

Moving Beyond the Baofeng

What equipment do I really need as a new ham?



SILVERCREEK AMATEUR RADIO ASSOCIATION
W8WKY.ORG

So why pick on the Baofeng?

Not really picking on it! It's a reasonable first radio for the new ham, especially if you're trying to decide if it's a hobby to invest in. Little is lost if you get licensed, never get on the air, and eventually lose the charger for it. Also, the radio you have is better than the radio you don't have! However, the Baofeng does have some significant deficiencies:

- Audio quality is poor (mic issues)
- Transmissions are... wide... meaning you're not getting on your power onto the frequency you want (i.e. most Baofengs are technically non-compliant with FCC emission rules)
- The UI/UX is annoying and difficult



So, what's my next move?

This gets asked quite a lot by new hams. The answer is “it depends”.

- What do you really want to do?
- How much do you really want to spend?
- Most stuff you will read online is published by the hard-core operators or people trying to do “Radio on a shoestring budget” -- 90% of hams are somewhere in the middle



Equipment Rough Prioritization

In terms of **dollars**, invest in the following priority order:

1. Feedline (for base installs)
2. Radio
3. Power
 - DC power for base installs
 - Rapid charger/base for HTs
4. Antennas

Unless you have very specific requirements or plans, you DO NOT need any expensive antennas to get on the air well for HF, VHF, or UHF at 100W or under

Build your own:

- ✓ Wire OCF dipoles for 80m – 6m
- ✓ Inverted-V dipoles for 80m – 10m
- ✓ J-Poles for 2m/70cm

When to buy:

- ✓ Good HT antenna for a good HT radio unit
- ✓ Mobile mount / antenna for vehicles
- ✓ Higher-gain dual-band verticals for 2m/70cm

Feedline Matters – Especially at VHF/UHF

Cable Type	4 MHz	14 MHz	144 MHz	440 MHz
RG-213	0.4 dB	0.8 dB	2.6 dB	4.9 dB
RG-8X	0.8 dB	1.5 dB	4.9 dB	9.0 dB
RG-8/U	0.4 dB	0.8 dB	2.6 dB	4.9 dB
LMR-400	0.3 dB	0.5 dB	1.7 dB	3.0 dB

Losses per 100ft of each cable type at indicated frequency

Examples

- RG-8X loss of 9dB @ 440 MHz means a standard 35W UHF signal is ~3.7W when it gets to the antenna vs LMR-400 loss of 3dB @ 440 MHz only reduces the signal to ~17.5W;
- RG-8X loss 4.9 dB @ 144 MHz of a 50W signal is ~17W vs. LMR-400 1.7 dB is ~35W

- ✓ For short runs, it really doesn't matter much (except UHF)
- ✓ For longer runs (i.e., 50+ ft) the losses do really start to matter
- ✓ For high frequencies, the losses add up a lot faster

Radio Considerations - Handhelds

- Mainline vendors' products will have a much more intuitive and useful user interface
- Don't worry about digital modes unless you're 100% sure you want to get involved with them
 - Dual use of analog/digital works well with D-STAR and System Fusion Radios; DMR dual-use is unpleasant
- Look carefully at battery size and charging method before you buy: For example, the stock Icom battery is small and puny, and the "rapid charger" is unreasonably expensive
- Be wary of used with HTs... don't know what's happened to them unless they are in pristine condition

N8EI's Recommendations



Yaesu FT-3DR
~\$370



Yaesu FT-60R
~\$155

Radio Considerations – Mobiles / “Base” VHF/UHF

N8EI’s Recommendations

- Unless there’s a feature or model you really want, look at used first
 - Mobile-style radios are almost always static installs in a car or home
 - QRZ.com, eBay
- For home/shack use, if it fits in otherwise, look for a radio with an ACC/TNC/”data” port on the back
- Almost everyone uses “mobile” radios in the shack



Icom ID-4100A
~\$330



Yaesu FT-8900
???



Icom IC-2730A
~\$280

Radio Considerations – HF Transceivers

- Unless you're really interested in historical radios, don't buy anything older than circa-2000 or newer
- SDR / semi-SDRs and radios with good DSP make a world of difference
- Again, don't be afraid to go used
 - Non-smoking a must!
 - Look for cosmetic blemishes on the dials and screen
 - Be wary of "MARS mod" radios unless you can check who/how the job was done
 - HF transceivers are like cars, golf clubs, etc. – many people want the "latest" just because it's the latest

N8EI's Recommendations



Icom IC-7300

New ~\$1100
Used ~\$800



Yaesu FT-891

New ~\$639
Used ~\$575

Any used, well-cared-for HF transceiver built after circa 2005 will work just fine

Power Supplies

- For your first power supply, don't worry so much about "types" or the "quietest" supply
 - For VHF/UHF you likely will never notice
 - For HF unless you're in a silent zone, other stuff will make more noise than your PSU
 - If you ARE in a silent zone, please let me know where it is immediately...
- You do not need 1-to-1 power supply to radio
 - N8EI's shack runs one 40A DC PSU to run an HF, VHF/UHF, and VHF digipeater
 - Learn to love Anderson Power Poles
- Get a 35-40A power supply

N8EI's Recommendation



MegaWatt S-400-12

<http://megawattpowersupplies.com/>

\$60 + S/T

Antennas

HF Antennas

Dipoles work very well!

- 14 gauge Home Depot/Lowes THHN wire works wonders
- A good balun is very helpful
- Don't overly worry about "NVIS"

- ✓ Standard dipole / inverted-V
- ✓ 14% Off-Center Dipole w/ 4:1 balun
- ✓ G5RV and derivatives can work well in certain circumstances

VHF/UHF Antennas

- Height is more important than gain in most cases
- Know where you have to go – don't over build/buy for your use

- ✓ Homemade J-Pole
- ✓ Comet GP-1 or GP-3
- ✓ Diamond X30A
- ✓ Diamond SRH701A for handhelds