



CE EMC

TEST REPORT

For

Monitor with Touchscreen

Model: POC-195

Trade Name: Advantech

Issued for

Advantech Co., Ltd.

**No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.**

Issued by



Compliance Certification Services Inc.
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1 TEST RESULT CERTIFICATION

Applicant: Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.

Manufacturer: Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District,
Taipei 114, Taiwan, R.O.C.

Equipment Under Test: Monitor with Touchscreen

Trade Name: Advantech

Model: POC-195

Detailed EUT Description: See Item 2 of this report

Date of Test: October 31 ~ November 3, 2006

| Applicable Standard | Class/Limit/Criterion | Test Result |
|---|----------------------------|-------------------------|
| EN 60601-1-2: 2001, including | | |
| EN 55011: 1998 + A1: 1999 + A2: 2002 | Class B | No non-compliance noted |
| EN 61000-3-2: 2000 | Class D | No non-compliance noted |
| EN 61000-3-3: 1995 + A1: 2001 | Limit | No non-compliance noted |
| IEC 61000-4-2: 1995 + A1: 1998 + A2: 2000 | See Item 10 of this report | No non-compliance noted |
| IEC 61000-4-3: 2002 + A1: 2002 | See Item 11 of this report | No non-compliance noted |
| IEC 61000-4-4: 1995 + A1: 2000 + A2: 2001 | See Item 12 of this report | No non-compliance noted |
| IEC 61000-4-5: 1995 + A1: 2000 | See Item 13 of this report | No non-compliance noted |
| IEC 61000-4-6: 1996 + A1: 2000 | See Item 14 of this report | No non-compliance noted |
| IEC 61000-4-8: 1993 + A1: 2000 | See Item 15 of this report | No non-compliance noted |
| IEC 61000-4-11: 1994 + A1: 2000 | See Item 16 of this report | No non-compliance noted |
| Deviation from Applicable Standard | | |
| None | | |

The above equipment was tested by Compliance Certification Services Inc. for compliance with the requirements set forth in the EMC Directive 93/42/EEC and the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Reviewed by:

Miller Lee
Deputy Manager of Linkou Laboratory
Compliance Certification Services Inc.

Susan Su
Section Manager of Linkou Laboratory
Compliance Certification Services Inc.



2 EUT DESCRIPTION

| | | | |
|-----------------------------------|--|--------------|--|
| Product | Monitor with Touchscreen | | |
| Trade Name | Advantech | | |
| Model | POC-195 | | |
| Housing Type | Plastic | | |
| EUT Power Rating | VDC From Power Supply | | |
| Power Supply Manufacturer | ATX | Model | FSP180-50MP |
| Power Adapter Power Rating | I/P AC: 100-240VAC, 50-60Hz, 4A max. O/P DC: +5V, 12A; +12V, 12A; +3.3V, 16.8A; +5Vsb, 2.0A; -12V, 0.8 A (180 watts) | | |
| AC Power Cord Type | Unshielded, 1.8m (Detachable) | | |
| CPU Manufacturer | Intel | Model | PentiumR M processor (Socket 479); up to 2.0GHz |
| Memory Manufacturer | 512MB | | |
| Main Board Manufacturer | ADVANTECH | Model | PCM9690 |
| LCD Panel Manufacturer | AUO | Model | M190EG01 V0 |
| HDD Manufacturer | Fujitsu | Model | MHV2040AT (40GB) |
| ODD Manufacturer | TEAC | Model | CD-224E-N |
| VGA Card Manufacturer | On Board | | |
| LAN Card Manufacturer | On Board | | |

I/O Port of EUT

| I/O Port Type | Q'TY | TESTED WITH |
|-------------------------|------|-------------|
| 1. Parallel Port | 1 | 1 |
| 2. Serial Port | 3 | 3 |
| 3. Video-Out Port (VGA) | 1 | 1 |
| 4. USB Port | 9 | 9 |
| 5. Earphone Port | 1 | 1 |
| 6. Microphone Port | 1 | 1 |
| 7. Line In Port | 1 | 1 |
| 8. LAN Port | 2 | 2 |



3 TEST METHODOLOGY

3.1 EUT SYSTEM OPERATION

1. An EMI test software was loaded and executed in Windows XP mode.
2. A communicated software was loaded and executed to communicate between EUT and remote side.
3. EUT sends and receives data from Notebook PC on remote side via LAN cable.
4. Data was sent to Monitor filling the screen with upper case of "H" patterns.
5. Test program sequentially exercised all related I/O's of EUT and sent "H" patterns to all applicable output ports of EUT.
6. Repeat 3 to 5.

Note: Test program is self-repeating throughout the test.

3.2 DECISION OF FINAL TEST MODE

1. The following test mode(s) were canned during the preliminary test:

Mode 1

1280 x 1024 Resolution

Mode 2

1024 x 768 Resolution

Mode 3

800 x 600 Resolution

2. After the preliminary scan, the following test mode was found to produce the highest emission level.

Mode 1

Then, the EUT configuration and cable configuration of the above highest emission mode was chosen for all final test items.



4 SETUP OF EQUIPMENT UNDER TEST

Setup Diagram

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

Support Equipment

| No. | Equipment | Model No. | Serial No. | FCC ID | Trade Name | Data Cable | Power Cord |
|-----|-------------------------|-------------------|------------------|------------|------------|--|---|
| 1 | Monitor | 959NF | AQ19H2RT706121B | FCC DoC | SAMSUNG | VGA Cable: Shielded, 1.2m with two cores | Unshielded, 1.8m |
| 2 | Modem | DM-1414 | 304012263 | IFAXDM1414 | ACEEX | Unshielded, 1.0m | Unshielded, 1.2m |
| 3 | Printer | STYLUS C60 | DR3K042012 | FCC DoC | EPSON | Shielded, 1.8m | Unshielded, 1.5m |
| 4 | PS/2 Keyboard | Y-SP29 | SYU30272821 | FCC DoC | Logitech | Unshielded, 1.2m | N/A |
| 5 | PS/2 Mouse | M-S34 | HCA25200078 | DZL211029 | Logitech | Unshielded, 1.2m | N/A |
| 6 | COM Mouse | M-MM43 | LZE95250096 | FCC DoC | Logitech | Unshielded, 1.2m | N/A |
| 7 | COM Mouse | M-MM43 | LZE94052791 | FCC DoC | Logitech | Unshielded, 1.2m | N/A |
| 8 | USB 2.0 External HDD | F12-U | A0100214-43b0005 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 9 | USB 2.0 External HDD | F12-U | A0100214-43b0008 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 10 | USB 2.0 External HDD | F12-U | A0100214-43b0014 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 11 | USB 2.0 External HDD | F12-U | A0100214-43b0010 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 12 | USB 2.0 External HDD | F12-U | A0100214-39t0005 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 13 | USB 2.0 External HDD | F12-UF | A0100214-43b0015 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 14 | USB 2.0 External HDD | F12-UF | A0100214-43b0015 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 15 | USB 2.0 External HDD | F12-UF | A0100214-43b0015 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 16 | USB 2.0 External HDD | F12-U | A0100214-43b0001 | FCC DoC | TeraSys | USB Cable: Shielded, 1.8m | N/A |
| 17 | Walkman | RQ-L10 | HB003029 | FCC DoC | Panasonic | Unshielded, 1.8m | N/A |
| 18 | Multimedia Headset | CJC-5258MV | 0507106004 | FCC DoC | CJC | Unshielded, 2.0m | N/A |
| 19 | Multimedia Headset | CJC-5258MV | 0507106140 | FCC DoC | CJC | Unshielded, 2.0m | N/A |
| 20 | Hub (Remote) | DS104 | N/A | FCC DoC | NERGEAR | LAN Cable: Unshielded, 5.0m x 2 | Unshielded, 1.8m |
| 21 | Notebook PC (Remote) | COMPAQ NC 4010 | CNU441F8LV | FCC DOC | HP | Line Cable: Unshielded, 1.5m | AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core |

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.



5 FACILITIES AND ACCREDITATIONS






5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at CCS Taiwan Linkou Lab at No. 81-1, Lane 210, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, Taiwan.

The measurement facilities are constructed in conformance with the requirements of CISPR 16-1, ANSI C63.4 and other equivalent standards.

5.2 LABORATORY ACCREDITATIONS AND LISTINGS

The test facilities used to perform Electromagnetic compatibility tests are registered or accredited by the organizations listed in the following table which includes the recognized scope specifically. This accredited organization maintains A2LA accreditation to ISO/IEC 17025 for the specific test listed in A2LA Certificate # 0824-01.

| Country | Agency | Scope of Accreditation | Logo |
|---------|-----------------|---|--|
| USA | A2LA | EN 55011, EN 55014-1/2, CISPR 11, CISPR 14-1/2, EN 55022, EN 55015, CISPR 22, CISPR 15, AS/NZS 3548, VCCI V3 (2001), CFR 47, FCC Part 15/18, CNS 13783-1, CNS 13439, CNS 13438, CNS 13803, CNS 14115, EN 55024, IEC 801-2, IEC 801-3, IEC 801-4, IEC/EN 61000-3-2, IEC/EN 61000-3-3, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 50081-1/EN 61000-6-3, EN 50081-2/EN 61000-6-4, EN 50081-2/EN 61000-6-1: 2001 |  ACCREDITED No. 0824-01 |
| USA | FCC | 3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements |  93105, 90471 |
| Japan | VCCI | 3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements | VCCI R-393/2316/725/1868 C-402/747/912 |
| Norway | NEMKO | EN 50081-1/2, EN 50082-1/2, IEC 61000-6-1/2, EN 50091-2, EN 50130-4, EN 55011, EN 55013, EN 55014-1/2, EN 55015, EN 55022, EN 55024, EN 61000-3-2/3, EN 61326-1, IEC 61000-4-2/3/4/5/6/8/11, EN 60601-1-2, EN 300 328-2, EN 300 422-2, EN 301 419-1, EN 301 489-01/03/07/08/09/17, EN 301 419-2/3, EN 300 454-2, EN 301 357-2 |  ELA 124a ELA 124b ELA 124c |
| Taiwan | TAF | EN 300 328-1, EN 300 328-2, EN 300 220-1, EN 300 220-2, EN 300 220-3, 47 CFR FCC Part 15 Subpart C, EN 61000-3-2, EN 61000-3-3, CNS 13439, CNS 13783-1, CNS 14115, CNS 13438, AS/NZS CISPR 22, CNS 13022-1, IEC 61000-4-2/3/4/5/6/8/11, CNS 13022-2/3 |  Testing Laboratory 0363 |
| Taiwan | BSMI | CNS 13438, CNS 13783-1, CNS 13439, CNS 14115 |  SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014 |
| Canada | Industry Canada | RSS212, Issue 1 | Canada IC 3991-3 IC 3991-4 |

Note: No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



6 INSTRUMENT AND CALIBRATION

6.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6.2 TEST AND MEASUREMENT EQUIPMENT

The following list contains measurement equipment used for testing. The equipment conforms to the requirement of CISPR 16-1, ANSI C63.2 and other required standards.

Calibration of all test and measurement, including any accessories that may effect such calibration, is checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

Equipment Used for Emission Measurement

| Conducted Emission Test Site # 4 | | | | |
|----------------------------------|--------------|----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMI Test Receiver | R&S | ESCS30 | 847793/012 | 02/12/2007 |
| LISN | EMCO | 3825/2 | 9003-1628 | 07/30/2007 |
| LISN | R&S | ENV 4200 | 830326/016 | 03/28/2007 |

Note: The measurement uncertainty is less than +/- 3.4600dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.

| Open Area Test Site # 1 | | | | |
|-------------------------|----------------|-----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | ADVANTEST | R3261C | 81720301 | N.C.R |
| EMI Test Receiver | R&S | ESVS20 | 838804/004 | 01/18/2007 |
| Pre-Amplifier | HP | 8447D | 2944A09173 | 03/22/2007 |
| Bilog Antenna | Sunol Sciences | JB1 | A111203 | 03/24/2007 |
| Turn Table | EMCO | 2081-1.21 | N/A | N.C.R |
| Antenna Tower | EMCO | 2075-2 | 9707-2604 | N.C.R |
| Controller | EMCO | 2090 | N/A | N.C.R |
| RF Switch | Anritsu | MP59B | M54367 | N.C.R |
| Site NSA | CCS | N/A | N/A | 08/18/2007 |

Note: The measurement uncertainty is less than +/- 4.5272dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.



| Power Harmonic & Voltage Fluctuation/Flicker Measurement (EN 61000-3-2&-3-3) | | | | |
|--|--------------|----------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| HARMONICS SYSTEM | EMC-PARTNER | HARMONICS-1000 | 094 | 11/22/2006 |

Equipment Used for Immunity Measurement

| ESD Test Site (IEC/EN 61000-4-2) | | | | |
|----------------------------------|--------------|--------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| ESD Generator | SCHAFFNER | NSG438 | 170 | 05/08/2007 |

| Radiated Electromagnetic Field Immunity Test Site (IEC/EN 61000-4-3) | | | | |
|--|--------------|----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| S.G. | R&S | SMY02 | 100094 | 08/13/2007 |
| Power Meter | R&S | NRVD | 837794/029 | 08/13/2007 |
| Power Sensor | R&S | URV5-Z2 | 835640/015 | 08/13/2007 |
| Power Sensor | R&S | URV5-Z2 | 835640/016 | 08/13/2007 |
| Power Amplifier | ar | 150W1000 | 300300 | N.C.R |

| Fast Transients/Burst Test Site (IEC/EN 61000-4-4) | | | | |
|--|----------------|----------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| EMC TEST SYSTEM | EMC-PARTNER | TRANSIENT-2000 | 754 | 09/14/2007 |
| Clamp | HAEFELY TRENCH | 093 506.1 | 080 421.13 | N.C.R |

| Surge Immunity Test Site (IEC/EN 61000-4-5) | | | | |
|---|----------------|-------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Surge Tester | HAEFELY TRENCH | PSUGER 4010 | 583 334-71 | 09/04/2007 |



| CS Test Site (IEC/EN 61000-4-6) | | | | |
|---------------------------------|--------------|----------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| S.G. | R&S | SMY02 | 100094 | 08/13/2007 |
| Power Meter | R&S | NRVD | 837794/029 | 08/13/2007 |
| Power Sensor | R&S | URV5-Z2 | 835640/015 | 08/13/2007 |
| Power Sensor | R&S | URV5-Z2 | 835640/016 | 08/13/2007 |
| Power Amplifier | ar | 500A100A | 300299 | N.C.R. |
| CDN | FCC | FCC-801-M3-16A | 99122 | 08/31/2007 |
| CDN | Lüthi | 801-M3 | 1879 | N.C.R. |
| CDN | SCHAFFNER | T400 | 16906 | 12/28/2006 |

| Power Frequency Magnetic Field Immunity Test Site (IEC/EN 61000-4-8) | | | | |
|--|-------------------|-----------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| TRIAX ELF Magnetic Field Meter | F.W.BELL | 4090 | 9711 | 11/27/2006 |
| Clamp Meter | National | 300K | 11-5980 K | 11/22/2006 |
| Magnetic Field Tester | HAEFELY TRENCH | MAG 100.1 | 080 938-01 | 05/17/2007 |

| Voltage Dips/Short Interruption and Voltage Variation Immunity Test Site (IEC/EN 61000-4-11) | | | | |
|--|-------------------|------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Dips/Interruption and Variations Simulator | HAEFELY TRENCH | PLINE 1610 | 080 344-05 | 04/10/2007 |



7 LINE CONDUCTED & RADIATED EMISSION TEST

7.1 LIMIT

Maximum permissible level of Line Conducted Emission

| 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: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 10 meter

| Frequency (MHZ) | Class A (dBuV/m) | Class B (dBuV/m) |
|--------------------|------------------|------------------|
| | Quasi-peak | Quasi-peak |
| 30 – 230 | 40 | 30 |
| 230 - 1000 | 47 | 37 |

Note: The lower limit shall apply at the transition frequency.



7.2 TEST PROCEDURE OF LINE CONDUCTED EMISSION

Procedure of Preliminary Test

- The EUT was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55011 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per EN 55011.
- All I/O cables were positioned to simulate typical actual usage as per EN 55011.
- The test equipment EUT installed received AC power, 230VAC/50Hz, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane.
- All support equipment received power from a second LISN.
- The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT configuration and cable configuration of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the Average limit in Q.P. mode, then the emission signal was re-checked using an Average detector.
- The test data of the worst-case condition(s) was recorded.

**Data Sample:**

| Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correctrion factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak. limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----------------|--------------------------|------------------------|-------------------------|-------------------------|-----------------------|-------------------------|----------------------|-----------------------|---------------------|--------|
| x.xx | 43.95 | 33 | 10.0 | 53.95 | 43 | 56.00 | 46.00 | -2.05 | -3 | Pass |

Frequency (MHz) = Emission frequency in MHz

Reading (dBuV) = Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB

Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain

Result (dBuV) = Raw reading converted to dBuV and CF added

Limit (dBuV) = Limit stated in standard

Margin (dB) = Result (dBuV) – Limit (dBuV)



7.3 TEST PROCEDURE OF RADIATED EMISSION

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per EN 55011.
- All I/O cables were positioned to simulate typical usage as per EN 55011.
- The EUT received AC power source, 230VAC/50Hz, from the outlet socket under the turntable. All support equipment received power from another socket under the turntable.
- The antenna was placed at 10 meter away from the EUT as stated in EN 55011. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.2 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.2 producing the highest emission level.
- The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

Procedure of Final Test

- EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.
- The test data of the worst-case condition(s) was recorded.

**Data Sample:**

| Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------------|-------------|--------|
| xx.xx | 16.49 | 9.86 | 26.35 | 30.00 | -3.65 | 116.00 | 101.00 | QP |

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
Q.P. =Quasi-Peak

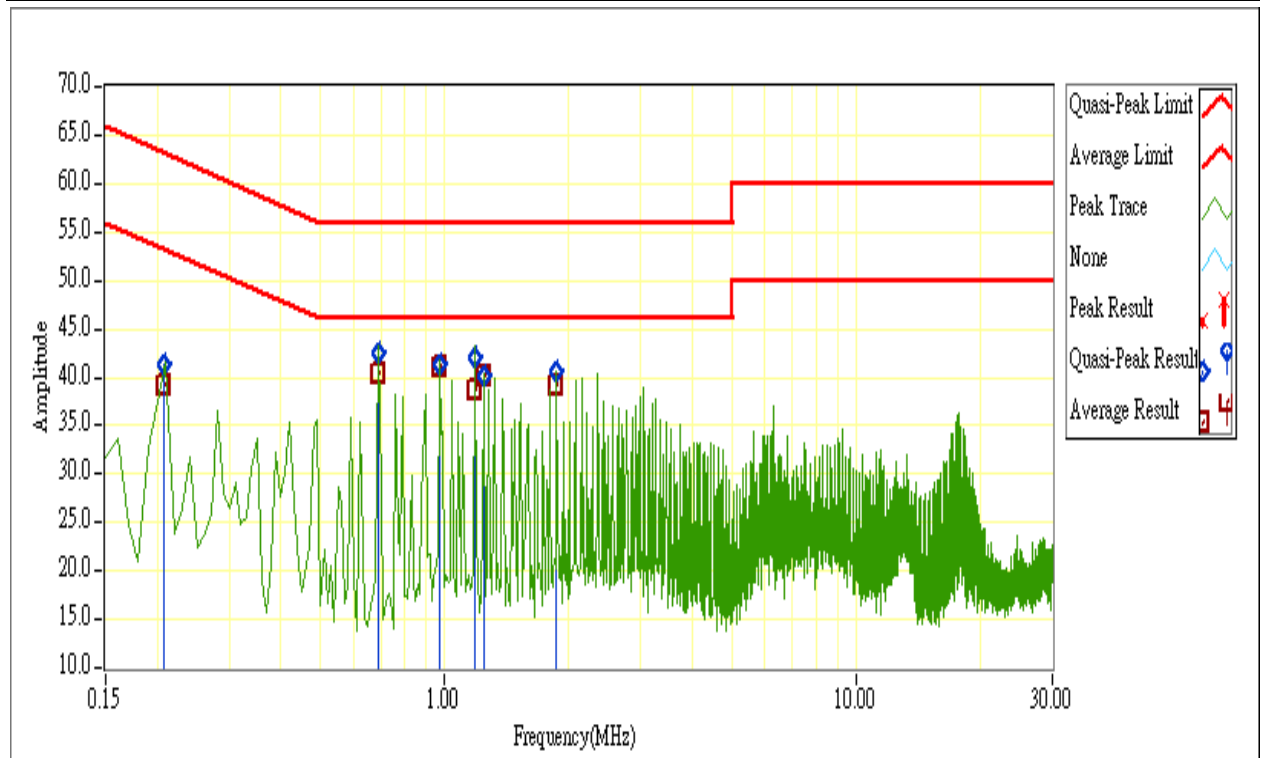


7.4 TEST RESULTS

Line Conducted Emission

Linkou Conduction 4

| | | | |
|----------------------|---------------------|------------|------------|
| Job No.: | 61027103 | Line: | L1 |
| Standard: | EN 55011 Class B | | |
| Test Item: | Conduction Emission | Date: | 2006/10/31 |
| Temp.(°C)/Hum.(%RH): | 21°C/53%RH | Time: | PM 05:05 |
| Company: | Advantech | Tested By: | Tony Tsai |
| Model: | POC-195 | Test Mode: | Mode 1 |

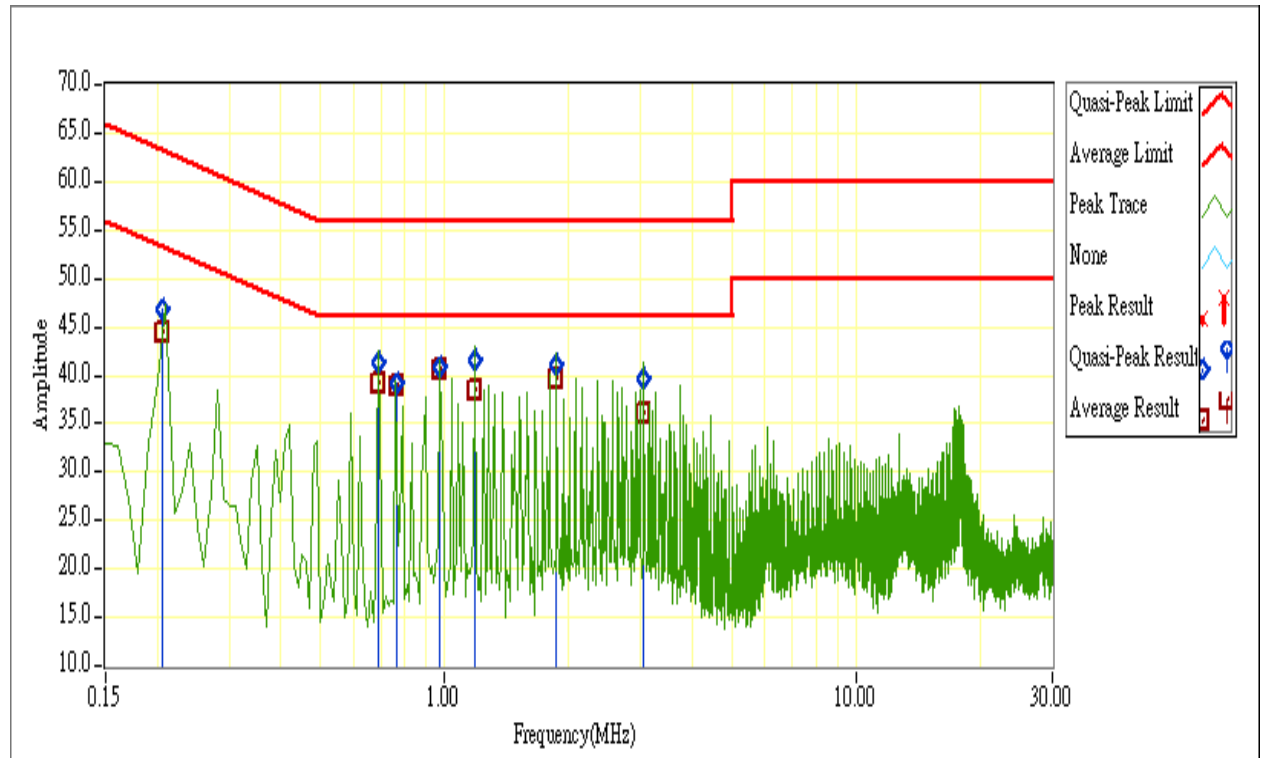


| NO. | Frequency (MHz) | Quasi Peak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | Quasi Peak result (dBuV) | Average result (dBuV) | Quasi Peak limit (dBuV) | Average limit (dBuV) | Quasi Peak margin (dB) | Average margin (dB) | Remark |
|-----|--------------------|------------------------------------|------------------------------|------------------------------|-----------------------------------|-----------------------------|----------------------------------|----------------------------|---------------------------------|---------------------------|--------|
| 1 | 0.21 | 31.33 | 29.24 | 9.89 | 41.22 | 39.13 | 63.28 | 53.28 | -22.06 | -14.15 | Pass |
| 2 | 0.69 | 32.62 | 30.64 | 9.80 | 42.42 | 40.44 | 56.00 | 46.00 | -13.58 | -5.56 | Pass |
| 3 | 0.97 | 31.40 | 31.26 | 9.80 | 41.20 | 41.06 | 56.00 | 46.00 | -14.80 | -4.94 | Pass |
| 4 | 1.18 | 32.19 | 28.91 | 9.82 | 42.01 | 38.73 | 56.00 | 46.00 | -13.99 | -7.27 | Pass |
| 5 | 1.25 | 30.33 | 30.18 | 9.83 | 40.16 | 40.01 | 56.00 | 46.00 | -15.84 | -5.99 | Pass |
| 6 | 1.87 | 30.79 | 29.21 | 9.90 | 40.69 | 39.11 | 56.00 | 46.00 | -15.31 | -6.89 | Pass |

L1 = Line One (Live Line)

**Linkou Conduction 4**

| | | | |
|-----------------------------|---------------------|-------------------|------------|
| Job No.: | 61027103 | Line: | L2 |
| Standard: | EN 55011 Class B | | |
| Test Item: | Conduction Emission | Date: | 2006/10/31 |
| Temp.(°C)/Hum.(%RH): | 21°C/53%RH | Time: | PM 05:23 |
| Company: | Advantech | Tested By: | Tony Tsai |
| Model: | POC-195 | Test Mode: | Mode 1 |

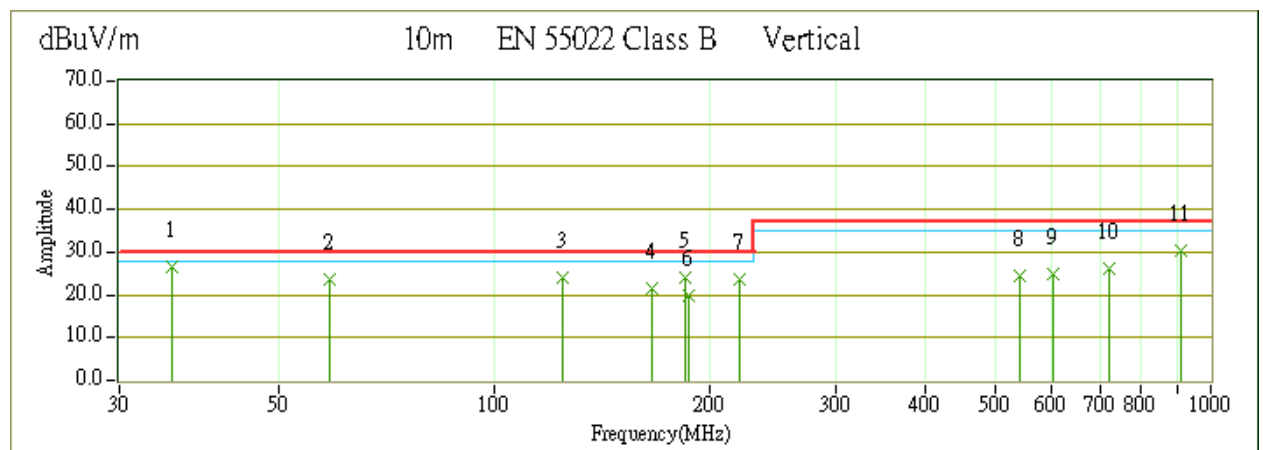


| NO. | Frequency | Quasi Peak reading | Average reading | Correction factor | Quasi Peak result | Average result | Quasi Peak limit | Average limit | Quasi Peak margin | Average margin | Remark |
|-----|-----------|--------------------|-----------------|-------------------|-------------------|----------------|------------------|---------------|-------------------|----------------|-------------|
| | (MHz) | (dBuV) | (dBuV) | (dB) | (dBuV) | (dBuV) | (dBuV) | (dBuV) | (dB) | (dB) | (Pass/Fail) |
| 1 | 0.21 | 37.04 | 34.52 | 9.89 | 46.93 | 44.41 | 63.36 | 53.36 | -16.43 | -8.95 | Pass |
| 2 | 0.69 | 31.40 | 29.37 | 9.80 | 41.20 | 39.17 | 56.00 | 46.00 | -14.80 | -6.83 | Pass |
| 3 | 0.76 | 29.45 | 29.07 | 9.80 | 39.25 | 38.87 | 56.00 | 46.00 | -16.75 | -7.13 | Pass |
| 4 | 0.97 | 31.07 | 30.90 | 9.80 | 40.87 | 40.70 | 56.00 | 46.00 | -15.13 | -5.30 | Pass |
| 5 | 1.18 | 31.79 | 28.74 | 9.82 | 41.61 | 38.56 | 56.00 | 46.00 | -14.39 | -7.44 | Pass |
| 6 | 1.87 | 31.20 | 29.73 | 9.90 | 41.10 | 39.63 | 56.00 | 46.00 | -14.90 | -6.37 | Pass |
| 7 | 3.05 | 29.22 | 25.67 | 10.49 | 39.71 | 36.16 | 56.00 | 46.00 | -16.29 | -9.84 | Pass |

L2 = Line Two (Neutral Line)

**Radiated Emission (A)****CCS Radiated Test OATS 1**

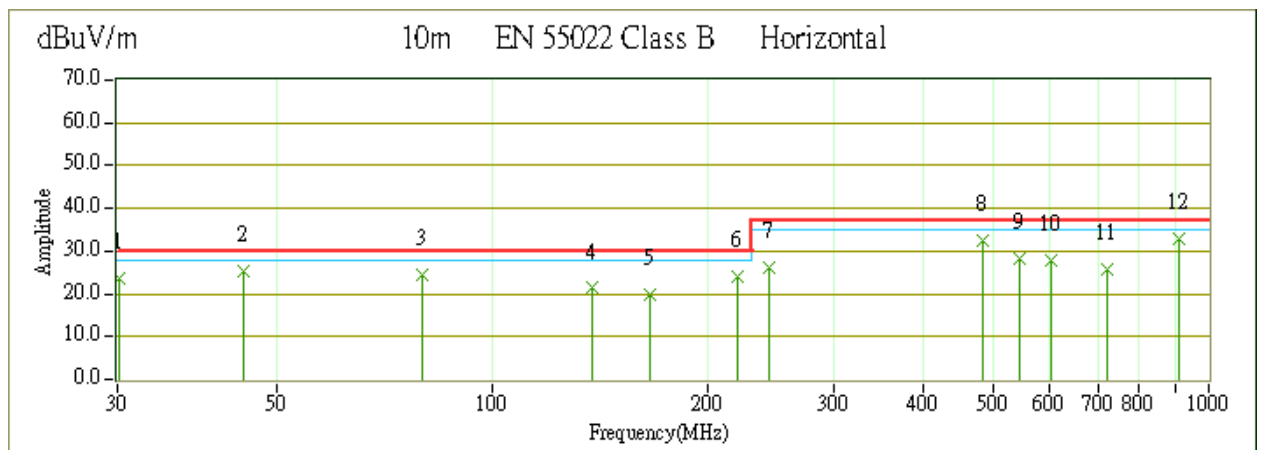
| | | | |
|-----------------------------|-------------------|-------------------------|------------|
| Job No.: | 61027103 | Ant. Polar.: | Ver. |
| Standard: | EN 55011 Class B | Tested Distance: | 10m |
| Test Item: | Radiated Emission | Date: | 2006/10/31 |
| Temp.(°C)/Hum.(%RH): | 21°C/56%RH | Time: | PM 07:30 |
| Company: | Advantech | Tested By: | Tony Tsai |
| Model: | POC-195 | Test Mode: | Mode 1 |



| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 35.43 | 7.74 | 18.98 | 26.72 | 30.00 | -3.28 | 83.00 | 100.00 | QP |
| 2 | 59.03 | 14.19 | 9.51 | 23.70 | 30.00 | -6.30 | 46.00 | 100.00 | QP |
| 3 | 124.50 | 7.92 | 16.03 | 23.95 | 30.00 | -6.05 | 271.00 | 100.00 | QP |
| 4 | 165.77 | 6.91 | 14.56 | 21.47 | 30.00 | -8.53 | 174.00 | 100.00 | QP |
| 5 | 184.41 | 9.57 | 14.40 | 23.97 | 30.00 | -6.03 | 124.00 | 100.00 | QP |
| 6 | 186.64 | 5.27 | 14.50 | 19.77 | 30.00 | -10.23 | 237.00 | 100.00 | QP |
| 7 | 219.95 | 9.22 | 14.30 | 23.52 | 30.00 | -6.48 | 207.00 | 100.00 | QP |
| 8 | 541.98 | 0.12 | 24.38 | 24.50 | 37.00 | -12.50 | 28.00 | 321.00 | QP |
| 9 | 603.21 | -0.12 | 24.89 | 24.77 | 37.00 | -12.23 | 234.00 | 333.00 | QP |
| 10 | 722.91 | -0.98 | 27.03 | 26.05 | 37.00 | -10.95 | 360.00 | 202.00 | QP |
| 11 | 911.05 | -0.35 | 30.62 | 30.27 | 37.00 | -6.73 | 14.00 | 178.00 | QP |

**Radiated Emission (B)****CCS Radiated Test OATS 1**

| | | | |
|-----------------------------|-------------------|-------------------------|------------|
| Job No.: | 61027103 | Ant. Polar.: | Hor. |
| Standard: | EN 55011 Class B | Tested Distance: | 10m |
| Test Item: | Radiated Emission | Date: | 2006/10/31 |
| Temp.(°C)/Hum.(%RH): | 21°C/56%RH | Time: | PM 08:16 |
| Company: | Advantech | Tested By: | Tony Tsai |
| Model: | POC-195 | Test Mode: | Mode 1 |



| No. | Frequency (MHz) | Reading (dBuV) | Correction Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|----------------|--------------------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.11 | 1.14 | 22.53 | 23.67 | 30.00 | -6.33 | 136.00 | 400.00 | QP |
| 2 | 45.08 | 13.04 | 12.26 | 25.30 | 30.00 | -4.70 | 252.00 | 400.00 | QP |
| 3 | 79.75 | 14.00 | 10.40 | 24.40 | 30.00 | -5.60 | 25.00 | 400.00 | QP |
| 4 | 138.01 | 5.47 | 15.83 | 21.30 | 30.00 | -8.70 | 91.00 | 400.00 | QP |
| 5 | 165.76 | 5.31 | 14.56 | 19.87 | 30.00 | -10.13 | 280.00 | 400.00 | QP |
| 6 | 219.99 | 9.70 | 14.30 | 24.00 | 30.00 | -6.00 | 279.00 | 400.00 | QP |
| 7 | 243.30 | 11.02 | 14.98 | 26.00 | 37.00 | -11.00 | 185.00 | 400.00 | QP |
| 8 | 484.50 | 9.60 | 22.70 | 32.30 | 37.00 | -4.70 | 238.00 | 293.00 | QP |
| 9 | 544.00 | 3.67 | 24.43 | 28.10 | 37.00 | -8.90 | 0.00 | 336.00 | QP |
| 10 | 603.50 | 3.10 | 24.90 | 28.00 | 37.00 | -9.00 | 226.00 | 344.00 | QP |
| 11 | 722.60 | -1.23 | 27.03 | 25.80 | 37.00 | -11.20 | 345.00 | 192.00 | QP |
| 12 | 907.12 | 2.36 | 30.54 | 32.90 | 37.00 | -4.10 | 206.00 | 178.00 | QP |



8 POWER HARMONICS TEST

Port : AC mains

Basic Standard : EN 61000-3-2 (2000)

Limits : ☐ CLASS A ; ☐ CLASS B ; ☐ CLASS C ; ☒ CLASS D

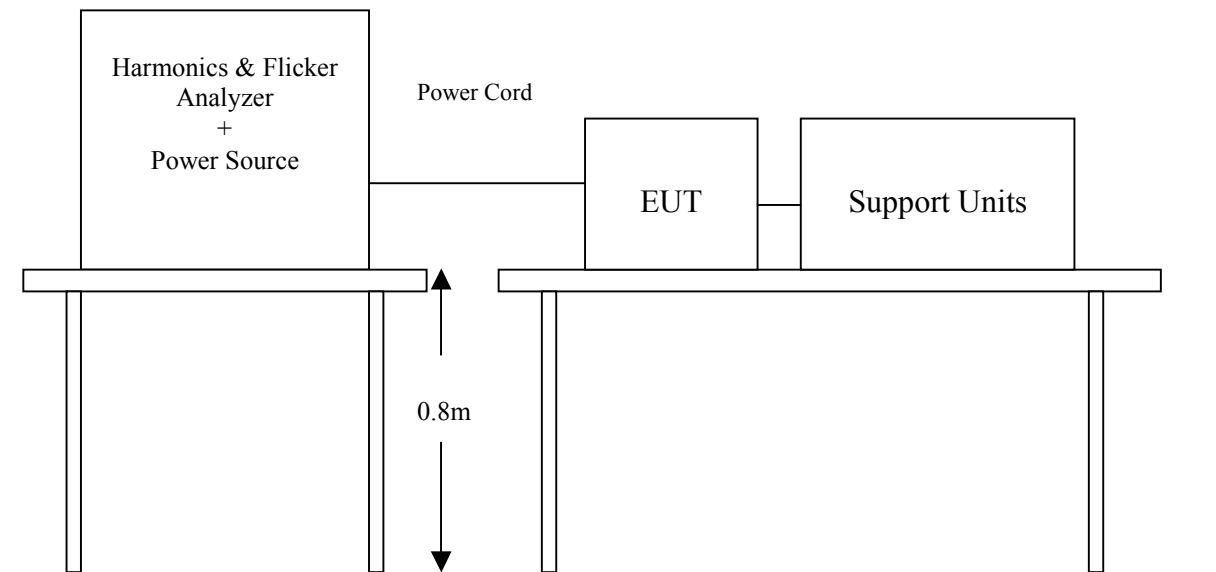
Tested by : Tony Tsai

Temperature : 20°C

Humidity : 55%

Limit:

| Limits for Class A equipment | | Limits for Class D equipment | | |
|------------------------------|--|------------------------------|---|--|
| Harmonics Order n | Max. permissible harmonics current A | Harmonics Order n | Max. permissible harmonics current per watt mA/W | Max. permissible harmonics current A |
| Odd harmonics | | Odd Harmonics only | | |
| 3 | 2.30 | 3 | 3.4 | 2.30 |
| 5 | 1.14 | 5 | 1.9 | 1.14 |
| 7 | 0.77 | 7 | 1.0 | 0.77 |
| 9 | 0.40 | 9 | 0.5 | 0.40 |
| 11 | 0.33 | 11 | 0.35 | 0.33 |
| 13 | 0.21 | 13 | 0.30 | 0.21 |
| 15<=n<=39 | 0.15x15/n | 15<=n<=39 | 3.85/n | 0.15x15/n |
| Even harmonics | | | | |
| 2 | 1.08 | | | |
| 4 | 0.43 | | | |
| 6 | 0.30 | | | |
| 8<=n<=40 | 0.23x8/n | | | |

Block Diagram of Test Setup:**Test Procedure:**

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

Test Result : (See Appendix II for details)***PASS******FAIL***

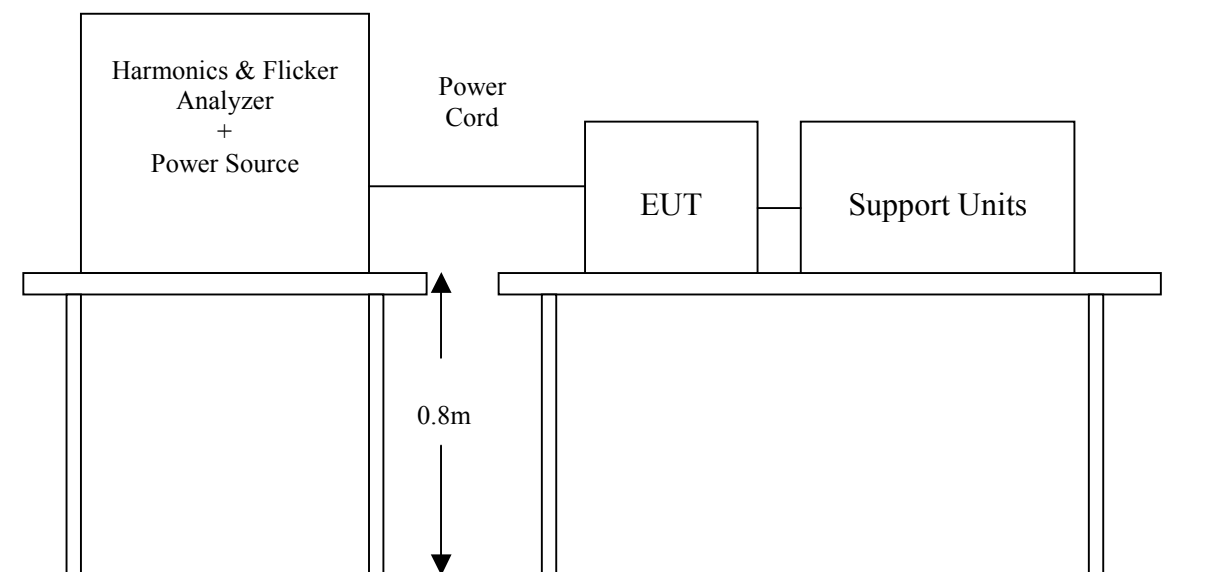
9 POWER VOLTAGE FLUCTUATION / FLICKER TEST

Port : AC mains
Basic Standard : EN 61000-3-3
Limits : §5 of EN 61000-3-3
Tested by : Tony Tsai
Temperature : 20°C
Humidity : 55% RH

Limit:

| TEST ITEM | LIMIT | REMARK |
|---------------|-------|--|
| P_{st} | 1.0 | P_{st} means short-term flicker indicator. |
| P_{lt} | 0.65 | P_{lt} means long-term flicker indicator. |
| T_{dt} (ms) | 500 | T_{dt} means maximum time that dt exceeds 3 %. |
| d_{max} (%) | 4% | d_{max} means maximum relative voltage change. |
| dc (%) | 3.3% | dc means relative steady-state voltage change |

Block Diagram of Test Setup:



**Test Procedure:**

- a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
- b. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

Test Result: (See Appendix II for details)**Continue**

| Test Parameter | Measurement Value | Limit | Result |
|----------------------|-------------------|-------|--------|
| P _{st} | 0.072 | 1.0 | Pass |
| P _{lt} | 0.072 | 0.65 | Pass |
| T _{dt} (ms) | 0 | 500 | Pass |
| d _{max} (%) | 0% | 4% | Pass |
| dc (%) | 0% | 3.3% | Pass |

Manual Switch

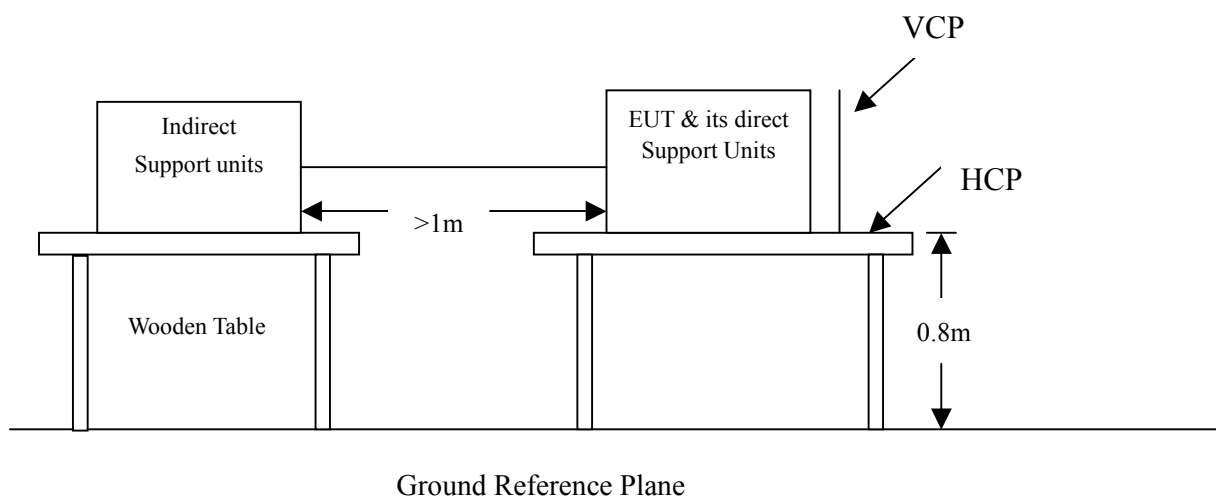
| Test Parameter | Measurement Value | Limit | Result |
|----------------------|-------------------|-------|--------|
| P _{st} | 0.075 | 1.0 | Pass |
| P _{lt} | 0.075 | 0.65 | Pass |
| T _{dt} (ms) | 0 | 500 | Pass |
| d _{max} (%) | 0% | 4% | Pass |
| dc (%) | 0.09% | 3.3% | Pass |

10 ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

| | |
|------------------------------|---|
| Port | : Enclosure |
| Basic Standard | : IEC/EN 61000-4-2 |
| Test Level | : $\pm 2, 4, 8$ kV (Air Discharge) : $\pm 2, 4, 6$ kV (Contact Discharge) : $\pm 2, 4, 6$ kV (Indirect Discharge) |
| Performance Criterion | : The Equipment or System shall be able to provide the essential performance and remain safe. |
| Tested by | : Tony Tsai |
| Temperature | : 20°C |
| Humidity | : 51% RH |
| Pressure | : 995mbar |

Block Diagram of Test Setup:

(The 470 k ohm resistors are installed per standard requirement.)



**Test Procedure:**

The electrostatic discharges were applied as follows:

| Amount of Discharges | Voltage | Coupling | Result (Pass/Fail) |
|----------------------|------------------|--------------------------------|--------------------|
| ≥ 10 / Point | $\pm 2, 4, 8$ kV | Air Discharge | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Contact Discharge | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Indirect Discharge HCP | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Indirect Discharge VCP (Front) | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Indirect Discharge VCP (Left) | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Indirect Discharge VCP (Back) | Pass |
| ≥ 10 / Point | $\pm 2, 4, 6$ kV | Indirect Discharge VCP (Right) | Pass |

For the tested points to EUT, please refer to attached page.

(Blue Arrow Mark For Contact Discharge And Red Arrow Mark For Air Discharge)

Observation: No function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Change of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

The Tested Points of EUT

Photo 1 of 4



Photo 2 of 4



Photo 3 of 4



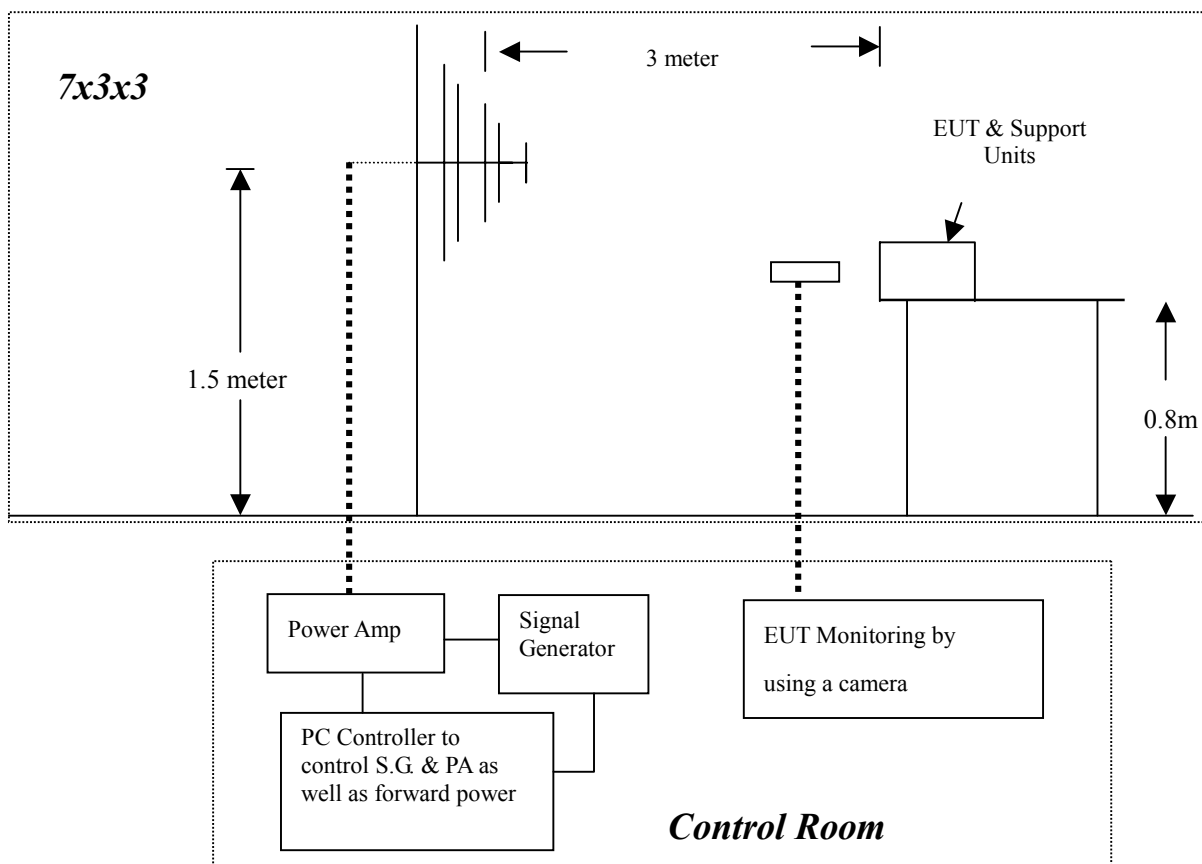
Photo 4 of 4



11 RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

| | |
|------------------------------|---|
| Port | : Enclosure |
| Basic Standard | : IEC/EN 61000-4-3 |
| Requirements | : 3 V/m / with 80% AM. 1kHz Modulation. |
| Performance Criterion | : The Equipment or System shall be able to provide the essential performance and remain safe. |
| Tested by | : Tony Tsai |
| Temperature | : 21°C |
| Humidity | : 50% RH |
| Pressure | : 998mbar |

Block Diagram of Test Setup:



**Test Procedure:**

Frequency Range 80MHz ~ 2500MHz

Steps : 1 % of fundamental

Dwell Time : 3 sec

| Range (MHz) | Field | Modulation | Polarity | Position | Result (Pass/Fail) |
|-------------|-------|------------|----------|----------|--------------------|
| 80-2500 | 3V/m | Yes | H | 0 | Pass |
| 80-2500 | 3V/m | Yes | V | 0 | Pass |
| 80-2500 | 3V/m | Yes | H | 90 | Pass |
| 80-2500 | 3V/m | Yes | V | 90 | Pass |
| 80-2500 | 3V/m | Yes | H | 180 | Pass |
| 80-2500 | 3V/m | Yes | V | 180 | Pass |
| 80-2500 | 3V/m | Yes | H | 270 | Pass |
| 80-2500 | 3V/m | Yes | V | 270 | Pass |

Observation: No any function degraded during the tests.**Compliance Criteria:**

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

12 FAST TRANSIENTS/BURST IMMUNITY TEST

Port : On Power Supply Line and Telecommunication Line

Basic Standard : IEC/EN 61000-4-4

Requirements : ± 2 kV for Power Supply Line

± 1 kV for LAN Cable

Performance Criterion : The Equipment or System shall be able to provide the essential performance and remain safe.

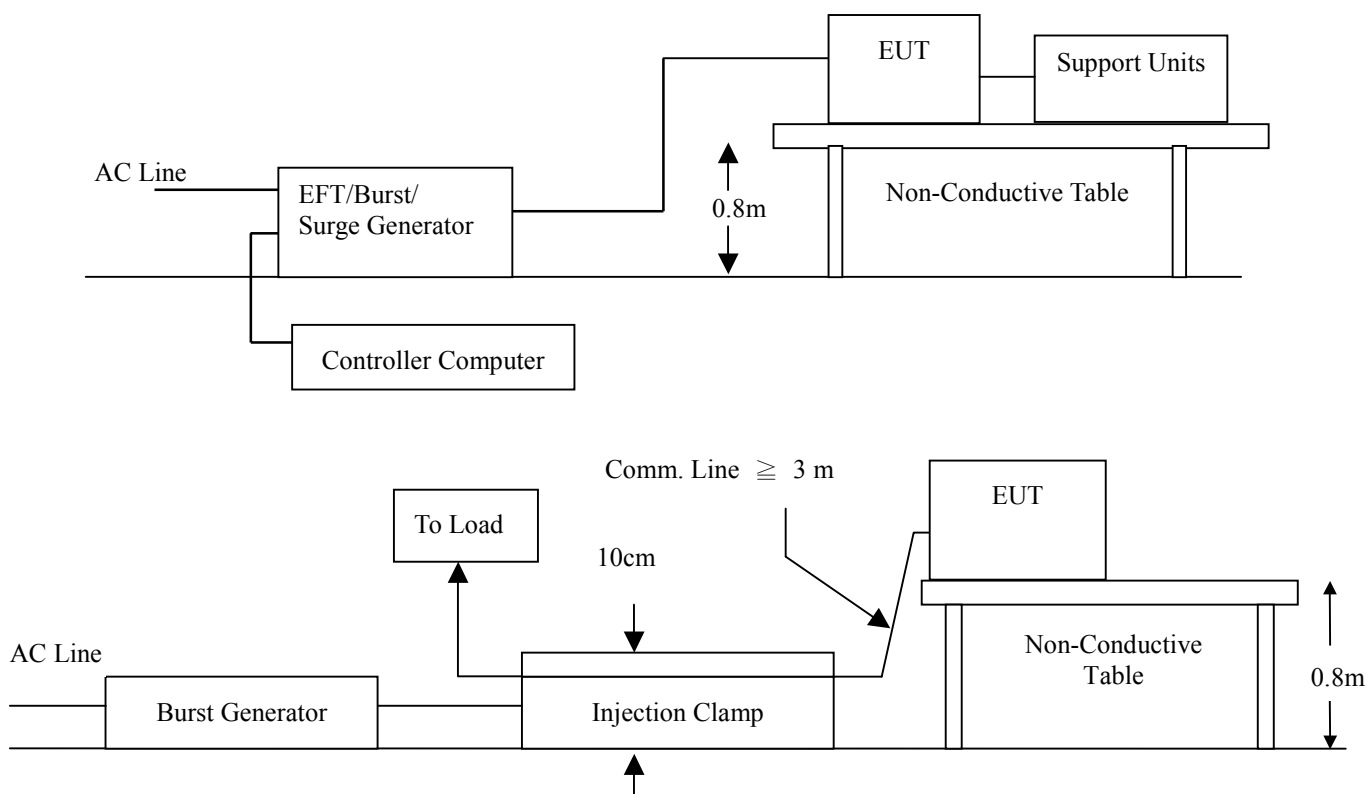
Tested by : Tony Tsai

Temperature : 21°C

Humidity : 53% RH

Pressure : 990mbar

Block Diagram of Test Setup:



**Test Procedure:**

Impulse Frequency : 5kHz
Tr/Th : 5/50ns
Burst Duration : 15ms
Burst Period : 3Hz

| Inject Line | Voltage kV | Inject Method | Result (Pass/Fail) |
|------------------------|------------|---------------|--------------------|
| L | ± 2 | Direct | Pass |
| N | ± 2 | Direct | Pass |
| PE | ± 2 | Direct | Pass |
| L + N | ± 2 | Direct | Pass |
| L + PE | ± 2 | Direct | Pass |
| N + PE | ± 2 | Direct | Pass |
| L + N + PE | ± 2 | Direct | Pass |
| RJ 45 Port (LAN Cable) | ± 1 | Clamp | Pass |

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

13 SURGE IMMUNITY TEST

Port : Power Cord

Basic Standard : IEC/EN 61000-4-5

Requirements : ± 1 kV (Line to Line)
 ± 2 kV (Line to Ground)

Performance Criteria : The Equipment or System shall be able to provide the essential performance and remain safe.

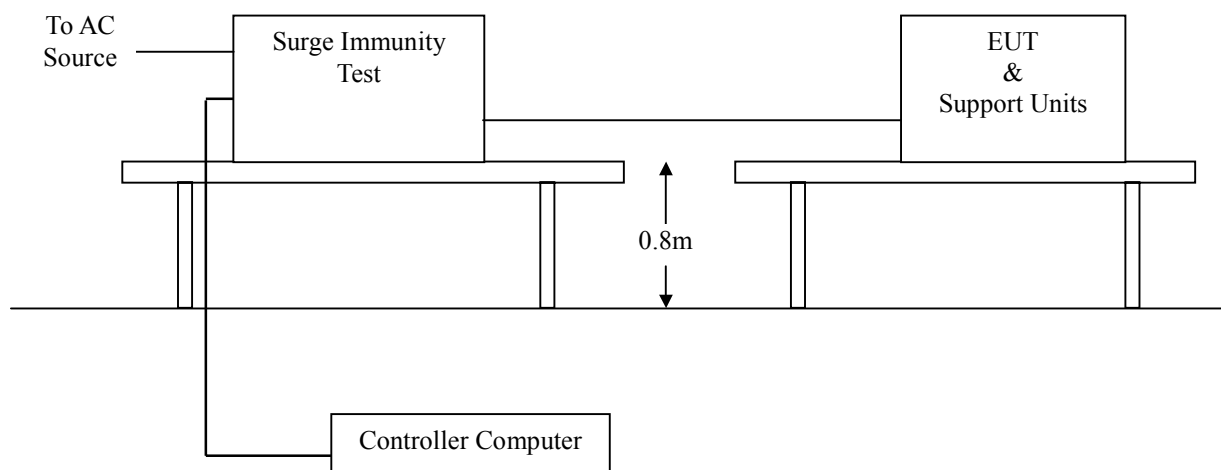
Tested by : Tony Tsai

Temperature : 21°C

Humidity : 53% RH

Pressure : 990mbar

Block Diagram of Test Setup:



**Test Procedure:**

Voltage Waveform : 1.2/50 *us*
Current Waveform : 8/20 *us*
Polarity : Positive/Negative
Phase angle : 0°, 90°, 270°
Number of Test : 5

| Coupling Line | Voltage (kV) | Polarity | Coupling Method | Result (Pass/Fail) |
|---------------|--------------|----------|-----------------|--------------------|
| L1-L2 | 1 | Positive | Capacitive | Pass |
| L1-PE | 2 | Positive | Capacitive | Pass |
| L2-PE | 2 | Positive | Capacitive | Pass |
| L1-L2 | 1 | Negative | Capacitive | Pass |
| L1-PE | 2 | Negative | Capacitive | Pass |
| L2-PE | 2 | Negative | Capacitive | Pass |

Observation: No any function degraded during the tests.

Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

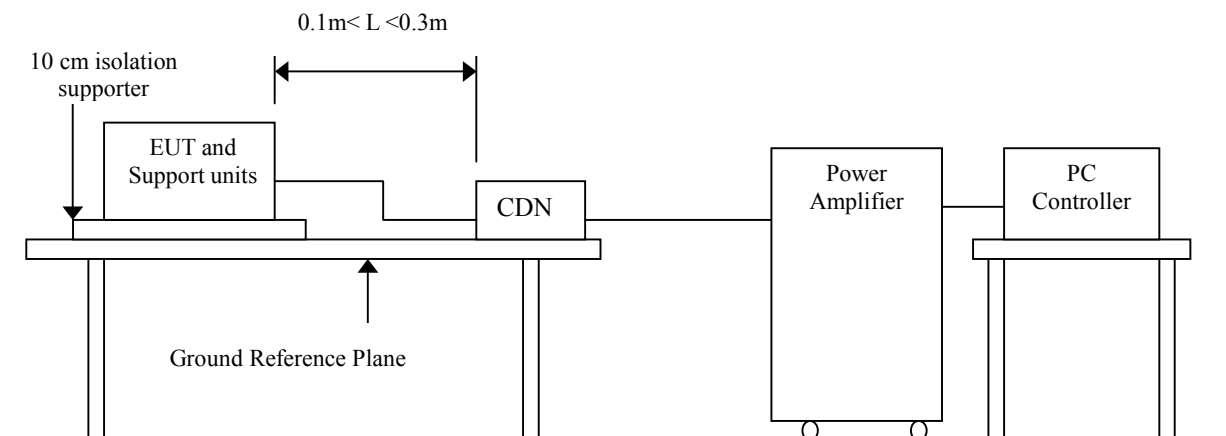
For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

14 CONDUCTED DISTURBANCE/INDUCED RADIO-FREQUENCY FIELD IMMUNITY TEST

| | |
|------------------------------|---|
| Port | : AC Port and Telecommunication Line |
| Basic Standard | : IEC/EN 61000-4-6 |
| Requirements | : 3 V with 80% AM. 2Hz Modulation. |
| Injection Method | : CDN-M3 for Power Cord CDN-T4 for LAN Cable |
| Performance Criterion | : The Equipment or System shall be able to provide the essential performance and remain safe. |
| Tested by | : Tony Tsai |
| Temperature | : 21°C |
| Humidity | : 50% RH |
| Pressure | : 998mbar |

Block Diagram of Test Setup:



**Test Procedure:**

Frequency Range : 0.15MHz-80MHz

Frequency Step : 1% of fundamental

Dwell Time : 3 sec

| Range (MHz) | Field | Modulation | Result (Pass/Fail) |
|-------------|-------|------------|--------------------|
| 0.15-80 | 3V | Yes | Pass |

Observation: No any function degraded during the tests.**Compliance Criteria:**

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

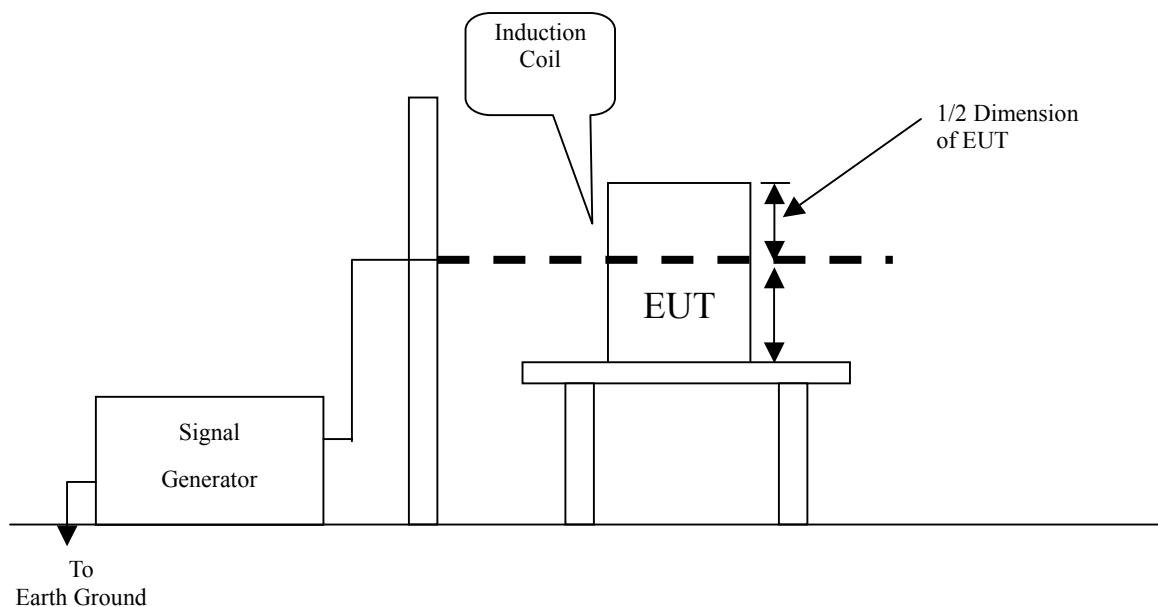
For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

15 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

| | |
|------------------------------|---|
| Port | : Enclosure |
| Basic Standard | : IEC/EN 61000-4-8 |
| Requirements | : 3 A/m |
| Performance Criterion | : The Equipment or System shall be able to provide the essential performance and remain safe. |
| Tested by | : Tony Tsai |
| Temperature | : 21°C |
| Humidity | : 53% RH |
| Pressure | : 990mbar |

Block Diagram of Test Setup:



**Test Procedure:**

Field Strength : 3A/m

Power Freq. : 50Hz

Orientation : X, Y, Z

| Orientation | Field | Result (Pass/Fail) | Remark |
|-------------|-------|--------------------|--------|
| X | 3A/m | Pass | |
| Y | 3A/m | Pass | |
| Z | 3A/m | Pass | |

Observation: No any function degraded during the tests.**Compliance Criteria:**

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Chang of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

16 VOLTAGE DIPS / SHORT INTERRUPTIONS

Port : AC mains

Basic Standard : IEC/EN 61000-4-11

Requirement : PHASE ANGLE 0, 45, 90, 135, 180, 225, 270, 315 degrees

| Voltage Dips | Test Level % U_T | Reduction (%) | Duration (periods) |
|-----------------|-----------------------|------------------|-------------------------|
| | <5 | >95 | 0.5 |
| | 40 | 60 | 5 |
| | 70 | 30 | 25 |

| Voltage Interceptions | Test Level % U_T | Reduction (%) | Duration (periods) |
|--------------------------|-----------------------|------------------|-------------------------|
| | <5 | >95 | 250 |

Test Interval : Min. 10 sec.

Performance Criteria : The Equipment or System shall be able to provide the essential performance and remain safe.

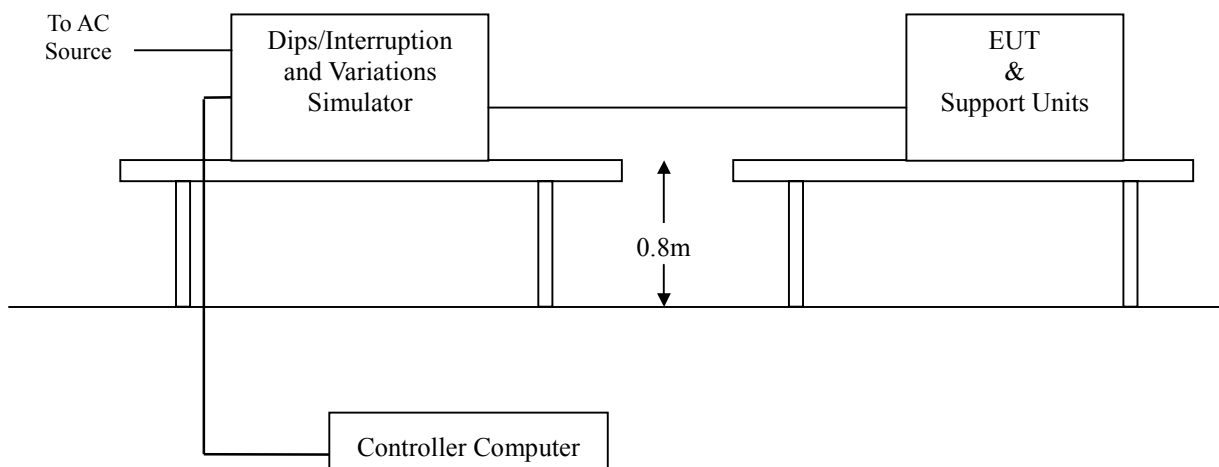
Tested by : Tony Tsai

Temperature : 21°C

Humidity : 53% RH

Pressure : 990mbar

Block Diagram of Test Setup:



**Test Procedure:**

The duration with a sequence of three dips/interruptions with interval of 10 s minimum
(Between each test event)

Voltage Dips:

| Test Level % U _T | Reduction (%) | Duration (periods) | Observation | Result |
|--------------------------------|------------------|-------------------------|-------------|--------|
| 0 | 100 | 0.5 | Normal | PASS |
| 40 | 60 | 5 | Normal | PASS |
| 70 | 30 | 25 | Normal | PASS |

Voltage Interruptions:

| Test Level % U _T | Reduction (%) | Duration (periods) | Observation | Result |
|--------------------------------|------------------|-------------------------|--|--------|
| 0 | 100 | 250 | EUT shut down but can be recovered by manual, as the events disappear. | PASS |

Note:

1. Normal - No any functions degrade during and after the test.
2. For Voltage Interruption, EQUIPMENT and SYSTEMS are allowed a deviation from the requirements of 36.202.1 j) at the IMMUNITY TEST LEVEL specified in Table 211, provided the EQUIPMENT or SYSTEM remains safe, experiences no component failures and is restorable to the pre-test state with OPERATOR intervention. Determination of compliance is based upon performance of the EQUIPMENT or SYSTEM during and after application of the test sequence.

Observation: No any function degraded during the tests.



Compliance Criteria:

Under the test conditions specified in 36.202, the EQUIPMENT or SYSTEM shall be able to provide the ESSENTIAL PERFORMANCE and remain safe. The following DEGRADATIONS associated with ESSENTIAL PERFORMANCE and safety shall not be allowed:

- Component failures
- Changes in programmable parameters
- Reset to factory defaults (manufacturer's presets)
- Change of operating mode
- False alarms
- Cessation or interruption of any intended operation, even if accompanied by an alarm
- Initiation of any unintended operation, including unintended or uncontrolled motion, even if accompanied by an alarm
- Error of a displayed numerical value sufficiently large to affect diagnosis or treatment
- Noise on a waveform in which the noise is indistinguishable from physiologically-produced signals or the noise interferes with interpretation of physiologically-produced signals
- Artefact or distortion in an image in which the artefact is indistinguishable from physiologically-produced signals or the distortion interferes with interpretation of physiologically-produced signals
- Failure of automatic diagnosis or treatment EQUIPMENT and SYSTEMS to diagnose or treat, even if accompanied by an alarm.

For EQUIPMENT and SYSTEMS with multiple FUNCTIONS, the criteria apply to each FUNCTION, parameter and channel.

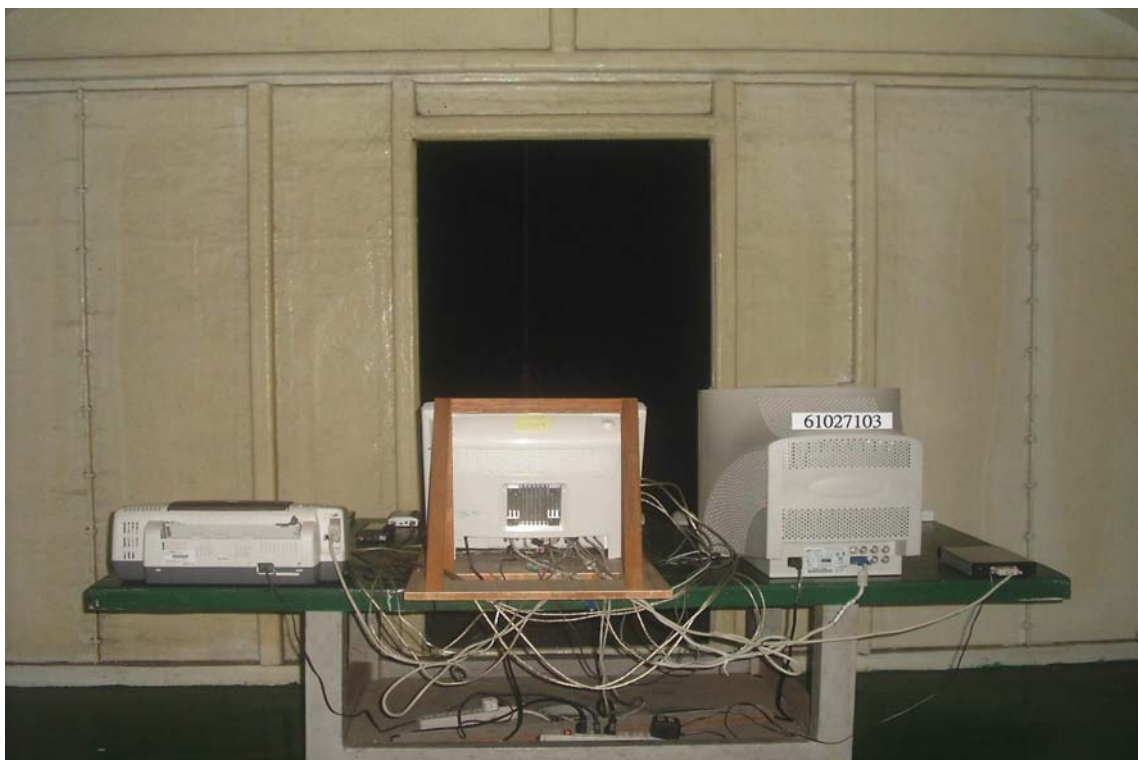
The EQUIPMENT or SYSTEM may exhibit DEGRADATION of performance (e.g. deviation from manufacturer's specifications) that does not affect ESSENTIAL PERFORMANCE or safety.

APPENDIX I - PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST (EN 55011)



RADIATED EMISSION TEST (EN 55011)





POWER HARMONIC & VOLTAGE FLUCTUATION / FLICKER TEST



ELECTROSTATIC DISCHARGE TEST

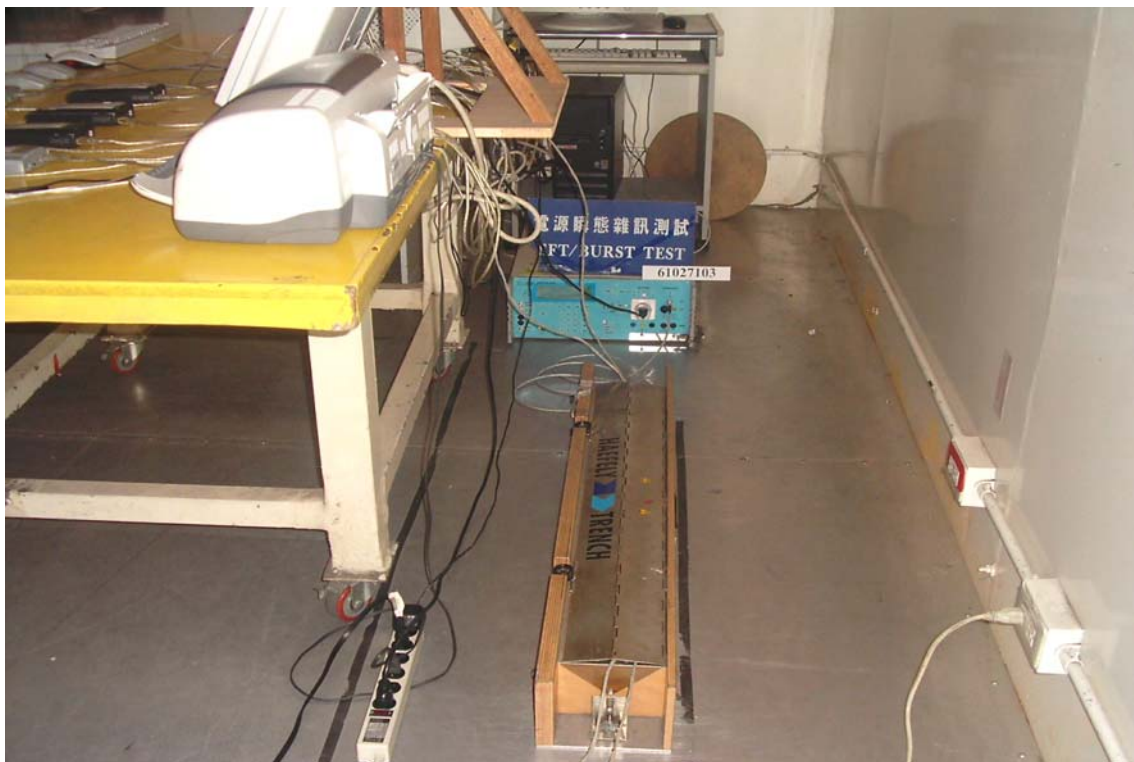




RADIATED ELECTROMAGNETIC FIELD TEST



FAST TRANSIENTS/BURST TEST



SURGE IMMUNITY TEST



CONDUCTED DISTURBANCE, INDUCED BY RADIO-FREQUENCY FIELDS TEST



POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST



VOLTAGE DIPS / INTERRUPTION TEST





APPENDIX II – TEST RESULT OF EN 61000-3-3

Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

Comply: IEC 61000-3-2 Ed.2.1 :2001 (incl. Amd.14) - IEC 61000-4-7 Ed.1.0 :1991

Advantech

HARCS Setup File : [unnamed](#)

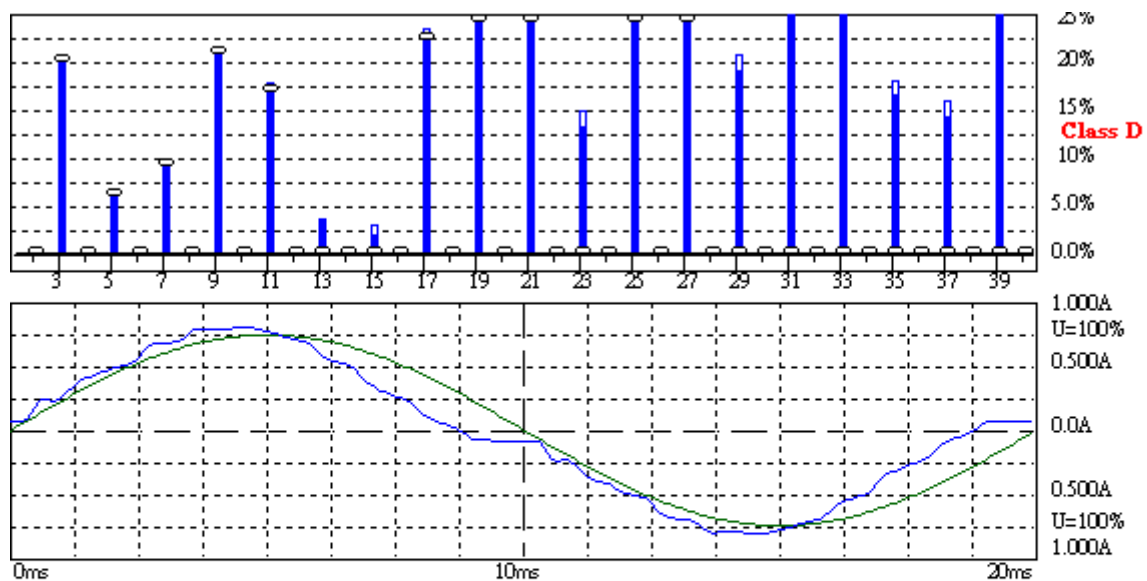
HARCS Report File : [unnamed](#)

Operator : Tony Tsai

Unit : Monitor with Touchscreen

Serialnumber : POC-195

Remarks Temp:20 Humid:55



Harmonic Emission - IEC 61000-3-2 , EN 61000-3-2 , (EN60555-2)

2006/11/1 下午 03:01

| | | | | | | | |
|--------------------|---------|------|---------|--------------------|---------|--------------------|--------------|
| U _{rms} = | 230.1 V | P = | 112.0 W | THC = | 0.082 A | Range: | 1 A |
| I _{rms} = | 0.510 A | pf = | 0.954 | P _{max} = | 112.7 W | V _{nom} : | 230 V |
| | | | | | | TestTime: | 5 min (100%) |

Test completed, Result: PASSED

Temp:20 Humid:55

BAR-1000 EMC Printer

Full Bar : Actual Values

Empty Bar : Maximum Values

Blue : Current , Green : Voltage , Red : Failed



Measurement

Advantech

Date : 2006/11/1 03:01 V4.14

File :

Operator : Tony Tsai

Unit : Monitor with Touchscreen

Serialnumber : POC-195

Remarks Temp:20 Humid:55

Urms = 230.1V Freq = 49.987 Range: 1 A

Irms = 0.510A Ipk = 0.820A cf = 1.608

P = 112.0W S = 117.3VA pf = 0.954

THDi = 16.1 % THDu = 0.10 % Class D

Test - Time : 5min (100 %)

Limit Reference: Pmax = 112.74W

Test completed, Result: PASSED

| Order | Freq. | Imax | Imax% | Imax%L | Limit | Status |
|-------|-------|--------|--------|--------|--------|--------|
| | [Hz] | [A] | [%] | [%] | [A] | |
| 1 | 50 | 0.5072 | 99.497 | | | |
| 2 | 100 | 0.0021 | 0.4191 | | | |
| 3 | 150 | 0.0773 | 15.158 | 20.159 | 0.3833 | |
| 4 | 200 | 0.0005 | 0.0958 | | | |
| 5 | 250 | 0.0131 | 2.5623 | 6.0979 | 0.2142 | |
| 6 | 300 | 0.0003 | 0.0599 | | | |
| 7 | 350 | 0.0104 | 2.0354 | 9.2038 | 0.1127 | |
| 8 | 400 | 0.0004 | 0.0838 | | | |
| 9 | 450 | 0.0118 | 2.3108 | 20.898 | 0.0564 | |
| 10 | 500 | 0.0002 | 0.0479 | | | |
| 11 | 550 | 0.0070 | 1.3649 | 17.634 | 0.0395 | |
| 12 | 600 | 0.0002 | 0.0359 | | | |
| 13 | 650 | 0.0011 | 0.2155 | 3.2906 | 0.0334 | |
| 14 | 700 | 0.0005 | 0.0958 | | | |



| | | | | | |
|----|------|--------|--------|--------|--------|
| 15 | 750 | 0.0008 | 0.1557 | 2.7422 | 0.0289 |
| 16 | 800 | 0.0004 | 0.0718 | | |
| 17 | 850 | 0.0059 | 1.1614 | 23.189 | 0.0255 |
| 18 | 900 | 0.0004 | 0.0838 | | |
| 19 | 950 | 0.0099 | 1.9516 | 43.551 | 0.0228 |
| 20 | 1000 | 0.0011 | 0.2155 | | |
| 21 | 1050 | 0.0081 | 1.5805 | 38.981 | 0.0207 |
| 22 | 1100 | 0.0005 | 0.1078 | | |
| 23 | 1150 | 0.0027 | 0.5388 | 14.555 | 0.0189 |
| 24 | 1200 | 0.0007 | 0.1437 | | |
| 25 | 1250 | 0.0061 | 1.1973 | 35.156 | 0.0174 |
| 26 | 1300 | 0.0002 | 0.0479 | | |
| 27 | 1350 | 0.0090 | 1.7601 | 55.813 | 0.0161 |
| 28 | 1400 | 0.0002 | 0.0479 | | |
| 29 | 1450 | 0.0031 | 0.5987 | 20.390 | 0.0150 |
| 30 | 1500 | 0.0002 | 0.0359 | | |
| 31 | 1550 | 0.0038 | 0.7423 | 27.028 | 0.0140 |
| 32 | 1600 | 0.0004 | 0.0838 | | |
| 33 | 1650 | 0.0035 | 0.6825 | 26.451 | 0.0132 |
| 34 | 1700 | 0.0003 | 0.0599 | | |
| 35 | 1750 | 0.0022 | 0.4310 | 17.719 | 0.0124 |
| 36 | 1800 | 0.0002 | 0.0359 | | |
| 37 | 1850 | 0.0018 | 0.3592 | 15.609 | 0.0117 |
| 38 | 1900 | 0.0002 | 0.0479 | | |
| 39 | 1950 | 0.0050 | 0.9818 | 44.971 | 0.0111 |
| 40 | 2000 | 0.0004 | 0.0718 | | |



Advantech

Date : 2006/11/1 PM 03:23 V4.14

File :

Operator : Tony Tsai
Unit : Monitor with Touchscreen
Serialnumber : POC-195
Remarks Temp:20 Humid:55 (Continue)

Urms = 230.1V Freq = 49.974 Range: 2 A
Irms = 0.509A Ipk = 0.817A cf = 1.607
P = 111.9W S = 117.1VA pf = 0.955

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
dmax : 4.00 % dc : 3.30 %
dtLim: 3.30 % dt>Lim: 500ms

Test completed, Result: PASSED

Plt = 0.072

| | Pst | dmax | dc | dt>Lim | Fail |
|---|-------|-------|-------|--------|------|
| | | [%] | [%] | [ms] | |
| 1 | 0.072 | 0.000 | 0.000 | 0.000 | |



Advantech

Date : 2006/11/1 PM 03:37 V4.14

File :

Operator : Tony Tsai
Unit : Monitor with Touchscreen
Serialnumber : POC-195
Remarks Temp:20 Humid:55 (Manual Switch)

Urms = 230.1V Freq = 49.987 Range: 2 A
Irms = 0.510A Ipk = 0.818A cf = 1.605
P = 112.2W S = 117.3VA pf = 0.956

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
dmax : 4.00 % dc : 3.30 %
dtLim: 3.30 % dt>Lim: 500ms

Test completed, Result: PASSED

Plt = 0.075

| | Pst | dmax | dc | dt>Lim | Fail |
|---|-------|-------|-------|--------|------|
| | | [%] | [%] | [ms] | |
| 1 | 0.075 | 0.000 | 0.090 | 0.000 | |