



# TEST REPORT

No. 2011TAR599

for

**ZTE Corporation**

**HSUPA Wireless Access Terminal**

**Model Name: MF23**

**FCC ID : Q78-ZTEMF23**

with

**Hardware Version: T0057366C-G**

**Software Version: EN\_ZTE\_MF23\_AV1.0.0B04**

**Issued Date: 2011-11-14**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

**Test Laboratory:**

***DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02***

***FCC 2.948 Listed: No.733176***

***IC O.A.T.S listed: No.6629A-1***

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52, Huayuan beilu, Haidian District, Beijing, P. R. China  
Postal Code: 100191  
Telephone: 00861062304633-2678  
Fax: 00861062304633-2504

### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.3. Project data

Testing Start Date: Oct. 16, 2011  
Testing End Date: Oct. 20, 2011

### 1.4. Signature



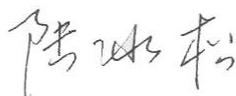
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(Prepared this test report)



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Sun Xiangqian  
(Reviewed this test report)



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Lu Bingsong  
Deputy Director of the laboratory  
(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: ZTE Corporation  
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China  
City: Nan Jing  
Postal Code: 210012  
Country: China  
Telephone: +86-25-52878232  
Fax: +86-25-68897541

### **2.2. Manufacturer Information**

Company Name: ZTE Corporation  
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China  
City: Nan Jing  
Postal Code: 210012  
Country: China  
Telephone: +86-25-52878232  
Fax: +86-25-68897541

### **3. Equipment Under Test (EUT) and Ancillary Equipment (AE)**

#### **3.1. About EUT**

Description	HSUPA Wireless Access Terminal
Model Name	MF23
FCC ID	Q78-ZTEMF23
Extreme vol. Limits	9.6VDC to 14.4VDC (nominal: 12VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

#### **3.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
EUT1	352037031239219	T0057366C-G	EN_ZTE_MF23_AV1.0.0B04

\*EUT ID: is used to identify the test sample in the lab internally.

#### **3.3. Internal Identification of AE used during the test**

<b>AE ID*</b>	<b>Description</b>	<b>SN</b>
AE1	AC/DC Adapter	/

AE1

Model	RD1200700-C55-1MG
Manufacturer	RUIDE
Length of DC line	122cm

\*AE ID: is used to identify the test sample in the lab internally.

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices	July 10, 2008 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber** (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

**Conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

**Fully-anechoic chamber1** (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

**Fully-anechoic chamber2** (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

## 6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	A.1	P
2	Conducted Emission	15.107(a)	A.2	P

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2012-03-12
2	Test Receiver	ESCI	100766	R&S	2011-12-06
3	Test Receiver	ESI40	831564/002	R&S	2012-02-11
4	BiLog Antenna	VUL9163	302	Schwarzbeck	2012-02-10
5	LISN	ESH2-Z5	829991/012	R&S	2012-04-17
6	Universal Radio Communication Tester	CMU200	100680	R&S	2012-09-05
7	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-02-18
8	PC	OPTIPLEX 755	3908243625	DELL	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
10	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
11	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
12	Mouse	VR-301	692722550019 8	XINGYU	N/A

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 15.109(a)

#### **A.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator (Ethernet mode) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

#### **A.1.2 EUT Operating Mode:**

The EUT is operating in the cable Ethernet mode.

During the test, the EUT is set to GSM850MHz idle mode. The RJ11 port of EUT is connected to a telephone while the telephone is set to on hook position. The WLAN function of EUT is set to receive only mode. The EUT is connected to a PC via a Cat-5 cable. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The PING program is used to let the PC keep on transferring data to EUT.

#### **A.1.3 Measurement Limit**

Limit from CFR Part 15.109(a)

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

#### **A.1.4 Test Condition**

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/1MHz	15

### A.1.5 Measurement Results

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

$G_A$ : Antenna factor of receive antenna

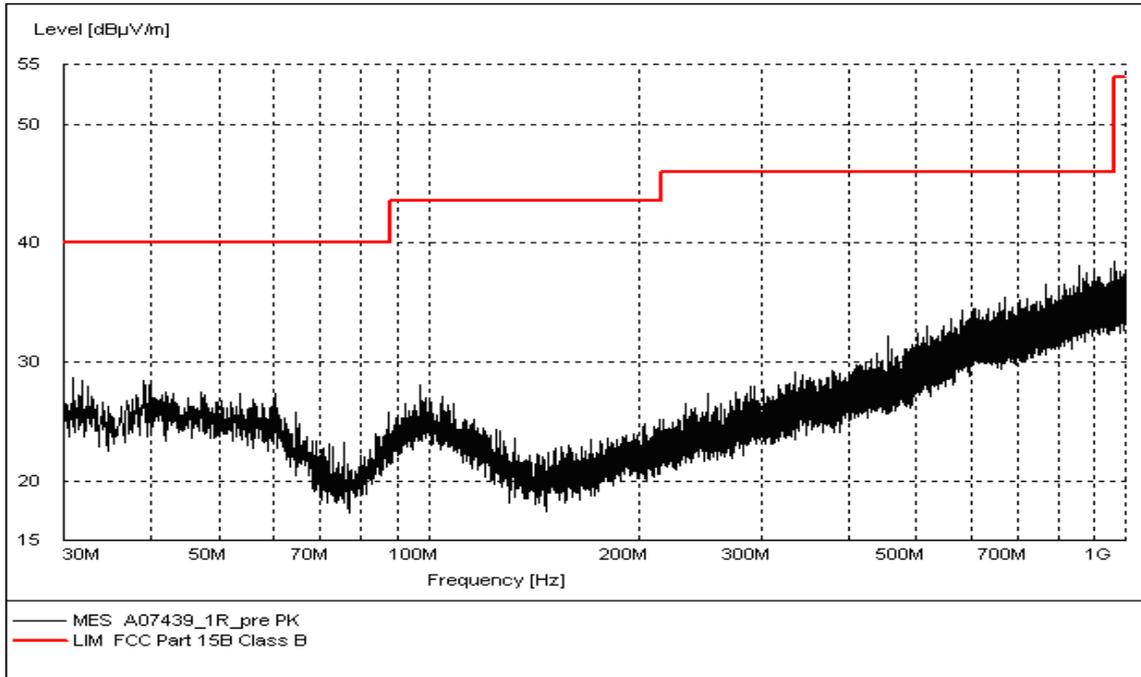
$G_{\text{PL}}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

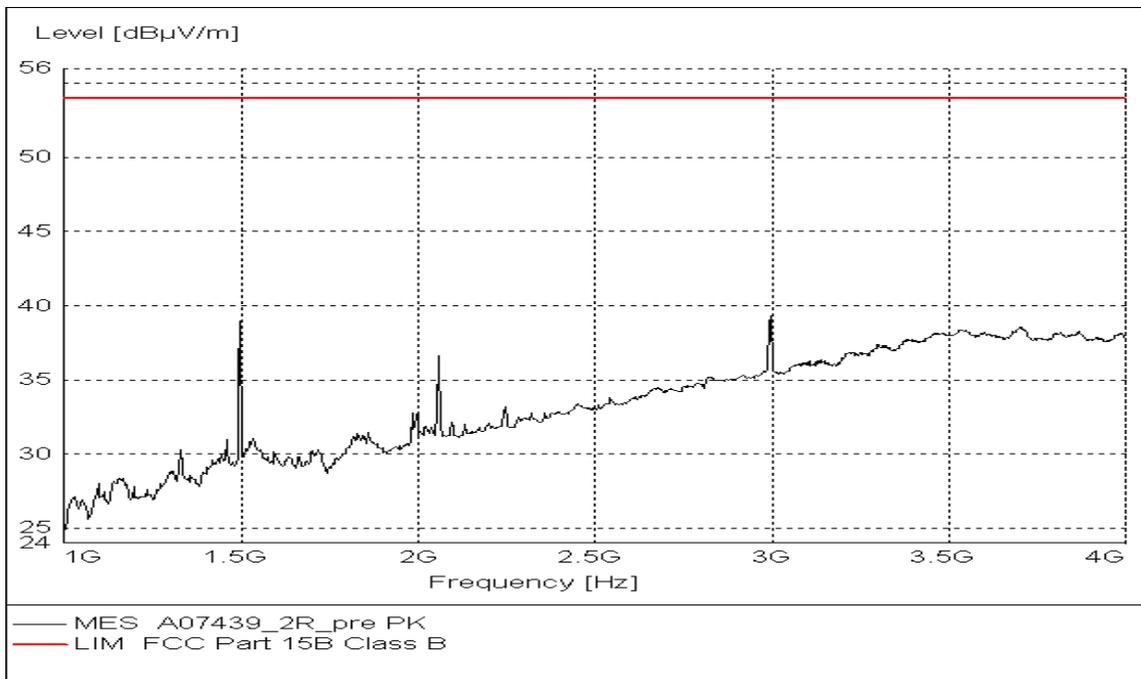
### Ethernet Mode

Frequency(MHz)	Result(dBuV/m)	$G_{\text{PL}}$ (dB)	$G_A$ (dB/m)	$P_{\text{mea}}$ (dBuV)	Polarity
2995.992	39.29	-19.5	29.2	29.59	VERTICAL
1496.994	38.97	-21.8	24.7	36.07	VERTICAL
2991.984	38.84	-19.5	29.2	29.14	VERTICAL
3699.399	38.57	-19.5	33.4	24.67	VERTICAL
3701.403	38.56	-19.4	33.4	24.56	VERTICAL
3703.407	38.54	-19.4	33.4	24.54	VERTICAL

**Ethernet Mode**



**Figure A.1 Radiated Emission from 30MHz to 1GHz**



**Figure A.2 Radiated Emission from 1GHz to 4GHz**

## A.2 Conducted Emission

### Reference

FCC: CFR Part 15.107(a)

### A.2.1 Method of measurement

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

### A.2.2 EUT Operating Mode:

The EUT is operating in the cable Ethernet mode.

During the test, the EUT is set to GSM850MHz idle mode. The RJ11 port of EUT is connected to a telephone while the telephone is set to on hook position. The WLAN function of EUT is set to receive only mode. The EUT is connected to a PC via a Cat-5 cable. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The PING program is used to let the PC keep on transferring data to EUT.

### A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

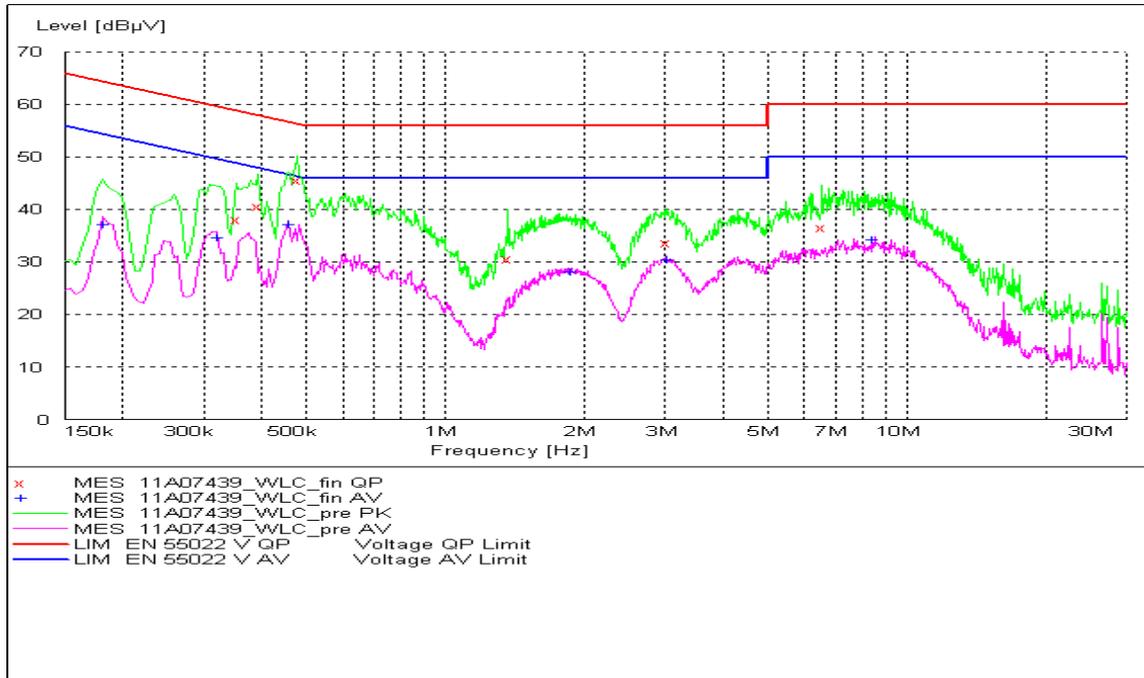
\*Decreases with the logarithm of the frequency

### A.2.4 Test Condition in Ethernet mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1

**A.2.5 Measurement Results**  
**Ethernet Mode**



**Figure A.3 Conducted Emission**

**MEASUREMENT RESULT: "11A07439\_WLC\_fin QP"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.352500	38.20	10.1	59	20.7	L1	GND
0.393000	40.60	10.1	58	17.4	N	GND
0.478500	45.60	10.1	56	10.8	N	GND
1.369500	30.60	10.1	56	25.4	N	GND
3.025611	33.80	10.1	56	22.2	N	GND
6.554698	36.70	10.2	60	23.3	L1	GND

**MEASUREMENT RESULT: "11A07439\_WLC\_fin AV"**

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.181500	37.20	10.1	54	17.3	N	GND
0.321000	34.70	10.1	50	15.0	N	GND
0.456000	37.10	10.1	47	9.6	N	GND
1.873500	28.20	10.1	46	17.8	N	GND
3.025611	30.50	10.1	46	15.5	L1	GND
8.411158	34.40	10.2	50	15.6	L1	GND

**\*\*\*END OF REPORT\*\*\***