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# TABLE OF CONTENT

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## CHAPTER 1

About this board .....	1
About this manual.....	1
1-1 FEATURE OF MAIN BOARD .....	2
1-2 PHYSICAL LAYOUT OF J-426.....	3

## CHAPTER 2

HARDWARE INSTALLATION .....	4
2-1 INSTALL THE SYSTEM CPU PROCESSOR .....	4
2-2 Set the cpu relevant jumpers to correctly configure the CPU type, CPU type, CPU clock and CPU voltage.....	4
2-3 External cache installation .....	7
2-4 System DRAM installation.....	8
2-5 Installation IDE, Enhance I/O connector and other Jumper.....	9

## CHAPTER 3

BIOS SETUP.....	11
3-1 AWARD BIOS SETUP GUIDE .....	11
3-2 STANDARD CMOS SETUP .....	12
3-3 BIOS FEATURES SETUP .....	13
3-4 CHIPSET FEATURES SETUP .....	14
3-5 POWER MANAGEMENT SETUP .....	15
3-6 PCI CONFIGURATION SETUP.....	16

## CHAPTER 4

TEST REPORT .....	17
4-1 PERFORMANCE REPORT .....	17
4-2 GENERAL UTILITY TEST .....	18
4-3 SOFTWARE RELIABILITY TEST.....	19
4-4 VGA CARD COMPATIBLE TEST .....	20
4-5 IDE-HDD COMPATIBLE TEST.....	21
4-7 NETWORK COMPATIBLE TEST.....	22



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# CHAPTER 1

## About this board

The J-426 design based on ALI 1487 & 1489 80486 system chip & Winbond I/O chipset, it can works on all kinds 80486DX CPU. As this board is aiming at the demand of multi-media and industry PC, so the board size lessen to be 22\*17cm, but it can fully match with future specification needs. Such as it supports EDO & standard fast page DRAM, high performance PCI BUS, enhance I/O & IDE on board ... etc. It should be the best choice for 486 system board.

## About this manual

This manual was asked to be brief, and understandable. It contains 4 chapters as below:

- CHAPTER 1.     1-1 Feature of main board  
                  1-2 PCB layout and relevant position
- CHAPTER 2.     For hardware installation
- CHAPTER 3.     For software setup, including BIOS, IDE driver
- CHAPTER 4.     Testing report

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## 1-1 FEATURE OF MAIN BOARD

- MICRO PROCESSOR
  - ZIF socket
  - Support Intel, AMD, Cyrix & Ti 80486DX family
- CHIPSET
  - System chipset: ALI M1487 (ISA bus controller)  
ALI M1489 (cache memory PCI controller)
  - I/O chipset: Winbond W83787 & W83768
- MEMORY
  - 32 bit memory
  - EDO & fast page DRAM support
  - Support two 72pin SIMM socket
  - On board memory up to 128 MB
- EXTERNAL CACHE (L2 CACHE)
  - Support write back cache
  - Size: 128KB to 512KB cache
- Enhanced PCI IDE & ISA I/O
  - System chip built in enhanced PCI IDE controller
  - Support two channel with four IDE device
  - Two serial ports with FIFO 16550, one parallel port with ECP/EPP device
  - One floppy connector with two FDD
  - IDE & I/O control by BIOS
- BIOS
  - AWARD green BIOS, support SMM SMI function
  - Plug & play flash BIOS for Windows 95 (option)
- SLOT
  - 4 pcs of ISA 16 bit bus
  - 3 pcs of PCI bus
- SIZE
  - 22\*17cm (8.66\*6.69 inch)

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## **1-2 PHYSICAL LAYOUT OF J-426**

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## CHAPTER 2

### HARD WARE INSTALLATION

#### 2-1 INSTALL THE SYSTEM CPU PROCESSOR

- ❑ The CPU ZIF socket locate U13
- ❑ Raise the ZIF socket retaining arm to the open position. Pin coordinates A-1 well be in the arm corner
- ❑ Position the notched corner of microprocessor over the notched corner of the ZIF socket and align the pins of CPU over the socket
- ❑ carefully insert the aligned CPU into the ZIF socket and press firmly. After CPU to ensure it is installed in the correct direction and pin aligned properly

#### 2-2 Set the CPU relevant jumpers to correctly configure the CPU type, CPU clock and CPU voltage

- ❑ CPU Type: There are Intel, AMD Cyrix UMC and other compatible CPU. Essentially, make sure which type of CPU you use and set the jumper
- ❑ CPU Type, Speed, Voltage, Jumper location:

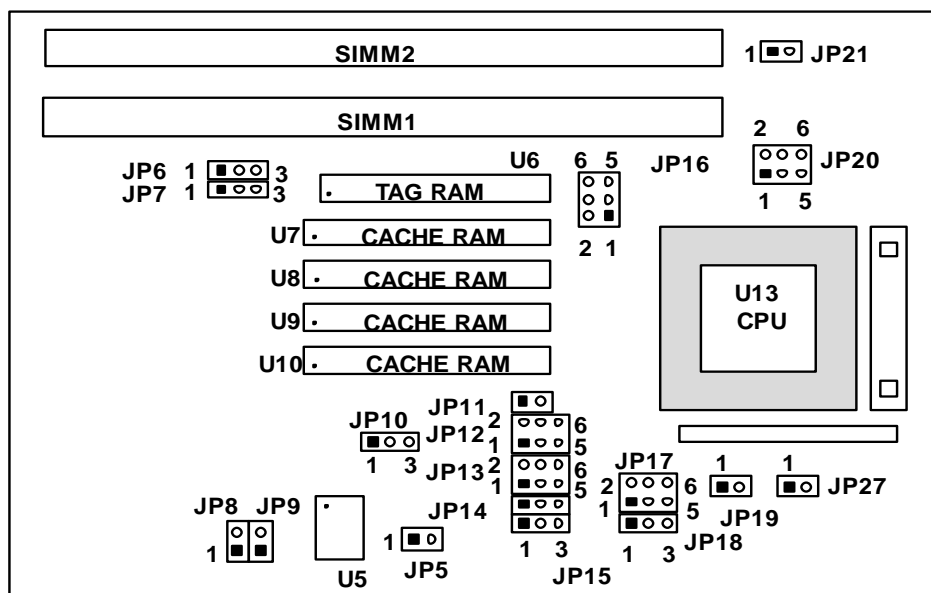


Figure 2-1

□ CPU Type Selection Jumper: JP5, JP12, JP13, JP14, JP15, JP16, JP17 JP18, JP19, JP27 (BLUE color selector)

CPU TYPE	JP5	JP12	JP13	JP14	JP15	JP16	JP17	JP18	JP19	JP27	Factory Default
Intel 486SX	OFF	OFF	OFF	OFF	1-2	OFF	1-2	1-2	OFF	ON	
Intel 486DX/DX2	OFF	OFF	OFF	2-3	1-2	OFF	1-2	2-3	OFF	ON	
Intel 486SX-S	ON	3-4	OFF	OFF	1-2	3-4	5-6	1-2	OFF	ON	
Intel 486DX/DX2/DX4-S	ON	3-4	OFF	2-3	1-2	3-4	5-6	2-3	OFF	ON	
AMD 486-66(80)/100 WRITE THROUGH	OFF	OFF	OFF	2-3	1-2	OFF	1-2	2-3	ON/OFF	ON	C *
AMD 486-66(80)/100 WRITE BACK	ON	3-4	1-3,5-6/ 5-6	2-3	2-3	3-4	5-6	2-3	OFF	ON	
Cyrix T1/SGS/DX/DX2/DX4	ON	5-6	1-2	2-3	1-2	5-6	3-4	2-3	OFF	OFF	
Intel P24D/ Cyrix M1SC	ON	3-4	5-6	2-3/ 1-2	2-3	3-4	5-6	2-3	OFF	ON	
Intel P24T	ON	3-4	OFF	1-2	2-3	3-4	5-6	2-3	OFF	ON	
UMC U5	OFF	1-2	OFF	OFF	1-2	1-2	1-2	1-2	OFF	ON	

TABLE - 1

□ CPU SPEED Selection Jumper: JP8, JP9, JP10, JP11 (White color selector)



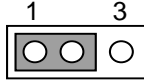



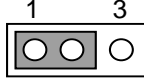


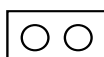
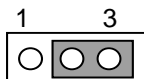

Jumper No./ Mhz	JP8	JP9	JP10	JP11	Factory Defauly
25MHz	 open	 open	 1-2 closed	 open	
33MHz	 closed	 closed	 1-2 closed	 open	*
40MHz	 closed	 open	 2-3 closed	 closed	

TABLE - 2

□ CPU Voltage selection Jumper: JP20 (Yellow color selector)

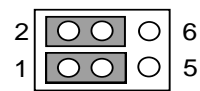
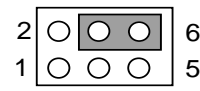
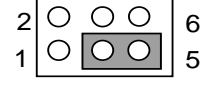
Voltage	JP20	Factory defaulty
5V	 1-3 closed 2-4 closed	
4V	 4-6 closed	
3.45V	 3-5 closed	*

TABLE - 3



## 2-3 External cache installation

□ CACHE size Jumper selection: **JP6, JP7** (Black color selector)

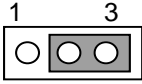
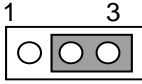
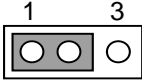
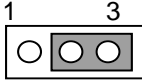
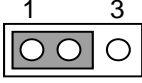
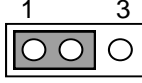
Cache	TAG	Data	JP7	JP6
128K	8K/16K/32K*8	32K*8	 2-3 closed	 2-3 closed
256K	16K32/K*8	64K*8	 1-2 closed	 2-3 closed
512K	32K*8	128K*8	 1-2 closed	 1-2 closed

TABLE - 4

## 2-4 System DRAM installation

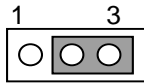
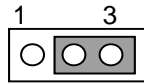
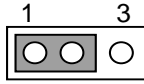
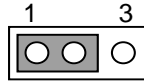
The board has 2 pcs 72-pin SIMM socket, you can use single or double side DRAM module, it is the table for DRAM configuration:

SIMM1	SIMM2	TOTAL MEMORY
-------	-------	--------------

1MB	NONE	1MB
1MB	1MB	2MB
4MB	NONE	4MB
4MB	4MB	8MB
8MB	NONE	8MB
8MB	8MB	16MB
16MB	NONE	16MB
16MB	16MB	32MB
32MB	NONE	32MB
32MB	32MB	64MB
64MB	NONE	64MB
64MB	64MB	128MB

**2-5 Install IDE, Enhance I/O connector and other Jumper**

- J1:** Primary IDE port for device 0 and device 1 support MODE 3 & MODE 4
- J6:** Secondary IDE port for device 2 and device 3 support MODE3 & MODE 4
- J2:** FDD connector
- J3:** Parallel port with ECP/EPP device to increased printer performance and connect IDE/SCSI device.
- J4/J5:** COM1/COM2 serial port with 16550 function
- JP2, JP4:** ECP function jumper setting (Green color selector)


Mhz	JP2	JP4
<b>DMA#1</b>	 <p>2-3 closed</p>	 <p>2-3 closed</p>
<b>DMA#3</b>	 <p>1-2 closed</p>	 <p>1-2 closed</p>


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**TABLE - 5**

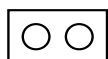
**JP1:** Battery supply selector


 on board battery  
open

 clear cmos data  
closed


**JP3:** On board IDE LED connector

**JP23:** Printer port

 Bidereltion  
open

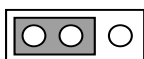
 Output only  
closed

**JG1:** Suspended switch connector :

 normal operation  
open

 suspend mode  
closed

**W83877F installation:**

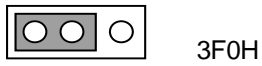
**JW1:**  877 chip enable  
1-2 closed

 877 chip disable  
2-3 closed

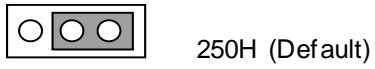
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**JW2:** CR Address Setting:

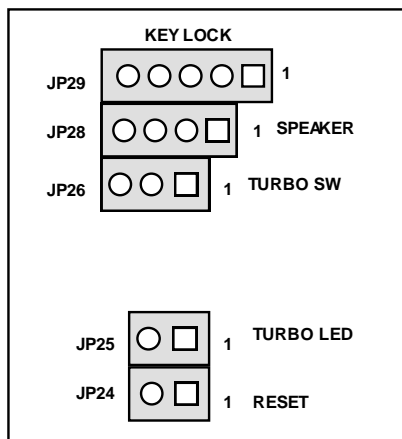


1-2 closed



2-3 closed

**The other:** Key Lock, Turbo SW, Speaker, Reset, Turbo LED connector



**TABLE - 6**

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## CHAPTER 3

### BIOS SETUP

#### 3-1 AWARD BIOS SETUP GUIDE

ROM PCI/ISA BIOS (2A4KDJ1H)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PCI CONFIGURATION SETUP	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
ESC : QUIT	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color
IRQ Settings, Latency Timers...	

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## 3-2 STANDARD CMOS SETUP

ROM PCI/ISA BIOS (2A4KDJ1H)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Fri, Jul 28 1995

Time (hh:mm:ss) : 14 : 45 : 51

<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>
Primary Master	: None	0	0	0	0	0	0	-----
Primary Slave	: None	0	0	0	0	0	0	-----
Secondary Master	: None	0	0	0	0	0	0	-----
Secondary Slave	: None	0	0	0	0	0	0	-----

Drive A : 1.2M , 5.25 in.

Drive B : None

Video : EGA/VGA

Halt On : All Errors

Base Memory : 640K

Extended Memory : 3168K

Other Memory : 384K

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Total Memory : 8192K

Esc : Quit

↑ ↓ → ← : Select Item

Pu/Pd/+/- : Modify

F1 : Help

(Shift)F2: Change Color

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### 3-3 BIOS FEATURES SETUP

ROM PCI/ISA BIOS (2A4KDJ1H)

BIOS FEATURES SETUP

AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: A,C		
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PCI/VGA Palette Snoop	: Enabled		
		Esc: Quit	↑ ↓ → ← : Select Item
		F1 : Help	Pu/Pd/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

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### 3-4 CHIPSET FEATURES SETUP

ROM PCI/ISA BIOS (2A4KDJ1H)

CHIPSET FEATURES SETUP

AWARD SOFTEARE, INC.

Auto Configuration	: Enabled	Onboard FDD Controller	: Enabled
AT-Bus Clock	: CLK/3	Onboard Serial Port 1	: COM1/3F8
DRAM Read Timing	: Normal	Onboard Serail Port 2	: COM2/2F8
DRAM Write Timing	: Normal	Onboard Parallel Port	: 378H
SRAM Read Timing	: 2-1-1-1	Onboard Parallel Mode	: Normal
SRAM Write Timing	: 0 Wait	Onboard Game Port	: Disabled
Internal Cache WB/WT	: WB		
Hidden Refresh	: Disabled		
ISA I/O Recovery	: Enabled		
Fast-Back-to-Back	: Enabled		
On-Chip Local Bus IDE	: Enabled		
IDE Buffer for DOS & Win	: Enabled		
The 2nd channel IDE	: Enabled		
IDE HDD Block Mode	: Disabled	Esc: Quit	↑ ↓ → ←: Select Item
IDE Primary Master PIO	: Auto	F1 : Help	Pu/Pd/+/-:Modify
IDE Primary Slave PIO	: Auto	F5 : Old Values	(Shift)F2 : Color
IDE Secondary Master PIO	: Auto	F6 : Load BIOS Defaults	
IDE Secondary Slave PIO	: Auto	F7 : Load Setup Defaults	



## 3-5 POWER MANAGEMENT SETUP

ROM PCI/ISA BIOS (2A4KDJ1H)  
 POWER MANAGEMENT SETUP  
 AWARD SOFTWARE, INC.

Power Management	: Disabled	IRQ6 (Floppy Disk)	: ON
PM Control by APM	: Yes	IRQ7 (LPT1)	: ON
Video Off Option	: Susp,Stby ->Off	IRQ8 (RTC Alarm)	: OFF
Video Off Method	: V/H SYNC+Blank	IRQ9 (IRQ2 Redir)	: ON
		IRQ10 (Reserved)	: OFF
	** PM Timbers **	IRQ11 Activity	: OFF
HDD Power Down	: Disabled	IRQ12 Activity	: ON
VGA Activity Wakeup	: Disabled	IRQ13 Activity	: OFF
Standby Mode	: Disabled	IRQ14 (Hard Disk)	: ON
Suspend Mode	: Disabled	IRQ15 (Reserved)	: OFF
	** PM Events **		
VGA	: OFF		
FDD (3FXh)	: ON		
LPT & COM	: LPT/COM		
HDD (1FXh)	: ON		
NMI	: OFF		
IRQ3 (COM 2)	: ON		
IRQ4 (COM 1)	: ON		
IRQ5 (LPT 2)	: ON		
		Esc: Quit	↑ ↓ → ←: Select Item
		F1 : Help	Pu/Pd/+/-:Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

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## 3-6 PCI CONFIGURATION SETUP

ROM PCI/ISA BIOS (2A4L6J11)

PCI CONFIGURATION SETUP

AWARD SOFTWARE, INC.

PnP BIOS Auto-Config	: Disabled	CPU to PCI Write Buffer	: Disabled
Slot 1 Using INT#	: AUTO	CPU to PCI Byte Merge	: Disabled
Slot 2 Using INT#	: AUTO	PCI DRAM Buffer	: Disabled
Slot 3 Using INT#	: AUTO		
1st Available IRQ	: NA		
2nd Available IRQ	: NA		
3rd Available IRQ	: NA		
4th Available IRQ	: NA		
PCI IRQ Activated By	: Level		
PCI IDE 2nd Channel	: Enabled		
PCI IDE IRQ Map To	: PCI-AUTO		
Primary IDE INT#	: A		
Secondary IDE INT#	: B		
		Esc: Quit	↑ ↓ → ←: Select Item
		F1 : Help	Pu/Pd/+/-:Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

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## CHAPTER 4

### TEST REPORT

#### 4-1 PERFORMANCE REPORT

CPU BRAND & TYPE	LAND MARK SYSTEM SPEED TEST V2.0		POWER METER V1.81	NORTON UTILITY SYSINFO V8.0	
	CPU:(MHz)	FPU:(MHz)	CPU:(MIPS)	CPU SPEED:	PERFORMANCE:
Intel 80486DX4 -100	361.61	814.74	30.3	197.1	135.1
AMD 80486DX -80	267.59	654.09	23.9	158.4	109.4
AMD 80486DX2 -66	221.97	542.61	21.2	143.4	98.7

Cyrix Cx486DX2 -V66	218.88	589.07	19.1	112.6	78.1
Cyrix Cx486DX -V80	263.20	766.13	23.1	135.8	94.2
Cyrix Cx486DX -V33	109.45	318.92	9.6	56.3	41.2
Intel 80486DX -33	111.00	283.21	10.8	71.7	51.6
Cyrix Cx5x86 -100	423.76	1092.11	36.2	197.1	135.8

## 4-2 GENERAL UTILITY TEST

<b><u>MS-DOS</u></b>			
<b>PROGRAM</b>	<b>VERSION</b>	<b>TIMES</b>	<b>RESULT PASS/FAIL</b>
ET	3.51	2	PASS
CELEM CACHE TEST	1.0	3	PASS
QAPLUS	4.6	1	PASS
AUTO CAD	R10	1	PASS
AUTO CAD	R11	1	PASS
ORCAD	3.1	1	PASS

<b><u>WINDOWS</u></b>			
<b>PROGRAM</b>	<b>VERSION</b>	<b>TIMES</b>	<b>RESULT PASS/FAIL</b>
SPEEDY	1.0	4 HR	PASS

DESIGER	3.01	2	PASS
QAPLUS FOR WINDOWS	5.0	1	PASS
WIN BENCH	3.11	4	PASS
WIN BENCH	4.0	4	PASS
WIN BENCH	95	4	PASS
WINTEC	V1.2	2 DAYS	PASS

### 4-3 SOFTWARE RELIABILITY TEST

#### STEP1.

PROGRAM	VERSION	LOOP/TIMES	RESULT/PASS FAIL
QAPLUS	4.52	4	PASS
QAPLUS	5.13	2	PASS
CHECKIT PRO	3.0	1	PASS
WINDOWS	3.1	4	PASS
WINSTON	1.0	1	PASS
WINSTON	95	1	PASS

#### STEP2.

PROGRAM	VERSION	TIMES	RESULT/PASS FAIL
OS/2 ENGLISH	2.0	2	PASS
INSTALL WINDOWS	3.1	3	PASS

#### STEP3.

PROGRAM	VERSION	TIMES	RESULT/PASS FAIL
---------	---------	-------	------------------

DOS PC BENCH	8.0	1	PASS
DOS PC BENCH	'93	1	PASS

#### STEP4.

PROGRAM	VERSION	TIMES	RESULT/PASS FAIL
NETWARE	3.11	1	PASS
WINDOW NT	3.1	3	PASS
WINDOW NT	3.5	2	PASS
WINDOW NT CHINESE	3.5	3	PASS

#### STEP5.

PROGRAM	VERSION	TIMES	RESULT/PASS FAIL
OS/2 CHINES	3.0	1	PASS
WINDOWS CHINES	3.1	1	PASS

#### STEP6.

PROGRAM	VERSION	TIMES	RESULT/PASS FAIL
SCO UNIX	V3.24	1	PASS

## 4-4 VGA CARD COMPATIBLE TEST

ISA-BUS	PASS/FAIL	MEMO
1. MX-86010FC 1M RAM	PASS	
2. WD-90C30LR 1M RAM	PASS	
3. TRIDENT 8900 1M RAM	PASS	
4. REALTEC 3105E 1M RAM	PASS	
5. WDC WD-90C11 1M RAM	PASS	
6. HM-86304 1M RAM	PASS	
7. ET-3000AX 1M RAM	PASS	

PCI-BUS	PASS/FAIL	MEMO
1. S3 864 2M RAM	PASS	
2. TRIDENT 9440 AGI 2M RAM	PASS	
3. ET-4000 W32P 2M RAM	PASS	
4. CIRRUS 5434 2M RAM	PASS	

5. CIRRUS 5430	2M RAM	PASS	
6. AVANCE ALG 2301	2M RAM	PASS	
7. SIS 6202	2M RAM	PASS	
8. S3 968	4M RAM	PASS	

#### 4-5 IDE-HDD COMPATIBLE TEST

ISA-BUS	PASS/FAIL	MEMO
1. HMC HM83740	PASS	
2. Winbond W83787F + W83758F	PASS	
3. Winbond W86450	PASS	
4. UMC UM8663	PASS	
5. Gold Star Prime 2C	PASS	

PCI-BUS	PASS/FAIL	MEMO
1. CMD 640B	PASS	
2. ALI M5215	PASS	

#### 4-6 SCSI-COMPATIBLE TEST

PCI-BUS	PASS/FAIL	MEMO
1. NCR 53C810	PASS	
2. Adaptec AIC-7870P	PASS	

#### 4-7 NET WORK COMPATIBLE TEST

ISA-BUS	PASS/FAIL	MEMO
1. S9152DR	PASS	NOVELL
2. UK0022 (YCL)	PASS	"
3. S9212AF (GROUP-TEK)	PASS	"
4. S9136AK	PASS	"
5. UM9136AK	PASS	"

6. DL2517B (DE-220CT)	PASS	
7. S9136AK	PASS	
8. S9218AD	PASS	
9. 3 COM	PASS	

<b>PCI-BUS</b>	<b>PASS/FAIL</b>	<b>MEMO</b>
1. AMD AM79C97	PASS	

#### **4-8 SOUND CARD COMPATIBLE TEST**

<b>ISA-BUS</b>	<b>PASS/FAIL</b>	<b>MEMO</b>
1. OPTI 929 (SOUND 16)	PASS	
2. SOUND Blaster Pro	PASS	
3. MPEG MOVIE	PASS	