

# Unlocking the Future of RF Technology

---

ADVANCED MANUFACTURING AND INNOVATIVE SOLUTIONS ACROSS DIVERSE MARKETS



---

## A GLOBAL LEADER IN RF SOLUTIONS

Industries worldwide depend on high-frequency, high-performance RF and microwave technology to meet growing connectivity demands. From powering advanced driver-assistance systems (ADAS) to enabling next-generation 5G networks, RF technology is critical to today's innovations. Molex is a global leader in RF design and manufacturing, providing versatile, reliable and scalable solutions that meet the rigorous demands of industries such as automotive, smart agriculture, medical, telecom and test and measurement.

With deep engineering expertise, cutting-edge manufacturing capabilities and a global network of facilities, Molex helps customers achieve exceptional performance and resilience across a range of applications. Leveraging HFSS modeling, a custom cable configurator and diligent testing protocols, Molex develops meticulously engineered products that improve signal integrity while minimizing loss and interference. Backed by decades of experience, Molex remains a trusted partner, providing seamless connectivity and shaping the future of RF technology.

Through close collaboration with customers and a commitment to engineering excellence, Molex develops RF solutions that meet the toughest design challenges across industries.

- **Comprehensive product portfolio:** RF connectors, cable assemblies and custom solutions
- **Advanced engineering tools:** HFSS modeling, cable configurators and more
- **Proven reliability:** Rigorous testing leads to exceptional performance
- **Global manufacturing network:** State-of-the-art facilities in Naperville, IL; Guadalajara and Nogales, Mexico; Jiangsu, Suzhou and Dongguan, China; and Taipei, Taiwan

# AUTOMOTIVE RF SOLUTIONS

High-performance RF connectivity is a necessity to power advancements in ADAS, vehicle-to-everything (V2X) communication and infotainment. Modern vehicles support real-time data transmission across sensors, cameras and networks, even in extreme surroundings. From autonomous driving to in-vehicle communication, these systems must withstand vibration, temperature extremes and electromagnetic interference (EMI) while maintaining consistent, long-lasting operation.

Molex automotive RF solutions are engineered for resilience in harsh conditions, meeting the stringent requirements of next-generation vehicle architectures.



## THE CHALLENGES

High-speed, uninterrupted connectivity is essential for automotive systems to support safety-critical applications. These systems need to perform even when vibrations, temperature fluctuations and EMI are present.



## THE SOLUTION

Molex RF products are built for the demands of automotive networks, providing steady data transmission even in extreme conditions. High-quality materials and strict manufacturing standards help maintain performance where failure is not an option.

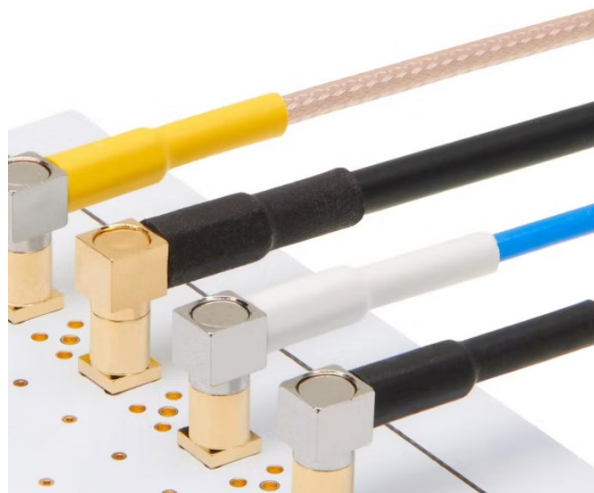


## FEATURED PRODUCT PORTFOLIO:



### High-Speed FAKRA-Mini (HFM) Interconnect System

- Delivers data rates up to 28Gbps and frequencies up to 20 GHz
- 80% smaller than traditional FAKRA connectors, maximizing space
- Vibration-resistant framework with integrated secondary locks for stability in automotive environments



### MMCX PoC Straight and Right-Angle Plugs

- Designed for 50Ω impedance to optimize signal integrity
- Space-saving, flexible and stable connectivity for compact footprints
- Efficient performance over a 450mm cable length for consistent RF communication
- Supports power over coax



### Camera I/O Interconnect

- Operates up to 3 GHz with superior signal integrity for precision transmission
- Reliable operation across extreme temperature ranges from -40°C to +105°C
- Gold-plated for increased durability



### Camera I/O Jack Connector

- Simplified integration for module-to-board applications with up to 3 GHz performance
- Durable construction with high-temperature thermoplastic and gold plating
- Proven operation in harsh environments from -40°C to +105°C

## DESIGN CONSIDERATION: SIGNAL INTEGRITY

Automotive RF systems demand interference-free communication to maintain effectiveness in safety-critical operations. Molex uses contact designs with controlled impedance to minimize signal distortion and reflection. Advanced EMI shielding techniques reduce external noise, delivering consistent high-frequency performance even under extreme conditions.

## APPLICATION SPOTLIGHT

# SMART AGRICULTURE RF SOLUTIONS

RF connectivity is crucial in modern agriculture, powering precision farming, autonomous machinery and environmental monitoring. Agricultural systems must deliver uninterrupted data transmission even in remote, harsh field applications. They also need to resist extreme weather, moisture, dust and interference from surrounding equipment.

Smart agriculture RF solutions from Molex provide robust performance in the toughest agricultural environments, supporting data-driven farming.



## THE CHALLENGES

Agricultural systems depend on continuous data transmission for precision farming and autonomous machinery. However, these systems operate in harsh environments—extreme temperatures, moisture, dust and vibrations from equipment—all of which make connectivity a significant challenge in the field.



## THE SOLUTION

Ruggedized RF solutions are engineered to withstand outdoor conditions while maintaining reliable communication across sensors, drones and machinery. With advanced materials, sealing and optimized designs, these components deliver performance where failure is not an option.

# FEATURED PRODUCT PORTFOLIO:



**FAKRA Jack, Straight, Crimp, RG-174 Cable**

- Designed for telematics applications
- Operates efficiently to 6 GHz
- IP69-rated options available
- Color-coded and keyed shrouds or easy installation



**MMCX PoC Straight and Right Angle Plugs to SMA Straight Bulkhead Jack**

- 150mm cable with 50Ω impedance for optimal signal integrity
- Designed for outdoor agricultural applications to withstand tough conditions
- Ideal for GPS antennas and sensor systems with reliable connectivity



**SMA Jack, Bulkhead Mount**

- Operates up to 18 GHz for high-frequency data communication
- IP68-rated for rugged moisture, dust and outdoor protection
- Bulkhead design allows for secure and stable mounting for long-term use



**TNC Plug, Straight**

- Operates up to 12 GHz for robust communication in agricultural systems
- Precision TNC plugs can operate up to 18 GHz
- Reverse polarity configuration enhances connection protection
- IP68-rated for dependable performance in outdoor settings

## DESIGN CONSIDERATION: MATERIAL SELECTION

Material selection is a critical focus in developing smart agriculture RF products, which are built to withstand extreme field conditions. Using high-performance materials such as PBT and IP67/IP68-rated sealing, Molex ensures moisture, dust and vibration resistance. Specialized materials minimize signal loss, prevent heat buildup and enable compact architectures, delivering consistent performance in farming applications extreme conditions.



APPLICATION SPOTLIGHT

MEDICAL RF SOLUTIONS

Uninterrupted connectivity is critical in healthcare. As the industry moves toward more integrated patient-centered care, the need for flawless communication between devices only increases. Medical devices operate in highly regulated scenarios where signal integrity and safety are the highest priority. From MRI machines to telemedicine, healthcare technology relies on meeting stringent electromagnetic compatibility (EMC) and safety standards.

Molex medical RF solutions address these challenges, offering high-performance, non-magnetic connectors, cable assemblies and components that withstand the rigorous standards of the medical field.



THE CHALLENGES

Medical devices must operate infallibly in high-interference environments while complying with strict safety standards. Maintaining signal integrity across devices like MRI machines and wearables while providing patient safety and regulatory compliance is understandably difficult.



THE SOLUTION

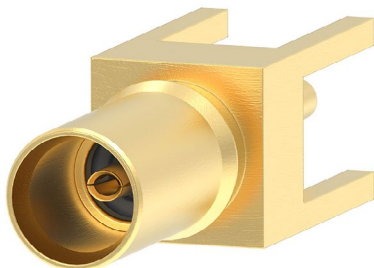
With non-magnetic components, high-performance connectors and strict adherence to safety standards, Molex medical RF products maintain steady data transmission in life-critical applications, advancing the future of healthcare technology.

# FEATURED PRODUCT PORTFOLIO:



## 50 Ohm, Gang of 4 MPRF Jack, Non-Magnetic

- Non-magnetic design for MRI compatibility
- Supports frequencies up to 6 GHz for high-performance medical applications
- Right-angle PCB mount for space efficiency and simplified integration
- 50Ω impedance for strong signal integrity



## MPRF Jack, Straight, Non-Magnetic, PCB Mount

- Straight PCB mount for easy integration into medical devices
- 50Ω impedance for reliable, low-loss signal transfer
- Non-magnetic construction for use in MRI and other sensitive operating conditions
- Operates at frequencies up to 6 GHz for seamless medical device performance



## SMA Bulkhead Jack-to-I-PEX MHF I LK Plug

- High-frequency performance for superior signal integrity
- Ideal for medical wearables and diagnostic equipment
- Compact form factor for space-constrained medical applications
- Patented locking mechanism enhances stability and prevents accidental disconnection
- Versatile connectivity with multiple interface options



## TNC Jack, Straight, Bulkhead

- IP68-rated for maximum protection against moisture and dust
- Flexible cable attachment for secure connections
- Supports up to 12 GHz for error-free RF communication
- Precision TNC jacks can operate up to 18 GHz
- Bulkhead mount for robust, stable integration in medical devices

## DESIGN CONSIDERATION: IMPEDANCE MATCHING

In medical devices, maintaining peak power transfer and minimizing signal loss are vital to ensuring the dependability of diagnostic and monitoring systems. Molex works closely with customers to refine connectors to maintain consistent impedance across components, reducing signal distortion and facilitating accurate data transmission in complex healthcare settings.



## APPLICATION SPOTLIGHT

# TELECOM AND WIRELESS RF SOLUTIONS

With the expansion of 5G networks and increasing high-speed connectivity demands, the telecom industry is rapidly evolving. RF solutions are critical for maintaining signal integrity and managing interference, especially in high-frequency 5G, micro-cells and next-gen wireless applications.

Molex offers scalable solutions to increase system performance, support higher bandwidth and adapt to evolving telecom standards. By addressing challenges in network scalability and interference management, Molex is helping to build the foundation for further 5G infrastructure, small-cell deployments and future developments.



## THE CHALLENGES

As 5G infrastructure expands, telecom networks will need to handle higher data throughput while mitigating interference from high-frequency signals. Ongoing connectivity across both urban and rural areas is essential.



## THE SOLUTION

Expert modeling and exceptional manufacturing lead Molex RF solutions, tackling the unique demands of 5G and high-bandwidth systems. These solutions improve signal transmission and reduce interference, bolstering the growth of modern telecom networks.

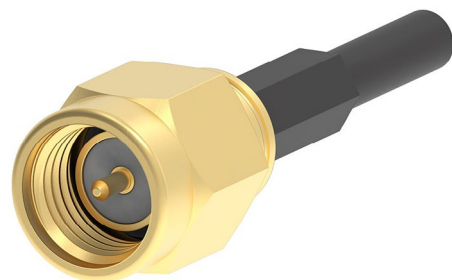


# FEATURED PRODUCT PORTFOLIO:



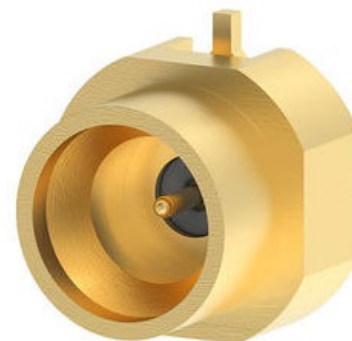
**SMP-MAX Evolution Plug, Straight**

- Supports frequencies up to 10 GHz for high-speed telecom applications
- 50Ω impedance ensures optimal signal integrity and minimal loss
- Surface-mount and through-hole PCB mounting options for design flexibility
- Gold-plated contacts for enhanced conductivity and durability



**50 Ohms, SMA Plug, Straight, Crimp**

- Compatible with RG-174, RG-188 and RG-316 cables for flexible installation
- Gold-plated brass body for superior signal transmission and low loss
- Crimp connection supplies stable, low-resistance contacts for long-term use



**SMPM Plug, Straight, Full Detent, PCB, Surface Mount**

- Supports frequencies up to 65 GHz
- Ideal for board-to-board and blind-mate applications, compensates for misalignment
- Integrates into test setups for precise RF measurements with minimal signal loss or interference
- Ensures robust RF connectivity



**4.3-10 Straight Plug-to-4.3-10 Straight Plug with Boot and Overmold**

- Plug-to-plug configuration for secure, high-frequency telecom connections
- 1828.80mm cable length balances reach and flexibility in RF installations
- 50Ω impedance for stable signal transmission with low attenuation
- Boot and overmold construction enhances durability and environmental protection

## DESIGN CONSIDERATION: SCALABILITY

Telecom networks depend on flexible, modular designs to meet growing demands in bandwidth, coverage and complexity. Molex telecom & wireless RF solutions make seamless network expansion possible, reducing deployment time and cost.

APPLICATION SPOTLIGHT

TEST AND MEASUREMENT  
RF SOLUTIONS

As the market for high-frequency testing increases, maintaining signal integrity across a broad range of frequencies has become more challenging. Calibration and quality assurance tasks require components that can meet stringent performance standards, particularly in high-speed applications that span from DC to 110 GHz. These capabilities are fundamental for advancing systems in industries like telecommunications, AI and medical technologies, where accuracy is non-negotiable.

In testing conditions, precision adapters and connectors are essential. Non-magnetic RF solutions further sharpen measurement accuracy by optimizing signal-to-noise ratios in sensitive equipment. Molex delivers these specialized components, helping engineers achieve outstanding results in demanding test and measurement applications.



THE CHALLENGES

Test environments require RF solutions that supply consistent high-frequency performance while minimizing signal loss and interference.



THE SOLUTION

Molex offers RF adapters, connectors and cable assemblies that achieve excellent calibration and testing performance, with customizable solutions made to meet the unique demands of accurate testing across industries.

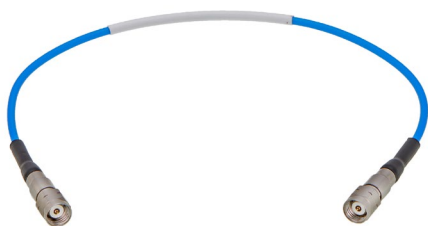


## FEATURED PRODUCT PORTFOLIO:



### Cardinal Test 1.0mm

- Supports frequencies up to 110 GHz for accurate RF testing in laboratory settings
- Armored cable construction supports durability and protection against physical damage
- 609.60mm cable length provides flexibility for various test configurations



### Cardinal Flex 1.85mm

- Engineered for high-frequency testing with excellent performance at 67 GHz
- Flexible cable construction for easy installation and use in tight spaces
- 914.40mm cable length offers extended reach for diverse setups



### 50 Ohms, Solderless RF/Microwave PCB Connector, 1.0mm

- Rated for frequencies up to 110 GHz for ultra-high-speed RF/microwave applications
- Solderless design for easy and quick assembly, minimizing downtime
- Passivated stainless steel construction ensures longevity and resistance to wear



### 50 Ohms, Precision Test Adapter, 1.0mm Plug-to-1.85mm Jack

- Detailed design supports accurate testing up to 110 GHz for RF measurements
- Passivated finish enhances signal integrity and minimizes interference
- Compact, sturdy adapter for between-series connections in testing environments

## DESIGN CONSIDERATION: RELIABILITY

As RF testing conditions can vary considerably from one test to another, RF components need to invariably perform at their highest levels. Fluctuating temperatures, signal interference and other factors can impact accuracy and repeatability. Molex delivers RF solutions that maintain reliable performance, achieving consistent results in both controlled and variable testing environments.

# MOLEX HIGH-PERFORMANCE RF CONNECTORS AND COMPONENTS

## ULTRA-MICROMINIATURE





	Product	Description	Frequency Range	Key Features
A small, gold-plated microcoaxial connector with a black cable attached.	Microcoaxial RF Connectors (MCRF)	Ultra-microminiature wire-to-board solutions with a profile as low as 1.80mm, ideal for small handheld wireless devices	DC to 6 GHz	Small footprint, designed for 0.81; 1.13; 1.32; and 1.37mm cable types
A gold-plated SSMCX coaxial connector with a rectangular base and a central pin.	SSMCX Coaxial RF Connectors	Versatile coaxial connectors available in individual pairs or ganged systems	DC to 6 GHz	Available in 50 and 75 Ohms, non-magnetic versions available

## MICROMINIATURE

	Product	Description	Frequency Range	Key Features
A gold-plated MMCX RF connector with a cylindrical body and a central pin.	MMCX RF Connectors	Compact and lightweight connectors for space-critical applications	DC to 6 GHz	Snap-on coupling, ideal for wire-to-board applications
A gold-plated MCX RF connector with a cylindrical body and a central pin.	MCX RF Connectors	Quick and easy snap-on mating for wire-to-board applications	Up to 6 GHz	Available in 50 and 75 Ohms, snap-on coupling
A gold-plated SMPM and SMP RF connector with a rectangular body and a central pin.	SMPM and SMP RF Connectors	PCB mount, cable mount and in-series adapters for board-to-board, blind-mate and rack-and-panel applications	SMP: DC to 40 GHz, SMPM: DC to 65 GHz	Board-to-board misalignment compensation, ideal for high-density PCB applications

# MOLEX HIGH-PERFORMANCE RF CONNECTORS AND COMPONENTS





## SUBMINIATURE

Product		Description	Frequency Range	Key Features
	SMA RF Connectors	High-strength, durable connectors for mode-free operation	DC to 27 GHz (optimized versions)	Reverse polarity versions available
	SMB RF Connectors	Snap-on coupling design for quick installation	DC to 6 GHz	Available in 50 and 75 Ohms; ideal for field installations
	SMP-MAX Board-to-Board RF Connectors	50 Ohms connector with patented impedance-matching insulator	DC to 6 GHz	Tolerates gaps up to 2.00mm, among the highest misalignment tolerances in the industry
	DIN 1.0/2.3 Connector & Backplane System	Modular assembly for high-performance RF content in board-to-board connections	50 Ohms: DC to 10 GHz, 75 Ohms: DC to 3 GHz	Push/pull coupling





# MOLEX HIGH-PERFORMANCE RF CONNECTORS AND COMPONENTS

## SUBMINIATURE



Product		Description	Frequency Range	Key Features
	Precision Compression-Mount Microwave Test Connectors	Vertical-mount connectors for high-frequency, high-bandwidth testing	DC to 67 GHz	Solderless compression mounting for SMA, 2.92mm, 2.4mm, 1.85mm
	BMA Blind-Mate RF Connectors	High-frequency rack-and-panel RF applications	DC to 22 GHz	Fixed and float-mount options, misalignment compensation
	FAKRA, FAKRA II SMB, and Sealed FAKRA Connector Systems	360° rotation and secondary locking latch for easy cable routing	DC to 6 GHz	Color-coded, keyed shrouds, ideal for automotive applications
	Type F RF Connectors	Miniature 75 Ohms threaded coupling design for broadband communications	DC to 2 GHz (optimized versions up to 4 GHz)	Meets SCTE standards

# MOLEX HIGH-PERFORMANCE RF CONNECTORS AND COMPONENTS

## MINIATURE


Product		Description	Frequency Range	Key Features
	BNC RF Connectors	Connector and cable assembly solutions for broadcast TV and video	DC to 4 GHz (optimized for 12 GHz)	Available in 50 and 75 Ohms
	TNC RF Connectors	Miniature connectors for high-vibration environments	DC to 11 GHz (optimized to 18 GHz)	Threaded coupling, robust vibration resistance

## MEDIUM




Product		Description	Frequency Range	Key Features
	4.3-10 RF Connector System & Cable Assemblies	Low PIM performance built into the connector and serialized traceable cable	DC to 12 GHz	Hand Tight, Quick Lock, Wrench Tight
	Type N RF Connectors	Balances frequency and power with low-loss interconnects	DC to 11 GHz (optimized for 18 GHz)	Threaded coupling

# MOLEX HIGH-PERFORMANCE RF CONNECTORS AND COMPONENTS

## LARGE

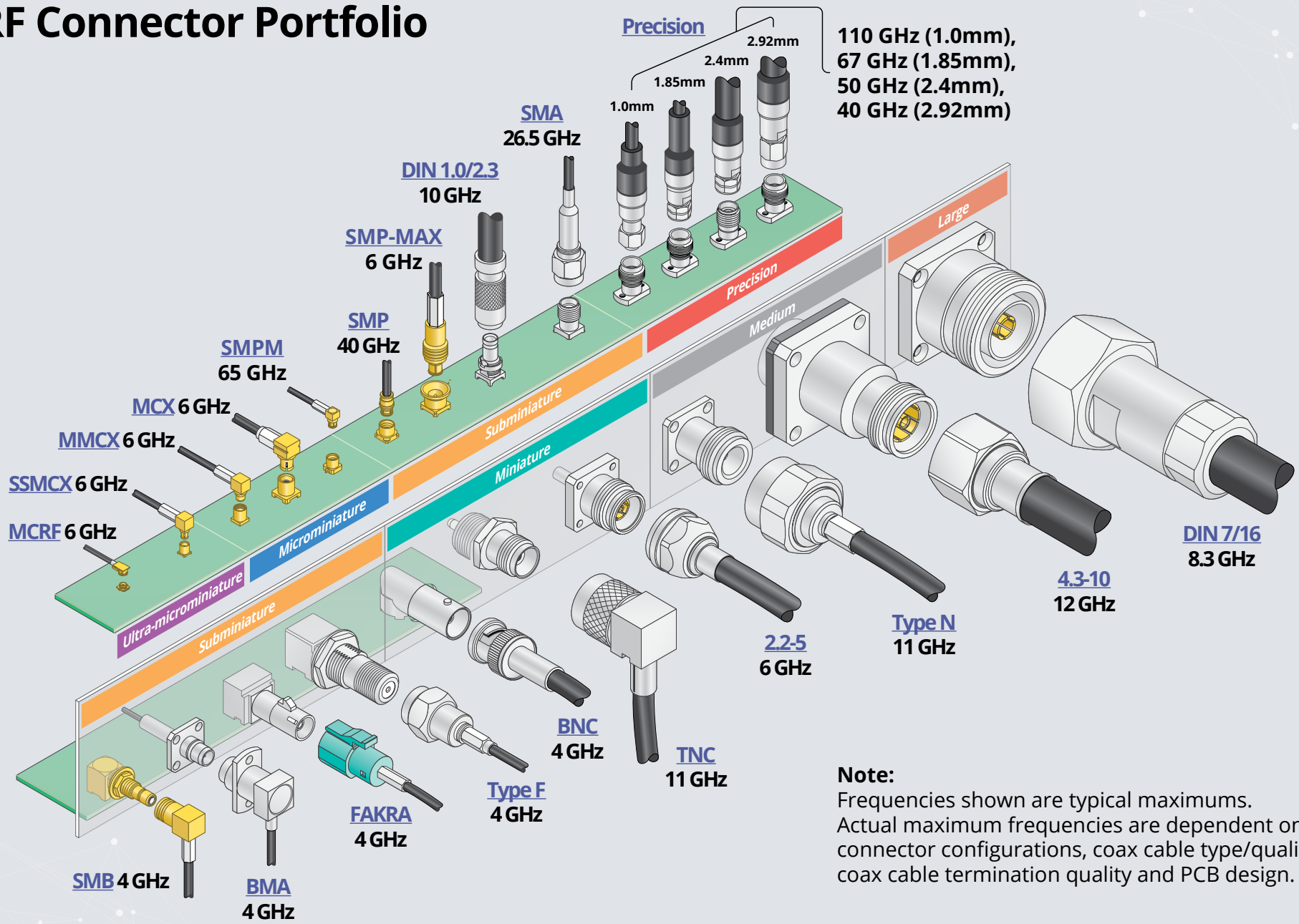
Product		Description	Frequency Range	Key Features
	7/16 DIN Connectors	Designed for rugged, high-power wireless infrastructure	DC to 7 GHz	Low PIM, ideal for outdoor infrastructure

## OTHER

Product		Description	Key Features
	Multi-Port RF (MPRF) Coaxial Cable-to-Board Solutions	High-density PCB footprint for high-vibration environments	Available in 4, 6, and 8 ports, 3.75mm spacing
	Non-Magnetic RF Solutions	Broadest selection of non-magnetic RF connectors and cables	Electroless nickel phosphorus under gold plating, ideal for medical and aerospace applications
	RF Cable Assemblies	Standard BNC and SMB cable assemblies, plus custom RF cables	50 and 75 Ohms, factory-tested for 100% hi-pot testing, also known as a high-potential test, and continuity



# RF Connector Portfolio



**Note:**  
Frequencies shown are typical maximums.  
Actual maximum frequencies are dependent on  
connector configurations, coax cable type/quality,  
coax cable termination quality and PCB design.



Molex continues to raise the bar in RF technology, delivering practical solutions across automotive, medical, telecom, smart agriculture, and test and measurement industries. Our broad range of RF connectors, cable assemblies and precision components are supported by cutting-edge modeling tools and a strong global manufacturing network. By focusing on collaboration and constant innovation, we meet the evolving needs of our customers with effective real-world solutions.

[molex.com](https://molex.com)