



Test Environment Quality of Service

TEQoS2

The GSM-R Test Cabinet is designed as a robust housing for up to two GSM-R MobileTerminations (GSM-R MT2) which can also be easily carried. It contains a built in DC power supply that allows operation from different DC power sources (nominal 12-110 V).

The 8 Watt GSM-R Mobile Termination 2 (GSM-R MT2) is the heart of TEQoS2 and represents the interface between any railway application utilizing the GSM-R network and the fixed line infrastructure.

GPS-Receiver (not part of product delivery): The possibility to use a GPS receiver, to correlate measured values and positions exactly, makes TEQoS2 a unique test environment.

Notebook (not part of product delivery).

Software

Trace2 Software:

PC terminal application connected to the service interface of the GSM-R MT2. It operates in a client-server architecture with the Trace report module running on MT2, Trace terminal running on PC. MT2 and PC are communicating via a RS232 interface.

Comtalk II Software:

Generic terminal program for control and data communication with the GSM-R MT2. It is used to control the GSM-R Mobile Termination unit via AT commands. Commands can be entered in the command line and buttons for AT commands can be easily defined. Received characters and information are displayed in a separate communication buffer. Complete test procedures can be programmed with a built in script language on customer request by Funkwerk.

The GSM-R MT2 includes a widely used GSM chip set and a state of the art signalling software designed for public GSM. Funkwerk Systems Austria enriched the basic software with railway specific functions (ASCI features), e.g. Voice Broadcast Service, Voice Group Call Service and eMLPP feature.

The GSM-R MT2 provides two serial interfaces and the antenna connector on the front, one interface towards the backplane and a SIM-Card interface on top of the module:

- **Service Interface (RS-232):**
Used for configuration, software download, tracing, audio communication via test handset, AT command "bypass", reset.
- **Data Interface (RS232/RS422):**
For controlling the MT2 by AT Commands according to GSM specification (e.g. 07.07), stand alone testing.
- **Backplane Interface:**
Power supply (5V, 13V).
- **SIM Interface:**
Insertion of the plug-in GSM SIM (3V / 5V).

TEQoS2

To ensure high quality GSM-R coverage along railway tracks Funkwerk Systems GmbH has developed a test environment for Quality of Service Tests.

Features:

- Trace of GSM Layer-2 and Layer-3 including ASCII and AT command messages
- Full decoding of messages based on 3gpp specifications.
- Additional short decoding of GSM Layer-3 message contents
- Realtime trace analysis possible
- Post processing and replay of existing trace data
- Searching in trace data and decoded message contents
- Filtering of trace messages
- Book marking and color highlighting of trace messages
- Integrated terminal program (Comtalk II) with user definable buttons, test scripting capabilities and support for downloading software into mobile terminations
- Synchronization of trace message selection across all presented views (RSSI chart, GPS map, Trace Data Table, Bookmarks)
- RSSI chart: graphical presentation of quality, timing advance and field strength
- GPS map: graphical presentation of related GPS data
- Standard geographical maps (such as shapefiles .shp) can be integrated by the user as layers for GPS data presentation
- Integration of Openstreetmap geographical data via internet connection.
- Based on a special mode of the mobile termination the Trace2 can be used as a GSM-R frequency scanner to analyze network problems such as blocking and interference
- Scanning chart: graphical presentation of GSM-R frequency scanning results

Optional Features

- Trace of GPRS Layer-2 and Layer-3
(GPRS is not activated per default in the mobile termination. To activate this feature a GPRS activation key is needed. For further information please contact the sales department of Funkwerk)
- Short decoding of trace messages can be customized on request
- QoS-Test Scripts according O-2475 available (additional license)
- Additional test scripts for QoS measurements are available on request
- User defined post processing of trace data possible on request (based on service agreement)

TEQoS2 is used during the start-upphase of a new GSM-R network, as well as in the ordinary operation and optimisation process, wherever measurements need to be performed to guarantee the quality of the GSM-R subsystem.

