

# CELLFLEX® and CELLFLEX® Lite Transmission Lines

Optimizing network build-outs and operational performance  
through constant innovation



RADIO FREQUENCY SYSTEMS  
The Clear Choice®



CELLFLEX® and CELLFLEX® Lite

# The industry's most advanced transmission-line family

## A comprehensive transmission line portfolio to fit every need

The CELLFLEX® and CELLFLEX® Lite duo make up the largest corrugated transmission line portfolio in the wireless infrastructure industry. The foam dielectric cables combine remarkable flexibility with high strength and superior electrical performance.

This premium transmission line family is backed by a complete line of accessories common to both the copper and aluminum products, including the renowned OMNI FIT™ connector range.

CELLFLEX® cables provide a reliable and technically superior solution when used as backbone feeders in cellular radio systems, including GSM, UMTS, CDMA, PDC and LTE, as well as WIMAX. Other common uses for the CELLFLEX® family include the cabling of antenna arrays, radio equipment interconnections and jumper assemblies.

20 unique CELLFLEX® types, ranging from 1/8" to 2-1/4", provide users a perfect match for the most complicated and demanding applications. Every cable comes with a guarantee of reliability, performance and cost-effectiveness from the most experienced and innovative cable manufacturer in the world – Radio Frequency Systems.

## A tradition of continuous innovation

Designing better performing, more durable and lighter cables is part of RFS' long tradition of innovation leadership. The Hackethaldraht Company – RFS' direct predecessor – was established in Hanover, Germany on September 29, 1900, and was responsible for many transmission-line firsts.

An important milestone was set in 1951 with the invention of corrugated, longitudinally welded coaxial cables. This technology gave way in 1962 to the launch of foam dielectric coaxial cables by the then renamed Kabelmetal Corporation. CELLFLEX® would quickly become the preferred cable choice for mobile communication base station applications.

The original CELLFLEX® cable provides the design basis for the extremely lightweight CELLFLEX® Lite cable, which features a corrugated aluminum outer conductor.

Today, RFS' premium attenuation, low-loss CELLFLEX® cable continues to lead the industry in electrical performance.



CELLFLEX® Lite

# RFS' aluminum cable – best value for money



## World's first aluminum cable

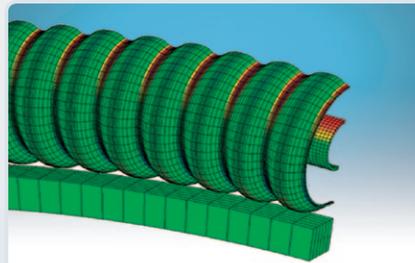
CELLFLEX® Lite is a foam dielectric corrugated coaxial cable with an aluminum outer conductor and a copper inner conductor. With its low weight, CELLFLEX® Lite is easy to transport, handle and install. It has become a preferred option for the rapid rollout of wireless network infrastructure around the world. Freed from the unpredictable market price of copper, CELLFLEX® Lite offers an attractive price point and performance combination for establishing RFS base-station-to-antenna links while meeting budget targets during network rollouts.

Unlike alternative constructions, RFS' corrugation technology allows CELLFLEX® Lite cables to bend easily without risk of damage, even against strong bending forces. This feature, coupled with its lightweight design, allows for fast installation, reduced tower load and makes it ideal for congested tower-top applications.

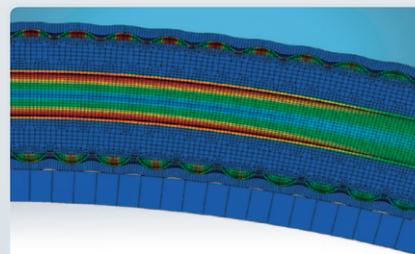
CELLFLEX® Lite delivers world-class attenuation, return loss and intermodulation performance. The electrical performance of CELLFLEX® Lite aluminum cables is equivalent to or superior than that of most other brands' copper transmission cables. Copper cable theft has become a severe problem for mobile operators worldwide. With its aluminum outer conductor construction, CELLFLEX® Lite is less attractive to thieves, making it an ideal alternative to copper cables. To deter theft, RFS clearly marks each meter of CELLFLEX® Lite cable with the words "RFS ALUMINIUM".

## The most stringent reliability requirements

Simulation of Accelerated Lifetime Qualification tests are performed on CELLFLEX® Lite cables according to international standards. These tests confirm that the cables maintain outstanding product performance after mechanical and environmental stresses. The conditions applied during the tests are even more severe than those experienced in real-life applications and simulate many years of use.



Simulation of accelerated lifetime



Numerical modeling of mechanical and electro-magnetic properties

## Jumper cables

CELLFLEX® foam dielectric jumper cables provide the ideal combination of low loss, high strength and exceptional flexibility for optimum performance. Jumper cables are primarily used between main feeders and antennas, main feeders and systems equipment or Remote Radio Heads (RRHs) and antennas.

RFS Factory-Fit Jumpers feature soldered connectors to ensure long-term product durability and best-in-class intermodulation performance. Jumper assemblies with one connectorized side complement the portfolio, providing higher flexibility in terms of length and on-site interface options.

Depending on the jacket option, jumper cables are suitable for indoor and outdoor applications and can withstand severe environmental conditions. Jumper assemblies are designed to the IP68 classification, providing safety even if humidity reaches the coaxial system.

CELLFLEX® jumper cables offer:

- ⊕ Excellent contact force
- ⊕ Low and stable intermodulation to Third-Order Intermodulation (IM3) levels
- ⊕ Highly effective radio frequency (RF) screening
- ⊕ Safe operation to IP68 classification levels

# Thinking ahead with CELLFLEX® and CELLFLEX® Lite: Corrugated cables



Based on several decades of engineering expertise in cable manufacturing, RFS offers cables with an advanced corrugation profile. Unlike alternatives, this profile enables CELLFLEX® copper and CELLFLEX® Lite aluminum cables to bend easily without risk of damage due to strong bending forces. These cables are used for state-of-the-art transmission lines and built to meet diverse installation requirements.

RFS' corrugated cable family was developed to meet the strict demands of today's telecommunications industry, to provide best-in-class Passive Intermodulation (PIM) performance and to be ready for PIM site commissioning. RFS' corrugated cables also help customers achieve their environmental objectives.

Corrugated cables from RFS are easier to reuse and recycle than competing cables on the market. CELLFLEX® and CELLFLEX® Lite do not feature bonded layers, making it easy to extract pure copper parts from the transmission lines when future network improvements require an overhaul of materials.

## CELLFLEX® key features and benefits

Extremely low attenuation values	⇒ Permits long cable lengths for reliable installation on high towers, ensuring that link budget targets can be met
High flexibility	⇒ Easy handling facilitates quick installation
Available with UV-resistant black-colored or gray-colored jackets	⇒ Choice of UV-resistant color – low visual impact
High screening effectiveness	⇒ No distortion of neighboring systems
Rugged design	⇒ Resists extreme weather conditions and harsh environments
Corrugated conductors	⇒ Standard procedures for connectorization – no additional tools or training needed
Excellent return loss	⇒ Perfect solution for highly sensitive applications
Corrugated conductors	⇒ Standard procedures for connectorization, easy to install, ensuring superior PIM performance

## CELLFLEX® Lite key features and benefits

Lightweight transmission-line solution	⇒ Easy to transport, handle and install. Rapid rollout of wireless network infrastructure possible: first to market. Savings in shipping costs.
Provides a cost-effective alternative to copper transmission lines	⇒ Reduced CAPEX spending
Is offered in diameter sizes from 1/2" to 1-5/8"	⇒ Covers the majority of applications
Offers user-friendly compatibility with RFS' proven range of accessories. OMNI FIT™ connectors can be used with both copper and aluminum cables	⇒ Less inventory, reduced operating working capital (OWC)
Enables trouble-free installation and operation	⇒ No downtime, reduced risk
Boasts an attenuation of less than 6.25dB/100m @ 2 GHz (valid for 7/8")	⇒ Uninterrupted coverage
Specially developed connectors provide low and stable intermodulation performance	⇒ No sensitivity degradation of the base station system. No dropped calls
Is available with UV-resistant polyethylene or flame-retardant jackets	⇒ Choice of standard halogen-free or flame-retardant jacket options
Has a return loss performance equal to that of copper cables from competing cable suppliers	⇒ Continuous premium antenna system performance

OMNI FIT™ connectors:

# Two totally compatible connector families



## Full copper and aluminum compatibility

RFS connectors are designed for high performance, easy installation and full compatibility. The entire range of the breakthrough OMNI FIT™ Premium and OMNI FIT™ Standard connectors work with both copper and aluminum cables. A given connector, for example, adapts to four different 7/8-inch cable types, providing considerable savings and reducing installation errors. To achieve the best possible PIM performance, the cable type and connector should match.

A perfect complement to the CELLFLEX® transmission line range, OMNI FIT™ connectors provide users with familiar connection options, premium electrical characteristics and reliable, long-life use.



Full copper and aluminium compatibility

## OMNI FIT™ Premium connectors

OMNI FIT™ Premium, RFS' line of premium RF connectors, features design breakthroughs for best-in-class performance and value. OMNI FIT™ Premium ensures hassle-free installation, safe sealing and the best PIM levels in the industry.

The product of intense research, OMNI FIT™ Premium connectors integrate groundbreaking concepts in connector design. A new high-tech polymer claw replaces the machined brass version. The dual-grip function on the outer conductor ensures best-in-class PIM performance under static and dynamic conditions. The high-tech polymer claw is a low-friction component for easier installation and no risk of corrosion.

OMNI FIT™ Premium offers a five-point watertight design, including a unique new 360-degree compression-method sealing process for the cable jacket. These connectors provide such a secure, watertight seal that no additional weatherproofing is needed.

The unique sealing process and the dual-grip function of the new polymer

claw ensure long-term premium Voltage Standing Wave Ratio (VSWR) and PIM performance. This helps to avoid difficult-to-detect, latent failures in the RF path that gradually degrade network quality over time. Operators save time and money, leading to reduced total cost of ownership.

## OMNI FIT™ Standard connectors

RFS' OMNI FIT™ Standard connectors are designed to provide standard VSWR performance while ensuring excellent PIM performance. The connectors offer a cost-effective, high-quality connector-to-cable interface for easy, fast and safe connector attachment.



# CELLFLEX® and CELLFLEX® Lite User-friendly accessories



## A complete portfolio

CELLFLEX® and CELLFLEX® Lite cables are backed by a complete portfolio of user-friendly accessories, including grounding kits and clamps, trimming and preparation tools, jumpers, EMP-protectors, wall feed-thrus and hoisting grips.

These advanced products are designed with the customer in mind, offering full compatibility according to today's demands. Customers only require one type of accessory for each cable size, eliminating the need to stock redundant accessories.

Accessories for the most common cable types (1/2" to 1-5/8") are shown here. Please see the RFS website or myCatalog CD for a complete inventory of all accessories.

All CELLFLEX® and CELLFLEX® Lite accessories are compatible with both the copper and aluminum product lines.

RFS has developed a versatile trimming tool with different inlay options so it can be used for OMNI FIT™ Premium or OMNI FIT™ Standard connectors.



RFS' new EMP protector is LTE-ready

# 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](http://www.rfsworld.com/sales/semesai)

**Northern Europe**

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