

**TEST REPORT****FCC Rules and Regulations Part 15 Subpart B Class B 2007****Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement****Report Reference No.**.....: **TRE08110013**

Compiled by

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Date of issue.....: Dec 11, 2008

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**.....: **Zhuhai Yuehua Electronic Co., Ltd**

Address.....: 13, No.4 Pingdong Road, Nanping Technology District, Zhuhai, China

Test specification:Standard: **FCC Rules and Regulations Part 15 Subpart B Class B 2007**

Non-standard test method.....: /

Test Report Form No......: HTWEMCFCC_1A

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

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

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Test item description: Turbo Ethernet Adapter

Trade Mark: /

Manufacturer: Zhuhai Yuehua Electronic Co., Ltd

Model/Type reference.....: RD31101

Ratings.....: 100-240V AC 0.1A 50/60Hz

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

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

Test Report No. :	TRE08110013	Dec 11, 2008 Date of issue
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Equipment under Test : Turbo Ethernet Adapter

Model /Type : RD31101

Listed Models : /

Applicant : Zhuhai Yuehua Electronic Co., Ltd

Address : 13, No.4 Pingdong Road, Nanping Technology District,
Zhuhai, China

Manufacturer : Zhuhai Yuehua Electronic Co., Ltd

Address : 13, No.4 Pingdong Road, Nanping Technology District,
Zhuhai, China

Test Result according to the standards on page 4:	Positive
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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:

[FCC Rules and Regulations Part 15 Subpart B Class B 2007](#) Radio Frequency Devices – Unintentional Radiators – Limits and methods of measurement

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample : Oct 29, 2008

Testing commenced on : Nov 01, 2008

Testing concluded on : Dec 11, 2008

2.2. Equipment Under Test

Power supply system utilised

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

AC 120V / 60Hz

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

The EUT is a Turbo Ethernet Adapter which there is two appearances.
Serial No.: 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 FCC Rules and Regulations Part 15 Subpart B Class B 2007 and ANSI 63.4 2003, 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

- o PC notebook

Manufacturer : IBM

Model No. : 2884-CC1

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: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: August 02, 2007. Valid time is until March 04, 2009.

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: 2005 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, 2009.

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 17025:2005 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the Authorization is valid through April 25, 2009.

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:	<u>22-25 ° C</u>
Humidity:	<u>40-54 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Test Description

Emission Measurement		
Radiated Emission	FCC Rules and Regulations Part 15 Subpart B Class B 2007	PASS
Conducted Disturbance	FCC Rules and Regulations Part 15 Subpart B Class B 2007	PASS

Remark: 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	0.15~30 MHz	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	2008/06
2	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESI 26	100009	2008/11
3	RF TEST PANEL	ROHDE & SCHWARZ	TS / RSP	335015/ 0017	2008/11
4	TURNTABLE	ETS	2088	2149	2008/11
5	ANTENNA MAST	ETS	2075	2346	2008/11
6	EMI TEST SOFTWARE	ROHDE & SCHWARZ	ESK1	N/A	2008/11

Conducted Disturbance					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCS30	100038	2008/11
2	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	100028	2008/11
3	Pulse Limiter	ROHDE & SCHWARZ	ESHSZ2	100044	2008/11
4	EMI Test Software	ROHDE & SCHWARZ	ESK1	N/A	2008/11

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

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 88	3	40
88~216	3	43.5
216 ~ 960	3	46
960~1000	3	54

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

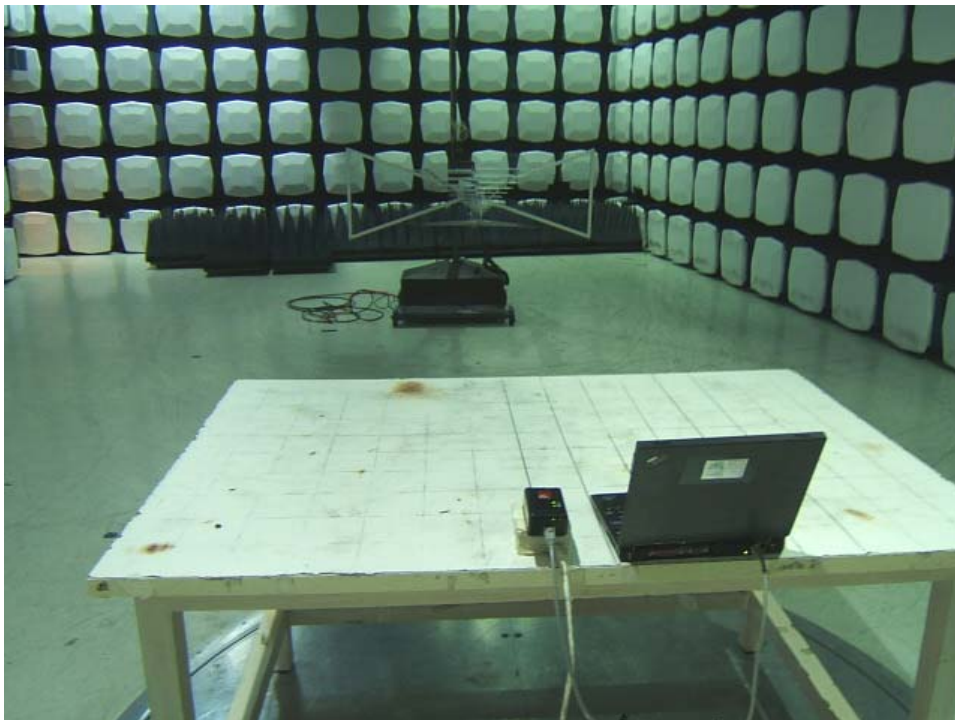
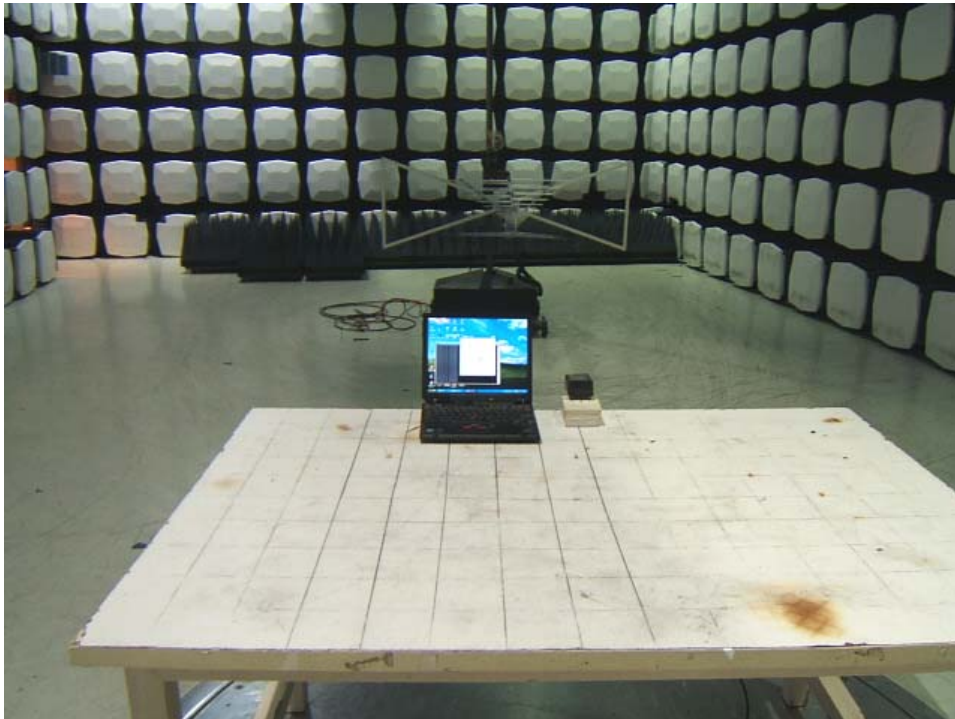
4.1.3.1. Operating Condition

The EUT is communication during the test, and the maximum emanating results are recorded.

4.1.3.2. Test Procedure

EUT is tested in Semi-Anechoic Chamber. EUT is placed on a nonmetal table which is 0.8 meter above a grounded turntable. The turntable can rotate 360 degrees to determine the azimuth of the maximum emission level. EUT is set 3 meters away from the center of receiving antenna, and the antenna can move up and down from 1 to 4 meter to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set on the test.

4.1.3.3. Photos of the test set-up



4.1.4. Test result

The requirements are **Fulfilled**

Band Width: 120KHz

Frequency Range: 30MHz to 1000MHz

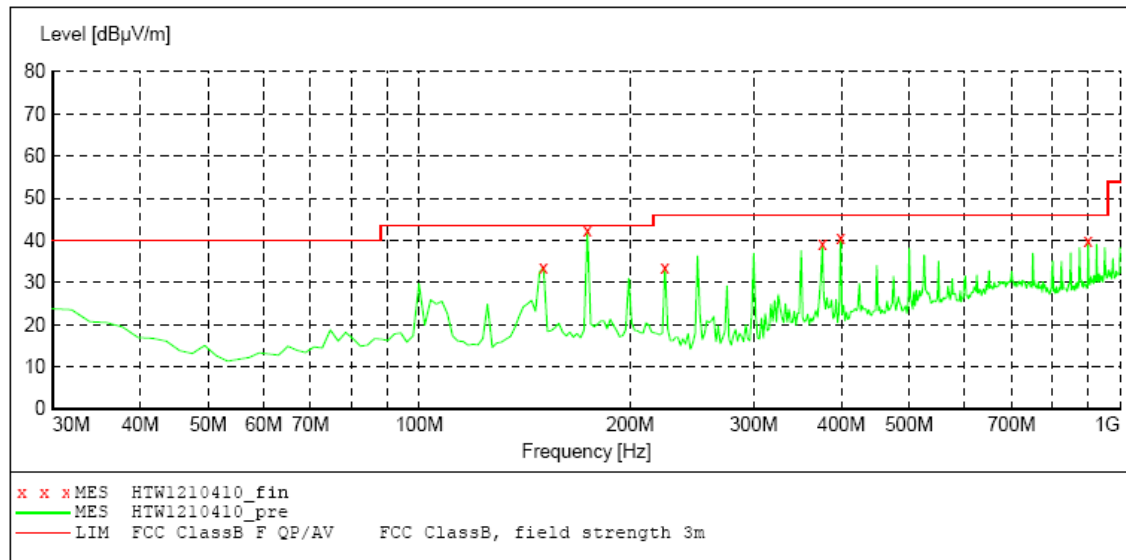
Remarks: The limits are kept. For detailed results, please see the following page(s).

SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD**RADIATED EMISSION FCC PART 15 CLASS B**

EUT: Turbo Ethernet Adapter M/N:RD31101
 Manufacturer: ZHUHAI YUEHUA ELECTRONIC Co.,Ltd
 Operating Condition: COMMUNICATION
 Test Site: 3M CHAMBER
 Operator: Peter
 Test Specification: AC 120V 60Hz
 Comment:
 Start of Test: 12/10/2008 / 11:44:18PM

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

Short Description:		Field Strength(30M-1G)				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 08

**MEASUREMENT RESULT: "HTW1210410_fin"**

12/10/2008 11:59AM

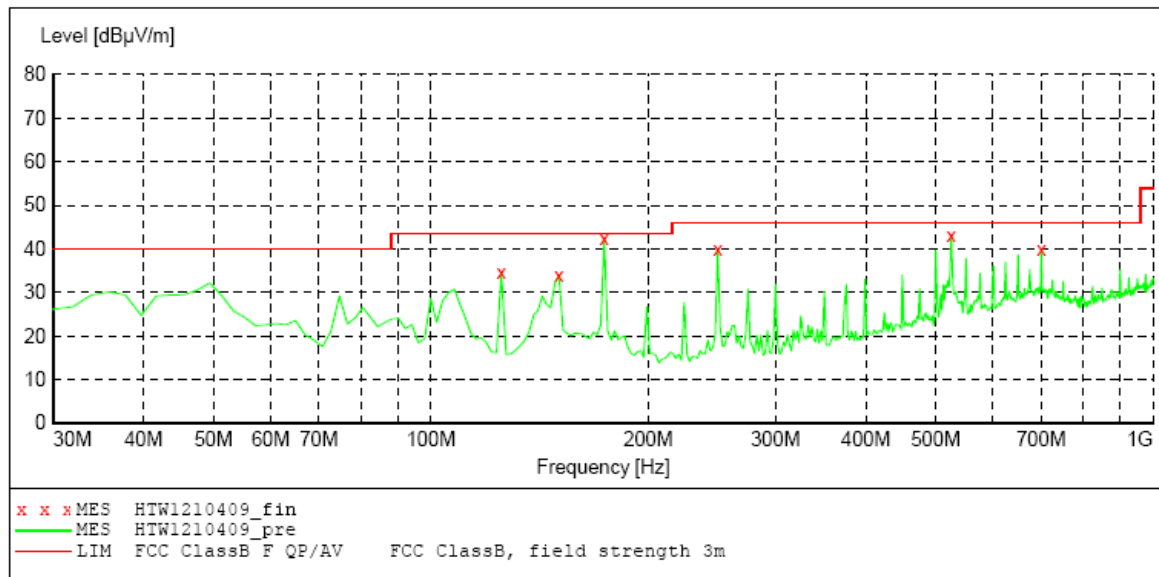
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
150.520000	33.70	10.8	43.5	9.8	QP	275.0	40.00	HORIZONTAL
173.850000	42.40	11.3	43.5	1.1	QP	300.0	110.00	HORIZONTAL
224.390000	33.70	11.6	46.0	12.3	QP	120.0	93.00	HORIZONTAL
376.010000	39.20	16.5	46.0	6.8	QP	100.0	214.00	HORIZONTAL
399.340000	40.70	17.2	46.0	5.3	QP	100.0	214.00	HORIZONTAL
900.860000	40.10	25.4	46.0	5.9	QP	100.0	180.00	HORIZONTAL

SHENZHEN HUATONGWEI INTERNATIONAL INSPECTION CO.,LTD**RADIATED EMISSION FCC PART 15 CLASS B**

EUT: Turbo Ethernet Adapter M/N:RD31101
Manufacturer: ZHUHAI YUEHUA ELECTRONIC Co.,Ltd
Operating Condition: COMMUNICATION
Test Site: 3M CHAMBER
Operator: Peter
Test Specification: AC 120V 60Hz
Comment:
Start of Test: 12/10/2008 / 11:42:11PM

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

Short Description:			Field Strength(30M-1G)			
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	Width				
30.0 MHz	1.0 GHz	60.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562 08

**MEASUREMENT RESULT: "HTW1210409_fin"**

12/10/2008 11:56AM

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
125.250000	34.60	11.6	43.5	8.9	QP	100.0	179.00	VERTICAL
150.520000	33.90	10.8	43.5	9.6	QP	100.0	318.00	VERTICAL
173.847695	42.30	11.3	43.5	1.2	QP	100.0	162.00	VERTICAL
249.659319	40.10	12.4	46.0	5.9	QP	100.0	336.00	VERTICAL
525.690000	43.00	20.8	46.0	3.0	QP	110.0	300.00	VERTICAL
700.640000	39.80	26.7	46.0	6.2	QP	105.0	195.00	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 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
5.000~30.000	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 during the test, and the maximum emanating results are recorded.

4.2.3.2. Test Procedure

EUT is placed on a nonmetal table 0.8 meter above the grounded reference plane. The power line of the EUT is connected to the LISN which is connected to receiver by coaxial line, and then disturbance signals of the neutral line and live line can be detected by the receiver.

4.2.3.3. Photos of the test set-up



4.2.4. Test result

The requirements are **Fulfilled**

Band Width: 9KHz

Frequency Range: 150KHz to 30MHz

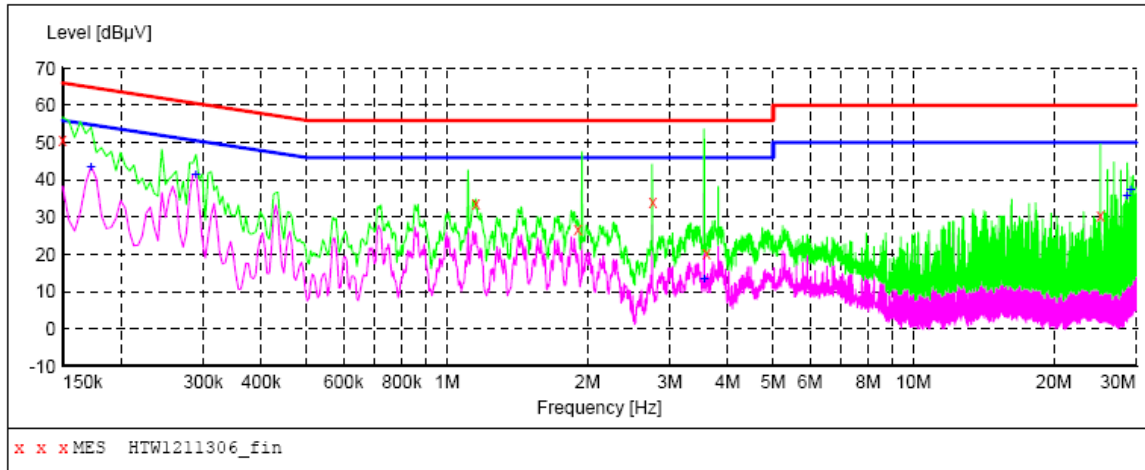
Remarks: The limits are kept. For detailed results, please see the following page(s).

Shenzhen Huatongwei International Inspection CO.,Ltd**Voltage Mains Test FCC PART 15 CLASS B**

EUT: Turbo Ethernet Adapter M/N:RD31101
Manufacturer: Zhuhai Yuehua Electronic Co.,Ltd
Operating Condition: COMMUNICATION
Test Site: 3# SHIELDED ROOM
Operator: Tony
Test Specification: AC 120V/60Hz
Comment:
Start of Test: 12/11/2008 / 10:22:24AM

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW1211306_fin"**

12/11/2008 10:25AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	50.90	10.6	66	15.1	QP	L1	GND
1.153500	33.80	10.6	56	22.2	QP	L1	GND
1.909500	26.90	10.6	56	29.1	QP	L1	GND
2.760000	34.10	10.7	56	21.9	QP	L1	GND
3.601500	20.10	10.7	56	35.9	QP	L1	GND
25.174500	30.60	11.3	60	29.4	QP	L1	GND

MEASUREMENT RESULT: "HTW1211306_fin2"

12/11/2008 10:25AM

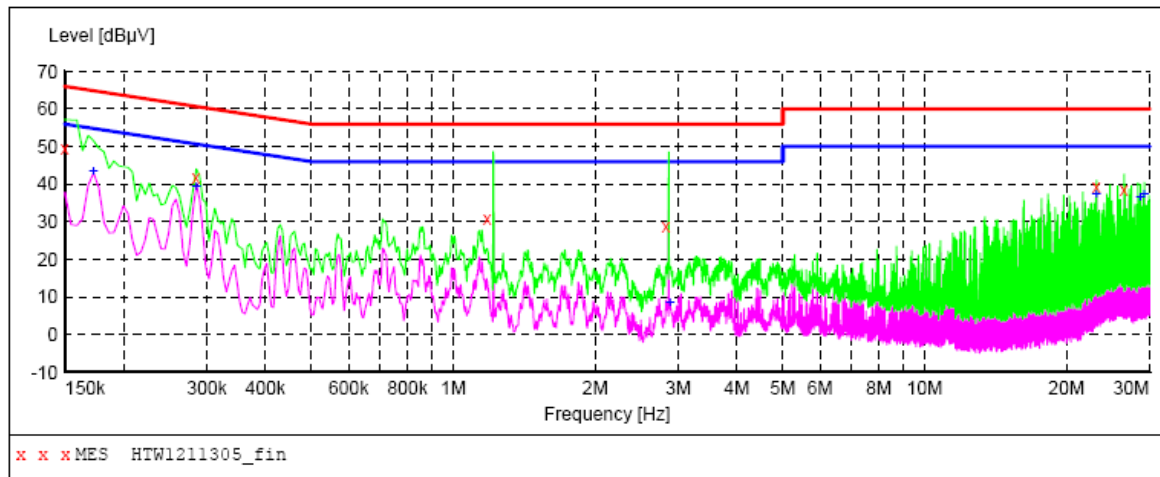
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.172500	43.30	10.6	55	11.5	AV	L1	GND
0.289500	41.20	10.6	51	9.3	AV	L1	GND
3.565500	13.20	10.7	46	32.8	AV	L1	GND
28.689000	35.90	11.5	50	14.1	AV	L1	GND
29.238000	37.20	11.5	50	12.8	AV	L1	GND

Shenzhen Huatongwei International Inspection CO.,Ltd**Voltage Mains Test FCC PART 15 CLASS B**

EUT: Turbo Ethernet Adapter M/N:RD31101
 Manufacturer: Zhuhai Yuehua Electronic Co.,Ltd
 Operating Condition: COMMUNICATION
 Test Site: 3# SHIELDED ROOM
 Operator: Tony
 Test Specification: AC 120V/60Hz
 Comment:
 Start of Test: 12/11/2008 / 10:18:44AM

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

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "HTW1211305_fin"**

12/11/2008 10:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.150000	49.30	10.6	66	16.7	QP	N	GND
0.285000	41.70	10.6	61	19.0	QP	N	GND
1.180500	30.90	10.6	56	25.1	QP	N	GND
2.827500	28.60	10.7	56	27.4	QP	N	GND
23.131500	39.50	11.3	60	20.5	QP	N	GND
26.488500	38.60	11.4	60	21.4	QP	N	GND

MEASUREMENT RESULT: "HTW1211305_fin2"

12/11/2008 10:21AM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.172500	43.20	10.6	55	11.6	AV	N	GND
0.285000	39.50	10.6	51	11.2	AV	N	GND
2.886000	8.60	10.7	46	37.4	AV	N	GND
23.131500	37.50	11.3	50	12.5	AV	N	GND
28.689000	36.50	11.5	50	13.5	AV	N	GND
29.238000	37.20	11.5	50	12.8	AV	N	GND

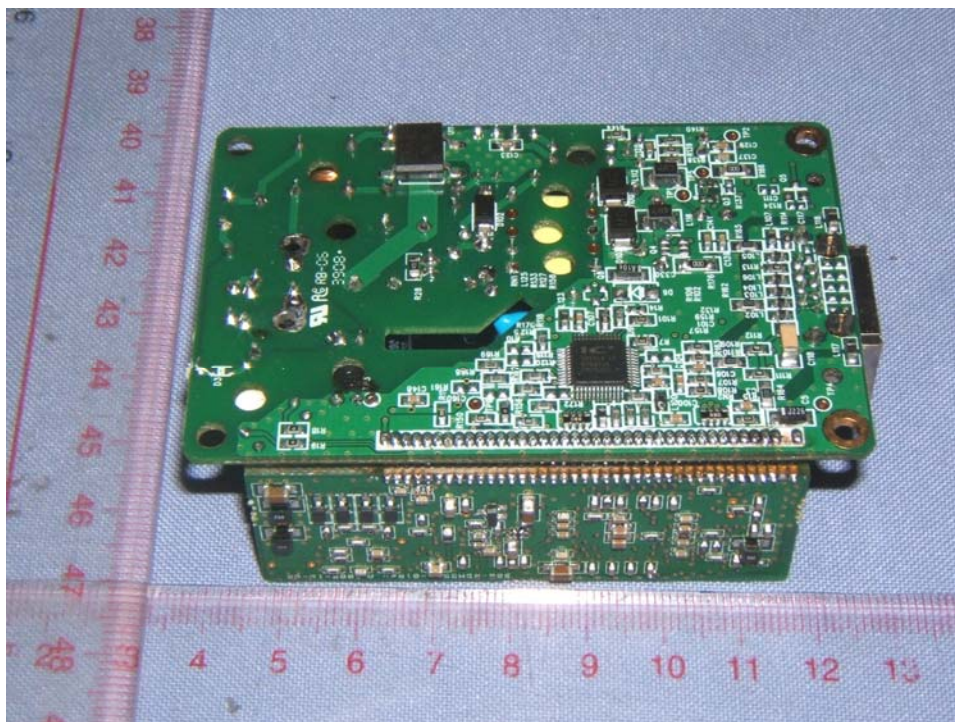
5. External and Internal Photos of the EUT

5.1. External photos of the EUT





5.2. Internal photos of the EUT



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