

FCC RF Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	CDMA /LTE Multi-Mode Digital Mobile Phone
BRAND NAME		ZTE
MODEL NAME	:	Z3001S
FCC ID	:	SRQ-Z3001S
STANDARD	:	FCC 47 CFR Part 2, and 90(S)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Nov. 16, 2017 and testing was completed on Dec. 21, 2017. 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-603-E 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.

Journes Huang

R TESTING NVLAP LAB CODE 600155-0

Approved by: James Huang / Manager

Sporton International (Kunshan) Inc.

No.3-2 Ping-Xiang Rd, Kunshan Development Zone Kunshan City Jiangsu Province 215335 China



TABLE OF CONTENTS

RE	VISIO	N HISTORY	3
SU	MMAR	Y OF TEST RESULT	4
1	GENE 1.1. 1.2. 1.3. 1.4. 1.5. 1.6. 1.7.	ERAL DESCRIPTION Applicant Manufacturer Feature of Equipment Under Test Product Specification of Equipment Under Test Modification of EUT Maximum Frequency Tolerance, Emission Designator and Conducted Power Testing Site	5 5 6 6 7
2	2.1 2.2	Applied Standards CONFIGURATION OF EQUIPMENT UNDER TEST Test Mode Connection Diagram of Test System	8 8
3	2.3 2.4 TEST	Support Unit used in test configuration and system Measurement Results Explanation Example	9
•	3.1 3.2 3.3 3.4 3.5 3.6	Conducted Output Power Measurement	10 12 17 19 22
4	LIST	OF MEASURING EQUIPMENT	28
5	UNCE	RTAINTY OF EVALUATION	29

APPENDIX A. SETUP PHOTOGRAPHS



REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FW7N1618A	Rev. 01	Initial issue of report	Dec. 27, 2017



Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Conducted Output Power Reporting only		-
3.2	§2.1049 §90.209	99% Occupied Bandwidth and 26dB Bandwidth	Reporting only	PASS	-
3.3	§2.1051 §90.691	Emission masks – In-band emissions	< 50+10log ₁₀ (P[Watts])	PASS	-
3.4	§2.1051 §90.691	Emission masks – Out of band emissions	< 43+10log ₁₀ (P[Watts])	PASS	-
3.5	§2.1053 §90.691	Field Strength of Spurious Radiation	< 43+10log ₁₀ (P[Watts])	PASS	Under limit 23.95 dB at 2462.000 MHz
3.6	§2.1055 §90.213	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

SUMMARY OF 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. Feature of Equipment Under Test

Product Feature & Specification				
Equipment CDMA /LTE Multi-Mode Digital Mobile Phone				
Brand Name	ZTE			
Model Name	Z3001S			
FCC ID	SRQ-Z3001S			
	CDMA/EV-DO/LTE			
EUT supports Radios application	WLAN 2.4GHz 802.11b/g/n HT20/HT40			
	Bluetooth v3.0+EDR/ Bluetooth v4.0 LE/Bluetooth v4.1 LE			
IMEI/MEID Code	Conducted: 990008980001080			
	Radiation: 99000898000216			
HW Version	Z3001SHW1.0			
SW Version	Z3001SV1.0.0B02			
EUT Stage Identical Prototype				



1.4. Product Specification of Equipment Under Test

Product Specification subjective to this standard					
Tx Frequency	CDMA2000 BC10 : 817.9 MHz ~ 823.1 MHz				
Rx Frequency	CDMA2000 BC10 : 862.9 MHz ~ 868.1 MHz				
Maximum Output Power to Antenna	CDMA2000 BC10 : 23.63 dBm				
Antenna Type	PIFA Antenna				
Type of Modulation	CDMA2000 1xRTT : QPSK CDMA2000 1xEV-DO : QPSK/8PSK				

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. Maximum Frequency Tolerance, Emission Designator and Conducted Power

FCC Rule	System	Type of Modulation	Frequency Tolerance (ppm)	Emission Designator	Maximum Conducted power(W)
Part 90S	CDMA2000 BC10 1xRTT	QPSK	0.0280 ppm	1M27F9W	0.2307



1.7. Testing Site

Sporton International (Kunshan) Inc. 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 F Province 215335 Ch TEL : +86-512-57900 FAX : +86-512-57900	ina 0158	ment Zone Kunshan City Jiangsu	
Teet Cite No	Sporton Site No.		FCC Test Firm Registration No.	
Test Site No.	TH01-KS	03CH03-KS	630927	

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

1.8. Applied Standards

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

- FCC 47 CFR Part 2, 90
- ANSI/TIA-603-E

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.



Test Configuration of Equipment Under Test 2

2.1 **Test Mode**

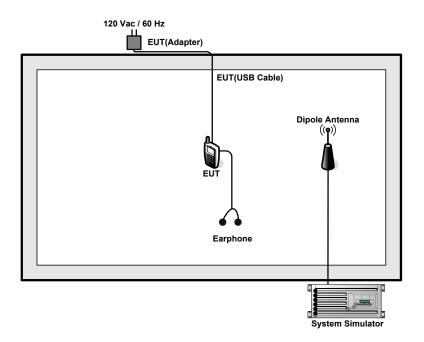
During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission: 30MHz to 10th harmonic. **Test Modes** Band **Radiated TCs Conducted TCs**

CDMA2000 BC10 1xRTT Link 1xRTT Link

Note: The maximum RF output power levels are 1xRTT RC3 SO55 mode for CDMA2000 BC10 on QPSK Link; only these modes were used for all tests.

2.2 **Connection Diagram of Test System**



Support Unit used in test configuration and system 2.3

ltem	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	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	Lenovo	SH100	N/A	Unshielded, 1.2 m	N/A

Sporton International (Kunshan) Inc. TEL: +86-512-57900158 FAX: +86-512-57900958 FCC ID : SRQ-Z3001S

: 8 of 29 Page Number Report Issued Date : Dec. 27, 2017 Report Version : Rev. 01 Report Template No.: BU5-FWCDMA Version 1.0



2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.4 dB and 10dB attenuator.

Offset (dB) = RF cable loss (dB) + attenuator factor (dB).

= 4.4 + 10 = 14.4 (dB)



3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 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.

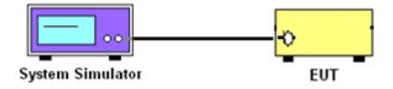
3.1.2 Measuring Instruments

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

3.1.3 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.

3.1.4 Test Setup





3.1.5 Test Result of Conducted Output Power

Conducted Power (*Unit: dBm)					
Band		CDMA2000 BC10			
Channel	476	580	684		
Frequency	817.9	820.5	823.1		
1xRTT RC1+SO55	23.55	23.58	23.60		
1xRTT RC3+SO55	23.58	23.62	<mark>23.63</mark>		
1xRTT RC3 SO32(+ F-SCH)	23.60	23.61	23.62		
1xRTT RC3 SO32 (+SCH)	23.52	23.55	23.58		
1xEVDO RTAP 153.6Kbps	23.58	23.60	23.61		
1xEVDO RETAP 4096Bits	23.57	23.55	23.60		

Note: Maximum burst average power for CDMA.



3.2 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.2.1 Description of (Occupied) Bandwidth Limitations Measurement

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

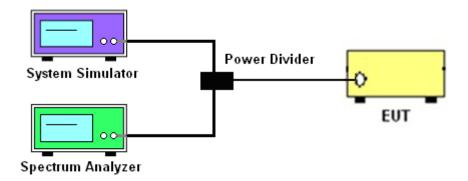
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

- 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
- 2. The 99% and 26 dB occupied bandwidth (BW) of the middle channel for the highest RF powers were measured.

3.2.4 Test Setup





3.2.5 Test Result of 99% Occupied Bandwidth and 26dB Bandwidth

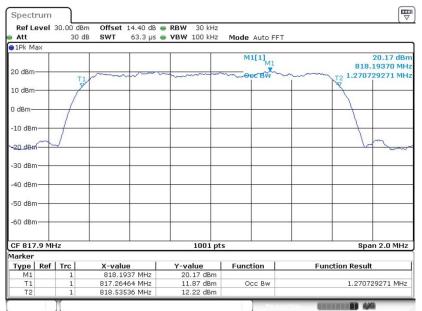
CDMA2000 BC10						
Test Mode		CDMA 2000 1xRTT				
Test Status		RC3 SO32				
Channel	476 (Low) 580 (Mid) 684 (High)					
Frequency (MHz)	817.9	820.5	823.1			
99% OBW (MHz)	1.27	1.27	1.27			
26dB BW (MHz)	1.43	1.43	1.43			



3.2.6 Test Result (Plots) of 99% Occupied Bandwidth and 26dB Bandwidth

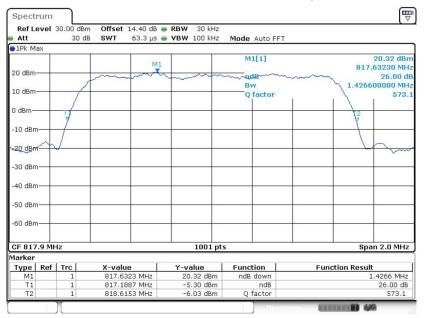
Band :	CDMA2000 BC 10	Test Mode :	1xRTT_RC3 SO55

99% Occupied Bandwidth Plot on Channel 476 (817.9MHz)



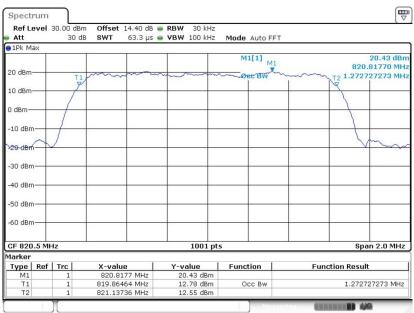
Date: 12.DEC.2017 20:40:25

26dB Bandwidth Plot on Channel 476 (817.9MHz)



Date: 12.DEC.2017 20:36:01

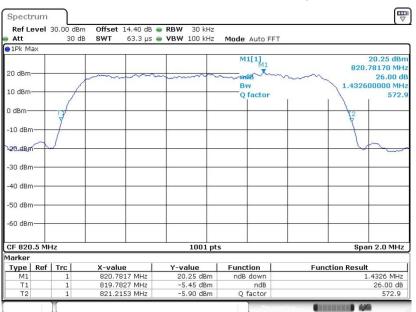




99% Occupied Bandwidth Plot on Channel 580 (820.5MHz)

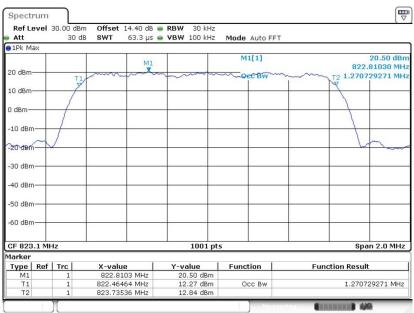
Date: 12.DEC.2017 20:40:59

26dB Bandwidth Plot on Channel 580 (820.5MHz)



Date: 12.DEC.2017 20:36:54

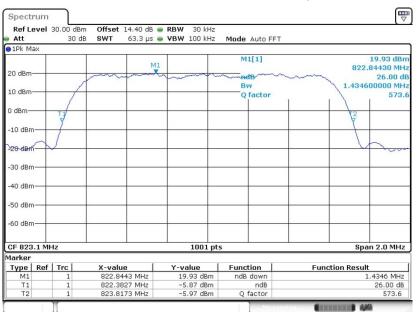




99% Occupied Bandwidth Plot on Channel 684 (823.1MHz)

Date: 12.DEC.2017 20:41:33

26dB Bandwidth Plot on Channel 684 (823.1MHz)



Date: 12.DEC.2017 20:37:27



3.3 Emissions Mask Measurement

3.3.1 Description of Emissions Mask Measurement

Equipment used in this licensed to EA or non-EA systems shall comply with the emission mask provisions of FCC Part 90.691.(a)(1)

- (a). Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:
 - (1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10(f/6.1) decibels or 50 + 10 Log10(P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

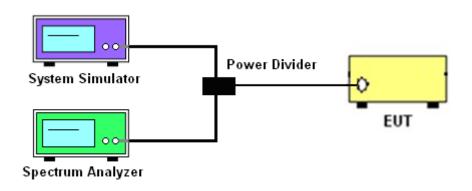
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

- 1. The EUT was connected to spectrum analyzer and base station via power divider.
- 2. The emissions mask of low and high channels for the highest RF powers were measured.
- 3. The RBW was set 1% of 99% Occupied Bandwidth, and VBW was set 3 times of RBW.
- 4. The final test results were shown below plots with a correction offset factor including cable loss, insertion loss of power divider.

3.3.4 Test Setup

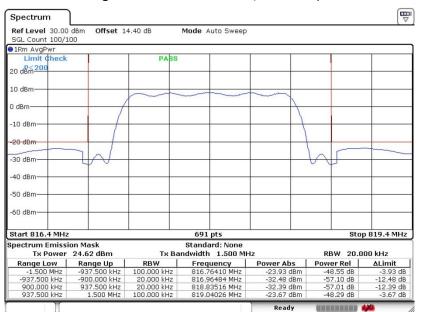




3.3.5 Test Result (Plots) of Conducted Emissions Mask

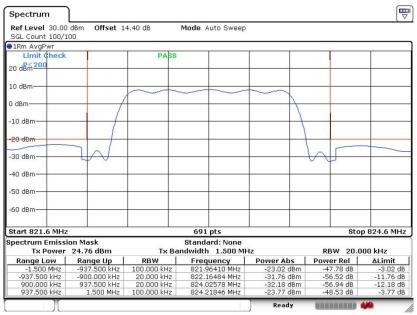
Band :	CDMA2000 BC10	Test Mode :	1xRTT_RC3 SO55

Lower Band Edge Plot on Channel 476 (817.9MHz)



Date: 12.DEC.2017 21:00:25

Higher Band Edge Plot on Channel 684 (823.1MHz)



Date: 12.DEC.2017 20:57:10



3.4 Emissions Mask – Out Of Band Emissions Measurement

3.4.1 Description of Conducted Emissions Out of band emissions measurement

The power of any emission FCC Part 90.691 (a)(2) on any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth at least $43 + 10 \log (P) dB$. It is measured by means of a calibrated spectrum analyzer and scanned from 30MHz up to a frequency including its 10^{th} harmonic.

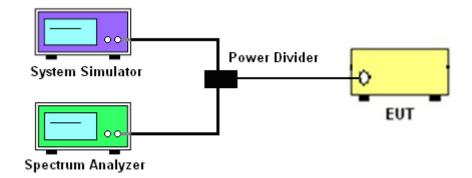
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

- 1. The EUT was connected to spectrum analyzer and base station via power divider.
- 2. The middle channel for the highest RF power within the transmitting frequency was measured.
- 3. The conducted spurious emission for the whole frequency range was taken.
- 4. The final test results were shown below plots with a correction offset factor including cable loss, insertion loss of power divider.

3.4.4 Test Setup





3.4.5 Test Result (Plots) of Conducted Emission

Band :	CDMA2000 BC10	Test Mode :	1xRTT_RC3 SO55

Conducted Emission Plot between on Channel 476 (817.9MHz)

Ref Level 24.40 d	Bm Offset 14.40) dB	Mode	Auto Sweep				
SGL Count 10/10								
1 Max		PA	00	1	-	1		-
20 deimit Check Line SPURIO		PA		+				
10 dBm	US_LINE_ADS_	PA	33					
10 dBm-								
) dBm								
Gabin								
10 dBm								
SPURIOUS LINE AB	S							
20 dBm	-			-	-	-		-
200 2								
-30 dBm			المتعامل وحد	القير بريدانا				
	and a state of the second						and Marine 1	at an Inc. Indet allocity
teat shift all to de trains	Introduction of the local data of the local data	allocatility and	- Hille		able an arrivale pole	and all and a fully fully	the state of the state	of the line of the second
Helinet Lelister	in the second	and a subscription of the	and the second	an all highing	dente a deseguira de la	n han die state en gebruik ten An ooste state en gebruik te	and a state of the state	aligner frigan interpretion
	and and a second s		and the second	an all highing	a fraga se		al al file al	digan figure life systems
50 dBm	ani yang dan sang dalam yang dan sang dalam yang dalam yang dalam yang dalam yang dalam yang dalam yang dalam y		and for a subset of the sec	an all highing	a ta bilina a sa kata palata pada Palata ina ta bina ta palata ina palata Palata ina ta palata palata palata palata palata palata palata palata pa	a a suid ait tain a particulation A suid a tain a tain a tain a tain a tain A suid a tain	about the set	A DECEMBER OF A
	2015 - Lin Davie and Andri Sink Takan (1999) 2015 - Lin Davie and Andri Sink Takan (1999) 2016 - Lin Davie and Andri Sink (1999) 2017 -			an all highing	n if fan en faar fan de fan de fan I ffelinger			
-50 dBm			and for a subsection of the sec	an all highing	a k bile, a near geografie fait e "it to no for a top of the solution	a da akil ja katang katang Katang katang katang Katang katang		
50 dBm				an all highing	al heine a scherzen gehalt werden Wille werden er gehalt werden Wille werden er gehalt werden der gehalt Werden der gehalt werden der gehalt werd	وي المراجع الم محمد المراجع الم المراجع المراجع		
50 dBm 60 dBm 70 dBm					aktolik, a sekszegyitek polit politik (konstruktion (konstruktion) politik (konstruktion) politik (konstruktion)			
50 dBm -60 dBm -70 dBm -78 dBm				an all highing	94 Julie 1 1997 (1997 - 199			op 12.75 GHz
50 dBm 60 dBm 70 dBm Start 30.0 MHz purious Emission	S		3600	D6 pts			St	
50 dBm 60 dBm 70 dBm Start 30.0 MHz purious Emission Range Low	s Range Up	RB	3600 W	D6 pts	ncy	Power Ab	St os	ΔLimit
50 dBm 60 dBm 70 dBm Start 30.0 MHz purious Emission Range Low 30.000 MHz	s Range Up 813.250 MHz	RB 1.0	3600 W	06 pts Freque 810.70	ncy	Power Ab -36.95	St dBm	ΔLimit -23.95 dE
50 dBm	s Range Up 813.250 MHz 1.000 GHz	RB 1.0 1.0	3600 W 000 MHz	D6 pts Freque 810.70 916.37	ncy 0571 MHz '138 MHz	Power Ab -36.95 -36.85	St dBm dBm	ΔLimit -23.95 dE -23.85 dE
50 dBm 60 dBm 70 dBm 70 dBm 70 dBm 70 dBm 8tart 30.0 MHz purious Emission Range Low 30.000 MHz 827.750 MHz 1.000 GHz	S Range Up 813.250 MHz 3.000 GHz 3.000 GHz	RB 1.0 1.0 1.0 1.0	3600 W 000 MHz 000 MHz 000 MHz	D6 pts Freque 810.70 916.37 2.90	ncy 1571 MHz 138 MHz 0089 GHz	Power Ab -36.95 -36.85 -37.09	St dBm dBm dBm	ΔLimit -23.95 dE -23.85 dE -24.09 dE
50 dBm	s 813.250 MHz 1.000 GHz	RB 1.0 1.0 1.0 1.0	3600 W 000 MHz	006 pts Freque 810.70 916.37 2.99 6.98	ncy 0571 MHz '138 MHz	Power Ab -36.95 -36.85	St dBm dBm dBm dBm dBm	ΔLimit -23.95 dE -23.85 dE

Date: 12.DEC.2017 21:01:58

Spectrum Ref Level 24.40 dBm SGL Count 10/10 Mode Auto Sweep Offset 14.40 dB ●1 Max 20 dbimit Check Line _SPURIOUS PASS LINE ABS PASS 10 dBm-0 dBm -10 dBm-SPURIOUS_LINE_ABS_ -30 dBm -50 dBm--60 dBm--70 dBm-Start 30.0 MHz 36006 pts Stop 12.75 GHz Spurious Emissions Power Abs -37.20 dBm -36.53 dBm -35.43 dBm -31.39 dBm -34.36 dBm -33.81 dBm Frequency 207.51318 MHz 951.49282 MHz 2.46244 GHz Range Up 813.250 MHz 30.000 MHz RBW ∆Limit 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz △Limit -24.20 dB -23.53 dB -22.43 dB -18.39 dB -21.36 dB -20.81 dB 30.000 MHz 827.750 MHz 1.000 GHz 3.000 GHz 7.000 GHz 10.000 GHz 313.250 MHz 1.000 GHz 3.000 GHz 7.000 GHz 10.000 GHz 12.750 GHz 6.64179 GHz 9.19854 GHz 10.65528 GHz 1.000 MHz 1.000 MHz

Conducted Emission Plot between on Channel 580 (820.5MHz)

Date: 12.DEC.2017 21:03:19

Sporton International (Kunshan) Inc. TEL : +86-512-57900158 FAX : +86-512-57900958 FCC ID : SRQ-Z3001S



Spectrum 🔆 Ref Level 24.40 dBm Offset 14.40 dB Mode Auto Sweep SGL Count 10/10 1 Max 20 demit Check Line_SPURIOUS_LINE_ABS PASS PASS 10 dBm-0 dBm -10 dBm-LINE_ABS_ -20 dBm--30 dBm--50 dBm--60 dBm -70 dBm-Stop 12.75 GHz Start 30.0 MHz 36006 pts Spurious Emissions Range Up 813.250 MHz 1.000 GHz 3.000 GHz 7.000 GHz 10.000 GHz 12.750 GHz Power Abs -37.49 dBm -35.13 dBm -36.86 dBm -31.53 dBm -34.73 dBm -32.85 dBm ΔLimit -24.49 dB -22.13 dB -23.86 dB -18.53 dB -21.73 dB -19.85 dB Range Low 30.000 MHz 827.750 MHz RBW 1.000 MHz 1.000 MHz Frequency 718.71983 MHz 827.79304 MHz

1.000 MHz 1.000 MHz 1.000 MHz 1.000 MHz

1.000 MHz

1.98625 GHz 6.51481 GHz 7.03731 GHz

12.31470 GHz

Conducted Emission Plot between on Channel 684 (823.1MHz)

Date: 12.DEC.2017 21:04:40

1.000 GHz 3.000 GHz 7.000 GHz 10.000 GHz



3.5 Field Strength of Spurious Radiation Measurement

3.5.1 Description of Field Strength of Spurious Radiated Measurement

The radiated spurious emission was measured by substitution method according to ANSI/TIA-603-E. 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 $43+10\log_{10}(P[Watts])$ dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

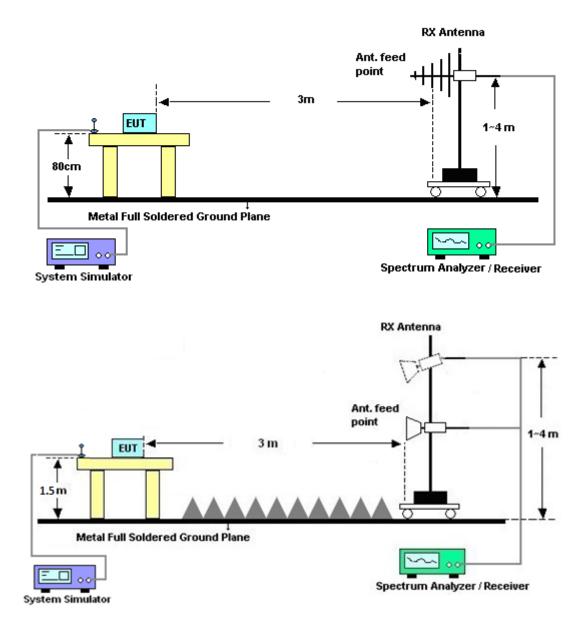
- 1. The EUT was placed on a rotatable wooden table 0.8 meters for frequency below 1GHz and 1.5 meter for frequency above 1GHz above the ground.
- 2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
- 3. The table was rotated 360 degrees to determine the position 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. EIRP (dBm) = S.G. Power Tx Cable Loss + Tx Antenna Gain
- 11. ERP (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 + 10log(P) dB below the transmitter power P(Watts)
 - = P(W) [43 + 10log(P)] (dB)

= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)

= -13dBm.



3.5.4 Test Setup





3.5.5 Test Result of Field Strength of Spurious Radiated

Band :		CDMA2000) BC10				Temperature :	24~25°	С
Test Mode :		1xRTT_RC	xRTT_RC3 SO55 Relative Humidity :						6
Test Engine	er:	Leve Zhao					Polarization :	Horizor	ntal
Remark :		Spurious e	missions	within 30-	1000MHz v	were fou	nd more than 200	dB below limi	it line.
Frequency	ERF	P Limit	Over	SPA	S.G.	TX Ca	ble TX Antenna	Polarization	Result
			Limit	Reading	Power	loss	Gain		
(MHz)	(dBm	n) (dBm)	(dB)	(dBm)	(dBm)	(dB) (dBi)	(H/V)	
1640	-54.2	5 -13	-41.25	-54.49	-56.16	1.14	5.20	Н	Pass
2462	-36.9	5 -13	-23.95	-44.61	-39.58	1.12	5.90	Н	Pass
3282	-58.1	3 -13	-45.13	-62.25	-61.34	1.34	6.70	Н	Pass

Band :		CDMA2000	CDMA2000 BC10 Temperature :							24~25°C	
Test Mode :		1xRTT_RC	RTT_RC3 SO55 Relative Humidity :						44~45%	6	
Test Engine	er:	Leve Zhao					Pola	rization :		Vertical	
Remark :		Spurious e	missions	within 30-	1000MHz \	were fou	ind m	ore than 20	dB be	low limi	t line.
Frequency	ERF	P Limit	Over	SPA	S.G.	TX Ca	ble [·]	TX Antenna	Pola	rization	Result
			Limit	Reading	Power	loss	5	Gain			
(MHz)	(dBn	n) (dBm)	(dB)	(dBm)	(dBm)	(dB)	(dBi)	(ł	H/V)	
1640	-59.3	1 -13	-46.31	-58.41	-61.22	1.14	1	5.20		V	Pass
2462	-37.5	8 -13	-24.58	-45.48	-40.21	1.12	2	5.90		V	Pass
3282	-59.6	6 -13	-46.66	-64.8	-62.87	1.34	1	6.70		V	Pass



3.6 Frequency Stability Measurement

3.6.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within $\pm 0.00025\%$ (± 2.5 ppm) of the center frequency according to FCC Part 90.213.

3.6.2 Measuring Instruments

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

3.6.3 Test Procedures for Temperature Variation

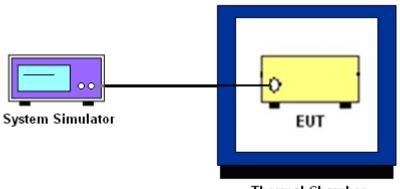
- 1. The EUT was set up in the thermal chamber and connected with the base station.
- 2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
- 3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.6.4 Test Procedures for Voltage Variation

- 1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
- 2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
- 3. The variation in frequency was measured for the worst case.



3.6.5 Test Setup



Thermal Chamber



3.6.6 Test Result of Temperature Variation

Test Conditions	Middle Channel	CDMA BC10 (1xRTT)	Limit 2.5ppm
Temperature (°C)	Voltage (Volt)	Deviation (ppm)	Result
50	Normal Voltage	0.0183	
40	Normal Voltage	0.0073	
30	Normal Voltage	0.0280	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0024	
0	Normal Voltage	0.0049	
-10	Normal Voltage	0.0061	PASS
-20	Normal Voltage	0.0171	
-30	Normal Voltage	0.0085	
20	Maximum Voltage	0.0232	
20	Normal Voltage	0.0012	
20	Battery End Point	0.0037	

Note: Normal Voltage = 3.7V. ; Battery End Point (BEP) = 3.5V. ; Maximum Voltage =4.2V



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. 08, 2017	Dec. 12, 2017~ Dec. 21, 2017	Aug. 07, 2018	Conducted (TH01-KS)
Thermal Chamber	Ten Billion	TTC-B3S	TBN-960502	-40~+150°C	Oct. 12, 2017	Dec. 12, 2017~ Dec. 21, 2017	Oct. 11, 2018	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150244	10Hz~44GHz	Apr. 18, 2017	Dec. 20, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Bilog Antenna	TeseQ	CBL6112D	35406	25MHz~2GHz	Apr. 22, 2017	Dec. 20, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1356	1GHz~18GHz	Apr. 22, 2017	Dec. 20, 2017	Apr. 21, 2018	Radiation (03CH03-KS)
Amplifier	com-power	PA-103A	161069	1MHz~1000MHz / 32 dB	Apr. 18, 2017	Dec. 20, 2017	Apr. 17, 2018	Radiation (03CH03-KS)
Amplifier	Agilent	8449B	3008A02370	1GHz~26.5GHz	Oct. 12, 2017	Dec. 20, 2017	Oct. 11, 2018	Radiation (03CH03-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Dec. 20, 2017	NCR	Radiation (03CH03-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Dec. 20, 2017	NCR	Radiation (03CH03-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Dec. 20, 2017	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	2.8dB
Confidence of 95% (U = 2Uc(y))	2.000

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

Measuring Uncertainty for a Level of	3.3dB
Confidence of 95% (U = 2Uc(y))	3.30B