Fun with Antennas

Connecting
Friends,
Communities
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Antenna Clinic
Workshop Event

SWR

- What is it?

SWR Standing Wave Ratio is really a measure of the transmission line and not the antenna itself. It is simply the ratio of Reflected Power to Forward Power.

- Why does it matter?
- High SWR “folds back” power into the transceiver and can damage equipment.
- The ideal SWR is 1:1
- Most modern transceivers can handle up to 3:1 with an internal tuner.

What is Impedance?

The ratio of applied voltage to initial current is impedance.

Remember Ohm's Law and the related questions on the General License exam?

Amps x Volts = Watts
Volts = Amps x Resistance

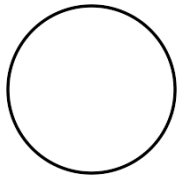
It's coming back now, right? Your radio likes 50 Ohms or 50 Ω.

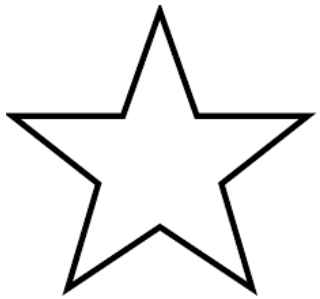
What is Gain?

This is extremely simplified but Gain is the characteristic of an antenna to radiate a stronger signal in some directions and a weaker or no signal in others.

As an extreme example, a circle would represent an omnidirectional antenna.

A star would have a stronger signal at each point and a much weaker or no signal at the base of the points.





The Chameleon F Loop 2.0 plus, Magnetic Loop Antenna.

eham review 5/5 8 reviews

- CHAMELEON ANTENNA F-Loop 2.0 Portable HF Loop Antennas were designed with portability, ease of use, ruggedness and high performance in mind. CHA F-LOOP 2.0 antennas are made with premium materials that are precisely manufactured and assembled.

- The bottom of a vertically oriented loop does not need to be more than a loop diameter above ground, making it very easy to install in a restricted space location. There is no significant improvement in sky wave propagation performance when a small loop is installed high; all that matters is the loop is substantially clear of objects in the immediate area (especially metal objects) and oriented towards the desired direction of radiation.

- Magnetic loops are different from typical antennas because it emphasizes the magnetic part of the radio wave (H field) rather than the electric part (E field) of the radio wave. It also has a high Q resonance of around 17 KHz on 40 meters, helping to provide some immunity from interference outside the resonant bandpass.

- CHA F-LOOP 2.0 Antennas were designed with weight, portability, versatility and cost in mind and are ideal for RV/camping, hotels, apartments, condominiums, homeowner's associations, deed restrictions and CCRs (Covenants, Conditions and Restrictions), Shortwave Listening (SWL) and other applications where it is not feasible to erect a multi-band wire or vertical antenna.

Chameleon MPAS 2.0 Portable HF Antenna.

eham review 5/5 6 reviews

- CHAMELEON ANTENNA CHA MPAS 2.0 Portable HF Antennas (Modular Portable Antenna System) is a concept allowing the radio operator to configure and deploy the antenna system in a variety of configurations.
  This new 2.0 version is a complete backpack antenna system that includes the CHA MIL 2.0 whip and the CHA MIL EXT 2.0 and more wire to support a greater range of deployment configurations: Vertical, Horizontal, Sloper, Inverted Vee, Inverted L, NVIS, Balcony, Stationary Vehicle and Man-Pack.

- The CHA MPAS 2.0 is perfect for Emergency Preparedness and Survival Communication.
  It is also the antenna for hams who enjoy camping, hiking, biking or other types of outdoor recreation which require communication gear to be both effective and highly portable.

Eagle One Vertical
by W8AFX and W8GMS
eham review 4.5/5 38 reviews

Buddipole

eham reviews 4.5/5 210 reviews

- It's a dipole... It's a vertical... It fits in your travel bag! The Buddipole™ is more than an antenna, it's a versatile system for launching your signal. Optimized for transmit power and proven for DX work, the Buddipole™ is the secret weapon used by HF portable operators all around the world.

- Precision engineered for maximum performance using lightweight composite materials and High-Q coils. Zero-loss balun with Quick-Connect feedpoint.

Comet HFJ-350M

eham reviews 2.6/5 5 reviews

- Most antennas sold for pedestrian mobile or bicycle HF mobile are rated to handle 20 or 30 watts, depending on band and mode. The Comet HFJ-350M is rated to handle 100 watts on 40 meters and higher frequencies. A slightly lower limit of 75 watts applies to 80 meters.

- Comet designed this antenna to be mounted directly on the antenna jack of your rig. For the 100 watt power level that seems too close for comfort. If this is a concern your radio probably offers a Power Level control that can be set to a lower level.

- The Comet HFJ-350M requires a counterpoise, which is not optional!

- In a portable environment, mounting the HFJ-350M on the antenna tuner, or even better, attaching the antenna to a camera tripod would be preferable. I am surprised the manufacturer did not package some sort of mount with their antenna or at least offer a mount as an option. It is possible that Comet has plans to do this someday and is waiting out the COVID-19 pandemic.

- https://www.radioclub-carc.com/wp-content/uploads/2020/07/How-do-I-HFJ350m-First-Look.pdf

References

ARRL Antenna and Antenna Analyzer books:
http://www.arrl.org/arrl-antenna-book

https://www.arrl.org/shop/Understanding-Your-Antenna-Analyzer

CARC:
https://www.RadioClub-CARC.com/resources/

Larsen Antenna:
www.pulseelectronics.com

Editor's Note:

Product Specifications and Pricing Information mentioned in this presentation are believed to have been correct when the presentation was created – September 2021.

Changes may occur without notice.

You are advised to check with the product manufacturer or dealer if product specifications or pricing are important factors for you.

The End