

EVB-KSZ9477 Image Programming Guide

Rev 1.1

July 20, 2017

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1 Revision History

Revision	Date	Summary of Changes
1.0	02/23/2017	Initial revision.
1.1	07/20/2017	Added SD card preparation instructions

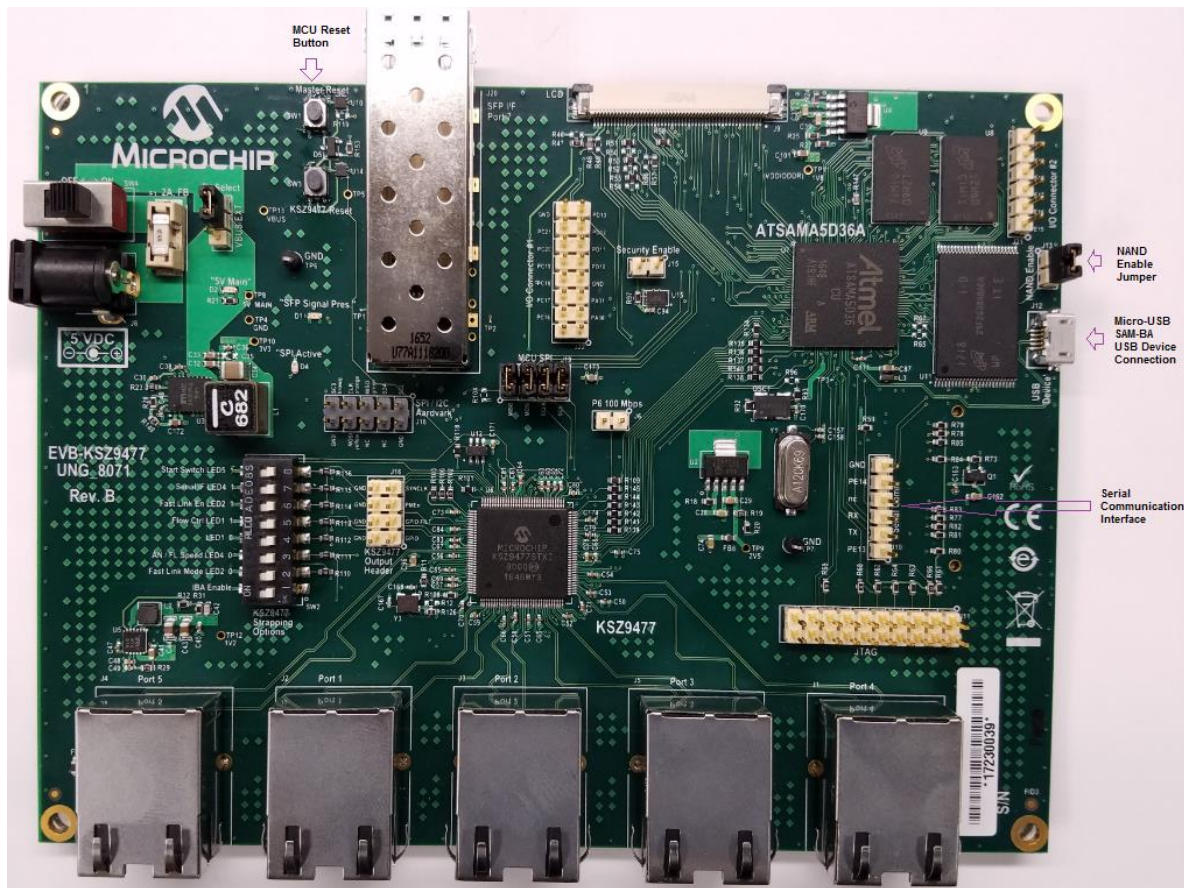
2 Introduction

The EVB-KSZ9477 (UNG8071) board can boot either from NAND flash or SD card. If SD card is present the EVB-KSZ9477 boots with SD card else boots with NAND flash.

This document describes how to program the EVB-KSZ9477 on board NAND flash and how to prepare bootable SD card. Any one of the method can be used to boot the EVB-KSZ9477.

The image binaries and scripts package *EVB-KSZ9477_Demo_Images_Vxx.xx.xx.zip* required for the image programming needs to be downloaded from Microchip.com KSZ9477 product page. The xx.xx.xx is the version of the switch software.

3 Evaluation Board – EVB-KSZ9477



4 NAND Flash Programming

4.1 NAND Flash Programming on Linux

The procedure below is tested with the Ubuntu x64 14.04.05 LTS distribution.

1. Open a terminal window and unzip file to a folder (ex: /home)

```
$ unzip EVB-KSZ9477_Demo_Images_Vxx.xx.xx.zip
$ cd EVB-KSZ9477_Demo_Images/linux
```

2. Connect the micro-USB (J12) connector of the EVB-KSZ9477 to the Linux PC.
3. Connect the 5V power to EVB-KSZ9477 board
4. Remove the NAND enable (J13) jumper and hit the MCU Reset button (the /dev/ttyACM0 created. You can see this by executing command '\$ tail -f /var/log/kernel.log')
5. Insert NAND enable (J13) jumper
6. If you are using x86 system then run the 'flash_board' script in the terminal window. If you are using x64 system then run execute 'flash_board_x64' script.

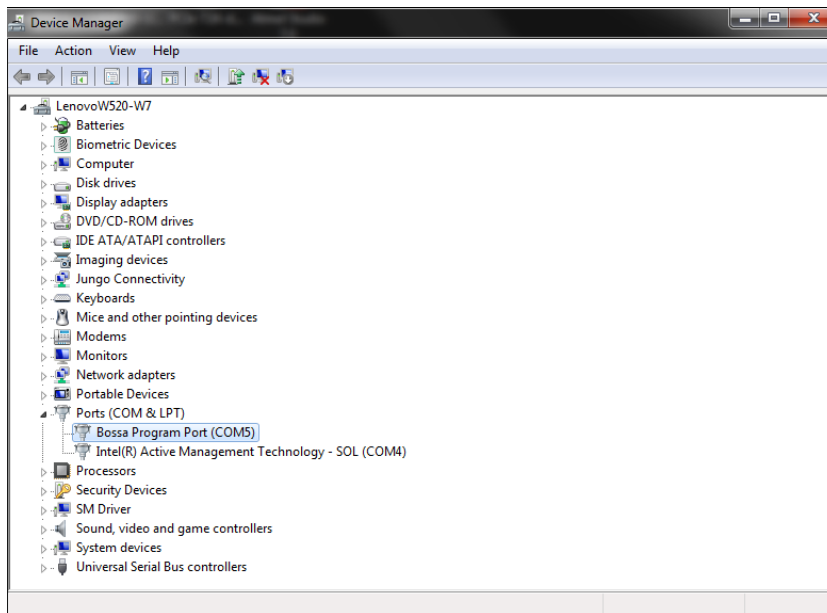
```
$ sudo flash_board
Or
$ sudo flash_board_x64
```

7. Once you see "=== DONE. ===" message you hit the MPU Reset button to reboot the EVB-KSZ9477 board.

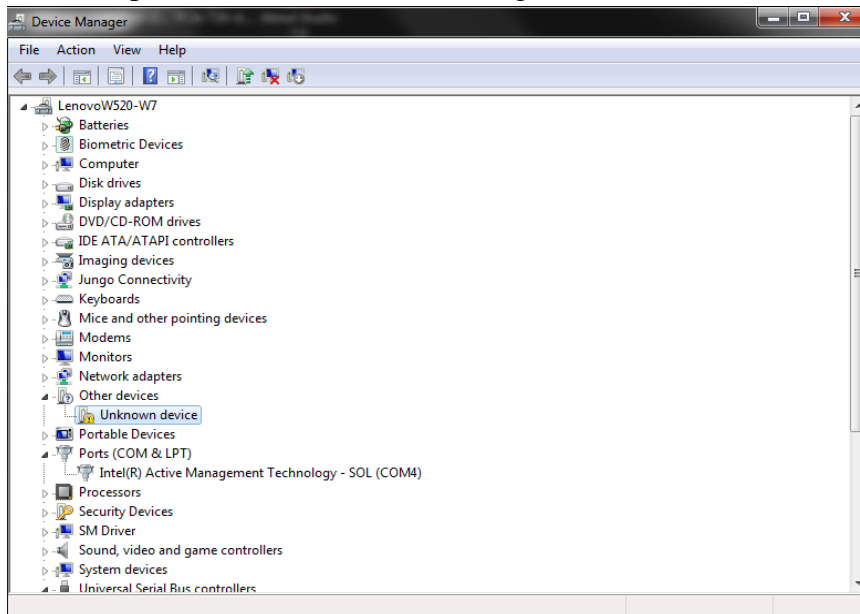
4.2 Flash Programming on Windows

This procedure is tested on Win7 x64 and Win10 x64 versions of Windows.

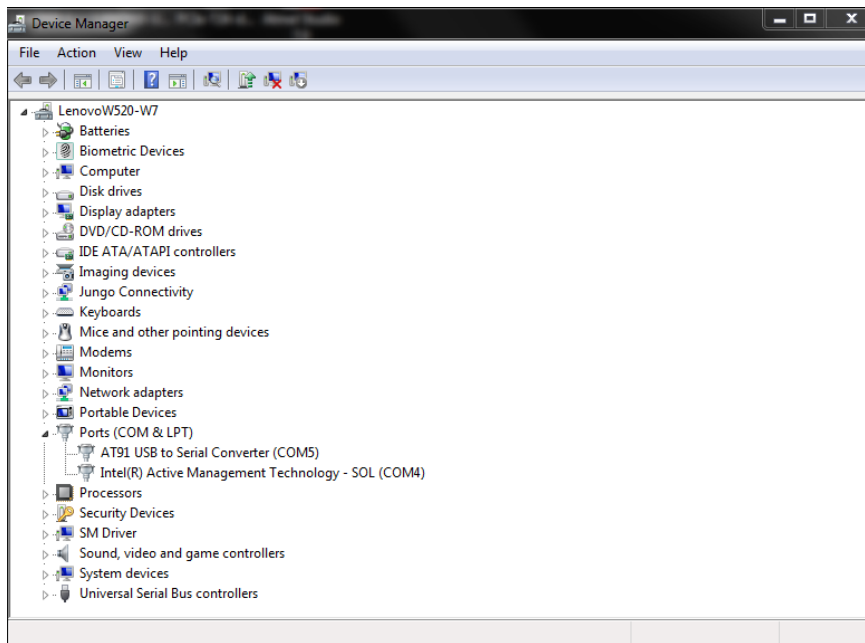
1. Unzip the zip file to a folder (ex: C:\tmp)
2. Open "Command Prompt" and change the EVB-KSZ9477_Demo_Images\windows folder (ex: c:\tmp\EVB-KSZ9477_Demo_Images\windows)
3. Connect the micro-USB (J12) connector of the EVB-KSZ9477 to the Windows PC.
4. Connect the 5V power to EVB-KSZ9477 board.
5. Remove the NAND enable (J13) jumper and hit the reset MCU Reset button.
6. When PC has internet connection, it will install "Bossa Program Port" automatically. (Port number may be different on the system.)



7. When PC doesn't have internet connection, find "Unknown device" under Other devices in Device Manager and install driver from EVB-KSZ9477_Demo_Images\windows\sam-ba_3.1.4\driver folder (ex: c:\tmp\EVB-KSZ9477_Demo_Images\windows\sam-ba_3.1.4\driver).



8. After successful installation the device manager will show "AT91 USB to Serial Converter" under Ports.



9. Please wait for few seconds before executing below command after power-up the board.
Make sure the device driver installation is complete.
10. Insert NAND enable (J13) jumper
11. Execute “flash_board.bat” under EVB-KSZ9477_Demo_Images\windows from
“Command Prompt” to program the NAND flash.
 > cd EVB-KSZ9477_Demo_Images\windows
 > flash_board.bat


```

Command Prompt

Wrote 20480 bytes at address 0x011f9000 (90.84%)
Wrote 8192 bytes at address 0x011fe000 (90.91%)
Wrote 20480 bytes at address 0x01200000 (91.09%)
Wrote 20480 bytes at address 0x01205000 (91.26%)
Wrote 20480 bytes at address 0x0120a000 (91.44%)
Wrote 20480 bytes at address 0x0120f000 (91.62%)
Wrote 20480 bytes at address 0x01214000 (91.80%)
Wrote 20480 bytes at address 0x01219000 (91.97%)
Wrote 6144 bytes at address 0x0121e000 (92.03%)
Skipped 1 empty page(s) at address 0x0121f800
Wrote 20480 bytes at address 0x01220000 (92.22%)
Wrote 20480 bytes at address 0x01225000 (92.40%)
Wrote 20480 bytes at address 0x0122a000 (92.58%)
Wrote 20480 bytes at address 0x0122f000 (92.76%)
Wrote 20480 bytes at address 0x01234000 (92.93%)
Wrote 20480 bytes at address 0x01239000 (93.11%)
Wrote 8192 bytes at address 0x0123e000 (93.18%)
Wrote 20480 bytes at address 0x01240000 (93.36%)
Wrote 20480 bytes at address 0x01245000 (93.54%)
Wrote 20480 bytes at address 0x0124a000 (93.71%)
Wrote 20480 bytes at address 0x0124f000 (93.89%)
Wrote 20480 bytes at address 0x01254000 (94.07%)
Wrote 20480 bytes at address 0x01259000 (94.25%)
Wrote 6144 bytes at address 0x0125e000 (94.30%)
Skipped 1 empty page(s) at address 0x0125f800
Wrote 20480 bytes at address 0x01260000 (94.50%)
Wrote 20480 bytes at address 0x01265000 (94.67%)
Wrote 20480 bytes at address 0x0126a000 (94.85%)
Wrote 20480 bytes at address 0x0126f000 (95.03%)
Wrote 20480 bytes at address 0x01274000 (95.21%)
Wrote 20480 bytes at address 0x01279000 (95.38%)
Wrote 8192 bytes at address 0x0127e000 (95.45%)
Wrote 20480 bytes at address 0x01280000 (95.63%)
Wrote 20480 bytes at address 0x01285000 (95.81%)
Wrote 20480 bytes at address 0x0128a000 (95.99%)
Wrote 14336 bytes at address 0x0128f000 (96.11%)
Skipped 27 empty page(s) at address 0x01292800
Wrote 4096 bytes at address 0x012a0000 (96.63%)
Skipped 62 empty page(s) at address 0x012a1000
Wrote 20480 bytes at address 0x012c0000 (97.90%)
Wrote 20480 bytes at address 0x012c5000 (98.08%)
Wrote 20480 bytes at address 0x012ca000 (98.26%)
Wrote 20480 bytes at address 0x012cf000 (98.44%)
Wrote 20480 bytes at address 0x012d4000 (98.62%)
Wrote 20480 bytes at address 0x012d9000 (98.79%)
Wrote 8192 bytes at address 0x012de000 (98.86%)
Wrote 20480 bytes at address 0x012e0000 (99.04%)
Wrote 20480 bytes at address 0x012e5000 (99.22%)
Wrote 16384 bytes at address 0x012ea000 (99.36%)
Skipped 36 empty page(s) at address 0x012ee000
Connection closed.

C:\tmp\EVB-KSZ9477_Demo_Images\windows>

```

If you see the below error please try re-running flash_board.bat

```

Command Prompt

Microsoft Windows [Version 6.1.7600]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\validation>cd C:\tmp\EVB-KSZ9477_Demo_Images\windows
C:\tmp\EVB-KSZ9477_Demo_Images\windows>flash_board.bat
C:\tmp\EVB-KSZ9477_Demo_Images\windows>.\sam-ba_3.1.4\sam-ba -x .\nandflash-usb.
qnl
Opening serial port 'COM7'
Error: Could not switch monitor on port 'COM7' to binary mode
Connection closed.

C:\tmp\EVB-KSZ9477_Demo_Images\windows>_

```


5 SD card Image Programming

The EVB-KSZ9477_Demo_Images_Vxx.xx.xx.zip contains SD card image that needs to be flashed to SD card. The image is present in EVB-KSZ9477_Demo_Images/images folder.

To flash images to SD card it is easier to use the Etcher tool. The tool can be downloaded from <https://etcher.io>. The Etcher tool provides same GUI interface on Windows as well as on Linux.

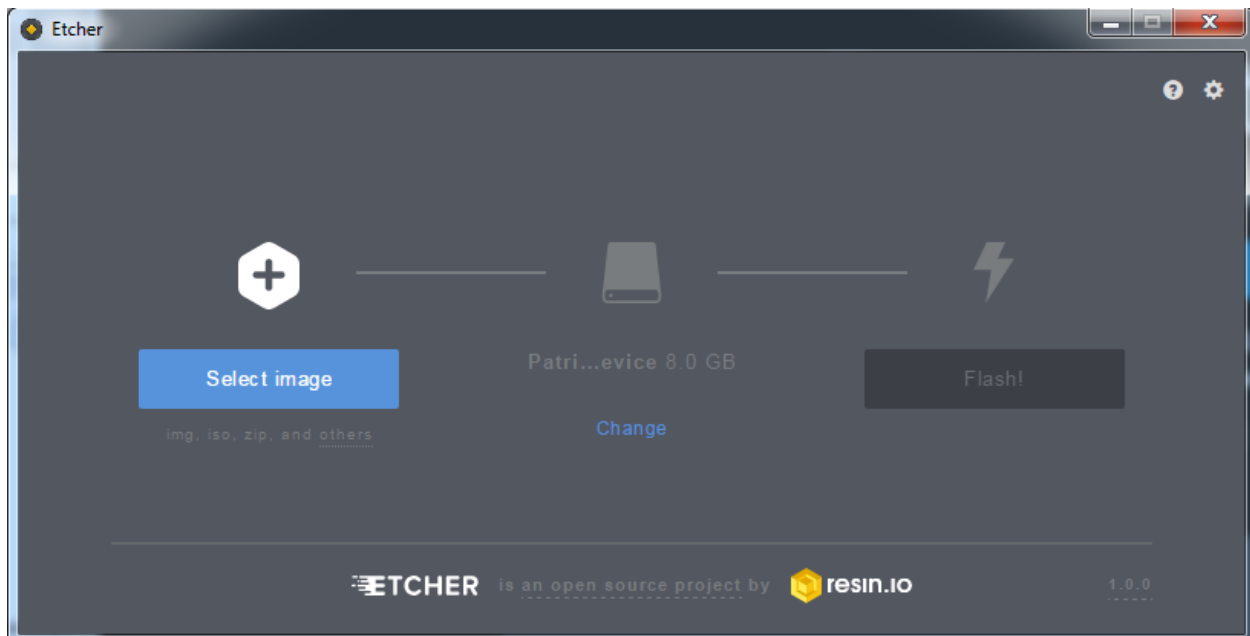
On Windows please download and install 32bit installer package. This procedure is tested on Win7x64.

On Linux please download x86 or x64 package depending on your Linux system. This procedure is tested on Ubuntu x64 14.04.05 LTS distribution.

5.1 SD card Programming

Note: SD card size 16GB or greater is required

1. Unzip the zip file to a folder (ex: C:\tmp)
2. The SD card image (sdcard.img) is located in EVB-KSZ9477_Demo_Images\images folder
(c:\tmp\EVB-KSZ9477_Demo_Images\images\sdcard.img) folder
3. Start the Etcher tool and select the image (sdcard.img). Please make sure appropriate SD card is selected. All the content of SD card will be erased.
4. Select flash! to program the SD card.



5. After successful completion of the programming the SD card can be used to boot the EVB-KSZ9477.

6 Booting the EVB-KSZ9477

The serial communication interface needs to be connected to PC using FTDI USB to serial (TTL-232R-3V3) cable. Also, connect the 5V power to EVB-KSZ9477 board.

6.1 Booting from NAND flash

After programming the NAND flash, if you hit MCU reset or power off/on the board boots with new image. The ‘buildroot login:’ will be prompted. You can enter ‘root’ and press enter to get command prompt.

6.2 Booting from SD card

After burning the SD card, insert the SD card in to the SD slot of EVB-KSZ9477. Reset the board either using MCU reset button or power off/on the board. The board boots with SD card and ‘buildroot login:’ will be prompted. You can enter ‘root’ and press enter to get command prompt.