FCC CLASS B COMPLIANCE REPORT

for

Electromagnetic Emissions

of

NOTBOOK PC

Trade Name : KAPOK
Model Number : 2X00x (X=0-9, x=A-Z)
FCC ID: L4PK2100PX13
Serial Number : Prototype
Report Number : 990054-F
Date : February 26, 1999

Prepared for :

KAPOK COMPUTER CO.
No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City 241
Taipei Hsien, Taiwan, R.O.C.

Prepared by :

C&C LABORATORY, CO., LTD.
1st Fl., No. 344, Fu Ching Street,
Taipei, Taiwan, R.O.C.
TEL: (02)2746-8584
FAX: (02)2763-2154

TABLE OF CONTENTS

VERIFICATION OF COMPLIANCE

Equipment Under Test:	NOTBOOK PC
Trade Name:	KAPOK
FCC ID:	L4PK2100PX13
Model Number:	2X00x (X=0-9, x=A-Z)
Serial Number:	Prototype
Applicant:	KAPOK COMPUTER CO. No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City 241 Taipei Hsien, Taiwan, R.O.C.
Manufacturer:	KAPOK COMPUTER CO. No. 2-66, Sec. 2, Kwang-Fu Rd., Sun Chung City 241 Taipei Hsien, Taiwan, R.O.C.
Type of Test:	FCC Class B
Measurement Procedure:	ANSI C63.4: 1992
File Number:	990054-F
Date of test:	January 30 / February 5, 1999
Tested by:	Clare Chou
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by C&C Laboratory, Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4, 1992. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Charles Wang

Charles Wang / Director

SYSTEM DESCRIPTION

EUT Test Program:

1. The CD-ROM driver was exercised to play Audio CD.
2. EMI test program (file name: EMCTEST) was loaded and executed in Windows mode.
3. Data was sent to monitor, LCD panel and TV, filling the screens with upper case of "H" patterns.
4. Test program sequentially exercised all related I/O's of EUT and sent "H" patterns to all applicable output ports of EUT.
5. Repeat 2 to 4. Test program is self-repeating throughout the test.

PRODUCT INFORMATION

Housing Type:	Plated plastic
AC power during Test:	115VAC/60Hz
EUT Power Rating:	20VDC, 3A
Power Adapter Manufacturer:	AMBIT
Power Adapter Model:	APA-60BI
Power Adapter Power Rating:	I/P: 100-240VAC, 50-60Hz O/P: 20VDC, 3A
AC Power Cord Type:	Unshielded, 1.8m (Detachable) to power adapter.
DC Power Cable Type:	Unshielded, 1.8m (Non-detachable) with a ferrite core at power adapter.
OSC/Clock Frequencies (Internal):	233 MHz
(External):	66 MHz
CPU Manufacturer: Intel	**Type:** Pentium II 233
13.3" TFT LCD Panel Manufacturer: LG	**Model:** LP133X4
HDD Manufacturer: Toshiba	**Model:** MK4006MAV
FDD Manufacturer: TEAC	**Model:** FD-05HG-5611
CD-ROM Manufacturer: TEAC	**Model:** CD-224EA
Battery Pack Manufacturer: GLW	**Model:** 2002D
Memory Capacity: 128MB	**Installed:** 32 MB

I/O Port of EUT:

I/O PORT TYPES	Q'TY	TESTED WITH
1). Parallel Port	1	1
2). Serial Port	1	1
3). Video Port	1	1
4). PS/2 Keyboard or Mouse Port	1	1
5). Microphone Port	1	1
6). Line-In Port	1	1
7). Speaker-Out Port	1	1
8). TV-Out Port	1	1
9). Video-In Port	1	1
10).USB Port	2	2

Note: The model 2X00x (X=0-9, x=A-Z), the means of X is for marketing purpose only.

SUPPORT EQUIPMENT

Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
Monitor	GDM-17SE2T	7138048	AK8GDM17SE2T	SONY	Shielded, 1.8m	Unshielded, 1.8m
Modem	2400SE	94-364-176285	DK467GSM24	Computer Peripheral	Shielded, 1.8m	Unshielded, 1.8m
Printer	C2642A	TH86K1M190	B94C2642X	HP	Shielded, 1.8m	I/P: Unshielded, 0.9m O/P: Unshielded, 1.9m
TV	21S3	70332865	N/A	TOSHIBA	Unshielded, 1.2m	Unshielded, 1.6m
USB Mouse	SL-A 799111	U3-1	E6QMOUSE X31	JOW DAIN	Shielded, 1.4m	N/A
USB Mouse	SL-A 799111	U3-2	E6QMOUSE X31	JOW DAIN	Shielded, 1.4m	N/A
Keyboard	KB-9000	9809048152	LFCACEKEY1	ACEKEY	Shielded, 1.5m	N/A
LD Player	CLD-1190	MA2651670UD	N/A	Pioneer	Unshielded, 1.2m	Unshielded, 1.86m
Walkman	YX-328	W3	N/A	YING-KO	Unshielded, 1.8m	N/A
Microphone	AY-125	I3	N/A	Diverse	Unshielded, 1.8m	N/A
Speaker	P-9A	E3	N/A	N/A	Unshielded, 1.1m	N/A

All the above equipment/cables were placed in worse case positions to maximize emission signals.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

MEASUREMENT PROCEDURE
(PRELIMINARY LINE CONDUCTED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4: 1992 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per ANSI C63.4: 1992.

3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4: 1992.

4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source of 115VAC/60Hz and was grounded to the ground plane.

5) All support equipment received power from a second LISN supplying power of 110VAC/60Hz.

6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum analyzer connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to analyzer and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the analyzer.

7) Analyzer scanned from 150kHz to 30MHz for emissions in each of the test modes. Analyzer settings were stated on the Measuring Instrument Settings page.

8) During the above scans, the emissions were maximized by cable manipulation.

9) The following test mode(s) were scanned during the preliminary test:

Modes:
1. **CPU Pentium II 233MHz + 1024 x 768 (LCD+CRT+TV Display)**
2. **CPU Pentium II 233MHz + 800 x 600 (LCD+CRT + TV Display)**
3. **CPU Pentium II 233MHz + 1600 x 1200 (CRT Display only)**

10) After the preliminary scan, we found the following test mode(s) producing the highest emission level.

Mode: 1.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE
(FINAL LINE CONDUCTED EMISSION TEST)

1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.

2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in peak mode, then the emission signal was re-checked using a Quasi-Peak/A.V. detector.

3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	PEAK Raw dBuV	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	---	56	46	-12.05	-2.05	L 1

Freq. = Emission frequency in MHz
Raw dBuV = Uncorrected Analyzer/ Receiver reading
Limit dBuV = Limit stated in standard
Margin dB = Reading in reference to limit
Note = Current carrying line of reading
"---" = The emission level complied with the Average limits with at least 2dB margin, so no further recheck.

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

Note: The lower limit shall apply at the transition frequency.

MEASUREMENT PROCEDURE
(PRELIMINARY RADIATED EMISSION TEST)

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4: 1992 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

2) Support equipment, if needed, was placed as per ANSI C63.4: 1992.

3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4: 1992.

4) The EUT received 115VAC/60Hz power source from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable.

5) The antenna was placed at some given distance away from the EUT as stated in ANSI C63.4: 1992. The antenna connected to the analyzer via a cable and at times a pre-amplifier would be used.

6) The analyzer quickly scanned from 30MHz to 2000MHz. Analyzer settings were stated on the Measuring Instrument Settings page. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

7) The following test mode(s) were scanned during the preliminary test:

   Modes:
   1. **CPU Pentium II 233MHz + 1024 x 768 (LCD+CRT+TV Display)**
   2. **CPU Pentium II 233MHz + 800 x 600 (LCD+CRT+TV Display)**
   3. **CPU Pentium II 233MHz + 1600 x 1200 (CRT Display only)**

8) After the preliminary scan, we found the following test mode(s) producing the highest emission level.

   Mode: 1.

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for reference of final testing.

MEASUREMENT PROCEDURE
(FINAL RAIDATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.

2) The analyzer scanned from 30MHz to 2000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
3) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the limit in peak mode, then the emission signal was re-checked using a Quasi-Peak detector, and only Q.P. reading will record in this report.

4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dB)	Corr. Factor (dBuV)	Emiss. Level (dBuV/m)	Limits)	Margin (dB)
xx.xx	14.0	11.2	26.2	30	-3.8

Freq.	= Emission frequency in MHz
Raw Data (dB)	= Uncorrected Analyzer / Receiver reading
Corr. Factor (dBuV)	= Correction factors of antenna factor and cable loss
Emiss. Level	= Raw reading converted to dBuV and CF added
Limit dBuV/m	= Limit stated in standard
Margin dB	= Reading in reference to limit

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m)		
		Q.P.	AVERAGE	PEAK
30-230	10	30	/	/
230-1000	10	37	/	/
Above 1000	10	/	43.5	63.5

**Note: "/" means the limit line isn't applicable.

SUMMARY DATA
(LINE CONDUCTED TEST)

Model Number: 2100P **Location:** Site # 3

Tested by: Clare Chou

Test Mode: CPU Pentium II 233MHz + 1024 x 768 (LCD+CRT+TV Display)

Test Results: Passed

Temperature: 25℃ **Humidity:** 59%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	PEAK Raw dBuV	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.337	41.9	---	---	59.3	49.3	-17.4	-7.4	L1
0.544	40.6	---	---	56.0	46.0	-15.4	-5.4	L1
0.814	39.1	---	---	56.0	46.0	-16.9	-6.9	L1
0.950	38.9	---	---	56.0	46.0	-17.1	-7.1	L1
1.087	39.8	---	---	56.0	46.0	-16.2	-6.2	L1
1.427	38.5	---	---	56.0	46.0	-17.5	-7.5	L1
1.427	39.8	---	---	56.0	46.0	-16.2	-6.2	L2
1.833	40.6	---	---	56.0	46.0	-15.4	-5.4	L2
2.107	41.3	---	---	56.0	46.0	-14.7	-4.7	L2
2.376	41.3	---	---	56.0	46.0	-14.7	-4.7	L2
2.923	41.4	---	---	56.0	46.0	-14.6	-4.6	L2
4.282	40.7	---	---	56.0	46.0	-15.3	-5.3	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

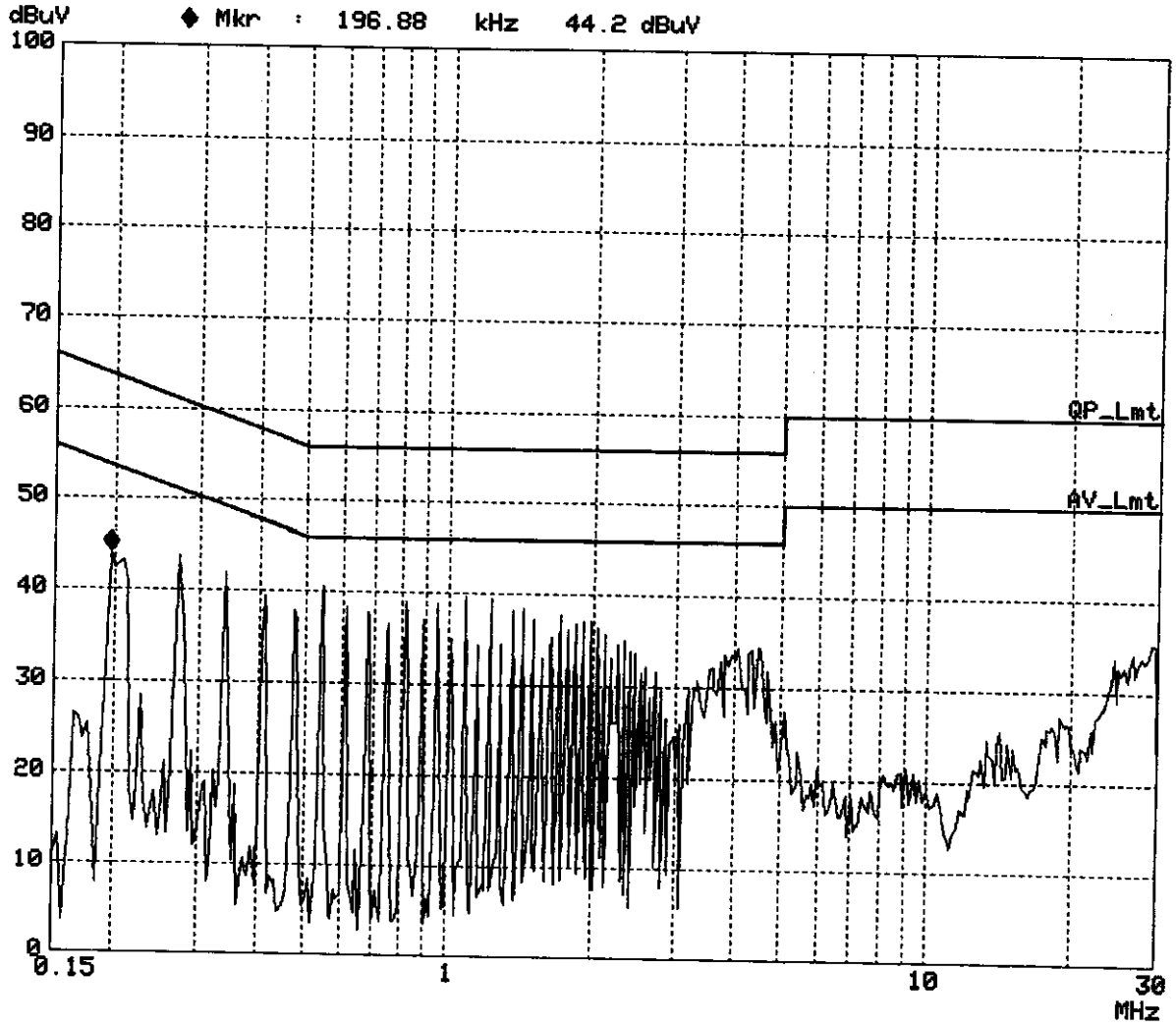
****NOTE: "---" denotes the emission level was less –2 dB to the Average limit, so no re-check anymore.**
" / " denotes the emission level was over the Average limit during Wide Band Scan, so re-check them with Q.P/A.V detector directly.

C&C Lab. Conduction Test Site 3
CISPR 22 Class B

EUT: 2100P
Manuf: KAPOK
Op Cond: FULL SYSTEM
Operator: Clare Chou
Test Spec: LISN=L1
Comment: FCC
File name: CISPR22B.SPC
Date: 30. Jan 99 11:52

Overview Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	3.9k	9k	PK	0.10ms	10dBLN	OFF



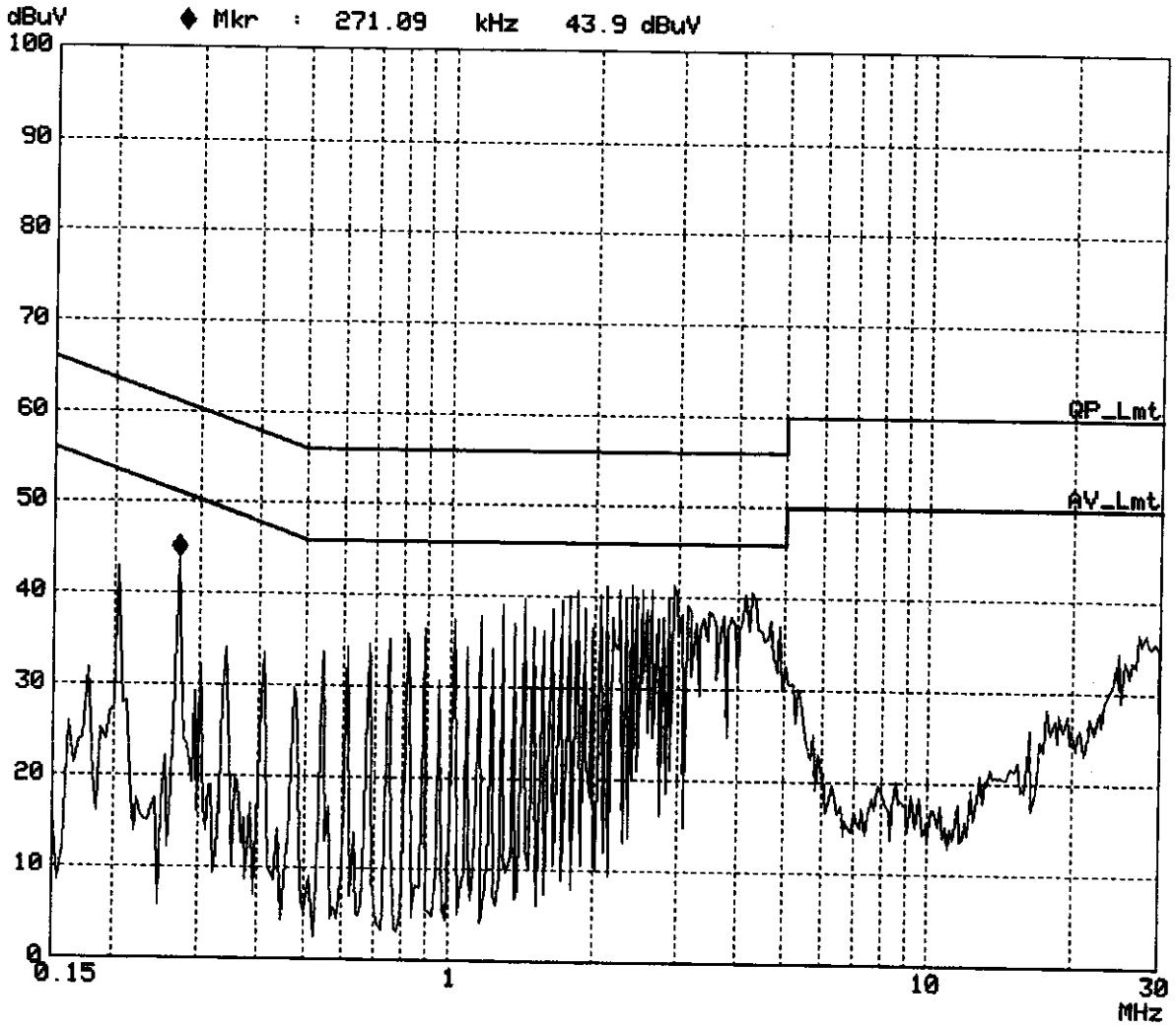
C&C Lab. Co.
File No: 9900[illegible]

C&C Lab. Conduction Test Site 3
CISPR 22 Class B

EUT: 2100P
Manuf: KAPOK
Op Cond: FULL SYSTEM
Operator: Clare Chou
Test Spec: LISN=N
Comment: FCC
File name: CISPR22B.SPC
Date: 30. Jan 99 11:50

Overview Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	3.9k	9k	PK	0.10ms	10dBLN	OFF



C&C Lab. Co.
File No: 990054-F

SUMMARY DATA
(RADIATED EMISSION TEST)

Model Number: 2100P **Location:** Site # 3

Tested by: Clare Chou **Polar. :** Vertical—10m

Test Mode: CPU Pentium II 233MHz + 1024 x 768 (LCD+CRT+TV Display)

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 26℃ **Humidity:** 59%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dB)	Corr. Factor (dBuV)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
133.19	13.1	14.6	27.7	30.0	-2.3
179.15	14.6	13.1	27.7	30.0	-2.3
195.38	14.9	12.5	27.4	30.0	-2.6
295.74	15.7	18.0	33.7	37.0	-3.3
418.00	11.8	22.0	33.8	37.0	-3.2
601.00	8.3	25.5	33.8	37.0	-3.2

SUMMARY DATA
(RADIATED EMISSION TEST)

Model Number: 2100P **Location:** Site # 3

Tested by: Clare Chou **Polar:** Horizontal- 10m

Test Mode: CPU Pentium II 233MHz + 1024 x 768 (LCD+CRT+TV Display)

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 26℃ **Humidity:** 59%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dB)	Corr. Factor (dBuV)	Emiss. Level (dBuV/m)	Limits)	Margin (dB)
154.70	13.8	13.4	27.2	30.0	-2.8
179.11	15.0	12.9	27.9	30.0	-2.1
211.74	14.2	13.2	27.4	30.0	-2.6
332.84	15.0	19.4	34.4	37.0	-2.6
366.42	14.1	20.4	34.5	37.0	-2.5
599.64	9.1	25.5	34.6	37.0	-2.4

APPENDIX 1

LETTER OF AGENT AUTHORIZATION

APPENDIX 6

TEST FACILITY

TEST FACILITY

Location:	No. 15, 14 Line, Chin Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan, R.O.C.
Description:	There are two 3/10m open area test sites and two line conducted labs for final test, and one 3/10m open area test site for engineering lab. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 1992 and CISPR 22/EN 55022 requirements.
Site Filing:	A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046. Registration also was made with Voluntary Control Council for Interference (VCCI).
Site Accreditation:	Accredited by NEMKO (Authorization #: ELA 124) for EMC & A2LA (Certificate #: 824.01) for Emission
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 and CISPR22 requirement that meet industry regulatory agency and accreditation agency requirement.

Ground Plane: Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

Site #1 and # 3 Line Conducted Test Site:	Vertical ground plane (2.2m x 2.2m) Horizontal ground plane (2.5m x 2.5m)

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

C & C LABORATORY CO., LTD
Taoyuan, Taiwan, R.O.C

for technical competence in the field of

Electrical (EMC) Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC Guide 25-1990 "General Requirements for the Competence of Calibration and Testing Laboratories" (equivalent to relevant requirements of the ISO 9000 series of standards) and any additional program requirements in the identified field of testing.

Presented this 7th day of November, 1997.

SEAL

President
For the Accreditation Council
Certificate Number 824.01
Valid to January 31, 2000

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation
(REVISED)

American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC GUIDE 25-1990 and EN 45001-1989

C & C LABORATORY CO., LTD
No. 15, 14 Lin, Chin Twu Chi
Lu Chu Hsiang, Taoyuan, TAIWAN, R.O.C.

Charles Wang Phone: 002 886 3 324 5966; Fax: 002 886 3 324 5235

ELECTRICAL (EMC)

Valid to: January 31, 2000

Certificate Number: 0824-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests:

Electrical Emissions - Enclosure - 3 & 10 Meters; to 6.5 GHz
(Sites 1 and 3)

Electrical Emissions - AC Power - 0 - 300 V; 50 - 400 Hz
(Sites 1 and 3)

On the following products/equipment:

Computer Components and Peripherals; Networking Components; Wireless Communications Components; Electronic Components

Using the following test methods/specifications/standards:

Code of Federal Regulations (CFR) 47, FCC Part 15 using ANSI C63.4

AS/NZS 3548

BCIQ CNS 13438

CISPR 22

EN: 50081-1, 50082-1, 55022

VCCI V3

Revised 08/18/98

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

March 13, 1998

IN REPLY REFER TO
31040/SIT
1300F2

C & C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei, Taiwan

Attention: Ceres Lin

Re: Measurement facility located at Taoyuan
(3 and 10 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is updated monthly and is available on the Laboratory's Public Access Link (PAL) at 301-725-1072, and also on the Internet at the FCC Website www.fcc.gov/oet/info/database/testsite/.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

April 20, 1998

IN REPLY REFER TO
31040/SIT
1300F2

C&C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei, Taiwan

Attention: Charles Wang

Re: Measurement facility located at Taoyuan, Site No. 3
(3 and 10 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is updated monthly and is available on the Laboratory's Public Access Link (PAL) at 301-725-1072, and also on the Internet at the FCC Website www.fcc.gov/oet/info/database/testsite/.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

FEDERAL COMMUNICATIONS COMMISSION
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, MD. 21046

February 01, 1999

Registration Number: 93105

C & C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei
Taiwan, R.O.C.

Attention: Charles Wang

Re: Measurement facility located at Taoyuan, Site No. 4
3 & 10 meters
Date of Listing: February 01, 1999

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W. Phillips

Thomas W Phillips
Electronics Engineer

附件如文

保存年限：

經濟部商品檢驗局（函）

中華民國捌拾柒年壹月貳拾日
（八七）台八十七二字第 01386 號

受文者：碁智科技股份有限公司

行文單位：正本：碁智科技股份有限公司

副本：本局第二組（二份）、第三組、秘書室（請刊登於檢驗雜誌）、資訊室（請刊登於網際網路）、檢驗處、各分局（均無附件）

主旨：有關 貴公司電磁相容檢測實驗室申請本局電磁相容檢測領域認可案，業經實地評鑑結果，同意認可登錄，請 查照。

說明：

一、認可登錄範圍如下：

實驗室名稱：碁智科技股份有限公司電磁相容檢測實驗室
實驗室地址：桃園縣蘆竹鄉新莊村14鄰15號

認可代號	認可產品類別	報告簽署人
SL2-IN-E-14	（II）資訊設備（CNS13438）	林淑女

評鑑標準：ISO Guide 25（1990年版）

二、本案評鑑認可期限三年，自八十七年元月十七日起至九十年元月十六日止，評鑑追查頻率每年乙次，得視需要增加稽查次數。

三、上開已認可領域如有變更事項，請於變更日起二週內函送相關資料至本局辦理。

四、貴公司執行本局指定之檢驗業務，依「商品檢驗法」第二十六條規定以執行公務論，且 貴公司應依規定履行相關之責任與義務。

五、檢送「商品電磁相容型式試驗報告」格式乙份，請自行印製使用。[illegible]

局長 陳介鎮

依照分層負責規定授權單位主管決行

Nemko

Worldwide Testing and Certification

ELA 4

EMC Laboratory Authorization

Aut. No. : ELA 124

EMC Laboratory: **C&C Laboratory Taiwan**
No. 28 Wen-Hwa Street, 330 Taoyuan
TAIWAN R.O.C.

Scope of Authorization: The authorization covers the following standards:

EN 50081-1	EN 50082-1
EN 55022	IEC 801-2
EN 60555-2,-3	IEC 801-3
EN 61000-3-2	IEC 801-4
EN 61000-3-3	EN 61000-4-2
EN 61000-4-3	EN 61000-4-4

This is to confirm that the abovementioned EMC Laboratory has been authorized according to the conditions described in Nemko Document ELA 10.
During Nemko's visit to the laboratory on the 08. October. 1997 an assessment was made of your facilities, qualifications and testing practices, and the relevant part of your organization. It was found that the EMC Laboratory is capable of performing tests within the scope mentioned above, accordingly, Nemko will accept your test results as a basis for attesting conformity with these EMC Standards for the products in question.

In case of product certification, your test report may be used by the applicant manufacturer, enclosed to his application.

In order to maintain the authorization, the information given in the enclosed ELA-INFOs has to be carefully followed. Nemko is to be promptly notified about any changes in the situation at your 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 authorization is issued on the conditions that you have signed the "**Statement by Authorization**", **ELA 3A**-Form. The Statement of 08 October. 1997 is binding.

Oslo, 20. October. 1997

For Nemko as

Kjell Bergh

Kjell Bergh, Head of EMC Section

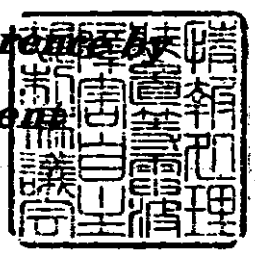
CERTIFICATE

Facility: C&C Laboratory, Company., Ltd.
(Conducted Interference Measurement)
Company : C&C Laboratory, Company., Ltd.
Address : No.15, 14 Lin, Chih Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures, Article 8.

Registration No. : C-402
Date of Registration : April 17, 1996
This Certificate is valid until June 30, 1999

Voluntary Control Council for Interference by Information Technology Equipment



CERTIFICATE

Facility: C&C Laboratory, Co., Ltd.
(Radiation 3 and 10 meter site)
Company : C&C Laboratory, Co., Ltd.
Address : No.15, 14 Lin, Chih Twu Chi, Lu Chu Hsiang, Taoyuan, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures, Article 8.

Registration No. : R-393
Date of Registration : April 17, 1996
This Certificate is valid until June 30, 1999

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Facility: C&C Conducted Interference Test Site No.3
(Conducted Interference Measurement)

Company : C&C Laboratory Co., Ltd.

Address : No.15, 14Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures.

Registration No. : C-747

Date of Registration : May 1, 1998

This Certificate is valid until June 30, 2001

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Facility: C&C Open Area Test Site No.3

(Radiation 3 and 10 meter site)

Company : C&C Laboratory Co., Ltd.

Address : No.15, 14Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures.

Registration No. : R-725

Date of Registration : May 1, 1998

This Certificate is valid until June 30, 2001

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Company : C&C Laboratory Co., Ltd.

Facility : C&C Conducted Interference Test Site No.4

(Conducted Interference Measurement)

Address : No.15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-912

Date of Registration : March 26, 1999

This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Company : C&C Laboratory Co., Ltd.

Facility: C&C Open Area Test Site No.4

(Radiation 3 and 10 meter site)

Address : No.15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-879

Date of Registration : March 26, 1999

This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by Information Technology Equipment

中華民國實驗室認證體系認可證書

Chinese National Laboratory Accreditation Certificate ROC

No.CNLA-ZL98078

茲以　程智科技股份有限公司程智科技電磁相容實驗室之電性測試領域經評鑑認可

十項發給本證書有效期限至九十年十一月十四日　此證

This is to certify that C & C Laboratory Co., Ltd. has been recognized by the Council of Chinese National Laboratory Accreditation as an accredited laboratory. The laboratory has been registered for ten specific tests within the field of Electrical Testing. The details of the scope of accreditation is described in the following pages and this Certificate is valid until Nov. 14, 2001.

CNLA

中華民國實驗室認證委員會
主　任　委　員

Chen, Ming-Bang

The Chairman of Chinese National Laboratory Accreditation Council

中　華　民　國　八十七　年 十一 月 十五 日

(本證書共 4 頁分離使用無效This document is invalid unless accompanied by all 4 pages.)

機構名稱 : 程智科[illegible]
實驗室名稱 : 程智科[illegible]
認可編號 : 0363
實驗室負責人 : 王駿義
測試領域 : 電性測試
發證日期 : 1998. 11. 15

Organization : C & C Laboratory Co., Ltd.
Laboratory : C & C Laboratory Co., Ltd.
Registration : 0363
Laboratory Head : WANG, Charles
Testing Field : Electrical Testing
Date of Registration: 1998.11.15

認可項目 Registration items	測試件 Test items	測試方法 Test standards	範圍 Range	認可之最佳測試能力 Best test capability recognized	備註 Remarks
EJ0102 諧波電流干擾 Harmonic current emissions	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-3-2(1995) EN 61000-3-2(1995)	輸入電流:100～2[illegible]0A(單相) [illegible]0～16 [illegible]1～40		
EJ0103 電壓變動與閃爍干擾 Voltage fluctuations and flicker	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-3-3(1994) EN 61000-3-3(1995)	[illegible]～[illegible]0A(單相) [illegible]～16 A		
EJ0122 電信及資訊技術系統及儀器 Systems and apparatus of the telecommunication and	資訊類及其週邊產品 ITE and peripheral Products	CISPR 22(1996) EN 55022(1995) CNS 13438(1997) AS/NZS 3548(1995) VCCI(1997) FCC Part 15(1996)	傳導干擾:150 kHz～30 MHz 輻射干擾:30 MHz～1.0 GHz 傳導干擾:450 kHz～30 MHz 輻射干擾:30 MHz～2.0 GHz		

認可項目 Registration items	測試件 Test items	測試方法 Test methods	範圍 Range	認可之最佳測試能力 Best test capability recognized	備註 Remarks
information technology					
EJ0202 靜電放電測試 Electrostatic discharge tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-2(1995) EN 61000-4-2(1995) CNS 13022-1(1992)	空間放電: 0.2 kV~16.5 kV(+/-) 接觸放電:0.2 kV~9.0 kV(+/-)		
EJ0203 輻射耐受測試 Radiated susceptibility tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 801-3(1984) IEC 1000-4-3(1995) EN 61000-4-3(1996) ENV 50204(1995)	[illegible]:26MHz~1.0 GHz [illegible] V/m,AM[illegible]) [illegible]:900 [illegible] ±5MHz [illegible]		
EJ0204 電性快速突波測試 Electrical fast transient/burst tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 801-4(1988) IEC 1000-4-4([illegible]) EN 61000-4-4([illegible]) CNS 13022-2(1992)	[illegible]:100~[illegible] [illegible] [illegible]:0~[illegible] [illegible]:0.[illegible]~4.5 kV		
EJ0205 突波/雷擊測試 Surge/lightening tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-5(1995) ENV 50142(1994) CNS 13022-3(1992)	[illegible]:100~240 [illegible] AC 240V [illegible]:16 A(AC/DC) [illegible]:0~4.2 kV [illegible]:[illegible]		
EJ0206 傳導耐受測試 Conducted susceptibility tests	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-4-6(1996) EN 61000-4-6(1996)	頻率範圍:150 kHz~230 MHz (強度:10 V,AM調變)		
EJ0208 電源頻率磁場耐受	資訊類及其週邊產品 ITE and peripheral	IEC 1000-4-8(1993) EN 61000-4-8(1993)	磁場強度 1 A/m~100 A/m		

認可項目 Registration items	測試項 Test items	測試方法 Test methods	範圍 Range	認可之測試能力 Test lab recognized	備註 Remarks
測試 Power frequency magnetic field immunity test	Products				
EJ0211 電壓下降，瞬斷和 採樣附受測試 Voltage dips,short interruptions and voltage variations immunity tests (以下空白)	資訊類及其[illegible] ITE and peripheral Products	[illegible]	[illegible]		

APPENDIX 7

TEST EQUIPMENT

MEASURING INSTRUMENT SETTING

TEST TYPE	DETECTOR	FREQUENCY RANGE	RESOLUTION BANDWIDTH	VIDEO BANDWIDTH
Conducted	Peak/QP/Avg	150kHz-30MHz	9kHz	9kHz
Radiated	Peak	30MHz-1GHz	100kHz	100kHz
Radiated	QP	30MHz-1GHz	120kHz	120kHz
Radiated	Peak/Avg	Above 1GHz	1MHz	1MHz

Note: All readings on data pages are taken with the detector in peak mode unless otherwise stated.

UNITS OF MEASUREMENT

Measurements of radiated interference are reported in terms of dBuV/m, at a specified distance. The indicated readings on the spectrum analyzer are converted to dBuV/m by use of appropriate conversion factors. Measurements of conducted interference are reported in terms of dBuV.

TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at C & C Laboratory, Co., Ltd. for testing. The equipment conforms to the American National Standard Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10kHz to 2GHz.

Equipment used during the tests:

Open Area Test Site: ☐ # 1 ; ■ #3

Open Area Test Site # 1					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	HP	8568B	3001A05004	03/25/1998	03/25/1999
S.P.A Display	HP	85662A	3104A18846	03/25/1998	03/25/1999
RF Preselector	HP	85685A	2947A01064	03/25/1998	03/25/1999
Q.P Adaptor	HP	85650A	2811A01399	03/25/1998	03/25/1999
Precision Dipole	R&S	HZ-12	846932/0004	06/16/1998	06/16/1999
Precision Dipole	R&S	HZ-13	846556/0008	06/16/1998	06/16/1999
Horn Antenna	EMCO	3115	9602-4659	04/04/1998	04/04/1999
Bilog Antenna	CHASE	CBL6112A	2309	03/14/1998	03/14/1999
Turn Table	EMCO	2081-1.21	N/A	N/A	N/A
Antenna Tower	EMCO	2075-2	9707-2604	N/A	N/A
Controller	EMCO	2090	N/A	N/A	N/A
RF Switch	ANRITSU	MP59B	N/A	N/A	N/A
Site Information	C&C	N/A	N/A	01/23/1999	01/23/2000

Open Area Test Site # 3					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	ADVANTEST	R3261C	71720533	10/27/1998	10/26/1999
Pre-Amplifier	HP	8447D	2944A09173	01/28/1999	01/27/2000
EMI Test Receiver	R&S	ESVS20	838804/004	12/12/1998	12/11/1999
Precision Dipole	R&S	HZ-12	846932/0004	06/06/1998	06/06/1999
Precision Dipole	R&S	HZ-13	846556/0008	06/16/1998	06/16/1999
Horn Antenna	EMCO	3115	9602-4659	04/04/1998	04/04/1999
Bilog Antenna	CHASE	CBL6112A	2179	11/14/1998	11/14/1999
Turn Table	EMCO	2081-1.21	9709-1885	N/A	N/A
Antenna Tower	EMCO	2075-2	9707-2060	N/A	N/A
Controller	EMCO	2090	9709-1256	N/A	N/A
RF Switch	ANRITSU	MP59B	N/A	N/A	N/A
Site Information	C&C	N/A	N/A	01/31/1999	01/31/2000

Conducted Emission Test Site: ☐ # 1 ; ■ #3

Conducted Emission Test Site # 1					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	HP	8568B	3001A05004	03/25/1998	03/25/1999
S.P.A Display	HP	85662A	3104A18846	03/25/1998	03/25/1999
RF Preselector	HP	85685A	2947A01064	03/25/1998	03/25/1999
Q.P Adaptor	HP	85650A	2811A01399	03/25/1998	03/25/1999
LISN	EMCO	3825/2	9106-1809	08/14/1998	08/14/1999
LISN	EMCO	3825/2	9106-1810	08/14/1998	08/14/1999

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	*** MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL. DUE**
Spectrum Analyzer	ADVANTEST	R3261A	91720031	03/25/1998	03/24/1999
EMI Test Receiver	R&S	ESHS10	843743/015	12/09/1998	12/08/1999
LISN	R&S	ESH3-Z5	848773/014	10/22/1998	10/21/1999
LISN	EMCO	3825/2	9003-1628	04/29/1998	04/28/1999

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

APPENDIX 8

BLOCK DIAGRAM OF TEST SETUP

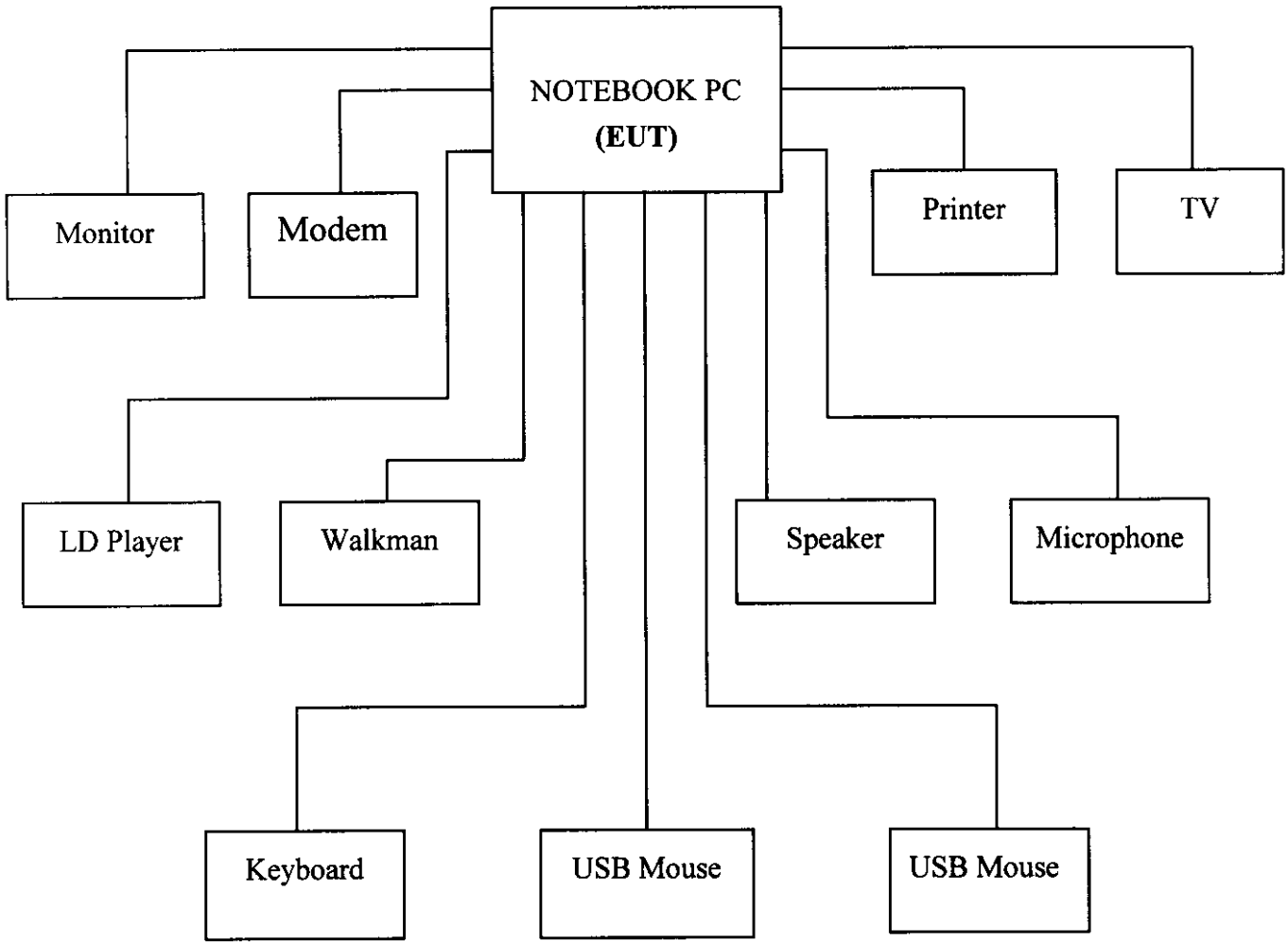
System Diagram of Connections between EUT and Simulators

EUT: NOTBOOK PC

Trade Name: KAPOK

Model Number: 2100P

Power Cord: Unshielded, 1.8m



APPENDIX A

PHOTOGRAPHS OF TEST SETUP