

SAHARA 1000 SYSTEM **Compatibility Report**

Document Number : SY-046-J0

Product Version : V1.2

Part Nrmber: 53-80355-00, 53-80355-02, 53-80355-03

BIOS Version : UC612

Manager	Supervisor	Writer

*FIC Research & Development Department
5F #52 Min-Chuan Road, Hsin-Tien City Taipei, Taiwan , R.O.C
Tel : 886-2-2918-6001 Fax : 886-2-2915-6728*

Table of Contents

REVISION HISTORY	4
1. OVERVIEW	5
2. SYSTEM FEATURES	7
3. SYSTEM TESTING HARDWARE CONFIGURATION	7
4. POWER ON/OFF AND REBOOT CYCLE	8
4.1 REBOOT TEST.....	8
4.2 RTC TEST.....	8
5. SYSTEM H/W BASIC FUNCTION TEST	10
5.1 SOCKET 370 CPU	
5.2 BIOS (SWITCH/JUMPER) SETUP & POWER MANAGEMENT UTILITY (PMU) FUNCTIONALITY: ..	10
5.3 PS/2 EXTERNAL PORT:.....	12
5.4 SERIAL PORT TEST:.....	13
5.5 PARALLEL PORT TEST :.....	13
5.6 USB(UNIVERSAL SERIAL BUS) PORT TEST :	14
5.7 ON-BOARD IDE CONTROLLER FUNCTION TEST:	14
5.8 Onboard Fundamental Function Test (VGA; LAN; Audio).....	15
6. H/W OPTION DEVICE TEST.....	27
6.1 MEMORY MODULE TEST:.....	28
6.2 ADD-ON CARDS.....	29
6.2.1 SCSI ADAPTER PRODUCTS.....	29
6.2.2 FAX / MODEM PRODUCTS	29
6.2.3 NETWORK CARD PRODUCTS	29
6.3 STORAGE DEVICES:	29
6.3.1 SCSI Peripheral Products:.....	29
6.3.2 IDE FIXED DISK DRIVE PRODUCTS:.....	29
6.3.3 ATAPI Device Product:.....	30
6.4 Peripherals:.....	30
6.4.1 Printer Peripheral Products:.....	30
6.4.2 Mouse Products:.....	30
6.4.3 DFP LCD Monitor:.....	30

6.5 Multimedia Kits:.....	31
7. SOFTWARE TEST	31
7.1 Base Operating System	
7.2 SOFTWARE APPLICATIONS	31
8. STABILITY & RELIABILITY TEST	32
9. PERFORMANCE TEST	33
APPENDIX A : DRIVER VERSION LIST	35
APPENDIX B : SYSTEM BIOS UPDATE HISTORY	35
APPENDIX C : SYSTEM HARDWARE UPDATE HISTORY	35
APPENDIX D: SYSTEM SPECIAL BOARD APPROVAL	36

Revision History

Document Revision	Issued Data	Description
Initial Revision Revision 1.0	07/14/99	Sahala 1000 test report build for M/B ver.1.1
Initial Revision Revision 1.1	09/03/99	Sahala 1000 test report build for M/B ver.1.2

FIC SAHARA DATABOOK DESKTOP PC PRODUCT SYSTEM TEST REPORT

DOCUMENT IDENTIFIER: QF6-090-001-02 REV. AX01. Sep. 15/1999

ABSTRACT: This document states SAHARA 1000 of system test requirements defined by international law, Specification and regulations as well as by FIC policy. It also summarizes FIC product test criteria required by many market-driven international environmental standards and government computer procurement guidelines.

APPLICABILITY: The system test reports contained in this document are applicable to desktop product is to be used by developers of SAHARA products and desktop office



products, including FIC OEM lines.

The document is confidential and proprietary and is property of First International Computer Inc. It is an unpublished work protected under applicable copyright laws.

© First International Computer Inc. 1988, 1999. All right reserved

*FIC Research & Development Department
5F #52 Min-Chuan Road, Hsin-Tien City Taipei, Taiwan , R.O.C
Tel : 886-2-2918-6001 Fax : 886-2-2915-6728*

1. Overview:

This test report describes the test configuration of system, it must follow during Engineering / Design Validation Test (EVT/DVT) of the “SAHARA 1000 ver.1.0 test plan”. The product focus at **FIC** Computer Corporation of business marketing, the development process assign to R&D of First International Computer Corporation. . All design function must meet customer request specification with “Microsoft WHQL Logo”, FIC specification if all test items had been finished and test result could be passed in the system compatibility, environment, stress, electrical performance, regulatory standards verification, mechanical, system power supply, DIMM qualification and final design review testing processed.

Purpose:

The testing process can provide a correct of reliability and stability system for demonstrate indentation, all problem solution or failure result will respond to customer and FIC R&D team. FIC will hold problem review meeting approximately once each week to review EVT/DVT status, define the debug team & assign corrective action.

The purpose of the Engineering/Design Verification Test (EVT/ DVT Test) is to demonstrate SAHARA 1000 ver. 1.2 can meet all functionality goals including all testing process, as stated in the engineering specification. Any problems and defects found during EVT test stage that should be documented, analyzed and betaken corrective action. After performing the test and reviewing the result from FIC R&D team. FIC will hold problem review meeting approximately once each week to review DVT status, define the debug team & assign corrective action. If we found the defects or bugs was found during the DVT test stage, we should do the tests again in next cycle if the corrective active have been taken. Then we can provide the supported options work properly on the system, and the all shipment basic configuration unit can work properly. After the fixed bug could be closed by customer & FIC.

Scope:

The propose of this specification is to establish testing item, and procedure to ensure the safe operating, distribution, installation, and use if all FIC and OEM’ s hardware product. It also provides criteria for all testing certification and rectification of all products.

The design specification applies all OEM’ s supplied and optional for FIC manufactured finished products.

Objectives:

Ensure that both systems and peripherals meet the engineering specification under the appropriate environmental conditions as set forth in the product requirement document. This is to be accomplished through environmental standards tests.

Determine the design margins with respect to relevant variables as determined by the responsible engineers in the project team.

Ensure product meets FIC regulatory standards including EMC and safety requirements as we submit to regulatory compliance.

Make sure all problems found during the EVT/DVT are corrected and proceed to DVT/RM stage.

2. System Features

CPU	Intel Celeron Socket 370 366-500 and beyond @ 66/100MHz Cyrilx 400-450+ @ 66/100MHz FSB frequencies supported: 66/100MHz
Chipset	North Bridge : SIS 620 Eagle South Bridge : SIS 5595B
L2 Cache	128KB Built on CPU Die
Memory	Supports 16 up to 512MB 168-pin PC-100 compliant DIMMS
Super I/O	NS351
Graphics	SIS 6326 embedded in SIS 620
Audio	Crystal 4280
Slots	2 PCI Slots(1 shared with ISA) on EISA riser card, 2 DIMM
Front Panel Connectors	1 Power/Sleep Button , LED:Power-On/Off & suspend activity indicator, HDD/LAN activity indicator
Back Panel Connectors	2 Serials, 1 Parallel, 2 USB, Power Button, 1 stacked PS/2 for Keyboard/Mouse , 1 VGA , 1 DFP, 1 Line-out , 1 Line-in, 1 Mic-in, 1 RJ45 LAN connector

3. System Hardware

Basic configuration

System	SAHARA 1000		
PCB version	1.2		
System NO.	# 1	# 2	# 3
Processor	Intel Celeron Socket 370 366MHz	Intel Celeron Socket 370 433MHz	Intel Celeron Socket 370 500MHz
Cache	Base on CPU		
BIOS Version	AMI BIOS UC612	AMI BIOS UC612	AMI BIOS UC612
Power Management	APM/ACPI		
Memory	N/A		
Chipset	North Bridge: SIS 620 Eagle South Bridge: SIS 5595B		
VGA (Onboard)	SIS 6326 embedded in SIS 620 no LFB	SIS 6326 embedded in SIS 620 4MB	SIS 6326 embedded in SIS 620 8MB
LAN (Onboard)	3COM 3C918 V2		
Audio (Onboard)	Crystal CS4280-CM PCI		
Hardware Monitoring	Winbond W83781D		
I/O	NS-351 Support Normal, EPP, ECP mode and IR interface		
I/O Port	2 Serials, 1 Parallel, 2 USB, Power Button, 1 stacked PS/2 for Keyboard/Mouse, 1 VGA, 1 DFP, 1 Line-in, 1 Mic-in, 1 RJ45 LAN connector		
System Slot	2PCI Slot (1shared with ISA) on EISA riser card		
HDD	N/A		
CD-ROM	Panasonic CR-175B 24X, TEAC CD224E-A92		
Floppy	Mitsumi D353F3 1.44MB		

4. Power On/Off and Reboot Cycle

4.1 Software Reboot Tests

The test is to ensure the SAHARA 1000 system power on in-rush current will not cause any damage. The test will describe as follows in the table list:

The Power On/Off and Reboot Cycle test process included in the list, please see below:

The unit will keep running power cycles over night. Power cycles are defined as boot to operating system and then restart system up to 1000 times. Any error occurred during the cycle will be logged.

“ONOFFVE” program is intended to be used on PC. The RTC alarm is enabled 10 seconds later as a ON event, and then the system is powered off.

Test Item	Test Environment	Result
Power On	O.S. Mode (Win95/Win98/WinNT)	PASS
	DOS Mode	PASS

4.2 RTC Test

Test Item	Test Environment	Test Spec.	Result
Power On	O.S. Mode (Win95/Win98/WinNT)	< 2 sec; 24H	PASS
	DOS Mode	< 2 sec; 24H	PASS
	BIOS Mode	< 2 sec; 24H	PASS
Power Off	AC Power	< 2 sec; 24H	PASS
	Remove AC Power	< 2 sec; 24H	PASS

5. System H/W Basic Function Test

5.1 Socket 370 CPU

As SAHARA 1000 spec., the CPU based on Intel Socket 370 Celeron 66/100 MHz and Cyrix 66/100 MHz

Intel Processors	Status
Celeron 366MHz with 128KB cache 66MHz	PASS
Celeron 400MHz with 128KB cache 66MHz	PASS
Celeron 433MHz with 128KB cache 66MHz	PASS
Celeron 466MHz with 128KB cache 66MHz	PASS
Celeron 500MHz with 128KB cache 66MHz	PASS

5.2 BIOS (Switch/Jumper) Setup & Power Management Utility (PMU) Functionality:

Description	Jumper/Switch Name	Default Option	Status
Power LED	F_PNL (One LED)	Open	PASS
IDE LED Connector	F_PNL (One LED)	Open	PASS
FDD LED	FDD(One LED)	Open	PASS
CPU FAN Connector	CPU_FAN	Open	PASS
Lan Card LED	F_PNL (One LED)	Open	PASS
Clear CMOS	CMOS_CLR (J2)	1-2	PASS
Front Panel	F_PNL	Open	PASS
Power Connector	Power Supply (90 Watt)	Open	PASS
HDD LED Power Connector	HDD_PW	Open	PASS
Clear Password	PSWD_CLR	Open	PASS
Wake On LAN	WOL	Open	PASS
On-board VGA Function	VGA_DSB	2-3	PASS

BIOS Feature Check

5.2.1 Main Level

Function	Test SPEC	Result
RTC Alarm	Must support day/hour/minute item Remote Power / ATX support	PASS
Device Auto Detect	Run auto detect function in BIOS	PASS
Floppy Drive A	1.44MB/Not Installed	PASS

5.2.2 High Level

Function	Test SPEC	Result
Boot Device	Check can boot from device(floppy, IDE, CDROM, LAN)	PASS
USB Keyboard	Only use USB keyboard must can Into BIOS setup menu.(USB function not Enabled) Can only use USB keyboard in DOS Mode? USB keyboard can into suspend & Wake up. (ACPI BIOS)	PASS
Modem Ring Up	COM 1 / COM 2 support Remote Power / ATX support	PASS
System / CPU Thermal	Instrument Test Function default suggest Disabled Hardware Monitor support LDCM test. CPU/Chassis FAN test Clock slow down test	PASS
RTC Alarm	Must support day/hour/minute item Remote Power / ATX support	PASS
LAN wake up	BIOS support LAN wake up function. (Wake up from suspend,Wake up from power off)	PASS
System DMI	DMI Utility for DOS LDCM 3.3 for Win 95 / Win98 / NT4 .0	PASS
PS/2 Mouse & IRQ 12	IRQ 12 can free when system no use PS/2 mouse	PASS
Auto Shutdown	Auto Power Off in Win 95/98 shutdown Remote Power / ATX support	PASS
Remote Power Switch	One touch / 4 second Remote Power / ATX support	PASS
Power Management	All OS test → H/W suspend switch / Suspend item / Time out test Modem Wake up	PASS
Ultra DMA/66 HDD	Can be detect in booting Install chipset IDE bus master driver.	PASS
Boot Full Screen Logo	Press "Delete" into BIOS setup	PASS
Year 2000	Run Year2000 program in DOS mode	PASS

5.2.3 Advance CMOS LEVEL

Function	Test SPEC	Result
Detect Boot Virus By Trend	Enable/Disable	PASS
S.M.A.R.T. for Hard Disk	Enable/Disable	PASS
CPU MicroCode Updation	Enable/Disable	PASS
Quick Boot	Enable/Disable	PASS
Cache Bus ECC	Enable/Disable	PASS
Boot Sequence	A,C/C,A/A,CD-ROM,C/CD-ROM,C,A/ C Only	PASS
Boot Up NumLock Status	Keyboard Num Lock LED ON/OFF	PASS
Password Check	Setup/Always 2.H/W CPW jumper test	PASS
PS/2 Mouse Function Control	Disable/Enable	PASS
O/S Select For DRAM > 64MB	OS2/ Non-OS2	PASS
Video BIOS Shadow	Enable/Disable	PASS

5.2.4 ADVANCED CHIPSET LEVEL

Function	Test SPEC	Result
CAS Latency by S.P.D.	Enable/Disable	PASS
Graphic Win Size	4, 8, 16, 32, 64, 128, 256M	PASS
USB Function	Enable/Disable	PASS
USB Keyboard Legacy Support	Enable/Disable	PASS
ClkGen spread spectrum	Enable/Disable	PASS
CPU/SDRAM Clock Selection (MHz)	Auto, 66/66, and 100/100	PASS
CPU Multiple Fator	X5, X5.5, X6, X6.5, X7, X7.5 and X8	PASS

5.2.5 POWER MANAGEMENT LEVEL

Function	Test SPEC	Result
Power Management/APM	Enable/Disable	PASS
Video Power Down Mode	Disable, Standby, or Suspend	PASS
Hard Disk Power Down Mode	Disable, Standby, or Suspend	PASS
Standby Time Out (Minute)	Disable, 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	PASS
Suspend Time Out (Minute)	Disable, 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15	PASS
Slow Clock Ratio	12.5%, 25%, 32.5%, 50%, 62.5%, 75%, 87.5%	PASS
Modem Use IRQ	N/A, 3, 4, 5, 7, 9, 10, 11	PASS
Power button function	On/Off, Suspend	PASS
Ring On Lead To Power On	Enable/Disable	PASS
Wake On LAN	Enable/Disable	PASS
AC Power Restores	Last State, Power on, Stay off	PASS
RTC Alarm Lead To Power On	Enable/Disable	PASS

5.2.6 PCI/Plug and Play LEVEL

Function	Test SPEC	Result
Plug and Play Aware OS	Yes/No	PASS
Share Memory Size	Auto/Manual	PASS
Clear NVRAM	Yes/No	PASS
PCI Latency Timer	32, 64, 96, 128, 160, 192, 224, 248	PASS
Primary Graphics Adapter	PCI/AGP	PASS
PCI VGA Palette Snoop	Enable/Disable	PASS
DMA Channel 0, 1, 3, 5, 6, 7	PnP or ISA/EISA	PASS
IRQ 3, 4, 7, 9, 10, 11, 14, 15	PCI/PnP or EISA	PASS

5.2.7 PERIPHERAL LEVEL

Function	Test SPEC	Result
ONBoard LAN Chip	Enable/Disable	PASS
OnBoard Sound Chip	Enable/Disable	PASS
ONBoard FDC	Auto/Enable/Disable	PASS
ONBoard Serial Port1	1. 2E8h/COM4; 3E8h/COM3; 2F8h/COM2; 3F8h/COM1 and Disable 2. Check them with serial mouse and external modern	PASS

ONBoard Serial Port2	1. 2E8h/COM4; 3E8h/COM3; 2F8h/COM2; 3F8h/COM1 and Disable 2. Check them with serial mouse and external modern	PASS
IR Duplex Mode	Full Duplex	PASS
Onboard Parallel Port	2.Check them with printer 3.Check them with Scanner in ECP mode DMA:1;3 2.Check them with scanner	PASS
Parallel Port Mode	Normal, Bi-Dir, EPP, or ECP	PASS
EPP Version	1.9, 1.7	PASS
Parallel Port IRQ	5, 7	PASS
Parallel Port DMA Channel	0, 1, 3	PASS
K/B WakeUp Function	N/A, Hot Key	PASS
HotKey for Wakeup	N/A, Wake Up, PowerOn, Ctrl-F1, Ctrl-F2, Ctrl-F3, Ctrl-F4, and Ctrl-F5	PASS
Mouse Wake-up function	Disable, Any Active, L.B., S-Click, L.B. D-Click, R.B. S-Click, R.B. D-Click, Single Click, and double Click	PASS

5.2.8 Hardware Monitor LEVEL

Function	Test SPEC	Result
System Thermal	Ignore, Monitor	PASS

This feature allows end users and technicians to monitor the data provided by the LDCM function of this board.

5.3 PS/2 External Port:

The test is to ensure the PS/2 port can support PS/2 Keyboard & Mouse functionality & work properly. The test will describe as follow the table list:

The PS/2 K/B & Mouse test process included the list, please see below:

1. PS/2 mouse or PS/2 Port K/B connecting in PS/2 port & load mouse driver in MS-DOS, the devices could work properly.
2. PS/2 mouse & K/B connecting in PS/2 port in all support Operating System, the devices could work properly.

The PS/2 Keyboard can HOT plug-in & using under all support Operating System and work properly.

The system could be resume from PS/2 mouse or keyboard.

Product Name	Vendor	Test Configuration					Test Result
		WIN98	WIN95 OSR2.5	NT4.0+ SP4	NT2000 Beta3	DOS/W FW	
Easy Access Button Keyboard	SK-2700	#1-#3	#1-#3	#1-#3	#1-#3	#1-#3	Pass
PS/2 Mouse	Logitech	#1-#3	#1-#3	#1-#3	#1-#3	#1-#3	Pass

5.4 Serial Port Test:

The test is to ensure the Serial port can support Serial device of functionality & work properly .The test will describe as follow the table list:

The Serial Port test process included the list, please see below :

1. Serial Mouse connecting in serial port could work properly.
2. Serial Mouse connecting in Serial port in WIN95 OSR2.5, the devices could work properly.
3. Plug & Play Serial Port Mouse connected in Serial Port in Windows95 OSR2.5 & Win98, the device can detect and work properly.

Plug & Play External FAX/Modem connected in Serial Port in Windows95 OSR2.5 & Win98 Operating System, the device can detect and work properly.

Product Name	Vendor	Test Configuration		Result
		WIN98	NT4.0+SP4	
M-M34 , Serial Mouse	Logitech	#1-#3	#1-#3	PASS
External Plug & Play FAX/MODEM 56K	ADI	#1-#3	#1-#3	PASS
External Plug & Play FAX/MODEM 56K	USR	#1-#3	#1-#3	PASS
External Plug & Play FAX/MODEM 56K	Motorola	#1-#3	#1-#3	PASS
External Plug & Play FAX/MODEM 56K	GVC	#1-#3	#1-#3	PASS

5.5 Parallel Port Test :

The test is to ensure the support parallel port functionality could work properly .The test will describe as follow the table list:

The parallel Port test process included the list, please see below:

Printer setting on Bi-direction/ECP/EPP Mode connecting in Parallel port in all support Operating system, the devices could work properly.

Floppy Device Drive can work properly in all support operating system when connected to Parallel Port.

Product Name	Vendor	Test Configuration		Result
		WIN98	WIN95 OSR2.5	
Laser Jet 6P support IR Interface Printer	HP	#1-#3	#1-#3	PASS
BJC740 Color Bubble Jet Printer	Canon	#1-#3	#1-#3	PASS

Universal Direct Cable ECP/EPPmode	FIC	#1-#3	#1-#3	PASS
---	------------	--------------	--------------	-------------

5.6 USB(Universal Serial Bus) Port Test :

The test to ensure the support USB port functionality could work properly .The test will describe as follow the table list:

The USB Port test process included the list, please see below:

USB Driver installed in Windows 98 / Windows95 OSR2.5 must have not conflict with others on-board device and connected USB device could work properly.

System auto detect when plugging USB Keyboard & USB Mouse in USB port in all support Operating system, and the devices could work properly.

Type	Vendor	Parts No	Description	Result
Mouse	Logitech	M-UA35	USB Mouse	PASS
	DEXIN	MA2R	USB Mouse	PASS
	Cypress		USB Mouse	PASS
HUB	Belkin	Express Bus F5U001	USB HUB	PASS
Camera	NEC	PC Camera U-CAM	USB Camera	PASS
	Kodak	DVC 323	USB Camera	PASS
Printer	CANON		USB Printer	PASS
Faxmodem	US Robotics	56K Voice Faxmodem	USB Faxmodem	PASS
Keyboard	BTC	BTC8113W	USB Keyboard	PASS
	Chicony	KU-8933	USB Keyboard	PASS

5.7 On-Board IDE Controller Function Test:

The test is to ensure the southbridge chipset support functionality could work properly .The test will describe as follow the table list :

The southbridge chipset test process included the list, please see below :

The southbridge chipset of all support Function transfer mode (PIO mode 4, UDMA 33 and UDMA66) could work properly in the ALL support Operating system.

The ATAPI of CD-ROM could work properly in the ALL support Operating system.

The IDE HDD could be detect in BIOS & work properly in the ALL support Operating system.

Product Name	Vendor	Test Configuration					Result
		WIN98	WIN95 OSR2.5	NT4.0+ SP4	DOS/ WFW	Win200 0 Beta3	

Floppy 3 Mode	Mitsumi	#1-#3	#1-#3	#1-#3	#1-#3	N/D	PASS
E-IDE PIO 4	Seagate	#1-#3	#1-#3	#1-#3	#1-#3	#1-#3	PASS
ULTRA DMA33	Seagate	#1-#3	#1-#3	#1-#3	N/D	#1-#3	PASS
ULTRA DMA66	Seagate	#1-#3	N/D	N/D	N/D	#1-#3	PASS

N/D : No Driver

5.8 Onboard Fundamental Function Test (VGA; LAN; Audio)

5.8.1 VGA Function Test

5.8.1.1 Configuration

We check onboard SiS AGP VGA function under below condition:

System	SAHARA 1000		
PCB version	1.2		
System Configuration	# 1-1	# 2-1	# 3-1
Processor	Socket 370 500MHz		
SDRAM	256MB		
BIOS Version	AMI BIOS UC612 VGA BIOS 1.05.50	AMI BIOS UC612 VGA BIOS 1.05.50	AMI BIOS UC612 VGA BIOS 1.05.50
VGA Chip	SIS 6326 embedded in SIS 620 no LFB	SIS 6326 embedded in SIS 620 4MB	SIS 6326 embedded in SIS 620 8MB
VGA driver	SIS VGA driver 1.04.53	SIS VGA V1.04.53	SIS VGA V1.04.53
O.S.	Win98 (English)		

5.8.1.2 Test Utilities

Test Utility	Version	Language	Status
Final Reality	1.01	English	PASS
3D Winbench98	1.0	English	PASS
3D Winbench99	1.0	English	PASS
3D Mark99	1.0	English	PASS
CD Winbench99	1.0	English	PASS

5.8.1.3 Test Condition

All test condition will be executed on Win95/98 under display setting all support resolution,

depts. , refresh rate and DDC function

Test Condition	Driver Version	Language	Status
Resolution with Color Depts Change and Refresh rate Test	V1.04.53 for Win95/98	English	PASS
Resolution with Color Depts Change and Refresh rate Test	V1.04.53 for Win NT 4.0	English	PASS
DDC function	PHILIPS 107MP VIEWSONIC PT795	English	PASS PASS

5.8.1.4 3D Graphics Quality Test (Under 3D WinBench 99)

 PASS
  NO SUPPORT
  INCORRECT

NO.	ITEM	Test Configuration		
		# 1	# 2	# 3
1	Flat Shading	 1	 1	 1
2	Gouraud Shading	 1	 1	 1
3	Dithering	 1	 1	 1
4	Z-Buffer	 1	 1	 1
5	Perspective Correct Textures	 1	 1	 1
6	Nearest	 1	 1	 1
7	Linear	 1	 1	 1
8	Nearest Mipmap Nearest	 1	 1	 1
9	Nearest Mipmap Linear	 1	 1	 1
10	Linear Mipmap Nearest	 1	 1	 1
11	Linear Mipmap Linear	 1	 1	 1
12	Mipmap LOD Bias	 	 	 
13	Modulate exture Blending	 1	 1	 1
14	Decal exture Blending	 1	 1	 1
15	DecalAlpha exture Blending	 1	 1	 1
16	ModulAlpha exture Blending	 1	 1	 1
17	Flat Wrap exture Addressing	 1	 1	 1
18	Cylindrical Wrap U	 1	 1	 1
19	Cylindrical Wrap V	 1	 1	 1
20	Clamp exture Addressing	 1	 1	 1
21	Mirror exture Addressing	 1	 1	 1

22	Cull Counterclockwise	i 1	i 1	i 1
23	Cull Clockwise	i 1	i 1	i 1
24	Cull None	i 1	i 1	i 1
25	Fog Vertex Linear	i 1	i 1	i 1
26	Fog Table Linear	i ¶	i ¶	i ¶
27	Fog Table exponential	i ¶	i ¶	i ¶
28	Specular Highlights	i 1	i 1	i 1
29	Color Key Transparency	i 1	i 1	i 1
30	Alpha Transparency	i 1	i 1	i 1
31	Source Alpha Pixel Blending	i 1	i 1	i 1
32	Add Pixel Blending	i 1	i 1	i 1
33	Modulate Pixel Blending	i 1	i 1	i 1
34	Modulate 2x Pixel Blending	i 1	i 1	i 1
35	Alpha Vertices	i 1	i 1	i 1
36	Perspective Correct Alpha	c Â	c Â	c Â
37	Alpha Comparison Greater Than	i 1	i 1	i 1
38	Alpha Comparison Greater Than or Equal	i 1	i 1	i 1
39	Alpha Comparison Less Than	i 1	i 1	i 1
40	Alpha Comparison Less Than or Equal	i 1	i 1	i 1
41	Z Comparison Greater Than	i 1	i 1	i 1
42	Z Comparison Greater Than or Equal	i 1	i 1	i 1
43	Z Comparison Less Than	i 1	i 1	i 1
44	Z Comparison Less Than or Equal	i 1	i 1	i 1
45	Z Accuracy	i 1	i 1	i 1
46	Z Bios	i ¶	i ¶	i ¶
47	Anti-Aliasing 640x480	c Â	c Â	c Â
48	Triangle Rasterization	c Â	c Â	c Â
49	Texture Fidelity	i 1	i 1	i 1
50	Texture Swapping	i 1	i 1	i 1
51	High Triangle Count	i 1	i 1	i 1
52	Fog Vertex and Color Key	i 1	i 1	i 1
53	Fog Vertex and Alpha	i 1	i 1	i 1
54	Alpha and Linear	i 1	i 1	i 1
55	Alpha and Linear Mipmap Linear	i 1	i 1	i 1
56	Small Triangles	i 1	i 1	i 1
57	Perspective Correct Color	c Â	c Â	c Â
58	Perspective Correct Specular	c Â	c Â	c Â
59	Anti-Aliasing 1024x768	c Â	c Â	c Â

5.8.1.5 Disable On Board VGA

ITEM	CHIPSET	Language	Status
Disable On Board VGA	Banshee	English	PASS

5.8.2 Onboard LAN Function Test (test by Network team engineer Jeffrey)

Wire For Management Function Test

PME: Magic frame Wake Up from LAN test.

Test Configuration:

BIOS: Setup Default, Wake Up on Lan → Enabled.

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	IBM	DTTA-350640	ATA33 6.4Gbyte Hard disk
		DTTA-351010	ATA33 10.1Gbyte Hard disk
	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B
File Server	Microsoft	HP Net Server	Windows NT 4.0 Server With LCM 1.5 and LDCM 3.3
MagicIPX	FIC	Software Utility	Test wake up LAN utility
Windows NT 4.0	Microsoft	Build 1381&SP4	Windows NT English
Windows 98 SR0	Microsoft	Build 1998	Windows 98 English
Windows 98 SE	Microsoft	Build 2222A	Windows 98 SE English
LDCM	Intel	LANdesk 3.30 <LW782D>	LANdesk Client Manager

Mode	State	NDIS4 Wake-up	NDIS5 Wake-up	Remark
APM	Standby	NO	OK	Root cause 3Com driver limited.
	Suspend	NO	OK	
	Off	OK	NO	
ACPI	S1	NO	OK	
	S3	NO	OK	
	S4	NO	OK	
	S5	OK	NO	

OS	Pwr Mgt	Drv technology	MP RWU	Patch	Test Result
NT4 SP3/SP4	None	NDIS4 (def.)	NA	NA	PASS
	APM (def.) Suspend/off	NDIS4 (def.)	OK	NA	PASS

Win98 SR0

		NDIS5	OK	Up to NDIS5	PASS
	ACPI S1/S2/S4	NDIS5(def.)	NO	NA	Because 3Com driver limited.
Win98 SE	APM (def.) Suspend/off	NDIS4	NO	Change to NDIS4	MS bug: change in APM architecture
		NDIS5 (def.)		NA	
	ACPI S1/S3/S4	NDIS4	NO	Change to NDIS4	Because 3Com driver limited.
		NDIS5 (def.)	OK	NA	PASS

TCPIP Ping Wake-Up

TCPIP Ping Wake-up is supported on Win98SE and Win2k in ACPI mode.

OS	Pwr Mgt	Drv technology	MP RWU	Patch	Test Result
Win98 SE	ACPI S1/S3/S4	NDIS4	NO	Up to NDIS5	PASS
		NDIS5 (def.)	OK	NA	PASS

Magic Packet Remote Power On Matrix

OS	Pwr Mgt	Drv technology	MP RPO	Patch	Test Result
Win98 SRx	APM (def.)	NDIS4 (def.)	OK	NA	PASS
		NDIS5	OK	NA	PASS
	ACPI	NDIS4(def.)	OK	NA	PASS
		NDIS5	NO	Back to NDIS4. Because NDIS5 doesn't support RPO in ACPI mode.	PASS
Win98 SE	APM (def.)	NDIS4	OK	NA	PASS
		NDIS5 (def.)	OK	NA	PASS
	ACPI	NDIS4	OK	NA	PASS
		NDIS5 (def.)	NO	Back to NDIS4. Because NDIS5 doesn't support RPO in ACPI mode.	PASS

LAN Card 3COM 3C905B-TX (Ethernet 100Mbps Chipset)

Test Item	Result
Wake-Up from Hardware Button suspend (1 st) (2 nd)	PASS
Wake-Up from Software suspend (1 st) (2 nd)	PASS
Wake-Up from Standby (time-out) suspend (1 st) (2 nd)	PASS
Wake-Up from Shutdown (power off) (1 st) (2 nd)	PASS
Shutdown from LDCM Administrator	PASS
Restart (Power ON) Computer From LDCM	PASS

Boot From LAN: PXE & RPL Protocol Test (PDK Test Tools)

Test Configuration:

Boot Method: PXE or RPL or TCP/IP (BootTP) or NetWare (802.2 or 802.3 or Ether NET II)

BIOS : Setup Default, Boot from Lan enabled.

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	IBM	DTTA-350640	ATA33 6.4Gbyte Hard disk
		DTTA-351010	ATA33 10.1Gbyte Hard disk
	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B
File Server	Microsoft	HP Net Server	Windows NT 4.0 Server With LCM 1.5 and LDCM 3.3
Windows 98 SE	Microsoft	Build 2222A	Windows 98 SE English
Windows NT 4.0	Microsoft	Build 1381	Windows NT 4.0 & SP4 English
Novell 5.0	Novell	5.0	NetWare Novell
LCM	Intel	LCM 1.5	LANDesk Configuration Manager
Boot ROM	3COM	Boot Agent 3.10	Managed Boot Agent (MBA)

Protocol	Server	Client
RPL network boot	NT4	DOS 6.22
BOOTP	NT 4.0 with LANWORKS BootP service	DOS 6.22
Novell 802.2	Novell 4.x/5.x	DOS 6.22
Novell 802.3	Novell 4.x/5.x	DOS 6.22
Novell Ethernet II	Novell 4.x/5.x	DOS 6.22
DHCP /PXE	PXE Servers	PXE 2.0

LAN Card 3COM 3C905B-TX (Ethernet 100Mbps Chipset)

Test Item PXE Protocol	Result
Boot from ProxyDHCP Server	PASS
Packet Analysis	PASS
UNDI Stress Test	PASS
PXE API Tests	PASS
Test Item RPL Protocol	Result
Boot from RemoteBoot NT Server	PASS
Boot from RemoteBoot Novell 4.11 Server	PASS

Novell NetWare/Windows 98 Test

IRQ, I/O port and slot Test

Assign PCI IRQ

Test Configuration: BIOS: Setup Default, PCI IRQ not Share

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	IBM	DTTA-350640	ATA33 6.4Gbyte Hard disk
		DTTA-351010	ATA33 10.1Gbyte Hard disk
	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B
	3Com	3C905C-TX	Ethernet 10/100 PCI Lan card
Windows 98 SE	Microsoft	Build2222A	Windows 98 SE English
Novell 5.0	Novell	5.0	NetWare Novell

Slot	LAN Card	IRQ & I/O Port Setting	Result
Build in M/B	3C905B	IRQ= 9 , I/O Port= D800	PASS
PCI	3COM 3C905C	IRQ= 11 , I/O Port= DC00	PASS

Slot	LAN Card	IRQ & I/O Port Setting	Result
Build in M/B	3C905B	IRQ= 9 , I/O Port= D800	PASS
PCI #1	INTEL PRO100+ <82559>	IRQ= 11 , I/O Port= DC80	PASS

5.8.2.3.2 LAN STRESS TEST (IDE INTERFACE)

Test Configuration: 1,2,3

BIOS: Setup Default

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	IBM	DTTA-350640	ATA33 6.4Gbyte Hard disk
		DTTA-351010	ATA33 10.1Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
Novell 5.0	Novell	5.0	NetWare Novell
LAN card	3COM	1. 3C905B	Ethernet Chipset Build in M/B
	3COM	2. 3C905C-TX	Ethernet 10/100 PCI LAN card
	INTEL	3. INTEL 100+ <82559>	Ethernet 10/100 PCI LAN card

Test Item	Test Configuration	Result
Fdisk two partitions	#1,#2,#3	PASS
Install Novell NetWare 5.0	#1,#2,#3	PASS
Duplex Test	#1,#2,#3	PASS
NWTEST.EXE Test (12 hours)	#1,#2,#3	PASS

Microsoft Windows NT Test

5.8.2.4.1 Server Bench Test

Test Configuration:

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
Windows 98 SE	Microsoft	Build 2222A	Windows 98 SE English
Windows NT 4.0	Microsoft	Build 1381&SP4	Windows NT English
IE	Microsoft	IE 5.0	Windows IE English
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B

Test Item	Result
Install Netscape, Browser Test	PASS
Install IE, Browser Test	PASS
Mail send and receive Test	PASS
Run NetBench 5.01 Server	PASS

Web Bench Test

Test Configuration:

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
Windows 98 SE	Microsoft	Build 2222A	Windows 98 SE English
Windows NT 4.0	Microsoft	Build 1381&SP4	Windows NT English
IE	Microsoft	IE 5.0	Windows IE English
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B

Test Item	Result
Install Netscape, Browser Test,	PASS

Install IE, Browser Test	PASS
Mail send and receive Test	PASS
Run Web bench Test	PASS

Net Bench Test

Test Configuration:

ITEM	Vendor	Model Name	Product Description
CPU	Intel	Celeron	433 MHz
Memory	Toshiba	TC59S6408BFT-80	RAM 64 MB
IDE HDD	WD	AC28400-00RT	ATA66 8.4 Gbyte Hard disk
CD-ROM	TEAC	CD-224E	IDE 24X CD-ROM
Monitor	LEO	LEO	17 inch
Video	SIS	SIS620	AGP VGA Build in chipset
Sound	Crystal	CS4280	PCI Sound Build in M/B
Windows 98 SE	Microsoft	Build 2222A	Windows 98 SE English
Windows NT 4.0	Microsoft	Build 1381&SP4	Windows NT English
IE	Microsoft	IE 5.0	Windows IE English
LAN card	3Com	3C905B	Ethernet Chipset Build in M/B

Test Item	Result
Install Netscape, Browser Test,	PASS
Install IE, Browser Test	PASS
Mail send and receive Test	PASS
Run Net Bench Test	PASS

5.8.2.5 NetWare Throughput Test.

Perform3 Test

Test Configuration: Test From DOS Prompt & Server is connected to Client

File	Unit	This PC	Unit	Combined PC	Unit
65535	Bytes	5372.20	KB/Sec	5372.20	Aggregate KB/Sec
61439	Bytes	24254.73	KB/Sec	24254.73	Aggregate KB/Sec
57343	Bytes	81250.41	KB/Sec	81250.41	Aggregate KB/Sec
53147	Bytes	118221.70	KB/Sec	118221.70	Aggregate KB/Sec
49151	Bytes	135753.92	KB/Sec	135753.92	Aggregate KB/Sec
45055	Bytes	18818.99	KB/Sec	11818.99	Aggregate KB/Sec
40959	Bytes	97736.48	KB/Sec	97736.48	Aggregate KB/Sec
36863	Bytes	62377.90	KB/Sec	62377.90	Aggregate KB/Sec
32767	Bytes	99851.68	KB/Sec	99851.68	Aggregate KB/Sec
28671	Bytes	35626.97	KB/Sec	35626.97	Aggregate KB/Sec
24575	Bytes	70994.61	KB/Sec	70994.61	Aggregate KB/Sec

20479	Bytes	38344.30	KB/Sec	38344.30	Aggregate KB/Sec
16383	Bytes	38187.96	KB/Sec	38187.96	Aggregate KB/Sec
12287	Bytes	12448.01	KB/Sec	12448.01	Aggregate KB/Sec
8191	Bytes	9991.98	KB/Sec	9991.98	Aggregate KB/Sec
				59915.46	Average KB/Sec

Onboard Audio Function Test

5.8.3.1 Configuration

We check onboard Crystal 4280 audio function under below condition:

System	SAHARA 1000
PCB version	1.2
Processor	Socket 370 500MHz
SDRAM	256MB (Full Loading)
Audio Chip	Crystal CS4280-CM
Audio driver	Crystal 4280 sound driver 4.06.2870
O.S.	Win98

5.8.3.2 Manual Test

Test Item	Description	Test Configuration
Recording Test	Did the file play back correctly, comparing favorably in sound quality to the original source material from the CD for all OS?	PASS
Recording Control Verification	Do all sliders and controls function correctly in Recording mode for all OS?	PASS
Mixing Multiple Input Lines	Do all sliders and controls function correctly while multiple input lines are mixed together for all OS?	PASS
Retention of Setting	Are changed settings saved each time for all OS?	PASS
Volume Control Icon	Does the Volume Control icons appear on the taskbar when Show Volume Control On the Taskbar option is enabled for all OS?	PASS
Multimedia Control Panel Verification	Is the Test adapters base audio driver listed in both the playback and recording combo boxes for all OS?	PASS
Other Drivers	Do all Test adapter's devices appear in the list in the proper locations for all OS?	PASS
.AVI Files	Could .AVI files be played successfully for all OS?	PASS

D-A/A-D Audio Test

Route: D-A

Out: Line(w/10k load)

Date: 6/24'99

	Description	Test	Spec	Result	Remark
1	Full scale output voltage	1.643v	1~2v	Pass	

2	Frequency accuracy	0.0058 %	<= 0.1%	Pass	
3	Frequency Response				See D-AFR wav.
4	THD+N (1kHz-3Db)	-77.377/-78.028Db	<= -60Db	Pass	
5	SNR (1kHz, -60Db)	83.457/83.457Db	>= 80Db	Pass	
6	Crosstalk (1kHz,0Db)	96.440/95.534Db	>= 55Db	Pass	

Route: A-D

In: Line

	Description	Test	Spec	Result	Remark
1	Full scale input voltage	0.44v	1~2v	Fail	
2	Frequency accuracy	/ %	<= 0.1%		
3	Frequency Response	/Db		Pass	See LAD FR wav.
4	THD+N (1kHz-3Db)	-69.273/-68.996Db	<= -55Db	Pass	
5	SNR (1kHz-60Db)	79.580/78.833Db	>= 75Db	Pass	

Route: A-D

In: Mic

	Description	Test	Spec	Result	Remark
1	Full scale input voltage	20.88 mv	50~200mv	Fail	
2	Frequency accuracy	/ %	<= 0.1%		
3	Frequency Response			Pass	See MAD FR wav.
4	THD+N (1kHz-3Db)	-48.995/-48.904Db	<= -55Db	Fail	
5	SNR (1kHz-60Db)	61.379/61.286Db	>= 75Db	Fail	

H/W Option Device Test

6.1 Memory Module Test (SDRAM)

PC100 DIMM

Vender	IC Part No.	ECC	Side	Module No.	Result
32MB 2MX64					
SEC	KM48S2020CT-GL	No	D	KMM36S403CT-GL	PASS
FUJITSU	81F16822B-102FN	No	D	321608S26FJ01	PASS
32MB 4MX64					
FUJITSU	81F641642C-102FN	No	S	320416S26FJ12	PASS
HITACHI	HM5264165TTB60	No	S	320416S36HI01	PASS
32MB 8MX32					
MITSUM I	M5M4V64S40ATP	No	S	320416S36MI01	PASS
FUJITSU	81F641642C-102FN	No	S	320416S26FJ12	PASS
FUJITSU	81F641642B-133FN	No	S	3200416S36FI11	PASS
SEC	KM416S4030BT-GH	No	S	320416S26SA01	PASS
NEC	D4564163G5-A10-9JF	No	S	MC-454CB646F-A10	PASS
SAMSU N	KM416S4030CT-GL	No	S	KMM366S424CTS-GL	PASS
64MB 8MX64					
SEC	KM48S8030CT-GH	No	S	BUFFALO VSJ-S64M2	PASS
TOSHIB A	TC59S6408BFT-80	No	S	BUFFALO VSJ-S64M2	PASS
LGS	GM72V66841ET7J	No	D	APACER M2L92443	PASS
LGS	GM72V66841ET7J	No	S	U9064*9941*	PASS
SIEMEN S	HYB39S64800AT-8	No	D	APACER M2S2954	PASS
MITSUBI	M2V64S30BTP	No	S	MH8S64BALD-8	PASS
MICRON	48LC8M8A2	No	S	MT8LSDT864AG-10CB4	PASS

HITACHI	HY57V658020A	No	S	HYM7V65801ATFG-10S	PASS
128MB 16MX64					
TOSHIBA	TC59S6408BFT-80	No	D	BUFFALO VSJ-D128M2	PASS
NEC	D4564841G5-A80-9JF	Yes	D	BUFFALO VSJ-ED128M2	PASS
mitsubishi	M2V64S30BTP	Yes	D	BUFFALO VSJ-ED128M2	PASS
HITACHI	HM5264805DTTB60	No	D	APACER M3H9234	PASS
SIEMENS	HYB39S64800AT-8	No	D	APACER M1S9245	PASS
LGS	GM72V66841ET7J	No	D	APACER E3L9234	PASS
256MB 16MX64					
SEC	KM48S16030T-GL	Yes	D	BUFFALO	PASS

6.2 Add-on Cards

6.2.1 SCSI Adapter Products

Vendor	Model Name	Product Description	Bus I/F	Result
Adaptec	AHA-2910C	Adaptec AHA-2910C PCI SCSI card	PCI	PASS
Adaptec	AHA-2940	Adaptec AHA-2940 PCI SCSI card	PCI	PASS
Adaptec	AHA-2940AU	Adaptec AHA-2940AU PCI SCSI	PCI	PASS

6.2.2 FAX / Modem Products

Vendor	Model Name	Bus I/F	Result
HAYES	HAYES 56K/14.4 Data/Fax Modem	Internal	PASS
US Robotics	Sportster External 56K Data/Fax Modem	Internal	PASS
Motorola	External v0.90 56K Modem	External	PASS
CIS	56K Modem	Internal	PASS
ASKey	V1456VQH-P1 V.90K56flex	Internal	PASS

6.2.3 Network Card Products

Vender	Model	Ver.	Chips No.	Specification	Bus	Result
--------	-------	------	-----------	---------------	-----	--------

3COM	3C905B	B		ETHERNET 10/100	PCI	PASS
INTEL	PRO10+	004	INTEL S82557	ETHERNET 10MB	PCI	PASS
	PRO100+	A	INTEL S82559	ETHERNET 10/100	PCI	PASS

6.3 Storage Devices

6.3.1 SCSI Peripheral Products

ITEM	Vendor	Model Name	Product Description	Result
SCSI Hard Disk	Seagate	ST-32520W	4.5GB Wide SCSI Hard Disk Drive	PASS
		ST-36530W	6.5GB Wide SCSI Hard Disk Drive	PASS
		ST-39140W	9.1GB Wide SCSI Hard Disk Drive	PASS
	IBM	DCAS34330	4.5GB Ultra SCSI HDD	PASS
lomega	Ditto	IO80-PX3	Ditto Easy 800 External Tape Driver	PASS
	Zip	Z100S	Zip 100 SCSI	PASS

6.3.2 IDE Fixed Disk Drive Products

Vendor	Model Name	Mode	Capacity	Result
Seagate	ST36422A	Ultra DMA 33	6.4GB	PASS
	ST38630A	Ultra DMA 33	8.6GB	PASS
	ST310232A	Ultra DMA 33	10.2GB	PASS
	ST38421A	Ultra DMA 66	8.4GB	PASS
Fujitsu	MPC3102AT	Ultra DMA 33	10.24GB	PASS
	MPD3064AT	Ultra DMA 66	6.4GB	PASS
	MPD3084AT	Ultra DMA 66	8.45GB	PASS
	MPD3108AT	Ultra DMA 66	10.8GB	PASS
Quantum	CX6200AT	Ultra DMA 66	6.4GB	PASS
	CX10200AT	Ultra DMA 66	10.2GB	PASS
	CX13000AT	Ultra DMA 66	13GB	PASS

6.3.3 ATAPI Device Product

Vendor	Model Name	Product Description	Bus I/F	Result
TEAC	CD224E-A92	ATAPI CD-ROM Device 24X	IDE	PASS
Panasonic lomega	CR-175B	ATAPI CD-ROM Device 24X	IDE	PASS
	LS-120	ATAPI LS-120	IDE	PASS

6.4 Peripherals

6.4.1 Printer Peripheral Products

Vendor	Model Name	Product Description	Bus I/F	Result
EPSON	Stylus 740	Stylus Color 740	ECP	PASS
HP	LaserJet III	HP LaserJet III	LPT	PASS
	LaserJet 5P	HP LaserJet 5P support IR Interface	LPT	PASS
	LaserJet 6P	HP LaserJet 6P support IR Interface	EPP	
Zip	ZIP100	lomega ZIP 100 Parallel port	LPT	PASS
LEO	LEO 300 ECP	LEO LPT scanner Scan-S6	Printer/ECP	PASS
	LEOScan	LEO ECP FS-1130A Scanner	Printer/ECP	PASS

6.4.2 Mouse Products

Vendor	Model Name	Product Description	Bus I/F	Result
Microsoft	Microsoft Mouse	Microsoft IntelliMouse Serial - PS/2 Mouse	Serial/PS2	PASS
Logitech	MouseMan	Logitech MouseMan Serial - PS/2 Mouse	Serial/PS2	PASS
	First Mouse+	Logitech First Mouse+ Serial - PS/2 Mouse	Serial/PS2	PASS
	TrackMan Marble	Logitech TrackMan Marble Serial - PS/2 Mouse	Serial/PS2	PASS

6.4.3 DFP LCD Monitor

Vendor	Model Name	Product Description	Result
ViewSonic	VPD-150	15" LCD Monitor	PASS
Lite-On	OEM	15" LCD Monitor	PASS
COMPAL	ST340	15" LCD Monitor	PASS
MAG		15" LCD Monitor	PASS

6.5 Multimedia Kits:

The test is to ensure the multimedia device connected to the "SAHARA 1000" system could work properly. The test will describe as follow the table list:

Product Name	Vendor	Test Configuration				Test Result
		WIN98		WIN95 OSR2.5		
Headphone	Creative	#1- #3	#1- #3	#1- #3	#1- #3	PASS
Microphone	Creative	#1- #3	#1- #3	#1- #3	#1- #3	PASS
Speaker	Creative	#1- #3	#1- #3	#1- #3	#1- #3	PASS

7. Software Compatibility Test Suite

7.1 Base Operating System

The board is tested to ensure that it runs a complete a RAGE of Operating Systems and thus operate in all network environments The board's Power Management and Remote functions are also tested.

Operating System	Version	Language	Company	Status
MS DOS Ver 6.22	6.22	English	Microsoft	PASS
MS Windows 95 OSR2.5	950C	ENG,JPN	Microsoft	PASS
MS Windows 98	1998	ENG,JPN	Microsoft	PASS
MS Windows 98 SE	4.10.2222 A	ENG,JPN	Microsoft	PASS
Windows NT Workstation	4.0	ENG,JPN	Microsoft	PASS
Windows 2000	5.0 Beta 3	English	Microsoft	PASS
IBM OS/2 Warp	4.0	English	IBM	PASS
Novell Network	3.12	English	Novell	PASS
Novell Network	4.10	English	Novell	PASS
Novell Network	5.00	English	Novell	PASS

7.2 Software Applications

Item	Descriptions	Version	O.S.	Language	Status
Communication	BITWare	3.30	Windows 9x	English	PASS
	WinFAX Pro	9.0	Windows 9x	English	PASS
	LapLink	7.0A	Windows 9x	English	PASS
Browser	Internet Explorer	4.01	Windows 9x	English	PASS
	Internet Explorer	3.02	Windows NT4.0	English	PASS

Database	Approach 96	1.0	Windows 95	English	PASS
	Lotus Notes	4.0	Windows 95	English	PASS
	Borland Visual Dbase	5.5	Windows 95	English	PASS
	Visual Foxpro	3.0A	Windows 95	English	PASS
Database	Visual dBASE Compiler	5.5	Windows 95	English	PASS
	Borland Delphi	3.0	Windows 95	English	PASS
	FoxPro Microsoft	5.0	Windows 95	English	PASS
Program	MS Visual Basic	5.0	Windows 9x	English	PASS
	MS Visual C++	4.0	Windows 9x	English	PASS
	Borland Delphi	2.0	Windows 95	English	PASS
Suites	Lotus SMART Suites 96	1.0	Windows 95	English	PASS
	MS Work for Windows	3.0	Windows	English	PASS
	MS Work for Windows95	4.0	Windows 95	English	PASS
	MS Office for Windows	4.3	Windows	English	PASS
	MS Office for Windows	4.3	Windows	Chinese	PASS
	MS Office 97 for Windows98	7.0	Windows 9x	English	PASS
TimeManagement	MS Project	4.1	Windows 95	English	PASS
	Organizer	2.1T	Windows	Chinese	PASS
Tools	Norton Ghost	4.0	DOS	English	PASS
	Norton Ghost	5.0	Windows9x	English	PASS
	Anti-virus for Win95	3.0	Windows 95	English	PASS
	Xing Soft MPEG Player	3.0	Windows 9x	English	PASS
	Xing DVD Play	1.0b	Windows9x	English	PASS
	Norton Backup	2.2	Windows	English	PASS
	Norton Commander	5.0	DOS	English	PASS
	Norton Utility	9.0	Windows 9x	English	PASS
	Microsoft Plus!	1.0	Windows 95	English	PASS
Word Processor	PE III (DW3)	4.0	DOS	English	PASS
	AMI Pro for Windows	3.1	Windows	English	PASS
	MS Word for Windows	6.0	Windows	English	PASS
	Word Prefect for Windows	6.0	Windows	English	PASS
	WordPerfect	6.0	Windows	English	PASS

8. Stability & Reliability Test

8.1 Dynamic Burn-in Tests

8.1.1 Test Configuration

Processor	Intel Celeron Socket370 500 MHz
Cache	128K
Memory	256MB (Full Loading)
Chipset	North Bridge: SIS 620 Eagle
PCIsset	South Bridge: SIS 5595B
VGA (Onboard)	SIS 6326 embedded in SIS 620 8MB LFB
LAN (Onboard)	3COM 3C918 V2
Audio (Onboard)	Crystal CS4280-CM PCI

8.1.2 Test Utilities

Software Name	Duration	Status
Novell Server version 4.11	24 hr.	PASS
SCO UNIX Open Desktop 5.0.4	24 hr.	PASS
Qaplus 5.52 in DOS 6.22	24 hr.	PASS
AMI Diagnostic 5.5 in DOS 7.0	24 hr.	PASS
PCPRO 6.0 in DOS 7.0	24hr.	PASS
Check It pro 5.0 in Win9X	24hr.	PASS
Bapco 4.0 in win98	24hr.	PASS
Bapco 4.0 in WinNT 4.0	12 hr.	PASS
WinBench99 in Win95 OSR 2.5	24 hr.	PASS
Winstone99 in Win98	24 hr.	PASS
HCT 8.1 stress test in Win98	12 hr.	PASS
VCD play in Win98	12 hr.	PASS
Audio play in Win98	12 hr.	PASS

9. Performance Test

9.1 Introduction

To evaluate the SAHARA1000 performance and to ensure its compatibility with a complete RAGE of the most popular operating systems and software applications. FIC Motherboard R&D Team conducted a comprehensive suite of benchmark tests on the board in a variety of hardware configurations, which including a full selection of Intel Pentium II/III processors as well as SDRAM types.

In order to demonstrate realistic business application performance, Winstone 99 under Windows 98 was chosen as the primary benchmarking tool for FIC tests. Winstone 99 Version 1.0 was developed by the Ziff-Davis Publishing Company to provide a tool for accurate and realistic measurement of system performance of personal computers running popular business-oriented applications in the Microsoft Windows 98 operating system environment. To demonstrate the performance of the SAHARA 1000 in the Windows NT operating system environment, tests were also run using the Winstone 99 for Windows NT 4.0 benchmarking tool.

9.2 System Benchmarks Performance Summary

Benchmarks Performance in SAHARA 1000:

The chart below illustrates the Winstone 99 under Windows 98 performance processor benchmark with the SAHARA 1000 using Intel socket 370 500MHz processor. The following is a sample of the results using 256MB SDRAM , with SIS AGP onboard VGA in 1024 x 768 x 16bit colors (3D WinBench 99 use 16bit color), and using different video ram resolution refresh rate of 60Hz, small font.

3D WinBench 99

ITEM	Shell 4MB	Shell 8MB	4MB LFB	8MB LFB
800*600*16bit	77.4	158	200	198
1024*768*16bit	Out of memory	104	Out of memory	133

Final Reality 101

ITEM	Shell 4MB	Shell 8MB	4MB LFB	8MB LFB
3D Performance	2.34	2.34	2.79	3.11
2D IMAGE	2.12	2.12	3.06	3.05
Bus transfer Rate	2.27	2.19	4.01	4.00
Overall	2.27	2.26	3.05	3.11

3D Mark99

ITEM	Shell 4MB	Shell 8MB	4MB LFB	8MB LFB
800*600*16bit 3D Mark	360	361	424	429
CPU 3D Marks	3190	3190	3736	3785

Winbench99

ITEM	Shell 4MB	Shell 8MB	4MB LFB	8MB LFB
CPUmark32	518	520	694	699
FPU WinMark	2650	2660	2660	2670
Business Disk WinMark99	3320	2970	3260	3300
High-End Disk WinMark99	7550	8190	10700	11700
Business Graphics WinM	81	82.8	109	112
High-End Graphics WinM	344	336	410	405

Winstone99

ITEM	Shell 4MB	Shell 8MB	4MB LFB	8MB LFB
Business	17.4	17.4	19.7	19.8

*Base On: Celeron socket 370 CPU 500MHz, NEC CL2 256MB, FUJITSU MPD3084AT HDD,
BIOS: UC612, M/B Ver.: 1.2, VGA Driver: 1.04.53 and Microsoft DX6.1

Appendix A : Driver Version List

Chipset	Operating System	Version	Notes
SIS 6326 3COM LAN Kit	Windows 95/98/NT4	V1.04.53	
	Window 95/98/NT4	V5.02	Driver Kit
	OS2 Warp 4.0	V5.02	Driver Kit
Crystal 4280	Windows 9X	4.06.2870	
	Windows NT 4.0	4.01.2050	
	Windows 98/2000	4.10.3010	
AMI BIOS Flash ROM Utilities	DOS	8.13	
CDROM -- Panasonic MKE	DOS/Windows3.1/95	SFF8090	
CDROM-- Teac	DOS/Windows3.1/95	CDKIT	

Appendix B : System BIOS Update History

Revision	Release Note	Release Date
UC610	7/27(Including VGA BIOS Ver. 1.05.50)	7/27/99
UC611	8/11(Including VGA BIOS Ver. 1.05.50)	8/11/99
UC612	9/06(Including VGA BIOS Ver. 1.05.50)	9/06/99

Appendix C : System Hardware Update History

Revision	Release Note	Release Date
----------	--------------	--------------

1.2	<ol style="list-style-type: none"> 1. Modify R5,C7,R29,R35 for VCCP quality. 2. Modify “-PWRBTN” pull up 10K to “RTCVDD” for power on issue. 3. Change J1 and VGA_DSB from ‘1x2’ to ‘1x3’ pin 4. Del C303~C310 and replace L25~L32 to 10€ {100MHz for LCD panel support. 5. Add R37 to BOM form on board AGP disable function. 6. Replace C62,C59 to 27pf/NPO and C133,C136 to 22pf/NPO for RTC issue. 7. Add EMI solution. 	7/20/99

Appendix D: System Special Board Approval

1 Riser Card

PART NO.	Description	O.S.	Result
51-40521-04	RISER-CEISA SLOT V1.2 FOR SAHARA CRYSTAL	95/98/NT4/200 0	PASS

2 LED Board

PART NO.	Description	O.S.	Result
51-40522-01	LED-B V1.1 FOR SAHARA II	95/98/NT4/200 0	PASS

3 CD-ROM Board

PART NO.	Description	O.S.	Result
51-40539-01	CD-ROM BOARD V1.2 SAHARA II	95/98/NT4/200 0	PASS