



Variant FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : WCDMA/CDMA/LTE Multi-Mode Digital
Mobile Phone
BRAND NAME : ZTE
MODEL NAME : ZTE A2017U
FCC ID : SRQ-ZTEA2017U
STANDARD : FCC 47 CFR Part 2, and 90(S)
CLASSIFICATION : PCS Licensed Transmitter Held to Ear (PCE)

This is a variant report which is only valid together with the original test report. The product was received on Sep. 01, 2016 and testing was completed on Sep. 21, 2016. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-D-2010 and shown 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 INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



SPORTON INTERNATIONAL INC.

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	N/A , Reporting only	PASS	-
4.4	§2.1053 §90.691	Field Strength of Spurious Radiation	$< 43+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 38.31 dB at 2456.000MHz



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 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	WCDMA/CDMA/LTE Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	ZTE A2017U
FCC ID	SRQ-ZTEA2017U
EUT supports Radios application	CDMA/EV-DO/ GSM/GPRS/EGPRS/WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/NFC/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/ WLAN 5GHz 802.11ac VHT20/VHT40/VHT80/ Bluetooth v3.0 + EDR/Bluetooth v4.1 LE/Bluetooth v4.2 LE
IMEI Code	Conducted: 990006780015052 Radiation: NA
HW Version	wwdB
SW Version	A2017UV1.0.0B07
EUT Stage	Production Unit

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	LTE Band 26 : 814.7 ~ 823.3 MHz
Rx Frequency	LTE Band 26 : 859.7 ~ 868.3 MHz
Bandwidth	1.4MHz/3MHz/5MHz/10MHz/15MHz
Maximum Output Power	23.58 dBm
Antenna Type	PIFA Antenna
Type of Modulation	QPSK / 16QAM

Remark: This test report recorded only product characteristics and test results of PCS Licensed Transmitter Held to Ear (PCE).

1.5 Modification of EUT

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

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL INC.	
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C. TEL: +886-3-327-3456 FAX: +886-3-328-4978	
Test Site No.	Sporton Site No.	FCC Registration No.
	03CH12-HY	TW1098

Note: The test site complies with ANSI C63.4 2014 requirement.

1.7 Applied Standards

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

- ♦ Preliminary Guidance for Receiving Applications for Certification of 3G Device. May 9, 2006.
- ♦ FCC 47 CFR Part 2, 90(S)
- ♦ ANSI / TIA / EIA-603-D-2010

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.



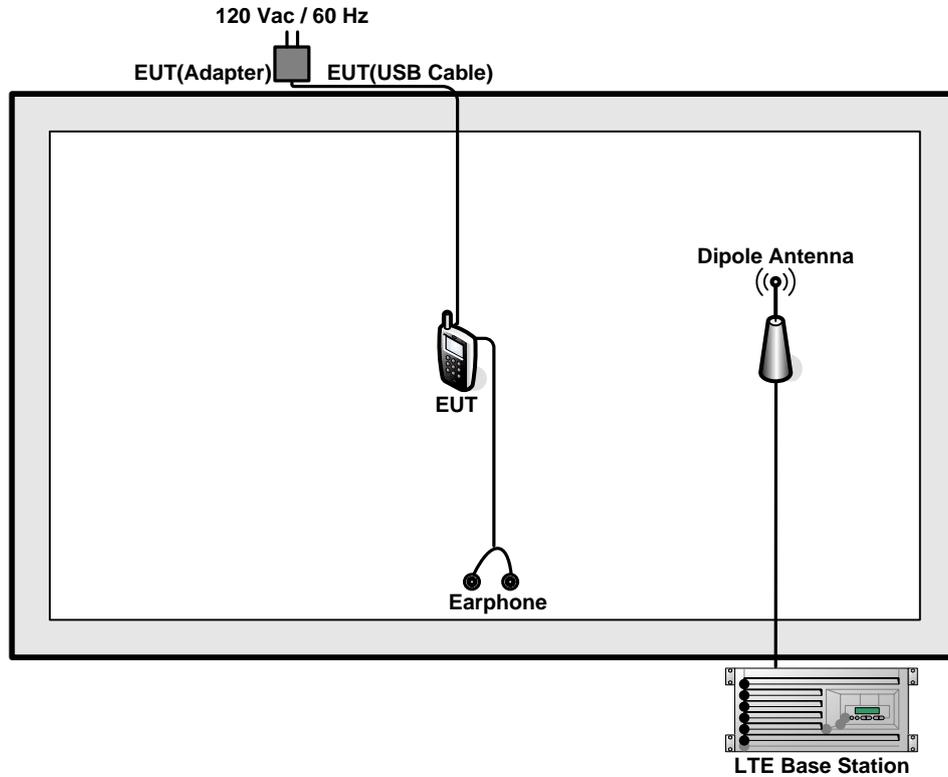
2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Test Items	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	26	v	v	v	v	v	-	v	v	v	v	v	v	v	v
Radiated Spurious Emission	26		v				-	v		v				v	
Note	<ol style="list-style-type: none"> The mark "v" means that this configuration is chosen for testing The mark "-" means that this bandwidth is not supported. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported. 														

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	Earphone	Lenovo	SH100	N/A	N/A	N/A

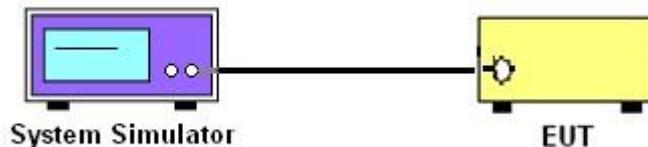
3 Test Result

3.1 Measuring Instruments

See list of measuring instruments of this test report.

3.2 Test Setup

3.2.1 Conducted Output Power



3.3 Test Result of Conducted Test

Please refer to Appendix A.

3.4 Conducted Output Power

3.4.1 Description of the Conducted Output Power

A system simulator was used to establish communication with the EUT. Its parameters were set to enforce EUT transmitting at the maximum power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

3.4.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the LTE Base Station.

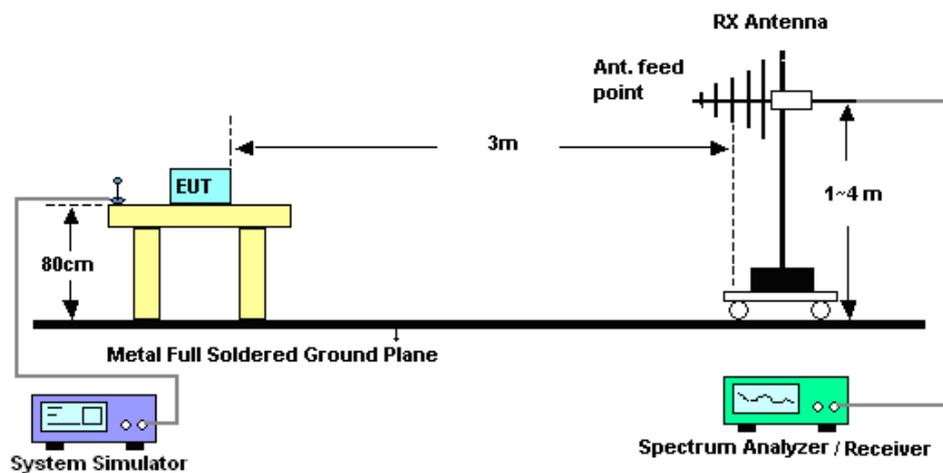
4 Radiated Test Items

4.1 Measuring Instruments

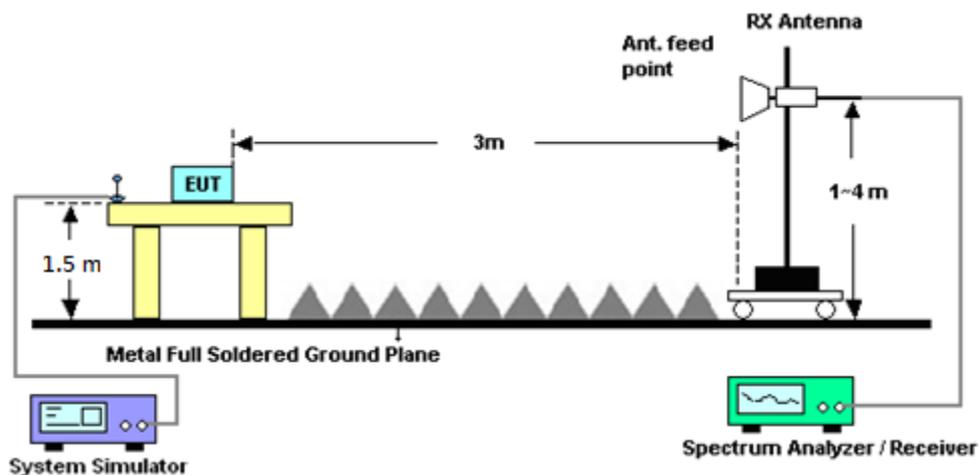
See list of measuring instruments of this test report.

4.2 Test Setup

4.2.1 For radiated test from 30MHz to 1GHz



4.2.2 For radiated test above 1GHz



4.3 Test Result of Radiated Test

Please refer to Appendix B.



4.4 Field Strength of Spurious Radiation Measurement

4.4.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-D-2010. The power of any emission FCC Part 90.691 on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least $43 + 10 \log (P)$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43+10\log_{10}(P[\text{Watts}])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

4.4.2 Measuring Instruments

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

4.4.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, Sweep = 500ms, Taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11. $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$
 $= -13\text{dBm}.$



5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D	37059	30MHz~1GHz	Dec. 29, 2015	Sep. 20, 2016~ Sep. 21, 2016	Dec. 28, 2016	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 08, 2015	Sep. 20, 2016~ Sep. 21, 2016	Oct. 07, 2016	Radiation (03CH12-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Sep. 20, 2016~ Sep. 21, 2016	Nov. 19, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-00 101800-30-1	1815698	1GHz~18GHz	Dec. 14, 2015	Sep. 20, 2016~ Sep. 21, 2016	Dec. 13, 2016	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHZ	Sep. 24, 2015	Sep. 20, 2016~ Sep. 21, 2016	Sep. 23, 2016	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	NCR	Sep. 20, 2016~ Sep. 21, 2016	NCR	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-450 0-B	N/A	1m~4m	NCR	Sep. 20, 2016~ Sep. 21, 2016	NCR	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	NCR	Sep. 20, 2016~ Sep. 21, 2016	NCR	Radiation (03CH12-HY)

NCR: No Calibration Required



6 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.4 dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.7 dB
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Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power)

BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel					26765	
Frequency (MHz)					821.5	
15	QPSK	1	0		23.55	
15	QPSK	1	37		23.58	
15	QPSK	1	74		22.55	
15	QPSK	36	0		22.33	
15	QPSK	36	20		22.54	
15	QPSK	36	39		21.57	
15	QPSK	75	0		22.41	
15	16QAM	1	0		22.60	
15	16QAM	1	37		22.95	
15	16QAM	1	74		21.78	
15	16QAM	36	0		21.54	
15	16QAM	36	20		21.45	
15	16QAM	36	39		21.34	
15	16QAM	75	0		21.44	
Channel					26740	
Frequency (MHz)					819	
10	QPSK	1	0		22.80	
10	QPSK	1	25		22.62	
10	QPSK	1	49		22.60	
10	QPSK	25	0		21.67	
10	QPSK	25	12		21.59	
10	QPSK	25	25		21.61	
10	QPSK	50	0		21.68	
10	16QAM	1	0		21.51	
10	16QAM	1	25		21.80	
10	16QAM	1	49		21.49	
10	16QAM	25	0		20.71	
10	16QAM	25	12		20.66	
10	16QAM	25	25		20.71	
10	16QAM	50	0		20.66	



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				26715	26740	26765
Frequency (MHz)				816.5	819	821.5
5	QPSK	1	0	22.64	22.58	22.62
5	QPSK	1	12	22.57	22.51	22.61
5	QPSK	1	24	22.58	22.53	22.51
5	QPSK	12	0	21.57	21.62	21.57
5	QPSK	12	7	21.63	21.61	21.50
5	QPSK	12	13	21.54	21.59	21.60
5	QPSK	25	0	21.56	21.59	21.55
5	16QAM	1	0	21.59	21.55	21.62
5	16QAM	1	12	21.05	21.48	21.33
5	16QAM	1	24	21.42	21.54	21.48
5	16QAM	12	0	20.80	20.70	20.69
5	16QAM	12	7	20.66	20.69	20.61
5	16QAM	12	13	20.58	20.61	20.73
5	16QAM	25	0	20.67	20.62	20.70



BW [MHz]	Modulation	RB Size	RB Offset	Power (dBm) Low Ch. / Freq.	Power (dBm) Middle Ch. / Freq.	Power (dBm) High Ch. / Freq.
Channel				26705	26740	26775
Frequency (MHz)				815.5	819	822.5
3	QPSK	1	0	22.70	22.63	22.58
3	QPSK	1	8	22.62	22.55	22.57
3	QPSK	1	14	22.63	22.62	22.55
3	QPSK	8	0	21.68	21.60	21.62
3	QPSK	8	4	21.65	21.58	21.47
3	QPSK	8	7	21.63	21.57	21.64
3	QPSK	15	0	21.70	21.63	21.64
3	16QAM	1	0	21.91	21.73	21.36
3	16QAM	1	8	21.53	21.71	21.31
3	16QAM	1	14	21.47	21.43	21.34
3	16QAM	8	0	20.76	20.48	20.74
3	16QAM	8	4	20.79	20.73	20.50
3	16QAM	8	7	20.71	20.74	20.57
3	16QAM	15	0	20.58	20.65	20.57
Channel				26697	26740	26783
Frequency (MHz)				814.7	819	823.3
1.4	QPSK	1	0	22.79	22.72	22.72
1.4	QPSK	1	3	22.78	22.66	22.71
1.4	QPSK	1	5	22.74	22.67	22.56
1.4	QPSK	3	0	22.76	22.71	22.65
1.4	QPSK	3	1	22.75	22.66	22.69
1.4	QPSK	3	3	22.71	22.61	22.70
1.4	QPSK	6	0	21.68	21.71	21.65
1.4	16QAM	1	0	21.83	21.65	21.84
1.4	16QAM	1	3	21.55	21.44	21.62
1.4	16QAM	1	5	21.82	21.36	21.47
1.4	16QAM	3	0	21.60	21.64	21.55
1.4	16QAM	3	1	21.70	21.59	21.56
1.4	16QAM	3	3	21.53	21.48	21.68
1.4	16QAM	6	0	20.76	20.54	20.57

Note: Maximum average power for LTE.



Appendix B. Test Results of Radiated Test

LTE Band 26 / 3MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1632	-61.15	-13	-48.15	-47.85	-62.96	0.97	4.93	H
	2456	-51.31	-13	-38.31	-41.93	-53.15	1.28	5.27	H
	3272	-69.00	-13	-56.00	-62.11	-72.31	1.53	7.00	H
	4088	-66.27	-13	-53.27	-60.91	-70.93	1.81	8.62	H
	1632	-62.98	-13	-49.98	-49.87	-64.79	0.97	4.93	V
	2456	-52.75	-13	-39.75	-43.38	-54.59	1.28	5.27	V
	3272	-68.74	-13	-55.74	-61.64	-72.05	1.53	7.00	V
	4088	-62.49	-13	-49.49	-56.94	-67.15	1.81	8.62	V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



Appendix D. Product Equality Declaration

ZTE CORPORATION**Product Change Description**

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

[ZTE A2017U]

[ZTE Corporation]

is the variant of the initial certified product,

[ZTE A2017U]

[ZTE Corporation]

[Project Number:16ZTE285]

SOFTWARE MODIFICATIONS:

Protocol Stack changes: NO

MMS/STK changes: NO

JAVA changes: NO

Other changes detailed: Yes, ZTE A2017U now using P-sensor to control transmitter power when top antenna works.

HARDWARE MODIFICATION:

Band changes: NO

Power Amplifier changes: NO

Antenna changes: NO

PCB Layout changes: NO

Components on PCB changes: NO

LCD changes: NO

Speaker changes: NO

Camera changes: NO

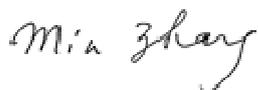
Vibrator changes: NO
Bluetooth changes: NO
FM changes: NO
Other changes: NO

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



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