SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION Co., Ltd.

# Declaration of Conformity

**Certification number: CTE07080007**

**Issue date: Aug 20, 2007**

In accordance with the following Applicable Directives:

**2004/108/EC**

**Electromagnetic Compatibility**

The equipment, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of:

**ETSI EN 300 386 V1.3.3: 2006**

The test results are traceable to the international or national standards.

| | |
|---|---|
| **Applicant:** | **SHENZHEN TENDA TECHNOLOGY CO., LTD**<br>3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen 518108, China |
| **Manufacturer:** | **SHENZHEN TENDA TECHNOLOGY CO., LTD**<br>3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen 518108, China |
| Equipment under test: | **Gigabit Ethernet Switch** |
| **Model/Type reference:** | **TEG1216T** |
| **Listed Model:** | **TEG1016S** |
| **Laboratory Name:** | **Shenzhen Huatongwei International Inspection Co., Ltd**<br>Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China<br>Tel: 86-755-26748058 Fax: 86-755-26748005<br>Http: //www.szhtw.com.cn E-mail: master@szhtw.com.cn |

CE

**Note:**

The certification is only valid for the equipment and configuration described, in conjunction with the test data detailed above.

The CE mark as shown beside can be used, under the responsibility of the manufacturer, after completion of an EC Directive of Conformity and compliance with all relevant EC Directive.

**Authorized by:**

For and on behalf of
Shenzhen Huatongwei International Inspection Co., Ltd.

Authorized Signature(s)

Shenzhen Huatongwei International Inspection Co., Ltd.
Keji S,12th , Road, Hi-tech Industrial Park, Shenzhen, Guangdong, China
Phone:86-755-26748099 Fax:86-755-26748089 http://www.szhtw.com.cn

# TEST REPORT

## ETSI EN 300 386 V1.3.3: Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) Requirements

| | |
|---|---|
| **Report Reference No**.....: | **TRE07080007** |
| Compiled by ( position+printed name+signature)..: | File administrators Mellen Lee |
| Supervised by ( position+printed name+signature)..: | Technique principal Byron Lai |
| Approved by ( position+printed name+signature)..: | Manager Jimmy Li |
| Date of issue.....: | Aug 20, 2007 |
| **Testing Laboratory Name** .....: | **Shenzhen Huatongwei International Inspection Co., Ltd** |
| Address.....: | Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China |
| Testing location/ procedure .....: | Full application of Harmonised standards ☒<br>Partial application of Harmonised standards ☐<br>Other standard testing methods ☐ |
| **Applicant's name**.....: | **SHENZHEN TENDA TECHNOLOGY CO., LTD** |
| Address.....: | 3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen 518108, China |
| **Test specification:** | |
| Standard .....: | **ETSI EN 300 386 V1.3.3: 2006** |
| **Test Report Form No**.....: | HTWEMCCE_1A |
| TRF Originator.....: | Shenzhen Huatongwei International Inspection CO., Ltd |
| Master TRF.....: | Dated 2006-06 |



| | |
|---|---|
| **Test item description ..... :** | Gigabit Ethernet Switch |
| Manufacturer .....: | SHENZHEN TENDA TECHNOLOGY CO., LTD |
| Model/Type reference.....: | TEG1216T |
| Listed Models .....: | TEG1016S |
| Ratings.....: | DC5V 6A 30W Load: 13.2W |
| Result.....: | **Positive** |

# EMC -- T E S T R E P O R T

| Test Report No. : | TRE07080007 | Aug 20, 2007<br>Date of issue |
|---|---|---|

| | | |
|---|---|---|
| Equipment under Test | : | Gigabit Ethernet Switch |
| Model / Type | : | TEG1216T |
| Listed Models | : | TEG1016S |
| **Applicant** | : | SHENZHEN TENDA TECHNOLOGY CO., LTD |
| Address | : | 3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen 518108, China |
| **Manufacturer** | : | SHENZHEN TENDA TECHNOLOGY CO., LTD |
| Address | | 3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen 518108, China |

| | |
|---|---|
| **Test Result** according to the standards on page 4: | **Positive** |

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# Contents

# 1. TEST STANDARDS

The tests were performed according to following standards:

ETSI EN 300 386 V1.3.3: 2006 Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) Requirements

# 2 . SUMMARY

## 2.1. General Remarks

Date of receipt of test sample : Aug 09, 2007

Testing commenced on : Aug 09, 2007

Testing concluded on : Aug 20, 2007

## 2.2. Equipment Under Test

## Power supply system utilised

Power supply voltage : ■ 230V / 50 Hz o 115V / 60Hz
o 12 V DC o 24 V DC
o Other (specified in blank below)

/

## 2.3. Short description of the Equipment under Test (EUT)

The EUT is Gigabit Ethernet Switch.

Serial number: Prototype

## 2.4. EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

Test program (customer specific)

| |
|---|
| Emissions tests……..: According to ETSI EN 300 386 V1.3.3, searching for the highest disturbance. |
| Immunity tests ……..: According to ETSI EN 300 386 V1.3.3, searching for the highest susceptivity. |
| Harmonic current……. : According to ETSI EN 300 386 V1.3.3, searching for the highest disturbance. |
| Voltage fluctuation……. : According to ETSI EN 300 386 V1.3.3, searching for the highest disturbance. |

## 2.5. EUT configuration

**The following peripheral devices and interface cables were connected during the measurement:**

■ - supplied by the manufacturer

o - supplied by the lab

| | | |
|---|---|---|
| ■ Power Cord for EUT | Length (m) : | 1.2 |
| | Shield : | Unshielded |
| | Detachable : | Detachable |
| o Computer | Manufacture : | DELL |

## 2.6. Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test relative to a performance criteria defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product. Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

— essential operational modes and states;
— tests of all peripheral access(hard disks, floppy disks, printers, keyboard, mouse, etc.);
— quality of software execution
— quality of data display and transmission
— quality of speech transmission

**Definition related to the performance level:**

■ based on the used product standard
o based on the declaration of the manufacturer, requestor or purchaser

**Criterion A:**

The apparatus shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

**Criterion B:**

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if 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, or by any operation specified in the instructions for use.

# 3. TEST ENVIRONMENT

## 3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

## 3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

### CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 1999 General Requirements) for the Competence of Testing and Calibration Laboratories.

### A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 1999 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is from Aug 24, 2005 to Sept 30, 2007

### FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 662850, Renewal date September 12, 2006.

### IC-Registration No.: 5377

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377 on November 28th, 2005.

### ACA

Shenzhen Huatongwei International Inspection Co., Ltd, EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

### NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

### VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2484. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: December 20, 2006. Valid time is until December 19, 2009.

### IECEE CB

Shenzhen Huatongwei International Inspection Co Ltd has been assessed and determined to fully comply with the requirements of ISO/IEC 17025: 2005-05, The Basic Rules, IECEE 01: 2006-10 and Rules of Procedure IECEE 02: 2006-10, and the relevant IECEE CB-Scheme Operational Documents.

It is therefore entitled to operate as a CB Testing Laboratory under the responsibility of Nemko A/S. This certificate remains valid until May 25th 2009 at which time it will be reissued by the IECEE Executive Secretary upon successful completion of the normally scheduled 3-year Reassessment Program administered by the IECEE CB Scheme.

**DNV**

Shenzhen Huatongwei International Inspection Co Ltd has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025(2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until 09 July, 2010.

## 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature: | 15-35 ° C |
| Humidity: | 30-60 % |
| Atmospheric pressure: | 950-1050mbar |

## 3.4. Test Description

| | | |
|---|---|---|
| Emission Measurement | | |
| Radiated Emission | ETSI EN 300 386 V1.3.3: 2006<br>EN 55022: 1998+A1: 2006 | PASS |
| Conducted Disturbance | ETSI EN 300 386 V1.3.3: 2006<br>EN 55022: 1998+A1: 2006 | PASS |
| Harmonic Current | ETSI EN 300 386 V1.3.3<br>EN 61000-3-2: 2006 | PASS |
| Voltage Fluctuation and Flicker | ETSI EN 300 386 V1.3.3<br>EN 61000-3-3: 1995+A1: 2001+A2: 2005 | PASS |
| Immunity Measurement | | |
| Electrostatic Discharge | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-2: 2001 | PASS |
| RF Field Strength Susceptibility | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-3: 2006 | PASS |
| Electrical Fast Transient/Burst Test | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-4: 2004 | PASS |
| Surge Test | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-5: 2005 | PASS |
| Conducted Susceptibility Test | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-6: 2006 | PASS |
| Voltage Dips and Interruptions Test | ETSI EN 300 386 V1.3.3: 2006<br>EN 61000-4-11: 2004 | PASS |

The measurement uncertainty is not included in the test result.

## 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

| Test | Range | Measurement Uncertainty | Notes |
|---|---|---|---|
| Radiated Emission | 30~1000MHz | 4.22dB | (1) |
| Conducted Disturbance | 0.15~30MHz | 3.29dB | (1) |

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 3.6. Equipments Used during the Test

| Radiated Emission | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | ULTRA-BROADBAND ANTENNA | ROHDE & SCHWARZ | HL562 | 100015 | 2006/10 |
| 2 | EMI TEST RECEIVER | ROHDE & SCHWARZ | ESI 26 | 100009 | 2006/10 |
| 3 | RF TEST PANEL | ROHDE & SCHWARZ | TS / RSP | 335015/ 0017 | 2006/10 |
| 4 | TURNTABLE | ETS | 2088 | 2149 | 2006/10 |
| 5 | ANTENNA MAST | ETS | 2075 | 2346 | 2006/10 |
| 6 | EMI TEST SOFTWARE | ROHDE & SCHWARZ | ESK1 | N/A | 2006/10 |

| Conducted Disturbance | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | EMI Test Receiver | ROHDE & SCHWARZ | ESCS30 | 100038 | 2006/10 |
| 2 | Artificial Mains | ROHDE & SCHWARZ | ESH2-Z5 | 100028 | 2006/10 |
| 3 | Pulse Limiter | ROHDE & SCHWARZ | ESHSZ2 | 100044 | 2006/10 |
| 4 | EMI Test Software | ROHDE & SCHWARZ | ESK1 | N/A | 2006/10 |

| Harmonic Current | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | Purified Power Source | CALIFORNIA INSTRUMENTS | HFS500 | 54513 | 2006/10 |
| 2 | Harmonic And Flicker Analyzer | EM TEST | DPA503S1 | 0500-10 | 2006/10 |

| Voltage Fluctuation and Flicker | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | Purified Power Source | CALIFORNIA INSTRUMENTS | HFS500 | 54513 | 2006/10 |
| 2 | Harmonic And Flicker Analyzer | EM TEST | DPA503S1 | 0500-10 | 2006/10 |

| Electrostatic Discharge | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | ESD Simulator | EM TEST | DITOC0103Z | 0301-04 | 2006/10 |

| RF Field Strength Susceptibility | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | SIGNAL GENERATOR | IFR | 2032 | 203002/100 | 2006/10 |
| 2 | AMPLIFIER | AR | 150W1000 | 301584 | 2006/10 |
| 3 | DUAL DIRECTIONAL COUPLER | AR | DC6080 | 301508 | 2006/10 |
| 4 | POWER HEAD | AR | PH2000 | 301193 | 2006/10 |
| 5 | POWER METER | AR | PM2002 | 302799 | 2006/10 |

| Electrical Fast Transient/Burst | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | Ultra Compact Simulator | EM TEST | UCS500M6 | 0500-19 | 2006/10 |
| 2 | Coupling Clamp | EM TEST | HFK | 1501-14 | 2006/10 |

| Surge | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | ULTRA COMPACT SIMULATOR | EM TEST | UCS500M6 | 0500-19 | 2006/10 |

| Conducted Susceptibility | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | Signal Generator | IFR | 2023A | 202304/060 | 2006/10 |
| 2 | Amplifier | AR | 75A250 | 302205 | 2006/10 |
| 3 | Dual Directional Coupler | AR | DC2600 | 302389 | 2006/10 |
| 4 | 6db Attenuator | EMTEST | ATT6/75 | 0010230A | 2006/10 |
| 5 | EM CLAMP | LÜTHI | EM101 | 335625 | 2006/10 |
| 6 | CDN | EMTEST | CDN M3 | 0802-03 | 2006/10 |

| Voltage Dips and Interruptions | | | | | |
|---|---|---|---|---|---|
| Item | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. |
| 1 | Ultra Compact Simulator | EM TEST | UCS500M6 | 0500-19 | 2006/10 |
| 2 | Motor Driven Voltage Transformer | EM TEST | MV2616 | 0301-11 | 2006/10 |

# 4. TEST CONDITIONS AND RESULTS

## 4.1. Radiated Emission

For test instruments and accessories used see section 3.6.

### 4.1.1. Description of the test location

Test location: Shielded room No. 4

### 4.1.2. Limits of disturbance(Class B)

| Frequency (MHz) | Distance (Meters) | Field Strengths Limits (dBμV/m) |
|---|---|---|
| 30 ~ 230 | 3 | 40 |
| 230 ~ 1000 | 3 | 47 |

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

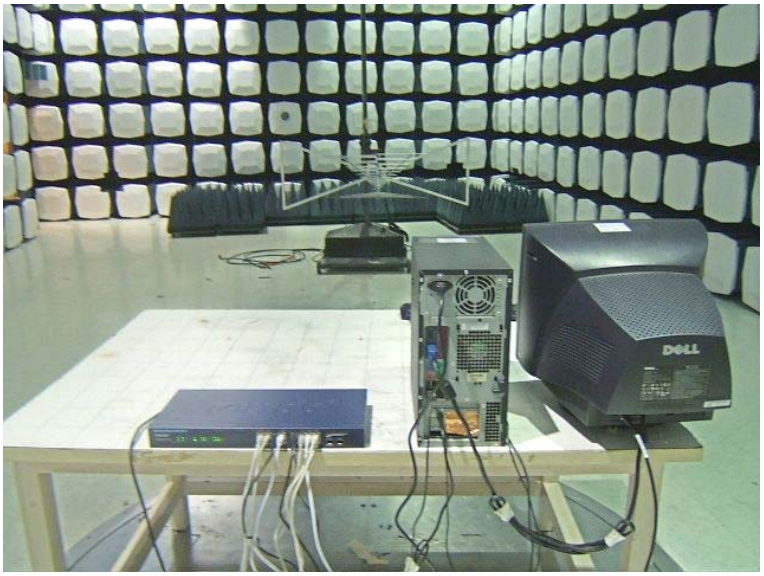
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

### 4.1.3. Description of the test set-up

4.1.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum emanation are recorded.

4.1.3.2. Photos of the test set-up




### 4.1.4. Test result

The requirements are **Fulfilled**

Band Width: 120KHz

Frequency Range: 30MHz to 1000MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

***SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD***

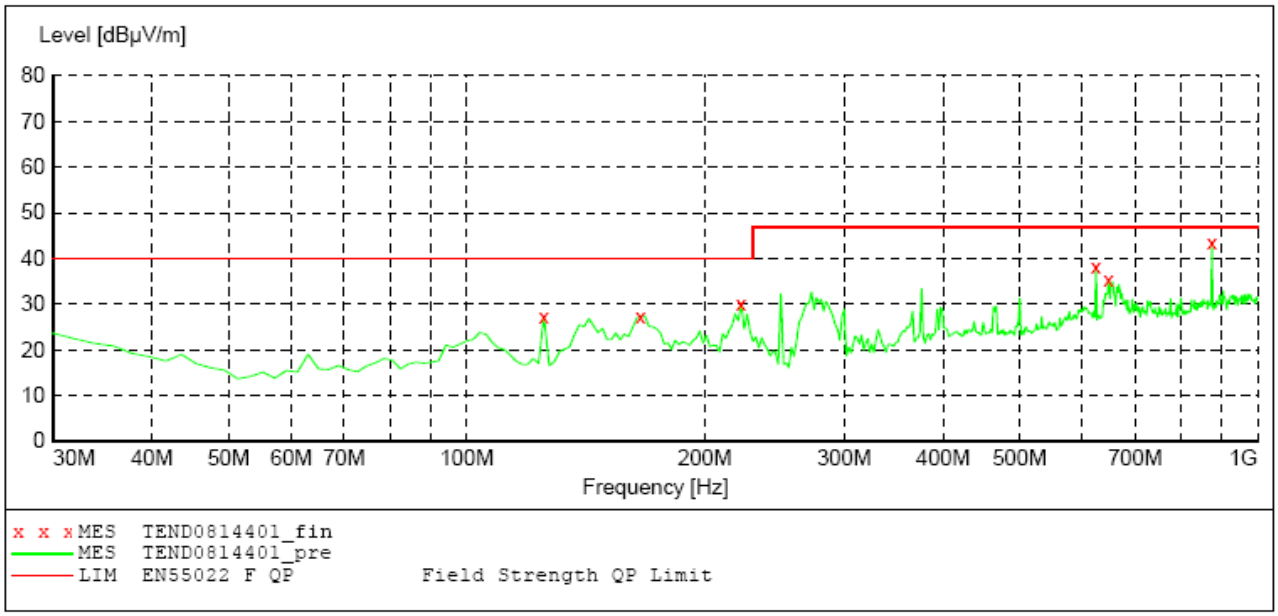
***RADIATED EMISSION EN55022 CLASS B***

```
EUT:                  Gigabit Ethcrnet Switch M/N:TEG1216T
Manufacturer:         SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition:  Running
Test Site:            3M CHAMBER
Operator:             JACKY
Test Specification:   AC 230V/50Hz
Comment:
Start of Test:        8/14/07 / 12:19:07PM
```

***SCAN TABLE: "test (30M-1G)"***

Short Description: Field Strength

| Start Frequency | Stop Frequency | Step Width | Detector | Meas. Time | IF Bandw. | Transducer |
|---|---|---|---|---|---|---|
| 30.0 MHz | 1.0 GHz | 60.0 kHz | QuasiPeak | 1.0 s | 120 kHz | HL562 07 |




***MEASUREMENT RESULT: "TEND0814401_fin"***

8/14/07 12:31PM

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 125.250501 | 27.40 | 12.5 | 40.0 | 12.6 | QP | 100.0 | 127.00 | HORIZONTAL |
| 166.072144 | 27.40 | 10.7 | 40.0 | 12.6 | QP | 300.0 | 77.00 | HORIZONTAL |
| 222.444890 | 30.20 | 11.4 | 40.0 | 9.8 | QP | 100.0 | 197.00 | HORIZONTAL |
| 624.829659 | 38.10 | 23.1 | 47.0 | 8.9 | QP | 250.0 | 221.00 | HORIZONTAL |
| 648.156313 | 35.40 | 23.4 | 47.0 | 11.6 | QP | 100.0 | 221.00 | HORIZONTAL |
| 875.591182 | 43.60 | 25.0 | 47.0 | 3.4 | QP | 100.0 | 221.00 | HORIZONTAL |

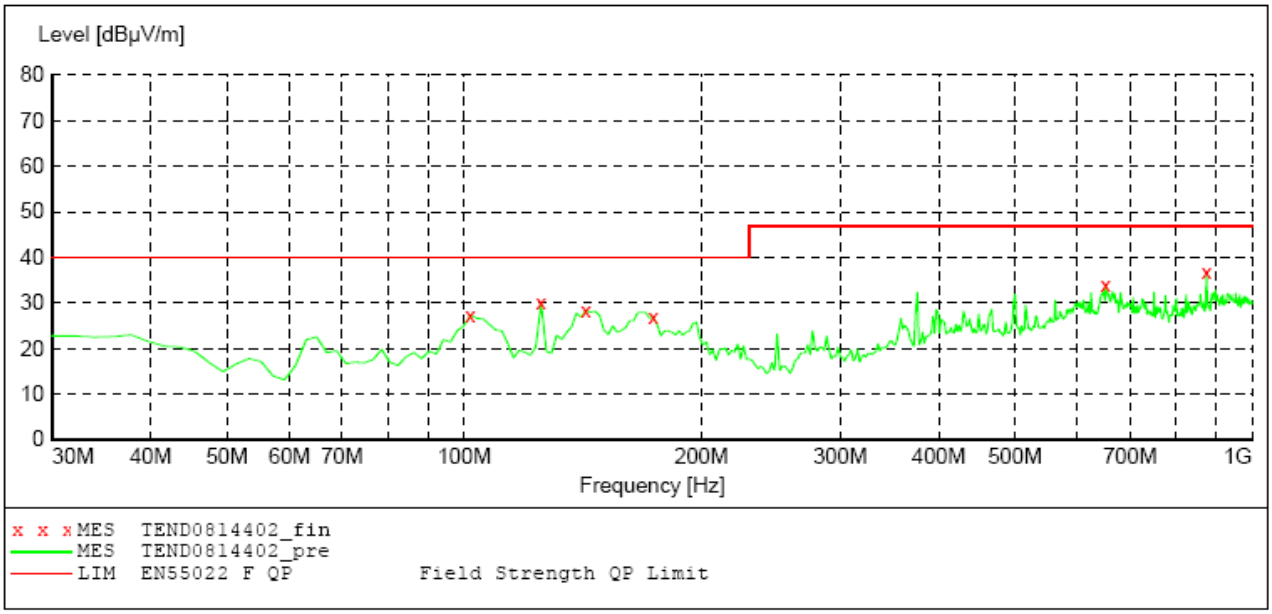
***SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD***

***RADIATED EMISSION EN55022 CLASS B***

```
EUT:                  Gigabit Ethcrnet Switch M/N:TEG1216T
Manufacturer:         SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition:  Running
Test Site:            3M CHAMBER
Operator:             JACKY
Test Specification:   AC 230V/50Hz
Comment:
Start of Test:        8/14/07 / 12:32:44PM
```

***SCAN TABLE: "test (30M-1G)"***

```
  Short Description:              Field Strength
  Start      Stop      Step       Detector  Meas.     IF       Transducer
  Frequency  Frequency Width                Time      Bandw.
  30.0 MHz   1.0 GHz   60.0 kHz   QuasiPeak 1.0 s     120 kHz  HL562 07
```




***MEASUREMENT RESULT: "TEND0814402_fin"***

8/14/07 12:44PM

| Frequency MHz | Level dBµV/m | Transd dB | Limit dBµV/m | Margin dB | Det. | Height cm | Azimuth deg | Polarization |
|---|---|---|---|---|---|---|---|---|
| 101.923848 | 27.30 | 14.6 | 40.0 | 12.7 | QP | 100.0 | 57.00 | VERTICAL |
| 125.250501 | 30.00 | 12.5 | 40.0 | 10.0 | QP | 100.0 | 78.00 | VERTICAL |
| 142.745491 | 28.40 | 11.2 | 40.0 | 11.6 | QP | 100.0 | 172.00 | VERTICAL |
| 173.847695 | 26.80 | 11.2 | 40.0 | 13.2 | QP | 100.0 | 197.00 | VERTICAL |
| 652.044088 | 34.00 | 23.4 | 47.0 | 13.0 | QP | 100.0 | 150.00 | VERTICAL |
| 875.591182 | 36.60 | 25.0 | 47.0 | 10.4 | QP | 100.0 | 125.00 | VERTICAL |

## 4.2. Conducted disturbance

For test instruments and accessories used see section 3.6.

### 4.2.1. Description of the test location

Test location: Shielded room No. 3

### 4.2.2. Limits of disturbance

Limit of conducted disturbance at the mains ports(Class B)

| Frequency Range (MHz) | Limits (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.150～0.500 | 66～56 | 56～46 |
| 0.500～5.000 | 56 | 46 |
| 5.000～30.00 | 60 | 50 |

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

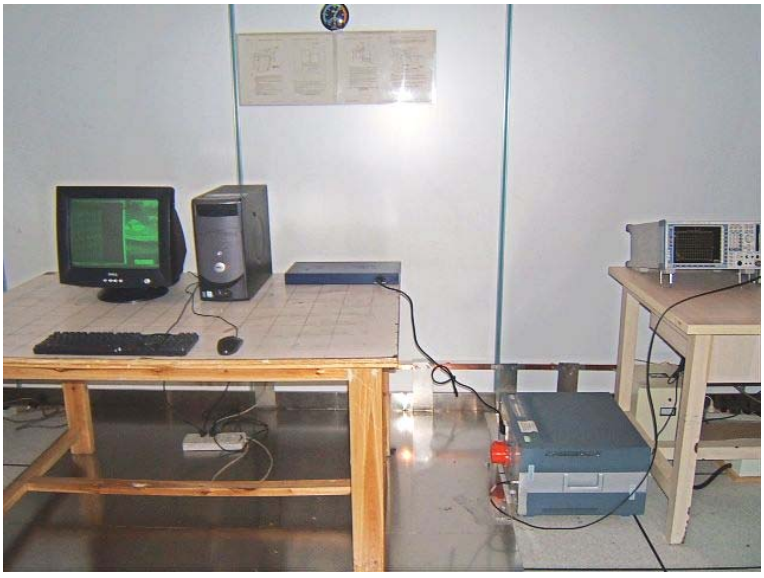
### 4.2.3. Description of the test set-up

4.2.3.1. Operating Condition

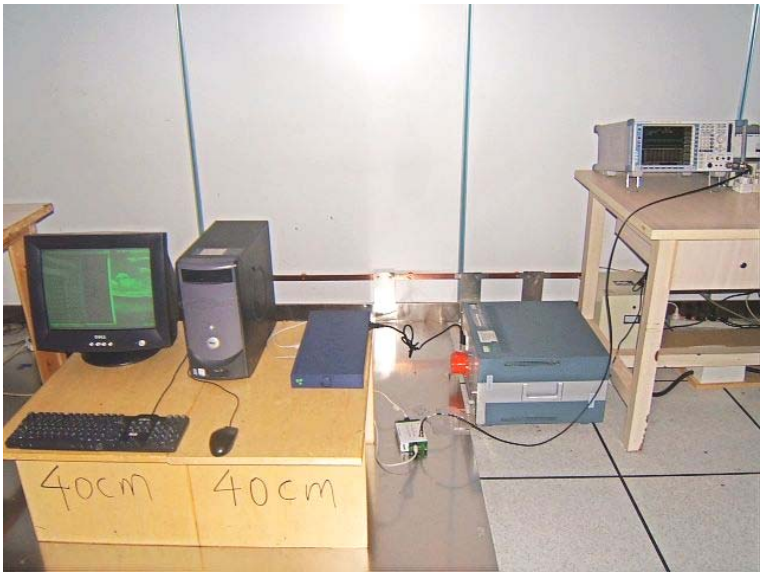
The EUT is running with PC system during the test, and the results of the maximum emanation are recorded.

4.2.3.2. Photo of the test set-up

at Mains Ports：



at Telecommunication Ports：




### 4.2.4. Test result

The requirements are **Fulfilled**

Band Width: 9KHz

Frequency Range: 150KHz to 30MHz

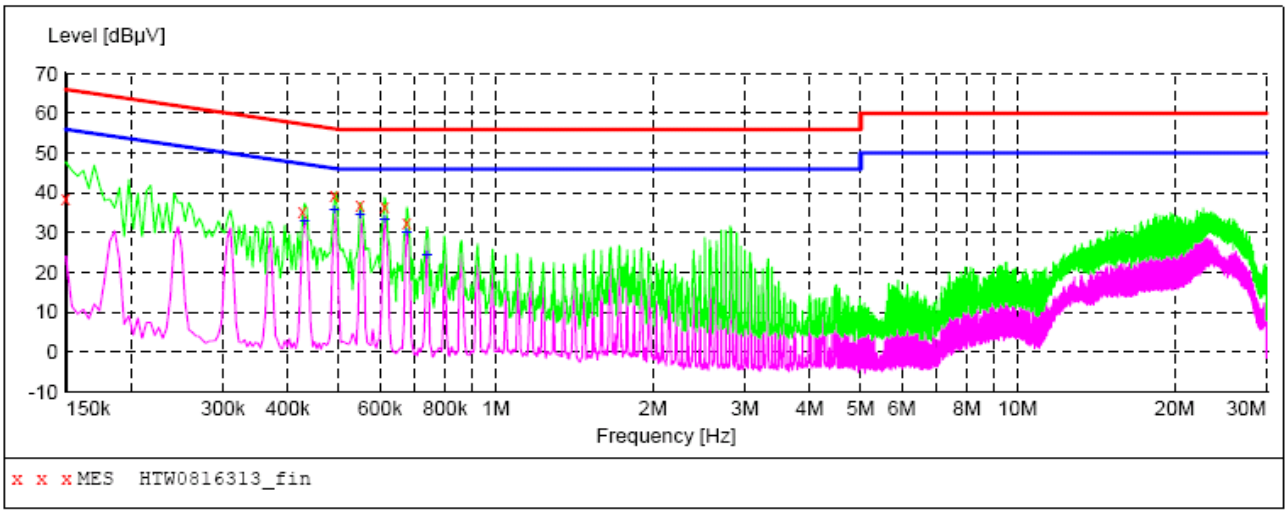
**Remarks:** The limits are kept. For detailed results, please see the following page(s).

***Shenzhen Huatongwei International Inspection CO.,Ltd***

***Voltage Mains Test EN55022 CLASS B***

EUT: Gigabit Ethernet Switch M/N:TEG1216T
Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition: Running
Test Site: 3# SHIELDED ROOM
Operator: SAM
Test Specification: AC 230V/50Hz
Comment:
Start of Test: 8/16/2007 / 9:52:15AM

***SCAN TABLE: "Voltage (9K-30M)FIN"***
Short Description: 150K-30M Voltage




***MEASUREMENT RESULT: "HTW0816313_fin"***

8/16/2007 9:54AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.150000 | 38.40 | 10.0 | 66 | 27.6 | QP | L1 | GND |
| 0.426000 | 35.50 | 10.1 | 57 | 21.8 | QP | L1 | GND |
| 0.490000 | 39.30 | 10.1 | 56 | 16.9 | QP | L1 | GND |
| 0.549500 | 37.00 | 10.1 | 56 | 19.0 | QP | L1 | GND |
| 0.612500 | 36.40 | 10.1 | 56 | 19.6 | QP | L1 | GND |
| 0.675500 | 32.60 | 10.1 | 56 | 23.4 | QP | L1 | GND |

***MEASUREMENT RESULT: "HTW0816313_fin2"***

8/16/2007 9:54AM

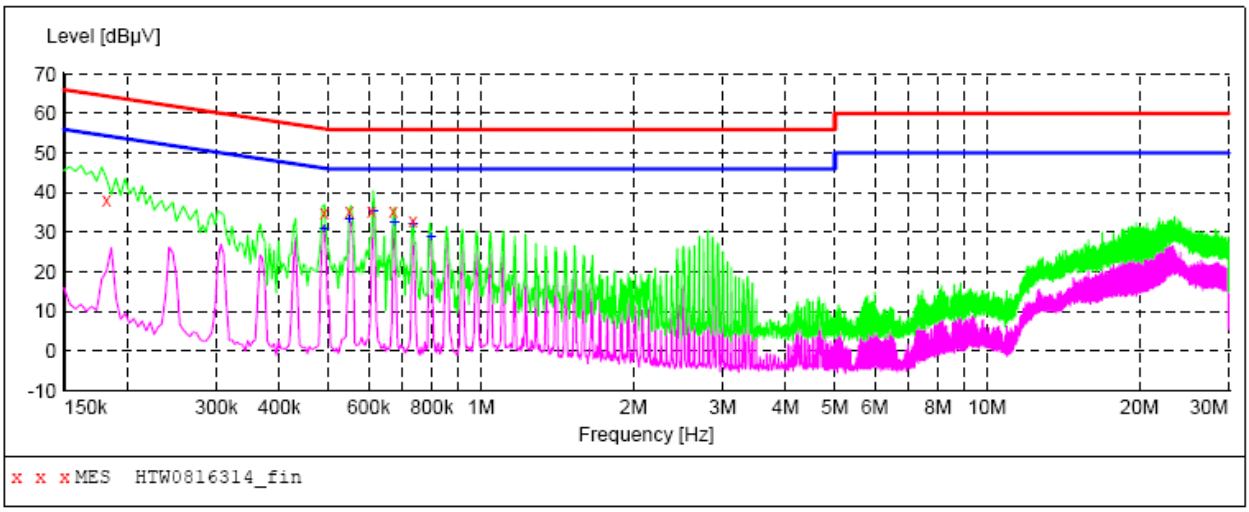
| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.430000 | 33.00 | 10.1 | 47 | 14.3 | AV | L1 | GND |
| 0.490000 | 35.60 | 10.1 | 46 | 10.6 | AV | L1 | GND |
| 0.549500 | 34.50 | 10.1 | 46 | 11.5 | AV | L1 | GND |
| 0.612500 | 33.40 | 10.1 | 46 | 12.6 | AV | L1 | GND |
| 0.675500 | 29.90 | 10.1 | 46 | 16.1 | AV | L1 | GND |
| 0.738500 | 24.40 | 10.1 | 46 | 21.6 | AV | L1 | GND |

***Shenzhen Huatongwei International Inspection CO.,Ltd***

***Voltage Mains Test EN55022 CLASS B***

EUT: Gigabit Ethernet Switch M/N:TEG1216T
Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition: Running
Test Site: 3# SHIELDED ROOM
Operator: SAM
Test Specification: AC 230V/50Hz
Comment:
Start of Test: 8/16/2007 / 9:55:14AM

***SCAN TABLE: "Voltage (9K-30M)FIN"***
Short Description: 150K-30M Voltage




***MEASUREMENT RESULT: "HTW0816314_fin"***

8/16/2007 9:57AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.182000 | 38.00 | 10.0 | 64 | 26.4 | QP | N | GND |
| 0.490000 | 35.00 | 10.1 | 56 | 21.2 | QP | N | GND |
| 0.549500 | 35.30 | 10.1 | 56 | 20.7 | QP | N | GND |
| 0.608000 | 35.40 | 10.1 | 56 | 20.6 | QP | N | GND |
| 0.671000 | 35.30 | 10.1 | 56 | 20.7 | QP | N | GND |
| 0.734000 | 33.00 | 10.1 | 56 | 23.0 | QP | N | GND |

***MEASUREMENT RESULT: "HTW0816314_fin2"***

8/16/2007 9:57AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 0.490000 | 31.00 | 10.1 | 46 | 15.2 | AV | N | GND |
| 0.549500 | 33.40 | 10.1 | 46 | 12.6 | AV | N | GND |
| 0.612500 | 35.20 | 10.1 | 46 | 10.8 | AV | N | GND |
| 0.675500 | 32.60 | 10.1 | 46 | 13.4 | AV | N | GND |
| 0.734000 | 31.90 | 10.1 | 46 | 14.1 | AV | N | GND |
| 0.797000 | 28.80 | 10.1 | 46 | 17.2 | AV | N | GND |

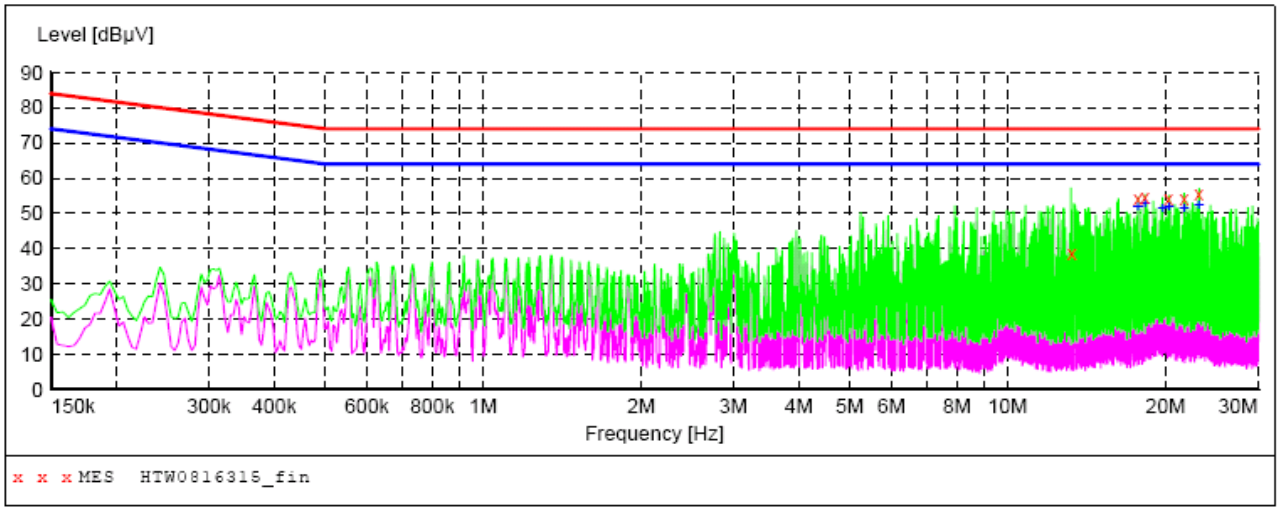
***Shenzhen Huatongwei International Inspection CO.,Ltd***

***Voltage Mains Test EN55022 CLASS B T***

```
EUT:                    Gigabit Ethernet Switch M/N:TEG1216T
Manufacturer:           SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition:    Running
Test Site:              3# SHIELDED ROOM
Operator:               SAM
Test Specification:     AC 230V/50Hz
Comment:
Start of Test:          8/16/2007 / 10:43:22AM
```

***SCAN TABLE: "EN 22 T Voltage FIN"***

```
  Short Description:            150K-30MHz Voltage
```




***MEASUREMENT RESULT: "HTW0816315_fin"***

8/16/2007 10:46AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 13.238000 | 38.80 | 20.7 | 74 | 35.2 | QP | ??? | GND |
| 17.694000 | 54.20 | 20.7 | 74 | 19.8 | QP | ??? | GND |
| 18.242000 | 54.70 | 20.7 | 74 | 19.3 | QP | ??? | GND |
| 20.258000 | 54.10 | 20.8 | 74 | 19.9 | QP | ??? | GND |
| 21.662000 | 54.40 | 20.8 | 74 | 19.6 | QP | ??? | GND |
| 23.130000 | 55.50 | 20.8 | 74 | 18.5 | QP | ??? | GND |

***MEASUREMENT RESULT: "HTW0816315_fin2"***

8/16/2007 10:46AM

| Frequency MHz | Level dBµV | Transd dB | Limit dBµV | Margin dB | Detector | Line | PE |
|---|---|---|---|---|---|---|---|
| 17.694000 | 52.10 | 20.7 | 64 | 11.9 | AV | ??? | GND |
| 18.242000 | 52.70 | 20.7 | 64 | 11.3 | AV | ??? | GND |
| 19.710000 | 51.60 | 20.8 | 64 | 12.4 | AV | ??? | GND |
| 20.258000 | 51.90 | 20.8 | 64 | 12.1 | AV | ??? | GND |
| 21.662000 | 51.40 | 20.8 | 64 | 12.6 | AV | ??? | GND |
| 23.130000 | 52.30 | 20.8 | 64 | 11.7 | AV | ??? | GND |

## 4.3. Harmonic current

For test instruments and accessories used see section 3.6.

**Description of the test location**

Test location: Shielded room No. 2

**Limits of Harmonic Current**

Test configuration and procedure see clause 7.1 of standard EN 61000-3-2: 2006.

### 4.3.1. Description of the test set-up

4.3.1.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum emanating results are recorded.

4.3.1.2. Photo of the test set-up

**Test result**

The requirements are **Fulfilled**

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

# Test Report of HTW

| | |
|---|---|
| Standard used: | EN/IEC 61000-3-2 (2006) Quasi-stationary - Equipment class A |
| Observation time: | 150s |
| Windows width: | 10 periods - (EN/IEC 61000-4-7 Edition 2002) |
| Customer: | SHENZHEN TENDA TECHNOLOGY CO.,LTD |
| Mains supply voltage: | AC 230V 50Hz |
| E. U. T.: | Gigabit Ethernet Switch |
| | M/N: TEG1216T |
| Date of test | 18:57 16.Aug 2007 |
| Operator: | Byron |

| **Test Result** | |
|---|---|
| E. U. T.: | PASS |
| Power Source: | PASS |

## E. U. T. Result

### *Check harmonics 2..40 [exception odd 21..39]:*

| | |
|---|---|
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 100%:** | |
| Order (n): | None |

### *Check odd harmonics 21..39:*

| | |
|---|---|
| **All Partial Odd Harmonics below partial limits.** | |
| **Harmonic(s) > 150%:** | |
| Order (n): | None |
| **Harmonic(s) with average > 150%:** | |
| Order (n): | None |

## Power Source Result

| | |
|---|---|
| **First dataset out of limit:** | |
| DS (time): | None |
| **Harmonic(s) out of limit:** | |
| Order (n): | None |

## *Average harmonic current results*

| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 54.493E-3 | 100.000 | | |
| 2 | 2.272E-3 | 4.170 | 1.08 | PASS |
| 3 | 49.692E-3 | 91.190 | 2.30 | PASS |
| 4 | 2.326E-3 | 4.269 | 430.00E-3 | PASS |
| 5 | 47.824E-3 | 87.761 | 1.14 | PASS |
| 6 | 2.109E-3 | 3.870 | 300.00E-3 | PASS |
| 7 | 45.296E-3 | 83.123 | 770.00E-3 | PASS |
| 8 | 2.117E-3 | 3.885 | 230.00E-3 | PASS |
| 9 | 42.032E-3 | 77.133 | 400.00E-3 | PASS |
| 10 | 1.852E-3 | 3.398 | 184.00E-3 | PASS |
| 11 | 38.253E-3 | 70.198 | 330.00E-3 | PASS |
| 12 | 1.684E-3 | 3.091 | 153.33E-3 | PASS |
| 13 | 34.034E-3 | 62.456 | 210.00E-3 | PASS |
| 14 | 1.568E-3 | 2.878 | 131.43E-3 | PASS |
| 15 | 29.554E-3 | 54.235 | 150.00E-3 | PASS |
| 16 | 1.269E-3 | 2.328 | 115.00E-3 | PASS |
| 17 | 24.989E-3 | 45.857 | 132.35E-3 | PASS |
| 18 | 1.079E-3 | 1.981 | 102.22E-3 | PASS |
| 19 | 20.497E-3 | 37.614 | 118.42E-3 | PASS |
| 20 | 959.245E-6 | 1.760 | 92.00E-3 | PASS |
| 21 | 16.221E-3 | 29.768 | 160.71E-3 | PASS |
| 22 | 729.223E-6 | 1.338 | 83.64E-3 | PASS |
| 23 | 12.281E-3 | 22.537 | 146.74E-3 | PASS |
| 24 | 673.110E-6 | 1.235 | 76.66E-3 | PASS |
| 25 | 8.788E-3 | 16.127 | 135.00E-3 | PASS |
| 26 | 530.470E-6 | 0.973 | 70.77E-3 | PASS |
| 27 | 5.801E-3 | 10.645 | 124.99E-3 | PASS |
| 28 | 397.895E-6 | 0.730 | 65.71E-3 | PASS |
| 29 | 3.409E-3 | 6.256 | 116.39E-3 | PASS |
| 30 | 318.474E-6 | 0.584 | 61.33E-3 | PASS |
| 31 | 1.731E-3 | 3.176 | 108.87E-3 | PASS |
| 32 | 286.089E-6 | 0.525 | 57.50E-3 | PASS |
| 33 | 1.200E-3 | 2.202 | 102.27E-3 | PASS |
| 34 | 273.773E-6 | 0.502 | 54.12E-3 | PASS |
| 35 | 1.571E-3 | 2.883 | 96.44E-3 | PASS |
| 36 | 235.347E-6 | 0.432 | 51.11E-3 | PASS |
| 37 | 1.910E-3 | 3.505 | 91.21E-3 | PASS |
| 38 | 224.460E-6 | 0.412 | 48.42E-3 | PASS |
| 39 | 2.007E-3 | 3.682 | 86.53E-3 | PASS |
| 40 | 205.028E-6 | 0.376 | 46.00E-3 | PASS |

## *Maximum harmonic current results*

| Hn | Ieff [A] | Ieff [%] | Limit [A] | Result |
|---|---|---|---|---|
| 1 | 54.696E-3 | 100.000 | | |
| 2 | 5.222E-3 | 9.547 | 1.62 | PASS |
| 3 | 49.893E-3 | 91.220 | 3.45 | PASS |
| 4 | 4.637E-3 | 8.477 | 645.00E-3 | PASS |
| 5 | 48.030E-3 | 87.814 | 1.71 | PASS |
| 6 | 4.864E-3 | 8.893 | 450.00E-3 | PASS |
| 7 | 45.485E-3 | 83.160 | 1.15 | PASS |
| 8 | 4.032E-3 | 7.372 | 345.00E-3 | PASS |
| 9 | 42.179E-3 | 77.115 | 600.00E-3 | PASS |
| 10 | 3.984E-3 | 7.285 | 276.00E-3 | PASS |
| 11 | 38.382E-3 | 70.173 | 495.00E-3 | PASS |
| 12 | 3.437E-3 | 6.284 | 229.99E-3 | PASS |
| 13 | 34.136E-3 | 62.411 | 315.00E-3 | PASS |
| 14 | 2.789E-3 | 5.098 | 197.15E-3 | PASS |
| 15 | 29.661E-3 | 54.229 | 225.00E-3 | PASS |
| 16 | 2.669E-3 | 4.880 | 172.50E-3 | PASS |
| 17 | 25.097E-3 | 45.884 | 198.52E-3 | PASS |
| 18 | 2.118E-3 | 3.872 | 153.33E-3 | PASS |
| 19 | 20.590E-3 | 37.644 | 177.63E-3 | PASS |
| 20 | 1.786E-3 | 3.266 | 138.00E-3 | PASS |
| 21 | 16.314E-3 | 29.827 | 160.71E-3 | PASS |
| 22 | 1.533E-3 | 2.803 | 125.46E-3 | PASS |
| 23 | 12.397E-3 | 22.666 | 146.74E-3 | PASS |
| 24 | 1.212E-3 | 2.216 | 114.99E-3 | PASS |
| 25 | 8.920E-3 | 16.309 | 135.00E-3 | PASS |
| 26 | 887.997E-6 | 1.624 | 106.16E-3 | PASS |
| 27 | 5.898E-3 | 10.784 | 124.99E-3 | PASS |
| 28 | 702.267E-6 | 1.284 | 98.57E-3 | PASS |
| 29 | 3.467E-3 | 6.340 | 116.39E-3 | PASS |
| 30 | 713.160E-6 | 1.304 | 92.00E-3 | PASS |
| 31 | 1.817E-3 | 3.322 | 108.87E-3 | PASS |
| 32 | 601.597E-6 | 1.100 | 86.25E-3 | PASS |
| 33 | 1.258E-3 | 2.300 | 102.27E-3 | PASS |
| 34 | 489.035E-6 | 0.894 | 81.18E-3 | PASS |
| 35 | 1.637E-3 | 2.994 | 96.44E-3 | PASS |
| 36 | 320.775E-6 | 0.586 | 76.66E-3 | PASS |
| 37 | 1.990E-3 | 3.639 | 91.21E-3 | PASS |
| 38 | 307.115E-6 | 0.561 | 72.63E-3 | PASS |
| 39 | 2.046E-3 | 3.741 | 86.53E-3 | PASS |
| 40 | 249.691E-6 | 0.457 | 69.00E-3 | PASS |

## *Maximum harmonic voltage results*

| Hn | Ueff [V] | Ueff [%] | Limit [%] | Result |
|---|---|---|---|---|
| 1 | 229.96 | 99.983 | | |
| 2 | 165.29E-3 | 0.072 | 0.2 | PASS |
| 3 | 406.40E-3 | 0.177 | 0.9 | PASS |
| 4 | 62.97E-3 | 0.027 | 0.2 | PASS |
| 5 | 18.97E-3 | 0.008 | 0.4 | PASS |
| 6 | 62.04E-3 | 0.027 | 0.2 | PASS |
| 7 | 43.98E-3 | 0.019 | 0.3 | PASS |
| 8 | 30.21E-3 | 0.013 | 0.2 | PASS |
| 9 | 18.59E-3 | 0.008 | 0.2 | PASS |
| 10 | 22.06E-3 | 0.010 | 0.2 | PASS |
| 11 | 26.76E-3 | 0.012 | 0.1 | PASS |
| 12 | 18.15E-3 | 0.008 | 0.1 | PASS |
| 13 | 32.91E-3 | 0.014 | 0.1 | PASS |
| 14 | 15.98E-3 | 0.007 | 0.1 | PASS |
| 15 | 25.31E-3 | 0.011 | 0.1 | PASS |
| 16 | 20.01E-3 | 0.009 | 0.1 | PASS |
| 17 | 34.29E-3 | 0.015 | 0.1 | PASS |
| 18 | 17.48E-3 | 0.008 | 0.1 | PASS |
| 19 | 22.73E-3 | 0.010 | 0.1 | PASS |
| 20 | 17.54E-3 | 0.008 | 0.1 | PASS |
| 21 | 29.42E-3 | 0.013 | 0.1 | PASS |
| 22 | 14.39E-3 | 0.006 | 0.1 | PASS |
| 23 | 20.24E-3 | 0.009 | 0.1 | PASS |
| 24 | 11.46E-3 | 0.005 | 0.1 | PASS |
| 25 | 22.38E-3 | 0.010 | 0.1 | PASS |
| 26 | 16.05E-3 | 0.007 | 0.1 | PASS |
| 27 | 12.01E-3 | 0.005 | 0.1 | PASS |
| 28 | 15.31E-3 | 0.007 | 0.1 | PASS |
| 29 | 13.73E-3 | 0.006 | 0.1 | PASS |
| 30 | 14.71E-3 | 0.006 | 0.1 | PASS |
| 31 | 8.99E-3 | 0.004 | 0.1 | PASS |
| 32 | 12.48E-3 | 0.005 | 0.1 | PASS |
| 33 | 15.56E-3 | 0.007 | 0.1 | PASS |
| 34 | 12.42E-3 | 0.005 | 0.1 | PASS |
| 35 | 10.54E-3 | 0.005 | 0.1 | PASS |
| 36 | 8.89E-3 | 0.004 | 0.1 | PASS |
| 37 | 11.64E-3 | 0.005 | 0.1 | PASS |
| 38 | 9.58E-3 | 0.004 | 0.1 | PASS |
| 39 | 11.62E-3 | 0.005 | 0.1 | PASS |
| 40 | 11.58E-3 | 0.005 | 0.1 | PASS |

## 4.4. Voltage Fluctuation and Flicker

For test instruments and accessories used see section 3.6.

### 4.4.1. Description of the test location

Test location: Shielded room No. 2

### 4.4.2. Limits of voltage fluctuation and flicker

Test configuration and procedure see clause 5 of standard EN 61000-3-3: 1995+A1: 2001+A2: 2005.

### 4.4.3. Description of the test set-up

4.4.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum emanation are recorded.

4.4.3.2. Photo of the test set-up

### 4.4.4. Test result

The requirements are **Fulfilled**

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

# Test Report of HTW

| | |
|---|---|
| Standard used: | EN 61000-3-3 Flicker |
| Short time (Pst): | 10 min |
| Observation time: | 120 min (12 Flicker measurement) |
| Customer: | SHENZHEN TENDA TECHNOLOGY CO.,LTD |
| Flickermeter: | AC 230V / 50Hz |
| E. U. T.: | Gigabit Ethernet Switch<br>M/N: TEG1216T |
| Date of test: | 18:51 16.Aug 2007 |
| Tester: | Byron |

| | |
|---|---|
| Test Result | PASS |

## Maximum Flicker results

| | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| Plt | 0.028 | 0.65 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.099 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

## Detail Flicker data

| Flicker measurement 1 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.096 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 2 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.096 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 3 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.095 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 4 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.094 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 5 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.099 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 6 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.093 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 7 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.096 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 8 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.091 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 9 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.089 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 10 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.092 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 11 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.096 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

| Flicker measurement 12 | EUT values | Limit | Result |
|---|---|---|---|
| Pst | 0.028 | 1.00 | PASS |
| dc [%] | 0.000 | 3.30 | PASS |
| dmax [%] | 0.092 | 4.00 | PASS |
| dt [s] | 0.000 | 0.50 | PASS |

## 4.5. Electrostatic discharge

For test instruments and accessories used see section 3.6.

### 4.5.1. Description of the test location and date

Test location: Shielded room No. 1

Date of test: Aug 20, 2007

Operator: Byron

### 4.5.2. Severity levels of electrostatic discharge

4.5.2.1. Severity level: Contact Discharge at ±4KV Air Discharge at±8KV

| Level | Test Voltage Contact Discharge (KV) | Test Voltage Air Discharge (KV) |
|---|---|---|
| 1 | 2 | 2 |
| 2 | 4 | 4 |
| 3 | 6 | 8 |
| 4 | 8 | 15 |
| X | Special | Special |

4.5.2.2. Performance criterion: **B**

### 4.5.3. Description of the test set-up

4.5.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.5.3.2. Photo of the test set-up

#### 4.5.4. Test specification:

| | | | |
|---|---|---|---|
| Contact discharge voltage: | ■ 2 kV | ■ 4 kV | ■ 6kV |
| Number of discharges: | ■ ≥ 10 | □ ≥ 25 | |
| Air discharge voltage: | ■ 2 kV | ■ 4 kV | ■ 8 kV |
| Number of discharges: | ■ ≥ 10 | □ ≥ 25 | |
| Type of discharge: | Direct discharge | ■ Air discharge<br>■ Contact discharge | |
| | Indirect discharge | ■ Contact discharge | |
| Polarity: | ■ Positive | ■ Negative | |
| Discharge location: | ■ see photo documentation of the test set-up | | |
| | ■ all external locations accessible by hand | | |
| | ■ horizontal plate (HCP) | | |
| | ■ vertical coupling plate (VCP) | | |

#### 4.5.5. Test result

The requirements are **Fulfilled** Performance Criterion: **B**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

## 4.6. Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 3.6.

#### 4.6.1. Description of the test location and date

Test location: Shielded room No. 4

Date of test: Aug 20, 2007

Operator: Byron

#### 4.6.2. Severity levels of radiated, radio-frequency, electromagnetic field

4.6.2.1. Severity level: 3 V/m

| Level | Field Strength (V/m) |
|---|---|
| 1. | 1 |
| 2. | 3 |
| 3. | 10 |
| X | Special |

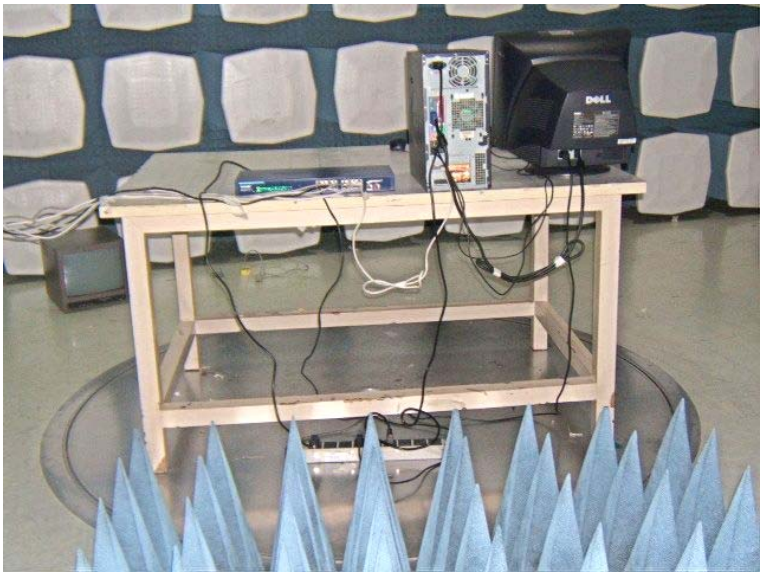
4.6.2.2. Performance criterion**: A**

### 4.6.3. Description of the test set-up

4.6.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.6.3.2. Photo of the test set-up



### 4.6.4. Test specification:

| | |
|---|---|
| Frequency range: | ■ 80 MHz to 2000 MHz |
| Field strength: | ■ 3 V/m ■ 10V/m |
| EUT - antenna separation: | ■ 3 m |
| Modulation: | ■ AM: 80 %<br>■ sinusoidal 1000Hz |
| Frequency step: | ■ 1 % with 3s dwell time |
| Antenna polarisation: | ■ horizontal ■ vertical |

### 4.6.5. Test result

The requirements are **Fulfilled** Performance Criterion: **A**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

## 4.7. Electrical fast transients / Burst

For test instruments and accessories used see section 3.6.

### 4.7.1. Description of the test location and date

Test location: Shielded room No. 1

Date of test: Aug 20, 2007

Operator: Byron

### 4.7.2. Severity levels of electrical fast transients / Burst

4.7.2.1. Severity level: ±1000V for AC power supply lines

| Open circuit output test voltage and repetition rate of the impulses | | | | |
|---|---|---|---|---|
| Level | On power port, PE | | On I/O signal, data and control ports | |
| | V peak(KV) | Repetition rate (KHz) | Voltage peak | Repetition rate (KHz) |
| 1. | 0.5 | 5 or 100 | 0.25 | 5 or 100 |
| 2. | 1 | 5 or 100 | 0.5 | 5 or 100 |
| 3. | 2 | 5 or 100 | 1 | 5 or 100 |
| 4. | 4 | 5 or 100 | 2 | 5 or 100 |
| X | Special | Special | Special | Special |

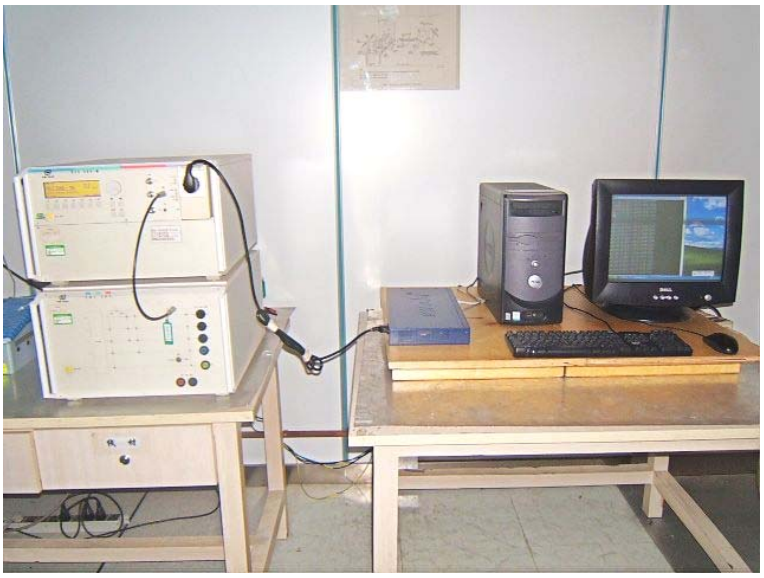
4.7.2.2. Performance criterion: **B**

### 4.7.3. Description of the test set-up

4.7.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.7.3.2. Photo of the test set-up



### 4.7.4. Test specification:

| | | | |
|---|---|---|---|
| Coupling network: | ☐ 0.5 kV | ■ 1 kV | ☐ 2 kV |
| Coupling clamp: | ■ 0.5 kV | ☐ 1 kV | |
| Burst frequency: | ■ 5.0 kHz | | |
| Coupling duration: | ■ ≥ 60 s | | |
| Polarity: | ■ positive | ■ negative | |

### 4.7.5. Coupling points

| | | |
|---|---|---|
| Cable description: | AC power line : L, N, PE, L+N, L+PE, N+PE, L+N+PE<br>Signal Line | |
| Screening: | o screened | ■ unscreened |
| Status: | o passive | ■ active |
| Signal transmission: | ■ analogue | o digital |
| Length: | ■ 1.0 m | |

### 4.7.6. Test result

The requirements are **Fulfilled** Performance Criterion: **B**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

## 4.8. Surge

For test instruments and accessories used see section 3.6.

### 4.8.1. Description of the test location and date

Test location: Shielded room No. 1

Date of test: Aug 20, 2007

Operator: Byron

### 4.8.2. Severity levels of surge

4.8.2.1. Severity level: Line to line: ±1KV Line to earth: ±2KV

| Level | Test Voltage (KV) |
|---|---|
| 1 | 0.5 |
| 2 | 1.0 |
| 3 | 2.0 |
| 4 | 4.0 |
| * | Special |

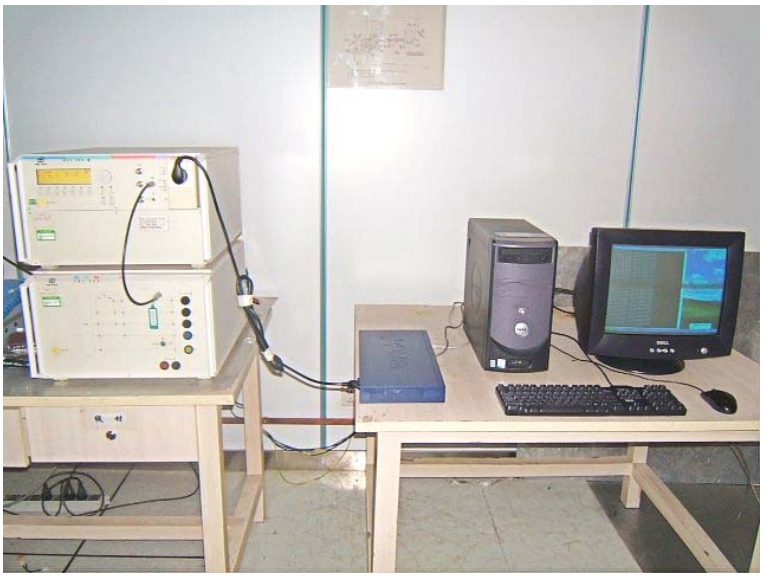
4.8.2.2. Performance Criterion: **B**

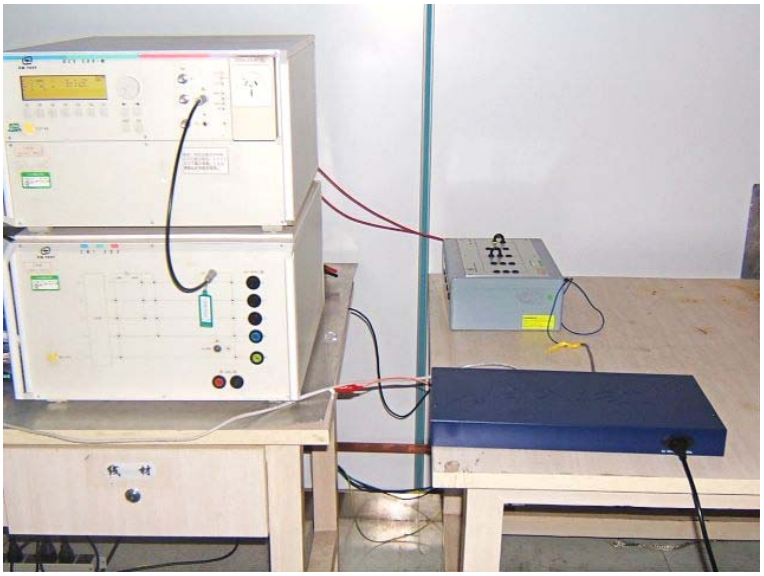
### 4.8.3. Description of the test set-up

4.8.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.8.3.2. Photo of the test set-up





### 4.8.4. Test specification:

| | | | | |
|---|---|---|---|---|
| Pulse amplitude-Power line sym.: Source impedance: 2 Ω + 18µF | ☐ 0.5 kV | ■ 1 kV | ☐ 2 kV | ☐ 4 kV |
| Pulse amplitude-Power line unsym: Source impedance: 12 Ω + 9µF | ☐ 0.5 kV | ☐ 1 kV | ■ 2 kV | ☐ 4 kV |
| Signal Line (indoor) | ■ 0.5 kV | | | |
| Number of surges: | ■ 5 Surges/Phase angle | | | |
| Phase angle: | ■ 0 ° | ■ 90 ° | ■ 180 ° | ■ 270 ° |
| Repetition rate: | ■ 60 s | | | |
| Polarity: | ■ positive | | ■ negative | |

### 4.8.5. Coupling points

| | | |
|---|---|---|
| Cable description: | AC power line: L-N, L-PE, N-PE<br>Signal Line | |
| Screening: | o screened | ■ unscreened |
| Status: | o passive | ■ active |
| Signal transmission: | ■ analogue | o digital |
| Length: | ■ 1.0 m | |

### 4.8.6. Test result

The requirements are **Fulfilled** Performance Criterion: **B**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

## 4.9. Conducted disturbances induced by radio-frequency fields

For test instruments and accessories used see section 3.6.

### 4.9.1. Description of the test location and date

Test location: Shielded room No. 2

Date of test: Aug 20, 2007

Operator: Byron

### 4.9.2. Severity levels of conducted disturbances induced by radio-frequency fields discharge

4.9.2.1. Severity Level: 3V

| Level | Field Strength （V） |
|---|---|
| 1. | 1 |
| 2. | 3 |
| 3. | 10 |
| X | Special |

4.9.2.2. Performance Criterion: **A**

### 4.9.3. Description of the test set-up

4.9.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.9.3.2. Photo of the test set-up

### 4.9.4. Test specification:

| | |
|---|---|
| Frequency range: | ■ 0.15 MHz to 80 MHz |
| Test voltage: | ■ 3 V |
| Test Line: | AC mains<br>Signal Line |
| Modulation: | ■ AM: 80 %<br>■ sinusoidal 1000Hz |
| Frequency step: | ■ 1 % with 3s dwell time |

### 4.9.5. Coupling points

Cable description : AC power line
Signal Line

| | | |
|---|---|---|
| Screening: | o screened | ■ unscreened |
| Status: | o passive | ■ active |
| Signal transmission: | ■ analogue | o digital |
| Length: | ■ 1.0 m | |

### 4.9.6. Test result

The requirements are **Fulfilled** Performance Criterion: **A**

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

## 4.10. Magnetic Field Immunity

The test is not applicable.

## 4.11. Voltage Dips and Interruptions

For test instruments and accessories used see section 3.6.

### 4.11.1. Description of the test location and date

Test location: Shielded room No. 1

Date of test: Aug 20, 2007

Operator: Byron

### 4.11.2. Severity levels of voltage dips and interruptions

| Test Level (%Ut) | Voltage Dip And Short Interruptions (%Ut) | Performance Criterion | Duration (In Period) |
|---|---|---|---|
| 0 | 100 | B | 0.5 |
| 70 | 30 | C | 25 |
| 0 | 100 | C | 250 |

### 4.11.3. Description of the test set-up

4.11.3.1. Operating Condition

The EUT is running with PC system during the test, and the results of the maximum susceptive results are recorded.

4.11.3.2. Photo of the test set-up

### 4.11.4. Test specification:

| | |
|---|---|
| Nominal Mains Voltage ($V_N$): | ■ 230 V AC |
| Number of voltage fluctuations: | ■ 3 |
| Level of reduction(dip) / duration: | ■ 100 % / 10ms ■ 30 % / 500ms |
| Nominal Mains Voltage ($V_N$): | ■ 230 V AC |
| Number of Interruptions: | ■ 3 |
| Duration of the Interruption: | ■ 5000 ms |

### 4.11.5. Test result

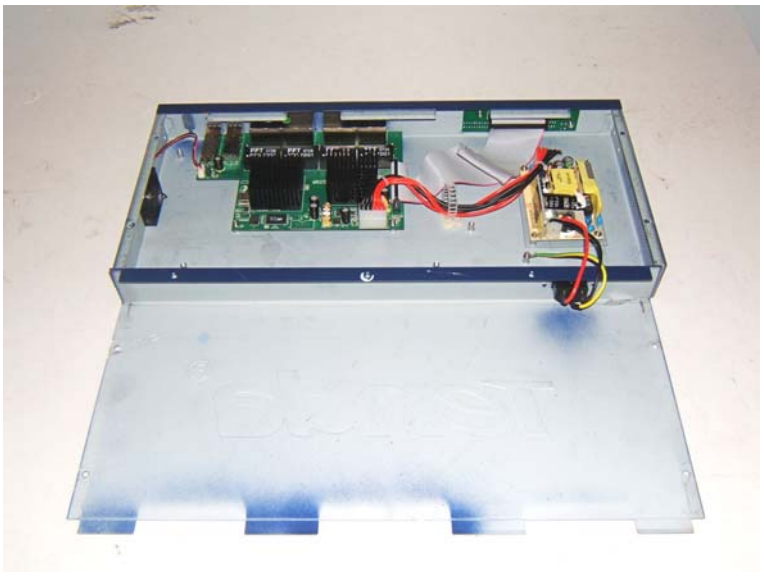
The requirements are **Fulfilled**
Performance Criterion **See section 4.11.2**

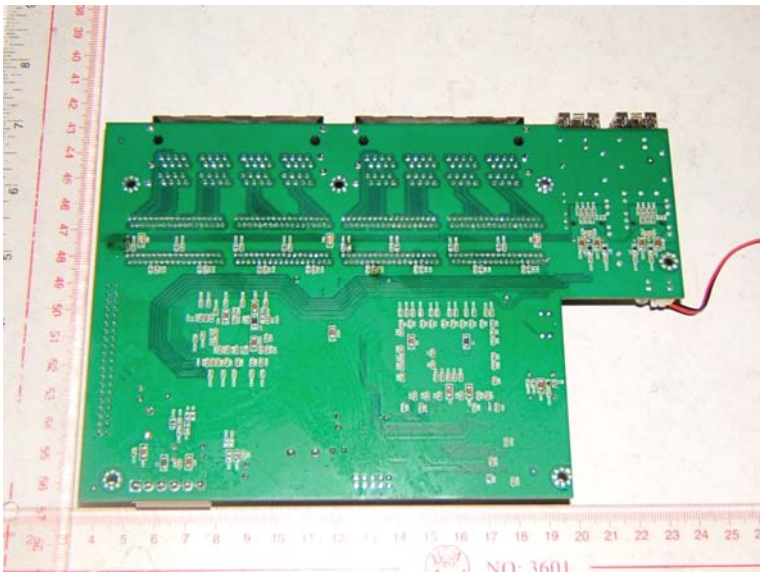
**Remarks:** During the test no deviation was detected to the selected operation mode(s).

# 5. External and Internal Photos of the EUT

## 5.1. External photos of the EUT

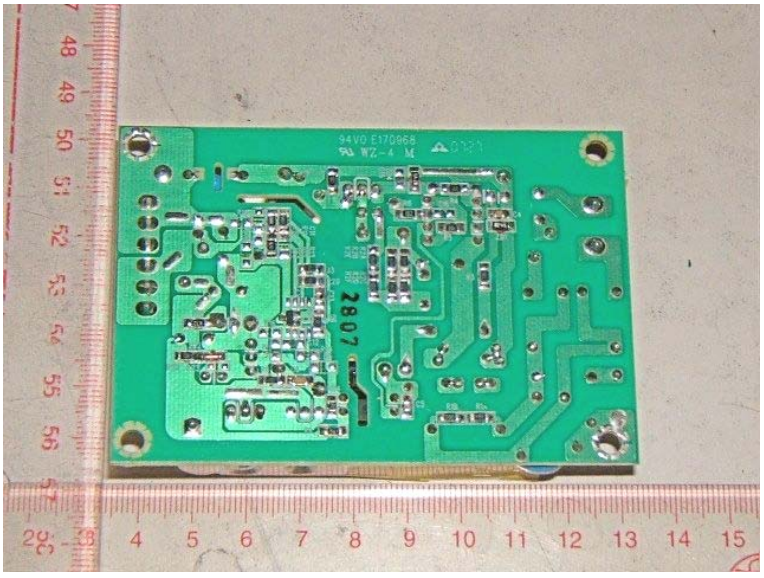
## 5.2. Internal photos of the EUT

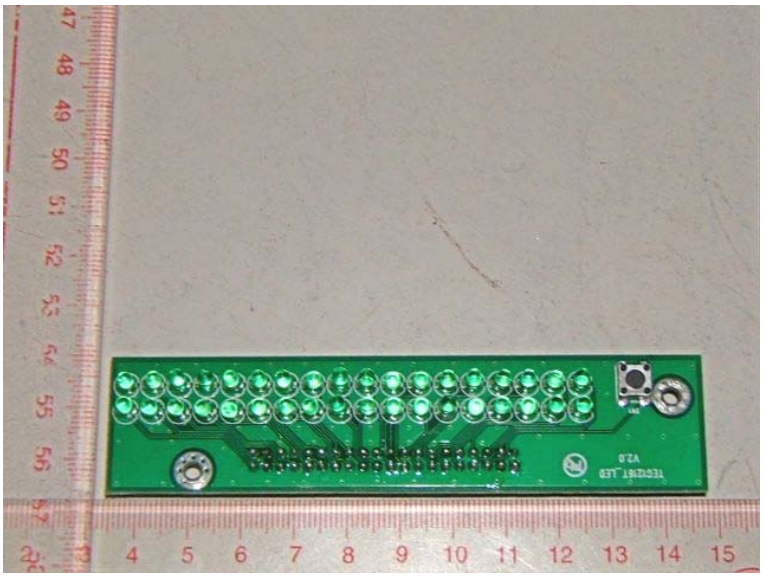


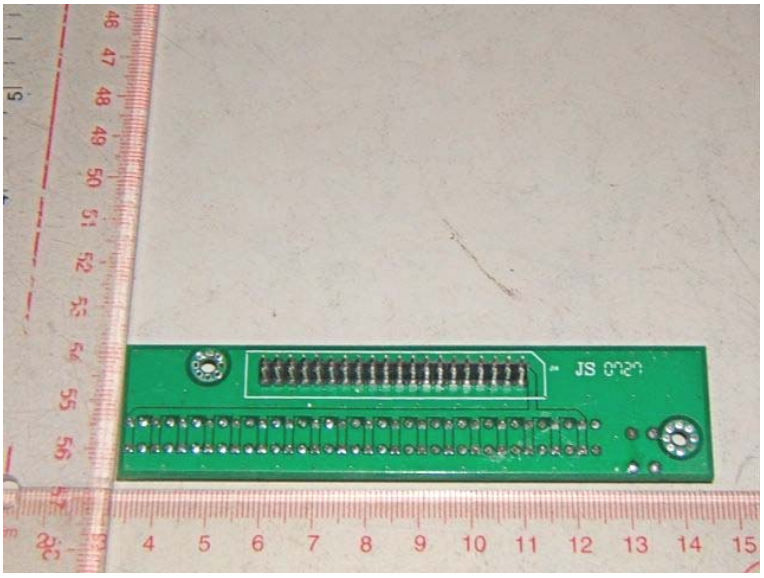



DVE
DASH 2 B-5
90E260421-00F


Bi-Sonic
Bi-Sonic Technology Corp.
DC BRUSHLESS FAN MOTOR
MODEL BP401005H
DC 5V 0.23A


94V0 E170968
WZ-4 M
2807





**.....End of Report.....**