

RFS Microwave Antenna Systems

The necessary link in your radio network



The total package solution for your microwave antenna system

Meeting current and future capacity demands

The massive demand for fast and reliable communications is straining infrastructures the world over. Whether for commercial services, public safety networks or private enterprises, there is an enormous need for communication 'superhighways' – conduits for high volumes of voice and data traffic that can span great distances.

Because of their ease of installation and economy, wireless transmission networks are increasingly being deployed for point-to-point and point-to-multipoint applications. Wireless transmission networks founded on microwave systems are used for:

- ⇒ Public and mobile backhaul
- ⇒ Branch links and distribution
- ⇒ Broadcast and private enterprise

Whether upgrading from analog to digital, or deploying new services, there is a pressing need for precision-engineered systems that mitigate interference and provide the flexibility to meet the capacity requirements of today – and tomorrow.

A worldwide leader, RFS meets this need by providing microwave antenna systems for wireless transmission networks. RFS strives to anticipate key industry issues – such as environmental constraints, new radiation standards and new spectrum releases – to ensure it pioneers the best solutions to meet evolving market needs.



Five links to success

RFS offers total package solutions for installers, OEM integrators and network operators. Successful wireless transmission networks depend on a multitude of factors, and RFS focuses intensely on each of them.

RFS' leadership in the RF microwave sector is underpinned by five clear differentiators:

⇒ End-to-end microwave antenna systems

RFS' portfolio encompasses all elements of the RF chain, with a comprehensive suite of microwave antennas including advanced mounting structures, wind load kits, sway bars, couplers, elliptical waveguides, connectors, grounding kits and pressurization equipment – a total package solution for rapid deployments and improved efficiency.

⇒ Total lifecycle performance

The mechanical robustness and electrical performance of RFS microwave solutions are unsurpassed. RFS antenna installations exhibit survival wind speeds of up to 250km/h (155mph). Each product is built to ensure premium performance for many years to come.

⇒ R&D and innovation

Through an unrivalled program of research and design, RFS is a leader and innovator in the microwave systems sector, delivering future-proof systems that can support tomorrow's capacity requirements.

⇒ Truly global service and support

With on-the-ground personnel on every continent, RFS is ideally positioned to offer truly global value-added services, including installation and system design advice, technical training programs and much more. Ranging from simple logistics services to full site kitting, RFS' logistics support enables operators to minimize their Total Cost Of Ownership (TCO).

⇒ Engineering excellence

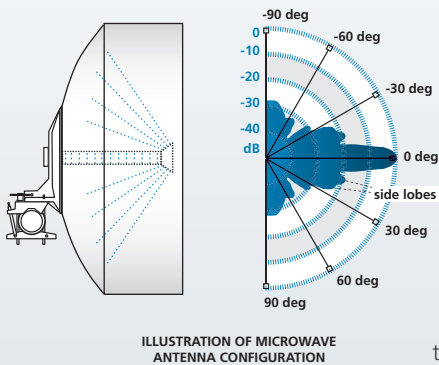
All RFS antenna models and integrated antennas are designed and developed in the company's own state-of-the-art engineering facilities. All prototypes are subjected to extensive testing – including electrical, mechanical (vibration, wind speed, shock) and environmental performance.

Services at the click of a mouse

To support its business partners, RFS has developed advanced electronic tools, which are available on its website (www.rfsworld.com, under the Support menu). These include access to RFS' myCatalog; the RPE Viewer (an application for printing radiation pattern envelopes for RFS microwave antennas, in text or graphical format); and the microwave Link Calculator (to help determine link budgets).

Flexible choices for flexible network design

RFS offers a true end-to-end solution set optimized for all popular microwave radio bands. Its microwave antenna systems offer premium electrical performance to meet the most stringent of wireless transmission network requirements.



Solid parabolic antennas

RFS’ advanced solid parabolic antenna range incorporates multiple antenna sizes (1 to 15ft), supporting all frequency bands between 3.6 and 80GHz. These single- or dual-polarized solutions are available in four different performance classes: standard, high, ultra-high and high Cross Polar Discrimination (XPD) performance.

➡ RFS microwave antennas

Spanning 3.6 to 22GHz (2 to 15ft), these antennas are available in all performance classes.

➡ RFS SlimLine® antennas

A cost-effective series of antennas in the 6 to 22GHz range (2 to 6ft), offering quick and easy installation with excellent electrical performance.

➡ RFS CompactLine® antennas

This specially designed ‘dual reflector’ feed system yields an ultra-low-profile – and ultra-high-performance – series of antennas in the 6 to 80GHz range (1 to 6ft).

FLEXWELL® elliptical waveguide

The industry-renowned FLEXWELL elliptical waveguide can achieve the radio-to-antenna link in a single run, directly from the equipment building to the tower-mounted antenna.

Designed to support microwave frequency bands from 3 to 40GHz, it is available in various sizes and types, and three different categories:

- Standard** – Cost-efficient solutions for low- and medium-capacity radio relay systems
- Premium** – Low VSWR waveguide for high-capacity radio systems
- Overmoded** – Exceptionally low-attenuation waveguide for the most demanding applications

Accessories include the FLEXWELL flanged connector range, as well as dehydrators, pressurization equipment and flexible, twistable rectangular waveguides.



Premium electrical performance features by RFS

End-to-end system optimization	➡ Careful matching of customized antenna and waveguide components for optimum system operation
Interference control	➡ Unsurpassed RF pattern/sidelobe control, meeting all – and exceeding most – global radiation standards
High cross-polar discrimination	➡ Dual-polarization antennas provide additional capacity with reduced interference
Low loss and low VSWR	➡ Each antenna and waveguide is custom-made for optimal electrical performance in specific frequency bands
Mechanical stability	➡ Installations feature unsurpassed mechanical stability for premium point-to-point radio link networks

Driving down the cost of ownership

RFS maintains a strong focus on reducing the cost of ownership through cutting-edge, lightweight product designs, and optimized packaging and logistical solutions.



Customized and streamlined designs

➡ Tailored, integrated solutions

RFS antennas can be customized with fittings to allow specific radios and hot-standby couplers to be mounted directly on the antenna. This eliminates the need for a waveguide link between the tower-mounted antenna and equipment building.

➡ Critical RPEs in small sizes

Because radiation standards are a challenge in small antenna sizes, RFS has pioneered the development of small antennas that meet key pattern requirements. Network owners can thus choose smaller antennas, facilitating site negotiations and minimizing ongoing leasing costs.

➡ Lightweight solutions

RFS has adopted design practices to ensure its microwave solutions are the lightest in the business, saving installation time and costs. These include innovative structural designs to minimize materials without sacrificing mechanical stability.

Customer-focused shipping

RFS offers a total package of microwave system solutions based on the customer’s shipping instructions. It provides first-class logistics services, bundling all products with the associated documentation for shipment to sites.

Logistics centers in North and South America as well as Europe have been established to simplify logistics for customers and to:

- Reduce TCO** for the site deployment
- Decrease costs** for logistics/transport
- Shorten lead times** through optimized logistics.



The Flex concept: modularity for ordering and delivery

RFS provides flexibility and modularity for antenna ordering and delivery through the Flex concept. This approach enables customers to place separate orders for the parabolic reflector and its electrical feed. To achieve this, RFS has aligned each reflector of a given size with the feeds of all frequency bands.

With the modular Flex concept, the heavy parabolic reflector can be ordered in advance and shipped by sea. The lightweight electrical feed may then be ordered at the last minute and air-shipped for assembly onsite with the reflector.

Four corners of the globe: RFS is tried, tested and true



Readying China for DTV

RFS supported broadcasters in Shandong Province – one of China’s more densely populated regions and the first to implement the digital switchover (DSO) of its analog systems – by gearing it up for digital television (DTV). An extensive digital upgrade of its 650-kilometer (400-mile) backhaul network was completed with total RFS microwave antenna systems



Boosting next- generation wireless in Mexico

RFS provided Iusacell, Mexico’s third-largest wireless carrier, with an end-to-end microwave solution to expand and enhance its mobile network in order to support third-generation (3G) CDMA2000 1xEV-DO Revision A (Rev. A) technology. Over one thousand integrated microwave antennas were locally manufactured and stored in a project-dedicated warehouse.



Raising microwave in Arizona

As part of a critical digital upgrade to its public safety communications networks, the western US state of Arizona relied on RFS for cutting-edge point-to-point microwave systems. Antennas, waveguide and related accessories were deployed to provide the lifeline for the state’s highway patrol, Emergency Medical Services (EMS) providers and other public-safety services operating across long distances.



Providing the Moscow – St. Petersburg link

Establishing the backbone of the communications link between Moscow and St. Petersburg for a prominent Russian mobile operator, RFS supplied microwave antennas for cellular coverage along the major road and train arteries between the two cities. The microwave backbone connected cellular base stations located at regular intervals along the 800-kilometer (500-mile) route.

Why RFS? A worldwide leader in wireless and broadcast infrastructure



Radio Frequency Systems (RFS) is a global designer and manufacturer of cable, antenna and tower systems, along with active and passive RF conditioning modules, providing total-package solutions for wireless and broadcast infrastructure.

RFS serves OEMs, distributors, systems integrators, operators and installers in the broadcast, wireless communications, land-mobile and microwave market sectors.

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

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