Summary of Files Available on GitHub

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The GitHub repository contains all of the design and source code files for the MicroBAR in their native format. These include:

Schematics and PCB Layout
Software: Altium Designer 10
This folder includes two separate projects for the two boards in the MicroBAR:

1. LAMP Chip PCB.PrjPCB
2. LAMP Microcontroller PCB.PrjPCB

Microcontroller and LCD Firmware
Software: Adruino 1.0.4 and Amulet Technologies GEMcompiler 1.1.2.
This folder includes:

1. Amulet LCD GUI. The "mainmenu.htm" is the root page that should be downloaded to the LCD.
2. Atmel8U2 DFU USB Firmware. This should be programmed onto the 8U2 USB interface chip via AVR-ISP.
3. Arduino Sketches. These include the firmware code for the MicroBAR. The "controller.ino" is the root sketch. Code for hardware peripherals (LCD, Header, Lights, GPS, etc.) is included in separate sketch files.

Enclosure CAD Files
Software: Rhinoceros 4
This folder includes the original enclosure design (enclosure.3dm) as well as exported STL files for 3D printing.

PC Control and Analysis Software
Software: Processing 1.2.1 and MATLAB
This folder includes:

1. Windows Driver. Once the 8U2 firmware is loaded, Windows will be able to use this driver to communicate with the MicroBAR as a serial port.
2. Processing UI. This is the main control program for the MicroBAR, written in the Processing language. LAMP_UI.pde is the main file.
3. MATLAB Analysis Scripts. All analysis and data visualizationwas carried out in MATLAB. plot_data_from_log.m parses log files generated by the Processing UI and generates a series of plots. microbar_calibration.mat includes the sensitivity coefficient matrix for the detector array.

Microfluidic Chip Layout
Software: AutoCAD 2012
This folder includes the standard chip layout that we use in this manuscript, which features 96 reaction wells at 4.5 mm pitch, with 16 wells connected in parallel to each of 6 inlets.