

ROHDE & SCHWARZ

Make ideas real



Empowering naval forces with advanced naval systems

TRUE SPECTRUM DOMINANCE IN THE NAVAL DOMAIN



TRUE SPECTRUM DOMINANCE IN ALL DOMAINS



NON-TERRESTRIAL
MONITORING



MONITORING
SOLUTIONS



COUNTERING
DRONES



ELINT/RESM



COMINT/CESM



CYBERSECURITY



MOBILE
NETWORK
TESTING



NAVAL
COMMUNICATIONS
SYSTEMS



CELLULAR
NETWORK AND
IP ANALYTICS



TEST &
MEASUREMENT



TACTICAL
COMMUNICATIONS



AIRBORNE
COMMUNICATIONS



Today's military missions increasingly rely on information superiority and advanced command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems.

Control over the electromagnetic spectrum has become essential in achieving strategic military dominance.

Rohde&Schwarz develops, designs, manufactures and implements turnkey end-to-end solutions for secure communications, SIGINT / EW, intelligence, test & measurement and security in modern warfare. Our solutions contribute to effective C4ISR, enabling customers to achieve dominance in the electromagnetic spectrum for a decisive edge in modern warfare.

SIGNAL MASTERY

Signal testing and generation, secure communications, encryption, signal detection, location, analysis and interception from a single source.

VERTICAL INTEGRATION

Rohde&Schwarz maintains a high degree of vertical integration with nearly its entire value chain inside the company. All products are developed and manufactured in its own factories.

ONE-STOP SHOP

Rohde&Schwarz provides a one-stop shop with the full range of turnkey solutions, from sensors and analysis to effectors across the electromagnetic spectrum.

TRUSTED PARTNERSHIP

As an independent, privately-owned company, Rohde&Schwarz finances its growth with its own resources. The company is not beholden to capital markets or stock market expectations.

“As a technology leader and reliable partner working at the forefront of innovation, we at Rohde & Schwarz are not only meeting the naval demands of today; we are envisioning and engineering the fleet of the future.

Our commitment to cutting-edge technology and strategic excellence ensures that our partners are ready to navigate the complexities of tomorrow’s maritime challenges and achieve true spectrum dominance in the naval domain – yesterday, today and in the future.”



CURRENT AND FUTURE REQUIREMENTS IN THE NAVAL DOMAIN

DEMANDS ON NAVAL FORCES ARE MORE COMPLEX AND MULTIFACETED THAN EVER BEFORE

In the future, the naval domain will require cutting-edge technology, strategic agility, and operational readiness to address a wide range of challenges, from traditional conflicts to asymmetric threats like piracy and terrorism. Ensuring maritime security, protecting trade routes and maintaining peace and freedom of navigation in international waters require advanced capabilities in command, control, communications & computers, intelligence, surveillance, and reconnaissance (C4ISR) as well as robust cybersecurity mechanisms for true spectrum dominance. Looking forward, it is necessary to adapt to emerging trends and technologies, including:

- Managing **COMPLEX COMMUNICATIONS NETWORKS** for enhanced connectivity and secure information sharing
- Integrating **ARTIFICIAL INTELLIGENCE and AUTONOMOUS/UNCREWED SYSTEMS** to enhance decision-making processes and operational efficiency

- Developing **SOPHISTICATED ELECTROMAGNETIC WARFARE CAPABILITIES** for enhanced situational awareness and electromagnetic superiority in contested and dynamic operational environments
- Ensuring **CYBER AND NETWORK SECURITY** for modern vessels acting as sophisticated floating command and control platforms, i.e. data centers
- Implementing **MODULAR PLATFORMS** that can be rapidly reconfigured for diverse missions

Rohde & Schwarz is dedicated to providing comprehensive systems that meet both today's and tomorrow's naval requirements, ensuring customers remain at the forefront of maritime excellence by integrating tomorrow's naval systems into today's platform environments.

CONTRIBUTING TO NAVAL C4ISR

Rohde & Schwarz supports naval forces and coast guards by providing advanced technologies and secure naval systems that contribute to naval C4ISR – all from a single source.

REVOLUTIONIZING NAVAL OPERATIONS FOR UNMATCHED SUPERIORITY

Rohde & Schwarz expertise in turnkey communications, signal intelligence (SIGINT), electromagnetic warfare (EW) and security systems is aligned with the requirements of naval forces seeking true spectrum dominance in the maritime domain.

As an experienced market player and trusted industry partner, Rohde & Schwarz has the expertise to integrate tomorrow's next-generation technologies into today's infrastructures and networks on a range of naval platforms as a single systems provider.



Learn more
about our naval
system portfolio

SIGNAL INTELLIGENCE (SIGINT)

- ▶ Electronic intelligence (ELINT)
- ▶ Communications intelligence (COMINT)

ELECTROMAGNETIC WARFARE (EW)

- ▶ Naval Electronic Support (R-ES / C-ES)
- ▶ Naval Electronic Attack (EA)

**INTEGRATED NAVAL
COMMUNICATIONS**

**SENSOR FUSION &
SIGNAL ANALYSIS**

**EDGE COMPUTING &
SIGNAL PROCESSING**

**SHORE
COMMUNICATIONS**

TEST & MEASUREMENT

- ▶ EMC / EMI testing
- ▶ Radar / EW testing
- ▶ Military communications testing

**MARITIME
CYBERSECURITY**

WE DON'T JUST PROMISE, WE DELIVER

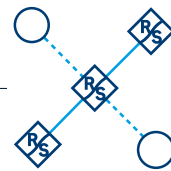
THE ROHDE & SCHWARZ NAVAL COMPETENCES

Why choose Rohde & Schwarz for your next naval mission?



TRUE INDEPENDENCE

As a privately owned company, Rohde & Schwarz has a uniquely stable and resilient organization with an entrepreneurial identity built on independence. As a truly independent partner, we are committed solely to our customers and projects without being beholden to shareholders or governments.



HIGH VERTICAL INTEGRATION

Our true independence allows us to take ownership of large shares of our production processes and streamline our operations. High vertical integration means that nearly the entire value chain and production of mission-critical components happens in house.



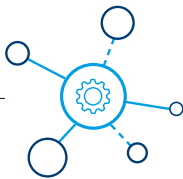
SYSTEM INTEGRATION

Rohde&Schwarz develops state-of-the-art equipment as well as complete systems and possesses the knowledge to integrate our own components as well as those of third-party providers into complex system environments.



TECHNOLOGY LEADER

For over 90 years, Rohde&Schwarz has been a reliable technology partner providing German engineering excellence and decades of experience to our customers. Drawing on this, we develop and integrate tomorrow's naval technologies into current platforms and system environments, not only to envision the fleet of the future but also to shape it.



ONE-STOP SHOP

We are a one-stop shop for our customers, providing an entire range of turnkey systems that cover sensing, analysis, and effectors across the electromagnetic spectrum. Because these systems all come from a single source, customers have only one number to call and benefit from reduced complexity.



RELIABILITY

We prove our reliability through end-to-end responsibility and hold ourselves accountable in difficult situations. These values make us a truly reliable partner for navies worldwide.



GLOBAL NETWORKS

Rohde&Schwarz has an extensive global network and is present in more than 70 countries, primarily with its own subsidiaries, allowing us to deliver exceptional support and professional services throughout the whole product lifecycle.

MASTERING EVERY ASPECT OF ANY SIGNAL

TURNING DATA INTO ACTIONABLE INTELLIGENCE

Controlling the electromagnetic spectrum (EMS) has proven to be a critical success factor for armed forces worldwide. In the highly competitive defense market, everyone claims to have mastered the EMS.

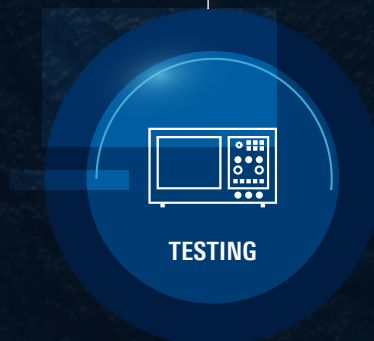
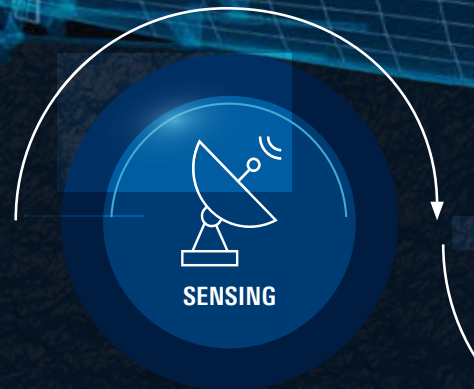
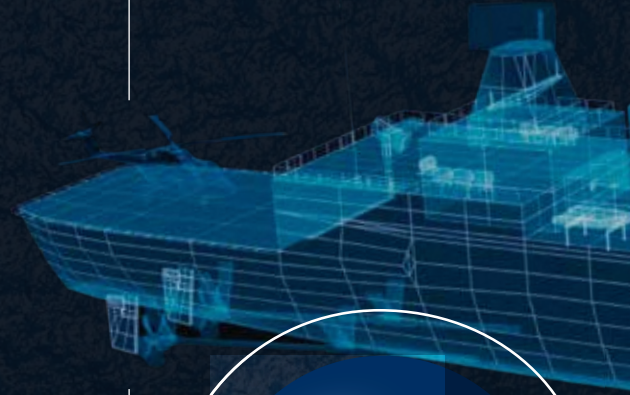
What sets Rohde&Schwarz apart is our unique value proposition complementing our outstanding defense portfolio. We are the only company that delivers true spectrum dominance.

Spectrum dominance requires the mastery of the entire signal ecosystem – and that is where Rohde&Schwarz stands out. We are the sole provider of comprehensive signal management systems, uniquely capable of secure signal transmission, detection, location, analysis, and interference, while driving innovation in signal generation and testing.

Our competitors often rely on our test and measurement systems to enhance their own products and services. Meanwhile, we have the unique advantage of developing, designing, and manufacturing our own systems in-house, under one roof.

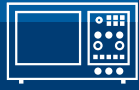
This expertise across the entire signal chain gives us an unparalleled understanding of the EMS.

Rohde&Schwarz lets you master every aspect of a signal, turning raw data into actionable intelligence.





TESTING



TESTING

All our systems are thoroughly tested and optimized with our very own state-of-the-art test & measurement (T&M) equipment. This in-house competence allows us to enhance and optimize our communications, intelligence and security systems to deliver cutting-edge performance.

As the T&M market leader, we set the standard for what is possible with test equipment and systems operating in the EMS. That is why even our competitors rely on our T&M equipment.

SENSING

Signals intelligence (SIGINT) sensor systems from Rohde & Schwarz detect even the smallest, most fleeting electromagnetic emissions. This outstanding sensitivity in combination with the high coverage range of our systems results in a maximum probability of intercepting emitted signals. Edge computing helps process and analyze large data volumes quickly and close to the source.



SENSING



ANALYZING &
PROCESSING

ANALYZING & PROCESSING

Specialized resources are becoming more and more scarce, while at the same time signal density in the EMS is increasing and with it the need to process ever more signals. In this environment, effective analysis and processing systems are crucial.

Rohde & Schwarz products enable a level of situational awareness that empowers users employ gathered information efficiently and effectively. Our systems process and analyze captured signals in real-time, aggregate them and generate signal records and reports that are intuitive to use.

FUSION

Sensor fusion brings together and combines different sensor sources early on. The data thus accumulated then has to be translated into a clear situation picture.

The Rohde & Schwarz system breaks down information silos as early as possible and enriches data with open-source information to deliver a much more detailed and sharply focused situation picture.



FUSION



COUNTERING

Electromagnetic warfare (EW) systems must quickly identify and classify threat signal emissions to initiate appropriate countermeasures.

The outstanding sensitivity and range advantage of our systems allow more time to react and persistently keep threats in check. Our SIGINT sensors, efficient analysis & processing capabilities and sensor fusion systems clear the fog of war and stop adversaries in their tracks without causing physical damage.

CONNECTING

Robust, secure communications networks are the key to effectively sharing data and information within and beyond the fleet. Connecting all types and sizes of naval platforms and integrating them into wider networks to provide enhanced interoperability and connectivity is crucial.

Rohde & Schwarz secure communications systems provide the right information when, where and in the right quantity to those who need it.



SECURING

The entire signal chain must be secured to protect it from unauthorized access. Failure to secure it allows others access to the results of all steps in the signal chain or use them in harmful ways.

We incorporate our extensive cyber and network security competencies into every system and component to secure data, information and naval systems. Our systems meet all standards and are tailored to individual customer requirements to protect data and information.



TEST & MEASUREMENT AT A GLANCE:

- ▶ **Reliable measurements:** Engineered to withstand harsh marine environments for accurate and reliable measurements
- ▶ **Comprehensive systems:** Range of test equipment and software for shipboard electronics testing, including signal generators, spectrum analyzers, and oscilloscopes
- ▶ **Advanced system testing:** Simulation and data analysis capabilities support EW, navigation, and communications system testing
- ▶ **Optimized performance:** Helping naval forces optimize equipment performance, reduce downtime, and improve operational effectiveness

SETTING THE STANDARD FOR WHAT IS POSSIBLE

True spectrum dominance begins before any system is installed on the battlefield. Ensuring absolute reliability and the best performance in the electromagnetic spectrum starts with extensive testing and measurement of all systems and components as a cornerstone for successful operations. True spectrum dominance is only possible when users can absolutely rely on the flawless performance of their systems. As the market leader for test and measurement equipment, we set the standard for what is possible in this area.

TEST & MEASUREMENT

Rohde&Schwarz provides a comprehensive range of test & measurement (T&M) systems for naval forces, designed to meet the unique challenges of shipboard electronics testing. Our systems are engineered to withstand the harsh marine environment, ensuring reliable and accurate measurements in even the most demanding conditions. From shipboard radar and communications systems to electromagnetic warfare (EW) and navigation systems, our T&M systems help naval forces optimize their equipment performance, reduce downtime, and improve overall operational effectiveness.

Our T&M systems for naval forces are designed to support a wide range of applications. We offer an array of specialized test equipment, including signal generators, spectrum analyzers and oscilloscopes, as well as software systems for data analysis and visualization. Our systems are also designed to be highly flexible and adaptable, so that naval forces can easily integrate them into their existing T&M infrastructure.

One of the key benefits of our T&M systems for naval forces is that they support development and testing of advanced shipboard systems, such as those used for EW and navigation. Our systems enable naval forces to simulate complex scenarios, test system performance under a range of conditions, and optimize system configuration for maximum effectiveness. This helps to ensure that naval forces are always equipped with the latest and most advanced technology, giving them a critical edge in the field.

SIGNAL INTELLIGENCE ON THE HIGH SEAS

Effective situational awareness and informed decision making depend on the ability to harness and analyze communications and radar signals in the electromagnetic spectrum (EMS). By leveraging both internal and external signals emissions, a comprehensive and unparalleled understanding of the operational environment is achieved, providing a strategic advantage in any mission theater, particularly in the demanding naval domain.

NAVAL SIGNAL INTELLIGENCE

Rohde&Schwarz designs, develops and delivers innovative **signal intelligence (SIGINT)** systems that collect data from various sources and handle large volumes of simultaneously intercepted signals for a clear picture of the environment to enhance information superiority.

We support maritime forces around the world with high-end SIGINT systems employed to observe, analyze and exploit radar, terrestrial and non-terrestrial signals throughout the EMS. Our naval SIGINT systems combine perfectly integrated hardware and software components spanning the whole intelligence cycle from sensors to finished intelligence. This portfolio includes antenna systems, receivers

and direction finders to detect and locate SIGINT targets early on, as well as recorders for signal collection, online and offline analysis tools, maps for geolocation information, databases, system software and recording capabilities, which together form the software core of our naval SIGINT systems.

Our SIGINT sensor systems enable covert surveillance, allowing users to discreetly gather intelligence on a target without alerting it to their presence. This capability enables the collection of valuable information about the emitting object and potential target while maintaining a low probability of detection.

NAVAL ELECTRONIC INTELLIGENCE

Electronic intelligence (ELINT) systems from Rohde&Schwarz provide maritime forces with the ability to intercept, direction find, collect and analyze threat radar signals. Easy-to-operate and rapidly deployable to cover wide areas of operation, these systems give operators the means to detect and analyze even the most low-power

and stealthy of signals. Prior to a planned operation, naval ELINT systems can be deployed to one or more areas of interest over long periods to monitor and record changes in the electromagnetic order of battle (EOB) live over time.

NAVAL COMMUNICATIONS INTELLIGENCE

Communications intelligence (COMINT) systems from Rohde&Schwarz allow maritime forces to generate an accurate intelligence picture of an adversary by monitoring HF, VHF and UHF radio frequency bands. Our systems detect, analyze and geolocate threats in

real-time to retrieve valuable information for mission success. Rohde&Schwarz technology enables customers to analyze and intercept mobile and satellite communications in order to identify, locate and seize potential targets.



SIGNAL INTELLIGENCE AT A GLANCE:

- ▶ **Sensitivity:** Extremely sensitive, high-performance radar and communications detection and analysis, enables naval forces to detect and track potential threats at long ranges
- ▶ **Advanced ELINT and COMINT systems:** Provide valuable insights into the intentions and capabilities of potential threats
- ▶ **Silent listening:** Low-power signals detect, classify and prioritize radar and datalink emissions while minimizing the risk of being detected with silent listening
- ▶ **Integrated EW capabilities:** Allow naval forces to detect, analyze, and respond to electromagnetic threats in real-time
- ▶ **Modular scalable architecture:** Customizable to meet the specific needs of each naval customer and easily integrated into existing naval architectures
- ▶ **Mission-proven in worldwide operations:** Proven track record of reliability and support with a long history of providing high-quality SIGINT systems to naval forces around the world



SENSOR FUSION & SIGNAL ANALYSIS AT A GLANCE:

- ▶ **Edge computing:** Quick processing of large data volumes from multiple sensor systems in support of real-time analysis and decision making
- ▶ **Automatic signal processing:** Automatic capture, aggregation, and processing of signals to generate demodulated signal records and reports
- ▶ **Sensor fusion:** Aggregation and processing of fragmented sensor data from various sources to generate a comprehensive situation picture
- ▶ **AI-powered analysis:** TARAN uses AI to aggregate and enrich data from multiple sources, providing a detailed situation overview and supporting efficient data collection
- ▶ **Decentralized processing:** Enables decentralized processing of real-time data

TURNING RAW DATA INTO A SHARP PICTURE

To derive meaningful insights from raw data, we have to combine information from various sources into a single, unified operational picture. This enables comprehensive situational awareness, which in turn supports the chain of command and empowers decision makers to choose informed courses of action, reducing the risk of potential threats.

EDGE COMPUTING & SIGNAL PROCESSING

A comprehensive picture of the electromagnetic spectrum is created by aggregating vast amounts of data from multiple sensor systems. Edge computing helps process these large data volumes quickly at the source. It automatically captures, aggregates and processes collected data efficiently, detecting, geolocating, classifying, demodulating and decoding all of the signals. Capturing and processing crucial signals of interest makes it possible to pull demodulated signal records and reports for each signal stored in the central database.

Rohde&Schwarz supports decentralized, efficient processing of real-time data with innovative software systems that can respond to analysis and signal processing automation on a customer-by-customer basis, significantly shortening response times. Data that is relevant to higher-level, big-picture matters can be pre-filtered and transmitted to a data center in the required form for more efficient use of available bandwidth.

SENSOR FUSION & SIGNAL ANALYSIS

Accurate identification and tracking of critical information requires advanced capabilities that apply intelligent filters and advanced screening models to raw data from various sources, including legacy and network communications.

TARAN from Rohde&Schwarz is the tool of choice for powerful and reliable analysis of massive amounts of data and enables optimal decision making and increased efficiency in operational management, collection task and intelligence preparation of the operational environment

of any subject domain. This Rohde&Schwarz sensor fusion system combines and processes fragmented sensor data to generate an overall situation picture. Massive amounts of collected data are further aggregated and enriched with open-source information through artificial intelligence (AI) for a much more granular situation picture. TARAN not only helps users with efficient data collection, but it also brings clarity to complex relationships in the context of the intelligence cycle (direction, collection, processing, dissemination and feedback).

CLEAR THE FOG OF WAR

Electromagnetic warfare seeks to secure friendly forces' dominance over the electromagnetic spectrum in the operating environment, while disrupting the adversary's access to it, clearing the fog of war.

NAVAL ELECTROMAGNETIC WARFARE

An overall situation picture and spectrum dominance in the naval domain are vital to taking the necessary measures to counter or even disrupt enemy communications, secure friendly communications and protect allied interests.

Rohde&Schwarz offers scalable strategic and tactical intelligence, surveillance and reconnaissance (ISR) systems for various naval platforms enabling effective electromagnetic warfare (EW) at high seas for true spectrum dominance in the naval domain. Clearing the fog of war.

NAVAL ELECTRONIC SUPPORT

Vessels operating in the naval domain are highly visible, high-value targets for adversary shipborne, airborne, or ground-based systems, which pose the major threat of anti-ship cruise missiles (ASCM). The earliest possible warning of active multi-function radars, airborne interception radars and radar missile seekers in this domain is therefore critical for platform protection. One aspect of EW involves reconnaissance and surveillance of the electromagnetic environment, traditionally called electromagnetic support measures (ESM), to gain situational awareness.

Naval ES – which can be further broken down into radar electromagnetic support (R-ES) and communications electromagnetic support (C-ES) – is therefore a critical source of information for forward-deployed decision makers and

a key element of overall naval defense. Integrated into naval vessels, ES systems detect radar and communications emitters, identify and classify them and add critical information to the situation picture for improved situational awareness and self-protection. They can also trigger countermeasures and collect intelligence during operations.

Rohde&Schwarz Naval ES systems combine state-of-the-art R-ES and C-ES equipment capable of seamless integration into current and future naval platforms and system environments to protect national strategic and economic interests and prepare for the missions of today and tomorrow. Early, precise emitter detection at maximum stand-off range combined with long-distance direction finding allows fast and reliable threat recognition and enhanced situational awareness in naval missions.



ELECTROMAGNETIC WARFARE AT A GLANCE:

- ▶ **Electromagnetic support measures (ESM):** Advanced ES capabilities enable naval forces to detect, analyze, and locate RF emissions sources
- ▶ **Integrated SIGINT and EW systems:** Turnkey integrated antenna system with signal intelligence and electromagnetic support and countermeasures capabilities
- ▶ **Modular and scalable:** Open architecture, customizable to meet the specific needs of each naval customer and easily integrated into existing naval architectures
- ▶ **Mission-proven in worldwide operations:** Proven track record of reliability and support, with a long history of providing high-quality, mission-proven EW systems to naval forces around the world

COASTAL SURVEILLANCE & BORDER PROTECTION

PROTECT COASTS AND BORDERS

We help governments and organizations protect their coastlines and borders from potential threats with systems that include signals intelligence (SIGINT) and electromagnetic warfare (EW) capabilities designed to detect and analyze all signals in the electromagnetic spectrum whatever the source. This provides naval forces and coast guards with real-time situational awareness and threat detection to protect their coastlines and borders from potential threats. Our SIGINT/EW systems can be integrated into a comprehensive surveillance system to provide a complete picture of the operational environment.

Our systems for coastal surveillance and border protection are designed to meet the unique challenges of these missions, including the need for high-speed data transmission, secure communications, and reliable system operation in harsh environments. Our SIGINT/EW systems can detect and analyze signals from small boats, aircraft and other vessels, even in challenging weather conditions. They also include advanced software for data analysis and visualization, as well as secure communications networks for real-time information sharing between agencies and organizations. Together they provide a comprehensive and integrated surveillance system.



TURNING VESSELS INTO NETWORKS

Critical intelligence loses its value if it cannot be reliably exchanged between friendly units and their allies, which is why secure information sharing is essential in joint and combined operations. Contextualized information sharing is vital for informed decision making and effective action. Timely and relevant information is also crucial to mission success because delays or inaccuracies can have grave consequences.

SECURE COMMUNICATIONS

In naval operations, the speed of information sharing is critical because it directly impacts the effectiveness of decision making and can be the difference between success and failure.

Rohde&Schwarz provides secure communications systems that ensure the necessary speed and provide fast, reliable transmission of sensitive information while maintaining security and integrity. With a 90-year heritage in secure communications systems, we offer integrated communications systems (ICS) that integrate seamlessly into naval platforms and wider networks.

NAVICS - the naval ICS from Rohde&Schwarz – embodies our approach to achieving secure and interoperable communications in the naval domain.

It is a turnkey portfolio of software and hardware components that rise to every communications challenge. It combines and coordinates various subsystems into a unified whole, ensuring secure and fully IP-based voice and data communications across all naval platforms and networks. The NAVICS ecosystem includes voice and data systems, encryption devices, gateways, and IP management and routing systems.

Rohde&Schwarz combines traditional software-defined radio (SDR) communications with directional, highly agile communications using new technologies that allow high data rates in a flexible, hybrid system. This enables reliable connections over long ranges, high data throughput and low latency, while providing the physical and operational advantages of directional propagation. This hybrid approach supports current and future efforts to integrate artificial intelligence into unmanned platforms, while enhancing decision making processes and operational efficiency.



SECURE COMMUNICATIONS AT A GLANCE:

- ▶ **Flexibility:** Fully flexible and semi-automated and automated assignment of the optimal transmission medium
- ▶ **Integration:** Combines classic HF and VUHF with modern SATCOM and further IP services
- ▶ **Interoperability and flexibility:** Compatible with a wide range of communications systems and protocols, including legacy systems
- ▶ **Intuitive use:** Easy to use and maintain, with intuitive user interfaces and minimal maintenance requirements for secure communications that are as easy to use as a smartphone
- ▶ **Mission-proven in worldwide operations:** Proven track record of reliability and support, with a long history of providing high-quality, mission-proven communications systems to naval forces around the world



CONNECTIVITY BEYOND THE VESSEL

Rohde&Schwarz not only equips maritime platforms of all configurations and sizes, but also offers expertise for connectivity beyond the vessel for seamless, secure information exchange between naval vessels and shore facilities. Our liquid-cooled, high-frequency (HF) high-power transmitters offer wideband capability and power output of 5 kW to 10 kW, making them ideal for shore stations.

These transmitters meet the HF requirements of NATO's maritime forces through integration with the Broadcast and Ship Shore (BRASS) architecture, including the upgrade to the new NATO-standard BRASS Enhancement One Target Architecture (BRE1TA) and ready for

Enhancement Two (BRE2TA). They provide robust HF broadcast capabilities, enabling ships to receive critical information from shore stations over vast distances. This ensures that naval forces stay connected to shore even in remote or congested areas.

Our high-power transmitters are also suited for Ship-Shore-Ship-Buffer (SSSB) requirements, which maintain the integrity and continuity of communications by buffering messages to mitigate network delays, disruptions, or bandwidth limitations, enhancing operational readiness and coordination between naval forces.

THE NEW REALITY FOR HF COMMUNICATIONS

Thanks to our rich heritage in HF communications, Rohde&Schwarz supports naval customers with state-of-the-art radio equipment for 4th generation HF wideband applications. Our SDR radio family for stationary and ship-borne communications meets today's demands, including wideband internet protocol over air (IPoA) using wideband digital link (WBxDL) technology for greater automation and easier operation.

Our HF backbone networks provide a robust alternative and secure backup system for satellite communications (SATCOM) networks, especially in crisis situations. With no additional infrastructure required, operating costs are lower and reliability is increased. This makes HF backbone networks an attractive system for naval mission theaters where infrastructure may be limited.

SECURING FLOATING DATA CENTERS

Modern warships are increasingly becoming sophisticated command and control platforms, floating data centers designed to keep pace with the increasing digitalization of naval operations. It is of the utmost importance to protect cybersecurity of naval platforms both at sea and in port.

MARITIME CYBERSECURITY

In today's digital age, naval forces must protect their assets from an increasing number of cyber threats. When the naval platform is in port and connected to a local network, or when communication takes place on board via unsecured networks, security gaps open and expose the platform to unauthorized access. Maritime cybersecurity protects naval assets such as ships, submarines, and naval bases from these threats.

At Rohde&Schwarz, we understand the unique challenges that come with ensuring naval cybersecurity. Our systems are designed to provide comprehensive protection of networks and IT security. This involves securing installed communications networks and protecting sensitive data from unauthorized access.

Network security is a critical component of maritime cybersecurity, and our systems provide robust network security measures, including firewalls. Because **IT security** is also a key concern for naval forces, our systems provide IT security measures, including authentication and access control. These measures help to ensure that only authorized personnel have access to sensitive data and systems and that data is protected both in transit and in storage.

At Rohde&Schwarz, we are committed to providing our maritime customers with the most advanced and effective cybersecurity systems available designed to meet the unique needs of naval forces.



SECURITY AT A GLANCE:

- ▶ **Protection:** Comprehensive protection of installed communications network against cyber threats and sensitive data from unauthorized access
- ▶ **Customization:** Security systems tailored to unique naval cybersecurity needs – from fulfilling minimum security requirements to multi-level security demands
- ▶ **Compliance:** Compliant with relevant regulations and standards, with expert assistance to meet or exceed requirements
- ▶ **Authentication and access control:** Ensures regulated access to sensitive data and systems
- ▶ **Advanced technology:** Using AI and encryption

Present in more
than **70 countries**
worldwide

Production
plants based in
Germany

System integrator
and **strong,**
independent partner

Thanks to our locations spread around
the world, you can **contact**
our experts 24/7

Dedicated **naval center of competence**
in Kiel demonstrates the company's commitment to naval projects



Over **55 naval forces** and **coast guards**
around the world rely on Rohde & Schwarz naval systems:

German Navy



French Navy



**Danish Coast
Guard**



Spanish Navy



**Royal Australian
Navy**



**Royal Netherlands
Navy**

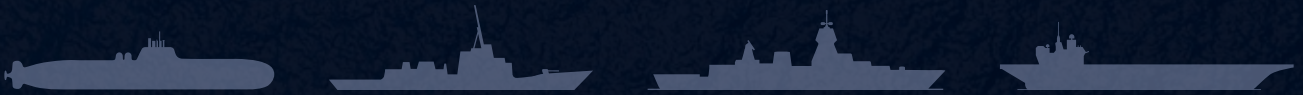


and
many
more ...

On board of **more than 300 ships** worldwide

Nearly **100%** in-house manufacturing ensures traceable interface control and quality down to the smallest detail

System integration in all types and sizes of **platforms above and below sea-level**



In line with all relevant

NATO standards

Trusted NATO partner contributing to and **creating** further developments of NATO standards

Over **90 years** of German engineering excellence

The Rohde & Schwarz naval competence represented by one product:

Integrated antenna system (IAS)

- ▶ Single mast installation with an ingenious space-saving, interference-free design
- ▶ Highly sensitive active and passive antennas for mobile and stationary use
- ▶ Optimized decoupling for performance that equals coverage
- ▶ Optimal integration with minimal influence on the ship's sensors and effectors
- ▶ Broadband HF systems that enable multiple transmission systems to transmit simultaneously via the same antenna



STRONG AND MEANINGFUL PARTNERSHIP

For Rohde & Schwarz, partnership is more than collaboration. It means forming close, meaningful relationships where everyone brings unique capabilities together to achieve better, more innovative results to meet or exceed customer requirements.



FULFILLING EVEN THE MOST AMBITIOUS, FUTURE-ORIENTED CUSTOMER DEMANDS

We prioritize building long-term relationships based on trust, transparency, and mutual success. Strong communication, proactive issue resolution and robust intellectual property protection attest to our commitment.

Rohde&Schwarz shares its unique know-how and expertise as a technology leader, enhancing knowledge in cooperation with industry partners to fulfill even the most ambitious customer demands.

As a trusted partner, we offer technical expertise, quality control, on-time delivery, competitive pricing, flexibility, strong communication and professional services. Our in-house design, development, and production of technologies in the naval defense sector allows for streamlined integration processes, reduced development costs, and accelerated time-to-market.



Learn more about
partnering with
Rohde & Schwarz

PARTNERSHIP AT A GLANCE:

- ▶ Highest degree of transparency and information sharing thanks to true independence
- ▶ In-house manufacturing of critical parts using state-of-the-art plants, ensuring uncompromised availability, short lead times, and the highest levels of quality control
- ▶ Having experiences with projects spanning over various decades, we make long-term commitments and are not focused on achieving quick-wins
- ▶ Experience and expertise in diverse naval projects in scope and complexity thanks to 90 years of presence and robust processes
- ▶ Mission-proven technology and products, that can be self- and/or third-party integrated seamlessly in multiple platforms and infrastructures
- ▶ Extensive global network with a presence in more than 70 countries allowing exceptional, professional support and services for the whole product lifecycle – close to the customer

GOING ABOVE AND BEYOND - EXCELLENCE IN NAVAL SERVICES

At Rohde & Schwarz, we deliver unparalleled services for naval customers, ensuring the highest standards of quality, efficiency, and innovation. Our expertise spans all aspects of naval project management, full system integration capabilities, training programs and top deck design.

PROJECT MANAGEMENT AND SYSTEM ENGINEERING

We assume full responsibility for your naval project and deliver professional services thanks to certified project management and worldwide experience. Thanks to resource management based on state-of-the-art tooling, global procurement strategies, and expert engineering at the highest-level using model-based system engineering (MBSE) we can manage even the most complex projects and requirements. We can handle the full integration process, including environmental testing, and provide maintenance services, spare parts, and customer-specific training.

SYSTEM INTEGRATION

We are the competent partner of choice for system integration, from the idea and planning to delivery and acceptance. Because we design, manufacture and deliver turn-key communications, intelligence and security systems almost exclusively in-house in our manufacturing plants based in Germany, we have a deep understanding and expert knowledge of integrating our own and third-party assets and technologies into current and to the standards of future infrastructures and network environments for various naval platforms. Our full system integration services including demo systems, strategic partnerships with certified suppliers and worldwide implementation capabilities ensure that every component of your naval project works in perfect harmony.



Learn more
about service at
Rohde & Schwarz



TOP DECK DESIGN

Due to limited space for antenna arrangements aboard naval ships, we provide space-saving hardware and support customers with planning software to enable efficient top deck design, creating layouts that maximize operational effectiveness and performance while ensuring crew safety:

- Efficient layouts for all installations on top deck while maximizing operational effectiveness and performance
- State-of-the-art materials and design principles for durability and resilience
- Electromagnetic compatibility (EMC) testing, decoupling calculations, SATCOM analysis, as well as near field and far field simulations
- Antenna concepts for integrated communications and surveillance systems
- Customized designs to meet specific mission requirements and environmental conditions

TRAINING

The pace of change and increasing complexity in the naval domain is highly dynamic. Continuous learning and preparation are critical for mission readiness. Rohde & Schwarz offers unique industry insights through outstanding on-location and off-site technical training courses for all our systems. We deliver training in a variety of formats including offline classroom training, on-demand online courses, and training tailored to specific customer needs.

The Rohde & Schwarz SIGINT/EW Academy is a training highlight. The curriculum equips operators, analysts and managers with the knowledge, skills, and tools they need to achieve mission success. The academy offers role-based supplemental training, facilitating expertise in the armed forces in SIGINT and its related disciplines.

SERVICE LEVEL AGREEMENTS

We offer outstanding service and support packages in the form of service level agreements (SLA) driven by customer needs, maintaining all your Rohde & Schwarz naval systems and ensuring excellent customer care. Our global service and support network keeps customers mission ready.

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 and measurement, technology systems, and networks and cybersecurity. Founded more than 90 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

Service at Rohde & Schwarz You're in great hands

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

Sustainable product design

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

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

Certified Quality Management

AQAP-2110

Certified Quality Management

EN 9100

Rohde & Schwarz customer support

www.rohde-schwarz.com/support

