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ZCU102 Power Bus Reprogramming
Contents

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- Hardware & Software Requirements
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- Maxim PowerTool software tutorial
Caution!

- The Maxim PowerTool software used in this presentation can adjust the power supply outputs on the ZCU102
- If used improperly, it can seriously damage your ZCU102
- Before making any adjustments not specifically covered in this presentation:
  - Understand the power requirements for Zynq UltraScale+ MPSoC devices
  - Understand the consequences of the change you are making
  - Understand that the PMBus devices can ONLY be programmed 4 times
Hardware Requirements

- Maxim MAXPOWERTOOL002# USB-to-PMBus interface dongle
  - Maxim Part Number: MAXPOWERTOOL002#
Software Requirements

Maxim Digital Power Tool

- Maxim File name: MaximDigitalPowerTool_V2.00.01.exe
  (version subject to change – use latest version available on Maxim website)
Software Setup

- Install the Maxim Digital Power Tool
Connect Maxim Dongle

On the Maxim Dongle
– Connect the Ribbon Cable
– Connect the USB Cable
Connect Maxim Dongle

- Connect the Ribbon Cable to the ZCU102 (J84)
  - Red Stripe towards pin 1
  - Insert the “A” end of the USB cable into a PC USB port (do not use a docking station or USB hub port)
  - Install J153 jumper to inhibit all FPGA rails
    - Required to update XML file
  - Turn on the ZCU102 board
Check Voltage Levels

- Open Maxim GUI version v2.00.01 (or later)
- Within the Maxim GUI, go to “Dashboard”
  - This will automatically start scanning the power rails
- Please verify that there are a total of 14 voltage rails shown, and all except 0x1A and 0x1B voltage rails are disabled (“Enabled” LEDs turn red)
Check Voltage Levels

Using the Maxim PowerTool, check that you see the following (voltages inhibited)

The Power Good LEDs on the ZCU102 will not light up green upon power-up
Restoring Power Levels

- Unzip the file appropriate to the rev of the ZCU102 you have:
  - ZCU102 Rev A: FULL_ZCU102_REVA_ONLY_02172016_FINE_CAL_10904.xml
  - ZCU102 Rev B, C, D: FULL_ZCU102_REVB-D_02172016_FINE_CAL_10904.xml

- Open the MaximDigitalPower GUI

- Verify that all power rails are listed in the GUI:
  - 0x0A
  - 0x0B
  - 0x10
  - 0x13
  - 0x14
  - 0x15
  - 0x16
  - 0x17
  - 0x18
  - 0x1A
  - 0x1B
  - 0x1D
Maxim PowerTool

Expand the Maxim GUI so that you can see the “Load Configuration” button on the GUI

Click “Load Configuration” and browse to where you have saved the appropriate XML file

Load the XML file
Maxim PowerTool

- Once the XML has been programmed in, the GUI will prompt you to say that the controllers must be re-loaded.
- A “Task completed, devices will be reloaded” dialog box will appear indicating that the XML file has been loaded in all of the devices.
- Click “OK” and the GUI will rescan all of the regulators on the board and repopulate them.
Maxim PowerTool

- You might need to click the “Search for Devices” button to refresh the controller information.
Maxim PowerTool

Once the engineer is satisfied that values are loaded, the “Store User ALL” button in the Dashboard tab will store configuration in the NVM (non-volatile memory) of each device.

– A warning message will appear, and warn you that the MAX20751 has a limited number of write cycles remaining.
– You should press “cancel”, and it will avoid updating the MAX20751.
– Why? The supplied XML file only addresses the MAX15303 devices, so no need to waste a write cycle for the MAX20751 on this board.

IMPORTANT: Do not power off the board.
Maxim PowerTool

- Power off the ZCU102
- Remove jumper J153
- Wait 30 seconds
- Power on the ZCU102 once more to verify
- If the Dashboard does not refresh automatically:
  - Click the “Search for Devices” button
  - Note that the VFMC_ADJ_10A (located at 0x18) voltage rail will remain disabled – this is by design
- Verify that all Power Good LEDs on the ZCU102 are on
- Verify that the FPGA power good LED is green
- Open the Maxim PowerTool GUI to verify the correct voltages on 12V (Input Voltage) and all FPGA rails (Output Voltage)
  - You should see 14 rails: 13 green LEDs and 1 red LED (for 0x18)