MicroZed
Errata

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1 Introduction

Thank you for your interest in the Zynq 7Z010/7Z020 MicroZed board. Although Avnet has made every effort to ensure the highest possible quality, these boards are subject to the limitations described in this errata notification. This document pertains to MicroZed Revision B, C, and F boards (revision D & E MicroZed boards were not produced).

Be aware that any of the optional workarounds requiring physical modifications to the board are done at the User's own risk. Avnet is not liable for poorly performed rework.

2 Identifying Affected Boards

The Revision of the MicroZed Revision C and F boards can be found on the backside sticker as shown below. If you do not have a backside revision sticker, the MicroZed is a Revision B.

Figure 1 – Identifying MicroZed Board Revision

3 Errata

3.1 Silicon Labs CP2104 USB-UART device Vbus cannot exceed Vdd by 3.6V

Applications Affected

The MicroZed Revision B and C used in SOM mode with a Carrier Card.

Description

The Silicon Labs CP2104 USB-UART device Vbus cannot exceed Vdd by 3.6V or more. As of October 2013, this is not currently documented in the CP2104 datasheet. Since MicroZed Rev B/C was designed in self-powered mode (internal CP2104 regulator bypassed), it is possible that a MicroZed could be plugged into a Carrier, with a USB-UART cable plugged in, and the Carrier powered-down. The USB-UART Vbus will be ~5V in this case, while Vdd (tied to the MicroZed 3.3V rail) will be floating. This causes the part to latch up, and we have seen cases where the internal regulator will power up and start regulating 3.35V back onto the MicroZed 3.3V rail. Eventually, the CP2104 will fail in this mode.

Workaround

When using the MicroZed in SOM mode, unplug the MicroZed USB-UART connection first, and then power down the Carrier Card with the power switch or removing the power plug. Failure to do so could cause damage to the MicroZed and/or Carrier Card.

3.2 Marvell 88E1512 Ethernet Phy LED back-drive on 1.8V rail

Applications Affected

The MicroZed Revision B and C used in SOM mode with a Carrier Card.

Description

The Marvell 88E1512 Ethernet PHY includes two LED control signals to drive the Bel Fuse RJ45 integrated LEDs. These LEDs are connected to 3.3V, while the control signals are driven from the Vddo pins of the PHY, which are tied to 1.8V. In the case where a Carrier signals the MicroZed to power down, the 1.8V rail will go down before 3.3V if the USB-UART cable is plugged in. While the 1.8V rail is down and the 3.3V rail is still up, leakage could occur from the 3.3V rail, through the Ethernet LEDs, into the PHY, and onto the 1.8V rail, effectively preventing the 1.8V rail from ever reaching zero volts.

Workaround

When using the MicroZed in SOM mode, unplug the MicroZed USB-UART connection first, and then power down the Carrier Card with the power switch or removing the power plug. Failure to do so could cause damage to the MicroZed and/or Carrier Card.

3.3 JX2 Pin 10 PCB Trace Disconnected

Applications Affected

The MicroZed Revision C

Description

The MicroZed Rev C PCB had an error in which JX2 Pin 10 did not get physically connected to the PG_1V8 net.

Workaround

Avnet has added a rework wire to remedy this situation. No workaround is required by the user.

3.4 Ethernet LEDs constant on and not blinking

Applications Affected

The MicroZed Revision F – first production run in December, 2013.

Description

MOSFET buffer circuits have been added to the Revision F MicroZed to address item 3.2 in this document. The first production run of MicroZed Revision F have an earlier software build (version 1.0) from the factory. This version of software does not set the LED outputs on the Marvell 88E1512 Ethernet PHY to a known state after initialization (outputs are tri-stated).

A new software revision, v1.1, has been created to initialize the Marvell PHY LED ports to a known state, thereby reliably driving the LEDs.

Workaround

If your Revision F MicroZed LEDs do not stay on after booting out of the box, you do not need to do anything – the latest version of software has been loaded at the factory.

If your Revision F MicroZed Ethernet LEDs are constantly on, download the MicroZed_Linux_sd_image_v1_1_131212.zip file from www.microzed.org/documentation/1519 and install it on your microSD card. Change the MODE jumpers to SD card boot, then reboot the board.

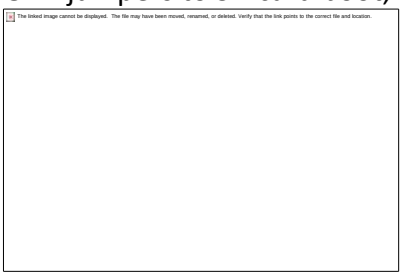


Figure 2 – SD Card Boot Mode

You may also program the quad SPI FLASH with the v1.1 software by utilizing the ***Open Source Linux In System QSPI Programming Tutorial*** posted at www.microzed.org/design/1519/10. After programming, be sure to switch back to QSPI mode to see the results.

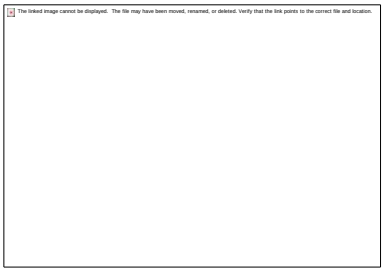


Figure 3 – QSPI Boot Mode

3.5 1.8V Supply Enable May Not Reach Threshold

Be aware that this issue has not caused any field failures, but it is being addressed based on datasheet analysis.

Applications Affected
MicroZed Revisions B, C, and F-01

Description
The 1.8V rail on MicroZed is generated from device U15, which is a TI TLV62130RGT. This device has an enable pin that is driven by the Power Good signal (net name PG_1V_10) coming from U17, which is the 1.0V circuit, also driven by a TI TLV62130RGT.

As stated in the TLV62130 datasheet, the PG output is open drain and requires a pull-up resistor. The implementation on MicroZed includes a strong pull-up and a weak pull-down. The weak pull-down was added to more quickly shut down the circuitry in a power-off event.

EN is the enable input of the TLV62130. The high-level input threshold V_H is 0.9V.

For the affected revisions, the voltage on U17.PG and U18.EN is calculated using the following:

- R42 = 1KΩ, pulled up to 1.0V
- R88 = 4.99KΩ, connected to GND
- PG_1V_10 = 1.0 * (4.99K) / (1K + 4.99K) = 0.83V

Workaround
Replace R42 with 240Ω.

PG_1V_10 = 1.0 * (4.99K) / (240 + 4.99K) = 0.95V

This issue is corrected on Revision F-06.

3.6 USB Host Configuration Resistor

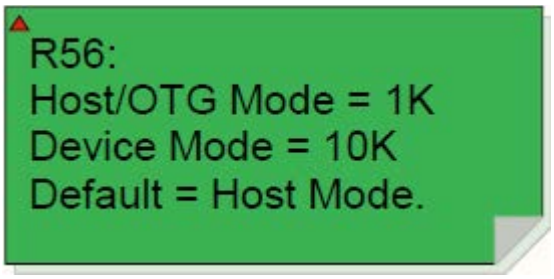
Be aware that this issue has not caused any field failures, but it is being addressed based on datasheet analysis.

Applications Affected

MicroZed Revisions B, C, and F-01

Description

MicroZed uses a MicroChip USB3320 device for the USB Host circuit. On Sheet 5 of the MicroZed schematics, see the following note:



This is incorrect. This resistor is the R_{VBUS} resistor, which according to the USB3320 is specified to be:

Table 5.7 Required R_{VBUS} Resistor Value

OPERATING MODE	R_{VBUS}
Device only	10kΩ ±5%
OTG Capable	1kΩ ±5%
Host *UseExternalVbusIndicator = 1*	10kΩ ±5%

Since the default operating mode on MicroZed is Host Mode, R56 should be 10KΩ but it is populated incorrectly as 1KΩ.

Workaround

Change R56 to 10KΩ.

Putting the MicroZed into Device Mode requires a few other modifications. The R_{VBUS} resistor should also be 10KΩ for Device Mode. The other modifications required for Device Mode are documented in Section 2.3.1 of the *MicroZed Hardware User Guide*.

This issue is corrected on Revision F-06.

3.7 DDR3 Reset (DRST_B) Resistor

Be aware that this issue has not caused any field failures, but it is being addressed based on datasheet analysis.

Applications Affected
MicroZed Revisions B and F-01

Description
At the time MicroZed was designed, there was an error in UG933 that said DRST_B should be pulled up via 40Ω to Vtt. MicroZed was designed with a 3-pad resistor jumper (JT6) to allow changing between a pull-up to Vtt or a pull-down to GND.

MicroZed Revision B was built with the 40Ω pull-up to Vtt. All DDR3 tests passed successfully.

Xilinx clarified and corrected UG933 in July 2013, which was after Rev B was built, but before Rev C.

Revision C was populated with a 4.7KΩ to GND, as specified by UG933. However, the Rev C schematic and BOM erroneously do not reflect this.

Revision F-01 was populated with a 1.0KΩ to GND. However, the Rev F-01 schematic and BOM erroneously do not reflect this.

Workaround
Revision B and F-01: Replace the JT6 resistor with a 4.7KΩ in the 2-3 position. The 2-3 position of JT6 on the PCB is shown below.

This issue is corrected on Revision F-06.

4 New Erratum

Any new erratum found will first be posted in the MicroZed Forums:

http://microzed.org/forum

Since this document will only be updated periodically, it is recommended that the MicroZed Forum also be checked for other, recently found erratum.

5 Additional Support

For additional support, please review the discussions and post your questions to the ZedBoard Forum at

http://microzed.org/forum

You can also contact your local Avnet/Silica FAE.

6 Revision History

Date	Version	Revision
01 Nov 2013	1.0	Initial Version, MicroZed Rev. B & C
12 Dec 2013	1.1	Added section 3.4 for Rev. F MicroZed
23 May 2014	1.2	Added sections 3.5, 3.6, and 3.7