FCC PART 22 TYPE APPROVAL

EMI MEASUREMENT AND TEST REPORT

For

ZTE Corporation

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

FCC ID: Q78-ZXCBTS802T

April 29, 2005

This Report Concerns:	**Equipment Type:**
☒ Original Report	CDMA Micro Base Transceiver Station

Test Engineer:	Sam Lin
Report No.:	RSZ05032301
Test Date:	March 28-April 1, 2005
Reviewed By:	Chris Zeng
Prepared By:	Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: +86-755-33320018 Fax: +86-755-33320008

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *ZTE Corporation*'s product, model number: ZXCBTS M802T; ZXCBTS R802T; or the "EUT" as referred to in this report is a CDMA Micro Base Transceiver Station. The EUT is measured approximately 63.0 cm L x 40.0cmW x 28.5cmH, rated input voltage: AC 120V/60Hz.

The following charts describe the modules what ZXCBTS M802T and ZXCBTS R802T have used.

ZXCBTS M802T			
NO.	MODULE NAME		
1	RFS	MPA802	
2		MLNA800	
3		MTRX（800M）	RFCM
			FS800
			RX800
			TX800
			IQ_BORAD
4		RFE (RF Filter)	MDUP800
			MDIV800
5	MPD (Power supply)		
6	TFS	GPSTM	
7	BDS	BDM800	

ZXCBTS R802T			
NO.	MODULE NAME		
1	RFS	MPA802	
2		MLNA800	
3		MTRX（800M）	RFCM
			FS800
			RX800
			TX800
			IQ_BORAD
4		RFE (RF Filter)	MDUP800
			MDIV800
5	MPD (Power supply)		
6	TFS	N/A	
7	Remote Fiber Module (RFM)		

Note:

RFS: Provides an air interface, completes the modulation transmitting and demodulation receiving of CDMA signals and implements related detection, monitor, configuration and control functions.
MPD: Power supply.
TFS: Provides time and frequency signals necessary for the BDS and RFS.
BDS: Completes the baseband modulation/demodulation of CDMA signals and also provides functions such as resources management, signaling processing and operation & maintenance. In addition, the BDS provides an Abis interface with the base station controller.
RFM: Remote Fiber Module, used to transmit CDMA baseband signals and system signaling.

** The test data gathered are from production sample, serial number which were provided by the manufacturer:*

ZXCBTS M802T:0510043050100033;
ZXCBTS R802T: 0510043050100043;

Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Subpart J and Part 22 Subpart H of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules for output power, modulation characteristic, occupied bandwidth, spurious emission at antenna terminal, field strength of spurious radiation, frequency stability, and conducted and radiated margin.

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 22 Subpart H - Public Mobile 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 Bay Area Compliance Lab Corp. (ShenZhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab Corp. (ShenZhen) 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.: 382179. 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

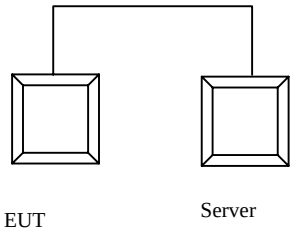
Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

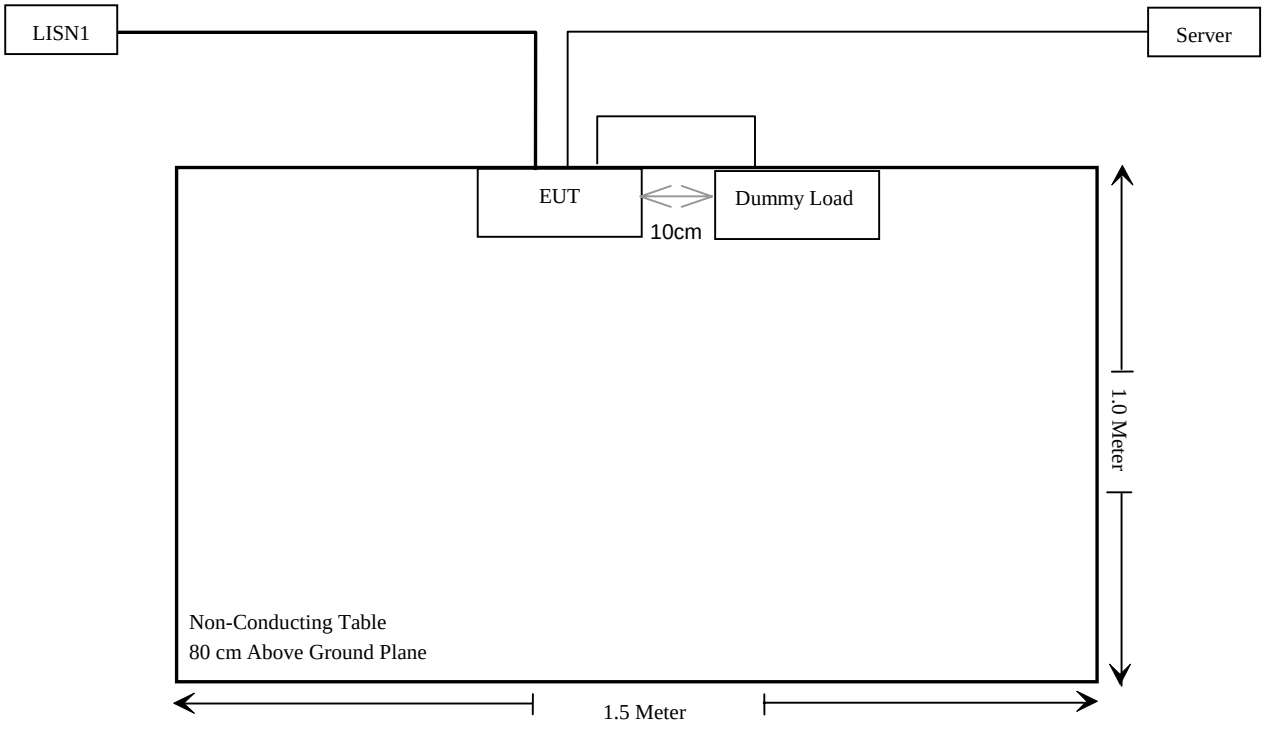
Equipment Modifications

BACL has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

ZXCBTS M802T

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107 (a)	Conduction Emission	Compliant
§2.1046, §22.913(a)	Effective radiated power	Compliant
§ 2.1091	RF Exposure	Compliant
§2.1047	Modulation characteristic	Compliant
§15.109(a)	Radiation Emission	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §22.917	Spurious Emissions AT Antenna Terminals	Compliant
§22.1049 §22.917 §22.905	Occupied Bandwidth	Compliant
§22.917	Band Edge	Compliant
§ 2.1055 (a) § 2.1055 (d) § 22.355	Frequency stability vs. temperature Frequency stability vs. voltage	Compliant

ZXCBTS R802T

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107 (a)	Conduction Emission	Compliant
§15.109(a)	Radiation Emission	Compliant

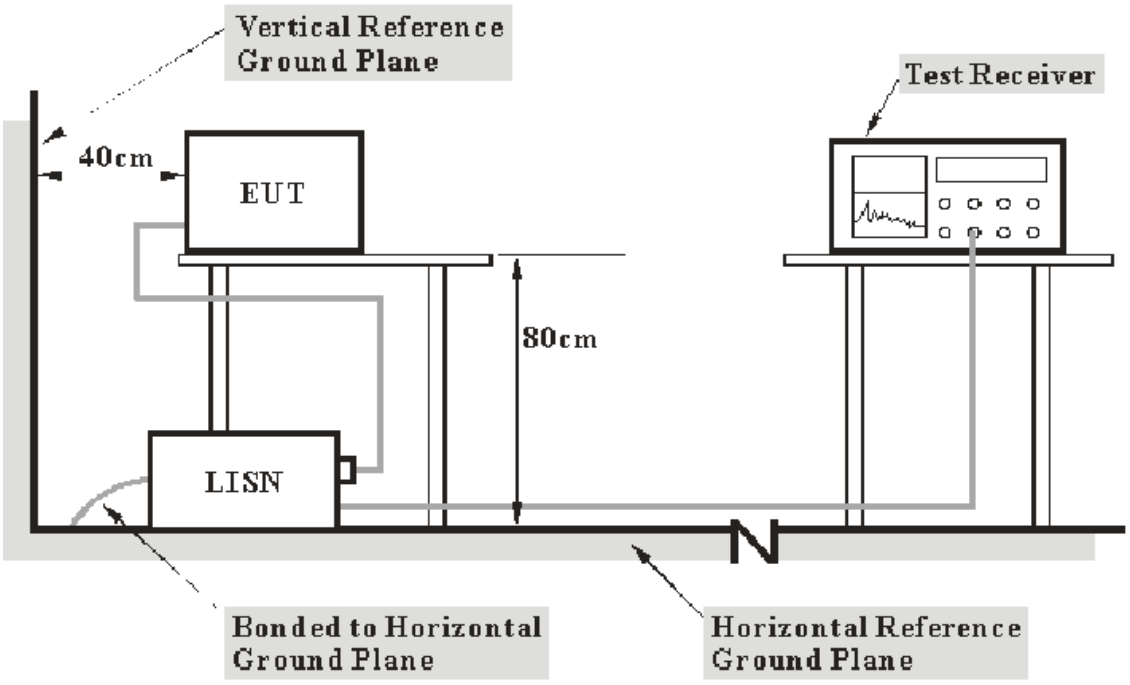
§15.107 (a)- CONDUCTED EMISSION

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 BACL is ±2.4 dB.

EUT Setup



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

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120 VAC/60 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	2004-9-24	2005-9-23
R&S	LISN	ESH2-Z5	100027	2004-9-24	2005-9-23
SCHWARZBECK	LISN	NNLK8129	8129-151	2004-9-24	2005-9-23
R&S	ISN	ENY22	100046	2004-9-24	2005-9-23
R&S	ISN	ENY41	100057	2004-9-24	2005-9-23
R&S	Pulse Limiter	ESH3-Z2	100063	2004-9-24	2005-9-23
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	2004-9-24	2005-9-23

***** Com-Power's LISN were used as the supporting equipment.
*** Statement of Tractability: BACL** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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

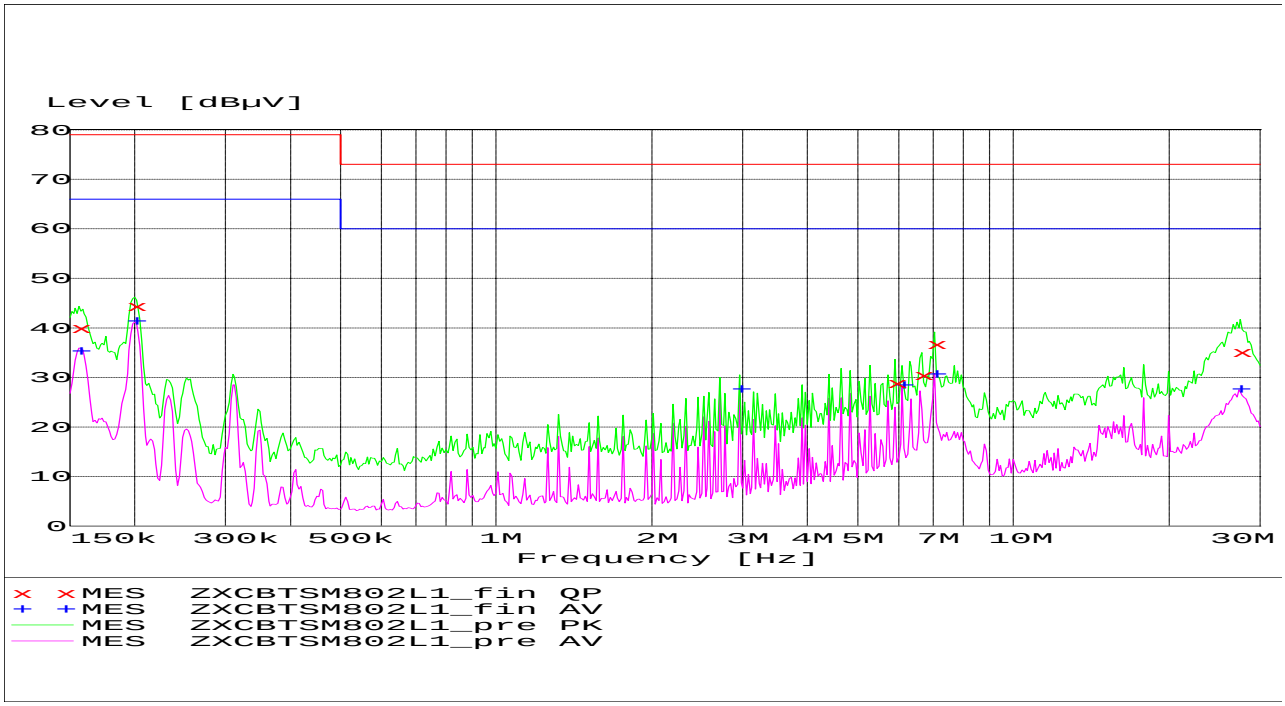
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing was performed by Sam Lin on 2005-3-28

Test result: Pass

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

EUT: ZXCBTS M802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: ZTE
Operator:
Test Specification: FCC PART 15 Class A
Comment: Line
Start of Test: 2005-3-28 / 14:02:42



MEASUREMENT RESULT: "ZXCBTSM802L1_fin QP"

2005-3-28 14:05

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.156097	40.00	9.9	79	39.1	L1	GND
0.199834	44.40	9.9	79	34.6	L1	GND
5.907402	28.80	10.0	73	44.2	L1	GND
6.657398	30.50	10.0	73	42.5	L1	GND
7.039280	36.60	10.0	73	36.4	L1	GND
27.496617	35.10	10.2	73	37.9	L1	GND

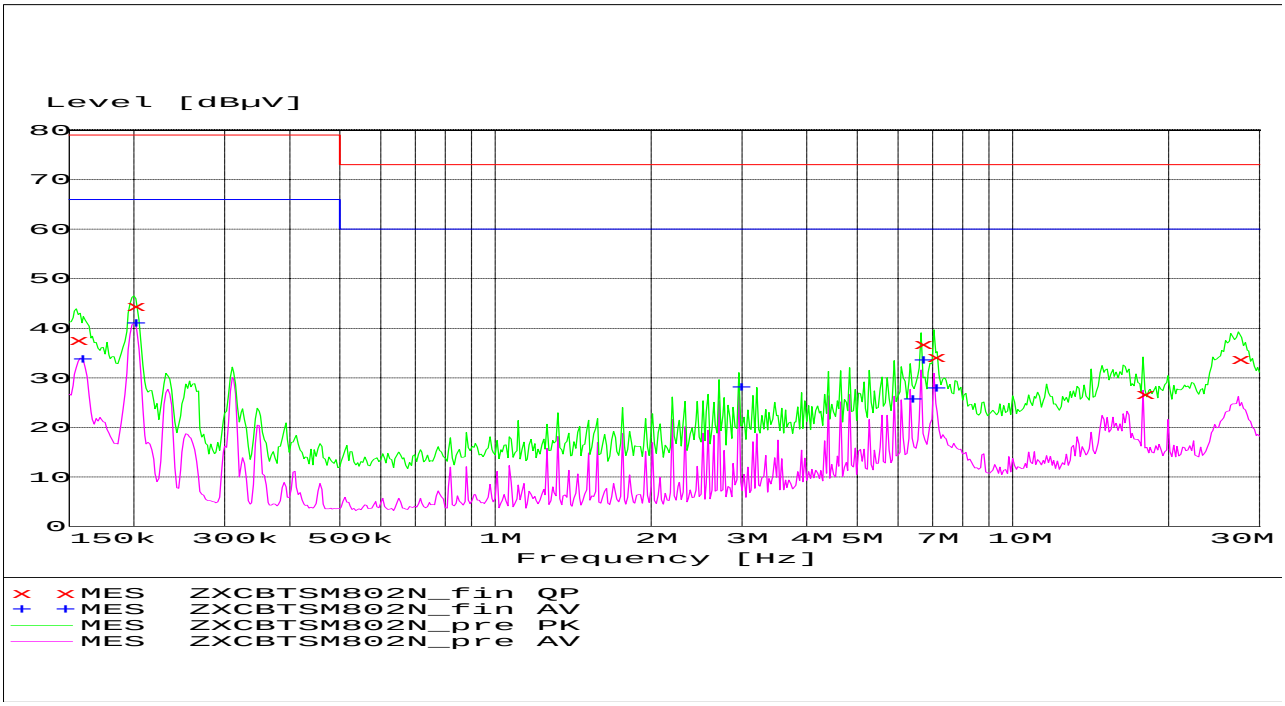
MEASUREMENT RESULT: "ZXCBTSM802T L1_fin AV"

2005-3-28 14:05

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.156097	35.20	9.9	66	30.8	L1	GND
0.199834	41.40	9.9	66	24.6	L1	GND
2.953454	27.70	10.0	60	32.3	L1	GND
6.098720	28.40	10.0	60	31.6	L1	GND
7.039280	30.60	10.0	60	29.4	L1	GND
27.278390	27.60	10.2	60	32.4	L1	GND

Conducted Emission

EUT: ZXCBTS M802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: ZTE
Operator:
Test Specification: FCC PART 15 Class A
Comment: Neutral
Start of Test: 2005-3-28 / 14:09:37



MEASUREMENT RESULT: "ZXCBTSM802T N_fin QP"

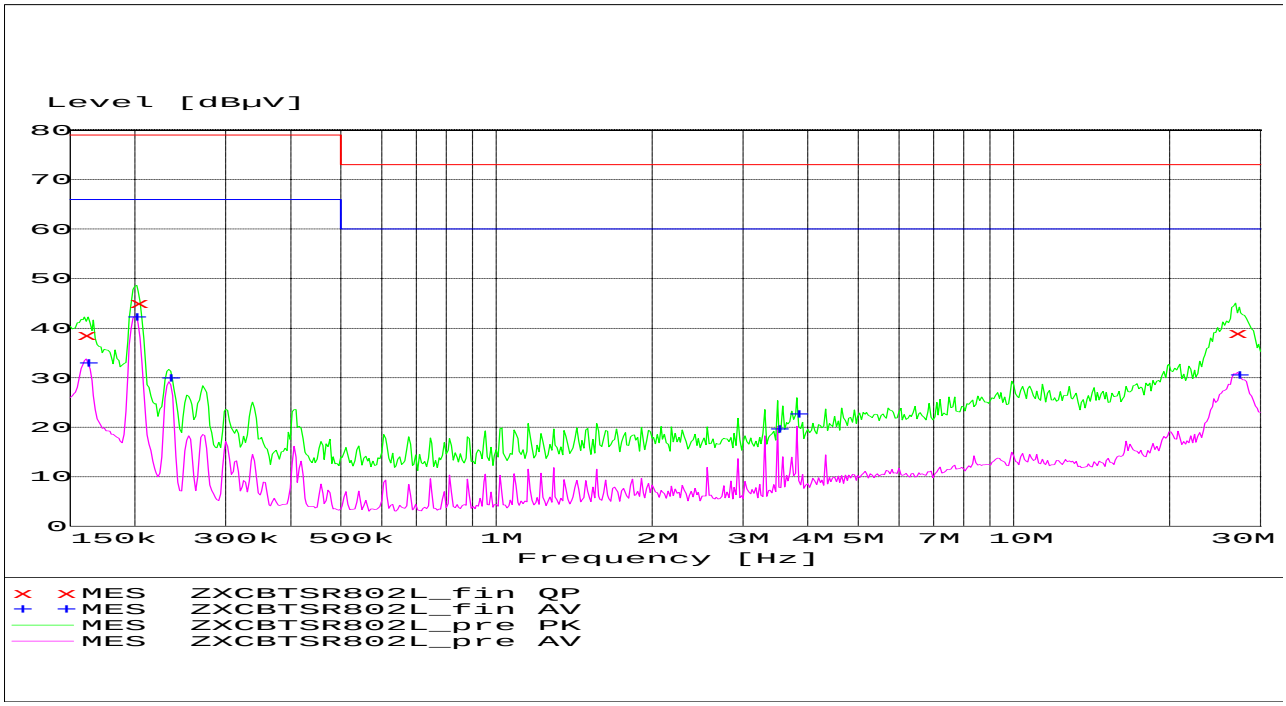
2005-3-28 14:12

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154858	37.60	9.9	79	41.4	N	GND
0.199834	44.40	9.9	79	34.6	N	GND
6.657398	36.70	10.0	73	36.3	N	GND
7.039280	34.10	10.0	73	38.9	N	GND
17.881771	26.60	10.1	73	46.4	N	GND
27.278390	33.80	10.2	73	39.2	N	GND

2005-3-28 14:12

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.157346	33.80	9.9	66	32.2	N	GND
0.199834	41.00	9.9	66	25.0	N	GND
2.953454	28.00	10.0	60	32.0	N	GND
6.346603	25.60	10.0	60	34.4	N	GND
6.657398	33.60	10.0	60	26.4	N	GND
7.039280	27.80	10.0	60	32.2	N	GND

EUT: ZXCBTS R802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: ZTE
Operator:
Test Specification: FCC PART 15 Class A
Comment: Line
Start of Test: 2005-3-28 / 15:31:55



MEASUREMENT RESULT: "ZXCBTSR802T L_fin QP"

2005-3-28 15:34

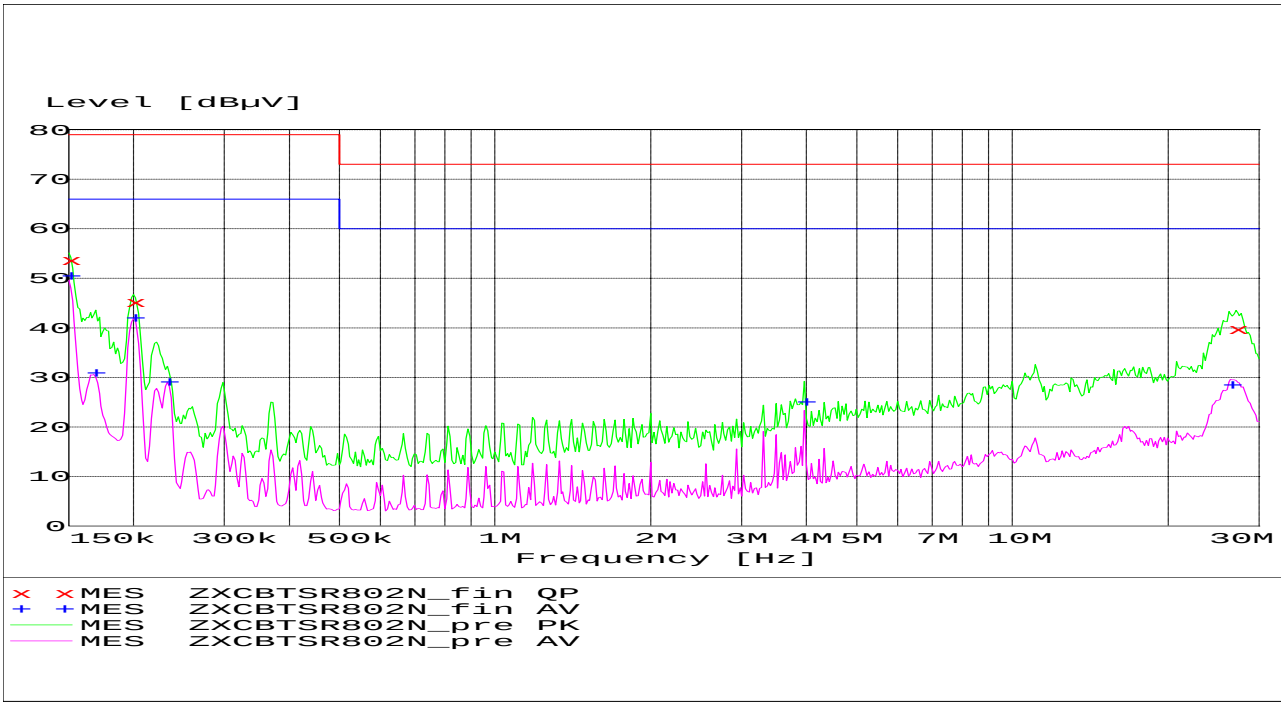
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.159873	38.60	9.9	79	40.4	L1	GND
0.201433	44.90	9.9	79	34.1	L1	GND
26.847117	38.90	10.2	73	34.1	L1	GND
0.270512	12.00	9.9	79	67.0	L1	GND
0.409371	13.3	9.9	79	65.7	L1	GND
3.811250	19.2	10.0	73	53.8	L1	GND

MEASUREMENT RESULT: "ZXCBTSR802T L_fin AV"

2005-3-28 15:34

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.161152	33.00	9.9	66	33.0	L1	GND
0.199834	42.10	9.9	66	23.9	L1	GND
0.232499	29.90	9.9	66	36.1	L1	GND
3.491415	19.60	9.9	60	40.4	L1	GND
3.811249	22.50	10.0	60	37.5	L1	GND
27.061894	30.50	10.2	60	29.5	L1	GND

EUT: ZXCBTS R802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: ZTE
Operator:
Test Specification: FCC PART 15 Class A
Comment: Neutral
Start of Test: 2005-3-28 / 15:41:35



MEASUREMENT RESULT: "ZXCBTSR802T N_fin QP"

2005-3-28 15:44

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	53.70	9.9	79	25.3	N	GND
0.199834	45.10	9.9	79	33.9	N	GND
27.061894	39.70	10.2	73	33.3	N	GND
0.221643	27.0	9.9	79	52.0	N	GND
0.297643	19.1	9.9	79	59.9	N	GND
3.966162	24.7	10.0	73	48.3	N	GND

MEASUREMENT RESULT: "ZXCBTSR802T N_fin AV"

2005-3-28 15:44

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.150000	50.40	9.9	66	15.7	N	GND
0.167702	30.80	9.9	66	35.2	N	GND
0.199834	42.00	9.9	66	24.0	N	GND
0.232499	29.00	9.9	66	37.0	N	GND
3.966157	25.00	10.0	60	35.0	N	GND
26.422664	28.50	10.2	60	31.5	N	GND

§2.1046, §22.913(a) - EFFECTIVE RADIATED POWER

Standard Applicable

According to FCC §2.1046 and §22.913 (a), the ERP of transmitters and cellular repeaters must not exceed 500 Watts.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2004-11-5	2005-11-4

*** Statement of Tractability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

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:	1015 mbar

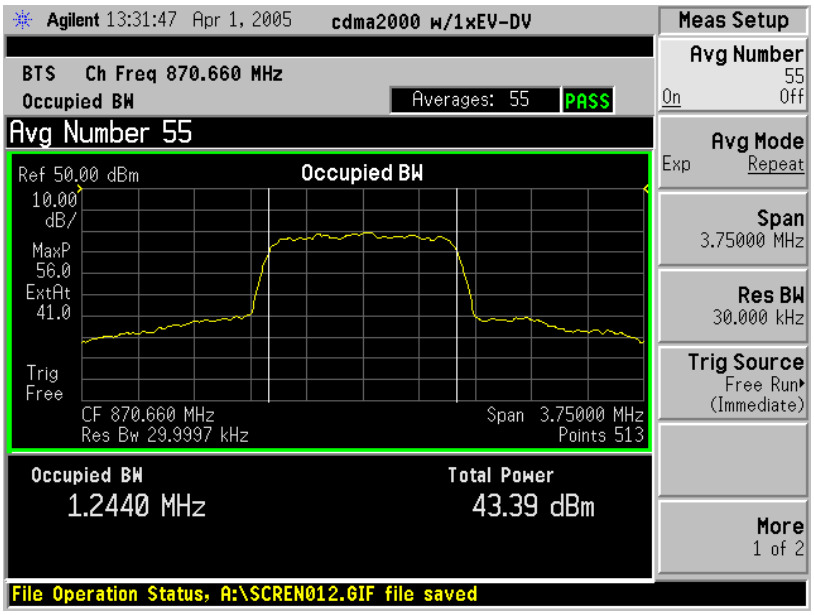
The testing was performed by Sam Lin on 2005-4-1

Model: ZXCBTS M802T

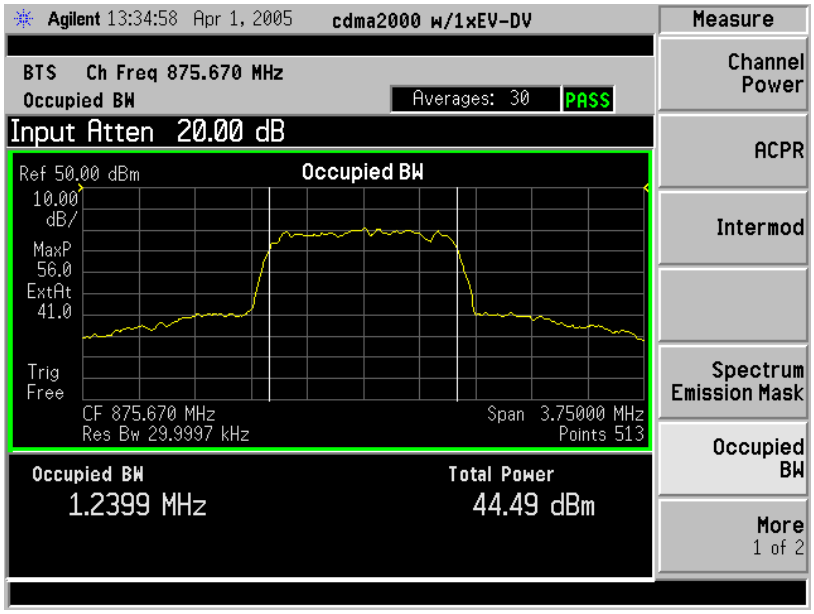
The result has been complied with the §2.1046, §22.913(a), see the following plot:

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
Low	870.66	43.39	21.83	500
Middle	875.67	44.49	28.12	500
High	879.36	43.84	24.21	500

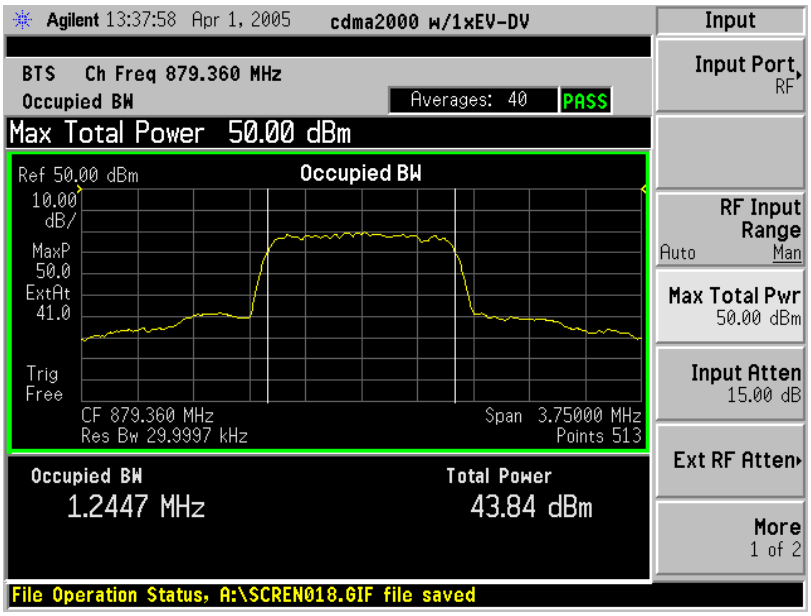
Channel 22



Channel 189



Channel 312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cdma2000 w/1xEV-DV
BTS Ch Freq 879.360 MHz
Occupied BW
Averages: 40
PASS
Max Total Power 50.00 dBm
Ref 50.00 dBm
Occupied BW
10.00 dB/
MaxP 50.0
ExtAt 41.0
Trig Free
CF 879.360 MHz
Res Bw 29.9997 kHz
Span 3.75000 MHz
Points 513
Occupied BW
1.2447 MHz
Total Power
43.84 dBm
File Operation Status, A:\SCREN018.GIF file saved
Input
Input Port RF
RF Input Range Auto Man
Max Total Pwr 50.00 dBm
Input Atten 15.00 dB
Ext RF Atten
More 1 of 2

§2.1047- MODULATION CHARACTERISTIC

Standard Applicable

Requirement: §2.1047.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2004-11-5	2005-11-4

*** Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Test Procedure

CDMA digital mode is used by EUT.

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

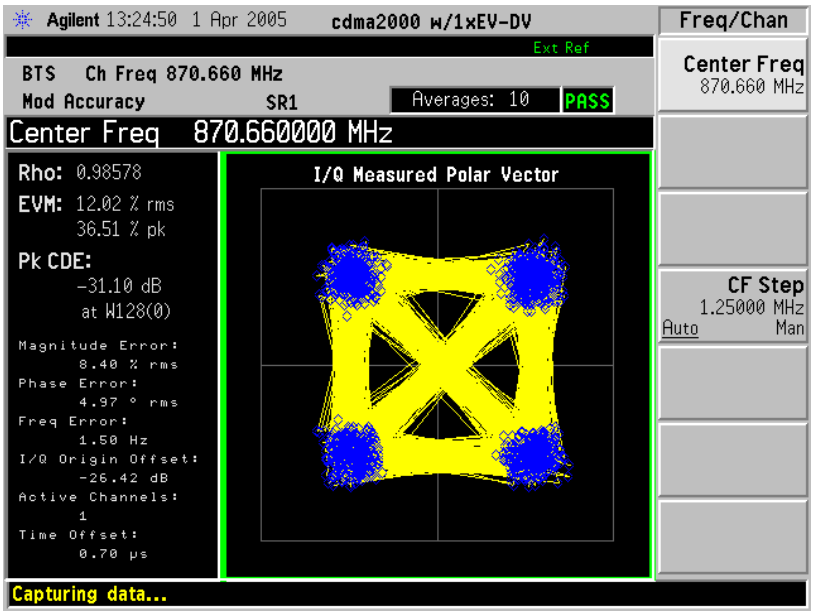
The testing was performed by Sam Lin on 2005-4-11

Model: ZXCBTS M802T

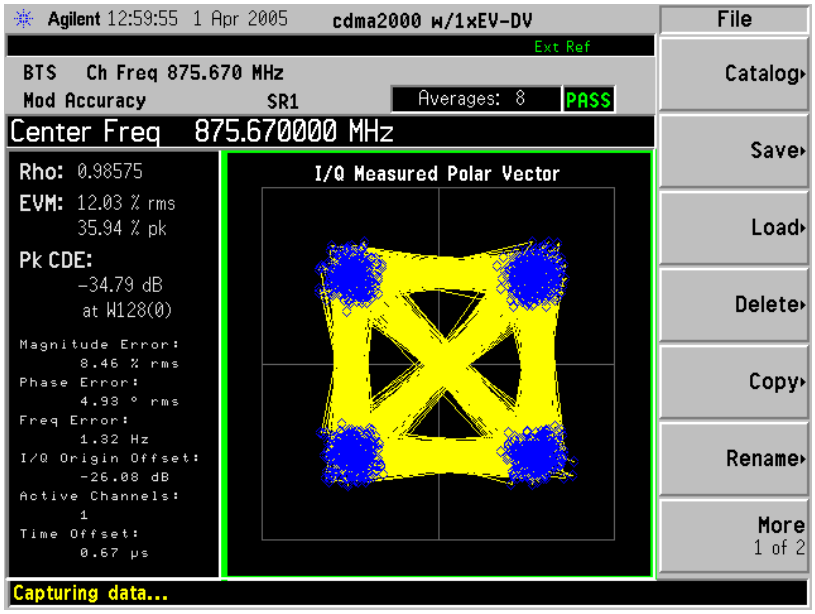
The result has been complied with the §2.1047, see the following plot:

Channel	Frequency (MHz)	Rho
Channel 22	870.66	0.98578
Channel 189	875.67	0.98575
Channel 312	879.36	0.98630

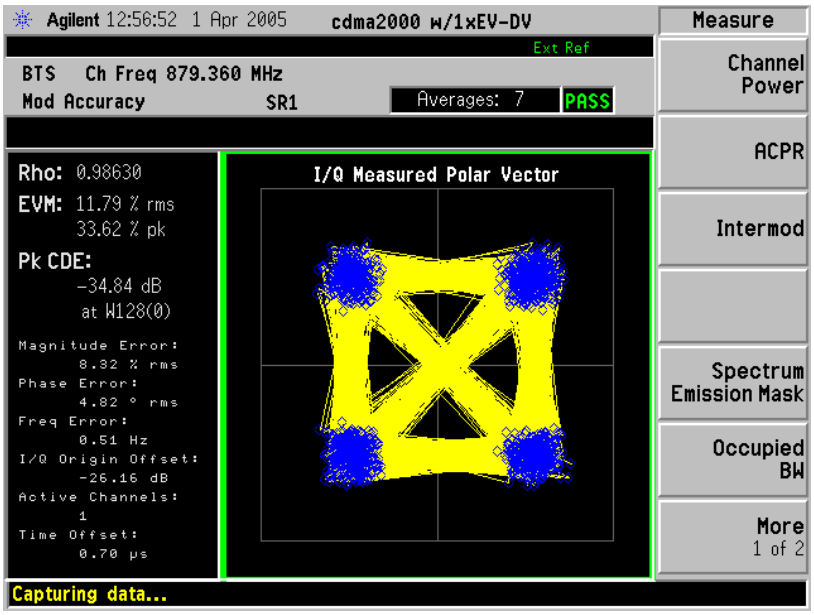
Channel 22



Channel 189



Channel 312


Agilent 12:56:52 1 Apr 2005
cdma2000 w/1xEV-DV
Ext Ref
BTS Ch Freq 879.360 MHz
Mod Accuracy SR1
Averages: 7
PASS
Rho: 0.98630
EVM: 11.79 % rms
33.62 % pk
Pk CDE:
-34.84 dB
at W128(0)
Magnitude Error:
8.32 % rms
Phase Error:
4.82 ° rms
Freq Error:
0.51 Hz
I/Q Origin Offset:
-26.16 dB
Active Channels:
1
Time Offset:
0.70 µs
I/Q Measured Polar Vector
Capturing data...
Measure
Channel Power
ACPR
Intermod
Spectrum Emission Mask
Occupied BW
More
1 of 2

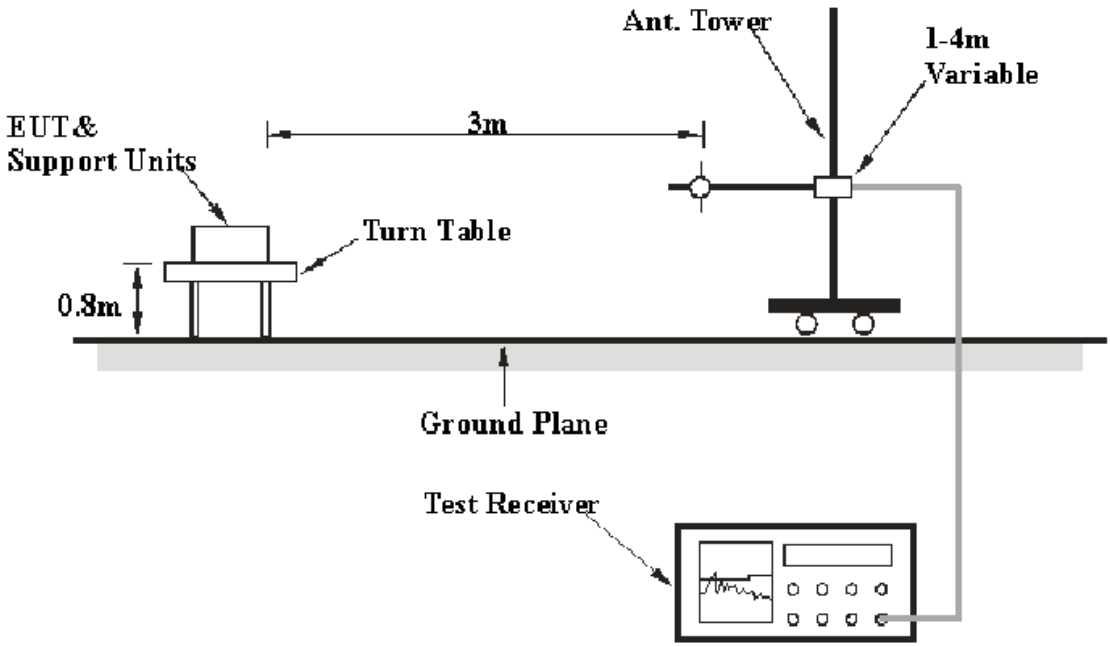
§15.109(a)- RADIATED EMISSION

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 radiation emissions measurement at BACL is ±4.0 dB.

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 1 GHz.

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

Frequency Range	***RBW***	***Video B/W***
30 – 1000 MHz	100 KHz	100 KHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESI26	100058	2004-9-24	2005-9-23
R&S	Ultra Broadband Antenna	HL562	100022	2003-3-7	2006-34
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2004-10-10	2007-10-7
Albatross	Anechoic Chamber	3m Site	N/A	2002-6-8	2005-6-5
R&S	Cable Set	RE Cable	N/A	2004-9-24	2005-9-23
R&S	Software	ES-K1	N/A	N/A	N/A

*** Statement of Traceability: BACL** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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:

Corr. Ampl. =Meter Reading + Antenna Loss+ Cable Loss - 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:

Margin = Corr. Ampl. –Limit

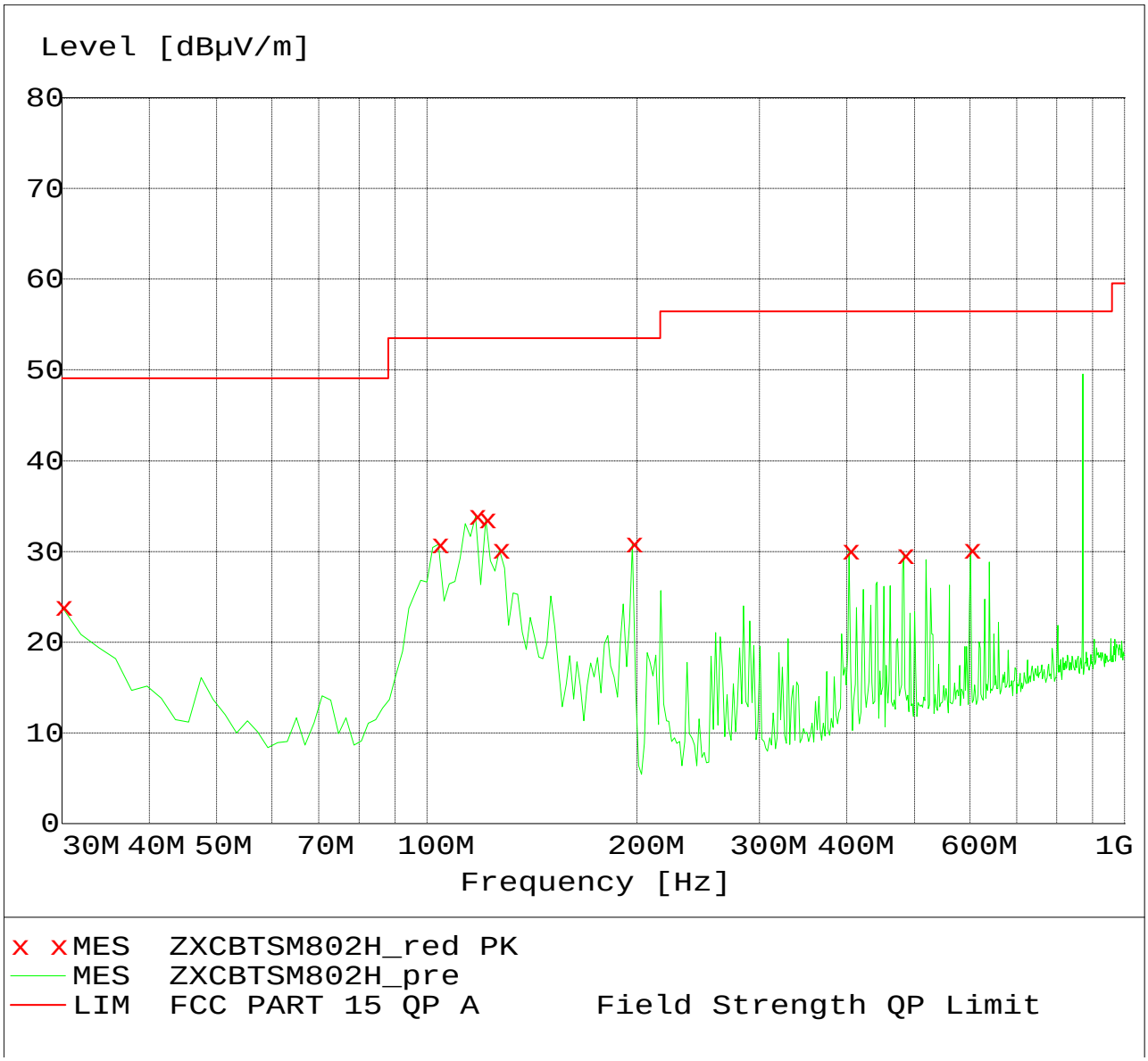
Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing were performed by Sam Lin on 2005-4-11, and the data were only for unintentional radiator and be subjected to verification

EUT: ZXCBTS M802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC PART15 Class A
Comment: Horizontal
Start of Test: 2005-3-29 / 10:50:57

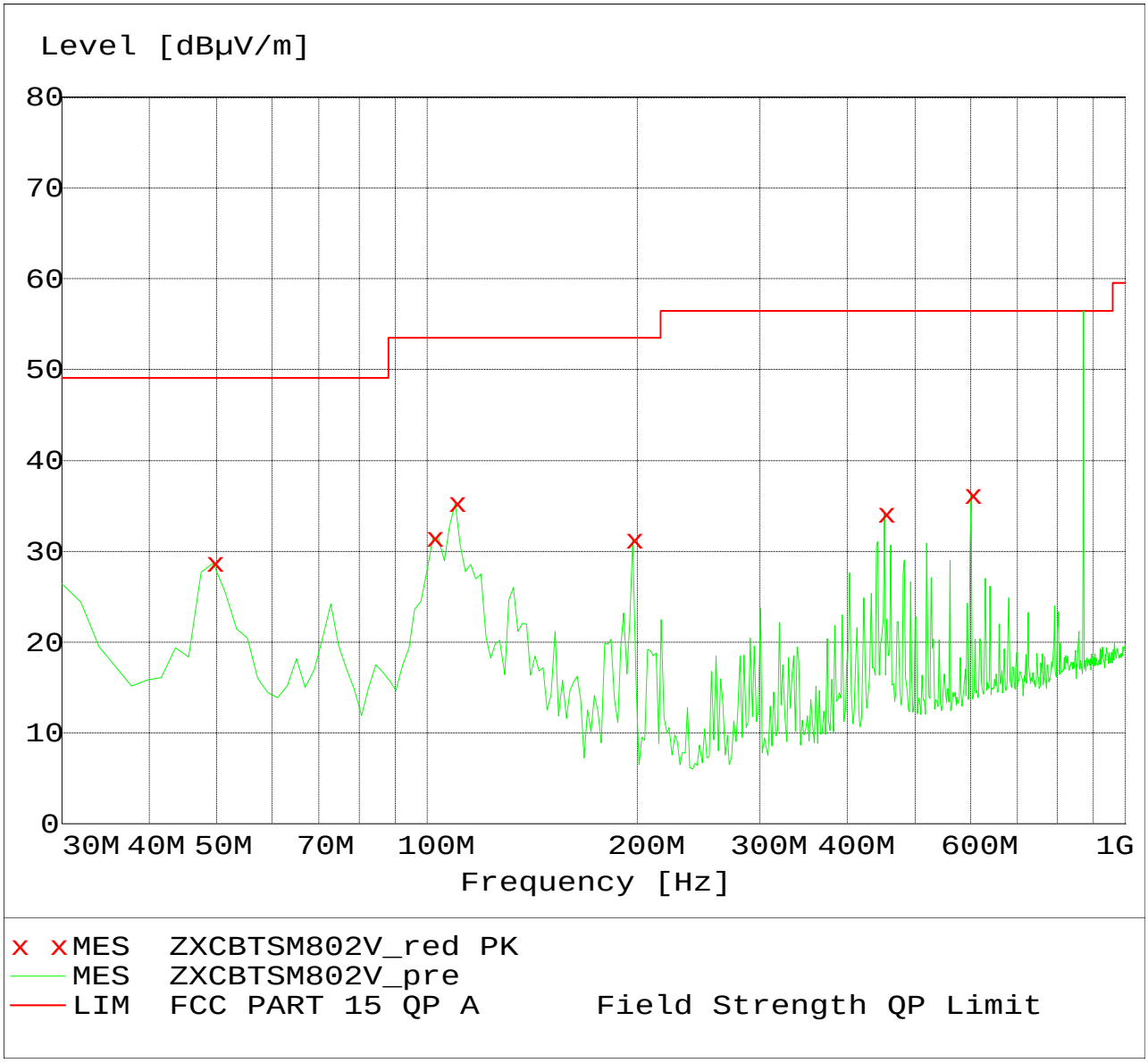


MEASUREMENT RESULT: "ZXCBTSM802T H_red PK"

2005-3-29 10:57

Frequency MHz	Level dBµV/m	Height cm	Azimuth deg	Polarisation	Transd dB	Limit dBµV/m	Margin dB
30.000000	23.88	100.0	270.00	HORIZONTAL	-16.9	49.1	25.2
103.867735	30.75	300.0	180.00	HORIZONTAL	-26.2	53.5	22.8
117.474950	33.84	200.0	0.00	HORIZONTAL	-25.6	53.5	19.7
121.362725	33.53	100.0	0.00	HORIZONTAL	-25.6	53.5	20.0
127.194389	30.20	300.0	180.00	HORIZONTAL	-26.1	53.5	23.3
197.174349	30.86	100.0	180.00	HORIZONTAL	-27.2	53.5	22.7
403.226453	30.02	100.0	0.00	HORIZONTAL	-19.5	56.4	26.4
482.925852	29.57	200.0	0.00	HORIZONTAL	-17.5	56.4	26.9
601.503006	30.09	100.0	180.00	HORIZONTAL	-15.1	56.4	26.3

EUT: ZXCBTS M802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC PART15 Class A
Comment: Vertical
Start of Test: 2005-3-29 / 10:34:23



MEASUREMENT RESULT: "ZXCBTSM802T V_red PK"

2005-3-29 10:44

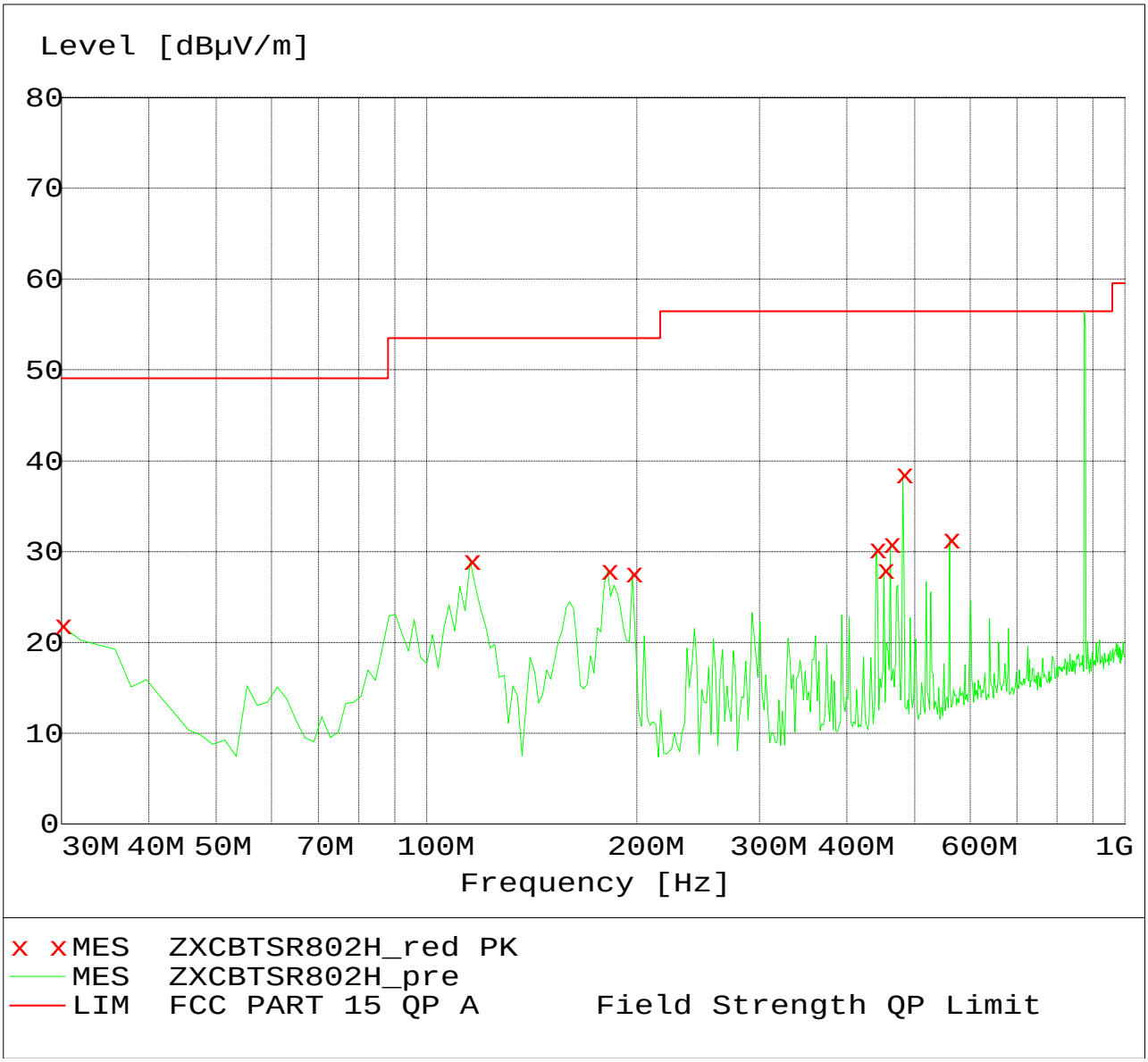
Frequency MHz	Level dBµV/m	Height cm	Azimuth deg	Polarisation	Transd dB	Limit dBµV/m	Margin dB
49.438878	28.72	100.0	270.00	VERTICAL	-27.9	49.1	20.4
109.699399	35.29	100.0	90.00	VERTICAL	-26.0	53.5	18.2
101.923840	31.48	100.0	90.00	VERTICAL	-27.2	53.5	22.0
197.174349	31.25	100.0	90.00	VERTICAL	-27.2	53.5	22.3
451.823647	34.16	100.0	270.00	VERTICAL	-18.3	56.4	22.3
601.503006	36.15	100.0	90.00	VERTICAL	-15.1	56.4	20.3

EUT: ZXCBTS R802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC PART15 Class A
Comment: Hor
Start of Test: 2005-3-29 / 15:33:46

SCAN TABLE: " FCC PART15 Class A ***Field***"

Short Description: FCC PART15 Class A Field Strength

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	100.0 kHz	QuasiPeak	20.0 ms	120 kHz	HL562-22dBuV/m



MEASUREMENT RESULT: "ZXCBTSR802T H_red PK"

2005-3-29 15:42

Frequency MHz	Level dBµV/m	Height cm	Azimuth deg	Polarisation	Transd dB	Limit dBµV/m	Margin dB
30.000000	21.87	100.0	90.00	HORIZONTAL	-16.9	49.1	27.2
115.531062	28.97	200.0	180.00	HORIZONTAL	-25.7	53.5	24.6
181.623246	27.84	100.0	180.00	HORIZONTAL	-26.5	53.5	25.7
197.174349	27.56	100.0	270.00	HORIZONTAL	-27.2	53.5	26.0
440.160321	30.28	200.0	90.00	HORIZONTAL	-18.6	56.4	26.2
451.823647	27.99	200.0	90.00	HORIZONTAL	-18.3	56.4	28.4
461.543086	30.80	200.0	90.00	HORIZONTAL	-18.0	56.4	25.6
480.981964	38.49	200.0	270.00	HORIZONTAL	-17.5	56.4	18.0
560.681363	31.28	200.0	90.00	HORIZONTAL	-15.8	56.4	25.2

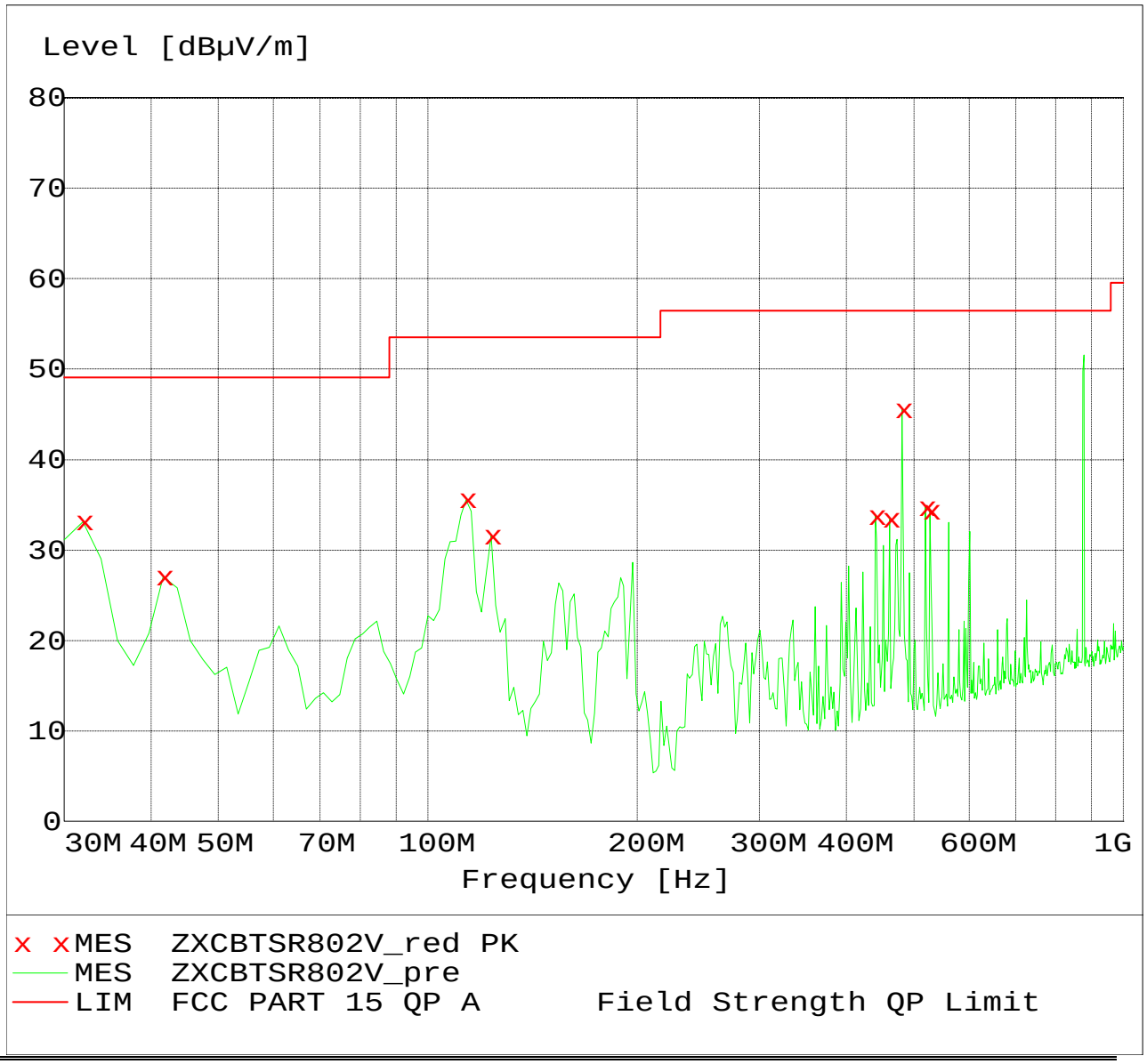
ZTE Corporation

EUT: ZXCBTSR802T
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC PART15 Class A
Comment: Ver
Start of Test: 2005-3-29 / 15:17:40

SCAN TABLE: " FCC PART15 Class A Field"

Short Description: FCC PART15 Class A Field Strength

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	100.0 kHz	QuasiPeak	20.0 ms	120 kHz	HL562-22dBuV/m



MEASUREMENT RESULT: "ZXCBTSR802T V_red PK"

2005-3-29 15:25

Frequency MHz	Level dBµV/m	Height cm	Azimuth deg	Polarisation	Transd dB	Limit dBµV/m	Margin dB
31.943888	33.14	100.0	0.00	VERTICAL	-17.9	49.1	15.9
41.663327	27.01	100.0	90.00	VERTICAL	-23.1	49.1	22.1
113.587174	35.56	100.0	90.00	VERTICAL	-25.8	53.5	18.0
123.306613	31.58	100.0	180.00	VERTICAL	-25.7	53.5	21.9
440.160321	33.74	200.0	180.00	VERTICAL	-18.6	56.4	22.7
461.543086	33.36	200.0	0.00	VERTICAL	-18.0	56.4	23.1
480.981964	45.52	100.0	180.00	VERTICAL	-17.5	56.4	10.9
519.859719	34.71	100.0	180.00	VERTICAL	-16.6	56.4	21.7
527.635271	34.25	100.0	180.00	VERTICAL	-16.6	56.4	22.2

§2.1053- SPURIOUS RADIATED EMISSIONS

Applicable Standard

Requirements: CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESI26	100058	2004-9-24	2005-9-23
R&S	Ultra Broadband	HL562	100022	2003-3-7	2006-3-4
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2004-10-10	2007-10-7
Albatross	Anechoic Chamber	3m Site	N/A	2002-6-8	2005-6-5
R&S	Cable Set	RE Cable	N/A	2004-9-24	2005-9-23
R&S	Software	ES-K1	N/A	N/A	N/A
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100013	2004-1-31	2007-1-28
SCHWARZBECK	VHF-UHF Broad band Antenna	VUBA 9117	SB3174	2003-3-31	2006-3-28
R&S	Signal Generator	SMR20	100098	2004-9-24	2005-9-23

*** Statement of Traceability: BACL** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 1g (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing was performed by Sam Lin on 2005-4-11

Model: ZXCBTS M802T

Indicated		Table	Test Antenna		Substituted			Antenna	Cable	Absolute	Limit	Margin
Frequency MHz	Ampl. dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm	Polar H/V	Gain Correction	Loss dB	Level dBm	dBm	dB
CHANNEL 22 F=870.66MHZ												
1096.19	41.02	90	1.0	H	1096.19	-57.0	H	7.40	2.7	-52.30	-13	-39.3
1072.14	42.91	0	1.5	V	1072.14	-59.3	V	7.40	2.7	-54.60	-13	-41.6
2635.27	38.66	270	1.0	V	2635.27	-63.0	V	10.10	4.4	-57.30	-13	-44.3
1741.32	36.25	270	1.0	H	1741.32	-63.5	H	8.70	3.6	-58.40	-13	-45.4
2611.98	38.38	270	1.0	H	2611.98	-67.0	H	10.10	4.4	-61.30	-13	-48.3
1192.38	41.49	0	1.5	V	1192.38	-66.0	V	7.40	2.9	-61.50	-13	-48.5
1741.32	37.63	180	1.0	V	1741.32	-68.0	V	8.70	3.6	-62.90	-13	-49.9
870.66	91.38	0	1.0	H	870.66	34.6	H	-1.24	2.5	30.86		
870.66	101.02	0	1.2	V	870.66	46.0	V	-1.24	2.5	42.26		
Channel 189 f=875.67MHz												
1192.38	37.9	270	1.0	H	1192.38	-58.0	H	7.4	2.9	-53.5	-13	-40.5
1084.16	37.25	270	1.0	H	1084.16	-62.4	H	7.4	2.7	-57.7	-13	-44.7
1036.07	37.81	270	1.0	H	1036.07	-62.5	H	7.4	2.7	-57.8	-13	-44.8
1168.33	39.35	270	1.5	V	1168.33	-62.5	V	7.4	2.7	-57.8	-13	-44.8
1751.34	35.53	270	1.0	H	1751.34	-64.0	H	8.7	3.6	-58.9	-13	-45.9
2623.32	38.13	270	1.0	V	2623.32	-65.0	V	10.1	4.4	-59.3	-13	-46.3
2623.32	37.41	270	1.0	H	2623.32	-68.0	H	10.1	4.4	-62.3	-13	-49.3
1216.43	37.25	0	1.5	V	1216.43	-67.0	V	7.4	2.9	-62.5	-13	-49.5
1757.51	35.35	0	1.5	V	1757.51	-70.3	V	8.7	3.6	-65.2	-13	-52.2
875.67	101.13	0	1.2	V	875.67	46.8	V	-1.24	2.5	43.06		
875.67	89.29	0	1.0	H	875.67	32.7	H	-1.24	2.5	28.96		
Channel 312 f=879.36MHz												
1758.72	40.29	180	1.5	H	1758.72	-58.4	H	8.7	3.6	-53.3	-13	-40.3
1024.05	43.06	90	1.0	V	1024.05	-58.0	V	7.4	2.7	-53.3	-13	-40.3
1120.24	37.66	0	1.5	H	1120.24	-58.5	H	7.4	2.9	-54.0	-13	-41
1096.19	38.38	180	1.5	H	1096.19	-60.8	H	7.4	2.7	-56.1	-13	-43.1
1060.12	37.47	180	1.5	H	1060.12	-61.0	H	7.4	2.7	-56.3	-13	-43.3
2638.08	38.68	0	1.5	V	2638.08	-63.0	V	10.1	4.4	-57.3	-13	-44.3
1168.34	38.79	270	1.0	V	1168.34	-64.6	V	7.4	2.9	-60.1	-13	-47.1
1096.19	37.3	270	1.5	V	1096.19	-67.1	V	7.4	2.7	-62.4	-13	-49.4
2635.27	38.52	90	1.0	H	2635.27	-68.2	H	10.1	4.4	-62.5	-13	-49.5
1758.72	35.37	270	1.5	V	1758.72	-70.3	V	8.7	3.6	-65.2	-13	-52.2
879.36	103.81	0	1.2	V	879.36	48.2	V	-1.54	2.5	44.16		
879.36	91.09	0	1.0	H	879.36	34.3	H	-1.54	2.5	30.26		

§2.1051, §22.917(a)- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

Requirements: CFR 47§ 2.1051. §22.917(a)

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1057

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2004-11-10	2005-11-9

*** Statement of Traceability: BACL** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 10^{th} harmonic.

Test Data

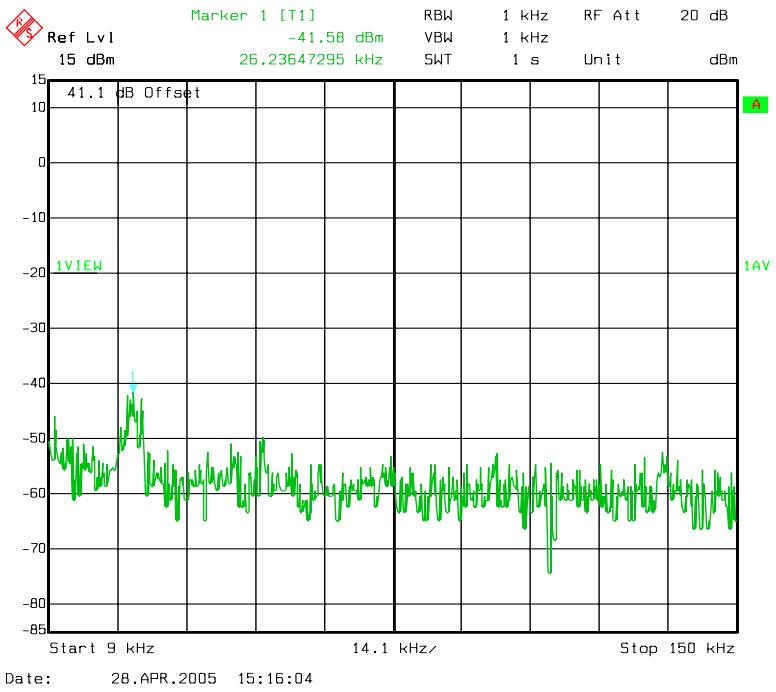
Environmental Conditions

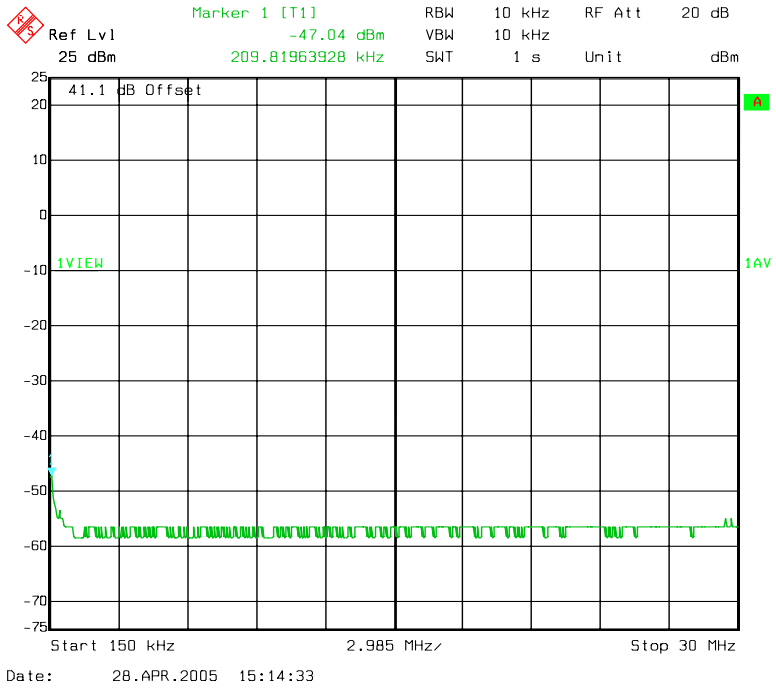
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

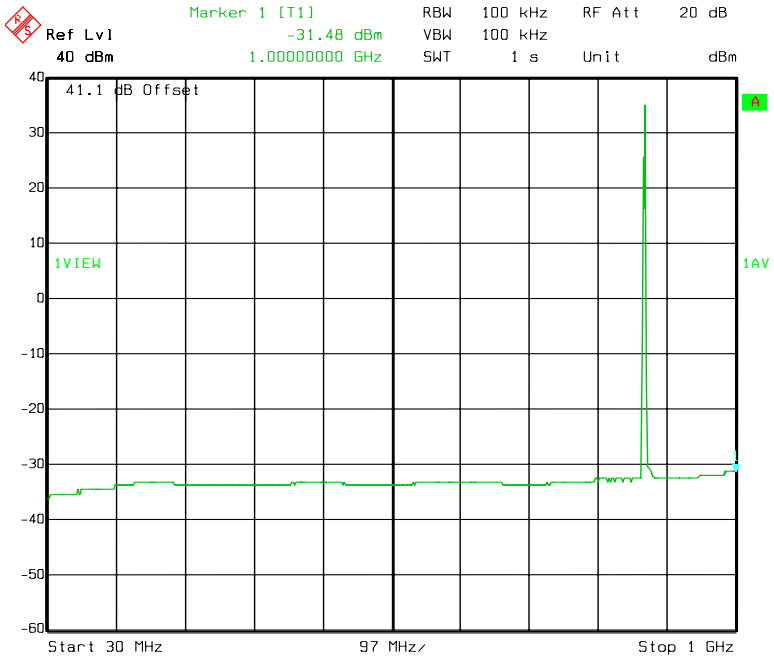
The testing was performed by Sam Lin on 2005-4-1

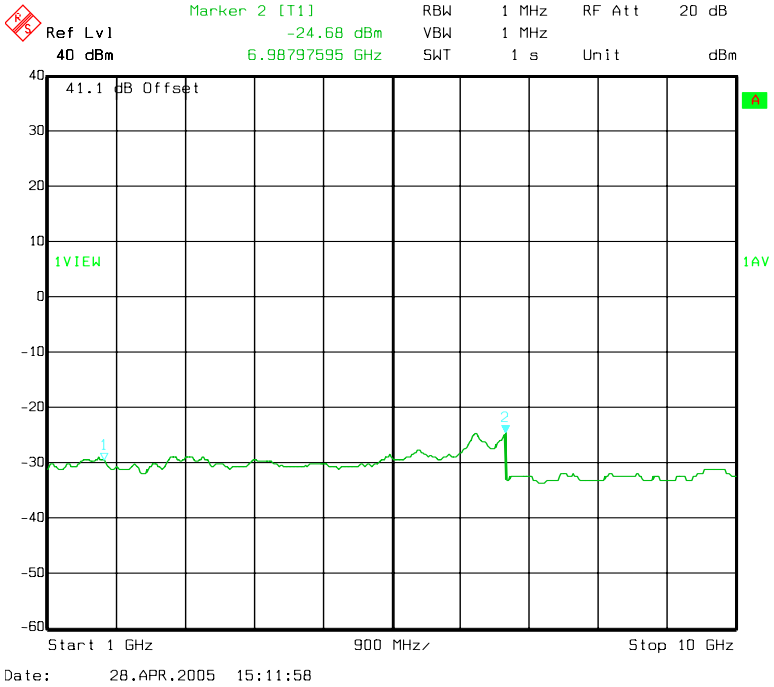
Model: ZXCBTS M802T

Channel 22

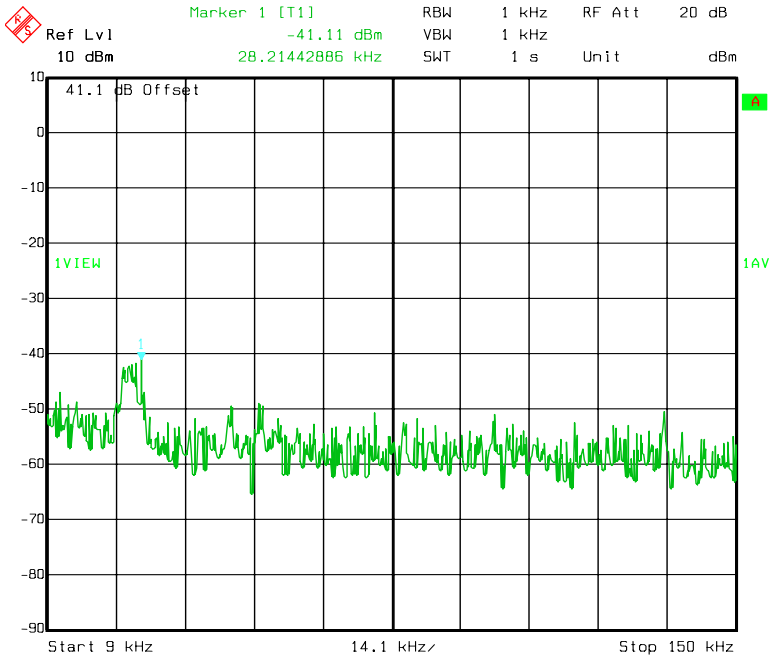


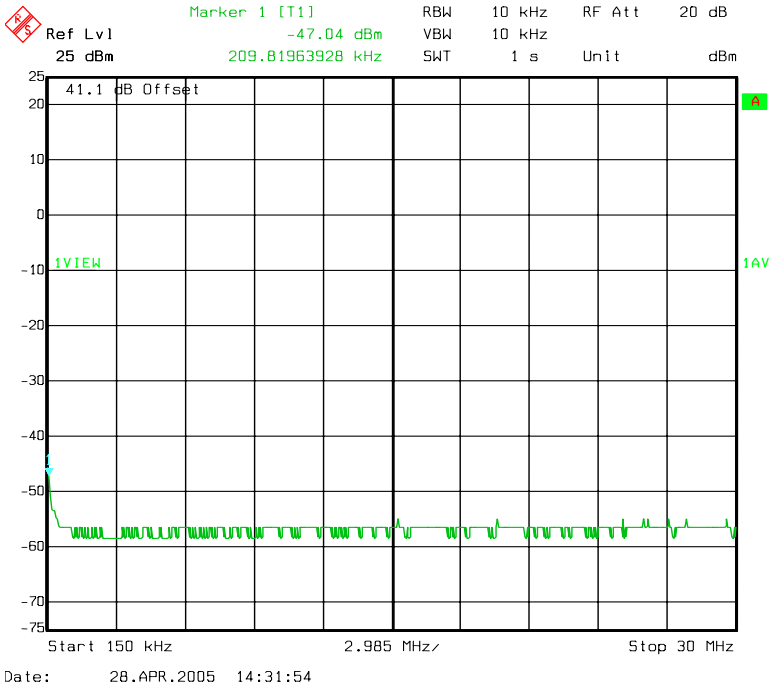


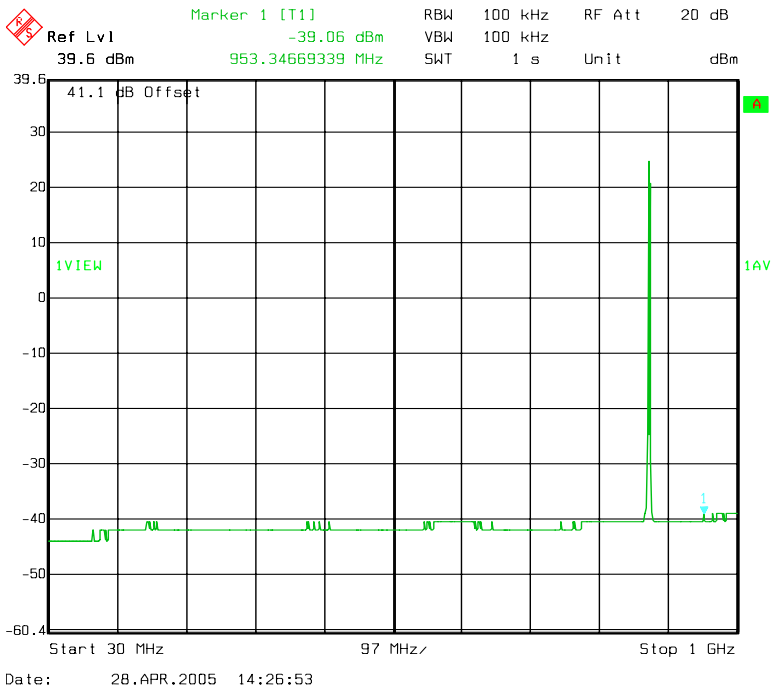

Marker 1 [T1]
-31.48 dBm
1.00000000 GHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 20 dB
Unit dBm
Ref Lvl
40 dBm
41.1 dB Offset
1VIEW
1AV
A
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 28.APR.2005 15:13:16

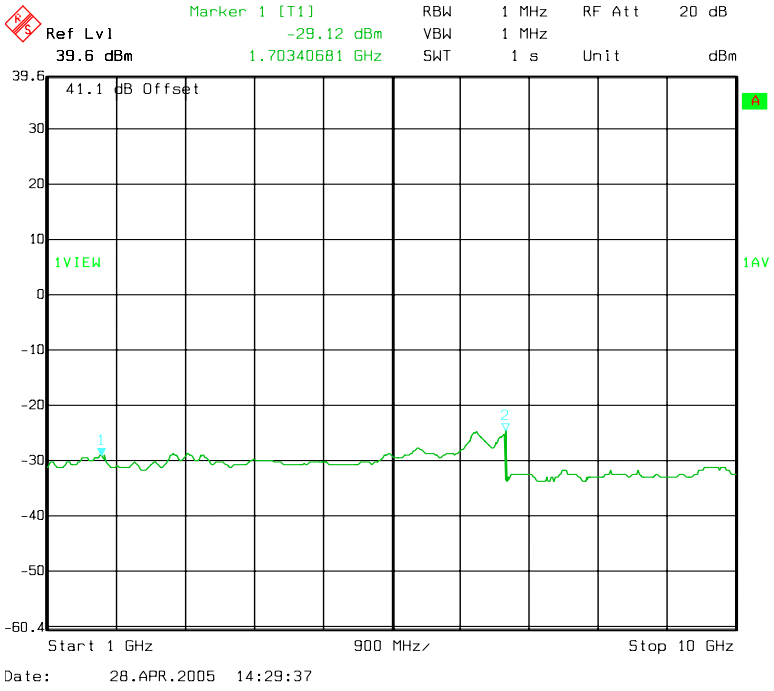

Marker 2 [T1]
-24.68 dBm
6.98797595 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 20 dB
Unit dBm
Ref Lvl
40 dBm
41.1 dB Offset
1VIEW
1AV
A
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 28.APR.2005 15:11:58

Channel 189

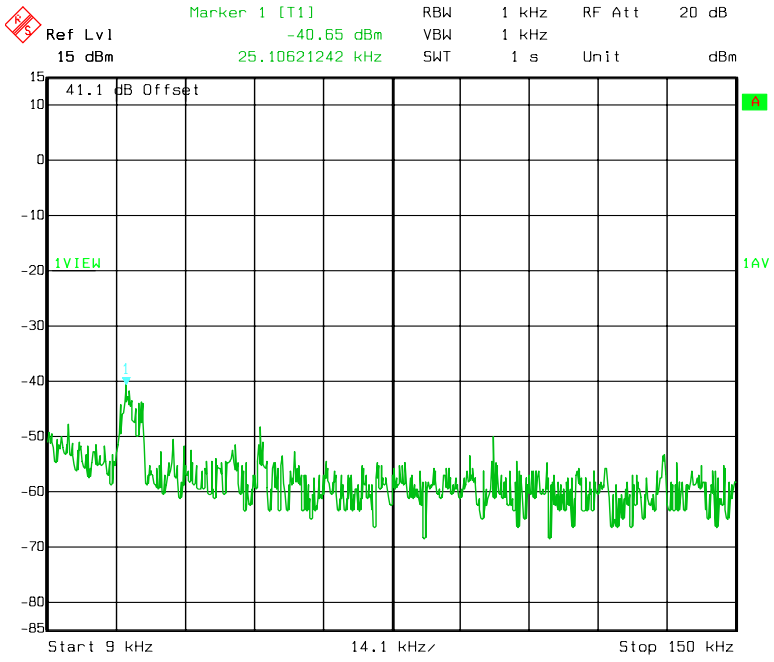

Marker 1 [T1]
RBW 1 kHz
RF Att 20 dB
Ref Lvl
-41.11 dBm
VBW 1 kHz
10 dBm
28.21442886 kHz
SWT 1 s
Unit dBm
41.1 dB Offset
1VIEW
1AV
Start 9 kHz
14.1 kHz/
Stop 150 kHz
Date: 28.APR.2005 14:34:13

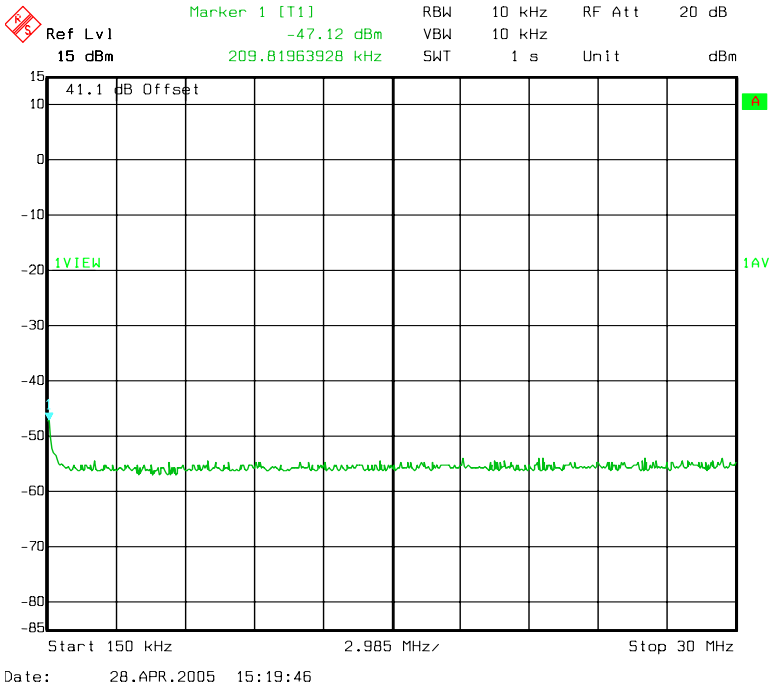

Marker 1 [T1]
RBW 10 kHz
RF Att 20 dB
Ref Lvl
-47.04 dBm
VBW 10 kHz
25 dBm
209.81963928 kHz
SWT 1 s
Unit dBm
41.1 dB Offset
1VIEW
1AV
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 28.APR.2005 14:31:54

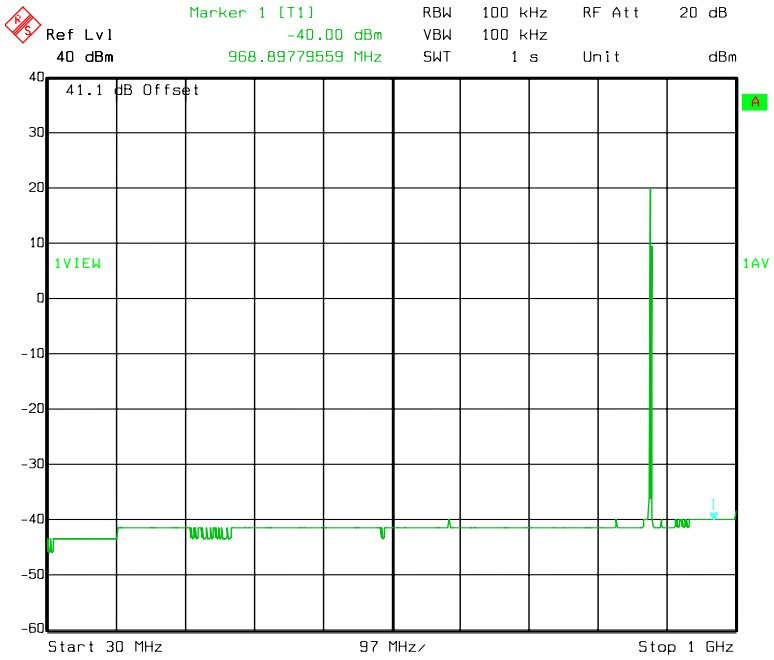

Marker 1 [T1]
Ref Lvl
39.6 dBm
-39.06 dBm
953.34669339 MHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 20 dB
Unit dBm
41.1 dB Offset
1VIEW
1AV
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 28.APR.2005 14:26:53

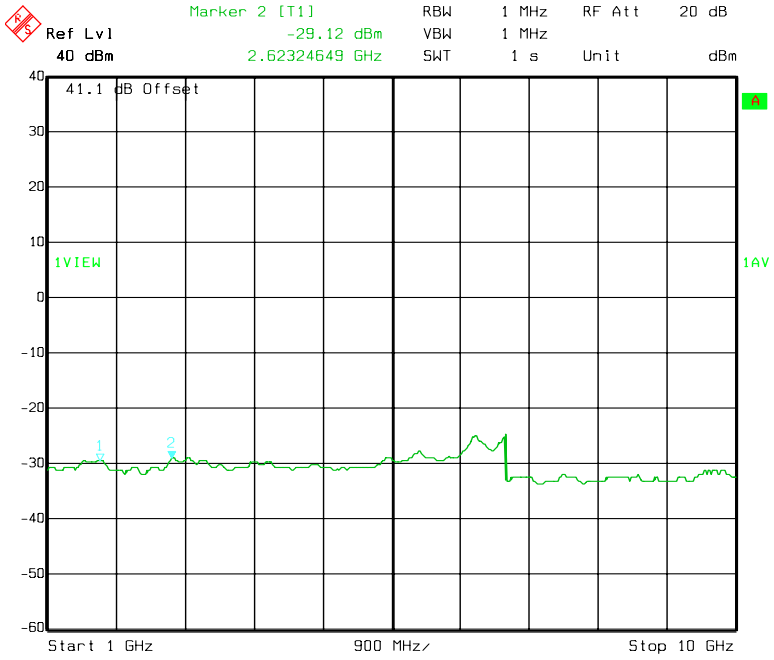

Marker 1 [T1]
Ref Lvl
39.6 dBm
-29.12 dBm
1.70340681 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 20 dB
Unit dBm
41.1 dB Offset
1VIEW
1AV
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 28.APR.2005 14:29:37

Channel 312


Marker 1 [T1]
Ref Lvl
15 dBm
-40.65 dBm
25.10621242 kHz
RBW 1 kHz
VBW 1 kHz
SWT 1 s
RF Att 20 dB
Unit dBm
41.1 dB Offset
1VIEW
1AV
A
Start 9 kHz
14.1 kHz/
Stop 150 kHz
Date: 28.APR.2005 15:18:32


Marker 1 [T1]
Ref Lvl
15 dBm
-47.12 dBm
209.81963928 kHz
RBW 10 kHz
VBW 10 kHz
SWT 1 s
RF Att 20 dB
Unit dBm
41.1 dB Offset
1VIEW
1AV
A
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 28.APR.2005 15:19:46


Marker 1 [T1]
RBW 100 kHz
RF Att 20 dB
Ref Lvl
-40.00 dBm
VBW 100 kHz
40 dBm
968.89779559 MHz
SWT 1 s
Unit dBm
41.1 dB Offset
A
1VIEW
1AV
40
30
20
10
0
-10
-20
-30
-40
-50
-60
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 28.APR.2005 15:21:03


Marker 2 [T1]
RBW 1 MHz
RF Att 20 dB
Ref Lvl
-29.12 dBm
VBW 1 MHz
40 dBm
2.62324649 GHz
SWT 1 s
Unit dBm
41.1 dB Offset
A
1VIEW
1AV
40
30
20
10
0
-10
-20
-30
-40
-50
-60
Start 1 GHz
900 MHz/
Stop 10 GHz
Date: 28.APR.2005 15:22:18

§2.1049, §22.917, §22.905 -OCCUPIED BANDWIDTH

Standard Applicable

Requirements: CFR 47, Section 2.1049, Section 22.901and Section 22.917.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2004-11-5	2005-11-4

*** Statement of Traceability: BACL** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 the 26 dB and 99%Power bandwidth was recorded.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	1032mbar

The testing was performed by Sam Lin on 2005-4-12

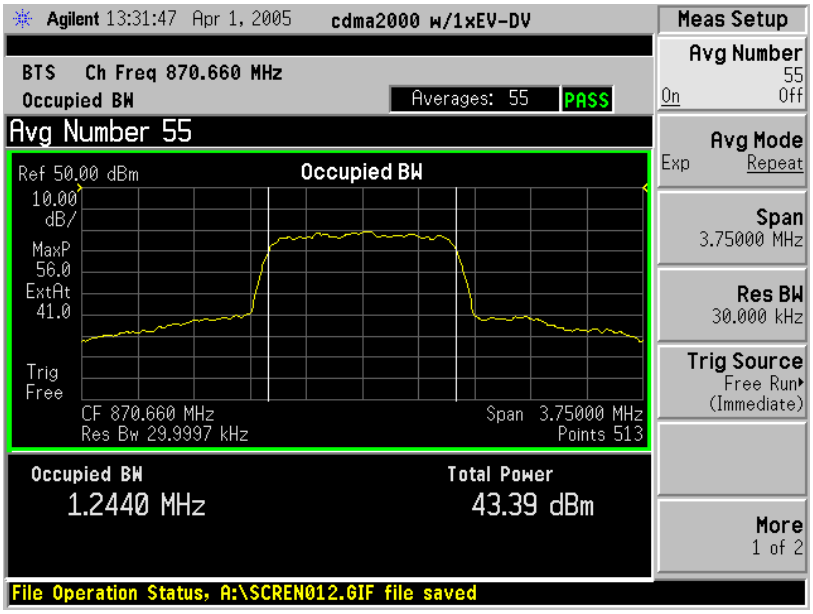
Test Result: Pass

Model: ZXCBTS M802T

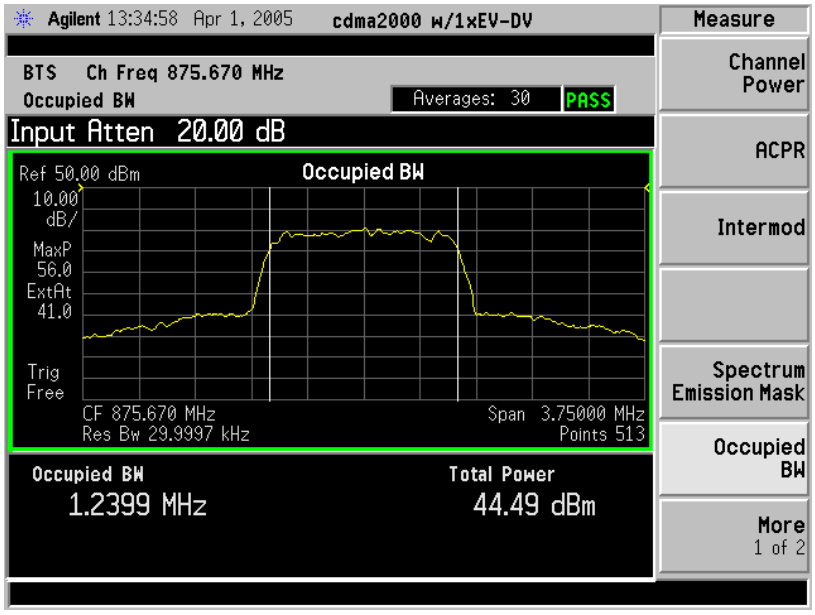
The result has been complied with the §2.1049, §22.917, and §22.905, see the following plot:

Channel	Channel frequency (MHz)	99% Power Bandwidth (MHz)
Channel 22	870.66	1.2484
Channel 189	875.67	1.2471
Channel 312	879.36	1.2507

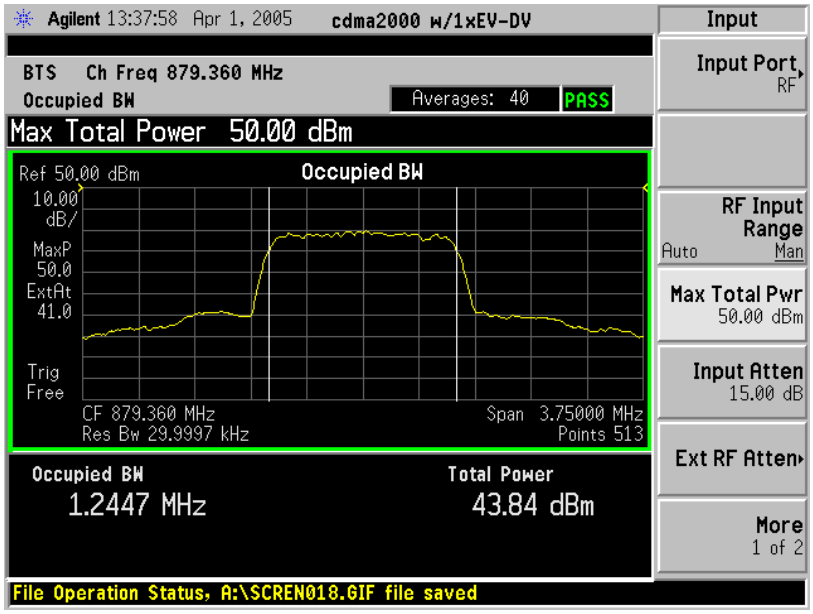
Channel 22



Channel 189



Channel 312


Agilent 13:37:58 Apr 1, 2005
cdma2000 w/1xEV-DV
BTS Ch Freq 879.360 MHz
Occupied BW
Averages: 40
PASS
Max Total Power 50.00 dBm
Ref 50.00 dBm
Occupied BW
10.00 dB/
MaxP 50.0
ExtAt 41.0
Trig Free
CF 879.360 MHz
Res Bw 29.9997 kHz
Span 3.75000 MHz
Points 513
Occupied BW
1.2447 MHz
Total Power
43.84 dBm
File Operation Status, A:\SCREN018.GIF file saved
Input
Input Port RF
RF Input Range Auto Man
Max Total Pwr 50.00 dBm
Input Atten 15.00 dB
Ext RF Atten
More 1 of 2

§22.917- BAND EDGES

Standard Applicable

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
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2004-11-10	2005-11-9

*** Statement of Traceability: BACL Corp.** attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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, RBW set to 30 kHz.

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	59%
ATM Pressure:	1178mbar

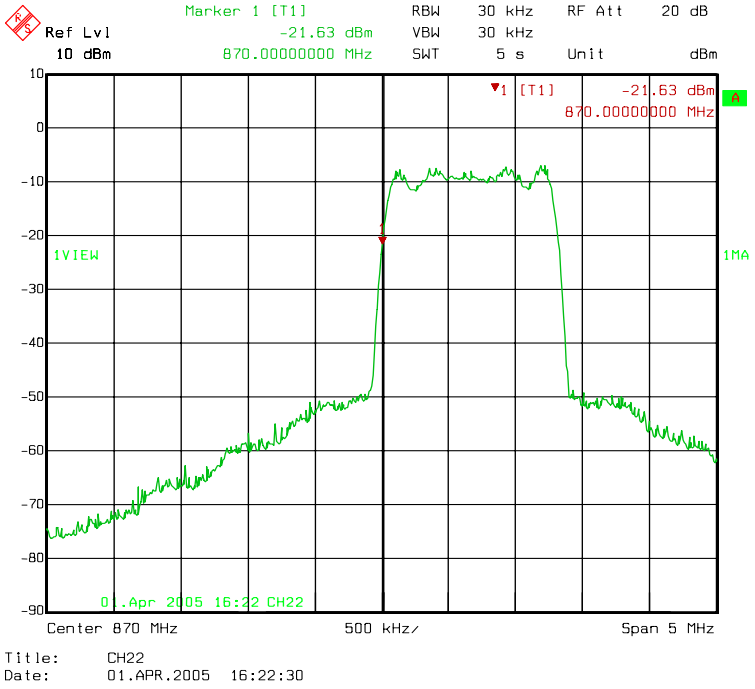
The testing was performed by Sam Lin on 2005-4-1

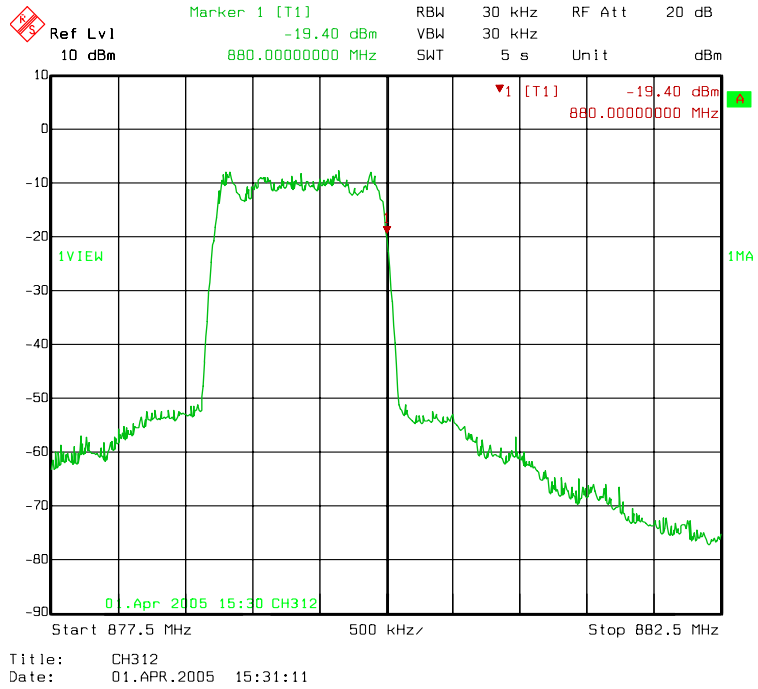
Test Result: Pass

Model: ZXCBTS M802T

The result has been complied with the§22.917, see the following plot:

Frequency MHz	Emission dBm	Limit dBm
870.00	-21.63	-13.00
880.00	-19.40	-13.00





§2.1055 (a), §2.1055 (d), §22.355 - FREQUENCY STABILITY

Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1_Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency range (MHz)	Base, fixed (ppm)	Mobile [SU][le][/ SU]3 watts (ppm)	Mobile [le]3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2004-11-5	2005-11-4
GZ-ESPEC	Temperature Chamber	EL-10AGP	0105105	2004-6-1	2005-5-31

*** Statement of Traceability: BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 20 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 Sam Lin on 2004-4-1.

Model: ZXCBTS M802T

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature				
Temperature ℃	Power Supplied Vac	Frequency Measure Error Hz	Error ppm	Limit 1.5ppm
CH22 f=870.66MHz				
-30	120	7.27	0.00835	1.5
-20	120	7.78	0.00894	1.5
-10	120	7.32	0.00841	1.5
0	120	7.21	0.00828	1.5
10	120	8.17	0.00938	1.5
20	120	8.12	0.00933	1.5
30	120	5.13	0.00589	1.5
40	120	6.24	0.00717	1.5
55	120	6.43	0.00739	1.5
CH189 f=875.67MHz				
-30	120	7.47	0.00853	1.5
-20	120	7.28	0.00831	1.5
-10	120	7.58	0.00866	1.5
0	120	7.42	0.00847	1.5
10	120	7.65	0.00874	1.5
20	120	7.52	0.00859	1.5
30	120	4.59	0.00524	1.5
40	120	6.30	0.00719	1.5
55	120	7.00	0.00799	1.5

Continues

CH312 f=879.36MHz				
-30	120	7.74	0.0088	1.5
-20	120	7.24	0.00823	1.5
-10	120	7.84	0.00892	1.5
0	120	7.67	0.00872	1.5
10	120	7.84	0.00892	1.5
20	120	7.49	0.00852	1.5
30	120	4.89	0.00556	1.5
40	120	6.60	0.00751	1.5
55	120	7.51	0.00854	1.5

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage				
Voltage Vac	Temperature ℃	Frequency Measure Error Hz	Error ppm	Limit 1.5ppm
CH22 f=870.66MHz				
85	20	2.10	0.00241	1.5
120	20	2.20	0.00253	1.5
138	20	1.15	0.00132	1.5
CH189 f=875.67MHz				
85	20	1.65	0.00188	1.5
120	20	2.14	0.00244	1.5
138	20	2.02	0.00231	1.5
CH312 f=879.36MHz				
85	20	1.78	0.00202	1.5
120	20	1.89	0.00215	1.5
138	20	2.05	0.00233	1.5