

## **Newcomers and Elmers Net Notes August 4<sup>th</sup> Robert AK3Q HomeBrew Project Ideas**

Building radios, test equipment, and antennas has been a mainstay of amateur radio from the beginning

- Earliest radios were all home-built, or “homebrew” as we say
- Many advancements in the field of electronics have come from amateur radio folks
- Still today radio amateurs are on the forefront of technological advancements in electronics, communications, and even cancer treatment

What follows are some homebrew project suggestions to hopefully whet your appetite for exploring this aspect of the hobby

- It’s never too soon to start building things
- One of the best ways to understand radio, electronics, and antennas is by building projects
- You can start out as simply or as aggressively as you want to, but I recommend starting out simply and building upon that
- Antennas are practical place to start, and you can get some real satisfaction making contacts with an antenna you built yourself
- I have covered some of those possibilities in past weeks, so I won’t repeat them here
- While it may seem odd to think about building your own radio or test equipment since there is already a lot of commercial equipment available, building your own takes you behind the scenes of what’s happening and increases your understanding

### **Radios**

- Numerous radio kits abound from simple Morse code radios to multi-band HF SSB radios and beyond
- Two different but useful routes would be to build a traditional AM/FM or Shortwave receiver, or one of the Software-defined radio kits available, such as the SoftRock kit.
- The merging of computers and radio has produced some amazing opportunities not available even a few short years ago
- Arduino (are-do-WE-know) microprocessor is all the rage right now, as it is relatively cheap and programming software is available to do all kinds of things with it
- BTW, the OHKYIN monthly club meeting on Tuesday is featuring a presentation about the Arduino board and some of the things you can do with it-you can check out their webpage for more info

- A similar movement merging computers and radio right now is the raspberry Pi board which runs Linux and can interface with a lot of radio equipment depending on how it is set up
- It is basically a computer on a single board
- If you want to go classic, "old-school" there are many plans and kits available to build crystal radios, vacuum tube radios and the like

#### Test Equipment and Tools

- You can also build your own test equipment, such as an SWR meters, power meters, volt meters, and even oscilloscope kits
- Test equipment can be as basic or as hi-tech as you want to go in terms of building kits
- Some kits are designed as project boards where things snap in – these are designed for education more than making a finished product
- Radio Shack, Amazon, and other places sell educational electronic kits like this, as well as basic radio kits
- More advanced kits are designed to have you solder in parts, run some basic wiring, and other assembly
- Some kits used through-the-board components while others use what is known as surface-mount components
- While through-the-board kits are still readily available, many kits are using surface mount components which require some experience for assemble—most parts need a magnifying glass and a really, really steady hand and light touch
- I would recommend working with through-the-board components for a while until you are really comfortable with the larger components, then try tackling a simple surface mount kit

#### Some Basic Tools

- Soldering iron, solder, and a solder-removing wick
- Digital volt meter (DVM) for measuring circuits
- Needle-nosed pliers, wire cutters and strippers, set of screwdrivers
- Set of small tools can be useful, as normal tool sizes can be too big.
- Good lighting and magnification is important, as well as a means of allowing you to work hands free
- Harbor Freight can offer a lot of interesting tools for reasonable prices, and there are a number of specialty electrical supply dealers online such as Allied, Mouser, and Jameco; locally Debco and R&L have parts as well, and Radio Shack is beefing up its parts supplies again
- I would recommend making a spece devoted to projects in your home or garage, where you can leave parts out without being disrupted
- Also parts boxes and fishing/tackle boxes can make great storage units, as you will quickly start building up supplies if you get into it

- As you advance into more electronics work, you may want to get an oscilloscope, and even a spectrum analyzer, although these can get rather expensive
- There are PC capable units which have a limited range, but will let you use your laptop or desktop for display and software purposes; these are significantly cheaper

#### Some Useful Web Sites:

[www.sdr-kits.net/](http://www.sdr-kits.net/)  
[fivedash.com/](http://fivedash.com/)  
<http://www.radio-kits.co.uk/hunter/>  
[http://wb5rvz.com/sdr/New\\_SR\\_Lite/](http://wb5rvz.com/sdr/New_SR_Lite/)  
<http://ae9rb.com/>  
<http://www.sdr-cube.com>  
[www.ramseyelectronics.com/](http://www.ramseyelectronics.com/)  
<https://www.midnightscience.com/kits.html>  
<http://www.tentec.com/categories/Kits/>  
<http://www.mtmscientific.com/swradio.html>  
<http://www.raspberrypi.org/>