

MEASUREMENT / TECHNICAL REPORT

SIEMENS AG

Model: Personal Computer Scenic Mobile 510 AGP

FCC ID: HSSMOB510A1

November 19, 1998

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

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

Application for Certification
prepared by:
Guenther Roesch
Siemens AG
Buergermeister-Ulrich-Str. 100
86199 Augsburg
Germany
Tel.: +49 821 804 2581
Fax: +49 821 804 2675

Applicant for this device:

Siemens AG
Buergermeister-Ulrich-Str. 100
86199 Augsburg
Germany
Tel.: +49 821 804-0

SIEMENS

Engineer: _____
Heinz Zenkner
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
1/94

Table of Contents

1 GENERAL INFORMATION	5
1.1 Product Description	5 - 6
1.2 Related Submittal(s)/Grant(s)	7
1.3 Tested System Details	7 - 9
1.4 Test Methodology	10
1.5 Test Facility	10
1.6 Referenced Rules Sections	10
2 PRODUCT LABELING	11
Figure 2.1 FCC ID Label	11
Figure 2.2 Location of Label on EUT	12
3 SYSTEM TEST CONFIGURATION	13
3.1 Justification	13 - 14
3.2 Video Mode Justification	15 - 16
3.3 EUT Exercise Software	17
3.4 Special Accessories	17
3.5 Equipment Modifications	18
3.6 Configuration of Tested System	18
Figure 3.1 Configuration of Tested System	19 - 20
4 BLOCK DIAGRAM OF EQUIPMENT UNDER TEST	21
4.1 Block Diagram Description	21
4.2 Clock frequencies of the EUT	22
Figure 4.2 System clock block diagram	23
4.3 Theory of Operation	24
Figure 4.1 Block Diagram	25
5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS	26
5.1 Test setup, conducted emission, front side view	26
5.2 Test setup, conducted emission, rear side view	27
5.3 Test setup, radiated emission, front side view	28
5.4 Test setup, radiated emission, rear side view	29

6	CONDUCTED EMISSION DATA	30
6.1	Test Procedure	30
6.2	Measured data	30 - 38
6.3	Referenced Rules	39
6.4	Test Instrumentation Used, Conducted Measurement	39
7	RADIATED EMISSION DATA	40
7.1	Test Procedure	40
7.2	Measured Data	41 - 56
7.3	Reference Rules Sections	57
7.4	Test Instrumentation Used, Radiated Measurement	57
7.5	Field Strength Calculation	58
7.6	Table of Correction Factors	59 - 61
8	PHOTOS OF TESTED EUT	62
8.1	Front side of EUT	62
8.2	Rear side of EUT	63
8.3	System board, bottom side view	64
8.4	System board, top side view	65
8.5	Notebook partly disassembled, without top shield	66
8.6	Notebook partly disassembled, without top case	67
8.7	DVD-drive, front side	68
8.8	DVD-drive, rear side	69
8.9	HD-drive, Fujitsu	70
8.10	RAM module, front side	71
8.11	RAM module, rear side	72
8.12	Floppy drive, front side	73
8.13	Floppy drive, rear side	74
8.14	Connection board and IR interface, front side	75
8.15	Connection board and IR interface, rear side	76
8.16	Upper connection board, front side	77
8.17	Upper connection board, rear side	78
8.18	MMO module, front side	79
8.19	MMO module, rear side	80
8.20	Keyboard, front side	81
8.21	Keyboard, rear side	82

8.22 PCMCIA bay	83
8.23 LCD panel, front side	84
8.24 LCD panel, rear side	85
8.25 LCD control panel, top side	86
8.26 AC/DC-adapter, rear side	87
8.27 AC/DC-adapter, soldering side with shielding	88
8.28 AC/DC-adapter, component side with shielding	89
8.29 AC/DC-adapter, soldering side without shielding	90
8.30 AC/DC-adapter, component side without shielding	91
8.31 DC/DC-converter for LCD panel, front side	92
8.32 DC/DC-converter for LCD panel, rear side	93

Attachment A: User Manual	94
---------------------------	----

SIEMENS

Siemens AG
 Personal Computer Scenic Mobile 510 AGP
 FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
4/94

1 GENERAL INFORMATION

1.1 Product Description

The Siemens Computer Scenic Mobile 510 AGP is a notebook. The system board integrates the Pentium Processor, memory and I/O-technologies. The system can be assembled with Intel Processors Pentium MMX 200 MHz up to Pentium II 300 MHz.

Description of the power supply:

- AC- / DC- adapter: Siemens, model ADP-50EB
S26391-F192-V600

Features Overview:

Cache:	16 Kbyte integrated in processor 512 Kbyte synchronous Second Level Cache
Main memory (EDO RAM 3.3 V):	32 - 128 Mbyte EDO RAM or SD RAM 2 slots for 16, 32, 64 Mbyte modules JEDEC 144 pin SO DIMM (may not be mixed)
System ROM (flash EPROM):	512 Kbyte for system and video BIOS
Disk drives:	Floppy disk drive for 3 ½ inch floppy disks hard disk drive 2.5 inch, 12.7 mm height, CD ROM drive twenty speed or more
Monitor:	Backlit liquid-crystal transmissive display (LCD)
Display diagonal:	
• LCD TFT/ADS	33,8 cm (13.3 inch) XGA
Resolution / colors:	
• LCD TFT 13,3	1024 x 768 x 256 colors (18 bit)

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
5/94

- Screen controller: Neomagic NMG4 on PCI Bus with Windows accelerator
- Video memory (EDO-RAM): 2 Mbyte
- supported resolutions on external display: 640 x 480 / 16.7 million colors and 85 Hz
800 x 600 / 16.7 million colors and 85 Hz
1024 x 768 / 65.536 colors and 75 Hz

Audio:

- Compatibility: Soundchip ESS1869
Soundblaster Pro, Ad lib, MS sound system
16 bit, stereo

- A/D and D/A conversion:

input devices

- Keyboard: 86 keys
- Touchpad (Length, Width) 64 x 48 mm

Slots:

- PC card (CardBus/PCMCIA): PCMCIA 2 x type II or 1 x type III simultaneously,
PC card controller 6832, Zoomed-Video-Port

Ports:

- PS/2 mouse port/
PS/2 keyboard port: 6-pin mini DIN female connector
- Port for MobiDock/QuickPort: 240-pin female connector
- Parallel port: 25-pin female connector, bi-directional
- Port for external monitor: EPP/ECP capable
- Serial port: 15-pin female connector
- Microphone jack:
- Audio input: 9-pin male connector, 16550 compatible
- Audio output: connector, mono
- Infrared interface (Fast IrDA): connector, stereo
- USB (Universal Serial Bus): connector, stereo
- Kensington Lock

The personal computer is assembled by Siemens AG, Buergermeister-Ulrich-Strasse 100, 86199 Augsburg.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
6/94

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 Mobile 510 AGP S26391-F192-V10	HSSMOB510A1	Notebook (300 MHz) EUT	
2	Siemens MCM 1707 NTD	A3LCGS762	Monitor	unshielded power cord [175] shielded video cable [172]
3	Microsoft MS 2.1A	C3KKMP3	Mouse	shielded mouse cable [183]
4	Hewlett Packard HP 2225D+ (3012S70819)	DSI6XU2225	Printer, serial I/F	unshielded power cord [185], shielded serial cable [190]

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
7/94

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
5	Siemens ADP-50EB S26391-F192-V600	N/A	AC- / DC- Adapter	unshielded AC cable [178] shielded DC cable [149]
6	Escom	N/A	Microphone	shielded cable [142]
7	Power beat P10	N/A	Loud- speakers	shielded cable [166 + 124]
8	Siemens	N/A	USB cable	shielded cable, terminated [86]
	<u>Pos 1 contains:</u>			
a	Samsung (LT133X5-122) Rev. 1A	DDTF3CLC109	Flexprint	
b	Samsung LT133X5-126	N/A	Display	
c	Siemens TF2C Rev. 1A/3A	DAJNVNPB205	Inverter board	
d	Fujitsu MHD2032AT	N/A	Hard disk	
e	Logitech 221109 Rev. A P-SE2VTH	N/A	Touch pad	

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
8/94

Pos	Model Number (Serial Number)	FCC ID	Description	Cable Description (length in [cm])
f	Keyboard Rev. 3A	AETF1FX0013	Keyboard	
g	Intel MO-Modul	AA689020-403	CPU	
h	lower connection board Rev. 2A	DA0TF3UBAAO	Board	
i	IR board Rev. 3B	DA0TF1JR8C9	Board	
j	SEC Memory modul	KMM466S823BT3-F0	RAM	
k	PCMCIA bay 0103036C	N/A	PCMCIA	
l	MFB8800058 Rev. 2A DA0TF3MBAA6	N/A	System board	
m	Siemens S26391-F192-V110	N/A	Battery	
n	Siemens S26391-F192-V220	N/A	DVD	
o	Siemens S26391-F192-V400	N/A	Floppy disk drive	
p	Siemens S26391-F192-V500	N/A	Floppy disk drive cable	

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
9/94

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, Buergermeister-Ulrich-Strasse 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

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
10/94

2 PRODUCT LABELING

2.1 FCC ID Label

FCC ID: HSSMOB510A1

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.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
11/94

2.2 Location of Label on EUT

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
12/94

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). The notebook can be equipped either with an internal AC/DC-adaptor or with an accumulator. Both combinations were tested (see figure 3.1). The system clock is 66,66 MHz, the clock frequency was tested with the highest possible processor:

66,66 MHz clock: Pentium II 300 MHz

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
13/94

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

External AC/DC-adapter, internal accumulator:

Frequency range 30 MHz - 1 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Frequency range 1 GHz - 3 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Internal AC/DC-adapter:

Frequency range 30 MHz - 1 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Frequency range 1 GHz - 3 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Referring to conducted emission the following (worst case) result is applicable:

External AC/DC-adapter, internal accumulator:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Internal AC/DC-adapter:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
14/94

3.2 Video mode Justification

The system was tested in video graphic mode 1024 x 768. The worst case combinations (with accu pack or internal AC/DC-adapter) of the system was used to collect the included data.

The following data is applicable:

radiated emission:

External AC/DC-adapter, internal accumulator:

Frequency range 30 MHz - 1 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Frequency range 1 GHz - 3 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Internal AC/DC-adapter:

Frequency range 30 MHz - 1 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Frequency range 1 GHz - 3 GHz:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
15/94

conducted emission:

External AC/DC-adapter, internal accumulator:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

Internal AC/DC-adapter:

66,66 MHz clock/Pentium II 300 MHz, video resolution 1024 x 768

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
16/94

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)
- external Floppy drive writes to the HD and reads back
- internal DVD-drive writes to the HD
- "H`s" are sent to the printer port
- data is sent to USB port
- signals to video and audio periphery
- accumulator is charged (if applicable)
- LAN communication via PCMCIA

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.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
17/94

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.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

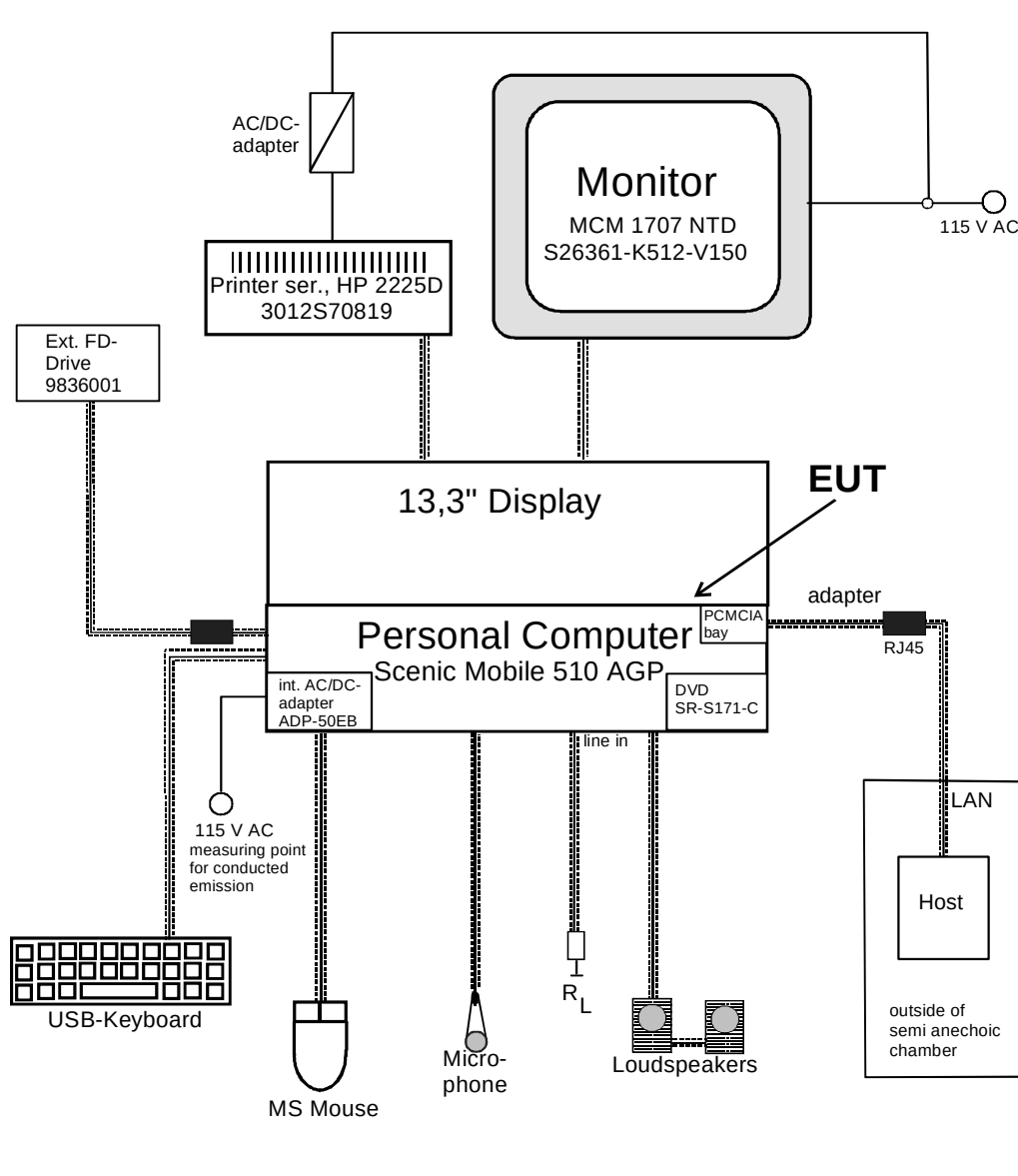
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
18/94

Figure 3.1 Configuration of Tested System

Configuration a): internal AC/DC-adapter, no accumulator



SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

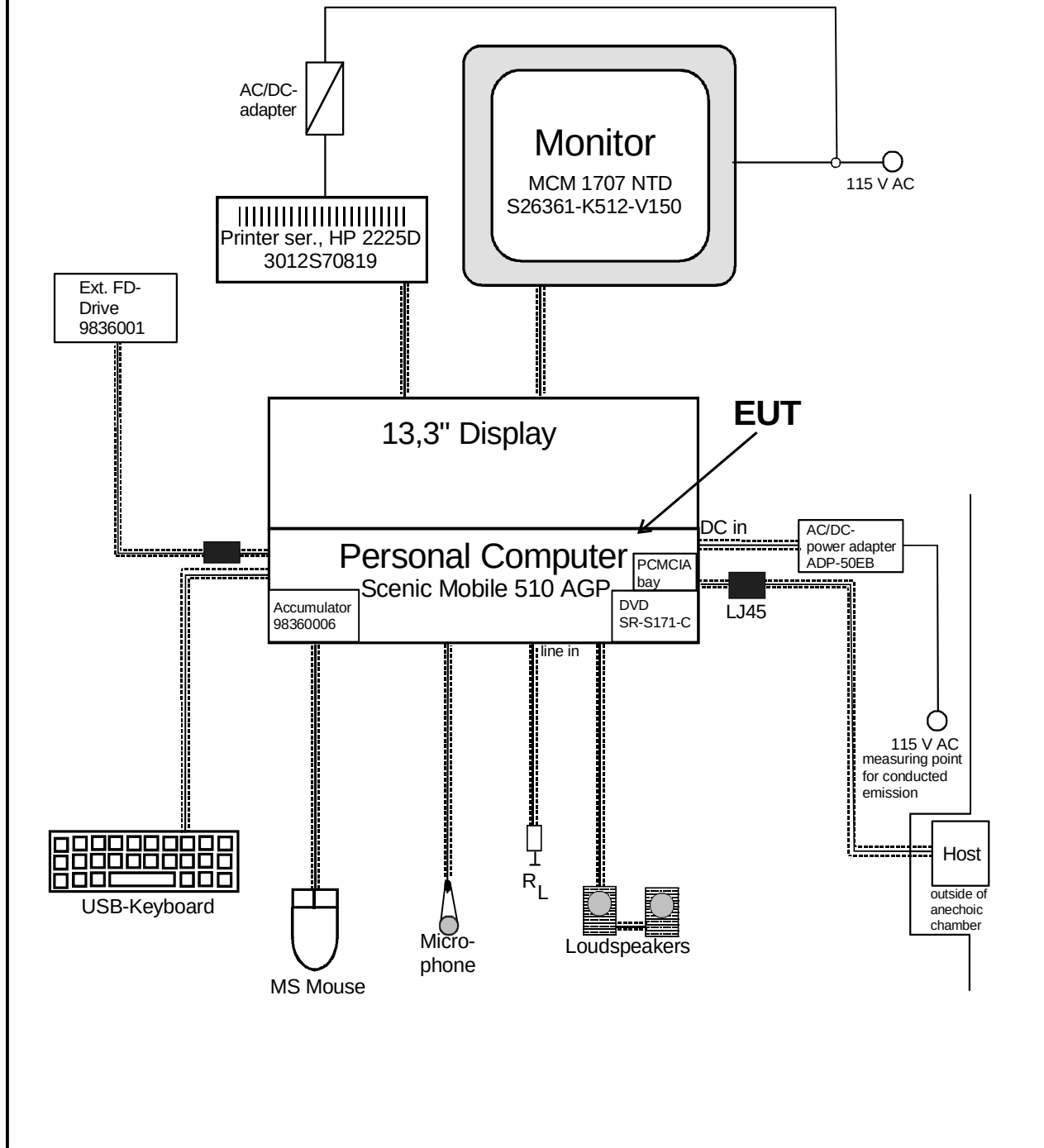
FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
19/94

Figure 3.1.1 Configuration of Tested System

Configuration b): external AC/DC-adapter, internal accumulator



SIEMENS

Siemens AG

Personal Computer Scenic Mobile 500 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
20/94

4 BLOCK DIAGRAM OF EUT

see fig 4.1 page 25

4.1 Block Diagram Description (see fig. 4.1)

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

- MMO module (CPU)
- Clock
- Video
- Extension
- internal periphery
- Audio
- external periphery
- Core

The detailed diagram of the system board is shown in fig 4.1.
The personal computer works exactly like a traditional PC.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
21/94

4.2 Clock frequencies of EUT

Clock synthesizer	14,318 MHz
Memory	66,66 MHz
PCI-bus	33,33 MHz
PIIX4	33,33 MHz / 48 MHz
I/O controller	14,3 MHz
USB	48 MHz
VGA controller	14,3 MHz
Keyboard controller	32,768 kHz
Docking clock	33,3 MHz
Infrared controller	14,3 MHz

SIEMENS

Siemens AG

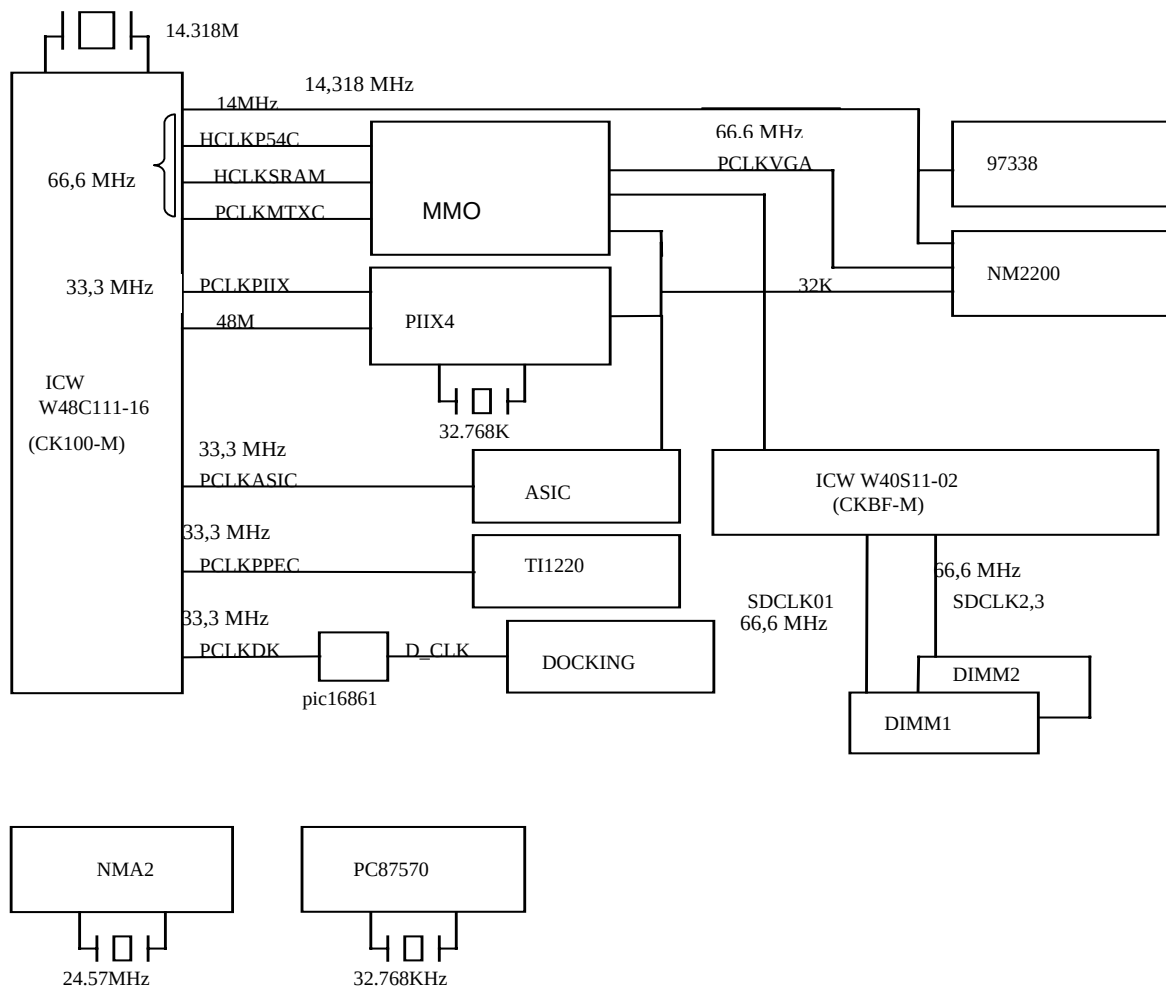
Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
22/94

Figure 4.2 System Clock block diagram



4.3 Theory of Operation

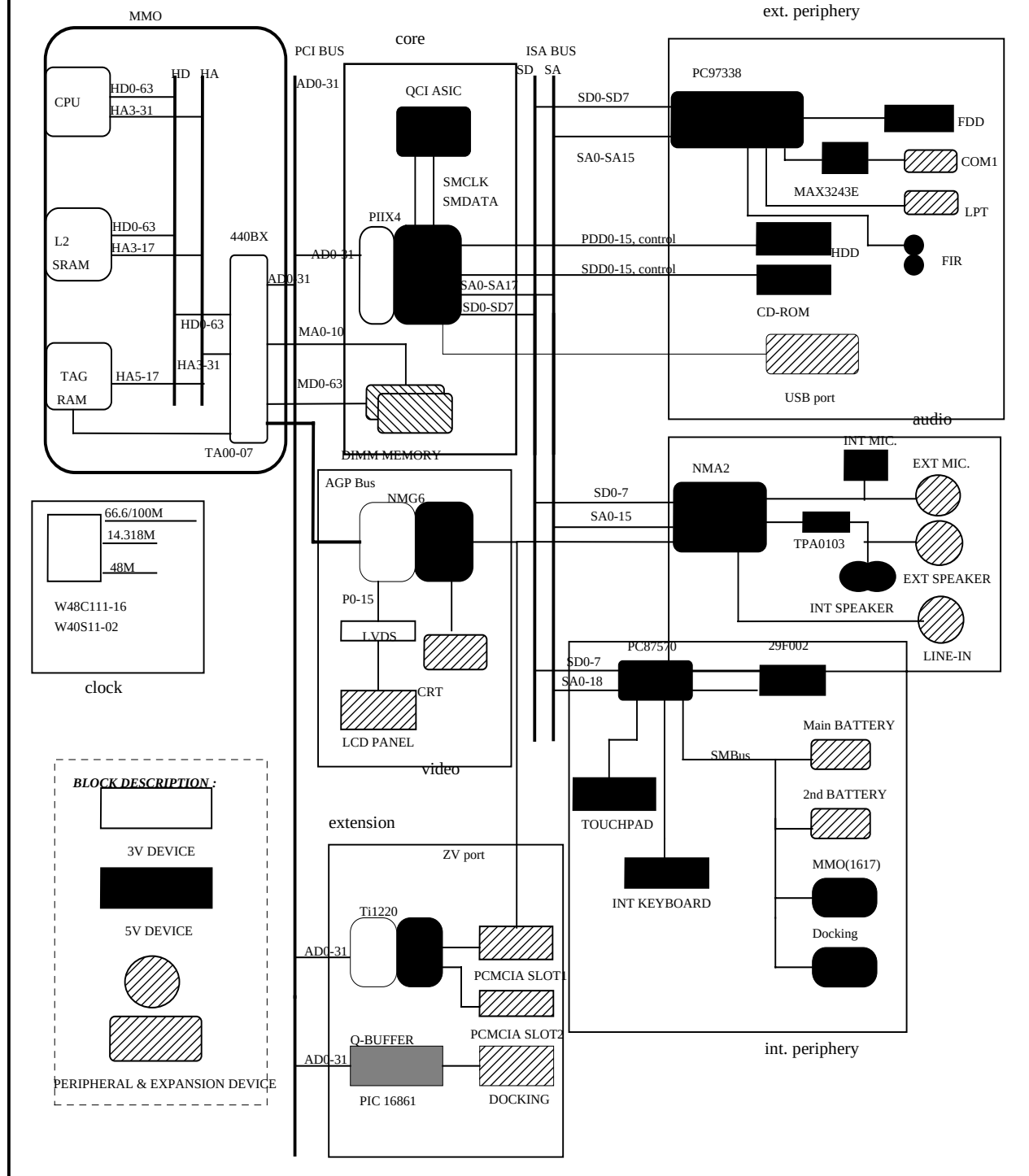
The notebook works exactly like a traditional PC.

The processor runs internally with 233 ; 266 or 300 MHz, the system clock is in each case the same - 66,66 MHz and is multiplied by the processors internally by 3,5 ; 4,0 or 4,5.

The highest possible frequencies and the corresponding processors are:

System clock	Processor	factor
66,66 MHz	233 MHz	3,5
66,66 MHz	266 MHz	4,0
66,66 MHz	300 MHz	4,5

Figure 4.1 Block Diagram of the EUT



SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
25/94

5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS

5.1 Test setup, conducted emission, front side view

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
26/94

5.2 Test setup, conducted emission, rear side view

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
27/94

5.3 Test setup, radiated emission, front side view

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
28/94

5.4 Test setup, radiated emission, rear side view

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
29/94

6 CONDUCTED EMISSION DATA

6.1 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.

6.2 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 printer and the monitor are supplied with power via a second LISN.

The worst case results of the corresponding is given next:

- a) Configuration with the external used AC/DC-adapter and an internal accumulator
- b) Configuration with the internal used AC/DC-adapter instead of the accumulator

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
30/94

Judgement: Passed by

	Frequency [MHz]	Measured [dB(μV)]	Kind of value	Limit [dB(μV)]	Configuration
phase	0,294	53,70	QP	60,4	a
phase	0,222	55,60	QP	62,7	a
neutral	1,326	42,90	AV	46	a
phase	2,064	41,90	AV	46	a
neutral	1,62	40,0	AV	46	a
neutral	0,222	55,1	QP	62,7	b
neutral	0,294	52,1	QP	60,4	b
phase	1,914	42,4	AV	46	b
phase	1,104	42,1	AV	46	b
neutral	1,986	41,0	AV	46	b

AV: average

QP: quasi peak

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: H. Zenkner

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
31/94

Measurement Protocols

Page No

Scenic Mobile 510 AGP
Configuration with external used AC/DC-
adapter and internal accu

33 - 35

Scenic Mobile 510 AGP
Configuration with internal used AC/DC-
adapter without accu

36 - 38

SIEMENS

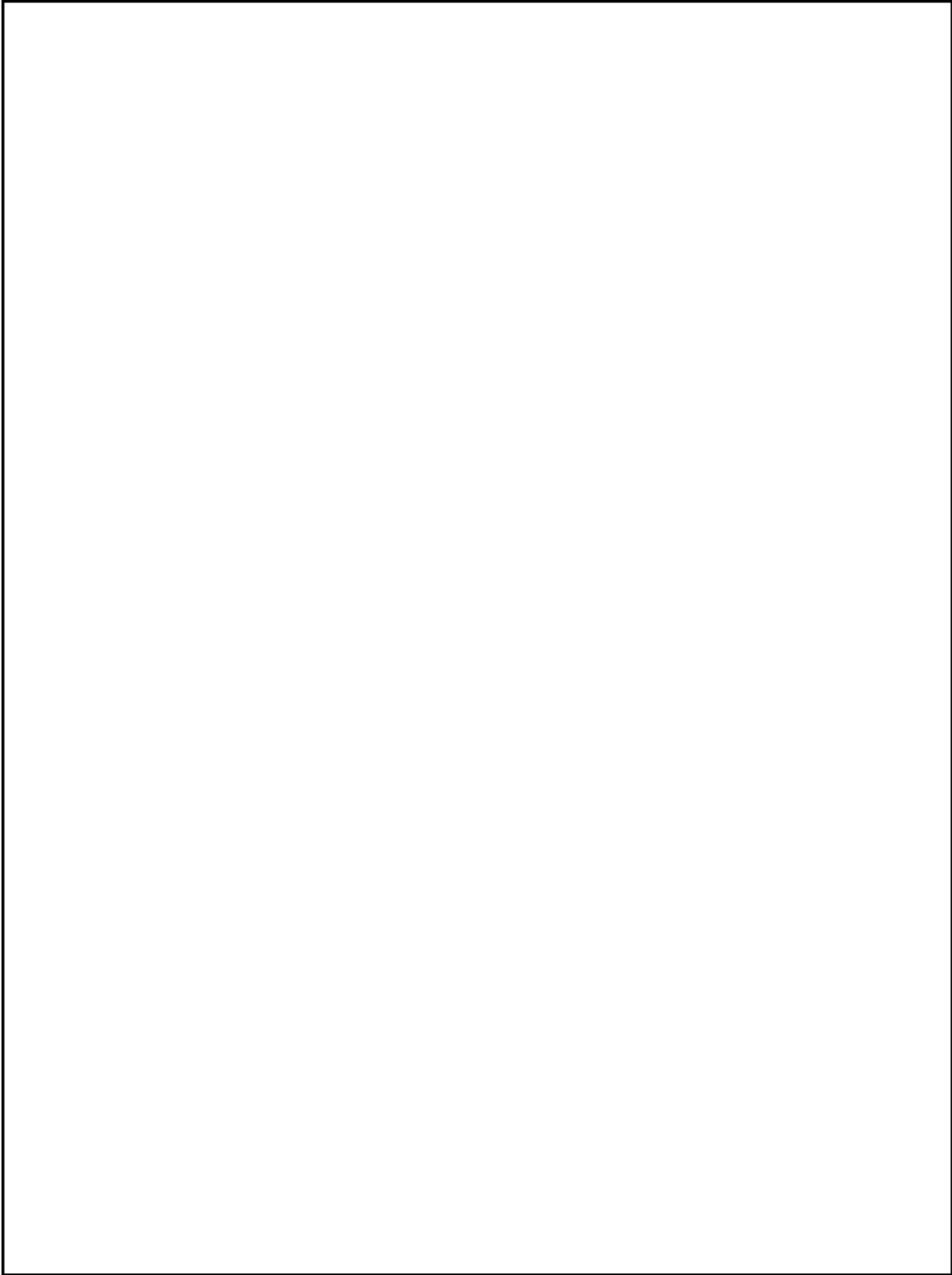
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
32/94

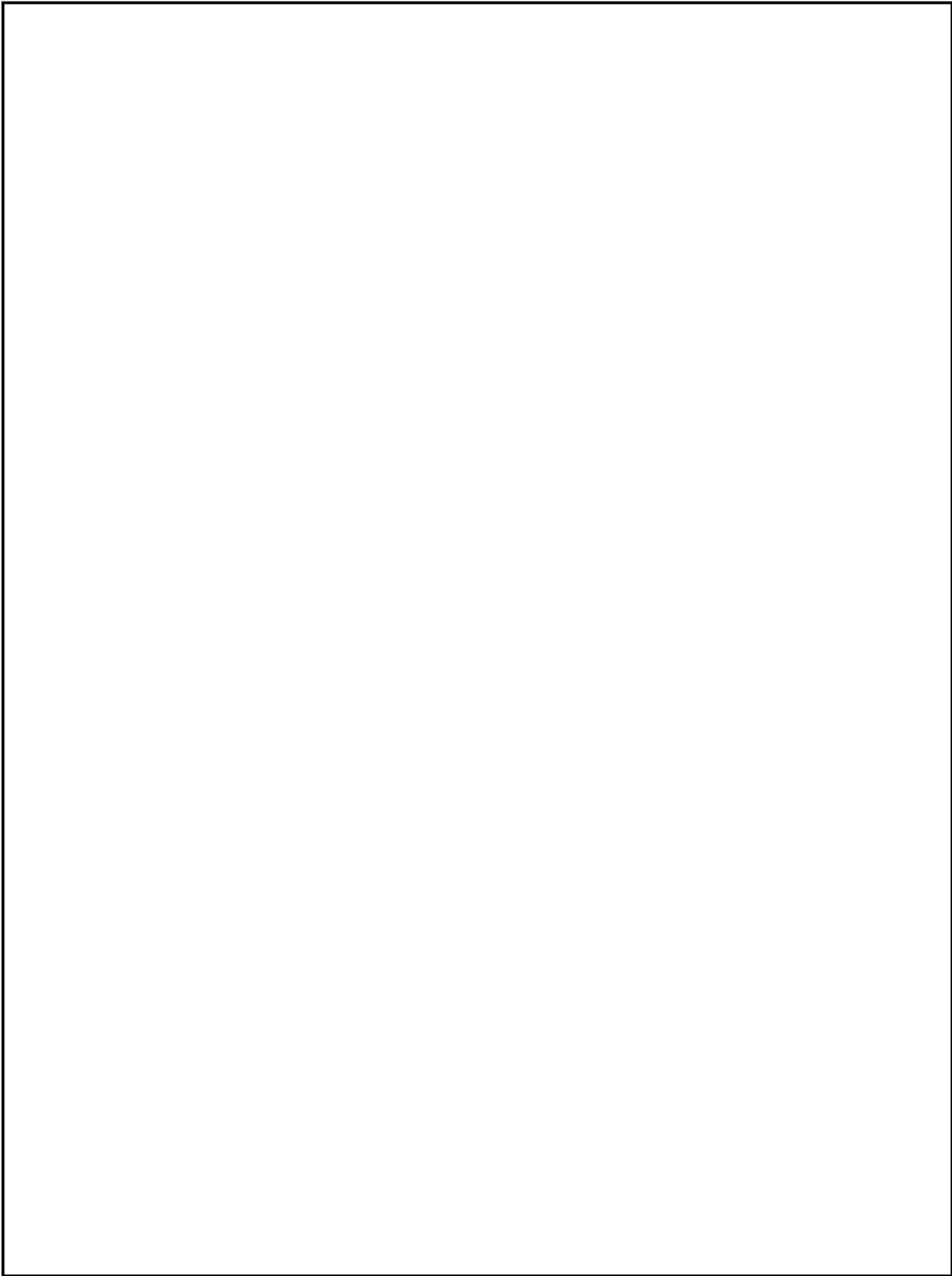


SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
33/94



SIEMENS

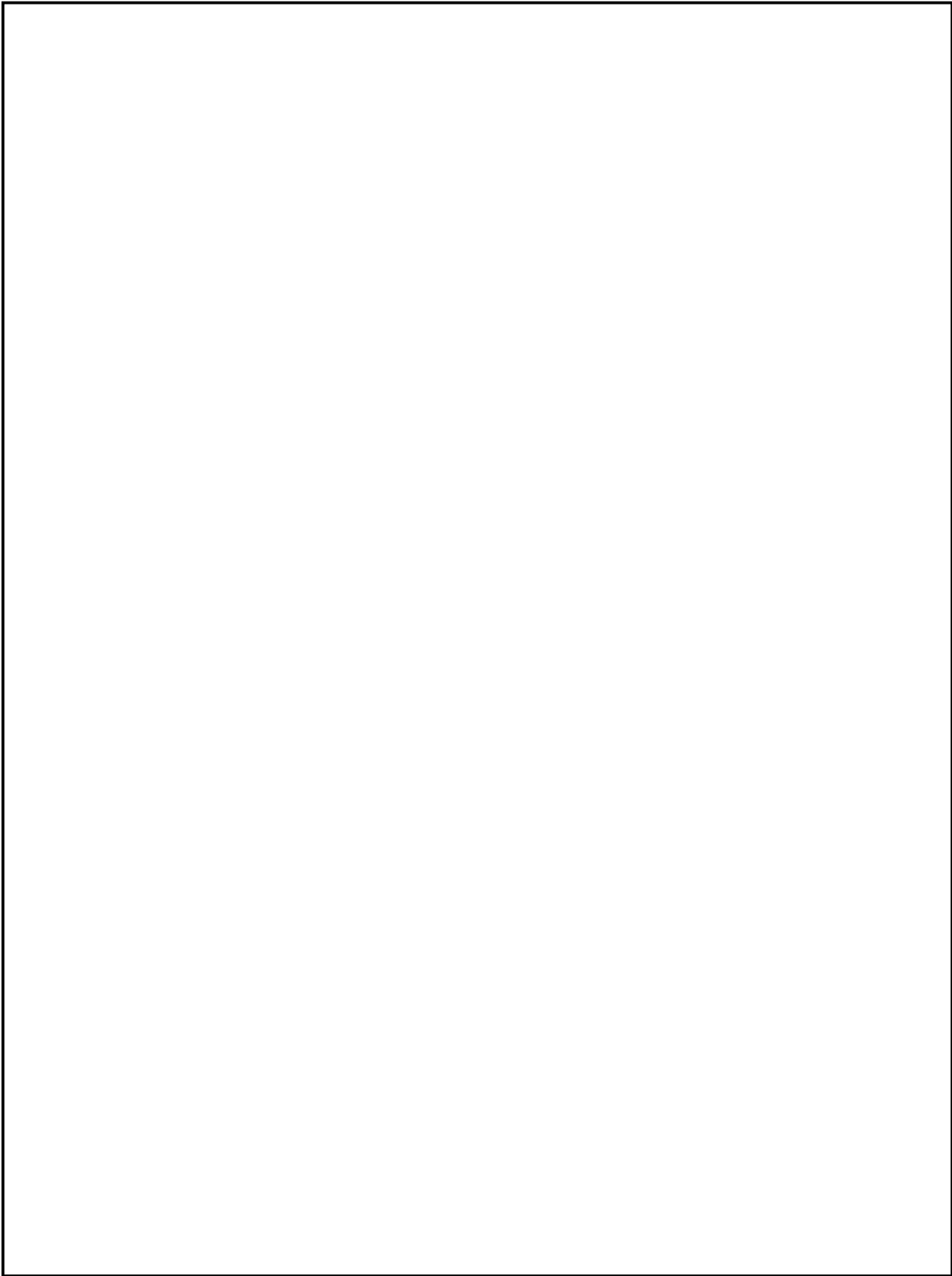
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
34/94



SIEMENS

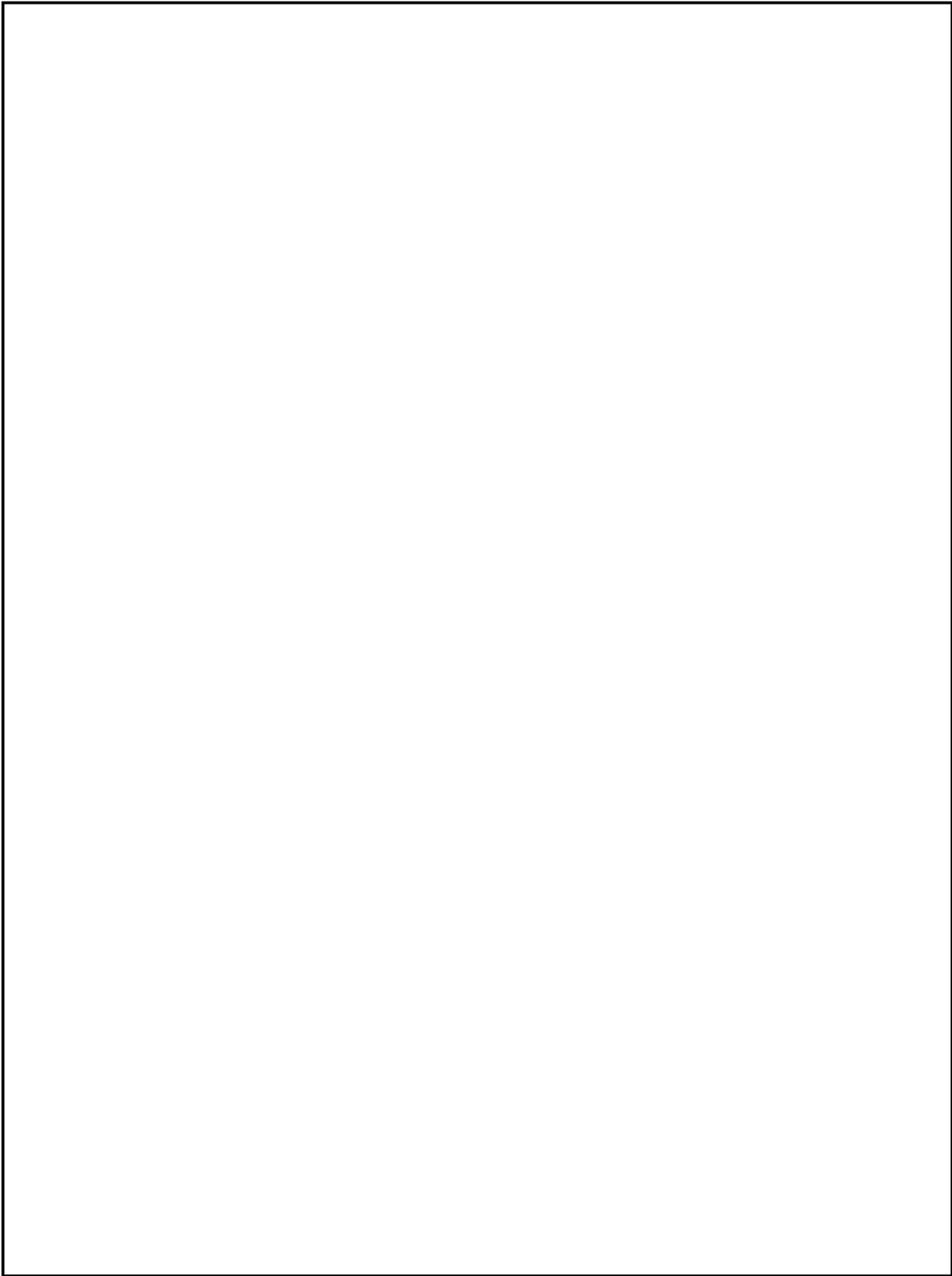
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
35/94



SIEMENS

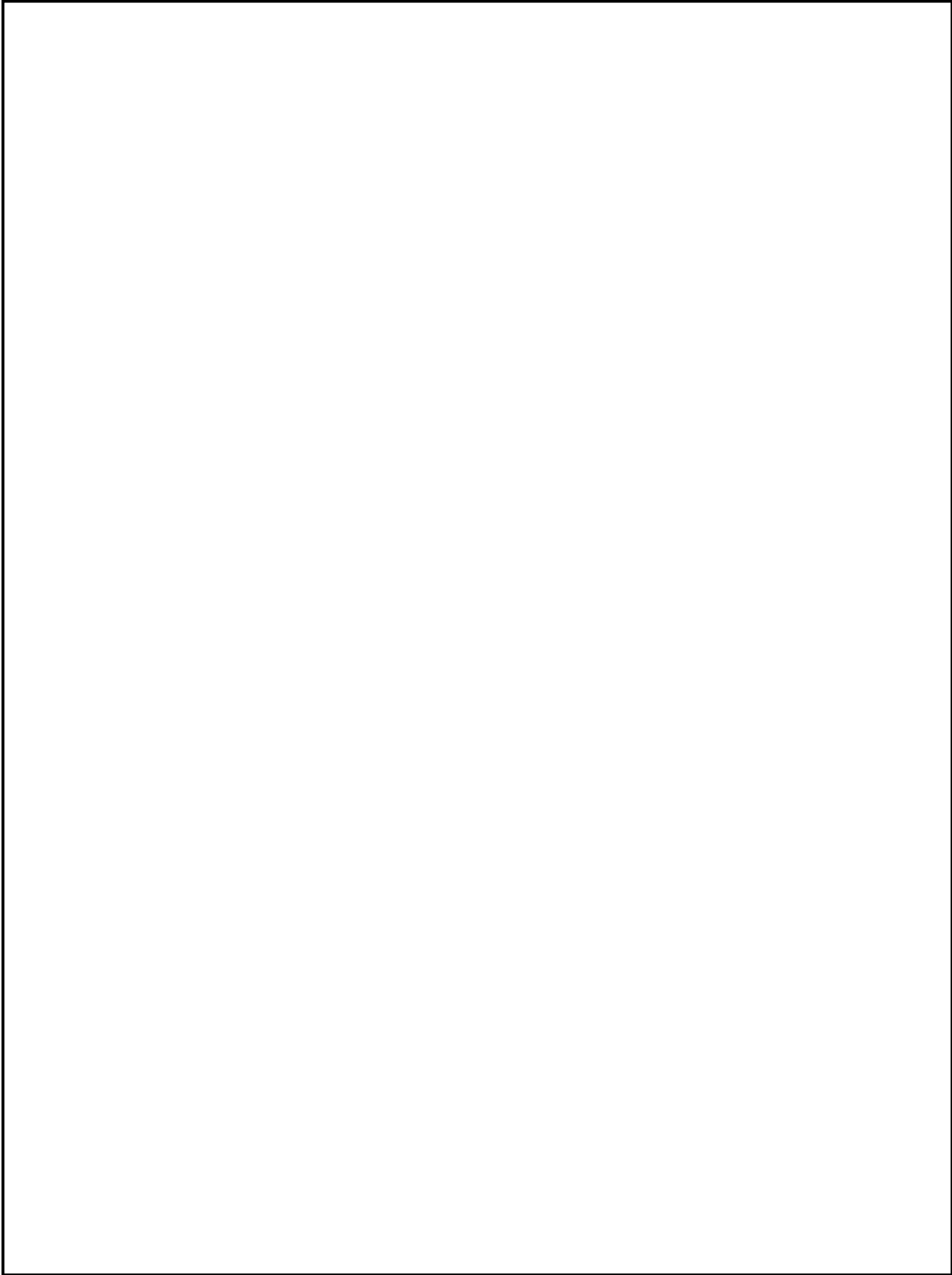
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
36/94

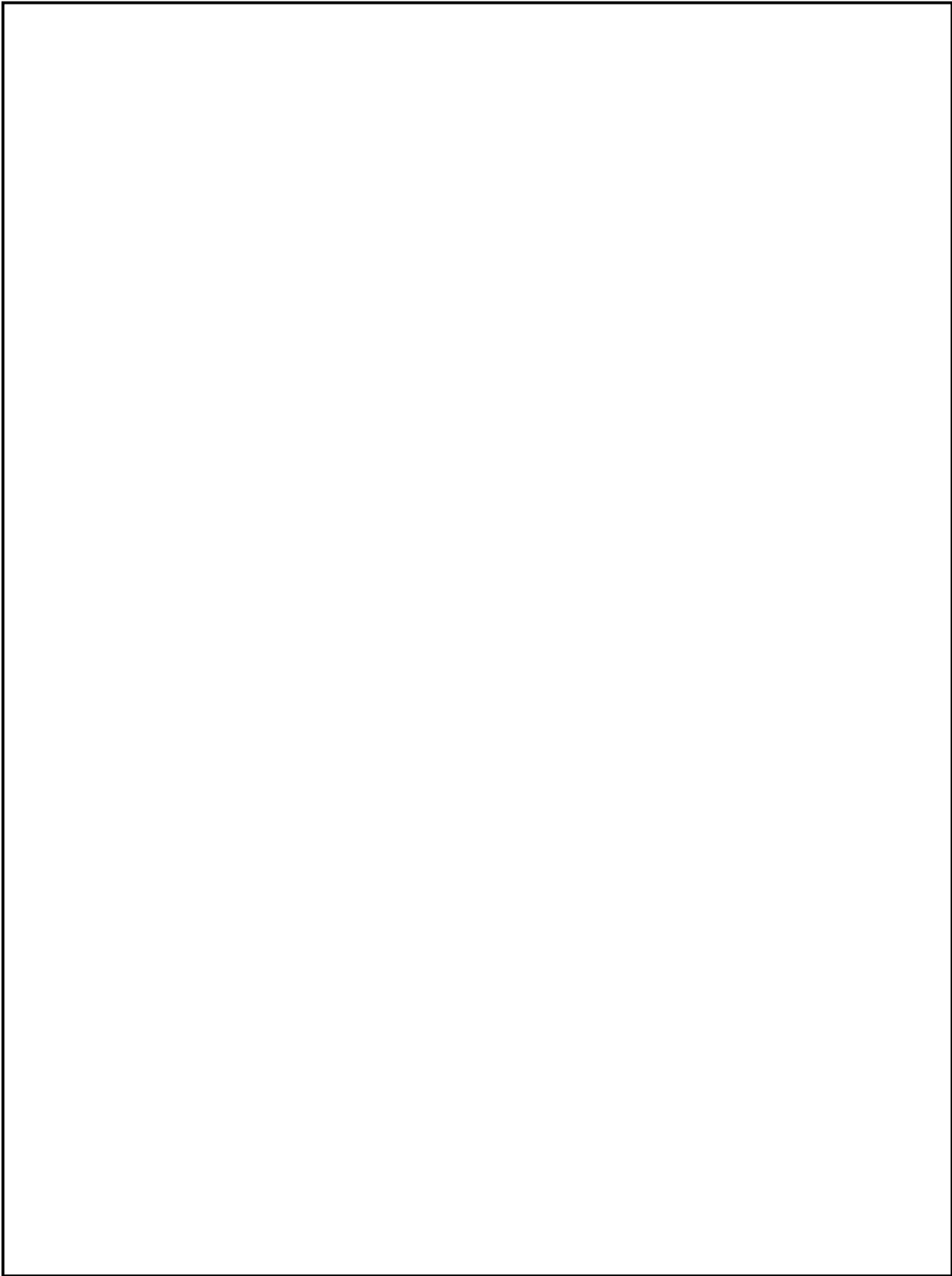


SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
37/94



SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
38/94

6.3 Referenced Rules Sections

N/A

6.4 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	ESH2-Z5 Rohde/Schwarz	871884/004	May 98	12 months
LISN	ESHS-Z5 Rohde&Schwarz	831.5518.52	May 98	12 months
Pulse limiter	ESH3-Z2 Rohde&Schwarz	60813	May 98	12 months

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
39/94

7 RADIATED EMISSION DATA

7.1 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 3000 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 3000 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.

For further data see enclosed test results.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
40/94

7.2 Measured Data

The EUT was measured with the Processor Pentium II 300 MHz in video mode 1024 x 768 in two different configurations:

a) Scenic Mobile 510 AGP

Configuration with external used AC/DC-adapter and internal accu

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth [deg]	Polarization
52.170000	25.40	8.2	30.0	4.5	400.0	330.00	vertical
182.610000	24.30	10.8	30.0	5.6	400.0	59.00	horizontal
210.300000	24.10	11.4	30.0	5.8	400.0	59.00	horizontal
228.270000	25.00	12.6	30.0	4.9	340.0	90.00	horizontal
684.780000	32.80	21.7	37.0	4.1	400.0	180.00	vertical

all levels are quasi-peak levels

Part 2: frequency range 1 GHz - 3 GHz:

Judgement: Passed by

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth [deg]	Polarization
1066.000000	29.40	9.2	53.9	24.4	100.0	249.00	horizontal
1198.900000	34.60	8.3	53.9	19.2	100.0	219.00	horizontal
1265.800000	34.20	8.8	53.9	19.6	160.0	300.00	vertical
1332.700000	35.60	9.1	53.9	18.2	220.0	300.00	vertical
1598.800000	36.80	9.9	53.9	17.0	100.0	29.00	vertical

all levels are average levels

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
41/94

b) Scenic Mobile 510 AGP

Configuration with internal used AC/DC-adapter without accu

Part 1: frequency range 30 MHz - 1000 MHz:

Judgement: Passed by

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth [deg]	Polarization
215.220000	28.20	11.8	30.0	1.7	100.0	29.00	vertical
228.270000	26.10	12.6	30.0	3.8	100.0	90.00	vertical
306.540000	34.50	15.6	37.0	2.4	100.0	0.00	vertical
313.050000	34.40	15.8	37.0	2.5	100.0	0.00	vertical
717.390000	33.50	22.0	37.0	3.4	280.0	29.00	vertical

all levels are quasi-peak levels

Part 2: frequency range 1 GHz - 3 GHz:

Judgement: Passed by

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth [deg]	Polarization
1199.200000	38.10	8.3	53.9	15.7	100.0	339.00	horizontal
1332.400000	36.40	9.1	53.9	17.4	220.0	300.00	vertical
1467.700000	33.00	9.1	53.9	20.8	100.0	339.00	horizontal
1599.100000	35.30	9.9	53.9	18.5	160.0	309.00	horizontal
1732.300000	36.80	11.4	53.9	17.0	100.0	339.00	horizontal

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.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
42/94

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: R. Schaufler

Test Personnel:

Tester Signature: _____ Date: _____

Printed Name: H. Zenkner

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
43/94

Measurement Protocols

Page No

Scenic Mobile 510 AGP **Configuration with external used AC/DC-** **adapter and internal accu**

Frequency range 30 MHz - 1 GHz:
66,66 MHz clock/Pentium II 300 MHz,
video resolution 1024 x 768

45 - 47

Frequency range 1 GHz - 3 GHz:
66,66 MHz clock/Pentium II 300 MHz,
video resolution 1024 x 768

48 - 50

Scenic Mobile 510 AGP **Configuration with internal used AC/DC-** **adapter without accu**

Frequency range 30 MHz - 1 GHz:
66,66 MHz clock/Pentium II 300 MHz,
video resolution 1024 x 768

51 - 53

Frequency range 1 GHz - 3 GHz:
66,66 MHz clock/Pentium II 300 MHz,
video resolution 1024 x 768

54 - 56

SIEMENS

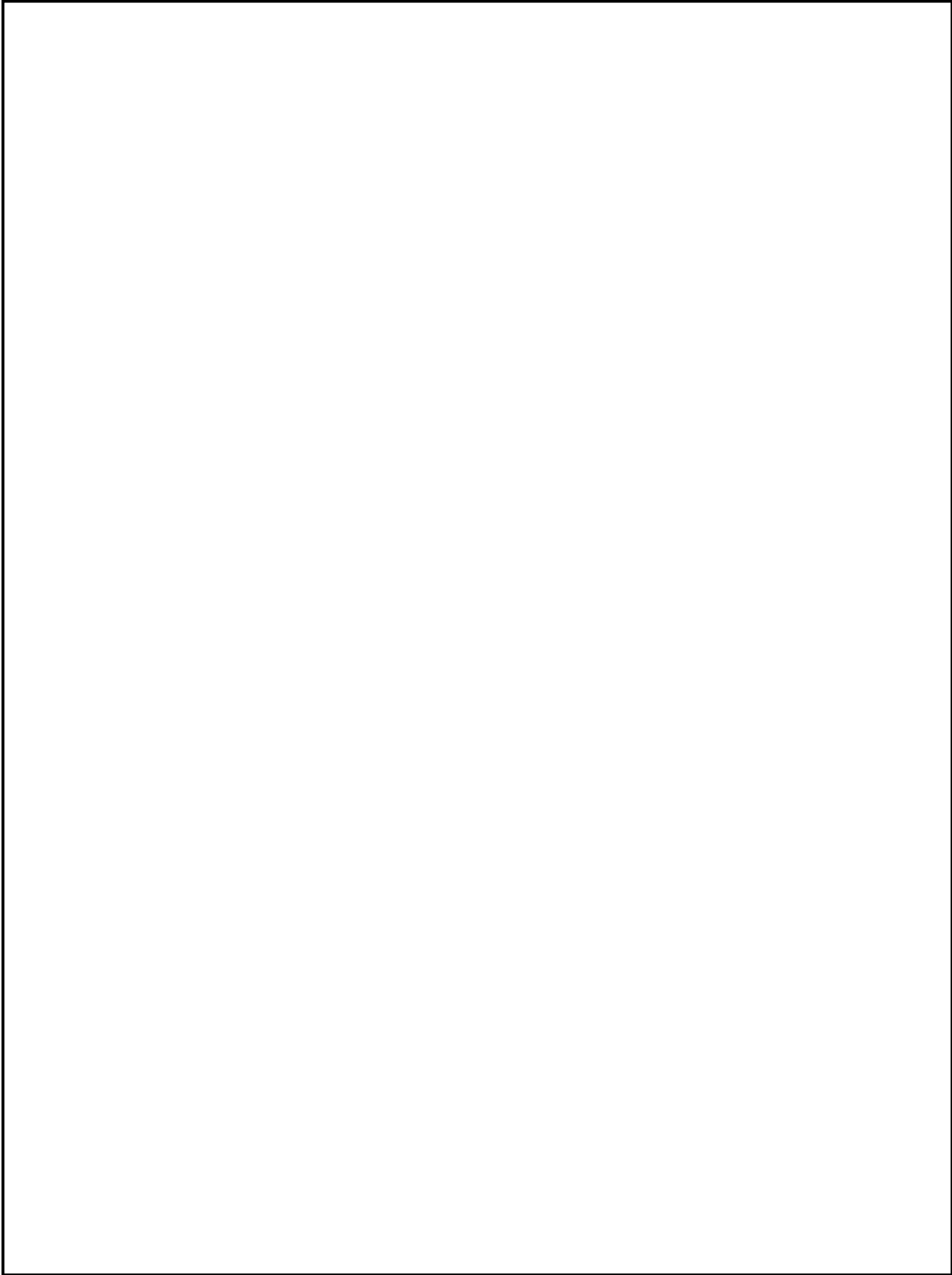
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
44/94

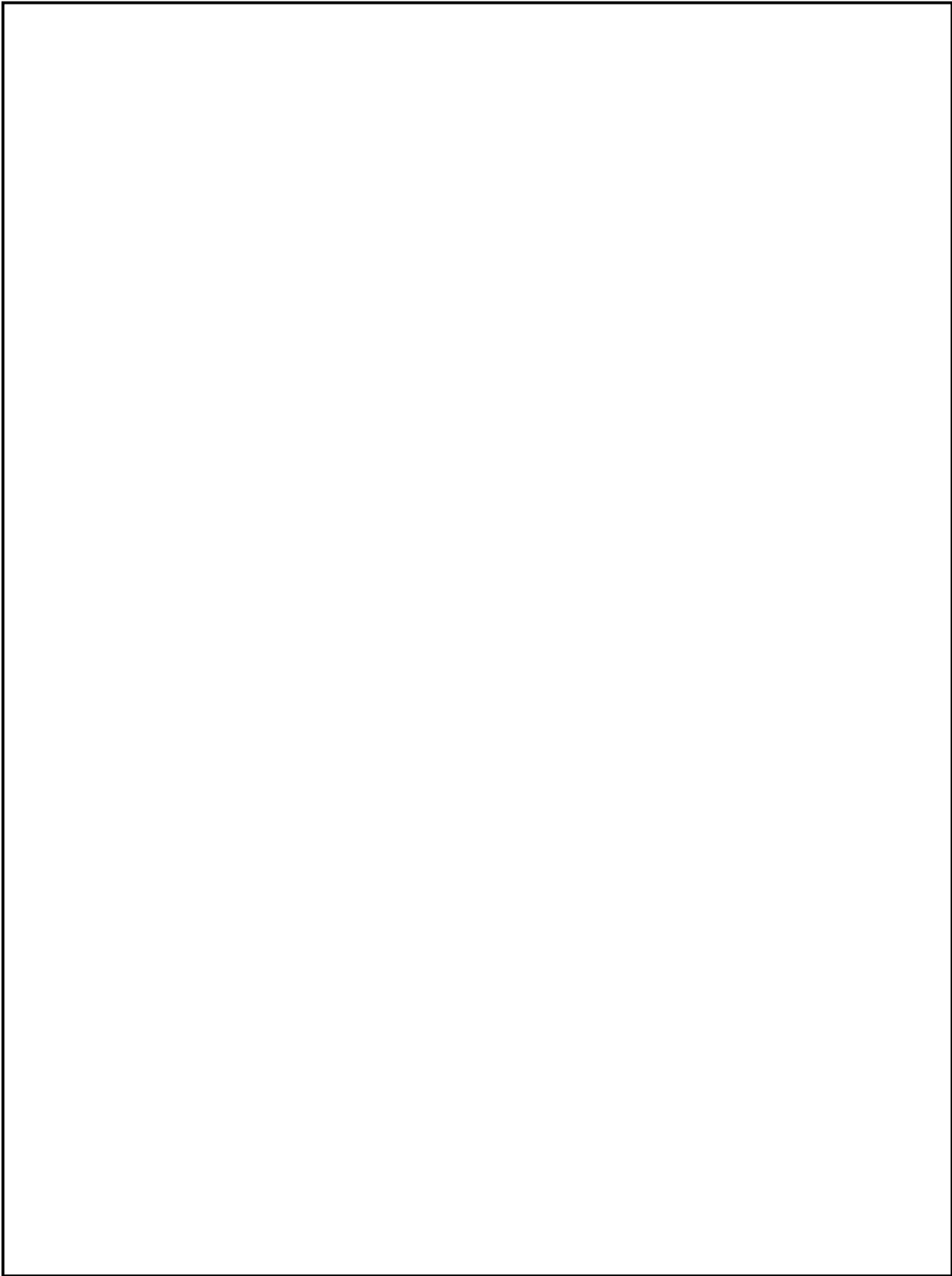


SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
45/94



SIEMENS

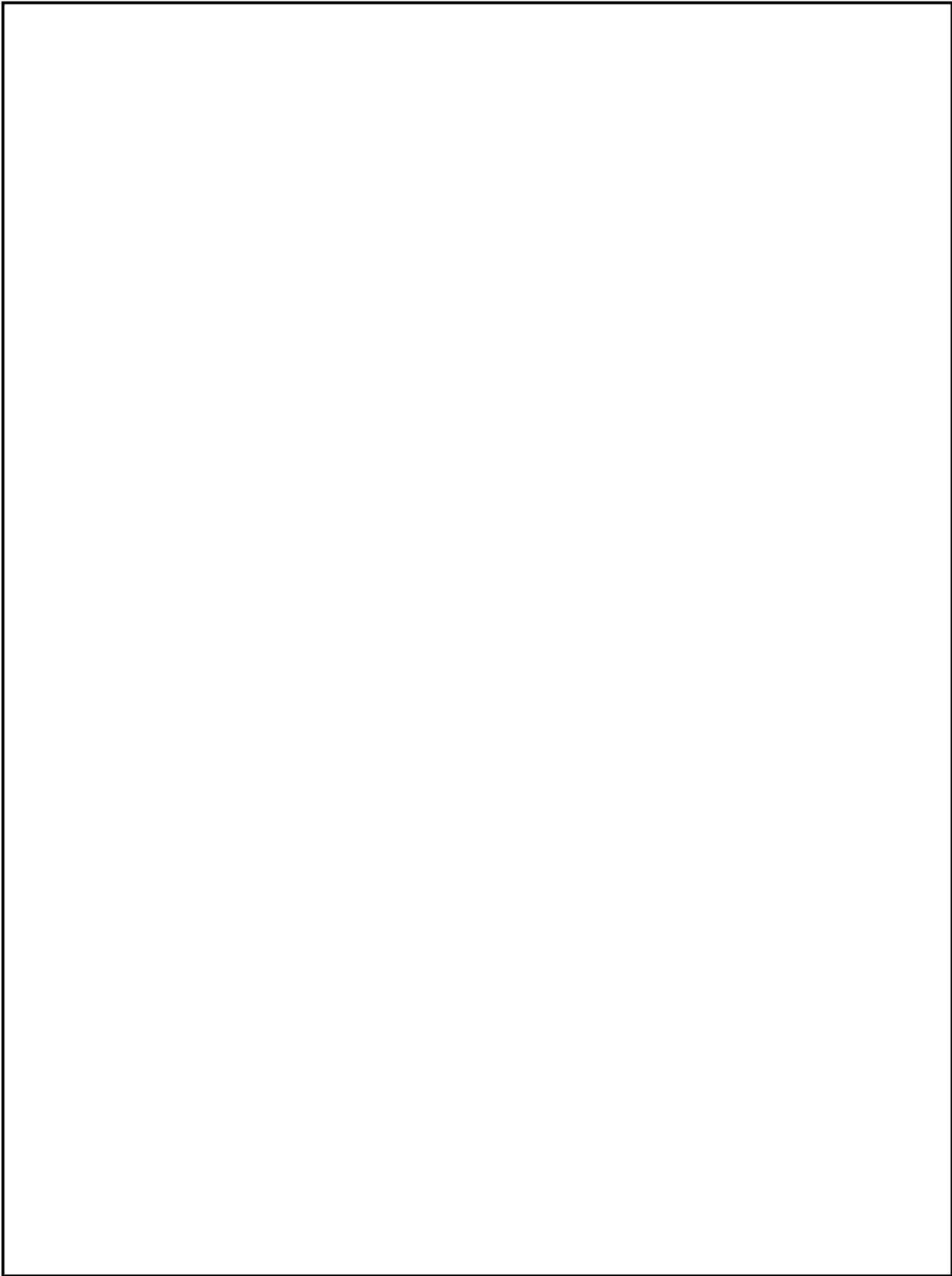
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
46/94



SIEMENS

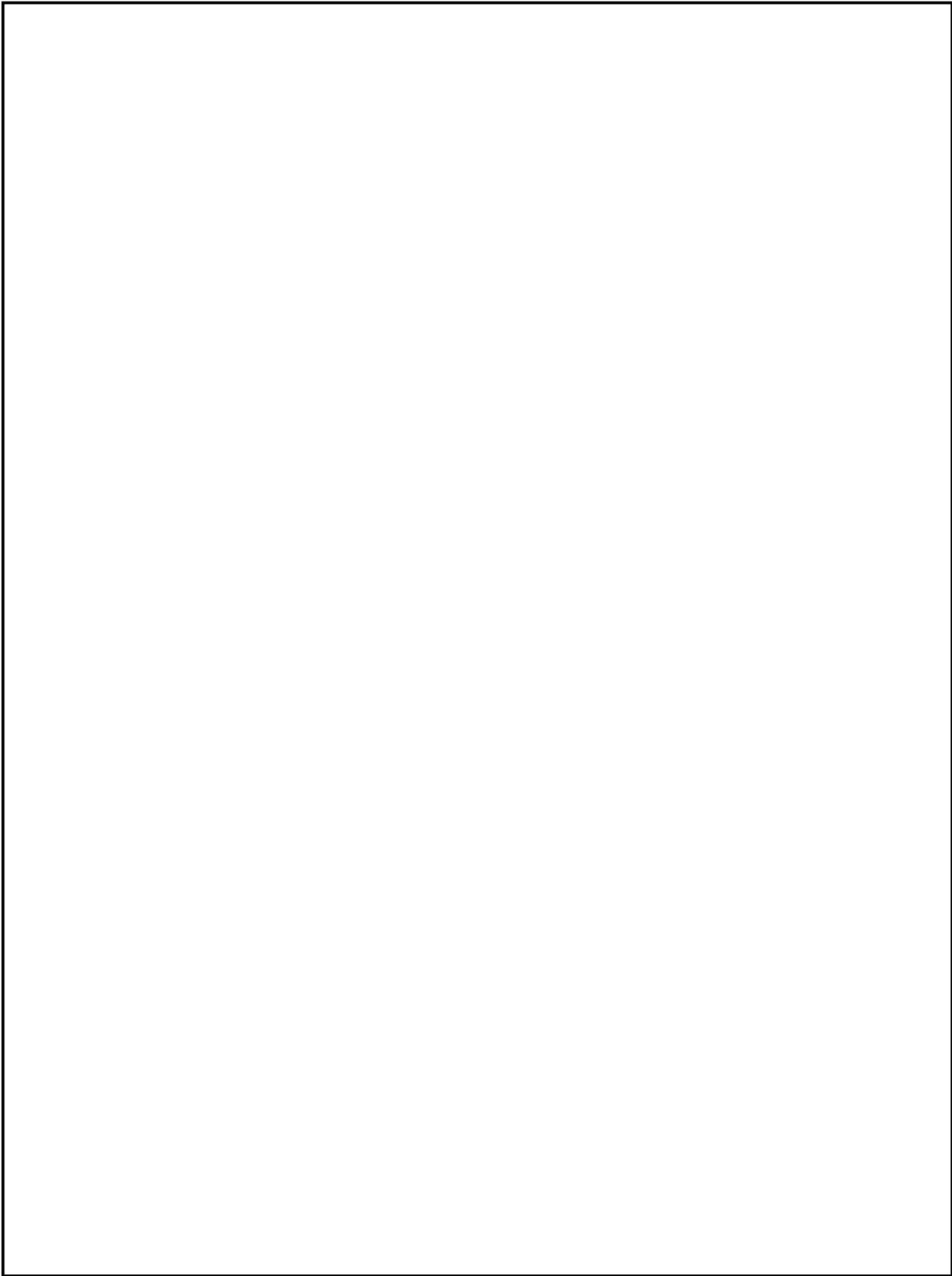
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
47/94



SIEMENS

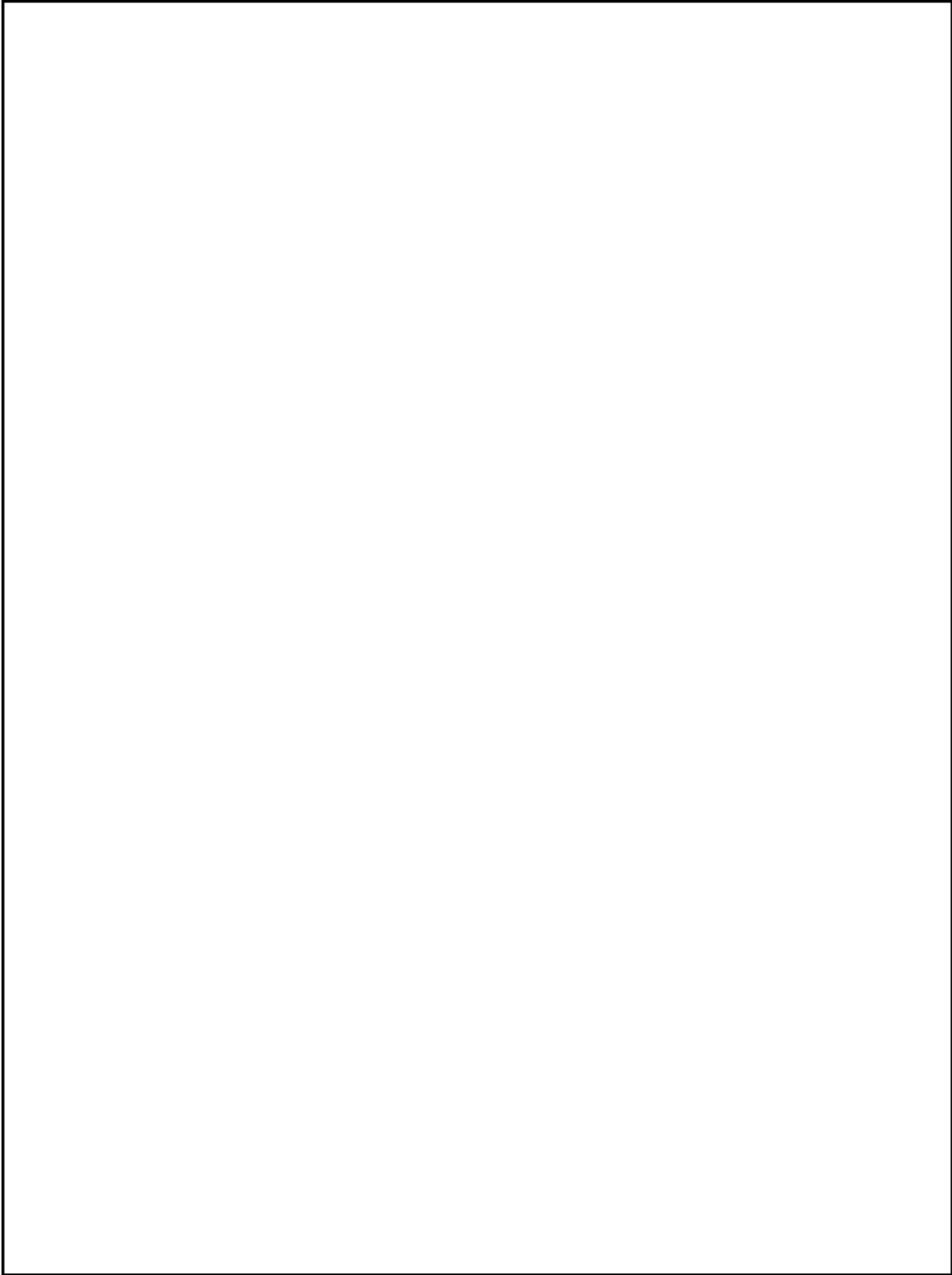
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
48/94



SIEMENS

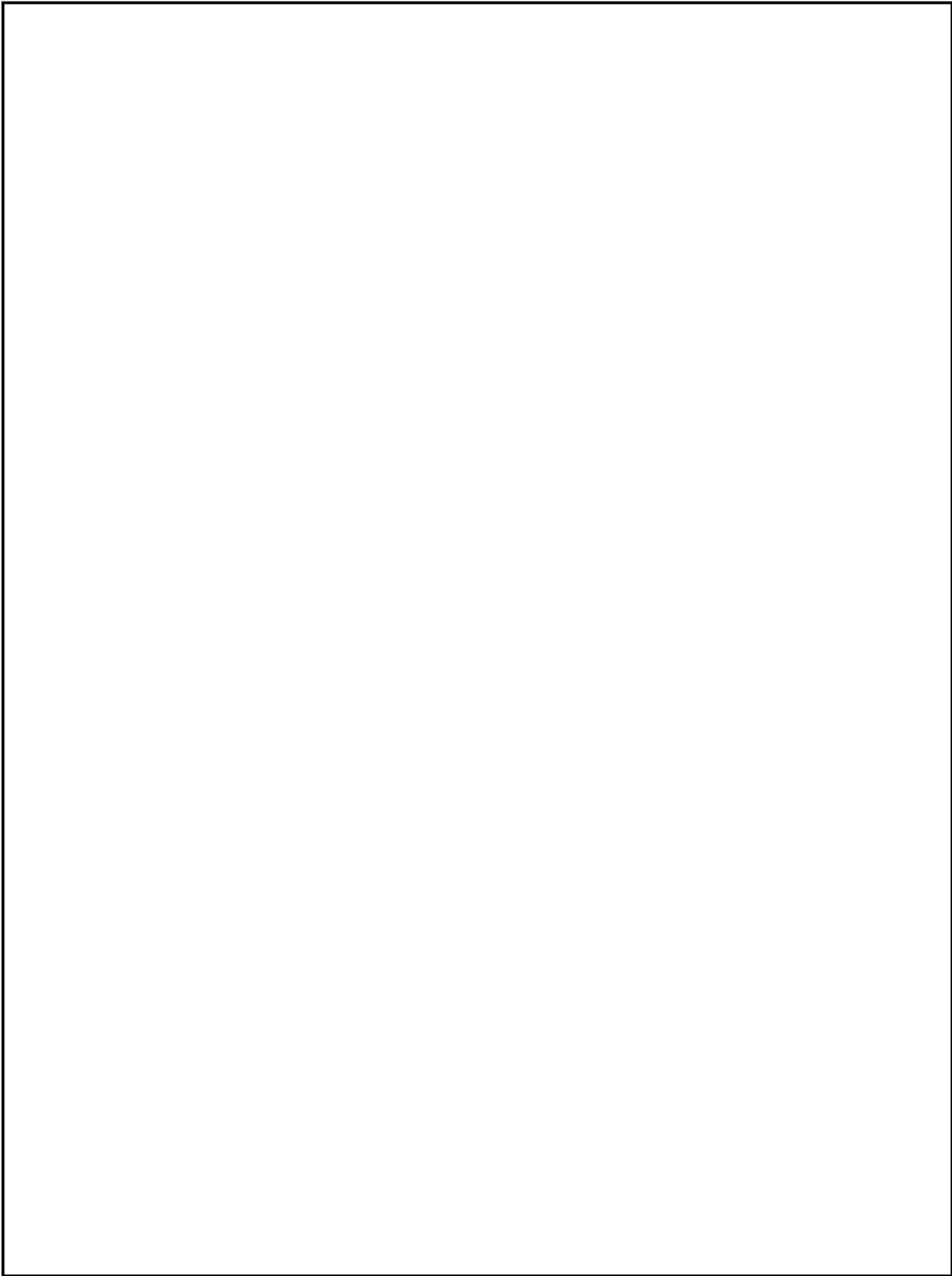
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
49/94



SIEMENS

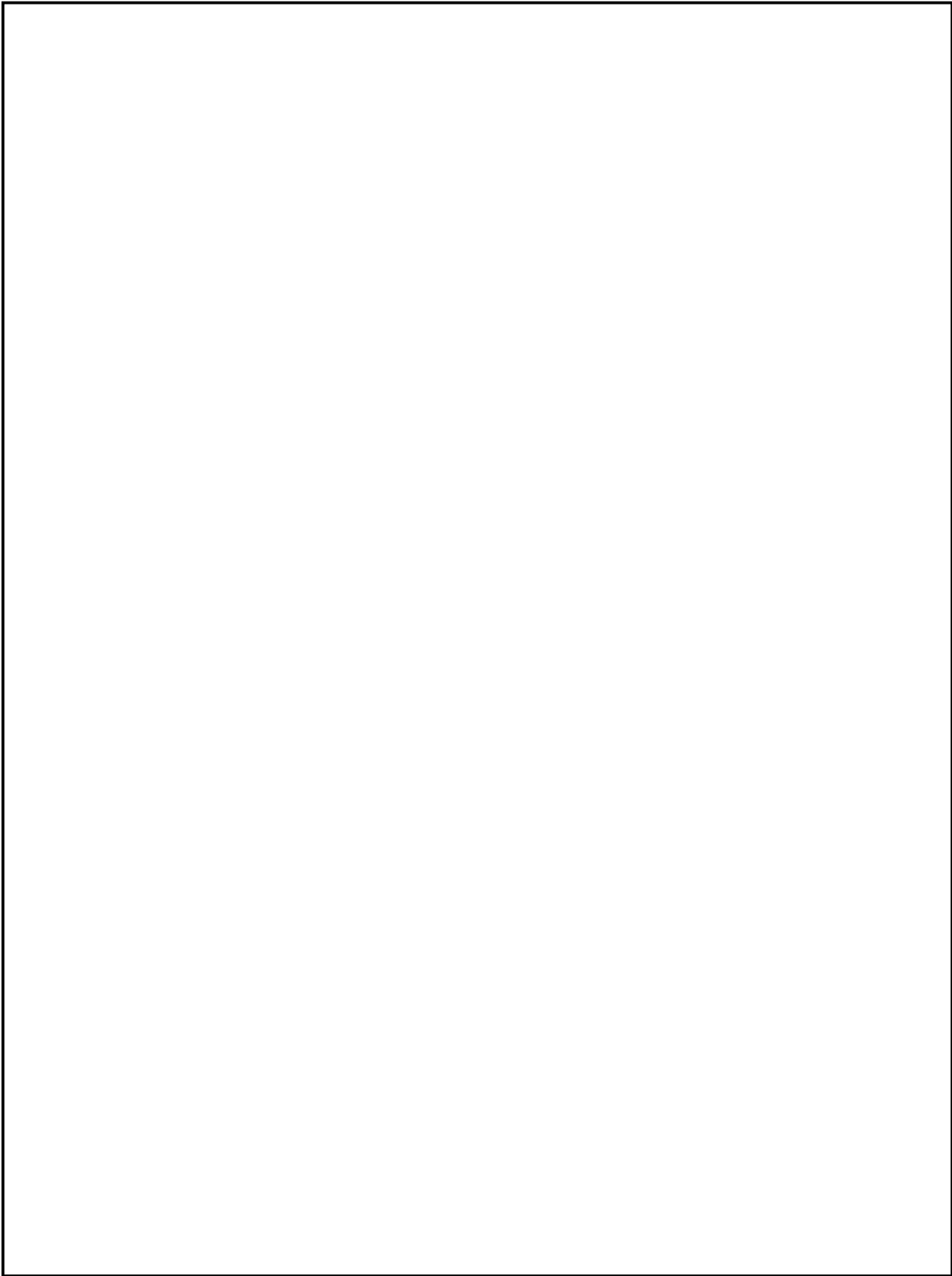
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
50/94



SIEMENS

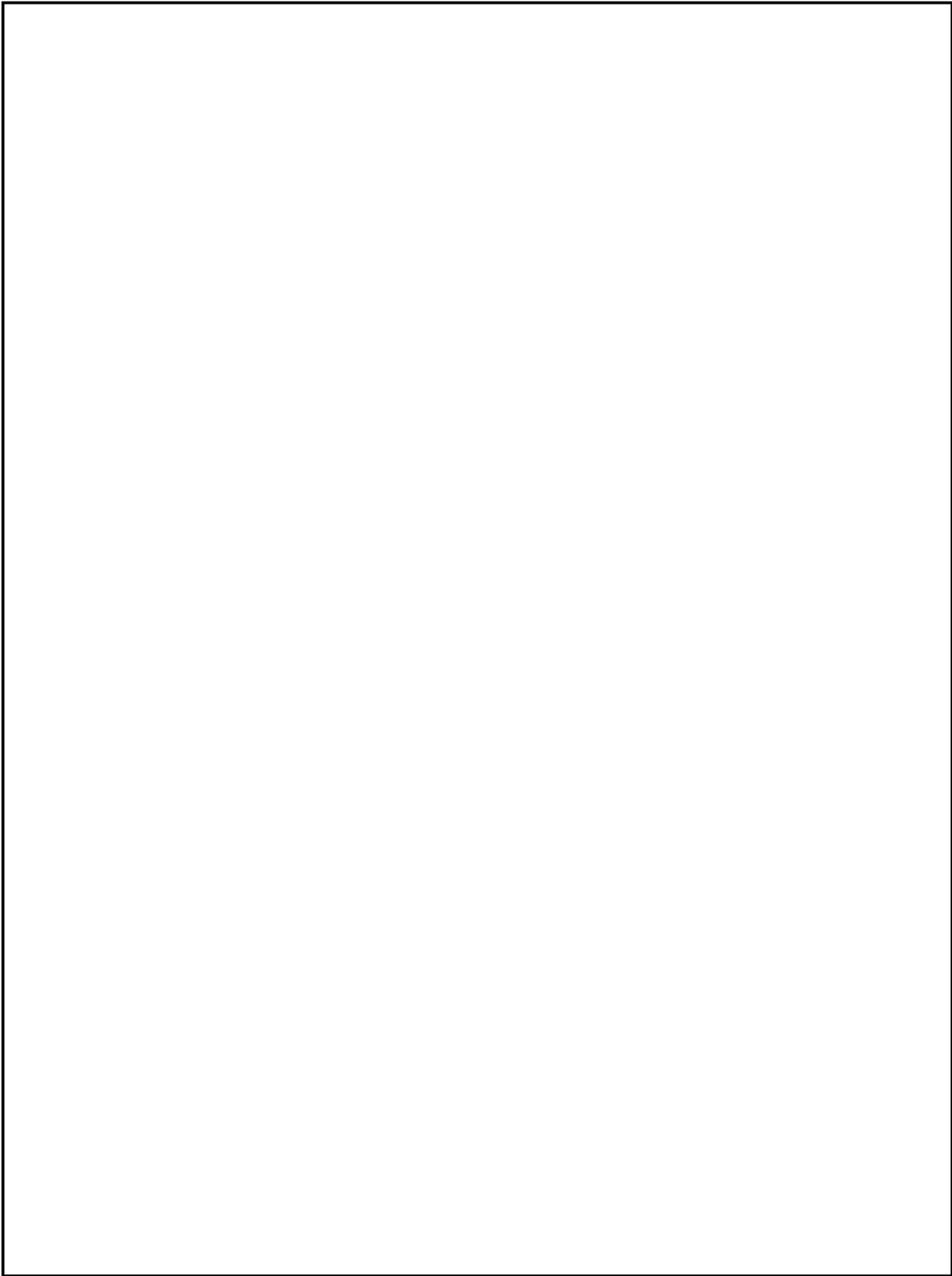
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
51/94



SIEMENS

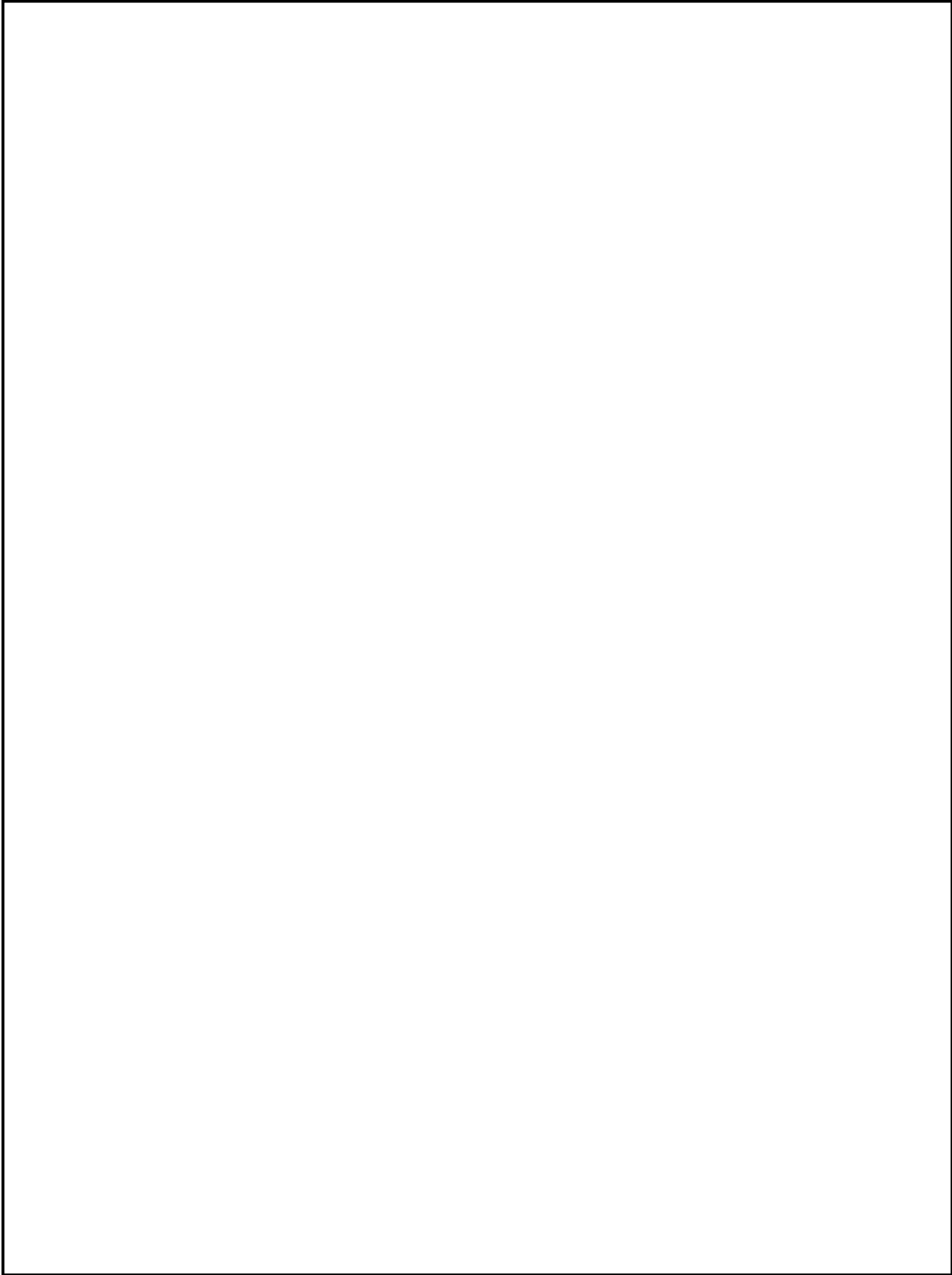
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
52/94

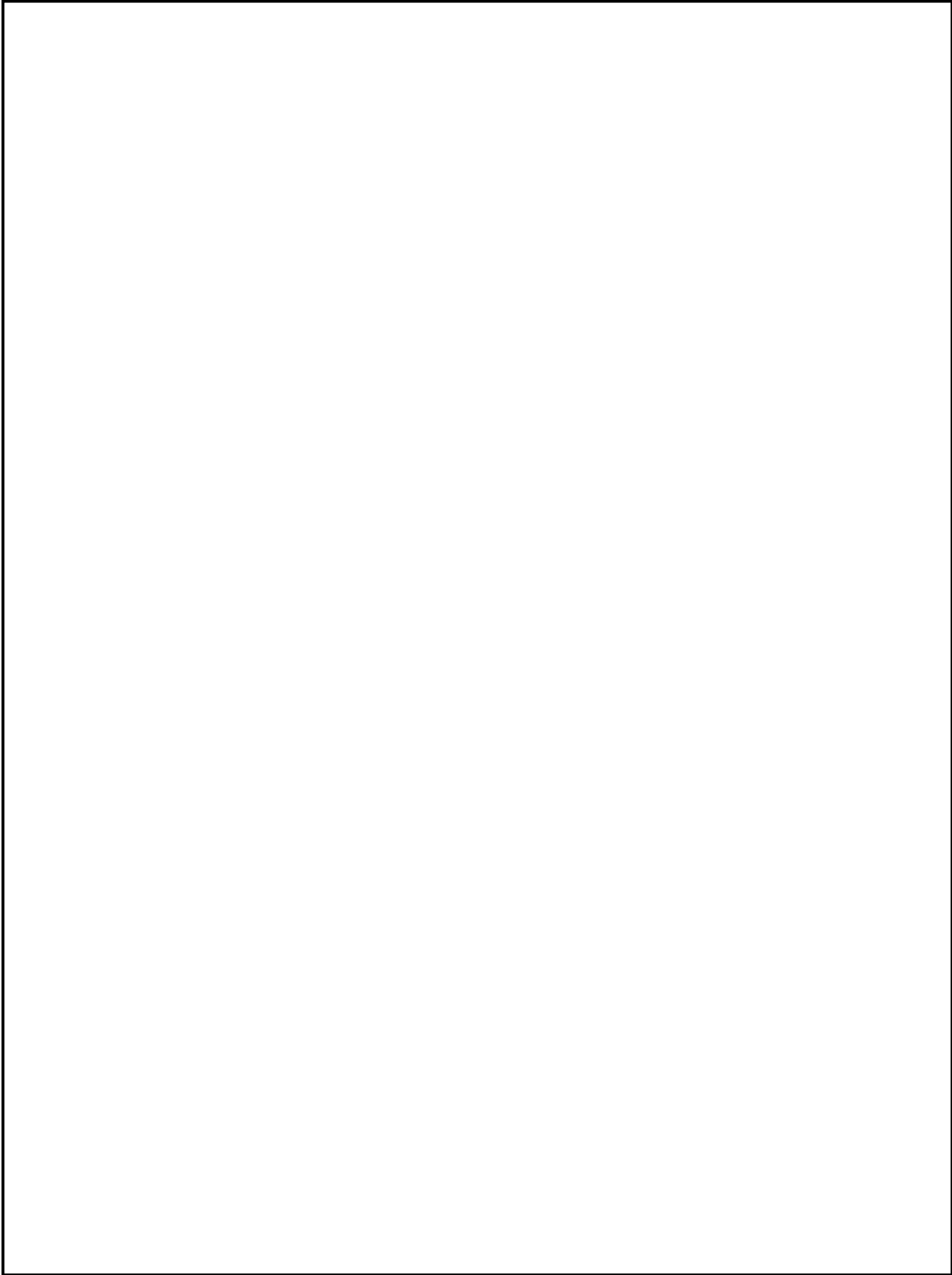


SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
53/94



SIEMENS

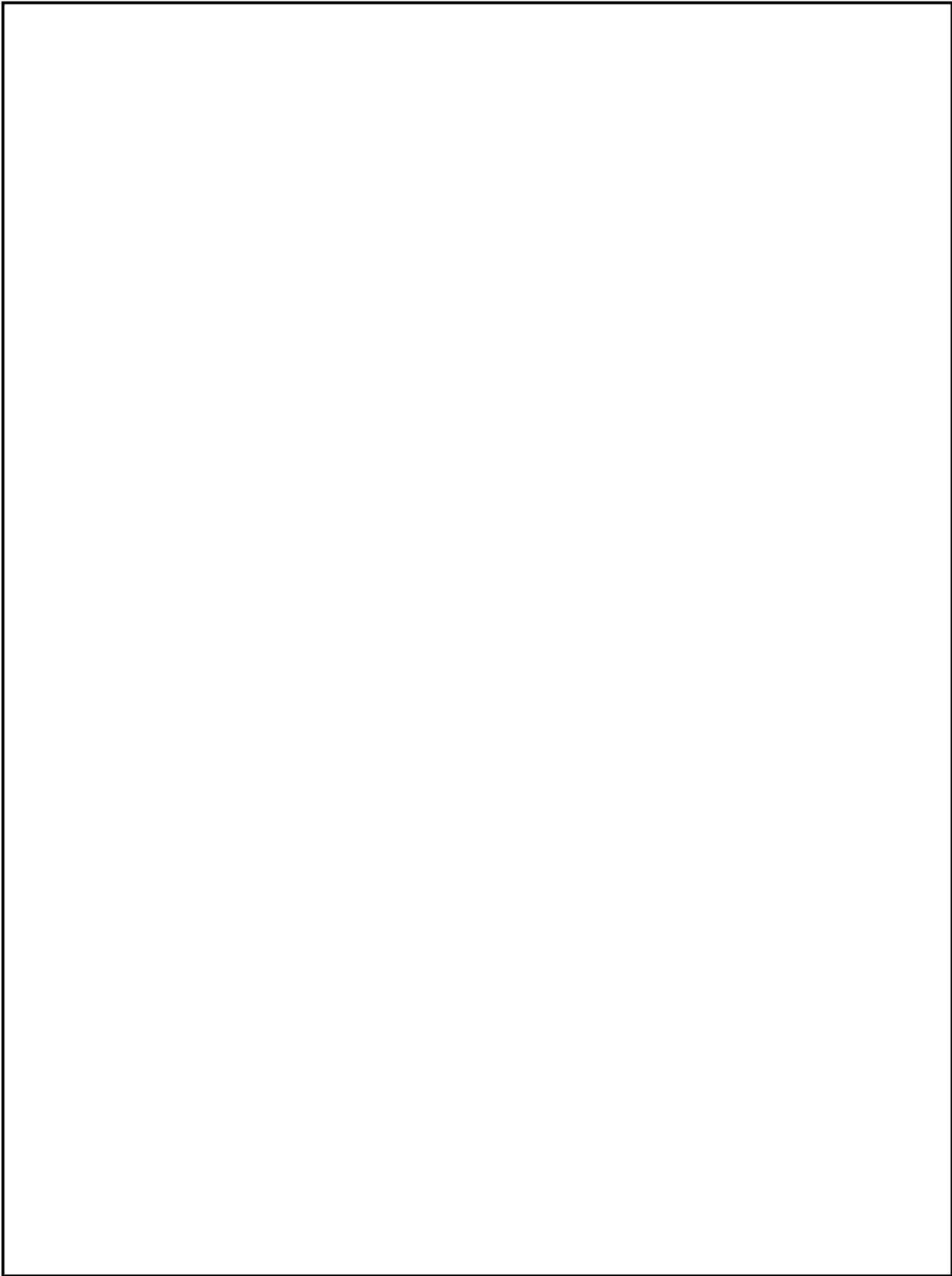
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
54/94



SIEMENS

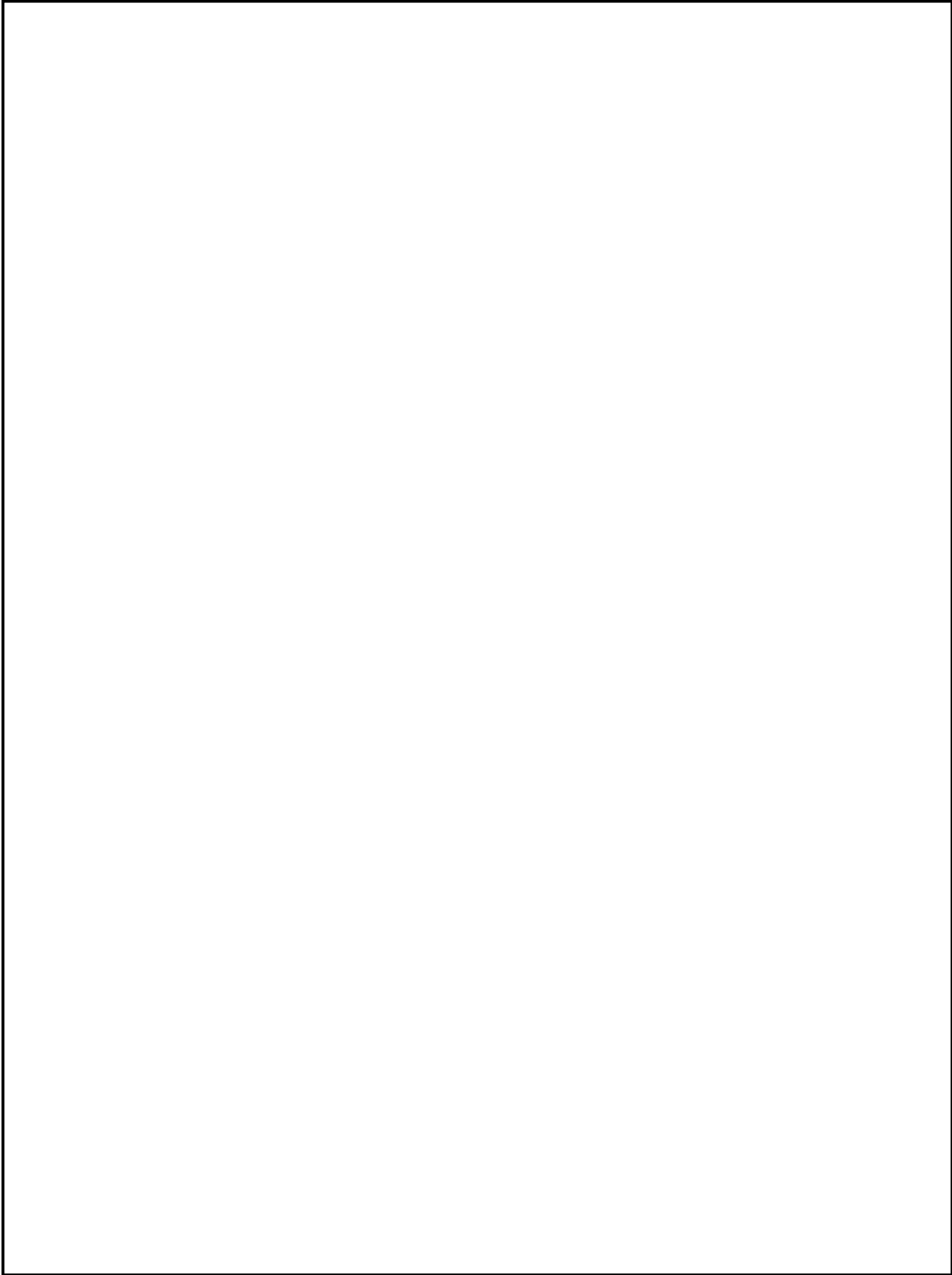
Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
55/94



SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
56/94

7.3 Referenced Rules Sections

N/A

7.4 Test Instrumentation Used, Radiated Measurement

Type	Manufacturer/ Model No.	Serial No.	Last Cal.	Cal. Interval
Receiver	ESMI Rohde&Schwarz	840607/006	Jan. 97	15 months
Antenna	CBL 6111 Chase	1345	May 98	12 months
Active Ridged antenna	Tensor 4105 Rohde&Schwarz	2063	May 98	12 months

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: Nov 19, 1998

Page:
57/94

7.5 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 dB μ 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 μ V/m.

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

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

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

103,5 μ V/m

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
58/94

7.6 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

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
60/94

Frequency range: 1 GHz to 3 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

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
61/94

8 PHOTOS OF TESTED EUT

8.1 Front side of EUT

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
62/94

8.2 Rear side of EUT

see page 14, location of label on EUT

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
63/94

8.3 System board, bottom side view

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
64/94

8.4 System board, top side view

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
65/94

8.5 Notebook partly disassembled, without top shield

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
66/94

8.6 Notebook partly disassembled, without top case

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
67/94

8.7 DVD-drive, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
68/94

8.8 DVD-drive, rear side

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
69/94

8.9 HD-drive, Fujitsu

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
70/94

8.10 RAM module, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
71/94

8.11 RAM module, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
72/94

8.12 Floppy drive, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
73/94

8.13 Floppy drive, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
74/94

8.14 Connection board and IR interface, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
75/94

8.15 Connection board and IR interface, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
76/94

8.16 Upper connection board, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
77/94

8.17 Upper connection board, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
78/94

8.18 MMO module, front side

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
79/94

8.19 MMO module, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
80/94

8.20 Keyboard, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
81/94

8.21 Keyboard, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
82/94

8.22 PCMCIA bay

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
83/94

8.23 LCD panel, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
84/94

8.24 LCD panel, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
85/94

8.25 LCD control panel, top side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
86/94

8.26 AC/DC-adapter, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
87/94

8.27 AC/DC-adapter, soldering side with shielding

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
88/94

8.28 AC/DC-adapter, component side with shielding

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
89/94

8.29 AC/DC-adapter, soldering side without shielding

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
90/94

8.30 AC/DC-adapter, component side without shielding

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
91/94

8.31 DC/DC-converter for LCD panel, front side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
92/94

8.32 DC/DC-converter for LCD panel, rear side

SIEMENS

Siemens AG
Personal Computer Scenic Mobile 510 AGP
FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
93/94

Attachment: User Manual

For FCC statement please refer to user manual page 5.

SIEMENS

Siemens AG

Personal Computer Scenic Mobile 510 AGP

FCC Identifier:
HSSMOB510A1

Date: **Nov 19, 1998**

Page:
94/94