

## i.MX53 SABRE Board - Windows Embedded Compact 7 – Build EBoot

### Summary:

This is a step-by-step how-to-guide that shows how to build a Windows Embedded Compact 7 Bootloader (eboot.nb0) image for the Freescale Semiconductor i.MX53 SABRE Board using a SD Card for booting.

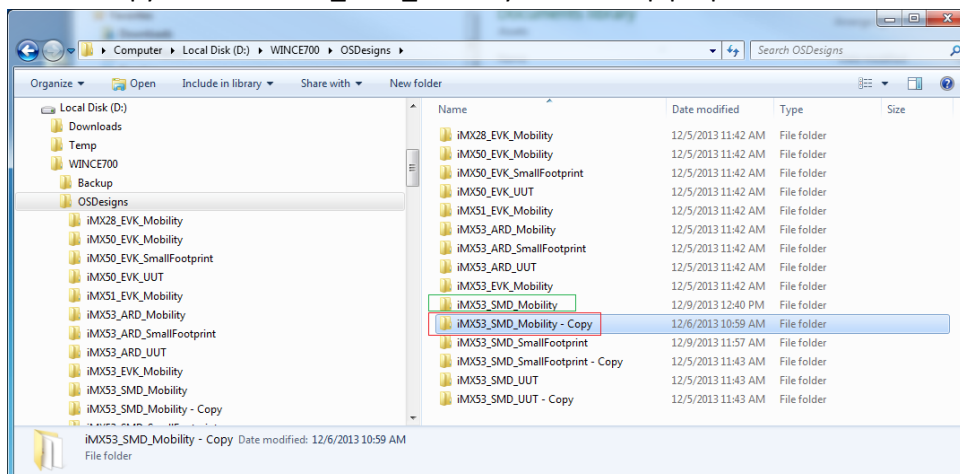
The pre-requisite are the following:

- Install Microsoft Visual Studio 2008
- Install Microsoft Visual Studio 2008: Service Pack 1
- Install Microsoft Visual Studio 2008: Windows Embedded Compact 7 (WEC7) ATL Update for Visual Studio 2008 SP1
- Install Microsoft Visual Studio 2008: Windows Embedded Compact 7 (WEC7) Evaluation Edition Add-In
- Install Microsoft Visual Studio 2008: Windows Embedded Compact 7 (WEC7) BSP for Freescale i.MX53 SABRE [*IMX53\_WCE700\_1105\_BSP\_SOURCE/WCE700\_11.05.03\_ER.zip*]
- Install Microsoft Visual Studio 2008: Windows Embedded Compact 7 (WEC7) Patch & MM for Freescale i.MX53 SABRE [*IMX\_WCE700\_1105\_TABLET\_MMCODES/WinCE700\_MX53\_SMD\_11.05.03\_ER\_MM.zip*]
- Install Microsoft Visual Studio 2008: Windows Embedded Compact 7 (WEC7) BSP Patch Update for Freescale i.MX53 SABRE [*IMX53\_WCE700\_1105\_BSP\_PATCH/WCE700\_MX53\_Patch\_1112.zip*]

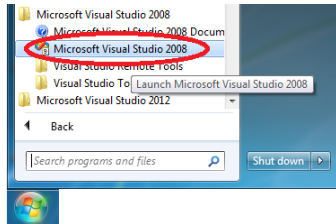
### Steps To Perform:

#### 1) Build WEC7 EBOOT Image

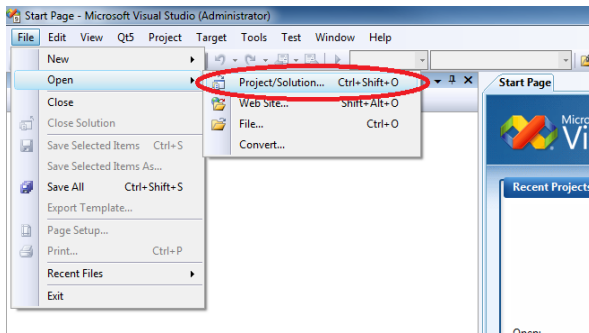
- a. Make a copy of the “iMX53\_SMD\_Mobility” for backup purposes.



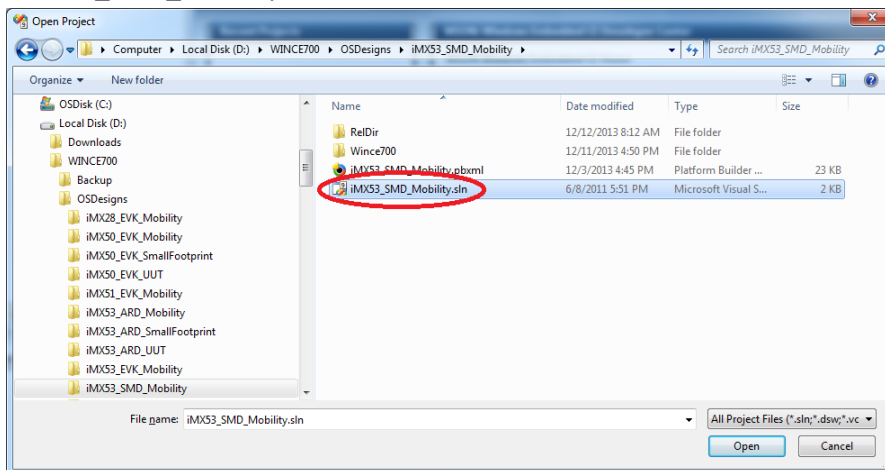
- b. Open Microsoft Visual Studio 2008 by selecting **START | All Programs | Microsoft Visual Studio 2008 | Microsoft Visual Studio 2008**.



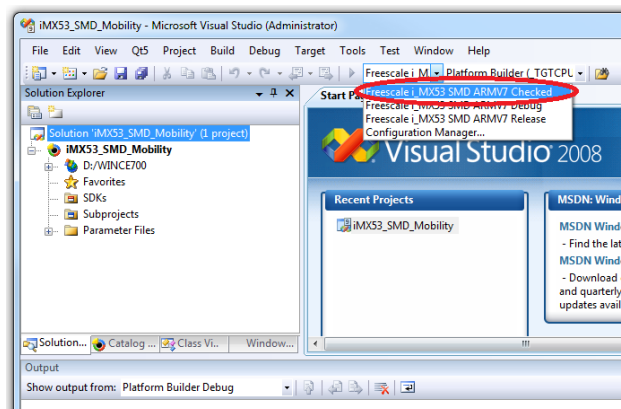
- c. Open an existing project by selecting **File | Open | Project/Solution...** from the menu bar.



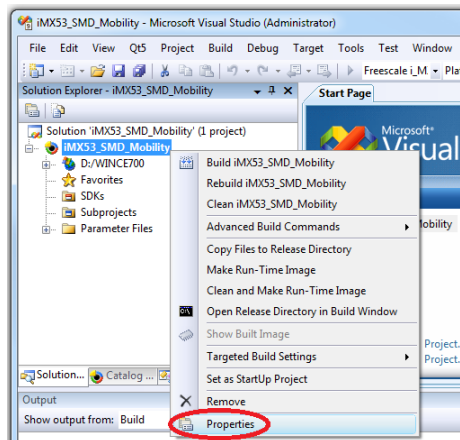
- d. Open the 'iMX53\_SMD\_Mobility' project provided by Freescale by clicking on "iMX53\_SMD\_Mobility.sln".



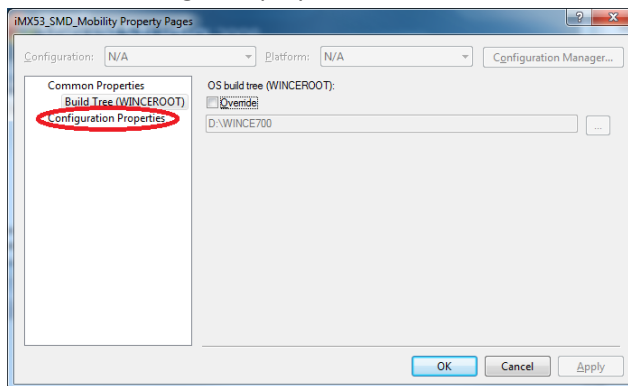
- e. From the 'Standard' tool bar select "Freescale i\_MX53 SMD ARMV7 Checked".



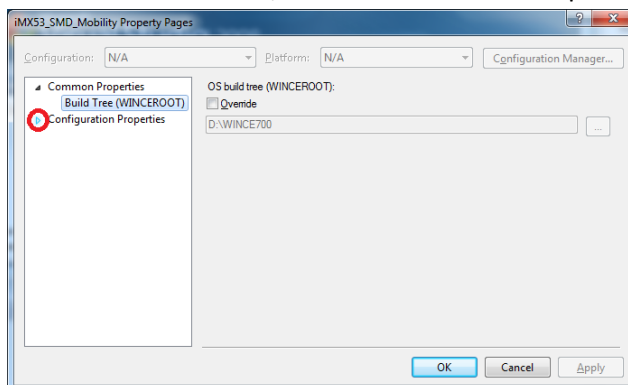
- f. Verify that SD/MMC environment variable is set.  
i. Right-click on the "iMX53\_SMD\_Mobility" project and select "Properties".



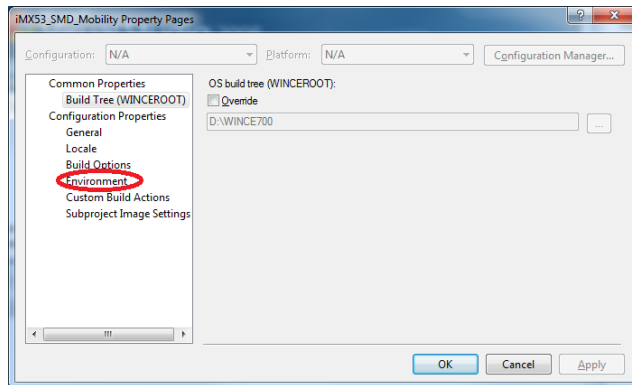
- ii. Once the dialog is displayed hover the mouse over “Configuration Properties”.



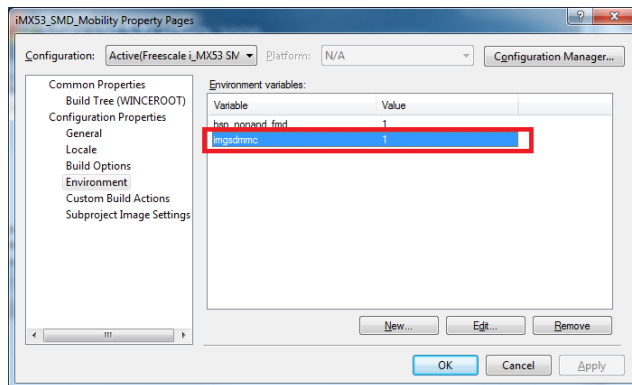
- iii. An arrow will be show, click on this arrow to expand the configuration properties.



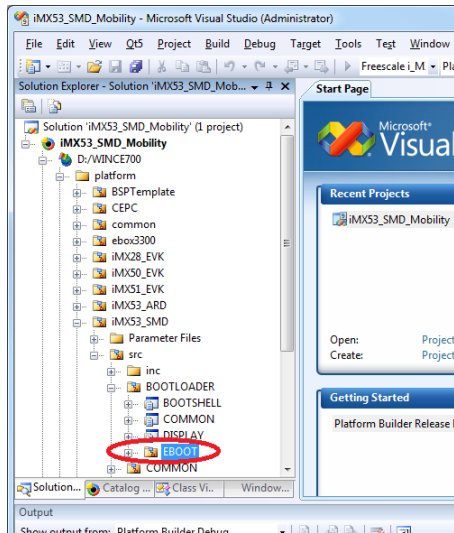
- iv. Next, click on “Environment”.



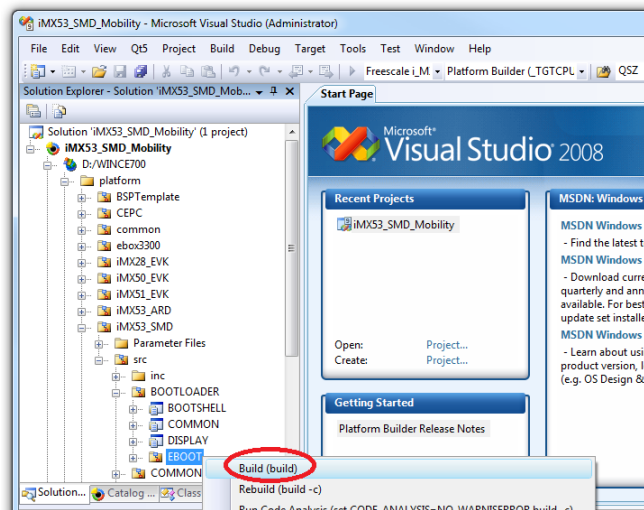
- v. Verify that the “imgsdmmc” value is set to “1”.



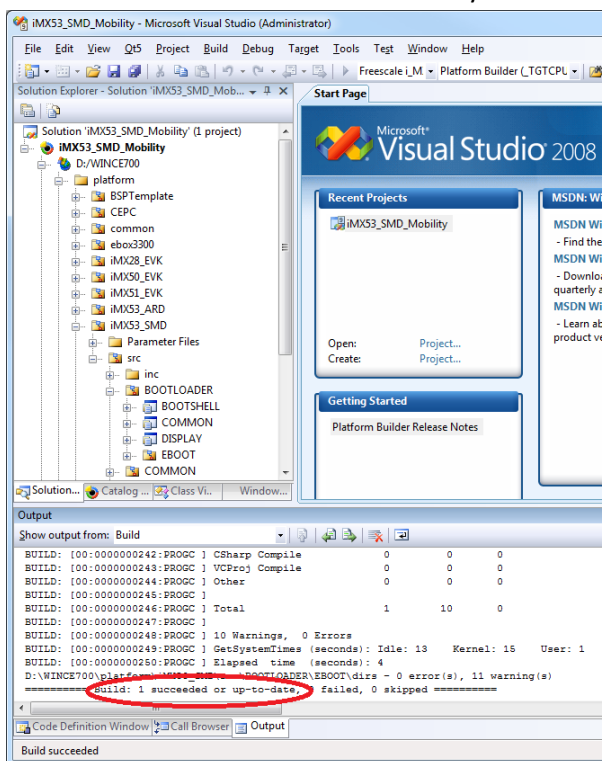
- g. Expand the solution until EBOOT is shown.



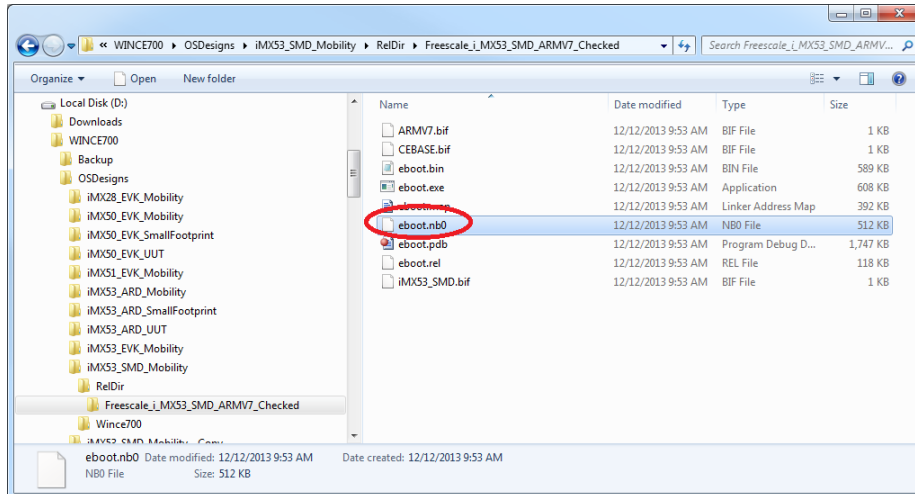
- h. Right click on “EBOOT” and select “Build (build)”.



- i. Wait until the build finishes successfully.



- j. Locate the output from the build  
 (D:\WINCE700\OSDesigns\iMX53\_SMD\_Mobility\RelDir\Freescale\_i\_MX53\_SMD\_ARMV7\_Checked\ebot.nb0). The specific file necessary will be named “eboot.nb0”.



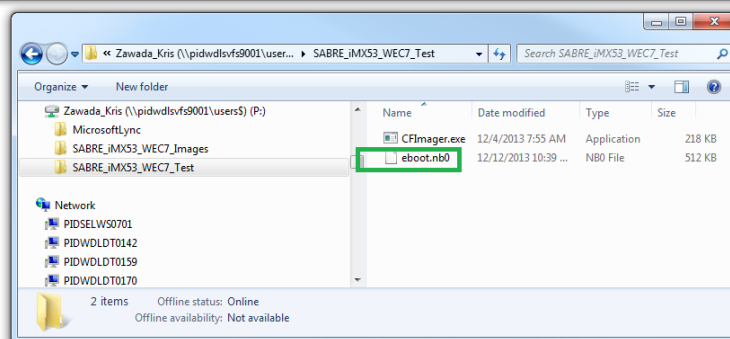
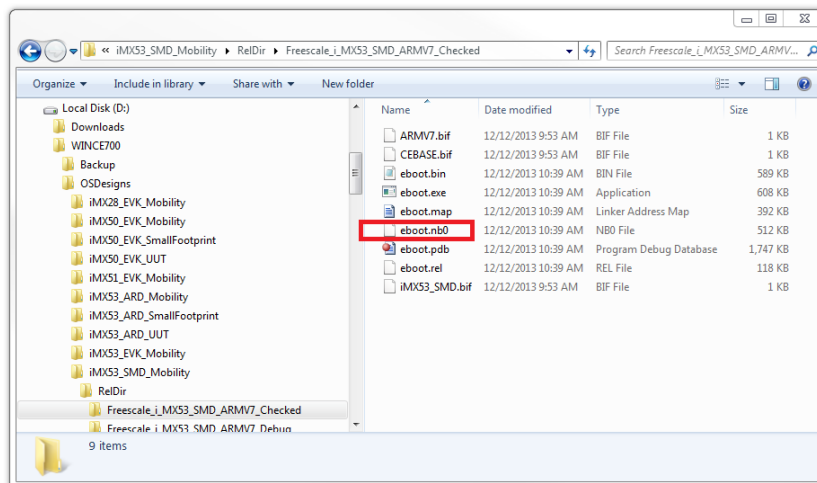
## 2) Program WEC7 EBOOT Image to SD Card

- a. Copy the “eboot.nb” file from the output directory into a temporary directory used for programming.

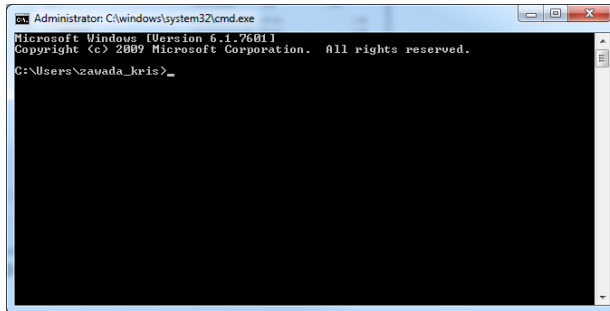
- i. **Output:**

D:\WINCE700\OSDesigns\iMX53\_SMD\_Mobility\RelDir\Freescaler\_i\_MX53\_SMD\_ARMV7\_Checked

- ii. **Temp:** P:\SABRE\_iMX53\_WEC7\_Test



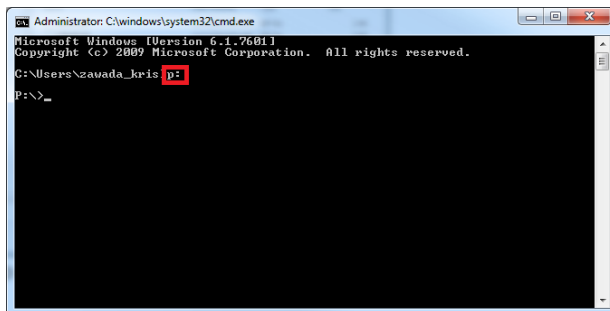
- b. Open the command prompt



```
Administrator: C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\zawada_kris>
```

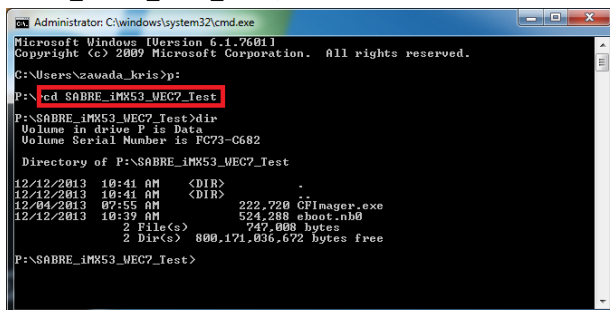
- c. Navigate to the drive that contains the temporary directory for programming (in this case it is: p:).



```
Administrator: C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\zawada_kris> p:
P:\>
```

- d. Navigate into the directory that contains the programmer and image (in this case it is: cd SABRE\_iMX53\_WEC7\_Test).



```
Administrator: C:\windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\zawada_kris> p:
P:\> cd SABRE_iMX53_WEC7_Test
P:\SABRE_iMX53_WEC7_Test> dir
Volume in drive P is Data
Volume Serial Number is FC73-C682

Directory of P:\SABRE_iMX53_WEC7_Test

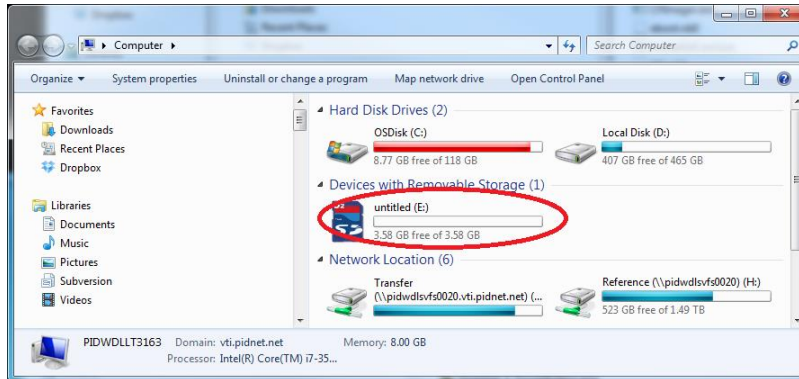
12/12/2013 10:41 AM <DIR> .
12/12/2013 10:41 AM <DIR> ..
12/04/2013 07:55 AM          222,720 CPImager.exe
12/12/2013 10:39 AM          524,288 eboot.nb0
                2 File(s)      747,008 bytes
                2 Dir(s)      800,171,036,672 bytes free

P:\SABRE_iMX53_WEC7_Test>
```

- e. Plug in the SD Card into the computer.



- f. Make note of the drive letter assigned to the SD Card.



- g. Program the bootloader (eboot.nb0) by executing the command below (CFImager -a -f eboot.nb0 -d E -iMX53).

```

Administrator: C:\windows\system32\cmd.exe
12/12/2013 10:41 AM <DIR> .
12/12/2013 10:41 AM <DIR> ..
12/04/2013 07:55 AM      222,720 CFImager.exe
12/12/2013 10:39 AM      524,288 eboot.nb0
                2 File(s)      747,008 bytes
                2 Dir(s)      800,171,036,672 bytes free

P:\SABRE_IMX53_UEC7_Test>CFImager.exe -a -f eboot.nb0 -d E -iMX53
Failed to unlock drive, closing anyway!
Exception found: -24 Invalid device handle

P:\SABRE_IMX53_UEC7_Test>CFImager.exe -a -f eboot.nb0 -d E -iMX53
drive = E
removable = no
device block size = 512 bytes
device block count = 0x762762

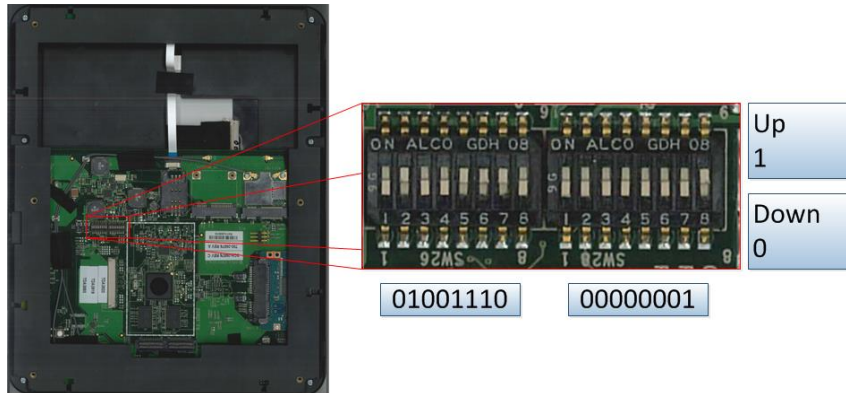
firmware size = 0x80000 bytes (0x400 blocks)
extra blocks = 1522
Flashing eboot.nb0 at sector 0x2
Writing firmware...
Writing PFI partition...
Writing MBR...
done!
P:\SABRE_IMX53_UEC7_Test>
  
```

- h. Remove the SD Card from the slot.
- 3) Change the BOOT on SABRE to use SD Card
- a. Item 0

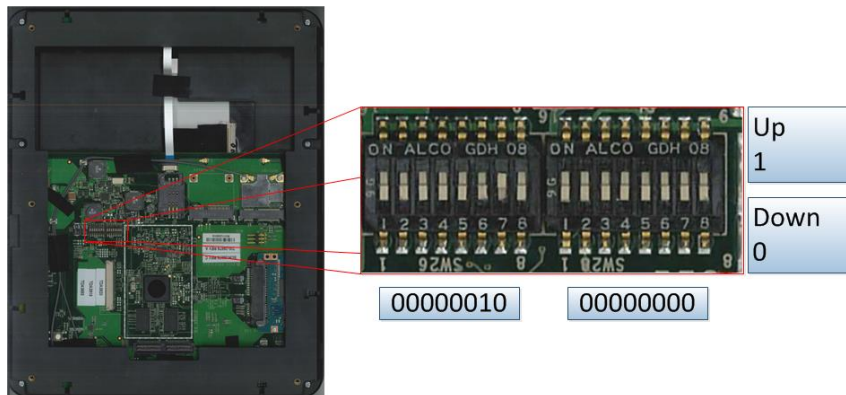


- b. Find DIP switches on the back of the circuit board.





c. Change the DIP switches to use the settings below.



d. Place red cover on the back of the tablet and secure with screws.

4) Boot SABRE from SD Card

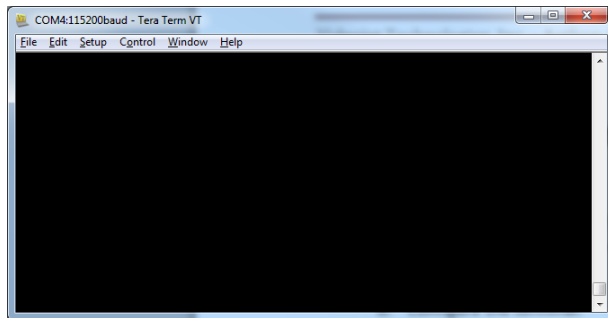
a. Plug in the debug board.



b. Plug in the SD Card.



- c. Plug in the power cord.
- d. Configure the terminal.
  - i. **Port:** COM4
  - ii. **Baud Rate:** 115200
  - iii. **Data:** 8 bit
  - iv. **Parity:** None
  - v. **Stop:** 1 bit
  - vi. **Flow control:** none



- e. Press the power button.



- f. Observe that nothing is happening at the terminal.

The terminal show no output at all.  
The display is black.

5) Done!