Test Report

Product Name : Mother Board with CD-R/W
Model No. : A7V333, CRW-4012A

Applicant	ASUSTeK COMPUTER INC.
Address	4Fl., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	February 5, 2002
Date of Test	February 5, 2002
Report No.	022L019E

The Test Results relate only to the samples tested.

QuieTeK Corporation

EMC/Safety Test Laboratory
Accredited by DNV, TUV, Nemko and NVLAP

Date: February 5, 2002
QTK No.: 022L019E

CE

Statement of Conformity

The certifies that the following designated product

Product	:	Mother Board wiht CD-R/W
Trade Name	:	ASUS
Model Number	:	A7V333, CRW-4012A
Company Name	:	ASUSTeK COMPUTER INC.

This product is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility Directive (89/336/EEC).For the evaluation regarding EMC, the following standards were applied:

RFI Emission:

EN 55022:1998 Class B : Product family standard

EN 61000-3-2:1995 Class D : Limits for harmonic current emission
Amendment 1:1998
Amendment 2:1998
Amendment 14:2000

EN 61000-3-3:1995 : Limitation of voltage fluctuation and flicker in low-voltage supply system

Immunity :

EN 55024:1998 Product family standard

TÜV DNV NVLAP NEMKO

TEST LABORATORY

Gene Chang/ Manager

The verification is based on a single evaluation of one sample of above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab. Logo.

QuieTek Corporation / No.75-1, Wang-Yeh Valley, Yung-Hsing, Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.
Tel: 886-2-8601-3788, Fax: 886-2-8601-3789, E-mail: service@quietek.com

Test Report Certification

Test Date : February 5, 2002
Report No. : 022L019E

QuieTek Corporation
Accredited by TUV, DNV, Nemko and NIST (NVLAP)

Product Name	:	Mother Board with CD-R/W
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4Fl., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	:	ASUSTeK COMPUTER INC.
Model No.	:	A7V333, CRW-4012A
Rated Voltage	:	Power by PC
Trade Name	:	ASUS
Measurement Standard	:	EN 55022:1998 Class B EN 61000-3-2:1995, Amendment 1:1998, Amendment 2:1998 Amendment 14:2000, EN 61000-3-3:1995, EN 55024:1998
Measurement Procedure	:	EN 55022:1998, EN 61000-3-2:1995, EN 61000-3-3:1995, IEC 61000-4-2:1995, IEC 61000-4-3:1995, IEC 61000-4-4:1995, IEC 61000-4-5:1995, IEC 61000-4-6:1996, IEC 61000-4-8:1993, IEC 61000-4-11:1994
Test Result	:	Complied

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By	:	(Shelly Fan)
Tested By	:	(Miller Lee)
Reviewed By	:	(Murphy Wang)
Approved By	:	(Gene Chang)

TÜV DNV NVLAP NVLAP Lab Code: 200533-0 NEMKO

Test Report Certification

Test Date : February 5, 2002
Report No. : 022L019E

QuieTek Corporation
Accredited by TUV, DNV, Nemko and NIST (NVLAP)

Product Name	:	Mother Board with CD-R/W
Applicant	:	ASUSTeK COMPUTER INC.
Address	:	4Fl., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	:	ASUSTeK COMPUTER INC.
Model No.	:	A7V333, CRW-4012A
Rated Voltage	:	Power by PC
Trade Name	:	ASUS
Measurement Standard	:	AS/NZ 3548: 1995
Measurement Procedure	:	AS/NZ 3548: 1995
Test Result	:	Complied

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.

Documented By	:	(Shelly Fan)
Tested By	:	(Miller Lee)
Reviewed By	:	(Murphy Wang)
Approved By	:	(Gene Chang)

TÜV DNV
NVLAP NVLAP Lab Code: 200533-0
NEMKO

TABLE OF CONTENTS

1. General Information

1.1. EUT Description

Product Name	Mother Board with CD-R/W
Trade Name	ASUS
Model No.	A7V333, CRW-4012A
EUT Voltage	Power by PC

Note:

1. The EUT is a Mother Board with CD-R/W, which can support AMD's CPU (AMD 1800+/ 133MHz, 1.4GHz/ 100MHz)。
2. The EUT have one keyboard port, one mouse port, eight USB ports, one printer port, two COM ports, one game port, one microphone port, one Line-in port, one line-out ports and one IEEE 1394 port.
3. QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

EMI Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite Mode 2: AMD 1.4GHz/ 100MHz, Read
EMS Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite

1.2. Tested System Details

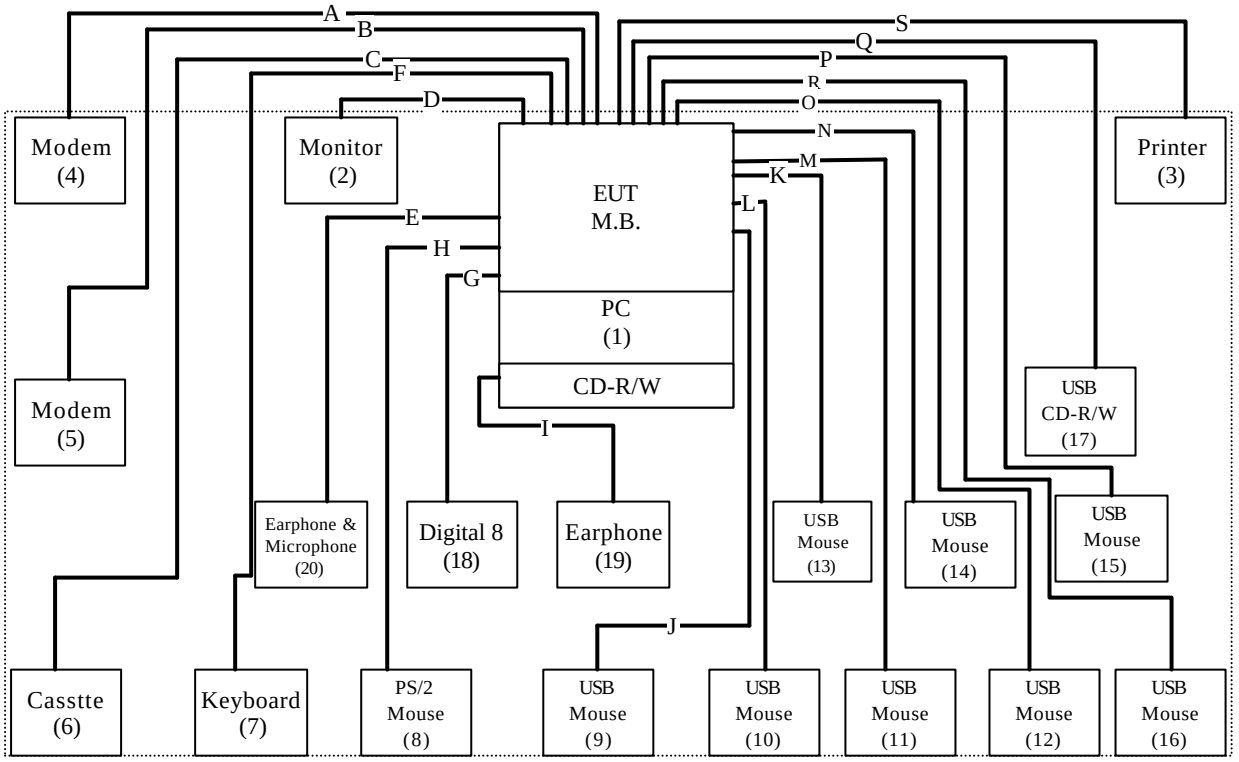
The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.
(1)	PC Internal			
	Chassis	CHENBRO	B6251-200	N/A
	CPU	1. AMD 1800+/ 133MHz 2. AMD 1.4GHz/ 100MHz		
	HDD	MAXTOR	D740X-6L	N/A
	HDD	WESTERN DIGITAL	WD400BB-00A0A1	N/A
	HDD	QUANTUM	LM30A011	N/A
	CD-ROM	MITSUMI	CRMC-FX4830T	N/A
	FDD	PANASONIC	JU-257A606P	N/A
	VGA Card	ASUS	V7700TI/64M	N/A
	Sound Card	On board		
	Switch power supply	SEVENTEAM	SP-250BLP	N/A
(2)	Monitor	ADI	CM703	038054T10203882
(3)	Printer	EPSON	Color 680	015256
(4)	Modem	ACEEX	DM-1414	0102027548
(5)	Modem	ACEEX	DM-1414	0102027539
(6)	Walkman	AIWA	HS-TA164	N/A
(7)	Keyboard	HP	SK-2506	C00083358
(8)	Mouse	IBM	M-SAU-IBM6	23-029359
(9)	USB Mouse	Logitech	M-BE58	LZE11405150
(10)	USB Mouse	Logitech	M-BE58	LZE10151096
(11)	USB Mouse	Logitech	M-BE58	LZE11405306
(12)	USB Mouse	Logitech	M-BE58	LZE11405342
(13)	USB Mouse	Logitech	M-BE58	LZE10151096
(14)	USB Mouse	Logitech	M-BE58	LZE11405011
(15)	USB Mouse	Logitech	M-BE58	LZE11403976
(16)	Joystick	GENIUS	MAXFIRE FORCE G-09D	CJ0100200517
(17)	USB CD-R/W	TEAC	CD-RW280PU	712586
(18)	Digital 8 (D8)	SONY	DCR-TRV5250	1081754
(19)	Earphone	AIWA	N/A	N/A
(20)	Microphone & Earphone	TOKTO	SX-MI	N/A

Note: 1. The power cord of the device 1, 2, 3, 4, 5 and 17 are non-shielded power cord.

Signal Cable Type		Signal cable Description
A.	RS232 cable	Shielded, 1.5m
B.	RS232 cable	Shielded, 1.5m
C.	Audio cable	Non-Shielded, 1.2m
D.	VGA cable	Shielded, 1.8m with core
E.	Earphone & Microphone cable	Non-Shielded, 1.5m
F.	Keyboard cable	Shielded, 1.8m
G.	1394 cable	Shielded, 1.2m
H.	PS/2 mouse cable	Shielded, 1.2m
I.	Earphone cable	Non-Shielded, 1.8m
J.	USB mouse cable	Shielded, 1.8m
K.	USB mouse cable	Shielded, 1.8m
L.	USB mouse cable	Shielded, 1.8m
M.	USB mouse cable	Shielded, 1.8m
N.	USB mouse cable	Shielded, 1.8m
O.	USB mouse cable	Shielded, 1.8m
P.	USB mouse cable	Shielded, 1.8m
Q.	USB cable	Shielded, 0.8m
R.	Joystick cable	Shielded, 1.8m
S.	Printer cable	Shielded, 1.5m

1.3. Configuration of tested System



1.4. EUT Exercise Software

(1) Setup the EUT and simulators as shown on 1.3.

(2) Turn on the power of all equipment.

(3) EUT reads data from disk.

(4) EUT will sends “H” pattern to monitor, the monitor will show “H” pattern on the screen.

(5) EUT sends “H” pattern to printer, the printer will print “H” pattern on paper.

(6) EUT reads and writes data into and from modem.

(7) EUT will read data from floppy disk and then writes the data into floppy disk, same operation for hard disk.

(8) Run “Media player” test program. (VCD play mode)

(9) Run “CD RW98” test program.

(10) Repeat the above procedure (3) to (9).

(11) The CD ROM play the audio signal and video picture during the test.

1.5. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description:

June 29, 2001 Accreditation on NVLAP
NVLAP Lab Code: 200533-0

June 11, 2001 Accreditation on DNV
Statement No. : 413-99-LAB11

January 04, 1999 Accreditation on TUV Rheinland
Certificate No.: I9865712-9901

April 18, 2001 Accreditation on Nemko
Certificate No.: ELA 165
Certificate No.: ELA 162

Site Name: Quietek Corporation

Site Address: N0.5-22, Ruei-Shu Valley, Rue-Ping Tsuen, Lin Kou Shiang, Taipei 244, Taiwan, R.O.C.

TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

2. Conducted Emission

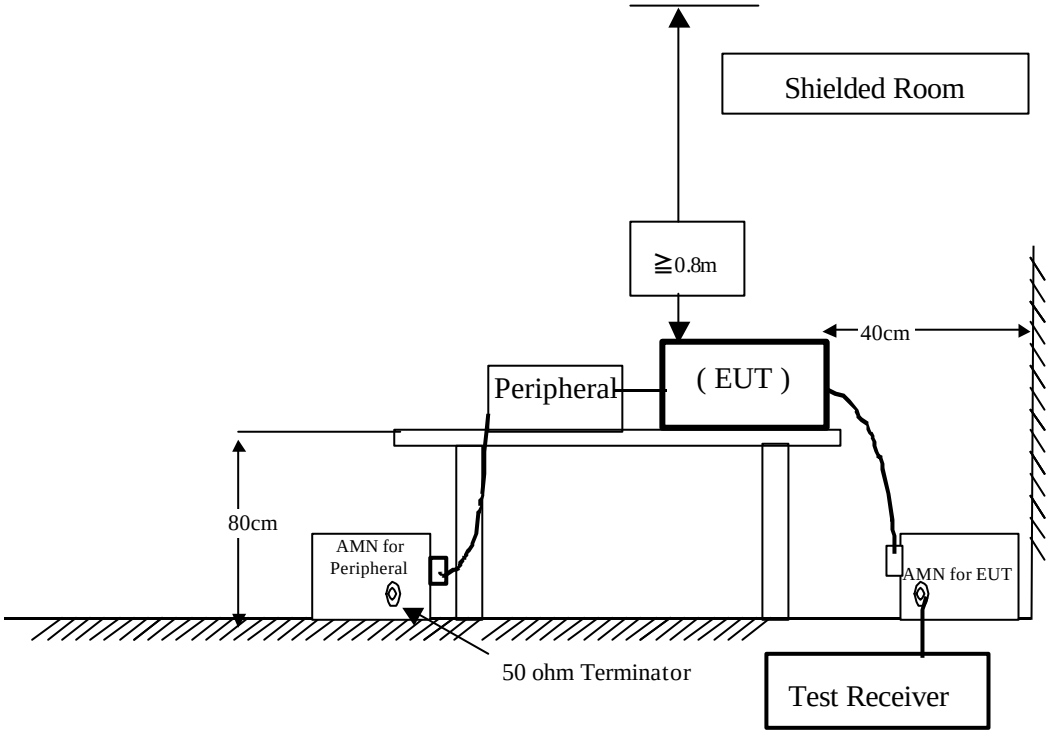
2.1. Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/838251/0001	May, 2001	
2	L.I.S.N.	R & S	ESH3-Z5/836679/0023	May, 2001	EUT
3	L.I.S.N.	R & S	ENV 4200/833209/0023	May, 2001	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2001	
5	N0.4 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2. Test Setup



2.3. Limits

EN 55022 Limits (dBuV)				
Frequency MHz	Class A		Class B	
	QP	AV	QP	AV
0.15 - 0.50	79	66	66-56	56-46
0.50-5.0	73	60	56	46
5.0 - 30	73	60	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to EN 55022:1998 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Test Specification

According to EN 55022:1998

2.6. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 13. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

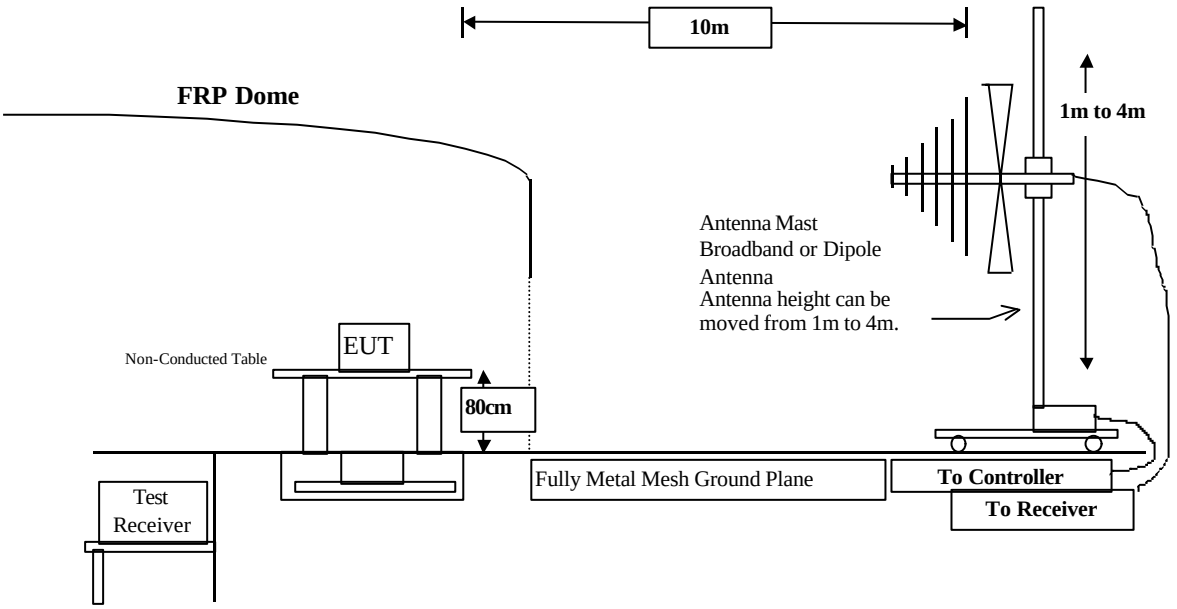
3.1. Test Equipment

The following test equipment are used during the radiated emission test:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☐Site # 1	X	Test Receiver	R & S	ESVS 10 / 834468/003	July, 2001
	X	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2001
	X	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2001
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Nov., 2001
	X	Test Receiver	R & S	ESCS 30 / 836858/022	Nov., 2001
☒Site # 2	X	Spectrum Analyzer	Advantest	3162 / 100803466	May, 2001
	X	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2001
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	Oct., 2001
	X	Horn Antenna	ETS	3115 / 0005-6160	July, 2001
	X	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	July, 2001

Note: 1. All equipments that need to calibrate are with calibration period of 1 year.
2. Mark "X" test instruments are used to measure the final test results.

3.2. Test Setup



3.3. Limits

EN 55022 Limits (dBuV/m)				
Frequency MHz	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m
30 – 230	10	40	10	30
230 – 1000	10	47	10	37

3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters.
The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to EN55022:1998 on radiated measurement.
Radiated emissions were invested over the frequency range from 30MHz to1GHz using a receiver bandwidth of 120kHz. Radiated was performed at an antenna to EUT distance of 10 meters.

3.5. Test Specification

According to EN 55022:1998

3.6. Test Result

The emission from the EUT was below the specified limits. The worst-case emissions are shown in section 13. The acceptance criterion was met and the EUT passed the test.

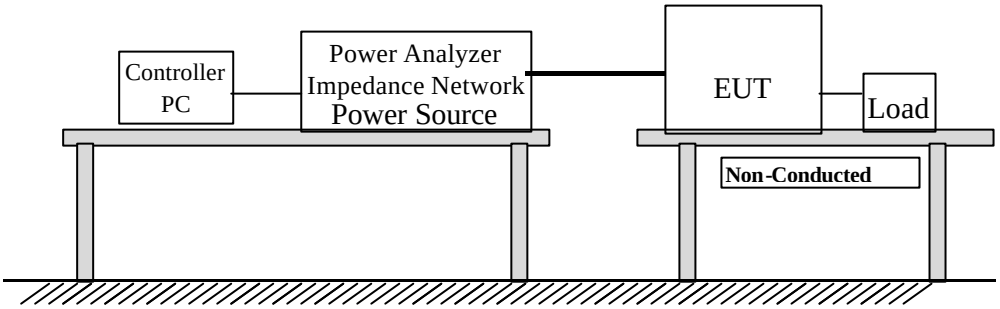
4. Power Harmonics and Voltage Fluctuation

4.1. Power Harmonics and Voltage Fluctuation Test Equipment List

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Power Harmonics Tester	SCHAFFNER	Profline 2105-400 S/N: HK54148	Jun., 2001
2	Analyzer	SCHAFFNER	CCN 1000-1/X71887	Jun., 2001
3	No.3 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

4.2. Test Setup



4.3. Limits

➢Limits of Harmonics Currents

Harmonics Order	Maximum Permissible harmonic current (in amperes)	Harmonics Order	Maximum Permissible harmonic current (in amperes)
Odd harmonics		Even harmonics	
3	2.30	2	1.08
5	1.14	4	0.43
7	0.77	6	0.30
9	0.40	$8 \le n \le 40$	0.23 * 8/n
11	0.33		
13	0.21		
$15 \le n \le 39$	0.15 * 15/n		

4.4. Test Procedure

The EUT is supplied in series with power analyzer from a power source having the same normal voltage and frequency as the rated supply voltage and the equipment under test. And the rated voltage at the supply voltage of EUT of 0.94 times and 1.06 times shall be performed.

4.5. Test Specification

According to EN 61000-3-2:1995, , Amendment 1:1998, Amendment 2:1998, Amendment 14:2000 and EN 61000-3-3:1995

4.6. Test Result

The measurement of the power harmonics, which test at the extremes of EUT' s supply range, was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

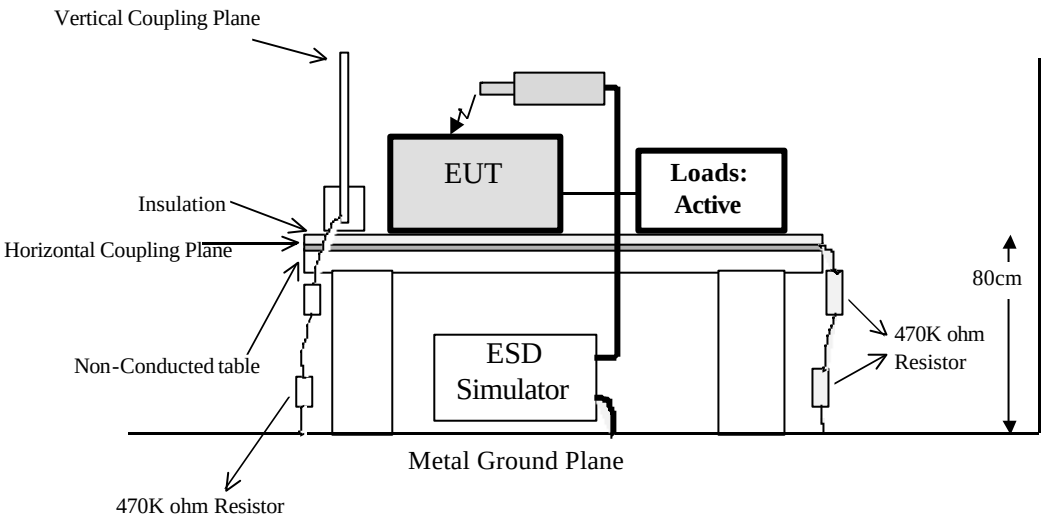
5. Electrostatic Discharge (ESD)

5.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	ESD Simulator System	SCHAFFNER	NSG 432 S/N: 1453	Jun., 2001
2	HorizontalCoupling Plane(HCP)	QuieTek	HCP AL50	Jun., 2001
3	Vertical Coupling Plane(VCP)	QuieTek	VCP AL50	Jun., 2001
4	No.1 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

5.2. Test Setup



5.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Electrostatic Discharge	kV(Charge Voltage)	±8 Air Discharge ±4 Contact Discharge	B

5.4. Test Procedure

Direct application of discharges to the EUT:

Contact discharge was applied only to conductive surfaces of the EUT.

Air discharges were applied only to non-conductive surfaces of the EUT.

During the test, it was performed with single discharges. For the single discharge time between successive single discharges will be keep longer 1 second. It was at least ten single discharges with positive and negative at the same selected point.

The selected point, which was performed with electrostatic discharge, was marked on the red label of the EUT.

Indirect application of discharges to the EUT:

Vertical Coupling Plane (VCP):

The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.

The four faces of the EUT will be performed with electrostatic discharge. It was at least ten single discharges with positive and negative at the same selected point.

5.5. Test Specification

According to IEC 61000-4-2:1995

5.6. Test Result

The measurement of the electrostatic discharge was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

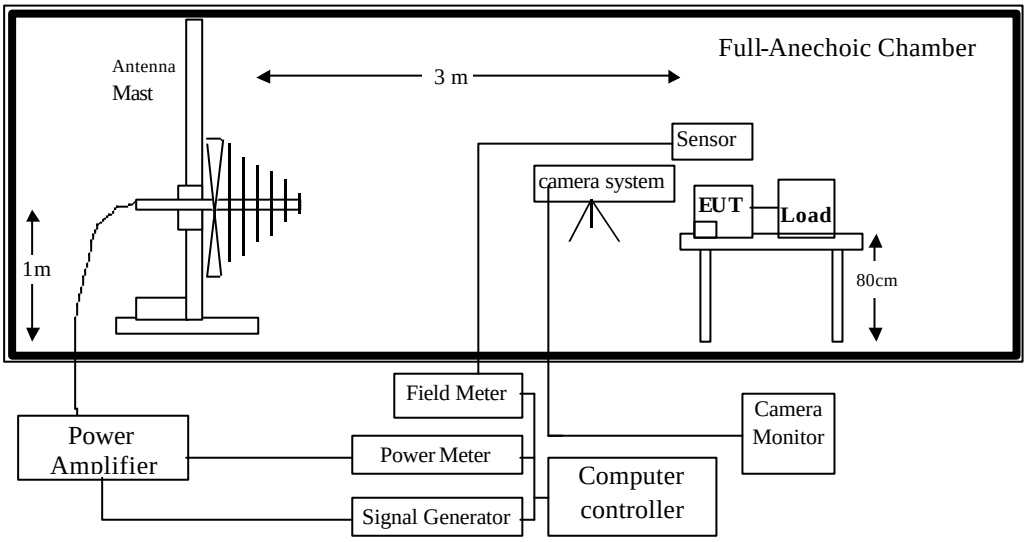
6. Radiated Susceptibility (RS)

6.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Signal Generator	IFR	2023B / 202302/581	May, 2001
2	Power Amplifier	A & R	500A100AM3 /29369	Aug., 2001
3	Power Amplifier	SCHAFFNER	CBA9413B / 0006	June, 2001
4	Field Strength Sensor	SCHAFFNER	EMC 20 / Y-0028/ Z-0003	June, 2001
5	Power Antenna	SCHWARZBECK	VULB 9166 / 1073	Sep., 2001
6	Power Meter	BOONTON	4232A / 42201	May, 2001
7	No.2 EMC Fully Chamber			July, 2001

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

6.2. Test Setup



6.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Radio-Frequency	MHz	80-1000	
	Electromagnetic Field	V/m(Un-modulated, rms)	3	A
	Amplitude Modulated	% AM (1kHz)	80	

6.4. Test Procedure

The EUT and load, which are placed on a table that is 0.8 meter above ground, are placed with one coincident with the calibration plane such that the distance from antenna to the EUT was 3 meters.

Both horizontal and vertical polarization of the antenna and four sides of the EUT are set on measurement.

In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

All the scanning conditions are as follows:

Condition of Test	Remarks
EN 55024:1998	
1. Field Strength	3 V/M Level 2
2. Radiated Signal	AM 80% Modulated with 1kHz
3. Scanning Frequency	80MHz - 1000MHz
4 Dwell Time	3 Seconds
5. Frequency step size Δf :	1%
6. The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

6.5. Test Specification

According to IEC 61000-4-3:1995

6.6. Test Result

The measurement of the radiated susceptibility was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

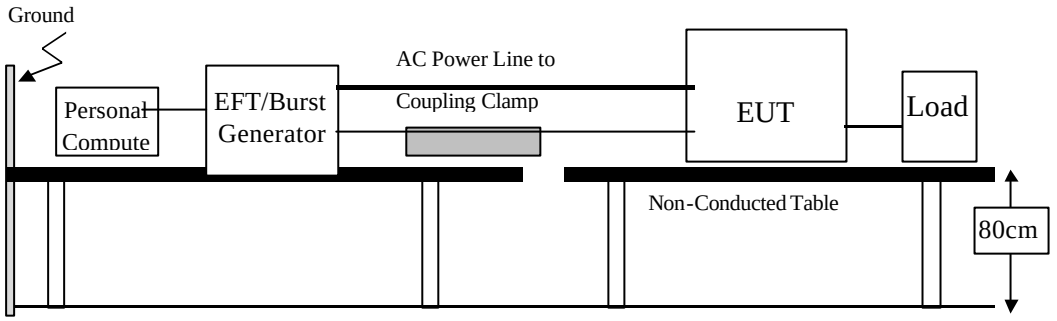
7. Electrical Fast Transient/Burst (EFT/B)

7.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Fast Transient/Burst Generator	SCHAFFNER	BEST S/N: 300035-008SC	Jun., 2001
2	No.3 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

7.2. Test Setup



7.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Ts ns Rep. Frequency kHz	0.5 5/50 5	B
Input DC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Ts ns Rep. Frequency kHz	0.5 5/50 5	B
Input AC Power Ports				
	Fast Transients Common Mode	kV (Peak) Tr/Ts ns Rep. Frequency kHz	1 5/50 5	B

7.4. Test Procedure

The EUT and load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides.

For Signal Ports and Telecommunication Ports:

The EFT interference signal is through a coupling clamp device couples to the signal and control lines of the EUT with burst noise for 1min.

For Input DC and AC Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the EFT interference signal.

Each of the Line and Neutral conductors is impressed with burst noise for 1 min.

The length of power cord between the coupling device and the EUT shall be 1m.

7.5. Test Specification

According to IEC 61000-4-4:1995

7.6. Test Result

The measurement of the Electrical Fast Transient/Burst was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

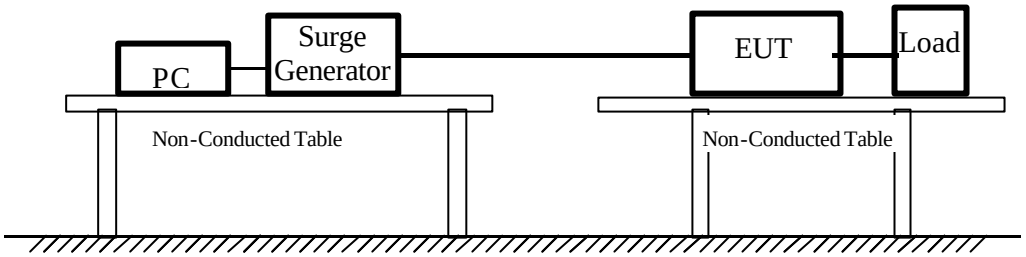
8. Surge

8.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Surge Generator	SCHAFFNER	BEST S/N: 300035-008SC	Jun., 2001
2	No.3 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

8.2. Test Setup



8.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Surges	Tr/Ts uS	1.2/50 (8/20)	
	Line to Ground	KV	± 1	B
Input DC Power Ports				
	Surges	Tr/Ts uS	1.2/50 (8/20)	
	Line to Ground	kV	± 0.5	B
AC Input and AC Output Power Ports				
	Surges	Tr/Ts uS	1.2/50 (8/20)	
	Line to Line	kV	± 1	B
	Line to Ground	kV	± 2	

Notes:

1) Applicable only to ports which according to the manufacturer' s may directly to outdoor cables.
2) Where normal functioning cannot be achieved because of the impact of the CDN on the EUT,no test shall be required.

8.4. Test Procedure

The EUT and its load are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides.
The length of power cord between the coupling device and the EUT shall be 2m or less.
For Input and Output AC Power or DC Input and DC Output Power Ports:

The EUT is connected to the power mains through a coupling device that directly couples the Surge interference signal.

The surge noise shall be applied synchronized to the voltage phase at 0^0, 90^0, 180^0, 270^0 and the peak value of the a.c. voltage wave. (Positive and negative)

Each of Line-Earth and Line-Line is impressed with a sequence of five surge voltages with interval of 1 min.

8.5. Test Specification

According to IEC 61000-4-5:1995

8.6. Test Result

The measurement of the Surge was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

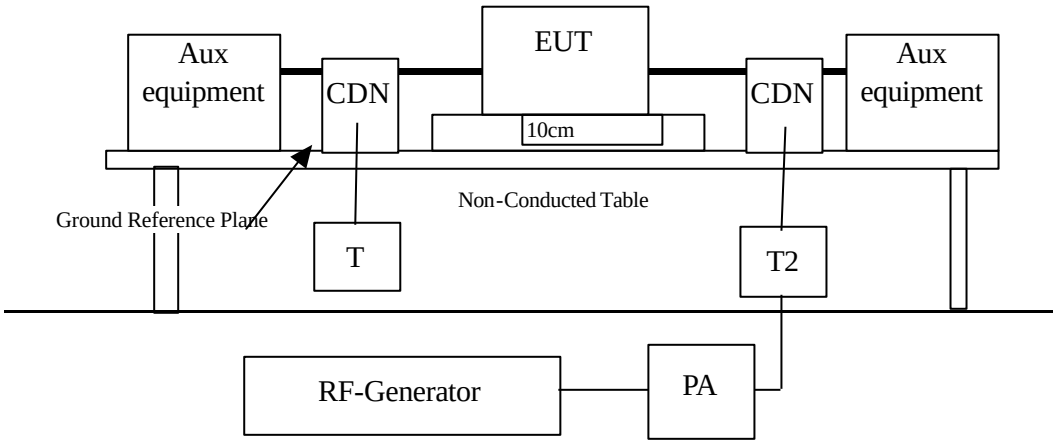
9. Conducted Susceptibility (CS)

9.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Signal Generator	IFR	2023B / 202302/581	May, 2001
2	Power Amplifier	A & R	500A100AM3 /29369	Aug., 2001
3	Power Amplifier	SCHAFFNER	CBA9413B / 0006	Jun., 2001
4	CDN 1	Schwarzbeck	L801 M2/3 / 1549	Jun., 2001
5	CDN 2	Schwarzbeck	L801 S1 / 1574	Jun., 2001
6	CDN 3	Schwarzbeck	L801 AF4 / 1064	Jun., 2001
7	CDN 4	Schwarzbeck	L801 AF8 / 1070	Jun., 2001
8	CDN 5	FCC	FCC-801-S9 / 9837	Jun., 2001
9	CDN 6	FCC	FCC-801-S15 / 9838	Jun., 2001
10	CDN 7	FCC	FCC-801-S25 / 9839	Jun., 2001
11	50 ohm Terminator	RES-NET	RCX6BM	Jun., 2001
12	6dB Attenuator	BIRD	RFA250NFF10	Jun., 2001
13	EM Clamp	Schwarzbeck	KEMZ 801 / 15928	Jun., 2001
14	No.2 EMC Fully Chamber	N/A		

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

9.2. Test Setup



9.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Signal Ports and Telecommunication Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input DC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A
Input AC Power Ports				
	Radio-Frequency Continuous Conducted	MHz V (rms, Un-modulated) % AM (1kHz)	0.15-80 3 80	A

9.4. Test Procedure

The EUT are placed on a table that is 0.8 meter height, and a Ground reference plane on the table, EUT are placed upon table and use a 10cm insulation between the EUT and Ground reference plane.

For Signal Ports and Telecommunication Ports

The disturbance signal is through a coupling and decoupling networks (CDN) or EM-clamp device couples to the signal and Telecommunication lines of the EUT.

For Input DC and AC Power Ports

The EUT is connected to the power mains through a coupling and decoupling networks for power supply lines. And directly couples the disturbances signal into EUT.

Used CDN-M2 for two wires or CDN-M3 for three wires.

All the scanning conditions are as follows:

Condition of Test	Remarks
1. Field Strength	130dBuV(3V) Level 2
2. Radiated Signal	AM 80% Modulated with 1kHz
3. Scanning Frequency	0.15MHz – 80MHz
4 Dwell Time	3 Seconds
5. Frequency step size Δf :	1%
6. The rate of Swept of Frequency	1.5 x 10^{-3} decades/s

9.5. Test Specification

According to IEC 61000-4-6:1996

9.6. Test Result

The measurement of the Conducted Susceptibility was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

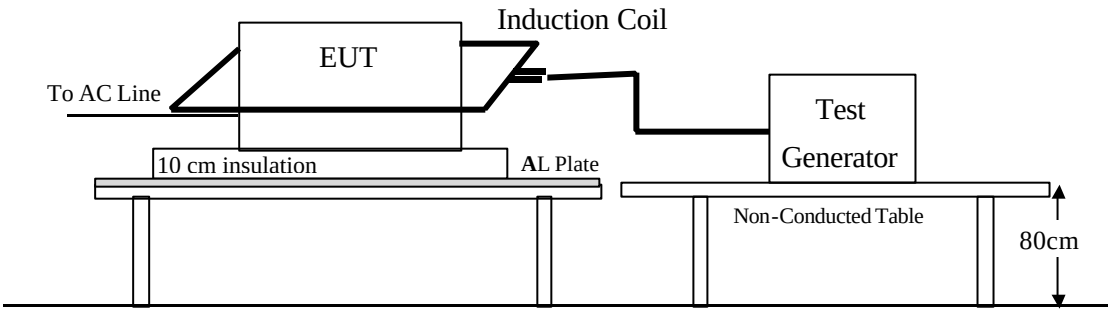
10. Power Frequency Magnetic Field

10.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Power Line Maganetics	SCHAFFNER	PLINE 1610 S/N: 080 938-05	Jun., 2001
2	Gauss Meter	F.W.BELL	4090	Jun., 2001
3	Magnetic Field Coil	SCHAFFNER	INA702 S/N: 199749-020 IN	Jun., 2001
4	No.3 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

10.2. Test Setup



10.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Enclosure Port				
	Power-Frequency Magnetic Field	50 1	Hz A/m (r.m.s.)	A

10.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured at least 1m*1m min. The test magnetic field shall be placed at central of the induction coil.

The test magnetic Field shall be applied 10minutes by the immersion method to the EUT. And the induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z Orientations).

10.5. Test Specification

According to IEC 61000-4-8:1993

10.6. Test Result

The measurement of the Power Frequency Magnetic Field was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

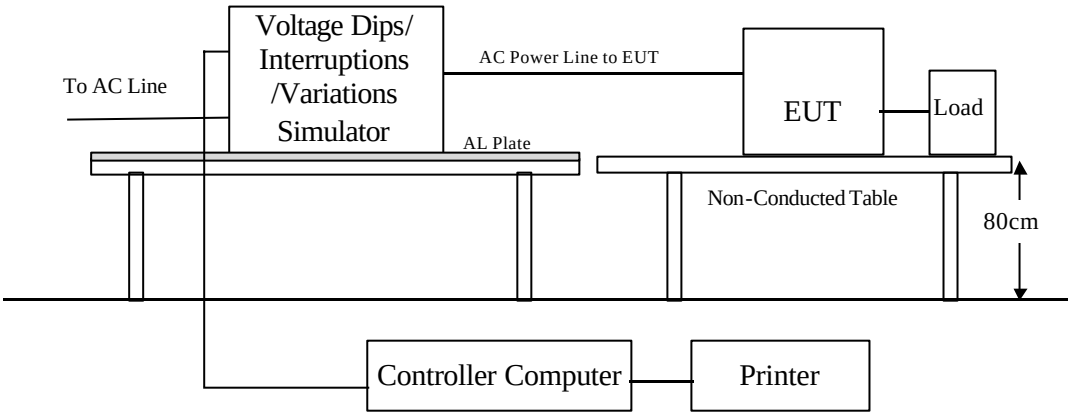
11. Voltage Dips and Interruption Measurement

11.1. Test Equipment

Item	Instrument	Manufacturer	Type No/Serial No.	Last Calibration
1	Voltage Dips Generator	SCHAFFNER	BEST S/N:300035-008SC	Jun., 2001
2	No.3 Shielded Room			N/A

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

11.2. Test Setup



11.3. Test Level

Item	Environmental Phenomena	Units	Test Specification	Performance Criteria
Input AC Power Ports				
	Voltage Dips	>95 0.5	% Reduction Period	B
		30 25	% Reduction Periods	C
	Voltage Interruptions	> 95 250	% Reduction Periods	C

11.4. Test Procedure

The EUT and its load are placed on a table which is 0.8 meter above a metal ground plane measured 1m*1m min. And 0.65mm thick min. And projected beyond the EUT by at least 0.1m on all sides. The power cord shall be used the shortest power cord as specified by the manufacturer.

For Voltage Dips/ Interruptions test:

The selection of test voltage is based on the rated power range. If the operation range is large than 20% of lower power range, both end of specified voltage shall be tested. Otherwise, the typical voltage specification is selected as test voltage.

The EUT is connected to the power mains through a coupling device that directly couples to the Voltage Dips and Interruption Generator.

The EUT shall be tested for 30% voltage dip of supplied voltage and duration 10ms, for 60% voltage dip of supplied voltage and duration 100ms with a sequence of three voltage dips with intervals of 10 seconds, and for 95% voltage interruption of supplied voltage and duration 5000ms with a sequence of three voltage interruptions with intervals of 10 seconds. Voltage phase shifting are shall occur at 0^0, 45^0, 90^0, 135^0, 180^0, 225^0, 270^0, 315^0 of the voltage.

11.5. Test Specification

According to IEC 61000-4-11:1994

11.6. Test Result

The measurement of the Voltage Dips and Interruption was investigated and test result was shown in section 13. The acceptance criterion was met and the EUT passed the test.

12. EMC Reduction Method During Compliance Testing

No modification was made during testing.

13. Test Result

The test results in the emission and the immunity were performed according to the requirements of measurement standard and process. Quietek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission is listed as below.

All the tests were carried out with the EUT in normal operation, which was defined as:

EMI Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite Mode 2: AMD 1.4GHz/ 100MHz, Read
EMS Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite

Note :

☒ No Deviation from standard procedure

☐ Deviations from standard procedure

13.1. Test Data of Conducted Emission

Date of Test	February 5, 2002	Test Room	No.4 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Line1 & Line2	Test Range	0.15MHz – 30MHz

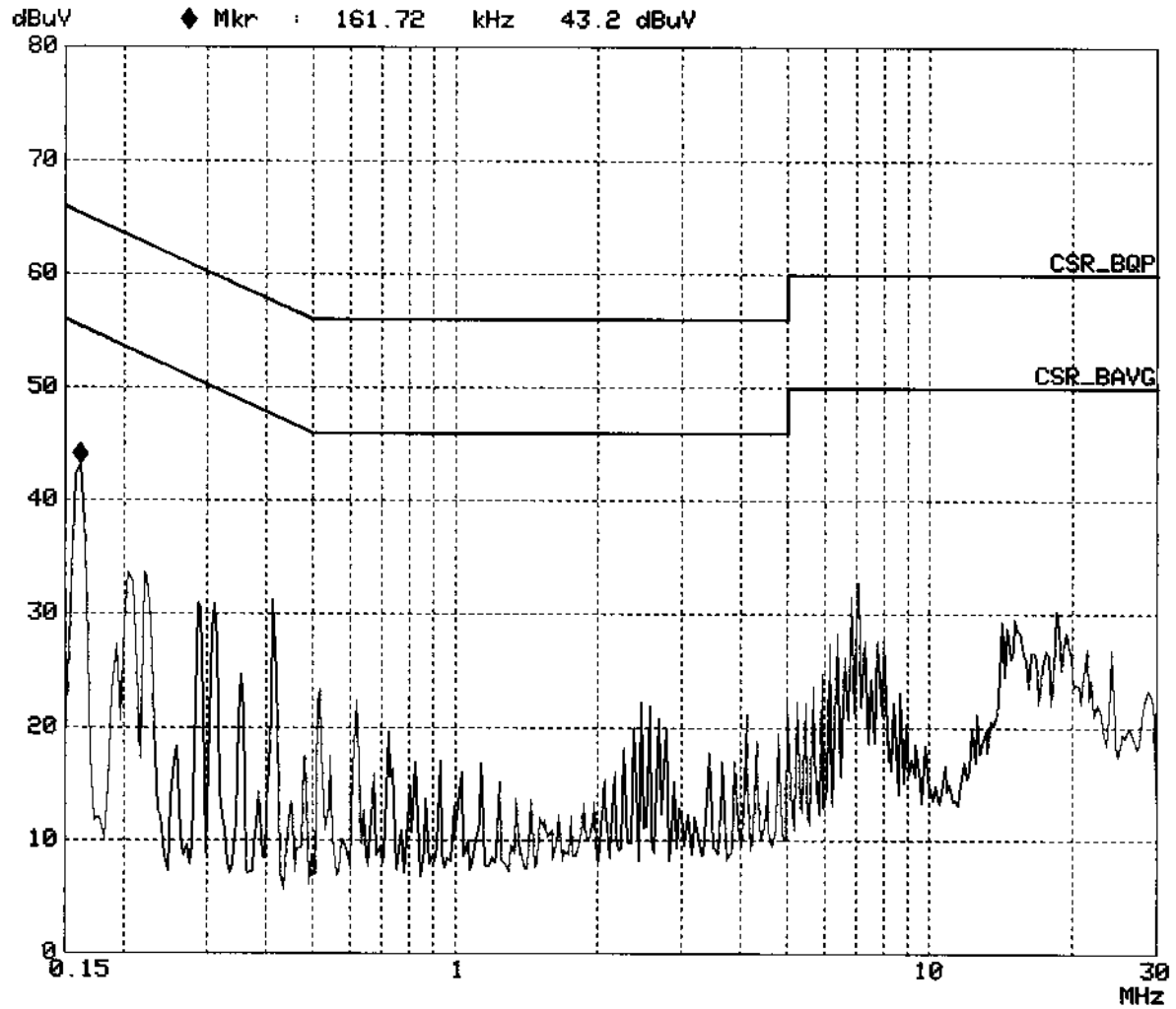
Frequency	Measurement Level (dBuV)				Limits (dBuV)	
MHz	Line1 QP	Line1 AV	Line2 QP	Line2 AV	QP	AV
0.162	44.55	41.61	--	--	65.38	55.36
0.205	35.06	33.11	--	--	63.42	53.45
0.310	32.06	30.71	--	--	59.97	49.97
0.412	29.86	28.01	--	--	57.61	47.61
7.088	32.26	23.61	--	--	60.00	50.00
18.502	28.01	19.58	--	--	60.00	50.00
0.158	--	--	48.74	44.61	65.58	55.57
0.205	--	--	38.34	37.21	63.42	53.41
0.291	--	--	35.21	30.91	60.51	50.50
0.416	--	--	30.35	25.81	57.54	47.53
6.845	--	--	31.65	23.91	60.00	50.00
15.505	--	--	25.55	17.68	60.00	50.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. Measurement Level = Reading Level + LISN Factor + Cable loss.
3. "--", means the average measurement was not performed when the Quasi-peak measured data under the limit of average detection.

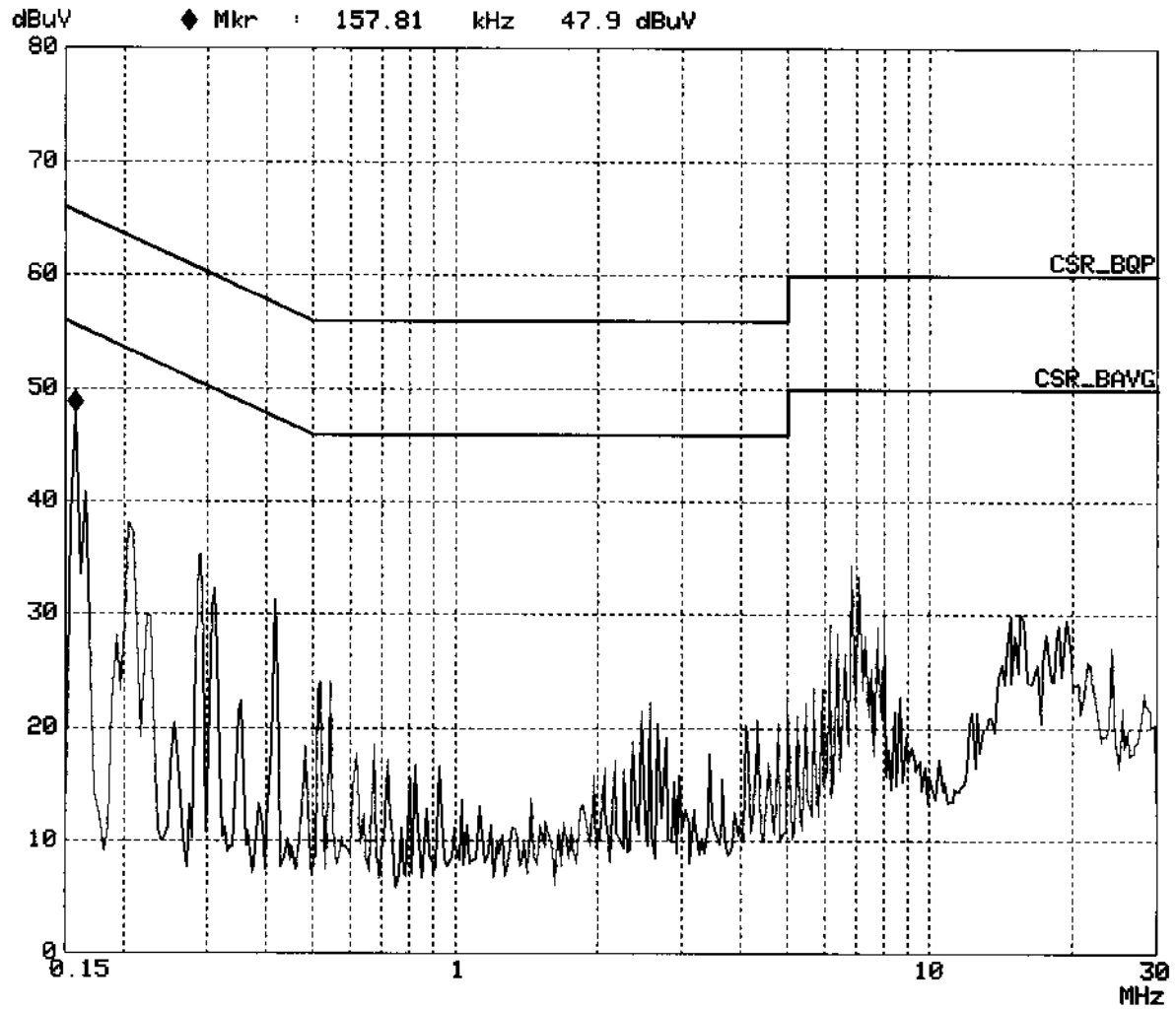
QUIETEK CORPORATION
EMI TEST RECEIVER ESCS30

EUT:	MOTHER BOARD & CD-R/W
Manuf:	ASUS
Op Cond:	FULL SYSTEM
Operator:	MILLER
Test Spec:	AC 230V/50HZ
Comment:	LINE 1
	M/N:A7V333,CRW-4012A MODE:1
File name:	FCC15B.RES
Date:	18. Feb 02 17:03



QUIETEK CORPORATION
EMI TEST RECEIVER ESCS30

EUT:	MOTHER BOARD & CD-R/W
Manuf:	ASUS
Op Cond:	FULL SYSTEM
Operator:	MILLER
Test Spec:	AC 230V/50HZ
Comment:	LINE 2
	M/N:A7V333,CRW-4012A MODE:1
File name:	FCC15B.RES
Date:	18. Feb 02 17:07



Date of Test	February 5, 2002	Test Room	No.4 Shielded Room
Test Mode	Mode 2: AMD 1.4GHz/ 100MHz, Read	Product	Mother Board with CD-R/W
Test Condition	Line1 & Line2	Test Range	0.15MHz – 30MHz

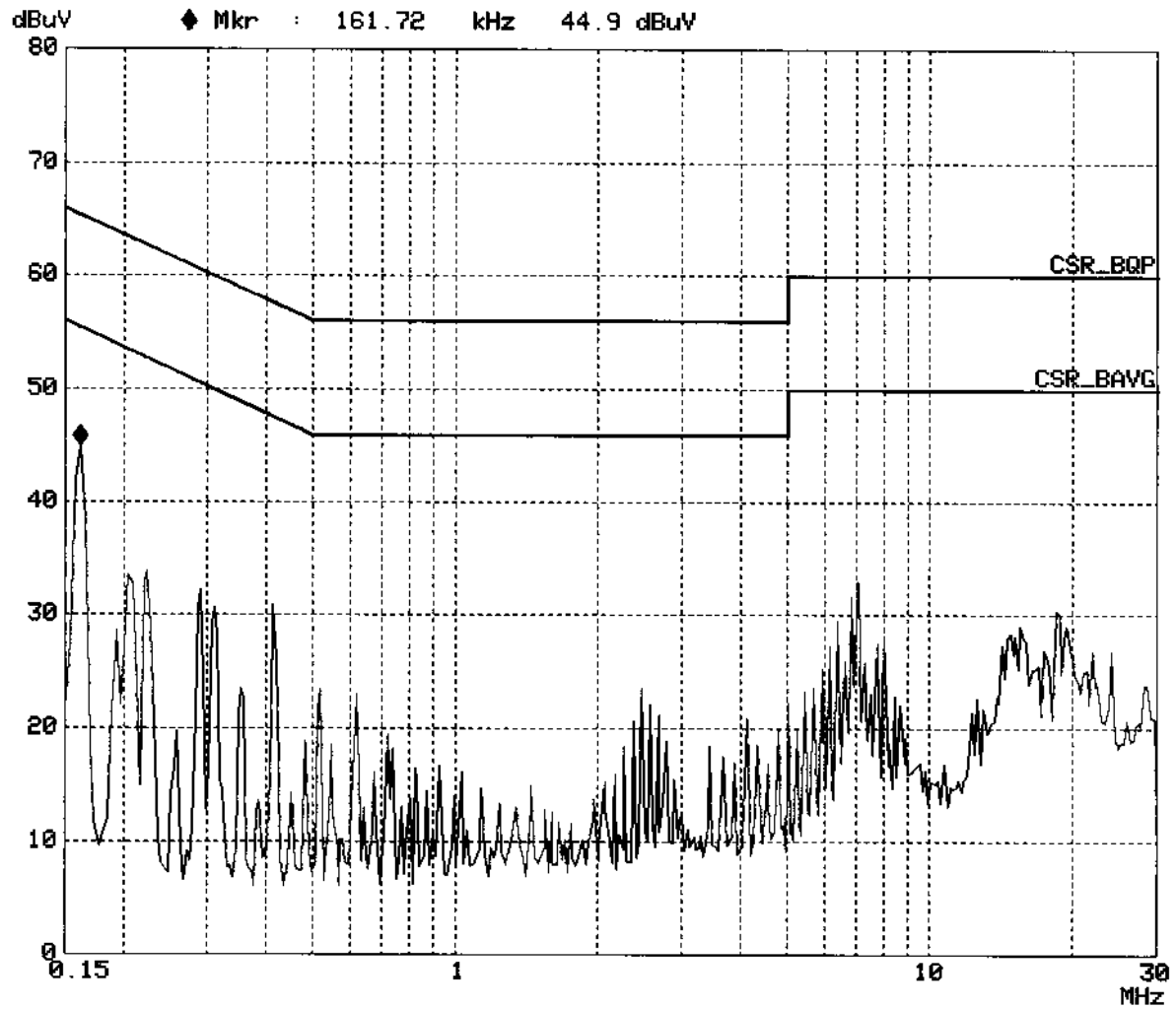
Frequency	Measurement Level (dBuV)				Limits (dBuV)	
MHz	Line1 QP	Line1 AV	Line2 QP	Line2 AV	QP	AV
0.162	45.31	42.41	--	--	65.38	55.36
0.224	36.64	32.01	--	--	62.66	52.67
0.291	32.05	29.51	--	--	60.51	50.50
0.412	29.70	28.01	--	--	57.61	47.61
7.072	31.44	23.31	--	--	60.00	50.00
18.486	27.99	18.58	--	--	60.00	50.00
0.162	--	--	50.44	46.31	65.38	55.36
0.209	--	--	37.62	36.51	63.26	53.24
0.291	--	--	35.80	31.41	60.51	50.50
0.416	--	--	30.11	25.71	57.54	47.53
7.099	--	--	29.06	15.21	60.00	50.00
18.740	--	--	27.21	18.87	60.00	50.00

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. Measurement Level = Reading Level + LISN Factor + Cable loss.
3. "--", means the average measurement was not performed when the Quasi-peak measured data under the limit of average detection.

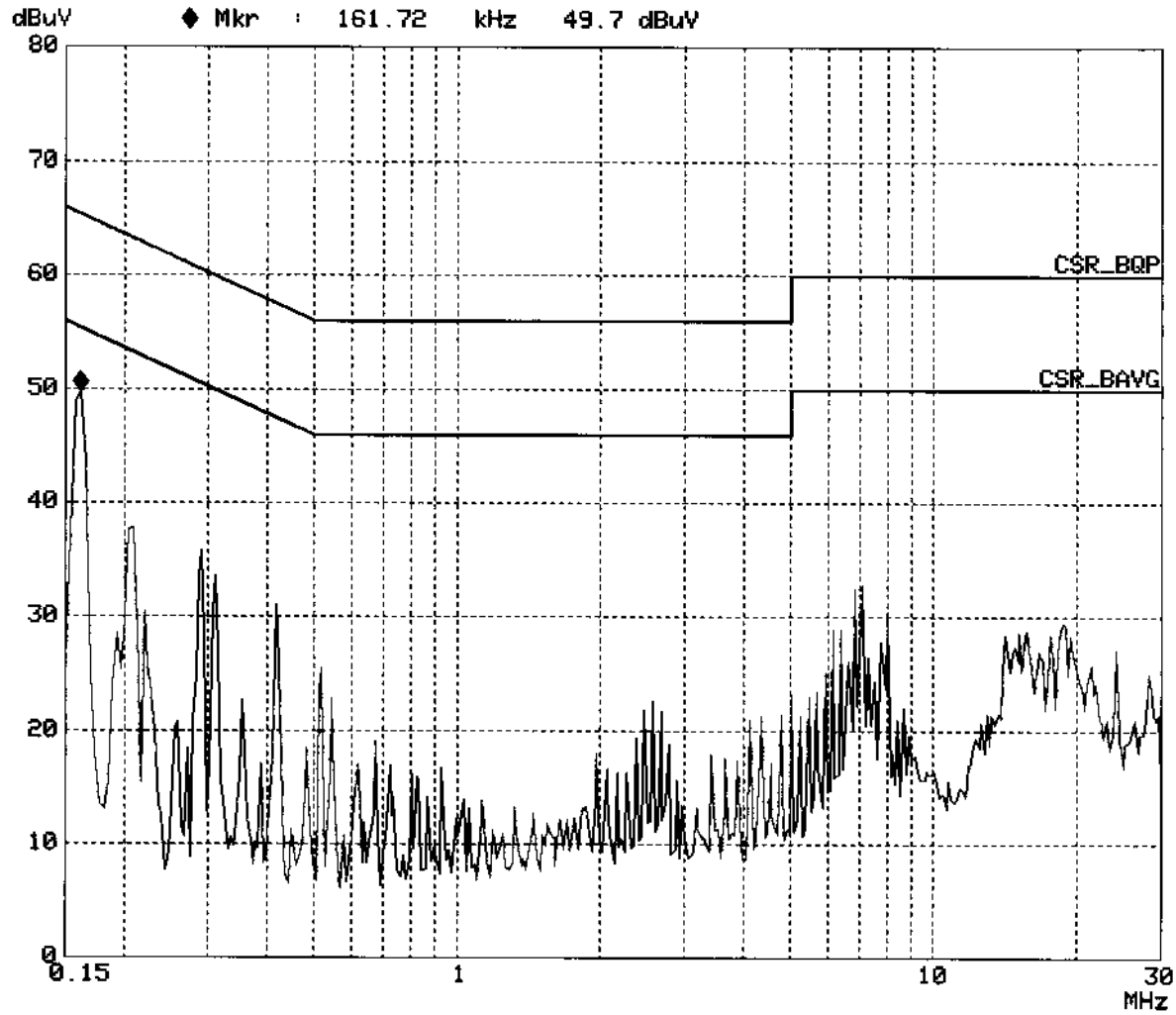
QUIETEK CORPORATION
EMI TEST RECEIVER ESCS30

EUT:	MOTHER BOARD & CD-R/W
Manuf:	ASUS
Op Cond:	FULL SYSTEM
Operator:	MILLER
Test Spec:	AC 230V/50HZ
Comment:	LINE 1
	M/N:A7V333,CRW-4012A MODE:2
File name:	FCC15B.RES
Date:	18. Feb 02 17:15



QUIETEK CORPORATION
EMI TEST RECEIVER ESCS30

EUT:	MOTHER BOARD & CD-R/W
Manuf:	ASUS
Op Cond:	FULL SYSTEM
Operator:	MILLER
Test Spec:	AC 230V/50HZ
Comment:	LINE 2
	M/N:A7V333,CRW-4012A MODE:2
File name:	FCC15B.RES
Date:	18. Feb 02 17:19



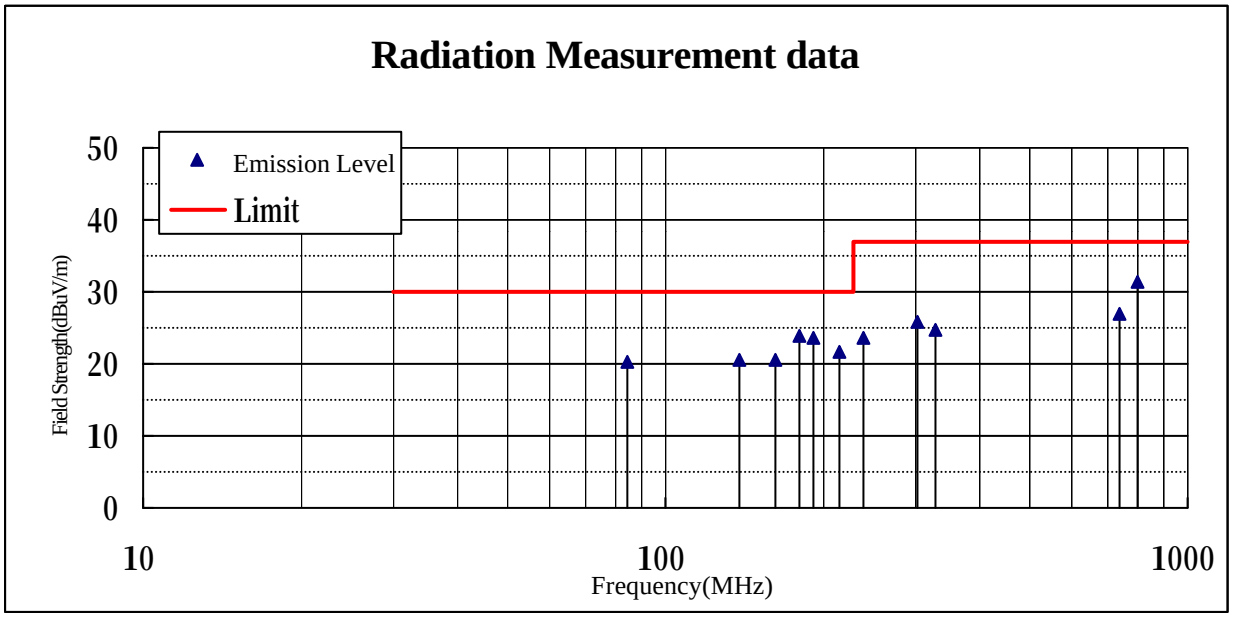
13.2. Test Data of Radiated Emission

Date of Test	February 5, 2002	Test Site	No.2 OATS
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	10m & Horizontal	Test Range	30MHz – 1GHz

Frequency MHz	Cable Loss (dB)	Probe Factor (dB/m)	Pre-Amp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)
84.353	1.15	8.50	0.00	10.53	20.18	-9.82	30
138.470	1.43	11.29	0.00	7.86	20.58	-9.42	30
162.549	1.55	9.19	0.00	9.72	20.46	-9.54	30
180.010	1.64	8.27	0.00	13.94	23.85	-6.15	30
192.000	1.70	8.00	0.00	13.92	23.62	-6.38	30
214.772	1.82	7.97	0.00	11.81	21.60	-8.40	30
240.024	1.95	10.42	0.00	11.14	23.51	-13.49	37
302.900	2.27	12.38	0.00	11.06	25.71	-11.29	37
329.316	2.41	12.39	0.00	9.97	24.77	-12.23	37
740.120	4.53	18.54	0.00	3.77	26.84	-10.16	37
800.530	4.85	19.20	0.00	7.32	31.37	-5.63	37

Note:

1. All Reading Levels below 1GHz are Quasi-Peak.
2. Emission Level = Reading Level + Probe Factor + Cable loss – Preamp.
3. Margin = Limit - Emission Level

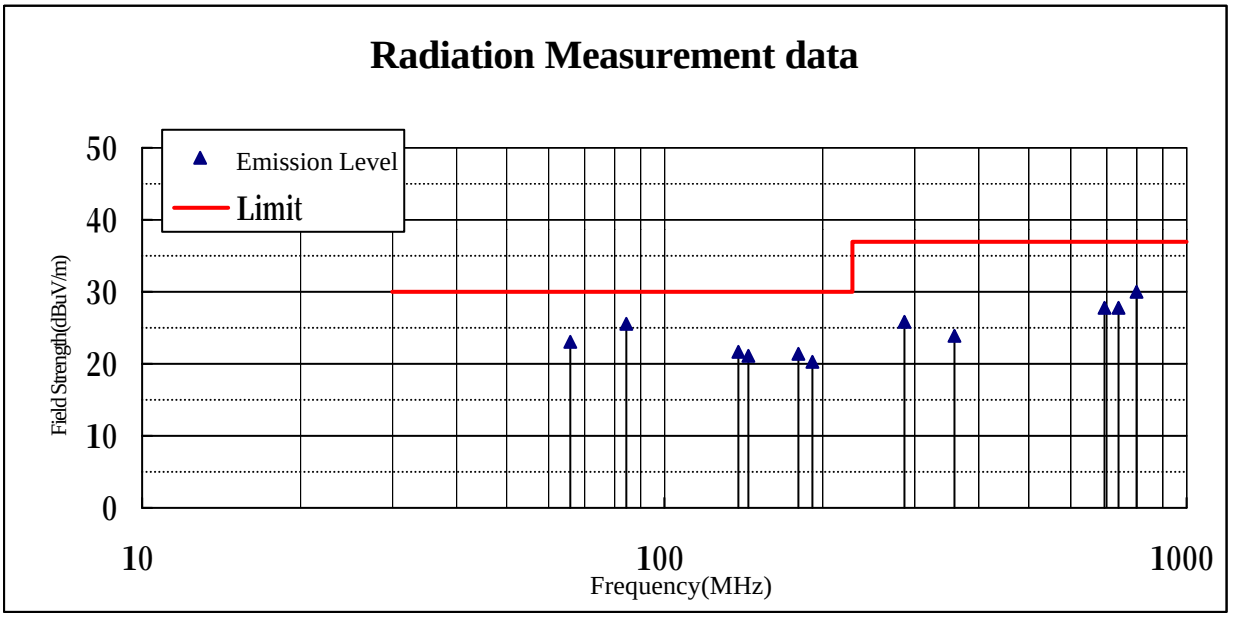


Date of Test	February 5, 2002	Test Site	No.2 OATS
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	10m & Vertical	Test Range	30MHz – 1GHz

Frequency MHz	Cable Loss (dB)	Probe Factor (dB/m)	Pre-Amp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)
66.325	1.05	5.86	0.00	16.16	23.07	-6.93	30
84.349	1.15	7.66	0.00	16.78	25.59	-4.41	30
138.580	1.43	10.30	0.00	10.03	21.76	-8.24	30
144.601	1.46	9.86	0.00	9.84	21.16	-8.84	30
179.996	1.64	8.41	0.00	11.27	21.32	-8.68	30
192.000	1.70	8.08	0.00	10.54	20.32	-9.68	30
288.043	2.20	12.27	0.00	11.46	25.93	-11.07	37
360.005	2.57	14.38	0.00	7.05	24.00	-13.00	37
693.942	4.29	18.04	0.00	5.49	27.82	-9.18	37
740.390	4.53	20.87	0.00	2.49	27.89	-9.11	37
801.820	4.85	19.26	0.00	5.85	29.96	-7.04	37

Note:

1. All Reading Levels below 1GHz are Quasi-Peak.
2. Emission Level = Reading Level + Probe Factor + Cable loss – Preamp.
3. Margin = Limit - Emission Level

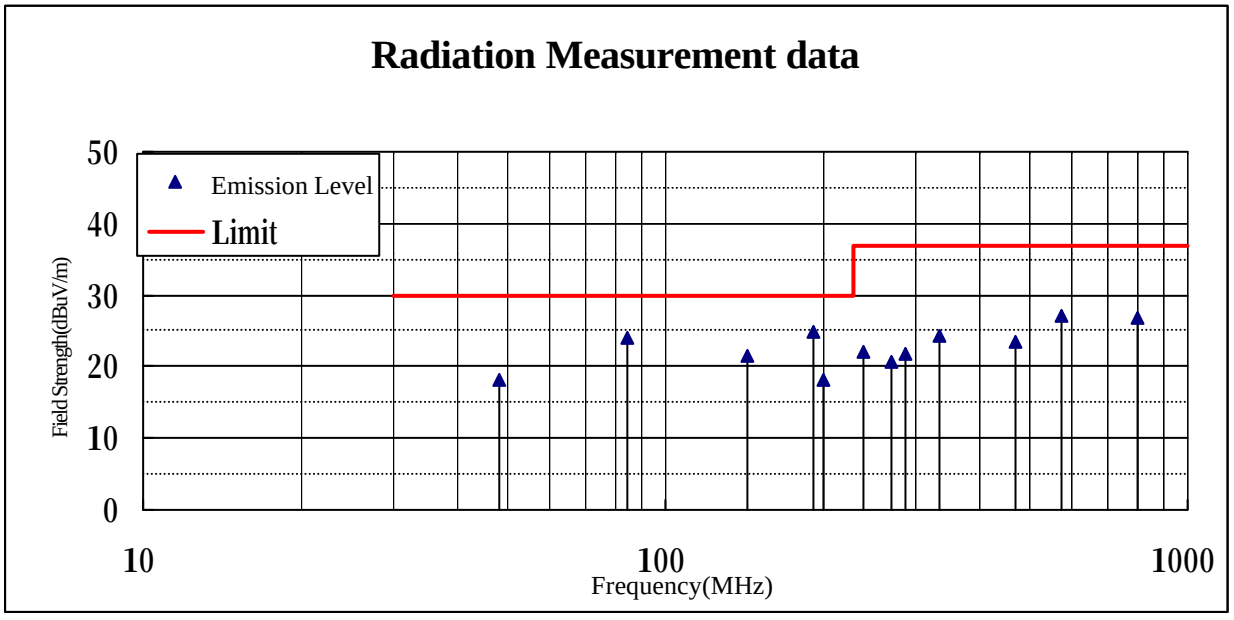


Date of Test	February 5, 2002	Test Site	No.2 OATS
Test Mode	Mode 2: AMD 1.4GHz/ 100MHz, Read	Product	Mother Board with CD-R/W
Test Condition	10m & Horizontal	Test Range	30MHz – 1GHz

Frequency MHz	Cable Loss (dB)	Probe Factor (dB/m)	Pre-Amp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)
48.230	0.96	8.36	0.00	8.89	18.21	-11.79	30
84.330	1.15	8.50	0.00	14.42	24.07	-5.93	30
144.010	1.45	10.87	0.00	9.05	21.37	-8.63	30
192.006	1.70	8.00	0.00	15.29	24.99	-5.01	30
200.870	1.75	8.40	0.00	8.04	18.19	-11.81	30
240.032	1.95	10.42	0.00	9.63	22.00	-15.00	37
271.728	2.11	11.93	0.00	6.58	20.62	-16.38	37
288.048	2.20	11.91	0.00	7.80	21.91	-15.09	37
336.040	2.45	12.68	0.00	9.05	24.18	-12.82	37
468.170	3.13	16.78	0.00	3.56	23.47	-13.53	37
576.094	3.69	17.62	0.00	5.68	26.99	-10.01	37
803.200	4.86	19.31	0.00	2.53	26.70	-10.30	37

Note:

1. All Reading Levels below 1GHz are Quasi-Peak.
2. Emission Level = Reading Level + Probe Factor + Cable loss – Preamp.
3. Margin = Limit - Emission Level

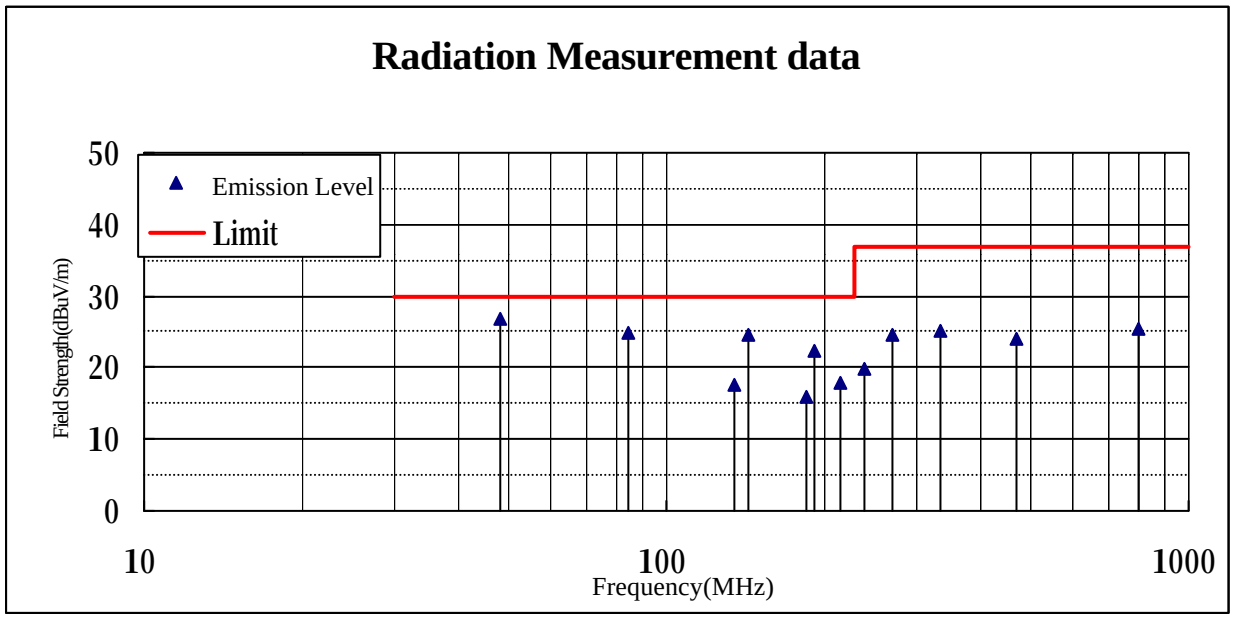


Date of Test	February 5, 2002	Test Site	No.2 OATS
Test Mode	Mode 2: AMD 1.4GHz/ 100MHz, Read	Product	Mother Board with CD-R/W
Test Condition	10m & Vertical	Test Range	30MHz – 1GHz

Frequency MHz	Cable Loss (dB)	Probe Factor (dB/m)	Pre-Amp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)
48.180	0.96	8.36	0.00	17.52	26.84	-3.16	30
84.330	1.15	8.50	0.00	15.23	24.88	-5.12	30
134.990	1.41	11.59	0.00	4.58	17.58	-12.42	30
144.002	1.45	10.87	0.00	12.14	24.46	-5.54	30
186.233	1.67	8.04	0.00	6.26	15.97	-14.03	30
192.004	1.70	8.00	0.00	12.65	22.35	-7.65	30
216.030	1.83	8.21	0.00	7.78	17.82	-12.18	30
239.755	1.95	10.42	0.00	7.56	19.93	-17.07	37
271.726	2.11	11.93	0.00	10.46	24.50	-12.50	37
334.410	2.44	12.56	0.00	10.04	25.04	-11.96	37
468.870	3.13	16.78	0.00	4.12	24.03	-12.97	37
804.170	4.86	19.31	0.00	1.24	25.41	-11.59	37

Note:

1. All Reading Levels below 1GHz are Quasi-Peak.
2. Emission Level = Reading Level + Probe Factor + Cable loss – Preamp.
3. Margin = Limit - Emission Level

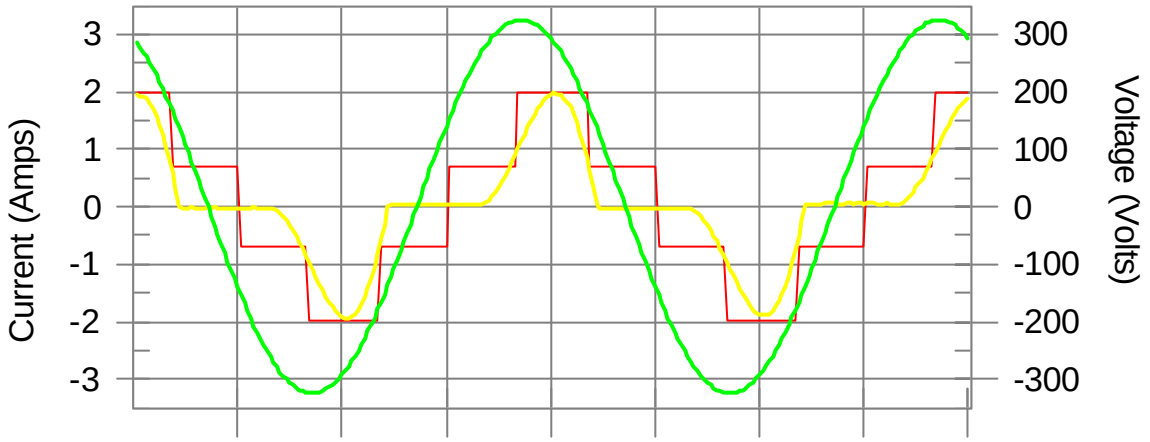


13.3. Test Data of Power Harmonics

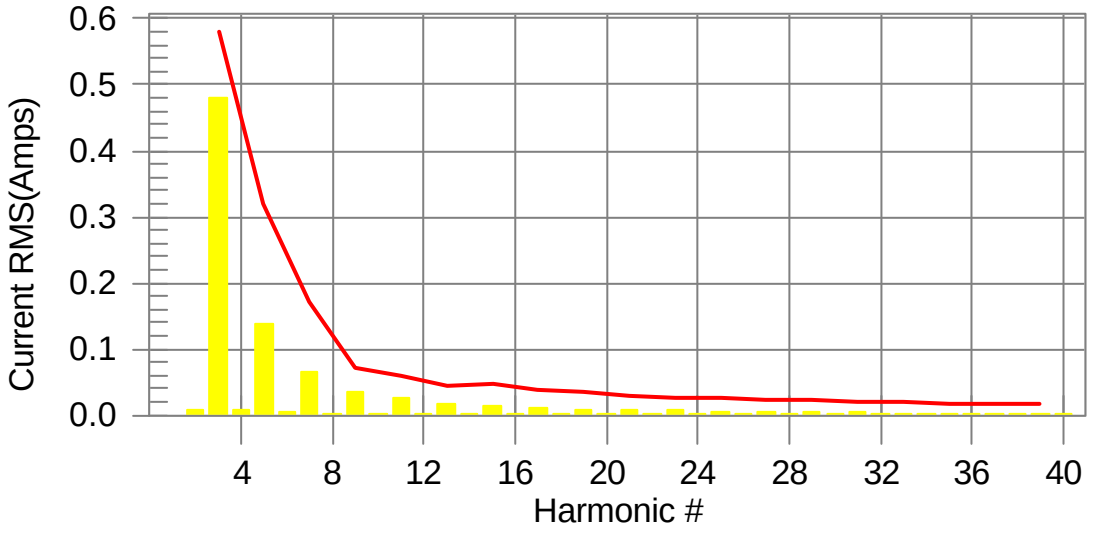
Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Power Harmonics (Classification: Class D)		

Test Result: Pass Source qualification: Normal

Current & voltage waveforms It is 3.1% outside Class-D envelope



Harmonics and Class D limit line European Limits



Test result: Pass Worst harmonic was #3 with 90.51 % of the limit.

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

V_RMS (Volts):	229.87		
I_Peak (Amps):	1.982	I_RMS (Amps):	0.935
I_Fund (Amps):	0.812	Crest Factor:	2.313
Power (Watts):	171	Power Factor:	0.795

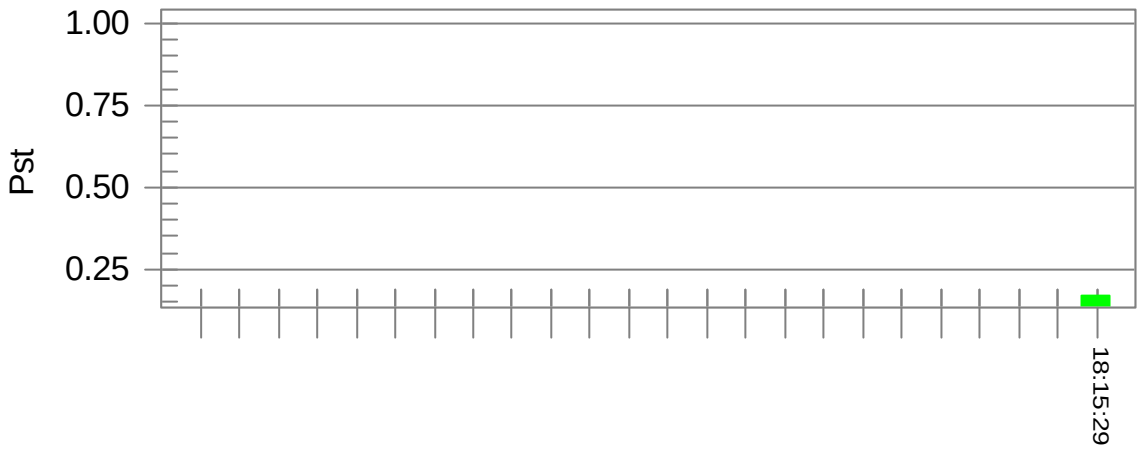
Harm#	Harmonics	Limit	% of Limit	Status
2	0.007			
3	0.480	0.579	82.90	Pass
4	0.007			
5	0.138	0.321	43.09	Pass
6	0.005			
7	0.065	0.170	38.16	Pass
8	0.003			
9	0.036	0.072	50.09	Pass
10	0.002			
11	0.027	0.060	46.07	Pass
12	0.001			
13	0.016	0.045	36.27	Pass
14	0.002			
15	0.015	0.047	32.44	Pass
16	0.002			
17	0.010	0.037	26.63	Pass
18	0.002			
19	0.009	0.036	24.89	Pass
20	0.002			
21	0.007	0.028	25.74	Pass
22	0.002			
23	0.007	0.027	25.38	Pass
24	0.002			
25	0.005	0.025	20.74	Pass
26	0.001			
27	0.005	0.023	0.00	Pass
28	0.001			
29	0.004	0.023	0.00	Pass
30	0.001			
31	0.004	0.021	0.00	Pass
32	0.001			
33	0.003	0.020	0.00	Pass
34	0.001			
35	0.003	0.018	0.00	Pass
36	0.001			
37	0.003	0.017	0.00	Pass
38	0.001			
39	0.003	0.016	0.00	Pass
40	0.001			

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Voltage Fluctuations and Flicker		

Test Result: Pass Status: Test Completed

Pst and limit line European Limits



Time is too short for Plt plot

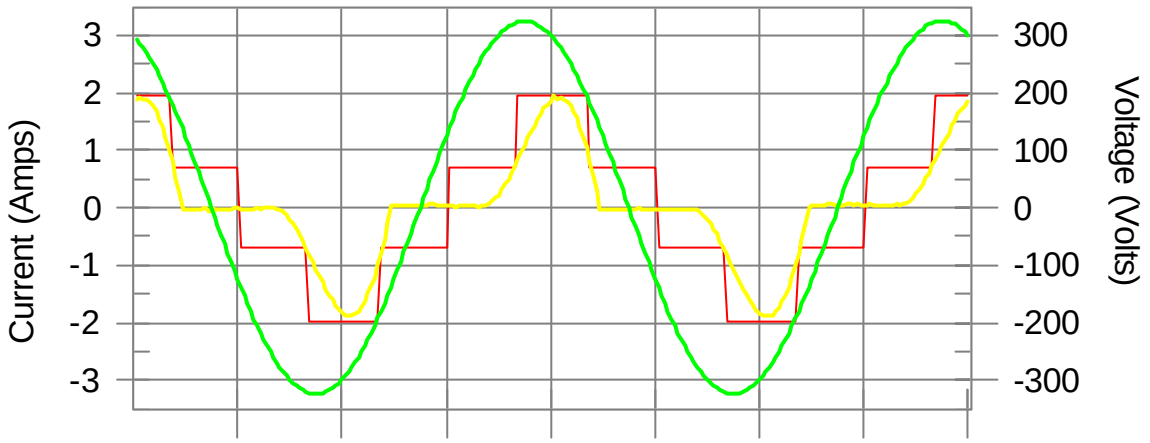
Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.45		
Highest dt (%):	0.16	Test limit (%):	4.00
Highest dc (%):	0.24	Test limit (%):	3.30
Highest dmax (%):	0.24	Test limit (%):	4.00
Highest Pst (10 min. period):	0.171	Test limit:	1.000
Highest Plt (2 hr. period):	0.075	Test limit:	0.650

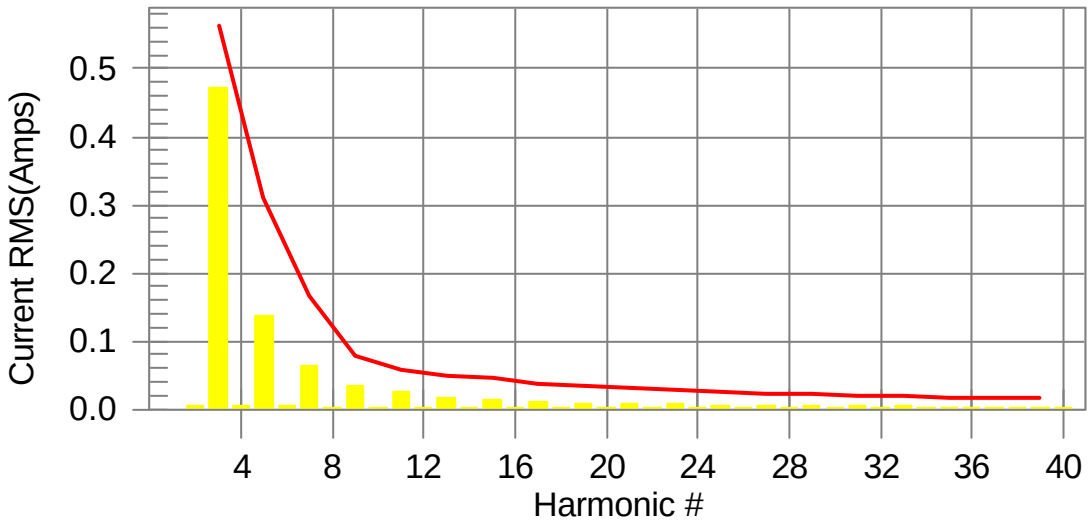
Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 2: AMD 1.4GHz/ 100MHz, Read	Product	Mother Board with CD-R/W
Test Condition	Power Harmonics (Classification: Class D)		

Test Result: Pass Source qualification: Normal

Current & voltage waveforms It is 2.7% outside Class-D envelope



Harmonics and Class D limit line European Limits



Test result: Pass Worst harmonic was #3 with 86.31 % of the limit.

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

V_RMS (Volts):	229.67		
I_Peak (Amps):	1.967	I_RMS (Amps):	0.925
I_Fund (Amps):	0.788	Crest Factor:	2.195
Power (Watts):	168	Power Factor:	0.793

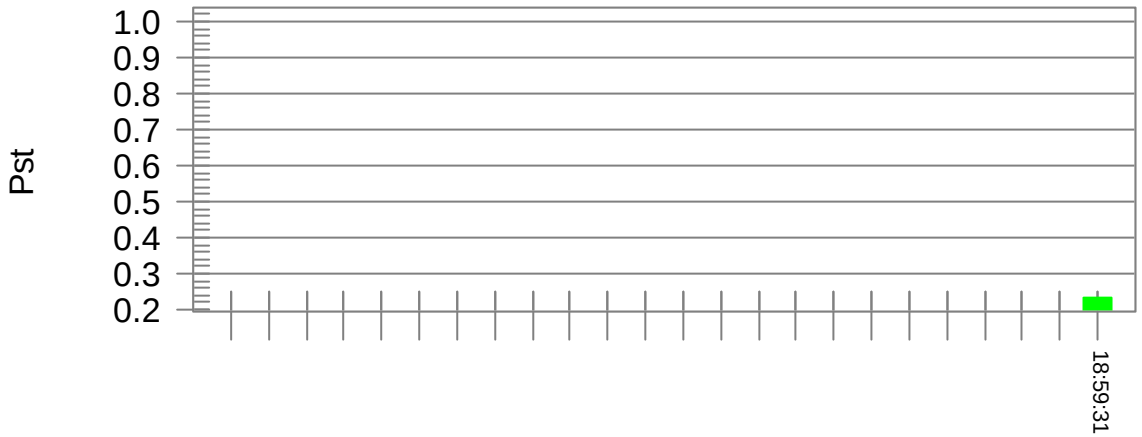
Harm#	Harmonics	Limit	% of Limit	Status
2	0.004			
3	0.473	0.563	84.08	Pass
4	0.005			
5	0.138	0.311	44.48	Pass
6	0.004			
7	0.063	0.165	38.31	Pass
8	0.002			
9	0.035	0.077	44.70	Pass
10	0.001			
11	0.026	0.058	45.85	Pass
12	0.001			
13	0.016	0.050	32.67	Pass
14	0.001			
15	0.015	0.045	32.98	Pass
16	0.001			
17	0.010	0.037	26.40	Pass
18	0.001			
19	0.009	0.035	25.84	Pass
20	0.002			
21	0.007	0.032	22.74	Pass
22	0.002			
23	0.007	0.027	24.18	Pass
24	0.001			
25	0.005	0.026	0.00	Pass
26	0.001			
27	0.005	0.023	0.00	Pass
28	0.001			
29	0.004	0.023	0.00	Pass
30	0.001			
31	0.004	0.020	0.00	Pass
32	0.001			
33	0.003	0.020	0.00	Pass
34	0.001			
35	0.003	0.017	0.00	Pass
36	0.001			
37	0.003	0.017	0.00	Pass
38	0.001			
39	0.003	0.017	0.00	Pass
40	0.001			

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 2: AMD 1.4GHz/ 100MHz, Read	Product	Mother Board with CD-R/W
Test Condition	Voltage Fluctuations and Flicker		

Test Result: Pass Status: Test Completed

Pst_i and limit line European Limits



Time is too short for Plt plot

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.45		
Highest dt (%):	0.17	Test limit (%):	4.00
Highest dc (%):	0.21	Test limit (%):	3.30
Highest dmax (%):	0.31	Test limit (%):	4.00
Highest Pst (10 min. period):	0.234	Test limit:	1.000
Highest Plt (2 hr. period):	0.102	Test limit:	0.650

13.4. Test Data of Electrostatic Discharge

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Electrostatic Discharge (Performance Criteria: B)		

Test point	Polarity	Number of Discharges	Observation	Result
Seams	+/-8kV Air	10	Normal function	**PASS**
Switch	+/-4kV Air	10	Normal function	**PASS**
Knobs	+/-4kV Con	50	Normal function	**PASS**
Metal Plate	+/-4kV Con	50	Normal function	**PASS**
Screws	+/-4kV Con	50	Normal function	**PASS**
H.C.P.	+/-4kV	50	Normal function	**PASS**
V.C.P.	+/-4kV	50	Normal function	**PASS**

Criteria judgment of Test result:

- ☐ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☒ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

13.5. Test Data of Radiated Susceptibility

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Radiated Susceptibility (Performance Criteria: A)		

Frequency (MHz)	Position (Angle)	Polarity (H or V)	Field Strength (V/m)	Observation	Results
80-1000	0	H	3	Normal Function	**Pass**
80-1000	0	V	3	Normal Function	**Pass**
80-1000	90	H	3	Normal Function	**Pass**
80-1000	90	V	3	Normal Function	**Pass**
80-1000	180	H	3	Normal Function	**Pass**
80-1000	180	V	3	Normal Function	**Pass**
80-1000	270	H	3	Normal Function	**Pass**
80-1000	270	V	3	Normal Function	**Pass**

Criteria judgment of Test result:

☒ Meet criteria A: No abnormalities were observed during and directly after the test.
☐ Meet criteria B: Operate as intended after the test
☐ Meet criteria C: Loss/Error of function
☐ Additional Information
  ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  ☒ No false alarms or other malfunctions were observed during or after the test.

13.6. Test Data of Electrical Fast Transient

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Electrical Fast Transient (Performance Criteria: A)		

Inject Line	Polarity	Voltage kV	Inject Time (Second)	Inject Method	Observation	Result
L	±	1kV	60	Direct	Normal Function	**Pass**
N	±	1kV	60	Direct	Normal Function	**Pass**
PE	±	1kV	60	Direct	Normal Function	**Pass**
L+N	±	1kV	60	Direct	Normal Function	**Pass**
L+PE	±	1kV	60	Direct	Normal Function	**Pass**
N+PE	±	1kV	60	Direct	Normal Function	**Pass**
L+N+PE	±	1kV	60	Direct	Normal Function	**Pass**

Criteria judgment of Test result:

- ☒ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

13.7. Test Data of Surge

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Surge (Performance Criteria: A)		

Inject Line	Polarity	Angle	Voltage kV	Time Interval (Second)	Inject Method	Observation	Result
L-N	±	0	1kV	60	Direct	Normal Function	**Pass**
L-N	±	90	1kV	60	Direct	Normal Function	**Pass**
L-N	±	180	1kV	60	Direct	Normal Function	**Pass**
L-N	±	270	1kV	60	Direct	Normal Function	**Pass**
L-PE	±	0	2kV	60	Direct	Normal Function	**Pass**
L-PE	±	90	2kV	60	Direct	Normal Function	**Pass**
L-PE	±	180	2kV	60	Direct	Normal Function	**Pass**
L-PE	±	270	2kV	60	Direct	Normal Function	**Pass**
N-PE	±	0	2kV	60	Direct	Normal Function	**Pass**
N-PE	±	90	2kV	60	Direct	Normal Function	**Pass**
N-PE	±	180	2kV	60	Direct	Normal Function	**Pass**
N-PE	±	270	2kV	60	Direct	Normal Function	**Pass**

Criteria judgment of Test result:

- ☒ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

13.8. Test Data of Conducted Susceptibility

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Conducted Susceptibility (Performance Criteria: A)		

Frequency Range (MHz)	Voltage Applied dBuV(V)	Inject Method	Tested Port of EUT	Observation	Result
0.15 ~ 80	130(3V)	CDN 1	AC IN	Normal Function	**PASS**
0.15 ~ 80	130(3V)	Clamp	Signal Line	Normal Function	**PASS**

Criteria judgment of Test result:

- ☒ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

13.9. Test Data of Power Frequency Magnetic Field

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Power Frequency Magnetic Field (Performance criteria: A)		

Polarization	Frequency (Hz)	Magnetic Strength (A/m)	Observation	Test Result
X Orientation	50	1	Normal Function	**PASS**
Y Orientation	50	1	Normal Function	**PASS**
Z Orientation	50	1	Normal Function	**PASS**

Criteria judgment of Test result:

- ☒ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☐ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☐ Additional Information
  - ☐ EUT stopped operation and could / could not be reset by operator at ____ kV.
  - ☒ No false alarms or other malfunctions were observed during or after the test.

13.10. Test Data of Voltage Dips and Interruption

Date of Test	February 5, 2002	Test Room	No.3 Shielded Room
Test Mode	Mode 1: AMD 1800+/ 133MHz, Rewrite	Product	Mother Board with CD-R/W
Test Condition	Voltage Dips and Interruption		

Voltage Dips and Interruption Reduction(%)	Angle	Test Duration (Periods)	Required Performance Criteria	Observation	Test Result
>95(0V)	0	0.5	B	Normal Function	**PASS**
>95(0V)	45	0.5	B	Normal Function	**PASS**
>95(0V)	90	0.5	B	Normal Function	**PASS**
>95(0V)	135	0.5	B	Normal Function	**PASS**
>95(0V)	180	0.5	B	Normal Function	**PASS**
>95(0V)	225	0.5	B	Normal Function	**PASS**
>95(0V)	270	0.5	B	Normal Function	**PASS**
>95(0V)	315	0.5	B	Normal Function	**PASS**
30(161V)	0	25	C	Normal Function	**PASS**
30(161V)	45	25	C	Normal Function	**PASS**
30(161V)	90	25	C	Normal Function	**PASS**
30(161V)	135	25	C	Normal Function	**PASS**
30(161V)	180	25	C	Normal Function	**PASS**
30(161V)	225	25	C	Normal Function	**PASS**
30(161V)	270	25	C	Normal Function	**PASS**
30(161V)	315	25	C	Normal Function	**PASS**
>95(0V)	0	250	C	C	**PASS**
>95(0V)	45	250	C	C	**PASS**
>95(0V)	90	250	C	C	**PASS**
>95(0V)	135	250	C	C	**PASS**
>95(0V)	180	250	C	C	**PASS**
>95(0V)	225	250	C	C	**PASS**
>95(0V)	270	250	C	C	**PASS**
>95(0V)	315	250	C	C	**PASS**

Criteria judgment of Test result:

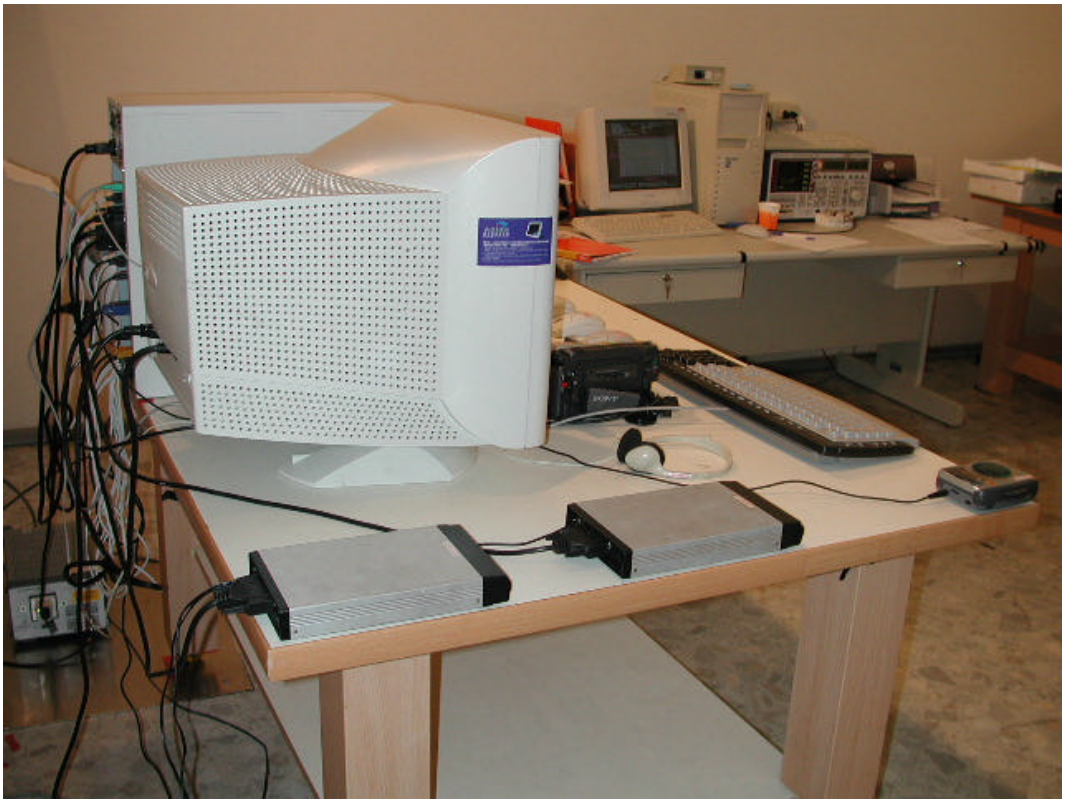
- ☐ Meet criteria A: No abnormalities were observed during and directly after the test.
- ☒ Meet criteria B: Operate as intended after the test
- ☐ Meet criteria C: Loss/Error of function
- ☒ Additional Information
  - ☒ EUT stopped operation and could be reset by operator.
  - ☐ No false alarms or other malfunctions were observed during or after the test.

Attachment 1 : EUT Test Photographs

Attachment 1 : EUT Test Photographs

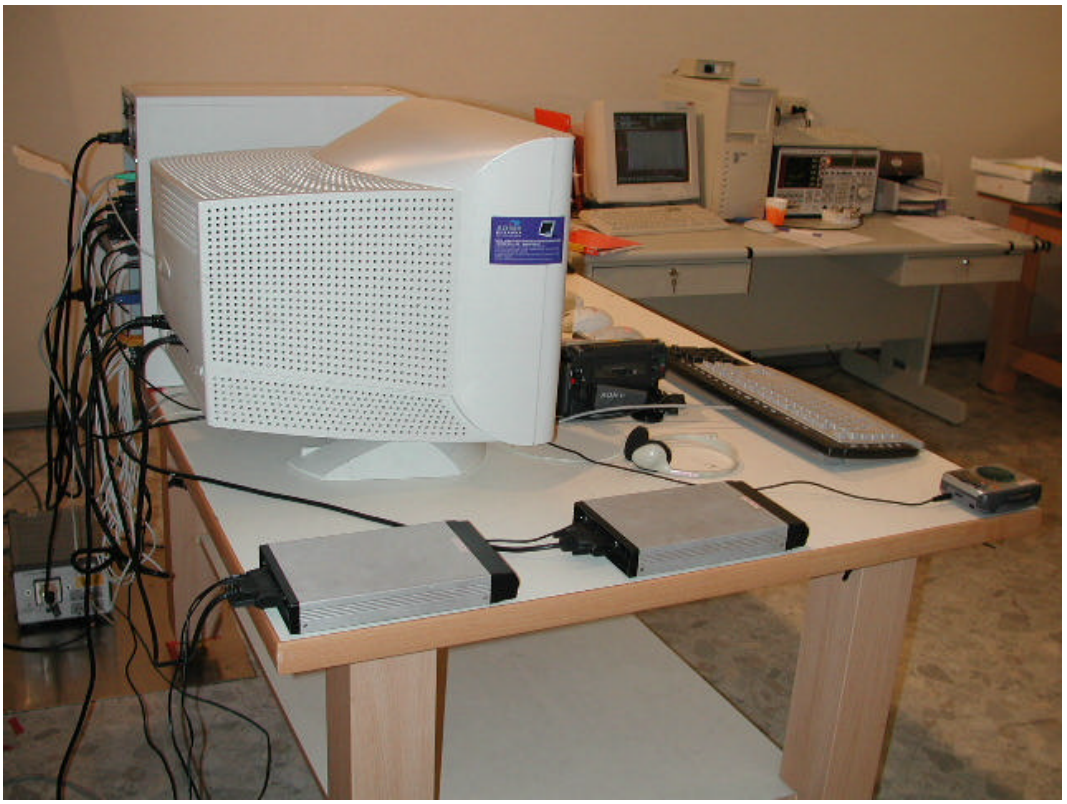
Front View of Conducted Test (Mode 1)

Back View of Conducted Test (Mode 1)



Front View of Conducted Test (Mode 2)

Back View of Conducted Test (Mode 2)

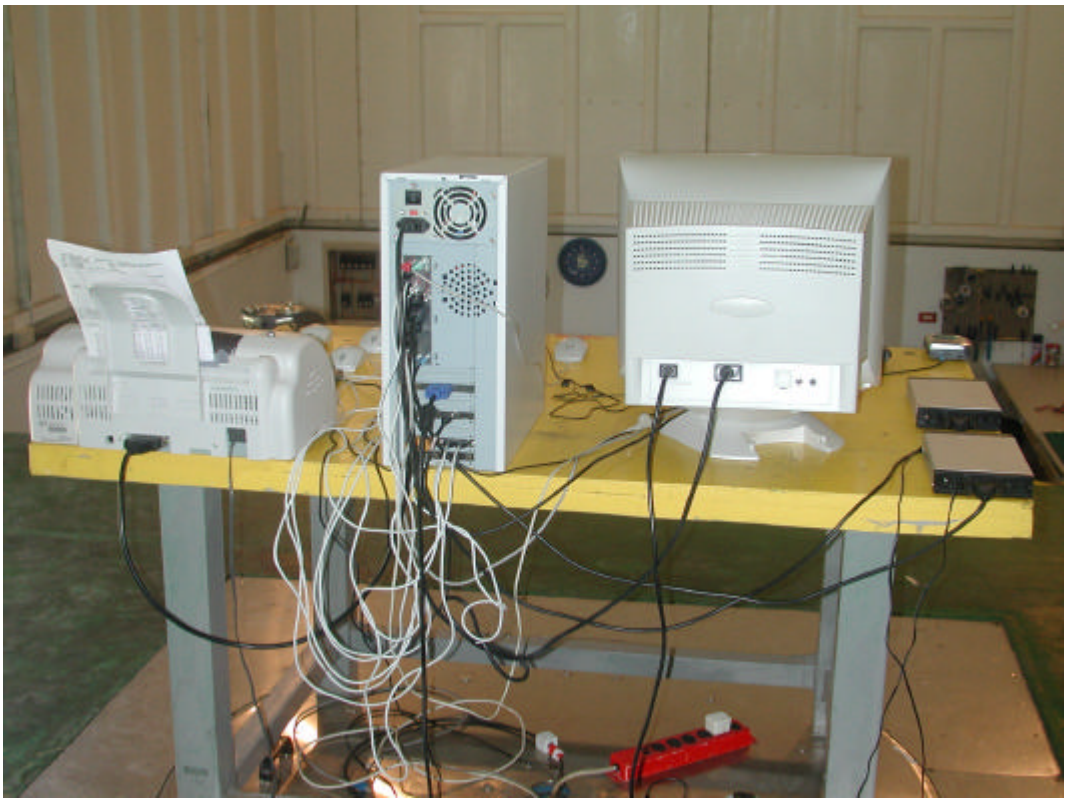


Front View of Radiated Test (Mode 1)

Back View of Radiated Test (Mode 1)

Front View of Radiated Test (Mode 2)

Back View of Radiated Test (Mode 2)



Harmonics Test Setup (Mode 1)

Harmonics Test Setup (Mode 2)

ESD Test Setup

RS Test Setup

EFT/B Test Setup

Surge Test Setup

CS Test Setup

Power Frequency Magnetic Field Test Setup

Dips Test Setup

Attachment 2 : EUT Detailed Photographs

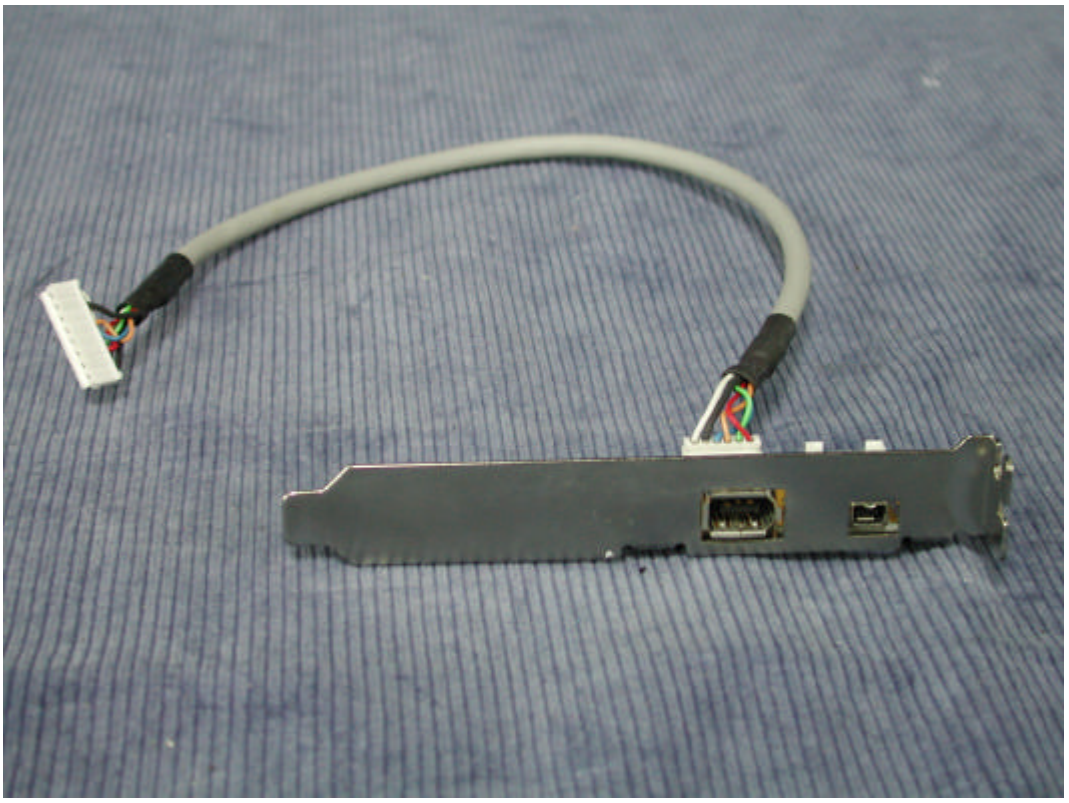
Attachment 2 : EUT Detailed Photographs

(1) EUT Photo

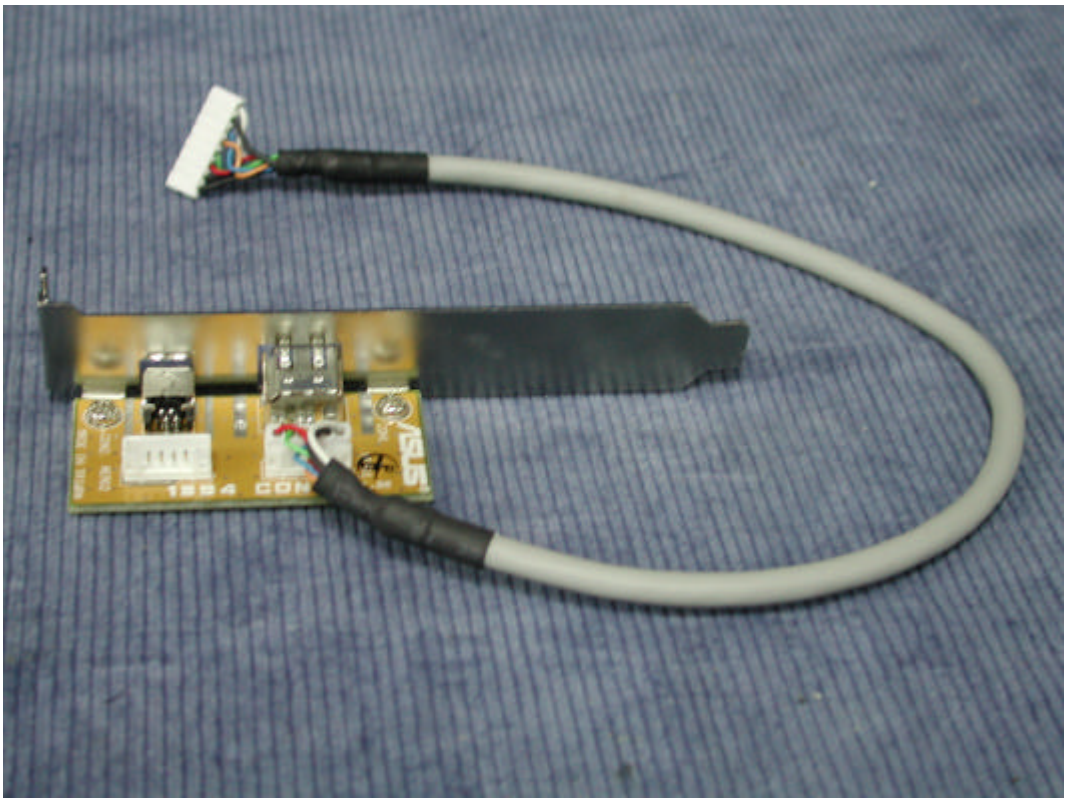
(2) EUT Photo

(3) EUT Photo

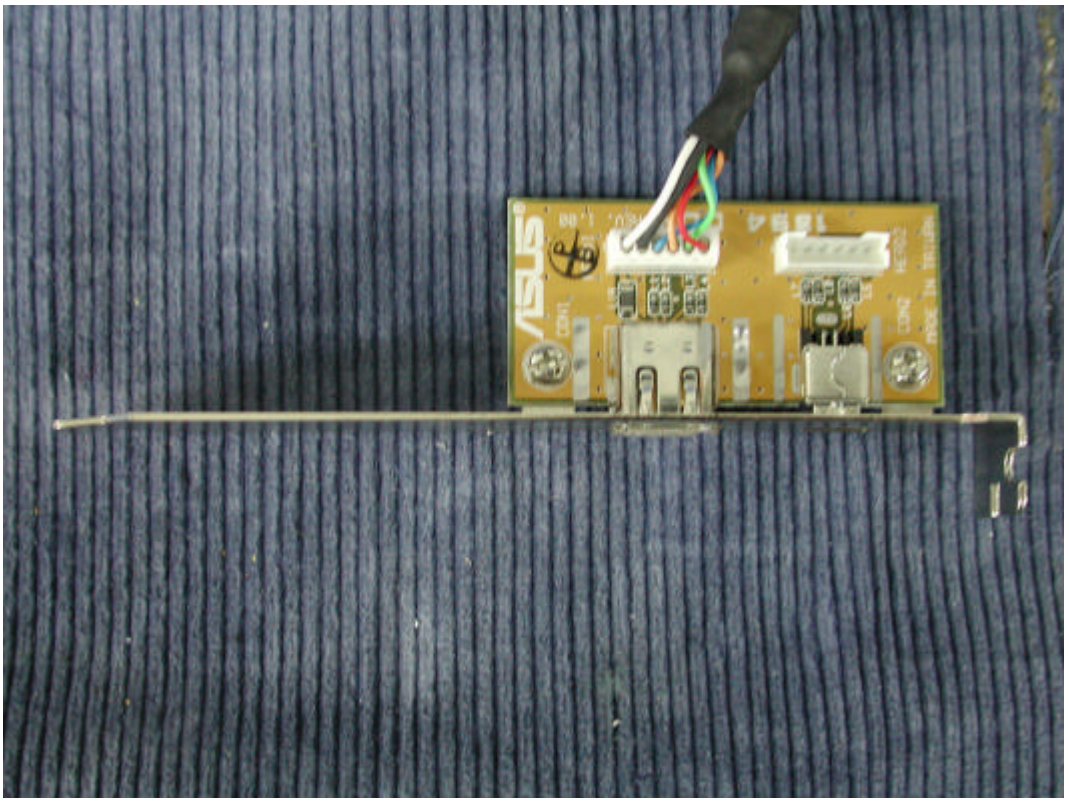
(4) EUT Photo



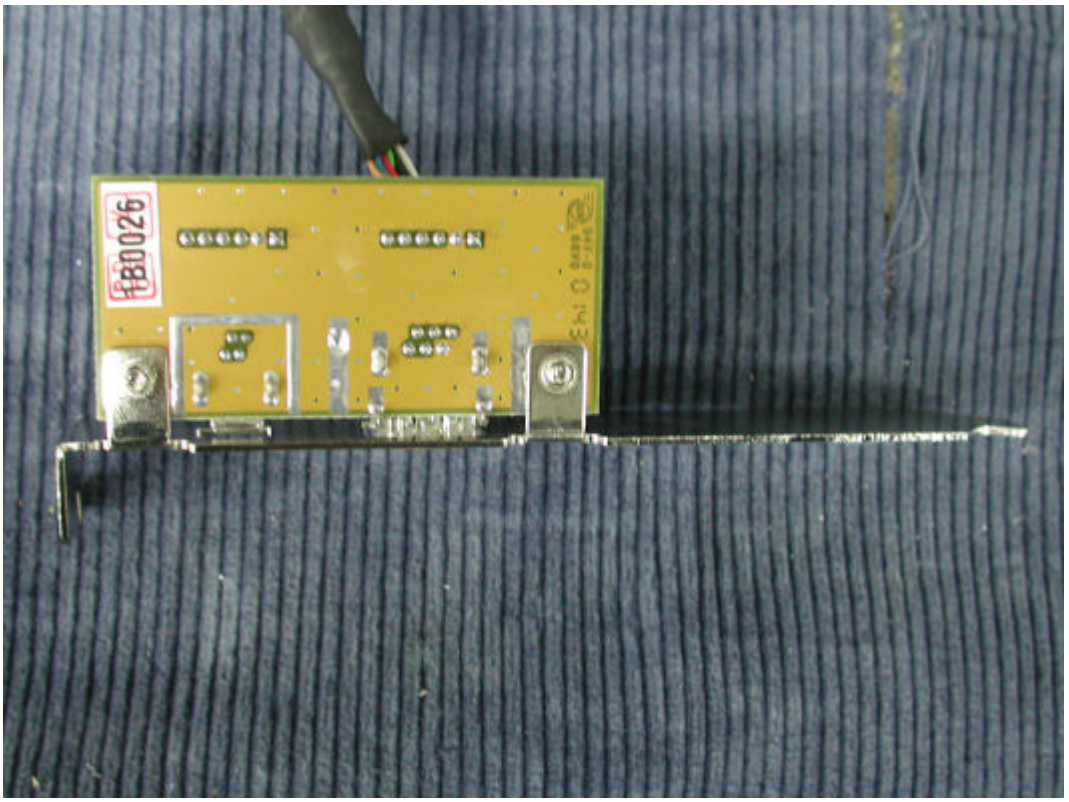
(5) EUT Photo



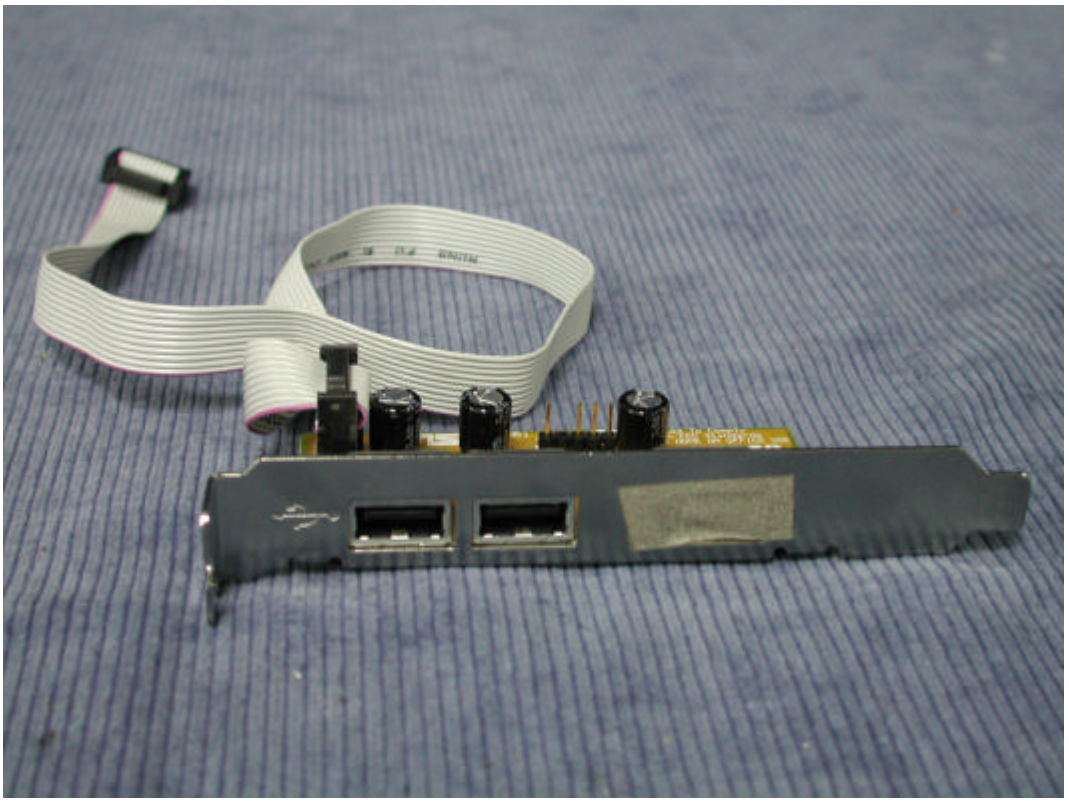
(6) EUT Photo



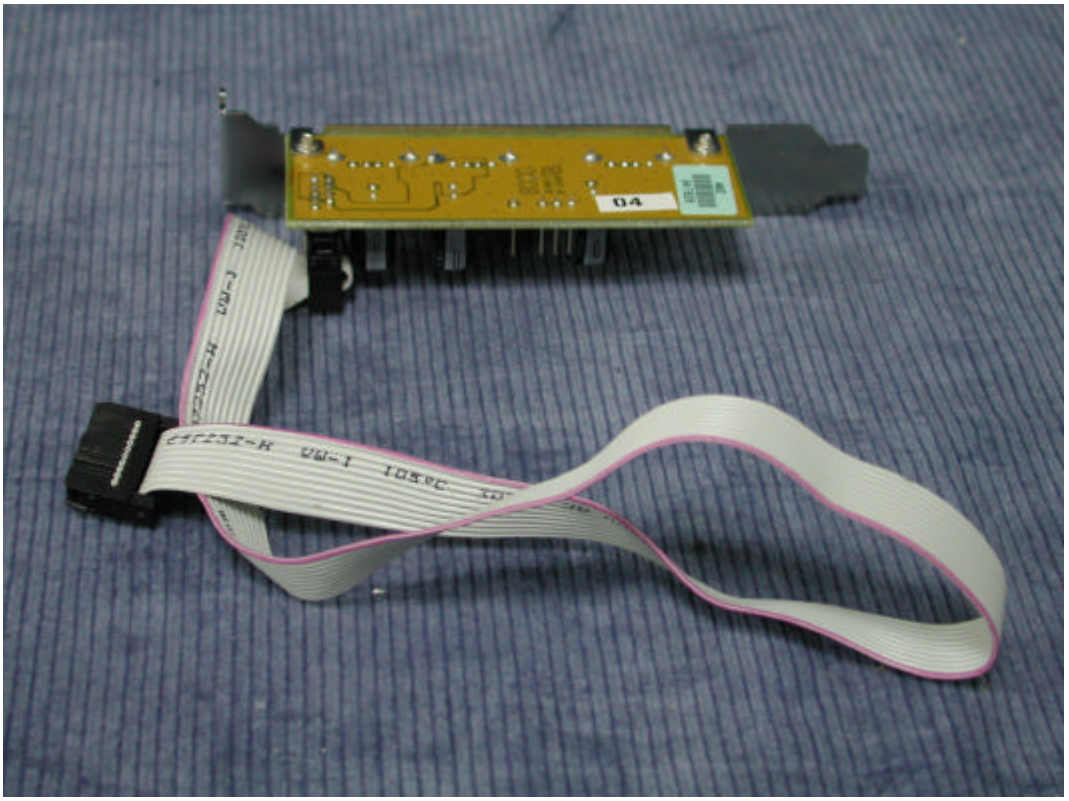
(7) EUT Photo



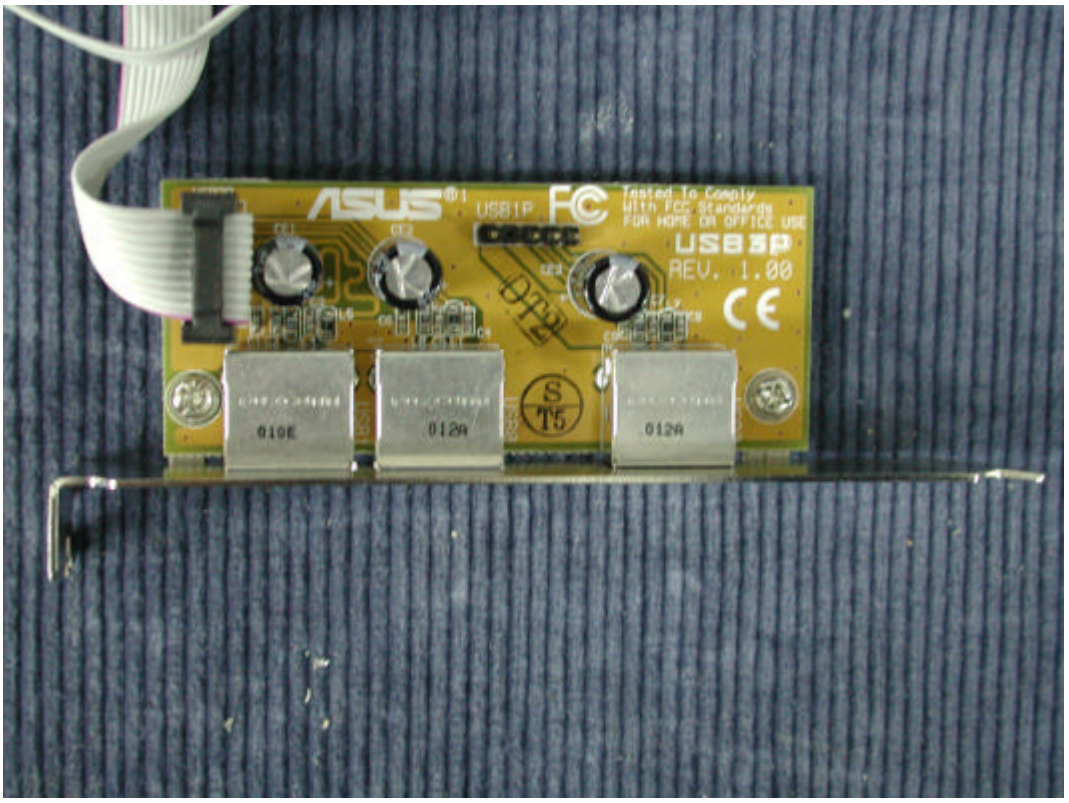
(8) EUT Photo



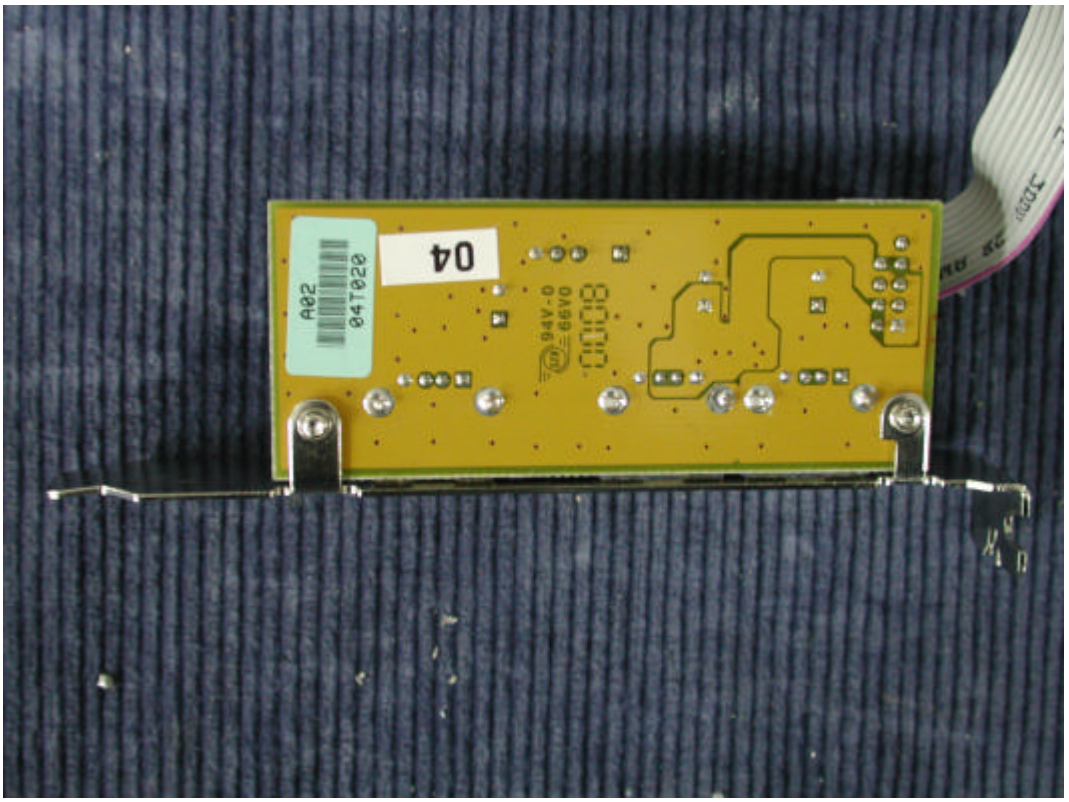
(9) EUT Photo



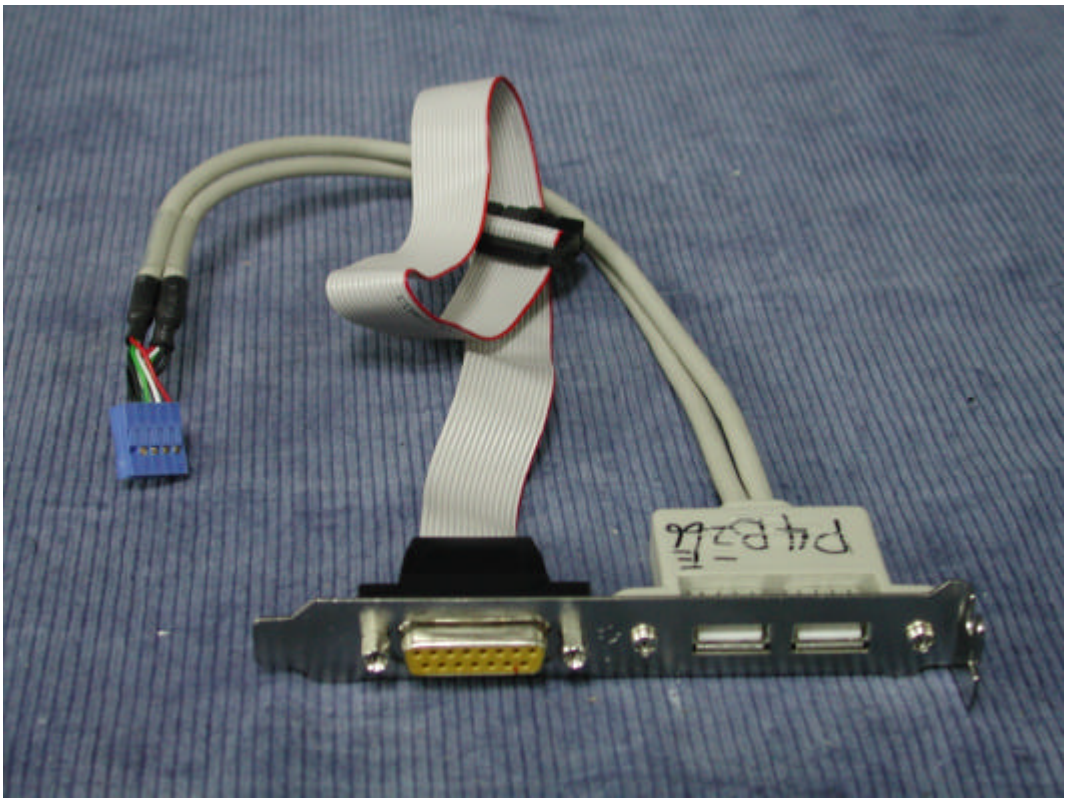
(10) EUT Photo



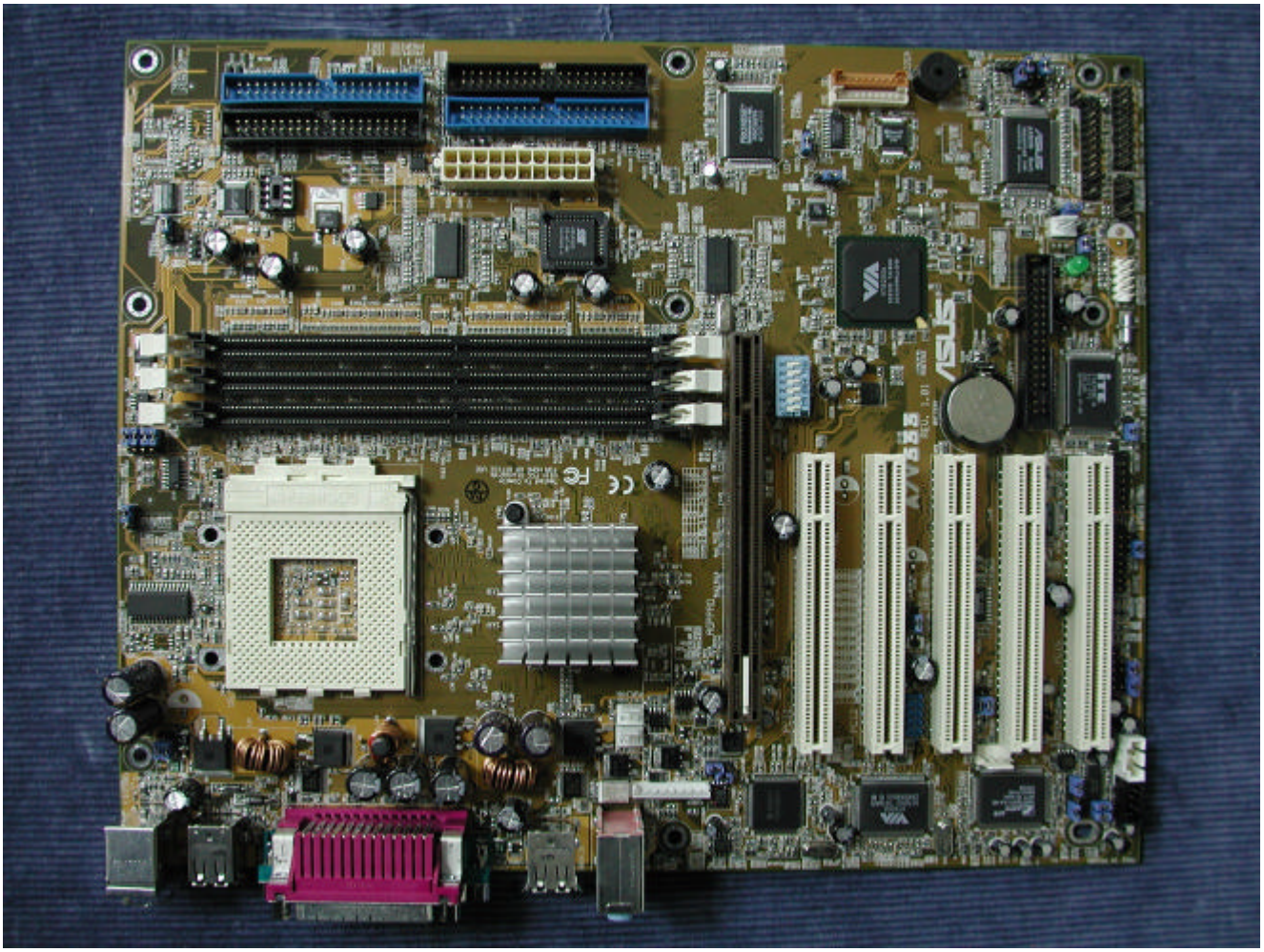
(11) EUT Photo



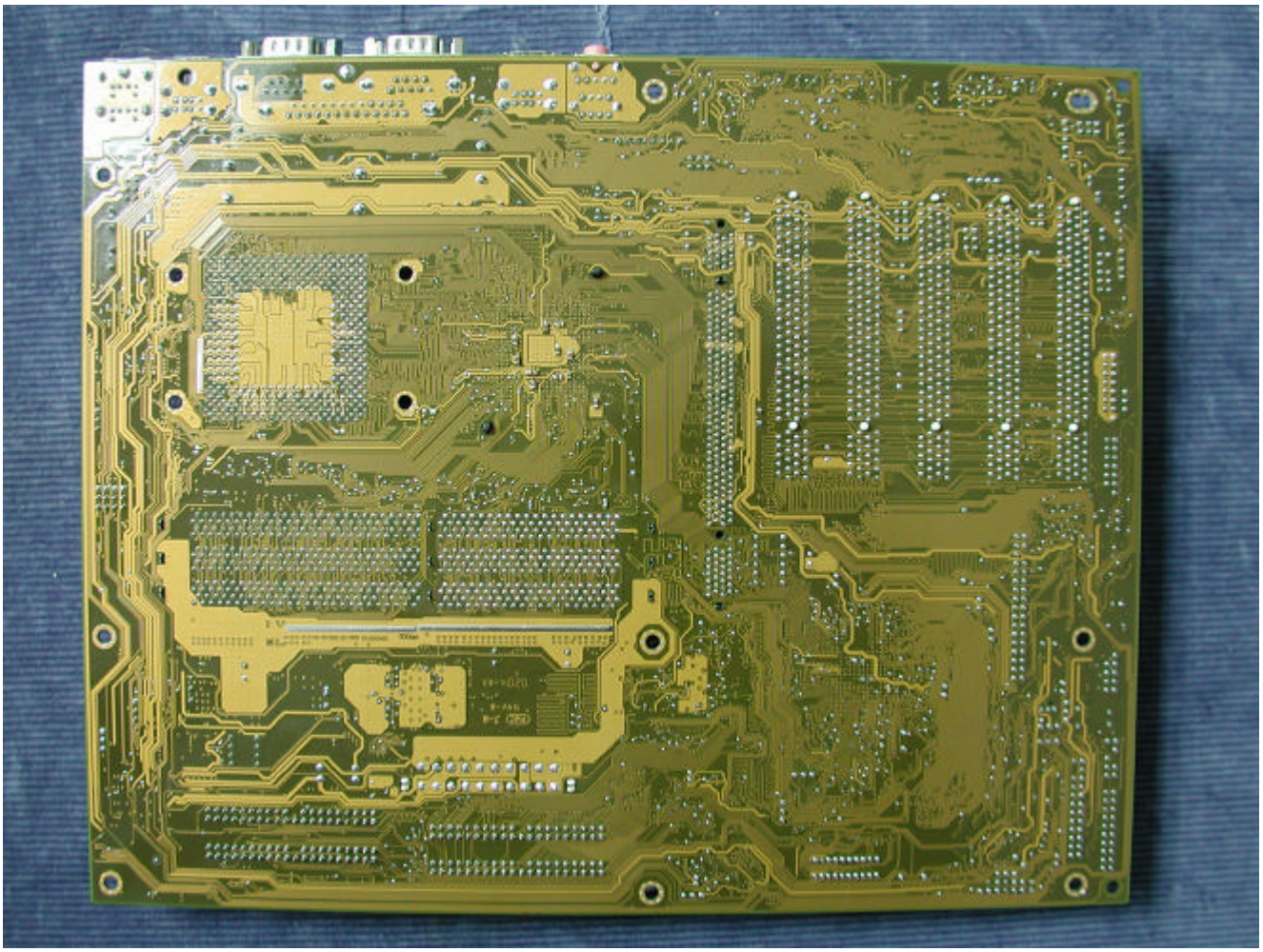
(12) EUT Photo



(13) EUT Photo



(14) EUT Photo



(15) EUT Photo

(16) EUT Photo

Reference : Laboratory of License

National Institute of Standards and Technology

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ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200533-0

QUITEK CORPORATION
No. 5, Ruei-shu Valley, Ruei-ping, Tsuen
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TAIWAN
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NVLAP Code	*Designation / Description*
Emissions Test Methods:	
12/CIS22	IEC/CISPR 22 (1997) and EN 55022 (1998): Limits and methods of measurement of radio disturbance characteristics of information technology equipment
12/CIS22a	IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
12/CIS22b	CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
12/F01	FCC Method - 47 CFR Part 15 - Digital Devices
12/F01a	Conducted Emissions, Power Lines, 450 KHz to 30 MHz
12/F01b	Radiated Emissions

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Scope of Accreditation

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

NVLAP LAB CODE 200533-0

QUITEK CORPORATION

NVLAP Code	*Designation / Description*
12/T51	AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

Immunity Test Methods:

12/I01	IEC 61000-4-2 (1995) and Amendment 1 (1998): Electrostatic Discharge Immunity Test
12/I02	IEC 61000-4-3 (1995) and Amendment 1 (1998): Radiated, Radio-Frequency Electromagnetic Field Immunity Test
12/I03	IEC 61000-4-4 (1995): Electrical Fast Transient/Burst Immunity Test
12/I04	IEC 61000-4-5 (1995): Surge Immunity Test
12/I05	IEC 61000-4-6 (1996): Immunity to Conducted Disturbances, Induced Radio-Frequency Fields
12/I06	IEC 61000-4-8 (1993): Power Frequency Magnetic Field Immunity Test
12/I07	IEC 61000-4-11 (1994): Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests

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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

June 30, 2003

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NVLAP Lab Code: 200533-0

Nemko World-wide Testing and Certification

ELA 4

EMC Laboratory Authorisation

Aut. No. : ELA 165

EMC Laboratory: **QuieTek Corporation**
No. 75-2, Wang-Yeh Valley,
Yung-Hsing, Chiung-Lin, Hsin-Chu,
Hsin-Chu County, Taiwan R.O.C.

Scope of Authorization: **All CENELEC standards [ENs] for EMC that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards that are listed on the accompanying page.**

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union EMC Directive [89/336/EEC as amended by 92/31/EEC and 98/13/EC].

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain this Authorization, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorization. The Authorization may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through **31. December 2003**.

Oslo, 18. April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: **P.O.Box 73 Blindern** **N-0314 OSLO, NORWAY**

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Nemko World-wide Testing and Certification

ELA 4

EMC Laboratory Authorisation

Aut. No. : ELA 162

EMC Laboratory: **QuieTek Corporation**
No. 75-2, Wang-Yeh Valley,
Yung-Hsing, Chiung-Lin, Hsin-Chu,
Hsin-Chu County, Taiwan R.O.C.

Scope of Authorization: **EN 60601-1-2 and IEC 60601-1-2, the Collateral Standards for electromedical products, with particular application to EMC requirements only.**

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation listed above. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under either the European Union Medical Device Directive [MDD], 93/42/EEC, or the European Union Active Implantable Medical Device Directive [AIMD], 90/385/EEC, (as applicable).

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

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Oslo, 18. April 2001

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EMC Laboratory Authorisation

Aut. No. : ELA 191

(Page 2 of 2)

SCOPE OF AUTHORISATION

Generic and product-family standards – R&TTE Directive

EN 300 220-3 :2000	ETS 300 328:1996 + A1:97 EN 300 328-2:2000	I-ETS 300 330:1994 + A1:97 (Not harmonised for R&TTE-D)
EN 300 422-2 :2000	I-ETS 300 440:1995 (Not harmonised for R&TTE-D)	ETS 300 445 :1996 + A1 :97 EN 301 489-09 :2000
ETS 300 683 :1997 EN 301 489-03 :2000	ETS 300 826 :1997 EN 301 489-17 :2000	EN 301 489-01:2000

Basic standards

EN 61000-4-2:1995 + A1:98 IEC 61000-4-2:1995 + A1:98 (EN 60801-1:1993 IEC 801.2:1991 IEC 801.2:1984)	EN 61000-4-3:1996 + A1:98 IEC 61000-4-3:1995 + A1:98 (IEC 801.3:1984 ENV 50140:1993 + ENV 50204:1995)	EN 61000-4-4:1995 IEC 61000-4-4:1995 (IEC 801.4:1990)
EN 61000-4-5:1995 IEC 61000-4-5:1995 (ENV 50142:1994)	EN 61000-4-6:1996 IEC 61000-4-6:1996 (ENV 50141:1993)	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994		

Oslo, 24 April 2001 Kjell Bergh, Nemko Group EMC Co-ordinator

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Nemko World-wide Testing and Certification

ELA 4

EMC Laboratory Authorisation

Aut. No. : ELA 162

EMC Laboratory: **QuieTek Corporation**
No. 75-2, Wang-Yeh Valley,
Yung-Hsing, Chiung-Lin, Hsin-Chu,
Hsin-Chu County, Taiwan R.O.C.

Scope of Authorization: **EN 60601-1-2 and IEC 60601-1-2, the Collateral Standards for electromedical products, with particular application to EMC requirements only.**

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation listed above. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under either the European Union Medical Device Directive [MDD], 93/42/EEC, or the European Union Active Implantable Medical Device Directive [AIMD], 90/385/EEC, (as applicable).

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through **31. December 2003**.

Oslo, 24. April 2001

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EMC Laboratory Authorisation

Aut. No. : ELA 165

(Page 2 of 2)

SCOPE OF AUTHORIZATION

GENERIC & PRODUCT-FAMILY STANDARDS

EN 50081-1:1992 IEC 61000-6-3 EN 50081-2:1993 IEC 61000-6-4:1997	EN 50082-1:1992 EN 50082-1 :1997 IEC 61000-6-1:1997 EN 50082-2:1995 EN 61000-6-2:1999 IEC 61000-6-2:1999	EN 50091-2:1995
EN 50130-4:1995 + A1:98	EN 55011:1991 + A1:97 + A2:96 CISPR 11:1990 + A1:96 + A2:96 EN 55011:1998 + CISPR 11:97	EN 55013:90 + A12:94 + A13:96 + A14 :99 CISPR 13:75 + A1:83
EN 55014-1:1993 + A1:97 + A2 :99 CISPR 14:1993 + A1:96 + A2 :	EN 55014-2:1997 CISPR 14-2:1997 EN 55104:1995	EN 55015:1993, CISPR 15:1992 EN 55015:1996 + A1:97 CISPR 15:96 + A1:97
EN 55022:1994 + A1:95 + A2:97 CISPR 22:1993 + A1:95 + A2:96 EN 55022:1998, CISPR 22:1997	EN 55024:1998 CISPR 24:1997	EN 55103-1:1996
EN 55103-2:1996		
EN 61000-3-2:1995 + A1:98 + A2:98 + A14 :00 IEC 61000-3-2:1995 + A1:97 + A2:98 IEC 61000-3-2 :2000	EN 61000-3-3:1995, IEC 61000-3-3:1994 EN 61000-3-11 :2000 IEC 61000-3-11 :2000	EN 61326-1:1997 + A1:98 IEC 61326:1997 + A1:98

BASIC STANDARDS

EN 61000-4-2:1995 + A1:98 IEC 61000-4-2:1995 + A1:98 (EN 60801-1:1993 IEC 801.2:1991 IEC 801.2:1984)	EN 61000-4-3:1996 + A1:98 IEC 61000-4-3:1995 + A1:98 (IEC 801.3:1984 ENV 50140:1993 + ENV 50204:1995)	EN 61000-4-4:1995 IEC 61000-4-4:1995 (IEC 801.4:1990)
EN 61000-4-5:1995 IEC 61000-4-5:1995 (ENV 50142:1994)	EN 61000-4-6:1996 IEC 61000-4-6:1996 (ENV 50141:1993)	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994		

Oslo, 24 April 2001

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Nemko World-wide Testing and Certification

ELA 4RTTE

EMC Laboratory Authorisation

Aut. No. : ELA 191

Testing of

Radio & Telecommunications Terminal Equipment

EMC Laboratory:	**QuieTek Corporation** **No. 75-2, Wang-Yeh Valley,** **Yung-Hsing, Chiung-Lin, Hsin-Chu,** **Hsin-Chu County, Taiwan R.O.C.**
Scope of Authorisation:	**All CENELEC and ETSI standards [ENs and ETSs that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards]. This authorisation covers all of the EMC-related testing and documentation within the scope of the *Radio and Telecommunications Terminal Equipment [R&TTE] Directive [i.e. 1999/5/EC].*** **NOTE: This authorisation also covers EMC-related testing and documentation that is within the scope of Article 10.5 of the *EMC Directive [i.e. 89/336/EEC as amended by 92/31/EEC]***

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfils the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union's Directives specified above

For Type Examination Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through **31. December 2003**.

Oslo, 24. April 2001

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