

Simulating a Multiband Omnidirectional Dipole Antenna Design

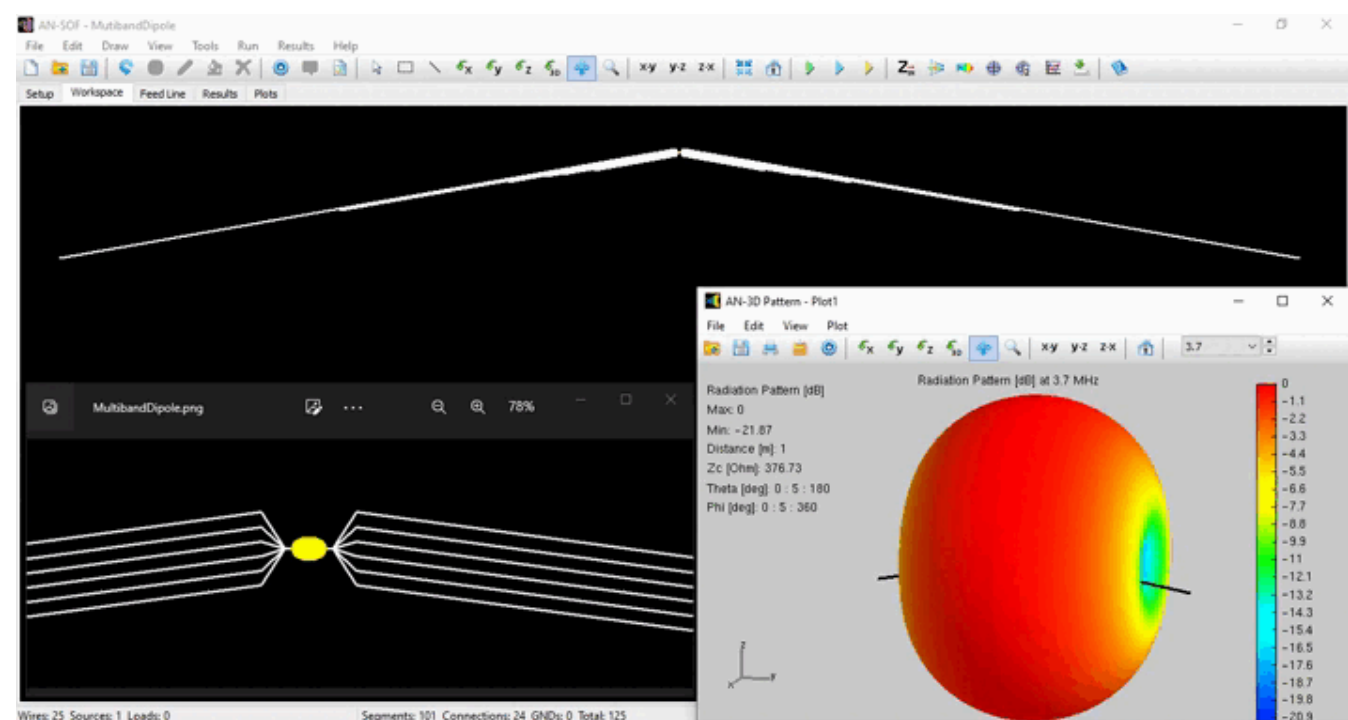
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Discover the design and simulation of a multiband omnidirectional dipole antenna using AN-SOF. Operating at six key frequencies, this antenna combines closely spaced parallel dipoles into a single feed point. Explore how simulation reveals performance patterns and empowers your antenna experiments.

Designing an omnidirectional antenna capable of operating across multiple frequency bands from a single feed point is a fascinating engineering challenge. The image below illustrates a simulated **multiband dipole antenna** consisting of six closely spaced parallel dipoles. Each dipole converges at a common feed point at the antenna’s center.

Each dipole is cut to approximately half a wavelength for resonance at specific frequencies: **3.7, 7.05, 14.2, 18.1, 21.2, and 28.5 MHz**. The animation of the radiation patterns reveals how the antenna performs across these bands. At lower frequencies, the antenna produces a classic donut-shaped omnidirectional pattern, while at higher frequencies, more complex lobed patterns emerge due to the interaction of the dipoles.



Multiband dipole antenna with a shared feed point, illustrating radiation pattern variations across multiple frequencies.

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Simulating this design highlights the importance of accurate computational tools. **AN-SOF is particularly suited for this task** because of **its ability to handle closely spaced wires**, a feature that many traditional simulation tools struggle to manage. This capability is made possible by **AN-SOF's advanced calculation methods**, which address **key limitations of conventional approaches**.

By providing detailed insights into the antenna's behavior, AN-SOF enables both hobbyists and professionals to optimize and experiment with multiband designs. Whether you are a ham radio enthusiast looking to explore new antenna configurations or an RF engineer seeking reliable simulation results, this multiband omnidirectional dipole offers an excellent opportunity for hands-on experimentation and practical application.

See Also:

- **[Overcoming 7 Limitations in Antenna Design: Introducing AN-SOF's Conformal Method of Moments](#)**
- **[The 5-in-1 J-Pole Antenna Solution for Multiband Communications](#)**

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About the Author

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RF ENGINEER & PHYSICS PH.D. With 25+ years in Computational Electromagnetics, I'm a passionate researcher focused on antenna modeling and design. As Founder of Golden Engineering LLC, I develop accessible, high-performance simulation tools that help RF engineers optimize their designs, educators teach complex concepts, and hobbyists bring antenna projects to life.

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