

FREERIDER BACKPACK SYSTEM GENERATION 4

Walk testing with maximum flexibility



Product Brochure
Version 03.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The Freerider backpack system generation 4 is a compact, lightweight solution for walk test and drive test campaigns. Supporting up to 12 test mobile phones and high-performance scanner measurements (including 5G millimeterwave and LTE 4x4 MIMO), it is ideal for network optimization, benchmarking and cellular network analysis.

To ensure maximum autonomy, the Freerider backpack system generation 4 is equipped with an intelligent voltage supply with one to eight batteries that can be hot swapped. The integrated Ethernet switch and optional USB hub allow R&S®TSMx6 scanners and QualiPoc mobile phones to be connected and charged. A light, yet water-resistant coating with air passages and silent fans allows the backpack to be used in a wide range of climates. The carrying straps can be individually adjusted to offer the best wearing comfort. An external tablet or laptop can be used to wirelessly control the measurement application running on an R&S®TSMA6B autonomous mobile network scanner or R&S®NCM4 compact integrated PC.

Key facts

- ▶ Modular and future-proof for network optimization, benchmarking and cellular network analysis
- ▶ Supports up to 12 test mobile phones
- ▶ Supports 5G NR, including millimeterwave
- ▶ Compact and lightweight
- ▶ Designed for all environmental conditions



Freerider CORE inside the R&S®FR-BP backpack, with external tablet

BENEFITS AND KEY FEATURES

Flexible solution

- ▶ Ideal backpack solution for your application
- ▶ Supports all Rohde&Schwarz drive test applications
- ▶ [page 3](#)

Wide range of supported measurements

- ▶ Extensive test mobile phone support
- ▶ Unrivalled scanner support
- ▶ [page 4](#)

Professional platform for everyday use

- ▶ Designed for usability and reliability
- ▶ Designed for the toughest environmental conditions
- ▶ [page 5](#)

FLEXIBLE SOLUTION

Ideal backpack solution for your application

Mobile traffic data is exploding. Globally, it has doubled in recent years, especially in indoor locations such as shopping malls, stadiums, event halls, pedestrian zones, airports and trains. For network operators, such indoor or confined venues are extremely challenging because they require a denser network of endpoints and a higher number of base stations. The Freerider backpack system generation 4 is the ideal solution to easily and comfortably test such demanding locations.

It is not always possible to deploy dedicated drive test vehicles. With the Freerider backpack system generation 4, a complete and compact drive test system can be temporarily installed in a rental car, significantly reducing the setup time for measurement campaigns. The sturdy construction is shock and vibration proof in line with automotive standards and can be used in any vehicle type.

Supports all Rohde & Schwarz drive test applications

- ▶ ROMES drive test software for in-field optimization
- ▶ SmartBenchmarker for benchmarking tests
- ▶ R&S®NESTOR cellular network analysis software

The future-proof Freerider backpack system generation 4 supports the latest 5G networks as well as legacy technologies such as GSM, UMTS and LTE. Devices such as scanners and test mobile phones can be added or upgraded in the field.

WIDE RANGE OF SUPPORTED MEASUREMENTS

Extensive test mobile phone support

The Freerider backpack system generation 4 supports up to 12 test mobile phones, which can be charged via the optional, integrated USB hub. A specially designed mount with quick-release function makes it easy to detach the mobile phones, for example to exchange SIM cards. Depending on the number of test mobile phones, the position of the phones can easily be changed to meet campaign requirements.

Unrivaled scanner support

Full support of the R&S®TSMx scanner family:

- ▶ R&S®TSMA6B autonomous mobile network scanner
- ▶ R&S®TSME6 ultracompact drive test scanner
- ▶ R&S®TSME44DC and R&S®TSMS53DC ultracompact downconverters

The Freerider backpack system generation 4 fully supports GSM, WCDMA, CDMA2000®, 1xEV-DO, WiMAX™, LTE, NB-IoT, LTE-M, PowerScan RF, CW channel power scan and 5G NR. For 5G NR millimeterwave, it offers a measurement bandwidth of up to 100 MHz. LTE MIMO measurements support up to 4x4 MIMO configurations. Scanner antennas are integrated into the backpack design with neat cable guides and optimized antenna positions, for example with dedicated antenna rods for millimeterwave measurements above the user's head.



Freerider CORE with eight QualiPoc mobile phones

PROFESSIONAL PLATFORM FOR EVERYDAY USE

Designed for usability and reliability

To ensure maximum autonomy, the Freerider backpack system generation 4 is equipped with an intelligent voltage supply with one to eight batteries that can be hot swapped. With four batteries, a measurement duration of more than four hours is possible (equipped with one R&S®TSMA6B and four test mobile phones). The batteries can be charged inside the backpack and do not have to be removed for charging. Alternatively, the system can be operated from the AC power supply (included in scope of delivery) or in a car with the optional DC/DC converter. The entire system can be started or shut down with a central power button.

The backpack can be operated from a tablet or laptop via Wi-Fi® to control the measurement application running on a built-in PC (R&S®NCM4) or an R&S®TSMA6B scanner. A cabled LAN or USB connection is also possible via the integrated LAN switch or optional USB hub.

Since measurement days can be long, the Freerider backpack system generation 4 has been designed with user ergonomics and weight reduction in mind. The carrying straps and hip belt can be individually adjusted to offer the best wearing comfort. The compact design allows free movement even in crowded or narrow locations. A typical measurement configuration (one R&S®TSMA6B and four test mobile phones) weighs less than 7.9 kg.

Designed for the toughest environmental conditions

The system has been designed for indoor and outdoor use. Active ventilation with silent fans allows operation in hot climates. The coating protects the backpack against splash water ingress in rainy conditions, and the light color of the coating minimizes the impact of solar radiation.



View of inside with QualiPoc, R&S®NCM4 compact integrated PC and R&S®TSME6 ultracompact drive test scanner

SPECIFICATIONS IN BRIEF

Specifications in brief

Environmental conditions

Temperature	operating temperature range	0°C to +50°C
	permissible temperature range	-10°C to +55°C ¹⁾
	storage temperature range	-10°C to +55°C

Damp heat +25°C/+55°C, < 95% relative humidity, cyclic, noncondensing, in line with EN 60068-2-14

Connectors		power input, 5 × LAN, 16 × USB (optional)
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Power rating

Supply voltage	DC	16 V to 19 V
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Power consumption during operation	equipped with R&S [®] NCM4, 2 × R&S [®] TSME6, 8 × UEs performing a real measuring task	typ. 90 W
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Maximum inrush current		11 A at 19 V
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Product conformity

Electromagnetic compatibility	EU: in line with EMC directive 2004/108/EC	applied harmonized standards: EN 55032/EN 61326-1 (home location, class B), EN 55024, EN 61000-6-2/EN 61326 (industrial location, class B)
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Electrical safety	EU: in line with directive 2014/35/EC	EN 61010-1
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	USA	UL 61010-1
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Dimensions and weight

Dimensions	Freerider CORE	485 mm × 356 mm × 146 mm (19.1 in × 14.0 × 5.8 in)
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	Freerider CORE and R&S [®] FR4-EXTEND extension kit	485 mm × 356 mm × 191 mm (19.1 in × 14.0 × 7.5 in)
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Weight	depends on installed devices	
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	Freerider CORE (without devices and batteries)	approx. 3.2 kg (7.1 lb)
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	Freerider CORE and R&S [®] FR4-EXTEND extension kit (without devices and batteries)	approx. 4.0 kg (8.8 lb)
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	1 × R&S [®] TSMA6B and 4 × test mobile phones	approx. 7.9 kg (17.4 lb)
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Software	only one can be installed	optimized for the software applications: ▶ ROMES ▶ SmartBenchmark ▶ R&S [®] NESTOR
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¹⁾ The maximum operating temperature may be lowered by the maximum stable operating temperature of the installed UEs and devices.

ORDERING INFORMATION

Designation	Type	Order No.
Base unit (including accessories supplied such as power cable, manual)		
Freerider CORE	R&S®FR4-CORE	1900.6403.10
Scope of delivery: battery management and power distribution, LAN switch, fans, internal case, AC power supply		
Hardware options		
Extension kit	R&S®FR4-EXTEND	1900.6403.11
Mounting kit, for UE	R&S®FR4-MK-UE	1900.6403.14
Mounting kit, for UE9 to UE12	R&S®FR4-MK-912	1900.6403.15
UPC4 USB hub	R&S®FR4-MK-HUB	1900.6403.18
Mounting kit, for R&S®NCM4	R&S®FR4-MK-N3	1900.6403.38
Mounting kit, for R&S®TSM A6B	R&S®FR4-MK-A6	1900.6403.13
Mounting kit, for R&S®TSME6	R&S®FR4-MK-E6	1900.6403.16
Backpack, for R&S®FR4-CORE	R&S®FR4-BP	1900.6403.20
Backpack, for R&S®FR4-CORE and R&S®FR4-EXTEND	R&S®FR4-BP-EXT	1900.6403.21
Lithium-ion battery pack	R&S®FR3-BA89WH	1900.5794.02
External accessories (e.g. antenna, cables)		
ISOFIX car mounting kit	R&S®FR4-ISOFIX	1900.6403.27
Transportation case	R&S®FR4-TRCASE	1900.6403.28
Synchronization cable, for two R&S®TSME6	R&S®FR4-SC-2FD	1900.6403.24
Synchronization cable, for four R&S®TSME6	R&S®FR4-SC-4FD	1900.6403.25
Synchronization cable, for five R&S®TSME6 and one R&S®TSMS53DC	R&S®FR4-SC-6FD	1900.6403.26
Single-port ultrawideband antenna, 698 MHz to 6000 MHz	R&S®TSME-Z10	4900.1917.02
Antenna holder, for R&S®TSME-Z10	R&S®FR4-MK-Z10	1900.6403.22
Three-port antenna, 698 MHz to 2690 MHz (MIMO) and GPS	R&S®TSME-Z11	4900.1923.02
Antenna holder, for R&S®TSME-Z11	R&S®FR4-MK-Z11	1900.6403.23
Antenna for 5G, 17 GHz to 70 GHz	R&S®FR4-5G-A3	1900.6403.42
Vehicle power supply (16 V DC, 120 W)	R&S®FR3-VPS	1900.5794.08

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- ▶ 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 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

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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