Portable Coverage Measurement System TS 9951

For GSM900/1800/1900, ETACS/DECT/DAB/CDMA signalling parameters

- Indoor and outdoor coverage measurement system
- Complete outdoor system integrated in portable case
- 1 to 4 test mobiles
- Indoor: hand-held PEN-PC with one test mobile
- Detection and localization of coverage gaps

- Suitable antenna with magnetic mount
- Test mobiles for GSM 900/1800/1900, ETACS, CDMA
- DAB receiver
- Windows 95 operating system
- ROMES measurement software with on-line graphics and alphanumeric data

- ROMESKxx software extensions for ROMES
- Route display with cartographic map underlay
- ROSEVAL evaluation software (optional)
- GPS navigation system (optional)
- Transportation case
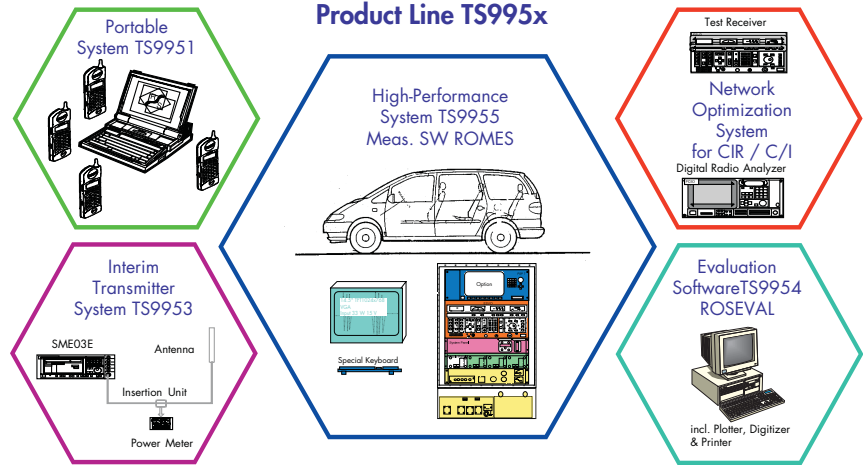
ROHDE & SCHWARZ

Mobile mobility: a system overview

High mountains and deep-cut valleys – this is the actual real-life situation that demands communication without interference but with full field-strength coverage.

TS9951 is the budget-priced compact solution for all network-specific quality parameter measurements. With a minimum of time and cost, the user can collect quality parameters from his own network as well as from other networks.

The system can be fitted with test mobiles/receivers for:

- GSM 900
- GSM1800
- GSM1900
- ETACS
- DAB
- CDMA (IS-95)
- CDMA (J-STD-008)

Product Line TS995x

Portable System TS9951

High-Performance System TS9955 Meas. SW ROMES

Interim Transmitter System TS9953
SME03E
Antenna
Insertion Unit
Power Meter
Special Keyboard
Option

Test Receiver
Network Optimization System for CIR / C/I
Digital Radio Analyzer

Evaluation SoftwareTS9954 ROSEVAL
incl. Plotter, Digitizer & Printer

Overview of product line TS995X

Depending on the individual measurement philosophy TS9951 can be equipped for simultaneous measurements with up to four test mobiles, even with mixed technologies/standards. Four test mobiles can be used in a single system.

Components

The Coverage Measurement System TS9951 is a complete system for measurements in digital networks like GSM 900/1800/1900, ETACS, DAB, CDMA. Its system layout and software architecture makes it possible, to integrate functionality for other digital networks which may be introduced in the future.
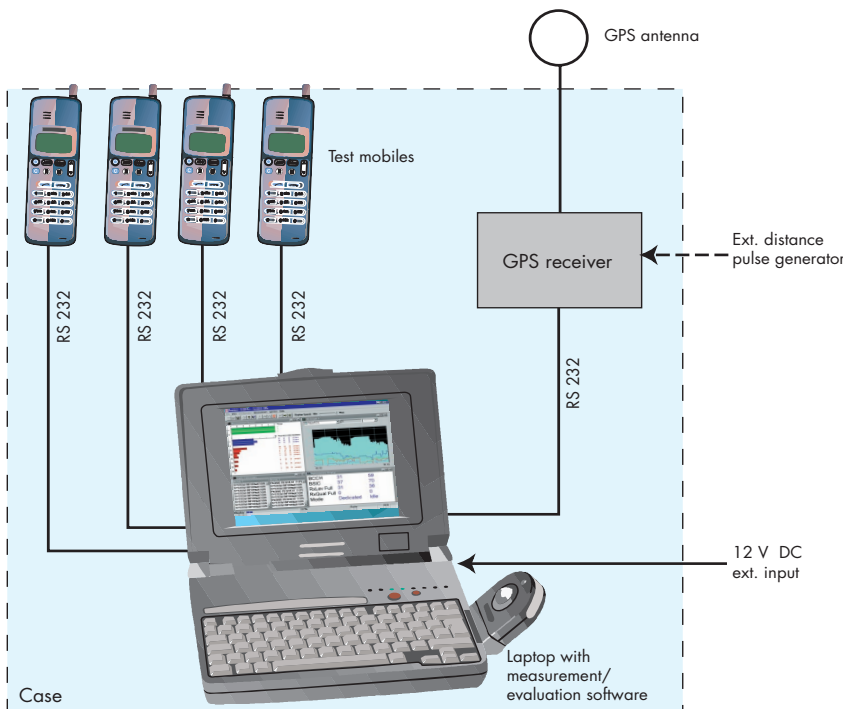
The hardware can be configured for different fields of application: *outdoor and indoor* measurements.

- Outdoor: the complete system is integrated in a portable case
- Indoor: hand-held PEN-PC with one test mobile

Outdoor

The Coverage Measurement System TS9951-Outdoor is a complete system for collecting signalling and localization parameters of the entire network(s).

A high-performance laptop with large TFT screen acts as the system controller. The coverage measurement softwareROMES and the evaluation software ROSEVAL (optional) run on the laptop under Windows95.

GPS antenna

Test mobiles

RS 232 / RS 232 / RS 232 / RS 232

GPS receiver

Ext. distance pulse generator

RS 232

12 V DC ext. input

Laptop with measurement/ evaluation software

Case

TS9951– Outdoor

Indoor

A complete coverage measurement system especially designed for indoor measurements. A compact solution and really inconspicuous in handling. The system consists of a special controller (hand-held PEN-PC), one test mobile (GSM 900/1800/1900, ETACS or CDMA) and a control cable including an integrated interface adapter. The system is completely controlled by clicking on the screen with the electronic control pen.

TS9951-Indoor with PEN-PC, test mobile, system cable and control pen

GPS Option

The GPS system consists of a satellite antenna, an antenna cable, and the reception module. This unit collects the position coordinate signals of several geostationary satellites simultaneously. With these, data the integrated computer calculates the exact position of the measuring equipment on earth. These data combined with the time information are transferred to the system controller of the measuring system via an RS232 interface. The system controller stores these data together with the measurment results. A special installation in the test vehicle is not necessary.

Two different GPS navigation systems are available:

- Standard GPS system (Svee6): It consists of a small GPS receiver module, integrated in the case of the TS9951-Outdoor system. A magnetic mounting antenna can be easily installed on the test vehicle. This solution is low-priced, flexible and requires no special preparations for the car
- Advanced GPS system (Placer GPS455DR): This system uses external sensors in addition to the GPS receiver. An automatic electronic compass sends bearing information together with distance pulses from the sensor system to the GPS core module. So it is able to send continuous positioning information to the measurement system, even if it gets no signals from the satellites (eg in a tunnel or urban areas).

Test mobiles

The available test mobiles are a derivative of the commercial version with additional engineering functionality and have full type approval (FT).

- 1 to 4 test mobiles and suitable antenna with magnetic mount
- DAB receiver

- Test mobiles available for GSM 900/1800/1900, ETACS, CDMA

For testing the quality of the digital networks, signalling parameters have to be measured, logged and analyzed. The signalling procedure can only be measured by using a test mobile.

The test mobiles collect, store and send the protocol information to the system controller via RS232 interface. These data are stored together in the memory with geographical data and time information. At most four test mobiles of mixed technology/standard can be used simutaneously.
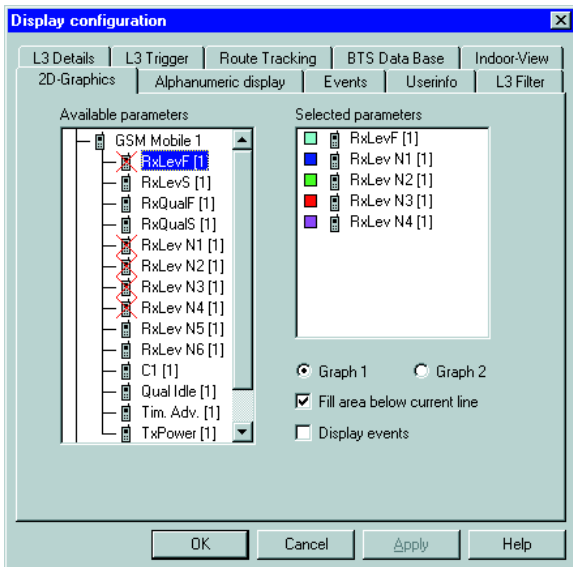
Software

The following coverage measurement software of Rohde&Schwarz can be used with the TS9951 system (indoor or outdoor):
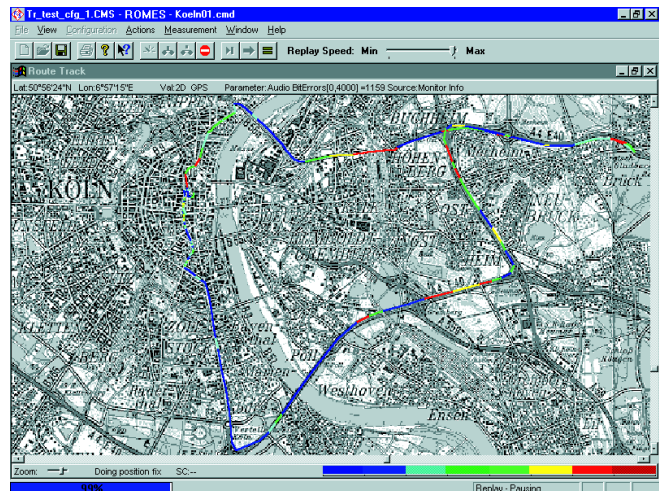
- ROMES measurement software with on-line graphics and alpha-numeric data
- ROMESKxx software extensions for ROMES
- ROSEVAL evaluation software (optional)
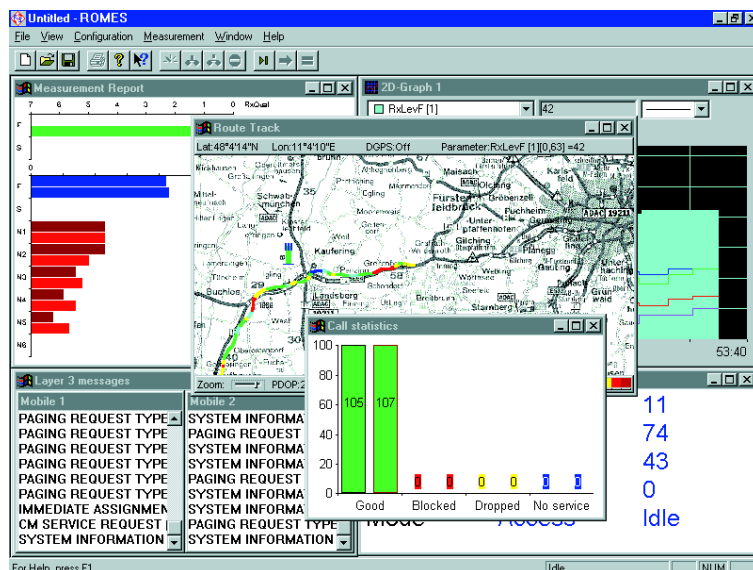
Coverage Measurement Software ROMES with various measurement displays

Configuration of 2D graphics displays, selection of parameters

Typical Route Track display (here for DAB-measurements)

Coverage Measurement Software ROMES

Unique features ensure that measurements are fast, efficient and thus economical. The intuitive menu-driven Windows-based user interface requires no special expertise for operation.
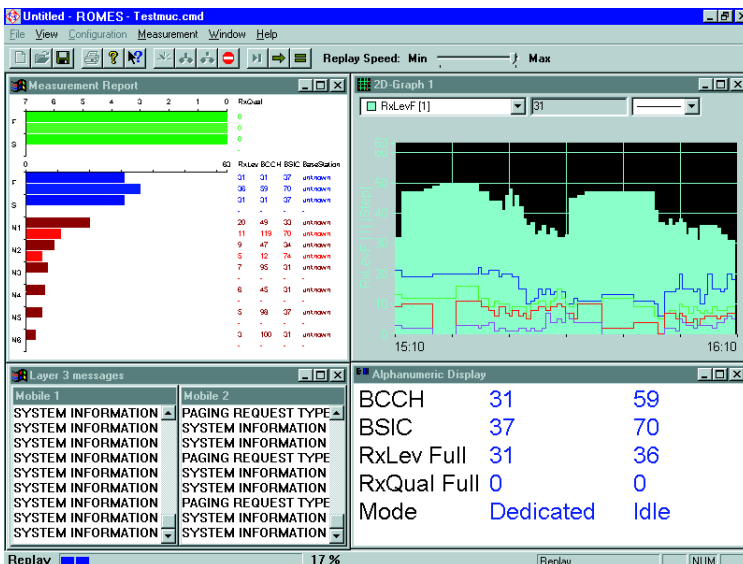
The benefits at a glance:

- Recording and display of signalling data of 1 to 4 test mobiles (max. 4 for GSM) simultaneously for quick and easy network quality comparison
- Check of progress and quality of measurements
- Window selection and sizing at any time, even during measurement or replay
- Freely definable colours for the presentation of measurement parameters on screen
- Replay of recorded measurement files (or selected parts) with individual choice of specific views
- Position of test vehicle can be followed on road map during test tour or replay
- Automatic map-splitting for large maps with high quantity of data
- List of all BTS (base transmitter station) can be created
- Measurement with/without recording
- Free definition of 10 events to be set manually (keystroke "Ctrl + 1…0")
- Configuration of system events with graphical icons (like "handover", "connect", "disconnect", assignment, location update, etc)
- Freely configurable upper and lower thresholds; alarm when out of settings
- Replay speed can be increased or replay stopped; jumps inside the replay to earlier and later parts of the test tour
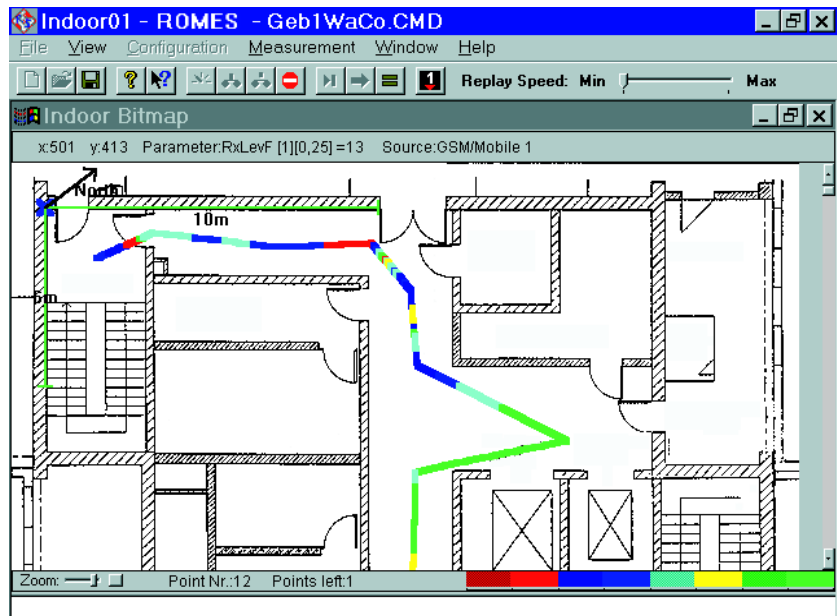
Evaluation Software Roseval
- Generation of structured meta files
- Highly effective evaluation through the use of filtered and selected data
- Efficient file management of measurement data (central server)
- Fast access to all local temporary data
- Freely definable legends and comments

Typical GSM display configuration: measurement report, 2D graphics, layer 3 messages, alphanumeric display

- Selection and evaluation of multiple measurement files in database only limited by system resources
- Exact reference of measured points to the measurement device they originate from
- Statistical evaluation and area data mapping
- SQL (Structured Query Language) data selection and evaluation
- User-definable derived signals
- Global data selection (interactive and SQL)
- Wide range of attributes assignable to each signal (colour, icons, pattern, ranges) to get the most efficient visualization of parameters

Indoor measurement

- Presentation of a test tour on a floor plan or map, which has been previously scanned or drawn and loaded into the software (bitmap file).
- Selection of parameters for the presentation of the measured data with actual value as well as selected value range
- Coloured line representing the range of values of the measured data
- Individual configuration of the eight thresholds for the coloured line
- A fixed point can be defined as the reference for navigation. This fixed point can be set to the geographical North
- The overlaid floor plan can be scaled with length indications; thus the distance (x- and y- coordinates) for each measurement point is related to the fixed point.
- "Zoom facility" for zooming in and out.

Indoor Bitmap and Measurement Report display; navigation mode *Way Points*, measurement mode *Continuous* (here for GSM)

- Two measurement modes and two navigation modes are provided:
  – Measurement modes
  Hot Spots: statistical information about the temporal distribution of the value of selected parameters at a point of measurement
  Continuous measurements: measurements of selected parameters over the way, time and presentation of results by means of a scaled, coloured line on an overlaid floor plan
  – Navigation modes
  Way Points: predefined points of measurement marked on an overlaid floor-plan
  Stream Input: measurement points defined on an overlaid floorplan during the test tour through the building

General Data

TS9951-Outdoor

- Dimensions in mm (L x D x H): 600 x 400 x 300
- Weight approx. 18 kg
- Car cable for 12 V DC

TS9951-Indoor
- Protection soft bag
- Case, shoulder straps
- Dimensions in mm (L x D x H): 300 x 210 x 60
- Weight 1.8 kg

Related data-sheets:

Solutions for Coverage Measurement
PD 757.1925
High-Performance Coverage Measurement System TS9955
PD 757.2138
TS9955-CW-3plus Compact Coverage Measurement System
PD 757.4247
Evaluation Software Roseval
PD 757.4082
TS51-K1/TS55-K1 Coverage Measurement Software
PD 757.2415
Interim Test Transmitter TS9953
PD 757.2115

Fax Reply (Portable Coverage Measurement System TS9951)

❏ **Please send me an offer**

❏ **I would like a demo**

❏ **Please call me**

❏ **I would like to receive your free-of-charge CD-ROM catalog**
(including Test&Measurement Products +
Sound and TV Broadcasting)

Others: ————————————————————————
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