Efika MX53 Production Programming

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Terminology & Prerequisites

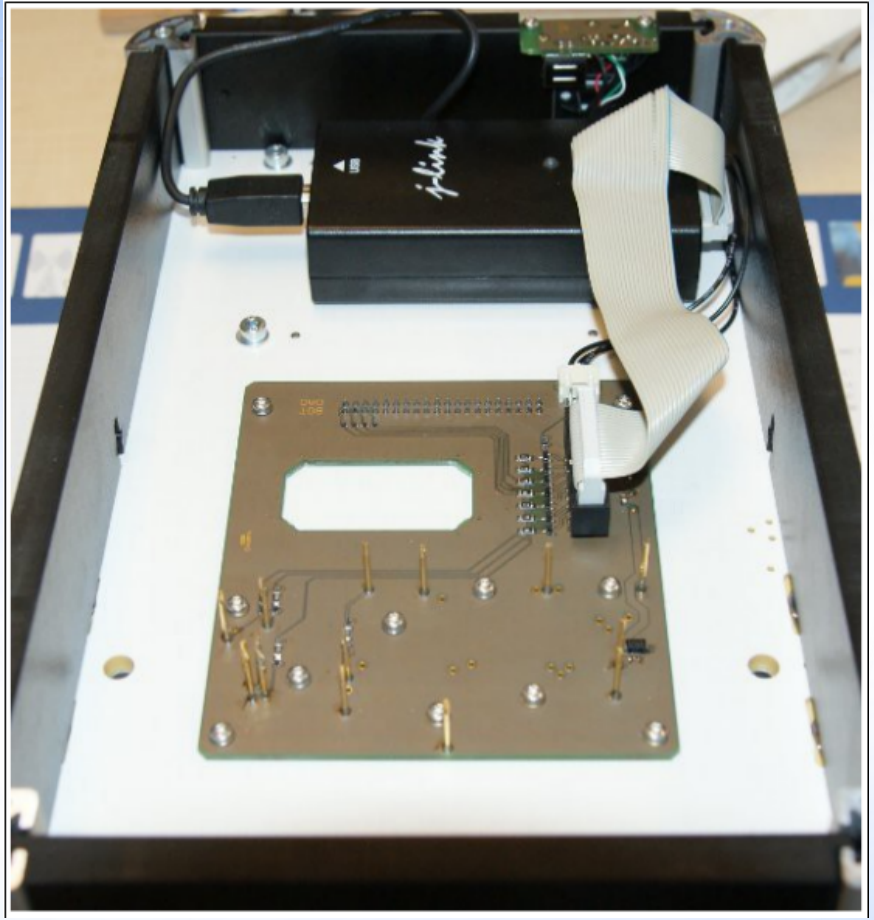
- Production programming fixture (“fixture”, “test adapter”): Device used to flash the STM “Housekeeping” CPU and burn the i.MX53 fuses. Requires 12 volt DC power source (positive polarity)
- Production programming computer (“production computer”): specially configured computer to instruct the fixture to prepare an Efika MX53 and display status and error messages. Current one boots from USB.
- JLink “Segger”: JTAG debug probe, connecting the fixture to the production computer
- SD Cards
    - NAND setup / recovery SD: prepares Efika MX53 to use stage 1 bootloader, enables use of U-Boot https://jira.genesi-usa.com/confluence/pages/viewpage.action?pageId=12517408
    - Efika MX53 Installer SD: Installs Linux Kernel and Ubuntu onto the Efika MX53 https://jira.genesi-usa.com/bamboo/browse/ETTO-ISBNDS (use latest)
- Slimbook case with peripherals, or at a bare minimum the display panel and SPPP keyboard (with cables).
- 4 mm hex key wrench, small screwdriver
- You may also wish to consult the documentation on this Confluence page (account required): https://jira.genesi-usa.com/confluence/pages/viewpage.action?pageId=12517408

Setup: Production Programming Fixture

Requires: 4 mm hex key wrench, 12V DC (positive) power supply, J-Link Segger

- Open the bottom panel of the fixture using hex key wrench
- Attach ribbon cable of J-Link Segger to fixture board. Attach J-Link cable of Segger the port on the side of the fixture, near the power supply. (Picture on next slide)
- Close bottom panel of fixture, set upright on stable, even surface.
- Connect 12V DC power supply to fixture

IMPORTANT: If you are using a power adapter to convert AC to DC, make sure the voltage is 12 volts and the polarity is positive. Making a mistake here can irreversibly damage the board! If in doubt, use a voltmeter.



J-Link Segger inside fixture

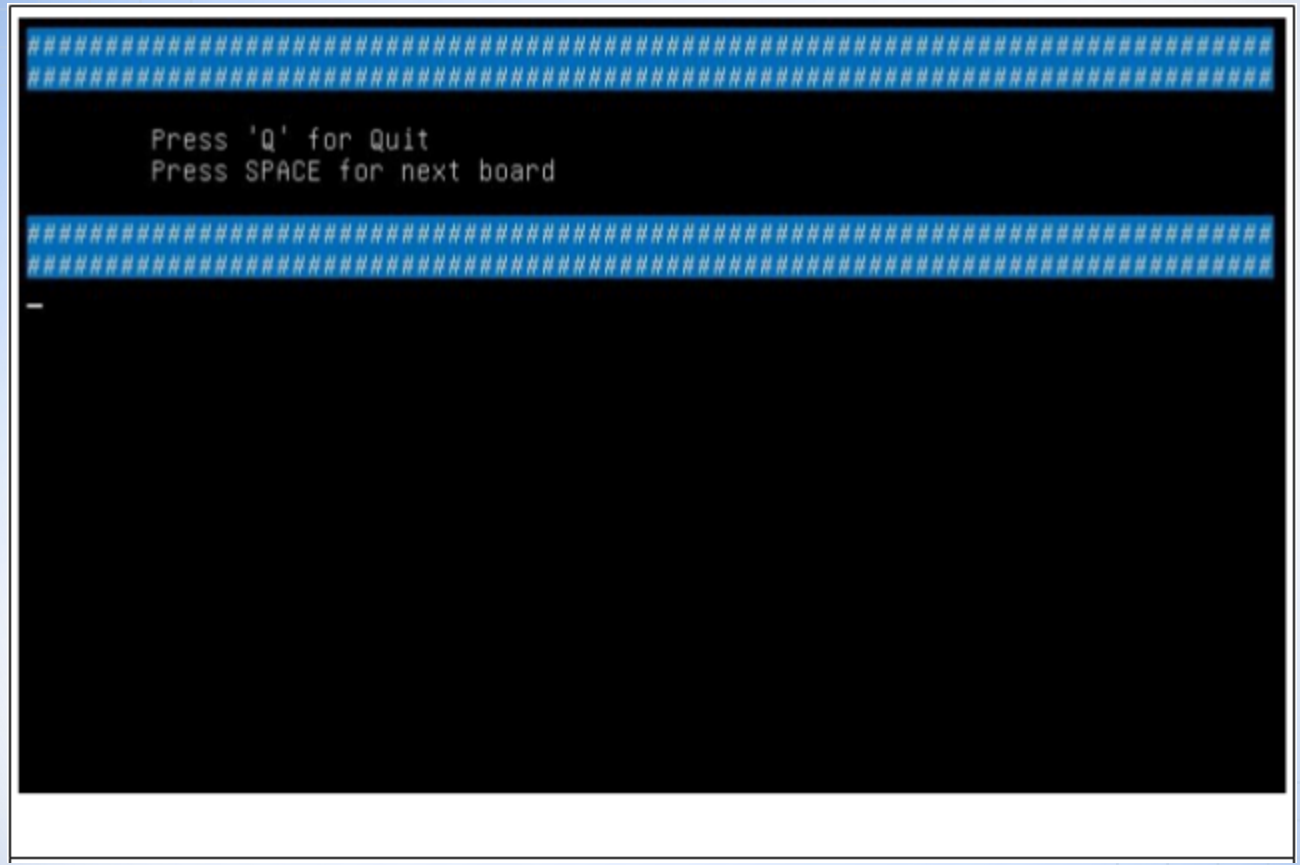
Setup: Production Programming Computer

Requires: Specially configured computer, J-Link Segger USB cable.

Our current configuration boots the production computer OS from USB.

To use the test production computer:

- Insert custom boot USB into computer in the single port near the optical disk drive
- Connect fixture to production computer using J-Link Segger USB cable.
- Boot production computer

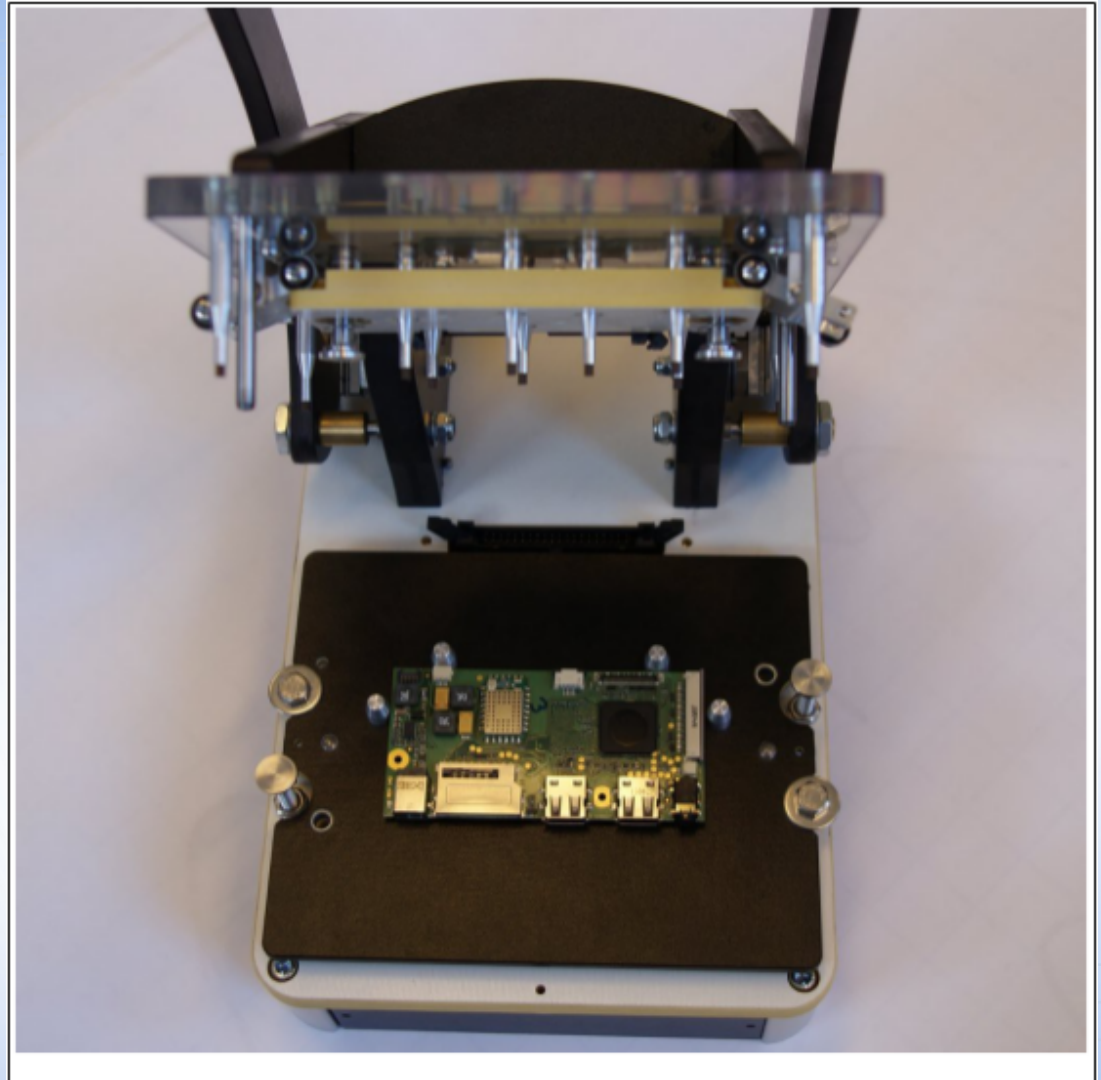


Test production computer after successful boot

Production: Placing the Board on Fixture

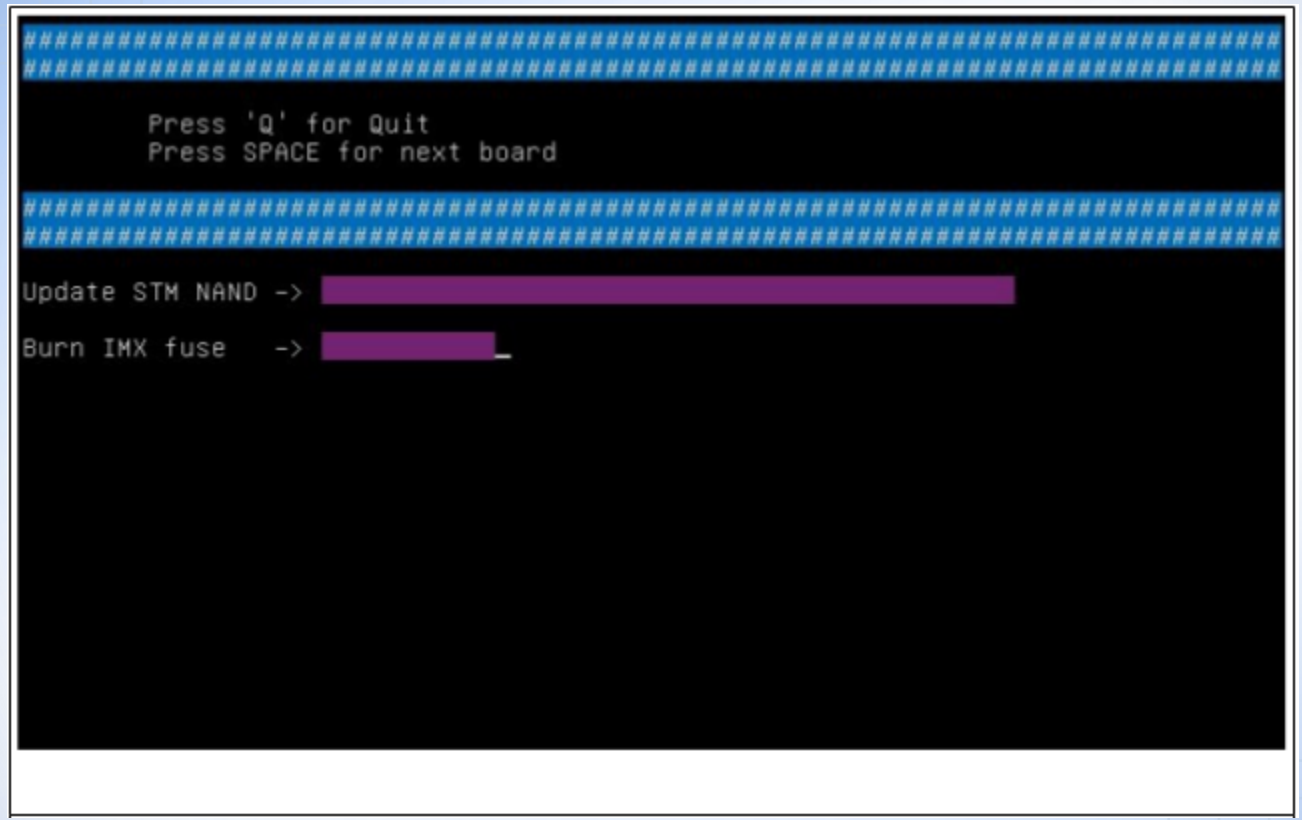
Requires: Efika MX53 board

- Remove any protective elements / clips from periphery connections
- Use handle to lift / open glass plate of fixture and place board face-up (i.e. with i.MX53 CPU visible) on fixture. The two small metal screws on the fixture go inside the two corresponding holes in the board (see picture on next slide)
- Slowly and completely close fixture

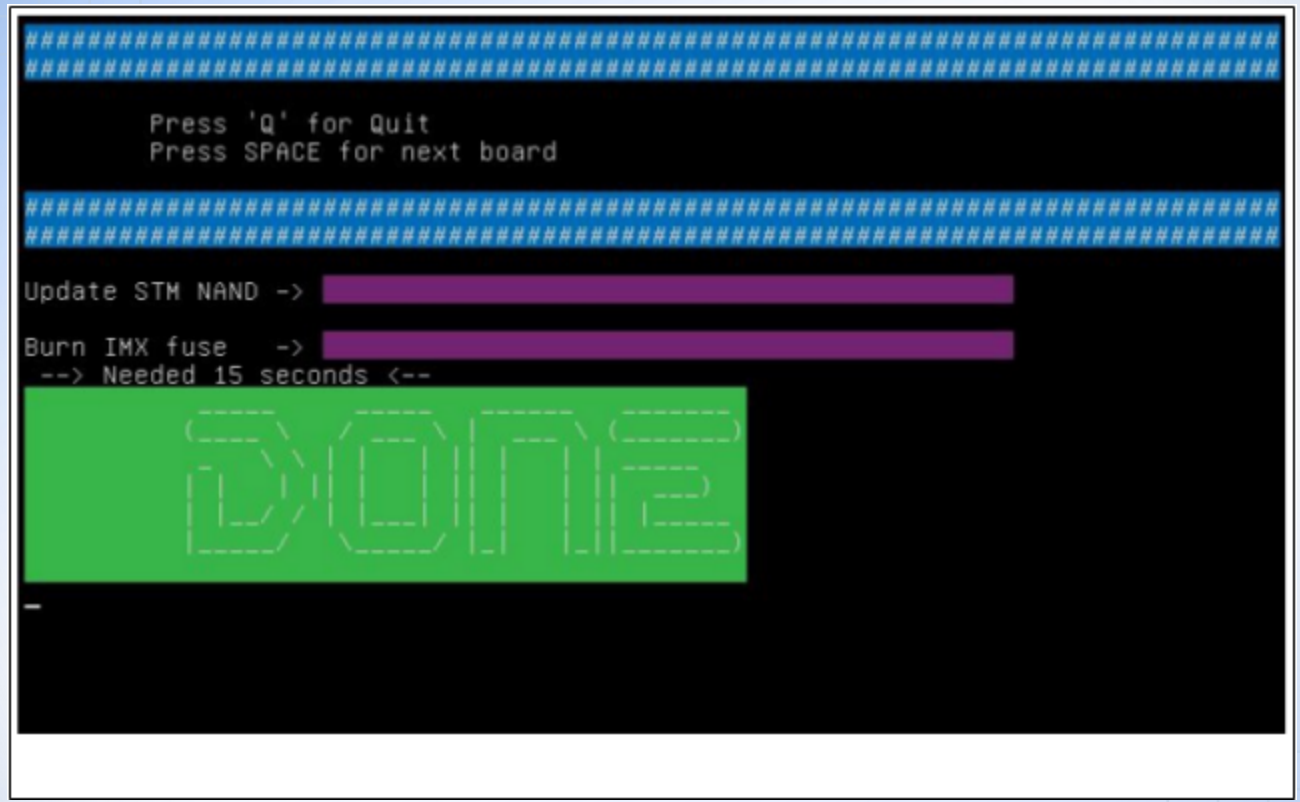


Production: Flashing the STM NAND

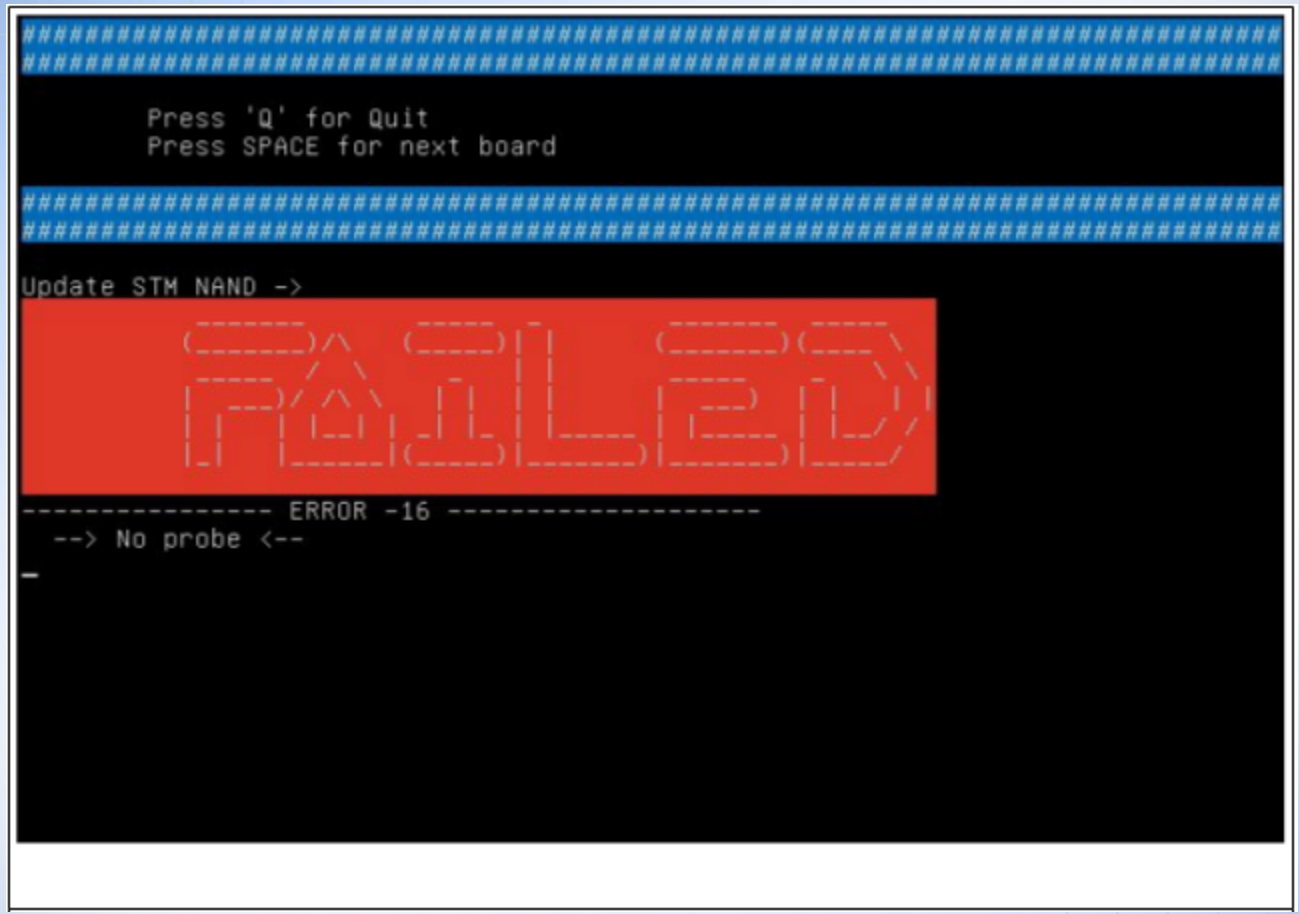
- Once the board is placed and the production computer is ready, press the SPACE button to flash the STM and burn the i.MX53 fuses
- The production computer screen will display the progress of each task and indicate success or failure
- In the event of failure, disconnect the fixture from the production computer, wait for two seconds, then reconnect. Open the fixture and check that the J-Link LED has stopped blinking before continuing



STM NAND flash and IMX fuse burn in progress



STM NAND flash and IMX fuse burn successful



STM NAND flash and IMX fuse burn failure

Production: Preparing Efika MX53 for Boot

Requires: NAND setup / recovery SD, empty Slimbook case with peripheral connections, small screwdriver & screw, power supply for Efika MX53

- Remove board from fixture
- Place board into Slimbook and connect peripheries: battery, speakers, wireless, panel & camera. Secure board by using screw. Lastly, attach touchpad and keyboard to board. Keyboard frame should be resting in proper place (don’t screw it in yet, as you may need to take the board out in case of error)
- Insert NAND setup SD
- Connect Efika MX53 power supply
- Hold the Down Arrow / Page Down (AvPag) key and then press Esc and Fn. The board should power up and the backlight of the display panel should light up, but remain blank.
- If successful the machine should power off by itself - no status message will be displayed.
- Remove NAND setup SD

Production: Installing Linux

Requires: Installer SD, small screwdriver & screws

- Insert Installer SD
- Press Esc + Fn (boot command). Board should power on and display Linux penguin followed by Genesi logo
- Follow the on-screen instructions
- When the system is finished installing it will power off. Remove Installer SD
- The system should be ready. You can test by powering the device on and verifying it reaches a desktop environment, asking the user to configure system language
- Disconnect the power supply.
- Screw keyboard panel onto slimbook case

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