Report on the EMC Emissions Testing of the STL2 Server Board in the Chenbro* A9891-207 ATX Net Server Lab. Ref. PVCS1399

Quasi-stationary Current Harmonics **(as per EN61000-3-2: 1995)**
Voltage Fluctuation and Flicker **(as per EN61000-3-3: 1995)**

Certificate No FS 28707

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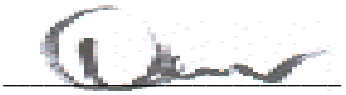
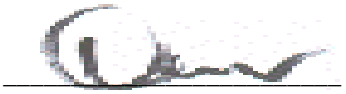
CONDUCTED TEST	TESTED BY & DATE	SIGNATURE
Quasi-stationary Current Harmonics (as per EN61000-3-2: 1995)	Donna Fraser 25/10/00	
Voltage Fluctuation and Flicker (as per EN61000-3-3: 1995)	Donna Fraser 25/10/00	

APPROVED BY & DATE	SIGNATURE
Ann Nicholas 03/11/00	

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1. INTRODUCTION

1.1. Introduction

This report presents the results of the EMC Emissions tests on the STL2 Server Board in the Chenbro A9891-207 ATX Net Server – Lab. Ref. PVCS1399 to the following Standards

- Quasi-stationary Current Harmonics (as per EN61000-3-2: 1995)
- Voltage Fluctuation and Flicker (as per EN61000-3-3: 1995)

The testing was carried out by INTEL CORPORATION (UK) LTD at their Engineering test facilities located at

Intel Corporation (UK) Ltd
Pipers Way
Swindon
Wiltshire
England
SN3 1RJ

This report also details the configuration of the equipment under test, the test methods used, and any relevant modifications where appropriate.

1.2. Summary of Issues

A summary of Action Items for hardware related issues are given below.

An Action Item (AI) means that the particular test is not meeting the relevant specification and could prevent correct operation of the named EUT.

Other items in this report may be marked as FYI. These are recommendations or observations that may be of interest to the system designer.

1.2.1. Action Items

- None.

1.2.2. FYI Items

- From the results in this report it can be seen that the EUT passed Harmonics (Class A) and Flicker testing.

2. EQUIPMENT UNDER TEST (EUT)

2.1. EUT.

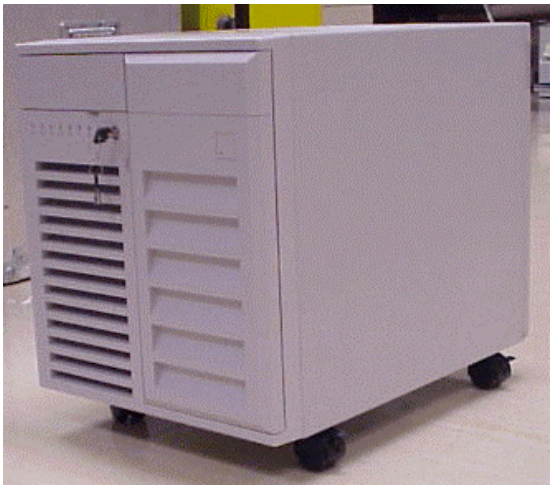

Figure 2-1 Chenbro A9891-207 ATX Net Server Chassis

2.2. EUT Configuration.

Supplier	Description	Model/Part Number	Serial Number	Location
Chenbro	Net Sever Chassis	A9891-207	C001403	N/A
Emacs*	ATX Power supply	RPD-5400F-RV2S	860094	Bottom back of chassis
Intel	STL2 Server board	DG7ESZ	2AA1000192	N/A
VXI*	VRM	073-20770-01	None	VRM Socket
Intel	Pentium® III Processor	RB80526PZ001256	L026A588-0230	Primary CPU Socket
Intel	Pentium® III Processor	RB80526PZ001256	L026A588-0258	Secondary CPU Socket
NEC*	MB 133MHz ECC Reg. DIMM x4	PC133R-333-542-A1	None	DIMM 1 To 4
Sony*	Floppy Drive	MPF920-E	54316748	Top 3.5” drive bay external
Seagate*	18.5GB SCSI Hard Drive	ST318451LW	3CC003YN	Top 3.5” HDD drive bay
Seagate	18.5GB SCSI Hard Drive	ST318451LW	3CC0097R	Middle 3.5” HDD drive bay
Seagate	18.5GB SCSI Hard Drive	ST318451LW	3CC0087L	Bottom 3.5” HDD drive bay
Sony	32X IDE CDROM Drive	CDU701	7004556	Top 5.25” drive bay external
Intel	SRCU31 RAID Controller Card	PBA A2497-010	INGW03700074	PCI slot 4

Table 2-1

2.3. Support Equipment

2.3.1. Screened room

Supplier	Description	Model/Part Number	Cable description
Cherry	PS/2 Keyboard	MY 3000	2M shielded
Logitech	PS/2 Mouse	MS-35	2M unshielded
NEC	Monitor	Multisync E500	2M shielded
Intel Corporation	Serial Emulator	C12573	2.5M shielded
Intel Corporation	Parallel Emulator	C12574	1.5M shielded
Intel Corporation	USB Camera	680942-002	2M unshielded

Table 2-2

2.4. EUT Deviations and Comments

EUT tested with two 1GHz module, Intel Pentium® III Processor with active heatsink and fan.
The Intel Independent I/O shield was fitted in the chassis.
Two Panaflo* 12v 9cm fans (FBK-09A12M) fitted. One positioned front/middle and one positioned top/rear of hard drive bay.
BIOS version STL20.86B.0015.P01.

2.5. Software

The program used to exercise the EUT was the EMC test software version 2.2 which was running under Microsoft* Windows NT* 4.0 Server. Video resolution was set at 800x600.

The EMC test software version 2.2 is designed to exercise the various EUT components in a manner similar to typical use. The software was installed on the hard disk drive and starts automatically on EUT power up. Once started the software exercises each of the following EUT components:

CDROM drive - reads data from the CD-ROM. The directory tree is scanned and data is read until a given number of bytes (1.5M) have been read.
Hard disk drive - writes, read and verifies 64K bytes of data on each drive.
Floppy drive - writes, read and verifies one sector for each working drive.
Keyboard - performs a keyboard confidence test.
Monitor - either inverts the colour of every pixel on the screen or continually outputs 'H' characters.
Mouse uses the driver to do a mouse confidence test.
Parallel port - either 256 (with loopback connector) or 54 (without) characters (A-z, a-z) are written (and with loopback connector, also read back).
Serial port - the line is configured, if a loopback connector is present a non-blocking read is issued, (baudrate/20, max 6000) characters (streams of 0-9) are written, and the same number of characters must be read back (only if a loopback connector is present).
USB - Reads device descriptor from each device attached. On subsequent reads it verifies that the data is correct.
Network - Writes a file to a specified directory then reads it back.

3. Quasi-stationary Current Harmonics (as per EN61000-3-2: 1995)

3.1. Test Setup

The EUT was placed on top of a wooden table.

3.2. Test Equipment

Manufacturer	Description	Model/Part Number	Cal. Due date
EM Test	Harmonic test system	HFS500	1st May 2001
EM Test	Harmonics control system	DPA503	1st May 2001

Table 3-1

3.3. EUT

See section 2.1

3.4. Support Equipment Deviations

None.

3.5. Test Method

This test measures the harmonic currents injected into the AC mains from the EUT. It is applicable to electrical and electronic equipment having an input current up to and including 16A per phase, and intended to be connected to public low-voltage distribution systems of between 220V and 250V at 50Hz line to neutral.

3.6. Harmonics Test Conditions

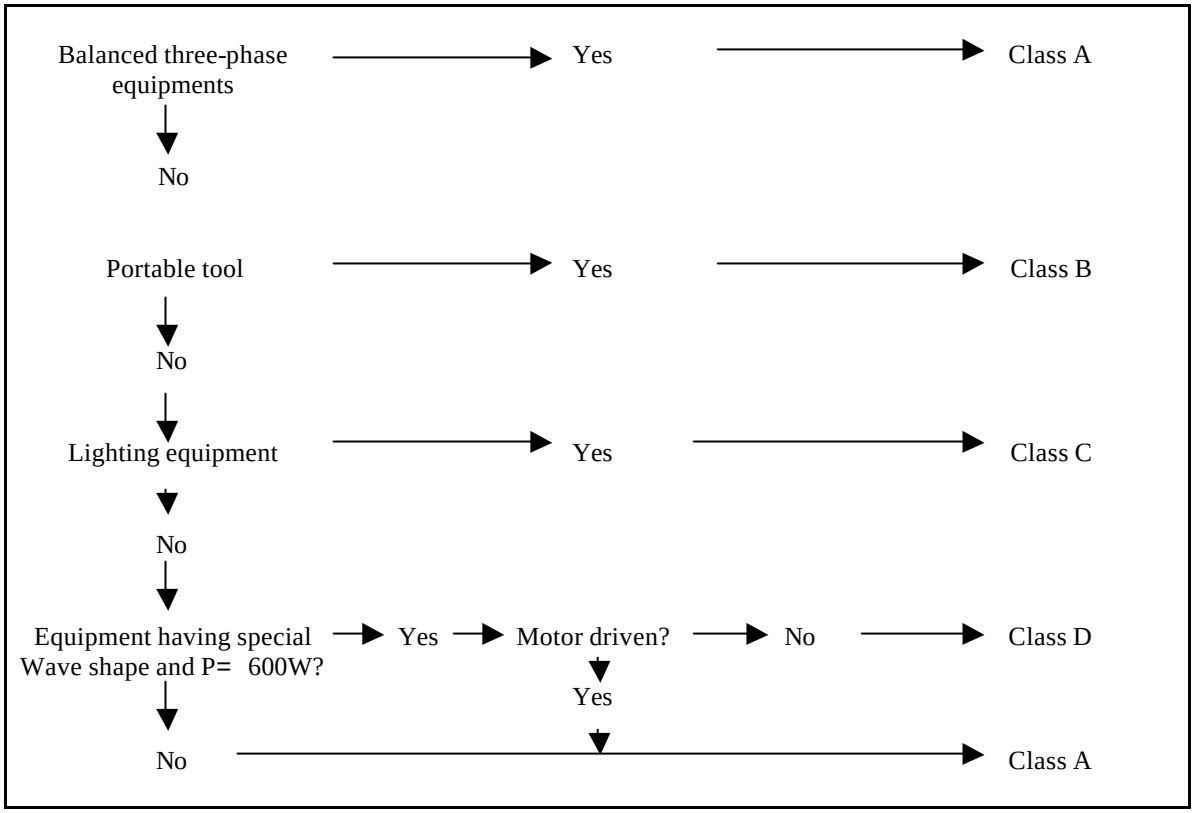

Figure 3-1

3.7. Test Results

Environmental Status

25°C Temperature, 35% Humidity and 1009mB Barometric Pressure

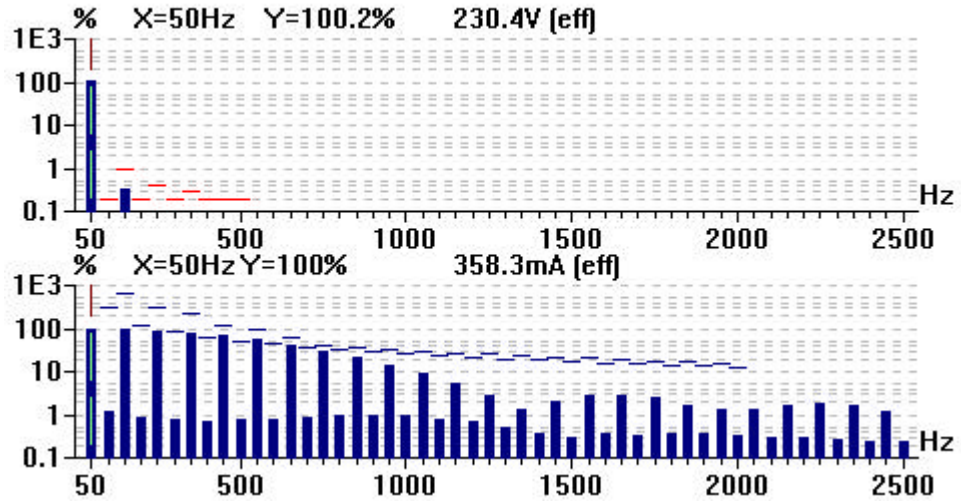

Figure 3-1 Results from Harmonic testing Class A

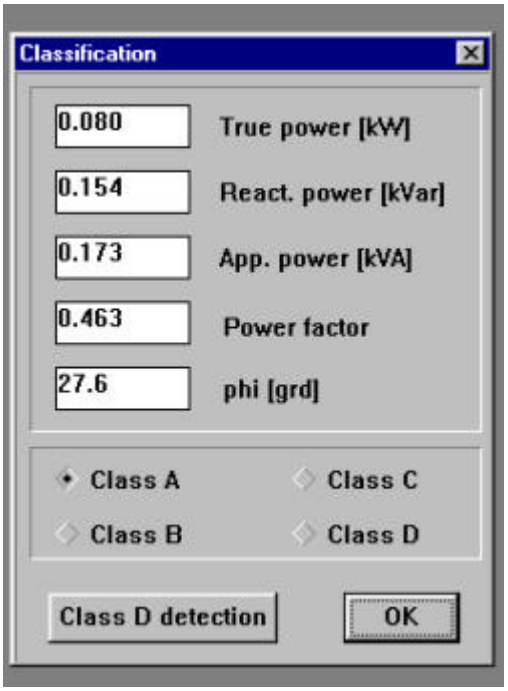

Figure 3-2 Results from Harmonic testing Class A

As can be seen from the results above the EUT passed Class A testing.

4. Voltage Fluctuation and Flicker (as per EN61000-3-3: 1995)

4.1. Test Setup

The EUT was placed on top of a wooden table.

4.2. Test Equipment

4.2.1. Radiated Emissions (E-FIELD)

Manufacturer	Description	Model/Part Number	Cal. Due date
EM Test	Harmonic test system	HFS500	1st May 2001
EM Test	Harmonics control system	DPA503	1st May 2001

Table 4-1

4.3. EUT

See section 2.1

4.4. Support Equipment Deviations

None.

4.5. Test Method

This test measures the voltage fluctuations and flicker impressed on the AC mains by the EUT. It is applicable to electrical and electronic equipment having an input current up to and including 16A per phase, and intended to be connected to public low-voltage distribution systems of between 220V and 250V at 50Hz line to neutral.
The test is conducted using frequency domain instrumentation described in the spec. All types of voltage fluctuations are assessed at the supply terminals of the EUT by direct measurement using a flickermeter.

4.6. Test Results

Environmental Status

25°C Temperature, 35% Humidity and 1009mB Barometric Pressure

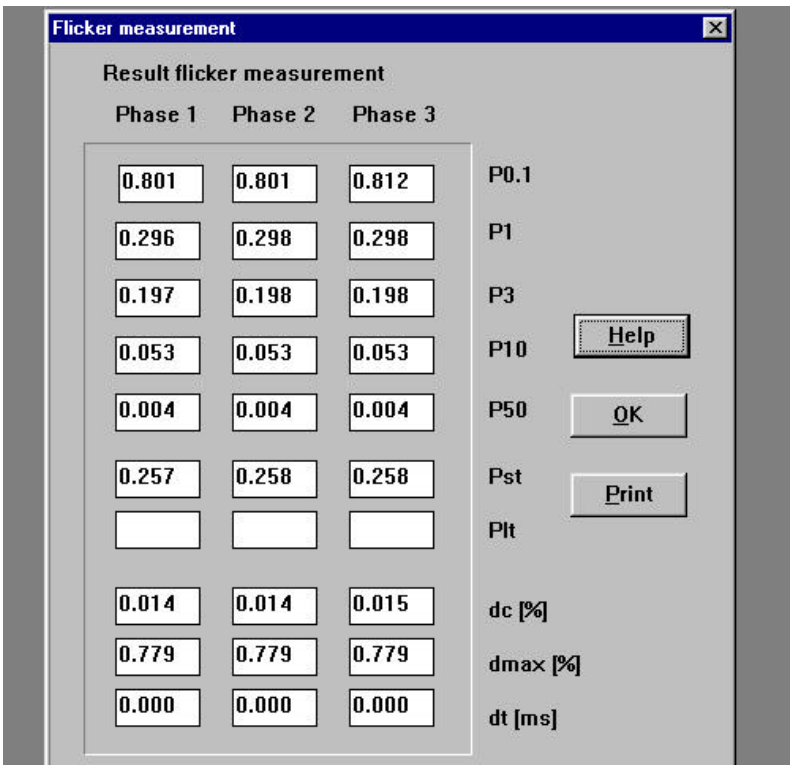

Figure 4-1 Results from Flicker testing.

The following limits apply:

The value of *P*st shall not be greater than 1,0

The relative steady state voltage change *d*c, shall not exceed 3%

The maximum relative voltage change *d*max, shall not exceed 4%

The value of *d*(t) during a voltage change shall not exceed 3% for more than 200ms.

As can be seen from the results above the EUT passed.