TESTING
CNAS L4963

# MPR REPORT

No. 2011SAR166

FCC ID: Q78-ZTEMF23

Applicant: ZTE CORPORATION

Product: HSUPA Wireless Access Terminal

Model: MF23

Issued Date: 2011-12-09

**Test Laboratory:**
Shanghai Tejet Communications Technology Co., Ltd Testing Center.
Room 6205-6208, Building 6, No.399 Cailun Rd. Zhangjiang Hi-Tech Park, Shanghai, China 210203
Tel: +86-21-61650880
Fax: +86-21-61650881
www.tejet.cn

**Note:**
The following test results relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of the test laboratory.

## General Information

| | | | |
|---|---|---|---|
| Product Name | HSUPA Wireless Access Terminal | Model Name | MF23 |
| Applicant | ZTE CORPORATION | | |
| Manufacturer | ZTE CORPORATION | | |
| Reference Standard | **FCC RULES 47 CFR2.1091:** Radiofrequency radiation exposure evaluation: mobile device | | |
| | **OET65C-97-01:** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields | | |
| Test Results | Pass | | |

Prepared by _____ Date 2011.12.09
Yin Xiaoming

Reviewed by _____ Date 2011.12.09
Xue Jianguo

Approved by _____ Date 2011.12.09
GM of Tejet
Wang Jianrong

(Stamp)

# CONTENTS:

# 1. Test Laboratory

## 1.1 Testing Location:

Company: Shanghai Tejet Communications Technology Co., Ltd Testing Center.
Address: Room 6205-6208, Building 6, No.399 Cailun Rd. Zhangjiang Hi-Tech Park, Shanghai, China
Post Code : 210203
Tel: +86-21-61650880
Fax: +86-21-61650881
Website: www.tejet.cn

## 1.2 Laboratory Environment

| | |
|---|---|
| Temperature | 20° C～ 25 ° C |
| Relative humidity | 20%～70% |

## 1.3 Testing date

The test is performed on Nov 5th~15th 2011.

# 2. Client Information

## 2.1 Applicant information

| | |
|---|---|
| Company Name: | ZTE Corporation |
| Address: | ZTE Plaza ,Keji Road South ,Hi-Tech Industrial Park ,Nanshan District, Shenzhen, Guangdong,518057,P.R.China |
| Post Code : | 518057 |
| Country: | China |
| Tel: | 021-68897541 |
| Fax: | 021-50801070 |

## 2.2 Manufacturer Information

| | |
|---|---|
| Company Name: | ZTE Corporation |
| Address: | ZTE Plaza ,Keji Road South ,Hi-Tech Industrial Park ,Nanshan District, Shenzhen, Guangdong,518057,P.R.China |
| Post Code : | 518057 |
| Country: | China |
| Tel: | 021-68897541 |
| Fax: | 021-50801070 |

# 3.Equipment Under Test (EUT) and Accessory Equipment (AE)

## 3.1 Information of EUT

| | | |
|---|---|---|
| Device type | Portable device | |
| Product name | WCDMA Wireless Module | |
| Device operation configuration: | | |
| IMEI | 3520370312422296 | |
| S/N | T005GR212QB7000087 | |
| Operating mode(s): | GSM850 | |
| | GSM1900 | |
| | WCDMA BAND II | |
| | WCDMA BAND V | |
| Test modulation | (GSM)GMSK | |
| Rated output power | GSM 850:33dBm | |
| | GSM1900: 30dBm | |
| | WCDMA Band II：24dBm | |
| | WCDMA Band V：24dBm | |
| Operating frequency range(s): | Band | Tx(MHz) |
| | GSM850 | 869.2～893.8 |
| | GSM1900 | 1930.2～1989.8 |
| | WCDMA Band II | 1852.4～1907.6 |
| | WCDMA Band V | 826.4～846.6 |
| Power class | GSM850: 4,test with power level 5 | |
| | GSM1900: 1,test with power level 0 | |
| | WCDMA Band II：3，test with maximum output power | |
| | WCDMA Band V：3，test with maximum output power | |
| HW Version | T0057366C-G | |
| SW Version | EN_ZTE_MF23_AV1.0.0B04； | |

## 3.2 Information Of AE

| AE ID* | Description |
|---|---|
| AE1 | Power supply |

AE1

| | |
|---|---|
| Model | RD1200700-C55-1OG |
| Manufacture | ZTE CORPORATION |

*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.

| Reference | Title | Version |
|---|---|---|
| OET65C | Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields | 1997-01 |

KDB 447498 D01： Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Polices

## 4.2 RF Exposure Limit

According to OET65C: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation 。

**Table 1.** ***FCC Limits for Maximum Permissible Exposure (MPE)***

**(B) Limits for General Population/Uncontrolled Exposure**

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) ($mW/cm^2$) | Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | ($180/f^2$)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | -- | -- | f/1500 | 30 |
| 1500-100,000 | -- | -- | 1.0 | 30 |

f = frequency in MHz *Plane-wave equivalent power density

## 5. Friis Formula

Friis transmission formula : Pd = (Pout*G) *DutyFactor / (4*Pi*$r^2$)
where
**Pd** = power density in **mW/cm$^2$**
**Pout** = output power to antenna in m**W**
**G** = gain of antenna in linear scale
**Pi** = **3.1416**
R = distance between observation point and center of the radiator in **cm**
Pd is the limit of MPE. If we know the maximum Gain of the antenna and the total power input to the antenna, through the calculation, we will know the MPE value at distance 20cm.
Of GSM Duty Factor=1：8.3.
Of WCDMA Duty Factor=1：1
Of WIFI 802.11b/g/n Duty Factor=1：1：

## 6. Classification

According KDB 447498 D01：

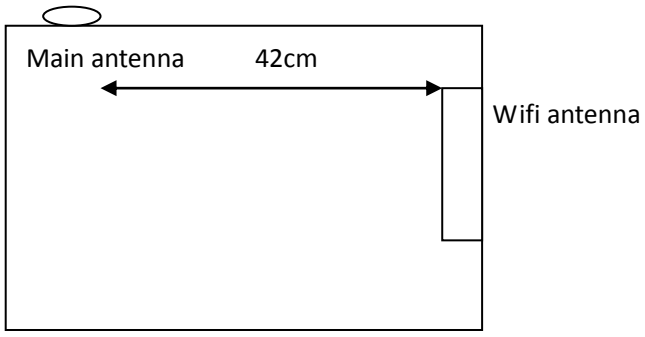
The antennas of this product, under normal use condition, is at least 20cm away from the body of the user.

Distance between wifi antenna and main antenna is 42cm≥5cm.

Simultaneous Transmission SAR are not required.

So, this device is classified as Mobile Device.

Picture of antennas：



# 7. Test Results

## 7.1 The maximum antenna gain

The maximum antenna gain for external antenna is
GSM 850: 5.39dBi
GSM1900: 5.13dBi
WCDMA BAND II: 4.94dBi
WCDMA BAND V: 4.89dB
WIFI 802.11b/g/n： 3.3 dBi

## 7.2 Output Power Into Antenna & RF Exposure value at distance 20cm

| Frequency band | Output power（dBm） | Power density（mW/ $cm^2$） | Limit of Power density（mW/ $cm^2$） |
|---|---|---|---|
| **GSM850** | 32.97 | 0.164 | **0.55** |
| **GSM1900** | 29.33 | 0.067 | **1** |
| **WCDMA BAND II** | 22.65 | 0.114 | **0.55** |
| **WCDMA BAND V** | 22.65 | 0.113 | **1** |
| **WIFI** | 30 | 0.425 | **1** |

So the limit is kept.

## ANNEX A: EUT Photograph


EUT

POWER SUPPLY

## ANNEX B: Test Instruments

| No. | Name | Type | S/N | Calibration Date | Valid Period |
|---|---|---|---|---|---|
| 01 | BTS | CMU200 | 121464 | Oct 14st，2011 | One year |

## ANNEX C: Measurement Uncertainty

| | |
|---|---|
| Expanded uncertainty (confidence interval of 95 %)（k=2） | 0.4 dB |

## ANNEX D: Change History

| Version | Change Contents | Author | Date |
|---|---|---|---|
| V1.0 | First edition | Yin xiaoming | 2011-11-17 |
| V2.0 | Add information of wifi antenna | Yin xiaoming | 2011-12-09 |
| | | | |
| | | | |
| | | | |

----------END OF REPORT----------