

# ROHDE & SCHWARZ HEALTH GUIDE

## For vector network analyzers

- For further information on the topics below
- ▶ please consult the safety instructions and
  - ▶ the user manual for your instrument



Flyer  
Version 01.00

**ROHDE & SCHWARZ**

Make ideas real

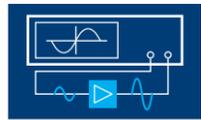


# PREVENTING ELECTRICAL DAMAGE

## DO:



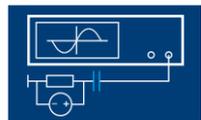
- ▶ Consult the operating manual or data sheet for further information before using any port.



- ▶ Verify that the RF output level of the DUT is below the instrument's RF damage level, especially when testing a high power DUT with gain. While the instrument's maximum output RF level is below the RF damage level of RF ports, applying gain can result in an overload. Set a custom "preset" output power when working with sensitive DUTs. By default, "preset" results in an active RF output power of -10 dB.



- ▶ Observe ESD precautions: Use a wrist strap and cord to ground yourself, for example by using the ground connector on the back of the instrument, or use a conductive floor mat and heel ground strap combination when you connect or disconnect a DUT or test fixture to the instrument's test ports. Install ESD protective covers after each use of the instrument's ports. Electrostatically discharge a DUT with a short or match prior to connecting it to the instrument. Even residual charge of cables can cause damage when discharged over the instrument.



- ▶ Protect ports from direct current. Applicable limits are specified in the data sheet (see "damage current/voltage/DC voltage").



- ▶ Consult the data sheet on the permissible characteristics of the instrument's power supply. Always use a power supply with a connection to ground.



- ▶ Ensure that the ambient temperature is within the range specified in the data sheet.

## DO NOT:

- ▶ Operate the instrument outside specifications. Warning signs are strategically placed at sensitive connectors.

- ▶ Overload ports by exceeding the applicable limits specified in the data sheet. RF and direct excess ports are especially sensitive to overload.

- ▶ Damage the instrument's earth grounding protection by using an (extension) power cable, or autotransformer without a protective ground conductor.

- ▶ Directly connect a DC supply to a port. Instead, use a bias tee for both biasing your DUT and supplying it with the RF signal.

- ▶ Use any AC power cable other than that delivered with the instrument. Other cables may be of poorer quality and could result in damage to the instrument.

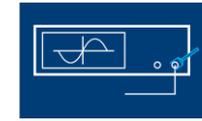
- ▶ Operate the instrument in case it shows signs of condensation. Condensation is the result of rapid temperature changes, for example during transport or power-up.

# PREVENTING MECHANICAL DAMAGE

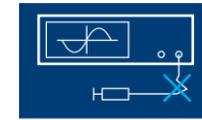
## DO:



- ▶ Take preventive measures in case of a suboptimal operating site, for example by providing extra shielding for your instruments.



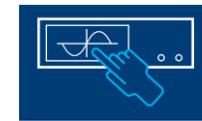
- ▶ Clean and inspect each connector prior to its use. Make sure to align the connectors on the cable and on the instrument along a common axis before tightening. Turn the outer connector nut, not the cable itself. Use a calibrated torque wrench to tighten the connector with the specified torque.



- ▶ Make sure to prevent sharp bending of cables. Sharp bends lead to reflections and possibly to permanent cable damage. Rather use a cable with the appropriate length.



- ▶ Look for dirt and outer and inner conductor damage before using any cable. In case of dirt, apply compressed air to dislodge larger debris. Make use of isopropanol moistened foam cleaning swabs or wooden cocktail sticks to remove the remaining dirt. Dry the connector using compressed air.



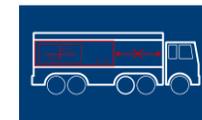
- ▶ Use your fingers or a stylus pen when touching the screen. Use a soft, dry, lint-free dust cloth for cleaning.



- ▶ Use both handles on the front or side of the casing for lifting or carrying the instrument.



- ▶ Fold the feet in or out completely to ensure stability of the instrument. The feet can collapse if they are not folded out completely or if the instrument is shifted while the feet are folded out.



- ▶ Use the original packaging for transportation. It is specifically designed to prevent mechanical damage and to provide ESD protection. In case the original packaging is lost, it can always be ordered separately.

## DO NOT:

- ▶ Operate the instrument in a wet or polluted environment or expose it to high electromagnetic interference, as these conditions can lead to premature aging or cause damage to the instrument.

- ▶ Tighten cables excessively, as this can cause damage to the cable or the connector. In contrast, insufficient tightening can lead to inaccurate measurement results. Make sure not to mix incompatible connector systems.

- ▶ Repeatedly bend cables, as this will increase wear and influence the user calibration.

- ▶ Apply too much pressure when cleaning the inside of connectors with foam cleaning swabs or wooden cocktail sticks. In the case of female connectors with an air dielectric, the slotted contacts of the inner conductor are easily bent. In the case of male connectors, the center pin is easily bent.

- ▶ Use cleaning agents, as there is a risk of damage to the screen. Never touch the screen with ballpoint pens or other sharp objects.

- ▶ Apply excessive force to the handles, for example by carrying the instrument using only one handle.

- ▶ Exceed the maximum force or load on the instrument, with or without folded-out feet. Applicable limits are specified in the user manual.

- ▶ Leave headroom in the transport box, as this means loose cargo and potential damage. Never use styrene pellets for packaging, as they do not provide proper cushioning.

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

## Rohde & Schwarz

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

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