Novel Broadband and High Gain Antenna

VTIP 20-003: “A Broadband, High Gain, End-fed Coaxial Collinear Antenna”

THE CHALLENGE

There are a variety of VHF/UHF communication systems that require an omnidirectional antenna which is low-weight, portable, easy to fabricate, and low cost. A vertical collinear array of dipole antennas is a popular candidate for mobile communication due to its omnidirectional radiation pattern. These are currently used in a wide variety of communications applications, and improved antennas that can achieve data transfer at faster rates and are versatile in setup options are much needed.

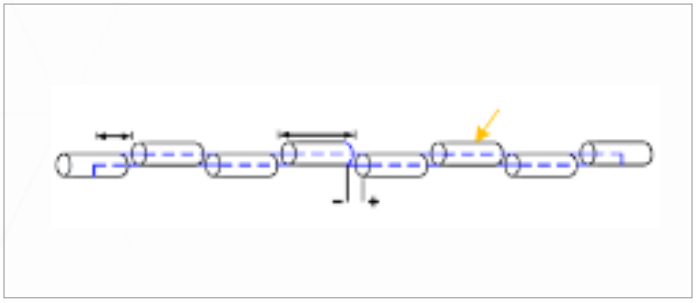
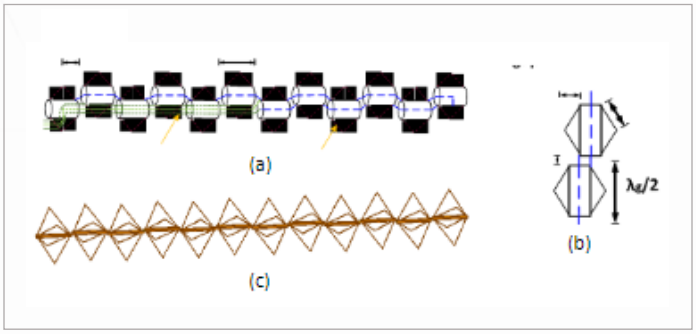


Diagram of center-fed CoCo antenna.



Diagrams of proposed wideband end-fed CoCo antenna: a) Wire mesh and end-feeding structure; b) side view of two sections; c) 3D view.

OUR SOLUTION

Virginia Tech researchers have invented a wideband high-gain wire mesh coaxial collinear antenna with a stable radiation pattern. The proposed antenna has 3X more bandwidth than classical center-fed antennas while maintaining a stable gain and radiation pattern over a wide frequency band.

Main benefits include:

- Low cost
- Light weight
- High bandwidth
- Stable gain and radiation pattern

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