

Variant FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE Ufi
BRAND NAME : ZTE
MODEL NAME : Z288L
FCC ID : SRQ-Z288L
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DTS) Digital Transmission System

This is a variant report which is only valid together with the original report. The product was received on Jul. 06, 2014 and testing was completed on Jul. 29, 2014. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in 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: Joseph Lin / Supervisor



Approved by: Jones Tsai / Manager



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR450601-01	Rev. 01	This is a variant report for Z288L. The product change description could be referred to Appendix D. All the test cases were performed on original report which can be referred to Sporton Report Number FR450601. Based on the original test report, only conducted power, and radiated spurious emissions were verified for the differences.	Aug. 04, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(b)	Power Output Measurement	$\leq 30\text{dBm}$	Pass	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 9.35 dB at 34.850 MHz
3.3	15.203 & 15.247(b)	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

ZTE CORPORATION

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

1.2 Manufacturer

ZTE CORPORATION

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

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	LTE Ufi
Brand Name	ZTE
Model Name	Z288L
FCC ID	SRQ-Z288L
EUT supports Radios application	CDMA/EV-DO/LTE/WLAN 2.4GHz 802.11b/g/n HT20
HW Version	Z288LHWV1.1
SW Version	TF_US_Z288LV1.0.0B05
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.

1.4 Product Specification subjective to this standard

Product Specification subjective to this standard	
Tx/Rx Channel Frequency Range	802.11b/g/n : 2412 MHz ~ 2462 MHz
Maximum (Peak) Output Power to Antenna	802.11b : 16.13 dBm (0.0410 W) 802.11g : 22.62 dBm (0.1828 W) 802.11n HT20 : 21.97 dBm (0.1574 W)
Antenna Type	802.11b/g/n : Monopole Antenna with gain 1.50 dBi
Type of Modulation	802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)

1.5 Modification of EUT

No modifications are made to the EUT during all test items.

1.6 Testing Location

Test Site	SPORTON INTERNATIONAL (KUNSHAN) INC.		
Test Site Location	No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P.R.C. TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-KS	03CH02-KS	418269

1.7 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02
- ♦ ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. FCC permits the use of the 1.5 meter table as an alternative in C63.10-2013 through inquiry tracking number 961829.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz) and radiated emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases were recorded in this report.

The final configuration from all the combinations and the worst-case data rates were investigated by measuring the maximum power across all the data rates and modulation modes under section 2.2.

Based on the worst configuration found above, the RF power setting is set individually to meet FCC compliance limit for the final conducted and radiated tests shown in section 2.3.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437	-	-

2.2 Pre-Scanned RF Power

Preliminary tests were performed in different data rate and data rate associated with the highest power were chosen for full test shown in the following tables.

WLAN 2.4GHz 802.11b RF Power (dBm)						
Power vs. Channel			Power vs. Data Rate			
Channel	Frequency (MHz)	Data Rate 1Mbps	Channel	2Mbps	5.5Mbps	11Mbps
CH 01	2412 MHz	16.13	CH 01	16.05	15.86	16.04

WLAN 2.4GHz 802.11g RF Power (dBm)										
Power vs. Channel			Power vs. Data Rate							
Channel	Frequency (MHz)	Data Rate 6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 06	2437 MHz	22.62	CH 06	22.26	22.55	22.23	22.31	21.93	20.92	20.77

WLAN 2.4GHz 802.11n-HT20 RF Power (dBm)										
Power vs. Channel			Power vs. MCS Index							
Channel	Frequency (MHz)	MCS Index MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 01	2412 MHz	21.97	CH 01	21.31	21.85	21.12	20.86	18.89	20.19	19.17

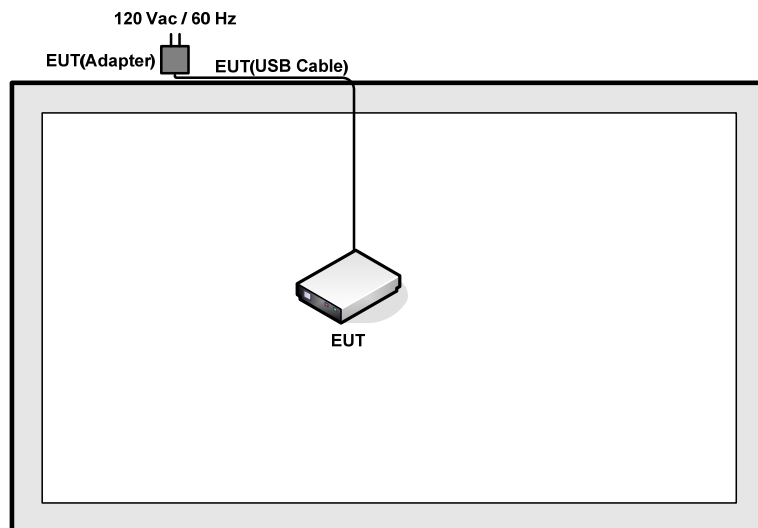
2.3 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

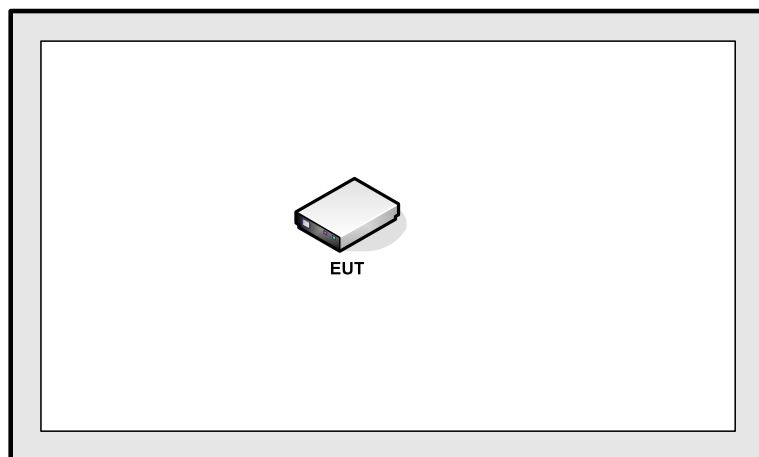
Modulation	Data Rate
802.11b	1 Mbps
802.11g	6 Mbps
802.11n HT20	MCS0

2.4 Connection Diagram of Test System

<For 2.4GHz WLAN 802.11b/n Tx Mode>



<For 2.4GHz WLAN 802.11g Tx Mode>



2.5 Support Unit used in test configuration and system

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.	Notebook	Lenovo	G480	N/A	N/A	AC I/P: Unshielded, 1.8 m DC O/P: Shielded, 1.8 m

2.6 EUT Operation Test Setup

For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for peak output power is 30dBm. If transmitting Antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the Antenna exceeds 6dBi.

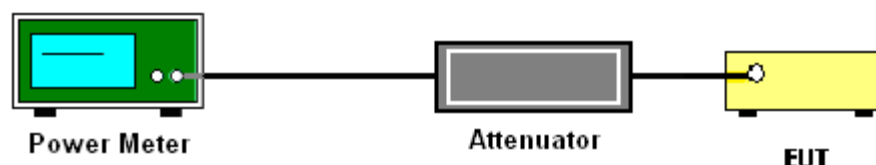
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedures

1. The testing follows the Measurement Procedure of FCC KDB No. 558074 DTS D01 Meas. Guidance v03r02.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Please refer to Appendix A of this test report.

3.1.6 Test Result of Average output Power (Reporting Only)

Please refer to Appendix A of this test report.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r02.
2. 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. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamplifier Factor = Level
6. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
7. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
 - (3) Set RBW = 1 MHz, VBW= 3MHz for $f \geq 1$ GHz for peak measurement.

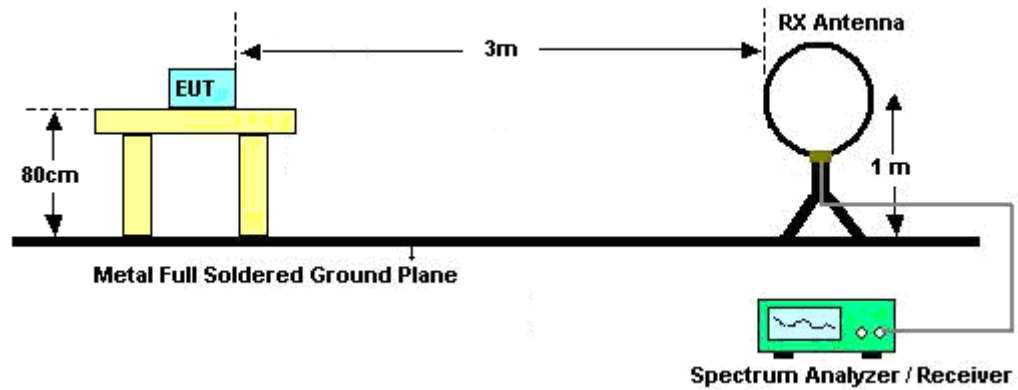
For average measurement:

 - VBW = 10 Hz, when duty cycle is no less than 98 percent.
 - VBW $\geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

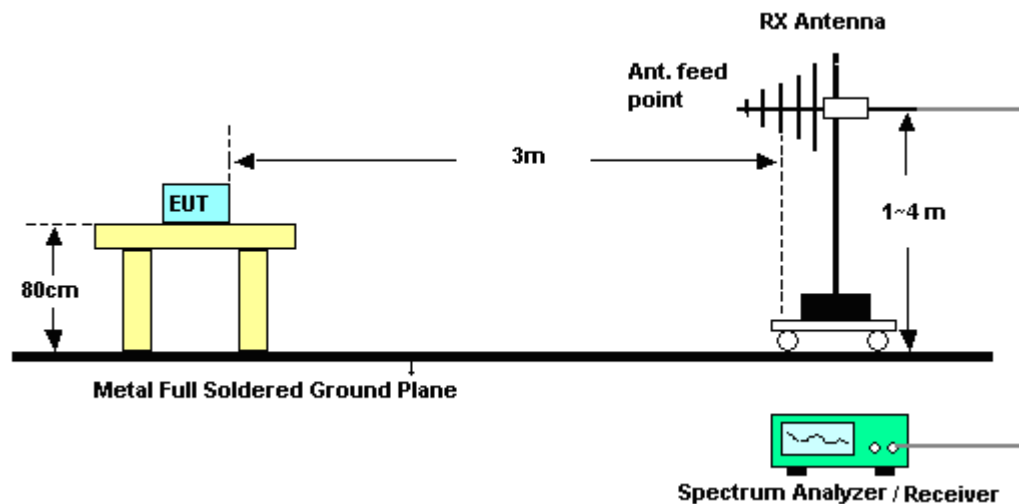
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
802.11b	100.00	-	-	10Hz
802.11g	98.28	-	-	10Hz
2.4GHz 802.11n HT20	98.16	-	-	10Hz

3.2.4 Test Setup

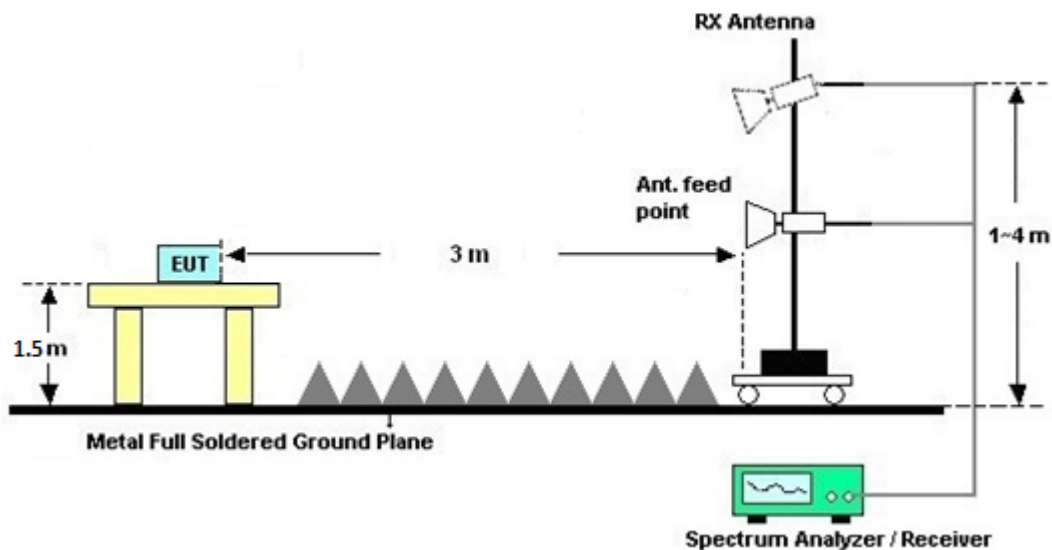
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.2.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix B.

3.2.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix B.

3.3 Antenna Requirements

3.3.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.3.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Pulse Power Sensor	Anritsu	MA2411B	0917070	30MHz~40GHz	Jan. 23, 2015	Jul. 25, 2015	Jan. 22, 2016	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 23, 2015	Jul. 25, 2015	Jan. 22, 2016	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz; Max 30dBm	Sep. 29, 2014	Jul. 29, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz; Max 30dBm	Sep. 25, 2014	Jul. 29, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 13, 2014	Jul. 29, 2015	Nov. 12, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz~2GHz	Sep. 13, 2014	Jul. 29, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Sep. 04, 2014	Jul. 29, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz~1000MHz / 32 dB	May 04, 2015	Jul. 29, 2015	May 03, 2016	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A023 84	1GHz~26.5GHz Gain 30dB	Oct. 28, 2014	Jul. 29, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002 473	N/A	NCR	Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 29, 2015	NCR	Radiation (03CH02-KS)

5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	5.1dB
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Appendix A. Conducted test results

Test Engineer:	Issac Song	Temperature:	21~25	°C
Test Date:	2015/7/25	Relative Humidity:	51~54	%

TEST RESULTS DATA
Peak Power Table

2.4GHz Band										
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
11b	1Mbps	1	1	2412	16.13	30.00	1.50	17.63	36.00	Pass
11b	1Mbps	1	6	2437	15.95	30.00	1.50	17.45	36.00	Pass
11b	1Mbps	1	11	2462	15.93	30.00	1.50	17.43	36.00	Pass
11g	6Mbps	1	1	2412	22.51	30.00	1.50	24.01	36.00	Pass
11g	6Mbps	1	6	2437	22.62	30.00	1.50	24.12	36.00	Pass
11g	6Mbps	1	11	2462	22.55	30.00	1.50	24.05	36.00	Pass
HT20	MCS0	1	1	2412	21.97	30.00	1.50	23.47	36.00	Pass
HT20	MCS0	1	6	2437	21.92	30.00	1.50	23.42	36.00	Pass
HT20	MCS0	1	11	2462	21.84	30.00	1.50	23.34	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

2.4GHz Band						
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)	Average Conducted Power (dBm)
11b	1Mbps	1	1	2412	0.00	13.68
11b	1Mbps	1	6	2437	0.00	13.56
11b	1Mbps	1	11	2462	0.00	13.47
11g	6Mbps	1	1	2412	0.08	12.37
11g	6Mbps	1	6	2437	0.08	12.50
11g	6Mbps	1	11	2462	0.08	12.39
HT20	MCS0	1	1	2412	0.08	11.53
HT20	MCS0	1	6	2437	0.08	11.47
HT20	MCS0	1	11	2462	0.08	11.40



Appendix B. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

WIFI 802.11b (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b CH 11 2462MHz	*	2460.538	100.55	-	-	101.41	31.31	4.79	36.96	182	330	P	H
	*	2461.289	96.07	-	-	96.93	31.31	4.79	36.96	182	330	A	H
		2483.64	48.27	-25.73	74	49.07	31.34	4.8	36.94	182	330	P	H
		2483.52	34.1	-19.9	54	34.9	31.34	4.8	36.94	182	330	A	H
	*	2460.454	97.29	-	-	98.15	31.31	4.79	36.96	176	7	P	V
	*	2460.12	92.12	-	-	92.98	31.31	4.79	36.96	176	7	A	V
		2483.84	45.7	-28.3	74	46.5	31.34	4.8	36.94	176	7	P	V
		2483.52	31.8	-22.2	54	32.6	31.34	4.8	36.94	176	7	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11b (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11b CH 11 2462MHz		4923	46.88	-27.12	74	41.64	34.97	6.92	36.65	158	115	P	H
		7386	48.32	-25.68	74	40.64	35.78	8.68	36.78	200	103	P	H
		4923	46.67	-27.33	74	41.43	34.97	6.92	36.65	216	102	P	V
		7386	48.09	-25.91	74	40.41	35.78	8.68	36.78	174	110	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz
WIFI 802.11g (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 11 2462MHz	*	2456.947	104.87	-	-	105.73	31.31	4.79	36.96	155	133	P	H
	*	2457.114	93.29	-	-	94.15	31.31	4.79	36.96	155	133	A	H
		2483.8	61.97	-12.03	74	62.77	31.34	4.8	36.94	155	133	P	H
		2483.52	37.12	-16.88	54	37.92	31.34	4.8	36.94	155	133	A	H
	*	2458.784	97.66	-	-	98.52	31.31	4.79	36.96	190	103	P	V
	*	2459.201	86.06	-	-	86.92	31.31	4.79	36.96	190	103	A	V
		2483.52	52.08	-21.92	74	52.88	31.34	4.8	36.94	190	103	P	V
		2483.52	31.31	-22.69	54	32.11	31.34	4.8	36.94	190	103	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11g (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11g CH 11 2462MHz		4923	46.81	-27.19	74	41.57	34.97	6.92	36.65	150	216	P	H
		7386	47.42	-26.58	74	39.74	35.78	8.68	36.78	150	145	P	H
		4923	46.81	-27.19	74	41.57	34.97	6.92	36.65	150	78	P	V
		7386	47.18	-26.82	74	39.5	35.78	8.68	36.78	150	166	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n HT20 CH 11 2462MHz	*	2458.951	102.08	-	-	102.94	31.31	4.79	36.96	253	328	P	H
	*	2459.118	89.05	-	-	89.91	31.31	4.79	36.96	253	328	A	H
		2483.52	58.6	-15.4	74	59.4	31.34	4.8	36.94	253	328	P	H
		2483.52	34.27	-19.73	54	35.07	31.34	4.8	36.94	253	328	A	H
	*	2457.782	104.28	-	-	105.14	31.31	4.79	36.96	201	249	P	V
	*	2458.951	91.32	-	-	92.18	31.31	4.79	36.96	201	249	A	V
		2483.52	60.74	-13.26	74	61.54	31.34	4.8	36.94	201	249	P	V
		2483.52	36.97	-17.03	54	37.77	31.34	4.8	36.94	201	249	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**2.4GHz 2400~2483.5MHz****WIFI 802.11n HT20 (Harmonic @ 3m)**

WIFI Ant. 1	Note	Frequency (MHz)	Level (dBμV/m)	Over Limit (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
802.11n		4923	46.52	-27.48	74	41.28	34.97	6.92	36.65	195	263	P	H
HT20		7386	47.2	-26.8	74	39.52	35.78	8.68	36.78	166	56	P	H
CH 11		4923	46.34	-27.66	74	41.1	34.97	6.92	36.65	174	126	P	V
2462MHz		7386	48.03	-25.97	74	40.35	35.78	8.68	36.78	195	200	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

**Emission below 1GHz****2.4GHz WIFI 802.11b (LF)**

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11b LF		114.39	29.88	-13.62	43.5	51.53	11.84	1.8	35.29	100	102	P	H
		152.22	23.4	-20.1	43.5	44.63	11.13	2.57	34.93	-	-	P	H
		203.63	20.56	-22.94	43.5	43.61	9.55	2.47	35.07	-	-	P	H
		399.57	17.93	-28.07	46	34.14	16.2	2.82	35.23	-	-	P	H
		649.83	17.41	-28.59	46	29.66	19	3.57	34.82	-	-	P	H
		814.73	19.29	-26.71	46	29.16	20.54	4.07	34.48	-	-	P	H
		34.85	30.65	-9.35	40	47.34	17.6	0.98	35.27	120	226	P	V
		176.47	29.35	-14.15	43.5	52.02	10.25	2.03	34.95	-	-	P	V
		299.66	15.46	-30.54	46	34.05	13.5	2.67	34.76	-	-	P	V
		544.1	17.43	-28.57	46	30.53	18.09	3.31	34.5	-	-	P	V
		750.71	19.32	-26.68	46	30.2	19.81	3.72	34.41	-	-	P	V
		900.09	21.16	-24.84	46	30.18	21.4	4.14	34.56	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz

2.4GHz WIFI 802.11g (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11g LF		114.39	33.88	-9.62	43.5	55.53	11.84	1.8	35.29	162	98	P	H
		152.22	23.4	-20.1	43.5	44.63	11.13	2.57	34.93	-	-	P	H
		299.66	16.32	-29.68	46	34.91	13.5	2.67	34.76	-	-	P	H
		399.57	17.93	-28.07	46	34.14	16.2	2.82	35.23	-	-	P	H
		579.99	16.95	-29.05	46	29.58	18.38	3.76	34.77	-	-	P	H
		710.94	18.05	-27.95	46	29.56	19.41	3.83	34.75	-	-	P	H
		34.85	28.65	-11.35	40	45.34	17.6	0.98	35.27	132	220	P	V
		172.59	26.12	-17.38	43.5	48.64	10.39	2.03	34.94	-	-	P	V
		270.56	13.54	-32.46	46	33.56	12.26	2.54	34.82	-	-	P	V
		366.59	14.37	-31.63	46	31.54	15.13	2.83	35.13	-	-	P	V
		549.92	16.76	-29.24	46	29.74	18.2	3.31	34.49	-	-	P	V
		707.06	18.47	-27.53	46	30.05	19.37	3.83	34.78	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Emission below 1GHz

2.4GHz WIFI 802.11n HT20 (LF)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz 802.11n HT20 LF		114.39	30.88	-12.62	43.5	52.53	11.84	1.8	35.29	100	187	P	H
		152.22	22.4	-21.1	43.5	43.63	11.13	2.57	34.93	-	-	P	H
		203.63	19.56	-23.94	43.5	42.61	9.55	2.47	35.07	-	-	P	H
		399.57	16.93	-29.07	46	33.14	16.2	2.82	35.23	-	-	P	H
		579.99	15.95	-30.05	46	28.58	18.38	3.76	34.77	-	-	P	H
		710.94	18.05	-27.95	46	29.56	19.41	3.83	34.75	-	-	P	H
		34.85	30.65	-9.35	40	47.34	17.6	0.98	35.27	132	110	P	V
		159.98	23.49	-20.01	43.5	44.98	10.85	2.57	34.91	-	-	P	V
		399.57	16	-30	46	32.21	16.2	2.82	35.23	-	-	P	V
		707.06	17.47	-28.53	46	29.05	19.37	3.83	34.78	-	-	P	V
		804.06	18.52	-27.48	46	28.68	20.36	4	34.52	-	-	P	V
		900.09	20.16	-25.84	46	29.18	21.4	4.14	34.56	-	-	P	V
Remark	1. No other spurious found. 2. All results are PASS against limit line.												



Note symbol

*	Fundamental Frequency which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is over limit line.
P/A	P eak or A verage
H/V	H orizontal or V ertical



A calculation example for radiated spurious emission is shown as below:

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Ant.				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11b		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
CH 01													
2412MHz		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix D. Product Change Description

ZTE CORPORATION

Product Change Description

As the applicant of the below model, [ZTE Corporation] declares that the product,

[Z288L]
[ZTE Corporation]

is the variant of the initial certified product,

[Z288L]
[ZTE Corporation]

SOFTWARE MODIFICATIONS:

Protocol Stack changes: NO

MMS/STK changes: NO

JAVA changes: NO

Other changes detailed: NO

HARDWARE MODIFICATION:

Band changes: NO

Power Amplifier changes: NO

Antenna changes: YES Antenna matching changed

PCB Layout changes: YES

Components on PCB changes: YES

Duplexer Changed due to supply:

a. CDMA BC0: from 2520(MURATA:SAYFH836MCC0F0A) to 1814
(MURATA:SAYEY836MCA0F0A)

b. CDMA BC1: from 2520(AVAGO:ACMD-7407-TR1) to
1814(MURATA:SAYEY1G88BA0B0A)

c. LTE B13: from 2520(EPCOS: B39781B7677A710) to 2016 (TAIYO:D5PE782M0P3PZ-ZAS)

Filter Changed due to supply:

a. Drx Chain for CDMA BC1: from 1411(MURATA:SAFE1G96FL0F00) to
1109(MURATA:SAFFB1G96FL0F0A)

Tx Chain for LTE B13: from 1411(EPCOS:B39781B9475M410) to 1109(TBD)

d. Varistors changed due to supply. From yageo (VRS0402KR140161N) to
sunlord(SDV1005E140C101NPTF)

Add second Flash vender ESMT

LCD changes: NO

Speaker changes: NO

Camera changes: NO

Vibrator changes: NO

Bluetooth changes: NO

FM changes: NO

Other changes: NO

MECHANICAL MODIFICATIONS:

Use new metal front/back cover or keypad: NO

Mechanical shell changes: NO

Other changes detailed: NO

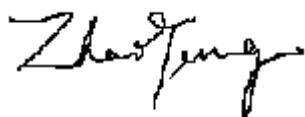
ACCESSORY MODIFICATIONS:

Battery changes: NO

AC Adaptor changes: NO

Earphone changes: NO

APPROVED BY:



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