

Yagi Antenna Building

Hosted By:

NEU Wireless

NU IEEE

Please sign in:



Welcome!

- Wireless Club Meetings 7PM Thursdays @ 503 Hayden (Free Pizza!)
- Scope of today's workshop:
 - Rapid-Fire Ham Radio Overview
 - Antennas 101
 - The Build (<https://www.instructables.com/The-Tape-Measure-Antenna/>)

What is HAM radio?

- A hobby and service that allows individuals to communicate using designated radio frequencies for personal, non-commercial purposes.
- It offers a wide range of communication modes, including voice (using various modulation types), Morse code, digital data modes, and even satellite communications. Operators can use a variety of equipment, from handheld transceivers to complex radio setups.



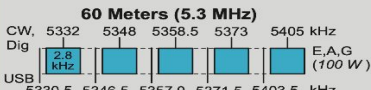
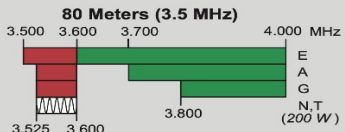
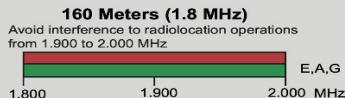
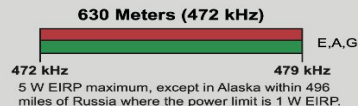
What is HAM Radio? con't

US Amateur Radio Bands

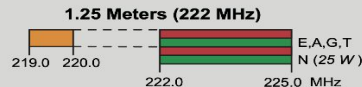
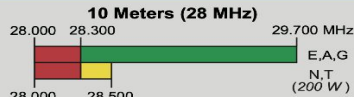
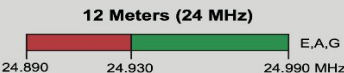
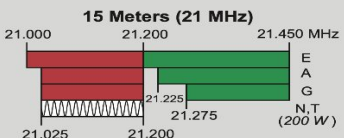
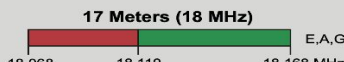
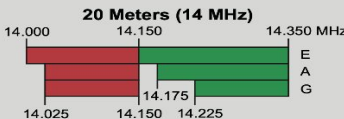
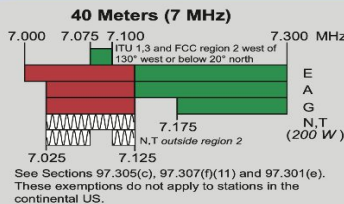
US AMATEUR POWER LIMITS

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.

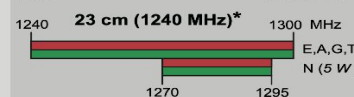
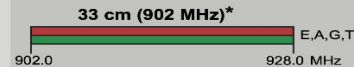
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/plc-database-amateur-notification-process/>. You need only register once for each band.



General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.



*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	76.0-81.0 GHz	All above 275 GHz

‡ No pulse emissions



ARRL The national association for AMATEUR RADIO

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 for detailed band plans.

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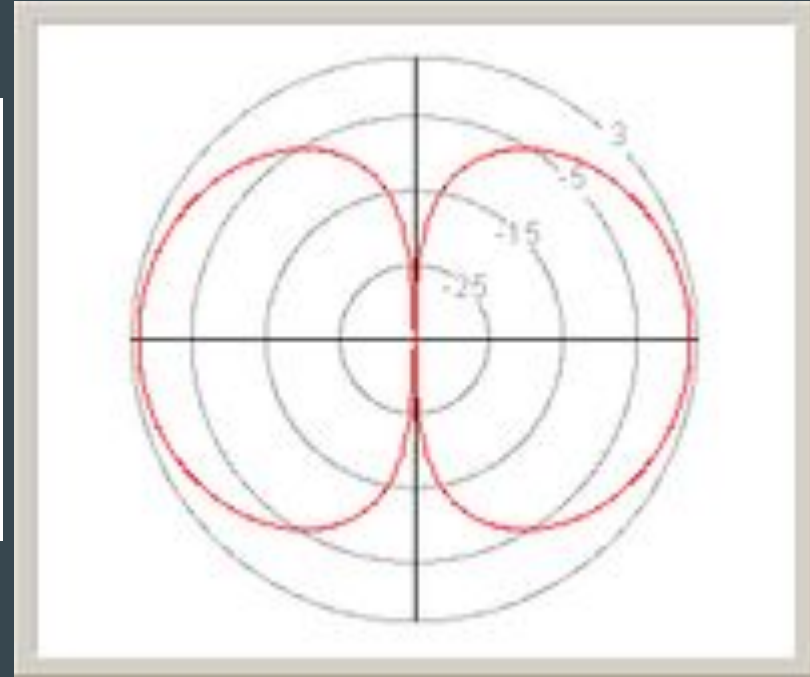
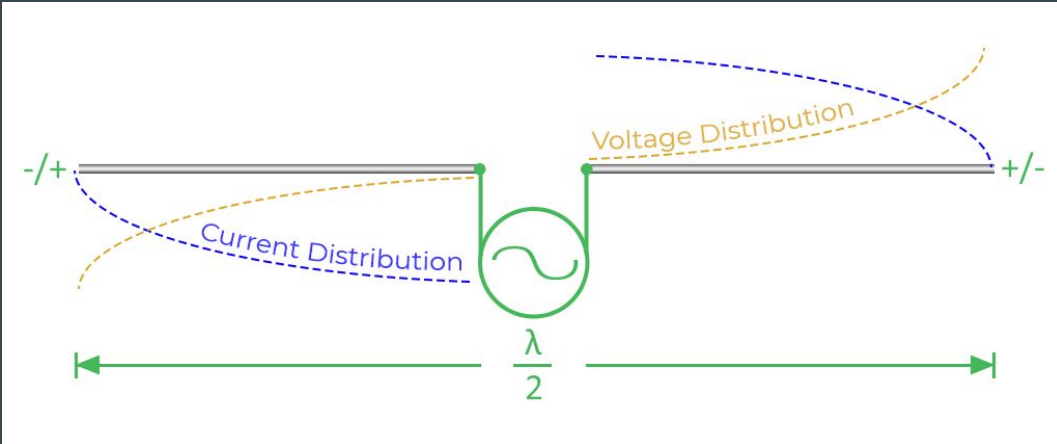
Getting Started in Amateur Radio:
Toll-Free 1-800-326-3942 (860-594-0355)
email: newham@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

Ham Radio Application: Fox Hunting



A Dipole Antenna: The Central Element



Yagi Antenna Overview

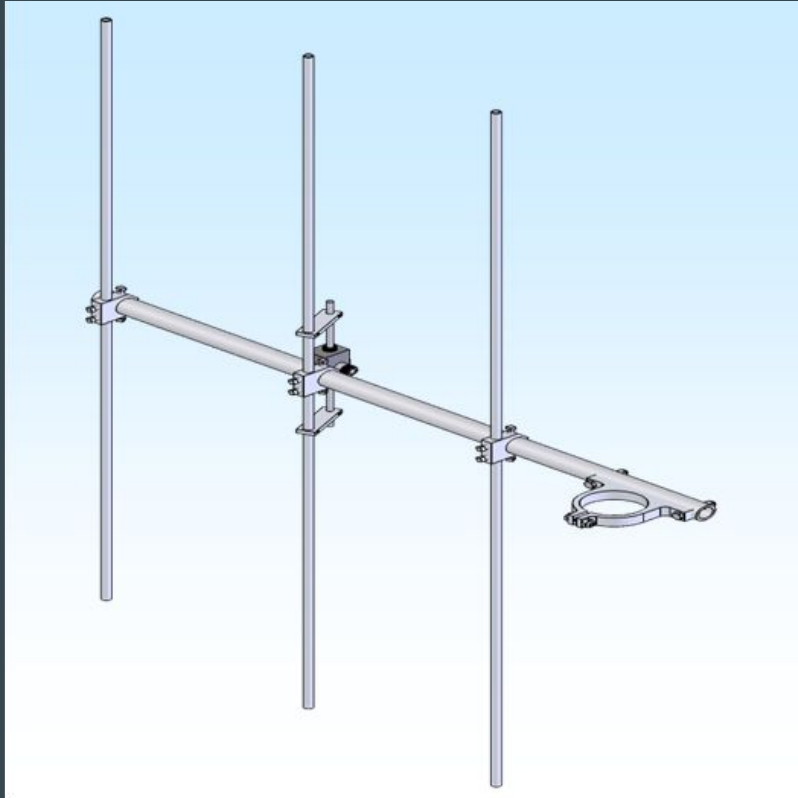
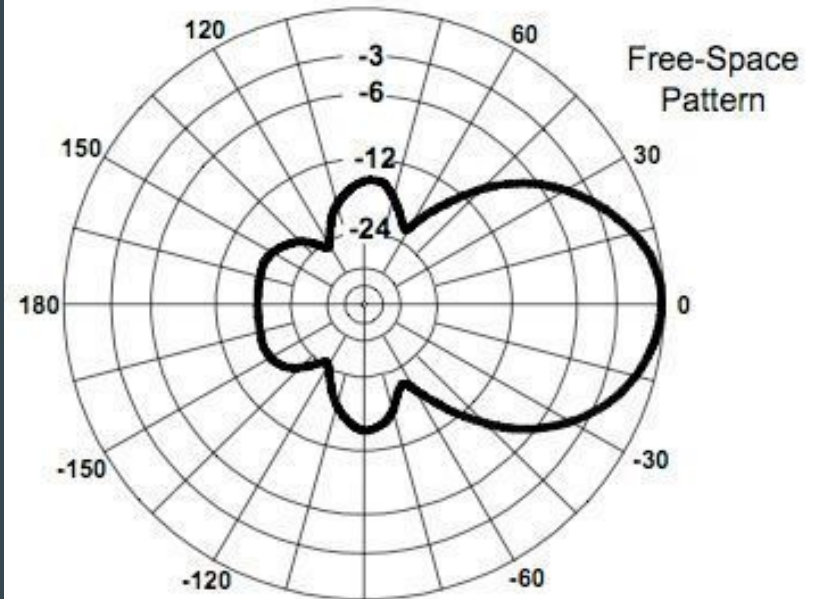


Figure E9-1

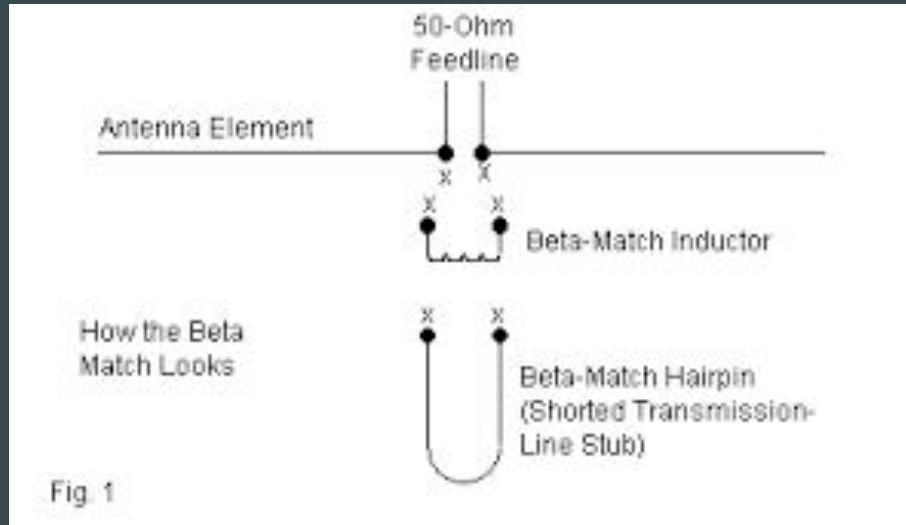


Yagi Antenna Technical Concept

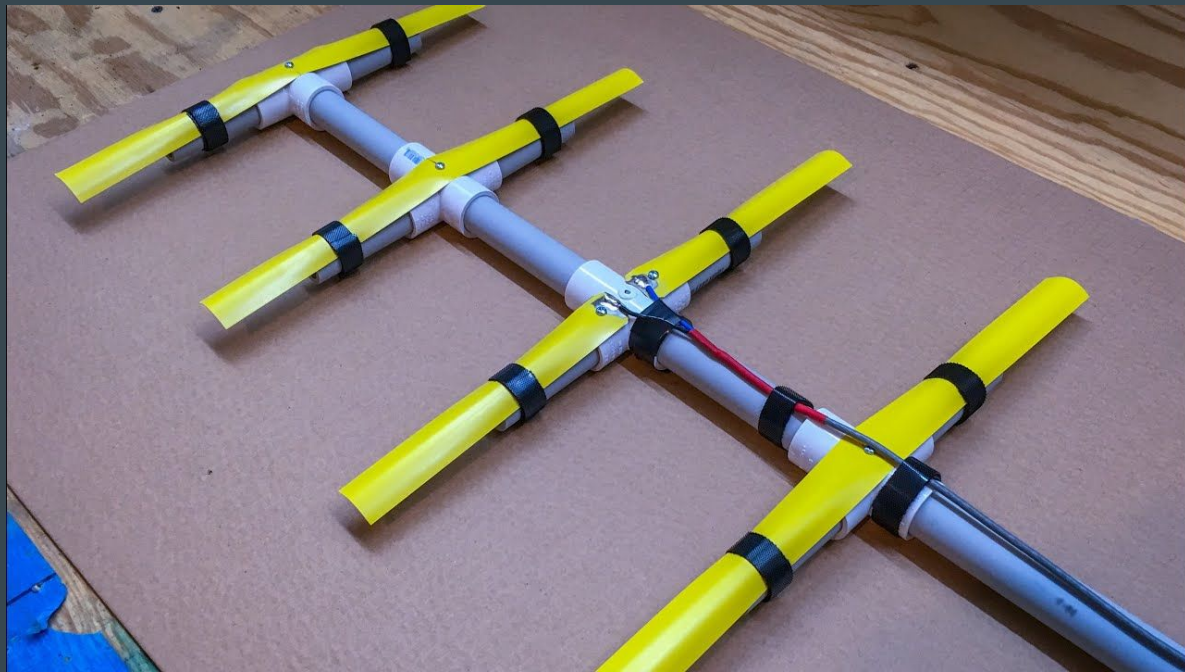
- Yagi antenna typically consists of several elements, including a driven element, reflector, and one or more directors. The driven element is the part that is connected to the transmitter or receiver, while the reflector and directors are passive elements that help direct the antenna's beam.
- Yagi antennas are commonly used in various applications, such as amateur radio, TV reception, Wi-Fi networks, and point-to-point microwave links. Their directional properties make them effective for reaching distant stations and minimizing interference from other directions, improving signal quality and range.

Matching The Dipole... Hairpin!

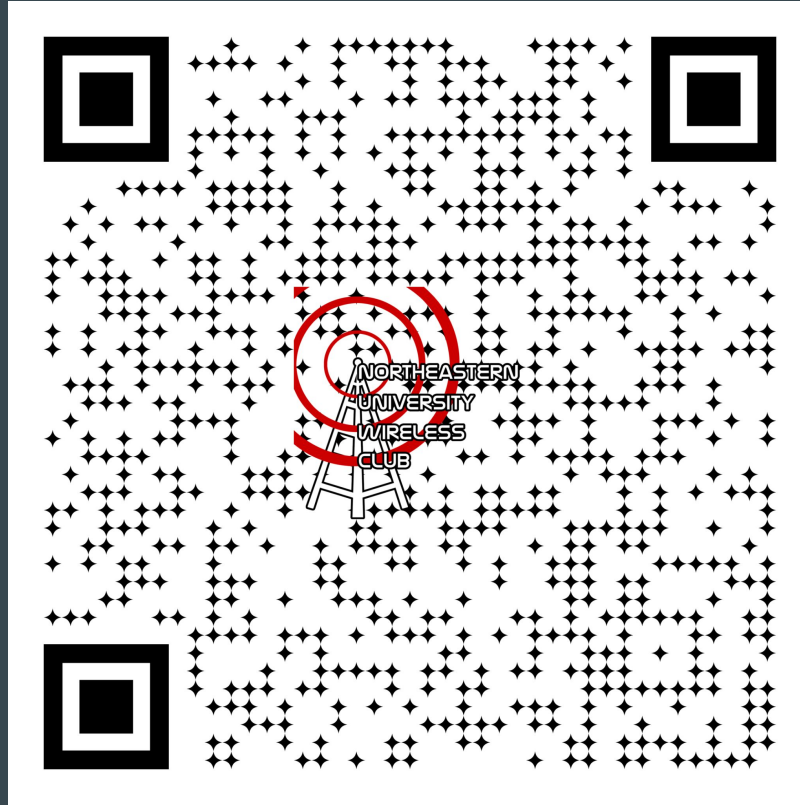
Hairpin matches are primarily used for impedance matching purposes. They help match the impedance of a transmission line or a component to the desired or required impedance level. This is crucial for maximizing power transfer and minimizing signal reflection.



Yagi + Scrappy = Tape Measure Yagi!



Tape Measure Yagi! Instructions - Scan:



[instructables.com/The-Tape-Measure-Antenna](https://www.instructables.com/The-Tape-Measure-Antenna)

Questions?

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