FCC ID: E5XKB8170

# FCC TEST REPORT

**REPORT NO.:** F910527A06

**MODEL NO.:** 8170

**RECEIVED:** May 27, 2002

**TESTED:** June 3, 2002

**APPLICANT:** BEHAVIOR TECH COMPUTER CORP.

**ADDRESS:** 2F, 51, TUNG HSING RD., TAIPEI, TAIWAN, R.O.C.

**ISSUED BY:** Advance Data Technology Corporation

**LAB LOCATION:** 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.



0528
ILAC MRA

Lab Code: 200102-0

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# 1 CERTIFICATION

| | |
|---|---|
| **PRODUCT:** | KEYBOARD |
| **BRAND NAME:** | CREATIVE |
| **MODEL NO:** | 8170 |
| **TEST ITEM:** | ENGINEERING SAMPLE |
| **APPLICANT:** | BEHAVIOR TECH COMPUTER CORP. |
| **STANDARDS:** | FCC Part 15, Subpart B, Class B |
| | CISPR 22: 1997, Class B |
| | ANSI C63.4-1992 |

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility on June 3, 2002. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

**CHECKED BY:** Kathy Tseng , **DATE:** June 4, 2002

( Kathy Tseng )

**APPROVED BY:** Fred Chen , **DATE:** June 4, 2002

( Fred Chen, Manager )

# 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| Standard | Test Type | Result | Remarks |
|---|---|---|---|
| FCC Part 15, Subpart B, CISPR 22: 1997, Class B | Conducted Test | PASS | Meets Class B Limit Minimum passing margin is –14.62 dB at 7.757 MHz |
| | Radiated Test | PASS | Meets Class B Limit Minimum passing margin is –6.1 dB at 199.93 MHz |

**NOTE:** For conducted emission test, the test limit used is according to FCC Part 15.107. In this part, conducted emission test for telecom port is not mentioned and therefore this item is not tested.

# 3 GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **PRODUCT** | KEYBOARD |
| **MODEL NO.** | 8170 |
| **POWER SUPPLY** | DC 8V, 100mA ( from PC ) |
| **DATA CABLE** | PS/2 Shielded 3m |

**NOTE:** The EUT is a PS/2 KEYBOARD attached with a piano keyboard.

During the test, both of the keyboard were tested separately and their data were recorded in this report:

Mode 1: Keyboard function
Mode 2: Piano function

For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

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## 3.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | PC | HP | DTPC 27 | 21402951 | FCC DoC Approved |
| 2 | MONITOR | ADI | CM100 | 020058T10200182 | FCC DoC Approved |
| 3 | PRINTER | EPSON | LQ-300+ | DCGY017081 | FCC DoC Approved |
| 4 | MODEM | ACEEX | 1414 | 980020533 | IFAXDM1414 |
| 5 | PS/2 MOUSE | LOGITECH | M-S61 | HCA11824170 | JNZ211403 |
| 6 | SPEAKER | JAZZ | J-008 | J80391997 | N/A |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | NA |
| 2 | 1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core |
| 3 | 1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core |
| 4 | 1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core. |
| 5 | 1.8 m Non shielded wire, terminated with PS/2 connector via drain wire, w/o core. |
| 6 | 1.5 m wrapped shielded wire, terminated via drain wire, with 3.5 mm phone plug, w/o core. |

**NOTE:** All power cords of the above support units are non shielded (1.8m).

# 4 EMISSION TEST

## 4.1 CONDUCTED EMISSION MEASUREMENT

### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Class A (dBuV) | | Class B (dBuV) | |
|---|---|---|---|---|
| | Quasi-peak | Average | Quasi-peak | Average |
| 0.15 - 0.5 | 79 | 66 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 73 | 60 | 56 | 46 |
| 5.0 - 30.0 | 73 | 60 | 60 | 50 |

**NOTES**: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESHS30 | 828109/007 | July 4, 2002 |
| ROHDE & SCHWARZ Artificial Mains Network (for EUT) | ESH3-Z5 | 839135/006 | July 3, 2002 |
| * ROHDE & SCHWARZ 4-wire ISN | ENY41 | 838119/028 | Dec. 2, 2002 |
| * ROHDE & SCHWARZ 2-wire ISN | ENY22 | 837497/016 | Dec. 2, 2002 |
| EMCO-L.I.S.N. (for peripheral) | 3825/2 | 9204-1964 | July 3, 2002 |
| Software | Cond-V2.0M | NA | NA |
| RF cable (JYEBAO) | 5D-FB | Cable-C02.01 | July 5, 2002 |
| HP Terminator (For EMCO LISN) | 11593A | E1-01-298 | Feb. 20, 2003 |
| HP Terminator (For EMCO LISN) | 11593A | E1-01-299 | Feb. 20, 2003 |
| Shielded Room | Site 2 | ADT-C02 | NA |
| VCCI Site Registration No. | Site 2 | C-240 | NA |

**NOTE**: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

3. "*": These equipment are used for conducted telecom port test only (if tested).

## 4.1.3 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

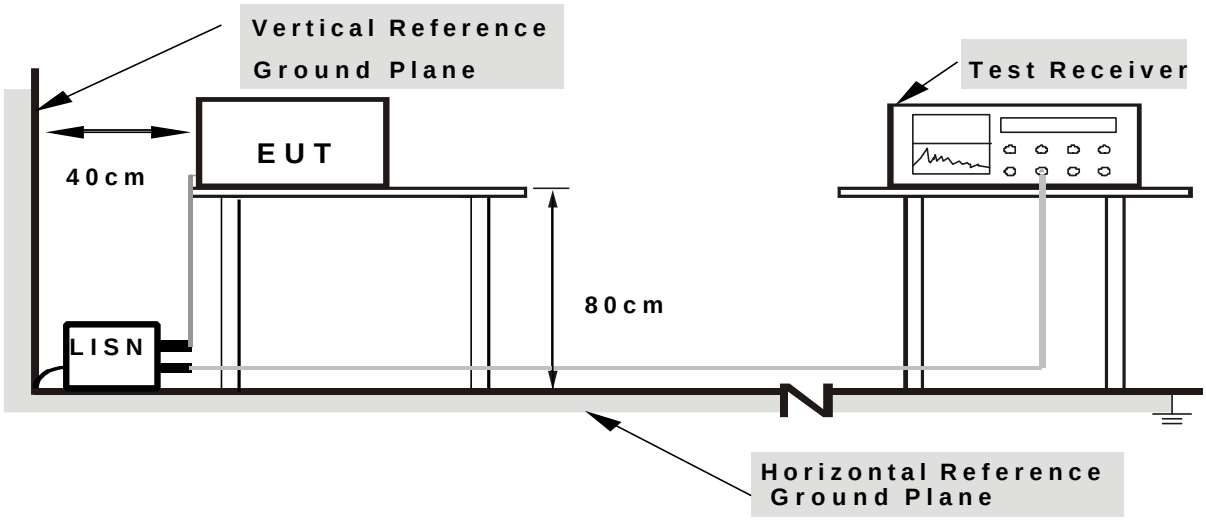
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported.

## 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.1.5 TEST SETUP




**Note: 1.Support units were connected to second LISN.**
**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes**

For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

## 4.1.6 EUT OPERATING CONDITIONS

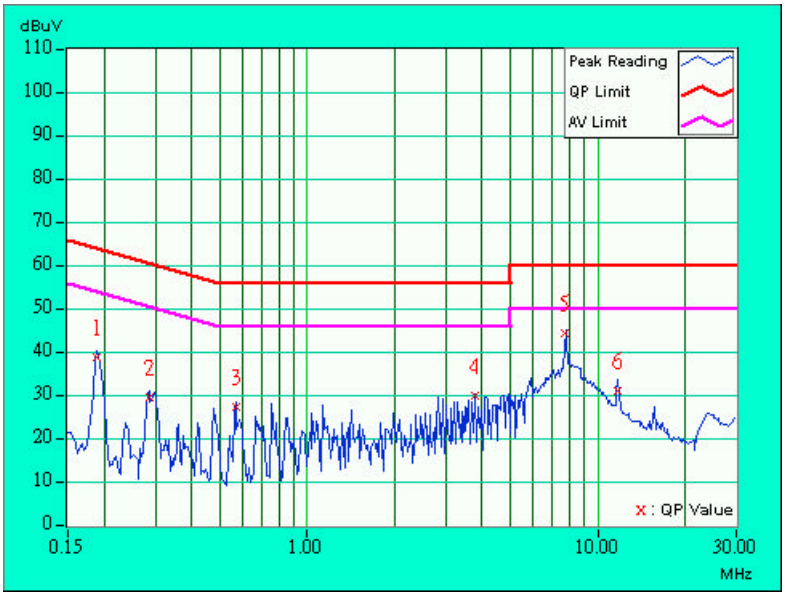
a. Turned on the power of all equipment.
b. PC ran a test program to enable all functions.
c. PC read and wrote messages from FDD and HDD.
d. EUT sent "H" character to PC (mode 1)
e. EUT sent Media message to PC (mode 2)
f. PC sent "H" messages to monitor and monitor displayed "H" patterns on screen.
g. PC sent "H" messages to modem.
h. PC sent "H" messages to printer and then printer printed them on paper.
i. Repeated steps c-i.

## 4.1.7 TEST RESULTS (A)

| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 1 | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER** | 120Vac, 60 Hz | **PHASE** | Line (L) |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.189 | 0.10 | 38.17 | - | 38.27 | - | 64.08 | 54.08 | -25.81 | - |
| 2 | 0.285 | 0.10 | 29.00 | - | 29.10 | - | 60.66 | 50.66 | -31.56 | - |
| 3 | 0.567 | 0.10 | 26.95 | - | 27.05 | - | 56.00 | 46.00 | -28.95 | - |
| 4 | 3.786 | 0.28 | 29.23 | - | 29.51 | - | 56.00 | 46.00 | -26.49 | - |
| 5 | 7.753 | 0.43 | 44.02 | - | 44.45 | - | 60.00 | 50.00 | -15.55 | - |
| 6 | 11.740 | 0.60 | 30.50 | - | 31.10 | - | 60.00 | 50.00 | -28.90 | - |

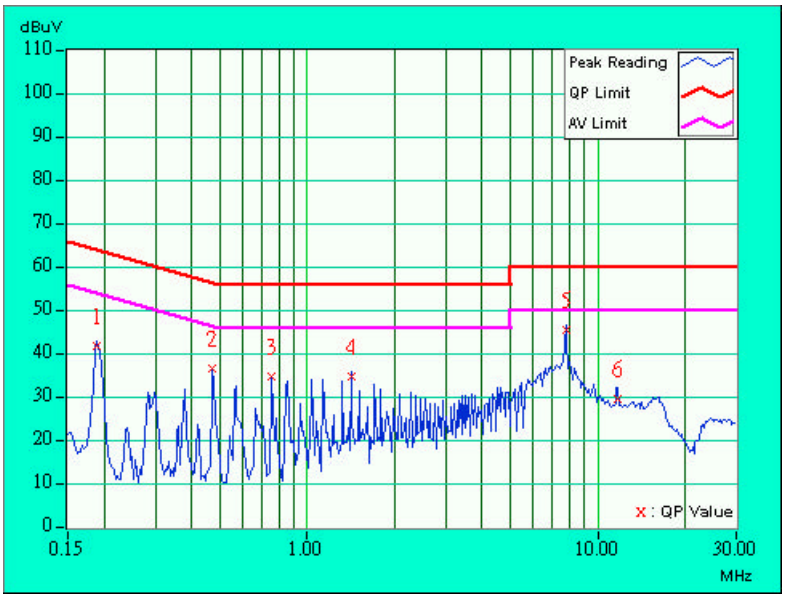
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



| EUT | KEYBOARD | MODEL | 8170 |
|---|---|---|---|
| MODE | 1 | 6dB BANDWIDTH | 9 kHz |
| INPUT POWER | 120Vac, 60 Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 25 deg. C, 55 % RH, 1005 hPa | TESTED BY: Jim Hsiang | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.189 | 0.10 | 41.20 | - | 41.30 | - | 64.08 | 54.08 | -22.78 | - |
| 2 | 0.472 | 0.10 | 36.07 | - | 36.17 | - | 56.48 | 46.48 | -20.31 | - |
| 3 | 0.757 | 0.10 | 34.27 | - | 34.37 | - | 56.00 | 46.00 | -21.63 | - |
| 4 | 1.420 | 0.10 | 34.44 | - | 34.54 | - | 56.00 | 46.00 | -21.46 | - |
| 5 | 7.757 | 0.36 | 45.02 | - | 45.38 | - | 60.00 | 50.00 | -14.62 | - |
| 6 | 11.748 | 0.47 | 29.18 | - | 29.65 | - | 60.00 | 50.00 | -30.35 | - |

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

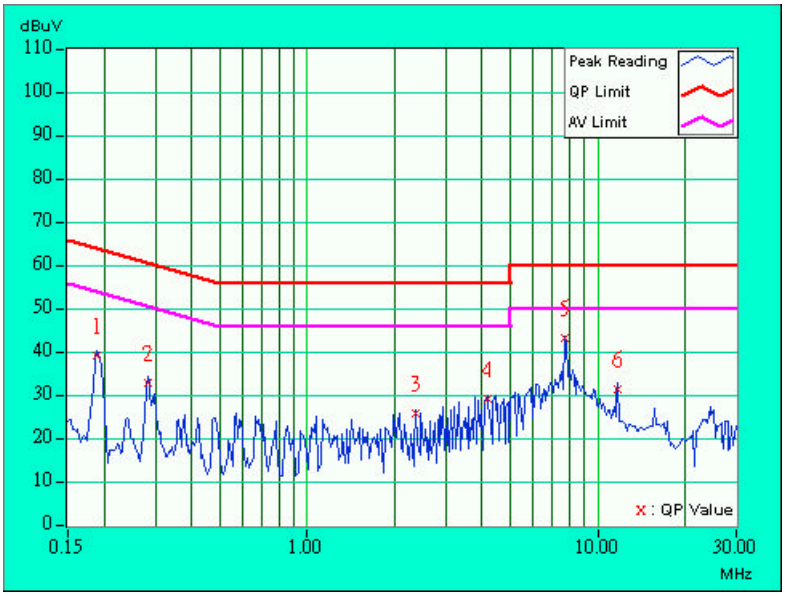


## 4.1.8 TEST RESULTS (B)

| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 2 | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER** | 120Vac, 60 Hz | **PHASE** | Line (L) |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.189 | 0.10 | 38.65 | - | 38.75 | - | 64.07 | 54.07 | -25.32 | - |
| 2 | 0.282 | 0.10 | 32.41 | - | 32.51 | - | 60.75 | 50.75 | -28.24 | - |
| 3 | 2.367 | 0.14 | 25.27 | - | 25.41 | - | 56.00 | 46.00 | -30.59 | - |
| 4 | 4.167 | 0.31 | 28.63 | - | 28.94 | - | 56.00 | 46.00 | -27.06 | - |
| 5 | 7.744 | 0.42 | 42.67 | - | 43.09 | - | 60.00 | 50.00 | -16.91 | - |
| 6 | 11.746 | 0.60 | 30.92 | - | 31.52 | - | 60.00 | 50.00 | -28.48 | - |

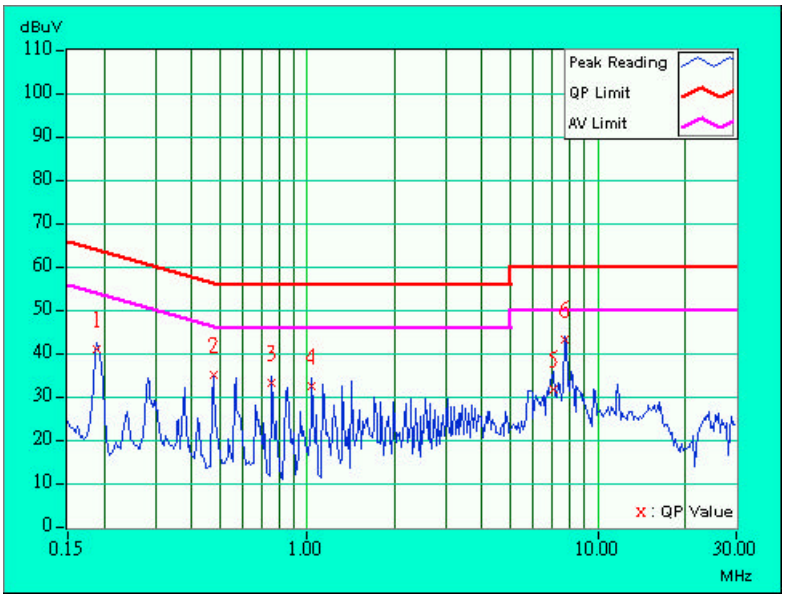
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 2 | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER** | 120Vac, 60 Hz | **PHASE** | Neutral (N) |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.189 | 0.10 | 40.59 | - | 40.69 | - | 64.08 | 54.08 | -23.39 | - |
| 2 | 0.474 | 0.10 | 34.73 | - | 34.83 | - | 56.45 | 46.45 | -21.62 | - |
| 3 | 0.757 | 0.10 | 32.84 | - | 32.94 | - | 56.00 | 46.00 | -23.06 | - |
| 4 | 1.041 | 0.10 | 32.31 | - | 32.41 | - | 56.00 | 46.00 | -23.59 | - |
| 5 | 7.007 | 0.35 | 31.35 | - | 31.70 | - | 60.00 | 50.00 | -28.30 | - |
| 6 | 7.745 | 0.36 | 42.85 | - | 43.21 | - | 60.00 | 50.00 | -16.79 | - |

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Class A (at 10m) | Class B (at 10m) |
|---|---|---|
| | dBuV/m | dBuV/m |
| 30 – 230 | 40 | 30 |
| 230 - 1000 | 47 | 37 |

**NOTE**: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| HP Spectrum Analyzer | 8594A | 3144A00308 | Aug. 22, 2002 |
| HP Preamplifier | 8447D | 2944A08119 | July. 17, 2002 |
| * HP Preamplifier | 8449B | 3008A01201 | Dec. 06, 2002 |
| * HP Preamplifier | 8449B | 3008A01292 | Aug. 21 & 2002 |
| ROHDE & SCHWARZ TEST RECEIVER | ESCS 30 | 838251/021 | Jan. 15, 2003 |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103 UHA 9105 | E101051 E101055 | Nov. 23, 2002 |
| * ROHDE & SCHWARZ TEST RECEIVER | ESMI | 839013/007 839379/002 | Jan. 27, 2003 |
| * CHASE Bilog Antenna | CBL6112A | 2329 | May 10, 2003 |
| * SCHWARZBECK Horn Antenna | BBHA9120 -D1 | D130 | July 6, 2002 |
| * EMCO Horn Antenna | 3115 | 9312-4192 | April 9, 2003 |
| * EMCO Turn Table | 1060 | 1195 | NA |
| * EMCO Tower | 1051 | 1163 | NA |
| * Software | AS61D4 | NA | NA |
| * ANRITSU RF Switches | MP59B | E10124 | May 9, 2003 |
| * TIMES RF cable | LMR-600 | CABLE-ST2-01 | May 9, 2003 |
| Open Field Test Site | Site 2 | ADT-R02 | May 11 & 2003 |
| VCCI Site Registration No. | Site 2 | R-237 | NA |

**NOTE:** 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3. "*" = These equipment are used for the final measurement.

4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

## 4.2.3 TEST PROCEDURE

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10-meter open field site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarization of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the turn table was turned from 0 degrees to 360 degrees to find the maximum reading.

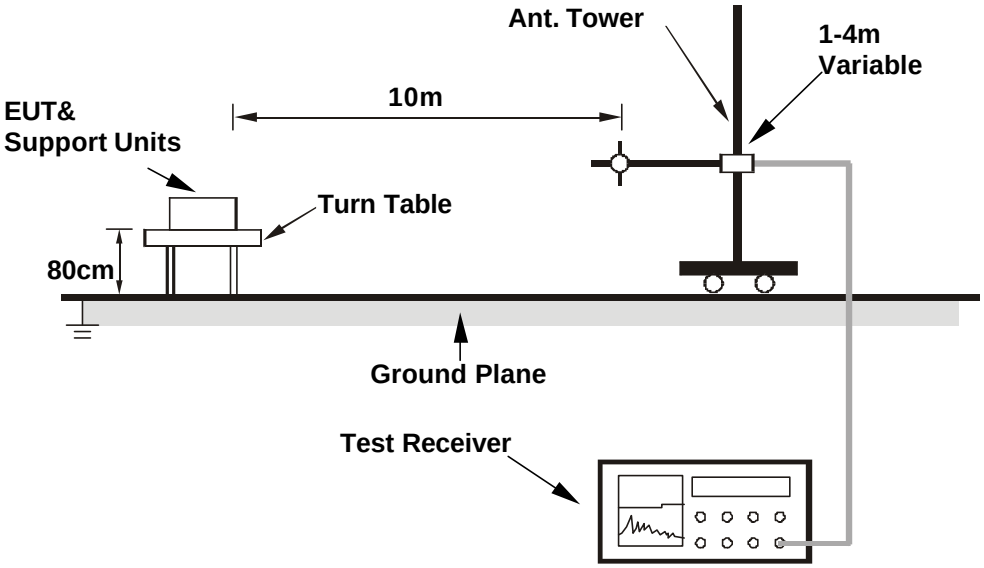
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi- peak method or average method as specified and then reported In Data sheet peak mode and QP mode.

## 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

## 4.2.5 TEST SETUP




For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

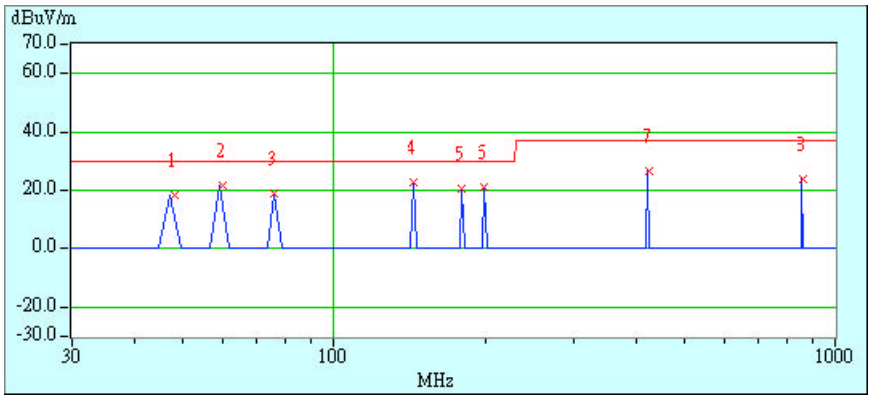
## 4.2.7 TEST RESULTS (A)

| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 1 | **FREQUENCY RANGE** | 30-1000 MHz |
| **INPUT POWER** | 120Vac, 60 Hz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-Amp. Gain (dB) | Correction Factor (dB/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.99 | 18.6 QP | 30.00 | -11.40 | 3.73H | 169 | 9.15 | 8.53 | 0.92 | 0.00 | -9.45 |
| 2 | 59.95 | 21.4 QP | 30.00 | -8.60 | 3.45H | 283 | 14.07 | 6.29 | 1.04 | 0.00 | -7.33 |
| 3 | 76.03 | 19.0 QP | 30.00 | -11.00 | 4.00H | 258 | 11.59 | 6.24 | 1.17 | 0.00 | -7.41 |
| 4 | 143.98 | 22.6 QP | 30.00 | -7.40 | 4.00H | 347 | 9.69 | 11.17 | 1.74 | 0.00 | -12.91 |
| 5 | 180.00 | 20.5 QP | 30.00 | -9.50 | 4.00H | 272 | 9.96 | 8.66 | 1.87 | 0.00 | -10.54 |
| 6 | 199.90 | 21.2 QP | 30.00 | -8.80 | 4.00H | 225 | 10.28 | 8.90 | 2.05 | 0.00 | -10.94 |
| 7 | 424.01 | 26.7 QP | 37.00 | -10.30 | 2.63H | 110 | 7.92 | 15.47 | 3.31 | 0.00 | -18.78 |
| 8 | 860.02 | 23.6 QP | 37.00 | -13.40 | 1.62H | 238 | -1.32 | 19.88 | 5.07 | 0.00 | -24.96 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB/m) = Pre-Amplifier Gain (dB) - Antenna Factor (dB/m) - Cable Factor (dB)
3. Pre-Amplifier Gain (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.

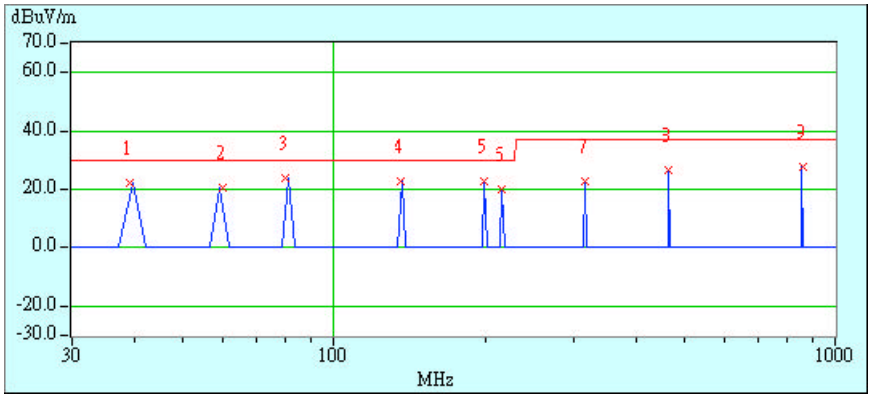


| EUT | KEYBOARD | MODEL | 8170 |
|---|---|---|---|
| MODE | 1 | FREQUENCY RANGE | 30-1000 MHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION & BANDWIDTH | Quasi-Peak, 120kHz |
| ENVIRONMENTAL CONDITIONS | 25 deg. C, 55 % RH, 1005 hPa | TESTED BY: Jim Hsiang | |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-Amp. Gain (dB) | Correction Factor (dB/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 39.15 | 22.3 QP | 30.00 | -7.70 | 1.79V | 284 | 8.17 | 13.35 | 0.78 | 0.00 | -14.13 |
| 2 | 59.96 | 20.7 QP | 30.00 | -9.30 | 1.61V | 204 | 13.37 | 6.29 | 1.04 | 0.00 | -7.33 |
| 3 | 79.98 | 24.0 QP | 30.00 | -6.00 | 1.98V | 185 | 14.93 | 7.88 | 1.19 | 0.00 | -9.07 |
| 4 | 135.99 | 22.9 QP | 30.00 | -7.10 | 1.00V | 155 | 9.76 | 11.48 | 1.66 | 0.00 | -13.14 |
| 5 | 199.90 | 22.5 QP | 30.00 | -7.50 | 1.00V | 46 | 11.55 | 8.90 | 2.05 | 0.00 | -10.94 |
| 6 | 215.98 | 20.1 QP | 30.00 | -9.90 | 1.00V | 177 | 8.15 | 9.78 | 2.17 | 0.00 | -11.95 |
| 7 | 315.97 | 22.9 QP | 37.00 | -14.10 | 1.81V | 200 | 7.42 | 12.78 | 2.70 | 0.00 | -15.48 |
| 8 | 465.98 | 26.7 QP | 37.00 | -10.30 | 1.92V | 90 | 6.72 | 16.28 | 3.69 | 0.00 | -19.99 |
| 9 | 860.18 | 27.9 QP | 37.00 | -9.10 | 2.26V | 238 | 2.94 | 19.88 | 5.07 | 0.00 | -24.97 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB/m) = Pre-Amplifier Gain (dB) - Antenna Factor (dB/m) - Cable Factor (dB)
3. Pre-Amplifier Gain (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.



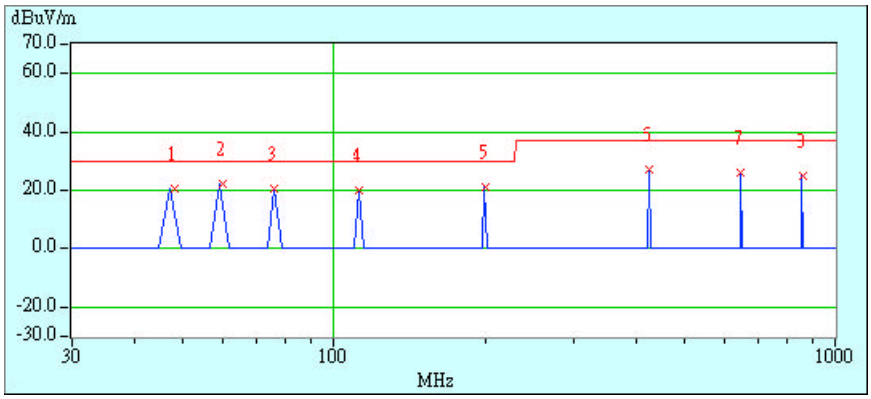
## 4.2.8 TEST RESULTS (B)

| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 2 | **FREQUENCY RANGE** | 30-1000 MHz |
| **INPUT POWER** | 120Vac, 60 Hz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-Amp. Gain (dB) | Correction Factor (dB/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47.96 | 20.7 QP | 30.00 | -9.30 | 4.00H | 256 | 11.25 | 8.53 | 0.92 | 0.00 | -9.45 |
| 2 | 59.94 | 22.4 QP | 30.00 | -7.60 | 3.69H | 272 | 15.07 | 6.29 | 1.04 | 0.00 | -7.33 |
| 3 | 76.05 | 20.4 QP | 30.00 | -9.60 | 4.00H | 66 | 12.99 | 6.24 | 1.17 | 0.00 | -7.41 |
| 4 | 112.11 | 19.8 QP | 30.00 | -10.20 | 4.00H | 158 | 7.32 | 11.09 | 1.39 | 0.00 | -12.48 |
| 5 | 199.96 | 21.3 QP | 30.00 | -8.70 | 4.00H | 167 | 10.36 | 8.90 | 2.05 | 0.00 | -10.95 |
| 6 | 424.08 | 27.2 QP | 37.00 | -9.80 | 3.08H | 329 | 8.38 | 15.51 | 3.33 | 0.00 | -18.85 |
| 7 | 648.07 | 25.9 QP | 37.00 | -11.10 | 2.28H | 204 | 2.93 | 18.56 | 4.42 | 0.00 | -22.97 |
| 8 | 859.98 | 25.1 QP | 37.00 | -11.90 | 2.02H | 281 | 0.14 | 19.88 | 5.07 | 0.00 | -24.96 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB/m) = Pre-Amplifier Gain (dB) - Antenna Factor (dB/m) - Cable Factor (dB)
3. Pre-Amplifier Gain (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.

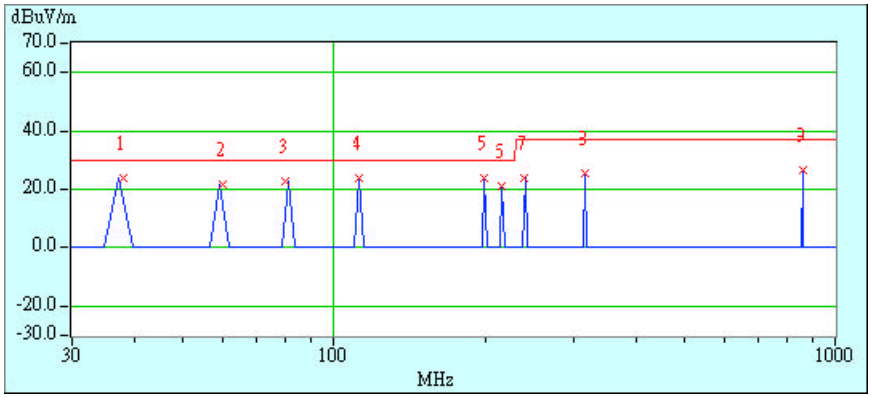


| | | | |
|---|---|---|---|
| **EUT** | KEYBOARD | **MODEL** | 8170 |
| **MODE** | 2 | **FREQUENCY RANGE** | 30-1000 MHz |
| **INPUT POWER** | 120Vac, 60 Hz | **DETECTOR FUNCTION & BANDWIDTH** | Quasi-Peak, 120kHz |
| **ENVIRONMENTAL CONDITIONS** | 25 deg. C, 55 % RH, 1005 hPa | **TESTED BY**: Jim Hsiang | |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Antenna Factor (dB/m) | Cable Factor (dB) | Pre-Amp. Gain (dB) | Correction Factor (dB/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 37.91 | 23.6 QP | 30.00 | -6.40 | 1.69V | 138 | 8.74 | 14.03 | 0.82 | 0.00 | -14.86 |
| 2 | 59.89 | 21.4 QP | 30.00 | -8.60 | 1.56V | 158 | 14.07 | 6.29 | 1.04 | 0.00 | -7.34 |
| 3 | 80.20 | 22.8 QP | 30.00 | -7.20 | 1.77V | 275 | 13.73 | 7.88 | 1.19 | 0.00 | -9.08 |
| 4 | 112.04 | 23.6 QP | 30.00 | -6.40 | 1.00V | 153 | 11.12 | 11.09 | 1.39 | 0.00 | -12.48 |
| 5 | 199.93 | 23.9 QP | 30.00 | -6.10 | 1.00V | 294 | 12.96 | 8.90 | 2.05 | 0.00 | -10.95 |
| 6 | 215.96 | 20.9 QP | 30.00 | -9.10 | 1.00V | 271 | 8.95 | 9.78 | 2.17 | 0.00 | -11.95 |
| 7 | 240.03 | 24.1 QP | 37.00 | -12.90 | 1.00V | 303 | 10.69 | 11.06 | 2.35 | 0.00 | -13.41 |
| 8 | 316.01 | 25.5 QP | 37.00 | -11.50 | 1.43V | 151 | 10.01 | 12.78 | 2.70 | 0.00 | -15.48 |
| 9 | 860.70 | 26.7 QP | 37.00 | -10.30 | 2.68V | 342 | 1.76 | 19.87 | 5.07 | 0.00 | -24.95 |

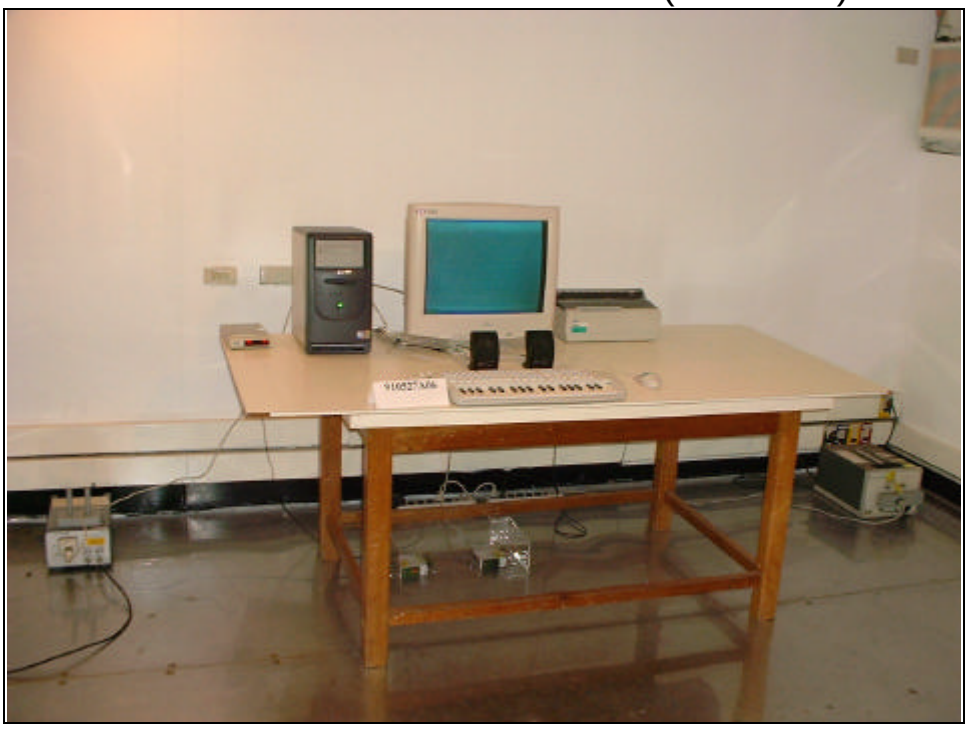
**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) – Correction Factor(dB)
2. Correction Factor(dB/m) = Pre-Amplifier Gain (dB) - Antenna Factor (dB/m) - Cable Factor (dB)
3. Pre-Amplifier Gain (dB) = 0, when the test receiver is used to read the value and because it did not use the Pre-Amplifier.
4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.



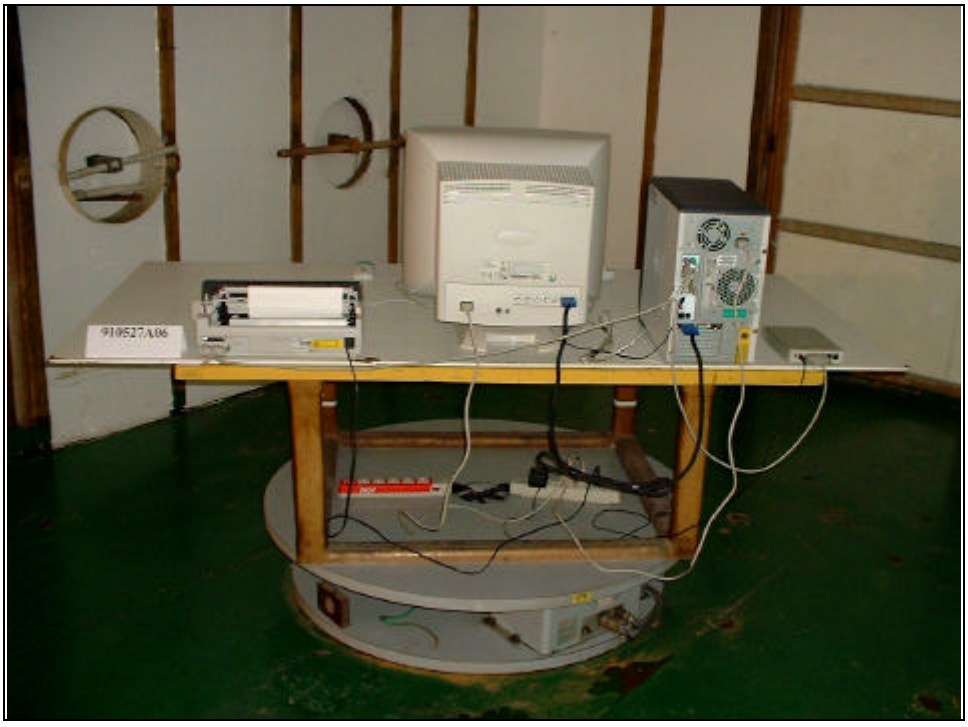
# 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST ( MODE 1 )

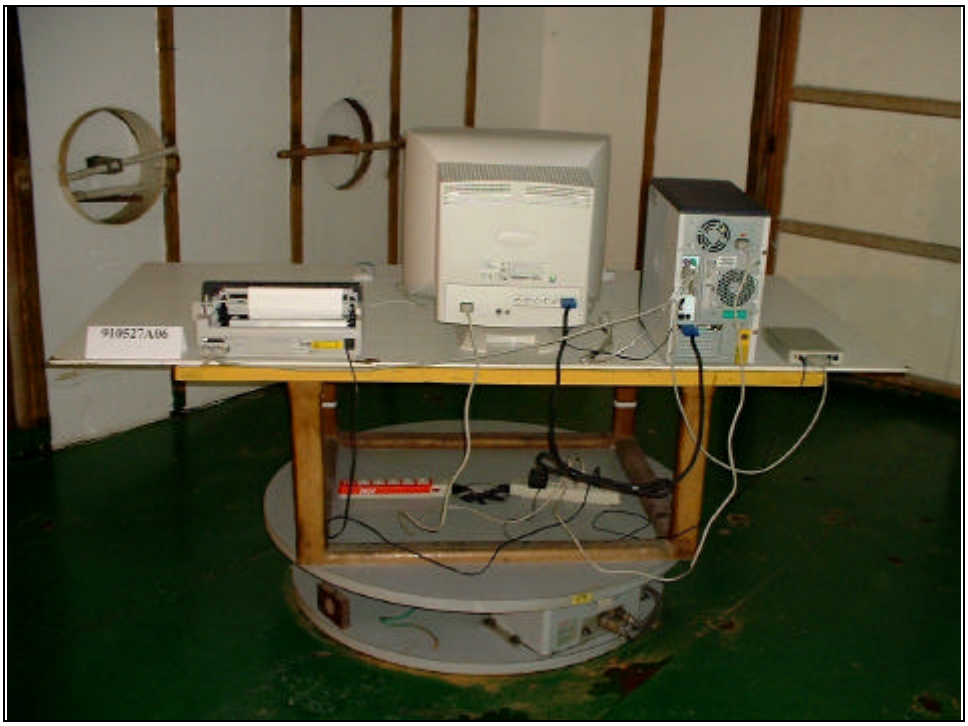
## CONDUCTED EMISSION TEST ( MODE 2 )



## RADIATED EMISSION TEST (MODE 1)

# RADIATED EMISSION TEST (MODE 2)

# 6 APPENDIX - INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

| | |
|---|---|
| **USA** | FCC, NVLAP, UL |
| **Germany** | TUV Rheinland |
| **Japan** | VCCI |
| **New Zealand** | MoC |
| **Norway** | NEMKO, DNV |
| **Canada** | INDUSTRY CANADA |
| **R.O.C.** | CNLA, BSMI |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.

If you have any comments, please feel free to contact us at the following:

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**Hsin Chu EMC Lab**:
Tel: 886-35-935343
Fax: 886-35-935342

**Lin Kou Safety Lab**:
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Fax: 886-2-26093184

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The address and road map of all our labs can be found in our web site also.