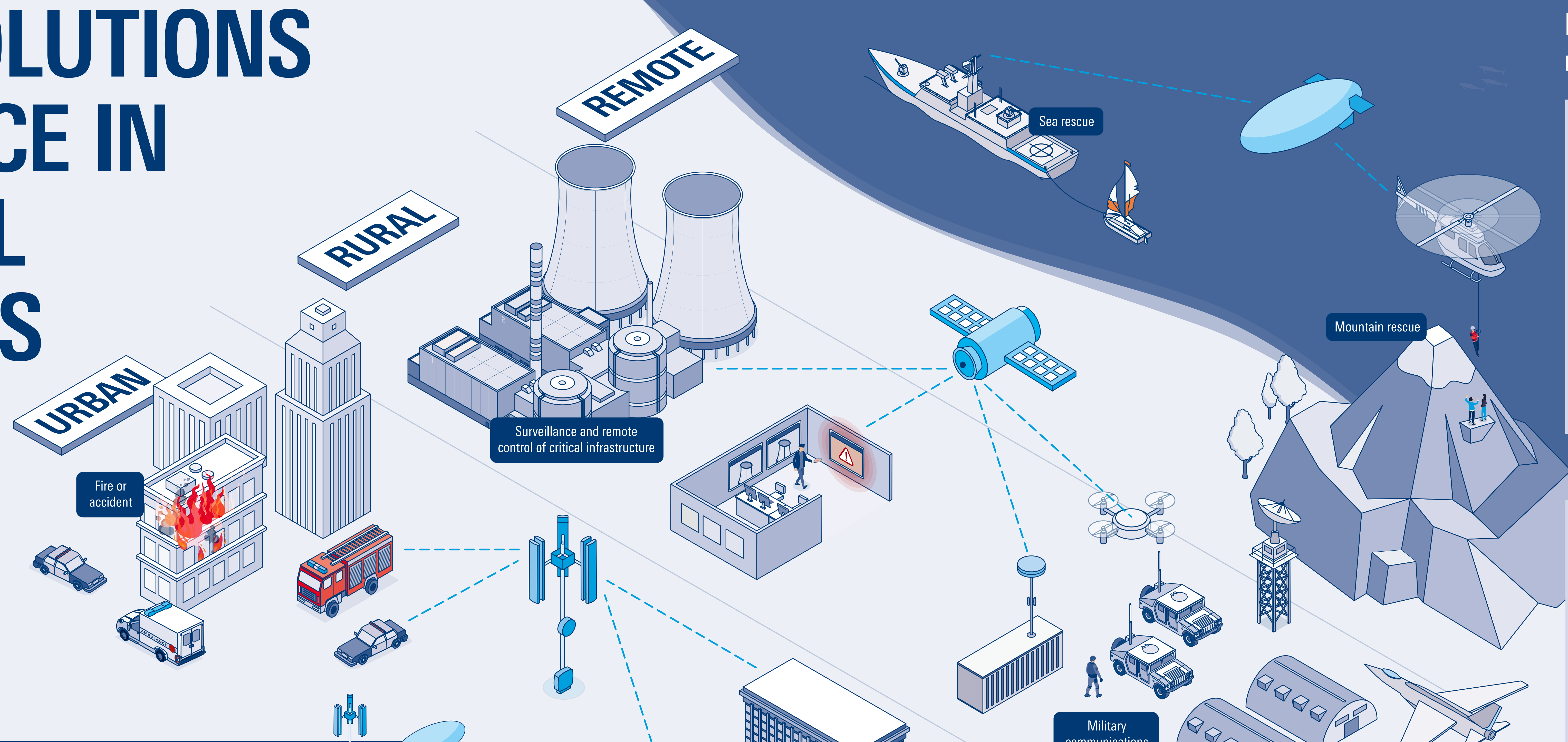
TRUSTED TEST SOLUTIONS FOR PERFORMANCE IN MISSION-CRITICAL COMMUNICATIONS

First responders and mission-critical sectors require secure, low-latency wireless coverage over large areas. Mission-critical 5G networks meet these needs by offering enhanced reliability, security and performance, empowering public safety, healthcare and defense.

To ensure that they perform flawlessly in life-critical situations, these networks must undergo thorough testing under realistic conditions. Our test solutions enable validation of performance, resilience and security, reducing risk and ensuring readiness when every second counts.

Learn more about our test solutions for mission-critical communication here:
http://www.rohde-schwarz.com/aerospace-defense/milcom-test



Features and benefits of mission-critical 5G networks

Features

- ✓ Significantly enhanced data transmission speed, lower latency and higher bandwidth facilitate large-volume data analysis, smooth operation of bandwidth-intensive applications, and near real-time response for critical applications like remote surgery and precision targeting.
- ✓ Improved network capacity with up to 100 times more connected devices compared to LTE.
- ✓ Network slicing capabilities enhance reliability and security, providing secure networks tailored for specific applications, including military uses.

Benefits

- Advanced robotics and autonomous systems
- Enhanced situational awareness and improved soldier communications
- Strategic and tactical forces are empowered to maintain their leadership
- Improved cybersecurity capabilities
- Improved logistics and supply chain management

Different types of base stations

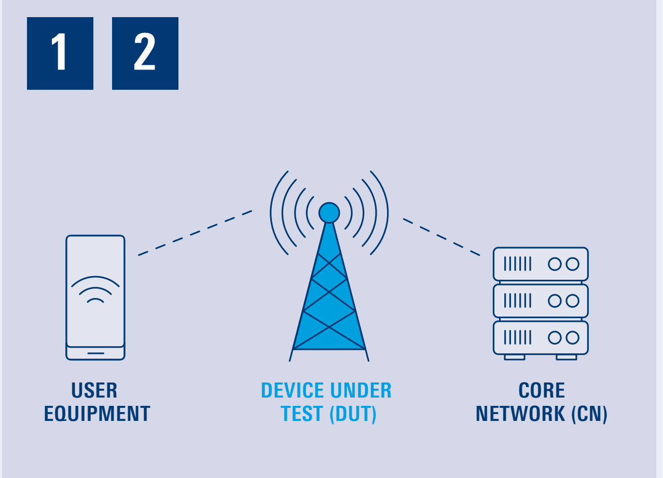
In urban areas, mainly terrestrial base stations are used, while in rural and remote areas, the link is established via satellite-, or high-altitude platform stations (HAPS), which are special aircrafts used for network coverage in selected areas.

For a communication in a wider area, a communication link can be established via several base stations (hops), e.g., a person connects with his mobile phone to a terrestrial base station. From there, the signal is forwarded to a LEO satellite, which connects to an adjacent satellite via an inter-satellite link (ISL) and so on, until the signal is send back to earth to the counter station.

Test solutions across the entire value chain

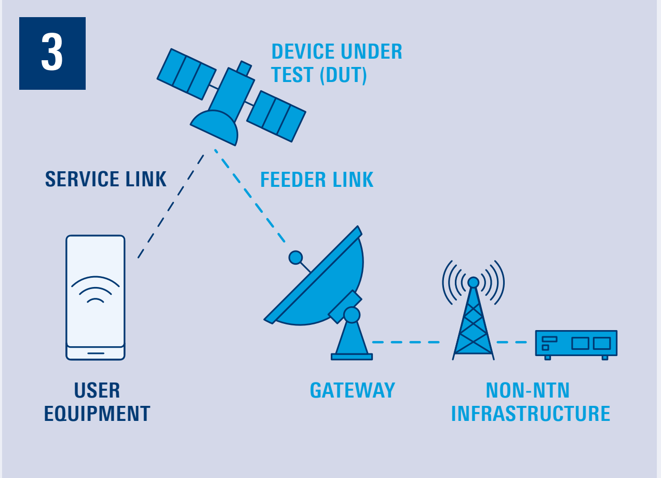
Rohde & Schwarz and Viavi Solutions offer test solutions for mission-critical 5G and 5G NTN communications, from R&D to prototyping, production and system integration.

Radio access network (RAN/O RAN) and network efficiency (NEE) test



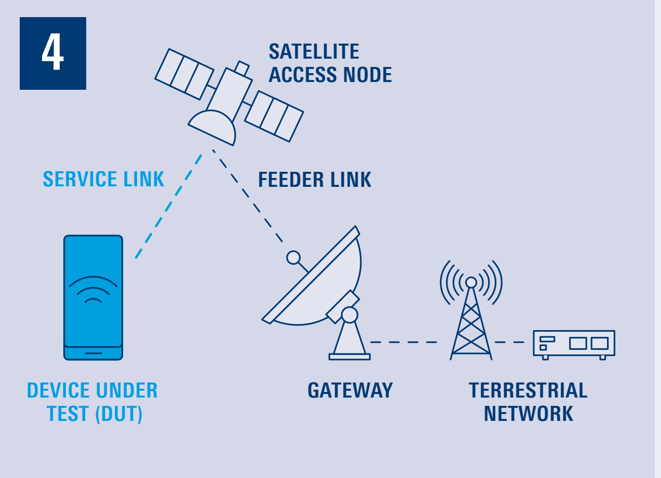
The setup offers comprehensive test coverage including network energy efficiency (NEE) of the radio access network (RAN / O-RAN) in compliance with the 3GPP conformance standards specified in TS 38.141-1/2 Chapter 6 and 7.

Satellite access node (SAN) test



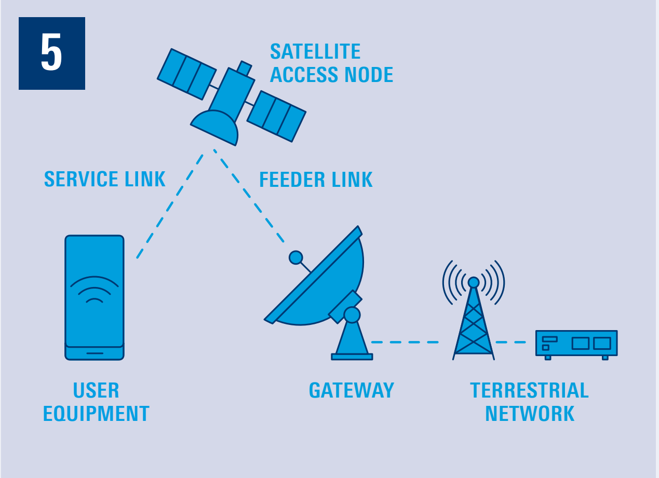
The setup enables comprehensive 4G and 5G testing, supporting base station validation, Open RAN, NTN, MU-MIMO, eMBB, URLLC, IoTv and mission-critical 5G use cases. It emulates thousands of devices, offers advanced features like 10 CC carrier aggregation, and provides versatile solutions for chipset manufacturers, NEMs, integrators, and service providers.

User equipment (UE) test



The UE is tested in an emulated terrestrial/non-terrestrial 5G network (NTN). The solution offers full-channel emulation of NTN multiorbital (LEO, MEO, GEO/GSO) and multiband (S-, L-, Ku-, Ka-band) scenarios.

End-to-end (E2E) system emulation / digital twin



A digital twin solution provides a comprehensive digital replica of the 5G terrestrial (NR) and non-terrestrial networks, inclusive of all network components that are emulated in the lab. This advanced solution facilitates the emulation of authentic user environments, integrating real-live data to generate diverse test scenarios.

Products for mission-critical communications solutions from Rohde & Schwarz

	 R&S®FSW + R&S®VSE SOFTWARE	 R&S®SMW200A / R&S®SMBV100B	 VIAVI TM500 + TEST MANAGER SOFTWARE	 R&S®CMX500	 NGP800	 PVT360A
1 Radio access network Test	RF analysis of the downlink signal from the radio unit	Non-signaling RF test of radio access networks.	Device emulation for 4G/5G base station tests.			UE signal generation and signal analysis up to 8 GHz in one box.
2 Network energy efficiency Test	RF analysis of the downlink signal from the radio unit	Non-signaling RF test of radio access networks.	Device emulation for 4G/5G base station tests.		Power efficiency analysis	UE signal generation and signal analysis up to 8 GHz in one box.
3 Satellite access node Test		Non-signaling RF test of radio access networks.	Device emulation for 4G/5G base station tests.			
4 User equipment test				4G/5G network emulation for user equipment testing.		
5 End-to-end test (digital twin)			Device emulation for 4G/5G base station tests.	4G/5G network emulation for user equipment testing.		

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Make ideas real

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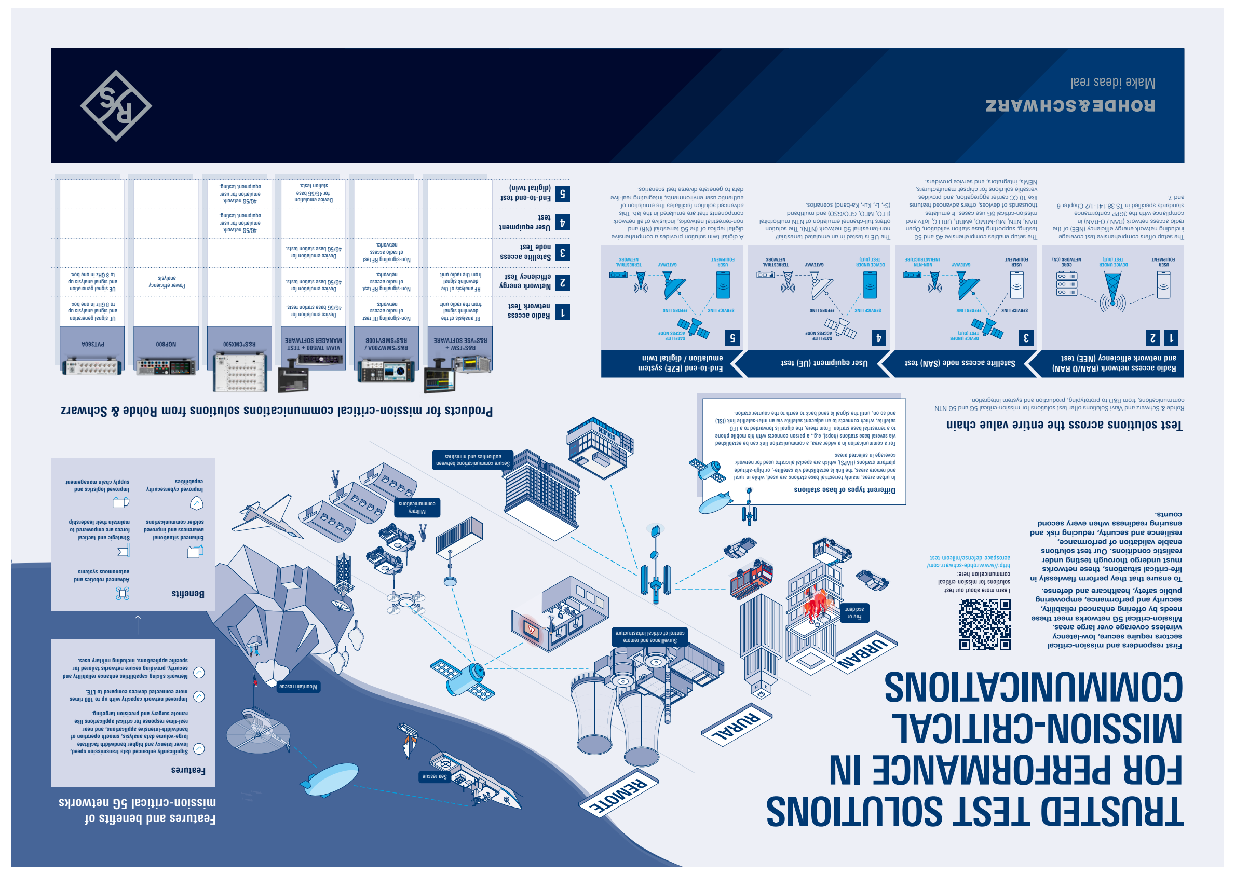

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Make ideas real

Service at Rohde & Schwarz
You're in great hands

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- Customized and flexible
- Uncompromising quality
- Long-term dependability

Rohde & Schwarz
The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks & cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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PD 3610.1885.82 | Version 01.00 | September 2025 (nk)
Trusted test solutions for performance in mission-critical communications

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