MEASUREMENT / TECHNICAL REPORT

Fujitsu Siemens Computers

Model: Personal Computer Scenic DT6

FCC ID: HSSSCENIC6511

May 24, 2000

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 Fujitsu Siemens Computers Scenic DT6 is a compact desktop personal computer. The system board integrates the Pentium Processor, memory, and I/O-technologies. The main system unit is assembled with the Processor Intel Pentium III up to 850 MHz.

Original grant, dated: Feb. 23, 1999
First class II change, dated: Aug. 18, 1999
Second class II change, dated: Dec. 17, 1999

Description of the power supplies:

- Power supplies:

ASTEC, model	AA20650 S26113-E425-V30
Minebea, model	SPW1553-1 S26113-E425-V20

Features Overview:

Chip Set

- Vendor: Intel
- Type: Natoma 82440BX
PAC 82443BX & PIIX4E82371EB

Intelligent drive electronics (IDE) interface

- Feature: Enhanced bus master ATA33 IDE interface incl. EIDE

Universal serial bus (USB) interface

- Support: 12 Mbits/s
Windows 98™ and Windows NT™
- Connector: Two external USB connectors

Super I/O

- Vendor: SMSC
- Type: FDC37M807

Keyboard and mouse interface

- Feature: Keyboard and mouse interface
- Support: Connector exchange
  Power fused with polyswitch
- External connector: Two external PS/2 Mini-DIN connectors

Parallel port interface

- Feature: One parallel port
- Support: EPP / ECP capable
  Interrupts / DMA channels route able for PnP
- Connector: One external standard parallel port

Serial port interface

- Feature: Two serial ports with FIFO, 16550 compatible
  One external serial (COM1) port
  One internal chip card reader port of external serial (COM2)
  Port via wire
- Support: Interrupts route able for PnP
- Connector: One external standard and one internal connector

Main memory

- Support: The system needs at least one module and can manage at most there SDRAM modules.
- Size: From 16 Mbytes up to 768 Mbytes SDRAM
- Technology: 100 MHz unbuffered DIMM modules.
  168 Pin, 3,3 V, 64 Bit, 72 Bit (with ECC), 100 MHz SDRAM
- Granularity: For one socket 16, 32, 64, 128 or 256 Mbyte.

LAN – Ethernet controller

- Vendor: Intel
- Type: 82559
- Feature: 10/100 Mbit/s

The personal computer is assembled by Fujitsu Siemens Computers GmbH, 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	Fujitsu Siemens Computers DT6-D1107 (Scenic xB-1107)	HSSSCENIC6511	Personal Computer **EUT**	unshielded power cord [292]
2	Fujitsu Siemens Computers MCM 17P1 YEDA175914	A3LCSE783	Monitor	unshielded power cord [175] shielded video cable [168]
3	Microsoft Mouse 2.1 A 0056712-5	C3KKMP1	Mouse	shielded mouse cable [197]
4	Logitech M-UB48 LZA83300044	DZL211137	USB-Mouse	shielded mouse cable [197]

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
5	Fujitsu Siemens Computers S26381-K240-V120 YBKB990330300550	HSS01TASTK240	Keyboard	shielded keyboard cable [143]
6	Cherry MY3000USB4A 000468K37	DOC	USB-Keyboard	shielded keyboard cable [143]
7	Hewlett Packard HP 2225C+ (3012S70819)	DSI6XU2225	Printer, parallel I/F	unshielded AC cable [180], shielded centronics cable [190]
8	Hewlett Packard HP 2225D+ (2952S61299)	DSI6XU2225	Printer, serial I/F	unshielded power cord [185], shielded serial cable [190]
9	Bay Networks HUB 100BaseT	N/A	HUB	
10			Line IN	shielded cable, terminated [192]
	Pos 1 contains:			
a_1	ASTEC (UK), AA20650 S26113-E425-V30	N/A	Power supply	N/A

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
a_2	Minebea SPW1553-1 S26113-E425-V20 GS2	N/A	Power supply	N/A
b	Fujitsu Siemens Computers S26361-D1107-A11 GS 3	N/A	System board	N/A
c	Hyundai PC100-322-620	N/A	SDRAM	N/A
d	Intel Pentium III 80526/PY850256	N/A	Processor module	N/A
e	Matrox G200 AGP	DOC: G2+/MILA/8B/20	Graphic board	N/A
f	Quantum Fireball EX 6.4A S26361-H426-V100	N/A	Hard disk drive	N/A
g	Toshiba XM-6302B S26361-H402-V500	CJ6AT98-032	CD-ROM drive	N/A
h	SONY MPF920-C	N/A	Floppy disk drive	N/A
i	Intel Ethernet Express Pro 100+		LAN onboard	

Remark: position $1a_1$ / $1a_2$ 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 test site is located at Fujitsu Siemens Computers GmbH, Bürgermeister-Ulrich-Str. 100, 86199 Augsburg, Germany. This site consist of a 10 m semi anechoic chamber for radiated emission testing and of two shielded cabinets for conducted emission testing. The 10 m semi anechoic chamber is conform with the NSA-limits described in CISPR22, CISPR16 and ANSI C63.4.1992. The site is registered by the German accreditation body DAR-Registration No. TTI-P-G114 and by the Federal Communications Commission on April 07, 2000, Registration Number 90935.

1.6 Referenced Rules Sections

N/A

2 PRODUCT LABELING

2.1 FCC ID Label: see attached file

2.2 Location of Label on EUT: see attached file

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 100 MHz, the clock frequency was tested with the corresponding worst case processor:

100 MHz clock: Intel Pentium III 850 MHz

The system is provided with two kinds of power supplies:

- ASTEC, AA20650 FSC: S26113-E425-V30
- Minebea, SPW1553-1 FSC: S26113-E425-V20

According both worst case results concerning the test report of the original grant (dated: Feb. 23, 1999), the first class II change (dated: Aug. 18, 1999) and the second class II change (dated: Dec. 17, 1999) the following configuration has been tested:

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

ASTEC PSU:

Frequency range 30 MHz - 1 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Minebea PSU:

Frequency range 30 MHz - 1 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

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

ASTEC PSU:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power via EUT

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power from peripheral device LISN

Minebea PSU:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power via EUT

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power from peripheral device LISN

3.2 Video mode Justification

The system was tested in video graphic mode 1024 x 768/100 Hz. The worst case combination according the test results of the original grant (dated: Feb. 23, 1999), the first class II change (dated: Aug. 18, 1999) and the second class II change (dated: Dec. 17, 1999) have been tested: The following data are applicable:

radiated emission:

ASTEC PSU:

Frequency range 30 MHz - 1 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Minebea PSU:

Frequency range 30 MHz - 1 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz

conducted emission:

ASTEC PSU:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power via EUT

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power from peripheral device LISN

Minebea PSU:

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power via EUT

100 MHz clock/Pentium III 850 MHz, video resolution 1024 x 768/100 Hz monitor power from peripheral device LISN

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 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

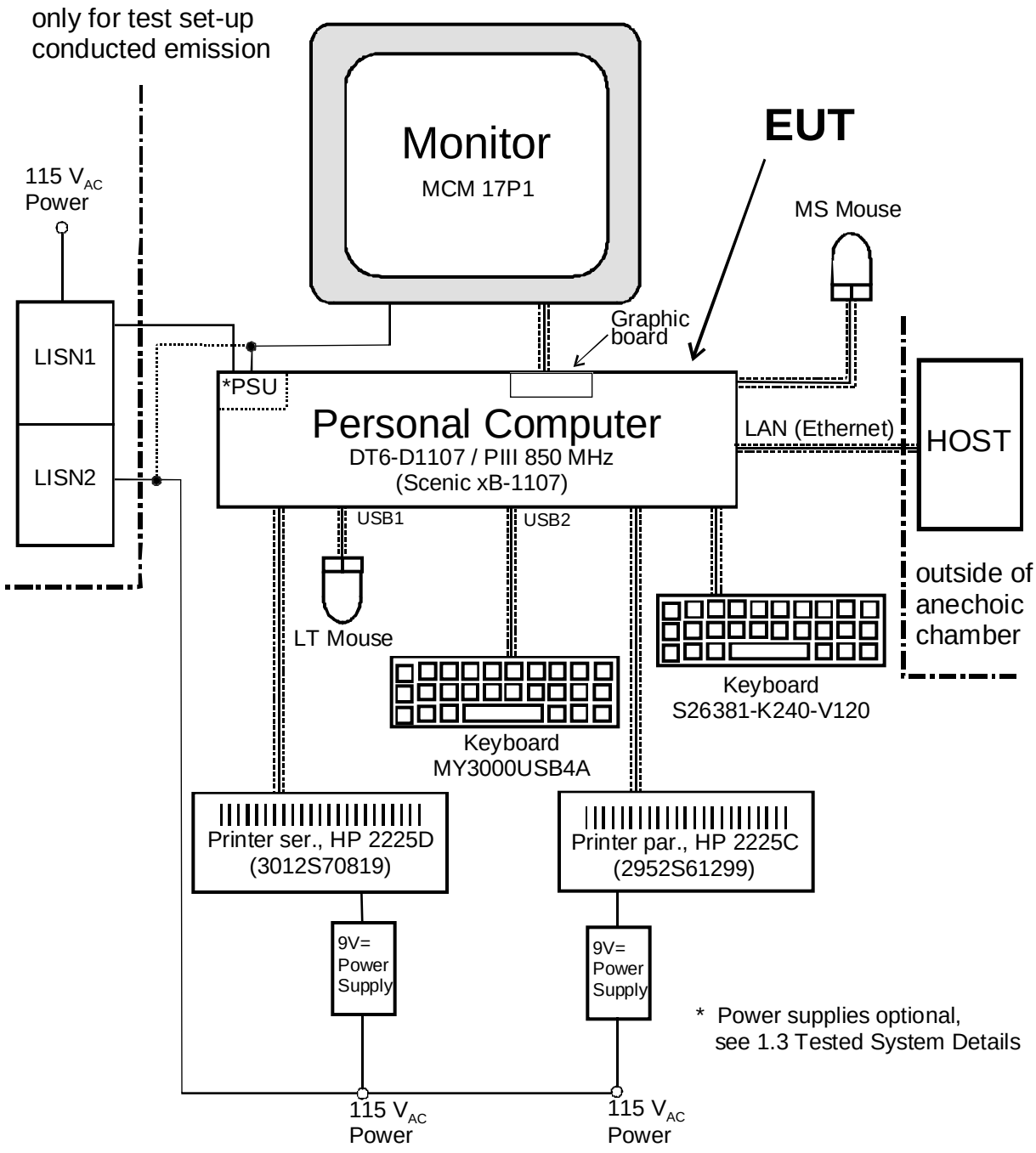
Applicant Signature _____ Date _____

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 21

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
- Peripheral connector area (keyboard, mouse, ser. 1, parallel port LAN, 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 / 100 MHz
Memory	66.6 / 100 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

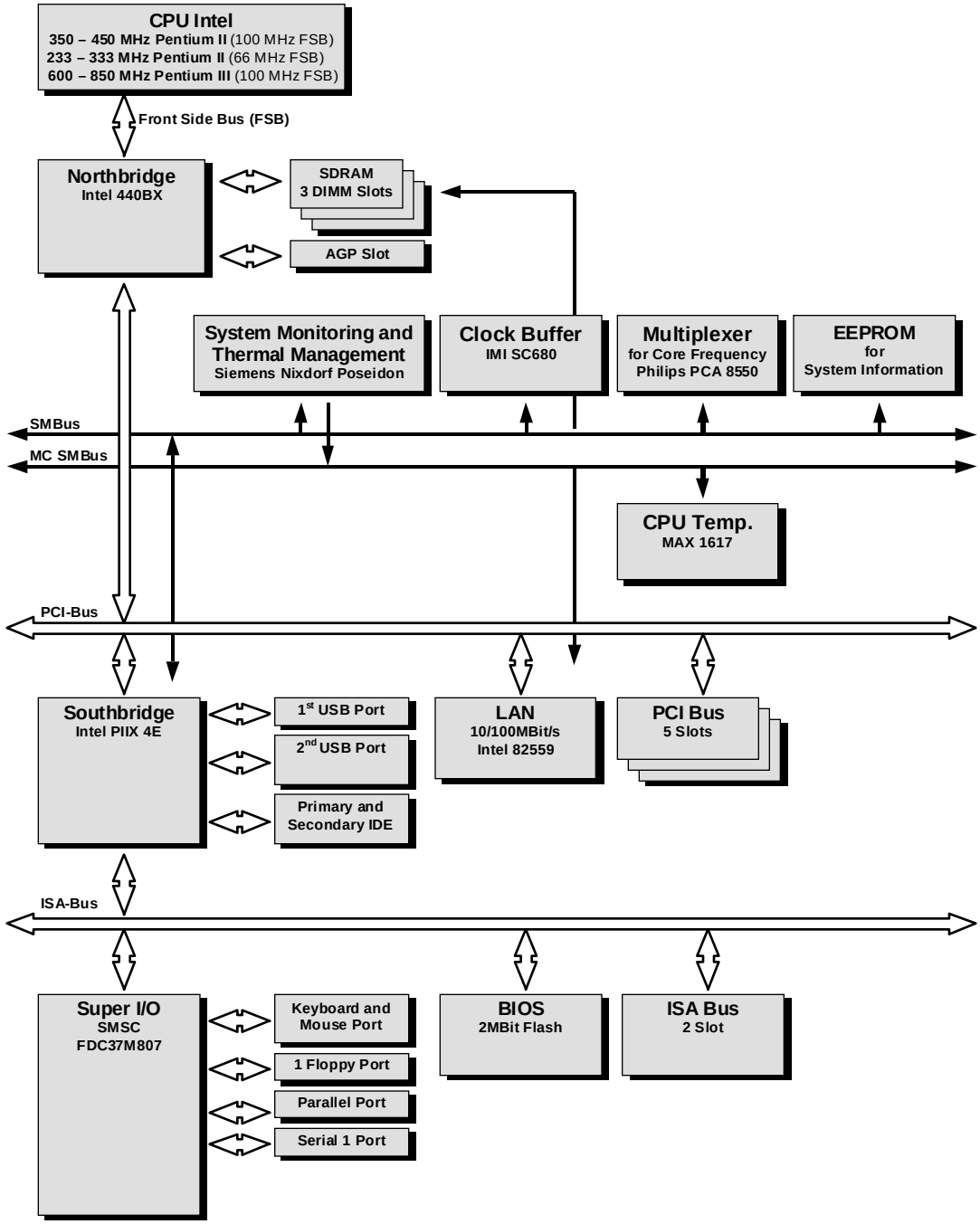
The compact desktop PC works exactly as a traditional PC.

The processors run internally between 233 and 850 MHz, the system clock is 66.6 MHz or 100 MHz and is multiplied by the processors internally by 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 7.5 or 8.5.

The highest possible frequencies and the corresponding processors are:

System clock	Processor	factor
66.6 MHz	233 MHz	3.5
66.6 MHz	266 MHz	4.0
66.6 MHz	300 MHz	4.5
66.6 MHz	333 MHz	5.0
66.6 MHz	366 MHz	5.5
100 MHz	350 MHz	3.5
100 MHz	400 MHz	4.0
100 MHz	450 MHz	4.5
100 MHz	500 MHz	5.0
100 MHz	600 MHz	6.0
100 MHz	750 MHz	7.5
100 MHz	850 MHz	8.5

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 (ESH3). 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 powered both, via the system unit or separately.

The worst case results of the measurement is given next:

ASTEC PSU:

a) video resolution 1024 x 768/100 Hz, monitor power via EUT
b) video resolution 1024 x 768/100 Hz, monitor power from peripheral device LISN

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	0.186	51.60	QP	64.2	a

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	0.246	54.30	QP	61.8	a
phase	0.312	47.50	QP	59,9	a
phase	0.186	49.00	AV	54.2	a
phase	0.246	49.60	AV	51.8	a
phase	0,312	45.30	AV	49.9	a
phase	0.186	53.10	QP	64.2	b
phase	0.246	56.20	QP	61.8	b
phase	0.312	48.90	QP	59.9	b
phase	0.186	50.50	AV	54.2	b
phase	0.252	50.10	AV	51.6	b
phase	0.312	46.70	AV	49.9	b

AV: average
QP: quasi peak

Minebea PSU:

a) video resolution 1024 x 768/100 Hz, monitor power via EUT
b) video resolution 1024 x 768/100 Hz, monitor power from peripheral device LISN

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	0.300	42.70	QP	60.2	a
phase	1.224	38.70	QP	56.0	a

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
phase	1.332	39.90	QP	56.0	a
phase	0.300	40.40	AV	50.2	a
phase	1.224	36.90	AV	46.0	a
phase	1.332	38.70	AV	46.0	a
phase	0.300	43.80	QP	62.2	b
phase	1.332	40.70	QP	56.0	b
phase	1.446	39.20	QP	56.0	b
phase	0.300	41.90	AV	50.2	b
phase	1.332	39.80	AV	46.0	b
neutral	1.446	36.80	AV	46.0	b

AV: average
QP: quasi peak

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: M. Rothtauscher

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: A. Luck

Measurement Protocols: see attached file

ASTEC PSU:
100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz
monitor power via EUT

100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz
monitor power from peripheral device LISN

Minebea PSU:
100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz
monitor power via EUT

100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz
monitor power from peripheral device LISN

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 99	12 months
Receiver	ESH3 Rohde&Schwarz	879599/019	May 99	12 months
LISN	ESH2-Z5 Rohde&Schwarz	871884/004	May 99	12 months
LISN	ESH3-Z5 Rohde&Schwarz	883650/027	May 99	12 months
Pulse limiter	ESH3-Z2 Rohde&Schwarz	---	May 99	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 Pentium III 850 MHz in video mode 1024 x 768/100 Hz. The test results below reflect the worst case with:

ASTEC PSU:

a) 100 MHz clock/Intel Pentium III 850 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
143.97000	22.70	30.000	-7.3	ver	2.80	270.000
333.51000	30.50	37.000	-6.5	hor	2.20	29.000
550.95000	29.70	37.000	-7.3	hor	2.20	59.000
562.50000	31.50	37.000	-5.5	ver	1.00	180.000
618.75000	33.90	37.000	-3.1	hor	2.20	29.000
731.28000	33.80	37.000	-3.2	hor	1.00	150.000

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.

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
1130.20000	28.50	53.9	25.4		120.00	330.00	ver
1200.40000	29.00	53.9	24.9		120.00	330.00	ver

Frequency [MHz]	Level* [dB(µV/m)]	Limit [dB(µV/m)]	Margin [dB]	Exceed Mark	Height [cm]	Azimuth [deg]	Ant Pol
1687.90000	32.80	53.9	21.1		120.00	330.00	ver
1795.30000	29.70	53.9	24.2		120.00	330.00	ver
4107.40000	31.70	53.9	22.2		220.00	119.00	ver
4966.00000	34.30	53.9	19.6		160.00	180.00	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

b) 100 MHz clock/Intel Pentium III 850 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
111.39000	22.50	30.000	-7.5	ver	1.60	180.000
467.79000	30.90	37.000	-6.1	ver	3.40	180.000
551.37000	31.30	37.000	-5.7	hor	1.60	29.000
562.53000	32.00	37.000	-5.0	hor	1.60	29.000
618.78000	33.60	37.000	-3.4	hor	1.60	270.000
893.52000	32.40	37.000	-4.6	ver	1.60	180.000

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.

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
1293.70000	30.30	53.9	23.6		120.00	330.00	ver
1695.40000	34.80	53.9	19.1		120.00	330.00	ver
1801.00000	29.60	53.9	24.3		120.00	330.00	ver
3392.20000	31.10	53.9	22.8		100.00	29.00	hor
4159.00000	31.60	53.9	22.3		220.00	59.00	ver
4966.30000	34.30	53.9	19.6		220.00	0.00	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.

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: M. Heuser

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: A. Luck

Measurement Protocols: see attached files

ASTEC PSU:

Frequency range 30 MHz - 1 GHz:
100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:
100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 Hz

Minebea PSU:

Frequency range 30 MHz - 1 GHz:
133 MHz clock/Intel Pentium III 866 MHz
video resolution 1024 x 768/85 Hz

Frequency range 1 GHz - 5 GHz:
100 MHz clock/Intel Pentium III 850 MHz
video resolution 1024 x 768/100 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 99	15 months
Antenna	CBL 6111 Chase	1345	May 99	12 months
Antenna	CBL 6112 Chase	2041	Aug 99	15 months
Active Ridged antenna	Tensor 4105 Rohde&Schwarz	2063	Dec 99	15 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 (Antenna CBL6112)

Frequency [MHz]	Correction Bilog Antenna [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
30.0	17.80	0.65	18.45
35.0	15.10	0.67	15.77
40.0	12.40	0.68	13.08
45.0	9.80	0.73	10.53
50.0	7.70	0.74	8.44
55.0	6.20	0.82	7.02
60.0	5.10	0.84	5.94
70.0	5.00	0.90	5,.90
80.0	6.60	0.95	7.55
90.0	8.50	0.99	9.49
100.0	10.30	1.10	11.40
120.0	11.40	1.14	12.54
140.0	10.40	1.27	11.67
160.0	9.40	1.35	10.75
180.0	8.50	1.45	9.95
200.0	9.10	1.51	10.61
250.0	11.80	1.71	13.51
300.0	13.00	1.84	14.84
350.0	14.10	2.00	16.10
400.0	16.00	2.18	18.18
450.0	16.30	2.35	18.65
500.0	17.10	2.43	19.53

Frequency [MHz]	Correction Bilog Antenna [dB]	Correction Cable [dB]	Correction Antenna + Cable [dB]
550.0	18.80	2.62	21.41
600.0	18.60	2.73	21.33
650.0	19.00	2.88	21.88
700.0	19.10	2.91	22.01
750.0	19.80	3.01	22.81
800.0	19.80	3.21	23.01
850.0	20.40	3.32	23.72
900.0	20.50	3.40	23.90
950.0	20.80	3.49	24.29
1000.0	21.10	3.69	24.79

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 set-up, conducted emission, front side view

7.2 Test set-up, conducted emission, rear side view

7.3 Test set-up, radiated emission, front side view

7.4 Test set-up, radiated emission, rear side view

8 External Photos of EUT

see original grant, date: Feb. 23, 1999

9 Internal Photos of EUT: see attached files

9.1 Inside view of EUT

9.2 Processor, top side view

9.3 Processor, rear side view

For further photos please refer to:

Original grant, dated: Feb. 23, 1999
First class II change, dated: Aug. 18, 1999
Second class II change, dated: Dec. 17, 1999

10 User Manual: see attached file