

# MEASUREMENT / TECHNICAL REPORT

**Fujitsu Siemens Computers**

**Model: Personal Computer Scenic MT8**

**FCC ID: HSSSCENIC8651**

**Nov. 12, 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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Personal Computer Scenic MT8

FCC Identifier:  
HSSSCENIC8651

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# 1 GENERAL INFORMATION

## 1.1 Product Description

The Fujitsu Siemens Computers Scenic 865 MT8 is a tower 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 733 MHz.

### *Description of the power supplies:*

- Power supplies:

ASTEC, model	AA20660 S26113-E427-V30
Minebea, model	SPW1562-1 S26113-E427-V20 (GS2)

### *Features Overview:*

#### CPU – Intel Pentium II/III

- Up to 500 MHz Pentium II/III with 100 MHz Front Side Bus
- Up to 733 MHz Pentium III with 133 MHz Front Side Bus
- Onboard voltage regulator VRM 8.2 and VRM 8.4

#### Chips on board

- Intel 820 AGP Chip Set
- Analog Devices AD 1881 Audio Codec
- Intel 82559 LAN Controller
- National PC87363 Super I/O

#### AC'97

- Host based Audio with AC'97
- Mono Micro In, Stereo Line In, Stereo CD IN, Stereo Aux In, Game/MIDI Port
- Stereo Line Out (max. 2x0,5 W / 8 Ω)
- Sound via internal system speaker

#### Main memory

- Two 2,5 V RIMM sockets for 16 MByte up to 1 GByte (266/300/356/400 MHz), Support only for 1-32 RDRAM Chips

#### Communication

- 2 USB ports with 12 MBits/s
- 2 External PS2 ports support Keyboard and Mouse connectors exchange
- 1 External parallel port
- 1 External serial (COM1) port

#### LAN – Ethernet Controller

- Intel 82559 on board with 10/100 MBit/s

#### Storage Devices

- 2 IDE ports for up to 4 IDE devices Support enhanced busmaster ATA66
- One internal Floppy port for two Floppy and one Floppy-Tape drive Support up to 2,88 MByte Floppy

#### Form factor, slots compatible list

- ATX
- 1 4x AGP slot, 5 PCI slots and 1 shared AC'97 / ISA-Bus slot
- Compatible to ACPI, APM, AGP, BBS, DMI, IAPC, OnNow, PC99, PCI, WfM

The personal computer is assembled by Siemens PC Systeme GmbH & Co. KG,  
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:

<b>Pos</b>	<b>Model Number (Serial Number)</b>	<b>FCC ID</b>	<b>Description</b>	<b>Cable Description (length in [cm])</b>
1	Fujitsu Siemens Computers Scenic 865 (MT8)	HSSSCENIC8651	Personal Computer <b>EUT</b>	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 1825831-00000	C3KKMP1	Mouse	shielded mouse cable [197]
4	Microsoft Intelli mouse 1.1 A 0015096-00000	DOC: m/n:IM1	USB-Mouse	shielded mouse cable [197]
5	Fujitsu Siemens Computers S26381-K293-V120 31003980149	HSS01TASTK293	Keyboard	shielded keyboard cable [143]

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
6	Cherry MY3000USB4A 000468K37	DOC	USB- Keyboard	shielded keyboard cable [143]
7	Hewlett Packard HP 2225C+ (3012S70819)	DSI6XU2225	Printer, parallel I/F	unshielded AC ca- ble [180], shielded centronics cable [190]
8	Hewlett Packard HP 2225D+ (3019S70991)	DSI6XU2225	Printer, serial I/F	unshielded power cord [185], shiel- ded serial cable [190]
8	Media Vision	N/A	Microphone	shielded cable [142]
9	Chairman Power Beat P-10	N/A	Loud- speakers	shielded cable [166 + 124]
10	Microsoft Side Winder 3D Pro 02102539	C3KMJ1	Joystick	shielded cable
11	Bay Networks HUB 100BaseT	N/A	HUB	
12			Line IN	shielded cable, terminated [192]
	<b><u>Pos 1 contains:</u></b>			
a <sub>1</sub>	ASTECC (UK), AA20660 S26113-E427-V30	N/A	Power supply	N/A

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
a <sub>2</sub>	Minebea SPW1562-1 S26113-E427-V20 GS2	N/A	Power supply	N/A
b	Western Digital AC313000-07RTT0	N/A	Hard disk drive	N/A
c	Mitsumi CRMC-FX4010M-LB S26361-H442-V500	DOC	CD-ROM drive	N/A
d	Teac FD-235HF-8376 S26361-H202-V500	N/A	Floppy disk drive	N/A
e	Fujitsu Siemens Computers S26361-D1127-A22	N/A	System board	N/A
f	Intel Pentium III 733 MHz 80526PZ733256	N/A	Processor module	N/A
g	Matrox Millennium G400 AGP	DOC	Graphic board	N/A
h	Samsung 800-45 100	N/A	RDRAM	N/A

Remark: position 1a<sub>1</sub> / 1a<sub>2</sub> 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 PC Systeme GmbH & Co. KG, 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: 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 highest system clock is 133 MHz, the clock frequency was tested with the corresponding worst case processor:

133 MHz clock: Intel Pentium III 733 MHz

The system is provided with two kinds of power supplies:

- ASTEC, AA20660 FSC: S26113-E427-V30
- Minebea, SPW1562-1 FSC: S26113-E427-V20

Each power supply has been measured with the highest possible clock frequency (worst case).

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

**ASTEC PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

**Minebea PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

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

**ASTEC PSU:**

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power via system unit

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power externally

**Minebea PSU:**

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power via system unit

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power externally

## 3.2 Video mode Justification

The system was tested in video graphic mode 1024 x 768, 100 Hz with the graphic controller Matrox Millennium G400 AGP (DOC).

The following data are applicable:

### radiated emission:

#### **ASTECS PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

#### **Minebea PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

### conducted emission:

#### **ASTECS PSU:**

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

monitor power via system unit

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz

monitor power externally

**Minebea PSU:**

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power via system unit

133 MHz clock/Pentium III 733 MHz, video resolution 1024 x 768/100 Hz  
monitor power externally

## 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 \_\_\_\_\_

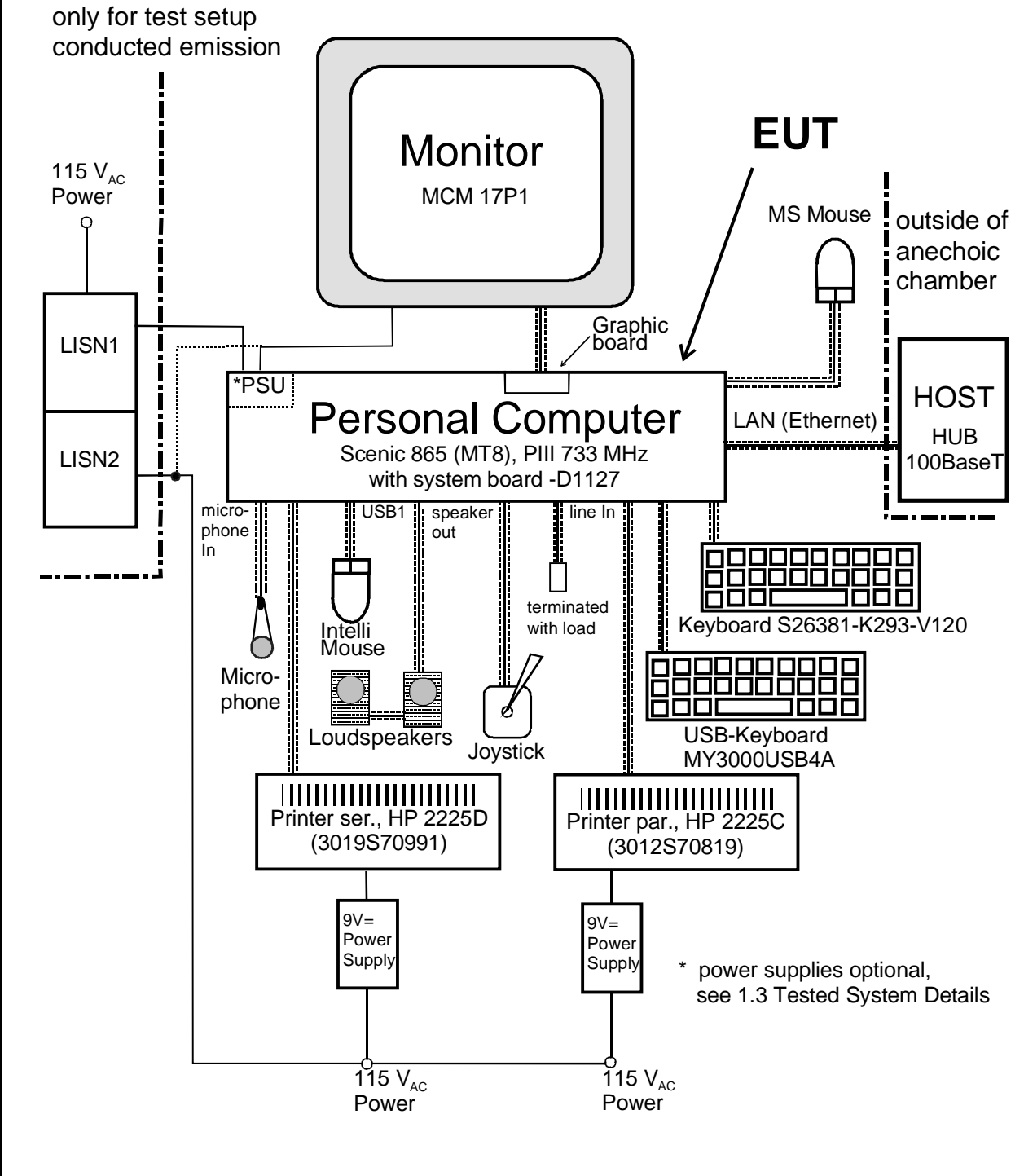
Typed/Printed Name \_\_\_\_\_ Position \_\_\_\_\_

## 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 20

### 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, USB and audio)

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

AGP bus	66 MHz
Clock synthesizer	14,318 MHz
Front side bus	133 MHz
Memory	267/300/356/400 MHz
PCI-bus	33,3 MHz
PIIX4 to IDE and USB	33,3 MHz
I/O controller	48 MHz
USB	48 MHz
Audio controller	24,576 MHz
LAN	25 MHz

## 4.3 Theory of Operation

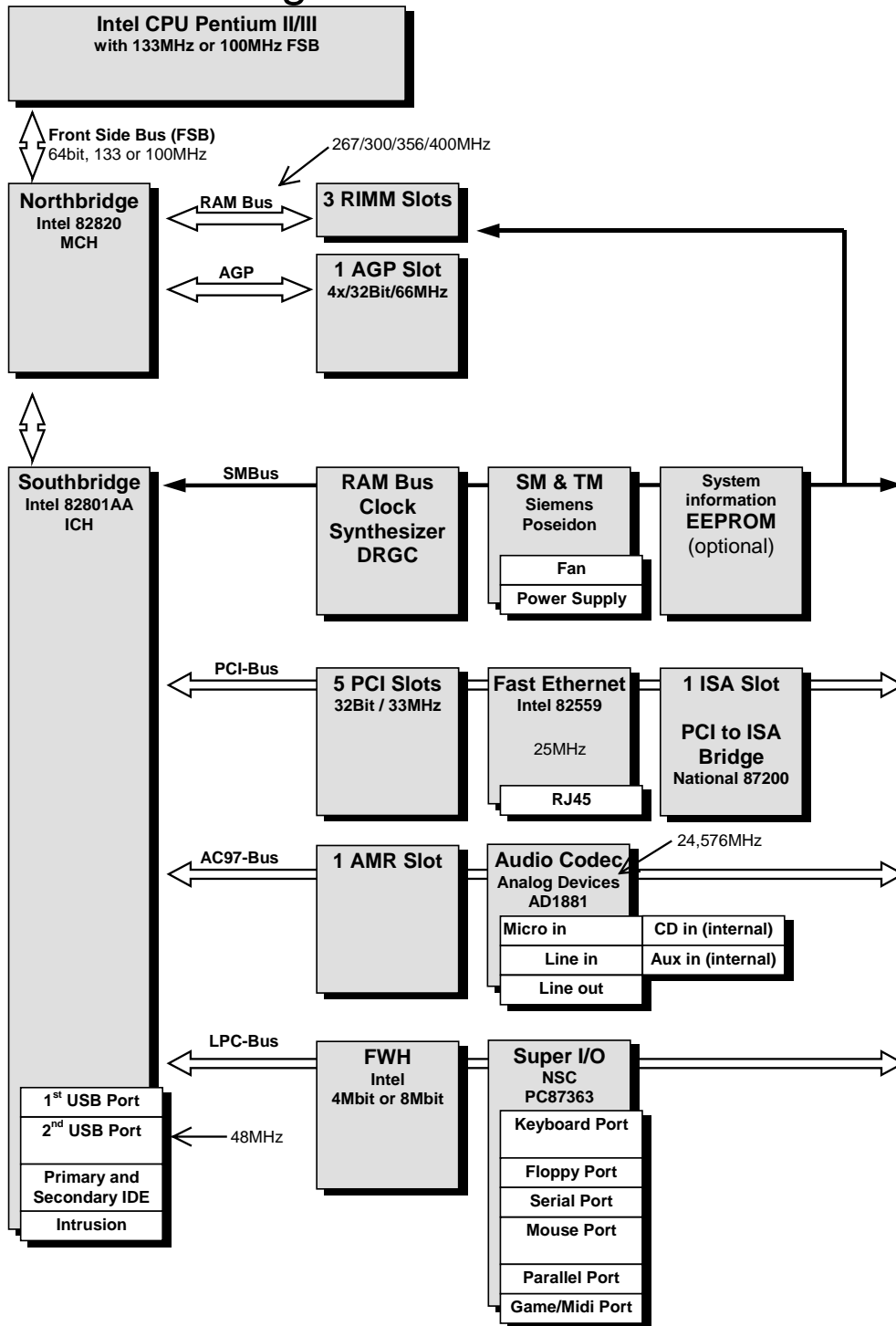
The mini tower PC works exactly as a traditional PC.

The processors run internally between 400 and 733 MHz, the system clock is 100 MHz or 133 MHz and is multiplied by the processors internally by 4,0, 4,5, 5,0, 5,5 or 6,0

The highest possible frequencies and the corresponding processors are:

System clock	Processor	factor
100 MHz	400 MHz	4,0
100 MHz	450 MHz	4,5
100 MHz	500 MHz	5,0
100 MHz	550 MHz	5,5
100 MHz	600 MHz	6,0
133 MHz	666 MHz	5,0
133 MHz	733 MHz	5,5

# 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 (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 via system unit
- b) video resolution 1024 x 768/100 Hz, monitor power externally

Judgement: Passed by

	Frequency [MHz]	Measured [dB(µV)]	Kind of value	Limit [dB(µV)]	Configuration
neutral	0,180	48,90	QP	65,0	a

Judgement: Passed by

	Frequency [MHz]	Measured [dB(μV)]	Kind of value	Limit [dB(μV)]	Configuration
neutral	0,300	51,90	QP	60,0	a
neutral	0,420	38,00	QP	57,0	a
neutral	0,180	42,60	AV	55,0	a
neutral	0,300	46,00	AV	50,0	a
neutral	0,360	35,80	AV	49,0	a
neutral	0,180	49,80	QP	65,0	b
neutral	0,222	39,40	QP	63,0	b
neutral	0,300	52,70	QP	60,0	b
neutral	0,180	42,80	AV	55,0	b
neutral	0,300	46,20	AV	50,0	b
neutral	0,360	36,00	AV	49,0	b

AV: average

QP: quasi peak

### Minebea PSU

- a) video resolution 1024 x 768/100 Hz, monitor power via system unit
- b) video resolution 1024 x 768/100 Hz, monitor power externally

Judgement: Passed by

	Frequency [MHz]	Measured [dB(μV)]	Kind of value	Limit [dB(μV)]	Configuration
phase	0,162	49,60	QP	65,0	a
phase	0,216	49,50	QP	63,0	a

	Frequency [MHz]	Measured [dB(μV)]	Kind of value	Limit [dB(μV)]	Configuration
phase	0,330	42,30	QP	60,0	a
phase	0,216	46,80	AV	53,0	a
phase	0,330	38,90	AV	50,0	a
phase	1,734	37,90	AV	46,0	a
phase	0,216	50,60	QP	63,0	b
phase	0,330	43,20	QP	60,0	b
phase	1,734	40,90	QP	56,0	b
phase	0,216	48,10	AV	53,0	b
phase	0,330	40,40	AV	50,0	b
phase	1,734	38,80	AV	46,0	b

AV: average  
QP: quasi peak

Test Personnel:

Tester Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: R. Schaufler

## Measurement Protocols: see attached file

### **ASTEC PSU:**

133 MHz clock/Intel Pentium III 733 MHz  
video resolution 1024 x 768/100 Hz  
monitor power via system unit

133 MHz clock/Intel Pentium III 733 MHz  
video resolution 1024 x 768/100 Hz  
monitor power externally

### **Minebea PSU:**

133 MHz clock/Intel Pentium III 733 MHz  
video resolution 1024 x 768/100 Hz  
monitor power via system unit

133 MHz clock/Intel Pentium III 733 MHz  
video resolution 1024 x 768/100 Hz  
monitor power externally



## 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 733 MHz in video mode 1024 x 768, 100 Hz. The test results below reflect the worst case with:

### ASTECS PSU:

a) 133 MHz clock/Intel Pentium III 733 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
127.14000	20.00	30.000	-10.0	ver	1.00	210.000
398.85000	34.30	37.000	-2.7	hor	2.20	59.000
664.14000	31.00	37.000	-6.0	hor	1.60	29.000
672.03000	34.00	37.000	-3.0	ver	1.00	29.000
737.46000	29.50	37.000	-7.5	hor	1.00	59.000
930.72000	32.50	37.000	-4.5	hor	2.80	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.

### 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
1462.30000	43.80	53.9	10.1		100.00	59.00	hor
1848.10000	45.70	53.9	8.2		100.00	29.00	hor

Frequency [MHz]	Level* [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Exceed Mark	Height [cm]	Azimuth [deg]	Ant Pol
1932.10000	41.00	53.9	12.9		180.00	29.00	hor
2352.10000	41.30	53.9	12.6		100.00	29.00	hor
2922.70000	35.50	53.9	18.4		140.00	29.00	hor
2923.00000	35.50	53.9	18.4		140.00	29.00	hor

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) 133 MHz clock/Intel Pentium III 733 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
165.69000	22.70	30.000	-7.3	ver	1.00	180.000
398.70000	30.90	37.000	-6.1	hor	2.80	119.000
606.24000	31.80	37.000	-5.2	ver	2.20	210.000
664.02000	30.20	37.000	-6.8	ver	2.20	0.000
672.03000	32.20	37.000	-4.8	hor	3.00	150.000
936.90000	32.80	37.000	-4.2	ver	1.80	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.

Test Personnel:

Tester Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: A. Peschka

Tester Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: H. Zenkner



Fujitsu Siemens Computers  
Personal Computer Scenic MT8

FCC Identifier:  
HSSCENIC8651

Date: Nov. 12, 1999

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## Measurement Protocols: see attached file

### **ASTEC PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Intel Pentium III 733 MHz

video resolution 1024 x 768/100 Hz

Frequency range 1 GHz - 5 GHz:

133 MHz clock/Intel Pentium III 733 MHz

video resolution 1024 x 768/100 Hz

### **Minebea PSU:**

Frequency range 30 MHz - 1 GHz:

133 MHz clock/Intel Pentium III 733 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	May 98	15 months
Active Ridged antenna	Tensor 4105 Rohde&Schwarz	2063	May 98	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:

$$\mathbf{FS = RA + AF + CF}$$

where FS = Field Strength

AF = Antenna Factor (incl. Preamplifier factor)

CF = Cable Attenuation Factor

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

$$FS = 28,5 + 10,5 + 1,3 = 40,3 \text{ dB}\mu\text{V/m}$$

The 40,3 dB $\mu$ V/m value can be mathematically converted to its corresponding level in  $\mu$ V/m.

Level in  $\mu$ V/m =  
Common Antilogarithm [(40,3 dB $\mu$ V/m)/20] =

**103,5  $\mu$ V/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 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

8.1 Front side of EUT

8.2 Rear side of EUT

## 9 Internal Photos of EUT: see attached files

- 9.1 Inside view of EUT
- 9.2 Hard disk drive, top side view
- 9.3 CD-ROM drive, top side view
- 9.4 Floppy disk drive, top side view
- 9.5 System board, front side view
- 9.6 System board, rear side view
- 9.7 Graphic board, front side view
- 9.8 Graphic board, rear side view
- 9.9 RDRAM module, front and rear side view
- 9.10 Processor module, top side view
- 9.11 Power supply ASTEC, closed case, top side view
- 9.12 Power supply ASTEC, opened case, inside view
- 9.13 Power supply ASTEC, regulator board, rear side view
- 9.14 Power supply ASTEC, rear side view
- 9.15 Power supply Minebea, closed case, top side view
- 9.16 Power supply Minebea, opened case, inside view
- 9.17 Power supply Minebea, regulator board, rear side view
- 9.18 Power supply Minebea, rear side view

# 10 User Manual

For FCC statement please refer to user manual page 5.