

FCC TEST REPORT

for

CISPR PUB. 22 Class B

Equipment : VGA CARD

Model No. : A4-S3TR3DGD-A3-L

FCC ID : FQIS3TR3D

Filing Type : Original Grant

Applicant : **JOYTECH COMPUTER CO., LTD.**
3F, No. 1, ALLEY2, SZU-WEI LANE,
CHUNG CHENG RD., HSIN TIEN CITY,
TAIPEI HSIEN, TAIWAN, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without the written authorization of the test lab., the Test Report may not be copied.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

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CERTIFICATE OF COMPLIANCE

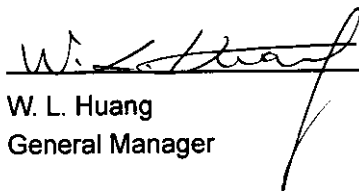
for

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Applicant : JOYTECH COMPUTER CO., LTD.
3F, No. 1, ALLEY2, SZU-WEI LANE,
CHUNG CHENG RD., HSIN TIEN CITY,
TAIPEI HSIEN, TAIWAN, R.O.C.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4 - 1992** and the energy emitted by this equipment was **passed CISPR PUB. 22** both radiated and conducted emission class B limits. Testing was carried out on May. 20, 1999 at **SPORTON International Inc.** LAB. in Lin Kou.


W. L. Huang
General Manager

May 27, 99

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1. Applicant

JOYTECH COMPUTER CO., LTD.
3F, No. 1, ALLEY2, SZU-WEI LANE,
CHUNG CHENG RD., HSIN TIEN CITY,
TAIPEI HSIEN, TAIWAN, R.O.C.

1.2. Manufacturer

Same as 1.1.

1.3. Basic Description of Equipment under Test

Equipment	: VGA CARD
Model No.	: A4-S3TR3DGD-A3-L
FCC ID	: FQIS3TR3D
Trade Name	: APOLLO TRIO 3D
Data Cable	: Shielded, 1.15m
Power Supply Type	: N/A
Power Cord	: N/A

1.4. Feature of Equipment under Test

- High performance Integrated 2D/3D Graphics and Video Accelerator:
- 64-bit 2D/3D graphics engine
- SGRAM/SDRAM at 100 MHz
- S3d Graphics Engine:
 - High performance 2D acceleration
 - Flat and Gouraud shading for 3D
- Glueless 66/133 MHz AGP Bus Operation
- S3 Streams Processor Technology

2. Test Configuration of Equipment under Test

2.1. Test Manner

- a. The EUT has been associated with personal computer and peripherals pursuant to ANSI C63.4-1992 and configuration operated in a manner which tended to maximize its emission characteristics in a typical application.
- b. The HITACHI Monitor, DELL PS/2 Keyboard, PRIMAX PS/2 Mouse, HP Printer, ACEEX Modem and EUT were connected to the FIC PC for EMI test.
- c. The Following display resolution were investigated during the compliance test:
 1. Horizontal frequency (640x480 to 1,600x1,200, 31.5 KHz to 106 KHz)
 2. Vertical frequency (60 Hz to 85 Hz)
- d. According to the above tests, we listed the following display modes as the worst cases:
 1. 1,600x1,200 (non-interlaced 106 KHz), refresh rate 85 Hz.
 2. 1,280x1,024 (non-interlaced 91 KHz), refresh rate 85 Hz.
- e. Frequency range investigated: conduction 150 KHz to 30 MHz, radiation 30 MHz to 2000MHz.

2.2. Description of Test System

Support Unit 1. -- Personal Computer (FIC)

FCC ID	: N/A
Model No.	: P2L97
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0037
Data Cable	: Shielded, 360 degree via metal backshells
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- Monitor (HITACHI)

FCC ID	: N/A
Model No.	: CM803ET
Power Supply Type	: Switching
Power Cord	: N/A
Serial No.	: SP0096
Data Cable	: Shielded, 360 degree via metal backshells
Remark	: This support device was tested to comply with FCC stand authorized under a declaration of conformity.

Support Unit 3. -- PS/2 Keyboard (DELL)

FCC ID : GYUM92SK
Model No. : AT101(DE8M)
Serial No. : SP0054
Data Cable : Shielded, 360 degree via metal backshells, 1.9m

Support Unit 4. -- PS/2 Mouse (PRIMAX)

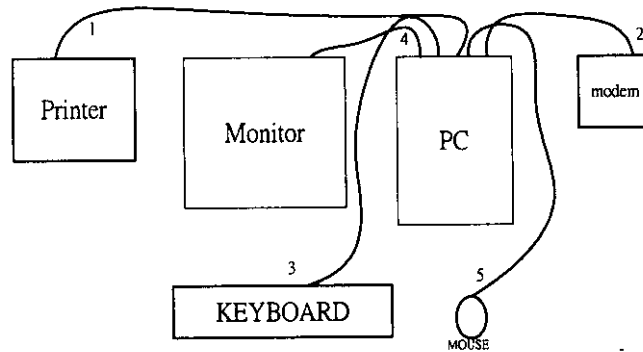
FCC ID : EMJMUSJQ
Model No. : MUS9J
Serial No. : SP0045
Data Cable : Shielded, 360 degree via metal backshells, 1.7m

Support Unit 5. -- Printer (HP)

FCC ID : B94C2642X
Model No. : DeskJet 400
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0048
Data Cable : Braided-Shielded, 360 degree via metal backshells, 1.35m

Support Unit 6. -- Modem (ACEEX)

FCC ID : IFAXDM1414
Model No. : DM1414
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0059
Data Cable : Braided-Shielded, 360 degree via metal backshells, 1.15m

2.3. Connection Diagram of Test System

1. The I/O cable is connected from PC to the support unit 5.
2. The I/O cable is connected from PC to the support unit 6.
3. The I/O cable is connected from PC to the support unit 3.
4. The I/O cable is connected from EUT to the support unit 2.
5. The I/O cable is connected from PC to the support unit 4.

3. Test Software

Two executive program, EMITEST.EXE & WINFCC.EXE under WIN 98, which generate a complete line of continuously repeating " H " pattern were used as the test software.

The programs were executed as follows :

- a. Turn on the power of all equipment.
- b. The PC reads the test program from the floppy disk drive and runs it.
- c. The PC sends " H " messages to the monitor, and the monitor displays " H " patterns on the screen.
- d. The PC sends " H " messages to the printer, then the printer prints them on the paper.
- e. The PC sends " H " messages to the modem.
- f. The PC sends " H " messages to the internal Hard Disk, and the Hard Disk reads and writes the message.
- g. Repeat the steps from b to f.

4. General Information of Test

4.1. Test Facility

This test was carried out by SPORTON International Inc. in an openarea test site.
Openarea Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

4.2. Standard for Methods of Measurement

ANSI C63.4-1992

4.3. Test in Compliance with

CISPR PUB. 22 Class B

4.4. Frequency Range Investigated

- a. Conduction: from 150 kHz to 30 MHz
- b. Radiation : from 30 MHz to 2,000 MHz

4.5. Test Distance

The test distance of radiated emission from antenna to EUT is 10 M.

5. Test of Conducted Powerline

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

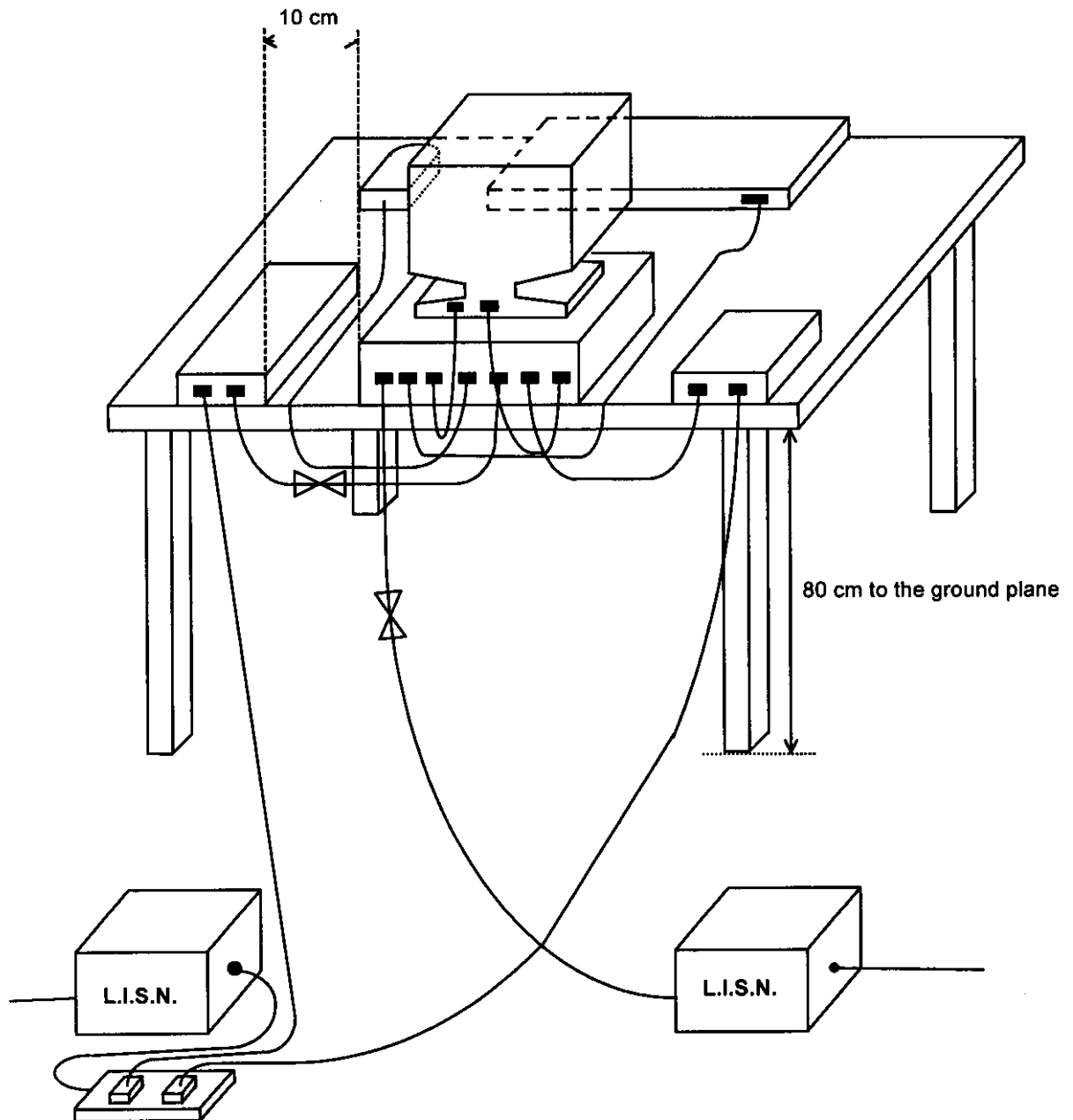
5.1. Major Measuring Instruments

Test Receiver	HP 8591EM
Attenuation	0 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
Step MHz	0.007 MHz
IF Bandwidth	9 kHz

5.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- i. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be retested one by one using the quasi-peak method and reported.

5.3. Typical Test Setup Layout of Conducted Powerline



5.4. Test Result of AC Powerline Conducted Emission

5.4.1. Test mode : 1600x1200 85HZ/106K

- Temperature : 21°C
- Relative Humidity : 64 %
- Test Date : May. 20, 1999

The Conducted Emission test was passed at minimum margin

LINE 0.272 MHz / 45.20 dBuV.

Freq. (MHz)	Line or Neutral	Meter Reading				Limits				Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dB)	A.V. (dB)
0.272	L	45.20	44.40	181.97	165.96	61.05	51.05	1128.96	357.01	-15.85	-6.65
0.514	L	29.50	27.90	29.85	24.83	56.00	46.00	630.96	199.53	-26.50	-18.10
22.569	L	33.50	32.40	47.32	41.69	60.00	50.00	1000.00	316.23	-26.50	-17.60
0.273	N	44.70	43.90	171.79	156.68	61.04	51.04	1127.07	356.41	-16.34	-7.14
0.516	N	29.70	27.40	30.55	23.44	56.00	46.00	630.96	199.53	-26.30	-18.60
22.569	N	33.80	32.80	48.98	43.65	60.00	50.00	1000.00	316.23	-26.20	-17.20

Test Engineer :

Kenny Chuang
KENNY CHUANG

5.4.2. Test mode : 1280x1024 85HZ/91K

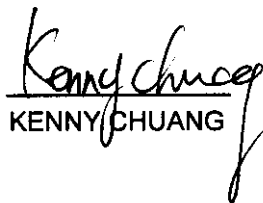
- Temperature : 21°C
- Relative Humidity : 64 %
- Test Date : May. 20, 1999

The Conducted Emission test was passed at minimum margin

LINE 0.273 MHz / 44.90 dBuV.

Freq. (MHz)	Line or Neutral	Meter Reading				Limits				Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (uV)	A.V. (uV)	Q.P. (dB)	A.V. (dB)
0.273	L	44.90	44.10	175.79	160.32	61.03	51.03	1125.46	355.90	-16.13	-6.93
0.514	L	29.80	27.50	30.90	23.71	56.00	46.00	630.96	199.53	-26.20	-18.50
22.570	L	33.90	33.00	49.55	44.67	60.00	50.00	1000.00	316.23	-26.10	-17.00
0.245	N	44.90	42.20	175.79	128.82	61.93	51.93	1249.07	394.99	-17.03	-9.73
0.515	N	29.90	28.50	31.26	26.61	56.00	46.00	630.96	199.53	-26.10	-17.50
22.570	N	33.70	32.60	48.42	42.66	60.00	50.00	1000.00	316.23	-26.30	-17.40

Test Engineer :


KENNY CHUANG

6. Test of Radiated Emission

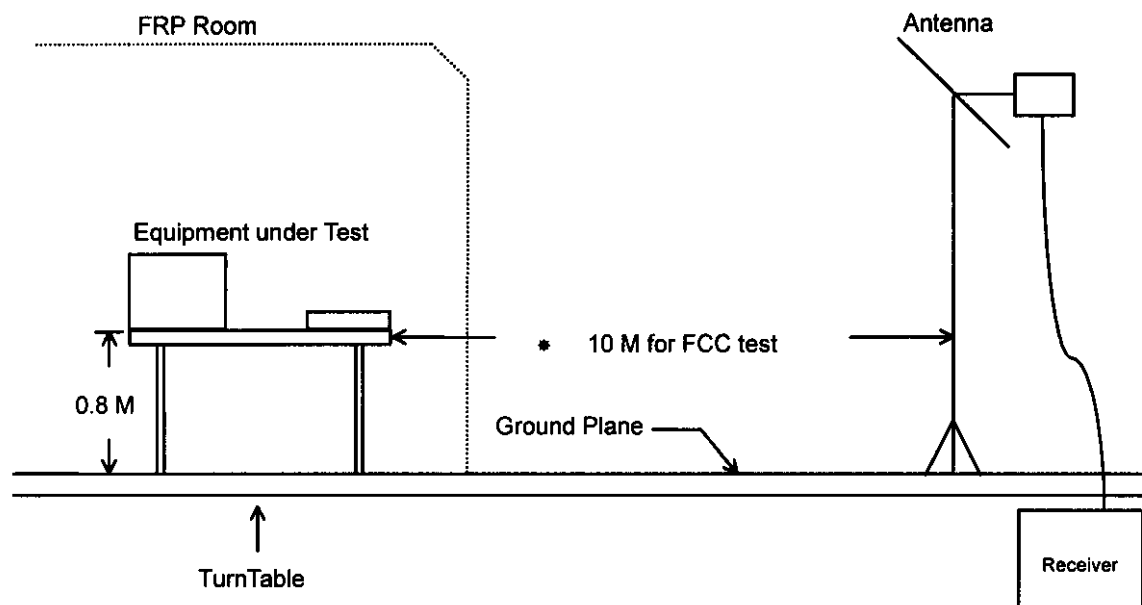
Radiated emissions from 30 MHz to 2,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-1992. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1. Major Measuring Instruments

Amplifier	(HP 87405A)
Attenuation	0 dB
RF Gain	25 dB
Signal Input	10 MHz to 3 GHz
Spectrum Analyzer	(HP 8560E)
Attenuation	0 dB
Start Frequency	30 MHz
Stop Frequency	2,000 MHz
Video Bandwidth	1 MHz
Signal Input	30 Hz to 2.9 GHz
Test Receiver	(R&S ESVP)
Resolution Bandwidth	120 KHz
Frequency Band	30 MHz to 1 GHz
Quasi-Peak Detector	ON for Quasi-Peak Mode OFF for Peak Mode

6.2. Test Procedures

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its 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.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 6 dB margin will be repeated one by one using the quasi-peak method and reported.

6.3. Typical Test Setup Layout of Radiated Emission

6.4. Test Result of Radiated Emission

6.4.1. Test mode : 1600x1200 85HZ/106K

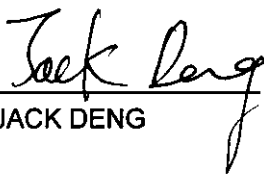
- Test Distance : 10 M
- Temperature : 32°C
- Relative Humidity : 49 %
- Test Date : May. 18, 1999
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin

400.656 MHz / 33.26 dBuV (VERTICAL) Antenna Height 1.5 Meter, Turntable Degree 60 °.

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits		Emission (dBuV/m)	Level (uV/m)	Margin (dB)
					(dBuV/m)	(uV/m)			
400.656	V	16.00	2.17	15.09	37.00	70.79	33.26	46.03	-3.74
140.201	V	10.80	1.17	12.91	30.00	31.62	24.88	17.54	-5.12
86.052	H	7.90	1.00	13.76	30.00	31.62	22.66	13.58	-7.34
134.319	H	11.00	1.17	10.04	30.00	31.62	22.21	12.90	-7.79
229.301	H	9.17	1.75	11.90	30.00	31.62	22.82	13.84	-7.18
401.453	H	16.08	2.17	11.76	37.00	70.79	30.01	31.66	-6.99

Test Engineer :


JACK DENG

6.4.2. Test mode : 1280x1024 85HZ/91K

- Test Distance : 10 M
- Temperature : 32°C
- Relative Humidity : 49 %
- Test Date : May. 18, 1999
- Emission level (dBuV/m) = 20 log Emission level (uV/m)
- Corrected Reading : Antenna Factor + Cable Loss + Reading = Emission

The Radiated Emission test was passed at minimum margin

197.118 MHz / 24.83 dBuV (VERTICAL) Antenna Height 1.5 Meter, Turntable Degree 200 °.

Frequency (MHz)	Polarity	Antenna Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Limits		Emission (dBuV/m)	Level (uV/m)	Margin (dB)
					(dBuV/m)	(uV/m)			
44.705	H	10.50	0.72	10.60	30.00	31.62	21.82	12.33	-8.18
45.224	V	9.40	0.67	13.44	30.00	31.62	23.51	14.98	-6.49
68.060	V	5.00	1.00	14.98	30.00	31.62	20.98	11.19	-9.02
118.137	V	11.57	1.14	10.08	30.00	31.62	22.79	13.79	-7.21
132.589	V	11.20	1.17	8.21	30.00	31.62	20.58	10.69	-9.42
197.118	V	8.80	1.50	14.53	30.00	31.62	24.83	17.44	-5.17

Test Engineer :


JACK DENG

7. Antenna Factor & Cable Loss

Frequency (Mhz)	Antenna Factor (dB)	Cable Loss (dB)
30	17.8	0.8
35	15.2	0.7
40	12.6	0.8
45	10.2	0.7
50	7.7	0.7
55	6.4	0.8
60	5.1	0.8
65	5.1	1.0
70	5.1	1.0
75	5.9	1.0
80	6.7	1.0
85	7.9	1.0
90	8.6	1.1
95	9.6	1.2
100	10.2	1.0
110	11.3	1.0
120	11.6	1.2
130	11.4	1.2
140	10.8	1.2
150	10.2	1.3
160	9.2	1.3
170	9.1	1.3
180	8.2	1.3
190	8.4	1.5
200	8.9	1.5
220	8.7	1.8
240	10.9	1.7
260	13.3	1.5
280	12.5	1.5
300	13.0	1.8
320	13.6	1.8
340	13.9	1.7
360	14.5	1.8
380	14.9	2.0
400	16.0	2.2
450	16.5	2.2
500	17.5	2.0
550	19.0	2.5
600	18.60	2.5
650	18.90	2.8
700	19.1	2.7
750	19.8	3.2
800	19.9	3.2
850	20.5	3.2
900	20.4	3.3
950	21.0	3.3
1000	21.2	3.3

8. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMC Receiver (site 2)	HP	8591EM	3710A01187	9 KHz – 1.8 GHz	Sep. 18, 1998	Conduction
LISN (EUT) (site 2)	Telemeter	NNB-2/16Z	98009	50 ohm / 50 uH	Jan. 22, 1999	Conduction
LISN (Support Unit) (site 2)	EMCO	3810/2NM	9703-1839	50 ohm / 50 uH	Jul. 06, 1998	Conduction
Spectrum Analyzer (Site 4)	HP	8560E	3728A03185	30Hz - 2.9GHz	Sep. 09, 1998	Radiation
Amplifier (Site 4)	HP	87405A	3207A01437	10MHz –3.0GHz	June 26, 1998	Radiation
Test Receiver (Site 4)	R&S	ESVP	893610/003	20MHz - 1.3GHz	April 12, 1999	Radiation
Bilog Antenna (Site 4)	CHASE	CBL6112A	2288	30MHz -2GHz	Jul. 14, 1998	Radiation
Half-wave dipole antenna (Site 4)	EMCO	3121C	9705-1285	28 M - 1GHz	May 19, 1999	Radiation
Turn Table (site 4)	EMCO	2080	9711-1090	0 ~ 360 degree	N/A	Radiation
Antenna Mast (site 4)	EMCO	2075	9711-2114	1 m- 4 m	N/A	Radiation



D700701

SPORTON LAB.

Certificate No:

CERTIFICATE OF COMPLIANCE

Authorized under Declaration of Conformity
according to

47 CFR, Part 2 and Part 15 of the FCC Rules

Equipment Under Test : **PERSONAL COMPUTER**

Model No. : **P2L97**

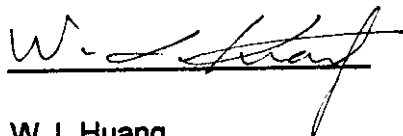
Applicant : **FIRST INTERNATIONAL COMPUTER INC.**

6F, Formosa Plastics Rear Building 201,
Tung Hwa N. Rd., Taipei, Taiwan, R.O.C.



CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN
ACCORDANCE WITH THE PROCEDURES GIVEN IN **ANSI C63.4 - 1992**
AND THE ENERGY EMITTED BY THIS EQUIPMENT WAS **PASSED** BOTH
RADIATED AND CONDUCTED EMISSIONS CLASS B LIMITS. THE TESTING
WAS COMPLETED ON **SEP. 02, 1997** AT **SPORTON INTERNATIONAL**
INC. LAB. IN **NEI HWU**.

 **OCT 02, 97**

W. L. Huang

GENERAL MANAGER