

FCC PART 15B
MEASUREMENT AND TEST REPORT

For

ZTE Corporation

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Shenzhen, Guangdong, China 518057

FCC ID: Q78-ZTEX176
Model: ZTEX176

Report Type: Original Report	Product Type: CDMA 1X Digital Mobile Phone
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1 GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, FCC ID: Q78-ZTE X176 or the "EUT" as referred to in this report is a CDMA 1X Digital Mobile Phone, which measures approximately 100mm(L) x43.3mm(W) x 13.4mm(H)

The frequency range is CDMA 1.9 GHz (UL: 1850~1910 MHz, DL: 1930~1990 MHz).

Type of Modulation: OQPSK

Occupied Bandwidth: 1.25 MHz

TX/RX Separation: 20 MHz

** The test data gathered are from production sample, serial number: 290727810211, provided by the manufacturer.*

Antenna Frequency Range: 1850-1990 MHz

Connector Type: Crimp Connection

Maximum Gain: 2dB

Antenna Type/Pattern: Monopole/ Omni directional

EUT Photo



Additional Photos in Exhibit C

1.2 Objective

This report has been prepared by ZTE Corp. in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communications Commission rules, and Canadian ICES-003, Interference – Causing Equipment Standards for Digital Apparatus.

The objective is to determine compliance with FCC Part 15 Standard, Class B limits, and Canadian ICES-003 Standard, Class B limits for conducted and radiated emission requirements for the digital device portion of this device.

1.3 Related Submittal(s)/Grant(s)

There is no related original submittal under the same FCC ID, for the intentional radiator portion of the EUT subject to the FCC part 24E requirements. Please refer to ZTE report ZTEB0809307-24E for measurement and testing results.

1.4 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurements were performed at ZTE Corporation Reliability Testing Center

1.5 Test Facility

ZTE Corporation Reliability Testing Center

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

Tel: +86-755-26770345

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Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC).

The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 25, 2005. ZTE Corporation Lab's FCC Registration Number is 373926.

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was configured for testing according to ANSI C63.4-2003.

The final qualification test was performed with the EUT operating at normal mode.

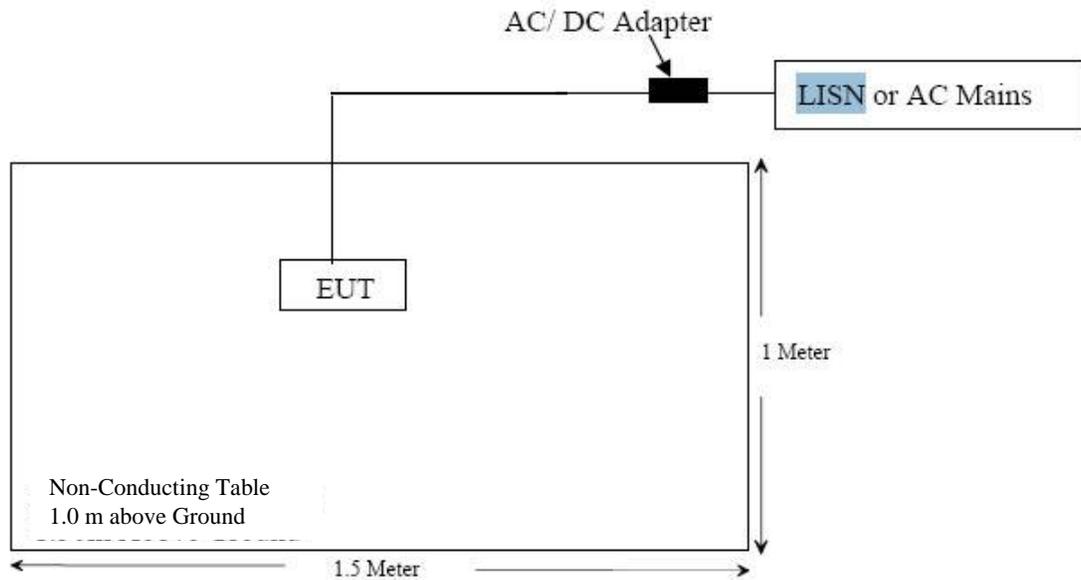
2.2 Equipment Modifications

No modifications were made to the EUT.

2.3 Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Agilent	Wireless communication test set	8960 E5515C	GB43042905
HP	Laptop	NC8430 (AC Adaptor: PPP012L-S)	CNU64610SB

2.4 Test Setup Block Diagram



3 SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§ 15.107	Conducted Emission	Compliant
§ 15.109	Radiated Emission	Compliant

4 §15.107 – Conducted Emission

4.1 Applicable Standard

As per FCC §15.107: Conducted Limits

(a) Except for Class A digital devices, 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 in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

4.2 EUT Setup

The conducted emissions tests were performed in the 10-meter test chamber, using the setup in accordance with ANSI C63.4-2003 measurement procedures. The specifications used were in accordance with FCC Part 15 Standard, Class B limits.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected the AC/DC adapter which was connected to a LISN that provided 120 V/ 60 Hz power.

4.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Dates
R & S	EMI Test Receiver 20 Hz ~ 26.5 GHz	ESIB26	100058	2007-11-2
EMCO	LISN	ESH2-Z5	100027	2008-3-3

*

Statement of Traceability: ZTE Corporation Reliability Testing Center attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

4.4 Test Procedure

During the conducted emissions test, the power cord of the host system was connected to the main outlet of the LISN-1.

Maximizing procedure was performed on the six (6) highest emission readings from the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Average readings are labeled "AV" and Quasi-peak readings are labeled "QP," in the test data hereinafter.

4.5 Environmental Conditions

Temperature:	22° C
Relative Humidity:	55%
ATM Pressure:	1018mbar

* The testing was performed by Guan Bin on 2008-09-16

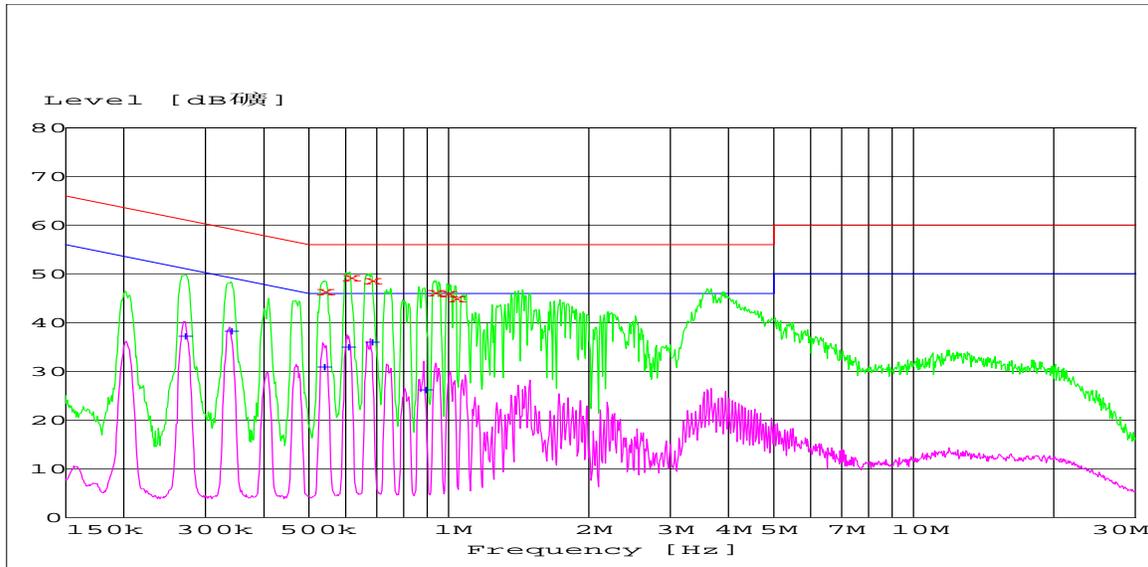
4.6 Summary of Test Results

According to the recorded data, the EUT complied with FCC §15.107 Standard, Class B limits, and had the worst margin reading of:

Conducted Disturbance at AC port			
Margin (dB)	Frequency (MHz)	Conductor Mode (Hot/Neutral)	Range (MHz)
6.6	0.611446	HOT	0.150 MHz to 30 MHz

4.7 Conducted Emissions Test Plots and Data

Conducted Disturbance at AC port measurements were undertaken on the Hot



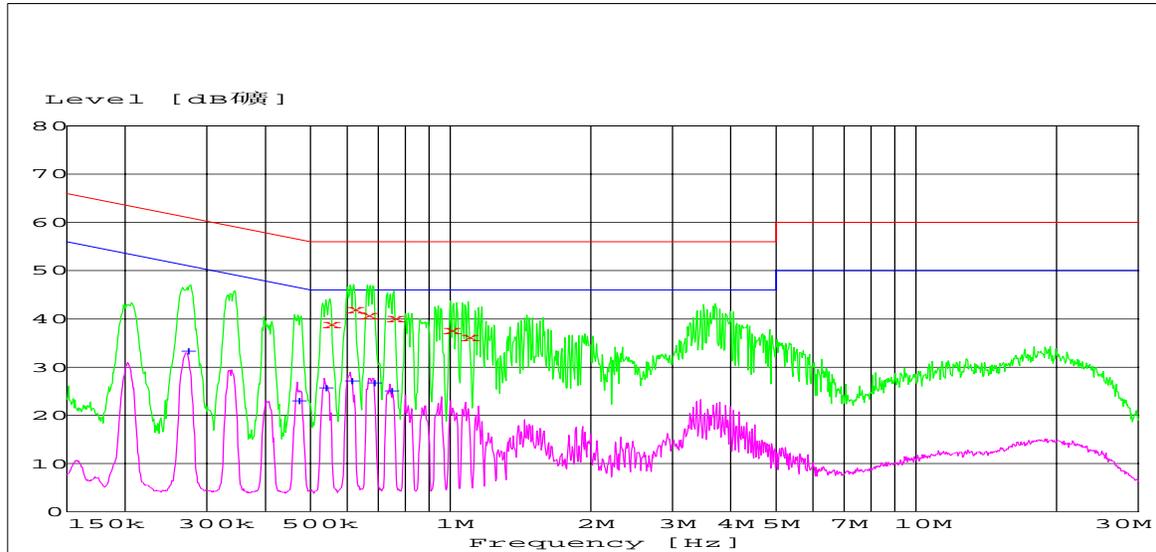
Quasi-Peak Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Hot/Neutral)	Transd. (dB)	Limit (dBµV)	Margin (dB)
0.53812	46.5	Hot	9.9	56	9.5
0.611446	49.4	Hot	9.9	56	6.6
0.681033	48.8	Hot	9.9	56	7.2
0.929818	46.3	Hot	9.9	56	9.7
0.991146	46.1	Hot	9.9	56	9.9
1.031513	45.1	Hot	9.9	56	10.9

Average Measurements

Frequency (MHz)	Average (dBµV)	Conductor (Hot/Neutral)	Transd. (dB)	Limit (dBµV)	Margin (dB)
0.268666	37.4	Hot	9.9	51	13.8
0.337314	38.4	Hot	9.9	49	10.9
0.535976	31	Hot	9.9	46	15
0.604167	35.1	Hot	9.9	46	10.9
0.67832	36.2	Hot	9.9	46	9.8
0.882795	26.4	Hot	9.9	46	19.6

Conducted Disturbance at AC port measurements were undertaken on the Neutral



Quasi-Peak Measurements

Frequency (MHz)	Quasi-Peak (dBµV)	Conductor (Hot/Neutral)	Transd. (dB)	Limit (dBµV)	Margin (dB)
0.551165	39	Neutral	9.9	56	17
0.618813	42.1	Neutral	9.9	56	13.9
0.662266	40.9	Neutral	9.8	56	15.1
0.755518	40.3	Neutral	9.9	56	15.7
0.999091	37.7	Neutral	9.9	56	18.3
1.090804	36.3	Neutral	9.9	56	19.7

Average Measurements

Frequency (MHz)	Average (dBµV)	Conductor (Hot/Neutral)	Transd. (dB)	Limit (dBµV)	Margin (dB)
0.27082	33.3	Neutral	9.9	51	17.8
0.46795	23.2	Neutral	9.9	47	23.4
0.535976	25.8	Neutral	9.9	46	20.2
0.60901	27.3	Neutral	9.9	46	18.7
0.681033	26.8	Neutral	9.9	46	19.2
0.740588	25.1	Neutral	9.9	46	20.9

5 §15.109 –Radiated Emission

5.1 Applicable Standard

As per FCC §15.109: Radiated Emission Limits

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength ($\mu\text{V/m}$)
33 -88	100
88 – 216	150
216 – 960	200
Above 960	500

(g) As an alternative to the radiated emission limits shown in paragraphs (a) and (b) of this section, digital devices may be shown to comply with the standards contained in Third Edition of the International Special Committee on Radio Interference (CISPR), Pub. 22, “Information Technology Equipment – Radio Disturbance Characteristics – Limits and Methods of Measurement.”

Note: The CISPR 22 §6 Standard, Class B limits are applied to the test data hereinafter.

5.2 Test Setup

The radiated emissions tests were performed in the 10-meter test chamber, using the setup in accordance with ANSI C63.4-2003 measurement procedures. The specifications used were in accordance with CISPR 22 Standard, Class B limits for frequencies between 30 MHz and 1 GHz, and FCC Part 15 Standard, Class B limits for frequencies above 1 GHz.

The spacing between the peripherals was 10 cm.

The external I/O cables were draped along the test table and bundled as required.

The EUT was connected to the AC/DC adaptor which was connected to the AC Mains to represent normal operating conditions.

5.3 Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Cal. Date
R & S	EMI Test Receiver 20Hz~26.5GHz	ESIB26	100058	2007-11-2
R & S	Log periodic Antenna 30~3000MHz	HL562	100022	2008-8-11
Albatross	Anechoic Chamber 3m site	3m site	A0001735A	2008-7-01
R & S	Software	ES-K1	N/A	N/A
Agilent	Universal Radio Communication Tester	8960	GB43042905	2008-01-19

* **Statement of Traceability:** ZTE Corporation Reliability Testing Center attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

5.4 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2003). The test distance was 3m. The EUT was set-up on insulator 0.8m above the Metallic Turntable

The radiated disturbance measurements were made using a Rohde and Schwarz ESI Test Receiver and control software ES-K1.

A preliminary scan and a final scan of the emissions were made from 30MHz to 1GHz by using test script of software; the emissions were measurement using a Quasi-Peak detector. The maximal emission value was acquired by adjusting the antenna height, polarization and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0° to 360°. The receive antenna has two polarizations V and H.

5.5 Environmental Conditions

Temperature:	22.5° C
Relative Humidity:	57%
ATM Pressure:	1016mbar

* The testing was performed by Guan Bin on 2008-09-16

5.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor, and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corrected Amplitude} - \text{Class B Limit}$$

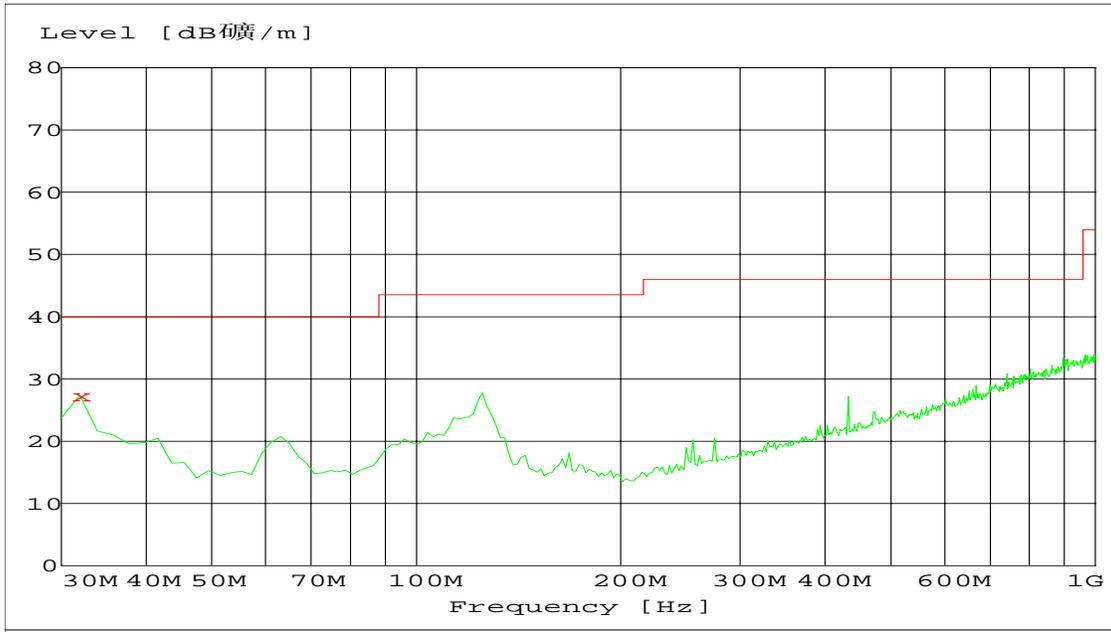
5.7 Summary of Test Results

According to the recorded data, the EUT complied with FCC §15.109 Standard, Class B limits, and had the worst margin readings – when calculated using CISPR 22 Standard, Class B limits – of:

Connection 120V /60Hz AC			
Margin (dB)	Frequency (MHz)	Polarization (Horizontal/Vertical)	Range (MHz)
2.5	31.94389	Vertical	30 MHz to 1000 MHz

5.8 Radiated Emissions Test Plots and Data

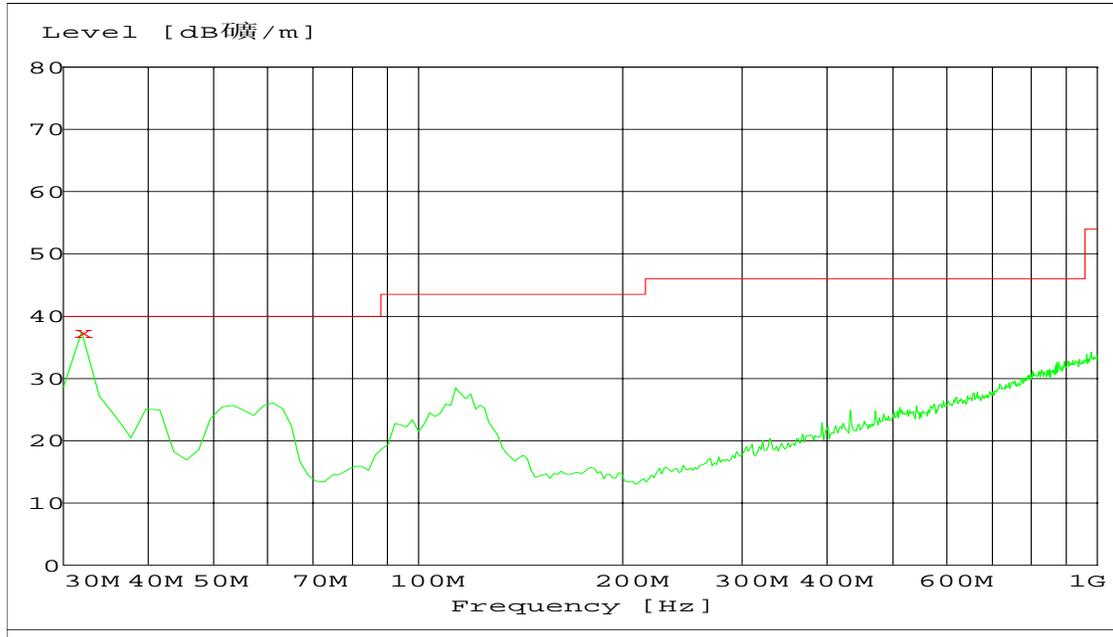
Horizontal



Measurement Results: Quasi-Peak Detector

Frequency (MHz)	Quasi-Peak (dBµV/m)	Turntable Position (degrees)	Antenna Height (cm)	Ant. Polarity (H/V)	Transd (dB)	Limit (dBµV/m)	Margin (dB)
31.94389	27.4	260	100	H	-12.4	40	12.6

Vertical



Measurement Results: Quasi-Peak Detector

Frequency (MHz)	Quasi-Peak (dBµV/m)	Turntable Position (degrees)	Antenna Height (cm)	Ant. Polarity (H/V)	Transd (dB)	Limit (dBµV/m)	Margin (dB)
31.94389	37.51	83	100	V	-11.8	40	2.5