



TEST REPORT

No. 2012TAR009

for

ZTE Corporation

HSPA+ Wireless Router Product

Model Name: MF29A

FCC ID : Q78-ZTEMF29A

with

Hardware Version: PCBMF29A1.0.0

Software Version: EN_ZTE_MF29_AV1.0.0B05

Issued Date: 2012-01-16

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02

FCC 2.948 Listed: No.733176

IC O.A.T.S listed: No.6629A-1

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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CONTENTS

1. TEST LABORATORY	3
1.1. TESTING LOCATION	3
1.2. TESTING ENVIRONMENT	3
1.3. PROJECT DATA	3
1.4. SIGNATURE.....	3
2. CLIENT INFORMATION	4
2.1. APPLICANT INFORMATION.....	4
2.2. MANUFACTURER INFORMATION.....	4
3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	5
3.1. ABOUT EUT.....	5
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	5
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST.....	5
4. REFERENCE DOCUMENTS.....	6
4.1. REFERENCE DOCUMENTS FOR TESTING.....	6
5. LABORATORY ENVIRONMENT.....	7
6. SUMMARY OF TEST RESULTS.....	8
7. TEST EQUIPMENTS UTILIZED.....	9
ANNEX A: MEASUREMENT RESULTS	10

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: No 52, Huayuan beilu, Haidian District, Beijing, P. R. China
Postal Code: 100191
Telephone: 00861062304633-2678
Fax: 00861062304633-2504

1.2. Testing Environment

Normal Temperature: 15-35°C
Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: Jan. 04, 2012
Testing End Date: Jan. 06, 2012

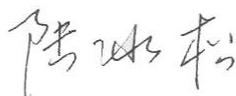
1.4. Signature



Qu Pengfei
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



Lu Bingsong
Deputy Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: ZTE Corporation
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China
City: Nan Jing
Postal Code: 210012
Country: China
Telephone: +86-25-52878232
Fax: +86-25-68897541

2.2. Manufacturer Information

Company Name: ZTE Corporation
Address /Post: #68 Zijin Hua Road, Nanjing, Jiangsu Province, P. R. China
City: Nan Jing
Postal Code: 210012
Country: China
Telephone: +86-25-52878232
Fax: +86-25-68897541

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	HSPA+ Wireless Router Product
Model Name	MF29A
FCC ID	Q78-ZTEMF29A
Extreme vol. Limits	9.6VDC to 14.4VDC (nominal: 12VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	355475040101292	PCBMF29A1.0.0	EN_ZTE_MF29_AV1.0.0B05

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	AC Adapter	801106085002113

AE1

Model	STC-A2O120150C55-C
Manufacturer	RUIDE
Length of cable	151.5cm

*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
FCC Part 15, Subpart B	Radio frequency devices	10-1-10 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.8 meters×3.08 meters×3.53 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Fully-anechoic chamber2 (8.6 meters×6.1 meters×3.85 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 1 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80 to 4000 MHz

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict
1	Radiated Emission	15.109(a)	A.1	P
2	Conducted Emission	15.107(a)	A.2	P

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESCI	100344	R&S	2012-03-12
2	Test Receiver	ESCI	100766	R&S	2012-04-11
3	Test Receiver	ESI40	831564/002	R&S	2012-02-11
4	BiLog Antenna	VUL9163	302	Schwarzbeck	2012-02-10
5	LISN	ESH2-Z5	829991/012	R&S	2012-04-17
6	Universal Radio Communication Tester	CMU200	100680	R&S	2012-09-05
7	Dual-Ridge Waveguide Horn Antenna	3115	6914	EMCO	2012-02-18
8	PC	OPTIPLEX 755	3908243625	DELL	N/A
9	Monitor	E178FPc	CN-OWR979-6 4180-7AJ-D2M S	DELL	N/A
10	Printer	DeskJet D2368	TH72E12G7Q	HP	N/A
11	Keyboard	L100	CN0RH659658 907ATOI40	DELL	N/A
12	Mouse	VR-301	692722550019 8	XINGYU	N/A

ANNEX A: MEASUREMENT RESULTS

A.1 Radiated Emission

Reference

FCC: CFR Part 15.109(a)

A.1.1 Method of measurement

The field strength of radiated emissions from the unintentional radiator (Ethernet mode) at a distance of 3 meters is tested. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

A.1.2 EUT Operating Mode:

The EUT is operating in the cable Ethernet mode.

During the test, the EUT is set to GSM850MHz idle mode. The WLAN function of EUT is set to receive only mode.

One RJ11 port of EUT is connected to a telephone while the telephone is set to on hook position. The other RJ11 port is disconnected. The LAN1 port of EUT is connected to a PC via a Cat-5 cable. The WAN/LAN port of EUT is connected to LAN via a Cat-5 cable. The LAN2 and LAN3 are connected with a Cat-5 cable. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The PING program is used to let the PC keep on transferring data to other terminal on LAN via EUT.

A.1.3 Measurement Limit

Limit from CFR Part 15.109(a)

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	100
88-216	150
216-960	200
Above 960	500

A.1.4 Test Condition

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
30-1000	100kHz/300kHz	5
1000-4000	1MHz/1MHz	15

A.1.5 Measurement Results

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}} = P_{\text{Mea}} + G_A + G_{\text{PL}}$$

Where

G_A : Antenna factor of receive antenna

G_{PL} : Path Loss

P_{Mea} : Measurement result on receiver.

Ethernet Mode

Frequency(MHz)	Result(dBuV/m)	G_{PL} (dB)	G_A (dB/m)	P_{mea} (dBuV)	Polarity
2995.992	39.81	-19.5	29.20	30.11	VERTICAL
986.760	39.37	-22.2	21.09	40.48	HORIZONTAL
903.660	39.14	-22.1	21.09	40.15	HORIZONTAL
2991.984	38.96	-19.5	29.20	29.26	VERTICAL
250.020	38.90	-22.2	12.05	49.05	HORIZONTAL
124.980	38.86	-22.1	10.48	50.48	VERTICAL

Ethernet Mode

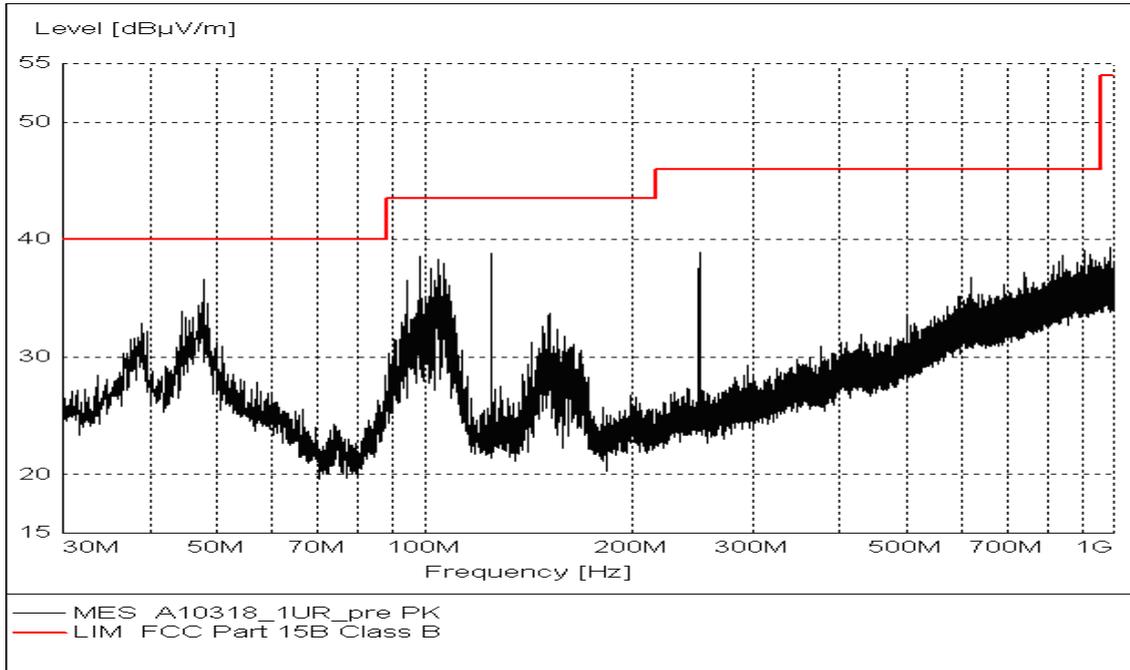


Figure A.1 Radiated Emission from 30MHz to 1GHz

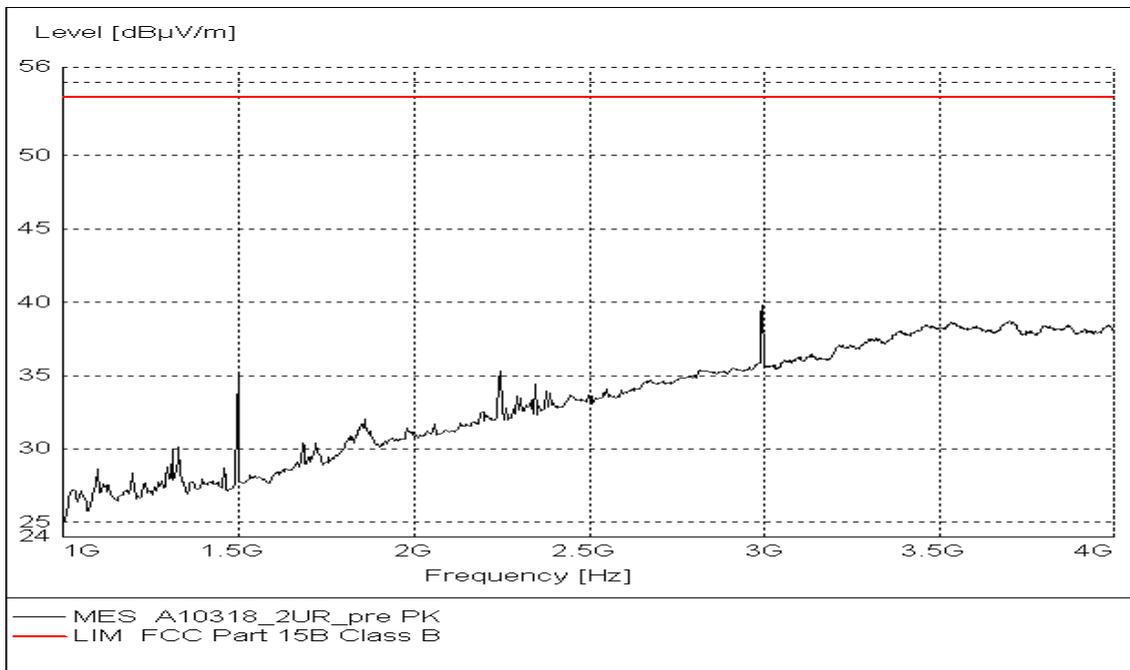


Figure A.2 Radiated Emission from 1GHz to 4GHz

A.2 Conducted Emission

Reference

FCC: CFR Part 15.107(a)

A.2.1 Method of measurement

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. Tested in accordance with the procedures of ANSI C63.4 - 2003, section 7.2.

A.2.2 EUT Operating Mode:

The EUT is operating in the cable Ethernet mode.

During the test, the EUT is set to GSM850MHz idle mode. The WLAN function of EUT is set to receive only mode.

One RJ11 port of EUT is connected to a telephone while the telephone is set to on hook position. The other RJ11 port is disconnected. The LAN1 port of EUT is connected to a PC via a Cat-5 cable. The WAN/LAN port of EUT is connected to LAN via a Cat-5 cable. The LAN2 and LAN3 are connected with a Cat-5 cable. The model of the PC is DELL OPTIPLEX 755, and the serial number of the PC is 3908243625. The PING program is used to let the PC keep on transferring data to other terminal on LAN via EUT.

A.2.3 Measurement Limit

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

*Decreases with the logarithm of the frequency

A.2.4 Test Condition in Ethernet mode

Voltage (V)	Frequency (Hz)
120	60

RBW	Sweep Time(s)
9kHz	1

A.2.5 Measurement Results
Ethernet Mode

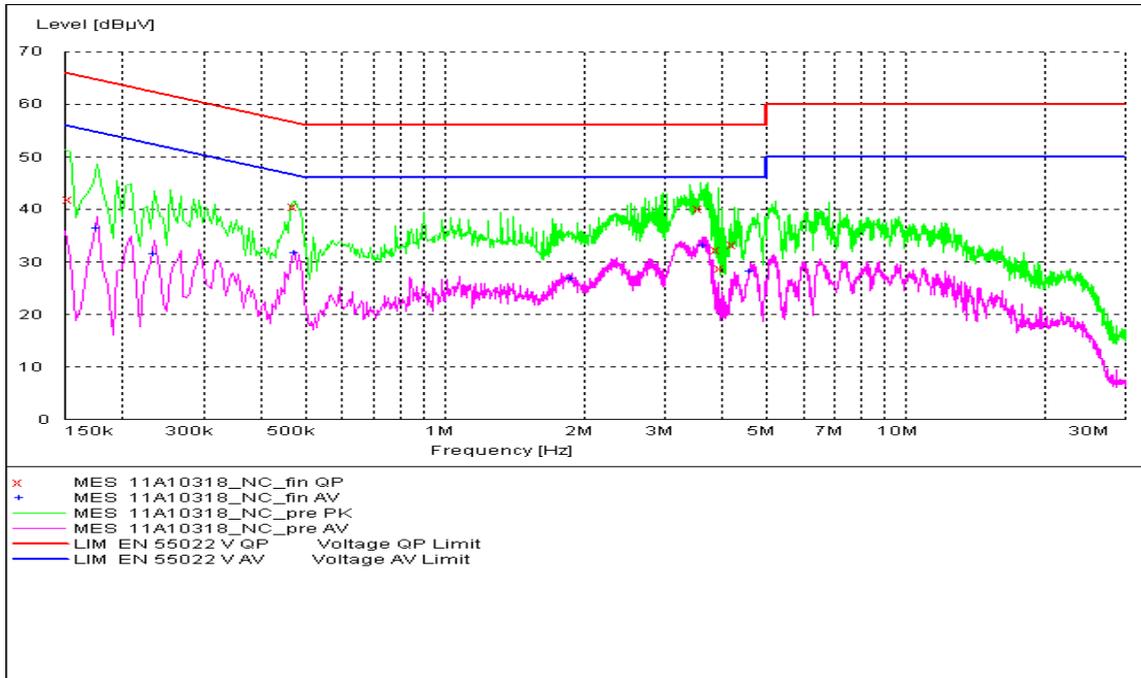


Figure A.3 Conducted Emission

MEASUREMENT RESULT: "11A10318_NC_fin QP"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154500	41.90	10.1	66	23.9	L1	GND
0.474000	40.50	10.1	56	15.9	N	GND
3.591471	40.20	10.1	56	15.8	L1	GND
3.913672	32.30	10.1	56	23.7	N	GND
3.984684	28.70	10.2	56	27.3	L1	GND
4.256266	33.30	10.1	56	22.7	N	GND

MEASUREMENT RESULT: "11A10318_NC_fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.177000	36.30	10.1	55	18.3	N	GND
0.235500	31.40	10.1	52	20.8	N	GND
0.474000	31.60	10.1	46	14.9	N	GND
1.882500	26.90	10.1	46	19.1	L1	GND
3.663951	33.10	10.1	46	12.9	L1	GND
4.601187	28.20	10.2	46	17.8	L1	GND

*****END OF REPORT*****