iEi

IEI Technology Corp.

MODEL:

ECN-581A-QM57

Socket G1 Intel® Core™ i5 CPU Embedded System with Dual DVI, GbE, Four USB 2.0, SATA 3Gb/s, PCIe mini, Two RS-232 and Intel® AMT 6.0, RoHS Compliant

User Manual

Rev. 1.00 – 29 July 2010

RoHS Lead Free

Revision

Date	Version	Changes
29 July 2010	1.00	Initial release

Copyright

Table of Contents

List of Figures

List of Tables

Chapter

1

Introduction

1.1 Overview

Figure 1-1: ECN-581A-QM57

The ECN-581A-QM57 embedded system is a fanless system with two DVI ports for dual display. It is powered by the 32 nm Intel® Core™ i5 processor, uses the Intel® QM57 chipset and has 2.0 GB of DDR3 memory. The ECN-581A-QM57 supports a 2.5" SATA HDD with up to 3 Gb/s data transfer rate.

1.2 Model Variations

The model variations of the ECN-581A-QM57 series are listed below.

Models	CPU	CPU Speed	Wireless
ECN-581A-R10/QM57-I5/2GB	Intel® Core™ i5 processor	2.4 GHz	No
ECN-581AW-R10/QM57-I5/2GB	Intel® Core™ i5 processor	2.4 GHz	Yes

Table 1-1: Model Variations

1.3 Features

The ECN-581A-QM57 features are listed below:

- 32 nm Intel® Core™ i5 processor
- 2.0 GB of DDR3 SDRAM SO-DIMM preinstalled
- Supports 2.5" SATA HDD and PCIe mini card
- Two DVI ports for dual display
- Audio line-out, Mic-in and line-in jacks
- One Gigabit Ethernet port
- Four USB 2.0 ports
- Two RS-232 serial ports

- Intel® AMT 6.0
- RoHS compliant

1.4 Technical Specifications

The ECN-581A-QM57 technical specifications are listed in **Table 1-2**.

System	
SBC	NANO-QM57A
CPU and Models	2.4 GHz 32 nm Intel® Core™ i5 processor
Chipset	Intel® QM57
Memory	2.0 GB of DDR3 SO-DIMM preinstalled
Real-time Clock	Battery backup RTC
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Ethernet Controller	One Intel® 82577 PCIe GbE controller with Intel® AMT 6.0 support
Audio	Realtek ALC888 HD 7.1 channel audio codec
Multimedia	▪ MPEG-2 decoding ▪ WMV9 (VC-1) and H.264 (AVC) support ▪ Hardware acceleration for MPEG2 VLD/iDCT ▪ Blu-ray support @ 40 Mb/s ▪ DirectX 10
I/O and Indicators	
Ethernet	1 x 10/100/1000 Mb/s
Serial Ports	2 x RS-232
USB Interfaces	4 x USB 2.0 ports
Display	1 x DVI-I 1x DVI-D
Audio	One Line-out jack; one Mic-in jack; one line-in jack
Storage	
HDD	Supports one 2.5" SATA 3Gb/s HDD/SSD

Power	
Power Adapter	12 V DC input 60W power adaptor with ERP and PSE certificates
Power Supply	+12 V DC
Power Consumption	60 W
Power Connector	One locking power jack
Power Button	One power button
Environmental and Mechanical	
Operating Temperature	-20°C ~ 50°C (with HDD) with air flow* *Ambient air speed per IEC-68-2-2 standard
Shock	Half-sine wave shock 3G, 11ms, 3 shocks per axis
Vibration	Operating Random Vibration Mode (MIL-STD-810F 514.5C-2)
Chassis Construction	Aluminum Alloy
Mounting	Wall mount
Physical Dimensions	180 mm x 138 mm x 50 mm (W x D x H)
Weight (Net/Gross)	1.1 kg / 2 kg
EMC/Safety	CE, FCC class A

Table 1-2: Technical Specifications

1.5 Front Panel

The front panel of the ECN-581A-QM57 contains one power button to power up the system and three audio jacks. The button is also a LED indicator that shows power and HDD status:

- Blue: power on
- Orange: HDD activity
- 1 x Audio line-out
- 1 x Audio line-in
- 1 x Audio mic-in

Mic-in · Power Button · Line-out · Line-in

Figure 1-2: ECN-581A-QM57 Front Panel

1.6 Connector Panel

All external peripheral interface connectors are located on the front panel of the ECN-581A-QM57 . The peripheral interface connectors are shown in **Figure 1-3**.

Wireless Antenna · 2 x RS-232 · RJ-45 GbE LAN · 12 V DC Power · DVI-I · DVI-D · Reset Button · 4 x USB
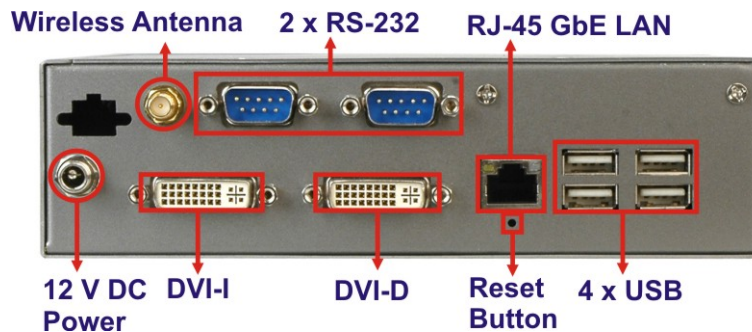
Figure 1-3: ECN-581A-QM57 Peripheral Connectors

Connectors and buttons on the rear panel include the following.

- 1 x 12 V DC locking power input jack
- 1 x DVI-I port
- 1 x DVI-D port
- 2 x RS-232 serial ports
- 4 x USB ports
- 1 x Gigabit Ethernet RJ-45 port
- 1 x Reset button
- 1 x Wireless antenna connector (wireless model only)

1.7 Dimensions

The physical dimensions are shown below:
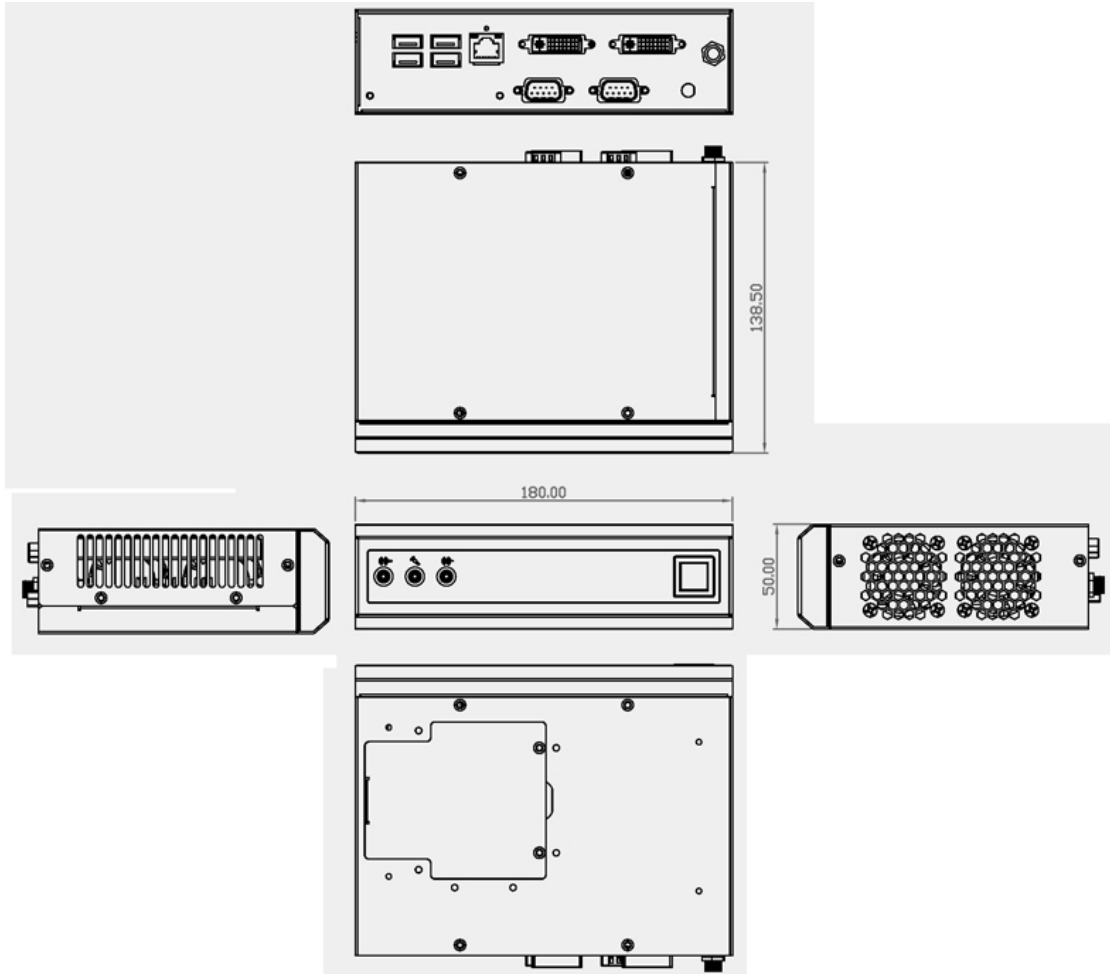
Figure 1-4: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the ECN-581A-QM57 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECN-581A-QM57. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECN-581A-QM57 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- *Self-grounding*: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring the ECN-581A-QM57, place it on an antic-static pad. This reduces the possibility of ESD damaging the ECN-581A-QM57.

2.2 Unpacking Precautions

When the ECN-581A-QM57 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the ECN-581A-QM57 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Unpacking Checklist

NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the ECN-581A-QM57 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The ECN-581A-QM57 is shipped with the following components:

Quantity	Item and Part Number	Image
1	ECN-581A-QM57 multimedia box	
1	Power adapter (12 V DC, 60 W)	
1	Power cord	
2	Wall mount brackets	
4	Screws for wall mount brackets	
4	Screws for HDD installation	
1	2dbi wireless antenna (wireless model only)	

Quantity	Item and Part Number	Image
1	User manual and driver CD	

Table 2-1: Package List Contents

Chapter

3

Installation

3.1 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the ECN-581A-QM57, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the ECN-581A-QM57 must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the ECN-581A-QM57 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The ECN-581A-QM57 must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Grounding**: The ECN-581A-QM57 should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the ECN-581A-QM57.

3.2 Hard Disk Drive (HDD) Installation

To install the hard drive, please follow the steps below:

Step 1: Remove the top and front panels by removing four retention screws from the top panel, one from the right side, two from the bottom panel and four from the left side panel as shown in **Figure 3-1**.

top and right side

bottom
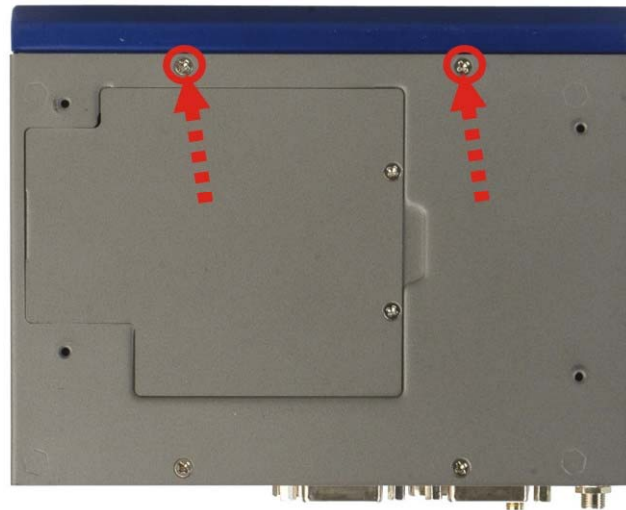
left side
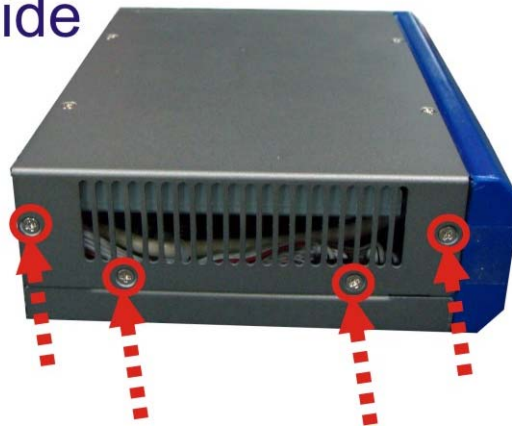
Figure 3-1: Retention Screws Removal

Step 2: Remove the four HDD bracket retention screws (**Figure 3-2**) and lift the HDD bracket out of the ECN-581A-QM57.
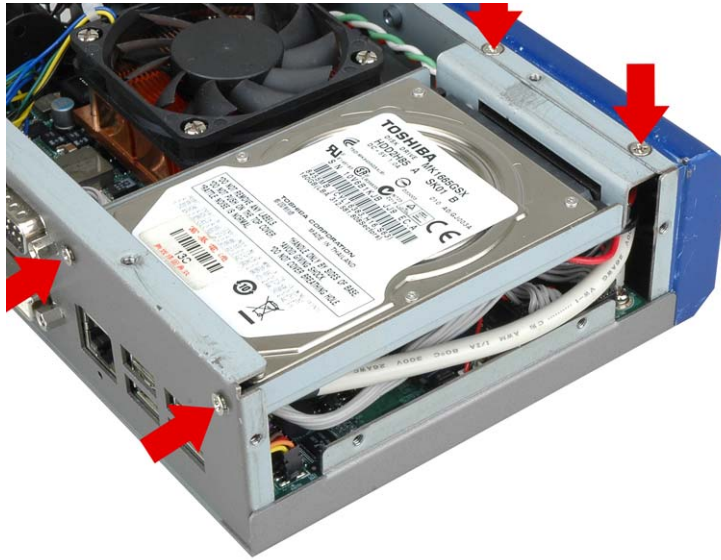
Figure 3-2: HDD Bracket Retention Screws (Inside)

Step 3: Attach the HDD bracket to the HDD. Secure the HDD with the HDD bracket by fastening four retention screws (**Figure 3-3** ❶).

Step 4: Connect the SATA cable in the ECN-581A-QM57 to the HDD. Secure the SATA cable with the HDD by fastening two round head screws (**Figure 3-3** ❷).
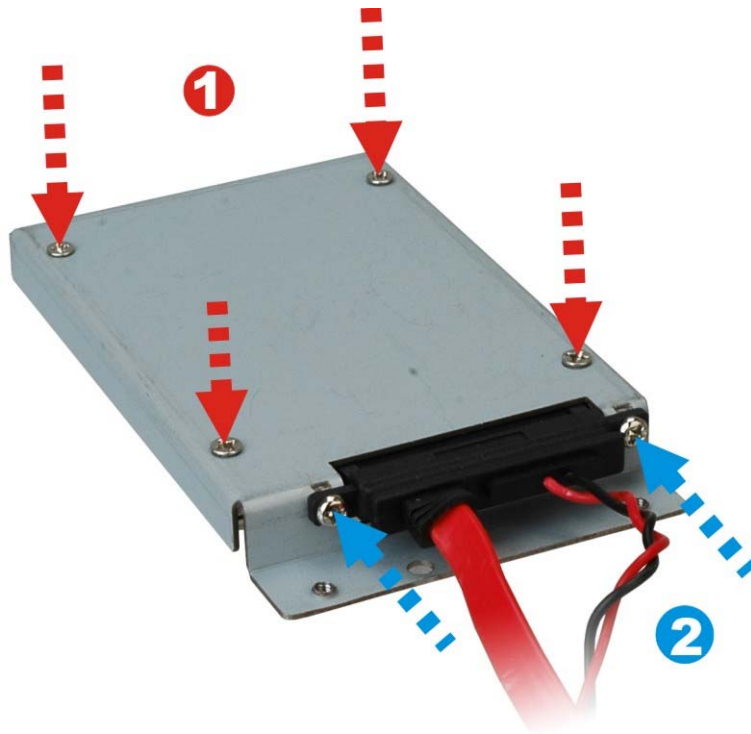
Figure 3-3: HDD Retention Screws

Step 5: Install the HDD bracket in the same position it was before.

Figure 3–4: HDD Installation

Step 6: Reinstall the front panel.

Step 7: Reinstall the top panel.

3.3 Mount the System

The ECN-581A-QM57 supports wall mounting. The bottom panel of the ECN-581A-QM57 contains four screw holes for mounting (**Figure 3-5**) the system.
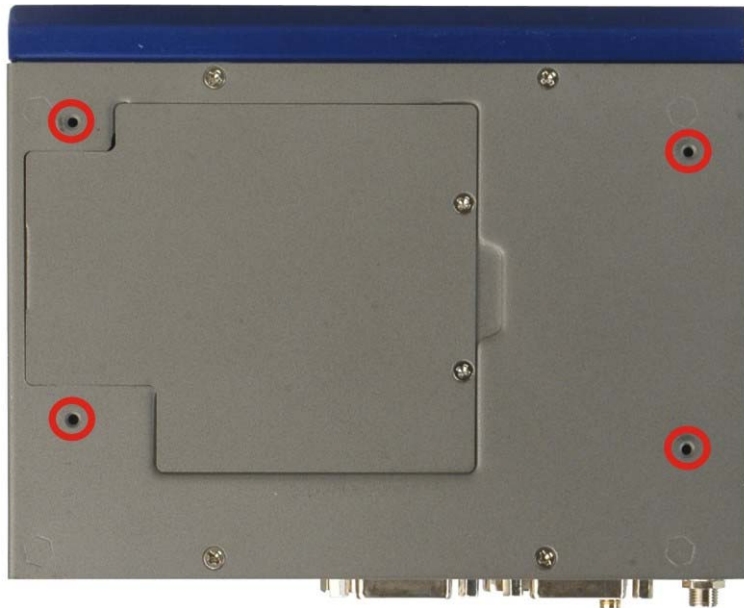
Figure 3-5: Mounting Screw Holes

3.3.1 Mounting the System with Mounting Brackets

To mount the embedded system onto a wall or some other surface using the two mounting brackets, please follow the steps below.

Step 1: Turn the embedded system over.

Step 2: Align the two retention screw holes in each bracket with the corresponding retention screw holes on the sides of the bottom surface.

Step 3: Secure the brackets to the system by inserting two retention screws into each bracket as illustrated in **Figure 3-6**.
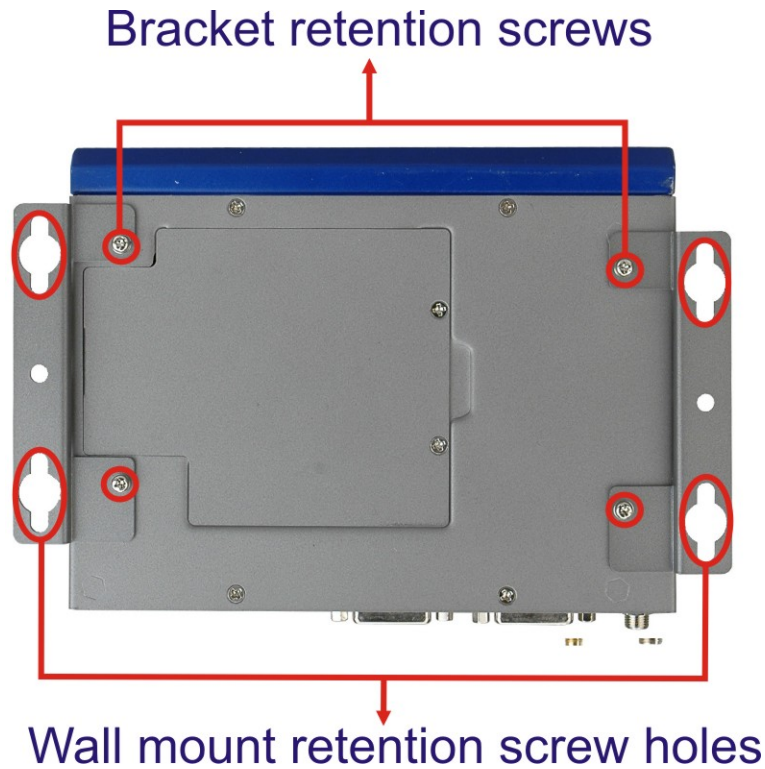
Figure 3-6: Mounting Bracket Retention Screws

Step 4: Drill holes in the intended installation surface.

Step 5: Align the mounting holes in the sides of the mounting brackets with the predrilled

holes in the mounting surface.

![NOTE icon] **NOTE:**

To have the best system heat dissipation, please make sure to face the

I/O panel downward (**Figure 3-6**) when mounting the system.

Step 6: Insert four retention screws, two in each bracket, to secure the system to the

wall.

Figure 3-7: Wall Mounting

3.4 Jumper Settings

![NOTE icon] **NOTE:**

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with

the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.
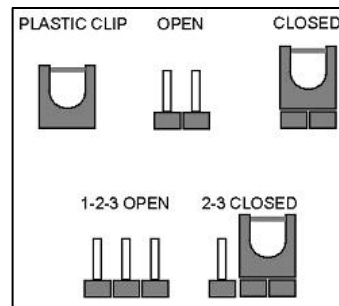
Before the ECN-581A-QM57 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the ECN-581A-QM57 are listed in **Table 3-1**. To access jumper, please remove the top cover.

Description	Type	Label
AT Auto Button	2-pin header	J_AUTOPWR1
AT/ATX Power Mode Setting	3-pin header	J_ATXCTL1
Clear CMOS	3-pin header	J_CMOS1
ME RTC Register	3-pin header	ME_RTC1
ME RTC Security Override	2-pin header	JP1

Table 3-1: Jumpers

3.4.1 AT Auto Button Power Select Jumper Settings

Jumper Label: J_AUTOPWR1

Jumper Type: 2-pin header

Jumper Settings: See **Table** 3-3

Jumper Location: See **Figure 3-8**

The AT Auto Button Power Select jumper specifies the systems auto button power mode as AT or ATX.

Setting	Description
Short	Use AT power
Open	Use ATX power

Table 3-2: AT Auto Button Power Select Jumper Settings
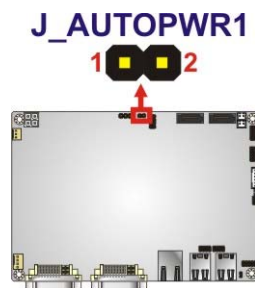
Figure 3-8: AT Auto Button Select Jumper Settings

3.4.2 AT/ATX Power Select Jumper Settings

Jumper Label:	**J_ATXCTL1**
Jumper Type:	3-pin header (1x3)
Jumper Settings:	See **Table 3-3**
Jumper Location:	See **Figure 3-9**

The AT/ATX Power Select jumper specifies the systems power mode as AT or ATX. AT/ATX Power Select jumper settings are shown in **Table 3-3**.

AT Power Select	Description	
Short 1 - 2	Use ATX power	
Short 2 – 3	Use AT power	Default

Table 3-3: AT/ATX Power Select Jumper Settings

The location of the AT/ATX Power Select jumper is shown in **Figure 3-9** below.
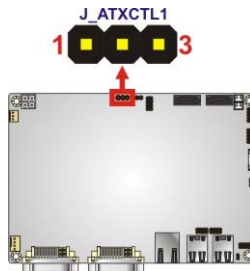
Figure 3-9: AT/ATX Power Select Jumper Location

3.4.3 Clear CMOS Jumper

Jumper Label:	**J_CMOS1**
Jumper Type:	3-pin header (1x3)
Jumper Settings:	See **Table 3-4**
Jumper Location:	See **Figure 3-10**

If the ECN-581A-QM57 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the "CMOS Settings Wrong" message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu.   Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu. The clear CMOS jumper settings are shown in **Table 3-4**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 3-4: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 3-10** below.
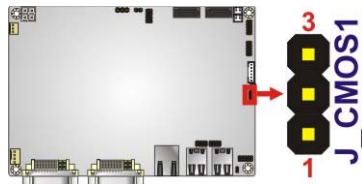
Figure 3-10: Clear CMOS Jumper

3.4.4 ME RTC Register Jumper

Jumper Label: **ME_RTC1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 3-5**

Jumper Location: See **Figure 3-11**

The ME RTC Register jumper saves or clears the ME RTC registers. The ME RTC Register jumper settings are shown in **Table 3-4**.

Setting	Description	
Short 1-2	Save ME RTC registers (normal operation)	Default
Short 2-3	Clear ME RTC registers	

Table 3-5: ME RTC Register Jumper Settings
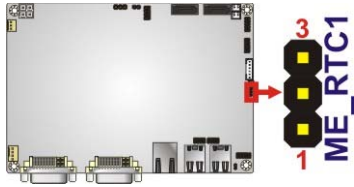
Figure 3-11: ME RTC Register Jumper Location

3.4.5 ME RTC Flash Security Override Jumper

Jumper Label: **JP1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-6**

Jumper Location: See **Figure 3-12**

The ME RTC Security Override jumper protects or overrides the ME RTC Flash security registers. The ME RTC Security Override jumper settings are shown in **Table 3-4**.

Setting	Description	
Open	Flash Security On	Default
Short	Flash Security Override	

Table 3-6: ME RTC Security Override Jumper Settings
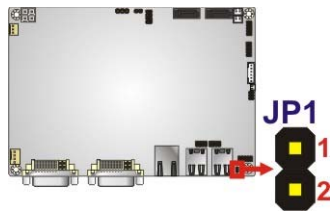
Figure 3-12: ME RTC Security Override Jumper Location

3.5 External Peripheral Interface Connectors

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- DVI devices
- RJ-45 Ethernet cable connector
- Serial devices
- USB devices
- VGA monitor
- Wireless antenna

To install these devices, connect the corresponding cable connector from the actual device to the corresponding ECN-581A-QM57 external peripheral interface connector making sure the pins are properly aligned.

Figure 3-13: Peripheral Connectors (Front Panel)
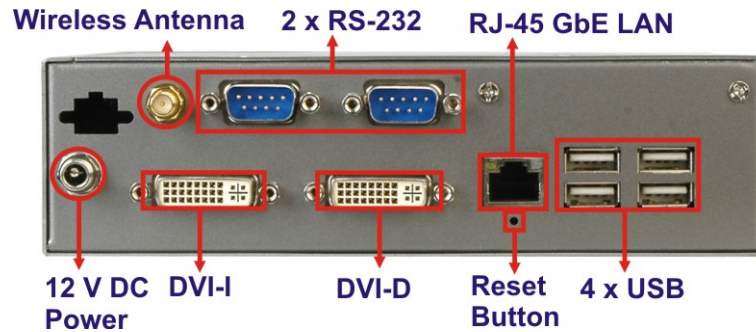
Figure 3-14: Peripheral Connectors (Rear)

3.5.1 Audio Connector

The audio jacks on the front panel enable the ECN-581A-QM57 to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

Step 1:   **Identify the audio plugs**. The plugs on your home theater system or speakers may not match the colors on the rear panel. If audio plugs are plugged into the wrong jacks, sound quality will be very bad.

Step 2:   **Plug the audio plugs into the audio jacks**. Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

- **Line In port (Light Blue):** Connects a CD-ROM, DVD player, or other audio devices.
- **Microphone (Pink):** Connects to a microphone.
- **Line Out port (Lime):** Connects to headphones or speakers.
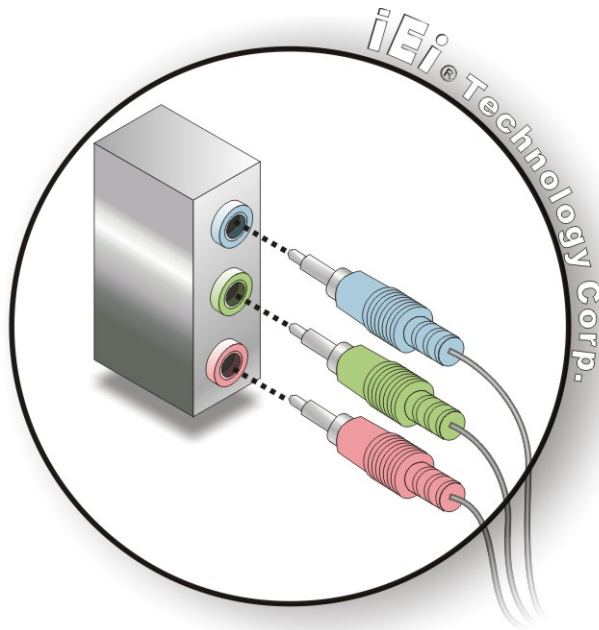
Figure 3-15: Audio Connector

Step 3: **Check audio clarity**. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

3.5.2 DVI Display Device Connection

The ECN-581A-QM57 has one female DVI-I connector and one female DVI-D connector on the external peripheral interface panel. The DVI connectors are connected to digital display devices. To connect a digital display device to the ECN-581A-QM57, please follow the instructions below.

Step 1: **Locate the DVI-I connector**. The location of the DVI-I connector is shown in another chapter.

Step 2: **Align the DVI-I connector**. Align the male DVI-I connector on the digital display device cable with the female DVI-I connector on the external peripheral interface.

Step 3: **Insert the DVI-I connector** Once the connectors are properly aligned with the male connector, insert the male connector from the digital display device into the female connector on the ECN-581A-QM57. See Figure 3-16.
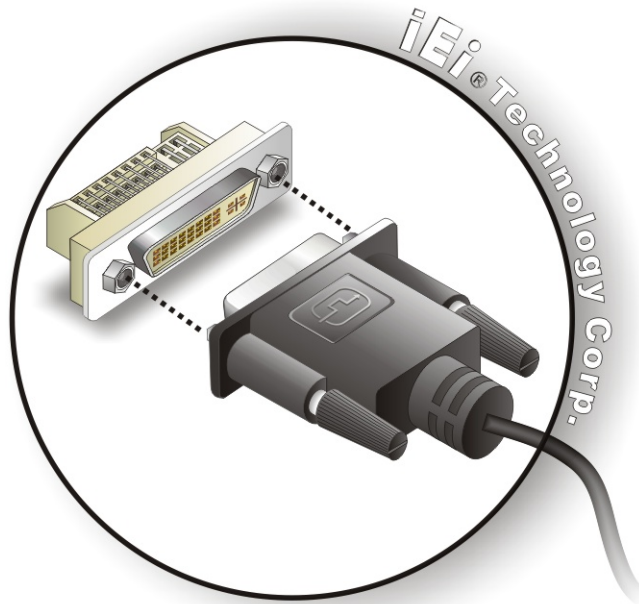
Figure 3-16: DVI Connector

Step 4: **Secure the connector.** Secure the DVI-I connector from the digital display device to the external interface by tightening the two retention screws on either side of the connector.

3.5.3 LAN Connection (Single Connector)

There is one external RJ-45 LAN connector. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors**. The location of the LAN connector is shown in **Chapter 4**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the ECN-581A-QM57. See Figure 3-17.
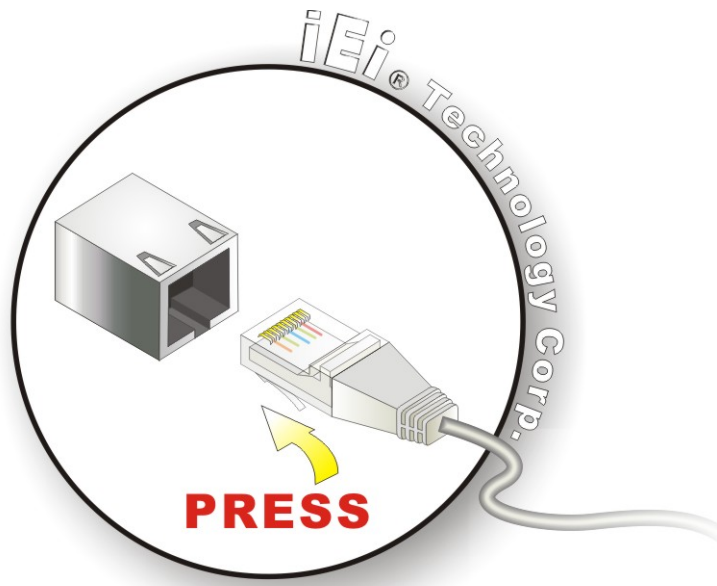
Figure 3-17: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

3.5.4 Serial Device Connection

The ECN-581A-QM57 has two female DB-9 connectors on the external peripheral interface panel for connecting to serial devices. Follow the steps below to connect a serial device to the ECN-581A-QM57.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Figure 3-13**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 3-18.
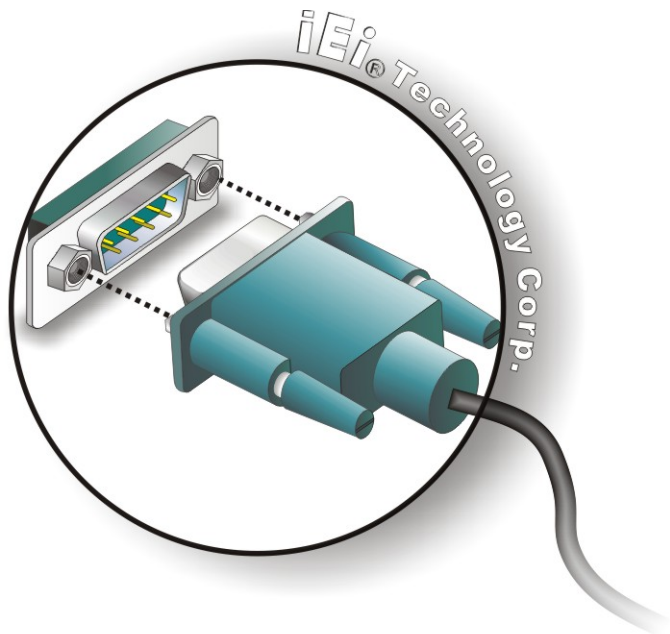
Figure 3-18: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external

interface by tightening the two retention screws on either side of the connector.

3.5.5 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the ECN-581A-QM57.

Step 1: **Locate the USB Series "A" receptacle connectors**. The location of the USB

Series "A" receptacle connectors are shown in **Figure 3-13**.

Step 2: **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into

the USB Series "A" receptacle on the external peripheral interface. See

Figure 3-19.
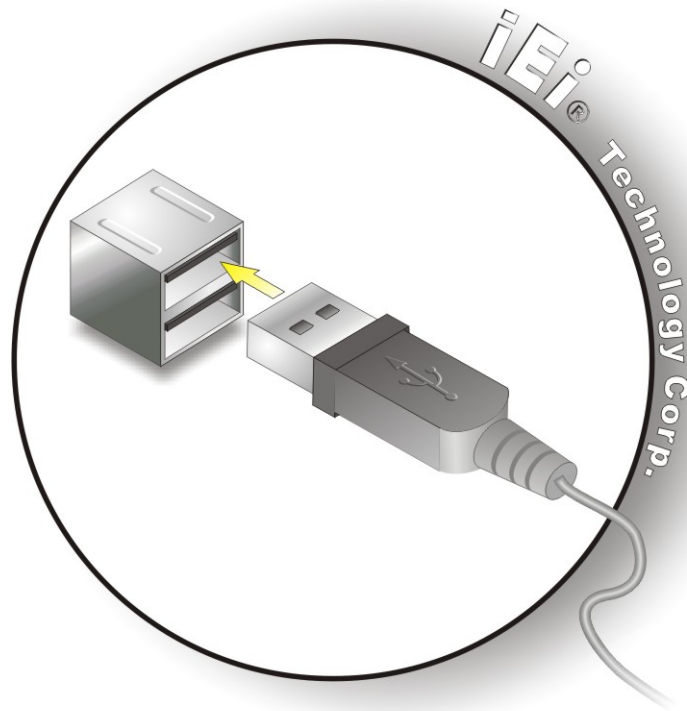
Figure 3-19: USB Connector

3.5.6 VGA Monitor Connection

The ECN-581A-QM57 is shipped with a DVI-I (male) to VGA adapter (female DB-15 connector). The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the ECN-581A-QM57, please follow the instructions below.

Step 3: Locate the DVI-I connector (VIDEO1). The location of the VIDEO1 connector is shown in Chapter 3.

Step 4: Align the DVI-I to VGA adapter. Align the DVI-I (male) end of the DVI-I to VGA adapter with the VIDEO1 connector on the external peripheral interface.

Step 5: **Insert the DVI-I to VGA connector**. Once the connectors are properly aligned, insert male connector from the adapter into the female connector on the ECN-581A-QM57.

Step 6: **Locate the female DB-15 connector** on the adapter.

Step 7: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 8: **Insert the VGA connector**. Once the connectors are properly aligned, insert the male connector from the VGA screen into the female connector on the ECN-581A-QM57. See **Figure 3-20**.
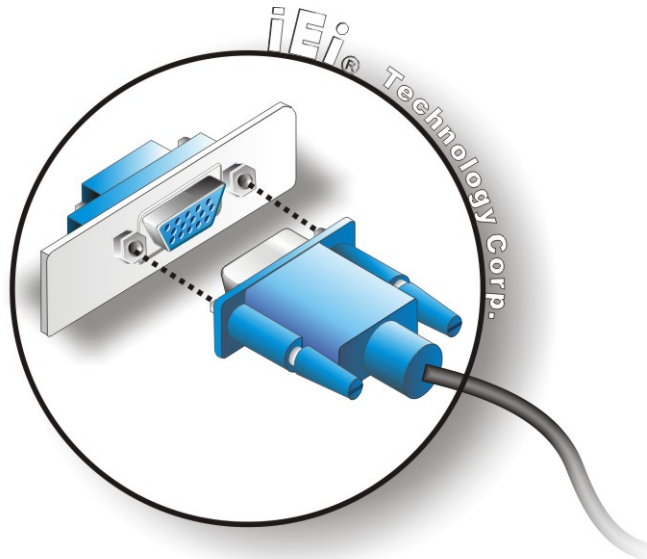
Figure 3-20: VGA Connector

Step 9: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

Chapter

4

BIOS

4.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

4.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the DELETE key as soon as the system is turned on or
2. Press the DELETE key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the DELETE key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press ESC to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values.
F3 key	Load optimized defaults

Key	Function
F4 key	Save all the CMOS changes

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **5**.

4.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.

```
        Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
    Main    Advanced   Chipset    Boot    Security  Save & Exit

 BIOS Information                                          Set the Time. Use Tab to
 BIOS Vendor                    American Megatrends        switch between Time
 Core Version                   4.6.3.7 0.16               elements.
 Project Version                Z129AR11.ROM
 Build Date                     05/28/2010 10:26:42
                                                           ---------------------
 Memory Information
 Total Memory                   2048 MB (DDR3 1066)        ←→: Select Screen
                                                           ↑ ↓: Select Item
 System Date                    [Tue 07/12/2008]           Enter Select
 System Time                    [14:20:27]                 F1   General Help
                                                           F2   Previous Values
 Access Level                   Administrator              F3   Optimized Defaults
                                                           F4   Save
                                                           ESC  Exit
        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 1: Main

➔ **BIOS Information**

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date:** Date the current BIOS version was made

➔ **Memory Information**

The **Memory Information** lists a brief summary of the on-board memory. The fields in **Memory Information** cannot be changed.

- Total Memory: Displays the auto-detected system memory size and type.

The System Overview field also has two user configurable fields:

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

4.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

 WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```
       Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
   Main    Advanced   Chipset    Boot    Security  Save & Exit

 > ACPI Settings                               System ACPI Parameters
 > CPU Configuration
 > SATA Configuration
 > USB Configuration
 > Super IO Configuration                      ----------------------
 > H/M Monitor
 > AMT Configuration                           ←→: Select Screen
 > Serial Port Console Redirection             ↑ ↓: Select Item
                                               Enter Select
                                               F1   General Help
                                               F2   Previous Values
                                               F3    Optimized
                                               Defaults
                                               F4    Save
                                               ESC   Exit
         Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

4.3.1 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.

```
       Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
          Advanced

ACPI Sleep State                    [S1 (CPU Stop Clo…)]    Set the ACPI state used
                                                            for System suspend


                                                            ---------------------

                                                            ←→: Select Screen
                                                            ↑ ↓: Select Item
                                                            Enter Select
                                                            F1   General Help
                                                            F2   Previous Values
                                                            F3    Optimized
                                                            Defaults
                                                            F4    Save
                                                            ESC   Exit
          Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```
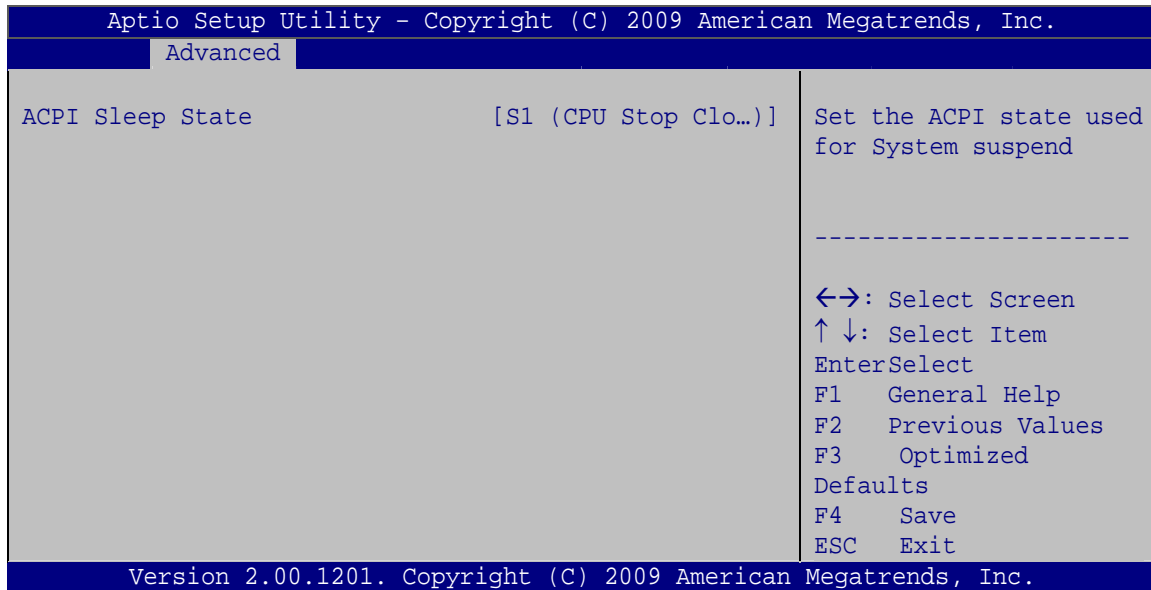
BIOS Menu 3: ACPI Configuration

➔ **ACPI Sleep State [S1 (CPU Stop Clock)]**

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (CPU Stop Clock)** DEFAULT   The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

➔ **S3 (Suspend to RAM)**   The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

4.3.2 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 4**) to view detailed CPU specifications and configure the CPU.

```
     Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
          Advanced

CPU Configuration

Processor Type              Intel(R) Core(TM) i5 CPU
EMT64                          Supported          ---------------------
Processor Speed                2394 MHz
Processor Stepping             20652               ←→: Select Screen
Microcode Revision             9                   ↑ ↓: Select Item
Processor Cores                2                   Enter Select
Intel HT Technology            Supported           F1   General Help
                                                   F2   Previous Values
                                                   F3    Optimized
                                                   Defaults
                                                   F4    Save
                                                   ESC   Exit
          Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 4: CPU Configuration

The CPU Configuration menu (**BIOS Menu 4**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- EMT64: Indicates if the EM64T is supported by the CPU.
- Processor Speed: Lists the CPU processing speed
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if the Intel HT Technology is supported by the CPU.

4.3.3 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 5**) to change and/or set the configuration of the SATA devices installed in the system.

```
        Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
           Advanced

SATA Configuration                                     (1) IDE Mode. (2) AHCI
                                                       Mode. (3) RAID Mode.
SATA Port0                      Not Present
SATA Port1                      Not Present
SATA Port5                      Not Present            ---------------------

SATA Mode                       [IDE Mode]             ←→: Select Screen
Serial-ATA Controller 0         [Enhanced]             ↑ ↓: Select Item
Serial-ATA Controller 1         [Enhanced]             EnterSelect
                                                       F1   General Help
                                                       F2   Previous Values
                                                       F3    Optimized
                                                       Defaults
                                                       F4    Save
                                                       ESC   Exit
        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 5: IDE Configuration

➔ **SATA Mode [IDE Mode]**

Use the **SATA Mode** option to configure SATA devices as normal IDE devices.

➔ **Disable**   Disables SATA devices.

➔ **IDE Mode**   DEFAULT   Configures SATA devices as normal IDE device.

➔ **AHCI Mode**   Configures SATA devices as AHCI device.

➔ **RAID Mode**   Configures SATA devices as RAID device.

➔ **Serial-ATA Controller 0/1 [Enhanced]**

Use the **Serial-ATA Controller** option to configure the Serial-ATA controller mode when the SATA mode is set to IDE Mode.

➔ **Disable**   Disables Serial-ATA controller.

➔ **Enhanced**   DEFAULT   Configures the Serial-ATA controller to be in enhanced mode. In this mode, IDE channels and SATA channels are separated. Some legacy OS do not support this mode.

➔ **Compatible**   Configures the Serial-ATA controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels.

4.3.4 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 6**) to read USB configuration information and configure the USB settings.

```
         Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
    Advanced

USB Configuration                                      Enables Legacy USB
                                                       support. AUTO option
USB Devices:                                           disables legacy support
      2 Hubs                                           if no USB devices are
                                                       connected. DISABLE
Legacy USB Support                   [Enabled]         option will keep USB
EHCI Hand-off                        [Enabled]         devices available only
                                                       for EFI applications.

                                                       ---------------------
                                                       ←→: Select Screen
                                                       ↑↓: Select Item
                                                       Enter Select
                                                       F1   General Help
                                                       F2   Previous Values
                                                       F3    Optimized
                                                       Defaults
                                                       F4    Save
                                                       ESC   Exit
         Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 6: USB Configuration

➔ **USB Devices**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **All USB Devices [Enabled]**

Use the **All USB Devices** option to enable the USB devices.

➔ **Disabled**   All USB devices are disabled.

➔ **Enabled**   DEFAULT   All USB devices are enabled.

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**   Legacy USB support disabled

➔ **Enabled**   DEFAULT   Legacy USB support enabled

➔ **Auto**   Legacy USB support disabled if no USB devices are connected

4.3.5 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

```
         Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
           Advanced

Super IO Configuration                               Set Parameters of Serial
                                                     Port 0 (COMA)
Super IO Chip                    Fintek F81801
> Serial Port 0 Configuration
> Serial Port 1 Configuration                        --------------------
                                                     ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     EnterSelect
                                                     F1   General Help
                                                     F2   Previous Values
                                                     F3    Optimized
                                                     Defaults
                                                     F4    Save
                                                     ESC   Exit
         Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 7: Super IO Configuration

4.3.5.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 8**) to configure the serial port n.

```
         Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
           Advanced

Serial Port 0 Configuration                          Enable or Disable Serial
                                                     Port (COM)
Serial Port                    [Enabled]
Device Settings                IO=3F8h; IRQ=4
                                                     --------------------
Change Settings                [Auto]                ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     EnterSelect
                                                     F1   General Help
                                                     F2   Previous Values
                                                     F3    Optimized
                                                     Defaults
                                                     F4    Save
                                                     ESC   Exit
         Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 8: Serial Port n Configuration Menu

4.3.5.1.1 Serial Port 0 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**   Disable the serial port

➔ **Enabled**   **DEFAULT**   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**   **DEFAULT**   The serial port IO port address and interrupt address are automatically detected.

➔ **IO=3F8h; IRQ=4**   Serial Port I/O port address is 3F8h and the interrupt address is IRQ4

➔ **IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

➔ **IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

➔ **IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

➔ **IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

4.3.5.1.2 Serial Port 1 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

    ➔ **Disabled**   Disable the serial port

    ➔ **Enabled**   D<small>EFAULT</small>   Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

    ➔ **Auto**   D<small>EFAULT</small>   The serial port IO port address and interrupt address are automatically detected.

    ➔ **IO=2F8h; IRQ=3**   Serial Port I/O port address is 2F8h and the interrupt address is IRQ3

    ➔ **IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

    ➔ **IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

    ➔ **IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

    ➔ **IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**   Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

4.3.6 H/W Monitor

The H/W Monitor menu (**BIOS Menu 9**) shows the operating temperature, fan speeds and system voltages.

```
       Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
          Advanced

PC Health Status

> Smart Fan Mode Configuration

CPU Temperature                 :+46 C
SYS Temperature                 :+34 C

CPU FAN Speed                   :3500 RPM                 --------------------
SYS FAN Speed                   :N/A                      ←→: Select Screen
                                                          ↑ ↓: Select Item
VIN0(VCC3C)                     :+3.312 V                 Enter Select
VIN1(VCORE)                     :+1.160 V                 F1   General Help
VIN2(+1.5V)                     :+1.520 V                 F2   Previous Values
VSB3V                           :+3.328 V                 F3   Optimized
VBAT                            :+3.216 V                 Defaults
                                                          F4   Save
                                                          ESC  Exit
       Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 9: Hardware Health Configuration

4.3.6.1 Smart Fan Mode Configuration

Use the Smart Fan Mode Configuration menu (**BIOS Menu 10**) to configure the CPU fan.

```
        Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
            Advanced

Smart Fan Mode Configuration                        CPU Fan Mode Select

> CPU Fan Mode                    [Auto RPM Mode]
  First Boundary Temp            60
  Second Boundary Temp           50
  Third Boundary Temp            40
  Fourth Boundary Temp           30
  Segment 1 Speed Cou            100            ---------------------
  Segment 2 Speed Cou            85             ←→: Select Screen
  Segment 3 Speed Cou            70             ↑ ↓: Select Item
  Segment 4 Speed Cou            60             Enter Select
  Segment 5 Speed Cou            50             F1    General Help
  Starting Full Speed            5000           F2    Previous Values
                                                F3    Optimized
                                                Defaults
                                                F4    Save
                                                ESC   Exit

        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 10: Hardware Health Configuration

➔ **CPU Fan Mode [Auto Fan by RPM]**

Use the **CPU Fan Mode** option to configure the CPU fan.

➔ **Auto RPM Mode**   DEFAULT   The fan adjusts its speed using these settings by RPM:

First Boundary Temperature

Second Boundary Temperature

Third Boundary Temperature

Fourth Boundary Temperature

Segment 1 Speed Count

Segment 2 Speed Count

Segment 3 Speed Count

Segment 4 Speed Count

Segment 5 Speed Count

Starting Full Speed Count

➔ **Auto Duty Cycle Mode**

The fan adjusts its speed using these settings by Duty Cycle:

First Boundary Temperature

Second Boundary Temperature

Third Boundary Temperature

Fourth Boundary Temperature

Segment 1 Speed Count

Segment 2 Speed Count

Segment 3 Speed Count

Segment 4 Speed Count

Segment 5 Speed Count

➔ **Manual RPM Mode**

The fan spins at the speed set in:

Expect speed count value

(Min=1000 rpm, Max=15000 rpm)

➔ **Manual Duty Cycle Mode**

The fan spins at the speed set in:

Expect Duty Cycle

(Min=0%, Max=100%)

NOTE:

Smart fan functions are supported only when using a 4-pin fan.   When using a 3-pin fan, the functions are not supported.

➔ **First Boundary Temperature [060]**

WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

▪ Minimum Value: 1°C

▪ Maximum Value: 128°C

➔ **Second Boundary Temperature [050]**

 WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

▪ Minimum Value: 1°C

▪ Maximum Value: 128°C

➔ **Third Boundary Temperature [040]**

 WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

▪ Minimum Value: 1°C

▪ Maximum Value: 128°C

➔ **Fourth Boundary Temperature [030]**

 WARNING:

CPU failure can result if this value is set too high

When the fan is off, it will only start when the temperature exceeds this setting.

▪ Minimum Value: 1°C

▪ Maximum Value: 128°C

➔ **Segment 1 Speed Count [100]**

This value is always full speed and corresponds to the First Boundary Temperature. This speed should be higher than Segment 2.

- Minimum Value: 1%
- Maximum Value: 100%

➔ **Segment 2 Speed Count [085]**

This value is always full speed and corresponds to the Boundary Temperature. This speed should be higher than Segment 3.

- Minimum Value: 1%
- Maximum Value: 100%

➔ **Segment 3 Speed Count [070]**

This value is always full speed and corresponds to the Third Boundary Temperature. This speed should be higher than Segment 4.

- Minimum Value: 1%
- Maximum Value: 100%

➔ **Segment 4 Speed Count [060]**

This value is always full speed and corresponds to the Fourth Boundary Temperature. This speed should be higher than Segment 5.

- Minimum Value: 1%
- Maximum Value: 100%

➔ **Segment 5 Speed Count [050]**

This value is always full speed. The CPU fan starts at this speed.

- Minimum Value: 1%
- Maximum Value: 100%

➔ **Starting Full Speed Count**

This value is the starting speed of the CPU fan.

- Minimum Value: 1000 RPM
- Maximum Value: 15000 RPM

➔ **PC Health Status**

The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Fan Speeds:
  - CPU Fan Speed
- Voltages:
  - VCC3V
  - Vcore
  - +1.5V
  - VSB3V
  - VBAT

4.3.7 AMT Configuration

The **AMT Configuration** menu (**BIOS Menu 11**) allows the advanced power management options to be configured.

```
Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
     Advanced

AMT                            [Enabled]          AMT Help
Unconfigure AMT/ME             [Disabled]


                                                  --------------------
                                                  ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  EnterSelect
                                                  F1   General Help
                                                  F2   Previous Values
                                                  F3    Optimized
                                                  Defaults
                                                  F4    Save
                                                  ESC   Exit

        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```
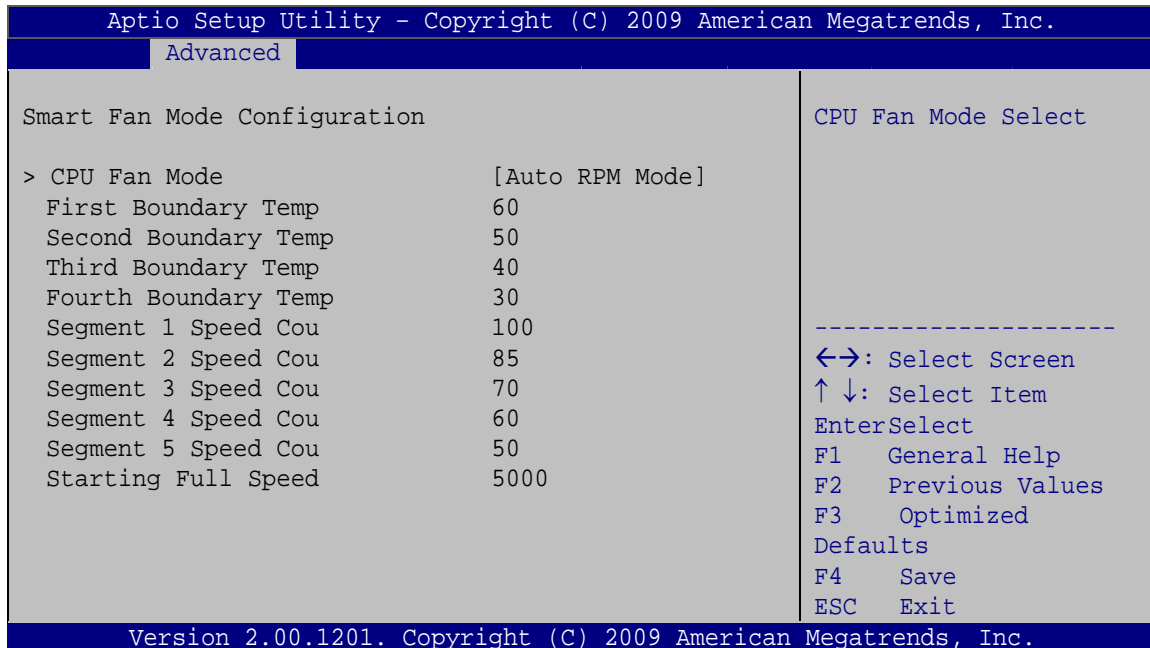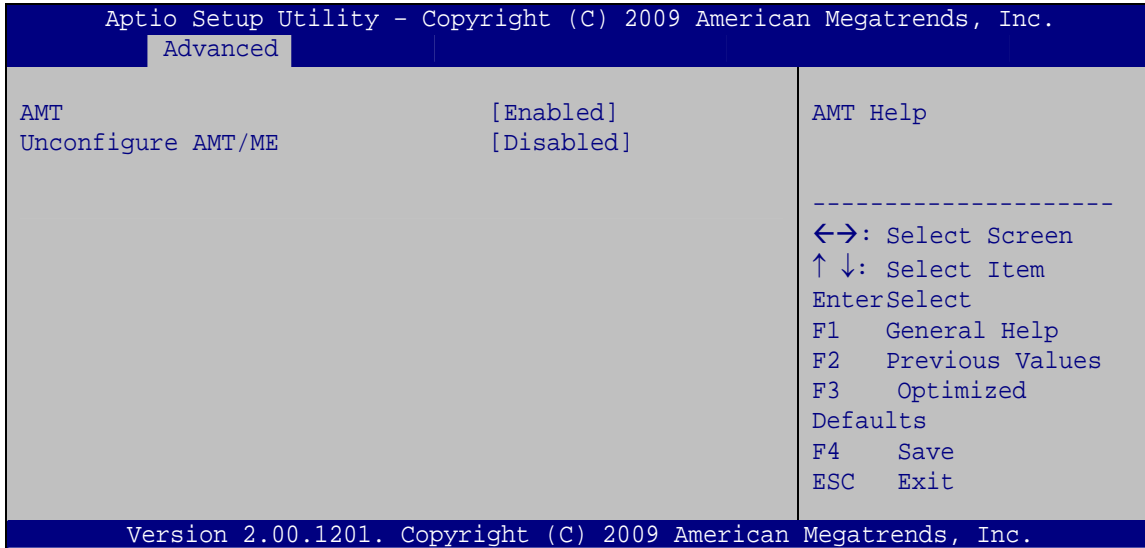
BIOS Menu 11: AMT Configuration

➔ **AMT [Enabled]**

Use **AMT** option to enable or disable the Intel® AMT function.

➔ **Disabled**   Intel® AMT is disabled

➔ **Enabled**   DEFAULT   Intel® AMT is enabled

➔ **Unconfigure AMT/ME [Disabled]**

Use the **Unconfigure AMT/ME** option to perform AMT/ME unconfigure without password operation.

➔ **Disabled**   DEFAULT   Not perform AMT/ME unconfigure

➔ **Enabled**   To perform AMT/ME unconfigure

4.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

```
Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
       Advanced

  COM0                                        The settings specify how
   Console Redirection          [Enabled]     the host computer and the
 > Console Redirection Settings               remote computer (which
                                              the user is using) will
  COM1                                        exchange data. Both
   Console Redirection          [Disabled]    computers should have
 > Console Redirection Settings               the same or compatible
                                              settings.

                                              --------------------
                                              ←→: Select Screen
                                              ↑ ↓: Select Item
                                              Enter Select
                                              F1   General Help
                                              F2   Previous Values
                                              F3    Optimized
                                              Defaults
                                              F4    Save
                                              ESC   Exit
       Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 12: Serial Port Console Redirection

➔ **Console Redirection**

Use **Console Redirection** option to enable or disable the console redirection function.

➔ **Disabled** DEFAULT Disables the console redirection function.

➔ **Enabled** Enabled the console redirection function.

4.3.8.1 Console Redirection Settings

The **Console Redirection Settings** menu (**BIOS Menu 13**) allows the console redirection options to be configured. The option is active when Console Redirection option is enabled.

```
Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
        Advanced

COM0
Console Redirection Settings                          Emulation: ANSI:
                                                     Extended ASCII char set.
Terminal Type                    [VT-UTF8]           VT100: ASCII char set.
Bits per second                  [115200]            VT100+: Extends VT100 to
Data Bits                        8                   support color, function
Parity                           None                keys, etc. VT-UTF8: Uses
Stop Bits                        1                   UTF8 encoding to map
                                                     Unicode chars onto 1 or
                                                     more bytes.

                                                     --------------------
                                                     ←→: Select Screen
                                                     ↑↓: Select Item
                                                     Enter Select
                                                     F1    General Help
                                                     F2    Previous Values
                                                     F3    Optimized
                                                     Defaults
                                                     F4    Save
                                                     ESC   Exit

        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 13: Console Redirection Settings

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** option to specify the remote terminal type..

➔ **VT100**   The target terminal type is VT100

➔ **VT100+**   The target terminal type is VT100+

➔ **VT-UTF8**   The target terminal type is VT-UTF8

➔ **ANSI**   DEFAULT   The target terminal type is ANSI

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the transmission speed of the serial port.

➔ **9600**   The transmission speed is 9600

➔ **19200**   The transmission speed is 19200

➔ **57600**   The transmission speed is 57600

è   **115200**   **DEFAULT**   The transmission speed is 115200

4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 14**) to access the Northbridge and Southbridge configuration menus

---

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
       Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
   Main    Advanced  Chipset    Boot    Security  Save & Exit

 > North Bridge                                    North Bridge Parameters
 > South Bridge
 > Integrated Graphics
                                                   --------------------
                                                   ßà: Select Screen
                                                   ↑ ↓: Select Item
                                                   Enter Select
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized
                                                   Defaults
                                                   F4    Save
                                                   ESC   Exit
       Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```
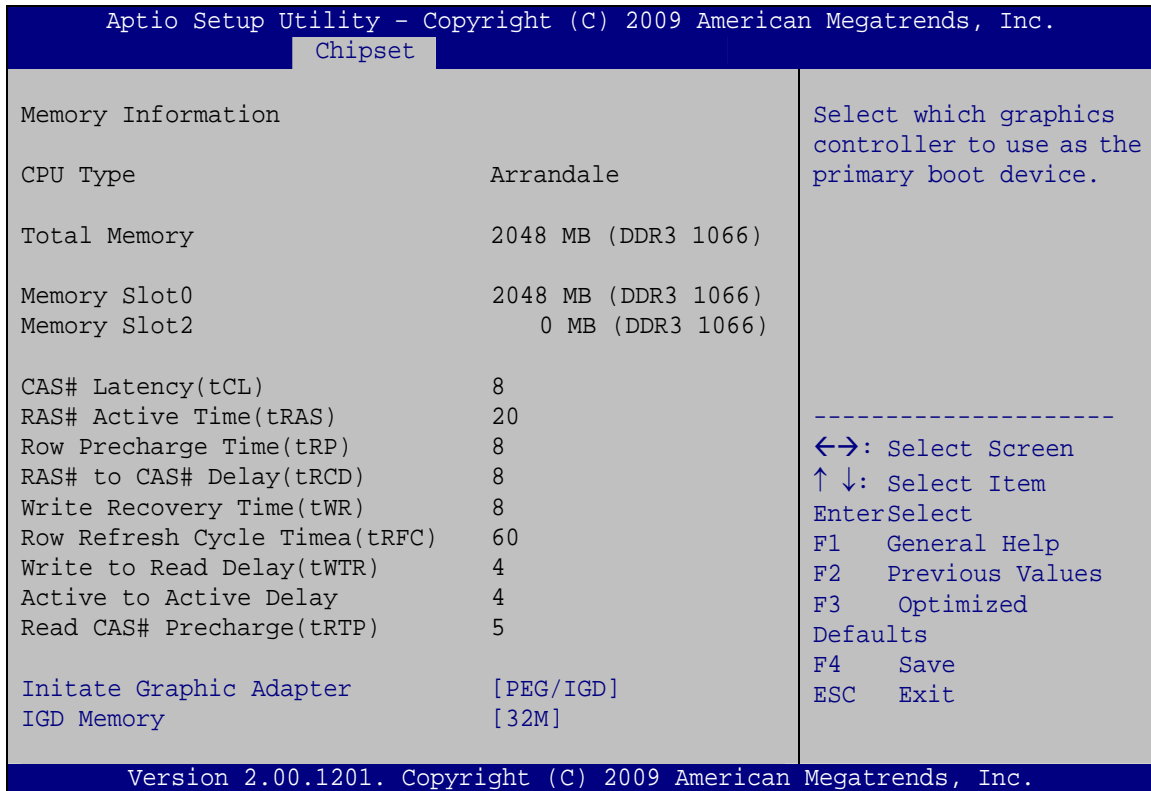
BIOS Menu 14: Chipset

4.4.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 15**) to configure the Northbridge chipset.

```
         Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
                      Chipset

Memory Information                                          Select which graphics
                                                           controller to use as the
CPU Type                          Arrandale                primary boot device.

Total Memory                      2048 MB (DDR3 1066)

Memory Slot0                      2048 MB (DDR3 1066)
Memory Slot2                         0 MB (DDR3 1066)

CAS# Latency(tCL)                 8
RAS# Active Time(tRAS)            20                        --------------------
Row Precharge Time(tRP)           8
RAS# to CAS# Delay(tRCD)          8                         ←→: Select Screen
Write Recovery Time(tWR)          8                         ↑ ↓: Select Item
Row Refresh Cycle Timea(tRFC)     60                        EnterSelect
Write to Read Delay(tWTR)         4                         F1   General Help
Active to Active Delay            4                         F2   Previous Values
Read CAS# Precharge(tRTP)         5                         F3    Optimized
                                                           Defaults
Initate Graphic Adapter           [PEG/IGD]                 F4   Save
IGD Memory                        [32M]                     ESC  Exit

         Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 15:Northbridge Chipset Configuration

➔ **Initiate Graphics Adapter [PEG/IGD]**

Use the **Initiate Graphics Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:
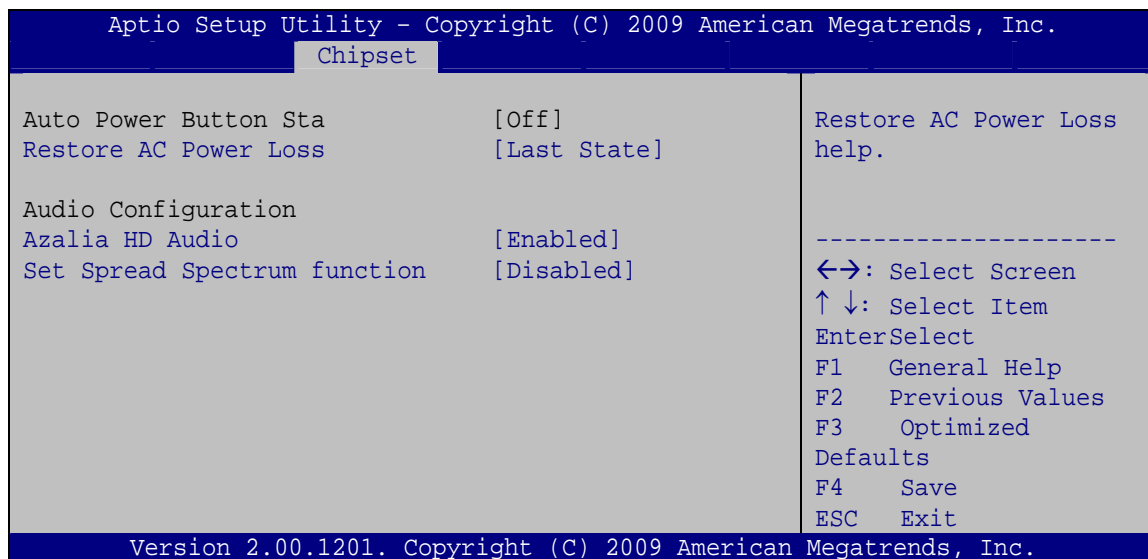
- IGD
- PEG/IGD   DEFAULT

➔ **IGD Memory [32 MB]**

Use the **IGD Memory** option to specify the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**

➔ **32 MB**   DEFAULT   32 MB of memory used by internal graphics device

➔ **64 MB**   64 MB of memory used by internal graphics device

➔ **128 MB**   128 MB of memory used by internal graphics device

4.4.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 16**) to configure the Southbridge chipset.

```
       Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
                        Chipset

Auto Power Button Sta          [Off]              Restore AC Power Loss
Restore AC Power Loss          [Last State]       help.

Audio Configuration
Azalia HD Audio                [Enabled]          --------------------
Set Spread Spectrum function   [Disabled]         ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  Enter Select
                                                  F1   General Help
                                                  F2   Previous Values
                                                  F3    Optimized
                                                  Defaults
                                                  F4    Save
                                                  ESC   Exit
          Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 16:Southbridge Chipset Configuration

➔ **Restore AC Power Loss [Power Off]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**   The system remains turned off

➔ **Power On**   DEFAULT   The system turns on

➔ **Last State**   The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

➔ **Azalia HD Audio [Enabled]**

Use the **Azalia HD Audio** option to enable or disable the High Definition Audio controller.

➔ **Disabled**   The onboard High Definition Audio controller is disabled

➔ **Enabled** DEFAULT   The onboard High Definition Audio controller automatically detected and enabled

➔ **Set Spread Spectrum function [Disabled]**

Use the **Set Spread Spectrum function** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔ **Disabled**   DEFAULT   EMI not reduced

➔ **Enabled**   EMI reduced

4.4.3 Integrated Graphics

Use the **Integrated Graphics** menu to configure the video device connected to the system.

```
          Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
                        Chipset

Intel IGD SWSCI OpRegion Configuration          Select the DVMT/FIXED
                                                Mode Memory size used by
DVMT/FIXED Memory              [Maximum]        Internal Graphics
                                                Device.
IGD - Boot Type                [VBIOS Default]

                                                ----------------------
                                                ←→: Select Screen
                                                ↑ ↓: Select Item
                                                Enter Select
                                                F1   General Help
                                                F2   Previous Values
                                                F3    Optimized
                                                Defaults
                                                F4    Save
                                                ESC   Exit
          Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```
BIOS Menu 17: Intel IGD SWSCI OpRegion

➔   **DVMT/FIXED Memory [128 MB]**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

   ▪   128 MB   Default
   ▪   256 MB
   ▪   Maximum

➔   **IGD – Boot Type [VBIOS Default]**

Use the **IGD – Boot Type** BIOS feature to determine what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

   ▪   VBIOS Default   DEFAULT
   ▪   CRT
   ▪   CTR1

- EFP

- EFP1

- CRT + CRT1

- CRT + EFP1

4.5 Boot

Use the **Boot** menu (**BIOS Menu 18**) to configure system boot options.

```
        Aptio Setup Utility - Copyright (C) 2009 American Megatrends, Inc.
   Main    Advanced   Chipset    Boot     Security  Save & Exit

Boot Configuration                                      Enables/Disables Quiet
Quiet Boot                     [Enabled]                Boot option
Bootup NumLock State           [On]
82577 PXE OpROM                [Disabled]
Option ROM Messages            [Force BIOS]             --------------------

                                                        ←→: Select Screen
Boot Option Priorities                                  ↑↓: Select Item
Boot Option #1                                          Enter Select
                                                        F1   General Help
Hard Drive BBS Prioties                                 F2   Previous Values
                                                        F3    Optimized
                                                        Defaults
                                                        F4    Save
                                                        ESC   Exit
        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

   BIOS Menu 18: Boot

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**   Normal POST messages displayed

➔ **Enabled**   D**EFAULT**   OEM Logo displayed instead of POST messages

➔ **Bootup NumLock [On]**

Use the **Bootup NumLock** BIOS option to specify if the number lock setting must be modified during boot up.

è **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

è **On** DEFAULT Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

è **82577 PXE OpROM [Disabled]**

Use the **82577 PXE OpROM** option to enable the Intel® 82577 PCIe GbE controller to boot the system.

è **Disabled** DEFAULT Cannot be booted from a remote system through the Intel® 82577 PCIe GbE controller

è **Enabled** Can be booted from a remote system through the Intel® 82577 PCIe GbE controller

è **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to allow add-on ROM (read-only memory) messages to be displayed.

è **Force BIOS** DEFAULT The system forces third party BIOS to display during system boot.

è **Keep Current** The system displays normal information during system boot.

4.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.

```
        Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
   Main    Advanced   Chipset    Boot    Security  Save & Exit

 Password Description                              Set Setup Administrator
                                                  Password
 If ONLY the Administrator's password is set,
 then this only limits access to Setup and is
 only asked for when entering Setup               --------------------
 If ONLY the User's password is set, then this    ←→: Select Screen
 is a power on password and must be entered to    ↑ ↓: Select Item
 boot or enter Setup. In Setup the User will      Enter Select
 have Administrator rights.                       F1   General Help
                                                  F2   Previous Values
                                                  F3    Optimized
 Administrator Password                           Defaults
 User Password                                    F4    Save
                                                  ESC   Exit
        Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 19: Security

➔ **Administrator Password**

Use the **Administrator Password** to set or change a administrator password.

➔ **User Password**

Use the **User Password** to set or change a user password.

4.7 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
      Aptio Setup Utility – Copyright (C) 2009 American Megatrends, Inc.
  Main    Advanced   Chipset     Boot    Security  Save & Exit

 Save Changes and Reset                              Exit system setup after
 Discard Changes and Reset                           saving the changes.

 Save Options
 Save Changes
 Discard Changes

 Restore Defaults                                    ---------------------
                                                     ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     Enter Select
                                                     F1   General Help
                                                     F2   Previous Values
                                                     F3    Optimized
                                                     Defaults
                                                     F4    Save
                                                     ESC   Exit
      Version 2.00.1201. Copyright (C) 2009 American Megatrends, Inc.
```

BIOS Menu 20:Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **Save Changes**

Use the **Save Changes** option to save the changes made to the BIOS options.

➔ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

Appendix

A

Intel® AMT Configuration

A.1 Intel® AMT Setup Procedure

The ECN-581A-QM57 is featured with the Intel® Active Management Technology (AMT) 6.0. To enable the Intel® AMT function, follow the steps below.

Step 1: Make sure the DIMM1 socket is installed with one DDR3 SO-DIMM.

Step 2: Connect an Ethernet cable to the RJ-45 connector labeled LAN2_USB2.

Step 3: The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled, including:

AMT Configuration [Advanced]

ME Subsystem [Chipset]

Step 4: Configure the Intel® Management Engine BIOS extension (MEBx) (see Section **A.2** below)

Step 5: The following dialog window is displayed after the OS is loaded to show the Intel® AMT status on the ECN-581A-QM57 is enabled.

Figure A-1: Intel® Active Management Technology Status Dialog

A.2 Intel® Management Engine BIOS Extension

This section describes the essential steps for using the Intel® Management Engine BIOS extension (MEBx).

Step 1: A screen prompts the user to press <Ctrl+P> after a single beep during boot-up process. To get into the Intel® MEBx settings, press <Ctrl+P>.

Step 2: Enter the Intel® ME password as it requires (**Figure B-7**). Enter the Intel®

default password: **admin**.
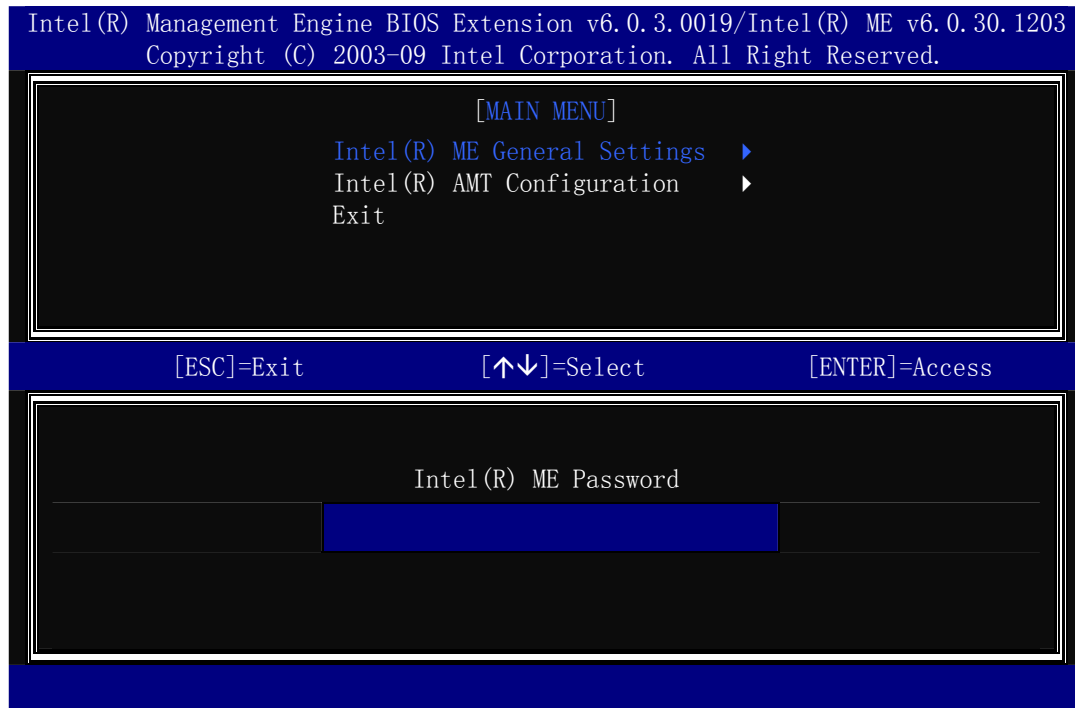
Figure A-2: Intel® Current ME Password

Step 3: Enter a new password following the strong password rule (containing at least

one upper case letter, one lower case letter, one digit and one special character,

and be at least eight characters). (**Figure B-8**)

Step 4: Verify the new password by entering again.

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
           Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                                [MAIN MENU]
                        Intel(R) ME General Settings    ▶
                        Intel(R) AMT Configuration       ▶
                        Exit


            [ESC]=Exit              [↑↓]=Select              [ENTER]=Access


                          Intel(R) ME New Password
```
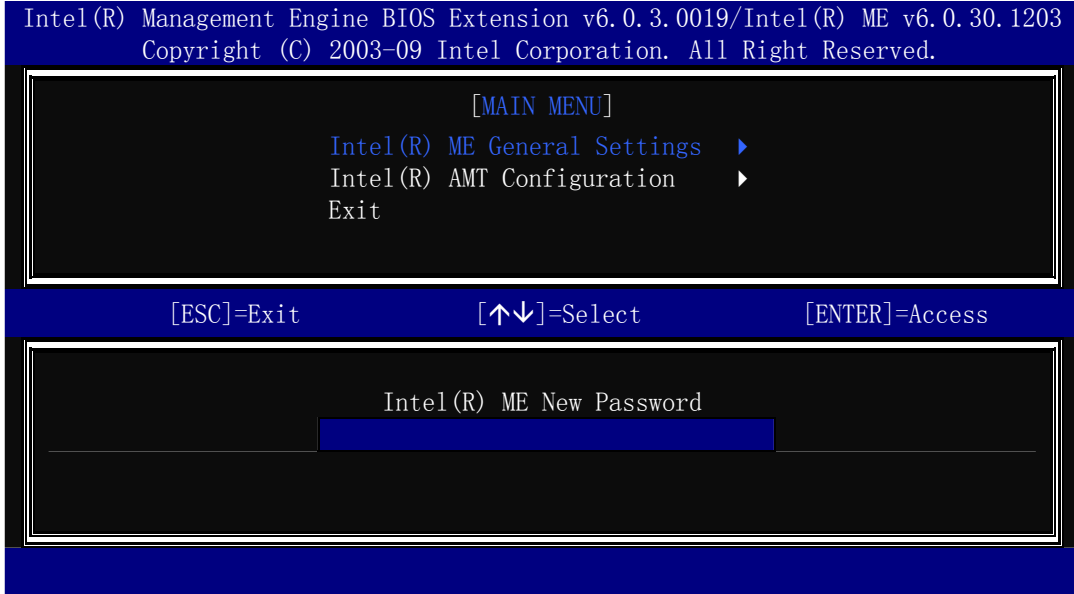
Figure A-3: Intel® ME New Password

Step 5: Select **Intel® AMT Configuration** and press **Enter** (**Figure B-12**).

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
           Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                                [MAIN MENU]
                        Intel(R) ME General Settings    ▶
                        Intel(R) AMT Configuration       ▶
                        Exit


            [ESC]=Exit              [↑↓]=Select              [ENTER]=Access
```
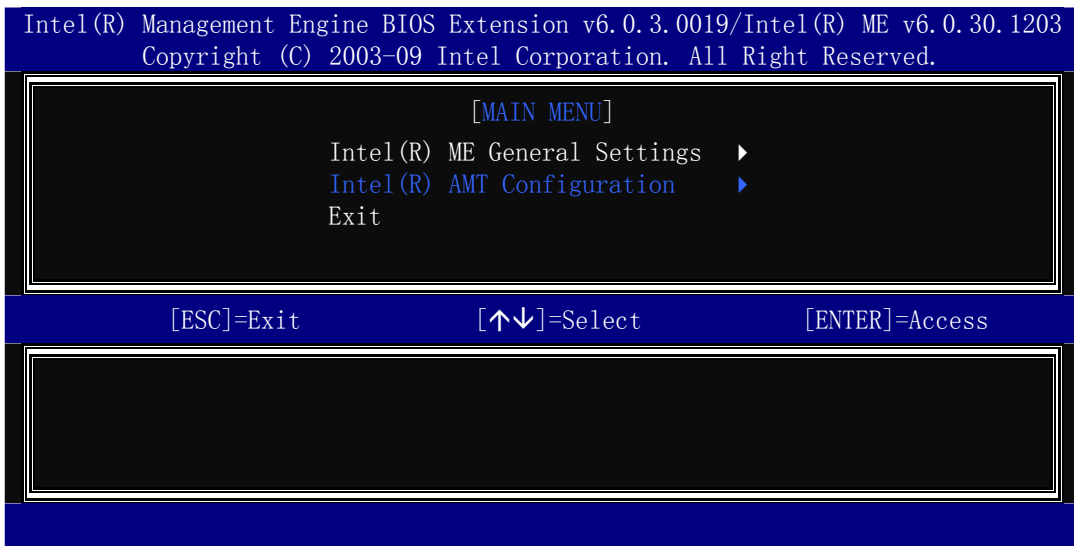
Figure A-4: Intel® AMT Configuration

Step 6: Select **KVM Configuration** and press **Enter**. (**Figure B-13**)

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
        Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                      [Intel(R) AMT CONFIGURATION]

                Manageability Feature Selection
                SOL/IDER                              ▶
                KVM Configuration                     ▶
                Previous Menu


        [ESC]=Exit              [↑↓]=Select          [ENTER]=Access
```
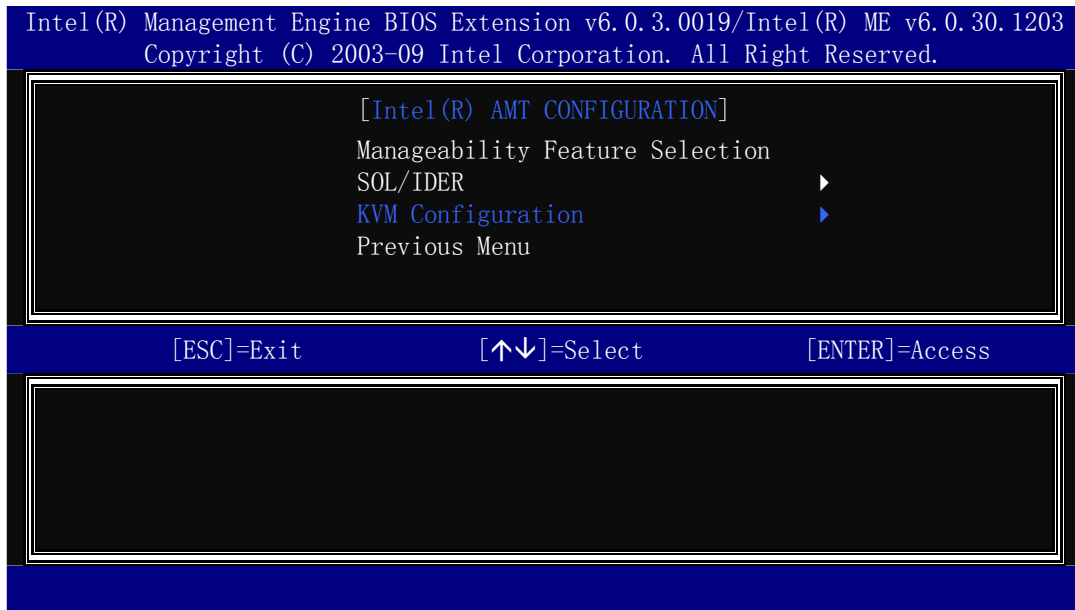
Figure A-5: Select KVM Configuration

Step 7: When the screen in **Figure B-14** prompts, select **User Opt-in** and press **Enter**.

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
        Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                        [KVM CONFIGURATION]

                KVM Feature Selection
                User Opt-in
                Opt-in Configuration from remote IT
                Previous Menu


        [ESC]=Exit              [↑↓]=Select          [ENTER]=Access
```
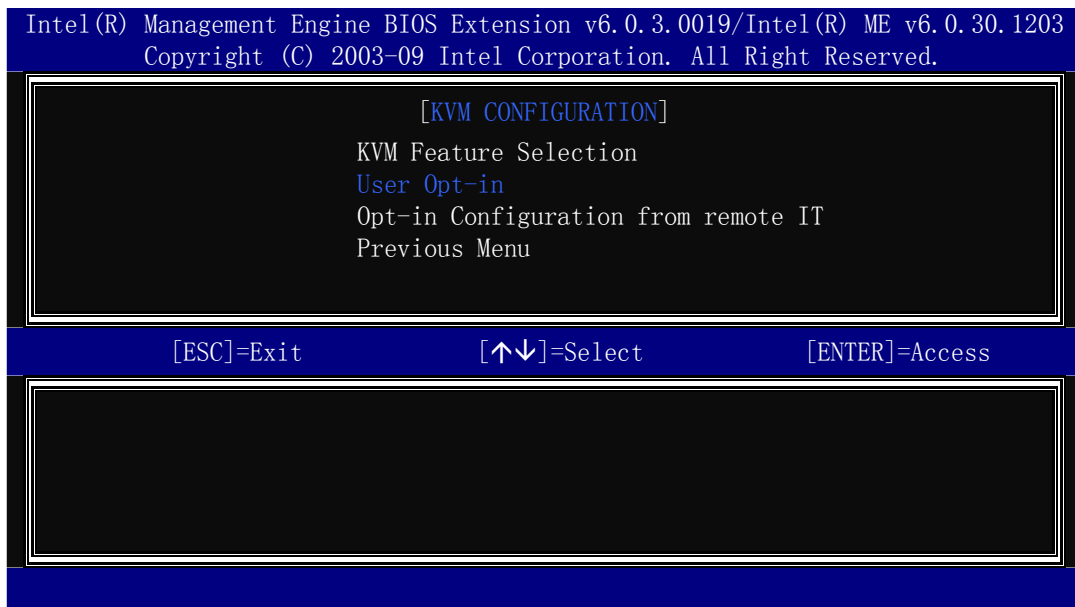
Figure A-6: KVM Configuration

Step 8: Two options are shown as in **Figure B-18**. Choose **User Consent is not**

required for KVM session which means no password is required for using

iAMT function. Then press **Enter**.

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
        Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                        [KVM CONFIGURATION]
                 KVM Feature Selection
                 User Opt-in
                 Opt-in Configuration from remote IT
                 Previous Menu


        [ESC]=Exit              [↑↓]=Select              [ENTER]=Access

                 [*] User Consent is not required for KVM session
                 [ ] User Consent is required for KVM session
```
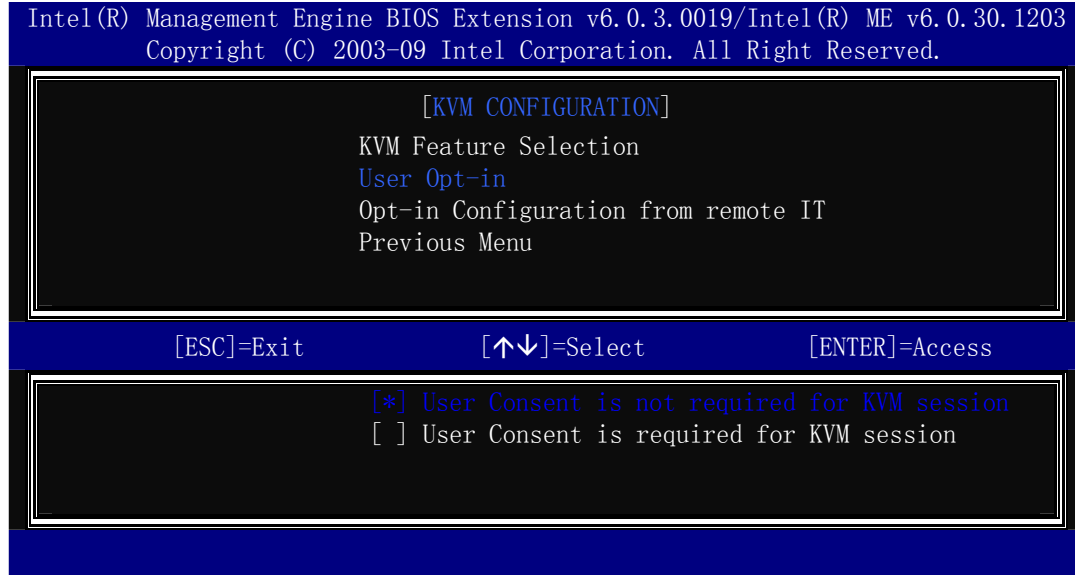
Figure A-7: KVM User Opt-in

Step 9: Make other necessary settings in the Intel® MEBx depending on users' need.

Step 10: To exit the Intel® MEBx, return to the main menu and select Exit. (**Figure B-25**)

```
Intel(R) Management Engine BIOS Extension v6.0.3.0019/Intel(R) ME v6.0.30.1203
        Copyright (C) 2003-09 Intel Corporation. All Right Reserved.

                        [MAIN MENU]
                 Intel(R) ME General Settings    ▶
                 Intel(R) AMT Configuration      ▶
                 Exit


        [ESC]=Exit              [↑↓]=Select              [ENTER]=Access
```
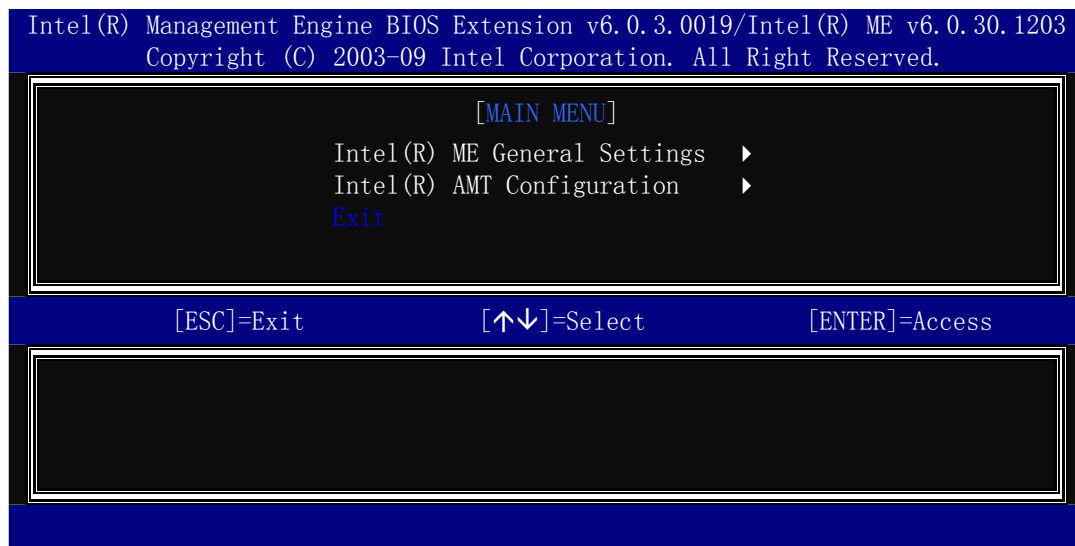
Figure A-8: Exit

A.3 IEI Easy Manager Application

IEI Easy Manager (iEZMan) application program allows a remote user, such as a support person, to remotely control and perform administrative tasks through a graphical user interface in Windows. The functions of the iEZMan application include

- Power Management
- Schedule Power Management
- Remote Access
- Group Management
- Patch Management
- Alert and Events

For more information regarding the iEZMan application, please refer to the instruction manual of the iEZMan.

Appendix

B

One Key Recovery

B.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

To create the system backup the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

B.1.1 System Requirement

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

 NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- ▪ Microsoft Windows
  - ○ Windows XP (Service Pack 2 or 3 required)
  - ○ Windows Vista

- o Windows 7
- o Windows CE 5.0
- o Windows CE 6.0
- o Windows XP Embedded
- Linux
  - o Fedora Core 12 (Constantine)
  - o Fedora Core 11 (Leonidas)
  - o Fedora Core 10 (Cambridge)
  - o Fedora Core 8 (Werewolf)
  - o Fedora Core 7 (Moonshine)
  - o RedHat RHEL-5.4
  - o RedHat 9 (Ghirke)
  - o Ubuntu 8.10 (Intrepid)
  - o Ubuntu 7.10 (Gutsy)
  - o Ubuntu 6.10 (Edgy)
  - o Debian 5.0 (Lenny)
  - o Debian 4.0 (Etch)
  - o SuSe 11.2
  - o SuSe 11.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

NOTE:

> The recovery CD can only be used with IEI products. The software will fail
> to run and a warning message will appear when used on non-IEI hardware.

```
X:\I386\system32\cmd.exe - startnet.cmd                          _□×

X:\I386\system32>call start.exe
```

Project1
This software only runs on IEI hardware!
OK
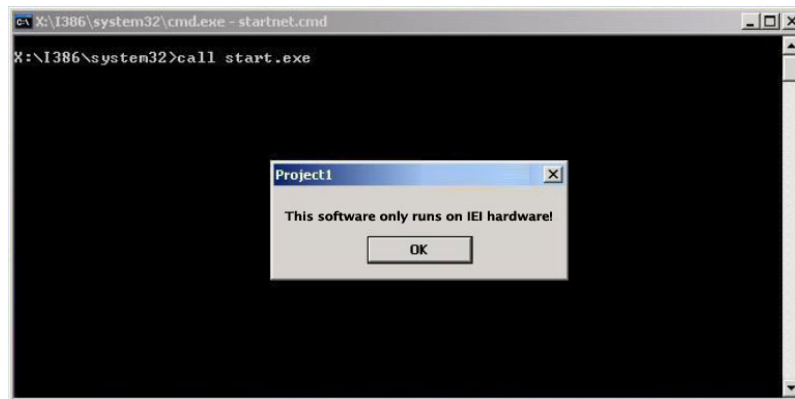
B.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore system, a few setup procedures are
required.

Step 11: Hardware and BIOS setup

Step 12: Create partitions

Step 13: Install operating system, drivers and system applications.

Step 14: Build-up recovery partition

Step 15: Create factory default image

The detailed descriptions are described in the following sections.

> **NOTE:**
>
> The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps which is described in **Section B.3**.

B.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard driver or SSD in the ECN-581A-QM57. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the ECN-581A-QM57 and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

B.2.2 Create Partitions

Step 1: Put the recovery CD in the optical drive.

Step 2: Turn on the system.

Step 3: When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient.

Step 4: The recovery tool setup menu is shown as below.

Figure B-1: Recovery Tool Setup Menu

Step 5: Press <**5**> then <Enter>.

Figure B-2: Command Mode

Step 6: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>create part pri size= ___

DISKPART>assign letter=F

DISKPART>exit

system32>format N: /fs:ntfs /q /y

system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit

Figure B-3: Partition Creation Commands

![NOTE icon] **NOTE:**

Use the following commands to check if the partitions were created successfully.

Step 7: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

B.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

![NOTE icon] **NOTE:**

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

B.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient.

Step 4: When the recovery tool setup menu appears, press **<2>** then <Enter>.
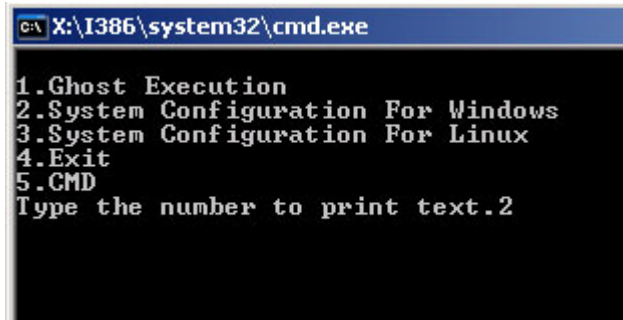
Figure B-4: System Configuration for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for recovery files in **Section B.2.2** is hidden and the recovery tool is saved in this partition.
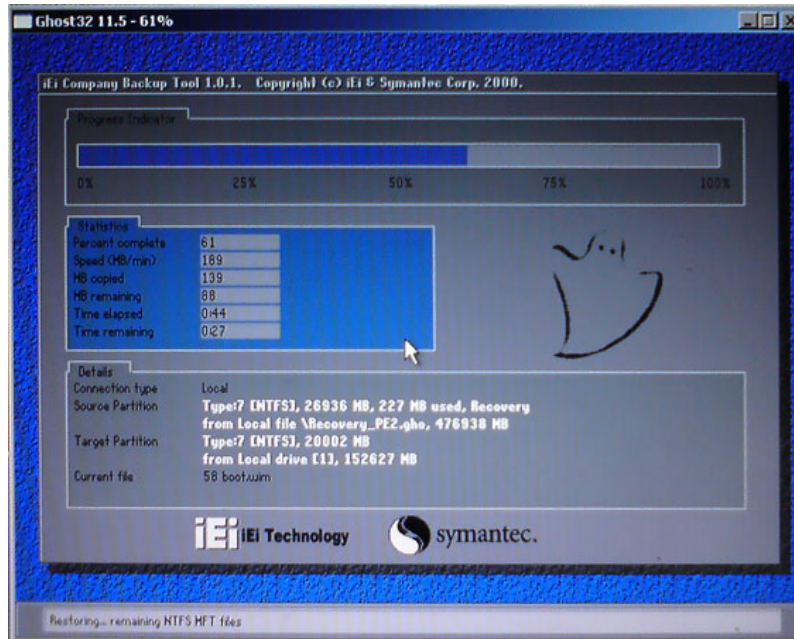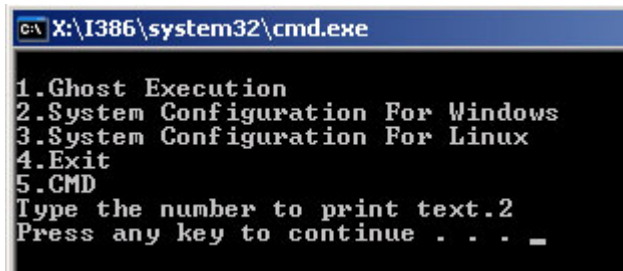
Figure B-5: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

Figure B-6: Press any key to continue

Step 7: Eject the recovery CD.

B.2.5 Create Factory Default Image
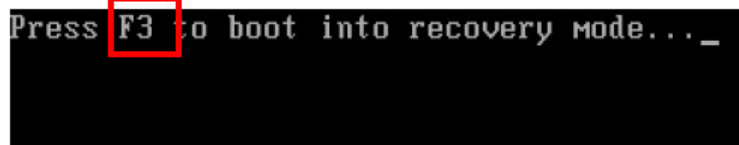
  NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure B-7**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

Figure B-7: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure B-8**)
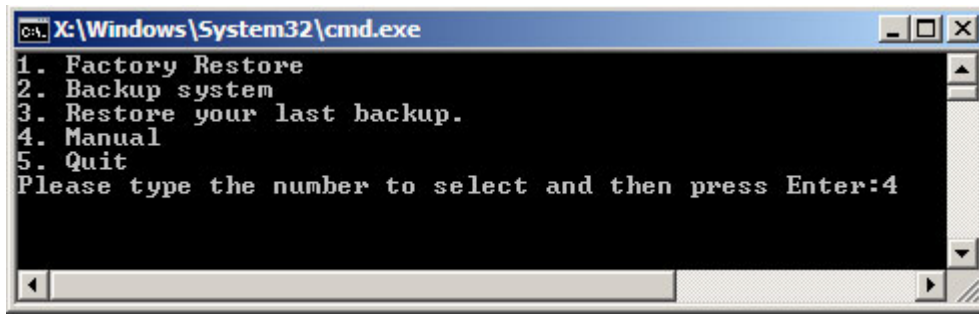
Figure B-8: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.
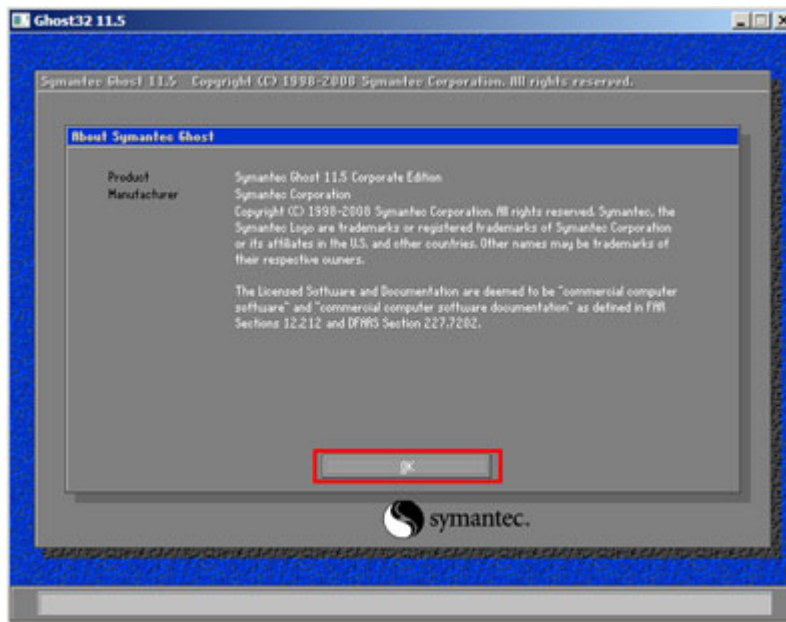
Figure B-9: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure B-10**).
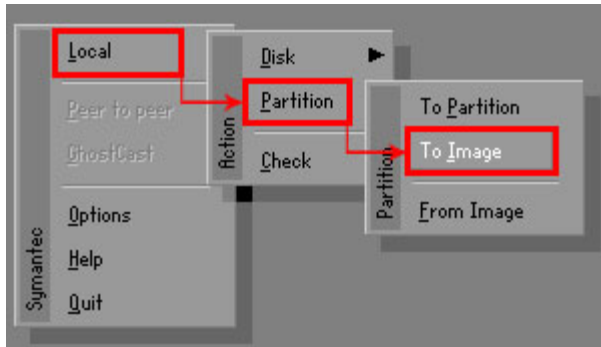
Figure B-10: Symantec Ghost Path

Step 5: Select the local source drive as shown in **Figure B-11**. Then click OK.
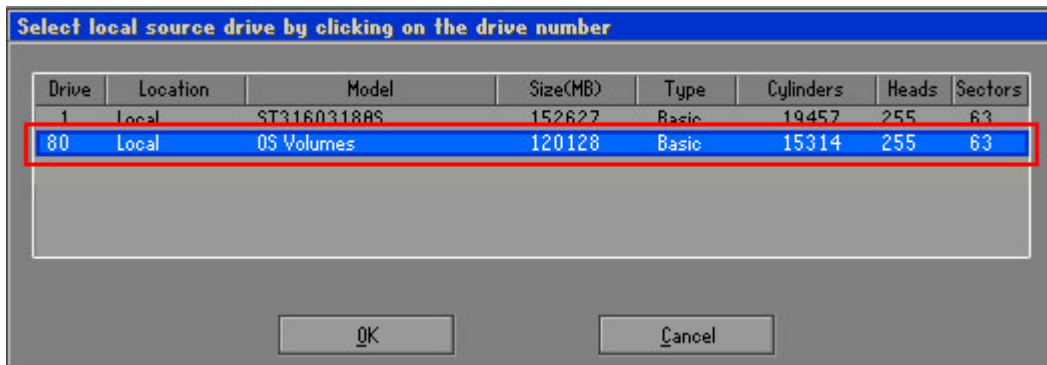
Figure B-11: Select a Local Source Drive

Step 6: Select a source partition from basic drive as shown in **Figure B-12**. Then click

OK.
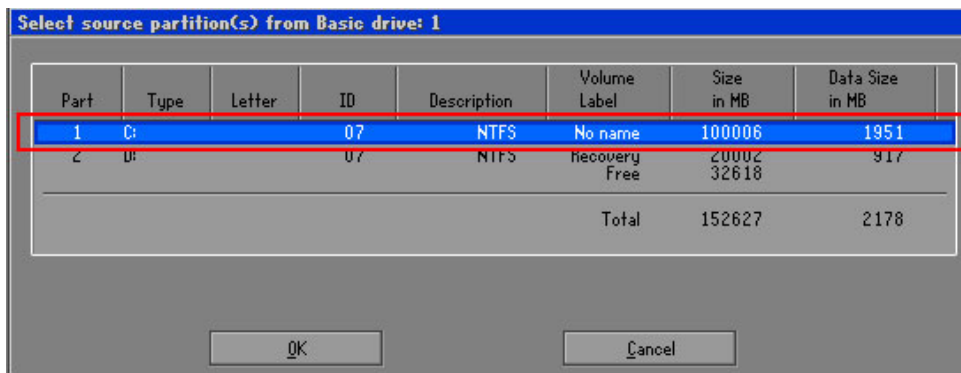
Figure B-12: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei**

(**Figure B-13**). Click **Save**. The factory default image will then be saved in the

selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.
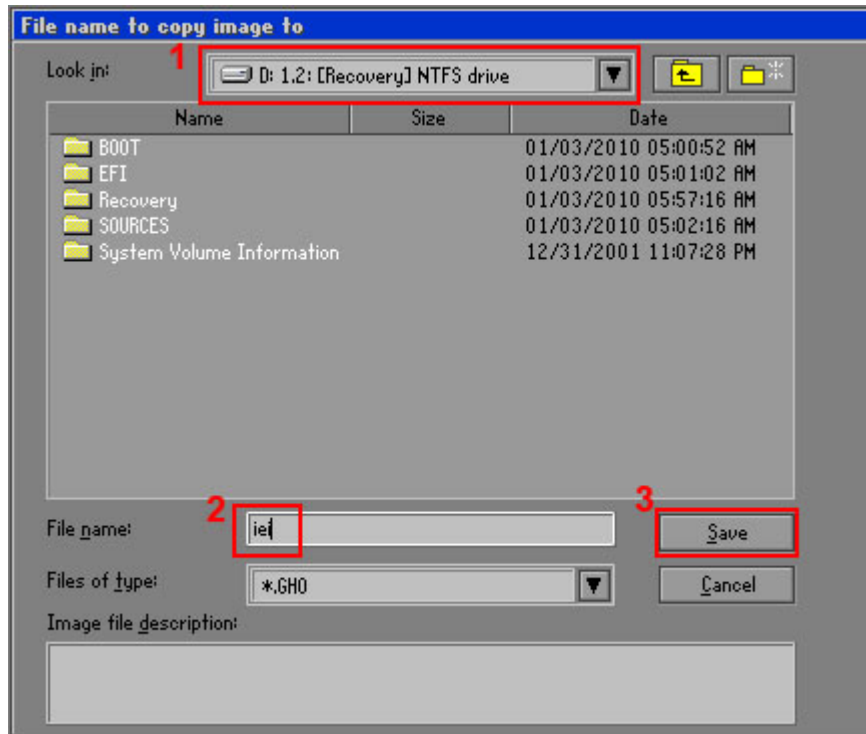
Figure B-13: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure B-14** prompts, click **High** to make

the image file smaller.
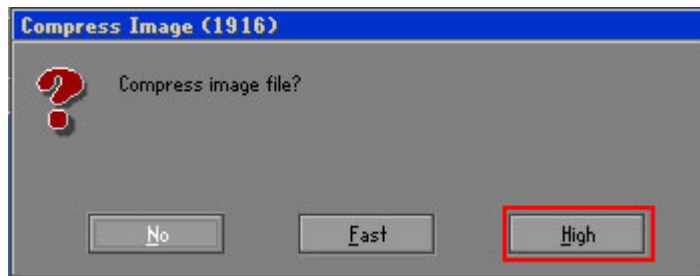
Figure B-14: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to

continue.
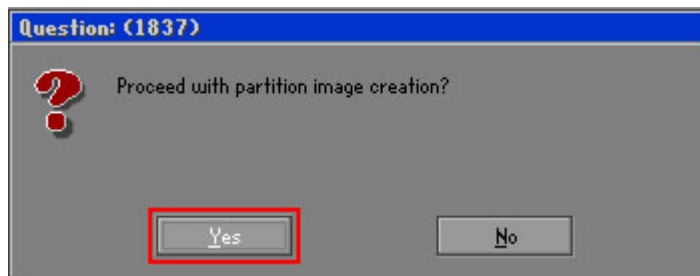
Figure B-15: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure B-16**).
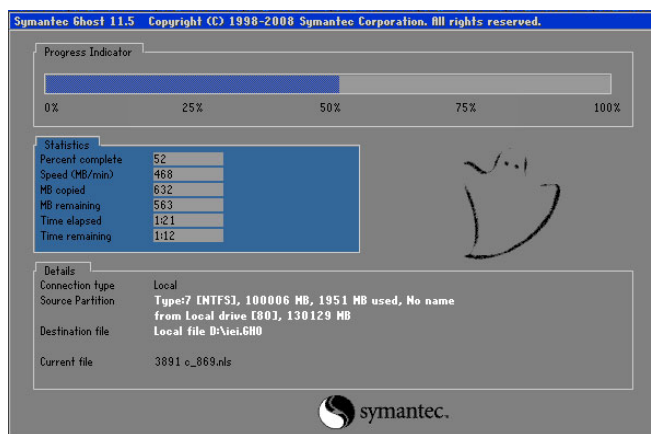
Figure B-16: Image Creation Complete

Step 11: When the image creation completes, a screen prompts as shown in **Figure B-18**.

Click **Continue** and close the Ghost window to exit the program.
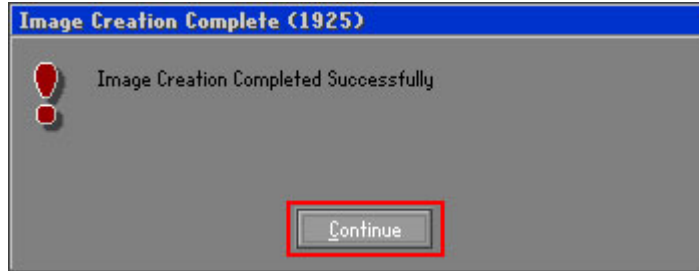
Figure B-17: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to

reboot the system.
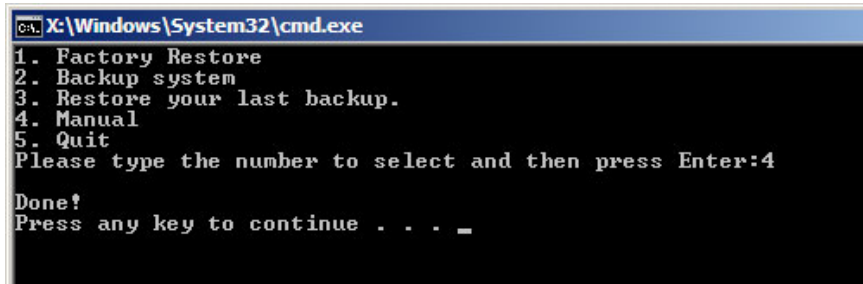
Figure B-18: Press Any Key to Continue

B.3 Setup Procedure for Linux

The initial setup procedures for Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section B.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

  NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: **/**
- Partition 2: **SWAP**

  NOTE:

Please reserve enough space for partition 3 for saving recovery images.
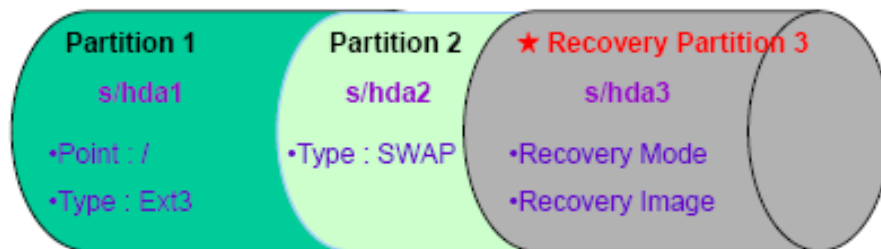
Figure B-19: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.
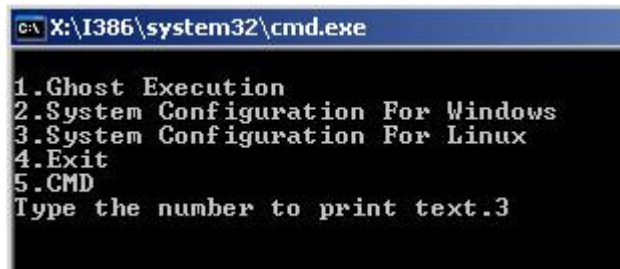
system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>exit

system32>**format N: /fs:ntfs /q /v:Recovery /y**

system32>**exit**

Step 4:   **Build-up recovery partition**. Press any key to boot from the recovery CD. It will
take a while to launch the recovery tool. Please be patient. When the recovery
tool setup menu appears, type <**3**> and press <Enter> (**Figure B-20**). The
Symantec Ghost window appears and starts configuring the system to build-up a
recovery partition. After completing the system configuration, press any key to
reboot the system. Eject the recovery CD.
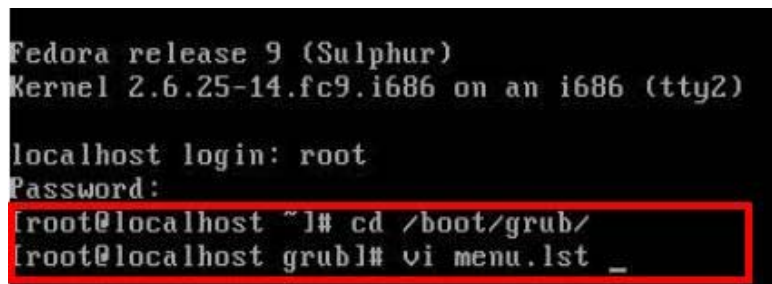
Figure B-20: System Configuration for Linux

Step 5:   **Access the recovery tool main menu by modifying the "menu.lst"**. To first
access the recovery tool main menu, the menu.lst must be modified. In Linux
system, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst

Figure B-21: Access menu.lst in Linux (Text Mode)

Step 6:   Modify the menu.lst as shown below.

```
#boot=/dev/sda
default=0
timeout=10          ← Modify timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
        root (hd0,0)
        kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
ac38b5c78910 rhgb quiet
        initrd /initrd-2.6.25-14.fc9.i686.img

title   Recovery Partition
root    (hd0,2)                   ← Type command
makeactive
chainloader +1
```

- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7:   The recovery tool menu appears. (**Figure B-22**)


```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:
```

Figure B-22: Recovery Tool Menu

Step 8:   **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section B.2.5** to create a factory default image.

B.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The main menu of the recovery tool is shown below.
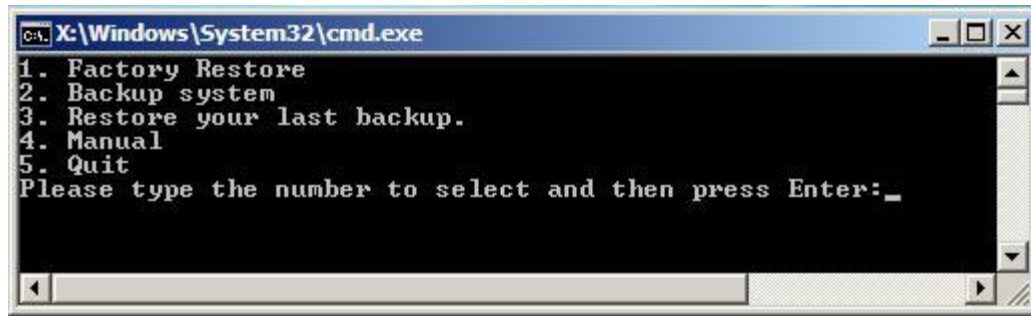
Figure B-23: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore**: Restore the factory default image (iei.GHO) created in **Section B.2.5**.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

![warning icon] **WARNING:**

Please do not turn off the system power during the process of system recovery or backup.

![warning icon] **WARNING:**

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

B.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 9: Type <**1**> and press <**Enter**> in the main menu.

Step 10: The Symantec Ghost window appears and starts to restore the factory default. A

factory default image called **iei.GHO** is created in the hidden Recovery partition.
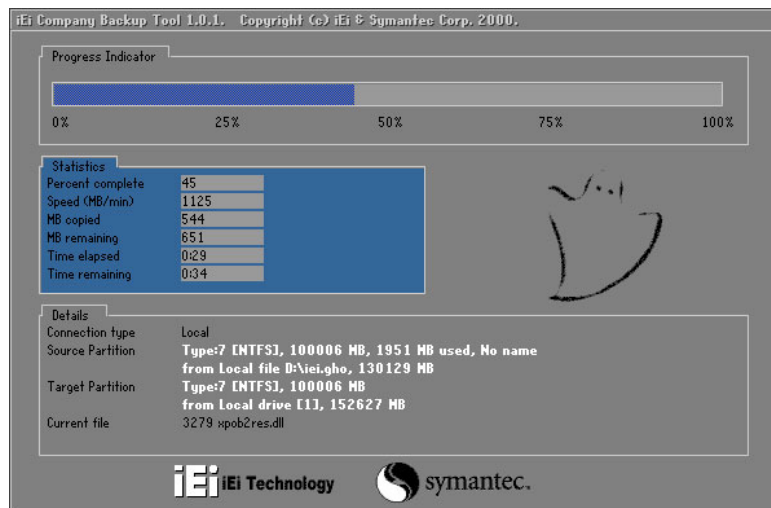

Figure B-24: Restore Factory Default

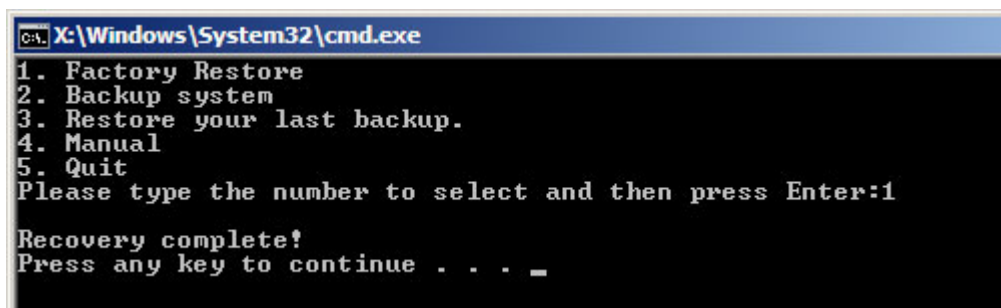**Step 11:** The screen is shown as in **Figure B-25** when completed. Press any key to

reboot the system.

Figure B-25: Recovery Complete Window

B.4.2 Backup System

To backup the system, please follow the steps below.

Step 12: Type **<2>** and press **<Enter>** in the main menu.

Step 13: The Symantec Ghost window appears and starts to backup the system. A

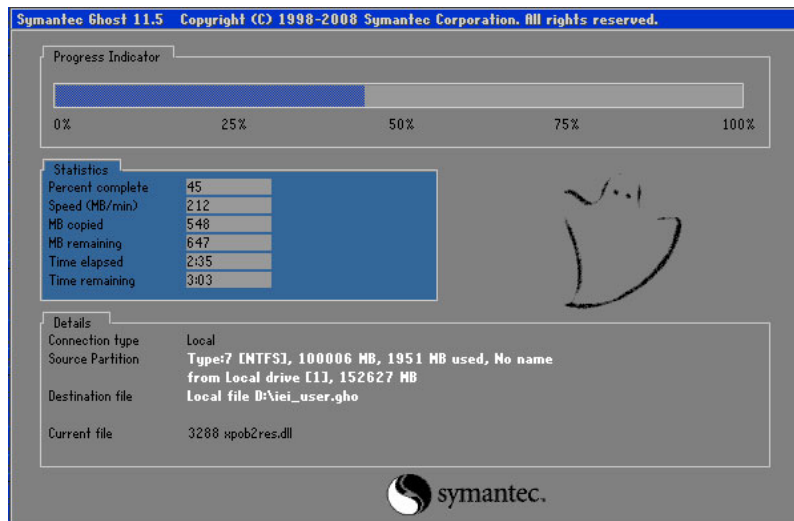backup image called **iei_user.GHO** is created in the hidden Recovery partition.

Figure B-26: Backup System

Step 14: The screen is shown as in **Figure B-25** when system backup is completed.
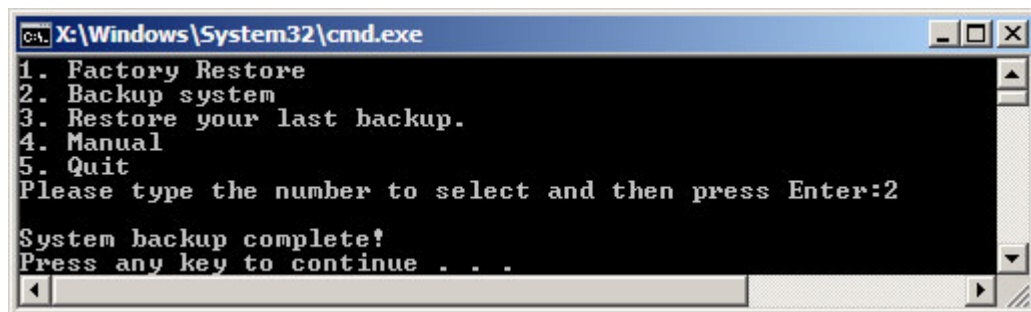
Press any key to reboot the system.

Figure B-27: System Backup Complete Window

B.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 15: Type <**3**> and press <**Enter**> in the main menu.

Step 16: The Symantec Ghost window appears and starts to restore the last backup
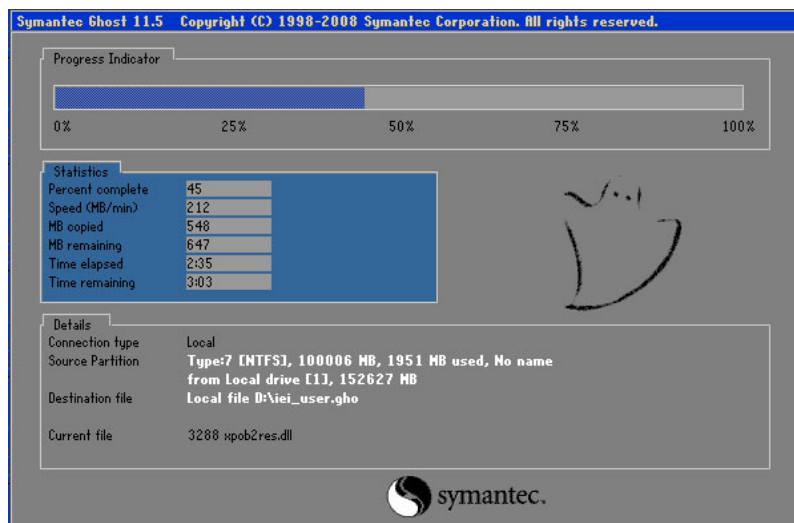
image (iei_user.GHO).

Figure B-28: Restore Backup

Step 17: The screen is shown as in **Figure B-25** when backup recovery is completed.
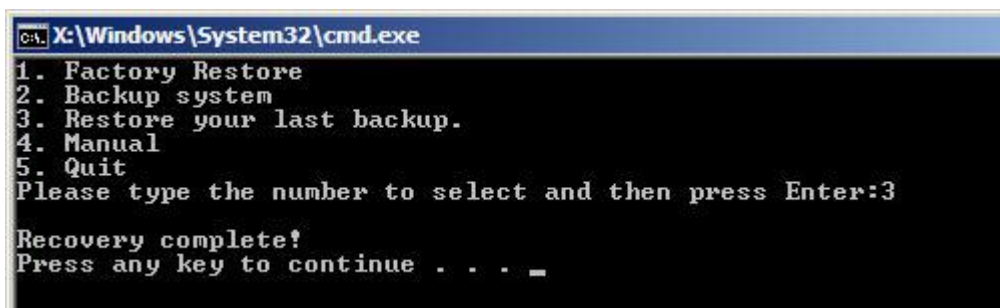
Press any key to reboot the system.

Figure B-29: Restore System Backup Complete Window

B.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 18: Type **<4>** and press **<Enter>** in the main menu.

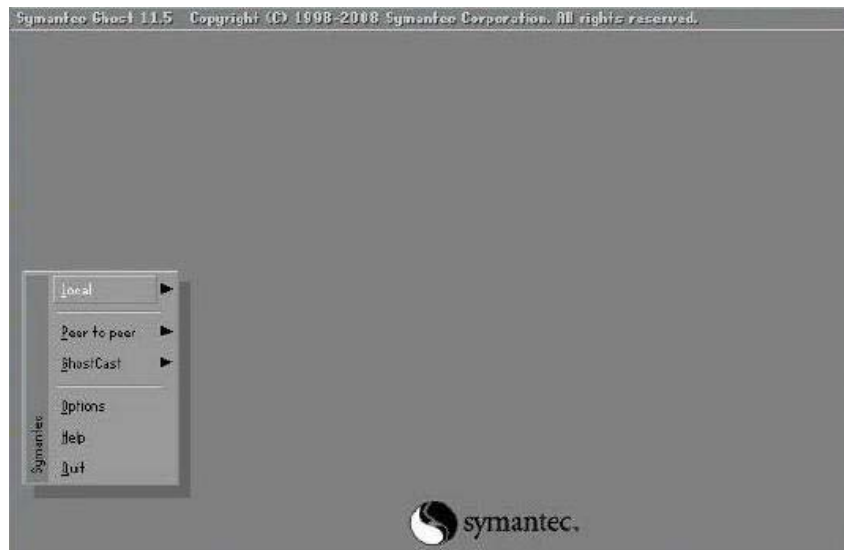**Step 19:** The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

Figure B-30: Symantec Ghost Window

Step 20: When backup or recovery is completed, press any key to reboot the system.

Appendix

C

Safety Precautions

C.1 Safety Precautions

WARNING:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the ECN-581A-QM57.

Please follow the safety precautions outlined in the sections that follow:

C.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- *Make sure the power is turned off and the power cord is disconnected* when moving, installing or modifying the system.
- *Do not apply voltage levels that exceed the specified voltage range*. Doing so may cause fire and/or an electrical shock.
- *Electric shocks can occur* if opened while still powered on.
- *Do not drop or insert any objects* into the ventilation openings.
- *If considerable amounts of dust, water, or fluids enter the system*, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- **DO NOT**:
  - Drop the system against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

C.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the ECN-581A-QM57 may result in permanent damage to the ECN-581A-QM57 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECN-581A-QM57. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECN-581A-QM57 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- *Wear an anti-static wristband*: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- *Self-grounding*: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- *Use an anti-static pad*: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- *Only handle the edges of the electrical component*: When handling the electrical component, hold the electrical component by its edges.

C.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the ECN-581A-QM57, please follow the guidelines below.

C.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the ECN-581A-QM57, please read the details below.

- The interior of the ECN-581A-QM57 does not require cleaning. Keep fluids away from the ECN-581A-QM57 interior.

- Be cautious of all small removable components when vacuuming the ECN-581A-QM57.
- Turn the ECN-581A-QM57 off before cleaning the ECN-581A-QM57.
- Never drop any objects or liquids through the openings of the ECN-581A-QM57.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the ECN-581A-QM57.
- Avoid eating, drinking and smoking within vicinity of the ECN-581A-QM57.

C.2.2 Cleaning Tools

Some components in the ECN-581A-QM57 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the ECN-581A-QM57.

- *Cloth* – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the ECN-581A-QM57.
- *Water or rubbing alcohol* – A cloth moistened with water or rubbing alcohol can be used to clean the ECN-581A-QM57.
- *Using solvents* – The use of solvents is not recommended when cleaning the ECN-581A-QM57 as they may damage the plastic parts.
- *Vacuum cleaner* – Using a vacuum specifically designed for computers is one of the best methods of cleaning the ECN-581A-QM57. Dust and dirt can restrict the airflow in the ECN-581A-QM57 and cause its circuitry to corrode.
- *Cotton swabs* - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- *Foam swabs* - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

D

Hazardous Materials Disclosure

D.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated "Environmentally Friendly Use Period" (EFUP). This is an estimate of the number of years that these substances would "not leak out or undergo abrupt change." This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						