



Variant FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE uFi
BRAND NAME : ZTE
MODEL NAME : MF923
FCC ID : SRQ-MF923
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

This is a variant report which is only valid together with the original test report. The product was received on Sep. 12, 2016 and completely tested on Sep. 30, 2016. 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.

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SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.407(a)	Maximum Conducted Output Power	FCC ≤24 dBm (depend on band)	Pass	-
3.2	15.407(b)	Unwanted Emissions	≤ -17, -27 dBm (depend on band)&15.209(a)	Pass	Under limit 2.95 dB at 5148.960 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	LTE uFi
Brand Name	ZTE
Model Name	MF923
FCC ID	SRQ-MF923
EUT supports Radios application	WCDMA/HSPA/DC-HSDPA/ HSPA+(16QAM uplink is not supported)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20/HT40/ WLAN 5GHz 802.11a/n HT20/HT40/
IMEI Code	Conducted: 865135023724618 Radiated: N/A
HW Version	xx4A
SW Version	MF923V2.3
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 of Equipment Under Test

Standards-related Product Specification														
Tx/Rx Frequency Range	5180 MHz ~ 5240 MHz													
Maximum Output Power to Antenna	802.11a : 10.49 dBm / 0.0112 W 802.11n HT20 : 13.50 dBm / 0.0224 W 802.11n HT40 : 13.74 dBm / 0.0237 W													
Antenna Type	Chain Port 0: IFA Antenna Chain Port 1: IFA Antenna													
Antenna Function for Transmitter		<table border="1"><thead><tr><th></th><th>Chain Port 0</th><th>Chain Port 1</th></tr></thead><tbody><tr><td>802.11 a</td><td>V</td><td>V</td></tr><tr><td>802.11 n SISO</td><td>V</td><td>V</td></tr><tr><td>802.11 n MIMO</td><td>V</td><td>V</td></tr></tbody></table>		Chain Port 0	Chain Port 1	802.11 a	V	V	802.11 n SISO	V	V	802.11 n MIMO	V	V
		Chain Port 0	Chain Port 1											
	802.11 a	V	V											
	802.11 n SISO	V	V											
802.11 n MIMO	V	V												
Type of Modulation	802.11a/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. China TEL: +86-0512-5790-0158 FAX: +86-0512-5790-0958		
Test Site No.	Sporton Site No.		FCC Registration No.
	TH01-KS	03CH03-KS	306251

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

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 E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
- ♦ 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. 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: 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.

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5180- 5240 MHz Band 1 (U-NII-1)	36	5180	44	5220
	38*	5190	46*	5230
	40	5200	48	5240

Note: The above Frequency and Channel in "*" were 802.11n HT40.



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 in the following tables.

Channel	Frequency (MHz)	Chain Port	WLAN 5GHz 802.11a Average Power (dBm)								
			Data Rate	Power vs. Data Rate							
			6Mbps	Channel	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
CH 36	5180	0	10.45	CH 48	10.34	10.26	10.23	10.22	10.20	10.17	10.12
CH 44	5220	0	10.48								
CH 48	5240	0	10.49								
CH 36	5180	1	10.47	CH 36	10.32	10.40	10.29	10.32	10.40	10.43	10.34
CH 44	5220	1	10.15								
CH 48	5240	1	10.00								

Channel	Frequency (MHz)	Chain Port	WLAN 5GHz 802.11n-HT20 Average Power (dBm)								
			MCS Index	Power vs. Data Rate							
			MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 36	5180	0	10.11	CH 36	9.71	9.65	9.77	9.82	9.85	9.75	9.72
CH 44	5220	0	9.87								
CH 48	5240	0	10.03								
CH 36	5180	1	10.38	CH 36	10.36	10.32	10.33	10.32	10.36	10.29	10.37
CH 44	5220	1	10.08								
CH 48	5240	1	10.14								
CH 36	5180	0+1(0)	10.19	CH 36	10.00	10.05	10.06	10.08	10.10	10.04	10.15
CH 44	5220	0+1(0)	10.02								
CH 48	5240	0+1(0)	10.01								
CH 36	5180	0+1(1)	10.77	CH 36	10.62	10.52	10.57	10.61	10.53	10.58	10.50
CH 44	5220	0+1(1)	10.35								
CH 48	5240	0+1(1)	10.41								
CH 36	5180	0+1	13.50	CH 36	13.33	13.30	13.33	13.36	13.33	13.33	13.34
CH 44	5220	0+1	13.20								
CH 48	5240	0+1	13.23								



Channel	Frequency (MHz)	Chain Port	WLAN 5GHz 802.11n-HT40 Average Power (dBm)								
			MCS Index	Power vs. Data Rate							
			MCS0	Channel	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
CH 38	5190	0	9.76	CH 38	9.58	9.50	9.56	9.48	9.55	9.52	9.56
CH 46	5230	0	9.60								
CH 38	5190	1	9.99	CH 38	9.77	9.46	9.63	9.88	9.78	9.83	9.90
CH 46	5230	1	9.66								
CH 38	5190	0+1(0)	10.48	CH 46	10.69	10.62	10.61	10.68	10.63	10.67	10.68
CH 46	5230	0+1(0)	10.70								
CH 38	5190	0+1(1)	10.83	CH 38	9.97	9.74	9.59	9.58	9.54	9.59	9.51
CH 46	5230	0+1(1)	10.75								
CH 38	5190	0+1	13.67	CH 46	13.36	13.21	13.14	13.18	13.13	13.18	13.15
CH 46	5230	0+1	13.74								



2.3 Test Mode

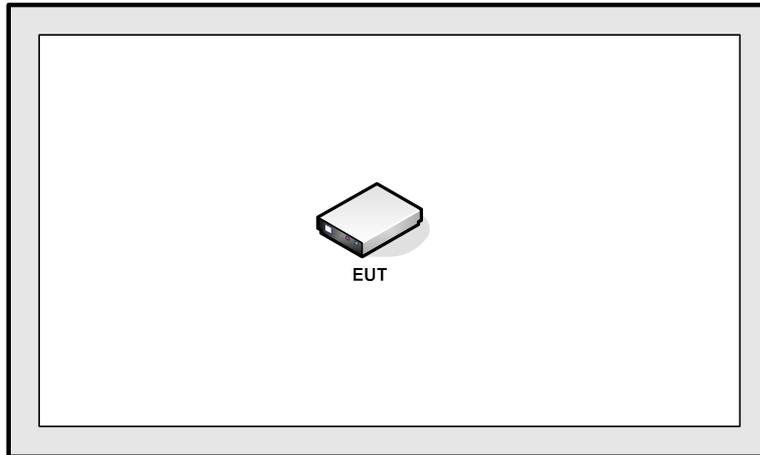
Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates from the power table described in section 2.2.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20	MCS0
802.11n HT40	MCS0

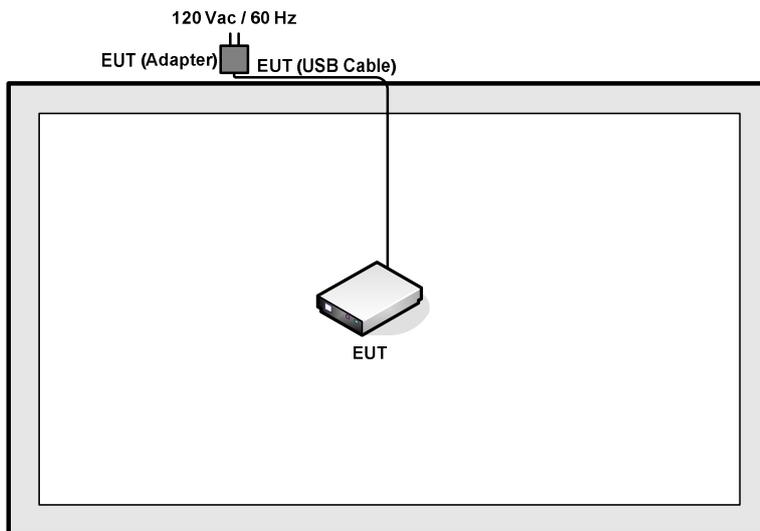
Ch. #		Band I: 5180- 5240 MHz		
		802.11a	802.11n HT20	802.11n HT40
L	Low	36	36	38
M	Middle	44	44	-
H	High	48	48	46

2.4 Connection Diagram of Test System

<Radiated Emission 11a Mode>



<Radiated Emission 11n Mode>



2.5 EUT Operation Test Setup

For WLAN RF test items, an engineering test program was provided and enabled to make EUT continuously transmit/receive.



3 Test Result

3.1 Maximum Conducted Output Power Measurement

3.1.1 Limit of Maximum Conducted Output Power

<FCC 14-30 CFR 15.407>

For mobile and portable client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.1.2 Measuring Instruments

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

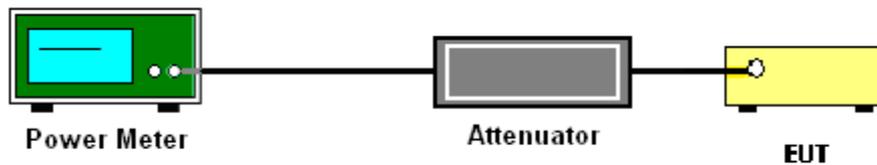
3.1.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, $10 \log(1/x)$, where x is the duty cycle.

3.1.4 Test Setup





3.2 Unwanted Radiated Emission Measurement

This section as specified in FCC Part 15.407(b) is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement. The unwanted emissions shall comply with 15.407(b)(1) to (6), and restricted bands per FCC Part15.205.

3.2.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5150-5250 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27dBm/MHz.
- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$



EIRP (dBm)	Field Strength at 3m (dBμV/m)
-17	78.3
-27	68.3

(3) KDB789033 D02 v01r03 G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.

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 789033 D02 General UNII Test Procedures New Rules v01r03. Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW ≥ 3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

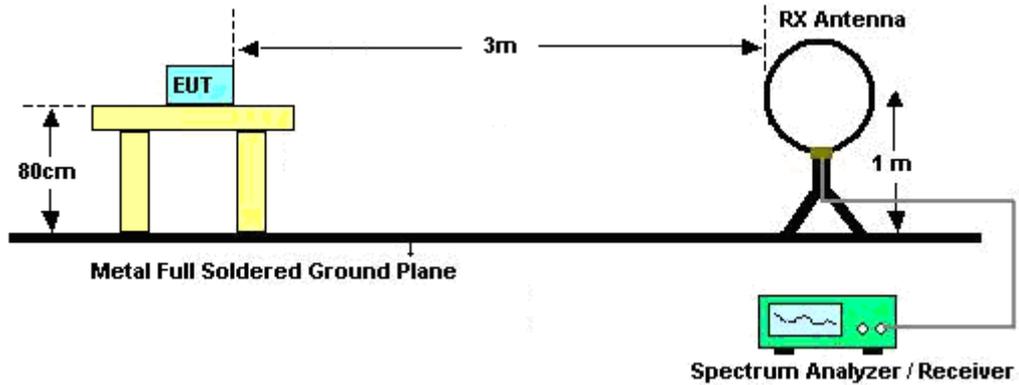
- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



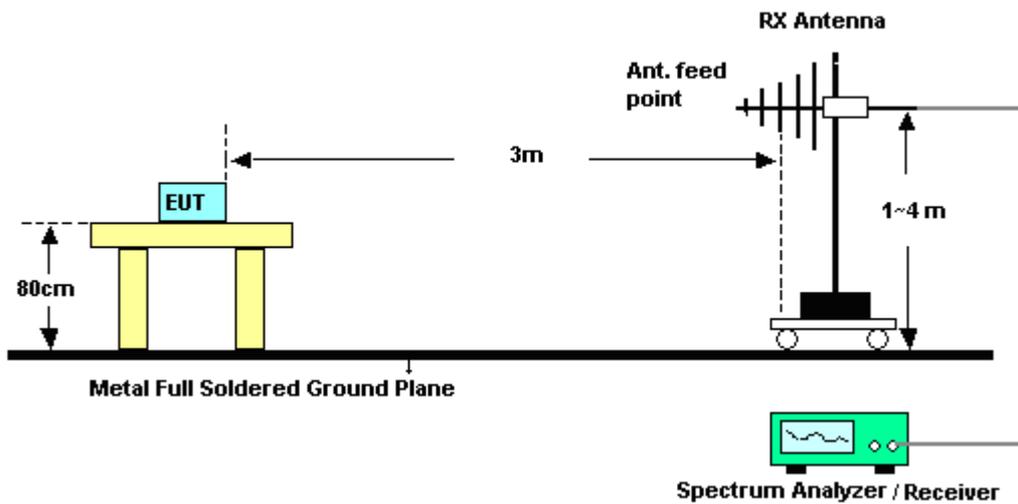
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.2.4 Test Setup

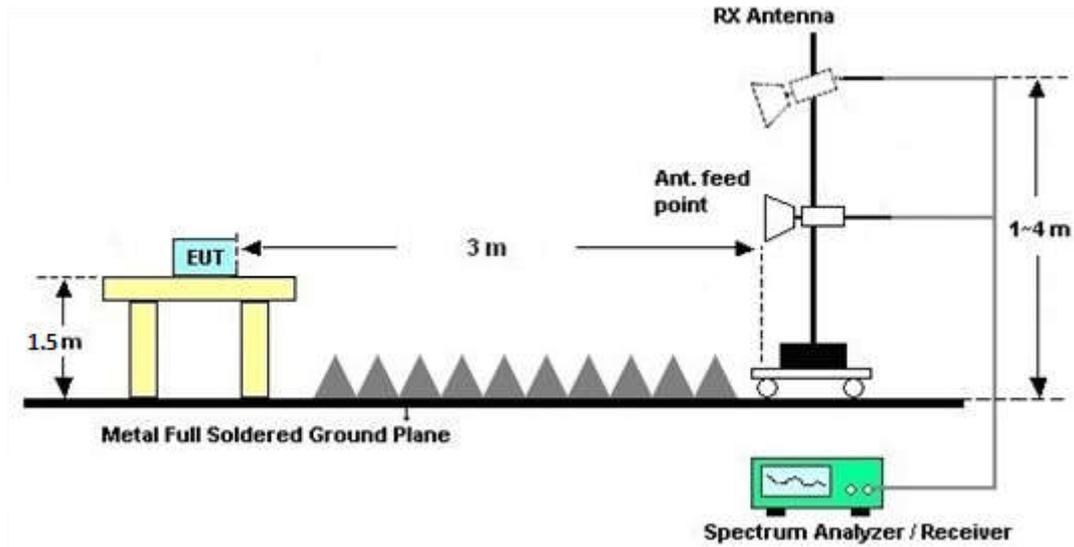
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



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

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 Band Edges

Please refer to Appendix A.

3.2.7 Duty Cycle

Please refer to Appendix B.

3.2.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix A.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Aug. 09, 2016	Sep. 28, 2016	Aug. 08, 2017	Conducted (TH01-KS)
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 20, 2016	Sep. 28, 2016	Jan. 19, 2017	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 20, 2016	Sep. 28, 2016	Jan. 19, 2017	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESCI	100534	9kHz~3GHz	Oct. 24, 2015	Sep. 29, 2016~ Sep. 30, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY551502 44	10Hz~44GHz	Apr. 22, 2016	Sep. 29, 2016~ Sep. 30, 2016	Apr. 21, 2017	Radiation (03CH03-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Nov. 07, 2015	Sep. 29, 2016~ Sep. 30, 2016	Nov. 06, 2016	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 16, 2016	Sep. 29, 2016~ Sep. 30, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-135 6	1GHz~18GHz	Apr. 16, 2016	Sep. 29, 2016~ Sep. 30, 2016	Apr. 15, 2017	Radiation (03CH03-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Oct. 10, 2015	Sep. 29, 2016~ Sep. 30, 2016	Oct. 09, 2016	Radiation (03CH03-KS)
Amplifier	SONOMA	310N	187289	9kHz~1GHz	Aug. 09, 2016	Sep. 29, 2016~ Sep. 30, 2016	Aug. 08, 2017	Radiation (03CH03-KS)
high gain Amplifier	MITEQ	AMF-7D-0010 1800-30-10P	1943529	1GHz~18GHz	Jan. 20, 2016	Sep. 29, 2016~ Sep. 30, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A023 70	1GHz~26.5GHz	Oct. 24, 2015	Sep. 29, 2016~ Sep. 30, 2016	Oct. 23, 2016	Radiation (03CH03-KS)
Amplifier	MITEQ	TTA1840-35-H G	1887435	18GHz~40GHz	Jan. 20, 2016	Sep. 29, 2016~ Sep. 30, 2016	Jan. 19, 2017	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F1040900 04	N/A	NCR	Sep. 29, 2016~ Sep. 30, 2016	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Sep. 29, 2016~ Sep. 30, 2016	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Sep. 29, 2016~ Sep. 30, 2016	NCR	Radiation (03CH03-KS)

NCR: No Calibration Required



5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.5 dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.6 dB
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Appendix A. Radiated Spurious Emission

Band 1 - 5150~5250MHz

WIFI 802.11a (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Chain Port				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)
802.11a CH 36 5180MHz		5144	50.69	-23.31	74	47.46	31.84	7.92	36.53	210	123	P	H
		5148.16	41.24	-12.76	54	38.01	31.84	7.92	36.53	210	123	A	H
	*	5184	97.68	-	-	94.4	31.85	7.94	36.51	210	123	P	H
	*	5184	90.62	-	-	87.34	31.85	7.94	36.51	210	123	A	H
		5150	52.6	-21.4	74	49.37	31.84	7.92	36.53	383	158	P	V
		5149.76	41.62	-12.38	54	38.39	31.84	7.92	36.53	383	158	A	V
	*	5184	98.76	-	-	95.48	31.85	7.94	36.51	383	158	P	V
	*	5184	91.79	-	-	88.51	31.85	7.94	36.51	383	158	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11a (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Chain Port				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)
802.11a CH 36 5180MHz		10360	44.9	-29.1	74	52.29	38.02	11.84	57.25	160	360	P	H
		10360	43.07	-30.93	74	50.46	38.02	11.84	57.25	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 - 5150~5250MHz

WIFI 802.11n HT20 (Band Edge @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Chain Port				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		5148.48	54.89	-19.11	74	51.66	31.84	7.92	36.53	105	201	P	H
		5149.76	43.23	-10.77	54	40	31.84	7.92	36.53	105	201	A	H
	*	5182	101.05	-	-	97.77	31.85	7.94	36.51	105	201	P	H
	*	5182	94.31	-	-	91.03	31.85	7.94	36.51	105	201	A	H
		5149.92	49.5	-24.5	74	46.27	31.84	7.92	36.53	100	19	P	V
		5149.92	40.4	-13.6	54	37.17	31.84	7.92	36.53	100	19	A	V
	*	5178	96.86	-	-	93.58	31.85	7.94	36.51	100	19	P	V
	*	5178	90.04	-	-	86.76	31.85	7.94	36.51	100	19	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz

WIFI 802.11n HT20 (Harmonic @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Chain Port				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT20 CH 36 5180MHz		10360	43.34	-30.66	74	50.73	38.02	11.84	57.25	160	360	P	H
		10360	43.28	-30.72	74	50.67	38.02	11.84	57.25	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

WIFI Chain Port 0+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 HT40 CH 38 5190MHz		5148.16	55.52	-18.48	74	52.29	31.84	7.92	36.53	100	108	P	H
		5149.6	46.32	-7.68	54	43.09	31.84	7.92	36.53	100	108	A	H
	*	5196	97.61	-	-	94.3	31.86	7.95	36.5	100	108	P	H
	*	5196	89.21	-	-	85.9	31.86	7.95	36.5	100	108	A	H
		5352.66	47.75	-26.25	74	44	31.91	8.34	36.5	100	108	P	H
		5353.74	39.52	-14.48	54	35.77	31.91	8.34	36.5	100	108	A	H
		5150.08	66.56	-7.44	74	63.33	31.84	7.92	36.53	133	80	P	V
	!	5148.96	51.05	-2.95	54	47.82	31.84	7.92	36.53	133	80	A	V
	*	5194	100.32	-	-	97.01	31.86	7.95	36.5	133	80	P	V
	*	5194	93.24	-	-	89.93	31.86	7.95	36.5	133	80	A	V
		5351.04	48.34	-25.66	74	44.59	31.91	8.34	36.5	133	80	P	V
		5352.66	41.14	-12.86	54	37.39	31.91	8.34	36.5	133	80	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												

Band 1 5150~5250MHz
WIFI 802.11n HT40 (Harmonic @ 3m)

WIFI Chain Port 0+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 HT40 CH 38 5190MHz		10380	43.21	-30.79	74	50.55	38.03	11.85	57.22	160	360	P	H
		10380	43.73	-30.27	74	51.07	38.03	11.85	57.22	160	360	P	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Band 1 5150~5250MHz

Emission below 1GHz

WIFI 802.11n HT40 (LF @ 3m)

WIFI	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
Chain Port				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
0+1		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
802.11n HT40 LF		30.97	23.5	-16.5	40	28.56	26.86	0.66	32.58	104	316	P	H
		96.93	23.34	-20.16	43.5	35.81	18.66	1.19	32.32	-	-	P	H
		166.77	25.1	-18.4	43.5	38.78	17.2	1.56	32.44	-	-	P	H
		367.56	27.28	-18.72	46	35.23	21.96	2.36	32.27	-	-	P	H
		454.86	28.85	-17.15	46	33.08	25.28	2.66	32.17	-	-	P	H
		908.82	27.29	-18.71	46	26.33	28.67	3.87	31.58	-	-	P	H
		31.94	29.1	-10.9	40	34.45	26.52	0.68	32.55	136	277	P	V
		52.31	26.51	-13.49	40	42.67	15.5	0.87	32.53	-	-	P	V
		99.84	22.87	-20.63	43.5	35.06	18.9	1.21	32.3	-	-	P	V
		165.8	28.33	-15.17	43.5	41.97	17.24	1.56	32.44	-	-	P	V
		199.75	27.53	-15.97	43.5	42.46	15.8	1.73	32.46	-	-	P	V
		455.83	24.92	-21.08	46	29.19	25.24	2.66	32.17	-	-	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	Peak or Average
H/V	Horizontal or Vertical



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.	
2		(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

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

For Peak Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 55.45(dBμV/m) – 74(dBμV/m)
= -18.55(dB)

For Average Limit @ 2390MHz:

- 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)
- Over Limit(dB)
= Level(dBμV/m) – Limit Line(dBμV/m)
= 43.54(dBμV/m) – 54(dBμV/m)
= -10.46(dB)

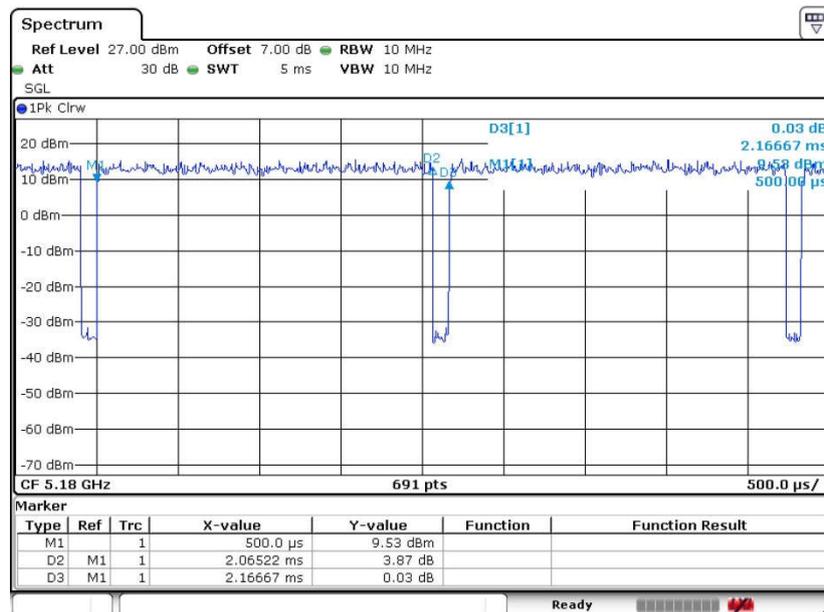
Both peak and average measured complies with the limit line, so test result is “PASS”.



Appendix B. Duty Cycle Plots

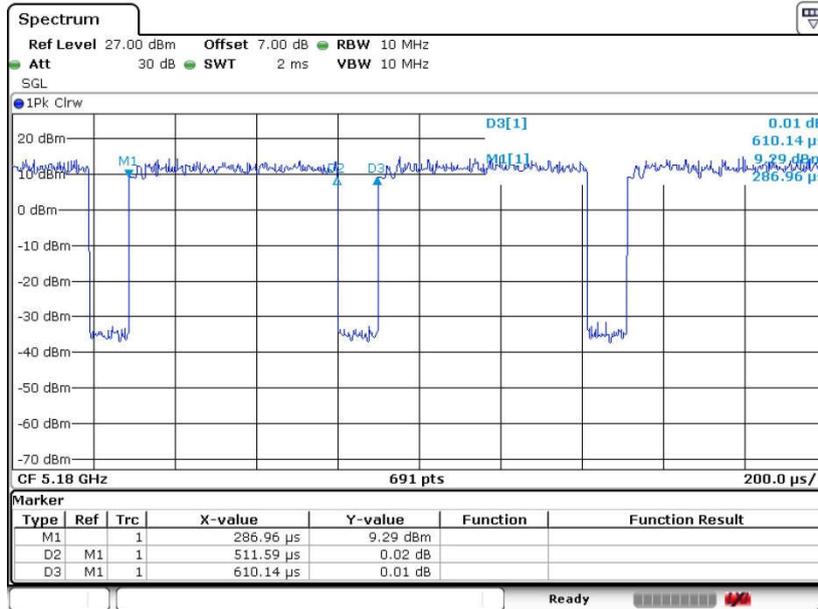
Chain Port	Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
1	802.11a	95.32	2.07	0.48	1kHz
0+1	5GHz 802.11n HT20	83.85	0.51	1.95	3kHz
0+1	5GHz 802.11n HT40	83.70	0.50	2.01	3kHz

802.11a

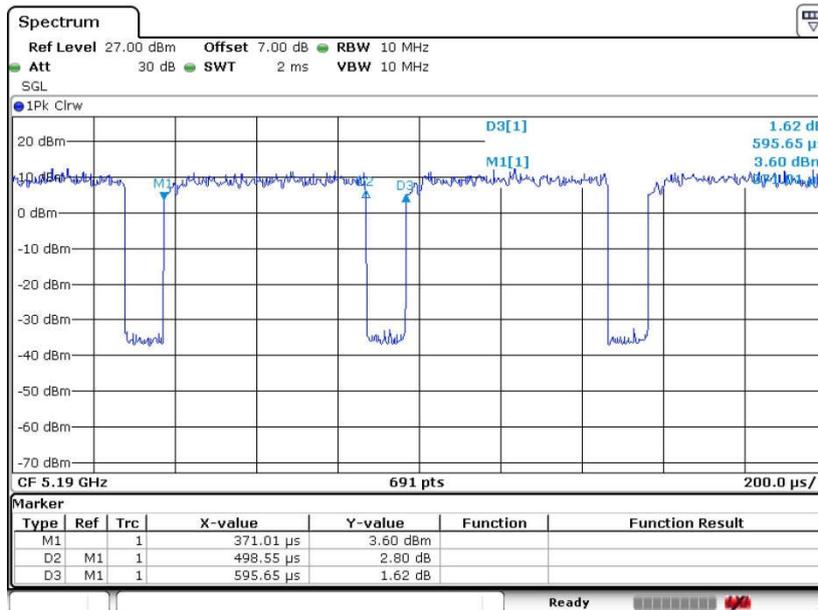




802.11n20



802.11n40





Appendix D. Product Equality Declaration

ZTE CORPORATION**Product Change Description**

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

[MF923]

[ZTE Corporation]

is the variant of the initial certified product,

[MF923]

[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: Yes, for LTE b2/4/5,WCDMA b1/2/5; The new PA chip component is pin-for-pin compatible and an equivalent chip as old chip, it has the same basic function as the old one, no radio parameters changed.

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

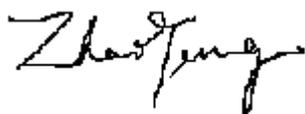
Other changes: SIM slot changed to the second vender.
Touch Panel changed to the second vender.
A LDO(which used for Micro-SD slot power supply)
changed to the second vender.

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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