EPSON

Product Support Bulletin

Subject: Proper Method for Running Benchmark and Diagnostics Programs

Date: 06/04/93
Page(s): 1 of 1

PSB No: S-0158
Originator: MWT

This bulletin describes the proper method for running any benchmark or diagnostics programs. This applies to any computer system.

In most cases, the computer should be started using an MS-DOS boot diskette that's 'clean' - in other words, one with no CONFIG.SYS or AUTOEXEC.BAT files. The appropriate executable can then be run, either from diskette or hard drive.

There will be some exceptions to the above rule. In attempting to benchmark or troubleshoot any add-on that requires a device driver (CD-ROM, local area network, etc.), obviously the necessary device driver(s) must be loaded. Also, some programs will require a minimum number of FILES or BUFFERS to be defined in the CONFIG.SYS file. Such programs will usually display this requirement if they are run without the necessary CONFIG.SYS file.

For the most consistent results, use the absolute minimal boot configuration that's allowed by the hardware being tested.

EPSON AMERICA, INC.

INFORMATION

Product Support Bulletin

Subject: Equity le - Early ROM BIOS Problem with Miniscribe 8425F

Date: 10/10/90
Page(s): 1 of 1

PSB No: S-0124
Originator: REM

A problem has been reported in the Equity le when using ROM BIOS versions earlier than release 1.76. This version has been used in production units since September 1989. The Miniscribe 8425F hard disk drive may generate a “1701" error message when a cold boot (power switch OFF and ON) after a warm boot (software reset or pushing the reset switch) is executed.

When the warm boot is executed, BIOS writes the status of the warm boot to the ROM BIOS scratch register. When a cold boot is executed after a warm boot, BIOS should erase the status in the scratch register, however, the early BIOS does not erase the status. The BIOS reads it as a warm boot and executes the POD, skipping the video check and the RAM check and checking the hard disk directory. This happens too fast for the Miniscribe 8425F hard disk drive to get ready for the BIOS check, so it shows the “1701 error message. In the case of the warm boot only, the hard disk is already ready, so no error message is generated.

If this problem is encountered, run the ROMBIOS program and check the ROM BIOS version to determine if the system needs the current version of BIOS release 1.76.

Please refer to ECN No. EQIE-005, dated 9/15/89, which described the EQUITY le ROM BIOS release 1.76 (CMTR-A06, -B06).

EPSON

EPSON AMERICA, INC.

INFORMATION

Product Support Bulletin

Subject: Equity Ie - Lotus 1 - 2- 3 Graph Patch Program

Date: 6/26/90
Page: 1 of 1

PSB No: S-0121
Originator: APA
APA

When using Lotus 1 - 2- 3 (ver. 2.01) with the Hercules Monochrome board or an Epson MGA board set for monochrome mode, the system displays garbage (usually a checker board pattern) when using graphics. This also occurs if the 90 x 25 text mode is selected in the Lotus INSTALL program, since Hercules graphics mode is utilized.

The solution for this problem is to disable the internal MCGA video by creating and using the program listed below. Run the MS - DOS supplied DEBUG program and type in the following:

```
                    ; Comments only - do not type in
- A
xxxx:0100 in AL,65 ; Get current value of equipment enable register.
xxxx:0102 and AL,FB ; Clear video enable bit to disable MCGA.
xxxx:0104 out 65,AL ; Output new value to the equipment enable register.
xxx"0106 int 20     ; End of program.
xxxx:0108           ' Press <Enter> key here.
-NMCGADIS.COM       ; Specify name of program as "MCGADIS.COM".
-RCX                , Edit CX register.
CX 0000             ; Currently contains 0000.
:8                  ; Specify 8 bytes to be saved.
- W                 ; Save program to disk.
Writing 0008 bytes
- Q                 ; Quit DEBUG.
```

Note: xxxx segment value will vary depending on system memory usage.

The MCGADIS.COM program can now be found in the current directory. It can be added to the AUTOEXEC.BAT file or run directly, before running Lotus. This program will enable a Hercules Monochrome board or Epson MGA board to be used in monochrome mode, but will not allow a CGA card to be used.

Product Support Bulletin

Subject: Equity/Apex Compatibility with the SOTA 386si

Date: 3/02/90
Page: 1 of 3

PSB No: S-0111
Originator: KAS

The purpose of this bulletin is to provide the 80386 Accelerator board test results, conducted by the Computer Product Support Center, involving the SOTA 386si from SOTA Technology, inc.

The Equity models tested were the Equity I, Equity II Equity I + and Equity le. The Apex models tested were the Apex, Apex Plus and Apex 100. All were tested with Norton Utilities and MS - DOS.

The table below shows compatibility and the Norton SI rating of the various systems.

Model	Norton SI	Compatibility
Equity I	12.0	Functioned normally with Norton Utilities and MS- DOS 2.11
Equity I+	12.0/16.9	Functioned normally with MS - DOS 3.3 and Norton Utilities at both CPU speeds.
Equity le	NA	Unable to boot at 10MHz. Performance erratic at 4.77MHz
Equity II	14.3	Functioned normally with MS - DOS 3.2 and Norton Utilities. (Tested only at 7.16MHz.)
Apex	15.9	Unable to boot at 4.77MHz. Functioned normally at 8MHz with MS - DOS 3.2 and Norton Utilities.
Apex Plus	11.5	Unable to boot at 9.54MHz. Functioned normally at 4.77MHz with MS - DOS 3.2 and Norton Utilities.
Apex 100	12.0/16.9	Functioned normally with MS - DOS 3.3 and Norton Utilities.

Installation of the board in most of the units was quick and simple to do when following the installation instructions accompanying the boards. Installation of the SOTA 386si in the Equity I and the Equity II is rather difficult. Due to the amount of disassembly required, we strongly recommend that only Authorized Service Centers install the board in the Equity I and Equity II.

Installation Instructions

Equity I

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 386si in an 8088 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Equity II

1. Remove the following from the main unit:
   a) upper case
   b) rear panel
   c) front panel
   d) FDD/power supply block.

2. Follow instructions for a standard installation for the SOTA 386si in an 8086 - based system. Take care to fold the SOTA connector cable so as not to prevent reassembly. This will necessitate routing the cable so that it does not conflict with the power connection to the main system board. The cable is sturdy and will tolerate being folded.

3. Reassemble the main unit and go through the testing and initialization procedure outlined in the SOTA manual.

Our Computer Product Support Center receives numerous calls requesting information and recommendations on 80386 Accelerator boards for use with the Equity and Apex (8088- and 8086 - based) personal computers.

We have found that the SOTA 386si may meet your requirements and are competitively priced!

Although these boards were tested by qualified product support specialists, Epson America makes no representations that these third party products are compatible with all hardware configurations or software applications.

We recommend that you certify these products with your specific hardware and software requirements and consult with the third party vendor to ensure reliable operation.

SOTA Technology can be reached at:

SOTA Technology, Inc.
657 N. Pastoria Ave.
Sunnyvale, CA 94086
Phone: (408) 245 - 3366

Product Support Bulletin

Subject: Compatibility Information for the Equity le and Manzana Microsystems External 5.25" 1.2MB Floppy Drive

Date: 9/12/89
Page: 1 of 1

PSB No: S-0103
Originator: KAS

This bulletin is intended to provide the results of compatibility testing conducted by the Computer Product Support Center with the PS/2 Connection Kit B, PS/2 Adapter Board and the 5.25" 1.2MB external floppy drive from Manzana Microsystems.

The PS/2 Adapter was found to support the external floppy drive as a 1.2MB floppy drive in the Equity le. The instructions should be followed as described on pages 14 and 15 in the PS/2 External Drive Manual, supplied by Manzana. The only special accommodation necessary is the use of supplied adhesive anchor pads and cable ties to secure the PS/2 Adapter board to the mounting bracket for the DB - 37 connector. This procedure is also outlined on page 15 of the PS/2 External Drive Manual.

MS - DOS version 3.0 or higher is required for installation of the PS/2 Adapter Board and use of the external drive as a 1.2MB floppy disk drive. The Equity le is shipped with MS - DOS 3.3.

Manzana includes the XDrive disk utilities with their PS/2 Adapter card. These utilities include a device driver for the external floppy disk drive, a drive letter query utility and an information utility for use with the external 1.2MB floppy disk drive.

Manzana Microsystems can be contacted at the following address:

Manzana Microsystems
7334 Hollister Avenue, Suite B
P.O. Box 2117
Goleta, CA 93118
Tel. (805) 968 - 1387

Product Support Bulletin

Subject : Novell Netware Compatibility Test Results for the Equity le

Date: 8/11/89
Page: 1 of 1

PSB No: S-0093
Originator: KAS

This bulletin is intended to provide a summary of the results of compatibility testing of the Equity le with Novell local- area networking products. This information was provided to Epson by Novell's Independent Manufacturing Support Program. For complete test result reports, contact Novell, Inc.

The Equity le was tested at 10MHz, as a workstation only.

Advanced Netware 2.0A

Network Boards		Workstation	Remote Boot
Gateway	G - Net	Passed	Failed
I B M	Token Ring	Passed	Passed
Novell	NE1000	Passed	Passed
Novell	RXNet	Passed	Passed
Proteon	Pronet	Passed	Passed
SMC/PD	Arcnet	Passed	Passed

Advanced Netware 2.15

Network Boards		Workstation	Remote Boot
AT&T	StarLAN	Passed	Not Tested
Gateway	G - Net	Passed	Not Tested
IBM	PC-Net II	Passed	Failed
IBM	Token Ring	Passed	Not Tested
Micom	Nl5010	Passed	Failed
Novell	NE1000	Passed	Failed
Novell	RXNet	Passed	Passed
Proteon	Pronet	Passed	Not Tested
SMC/PD	Arcnet	Passed	Passed
3Com	3c501	Passed	Passed
3Com	3c503	Passed	Not Tested

Advanced Netware 2.1

Network Boards		Workstation	Remote Boot
Novell	Intelligent NIC	Passed	Failed

Product Support Bulletin

Subject: Equity and Apex Series Compatibility with the Sysgen OmniBridge Controller and BridgeFiler External Floppy Drives

Date: 04/11/90
Page: 1 of 3

PSB No: S-0088B
Originator: KAS Kas

The purpose of this bulletin is to provide the results of compatibility testing conducted by the Computer Product Support Center with the Sysgen OmniBridge controller and Bridge - Filer external floppy disk drives.

Model	Comments
Equity I	The Equity I was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity II	The Equity II was found to be totally incompatible with the OmniBridge controller.
Equity III	The Equity III was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity I +	The Equity I + was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity Ie	The Equity Ie was found compatible with the OmniBridge controller. It was able to support only one external floppy drive, unlike the other models tested. The drive could be used as a high density (1.2Mb and 1.44Mb) or normal (360K and 720K) disk drive.

Equity II +	The Equity II + was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity lle	The Equity lle was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
Equity lll +	The Equity III + was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 144M) or normal (360K and 720K) disk drives.
Equity 386SX	The Equity 386SX was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 144M) or normal (360K and 720K) disk drives.
Equity 386/20	The Equity 386/20 was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
APEX	The Epson APEX was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.
APEX +	The Epson APEX was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.

APEX 100 — The Epson APEX 100 was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.

APEX 200 — The Epson APEX 200 was found compatible with the OmniBridge controller. It was able to support one or two external disk drives (daisychained) together. The external drives could be used as high density (1.2M and 1.44M) or normal (360K and 720K) disk drives.

NOTE: The recommended switch settings for the OmniBridge controller are as follows:

1-1 DOWN	2-1 DOWN
1-2 DOWN	2-2 DOWN
1-3 DOWN	2-3 UP
1-4 DOWN	2-4 UP

These settings select NO ADDRESS for the OmniBridge BIOS and allow it to coexist with the internal FDC of the computer in which it is being installed. This way you do not need to disable the internal FDC or connect any cables from the OmniBridge to internal floppy drives. This was found to be a universal setting for all of the computers listed above as compatible with the OmniBridge controller.

Product Support Bulletin

Subject: Equity le RAM Board Compatibility

Date: 6/12/89
Page: 1 of 1

PSB No: S-0084
Originator: REM

The purpose of this bulletin is to provide updated information on third party RAM boards compatible with the Equity le. The original compatibility list was incorrect.

Please attach this bulletin to the original Equity le compatibility list (PSB # S- 0077) for future reference.

Hardware Compatibility List

Product	Vendor	Works	Notes
Memory Cards			
Above Board PC	Intel Corporation	ng	
Above Board Plus	Intel Corporation	ng	
64/256KB Memory Board	IBM Corporation	ok	
Fast Card 4	THESYS Memory Products	ok	
Quad Board II	Quadram	ok	
RAMpage	AST Research	ok	

ng - not compatible
ok - compatible

Product Support Bulletin

Subject: Equity le CGA/EGA/VGA/MCGA Video Mode Compatibility

Date: 5/23/89 PSB No: S-0083
 Originator: REM

The purpose of this bulletin is to provide Equity le video mode compatibility information.

The Equity le standard configuration provides a built - in MCGA video adapter as part of the main MNTR board. Because of the higher graphic resolution capabilities of MCGA, this system requires an analog VGA color or VGA monochrome display monitor. The internal video adapter is disabled when an EGA or VGA video adapter card is installed. No dip switch changes or setup is required as the Equity le senses the adapter boards automatically.

MCGA supports a palette of over 256,000 colors and has the ability to display 256 colors simultaneously on a VGA color monitor. It will simultaneously display 64 shades of gray on a VGA monochrome monitor.

CGA color monitors cannot be used as the internal MCGA video adapter already supports CGA mode on the VGA monitor and cannot be disabled by adding a CGA video board.

The Equity le does not support EGA graphics without an EGA monitor and EGA adapter board. VGA graphics is not supported without the appropriate VGA video adapter board.

Software must state that it is CGA or MCGA compatible. Software which requires EGA or VGA will not run in those modes without the appropriate video adapter board and display monitor.

Product Support Bulletin

Subject: External 5.25” Floppy Disk Drives for the Equity le

Date: 6/12/89
Page: 1 of 1

PSB No: S - 0081A
Originator: REM

Epson does not currently manufacture an optional external floppy disk drive for the Equity le, however, the following companies manufacture external 5.25” floppy disk drives which, according to the manufacturers, are compatible with the Equity le.

Manzana Microsystems Inc. offers both the Manzana/360, 360KB and Manzana/1.2, 1.2MB external 5.25” Floppy disk drives.

Manzana Microsystems Inc.
7334 Hollister Ave., Suite B
P.O. Box 2117
Goleta, CA 93118
Tel. (805) 968 - 1387
Modem Tel. (805) 968 - 5449

The Nth Group offers a choice of four external floppy disk drives; a 5.25”, 360KB and 1.2MB and also a 3.5”, 720KB and 1.44MB floppy disk drive.

The Nth Group
3198 Main Str.
Moro Bay, CA 93442
Tel. (805) 772 - 6121

Please contact the manufacturers for additional information regarding these products.

Product Support Bulletin

Subject: Apex / Apex Plus / Equity Series Keyboards

Date: 4/19/89
Page: 1 of 1

PSB No: S-0080
Originator: REM

The purpose of this bulletin is to provide information on the various keyboards used with the Apex, Apex Plus and Equity series computers and the part numbers of the keyboard subassemblies used with these keyboards.

The Apex and Apex Plus computer keyboards are to be replaced as whole units.

The Equity series keyboards are repaired to the subassembly level. The Equity III keyboard PCB assembly is the only one that comes with the key top set attached.

Since some of the keyboards have the same model numbers, the difference can be determined by the FCC ID number in those cases.

The chart below provides a quick reference to determine the part number of the main keyboard PCB assembly, key top set, control logic subassembly, and keyboard cable.

Apex / Apex Plus

Model	Keyboard Unit
Apex	A265091A
Apex Plus	93553905410

Equity I, II, III

Model	Keyboard PCB Assy	Key Top set	Keyboard Cable
Equity I/II	Y145501001	Y145501021	Y144305000
Equity III	KAFLZ3AEPS1	attached	KACCL060UCA

Equity I +, II +, III+, 386/20

Model	Code	FCC ID	Keyboard PCB Assy	Control Board	Key Top set	Keyboard Cable
Q203A	AA	BKM9A8Q203A	Y127501001	attached	Y127501022	Y127501031
Q303A	AA	BMK9A8Q303A	Y127501001	attached	Y127501022	Y127501031
Q203A	A103A – AA	C9S4D7Q203A	Y163502001	none	Y127501022	Y163502020
Q203A	A103A – AA	C9S4D84701	Y163504007	Y171501017	Y127501022	Y163504006

Equity Ie

Model	Code	FCC ID	Keyboard PCB Assy	Control Board	Key Top set	Keyboard Cable
E1160A	-	C9S4D84701-201	Y163504007	Y171501017	Y171501007	Y171501006

Product Support Bulletin

Subject: Equity Ie Hardware and Software Compatibility Lists

Date: 4/13/89
Page: 1 of 6

PSB No: S-0077
Originator: MWT

The purpose of this bulletin is to provide a listing of tested hardware and software for the Equity Ie.

All testing was performed by Seiko Epson Japan and the results were supplied to Epson America. This is not an all - inclusive list; there are many hardware options and applications that will work correctly that are not listed. However, this information should serve to establish the high level of IBM PS/2 Model 30 compatibility that is designed into the Equity Ie.

The products tested were certified in one of three ways:

OK - Product works with full functionality
NG - Product does not work - see compatibility note
* - Product works with partial functionality - see compatibility note

Hardware Compatibility List

Product	Vendor	Works	Note
Memory Cards			
Above Board PC	Intel Corporation	ok	
Fastcard IV	**THESYS Memory Products**	**ok**	
RAMpage	**AST** Research	ok	
Video Cards			
Auto Switch EGA	**Paradise Systems Inc.**	**ok**	
Enhanced Graphics Adapter	IBM Corporation	ok	
EPSON Color Graphics Adapter	EPSON	ng	1
EPSON Monochrome Display Adapter	EPSON	ok	
Hercules Graphics Adapter	**Hercules Computer Technology**	**ok**	
IBM Monochrome Display & Printer Adapter	**IBM Corporation**	**ok**	
MGA Board	EPSON	*	2
Paradise VGA Plus	**Paradise Systems Inc.**	**ok**	
VEGA	Video-7 Inc.	ok	
VGA Display Adapter	IBM Corporation	ok	

Monitors			
FlexScan 8060s	Nanao USA Corporation	ok	
IBM PS/2 Color Display Model 8512	IBM Corporation	ok	
IBM PS/2 Color Display Model 8513	IBM Corporation	ok	
IBM PS/2 Monochrome Display Model 8503	IBM Corporation	ok	
NEC MultiSync	NEC Home Electronics (U.S.A.)	ok	
Mass Storage			
Drive Card 20	Mountain Computer Inc.	ok	
Hardcard 20	Plus Development Corp.	ok	
IBM PS/2 5.25" External Diskette Drive & Adapter	IBM Corporation	ng	3
Peripheral Ports			
IBM Game Control Card	IBM Corporation	ok	
Parallel Board	IBM Corporation	ok	
Serial/Parallel Board	IBM Corporation	ok	
Communication Devices			
Haves Smartmodem 1200B	Hayes Microcomputer Products	ok	
IBM 3278/3279 Emulation Adapter	IBM Corporation	ok	
IBM 5250 Emulation Adapter	IBM Corporation	ok	
IBM PC Network Adapter	IBM Corporation	ok	
IBM PC Network Adapter II	IBM Corporation	ok	
IBM Token Ring Network Adapter	IBM Corporation	ok	
IRMA2	Digital Communications Asst.	ok	
PCOX 3278/3279 Emulation Card	CXI Inc.	ok	
SDLC Board	IBM Corporation	ok	
Pointing Devices			
IBM PS/2 Mouse	IBM Corporation	ok	
KoalaPad Touch Tablet	Koala Technologies Corp.	ok	
Light Pen	FTG-DATA System	ng	4
Mach II Joystick	CH Products	ok	
Microsoft Bus Mouse and Adapter	Microsoft Corporation	ok	
Microsoft Serial Mouse	Microsoft Corporation	ok	
Others			
Copyiipc Board	Central Point Software Inc.	ok	
HP7475A Plotter	Hewlett Packard Co.	ok	

EPSON EQUITY Ie Compatibility Notes
-Hardware-

Note 1

Product : EPSON Color Graphics Adapter

This product does not work on the EPSON EQUITY Ie because the EPSON EQUITY Ie has built-in MCGA port. However, this is the same as the IBM PS/2 Model 30. No CGA card can be used on the IBM PS/2 Model 30.

Note 2

Product : EPSON MGA Card

This product cannot be used on the EPSON EQUITY Ie when color mode (CGA mode) is selected. This reason is the same as Note 1.

Note 3

Product : IBM PS/2 5.25" External Diskette Drive and Adapter

This product cannot be installed on the EPSON EQUITY Ie. This is because the FDD interface connecter (34 pins, power supply lines separated) in the EQUITY Ie is different from the IBM PS/2 Model 30 (40 pins, power supply lines included).

Note 4

Product : Light Pen

The EPSON EQUITY Ie and IBM PS/2 Model 30 do not support a light pen in standard configurations. In order to use the light pen, an EGA card is required.

Software Compatibility List

Product	Version	Vendor	Works	Note
Accounting				
Managing Your Money	1986	Micro Education Corp.	ok	
Communications				
Carbon Copy Plus	3.5	Meridian Technology	ok	
Crosstalk XVI	3.5	Microstuf Inc.	ok	
IBM 3270 Emulation Program Entry Level	1.20	IBM Corporation	ok	
IBM 3270 Workstation Program	1.0	IBM Corporation	ok	
IBM Enhanced 5250 Emulation Program	2.10	IBM Corporation	ok	
IBM PC 3270 Emulation Program	3.0	IBM Corporation	ok	
IBM PC Network Program	1.00	IBM Corporation	ok	
Lap-Link	1.97	Traveling Software	ok	
MOVE IT	3.0	WOOLF SOFT	ok	
PC-TALK IV	2.00	Headlands Communication Corp.	ok	
pfs: Professional Network	1.0	Software Publishing Corp.	ok	
Database				
dBASE III Plus (w/LAN Pack)	1.1	Ashton Tate	ok	
pfs:Professional File	1.0	Software Publishing Corp.	ok	
R:BASE System V	1.1	MicroRim Inc.	ok	
Rapid File	1.0	Ashton Tate	ok	
REFLEX THE ANALYST	1985	Borland International Inc.	ok	
Desktop Manager				
Desqview	2.00	Quarterdesk Office Systems	ok	
GEM Desktop	1.2	Digital Research Inc.	ok	
Microsoft Windows	1.04	Microsoft Corporation	ok	
Desktop Publishing				
pfs:First Publisher	1.00	Software Publishing Corp.	ok	
Ventura Publisher	1.0	Xerox Corporation	ok	
Entertainment				
Jet	1985	Sublogic Corporation	ok	
King's Quest	1984	Sierra On-Line Inc.	ok	
King's Quest III	1986	Sierra On-Line Inc.	ok	
Lode Runner	1983	Broderbund Software Inc.	ok	
Microsoft Flight Simulator	3.5	Microsoft Corporation	*	1
Space Quest	1986	Sierra On-Line Inc.	ok	
TAPPER	1983	Mfg Corp.	ok	

Graphics				
Auto-Cad	2.52	Autodesk, Inc.	ok	
Chart Master	6.2	Ashton Tate	ok	
Freelance Plus	R2.01	Lotus Development Corp.	ok	
Harvard Presentation Graphics	2.00	Software Publishing Corp.	ok	
Microsoft Chart	2.00	Microsoft Corporation	*	2
Microsoft Paintbrush	2.00	Microsoft Corporation	ok	
Integrated				
Framework II	1.1	Ashton Tate	ok	
pfs:First Choice	2.0	Software Publishing Corp.	ok	
Q&A	2.0	SYMANTEC	ok	
Symphony	1:2	Lotus Development Corp.	ok	
Language				
Microsoft Quick C	1.0	Microsoft Corporation	ok	
Turbo PASCAL	3.01A	Borland International Inc.	ok	
Turbo Prolog	1986	Borland International Inc.	ok	
IBM PC-DOS 3.30	3.30	IBM Corporation	ok	
Outline Processor				
ThinkTank	2.0	Living Video Text Inc.	ok	
Project Manager				
Harvard Total Project Manager II	2.0	Software Publishing Corp.	ok	
Microsoft Project	2.0	Microsoft Corporation	ok	
Spreadsheet				
1-2-3	R2.01	Lotus Development Corp.	ok	
Microsoft Excel	2.01	Microsoft Corporation	ok	
Microsoft Multiplan	2.0	Microsoft Corporation	ok	
pfs:Professional Plan	1.0	Software Publishing Corp.	ok	
SuperCalc 3	2.1	Sorcim Corporation	ok	
VP Planner	3.0	Paperback Software International	ok	
Utilities				
copy II PC	2.20	Central Point Software,Inc.	ok	
Direct Access	4.0	DELTA TECHNOLOGY	ok	
Eureka	1.0	Borland International Inc.	ok	
Fastback	5.13	5th Generation Systems	ok	
Fixed Disk Organizer	1.00	IBM Corporation	ok	
IBM Starter Diskette for Model 30	1.00	IBM Corporation	ng	3
Norton Commander	1.00	Peter Norton Computer Inc.	ok	
Norton Utilities	3.0	Peter Norton Computer Inc.	ok	
PC Tools	3.23	Central Point Software Inc.	ok	
SideKick	1.5	Borland International Inc.	ok	
SuperKey	1986	Borland International Inc.	ng	4
Turbo Lightning	1985	Borland International Inc.	ok	

Word Processing			
Bank Street Writer Plus	1986	Broderbund Software Inc.	ok
Display Write 4	1.00	IBM Corporation	* 5
Microsoft Word	3.1	Microsoft Corporation	ok
Multimate Advantage	3.60	Ashton Tate	ok
pfs:Professional Write	1.0	Software Publishing Corp.	ok
Volkswriter 3	1.0	Lifetree Software Inc.	ok
Word Perfect	4.2	WordPerfect Corporation	ok
WordStar 2000 Plus	2.00	MicroPro International Corp.	ok
WordStar 2000 Plus	3.00	MicroPro International Corp.	ok

EPSON EQUITY Ie Compatibility Notes
-Software-

Note 1 Product : Microsoft Flight Simulator
Note 2 Product : Microsoft Chart
Note 5 Product : Display Write 4

The problems are caused by the fact that the above products do not support MS-DOS/PC-DOS 3.30. If previous versions of MS-DOS/PC-DOS are used on the EPSON EQUITY Ie, these problems do not occur.

Product : Microsoft Flight Simulator
A mouse can not be used.

Product : Microsoft Chart
It is impossible to boot up from a disk which was installed by the SETUP program.

Product : Display Write 4
It is impossible to boot up from a disk which contains transferred system files.

Note 3
Product : IBM Starter Diskette for Model 30
The services (diagnostics) section does not work at all, because this program checks if the ROMBIOS is IBM's.

Note 4
Product : Superkey
Several keys do not work correctly because this product does not support the IBM PS/2 Model 30.

PRODUCT SUPPORT BULLETIN

PSB NO.: S-0075	DATE: 03/21/89	ORIGINATOR: KAS	PAGE: 1 of 4

SUBJECT: Equity Ie Common Questions and Answers

General

Q1. **Can the CPU speed be changed during operation?**
A. **Yes, it can.**

Q2. **How do I set the date and time of the real time clock?**
A. **Set the date and time with the MS-DOS 3.30 DATE and TIME commands. With MS-DOS versions up to 3.20, the DATE and TIME commands do not affect the RTC data in CMOS RAM. Starting with version 3.30 these commands do change CMOS RAM values.**

Q3. **Can the Equity Ie be operated at 220 VAC?**
A. **Yes, it automatically senses the input power. the input power should be between 90 and 265 VAC.**

Q4. **Does the Equity** Ie **have a Microchannel bus?**
A. **No, it uses the same 8 bit PC/XT bus as the PS/2 Model** 30.

Q5. **Can OS/2 be used with the Equity Ie?**
A. **No, OS/2 will not run with the Equity Ie's 8086 CPU. OS/2 will only run on machines that use an 80286 or** 80386 **CPU.**

Q6. **Is the speaker volume adjustable?**
A. **No, it has only programmable pitch and duration.**

Q7. **I cannot program the new MCGA modes in GWBasic. Why?**
A. **GWBasic 3.2 does not support the new video modes. Consult the GWBasic manual for all video modes supported.**

Hard Drives

Q8. **What hard drive and controllers can** I use?
A. **IBM PC/XT compatible hard drive controllers and 3.5" half height hard disk drives. The WD1002-WX1 controller has been tested and found compatible. The Miniscribe 8425F is the hard drive supplied by Epson for the Equity** Ie. **It is a 20Mb hard disk drive with a 40ms access time.**

Q9. **Can I install a hard card?**
A. **Yes, the hard card should be full length because the expansion slots are mounted horizontally.**

Q10. **The hard drive shows a slow data transfer rate. What causes this?**

A. **The proper interleave when using the Miniscribe 8425F and a WD1002-WX1 is 5. Debug will default to 3. Use HDFMTALL or boot with the reference diskette. The slow data transfer rate is caused by 8 bit data to 16 bit data conversion necessitated by the 8086 microprocessor used in the Equity Ie.**

Floppy Drives

Q11. **What type of floppy drives are used in the Equity Ie?**

A. **The Equity Ie uses the Epson (Model SMD-480L) 1/3 height, 3.5", 720Kb floppy drive.**

Q12. **Can I install 3rd party, internal floppy drives?**

A. **Only 3.5", 1/3 height, 720Kb floppy drives should be used. There is no support for 1.44Mb floppy drives.**

Q13. **Can I use 3rd party, 5.25", 360Kb external floppy drives?**

A. **No, the IBM PS/2 Model 30 has an internal floppy drive connector which is not compatible with the Equity Ie, and no other sources are currently known to offer compatible external floppy drives.**

Q14. **What is the maximum number of floppy drives supported?**

A. **The Equity Ie supports up to two floppy drives. This is the same as with the IBM PS/2 Model 30.**

Q15. **Is it necessary to change any settings after adding a second floppy disk drive?**

A. **No, the ROM BIOS automatically checks the number of floppy disk drives at boot up, so no special settings are required.**

Options

Q16. **Can I install additional serial and parallel port cards?**

A. **Only if they can be addressed as LPT2. The existing ports are fixed as LPT1. However, if the I/O addresses of optional ports are the same as for the built-in ports, the system ports are automatically disabled by the ROM BIOS when the system boots up.**

Q17. **Which memory expansion boards can I use?**

A. **The Intel Above Board PC and the AST Fastcard Rampage were tested and found to be compatible.**

Q18. **What mouse will work in the mouse port?**

A. **The Equity Ie is PS/2 mouse compatible. Any mouse sold for the PS/2 mouse interface would be compatible. The Microsoft mouse is one that is sold with a PS/2 connector. The driver that comes with the mouse should be used.**

Q19. Can the keyboards for the Equity + Series be used with the Equity Ie?

A. **No, the connectors are shaped differently.**

Q20. The keyboard and mouse connectors have exactly the same shape. Will it cause problems if they are accidentally reversed?

A. No, the circuits of the keyboard and mouse interfaces are exactly the same, so the keyboard and mouse will function properly when plugged into either connector.

Q21. Which math coprocessor will work in the Equity Ie?

A. 8087-1 (10MHz. **The co-processor is installed by simply plugging it into the socket. No Setup is required because the ROM BIOS automatically checks for the presence of a co-processor when the system boots up.**

Q22. **Which modems can I use?**

A. **Any PC/XT compatible modems, either internal or external.**

Video

Q23. What is meant by MCGA?

A. MCGA stands for multi-color graphics array. MCGA is functionally compatible with CGA (color graphics adapter) at the BIOS level. However, it is not compatible with the EGA standard. MCGA has the following video modes. Modes 0-6 are compatible with CGA, and modes 11 and 13 are newly added functions.

DISPLAY MODES:

	Character Block	Screen Resolution (Columns x Rows)	Colors Available
TEXT MODES			
Mode 0, 1	8 x 16	320 x 400 (40 x 25)	16
Mode 2, 3	8 x 16	640 x 400 (80 x 25)	16
GRAPHICS MODES			
Mode 4, 5	8 x 8 DS*	320 x 200 (40 x 25)	4
Mode 6	8 x 8 DS*	640 x 200 (80 x 25)	2
Mode 17	8 x 16	640 x 480 (80 x 30)	2
Mode 19	8 x 8 DS*	320 x 200 (40 x 25)	256

*** DS - Character Block is 8 x 8, but Double Scanned vertically to produce an 8 x 16 character image.**

MS DOS operates in a text mode. Mode 0 or 1 **is selected by the MODE C040 command. Mode 2 or 3 is selected by the MODE C080 command. The modes 4 through 19 are available only under program control. The new screen modes are 17 and 19. Modes 0 through 6 may have a different character block but are functionally the same as CGA.**

Q24. **What video boards, other than MCGA can be used in the Equity Ie?**

A. Any other video boards, with the exception of CGA.

Q25. **EGA Software does not work on the Equity Ie. Why not?**

A. Only MCGA and CGA video modes are supported. In order to use an EGA-mode application, either a VGA adapter (the VGA includes EGA-compatible functions) or an EGA board is required. Since a VGA monitor cannot be used with an EGA board, an EGA monitor would also be required when using an EGA adapter.

Q26. **Some application software requires specification of a video board as part of the installation process. Since MCGA may not be directly supported, what type of board should be specified?**

A. Specify CGA. MCGA is software compatible with CGA (but not with EGA or MDA). CGA should be specified even when using a monochrome VGA monitor. With a monochrome VGA monitor, shades are displayed in place of colors.

Q27. **When using a multisync monitor sometimes the video is in 40 Column mode at boot. What causes this?**

A. The Equity Ie Power-On-Diagnostics test for the monitor type. This is accomplished by checking MOSE0 and MOSE1 of the video connector CN1 for a GROUND or NC (Not Connected) state. Both the MOSE0 and MOSE1 are pulled-up to +5 volts on the computer side. The Epson VGA Monitors condition the cable pins with either GROUND or NC to inform the computer of its type.

The following chart shows the possible signals and types,

Pin 11 MOSE0	Pin 12 MOSE1	
1	1	No Monitor Connected
0	1	Analog Color Monitor
1	0	Analog Monochrome Monitor
0	0	Other Monitor Type

NOTE: 0 indicates a GROUND condition and 1 indicates an NC condition on the corresponding monitor pin.

The Epson VGA Monitor connections are as follows:

Color VGA	**pin 11 - GROUND**	**pin 12 - NC**
Monochrome VGA	**pin 11 - NC**	**pin 12 - GROUND**

Non-Epson VGA Monitor connections may vary.
When using Non-Epson VGA monitors with the Equity Ie, the monitor may need to be powered ON before the Equity Ie to avoid improper video modes on power up.

EPSON
EPSON AMERICA, INC.
SERVICE

PRODUCT SUPPORT BULLETIN

PSB NO.: S-0071	DATE: 3/10/89	ORIGINATOR: REM	PAGE: 1 of 1

SUBJECT: EQUITY Ie / MINISCRIBE **8425F HARD** DISK DRIVE INTERLEAVE

This bulletin provides information on the correct interleave factor for the Equity Ie computer when using the standard Epson configuration - WX1 hard disk controller and Miniscribe 8425F 20MB hard disk drive.

The Equity Ie's Miniscribe 8425F hard disk drive should be initialized with an interleave of 5:1. This will provide the optimum hard disk performance.

When changing the interleave, use the Unconditional Format option in the "DIAG" program which sets the default interleave of 5:1.

If your unable to use the Unconditional Format option to format or this format operates very slowly, the DEBUG program, to perform a low level format, will be required. When using DEBUG, an interleave of 3:1 is the default interleave. This should be changed to 5:1 before proceeding with the low level format. The DEBUG procedure is as follows:

1. **Insert the Startup / Operating 1 floppy diskette into Drive A:.**

2. **Type the following: (shown in bold)**

```
A>DEBUG    (Enter)
-RAX       (Enter)
AX 0000
:0005      (Enter)
-G=C800:5  (Enter)
```

The CPU will then display: Press "Y" to begin formatting with interleave 05!

After "Y" is pressed, the format will take about ten minutes to perform the low level format. Once this has completed, continue the hard disk preparation using the FDISK program to partition the hard disk for MS-DOS, then use the SELECT program to format the MS-DOS partition and to copy the MS-DOS Startup/Operating 1 files to the hard disk.

If your installing a 3rd party hard disk and controller, determine the best interleave factor by using a program such as SpinRite or equivalent.

EQUITY Ie					
VER	PART #	DESC	TYPE	LOC	REASON
1.50 1.50	31302-562 31302-562	MTR-A2 MTR-B2	27256-15 27256-15	U21 U22	INITIAL RELEASE
1.70 1.70	31302-562A 31302-562A	MTR-A3 MTR-B3	27256-12 27256-12	U21 U22	Fixes error with FDD when the head is located beyond track 77 at power on.
1.72 1.72	31302-562B 31302-562B	MTR-A4 MTR-B4	27256-12 27256-12	U21 U22	Fixes cursor key problem in MS Quick C. Fixes problem with IBM PC 3270 emulation on Gateway system.
1.74 1.74	31302-562C 31302-562C	MTR-A5 MTR-B5	27256-12 27256-12	U21 U22	Fixes problems with Inset software.
1.76 1.76	31302-562D 31302-562D	MTR-A6 MTR-B6	27256-12 27256-12	U21 U22	Fixes GW-Basic graphics problems; fixes number of supported colors shown in video mode from 255 to 256.

EQUITY II					
VER	PART #	DESC	TYPE	LOC	REASON
1.03 1.03	Y147800801 Y147800701	MQA-B1 MQA-A1	D2764 D2764	4U 5U	INITIAL RELEASE
1.11 1.11	Y147800802 Y147800702	MQA-B2 MQA-A2	D2764 D2764	4U 5U	Fixes problems with EGA and with Lotus 123 Adds support for 4 FDDs and improves support for 1.2MB FDD. See MIB SM0003 (6/2/86).
1.11 1.11	Y147810802 Y147810702	MSA-B2 MSA-A2	M2764 M2764	4U 5U	ROM BIOS EPROMs changed to masked ROMs. See ECN EQII-002 (02/13/87).

EQUITY II+ (10MHz)					
VER	PART #	DESC	TYPE	LOC	REASON
1.55 1.55	Y162802000 Y162803000	ADR-A1 ADR-B1	M27C128 M27C128	3B 4B	INITIAL RELEASE
3.03 3.03	22011035 22011036	ODD303 EVEN303	M27C128 M27C128	3B 4B	SEE EQUITY II+ (12MHz) Bios upgrade. ECN EQII+-006 (4/2/93).

Product Support Bulletin

Subject: Using Expanded Memory with Equity and Apex Computers

Date: 3/2/90
Page: 1 of 6

PSB No: S-0047C
Originator: KAS

Q1. What is Expanded Memory?

A. Conventional memory, managed by MS - DOS, is limited to 640K. In response to the need for greater amounts of accessible memory, the LIM EMS (Lotus/Intel/Microsoft Expanded Memory Specification) was introduced in 1984. EMS, version 3.2, provides usable memory beyond the 640K limit through "bank switching". The expanded memory is divided into 16K portions called "pages". The computer accesses these pages through a "page frame" or "window" which is 64K of memory located between 768K and 896K in 80286 - based systems and between 800K and 960K in 8086 - or 8088 - based systems. 16K pages of memory are allocated for an application's use and the EMM (Expanded Memory Manager) handles the job of mapping the pages in and out of the page frame as they are needed. However, in order to make use of expanded memory, the software must be written to take advantage of the EMS. Software such as Lotus 1 - 2 - 3, Microsoft Windows and Borland's SideKick Plus make use of expanded memory. EMS is limited to 8Mb of expanded memory.

Q2. What is EEMS?

A. A superset of EMS, AQA EEMS (AST/Quadram/Ashton - Tate Enhanced Expanded Memory Specification) provides greater flexibility in the mapping of expanded memory. However, it also uses the technique of "bank switching" and has its own memory manager which accommodates such specially written software as Quarterdeck's DESQview. EEMS is also limited to 8Mb of expanded memory.

Q3. What about the 155Mb RAM listed as the maximum for the Equity lll +?

A. This larger amount of RAM is the maximum usable memory range for an 80286 microprocessor and generally refers to extended memory. Extended memory starts at the 1Mb boundary and extends out to 16Mb. As it requires a 24 - bit address to access memory in this range, extended memory is handled by the protected mode of the 80286. Examples of currently available software that can switch into protected mode to use extended memory are Framework II, AutoCAD, the VDisk RAM disk and Xenix OS.

Q4. How does LIM EMS 4.0, the latest version, differ from the earlier version, LIM EMS 3.2?

A. EMS 4.0 supports up to 32Mb of expanded memory where EMS 3.2 supported only 8Mb. EMS 4.0 has been changed to make it easier for applications to share expanded memory. In EMS 4.0, page mapping has been streamlined and new functions allow application programs to dynamically increase and decrease the amount of expanded memory allocated to them. In previous versions of EMS, the page frame was located in an unused 64K block of memory between 640K and 1Mb. EMS 4.0, subject to limitations in the system hardware, supports the page frame anywhere in the first 1Mb of memory. Before EMS 4.0, the page frame held four pages. Now you can define a page frame of up to eight pages in memory above 640K. The size of the page frame is limited only by the amount of available memory. There has also been a change to support the smaller than standard (16K) memory pages used by some expanded memory boards.

Q5. Is EMS 4.0 compatible with my old expanded memory board?

A. The EMM 4.0 driver works with existing hardware. You don’t need to buy a new expanded memory board. However, until you use applications that have been written to take advantage of EMS 4.0, you probably won’t notice much improvement in performance over your older version.

Q6. What memory expansion boards are compatible with the Equity I and Equity II?

A. The following boards have been tested by Epson in the Equity I and II:

All Card w/MMU Multifunction	All Computers, Inc.
Liberty PC	Quadram Corporation
Mini Magiccard (EV - 138)	Everex Systems, Inc.
AST SixPak Premium	AST Research
AST Rampage	AST Research

Q7. What memory expansion boards are compatible with the Equity III?

A. The following boards have been tested by Epson in the Equity III:

Grande Byte	STB Systems
Intel Above Board AT	Intel Corporation
Liberty AT	Quadram Corporation
AST Advantage	AST Research
AST Rampage AT	AST Research
AST Ramvantage	AST Research

Q8. What memory expansion boards are compatible with the Equity I +?

A. The following boards have been tested by Epson in the Equity I +:

64/256KB Expansion Option	IBM
Above Board PC (1985)	Intel Corporation
Fastcard IV (1.6)	Thesys

Q9. What memory expansion boards are compatible with the Equity Ie?

A. The following boards have been tested by Epson in the Equity Ie:

64/256KB Expansion Option	IBM
Quad Board II	Quadram
Fastcard IV	Thesys
RAMpage	AST Research

Note: The Intel Above Boards do not currently operate reliably with the Equity Ie.

Q10. What memory expansion boards are compatible with the Equity II + and Equity Ill + (10MHz models)?

A. The following boards have been tested by Epson in the Equity II + and Equity Ill + (10MHz models):

Advantage Premium	AST Research
Rampage 286 *	AST Research
Above Board 286	Intel Corporation
Above Board 286 p/s *	Intel Corporation
Grande Byte *	STB Systems
Rio Grande	STB Systems
Elite 16	Profit Systems

* Will run at 8MHz, not at 10MHt.

Q11. What memory expansion boards are compatible with the Equity II + and Equity Ill + (12MHz models)?

A. The following boards have been tested by Epson in the Equity II + and Equity III + (12MHz models):

Rampage 286 Plus	AST Research
Elite 16	Profit Systems
Above Board Plus	Intel Corporation

NOTE: Previously boards from Micron Technology were listed as compatible with the 12MHz models of the Equity II + and Equity Ill +. They have been removed from the list because Micron no longer produces ISA memory boards.

Q12. How do you expand the memory of the Equity 386/20?

A. Memory expansion in the Equity 386/20 can be accomplished by adding SlMMs (single in - line memory modules) to the CHET - RM board. Both 256K and 1Mb SlMMs are available from Epson America. The 256K SlMMs are sold in 1Mb kits and the 1Mb SlMMs are sold in 2Mb kits. Compatible third party 1Mb SlMMs are available from Matsushita, Toshiba and CDC Enterprises. You can also use third party memory expansion boards such as those listed above for the Equity II +/Ill +.

Q13. Are there any guidelines to installing the SIMMs in the Equity 386/20?

A. Yes, when SIMMs are installed to increase memory beyond 1Mb, they must be installed so that banks of SIMMs are installed as matched pairs. See the matrix below:

Memory	Bank 0	Bank 1	Bank 2	Bank 3
1MB	4X256KB			
2MB	4X256KB	4X256KB		
4MB	4X256KB	4X256KB	4X256KB	4X256KB
4MB	4X1MB			
8MB	4X1 MB	4X1 MB		
10MB	4X1 MB	4X1 MB	4X256KB	4X256KB
16MB	4X1 MB	4X1 MB	4X1 MB	4X1 MB

Note: Refer to PSB S - 0095 for 18MB RAM Setup information.

Q14. Is there a driver supplied with the Equity 386/20 to allow the use of the extended memory as expanded memory?

A. Yes, the Equity 386/20 system software includes the device driver EEMM386EXE. This driver emulates LIM EMS 4.0 memory using the extended memory supplied by the additional SIMMs. It will support only the onboard memory above 1 MB, up to 15MB. This is the maximum memory that can be installed on the CHET- RM board. It will not support memory installed on memory expansion boards.

Q15. Are there any expanded memory boards that are compatible with the Equity LT?

A. No, the option slots on the LT require a special connector. The hard drive controller and the LT cartridge modem are the only option cards currently available from Epson America.

Q16. What expanded memory boards are compatible with the Apex by Epson?

A. The Above Board PC from Intel Corporation has been tested by Epson in the Apex.

Q17. Are there any general guidelines for determining the chip speed to install on the memory expansion boards?

A. Yes, if the CPU speed is 8MHz or less, use 150ns RAM chips. If the CPU speed is 10/12MHz, use 120ns RAM chips.

Q18. Is there anything that should be kept in mind during the installation procedure for the memory expansion boards?

A. Yes, when installing the memory boards in the Equity II + and Equity Ill + (12MHz models), remember that the bus speed is 12MHz. For example, the Intel Above Board 288 and Above Board Plus allow you to set up the bus speed and chip speed in their installation programs.

Q19. What is meant by backfilling memory when using software such as DESQview?

A. Backfilling is a function of many expanded memory boards which allows a portion of the board's memory to be used as conventional memory. In this way, you could turn a 256K system into one with 840K memory or more. In certain situations, you may want to disable some of the computer's conventional memory and the use the memory on the expansion board (i.e. DESQview).

Q20. Which Epson computers have memory settings that allow backfilling memory?

A. The Equity I, Equity I +, Equity II + and Equity Ill + allow backfill. The Equity I comes with 256K standard and the Apex comes with 512K, thus allowing backfill. The Equity I + has DIP switch settings allowing system memory to be disabled to 256K or 512K. The Equity II+ and Equity Ill + have jumpers on the system memory boards to allow memory to be disabled to 256K and 512K.