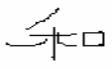


FCC PART 24 TYPE APPROVAL
EMI MEASUREMENT AND TEST REPORT
For
ZTE Corporation

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

FCC ID: Q78-CBTSO119

May 30, 2006

This Report Concerns: ☒ Original Report	Equipment Type: CDMA2000 Outdoor Compact BTS-OI
Test Engineer: JX HE 	
Report No.: RSZ06053004	
Test Date: May 01-28, 2006	
Reviewed By: ZH XIE 	
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	

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: ZXC10 CBTS O119 or the "EUT" as referred to in this report is a CDMA2000 Outdoor Compact BTS-O1. The EUT is measured approximately 90.0 cm L x 78.0cmW x 180.0cmH, rated input voltage: AC 220V.

** The test data gathered are from production sample, serial number: 0504150.*

Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Subpart J, and Part 24 Subpart E 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 24 Subpart E – PCS

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

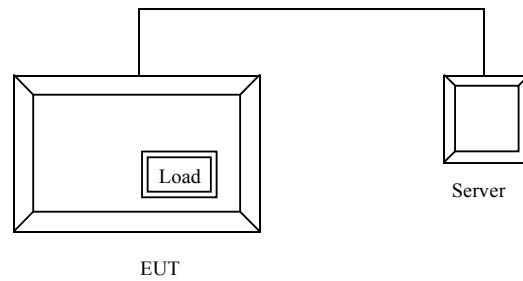
Description of Test Configuration

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

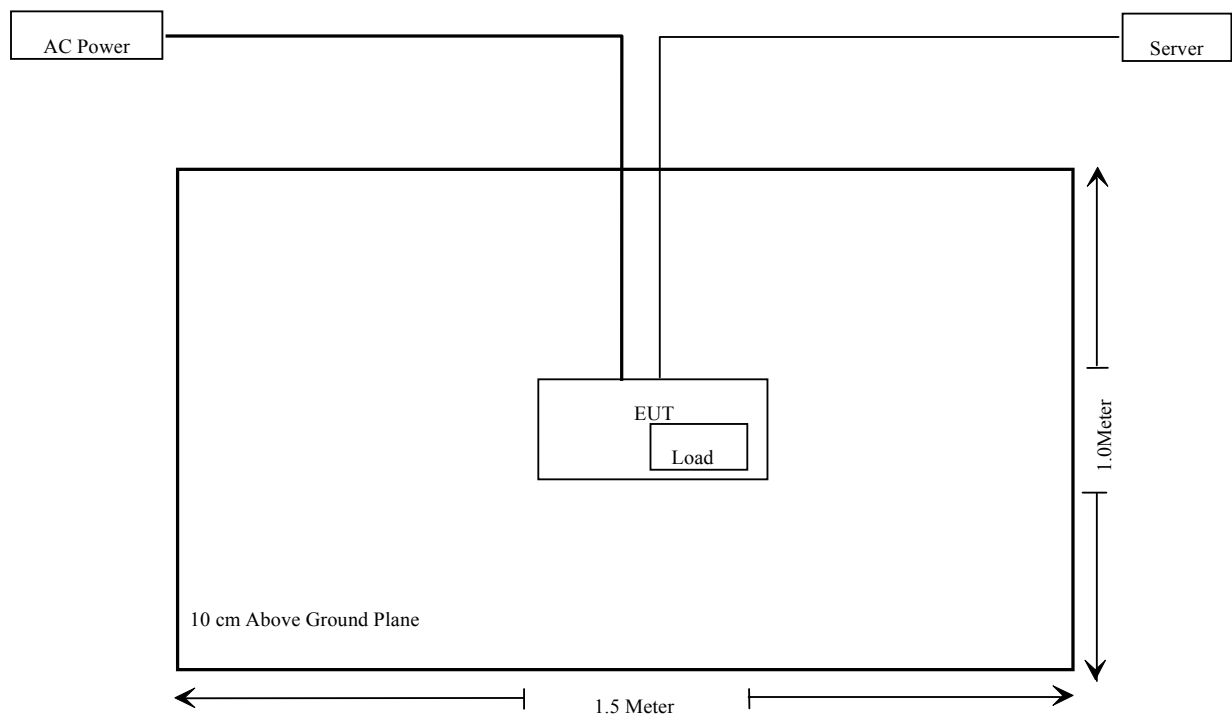
Equipment Modifications

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
§ 2.1091	RF Exposure	Compliant
§2.1046, §22.913(a)	EFFECTIVE RADIATED POWER	Compliant
§2.1047	Modulation characteristic	Compliant
§15.109(a)	Unintentional Radiation Emission	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §24.238(a)	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049, §24.238	Occupied Bandwidth	Compliant
§24.238	Band Edge	Compliant
§ 2.1055 (a) § 2.1055 (d) § 24.235	Frequency stability	Compliant
§15.107 (a)	Conduction Emission	Compliant

§2.1091 - RF EXPOSURE

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

f = frequency in MHz

* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 44.90 (dBm)

Maximum peak output power at antenna input terminal: 30.90 (W)

Prediction distance: 300 (cm)

Predication frequency: 1959.375 (MHz)

Antenna Gain (typical): 17 (dBi)

Power density at predication frequency at 300 cm: 0.464 (mW/cm²)

MPE limit for uncontrolled exposure at prediction frequency: 5(mW/cm²)

Test Result: Pass

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

Applicable Standard

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	2006-3-2	2007-3-2

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 JX HE on May 01-28, 2006.

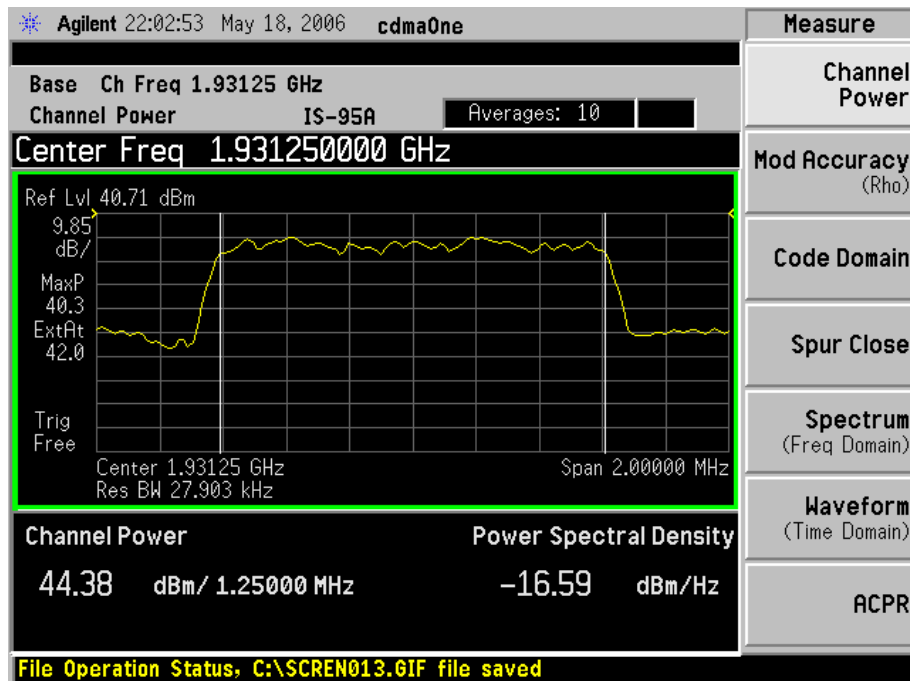
Test Result: Pass

Test Mode: Transmitting/CDMA2000 1X EV

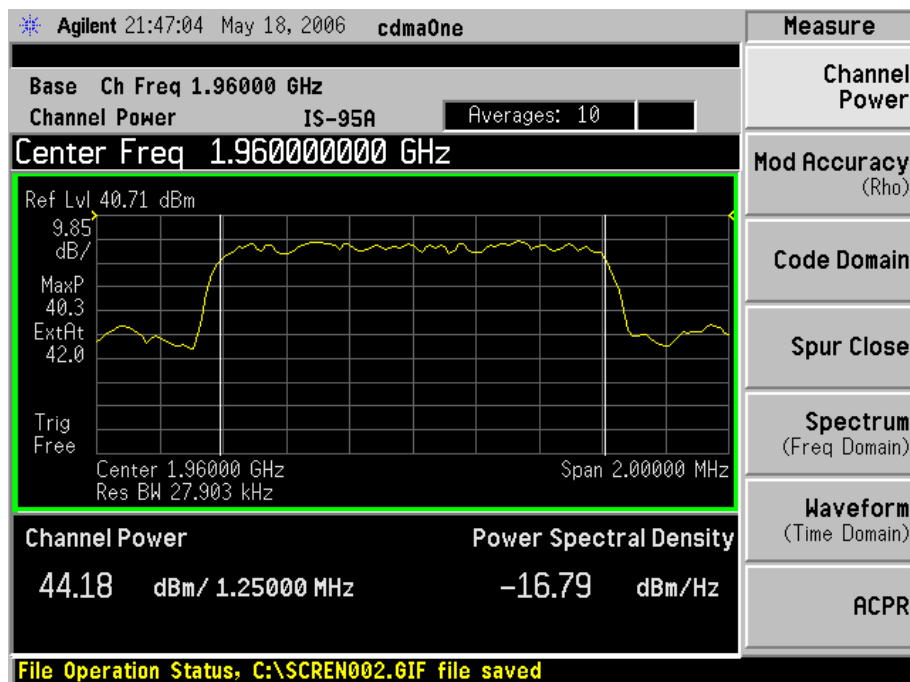
1 Carrier

Channel	Frequency (MHz)	Total Power in dBm	Total Power in W	Limit in W
Channel 25	1931.25	44.38	27.4	500
Channel 600	1960	44.18	26.2	500
Channel 1175	1988.75	44.36	27.3	500

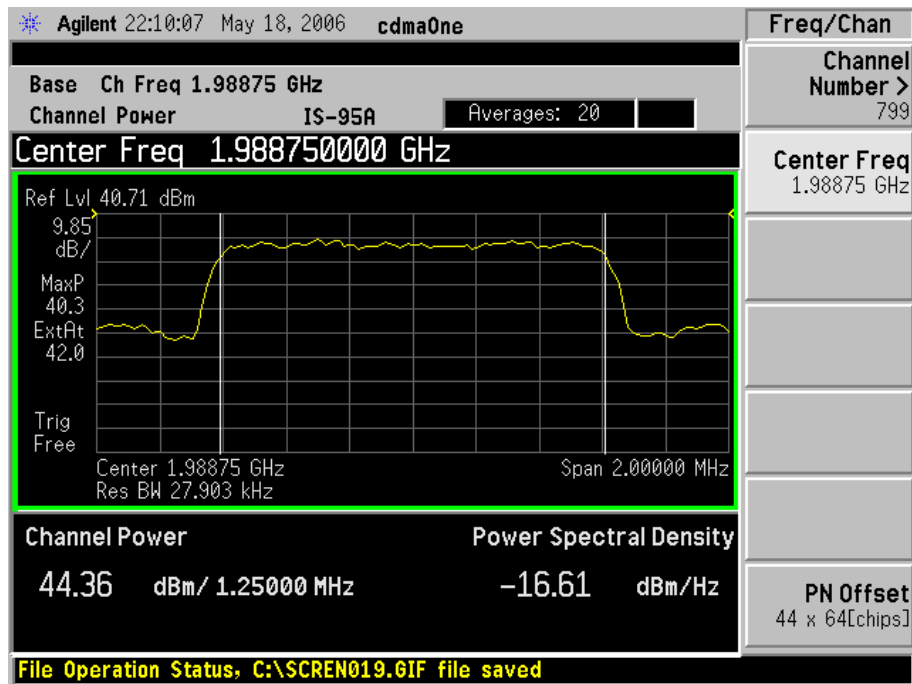
Channel 25



Channel 600



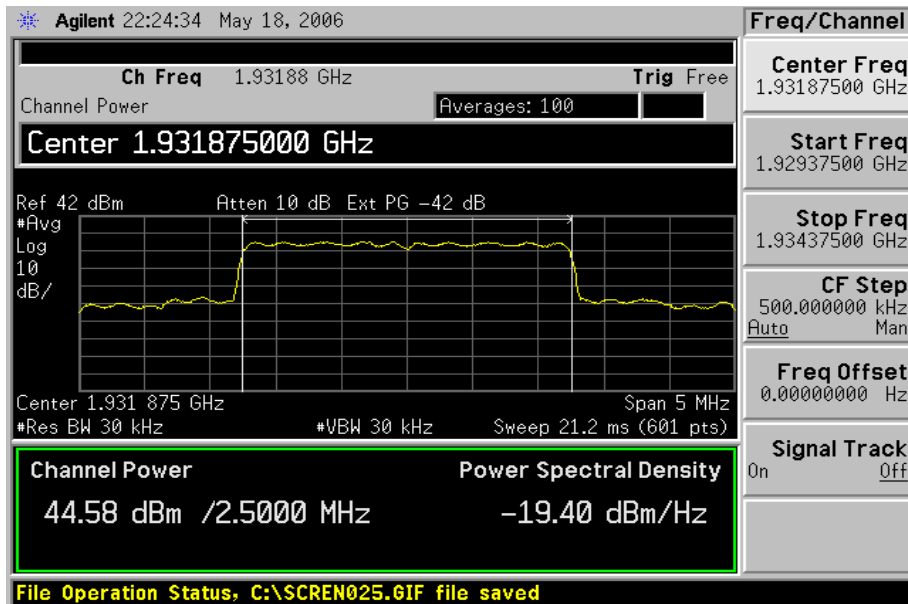
Channel 1175



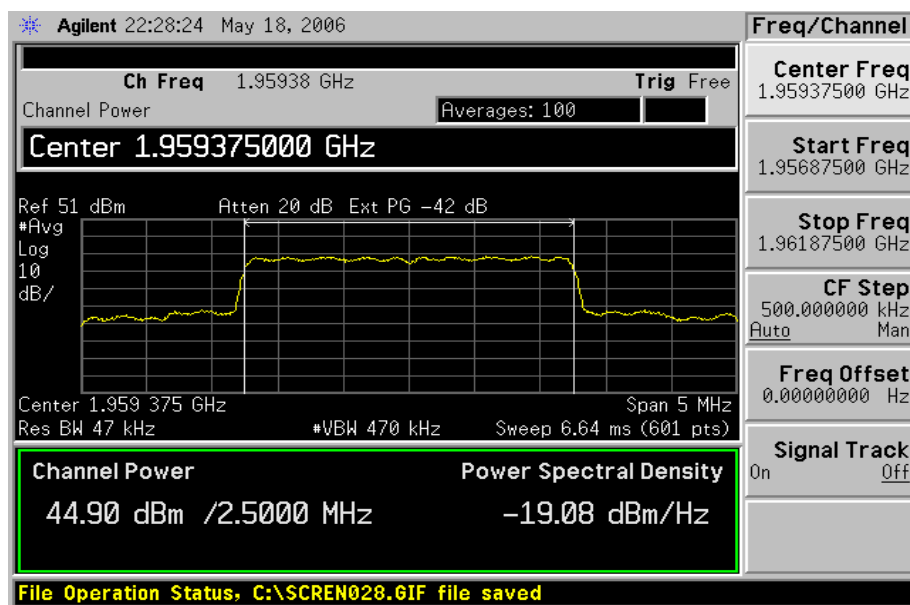
2 Carrier

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
Channel 25,50	1931.875	44.58	28.7	500
Channel 575,600	1959.375	44.90	30.9	500
Channel 1150, 1175	1988.125	44.50	28.2	500

Channel 25, 50



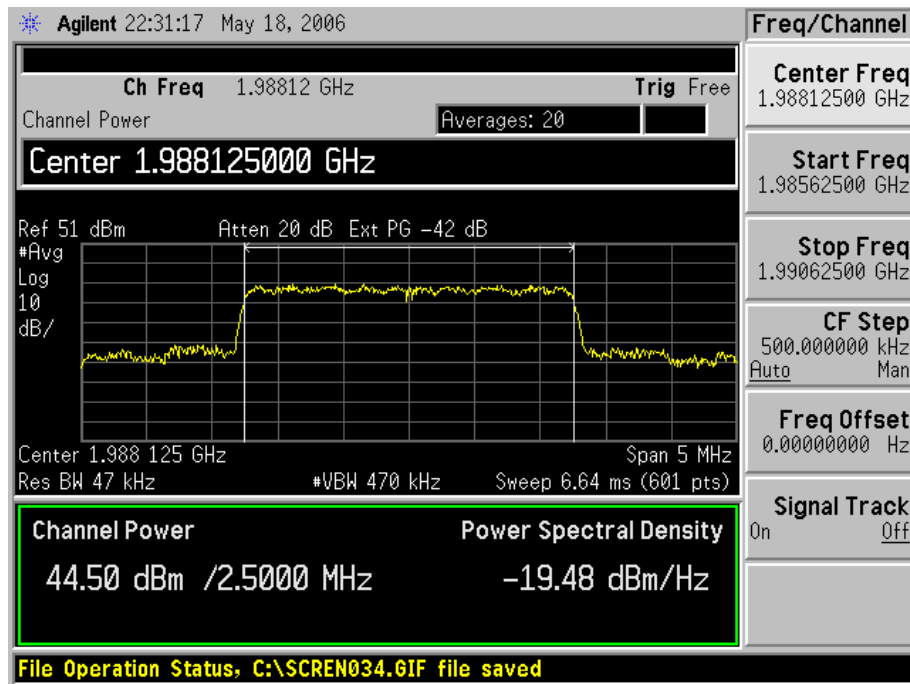
Channel 575,600



ZTE Corporation

FCC ID: Q78-CBTSI219

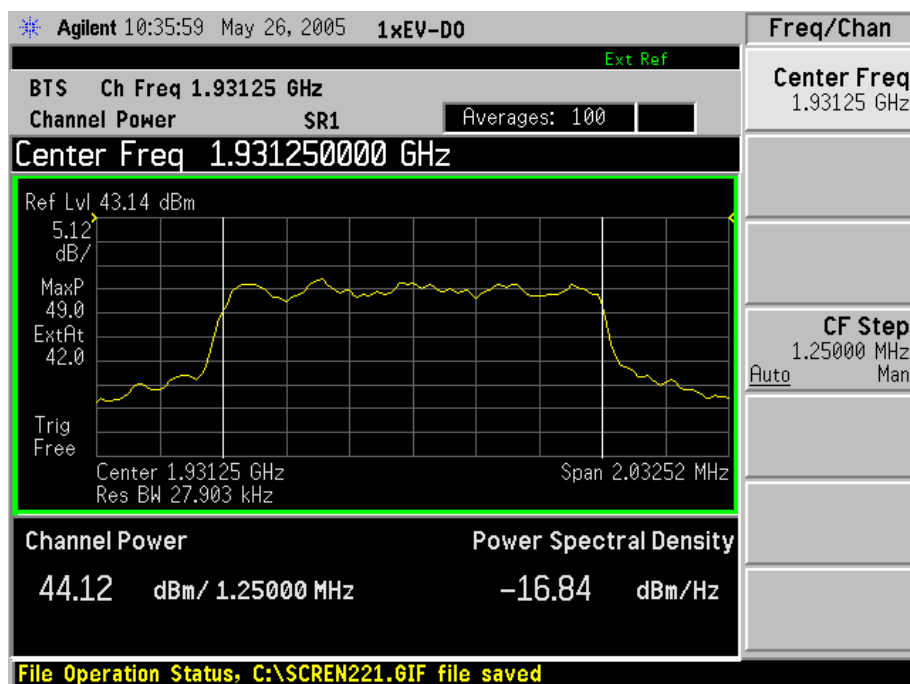
Channel 1150, 1175



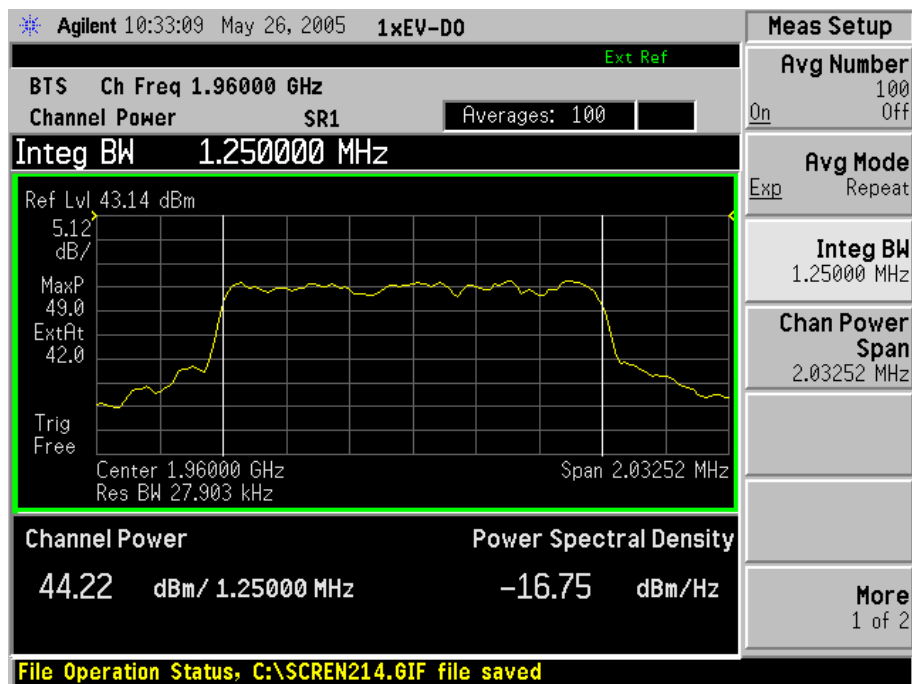
Test Mode: Transmitting/CDMA2000 1X EV DO
1 Carrier

Channel	Frequency (MHz)	Total Power in dBm	Total Power in W	Limit in W
Channel 25	1931.25	44.12	25.8	500
Channel 600	1960	44.22	26.4	500
Channel 1175	1988.75	44.10	25.7	500

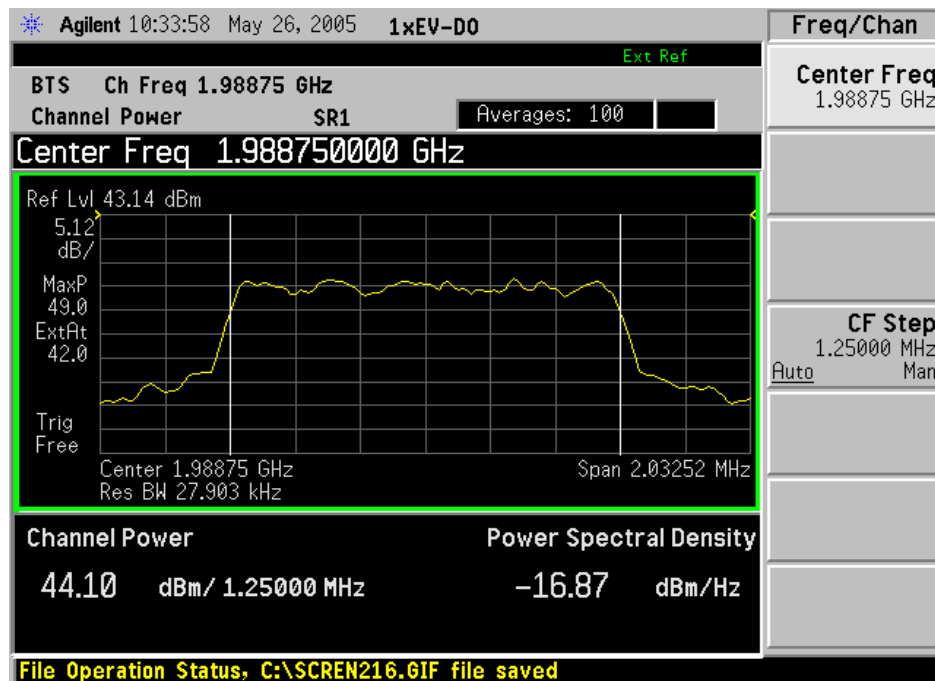
Channel 25



Channel 600



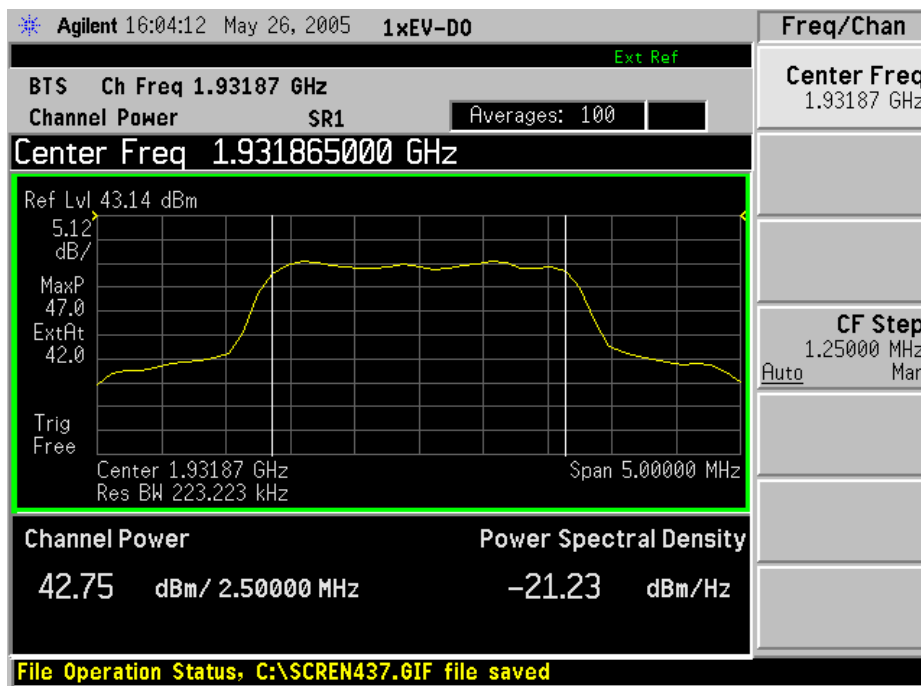
Channel 1175



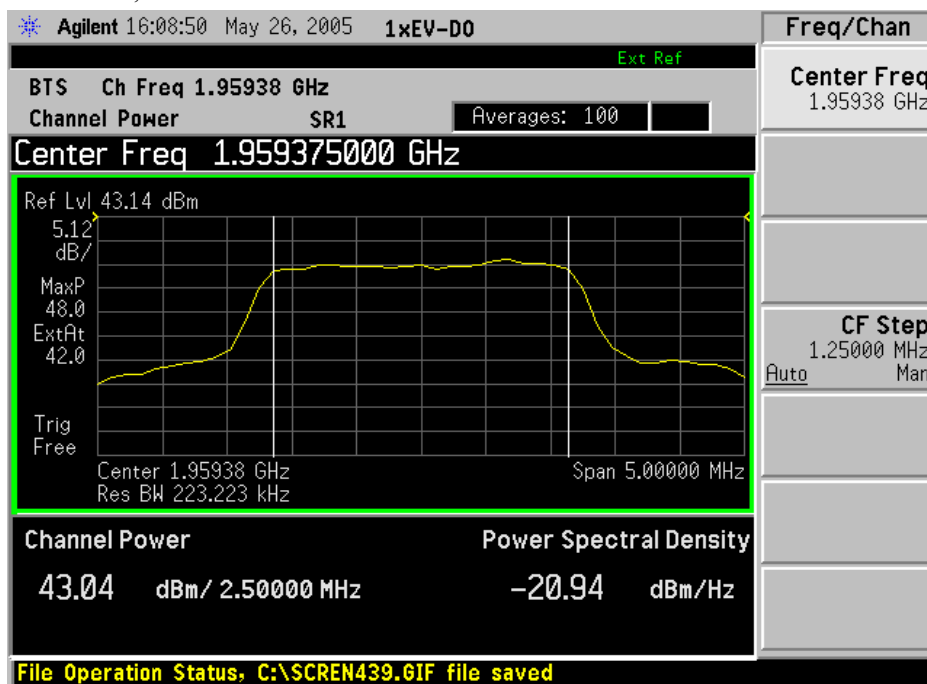
2 Carrier

Channel	Frequency (MHz)	Output Power in dBm	Output Power in	Limit in W
Channel 25,50	1931.875	42.75	18.8	500
Channel 575,600	1959.375	43.04	20.1	500
Channel 1150,	1988.125	42.49	17.7	500

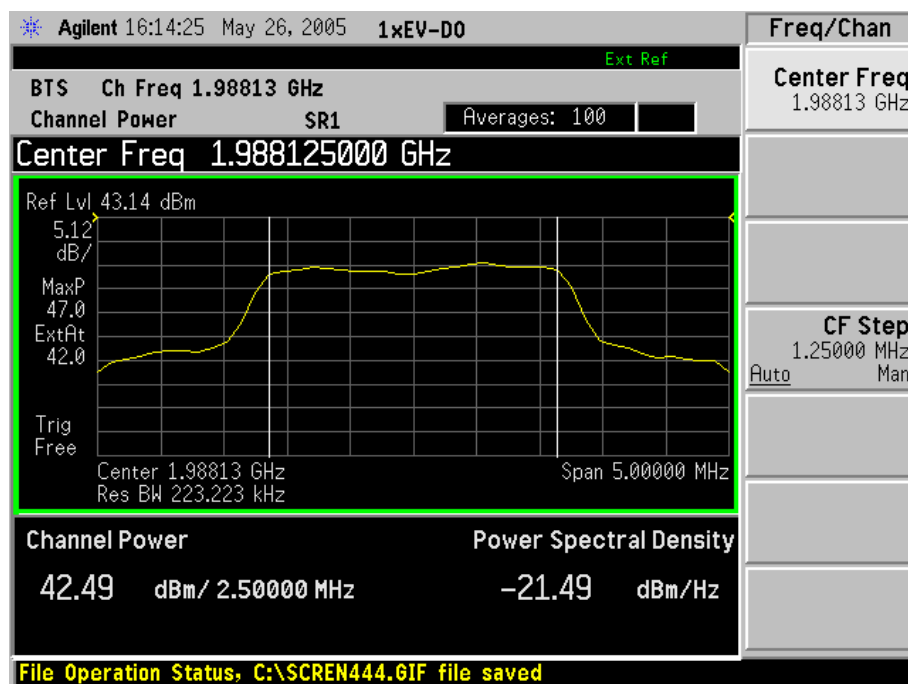
Channel 25, 50



Channel 575,600



Channel 1150, 1175



§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 Spectrum Analyzer	E4445A	MY44300451	2006-3-2	2007-3-2

Test Procedure

CDMA 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 JX HE on May 01-28, 2006.

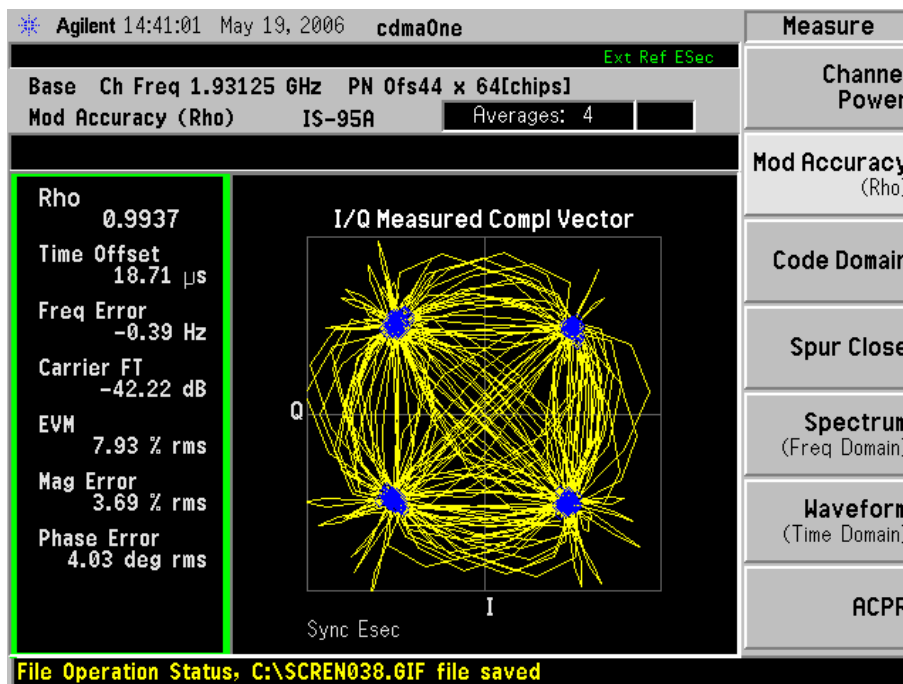
Test Result: Pass

Test Mode: Transmitting/CDMA2000 1X EV

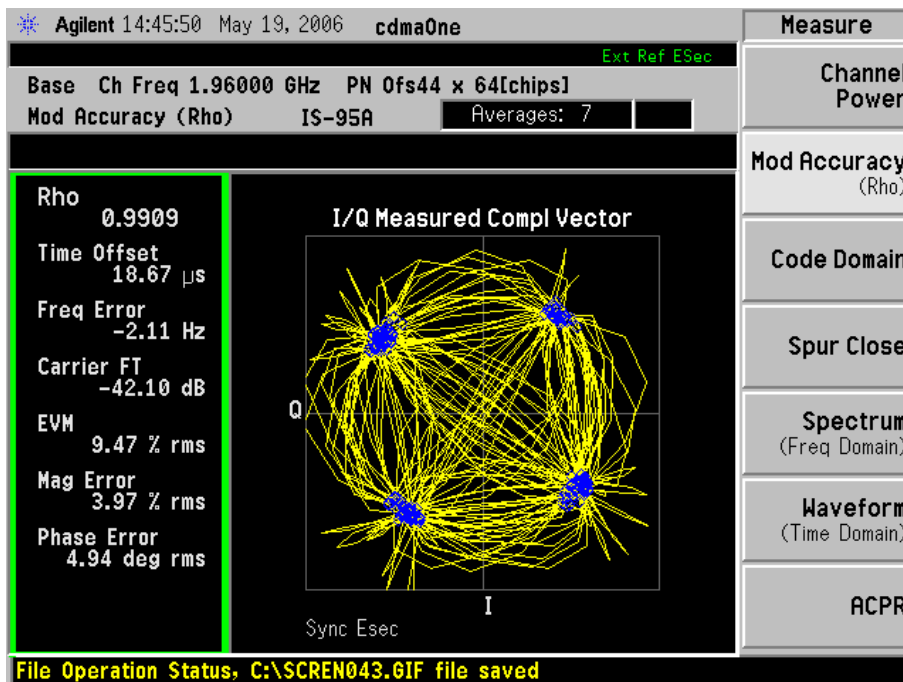
1 Carrier

Channel	Frequency (MHz)	Rho
Channel 25	1931.25	0.9937
Channel 600	1960	0.9909
Channel 1175	1988.75	0.9847

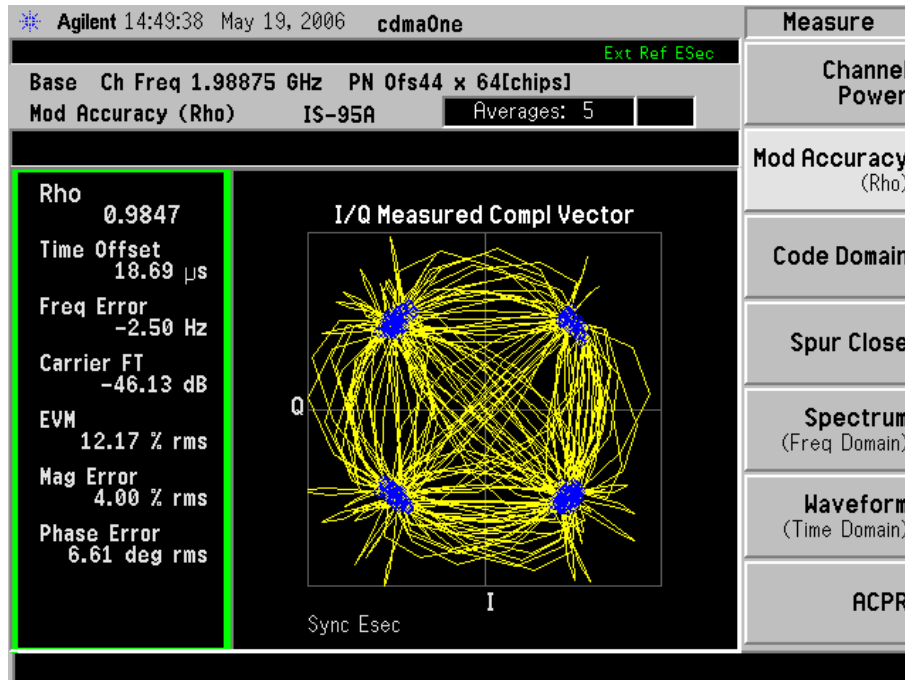
Channel 25



Channel 600



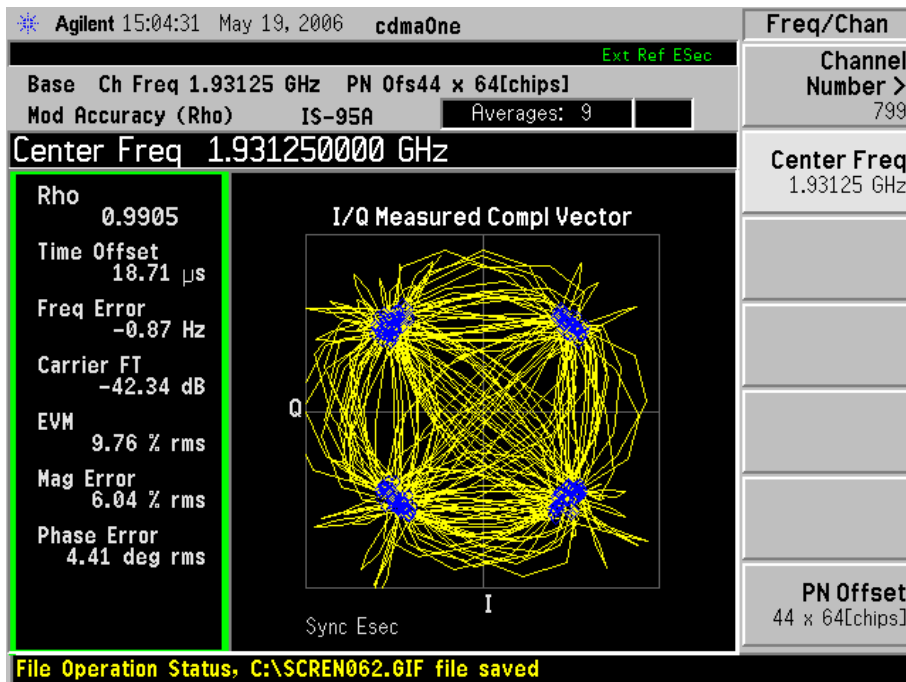
Channel 1175



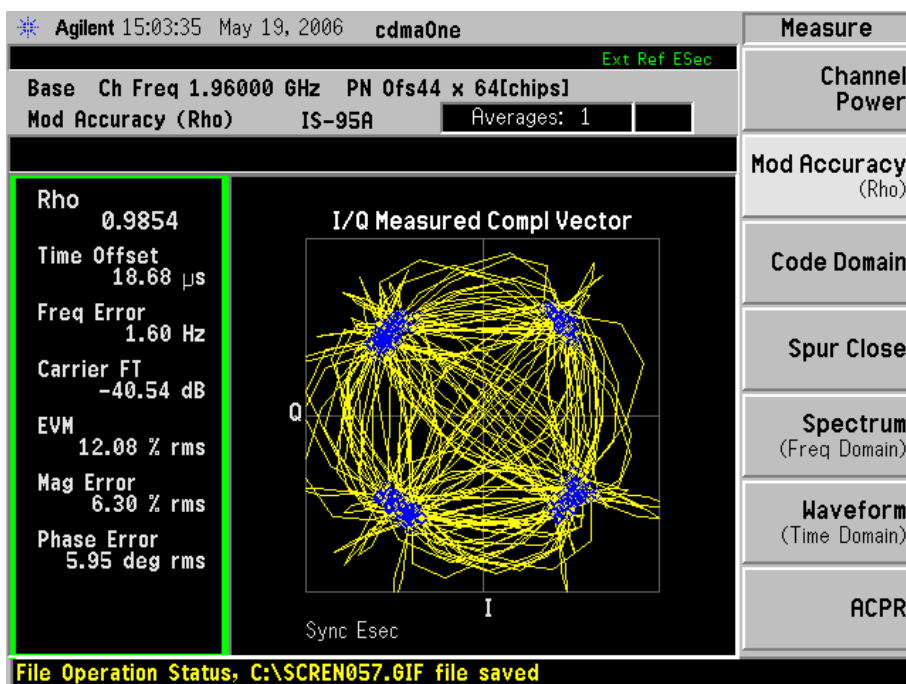
2 Carrier

Channel	Frequency (MHz)	Rho
Channel 25,50	1931.25	0.9905
Channel 575, 600	1960	0.9854
Channel 1150, 1175	1988.75	0.9814

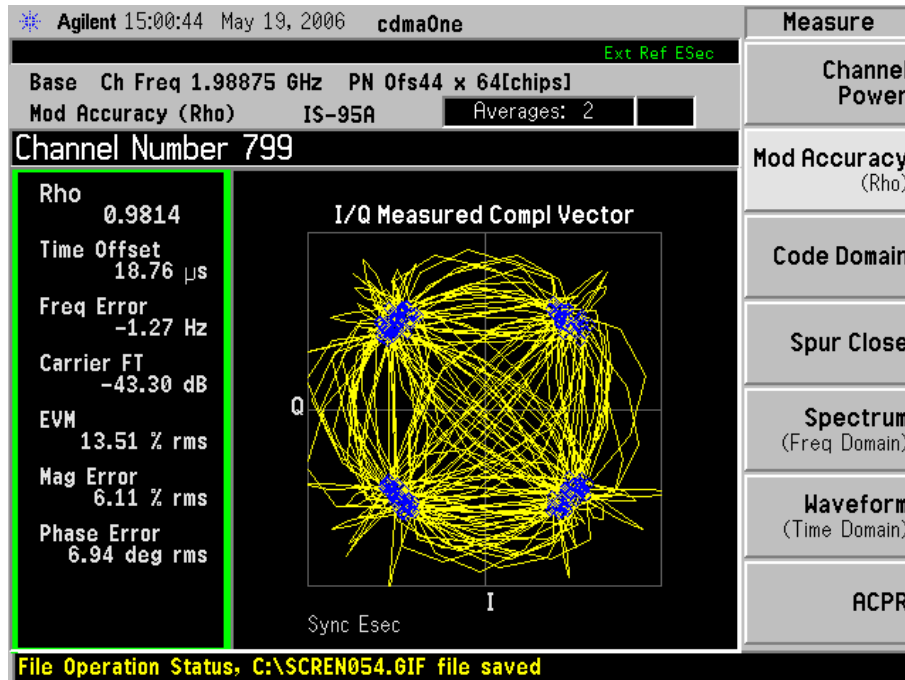
Channel 25,50



Channel 575, 600



Channel 1150, 1175

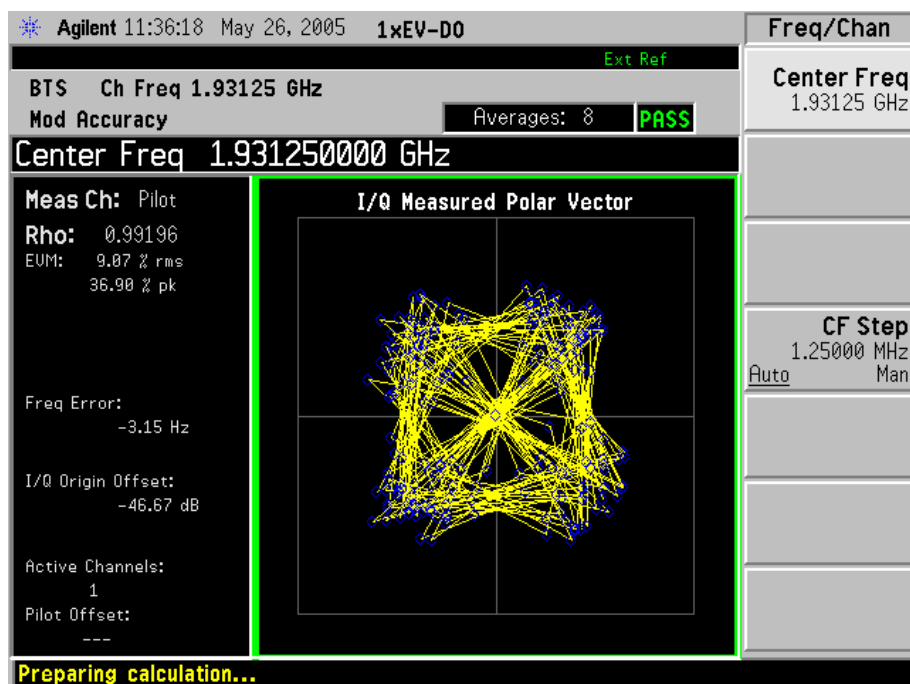


Test Mode: Transmitting/CDMA2000 1X EV DO

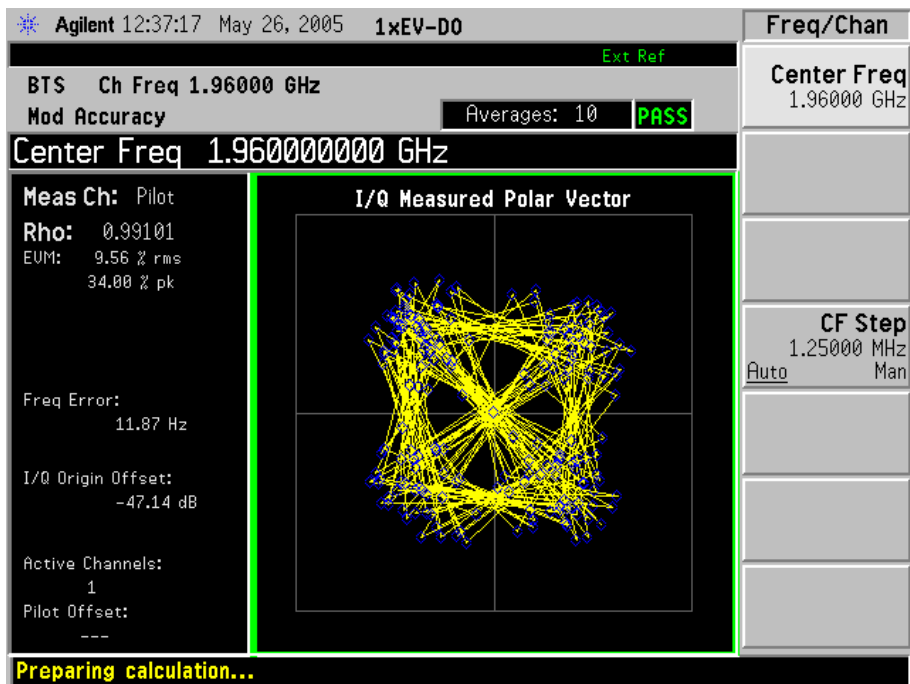
1 Carrier

Channel	Frequency (MHz)	Rho
Channel 25	1931.25	0.99196
Channel 600	1960	0.99101
Channel 1175	1988.75	0.98829

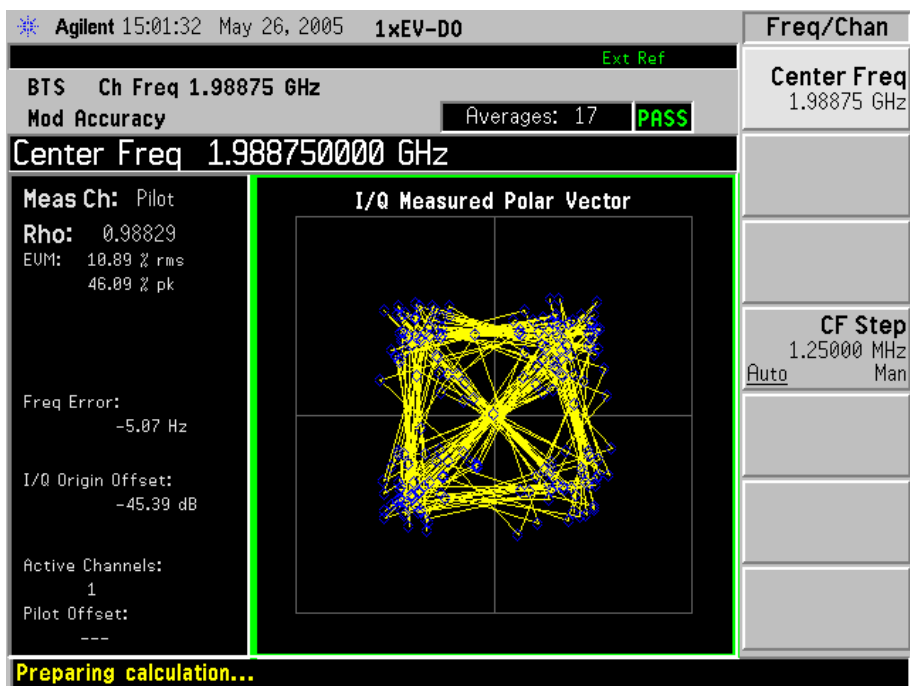
Channel 25



Channel 600



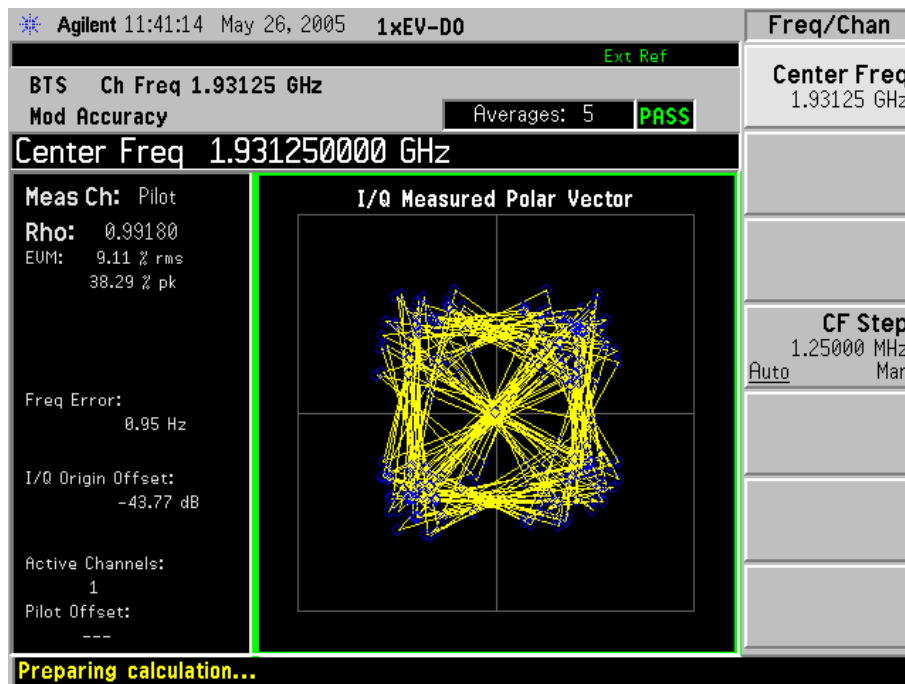
Channel 1175



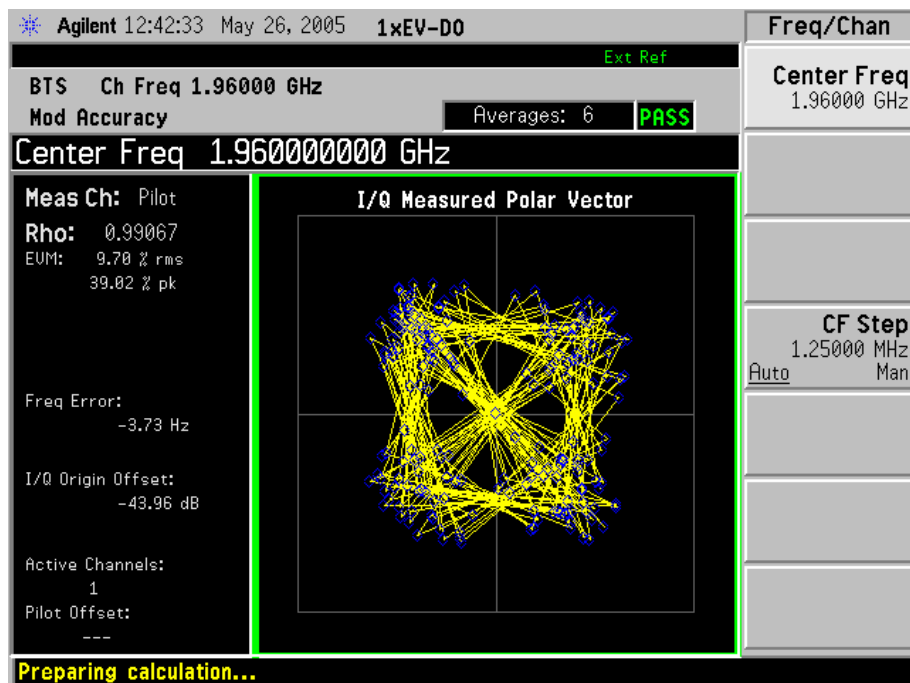
2 Carrier

Channel	Frequency (MHz)	Rho
Channel 25,78	1931.25	0.99180
Channel 119, 600	1960	0.99067
Channel 269, 1175	1988.75	0.98807

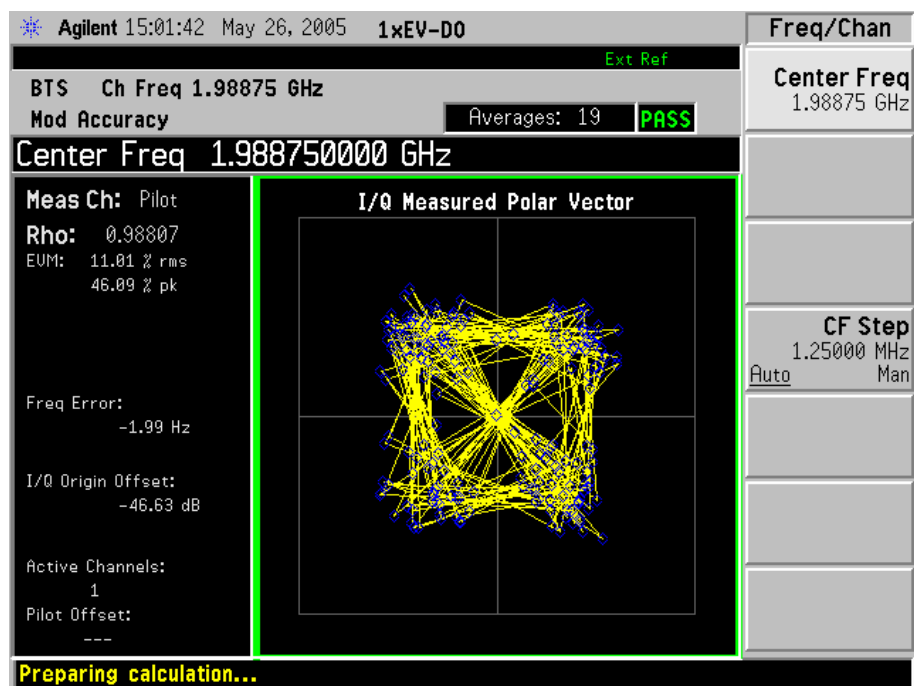
Channel 25,50



Channel 575, 600



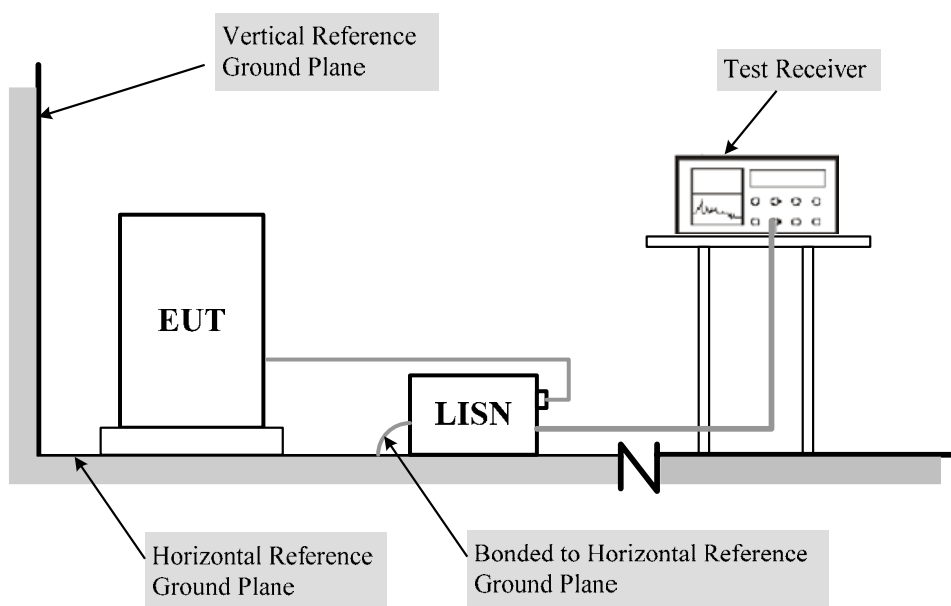
Channel 1150, 1175



§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 +2.3 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/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:

<u>Frequency Range</u>	<u>IFBW</u>
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	2005-10-17	2006-10-16
R&S	LISN	ESH2-Z5	100027	2005-10-17	2006-10-16
SCHWARZBECK	LISN	NNLK8129	8129-151	2005-10-17	2006-10-16
R&S	ISN	ENY22	100046	2005-10-17	2006-10-16
R&S	ISN	ENY41	100057	2005-10-17	2006-10-16
R&S	Pulse Limiter	ESH3-Z2	100063	2005-10-18	2006-10-17
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	2005-10-17	2006-10-16

* 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

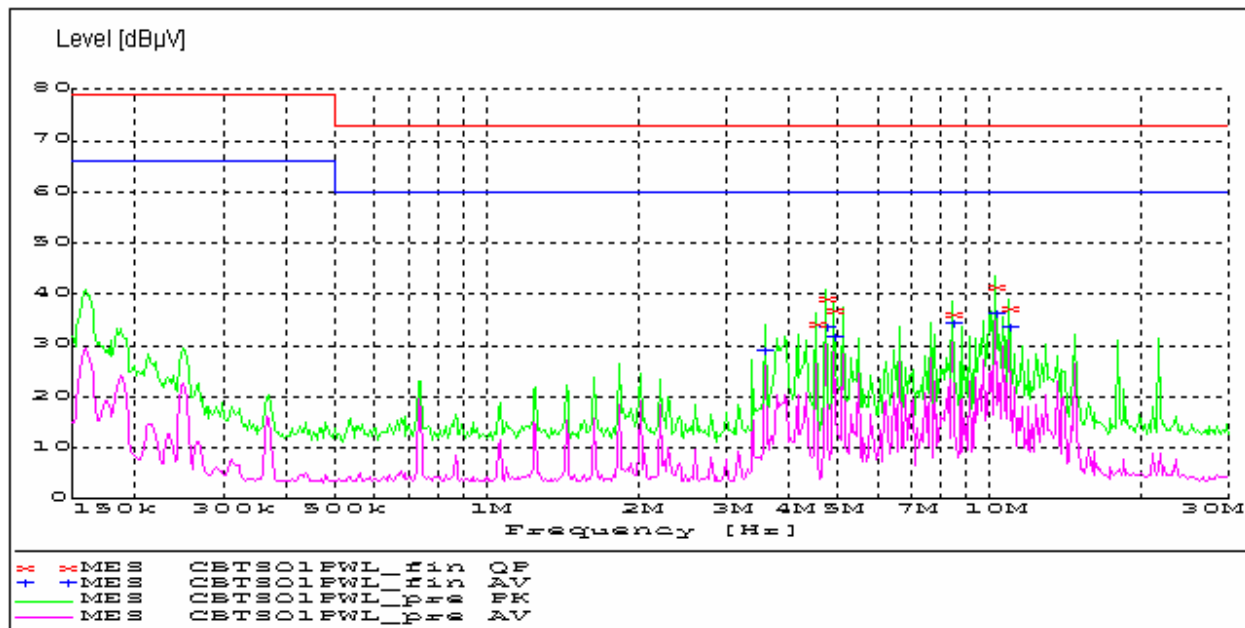
The testing was performed by Guan Bin on 2006-5-25

Test result: Pass

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

Conducted Emission

EUT: ZXC10 CBTS O119
 Manufacturer: ZTE
 Operating Condition: Runing
 Test Site: ZTE
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: AC, L line
 Start of Test: 2006-05-25/ 19:30:05

**MEASUREMENT RESULT: "CBT501PWL_fin QP"**

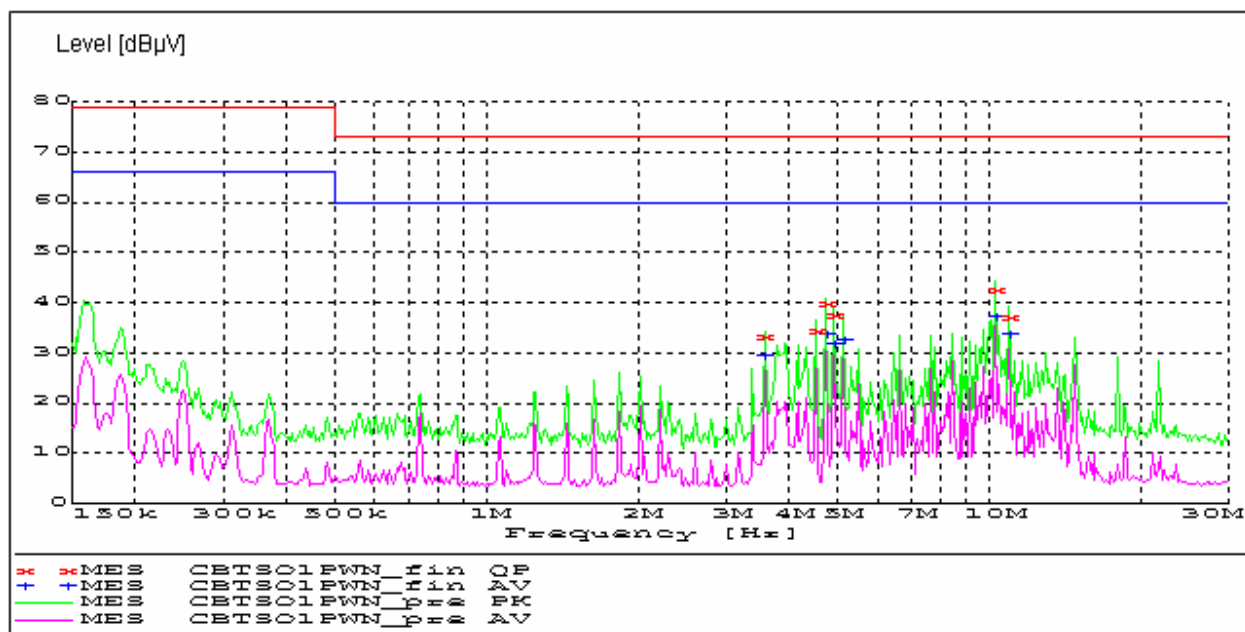
Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line dB	PE
4.541497	34.00	9.9	73	39.0	L1	GND
4.726086	39.10	9.9	73	33.9	L1	GND
4.918179	36.70	10.0	73	36.3	L1	GND
8.455134	35.70	9.9	73	37.3	L1	GND
10.318910	41.40	9.9	73	31.6	L1	GND
10.910824	37.00	9.9	73	36.0	L1	GND

MEASUREMENT RESULT: "CBTSO1PWL_fin AV"

Frequency MHz	Level dBμV	Transd	Limit dB	Margin dBμV	Line dB	PE
3.575881	28.80	9.9	60	31.2	L1	GND
4.726086	33.10	9.9	60	26.9	L1	GND
4.918179	31.20	10.0	60	28.8	L1	GND
8.455134	34.00	9.9	60	26.0	L1	GND
10.318910	35.70	9.9	60	24.3	L1	GND
10.910824	33.20	9.9	60	26.8	L1	GND

Conducted Emission

EUT: ZXC10 CBTS O119
 Manufacturer: ZTE
 Operating Condition: Runing
 Test Site: ZTE
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: AC, N line
 Start of Test: 2006-05-25/19:58:05

**MEASUREMENT RESULT: "CBTSO1PWN_fin QP"**

Frequency Hz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
3.575881	32.80	9.9	73	40.2	N	GND
4.541497	34.20	9.9	73	38.8	N	GND
4.726086	39.60	9.9	73	33.4	N	GND
4.918179	37.10	10.0	73	35.9	N	GND
10.318910	42.30	9.9	73	30.7	N	GND
10.910824	37.00	9.9	73	36.0	N	GND

MEASUREMENT RESULT: "CBTSO1PWN_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
3.575881	29.10	9.9	60	30.9	N	GND
4.726086	33.50	9.9	60	26.5	N	GND
4.918179	31.60	10.0	60	28.4	N	GND
5.118079	32.10	9.9	60	27.9	N	GND
10.318910	36.80	9.9	60	23.2	N	GND
10.910824	33.40	9.9	60	26.6	N	GND

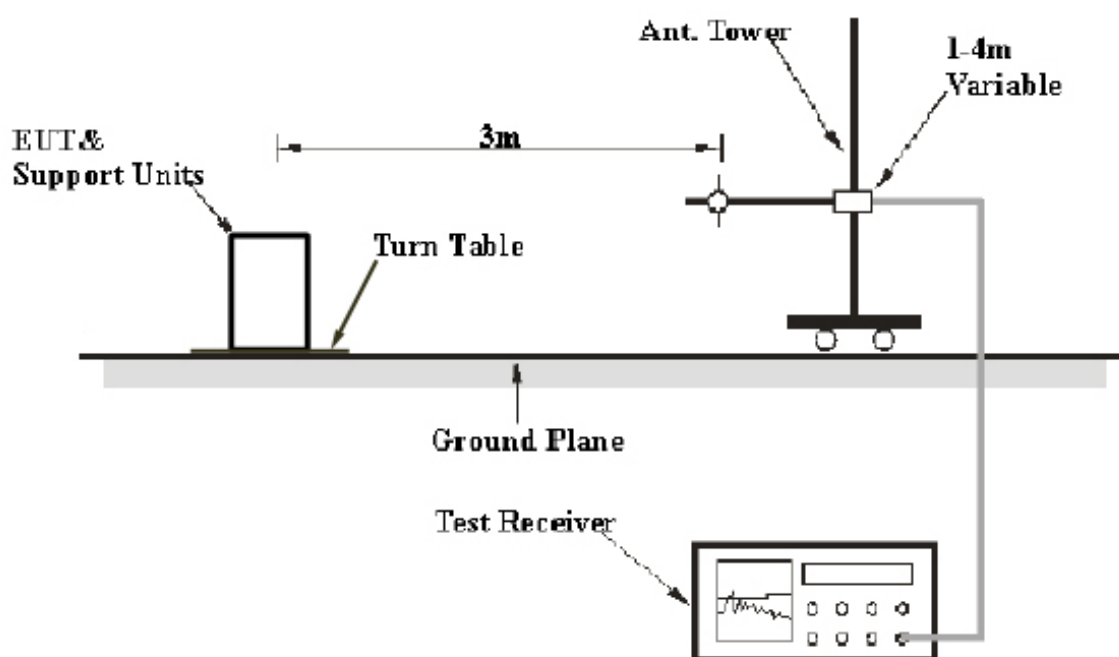
§15.109(a)- RADIATED EMISSION

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 radiated emissions measurement at the EMC lab of ZTE Corp. is $\pm 3.6\text{dB}$.

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 1000 MHz.

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

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESI26	100058	2005-10-17	2006-10-16
R&S	Ultra roadband Antenna	HL562	100022	2003-3-7	2008-3-6
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2004-10-10	2009-10-9
Albatross	Anechoic Chamber	3m Site	N/A	2005-7-15	2008-7-14
R&S	Cable Set	RE Cable	N/A	2005-10-17	2006-10-16
R&S	Software	ES-K1	N/A	N/A	N/A

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 = Limit - 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:

11.7 dB at 461.54 MHz in the Vertical polarization.

Test Data**Environmental Conditions**

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

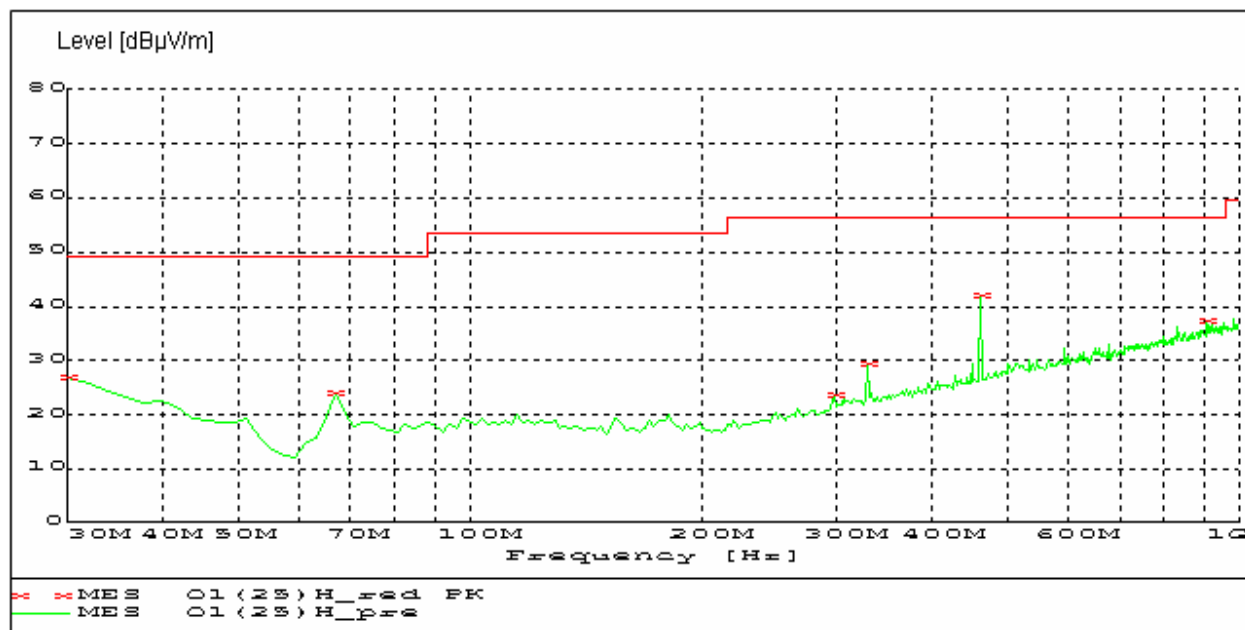
The testing was performed by Guan Bin on 2006-5-25, and the data were only for unintentional radiator and be subjected to verification

Test Mode: Transmitting

Plot(s) of Test Data

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

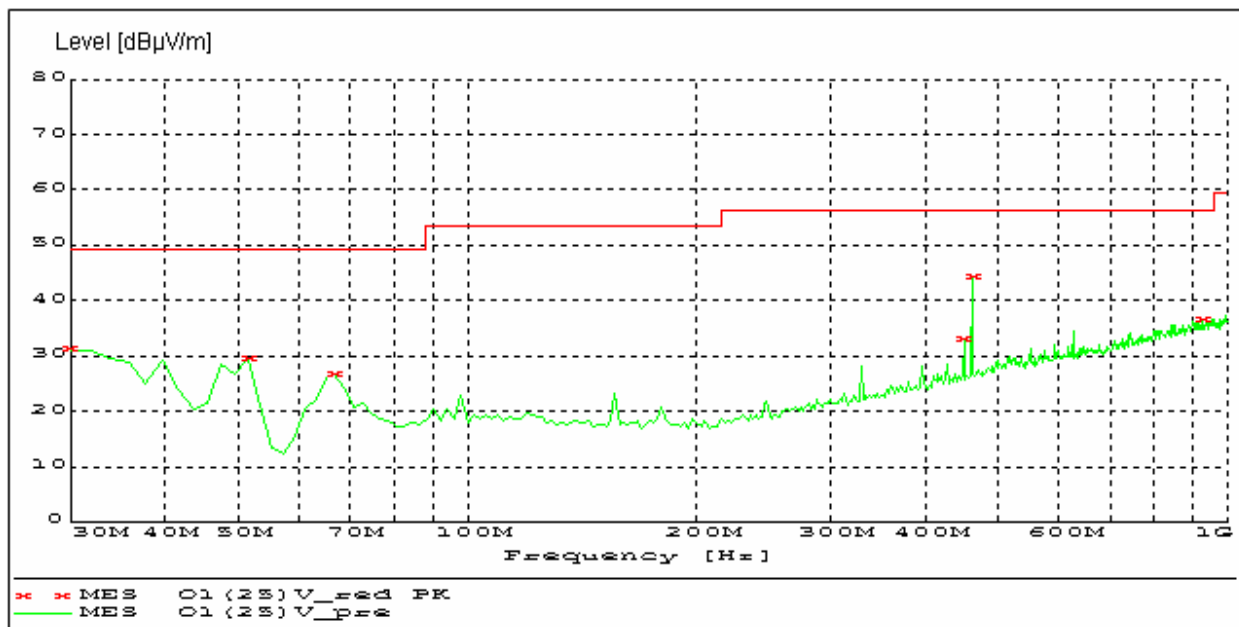
Channel 25
 EUT: ZXC10 CBTS O119
 Manufacturer: ZTE
 Operating Condition: Running
 Test Site: Anechoic Chamber
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: Horizontal, channel 25
 Start of Test: 2006-5-25 / 17:01:36



MEASUREMENT RESULT: "01(25)H_red PK"

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBμV/m	Margin dB
30.000000	26.76	56.00	100.0	HOR	-5.4	49.1	22.3
66.933868	23.94	105.00	200.0	HOR	-18.8	49.1	25.1
298.256513	23.53	8.00	200.0	HOR	-11.3	56.4	32.9
329.358717	29.26	326.00	200.0	HOR	-10.4	56.4	27.2
461.543086	41.69	326.00	200.0	HOR	-6.6	56.4	14.7
908.637275	37.21	83.00	100.0	HOR	1.3	56.4	19.2

EUT: ZXC10 CBTS O119
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC Part15 Class A
Comment: Vertical, channel 25
Start of Test: 2006-5-25 / 17:06:04

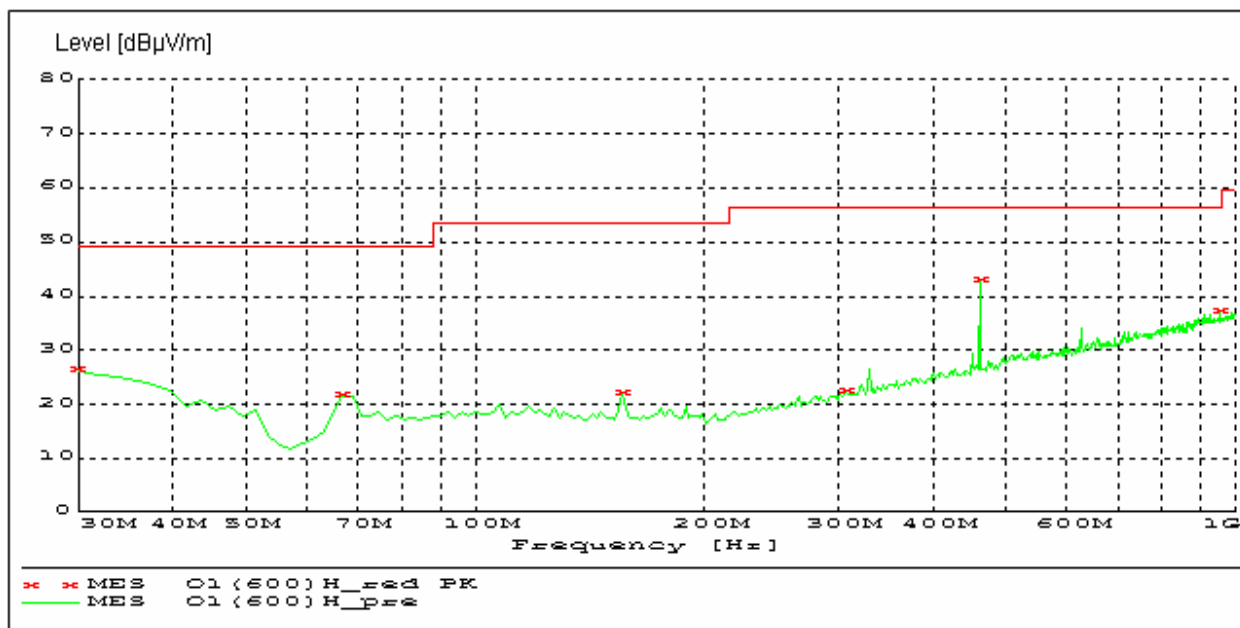


MEASUREMENT RESULT: "O1(25)V_red PK"

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBμV/m	Margin dB
30.000000	31.01	166.00	100.0	VER	-5.4	49.1	18.1
51.382766	29.47	13.00	100.0	VER	-17.7	49.1	19.6
66.933868	26.63	13.00	100.0	VER	-18.8	49.1	22.4
449.879760	32.99	346.00	100.0	VER	-7.0	56.4	23.4
461.543086	44.20	56.00	100.0	VER	-6.6	56.4	12.2
930.020040	36.58	28.00	100.0	VER	1.7	56.4	19.9

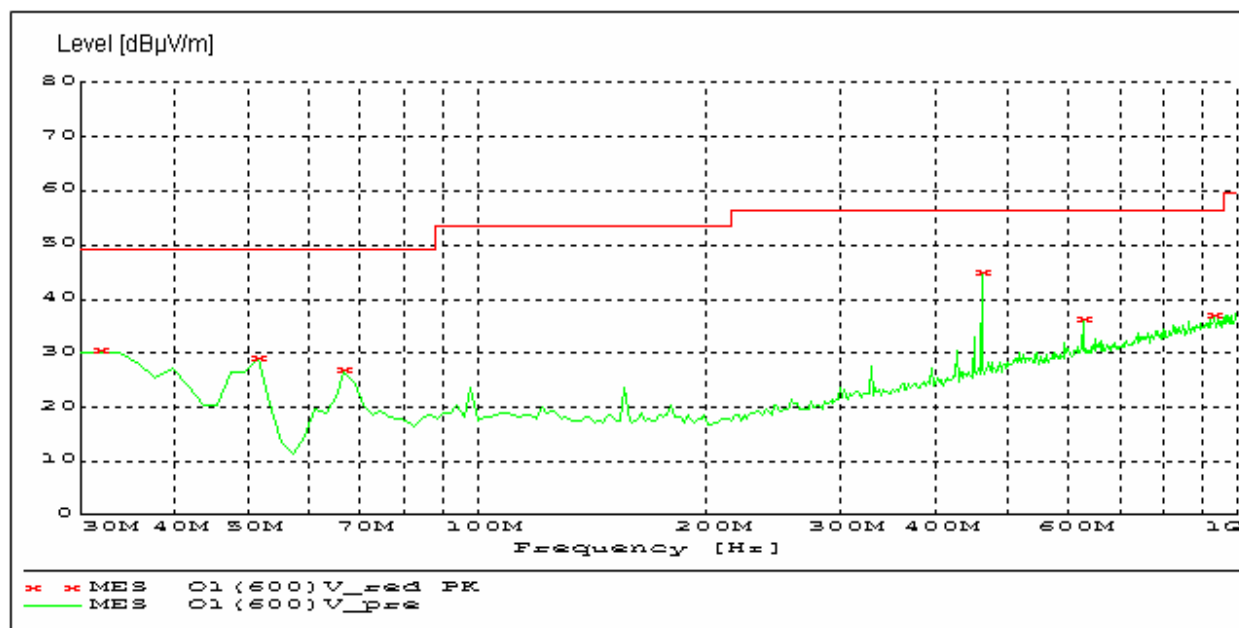
Channel 600

EUT: ZXC10 CBTS O119
Manufacturer: ZTE
Operating Condition: Running
Test Site: Anechoic Chamber
Operator:
Test Specification: FCC Part15 Class A
Comment: Horizontal, channel 600
Start of Test: 2006-5-25 / 16:56:06

**MEASUREMENT RESULT: "O1(600)H_red PK"**

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBμV/m	Margin dB
30.000000	26.15	85.00	100.0	HOR	-5.4	49.1	22.9
66.933868	21.49	91.00	200.0	HOR	-18.8	49.1	27.6
156.352705	21.95	202.00	200.0	HOR	-15.8	53.5	31.6
307.975952	22.48	85.00	100.0	HOR	-10.9	56.4	34.0
461.543086	42.71	339.00	200.0	HOR	-6.6	56.4	13.7
957.234469	37.00	23.00	200.0	HOR	1.8	56.4	19.4

EUT: ZXC10 CBTS O119
 Manufacturer: ZTE
 Operating Condition: Running
 Test Site: Anechoic Chamber
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: Vertical, channel 600
 Start of Test: 2006-5-25 / 16:50:37

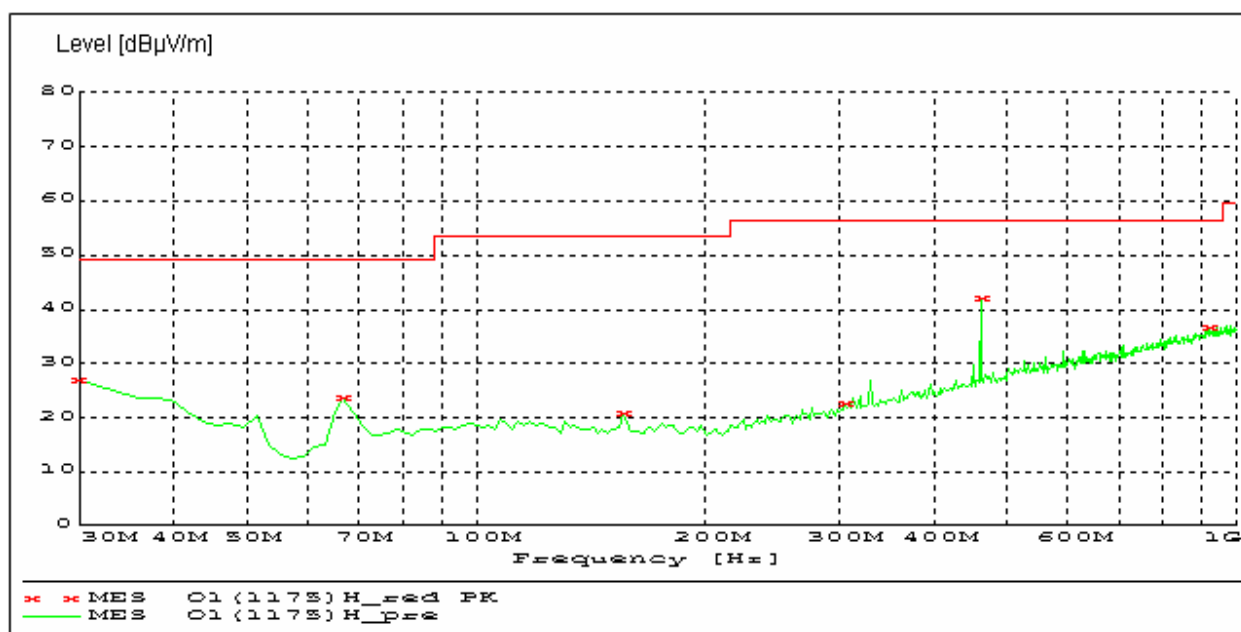


MEASUREMENT RESULT: "O1(600)V_red PK"

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBμV/m	Margin dB
31.943888	30.21	278.00	100.0	VER	-6.4	49.1	18.9
51.382766	28.92	42.00	100.0	VER	-17.7	49.1	20.2
66.933868	26.49	13.00	100.0	VER	-18.8	49.1	22.6
461.543086	44.74	56.00	100.0	VER	-6.6	56.4	11.7
626.773547	35.91	69.00	100.0	VER	-3.4	56.4	20.5
933.907816	36.83	37.00	200.0	VER	1.7	56.4	19.6

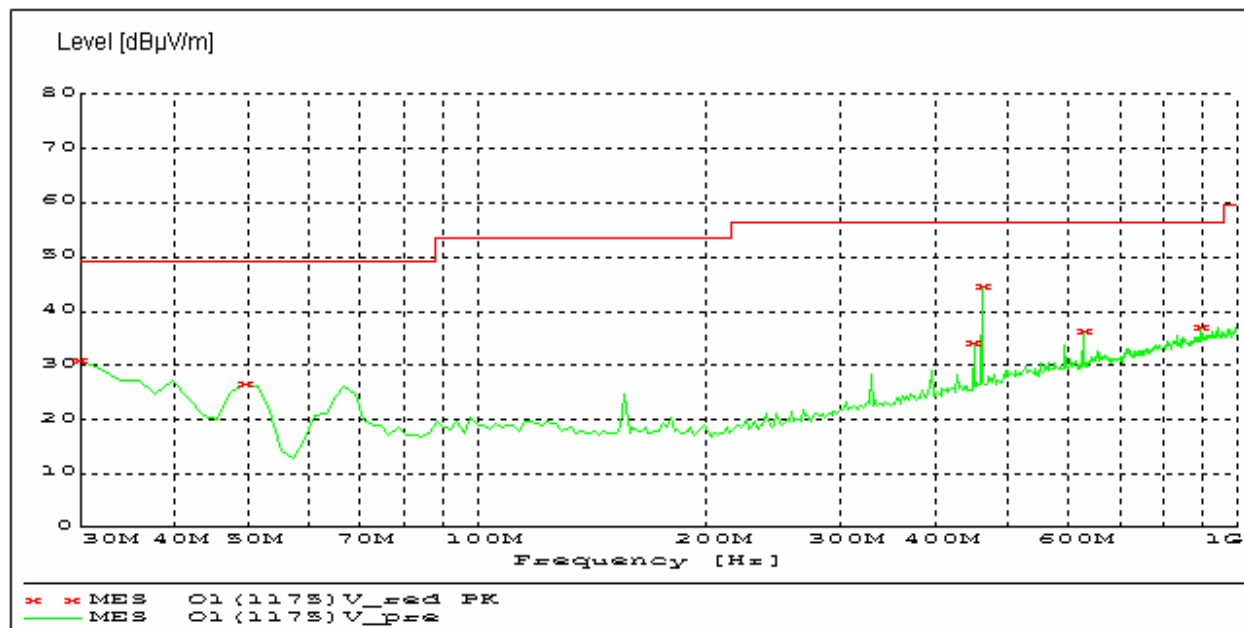
Channel 1175

EUT: ZXC10 CBTS O119
 Manufacturer: ZTE
 Operating Condition: Running
 Test Site: Anechoic Chamber
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: Horizontal, channel 1175
 Start of Test: 2006-5-25 / 16:39:32


MEASUREMENT RESULT: "01(1175)H_red PK"

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd	Limit dB	Margin dBμV/m	dB
30.000000	26.75	97.00	100.0	HOR	-5.4	49.1	22.3	
66.933868	23.51	90.00	200.0	HOR	-18.8	49.1	25.6	
156.352705	20.49	180.00	100.0	HOR	-15.8	53.5	33.0	
306.032064	22.33	339.00	200.0	HOR	-11.0	56.4	34.1	
461.543086	41.87	325.00	200.0	HOR	-6.6	56.4	14.6	
922.244489	36.55	152.00	100.0	HOR	1.6	56.4	19.9	

EUT: ZXC10 CBTS I119
 Manufacturer: ZTE
 Operating Condition: Running
 Test Site: Anechoic Chamber
 Operator:
 Test Specification: FCC Part15 Class A
 Comment: Vertical, channel 1175
 Start of Test: 2006-5-25 / 16:44:37



MEASUREMENT RESULT: "01(1175)V_red PK"

Frequency MHz	Level dBμV/m	Azimuth deg	Height cm	Polarisation	Transd dB	Limit dBμV/m	Margin dB
30.000000	30.63	111.00	100.0	VER	-5.4	49.1	18.5
49.438878	26.28	70.00	100.0	VER	-16.4	49.1	22.8
449.879760	33.76	345.00	100.0	VER	-7.0	56.4	22.7
461.543086	44.35	42.00	100.0	VER	-6.6	56.4	12.1
626.773547	36.00	83.00	100.0	VER	-3.4	56.4	20.4
896.973948	36.87	28.00	100.0	VER	1.1	56.4	19.6

§2.1053- SPURIOUS RADIATED EMISSIONS

Applicable Standard

Requirements: CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Dat	Calibration Due Date
R&S	EMI Test Receiver	ESI26	100058	2005-10-17	2006-10-16
R&S	Ultra roadband Antenna	HL562	100022	2003-3-7	2008-3-6
R&S	Double-Ridged Waveguide Horn Antenna	HF906	100032	2004-10-10	2009-10-9
Albatross	Anechoic Chamber	3m Site	N/A	2005-7-15	2008-7-14
R&S	Cable Set	RE Cable	N/A	2005-10-17	2006-10-16
R&S	Software	ES-K1	N/A	N/A	N/A

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

Channel 25: -31 dB at 5797.59 MHz
 Channel 600: -26 dB at 19973.95 MHz
 Channel 1175: -31.6 dB at 18176.35 MHz

Test Data**Environmental Conditions**

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

The testing was performed by Guan Bin on 2006-5-25

Indicated		Table	Test Antenna		Substituted			Antenna Gain	Cable	Absolute	Limit	Margin
Frequency MHz	Meter Reading dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm	Polar H/V	Correction dBi	Loss dB	Level dBm	dBm	dB
Channel 25 f= 1931.25MHz												
5797.59	54.32	33	100	H	5797.59	-44.4	H	6.5	9.05	-44	-13	-31
18671.34	69.77	190	100	H	18671.34	-36.7	H	12.2	6.45	-44.6	-13	-31.6
5797.59	53.19	277	100	V	5797.59	-50	V	6.5	9.05	-49.6	-13	-36.6
12835.67	59.69	360	100	H	12835.67	-50.1	H	10.1	12.15	-50.2	-13	-37.2
8907.82	53.47	341	200	V	8907.82	-51	V	8.4	9.65	-51.9	-13	-38.9
5412.83	48.9	242	100	H	5412.83	-52.7	H	6.3	8.55	-52.6	-13	-39.6
3488.98	43.48	242	100	H	3488.98	-59.4	H	5	7.75	-58.8	-13	-45.8
1769.54	46.24	23	100	V	1769.54	-60.1	V	3.5	6.55	-59.2	-13	-46.2
4787.58	45.92	319	100	V	4787.58	-61.5	V	5.9	9.15	-60.4	-13	-47.4
1769.54	44.3	86	100	H	1769.54	-62.4	H	3.5	6.55	-61.5	-13	-48.5
3501	42	152	100	V	3501	-65.2	V	5	7.75	-64.6	-13	-51.6
1324.65	35.08	0	200	V	1324.65	-68.7	V	3.1	4.25	-69.7	-13	-56.7
Channel 600 f=1960MHz												
19973.95	70.78	294	100	V	19973.95	-31.1	V	12.2	6.45	-39	-13	-26
18202.4	70.26	225	200	H	18202.4	-36.2	H	12.2	6.45	-44.1	-13	-31.1
5881.76	55.11	33	100	V	5881.76	-48	V	6.6	9.05	-47.7	-13	-34.7
5509.02	48.98	173	200	H	5509.02	-49.6	H	6.4	9.05	-49.1	-13	-36.1
1793.59	52.83	70	200	H	1793.59	-50.5	H	3.6	6.55	-49.7	-13	-36.7
12887.78	59.99	360	100	H	12887.78	-50.1	H	10.1	12.15	-50.2	-13	-37.2
6182.36	52.59	70	200	H	6182.36	-50.8	H	6.9	9.05	-50.8	-13	-37.8
12366.73	59.78	278	200	V	12366.73	-51	V	9.9	12.05	-51	-13	-38
1793.59	52.53	172	200	V	1793.59	-54	V	3.6	6.55	-53.2	-13	-40.2
8146.29	53.84	33	100	H	8146.29	-56.1	H	8	9.45	-56.8	-13	-43.8
3464.93	43.84	190	100	V	3464.93	-57.7	V	5	7.75	-57.1	-13	-44.1
5485.97	48.75	331	200	V	5485.97	-58.5	V	6.4	8.55	-58.5	-13	-45.5

Indicated		Table	Test Antenna		Substituted			Antenna	Cable	Absolute	Limit	Margin
Frequency	Meter	Angle	Height	Polar	Frequency	Level	Polar	Gain	Loss	Level		
MHz	Reading											
Channel 1175 f=1988.75MHz												
18176.35	69.72	119	200	H	18176.35	-36.7	H	12.2	6.45	-44.6	-13	-31.6
8120.24	55.56	360	100	V	8120.24	-45.1	V	8	9.45	-45.8	-13	-32.8
1829.66	56.97	349	100	H	1829.66	-47	H	3.6	6.55	-46.2	-13	-33.2
18671.34	70.42	87	100	V	18671.34	-40.2	V	12.2	6.45	-48.1	-13	-35.1
1829.66	54.72	87	100	V	1829.66	-51.8	V	3.6	6.55	-51	-13	-38
5436.87	49.54	244	100	H	5436.87	-51.7	H	6.3	8.55	-51.6	-13	-38.6
13018.04	60.53	87	100	V	13018.04	-51.1	V	10.2	11.85	-51.6	-13	-38.6
6987.98	51.98	15	200	H	6987.98	-51.8	H	7.3	9.25	-52	-13	-39
12939.88	60.07	244	100	H	12939.88	-52.7	H	10.1	12.15	-52.8	-13	-39.8
6603.21	53	0	200	V	6603.21	-54.8	V	7.1	9.25	-54.8	-13	-41.8
8120.24	53.74	330	200	H	8120.24	-56.1	H	8	9.45	-56.8	-13	-43.8
5424.85	48.91	33	100	V	5424.85	-58.5	V	6.3	8.55	-58.4	-13	-45.4

§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
Agilent	PSA Spectrum Analyzer	E4440A	US44302705	2005-11-24	2006-11-24

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**

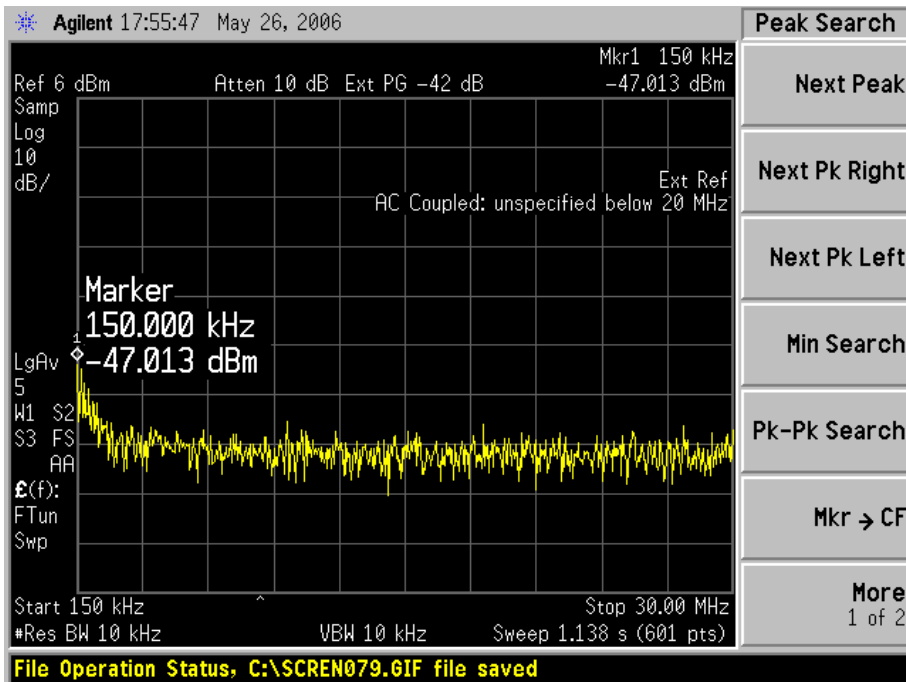
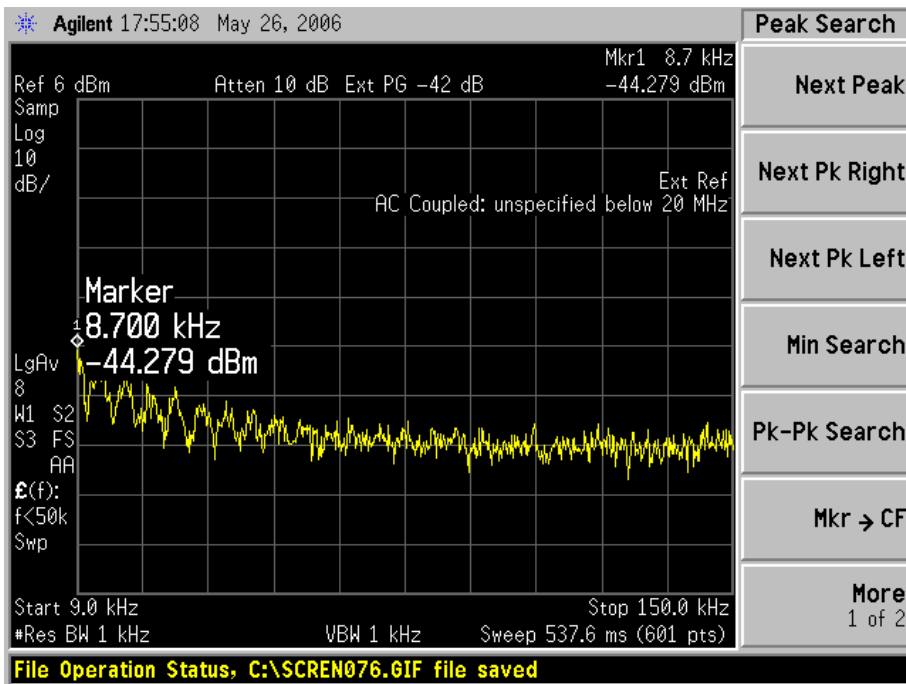
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

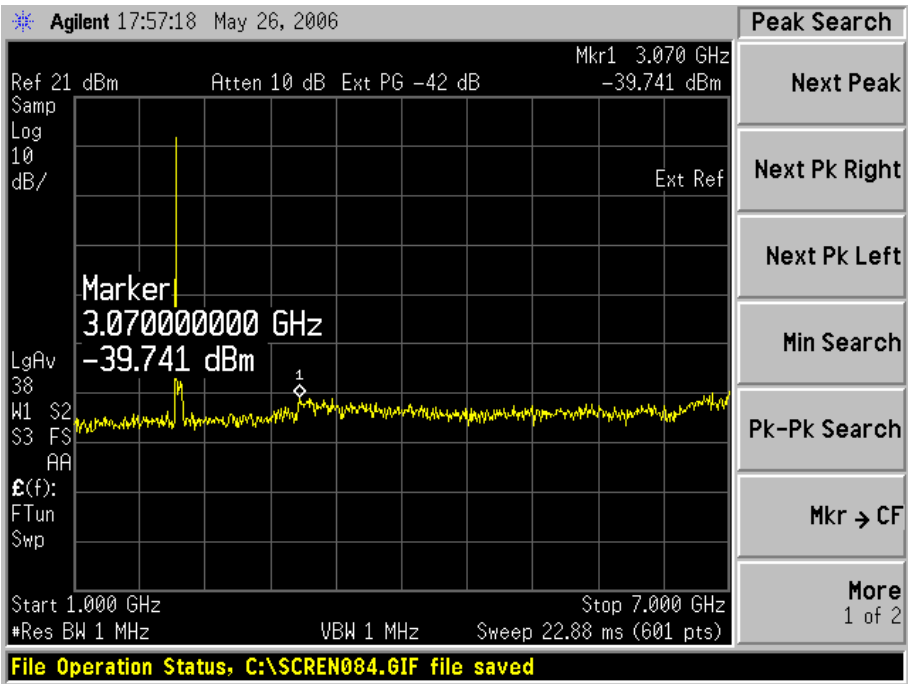
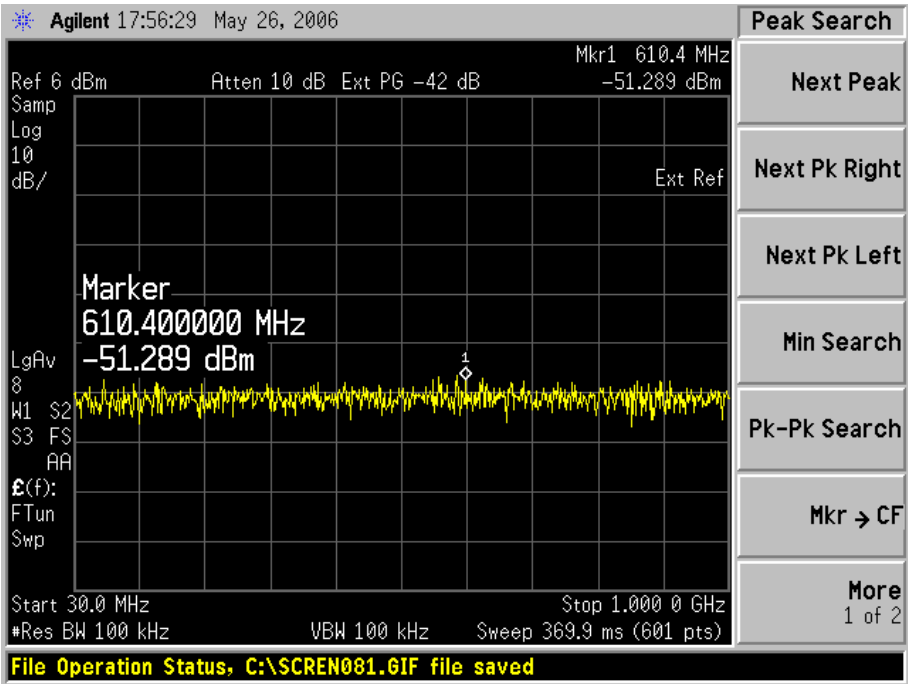
The testing was performed by JX HE on May 01-28, 2006.

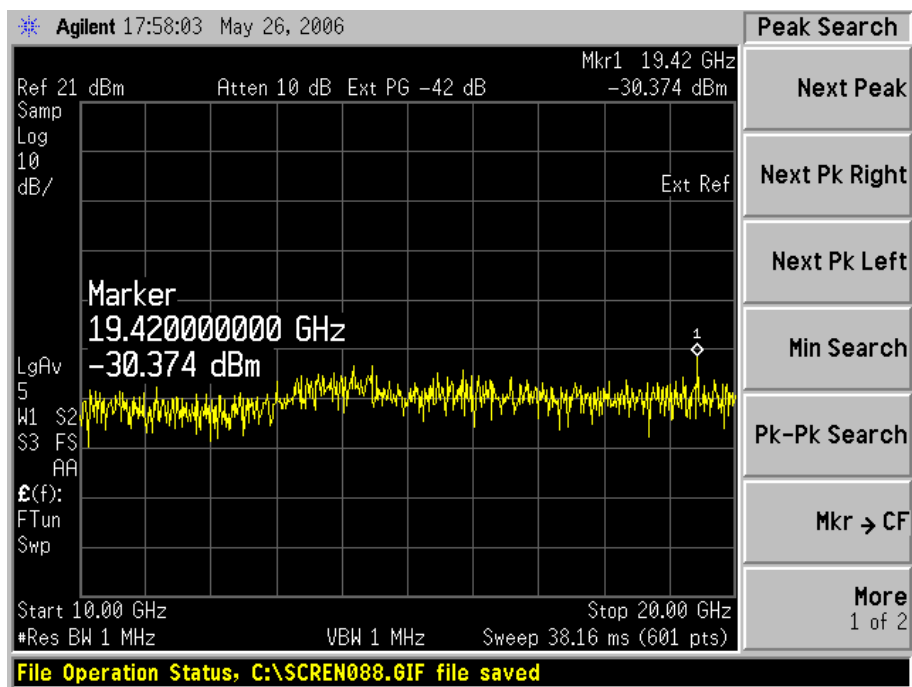
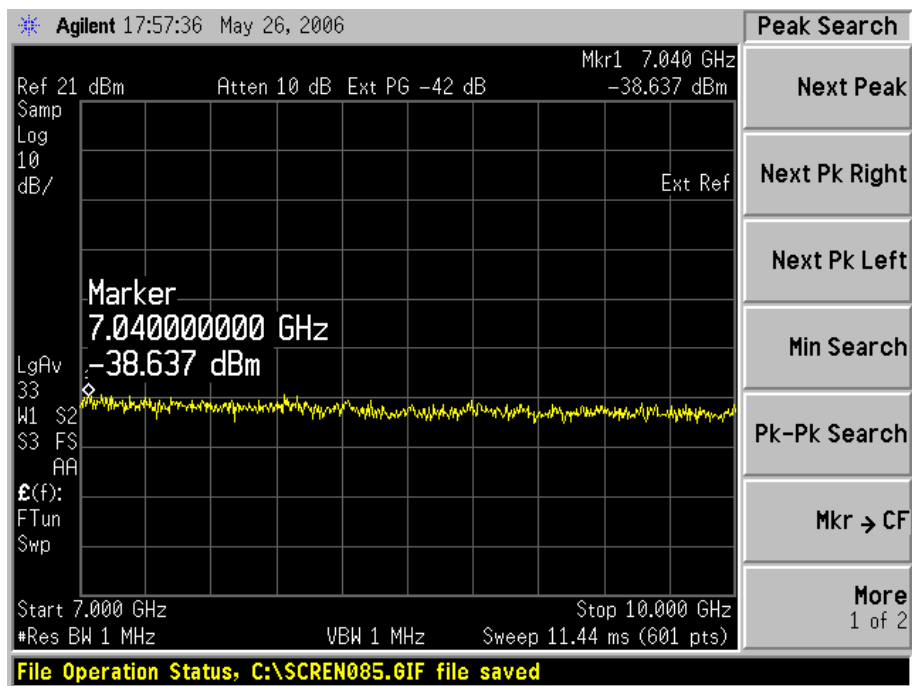
Test Result: Pass

Test Mode: Transmitting

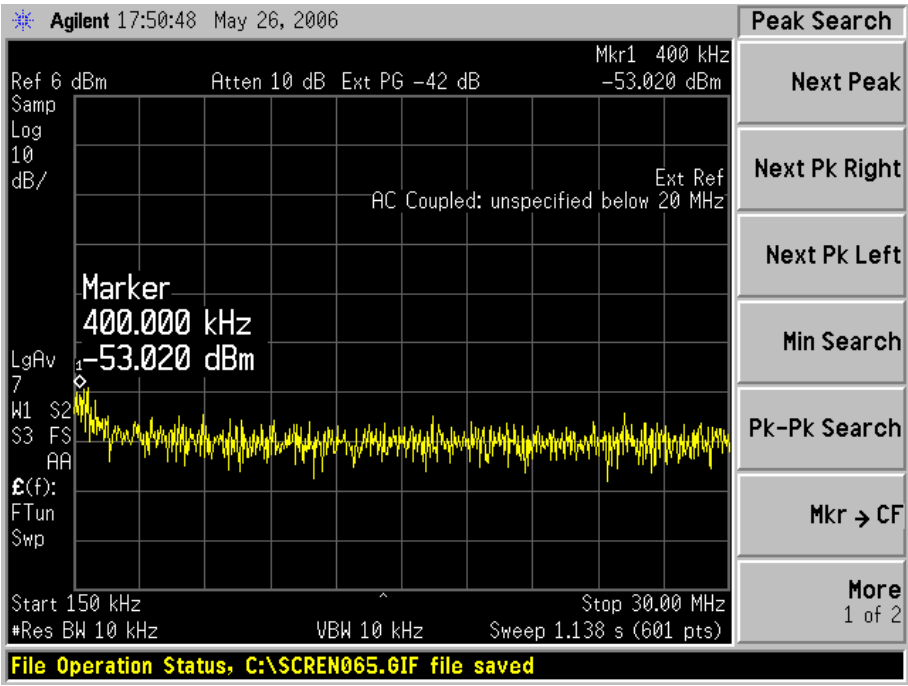
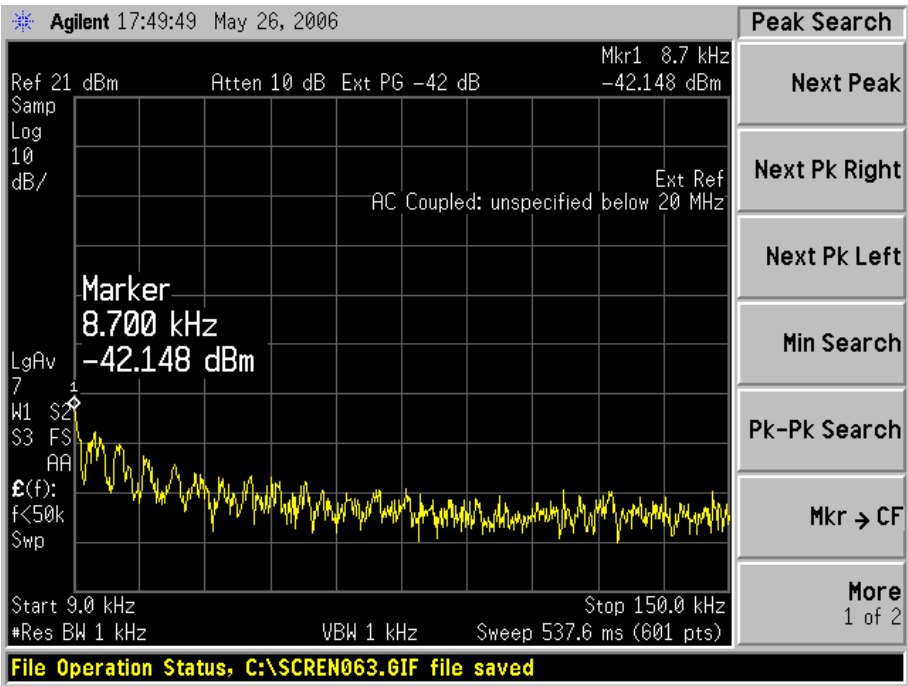
Channel 25

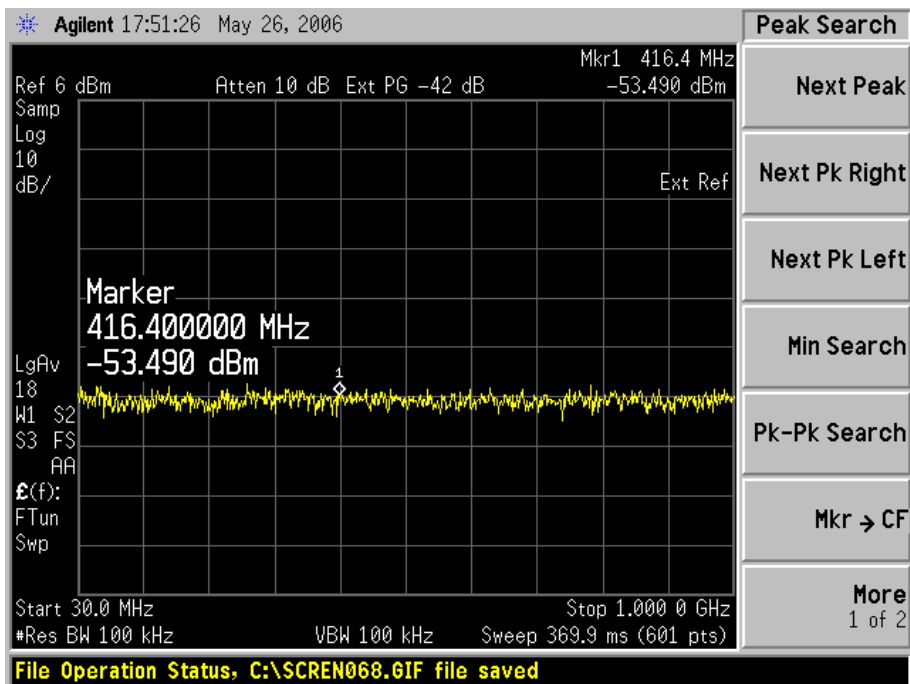
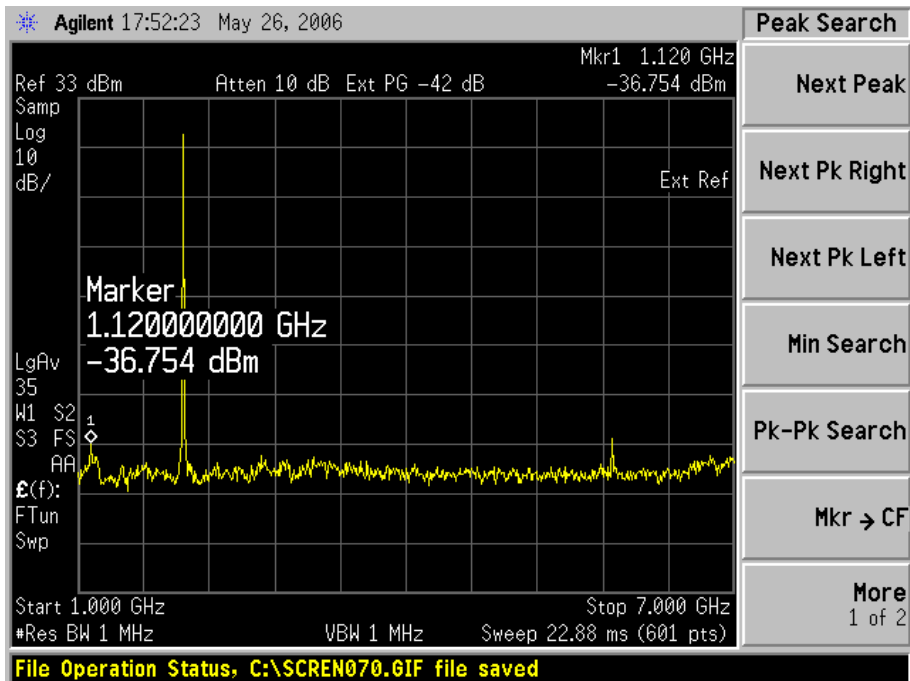


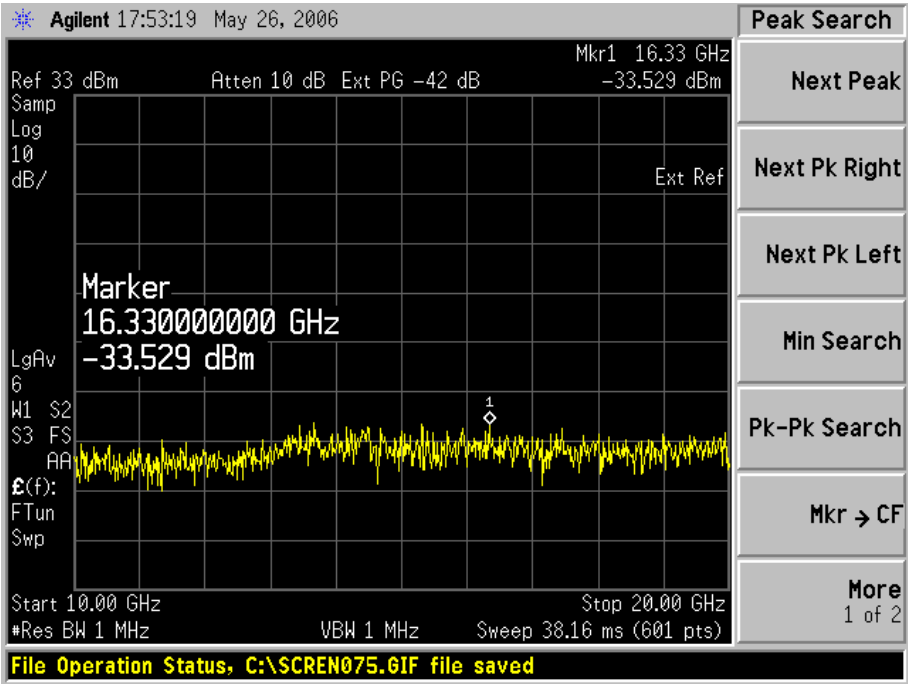
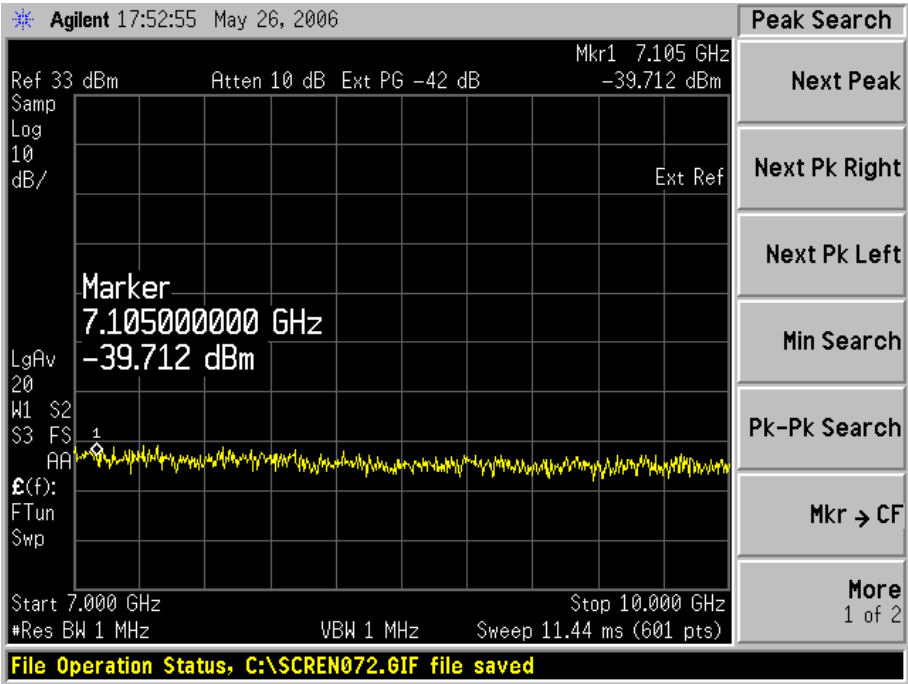




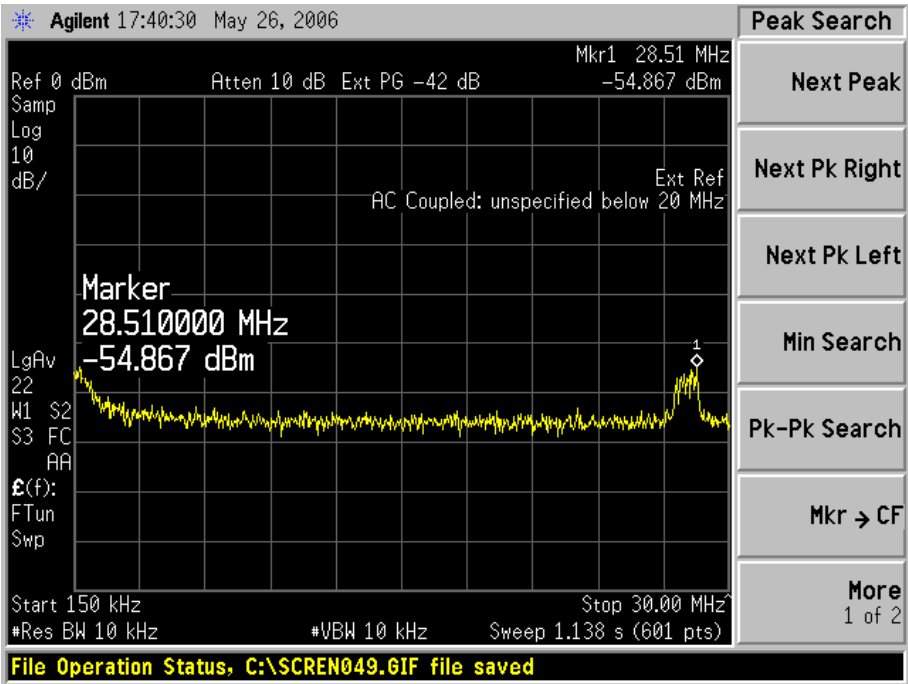
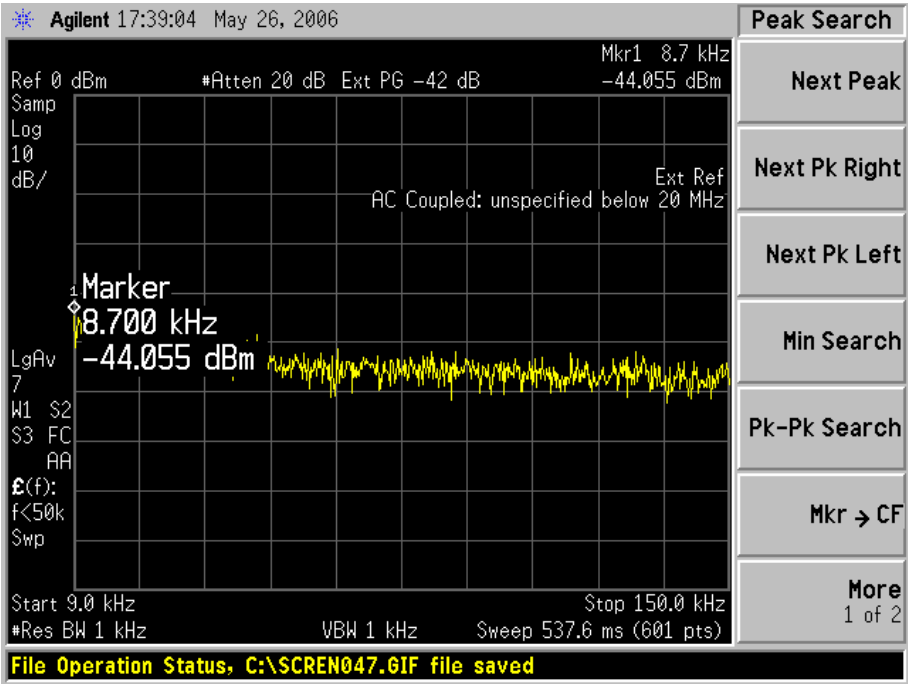
Channel 600

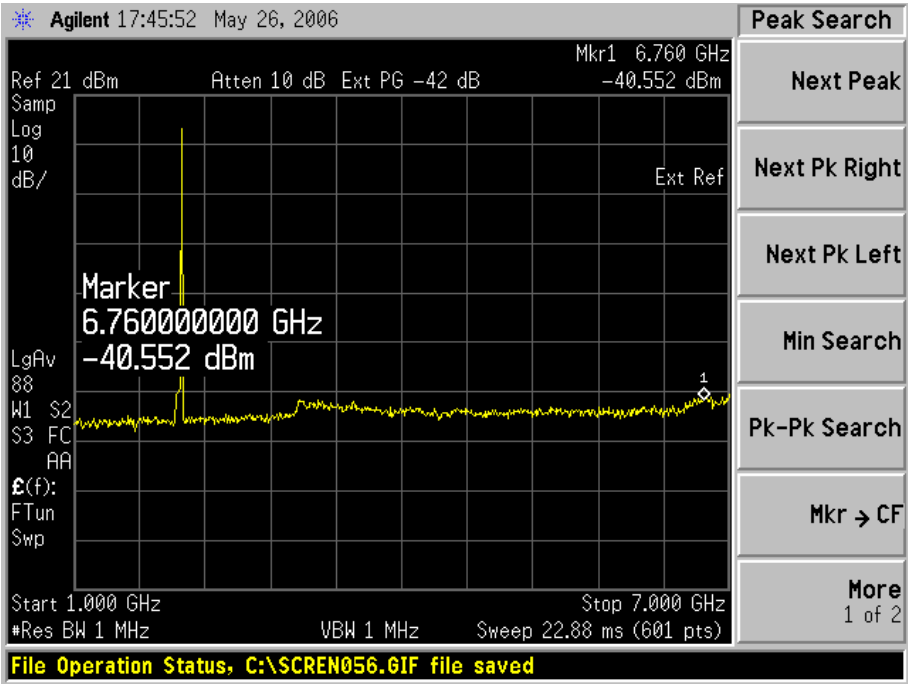
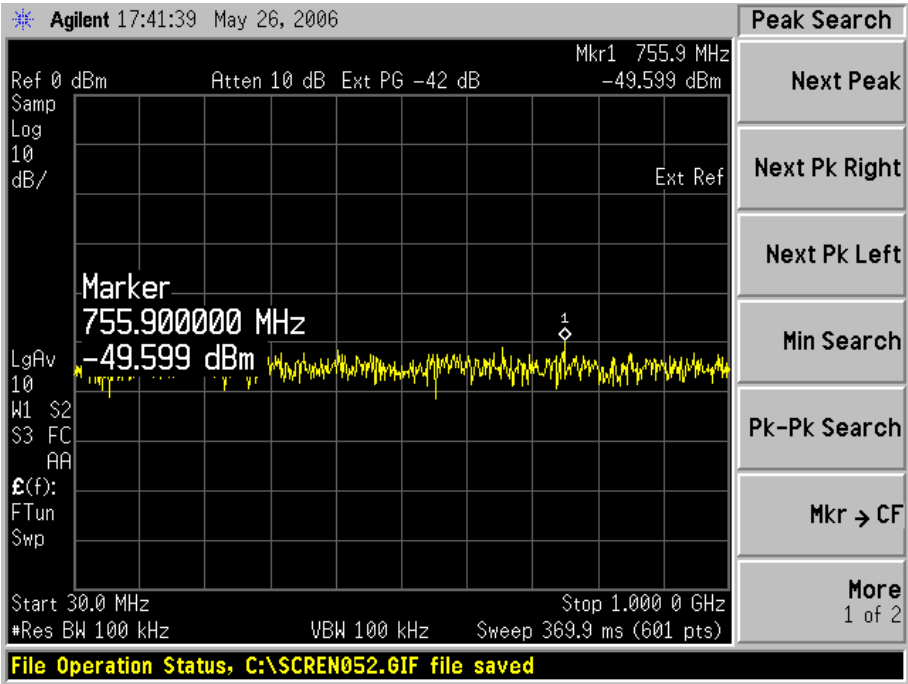


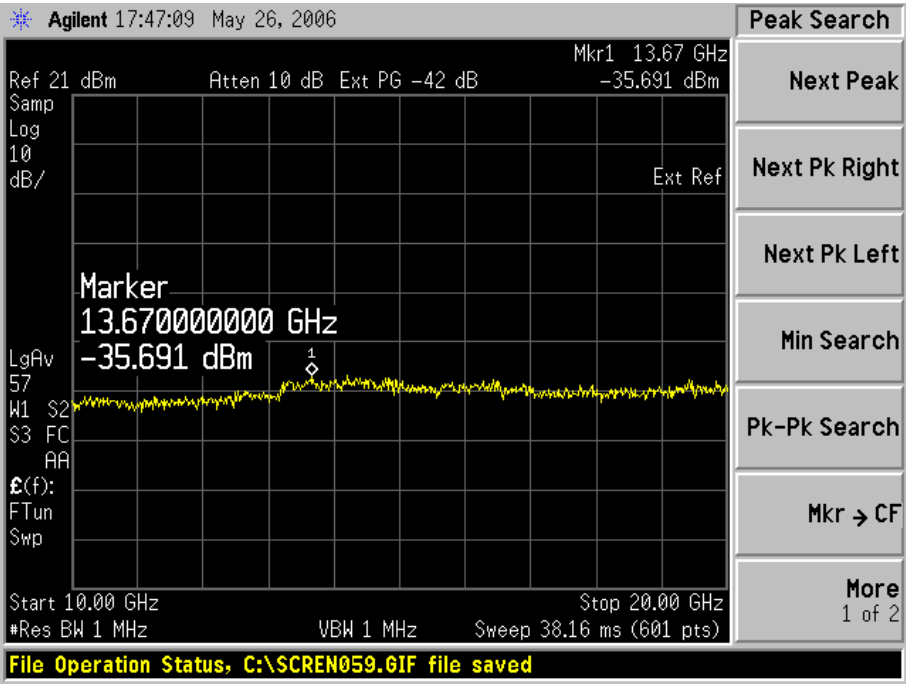
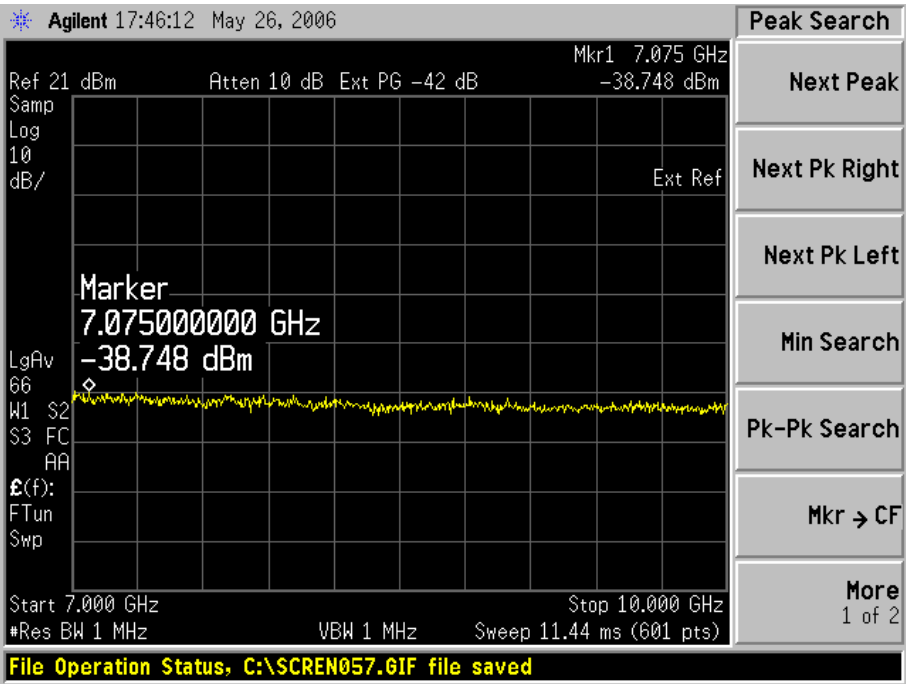




Channel 1175







§2.1049, §22.917, §22.905 -OCCUPIED BANDWIDTH

Applicable Standard

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

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

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:	1009mbar

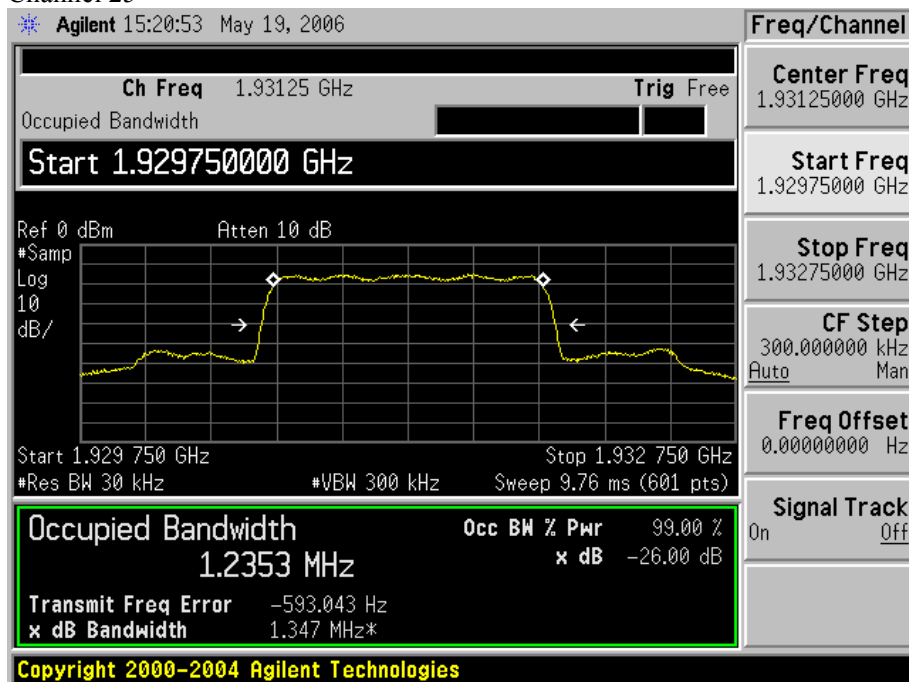
The testing was performed by JX HE on May 01-28, 2006.

Test Result: Pass

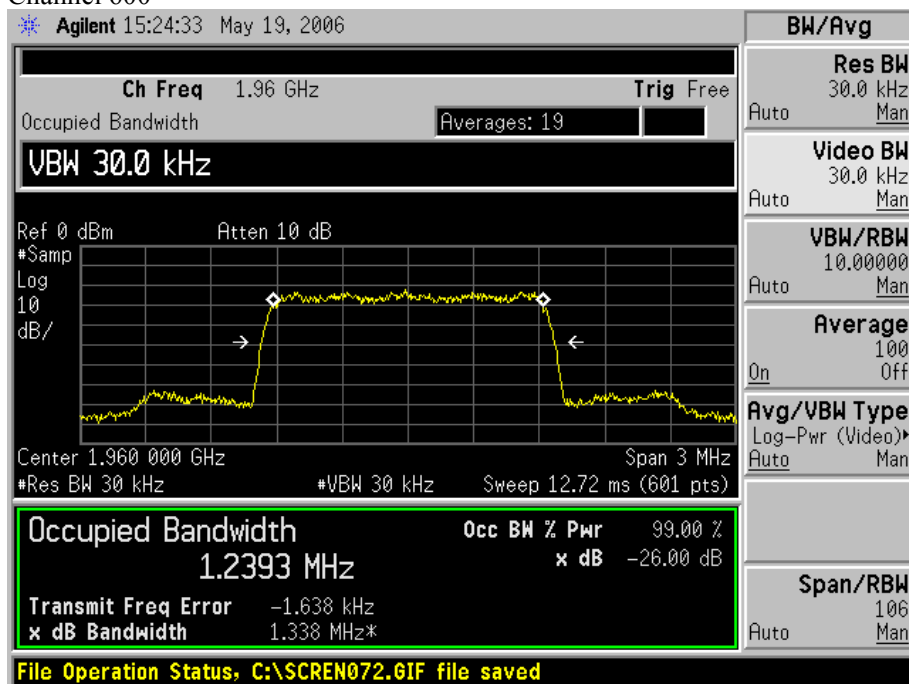
Test Mode: Transmitting

Channel	Channel frequency (MHz)	99% Power Bandwidth (MHz)
Channel 25	1931.25	1.2353
Channel 600	1960	1.2393
Channel 1175	1988.75	1.2337

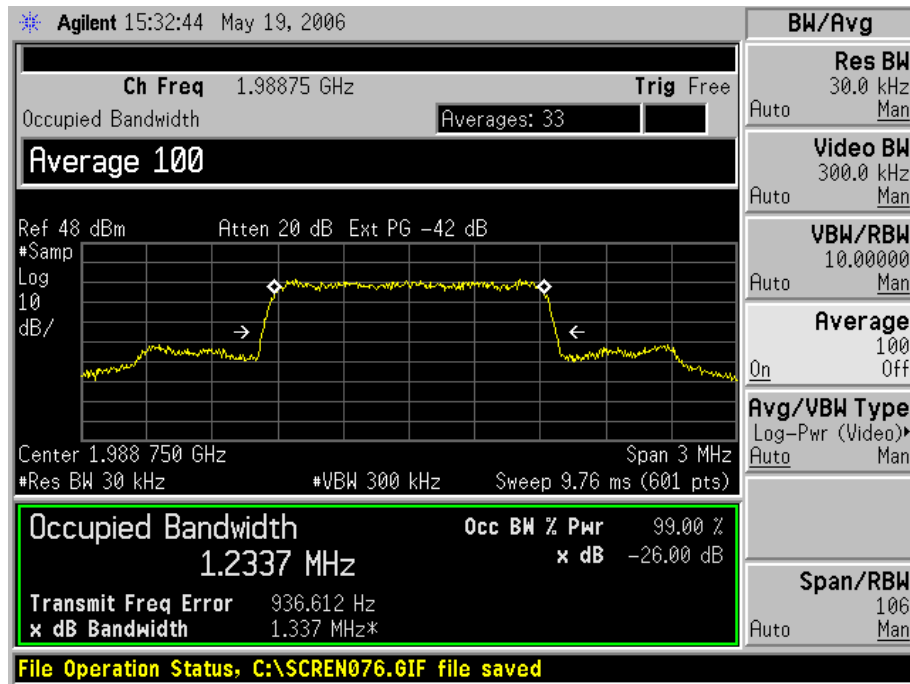
Channel 25



Channel 600



Channel 1175



§22.917- BAND EDGES

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 Spectrum Analyzer	E4445A	MY44300451	2006-3-2	2007-3-2

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

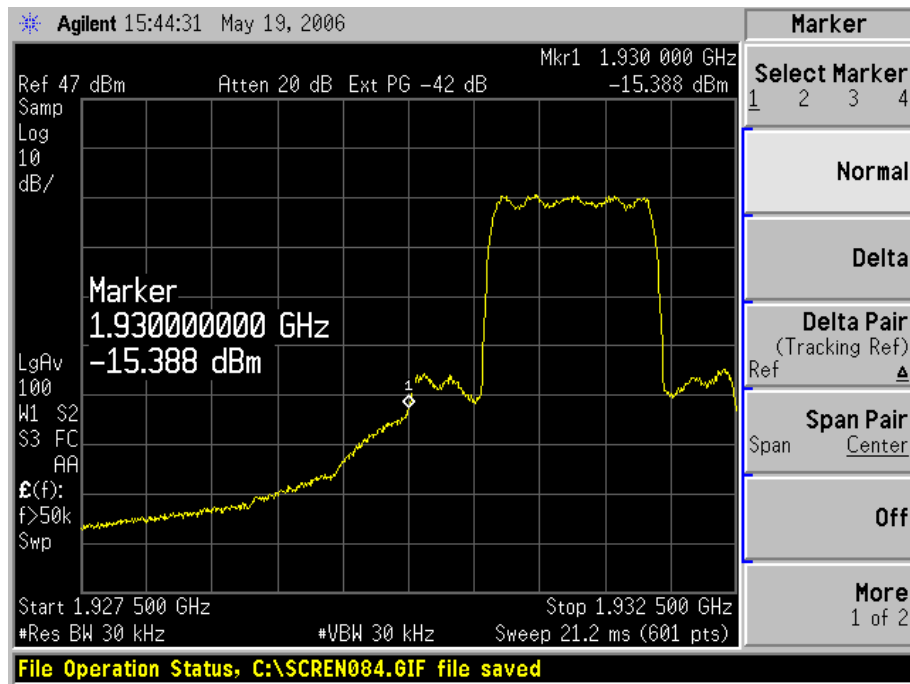
Temperature:	24 °C
Relative Humidity:	59%
ATM Pressure:	1009mbar

The testing was performed by JX HE on May 01-28, 2006.

Test Result: Pass

Test Mode: Transmitting

Frequency MHz	Emission dBm	Limit dBm
1927.5	-15.388	-13.00
1990	-14.543	-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)	Mobile		
	Base, fixed	[SU][le]/ Mobile	
	(ppm)	SU]3 watts	[le]3 watts
	(ppm)	(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	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 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 JX HE on May 01-28, 2006.

Test Result: Pass

Test Mode: Transmitting

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature				
Temperature °C	Power Supplied Vac	Frequency Measure Error Hz	Error ppm	Result
CH25 f=1931.25MHz				
-40	220	3.15	0.001631	PASS
-30	220	-1.24	0.000642	PASS
-20	220	-3.70	0.001915	PASS
-10	220	5.38	0.002785	PASS
0	220	-1.13	0.000585	PASS
10	220	1.08	0.000559	PASS
20	220	0.02	0.000010	PASS
30	220	-5.94	0.003086	PASS
40	220	8.48	0.004391	PASS
50	220	0.48	0.000249	PASS
55	220	9.06	0.004691	PASS
CH600 f=1960MHz				
-40	220	4.11	0.002096	PASS
-30	220	1.72	0.000875	PASS
-20	220	-0.65	0.000331	PASS
-10	220	-6.09	0.000311	PASS
0	220	1.10	0.000561	PASS
10	220	-10.08	0.005142	PASS
20	220	2.16	0.001102	PASS
30	220	3.33	0.001699	PASS
40	220	-0.47	0.000240	PASS
50	220	-3.42	0.001745	PASS
55	220	1.08	0.000551	PASS
CH1175 f=1988.75MHz				
-40	220	0.68	0.000342	PASS
-30	220	0.81	0.000407	PASS
-20	220	1.63	0.000820	PASS
-10	220	-3.7	0.001860	PASS
0	220	1.98	0.000996	PASS
10	220	8.91	0.004480	PASS
20	220	-3.6	0.001810	PASS
30	220	7.98	0.004013	PASS
40	220	3.05	0.001533	PASS
50	220	-0.52	0.000261	PASS
55	220	4.83	0.002429	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage				
Voltage Vac	Temperature °C	Frequency Measure	Error ppm	Limit 1.5ppm
CH25 f=1931.25MHz				
150	20	5.28	0.002734	PASS
180	20	-1.11	0.000575	PASS
210	20	1.50	0.000777	PASS
240	20	-2.04	0.001056	PASS
270	20	0.54	0.000280	PASS
300	20	-1.34	0.000694	PASS
CH600 f=1960MHz				
150	20	-2.04	0.001041	PASS
180	20	-1.42	0.000724	PASS
210	20	3.80	0.001939	PASS
240	20	1.87	0.000954	PASS
270	20	-2.24	0.001142	PASS
300	20	-3.62	0.001847	PASS
CH1175 f=1988.75MHz				
150	20	-1.84	0.000925	PASS
180	20	-4.83	0.002202	PASS
210	20	4.53	0.002278	PASS
240	20	-6.93	0.003485	PASS
270	20	-5.65	0.002841	PASS
300	20	-4.14	0.002082	PASS