

Mobile network testing

# BENCHMARKER3

Raising the bar for benchmarking  
to the next level



Product Brochure  
Version 01.00

**ROHDE & SCHWARZ**

Make ideas real



# AT A GLANCE

The Benchmarker 3 is a compact and robust benchmarking system optimized for drive test campaigns. The design and implementation of the Benchmarker 3 benefited from the extensive in-house benchmarking expertise. As a result, the future-proof Benchmarker 3 offer a very compact form factor and simple handling. It sets a new standard for vehicle based benchmarking data collection.

The key components of the Benchmarker 3 are the next-generation NUC based computing module and the smart mounting wall with its integrated USB and power conditioning unit.

The sophisticated and efficient air flow concept of the Benchmarker 3 ensures the proper and reliable operation of probes even during long and demanding data collection campaigns.

The powerful computing module delivers excellent performance when controlling up to twelve QualiPoc probes as well as up to two R&S®TSME6 scanners. The USB and power conditioning unit integrated in the Benchmarker 3 provide sufficient energy to charge the latest generation of smartphones for the entire duration of a benchmarking campaign.

The solid base plate allows easy and fast mounting into any kind of drive test car and provides a strong and sturdy frame for the Benchmarker 3.

## KEY FACTS

- ▶ Supports up to twelve QualiPoc probes
- ▶ Enhanced probe cooling due to forced air flow
- ▶ Compact design and simple handling
- ▶ Ultra-reliable system ensures efficient data collection
- ▶ Fully compatible with Benchmarker II, test containment modules (TCM) and vehicle roof box (VRB) systems





# BENEFITS AND KEY FEATURES

## Flexible, future-proof solution

- ▶ Perfect solution for extensive benchmarking campaigns
- ▶ Supports in-car and VRB solutions
- ▶ Future-proof without excluding the install base

## Perfect solution for extensive benchmarking campaigns

The Benchmarker3 is the perfect solution for extensive benchmarking campaigns. Thanks to its compact form factor and simple handling, it fits into all kinds of drive test cars. The Benchmarker3 car mounting kit with its quick-release fastener enables the Benchmarker3 solid base plate to be mounted in the car very quickly. Furthermore, in cases where the equipment cannot stay overnight in the vehicle, the Benchmarker3 can be quickly removed.

For large-scale benchmarking campaigns that require more than twelve channels, multiple systems can be interconnected.

The generic phone holder allows smartphones to be easily swapped or replaced with a newer model. Since new models are released every year, it is essential to be able to replace them in order to support the latest technology features. The generic mounting system of the Benchmarker3 enables the latest technology features and quality of service to be tested as soon as new devices are available. Since the same phone holder is used as in other mobile network testing (MNT) products such as the R&S®FR4, test mobiles can easily be moved from one system to the other.





### Supports in-car and VRB solutions

The Benchmark3 supports both in-car and VRB solutions for efficient data collection.

The Benchmark3 was designed and constructed using the extensive knowledge and many years of experience that Rohde&Schwarz SwissQual has in benchmarking. As a result, the Benchmark3 offers data collection in a very compact form factor and best-in-class cooling of test mobiles for in-car solutions. Keeping test mobiles in an acceptable temperature range is challenging and crucial. If the smartphones get too hot, they will throttle down

CPU performance to consume less energy, which of course has a severe impact on the collected data.

For use cases where test mobiles are hidden, the Benchmark3 offers an easy-to-mount and RF-neutral front cover.

For the VRB solution, the Benchmark3 supports the TCMs mounted to the VRB. This solution offers data collection outside of a car in TCMs featuring a thermal conditioning mechanism. This unique feature provides active cooling or heating inside the TCM and a forced airflow

Benchmark3 front cover  
hiding QualiPoc probes.



around the device itself. As a result, the sensor-controlled system ensures that all test devices operate at a stable and uniform temperature level even when TCM ambient temperatures vary.

To support TCMs and the VRB, the Benchmarker3 only requires the NUC based computing module and the USB and power conditioning unit. These two components take up very little space in the car.

### Future-proof without excluding the install base

The new Benchmarker3 is fully compatible with existing Benchmarker II systems.

Benchmarker II systems can easily be enhanced by a Benchmarker3 smart mounting wall to benefit from the improved probe cooling. These additional probes (up to 12) can be controlled by just one existing Benchmarker II computer slide-in module (CSM).

This demonstrates the enormous flexibility of the Benchmarker3, which is future-proof and scalable to meet the requirements of extensive benchmarking campaigns, but also enhances the existing install base with new features.



# ULTRA-RELIABLE AND EFFICIENT DATA COLLECTION

## TAKING RELIABILITY AND EFFICIENCY TO THE NEXT LEVEL

The new cooling concept for probes on the Benchmarker3 smart mounting wall offers best-in-class passive cooling. The forced air flow circulates from the back and from beneath the device, providing optimal passive cooling for all probes. This allows probes to be reliably operated under normal temperature conditions – even during long data collection campaigns. SmartBenchmarker controls the Benchmarker3 and its built-in pre-checks prevent a campaign from starting with a faulty configuration. This combination of dependable data collection hardware and an accurate software based configuration check increases reliability. Reliable data collection means fewer redrives, which in turn increases efficiency.

## BUILT TO LAST

The compact and robust Benchmarker3 is specifically designed for demanding drive test campaigns. The solid base plate enables easy mounting in drive test cars as well as a stable frame for the Benchmarker3 smart mounting wall. The handle on top makes it easy to carry the Benchmarker3 smart mounting wall. The power button switches on or shuts down the entire system, including connected probes. Even interconnected systems can be easily switched on or off by pressing just one of the power buttons.

The special RF-neutral material used to construct the Benchmarker3 is long-lasting and retains its properties for years.



Powerful computing module at the back of the Benchmarker 3.



# KEY BENEFITS OF THE ROHDE & SCHWARZ BENCHMARKING SOLUTION

## MEASURING QoS AND QoE FROM A REAL END-USER PERSPECTIVE

All quality of service (QoS) and quality of engineering (QoE) tests are performed directly on the probes and deliver the measurement results from a real end-user perspective. The built-in network performance score (NPS) campaign configurator on SmartBenchmarker allows users to create their own NPS campaign in line with the relevant standards.

The wide range of supported service tests on the probes includes numerous data tests, app service tests, voice quality and video streaming as well as the interactivity test to measure ultra-low latency.

## SEAMLESS DATA PROCESSING

The Rohde&Schwarz benchmarking solution offers efficient data collection, seamless data processing and automated insights and reports.

Benchmarker3 plays a key role in data collection, providing reliable and accurate measurements of QoS and QoE from a real end-user point of view.

SmartMonitor, the web based fleet monitoring application, offers remote configuration and remote monitoring of benchmarking systems, enabling experts to supervise ongoing campaigns or remotely support teams that are on site.

An automated service running in the background is responsible for moving measurement files from the file server to the postprocessing server, triggering the import into the postprocessing database and creating predefined reports. This allows the experts to focus on their main tasks – defining and configuring measurement campaigns and analyzing the collected data.

SmartAnalytics, the web based postprocessing application, provides powerful and intuitive insights from collected data. It delivers a precise and clear assessment of the operator's own network quality (QoE from the end-user perspective) and competitive position in the market. Furthermore, it visualizes the principle factors influencing network performance and QoE, including the context, development trends, problems and possible degradation causes.

# SPECIFICATIONS IN BRIEF

## Specifications in brief

### Environmental conditions

Operating conditions	temperature range	-10 °C to +50 °C; For system startup, the temperature must be higher than 0 °C. The maximum operating temperature is lowered by the maximum operating temperature of the UEs and devices used. For typical smartphones, the maximum system operating temperature is lowered to +30 °C.
	relative humidity	< 95 % (non-condensing)
Storage conditions	elevation	0 m to 2000 m (0 ft to 6500 ft)
	environment	in-vehicle and indoor
	temperature range	-10 °C to +55 °C
	relative humidity	< 95 % (non-condensing)
	elevation	0 m to 2000 m (0 ft to 6500 ft)
	environment	indoor

### Power rating

Supply voltage	DC	11.5 V to 16.8 V DC, max. 250 W (depending on configuration)
Power consumption during operation	BM3-SWML equipped with NCM4 and 12 x UEs performing a real measuring task	typ. 80 W

### Product conformity

Electromagnetic compatibility (EMC)	EU: in line with Radio Equipment Directive 2014/53/EU, UKCA: inline with Electromagnetic Compatibility Regulations 2016	applied harmonized standards: ▶ EN 55032: 2015 ▶ EN 55035: 2017 ▶ EN 50498: 2010 ▶ EN 301 489-1 V2.2.3 ▶ EN 301 489-17 V3.2.4 ▶ EN 301489-19 V2.1.1
	Electrical safety	EN 61010-1: 2010
Restriction of the use of hazardous substances	EU: inline with Low Voltage Directive 2014/35/EU, UKCA: inline with Electrical Equipment (Safety) Regulations 2016	EN 61010-1: 2010
		international IEC 61010-1: 2010, CB approval
	EU: in line with 2011/65/EU and 2015/863/EU, UKCA: inline with Restrictions of Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2021	applied harmonized standard: EN 63000:2018
Safety		IEC/EN61010-1: 2010, CB approval
Health		EN 62311:2008
Automotive		EN 50498:2010
Shock		EN 60068-2-27, 30 g shock spectrum/6 ms
Bumps		EN 60068-2-27, 15 g shock spectrum/6 ms
Vibration		EN 60068-2-64, PSD = 2 m <sup>2</sup> /s <sup>3</sup> at f = 4 Hz to 40 Hz, -6 dB/oct at f > 40 Hz

### Dimensions and weight

Dimensions	BM3-SMWL	
	height	
	with handle	526 mm
Weight	width	
	without quick mount kit	650 mm
	with quick mount kit	692 mm
	depth	
	base	211 mm
	with front cover	225 mm
	BM3-SWML	6.4 kg
	without UEs, scanners, NCMx, front cover	
	+ 12 UEs	approx. 8.8 kg
	+ 12 UEs + NCMx	approx. 9.3 kg
	+ 12 UEs + NCMx + TSME6	approx. 9.8 kg
	BM3, front cover	1.1 kg

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- ▶ Customized and flexible
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- ▶ 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](http://www.rohde-schwarz.com)

**Mobile network testing**

The company's broad and diverse product portfolio for mobile network testing addresses every test scenario in the network lifecycle – from base station installation to network acceptance and network benchmarking, from optimization and troubleshooting to interference hunting and spectrum analysis, from IP application awareness to QoS and QoE of voice, data, video and app based services.

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