

Beyond the HT: Your Next Radio

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Focus of This Presentation



- ▶ A new Technician often buys a VHF/UHF handheld transceiver to get started
- ▶ This presentation is about “what’s next?”

Three common paths beyond the HT:

- ▶ More VHF/UHF FM
- ▶ All mode VHF (2m, 6m ssb)
- ▶ First HF transceiver
(main topic of this presentation)

Typical FM Transceiver



FT-2900
2m FM
\$150



Icom IC-2730A
2m and 70cm FM
Dual receive
\$370



FT-7900
2m and 70cm FM
\$330



FT-8800
2m and 70cm FM
Dual receive
\$380

“Standard” Dualband Transceiver



Features

- Cross-Band Repeat
- V+U/V+V/U+U Dual Band Operation
- V+U Full Duplex Operation
- 1000 Memories
- 50 Watts Output (35 Watts on 430 MHz)
- DCS
- Backlit DTMF Mic
- Alpha Numeric [LCD](#)
- CTCSS Encode/Decode
- DCS Encode/Decode
- Smart Search
- 1200/9600 bps Packet Jack
- Hyper Memory (stores complete radio configuration)
- [Menu](#) customization
- [ARTS™ Auto-Range Transponder System](#)
- Internet Key for Access to [WIRES™](#)

“Advanced” Dualband FM Transceiver

Advanced models may have these additional features:

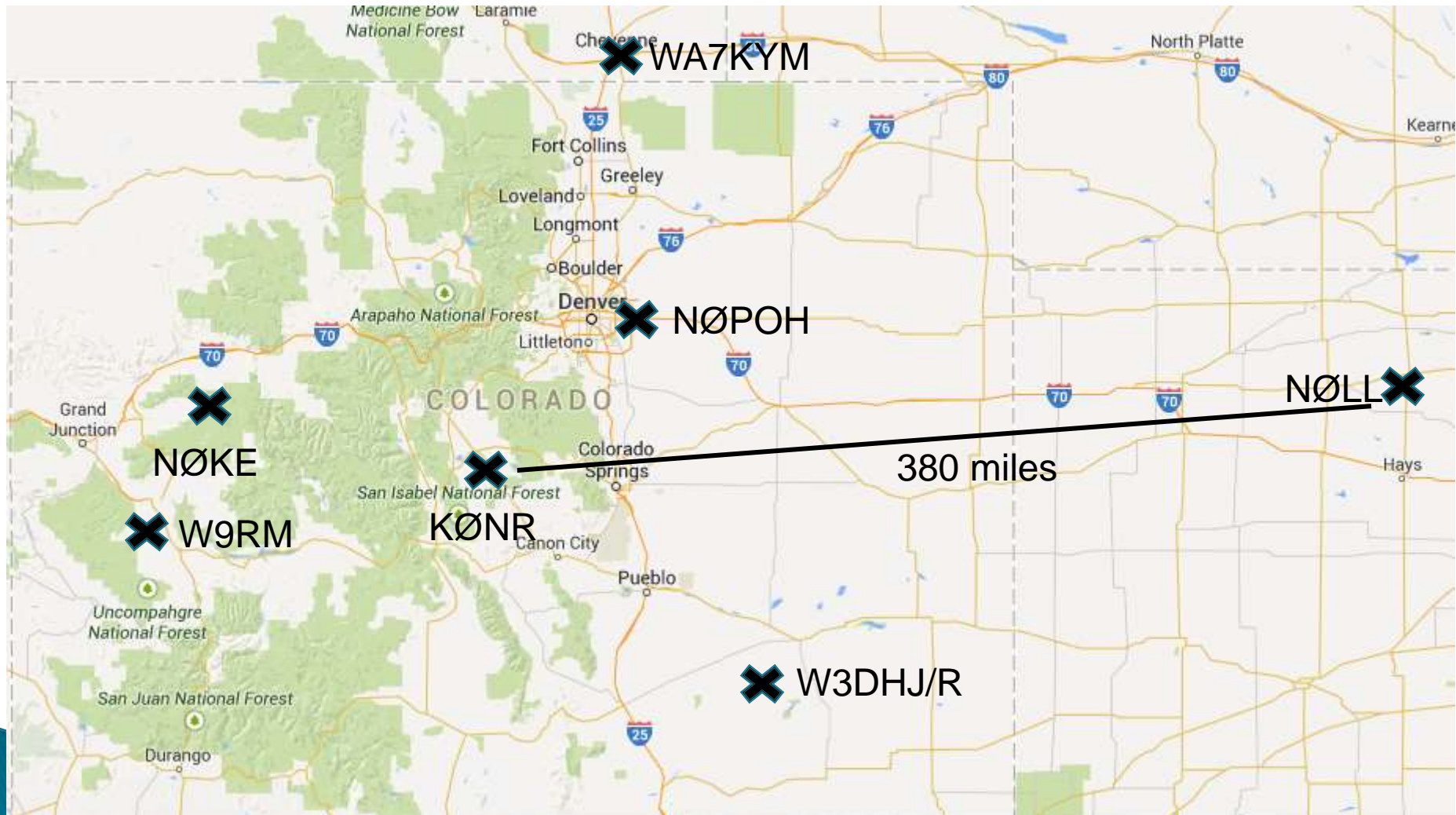
- 6m band
- 10m band
- D-STAR (Icom digital format)
- Fusion (Yaesu digital format)
- APRS
- GPS receiver

Icom IC-5100A
\$600

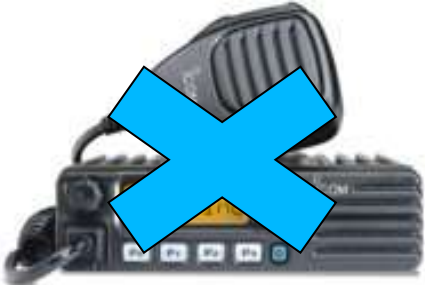


Yaesu FTM-400DR
\$600

What's Possible with 2m SSB?



SSB/CW VHF Transceivers



2m FM Only Rig



FT-450: HF plus 6
Meter Rig
\$700



TS-2000: HF 6M, 2M, 70cm
Optional 1.2 GHz
\$1600



FT-817: HF, 6M,
2M, 70 cm QRP
Rig \$700



FT-857D: HF, 6M, 2M,
70 cm Rig \$850



FT-991: HF, 6M, 2M,
70 cm Rig \$1700

Antennas

Most weak-signal VHF/UHF is done with horizontal polarization

Being cross-polarized can cause ~20 dB signal loss!!!!

Use a Yagi antenna, even a small one, for improved gain

Bigger is better, more gain

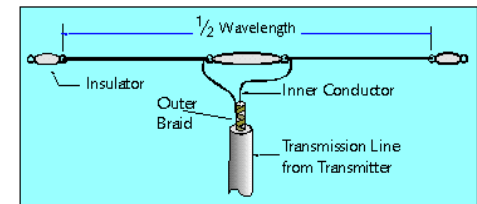
Height Above Average Terrain is important



Yagi



HO Loop



6M

dipole antenna

Dualband Arrow Antenna



M² 2M9 Yagi

M² 6M5X Yagi

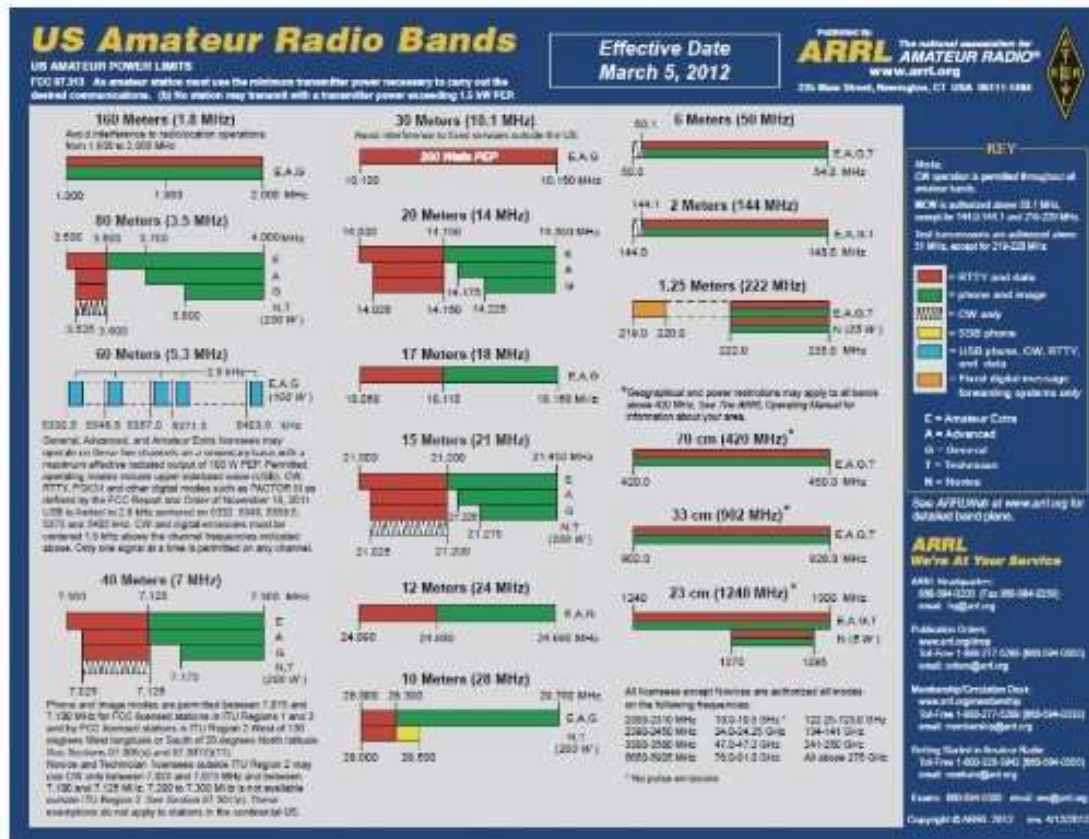


First HF Radio

- ▶ **Licensing issues (Technician vs General)**
- ▶ The Technician class license is the entry-level license of choice for most new ham radio operators. To earn the Technician license requires passing one examination totaling 35 questions on radio theory, regulations and operating practices. The license gives access to all Amateur Radio frequencies above 30 megahertz, allowing these licensees the ability to communicate locally and most often within North America. It also allows for some limited privileges on the HF (also called "short wave") bands used for international communications.
- ▶ The General class license grants some operating privileges on all Amateur Radio bands and all operating modes. *This license opens the door to world-wide communications.* Earning the General class license requires passing a 35 question examination. General class licensees must also have passed the Technician written examination. (ARRL)

First HF Radio

► Licensing issues (Technician vs General)



Common Old HF Transceivers



Yaesu FT-707 HF SSB TRANSCEIVER
\$165 Buy It Now



Yaesu FT-101B HF SSB TRANSCEIVER
\$299 OBO



Kenwood TS-870S HF transceiver
+DSP \$1,095 Buy It Now

Common New HF Transceivers

- ▶ Less than \$1500



Alinco DX-SR8T 160 to 10 meters
in SSB, CW, AM, FM --- \$530



ICOM IC-718 USB, LSB, CW,
RTTY(FSK) and AM modes are
built-in --- \$600

Common New HF Transceivers

- ▶ Less than \$1500



**Kenwood TS-480HX 200W
COMPACT HF TRANSCEIVER +
100W 6M --- \$1120**



**Yaesu FT-857-D ALL MODE HF /
6M + 2M + 70CM MOBILE
TRANSCEIVER --- \$825**

HF Transceivers You Build

- ▶ Less than \$1200



**Elecraft KX3 All-Mode Ultra-Portable
160m-6m Transceiver Kit \$900
Factory Assembled \$999**



**Elecraft K2 and K2/100W HF
Transceiver Kit \$770 (K2), 100W
+\$400**

Antenna Considerations

▶ Antenna tuners

- Incorporated in the transceiver
- Separate – Manual or Automatic?



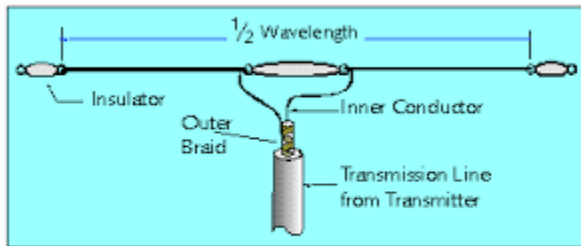
**MFJ-949E 300W TUNER NO
A/C ADPTR --- \$155**



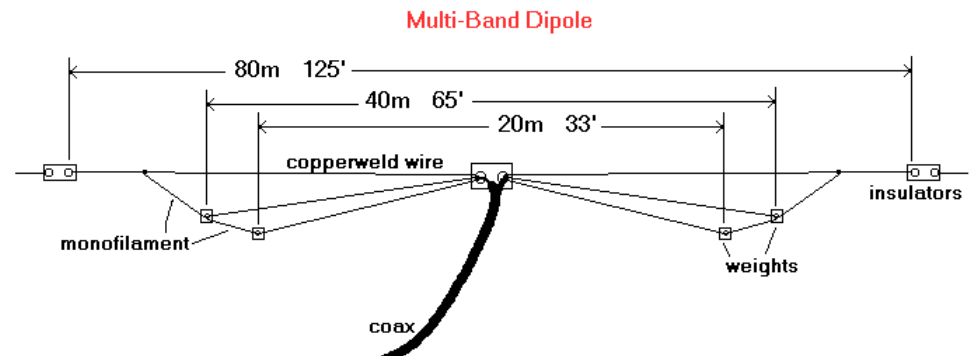
**LDG YT-100 AUTO TUNER FOR
FT-100/100D/857/897 SERIES
--- \$165**

Antenna Considerations

- ▶ Typical antennas
 - Dipole



dipole antenna



Antenna Considerations

- ▶ Typical antennas
 - Vertical

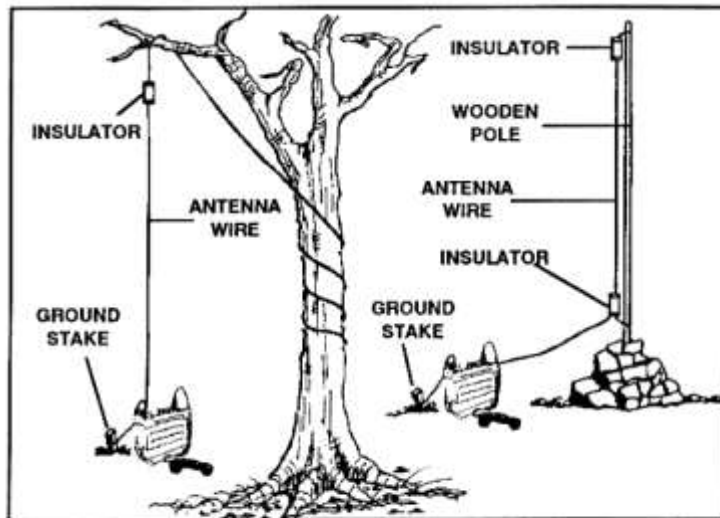


Figure E-6. Field substitutes for support of vertical wire antenna. GlobalSecurity.com



Comet-NCG
CHA-250B
250W PEP 3.5-57MHZ
HF VERTICAL ANT
BROADBAND ---
\$390

Antenna Considerations

- ▶ Typical antennas
 - Vertical



HUSTLER 6-BTV
10-15-20-30-40-75 MTR
VERTICAL --- \$210



BUTTERNUT HF9V
9 BAND VERTICAL ANTENNA ---
\$450

Power Supply

▶ Requirements

- ▶ Must be able to handle load requirements of the transceiver for an extended time and any initial surge when first keying or turning on
- ▶ Must output a clean DC signal with no ripple
- ▶ Must be regulated so that voltage remains constant under load
- ▶ Buy a power supply that you can grow into
- ▶ Linear Power supplies are heavier than switching supplies. If purchasing a switching supply look for models with “low RFI (radio frequency interference)”
- ▶ Linear power supplies cost typically \$100 +
- ▶ Switching supplies in the 30A continuous range can be purchased for under \$100

Other Accessories

▶ SWR meter

- A SWR meter measures the mismatch along a transmission line between a transmitter and an antenna.
- It is important to know the SWR value to make sure that the majority of the transmitter power is actually reaching the antenna and not being wasted by reflecting back to the station.
- SWR meters can be stand-alone or incorporated in a tuner or transmitter itself.



Diamond SX-600 HF AND DUAL-BAND VHF/UHF SWR WATTMETER 200W --- \$180

Other Accessories

▶ Antenna Switch

- An antenna switch allows the operator to select different antennas depending on operating band/conditions or direction of required transmission.



MFJ-2702 2 POS DC-1 GHZ ANTENNA SWITCH --- \$33



MFJ-1704 4 POSITION ANTENNA SWITCH --- \$75

Summary

Three common paths beyond the HT:

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- ▶ First HF transceiver

Questions

