



MULTIFUNCTIONAL TOOL FOR EMC LABS

R&S®ZNL vector network analyzer



Key considerations for a budget friendly investment

There are many considerations when budgeting for EMC systems and EMC labs. Apart from identifying what is essential to meet requirements for the test standards, balancing between cost-effectiveness and quality is just as equally important. The purchased instrument should be durable and reliable to support daily EMC maintenance and related tasks. At times, it should help to reveal potential problems before even starting measurement campaigns. In an ideal scenario, a multifunctional and easy-to-use instrument that adapts to different needs such as system installation, troubleshooting and calibration would deliver maximum value. Lastly, today's constantly increasing test frequencies and evolving test standards require knowledge of the matching conditions in EMC systems.

Hence, an easily expandable instrument that caters to future growth and changes is both crucial and ideal.

Key budgeting insights to balance essential requirements with quality

The R&S®ZNL is ideal for maintaining EMC setups with frequency ranges from 5 kHz up to 20 GHz. The R&S®ZNL is a highly scalable and versatile vector network analyzer that reduces investment costs and offers a unique option concept. It hosts a variety of functions that can be easily expanded via software keycodes or retrofitted on site. The analyzer comes in a compact form factor with better RF performance and measurement speed in comparable classes.

Your benefit	Features
Well-suited for EMC applications	<ul style="list-style-type: none"> ▶ System installation, e.g. antenna, LISN and preamplifier checks ▶ Troubleshooting, e.g. cable testing (attenuation, matching, TDR), filter testing and/or (re-)tuning ▶ Calibration, e.g. free-space path loss for over-the-air measurements ▶ Resource for measurement uncertainties
Well-rounded in performance	<ul style="list-style-type: none"> ▶ Wide frequency range: 5 kHz to 3/4.5/6/14/20 GHz ▶ High dynamic range of 130 dB (typ.) ▶ Short warm-up time (30 minutes)
Portable and scalable	<ul style="list-style-type: none"> ▶ Portable (battery-powered option) ▶ Easy to expand via software keycodes ▶ Supports manual calibration kits and automatic calibration units
Multifunctional yet compact	<ul style="list-style-type: none"> ▶ Optional spectrum analyzer and power meter capabilities ▶ Options to extend power range and step attenuators ▶ Comprehensive marker functions, user-specific limit lines and math function
Cost-efficient and reduces overall investment cost	<ul style="list-style-type: none"> ▶ Regular firmware updates ▶ Options and capabilities upgrade when required ▶ Robust warranties, services and customer support: over 70 service locations worldwide, accredited calibration and 24/7 customer support

The R&S®ZNL provides clear menu structures and numerous wizards to simplify operation and setup and reduce training time. Weighing approx. 7.3 kg, it includes a carrying handle and an optional battery pack. The fully portable R&S®ZNL can be operated at all EMC sites and is easy to transfer between test chambers, amplifier and system control rooms, and even in-situ locations.



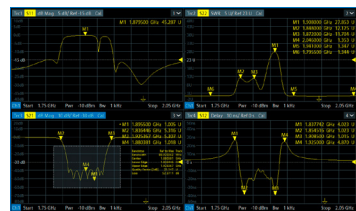
For options, prices and more information, visit www.rohde-schwarz.com/product/ZNL

Antenna, filter, LISN and preamplifier checks

Changing setups to tailor applications to the relevant EUT and standards is considered routine in EMC test facilities. Performing pre-checks on system components to ensure their proper working condition prior to integration provides the confidence that the tests will work as intended.



Furthermore, preventive maintenance helps to preserve quality and save costs in the long run. For example, unstable cables, undesired VSWR conditions or overloaded antennas can be promptly identified during such checks. Additionally, this helps to reduce uncertainties and improve the measurement results by identifying and replacing components with poor performance.



The R&S®ZNL supports S-parameter measurements (S_{11} , S_{12} , S_{21} , S_{22}) that help to identify any abnormalities or deviations such as phase, gain, impedance, insertion loss, SWR and more. The time domain analysis option (R&S®ZNL-K2) provides time domain and time gating functions to allow further analysis of the device under test (DUT) in the time domain.

R&S®ZN-ZE1xx calibration units, up to 26.5 GHz, can be paired with the R&S®ZNL to simplify calibration, reduce operator errors and improve calibration repeatability



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 Multifunctional tool for EMC labs
 PD 3673.0505.32 | Version 01.00 | July 2024 (ch)
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Fault isolation/cable testing

EMC component degradation over time, misalignment, mechanical damage and aging are some common problems that can lead to system performance issues or non-compliance with EMC standards. To mitigate these potential problems, regular maintenance, inspection and testing of EMC components are essential.



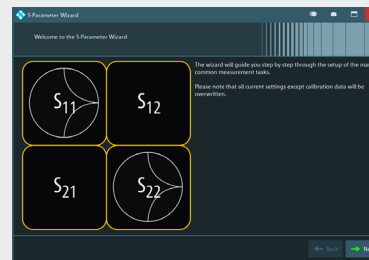
A typical signal path in an EMC system comprises multiple interconnected cables. Some parts of the cables are exposed to constant movement (e.g. at the connection to the antenna) while some are laid below the test chamber. In the event of a cable fault, time domain reflectometry (TDR) or DTF can help to speed up the troubleshooting process and save costs. For example, faults can be quickly isolated and defective part(s) can be identified for replacement.

AC powered or battery powered



The R&S®ZNL weighs approx. 7.3 kg (with battery) and comes with a carrying handle and optional battery pack (R&S®FPL1-B31), making it fully portable and ideal when making diagnostic tests between locations.

Easy to set up, easy to operate

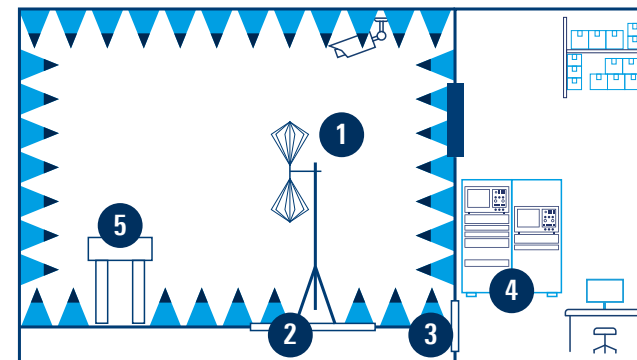


Guided user interface wizards are provided for S-parameters and calibration standards to allow convenient and hassle-free setup, including a context-sensitive help menu at the touch of a button.

Service and support



A wide range of services are available with the R&S®ZNL to meet your specific instrument management needs, ranging from extended warranty plans all the way through accredited calibration coverage, spare parts preparation and 24/7 customer support for technical inquiries.



1 to 5 indicate probable cable interconnection points

The R&S®ZNL can be easily upgraded with a distance-to-fault (DTF) function and/or TDR that is useful for cable testing. With the R&S®ZNL-K3 distance-to-fault measurement option, the location of discontinuities can be easily determined in order to estimate and locate cable faults. This helps to reduce the time and effort needed to isolate cable faults on site.

Ordering information for recommended R&S®ZNL models

Designation	Type	Order No.
Vector network analyzer, 5 kHz to 6 GHz, two ports, N (f)	R&S®ZNL6	1323.0012.06
Vector network analyzer, 5 kHz to 20 GHz, two ports, 3.5 mm (m)	R&S®ZNL20	1323.0012.20