



## ELECTROMAGNETIC COMPATIBILITY TEST REPORT

Company : ACCTON TECHNOLOGY CORP.  
Address : NO.1, Creation Rd. III, Science-Based Industrial Park, Hsinchu  
30077, Taiwan, R.O.C.  
Sample Name : 10/100 Mbs 'Retail' Hub  
Model : 3C19261  
Date Received : JUN. 01, 1999  
Date Tested : JUN. 01, 1999  
Date Retested : SEP. 29, 1999

### MEASUREMENT REQUIREMENT USED :

FCC RULES AND REGULATION PART 15 SUBPART B  
CLASS B OCTOBER 1998 AND ANSI C63.4 MAY 1992  
CISPR 22, CLASS B, 1996

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.

	Name	Signature	Date
Testing Engineer	C.F.Wu/NVLAP	<u>C. F. Wu</u>	Oct. 4 , 1999
Approving Manager	Paul Y. Liao/NVLAP	<u>Paul Y. Liao</u>	Oct. 5 , 1999

### Notes :

1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid as separately 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 date issued.
5. This is a NIST/NVLAP accredited report but not constituted and endorsed by US government.



## TABLE OF CONTENTS

TITLE	PAGE NO.
1. GENERAL INFORMATION.....	3
1.1 GENERAL STATEMENT.....	3
1.2 DESCRIPTION OF EUT   POWER .....	3
1.3 DESCRIPTION OF PERIPHERALS.....	4-5
1.4 EUT & PERIPHERALS SETUP DIAGRAM.....	6
1.5 EUT OPERATING CONDITION.....	7
1.6 DESCRIPTION OF TEST SITE .....	7
2. CONDUCTED EMISSION TEST .....	8
2.1 TEST EQUIPMENTS .....	8
2.2 TEST SETUP .....	8
2.3 CONDUCTED POWER LINE EMISSION LIMIT.....	9
2.4 TEST PROCEDURE.....	9
2.5 UNCERTAINTY OF CONDUCTED EMISSION .....	9
2.6 CONDUCTED RF VOLTAGE MEASUREMENT .....	10
2.7 PHOTOS OF CONDUCTION TEST .....	11
3. RADIATED EMISSION TEST .....	12
3.1 TEST EQUIPMENTS .....	12
3.2 TEST SETUP .....	12
3.3 RADIATION LIMIT .....	13
3.4 TEST PROCEDURE.....	13
3.5 UNCERTAINTY OF RADIATED EMISSION .....	13
3.6 RADIATED RF NOISE MEASUREMENT.....	14
3.7 PHOTOS OF OPEN SITE .....	15-16



## **1. GENERAL INFORMATION**

### **1.1 GENERAL STATEMENT**

MEASUREMENT DEVIATION : Comply with standard in full

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

### **1.2 DESCRIPTION OF EUT      POWER**

MANUFACTURER : ACCTON TECHNOLOGY CORP.

SAMPLE NAME    : 10/100 Mbs 'Retail' Hub

MODEL NUMBER   : 3C19261

SERIAL NUMBER   : Not applicable

POWER SUPPLY    : 9VDC(from power adapter)

POWER CORD      : Unshielded cable, 1.8m

Engineering Sample      , product Sample ☐ , Mass Product Sample ☐



## **1.3 DESCRIPTION OF PERIPHERALS**

### **( 1 ) PC**

MODEL NUMBER : NetServer Ldpro 6/180  
SERIAL NUMBER : SG70100104  
MANUFACTURER : HP CORP.  
F.C.C. ID : B94HPLS107  
POWER CORD : Unshielded , Detachable , 1.8m

### **( 2 ) MONITOR**

MODEL NUMBER : 6546-00N  
SERIAL NUMBER : 23-M6334  
MANUFACTURER : IBM CORP.  
F.C.C. ID : A3KM065  
POWER CORD : UnShielded , Detachable , 1.8m  
SIGNAL CABLE : Shielded , Undetachable , 1.5m

### **( 3 ) KEYBOARD**

PRODUCT NUMBER : C1405C#AB0  
PART NUMBER : 3625M60145  
MANUFACTURER : HP CORP.  
F.C.C. ID : B94C1405X  
POWER SOURCE : 5VDC (from PC)

### **( 4 ) PRINTER**

MODEL NUMBER : 5152-002  
SERIAL NUMBER : 0754365  
MANUFACTURER : IBM CORP.  
FCC ID : BKM9A85152002  
POWER CORD : Shielded , Undetachable , 1.5m  
SIGNAL CABLE : Shielded , Detachable , 1.5m

### **( 5 ) MODEM**

MODEL NUMBER : 4007AM  
SERIAL NUMBER : A10740073303  
MANUFACTURER : Hayes Microcomputer products Inc.  
FCC ID : -----  
SIGNAL CABLE : Shielded , Detachable , 1.8m  
POWER Adapter :  
Model number : DV-1215A  
Input : 120VAC/60Hz  
Output : 13.8VAC



**( 6 ) PC**

MODEL NUMBER : Vectra VE 5/133 series 3  
SERIAL NUMBER : SG72200556  
MANUFACTURER : HP CORP.  
F.C.C. ID : B94VECTRAVE53  
POWER CORD : Unshielded , Detachable , 1.8m

**( 7 ) MONITOR**

MODEL NUMBER : JC-1404HMA  
SERIAL NUMBER : 08D00346  
MANUFACTURER : NEC CORP.  
F.C.C. ID : A3D5YRJJC-1404HMA  
POWER CORD : UnShielded , Detachable , 1.8m  
SIGNAL CABLE : Shielded , Undetachable , 1.5m

**( 8 ) KEYBOARD**

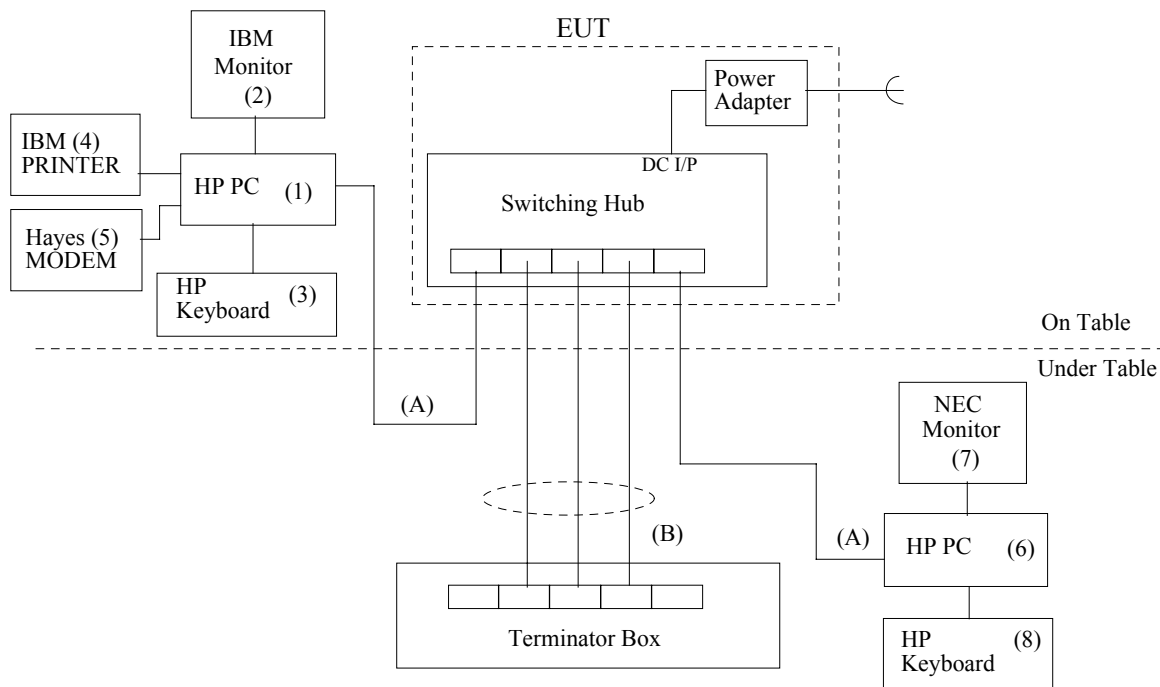
MODEL NUMBER : E03633WLTW-C  
PART NUMBER : -----  
MANUFACTURER : HP CORP.

**( 9 ) Cables**

	Type	Connector	Shielded	length
(A)	Uncross-over twisted-pair	RJ-45, plastic	No	15m
(B)	Cross-over Twisted-pair	RJ-45, plastic	No	3m



## 1.4 EUT & PERIPHERALS SETUP DIAGRAM



The indicated numbers (1)(2)(A)-----please refer to item 1.2



## **1.5 EUT OPERATING CONDITION**

1. Powered on all equipments.
2. Run “ACCTEST.EXE” on both PCs.
3. PC(1) chose 10Mbps and PC(4) chose 100Mbps.
4. Pressed “F2” to start working
5. Start testing.

## **1.6 DESCRIPTION OF TEST SITE**

SITE DESCRIPTION : FCC certificate NO. :31040/SIT  
TÜV certificate NO. :I9664582-9610  
Lloyd's certificate NO. :LA003  
BSMI certificate NO. :SL2-IN-E-0002  
NVLAP Lab code 200118-0  
CNLA certificate NO. :CNLA-ZL97018  
VCCI certificate NO. : R-706, C-650

NAME OF SITE : Electronics Research & Service Organization  
Industrial Technology Research Institute

SITE LOCATION : K500, 195-4 , sec. 4, Chung Hsing Rd.,  
Chu-Tung Chen. Hsin-Chu, Taiwan 31015 R.O.C.



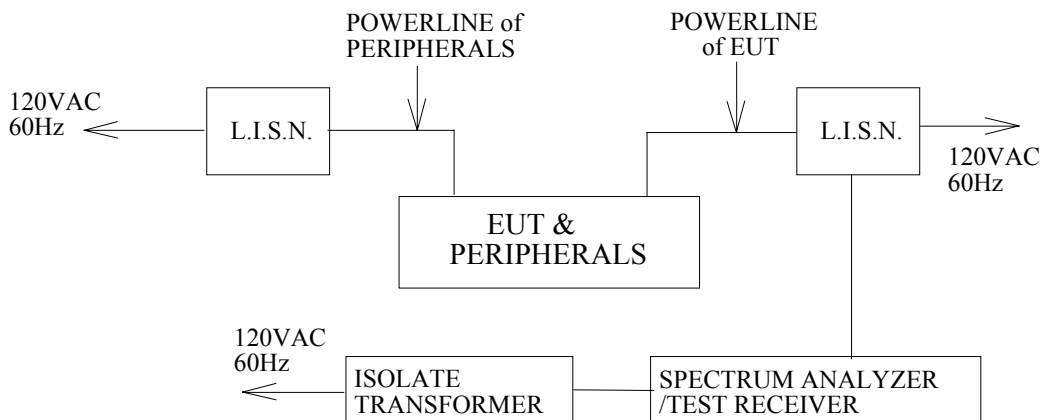
## 2. CONDUCTED EMISSION TEST

### 2.1 TEST EQUIPMENTS

The following test equipments are used during the conducted powerline tests :

MANUFACTURER OR TYPE	MODEL No	SERIAL NO.	DATE OF CALIBRATION	CALIBRATION PERIOD	REMARK
SPECTRUM ANALYZER & DISPLAY	HP 8568A	2235A02320	MAR. 18, 1999	1 Year	PRETEST
QUASI-PEAK ADAPTER	HP 85650 A	2341A00672	MAR. 18, 1999	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	MAR. 25, 1999 For Characteristic impedance JUN. 11, 1999 For Insertion loss	1 Year	FINAL
TEST RECEIVER	R/S ESH3	8720791118	JUL. 29, 1999	1 Year	FINAL
SHIELDED ROOM	KEENE 5983	NO.1	N/A	N/A	FINAL
PULSE LIMIT	R/S EHS3Z2	357.8810.52	JUL. 22, 1999	1 Year	FINAL
N TYPE COAXIAL CABLE	-----	-----	JUL. 05, 1999	1 Year	FINAL
50Ω TERMINATOR	-----	-----	JUL. 14, 1999	1 Year	FINAL

### 2.2 TEST SETUP







## 2.3 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY (MHz)	MAXIMUM RF LINE VOLTAGE (dB 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

## 2.4 TEST PROCEDURE

The test procedure is performed in a 12ft×12ft×8ft(L×W×H) shielded room. the EUT along with its peripherals were placed on a 1.0m(W)× 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.

## 2.5 UNCERTAINTY OF CONDUCTED EMISSION

The uncertainty of conducted emission is ±1.36dB.



## 2.6 CONDUCTED RF VOLTAGE 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 : 25

Humidity : 50 % RH

FREQUENCY  (MHz)	READING(dB V)				LIMITS (dB V)	
	ONE END & GRD'D		THE OTHER END & GRD'D			
	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.156	48.00	*	*	*	65.69	55.69
0.157	*	*	49.10	*	65.60	55.60
0.194	46.50	*	47.80	*	63.84	53.84
0.246	44.00	*	45.90	*	61.91	51.91
0.442	38.00	*	*	*	57.02	47.02
0.497	*	*	37.60	*	56.05	46.05
0.862	*	*	32.40	*	56.00	46.00
10.000	35.50	*	34.30	*	60.00	50.00
14.335	37.40	*	38.10	*	60.00	50.00
16.022	44.90	44.20	45.80	45.00	60.00	50.00
20.000	42.70	34.20	42.60	34.10	60.00	50.00
30.000	*	*	*	*	60.00	50.00

REMARKS : 1. Remark “\*” means Undetectable or the Q.P.values is lower than the limits of Ave.

2. Retest date : SEP. 29, 1999



## 2.7 PHOTOS OF CONDUCTION TEST



Comp. : ACCTON TECHNOLOGY CORP.

Model : 3C19261



### 3. RADIATED EMISSION TEST

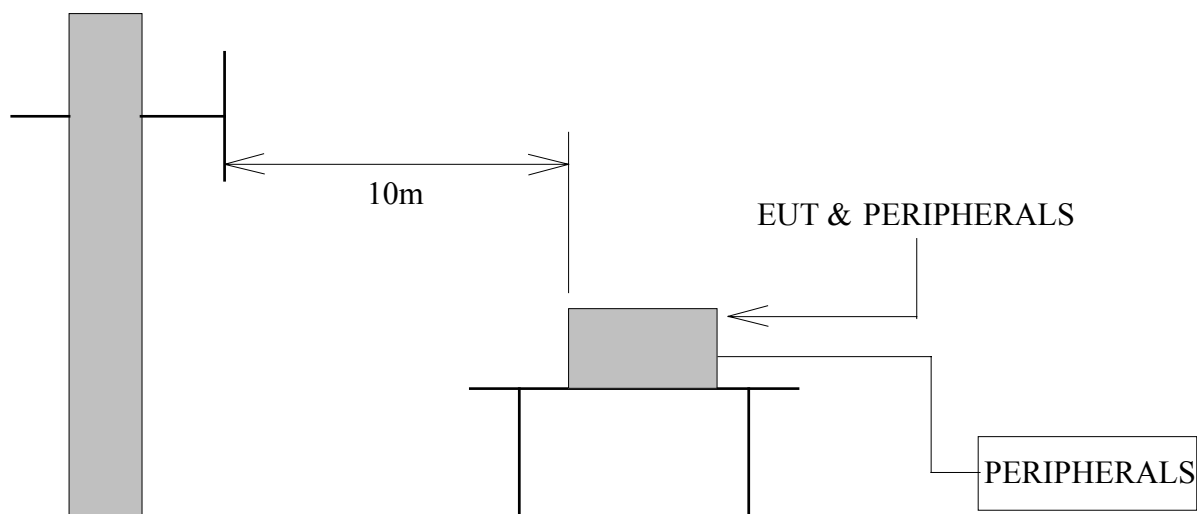
#### 3.1 TEST EQUIPMENTS

The following test equipments are utilized in making the measurements contained in this report.

MANUFACTURER OR TYPE	MODEL NO	SERIAL NO	DATE OF CALIBRATION	CALIBRATION PERIOD	REMARK
CHASE BI-LOG ANTENNA	CBL6111A	1546	MAY.23, 1999	1 Year	FINAL
R/S TEST RECEIVER	ESMI	842088/005 841978/008	JUL.29, 1999	1 Year	FINAL
OPEN SITE	-----	No.1	JUN. 29, 1999	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	015	JUL. 06, 1999	1 Year	FINAL

#### 3.2 TEST SETUP

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



Antenna Elevation Variable



### 3.3 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 V/M)	
		CLASS A	CLASS B
30 230	10	40	30
230 1000	10	47	37

Note : (1)The tighter 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.

### 3.4 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 ESMI) is 120 KHz.

The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

### 3.5 UNCERTAINTY OF RADIATED EMISSION

The uncertainty of radiated emission is  $\pm 2.72$ dB.



### 3.6 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 : 27

Humidity : 72 RH

FREQ- UENCY  (MHz)	ANTENNA FACTOR  (dB/m)	CABLE LOSS  (dB)	METER READING AT10m(dB $\mu$ V)		LIMITS  (dB $\mu$ V/m)	EMISSION LEVEL AT10m(dB $\mu$ V/m)	
			HORIZON- TAL	VERTICAL		HORIZON- TAL	VERTICAL
30.00	19.50	1.06	*	*	30.00	*	*
124.97	12.21	2.06	7.94	14.80	30.00	22.21	29.07
199.97	9.60	2.63	14.94	14.94	30.00	27.17	27.17
249.97	12.51	2.97	14.52	15.92	37.00	30.00	31.40
374.97	15.20	3.75	11.86	7.94	37.00	30.81	26.89
499.97	17.43	4.40	8.51	13.40	37.00	30.34	35.23
624.97	18.61	5.02	2.06	1.78	37.00	25.69	25.41
699.98	18.82	5.40	5.56	3.18	37.00	29.78	27.40
724.98	19.03	5.52	5.00	6.82	37.00	29.55	31.37
749.98	19.25	5.65	6.15	6.54	37.00	31.05	31.44
762.48	19.36	5.71	5.42	5.28	37.00	30.49	30.35
774.98	19.46	5.77	10.44	5.14	37.00	35.67	30.37
799.98	19.68	5.90	10.04	5.56	37.00	35.62	31.14
824.98	19.82	6.02	6.38	4.86	37.00	32.22	30.70
837.48	19.91	6.09	1.64	3.88	37.00	27.64	29.88
849.98	20.01	6.15	5.16	5.28	37.00	31.32	31.44
874.98	20.20	6.27	4.16	4.72	37.00	30.63	31.19
999.97	21.18	6.80	2.48	6.51	37.00	30.46	34.49
1000.00	24.86	6.80	*	*	37.00	*	*

REMARKS 1. Remark “\*” means Undetectable

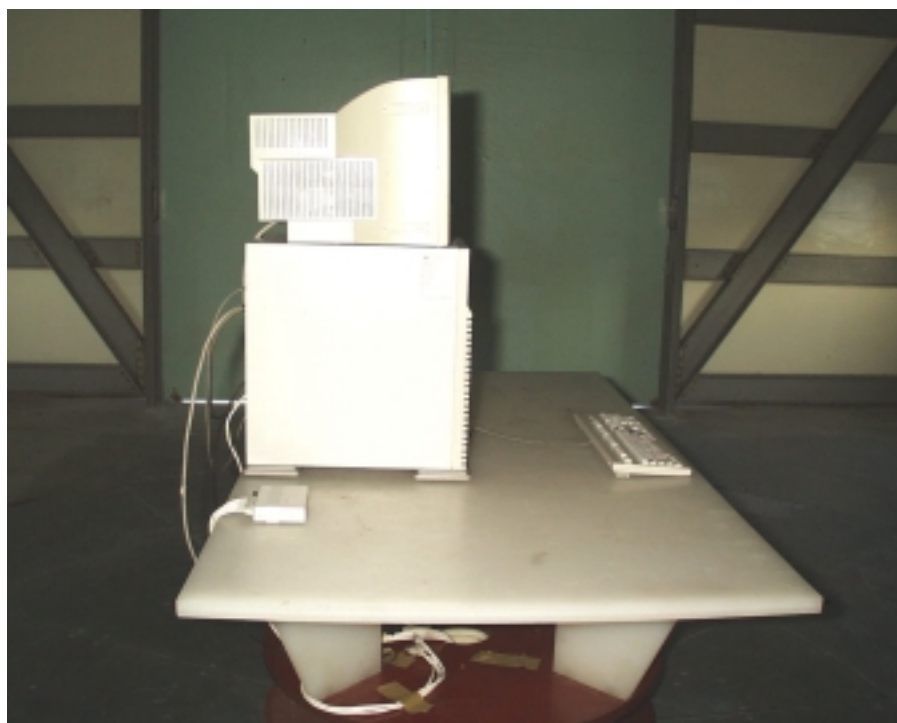
2. Emission level (dB  $\mu$ V/m) = Antenna Factor (dB/m) + Cable loss (dB)  
+ Meter Reading (dB  $\mu$ V).

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

4. Retest date : SEP. 29, 1999



### **3.7 PHOTOS OF OPEN SITE**

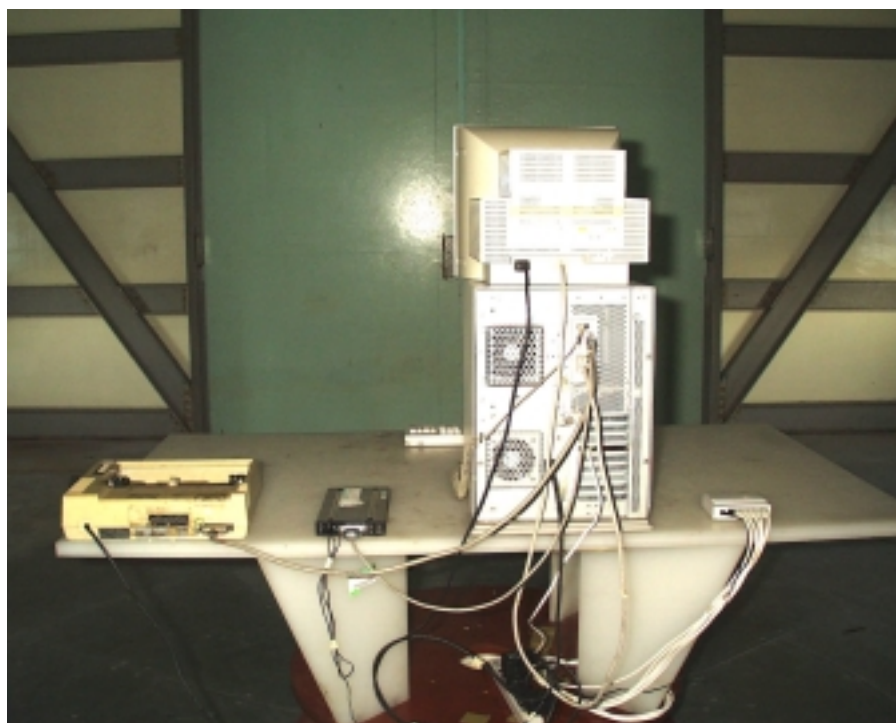


Comp. : ACCTON TECHNOLOGY CORP.  
Model : 3C19261





### **3.7 PHOTOS OF OPEN SITE**



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