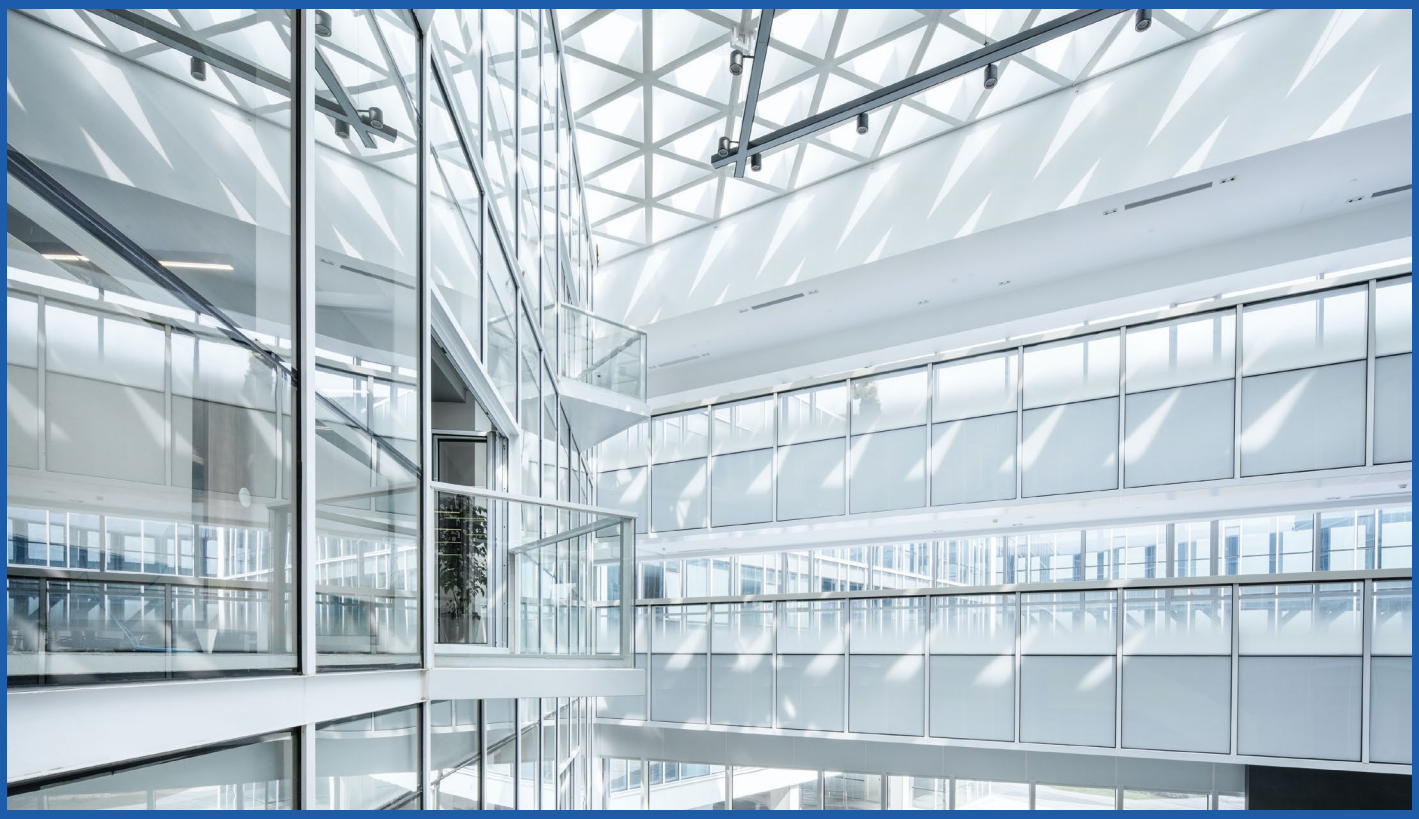
RFS Technologies
an Amphenol Company

PASSIVE DAS

SELECTION GUIDE

Edition 1 rev. B | 04.2024

5G-Ready Wireless Network Solutions for Buildings and Tunnels



RFS TECHNOLOGIES, INC. WIRELESS INDOOR SOLUTIONS

RFS TECHNOLOGIES, INC.

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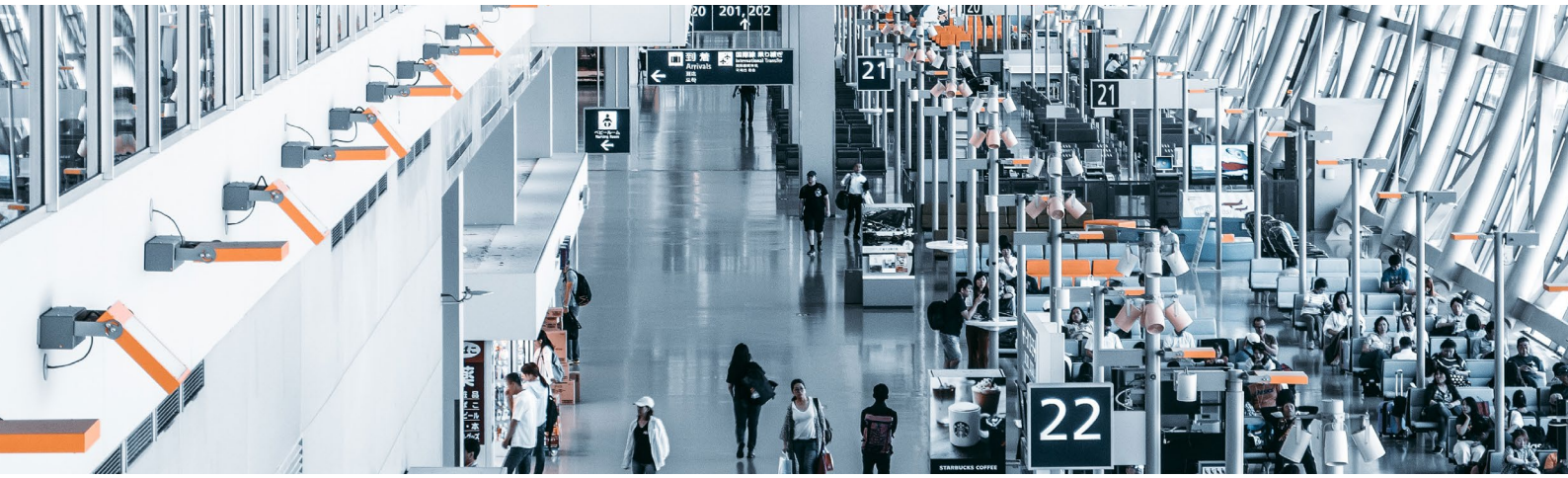
KEEP PEOPLE CONNECTED WITH THE **ULTIMATE PASSIVE DAS SOLUTIONS**

Keeping people connected with high-quality, uninterrupted wireless communications indoors and underground is essential to protect lives, run businesses and deliver the seamless wireless experience people expect. It's also extremely challenging.



Our passive distributed antenna system (DAS) solutions incorporate world-first inventions and innovations to keep people connected at all times, whether they're deep underground, at ground level or many stories above ground.

ULTRA-WIDEBAND, 5G-READY SOLUTIONS

Every component in our end-to-end passive DAS solutions is designed with the future in mind to support 5G wireless services globally and protect your investments. Our solutions include:

- Ultra-wideband RF products from 555 MHz to 6 GHz.
- CELLFLEX® coaxial cables that support all services up to 6 GHz.
- ClearFill®Line plenum-rated cables that support all services up to 6 GHz.
- RADIAFLEX® radiating cables that support all wireless services up to 6 GHz.

THE HIGHEST POSSIBLE LEVELS OF FIRE RESISTANCE

Our indoor communications cables have achieved the world's highest ratings for fire resistance and low-smoke, zero-halogen (LSZH):

- RFS Technologies, inc. DragonSkin™ is the first and only in-building coaxial cable to receive UL 2196 certification with no metal conduit, extensive wrapping or fire-resistant enclosure. This half-inch cable is thinner, safer, more flexible, and lighter weight than any other in-building coax cable with this level of fire resistance.
- RFS Technologies, inc. RADIAFLEX radiating cables and CELLFLEX coaxial cables achieved the top Construction Products Regulation (CPR) rating of B2ca with a d0 droplets rating.

In addition, all our cables meet major international flame- and fire-retardancy standards, including:

- IEC 60754-1/-2: Halogen-free and non-corrosive jacket tests
- IEC 60332-1: Flame tests
- IEC 60332-3-24: Cable bundle tests
- IEC 61034: Low-smoke emission tests

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THE FASTEST

MIMO Solutions Available

We are the only vendor that can enable MIMO end-to-end, and we have achieved two world firsts:

- The world's first pair of ultra-broadband radiating cables for cross-polarized 2x2, 4x4 and higher MIMO applications.
- A new world record for download speeds in tunnels with a 4x4 MIMO solution for the Follo Line high-speed railway project that reached 560 Mbps.

PROVEN IN HIGH-PROFILE DEPLOYMENTS

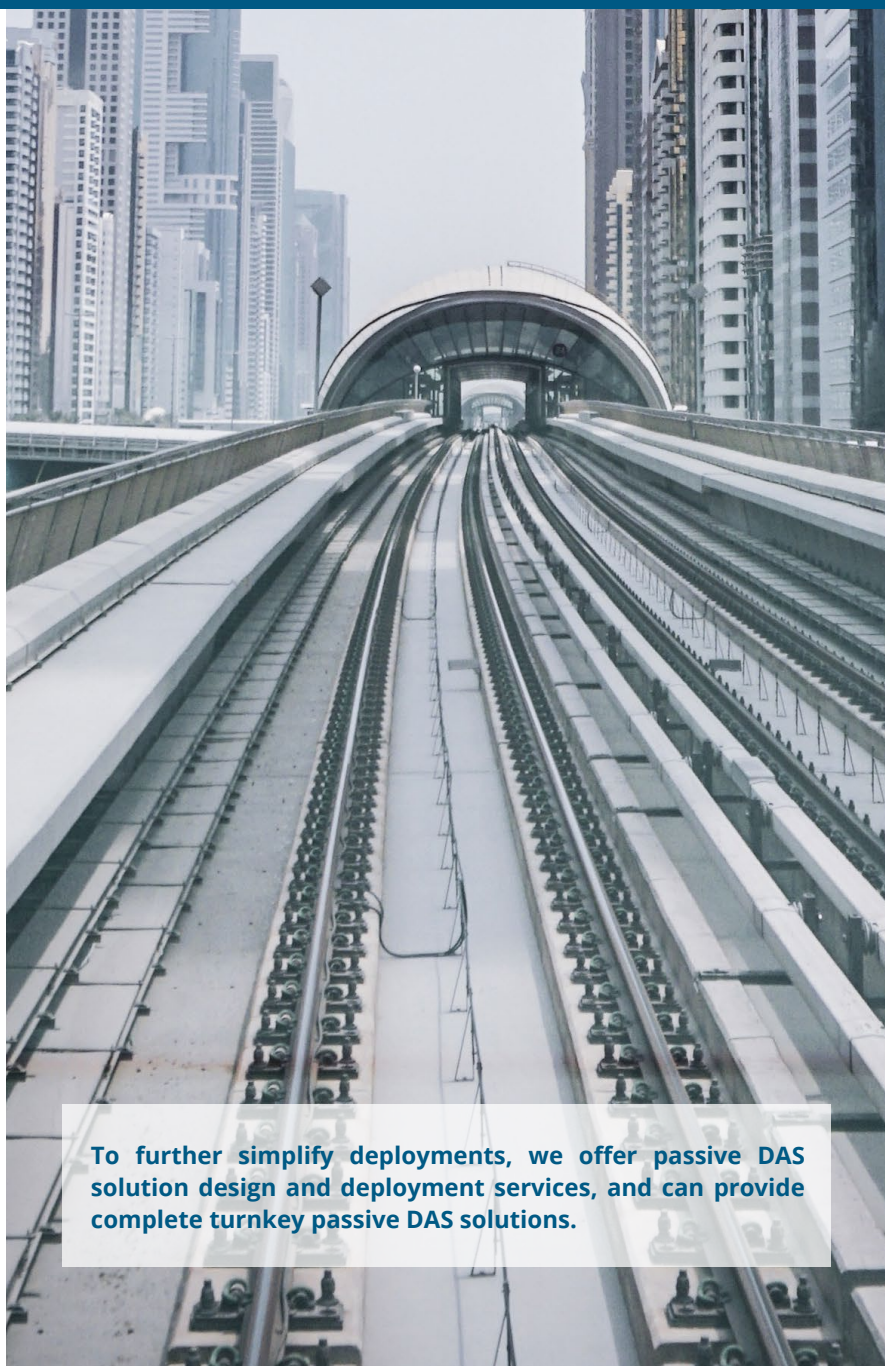
Our passive DAS solutions have been trusted to bring fast and reliable wireless communications to some of the most iconic and challenging indoor environments for more than 40 years. Here are just a few of four recent projects:

- Corcovado Visitor Center, Christ the Redeemer, Rio de Janeiro
- Eurotunnel
- Fréjus Road Tunnel
- Grand Pairs Express rapid transit line
- Hong Kong metro
- London Crossrail railway network
- Louvre Abu Dhabi
- Maracanã Stadium, Rio de Janeiro
- Saint Petersburg metro
- Singapore metro

RFS TECHNOLOGIES, INC IS YOUR FULL-SERVICE PASSIVE DAS PARTNER

We have the end-to-end passive DAS solutions, expertise and experience to support wireless indoor deployments with:

- Any complexity level
- Any business model
- Any frequencies
- Any network technologies
- Any commercial or mission-critical communications services



To further simplify deployments, we offer passive DAS solution design and deployment services, and can provide complete turnkey passive DAS solutions.

BRINGING WIRELESS NETWORKS **CLOSER TO PEOPLE**

HIGH PERFORMING SOLUTIONS END-TO-END

In addition to our world-renowned CELLFLEX, ClearFillLine and RADIAFLEX cables, our end-to-end passive DAS solutions include:

- Compact and lightweight broadband and ultra-broadband indoor antennas that deliver high performance and low visual impact
- Combiners and couplers to distribute RF signals in the most efficient and effective way possible
- Diplexers and triplexers to combine and separate signals in different wireless bands
- Power splitters that evenly split input signals with minimal reflections or loss
- Loads that terminate all types of open RF ports

All of our non-cable components are proven to maintain overall system performance and key performance characteristics such as passive intermodulation (PIM) performance.

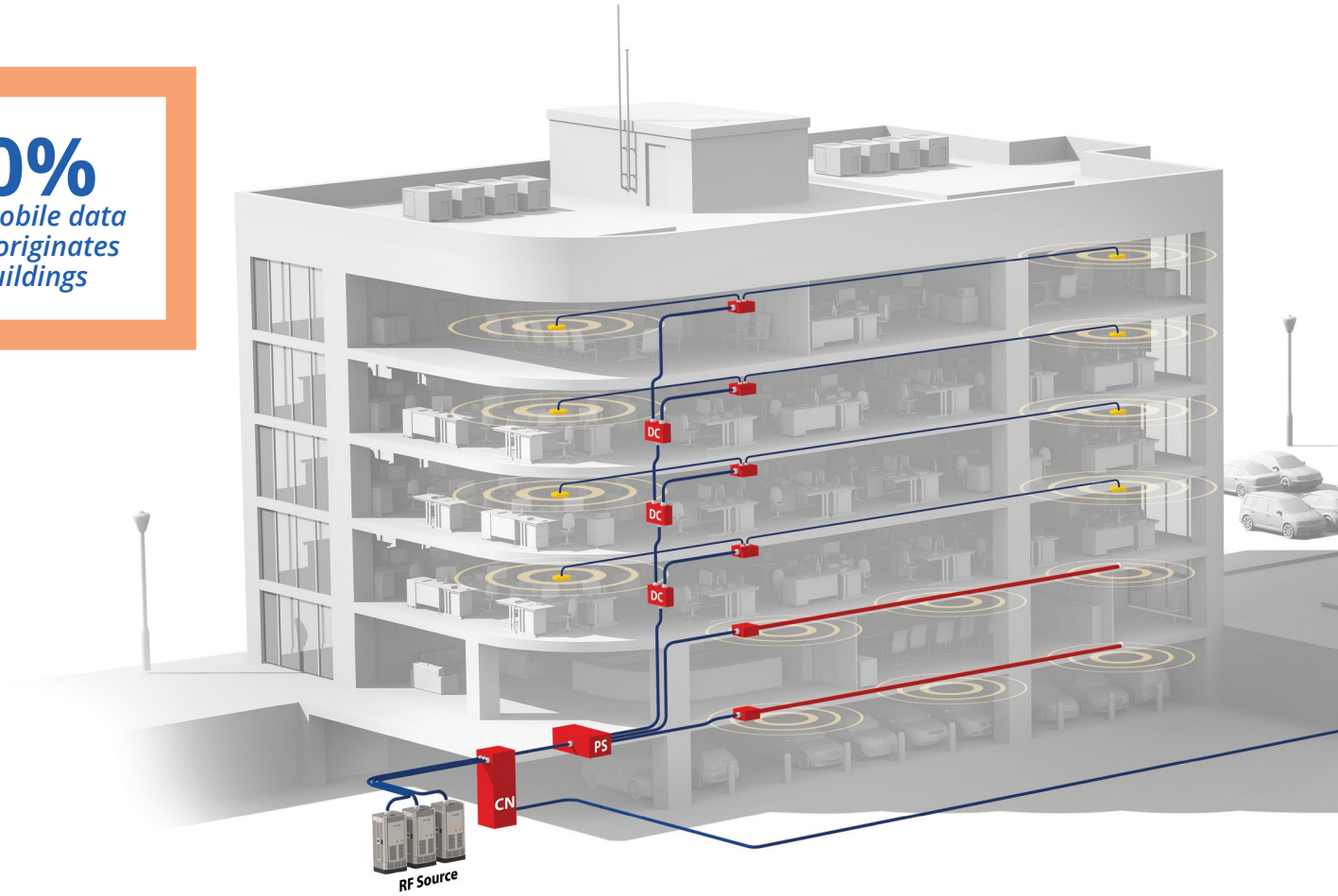
TAILORED AND SCALABLE FOR ANY INDOOR OR UNDERGROUND ENVIRONMENT

Every RFS Technologies, Inc passive DAS solution is purpose-built to match business objectives, application requirements and physical environment. We can tailor our solutions for any indoor or underground environment, from the most basic to those with the most difficult and complex RF challenges.

DELIVERING LOW TOTAL COST OF OWNERSHIP

Once installed, our passive DAS solutions require no maintenance and consume no electricity. These savings keep costs down and ensures error-free operation and high system availability —key requirements for mission-critical services.

80%
of all mobile data traffic originates in buildings



OUR PASSIVE DAS SOLUTIONS BRING CONSISTENT, RELIABLE AND HIGH-PERFORMANCE WIRELESS COMMUNICATIONS TO:

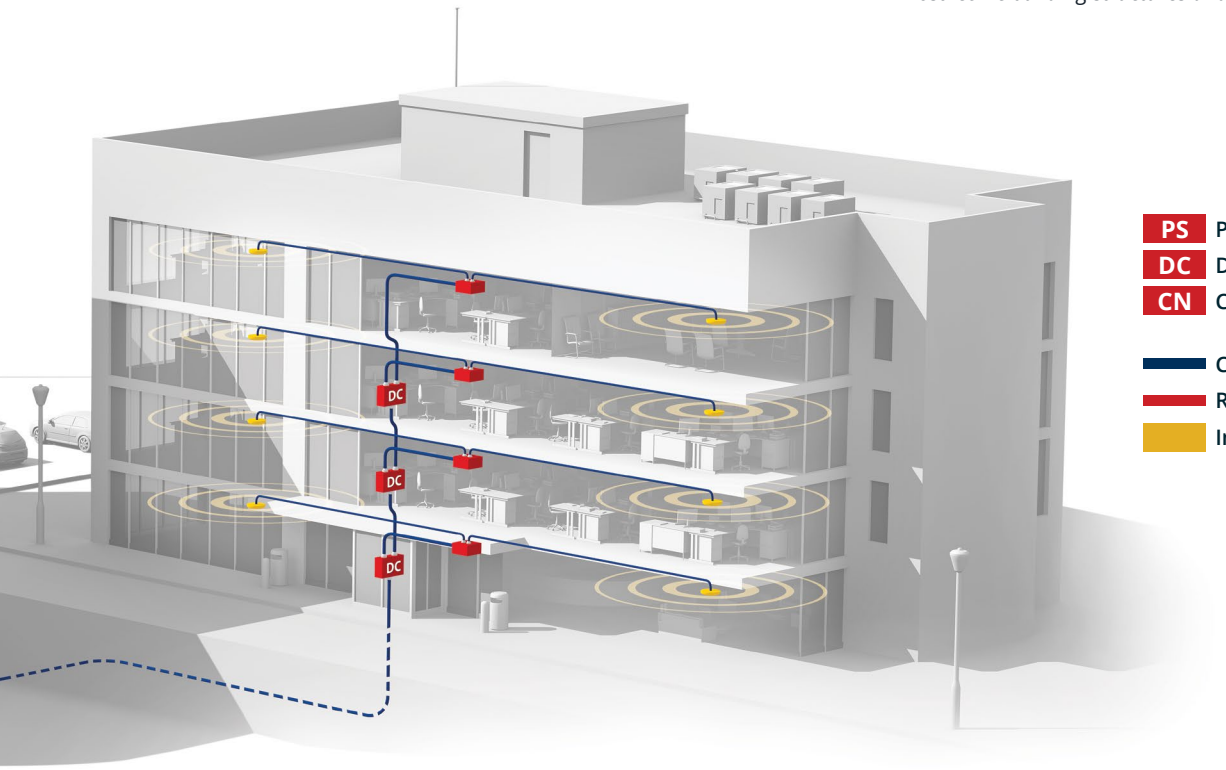
Buildings of all types and sizes:

- Airport terminals and train stations
- Stadiums and arenas
- Shopping malls
- Multi-dwelling units (MDUs)
- Resorts and hotels
- Office and industrial complexes
- Oil platforms
- Hospitals
- School campuses
- Conference centers
- Public buildings such as museums, art galleries, concert halls and libraries
- Tourist centers

Underground environments of all types and depths:

- Metro stations and lines
- Railway tunnels
- Road tunnels
- Mines

RFS Technologies, inc. solutions are deployed in some of the most iconic building structures and tunnels in the world.



PS Power Splitter
DC Directional Coupler
CN Combining Network

CELLFLEX Cable
RADIAFLEX Cable
In-Building Antenna

CABLES AND CONNECTORS
FOR EVERY DAS APPLICATION

RFS Technologies, inc. coaxial and radiating cables are designed to meet in-building communications requirements today and tomorrow. Our high-quality connectors maintain signal integrity end-to-end.

CELLFLEX® LOW-LOSS COPPER AND ALUMINUM CABLES

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 to ensure uninterrupted communications throughout buildings. This premium transmission line family is backed by a complete line of accessories, including the renowned OMNI FIT™ connector range.

Twenty unique CELLFLEX types, ranging in size from 1/4" to 1-5/8", provide users with a perfect match for even the most complicated and demanding applications. Every cable comes with a guarantee of reliability, performance and cost-effectiveness.

OMNI FIT™ CONNECTOR FAMILIES

RFS Technologies, inc. connectors are designed for high performance, easy installation and full compatibility throughout the CELLFLEX family. The entire range of innovative OMNI FIT™ Premium and OMNI FIT™ Standard connectors work with both copper and aluminum cables. 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.

RFS Technologies, inc. OMNI FIT™ Standard connectors are designed to meet and exceed industry standard Voltage Standing Wave Ratio (VSWR) and PIM performance. The connectors offer a cost-effective, high-quality connector-to-cable interface for easy, fast and safe connector attachment.

Low attenuation

Low attenuation enables extremely efficient signal transfers.

CELLFLEX Flame-Retardant Cables

SIZE	CABLE	CHARACTERISTIC	FIRE CLASS
1/2"	**SCF12-50 JFN**	Superflexible	B2ca s1a d0 a1
1/2"	**LCF12-50 JFN**	Low Loss	B2ca s1 d0 a1
7/8"	**LCF78-50 JFNA**	Low Loss	B2ca s1a d0 a1
1-1/4"	**LCFS114-50 JFNA**	Low Loss	B2ca s1b d0 a1 / B2ca s1b d2 a1
1-5/8"	**LCF158-50 JFNA**	Low Loss	Cca s1a d0 a1 / Cca s1a d2 a1

Please check the last status of Declaration of Performance (DoP) on rfstechnologies.com.
http://www.rfstechnologies.com/declaration-of-performance,677,1.html

COMPLETE SHIELDING
The solid outer conductor on CELLFLEX coaxial cables creates a continuous RFI/EMI shield that minimizes system interference.

OUTSTANDING INTERMODULATION PERFORMANCE
The solid inner and outer conductors virtually eliminate intermodulation.

WIDE RANGE OF APPLICATIONS
CELLFLEX cables support frequency bands up to 6000 MHz to enable a wide range of in-building applications.

LOW VSWR
Special low voltage standing wave ratio (VSWR) CELLFLEX variants help maintain system integrity.

HIGH POWER RATING
Low attenuation, excellent heat transfer properties and temperature stabilized dielectric material ensure safe, long-term operation at high transmit power levels.

dragonskin™

UL 2196
CERTIFIED

Learn more at DragonSkinCable.com

Keep communications alive to save lives

Our DragonSkin is the ultimate fire-resistant coax cable. It is the first and only RF communications cable that's been proven to successfully deliver RF signals after a minimum 2-hour burn time and sudden exposure to water without a metal conduit, extensive wrapping or a fire-resistant enclosure. DragonSkin is UL 2196-certified and meets NFPA 72 Survivability standards. And it installs like a regular cable to lower total cost of ownership:

- 0.54-inch diameter
- 8-inch bending radius
- Lightweight
- Uses standard RFS Technologies, inc. connectors

RADIAFLEX®
RADIATING CABLES

RADIAFLEX is the industry's most advanced portfolio of 5G-ready radiating cables for wireless indoor communications. RADIAFLEX radiating cables:

- Support all services up to 6 GHz with high performance, making them ideal for multiband, multi-operator applications in the most challenging indoor and underground environments
- Can be combined to take advantage of 3.5 GHz spectrum and accelerate to 5G in buildings and tunnels

SUPPORT ANY APPLICATION

RADIAFLEX radiating cables are available in several families with different bending radii, performance levels and outer conductor types to meet any application requirements:

- In-building and in-tunnel applications that require the highest possible radiating cable performance to support throughput-optimized 5G coverage solutions and the highly reliable systems needed for mission-critical wireless communications
- Heavy-duty in-building and mining applications
- In-vehicle applications
- Plenum-rated installations

TAKE 5G INTO TUNNELS

Our newest, patented RADIAFLEX 5G radiating cables are the only radiating cables on the market that support spectrum up to 4.2 GHz. Due to the stopband-free design, the cables operate in all 3GPP standardized frequency bands up to 4.2 GHz. These future-ready cables simultaneously support commercial wireless applications and mission-critical services, making them ideal for the next generations of wireless applications in tunnels as well as spectrum rebanding and refarming projects.

MAXIMIZE CAPACITY WITH MULTIBAND MIMO

Combining RFS Technologies', inc. vertically polarized RAY and horizontally polarized RLK product families takes advantage of unique cross-polarization effects to optimize MIMO conditions in tunnels. With two "perfect match" radiating cables, you have new opportunities to create a MIMO solution that takes in-tunnel data rates to higher levels.

INCREASE FIRE SAFETY

RADIAFLEX cables are low-smoke and halogen-free, meet all major international standards for flame and fire retardancy and have a CPR rating of B2ca with a d0 droplets rating.

RADIAFLEX cables deliver highly reliable wireless communications in some of the world's most iconic buildings and tunnels and in

41%

of the world's metros.

RADIAFLEX Radiating Cable **SELECTION GUIDE**

	Mission Critical		4G Commercial Radio			5G Commercial Radio				
	75-450 MHz	600-960 MHz	617-960 MHz	1700-1900 MHz	2200 MHz	2700 MHz	3800 MHz	4200 MHz	4900 MHz	6000 MHz
5G RADIAFLEX Radiating Cable Solution										
RLKX114-50*	+	++	++	++	++	+++	+++			
RLKX114-50B	+	++	++	++	++	+++	+++	+++		
RAYX114-50*	+	++	++	++	++	+++	+++			
RE60										+++
4G RADIAFLEX Radiating Cables										
RLKU158-50*	+	++	++	+++	+++	+++				
RAYA158-50*	+	++	++	+++	+++	+++				
RLKU114-50*	+	++	++	+++	+++	+++				
RAYA114-50*	++	++	++	+++	+++	+++				
RLKU78-50	+	++	++	+++	+++	+++				
RLKU12-50	+	++	++	+++	+++	+++				
Mission Critical Radio Application										
RLK158-50	+++	++	++							
RLK114-50	+++	++	++							
RLK78-50	+++	++	++							
RLK12-50	+++	++	++							
RLKW114-50	++	+++	+++	++						
RLKW78-50	++	+++	+++	++						
RLKW12-50	++	+++	+++	++						
GSM-R Applications										
RAY158-50	++	+++	+++							
RAY114-50	++	+++	+++							
RAY78-50	++	+++	+++							
Diverse Applications										
RCF12-50	+	+	+	+	+	+	+	+	+	+
RCF78-50	+	+	+	+	+	+	+			
RLFU158	++	++	++	++	++					
RLFU114	++	++	++	++	++					
RLFU78	++	++	++	++	++					

** MIMO cables*

RADIAFLEX Radiating Cables

CABLE	JACKET OPTION		
	JFNA	JFLA	CPR
RADIAFLEX RLK types 1/2"	C s1a d1 a1	Cca s1a d0 a1	B2ca s1a d0 a1
RADIAFLEX RLK, RLF, RAY types 7/8"	Dca s1b d2 a1	Dca s1b d2 a1	B2ca s1a d0 a1
RADIAFLEX RLK, RLF, RAY types 1-1/4"	Dca s1 d2 a1	Dca s1 d2 a1	B2ca s1b d0 a1
RADIAFLEX RLK, RLF, RAY types 1-5/8"	Dca s2 d2 a1	Cca s1b d1 a1	B2ca s1a d0 a1

Please check the last status of Declaration of Performance (DoP) on rfsworld.com.
http://www.rfsworld.com/declaration-of-performance,677,1.html

CLEARFILL®LINE
PLENUM-RATED CABLES

RFS Technologies, inc. ClearFill®Line plenum-rated wideband cables deliver outstanding electrical and mechanical performance, and operate in frequencies from 380 MHz to 6 GHz to support all in-building wireless technologies and applications. These air dielectric coaxial cables are thoroughly tested for safe use within the "environmental air handling space" in ceilings as well as in more traditional plenum applications. They're available in copper or lighter weight aluminum models to meet any installation requirements.

IMPROVE IN-BUILDING WIRELESS NETWORK PERFORMANCE

ClearFill®Line plenum-rated cables provide low attenuation and excellent return loss.

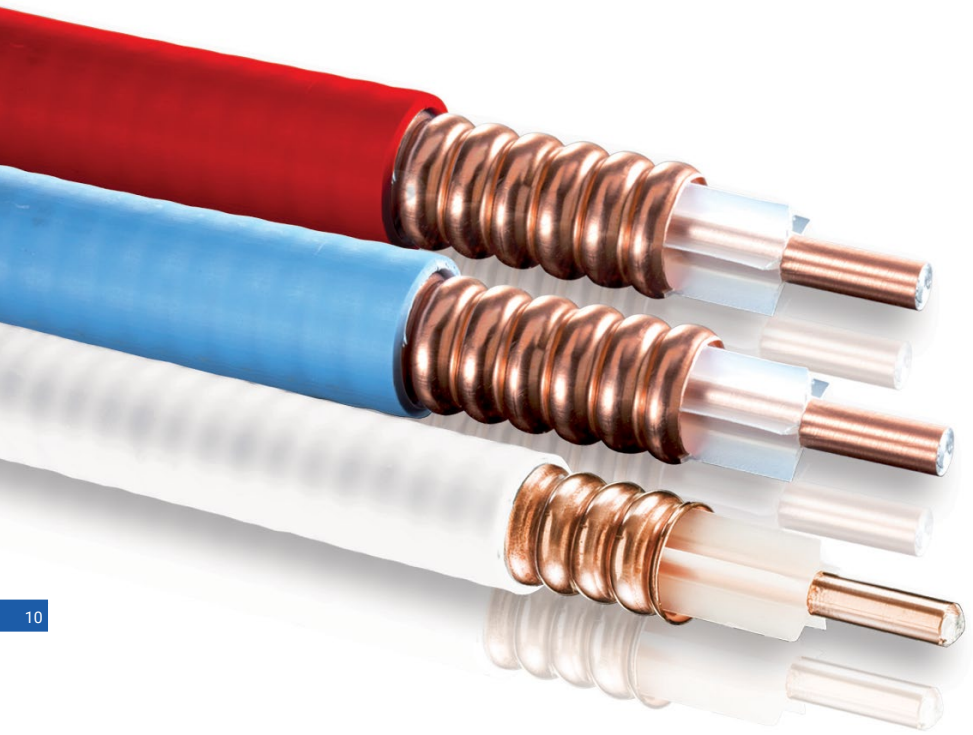
FREQUENCY RANGE (MHz)	RETURN LOSS (dB)	VSWR
698-960	24	1.13
1395-1432	24	1.13
1700-2155	24	1.13
2300-2700	20	1.22
3550-4200	18	1.29
5150-6000	18	1.29

They also feature robust construction that reduces the risk of performance issues:

- A continuous, star-shaped dielectric provides complete support for the inner conductor to eliminate electrical and mechanical problems in tight bending areas.
- The solid outer conductor creates a continuous RFI/EMI shield that minimizes system interference.

LEVERAGE NEW SPECTRUM

With wideband spectrum support up to 6 GHz, ClearFillLine plenum-rated cables make it easy to take advantage of newly available Citizens Broadband Radio Service (CBRS) spectrum in the 3.5 GHz band and LTE License Assisted Access (LAA) spectrum in the unlicensed 5 GHz band.



Wideband operation

Support technologies and applications in bands ranging from 380MHz up to 6GHz

Plenum-Rated Cables

SIZE	MODEL NUMBER	JACKET COLOR	CABLE WEIGHT kg/m (lb/ft)	OUTER CONDUCTOR MATERIAL
1/2"	**ICA12-50JPL**	Blue	0.37 (0.25)	Corrugated Copper
1/2"	**ICA12-50JPLLW**	White	0.19 (0.13)	Corrugated Aluminum
1/2"	**ICA12-50JPLW**	White	0.37 (0.25)	Corrugated Copper
1/2"	**ICA12-50JPLR**	Red	0.4 (0.27)	Annularly Corrugated Copper

RFS Technologies, inc. red plenum coaxial cables for public safety applications are best-in-class UHF/VHF cables that enableouts-tanding electrical performance for iDAS and oDAS emergency communication applications.

Plenum-Rated Jumper Cables

We offer models with white jackets, 1/4" diameter cable, of varying lengths in m (ft) increments.

SIZE	MODEL NUMBER	CHARACTERISTIC	CONNECTOR A	CONNECTOR B	LENGTH m (ft)
1/2"	**43M43MI12P-030FFP**	Blue, PVC	4.3-10 Male	4.3-10 Male	0.91 (3)
1/2"	**43M7MI12P-030FFP**	Blue, PVC	4.3-10 Male	7-16 Male	0.91 (3)
1/2"	**43MNMI12P-030FFP**	Blue, PVC	4.3-10 Male	N Type Male	0.91 (3)
1/2"	**7M7MI12P-030FFP**	Blue, PVC	7-16 Male	7-16 Male	0.91 (3)
1/2"	**7MNMI12P-030FFP**	Blue, PVC	7-16 Male	N Type Male	0.91 (3)
1/2"	**NMNMI12P-030FFP**	Blue, PVC	N Type Male	N Type Male	0.91 (3)

GET HIGH-PERFORMANCE JUMPER CABLES **FOR ANY APPLICATION, ANY SIZE**

RFS Technologies, inc. is a global leader in RF jumper cables and offers a completes portfolio of jumper cables that meet any requirements.

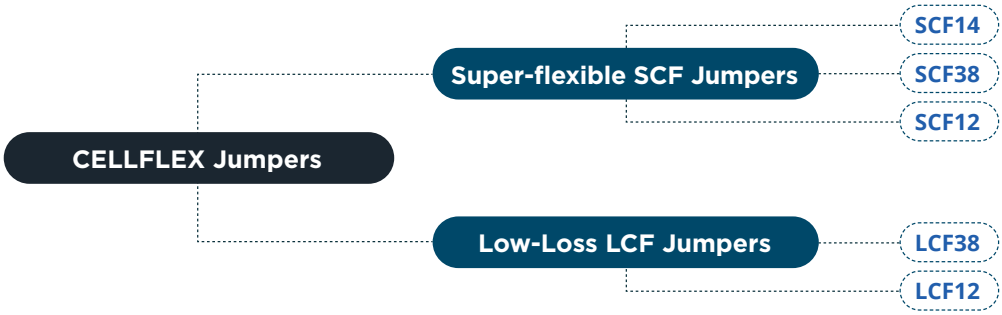
CELLFLEX Factory-Fit Jumpers are ideal for indoor environments and other locations where jumper connectors do not require weatherproofing.

CELLFLEX SecureFit Booted Jumpers are ideal for outdoor environments and other locations where jumper connectors need to be protected from the elements.

All of our CELLFLEX jumper cables support frequencies up to 6 GHz to simplify your network evolution and protect your investment.

CHOOSE FROM SUPER-FLEXIBLE AND LOW-LOSS JUMPER CABLES

CELLFLEX Factory-Fit Jumpers and CELLFLEX SecureFit Booted Jumpers are designed for seamless connection to our renowned CELLFLEX foam dielectric coaxial cables:



CELLFLEX super-flexible jumper cables combine outstanding bending characteristics and electrical performance to improve quality and efficiency in the most challenging deployment scenarios.

CELLFLEX low-loss jumper cables deliver extremely low attenuation that increases the efficiency of signal transfers in any RF system.

INCREASE FIRE-RESISTANCE

All CELLFLEX jumpers can be delivered with a flame-retardant "JFN" jacket type that meets the stringent fire safety requirements in European standard EN 50575. These flame-retardant jumpers meet the legal and regulatory requirements for fire safety in the European Construction Product Regulation (CPR) 305/2017 and other major fire safety standards.

CONNECTIONS IN THE FIELD JUST GOT EASIER

Our new coaxial adapter series provides a fast, easy and cost-effective solution for jumper connections. With a large selection of both straight and right angle adapters, there is a model for every network requirement. Passive intermodulation specifications for all RFS adapters is < -163 dBc.

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UNDERSTANDING **JUMPER NAMES**

RFS Technologies, inc. offers models with outdoor-rated jacket types, ofvarying lengths in m (ft) increments.

Connector A	Connector B	Cable Type	Jacket Type		Cable Length	Performance Type
7M	43M	S12	F	-	0100	FFP

7M & 43M CONNECTORS A & B

7M	7-16 Male
7F	7-16 Female
7MR	7-16 Male Right Angle
43M	4.3-10 Male
43F	4.3-10 Female
43MH	4.3-10 Male Handscrew
43MP	4.3-10 Male Push Pull
43MR	4.3-10 Male Right Angle
NM	N-Type Male
NF	N-Type Female
NMR	N-Type Male Right Angle
NXM	NEX10 Male
NXMP	NEX10 Male Push Pull
7MB	7-16 Male with Weatherboots
43MB	4.3-10 Male with Weatherboots
NMB	N-Type Male with Weatherboots

S12 CABLE TYPE

L38	3/8" Low Loss Coax
L12	1/2" Low Loss Coax
S14	1/4" Superflexible Coax
S38	3/8" Superflexible Coax
S12	1/2" Superflexible Coax

F JACKET TYPE

F	JFN Flame Retardant
Blank	PE; Indoor Use

0100 CABLE LENGTH*

0100	1 meter
0200	2 meter
0250	2.5 meter
1000	10 meter
1500	15 meter
030	3 feet
060	6 feet
100	10 feet
150	15 feet
200	20 feet

FFP JUMPER PERFORMANCE

FFP	Factory-Fit Premium
FFS	Factory-Fit Standard
UPM	Ultra PIM Performance

NOTES:
* 4 digits indicate meter length, 3 digits indicate feet length
Others lengths available on request

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CPR SAFETY IS KEY

ROBUST JACKET CONSTRUCTION ENABLES THE HIGHEST CPR CLASSIFICATIONS

RFS Technologies, inc. CPR-compliant coax and radiating cables feature a specially developed jacket that allows them to achieve best-in-class ratings for burning droplets (d0), low smoke emission (s1) and corrosivity (a1), the most important criteria for fire safety in cables that are installed indoors and underground.

All our cables are tested and certified by an external notified body according to EN 50575. In addition, our manufacturing facility in Meriden, Connecticut, has been audited and meets the highest system 1+ requirements for type approvals, regular production audits, as well as regular sampling and testing of products by the notified body.

FIND CPR-COMPLIANT CABLES FOR ANY APPLICATION

All RFS Technologies, inc. CPR-compliant cables are also designated as low-smoke, zero-halogen (LSZH) and meet International Electrotechnical Commission (IEC) standards for flame spread, smoke acidity and low smoke emission. They are compatible with existing RFS connectors, factory-assembled jumpers, grounding kits and clamps, as well as trimming and preparation tools.

European class code labeling example

This table explains the CPR class codes using the rating for our CELLFLEX cables as an example: B2ca s1 d0 a1.

B2	ca	s1	d1	a1
Fire performance class	Application to cable	Smoke ratio	Droplets rating	Acidity rating

Smoke opacity		Droplets		Acidity	
s1		d0	–	a1	
s2		d1		a2	
s3		d2		a3	

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CPR-COMPLIANT CABLES ARE IDEAL **FOR INDOOR APPLICATIONS**

A BROAD PORTFOLIO OF CPR-COMPLIANT CABLES FOR INDOOR APPLICATIONS

Since July 1, 2017, all communications cables installed in buildings in the European Union (EU) must meet the fire performance requirements in European standard EN 50575 and include the CE marking to comply with EU Construction Products Regulation (CPR) No. 305/2011.

RFS Technologies, inc. was the first cable vendor to offer RF communications cables with the highest CPR classifications for fire safety. Today, we offer a wide range of CELLFLEX® coaxial cables and RADIAFLEX® radiating cables that comply with European CPR No. 305/2017. This directive requires that coax and radiating cables meet the fire performance standards in the EN 50575 standard and be classified according to the EN 13501-6 standard.

Our cables are classified according to the CPR test standards and criteria listed below.

		CPR CLASSIFICATION			
		B2ca: +++	**Cca: ++**	**Dca: +**	**Eca: -**
Test Standard and Measurement					
IEC 60332-1-2	Flame spread	≤ 425 mm	≤ 425 mm	≤ 425 mm	≤ 425 mm
EN 50399	Flame spread	≤ 4.5 m	≤2.0 m	-	-
EN 50399	Total heat release	≤ 15 MJ	≤ 30 MJ	≤ 70 MJ	-
EN 50399	Peak heat release	≤ 30 kW	≤ 40 kW	≤ 400 kW	-
EN 50399	Fire grow rate	≤ 150 Ws-1	≤ 3000 Ws-1	≤ 1300 Ws-1	-
ADDITIONAL CLASSIFICATIONS					
EN 50399	Smoke emission	s1, s2, s3	s1, s2, s3	s1, s2, s3	-
EN 61034	Smoke density	s1a, s1b	s1a, s1b	s1a, s1b	-
EN 50399	Burning droplets	d0, d1, d2	d0, d1, d2	d0, d1, d2	-
EN 6754-2	Corrosivity	a1, a2, a3	a1, a2, a3	a1, a2, a3	-

The CPR burning droplets classification is particularly important because burning particles can ignite other cables or infrastructure. Only class d0 cables create no burning particles to deliver the highest levels of fire protection in buildings and tunnels.

SAFETY IS KEY

PASSIVE COMPONENTS
UP TO 6 GHZ

RFS Technologies, inc. provides a complete family of passive components that operate in all frequency bands from 555 MHz to 6 GHz:

- **Combiners** that support one service per frequency band, multiple services per band, and multi-band applications. We also offer standardized combiner modules in 19-inch racks.
- **Hybrid combiners and couplers** that combine multiple signals in the same wireless band onto a common feeder cable.
- **Directional couplers** and tappers that uniformly distribute RF signals.
- **Diplexers and triplexers** that combine and separate signals in different wireless bands.
- **Power splitters** that evenly split input signals with minimal reflections or loss.
- **Loads** that terminate all types of open RF ports.
- **Attenuators** that adapt RF power levels to meet different system requirements.

All RFS Technologies, inc. passive components provide optimal PIM performance to reduce interference and support the highest possible throughput levels end-to-end.

SUPPORT MULTI-OPERATOR REQUIREMENTS ANYWHERE IN THE WORLD

Our passive components are the perfect complement to our CELLFLEX® coax cables, RADIAFLEX® radiating cables, and indoor antennas, which also operate in all frequency bands up to 6 GHz.

Together, our passive DAS solution components provide complete flexibility to support 5G and deliver broadband multi-operator, multi-technology services using a single DAS, anywhere in the world.

NEW PRODUCTS

RFS PORTFOLIO EXPANSION 617 MHZ TO 4.2 GHZ

Watch for new component announcements

We're continually updating our portfolio to include passive components that target specific requirements. Coming soon: Passive DAS components that enable high-quality and cost-effective operation in all frequency bands from 617 MHz to 4.2 GHz.

Directional Couplers

COUPLING VALUE, dB	INSERTION LOSS VALUE	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Directional Couplers 555-6000MHz					
5	2.45	160	IP66	N Female	CDS5E-555/6000
6	1.9				CDS6E-555/6000
8	1.25				CDS8E-555/6000
10	0.8				CDS10E-555/6000
13	0.6				CDS13E-555/6000
15	0.5				CDS15E-555/6000
20	0.3				CDS20E-555/6000
30	0.3				CDS30E-555/6000
5	2.45	163		4.3-10 Female	CDS5-43-555/6000
6	1.9				CDS6-43-555/6000
8	1.25				CDS8-43-555/6000
10	0.8				CDS10-43-555/6000
13	0.6				CDS13-43-555/6000
15	0.5				CDS15-43E-555/6000
20	0.3				CDS20-43-555/6000
30	0.3				CDS30-43-555/6000
Directional Couplers 694-3800MHz					
6	1.7	155	IP65	N Female	CDS6E-694/3800
10	0.7				CDS10E-694/3800
15	0.4				CDS15E-694/3800
20	0.2				CDS20E-694/3800
30	0.2				CDS30E-694/3800
6	1.7	160		7-16 Female	CDS6DE-694/3800
10	0.7				CDS10DE-694/3800
15	0.4				CDS15DE-694/3800
20	0.2				CDS20DE-694/3800
30	0.2				CDS30DE-694/3800
6	1.7	160		4.3-10 Female	CDS6-43-694/3800
10	0.7				CDS10-43-694/3800
15	0.4				CDS15-43-694/3800
20	0.2				CDS20-43-694/3800
30	0.2				CDS30-43-694/3800
Directional Couplers 350-2700MHz					
6	1.8	160	IP65	N Female	CDS6E-350/2700-01
10	0.8				CDS10E-350/2700-01
15	0.5				CDS15E-350/2700-01
20	0.25				CDS20E-350/2700-01
30	0.3				CDS30E-350/2700-01
6	1.8			7-16 Female	CDS6DE-350/2700-01
10	0.8				CDS10DE-350/2700-01
15	0.5				CDS15DE-350/2700-01
20	0.25				CDS20DE-350/2700-01
30	0.3				CDS30DE-350/2700-01
6	1.8			4.3-10 Female	CDS6-43-350/2700-01
10	0.8				CDS10-43-350/2700-01
15	0.5				CDS15-43-350/2700-01
20	0.25				CDS20-43-350/2700-01
30	0.3				CDS30-43-350/2700-01

Hybrid Combiners

COMBINER TYPE	COUPLING VALUE, dB	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Hybrid Combiners 555-6000MHz					
2*2 Hybrid Combiner	3.1 ±0.9	160	IP66	N Female	**CDSE2x2-555/6000**
4*4 Hybrid Combiner	6.0 ±2.5				**CDSE4x4-555/6000**
2*2 Hybrid Combiner	3.1 ±0.9	163		4.3-10 Female	**CDS2x2-43-555/6000**
4*4 Hybrid Combiner	6.0 ±2.5				**CDS4x4-43-555/6000**
Hybrid Combiners 694-3800MHz					
2*2 Hybrid Combiner	3.1 ±0.5	155	IP65	N Female	**CDSE2x2-694/3800**
4*4 Hybrid Combiner	6.0 ±1.2				**CDSE4x4-694/3800**
2*2 Hybrid Combiner	3.1 ±0.5	160		7-16 Female	**CDSDE2x2-694/3800**
4*4 Hybrid Combiner	6.0 ±1.2				**CDSDE4x4-694/3800**
2*2 Hybrid Combiner	3.1 ±0.5	160		4.3-10 Female	**CDS2x2-43-694/3800**
4*4 Hybrid Combiner	6.0 ±1.2				**CDS4x4-43-694/3800**
Hybrid Combiners 350-2700MHz					
3dB Directional Hybrid Coupler	3.1±1.4@350-380MHz	160	IP65	N Female	**CDSE2x2-350/2700-01**
3dB Directional Hybrid Coupler	3.1±0.9@380-2700MHz	160		4.3-10 Female	**CDS2x2-43-350/2700-01**

Power Splitters

SPLITTER TYPE	SPLIT LOSS VALUE dB	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Splitters 555-6000MHz					
2-way power splitter	≤3.0	160	IP66	N Female	**PDS2E-555/6000**
3-way power splitter	≤4.8				**PDS3E-555/6000**
4-way power splitter	≤6.0				**PDS4E-555/6000**
2-way power splitter	≤3.0	163		4.3-10 Female	**PDS2-43-555/6000**
3-way power splitter	≤4.8				**PDS3-43-555/6000**
4-way power splitter	≤6.0				**PDS4-43-555/6000**
Splitters Combiners 694-3800MHz					
2-way power splitter	≤3.3	155	IP65	N Female	**PDS2E-694/3800**
3-way power splitter	≤5.1				**PDS3E-694/3800**
4-way power splitter	≤6.4				**PDS4E-694/3800**
6-way power splitter	≤8.6				**PDS6E-694/3800**
2-way power splitter	≤3.3	160		7-16 Female	**PDS2DE-694/3800**
3-way power splitter	≤5.1				**PDS3DE-694/3800**
4-way power splitter	≤6.4				**PDS4DE-694/3800**
2-way power splitter	≤3.3	160		4.3-10 Female	**PDS2-43-694/3800**
3-way power splitter	≤5.1				**PDS3-43-694/3800**
4-way power splitter	≤6.4				**PDS4-43-694/3800**
6-way power splitter	≤8.6				**PDS6-43-694/3800**
Splitters 350-2700MHz					
2-way power splitter	≤3.4	160	IP65	N Female	**PDS2E-350/2700-01**
3-way power splitter	≤5.2				**PDS3E-350/2700-01**
4-way power splitter	≤6.5				**PDS4E-350/2700-01**
2-way power splitter	≤3.4			7-16 Female	**PDS2DE-350/2700-01**
3-way power splitter	≤5.2				**PDS3DE-350/2700-01**
4-way power splitter	≤6.5				**PDS4DE-350/2700-01**
2-way power splitter	≤3.4			4.3-10 Female	**PDS2-43-350/2700-01**
3-way power splitter	≤5.2				**PDS3-43-350/2700-01**
4-way power splitter	≤6.5				**PDS4-43-350/2700-01**

Dummy Loads

POWER HANDLING, W	IP	CONNECTOR TYPE	MODEL NUMBER
Dummy Loads DC-6000MHz			
2	IP65	N Male	TER-E-6000-2W
5			TER-E-6000-5W
10			TER-E-6000-10W
20			TER-E-6000-20W
50			TER-E-6000-50W
100			TER-E-6000-100W
200			TER-E-6000-200W
2		4.3-10 Female	TER-43-6000-2W
5			TER-43-6000-5W
10			TER-43-6000-10W
20			TER-43-6000-20W
50			TER-43-6000-50W
100			TER-43-6000-100W
200			TER-43-6000-200W
Dummy Loads DC-3800MHz			
2	Indoor	N Male	TER-E-3800-2W
5			TER-E-3800-5W
10			TER-E-3800-10W
20			TER-E-3800-20W
30			TER-E-3800-30W
50			TER-E-3800-50W
100			TER-E-3800-100W
5		7-16 Female	TER-DE-3800-5W
10			TER-DE-3800-10W
20			TER-DE-3800-20W
30			TER-DE-3800-30W
50			TER-DE-3800-50W
2		4.3-10 Female	TER-43-3800-2W
5			TER-43-3800-5W
10			TER-43-3800-10W
20			TER-43-3800-20W
30			TER-43-3800-30W
50			TER-43-3800-50W
100			TER-43-3800-100W

Tappers

COUPLING VALUE, dB	INSERTION LOSS VALUE	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Tappers 350-6000MHz					
3 / 2:1	1.8dB@0.35-0.96GHz 2.1dB@1.695-2.7GHz 2dB@3.5-4.5 & 4.9-6GHz	160	IP66	N Female	**TPS3E-350/6000**
5 / 3:1	1.65				**TPS5E-350/6000**
6 / 4:1	1.5				**TPS6E-350/6000**
8 / 6:1	1.15				**TPS8E-350/6000**
10 / 10:1	0.75				**TPS10E-350/6000**
13 / 20:1	0.65				**TPS13E-350/6000**
15 / 30:1	0.4				**TPS15E-350/6000**
20 / 100:1	0.2dB@0.35-0.96 & 1.695-2.7GHz 0.3dB@3.5-4.5 & 4.9-6GHz				**TPS20E-350/6000**
30 / 1000:1	0.2				**TPS30E-350/6000**
3 / 2:1	1.8dB@0.35-0.96GHz 2.1dB@1.695-2.7GHz 2dB@3.5-4.5 & 4.9-6GHz	163		4.3-10 Female	**TPS3-43-350/6000**
5 / 3:1	1.65				**TPS5-43-350/6000**
6 / 4:1	1.5				**TPS6-43-350/6000**
8 / 6:1	1.15				**TPS8-43-350/6000**
10 / 10:1	0.75				**TPS10-43-350/6000**
13 / 20:1	0.65				**TPS13-43-350/6000**
15 / 30:1	0.4				**TPS15-43-350/6000**
20 / 100:1	0.2dB@0.35-0.96 & 1.695-2.7GHz 0.3dB@3.5-4.5 & 4.9-6GHz				**TPS20-43-350/6000**
30 / 1000:1	0.2				**TPS30-43-350/6000**
Tappers 694-3800MHz					
5 / 3:1	1.3	155	IP65	N Female	**TPS5E-694/3800**
6 / 4:1	1.1				**TPS6E-694/3800**
8 / 6:1	0.8				**TPS8E-694/3800**
10 / 10:1	0.5				**TPS10E-694/3800**
13 / 20:1	0.3				**TPS13E-694/3800**
15 / 30:1	0.2				**TPS15E-694/3800**
20 / 100:1	0.2				**TPS20E-694/3800**
30 / 1000:1	0.2				**TPS30E-694/3800**
5 / 3:1	1.3	160		7-16 Female	**TPS5DE-694/3800**
6 / 4:1	1.1				**TPS6DE-694/3800**
8 / 6:1	0.8				**TPS8DE-694/3800**
10 / 10:1	0.5				**TPS10DE-694/3800**
13 / 20:1	0.3				**TPS13DE-694/3800**
15 / 30:1	0.2				**TPS15DE-694/3800**
20 / 100:1	0.2				**TPS20DE-694/3800**
30 / 1000:1	0.2				**TPS30DE-694/3800**
5 / 3:1	1.3	160		4.3-10 Female	**TPS5-43-694/3800**
6 / 4:1	1.1				**TPS6-43-694/3800**
8 / 6:1	0.8				**TPS8-43-694/3800**
10 / 10:1	0.5				**TPS10-43-694/3800**
13 / 20:1	0.3				**TPS13-43-694/3800**
15 / 30:1	0.2				**TPS15-43-694/3800**
20 / 100:1	0.2				**TPS20-43-694/3800**
30 / 1000:1	0.2				**TPS30-43-694/3800**

Tappers

COUPLING VALUE, dB	INSERTION LOSS VALUE	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Tappers 350-2700MHz					
5 / 3:1	1.4	155	?	N Female	TPS5E-350/2700-01
6 / 4:1	1				TPS6E-350/2700-01
8 / 6:1	0.8				TPS8E-350/2700-01
10 / 10:1	0.4				TPS10E-350/2700-01
13 / 20:1	0.3				TPS13E-350/2700-01
15 / 30:1	0.3				TPS15E-350/2700-01
5 / 3:1	1.4			7-16 Female	TPS5DE-350/2700-01
6 / 4:1	1				TPS6DE-350/2700-01
8 / 6:1	0.8				TPS8DE-350/2700-01
10 / 10:1	0.4				TPS10DE-350/2700-01
13 / 20:1	0.3				TPS13DE-350/2700-01
15 / 30:1	0.3				TPS15DE-350/2700-01
5 / 3:1	1.4	160		4.3-10 Female	TPS5-43-350/2700-01
6 / 4:1	1.1				TPS6-43-350/2700-01
8 / 6:1	0.8				TPS8-43-350/2700-01
10 / 10:1	0.5				TPS10-43-350/2700-01
13 / 20:1	0.3				TPS13-43-350/2700-01
15 / 30:1	0.3				TPS15-43-350/2700-01
20 / 100:1	0.2				TPS20-43-350/2700-01
30 / 1000:1	0.2				TPS30-43-350/2700-01

Low PIM Cable Loads

POWER HANDLING, W	PIM dBc	IP	CONNECTOR TYPE	MODEL NUMBER
Cable Loads DC-6000MHz				
2	160	IP65	N Male	TERP-E-6000-2W
5				TERP-E-6000-5W
10				TERP-E-6000-10W
20				TERP-E-6000-20W
50				TERP-E-6000-50W
100				TERP-E-6000-100W
200				TERP-E-6000-200W
2	163		4.3-10 Male	TERP-43-6000-2W
5				TERP-43-6000-5W
10				TERP-43-6000-10W
20				TERP-43-6000-20W
50				TERP-43-6000-50W
100				TERP-43-6000-100W
200				TERP-43-6000-200W
Cable Loads DC-3800MHz				
5	155	Indoor	N Female	TERP-E-3800-5W
50				TERP-E-3800-50W
100				TERP-E-3800-100W
50	160		7-16 Female	TERP-DE-3800-50W
100				TERP-DE-3800-100W
50			4.3-10 Female	TERP-43-3800-50W
100				TERP-43-3800-100W

Any questions?
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