MHz clock).

The highest possible frequencies and the corresponding processors are:

System clock	Processor	factor
66,6 MHz	300 MHz	4,5
66,6 MHz	333 MHz	5,0
66,6 MHz	366 MHz	5,5
66,6 MHz	400 MHz	6,0
66,6 MHz	433 MHz	6,5

Figure 4.1 Block Diagram of the EUT



5 CONDUCTED EMISSION DATA

5.1 Test Procedure

The initial step in collecting conducted emission data is a Rohde & Schwarz Test Receiver (ESHS10). During first scan all data in peak mode is measured, then all significant peaks are explored either in quasi-peak mode or in average mode. In case of low noise (no peak value reaches the quasi peak limit), only average checks are done.

5.2 Measured Data

The conducted emission was measured the following way:

1. Peak noise on L
2. Peak noise on N

During the emission measurement the printers are supplied with power via a second LISN, the monitor was either powered via the system unit or separately.

The worst case results of the corresponding configuration (video resolution, supply modus: monitor via system unit or external) is given next:

ASTEC PSU
a) video resolution 1024 x 768/100 Hz, monitor power external
b) video resolution 1600 x 1200/75 Hz, monitor power via system unit

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	0,186	46,00	QP	64,2	a

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
neutral	0,246	43,30	QP	61,8	a
phase	0,306	45,80	QP	60,0	a
neutral	0,186	41,10	AV	54,2	a
phase	0,246	39,10	AV	51,8	a
phase	0,306	42,20	AV	50,0	a
neutral	0,432	29,50	AV	47,2	a
phase	0,492	29,40	AV	46,1	a
phase	0,186	46,20	QP	64,2	b
neutral	0,306	46,10	QP	60,0	b
phase	0,492	35,20	QP	56,1	b
neutral	0,186	41,00	AV	54,2	b
phase	0,246	39,30	AV	51,8	b
phase	0,306	42,50	AV	50,0	b
phase	0,432	29,30	AV	47,2	b
neutral	0,492	29,50	AV	46,1	b

AV: average
QP: quasi peak

Minebea PSU
a) video resolution 1024 x 768/100 Hz, monitor power via system unit
b) video resolution 1600 x 1200/75 Hz, monitor power external

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	0,588	35,90	QP	56,0	a
neutral	0,690	35,40	QP	56,0	a
phase	1,278	35,40	QP	56,0	a
neutral	4,626	35,40	QP	56,0	a
phase	4,236	32,40	AV	46,0	a
phase	4,332	34,10	AV	46,0	a
phase	4,530	35,20	AV	46,0	a
neutral	4,626	32,90	AV	46,0	a
phase	4,728	33,10	AV	46,0	a
phase	0,594	36,60	QP	56,0	b
phase	0,690	34,80	QP	56,0	b
neutral	4,440	36,40	QP	56,0	b
phase	0,594	32,80	AV	46,0	b
phase	4,242	33,00	AV	46,0	b
neutral	4,440	34,90	AV	46,0	b
neutral	4,536	33,80	AV	46,0	b
phase	4,638	34,20	AV	46,0	b

AV: average
QP: quasi peak

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: H. Zenkner

Measurement Protocols: see attached file

ASTEC PSU:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1024 x 768/100 Hz

66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1600 x 1200/75 Hz

Minebea PSU:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1024 x 768/100 Hz

66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1600 x 1200/75 Hz

5.3 Referenced Rules Sections

N/A

5.4 Test Instrumentation Used, Conducted Measurement

Type	Manufacturer/ Model No.	Serial No.	Last Cal.	Cal. Interval
Receiver	ESHS10 Rohde&Schwarz	842884/011	May 98	12 months
LISN	NSLK 8126 Schwarzbeck	8126160	May 98	12 months
LISN	ESHS-Z5 Rohde&Schwarz	871884/004	May 98	12 months
Pulse limiter	ESH3-Z2 Rohde&Schwarz	357.8810.52	May 98	12 months

6 RADIATED EMISSION DATA

6.1 Test Procedure

The radiated emission was measured in two parts:

1. in the frequency range from 30 MHz to 1000 MHz. The bandwidth of the EMI-receiver was set to 120 kHz and the detector was set to peak. During prescan all data in peak mode are accumulated automatically. At final measurement the detector was set to CISPR quasi peak and values above the acceptance line were verified automatically.

2. in the frequency range from 1000 MHz to 5000 MHz. The bandwidth of the EMI-receiver was set to 1 MHz and the detector was set to peak. During prescan all data in peak mode are accumulated automatically. At final measurement the detector was set to average and values above the acceptance line were verified automatically.

Both tests were performed in a semi anechoic chamber, measurements below 1000 MHz in a distance of 10 meters between antenna and EUT, above 1 GHz with a distance of 3 meters between antenna and EUT. During tests the EUT was turned 360° and the actual used receiving antenna was moved from 1 to 4 meters and the antenna polarisation was changed from horizontal to vertical for finding the maximum levels of emission.

For each range one antenna for the whole span was used

1. 30 MHz to 1000 MHz: log.-per antenna
2. 1000 MHz to 5000 MHz: rigid tensor antenna

After automatic tests during manual verification the cables and the equipment were placed and moved within the range of position in order to find the maximum of emission.

6.2 Measured Data

The EUT was measured with the Processor Intel Celeron 433 MHz in video modes 1024 x 768 and 1600 x 1200. The test results below reflect the worst case with:

ASTEC PSU:
a) 66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	10 Meter Limit [dB(µV/m)]	Exceeding [dB]	Ant Pol	Height in [m]	Angle in deg
30.21000	27.10	30.000	-2.9	ver	1.0000	300.000
66.60000	21.90	30.000	-8.0	ver	3.4000	59.000
77.97000	22.30	30.000	-7.6	ver	1.6000	270.000
80.01000	25.10	30.000	-4.8	ver	1.6000	119.000
132.93000	21.80	30.000	-8.1	ver	1.0000	300.000
947.16000	28.70	37.000	-8.2	hor	4.0000	59.000

all levels are quasi-peak levels

*****The correction factor is considered automatically by the test receiver.
A table of correction factors is listed in paragraph 7.4.

b) 66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	10 Meter Limit [dB(µV/m)]	Exceeding [dB]	Ant Pol	Height in [m]	Angle in deg
65.67000	21.60	30.000	-8.3	ver	3.4000	29.000
126.00000	19.90	30.000	-10.0	hor	4.0000	119.000
144.03000	19.30	30.000	-10.6	ver	1.0000	29.000
395.97000	28.20	37.000	-8.7	ver	1.0000	29.000
459.27000	28.20	37.000	-8.7	hor	4.0000	300.000
934.80000	29.00	37.000	-7.9	hor	1.0000	330.000

all levels are quasi-peak levels

Part 2: frequency range 1 GHz - 5 GHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]	Exceed Mark	Height [cm]	Azimuth [deg]	Ant Pol
1667.20000	28.00	53.9	25.8		100.0	300.00	ver
3834.70000	30.70	53.9	23.1		220.0	29.00	hor
3981.70000	30.70	53.9	23.1		100.0	29.00	ver
4320.10000	30.20	53.9	23.6		220.0	370.00	hor
4677.70000	31.90	53.9	21.9		100.0	330.00	ver
4973.50000	33.20	53.9	20.6		100.0	29.00	ver

all levels are average levels

*****The correction factor is considered automatically by the test receiver.
A table of correction factors is listed in paragraph 7.4.

Minebea PSU:
a) 66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1024 x 768/100 Hz

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	10 Meter Limit [dB(µV/m)]	Exceeding [dB]	Ant Pol	Height in [m]	Angle in deg
77.97000	20.10	30.000	-9.8	ver	3.4000	330.000
89.13000	20.90	30.000	-9.0	ver	1.0000	0.000
111.99000	24.20	30.000	-5.7	ver	2.2000	90.000
143.97000	17.70	30.000	-12.2	ver	2.2000	180.000
192.09000	14.10	30.000	-15.8	ver	1.0000	119.000
900.63000	33.80	37.000	-3.1	ver	1.6000	180.000

all levels are quasi-peak levels

Part 2: frequency range 1 GHz - 5 GHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]	Exceed Mark	Height [cm]	Azimuth [deg]	Ant Pol
1328.80000	22.00	53.9	31.8		180.0	180.00	hor
1378.00000	22.00	53.9	31.8		180.0	180.00	hor
1640.50000	27.40	53.9	26.4		140.0	0.00	ver
1738.60000	25.30	53.9	28.5		140.0	0.00	hor
4715.80000	31.50	53.9	22.3		180.0	0.00	ver
4999.90000	33.30	53.9	20.5		300.0	210.00	ver

all levels are average levels

*****The correction factor is considered automatically by the test receiver.
A table of correction factors is listed in paragraph 7.4.

b) 66,6 MHz clock/Intel Celeron 433 MHz,
video resolution 1600 x 1200/75 Hz

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency [MHz]	Level* [dB(µV/m)]	10 Meter Limit [dB(µV/m)]	Exceeding [dB]	Ant Pol	Height in [m]	Angle in deg
66.18000	21.20	30.000	-8.7	ver	3.4000	29.000
112.02000	22.80	30.000	-7.1	ver	2.2000	119.000
132.06000	16.20	30.000	-13.7	ver	1.0000	180.000
180.06000	15.90	30.000	-14.0	ver	1.0000	119.000
374.82000	28.50	37.000	-8.4	hor	2.9000	0.000
999.84000	29.00	37.000	-7.9	hor	1.0000	330.000

all levels are quasi-peak levels

*****The correction factor is considered automatically by the test receiver.
A table of correction factors is listed in paragraph 7.4.

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: M. Heuser

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: A. Siebenhütter

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: H. Zenkner

Measurement Protocols: see attached files

ASTEC PSU:
Frequency range 30 MHz - 1 GHz:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1024 x 768/100 Hz

66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1024 x 768/100 Hz

Minebea PSU:
Frequency range 30 MHz - 1 GHz:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1024 x 768/100 Hz

66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1600 x 1200/75 Hz

Frequency range 1 GHz - 5 GHz:
66,6 MHz clock/Intel Celeron 433 MHz
video resolution 1600 x 1200/75 Hz

6.3 Referenced Rules Sections

N/A

6.4 Test Instrumentation Used, Radiated Measurement

Type	Manufacturer/ Model No.	Serial No.	Last Cal.	Cal. Interval
Receiver	ESMI Rohde&Schwarz	840607/006	May 98	15 months
Antenna	CBL 6112 Chase	0003	May 98	12 months
Active Ridged antenna	Tensor 4105 Rohde&Schwarz	2063	May 98	12 months

6.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor automatically to the measured value. The display of the Receiver shows the corrected value. The complete table of correction factors is given on next page. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF

where FS = Field Strength

AF = Antenna Factor (incl. Preamplifier factor)

CF = Cable Attenuation Factor

Assume a receiver reading of 28,5 dBµV is obtained. The Antenna Factor of 10,5 and a Cable Factor of 1,3 is added, giving a field strength of 40,3 dBµV/m.

FS = 28,5 + 10,5 + 1.3 = 40,3 dBµV/m

The 40,3 dBµV/m value can be mathematically converted to its corresponding level in µV/m.

Level in µV/m =
Common Antilogarithm [(40,3 dBµV/m)/20] =

103,5 µV/m

6.6 Table of Correction Factors

Frequency range: 30 MHz to 1000 MHz

Frequency [MHz]	Correction Bilog Antenna [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
30,0	17,90	0,65	18,55
35,0	15,20	0,67	15,87
40,0	12,80	0,68	13,48
45,0	10,00	0,73	10,73
50,0	8,20	0,74	8,94
55,0	6,90	0,82	7,72
60,0	6,50	0,84	7,34
70,0	6,40	0,90	7,30
80,0	7,20	0,95	8,15
90,0	9,30	0,99	10,29
100,0	11,10	1,10	12,20
120,0	12,10	1,14	13,24
140,0	11,30	1,27	12,57
160,0	10,60	1,35	11,95
180,0	9,60	1,45	11,05
200,0	9,50	1,51	11,01
250,0	12,40	1,71	14,11
300,0	13,80	1,84	15,64
350,0	15,00	2,00	17,00
400,0	16,40	2,18	18,58
450,0	16,90	2,35	19,25
500,0	17,40	2,43	19,83

Frequency [MHz]	Correction Bilog Antenna [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
550,0	19,00	2,62	21,62
600,0	18,70	2,73	21,43
650,0	19,70	2,88	22,58
700,0	19,00	2,91	21,91
750,0	20,00	3,01	23,01
800,0	19,90	3,21	23,11
850,0	22,90	3,32	26,22
900,0	20,70	3,40	24,10
950,0	21,00	3,49	24,49
1000,0	25,00	3,69	28,69

Frequency range: 1 GHz to 5 GHz

Frequency [GHz]	Correction Tensor Antenna with Pre-amplifier [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
1,0	5,70	1,62	7,32
1,1	4,80	1,68	6,48
1,2	5,10	1,75	6,85
1,3	5,00	1,80	6,80
1,4	5,10	1,96	7,06
1,5	5,90	2,00	7,90
1,6	5,60	2,15	7,75
1,7	6,70	2,30	9,00
1,8	6,60	2,32	8,92
1,9	5,90	2,35	8,25
2,0	7,20	2,44	9,64
2,1	7,30	2,62	9,92
2,2	7,40	2,75	10,15
2,3	8,40	2,70	11,10
2,4	8,00	2,69	10,69
2,5	9,30	2,65	11,95
2,6	8,70	2,75	11,45
2,7	8,70	2,92	11,62
2,8	9,00	2,98	11,98
2,9	8,60	3,10	11,70
3,0	9,50	3,12	12,62
3,1	9,20	2,37	11,57
3,2	8,60	2,40	11,00

Frequency [GHz]	Correction Tensor Antenna with Pre-amplifier [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
3,3	8,70	2,42	11,12
3,4	9,70	2,43	12,13
3,5	9,70	2,46	12,16
3,6	10,40	2,43	12,83
3,7	10,80	2,45	13,25
3,8	11,50	2,47	13,97
3,9	11,90	2,49	14,39
4,0	10,90	2,46	13,36
4,1	10,10	2,48	12,58
4,2	8,80	2,49	11,29
4,3	8,70	2,51	11,21
4,4	8,50	2,53	11,03
4,5	8,70	2,54	11,24
4,6	9,50	2,57	12,07
4,7	10,10	2,57	12,67
4,8	11,10	2,59	13,69
4,9	11,50	2,60	14,10
5,0	11,60	2,62	14,22

7 Conducted And Radiated Emission Measurement Photos: see attached files

7.1 Test setup, conducted emission, front side view

7.2 Test setup, conducted emission, rear side view

7.3 Test setup, radiated emission, front side view

7.4 Test setup, radiated emission, rear side view

8 External Photos of EUT: see attached files

8.1 Front side of EUT

8.2 Rear side of EUT

8.3 Opened case, inside view of EUT

9 Internal Photos of EUT: see attached files

9.1 Hard disk drive, top side view
9.2 Floppy disk drive, top side view
9.3 CD-ROM drive, top side view
9.4 System board, front side view, part one
9.5 System board, front side view, part two
9.6 System board, rear side view, part one
9.7 System board, rear side view, part two
9.8 Graphic controller board, front side view
9.9 Graphic controller board, rear side view
9.10 SDRAM module, front and rear side view
9.11 Chip card reader, front side view
9.12 Chip card reader, rear side view
9.13 Power supply ASTEC, closed case, top side view
9.14 Power supply ASTEC, opened case, inside view
9.15 Power supply ASTEC, regulator board, rear side view
9.16 Power supply ASTEC, rear side view
9.17 Power supply Minebea, closed case, top side view
9.18 Power supply Minebea, opened case, inside view
9.19 Power supply Minebea, regulator board, rear side view
9.20 Power supply Minebea, rear side view

10 User Manual: see attached files

For FCC statement please refer to user manual page 5.