ROHDE&SCHWARZ

Make ideas real
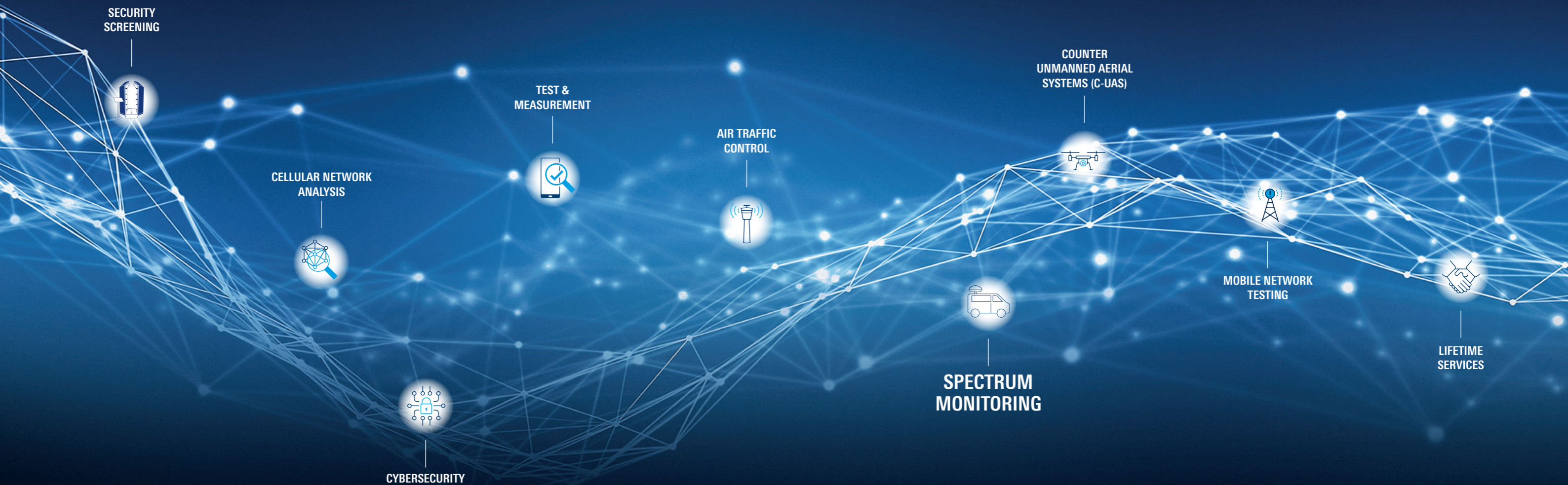
SPECTRUM AWARENESS FOR CRITICAL INFRASTRUCTURES

Solution overview

ROHDE & SCHWARZ CRITICAL INFRASTRUCTURE SOLUTIONS

The electromagnetic spectrum holds the potential to protect critical infrastructures. It not only enables communications that enhance safety and security but can also reveal potential threats such as illegal drone intrusion, unauthorized bugging devices, infiltration of harmful goods and radio jamming.

Rohde & Schwarz spectrum monitoring systems can detect suspicious or unwanted emissions, support interference mitigation and provide the basis for secure radio communications.

SECURITY SCREENING

CELLULAR NETWORK ANALYSIS

TEST & MEASUREMENT

AIR TRAFFIC CONTROL

COUNTER UNMANNED AERIAL SYSTEMS (C-UAS)

MOBILE NETWORK TESTING

LIFETIME SERVICES

SPECTRUM MONITORING

CYBERSECURITY

SYSTEM SOLUTION PARTNER

In addition to spectrum monitoring, Rohde & Schwarz is the partner of choice for safeguarding the performance of critical infrastructure and networks. As a system integrator and manufacturer of all core components, the company supplies turnkey solutions for the entire lifecycle – from system engineering and project implementation to aftersales service.

MONITORING INVISIBLE VULNERABILITIES

Monitoring the electromagnetic spectrum can help to efficiently protect critical infrastructures. At transport hubs and routes, such as airports, shipping ports and surface and underground railways, electromagnetic emissions play an increasingly decisive role for smooth operations. Irregularities in the spectrum can reveal potential threats at governmental and industrial facilities, where eavesdropping and malfunctions can cause damage. In these and other critical infrastructure sectors, monitoring the spectrum can increase security and prevent harm from occurring.

The increasing use of radiocommunications and growing number of electronic devices and wireless equipment makes the electromagnetic domain all the more important. Spectrum monitoring delivers insights into this domain and can therefore provide decisive advantages.
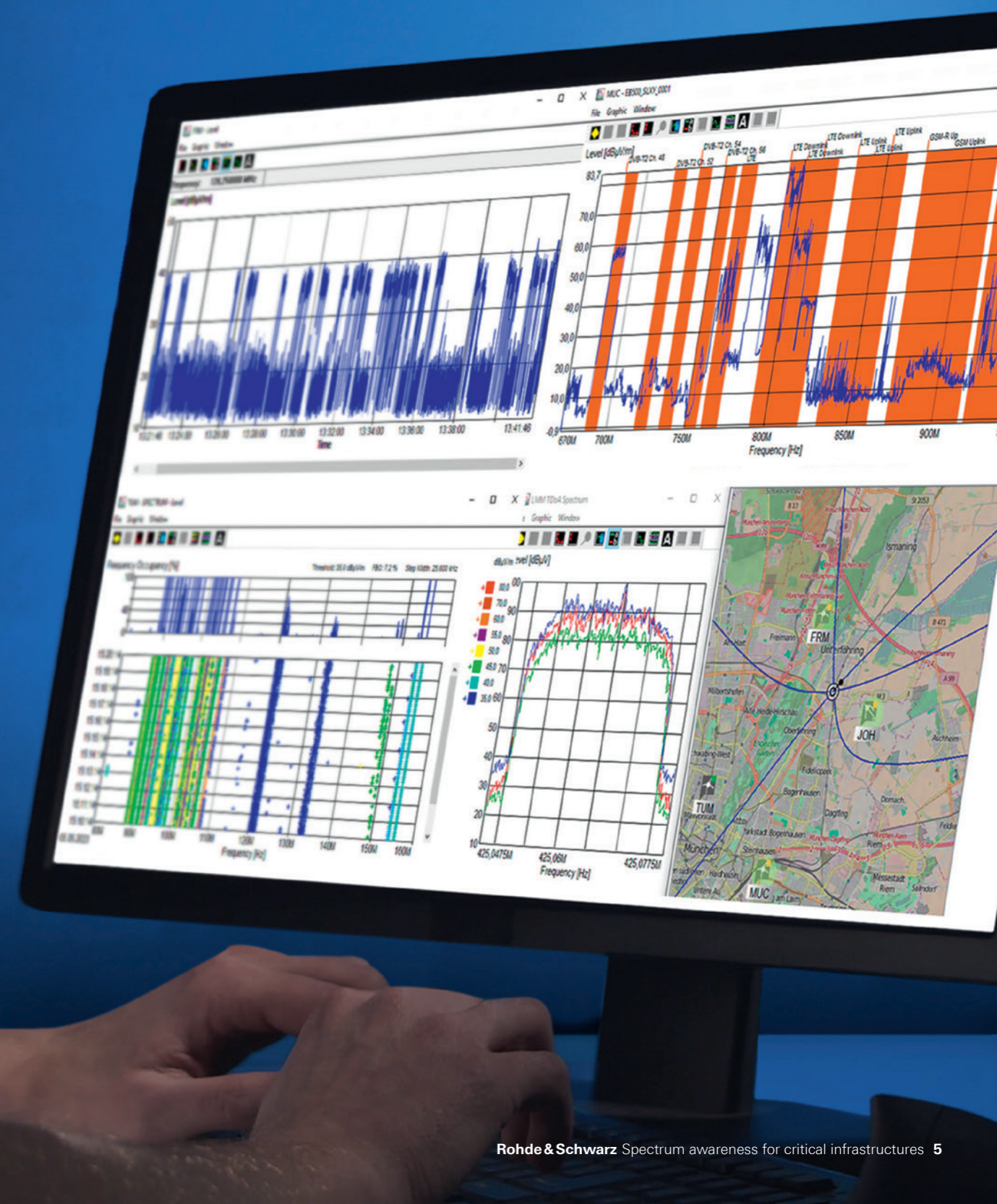
SPECTRUM AWARENESS

Monitoring the electromagnetic spectrum can provide decisive information, including indications of emerging threats and malfunctions at critical infrastructures. Spectrum monitoring detects emissions that do not belong to the regular spectrum. This monitoring can reveal unauthorized activities and help to avoid harmful emissions and mitigate radio interference.

Interference hunting

In most cases, radio interference is merely an annoyance. However, it can become dangerous when interference affects safety-relevant radio services or interlocking devices are incorrectly blocked or released. When such phenomena only occur sporadically, permanently or temporarily deployed spectrum monitoring systems can verify unwanted emissions on site. The systems can take bearings and record data, providing operators with preliminary information before they carry out interference hunting with portable equipment. This enables quick and efficient step-by-step interference hunting to restore radio services without needless delay.

Spectrum availability

At critical infrastructures, essential frequency bands must be accessible at all times. To maximize availability, radio services such as aviation navigation and wireless campus networks in industrial sectors require continuous spectrum monitoring. This allows early detection and helps mitigate potential radio interference. Abraded shielding of cables and plugs, corroded connecting bolts and other sources of interference often develop gradually and can be overlooked. Permanent monitoring of crucial frequency bands can enable deviations to be recognized automatically, which helps prevent failures and other harm from occurring.

Detecting unauthorized activities

Hidden bugging devices and intruders can use wireless communications for unauthorized activities. Also, ingenuous or ignorant infiltration of transmitting devices into critical areas can be unauthorized and present a risk. Spectrum monitoring systems can reveal such acts by detecting suspicious emissions. The systems can continuously monitor critical frequency bands as well as analyzing and locating the detected signals to verify and evaluate potential threats. This helps prevents unauthorized activities such as eavesdropping, intrusion and infiltration of unwanted devices.

Jammer recognition

Jammers are deliberate interferers that, target specific transmissions such as GNSS signals to avoid automatic position disclosure. Since jammed GNSS devices cannot receive the navigation satellites' signals, they will not be able to determine the position. Even more annoying is the fact that jammers often impede the reception of other nearby devices. When spectrum monitoring systems detect a suspected GNSS jammer or any other source of illegal transmission, they can immediate alert operators, who locate and terminate the source of the unauthorized emission.
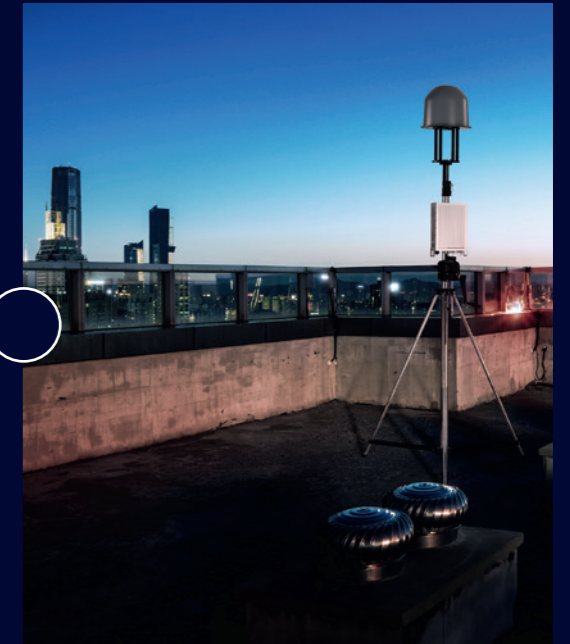
SOLUTIONS

Rohde & Schwarz spectrum monitoring systems can be configured for automatic measurements and run autonomously. The portfolio's efficient solutions comprise various fixed, transportable and portable spectrum monitoring systems for various applications. The systems provide extensive spectrum awareness within and around specific areas and facilities.

Fixed monitoring stations

Fixed monitoring stations perform 24/7 surveillance of the electromagnetic spectrum. They perform measurements in predefined frequency bands and trigger alerts if they detect abnormal emissions. The systems can also trigger further measures such as recordings for collecting evidence. The unattended systems run automatically and, conveniently, can be controlled remotely.

Transportable monitoring stations

Rohde & Schwarz transportable monitoring stations can be deployed at any site for spectrum clearance tasks, identifying sporadic radio interference and other temporary radio surveillance tasks. The systems are highly flexible thanks to their compact and lightweight design, minimal infrastructure requirements and simple setup. The stations can be controlled remotely or operated in automatic measurement mode

Portable monitoring stations

Rohde & Schwarz portable monitoring systems are versatile, lightweight, battery-powered tools for human-carried operations in the field. They support flexible measurements and interference hunting at any site. This portable equipment is always the means of choice for the last meters and where flexibility is paramount.

TRUSTED PARTNER THROUGHOUT THE PROJECT LIFECYCLE AND IN SERVICE

Rohde & Schwarz has extensive experience in managing spectrum monitoring system integration. Internal company standards ensuring comprehensive quality management and efficient organizational structure, as well as project teams with many years of experience in spectrum monitoring technologies, provide a strong basis for successful projects.

Training programs prepare customers for spectrum monitoring system operations. The operational training courses combine formal classroom instruction with hands-on training on the systems. Trainers teach well-prepared educational material adapted to the individual knowledge level of the operators.

Once the systems are put into operation, Rohde & Schwarz provides comprehensive lifecycle support and full lifecycle service. This includes software updates and hardware upgrades – e.g. to expand frequency ranges, enhance system functions or extend the number of monitoring stations. Customers benefit from additional training and maintenance services to ensure successful operation of their spectrum monitoring systems over the long term.

Service at Rohde & Schwarz
You're in great hands

▶ Worldwide
▶ Local and personalized
▶ 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.

www.rohde-schwarz.com

Sustainable product design

▶ Environmental compatibility and eco-footprint
▶ Energy efficiency and low emissions
▶ Longevity and optimized total cost of ownership

Certified Quality Management	Certified Environmental Management
ISO 9001	ISO 14001

Information Security Management System	Certified Quality Management
ISO/IEC 27001	AQAP-2110

Rohde & Schwarz training
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