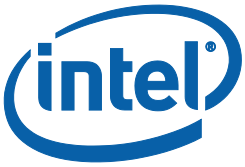

Getting Started with the Intel® DQ57TM UEFI 2.3.1 Development Kit

Welcome to the Getting Started Guide for the Intel® DQ57TM UEFI 2.3.1 Development Kit (development kit). The development kit helps BIOS engineers design, test, and debug Unified Extensible Firmware Interface (UEFI) drivers and applications on a UEFI 2.3.1-compliant system. You can download the developer kit from the Intel Web site for UEFI Driver and Application Tool Resources.

There are many benefits of using the development kit:

- Supports Intel® UDK 2010 and UEFI 2.3.1 development and debug
- Long lifetime hardware platform support from Intel
- All hardware and software components are commercially available without a nondisclosure agreement (NDA)
- Helps developers build platforms on demand for development, debugging, or validation
- Can be purchased pre-assembled or built from commodity hardware

This Getting Started Guide provides an overview of how to upgrade or install the developer platform UEFI BIOS image on an Intel® DQ57TM UEFI 2.3.1 Development Kit.

Contents

1 Before You Begin

Before you begin upgrading or installing a UEFI 2.3.1-compliant BIOS image on your development kit, you will need the following skills, components, and tools:

- **PC assembly skills.**
- **Host PC with Microsoft Windows XP*** or another appropriate Windows* operating system. (This system supports the optional Dediprog* software tool.)
- ***Intel® DQ57TM UEFI 2.3.1 Development Kit*** target PC, assembled with components from the supported hardware component list.
- **USB FAT-formatted flash drive.**
- **SPI flash programmer** with test clip and software utility (optional).

The following figure shows the installation environment for the development kit:

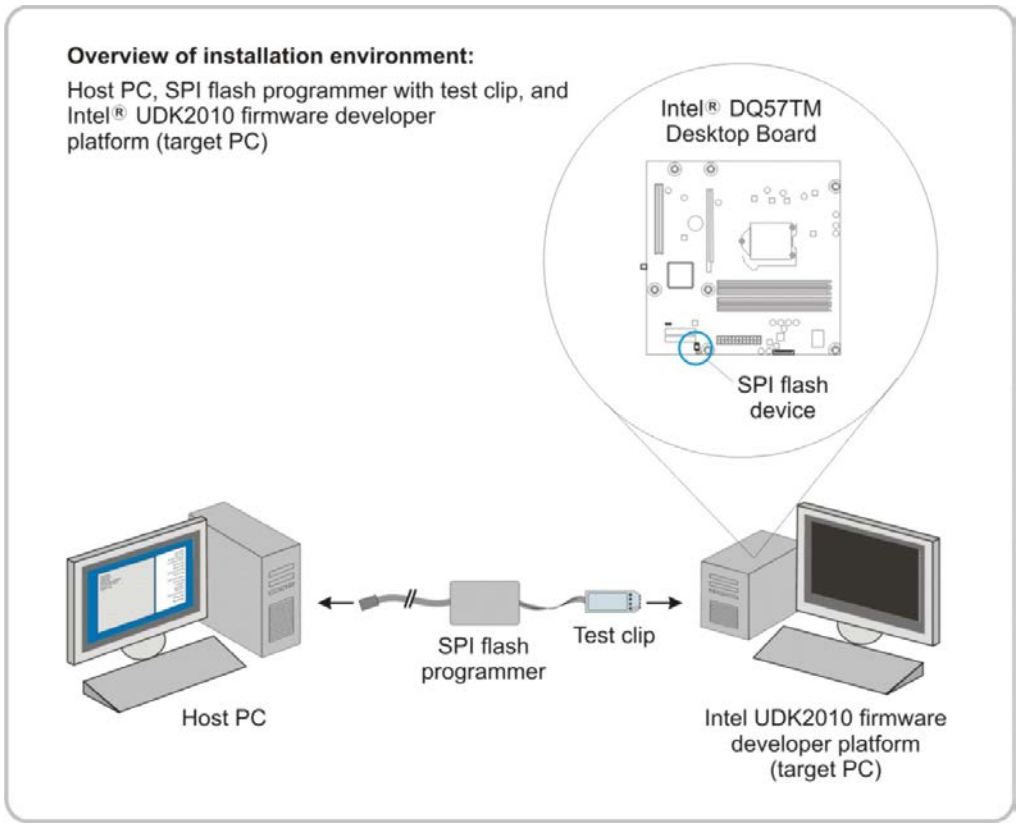

Figure 1-1. Overview of the SPI Flash Programming Environment

The development kit includes three BIOS images. You *must* use one of these BIOS images:

`UDK2010_TM_B11_release.rom`	The release version of the BIOS, with debugging features disabled. This is the recommended, default image for development.
`UDK2010_TM_B11_debug.rom`	The *debug* version of the BIOS, with debug output redirected to the serial port (**COM1**). This is the image recommended for general debugging.
`UDK2010_TM_B11_srcdbg.rom`	The *source level debug* version of the BIOS, which supports the Intel® UEFI Development Kit Debugger Tool using the serial port (**COM1**). This image is recommended only for advanced debugging.

CAUTION: You must use one of the supported BIOS images included with the development kit. Installing an unsupported BIOS image on the motherboard may render the motherboard unusable until it is re-flashed with a backup copy of the motherboard's original BIOS. Use only supported components with the Intel® DQ57TM UEFI 2.3.1 Development Kit.

The development kit also includes:

- *Intel DQ57TM Firmware Update Utility*: `FirmwareUpdate.efi`. The utility is part of the development kit.
- User documentation, including this getting started guide and the release notes.

Supported and recommended hardware components

Table 1-1 describes the supported and recommended PC hardware components for the Intel® DQ57TM UEFI 2.3.1 Development Kit. You *must* use the motherboard and processor listed in the table in order to upgrade or install a UEFI 2.3.1-compliant BIOS image on the development kit.

CAUTION: Installing the BIOS image on an unsupported motherboard may render the motherboard unusable until it is re-flashed with a backup copy of the motherboard's original BIOS. Use only supported components with the Intel® DQ57TM UEFI 2.3.1 Development Kit.

Table 1-1. Supported and recommended hardware components

Supported hardware and firmware	Notes
Intel® DQ57TM Desktop Board	**You must use the commercially available Intel DQ57TM Desktop Board.**
2nd generation Intel® Core™ i5-650 Processor with heat sink	**You must use a 2nd gen Intel Core i5-650 processor with heat sink.** This processor is available commercially.
Intel® DQ57TM UEFI 2.3.1 Development Kit BIOS image	**You must use one of the BIOS images** from the Intel® DQ57TM UEFI 2.3.1 Development Kit. The BIOS image replaces the Intel® DQ57TM Desktop Board BIOS and enables UEFI 2.3.1 support. The BIOS images in the developer's kit have been validated to work only with the specific processor and motherboard listed above.
Serial cable	**You must use a DB-9 male to 10-pin IDC socket serial cable** for the serial port on the Intel DQ57TM Desktop Board.
Recommended hardware	**Notes**
4GB (2 x 2GB) DDR3 1333 memory	The Intel DQ57TM Desktop Board supports up to 16 GB RAM. You should use at least 2 GB of DDR3 memory in your development build.
500 W Power supply	A power supply that meets the requirements of the Intel DQ57TM Desktop Board is adequate. However, consider installing a minimum 500W power supply.
SATA HDD 500GB	You should install a hard drive that has at least 500 GB. Testing hard drives over 2.2TB requires the use of UEFI.
SATA DVD-RW Optical Disk Drive or other install media	Most developers use a DVD drive to perform this type of UEFI build. Make sure you have an appropriate DVD drive or other media (such as a network connection or USB drive) appropriate for installing the operating system.
Micro-ATX Chassis	A chassis is not required. However, if you want the build to be portable, consider using a micro-ATX or similar chassis.
USB keyboard and USB mouse	Including a USB keyboard and mouse with the developer's platform allows you to input UEFI shell commands and navigate BIOS menus.
Monitor	A monitor is recommended in order to view console output.

SPI flash programmer to reflash the BIOS

The SPI flash programmer is optional but might be needed to reflash the BIOS image. This is because the development and testing of pre-production products can corrupt the flash image. If the flash image becomes corrupted, you may have to perform a hardware-based reprogramming of the SPI flash part.

To reprogram the SPI flash part, you will need a third-party SPI flash programmer, test clip, and corresponding software application. These elements allow you to transfer

the BIOS image from the host PC to the flash device on the firmware developer platform (the *target PC*).

SPI reflash instructions in this document are based on products from Dediprog Technology Co, Ltd.*, which have been verified to work with the supported hardware.

2 Firmware Upgrade or Installation

If you have a system running properly on an older version of the Intel® DQ57TM UEFI 2.3.1 Development Kit BIOS, you can simply upgrade the firmware.

If your system isn't running properly, or this is the first time you are flashing the development kit BIOS onto a retail motherboard, you should follow the complete firmware installation procedure. The full installation procedure takes about 30 minutes if you are a new user, and about 5 minutes if you are experienced.

You will need to be able to identify key elements on the Intel® DQ57TM Desktop Board in order to update or install a BIOS. Figure 2-1 show these elements.

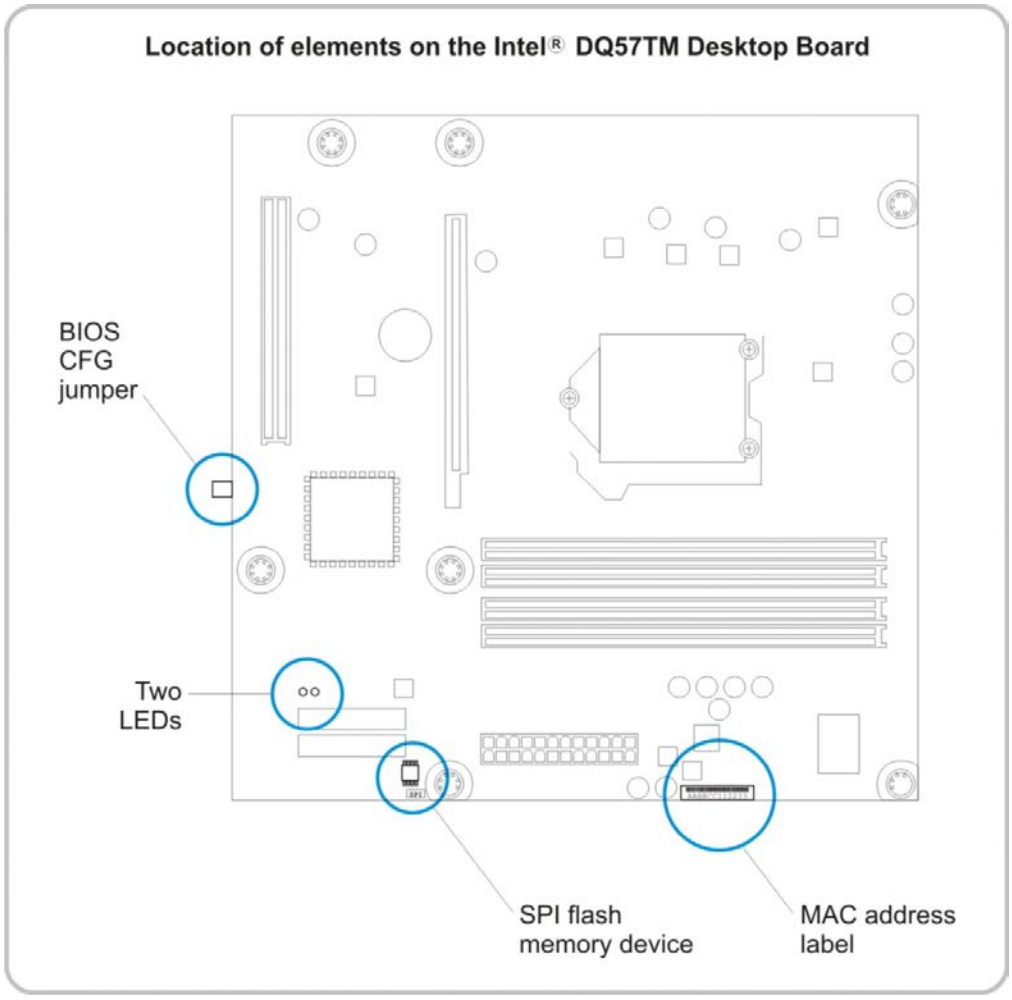

Figure 2-1. Location of BIOS CFG jumper, LEDs, SPI device, and MAC address.

Firmware upgrade (software based)

The `FirmwareUpdate.efi` utility lets you update the firmware from the UEFI Shell. You do not need a hardware-based SPI programmer for this update. Here are the general steps you would follow:

1. Set motherboard in configuration mode.
2. Power up the target PC and boot to the UEFI shell.
3. Use the UEFI shell firmware update utility (`FirmwareUpdate.efi`) to patch the BIOS with the motherboard's MAC address. Your command line will look similar to the following, with the ROM name and MAC address fields replaced with your system's specific information:

```
FirmwareUpdate –f UDK2010_TM_B11_xxxx.rom –m 0011AA33CC55
```

NOTE: The system will reset after the update has been applied.

NOTE: Upgrading the flash will restore Setup and Boot Manager settings to their default values. Any previous changes to Setup or Boot Manager values will be cleared in the upgrade process.

4. After the platform resets, verify that the BIOS functions correctly by entering setup, verifying the BIOS version string matches the expected value for the new BIOS version, and booting to the UEFI shell.
5. Set the motherboard back to normal mode.

Once a BIOS update is verified, the *Intel® DQ57TM UEFI 2.3.1 Development Kit* is ready for use in UEFI development.

Detailed steps for this procedure are explained in the Intel® DQ57TM UEFI 2.3.1 Development Kit Firmware Installation Guide.

Firmware installation (hardware based)

The complete firmware installation procedure requires the hardware-based SPI flash programmer. Here are the general steps for a complete firmware installation:

1. Set the motherboard in configuration mode.
2. Download the development kit BIOS images, firmware update tool, and user documentation.
3. Install the Dediprog software utility on the host PC.
4. Prepare the development kit (target PC) for the BIOS update.
5. Create a backup copy of the original BIOS image on the target PC's motherboard.
6. Erase the existing BIOS from the target PC's motherboard.
7. Write the development kit BIOS image to the target PC.
8. Reassemble the target PC.
9. Power up the target PC and boot to the UEFI shell.
10. Use the UEFI shell firmware update utility (`FirmwareUpdate.efi`) to patch the BIOS with the motherboard's MAC address. Your command line will look similar to the following, with the MAC address field replaced with your motherboard's MAC address:
    `FirmwareUpdate –m 0011AA33CC55`
11. After the platform resets, verify that the BIOS functions correctly by entering setup and booting to the UEFI shell.
12. Set motherboard back to normal mode.

Once a BIOS update is verified, the *Intel® DQ57TM UEFI 2.3.1 Development Kit* is ready for use in UEFI development.

Detailed steps for this procedure are explained in the Intel® DQ57TM UEFI 2.3.1 Development Kit Firmware Installation Guide.

Legacy BIOS support

Starting with BIOS Revision SDV.TM.B8, you can enable or disable the Compatibility Support Module (CSM) through the ***Device Manager -> Boot*** setup menu. You can do this without reflashing the BIOS. This lets you manage legacy BIOS support for UEFI Class 2 and Class 3 systems. This also lets you manage legacy issues with pre-boot video for the primary display output.

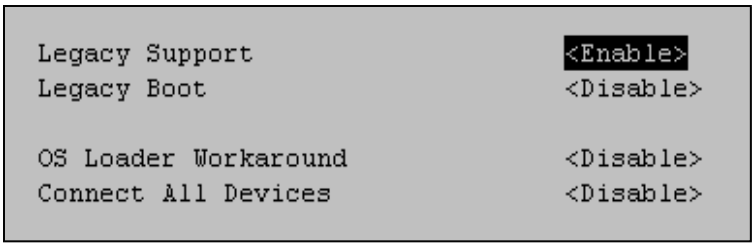

Figure 1-2. Legacy support field in the Boot setup menu

Information about legacy support is found in the Intel® DQ57TM UEFI 2.3.1 Development Kit Firmware Installation Guide.

3 User and Reference Documentation

The development kit includes several types of user documentation to help you:

- Intel® DQ57TM UEFI 2.3.1 Development Kit Getting Started Guide (this document): `UEFIDevKit_DQ57TM_Getting_Started_Guide.pdf`
- Intel® DQ57TM UEFI 2.3.1 Development Kit Firmware Installation Guide. `UEFIDevKit_DQ57TM_Firmware_Installation_Guide.pdf`
- Intel® DQ57TM UEFI 2.3.1 Development Kit Release Notes: `ReleaseNotes.txt`
- Instructions for the Firmware Update tool: `ReadMe.txt`
- Instructions for enabling source debug support using the Intel® UEFI Development Kit Debugger Tool: `SourceLevelDebug.txt`
- Software Tools License Agreement: `EULA.pdf`

Although you can assemble a platform yourself, you can also purchase a pre-assembled system from Hard Drives Northwest (recommended).

For information about ordering third-party Dediprog hardware and software tools, visit the Dediprog website.

For information related to UEFI software development, visit the Develop section of the Intel UEFI Community Web site at http://intel.com/udk

For information about the UEFI specification, visit the UEFI home page at www.uefi.org/home

Legal Information