EMI TESTING REPORT

EUT : MOUSE

MODEL : MA7EAV1

FCC ID : MA7EAV1

PREPARED FOR :

ALLSPIRIT CO., LTD.
7 FL, NO., 4, LANE 609,
SEC. 5, CHUNG HSIN RD.,
SAN CHUNG CITY, TAIPEI,
TAIWAN, R. O. C.

PREPARED BY :

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1. TEST REPORT CERTIFICATION

APPLICANT : ALLSPIRIT CO., LTD.

ADDRESS : 7 FL, NO., 4, LANE 609,
SEC. 5, CHUNG HSIN RD.,
SAN CHUNG CITY, TAIPEI,
TAIWAN, R. O. C.

EUT DESCRIPTION : MOUSE

(A) POWER SUPPLY : 100/240Vac 50/60Hz

(B) MODEL : MA7EAV1

(C) FCC ID : MA7EAV1

FINAL TEST DATE : 03/15/1999

MEASUREMENT PROCEDURE USED :

* PART 15 SUB PART B OF FCC RULES AND REGULATIONS (47 CFR PART 15)
* ANSI C63.4 - 1992

We hereby show that :

The measurement 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.

TESTING ENGINEER : Tommy Bai DATE 3/15/1999
Tommy Bai

SUPERVISOR : DATE 3/15/99
Jesse Ho

APPROVED BY : DATE 3/15/99
Johnson Ho

2. TEST STATEMENT

2.1 TEST STATEMENT

To whom it may concern,

This letter is to explain the test condition of this project. The EUT be tested as the following status.

CPU : 68030 Processor – 30MHz
Resolution : 640 x 480

The data was shown in this report reflects the worst – case data for the condition as listed above.
Please disregard any other oricessir (s) speed shown in this user manual.

2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS , THE STATEMNT

A . DID HAVE
Any departure from document policies & procedures or from specifications.
Yes _____, No ____V____ .
If yes , the description as below.

B . The certificate and report shall not be reproduced except in full , without the written approval of SRT LABORATORY.

C . The report must not be used by the client to claim product endorsement by NVLAP or any agency the government.

3. EUT MODIFICATIONS

The following accessories were added to the EUT during testing :

No modifications by SRT LAB.

4. MODIFICATION LETTER

This section contatins the following documents :

A. Letter of modifications.

5. CONDUCTED POWER LINE TEST

5 . 1 TEST EQUIPMENT

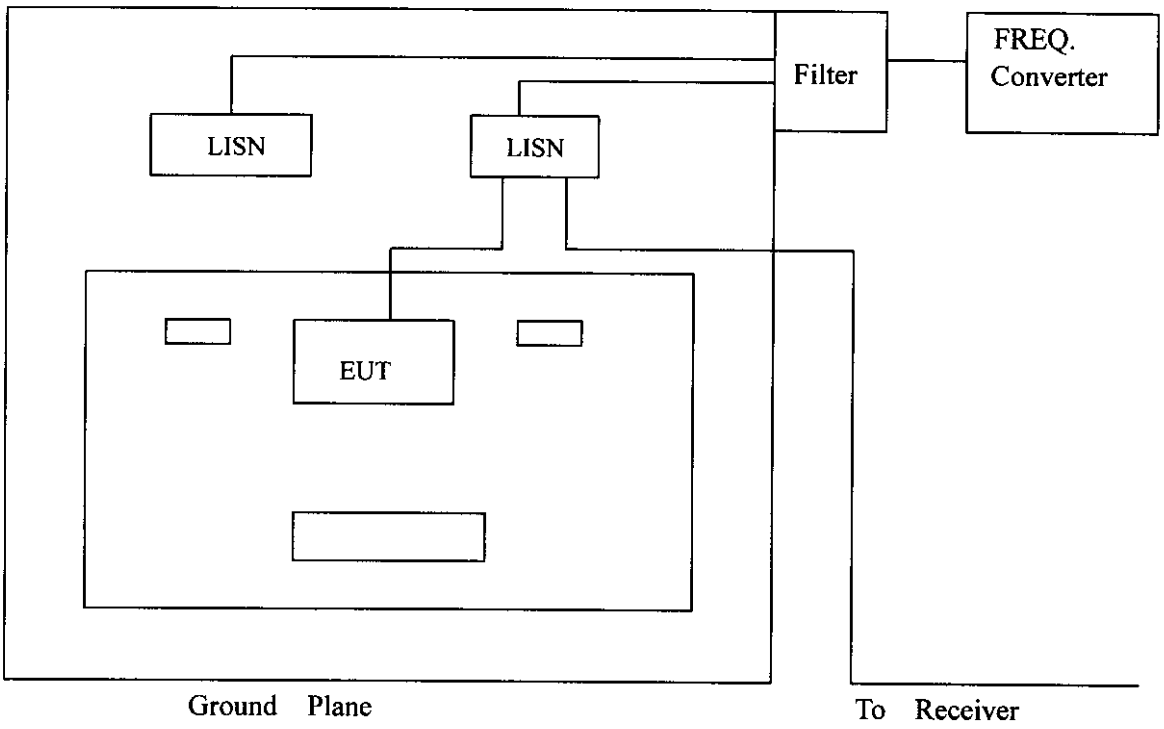
The following test equipment were used during the conducted power line test :

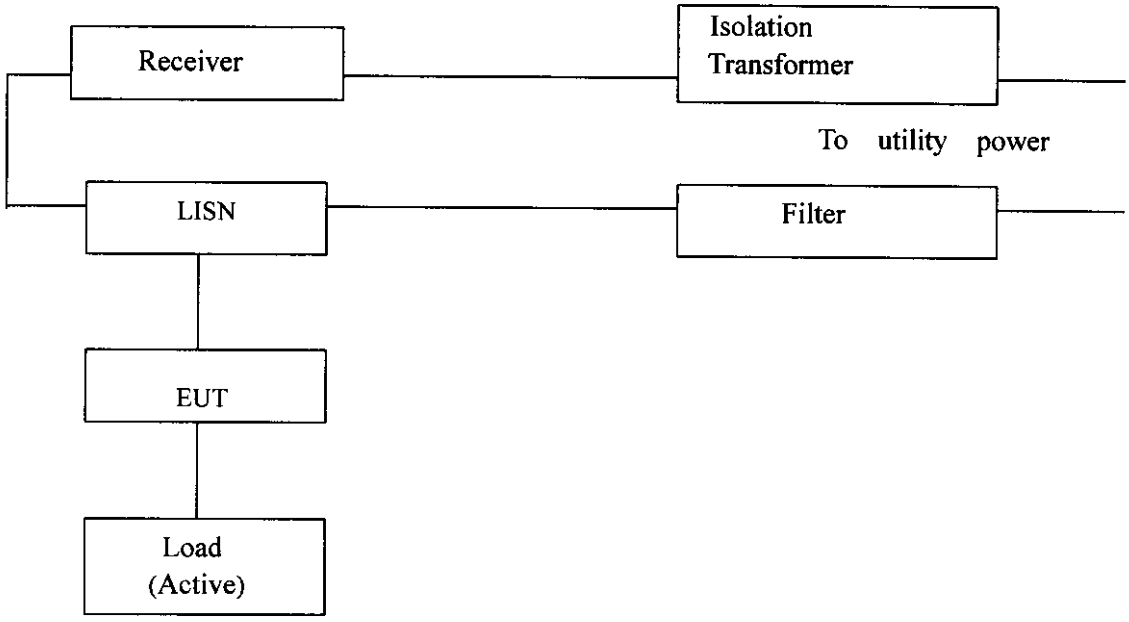
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DATE OF CAL. & CAL. CENTER	DUE DATE
SPECTRUM ANALYZER	9 KHz TO 1 GHz	HP	8590L/ 3624A01317	AUGUST 1998 ETC	1Y
EMI TEST RECEIVER	9 KHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30/ 826003/008	AUGUST 1998 ETC	1Y
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50-R24-BNC/ 951315	AUGUST 1998 ETC	1Y
LISN	50uH, 50 ohm	SOLAR ELECTRONICS	9252-50-R24-BNC/ 951315	AUGUST 1998 ETC	1Y
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1998 ITRI	1Y
POWER CONVERTER	0 TO 300 VAC VAC 47-500 Hz	AFC	AFC-1KW/ 850510	APRIL 1998 SRT	1Y

5 . 2 TEST PROCEDURE

The EUT was tested according to ANSI C63.4 - 1992. The frequency spectrum from 0.45 MHz to 30 MHz was investigated. The LISN used was 50 ohm / 50 uHenry as specified by SECTION 5.1 of ANSI C63.4 - 1992 . Cables and peripherals were moved to find the maximum emission levels for each frequency.

5 . 3 TEST SETUP





5.4 CONFIGURATION OF THE EUT

The EUT was configured according to ANSI C63.4 - 1992. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
MOUSE	ALLSPIRIT CO., LTD.	MA7EAV1	MA7EAV1

B. INTERNAL DEVICES

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC

C. PERIPHERALS

DEVICE	MANUFACTURER	MODEL # SERIAL #	FCCID / DoC	CABLE
PRINTER	EPSON	P862A	DoC	POWER-UNS DATA-S
MODEM	SMARTEAM	103/212A	EF56A103/212A	POWER-UNS DATA-S
KEYBOARD	APPLE	M0487	BCG9GRM5011	DATA-UNS
PC	MACINTOSH	M5011	BCG9GRM5011	POWER-UNS

- **REMARK** :

(1). Cable - uns : Unshielded
s : Shielded

(2). Cables - All 1m or greater in length – bundled according to ANSI C63.4 – 1992.

5.5 EUT OPERATING CONDITION

Operating condition is according to ANSI C63.4 - 1992.

1. EUT power on.
2. " H" pattern sent to the following peripherals :
   - printer
   - monitor
   - modem
3. CPU : 68030 Processor – 30MHz
   Resolution : 640 x 480

5.6 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY RANGE (MHz)	CLASS A	CLASS B
0.45 - 1.705	1000 uV	250 uV
1.705 - 30	3000 uV	250 uV

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

5.7 CONDUCTED POWER LINE TEST RESULT

The frequency spectrum from 0.45 MHz to 30 MHz was investigated. All readinges are QUASI – PEAK values with a resolution bandwidth of 9 KHz.

Temperature : 28 C Humidity : 78 %RH

QUASI – PEAK

FREQUENCY (MHz)	LINE1 (uV)	LINE2 (uV)	LIMIT (uV)
0.70	4.17	*	250
0.84	6.60	4.57	250
1.97	*	5.69	250
3.23	14.62	*	250
4.51	*	20.89	250

REMARKS : (1). * = Measurement does not apply for this frequency
(2). Uncertainty in conducted emmission measured is <+/ -2dB
(3). Any departure from specification : N/A
(4). CPU : 68030 Processor -- 30MHz
Resolution : 640 x 480

SIGNED BY TESTING ENGINEER : Tommy Bai

6. RADIATED EMISSION TEST

6.1 TEST EQUIPMENT

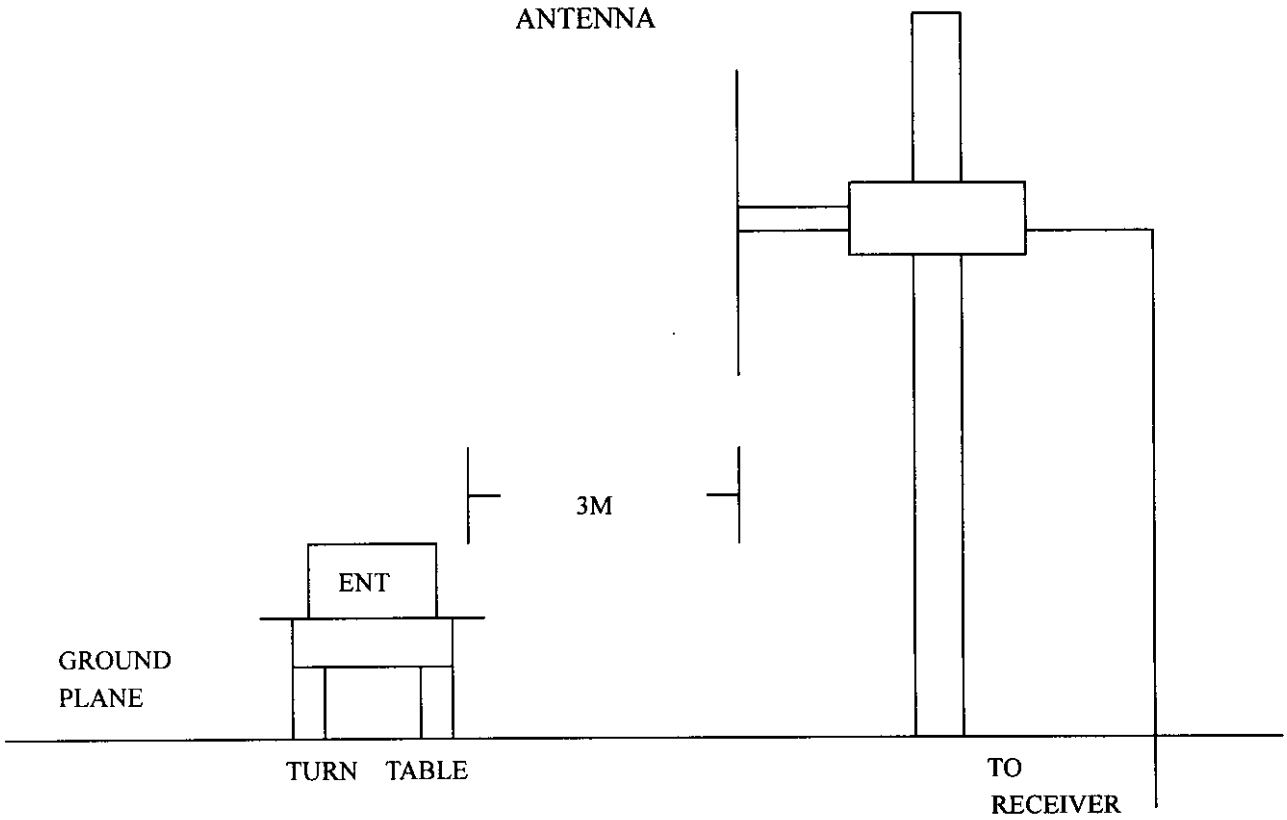
The following test equipment were used during the radiated emission test :

EQIPMENT / FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DUE DATE
RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/ 841977/03	APRIL 1998 ITRI	1Y
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/ 3019A05294	OCT. 1998 ETC	1Y
SPECTRUM ANALYZER	9 KHz TO 22 GHz	HP	8593E/ 3322A00670	APRIL 1998 ITRI	1Y
SPECTRUM ANALYZER	100 Hz TO 1000 MHz	IFR	A-7550/ 2684/1248	JULY 1998 ETC	1Y
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1998 ITRI	1Y
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-535	SEP. 1998 SRT	1Y
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	NOV. 1998 SRT	1Y
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9608-1073	NOV. 1998 SRT	1Y
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/ 9509-1152	SEP. 1998 SRT	1Y
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A08402	APRIL 1998 ITRI	1Y
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/ 2944A06412	AUGUST 1998 ETC	1Y
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/ 9612-3619	JAN. 1999 EMCO	1Y

6.2 TEST PROCEDURE

(1).The EUT was tested according to ANSI C63.4 - 1992. The radiated test was performed at SRT LAB'S OPEN SITE. this site is on file with the FCC laboratory division, reference 31040 / SRT.
(2).The EUT, peripheralls were put on the turntable which table size is 1m x 1.5 m, table heigh 0.8 m. All set up is according to ANSI C63.4-1992.
(3).The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are QUASI-PEAK values with a resolution bandeidth of 120 KHz. All readings are above 1 GHz, PEAK values with a resolution bandwidth of 1 MHz. Measurements were made at 3 METERS.
(4). The antenna heigh were varied from 1 m to 4 m heigh to find the maximum emission for each frequency.
(5). The antenna polarization : vertical polarization and horizontal polarization.

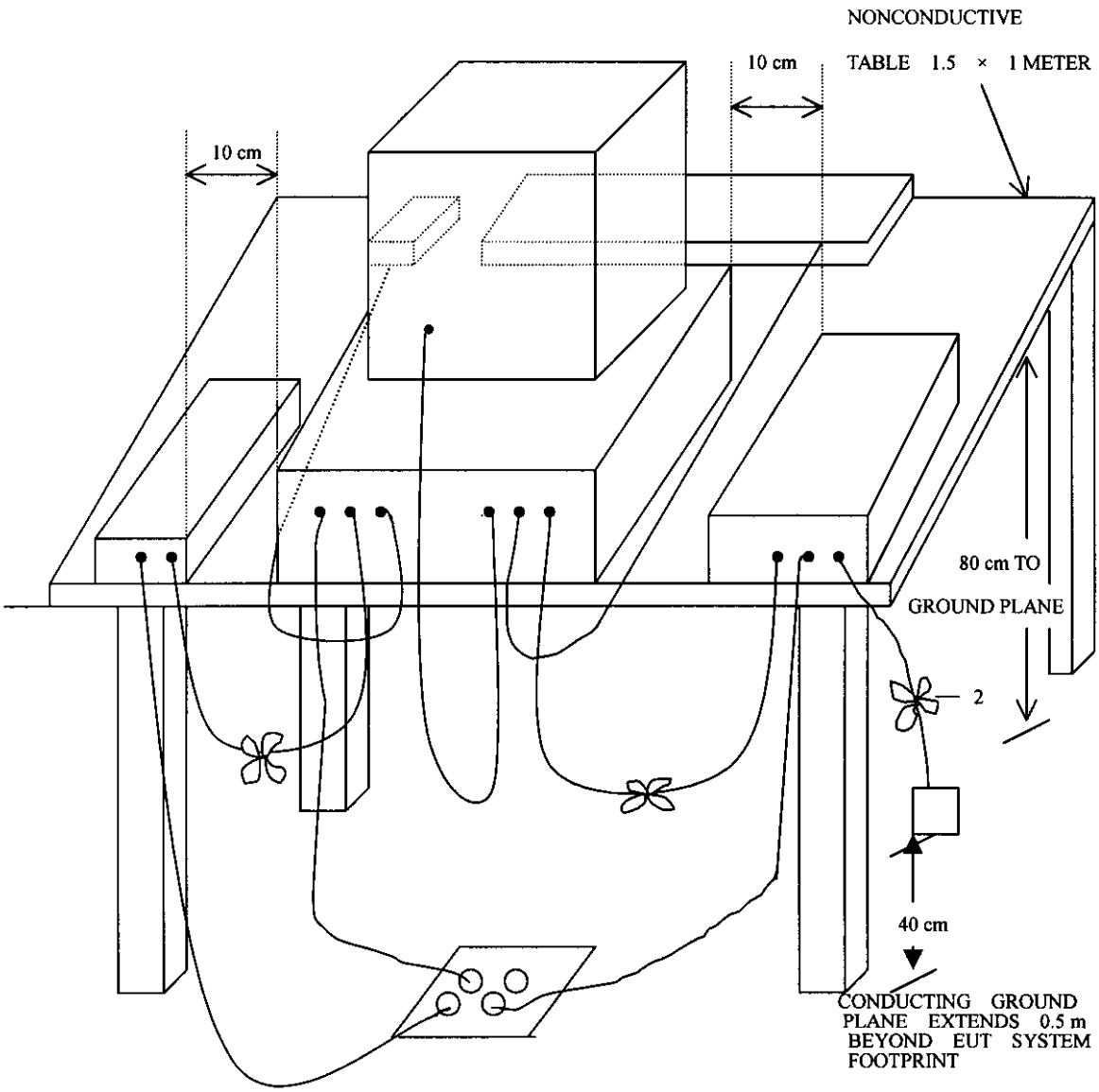
6.3 RADIATED TEST SET-UP



6 . 3 RADIATED TEST SET-UP

ANSI

ELECTRICAL AND ELECTRONIC EQUIIPMENT IN THE RANGE IN THE RANGE OF 9 KHz TO 40 GHz C63.4-1992



6.4 CONFIGURATION OF THE THE EUT

Same as section 4.4 of this report

6.5 EUT OPERATING CONDITION

Same as section 4.5 of this report.

6.6 RADIATED EMISSION LIMIT

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

CLASS B

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	100
88 - 216	3	150
216 - 960	3	200
ABOVE 960	3	500

CLASS B (OPEN CASE)

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	199.5
88 - 216	3	298.5
216 - 960	3	398.1
ABOVE 960	3	

CLASS A

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (uV/m)
30 - 88	3	316.3
88 - 216	3	473.2
216 - 960	3	613.0
ABOVE 960	3	1000.0

NOTE : 1. In the emission tables above, the tighter limit applies at the band edges.

2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

6.7 RADIATED EMISSION TEST RESULT

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are QUASI-PEAK values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz, PEAK values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.

Temperature : 28 C Humidity : 78 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBuV)		EMISSION (uV)		LMTS (uV)
			HORIZ	VERT	HORIZ	VERT	
77.66	0.7	7.9	27.8	*	66.1	*	100
93.85	0.8	8.7	25.3	*	54.9	*	150
115.95	0.9	9.8	25.2	24.8	62.4	59.6	150
140.25	1.0	12.1	22.4	23.7	59.6	69.2	150
215.66	1.3	9.3	*	22.7	*	46.2	150

REMARKS : (1). *=Measurement does not apply for this frequency.
(2). The maximum condition was with the monitor power cord connected to the personal computer.
(3). Sample calculation
20 log(emission)Uv/m = cable loss(dB)+factor(dB)+reading (dBuV/m)
(4). Uncertainty in radiated emission measured is <+/-4dB
(5). Any departure from specification : N/A
(6). CPU : 68030 Processor – 30MHz
Resolution : 640 x 480

SIGNED BY TESTING ENGINEER : Tommy Bai