

**1. TEST REPORT CERTIFICATION**

**APPLICANT** : Caliber Computer Corporation  
**ADDRESS** : 45800 Northport Loop West,  
Fremont, California 94538  
U.S.A.

**EUT DESCRIPTION** : PC SYSTEM  
(A) POWER SUPPLY : 115 / 230 V  
(B) MODEL : Ez-Machine  
(C) FCC ID : H9Uez-Machine  
**FINAL TEST DATE** : 05/06/1999

**MEASUREMENT PROCEDURE USED :**

- PART 15 SUB PART B OF FCC RULES AND REGULATIONS ( 47 CFR PART 15)
- ANSI C63.4 - 1992
- TEST PROCEDURE AND DATA ARE TRACEABLE TO NATIONAL OR INTERNATIONAL STANDARDS

*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 applicatoion.*

**TESTING ENGINEER** : Addison Liu **DATE** 5/6/99  
Addison Liu

**SUPERVISOR** : Jesse Ho **DATE** 5/6/99  
Jesse Ho

**APPROVED BY** : Johnson Ho **DATE** 5/6/99  
Johnson Ho



Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

To whom it may concern:

This is to serve as proper written authorization that Spectrum Research and Testing Laboratory, Inc., 15200 Shady Grove Rd., Rockville, MD 20850. Will act as our representative in all matters relating to FCC applications for equipment approval. This includes the signing of all related documents, the transmitting of required fees, and receiving correspondence and notifications from the FCC. All acts performed by Spectrum Research and Testing Laboratory, Inc. , especially modifications to our equipment under testing will be carried out on our behalf.

Meantime, the applicant certifies that in the case of an individual applicant (e.g., corporation), no party to the applicant is subject to a denial of federal benefits, that includes FCC benial of federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S.C. 862. For a definition of a " party " for these purpose see 47 C.F.R. 1.2002 (b).

If you have any questions regarding our application for equipment approval, please contact Spectrum Research and Testing Laboratory, Inc. by calling (301) 670-2818.

Respectfully,

Ted Wav

(Name, Surname)

Engineer Manager

( Position/ Title )

Effective Dates:

From 3-15-99 To 3-14-2000

Date: 3-14-99



Federal Communications Commission  
Authorization and Evaluation Division  
7435 Oakland Mills Road  
Columbia, MD 21046

To whom it may concern:

This is to serve as proper notice that our company agrees to make all  
modifications to FCC ID : H9UEz-Machine as listed in section 3.0 of  
modification to submitted by Spectrum Research and Testing Laboratory, Inc.

Respectfully,

Ted Wu

(Name, Surname)

Engineer Manager

(Position/ Title)

Effective Dates:

From 3-15-99 To 3-14-2000

Date: 3-14-99



### 3. EUT MODIFICATIONS

The following accessories were added to the EUT during testing :

MAIN BOARD :

- 1). Added spring finger under KBM-PS1 and JS1.
- 2). L1,L3,L4,L5 added ferrite beads  $600\Omega$  at 100 MHz (CHB2012U601).
- 3). C2,C3,C4,C8 added caps 220pf.
- 4). Change L26 to ferrite beads  $1000\Omega$  at 100MHz(BLM21B102S).
- 5). Change RN33,RN34 to  $33\Omega$ .
- 6). C34,C35,C36,C37,C38,C39,C40,C41,C42,C43,C44,C45,C46,C50,C51 added caps 22pf.
- 7). C60-C66 added caps 10pf.
- 8). BC86,BC15,BC17,BC56,BC58,BC34,BC28 added caps 0.01uf.
- 9). Ground of KBM-PS1 must to screw hole.
- 10). Signal Line of PWR SW,RST,HDD,LED,SPEAKER and PWR LED must add caps 0.1uf to ground.
- 11). KBM-PS1 VCC pin parallel cap 0.1uf to ground.
- 12). KBM-PS1 added spring finger to I/O cover.

CASE :

- 1). Added gasket under CD-ROM to improve contact.
- 2). Added gasket to improve I/O cover contact.
- 3). Power supply power cable added core (KCF-130-B).
- 4). LED Line added cove (K5BT 28\*13\*16).
- 5). Put the washer onto the I/O screw.

#### **4. MODIFICATION LETTER**

This section contains the following documents :

A. Letter of modifications.

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

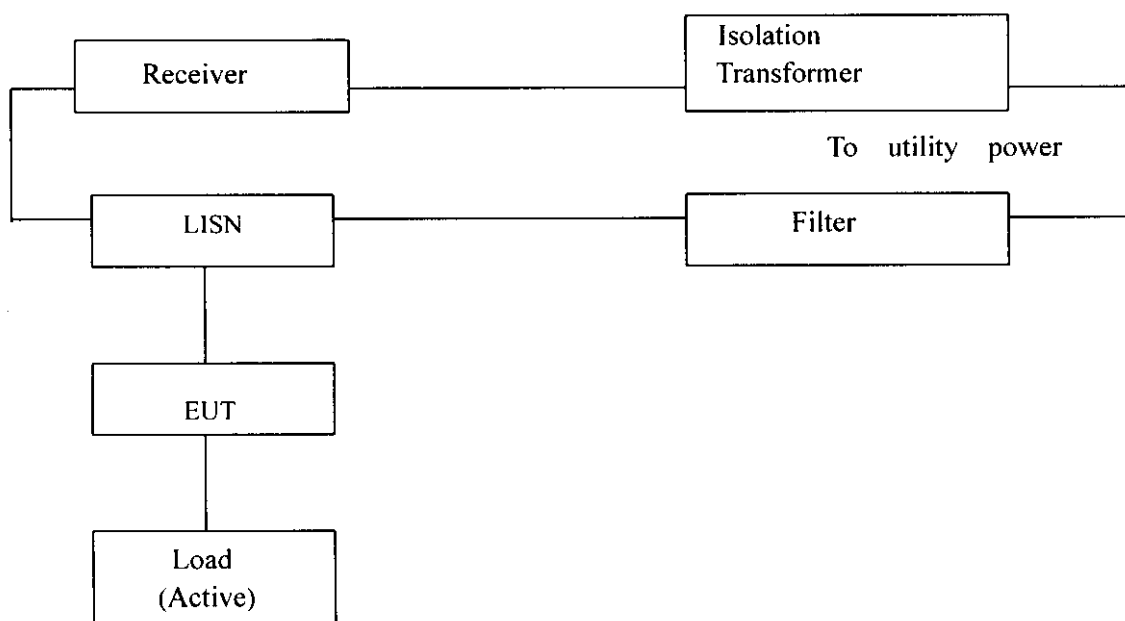
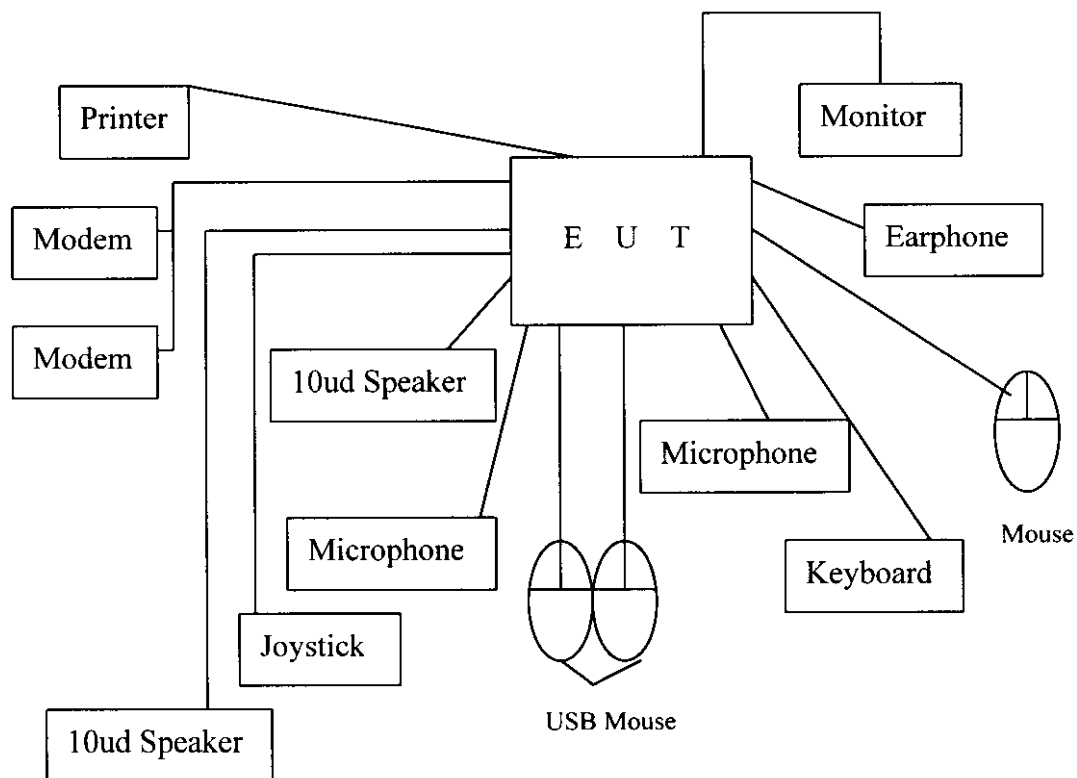
The following test equipment were used during the conducted power line test :

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DATE OF CAL. & CAL. CENTER	DUE DATE	FINAL TEST
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/ 951318	AUGUST 1998 ETC	1Y	√
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/ 841104/019	APRIL 1999 ETC	1Y	√
POWER CONVERTER	0 TO 300 VAC VAC 47-500 Hz	AFC	AFC-1KW/ 850510	MARCH 1999 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
PC SYSTEM	Caliber Computer Corporation	Ez-Machine	H9UEz-Machine

##### B. INTERNAL DEVICES

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
MAIN BOARD	ECS	P5SS-ME	DoC
POWER SUPPLY	MERIDIAN	CWT-200ATX	DoC
HDD	SEAGATE	ST32122A	N/A
FDD(3.5")	MITSUMI	D359M3	N/A
CD ROM	LITE-ON	LTN-382	N/A
MODEM CARD	MOTOROLA	56K PCI W/VOICE	N/A

**C. PERIPHERALS**

DEVICE	MANUFACTURER	MODEL # SERIAL #	FCCID / DoC	CABLE
MONITOR	VIEWSONIC	1768PS	GSS17006	1.8m unshielded power cable 1.5m shielded data cable (S2)
PRINTER	HP	2225C	BS46XU2225C	1.8m unshielded power cable 1.5m shielded data cable (S2)
MODEM	TEAM	1200AT	EF56A51200AT	1.8m unshielded power cable 1.5m shielded data cable (S2)
MODEM	TEAM	103/212A	EF56A5103/212A	1.8m unshielded power cable 1.5m shielded data cable (S2)
KEYBOARD	HP	SK-2502	GYUR4ISK	1.8m unshielded data cable
MOUSE	LEADING	EDGE PS/2	KHZMUSJC	1.8m unshielded data cable
USB MOUSE	ABIT	97M32U	NS5497M32U	1.5m shielded data cable (S1)
USB MOUSE	ABIT	97M32U	NS5497M32U	1.5m shielded data cable (S1)
MICROPHONE	QUICKSHOT	QS-5838	N/A	1.2m unshielded data cable
MICROPHONE	TAKY	UDM-606	N/A	1.2m unshielded data cable
EARPHONE	SP	SVR-A1	N/A	1.2m unshielded data cable
JOYSTICK	LOGITECH	J-Y68	N/A	1.2m unshielded data cable
SPEAKER	J-S	J-003	N/A	1.2m unshielded data cable
SPEAKER	JUSTER	DC-691P	N/A	1.2m unshielded data cable
ADAPTOR	JUSTER	PPI-0620-UL	N/A	1.8m unshielded power cord

**- REMARK :**

- (1). Cable - uns : Unshielded  
                   s : Shielded  
                   S1 : Single point shielding  
                   S2 : 360° shielding  
                   S3 : Double point shielding

- (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 \*2
3. Test with CPU  
CPU :AMD-K6-2 – 350MHz      Clock Chip : 100MHz
4. Resolution : 640 \* 480  
                  1024 \* 768  
                  1600 \* 1200

## 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 readings are quasi-peak values with a resolution bandwidth of 9 KHz.

Temperature : 14 C

Humidity : 59 %RH

**QUASI - PEAK**

FREQUENCY (MHz)	LINE1 (uV)	LINE2 (uV)	LIMIT (uV)
0.58	93.32	90.16	250
0.87	116.1	102.3	250
1.76	85.11	95.50	250
2.64	53.01	62.37	250
3.81	20.42	39.36	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). Resolution : 640 \* 480

SIGNED BY TESTING ENGINEER :



**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 : 14 C

Humidity : 59 %RH

**QUASI-PEAK**

FREQUENCY (MHz)	LINE1 (uV)	LINE2 (uV)	LIMIT (uV)
0.58	90.16	90.16	250
0.87	113.5	133.4	250
2.64	54.33	86.10	250
9.32	31.26	*	250
10.6	*	31.99	250

- REMARKS :**
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is  $\pm 2$ dB
  - (3). Any departure from specification : N/A
  - (4). Resolution : 1024 \* 768

SIGNED BY TESTING ENGINEER :



**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 : 14 C

Humidity : 59 %RH

**QUASI-PEAK**

FREQUENCY (MHz)	LINE1 (uV)	LINE2 (uV)	LIMIT (uV)
0.58	91.20	38.02	250
2.64	54.95	73.28	250
3.81	22.91	34.67	250
8.69	52.48	58.21	250
10.9	26.00	30.90	250
22.2	56.23	54.95	250

- REMARKS** :
- (1). \* = Measurement does not apply for this frequency
  - (2). Uncertainty in conducted emission measured is  $\pm 2$ dB
  - (3). Any departure from specification : N/A
  - (4). Resolution : 1600 \* 1200

SIGNED BY TESTING ENGINEER :



## 6. RADIATED EMISSION TEST

## 6.1 TEST EQUIPMENT

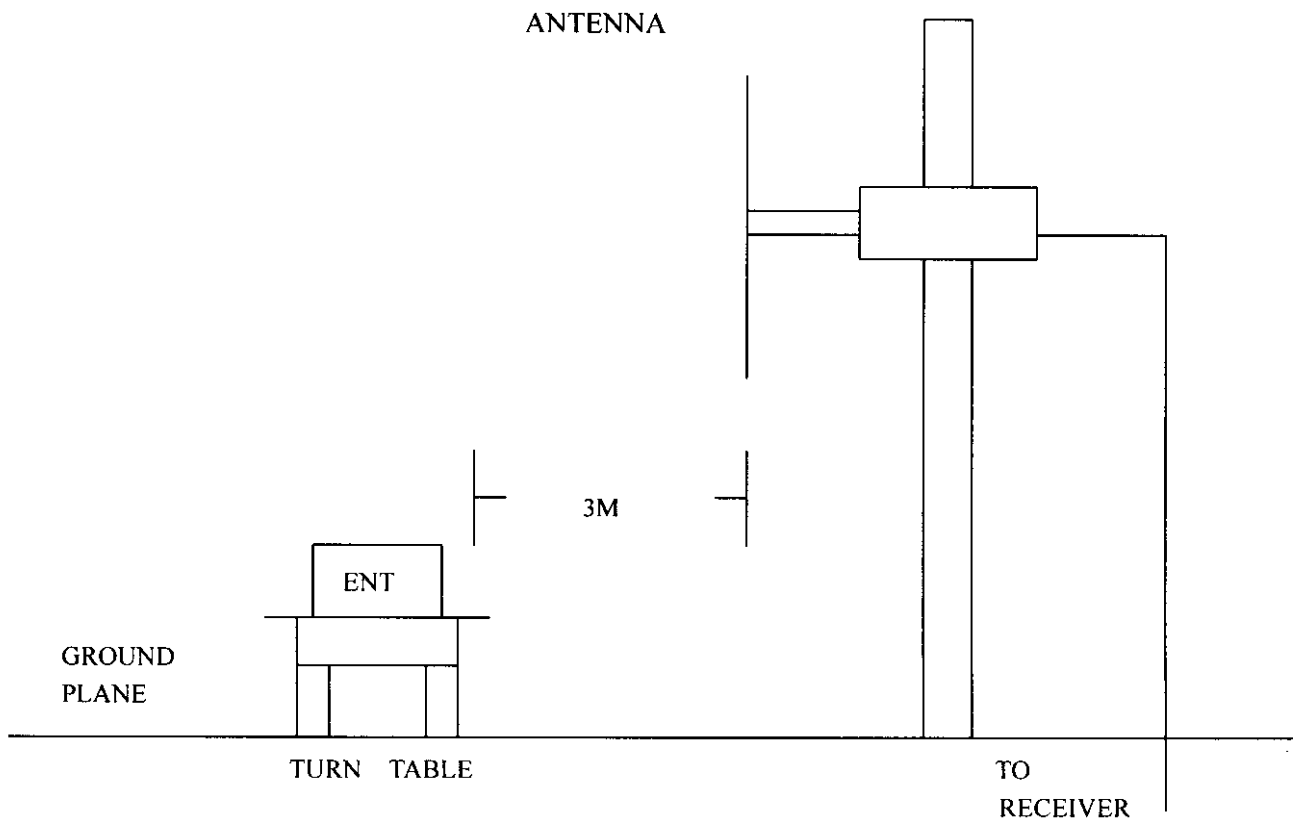
The following test equipment were used during the radiated emission test :

EQUIPMENT / FACILITIES	SPECIFICAT-IONS	MANUFACTUR-ER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DUE DATE	FINAL TEST
RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/ 841977/003	APRIL 1999 ETC	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 1999 ETC	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 1999 ETC	1Y	√
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9003-534	MARCH 1999 SRT	1Y	
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/ 9611-1239	SEP. 1998 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/ 9608-1073	SEP. 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 1999 ETC	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/ 9012-3619	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/SIT.
- (2).The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-1992.
- (3).The frequency spectrum from 30 MHz to 2 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 high were varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5).The antenna polarization : Vertical polarization and horizontal polarization.

## 6.3 RADIATED TEST SET-UP



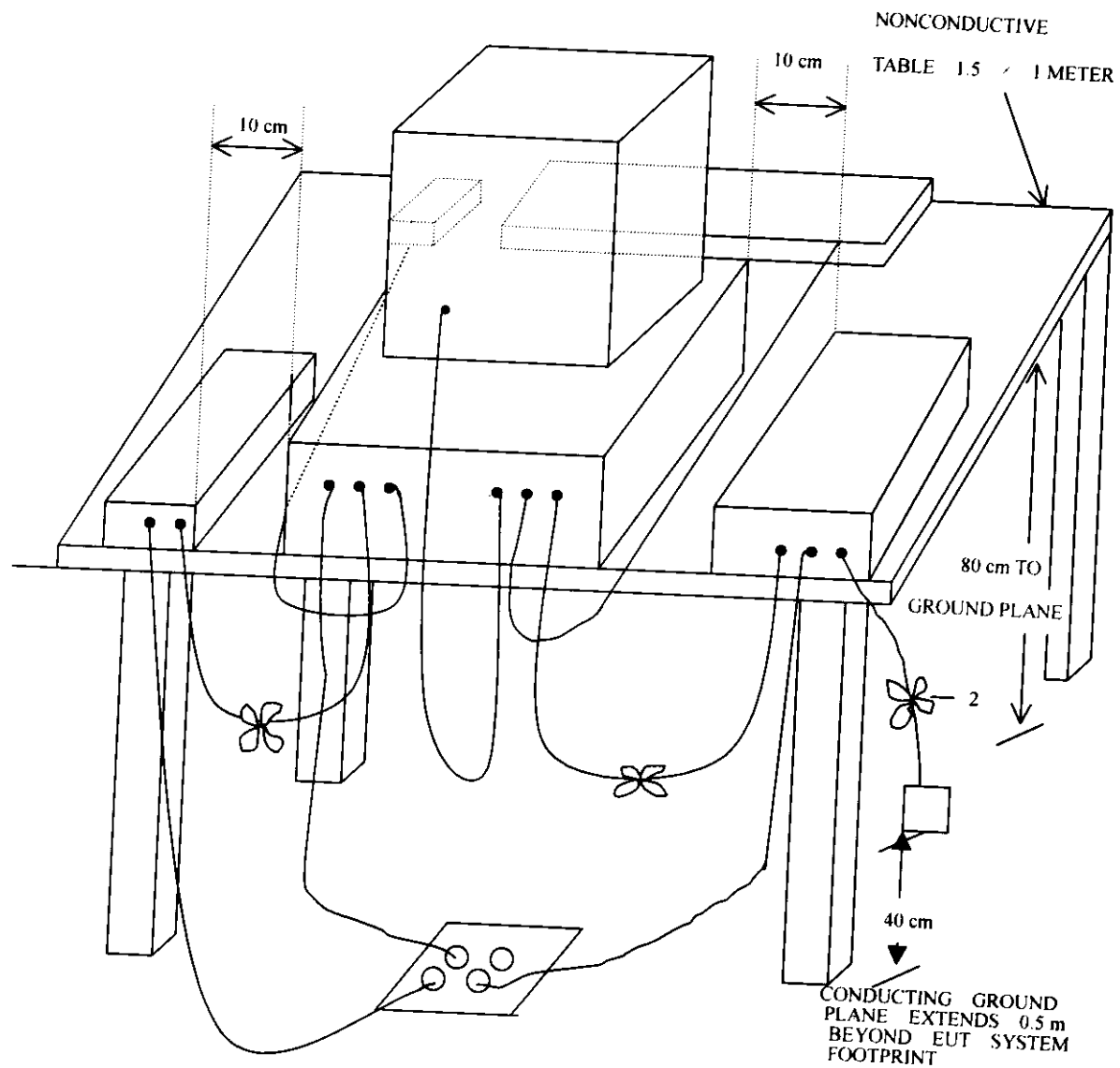


### 6.3 RADIATED TEST SET-UP

ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE IN THE RANGE OF 9 KHz TO 40 GHz

ANSI

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)	FIELDS 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)	FIELDS STRENGTH (uV/m)
30 - 88	3	199.5
88 - 216	3	298.5
216 - 960	3	398.1

##### CLASS A

FREQUENCY (MHz)	DISTANCE (m)	FIELDS 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 2 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 : 15 C

Humidity : 65 %RH

FREQ (MHz)	FACTOR (dB)	ANT FACTOR (dB/m)	READING (dBuV)		EMISSION (uV/m)		CYCLES (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
67.24	0.8	8.10	22.50	23.50	37.15	41.69	100
132.6	1.0	10.8	26.50	28.10	82.22	98.86	150
165.8	1.1	10.4	23.70	19.70	57.54	36.31	150
269.3	1.4	14.8	22.10	16.40	82.22	42.66	200
624.1	2.1	22.9	12.10	13.30	71.61	82.22	200
696.4	2.2	21.8	12.30	11.30	65.31	58.21	200

- REMARKS :**
- (1). \*=Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is <+/-4dB
  - (3). Any departure from specification : N/A
  - (4). Factor will include cable loss and correction factor.
  - (5). Sample calculation  

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$$
  - (6). Resolution : 640 \* 480

SIGNED BY TESTING ENGINEER :



**6.7 RADIATED EMISSION TEST RESULT**

The frequency spectrum from 30 MHz to 2 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 : 14 C

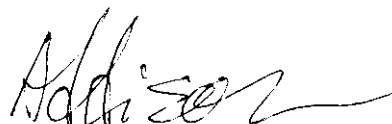
Humidity : 69 %RH

FREQ (MHz)	FACTOR (dB)	ANT FACTOR (dB/m)	READING (dBuV)		EMISSION (uV/m)		LIMITS (uV/m)
			HORIZ	VERT	HORIZ	VERT	
67.24	0.8	8.10	23.70	23.50	42.66	41.69	100
132.6	1.0	10.8	26.10	27.80	78.52	95.50	150
165.8	1.1	10.4	23.80	19.80	58.21	36.73	150
269.3	1.4	14.8	22.40	16.70	85.11	44.16	200
624.1	2.1	22.9	12.20	13.40	72.44	83.18	200
696.4	2.2	21.8	12.20	11.40	64.57	58.88	200

- REMARKS :**
- (1). \*=Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is  $\pm 4$ dB
  - (3). Any departure from specification : N/A
  - (4). Factor will include cable loss and correction factor.
  - (5). Sample calculation  

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$$
  - (6). Resolution : 1024 \* 768

SIGNED BY TESTING ENGINEER :



**6.7 RADIATED EMISSION TEST RESULT**

The frequency spectrum from 30 MHz to 2 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 : 14 C

Humidity : 69 %RH

FREQ (MHz)	FACTOR (dB)	ANT FACTOR (dB/m)	READING (dBuV)		EMISSION (uV/m)		LIMIT (uV/m)
			HORIZ	VERT	HORIZ	VERT	
67.24	0.8	8.10	24.00	23.60	44.16	42.17	100
132.6	1.0	10.8	26.60	28.00	83.18	97.72	150
152.5	1.1	9.50	11.20	12.30	12.30	13.96	150
165.8	1.1	10.4	24.00	20.00	59.57	37.58	150
696.4	2.2	21.8	12.50	11.60	66.83	60.26	200
707.0	2.2	21.8	14.00	13.80	79.43	77.62	200

- REMARKS :**
- (1). \*=Measurement does not apply for this frequency.
  - (2). Uncertainty in radiated emission measured is  $\pm 4$ dB
  - (3). Any departure from specification : N/A
  - (4). Factor will include cable loss and correction factor.
  - (5). Sample calculation  

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$$
  - (6). Resolution : 1600 \* 1200

SIGNED BY TESTING ENGINEER :

