

# EMC EMISSION – FCC TEST REPORT

Report Number : EMC-2009-001 - (E) Date of Issue: 18<sup>th</sup> Feb, 2009

Model / Serial No. : ZXMBW E9200

Product Type : Wimax Indoor PICO base station

Applicant : ZTE Corporation

Manufacturer : ZTE Corporation

License holder : ZTE Corporation

Address : 1/F., B Wing, ZTE Plaza, Keji Road South,

: Hi-Tech Industrial Park, Nanshan district, Shenzhen, PRC.

Test Result :  Positive  Negative

Total pages including Appendices : 27



TESTING  
CNAS L0611

## DIRECTORY - EMISSIONS

		<b>Pages</b>
<b>A) Documentation</b>		
Test Report		<u>1 - 16</u>
Directory		<u>2</u>
Test Regulations		<u>3</u>
General Remarks and Summary		<u>8</u>
Test Setups (Photographs)		<u>15</u>
Test Setups (Drawings)		<u>Nil</u>
<b>B) Test Data</b>		
Conducted Emissions	9/150/450 kHz - 30 MHz	<u>1, 8</u>
Radiated Emissions	30 MHz - 1000 MHz	2, 8
<b>C) Appendix A</b>		
Test Setup Drawing(s) and Test Data Sheets		<u>A2-A6</u>
<b>D) Appendix B</b>		
Constructional Photographs of EUT		<u>B1-B1</u>
<b>E) Appendix C</b>		
Certificates of EMC Lab		<u>C2-C4</u>

## EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to the following regulations:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> - EN 50081-1 : 1992                |  |  |
| <input type="checkbox"/> - EN 50081-2 : 1993                |  |  |
| <input type="checkbox"/> - EN 55011 : 1998 / A1:1999        | <input type="checkbox"/> - Group 1<br><input type="checkbox"/> - Class A | <input type="checkbox"/> - Group 2<br><input type="checkbox"/> - Class B |
| <input type="checkbox"/> - EN 55015 : 2000                  |  |  |
| <input type="checkbox"/> - EN 300 386 V.1.2.1 (03-2000)     |  |  |
| <input type="checkbox"/> - EN 300 386 V.1.3.1 (09-2001)     |  |  |
| <input type="checkbox"/> - EN 55022 : 1998 / A1 : 2000      | <input type="checkbox"/> - Class A                                       | <input type="checkbox"/> - Class B                                       |
| <input type="checkbox"/> - EN 61000-3-2 : 1995 / A14 : 2000 | <input type="checkbox"/> - EN 60555-2 : 1987                             |  |
| <input type="checkbox"/> - EN 61000-3-3 : 1995 / A1 : 2001  | <input type="checkbox"/> - EN 60555-3 : 1987 / A1: 1991                  |  |
| <input type="checkbox"/> - EN 60601-1-2 : 1993              |  |  |
| <input type="checkbox"/> - VCCI                             | <input type="checkbox"/> - Class A                                       | <input type="checkbox"/> - Class B                                       |
| <input checked="" type="checkbox"/> - FCC Part 15           | <input checked="" type="checkbox"/> - Class A                            | <input type="checkbox"/> - Class B                                       |
| <input type="checkbox"/> - CISPR 11 (1990)                  | <input type="checkbox"/> - Group 1<br><input type="checkbox"/> - Class A | <input type="checkbox"/> - Group 2<br><input type="checkbox"/> - Class B |
| <input type="checkbox"/> - CISPR 22 (1993)                  | <input type="checkbox"/> - Class A                                       | <input type="checkbox"/> - Class B                                       |

## Test Laboratory :

ZTE Coroperation  
5/F., A Wing, ZTE Plaza, Keji Road South,  
Hi-Tech Industrial Park, Nanshan district, Shenzhen, PRC.

## Environmental Conditions In The Laboratory:

	<u>Actual</u>
Temperature:	: 22 °C
Relative Humidity:	: 54%
Atmospheric Pressure:	: 1040 mBar

## Power Supply Utilized:

Power supply system : AC 110~230V  
Test power supply information: input 110Vac 60Hz

## STATEMENT OF 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 that can account for a nominal measurement error of  $\pm 4\text{dB}$ . 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.

## Symbol Definitions:

- - Applicable
- - Not Applicable

## Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The **CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)** measurements were performed at the following test location:

- Test not applicable

- Test Area No. 1 - Anechoic ferrite lined shielded room
- Test Area No. 2 - Shielded room 1: Bare shielded room
- Test Area No. 3 - EMC test laboratory open area
- Test Location No.

### Test Equipment Used :

	<b>Model Number</b>	<b>Manufacturer</b>	<b>Description</b>	<b>Serial Number</b>	<b>Due date</b>
■ -	ESCS30	Rohde & Schwarz	EMI Test Receiver	100068	2009-10-28
■ -	ESH2-Z5	Rohde & Schwarz	LISN	100027	2009-10-28
■ -	4825/2	EMCO	LISN	1064-9806	2009-10-28
■ -	ENY22	Rohde & Schwarz	ISN	100046	N/A
■ -	ENY41	Rohde & Schwarz	ISN	100057	N/A
■ -	ESH3-Z2	Rohde & Schwarz	Pulse limiter	100063	2009-10-28
■ -	ES-K1	Rohde & Schwarz	Software	----	N/A
■ -	CE Cable	Rohde & Schwarz	Cable	----	N/A
■ -	HP11967A	HP	Current Probe	555	2009-10-28

Remarks: All test equipment used are calibrated on a regular basis.

## Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

- Test not applicable

- Test Area No. 1 - Anechoic ferrite lined shielded room
- Test Area No. 2 - Shielded room 1: Bare shielded room
- Test Area No. 3 - EMC test laboratory open area
- Test Location No. - 1

Testing was performed at a test distance of :

- 3 meters
- 10 meters

Test Equipment Used :

Model Number	Manufacturer	Description	Serial Number	Due Date
<input checked="" type="checkbox"/> - ESI26	Rohde & Schwarz	EMI Test Receiver	100058	2009-10-28
<input checked="" type="checkbox"/> - HL 562	Rohde & Schwarz	Ultra Broadband Antenna	100022	2011-8-10
<input type="checkbox"/> - HF 906	Rohde & Schwarz	Double-Ridged Waveguide Horn Antenna	100032	
<input type="checkbox"/> - TS-FILT	Rohde & Schwarz	EMI Filter Bank	-----	
<input checked="" type="checkbox"/> - RE Cable	Rohde & Schwarz	Cable Set	-----	N/A
<input checked="" type="checkbox"/> - ES-K1	Rohde & Schwarz	Software	-----	N/A
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				
<input type="checkbox"/> -				

Remarks: All test equipment used are calibrated on a regular basis.

## Equipment Under Test (EUT) Test Operation Mode - Emissions Tests :

The equipment under test was operated under the following conditions during emissions testing:

- Standby
- Test Program (H - Pattern)
- Test Program (Color Bar)
- Test Program (Customer Specified)
- Normal Operating Mode
- Signal Flowing and Controlling. See "connection during tests"

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

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> - <u>AC power cord *1</u>   | Type : <u>Length=2m, 3 lines, copper cable, unshielded</u> |
| <input checked="" type="checkbox"/> - <u>Ethernet cord *1</u>   | Type : <u>Length=3m, unshielded twisted cable</u>          |
| <input checked="" type="checkbox"/> - <u>Grounding cord * 1</u> | Type : <u>Length=1m, 1 line, copper cable, unshielded</u>  |
| <input checked="" type="checkbox"/> - <u>ZXMBW E9200/Client</u> | Type : <u>Mode: ZXMBW E9200; ZTE</u>                       |
| <input checked="" type="checkbox"/> - <u>Computer * 1</u>       | Type : <u>Mode: KAITIAN2000 6C/1G; Lenovo</u>              |
| <input type="checkbox"/> - _____                                | Type : _____   |
| <input type="checkbox"/> - _____                                | Type : _____   |
| <input type="checkbox"/> - unshielded power cable               |  |
| <input type="checkbox"/> - unshielded cables                    |  |
| <input type="checkbox"/> - shielded cables                      | _____  |
| <input type="checkbox"/> - customer specific cables             |  |
| <input type="checkbox"/> - _____                                |  |
| <input type="checkbox"/> - _____                                |  |

**Emissions Test Results:**

**Conducted Emissions, 9/150/450 kHz - 30 MHz**

- PASS

- FAIL

- NOT APPLICABLE

Minimum limit margin 6.8 dB at 3.768 MHz

Maximum limit exceeding \_\_\_\_\_ dB at \_\_\_\_\_ MHz

Remarks: The conducted emission applied to L,N and Ethernet port ,test voltage is 110Vac,and the test frequency is 2593MHz ;

**Radiated Emissions (Electric Field), 30 MHz - 1000 MHz**

- PASS

- FAIL

- NOT APPLICABLE

Minimum limit margin 6.8 dB at 300.2 MHz

Maximum limit exceeding \_\_\_\_\_ dB at \_\_\_\_\_ MHz

Remarks: The minimum limit margin was found at the horizontal measurement.

**GENERAL REMARKS:**

It is the test results from all the tests which are performed in the EMC Laboratory of ZTE Corporation. ZTE Corporation EMC Lab was certificated by CNAS and the registration number was L0611. The FCC registration number of ZTE corporation EMC lab was 373926 and the date of listing was November 25, 2005.

The Test modes / monitoring methods for all the tests are specified by the manufacturer which can demonstrate the worst case in the emission tests and prove the EUT is still normal working during / after the immunity tests.

**SUMMARY:**

All tests according to the regulations cited on page 3 were

- Performed
- **Not** Performed

The Equipment Under Test

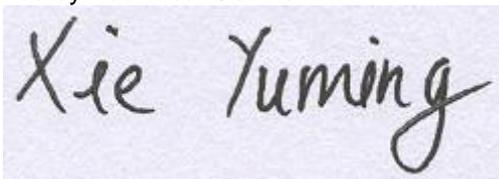
- **Fulfills** the general approval requirements cited on page 3.
- **Does not** fulfill the general approval requirements cited on page 3.

Testing Start Date: 16<sup>th</sup> Feb, 2009

Testing End Date: 20<sup>th</sup> Feb, 2009

**- ZTE CORPORATION EMC LABORATORY-**

Reviewed by Technical Certifier :



Xie Yuming  
EMC Laboratory Manager

Prepared by:



Wei Bin  
EMC Test Engineer

## Technical description of the test sample

### General Description :

- Main function of the product:

The ZXMBW E9200 is located at the radio access layer of the WIMAX network, delivering broadband radio access services for terminal users. The ZXMBW E9200, as a supplement for blind points and hotspots of macro coverage, is mainly applied for middle-scale and small-scale indoor coverage, such as airport, shopping mall and conference center and so on.:

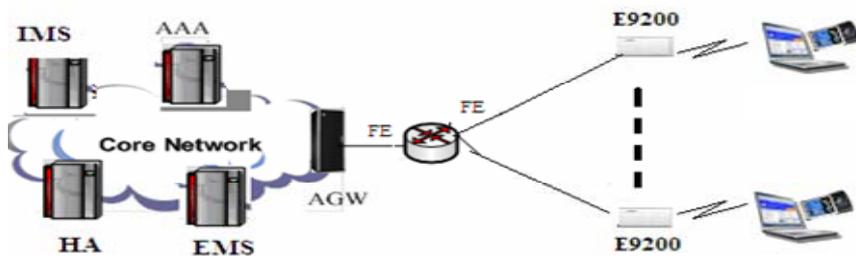


Figure 1: illustrates the position of the ZXMBW E9200 in the WIMAX network

### - HARDWARE CONSTRUCTION

The ZXMBW E9200 contains only one cabinet. The external dimension of the cabinet is (W x H x D):260mm (10 4/16 in) x 200mm (7 14/16 in) x 65mm (2 9/16 in). The internal dimension of the cabinet is (W x H x D): 246mm (9 11/16 in) x 184mm (7 4/16 in) x 23.5mm (1/16 in).

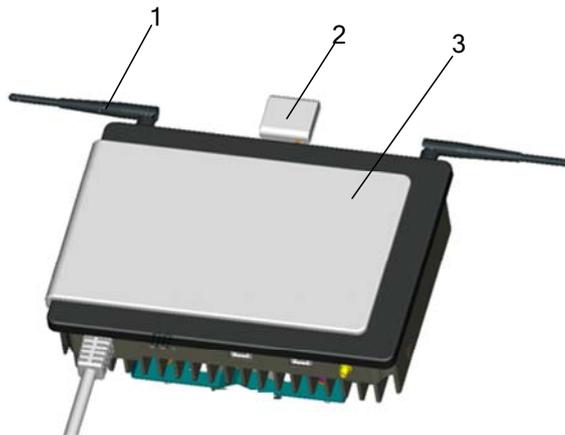


Figure 2 ZXMBW E9200 Appearance

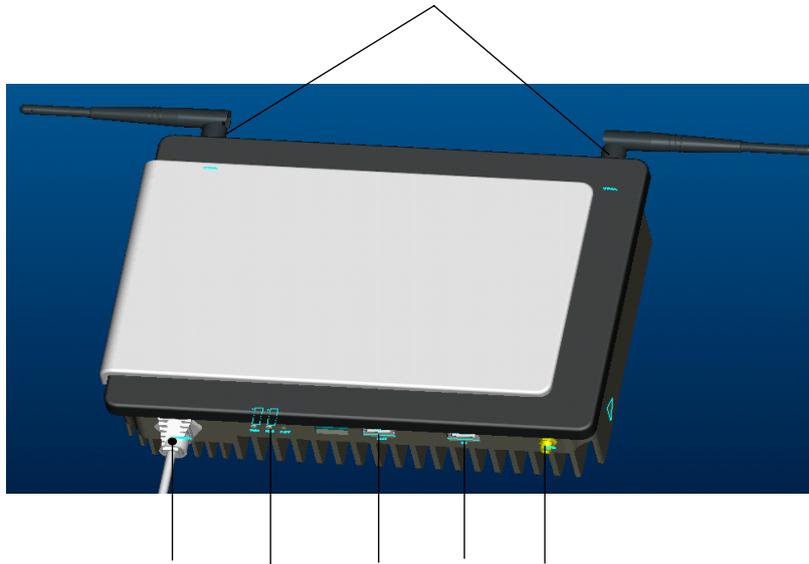


Figure 3 Interfaces of ZXMBW E9200

- |                    |                         |
|--------------------|-------------------------|
| 1. Power interface | 2. Indicators and Reset |
| 3. NM interface    | 4. R6 interface         |
| 5. GPS interface   | 6. RF interfaces        |

1

2

3

- TYPICAL NETWORKING APPLICATION

A typical application, as below:

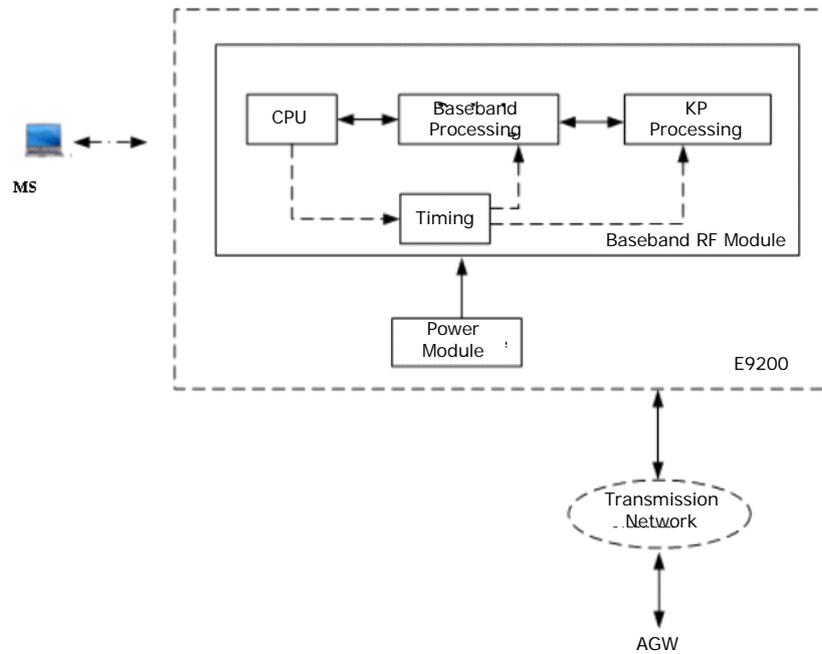


Figure 3 Typical application

- Working environment : Class A Digital Device; Other than domestic environment

**Connection during tests :**

- EMC test system configuration diagram

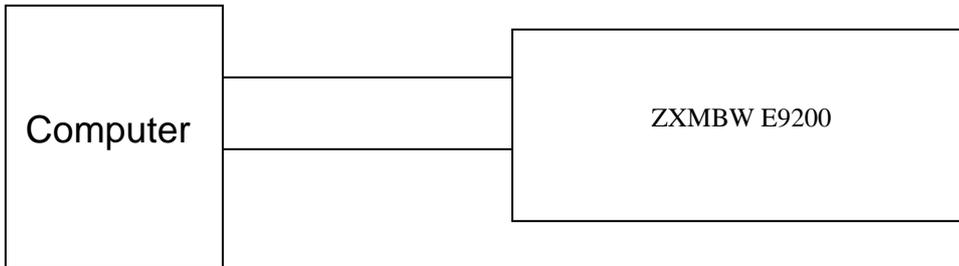


Figure 3 EMC test system configuration

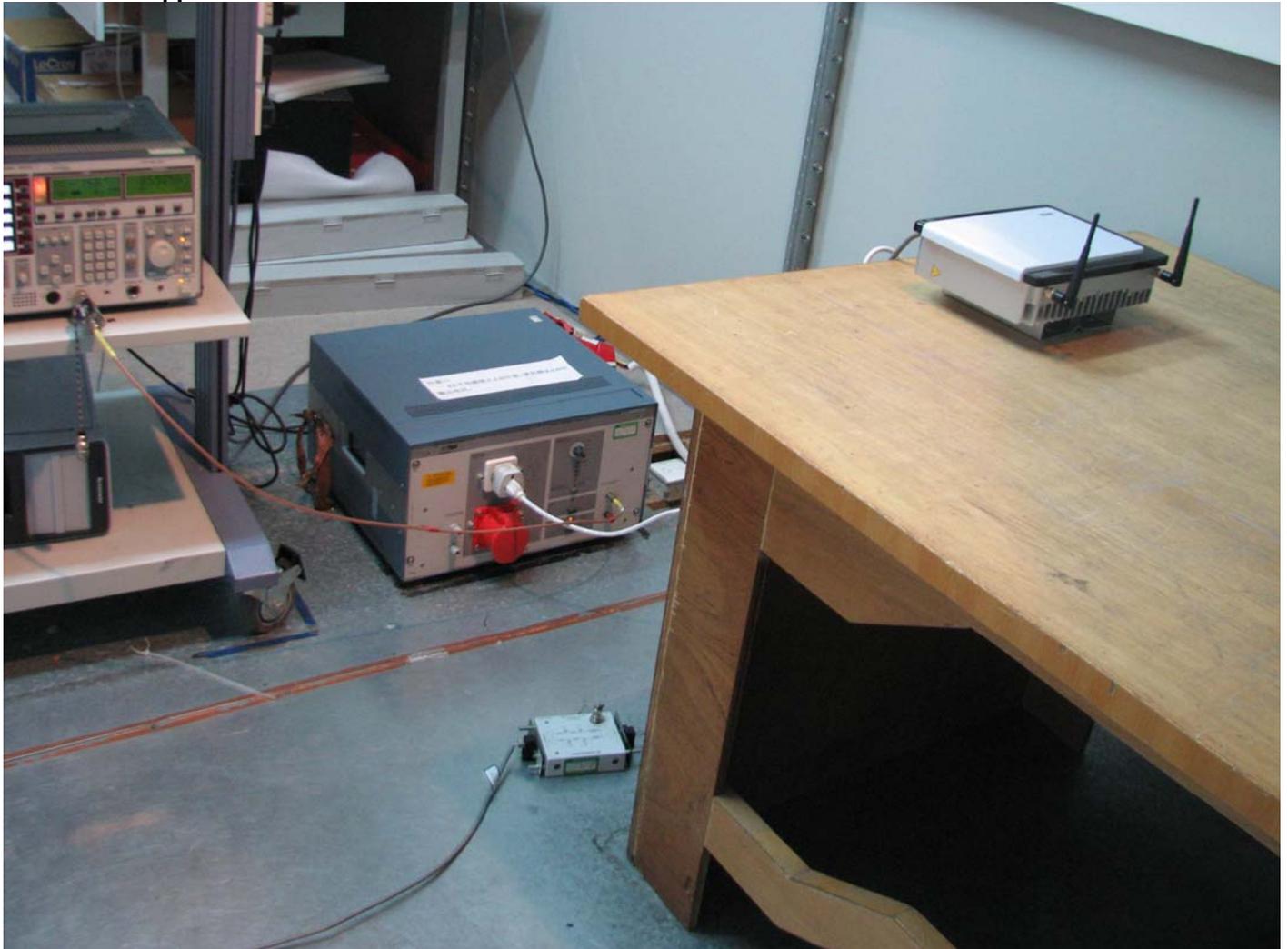
- Details of interfaces / accessories / Hardware / software

Table 1: Details of interfaces / accessories / Hardware / software

Item	Description	Type(Mode)	Length(S/N)	Note(Man.)
1	AC Power cord & Grounding	UL Listed	3 m.	Unshielded
2	Ethernet line	Twisted line	5 m.	Unshielded
4	ZXMBW E9200/Client	E9200	N/A	ZTE
5	Computer	N/A	N/A	lenovo

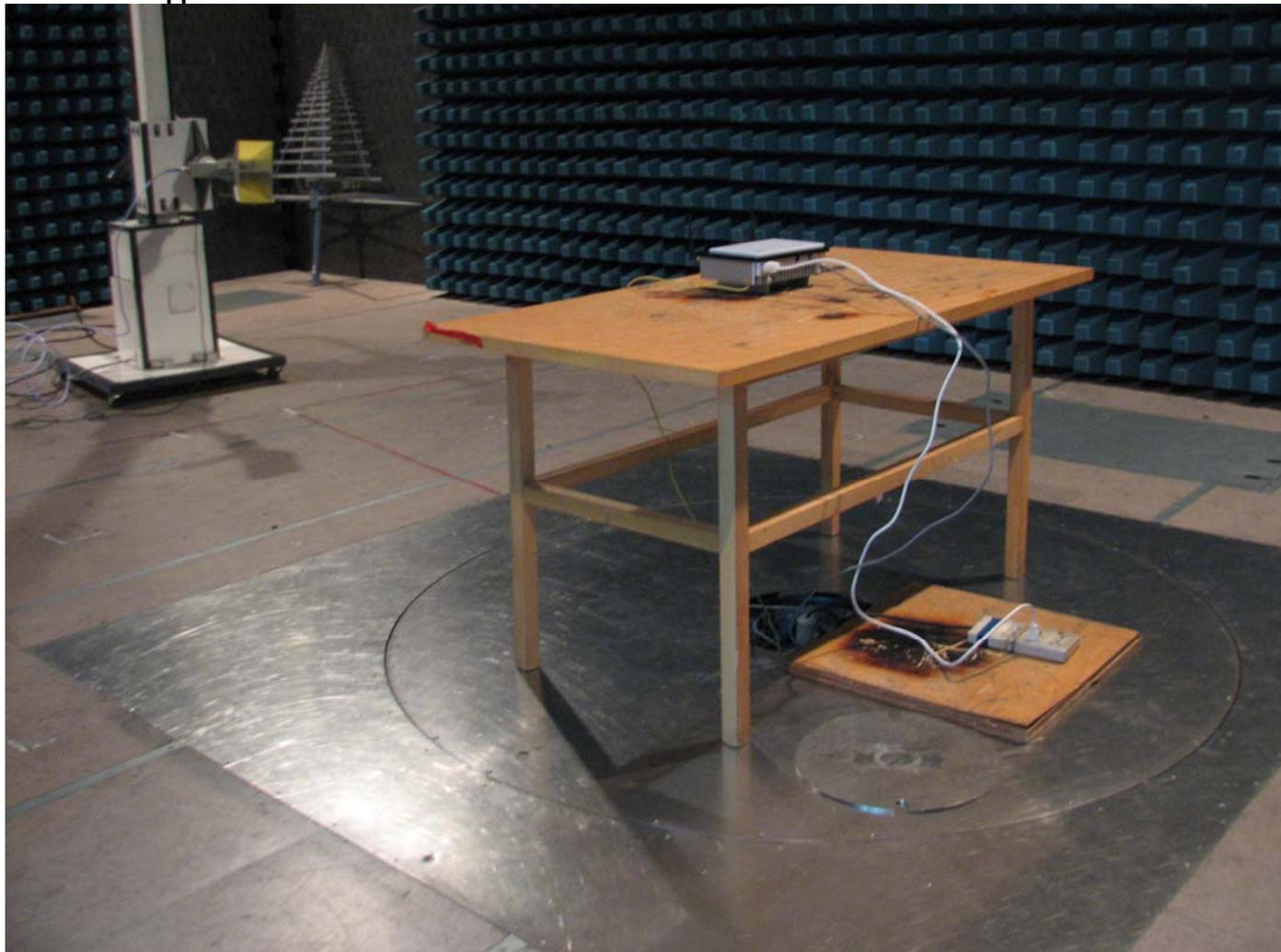
Photograph of Test Setup:  
Conducted Emissions 9/150/450 kHz - 30 MHz

- Test not applicable



Photograph of Test Setup:  
Radiated Emissions 30 MHz - 1000 MHz

- Test not applicable



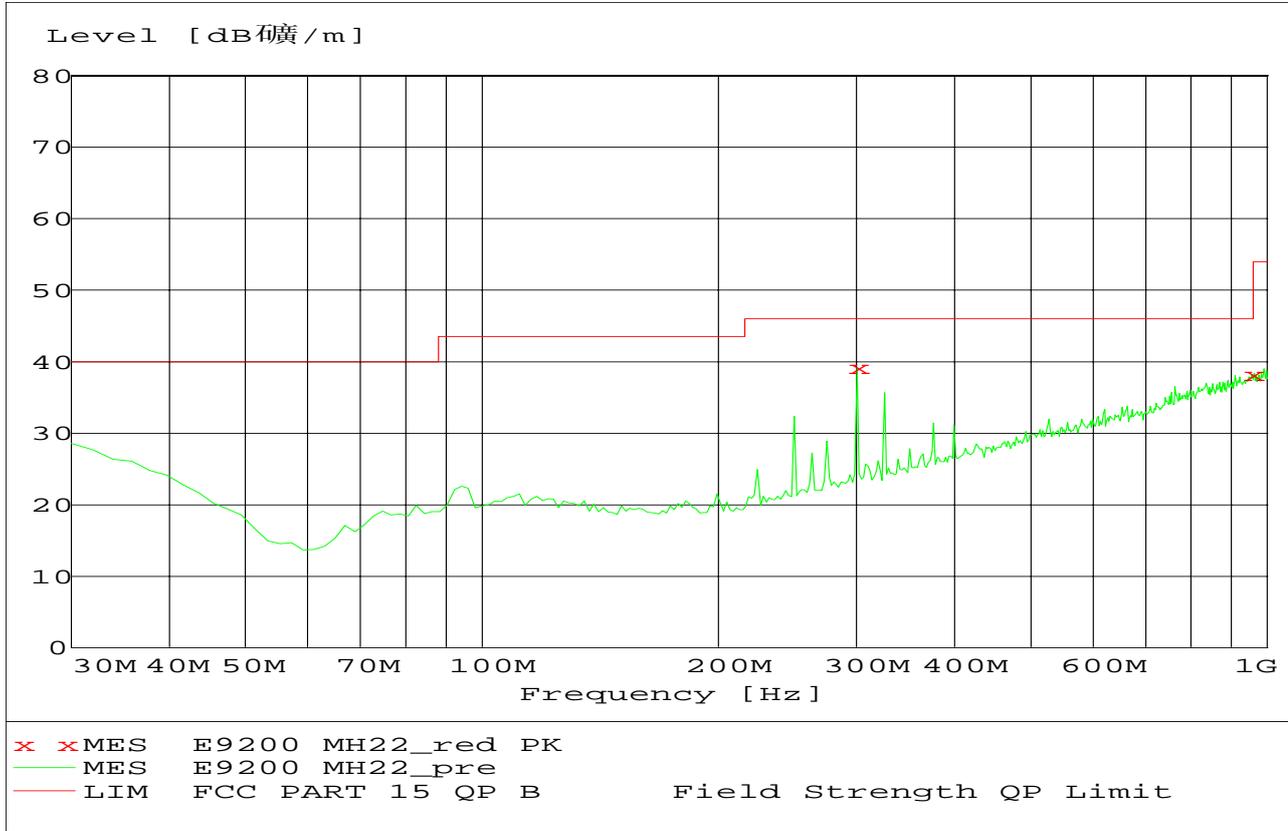


## Appendix A

Test Data Sheets

**Electric Field Strength**

Horizontal :

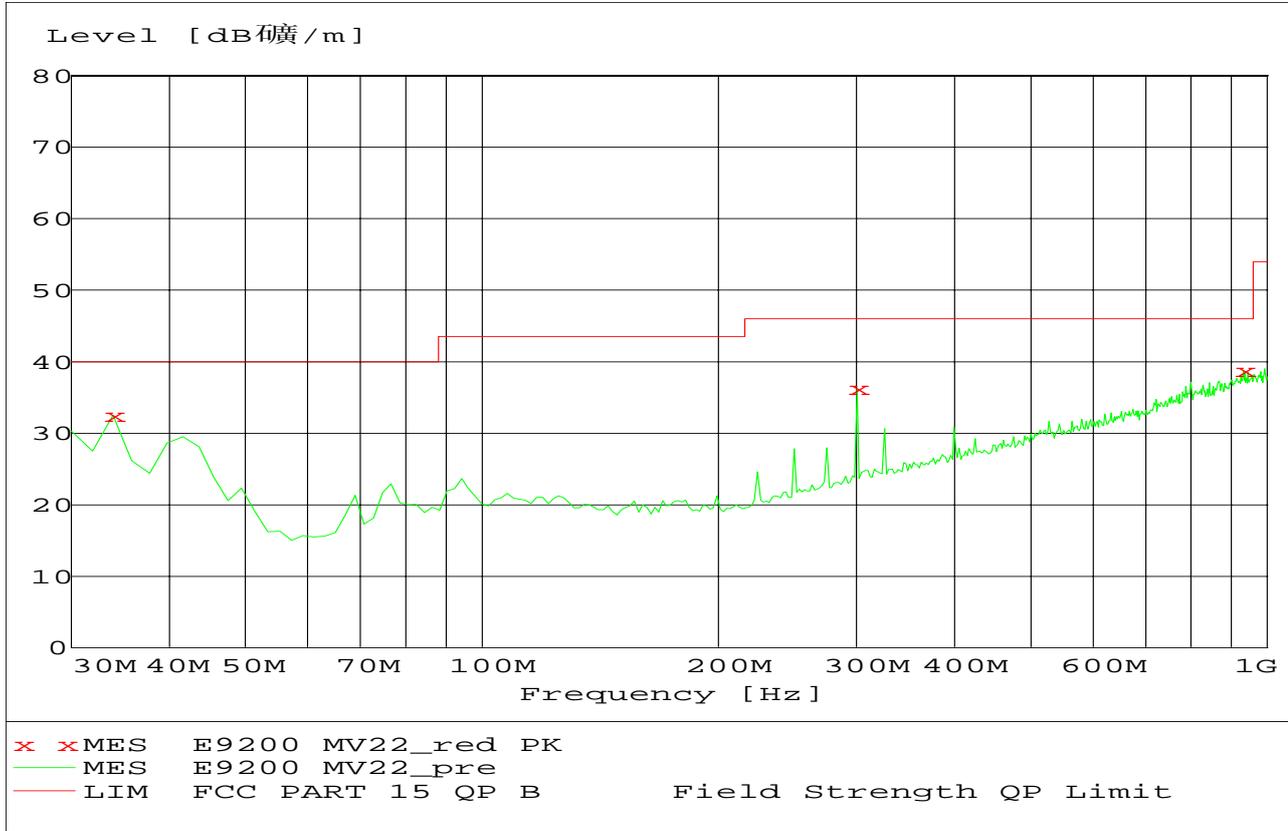


**MEASUREMENT RESULT: "E9200 MH22\_red PK"**

Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
300.200401	39.18	280.00	100.0	HOR	-10.0	46.0	6.8
955.290581	38.20	242.00	200.0	HOR	2.9	46.0	7.8

**Electric Field Strength**

Vertical:

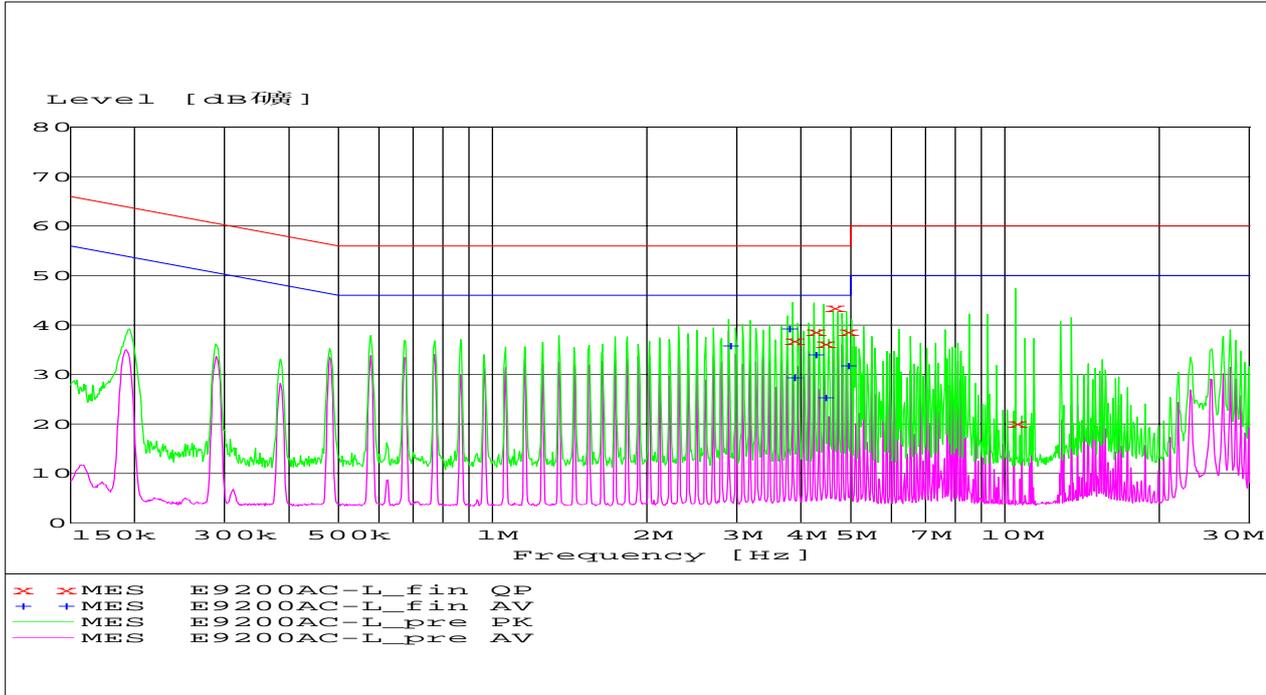


**MEASUREMENT RESULT: "E9200 MV22\_red PK"**

Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
33.887776	32.52	360.00	100.0	VER	-6.9	40.0	7.5
300.200401	36.29	207.00	200.0	VER	-10.0	46.0	9.7
931.963928	38.73	271.00	200.0	VER	2.8	46.0	7.3

**Conducted Emission**

Power supply cord "L"



**MEASUREMENT RESULT: "E9200AC-L\_fin QP"**

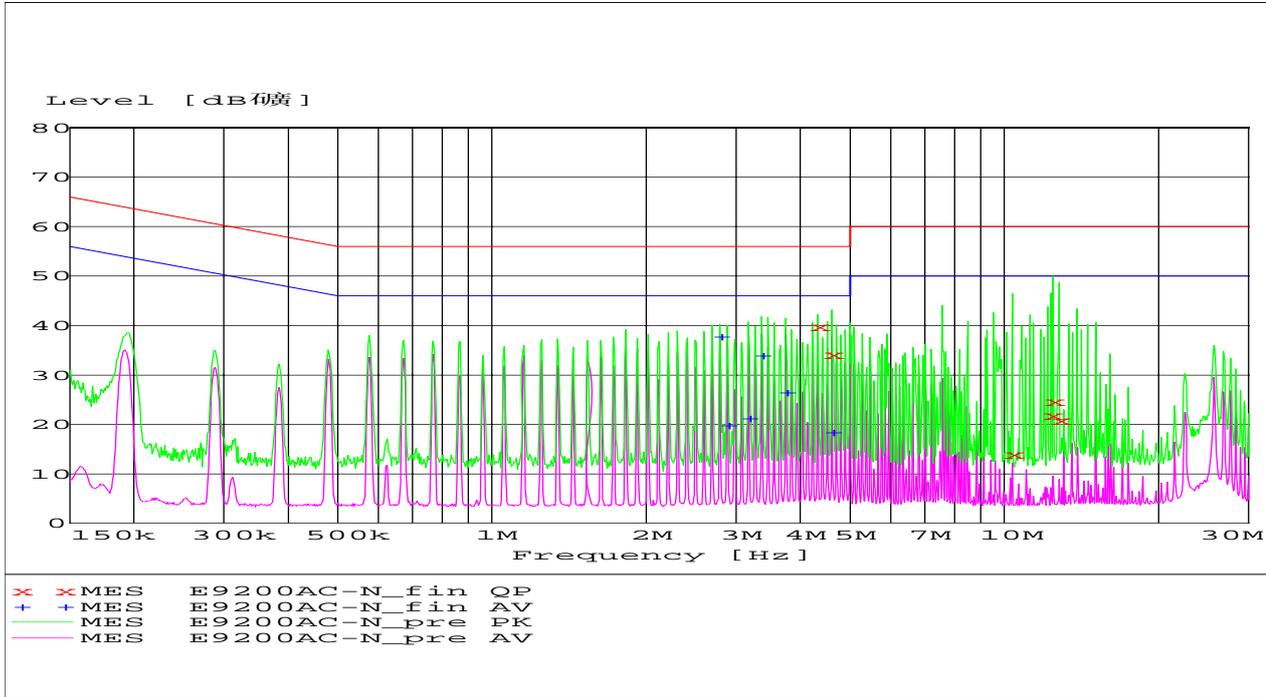
Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
3.851233	36.80	9.9	56	19.2	L1	GND
4.238468	38.70	9.9	56	17.3	L1	GND
4.428735	36.30	9.9	56	19.7	L1	GND
4.627544	43.50	9.9	56	12.5	L1	GND
4.913107	38.60	9.9	56	17.4	L1	GND
10.489667	20.20	10.0	60	39.8	L1	GND

**MEASUREMENT RESULT: "E9200AC-L\_fin AV"**

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
2.889166	35.90	9.9	46	10.1	L1	GND
3.760084	39.20	9.9	46	6.8	L1	GND
3.851233	29.50	9.9	46	16.5	L1	GND
4.238468	34.00	9.9	46	12.0	L1	GND
4.428735	25.50	9.9	46	20.5	L1	GND
4.913107	31.80	9.9	46	14.2	L1	GND

**Conducted Emission**

Power supply cord "N"



**MEASUREMENT RESULT: "E9200AC-N\_fin QP"**

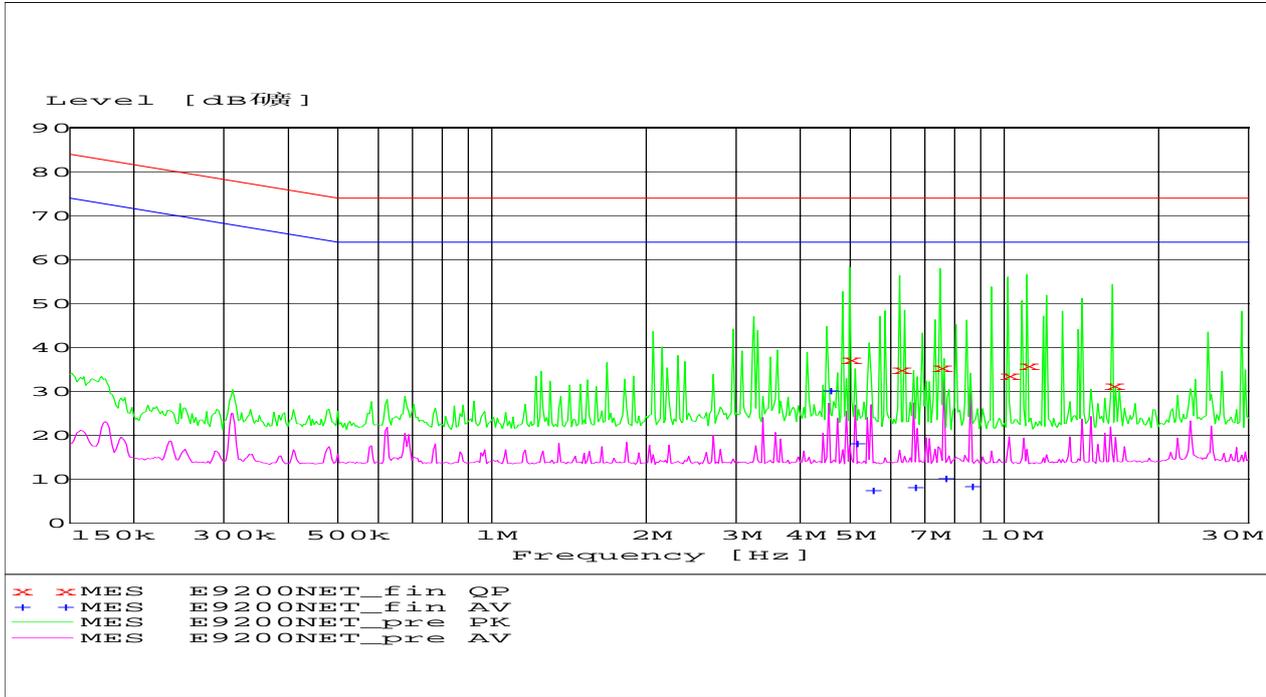
Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
4.323918	39.90	9.9	56	16.1	N	GND
4.609108	34.10	9.9	56	21.9	N	GND
10.364791	14.00	10.0	60	46.0	N	GND
12.355033	21.90	10.0	60	38.2	N	GND
12.454071	24.60	10.0	60	35.4	N	GND
12.806998	20.90	10.0	60	39.1	N	GND

**MEASUREMENT RESULT: "E9200AC-N\_fin AV"**

Frequency MHz	Level dB $\mu$ V	Transd dB	Limit dB $\mu$ V	Margin dB	Line	PE
2.787206	37.90	9.9	46	8.1	N	GND
2.877655	19.90	9.9	46	26.1	N	GND
3.166998	21.20	9.9	46	24.8	N	GND
3.362432	33.90	9.9	46	12.1	N	GND
3.745103	26.40	9.9	46	19.7	N	GND
4.609108	18.50	9.9	46	27.5	N	GND

**Conducted emission**

Ethernet line



**MEASUREMENT RESULT: "E9200NET\_fin QP"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
4.997185	37.30	19.9	74	36.7	Net	GND
6.246263	35.10	19.9	74	38.9	Net	GND
7.502613	35.40	19.9	74	38.6	Net	GND
10.155767	33.60	20.0	74	40.5	Net	GND
11.086095	36.00	20.0	74	38.0	Net	GND
16.251152	31.30	20.0	74	42.7	Net	GND

**MEASUREMENT RESULT: "E9200NET\_fin AV"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
4.541497	30.20	19.9	64	33.8	Net	GND
5.118079	18.20	19.9	64	45.8	Net	GND
5.498596	7.70	19.9	64	56.3	Net	GND
6.657398	8.30	19.9	64	55.7	Net	GND
7.623135	10.30	19.9	64	53.7	Net	GND
8.590958	8.50	19.9	64	55.5	Net	GND

## Appendix B

Constructional Photographs  
of  
Equipment under test (EUT)(see attached files:  
internal photos; external photos ;

**Any safety relevant information or constructional aspect concerning the sample or equipment under test as submitted by the applicant / report holder / certificate holder or any authorized agent is deemed to have no adverse effect on the electromagnetic compatibility (EMC) performance. Insofar as safety or compliance with Low Voltage Directive (LVD) or any relevant directive is concerned, the applicant / report holder / certificate holder or any authorized agent is required, by virtue of the relevant EU Directive provisions, to have satisfied that the product concerned (for which a sample was tested) meets with LVD or other relevant directives before placing it on the market.**

# Appendix C

Certificates

of

ZTE Corporation EMC Lab



**China National Accreditation Service for Conformity Assessment**

**LABORATORY ACCREDITATION CERTIFICATE**

**(No. CNAS L0611 )**

*China National Accreditation Service for Conformity Assessment has accredited*

**ZTE Corporation Reliability Testing Center**

5/F., A Wing, ZTE Plaza, Keji South Road, Hi-Tech, Industrial Park, Nanshan  
District, Shenzhen, Guangdong, China

*to ISO/IEC 17025:2005 General Requirements for the Competence of  
Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria  
for the Competence of Testing and Calibration Laboratories) for the  
competence in the field of testing.*

*The scope of accreditation is detailed in the attached schedule bearing the same  
accreditation number as above. The schedule forms an integral part of this  
certificate.*

**Date of Issue: 2007-05-17**

**Date of Expiry: 2012-05-16**

**Date of Initial Accreditation: 2001-12-17**

Signed on behalf of China National Accreditation Service  
for Conformity Assessment

China National Accreditation Service for Conformity Assessment(CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation systems for conformity assessment. CNAS is the signatory to International Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (ILAC MRA), and the signatory to Asia Pacific Laboratory Accreditation Cooperation Multilateral Recognition Arrangement (APLAC MRA).

CERTIFICATE

# ACT CERTIFICATE



Product Service

## Acceptance of Client's Testing

**Safety & EMC Laboratory  
Reliability Test Centre**

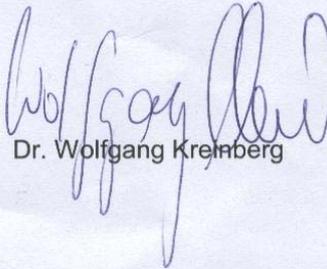
**ZTE Corporation**

ZTE Plaza, Keji Road South,  
Hi-Tech Industrial Park, Nanshan District,  
Shenzhen, Guangdong, 518057,  
P.R.China

This document certifies that the above named Manufacturer is included in the TÜV SÜD PRODUCT SERVICE GROUP (TÜV SÜD) Listing of Recognized Manufacturer's Laboratories and is qualified in compliance with the TÜV SÜD Acceptance of Client's Testing Program for the mutually agreed product categories and/ or standards. With this certificate TÜV SÜD confirms that the Manufacturer's Laboratory has been audited and continues to meet the ACT Program requirements.

Certificate No: PRC0608A  
Expiration Date: 2007-08-09

For the Executive Committee of TÜV SÜD:

  
Dr. Wolfgang Kreinberg



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706/04

**FEDERAL COMMUNICATIONS COMMISSION**

Laboratory Division  
7435 Oakland Mills Road  
Columbia, MD 21046

November 25, 2005

Registration Number: 373926

ZTE Corporation  
1/F, B2 Wing, ZTE plaza, Keji Road South  
Hi-Tech industrial park  
Shenzhen, Guangdong, 518057  
China  
Attention: Bright Xie

Re: Measurement facility located at Shenzhen  
Anechoic chamber (3 meters)  
Date of Renewal: November 25, 2005

Dear Sir or Madam:

Your request for renewal of the registration of the subject measurement facility has been received. The information submitted has been placed in your file and the registration has been renewed. The name of your organization will remain on the list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that the file must be updated for any changes made to the facility and the registration must be renewed at least every three years.

Measurement facilities that have indicated that they are available to the public to perform measurement services on a fee basis may be found on the FCC website [www.fcc.gov](http://www.fcc.gov) under E-Filing, OET Equipment Authorization Electronic Filing, Test Firms.

Sincerely,



Phyllis Parrish  
Information Technician

