



# 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, 27  
**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 Jun. 14, 2016 and completely tested on Aug. 13, 2016. We, SPORTON INTERNATIONAL (KUNSHAN) 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 (KUNSHAN) INC., the test report shall not be reproduced except in full.

Prepared by: James Huang / Manager

Approved by: Jones Tsai / Manager



**SPORTON INTERNATIONAL (KUNSHAN) INC.**  
No. 3-2, PingXiang Road, Kunshan, Jiangsu Province, P. R. China



## **TABLE OF CONTENTS**

**REVISION HISTORY.....3**

**SUMMARY OF TEST RESULT .....4**

**1 GENERAL DESCRIPTION .....5**

    1.1 Applicant .....5

    1.2 Manufacturer.....5

    1.3 Product Feature of Equipment Under Test.....5

    1.4 Product Specification of Equipment Under Test.....6

    1.5 Modification of EUT .....6

    1.6 Testing Site.....7

    1.7 Applied Standards .....7

**2 TEST CONFIGURATION OF EQUIPMENT UNDER TEST.....8**

    2.1 Test Mode.....8

    2.2 Connection Diagram of Test System.....9

    2.3 Support Unit used in test configuration and system .....10

**3 CONDUCTED TEST ITEMS .....11**

    3.1 Measuring Instruments .....11

    3.2 Test Setup .....11

    3.3 Test Result of Conducted Test .....11

    3.4 Conducted Output Power Measurement .....11

**4 RADIATED TEST ITEMS .....12**

    4.1 Measuring Instruments .....12

    4.2 Test Setup .....12

    4.3 Test Result of Radiated Test .....12

    4.4 Radiated Spurious Emission Measurement .....13

**5 LIST OF MEASURING EQUIPMENT .....14**

**6 UNCERTAINTY OF EVALUATION .....15**

**APPENDIX A. TEST RESULTS OF CONDUCTED TEST**

**APPENDIX B. TEST RESULTS OF RADIATED TEST**

**APPENDIX C. TEST SETUP PHOTOGRAPHS**

**APPENDIX D. PRODUCT EQUALITY DECLARATION**





**SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
3.4	§2.1046	Conducted Output Power	Reporting Only	PASS	-
4.4	§2.1053 §27.53 (a)(4)	Radiated Spurious Emission	$< 70+10\log_{10}(P[\text{Watts}])$	PASS	Under limit 9.44 dB at 6918.000 MHz



# 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	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/HSPA+(16QAM uplink is not supported)/DC-HSDPA/LTE/NFC WLAN2.4GHz 802.11b/g/n HT20/HT40 WLAN5GHz 802.11a/n HT20/HT40 WLAN5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth v3.0+EDR Bluetooth v4.1 LE Bluetooth v4.2 LE
IMEI Code	Conducted: 990006780015052 Radiation: 861712030025603/990006780050950
HW Version	wwdB
SW Version	A2017UV1.0.0B07
EUT Stage	Production Unit



### 1.4 Product Specification of Equipment Under Test

Product Feature	
Tx Frequency	LTE Band 30 : 2307.5 MHz ~ 2312.5 MHz
Rx Frequency	LTE Band 30 : 2352.5 MHz ~ 2357.5 MHz
Bandwidth	5MHz / 10MHz
Maximum Output Power to Top Antenna	LTE Band 30 : 20.37 dBm
Maximum Output Power to Bottom Antenna	LTE Band 30 : 23.10 dBm
Type of Modulation	QPSK / 16QAM

### 1.5 Modification of EUT

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

## 1.6 Testing Site

<b>Test Site</b>	SPORTON INTERNATIONAL INC.	
<b>Test Site Location</b>	No. 52, Hwa Ya 1 <sup>st</sup> 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	
<b>Test Site No.</b>	<b>Sporton Site No.</b>	<b>FCC Registration No.</b>
	03CH12-HY	TW1098

## 1.7 Applied Standards

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

- ♦ 47 CFR Part 2, Part 27(D)
- ♦ ANSI / TIA / EIA-603-D-2010
- ♦ FCC KDB 971168 Power Meas License Digital Systems D01 v02r02

**Remark:**

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. 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

### 2.1 Test Mode

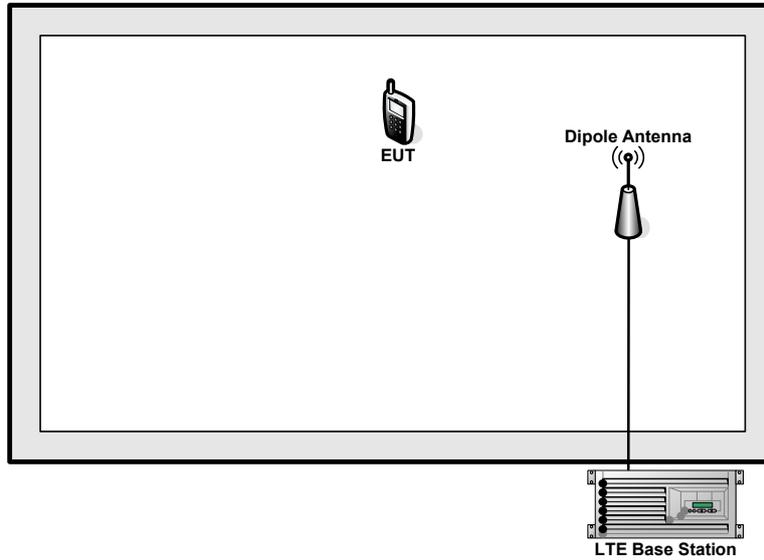
Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes to find the maximum emission.

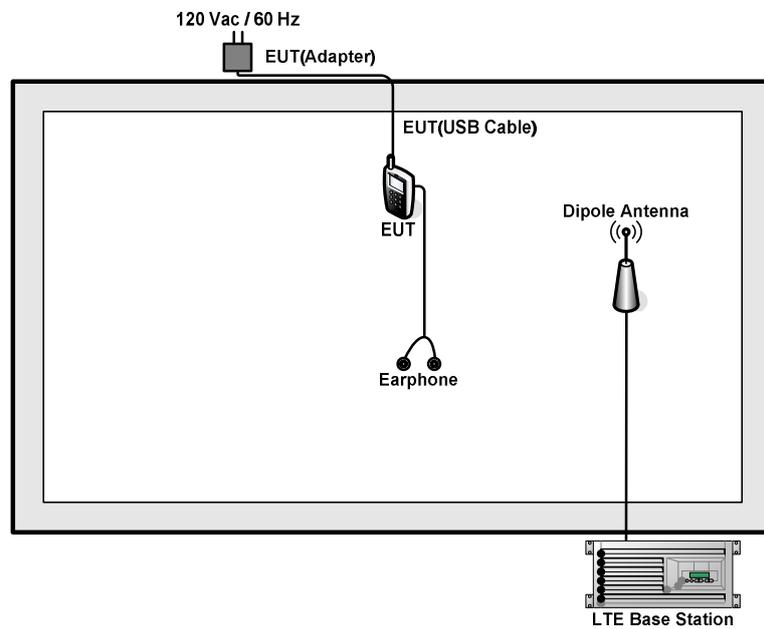
Conducted Test Cases	Band	Bandwidth (MHz)						Modulation		RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	Half	Full	L	M	H
Max. Output Power	30	-	-	V		-	-	V	V	V	V	V	V	V	V
		-	-		V	-	-	V	V	V	V	V		V	
Radiated Spurious Emission	30	-	-	V	V	-	-	V		V				V	
Note	<ol style="list-style-type: none"> <li>The mark "v" means that this configuration is chosen for testing</li> <li>The mark "-" means that this bandwidth is not supported.</li> <li>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.</li> </ol>														

## 2.2 Connection Diagram of Test System

### Top Antenna



### Bottom Antenna





### 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.	DC Power Supply	GW INSTEK	GPS-3030D	N/A	N/A	Unshielded, 1.8 m
3.	Earphone	Apple	MC690ZP/A	N/A	Shielded, 1.0 m	N/A

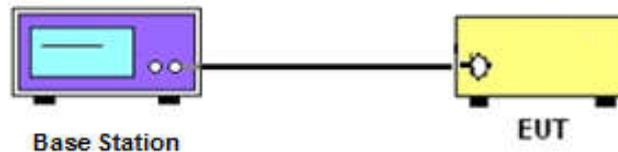
### 3 Conducted Test Items

#### 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 Measurement

##### 3.4.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. 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 base station.
2. Set EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.

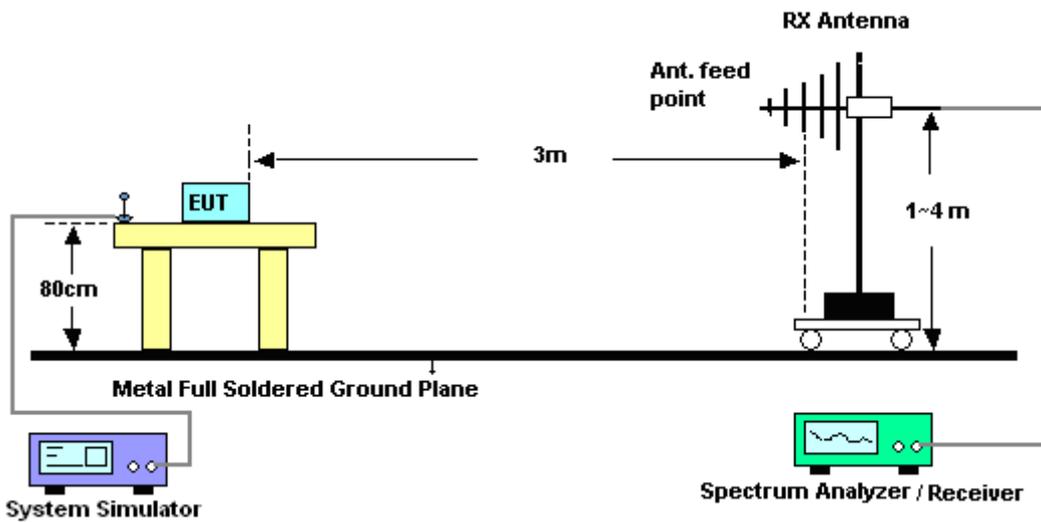
## 4 Radiated Test Items

### 4.1 Measuring Instruments

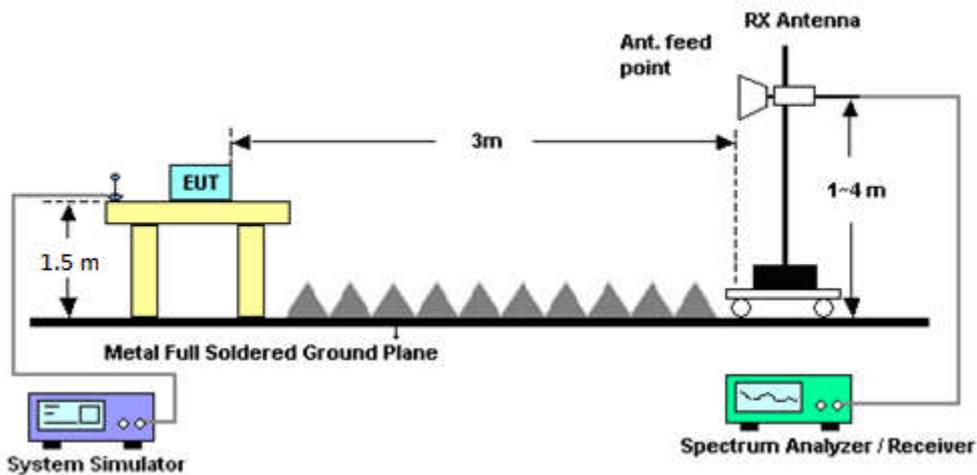
See list of measuring instruments of this test report.

### 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 Radiated Spurious Emission Measurement

### 4.4.1 Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI / TIA / EIA-603-D-2010.

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  $70 + 10 \log (P)$  dB.

### 4.4.2 Test Procedures

1. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the 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. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $70 + 10\log(P)$ dB below the transmitter power P(Watts)  
= P(W)- [70 + 10log(P)] (dB)  
= [30 + 10log(P)] (dBm) - [70 + 10log(P)] (dB)  
= -40dBm.

11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain



## 5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Nov. 20, 2015	Aug. 03, 2016~ Aug. 13, 2016	Nov. 19, 2016	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D	35414	30MHz~1GHz	Nov. 17, 2015	Aug. 03, 2016~ Aug. 13, 2016	Nov. 16, 2016	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1326	1GHz ~ 18GHz	Oct. 08, 2015	Aug. 03, 2016~ Aug. 13, 2016	Oct. 07, 2016	Radiation (03CH12-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz ~ 44GHZ	Sep. 24, 2015	Aug. 03, 2016~ Aug. 13, 2016	Sep. 23, 2016	Radiation (03CH12-HY)
EMI Test Receiver	Rohde & Schwarz	ESU26	100390	20Hz~26.5GHz	Dec. 21, 2015	Aug. 03, 2016~ Aug. 13, 2016	Dec. 20, 2016	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP140349	N/A	Nov. 17, 2015	Aug. 03, 2016~ Aug. 13, 2016	Nov. 16, 2016	Radiation (03CH12-HY)
Preamplifier	MITEQ	AMF-7D-00 101800-30-1	1815698	1GHz~18GHz	Dec. 14, 2015	Aug. 03, 2016~ Aug. 13, 2016	Dec. 13, 2016	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4,M Y28653/4,MY9	26GHz~40GHz	Jan. 12, 2016	Aug. 03, 2016~ Aug. 13, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4,M Y28653/4,MY9	1GHz~26GHz	Jan. 12, 2016	Aug. 03, 2016~ Aug. 13, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4,M Y28653/4,MY9	30MHz~1GHz	Jan. 12, 2016	Aug. 03, 2016~ Aug. 13, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY24958/4,M Y28653/4,MY9	9K~30MHz	Jan. 12, 2016	Aug. 03, 2016~ Aug. 13, 2016	Jan. 11, 2017	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	NCR	Aug. 03, 2016~ Aug. 13, 2016	NCR	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-450 0-B	N/A	1m~4m	NCR	Aug. 03, 2016~ Aug. 13, 2016	NCR	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	NCR	Aug. 03, 2016~ Aug. 13, 2016	NCR	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170576	18GHz ~ 40GHz	Apr. 15, 2016	Aug. 03, 2016~ Aug. 13, 2016	Apr. 14, 2017	Radiation (03CH12-HY)
Preamplifier	MITEQ	TTA0204	1872107	2GHz~40GHz	Feb. 15, 2016	Aug. 03, 2016~ Aug. 13, 2016	Feb. 14, 2017	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
---	--------

### Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	3.7 dB
---	--------

### Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ )	4.0 dB
---	--------



## Appendix A. Test Results of Conducted Test

### Conducted Output Power(Average power)

LTE Band 30 Maximum Average Power [dBm] Top Antenna						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	20.27	20.22	20.24
5	1	12		20.13	20.06	20.10
5	1	24		20.09	20.04	20.15
5	12	0		19.07	19.13	19.18
5	12	7		19.14	19.18	19.25
5	12	13		19.13	19.17	19.16
5	25	0		19.06	19.11	19.21
5	1	0	16-QAM	19.39	19.47	19.45
5	1	12		19.36	19.40	19.48
5	1	24		19.29	19.32	19.43
5	12	0		18.09	18.15	18.23
5	12	7		18.14	18.15	18.22
5	12	13		18.12	18.19	18.17
5	25	0		18.22	18.16	18.21
10	1	0	QPSK		20.37	
10	1	25			20.15	
10	1	49			20.24	
10	25	0			19.24	
10	25	12			19.29	
10	25	25			19.21	
10	50	0			19.32	
10	1	0	16-QAM		19.76	
10	1	25			19.55	
10	1	49			19.64	
10	25	0			18.24	
10	25	12			18.36	
10	25	25			18.23	
10	50	0			18.38	



LTE Band 30 Maximum Average Power [dBm] Bottom Antenna						
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest
5	1	0	QPSK	22.81	22.86	22.81
5	1	12		22.81	22.80	22.96
5	1	24		22.89	22.68	22.64
5	12	0		21.99	21.82	21.94
5	12	7		22.04	22.12	22.23
5	12	13		22.19	21.97	21.88
5	25	0		21.99	21.97	21.90
5	1	0	16-QAM	21.77	21.98	22.04
5	1	12		21.82	21.82	21.99
5	1	24		21.76	21.70	21.65
5	12	0		21.05	21.10	21.42
5	12	7		21.12	21.20	21.42
5	12	13		21.10	21.26	21.07
5	25	0		21.44	21.11	21.03
10	1	0	QPSK		22.94	
10	1	25			23.10	
10	1	49			22.88	
10	25	0			22.03	
10	25	12			22.08	
10	25	25			21.98	
10	50	0			22.09	
10	1	0	16-QAM		22.00	
10	1	25			22.02	
10	1	49			21.81	
10	25	0			21.42	
10	25	12			21.07	
10	25	25			21.01	
10	50	0			20.84	



### Appendix B. Test Results of Radiated Test

## Radiated Spurious Emission

<Top Antenna>

LTE Band 30 / 5MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	EIRP ( 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	4614	-61.18	-40	-21.18	-58.33	-67.99	2.11	8.93	H
	6924	-52.86	-40	-12.86	-57.45	-60.95	2.62	10.71	H
	9228	-56.61	-40	-16.61	-66.53	-66.69	2.53	12.61	H
	4614	-63.47	-40	-23.47	-60.33	-70.28	2.11	8.93	V
	6924	-49.52	-40	-9.52	-54.38	-57.61	2.62	10.71	V
	9228	-59.02	-40	-19.02	-67.56	-69.10	2.53	12.61	V

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

LTE Band 30 / 10MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	EIRP ( 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	4608	-59.07	-40	-19.07	-56.12	-65.87	2.11	8.92	H
	6918	-51.99	-40	-11.99	-56.58	-60.07	2.62	10.70	H
	9222	-55.25	-40	-15.25	-65.17	-65.33	2.53	12.61	H
	4608	-57.62	-40	-17.62	-54.38	-64.42	2.11	8.92	V
	6918	-49.44	-40	-9.44	-54.3	-57.52	2.62	10.70	V
	9222	-58.18	-40	-18.18	-66.72	-68.26	2.53	12.61	V

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



<Bottom Antenna>

LTE Band 30 / 5MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	EIRP ( 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	4615	-55.63	-40	-15.63	-52.78	-62.44	2.12	8.93	H
	6923	-57.00	-40	-17.00	-61.59	-65.09	2.62	10.71	H
	9231	-53.95	-40	-13.95	-63.87	-64.03	2.53	12.61	H
	4615	-59.96	-40	-19.96	-56.82	-66.77	2.12	8.93	V
	6923	-59.50	-40	-19.50	-64.36	-67.59	2.62	10.71	V
	9231	-56.10	-40	-16.10	-64.64	-66.18	2.53	12.61	V

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

LTE Band 30 / 10MHz / QPSK / RB Size 1 Offset 0									
Channel	Frequency ( MHz )	EIRP ( 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	4608	-56.30	-40	-16.30	-53.35	-63.10	2.11	8.92	H
	6918	-55.04	-40	-15.04	-59.63	-63.12	2.62	10.70	H
	9222	-54.29	-40	-14.29	-64.21	-64.37	2.53	12.61	H
	4608	-60.40	-40	-20.40	-57.16	-67.20	2.11	8.92	V
	6918	-59.63	-40	-19.63	-64.49	-67.71	2.62	10.70	V
	9222	-57.87	-40	-17.87	-66.41	-67.95	2.53	12.61	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:16ZTE027]

**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: GPS/WiFi/Bluetooth 3in1 antenna is now updated.

Aiming at improving GPS performance, we updated this antenna and this result to 1dB efficiency better than previous one. Meanwhile, WiFi/Bluetooth efficiency was slightly down.

Before



After

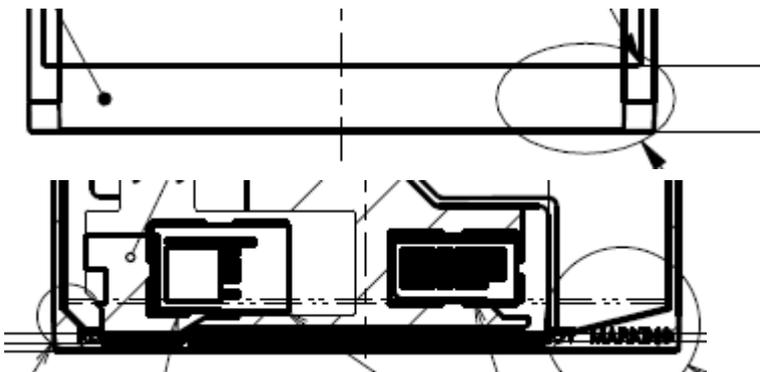


PCB Layout changes: NO

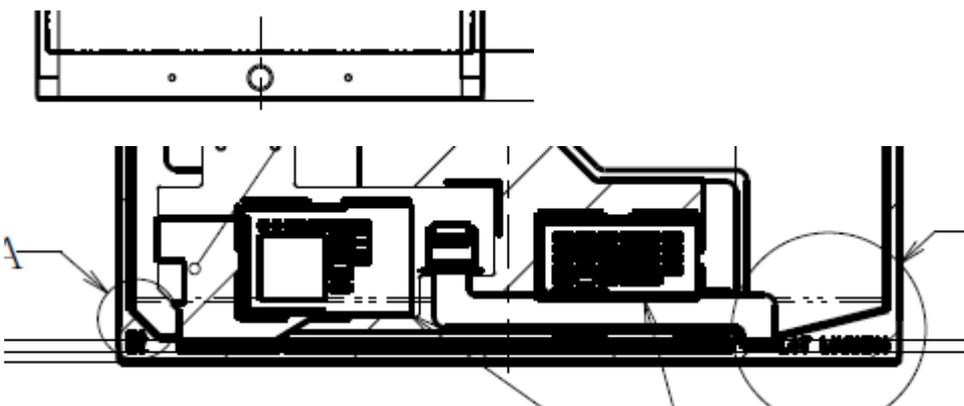
Components on PCB changes: NO

LCD changes: Yes, Added touch key and touch key FPC

Before



After



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

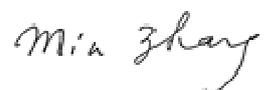
Other changes detailed: NO

## ACCESSORY MODIFICATIONS:

Battery changes:NO

AC Adaptor changes:NO

Earphone changes:NO



APPROVED BY: Min zhang

Project Manager: Li xiaofeng

Date:2016-6-6

Company: ZTE Corporation

Address: B109, #889, Bibo Rd, Zhangjiang Hi-Tech Park, Shanghai,China

Tel:+86-21-68896840

Fax: +86-21-68896835