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# R&S®ROMES2GO

## 3GPP Walk Test Solution

### QoS assurance made simple



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Innovation



**ROHDE & SCHWARZ**

# R&S®ROMES2GO 3GPP Walk Test Solution

## At a glance

R&S®ROMES2GO is an autonomous walk test solution that records and stores QoS and performance data in 3GPP mobile radio networks. All measurement results – even past error events such as dropped calls – are saved to the data card in the test mobile phone. No measurement data is lost. The LC screen displays the measurement results both alphanumerically and graphically. The sanner mode provides a quick overview of network activities. The results are based on the Nokia mobile phones N95, N6120, N6121, N85 and N96 (GSM, GPRS, EDGE, WCDMA, HSDPA).



R&S®ROMES2GO is a test mobile phone that records trace data in mobile radio networks. The measurement data is time-stamped and then saved in the test mobile phone's memory or on a memory card. GPS receivers also identify the location where the measurement was carried out. This very handy T&M tool is therefore ideal for performing measurements inside of buildings, in pedestrian zones, or during drive tests, even in vehicles of public transportation.

The intuitive user interface (Symbian OS1<sup>1)</sup>) allows measurements to be output in the most appropriate format (alphanumeric and graphical displays).

After the measurements have been carried out, the measurement files can be downloaded and converted to the \*.rscmd R&S®ROMES data format for further evaluation by means of the R&S®ROMES replay function. It is also possible to analyze the files without any further formatting by using compatible planning and analysis programs (third-party providers include P3 Solutions "MEDAS", AIRCOM "RANOPT", Andrews "Odyssey™", Actix, XCEED Technologies ("WindCatcher™", "BenchMarker™", "Vortex™").

The test mobile phones can handle both voice calls (circuit switched, CS) and data calls (packet-switched, PS).

- Autonomous 3GPP walk test solution for indoor and outdoor applications
- Use of indoor floor plans for walk tests
- With external (Bluetooth®<sup>2)</sup>) or built-in GPS
- Low investment costs (CAPEX); additional control software for standard test mobile phones
- Easy operation (measurement ON, measurement OFF)
- Available in different languages: German, English, Spanish, Chinese
- Flexible handling of task files (GSM, GPRS, EDGE, WCDMA, HSDPA and scanning)
- Storage of measurement data on the test mobile phone as well as data transmission to an FTP server or via USB cable
- Tooltips inform the user about the most important parameters

Further expansions will enable the test mobile phone to perform additional measurement tasks.

<sup>1)</sup> Symbian OS is a proprietary operating system produced by Symbian for smartphones and PDAs.

<sup>2)</sup> The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Rohde&Schwarz is under license.



# R&S®ROMES2GO

## 3GPP Walk Test Solution

### Benefits and key features

#### Small handset

R&S®ROMES2GO can be used inconspicuously anywhere, particularly when performing indoor measurements or measurements in vehicles of public transportation. A commercial cellphone (with NTM trace firmware) is the basis for this measurement tool/system. R&S®ROMES2GO comes in different languages of ease use.

#### GSM, GPRS, EDGE, UMTS, HSDPA

Combining all technologies in a single device saves logistics efforts.

#### Immediate storage of measurement data in a ring buffer

No measurement results are lost. Even past error events are saved when the measurement is started. The duration of the ring buffer can be adjusted to a maximum of 10 minutes (FIFO).

#### Measurements are performed in the background

Normal phone operation is still possible. Tooltips will inform the user about important parameters.

#### Display of measurement data (graphical, numeric)

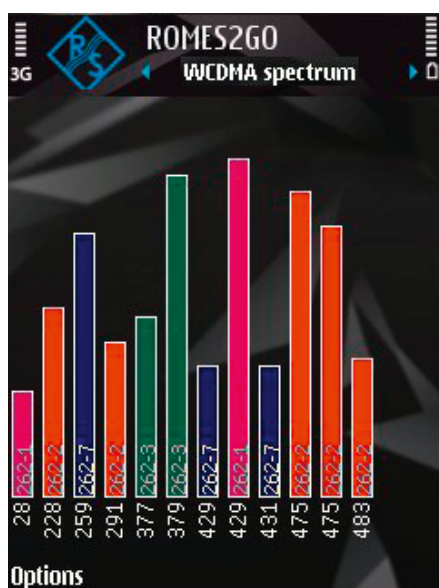
The display of the measurement data permits rapid, immediate analysis of the measurement parameters.

Floor plans of all indoor walk tests.

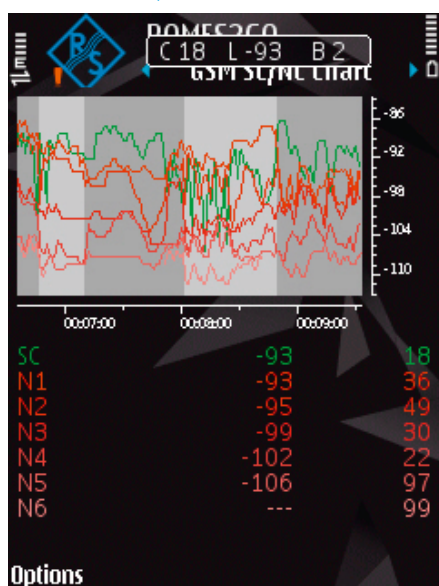
#### Scanning for quick overview

The scanner mode provides a quick overview about all network activities. The RF scanner detects all on-air signals and demodulates them. BCCH and BSIC are used to identify GSM base stations. 3G identification is based on UARFCN and SC.

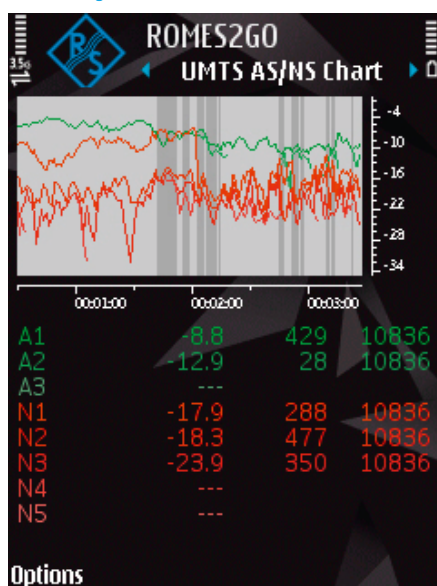
GSM/WCDMA scanner view.



Graphical/numeric display of the GSM measurement report.



Graphical/numeric display of the UMTS active/neighbor set.



Measurement data for data calls via HSDPA.



# Introduction

This autonomous solution is intended for T&M technicians who use a Nokia N95 (or Nokia 6120/6121), N85 or N96 test mobile phone. Starting a measurement automatically loads the last task that was run and immediately displays the measurement results on the mobile phone screen. The measurement files generated by the mobile phone can be converted to the \*.rscmd R&S®ROMES format after downloading.

For specific evaluation of network quality, R&S®ROMES2GO provides assisted Handover, i.e. suppressing or forcing of handover during a measurement.

The measurement task has absolutely no effect on the mobile phone's QoS behavior. There is no reduction in the possible data throughput, even if measurements are performed in parallel.

- Suitable for indoor and outdoor measurements
- An internal or external GPS receiver is used for outdoor measurements
- For indoor walk tests, floor plans are used for navigation
- Network scanning provides information about all on-air activities
- Forcing functions (cell, handover) for easy evaluation of network quality
- Easy handling due to different languages: German, English, Spanish, Chinese



Different languages selectable for reliable work.

Measurements in GSM idle mode.

ROMES2GO	
GSM idle	
Serving C...	
BCCH	49
RxLev	-89 dBm
BSIC	37
C1	18
C2	18
DSC	15
CI	30640
LAC	34567
Options	

GSM measurement report.

ROMES2GO	
GSM SC/NC	
BCCH	RxLev
SC	49 -88
36	-88
30	-96
18	-100
87	-104
23	-109
98	-110
99	-110
39	-112
Options	

GSM dedicated mode.

ROMES2GO	
GSM dedicated	
BCCH	49
RxLev	-86 dBm
RxQual	0
AMR UL	12.2 kbit/s
AMR DL	12.2 kbit/s
TA	2
C/I	20.95 dB
TCH	49
# Hop	4
TS DL	-----
Tx Power	--- 5 ---
RLT	40
Options	

# Application examples

## Starting the application

The last measurement task file that was used is loaded, and the measurement data is immediately written to the automatic ring buffer. The measurement results are displayed on the mobile phone screen.

## Ring buffer

A dropped call occurs during a field test. The user now starts the measurement. All data, including the data recorded in the ring buffer before the start of the measurement, is stored in the measurement file. No information is lost. The duration of the ring buffer can be adjusted to a maximum of 10 minutes (FIFO).

## Ending the application

The application can be closed only if no measurement data is stored.

## Starting the recording of trace data

The user presses a button to start the recording of trace data. A new file name is generated. GPS data is also saved. The status display provides storage information.

## Stopping the recording of trace data

The user presses a button to stop the recording of trace data. The measurement data and the data from the ring buffer is stored in a file. The measurement file is closed.

## "Freezing" the measurement display

A menu item allows a screenshot of the measurement display to be taken for subsequent visual analysis.

## Comments

The user can enter comments in a separate entry window. This information is time-stamped and then made available in a separate comment file.

## Downloading measurement data

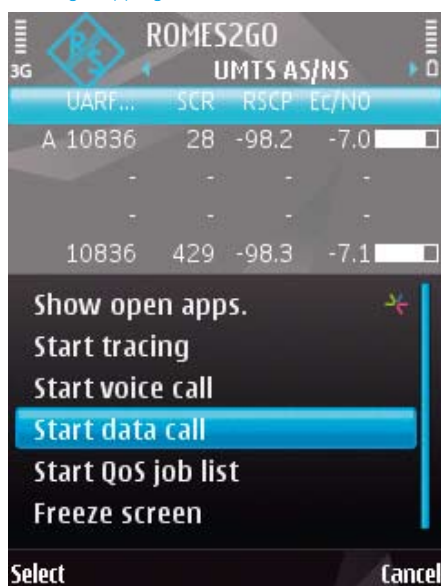
Generated measurement files can be downloaded at any time if no measurement is running. The user selects the measurement file(s) and defines the transmission path (USB or FTP server). This menu also has an option to delete the measurement file(s) after transmission.

## Selecting a measurement script/task file

The R&S®ROMES2GO menu allows the user to select a specific measurement task from a number of predefined tasks, which then configures the subsequent measurement.

Task files can easily be defined or designed by using R&S®ROMES2GO Bridge. Individual scripting (series of various tasks to be executed) provides autonomous measurements.

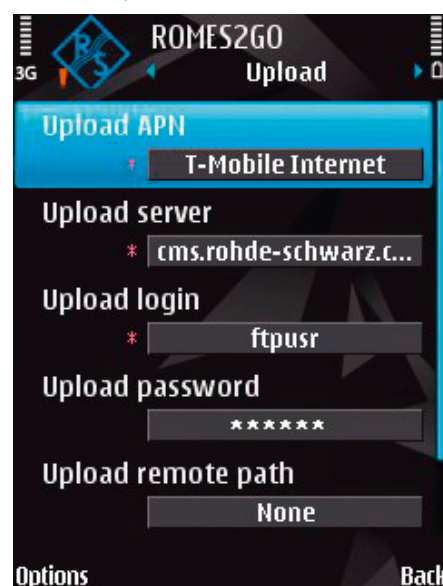
Starting/stopping a measurement.



Forcing functions.



Automatic upload of a measurement file.





### Selecting the GPS receiver

R&S®ROMES2GO allows the use of an external GPS receiver (Nokia N95, N85, N96 with integrated GPS) that is connected via Bluetooth®.

### Forcing menu

R&S®ROMES2GO offers the following forcing functions:

- 2G on BCCH
- 3G on UARFCN, scrambling code (SC)
- RAT mode: GSM only, WCDMA only, network-dependent

### Assisted handover forcing

- Suppression of normal handover
- Handover to a specified cell

### Transfer of measurement data

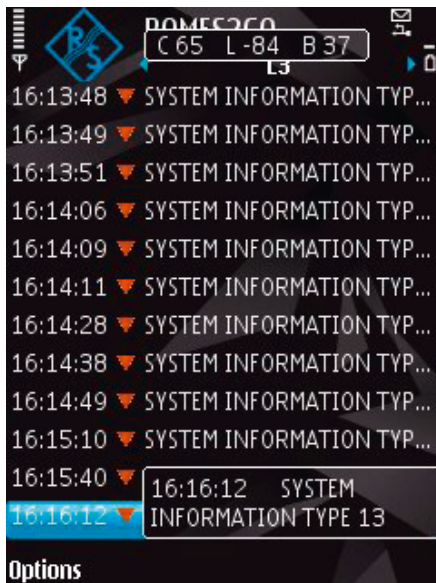
The following information is needed for FTP downloads:

- Server name
- Data directory
- User name
- Password

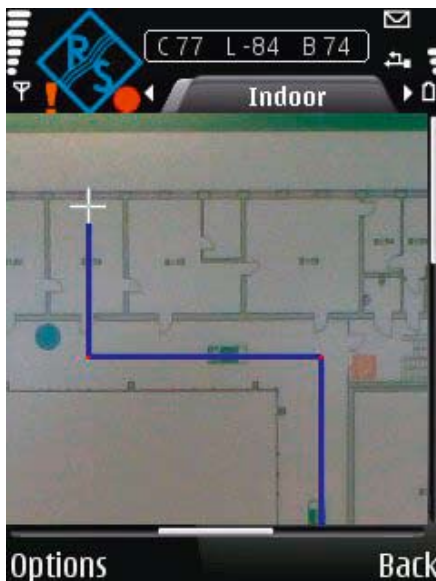
### Scanning parameters

- 2G: RF level, BCCH, BSIC
- 3G: RSCP, UARFCN, SC, MNC, MCC

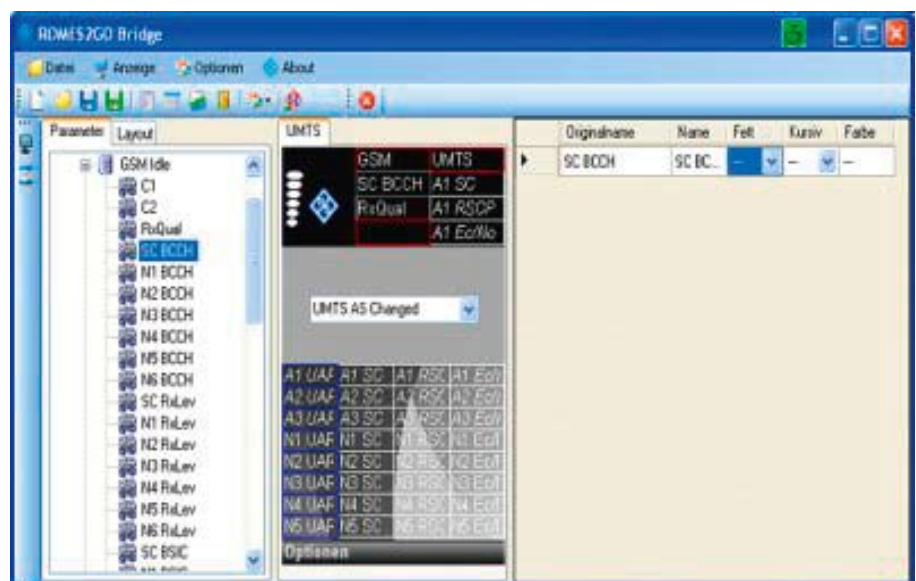
Layer-3 messages for up- and down link.



Indoor view and navigation.



R&S®ROMES2GO Bridge: individual generation of task files and scripting.



# Ordering information

Designation	Type	Order No.
<b>Basic components</b>		
R&S®ROMES2GO Walk Test Symbian Software	R&S®R2GO-N1	1506.9800.02
Special Nokia Trace Firmware "Lite" English for R&S®ROMES2GO (phone cannot be used as standard test mobile connected to a PC)	R&S®ROMES-U6L	1501.1176.26
<b>Software Options</b>		
R&S®ROMES2GO Option DQA Service Framework for testing of voice, FTP, UDP and Ping, configurable with random order; requires R&S®R2GO V2.0	R&S®R2GO-DQA	1510.8840.02
R&S®ROMES2GO Option Layer 3 testing for display of layer 3 messages during measurement; requires R&S®R2GO V2.0	R&S®R2GO-L3	1510.8857.02
<b>Select one of the following test mobiles</b>		
Nokia N85 HSDPA band I/II/VIII GSM/GPRS/EGPRS 850/900/1800/1900 bands, WCDMA/HSDPA 900/1900/2100 band I/II/VIII	R&S®TMS-N85	1510.8734.02
Nokia N85 HSDPA band II/V GSM/GPRS/EGPRS 850/900/1800/1900 bands, WCDMA/HSDPA 850/1900 band II/V	R&S®TMS-N85NA	1506.9730.02
Nokia N96 HSDPA band I/II/VIII GSM/GPRS/EGPRS 850/900/1800/1900 bands, WCDMA/HSDPA 900/2100 band I/II/VIII	R&S®TMS-N96	1510.8740.02
Nokia N96 NAM HSDPA band I/II/V GSM/GPRS/EGPRS 850/900/1800/1900 bands, WCDMA/HSDPA 850/1900/2100 band I/II/V	R&S®TMS-N96NA	1506.9723.02
<b>Accessories</b>		
R&S®ROMES4 Drive Test Software Replay Version with data export	R&S®ROMES4REP	1117.6885.34
GPS Receiver (Bluetooth®)	R&S®TS95GPSH	1090.8348.14
<b>Alternative Firmware Flashes</b>		
Special Nokia Trace Firmware "Lite" Chinese and English (phone cannot be used as standard test mobile connected to a PC)	R&S®ROMES-U6C	1501.1176.27
Special "Standard" Nokia Trace Firmware (phone can be used as standard test mobile connected to a PC as well)	R&S®ROMES-U6T	1501.1176.16



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## Environmental commitment

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System  
**ISO 9001**

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