

wireless networks portable devices telematics rfid electronic warfare signal intelligence tactical communication custom applications

# FRACTAL ANTENNA™

SYSTEMS INC

POWERFUL



VERSATILE

# fractal

# fractal

## FRACTAL ANTENNA SYSTEMS

communication custom applications



Wireless Networks



Telematics



RFID



Portable Devices

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### COMMERCIAL

From RFID and automated meter reading, to telematics, mobile devices, and wireless data networks, fractal antennas provide the optimal design solution for a myriad of commercial uses. With our ideal combination of size, performance, and form factor, fractal antennas give unparalleled flexibility to wireless designers.

#### Wireless Networks

Fractal antennas enable emerging wireless networking protocols, such as ZigBee, WiMAX, and MIMO.

#### Telematics

Fractal antennas are ideal for automobiles requiring compact multiband antennas for telecommunications, emergency notification, navigation, satellite radio, security, and television services.

#### RFID

Small, versatile, and cost-effective, fractal antennas are perfect for both RFID tags and readers, giving them multiband capability.

#### Portable Devices

High performance, compact fractal antennas enable unique mobile device configurations not previously possible.

#### Automated Meter Reading

Fractal antennas enable both drive-by monitoring of electric, gas, and water meters, as well as mesh networks for remote, online monitoring.

### DEFENSE & INTELLIGENCE

The inherent wideband qualities of fractal antennas are ideal for defense and intelligence applications. Compact size, versatile form factor, rugged construction, and superior wideband performance provide system integrators with the flexibility needed to meet rigorous requirements. With field-proven technology and an innovative, experienced engineering staff, Fractal Antenna Systems is uniquely qualified to serve this sector, with antennas that can cover up to a 200:1 frequency range.

#### Electronic Warfare

Featuring both extreme frequency range and power handling capability, fractal antennas are used in many innovative electronic warfare systems. Compact designs allow antennas to be used in a variety of locations, including vehicle, marine, airborne, fixed, or personnel-worn.

#### Signal Intelligence

Extreme wideband frequency coverage, plus compact, versatile form factors allow fractal antennas to monitor communications undetected.

#### Tactical Communications

Wideband fractal antennas enable the most advanced mobile tactical communications, combining bandwidth, interoperability, power handling, and compact form factor.

Fractal Antenna Systems is the recognized pioneer in fractal antenna technology. The company applies unique insights and working knowledge to create superior antenna products that are driven by the needs of customers. Based on decades of research and field experience, our patented fractal antennas enable the world's most challenging wireless design applications in commercial and defense/intelligence sectors.



Automated Meter Reading



Electronic Warfare



Signal Intelligence



Tactical Communications

#### CUSTOM APPLICATIONS

Fractal Antenna Systems works directly with both commercial and defense/intelligence customers to create customized solutions. From design and production to testing and implementation, Fractal Antenna Systems applies physics, math, design, and advanced tools to develop the most powerful and versatile antennas in the world.



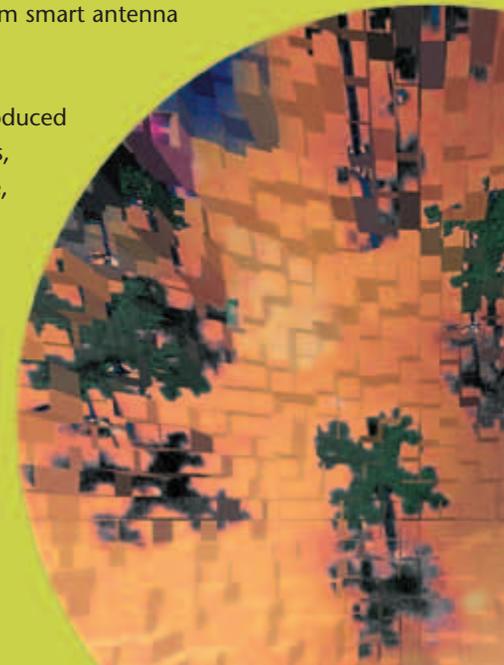
Antenna developed for in-car video feed from Indy Racing League cars. Custom antennas are developed for applications where small size, unusual form factor, and wideband or multiband performance are required.

#### RACTAL ANTENNA TECHNOLOGY

A fractal antenna is created using fractal geometry, a self-similar pattern built from the repetition of a simple shape. The inherent qualities of fractals enable the production of high performance antennas that are typically 50 to 75 percent smaller than traditional antennas.

Fractal antennas are also reliable and cost-effective. Antenna performance is attained through the geometry of the conductor, rather than with the accumulation of separate components or elements that increase complexity and potential failure points. Fractal antennas also allow for multiband capabilities, decreased size, and optimum smart antenna technology.

Fractal antennas can be produced in all existing antenna types, including dipole, monopole, patch, conformal, bicone, discone, spiral, and helical. Many hybrid designs greatly extend frequency ranges.



# fractal

## THE COMPANY



Design



Prototyping



Testing



Manufacturing

### COMPANY CAPABILITIES

Fractal Antenna Systems works with customers in various capacities, from design to prototyping to manufacturing. We are committed to providing a unique and powerful product or solution for your application.

#### Design

*Our engineering team possesses a depth of knowledge and experience that is unmatched in the industry. A complete design library plus a proprietary optimization tool, Fractal Coded Genetic Optimization (FRAGO), give us expansive resources with which to create antenna or embedded component candidates for customer applications.*

#### Prototyping

*Once an antenna or embedded component design has been selected, we quickly produce an operational prototype that is then refined and proven prior to customer delivery or manufacturing.*

#### Testing

*Indoor and outdoor testing facilities are available. We also work with third parties to meet the most rigorous certification requirements, including humidity, temperature, and impact testing.*

#### Manufacturing

*Onsite fabrication and manufacturing facilities are ideal for small-to-moderate production runs of antennas or embedded components. Third party contracts or license agreements are arranged for high-volume manufacturing.*

### ABOUT FRACTAL ANTENNA SYSTEMS

Fractal Antenna Systems was founded by Dr. Nathan Cohen, and supplies products for the world's most demanding wireless applications. Backed by one international and six U.S. patents, plus numerous patents pending, Fractal Antenna Systems is the recognized pioneer in fractal technology, with extensive research and field experience. Fractal Antenna Systems is a privately held company headquartered in Bedford, Massachusetts, USA.