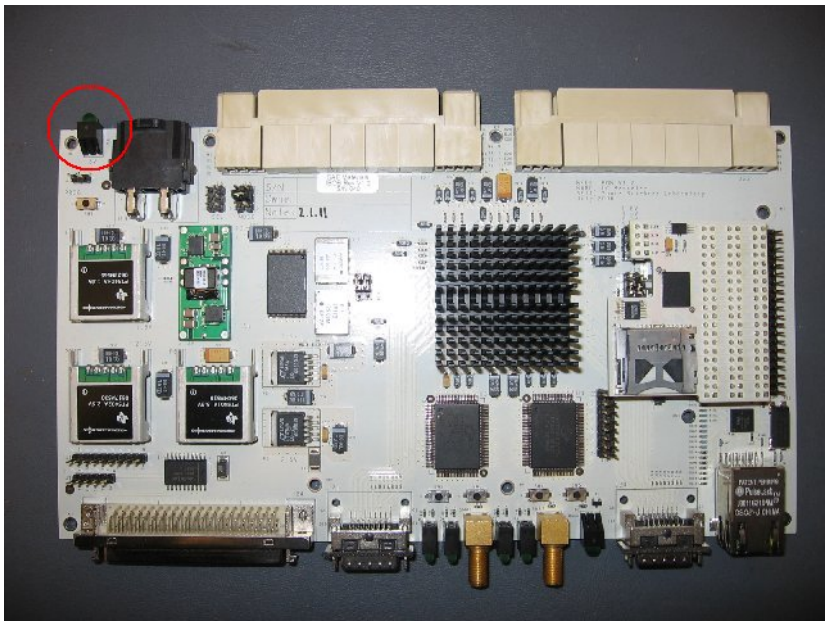
IBOB Fan Header Modification Procedure

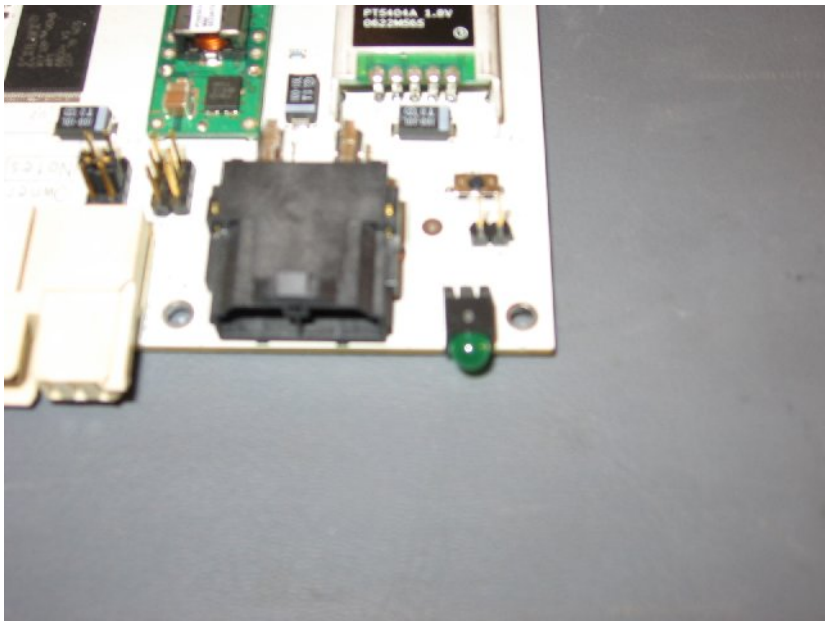
Author: Henry Chen
September 17, 2007 (v1.0)

IBOB boards were designed for high-density installation in a card cage or similar mounting solution with cooling fans. As such, the design relies on external cooling, and has no provision to attach a fan to cool the Xilinx FPGA. Forced-air cooling of the FPGA heatsink is strongly recommended, and is particularly necessary for designs that highly pack the FPGA or clock it at high rates. This document describes the procedure for modifying an IBOB board to provide a header from which to power a 5V DC fan.

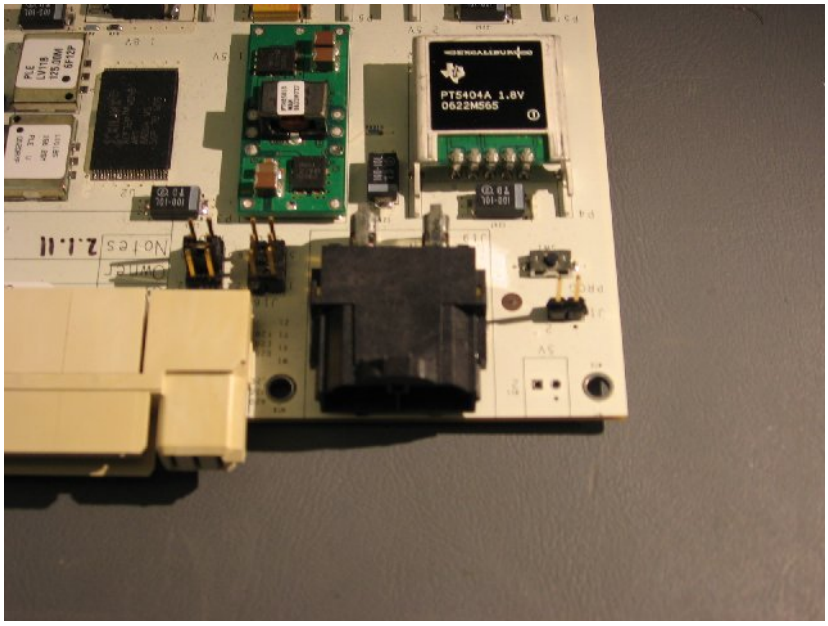
To get power for the fan, the 5V power-on LED must be forfeited. This LED is one of the only points on the board from which the 5V input can be accessed before it is regulated into the other board voltages. The LED is powered from 5V through a series resistor, so the modification will involve removing both the LED and the resistor, and bridging the header to a 5V pad.

The LED to be removed is D11, located at the upper-left corner of the board when viewed with the orientation shown below. It is next to the power input connector of the board.

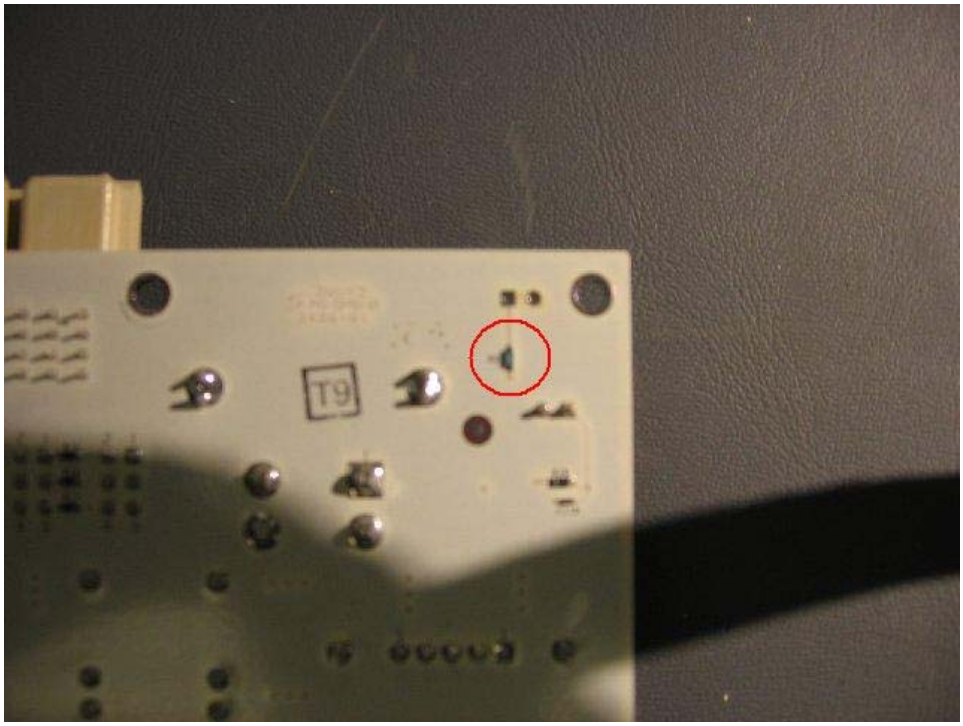


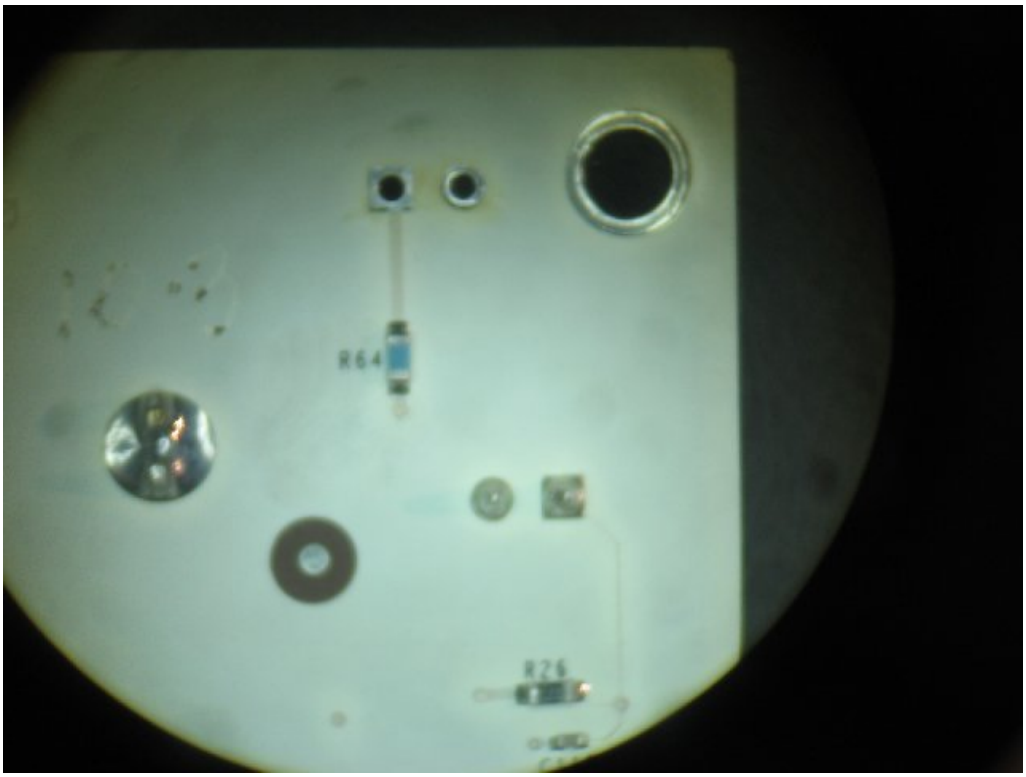


Remove the LED. Its through-hole footprint is suitable for a 0.100” header.

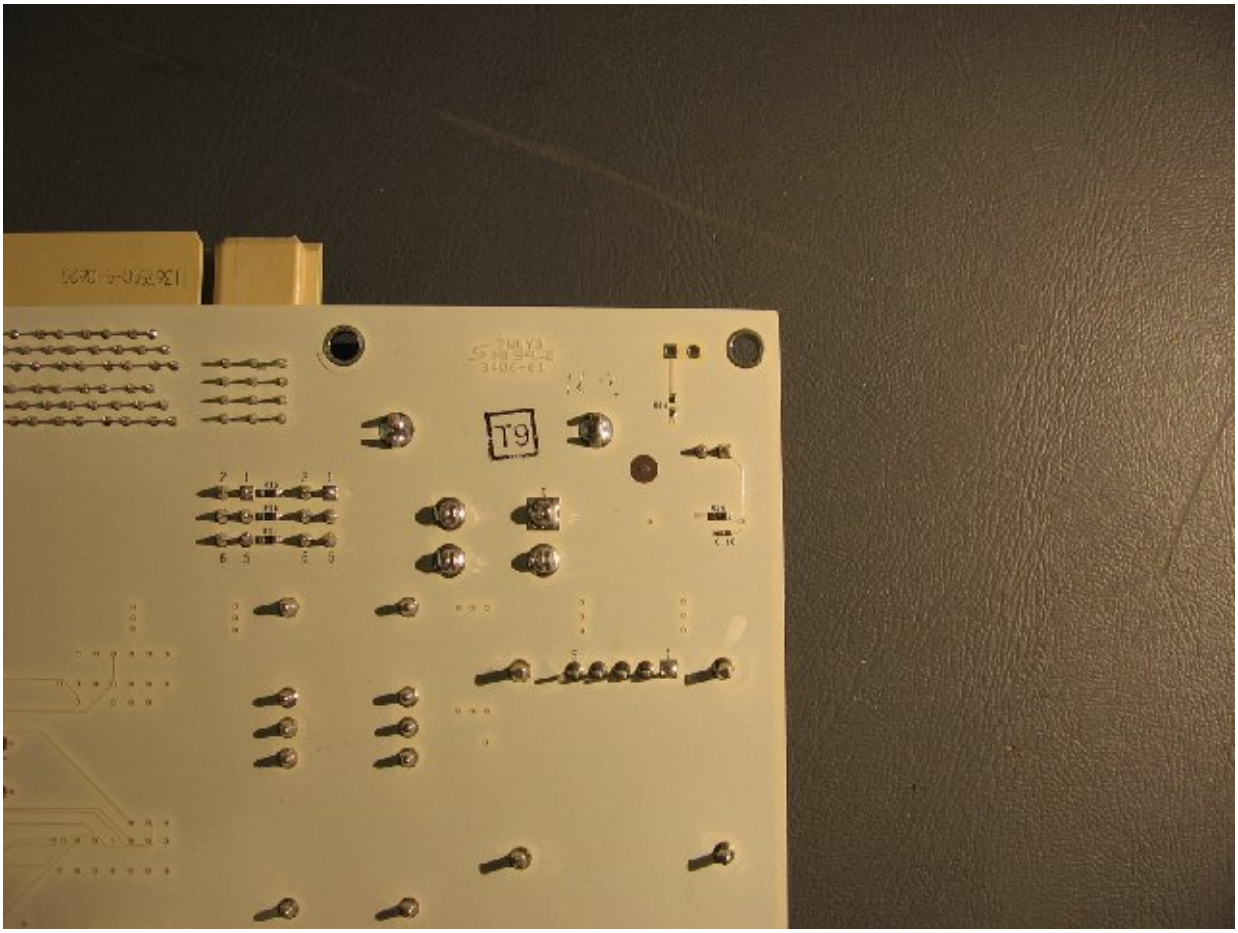


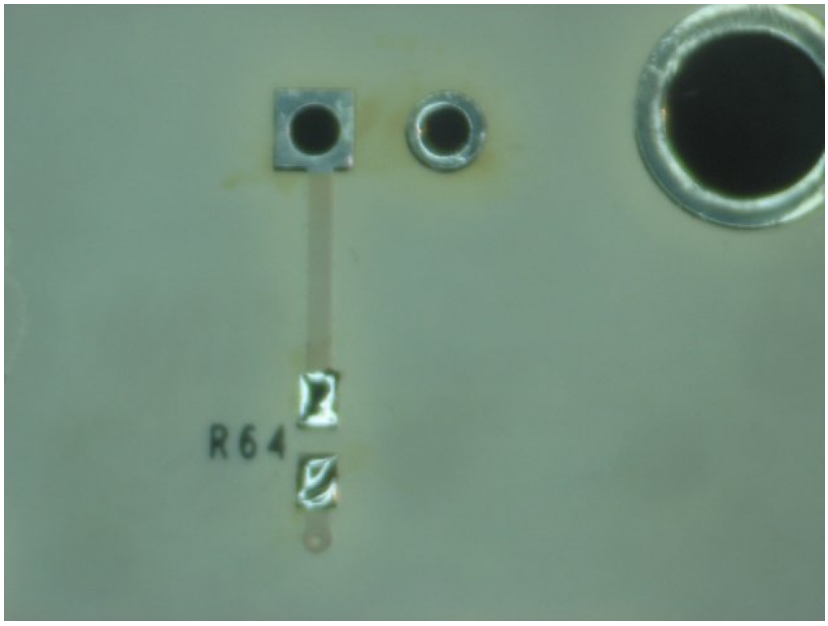
On the underside of the board in the same vicinity is resistor R64, which also needs to be removed. R64 is connected in series between the 5V plane and the LED.


T9

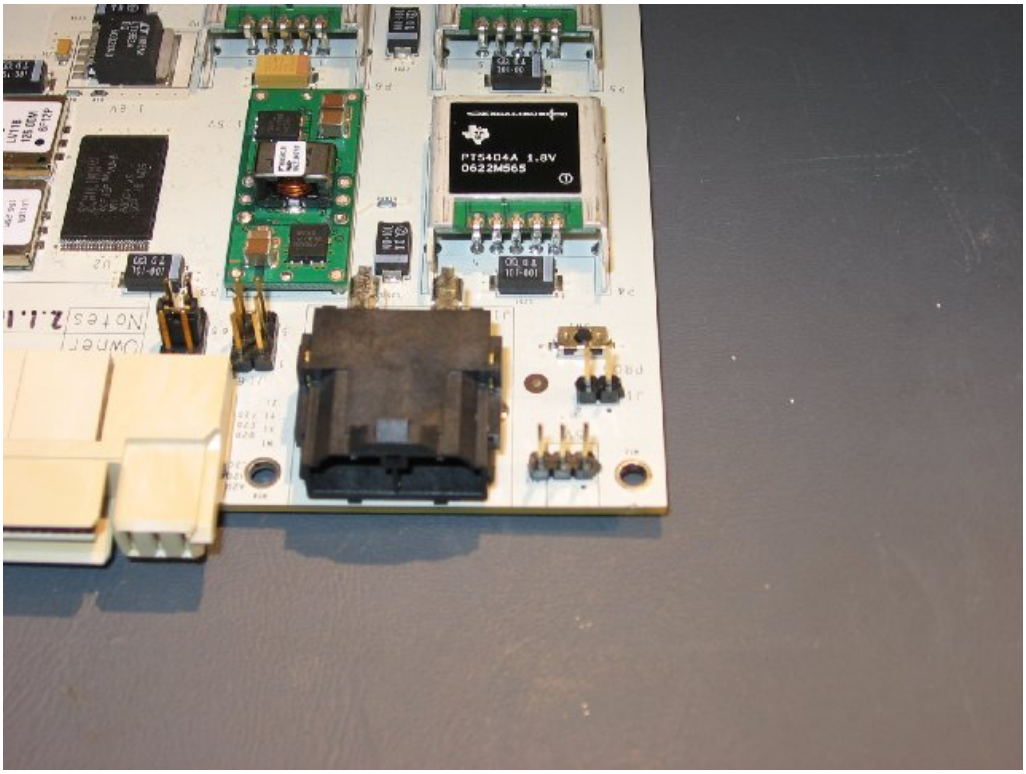

R64
R26

Once R64 has been removed:

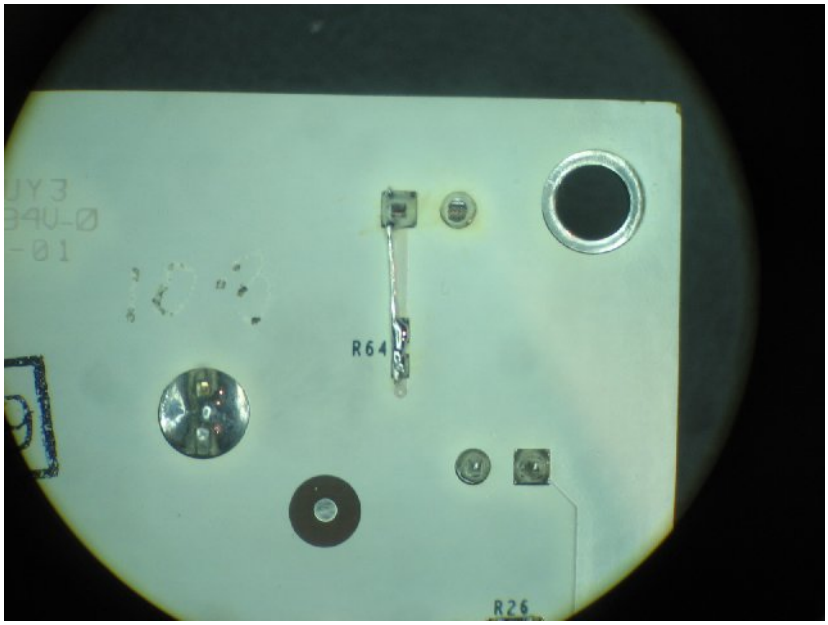


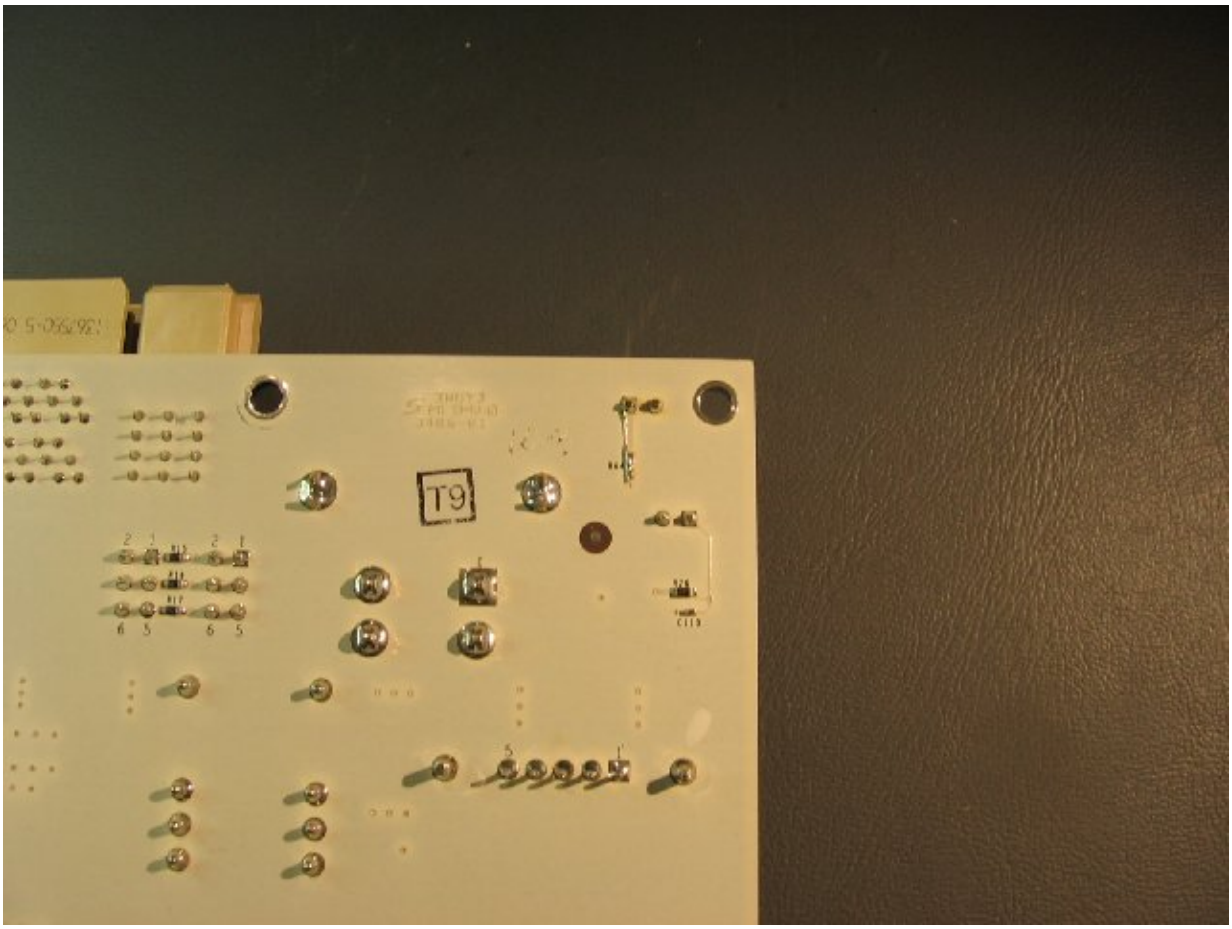


Insert a 1×2 or 1×3 0.100” header where the LED used to be populated. A 3-pin header is recommended, as it provides additional mechanical stability for standard 3-pin fan connectors. If a 3-pin header is used, clip the unused pin tail.



Once the header is installed, connect 5V to the header by shorting across the pads of R64 with solder or rework wire.





Once the board modification is complete, a 5V DC fan can be attached to the IBOB. A Panasonic/NMB FBK04F05H is recommended.