

Newcomers and Elmers Net Notes: Building Kits

March 29, 2015 Robert AK3Q

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

- You might wonder why someone would build their own radio or test equipment since there’s a lot of commercial equipment available
- Pride of ownership
- Cool to use your own stuff!
- First regenerative receiver I built still holds a special place in my heart
- First piece of test equipment recently was a real thrill, especially when it worked the first time, and it is a quality piece of equipment
- Sometimes we think homebrew mean low quality – that is definitely not the case
- building your own takes you behind the scenes of what’s happening and increases your understanding
- 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
- I always recommend antennas as a practical place to start, but I really do want to encourage you to get into kit building
- Eventually you may even decide to design your own “kit”, and who knows, it might be something others want to build as well!

Skills

The main skill you will need is patience and having a sense of curiosity will go a long way to making the whole process more fun

-- Learning to solder properly is the first skill to acquire; it is best to do this with some practice parts and boards, or else de-solder something and re-solder it

-- There are numerous soldering tutorials online, or you can get someone to show you how it should be done; also most books on circuits and building electronics have a section on soldering technique

- as we talked about last week, you want to have a soldering iron for small parts/thin solder, and a soldering gun for larger parts like building antenna coax connections
- if doing surface mount work (tiny parts/no through hole boards, 15 watts will do; for larger parts/through-hole construction, 25-35 watts is enough
- danger of cold solder joints when solder does not get hot enough means that it is a weak connection likely to fail
- too hot and things will melt that you don't want to melt!
- don't be afraid of soldering – you can do it!!

Kits are like recipes—they will give you instructions, images, and all the parts needed – you have to follow the instructions carefully and not hurry

- most kits will also tell you what you need to get the job done as far as tools or supplies
- some kits are basic enough that they assume you already know what you need
- there are also kits which do not require soldering, but they will tell you that as part of the kit description; if nothing is said, assume soldering is needed

- the biggest problem most people have with kits is thinking they understand what they are supposed to do without really understanding – don't rush through a kit
- I use to build model planes as a kid and invariably I would get moving too fast and think I had read the right instruction, only to have put a wrong part together
- usually reading through the whole instruction set can give you an idea of the flow of things, and then go back and do things in step by step order

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
- 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 Useful Web Sites:

www.partsexpress.com

www.qrpme.com

<http://fofio.blogspot.com/2013/02/radio-kit-guide.html>

<http://www.sdr-kits.net/>

<http://fivedash.com/>

<http://www.radio-kits.co.uk/hunter/>

http://wb5rvz.com/sdr/New_SR_Lite/

<http://ae9rb.com/>

<http://www.sdr-cube.com>

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/>

Franzis [Franzis Cardboard Tube Radio Kit](#)

Midnight Science [Midnight Science XSS-MMSW – My Marconi Shortwave Radio Kit](#)

