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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 11, 2010

Test Report No.: HCTE1005FE27-1

Test Site: HCT CO., LTD.

HCT FRN: 0005-8664-21

FCC ID:

Q78-A310

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

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

Trade/Model(s) : ZTE CORPORATION / A310

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.

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1. GENERAL INFORMATION

1.1 Product Description

Equipment Under Test (E.U.T) is **Tri-Band CDMA Phone (CDMA/PCS CDMA/AWS CDMA) with Bluetooth, Model: A310** manufactured by **ZTE CORPORATION**. Its basic purpose is used for communications.

Model	A310
FCC ID	Q78-A310
E.U.T Type	Tri-Band CDMA Phone (CDMA/PCS CDMA/AWS CDMA) with Bluetooth
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)

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 (CDMA/PCS CDMA/AWS CDMA) with Bluetooth	ZTE CORPORATION	A310	Q78-A310	TA
Travel adaptor	-	TL6D-0501000	-	E.U.T
Notebook PC	SAMSUNG	NT-R519	DoC	E.U.T
Notebook PC adaptor	DELTA	ADP-60ZH D AD-6019R	-	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 (CDMA/PCS CDMA/AWS CDMA) with Bluetooth	DC in	Y	-	(P)1.8
	Headset jack	-	N	(D)1.3
	USB data	Y	Y	(P,D)1.2
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 (CDMA/PCS CDMA/AWS CDMA) with Bluetooth	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

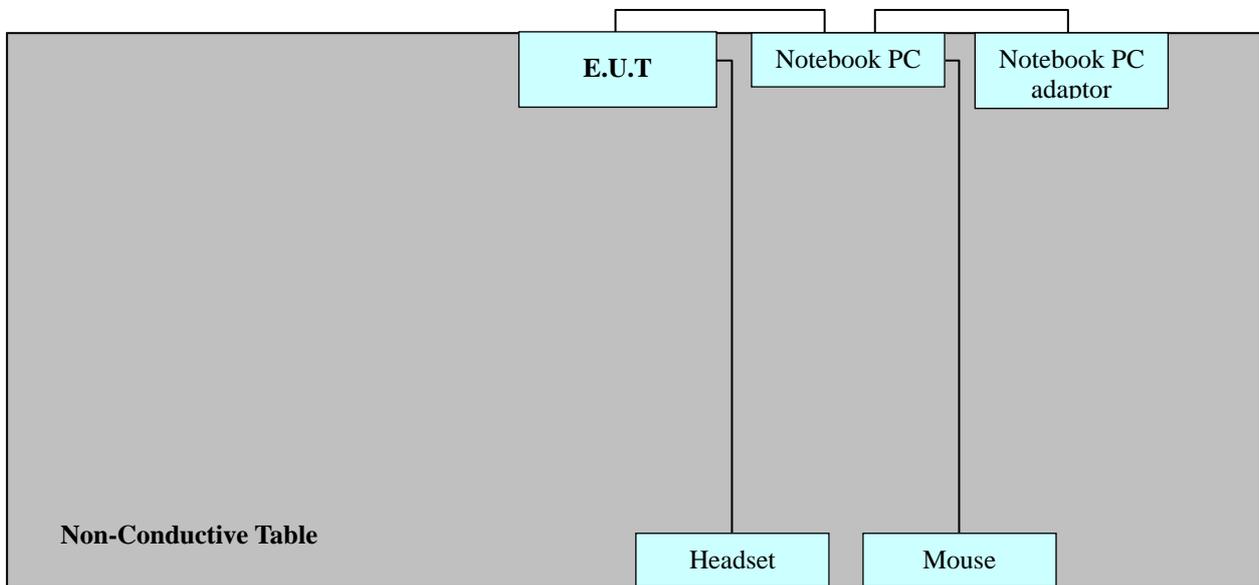
2. SYSTEM TEST CONFIGURATION

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 8.8 dB
Operating condition	: Data Communication mode
Detector	: Quasi-Peak, Average (6 dB Bandwidth: 9 kHz)
Temperature	: 23.7 °C
Humidity level	: 37.2 %
Test date	: March 31, 2010

Power Line Conducted Emissions			CISPR 22 Class B		
Frequency (MHz)	Amplitude (dB μ V)	Conductor	Result	Limit (dB μ V)	Margin (dB)
0.1540	54.9	NEUTRAL	Quasi-Peak	66.0	10.9
0.1540	57.0	HOT	Quasi-Peak	66.0	8.8
3.1440	32.0	HOT	Average	46.0	14.0
3.5040	33.0	NEUTRAL	Average	46.0	13.0

※ **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

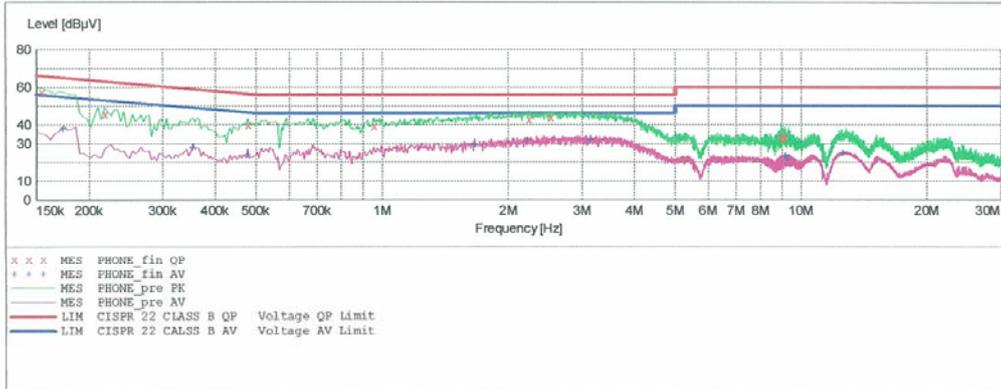
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EUT: A310
 Manufacturer:
 Operating Condition: DATA MODE
 Test Site: SHIELD ROOM
 Operator: DS-KIM
 Test Specification: CISPR22 CLASS B
 Comment: H

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)
500.0 kHz	5.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	ESH3 (20100210)
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
0.154001	57.00	10.1	66	8.8	---	---
0.218001	45.60	10.0	63	17.3	---	---
0.478001	39.80	10.1	56	16.5	---	---
0.956000	39.40	10.1	56	16.6	---	---
2.236000	42.90	10.2	56	13.1	---	---
2.528000	43.90	10.2	56	12.1	---	---
8.960000	33.10	10.7	60	26.9	---	---
9.024000	33.30	10.7	60	26.7	---	---
9.128000	33.00	10.7	60	27.0	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

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Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.174001	37.70	10.1	55	17.1	---	---
0.354001	28.00	10.1	49	20.9	---	---
0.478001	24.00	10.1	46	22.4	---	---
1.664000	29.10	10.1	46	16.9	---	---
2.228000	31.30	10.2	46	14.7	---	---
3.144000	32.00	10.3	46	14.0	---	---
9.220000	23.30	10.7	50	26.7	---	---
9.336000	21.10	10.8	50	28.9	---	---
12.596000	24.60	11.0	50	25.4	---	---

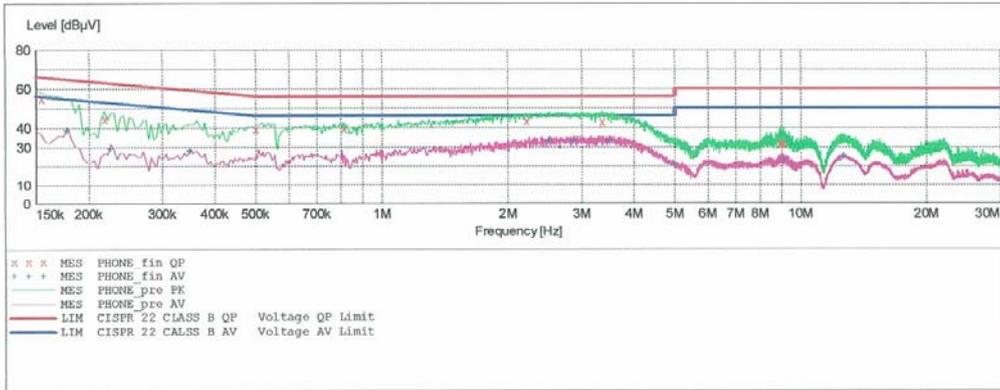
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EMC

EUT: A310
 Manufacturer:
 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)	
500.0 kHz	5.0 MHz	4.0 kHz	Average	10.0 ms	9 kHz	ESH3 (20100210)	
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
0.154001	54.90	10.1	66	10.9	---	---
0.218001	44.50	10.0	63	18.4	---	---
0.500000	39.40	10.1	56	16.6	---	---
0.812000	39.60	10.1	56	16.4	---	---
2.212000	43.20	10.2	56	12.8	---	---
3.348000	43.00	10.3	56	13.0	---	---
8.904000	31.40	10.7	60	28.6	---	---
8.976000	31.70	10.7	60	28.3	---	---
9.096000	31.40	10.7	60	28.6	---	---

MEASUREMENT RESULT: "PHONE_fin AV"

3/31/2010 2:03PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.178001	38.70	10.1	55	15.9	---	---
0.226001	29.20	10.0	53	23.4	---	---
0.350001	27.90	10.1	49	21.1	---	---
2.512000	32.90	10.2	46	13.1	---	---
2.872000	32.90	10.3	46	13.1	---	---
3.504000	33.00	10.3	46	13.0	---	---
5.000000	20.30	10.4	46	25.7	---	---
9.076000	23.10	10.7	50	26.9	---	---
12.672000	25.30	11.0	50	24.7	---	---

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 : 12.0 °C
 Humidity level : 43.0 %
 Test date : April 02, 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
47.4	19.4	12.5	0.7	V	32.6	40.0	7.4
113.4	17.7	10.2	1.2	V	29.1	43.5	14.4
186.1	15.6	11.0	1.4	H	28.0	43.5	15.5
246.3	7.6	11.3	1.7	H	20.6	46.0	25.4
409.2	8.2	15.6	2.2	H	26.0	46.0	20.0
643.0	5.2	20.1	2.7	V	28.0	46.0	18.0

※ **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: A310, Tri-Band CDMA Phone (CDMA/PCS CDMA/AWS CDMA) with Bluetooth, FCC ID: Q78-A310** complies with §15.107 and §15.109 of the FCC rules.