



# I Just Got My Technician's License ... So Now What?

## Amateur Radio on a Startup Budget



# What is a Technician's License?



## ▶ The Obvious –

- A certification granted by the Federal Communications Commission that the holder has exhibited the required proficiencies to legally transmit on radio frequencies as defined in the regulations.



# What is a Technician's License?



- ▶ The Classic –
  - A License to Learn



# What is a Technician's License?



- ▶ What better way is there to learn than by doing – use the privileges you have earned – get on the air and communicate!



# Bands Available



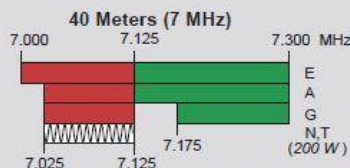
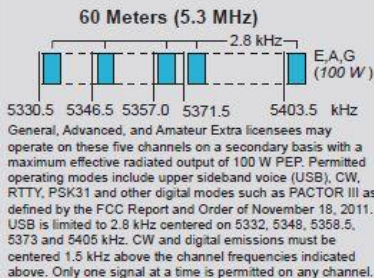
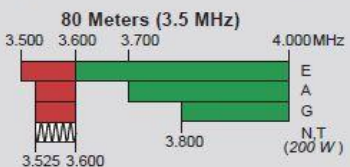
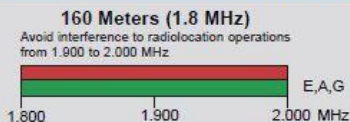
## Amateur Radio Bands

### AMATEUR POWER LIMITS

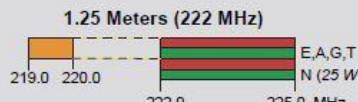
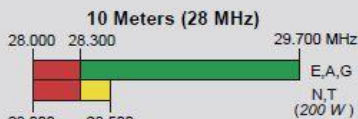
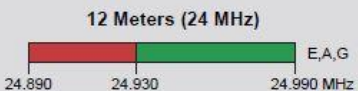
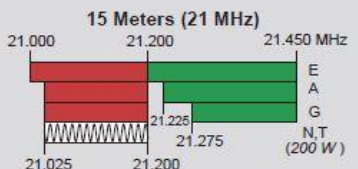
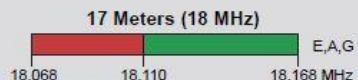
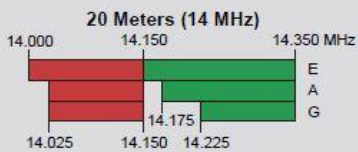
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date  
March 5, 2012

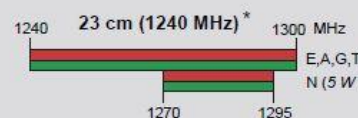
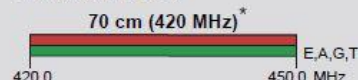
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**ARRL** The national association of **AMATEUR RADIO**  
www.arrl.org  
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Phone and Image modes are permitted between 7,075 and 7,100 MHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(f)(11).  
Novice and Technician licensees outside ITU Region 2 may use CW only between 7,025 and 7,075 MHz and between 7,100 and 7,125 MHz. 7,200 to 7,300 MHz is not available outside ITU Region 2. See Section 97.301(e). These exemptions do not apply to stations in the continental US.



\* Geographical and power restrictions may apply to all bands above 420 MHz. See The ARRL Operating Manual for information about your area.



All licensees except Novices are authorized all modes on the following frequencies:

|               |                 |                   |
|---------------|-----------------|-------------------|
| 2300-2310 MHz | 10.0-10.5 GHz * | 122.25-123.0 GHz  |
| 2390-2450 MHz | 24.0-24.25 GHz  | 134-141 GHz       |
| 3300-3500 MHz | 47.0-47.2 GHz   | 241-250 GHz       |
| 5650-5925 MHz | 78.0-81.0 GHz   | All above 275 GHz |

\* No pulse emissions

### KEY

Note:  
CW operation is permitted throughout all amateur bands.  
MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.  
Test transmissions are authorized above 51 MHz, except for 219-220 MHz.

- █ = RTTY and data
- █ = phone and image
- = CW only
- █ = SSB phone
- █ = USB phone, CW, RTTY, and data
- █ = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See ARRLWeb at [www.arrl.org](http://www.arrl.org) for detailed band plans.

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# Modes Available



- ▶ CW
- ▶ VOICE
- ▶ DATA
- ▶ RTTY
- ▶ DIGITAL



# GET ON THE AIR



- ▶ We have all been here – it's hard to just start talking to a microphone and hope someone is on the other end
- ▶ Get started where you can be comfortable



# GET ON THE AIR



- ▶ Repeaters and Local Nets
  - There is always someone there
  - Most Hams are very understanding
    - Especially if you admit you're new to this
  - You can't get better if you don't practice
  - We need more people like you on the air!





# GET ON THE AIR



- ▶ Repeater and Local Nets
  - W6JW – Every Monday night at 2000
    - 146.7900 (-) C123.0
    - 445.3000 (-) C100.0
    - 051.8600 (-) C82.5
  - PAPA System – New Hams Net
    - Every Wednesday night at 1900
    - PAPA1 Oat Mtn – 446.580 (-) C127.3



# GET ON THE AIR



- ▶ Other Local Repeater Groups
  - DARN System –
    - Disaster Area Radio Network
  - WIN System –
    - Western Inter-tie Network
  - Others –



# GET ON THE AIR



## ▶ EMERGENCY COMMUNICATIONS

- Santa Clarita Emergency Communications Team
- ARRL – ARES – Amateur Radio Emergency Service Group
- DCS – LA County Disaster Communications Service



# EQUIPMENT



## ▶ RADIOS

- HTs – Handhelds / Mobile units / Base Stations

## ▶ ANTENNAS

- Dipoles / Verticals / Yagis / Multi-band

## ▶ ACCESSORIES

- Coax / Meters / Tools / Towers



# EQUIPMENT



- ▶ Like any hobby you can get started for a reasonable cost
- ▶ Like any hobby you can start to justify more purchases
- ▶ Like any hobby you can end up spending way more than you planned to
- ▶ **HAVE A PLAN AND A BUDGET**



# EQUIPMENT



## ▶ NEW vs. USED

- There are benefits and detriments to both
- If you need to buy something right now, start with something inexpensive
- Go to events, participate, ask questions
- Hams love to talk about their gear





# EQUIPMENT



## ▶ NEW vs. USED

- eBay?
- There are many good deals, and many more bad ones
- Don't rush – there's always another one coming along
- Set a budget based on research and stick to it
- If it sounds too good, ...



# EQUIPMENT



## ▶ NEW vs. USED

- Amazon? Alibaba?
- There are some good deals, many mediocre deals, and some really bad deals
- Research the seller carefully
- Where does the item ship from?
- Where will you get service?
- If it sounds too good, ...



# WHAT SHOULD I BUY FIRST?



- ▶ What do you want to do?
  - HF – SSB, CW, Data
  - FM – Repeaters, simplex
  - Digital – D-Star, DMR
  - Computer – IRLP, Dongles



# WHAT SHOULD I BUY FIRST?



- ▶ Where do you plan to do it?
  - Local
  - DX
  - EME
  - Satellites



# WHAT SHOULD I BUY FIRST?



- ▶ How much do you have to spend?
  - Obviously a personal decision
  - There is always something else you could use, or need, or want
  - Avoid the immediate lure – it's more satisfying to work your way up



# WHAT SHOULD I BUY FIRST?



- ▶ What are you allowed to do?
  - HOAs?
  - CCRs?
  - Be a good neighbor





# ANTENNAS



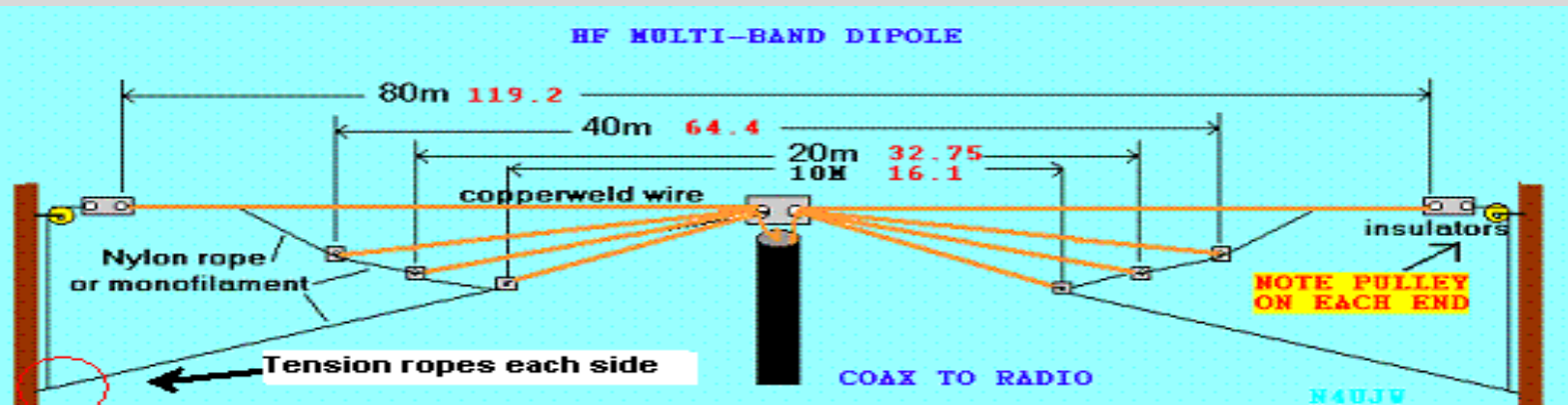
- ▶ Just a length of wire can talk around the world
- ▶ Simple to complex
- ▶ Buy or build
- ▶ Designs and plans on line



# ANTENNAS



- ▶ <http://www.hamuniverse.com/multidipole.html>



Tension rope is not tied to pulley rope in picture. It is tied near location of pulley rope down on supports within easy reach. It is tied last after final SWR adjustment and the antenna is in it's final position.

Suggested total lengths:

80 meters - 120 feet

40 meters - 65 to 66 feet

20 meters - 34 feet

10 meters - 17 feet

These lengths are not exact. Some tuning may be required. Use the standard formula  $468 / \text{freqmhz}$  for total feet for each band (freq) of interest. Adjust each length longer or shorter as needed.



# ANTENNAS





# BUILD YOUR OWN



## ▶ Projects

- <http://vk5ajl.com/index.php>
  - Antennas, baluns, tuners, ideas
- <http://www.amateurradio.bz/>
  - Zed Zed's Antennas and projects
- <http://wa5vjb.com/references.html>
  - Antenna reference pages



# BUILD YOUR OWN



- ▶ Kits available
  - Almost All Digital Electronics – [www.aade.com](http://www.aade.com)
  - YouKits – [www.youkits.com](http://www.youkits.com)
  - CheapHam – [www.cheapham.com](http://www.cheapham.com)
  - Elecraft – [www.elecraft.com](http://www.elecraft.com)
  - Many many more



# THINGS TO DO



- ▶ T-Hunts - One this weekend?
- ▶ SOTA - Summits on the Air
- ▶ NTS Traffic - Pass messages
- ▶ Contests - all bands very often
- ▶ Field Day - set up and operate under challenging conditions





# THINGS TO DO



- ▶ Have fun
- ▶ Meet new people
  - Locally
  - Around the World
- ▶ Learn new things



73