

Radio Basics

How to Choose Your First Radio

(and some other cool tidbits)

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Agenda

- ▶ Quick intros
- ▶ Stuff to consider
- ▶ New vs. used
- ▶ Research
- ▶ Mobile, handheld, & base station options
- ▶ Antennas (very) Basics
- ▶ Retail & used sources



Background – Why Did You Become a Ham?

- ▶ My background
 - ▶ What do I know, and what do I need to know?
- ▶ Yours
 - ▶ How long involved with ham radio?
 - ▶ Reason for getting involved?
- ▶ In order to select your ‘first radio’, ask yourself why you became a ham in the first place....
- ▶ What was it that drew you to the hobby?
- ▶ What are your goals?



Considerations

- ▶ New or Used?
- ▶ Collector?
- ▶ Occasional operator?
- ▶ Public Service Oriented?
- ▶ Contesting?
- ▶ Emcomm?
- ▶ Fixed, Mobile or Portable?
- ▶ Apartment, covenant-restricted, rural?
- ▶ VHF, UHF, HF, Satellite?
- ▶ Digital modes?
- ▶ How much are you able or willing to invest? 😊



New vs. Used

Benefits of Used	Problems with Used
More bang for buck	Might inherit problems
More 'track record'	Not latest technology
Might get from friend	Might not be friend for long! 😊

- ▶ Usually no warranty



New vs. Used (cont.)

Benefits of New	Problems with New
Latest technology	No track record
Usually has a warranty	Usually more expensive
Accessories available	Simple or aftermarket alternatives may not be hacked together yet
Often smaller	Smaller isn't always best
Feature set is often better	Improvements may be small increments



Research Before You Buy

- ▶ Save yourself a lot of grief
- ▶ Remember, opinions are like belly-buttons...
 - ▶ Look for personal experience
- ▶ QRZ.COM
- ▶ eHam.net
- ▶ CQ-amateur-radio.com
- ▶ ARRL.org
- ▶ Various Yahoo Groups
- ▶ Retail sites such as universal-radio.com, hamradio.com, aesham.com, texastowers.com and others



Mobile vs. Handheld vs. Base

- ▶ How will you operate?
- ▶ Can you afford several types?
- ▶ In General
 - ▶ HT's have lowest power, but most utility
 - ▶ Mobiles can be used as a base with power supply
 - ▶ Many base rigs are also transportable
 - ▶ HT's can be connected to an amp for more power
 - ▶ So can mobiles
 - ▶ So can bases
- ▶ Output Power: 50/20/10/5 W (144 MHz),
- ▶ 35/20/10/5 W (430 MHz)



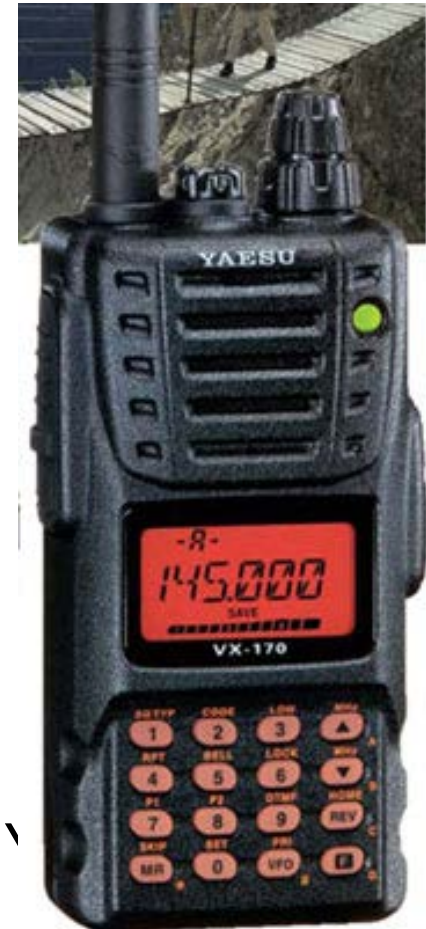
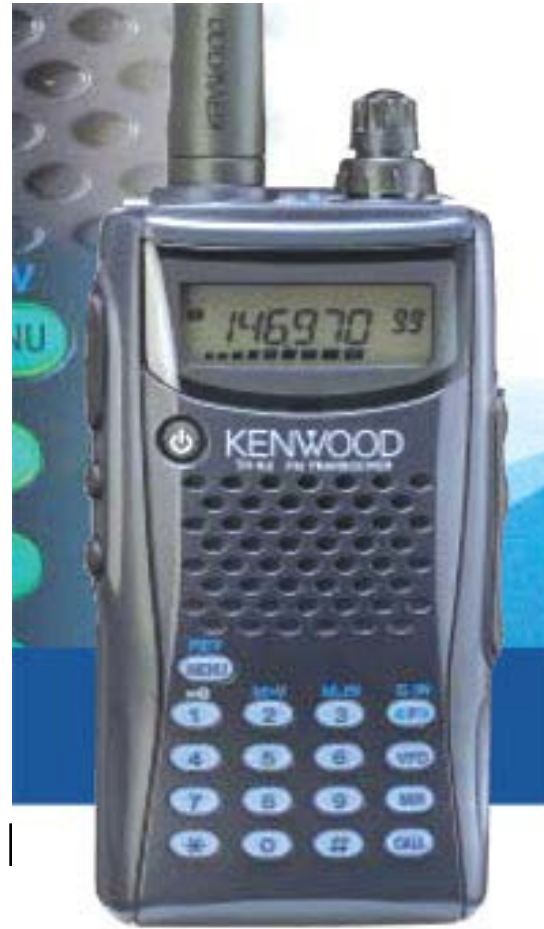
Let's Consider Handi-Talkies (“HTs”)

- ▶ Mono-banders normally least expensive
 - ▶ Don't unnecessarily limit yourself
- ▶ Most have a 5 Watt output
- ▶ Dual-banders probably the most popular
 - ▶ Dual receive (more expensive)
 - ▶ Single receive (can be competitive with mono-banders)

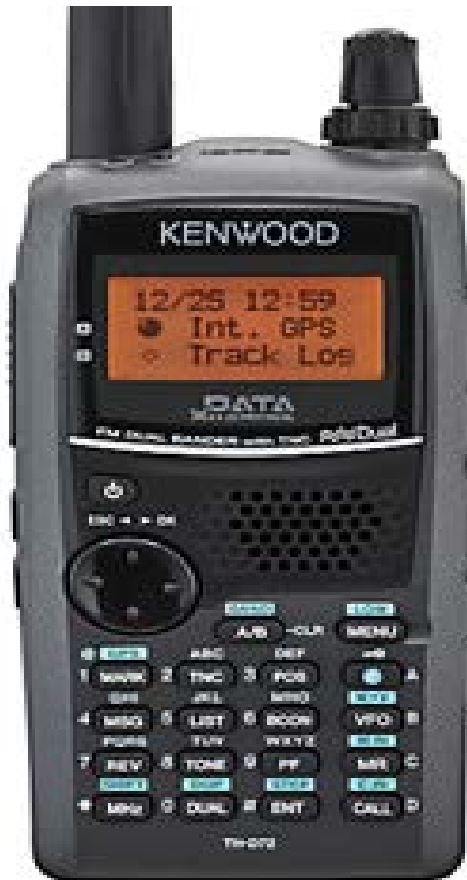


Some Current Models in the \$120 - 140 range

Get a copy of QST or CQ!



Higher End HTs in the \$300-500 Range



Mobiles

- ▶ More power than an HT
- ▶ Can be used mobile, base or transportable with the appropriate power source
- ▶ Can be cost-competitive with HTs
- ▶ Easier to read displays than HTs
- ▶ Usually more features and capabilities
- ▶ Normally UHF/VHF, some HF...
- ▶ Big 3: Kenwood, Icom, Yaesu (Vertex)
- ▶ New to the field: Wouxun (China), inexpensive



Some FM Mobiles, Basic to Fancy

- ▶ Icom's IC 2200H D-Star Upgradeable
- ▶ Somewhat of a bargain in the \$125 range



True Dual-band operations in the sub-\$600 range

- ▶ Icom's D-Star Upgradeable IC-2820



High-end Kenwood with Built-in TNC, APRS in the mid-\$500s TM-D710E



Yaesu – Vertex, Basic 2-meter for ~\$125! FT-1900



Quad-Band Operations (Two at a time) for under \$400!

- ▶ FT-8900R 29,50,144,430 FM operations



What about the Antenna?

- ▶ HTs: Rubber Duck = Dummy Load
 - ▶ Get another one or two, depending on your use
- ▶ Mobiles: Buy a good antenna
 - ▶ Magnetic mounts okay, not as good as permanent mounts
 - ▶ Center of metal mass tends to be best
 - ▶ Aesthetics will probably dictate placement! 😊



Okay... More Toys – The “Sound to Light” boxes

The Icom 706 series. One of the most successful lines in amateur history – and the original! – IC-706MK2G



Icom's current Mobile Everything Rig

- ▶ The IC-7000 has IF DSP and a host of cutting edge features. In the \$1200-1300 range



Kenwood Does STL Bigger

- ▶ Kenwood's TS-2000 does satellite well, PLUS has a built-in antenna tuner and other cool stuff. In the \$1600 range it is competitive if you consider the features.



Yaesu's FT-817 is Portable

- ▶ The very popular FT-817 series has five watts of output, is easily transported. Internal battery - a host of accessories... for \$550-ish



Marketed as the “ARES” radio

- ▶ FT-897 has ability to install tuner, power supply or batteries inside the radio,
- ▶ Big but more powerful than the 817 series. A good compromise radio for home and portable operations....and around \$800 new



Entry HF

- ▶ Icom's IC-718. Audio DSP. Good performance for not much more than an SWL rig. Typically in the low \$600s



Kenwood's Entry HF

- ▶ At around \$1160, but includes 6 Meter operations, a remote face plate and built in auto-tuner!
- ▶ TS-480 SAT



Other things to consider for HF

- ▶ HF Rigs also require some of the following:
 - ▶ A power supply
 - ▶ An antenna tuner (if not built in)
 - ▶ A freaking big antenna (when compared to a UHF/VHF radio)
 - ▶ Depending on your intentions
 - ▶ Automatic keyer or straight key
 - ▶ Sound card interface
 - ▶ Computer
 - ▶ Coax (maybe a lot)
 - ▶ Etc.



A Very Short Antenna Primer...

- ▶ Antennas are grouped in four basic categories:
 - ▶ **Verticals** Less money than beams on average
 - ▶ **Beams** Typically most expensive (towers, etc.)
 - ▶ **Wire** Usually the least expensive
 - ▶ **Dish** For Microwave frequencies



Verticals

- ▶ Includes ground planes
- ▶ Mobile antennas
- ▶ Common for VHF and UHF base stations
- ▶ Can be ground-mounted for HF work
- ▶ Can be phased to give some directionality
- ▶ There are cheap ones and expensive ones
- ▶ Need to consider carefully whether a vertical is right for you or not

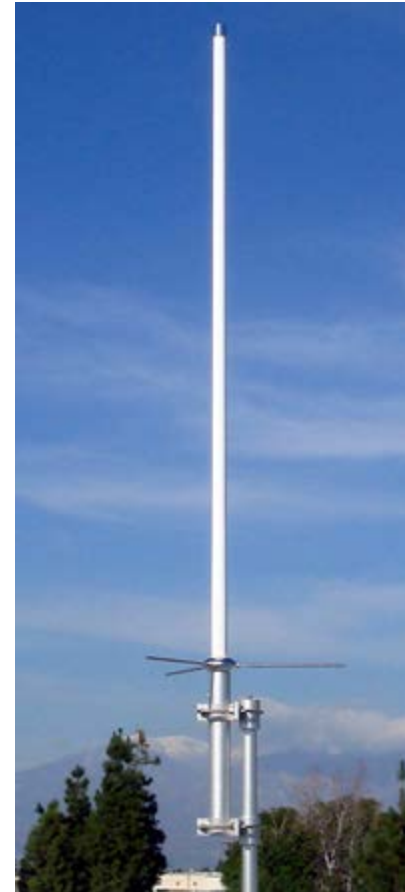




Cushcraft R-8 Vertical
Costs around \$530

Or Maybe You Start With Something Simpler...

- ▶ 2M/440 “base station” antenna – Comet GP-3, ~\$90
- ▶ Some stuff you’ll want to consider:
- ▶ **Gain:**
- ▶ 146MHz **4.5dBi**
- ▶ 446MHz **7.2dBi**
- ▶ **VSWR: 1.5:1** or less
- ▶ Max Power: 200 watts
- ▶ Length: 5' 11"
- ▶ Weight: 2 lbs. 12 oz.
- ▶ Mounting Mast Dia: 1 1/2-2 1/4"
- ▶ **Connector: SO-239**
- ▶ Construction: Heavy-duty fiberglass



Beams

- ▶ Best directionality
- ▶ Satellite work
- ▶ HF beams are large, typically require a tower and a rotator
- ▶ The complete install can be very expensive and a lot of work





- ▶ How much room and money do you have?
😊



Wire antennas

- ▶ Most commonly used on HF
 - ▶ Require at least two support points
 - ▶ Work better higher off the ground, depending...
 - ▶ Can be somewhat directional but not as much as a beam
 - ▶ Fun to experiment with and a cost effective way to enjoy HF operation without a lot of investment
 - ▶ Don't forget NVIS! Regional HF communications...
 - ▶ My sad, sad antenna story



Great... so where do I buy?

- ▶ Back to original questions...
- ▶ New?
- ▶ Used?
- ▶ Budget?
- ▶ Aside from traditional retail
 - ▶ Ebay
 - ▶ Flea markets
 - ▶ Other hams, word of mouth
 - ▶ Join a club!



Some retailers

- ▶ Ham Radio Outlet – www.hamradio.com
 - ▶ Closest store is in Portland
- ▶ AES – www.aesham.com
 - ▶ Nearest store is in Las Vegas
- ▶ Universal Radio – www.universal-radio.com
 - ▶ Has best site for New equipment information
- ▶ Texas Towers – www.texastowers.com
- ▶ Ebay – many dealers sell here www.ebay.com



Used Sources

- ▶ Most new dealers have some used/demo
- ▶ www.eham.net - extensive ham equipment
- ▶ www.qrz.com - almost as much as eham
- ▶ www.ebay.com new and used – research first!
- ▶ www.arrl.org - has limited classified listings
- ▶ When buying used or at auction, **do your research** before bidding. Know what an item is worth and consider ramifications.



Questions?

- ▶ Specific radios?
- ▶ Who else to ask?
- ▶ Other info sources?
- ▶ Intimidated?



Thanks for your attention....

And welcome to amateur radio!

Enjoy your time here 😊

