

November 4, 1999

WYSE Technology EN 55022-B Test Record

for

Window Based Terminal

Model Number: WT3720SE

Tests performed by WYSE Technology

3471 N. First Street, San Jose, CA

Test completed: October 21, 1999

Test Engineer: Benton Ng

Approved by: Masood Abrishamcar

October 21, 1999

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 October 21, 1999 on the WYSE WINTERM model: WT3720SE.

1.2 Purpose

Testing was performed to evaluate the emissions performance of the WT3720SE with respect to EN 55022 Class B.

1.3 Summary

The Power Adapter WT3720SE was found to be compliant to EN 55022 Class B Emission Requirements.

1.4 Testing Requirements

Testing was performed using procedures and criteria contained in EN 55022.

2.0 TEST ENVIRONMENT

2.1 Test Sample Description

WT3720SE 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 on a weather protected Open Area Test Site. The description of **OATS** is filed at the WYSE Regulatory Engineering Department. The **OATS** is located 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 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 84560A (RES BW: 30 KHz-100KHz, VBW: 10KHz – 30KHz)

Conducted:

HP 85650A Quasi-Peak Adapter

HP 8566B 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 22:1985, 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 1000 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 10 meter 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 1000 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 Power Adapter **WT3720SE** was **2.30 dB** below the limits at the worst case frequency of **179.99 MHz** in a Vertical Polarization.

3.5 Product Specification

Model: **WT3720SE (Logic Board P/N 991336-01 Rev. A)**

Clock Circuit:

U21 = MK1492-03, P/N 205565-50

Filters:

33 MHZ CLK Line:

R85 = 100 Ohm, P/N 370513-13; Z61 = 15pF (not loaded)

R86 = 100 Ohm, P/N 370513-13; Z58 = 15pF (not loaded)

R87 = 100 Ohm, P/N 370513-13; Z64 = 15pF (not loaded)

R88 = 100 Ohm, P/N 370513-13; Z59 = 15pF (not loaded)

14.3 MHZ CLK Line:

R89 = 33 Ohm, P/N 370513-13; Z60 = 15pF (not loaded)

48/24 MHZ CLK Line:

R90 = 33 Ohm, P/N 370513-13; Z51 = 15pF (not loaded)

24.5 MHZ (Audio) CLK Line:

R91 = 33 Ohm, P/N 370513-13; Z52 = 22pF, P/N 320310-21

U2 = GXLV166, P/N 200062-51

Power Filter

U1 = CX5530, P/N 205122-50

Filters:

R13 = 68 Ohm, P/N 370513-21; Z6 = 15pF (not loaded)

R12 = 68 Ohm, P/N 370513-21; Z5 = 15pF (not loaded)

L17, L18 = 43MTL, P/N 400032-31

RP 1-7 = 100 Ohm, P/N 371338-11

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Video Circuit:

U1 = CX5530, P/N 205122-50

Filters:

L1 = 43MTL, P/N 400021-01; C4, C5 = 33pF, P/N 320313-25

L2 = 43MTL, P/N 400021-01; C3, C6 = 33pF, P/N 320313-25

L3 = 43MTL, P/N 400021-01; C2, C7 = 33pF, P/N 320313-25

Termination:

R4, R5, R6 = 75 Ohm, P/N 370508-85

Audio Circuit:

U15 = LM4546, P/N 205123-53

Filters:

C19 = 100 pF, P/N 320313-37

L1-L4 = 43MTL, P/N 400008-03

Audio Connector:

J1, J2 = 3.5 MM, P/N 563674-01

Driving Transistor:

Q3, Q4 = MMBT3904, P/N 270010-50

Network:

U24 = DP83815, P/N 205127-50

Filters:

R70, R71 = 49.9 Ohm, P/N 370508-68

U17 = Transformer, Pulse Type '68515,' P/N 429099-51

Filters:

C32, C33 = .1 uF, P/N 320338-24

C34 = .01 uF, P/N 320345-13

R72, R73, R74, R75 = 75 Ohm, P/N 370513-22

Zero Ohm Jumpers:

RJE = 0 Ohm; Z13, Z14 = (not loaded)

RJB = (not loaded)

Z22 = P/N 205125-50

Z48 = (not loaded)

Z13 = (not loaded)

Radiated Emission Test

*WYSE Technology Inc.
3471 North 1st Street
San Jose Ca 95134*

Test Description:

EUT: WT3720SE

Serial No. 1C319A01057

Part No. 901987-01

File No. 102199#1

Test Type:

EN55022

EN55022

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

PASS: X ; FAIL: _____

Frequency {MHz} 1. 179.99; 2. 764.94; 3. 31.66; 4. 343.83

Margin {dBuV} 1. -2.30; 2. -4.22; 3. -5.10; 4. -5.54

Configuration:

1) Fully configured

Modifications:

1) None

Test Procedure Definition:

HP Spectrum Analyzer/QP Adapter

8566B/85650A

Configuration

WYSE 10M OATS

Frequency Range

30 - 2000 MHz

Operation to perform

Maximize & Measure

Initial Setting

Table angle: 0 degree

Tower Height: 100 cms

Antenna Polarity: Vertical

Test Engineer: Benton S. Ng

EUT:

<i>Description</i>	<i>Part No.</i>	<i>Serial No.</i>
WT3720SE	901987-01	1C319A01057

Supporting Devices:

<i>Description</i>	<i>Model</i>	<i>Serial No.</i>	<i>FCC ID</i>
Server HP Brio Computer	81XX	US74852369	DOC
D-Link Hub	DFE-409	F718102783	KAZED4904H1

Peripherals:

<i>Description</i>	<i>Model No.</i>	<i>Serial No.</i>	<i>FCC ID</i>
HP Serial Printer	2225D	3208S00972	DS16XU2225
HP Parallel Printer	2225C	2908S39511	DS16XU2225
Wyse Keyboard	KB-8923	TCAM8303939	E8HKB-5923
HP Mouse	M-S34	LZA64804895	DZL211029
Yamaha Speaker	AMX2000	None	None
Generic Microphone	None	None	None

Final Vertical Result

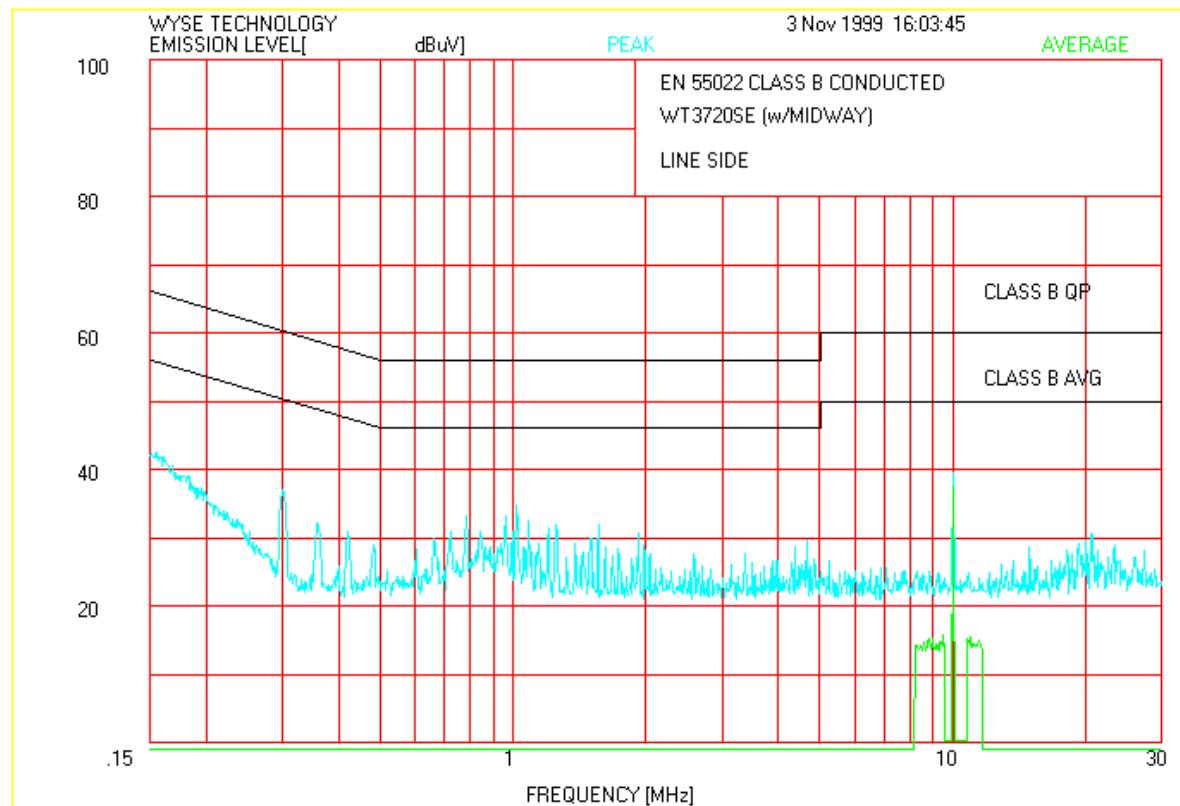
Frequency MHz	Peak dBuV/m	DelLim-Pk dB	QP dBuV/m	DelLim-QP dB	Angle deg	Hgt cm	Pol
31.666922	24.90	-5.10	--.--	--.--	263	399	Vert
53.562880	24.40	-5.60	--.--	--.--	239	101	Vert
64.443539	22.71	-7.29	--.--	--.--	157	201	Vert
65.257070	22.84	-7.16	--.--	--.--	233	399	Vert
179.998752	27.70	-2.30	--.--	--.--	119	101	Vert
343.837050	37.15	0.15	31.46	-5.54	200	101	Vert
393.654656	31.20	-5.80	--.--	--.--	293	101	Vert
765.061568	32.40	-4.60	--.--	--.--	94	398	Vert

Final Horizontal Result

Frequency MHz	Peak dBuV/m	DelLim-Pk dB	QP dBuV/m	DelLim-QP dB	Angle deg	Hgt cm	Pol
31.054111	27.12	-2.88	22.40	-7.60	118	200	Horz
53.895124	12.00	-18.00	--.--	--.--	301	399	Horz
64.400438	17.21	-12.79	--.--	--.--	236	299	Horz
65.257070	13.84	-16.16	--.--	--.--	123	399	Horz
66.643992	26.92	-3.08	22.33	-7.67	41	301	Horz
179.992092	28.60	-1.40	27.46	-2.54	136	297	Horz
343.901956	33.16	-3.84	30.37	-6.63	230	281	Horz
393.723788	32.28	-4.72	29.34	-7.66	308	224	Horz
764.942789	35.24	-1.76	32.78	-4.22	199	300	Horz

CONDUCTED EMISSION 0.15 MHz - 30 MHz

Date: 11/03/99 4:09 PM
Product: Wyse window based terminal model : WT3720SE
Title: EN55022B
Line side at 230V input



Date: 11/03/99 4:15 PM
Product: Wyse window based terminal model : WT3720SE
Title: EN55022B
Neutral side at 230V input

