Variant FCC RF Test Report

APPLICANT	:	ZTE CORPORATION
EQUIPMENT	:	WCDMA/LTE Hotspot
BRAND NAME	:	ZTE
MODEL NAME	:	Z289L
FCC ID	:	SRQ-Z289L
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E), 27(L)
CLASSIFICATION	:	PCS Licensed Transmitter (PCB)

This is a variant report which is only valid together with the original report. The product was received on Jun. 19, 2015 and testing was completed on Jul. 29, 2015. We, SPORTON INTERNATIONAL (KUNSHAN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA / EIA-603-C-2004 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.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory
2627

SPORTON INTERNATIONAL (KUNSHAN) INC.
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APPENDIX A. SETUP PHOTOGRAPHS

APPENDIX B. PRODUCT CHANGE DESCRIPTION

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG3O1008-02A	Rev. 01	This is a variant report for Z289L. The product change description could be referred to Appendix B. All the test cases were performed on original report which can be referred to Sporton Report Number FG3O1008A. Based on the original test report, only the conducted power, ERP/EIRP, conducted band edge, conducted spurious emission and radiated spurious emission were verified for the differences.	Jul. 31, 2015

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	§2.1046	Conducted Output Power	Reporting Only	PASS	-
3.2	§22.913(a)(2)	Effective Radiated Power	< 7 Watts	PASS	-
	§24.232(c)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	-
	§27.50(d)(4)	Equivalent Isotropic Radiated Power	< 1 Watts	PASS	-
3.3	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Band Edge Measurement	< 43+10log10(P[Watts])	PASS	-
3.4	§2.1051 §22.917(a) §24.238(a) §27.53(h)	Conducted Emission	< 43+10log10(P[Watts])	PASS	-
3.5	§2.1053 §22.917(a) §24.238(a) §27.53(h)	Field Strength of Spurious Radiation	< 43+10log10(P[Watts])	PASS	Under limit 30.63 dB at 7521.000 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/LTE Hotspot
Brand Name	ZTE
Model Name	Z289L
FCC ID	SRQ-Z289L
EUT supports Radios application	WCDMA/HSPA/HSPA+(Downlink Only)/LTE/ WLAN 2.4GHz 802.11b/g/n HT20
IMEI Code	Conducted: 359528031394270 Radiation: 359528031393827 ERP/EIRP: 359528031394270
HW Version	Z289LHWV1.1
SW Version	TF_US_Z289LV2.0.0B01
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 subjective to this standard

Product Specification subjective to this standard	
Tx Frequency	WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV : 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz
Rx Frequency	WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band IV : 2112.4 MHz ~ 2152.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz
Maximum Output Power to Antenna	WCDMA Band V : 22.77 dBm WCDMA Band IV : 22.55 dBm WCDMA Band II : 22.55 dBm
Antenna Type	LDS Antenna
Type of Modulation	WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) HSPA+: 16QAM (Downlink Only)

1.5 Modification of EUT

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

1.6 Maximum ERP/EIRP Power

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.0803
Part 24	WCDMA Band II RMC 12.2Kbps	QPSK	0.2087
Part 27	WCDMA Band IV RMC 12.2Kbps	QPSK	0.1726

1.7 Testing Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.	
Test Site Location	1F & 2F,Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595	
Test Site No.	**Sporton Site No.**	
	TH01-SZ	

Note: The test site complies with ANSI C63.4 2009 requirement.

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.**
	03CH02-KS	418269

Note: The test site complies with ANSI C63.4 2009 requirement.

1.8 Applicable Standards

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

- 47 CFR Part 2, 22(H), 24(E), 27(L)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems 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 were performed according to KDB 971168 D01 Power Meas. License Digital Systems v02r02 with maximum output power.

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

Radiated emissions were investigated as following frequency range:

1. 30 MHz to 10th harmonic for WCDMA Band V.
2. 30 MHz to 10th harmonic for WCDMA Band IV
3. 30 MHz to 10th harmonic for WCDMA Band II.

All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band II	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link
WCDMA Band IV	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note: The maximum power levels are chosen to test as the worst case configuration as follows:

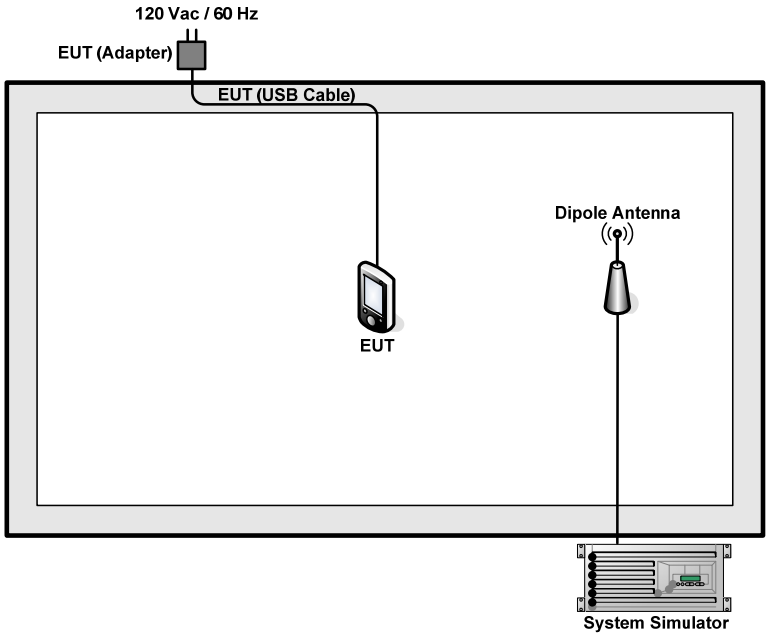
RMC 12.2Kbps mode for WCDMA band V and WCDMA band IV,

RMC 12.2Kbps mode for WCDMA band II, only these modes were used for all tests.

Conducted Power Measurement Results:

Conducted Power (*Unit: dBm)									
Band	**WCDMA Band V**			**WCDMA Band II**			**WCDMA Band IV**		
Channel	**4132**	**4182**	**4233**	**9262**	**9400**	**9538**	**1312**	**1413**	**1513**
Frequency	**826.4**	**836.4**	**846.6**	**1852.4**	**1880**	**1907.6**	**1712.4**	**1732.6**	**1752.6**
RMC 12.2K	**22.77**	22.70	22.66	22.43	22.54	**22.55**	**22.55**	22.50	22.52
HSDPA Subtest-1	21.39	21.32	21.21	21.21	21.31	21.25	21.13	21.08	21.10
HSDPA Subtest-2	21.30	21.31	21.18	21.19	21.20	21.18	21.11	21.06	21.07
HSDPA Subtest-3	21.22	21.33	21.21	21.20	21.20	21.18	21.07	21.03	21.05
HSDPA Subtest-4	21.22	21.31	21.15	21.20	21.22	21.20	20.99	20.91	20.95
HSUPA Subtest-1	21.13	21.30	21.15	20.84	20.90	20.81	21.23	21.15	21.20
HSUPA Subtest-2	20.54	20.63	20.50	20.35	20.53	20.67	20.93	21.11	20.95
HSUPA Subtest-3	20.50	20.55	20.42	20.28	20.42	20.40	20.32	20.26	20.30
HSUPA Subtest-4	21.21	21.35	21.21	20.73	20.95	20.91	20.92	20.97	20.80
HSUPA Subtest-5	20.58	20.56	20.52	20.63	20.76	20.71	20.52	20.41	20.48

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration

Item	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

2.4 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.

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 4.5 dB and 10dB attenuator.

Example :

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

= 4.5 + 10 = 14.5 (dB)

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

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

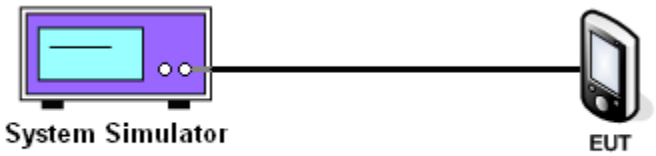
3.1.2 Measuring Instruments

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 the system simulator.
2. Set EUT at maximum power through system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4132 (Low)**	**4182 (Mid)**	**4233 (High)**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
Conducted Power (dBm)	22.77	22.70	22.66

PCS Band			
Modes	**WCDMA Band II (RMC 12.2Kbps)**		
Channel	**9262 (Low)**	**9400 (Mid)**	**9538 (High)**
Frequency (MHz)	**1852.4**	**1880**	**1907.6**
Conducted Power (dBm)	22.43	22.54	22.55

AWS Band			
Modes	**WCDMA Band IV (RMC 12.2Kbps)**		
Channel	**1312(Low)**	**1413 (Mid)**	**1513 (High)**
Frequency (MHz)	**1712.4**	**1732.6**	**1752.6**
Conducted Power (dBm)	22.55	22.50	22.52

Note: Maximum average power for WCDMA.

3.2 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.2.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band) and 1 Watts (AWS Band).

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 971168 v02r02 Section 5.2.1. (for WCDMA).
2. The EUT was placed on a non-conductive rotating platform 0.8 meters high in a semi-anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RMS detector per section 5. of KDB 971168 D01.
3. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power. The maximum emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
4. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by the substitution antenna at same location, and then a known power from S.G. was applied into the dipole antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain - Analyzer reading. Then the EUT's EIRP was calculated with the correction factor, EIRP = LVL + Correction factor and ERP = EIRP - 2.15. Take the record of the output power at substitution antenna.

	WCDMA/HSPA
SPAN	10MHz
RBW	100kHz
VBW	300kHz
Detector	RMS
Trace	Average
Average Type	Power
Sweep Count	100

3.2.4 Test Result of ERP

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		ERP(dBm)	ERP(W)	ERP(dBm)	ERP(W)
Lowest	826.4	19.04	0.0803	4.34	0.0027
Middle	836.4	18.27	0.0671	3.42	0.0022
Highest	846.6	17.64	0.0581	2.65	0.0018
Limit	ERP < 7W	Result		PASS	

3.2.5 Test Result of EIRP

WCDMA Band II (RMC 12.2Kbps) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1852.4	22.66	0.1846	22.46	0.1761
Middle	1880.0	21.58	0.1440	21.92	0.1556
Highest	1907.6	22.82	0.1913	23.19	0.2087
Limit	EIRP < 2W	Result		PASS	

WCDMA Band IV(RMC 12.2Kbps) Radiated Power EIRP					
Channel	Frequency (MHz)	Horizontal		Vertical	
		EIRP(dBm)	EIRP(W)	EIRP(dBm)	EIRP(W)
Lowest	1712.4	21.54	0.1425	20.41	0.1099
Middle	1732.6	21.71	0.1484	21.29	0.1344
Highest	1752.6	22.18	0.1651	22.37	0.1726
Limit	EIRP < 1W	Result		PASS	

3.3 Band Edge Measurement

3.3.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

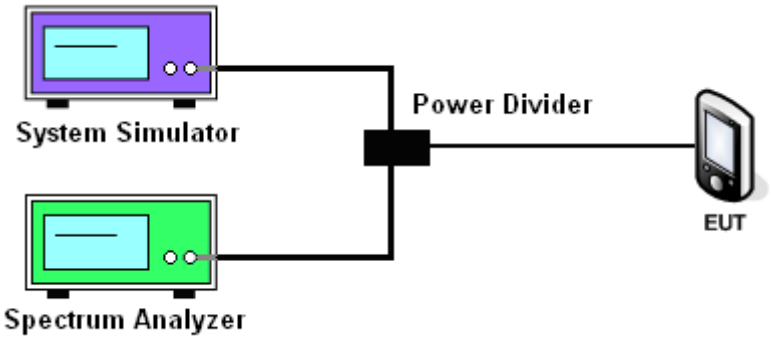
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The band edges of low and high channels for the highest RF powers were measured.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. 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.

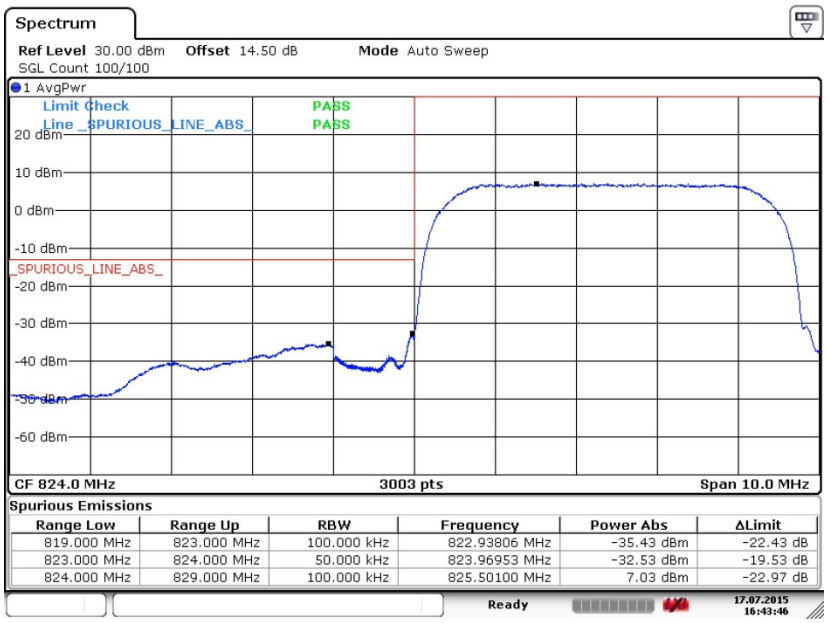
3.3.4 Test Setup



3.3.5 Test Result (Plots) of Conducted Band Edge

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

Lower Band Edge Plot on Channel 4132 (826.4 MHz)



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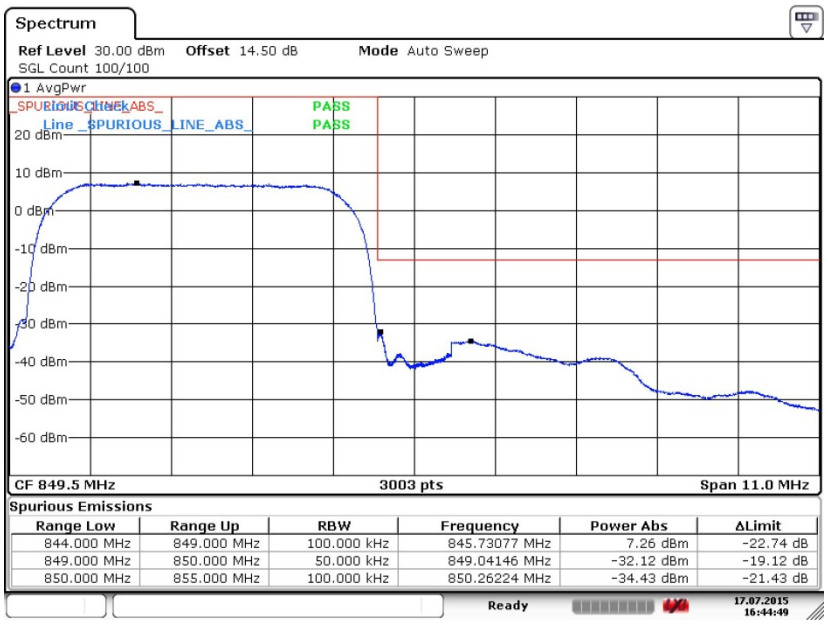
Higher Band Edge Plot on Channel 4233 (846.6 MHz)



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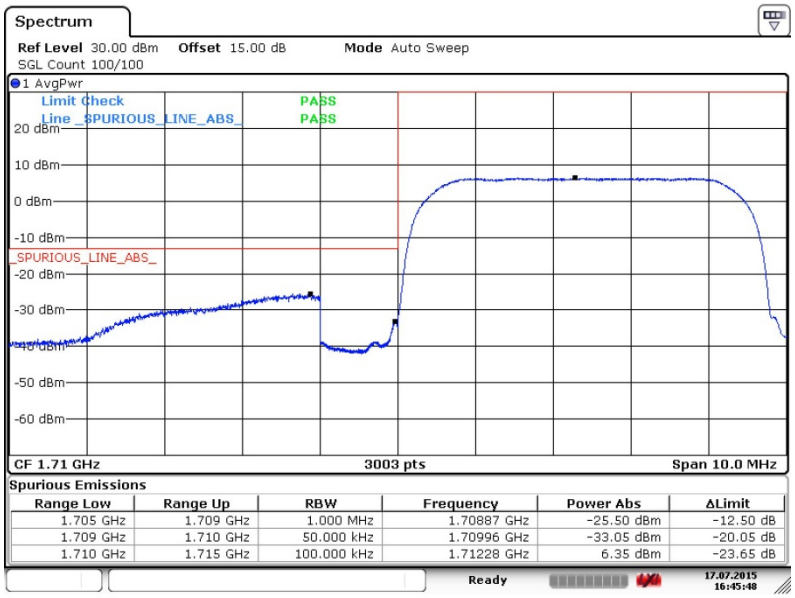
Band :	WCDMA Band IV	Test Mode :	RMC 12.2Kbps Link (QPSK)

Lower Band Edge Plot on Channel 1312 (1712.4 MHz)



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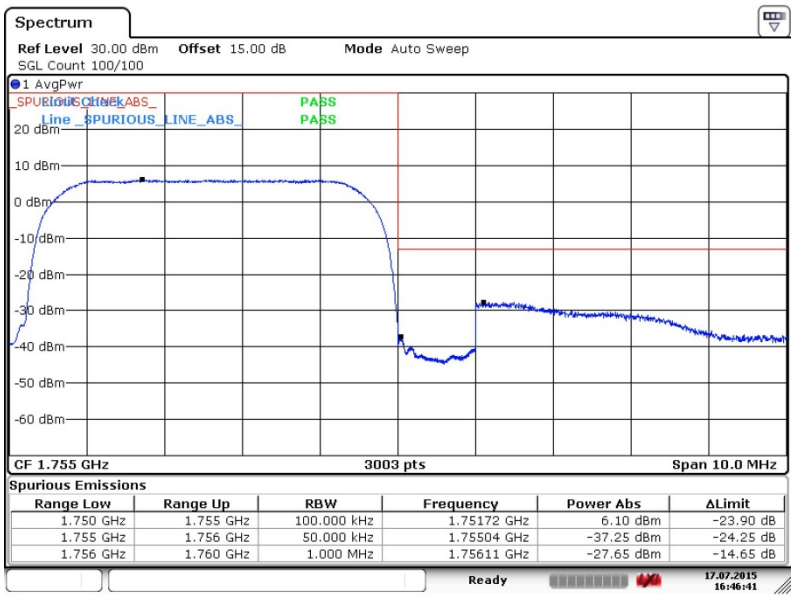
Higher Band Edge Plot on Channel 1513 (1752.6 MHz)



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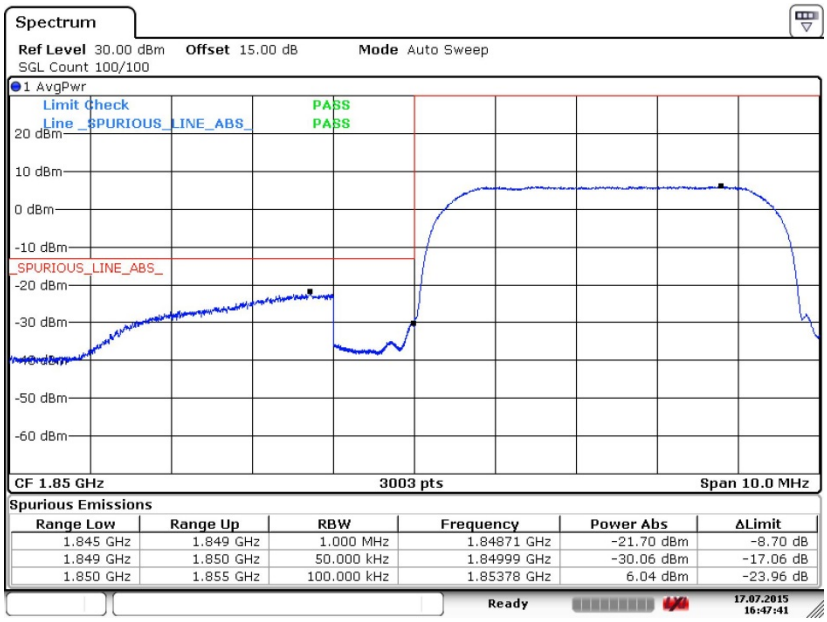
Band :	WCDMA Band II	Test Mode :	RMC 12.2Kbps Link (QPSK)

Lower Band Edge Plot on Channel 9262 (1852.4 MHz)



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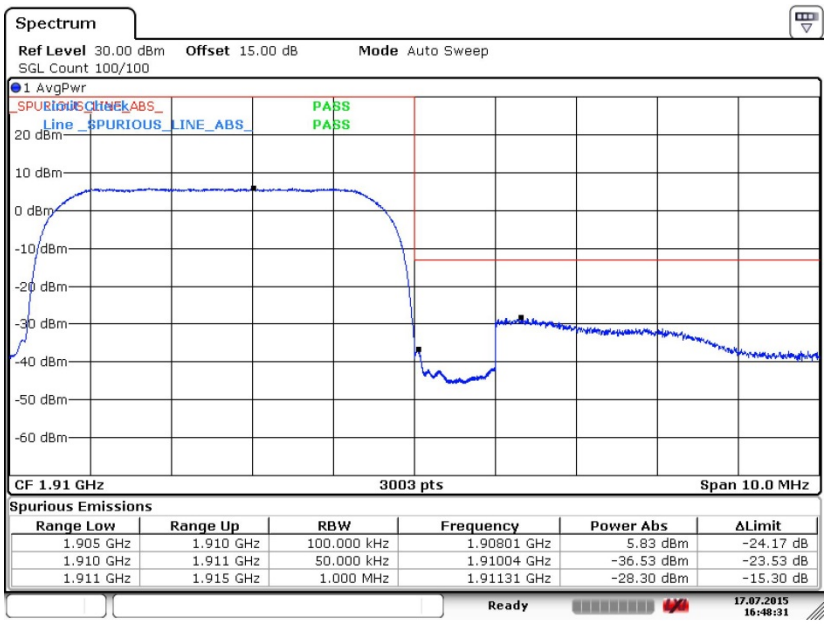
Higher Band Edge Plot on Channel 9538 (1907.6 MHz)



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3.4 Conducted Spurious Emission Measurement

3.4.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

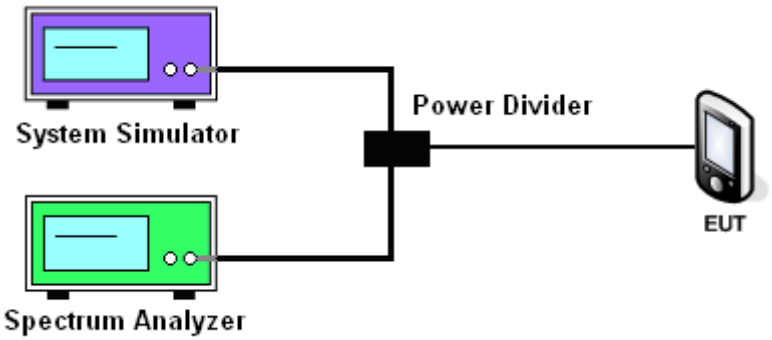
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 971168 v02r02 Section 6.0.
2. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by an RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. 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.

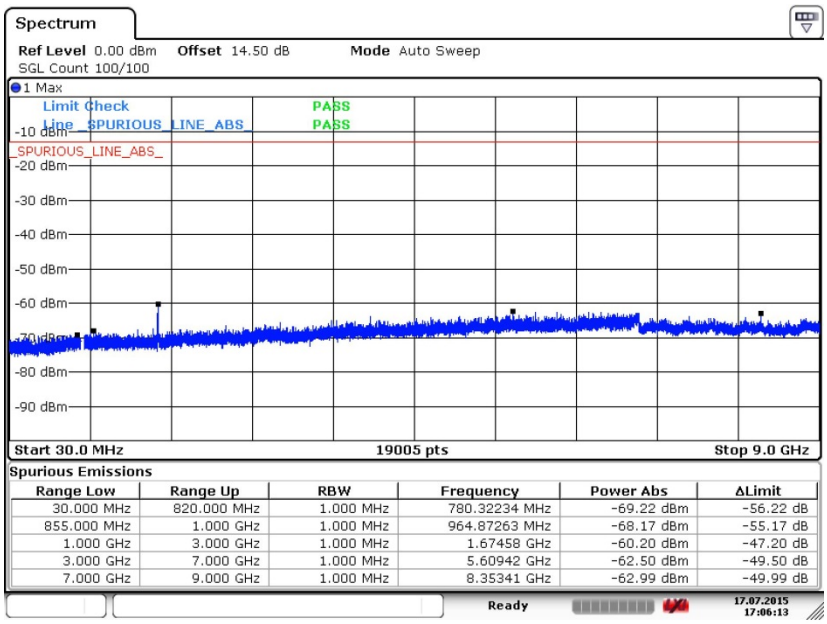
3.4.4 Test Setup



3.4.5 Test Result (Plots) of Conducted Spurious Emission

Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 9GHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	820.000 MHz	1.000 MHz	780.32234 MHz	-69.22 dBm	-56.22 dB
855.000 MHz	1.000 GHz	1.000 MHz	964.87263 MHz	-68.17 dBm	-55.17 dB
1.000 GHz	3.000 GHz	1.000 MHz	1.67458 GHz	-60.20 dBm	-47.20 dB
3.000 GHz	7.000 GHz	1.000 MHz	5.60942 GHz	-62.50 dBm	-49.50 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.35341 GHz	-62.99 dBm	-49.99 dB

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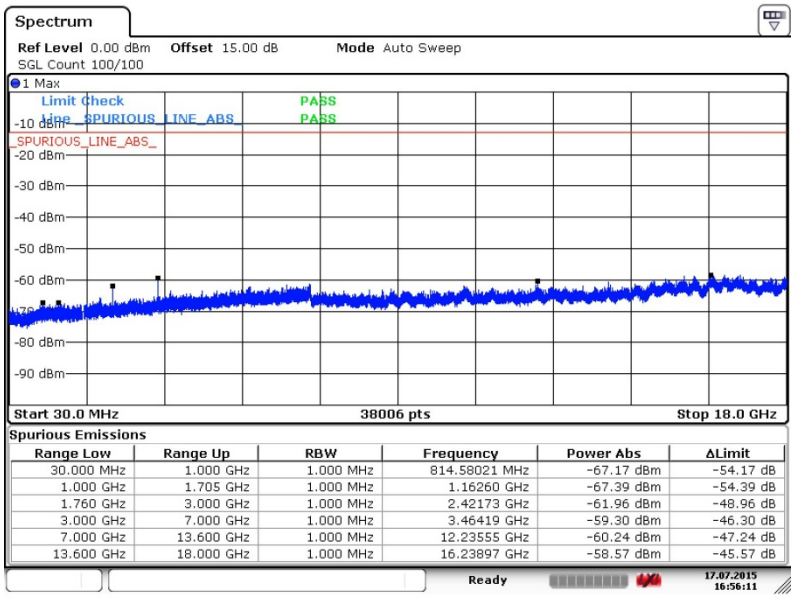
Band :	WCDMA Band IV	Channel :	CH1413
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1732.6 MHz

Conducted Spurious Emission Plot between 30MHz ~ 18GHz



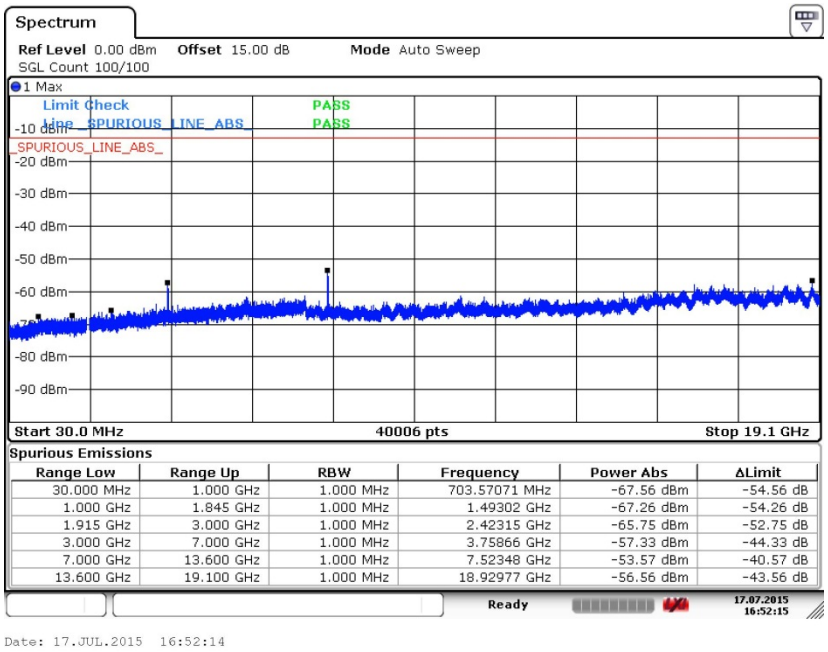
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	814.58021 MHz	-67.17 dBm	-54.17 dB
1.000 GHz	1.705 GHz	1.000 MHz	1.16260 GHz	-67.39 dBm	-54.39 dB
1.760 GHz	3.000 GHz	1.000 MHz	2.42173 GHz	-61.96 dBm	-48.96 dB
3.000 GHz	7.000 GHz	1.000 MHz	3.46419 GHz	-59.30 dBm	-46.30 dB
7.000 GHz	13.600 GHz	1.000 MHz	12.23555 GHz	-60.24 dBm	-47.24 dB
13.600 GHz	18.000 GHz	1.000 MHz	16.23897 GHz	-58.57 dBm	-45.57 dB

Date: 17.JUL.2015 16:56:11

Band :	WCDMA Band II	Channel :	CH9400
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 19.1GHz



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	1.000 GHz	1.000 MHz	703.57071 MHz	-67.56 dBm	-54.56 dB
1.000 GHz	1.845 GHz	1.000 MHz	1.49302 GHz	-67.26 dBm	-54.26 dB
1.915 GHz	3.000 GHz	1.000 MHz	2.42315 GHz	-65.75 dBm	-52.75 dB
3.000 GHz	7.000 GHz	1.000 MHz	3.75866 GHz	-57.33 dBm	-44.33 dB
7.000 GHz	13.600 GHz	1.000 MHz	7.52348 GHz	-53.57 dBm	-40.57 dB
13.600 GHz	19.100 GHz	1.000 MHz	18.92977 GHz	-56.56 dBm	-43.56 dB

3.5 Field Strength of Spurious Radiation Measurement

3.5.1 Description of Field Strength of Spurious Radiated Measurement

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 (P) 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 testing follows FCC KDB 971168 v02r02 Section 5.8 and ANSI / TIA-603-C-2004 Section 2.2.12.
2. The EUT was placed on a rotatable wooden table 0.8 meters above the ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search for the maximum spurious emission for both horizontal and vertical polarizations.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
12. ERP (dBm) = EIRP - 2.15
13. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
14. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

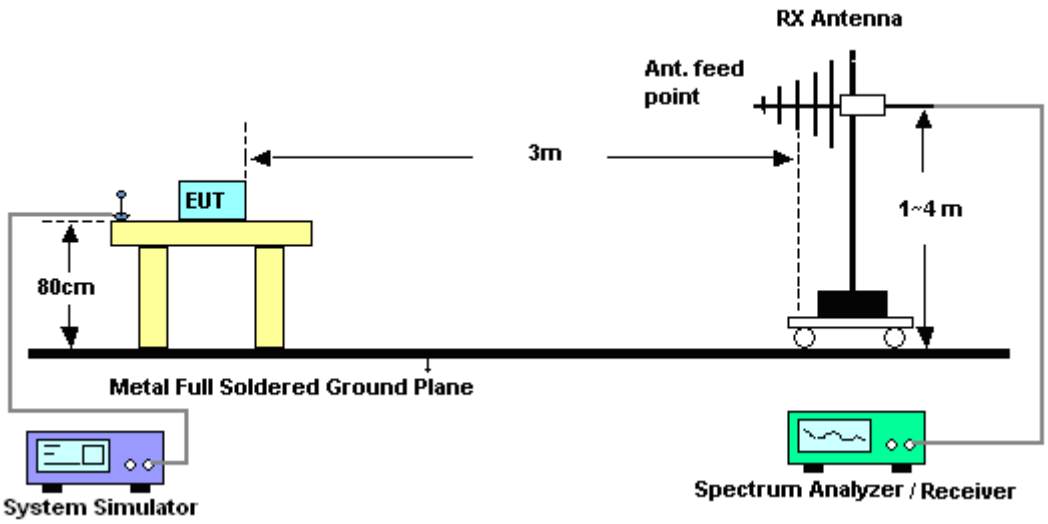
    = P(W) - [43 + 10log(P)] (dB)

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

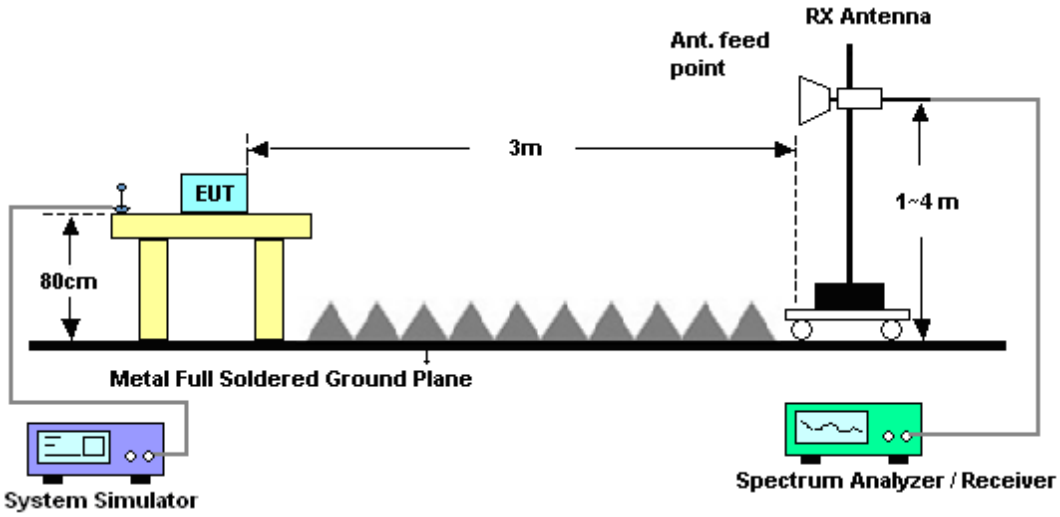
    = -13dBm.

3.5.4 Test Setup

For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.5.5 Test Result of Field Strength of Spurious Radiated

Band :	WCDMA Band V	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-57.72	-13	-44.72	-59.90	-59.61	1.86	5.90	H	Pass
2508	-55.57	-13	-42.57	-64.60	-57.91	2.31	6.80	H	Pass
3345	-52.51	-13	-39.51	-65.14	-54.91	2.85	7.40	H	Pass

Band :	WCDMA Band V	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-60.32	-13	-47.32	-59.18	-62.21	1.86	5.90	V	Pass
2508	-51.22	-13	-38.22	-62.19	-53.56	2.31	6.80	V	Pass
3345	-52.18	-13	-39.18	-66.16	-54.58	2.85	7.40	V	Pass

Band :	WCDMA Band IV	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

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)	Result
3465	-51.58	-13	-38.58	-65.71	-55.95	3.12	7.49	H	Pass
5198	-49.39	-13	-36.39	-62.54	-55.19	3.65	9.45	H	Pass
6930	-45.36	-13	-32.36	-62.22	-52.56	4.15	11.35	H	Pass

Band :	WCDMA Band IV	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

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)	Result
3465	-52.63	-13	-39.63	-65.45	-57.00	3.12	7.49	V	Pass
5198	-48.16	-13	-35.16	-62.17	-53.96	3.65	9.45	V	Pass
6930	-47.35	-13	-34.35	-62.6	-54.55	4.15	11.35	V	Pass

Band :	WCDMA Band II	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

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)	Result
3760	-51.06	-13	-38.06	-65.26	-55.66	3	7.60	H	Pass
5640	-45.88	-13	-32.88	-59.67	-52.14	3.84	10.10	H	Pass
7521	-43.63	-13	-30.63	-63.41	-51.13	4.43	11.93	H	Pass

Band :	WCDMA Band II	**Temperature :**	22~24°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	40~42%
Test Engineer :	Nick Su	**Polarization :**	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

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)	Result
3759	-52.93	-13	-39.93	-65.42	-57.53	3	7.60	V	Pass
5640	-48.07	-13	-35.07	-60.48	-54.33	3.84	10.10	V	Pass
7521	-44.90	-13	-31.90	-62.69	-52.40	4.43	11.93	V	Pass

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	9kHz~40GHz	May 05, 2015	Jul. 17, 2015	May 04, 2016	Conducted (TH01-SZ)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Sep. 29, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 28, 2015	Radiation (03CH02-KS)
Spectrum Analyzer	R&S	FSV40	101040	10kHz~40GHz; Max 30dBm	Sep. 25, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 24, 2015	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6112D	37879	30MHz-2GHz	Sep. 13, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 12, 2015	Radiation (03CH02-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	75957	1GHz~18GHz	Nov. 08, 2014	Jul. 27, 2015~ Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
Active Horn Antenna	com-power	AHA-118	701030	1GHz~18GHz	Nov. 08, 2014	Jul. 27, 2015~ Jul. 29, 2015	Nov. 07, 2015	Radiation (03CH02-KS)
SHF-EHF Horn	com-power	AH-840	101070	18GHz~40GHz	Sep. 04, 2014	Jul. 27, 2015~ Jul. 29, 2015	Sep. 03, 2015	Radiation (03CH02-KS)
Amplifier	com-power	PA-103A	161069	1kHz ~1000MHz / 32 dB	May 04, 2015	Jul. 27, 2015~ Jul. 29, 2015	May 03, 2016	Radiation (03CH02-KS)
Amplifier	Agilent	8449B	3008A02384	1-26.5GHz Gain 30dB	Oct. 28, 2014	Jul. 27, 2015~ Jul. 29, 2015	Oct. 27, 2015	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Jul. 27, 2015~ Jul. 29, 2015	NCR	Radiation (03CH02-KS)

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**

Appendix B. Product Change Description

ZTE中兴

ZTE CORPORATION

Product Change Description

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

[Z289L]
[ZTE Corporation]

is the variant of the initial certified product,

[Z289L]
[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: NO
Antenna changes: Yes
PCB Layout changes: YES xs6A –> xs6B
Components on PCB changes: YES

4 bands Duplexer Changed:

a. LTE/UMTS B4: from 2520(MURATA:SAYRF1G73CE0F0A) to 1814(WISOL:SFXG33UY902)
b. LTE/UMTS B2: from 2520(AVAGO:ACMD-7407-TR1) to 1814(MURATA:SAYEY1G88BA0B0A)
c. LTE/UMTS B5: from 2520(MURATASAYFH836MCC0F0A)to(MURATA:SAYEY836MCA0F0A)
d. LTE B17: from 2520(EPCOS: B39741B7924P810) to 2016(MURATA:SAYFH710MCA0F0A)

3 bands Filter Changed due to supply:

a. Drx Chain for LTE/UMTS B2: from 1411(MURATA:SAFEB1G96FL0F00) to

1109(MURATA:SAFFB1G96FL0F0A or Epcos:B39202B9860P810 or TAIYO: F6QG1G960P2KT)

b. Drx Chain for LTE/UMTS B4: from 1411(MURATA: SAFEB2G14FB0F00) to 1109(MURATA:SAFFB2G14FA0F0A or TAIYO: F6QG2G140P2KA)

c. Tx Chain for LTE B17: from 1411(MURATA:SAFEA710MAL0F00) to 1109(MURATA:SAFFB707MAA0F0A or TAIYO: F5QA707M5M2QY)

LCD changes: NO
Speaker changes: NO
Camera changes: NO
Vibrator changes: NO
Bluetooth changes: NO
FM changes: NO
Other changes: NO

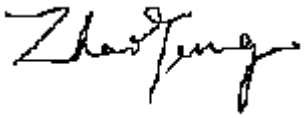
MECHANICAL MODIFICATIONS:

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

APPROVED BY:



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