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ZCU102 Power Bus Reprogramming



Contents

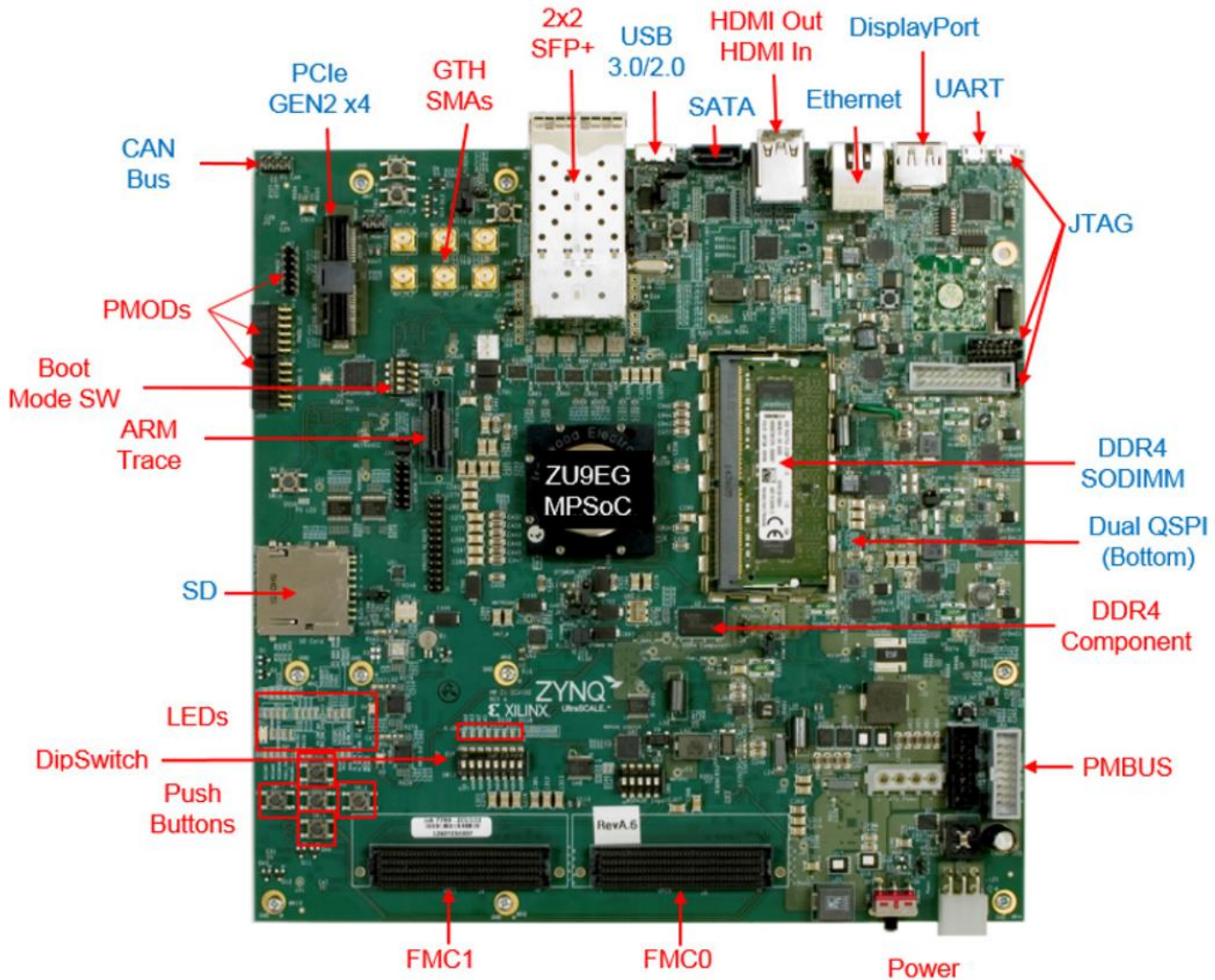
- Caution!
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Caution!

- 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



Xilinx ZCU102 Board



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

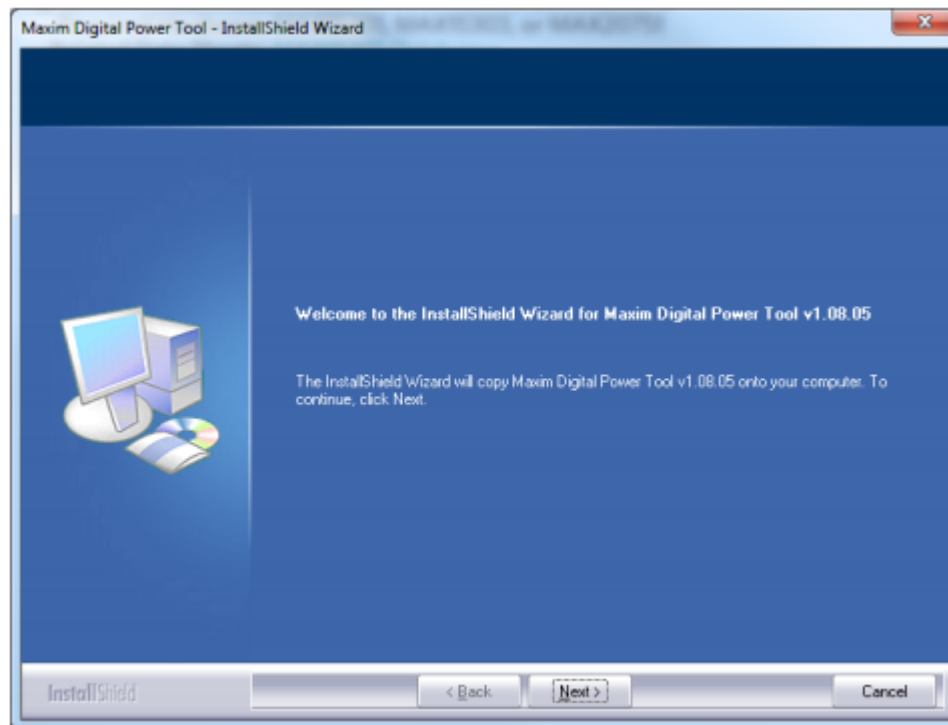
 - (version subject to change – use latest version available on Maxim website)

- Download: Latest Release at

 - <http://www.maximintegrated.com/en/design/tools/applications/evkit-software/index.mvp?id=1183/>

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

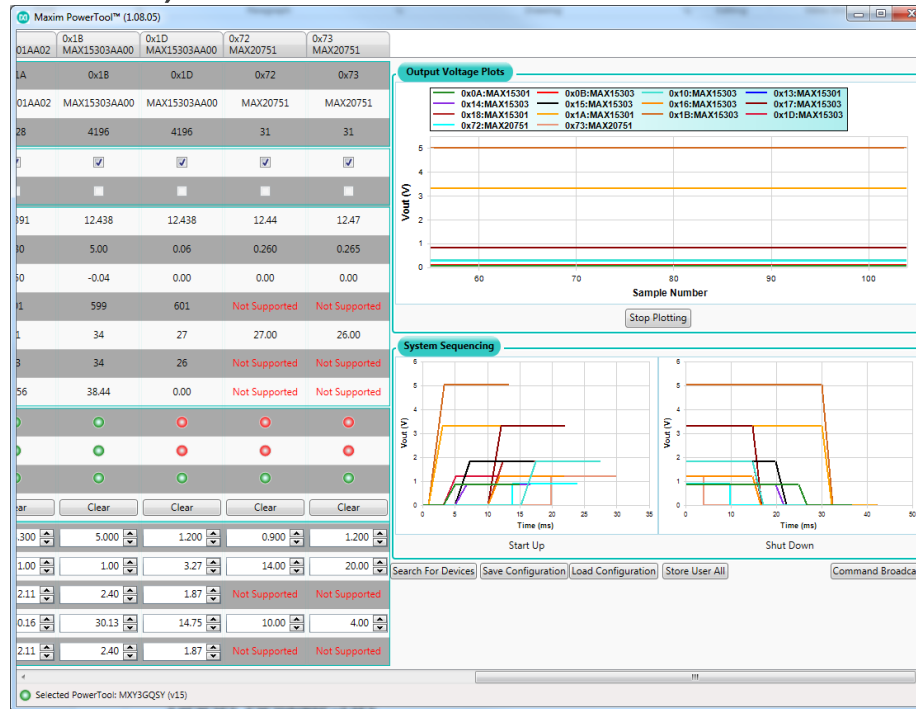
- Connect the Ribbon Cable to the ZCU102 (J84)
 - Red Stripe towards pin 1
 - Insert the “A” end of the USB cable into a PC USB port (do not use a docking station or USB hub port)
 - Install J153 jumper to inhibit all FPGA rails
 - Required to update XML file
 - Turn on the ZCU102 board

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)



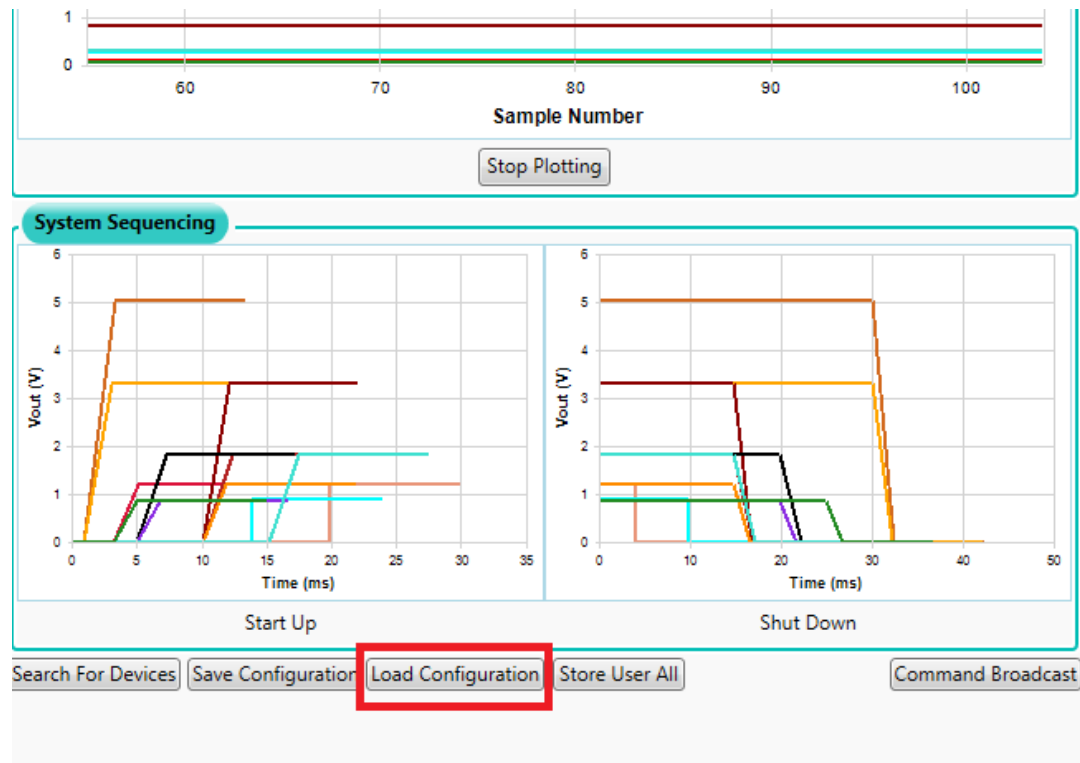
- The Power Good LEDs on the ZCU102 will not light up green upon power-up

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



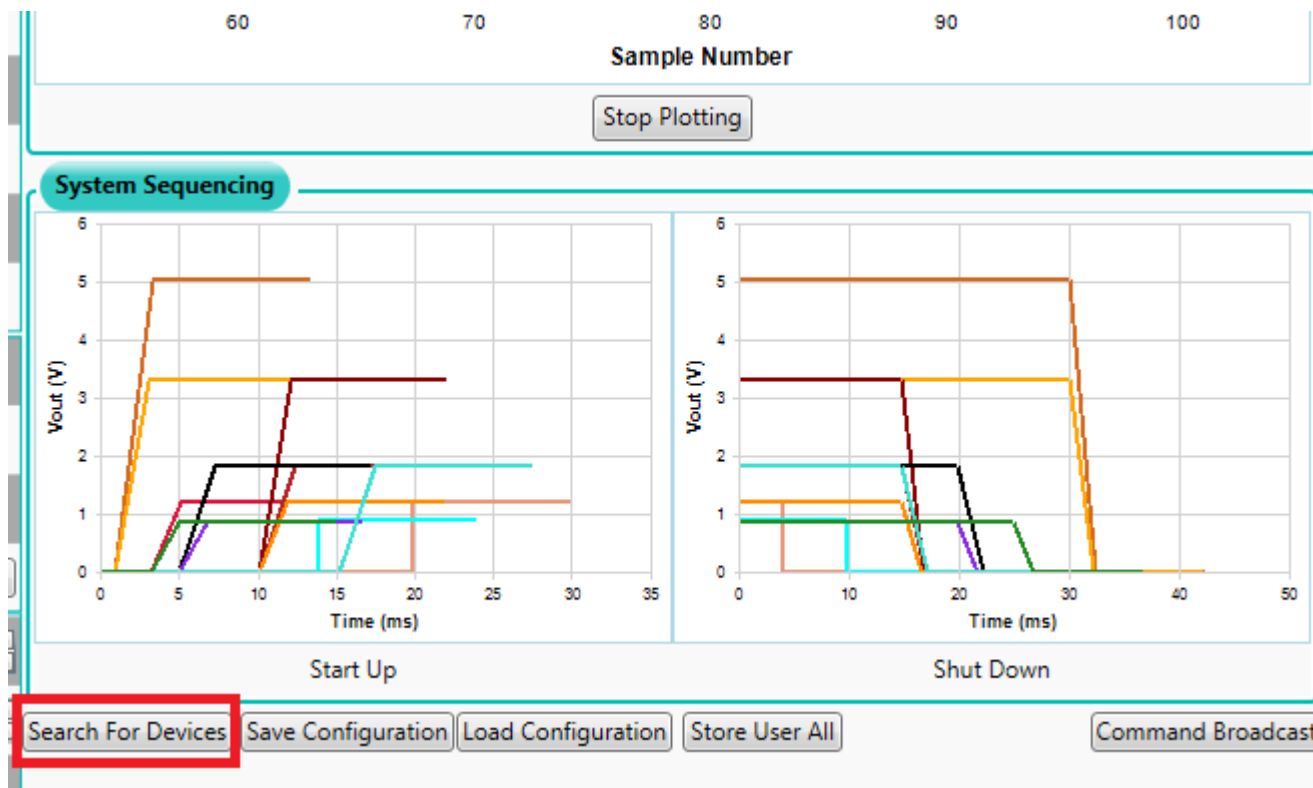
- Click “Load Configuration” and browse to where you have saved the appropriate XML file
- Load the XML file

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

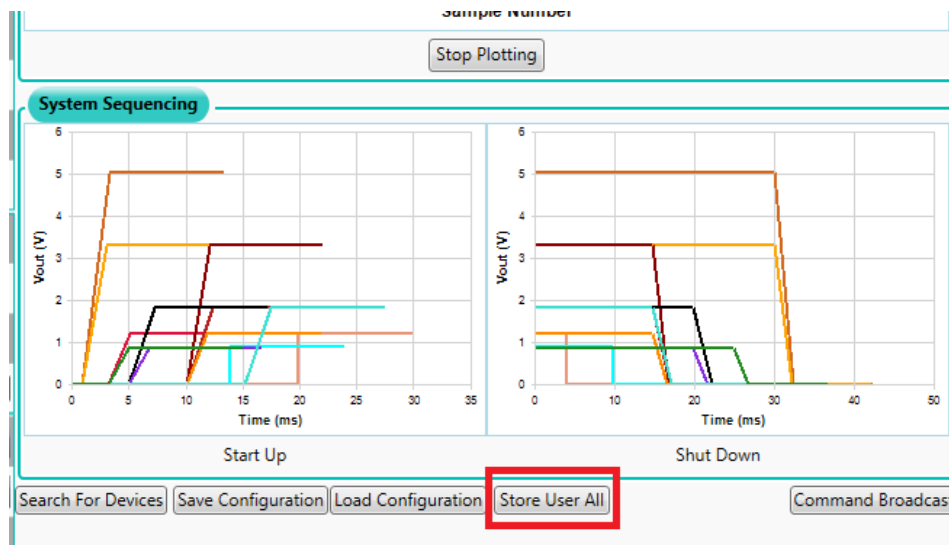
Maxim PowerTool

- 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)