JTAGulator

Programming and Functional Test Procedure for Hardware Revision B

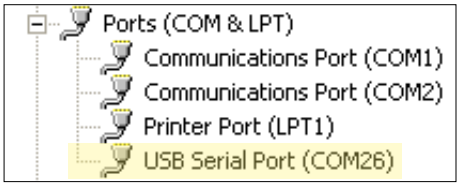
Joe Grand

Refer to video demonstration at `https://youtu.be/rFy3ZFVTLcQ`

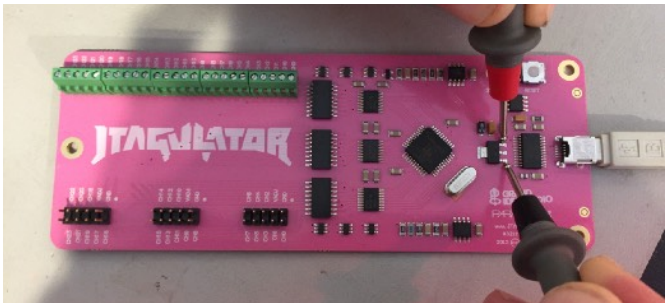
Document version 2.1, February 26, 2021

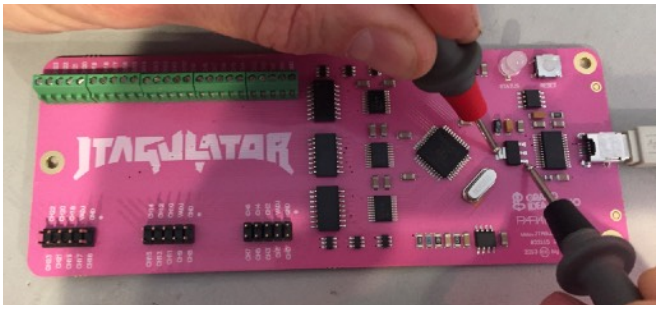
Setup:

1. Attach USB cable between host computer and JTAGulator
    a. Host computer should recognize USB device (FT232R USB UART or USB Serial Port)
    b. Error or no detection indicates failure at P1, U1, U3, or associated components



2. U6 pin 3 = 5.0V +/- 5% = 4.75V to 5.25V
3. U6 pin 2 or 4 (tab) = 3.3V +/- 1% = 3.26V to 3.34V

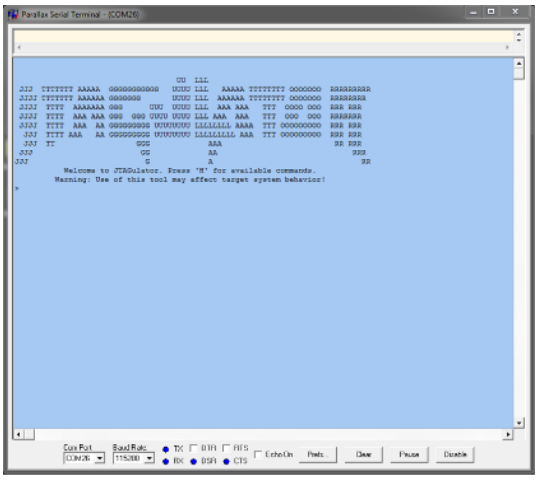




Programming:

4. Load Parallax Propeller Tool on host computer and select `Run | Identify Hardware...` or press F7
    a. Error or no detection indicates failure at U2, Q1, or associated components
5. Program EEPROM w/ JTAGulator code (via pre-compiled .eeprom file or built from source)
    a. Refer to video demonstration at `https://youtu.be/xlXwy-weG1M`
    b. Error or no detection indicates failure at U4, U2, or associated components
6. LED = ORANGE
    a. No LED indicates failure at D1, U2, or associated components

System Test:



7. Load Parallax Serial Terminal or other terminal program and open connection (115200 baud, 8 data bits, no parity, 1 stop bit)
8. Press any key in terminal program
    a. LED = GREEN
    b. Terminal program should display start-up banner and command prompt (>)
9. Set target voltage to 3.3V using the "V" command
    a. VADJ = 3.3V +/- 1% = 3.26V to 3.34V
    b. Improper voltage indicates failure at U5, U2, or associated components
10. From the GPIO ("G") submenu, set output value to 000000 using the "W" command
    a. CH23..CH0 = 0.0V (maximum allowable 0.1V)
    b. Improper voltage indicates failure at U7-U15, U2, or associated components
11. From the GPIO ("G") submenu, set output value to FFFFFF using the "W" command
    a. CH23..CH0 = 3.3V (minimum allowable 3.1V)
    b. Improper voltage indicates failure at U7-U15, R10-R13, P2-P9, U2, or associated components
12. From the GPIO ("G") submenu, use the "C" command to read all channels
    a. CH23..CH0: 11111111 11111111 11111111 (0xFFFFFF)
    b. Connect each channel from CH23..CH0 to GND one at a time
    c. Verify that only the proper channel displays a "0" bit (also known as "walking 0s")
    d. Improper result indicates failure at U7-U15, R10-R13, P2-P9, U2, or associated components
13. Close terminal program
14. Disconnect JTAGulator from host computer

END OF TEST