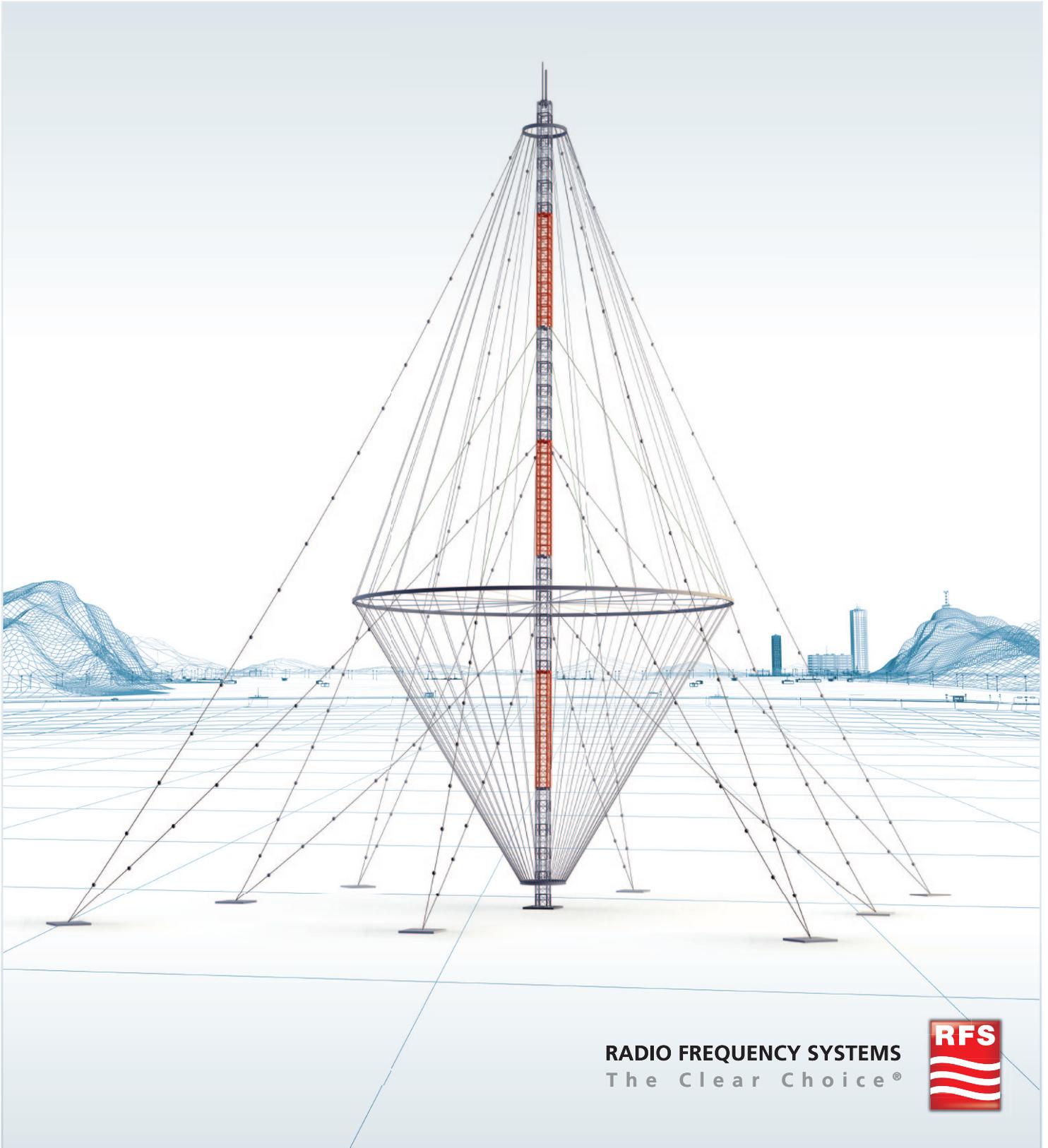


RFS HF and Defense Solutions

Mobilizing world-class HF communications capabilities



RADIO FREQUENCY SYSTEMS
The Clear Choice®



Customized, next-generation solutions for the most demanding defense and civilian operations

Securing the technological edge with HF systems

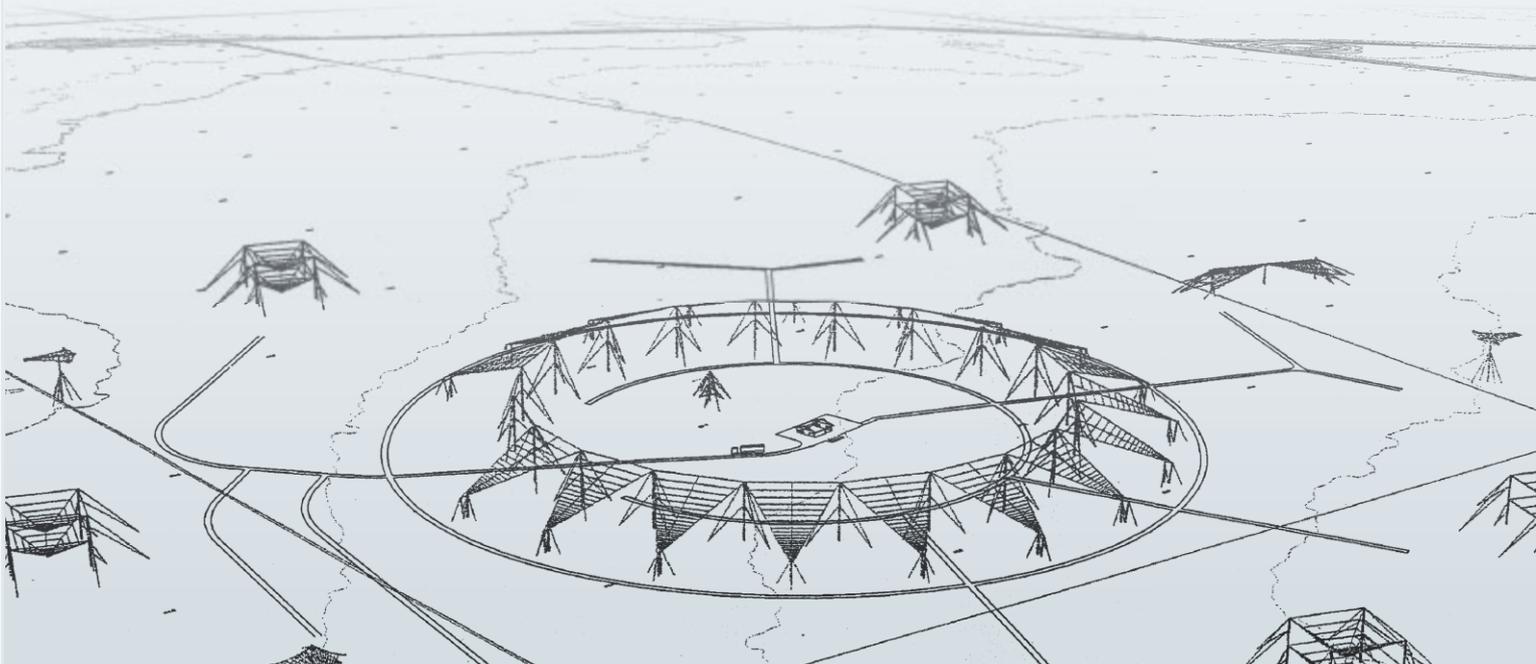
For decades, high-frequency (HF) systems have provided the communications hotline for defense forces and civilian groups around the world. With communications hops of up to 4,000 kilometers, HF systems continue to be a vital component of large-scale installations, and critical for rapid, ever-shifting deployments.

Voice communications have long been the primary focus. But with digital technologies gaining ground, transmitting tactical data via HF systems is an attractive

prospect that raises important questions for the personnel responsible for critical communications networks.

Military and emergency-response groups are faced with the need to upgrade their infrastructure to keep maintenance costs under control and ensure the system is future-proof for migration to digital technology. Radio Frequency Systems' capabilities are among the most advanced in the world for enhancing existing systems and creating both standard and customized HF and tactical antennas.

With a strong focus on improving system performance through innovative product design, RFS serves major defense groups, government organizations and system integrators across the globe. Our highly qualified team of engineers, technical officers and technicians are engaged in a continuous R&D program, designing and adapting HF and tactical products at the cutting edge of modern technology.



Reliability on every front



RFS is committed to providing HF system solutions that meet the most demanding communications requirements, across short, medium and long-distance coverage areas, and in the harshest environments.

↪ A comprehensive HF range

RFS' base range of broadband HF antennas includes more than 18 different designs. These are combined with a leading transmission line range, which includes the world's only 8 and 9-inch air-dielectric coaxial cables, to provide a comprehensive mix of flexible solutions that will adapt to any situation.

↪ Superior performance

A key component of RFS' system design and optimization capability is computer simulation and analysis. This process takes into account the prediction of ionospheric behavior and antenna specifications to enable coverage pattern simulation, ensuring the HF communications system will achieve the desired performance at all times.

↪ Mechanical robustness

To certify their reliability, HF systems are specially designed to be low-maintenance and long-lived. Rugged construction and corrosion resistance ensure that RFS' systems safely stand up to the most severe weather conditions.

↪ Customized solutions

RFS prides itself on its ability to work closely with customers in engineering a tailored HF antenna solution to meet the client's specific needs. Whether part of an upgrade or a new deployment, every component can be fully custom-designed and optimized for a specific application.

Knowledge gained in over 40 years of in-field experience

Comprehensive range of HF communications systems

RFS excels in the innovative design, manufacture and installation of HF antennas, tactical antennas, feeder systems, combiners, baluns and associated sub-systems. HF systems from RFS are designed with the use of advanced modeling capabilities, expertly developed and perfected over the past four decades. RFS also boasts proven capability in the design, construction and commissioning of all major HF communications systems and sub-systems.



Horizontal and vertical log periodics

Suitable for medium to long-distance applications, RFS' horizontal log periodic antenna performance is virtually ground-independent, with take-off angles that can be tailored to suit particular requirements. Alternatively, the RFS vertical log periodic antenna series provides ground-dependent vertical beam-widths and is characterized by a low-angle radiation that is essentially constant at all frequencies.



Broadband monopoles

Designed for medium to long-distance omnidirectional operation, these antennas exhibit low angle radiation patterns – an economical solution for general HF communications applications.

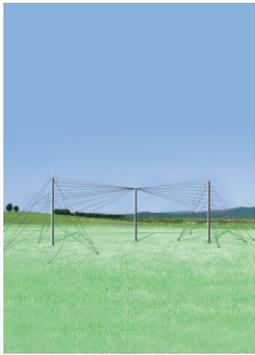
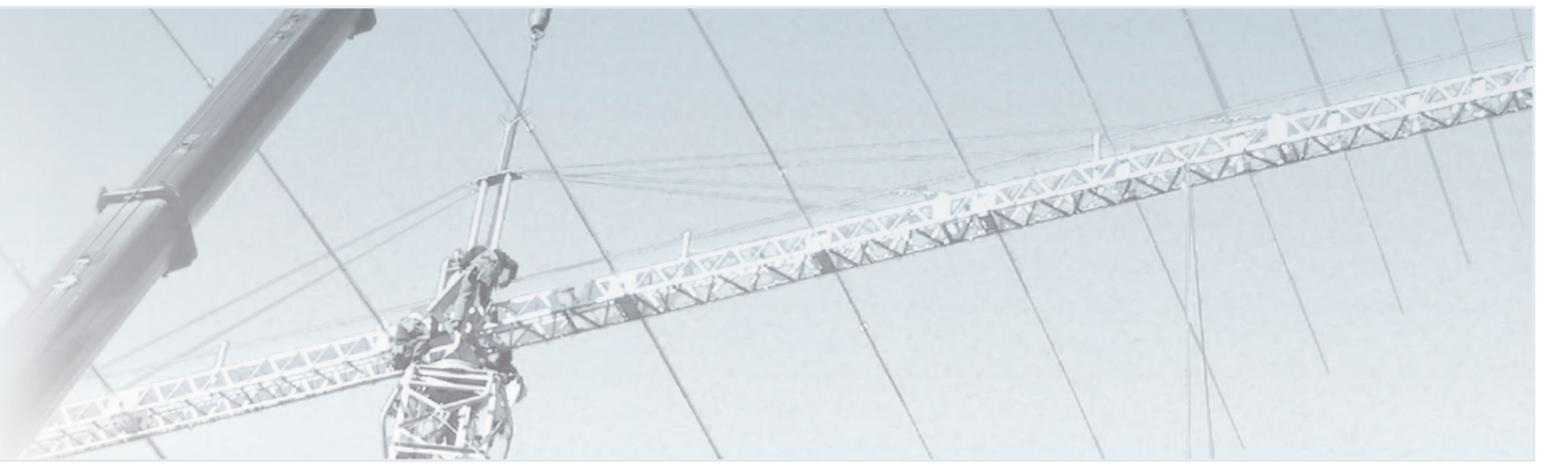


Tactical antennas

RFS' wide range of tactical man-pack and transportable antennas are available in standard designs or can be customized to meet specific customer requirements.

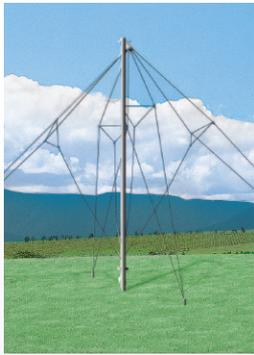
Total design excellence

As RFS designs are broadband, its antennas suit a wide variety of applications ranging from simple, low-cost, single-sideband radio (SSB) installations to complex, large-scale military installations and electronic warfare countermeasure systems.



Biconical dipoles

This omnidirectional broadband series is designed for short and medium-range coverage. As neither terminating resistors nor antenna-tuning hardware is required, essentially all input power is radiated.



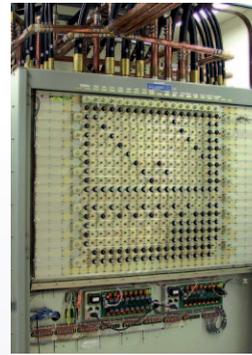
Standard and tandem deltas

Omnidirectional high angle radiators designed for ionospheric propagation over short to medium distances. Radiation results from a wave traveling upward to a resistive termination at the antenna's apex. Similar in form to the standard delta, the tandem delta does not have a terminating resistor. As a result, all input power is radiated, achieving gains of 3-4dB over the standard delta.



Rotatable log periodics

High-performance directional antennas are designed to provide short, medium and long-range coverage. These units exhibit high-gain characteristics coupled with excellent rotational speed and accuracy, making these multipurpose antennas the ideal solution for multi-link applications.



Antenna switching matrices

Antenna switching matrices facilitate multiple transmitter/receiver to multiple antenna interconnections, providing a compact system with low VSWR and high isolation characteristics.



System design, integration, and commissioning

RFS offers comprehensive HF and tactical turnkey project services, including specific resources and skills in key engineering areas such as:

- Antenna sub-system design
- Antenna farm design
- Antenna coupling analysis
- Antenna radiation hazard analysis
- Coverage maps – daytime and nighttime

PROJECT SPOTLIGHT:

High Frequency Surface Wave Radar (HFSWR)

RFS has developed the world's first commercially-available and most advanced High Frequency Surface Wave Radar (HFSWR) solution.



RFS and BAE Systems agreed to collaborate on the worldwide go-to-market for a High Frequency Surface Wave Radar (HFSWR) coastal surveillance solution developed with BAE Systems' technology.

Improving coastal surveillance capabilities

RFS' HFSWR solution is an evolution of proven BAE Systems technology and provides continuous, land-based, over-the-horizon coastal surveillance capabilities that are not possible with conventional microwave systems and that cost a fraction of traditional surveillance methods. The system is the world's first HFSWR solution to utilize a Monostatic Radar with a digitally-based architecture.

With the increasing importance of effective homeland security and Exclusive Economic Zone (EEZ) management, cost-effective coastal surveillance has become a necessity. The BAE Systems and RFS' HFSWR solution uses the surface wave propagation effect to provide unique low-level detection and tracking capabilities at ranges beyond the normal horizon limitation. It delivers highly accurate information and rapid updates to reduce the need for expensive air and sea patrols and can be used for a variety of applications:

- ➔ Fisheries protection and management
- ➔ Protection against illegal immigration, drug-running, piracy and terrorism

- ➔ Vessel Traffic Safety (VTS) in shipping lanes
- ➔ Offshore platform and island security, including detection, guidance and coordination of surveillance and reconnaissance activities
- ➔ Wide-area detection and tracking of low- and high-level flying aircraft and surface vessels

RFS and BAE Systems' HFSWR solution provides 120° azimuth coverage over long ranges and can be expanded to cover an entire national coastline. It delivers a higher probability of detection and higher accuracy than other HFSWR solutions through:

- ➔ Automatic frequency management, which optimizes system performance at all times without operator intervention.
- ➔ Multi-frequency operation, which provides high tracking accuracy, high availability and high probability of detection for all targets.
- ➔ Simultaneous air and surface processing, which maintains track on all targets of interest at all times.

Ionospheric Sounding Systems

The ionosphere is constantly monitored by a network of Vertical Incidence Sounders (VIS) and Oblique Incidence Sounders (OIS) to provide a real-time map of the ionosphere. High Frequency radio transmissions bounced off the ionosphere to a receiver with sounding techniques that measure the state of the ionosphere compared to vertical incidence soundings. The obtained data enables Over The Horizon Radar (OT HR) operators to adjust the transmission frequency and waveform being used to optimise radar performance.

Why RFS?

A worldwide leader in wireless and broadcast infrastructure



Radio Frequency Systems (RFS) offers a full range of HF communication antennas, including tactical antennas, broadband monopoles, horizontal, vertical and rotatable log periodics, biconical dipoles, standard and tandem deltas and HF shortwave broadcast antennas. It also offers ionospheric sounding systems, HF surface wave radar systems and antenna switching matrices, as well as system design, integration and commissioning.

As an ISO-compliant organization with manufacturing and customer-service facilities that span the globe, RFS offers cutting-edge engineering capabilities, superior field support and innovative product design

Serious about services

Customers know they can count on RFS for comprehensive logistical capabilities, flawless execution and outstanding technical skills and support. The company's dedicated shipment coordinators, hotline staff and on-site engineers go well beyond mere technology, striving to offer tailored solutions to meet even the most complex site-engineering and delivery challenges.

RFS' value-added services match the exact needs of business partners large and small.

Ever-present quality guarantee

From design to manufacture, ISO 9001 and ISO 14001 certification standards encompass all aspects of RFS' business worldwide. Every product RFS ships has stood up to the most stringent technical, environmental and quality control tests, continuously meeting and surpassing the expectations of a long list of wireless carriers, transportation and utility operators, and broadcasters.

RFS backs every product bearing its name with a quality guarantee that is unrivaled in the market.

A tradition of innovation

For over a century, RFS has been at the forefront of the wireless communication industry through its unwavering commitment to design and develop the world's most advanced technology in the field. Dedicated R&D teams, along with a privileged partnership with Bell Labs, are at the source of breakthroughs that are ensuring the mobility of an increasingly wireless world.

RFS is at the frontier of wireless technology innovation, sustaining the boldest ventures to enhance the way people communicate and live.

A truly global company

With on-the-ground personnel in more than 20 countries and on every continent, RFS always delivers on its commitments, providing a comprehensive range of premium products, systems and services. Its clients benefit from all the advantages of a global supplier, while relying on dedicated support from RFS' local engineering, manufacturing and shipping teams.

RFS' products, systems and personnel can be found in every corner of the planet. As a global group, RFS is committed to upholding the most stringent environmental, health and safety standards, and seeks to integrate green initiatives in every aspect of its business.

**For more information, please contact
the nearest RFS sales office:**

Southern Europe, Middle East, Africa & India

www.rfsworld.com/sales/semesai

Northern Europe

www.rfsworld.com/sales/euno

Latin America

www.rfsworld.com/sales/latam

North America

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