



SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION Co., Ltd.

## Declaration of Conformity

**Certification number: CTE07070014**

**Issue date: Aug 08, 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**

**EN 61000-3-2: 2006**

**EN 61000-3-3: 1995+A1: 2001+A2: 2005**

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

**Applicant:** SHENZHEN TENDA TECHNOLOGY CO., LTD  
3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen  
518108, China

**Manufacturer:** SHENZHEN TENDA TECHNOLOGY CO., LTD  
3F, Moso Technology Park, xili Town, Nanshan District, Shenzhen  
518108, China

Equipment under test: **Gigabit Ethernet Switch**

**Model/Type reference:** TEG1008

**Listed Model:** /

**Laboratory Name:** Shenzhen Huatongwei International Inspection Co., Ltd  
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China  
Tel: 86-755-26748058 Fax: 86-755-26748005  
Http: //www.szhtw.com.cn E-mail: master@szhtw.com.cn

**Note:**

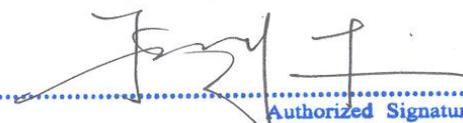
The certification is only valid for the equipment and configuration described, in conjunction with the test data detailed above.

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.



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

**Authorized by:**

  
Authorized Signature(s)





检测  
CNASL1225

partner

**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.**.....: **TRE07070014**

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 08, 2007

*Mellen Lee*  
*Byron Lai*  
*Jimmy Li*

**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   
Partial application of Harmonised standards   
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**  
**EN 61000-3-2: 2006**  
**EN 61000-3-3: 1995+A1: 2001+A2: 2005**

**Test Report Form No.**.....: HTWEMCCE\_1A

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF.....: Dated 2006-06

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**Test item description**.....: Gigabit Ethernet Switch

Manufacturer.....: SHENZHEN TENDA TECHNOLOGY CO., LTD

Model/Type reference.....: TEG1008

Listed Models.....: /

Ratings.....: AC9V 50Hz 1.2A 10.8W Load: 7W

Result.....: **Positive**

**EMC -- TEST REPORT**

<b>Test Report No. :</b>	<b>TRE07070014</b>	Aug 08, 2007
		Date of issue

Equipment under Test : Gigabit Ethernet Switch

Model / Type : TEG1008

Listed Models : /

**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

<b>Test Result</b> according to the standards on page 4:	<b>Positive</b>
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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.

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## 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 : Jul 12, 2007

Testing commenced on : Jul 18, 2007

Testing concluded on : Aug 08, 2007

### 2.2. Equipment Under Test

#### Power supply system utilised

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

/

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### 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 susceptibility.

---

Harmonic current..... : According to EN 61000-3-2, searching for the highest disturbance.

---

Voltage fluctuation..... : According to EN 61000-3-3, 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 Cable for EUT
  - Length (m) : 1.8
  - Shield : Unshielded
  - Detachable : Undetachable
  - Power Adapter
    - Manufacture : DVE
    - M/N : DVR-091A2ACUP-4818
- 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 28<sup>th</sup>, 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 EN 55022: 1998+A1: 2006	PASS
Conducted Disturbance	ETSI EN 300 386 V1.3.3: 2006 EN 55022: 1998+A1: 2006	PASS
Harmonic Current	EN 61000-3-2: 2006	PASS
Voltage Fluctuation and Flicker	EN 61000-3-3: 1995+A1: 2001+A2: 2005	PASS
Immunity Measurement		
Electrostatic Discharge	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-2: 2001	PASS
RF Field Strength Susceptibility	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-3: 2006	PASS
Electrical Fast Transient/Burst Test	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-4: 2004	PASS
Surge Test	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-5: 2005	PASS
Conducted Susceptibility Test	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-6: 2006	PASS
Power Frequency Magnetic Field Susceptibility Test	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-8: 2001	N/A
Voltage Dips and Interruptions Test	ETSI EN 300 386 V1.3.3: 2006 EN 61000-4-11: 2004	PASS

Note: "N/A" means not applicable.

The test result PASS and /or FAIL has no relationship with the measurement uncertainty.

### 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 (dB $\mu$ V/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 communication with PC system under LAN 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).

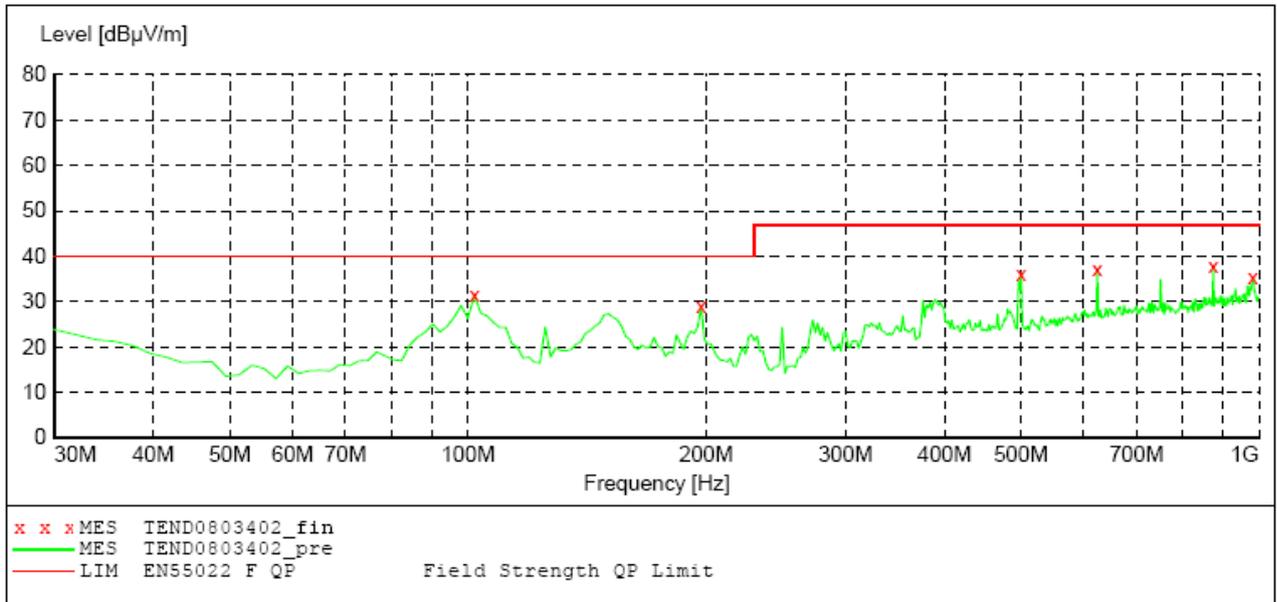
SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD

RADIATED EMISSION EN55022 CLASS B

EUT: Gigabit Ethernet Switch M/N:TEG1008
Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition: Communication
Test Site: 3M CHAMBER
Operator: JACKY
Test Specification: AC 230V/50Hz
Comment:
Start of Test: 8/3/07 / 1:23:59PM

SWEEP TABLE: "test (30M-1G)"

Table with 6 columns: Short Description, Field Strength, Start, Stop, Detector, Meas., IF, Transducer, Frequency, Time, Bandw. Row 1: 30.0 MHz, 1.0 GHz, MaxPeak, Coupled, 120 kHz, HL562 07



MEASUREMENT RESULT: "TEND0803402\_fin"

8/3/07 1:26PM

Table with 9 columns: Frequency MHz, Level dBµV/m, Transd dB, Limit dBµV/m, Margin dB, Det., Height cm, Azimuth deg, Polarization. Contains 6 rows of measurement data.

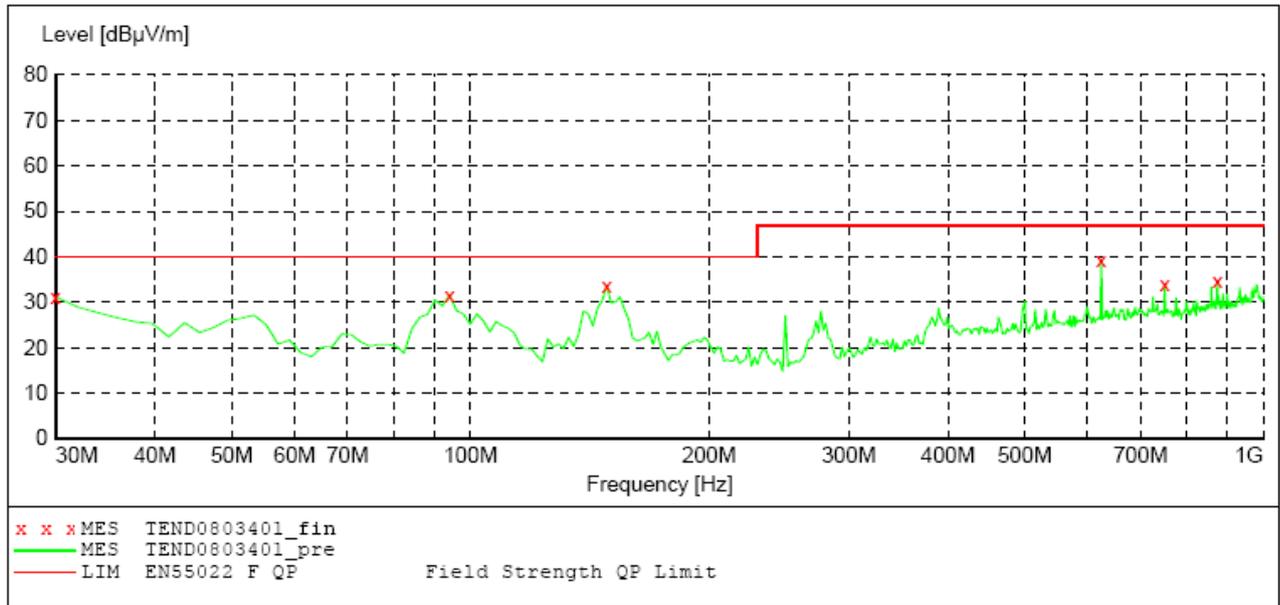
**SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD**

**RADIATED EMISSION EN55022 CLASS B**

EUT: Gigabit Ethernet Switch M/N:TEG1008  
 Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD  
 Operating Condition: Communication  
 Test Site: 3M CHAMBER  
 Operator: JACKY  
 Test Specification: AC 230V/50Hz  
 Comment:  
 Start of Test: 8/3/07 / 1:20:53PM

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

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 07



**MEASUREMENT RESULT: "TEND0803401\_fin"**

8/3/07 1:22PM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	31.20	21.2	40.0	8.8	QP	100.0	197.00	VERTICAL
94.100000	31.60	13.1	40.0	8.4	QP	100.0	267.00	VERTICAL
148.500000	33.60	10.9	40.0	6.4	QP	100.0	34.00	VERTICAL
624.800000	39.40	23.1	47.0	7.6	QP	100.0	150.00	VERTICAL
751.100000	33.90	23.9	47.0	13.1	QP	100.0	289.00	VERTICAL
875.500000	34.60	25.0	47.0	12.4	QP	100.0	242.00	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.

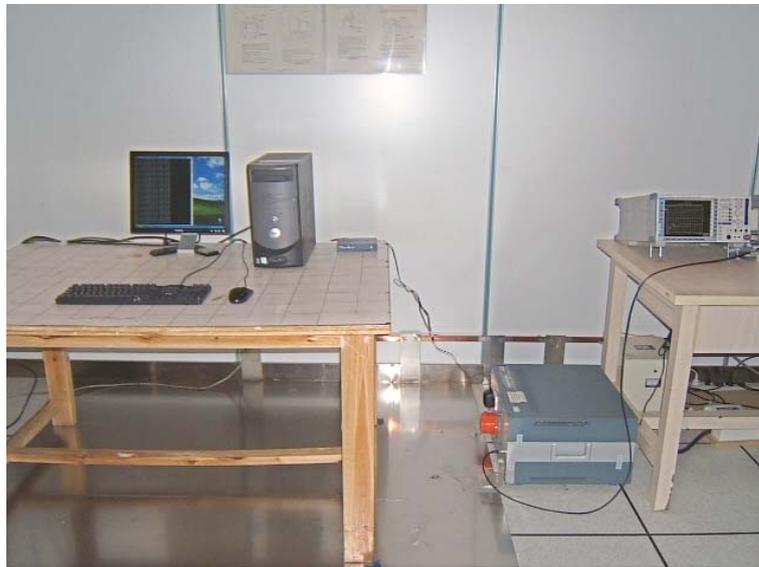
### 4.2.3. Description of the test set-up

#### 4.2.3.1. Operating Condition

The EUT is communication with PC system under LAN 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

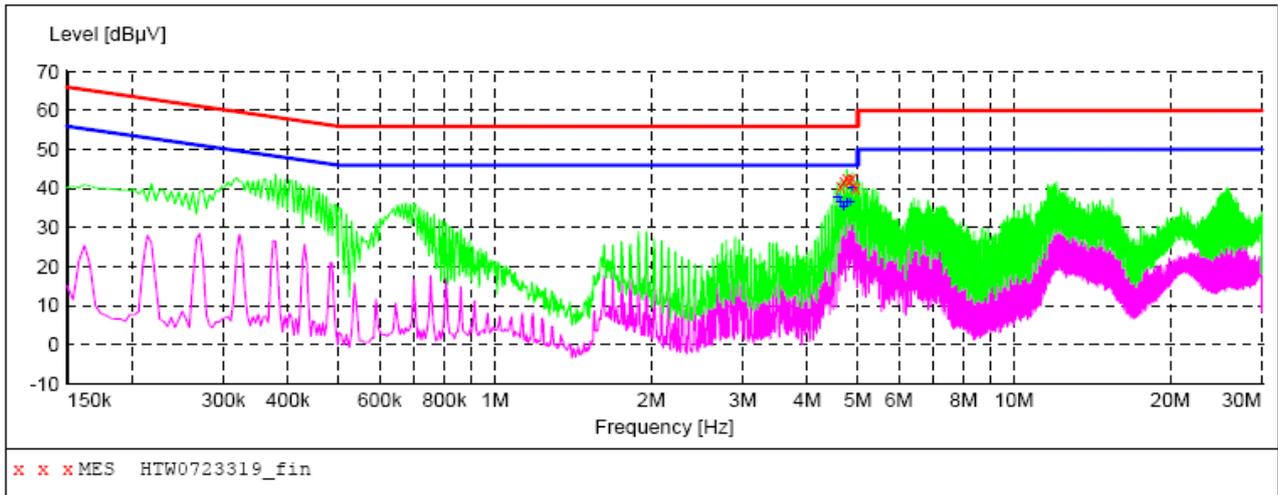
**Remarks:** The limits are kept. For detailed results, please see the following page(s).

Shenzhen Huatongwei International Inspection CO.,Ltd

Voltage Mains Test EN55022 B

EUT: Gigabit Ethernet Switch M/N:TEG1008
Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition: Communication
Test Site: 3# SHIELDED ROOM
Operator: SAM
Test Specification: AC 230V/50Hz
Comment:
Start of Test: 7/23/2007 / 4:20:33PM

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



MEASUREMENT RESULT: "HTW0723319\_fin"

7/23/2007 4:22PM

Table with 8 columns: Frequency MHz, Level dBµV, Transd dB, Limit dBµV, Margin dB, Detector, Line, PE. It lists several frequency measurements between 4.64MHz and 4.95MHz.

MEASUREMENT RESULT: "HTW0723319\_fin2"

7/23/2007 4:22PM

Table with 8 columns: Frequency MHz, Level dBµV, Transd dB, Limit dBµV, Margin dB, Detector, Line, PE. It lists several frequency measurements between 4.57MHz and 4.89MHz.

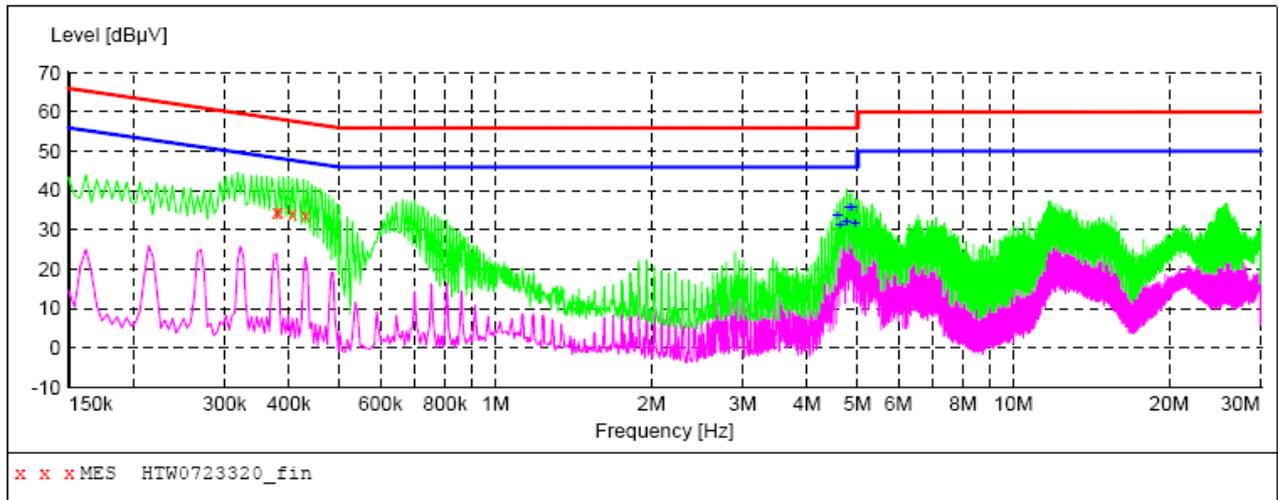
**Shenzhen Huatongwei International Inspection CO.,Ltd**

**Voltage Mains Test EN55022 B**

EUT: Gigabit Ethernet Switch M/N:TEG1008  
 Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD  
 Operating Condition: Communicaion  
 Test Site: 3# SHIELDED ROOM  
 Operator: SAM  
 Test Specification: AC 230V/50Hz  
 Comment:  
 Start of Test: 7/23/2007 / 4:23:13PM

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

Short Description: 150K-30M Voltage



**MEASUREMENT RESULT: "HTW0723320\_fin"**

7/23/2007 4:25PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.378000	34.60	10.1	58	23.7	QP	N	GND
0.382000	34.50	10.1	58	23.7	QP	N	GND
0.406000	34.00	10.1	58	23.7	QP	N	GND
0.430000	33.60	10.1	57	23.7	QP	N	GND

**MEASUREMENT RESULT: "HTW0723320\_fin2"**

7/23/2007 4:25PM

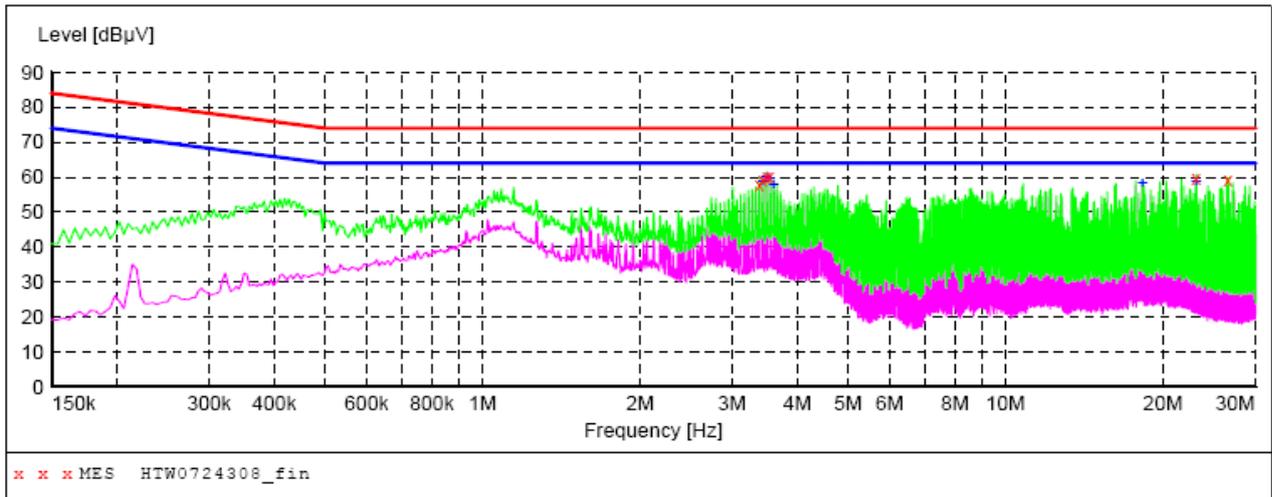
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
4.574000	33.70	10.3	46	12.3	AV	N	GND
4.640000	31.20	10.3	46	14.8	AV	N	GND
4.766000	32.20	10.3	46	13.8	AV	N	GND
4.826000	35.60	10.3	46	10.4	AV	N	GND
4.892000	35.80	10.3	46	10.2	AV	N	GND
4.952000	31.80	10.3	46	14.2	AV	N	GND

Shenzhen Huatongwei International Inspection CO.,Ltd

Voltage Mains Test EN55022 B T

EUT: Gigabit Ethernet Switch M/N:TEG1008
Manufacturer: SHENZHEN TENDA TECHNOLOGY CO.,LTD
Operating Condition: Communication
Test Site: 3# SHIELDED ROOM
Operator: SAM
Test Specification: AC 230V/50Hz
Comment: Ethernet
Start of Test: 7/24/2007 / 10:25:30AM

SCAN TABLE: "EN 22 T Voltage FIN"
Short Description: 150K-30MHz Voltage



MEASUREMENT RESULT: "HTW0724308\_fin"

Table with 8 columns: Frequency MHz, Level dBµV, Transd dB, Limit dBµV, Margin dB, Detector, Line, PE. Contains 6 rows of measurement data.

MEASUREMENT RESULT: "HTW0724308\_fin2"

Table with 8 columns: Frequency MHz, Level dBµV, Transd dB, Limit dBµV, Margin dB, Detector, Line, PE. Contains 6 rows of measurement data.

### 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 communication with PC system under LAN 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:TEG1008
Date of test	10:34 23.Jul 2007
Operator:	Andy

## Test Result

E. U. T.:	PASS
Power Source:	PASS

## E. U. T. Result

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

<b>Harmonic(s) &gt; 150%:</b>	
Order (n):	None
<b>Harmonic(s) with average &gt; 100%:</b>	
Order (n):	None

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

<b>All Partial Odd Harmonics below partial limits.</b>	
<b>Harmonic(s) &gt; 150%:</b>	
Order (n):	None
<b>Harmonic(s) with average &gt; 150%:</b>	
Order (n):	None

## Power Source Result

<b>First dataset out of limit:</b>	
DS (time):	None
<b>Harmonic(s) out of limit:</b>	
Order (n):	None

**Average harmonic current results**

Hn	leff [A]	leff [%]	Limit [A]	Result
1	34.262E-3	100.000		
2	503.528E-6	1.470	1.08	PASS
3	15.290E-3	44.628	2.30	PASS
4	282.972E-6	0.826	430.00E-3	PASS
5	9.417E-3	27.486	1.14	PASS
6	296.066E-6	0.864	300.00E-3	PASS
7	1.011E-3	2.951	770.00E-3	PASS
8	288.885E-6	0.843	230.00E-3	PASS
9	1.263E-3	3.687	400.00E-3	PASS
10	261.590E-6	0.763	184.00E-3	PASS
11	1.381E-3	4.029	330.00E-3	PASS
12	275.577E-6	0.804	153.33E-3	PASS
13	423.699E-6	1.237	210.00E-3	PASS
14	407.390E-6	1.189	131.43E-3	PASS
15	425.753E-6	1.243	150.00E-3	PASS
16	278.252E-6	0.812	115.00E-3	PASS
17	417.903E-6	1.220	132.35E-3	PASS
18	277.869E-6	0.811	102.22E-3	PASS
19	567.046E-6	1.655	118.42E-3	PASS
20	266.168E-6	0.777	92.00E-3	PASS
21	824.874E-6	2.408	160.71E-3	PASS
22	329.266E-6	0.961	83.64E-3	PASS
23	465.280E-6	1.358	146.74E-3	PASS
24	259.338E-6	0.757	76.66E-3	PASS
25	871.563E-6	2.544	135.00E-3	PASS
26	306.774E-6	0.895	70.77E-3	PASS
27	303.931E-6	0.887	124.99E-3	PASS
28	317.394E-6	0.926	65.71E-3	PASS
29	547.691E-6	1.599	116.39E-3	PASS
30	260.471E-6	0.760	61.33E-3	PASS
31	416.699E-6	1.216	108.87E-3	PASS
32	279.476E-6	0.816	57.50E-3	PASS
33	590.065E-6	1.722	102.27E-3	PASS
34	272.373E-6	0.795	54.12E-3	PASS
35	340.631E-6	0.994	96.44E-3	PASS
36	273.327E-6	0.798	51.11E-3	PASS
37	537.205E-6	1.568	91.21E-3	PASS
38	303.600E-6	0.886	48.42E-3	PASS
39	489.441E-6	1.429	86.53E-3	PASS
40	276.552E-6	0.807	46.00E-3	PASS

**Maximum harmonic current results**

Hn	I <sub>eff</sub> [A]	I <sub>eff</sub> [%]	Limit [A]	Result
1	34.507E-3	100.000		
2	595.099E-6	1.725	1.62	PASS
3	15.424E-3	44.698	3.45	PASS
4	315.308E-6	0.914	645.00E-3	PASS
5	9.486E-3	27.490	1.71	PASS
6	335.122E-6	0.971	450.00E-3	PASS
7	1.099E-3	3.185	1.15	PASS
8	341.351E-6	0.989	345.00E-3	PASS
9	1.319E-3	3.824	600.00E-3	PASS
10	285.219E-6	0.827	276.00E-3	PASS
11	1.436E-3	4.162	495.00E-3	PASS
12	322.161E-6	0.934	229.99E-3	PASS
13	480.852E-6	1.393	315.00E-3	PASS
14	454.757E-6	1.318	197.15E-3	PASS
15	479.318E-6	1.389	225.00E-3	PASS
16	320.876E-6	0.930	172.50E-3	PASS
17	469.876E-6	1.362	198.52E-3	PASS
18	320.652E-6	0.929	153.33E-3	PASS
19	653.494E-6	1.894	177.63E-3	PASS
20	293.643E-6	0.851	138.00E-3	PASS
21	874.583E-6	2.534	160.71E-3	PASS
22	378.885E-6	1.098	125.46E-3	PASS
23	558.527E-6	1.619	146.74E-3	PASS
24	288.894E-6	0.837	114.99E-3	PASS
25	950.580E-6	2.755	135.00E-3	PASS
26	349.905E-6	1.014	106.16E-3	PASS
27	343.663E-6	0.996	124.99E-3	PASS
28	365.839E-6	1.060	98.57E-3	PASS
29	602.402E-6	1.746	116.39E-3	PASS
30	289.356E-6	0.839	92.00E-3	PASS
31	470.127E-6	1.362	108.87E-3	PASS
32	312.791E-6	0.906	86.25E-3	PASS
33	635.705E-6	1.842	102.27E-3	PASS
34	301.442E-6	0.874	81.18E-3	PASS
35	385.169E-6	1.116	96.44E-3	PASS
36	305.894E-6	0.886	76.66E-3	PASS
37	617.563E-6	1.790	91.21E-3	PASS
38	339.320E-6	0.983	72.63E-3	PASS
39	533.492E-6	1.546	86.53E-3	PASS
40	324.880E-6	0.941	69.00E-3	PASS

**Maximum harmonic voltage results**

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	229.94	99.975		
2	165.82E-3	0.072	0.2	PASS
3	402.37E-3	0.175	0.9	PASS
4	66.99E-3	0.029	0.2	PASS
5	27.04E-3	0.012	0.4	PASS
6	63.79E-3	0.028	0.2	PASS
7	27.68E-3	0.012	0.3	PASS
8	31.24E-3	0.014	0.2	PASS
9	20.90E-3	0.009	0.2	PASS
10	18.84E-3	0.008	0.2	PASS
11	17.50E-3	0.008	0.1	PASS
12	15.30E-3	0.007	0.1	PASS
13	15.54E-3	0.007	0.1	PASS
14	15.47E-3	0.007	0.1	PASS
15	13.93E-3	0.006	0.1	PASS
16	18.31E-3	0.008	0.1	PASS
17	19.58E-3	0.009	0.1	PASS
18	17.19E-3	0.007	0.1	PASS
19	13.21E-3	0.006	0.1	PASS
20	16.26E-3	0.007	0.1	PASS
21	16.17E-3	0.007	0.1	PASS
22	11.35E-3	0.005	0.1	PASS
23	9.89E-3	0.004	0.1	PASS
24	12.05E-3	0.005	0.1	PASS
25	14.13E-3	0.006	0.1	PASS
26	17.22E-3	0.007	0.1	PASS
27	9.38E-3	0.004	0.1	PASS
28	16.82E-3	0.007	0.1	PASS
29	14.84E-3	0.006	0.1	PASS
30	13.16E-3	0.006	0.1	PASS
31	9.94E-3	0.004	0.1	PASS
32	12.88E-3	0.006	0.1	PASS
33	11.24E-3	0.005	0.1	PASS
34	12.76E-3	0.006	0.1	PASS
35	10.00E-3	0.004	0.1	PASS
36	11.54E-3	0.005	0.1	PASS
37	10.20E-3	0.004	0.1	PASS
38	9.24E-3	0.004	0.1	PASS
39	10.98E-3	0.005	0.1	PASS
40	11.00E-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 communication with PC system under LAN 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 M/N:TEG1008
Date of test:	10:40 23.Jul 2007
Tester:	Andy

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

### Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.004	3.30	PASS
dmax [%]	0.171	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 [%]	0.004	3.30	PASS
dmax [%]	0.171	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 [%]	0.090	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 [%]	0.093	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 [%]	0.089	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 [%]	0.092	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 [%]	0.087	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 [%]	0.093	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 [%]	0.089	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 [%]	0.092	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 [%]	0.090	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 [%]	0.091	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 08, 2007

Operator: Andy

### 4.5.2. Severity levels of electrostatic discharge

4.5.2.1. Severity level: Contact Discharge at  $\pm 4\text{KV}$  Air Discharge at  $\pm 8\text{KV}$

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 communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

4.5.3.2. Photo of the test set-up



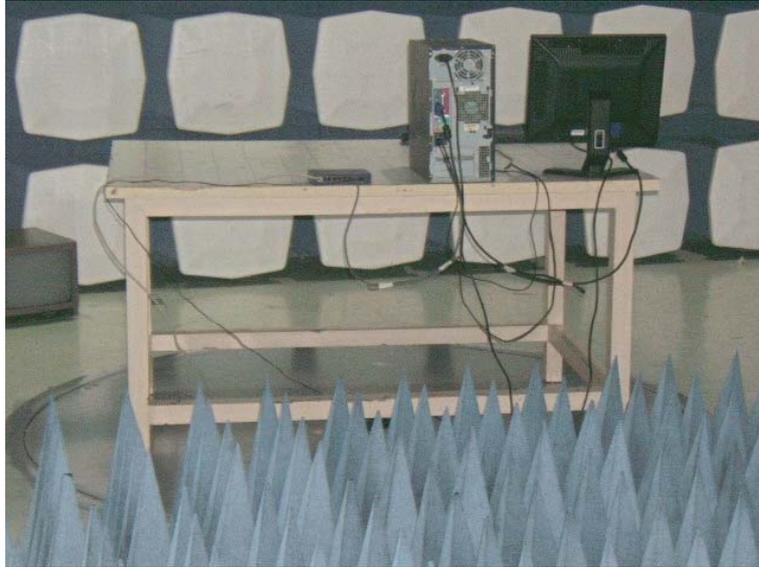


#### 4.6.3. Description of the test set-up

##### 4.6.3.1. Operating Condition

The EUT is communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

##### 4.6.3.2. Photo of the test set-up



#### 4.6.4. Test specification:

<u>Frequency range:</u>	■ 80 MHz to 1000 MHz
<u>Field strength:</u>	■ 3 V/m    ■ 10V/m
<u>EUT - antenna separation:</u>	■ 3 m
<u>Modulation:</u>	■ AM: 80 % ■ sinusoidal 1000Hz
<u>Frequency step:</u>	■ 1 % with 3s dwell time
<u>Antenna polarisation:</u>	■ 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 08, 2007

Operator: Andy

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

4.7.2.1. Severity level:  $\pm 1000V$  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

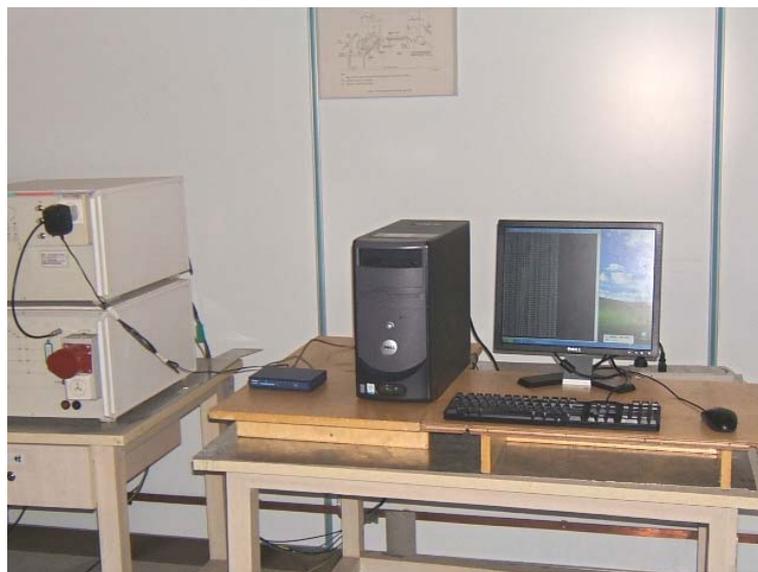
4.7.2.2. Performance criterion: **B**

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

4.7.3.1. Operating Condition

The EUT is communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

4.7.3.2. Photo of the test set-up





## 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 08, 2007

Operator: Andy

### 4.8.2. Severity levels of surge

4.8.2.1. Severity level: Line to line:  $\pm 1\text{KV}$  Line to earth:  $\pm 2\text{KV}$

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 communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

4.8.3.2. Photo of the test set-up





**4.8.4. Test specification:**

Pulse amplitude-Power line sym.:                     0.5 kV     1 kV         2 kV         4 kV  
 Source impedance: 2 Ω + 18μF

Pulse amplitude-Power line unsym.:                     0.5 kV     1 kV         2 kV         4 kV  
 Source impedance: 12 Ω + 9μF

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

Screening:     screened     unscreened  
Status:     passive     active  
Signal transmission:                                     analogue     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 08, 2007

Operator: Andy

### 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

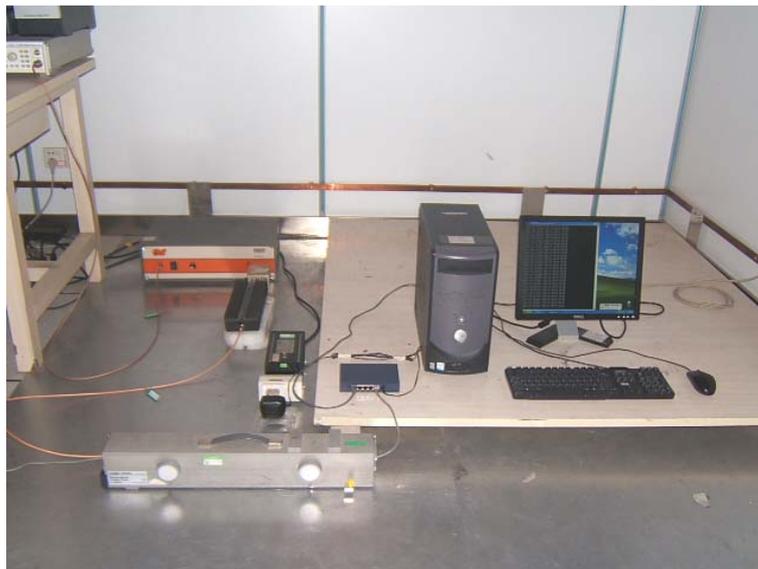
4.9.2.2. Performance Criterion: **A**

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

4.9.3.1. Operating Condition

The EUT is communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

4.9.3.2. Photo of the test set-up





#### 4.9.4. Test specification:

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

#### 4.9.5. Coupling points

Cable description :	AC power line Signal Line
Screening:	<input type="radio"/> screened                      ■ unscreened
Status:	<input type="radio"/> passive                            ■ active
Signal transmission:	■ analogue <input type="radio"/> 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 08, 2007

Operator: Andy

### 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 communication with PC system under LAN during the test, and the results of the maximum susceptible results are recorded.

#### 4.11.3.2. Photo of the test set-up



**4.11.4. Test specification:**

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

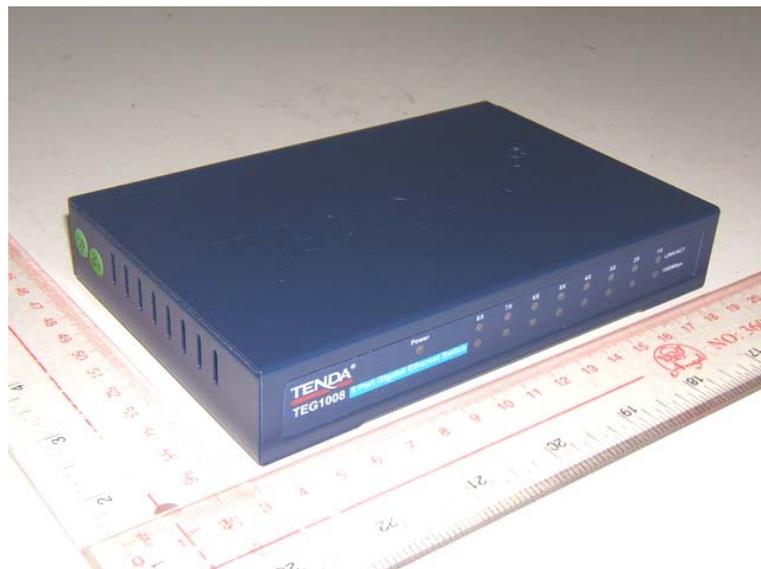
**4.11.5. Test result**

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

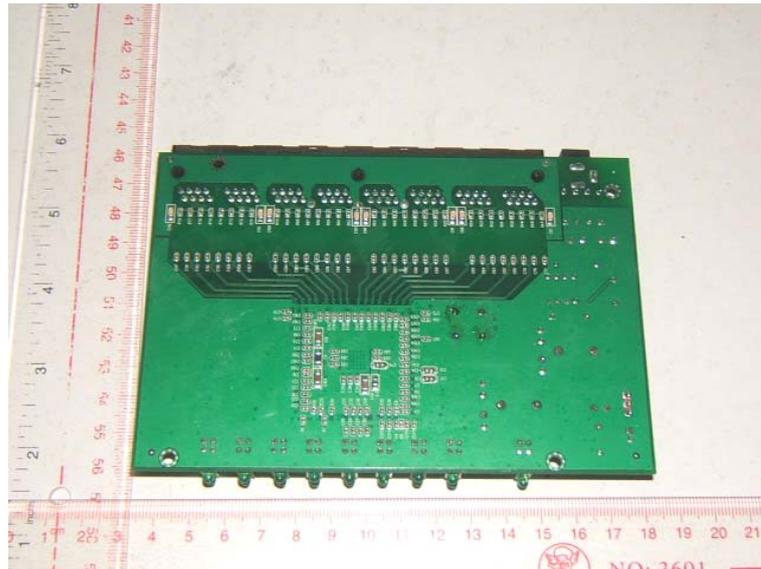
### 5.1. External photos of the EUT





### 5.2. Internal photos of the EUT





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