



# EMC

## TEST REPORT

REPORT NO. : CE89042008

MODEL NO. : MIC-3032/8-XX

DATE OF TEST : Apr. 20 ~ May 2, 2000

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1.

## CERTIFICATION

Issue date: May 6, 2000

Product : MIC-3032/8 8-slot CompactPCI enclosure  
Trade Name : ADVANTECH  
Model No. : MIC-3032/8-XX  
Applicant : ADVANTECH CO., LTD.  
Standard : EN 55022: 1994+A1: 1995+A2: 1997, **EN 50082-2: 1995**  
Class A EN 61000-4-2: 1995  
EN 61000-3-2: 1995, Class A EN 61000-4-3: 1996  
EN 61000-3-3: 1995 EN 61000-4-4: 1995  
EN 61000-4-6: 1996  
EN 61000-4-8: 1993  
ENV 50204: 1995

We hereby certify that one sample of the designation has been tested in our facility from Apr. 20 to May 2, 2000. 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: \_\_\_\_\_ , DATE: \_\_\_\_\_  
(Emission) ( John Liao )

TESTED BY: \_\_\_\_\_ , DATE: \_\_\_\_\_  
(Immunity) ( S. S. Wang )

CHECKED BY: \_\_\_\_\_ , DATE: \_\_\_\_\_  
( Sharon Hsiung )

APPROVED BY: \_\_\_\_\_ , DATE: \_\_\_\_\_  
( Mike Su )

**ADVANCE DATA TECHNOLOGY CORPORATION**



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## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Product : MIC-3032/8 8-slot CompactPCI enclosure  
Model No. : MIC-3032/8-XX  
Power Supply Type : Switching  
Power Cord : Nonshielded (1.8m)

Note: The EUT is a 8-solt CompactPCI enclosure for rack or panel mounting. This 9U high enclosure provides eight 6U card slots, and has drive bay which can accommodated devices and peripherals such as floppy disk drives and hard disk drives. The EUT has three cooling fans to provide forced cooling air in the system. These three fans are individually hot-swappable, and users can directly replace any of the fans without interrupting the system's operation. Also, the EUT is integrated with a backplane and an alarm module.

The "X" in model: MIC-3032/8-XX could be defined as A-Z, 0-9 or blank according to different kinds of power supplies provided.

| MODE                          | 1   | 2  | 3  |
|-------------------------------|---|--|--|
| MODEL                         | MIC-3032/8-9A                                     | MIC-3032/8-9D                                      | MIC-3032/8-9R  |
| POWER SUPPLY                  | AC POWER SUPPLY<br>PRT, ATX 400W<br>model: PRM400 | DC POWER SUPPLY<br>PRT, ATX 400W<br>model: PRMD400 | AC POWER SUPPLY<br>PRT, REDUNDANT 300 W)<br>model: PRT300L |
| MAINBOARD                     | ADVANTECH, model: MIC-3355                        |  |  |
| CPU                           | INTEL PENTIUM 233 MMX (66.6*3.5)                  |  |  |
| HDD                           | QUANTUM, model: EX 32A013, 3.2AT GB               |  |  |
| FDD                           | TEAC, model: FD-235HF                             |  |  |
| CD-ROM                        | DIGITAL, model: E 2950UA, 16X                     |  |  |
| POWER SUPPLY                  | PRT, model: PRMD 400, 210W                        |  |  |
| BACK PLANE                    | ADVANTECH, model: MIC-3462                        |  |  |
| COMPACT REAR TRANSITION BOARD | ADVANTECH, model: MIC-3301                        |  |  |

An industrial computer system is formed with the above configuration.

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 an office equipment and is classified as a light industry equipment. According to the manufacturer's request, the EUT was tested with the requirements of the following standards:

|                                   |                         |
|-----------------------------------|-------------------------|
| EN 55022: 1994+A1: 1995+A2: 1997, | <b>EN 50082-2: 1995</b> |
| Class A                           | EN 61000-4-2: 1995      |
| EN 61000-3-2: 1995, Class A       | EN 61000-4-3: 1996      |
| EN 61000-3-3: 1995                | EN 61000-4-4: 1995      |
|                                   | EN 61000-4-6: 1996      |
|                                   | EN 61000-4-8: 1993      |
|                                   | 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.  | MONITOR           | HP       | D2846     | J974912250                                       | Shielded Signal (1.5m)<br>Nonshielded Power (1.8m) |
| 2.  | KEYBOARD          | FORWARD  | FDA-104GA | FDKB8110111                                      | Shielded Signal (1.4m)                             |
| 3.  | KEYBOARD          | FORWARD  | FDA-104GA | FDKB8110120                                      | Shielded Signal (1.4m)                             |
| 4.  | USB KEYBOARD      | BTC      | 7932      | D7A140017  | Shielded Signal (1.8m)                             |
| 5.  | MOUSE             | LOGITECH | M-S43     | LZE00703207                                      | Shielded Signal (1.8m)                             |
| 6.  | MOUSE             | LOGITECH | M-S43     | LZE00703123                                      | Shielded Signal (1.8m)                             |
| 7.  | USB MOUSE         | DEXIN    | A2U800A   | 71001830   | Shielded Signal (1.5m)                             |
| 8.  | PRINTER           | HP       | 2225C     | 2442S63076                                       | Shielded Signal (2.2m)<br>Nonshielded Power (1.9m) |
| 9.  | MODEM x 4         | ACEEX    | 1414      | 980020508<br>980020535<br>980020531<br>980020503 | Shielded Signal (1.2m)<br>Nonshielded Power (1.9m) |
| 10. | EARPHONE          | HP       | LT-100    | H201024  | Nonshielded Signal (2.9m)                          |
| 11. | DC POWER SUPPLY   | TOPWARD  | 6603A     | 667971   | Shielded Signal (1.0m)<br>Nonshielded Power (1.8m) |
| 12. | PERSONAL COMPUTER | IBM      | 2156-D1N  | BNA349G  | Nonshielded Power (1.8m)                           |
| 13. | COLOR MONITOR     | ADI      | 9376      | 649015T00100102093A                              | Shielded Signal (1.5m)<br>Nonshielded Power (1.8m) |
| 14. | KEYBOARD          | FORWARD  | FDA-104GA | FDKB8110109                                      | Shielded Signal (1.4m)                             |
| 15. | MOUSE             | LOGITECH | M-S43     | LZE00703197                                      | Shielded Signal (1.8m)                             |
| 16. | LAN CARD          | INTEL    | GD82559   | 009027A598FB                                     | NA   |

Note: 1. Support unit 4 & 7 were connected to the USB ports of the mainboard, model: MIC-3355.

2. Support units 1-1 were set up as the SERVER PC system and communicated with support units 12-16 which acted as WORKSTATION and partners of communication system via a STP cable (10m).

## FOR IMMUNITY TEST

| No  | Product           | Brand    | Model No.  | Serial No.   | I/O Cable  |
|-----|-------------------|----------|------------|--|--|
| 1.  | MONITOR           | ACER     | 7234e      | 9174302003   | Shielded Signal (1.5m)<br>Nonshielded Power (1.8m) |
| 2.  | KEYBOARD          | HP       | C3758A     | C3758-60223  | Shielded Signal (1.4m)                             |
| 3.  | KEYBOARD          | HP       | C3753A     | C3753-60223  | Shielded Signal (1.4m)                             |
| 4.  | USB KEYBOARD      | BTC      | 7932       | 174250046  | Shielded Signal (1.8m)                             |
| 5.  | MOUSE             | LOGITECH | M-S43      | LZE93501869  | Shielded Signal (1.8m)                             |
| 6.  | MOUSE             | HP       | M-S43      | M401015  | Shielded Signal (1.8m)                             |
| 7.  | USB MOUSE         | DEXIN    | A2U800A    | 71001821   | Shielded Signal (1.5m)                             |
| 8.  | PRINTER           | HP       | C2145A     | SG59N16035   | Shielded Signal (2.2m)<br>Nonshielded Power (1.9m) |
| 9.  | MODEM x 4         | GVC      | F-1128V/R6 | 96-191-113004<br>96-191-113003<br>853E100<br>96-191-112532 | Shielded Signal (1.2m)<br>Nonshielded Power (1.9m) |
| 10. | EARPHONE          | HP       | LT-100     | H201023  | Nonshielded Signal (2.9m)                          |
| 11. | DC POWER SUPPLY   | TOPWARD  | 6603A      | 667971   | Shielded Signal (1.0m)<br>Nonshielded Power (1.8m) |
| 12. | NOTEBOOK COMPUTER | USI      | UNI-812    | 97207-0112-029850E   | Nonshielded Power (1.8m)                           |
| 13. | LAN CARD          | 3COM     | 3CCFE575BT | 6NV1F89B7A   | NA   |

Note: 1. Support unit 4 & 7 were connected to the USB ports of the mainboard, model: MIC-3355.

2. Support units 1-11 were set up as the SERVER PC system and communicated with support units 12-13 which acted as WORKSTATION and partners of communication system via a STP 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 13, 2000    |
| ROHDE & SCHWARZ Artificial Mains Network | ESH3-Z5   | 839135/006 | July 7, 2000     |
| EMCO-L.I.S.N.                            | 3825/2    | 9204-1964  | July 7, 2000     |
| Shielded Room                            | Site 2    | ADT-C02    | NA               |

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

##### RADIATED EMISSION MEASUREMENT

| Description & Manufacturer         | Model No.            | Serial No.               | Calibrated Until |
|------------------------------------|----------------------|--------------------------|------------------|
| HP Spectrum Analyzer               | 8590L                | 3544A01176               | April 18, 2001   |
| HP Preamplifier                    | 8447D                | 2944A08485               | May 1, 2000      |
| HP Preamplifier                    | 8347A                | 3307A01088               | Aug. 30, 2000    |
| ROHDE & SCHWARZ TEST RECEIVER      | ESMI                 | 839013/007<br>839379/002 | Aug. 30, 2000    |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103<br>UHA 9105 | E101051<br>E101055       | Nov. 23, 2000    |
| CHASE BILOG Antenna                | CBL6112A             | 2221                     | Aug. 4, 2000     |
| EMCO Turn Table                    | 1060                 | 1115                     | NA               |
| SHOSHIN Tower                      | AP-4701              | A6Y005                   | NA               |
| Open Field Test Site               | Site 5               | ADT-R05                  | July 30, 2000    |

Note: 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per 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.

##### CURRENT HARMONICS, VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

| Description & Manufacturer           | Model no. | Serial No. | Calibrated Until |
|--------------------------------------|-----------|------------|------------------|
| KeyTek, Power Arb Waveform Generator | EP72HF    | 9508346    | Mar. 29, 2001    |
| KIKUSUI AC SWITCHING POWER SUPPLY    | PCR 4000L | 9508355    | Mar. 29, 2001    |

Note: 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. 10, 2000    |
| KeyTek, ESD Simulator                            | MZ-15/EC      | 9902287    | Feb. 28, 2001    |
| KeyTek, EFT Generator                            | CE-40         | 9508257    | Sept. 5, 2000    |
| KeyTek, Capacitive Clamp                         | CE-40-CCL     | 9508259    | Sept. 5, 2000    |
| KeyTek, Control Center                           | E103          | 9508347    | NA               |
| KeyTek, Surge Combination Wave                   | E501A         | 9508349    | Aug. 30, 2000    |
| KeyTek, Surge Coupler/Decoupler                  | E551          | 9508350    | Aug. 30, 2000    |
| External Coupler /Decoupler                      | CM-TELCD      | 9926194    | NA               |
| I/O Signal Line Coupler/Decoupler                | CM-110CD      | 9907177    | NA               |
| ROHDE & SCHWARZ Signal Generator                 | SMY01         | 840490/009 | Aug. 19, 2000    |
| KALMUS Power Amplifier                           | LA1000V       | 091995-1   | NA               |
| KALMUS Power Amplifier                           | 757LC         | 091995-2   | NA               |
| HOLADAY Field Probe                              | HI-4422       | 89915      | Aug. 12, 2000    |
| 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               |
| FISCHER CUSTOM COMMUNICATIONS EM Injection Clamp | FCC-203I      | 50         | NA               |
| FCC Coupling Decoupling Network                  | FCC-801-M1-25 | 17         | NA               |
| BOONTON RF Voltage Meter                         | 9200B         | 331801AE   | Aug. 19, 2000    |
| COMTEST Compact Full Anechoic Chamber (7x3x3 m)  | CFAC          | ADT-S01    | Aug. 24, 2000    |
| HAEFELY Magnetic Field Tester                    | MAG 100.1     | 083794-06  | NA               |
| COMBINOVA Magnetic Field Meter                   | MFM10         | 224        | Oct. 29, 2000    |
| KEYTEK Mains Interference Simulator              | EMC Pro       | 9902207    | Feb. 16, 2001    |

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<br>(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 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<br>(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 A  
Frequency Range : 0.15 - 30 MHz (Conducted Emission)  
30 - 1000 MHz (Radiated Emission)  
Input Voltage : 230 Vac, 50 Hz  
Temperature : 24  
Humidity : 75 %  
Atmospheric Pressure : 1005 mbar

| TEST RESULT | Remarks  |
|-------------|--|
| <b>PASS</b> | Minimum passing margin of conducted emission: -19.2 dB at 16.706 MHz<br>Minimum passing margin of radiated emission: -2.1 dB at 200.50 MHz |

### 4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
2. Industrial Computer runs a test program to enable all functions.
3. Industrial Computer reads and writes messages from FDD and HDD.
4. Industrial Computer sends and receives messages from WORKSTATION via a STP cable.
5. Industrial Computer sends "H" messages to monitor and monitor displays "H" patterns on screen.
6. Industrial Computer sends "H" messages to modem.
7. Industrial Computer sends "H" messages to printer, and the printer prints them on paper.
8. Industrial Computer sends audio messages to earphone.
9. Repeat steps 3-9.



### 4.3 TEST DATA OF CONDUCTED EMISSION (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9A

MODE: 1

6 dB Bandwidth: 10 kHz

PHASE: LINE (L)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.156  | 0.2    | 57.0          | -   | 57.2           | -   | 79.0      | 66.0 | -21.8  | -   |
| 0.312  | 0.2    | 48.7          | -   | 48.9           | -   | 79.0      | 66.0 | -30.1  | -   |
| 0.523  | 0.2    | 43.1          | -   | 43.3           | -   | 79.0      | 66.0 | -35.7  | -   |
| 4.947  | 0.4    | 44.0          | -   | 44.4           | -   | 73.0      | 60.0 | -28.6  | -   |
| 16.706 | 1.0    | 52.8          | -   | 53.8           | -   | 73.0      | 60.0 | -19.2  | -   |
| 29.243 | 1.7    | 26.8          | -   | 28.5           | -   | 73.0      | 60.0 | -44.5  | -   |

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level 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
  6. Emission Level = Correction Factor + Reading Value.



## TEST DATA OF CONDUCTED EMISSION (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9A

MODE: 1

6 dB Bandwidth: 10 kHz

PHASE: NEUTRAL (N)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.156  | 0.2    | 57.0          | -   | 57.2           | -   | 79.0      | 66.0 | -21.8  | -   |
| 0.312  | 0.2    | 47.9          | -   | 48.1           | -   | 79.0      | 66.0 | -30.9  | -   |
| 0.523  | 0.2    | 43.0          | -   | 43.2           | -   | 79.0      | 66.0 | -35.8  | -   |
| 4.947  | 0.4    | 45.0          | -   | 45.4           | -   | 73.0      | 60.0 | -27.6  | -   |
| 16.706 | 0.8    | 52.1          | -   | 52.9           | -   | 73.0      | 60.0 | -20.1  | -   |
| 29.243 | 1.5    | 26.1          | -   | 27.6           | -   | 73.0      | 60.0 | -45.4  | -   |

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level 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
  6. Emission Level = Correction Factor + Reading Value.



#### 4.4 TEST DATA OF CONDUCTED EMISSION (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9D

MODE: 2

6 dB Bandwidth: 10 kHz

PHASE: LINE (L)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.159  | 0.2    | 15.6          | -   | 15.8           | -   | 79.0      | 66.0 | -63.2  | -   |
| 0.212  | 0.2    | 18.3          | -   | 18.5           | -   | 79.0      | 66.0 | -60.5  | -   |
| 1.602  | 0.2    | 34.0          | -   | 34.2           | -   | 73.0      | 60.0 | -38.8  | -   |
| 4.947  | 0.4    | 38.2          | -   | 38.6           | -   | 73.0      | 60.0 | -34.4  | -   |
| 15.512 | 1.0    | 48.0          | -   | 49.0           | -   | 73.0      | 60.0 | -24.0  | -   |
| 20.786 | 1.0    | 38.6          | -   | 39.6           | -   | 73.0      | 60.0 | -33.4  | -   |

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level 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
  6. Emission Level = Correction Factor + Reading Value.



## TEST DATA OF CONDUCTED EMISSION (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9D

MODE: 2

6 dB Bandwidth: 10 kHz

PHASE: NEUTRAL (N)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.159  | 0.2    | 19.1          | -   | 19.3           | -   | 79.0      | 66.0 | -59.7  | -   |
| 0.212  | 0.2    | 25.6          | -   | 25.8           | -   | 79.0      | 66.0 | -53.2  | -   |
| 1.602  | 0.2    | 33.8          | -   | 34.0           | -   | 73.0      | 60.0 | -39.0  | -   |
| 4.947  | 0.4    | 34.7          | -   | 35.1           | -   | 73.0      | 60.0 | -37.9  | -   |
| 15.512 | 0.8    | 49.8          | -   | 50.6           | -   | 73.0      | 60.0 | -22.4  | -   |
| 20.786 | 0.9    | 35.0          | -   | 35.9           | -   | 73.0      | 60.0 | -37.1  | -   |

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level 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
  6. Emission Level = Correction Factor + Reading Value.





#### 4.5 TEST DATA OF CONDUCTED EMISSION (C)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9R

MODE: 3

6 dB Bandwidth: 10 kHz

PHASE: LINE (L)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.156  | 0.2    | 55.0          | -   | 55.2           | -   | 79.0      | 66.0 | -23.8  | -   |
| 0.264  | 0.2    | 44.1          | -   | 44.3           | -   | 79.0      | 66.0 | -34.7  | -   |
| 0.318  | 0.2    | 39.3          | -   | 39.5           | -   | 79.0      | 66.0 | -39.5  | -   |
| 4.947  | 0.4    | 30.0          | -   | 30.4           | -   | 73.0      | 60.0 | -42.6  | -   |
| 16.705 | 1.0    | 49.8          | -   | 50.8           | -   | 73.0      | 60.0 | -22.2  | -   |
| 17.898 | 1.0    | 46.5          | -   | 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 emission level 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
  6. Emission Level = Correction Factor + Reading Value.



## TEST DATA OF CONDUCTED EMISSION (C)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9R

MODE: 3

6 dB Bandwidth: 10 kHz

PHASE: NEUTRAL (N)

| Freq.  | Corr.  | Reading Value |     | Emission Level |     | Limit     |      | Margin |     |
|--------|--------|---------------|-----|----------------|-----|-----------|------|--------|-----|
| [MHz]  | Factor | [dB (uV)]     |     | [dB (uV)]      |     | [dB (uV)] |      | (dB)   |     |
|        | (dB)   | Q.P.          | AV. | Q.P.           | AV. | Q.P.      | AV.  | Q.P.   | AV. |
| 0.156  | 0.2    | 54.4          | -   | 54.6           | -   | 79.0      | 66.0 | -24.4  | -   |
| 0.264  | 0.2    | 43.4          | -   | 43.6           | -   | 79.0      | 66.0 | -35.4  | -   |
| 0.318  | 0.2    | 39.0          | -   | 39.2           | -   | 79.0      | 66.0 | -39.8  | -   |
| 4.947  | 0.4    | 29.0          | -   | 29.4           | -   | 73.0      | 60.0 | -43.6  | -   |
| 16.705 | 0.8    | 50.2          | -   | 51.0           | -   | 73.0      | 60.0 | -22.0  | -   |
| 17.898 | 0.9    | 48.0          | -   | 48.9           | -   | 73.0      | 60.0 | -24.1  | -   |

- Remarks:
1. "\*": Undetectable
  2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  3. "-": The Quasi-peak emission level 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
  6. Emission Level = Correction Factor + Reading Value.



#### 4.6 TEST DATA OF RADIATED EMISSION (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9A

MODE: 1

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 160.30             | 11.6                      | 22.2                    | 33.8                       | 40.0              | -6.2           | 400                       | 357                        |
| 167.13             | 11.3                      | 17.5                    | 28.8                       | 40.0              | -11.2          | 400                       | 23                         |
| 169.75             | 11.2                      | 22.5                    | 33.7                       | 40.0              | -6.3           | 400                       | 80                         |
| 179.14             | 10.8                      | 17.3                    | 28.1                       | 40.0              | -11.9          | 400                       | 290                        |
| 197.98             | 10.2                      | 24.0                    | 34.2                       | 40.0              | -5.8           | 400                       | 97                         |
| 200.51             | 10.2                      | 26.7                    | 36.9                       | 40.0              | -3.1           | 400                       | 100                        |
| 467.68             | 19.1                      | 12.9                    | 32.0                       | 47.0              | -15.0          | 383                       | 357                        |
| 1270.10            | 29.1                      | 15.0                    | 44.1                       | 74.0              | -29.9          | 100                       | 32                         |
| 1337.20            | 29.5                      | 19.5                    | 49.0                       | 74.0              | -25.0          | 154                       | 306                        |
| 1470.20            | 30.4                      | 18.1                    | 48.5                       | 74.0              | -25.6          | 187                       | 5                          |
| 1536.90            | 30.9                      | 18.4                    | 49.3                       | 74.0              | -24.7          | 173                       | 1                          |

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)  
+ Reading value (dBuV).
  2. Correction Factor (dB) = Ant. Factor (dB)+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 (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9A

MODE: 1

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 66.86              | 6.6                       | 21.7                    | 28.3                       | 40.0              | -11.7          | 180                       | 305                        |
| 113.14             | 12.5                      | 19.4                    | 31.9                       | 40.0              | -8.1           | 100                       | 358                        |
| 122.57             | 12.9                      | 15.0                    | 27.9                       | 40.0              | -12.1          | 100                       | 358                        |
| 133.73             | 12.7                      | 11.5                    | 24.2                       | 40.0              | -15.8          | 100                       | 152                        |
| 150.89             | 12.1                      | 22.6                    | 34.7                       | 40.0              | -5.3           | 100                       | 12                         |
| 160.28             | 11.6                      | 26.1                    | 37.7                       | 40.0              | -2.3           | 100                       | 16                         |
| 169.73             | 11.2                      | 25.6                    | 36.8                       | 40.0              | -3.2           | 100                       | 355                        |
| 200.50             | 10.2                      | 27.7                    | 37.9                       | 40.0              | -2.1           | 100                       | 351                        |
| 334.00             | 15.9                      | 13.3                    | 29.2                       | 47.0              | -17.8          | 100                       | 7                          |
| 467.67             | 19.1                      | 15.4                    | 34.5                       | 47.0              | -12.5          | 100                       | 10                         |
| 1269.66            | 29.1                      | 17.4                    | 46.5                       | 74.0              | -27.5          | 130                       | 25                         |
| 1336.06            | 29.5                      | 17.6                    | 47.1                       | 74.0              | -26.9          | 127                       | 308                        |
| 1469.88            | 30.4                      | 17.3                    | 47.7                       | 74.0              | -26.3          | 207                       | 6                          |
| 1536.68            | 30.9                      | 18.7                    | 49.6                       | 74.0              | -24.4          | 158                       | 10                         |

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



#### 4.7 TEST DATA OF RADIATED EMISSION (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9D

MODE: 2

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 66.83              | 6.6                       | 20.0                    | 26.6                       | 40.0              | -13.4          | 100                       | 288                        |
| 75.43              | 7.8                       | 21.7                    | 29.5                       | 40.0              | -10.5          | 100                       | 0                          |
| 113.14             | 12.5                      | 19.6                    | 32.1                       | 40.0              | -7.9           | 100                       | 272                        |
| 144.05             | 12.4                      | 14.3                    | 26.7                       | 40.0              | -13.3          | 100                       | 9                          |
| 160.29             | 11.6                      | 21.9                    | 33.5                       | 40.0              | -6.5           | 100                       | 330                        |
| 197.99             | 10.2                      | 22.2                    | 32.4                       | 40.0              | -7.6           | 100                       | 309                        |
| 200.49             | 10.2                      | 25.1                    | 35.3                       | 40.0              | -4.7           | 100                       | 21                         |
| 216.85             | 11.4                      | 23.1                    | 34.5                       | 40.0              | -5.5           | 338                       | 297                        |
| 467.63             | 19.1                      | 17.0                    | 36.1                       | 47.0              | -10.9          | 228                       | 99                         |
| 734.81             | 22.2                      | 8.5                     | 30.7                       | 47.0              | -16.3          | 100                       | 322                        |
| 1336.09            | 29.5                      | 17.7                    | 47.2                       | 80                | -26.8          | 196                       | 358                        |
| 1536.07            | 30.9                      | 17.7                    | 48.6                       | 80                | -25.4          | 116                       | 367                        |

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)  
+ Reading value (dBuV).
  2. Correction Factor (dB) = Ant. Factor (dB)+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 (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9D

MODE: 2

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 66.85              | 6.6                       | 22.2                    | 28.8                       | 40.0              | -11.2          | 184                       | 231                        |
| 75.42              | 7.8                       | 19.7                    | 27.5                       | 40.0              | -12.5          | 181                       | 136                        |
| 113.14             | 12.5                      | 20.9                    | 33.4                       | 40.0              | -6.6           | 100                       | 290                        |
| 133.68             | 12.7                      | 15.6                    | 28.3                       | 40.0              | -11.7          | 100                       | 67                         |
| 150.85             | 12.1                      | 24.5                    | 36.6                       | 40.0              | -3.4           | 100                       | 333                        |
| 160.28             | 11.6                      | 24.9                    | 36.5                       | 40.0              | -3.5           | 100                       | 5                          |
| 198.00             | 10.2                      | 20.1                    | 30.3                       | 40.0              | -9.7           | 100                       | 317                        |
| 200.51             | 10.2                      | 27.2                    | 37.4                       | 40.0              | -2.6           | 100                       | 7                          |
| 216.86             | 11.4                      | 21.9                    | 33.3                       | 40.0              | -6.7           | 100                       | 24                         |
| 467.65             | 19.1                      | 12.5                    | 31.6                       | 47.0              | -15.4          | 329                       | 333                        |
| 734.82             | 22.2                      | 9.0                     | 31.2                       | 47.0              | -15.8          | 266                       | 333                        |
| 1002.72            | 27.2                      | 19.0                    | 46.2                       | 80.0              | -27.8          | 100                       | 201                        |
| 1336.32            | 29.5                      | 19.4                    | 48.9                       | 80.0              | -25.1          | 100                       | 12                         |
| 1536.30            | 30.9                      | 20.5                    | 51.4                       | 80.0              | -22.6          | 100                       | 27                         |

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



#### 4.8 TEST DATA OF RADIATED EMISSION (C)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9R

MODE: 3

ANT. POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 113.14             | 12.5                      | 17.6                    | 30.1                       | 40.0              | -9.9           | 400                       | 113                        |
| 122.57             | 12.9                      | 15.4                    | 28.3                       | 40.0              | -11.7          | 400                       | 248                        |
| 144.04             | 12.4                      | 15.2                    | 27.6                       | 40.0              | -12.4          | 400                       | 294                        |
| 160.28             | 11.6                      | 23.4                    | 35.0                       | 40.0              | -5.0           | 347                       | 350                        |
| 169.71             | 11.2                      | 22.3                    | 33.5                       | 40.0              | -6.5           | 400                       | 354                        |
| 198.01             | 10.2                      | 24.7                    | 34.9                       | 40.0              | -5.1           | 400                       | 3                          |
| 200.53             | 10.2                      | 26.8                    | 37.0                       | 40.0              | -3.0           | 400                       | 91                         |
| 334.18             | 15.9                      | 11.2                    | 27.1                       | 47.0              | -19.9          | 205                       | 217                        |
| 601.39             | 20.9                      | 17.0                    | 37.9                       | 47.0              | -9.1           | 111                       | 227                        |
| 1270.11            | 29.1                      | 14.9                    | 44.0                       | 74.0              | -30.0          | 100                       | 29                         |
| 1337.21            | 29.5                      | 19.7                    | 49.2                       | 74.0              | -24.8          | 158                       | 301                        |
| 1470.19            | 30.4                      | 18.5                    | 48.9                       | 74.0              | -25.1          | 167                       | 3                          |
| 1536.92            | 30.9                      | 18.9                    | 49.8                       | 74.0              | -24.2          | 173                       | 360                        |

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB)  
+ Reading value (dBuV).
  2. Correction Factor (dB) = Ant. Factor (dB)+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 (C)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9R

MODE: 3

ANT. POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

| Frequency<br>(MHz) | Correction<br>Factor (dB) | Reading Value<br>(dBuV) | Emission Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(cm) | Table<br>Angle<br>(Degree) |
|--------------------|---------------------------|-------------------------|----------------------------|-------------------|----------------|---------------------------|----------------------------|
| 66.84              | 6.6                       | 21.6                    | 28.2                       | 40.0              | -11.8          | 169                       | 289                        |
| 113.15             | 12.5                      | 20.4                    | 32.9                       | 40.0              | -7.1           | 100                       | 316                        |
| 144.05             | 12.4                      | 13.5                    | 25.9                       | 40.0              | -14.1          | 100                       | 206                        |
| 160.28             | 11.6                      | 21.8                    | 33.4                       | 40.0              | -6.6           | 100                       | 321                        |
| 169.72             | 11.2                      | 21.0                    | 32.2                       | 40.0              | -7.8           | 100                       | 6                          |
| 200.52             | 10.2                      | 27.6                    | 37.8                       | 40.0              | -2.2           | 100                       | 321                        |
| 216.87             | 11.4                      | 21.6                    | 33.0                       | 40.0              | -7.0           | 100                       | 41                         |
| 334.00             | 15.9                      | 18.9                    | 34.8                       | 47.0              | -12.2          | 104                       | 314                        |
| 467.66             | 19.1                      | 17.3                    | 36.4                       | 47.0              | -10.6          | 100                       | 350                        |
| 601.32             | 20.9                      | 11.5                    | 32.4                       | 47.0              | -14.6          | 158                       | 85                         |
| 1002.71            | 27.2                      | 19.2                    | 46.4                       | 74.0              | -27.6          | 100                       | 196                        |
| 1336.32            | 29.5                      | 20.0                    | 49.5                       | 74.0              | -24.5          | 103                       | 8                          |
| 1536.31            | 30.9                      | 30.6                    | 51.5                       | 74.0              | -22.5          | 100                       | 13                         |

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





## 4.9 DISTURBANCE IN SUPPLY SYSTEM

Product Family Standard : EN 61000-3-2, Class A (for mode 1)  
EN 60555-2 (for mode 3)  
Input Voltage : 230Vac, 50Hz  
Temperature : 20  
Humidity : 58 %  
Atmospheric Pressure : 1000 mbar

| TEST RESULT | Remarks |
|-------------|---------|
| PASS        | MODE 1  |
| PASS        | MODE 3  |

### 4.9.1 EUT OPERATION CONDITION

PC sends “full white screen pattern” message to EUT to make EUT have maximum power consumption. Besides that, “full black screen pattern” is also verified to try to find maximum harmonic value caused.

## 4.9.2 MEASUREMENT DATA OF HARMONICS TEST (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9A

MODE: 1

Fundamental Voltage : 229.657 Vrms  
Amperes : 0.549 Arms  
Frequency : 50 Hz  
Power Consumption : 62.869 W

| Harm. Order | Reading Data (A) | Limit (A) |
|-------------|------------------|-----------|
| 1           | -                | -         |
| 3           | 0.25             | 2.30      |
| 5           | 0.23             | 1.14      |
| 7           | 0.20             | 0.77      |
| 9           | 0.17             | 0.40      |
| 11          | 0.14             | 0.33      |
| 13          | 0.10             | 0.21      |
| 15          | 0.07             | 0.15      |
| 17          | 0.05             | 0.13      |
| 19          | 0.03             | 0.12      |
| 21          | 0.02             | 0.11      |
| 23          | 0.01             | 0.10      |
| 25          | 0.01             | 0.09      |
| 27          | 0.01             | 0.08      |
| 29          | 0.00             | 0.08      |
| 31          | 0.01             | 0.07      |
| 33          | 0.01             | 0.07      |
| 35          | 0.01             | 0.06      |
| 37          | 0.01             | 0.06      |
| 39          | 0.01             | 0.06      |

| Harm. Order | Reading Data (A) | Limit (A) |
|-------------|------------------|-----------|
| 2           | 0.00             | 1.08      |
| 4           | 0.00             | 0.43      |
| 6           | 0.00             | 0.30      |
| 8           | 0.00             | 0.23      |
| 10          | 0.00             | 0.18      |
| 12          | 0.00             | 0.15      |
| 14          | 0.00             | 0.13      |
| 16          | 0.00             | 0.11      |
| 18          | 0.00             | 0.10      |
| 20          | 0.00             | 0.09      |
| 22          | 0.00             | 0.08      |
| 24          | 0.00             | 0.08      |
| 26          | 0.00             | 0.07      |
| 28          | 0.00             | 0.07      |
| 30          | 0.00             | 0.06      |
| 32          | 0.00             | 0.06      |
| 34          | 0.00             | 0.05      |
| 36          | 0.00             | 0.05      |
| 38          | 0.00             | 0.05      |
| 40          | 0.00             | 0.05      |

Note: Steady state values on AC mains are recorded in the table.

### 4.9.3 MEASUREMENT DATA OF HARMONICS TEST (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure MODEL: MIC-3032/8-9R

MODE: 3

Fundamental Voltage : 229.654 Vrms  
 Amperes : 0.779 Arms  
 Frequency : 50 Hz  
 Power Consumption : 87.020 W

| Harm. Order | Reading Data (A) | Limit (A) |
|-------------|------------------|-----------|
| 1           | -                | -         |
| 3           | 0.35             | 2.30      |
| 5           | 0.32             | 1.14      |
| 7           | 0.28             | 0.77      |
| 9           | 0.24             | 0.40      |
| 11          | 0.20             | 0.33      |
| 13          | 0.16             | 0.21      |
| 15          | 0.12             | 0.15      |
| 17          | 0.09             | 0.13      |
| 19          | 0.06             | 0.12      |
| 21          | 0.04             | 0.11      |
| 23          | 0.03             | 0.10      |
| 25          | 0.02             | 0.09      |
| 27          | 0.02             | 0.08      |
| 29          | 0.02             | 0.08      |
| 31          | 0.01             | 0.07      |
| 33          | 0.01             | 0.07      |
| 35          | 0.00             | 0.06      |
| 37          | 0.01             | 0.06      |
| 39          | 0.01             | 0.06      |

| Harm. Order | Reading Data (A) | Limit (A) |
|-------------|------------------|-----------|
| 2           | 0.01             | 1.08      |
| 4           | 0.01             | 0.43      |
| 6           | 0.01             | 0.30      |
| 8           | 0.01             | 0.23      |
| 10          | 0.01             | 0.18      |
| 12          | 0.01             | 0.15      |
| 14          | 0.01             | 0.13      |
| 16          | 0.01             | 0.11      |
| 18          | 0.01             | 0.10      |
| 20          | 0.00             | 0.09      |
| 22          | 0.00             | 0.08      |
| 24          | 0.01             | 0.08      |
| 26          | 0.00             | 0.07      |
| 28          | 0.00             | 0.07      |
| 30          | 0.00             | 0.06      |
| 32          | 0.00             | 0.06      |
| 34          | 0.00             | 0.05      |
| 36          | 0.00             | 0.05      |
| 38          | 0.00             | 0.05      |
| 40          | 0.00             | 0.05      |

Note: Steady state values on AC mains are recorded in the table.



## 4.10 VOLTAGE FLUCTUATIONS AND FLICKER

Basic Standard : EN 61000-3-3  
Input Voltage : 230Vac, 50Hz  
Temperature : 25  
Humidity : 58 %  
Atmospheric Pressure : 1012 mbar

| TEST RESULT | Remarks |
|-------------|---------|
| PASS        | MODE 1  |
| PASS        | MODE 3  |

### 4.10.1 EUT OPERATION CONDITION

Same as item 4.1.1.



#### 4.10.2 TEST DATA OF VOLTAGE FLUCTUATIONS AND FLICKER (A)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9A

MODE: 1

Input Voltage : 229.657 Vrms

Input Amperes : 0.549 Arms

Power Factor : 0.499

Power Frequency: 50 Hz

Observation period (Tp): 2 hour

| Test Parameter | Measurement Value | Limitation | Remark |
|----------------|-------------------|------------|--------|
| Pst            | 0.085             | 1.0        | pass   |
| Plt            | 0.037             | 0.65       | pass   |
| Tdt (ms)       | 0                 | 200        | pass   |
| dmax (%)       | 0                 | 4%         | pass   |
| dc (%)         | 0                 | 3%         | pass   |

Note: (1) Plt means long-term flicker indicator  
(2) Pst means short-term flicker indicator  
(3) dc means relative steady-state voltage change  
(4) dmax means maximum relative voltage change  
(5) Tdt means maximum time that dt exceeds 3 %



#### 4.10.3 TEST DATA OF VOLTAGE FLUCTUATIONS AND FLICKER (B)

EUT: MIC-3032/8 8-slot CompactPCI enclosure

MODEL: MIC-3032/8-9R

MODE: 3

Input Voltage : 229.654 Vrms

Input Amperes : 0.779 Arms

Power Factor : 0.487

Power Frequency: 50 Hz

Observation period (Tp): 2 hour

| Test Parameter | Measurement Value | Limitation | Remark |
|----------------|-------------------|------------|--------|
| Pst            | 0.090             | 1.0        | pass   |
| Plt            | 0.039             | 0.65       | pass   |
| Tdt (ms)       | 0                 | 200        | pass   |
| dmax (%)       | 0                 | 4%         | pass   |
| dc (%)         | 0                 | 3%         | pass   |

Note: (1) Plt means long-term flicker indicator  
(2) Pst means short-term flicker indicator  
(3) dc means relative steady-state voltage change  
(4) dmax means maximum relative voltage change  
(5) Tdt means maximum time that dt exceeds 3 %



## 5. TEST RESULTS (IMMUNITY)

### 5.1 GENERAL DESCRIPTION

|  |          |   |
|--|----------|---|
| <b>Generic Standard</b>                | <b>:</b> | <b>EN 50082-2: 1995</b>   |
| Basic Standard                         | :        | EN 61000-4-2 (Electrostatic Discharge, ESD, 8kV air discharge, 4kV Contact discharge, Performance Criterion B)  |
| Specification and Performance Criteria | :        | 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  |
| Temperature                            | :        | 25  |
| Humidity                               | :        | 59 %  |
| Atmospheric Pressure                   | :        | 1012 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

Same as item **4.1.1**.



## 5.4 TEST RESULT OF ELECTROSTATIC DISCHARGE (ESD)

|                     |   |   |
|---------------------|---|---|
| Basic Standard      | : | EN 61000-4-2  |
| Discharge Impedance | : | 330 ohm / 150 pF  |
| Discharge Voltage   | : | Air Discharge - 8 kV (Direct)<br>Contact Discharge - 4 kV (Direct/Indirect) |
| Polarity            | : | Positive/Negative   |
| Number of Discharge | : | Minimum 20 times at each test point   |
| Discharge Mode      | : | Single Discharge  |
| Discharge Period    | : | 1-second minimum  |

| Test Result |      | Remarks |
|-------------|------|---------|
| Criterion A | PASS | MODE 1  |
| Criterion A | PASS | MODE 2  |
| Criterion A | PASS | MODE 3  |

### OBSERVATION DESCRIPTION

| Direct Application      |                   |            | Test Result       |               |
|-------------------------|-------------------|------------|-------------------|---------------|
| Discharge Level<br>(kV) | Polarity<br>(+/-) | Test Point | Contact Discharge | Air Discharge |
| 8                       | +/-               | 1-4        | N/A               | Note 1        |
| 4                       | +/-               | 1-3        | Note 1            | N/A           |

#### Description of test point:

- |                     |                    |
|---------------------|--------------------|
| 1. Junction of case | 2. All screws      |
| 3. All I/O ports    | 4. All metal parts |

| Indirect Application    |                   |            | Test Result         |                   |
|-------------------------|-------------------|------------|---------------------|-------------------|
| Discharge Level<br>(kV) | Polarity<br>(+/-) | Test Point | Horizontal Coupling | Vertical Coupling |
| 4                       | +/-               | 1 ~ 4      | Note 1              | Note 1            |

#### Description of test point:

- |               |              |
|---------------|--------------|
| 1. Front side | 2. Left side |
| 3. Right side | 4. Rear side |

#### Description of test result:

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

## 5.5 TEST RESULT OF RADIATED ELECTROMAGNETIC FIELDS (RS)

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

| Test Result |      | Remarks |
|-------------|------|---------|
| Criterion A | PASS | MODE 1  |
| Criterion A | PASS | MODE 2  |
| Criterion A | PASS | MODE 3  |

Note: Four sides of EUT are verified separately.

### Description of test result:

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





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

Basic Standard : EN 61000-4-6  
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) for mode 1 & 3  
CDN-M2 (2 wires) for mode 2  
CLAMP for mode 1,2,3

| Test Result |      | Remarks |
|-------------|------|---------|
| Criterion A | PASS | MODE 1  |
| Criterion A | PASS | MODE 2  |
| Criterion A | PASS | MODE 3  |

### OBSERVATION DESCRIPTION

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



## 5.8 TEST RESULT OF POWER FREQUENCY MAGNETIC FIELD

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

| Test Result |      | Remarks |
|-------------|------|---------|
| Criterion A | PASS | MODE 1  |
| Criterion A | PASS | MODE 2  |
| Criterion A | PASS | MODE 3  |

### 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  
Frequency range : 900 +/- 5 MHz  
Field strength : 10 V/m  
Modulation : 200Hz, Square Wave, 50% Duty Cycle  
Dewell Time : 30 second  
Polarity of Antenna : Horizontal and Vertical  
Test distance : 3 m

| Test Result |      | Remarks |
|-------------|------|---------|
| Criterion A | PASS | MODE 1  |
| Criterion A | PASS | MODE 2  |
| Criterion A | PASS | MODE 3  |

Note: Four sides of EUT are verified separately.

### OBSERVATION DESCRIPTION

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

## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST (MODE 1)



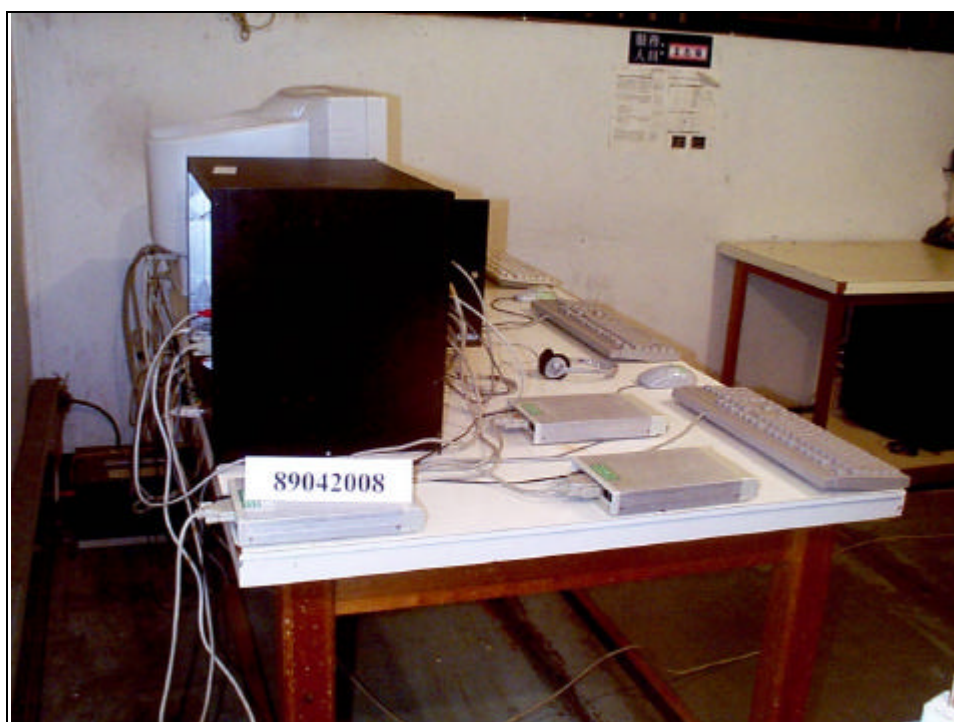


## CONDUCTED EMISSION TEST (MODE 2)

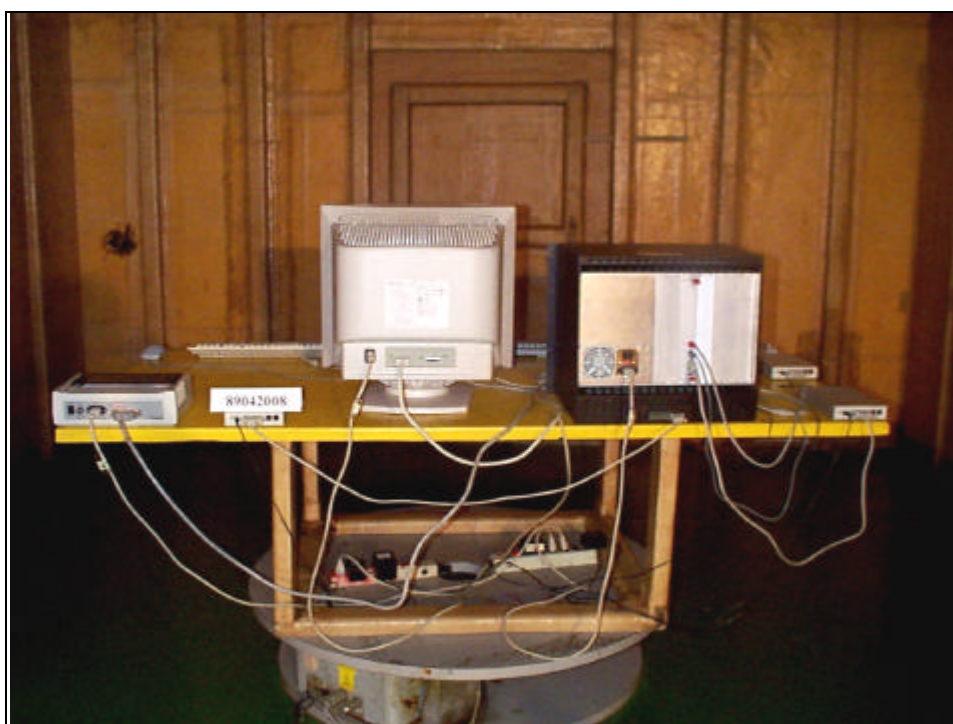
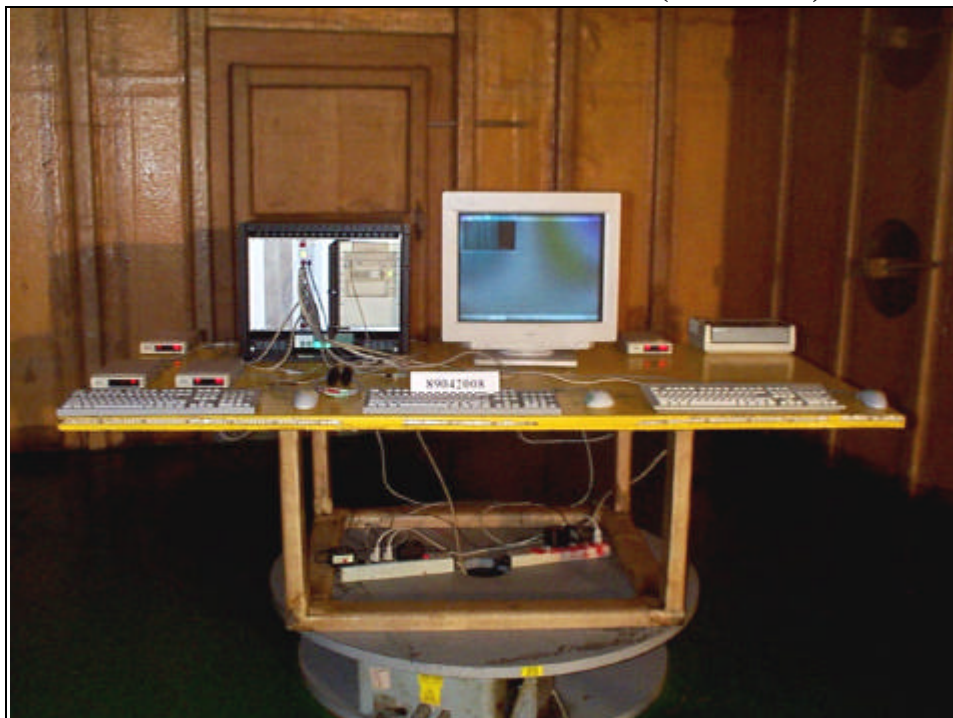




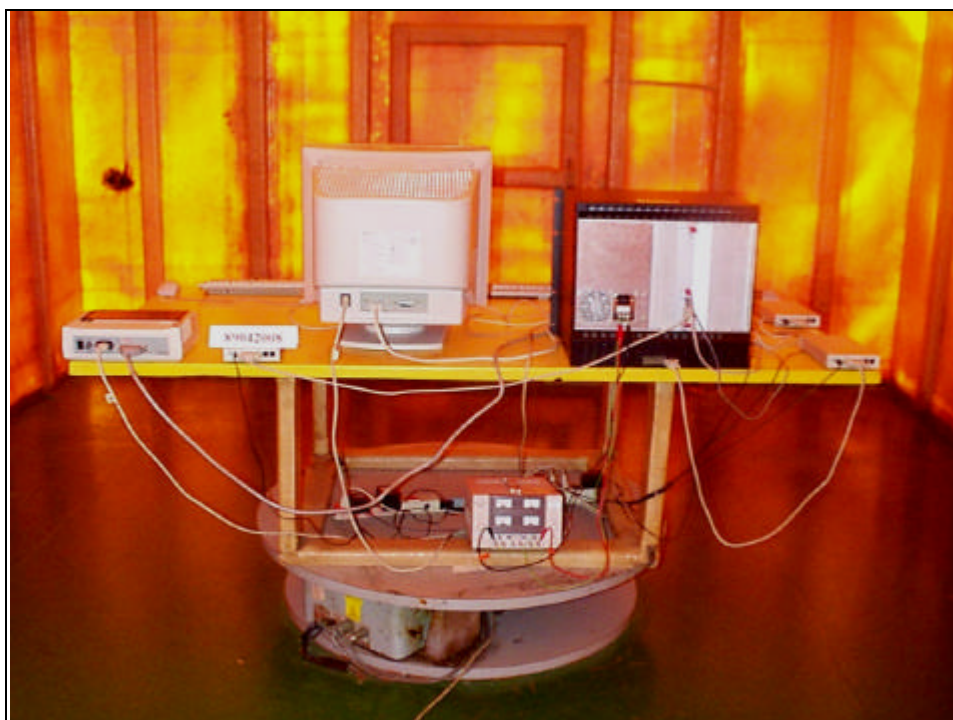
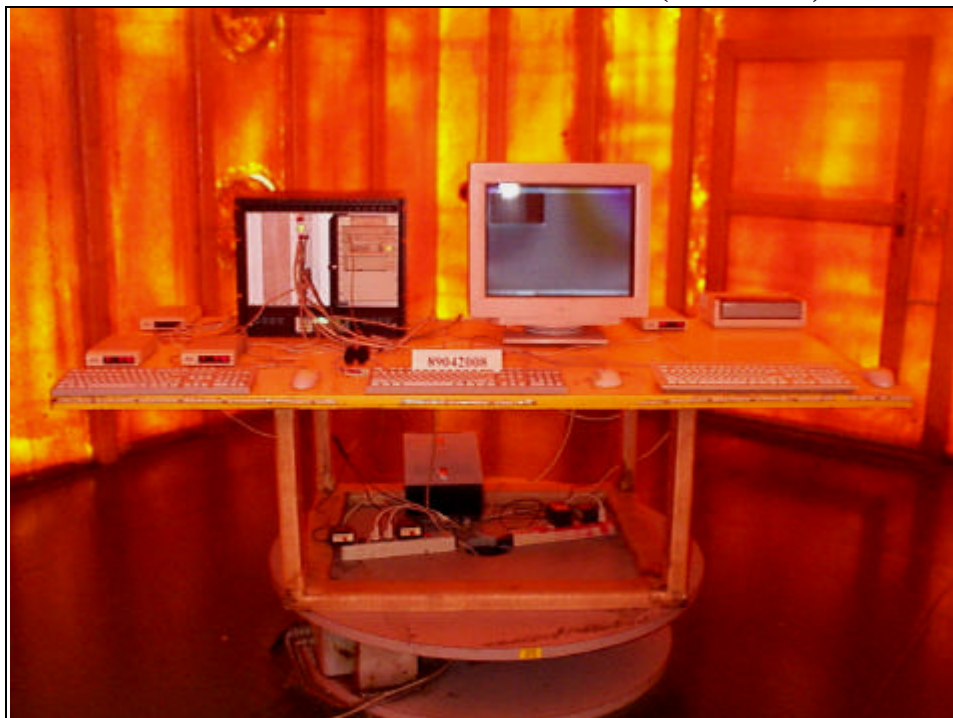
### CONDUCTED EMISSION TEST (MODE 3)



## **RADIATED EMISSION TEST (MODE 1)**

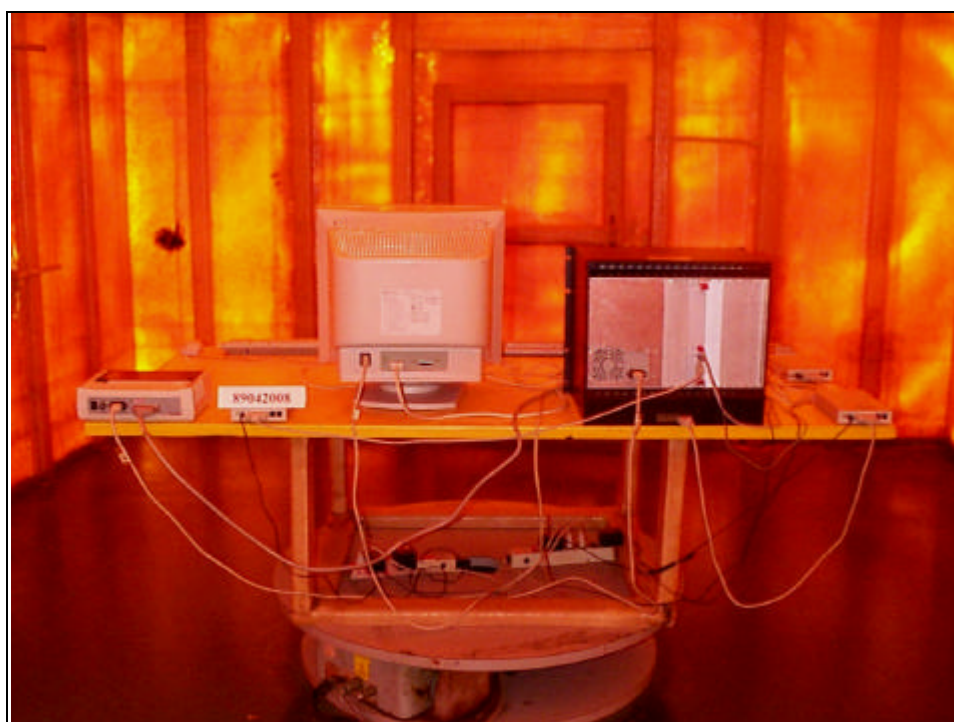


## **RADIATED EMISSION TEST (MODE 2)**





### **RADIATED EMISSION TEST (MODE 3)**



## **HARMONICS EMISSION TEST & VOLTAGE FLUCTUATIONS AND FLICKER TEST (MODE 1)**



## **HARMONICS EMISSION TEST & VOLTAGE FLUCTUATIONS AND FLICKER TEST (MODE 3)**



## ESD TEST (MODE 1)



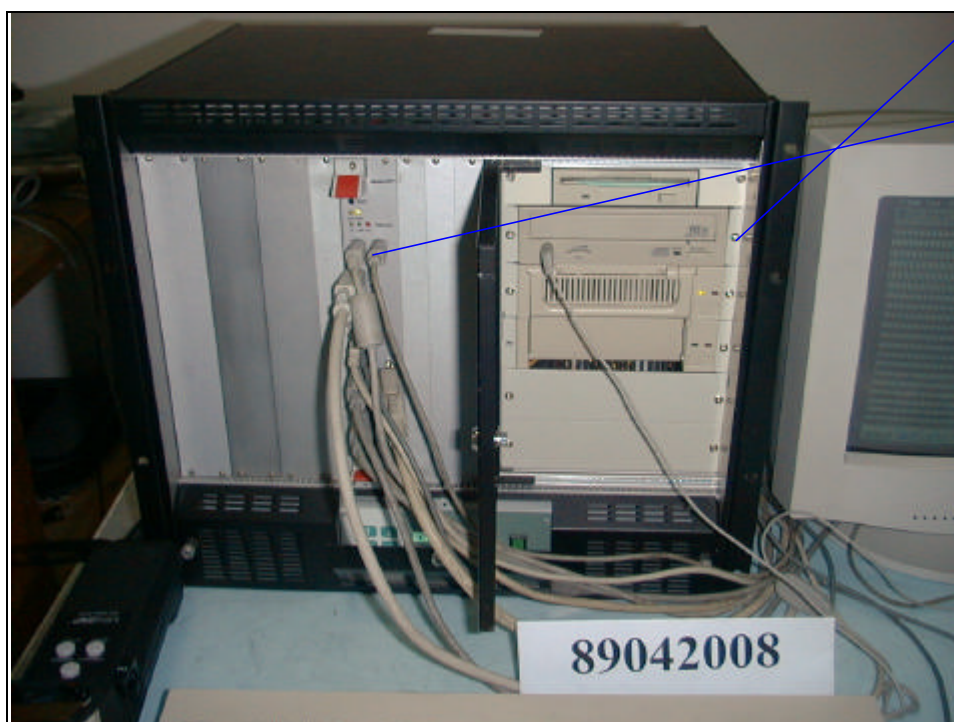
3

2





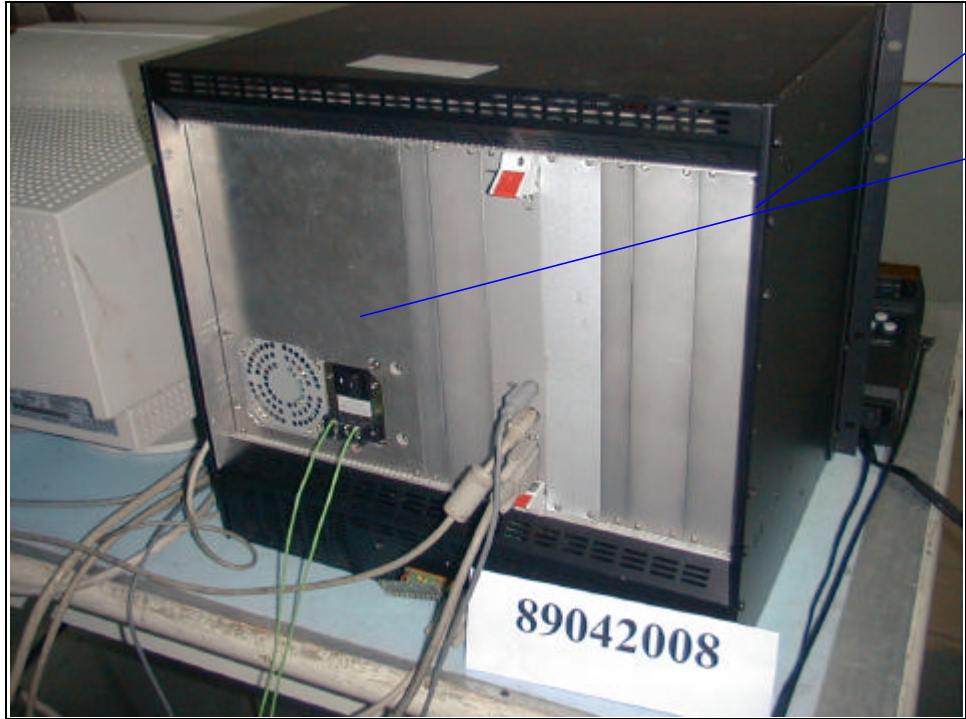
## ESD TEST (MODE 2)



2

3





1

4

### ESD TEST (MODE 3)



2

3

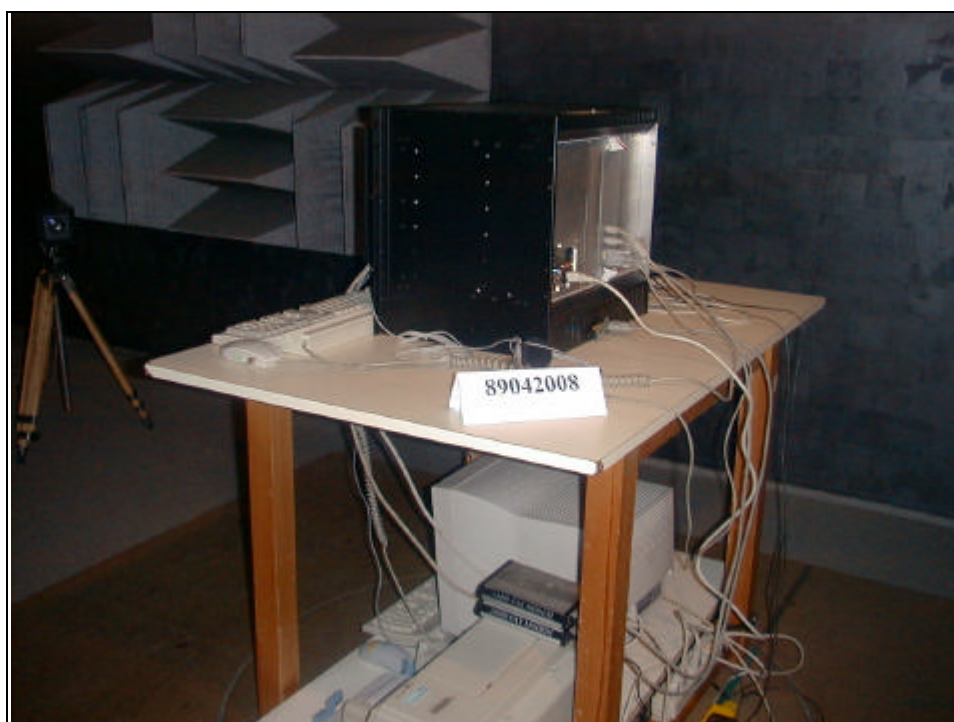


1

4

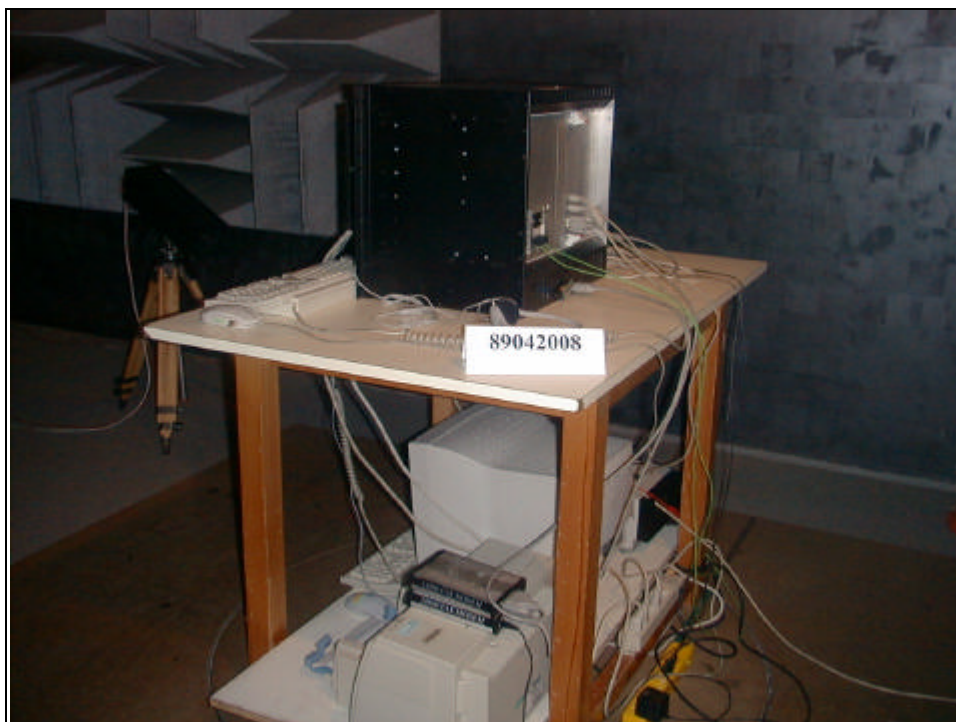


## RS TEST (MODE 1)





## RS TEST (MODE 2)



### RS TEST (MODE 3)



### **EFT TEST (MODE 1)**



### **EFT CLAMP TEST (MODE 1)**





### **EFT TEST (MODE 2)**



### **EFT CLAMP TEST (MODE 2)**





### **EFT TEST (MODE 3)**



### **EFT CLAMP TEST (MODE 3)**



### **CONDUCTED SUSCEPTIBILITY TEST (MODE 1)**



### **CONDUCTED SUSCEPTIBILITY CLAMP TEST (MODE 1)**



## CONDUCTED SUSCEPTIBILITY TEST (MODE 2)



## CONDUCTED SUSCEPTIBILITY CLAMP TEST (MODE 2)





### **CONDUCTED SUSCEPTIBILITY TEST (MODE 3)**



### **CONDUCTED SUSCEPTIBILITY CLAMP TEST (MODE 3)**



### **MAGNETIC TEST (MODE 1)**



### **MAGNETIC TEST (MODE 2)**



### MAGNETIC TEST (MODE 3)





## 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<br>TUV Product Service |
| ● Japan       | VCCI                                 |
| ● New Zealand | RFS                                  |
| ● Norway      | NEMKO                                |
| ● U.K.        | INCHCAPE, SGS                        |
| ● R.O.C.      | BCIQ                                 |

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:**  
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<http://www.adt.com.tw>