Anite

NEMO

HANDY-A

PRODUCT DESCRIPTION

Nemo Handy-A 1.50 is an Android-based solution for measuring and monitoring the air interface of GSM, CDMA, EVDO, WCDMA, HSDPA, HSUPA, HSPA+, LTE, and WiFi wireless networks, and mobile application QoS/QoE. Nemo Handy-A features include POLQA voice quality testing, indoor measurements, HTML testing with real web browser, and live outdoor map support with BTS icons. Nemo Handy-A ***provides you with the best real-time measurement visualization on the handheld market***. Nemo Handy-A's extensive application testing features offer full application level metrics on voice calls, voice quality, FTP/HTTP data transfers, HTML browsing, YouTube video streaming, SMS messaging, and ping.

Nemo Handy-A measurement data ***provides you with a complete and detailed picture of the radio interface and the quality of the tested applications***. The detailed and comprehensive radio interface data recorded with Nemo Handy-A is optimal for network planning, roll-out, tuning, verification, optimization, and maintenance. The application performance metrics are vital in mobile service benchmarking and QoS/QoE evaluation. Continuous recording of radio interface metrics ensures that the reasons for less than satisfactory service quality can always be found.

Nemo Handy-A can be used either as a regular phone with the application logging in the background, or as an active measurement tool with real-time data. Nemo Handy-A's small size and extensive measurement capabilities make it also the ideal tool for performing indoor and outdoor measurements. Nemo Handy-A logs and displays geographical coordinates using the mobile's internal GPS receiver.

All network parameters supported by the terminal's mobile trace interface, including signaling messages, are logged and made available for playback with Nemo Outdoor and for post-processing with Nemo Analyze. However, Nemo Handy-A's ***full and proven compatibility with third-party tools*** enables also post-processing with any other tool supporting the Nemo file format.

CONFIGURATIONS

The Nemo Handy-A package includes a smartphone with the Nemo Handy-A software and the Nemo File Manager.

EU PLATFORMS

- ***HTC One XL:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/1900/2100 MHz (DL 21.1/UL 5.76), LTE: 1800/2600 MHz
- ***HTC One S:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/2100 MHz (DL 21.1/UL 5.76)
- ***Samsung Galaxy Tab 8.9 LTE:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/1800/2600 MHz
- ***Samsung Galaxy S II LTE I9210:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/1800/2600 MHz
- ***Samsung Galaxy S III LTE GT-I9305 (Telia):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/1800/2600 MHz
- ***Samsung Galaxy Note II LTE GT-N7105 (M1):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/900/1800/2600 MHz
- ***Samsung Galaxy Note LTE 10.1 N8020: GSM:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz, LTE: 800/900/1800/2600 MHz (E-UTRA bands 20, 8, 3, 7)

US PLATFORMS

- ***HTC Inspire 4G:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900 MHz (DL 21.1/UL 5.76)
- ***HTC Sensation 4G:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 900/AWS MHz (DL 21.1/UL 5.76)
- ***HTC Vivid/Raider:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz (DL 21.1/UL 5.76), LTE: 700/AWS MHz
- ***HTC Amaze:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/AWS/1900/2100 MHz (DL 42.2/UL 5.76)
- ***HTC Rezound:*** CDMA/1xEVDO 800/1900 MHz (Rev. A, 3.1), LTE 700 MHz
- ***Samsung Galaxy S II Skyrocket i727:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz (UL 21.1/DL 5.76), LTE: 700/AWS MHz
- ***Samsung Galaxy Tab 8.9 LTE:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz (UL 42.2/DL 5.76), LTE: 700/AWS MHz
- ***Samsung Galaxy S III SGH-T999 (T-Mobile):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100/AWS MHz (DL 42.2/UL 5.76)
- ***Samsung Galaxy S III LTE SGH-I747 (AT&T):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz (DL 42.2/UL 5.76), LTE: 700/AWS MHz
- ***Samsung Galaxy S III LTE SGH-I747M (Bell, Telus):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/1900/2100 MHz (DL 42.2/UL 5.76), LTE: 700/AWS MHz
- ***Samsung Galaxy S III (SGH-I535, Verizon):*** CDMA/1xEVDO 850/1900 MHz (Rev. A), LTE 700 MHz
- ***Samsung Galaxy S III LTE (SPH-L710, Sprint):*** GSM 850/900/1800/1900 MHz, CDMA/1xEVDO 850/1900 MHz (Rev. A), LTE 1900 MHz

SEAP PLATFORMS

- ***HTC Velocity:*** GSM 850/900/1800/1900 MHz, HSPA/WCDMA 850/2100 MHz (DL 42.2/UL 5.76), LTE 1800 MHz
- ***Samsung Galaxy Tab 8.9 LTE:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/2100 MHz (DL 42.2/UL 5.76), LTE: 1800/2600 MHz
- ***Samsung Galaxy S II 4G GT-I9210-T:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/2100 MHz (DL 42.2/UL 5.76), LTE: 1800/2600 MHz
- ***Samsung Galaxy S III LTE GT-I9305 (M1, Optus):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/1800/2600 MHz
- ***Samsung Galaxy Note LTE GT-N7005:*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 900/2100 MHz (DL 42.2/UL 5.76), LTE: 1800/2600 MHz
- ***Samsung Galaxy Note II LTE GT-N7105 (M1):*** GSM: 850/900/1800/1900 MHz, HSPA/WCDMA: 850/900/2100 MHz (DL 42.2/UL 5.76), LTE: 800/900/1800/2600 MHz

EDITIONS

- ***Nemo Handy-A Field Test***
- ***Handy-A***
- ***Nemo Handy-A Pro***

	Nemo Handy-A FT	Nemo Handy-A	Nemo Handy-A Pro
GPS support (internal)	✓	✓	✓
Manual FTP transfer	✓	✓	✓
Voice call testing	✓	✓	✓
System lock	✓	✓	✓
Band lock	✓	✓	✓
Preferred UMTS carrier lock	✓	✓	✓
WiFi testing	✓	✓	✓
Data logging		✓	✓
HTTP testing		✓	✓
HTML testing		✓	✓
YouTube testing		✓	✓
SMS testing		✓	✓
ICMP ping		✓	✓
Iperf testing			✓
IP capture			✓
Scripting support			✓
Application testing with scripts1)			✓
Indoor map			✓
Outdoor map			✓
BTS file			✓
Playback			✓

1) Includes voice calls, FTP/HTTP data transfers, HTML browsing, YouTube testing, SMS messaging, and ping.

OTHER OPTIONAL FEATURES

These optional features require the Nemo Handy-A Pro edition.

- Voice quality (POLQA)
- Automated testing

NEMO HANDY KEY BENEFITS

Technological leader – Nemo Handy has set the standard for handheld network measurement devices since 2005 and continues to do so today as the most widely deployed handheld measurement tool in the world.

Cost-effectiveness – Nemo Handy's extensive measurement capabilities and benefits come incorporated in a small mobile terminal that is highly suitable for performing measurements both outdoors and in busy and crowded indoor spaces. Nemo Handy is your regular phone and measurement tool in one device.

Comprehensive logging – All network parameters supported by the terminal's mobile trace interface, including signaling messages, are logged and made available for post-processing.

Ease of use – Intuitive user interface makes all operations from timeslot testing to creating complex measurement scripts time-effective and easy.

Vendor independence – Full and proven compatibility with third-party tools.

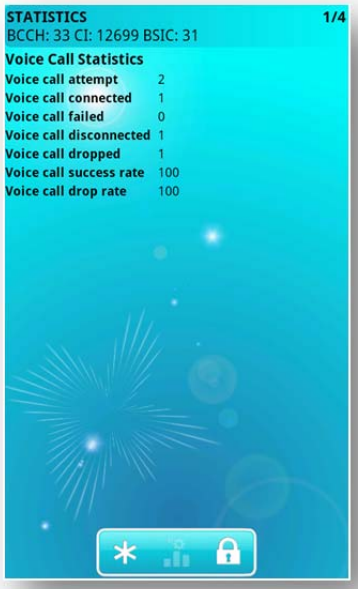
NEMO HANDY-A KEY FEATURES

- Android-based application
- Supports GSM, CDMA, EVDO, WCDMA, HSDPA, HSUPA, HSPA+, LTE, and WiFi measurements
- Automated service testing with scripts: voice call, voice quality, FTP and HTTP data transfers, Iperf, HTML browsing, YouTube video streaming, SMS messaging, and ping
- Support for POLQA voice quality testing both in uplink and downlink directions; mobile to mobile and mobile to server; and real-time MOS calculation (optional)
- HTML testing with real web browser
- System lock, band lock, and preferred UMTS carrier lock
- Optional automated testing mode
- Scripts can be created and modified with Nemo Handy-A's built-in script editor
- Supports the following view types: line, bar, and gauge graphs, and text views
- Real-time statistics
- L3 signaling messages can be decoded in Nemo Handy-A UI
- Graphical and customizable user interface
- Enables collecting geographical coordinates with the internal GPS receiver
- Time and speed display using the internal GPS receiver
- Indoor map with markers and geodetic coordinates (support, for example, for iBwave format)
- Walk guidance in indoor measurements
- Live outdoor map with BTS file support
- Playback for viewing measurement files after measurements. Also indoor measurements can be played back on an indoor map.

REAL-TIME DATA VIEWS AND USER INTERFACE

Nemo Handy offers a graphical user interface that has been optimized for small screen devices. A wide range of predefined data views is included.

Application testing and RF parameter displays can be viewed simultaneously. Application QoS/QoE statistics are displayed in real time for all of the supported applications.



The real-time results of both manual and script-aided testing can be monitored throughout the duration of the connection via various data views, such as text and grid views, bar, line, and gauge graphs.

Bar and line views display parameters in both numerical and graphical format. Line graph scales change according to the selected parameter. Automatic scaling is also possible. Bar graph scales can be displayed for each bar simultaneously. Integer parameters can be displayed either in decimal or in octal format.

APPLICATION TESTING

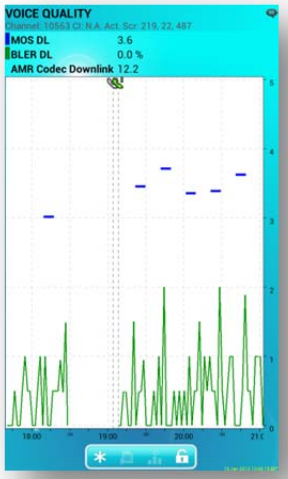
Nemo Handy-A supports built-in application testing options. It is possible to test voice calls, voice quality, FTP and HTTP data transfers, HTML browsing, YouTube video streaming, Iperf, ping, and SMS messages manually and with scripts. The QoS/QoE KPIs logged by Nemo Handy-A include connection setup delay, download time, time-to-content delay, throughput, etc.

VOICE CALLS

Nemo Handy-A offers support for manual and scripted voice call testing. Voice call related measurement events stored in the Nemo Handy-A log file include call attempt, call connect success, call disconnect, and call failed.

VOICE QUALITY TESTING

Nemo Handy-A supports voice quality measurements based on the POLQA (ITU-T Rec. P.863) algorithm. VQ testing can be performed both in uplink and downlink directions and in SWB (Super Wideband) and NB (Narrowband) POLQA measurement modes. Voice quality testing is supported with the latest Samsung terminals. VQ testing can be performed between two Nemo Handy-A terminals or between a terminal and Nemo Server. The voice quality score (MOS) is calculated real-time in Nemo Handy-A and the individual MOS scores are displayed on the screen during the call.



YOUTUBE VIDEO STREAMING

According to many statistics, YouTube produces 22% of the total global mobile traffic. Moreover, when inspecting only streaming services, YouTube represents more than 50% of the total global mobile streaming. That makes YouTube by far the most popular streaming application over the globe. With Nemo Handy-A it is possible to stream videos from YouTube and monitor the throughput and buffering values and video transfer start/stop/failure events.

FTP SESSIONS

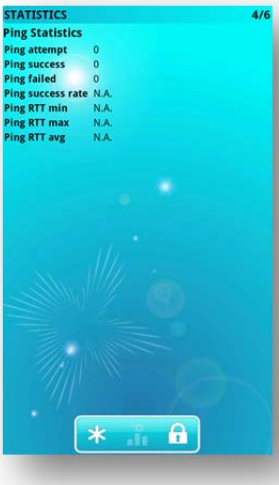
Nemo Handy-A offers support for manual and scripted testing of FTP data transfers. FTP transfer related measurement events stored in the Nemo Handy-A log file include data connection attempt, data connection success, data disconnect, and data connection failed.

HTTP SESSIONS

Nemo Handy-A offers support for manual and scripted testing of HTTP data transfers. HTTP transfer related measurement events stored in the Nemo Handy-A log file include data connection attempt, data connection success, data disconnect, and data connection failed.

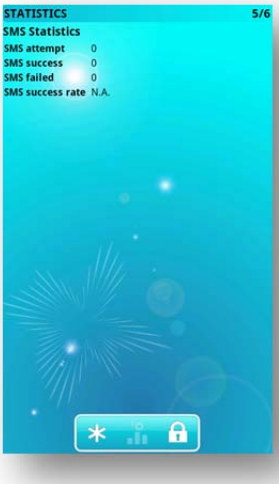
ICMP PING

Nemo Handy-A offers support for manual and scripted ICMP (Internet Control Message Protocol) ping testing. Ping related measurement events stored in the Nemo Handy-A log file include ping attempts, ping failed/succeeded, and ping success rate.



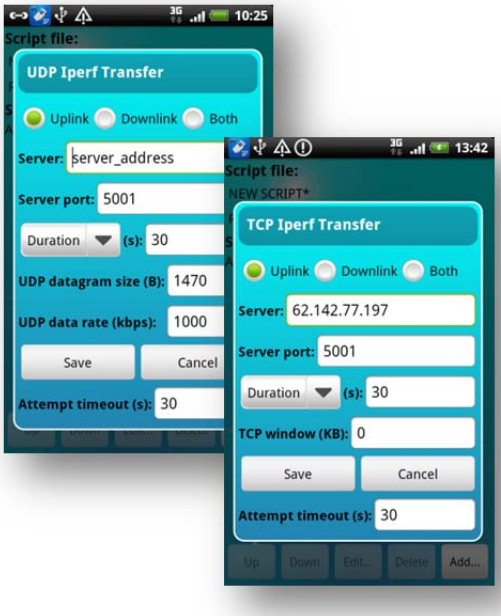
SMS MESSAGES

Nemo Handy-A offers support for manual and scripted SMS sending. SMS related measurement events stored in the Nemo Handy-A log file include SMS send attempts, SMS send succeeded/failed, and SMS success rate.



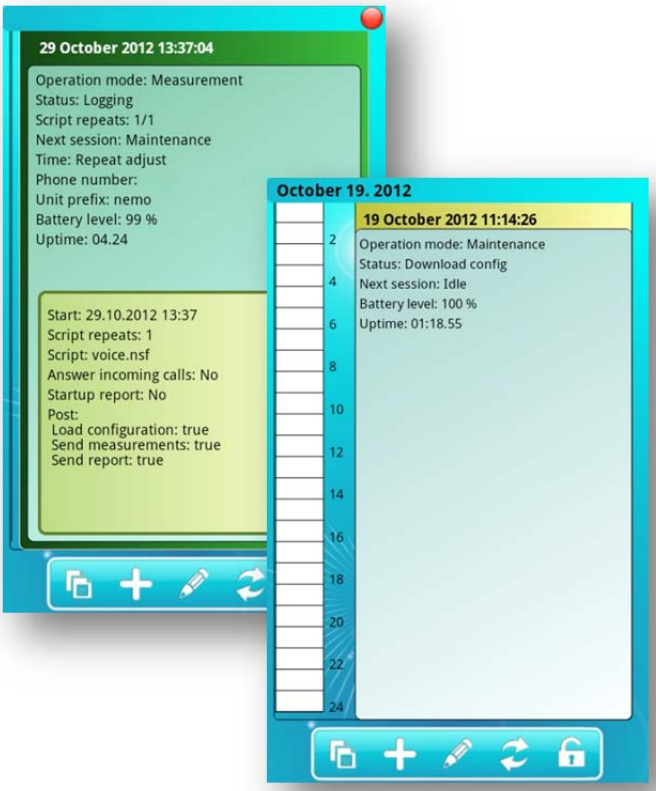
IPERF FOR TCP/UDP

Iperf was developed as a modern alternative for measuring TCP and UDP bandwidth performance. With Iperf for TCP and UDP testing, it is possible to measure the maximum performance of a network.



AUTOMATED TESTING

Nemo Handy-A offers an automated testing mode, i.e., the ability to schedule Nemo Handy-A to perform measurements automatically using a calendar view. During the automated testing mode, the data views are viewable, but you will not be able to control the measurement or use forcing features. Log files can be automatically sent to an FTP or HTTPS server.

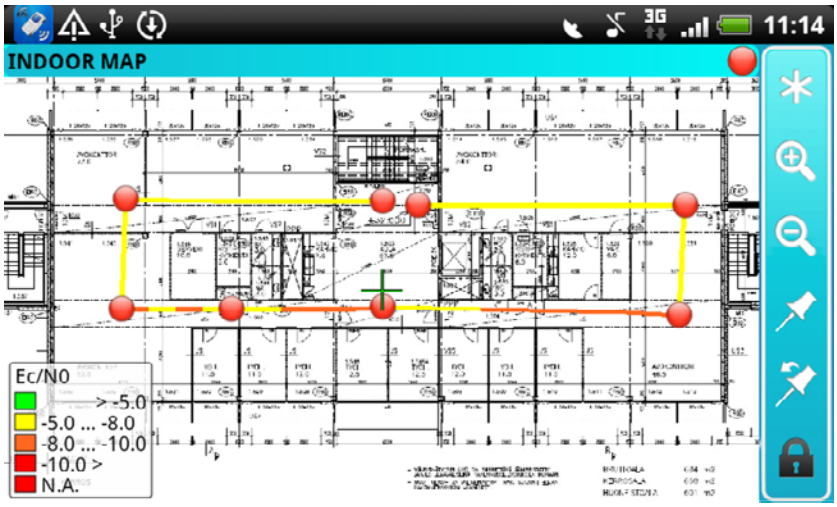


IP PACKET CAPTURING

Application level data can be captured with Nemo Handy-A. The data is collected in a separate logfile in .pcap format. Pcap files can be processed with Nemo Outdoor, Nemo Analyze, or Wireshark. By default full IP capture, including IP and all the layers above, is logged. Pcap logfiles can be very large if no filtering is applied. Therefore, it is practical to apply filtering to capture only the procotol layers of interest. Capture filter rules are defined in the standard Wireshark filter format.

INDOOR MEASUREMENTS

Nemo Handy-A provides indoor map support with an easy-to-use interface that includes zoom and pan tools. Digital images can be imported to Nemo Handy-A and converted into map files (.tab). iBwave map format is also supported. The scale of the map can be set based on a known distance on the map. The geodetic coordinates of the map can also be set based on two known coordinate positions. The measurement route can be drawn on the map with markers.



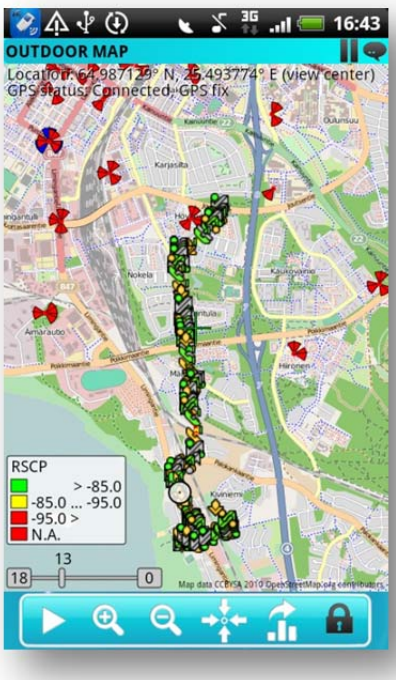
All network parameters supported by the terminal's mobile trace interface, including signaling messages, are logged and made available for playback with Nemo Outdoor and for post-processing with Nemo Analyze.

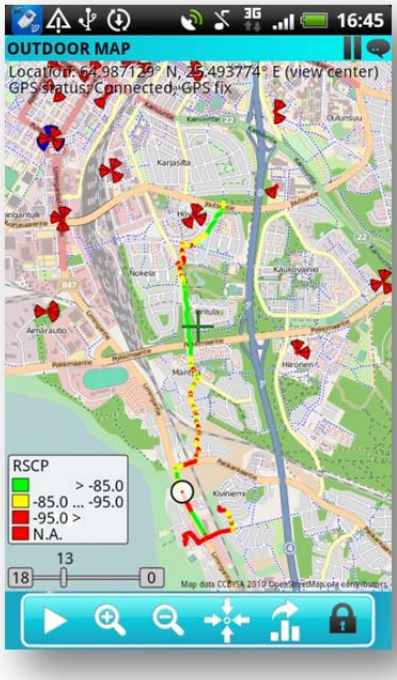
When importing an indoor map into Nemo Handy-A, you are also able to import a route plan (created with Nemo Outdoor) that you want to follow. Turn logging on, walk according to the route plan and add a marker always when you reach the next waypoint on the map. After the measurement Nemo Handy-A will provide a measurement and marker file that can be used in post processing.

OUTDOOR MEASUREMENTS

Nemo Handy-A provides outdoor map support with an easy-to-use interface that includes zoom and pan tools. The user is able to see the measured route with color-coded parameter values in real-time on live map and observe network parameter values from the route coloring on the map. Outdoor route coloring is based on the selected parameter's values, and user-defined or pre-defined limits and color sets.

With Nemo Handy-A you can view BTS icons on an outdoor map. During measurements, the BTS that the measurement device is connected to is highlighted with a user-defined color. Furthermore, notification icons can be viewed on the route.

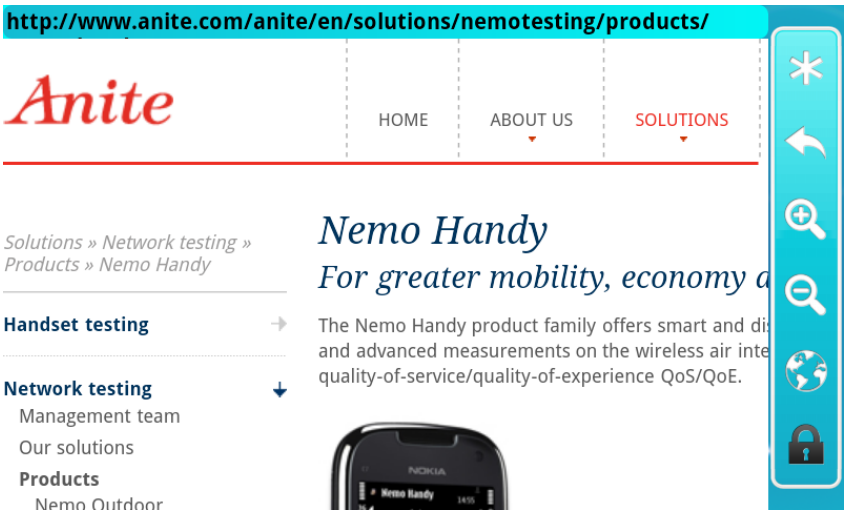




The map repository functionality in Nemo Handy-A enables the user to select from which map repository the outdoor map is downloaded from. Map tiles can be loaded to the cache to avoid data transfer testing, making zooming less time-consuming during the measurement.

All network parameters supported by the terminal's mobile trace interface, including signaling messages, are logged and made available for playback with Nemo Outdoor and for post-processing with Nemo Analyze.

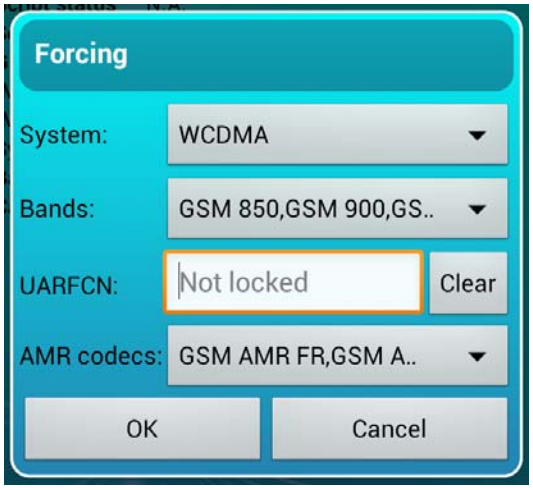
HTML TESTING WITH REAL BROWSER VIEW



Nemo Handy-A enables HTML testing with real browser view. The user can monitor when the web page is loaded when doing HTML testing. The user-friendly interface includes zoom and pan tools.

FORCING FEATURES

Nemo Handy-A supports band locking, system locking, preferred channel locking (UMTS only), and AMR codec activation. The channel lock is preferred, in other words, not a hard lock, and the locks are terminal-specific.

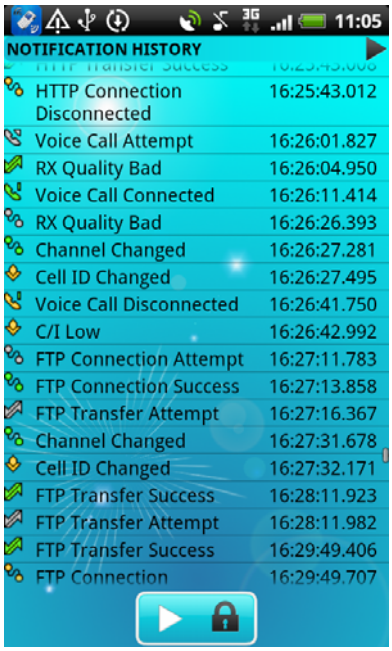


SCRIPTS

It is possible to use script files to run measurements with Nemo Handy-A. When a script is used, Nemo Handy-A makes voice calls, FTP and HTTP data transfers, HTML browsing, SMS message sending, and ping testing automatically. You can also create conditional, system-triggered scripts with indefinite wait periods that end when a specific system becomes active or with triggers that initiate a voice call when a specific system becomes active. With nested scripts (scripts inside scripts) you can run complex automated measurements combining several scripts. Scripts can be created and edited with Nemo Handy-A's built-in script editor. When the Autologging option is activated, Nemo Handy-A will start logging automatically when a script is started.

NOTIFICATIONS

Nemo Handy-A offers a set of audio notifications, notification icons, and popup messages that can be used to notify the user of important measurement events. Notifications can also be customized. Other notification features include individual notification activation/deactivation through the Nemo Handy-A UI and the notification history view.



PLAYBACK

Playback with Nemo Handy-A is a straightforward and easy way to view measurement files immediately after a measurement has ended, or later on. All data views are available for use in playback.

LOGGING AND PARAMETERS

You can use the Nemo Handy-A mobile as a regular phone while Nemo Handy-A is logging in the background. All network parameters supported by the terminal's mobile trace interface, including signaling messages, are logged and made available for post-processing. ***The logged tracing results contain all network parameters supported by the terminal's mobile trace interface, including signaling messages***. Please note that Nemo Handy-A's support for individual parameters varies according to the terminal used. For a detailed list of parameters supported by a particular terminal model, please refer to the Nemo Handy-A datasheet.

Log file recording is automatically stopped when the memory card is full and no more data can be recorded. When logging is stopped, the user can either save the file with the default name, save the file with a new name or delete the file. It is also possible to upload the log file on an FTP server directly from Nemo Handy-A.

POST-PROCESSING

Nemo Handy-A produces measurement files in binary file format (.nbl). Measurement data can be exported from Nemo Handy-A either by using a data cable or a memory card. After export, the measurement files are converted to the standard Nemo file format with the easy-to-use Windows(R) software Nemo File Manager. A detailed description of the Nemo file format is included on the product CD. The file format description contains all recorded events and their parameters.

The files in Nemo file format can be played back with Nemo Handy-A and Nemo Outdoor, and post-processed with Nemo Analyze or with one of the many third party post-processing/analysis tools supporting the Nemo file format. The most optimal approach to the post-processing of Nemo measurement data is Nemo Analyze. As an analysis tool, ***Nemo Analyze represents the cutting edge of drive test data visualization***, and offers a powerful and versatile approach to performing benchmarking, troubleshooting, and statistical reporting based on drive test data. The system ***scales from a standalone tool to an enterprise-level client/server solution and incorporates an innovative, low-maintenance database engine that has been designed and optimized specifically for high-performance post-processing of drive test data***.

Nemo Analyze offers a comprehensive set of technology-specific Key Performance Indicators for the latest wireless technologies and a wide range of data views that are known to offer the best visualization of drive test data on the market - and yet it is highly cost effective, easy to install and use, and it scales to meet the needs of organizations of any size.

All major wireless technologies, namely TDMA, AMPS, cdmaOne, GSM, HSCSD, GPRS, EDGE, WCDMA, HSDPA, HSUPA, HSPA+, LTE, CDMA2000, TETRA, DVB-H, LTE, TD-SCDMA, and WiMAX, ***are supported***.

NEMO TOOLS

In addition to Nemo Handy product family, Anite Finland Ltd. offers a comprehensive range of tools and software for measuring and analyzing wireless networks.

Nemo Analyze	Nemo Analyze is a powerful and versatile, cutting-edge analysis tool for performing benchmarking, troubleshooting and statistical reporting based on drive test data. The system scales from a standalone tool to an enterprise-level client/server solution and incorporates an innovative, low-maintenance database engine that has been designed and optimized specifically for high-performance post-processing of drive test data.
Nemo Autonomous	Nemo Autonomous is the first practical light-weight solution for performing fully automated large-scale measurements on the air interface of EGSM/GPRS/EDGE/WCDMA/HSDPA wireless networks. Nemo Autonomous streamlines your network measurement, troubleshooting, statistical reporting, and benchmarking processes, maximizes your awareness of what is happening in the network, and makes achieving all this considerably easier and more cost efficient.
Nemo Outdoor	A portable engineering tool for measuring and monitoring the air interface of TETRA, GSM (HSCSD, GPRS, EDGE), WCDMA (UMTS), TDMA (IS-136), AMPS, cdmaOne, CDMA 2000, HSDPA, HSUPA, HSPA+, TD-SCDMA, WiMAX, and LTE wireless networks.
-with Indoor Option	Nemo Outdoor is ideal for indoor measurements. Lightweight Tablet PC makes it is easy to carry and allows the user to plot the measurement route on a floor plan with a click of a pen.
-with Multi Option	Nemo Outdoor Multi enables benchmarking measurements on multiple networks and even on multiple technologies at the same time. Possibility to establish up to five simultaneous packet/circuit-switched data connections from test terminals.
Nemo Invex	Nemo Invex is a chassis-based benchmarking tool for wireless network measurements. Nemo Invex supports measurements on all major network technologies, including GSM, CDMA2000, EVDO, TD-SCDMA, WCDMA, HSDPA, HSUPA, HSPA+, WiMAX and LTE.
Nemo FSR1	Nemo FSR1 is a revolutionary, modular digital scanning receiver that provides accurate, reliable high-speed RF measurements of wireless networks across multiple bands and technologies. Nemo FSR1 supports measurements on LTE, WCDMA, HSDPA, GSM, CDMA, and EVDO networks.

CONTACT INFORMATION

To contact our sales personnel email us at nemo.sales@anite.com.

For sales contacts details by country, please check the updated contact information list at http://www.anite.com/businesses/network-testing/sales-contacts

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