



EMC TEST REPORT

Product Name : Wireless 11g PCI Card

Model Number : MS-6834

Applicant : MICRO-STAR INT'L CO., LTD.

Address : 3F-5 No. 30, Tai-Yuan St, Zhu-Bei City, Hsinchu Hsien 302,
Taiwan

Received Date : Dec. 16, 2003

Tested Date : Dec. 16~24, 2003

Notes :

1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to testing, and be invalid as seperately used.
3. This report is invalid without examination stamp and signature of this institute.
4. The tested specimen(s) will be preserved for thirty days from the data issued.





Test Report Verification

Product Name : Wireless 11g PCI Card
Model Number : MS-6834
Applicant : MICRO-STAR INT'L CO., LTD.

Measurement Standard :

- EN 55022 : 1998 , Class B
- ETSI EN 301 489-01 V1.4.1 : (2002)
- ETSI EN 301 489-17 V1.2.1 : (2002)
EN 61000-4-2+A2 : 2001
EN 61000-4-3+A1 : 2002

Tested By :	<u> K. P. Pang </u> (K. P. Pang)	Date :	<u> Dec. 25, 2003 </u>
Reviewed By :	<u> Roger Sheng </u> (Roger Sheng)	Date :	<u> Dec. 25, 2003 </u>
Approved By :	<u> Chieh-De </u> (Chieh-De Tsai , Manager)	Date :	<u> Dec. 25, 2003 </u>

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.



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1. SUMMARY OF TEST RESULTS

Emission			
Standard	Item	Result	Remarks
EN 55022 : 1998	Conducted	PASS	
Class B	Radiated	PASS	

Immunity ETSI EN 301 489-17 V1.2.1 : (2002)			
Standard	Item	Result	Remarks
EN 61000-4-2+A2:2001	ESD	PASS	
EN 61000-4-3+A1:2002	RS	PASS	



2. GENERAL INFORMATION

2.1 General Statement

MEASUREMENT DEVIATION : Comply with standard in full

TRACEABILITY : This test result is traceable to national or international std.

2.2 Description of EUT

MANUFACTURER : MICRO-STAR INTERNATIONAL CO., LTD.

SAMPLE NAME : Wireless 11g PCI Card

MODEL NAME : MS-6834

POWER SOURCE : 3.3VDC (From PC)

NOTE : Antenna 1, Dipole Antenna (white) with external
irremovable cable, Antenna Gain : 2dBi, cable loss : 1dB.
Antenna 2, Dipole Antenna (black) , Antenna Gain : 2dBi.

Engineering Sample , Product Sample , Mass Product Sample



2.3 Description of Peripherals

(1) PC

MANUFACTURER : HP CORP.
MODEL NUMBER : t123d
SERIAL NUMBER : TW31720190
FCC ID : DOC
POWER CORD : Unshielded, Detachable, 1.8m

(2) Notebook PC

MANUFACTURER : COMPAQ CORP.
MODEL NUMBER : N800V
SERIAL NUMBER : 5Y3EKSQZD1TJ
FCC : DOC
POWER CORD : Unshielded, Detachable, 1.8m

(3) PRINTER

MANUFACTURER : HP Corp.
MODEL NUMBER : C6431D
SERIAL NUMBER : CN19T6S011
FCC ID : DOC
POWER SOURCE : 100-240VAC,50/60Hz,0.7A
SIGNAL CABLE : Shielded , Undetachable , 1.8m

(4) MODEM

MANUFACTURER : ZYXEL communication Corp.
MODEL NUMBER : Omni 56K
SERIAL NUMBER : S1Z4107729
F.C.C. ID : 1880MN156K
POWER SOURCE : 9VAC(From Power Adapter)
SIGNAL CABLE : Shielded , Undetachable , 1.8m

(5) MOUSE

MANUFACTURER : HP CORP.
MODEL NUMBER : M-S34
SERIAL NUMBER : LZE95050431
FCC ID : DZL211029
SIGNAL CABLE : Shielded , Undetachable , 1.8m
POWER SOURCE : 5VDC (from PC)

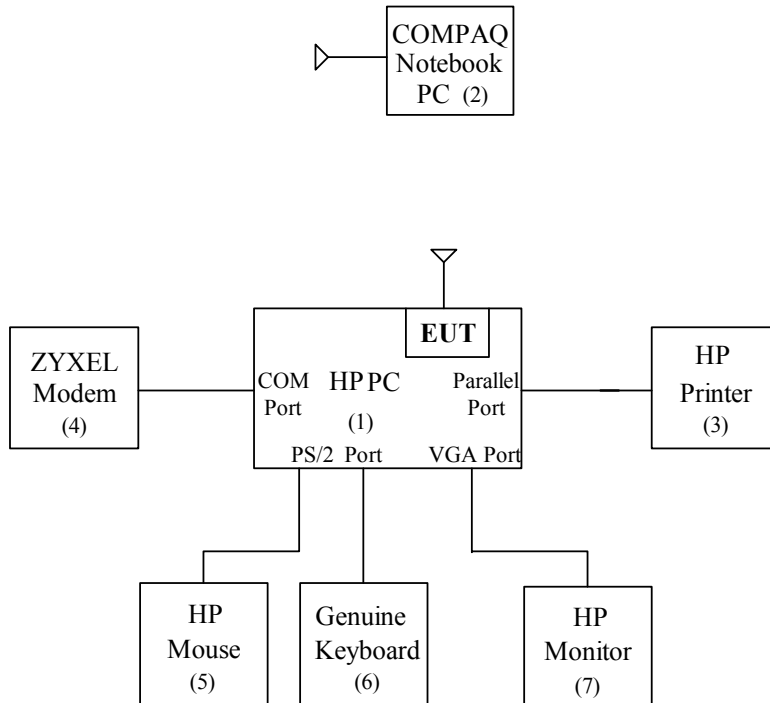
(6) KEYBOARD

MANUFACTURER : Genuine Company INC.
 MODEL NUMBER : K288
 SERIAL NUMBER : 206628619
 FCC ID : FKD46AK288
 POWER SOURCE : 5VDC (from PC)
 SIGNAL CABLE : Shielded , Undetachable , 1.8m

(7) MONITOR

MANUFACTURER : HP CORP.
 MODEL NUMBER : D8894A
 SERIAL NUMBER : CN00905269
 FCC ID : ARSCM569N
 POWER CORD : UnShielded , Detachable , 1.8m
 SIGNAL CABLE : Shielded , Undetachable , 1.8m

2.4 EUT & Peripherals Setup Diagram





2.5 EUT Operating Condition

1. Set up all equipments like the setup diagram.
2. PC (1) ping 192.168.1.90 -t to Notebook PC (2).
3. Notebook PC (2) ping 192.168.1.80 -t to PC (1).
4. All of the function are under run.
5. Start test.

2.6 Description of Open Site

SITE DESCRIPTION : FCC Certificate NO. : 90585
BSMI Certificate NO. : SL2-IN-E-0002
NVLAP Lab code : 200118-0
CNLA Certificate NO. : CNLA-ZL97018
VCCI Certificate NO. : R-1229, C-1250

NAME OF SITE : Ecom Sertech Corp. Hsinchu
(Spin-off from ITRI / ERSO on Apr. 01, 2003)

SITE LOCATION : Rm.258, Bldg.17, NO.195 , Sec. 4, Chung Hsing Rd.,
Chu-Tung Chen. Hsin-Chu, Taiwan 310 R.O.C.

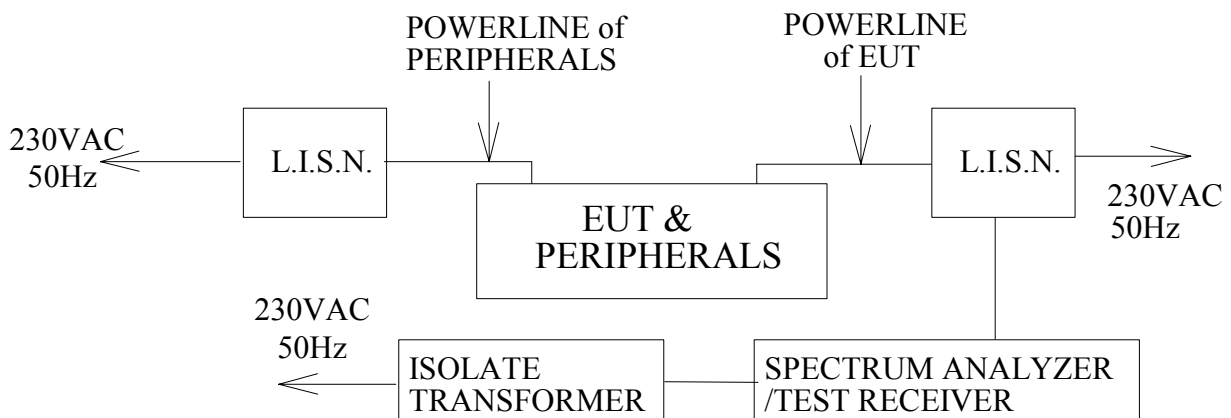
3. CONDUCTED POWERLINE TEST

3.1 Line Conducted Emission Measurement

3.1.1 Test Equipments

Manufacturer Or Type	Model No	Serial No.	Date of Calibration	Calibration Period	Remark
SPECTRUM ANALYZER & DISPLAY	HP 8568A	2235A02320	APR. 01, 2003	1 Year	PRETEST
QUASI-PEAK ADAPTER	HP 85650 A	2341A00672	APR. 01, 2003	1 Year	PRETEST
ISOLATION TRANSFORMER	SOLAR 7032-1	N/A	N/A	N/A	FINAL
L.I.S.N.	EMCO 3850/2	9311-1025 9401-1028	JAN. 08, 2003 For Characteristic impedance	1 Year	FINAL
			MAY 18, 2003 For Insertion loss		
TEST RECEIVER	ESHS 30	838550/003	JAN. 22, 2003	1 Year	FINAL
SHIELDED ROOM	KEENE 5983	NO.1	N/A	N/A	FINAL
PULSE LIMIT	R/S EHS3Z2	357.8810.52	JUL. 10, 2003	1 Year	FINAL
N TYPE COAXIAL CABLE	-----	-----	JUL. 10, 2003	1 Year	FINAL
50Ω TERMINATOR	-----	-----	JUL. 10, 2003	1 Year	FINAL

3.1.2 Test Setup





3.1.3 Conducted Power Line Emission Limit

Frequency (MHz)	Maximum Rf Line Voltage (dB μ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56	56-46
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

3.1.4 Test Procedure

The test procedure is performed in a 12ft \times 12ft \times 8ft(L \times W \times H) shielded room. the EUT along with its peripherals were placed on a 1.0m(W) \times 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chasis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chasis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

3.1.5 Measurement Uncertainty of Conducted Emission

The uncertainty of conducted emission is ± 1.36 dB.



3.1.6 Conducted Power Line Emission Measurement

The frequency spectrum from 0.15 MHz to 30 MHz was investigated.
 All emissions not reported below are more than 20 dB below the prescribed limits.
 Temperature : 26 °C Humidity : 65 % RH

Frequency (MHz)	Loss(dB)		Measurement				L1 Emission (dBμV)		L2 Emission (dBμV)		Limits (dBμV)	
			L1(dBμV)		L2(dBμV)		Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.
	L1	L2	Q.P.	A.V.	Q.P.	A.V.						
0.150	0.10	0.20	*	*	*	*	*	*	*	*	66.00	56.00
0.288	0.10	0.20	31.50	*	31.10	*	31.60	*	31.30	*	60.58	50.58
0.390	0.10	0.20	35.50	*	34.70	*	35.60	*	34.90	*	58.06	48.06
0.650	0.10	0.20	31.50	*	33.80	*	31.60	*	34.00	*	56.00	46.00
1.300	0.10	0.20	*	*	31.80	*	*	*	32.00	*	56.00	46.00
2.100	0.11	0.20	32.20	*	*	*	32.31	*	*	*	56.00	46.00
2.820	0.18	0.20	*	*	29.20	*	*	*	29.40	*	56.00	46.00
4.050	0.20	0.20	31.20	*	*	*	31.40	*	*	*	56.00	46.00
4.340	0.20	0.20	31.10	*	*	*	31.30	*	*	*	56.00	46.00
4.700	0.20	0.20	*	*	26.60	*	*	*	26.80	*	56.00	46.00
14.900	0.59	0.60	35.70	*	38.30	*	36.29	*	38.90	*	60.00	50.00
17.650	0.83	0.90	*	*	38.70	*	*	*	39.60	*	60.00	50.00
17.800	0.86	0.94	39.70	*	*	*	40.56	*	*	*	60.00	50.00
30.000	1.40	1.80	*	*	*	*	*	*	*	*	60.00	50.00

- REMARKS : 1. * Undetectable or the Q.P.values is lower than the limits of Ave.
 2. The EUT can be operated in TX and RX mode. After a preliminary test, the EUT in TX mode will have highest level of AC line conducted emission. The test results for EUT in TX mode are recorded in finial test report as representative.
 3. For Antenna 1 (white).



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Report No. : ER03-12-037C

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The frequency spectrum from 0.15 MHz to 30 MHz was investigated.
 All emissions not reported below are more than 20 dB below the prescribed limits.

Temperature : 26 °C

Humidity : 65 % RH

Frequency (MHz)	Loss(dB)		Measurement				L1 Emission (dBμV)		L2 Emission (dBμV)		Limits (dBμV)	
			L1(dBμV)		L2(dBμV)		Q.P.	A.V.	Q.P.	A.V.	Q.P.	A.V.
	L1	L2	Q.P.	A.V.	Q.P.	A.V.						
0.150	0.10	0.20	*	*	*	*	*	*	*	*	66.00	56.00
0.288	0.10	0.20	31.50	*	31.00	*	31.60	*	31.20	*	60.58	50.58
0.390	0.10	0.20	35.40	*	34.80	*	35.50	*	35.00	*	58.06	48.06
0.580	0.10	0.20	31.40	*	*	*	31.50	*	*	*	56.00	46.00
1.010	0.10	0.20	*	*	32.50	*	*	*	32.70	*	56.00	46.00
1.230	0.10	0.20	*	*	31.50	*	*	*	31.70	*	56.00	46.00
2.100	0.11	0.20	32.60	*	*	*	32.71	*	*	*	56.00	46.00
3.040	0.20	0.20	28.20	*	*	*	28.40	*	*	*	56.00	46.00
3.620	0.20	0.20	*	*	31.10	*	*	*	31.30	*	56.00	46.00
4.200	0.20	0.20	*	*	28.50	*	*	*	28.70	*	56.00	46.00
4.340	0.20	0.20	30.50	*	*	*	30.70	*	*	*	56.00	46.00
15.350	0.64	0.64	36.30	*	38.10	*	36.94	*	38.74	*	60.00	50.00
17.800	0.86	0.94	38.30	*	*	*	39.16	*	*	*	60.00	50.00
18.750	0.90	0.93	*	*	38.40	*	*	*	39.33	*	60.00	50.00
30.000	1.40	1.80	*	*	*	*	*	*	*	*	60.00	50.00

- REMARKS : 1. * Undetectable or the Q.P.values is lower than the limits of Ave.
 2. The EUT can be operated in TX and RX mode. After a preliminary test, the EUT in TX mode will have highest level of AC line conducted emission. The test results for EUT in TX mode are recorded in finial test report as representative.
 3. For Antenna 2 (black).

3.1.7 Photos of Conduction Test

For Antenna 1 (white)



For Antenna 2 (black)



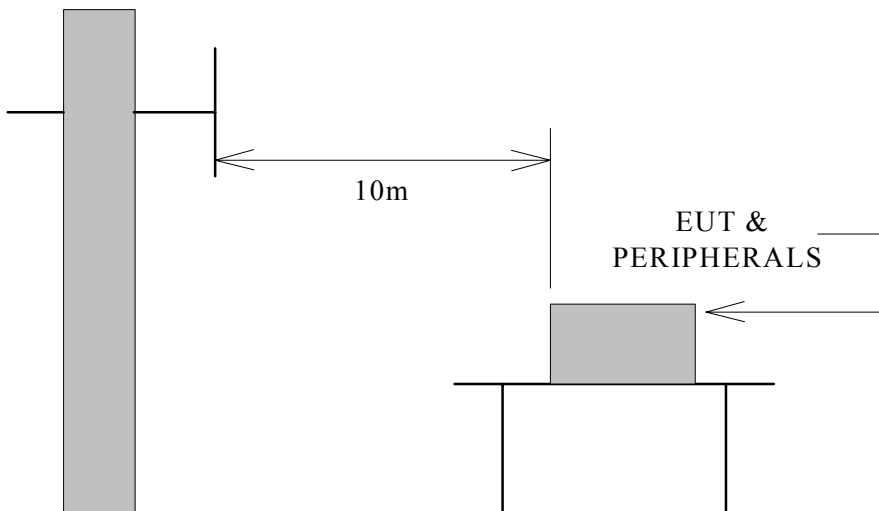
3.2 Radiated Emission Test

3.2.1 Test Equipments

Manufacturer or Type	Model No	Serial No	Date of Calibration	Calibration Period	Remark
CHASE BI-LOG ANTENNA	CBL6112B	2421	MAR. 20, 2003	1 Year	FINAL
R/S TEST RECEIVER	ESCS 30	835418/008	JUL. 30, 2003	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	012	JUL. 10, 2003	1 Year	FINAL

3.2.2 Test Setup

The diagram below shows the test setup which is utilized to make these measurements.



Antenna Elevation Variable



3.2.3 Radiation Limit

All emanation from a class B computing device or system , including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below :

Frequency (MHz)	Distance (METERS)	Field Strengths(dB μ V/m)	
		CLASS A	CLASS B
30—230	10	40	30
230—1000	10	47	37

- Note : (1)The tighten limit shall apply at the edge between two frequency bands.
(2)Distance refers to the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.

3.2.4 Test Procedure

The devices under test were placed on a rotatable table top 0.8 meter above ground. The table was rotated 360 degrees to determine the position of the highest radiation. EUT is set 10 meters from the interference receiving antenna which is mounted on the top of a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength Both horizontal polarization and vertical polarization of the antenna are set to make the measurement. The bandwidth setting on the E.M.I. meter (R/S TEST RECEIVER) is 120 KHz. The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

3.2.5 Measurement Uncertainty of Radiated Emission

The uncertainty of radiated emission is ± 2.72 dB.



3.2.6 Radiated RF Noise Measurement

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.

All readings are quasi-peak values.

Temperature : 19.4 °C

Humidity : 59 % RH

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Meter Reading at 10m(dBμV/M)		Limits at 10m (dBμV/M)	Emission Level at 10m(dBμV/M)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	17.98	0.90	*	*	30.00	*	*
298.69	13.39	3.59	8.40	9.60	37.00	25.38	26.58
310.33	13.74	3.66	9.40	12.30	37.00	26.81	29.71
430.61	17.12	4.41	9.80	13.50	37.00	31.33	35.03
502.39	18.02	4.91	8.90	10.30	37.00	31.83	33.23
609.09	19.31	5.45	8.30	9.50	37.00	33.06	34.26
710.94	19.95	5.95	8.10	9.30	37.00	34.00	35.20
815.70	20.71	6.43	7.90	9.60	37.00	35.04	36.74
1000.00	21.30	7.00	*	*	37.00	*	*

- REMARKS :
- *Undetectable
 - Emission level (dBμV/M) =Antenna Factor (dB/M) + Cable loss (dB) + Meter Reading (dBμV/M).
 - The test data marked in gray background means the EUT emission data is located in the margin uncertainty range of emission limits.
 - The RF-Chip combined with 802.11b&g mode. It will auto-detect the situation then switch the mode. The 802.11g mode is the worse case than the 802.11b mode. So only the 802.11g mode data are recorded in final test report.
 - For Antenna 1 (white).



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All readings are quasi-peak values.

Temperature : 19.4 °C

Humidity : 59 % RH

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Meter Reading at 10m(dBμV/M)		Limits at 10m (dBμV/M)	Emission Level at 10m(dBμV/M)	
			Horizontal	Vertical		Horizontal	Vertical
30.00	17.98	0.90	*	*	30.00	*	*
298.69	13.39	3.59	8.20	9.50	37.00	25.18	26.48
310.33	13.74	3.66	9.10	12.30	37.00	26.51	29.71
430.61	17.12	4.41	9.60	13.40	37.00	31.13	34.93
502.39	18.02	4.91	9.00	10.20	37.00	31.93	33.13
609.09	19.31	5.45	8.40	9.20	37.00	33.16	33.96
710.94	19.95	5.95	8.20	9.10	37.00	34.10	35.00
815.70	20.71	6.43	8.00	9.10	37.00	35.14	36.24
1000.00	21.30	7.00	*	*	37.00	*	*

REMARKS : 1. *Undetectable

2. Emission level (dBμV/M) =Antenna Factor (dB/M) + Cable loss (dB)
+ Meter Reading (dBμV/M).

3. The test data marked in gray background means the EUT emission data is located in the margin uncertainty range of emission limits.

4. The RF-Chip combined with 802.11b&g mode. It will auto-detect the situation then switch the mode. The 802.11g mode is the worse case than the 802.11b mode. So only the 802.11g mode data are recorded in final test report.

5. For Antenna 2 (black).

3.2.7 Photos of Open Site

For Antenna 1 (white)





For Antenna 2 (black)







4. IMMUNITY TEST

4.1 Test Equipment

Use	Manufacturer or Type	Model No.	Date of Calibration
√	HP Vectra 486/33M Computer	D2871A	N/A
√	HP VGA Monitor	D1193A	N/A
√	HP Keyboard	C1405B #ABO	N/A
√	HP VE 4/66 Computer	VE 4-66	N/A
√	IBM VGA Monitor	2248-002	N/A
√	HP Keyboard	C1405B#ABO	N/A
√	KeyTek Control Center	ECAT 103	MAY. 09, 2003
	Pacific Programmable Controller	UPC-32	MAY. 09, 2003
	Xitron Power Analyzer	2503AH	MAY. 09, 2003
	Pacific AC Power Source	3120AMXT-UPC32/MEP94	MAY. 09, 2003
	KeyTek Reference Impedance Module	ERI3	MAY. 09, 2003
√	KeyTek Control Center	ECAT 103	NOV. 23, 2003
√	KeyTek EFT/B Source	E421	NOV. 23, 2003
√	KeyTek Surge Network	E510,E503	NOV. 23, 2003
√	KeyTek EFT/B & Surge Coupler/Decoupler	E4552	NOV. 23, 2003
√	KeyTek Swell/Dip Interrupt Source	EP62	NOV. 13, 2003
	Noise Lightning Surge Simulator	LSS-712	FEB. 18, 2003
	KeyTek EFT Source	CE-40	JUL. 17, 2003
	Noise Impulse Noise Simulator	INS-410	FEB. 18, 2003
√	NoiseKen ESD Simulator	ESS-2000	FEB. 20, 2003
	KeyTek Surge Network	E503, E510A, E505A, E4554	JAN. 23, 2003
√	SCHWARZBECK Bilog Antenna	VULB9163	MAY 30, 2003
√	R&S Signal Generator Freq. Range : 9KHz ~ 2.08GHz	SMY02	JUL. 27, 2003
√	Boonton RF Voltmeter	9200B	JUL. 27, 2003
	NoiseKen Fast Transient Noise Simulator	FNS-105L	FEB. 18, 2003
	HOLADAY	HI-3624	OCT. 23, 2003
	FCC Coupling Decoupling Network Freq. range : 150KHz~230MHz	801-M4-25	SEPT. 31, 2003
	SCHAFFNER Coupling Decoupling Network Freq. range : 150KHz~230MHz	M325	OCT. 07, 2003
√	FCC Coupling Decoupling Network Freq. range : 150KHz~230MHz	801-M2-25	SEPT. 31, 2003
	FRANKONIA Coupling Decoupling Network Freq. Range : 150MHz ~ 230MHz	CDN RJ45	MAY. 02, 2003
	Keytek ESD Simulator	MZ-15/EC	JUN. 17, 2003
√	AR Amplifier Freq. Range : 10KHz ~ 220MHz	100W/150L	N/A
√	AR Amplifier Freq. Range : 25MHz ~ 1000MHz	100W1000M1A	N/A
√	DANA TORINO-ITALY .Power Frequenty Magnetic Field	.DAS-G60 .DAS 1S 1000	N/A
√	SCHAFFNER EM CLAMP	KEMZ 801	NOV. 05, 2003
√	MILMEGA LINEAR AMPLIFIER Freq. Range : 0.8-2.5GHz	AS0825-35	JUL. 14, 2003



4.2 Performance Criteria Description

Criteria	During test	After test
A	Shall operate as intended. May show degradation of performance (see note 1). Shall be no loss of function. Shall be no unintentional transmission.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmission.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note2).

Note 1 : Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance.
 If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonable expect from the apparatus if used as intended.

Note 2 : No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonable expect from the apparatus if user as intended.



4.3 Description of Peripherals

(1) PC

MANUFACTURER : HP CORP.
MODEL NUMBER : a308d
SERIAL NUMBER : TWL34400D2
INPUT POWER : 100-240VAC, 50/60Hz, 2/4A

(2) Keyboard

MANUFACTURER : HP CORP.
MODEL NUMBER : SK-2502C
SERIAL NUMBER : M00030429
INPUT POWER : 5VDC (From PC)

(3) Mouse

MANUFACTURER : IBM CORP.
MODEL NUMBER : M-SAU-IBM6
FCC ID : JNE2110
INPUT POWER : 5VDC (From PC)

(4) Monitor

MANUFACTURER : IBM CORP.
MODEL NUMBER : 2248-002
SERIAL NUMBER : 5506721
INPUT POWER : 100-240VAC, 50/60Hz, 1.2A

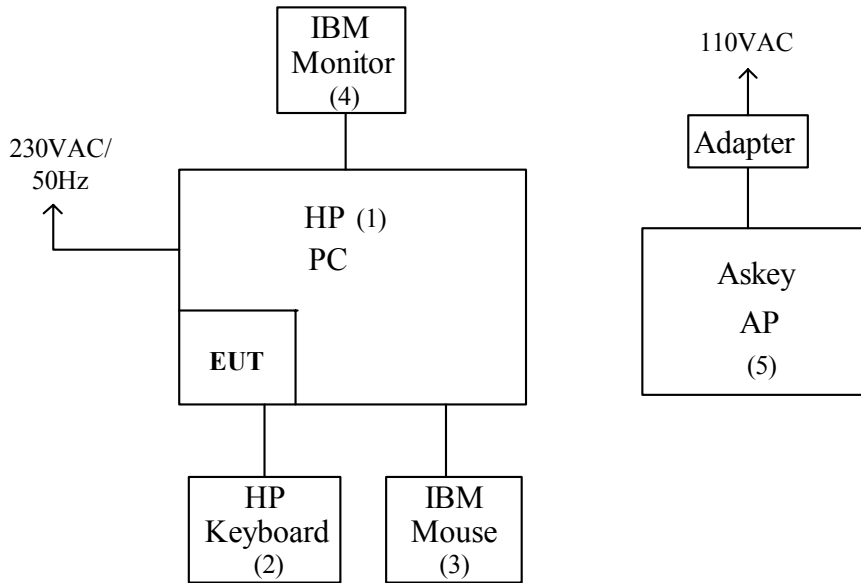
(5) AP

MANUFACTURER : ASKEY CORP.
MODEL NUMBER : HN294d
INPUT POWER : 12VDC, 1A

Adapter

MANUFACTURER : yHi
MODEL NUMBER : YC-1015-12
SERIAL NUMBER : 00021966
INPUT POWER : 100-120VAC, 60Hz, 0.4A
OUTPUT POWER : 12VDC, 1A

4.4 EUT & Peripherals Setup Diagram





4.5 Electrostatic Discharge Test

4.5.1 Climatic Conditions

Ambient temperature : 24 °C ~ 26 °C

Relative humidity : 55 % ~ 60 %

Atmospheric pressure : 99.0 kpa

4.5.2 Test Requirement and Procedure

The test was based on EN 61000-4-2+A2 (2001) and ETSI EN 301 489-17 (2002)

4.5.3 Test Conditions

Source voltage and frequency : 230VAC/50Hz, Single phase

R-C network : 330 Ω, 150 PF.

Test Level :

Air Discharge : 2 , 4 , 8 KV

Contact Discharge : 2 , 4 KV

HCP Discharge : 2 , 4 KV

VCP Discharge : 2 , 4 KV

Polarity : Positive / Negative

Number of test :

10 Discharges / Sensitive Polarity for Air Discharge.

10 Discharges / Sensitive Polarity for Contact, HCP and VCP Discharge.

Time between test : 1 Sec.



4.5.4 Measurement Uncertainty of Electrostatic Discharge Test

The uncertainty of output voltage indication is $\pm 5\%$

4.5.5 Test Results

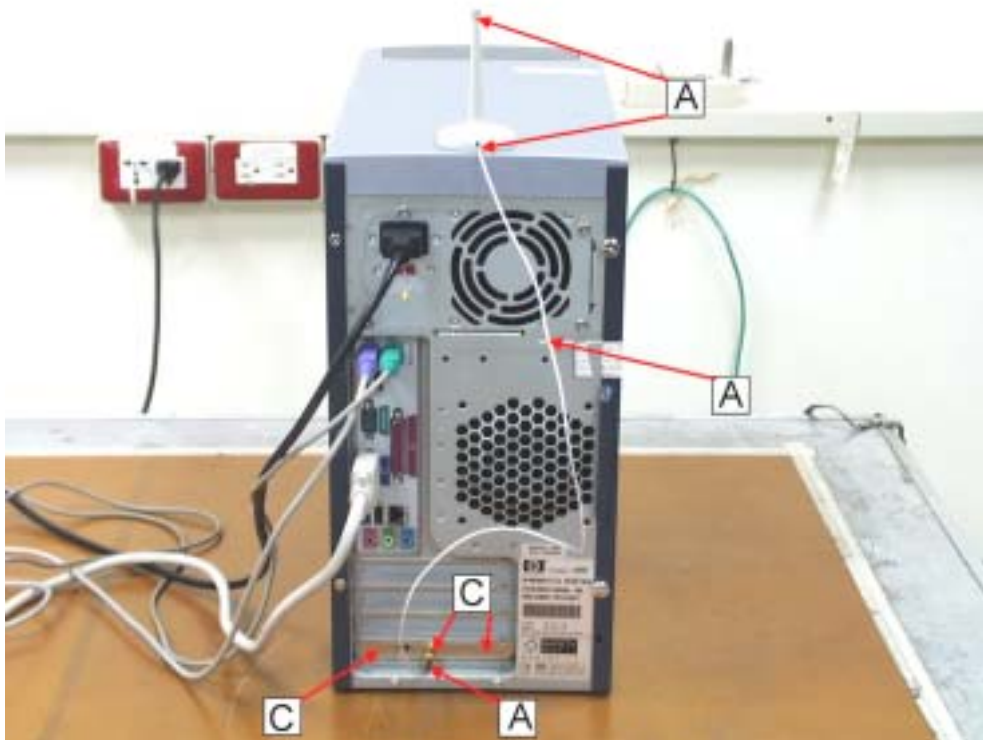
For Antenna 1 (white) ; Antenna 2 (black)

Severity level	Test Requirement Polarity	ETSI EN 301 489-17 (2002) requirement				Performance verification (criteria)				Test results
		Air discharge	Contact discharge	HCP discharge	VCP discharge	Air discharge	Contact discharge	HCP discharge	VCP discharge	
2 KV	+	B	B	B	B	A	A	A	A	pass
	-	B	B	B	B	A	A	A	A	pass
4 KV	+	B	B	B	B	A	A	A	A	pass
	-	B	B	B	B	A	A	A	A	pass
8 KV	+	B	NR	NR	NR	A	NR	NR	NR	pass
	-	B	NR	NR	NR	A	NR	NR	NR	pass

NR means there is no requirement.

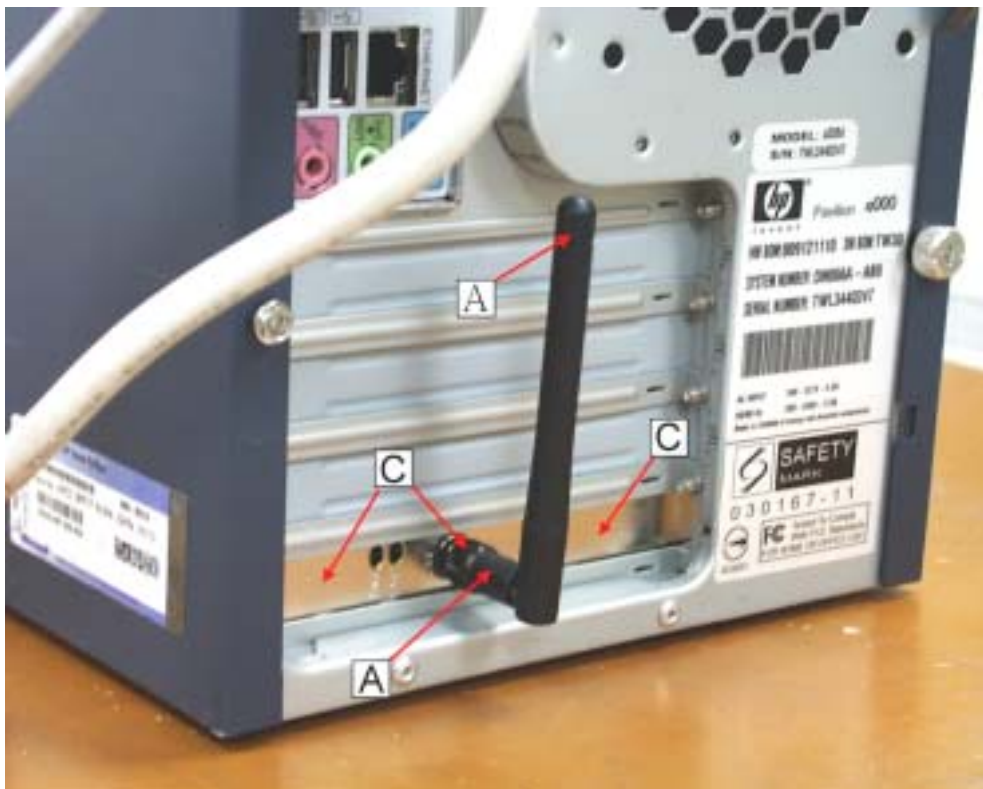
4.5.6 Photos of Electrostatic Discharge Test

For Antenna 1 (white)



※ A : Air Discharge ; C : Contact Discharge

For Antenna 2 (black)



※ A : Air Discharge ; C : Contact Discharge

4.6 Radiated Susceptibility Test

4.6.1 Climatic Conditions

Ambient temperature : 24 °C ~ 26 °C

Relative humidity : 55 % ~ 60 %

Atmospheric pressure : 99.0 kpa

4.6.2 Test Requirement and Procedure

The test was based on EN 61000-4-3+A1 (2002) and ETSI EN 301 489-17 (2002)

4.6.3 Test Conditions

Source voltage and frequency : 230VAC/50Hz, Single phase

Sweeping frequency : 80 MHz ~ 1000MHz, 1400MHz ~ 2000MHz.

Test Level : 3V/m.

Measuring distance : 3 meters

The four sides of EUT are tested (Front, Rear, Left, Right).

Antenna Polarization : Horizontal and Vertical polarizations.

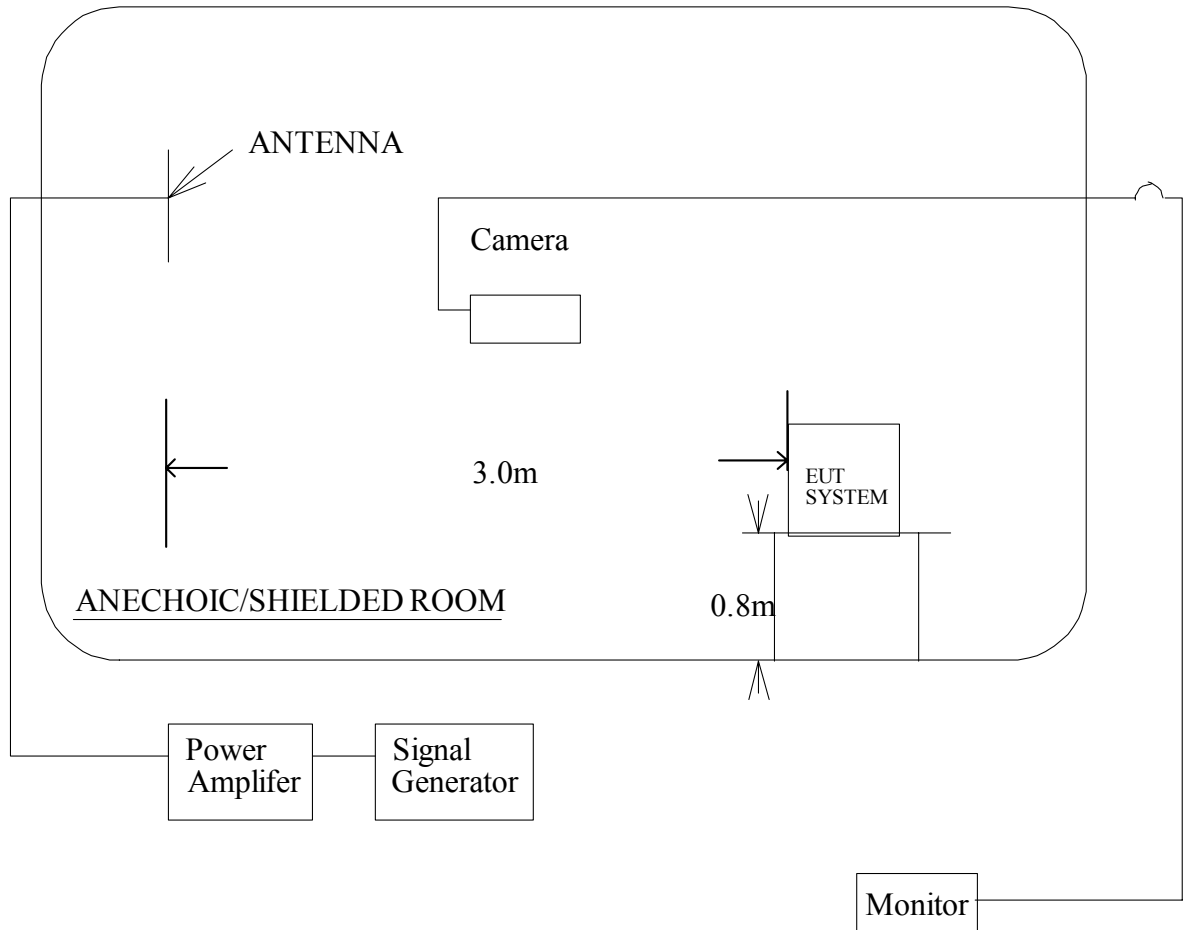
The generated signal amplitude was 80% AM (1KHz) amplitude modulated, the step size was 1% and test duration was 1000ms

4.6.4 Measurement Uncertainty of Radiated Susceptibility Test

The uncertainty of radiated susceptibility is ± 2.93 dB

4.6.5 Structure of The Test :

Setup configuration





4.6.6 Test Result

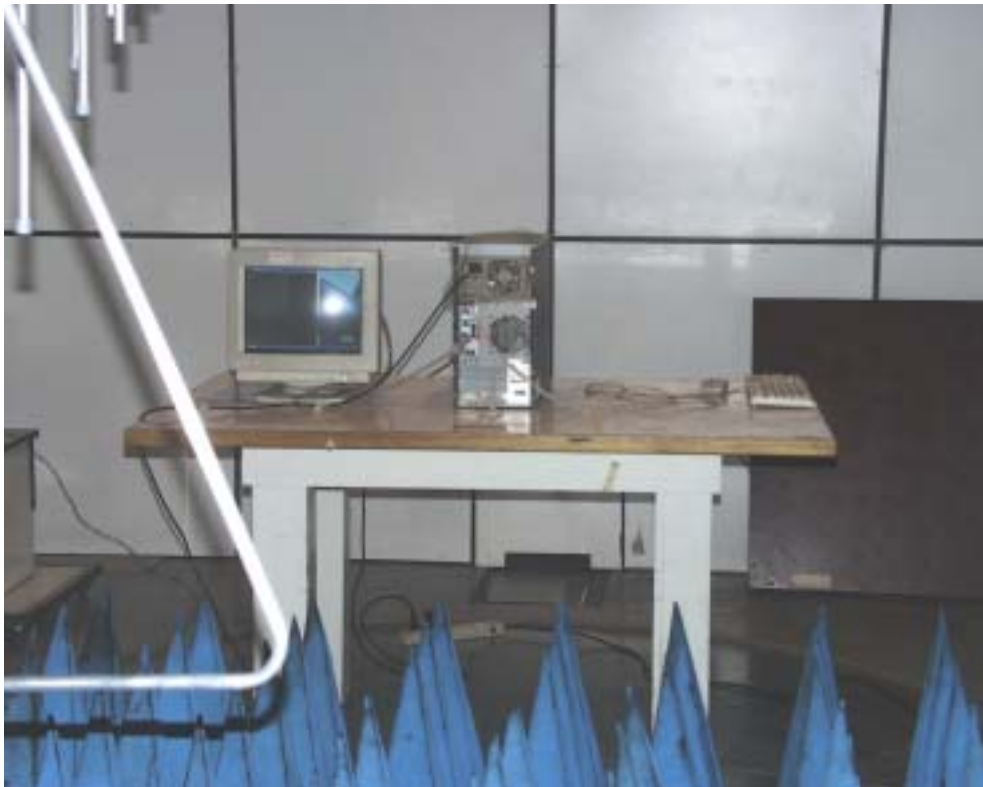
Frequency range : 80 MHz ~ 1000MHz, 1400MHz ~ 2000MHz.

For Antenna 1 (white) ; Antenna 2 (black)

Severity level (V/m)	ETSI EN 301 489-17 (2002) requirement		Performance verification (criteria)		Test results
	A	A	A	A	Pass

4.6.7 Photos of Radiated Susceptibility Test

For Antenna 1 (white)



For Antenna 2 (black)

