ZCU104 VADJ Setting for CON-FMC

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Abstract

This document contains how to set VADJ in the ZCU104 evaluation board for using CON-FMC properly.

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Introduction

1.1 Environment Setting

- Hardware
 - ZCU104 Evaluation board
 - CON-FMC
- Software
 - Windows 7/10
 - Vivado 2018.3

1.2 Overview

ZCU104 has LPC form factor for using FMC. You can use CON-FMC through this port. See below picture Figure 1 how CON-FMC is connected on the ZCU104 evaluation board.



Figure 1: ZCU104 Evaluation board with CON-FMC

1.3 VADJ Setting

Default VADJ is set to 1.8V stated in UG1267 by Xilinx officially[2]. However, the PG signal for VADJ is disabled when you get started with ZCU104 with a quick board test[6]. Unless the VADJ PG signal turns on, you can't use CON-FMC. When you use ZCU104 with CON-FMC, you can check its availability by 4 LEDs at the side of CON-FMC(see Figure 2). CON-FMC is working accordingly while all 4 LEDs are turned on.

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Figure 2: CON-FMC is ready with 4 LEDs lighted on

System Controller GUI(SCUI) supported by Xilinx will help you to set FMC VADJ in ZCU104[3]. This program can be downloaded from the official website of XIIinx. Through this program, you can command PMIC to set VADJ as 1.8V and enable PG. You can download the program from <u>here</u>. Note that the program is dependent on Windows. So make sure that you are using this program on Windows PC.

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	Zynq UltraScale+	MPSoC Evaluation K	its		
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Th Sy: vid qui H.3	e ZCU104 Evaluation Kit enables d stems (ADAS), machine vision, Au leo codec and supports many com ad-core ARMc Cortex-AS3 applica 264/H.265 video codec, and 16mm	Sesigners to jumpstart designs for embed gmented Reality (AR), drones and medica mon peripherals and interfaces for embe tions processor, dual-core Cortex-R5 real- I FINFET+ programmable logic.	ded vision applications such as surveillance, Advanced D I imaging. This kit features a Zynq UltraScale+ MPSoC EV dded vision use case. The included ZUZEV device is equi time processor, Mali-400 MP2 graphics processing unit, 4	river Assisted / device with pped with a KP60 capable	VC707 Evaluation Kit VC707 Evaluation Kit VC7222 Characterization Kit VC7203 Characterization Kit VC709 Connectivity Kit
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12	XTP482 - ZCU104 Evaluation Kit	Quick Start Guide		05/30/2018	
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7	XTP499 - ZCU104 IBERT Tutorial	(2018.2)	rdf0453-zcu104-ibert-c-2018-2.zip		
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15	XTP501 - ZCU104 MIG Tutorial (2	2018.2)	rdf0455-zcu104-mig-c-2018-2.zip		
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Figure 3: SCUI program can be downloaded from ZCU104 supports

When you extract the zip file you just downloaded like Figure 3, the files will look like Figure 4

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Figure 4: SCUI program directory

Before getting started with the program, you should prepare the ZCU104 evaluation board like Figure 5.



Figure 5: Prepare FPGA(left) and Mode DIP switch (right)

As you can see from the left picture of Figure 5, plug the power and USB-JTAG to ZCU104. Also, you should set the MODE DIP switches to be all on just like the right picture of Figure 5.

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Setting the VADJ requires the following steps.

- 1. Download program in the FPGA for the SCUI
- 2. Through SCUI, set VADJ to 1.8V and enable PG
- 3. Finally, store this user command to PMIC to set this permanently.

1.3.1 Program Download in FPGA

복사 분약일기 중 방복사 위치 - 백이용 바꾸기 문 사 · · · · · · · · · · · · · · · · · ·
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sc_download.bat 202
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Enter Board Information		
Board:	ZCU104	
Revision:	1.0	
Silicon:	Prod	
Mode:	default	
Serial Number:		
MAC Address:	01:02:03:04:05:06	
	ОК	

Figure 6: 'BoardUI.exe' file and its window

Double click the 'BoardUI.exe' to get started which you can see from the left picture of Figure 6. When the program is on, you may see the window like right picture of Figure 6. Click the downside arrow at the 'Serial Number' row. You may see some numbers which are unique numbers for each ZCU104 boards. When you click yours, then click 'OK' to proceed.

First thing you need to do is click 'About' tab at the top. Then click 'Program System Controller'. It will automatically program the FPGA and run the 'sc.elf' file for this SCUI program. When the process is done, you will notice that the progress bar is filled with green and 'PASSED' is shown just like the right picture of Figure 7.

🐮 ZCU104 - Board User Interface – 🗆 🗙	🐔 ZCU104 - Board User Interface 🗕 🗆 🗙
File Logging Layout Help	File Logging Layout Help
Clocks Voltages Power FMC EEPROM Data UTIL About	Clocks Voltages Power FMC EEPROM Data UTIL About
Get Version Firmware version: Board UI Version: Board/UI v2.0	Get Version Firmware version: Board UI Version: BoardUI v2.0
Program System Controller RUNNING	Program System Controller PASSED
System Controller	[System Controller]

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Figure 7: Program System Controller

1.3.2 VADJ Setting and Enable

80	ZCU104 - Board User Interface 🗕 🗖 🗙
File	Logging Layout Help
_	Clocks Voltages Power FMC EEPROM Data UTIL About
_/	Set VADJ LPC
•	Set VADJ to 0.0 V
•	Set VADJ to 1.2 V
•	Set VADJ to 1.5 V
◄	Set VADJ to 1.8 V
	System Controller

Figure 8: Set VADJ to 1.8V

Now, click 'FMC' tab on the top to set the VADJ voltages. You may see the 'Set VADJ to 1.8V' like Figure 8. For your information, our CON-FMC works accordingly at least 1.8V VADJ. So It is recommended to set the VADJ more or equal than 1.8V.

1.3.3 Store user command in PMIC through SCUI

This step is not required but recommended. It is already stated, the default setting is that VADJ PG is disabled. That means it will be disabled after a power cycle whether you set the VADJ to 1.8V or others. So you will need to do step 1.3.1 and 1.3.2 again every time you turn on the board. However, if you store your command in PMIC which is conducted in 1.3.2, you can avoid this circumstance.

To do this, click 'UTIL' and follow these steps carefully. You can see the example at Figure 9

- 1. Put '04' at the blank of the right of 'Set MUX'
- 2. Click 'Set MUX'
- 3. Put '44' at the right of 'Address' and put '15' at the right of 'Data to Write' in 'IIC Write'
- 4. Click 'IIC Write'

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8		ZCU104 - Board User Interface	_ 🗆 🗙		
File	File Logging Layout Help				
	Clocks Voltages	Power FMC EEPROM Data UTIL About			
•	Reset MUX		^		
•	Set MUX 2	Address (2 hex characters): 04			
✓	IIC Write	Address (2 hex characters): 44 Data to Write (2N hex characters): 15			
•	IIC Read	Address (2 hex characters): Bytes to Read (2 hex characters):			
		Read Data:	~		
System Controller					

Figure 9: PMbus Command to store User setting

After completing the above steps right after 1.3.2, the VADJ is always 1.8V and PG is always up even if the power is applied again. Now, the VADJ setting for using CON-FMC is completed.

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Revision History

2021.08.30: Version 0 Revision 0 is released by Chae Eon Lim, <u>celim@future-ds.com</u>

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