

CE MARK TECHNICAL FILE

AUSTRALIA EMC CONSTRUCTION

FILE

of

Personal Computer

Model/ Type/ Machine Type

VT5100

Contains:

1. Declaration of Conformity
2. EN55022/CISPR 22, AS/NZS 3548 Class B EMI test report
3. Test report of EN50082-1, AS/NZS 4252.1, EN60555-2, and EN60555-3
4. Certificate of EN60950
5. Block Diagram and Schematics
6. User`s manual



Date: June. 22, 2000

ISL-00A091E

Declaration of Conformity

Name of Manufacturer: Acer Inc
Address of Manufacturer: 7 Hsin Ann Rd., Science-Based Industrial Park
Hsinchu 30077
Taiwan, R. O. C.
Declares that product: Personal Computer
Model/ Type/ Machine Type: VT5100
Assembled by: Same as above
Address: Same as above

Conforms to the EMC Directive 89/336/EEC as attested by conformity with the following harmonized standards:

EN55022 Class B: 1994/A1:1995/A2:1997: Limits and Methods of Measurement of Radio Interference characteristics of Information Technology Equipment,

EN50082-1: 1992: Generic Immunity Standard -Part 1: Domestic Commercial and Light Industry,

EN60555-2: 1987: Disturbances in supply systems caused by household appliances and similar electrical equipment- Part 2: Harmonics,

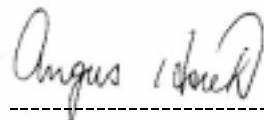
EN60555-3: 1987: Disturbances in supply systems caused by household appliances and similar electrical equipment- Part 3: Voltage Fluctuations.

Conforms to the Low Voltage Directive 73/23/EEC as attested by conformity with the following harmonized standard:

EN60950:1992 /A1:1993, A2:1993 /A3:1995 /A4:1997 /A11:1997: Safety of Information Technology Equipment Including electrical business equipment.

Conforms to the C-Tick Mark requirement as attested by conformity with the following standards:

AS/NZS 3548: 1995 /A1:1997 /A2:1997: Information technology equipment
AS/NZS 4252.1:1994: Generic Immunity.



Angus Hsieh / Director
Acer Inc

June. 28, 2000

Date

ISL-00A091E

EN50082-1 / AS/NZS 4252.1 / IMMUNITY
EN60555-2 / HARMONICS
EN60555-3 / VOLTAGE FLUCTUATIONS
TEST REPORT

of

Personal Computer

Model/ Type/ Machine Type

VT5100

Applied by:

Acer Inc
7 Hsin Ann Rd., Science-Based Industrial Park
Hsinchu 30077
Taiwan, R. O. C.

Test Performed by:

(NVLAP Lab. Code: 200234-0)
International Standards Laboratory
No. 21, Alley 37, Lane 122, Sec. 2
Hsiwan Rd. Hsichih Chen
Taipei Hsien 22117
Taiwan, R.O.C.

Tel:(02)2646-2550
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Report Number: ISL-00A091E

Test Date: June. 22, 2000

NVLAP Lab. Code: 200234-0; VCCI: R-341, C-354; NEMKO Aut. No: ELA 113; BSMI Lab. Code: SL2-IN-E-0013

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1. General

1.1 Certification of Accuracy of Test Data

The immunity tests which this report describes were conducted by an independent electromagnetic compatibility consultant, International Standards Laboratory in accordance with the Generic Immunity Standards EN50082-1:1992 / AS/NZS 4252.1:1994 which include IEC 801 series regulations, Harmonic Current Emissions EN60555-2: 1987, and Voltage Fluctuations EN60555-3: 1987.


Equipment Tested: Personal Computer
Model/ Type/ Machine Type: VT5100
Applied by Acer Inc

Date of test: June. 22, 2000

Test Engineer: Alan Tsai

Standard	Comment	Test Results
IEC 801-2, 1984	ElectroStatic Discharge	Complies
IEC 801-3, 1984	Radiated Electromagnetic Field	Complies
IEC 801-4, 1988	Fast Transient/Burst	Complies
EN60555-2, 1987	Harmonic Current Emissions	Complies
EN60555-3, 1987	Voltage Fluctuations	Complies

Approve & Signature



Jammy Chen/Manager

This test report accurately contains the test results of Electrostatic discharge, Radiation Electromagnetic Field, Fast Transient/Burst Test, Harmonic current Emissions of the sample equipment tested, and Voltage Fluctuations at the time of the test.

The results in this report apply only to the sample(s) tested.

This test report shall not be reproduced except in full, without the written approval of International Standards Laboratory.

2. Summary

2.1.1 Applicant Information

Applicant: Acer Inc
7 Hsin Ann Rd., Science-Based Industrial Park
Hsinchu 30077
Taiwan, R. O. C.

2.1.2 Operation Environment

Power supply : 230 Vac / 50 Hz

2.2 Description of Equipment Under Test

2.2.1 Description of Support Equipment

Support Unit 1.

Description:	Andrea Headphone
Model Number:	NC-80
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 2.

Description:	Koka Headphone
Model Number:	ST-8
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 3.

Description:	Acer USB Keyboard
Model Number:	6511-HA
Serial Number:	9122H070818D711684S00000
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A(comply with FCC DOC)

Support Unit 4.

Description:	AIWA stereo radio cassette player
Model Number:	HS-T160
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A

Support Unit 5.

Description:	KOKA Microphone
Model Number:	DM-510
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 6.

Description:	Microsoft Joy Stick
Model Number:	90873
Serial Number:	01151545
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	C3KMGP1

Support Unit 7.

Description:	SONY radio cassette player
Model Number:	WM-FX50
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A

Support Unit 8.

Description:	Logitech Mouse
Model Number:	M-SAH
Serial Number:	LZB81251703
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	DZL211029

Support Unit 9.

Description:	HP Printer (for parallel interface port)
Model Number:	C2642E
Serial Number:	N/A
Power Supply Type:	AC Adaptor (HP, Model: C2175A)
Power Cord:	Nonshielded, Detachable
Data Cable:	Shielded, Detachable, With Metal Hood
FCC ID:	(Comply with FCC DOC)

Support Unit 10.

Description:	Aceex Modem (for serial interface port)
Model Number:	DM1414
Serial Number:	960063771
Power Supply Type:	Linear, Power Adapter (AC to AC Xfmr, Wall Mounted Type)
Power Cord:	Nonshielded, Without Grounding Pin
FCC ID:	IFAXDM1414

Support Unit 11.

Description:	IBM Monitor
Model:	2237-00N
Serial Number:	23-KV210
Power Supply Type:	Switching
Power Cord:	Nonshielded, Detachable
FCC ID :	A3KM071

Support Unit 12.

Description:	Acer Keyboard
Model Number:	6512-CX
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	(comply with FCC DOC)

Support Unit 13.

Description:	Acer USB Mouse
Model:	MOSXUB
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	(Comply with FCC DOC)

Support Unit 14.

Description:	Acer USB Mouse
Model Number:	U48A
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	(Comply with FCC DOC)

Support Unit 15.

Description:	Acer USB Speaker
Model Number:	A-1
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	(Comply with FCC DOC)

Support Unit 16.

Description:	Personal Computer
Model:	IBM 2170
Serial No.:	N/A
Power Supply Type :	Switching
	Delta (Model: DPS-145PB-80A)
Hard Disk Drive:	Maxtor (Model: 91303D6) 13.3GB
Floppy Driver:	Panasonic (Model: JU256A276P)
CD-ROM Drive:	AOpen (Model: CD-940E/TKU PRO)
ZIP Driver:	Iomega (Model:Z100ATAPI)
LAN Card	Accton (Model: EN1207D-TX1)
FDD/HDD Controller and	
VGA port/ Parallel/	
Serial port:	Built on Motherboard
VGA port:	one 15-pin
Parallel Port:	one 25-pin
Serial Port:	one 9-pin
Keyboard Connector:	6-pin
Mouse Connector:	6-pin
USB Connector:	two 4-pin
Game Port:	one 15-pin
Speaker Port:	one
Microphone Port:	one
Line In Port:	one
Power Cord:	Nonshielded, Detachable
FCC ID:	N/A (comply witch FCC DOC)

2.2.2 Software for Controlling Support Unit

A test program which generates a complete line of continuously repeating "H" pattern is used as the software test program. The program was executed as follows:

- A. Read and write to the disk drives.
- B. Send audio signal to the speaker
- C. Send audio signal to the headphone.
- D. Send audio signal to the headphone.
- E. Receive audio signal from walkman.
- F. Receive audio signal from the microphone.
- G. Receive audio signal from walkman.
- H. Send H pattern to the parallel port device (Printer).
- I. Send H pattern to the serial port device (Modem).
- J. Send H pattern to the video port device (Monitor).
- K. Send H pattern to server and receive H pattern from server.
- L. Repeat the above steps.

	Filename	Issued Date
LAN	EMC.exe	11/22/1996
Monitor	HH.bat	8/20/1991
Modem 1	Hm.bat	8/20/1991
Printer1	Wordpad.exe	11/11/1999

2.2.3 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
AC Power Cord	110V (~240V) to AC Power Cord Inlet (3-pin)	1.8M	Nonshielded, Detachable	Plastic Head Plastic Hood
Server Data Cable	Server to EUT LAN port	33 feet	Shielded, Detachable	RJ-45, with Metal Head, Metal Hood
Monitor Data Cable	Monitor to PC VGA port	1.6M	Shielded, Detachable	Metal Head Plastic Hood
Modem Data Cable	Modem to PC COM 1 port	1.5M	Shielded, Detachable	Metal Head Metal Hood
Printer Data Cable	Printer to PC Parallel port	1.5M	Shielded, Detachable	Metal Head Plastic Hood
Mouse Data Cable	Mouse to PC Mouse port	1.8M	Shielded, Undetachable	Metal Head without Hood
Audio-in Data Cable	Walkman to PC Audio-In Port	1.5M	Nonshielded, Detachable to PC	Metal Head Plastic Hood
Joy Stick Data Cable	Joystick to PC Joystick port	1.2M	Nonshielded, Undetachable	Metal Head without Hood
Microphone Data Cable	Microphone to Mic Jack of PC	1.5M	Nonshielded, Undetachable	Metal Head without Hood
Audio-in Data Cable	Walkman to PC Audio-In Port	1.5M	Nonshielded, Detachable to PC	Metal Head Plastic Hood
USB Keyboard Data Cable	Keyboard to PC USB port	1.8M	Shielded, Undetachable	Metal Head Plastic Hood
Headphone Data Cable	Headphone to Line-out jack of PC	1.5M	Nonshielded, Undetachable	Metal Head without Hood

Description	Path	Cable Length	Cable Type	Connector Type
Headphone Data Cable	Headphone to Line-out jack of PC	1.5M	Nonshielded, Undetachable	Metal Head without Hood
USB MOUSE (MOSXUB) Data Cable	Keyboard to PC USB port	1.8M	Shielded, Undetachable	Metal Head Plastic Hood
USB MOUSE(U48A) Data Cable	Mouse to PC USB port	1.8M	Shielded, Undetachable	Metal Head Plastic Hood
Keyboard (6512-CX) Data Cable	Keyboard to PC Keyboard port	1.8M	Shielded, Undetachable	Metal Head Plastic Hood
USB Speaker Data Cable	Speaker to PC line-out port	1.5M	Nonshielded, Undetachable	Metal Head without Hood

2.3 Description of Equipment Under Test

EUT

Description:	Personal Computer
Condition:	Pre-Production
Model:	VT5100
Serial Number:	N/A
Power Supply Type:	Switching Delta (Model: DPS-145PB-82A) 145W or API (Model: API-9502-072) 145W or High Power (Model: SI-X145M3) 145W
Hard Disk Driver:	Seagate (Model: ST315323A) 15.3GB or Quantum (Model: LCT15LC20A) 20.4GB or Quantum (Model: LCT15LC30A) 30GB or Maxtor (Model: 31536H2) 15GB or Maxtor (Model: 32305H3) 23GB
Floppy Driver:	Panasonic (Model: JU-256A046P)
CD-ROM Driver:	Aopen (Model: CD-948E/AKU)
Modem Card:	Askey (Model: 1456VQH20E)
FDD/HDD Controller and Parallel/Serial ports:	Built on Motherboard
Parallel Port:	one 25-pin
Serial Port:	one 9-pin
LAN Port:	one 8-pin
Keyboard Connector:	6-pin
Mouse Connector:	6-pin
USB Connector:	four 4-pin
VGA Connector:	15-pin
Game Port:	one 15-pin
Speaker Port:	two
Microphone Port:	two
Line In Port:	one
Power Cord:	Nonshielded, Detachable
Display:	CRT
Maximum Resolution:	1280 X 1024 V: 60Hz

Speed and CPU

66MHz	Celeron 700,667,633,600,566,533MHz
100MHz	Pentium III 850,800,750,700,650,600MHz
133MHz	Pentium III 1000,933,866,800,733,667,600MHz

All types of CPU, switching power supplies, hard disk drivers, CD-ROM drivers, modem cards, and video modes listed above have been tested, we only present the worst case test data in the report. The test configuration is listed below:

CPU:	Pentium III 933 MHz
Power supply:	Delta (Model: DPS-145PB-82A) 145W
Hard disk driver:	Seagate (Model:ST315323A) 15.3GB
CD-ROM driver:	Aopen (Model:CD-948E/AKU)
Modem card:	Askey (Model:1456VQH20E)

EMI Noise Source:

Crystal: 25MHz (X1), 14.318MHz (X2), 32.768KHz (X3), 24.576MHz(X4)
Clock Generator: U6

EMI Solution:

1. One metal cover was added under CD-ROM driver.
2. Five spring fingers were added between add-on card bracket and metal enclosure.
3. One spring finger was added between FDD and CD-ROM drivers.

3. Electrostatic discharge (ESD) immunity

3.1 Electrostatic discharge (ESD) immunity test

Port:	Enclosure
Basic Standard:	IEC 801-2
Requirements:	8 kV (level 3)
Criteria:	B
Temperature:	27 degree C
Humidity:	55%

Test Procedure

The electronic discharges were applied as follows:

The EUT was set up on a nonconductive table, 1mm above a reference ground plane.
±8kV to all accessible parts of cabinet from outside.

Performance

No fatal operation errors were detected during or after the discharges.

Test equipment used

EMC-Partner Transient 1000-216.

Result

Performance of EUT complies with the given specification.

4. Radiated electromagnetic field immunity

4.1 Radiated electromagnetic field immunity test

Port:	Enclosure
Basic Standard:	IEC 801-3
Requirements:	3 V/m
Criteria:	A

Test Procedure

EUT was exposed to specified field:

Field:	3 V/m ~ 3.3 V/m (modulated)
Frequency range:	26 MHz - 1 GHz
Step:	1% of last Frequency
Step time:	800 msec

The field sensor is placed on the position of EUT to calibrate the field strength as required before EUT was setup on the table. The EUT was setup on a nonconductive table 0.8m above at a full-anechoic chamber.

The EUT is 3 m away from the transmitting antenna mounted on the antenna tower and turns 90 centigrade each time to have each sides of EUT face the antenna during each circle of test. The antenna is fixed 1.1 m above ground. Both vertical and horizontal polarization of antenna are set during the measurement. A CCD camera is used to monitor the condition of EUT for the performance judgement.

Performance

No fatal operation errors were detected during or after the exposure.

Test equipment used

Signal Generator:	HP	8656B
Field Strength Meter	Amplifier Research	FM2000
Field Strength Sensor	Amplifier Research	FP2000
Power Amplifier	Amplifier Research	100W1000M1
Power Antenna	EMCO	3143

Result

Performance of EUT complies with the given specification at 3 V/m.

5. Electrical Fast transients/burst immunity

5.1 Fast transients/burst immunity test

Port: AC mains
Basic Standard: IEC 801-4
Requirements: 1 kV
Criteria: B

Test Procedure

The EUT was setup on a nonconductive table 0.8 m above a reference ground plane.

Test Point: Power Line
AC Power Source: 230VAC, 50Hz

Voltage		1 KV	
Test Points	Polarity	Result	Comment
Line	+	N	90 sec
	-	N	90 sec.
Neutral	+	N	90 sec
	-	N	90 sec.
Ground	+	N	90 sec
	-	N	90 sec.

Note: 'N' means normal, the EUT function is correct during the test.

Performance

No fatal errors were detected after the transient/burst firing.

Test equipment used

EMC-Partner Transient 1000-216.

Result

Performance of EUT complies with the given specification.

5.2 Fast transients/burst immunity test for I/O cable

Port:	twisted pairs LAN port
Basic Standard:	IEC 801-4
Requirements:	0.5 kV
Criteria:	B

Test Procedure

The EUT was setup on a nonconductive table 0.8 m above a reference ground plane.

Performance

No fatal errors were detected after the transient/burst firing.

Test equipment used

EMC-Partner Transient 1000-216.

Result

Performance of EUT complies with the given specification.

6. Harmonics

6.1 Harmonics test

Port: AC mains
Basic Standard: EN60555-2

Test Procedure

The EUT is supplied in series with shunts or current transformers from a source having the same nominal voltage and frequency as the rated supply voltage and frequency of the EUT.

If the current harmonics vary more than proportionately with the supply voltage, tests at supply voltages of 0.94 times and 1.06 times the rated voltage shall be performed.

Equipment having more than one rated voltage shall be tested at the rated voltage producing the highest harmonics as compared with the limits. For equipment marked with a rated voltage range, the measurements shall be made at the extremes of that supply range.

Test equipment used

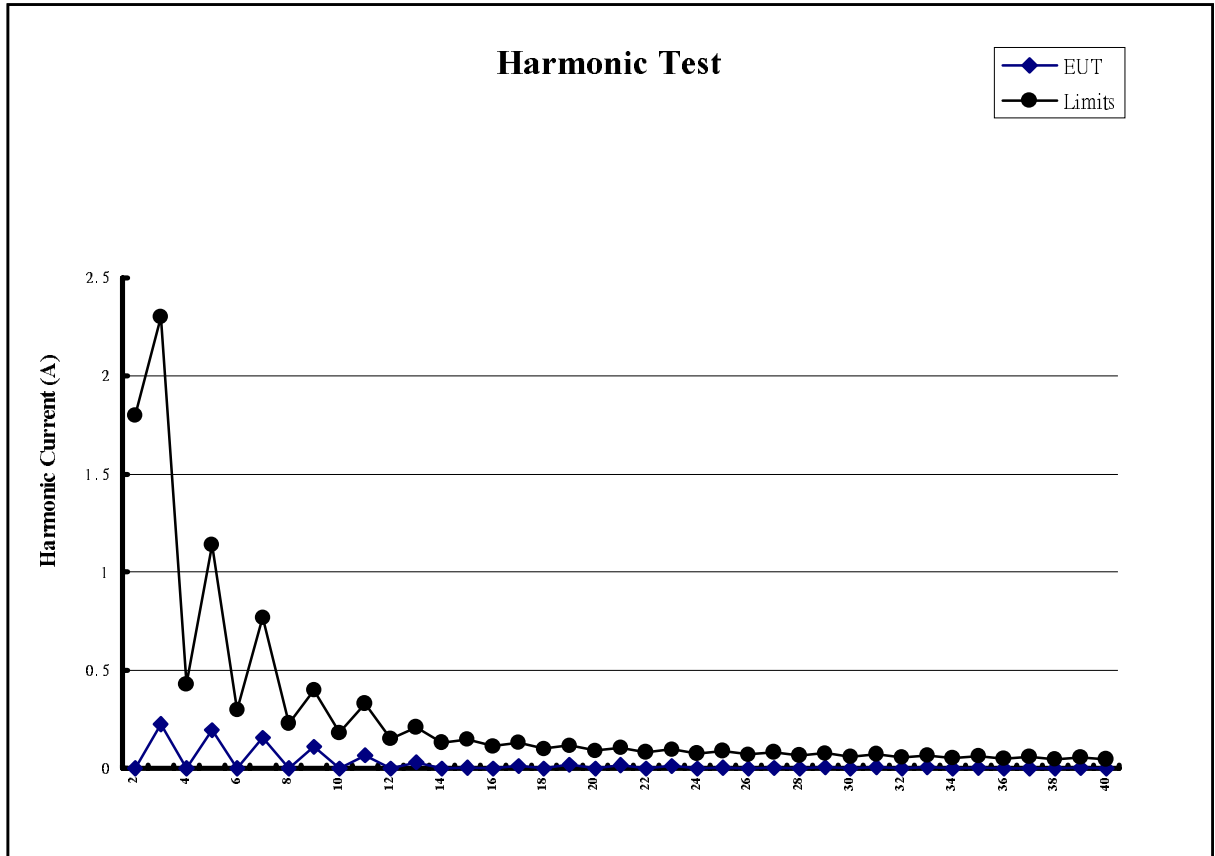
Standard Impedance	Xitron Technologies	2520
3-Channel Power Analysis System	Xitron Technologies	2503AH
Frequency Converter	Extech Electronics	CFC-110

Result

Performance of EUT complies with the given specification.

Test Data

Class A		PASS	
Power (W)	Power Factor	Power Voltage	Power Current
55.166	0.547	229.087	0.246



7. Voltage Fluctuations

7.1 Voltage Fluctuations test

Port: AC mains
Basic Standard: EN60555-3

Test Procedure

The EUT is supplied in series with reference impedance from a power source with the voltage and frequency as the nominal supply voltage and frequency of the EUT.

The EUT was tested for 10 minutes under the condition producing the highest voltage fluctuation.

Test equipment used

Standard Impedance	Xitron Technologies	2520
3-Channel Power Analysis System	Xitron Technologies	2503AH
Frequency Converter	Extech Electronics	CFC-110

Result

Performance of EUT complies with the given specification.

8. Photographs

8.1 Photos of ESD measurement



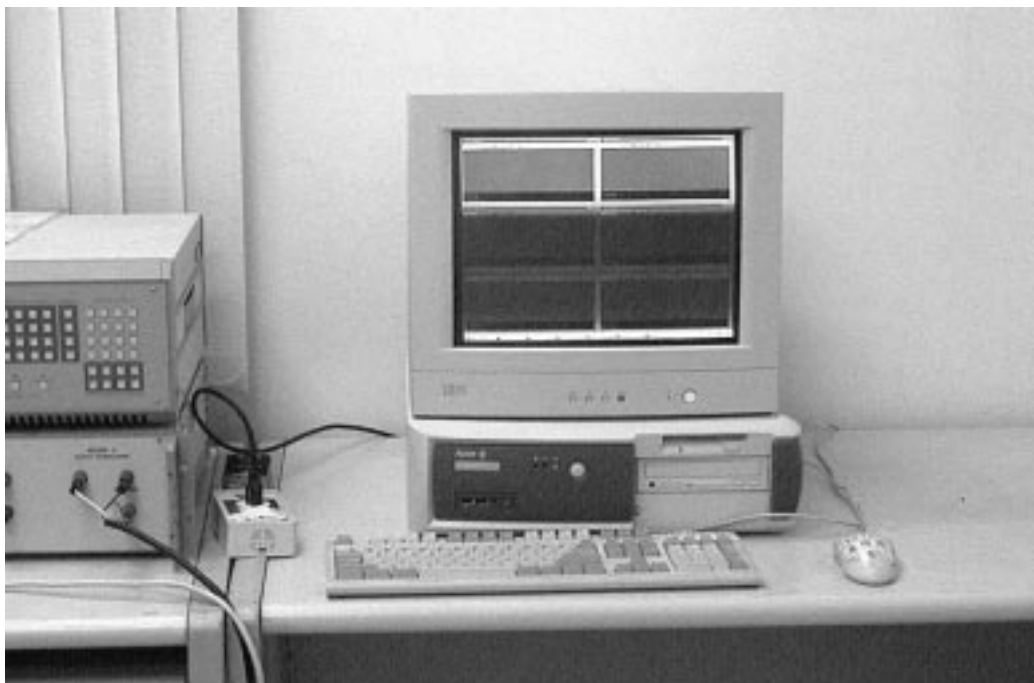
8.2 Photos of RF Field Strength Susceptibility Measurement



8.3 Photos of Electrical Fast Transient/Burst measurement



8.4 Photos of Harmonics and Voltage Fluctuations



8.5 Appendix: Photographs of EUT

Please find this appendix in the File of **ISL-00A091P**

$\theta \text{ Other}(X)$

Subject:	Personal Computer VT5100	Part No.:		Rev:	
	CE Mark Technical File Release	Doc. No.:			
Project Code:	91.38H01.101	Release Date:		Page	of
Model No.:	VT5100			Revision status	
Description:	Release VT5100 (S58M in H40) CE Mark Technical File			Page	Rev.
	It has passed the CE Mark Limits				
Reason For Released:	First Release				

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Copy To (All Contents): M0H0>M1MQ00

Copy (Cover Sheet): MDP1

MDA 1					
Approved By/	Reviewed By/			QA	Prepared By/