

September 27, 2002

WYSE Technology FCC 3M Class B Test Record

for

Window Based Terminal

Model Number: WT9450XE

Tests performed by WYSE Technology

3471 N. First Street, San Jose, CA

Test completed: September 27, 2002

Test Engineer: Jimmy Nguyen

September 27, 2002

1.0 INTRODUCTION

1.1 Scope

This record is intended to document conformance with the EMC Directive (89/336/EEC) and details the results of testing performed on September 27, 2002 on the model WT9450XE.

1.2 Purpose

Testing was performed to evaluate the emissions performance of the WT9450XE with respect to FCC 3m Class B.

1.3 Summary

The Windows Terminal WT9450XE was found to be compliant to FCC 3m Class B Emission Requirements.

1.4 Testing Requirements

Testing was performed using procedures and criteria contained in FCC 3m.

2.0 TEST ENVIRONMENT

2.1 Test Sample Description

WT9450XE is designed to communicate with a host system via Twisted Pair LAN interface on NT Windows Server.

Test Software

The software used during the test was a continuous loop batch file on Windows NT station. The program creates an entire page of "H"s and writes the entire page to the screen, and it also prints to the serial and parallel devices as used in the test setup. The cables were moved around to find the maximum emission from the EUT.

2.2 Test Facilities

2.2.1 Emissions Test Site

Radiated emissions testing was performed in a 3m Semi-Anechoic Chamber. The description of the **3m Chamber** is filed at the WYSE Regulatory Engineering Department. The Chamber is located at 3471 N. First Street, San Jose, California, USA. Conducted emission testing was performed inside a shielded enclosure (**Screen Room**) in the WYSE RFI laboratory. The description of the screen room is filed at WYSE Regulatory Engineering Department. The Screen Room is located at 3471 N. First Street, San Jose, California, USA.

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2.3 Test Equipment

The following are the list of equipment used during the radiation and conducted testing.

Radiated:

HP Receiver model 85460A (RES BW: 30 KHz-100KHz, VBW: 10KHz – 30KHz)

Conducted:

HP 85650A Quasi-Peak Adapter

HP 85680B Spectrum Analyzer (RES BW: 30KHz –100KHz, VBW: 10KHz – 30KHz)

SETUP:

In accordance with WYSE Technology test procedure.

PROCEDURE:

Biconilog antenna was used for frequency range 30MHz - 2 GHz. The frequency range was checked for signals strength. The antenna was then raised and lowered for final maximization. The frequency range was checked with antennas in the horizontal and vertical polarization.

3.0 TEST RESULTS

3.1 Test Description

CISPR Publication 22:1997, limits and methods of measurements of radio interface of information technology equipment, was the guiding document for the test. The product's radiated emissions from 30 MHz to 2000 MHz and its power mains conducted emissions from 150 KHz to 30 MHz were measured.

3.2 Test Configuration

The EUT was configured with a typical mix of available peripherals which fully configured all types of communications ports of the EUT and exercised it in a typical manner.

3.3 Test Procedure

For radiated emissions testing, the equipment is installed on a 0.8 meter high non-conductive turntable 3 meters from the receiving antenna mast. The EUT is fully exercised during the test to maximize emissions. The receiving antenna is scanned over the height range of 1 to 4 meters in both polarities and the turntable is rotated with emissions level observed at each frequency. During the process the equipment configuration is also modified by moving the interconnecting cables to find the typical configuration that maximizes emissions at each frequency.

The frequency range from 30 MHz to 2000 MHz is explored. Measurement data is compared to Class **B** limit.

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For conducted emissions testing the equipment is moved to a 0.8 meter high platform and the EUT and Configurations equipment are powered from a different LISNs. Both sides of the AC line are measured and the results compared to the Class **B** limit.

3.4 Test Results

A comparison of the measured data with the Class **B** limit of **CISPR** shows that Windows Terminal **WT9450XE** was **7.14 dB** below the limits at the worst case frequency of **161.99 MHz** in a Vertical Polarization.

3.5 Product Specification

Model: WT9450XE (Logic Board P/N 770394-01)

Clock Circuit:

U16 = ICS C9725-198

Filters:

33 MHZ CLK Line:

R215-217 = 33 ohms

14 MHZ CLK Line:

C164, 173 = 22 pF

48 MHZ CLK Line:

R240 = 22 ohms

U15 = VIA C3 CPU, 533 EBGA

C61, 72, 59, 65 = 47 pF

R117, 106 124, 122 = 27 ohms

C56, 68 = 27 pF

R120, 126, 113, 119 = 15 Kohms

L12, L17 = BLM1IP 300S

Main Power Filters:

U17 = ISL6524

PL1 = 2uH Choke

C188, C169, 168 = 10 uF Aluminum cap

Video Circuit:

U12 = IC,8601,NORTH BRIDGE

Filters:

L19, 20, 24, 25, 35, 32, 31 = BLM11P600S

C119 = 1 uF

C114 = 1000 pF

B38 = 0.1 uF

CT23 = 10 uF 16V

L40, 41 = BLM11A121S

C187, 192 = 1000 pF

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Termination:

R149, 140, 141, 70, 138, 146, 151 = 22.5 ohms
R242, 233 = 47 ohms

Audio Circuit:

U13 = VIA VT1621A AC97 CODEC and Audio

Filters:

L2, 8, 7, 3, 10, 1 = BLM11P600S
B2, 9, 6, 7, 25, 30, C11, 32, 33 = 0.1 uF
B16, B17 = 0.01 uF
C26, 28, 24, 23, 25 = 0.22 uF
C8, 9 = 27 pF
C7, 6, 22 = 22 pF

Network:

U11 = VIA VT6103 LAN

Filters:

C77, 83, 79, 75, 86 = 0.1 uF
C266, 267 = 47 pF
C73, 74 = 22 pF
R171, 175 = 330 ohms
R156, 159 = 49.9 ohms
CN3B = Conn, RJ45, 8P

Radiated Emission Test

3m Chamber

WYSE Technology Inc.

3471 North 1st Street

San Jose Ca 95134

Test Description:

EUT: WT9450XE

Serial No. PP#1

Part No. 902048-01

File No. 092702#2

Test Type:

EN55022

EN55022

FCC-A { } FCC-B { X } CISPR-A { } CISPR-B { }

PASS: X FAIL: Debug:

Frequency	Peak	DelLim-Pk	QP	DelLim-QP	Angle	Hgt	Pol
MHz	dBuV/m	dB	dBuV/m	dB	deg	cm	

See below

Configuration:

- 1) Fully configured
- 2) Video 1024X768 @ 85Hz

Modifications:

New P/S BD
Mylar sheet under mother board
XPE firmware with 192M Flash
Added gasket to I/O panel

Test Procedure Definition:

EMI Receiver	Model: 85460A	(Cal. Date: 09 May 2002)
	SN: 3807A11445	(Cal. Due Date: 09 May 2003)
Emco Biog Ant. (Type2)	Model: 3142	(Cal Date: Dec. 11 2002)
	SN: 1201	(Cal Due Date: Dec. 11 2003)
Configuration	WYSE 3M Chamber	
Frequency Rang	30 - 2000 MHz	
Operation to perform	Maximize & Measure	
Initial Setting	Table angle: 0 degree to 360 degree	
	Tower Height: 1meter - 4meter (Steps 1M)	
	Antenna Polarity: Vertical and Horizontal	

Comment:

H Pattern on monitor screen.
Installed Bead On 10/100 Base T

EUT:

Description	Part No.	Serial No.	FCC ID:
WT9450XE	902048-01	PP#1	TBA
Power adapter	Lishin LSE9802A1255	A20233015591	

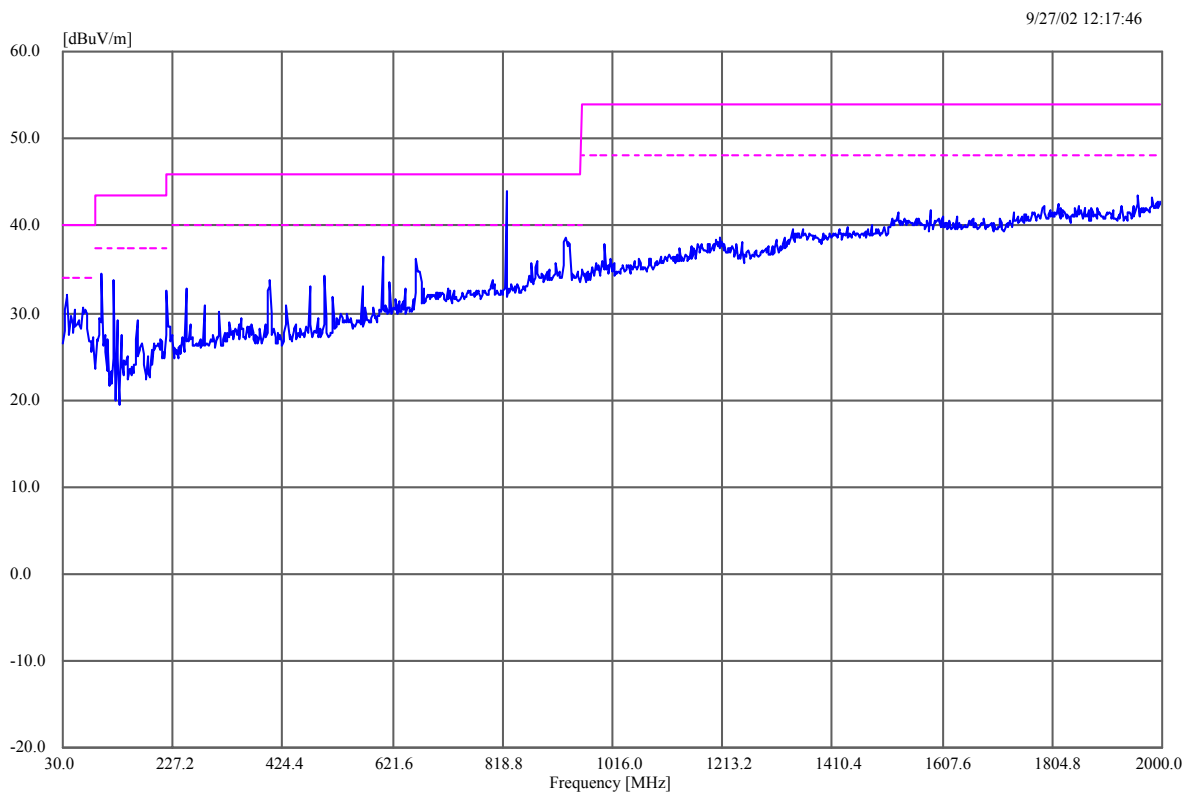
Supporting Devices:

Description	Model No.	Serial No.	FCC ID:
Server HP Brio Computer	81XX	US74852369	DOC
HP Key Board	SK-2501K	M970814311	GYUR38SK
HP Mouse	M-S34	LZA72737431	DZL211029

Peripherals:

Description	Model No.	Serial No.	FCC ID:
Sony 21" Monitor	CPD-G500	CN9AC1811W	DOC
HP Parallel Printer	812C	MX97GW196	DOC
US Robotics 56K Modem	005686-03	22BBQ9UAHN	DOC
Chicony KeyBoard (PS2)	KU-3923	1F11100209	E8HKB5923
Logitech mouse(PS2)	M-S69	LZP22800008	JNZ211443
Logitech Mouse (USB Wheel)	M-u48a	F48920A5BLS007Q	JNZ211443
Logitech Mouse (USB Wheel)	M-u48a	F48920A5BML04WJ	JNZ211443
Headset and Microphone	None	None	

Composite Trace



Final Data [57/849]

Frequency MHz	Peak dBuV/m	DelLim-Pk dB	QP dBuV/m	DelLim-QP dB	Hgt cm	Angle deg	Pol
44.977782	27.52	-12.48	--.--	--.--	147	358	Vert
46.032107	26.65	-13.35	--.--	--.--	137	358	Vert
50.020208	28.32	-11.68	--.--	--.--	137	358	Vert
50.180649	28.61	-11.39	--.--	--.--	105	358	Vert
50.478611	28.84	-11.16	--.--	--.--	98	358	Vert
50.937013	30.81	-9.19	--.--	--.--	105	358	Vert
51.510016	28.39	-11.61	--.--	--.--	169	358	Vert
55.109089	27.53	-12.47	--.--	--.--	102	88	Vert
55.965270	28.82	-11.18	--.--	--.--	102	21	Vert
57.402431	29.17	-10.83	--.--	--.--	102	59	Vert
58.411501	29.36	-10.64	--.--	--.--	102	51	Vert
63.579166	29.06	-10.94	--.--	--.--	102	14	Vert
64.068412	30.69	-9.31	--.--	--.--	102	170	Vert
64.679970	29.76	-10.24	--.--	--.--	123	-2	Vert
65.442029	30.01	-9.99	--.--	--.--	113	358	Vert
66.277964	29.24	-10.76	--.--	--.--	98	358	Vert
66.533389	29.35	-10.65	--.--	--.--	134	358	Vert
67.555087	26.25	-13.75	--.--	--.--	258	358	Vert
68.205259	28.46	-11.54	--.--	--.--	155	358	Vert
70.527302	29.60	-10.40	--.--	--.--	123	358	Vert
71.154253	29.11	-10.89	--.--	--.--	103	358	Vert
71.688323	28.97	-11.03	--.--	--.--	165	358	Vert
72.013409	29.47	-10.53	--.--	--.--	227	358	Vert
79.603980	24.43	-15.57	--.--	--.--	399	72	Horz
81.201153	27.83	-12.17	--.--	--.--	102	214	Vert
82.232239	25.29	-14.71	--.--	--.--	102	237	Vert
83.364413	24.19	-15.81	--.--	--.--	102	162	Vert
84.880716	23.27	-16.73	--.--	--.--	102	154	Vert
90.598024	25.26	-18.24	--.--	--.--	399	-3	Horz
92.423689	22.51	-20.99	--.--	--.--	398	49	Vert
93.549515	22.96	-20.54	--.--	--.--	147	358	Vert
94.523203	21.72	-21.78	--.--	--.--	186	-3	Horz
96.044590	26.10	-17.40	--.--	--.--	315	-3	Horz
97.048706	24.39	-19.11	--.--	--.--	102	303	Horz
100.152336	31.89	-11.61	--.--	--.--	99	358	Vert
100.912876	25.47	-18.03	--.--	--.--	206	358	Horz
102.914879	24.48	-19.02	--.--	--.--	217	358	Horz
105.657349	25.06	-18.44	--.--	--.--	102	118	Vert
109.195136	26.28	-17.22	--.--	--.--	398	295	Horz
120.037899	21.90	-21.60	--.--	--.--	102	260	Horz
121.549755	33.36	-10.14	--.--	--.--	104	358	Vert
125.024370	28.05	-15.45	--.--	--.--	98	358	Vert
128.127652	22.24	-21.26	--.--	--.--	295	52	Horz
133.951870	25.63	-17.87	--.--	--.--	398	235	Horz
145.590291	24.19	-19.31	--.--	--.--	191	-3	Horz
161.998705	36.36	-7.14	--.--	--.--	102	36	Vert
167.662664	23.77	-19.73	--.--	--.--	102	358	Vert
168.897889	26.90	-16.60	--.--	--.--	166	358	Horz
171.428594	24.46	-19.04	--.--	--.--	102	358	Vert
216.034840	31.50	-14.50	--.--	--.--	148	-3	Horz
249.996105	29.13	-16.87	--.--	--.--	102	176	Vert
283.516833	32.13	-13.87	--.--	--.--	102	57	Horz
401.816845	31.84	-14.16	--.--	--.--	98	358	Horz

472.495206	31.88	-14.12	--.--	--.--	159	-2	Horz
499.516214	29.43	-16.57	--.--	--.--	116	358	Horz
601.406171	36.19	-9.81	--.--	--.--	102	199	Horz
824.701102	30.15	-15.85	--.--	--.--	399	101	Horz

