

December 17, 1999

WYSE Technology EN 55022-B Test Record

for

Window Based Terminal

Model Number: WT3360SE

Tests performed by WYSE Technology

3471 N. First Street, San Jose, CA

Test completed: December 17, 1999

Test Engineer: Harinder Phul

Approved by: Masood Abrishamcar

December 17, 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 December 17, 1999 on the model WT3360SE.

1.2 Purpose

Testing was performed to evaluate the emissions performance of the WT3360SE with respect to EN 55022 Class B.

1.3 Summary

The Windows Terminal WT3360SE 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 550022.

2.0 TEST ENVIRONMENT

2.1 Test Sample Description

WT3360SE 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 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 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 Windows Terminal **WT3360SE** was **4.31 dB** below the limits at the worst case frequency of **510.20 MHz** in a Vertical Polarization.

3.5 Product Specification

Model: **WT3360SE (Logic Board P/N 991355-01 Rev. A)**

Clock Circuit:

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

Filters:

33 MHZ CLK Line:

R85 = 33 Ohm, P/N 370513-13; Z61 = 15pF (not loaded)

R86 = 33 Ohm, P/N 370513-13; Z58 = 15pF (not loaded)

R87 = 33 Ohm, P/N 370513-13; Z64 = 15pF (not loaded)

R88 = 33 Ohm, P/N 370513-13; Z59 = 15pF (not loaded)

14.3 MHZ CLK Line:

R27 = 33 Ohm, P/N 370513-13; Z61 = 15pF (not loaded)

24.5 MHZ (Audio) CLK Line:

R91 = 33 Ohm, P/N 370513-13; Z52 = 15pF, P/N 320310-17

U2 = GXLV166, P/N 200062-52

Power Filter

U1 = CX5530, P/N 205122-50

Filters:

R13 = 47 Ohm, P/N 370513-17; Z6 = 15pF (not loaded)

R12 = 47 Ohm, P/N 370513-17; Z5 = 15pF (not loaded)

L17, L18 = 43MTL, P/N 400021-01

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:

C524 = 0.1 μ F, P/N 320344-37

L16, L15N = 43MTL, P/N 400021-01

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 μ F, P/N 320338-24

C34 = .01 μ F, P/N 320345-13

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

Zero Ohm Jumpers:

R7, R8, R9, RJA = 0 Ohm, 1/4W, P/N 370457-99

R96, R138, R140, R141, R156, Z53 = 0 Ohm, 1/10W, P/N 370514-99

Radiated Emission Test

WYSE Technology Inc.

3471 North 1st Street

San Jose Ca 95134

Test Description:

EUT: WT3360se (Highway)

Serial No. 99M19B00018

Part No. 901995-01

File No.121799#2

Test Type:

EN55022

EN55022

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

PASS: X FAIL: Debug:

Frequency {MHz} 1. 510.20 2. 433.19 3. 125.19 4.

Margin {dBuv} 1. -4.31 2. -4.86 3. -4.87-- 4.

Configuration:

1) Fully configured

2) *Video1024 X 768 @ 75Hz (Not DDC 1280 X 1024)*

Modifications:

None

Test Procedure Definition:

HP EMI Receiver 85460A 5M (Chamber)

Frequency Rang 30 - 2000 MHz

Operation to perform Maximize & Measure

Initial Setting Table angle: 0 degree to 360 degree

Tower Height: 100 meter - 400 meter (Steps 100M)

Antenna Polarity: Vertical and Horizontal

Comment:

1) H Pattern on monitor screen.

2) Blank PCMCIA card installed

Test Engineer: Harinder S Phul

Radiated Emission Test

WYSE Technology Inc.

3471 North 1st Street

San Jose Ca 95134

EUT:

Description	Part No.	Serial No.	FCC ID:
WT3360se (Hiway #1)	901995-01	99M19B00018	

Supporting Devices:

Description	Model No.	Serial No.	FCC ID:
Server HP Brio Computer	81XX	US74852369	
3 Com Hub	TP400	7YPR021705	

Peripherals:

Description	Model No.	Serial No.	FCC ID:
Sony 21" Monitor	CPD-G500	2701749	DOC
HP Serial Printer	2225D	3208S00972	DS16XU2225
HP Parallel Printer	812C	C6411B	DOC
WYSE Key Board	7931M	B92600029	E5XKB10410U
HP Mouse	M-S34	LZC90710752	DZL211029
Gen. Spkr	AMX2000	None	
Gen. Microphone	None	None	
Intel Camera	YC76	0139882	EDUYC76

Final Vertical [7/925]

WT3360se (Hiway #1)

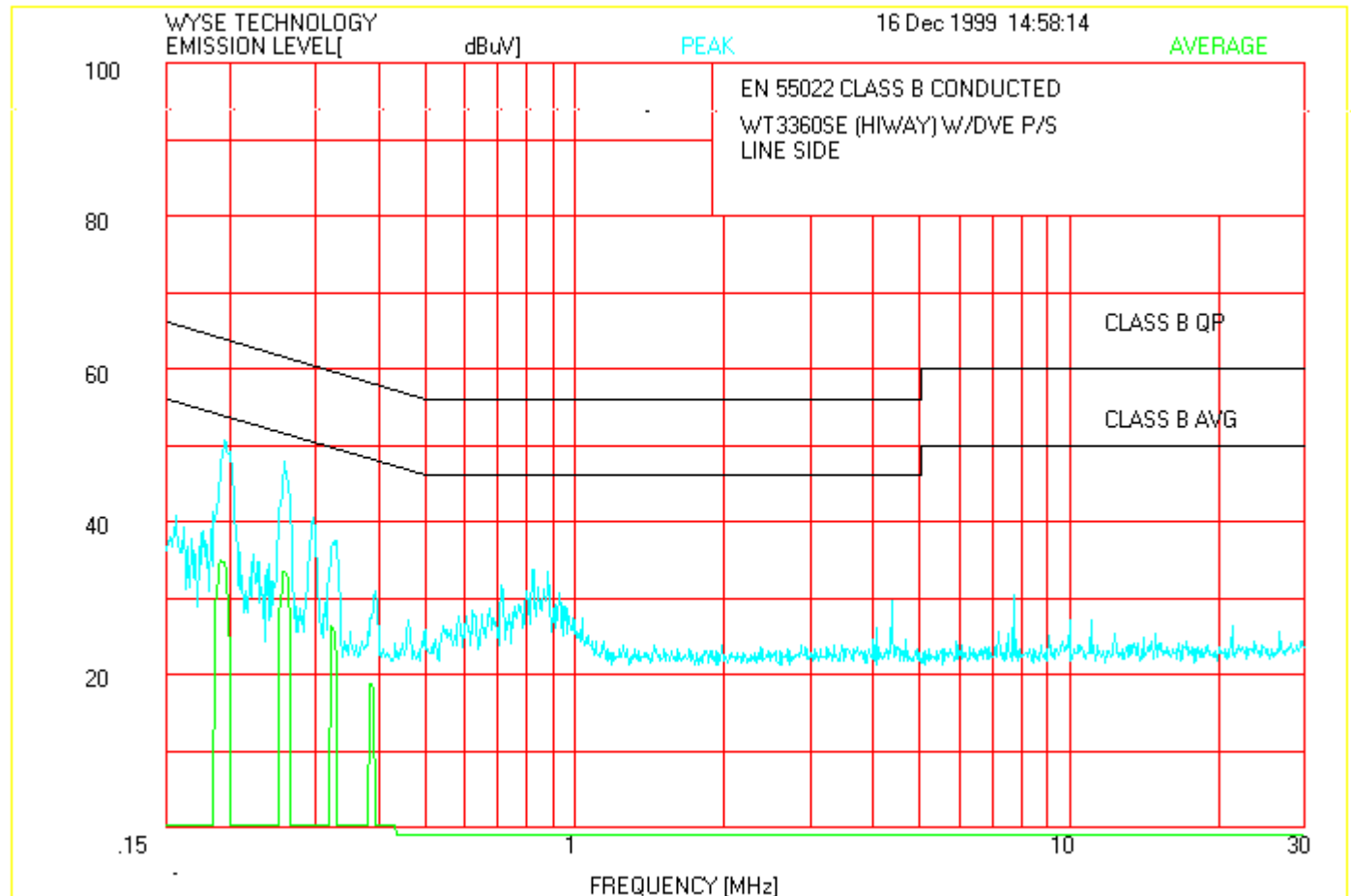
Frequency MHz	Peak dBuV/m	DeLLim-Pk dB	QP dBuV/m	DeLLim-QP dB	Angle deg	Hgt cm	Pol
125.196550	28.19	-1.81	25.13*	-4.87	97	383	Vert
216.013477	29.81	-0.19	22.20*	-7.80	348	397	Vert
369.016000	23.97	-13.03	--.--	--.--	0	295	Vert
433.192923	36.12	-0.88	32.14*	-4.86	358	399	Vert
479.090000	29.80	-7.20	--.--	--.--	180	399	Vert
510.204669	44.77	7.77	32.69	-4.31	358	330	Vert
540.888000	28.04	-8.96	--.--	--.--	267	399	Vert

Final Horizontal [7/925]

WT3360se (Hiway #1)

Frequency MHz	Peak dBuV/m	DeLLim-Pk dB	QP dBuV/m	DeLLim-QP dB	Angle deg	Hgt cm	Pol
125.196550	16.62	-13.38	--.--	--.--	59	399	Horz
216.010468	14.10	-15.90	--.--	--.--	96	101	Horz
368.996080	22.58	-14.42	--.--	--.--	205	399	Horz
433.192923	19.68	-17.32	--.--	--.--	83	101	Horz
479.093320	25.29	-11.71	--.--	--.--	239	399	Horz
510.201660	26.97	-10.03	--.--	--.--	349	101	Horz
540.878040	24.56	-12.44	--.--	--.--	59	399	Horz

Product: WT3360SE
Title : EN55022B
Line side at 230V input



Product: WT3360SE
Title : EN55022B
Neutral side at 230V input

