

ZTE Corporation FCC ID: Q78-ZXMBW-TP25E

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-TP25E

January 19, 2007

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: ZXMBW TP25E
<p>Test Engineer: Liu Rui</p> <p>Report No.: RSZ07010101</p> <p>Test Date: Dec 29,2006-Jan 18, 2007</p> <p>Reviewed By: Hu Qinghua</p> <p>Prepared By: ZTE Corporation. ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China 518057, P.R.China Tel: +86-755-26770000 Fax: +86-755-26771999</p>	

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 TP25I or the "EUT" as referred to in this report is a ZXMBW TP25I Agile 2.5G Remote Radio Frequency Unit .

Item	Index
Network parameter	WIMAX 2.5G Hz
Dimensions	About 118 mm×54 mm×5 mm
Weight	About 54 g
Data rate	Maximum rate: 2 Mbps in downlink, 1 Mbps in uplink
Working voltage	3.3V (using the power supply of the notebook computer)
Current loss	Dormant: 80 mA; Maximum: 800 mA
Maximum transmitting power	23 dbm

The ZXMBW TP25E WiMAX wireless data card is based on the WiMAX network. In places covered by WiMAX signals, it is capable of accessing the broadband Internet any time and any place, receiving/sending E-mail, and fulfilling such services as IPTV, VoIP and VOD, providing users with extremely free, flexible, fast and convenient Internet access. In this way, it makes your dream of a mobile office come true.

With a PCMCIA interface, the DATA CARD can be conveniently inserted into a notebook computer such an interface. The PCMCIA interface is used for the external hardware connection of the notebook computer, with a high transmission speed, easy plugging/unplugging and good compatibility.

Based on the IEEE 8.02.16e standard, the DATA CARD is capable of providing high-speed data access under the mobile environment.

Adopting the PCMCIA interface, the DATA CARD is compact and light. It has sleek appearance and stable performance.

Currently, the DATA CARD can be used in the Windows XP operating system only.

** The test data gathered are from production sample, serial number: 0701075.*

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.

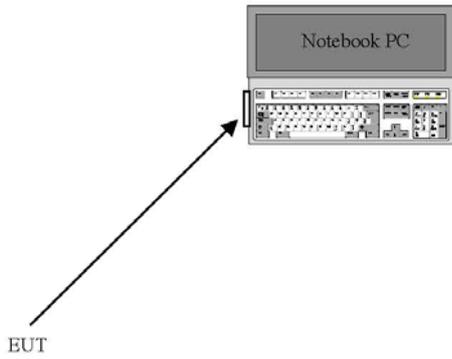
SYSTEM TEST CONFIGURATION

Description of Test Configuration Equipment Modifications

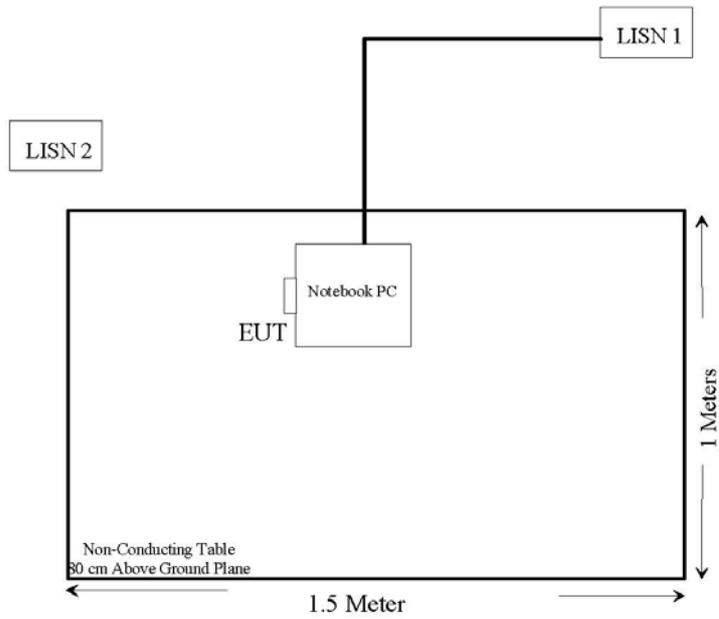
ZTE Corporation has not done any modification on the EUT.

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2006-11-24	2007-11-24
Dell	Note Book PC	Latitude D400	CND528026K	N/A	N/A

Configuration of Test System



Test Setup Block Diagram



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046&t27.5(h)	Conducted POWER	Compliant
§2.1047	Modulation characteristic	Compliant
§2.1046,§27.5(h)	RADIATED EMISSION	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1046&t27.5(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

SAR Test

Please refer to Conformance Test Report For Human Exposure To Electromagnetic Fields SAR
071L091_HPUSP09V01

Test Result: Pass

§2.1046, §27.5(h) -Conducted POWER

Applicable Standard

According to FCC §2.1046&27.5(h), the conducted power must not exceed 2 Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2006-11-24	2007-11-24

Test Procedure

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

Environmental Conditions

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

The testing was performed by Liu Rui on January 3, 2007.

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Test Data:

Frequency (MHz)	Total Power in dBm	Total Power in W	Limit in W
2620	22.2	0.166	2
2576	22.4	0.174	2
2530	22.5	0.178	2

§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	2006-11-24	2007-11-24

Test Procedure

WiMAX digital mode is used by EUT.

Test Data Environmental Conditions

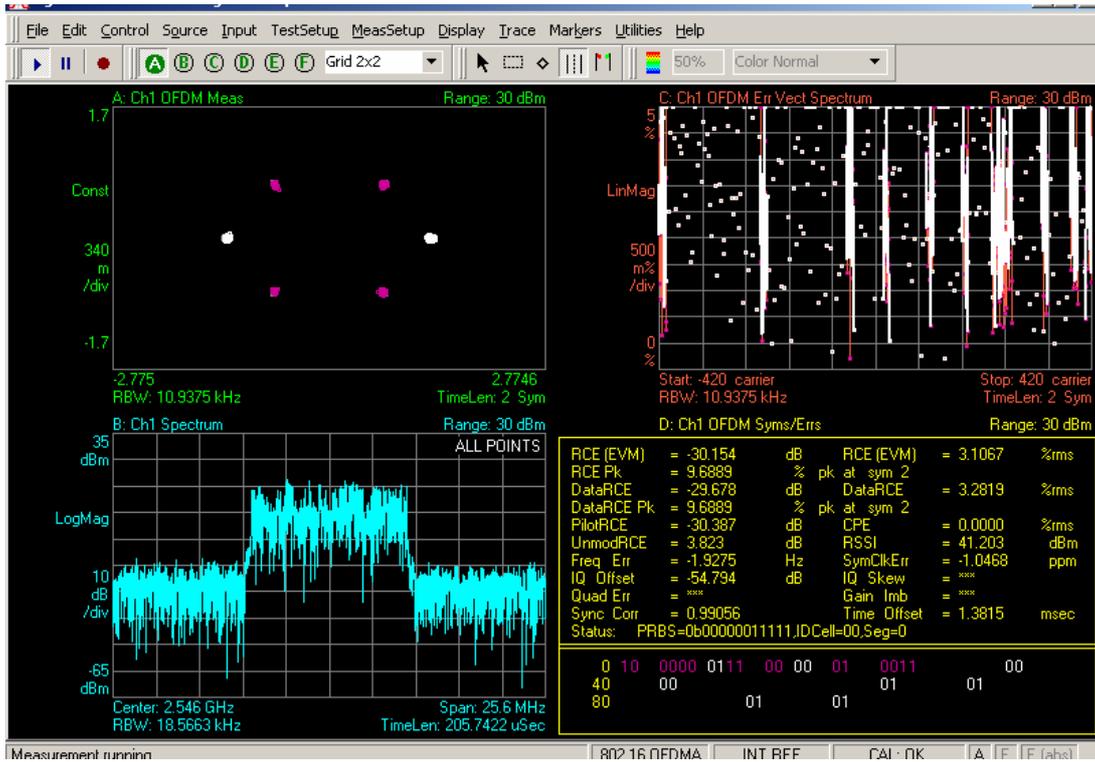
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Liu Rui on January 3, 2007.

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Frequency (MHz)	EVM(dB)	Limit(dB)
2546	-30.154	-18



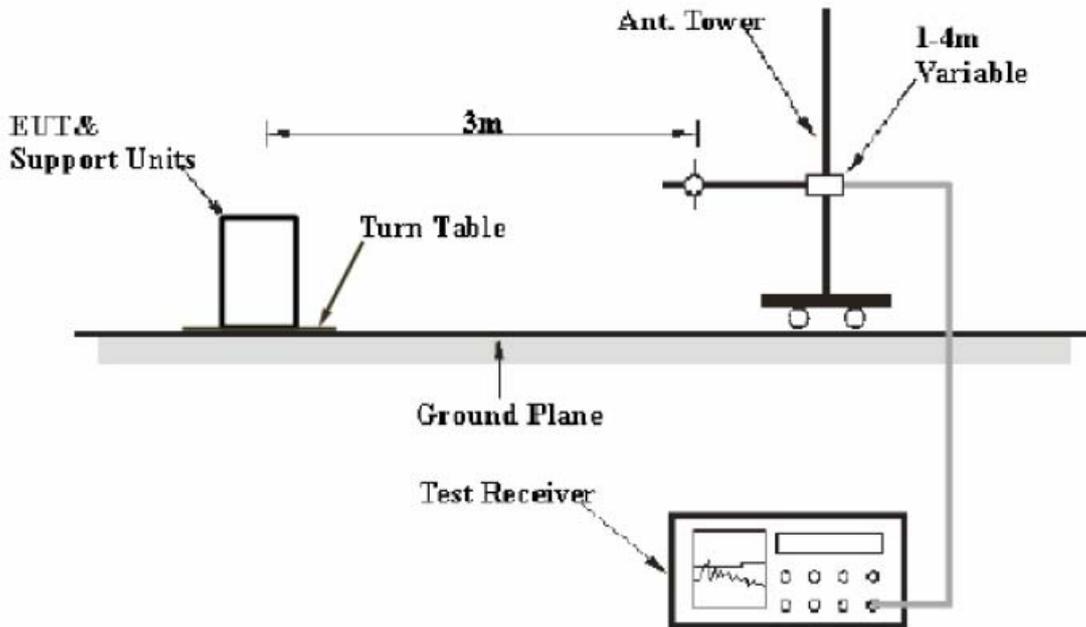
§2.1046, §27.5(h)- RADIATED EMISSION

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:

5.5dB at 912.525050 MHz in the Horizontal polarization.

Environmental Conditions:

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

The testing was performed by Guan Bin on 2007-1-11, and the data were only for unintentional radiator and be subjected to verification

Test Mode: *Transmitting WiMAX*

Plot(s) of Test Data

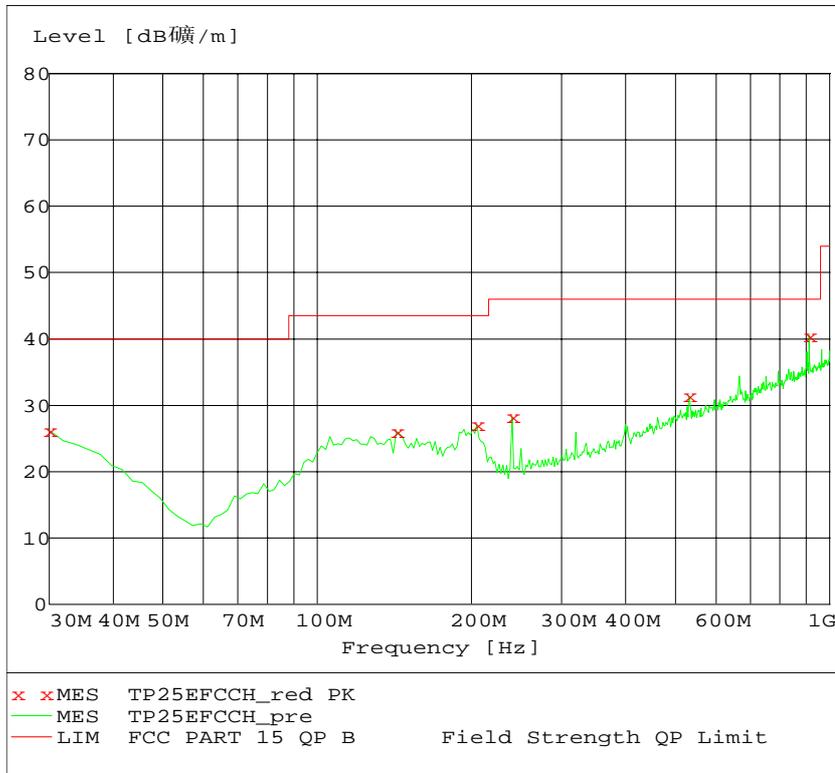
Plot(s) of Test Data is presented hereinafter as reference.

TEST Electric Field Strength

EUT: ZXMBW-TP25I
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15
 Comment: Horizontal
 Start of Test: 2007-1-11 / 10:31:20

SCAN TABLE: "EN 55022 Field fin"

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



MEASUREMENT RESULT: "TP25EFCCH_red PK"

2007-1-11 10:34

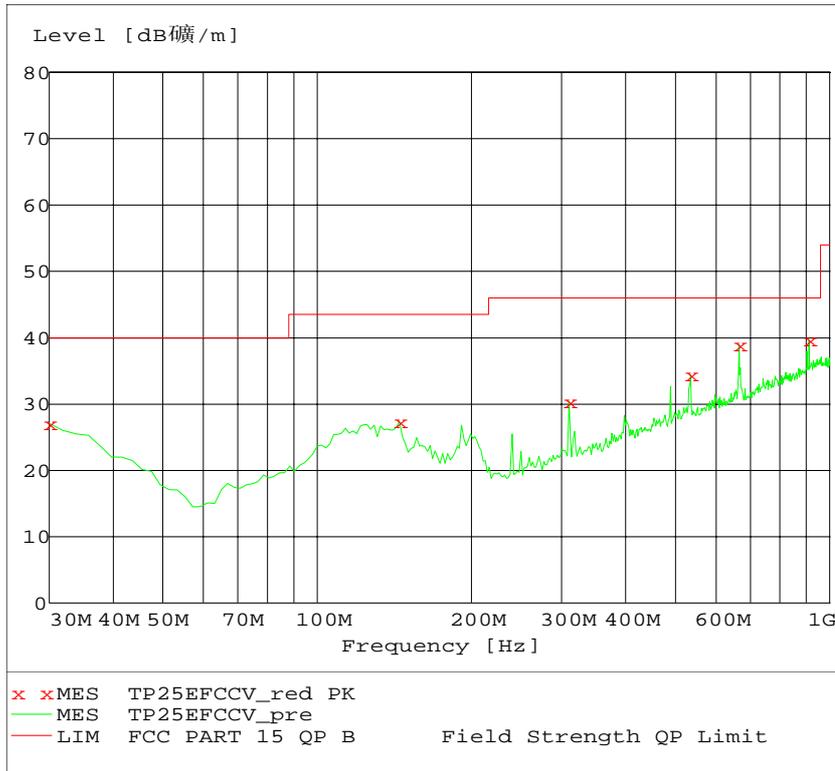
Frequency MHz	Level dB μ V/m	Azimuth deg	Height deg	Polarisation cm	Transd dB	Limit dB μ V/m	Margin dB
30.000000	26.25	263.00	100.0	HOR	-5.7	40.0	13.7
142.745491	26.05	261.00	200.0	HOR	-15.7	43.5	17.4
204.949900	27.08	119.00	100.0	HOR	-15.5	43.5	16.4
239.939880	28.22	245.00	100.0	HOR	-13.7	46.0	17.8
531.523046	31.39	0.00	200.0	HOR	-4.8	46.0	14.6
912.525050	40.50	136.00	200.0	HOR	7.0	46.0	5.5

TEST Electric Field Strength

EUT: ZXMBW-TP25I
 Manufacturer: ZTE Corporation
 Operating Condition: Communication
 Test Site: ZTE EMC Lab.
 Operator: guan bin
 Test Specification: FCC Part 15
 Comment: Vertical
 Start of Test: 2007-1-11 / 10:26:34

SCAN TABLE: "EN 55022 Field fin"

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



MEASUREMENT RESULT: "TP25EFCCV_red PK"

2007-1-11 10:29

Frequency MHz	Level dBμV/m	Azimuth deg	Height m	Polarisation cm	Transd dB	Limit dBμV/m	Margin dB
30.000000	27.12	262.00	200.0	VER	-5.7	40.0	12.9
144.689379	27.36	103.00	100.0	VER	-15.7	43.5	16.1
309.919840	30.37	31.00	200.0	VER	-10.8	46.0	15.6
535.410822	34.39	103.00	100.0	VER	-4.7	46.0	11.6
665.651303	38.99	51.00	100.0	VER	-2.1	46.0	7.0
912.525050	39.56	227.00	200.0	VER	7.0	46.0	6.4

§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 Antenna Cable	RX 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	2006-12-17	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)

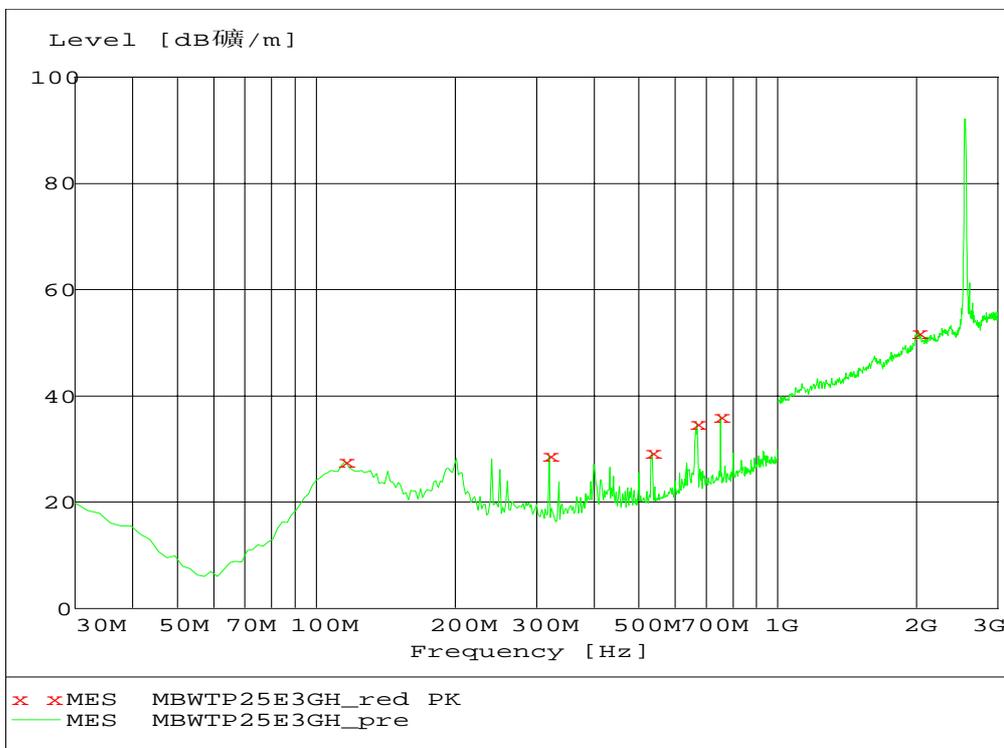
Test Results Summary:

50.07dB at 1260.521MHz

Test Data
TEST

Electric Field Strength

EUT: ZXMBW-TP25E
 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: 2006-12-29 / 16:24:48



MEASUREMENT RESULT: "TP25I30-3GH3_red PK"

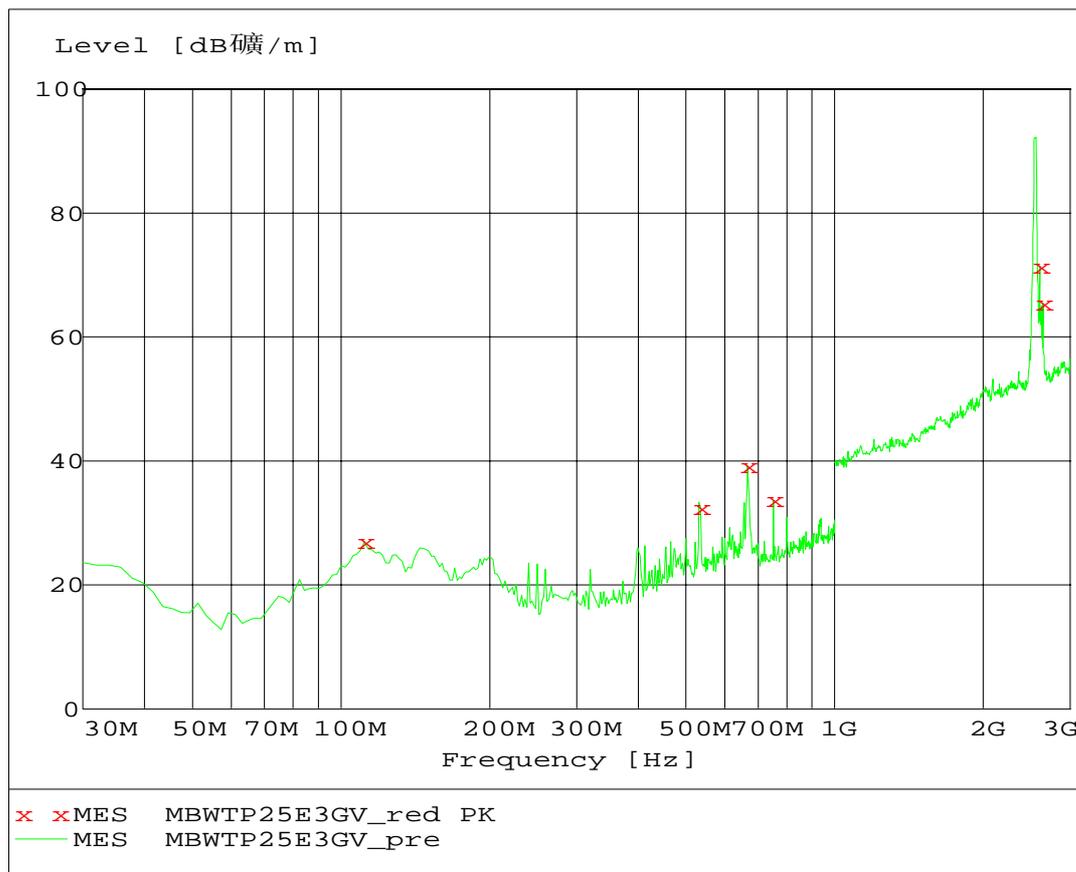
Frequency MHz	Field strength dBmV/m	Output power of the signal generator PS (dBm)	Cable loss C (dB)	Isotropic gain of the substitution antenna G (dBi)	Measurement result erp (dBm)	Limit erp(dBm)	Margin (dB)

115.531	27.67	-58.49	0.8	-12.48	-73.92	-13	60.92
319.63928	28.73	-68.36	1.5	0.23	-71.78	-13	58.78
533.46693	29.36	-67.41	1.9	-1.32	-72.78	-13	59.78
667.59519	34.9	-62.72	2.2	-1.23	-68.3	-13	55.3
751.18237	36.12	-62.83	2.3	-0.58	-67.86	-13	54.86
2018.036	51.95	-54.65	3.8	7.05	-53.55	-13	40.55

TEST

Electric Field Strength

EUT: ZXMBW-TP25E
 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: 2006-12-29 / 16:03:37

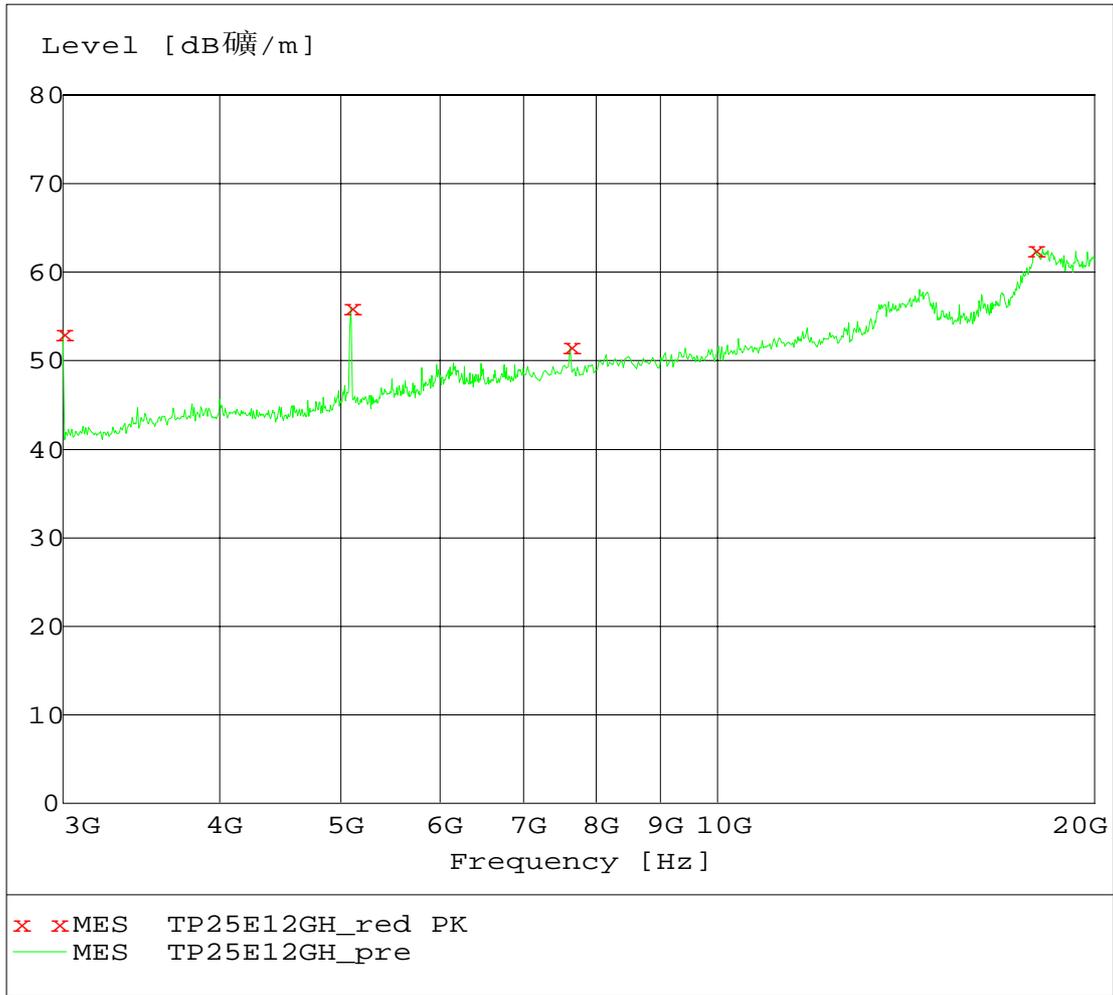


MEASUREMENT RESULT: "MBWTP25I3GV1_red PK"

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)
111.6432	27.02	-57.9	0.8	-13.47	-74.32	-13	61.32
535.4108	32.51	-63.06	2	-1.32	-68.53	-13	55.53
665.6513	39.27	-56.83	2.2	-1.23	-62.41	-13	49.41
751.18237	33.68	-64.36	2.3	-0.58	-69.39	-13	56.39
2603.2064	71.39	-36.14	4.3	7.95	-34.64	-13	21.64
2643.2866	65.42	-42.11	4.3	7.95	-40.61	-13	27.61

TEST**Electric Field Strength**

EUT: ZXMBW-TP25E
 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: 2006-12-29 / 17:12:11



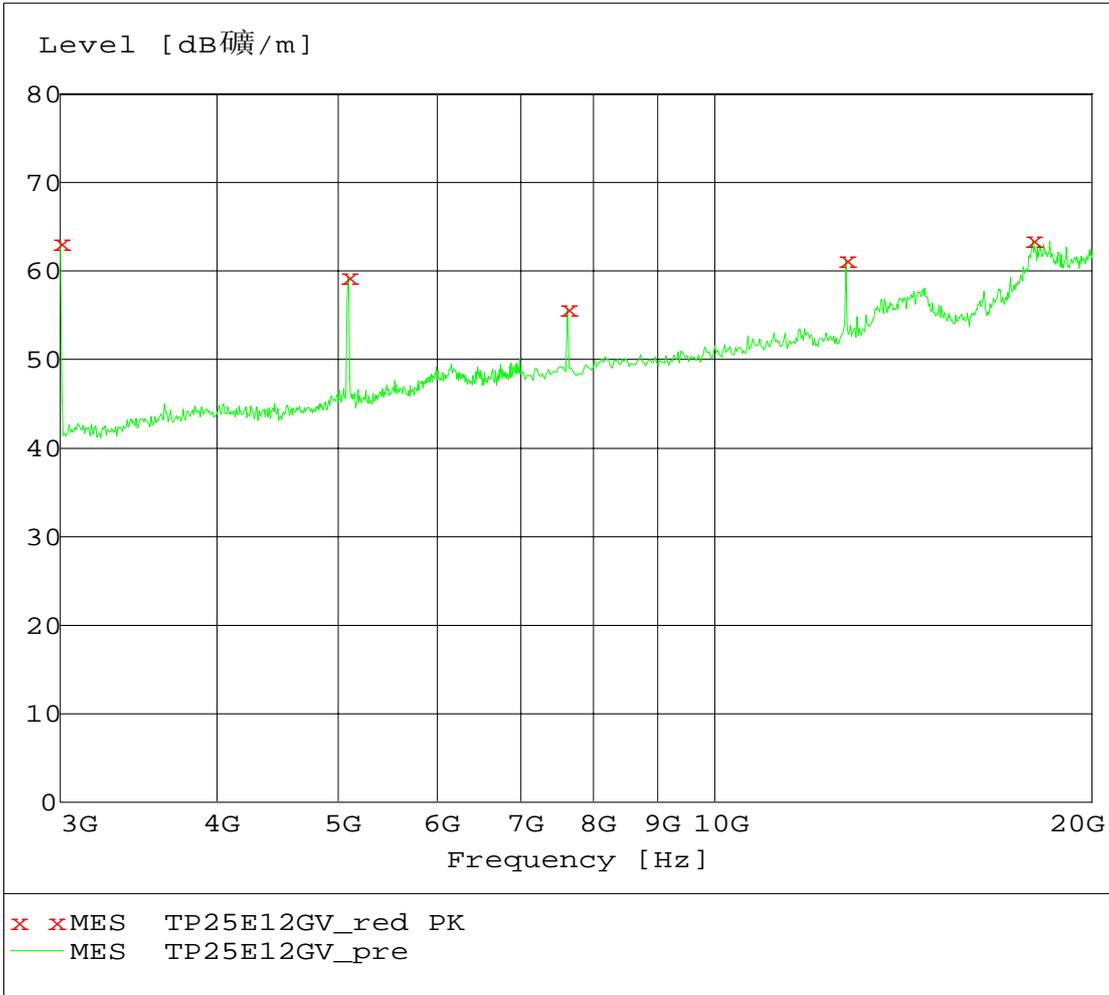
MEASUREMENT RESULT: "TP25E12GH_red PK"

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)
3000	53.09	-51.02	4.6	7.75	-50.02	-13	37.02
5092.1844	56.06	-44.84	6.1	8.55	-44.54	-13	31.54
7625.2505	51.66	-56.97	7.8	9.25	-57.67	-13	44.67
17915.832	62.62	-43.82	12.2	8.95	-49.22	-13	36.22

TEST

Electric Field Strength

EUT: ZXMBW-TP25E
 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: 2006-12-29 / 17:22:01



MEASUREMENT RESULT: "P25(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)
3000	63.14	-38.6	4.6	7.75	-37.6	-13	24.6
5092.1844	59.39	-47.24	6.1	8.55	-46.94	-13	33.94

7625.2505	55.82	-56.53	7.8	9.25	-57.23	-13	44.23
12731.463	61.3	-49.67	9.9	12.15	-49.57	-13	36.57
17941.884	63.52	-47.41	12.2	8.95	-52.81	-13	39.81

Environmental Conditions:

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

The testing was performed by Guan Bin on 2006-12-29

§2.1046, §27.5(h) - EFFECTIVE RADIATED POWER**Applicable Standard**

According to FCC §2.1046&27.5(h), the ERP of transmitters and cellular repeaters must not exceed 2 Watts.

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	2006-12-17	1Year

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 December 29, 2006.

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Test Data

Frequency (MHz)	SUBSTITUTION READING (dBm)	SUBSTITUTION ANTENNA	SUBSTITUTION CALBE LOSS	ERP (dBm)
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		GAIN (dB)	(dB)	
2620	18.45	7.95	4.3	22.1
2576	18.65	7.95	4.3	22.3
2530	18.85	7.95	4.3	22.5

ERP= SUBSTITUTION READING + SUBSTITUTION ANTENNA GAIN- SUBSTITUTION CALBE LOSS
 Exp: ERP=18.45+7.95-4.3=22.1

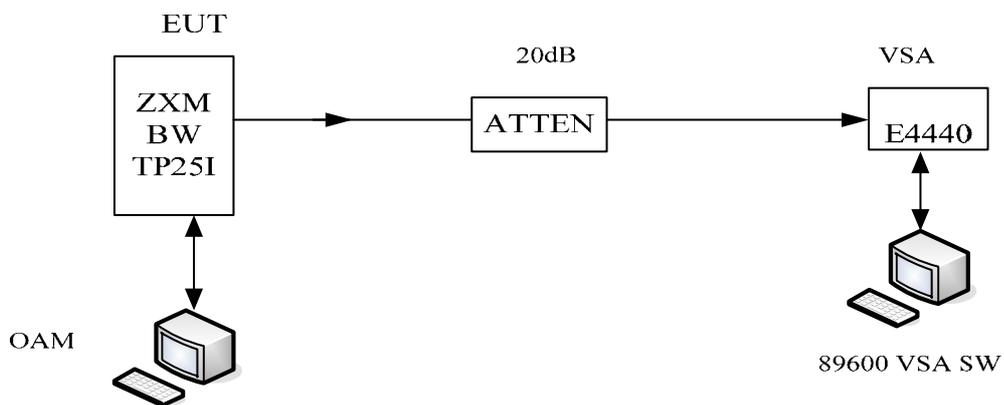
§2.1051, §27.53- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

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:



REMARKS:

1. Conducted level(dBm) = Measurement Value(dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Attenuator loss (dB) + Cable Loss (dB).
3. Attenuator loss (dB)=0dB, Cable Loss (dB)=1.5dB.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Series Spectrum Analyzer	E4440A	US44302705	2006-11-24	2006-11-24
JFW	JFW 20dB Attenuator	50HF-20-SMA	N/A	N/A	N/A
Hewlett Packard	Hewlett Packard RF Cable	8120-6192	01428251	N/A	N/A

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.

Environmental Conditions:

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

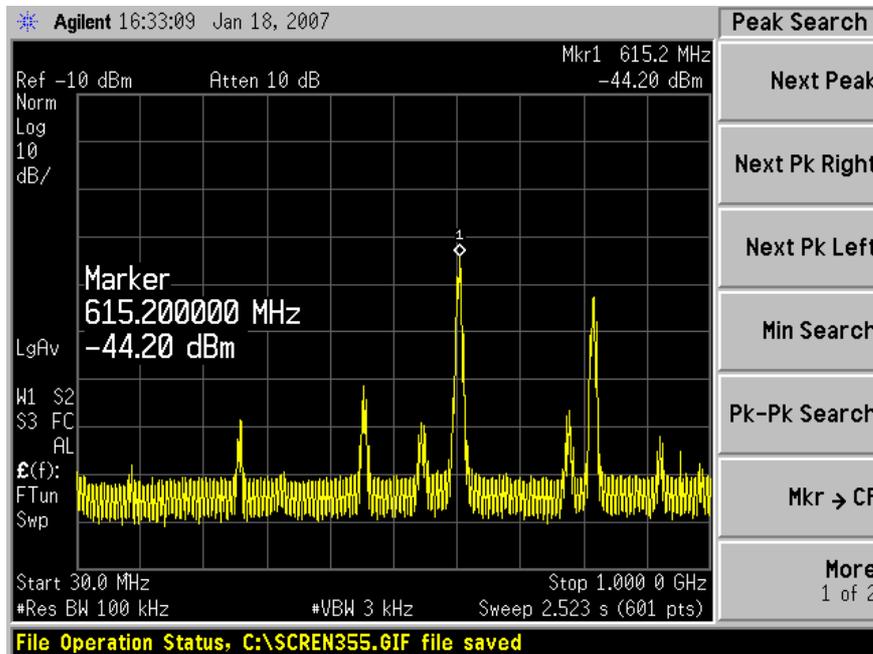
The testing was performed by Liu Rui on Jan 18, 2007

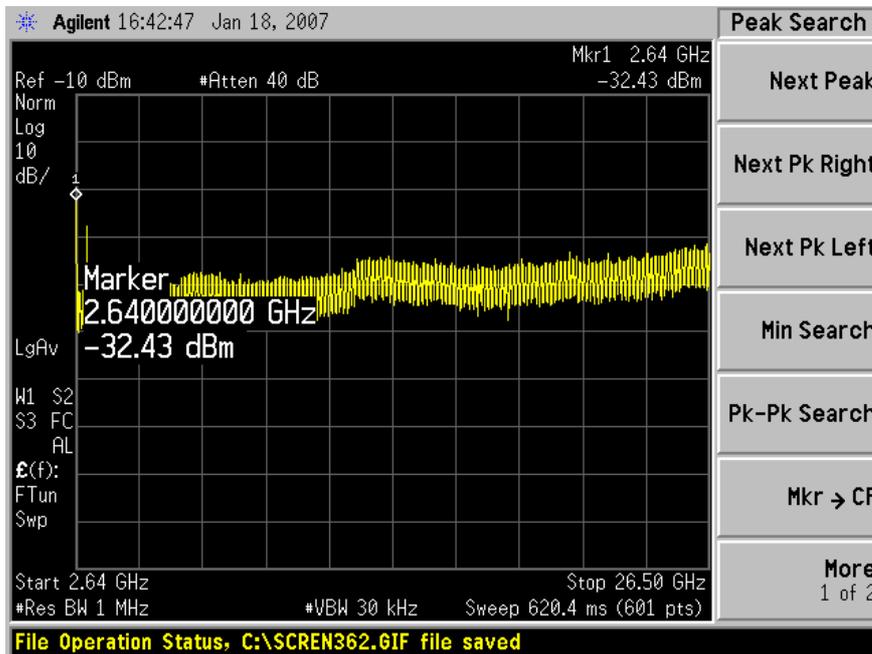
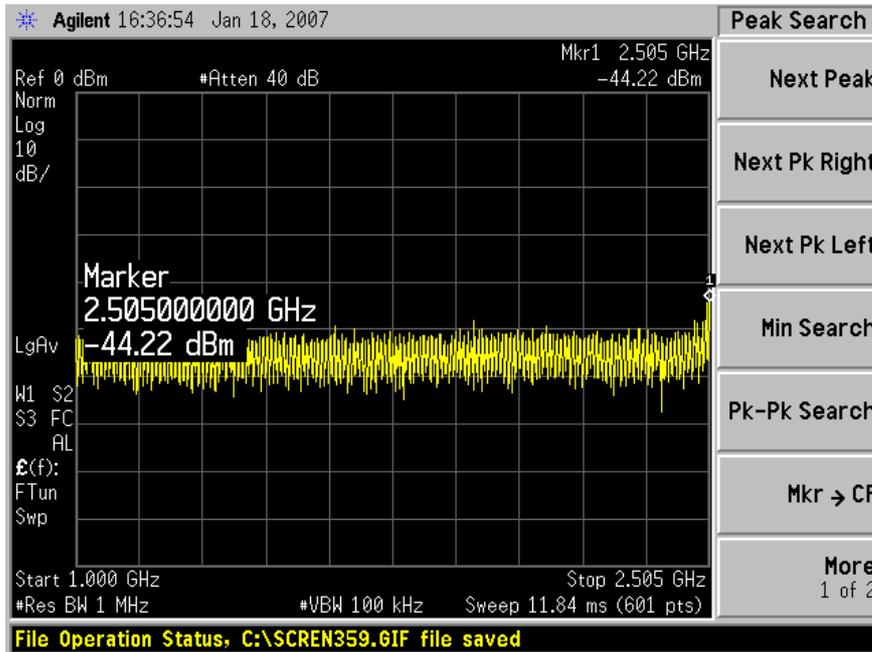
Test Result: Pass

Test Mode: *Transmitting WiMAX*

Test Data:

Frequency Range	Measurement (dBm)	attenuator loss (dB)	cable Loss (dB)	conductor level(dB)	Limit (dBm)	Margin (dBm)
30M-1GHz	-44.20	0	1.5	-42.70	-13	29.7
1GHz-2.521GHz	-44.22	0	1.5	-42.72	-13	29.72
2.571GHz-26.5GHz	-32.43	0	1.5	-30.93	-13	17.93





§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	2006-11-24	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

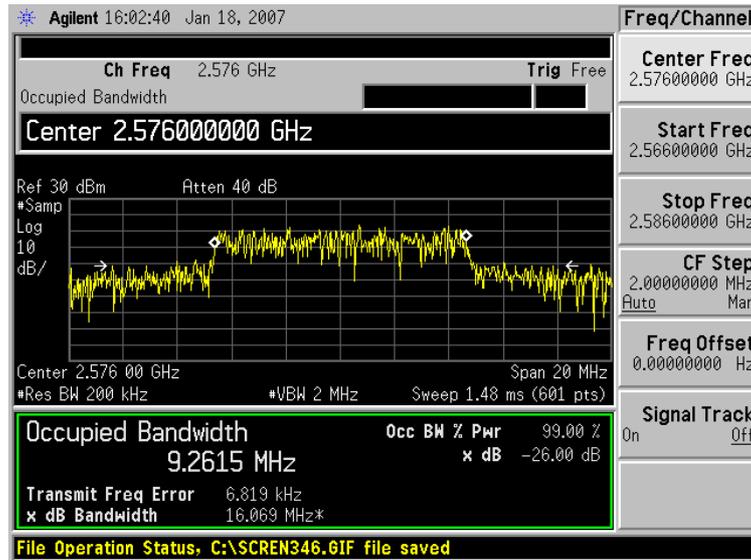
Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1009mbar

The testing was performed by Liu Rui on Jan 18, 2007.

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Channel frequency (MHz)	99% Power Bandwidth (MHz)	Limit (MHz)
2576	9.2615	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	2006-11-24	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

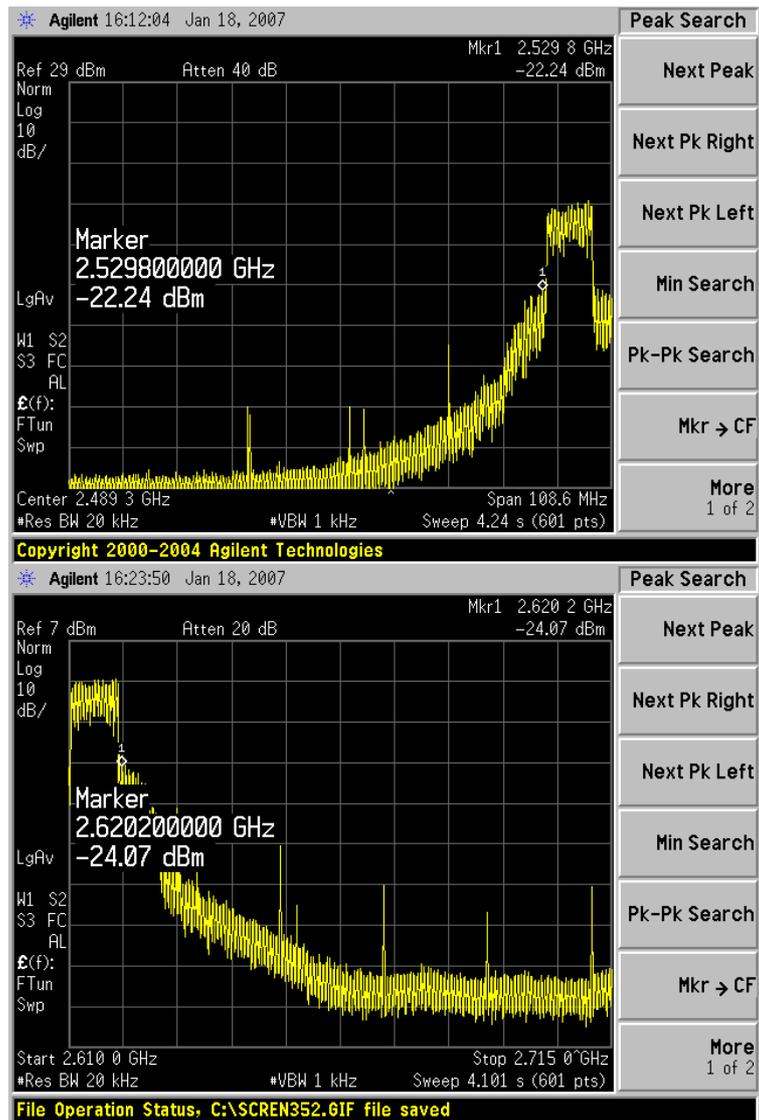
The testing was performed by Liu Rui on Jan 18, 2007

Test Result: Pass

Test Mode: *Transmitting WiMAX*

Test Data:

Frequency MHz	Emission dBm	Limit dBm
2529.8	-22.24	-13.00
2620.2	-24.07	-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 70 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.

Environmental Conditions

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

The testing was performed by Liu Rui on Jan 3-7, 2007.

Test Result: Pass

Test Mode: Transmitting WiMAX

Test Data:

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature				
Temperature °C	Power Supplied Vac	Frequency Measure Error Hz	Error ppm	Limit 0.02ppm
f=2546MHz				
-40	110	24.1254	0.0094	PASS

-30	110	18.4515	0.0070	PASS
-20	110	8.8142	0.0034	PASS
-10	110	-12.4523	0.0048	PASS
0	110	4.4117	0.0017	PASS
10	110	2.5347	0.0009	PASS
20	110	-8.5576	0.0033	PASS
30	110	-14.2548	0.0055	PASS
40	110	-9.5641	0.0037	PASS
50	110	6.0427	0.0023	PASS
55	110	5.2407	0.0020	PASS

Frequency Stability vs. Voltage

Frequency Stability vs. Voltage				
VoltageVac	Temperature °C	Frequency Measure	Error ppm	Limit 0.02ppm
f=2546MHz				
90	20	15.2412	0.0059	PASS
100	20	4.5128	0.0017	PASS
110	20	-5.1871	0.0020	PASS
120	20	-18.5402	0.0072	PASS
130	20	-10.2076	0.0040	PASS

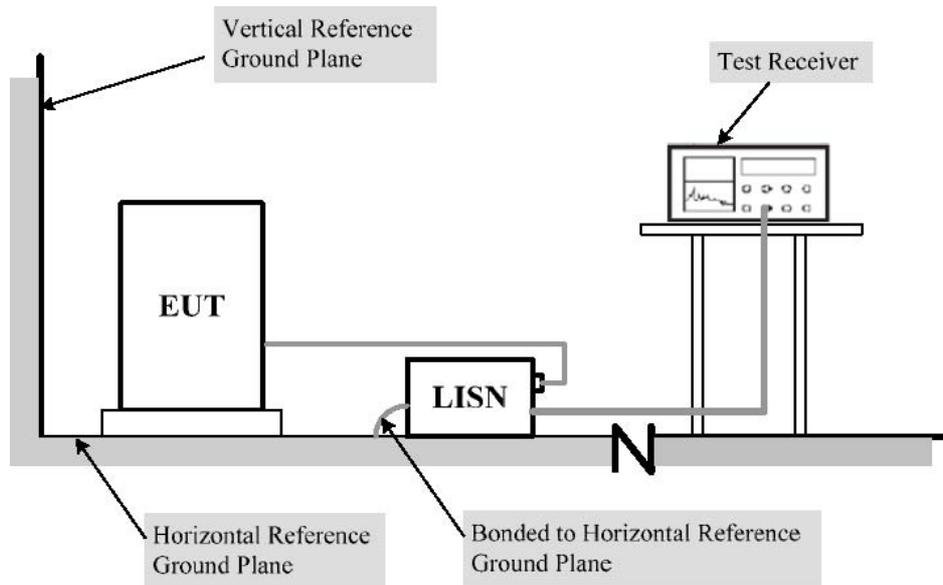
§15.107 (a)-CONDUCTED EMISSION

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 110 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
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.

Test Data Environmental Conditions

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

The testing was performed by Guan Bin on 2006-12-30

TEST RESULT: PASS

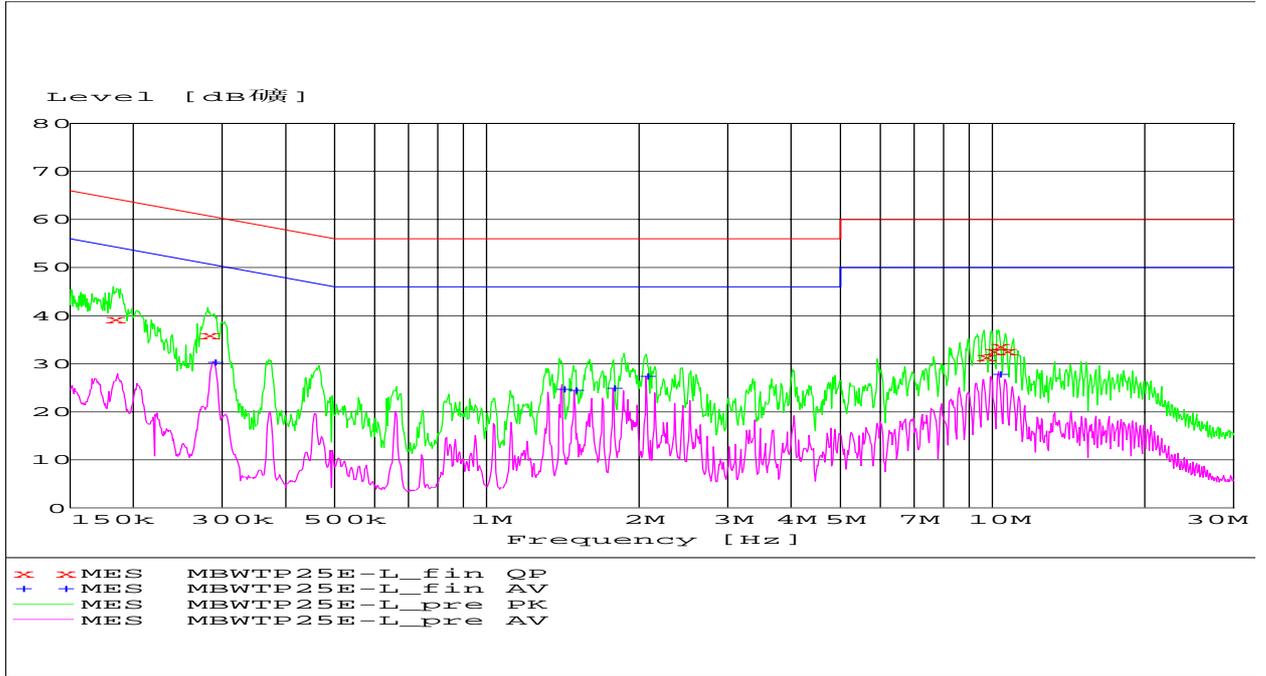
TEST

Conducted Emission

EUT: ZXMBW-TP25E
 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: 2006-12-30 / 11:26:30

SCAN TABLE: "PreviewTest"

Short Description:		EN 55022 Voltage				
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	0.4 %	MaxPeak	20.0 ms	9 kHz	ESH2-Z5
			Average			



MEASUREMENT RESULT: "MBWTP25E-L_fin QP"

2006-12-30 11:31

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line	PE
0.182408	39.30	9.9	64	25.1	L1	GND
0.280727	36.00	9.9	61	24.8	L1	GND
9.646144	31.40	9.9	60	28.6	L1	GND
9.959176	32.60	10.0	60	27.4	L1	GND
10.282368	33.70	10.0	60	26.3	L1	GND
10.616047	32.60	10.0	60	27.4	L1	GND

MEASUREMENT RESULT: "MBWTP25E-L_fin AV"

2006-12-30 11:31

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line dB	PE
0.287532	30.50	9.9	51	20.1	L1	GND
1.408329	24.90	9.9	46	21.1	L1	GND
1.489279	24.60	9.9	46	21.4	L1	GND
1.775250	25.10	9.9	46	20.9	L1	GND
2.066049	27.40	9.9	46	18.6	L1	GND
10.282368	28.00	10.0	50	22.1	L1	GND

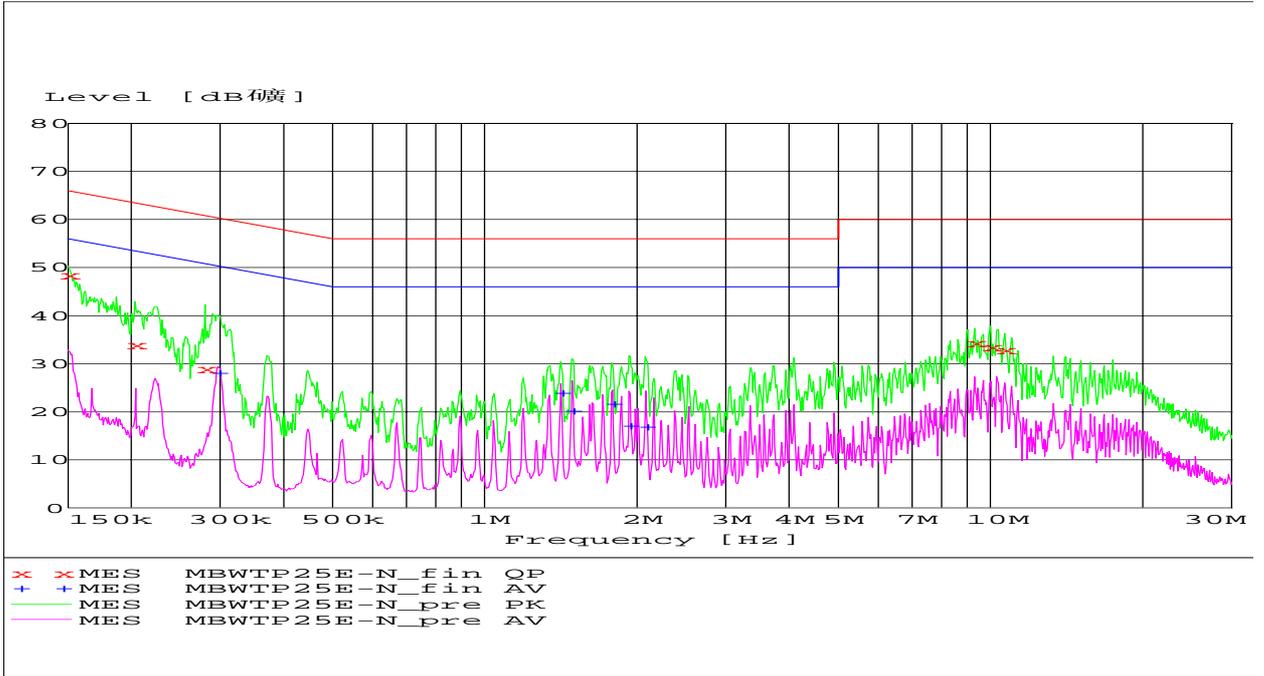
TEST

Conducted Emission

EUT: ZXMBW-TP25E
 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: 2006-12-30 / 10:54:51

SCAN TABLE: "PreviewTest"

Short Description:			EN 55022 Voltage			
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	0.4 %	MaxPeak	20.0 ms	9 kHz	ESH2-Z5
			Average			



MEASUREMENT RESULT: "MBWTP25E-N_fin QP"

2006-12-30 11:00

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line dB	PE
0.150000	48.50	9.9	66	17.5	N	GND
0.203167	34.00	9.9	64	29.5	N	GND
0.279609	28.90	9.9	61	32.0	N	GND
9.305727	34.50	9.9	60	25.5	N	GND
9.999013	33.60	10.0	60	26.4	N	GND
10.658511	33.00	10.0	60	27.0	N	GND

MEASUREMENT RESULT: "MBWTP25E-N_fin AV"

2006-12-30 11:00

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line dB	PE
0.296863	28.20	9.9	50	22.1	N	GND
1.413962	24.00	9.9	46	22.0	N	GND
1.489279	20.20	9.9	46	25.8	N	GND
1.789480	21.70	9.9	46	24.3	N	GND
1.930490	17.10	9.8	46	28.9	N	GND
2.082610	16.80	9.9	46	29.2	N	GND