



# Variant FCC Test Report

**APPLICANT** : ZTE CORPORATION  
**EQUIPMENT** : CDMA2000 Digital Mobile Phone  
**BRAND NAME** : ZTE  
**MODEL NAME** : X501  
**FCC ID** : Q78-X501  
**STANDARD** : FCC 47 CFR FCC Part 15 Subpart B  
**CLASSIFICATION** : Certification

This is a variant report which is only valid together with the original test report. The product was received on Jun. 25, 2012 and completely tested on Jul. 16, 2012. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (KUNSHAN) INC., the test report shall not be reproduced except in full.

Reviewed by:

Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
**No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C.**



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### SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 3.15 dB at 720.640 MHz



## **1. General Description**

### **1.1. Applicant**

**ZTE CORPORATION**

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

### **1.2. Manufacturer**

**ZTE CORPORATION**

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

### 1.3. Feature of Equipment Under Test

Product Feature	
Equipment	CDMA2000 Digital Mobile Phone
Brand Name	ZTE
Model Name	X501
FCC ID	Q78-X501
EUT supports Radios application	CDMA/EV-DO/WLAN 11bg / Bluetooth
HW Version	QB7627-05AMB_E
SW Version	X501_CKT_4.03
EUT Stage	Identical Prototype

**Remark:** The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Product Specification subjective to this standard	
<b>Tx Frequency</b>	CDMA2000 BC0: 824.70 MHz ~ 848.31 MHz CDMA2000 BC1: 1815.25 MHz ~ 1908.75 MHz CDMA2000 BC15 : 1711.25 ~ 1753.75 MHz 802.11b/g: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
<b>Rx Frequency Range</b>	CDMA2000 BC0: 869.70 MHz ~ 893.31 MHz CDMA2000 BC1: 1931.25 MHz ~ 1988.75 MHz CDMA2000 BC15 : 2111.25 ~ 2153.75 MHz 802.11b/g: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz GPS : 1.57542 GHz
<b>Antenna Type</b>	WWAN : Fixed Internal Antenna WLAN : PIFA Antenna Bluetooth : PIFA Antenna
<b>Type of Modulation</b>	CDMA2000 : QPSK CDMA2000 1xEV-DO : 8PSK 802.11b : DSSS (BPSK / QPSK / CCK) 802.11g : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth (1Mbps) : GFSK Bluetooth 2.1 EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth 2.1 EDR (3Mbps) : 8-DPSK GPS : BPSK



### 1.4. Test Site

<b>Test Site</b>	SPORTON INTERNATIONAL (KUNSHAN) INC.		
<b>Test Site Location</b>	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
<b>Test Site No.</b>	<b>Sporton Site No.</b>		<b>FCC/IC Registration No.</b>
	CO01-KS	03CH01-KS	149928/4086E-1

### 1.5. Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 3

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.



### 1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	GPS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
3.	WLAN AP	D-link	DIR-855	KA2DIR855A2	N/A	Unshielded, 1.8 m
4.	PC	Dell	MT380	FCC DoC	N/A	Unshielded, 1.8 m
5.	Monitor	Dell	E1910Hc	FCC DoC	Shielded, 1.2 m	Unshielded, 1.8 m
6.	(USB) Mouse	Dell	N231	FCC DoC	Shielded, 1.8 m	N/A
7.	(USB)Keyboard	Dell	SK-8115	FCC DoC	Shielded, 1.5 m	N/A
8.	Bluetooth Earphone	Nokia	BH-102	PYAHS-107W	N/A	N/A
9.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.2 m	N/A
10.	Printer	HP	Laser Jet 1018	FCC DoC	Shielded, 1.8 m	Unshielded, 1.8 m

## 2. Test Configuration of Equipment Under Test

### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition	
		EMI RE<1G	EMI RE≥1G
1.	Data application transferred mode (EUT with PC)	☒	☒

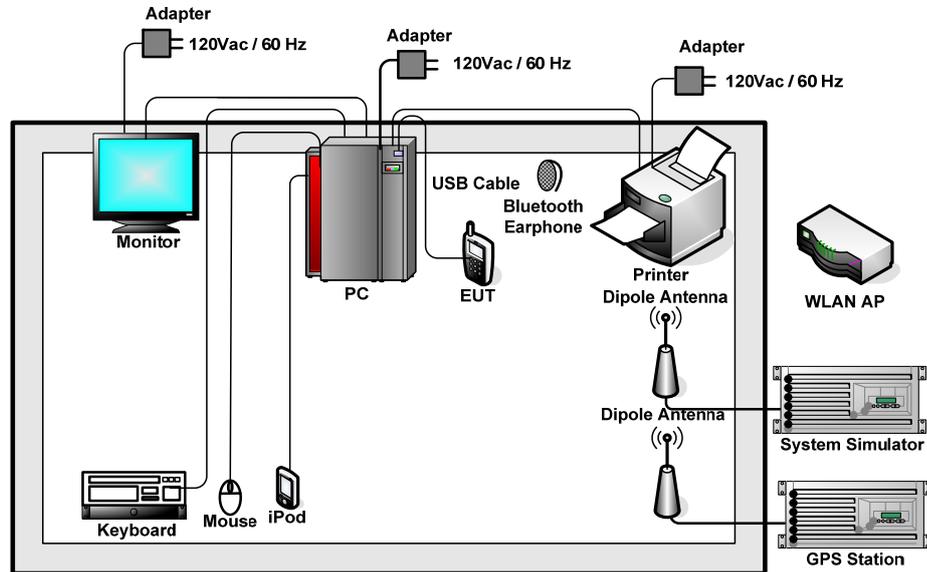
**Abbreviations:**

- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

Test Items	EUT Configure Mode	Function Type
Radiated Emissions < 1GHz	1	Mode 1: CDMA2000 BC1 Idle + WLAN Idle + Bluetooth Idle + USB Cable (Data Link with PC) + GPS Rx
Radiated Emissions ≥ 1GHz	1	Mode 1: CDMA2000 BC1 Idle + WLAN Idle + Bluetooth Idle + USB Cable (Data Link with PC) + GPS Rx

**Remark:** Link with PC means data application transferred mode between EUT and PC.

## 2.2. Connection Diagram of Test System





## **2.3. Test Software**

The EUT was in CDMA2000 idle mode during the testing. The EUT was synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

1. Execute the program, "Winthrax" under WIN7 installed in PC for files transfer with EUT via USB cable.
2. Data application is transferred between PC and EUT via USB cable.
3. Turn on GPS function to make the EUT receive continuous signals from GPS station.
4. Execute "H Pattern" to show H Pattern via VGA Cable on the Monitor.
5. Connect LCD Monitor via VGA Cable.



### 3. Test Result

#### 3.1. Test of Radiated Emission Measurement

##### 3.1.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

##### 3.1.2. Measuring Instruments

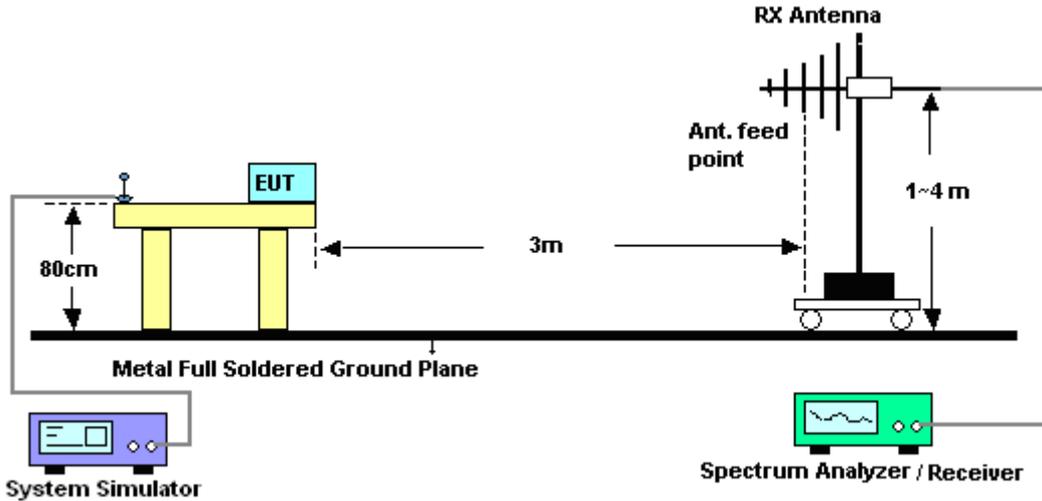
See list of measuring instruments of this test report.

##### 3.1.3. Test Procedures

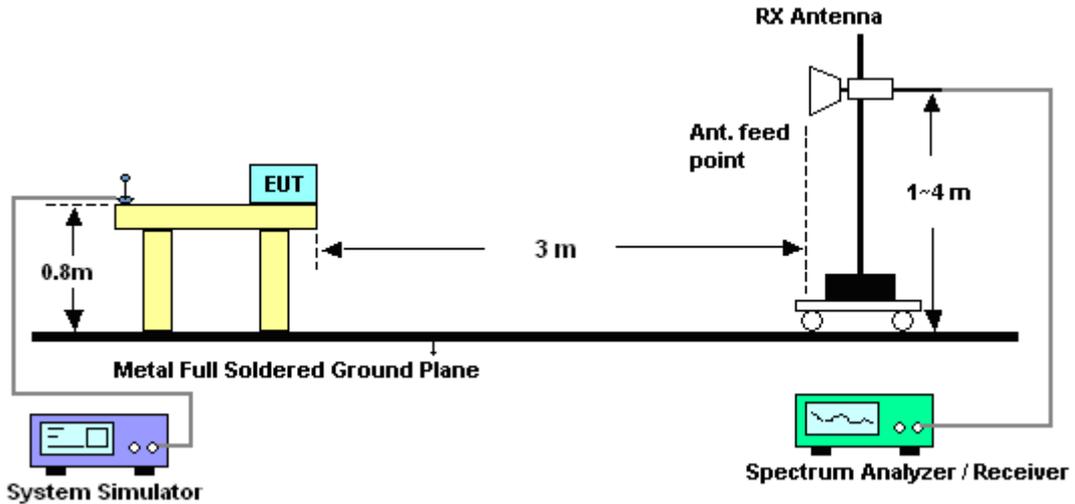
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
8. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor= Level

### 3.1.4. Test Setup of Radiated Emission

For radiated emissions from 30MHz to 1GHz



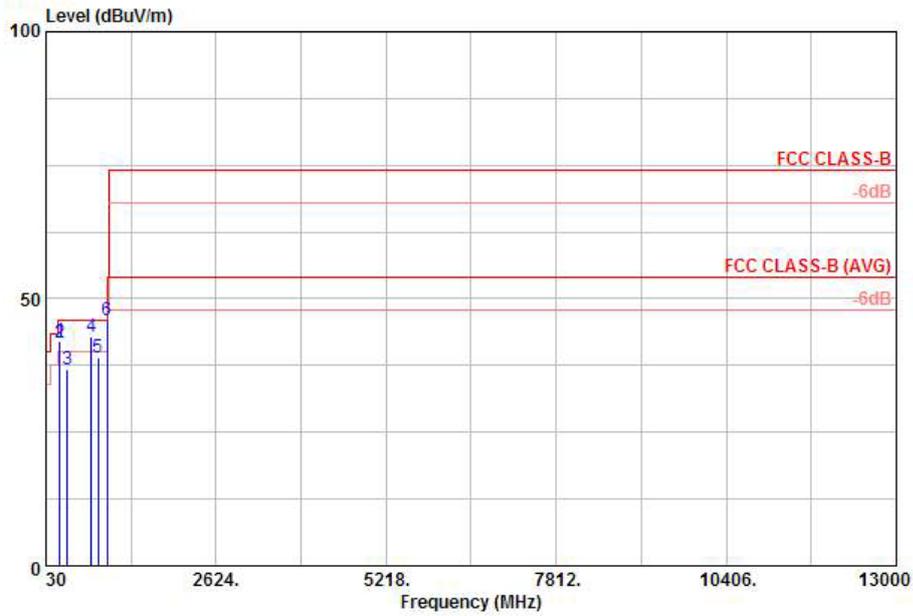
For radiated emissions above 1GHz





3.1.5. Test Result of Radiated Emission

Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Steven Hao	Relative Humidity :	43~44%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	CDMA2000 BC1 Idle + WLAN Idle + Bluetooth Idle + USB Cable (Data Link with PC) + GPS Rx		



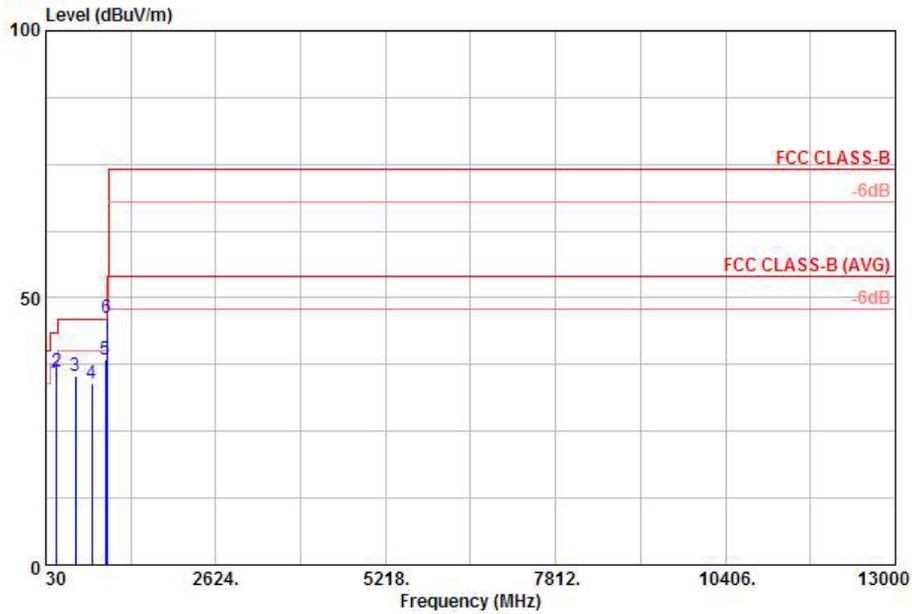
Site : 03CH01-KS  
 Condition: FCC CLASS-B 3m LF\_ANT\_100803 HORIZONTAL

Mode : mode 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	239.52	42.14	-3.86	46.00	59.79	11.51	0.66	29.82	---	---	Peak
2 !	243.40	41.92	-4.08	46.00	59.39	11.70	0.66	29.83	---	---	Peak
3	359.80	36.75	-9.25	46.00	51.13	14.72	0.82	29.92	---	---	Peak
4 !	720.64	42.85	-3.15	46.00	51.83	19.53	1.15	29.66	120	25	Peak
5	825.40	39.06	-6.94	46.00	47.24	20.18	1.26	29.62	---	---	Peak
6	960.23	45.85	-8.15	54.00	53.26	20.79	1.34	29.54	---	---	Peak



Test Mode :	Mode 1	Temperature :	23~25°C
Test Engineer :	Steven Hao	Relative Humidity :	43~44%
Test Distance :	3m	Polarization :	Vertical
Function Type :	CDMA2000 BC1 Idle + WLAN Idle + Bluetooth Idle + USB Cable (Data Link with PC) + GPS Rx		



Site : 03CH01-KS  
 Condition: FCC CLASS-B 3m LF\_ANT\_100803 VERTICAL

Mode : mode 1

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	180.35	34.36	-9.14	43.50	55.28	8.40	0.56	29.88	---	---	Peak
2	195.87	36.33	-7.17	43.50	56.94	8.80	0.58	29.99	150	0	Peak
3	480.08	35.34	-10.66	46.00	47.28	16.87	0.94	29.75	---	---	Peak
4	738.10	33.93	-12.07	46.00	42.54	19.79	1.17	29.57	---	---	Peak
5	935.98	38.34	-7.66	46.00	45.88	20.67	1.32	29.53	---	---	Peak
6	960.23	46.37	-7.63	54.00	53.78	20.79	1.34	29.54	---	---	Peak



### 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Nov. 09, 2011	Jul. 16, 2012	Nov. 08, 2012	Radiation (03CH01-KS)
Spectrum Analyzer	R&S	FSP40	100319	9kHz~40GHz	Dec. 30, 2011	Jul. 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Bilog Antenna	SCHAFFNER	CBL6112D	23182	25MHz~2GHz	Dec. 08, 2011	Jul. 16, 2012	Dec. 07, 2012	Radiation (03CH01-KS)
Double Ridge Horn Antenna	EMCO	3117	00075959	1GHz~18GHz	Jan. 06, 2012	Jul. 16, 2012	Jan. 05, 2013	Radiation (03CH01-KS)
Amplifier	Wireless	FPA-6592G	060007	30MHz~2GHz	Dec. 30, 2011	Jul. 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Dec. 30, 2011	Jul. 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
System Simulator	R&S	CMU200	837587/066	2G Full-Band	Dec. 30, 2011	Jul. 16, 2012	Dec. 29, 2012	Radiation (03CH01-KS)
GPS Station	ADIVIC	MP9000	MP9000-111046	N/A	Dec. 15, 2011	Jul. 16, 2012	Dec. 14, 2012	Radiation (03CH01-KS)



## 5. Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.26
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### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.54
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### Uncertainty of Radiated Emission Measurement (1 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.72
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## **Appendix A. Photographs of EUT**

Please refer to Sporton report number EP220101-01 as below.



## **Appendix C. Product Equality Declaration**

# ZTE CORPORATION

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

Tel: +86-755-86360734 ; Fax: +86-755-86360734

Date: July 19, 2012

## Product Equality Declaration

We, ZTE CORPORATION, declare on our sole responsibility for the product of **X501** below:

The differences between previous and current model of **X501** are as below:

1. Replace DP1 (AWS band duplex) vendor : Original: TAIYO, New: EPCOS
2. Delete L55 that is 2.7nH inductance.
3. Replace Z8 (PCS band TX SAW) vendor: Original: TAIYO, New: Murata
4. Replace Z9 (PCS band RX SAW) vendor: Original: TAIYO, New: Murata
5. Delete L18 that is 15nH inductance.
6. Modify the software version

Except listings above, the others are all the same as previous version.

Should you have any questions or comments regarding this matter, please have my best attention.

Sincerely yours,



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