

Fun + Easy Homebrewing

Hands-On Ham Radio

George Heron

Amateur Radio Operator: N2APB



Trenton Computer Festival

March 16, 2013

Trenton, NJ

“Homebrewing” = Do It Yourself

What is “Fun & Easy?”

- Parts all available ... and not too expensive!
- Fun and useful when completed
- Learn something along the way
- Build it in one evening
- It works!



So where do all these

“Fun & Easy Projects”

come from?



CWTD

Chat With The Designers

Your Live, Online, Interactive Weekly Magazine
for Hams, Homebrewers and Experimenters



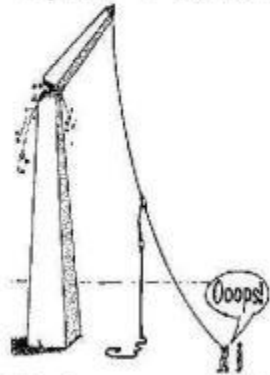
- Bi-weekly live “radio program”
- TONS of great fun & educational topics
- Some pretty good projects too
- <https://dl.dropbox.com/u/43021514/CWTD/TeamspeakChat.html>

Atlanticon QRP Forums

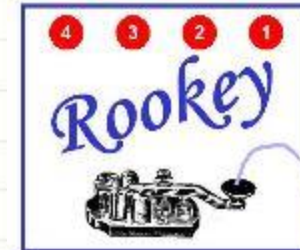
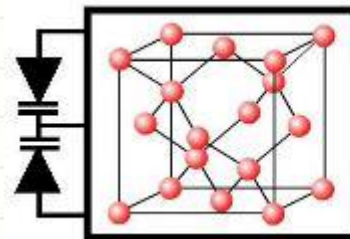
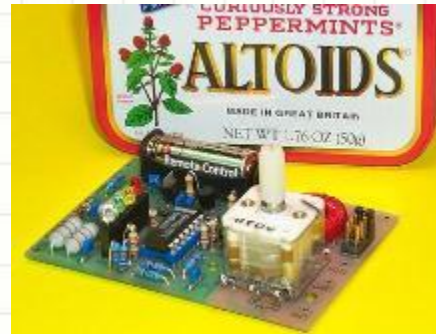
1999 - 2007

<http://www.amqrp.org/atlanticon/index.htm>

Atlanticon 99 QRP Forum

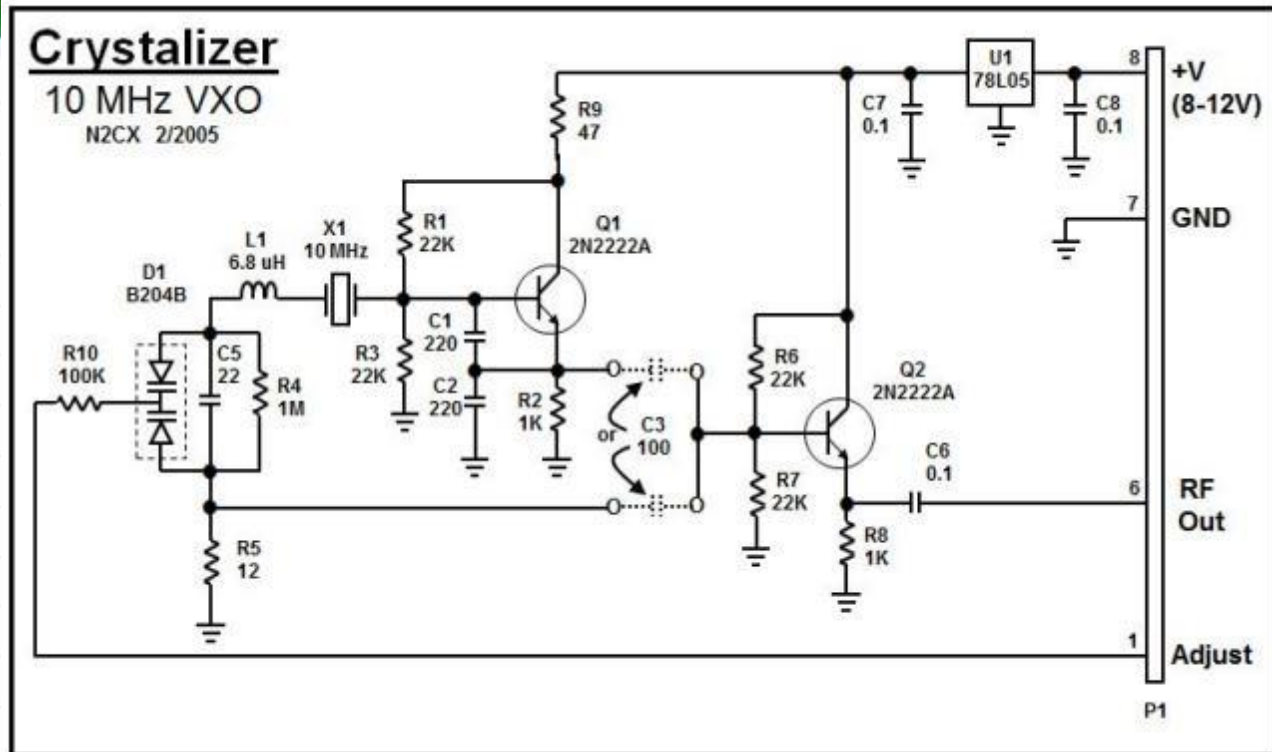


Baltimore, MD



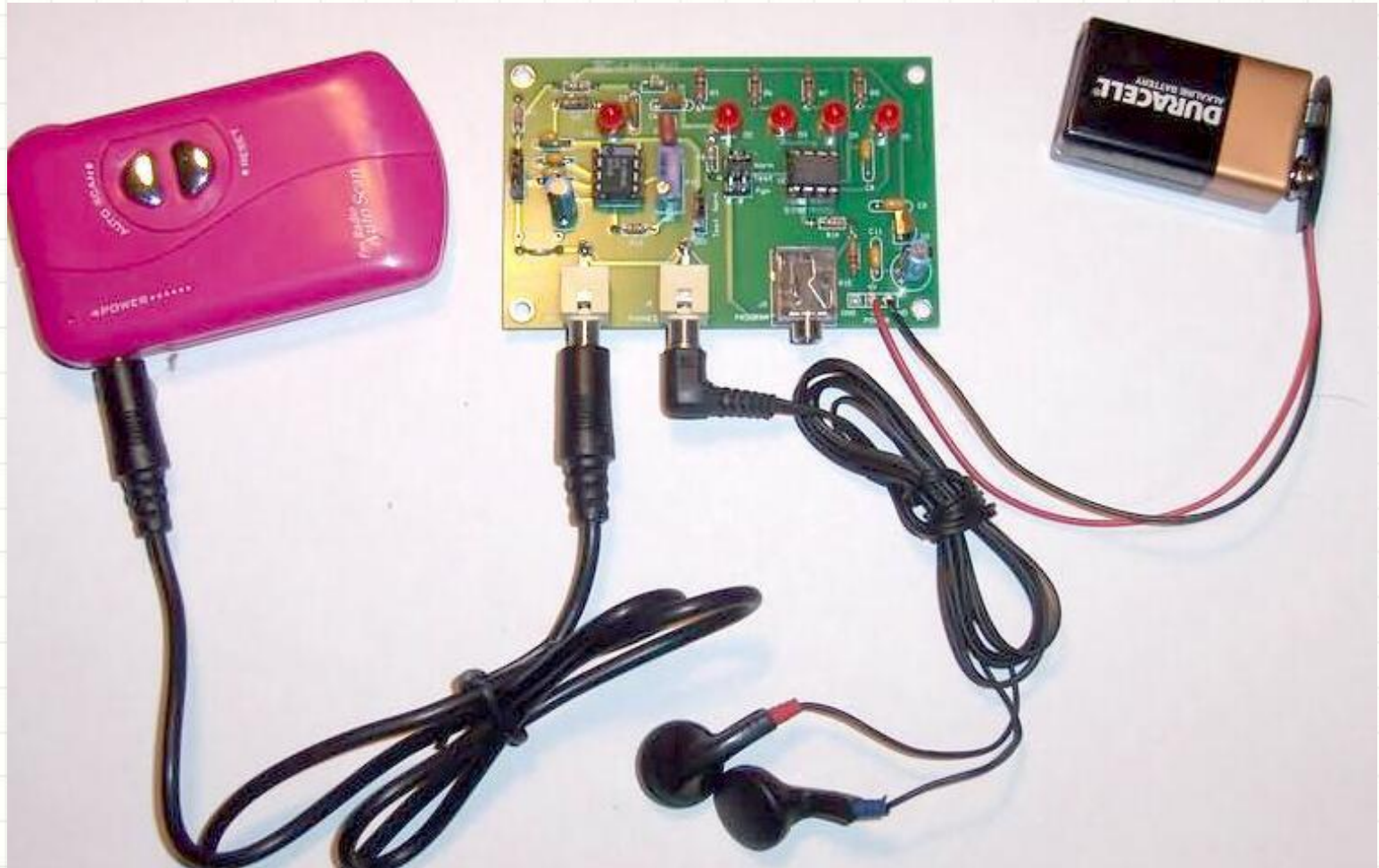
The Crystalizer

www.njgrp.org/atlanticon/Crystalizer.html

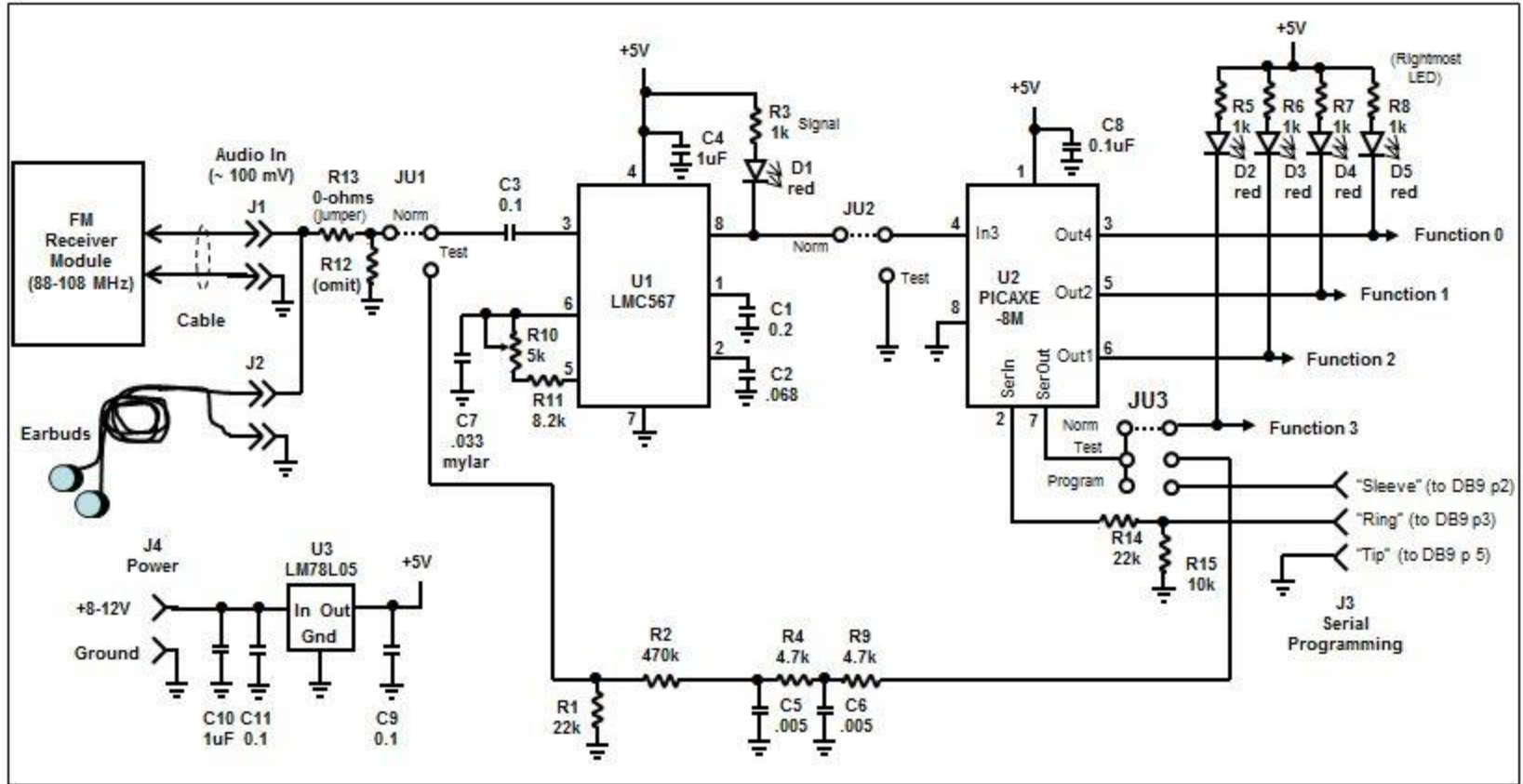


Rookey

<http://www.midnightdesignsolutions.com/rookey/index.html>



Rookey



Boy Scout Regen

<http://www.njgrp.org/regen/index.html>



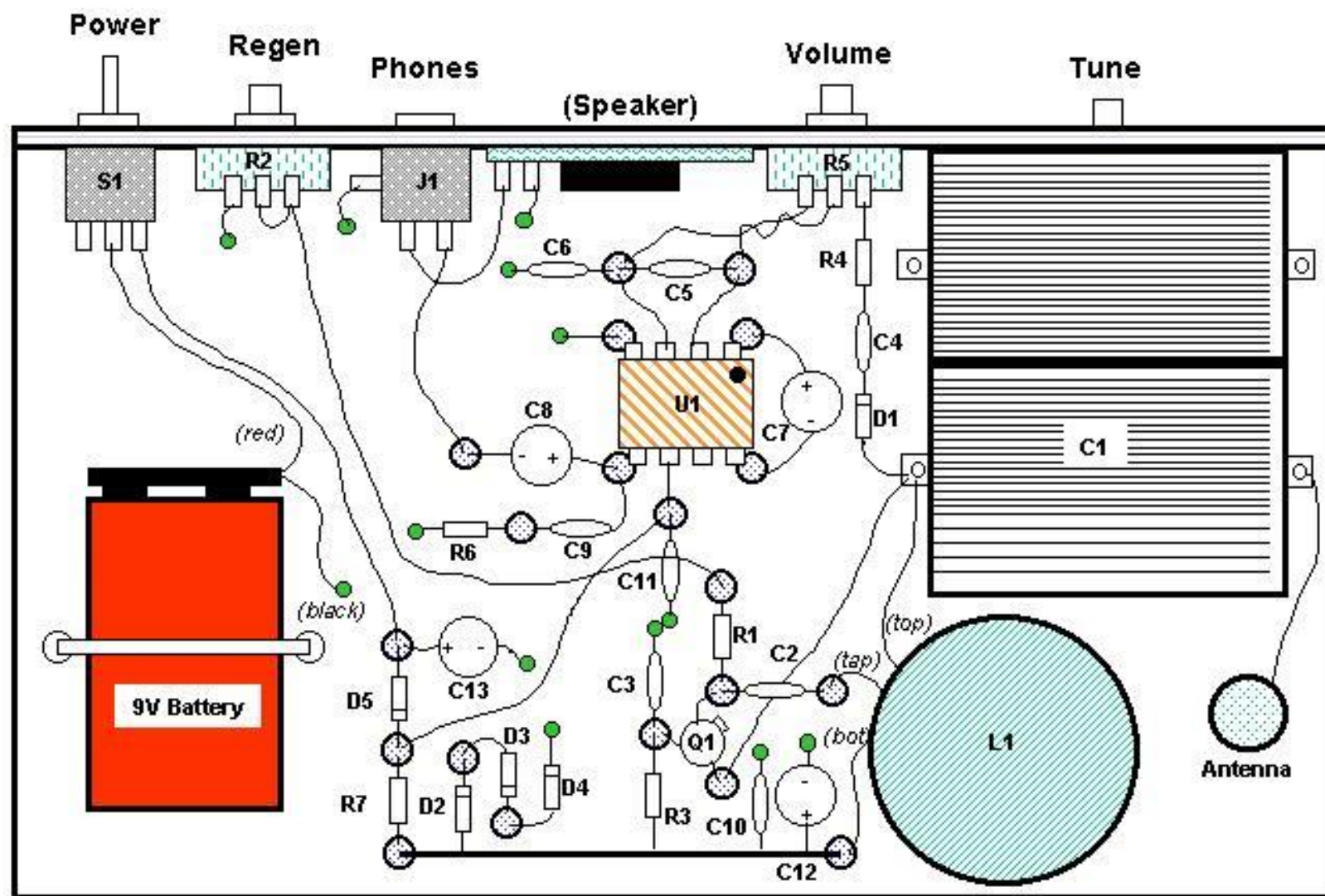
Boy Scout Regen

<http://www.njgrp.org/regen/index.html>



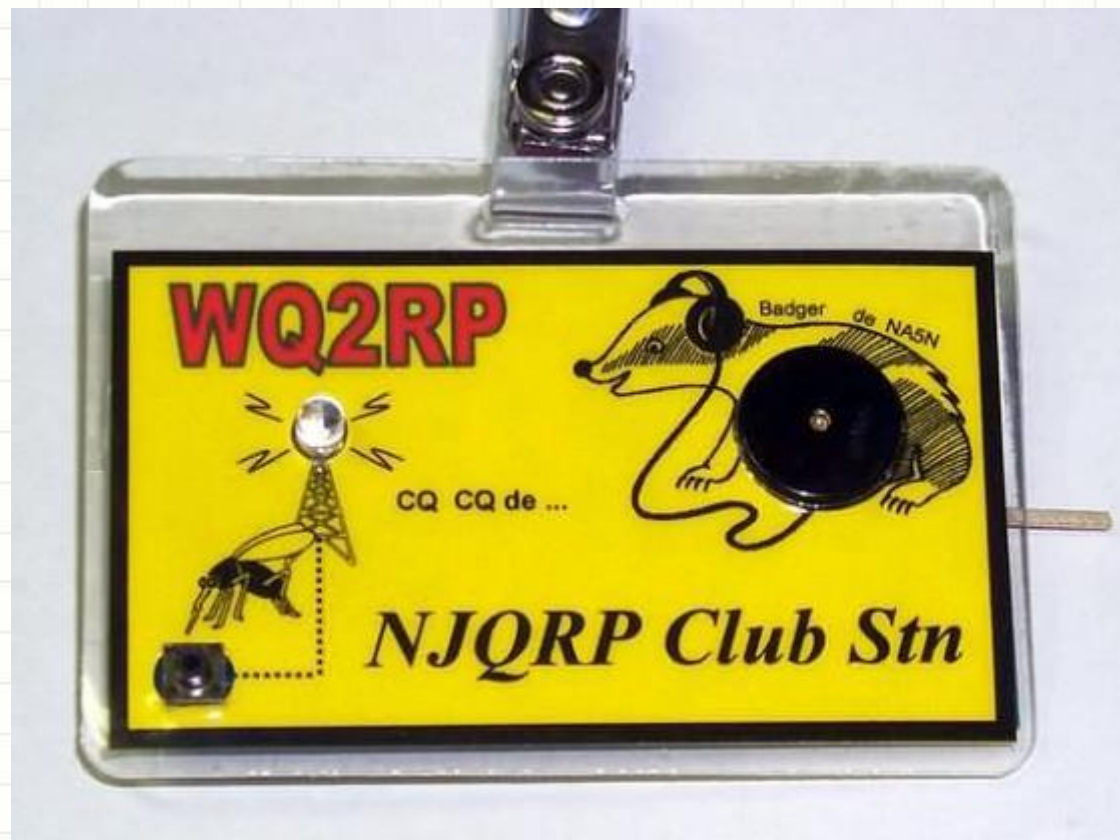
REGEN SHORTWAVE RECEIVER CONSTRUCTION LAYOUT

NOTE: Front panel components shown not to scale ... aligned for easy viewing



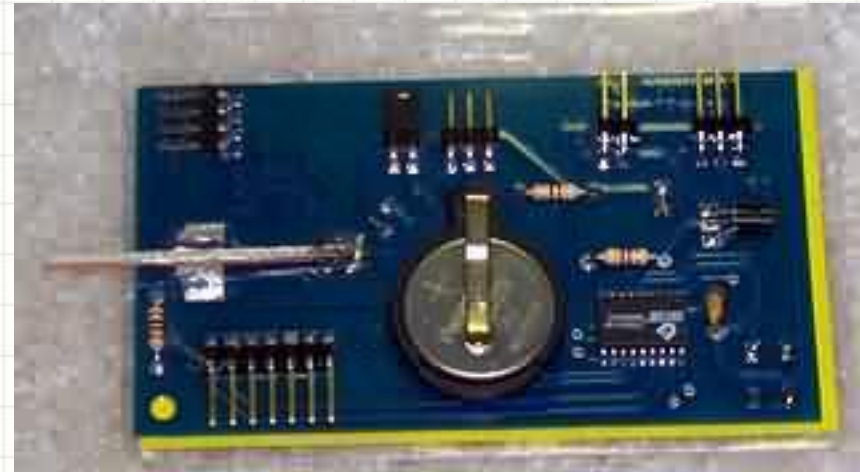
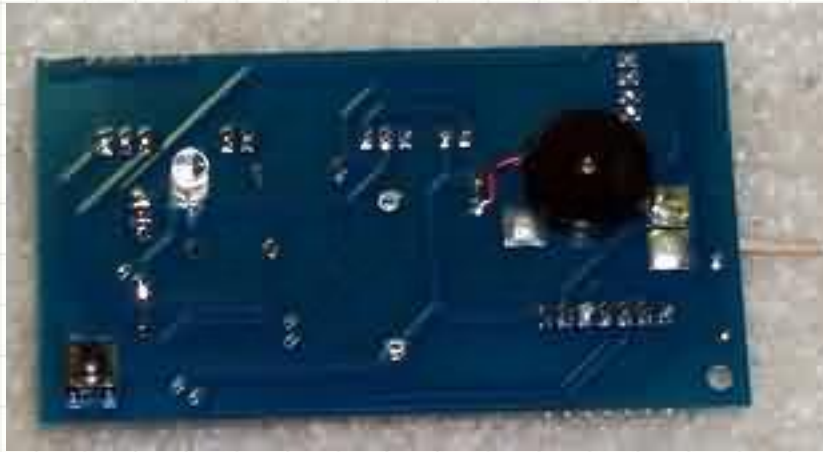
Badger

<http://www.njqrp.org/badger/index.html>



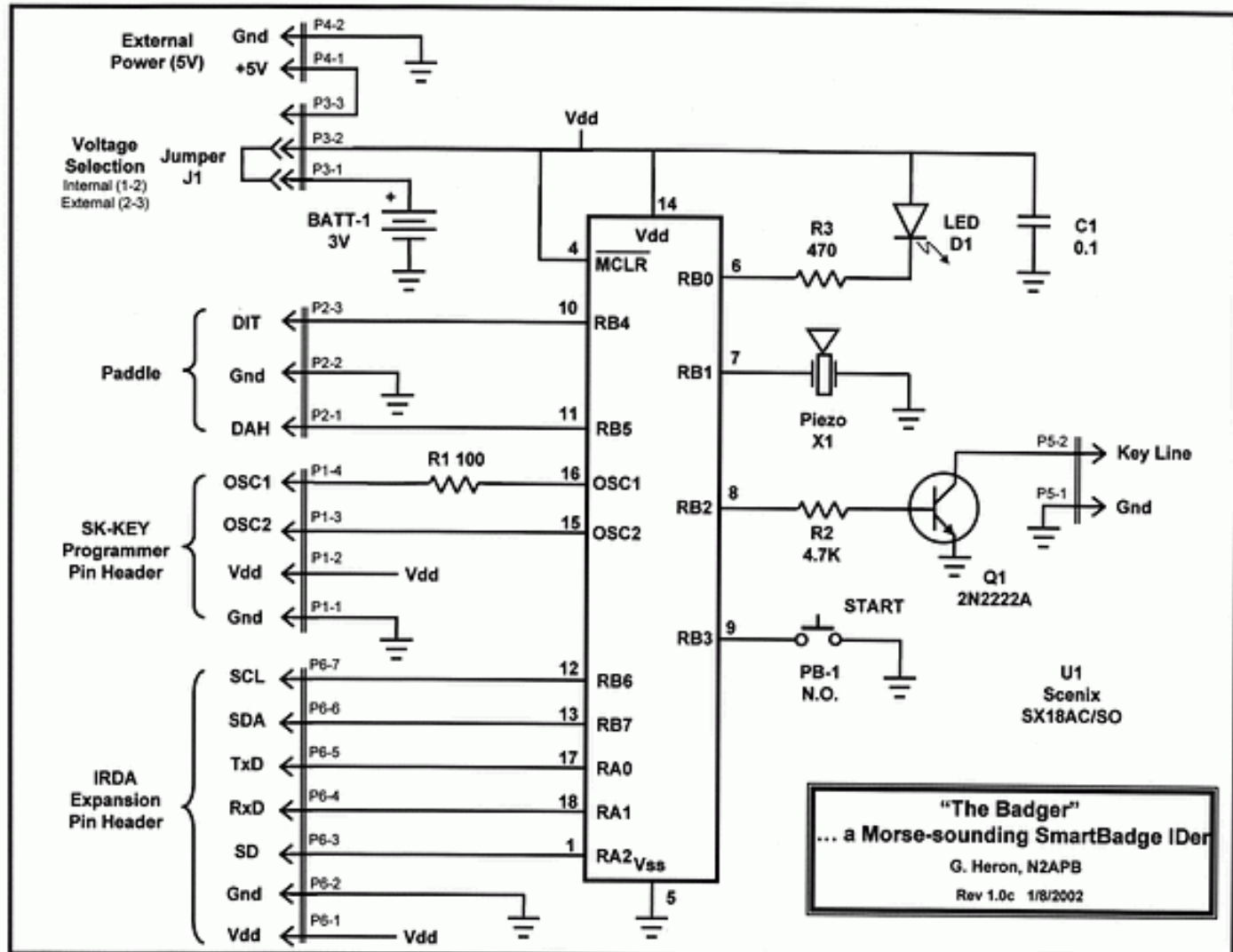
Badger

<http://www.njgrp.org/badger/index.html>



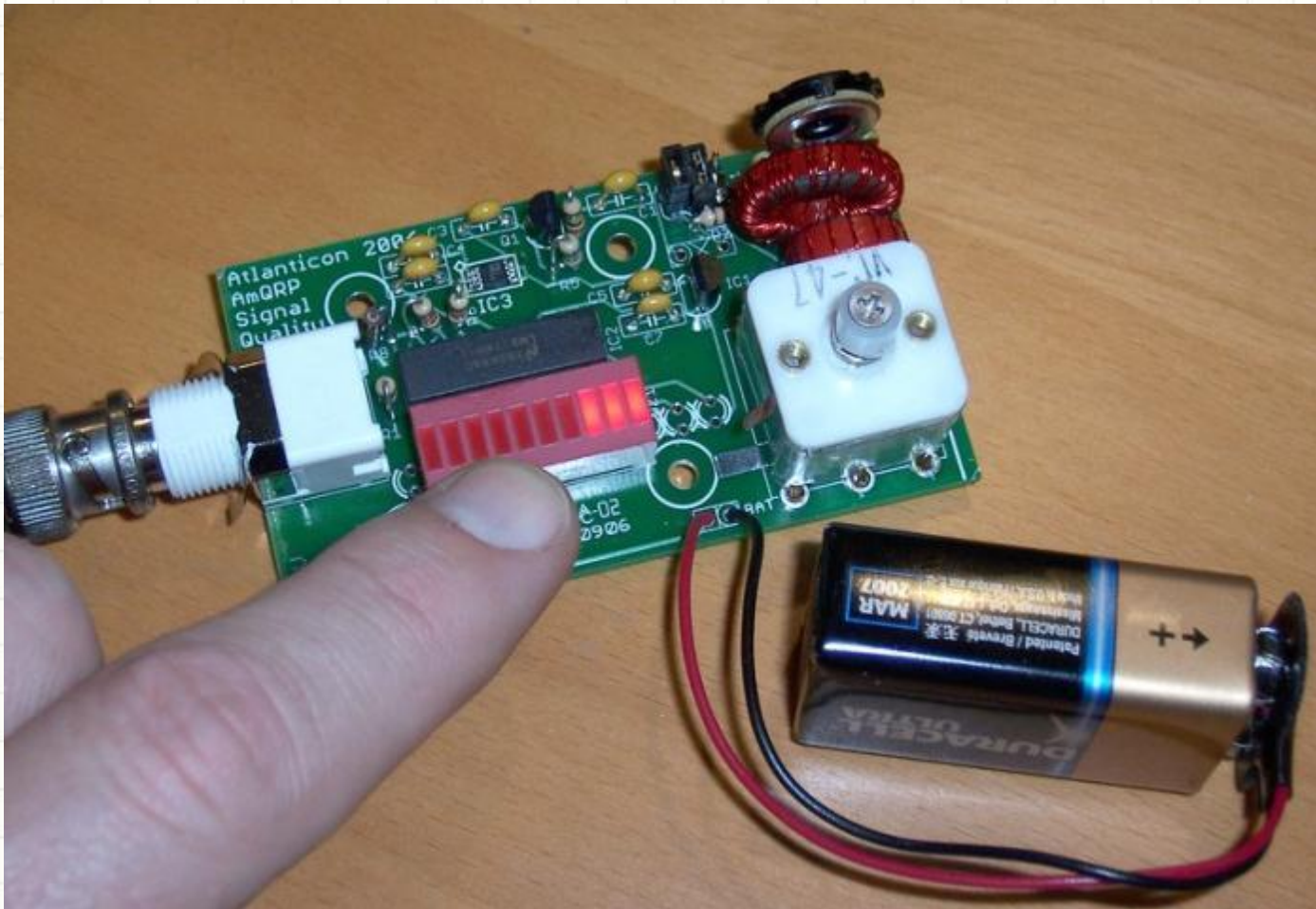
Badger

<http://www.njgrp.org/badger/index.html>



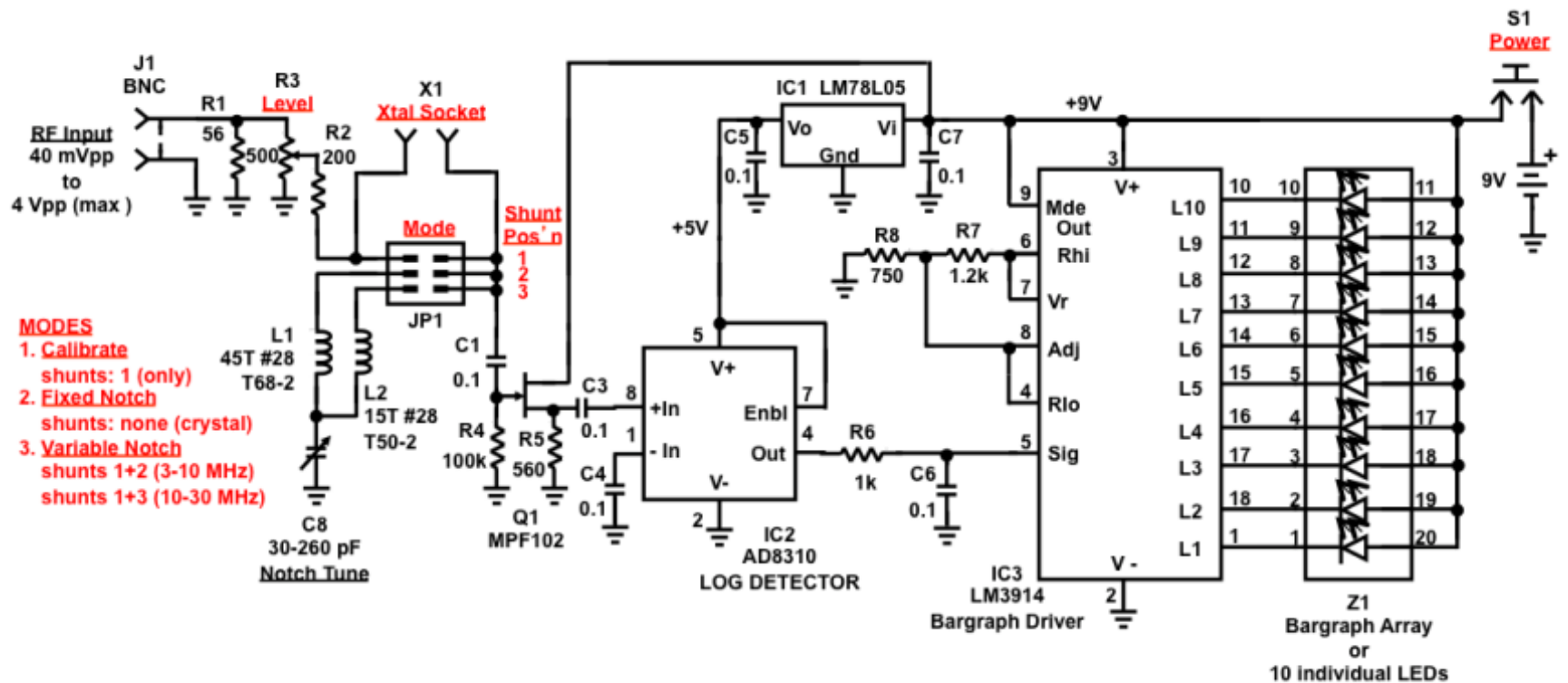
Signal Quality Meter

<http://www.njgrp.org/sqm/index.html>



Signal Quality Meter

<http://www.njgrp.org/sqm/index.html>

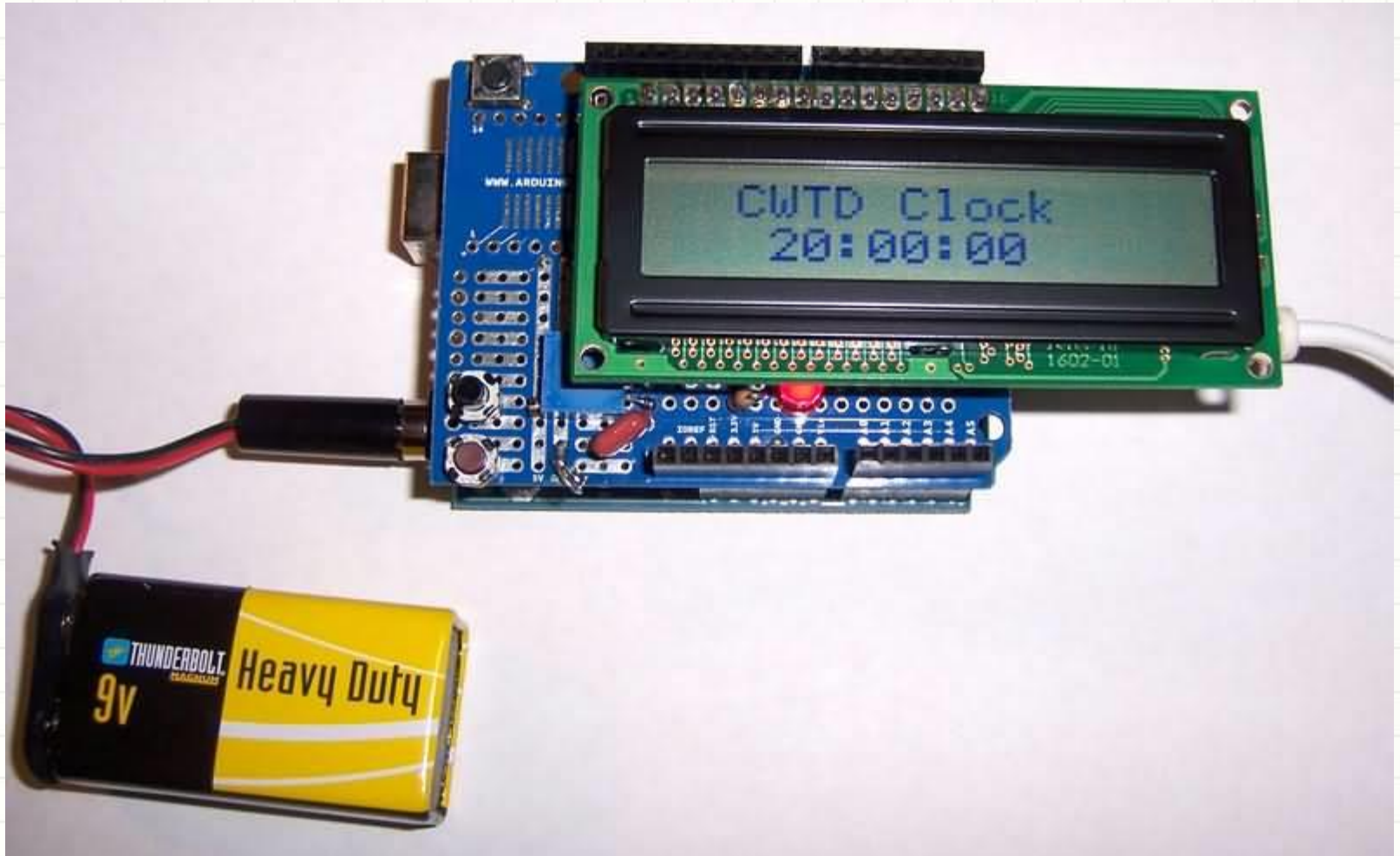


MODES

1. **Calibrate**
shunts: 1 (only)
2. **Fixed Notch**
shunts: none (crystal)
3. **Variable Notch**
shunts 1+2 (3-10 MHz)
shunts 1+3 (10-30 MHz)

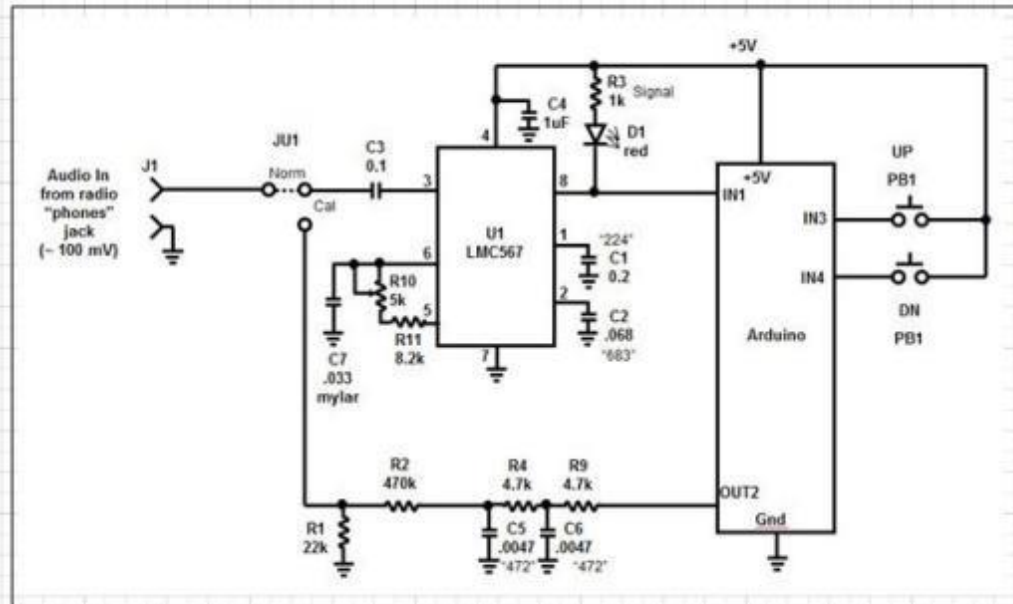
CWTD Arduino Clock

<https://dl.dropbox.com/u/43021514/CWTD/Feb5.html>

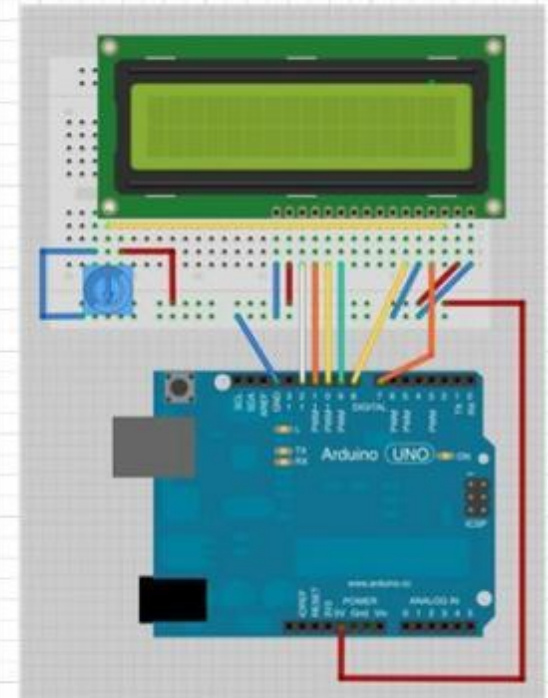


CWTD Arduino Clock

Tone Decoder Wiring



LCD Wiring



Display Pin Name	Display Pin Number	Arduino Pin (in this example)
RS	4	7
E	6	8
D4	11	9
D5	12	10
D6	13	11
D7	14	12

Arduino “Uno”

<http://arduino.cc/en/Main/ArduinoBoardUno>



Arduino References

Wikipedia ... <http://en.wikipedia.org/wiki/Arduino>

Arduino Home Page ... <http://www.arduino.cc/>

Arduino Software Download Page ... <http://arduino.cc/en/Main/Software>

Arduino Tutorial by ladyada.net ... <http://www.ladyada.net/learn/arduino/>

102 Projects from Make Magazine ... <http://makeprojects.com/c/Arduino>

Reference Books ...

The Definitive Guide to (All) Arduino Reference Books ... <http://www.arduinobooks.com/>

The Arduino Cookbook ... http://www.amazon.com/gp/product/0596802471/ref=as_li_ss_tl?ie=UTF8&tag=ab-checkprice-20&linkCode=as2&camp=217145&creative=399369&creativeASIN=0596802471

Programming Arduino - Getting Started With Sketches ... http://www.amazon.com/Programming-Arduino-Getting-Started-Sketches/dp/0071784225/ref=sr_1_4?ie=UTF8&qid=1358741928&sr=8-4&keywords=arduino

30 Arduino Projects for the Evil Genius ... <http://www.arduinoevilgenius.com/>

Purchase the Arduino at ...

Adafruit Arduino Starter Pack ... <http://www.adafruit.com/products/68>

Maker Shed ... http://www.makershed.com/Arduinos_Microcontrollers_s/43.htm

Mintduino ... <http://blog.makezine.com/2013/01/18/mintduino-game-pack-learning-arduino-from-the-ground-up/>

Digi-Key ... http://www.digikey.com/product-detail/en/A000066/1050-1024-ND/2784006?WT.mc_id=PLA_2784006&gclid=CMLp77rH-LQCFQsG4Aod5icA1Q

Atmega AT328P chip with programmed-bootloader ... <http://www.adafruit.com/products/123>

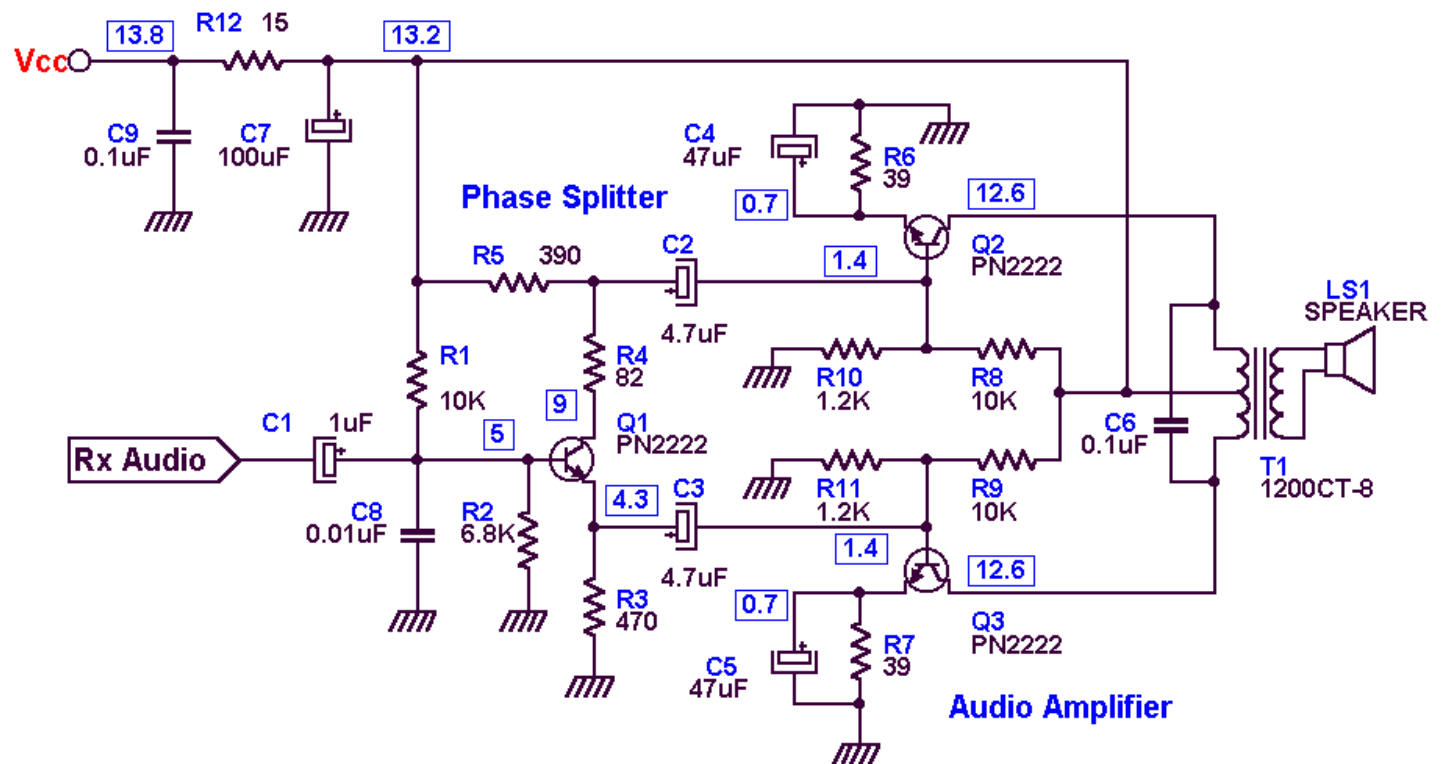
Islander Audio Amp

<http://www.njgrp.org/islanderamp/index.html>



Islander Audio Amp

K8IQY SW-30++ Auxiliary Audio Amplifier



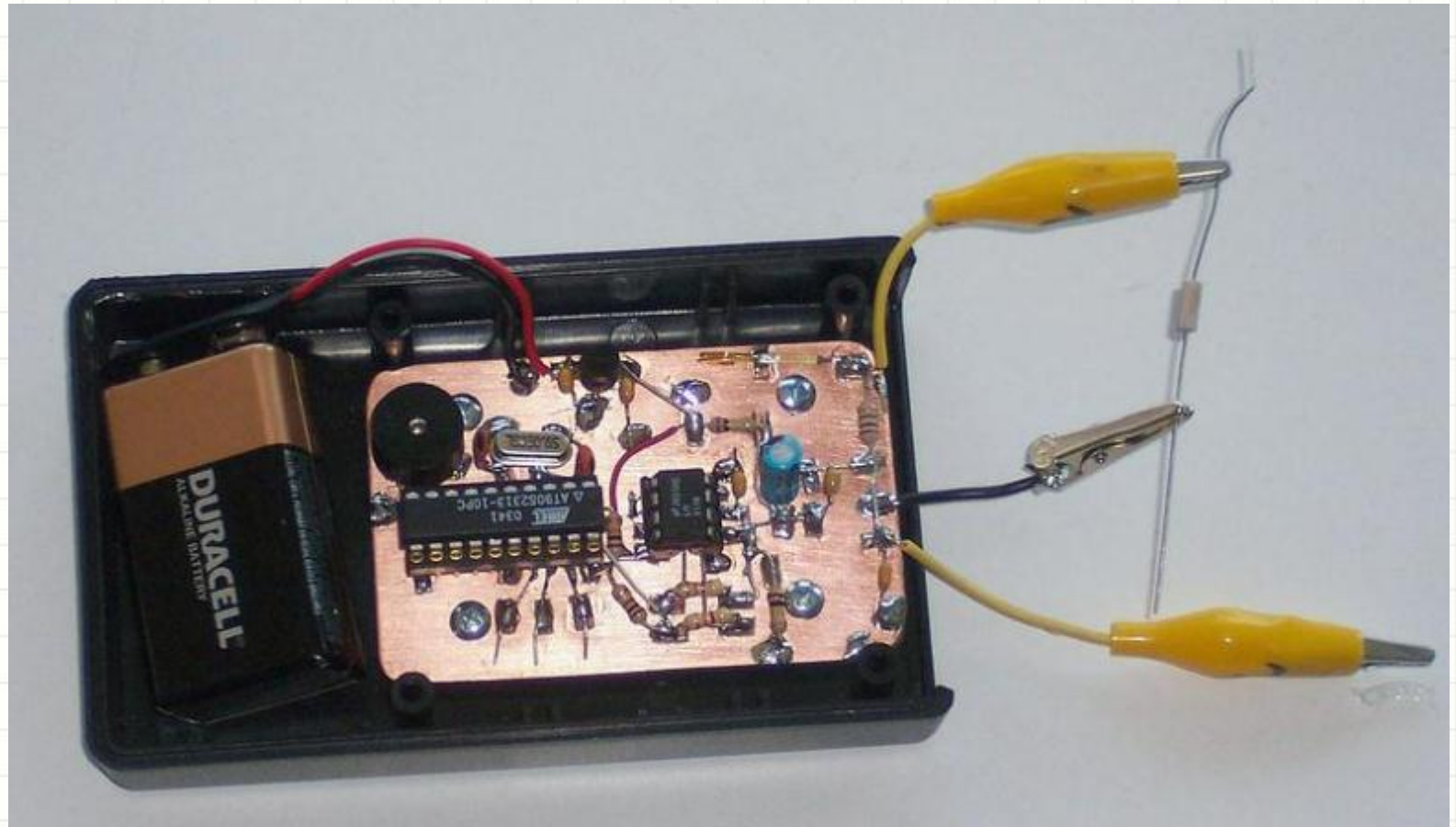
Jim Kortge, K8IQY

June 17, 2001

Revised: 07092001b

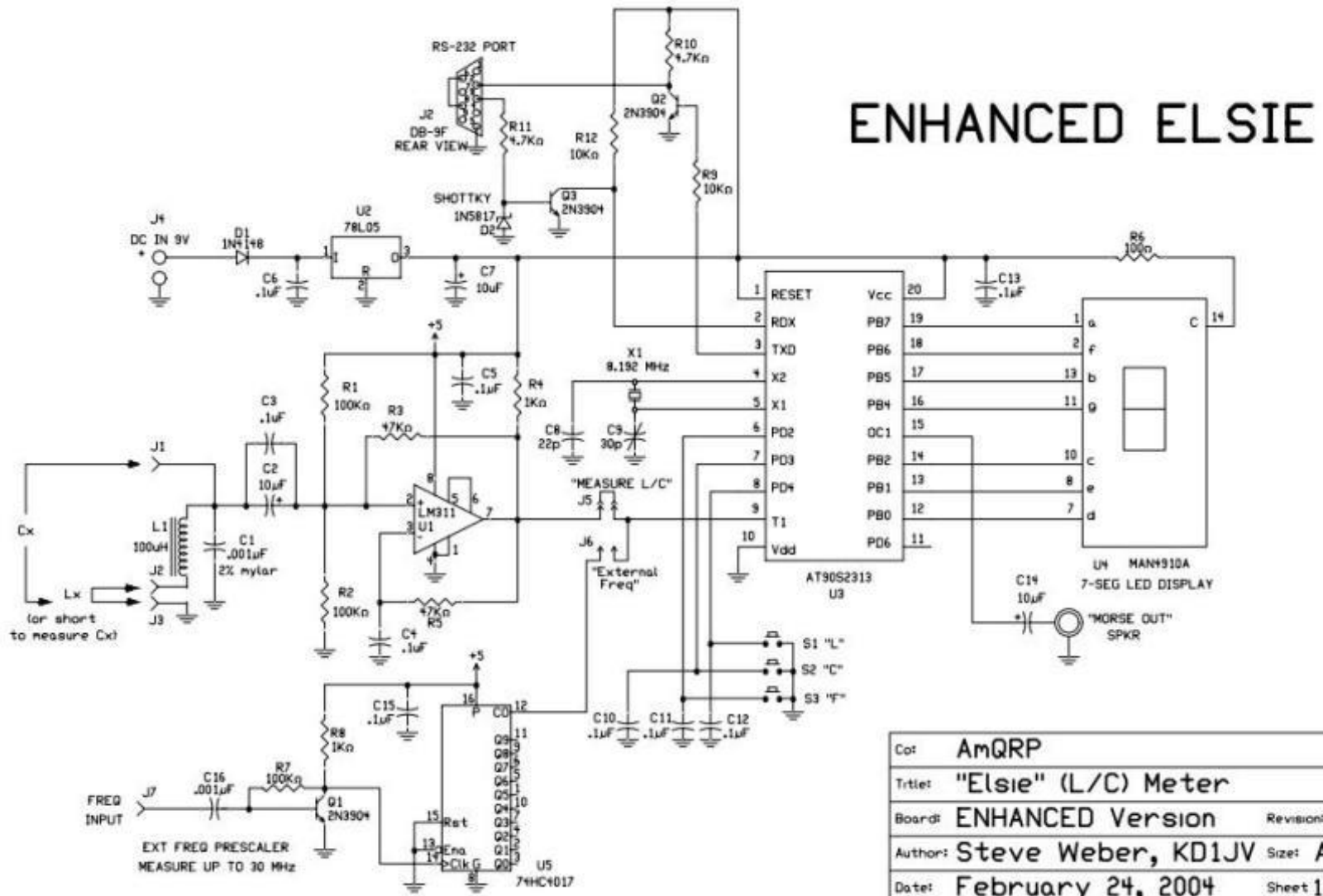
Elsie Meter

<http://www.amqrp.org/kits/elsie/index.html>



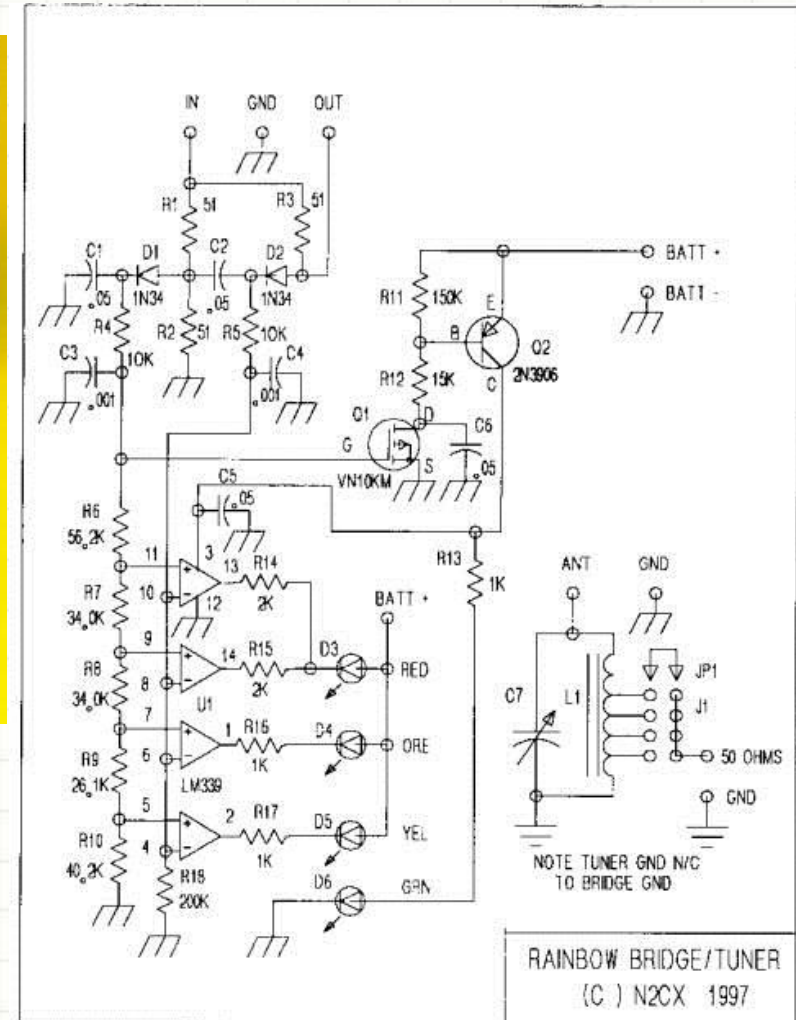
Elsie Meter

<http://www.amqrp.org/kits/elsie/index.html>



Rainbow Tuner

http://www.njgrp.org/Rainbow/rb_home.html



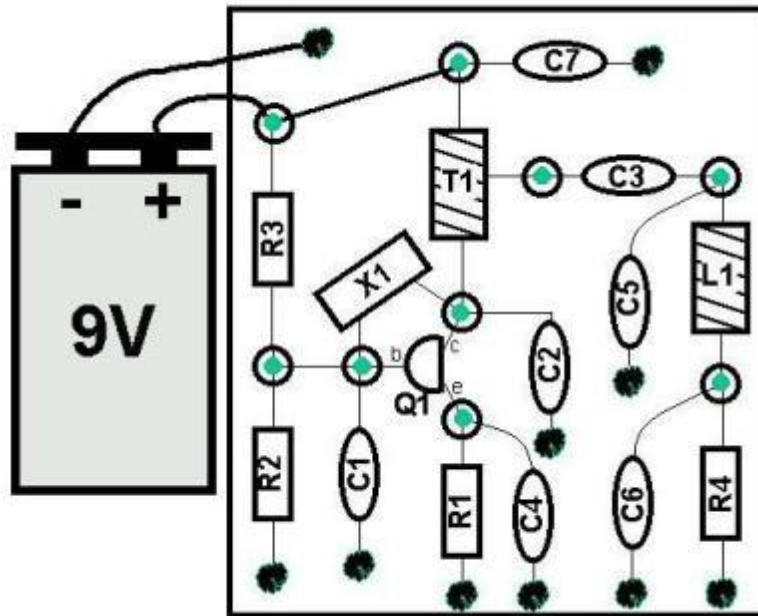
BLT Tuner

http://www.norcalqrp.org/norcal_blt.htm



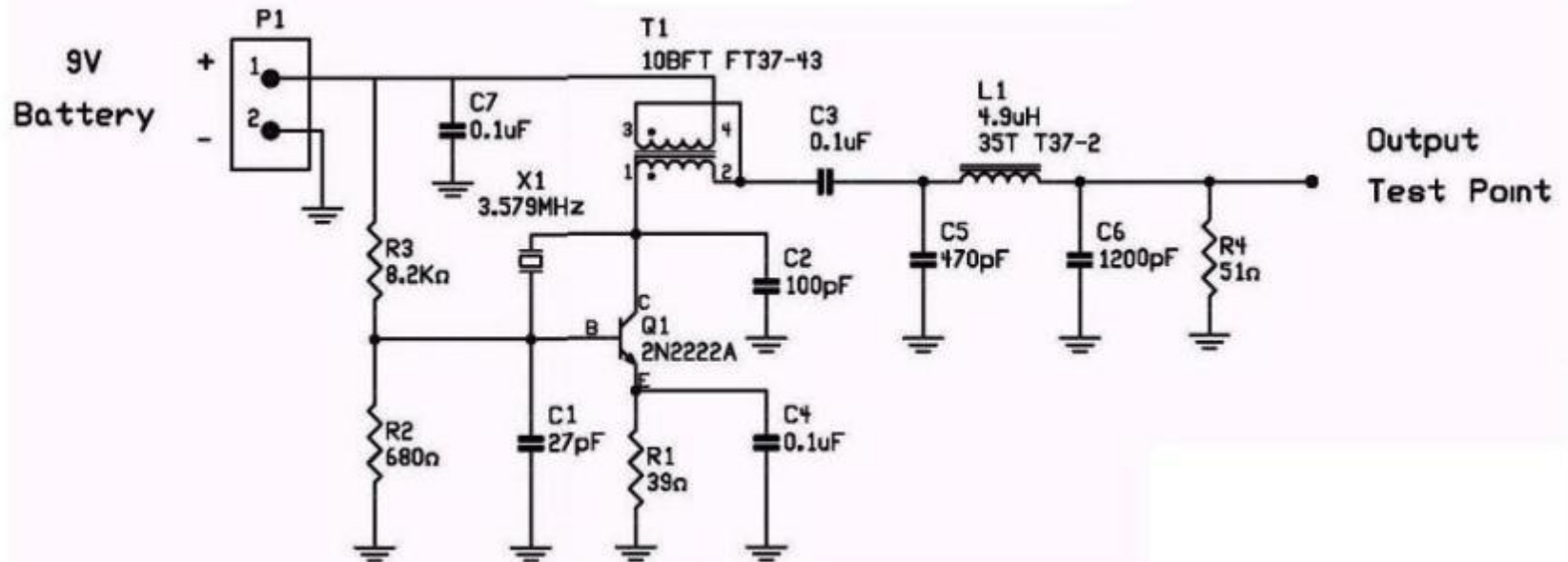
The SNAP

<http://www.njgrp.org/atlanticon/atlanticon%202000/snap.html>



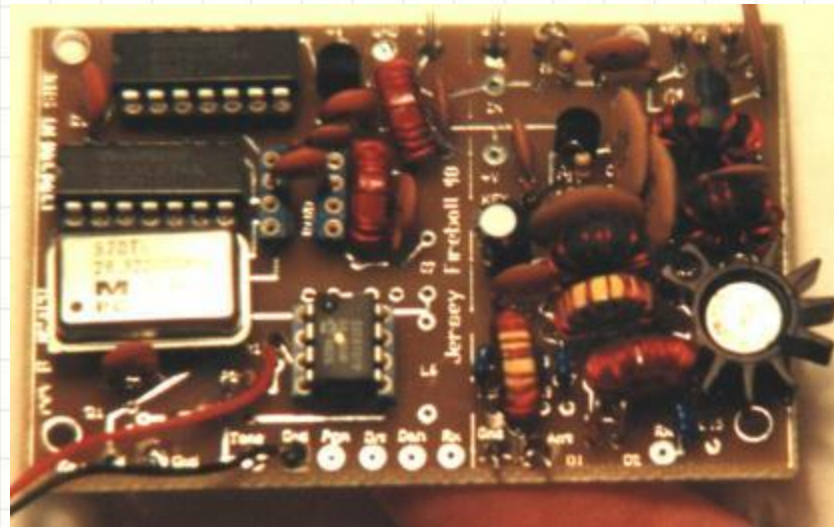
The SNAP

<http://www.njgrp.org/atlanticon/atlanticon%202000/snap.html>

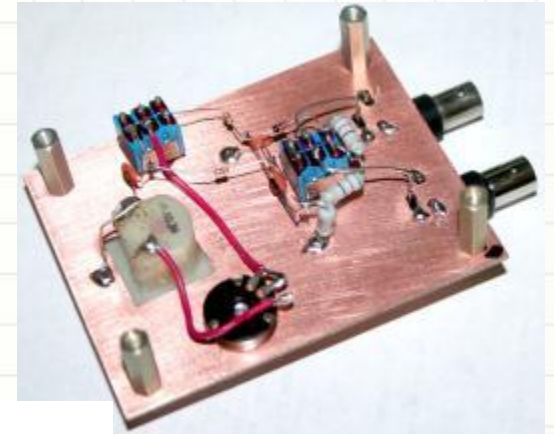


FireBall-40 QRPp Transmitter

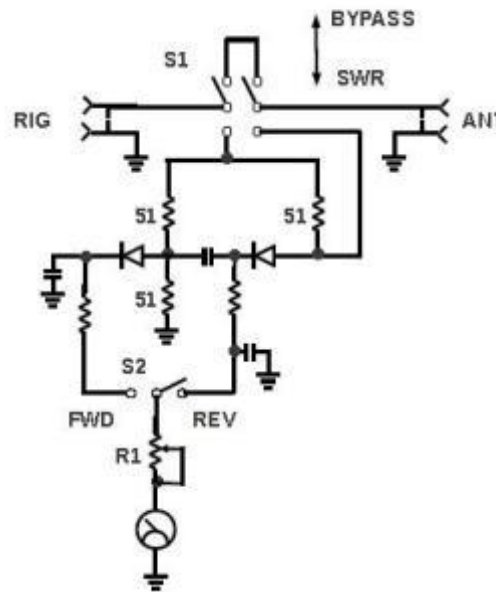
<http://www.njgrp.org/fireball40/index.html>



Retro SWR Meter



Retro SWR Bridge Schematic



- Operation
- S1 to SWR
 - S2 to FWD
 - Key xmtr
 - Set R1 to MTR F.S.
 - S2 to REV
 - Read MTR

- Meter Readings
- Full Scale HI SWR
 - $\frac{1}{2}$ scale 3:1 SWR
 - $\frac{1}{3}$ scale 2:1 SWR
 - $\frac{1}{5}$ scale 1.5:1 SWR

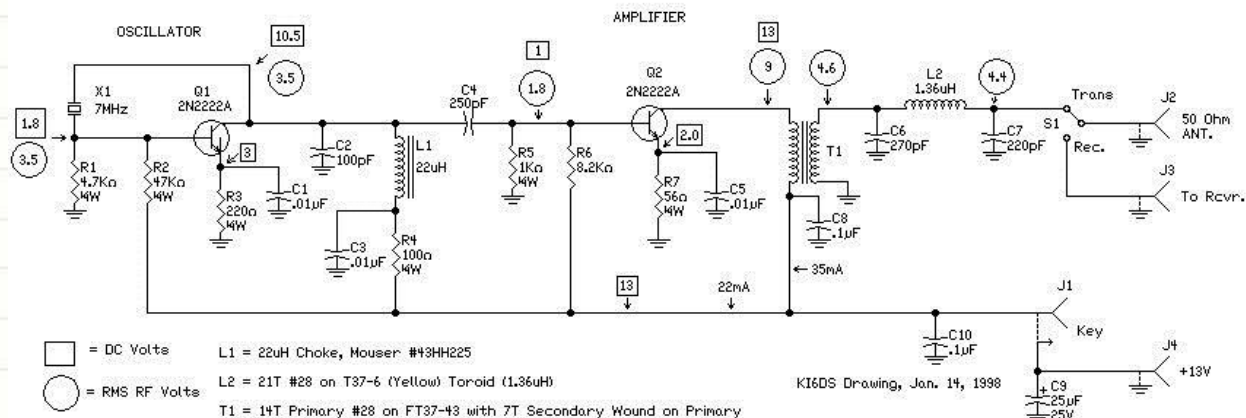
Tuna Tin 2 Transmitter

<http://www.njgrp.org/tuna/tuna.html>



<http://www.grpme.com/>

Tuna Tin 2 Transmitter
Designed by Doug Demaw, W1FB
Updated Parts by Dave Meacham, W6EMD



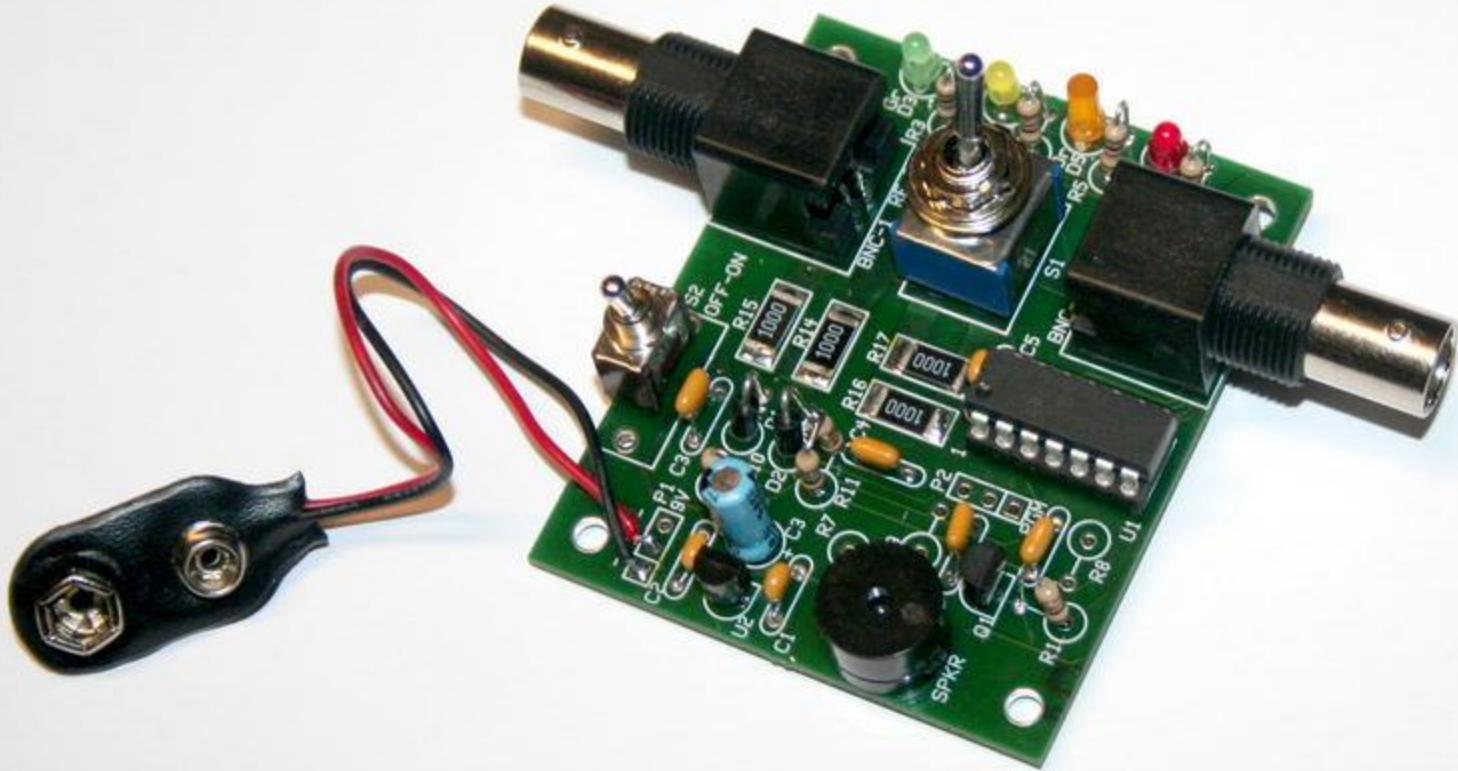
PIC-EL

- PIC Training Platform for Hams

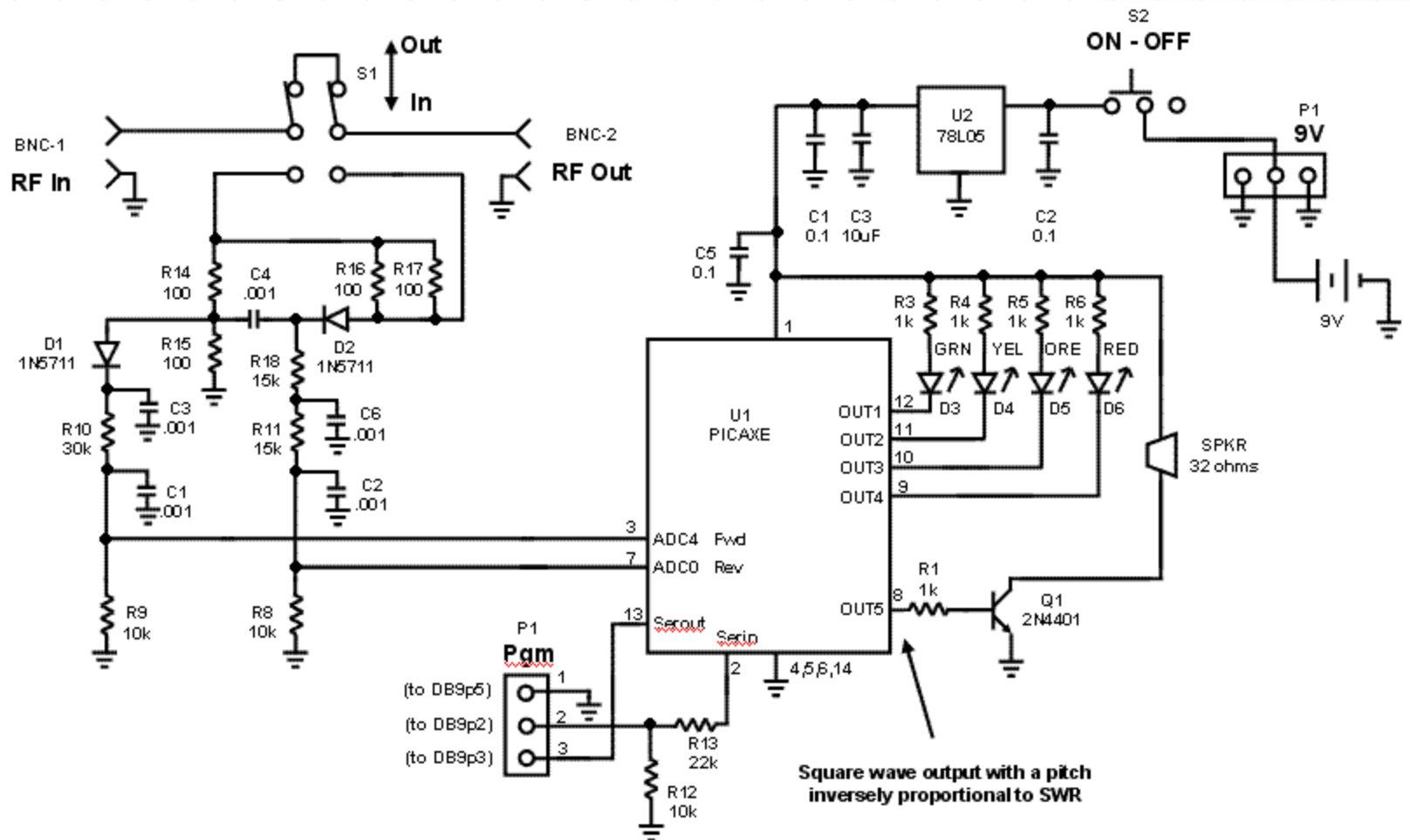


Growler SWR Meter

<https://dl.dropbox.com/u/43021514/CWTD/Feb%2028.html>

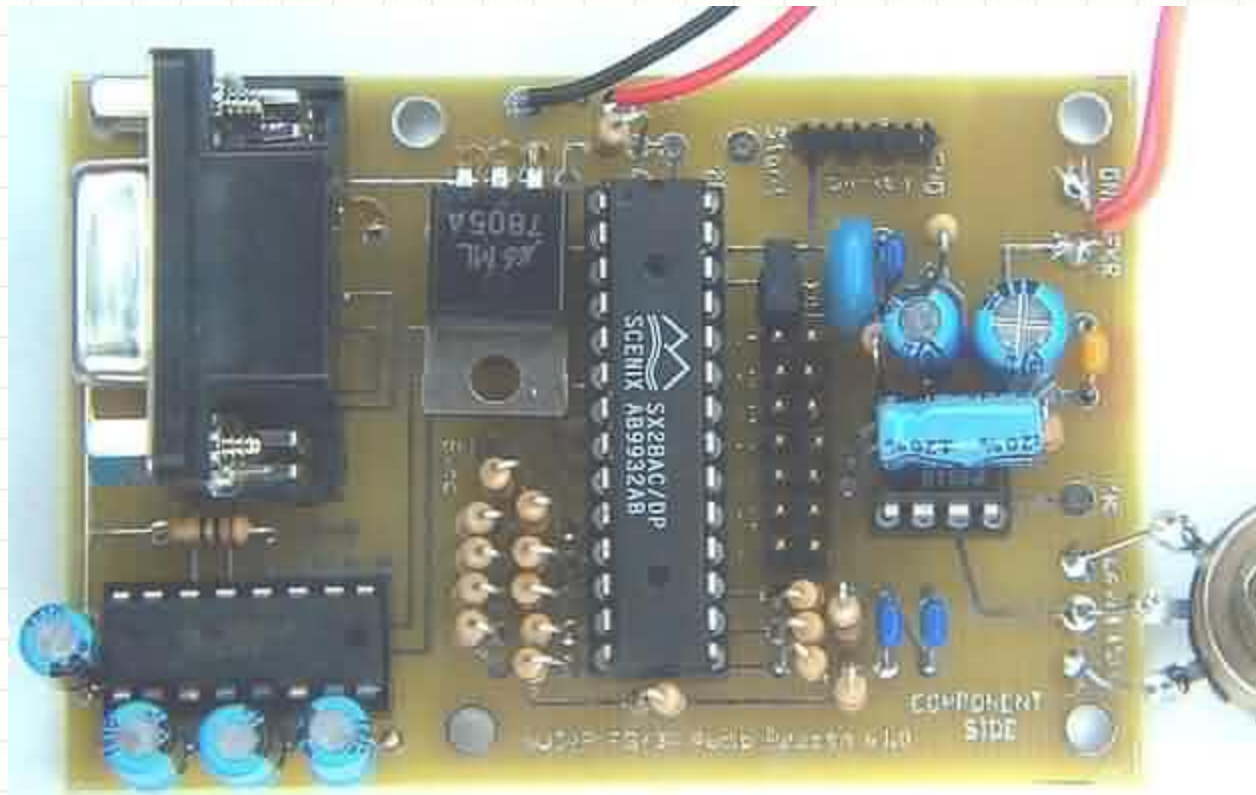


Growler SWR Meter

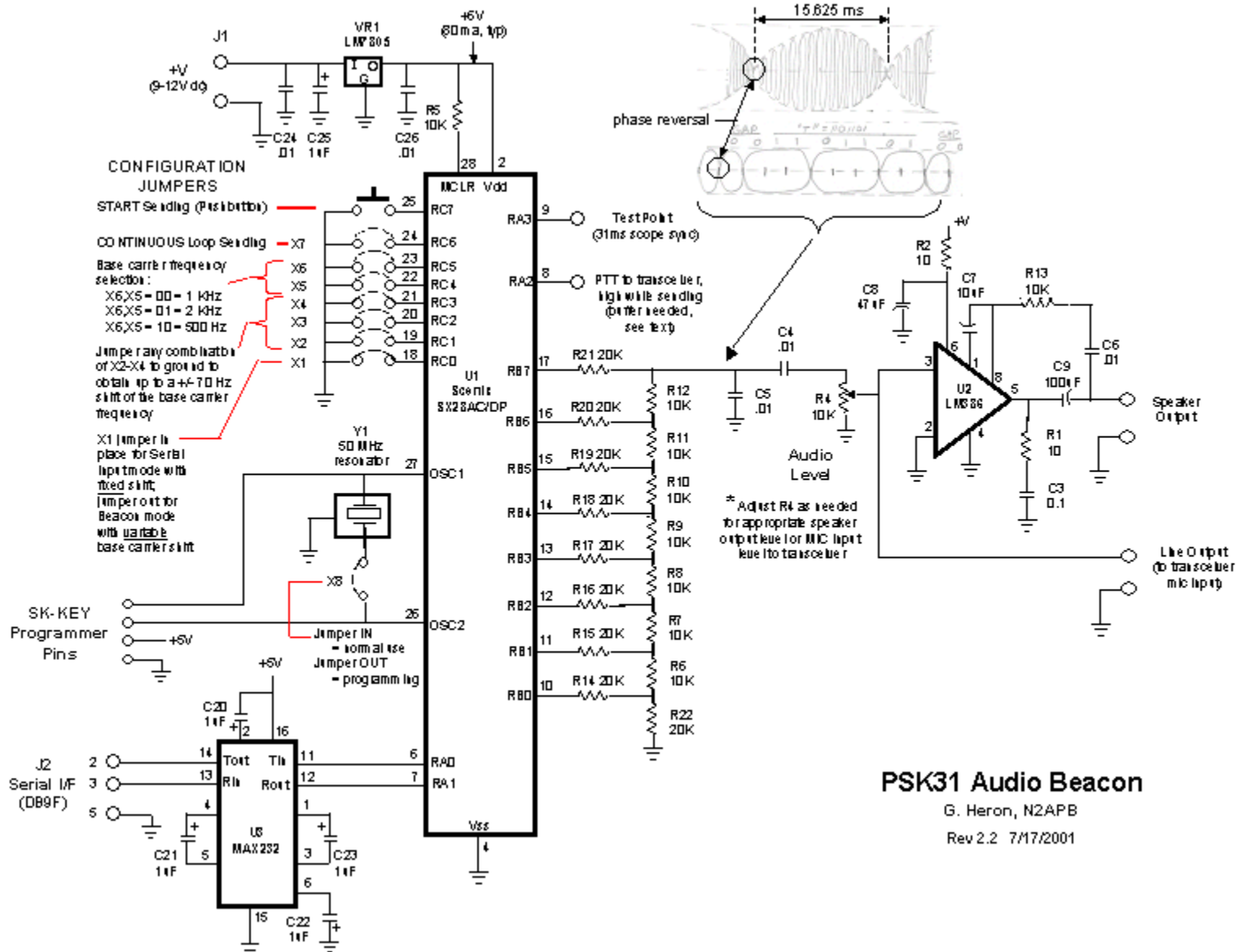


PSK Audio Beacon

<http://www.njgrp.org/psk31beacon/psk31beacon.html>



PSK Audio Beacon



Good Links

Chat With The Designers ... <https://dl.dropbox.com/u/43021514/CWTD/TeamspeakChat.html>

NJQRP Club ... <http://www.njgrp.org>

AmQRP Club ... <http://www.amgrp.org>

Atlanticon QRP Forums ... <http://www.amgrp.org/atlanticon/index.htm>

Midnight Design Solutions ... <http://midnightdesignsolutions.com/>

SDR Cube Transceiver ... <http://www.sdr-cube.com/>

NUE-PSK Digital Modem ... <http://www.nue-psk.com>

DDS-60 Daughtercard ... <http://midnightdesignsolutions.com/dds60/index.html>

HC908 VFO ... <http://midnightdesignsolutions.com/HC908VFO/index.html>

QRP Kits ... <http://www.qrpkits.com/>

Kits & Parts ... <http://www.kitsandparts.com/>

Four State QRP Group ... <http://www.4sgrp.com/index.php>

NorCal QRP Club ... <http://www.norcalqrp.org/>

G-QRP Club ... <http://www.ggrp.com/>

QRP ARCI ... <http://www.qrparci.org/>

Softrock SDR Kits ... <http://fivedash.com/>

Far Circuit Boards ... <http://www.farcircuits.net/>

Digi-Key ... <http://www.digikey.com/>

Mouser Electronics ... <http://www.mouser.com/>

Thanks, and have fun!



George Heron, N2APB
2419 Feather Mae Ct
Forest Hill, MD 21050

n2apb@MidnightDesignSolutions.com