UltraZed-EV VCU Power Update

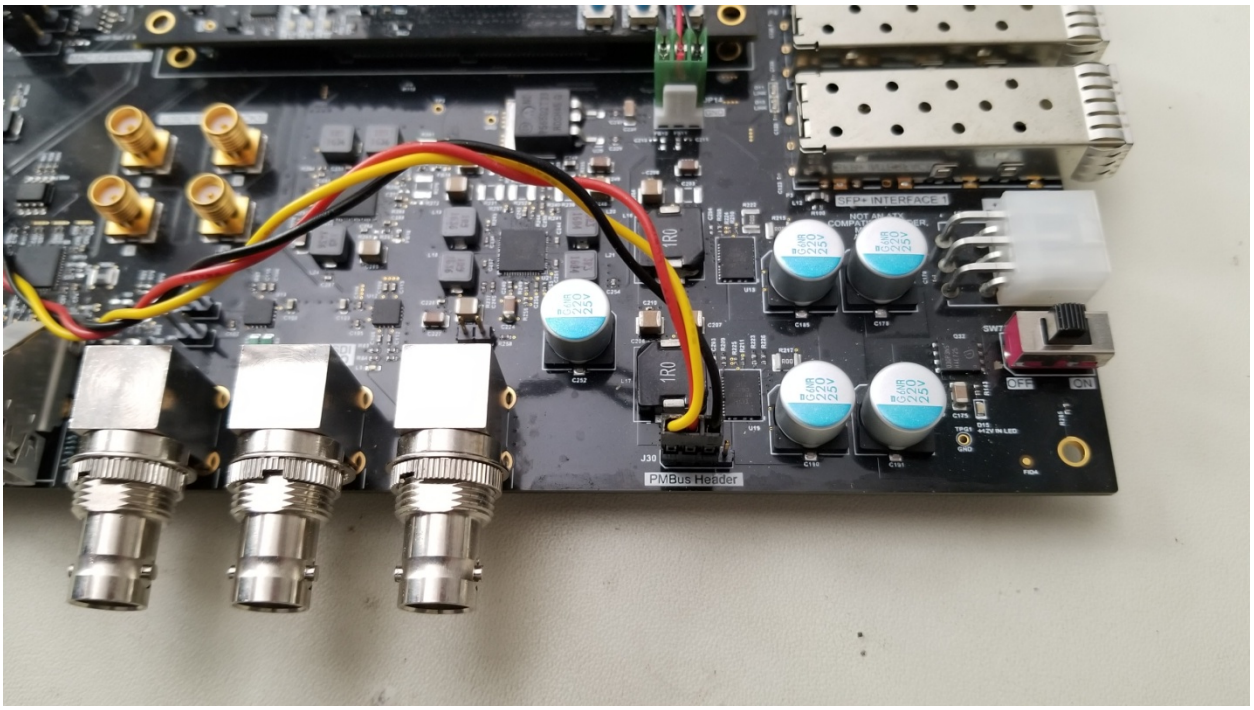
Procedure to Update Power supply for VCU operation

Introduction

This document guides you in updating the power supply configuration to support VCU operation. Early versions of the UltraZed EV set the VCU voltage to 0.85V per Xilinx early specifications. This voltage was modified to 0.9V by Xilinx to improve performance. Xilinx only supports designs with VCU voltage set to 0.9V. The EV utilizes the IRPS5401 PMIC from Infineon which is software programmable. This feature allows for easy reprogramming using a USB to PMBus dongle and the Infineon PowIRCenter GUI.

Required Resources

In order to perform the update you will need access to the PMBus interface. You may access the interface through J30 on the UltraZed EV carrier card. If you've designed your own carrier, you will need to make sure you can access this interface.



You will also need the Infineon PowIRCenter software, at the time of this writing available here: https://www.infineon.com/cms/en/product/promopages/power-center-software/

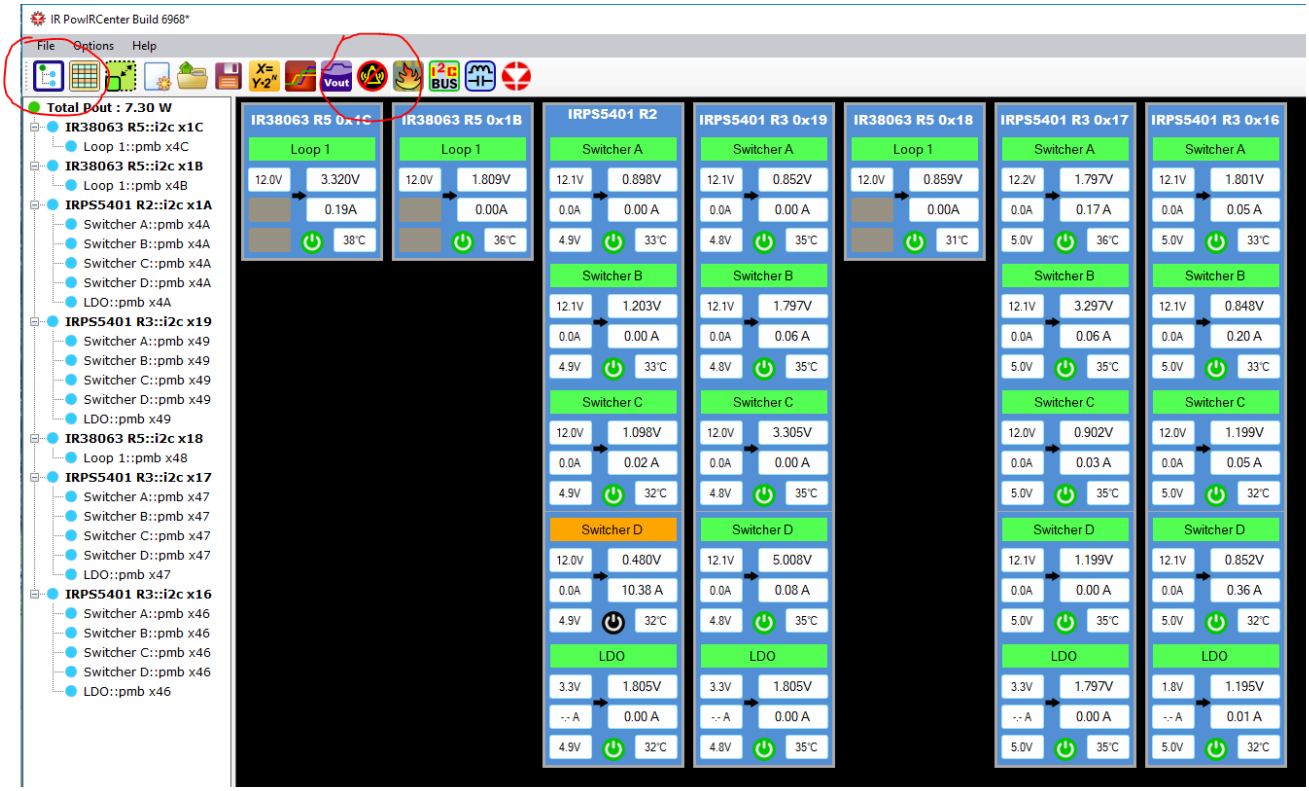
You will also need the USB to PMBus header. The part number for the dongle is Infineon USB005: https://www.infineon.com/cms/en/product/power/dc-dc-converter/digital-dc-dc-multiphase-controller/usb005/

The new configuration file is available through your local FAE. You may request the file from the following web portal – Avnet.me/AvnetProgrammingFiles

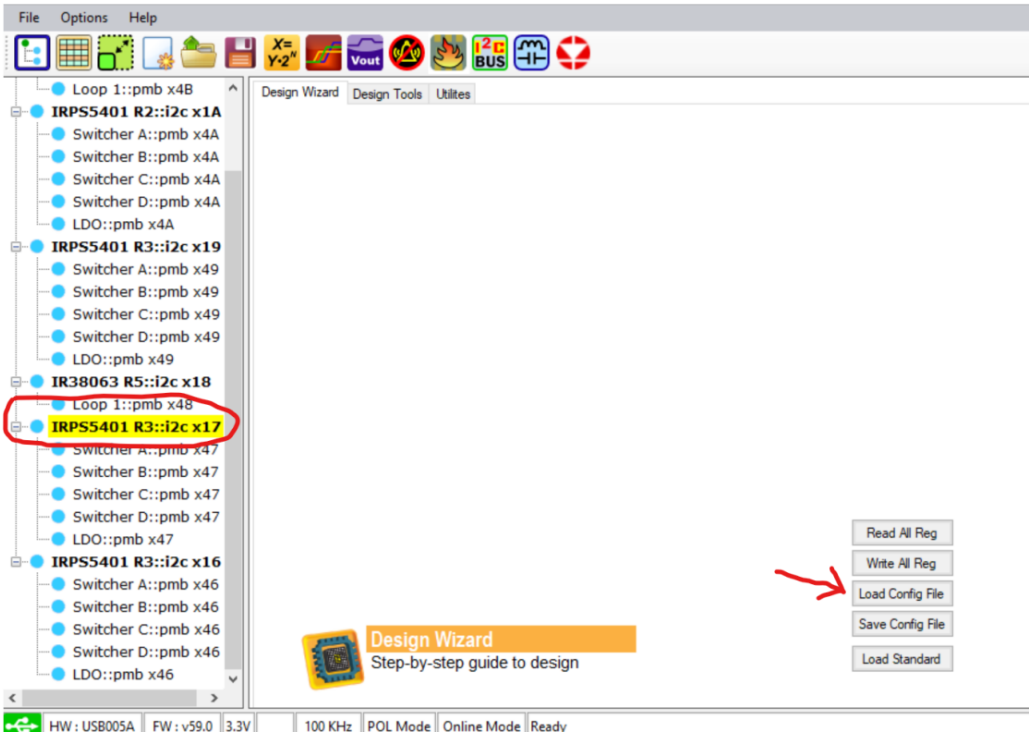
Procedure

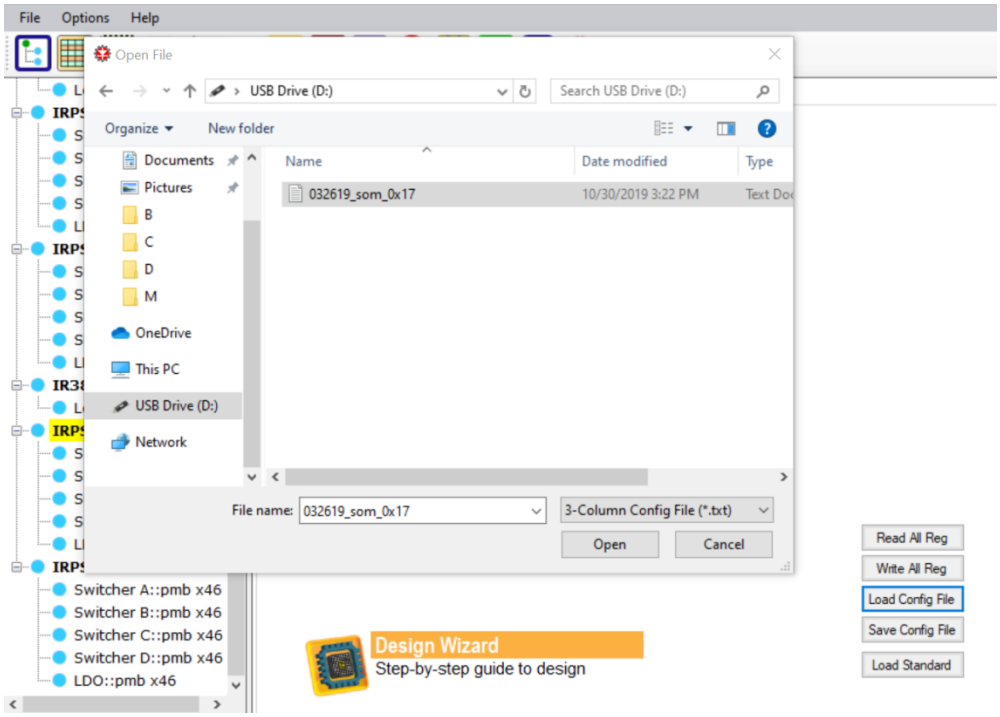
First power up your hardware and connect your dongle to the board. For the purposes of this document we are going to assume you are using the Avnet UltraZed EV Carrier. Pin 1 on J30 (or J22 depending on your board version, refer to image for location of header) of the Avnet carrier should connect to the yellow wire on the dongle. You will notice that J30(J22) is a 4 pin header, however the dongle only uses 3 pins. The 4th pin is not used for our application.

Open the Infineon PowIRCenter software and be sure that the software recognizes the dongle. You should see the USB symbol in the bottom left go from red to green when the dongle is connected. First click the button on the top left to “autopopulate devices”. When the software is done reading the bus your screen should show 7 devices like the image below. Clear the warnings (these are false warnings that occur at startup) using the button that shows a ringing bell with a red circle and cross out. All your outputs should then be green except for device R2 which has an unused output (switcher D).

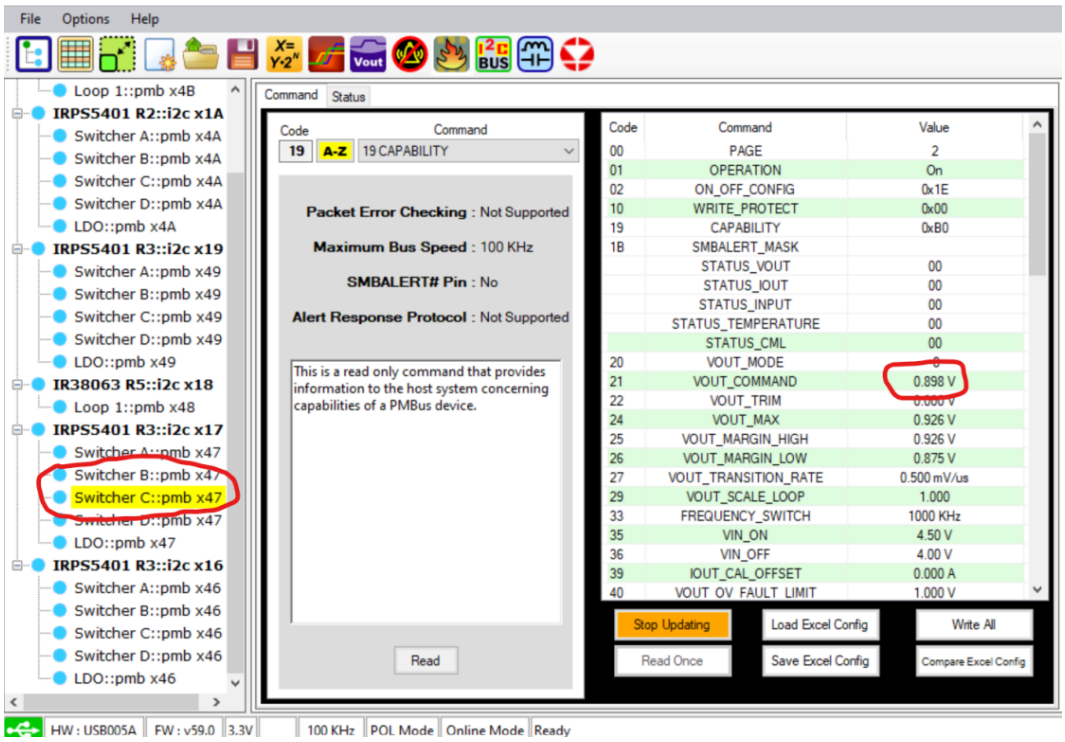


Next click on the IRPS5401 device at address x17 on the device tree on the left side. Click on the Design Wizard tab, then click on “load config file” and select the 032619_som_0x17.txt file to perform the update. To make sure it loads properly, click write all registers after loading the new file.

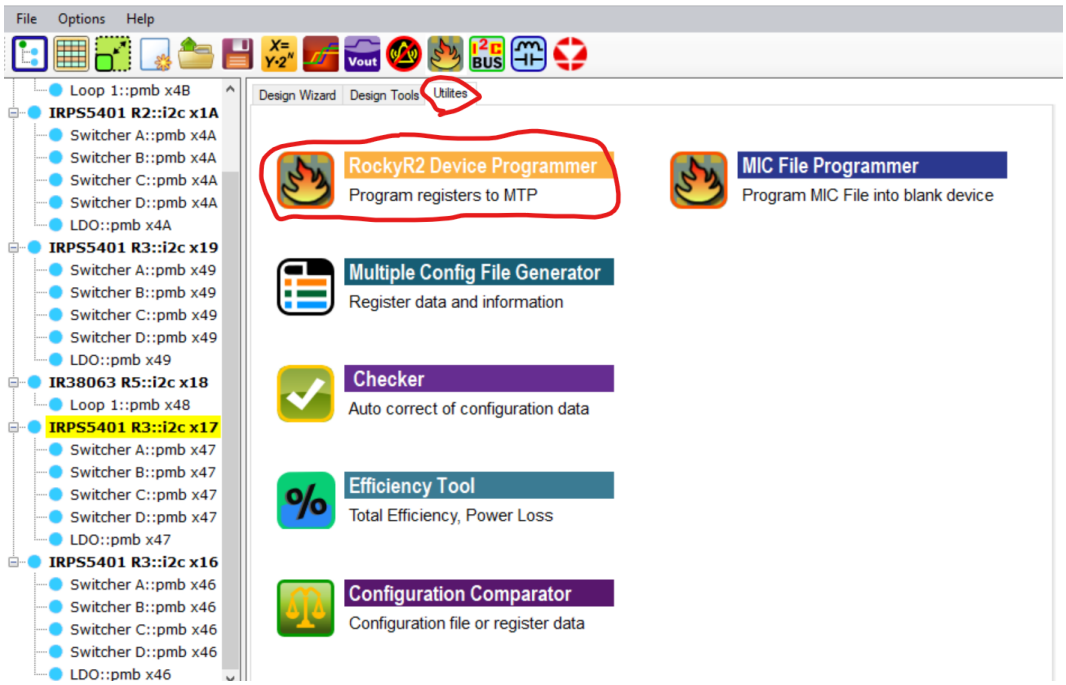




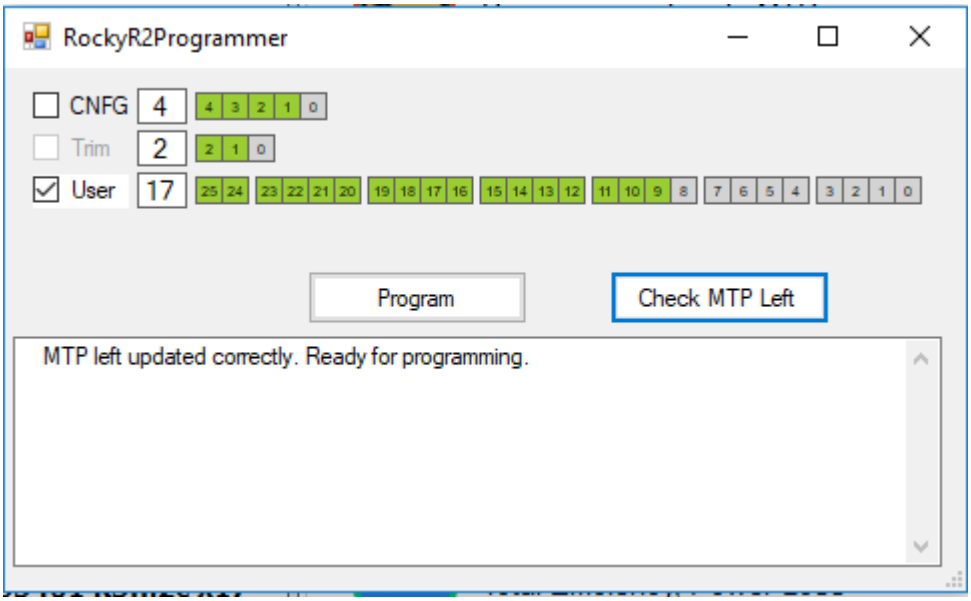
Click on Switcher C of device x17 and look at the value of VOUT_COMMAND. If this value is 0.898V then you have successfully loaded the new configuration.



After the new configuration file is loaded, click on the Utilities tab, then on the RockyR2 Device Programmer



You will see the popup below, check the user box, then click check MTP left. This process confirms the device is ready to program.



Next click the program button, once completed you will see a message that says done. You can then close the utility and the update process is complete.