

ZTE Corporation FCC ID: Q78-ZXMBW-RA25

FCC PART 27 TYPE APPROVAL
EMI MEASUREMENT AND TEST REPORT
For
ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China

FCC ID: Q78-ZXMBW-RA25

November 20, 2006

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: ZXMBW RA25
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Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of ZTE Corporation. This report must not be used by the client to claim product certification 、 approval 、 or endorsement by any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The ZTE Corporation's product, model number: ZXMBW RA25 or the "EUT" as referred to in this report is a ZXMBW RA25 Agile 2.5G Remote Radio Frequency Unit . The EUT is measured approximately 400 mm × 285 mm × 630 mm (W × D × H), input voltage: AC 220V.

** The test data gathered are from production sample, serial number: 0609150.*

Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Part 15, Part 27 of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 27 Wireless Communication Services

Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-B, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

Test Facility

The Test site used by ZTE Corporation to collect test data is located in the ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China , Tel: +86-755-26770000 ,Fax: +86-755-26771999. Test site at ZTE Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003. The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 0009043175. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

External I/O Cable

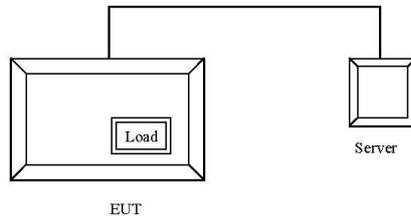
Cable Description	Length (M)	From/Port	To
Unshielded Undetachable AC Power Cable	3.0	EUT	AC POWER

SYSTEM TEST CONFIGURATION

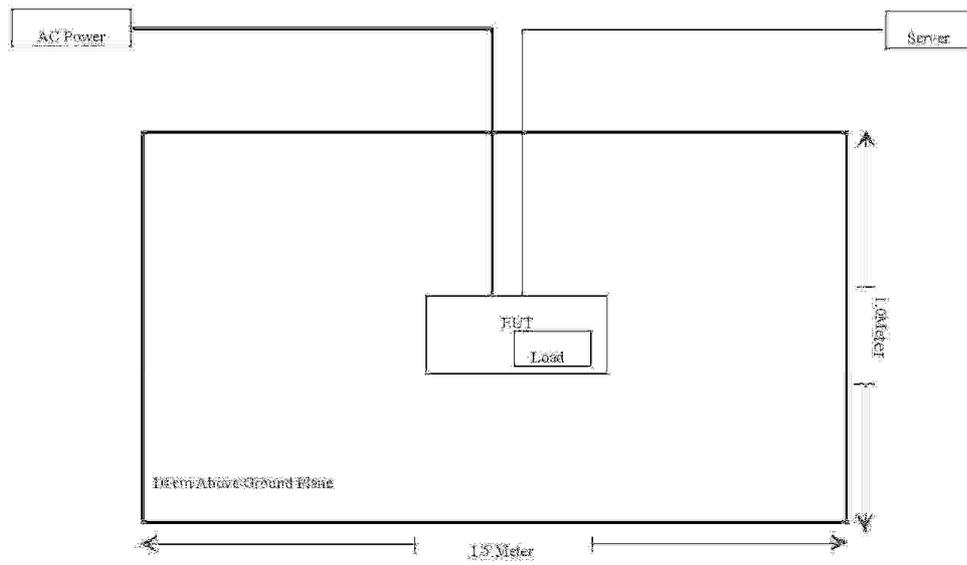
Description of Test Configuration Equipment Modifications

ZTE Corporation has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046&t27.50(h)	Conducted POWER	Compliant
§2.1047	Modulation characteristic	Compliant
§2.1046,§27.50(h)	RADIATED EMISSION	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1046&t27.50(h)	EFFECTIVE RADIATED POWER	Compliant
§2.1051, §27.53	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049	Occupied Bandwidth	Compliant
§24.238	Band Edge	Compliant
§ 2.1055 (a) § 2.1055 (d) § 27.54	Frequency stability	Compliant
§15.107 (a)	Conduction Emission	Compliant

§2.1046, §27.50(h) - CONDUCTED POWER**Applicable Standard**

According to FCC §2.1046&27.50(h), the conducted power must not exceed 2000 Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2005-11-24	2006-11-24

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test Data Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

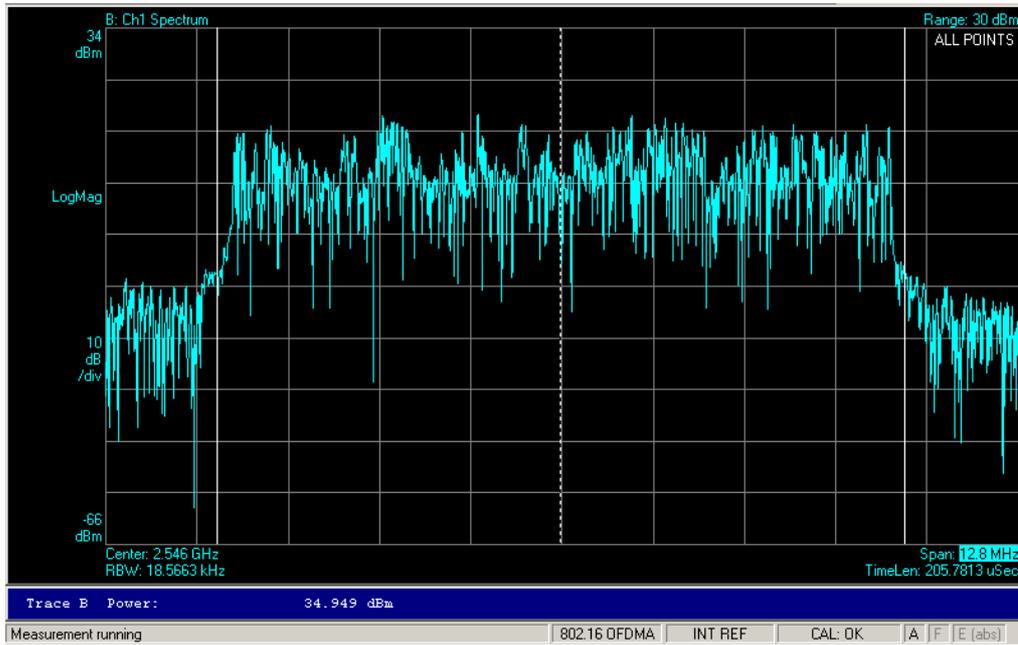
The testing was performed by Liu Rui on November 14-16, 2006.

Test Result: Pass

Test Mode: Transmitting WiMAX

Test Data:

Frequency (MHz)	Total Power in dBm	Total Power in W	Limit in W
2546	34.949	3.125	2000



§2.1047- MODULATION CHARACTERISTIC

Applicable Standard Requirement: §2.1047.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2005-11-24	2006-11-24

Test Procedure

WiMAX digital mode is used by EUT.

Test Data Environmental Conditions

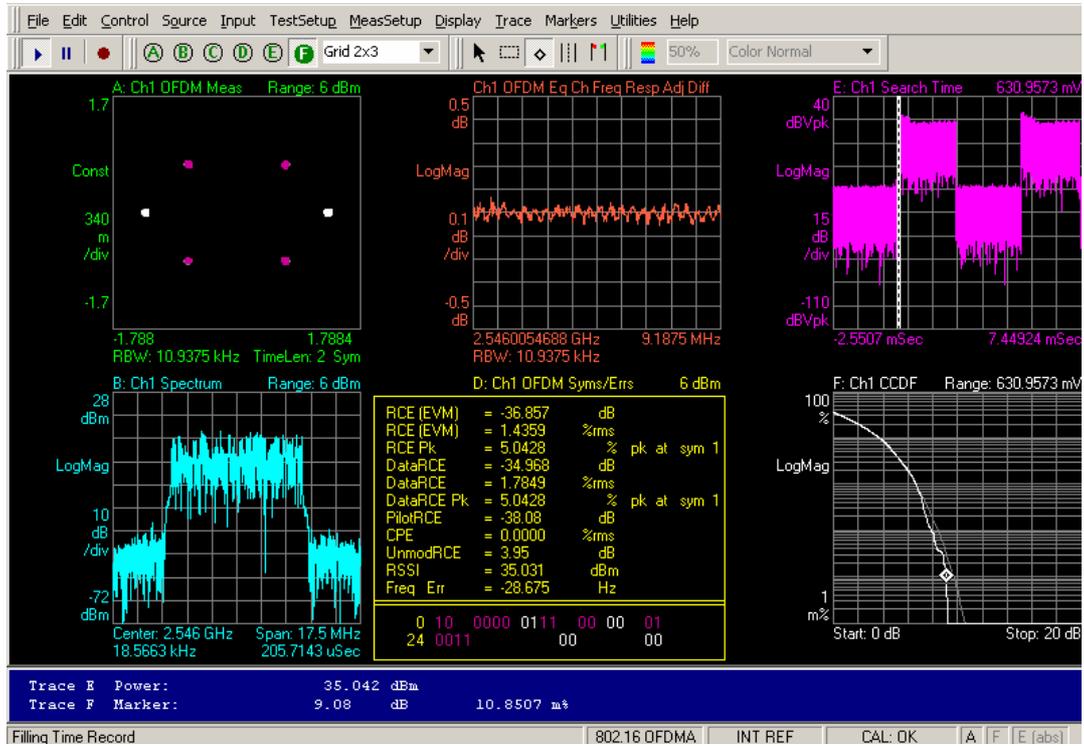
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Liu Rui on November 14-16,2006.

Test Result: Pass

Test Mode: Transmitting/WiMAX

Frequency (MHz)	EVM(dB)	QPSK Limit(dB)
2546	-36.857	-18



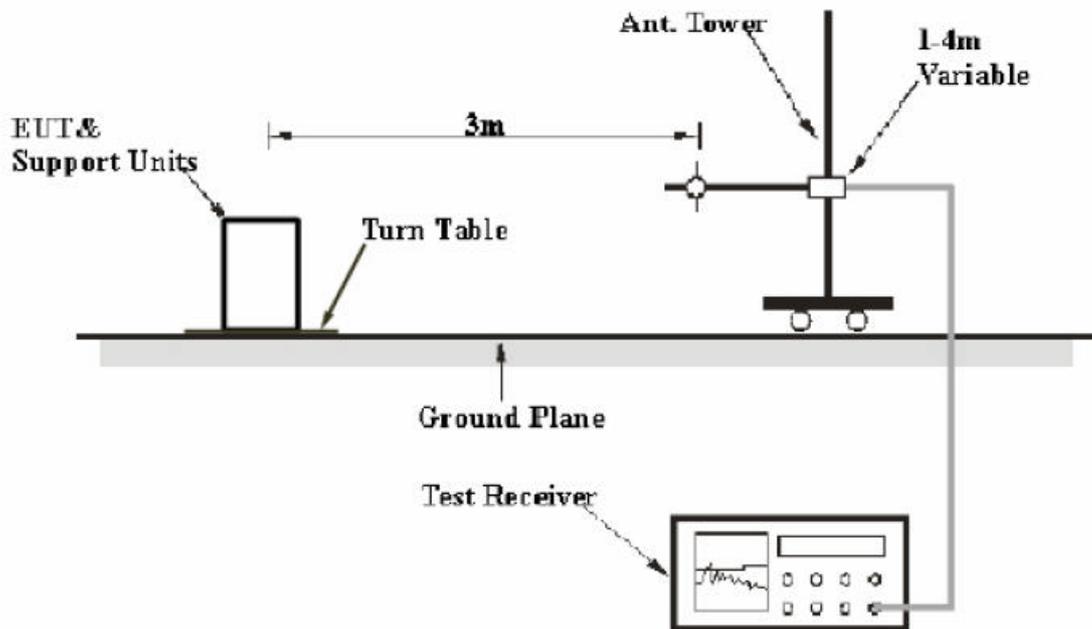
§2.1046,§27.50(h)- RADIATED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiated emissions measurement at the EMC lab of ZTE Corp. is 2dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber, using the setup accordance with the TIA/EIA 603-B. The specification used was the FCC 15.109 limits.

Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the Test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W
30 – 1000 MHz	100 kHz	300kHz	120kHz

Test Equipment List and Details

Item	Equipment	Manufacturer	Mode	Serial	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESI26	100058	2006-10-16	1 Year
2	Ultra Broadband Antenna	R&S	HL562	100022	2006-3-6	3 Years
3	Double-Ridged Waveguide Horn Antenna	R&S	HF906	100032	2004-10-10	3 Years
4	Anechoic Chamber	Albatross	3m Site	N/A	2005-7-15	3 Year
5	Cable Set	R&S	RE Cable	N/A	2006-8-17	1Year
6	Software	R&S	ES-K1	N/A	N/A	N/A
8	VHF-UHF Broad band Antenna	SCHWARZBEC K	VUBA 9117	SB3174	2004-11-17	3 Years

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT

complied with all installation combinations.

All data was recorded in the PK detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit.

For example, a margin of 7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.109(a), with the worst margin reading of:

3.5dB at 50.511022 MHz in the Vertical polarization.

Test Data Environmental Conditions

Temperature:	26 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing was performed by Guan Bin on 2006-10-9, and the data were only for unintentional radiator and be subjected to verification

Test Mode: Transmitting WiMAX

Plot(s) of Test Data

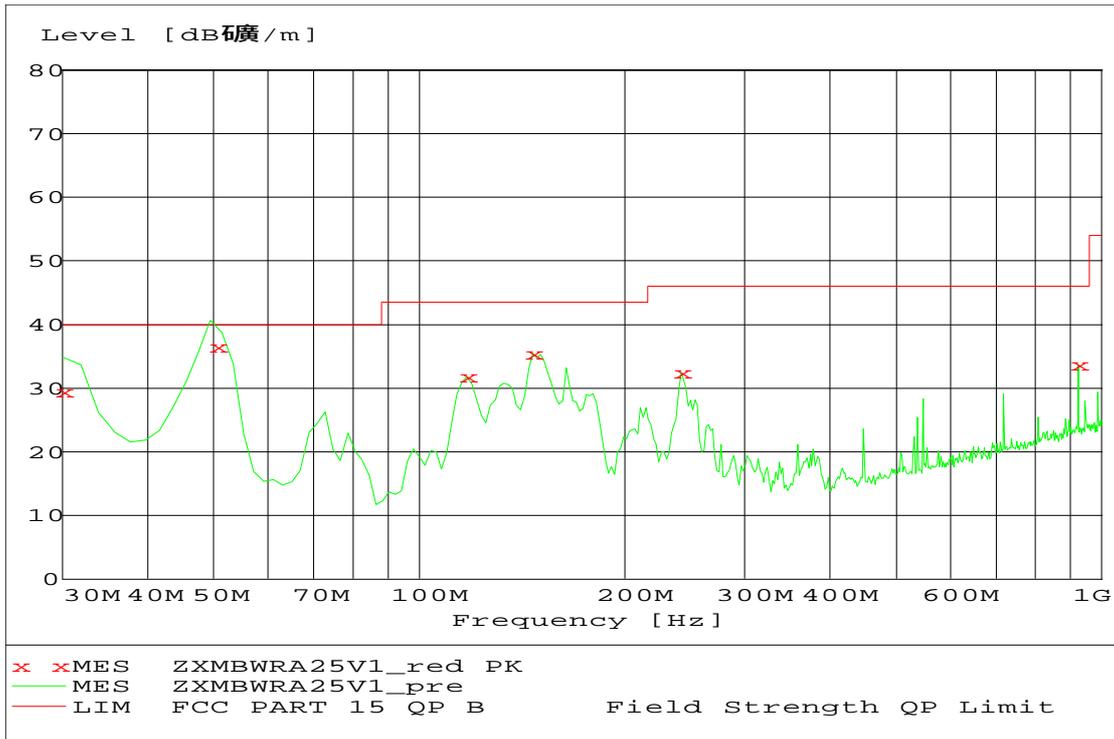
Plot(s) of Test Data is presented hereinafter as reference.

TEST Electric Field Strength

EUT: ZXMBW RA25
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15
 Comment: Vertical
 Start of Test: 2006-10-9 / 11:46:24

SCAN TABLE: "EN 55022 Field fin"

Short Description:		EN 55022 Field Strength fin				
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	100.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562-22dBuV/m



MEASUREMENT RESULT: "ZXMBWRA25V1_red PK"

2006-10-9 12:04

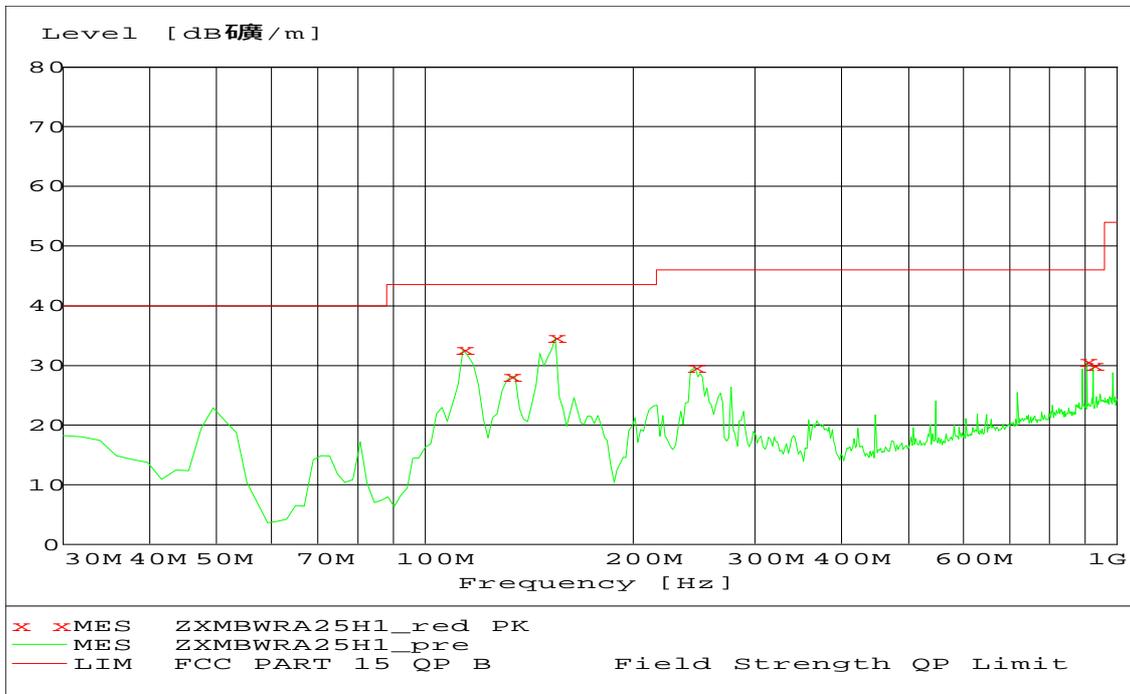
Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
30.080160	29.49	40.00	100.0	VER	-5.6	40.0	10.5
50.511022	36.46	251.00	100.0	VER	-16.5	40.0	3.5
117.474950	31.77	80.00	100.0	VER	-14.4	43.5	11.7
146.633267	35.50	238.00	100.0	VER	-16.0	43.5	8.0
241.883768	32.43	37.00	100.0	VER	-13.8	46.0	13.6
924.188377	33.66	23.00	100.0	VER	1.6	46.0	12.3

Electric Field Strength

EUT: ZXMBW RA25
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15
 Comment: Horizontal
 Start of Test: 2006-10-9 / 11:46:24

SCAN TABLE: "EN 55022 Field fin"

Short Description:		EN 55022 Field Strength fin					
Start	Stop	Step	Detector	Meas. Time	IF Bandw.	Transducer	
30.0 MHz	1.0 GHz	100.0 kHz	QuasiPeak	1.0 s	120 kHz	HL562-22dBuV/m	



MEASUREMENT RESULT: "ZXMBWRA25H1_red PK"

2006-10-9 11:55

Frequency MHz	Level dBµV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBµV/m	Margin dB
113.587174	32.63	110.00	200.0	HOR	-14.6	43.5	10.9
133.026052	28.19	82.00	200.0	HOR	-15.2	43.5	15.3
154.408818	34.70	253.00	200.0	HOR	-15.9	43.5	8.8
245.771543	29.70	317.00	100.0	HOR	-13.6	46.0	16.3
904.749499	30.69	96.00	200.0	HOR	1.1	46.0	15.3
924.188377	30.04	120.00	100.0	HOR	1.6	46.0	16.0

§2.1053-SPURIOUS RADIATED EMISSIONS

Applicable Standard Requirements: CFR 47, §2.1053

Test Equipment List and Details

Item	Equipment	Manufacturer	Mode	Serial	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESI26	100058	2006-10-16	1 Year
2	Ultra Broadband Antenna	R&S	HL562	100022	2006-3-6	3 Years
3	Double-Ridged Waveguide Horn Antenna	R&S	HF906	100032	2004-10-10	3 Years
4	Anechoic Chamber	Albatross	3m Site	N/A	2005-7-15	3 Year
5	Cable Set	R&S	RE Cable	N/A	2006-8-17	1Year
6	Cable set II	R&S	Substitution Tx Cable	N/A	2006-8-17	1Year
7	Cable set III	R&S	Hi-freq RX Antenna Cable	N/A	2006-8-17	1Year
8	Software	R&S	ES-K1	N/A	N/A	N/A
9	Double-Ridged Waveguide Horn Antenna	R&S	HF906	100013	2004-1-31	3 Years
10	VHF-UHF Broad band Antenna	SCHWARZBEC K	VUBA 9117	SB3174	2004-11-17	3 Years
11	Signal Generator	R&S	SMR20	100098	2005-12-17	1Year

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =10 lg (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB =43+10 Log10 (power out in Watts)

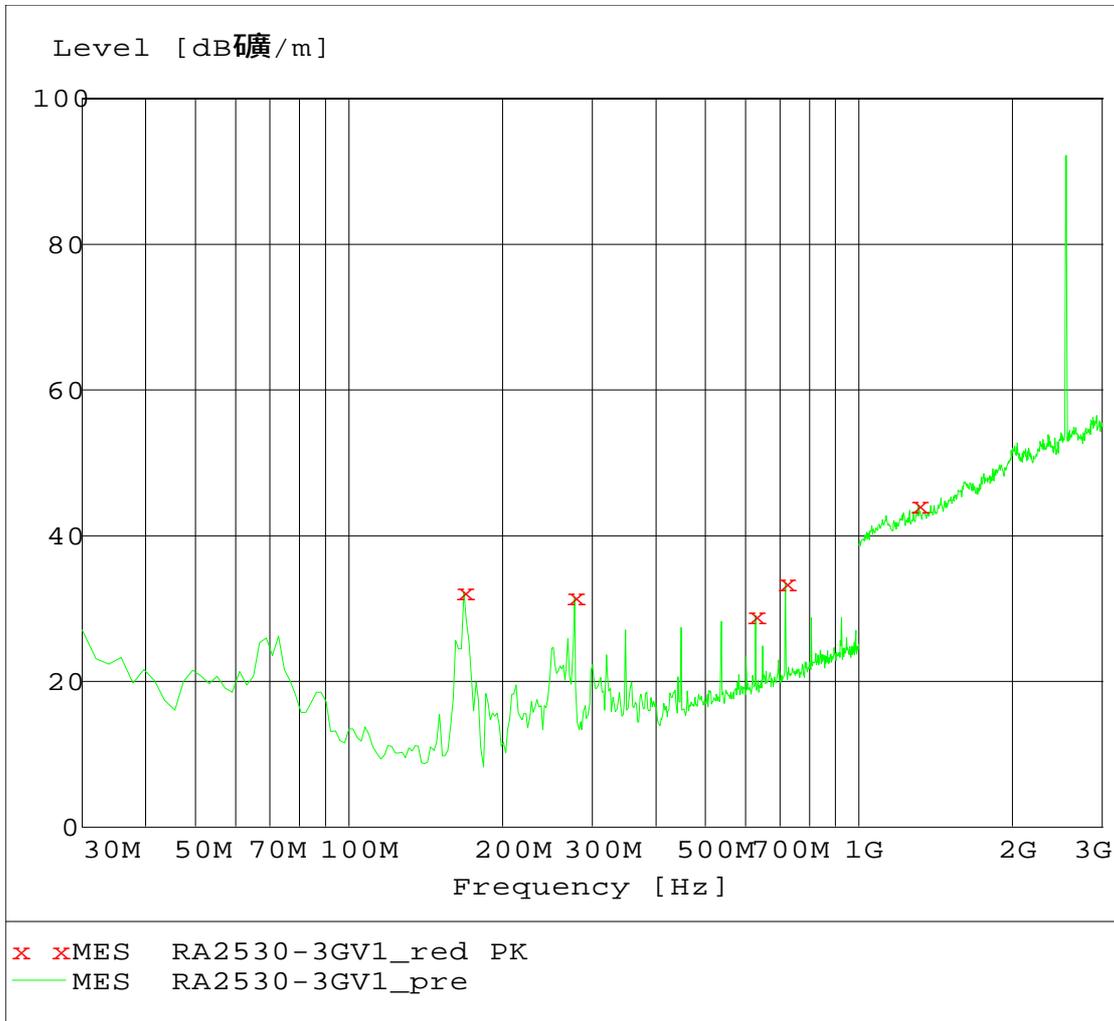
Test Results Summary

36dB at 18202.405MHz

Test Data

EUT: ZXMBW RA25
Manufacturer: ZTE Corporation
Operating Condition: Communication
Test Site: ZTE EMC Lab.
Operator: guan bin
Test Specification: CFR 47
Comment: 30MHz~3GHz for Vertical
Start of Test: 2006-10-10 / 14:52:27

MEASUREMENT RESULT: "RA2530-3GV1_red PK"



MEASUREMENT RESULT: "RA2530-3GV1_red PK"

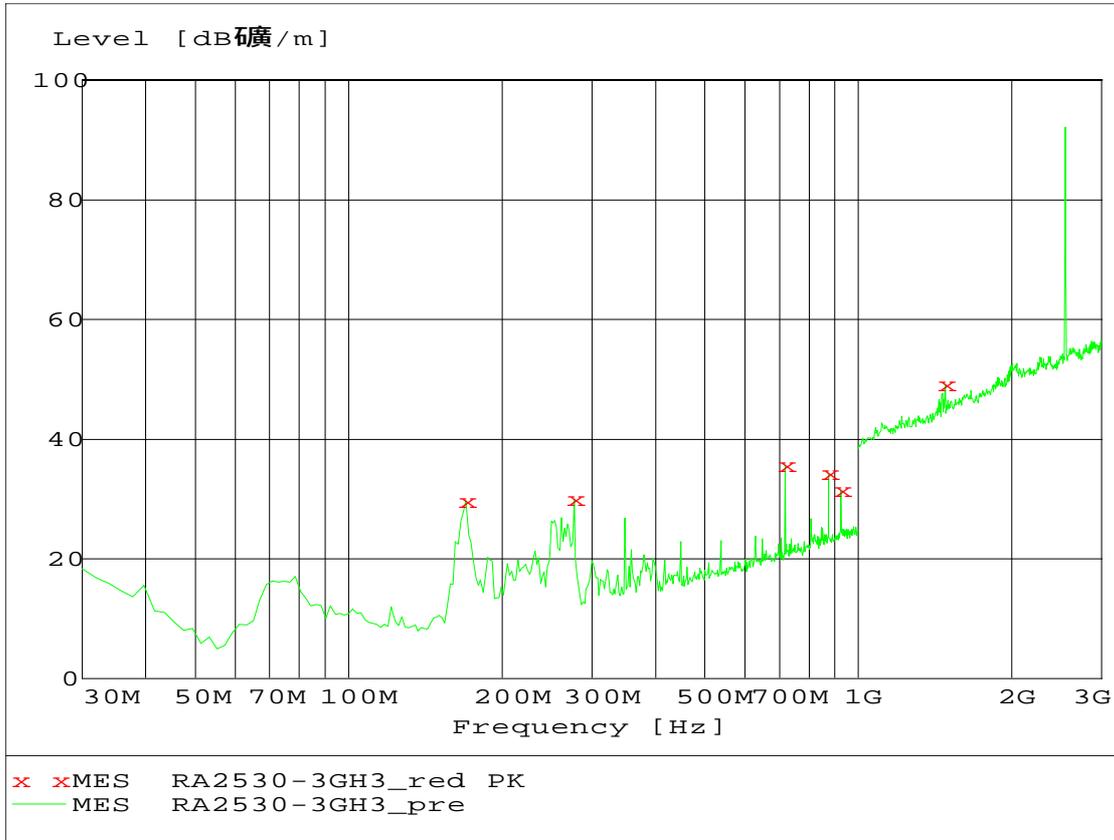
2006-10-10 15:27

Frequency MHz	Field strength dBmV/m	Output power of the signal generator or PS (dBm)	Cable loss C (dB)	Isotropic gain of the substitution antenna G (dBi)	Measurement result erp (dBm)	Limit erp(dBm)	Margin (dB)
168.01603	32.28	-59.95	1.1	-3.24	-66.44	-13	53.44
276.87375	31.61	-65.97	1.3	0.79	-68.63	-13	55.63
626.77355	29.07	-67.62	2.1	-1.09	-72.96	-13	59.96
718.13627	33.58	-62.52	2.3	-1.07	-68.04	-13	55.04
1308.6172	44.22	-64.61	3	4.25	-65.51	-13	52.51

TEST***Electric Field Strength***

EUT: ZXMBW RA25
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: CFR 47
 Comment: 30MHz~3GHz for Horizontal
 Start of Test: 2006-10-10 15:26

MEASUREMENT RESULT: "RA2530-3GH3_red PK"



MEASUREMENT RESULT: "RA2530-3GH3_red PK"

Frequency MHz	Field strength dBmV/m	Output power of the signal generator or PS (dBm)	Cable loss C (dB)	Isotropic gain of the substitution antenna G (dBi)	Measurement result erp (dBm)	Limit erp (dBm)	Margin (dB)
169.95992	29.76	-66.07	1.1	-3.24	-72.56	-13	59.56
276.87375	30.03	-66.72	1.3	0.79	-69.38	-13	56.38
718.13627	35.72	-61.9	2.3	-1.07	-67.42	-13	54.42
873.6473	34.4	-62.69	2.5	-1.32	-68.66	-13	55.66
924.18838	31.43	-64.72	2.5	-2.69	-72.06	-13	59.06
1480.9619	49.13	-58.54	3.2	4.25	-59.64	-13	46.64

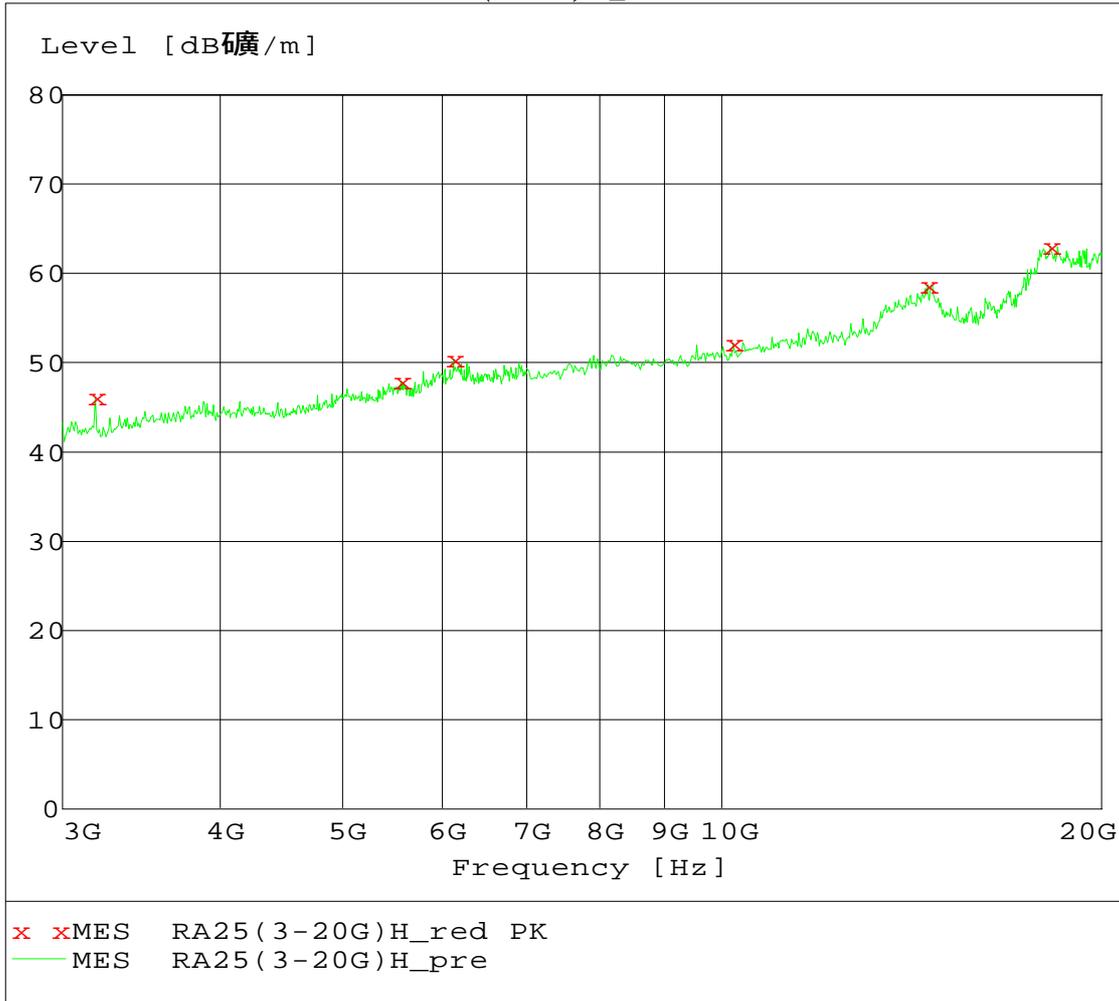
TEST

Electric Field Strength

EUT: ZXMBW RA25
 Manufacturer: ZTE Corporation

Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: CFR 47
 Comment: 3GHz~20GHz for Horizontal
 Start of Test: 2006-10-10 11:13

MEASUREMENT RESULT: "RA25(3-20G)H_red PK"



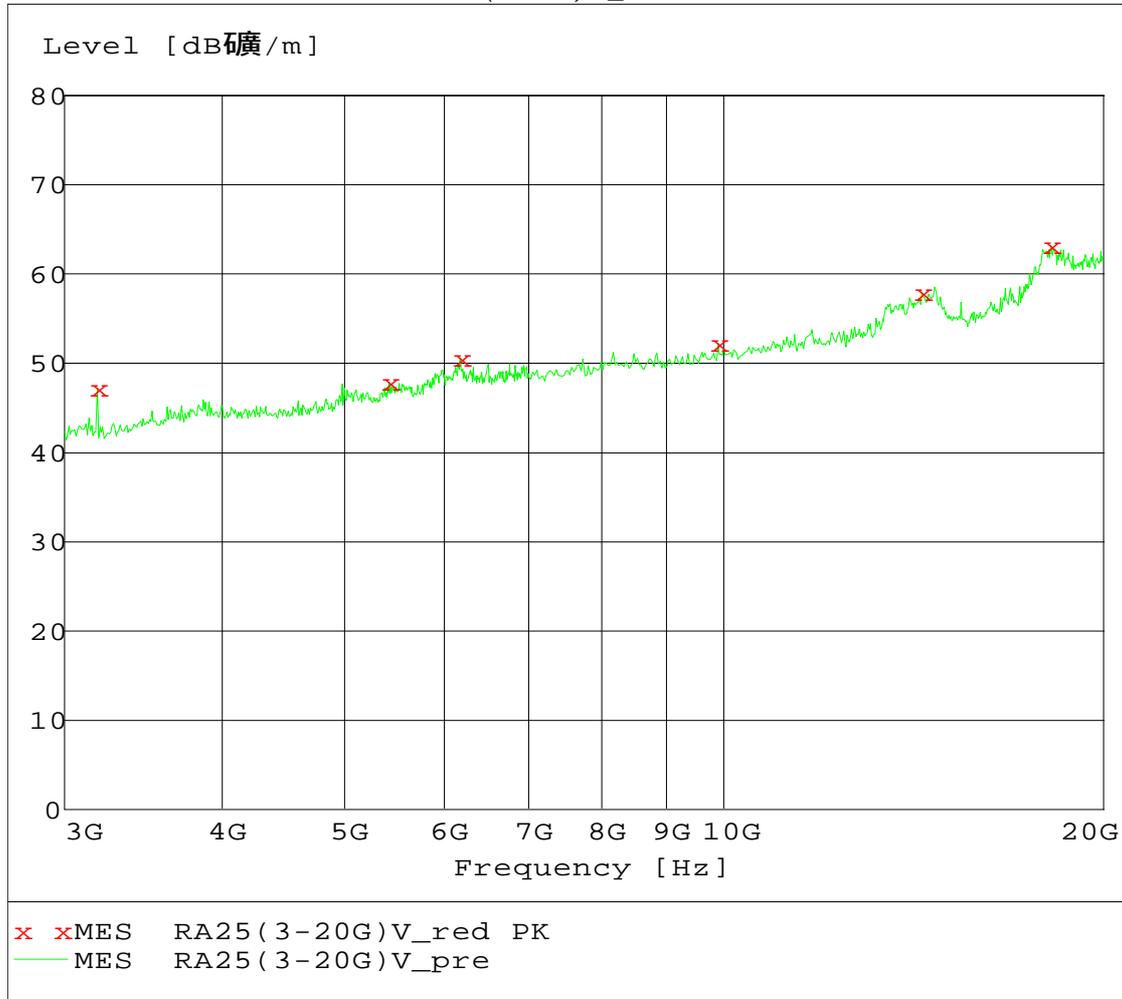
MEASUREMENT RESULT: "RA25(3-20G)H_red PK"

Frequency MHz	Field strength dBmV/m	Output power of the signal generator or PS (dBm)	Cable loss C (dB)	Isotropic gain of the substitution antenna G (dBi)	Measurement result erp (dBm)	Limiter p(dBm)	Margin (dB)
3184.3687	46.18	-57.93	4.8	7.75	-57.13	-13	44.13

5565.1303	47.95	-50.66	6.4	9.05	-50.16	-13	37.16
6126.2525	50.46	-52.93	6.8	9.05	-52.83	-13	39.83
10204.409	52.23	-56.71	8.9	11.35	-56.41	-13	43.41
14555.11	58.76	-49.59	11	9.15	-53.59	-13	40.59
18202.405	63	-41.1	12.2	6.45	-49	-13	36

EUT: ZXMBW RA25
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: CFR 47
 Comment: 3GHz~20GHz for Vertical
 Start of Test: 2006-10-10 11:08

MEASUREMENT RESULT: "RA25(3-20G)V_red PK"



MEASUREMENT RESULT: "RA25(3-20G)V_red PK"

Frequency MHz	Field strength dBmV/m	Output power of the signal generator PS (dBm)	Cable loss C (dB)	Isotropic gain of the substitution antenna G (dBi)	Measurement result erp (dBm)	Limit erp(dBm)	Margin (dB)
3184.3687	47.22	-53.75	4.8	7.75	-52.95	-13	39.95
5428.8577	47.85	-58.78	6.3	8.55	-58.68	-13	45.68
6182.3647	50.65	-58.4	6.9	9.05	-58.4	-13	45.40
9891.7836	52.23	-56.59	8.8	9.95	-57.59	-13	44.59
14346.693	58.01	-51.51	10.8	9.65	-54.81	-13	41.81
18150.301	63.23	-46.85	12.2	6.45	-54.75	-13	41.75

Environmental Conditions

Temperature:	26°C
Relative Humidity:	60 %
ATM Pressure:	1009 mbar

The testing was performed by Guan Bin on 2006-10-10

§2.1046, §27.50(h) - EFFECTIVE RADIATED POWER

Applicable Standard

According to FCC §2.1046&27.50(h), the ERP of transmitters and cellular repeaters must not exceed 2000mW.

Test Equipment List and Details

Item	Equipment	Manufacturer	Mode	Serial	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESI26	100058	2006-10-16	1 Year
2	Ultra Broadband Antenna	R&S	HL562	100022	2006-3-6	3 Years
3	Double-Ridged Waveguide Horn Antenna	R&S	HF906	100032	2004-10-10	3 Years
4	Anechoic Chamber	Albatross	3m Site	N/A	2005-7-15	3 Year
5	Cable Set	R&S	RE Cable	N/A	2006-8-17	1Year
6	Cable set II	R&S	Substitution Tx Cable	N/A	2006-8-17	1Year
7	Cable set III	R&S	Hi-freq RX Antenna	N/A	2006-8-17	1Year

			Cable			
8	Software	R&S	ES-K1	N/A	N/A	N/A
9	Double-Ridged Waveguide Horn Antenna	R&S	HF906	100013	2004-1-31	3 Years
10	VHF-UHF Broad band Antenna	SCHWARZBEC K	VUBA 9117	SB3174	2004-11-17	3 Years
11	Signal Generator	R&S	SMR20	100098	2005-12-17	1 Year

Test Procedure

1. On a test site, the EUT shall be placed at 1.5m height on a turn table, and in the position closest to normal use as declared by the applicant.
 2. The test antenna shall be oriented initially for vertical polarization located 3m from EUT to correspond to the frequency of the transmitter.
 3. The output of the test antenna shall be connected to the measuring receiver and the quasi-peak detector is used for the measurement.
 4. The transmitter shall be switched on, if possible, without modulation and the measuring receiver shall be tuned to the frequency of the transmitter under test.
 5. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
 6. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
 7. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
 8. The maximum signal level detected by the measuring receiver shall be noted.
 9. The transmitter shall be replaced by a horn (substitution antenna).
 10. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
 11. The substitution antenna shall be connected to a calibrated signal generator.
 12. In necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
 13. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
 14. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
 15. The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
 16. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- The measure of the effective radiated power is the large of the two levels recorded, at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Guan Bin on 2006-11-23

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Test Data

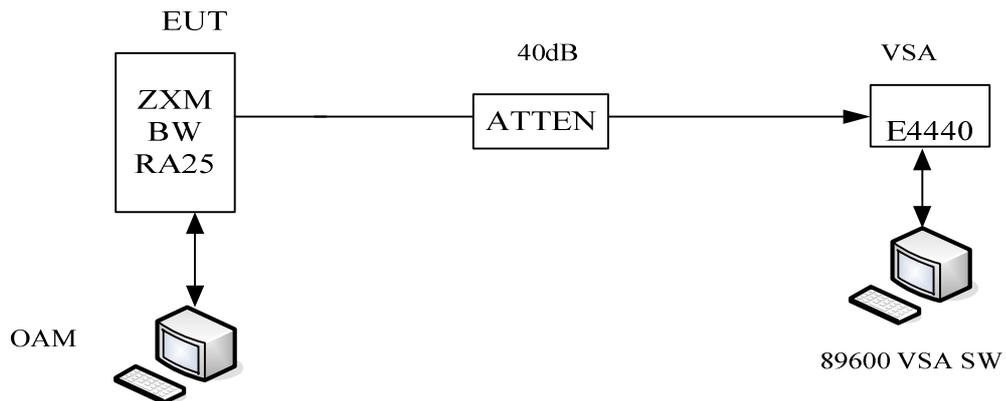
Frequency (MHz)	SUBSTITUTION READING (dBm)	SUBSTITUTION ANTENNA GAIN (dB)	SUBSTITUTION CALBE LOSS (dB)	ERP (dBm)
2546	26.55	7.95	4.3	30.20

§2.1051, §27.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard Requirements: CFR 47§2.1051, §27.53 .

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1051.

EUT Setup:



	RF Cable				
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Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Data Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Liu Rui on Nov16, 2006

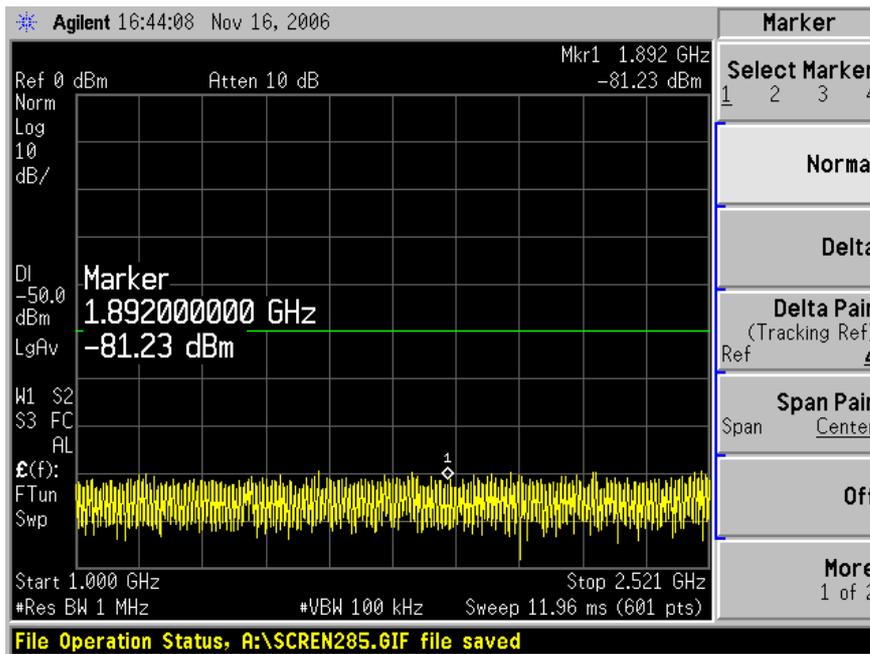
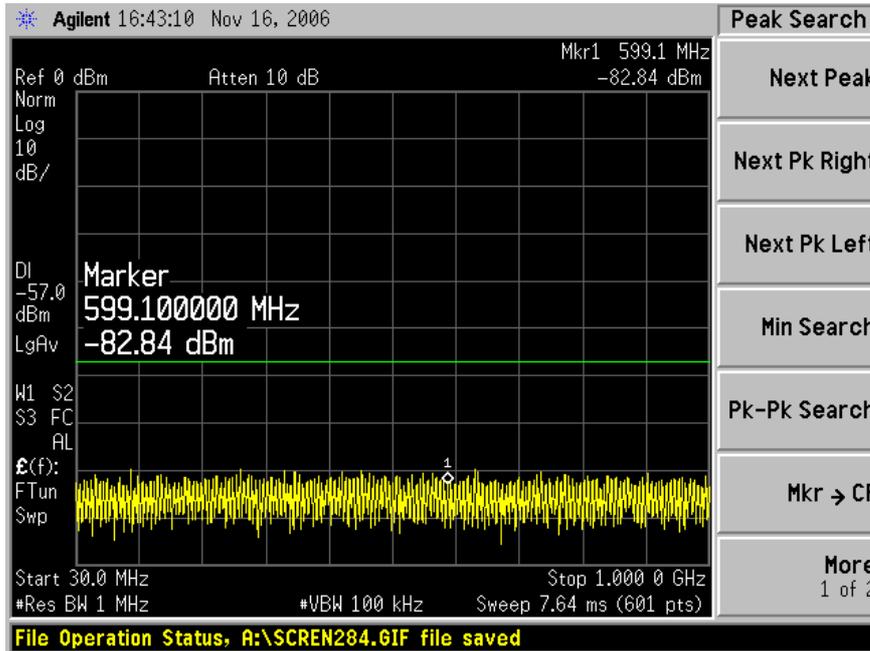
Test Result: Pass

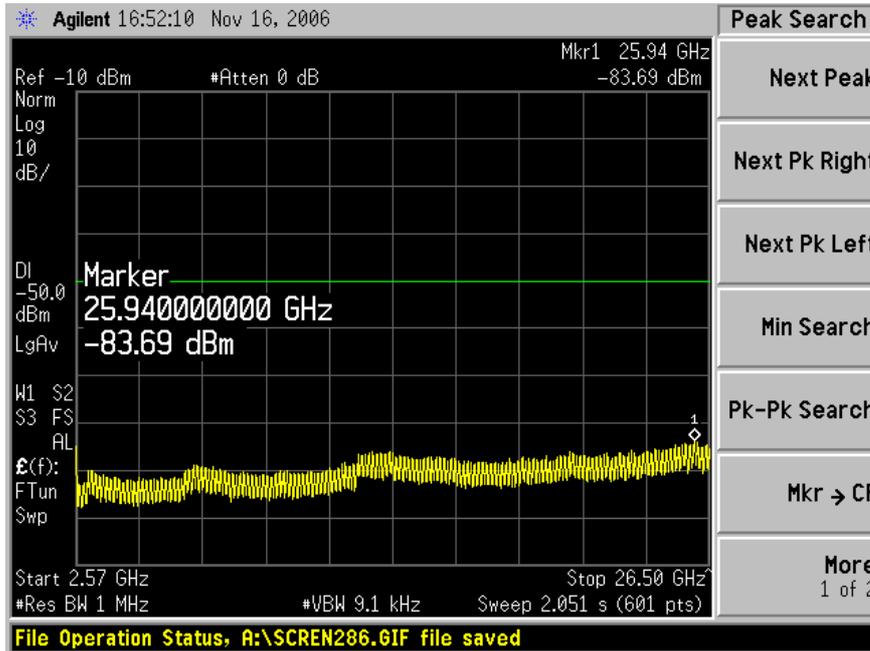
Test Mode: Transmitting WiMAX

Test Data:

Test Data:

Frequency Range	Measurement Value(dBm)	Attenuation or loss(dB)	Cable Loss(dB)	Conducted level(dBm)	Limit(dBm)	Margin(dBm)
30M-1GHz	-82.84	40	1.5	-41.34	-13	28.34
1GHz-2.521GHz	-81.23	40	1.5	-39.73	-13	26.73
2.571GHz-26.5GHz	-83.69	40	1.5	-42.19	-13	29.19





§2.1049-OCCUPIED BANDWIDTH

Applicable Standard Requirements: CFR 47, Section 2.1049

Test Equipment List and Details :

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2005-11-24	2006-11-24

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz and 99% Power bandwidth was recorded.

Test Data

Environmental Conditions

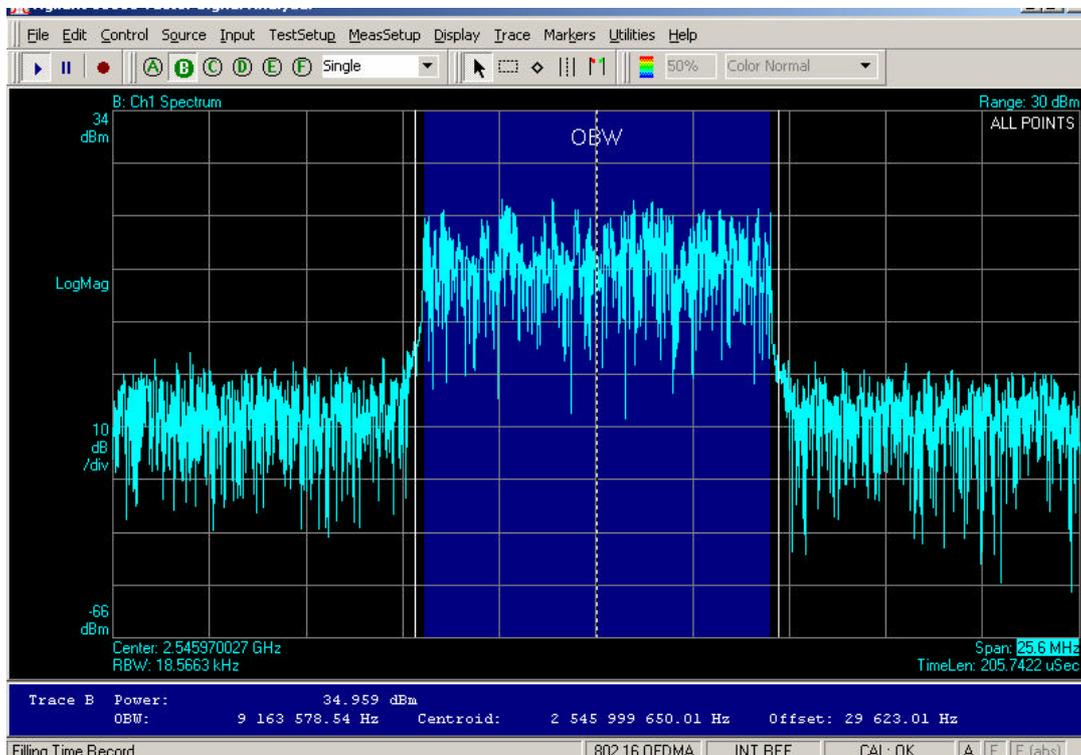
Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	1009mbar

The testing was performed by Liu Rui on Nov16, 2006.

Test Result: Pass

Test Mode: Transmitting WiMAX

Channel frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
2546	9.163	<10



§22.917- BAND DGES

Applicable Standard

According to §22.917, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (p) by a factor of at least $43 + 10 \log (p)$ dB.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2005-11-24	2006-11-24

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.

Test Data Environmental Conditions

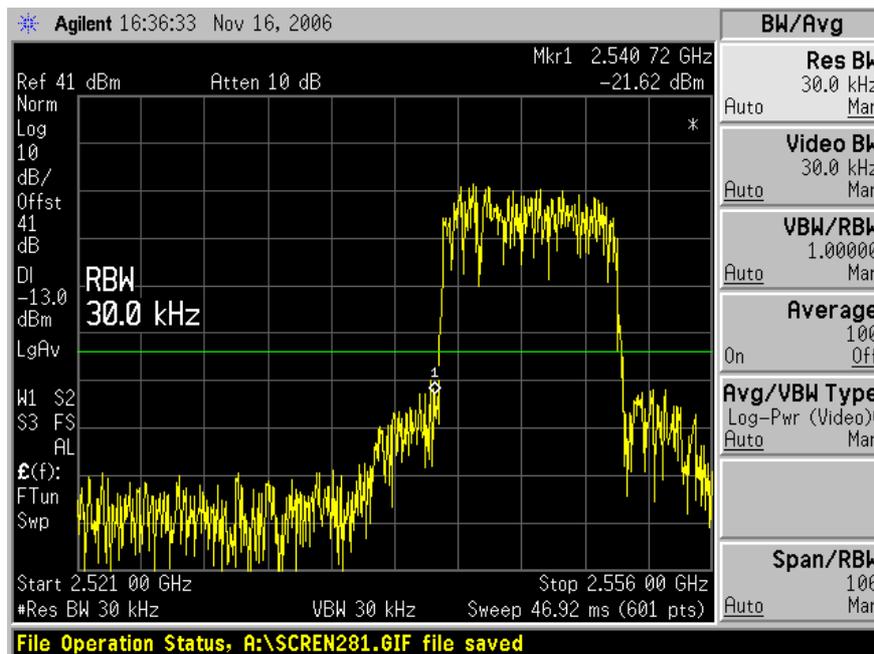
Temperature:	24 °C
Relative Humidity:	59%
ATM Pressure:	1009mbar

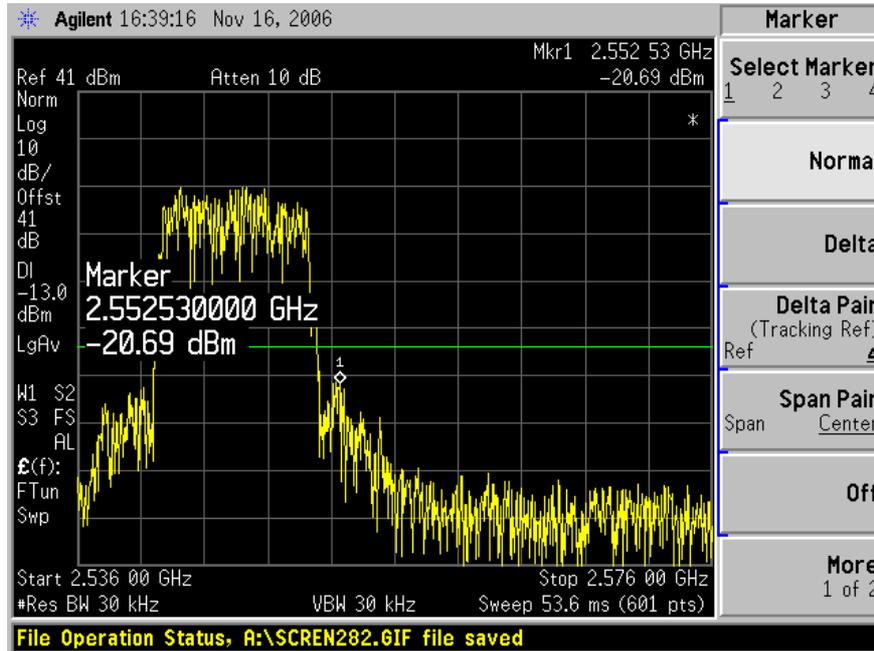
The testing was performed by Liu Rui on Nov 16 2006

Test Result: Pass

Test Mode: Transmitting WiMAX

Frequency (MHz)	Emission (dBm)	Limit (dBm)
2540.72	-21.62	-13.00
2552.53	-20.69	-13.00





§2.1055 (a), §2.1055 (d), §27.54 - FREQUENCY STABILITY

Applicable Standard

Requirements: FCC § 2.1055 (a), Part 27.54 following:

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2006-3-2	2007-3-2
GZ-ESPEC	Temperature Chamber	GRW-120	00020268	2006-3-8	2007-3-8

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to a f Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 150 minutes, the frequency output was

recorded from the counter.

Frequency Stability vs. Voltage: An external variable AC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Test Data

Environmental Conditions

Temperature:	20° C
Relative Humidity:	49%
ATM Pressure:	1011 mbar

The testing was performed by Liu Rui on Nov 3-7, 2006.

Test Result: Pass

Test Mode: Transmitting WiMAX

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature				
Temperature	Power Supplied Vac	Frequency Measure Error Hz	Error ppm	Limit 0.02ppm
f=2546MHz				
-40	220	-7.5625	0.00297	PASS
-30	220	-10.5415	0.00414	PASS
-20	220	21.7471	0.00854	PASS
-10	220	8.2456	0.00323	PASS
0	220	-11.9542	0.00469	PASS
10	220	9.5627	0.00375	PASS
20	220	28.6750	0.01126	PASS
30	220	34.2864	0.01346	PASS
40	220	-24.4958	0.00962	PASS
50	220	-15.4877	0.00608	PASS
55	220	29.1857	0.01146	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage				
VoltageVac	Temperature	Frequency Measure	Error ppm	Limit 0.02ppm
f=2546MHz				

150	20	1.5740	0.00061	PASS
180	20	5.2412	0.00205	PASS
210	20	-15.6440	0.00614	PASS
240	20	-24.1435	0.00948	PASS
270	20	12.3875	0.00486	PASS
300	20	5.8495	0.00229	PASS

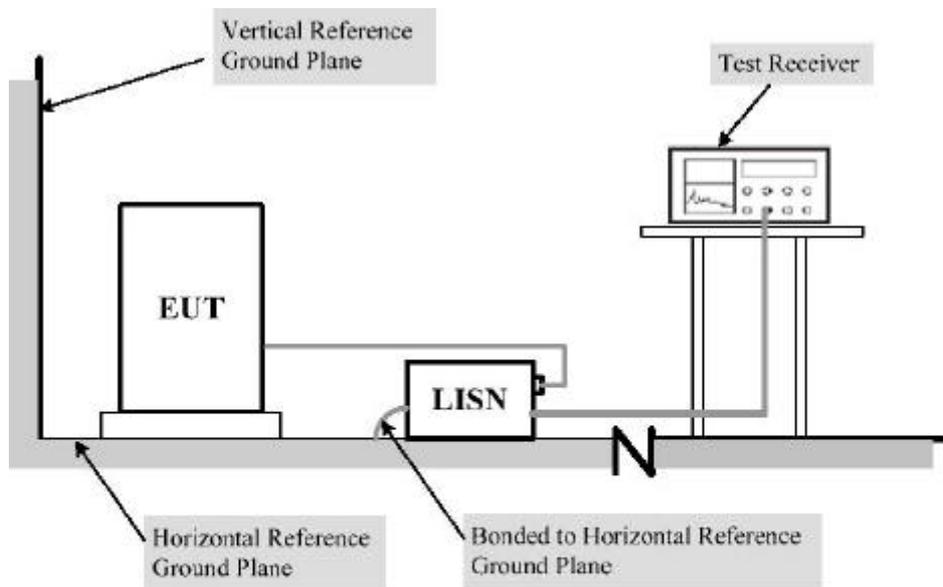
§15.107 CONDUCTED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at ZTE Corp. is 2 dB.

EUT Setup



Note: 1. Support units were connected to second LISN.
 2. Both of LISNs(AMN) 80cm from EUT and at the least 80cm from other units and other metal planes support units.

The setup of EUT is according with per TIA/EIA 603-B measurement procedure. The specification used was with the FCC Part 15.107 (a) Limit.

The external I/O cables were connected and positioned properly.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 220 VAC/50 Hz power source.

Test Receiver Setup

The test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the test receiver was set with the following configurations: *Frequency Range IFBW* 150 kHz – 30 MHz 9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS30	100068	2006-6-16	2007-6-15
R&S	LISN	ESH2-Z5	100027	2006-6-16	2007-6-15
SCHWARZBECK	LISN	NNLK8129	8129-151	2006-6-16	2007-6-15
R&S	ISN	ENY22	100046	2006-6-17	2007-6-16
R&S	ISN	ENY41	100057	2006-6-18	2007-6-17
R&S	Pulse Limiter	ESH3-Z2	100063	2006-6-18	2007-6-17
HP	Current Probe	HP11967A	555	2004-10-22	2007-10-19
R&S	Software	ES-K1	N/A	N/A	N/A
R&S	Cable	CE Cable	N/A	2006-6-16	2007-6-15

Com-Power's LISN were used as the supporting equipment.

Test Procedure

During the conducted emission test, the EUT power cord was connected the LISN. Maximizing procedure was performed on the six (6) highest were emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	47 %
ATM Pressure:	1000 mbar

The testing was performed by Guan Bin on 2006-11-3

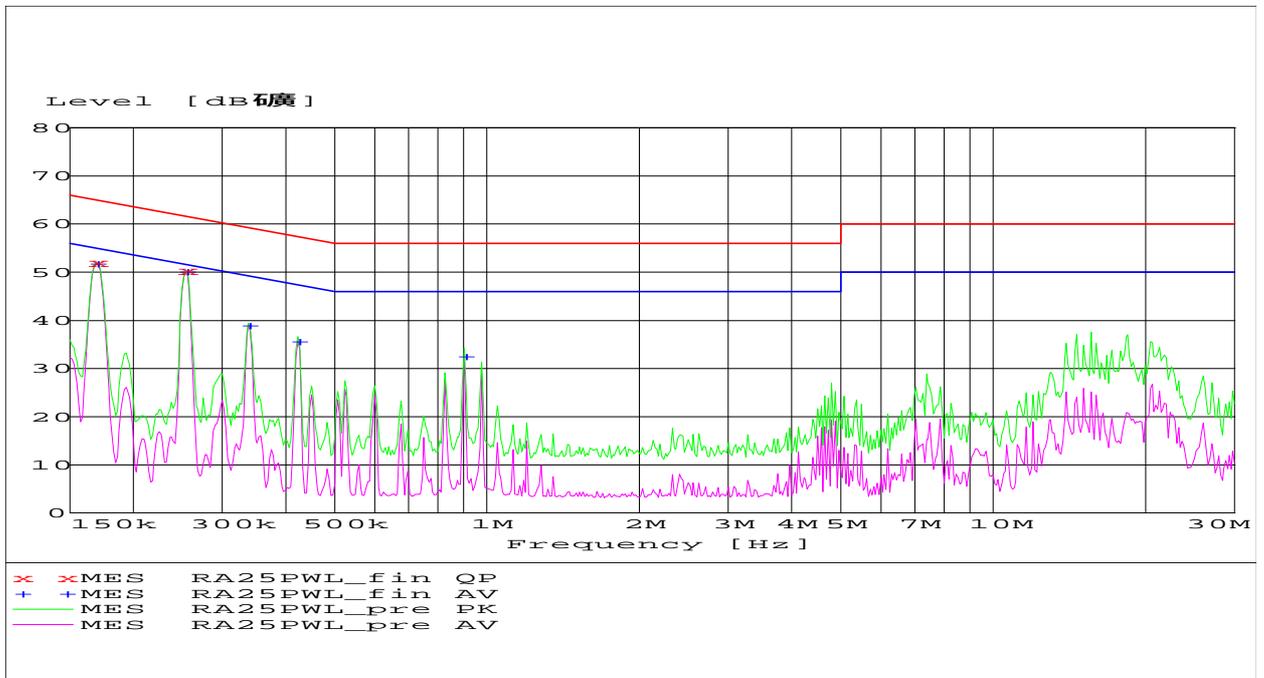
Test Result: Pass

Conducted Emission

EUT: ZXMBW-TP25I
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15.207
 Comment: L Line
 Start of Test: 2006-10-09 / 17:03:53

SCAN TABLE: "FinalTest"

Short Description: EN 55022 Voltage
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz ESH2-Z5
 Average



MEASUREMENT RESULT: "RA25PWL_fin QP"

2006-10-09 17:06

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.169044	52.00	9.9	65	13.0	L1	GND
0.253797	50.30	9.9	62	11.3	L1	GND

MEASUREMENT RESULT: "RA25PWL_fin AV"

2006-10-09 17:06

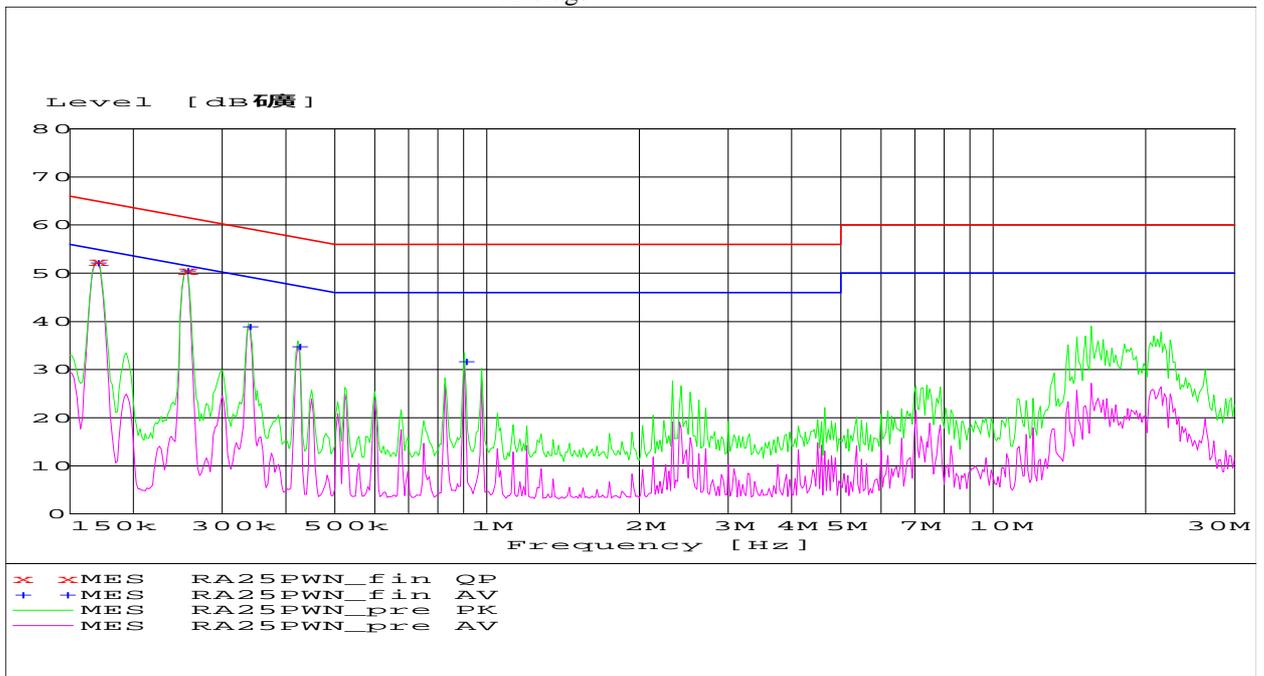
Frequency MHz	Level dB μ V	Transd dB μ V	Limit dB	Margin dB μ V	Line dB	PE
0.169044	51.80	9.9	55	3.2	L1	GND
0.253797	50.10	9.9	52	1.5	L1	GND
0.338116	38.90	9.9	49	10.4	L1	GND
0.422630	35.70	9.9	47	11.7	L1	GND
0.900971	32.50	9.9	46	13.5	L1	GND

Conducted Emission

EUT: ZXMBW-RA25
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15.207
 Comment: N Line
 Start of Test: 2006-10-09 / 16:58:51

SCAN TABLE: "FinalTest"

Short Description: EN 55022 Voltage
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 0.8 % QuasiPeak 1.0 s 9 kHz ESH2-Z5
 Average



MEASUREMENT RESULT: "RA25PWN_fin QP"

2006-10-09 17:03

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.169044	52.40	9.9	65	12.6	N	GND
0.253797	50.70	9.9	62	10.9	N	GND

MEASUREMENT RESULT: "RA25PWN_fin AV"

2006-10-09 17:03

Frequency MHz	Level dB μ V	Transd dB	Limit dB	Margin dB μ V	Line dB	PE
0.169044	52.30	9.9	55	2.7	N	GND
0.253797	50.60	9.9	52	1.0	N	GND
0.338116	39.10	9.9	49	10.2	N	GND
0.422630	34.90	9.9	47	12.5	N	GND
0.900971	31.70	9.9	46	14.3	N	GND