August 13, 1999

WYSE Technology EN 55022-B Test Record

for

Window Based Terminal

Model Number: WT3320SE

Tests performed by WYSE Technology

3471 N. First Street, San Jose, CA

Test completed: August 13, 1999

Test Engineer: Harinder Phul

Approved by: Masood Abrishamcar

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 **August 13, 1999** on the **WYSE WINTERM** model: **WT3320SE**.

1.2 Purpose

Testing was performed to evaluate the emissions performance of the **WT3320SE** with respect to **EN 55022** Class **B**.

1.3 Summary

The Power Adapter **WT3320SE** 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

WT3320SE 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.

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 is 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.

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 **WT3320SE** was **5.12 dB** below the limits at the worst case frequency of **450.02 MHz** in a Horizontal Polarization.

3.5 Product Specification

Model: **WT3320SE (Logic Board P/N 991336-01 Rev. 3E)**

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)

Test Description:

EUT: WT3320se (Midway)
Serial No. 97K19800012
Part No. 901989-01
File No. 081399#1

Test Type:

EN55022 EN55022
FCC-A { } FCC-B { } CISPR-A { } CISPR-B {**X**}
PASS: **X** FAIL: Debug:
Frequency {MHz} 1. **450.019** 2. 3.
Margin {dBuv} 1. **–5.12** 2. 3.

Configuration:

1) Fully configured.
2) Video 1024 X 786 @ 75Hz

Modifications:

1) None

Test Procedure Definition:

HP EMI Receiver	8546A
Configuration	WYSE 10M OATS
Frequency Rang	30 - 2000 MHz
Operation to perform	Maximize & Measure
Initial Setting	Table angle: 0 degree
	Tower Height: 100 cms
	Antenna Polarity: Vertical

Comment:

H Pattern on HP 15" monitor screen.
Install Intel 22k modem.

Test Engineer: H.S.Phul

EUT:

Description	Part No.	Serial No.
WT3320seMidway	**901989-01**	**97K19800012**

Supporting Devices:

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

Peripherals:

Discription	Model No.	Serial No.
HP 15" Monitor	D2830A	KR74596274
WYSE Key Board	KB-8923	TCAM8303939
HP Mouse	M-S34	LZA64804895
AMX 2000	None	81002SH-9840D
Inland Microphone	None	None

Final Vertical Results [12/849]

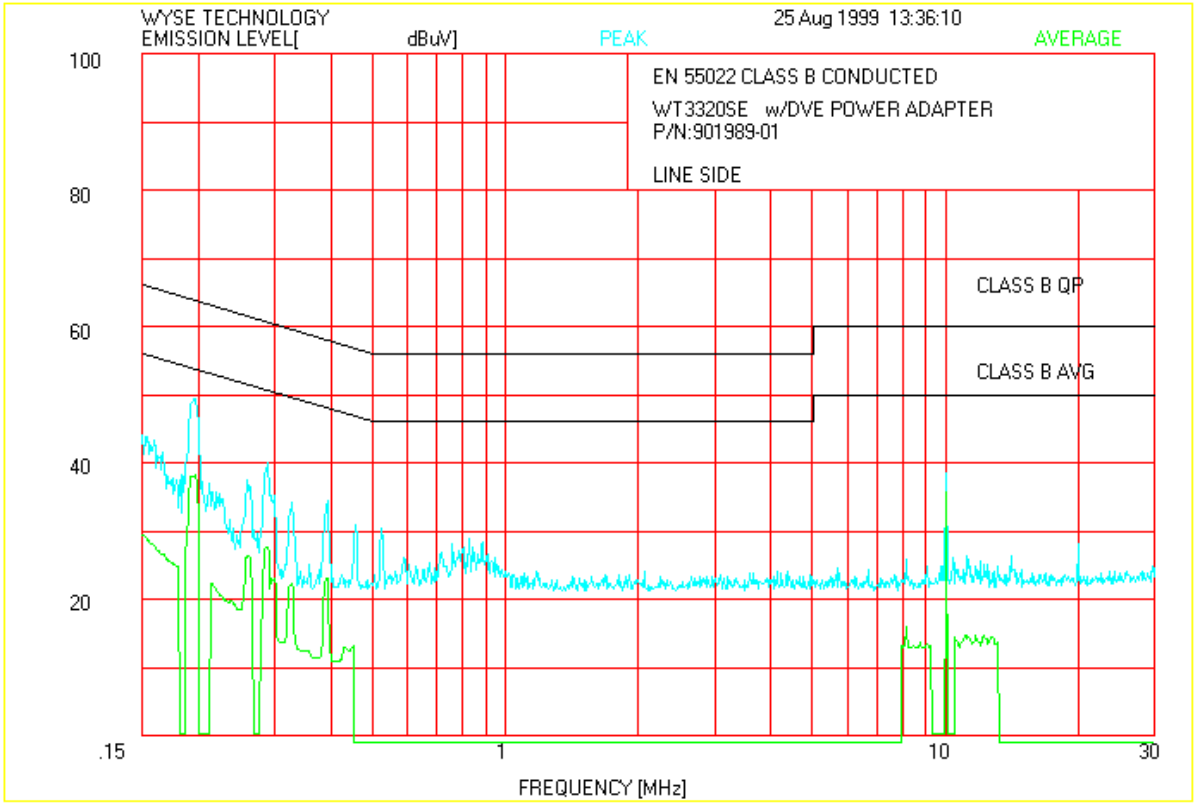
Frequency MHz	Peak dBuV/m	DelLim-Pk dB	QP dBuV/m	DelLim-QP dB	Angle deg	Hgt cm	Pol
224.994380	25.68	-4.32	19.97*	-10.03	106	140	Vert
371.275488	27.53	-9.47	--.--	--.--	158	140	Vert
392.540000	30.92	-6.08	--.--	--.--	185	140	Vert
393.724759	34.29	-2.71	30.32	-6.68	172	140	Vert
416.243537	33.95	-3.05	30.98	-6.02	299	140	Vert
449.998016	30.60	-6.40	--.--	--.--	162	140	Vert
466.842059	30.94	-6.06	--.--	--.--	192	340	Vert
579.517878	31.16	-5.84	--.--	--.--	121	101	Vert
594.227939	30.16	-6.84	--.--	--.--	236	219	Vert
598.168242	30.63	-6.37	--.--	--.--	0	101	Vert
630.802363	30.32	-6.68	--.--	--.--	353	128	Vert
637.181657	30.30	-6.70	--.--	--.--	100	101	Vert

Final Horizontal Results [11/849]

Frequency MHz	Peak dBuV/m	DelLim-Pk dB	QP dBuV/m	DelLim-QP dB	Angle deg	Hgt cm	Pol
224.994380	20.53	-9.47	--.--	--.--	20	319	Horz
371.266188	28.62	-8.38	--.--	--.--	219	394	Horz
392.530773	26.90	-10.10	--.--	--.--	76	154	Horz
393.724759	25.62	-11.38	--.--	--.--	32	299	Horz
416.240528	29.55	-7.45	--.--	--.--	31	298	Horz
450.022358	34.02	-2.98	31.88	-5.12	185	195	Horz
466.852424	27.26	-9.74	--.--	--.--	349	107	Horz
594.216440	29.44	-7.56	--.--	--.--	228	398	Horz
598.172359	29.17	-7.83	--.--	--.--	281	398	Horz
630.788857	35.11	-1.89	27.29*	-9.71	127	202	Horz
637.170156	28.89	-8.11	--.--	--.--	211	161	Horz

CONDUCTED EMISSION 0.15 MHz - 30 MHz

Date: 08/25/99 1:36 PM
Product: Wyse window based terminal model : WT3320SE
Title: EN55022B
Line side at 230V input



Date: **08/25/99 1:50 PM**
Product: **Wyse window based terminal model : WT3320SE**
Title: **EN55022B**
Neutral side at 230V input