DATA SHEET

Nemo Backpack

Reduce Indoor and Outdoor Benchmarking Testing Costs

Nemo Backpack is a compact and cost-effective benchmarking solution for indoor and outdoor use with Nemo Outdoor. With high quality lithium-ion batteries, Nemo Backpack can be used as a standalone system without an external power source. When mounted on a vehicle, an external +12 V power source can be used to power up the devices or charge batteries. Perform benchmarking measurements on several technologies and networks simultaneously with support for up to twelve test handsets or USB modems and 1-2 scanner receivers. Furthermore, together with the Nemo Outdoor Multi option, the system allows the simultaneous use of different combinations of measurement modes, such as, voice calls, voice quality calls, and data transfers. The system is connected to a Tablet PC or a laptop.

Features

- Flexible - use as a standalone system without an external power source or mounted on a vehicle with an external +12 V DC power source
- Lightweight and ergonomic – a custom-made, high-quality backpack
- Compact - carry on most aircraft as hand luggage
- Built-in lithium-ion battery packs - perform long measurement campaigns
- Hot-swappable batteries
- Audible low voltage warning
- High-quality industrial USB 3.0 hubs
- Use with up to twelve UEs and with the following scanning receivers:
  - Nemo FSR1, 1pcs
  - PCTEL EXflex, 1 pcs
  - PCTEL IBflex, 1 pcs
  - R&S TSME, 2 pcs
- Standard compliance and safety testing

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Technical Specifications

Computer requirements

- PC (IBM or Dell recommended) with Windows 7 (32/64 bit), Windows 10 (64 bit)
- For multi-data and voice quality measurements Intel Quad Core processor i7 2.26 GHz or higher recommended
- 512 MB RAM minimum, 1 GB RAM recommended
- 100 MB of free hard disk space for installation and use, 1 GB recommended

Interfaces

- Two USB 3.0 compliant B port (In)
- 14 USB 3.0 compliant ports (Out)
- Main power switch/LED
- Neutrik +12 V DC lockable power connector
- Two +12 V DC regulated auxiliary outputs (7 A combined)

Power specifications

- Input: +12 V DC nominal (10 – 17 V DC range), max 15 A
- Battery capacity: 3 x Lithium-ion 6.8 Ah, 73 Wh (total 20.4 Ah)
- Battery low voltage warning. Audible warning approx. 5 minutes before batteries are running out
- Charging indicators

Supported devices

- Test terminals and modems with USB ports (1-12)
- USB GPS receivers
- 1-2 scanner receivers

Measurement and benchmarking capabilities

- Voice connections: up to twelve networks
- Voice quality: up to twelve networks connections. Requires Nemo Active Testing Application (NATA) with smartphones.
- Data connections: up to twelve networks. Requires NATA with smartphones.
- Terminals and technologies:
  - Supports more than 200 test devices, including USB modems and Samsung and Qualcomm-based terminals
  - Supports any combination of technologies ranging from GSM to 5G NR

Standards Compliance

The product complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EU

EMC standard compliance tests

- IEC 61326-1:2012 / EN 61326-1:2013
- CISPR 11:2009+A1:2010 / EN 55011:2009+A1:2010
- IEC 61000-4-2:2008 / EN 61000-4-2:2009
- IEC 61000-4-3:2006+A1:2007+A2:2010 / EN 61000-4-3:2006 +A1:2008+A2:2010
- IEC 61000-4-4:2004+A1:2010 / EN 61000-4-4:2004+A1:2010
- IEC 61000-4-5:2005/ EN 61000-4-5:2006
- IEC 61000-4-6:2008 / EN 61000-4-6:2009
- IEC 61000-4-8:2009 / EN 61000-4-8:2010
- IEC 61000-4-11:2004 / EN 61000-4-11:2004
- CISPR 25
- ISO 7637-2:2011

Safety testing

- IEC 61010-1:2010 / EN 61010-1:2010

RoHS

- EN 50581:2012

Accessories

Standard accessories

- Nemo Backpack accessory kit
  - Shoulder bag
  - 110 V/220 V AC/DC power supply with power cords (EU, UK and US)
  - Adapter cable for power supply
  - +12 V DC power cable
  - 1 x USB memory and dongle key
  - Data cable set

Optional accessories

- Nemo Backpack optional power kit doubles the measurement time. It includes the following items:
  - 3 x NF2040HD34 Lithium-ion batteries (10.8 V, 6.8 Ah)
  - Desktop quick charger/calibration 1-bay CH4000 with 60 W power supply and power cords (EU, UK, and US)
  - Desktop quick charger/calibration 2-bay CH4040 with 60 W power supply and power cords (EU, UK, and US)

Backpack

Backpack operating temperature

- For Nemo Backpack: -10 to +40°C
- For Tablet PC and UEs, please check the operating temperatures from the device vendors.

Dimensions

- Exterior 64 x 23 x 35 cm/25.2 x 9 x 13.8” (H x D x W)
- Volume ~51.5 liters (3145 cu in)
- Shoulder bag
  - Exterior 28 x 22 x 30 cm (11 x 9 x 12”)
  - Volume ~18 liters (1098 cu in)

Weight

- Weight includes batteries (3 pcs).

Hardware configuration	Weight
Backpack system without test devices, computer and accessories	~8.5 kg (18.7 lb)
Backpack system with six test devices in measuring condition including Windows laptop	~11.3 kg (24.9 lb)
Backpack system with six test devices and one TSME scanner in measuring condition including laptop	~11.9 kg (26.2 lb)
Backpack system with nine test devices and two TSME scanners in measuring condition including laptop	~12.6 kg (27.8 lb)
Accessory kit with shoulder bag	~2 kg
Accessory and optional power kit with shoulder bag	~4.6 kg

Batteries

Maximum measurement duration

- Max measurement duration measured in room temperature 22°C (72°F) until test devices shut down using batteries. UEs in dedicated mode during the test running voice, FTP and YouTube.
- Max measurement duration varies depending on device configuration, operating temperature, cellular technology, network quality and used data protocol. Measurement duration times exclude control PC. With hot-swappable batteries measurement duration can be doubled with an optional power kit.

Hardware configuration	Maximum measurement duration
9 x UE (Samsung Galaxy S8)	7 hours
9 x UE (Samsung Galaxy S8) + Nemo FSR1 scanner with two tunable down converters	2 hours
9 x UE (Samsung Galaxy S8) + PCTEL IBflex scanner	3 h 30 min
9 x UE (Samsung Galaxy S8) + R&S TSME scanner	3 h 30 min

Smart lithium-ion battery specifications

- Lithium-ion 10.8 V 6.8 Ah, 73 Wh (NF2040HD34),
- Cut off voltage 7.2 V
- Weight 342 g (12.1oz)
- Storage temperature limits -20 to +60°C (-4 to 140°F)
- Battery capacity LCD indicators
- The battery complies with the following:
  - EMC directive 2006/95/EC
  - Low voltage directive 2004/108/EC
  - Battery recycling directive 2006/66/EC as amended
  - RoHS directive 2002/95/EC
  - The battery has been tested in accordance with the UN Manual of tests and Criteria part III subsection 38.3 (ST/SG/AC.10/11/Rev.3) more commonly known as the UN T1-T8 Transportation tests; and has been found to comply with the stated criteria. [USDOT-E7052].
- The battery has the following approvals:
  - CE [EN55022:2006 (ITE Class B) & EN55024:1998 (ITE)]
  - FCC Part 15 Class B
  - The battery warranty period is one year from the date of shipment
- Battery charging duration

Charging device	Recharge times
AC/DC power supply/charger	~4 hours
Desktop quick charger/calibration CH4000/CH4040	~3.5 hours

Verified Multi Configurations

The following multi device configurations have been verified by Nemo Wireless Network Solutions. Please consult our customer support before measuring with some other multi configuration.

Device	Max no of devices
Samsung Galaxy S7 SM-G9300	9
Samsung Galaxy S8 SM-G950F	9
Samsung Galaxy S9 SM-G960F	9
Samsung Galaxy S9 SM-G960U, U1, W	9
Sony Xperia XZ Premium G8141	9
Sony Xperia XZ Premium G8142	9
Samsung Galaxy S10 SM-G973F (6 pcs) + Samsung Galaxy S9 SM-G960F (6 pcs)	12

Ordering Information

Ordering number	Description
NTA10006A	Nemo Backpack 3z
	Nemo Backpack supporting up to twelve test devices and 1-2 scanning receivers
	Scanner mounting options
NTA10006A-100	Nemo FSR1 scanning receiver
NTA10006A-102	PCTEL EX scanning receiver
NTA10006A-103	PCTEL EXflex scanning receiver
NTA10006A-106	PCTEL IBflex scanning receiver
NTA10006A-107	Rohde & Schwarz TSME 1 pcs
NTA10006A-108	Rohde & Schwarz TSME 2 pcs
NTA10007A	Nemo Backpack optional power kit
	Lithium-ion batteries 3 pcs Desktop quick charger/calibration 1- bay CH4000A with power supply and power cords (EU, US, and UK) Desktop quick charger/calibration 2- bay CH4040 with power supply and power cords (EU, US, and UK)
NTG10006A	Windows tablet PC, Lenovo Thinkpad Yoga 260 or similar

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