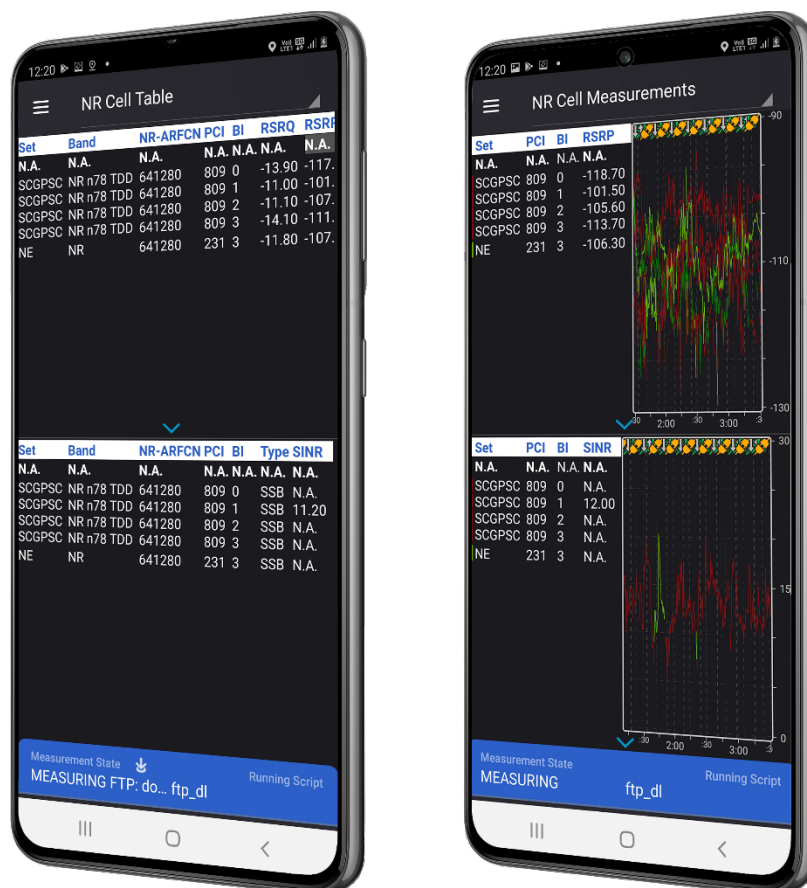# Nemo Handy

Fast and Efficient on the Go Network Measurement and Troubleshooting

Nemo Handy provides you with smart and discreet solutions for thorough and advanced measurement and optimization of the wireless air interface and mobile application Quality-of-Service (QoS) and Quality-of-Experience (QoE). The handheld Nemo Handy products are highly suitable for performing measurements both outdoors and in busy, crowded indoor spaces while being simultaneously used as a regular mobile phone.

Nemo Handy products provide you with the best real-time measurement visualization on the handheld market. In addition to a rich variety of real-time displays, all RF and signaling data is logged to the phone's internal storage. Log files are made available in Nemo file format for easy post-processing with Nemo post-processing tools or third-party post-processing tools.

Improve Your Wireless Network Measurements

Make outdoor and indoor wireless network measurements with a smart and inconspicuous application installed on the latest Android-based devices, such as Samsung Galaxy S23 5G, Samsung Z Flip4, and Sony Xperia 1 IV.

- Create complex measurement scripts more easily and effectively

- Reduce test time with the intuitive user interface

- Verify the end-user QoE (Quality of Experience) with a wide range of data-testing capabilities:

    - voice call testing, voice quality testing, FTP and HTTP data transfer testing, HTML browsing, email testing, iPerf testing, TWAMP testing, ping testing, SMS & MMS messaging testing, external application launch testing, mScore testing, and video quality testing

    - social media testing apps/protocols, including YouTube video and live video streaming, Facebook testing, Twitter testing, LinkedIn testing, Instagram testing, Dropbox testing, Google Drive testing, WhatsApp testing, Line testing, BiP Messenger testing, Viber testing, and Zalo testing

- Navigation application providing turn-by-turn instructions for your drive test campaigns (optional)

- Perform large-scale site acceptance projects with the optional Nemo Handy Site Acceptance Edition together with Nemo Cloud

- Perform audio quality tests (POLQA versions 2 and 3)

- Combine scanning and indoor measurements with portable, battery-operated PCTEL Gflex™ / IBflex™ / HBflex™ and R&S®TSMA6 Autonomous Mobile Network scanners

- Streamline operations and improve responsiveness with the Nemo Cloud option, a cloud-based platform for centralized remote control

- Create fast and efficient reports in the field with the Nemo Instant Report option

- Available in the following product editions: Nemo Handy Field Test (FT), Nemo Handy Basic, Nemo Handy Pro, Nemo Handy Pro+, Nemo Handy Lite, Nemo Handy Autonomous, Nemo Handy Work Order, Nemo Handy Site Acceptance, and Nemo Handy SSV (Single Site Verification)

5G NR Support

The 5G NR support in Nemo Handy enables operators and network vendors to test the advanced features and performance of 5G NR networks in busy and crowded indoor spaces. Nemo Handy enables both non-standalone (NSA) and standalone (SA) measurements in 5G NR. In addition, carrier aggregation support is available as an extra option.

Currently, Nemo Handy supports 5G NR measurements with the latest Qualcomm (up to X70) and Samsung Shannon chipset-based devices, pending device availability. The collected metrics include RACH information, TX power, rank (MIMO mode), modulation, MAC throughput and BLER, signal strength, and quality metrics of the SSB beams. In addition, Nemo Handy collects QoS measurements including throughput and latency. For 5G testing, an instant report template with support for 5G NSA measured is also available.

Measure and monitor

- 5G NR with the latest Qualcomm (X70) and Samsung Shannon chipset-based devices
- 5G NR NSA/SA
- 5G Carrier Aggregation
- LTE/LTE-A
- Legacy technologies from 2G to 4G
- WiFi, WiFi 6

Full Measurement Functionality with New Commercial Smartphones

Nemo Diagnostic Module can be carried in a compact hip belt with a wired connection to the phone

The accelerated pace of new 5G smartphone launches creates the need to quickly test with new devices in the network. Nemo Handy together with the external Nemo Diagnostic Module (NDM) enables full measurement functionality with commercial off-the-shelf smartphones. No special firmware or rooting is needed.

The measurement solution supports all Samsung and Qualcomm chipset-based phone models and is reusable over new phone models, hence there are no additional costs when changing the phone. Up to two Nemo Handy units can be connected to the NDM at the same time. Note that the external diagnostics port (USB) must be enabled on the used phone model and a driver on the NDM HW needs to be available.

The license for voice quality testing using POLQA is associated with the NDM, therefore, the same license can be used when changing the phone. Voice quality testing complies with ITU-T specified recommendations for voice quality analysis of HD voice in 4G and 5G networks. Voice quality testing is performed with the optional Nemo Intelligent Device Interface (NIDI). Both analog and digital (Bluetooth) methods are supported.