



# Wifi Radio Project

<http://mightyoem.com/wifiradio>

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mightyoem.com



# Motivation

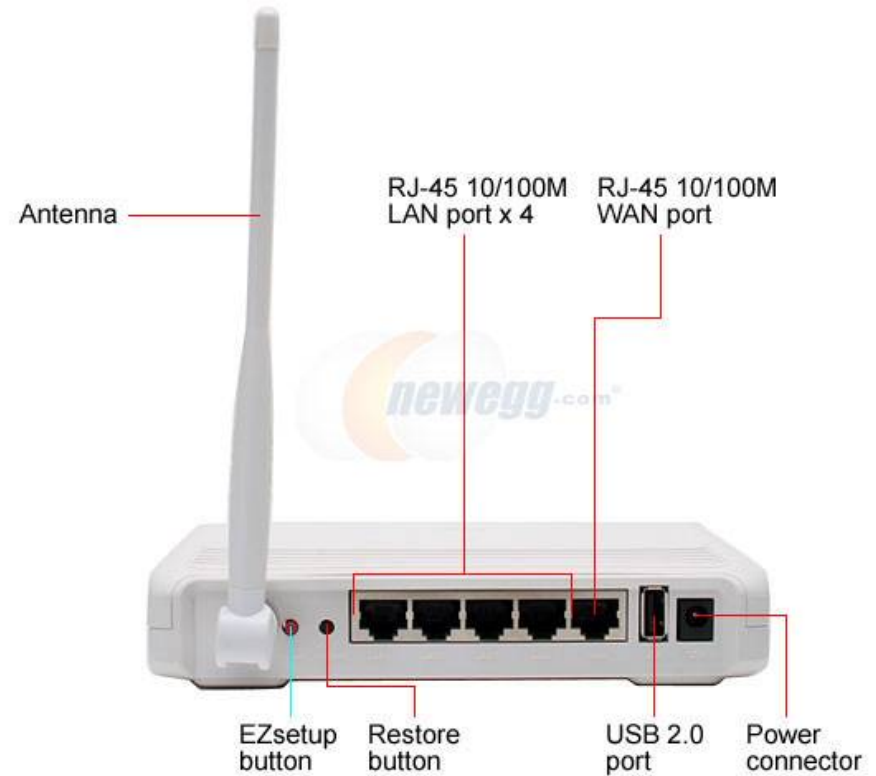
- How to get internet radio in garage without laptop?
- In late-2008, “Internet radios” were pretty rare
  - Lowest end was \$150, most \$300+
  - Eg. Asus Internet Air, Roku Soundbridge
  - Most had crappy canned interfaces, not much flexibility



# Wireless Router = Hackable platform for doing cool stuff

- A wireless router is sort of like a small, low power computer, right?
  - ~200MHz CPU
  - 16MB RAM
  - 4MB Flash (more is better)
  - Limited IO
  - And it runs Linux!

# Asus WL-520gU



- Asus WL-520gU
  - Introduced in July 2007
  - USB port for printer sharing
  - External removable antenna (RP-SMA)
  - Cheap, often discounted
    - \$40@ Newegg, sometimes ~\$20 after rebates.

# USB!!1!1

- USB-Audio
- USB-Storage
- USB-Serial
- ??





# PCB - Top

5V → 3.3V  
PS

16MB SRAM  
Samsung  
K4S281632I

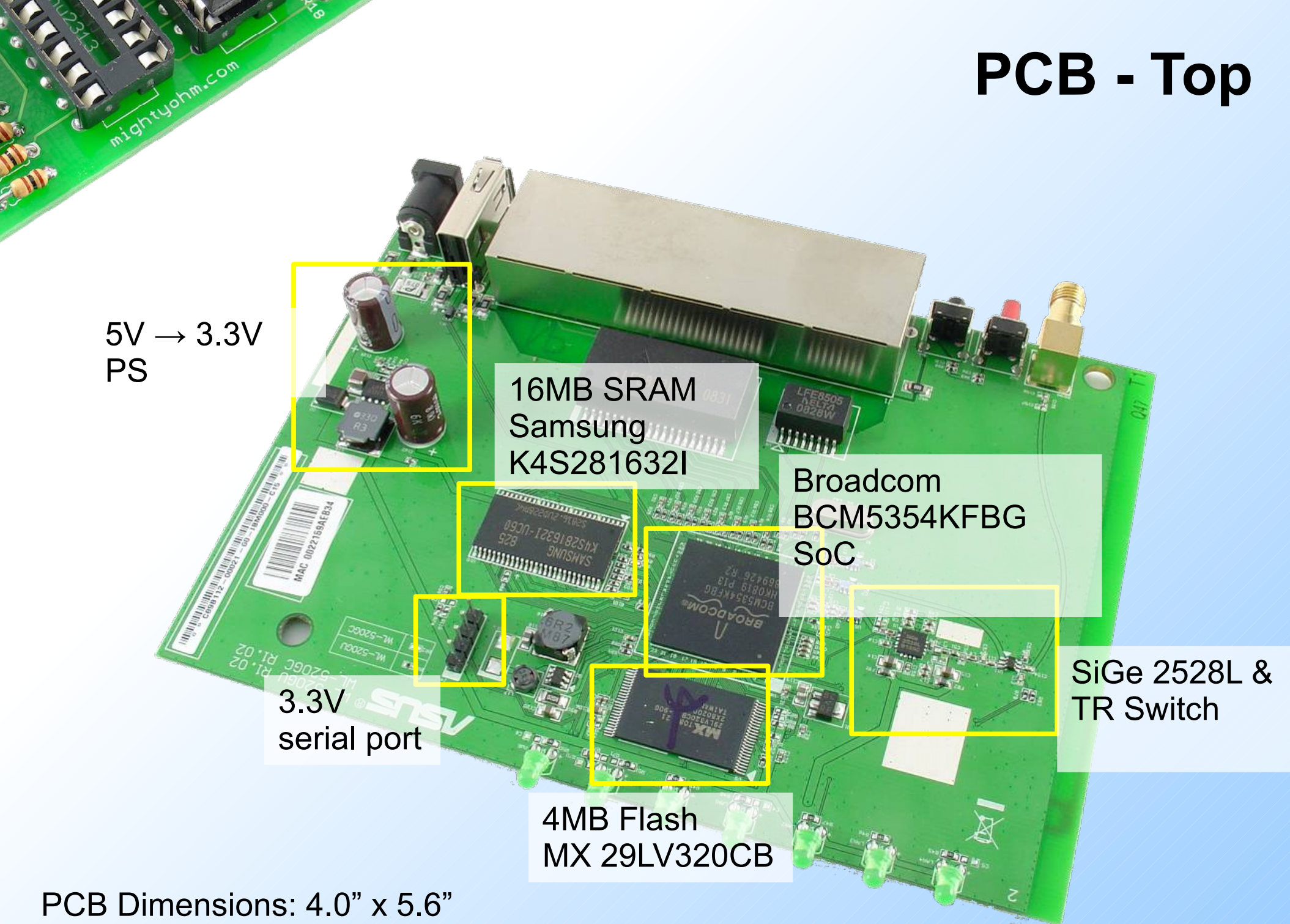
Broadcom  
BCM5354KFBG  
SoC

SiGe 2528L &  
TR Switch

3.3V  
serial port

4MB Flash  
MX 29LV320CB

PCB Dimensions: 4.0" x 5.6"



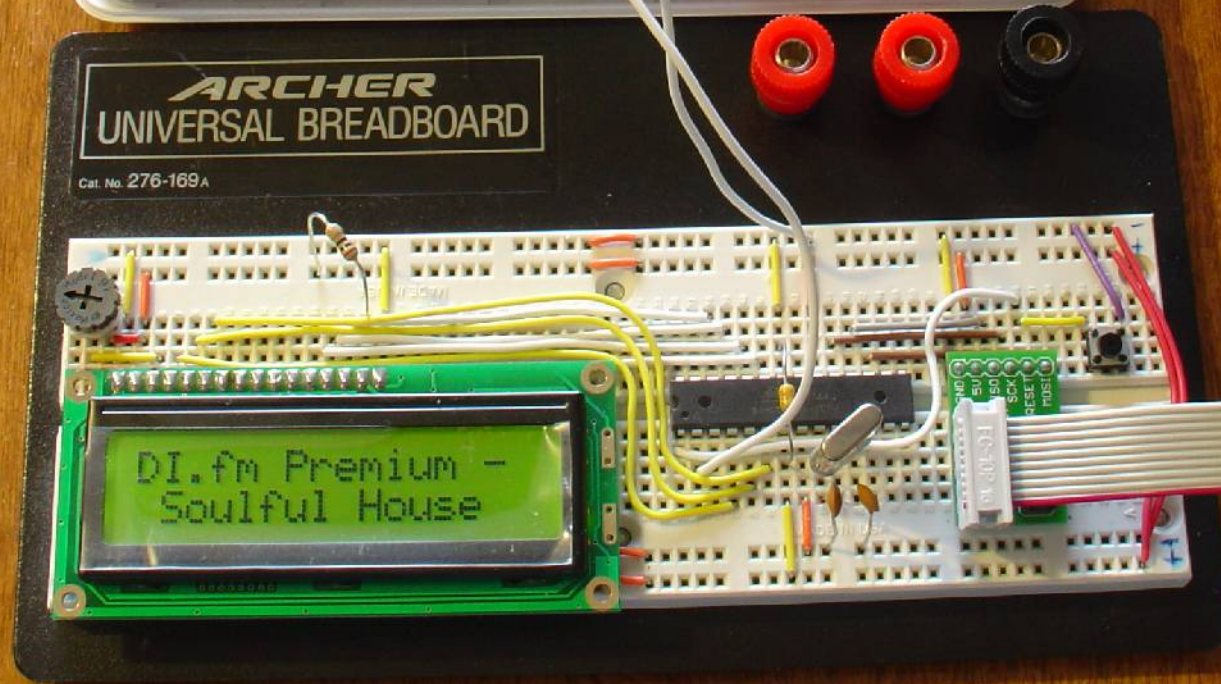
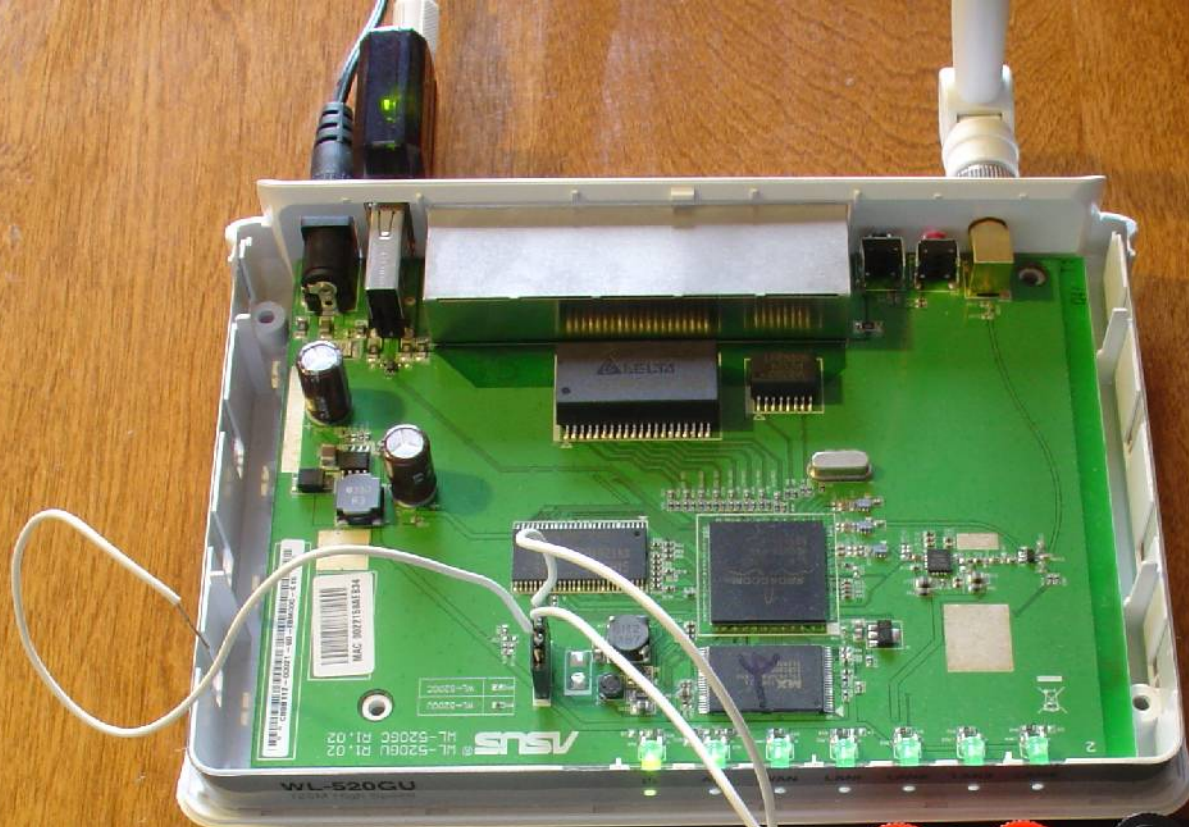


<http://openwrt.org>

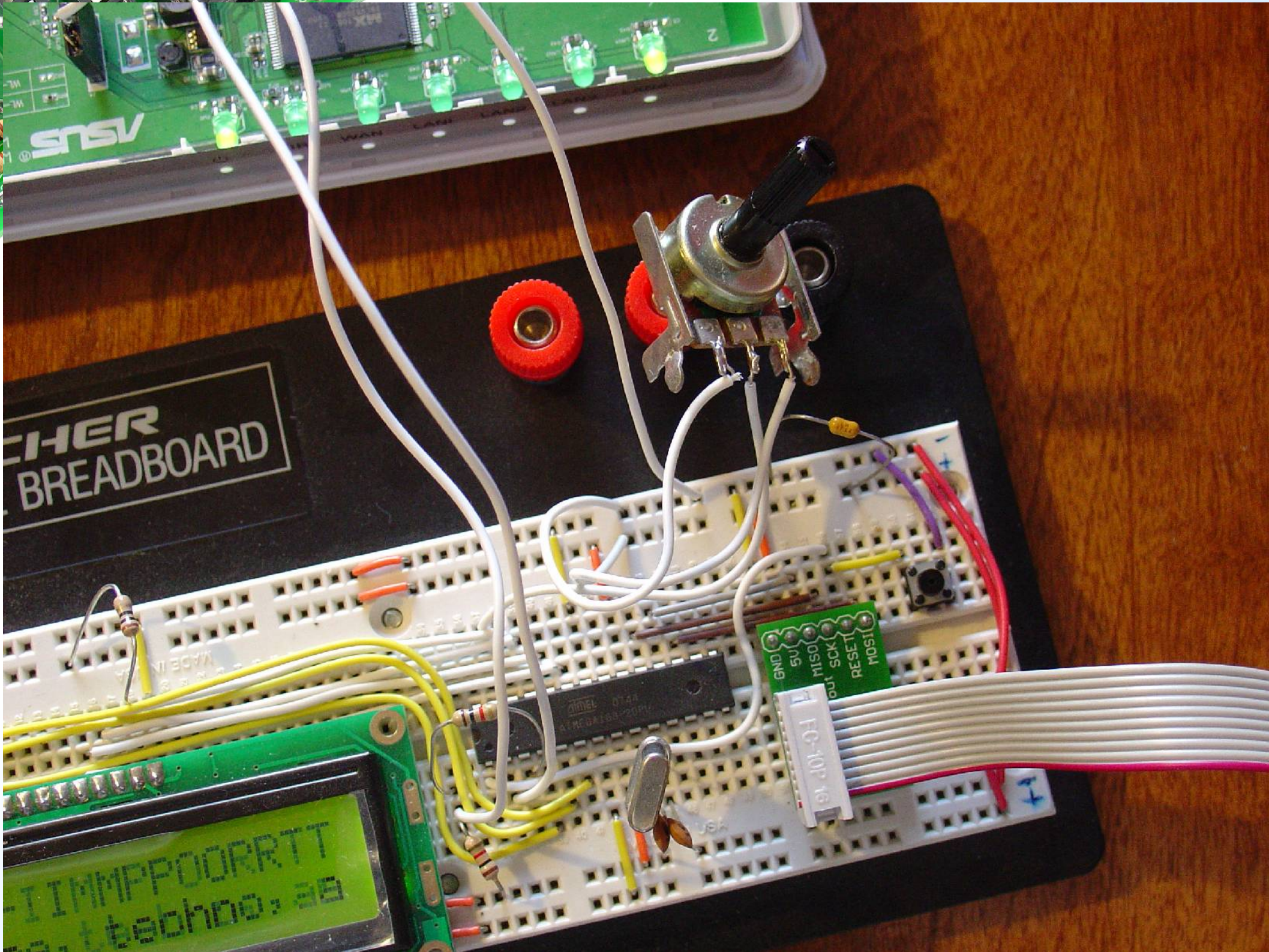
**OpenWrt is described as a Linux distribution for embedded devices.**

“... OpenWrt is the framework to build an application without having to build a complete firmware around it; for users this means the ability for full customization, **to use the device in ways never envisioned.**”











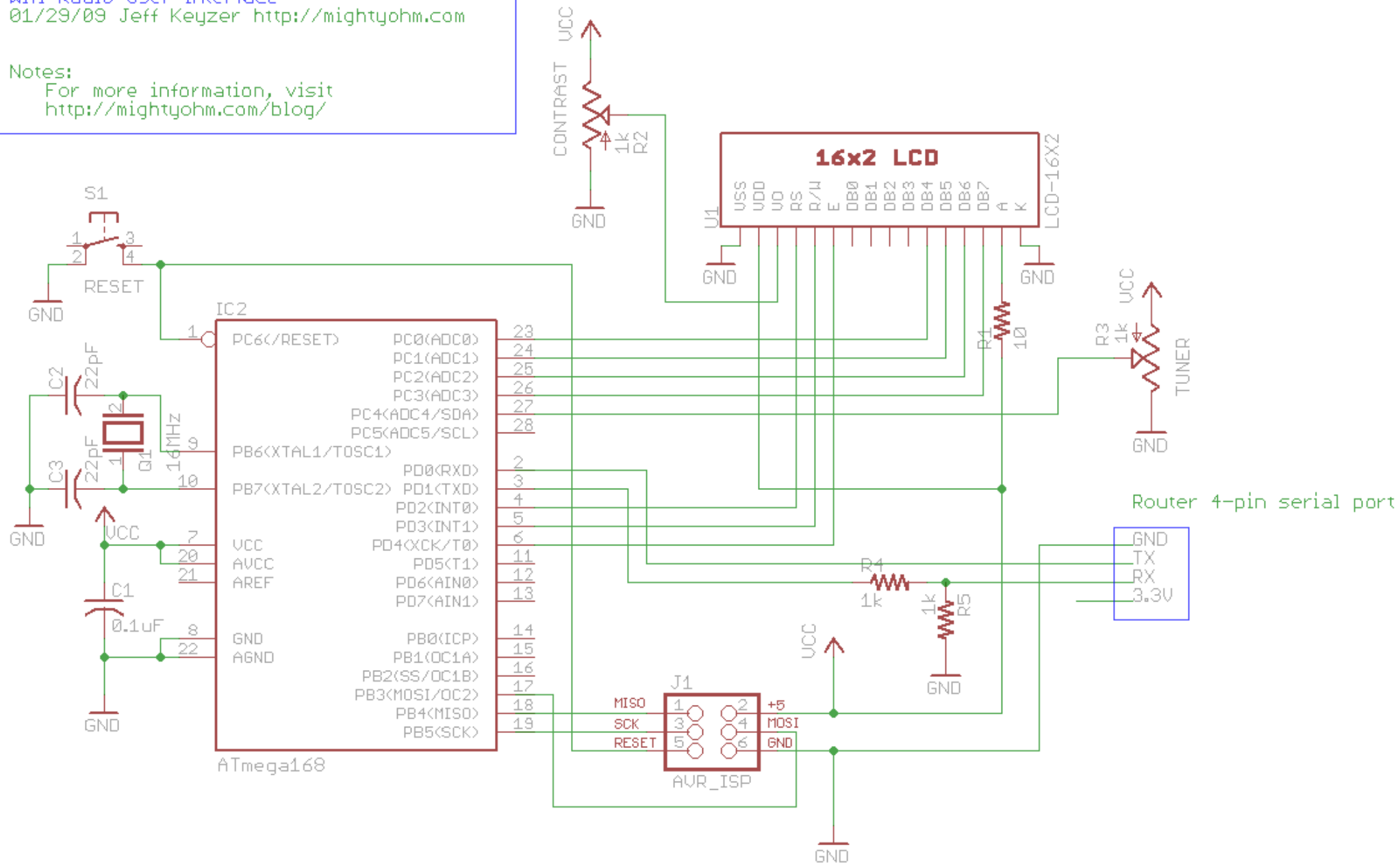
# Tuner/Display Circuit Schematic

Wifi Radio User Interface

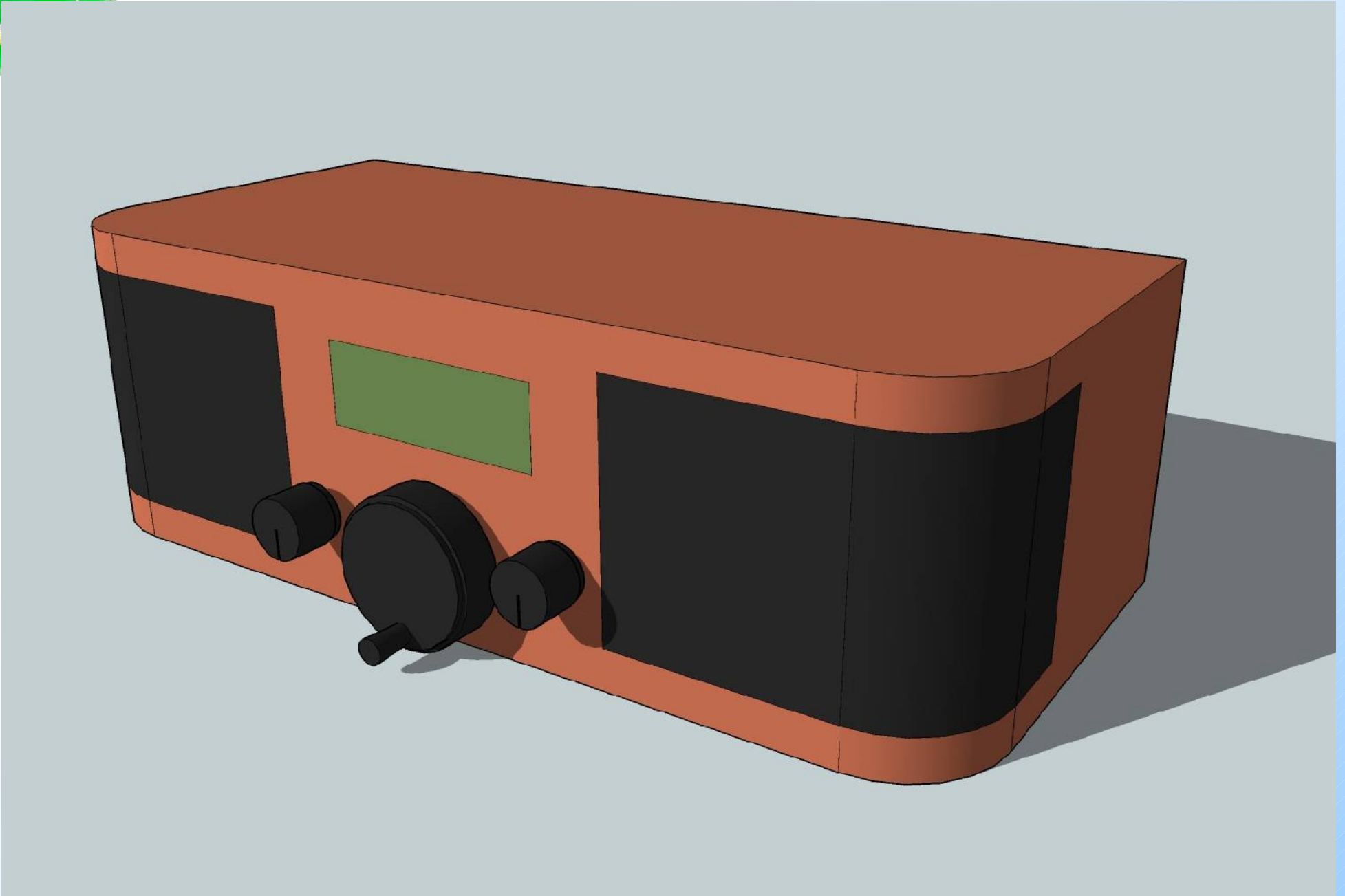
01/29/09 Jeff Keyzer <http://mightyohm.com>

## Notes:

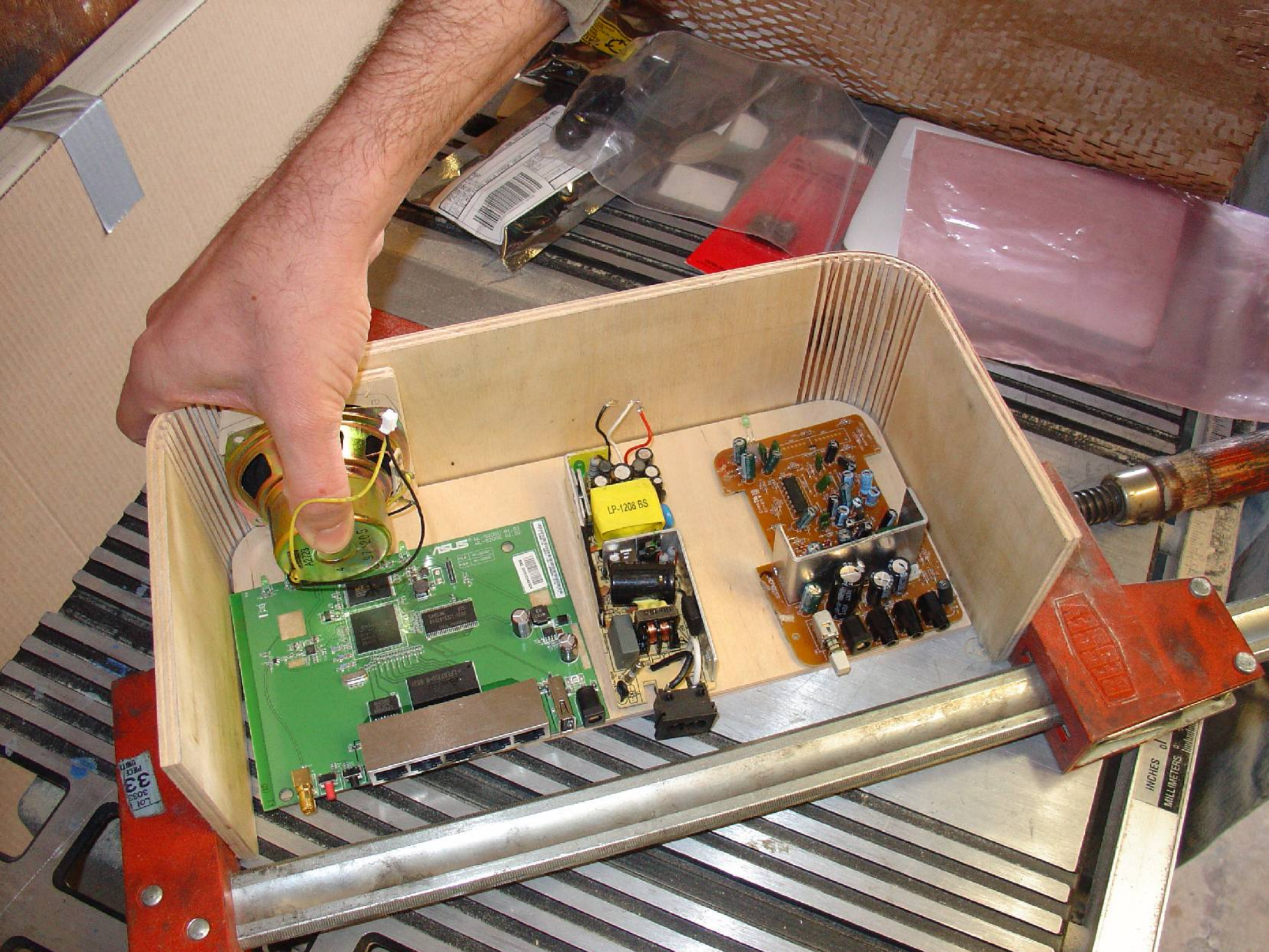
For more information, visit  
<http://mightyohm.com/blog/>



# Google Sketchup model













# Features

- Connects to WiFi network (802.11b/g)
  - Supports common types of encryption (WEP, WPA2+AES)
- Plays most Shoutcast (mp3) streaming radio stations
- Totally self-contained, just needs power. No PC necessary.
- Tuning knob changes stations
- Scrolling display shows current station, artist/title information
- Total cost to get started ~\$50
  - Finished radio ~\$150 (not including the donated box!)







Wifi Radio  
Nishtyohn.com





# Links

- For more info, boot images, tutorials:
  - **<http://mightyohm.com/wifiradio/>**
- Discussion forums
  - **<http://mightyohm.com/forum/>**
- Contact:
  - **<http://mightyohm.com>**
  - 
  - **@mightyohm**