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EMI REPORT (DoC)

Applicant:

ZTE CORPORATION

**ZTE PLAZA Hi-tech Park, Nanshan District,
Shenzhen Guangdong 518057, China**

Date of Issue: June 07, 2010

Test Report No.: HCTE1006FE07

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

Q78-A410

Rule Part(s) / Standard(s) : FCC PART 15 Subpart B / CISPR 22 Class B

Equipment Type : Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA/AWS CDMA)

Trade/Model(s) : ZTE CORPORATION / A410

Port / Connector(s) : DC Input Port / Headset Port / USB Data Port

The device bearing the trade name and model specified above, has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003. (See Test Report if any modifications were made for compliance)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

A handwritten signature in black ink, appearing to read 'Dong Sup Kim', positioned above a horizontal line.

Report prepared by
: Dong Sup Kim
Test Engineer of EMC Tech. Part

A handwritten signature in black ink, appearing to read 'Kyoung Hee Yoon', positioned above a horizontal line.

Approved by
: Kyoung Hee Yoon
Manager of EMC Tech. Part

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1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA/AWS CDMA)**, **Model: A410** manufactured by **ZTE CORPORATION**. Its basic purpose is used for communications.

Model	A410
FCC ID	Q78-A410
E.U.T Type	Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA/AWS CDMA)
TX Frequency	824.70 MHz to 848.31 MHz (CDMA 835) 1 851.25 MHz to 1 908.75 MHz (CDMA 1 900) 1 711.25 MHz to 1 753.75 MHz (AWS CDMA)
RX Frequency	869.70 MHz to 893.31 MHz (CDMA 835) 1 931.25 MHz to 1 988.75 MHz (CDMA 1 900) 2 111.25 MHz to 2 153.75 MHz (AWS CDMA)
Channel	Middle: 384 (CDMA 850) Middle: 450 (PCS 1 900)

1.2 Related Submittal(s) / Grant(s)

Original submittal only.

1.3 Tested System Details

All equipment descriptions used in the tested system (including inserted cards) are:

Device Type	Manufacturer	Model Number/ Part Number	FCC ID / DoC	Connected To
Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA /AWS CDMA)	ZTE CORPORATION	A410	Q78-A410	TA
Travel adaptor	-	TL60-D501000	-	E.U.T
Notebook PC	Compaq 6730b	HP	DoC	E.U.T
Notebook PC adaptor	PPP014Y-S	Hipro Electronics Co.,Ltd	-	Notebook PC
Mouse	Microsoft	Intellimouse optical USB and PS/2 compatible	DoC	Notebook PC
USB Cable	-	-	-	Notebook PC E.U.T
Headset	-	-	-	E.U.T

1.4 Cable Description

Product Name	Port	Power Cord Shielded (Y/N)	I/O Cable Shielded (Y/N)	Length (M)
Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA /AWS CDMA)	DC in	Y	-	(P)1.4
	Headset jack	-	N	(D)1.2
	USB data	Y	Y	(P,D)0.8
Notebook PC	USB (Mouse)	-	Y	(D)1.8

* The marked "(D)" means the data cable and "(P)" means the power cable.

1.5 Noise Suppression Parts on Cable. (I/O cable)

Product Name	Port	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA /AWS CDMA)	DC in	N	-	Y	E.U.T End
	Headset jack	N	-	Y	E.U.T End
	USB data	N	-	Y	Both End
Notebook PC	USB (Mouse)	Y	Notebook PC End	Y	Notebook PC End

1.6 Test Methodology

Both Conducted and Radiated testing was performed according to the procedures in ANSI C63.4/2003. Radiated testing was performed at an antenna to E.U.T distance of 3 m

1.7 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data are located at the 254-1, Maekok-ri, Hobup-myun, Ichon-si, Kyoungki-do, 467-701, KOREA. The site is constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated June 10, 2009. (Registration Number: 90661)

1.8 Frequency Range of Radiated Measurements

An unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a Radiated Emission limit is specified, up to the frequency shown in the following table

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 to 108	1 000
108 to 500	2 000
500 to 1 000	5 000
Above 1 000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

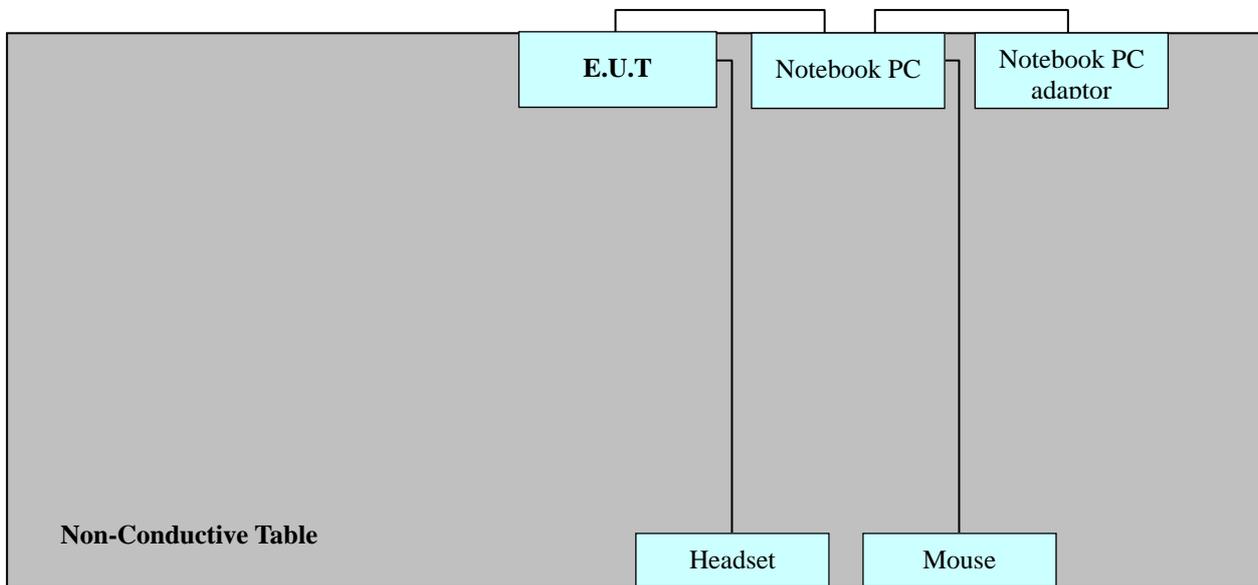
2. SYSTEM TEST CONFIGURATION

2.1 Configuration of Test System

Power Line Conducted test : E.U.T was connected to LISN via Notebook PC adaptor.
Preliminary Power Line Conducted Emission tests were performed by using the procedure in ANSI C63.4/2003 7.2.3 to determine the worst operating conditions.

Radiated Emission test : Preliminary Radiated Emission tests were performed by using the procedure in ANSI C63.4/2003 8.3.1.1 to determine the worst operating condition. Final Radiated Emission tests were performed at 3 m open area test site.

[Configuration of Tested System]



Power Line: 110 VAC

3. PRELIMINARY TEST

3.1 Conducted Emission Test

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
CDMA Idle (835, 1 900, AWS)	
Data Communication	○
Camera	

3.2 Radiated Emission Test

During preliminary tests, the following operating mode was investigated:

Operation Mode	The Worst Operating Condition
CDMA Idle (835, 1 900, AWS)	
Data Communication	○
Camera	

4. CONDUCTED AND RADIATED EMISSION TEST SUMMARY

4.1 Conducted Emission Test

The following table shows the highest levels of conducted emissions on both polarization of hot and neutral line.

Limit apply to	: CISPR 22 Class B
Result	: Passed by 7.4 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 25.9 °C
Humidity level	: 35.6 %
Test date	: June 04, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Result	Limit (dB μ V)	Margin (dB)
0.1500	55.9	HOT	Quasi-Peak	66.0	10.1
13.7240	42.6	NEUTRAL	Average	50.0	7.4
13.7240	48.1	NEUTRAL	Quasi-Peak	60.0	11.9
13.7480	42.5	HOT	Average	50.0	7.5

※ **NOTE:** Refer to page 10 to page 13 for details.

1. All modes of operation were investigated, and the worst-case emissions are reported.
2. Line H = Hot, Line N = Neutral

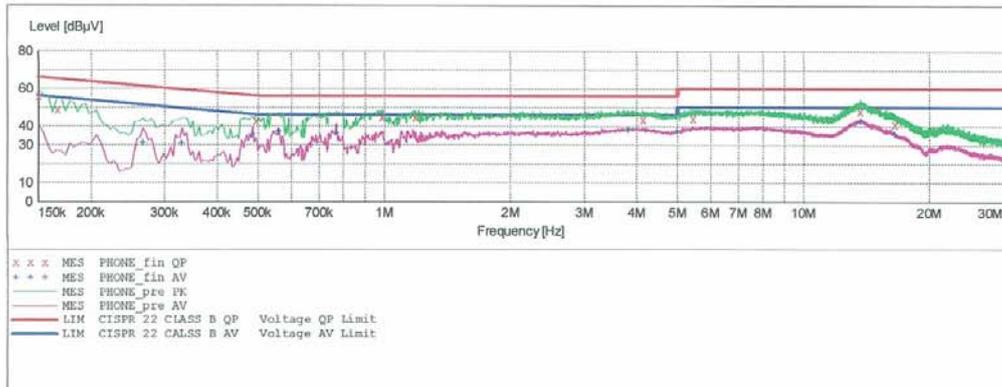
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EUT: A410
 Manufacturer: ZTE CORPORATION
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: DS-KIM
 Test Specification: CISPR22 CLASS B
 Comment: H

SCAN TABLE: "CISPR22 CLASS B"

Short Description:			CISPR22 CLASS B			
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

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Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150001	55.90	10.1	66	10.1	---	---
0.166001	48.80	10.1	65	16.3	---	---
0.494001	42.90	10.1	56	13.2	---	---
0.988000	44.80	10.1	56	11.2	---	---
1.184000	44.60	10.1	56	11.4	---	---
4.128000	43.40	10.4	56	12.6	---	---
5.452000	44.00	10.5	60	16.0	---	---
13.656000	48.00	11.1	60	12.0	---	---
16.516000	41.00	11.4	60	19.0	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.266001	31.20	10.0	51	20.0	---	---
0.330001	30.60	10.0	50	18.8	---	---
0.486001	35.60	10.1	46	10.6	---	---
0.560000	37.00	10.1	46	9.0	---	---
0.768000	36.20	10.1	46	9.8	---	---
3.828000	38.10	10.3	46	7.9	---	---
5.000000	37.30	10.4	46	8.7	---	---
13.748000	42.50	11.1	50	7.5	---	---
16.572000	35.50	11.4	50	14.5	---	---

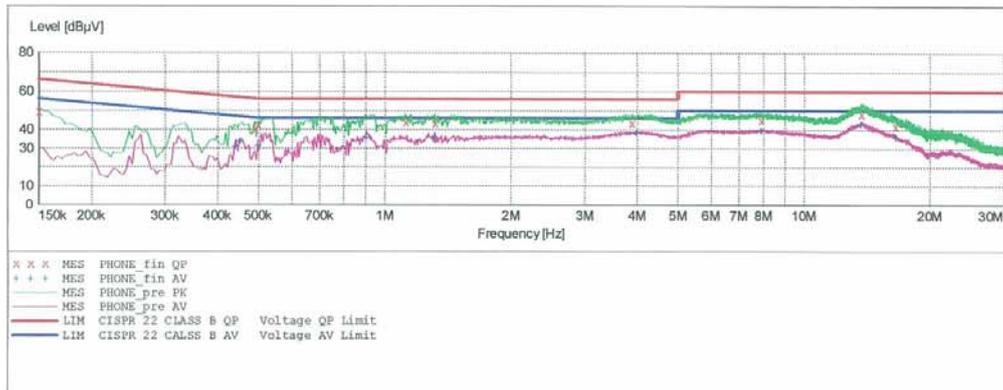
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EMC

EUT: A410
 Manufacturer: ZTE CORPORATION
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: DS-KIM
 Test Specification: CISPR22 CLASS B
 Comment: N

SCAN TABLE: "CISPR22 CLASS B"

Short Description:		CISPR22 CLASS B				
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak	10.0 ms	9 kHz	ESH3 (20100210)
			Average			



MEASUREMENT RESULT: "PHONE_fin QP"

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Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Line	PE
0.150001	49.30	10.1	66	16.7	---	---
0.490001	40.50	10.1	56	15.6	---	---
0.500000	42.30	10.1	56	13.7	---	---
1.120000	43.80	10.1	56	12.2	---	---
1.316000	43.20	10.1	56	12.8	---	---
3.888000	43.50	10.3	56	12.5	---	---
7.892000	44.60	10.7	60	15.4	---	---
13.724000	48.10	11.1	60	11.9	---	---
16.532000	41.60	11.4	60	18.4	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.442001	31.10	10.1	47	15.9	---	---
0.454001	33.60	10.1	47	13.2	---	---
0.500000	31.20	10.1	46	14.8	---	---
0.904000	35.50	10.1	46	10.5	---	---
1.316000	35.80	10.1	46	10.2	---	---
3.996000	38.30	10.3	46	7.7	---	---
7.928000	39.30	10.7	50	10.7	---	---
13.724000	42.60	11.1	50	7.4	---	---
16.604000	35.90	11.4	50	14.1	---	---

4.2 Radiated Emission Test

The following table shows the highest levels of Radiated Emissions on both polarization of horizontal and vertical.

Limit apply to : FCC PART 15 Subpart B
 Result : Passed by 7.4 dB
 Operating condition : Data Communication mode
 Detector : Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Temperature : 21.0 °C
 Humidity level : 38.5 %
 Test date : June 04 , 2010

Frequency	Reading	Ant. Factor	Cable Loss	Ant. POL	Total	Limit	Margin
MHz	dB μ V	dB/m	dB	(H/V)	dB μ V/m	dB μ V/m	dB
48.0	18.5	12.6	0.7	V	31.8	40.0	8.2
75.5	13.8	9.3	0.9	V	24.0	40.0	16.0
141.5	13.2	12.4	1.3	H	26.9	43.5	16.6
339.4	13.6	13.9	1.9	H	29.4	46.0	16.6
570.2	13.0	18.8	2.6	H	34.4	46.0	11.6
869.0	12.4	22.9	3.3	V	38.6	46.0	7.4

※ **NOTE:**

1. All modes of operation were investigated, and the worst-case emissions are reported.
2. For measurement above 1 GHz, noise level is more than 10 dB below the limit, specified in FCC Part 15.35

4.3 Test Setup Photos

[Conducted Emission]



[Radiated Emission]



5. FIELD STRENGTH CALCULATION

The field strength is calculated by adding the antenna factor and cable factor.
 The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

Where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 21.5 dB μ V is obtained. The antenna factor of 7.4 dB/m and a cable factor of 1.1 dB are added. The 30 dB μ V/m value is mathematically converted to its corresponding level in μ V/m.

$$FS = 21.5 + 7.4 + 1.1 = 30 \text{ dB}\mu\text{V/m}$$

[Radiated Emission Limits]

Frequency of Emission (MHz)	Field Strength	
	μ V/m	dB μ V/m
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0

6. TEST EQUIPMENT

<u>Type</u>	<u>Manufacturer</u>	<u>Model Number</u>	<u>Next CAL Date</u>
<u>Conducted Emission</u>			
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESCI	2011.02.19
<input checked="" type="checkbox"/> LISN	Rohde & Schwarz	ESH3-Z5	2011.02.05
<input type="checkbox"/> LISN	Rohde & Schwarz	ENV216	2011.04.06
<input checked="" type="checkbox"/> Attenuator	Rohde & Schwarz	ESH3-Z2	2010.10.30
<u>Radiated Emission</u>			
<input checked="" type="checkbox"/> EMI Test Receiver	Rohde & Schwarz	ESI40	2010.10.30
<input checked="" type="checkbox"/> Trilog Antenna	Schwarzbeck	VULB9160	2010.12.18
<input checked="" type="checkbox"/> Antenna Master	HD	MA240	-
<input checked="" type="checkbox"/> Turn Table	EMCO	1060	-
<input type="checkbox"/> Communication Antenna	TDK	LPDA-0802	-
<input type="checkbox"/> Antenna Position Tower	HD	240/520/00	-
<input type="checkbox"/> Base Station	Rohde & Schwarz	CMU 200	2011.02.17
<input checked="" type="checkbox"/> Horn Antenna	Schwarzbeck	BBHA 9120D	2012.04.13
<input checked="" type="checkbox"/> RF-Amplifier	MITEQ	AMF-6D-00101800 -35.20P.PS	2011.05.20
<input type="checkbox"/> Bluetooth Base Station	TESCOM	TC-3000A	2011.01.07

7. CONCLUSION

The data collected shows that the **ZTE CORPORATION, Model: A410, Tri-Band CDMA Phone with Bluetooth (CDMA/PCS CDMA/AWS CDMA), FCC ID: Q78-A410** complies with §15.107 and §15.109 of the FCC rules.