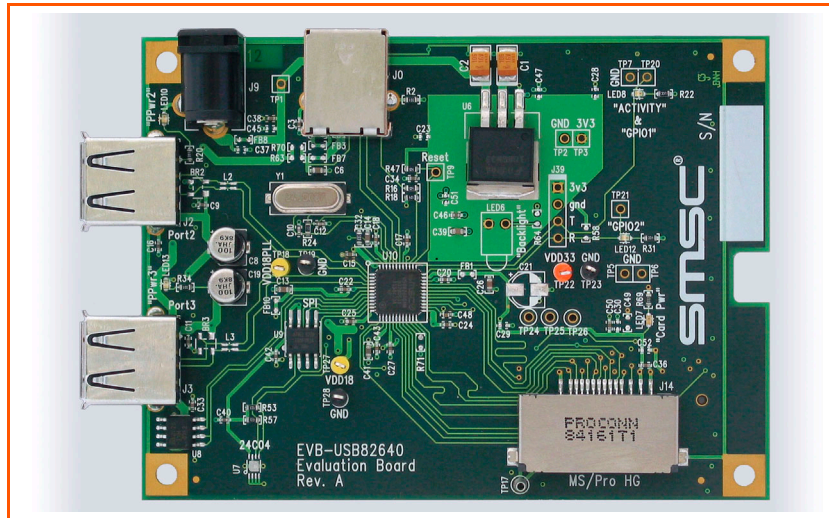




EVB-USB82640 Evaluation Board Revision A User Manual



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1 Overview

The SMSC USB82640 Evaluation Board Revision A contains an Ultra Fast USB 2.0 Multi-Format Flash Media Controller and a USB Hub Combo. The USB82640 Evaluation Board (EVB-USB82640) demonstrates a standalone application platform for developers of the following applications: Flash Media Card Reader/Writer, printers, desktop and mobile PCs, consumer A/V, and flat panel displays.

The USB82640 is compatible with the following:

- Microsoft Vista[®]
- Windows[®] XP
- Windows ME
- Windows 2000 SP4
- Apple[®] OS X
- Linux[®] Mass Storage Class Drivers

1.1 Features

- 48-pin QFN (RoHS compliant) package.
- Supports these Media Types:
 - Secure Digital (SD[™])
 - Memory Stick[®] (MS) 4-bit/8-bit interfaces
 - Memory Stick PRO[™]
 - Memory Stick PRO-HG[™]
 - MultiMediaCard[™] (MMC) 4-bit/8-bit interfaces
- Two USB 2.0 downstream hub ports with individual port power and over-current sense.
- Supports external configuration
 - External SPI flash for USB downloadable firmware.
 - External I²C EEPROM for configuration options.
- Low cost 4-layer space saving design
- Operates from a single voltage (+5.0 VDC, regulated) 'wall wart' external power supply.
- Internal FET power switch for all media types.
- Multiple LED indicators
 - Activity LED indicator
 - Card power LED indicator
 - Optional +3.3 VDC power LED indicator
 - Port power LED
- Test header for firmware development and debug.
- Single crystal clock source
- Single onboard +3.3 VDC regulator.

1.2 General Description

The EVB-USB82640 is a demonstration and evaluation platform featuring the USB82640 Ultra Fast USB 2.0 Multi-Format Flash Media Controller and the USB Hub Combo on a 4-layer RoHS compliant printed circuit board. It is designed to support internal default settings and either an external I²C EEPROM for customized functionality or SPI flash for external firmware.

An 8-Mbit SPI flash device is populated on the evaluation board to provide firmware updates via USB by using the SMSC provided USBDM utility.

Default configuration can be changed by adding an EEPROM into the provided footprint. However, the SPI flash device has to first be removed to avoid signaling conflicts. [Figure 1.1, "Top and Bottom Level Silk Screen and Copper Layers"](#) shows the top and bottom level silk screen and copper layer.

1.3 Functional Block Diagram

The USB82640 consists of the blocks shown in the diagram below and described in the following sections.

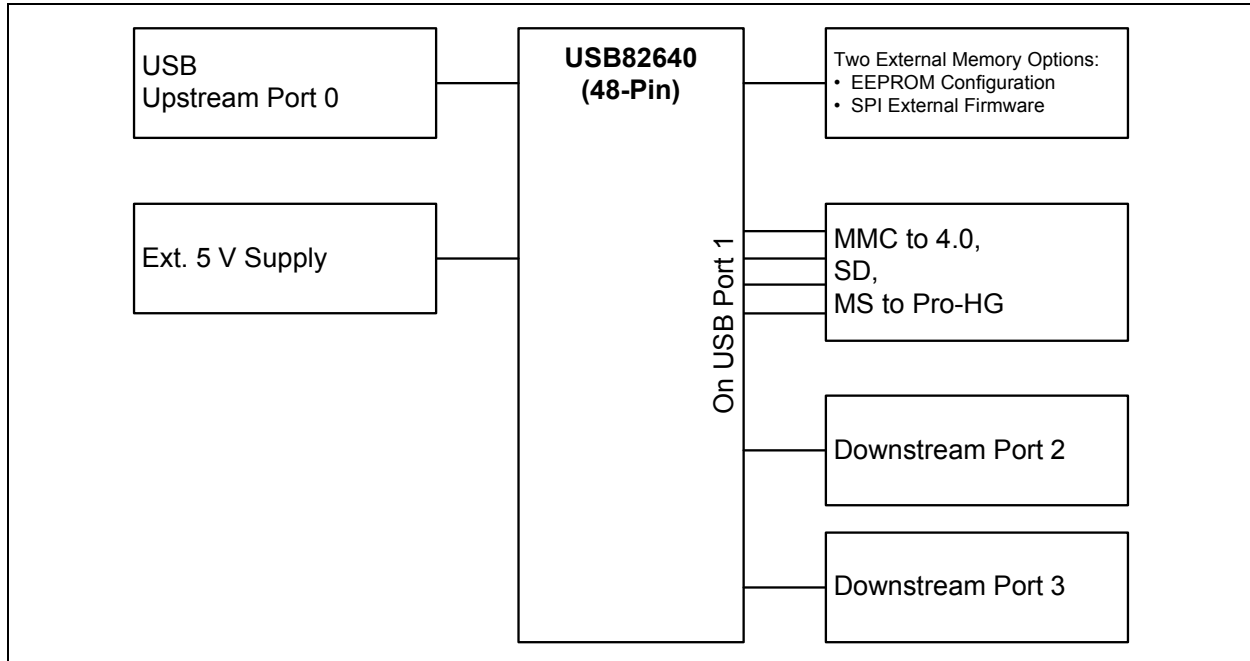


Figure 1.2 Functional Block Diagram

2 Getting Started

The EVB-USB82640 is configured by internal default registers. In this configuration it operates as a USB 2.0 combo device with a three port USB Hub (two external ports) and a Flash Media Controller with SMSC standard VID/PID/DID settings.

2.1 Configuration

The EVB-USB82640 is designed for flexible configuration solutions. It demonstrates functionality with default internal register settings, USB host downloadable configuration EEPROM, or USB host downloadable external firmware to a SPI flash.

2.1.1 Configuration Source - Internal default

When the EVB-USB82640 does not detect an EEPROM or a valid SPI flash image upon power-up, the EVB-USB82640 uses internal default register settings; it sets the Vendor ID, Product ID, Language ID, and Device ID, and a few other choices from internal ROM code.

2.1.2 Configuration Source - External EEPROM

Upon power-up the EVB-USB82640 looks for an attached EEPROM on its I²C interface. The EVB-USB82640 provides a footprint where an external EEPROM (embedded in a DFN8 package of type 24C04) can be soldered to customize the Media Controller's settings. The EEPROM contains 512 bytes of user customizable settings. Among the settings are Vendor ID, Product ID, and Device ID numbers. For details on the fields please see the USB82640 Software Release notes. To use the EEPROM the SPI flash chip U9 must first be removed.

2.1.3 Configuration Source - External SPI Flash

The installed SPI flash is initially blank. In this scenario the internal firmware will execute. External firmware updates can be downloaded via USB using the SMSC utility USBDM to the SPI flash. After downloading the EVB-USB82640 will execute out of the SPI flash.

2.1.4 Power Source - Self/Bus Powered

The EVB-USB82640 supports both self- and bus-powered operation. By default the EVB-USB82640 is populated for bus-powered operation. Refer to the table below for resistor population options to change the power source.

Table 2.1 Population Options for Self- or Bus-Powered Operation

POWER SOURCE	R63
Bus-Powered	Populate
Self-Powered (Default)	Do not Populate

2.1.5 Configuration Source - USB Upstream

The EEPROM supporting the USB82640 is configured via a USB cable connected to the upstream connector with a SMSC configuration tool named USBDM, see USB82640 Software Release Notes for details. USBDM allows for modification of Vendor ID, Product ID, Language ID, Device ID, and configuration settings see [Figure 2.1, "USBDM Configuration Interface"](#).

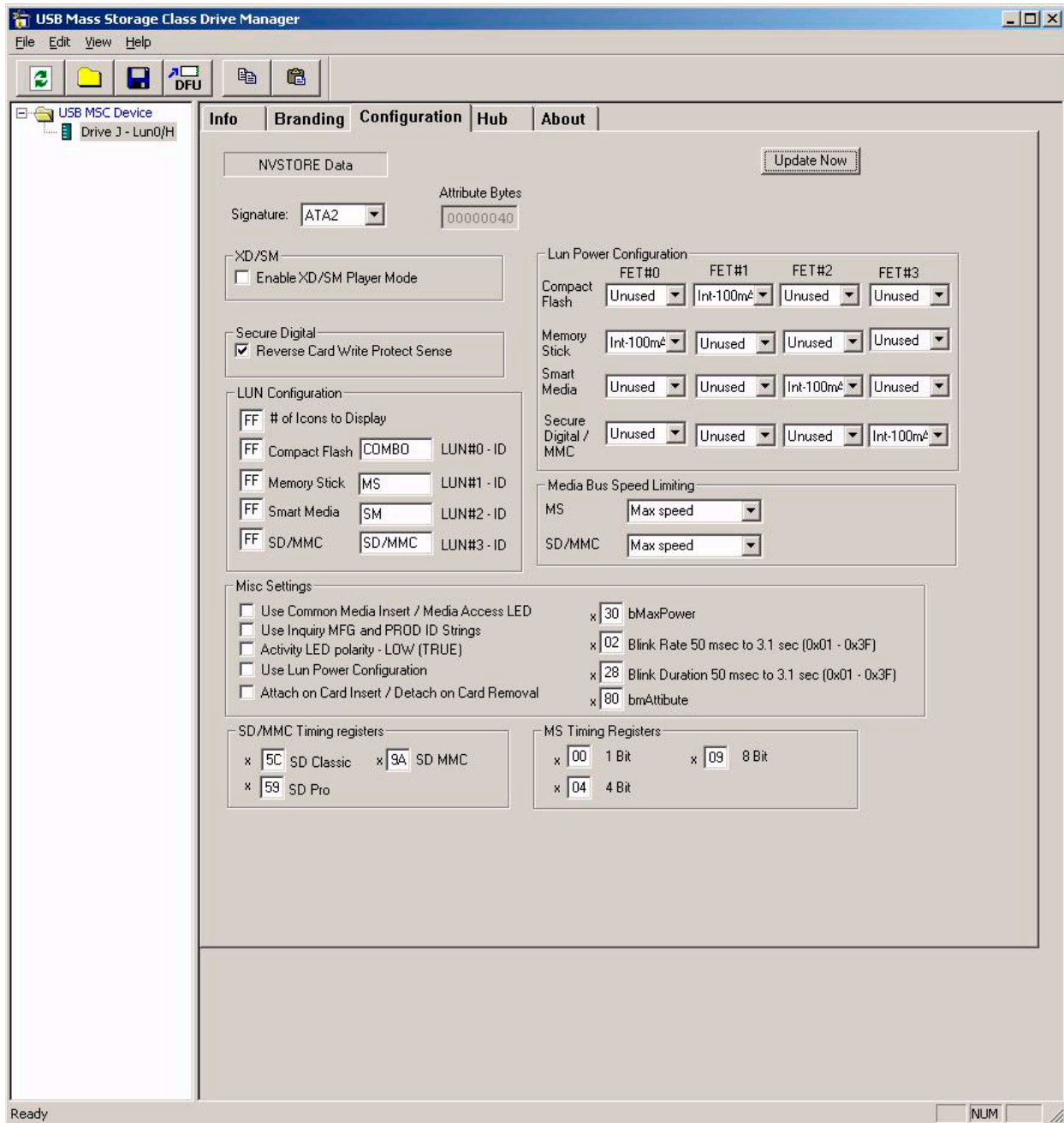


Figure 2.1 USBDM Configuration Interface

Table 2.2 Customer Revision History

REVISION LEVEL & DATE	SECTION/FIGURE/ENTRY	CORRECTION
Rev. 1.0 (11-20-09)	Initial release	

Further Information

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