



FCC RF Test Report

APPLICANT : ZTE CORPORATION
EQUIPMENT : LTE/WCDMA/GSM (GPRS)
Multi-Mode Digital Mobile Phone
BRAND NAME : ZTE
MODEL NAME : Z999
FCC ID : SRQ-Z999
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : (DSS) Spread Spectrum Transmitter

The product was received on Oct. 13, 2017 and testing was completed on Nov. 18, 2017. 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.

Approved by: James Huang / Manager



Sporton International (Kunshan) Inc.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR760101-02A	Rev. 01	Initial issue of report	Nov. 29, 2017

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
-	15.247(a)(1)	Number of Channels	$\geq 15\text{Chs}$	Not Required	-
-	15.247(a)(1)	Hopping Channel Separation	$\geq 2/3$ of 20dB BW	Not Required	-
-	15.247(a)(1)	Dwell Time of Each Channel	$\leq 0.4\text{sec}$ in 31.6sec period	Not Required	-
-	15.247(a)(1)	20dB Bandwidth	NA	Not Required	-
3.1	15.247(b)(1)	Peak Output Power	$\leq 125\text{ mW}$	Pass	-
-	15.247(d)	Conducted Band Edges	$\leq 20\text{dBc}$	Not Required	-
-	15.247(d)	Conducted Spurious Emission	$\leq 20\text{dBc}$	Not Required	-
-	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 14.70 dB at 831.220 MHz
-	15.207	AC Conducted Emission	15.207(a)	Not Required	-
-	15.203 & 15.247(b)	Antenna Requirement	N/A	Not Required	-

Remark: Not Required means the changes dose not affected the test result.



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/WCDMA/GSM (GPRS) Multi-Mode Digital Mobile Phone
Brand Name	ZTE
Model Name	Z999
FCC ID	SRQ-Z999
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/ HSPA+(16QAM uplink is not supported)/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 v4.0 LE/ Bluetooth v4.1 LE
IMEI Code	Conducted: 865800030027954 Radiation: 865800030028028
HW Version	Z999HWV1.0
SW Version	Z999V1.0.0B25
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. This is a variant report for Z999. The product equality declaration could be referred to Appendix C. Based on the similarity between two models, we only retest conducted power and Radiated Spurious Emission from original test report (Sporton Report Number FR760101A) were verified for the differences.

1.4 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	Bluetooth BR(1Mbps) : 7.63 dBm (0.0058 W) Bluetooth EDR (2Mbps) : 6.74 dBm (0.0047 W) Bluetooth EDR (3Mbps) : 7.19 dBm (0.0052 W)
Antenna Type / Gain	PIFA Antenna with gain 3.57 dBi
Type of Modulation	Bluetooth BR (1Mbps) : GFSK Bluetooth EDR (2Mbps) : $\pi/4$ -DQPSK Bluetooth EDR (3Mbps) : 8-DPSK

1.5 Modification of EUT

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



1.6 Testing Location

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600155-0) and the FCC designation No. is CN5013.

Test Site	Sporton International (Kunshan) Inc.	
Test Site Location	No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	Sporton Site No.	FCC Test Firm Registration No.
	TH01-KS	630927

Sporton Lab is accredited to ISO 17025 by National Voluntary Laboratory Accreditation Program (NVLAP code: 600156-0) and the FCC designation No. is CN5019.

Test Site	Sporton International (Shenzhen) Inc.	
Test Site Location	No. 3 Bldg the third floor of south, Shahe River west, Fengzeyuan Warehouse, Nanshan District Shenzhen City Guangdong Province 518055 China TEL: +86-755-3320-2398	
Test Site No.	Sporton Site No.	FCC Test Firm Registration No.
	03CH04-SZ	577730

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 C §15.247
- ♦ 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

2.1 Descriptions of Test Mode

Preliminary tests were performed in different data rates and recorded the RF output power in the following table:

Channel	Frequency	Bluetooth RF Output Power		
		Data Rate / Modulation		
		GFSK	$\pi/4$ -DQPSK	8-DPSK
		1Mbps	2Mbps	3Mbps
Ch00	2402MHz	7.61 dBm	6.74 dBm	7.19 dBm
Ch39	2441MHz	7.62 dBm	6.72 dBm	7.02 dBm
Ch78	2480MHz	7.63 dBm	6.71 dBm	7.04 dBm

Remark:

1. All the test data for each data rate were verified, but only the worst case was reported.
 2. The data rate was set in 1Mbps for all the test items due to the highest RF output power.
- a. 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: conduction (150 kHz to 30 MHz), radiation (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). Pre-scanned tests, X, Y, Z in three orthogonal panels, and different data rates were conducted to determine the final configuration (X plane as worst plane) from all possible combinations, and the worst mode of radiated spurious emissions is Bluetooth 1Mbps mode, and recorded in this report.

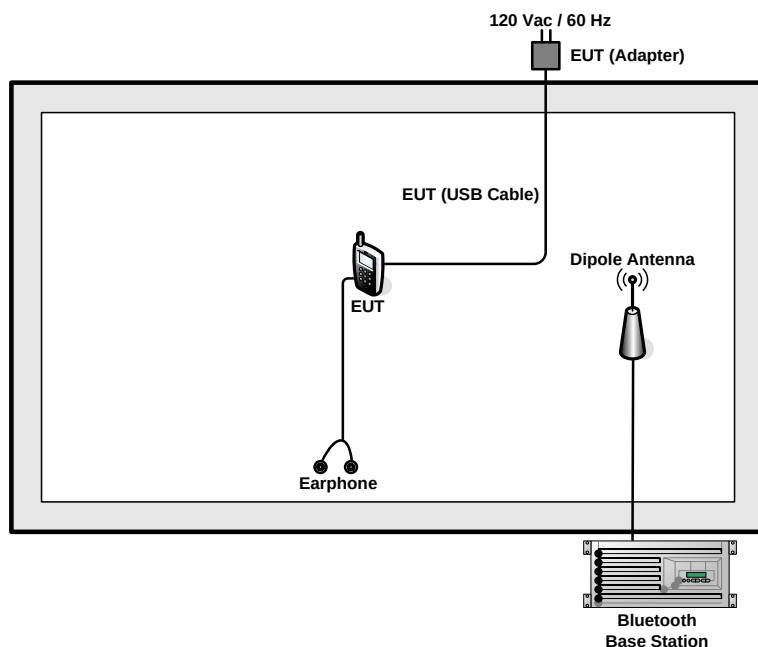
2.2 Test Mode

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases			
Test Item	Data Rate / Modulation		
	Bluetooth BR 1Mbps GFSK	Bluetooth EDR 2Mbps $\pi/4$ -DQPSK	Bluetooth EDR 3Mbps 8-DPSK
Conducted Test Cases	Mode 1: CH00_2402 MHz	Mode 4: CH00_2402 MHz	Mode 7: CH00_2402 MHz
	Mode 2: CH39_2441 MHz	Mode 5: CH39_2441 MHz	Mode 8: CH39_2441 MHz
	Mode 3: CH78_2480 MHz	Mode 6: CH78_2480 MHz	Mode 9: CH78_2480 MHz
Radiated Test Cases	Bluetooth BR 1Mbps GFSK		
	Mode 1: CH00_2402 MHz		
	Mode 2: CH39_2441 MHz		
	Mode 3: CH78_2480 MHz		
Remark: For Radiated Test Cases, The tests were performed with Adapter , Earphone, and USB Cable.			

2.3 Connection Diagram of Test System

<Bluetooth Tx Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	BT Base Station	R&S	CBT	N/A	N/A	Unshielded, 1.8 m
2.	Earphone	Lenovo	LH102	N/A	Unshielded, 1.2m	N/A

3 Test Result

3.1 Peak Output Power Measurement

3.1.1 Limit of Peak Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts.

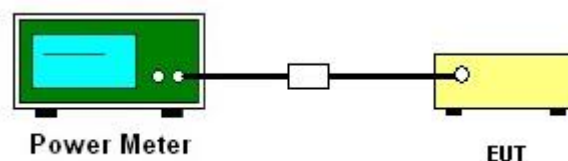
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
1. 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.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Measure the conducted output power with cable loss and record the results in the test report.
4. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Test Mode :	1Mbps	Temperature :	21~25°C
Test Engineer :	Silent Hai	Relative Humidity :	51~55%

Channel	Frequency (MHz)	RF Power (dBm)		
		GFSK	Max. Limits (dBm)	Pass/Fail
		1 Mbps		
00	2402	7.61	20.97	Pass
39	2441	7.62	20.97	Pass
78	2480	7.63	20.97	Pass

Test Mode :	2Mbps	Temperature :	21~25°C
Test Engineer :	Silent Hai	Relative Humidity :	51~55%

Channel	Frequency (MHz)	RF Power (dBm)		
		$\pi/4$ -DQPSK	Max. Limits (dBm)	Pass/Fail
		2 Mbps		
00	2402	6.74	20.97	Pass
39	2441	6.72	20.97	Pass
78	2480	6.71	20.97	Pass

Test Mode :	3Mbps	Temperature :	21~25°C
Test Engineer :	Silent Hai	Relative Humidity :	51~55%

Channel	Frequency (MHz)	RF Power (dBm)		
		8-DPSK	Max. Limits (dBm)	Pass/Fail
		3 Mbps		
00	2402	7.19	20.97	Pass
39	2441	7.02	20.97	Pass
78	2480	7.04	20.97	Pass

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated Band Edges and Spurious Emission

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. In addition, radiated emissions which fall in the restricted bands must also comply with the 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.



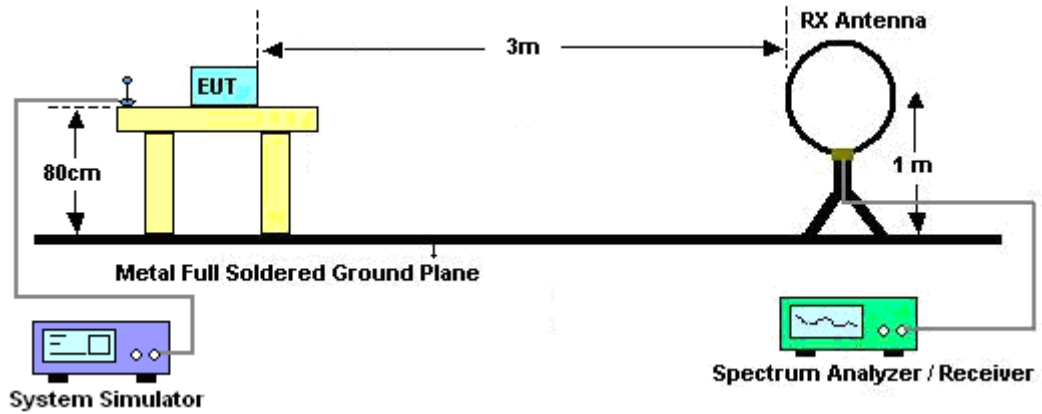
3.2.3 Test Procedures

1. The 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 interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, 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 to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Set RBW=100 kHz for $f < 1 \text{ GHz}$, RBW=1MHz for $f > 1\text{GHz}$; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
 - (3) For average measurement: use duty cycle correction factor method per 15.35(c).
Duty cycle = On time/100 milliseconds
On time = $N_1 * L_1 + N_2 * L_2 + \dots + N_{n-1} * L_{n-1} + N_n * L_n$
Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
Average Emission Level = Peak Emission Level + $20 * \log(\text{Duty cycle})$
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

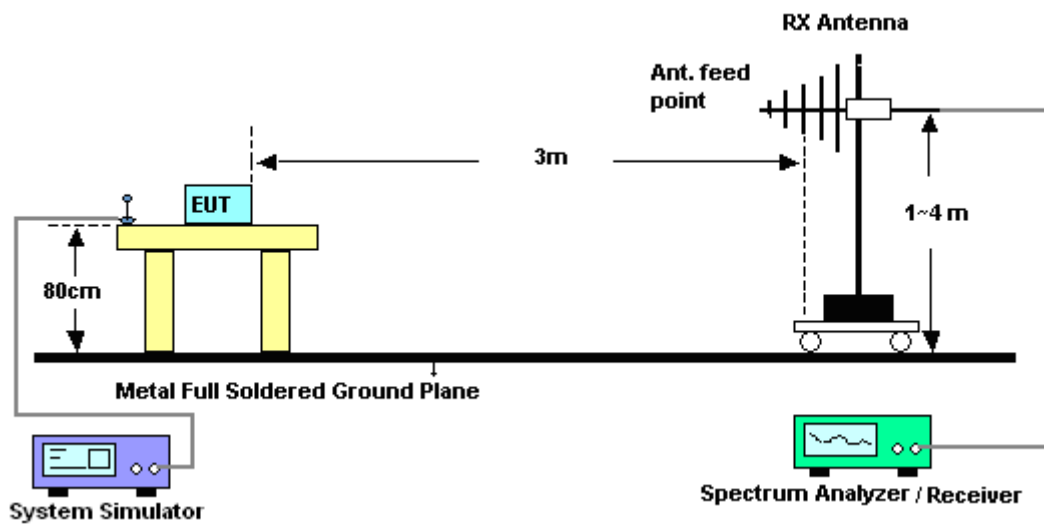
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from $20\log(\text{dwell time}/100\text{ms})$. This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.2.4 Test Setup

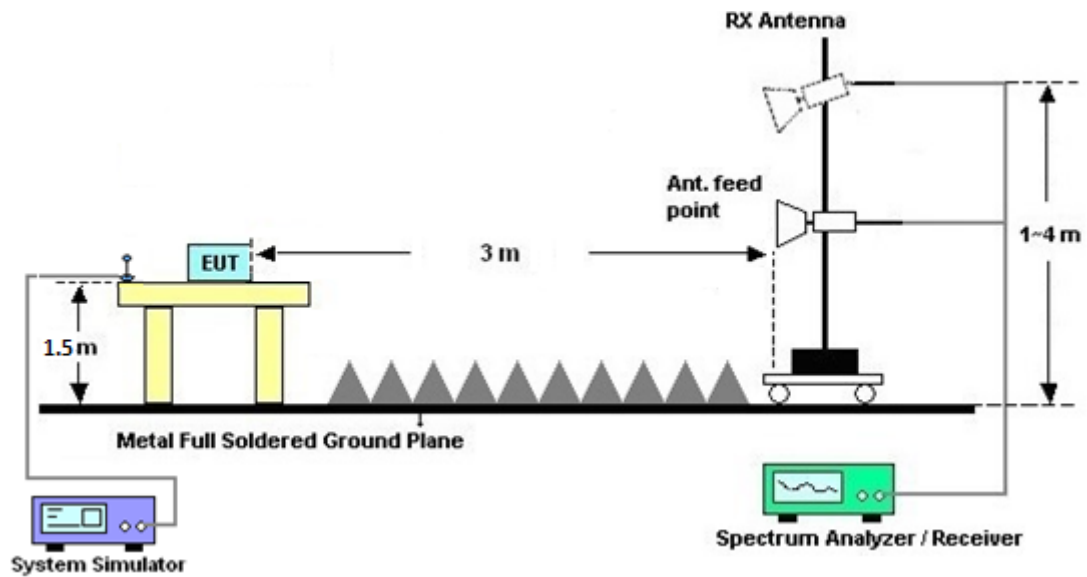
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz

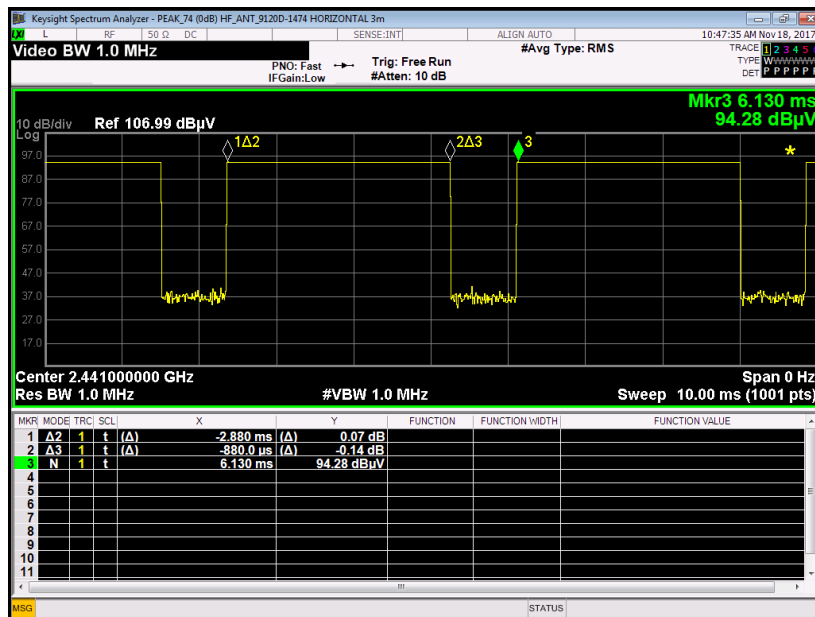


3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

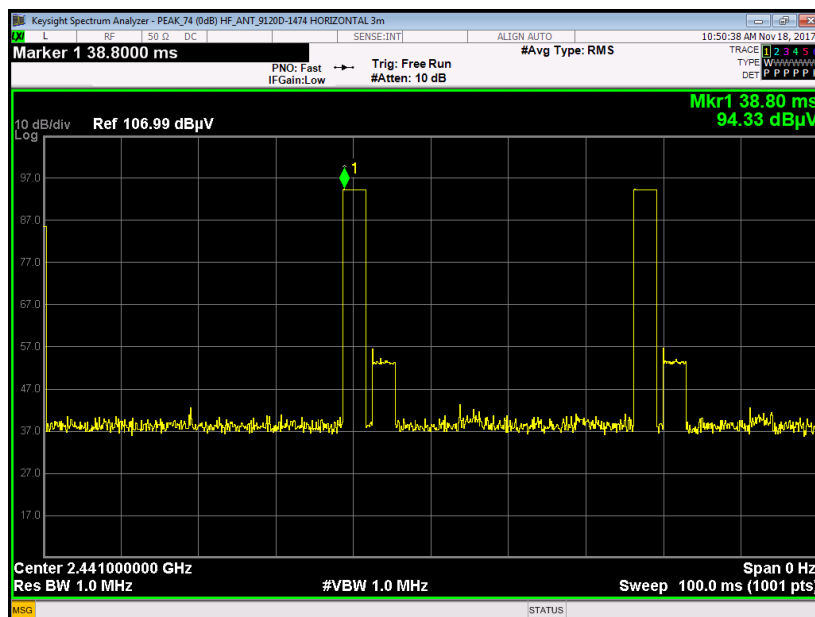
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

3.2.6 Duty cycle correction factor for average measurement

DH5 on time (One Pulse) Plot on Channel 39



DH5 on time (Count Pulses) Plot on Channel 39



Note:

1. Worst case Duty cycle = on time/100 milliseconds = 2 * 2.88 / 100 = 5.76 %
2. Worst case Duty cycle correction factor = 20*log(Duty cycle) = -24.79 dB
3. DH5 has the highest duty cycle worst case and is reported.

Duty Cycle Correction Factor Consideration for AFH mode:

Bluetooth normal hopping rate is 1600Hz and reduced to 800Hz in AFH mode; due to the reduced number of hopping frequencies, with the same packet configuration the dwell time in each channel frequency within 100msec period is longer in AFH mode than normal mode.

In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time DH5 packet is observed; the period to have DH5 packet completing one hopping sequence is

$$2.88 \text{ ms} \times 20 \text{ channels} = 57.6 \text{ ms}$$

There cannot be 2 complete hopping sequences within 100ms period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. $[100\text{ms} / 57.6\text{ms}] = 2 \text{ hops}$

Thus, the maximum possible ON time:

$$2.88 \text{ ms} \times 2 = 5.76 \text{ ms}$$

Worst case Duty Cycle Correction factor, which is derived from the maximum possible ON time,

$$20 \times \log(5.76 \text{ ms}/100\text{ms}) = -24.79 \text{ dB}$$

3.2.7 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix A.

3.2.8 Test Result of Radiated Spurious 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
Pulse Power Sensor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 19, 2017	Oct. 17, 2017	Jan. 18, 2018	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 19, 2017	Oct. 17, 2017	Jan. 18, 2018	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101404	9kHz~7GHz	Apr. 20, 2017	Nov. 18, 2017	Apr. 19, 2018	Radiation (03CH04-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Apr. 20, 2017	Nov. 18, 2017	Apr. 19, 2018	Radiation (03CH04-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 14, 2017	Nov. 18, 2017	May 13, 2018	Radiation (03CH04-SZ)
Bilog Antenna	TeseQ	CBL6111D	41909	30MHz~1GHz	May 16, 2017	Nov. 18, 2017	May 15, 2018	Radiation (03CH04-SZ)
Double Ridge Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-1474	1GHz~18GHz	Jan. 12, 2017	Nov. 18, 2017	Jan. 11, 2018	Radiation (03CH04-SZ)
Horn Antenna	SCHWARZBECK	BBHA9170	9170#679	15GHz~40GHz	May 17, 2017	Nov. 18, 2017	May 16, 2018	Radiation (03CH04-SZ)
Amplifier	Burgeon	BPA-530	102211	0.01Hz~3000MHz	Oct. 19, 2017	Nov. 18, 2017	Oct. 18, 2018	Radiation (03CH04-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1989346	1GHz~18GHz	Jul. 27, 2017	Nov. 18, 2017	Jul. 26, 2018	Radiation (03CH04-SZ)
Amplifier	Agilent Technologies	83017A	MY53270156	500MHz~26.5GHz	Apr. 20, 2017	Nov. 18, 2017	Apr. 19, 2018	Radiation (03CH04-SZ)
AC Power Source	Chroma	61601	N/A	N/A	NCR	Nov. 18, 2017	NCR	Radiation (03CH04-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Nov. 18, 2017	NCR	Radiation (03CH04-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Nov. 18, 2017	NCR	Radiation (03CH04-SZ)

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% ($U = 2Uc(y)$)	5.1 dB
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Uncertainty of Radiated Emission Measurement (1GHz ~ 18GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.0 dB
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Uncertainty of Radiated Emission Measurement (18GHz ~ 40GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	5.1 dB
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Appendix A. Radiated Spurious Emission

2.4GHz 2400~2483.5MHz

BT (Band Edge @ 3m)

BT	Note	Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
BT CH00 2402MHz		2369.01	46.29	-27.71	74	43.14	27.37	4.72	28.94	169	69	P	H
		2369.01	21.5	-32.50	54	-	-	-	-	169	69	A	H
	*	2402	98.29	-	-	95.02	27.43	4.78	28.94	169	69	P	H
	*	2402	73.5	-	-	-	-	-	-	169	69	A	H
		2367.75	45.98	-28.02	74	42.9	27.3	4.72	28.94	378	177	P	V
		2367.75	21.19	-32.81	54	-	-	-	-	378	177	A	V
	*	2402	96.29	-	-	93.02	27.43	4.78	28.94	378	177	P	V
	*	2402	71.5	-	-	-	-	-	-	378	177	A	V
BT CH 39 2441MHz		2387.98	45.03	-28.97	74	41.76	27.43	4.78	28.94	139	100	P	H
		2387.98	20.24	-33.76	54	-	-	-	-	139	100	A	H
	*	2441	98.12	-	-	94.64	27.61	4.82	28.95	139	100	P	H
	*	2441	73.33	-	-	-	-	-	-	139	100	A	H
		2497.48	45.64	-28.36	74	41.94	27.8	4.85	28.95	139	100	P	H
		2497.48	20.85	-33.15	54	-	-	-	-	139	100	A	H
		2358.44	45.36	-28.64	74	42.28	27.3	4.72	28.94	397	176	P	V
		2358.44	20.57	-33.43	54	-	-	-	-	397	176	A	V
	*	2441	96.18	-	-	92.7	27.61	4.82	28.95	397	176	P	V
	*	2441	71.39	-	-	-	-	-	-	397	176	A	V
		2499.37	46.25	-27.75	74	42.55	27.8	4.85	28.95	397	176	P	V
		2499.37	21.46	-32.54	54	-	-	-	-	397	176	A	V



BT CH 78 2480MHz	*	2480	96.13	-	-	92.49	27.74	4.85	28.95	169	69	P	H
	*	2480	71.34	-	-	-	-	-	-	169	69	A	H
		2483.72	50.76	-23.24	74	47.12	27.74	4.85	28.95	169	69	P	H
		2483.72	25.97	-28.03	54	-	-	-	-	169	69	A	H
	*	2480	95.52	-	-	91.88	27.74	4.85	28.95	397	176	P	V
	*	2480	70.73	-	-	-	-	-	-	397	176	A	V
		2483.92	49.78	-24.22	74	46.14	27.74	4.85	28.95	397	176	P	V
		2483.92	24.99	-29.01	54	-	-	-	-	397	176	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



2.4GHz 2400~2483.5MHz

BT (Harmonic @ 3m)

BT	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)
BT CH 00 2402MHz		4804	39.63	-34.37	74	60.86	31.44	5.55	58.22	151	360	P	H
		4804	14.84	-39.16	54	-	-	-	-	151	360	A	H
		4804	39.93	-34.07	74	61.16	31.44	5.55	58.22	151	360	P	V
		4804	15.14	-38.86	54	-	-	-	-	151	360	A	V
BT CH 39 2441MHz		4882	37.92	-36.08	74	58.65	31.61	5.76	58.1	151	360	P	H
		4882	13.13	-40.87	54	-	-	-	-	151	360	A	H
		7323	44.69	-29.31	74	59.11	36.19	7.26	57.87	151	360	P	H
		7323	19.9	-34.10	54	-	-	-	-	151	360	A	H
		4882	40.27	-33.73	74	61	31.61	5.76	58.1	151	360	P	V
		4882	15.48	-38.52	54	-	-	-	-	151	360	A	V
		7323	44.7	-29.30	74	59.12	36.19	7.26	57.87	151	360	P	V
		7323	19.91	-34.09	54	-	-	-	-	151	360	A	V
BT CH 78 2480MHz		4960	39.94	-34.06	74	60.12	31.82	5.96	57.96	149	360	P	H
		4960	15.15	-38.85	54	-	-	-	-	149	360	A	H
		7440	43.18	-30.82	74	57.16	36.34	7.17	57.49	149	360	P	H
		7440	18.39	-35.61	54	-	-	-	-	149	360	A	H
		4960	39.67	-34.33	74	59.85	31.82	5.96	57.96	149	360	P	V
		4960	14.88	-39.12	54	-	-	-	-	149	360	A	V
		7440	44.03	-29.97	74	58.01	36.34	7.17	57.49	149	360	P	V
		7440	19.24	-34.76	54	-	-	-	-	149	360	A	V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line.												



Emission below 1GHz

2.4GHz BT (LF)

BT	Note	Frequency	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
2.4GHz BT LF		30	24.63	-15.37	40	31.45	24.9	0.25	31.97	-	-	P	H
		106.63	20.28	-23.22	43.5	34.19	16.7	1.09	31.7	-	-	P	H
		230.79	21.09	-24.91	46	34.18	16.51	1.67	31.27	-	-	P	H
		481.05	25.15	-20.85	46	30.42	23.6	2.38	31.25	-	-	P	H
		665.35	28.80	-17.20	46	30.8	26.39	2.85	31.24	-	-	P	H
		831.22	31.30	-14.70	46	30.51	28.75	3.22	31.18	100	254	P	H
		32.91	22.05	-17.95	40	30.21	23.49	0.32	31.97	-	-	P	V
		149.31	18.51	-24.99	43.5	31.77	17.03	1.26	31.55	-	-	P	V
		466.5	25.84	-20.16	46	31.48	23.29	2.34	31.27	-	-	P	V
		685.72	27.79	-18.21	46	29.57	26.57	2.9	31.25	-	-	P	V
		778.84	29.09	-16.91	46	29.04	28.12	3.11	31.18	-	-	P	V
		880.69	29.64	-16.36	46	28.33	29.14	3.34	31.17	100	321	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+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

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 C. Product Equality Declaration

ZTE CORPORATION**Product Change Description**

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

[Z999]

[ZTE Corporation]

is the variant of the initial certified product,

[Z999]

[ZTE Corporation]

[Project Number:17ZTE191-01]

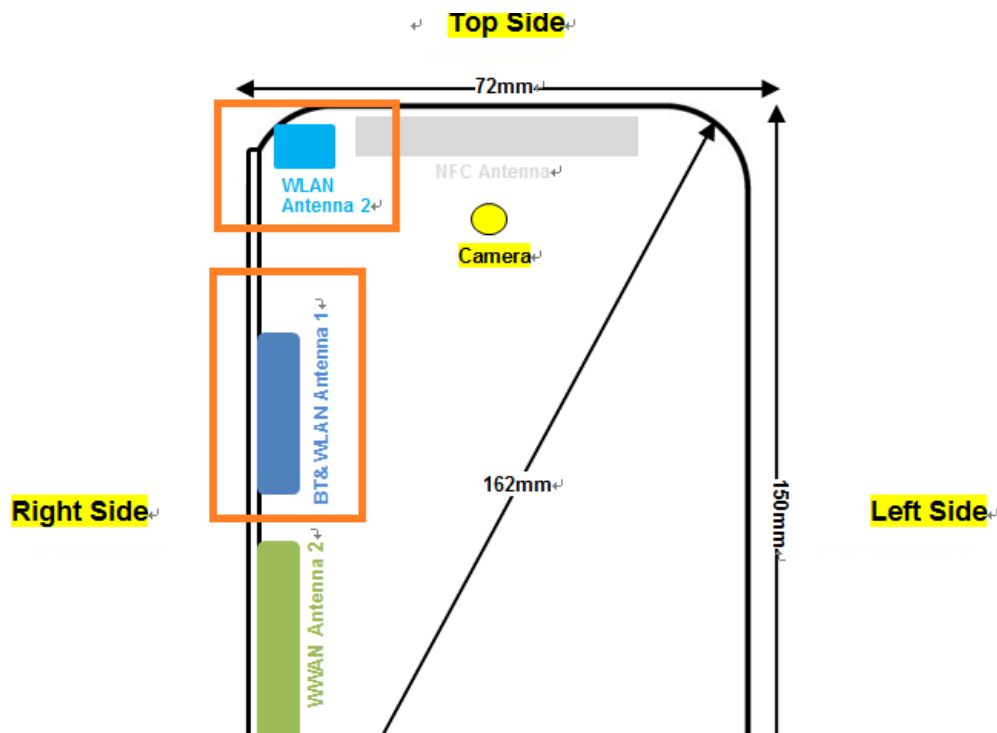
SOFTWARE MODIFICATIONS:

Protocol Stack changes: NO

MMS/STK changes: NO

JAVA changes: NO

Other changes detailed: Yes, ZTE now switch WLAN Antenna 1 and 2's function. This means WLAN Antenna 2 in below picture now support Bluetooth and WIFI while WLAN antenna 1 only supports WIFI MIMO function.



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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