# EMC

# TEST REPORT

REPORT NO. : CE88031606
MODEL NO. : PCM-4894
DATE OF TEST : March 22 ~ Apr. 7, 1999

PREPARED FOR: AAEON TECHNOLOGY INC.

ADDRESS : 1F, NO. 6, ALLEY 6, LANE 45, PAO-HSIN RD.,
HSIN-TIEN CITY, TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

NVLAP®
Accredited Laboratory

11F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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# 1. CERTIFICATION

Issue date: Apr. 8, 1999

| | | | |
|---|---|---|---|
| Product | : | CPU BOARD | |
| Trade Name | : | AAEON | |
| Model No. | : | PCM-4894 | |
| Applicant | : | AAEON TECHNOLOGY INC. | |
| Standard | : | EN 55022: 1994+A1: 1995+A2: 1997, Class A | **EN 50082-2: 1995**<br>EN 61000-4-2: 1995<br>EN 61000-4-3: 1997<br>EN 61000-4-4: 1995<br>EN 61000-4-6: 1996<br>EN 61000-4-8: 1994<br>ENV 50204: 1995 |

We hereby certify that one sample of the designation has been tested in our facility from Mar. 22 to Apr. 7,1999. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

TESTED BY ( Emission ) : Jone Lin ( Jone Lin ) , DATE: 4/8/99

TESTED BY ( Immunity ) : S.S. Wang ( S. S. Wang ) , DATE: 4/8/99

CHECKED BY : Ariel Hsieh ( Ariel Hsieh ) , DATE: 4/8/99

APPROVED BY : Mike Su ( Mike Su ) , DATE: 4/8/99.

**ADVANCE DATA TECHNOLOGY CORPORATION**

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# 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

| | | |
|---|---|---|
| Product | : | CPU BOARD |
| Model No. | : | PCM-4894 |
| Power Supply | : | Switching (DC from PC) |
| Data Cable | : | NA |

Note: The EUT, which is installed in the industrial PC, was tested with the following configuration:

| ITEM | BRAND | MODEL | REMARK |
|---|---|---|---|
| **CHASSIS** | AAEON | AIPC-314 | |
| **CPU** | AMD | DX5-133 | |
| **HDD** | QUANTUM | 3.5 Series | |
| **FDD** | MITSUMI | D353M3 | |
| **BACKPLANE** | ADVANTECH | PCA-6113 | |
| **POWER SUPPLY** | EMACS | AX2-5250F | |

The video resolution of 1024x768 was used during the test.

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

## 2.2 GENERAL DESCRIPTION OF APPLIED STANDARD

The EUT is a kind of Information Technology Equipment which could be used in industrial area and according to the manufacturer's specifications, it was tested according to the following standards:

EN 55022: 1994+A1: 1995+A2: 1997, Class A

**EN 50082-2: 1995**
EN 61000-4-2: 1995
EN 61000-4-3: 1997
EN 61000-4-4: 1995
EN 61000-4-6: 1996
EN 61000-4-8: 1994
ENV 50204: 1995

All tests are performed and recorded as per above standards.

## 2.3 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 are used to form representative test configuration during the tests.

**FOR EMISSION TEST**

| No | Product | Brand | Model No. | Serial No. | I/O Cable |
|---|---|---|---|---|---|
| 1. | COLOR MONITOR | ADI | PD-959 | 730020U00100274 | Shielded Signal (1.2m) Nonshielded Power (1.8m) |
| 2. | PRINTER | HP | 2225C+ | 3030S79116 | Shielded Signal (1.2m) Nonshielded Power (1.2m) |
| 3. | MODEM | ACEEX | 1414 | 980020240 | Shielded Signal (1.2m) Nonshielded Power (1.2m) |
| 4. | MODEM | ACEEX | 1414 | 980020534 | Shielded Signal (1.2m) Nonshielded Power (1.2m) |
| 5. | MODEM | ACEEX | 1414 | 980020507 | Shielded Signal (1.2m) Nonshielded Power (1.2m) |
| 6. | KEYBOARD | BTC | 5121 | L68203191 | Shielded Signal (1.2m) |
| 7. | MOUSE | LOGITECH | M-M30 | LTR53500776 | Shielded signal (1.4m) |
| 8. | PC | IBM | 6560-T7T | 9983708 | Nonshielded power (1.8m) |
| 9. | MONITOR | ACER | 7134T | M500233562 | Shielded Signal (1.5m) Nonshielded Power (1.8m) |
| 10. | KEYBOARD | HP | C3758A | K101087 | Shielded Signal (1.5m) |
| 11. | MOUSE | DEIXN | A2P800A | 80110011 | Shielded Signal (1.8m) |
| 12. | LAN CARD | INTEL | S82555 | 00A0C9A6CB5252713 | NA |

Note: Support unit 1~7 acted as SERVER PC and communicated with support unit 8-12 which acted as WORKSTATION and systems of communication partner via a UTP cable (10m).

**FOR IMMUNITY TEST**

| No | Product | Brand | Model No. | Serial No. | I/O Cable |
|---|---|---|---|---|---|
| 1. | COLOR MONITOR | ACER | 7234e | 9174302003 | Shielded Signal (1.5m) Nonshielded Power (1.8m) |
| 2. | PRINTER | HP | C2145A | SG59N16035 | Shielded Signal (1.5m) Nonshielded Power (1.8m) |
| 3. | MODEM | GVC | F-1114V/R6 | 853E100 | Shielded Signal (1.25m) Nonshielded Power (1.5m) |
| 4. | MODEM | GVC | F-1128V1R6 | 96-191-113003 | Shielded Signal (1.25m) Nonshielded Power (1.5m) |
| 5. | MODEM | GVC | F-1128V1R6 | 96-191-113004 | Shielded Signal (1.25m) Nonshielded Power (1.5m) |
| 6. | KEYBOARD | BTC | 5121 | L68203191 | Shielded Signal (1.5m) |
| 7. | MOUSE | LOGITECH | M-S28-6MP | LTN51301838 | Shielded signal (1.5m) |
| 8. | PC | IBM | 6560-T7T | 9983708 | Nonshielded power (1.8m) |
| 9. | MONITOR | ADI | PV-448 | 604012V00100231A | Shielded Signal (1.5m) Nonshielded Power (1.8m) |
| 10. | KEYBOARD | HP | C3758A | C3758-60223 | Shielded Signal (1.5m) |
| 11. | MOUSE | HP | M-S34 | LZA72556243 | Shielded Signal (1.8m) |
| 12. | LAN CARD | INTEL | S82555 | 00A0C98B9F7635713 | NA |

Note: Support unit 1~7 acted as SERVER PC and communicated with support unit 8-12 which acted as WORKSTATION and systems of communication partner via a UTP cable (10m).

## 2.4 TEST SETUP

Please refer to the photos of test configuration in Item 6.

# 3. TEST INSTRUMENTS

## 3.1 TEST INSTRUMENTS (EMISSION)

**CONDUCTED EMISSION MEASUREMENT**

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESHS30 | 828109/007 | July 22, 1999 |
| ROHDE & SCHWARZ Artificial Mains Network | ESH2-Z5 | 892107/003 | July 20, 1999 |
| EMCO L.I.S.N. | 3825/2 | 9504-2359 | July 20, 1999 |
| Shielded Room | Site 3 | ADT-C03 | NA |

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's 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.

**RADIATED EMISSION MEASUREMENT**

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| HP Spectrum Analyzer | 8594E | 3412A01132 | Sept. 24, 1999 |
| CHASE Preamplifier | CPA9231A/4 | 3215 | Nov. 1, 1999 |
| HP Preamplifier | 8347A | 3307A01088 | Sept. 9, 1999 |
| ROHDE & SCHWARZ TEST RECEIVER | ESVS 10 | 846285/012 | Dec. 14, 1999 |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103<br>UHA 9105 | E101051<br>E101055 | Nov. 25, 1999 |
| CHASE BILOG Antenna | CBL6112 | 2074 | Dec. 25, 1999 |
| EMCO Double Ridged Guide Antenna | 3115 | 9312-4192 | April 5, 2000 |
| CHANCE Turn Table & Tower Controller | ACS-I | NA | NA |
| Open Field Test Site | Site 6 | ADT-R06 | Dec. 24, 1999 |

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's 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.

## 3.2 TEST INSTRUMENTS (IMMUNITY)

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| KeyTek, ESD Test System | 2000 | 9105240/41 | Aug. 9, 1999 |
| KeyTek, ESD Simulator | MZ-15/EC | 92022232 | April 15, 1999 |
| KeyTek, EFT Generator | CE-40 | 9508257 | Sept. 8, 1999 |
| KeyTek, Capacitive Clamp | CE-40-CCL | 9508259 | Sept. 9, 1999 |
| KeyTek, Control Center | E103 | 9508347 | NA |
| KeyTek, Surge Combination Wave | E501A | 9508349 | Sept. 3, 1999 |
| KeyTek, Surge Coupler/Decoupler | E551 | 9508350 | Sept. 3, 1999 |
| ROHDE & SCHWARZ Signal Generator | SMY01 | 840490/009 | Sept. 30, 1999 |
| KALMUS Power Amplifier | LA1000V | 091995-1 | NA |
| KALMUS Power Amplifier | 757LC | 091995-2 | NA |
| HOLADAY Field Probe | HI-4422 | 89915 | Oct. 27, 1999 |
| EMCO BiconiLog Antenna | 3141 | 1001 | NA |
| FCC Coupling Decoupling Network | FCC-801-M3-25 | 48 | NA |
| FCC Coupling Decoupling Network | FCC-801-M2-25 | 20 | NA |
| FCC Coupling Decoupling Network | FCC-801-M1-25 | 17 | NA |
| BOONTON RF Voltage Meter | 9200B | 331801AE | Dec. 17, 1999 |
| COMTEST Compact Full Anechoic Chamber (7x3x3 m) | CFAC | ADT-S01 | Aug. 4, 1999 |
| HAEFELY Mains Interference Simulator | PLINE 1610 | 083690-17 | July 6, 1999 |
| HAEFELY Magnetic Field Tester | MAG 100.1 | 083794-06 | NA |
| COMBINOVA Magnetic Field Meter | MFM10 | 224 | Aug. 26, 1999 |

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

## 3.3 LIMITS OF CONDUCTED AND RADIATED EMISSION

### LIMIT OF RADIATED EMISSION OF EN 55022

| FREQUENCY (MHz) | Class A (at 10m) dBuV/m | Class B (at 10m) 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 emanation 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.

### LIMIT OF CONDUCTED EMISSION OF EN 55022

| 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 |

Note: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz
(3) All emanation 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. TEST RESULTS (EMISSION)

## 4.1 RADIO DISTURBANCE

| | | |
|---|---|---|
| Product Family Standard | : | EN 55022: 1994+A1: 1995+A2: 1997, Class B |
| Frequency Range | : | 0.15 - 30 MHz (Conducted Emission) |
| | | 30 - 1000 MHz (Radiated Emission) |
| Input Voltage | : | 230 Vac, 50 Hz (to PC) |
| Temperature | : | 24 ℃ |
| Humidity | : | 65 % |
| Atmospheric Pressure | : | 998 mbar |

| TEST RESULT | Remarks |
|---|---|
| PASS | Minimum passing margin of conducted emission: -17.1 dB at 6.368 MHz<br>Minimum passing margin of radiated emission: -3.6 dB at 72.08 MHz |

## 4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. Industrial PC reads a test program to enable all functions.
3. Industrial PC reads and writes messages from HDD and FDD.
4. Industrial PC sends/receives messages to/from WORKSTATION via a UTP cable.
5. Industrial PC sends "H" messages to monitor and monitor displays "H" patterns on screen.
6. Industrial PC sends "H" messages to modem.
7. Industrial PC sends "H" messages to printer, and the printer prints them on paper.
8. Repeat steps 2-8.

## 4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

6 dB Bandwidth: 10 kHz

PHASE: LINE (L)

| Freq. | Meter Reading [dB (uV)] | | | | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|
| [MHz] | Corr. | Reading Data | | Total | | [dB (uV)] | | [dB (uV)] | |
| | Factor | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 0.213 | 0.2 | 52.5 | - | 52.7 | - | 79.0 | 66.0 | -26.3 | - |
| 0.294 | 0.2 | 53.6 | - | 53.8 | - | 79.0 | 66.0 | -25.2 | - |
| 0.552 | 0.3 | 50.8 | - | 51.1 | - | 73.0 | 60.0 | -21.9 | - |
| 0.633 | 0.3 | 53.5 | - | 53.8 | - | 73.0 | 60.0 | -19.2 | - |
| 6.368 | 0.8 | 53.7 | - | 54.5 | - | 73.0 | 60.0 | -18.5 | - |
| 21.632 | 1.4 | 46.1 | - | 47.5 | - | 73.0 | 60.0 | -25.5 | - |

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
EN55022 CLASS A

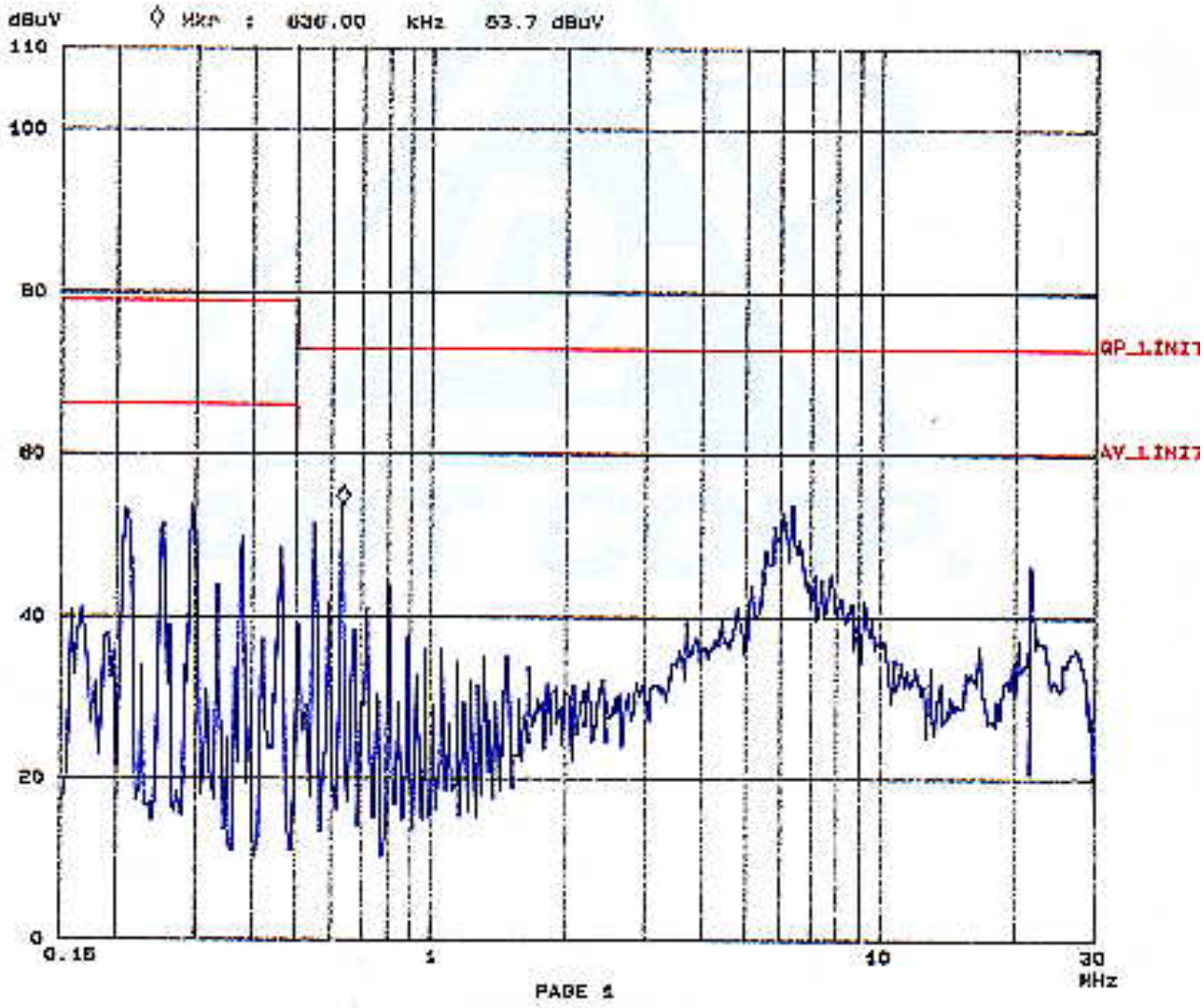
22. Mar 99 16:59

Report No. CE 8803606
Page 11-1
Tested by Jane Lin

EUT: PCH-4884
Test Spec: LISN : L

Test Scan Settings (3 Ranges)

| Frequencies | | | Receiver Settings | | | | | |
|---|---|---|---|---|---|---|---|---|
| Start | Stop | Step | IF BW | Detector | M-Time | Atten | Preamp | QpAge |
| 150k | 460k | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 80dB |
| 460k | 5M | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 80dB |
| 5M | 30M | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 80dB |

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# TEST DATA OF CONDUCTED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

6 dB Bandwidth: 10 kHz

PHASE: NEUTRAL (N)

| Freq. | Meter Reading [dB (uV)] | | | | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|
| [MHz] | Corr. | Reading Data | | Total | | [dB (uV)] | | [dB (uV)] | |
| | Factor | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 0.213 | 0.2 | 58.9 | - | 59.1 | - | 79.0 | 66.0 | -19.9 | - |
| 0.294 | 0.2 | 55.0 | - | 55.2 | - | 79.0 | 66.0 | -23.8 | - |
| 0.552 | 0.3 | 47.7 | - | 48.0 | - | 73.0 | 60.0 | -25.0 | - |
| 0.633 | 0.3 | 51.0 | - | 51.3 | - | 73.0 | 60.0 | -21.7 | - |
| 6.368 | 0.6 | 55.3 | - | 55.9 | - | 73.0 | 60.0 | -17.1 | - |
| 21.632 | 1.0 | 45.8 | - | 46.8 | - | 73.0 | 60.0 | -26.2 | - |

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 3
EN55022 CLASS A

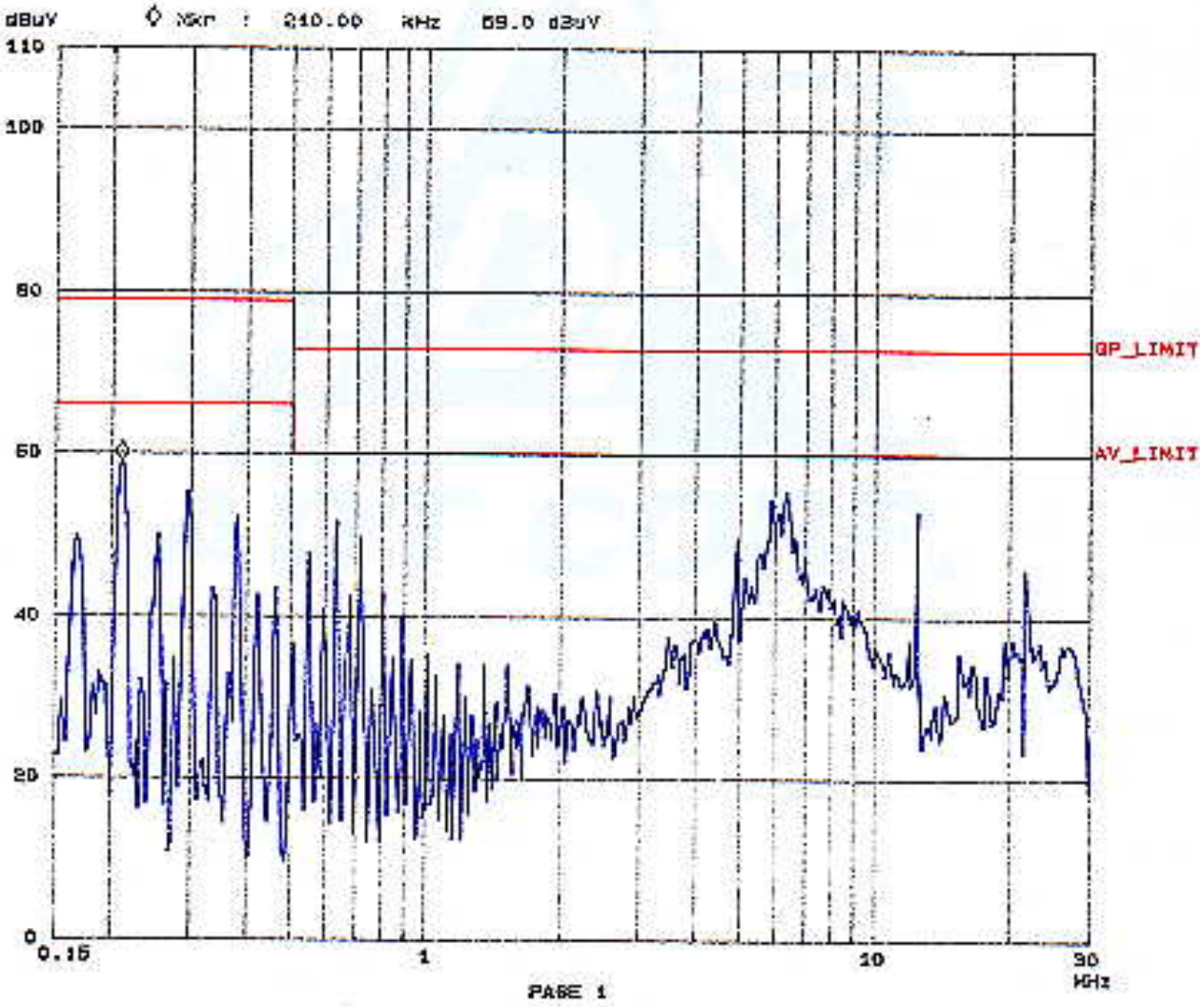
22. Mar 98 17:05

Report No. CE 8803160-6
Page 1 of 1
Tested by Jone Lin

EUT: PCH-4004
Test Spec: LISN : N

Fast Scan Settings (3 Ranges)

| Frequencies | | | Receiver Settings | | | | | |
|---|---|---|---|---|---|---|---|---|
| Start | Stop | Step | IF BW | Detector | M-Time | Atten | Preamp | OpRge |
| 150k | 450k | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 60dB |
| 450k | 5M | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 60dB |
| 5M | 30M | 3k | 10k | PK | 0.05ms | 10dBLN | OFF | 60dB |



## 4.4 TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

| Frequency (MHz) | Correction Factor (dB/m) | Reading Data (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 63.77 | 7.4 | 16.9 | 24.3 | 40.0 | -15.7 |
| 63.77 | 7.4 | 16.4 | 23.8 | 40.0 | -16.2 |
| 68.67 | 7.3 | 15.2 | 22.5 | 40.0 | -17.5 |
| 133.51 | 14.1 | 13.7 | 27.8 | 40.0 | -12.2 |
| 146.29 | 12.9 | 14.0 | 26.9 | 40.0 | -13.1 |
| 200.42 | 11.1 | 11.7 | 22.8 | 40.0 | -17.2 |
| 233.68 | 14.3 | 15.9 | 30.2 | 40.0 | -16.8 |

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

## TEST DATA OF RADIATED EMISSION

EUT: **CPU BOARD** MODEL: **PCM-4894**

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

| Frequency (MHz) | Correction Factor (dB/m) | Reading Data (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|
| 63.77 | 7.4 | 20.3 | 27.7 | 40.0 | -12.3 |
| 66.77 | 7.5 | 20.3 | 27.8 | 40.0 | -12.2 |
| 68.76 | 7.6 | 24.1 | 31.7 | 40.0 | -8.3 |
| 72.08 | 7.8 | 28.6 | 36.4 | 40.0 | -3.6 |
| 73.61 | 8.0 | 27.0 | 35.0 | 40.0 | -5.0 |
| 133.61 | 13.2 | 23.2 | 36.4 | 40.0 | -3.6 |
| 317.50 | 17.5 | 20.3 | 37.8 | 40.0 | -9.2 |

REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) +Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

# 5. TEST RESULTS (IMMUNITY)

## 5.1 GENERAL DESCRIPTION

| | | |
|---|---|---|
| Generic Standard | : | EN 50082-2: 1995 |
| Basic Standard and Performance Criteria | : | EN 61000-4-2 (Electrostatic Discharge, ESD, 8kV air discharge, 4kV Contact discharge, Performance Criterion B) |
| | | EN 61000-4-3 (Radio-Frequency Electromagnetic Field Susceptibility Test, RS, 80-1000 MHz, 10V/m, 80% AM (1kHz), Performance Criterion A) |
| | | EN 61000-4-4 (Electrical Fast Transient/Burst, EFT, Power line: 2kV, Signal line: 1kV, Performance Criterion B) |
| | | EN 61000-4-6 (Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 10V/m, 80% AM, 1kHz, Performance Criterion A) |
| | | EN 61000-4-8 (Power Frequency Magnetic Field Test, 50 Hz, 30A/m, Performance Criterion A) |
| | | ENV 50204 (Radio-Frequency Electromagnetic Field, Pulse modulated, 900+/-5 MHz, 10V/m, 50 % duty cycle, Rep. Frequency 200 Hz, Performance Criterion A) |
| Input Voltage | : | 230 Vac, 50 Hz (to power of Industrial PC) |
| Temperature | : | 25 ℃ |
| Humidity | : | 58 % |
| Atmospheric Pressure | : | 999 mbar |

## 5.2 PERFORMANCE CRITERIA DESCRIPTION

Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

## 5.3 EUT OPERATION CONDITION

Industrial PC runs a test program to access FDD/HDD/MODEM/PRINTER sequentially and show the result on monitor screen.

## 5.5 TEST RESULT OF RADIATED RADIO FREQUENCY DISTURBANCES (RS)

| | | |
|---|---|---|
| Basic Standard | : | EN 61000-4-3 |
| Generic Standard | : | EN 50082-2 |
| Frequency range | : | 80 MHz - 1000 MHz |
| Field strength | : | 10 V/m |
| Modulation | : | 1kHz Sine Wave, 80%, AM Modulation |
| Dwell Time | : | 3 seconds |
| Frequency step | : | 1 % of fundamental |
| Polarity of Antenna | : | Horizontal and Vertical |
| Test distance | : | 3 m |

| Test Result | | Remarks |
|---|---|---|
| Criterion A | PASS | Model: PCM-4894 |

Note: Four sides of EUT are verified separately.

## OBSERVATION DESCRIPTION

There is no change compared with initial operation during the test.

## 5.6 TEST RESULT OF ELECTRICAL FAST TRANSIENT/BURST (EFT/BURST)

| | | |
|---|---|---|
| Basic Standard | : | EN 61000-4-4 |
| Generic Standard | : | EN 50082-2 |
| Test Voltage | : | Power Line - 2 kV (to power of Industrial PC)<br>Signal/Control Line - 1kV |
| Polarity | : | Positive/Negative |
| Impulse Frequency | : | 5 kHz |
| Tr / Tn | : | 5/50 ns |
| Burst Duration | : | 15 ms |
| Burst Period | : | 300 ms |
| Test Duration | : | Not less than 1 min. |

| Test Result | | Remarks |
|---|---|---|
| Criterion A | PASS | Model: PCM-4894 |

### OBSERVATION DESCRIPTION

| Test Point | Polarity | Test Level (kV) | Result |
|---|---|---|---|
| L1 | +/− | 2 | Note 1 |
| L2 | +/− | 2 | Note 1 |
| GND | +/− | 2 | Note 1 |
| Signal / Control Line | +/− | 1 | Note 1 |

**Description of test result:**

Note 1: There was no change compared to initial operation during the test.

## 5.7 TEST RESULT OF CONDUCTED RADIO FREQUENCY DISTURBANCES (CS)

| | | |
|---|---|---|
| Basic Standard | : | EN 61000-4-6 |
| Generic Standard | : | EN 50082-2 |
| Frequency range | : | 0.15 MHz - 80 MHz |
| Field strength | : | 10 V/m |
| Modulation | : | 1kHz Sine Wave, 80%, AM Modulation |
| Frequency step | : | 1 % of fundamental |
| Coupled cable | : | Power Mains, Unshielded |
| Coupling device | : | CDN-M3 (3 wires), Clamp |

| Test Result | | Remarks |
|---|---|---|
| Criterion A | PASS | Model: PCM-4894 |

## OBSERVATION DESCRIPTION

There is no change compared with initial operation during the test.

## 5.8 TEST RESULT OF POWER FREQUENCY MAGNETIC FIELD

| | | |
|---|---|---|
| Basic Standard | : | EN 61000-4-8 |
| Generic Standard | : | EN 50082-2 |
| Frequency range | : | 50 Hz |
| Field strength | : | 30 A/m |
| Observation Time | : | 1 minute |
| Inductance coil | : | Rectangular type, 1mx1m |

| Test Result | | Remarks |
|---|---|---|
| **Criterion A** | **PASS** | Model: PCM-4894 |

### OBSERVATION DESCRIPTION

There was no change compared with initial operation during the test.

## 5.9 TEST RESULT OF RADIO-FREQUENCY ELECTROMAGNETIC FIELD, PULSE MODULATED

| | | |
|---|---|---|
| Basic Standard | : | ENV 50204 |
| Generic Standard | : | EN 50082-2 |
| Frequency range | : | 900 +/- 5 MHz |
| Field strength | : | 10 V/m |
| Modulation | : | 200Hz, Square Wave, 50% Duty Cycle |
| Dwell Time | : | 30 second |
| Polarity of Antenna | : | Horizontal and Vertical |
| Test distance | : | 3 m |

| Test Result | | Remarks |
|---|---|---|
| Criterion A | PASS | Model: PCM-4894 |

Note: Four sides of EUT are verified separately.

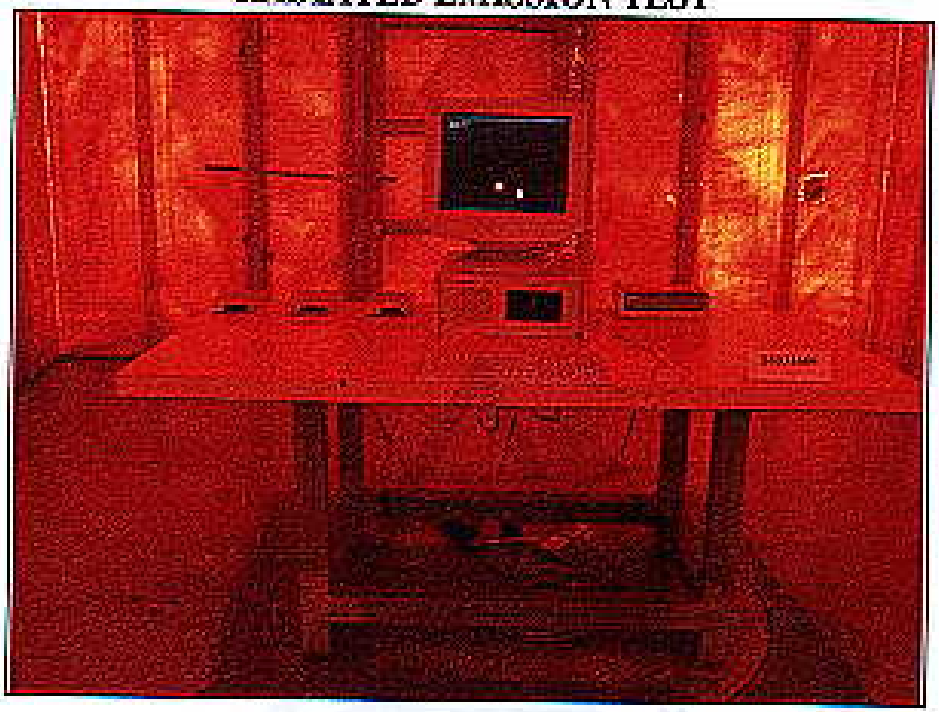
## OBSERVATION DESCRIPTION

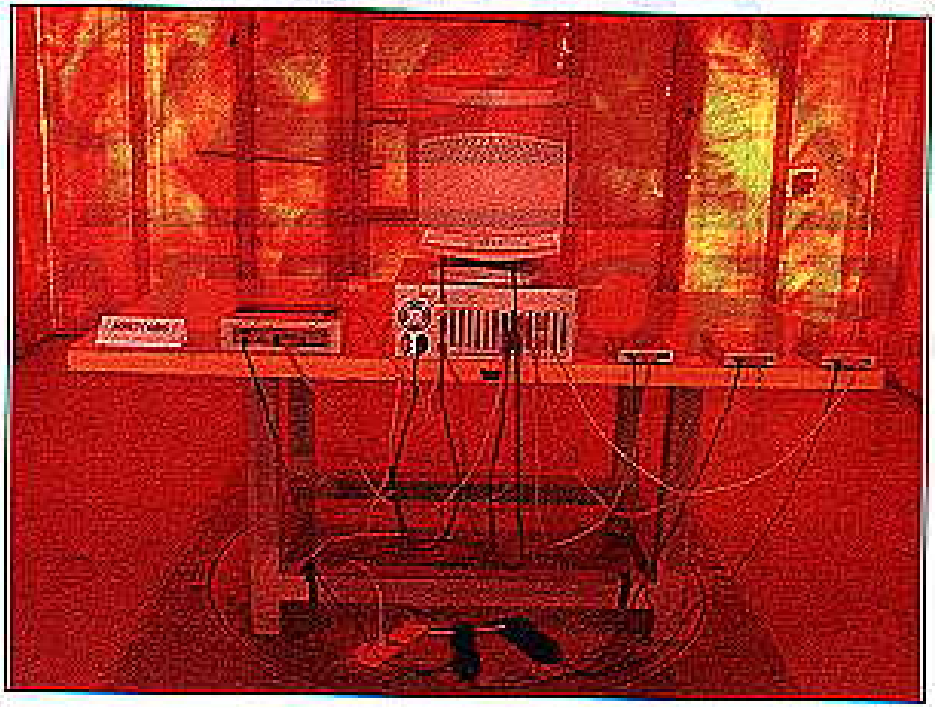
There is no change compared with initial operation during the test.

# 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

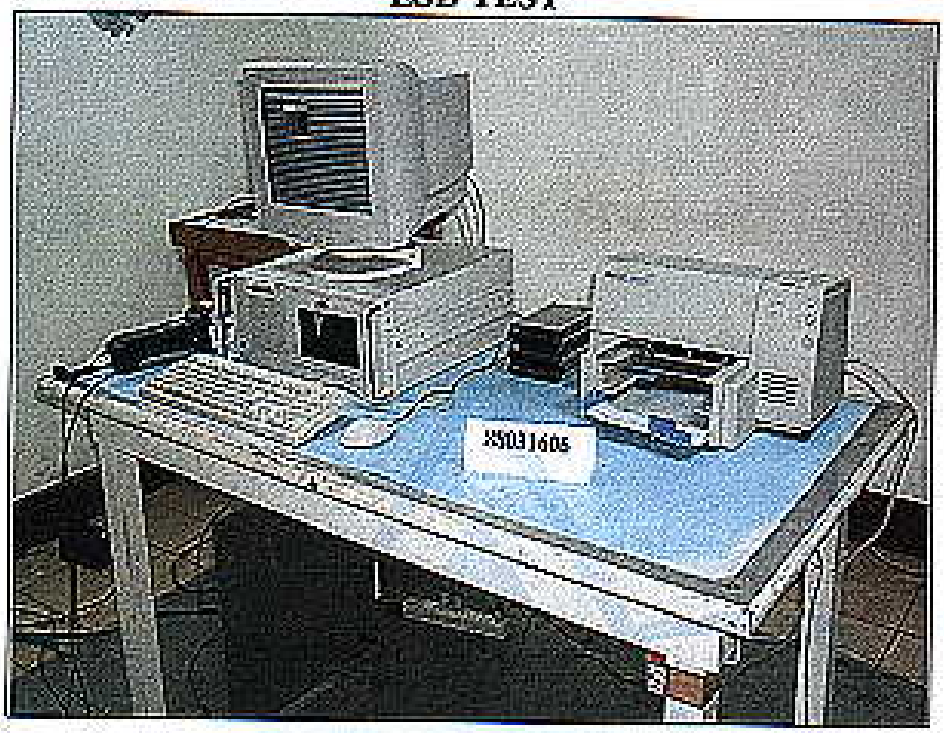
## CONDUCTED EMISSION TEST

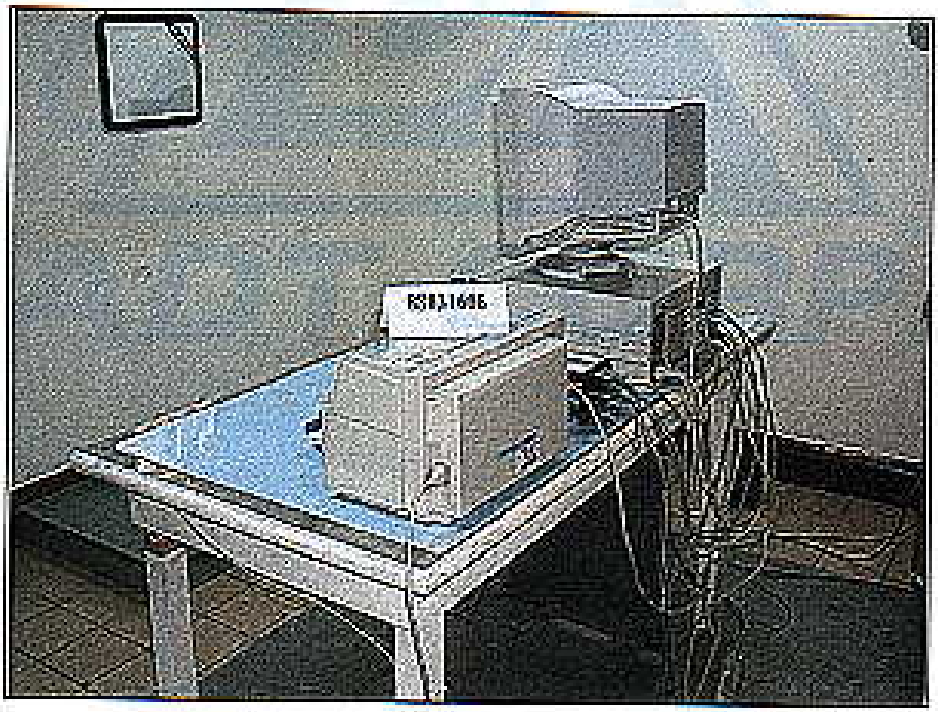
## RADIATED EMISSION TEST



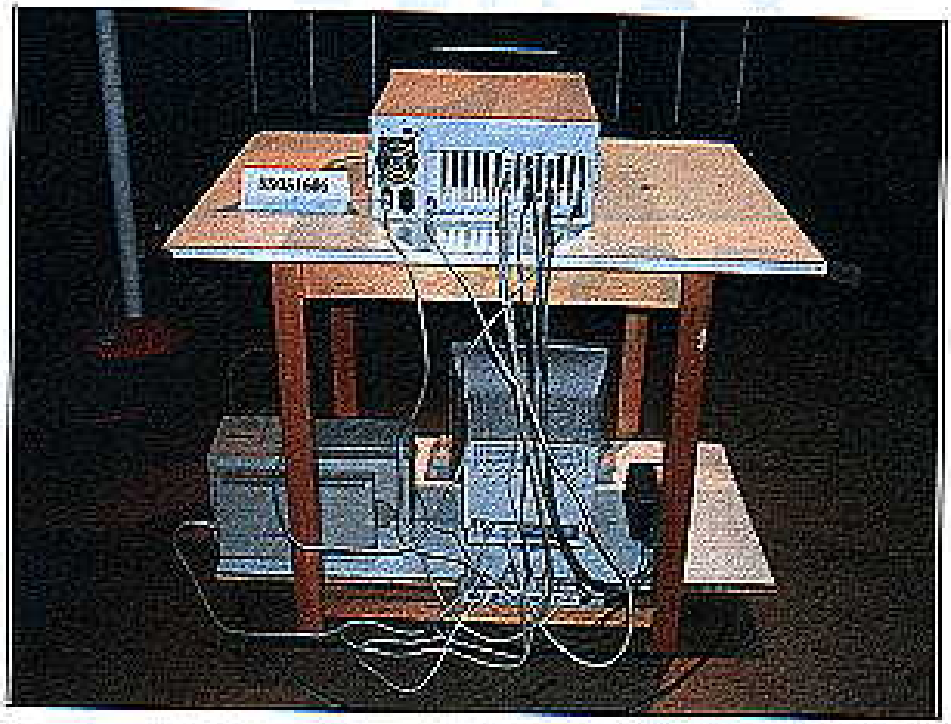


# ESD TEST





## RS & PULSE MODULATION TEST



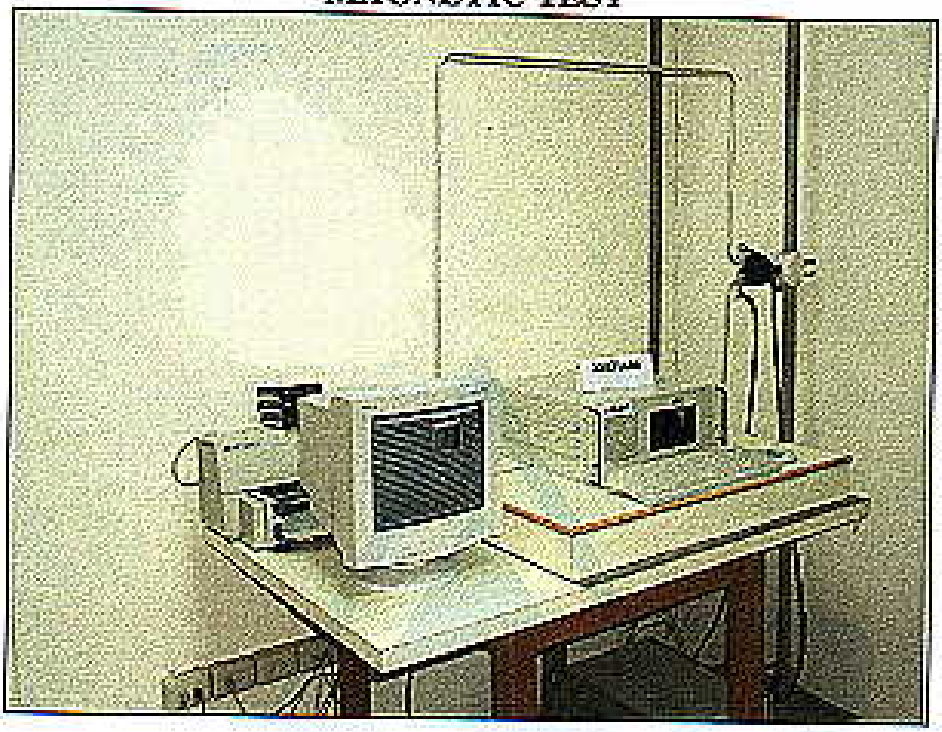
## EFT TEST

## EFT CLAMP TEST

## CONDUCTED SUSCEPTIBILITY TEST


## CONDUCTED SUSCEPTIBILITY CLAMP TEST

## MAGNETIC TEST



# 7. APPENDIX - INFORMATION OF THE TESTING LABORATORY

## Information of the testing laboratory

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

| | |
|---|---|
| • USA | FCC, UL, NVLAP |
| • Germany | TUV Rheinland |
| | TUV Product Service |
| • Japan | VCCI |
| • New Zealand | RFS |
| • Norway | NEMKO, DNV |
| • U.K. | INCHCAPE, SGS |
| • R.O.C. | BSMI |

Enclosed please find some certificates of our laboratory obtained from approval agencies. If you have any comments, please feel free to contact us with the following:


**Lin Kou EMC Lab.:**
Tel: 886-2-26032180
Fax: 886-2-26022943

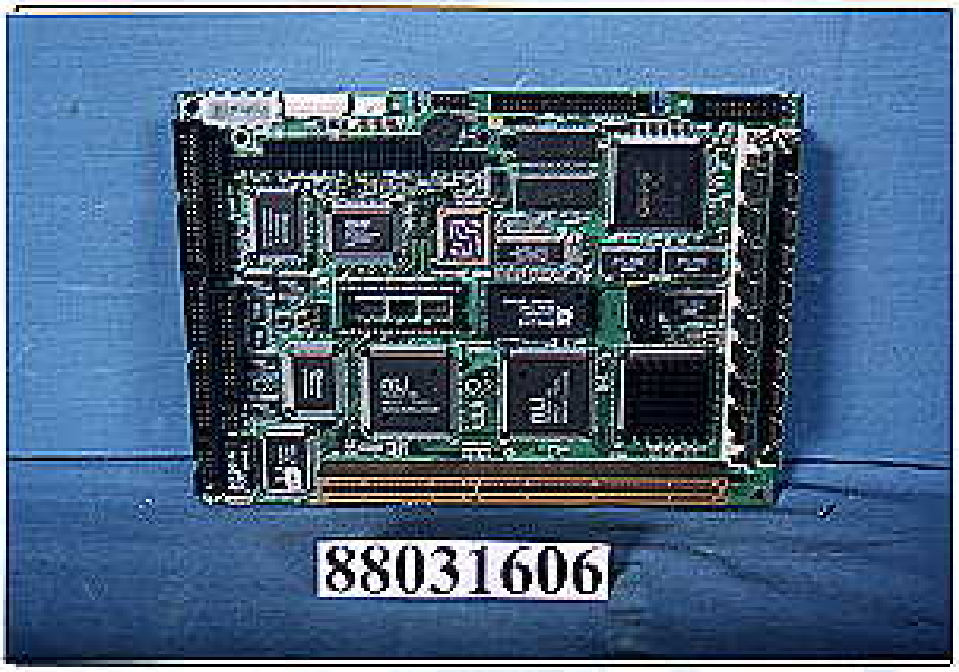
**Hsin Chu EMC Lab:**
Tel: 886-35-935343
Fax: 886-35-935342

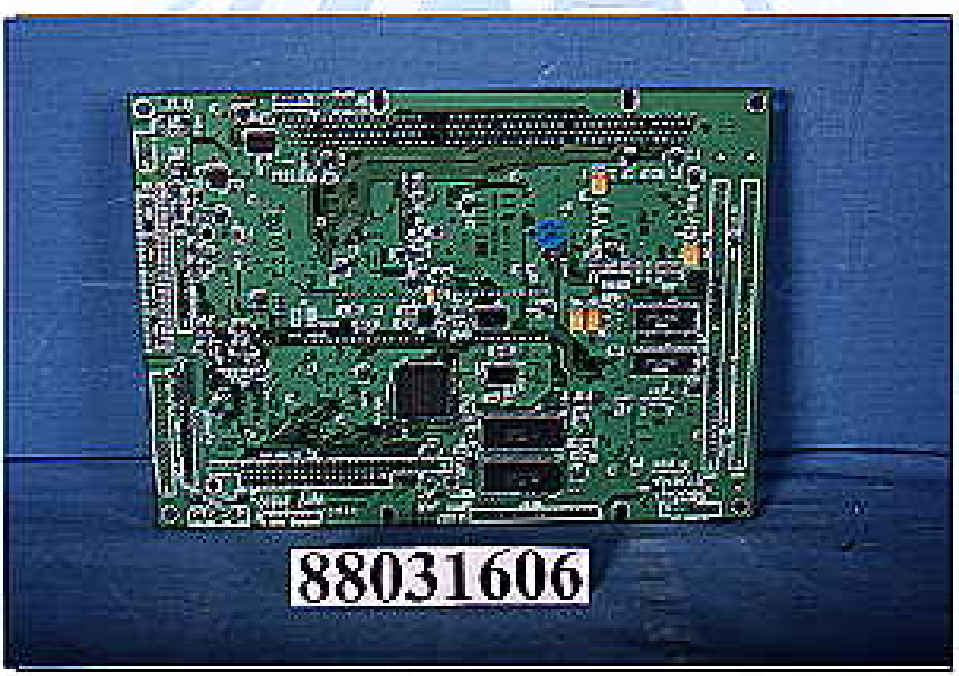
**Lin Kou Safety Lab.:**
Tel: 886-2-26093195
Fax: 886-2-26093184

**Design Center:**
Tel: 886-2-26093195
Fax: 886-2-26093184

E-mail: service@mail.adt.com.tw
http://www.adt.com.tw

# CONSTRUCTION PHOTOS OF EUT


88031606


88031606