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Enable/Disable DC/DC regulator pin from BGScript

Answered



Zdravko Nanev

asked this on December 7, 2013, 12:59

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I have a scenario, where BLE112/BLE113 module is connected to TI's TPS62730 DC/DC power regulator through pin P1.7 (designated with `<pmux regulator_pin="7" />` in hardware.xml file).

Is it possible to control the state of pin P1.7 through BGScript? I need to switch the DC/DC regulator off temporarily. What I tried was to change the direction of the pin to input with pull up, but it seems that the stack still continues to control the pin when the module transmits packets.

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Comments



Zdravko,

In short, when using the DC/DC converter and the "regulator_pin" setting on `<pmux>` tag in hardware.xml, you cannot control the state of pin P1.7 directly from BGScript because it is controlled by the stack automatically. Depending on what you're trying to achieve, there may be another solution. What is the reason you're looking to disable the converter?

Greg Rowberg

December 13, 2013, 05:49



User photo

Zdravko Nanev

Greg,

thank you for your response.

The reason I'm looking for a way to disable the converter is that I want to implement OTA firmware upgrade of a battery powered module. In order to maximize battery capacity I included TI's converter in the hardware design. And here lies my problem - when the module is not transmitting, the regulator is in bypass mode and the SPI flash chip will be happy with the supply power of about 3V. However, in order to transfer the new firmware through OTA, a connection has to be established, which kicks the regulator in and the module is powered with 2.1V, which I think will be insufficient to successfully program the SPI flash memory. In an ideal world, there will be SPI flash chips available with power supply capabilities within the range of 2.0V - 3.3V. However the chips I can get hold of are either rated 1.2V - 1.9V or 2.3V - 3.3V.

Any advice how to override the regulator behaviour would be greatly appreciated.

December 13, 2013, 11:49



Greg Rowberg

Zdravko,

There may be a solution to your problem, using the mostly undocumented "system_reg_write" command. For an example of using the command, check out this Knowledgebase article: <https://bluegiga.zendesk.com/entries/23109941--BGScript-baud-change...>

You can use this command to overwrite the value on the PMUX register that controls the regulator pin. Check out the user guide for the TI CC254x here: <http://www.ti.com/lit/ug/swru191d/swru191d.pdf>

On page 84 section 7.10, there is a description of the PMUX pins, and on page 90 is the breakdown of the byte value for the PMUX register. The system_reg_write command take two parameters: register address and new byte value. In this case, assuming clock out is disabled, you would want to use "system_reg_write(\$70ae, \$07)" to turn it off (00000111 in binary) immediately prior to the OTA transfer process. The DFU reset after the firmware update should reset the regulator pin status so that the regulator is enabled when the radio is activated again, though since the radio is not active during the DFU firmware writing process, the regulator should stay in bypass mode.

December 14, 2013, 23:26



User photo

Zdravko Nanev

Greg,

thank you so much!

Answer

5/21/2015

Enable/Disable DC/DC regulator pin from BGScript : Bluegiga Technologies

Support

This is exactly the kind of information I was looking for. I tried your suggestions and everything now works perfectly fine! I was able to flash new firmware through OTA, disabling the regulator through the PMUX register beforehand.

Many thanks,

Zdravko

December 15, 2013, 00:24