



Blank Page

Don't Forget To Delete Me!

EMI TESTING REPORT

EUT : MOUSE

MODEL : CREUBV-P

FCC ID : NHM-CREUBV

PREPARED FOR :

CRE TECHNOLOGY CORP. LTD.

3F, NO. 46, SEC. 2, KAI-FENG ST.,

TAIPEI, TAIWAN, R.O.C.

PREPARED BY :

SPECTRIM RESEARCH & TESTING LABORATORY INC.
NO. 101-10, LING 8, SHAN-TONG LI CHUNG-LI CITY,
TAOYUAN, TAIWAN, R. O. C.

TEL : (03) 4987684

FAX : (03) 4986528

TABLE OF CONTENTS

1. TEST REPORT CERTIFIICATION.....	4
2. TEST STATEMENT	
2.1 TEST STATEMENT.....	5
2.2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS, TEST STATEMENT.....	5
3. EUT MODIFICATIONS.....	6
4. MODIFICATION LETTER.....	7
5. CONDUCTED POWER LINE TEST	
5.1 TEST EQUIPMENT.....	8
5.2 TEST PROCEDURE.....	8
5.3 TEST SETUP.....	9
5.4 CONFIGURATION OF THE EUT.....	10-11
5.5 EUT OPERATING CONDITION.....	12
5.6 EMISSION LIMIT.....	12
5.7 EMISSION TEST RESULT.....	13
6. RADIATED EMISSION TEST	
6.1 TEST EQUIPMENT.....	14
6.2 TEST PROCEDURE.....	15
6.3 TEST SETUP.....	15-16
6.4 CONFIGURATION OF THE EUT.....	17
6.5 EUT OPERATING CONDITION.....	17
6.6 EMISSION LIMIT.....	17
6.7 RADIATION EMISSION TEST RESULT.....	18
7. PHOTOS OF TESTING.....	19-25

1. TEST REPORT CERTIFICATION

APPLICANT : CRE TECHNOLOGY CORP. LTD.

ADDRESS : 3F. NO. 46, SEC. 2, KAI-FENG ST.,
TAIPEI, TAIWAN, R.O.C.

EUT DESCRIPTION : MOUSE

(A) POWER SUPPLY : FROM PC

(B) MODEL : CREUBV-P

(C) FCC ID : NHM-CREUBV

FINAL TEST DATE : 01/15/1999

MEASUREMENT PROCEDURE USED :

*PART 15 SUB PART B OF FCC RULES AND REGULATIONS (47 CFR PART 15)
FCC / 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 : Hill Chou DATE 1/15/99
Hill Chou

SUPERVISOR : Jesse Ho DATE 1/15/99
Jesse Ho

APPROVED BY : Johnson Ho DATE 1/15/99
Johnson Ho

2. TEST STATEMENT

2.1 TEST STATEMENT

To whom it may concern,

This letter is to explain the EUT(Mouse) will be class II changed.

The original FCC ID: NHM-CREUBV was approved by FCC.

The different between new one and old one is USB cable and IC (HT82M33C).

CPU PC : PENTIUM – 166MMX

CLOCK CHIP: 66MHz

RESOLUTION : 640 * 480

The data was shown in this report reflects the worst – case data for the condition as listed above.

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

A. DID HAVE

Any departure from document policies & procedures or from specifications.

Yes _____, No _____

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 :

- 1). Changed C1 and C2 from 47pF to cap. 68pF.
- 2). Cut off the ground of C1 and C2 contact to HT82M33C Pin9.

4. MODIFICATION LETTER

This section contains the following documents :

- A. Letter of modifications

5. CONDUCTED POWER LINE TEST**5.1 TEST EQUIPMENT**

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

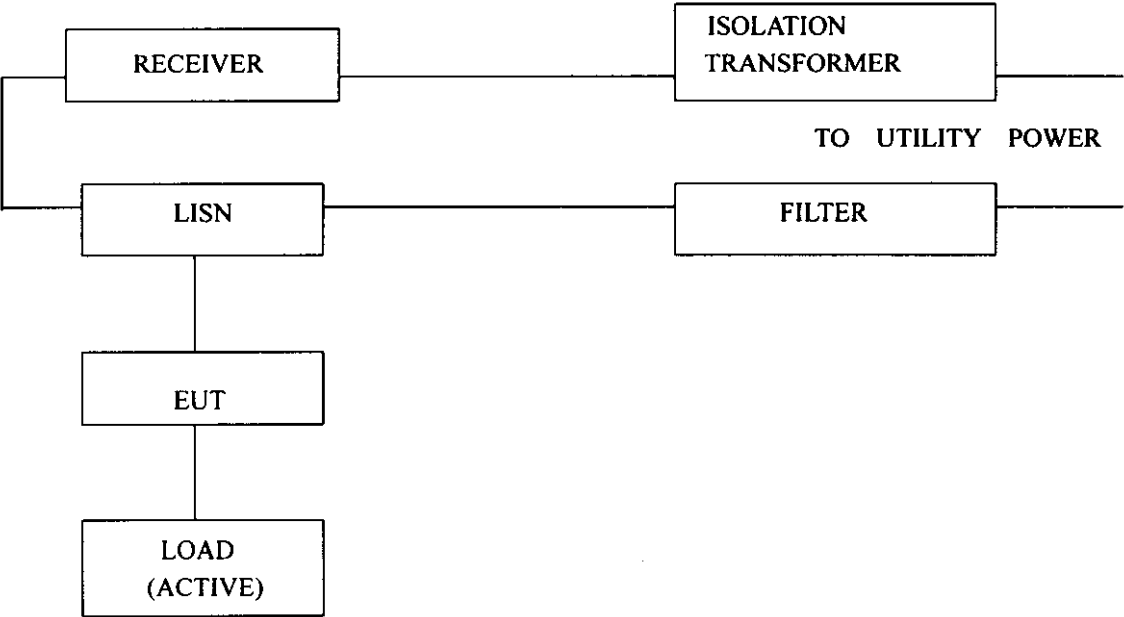
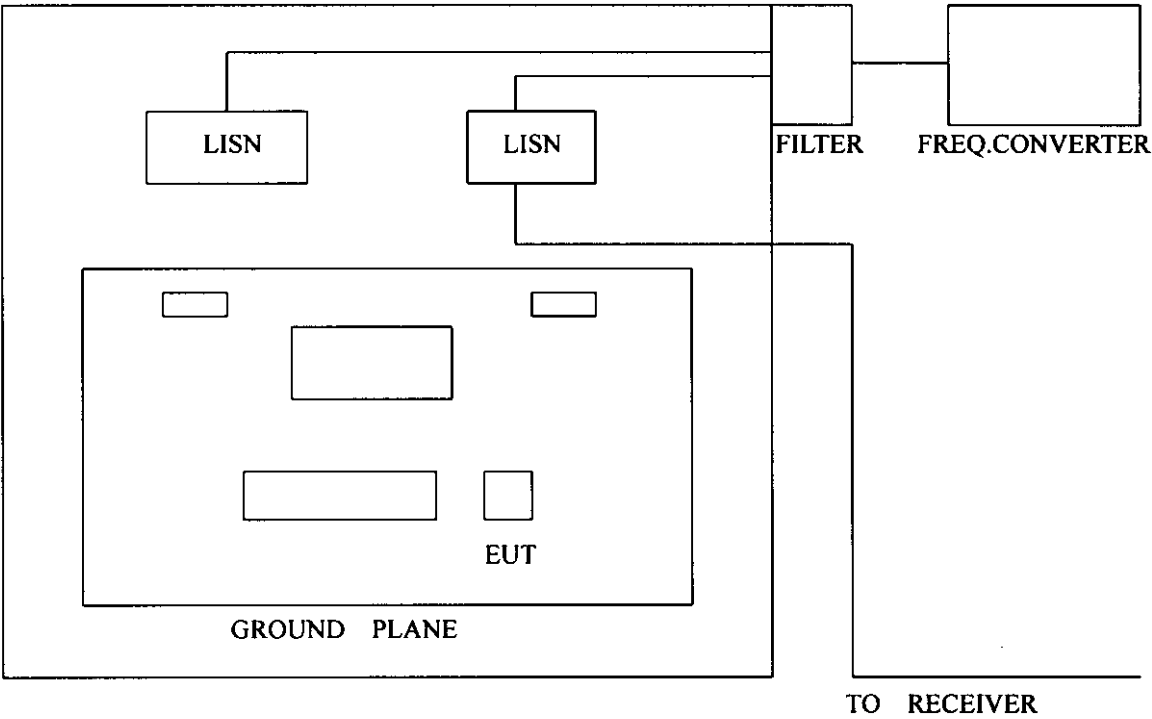
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL SERIAL	DATE OF PURCHASE	WARRANTY
SPECTRUM ANALYZER	9 KHz TO 1 GHz	HP	8590L/ 3624A01317	AUGUST , 1998 ETC	1Y
EMI TEST RECEIVER	9 KHz TO 30 MHz	ROHDE & SCHWARZ	ESHS30/ 826003/008	AUGUST , 1998 ETC	1Y
LISN	50 uH, 50 ohm	SOLAR ELECTRONICS	9252-50- R24-BNC/ 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	APPIL , 1998 ITRI	1Y
POWER CONVERTER	0 TO 300 VAC VAC 47-500 Hz	AFC	AFC-1KW/ 850510	APPIL , 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

SEMI - ANECHOIC CHAMBER



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	FCC ID
MOUSE	CRE TECHNOLOGY CORP. LTD.	CREUBV-P	NHM-CREUBV

B. INTERNAL DEVICES

DEVICE	MANUFACTURER	MODEL	FCC ID

C. PERIPHERALS

DEVICE	MANUFACTURER	MODEL / SERIAL	PORT	TYPE
MONITOR	OPTIQUEST	4500DC-E	GWGMULTI82	POWER-UNS DATA-S
PRINTER	HP	2225C	BS46XU2225C	POWER-UNS DATA-S
MODEM	SMARTEAM	103/212A	EF56A5103/212A	POWER-UNS DATA-S
KEYBOARD	HP	SK-2502	GYUR41SK	DATA-UNS
PC	COMPAQ	3431	EUN3431	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. PC CPU : PENTIUM - 166MMX
CLOCK CHIP : 66MHz
4. RESOLUTION : 640 * 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 tougher limit applies at the band edges.

5.7 CONDUCTED POWER LINE TEST RESULT

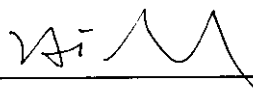
The frequency spectrum from 0.45 MHz to 30 MHz was investigated. All readings are QUASI-PEAK VALUES with a resolution bandwidth of 9 KHz.

TEMPERATURE : 24 °CHUMIDITY : 56 %RH

FREQUENCY (MHz)	LINE1 (µV)	LINE2 (µV)	LINE3 (µV)
0.76	*	43.65	250
0.97	38.46	58.88	250
1.80	*	69.98	250
3.59	98.86	*	250
3.73	112.20	*	250
6.58	87.10	127.35	250
11.19	38.46	90.16	250
23.98	167.88	165.96	250

REMARKS : (1). * = measurement does not apply for this frequency
(2).uncertainty in conducted emission measured is <+/- 2dB
(3).any departure from specification : N/A
(4).PC CPU : PENTIUM - 166MMX
CLOCK CHIP : 66MHz
(5).RESOLUTION : 640*480

SIGNED BY TESTING ENGINEER :



6. RADIATED EMISSION TEST**6.1 TEST EQUIPMENT**

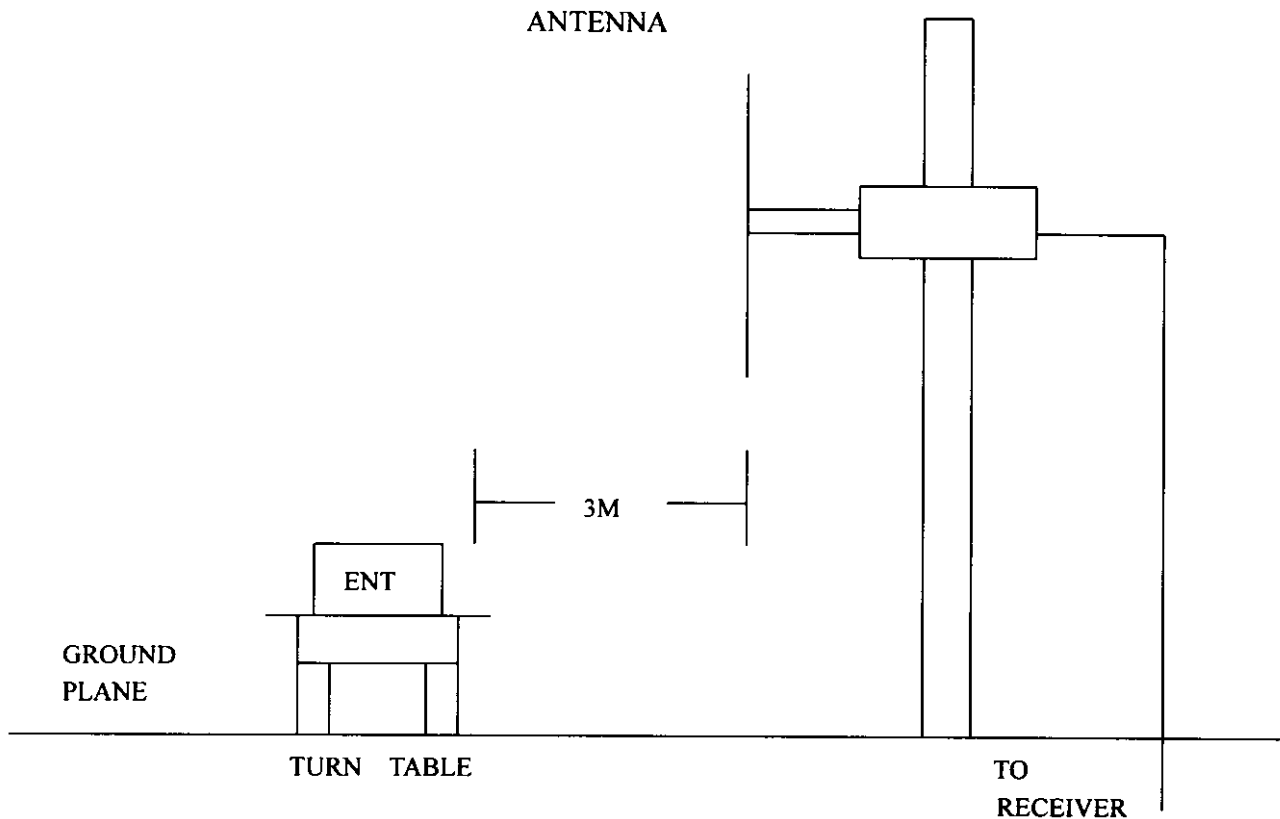
THE FOLLOWING TEST EQUIPMENT WAS USED DURING THE RADIATED EMISSION TEST :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL	DATE	WARRANTY
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/ 9602-4681	JULY, 1997 SRT	1.5Y

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, peripherals were put on the turntable which table size is 1m x 1.5 m, table height 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 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.
- (4).The antenna height were varied from 1 m to 4 m height to find the maximum emission for each frequency.
- (5).The antenna polarization : vertical polarization and horizontal polarization.

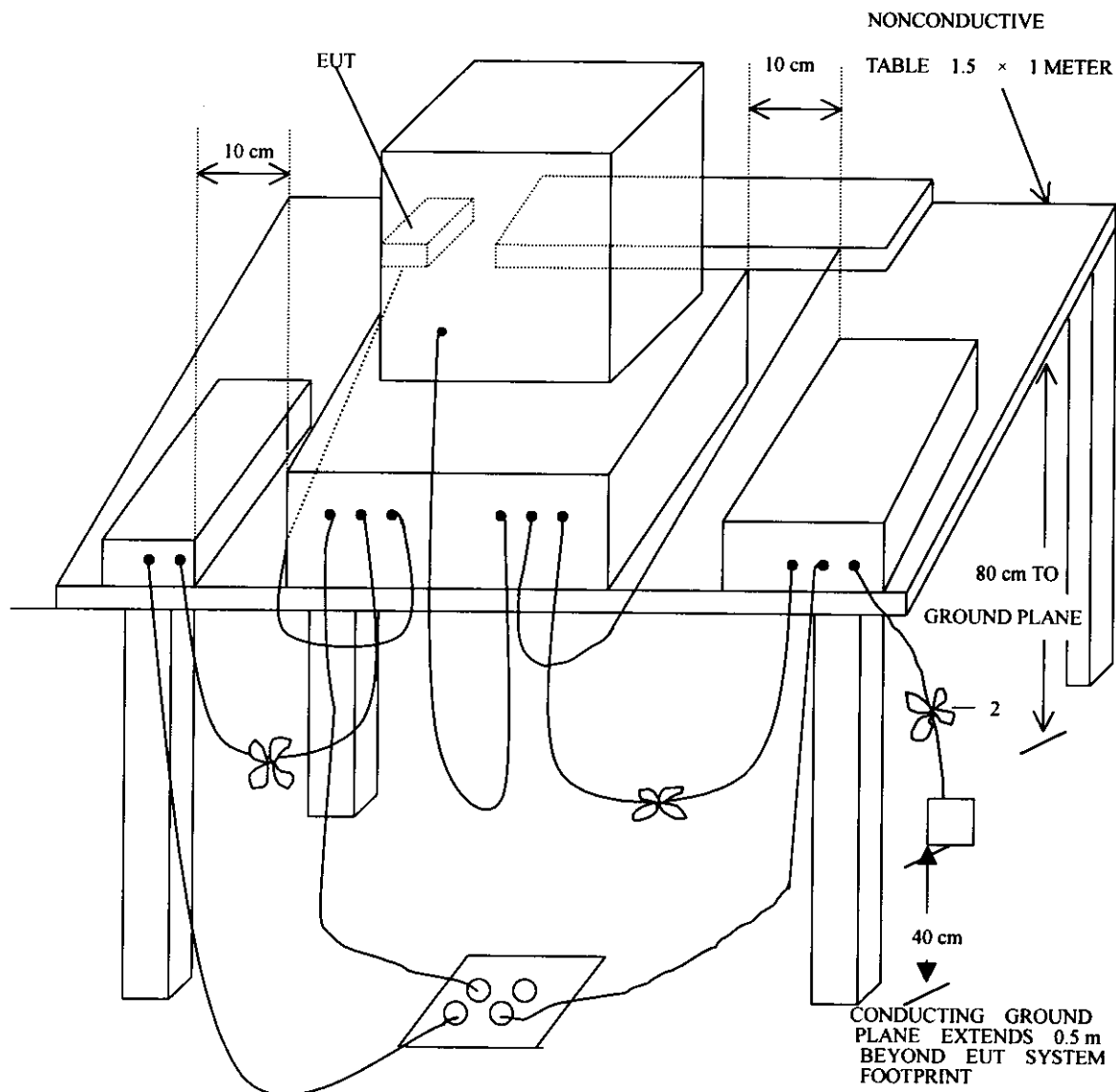
6.3 RADIATED TEST SET-UP



6.3 RADIATED TEST SET-UP

ANSI

ELECTRICAL AND ELECTRONIC EQUIPMENT 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 (V/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 (V/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 (V/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 tougher 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. Measurements were made at 3 meters. The measurements above 1 GHz with a resolution bandwidth of 1 MHz are PEAK READING at a distance of 3 meters.

TEMPERATURE : 24 °CHUMIDITY : 56 %RH

FREQ. (MHz)	CABLE LOSS (dB)	ANT. FACTOR (dB)	READING (dBm)		CONVERSION		
			Hertz	Volts	Field	Power	
132.45	1.0	10.7	14.5	11.6	20.4	14.6	150
156.50	1.1	10.2	13.3	8.9	17.0	10.2	150
216.09	1.2	13.0	11.3	10.4	18.8	17.0	200
432.66	1.8	17.1	16.7	16.2	60.3	56.9	200
532.50	1.8	19.7	13.5	12.6	56.2	50.7	200
599.07	2.1	23.2	13.2	9.4	84.1	54.3	200

- 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

$$20 \text{ LOG(EMISSION)Uv/m} = \text{CABLE LOSS(dB)} + \text{FACTOR(dB)} + \text{READING (dBuV/m)}$$
 - (4).uncertainty in radiated emission measured is <+/-4dB
 - (5).any departure from specification : N/A
 - (6).CPU: PENTIUM - 166MMX
 CLOCK CHIP: 66MHz
 RESOLUTION: 640 * 480

SIGNED BY TESTING ENGINEER :

