

3GMA

Measurement and Analysis Tools for 2G, 2.5G and 3G Wireless Networks

Key features



- Multi-Mobile operation plus P/N Scanner operation
- Built-in report generator, ETSI TS 102-250 QoS KPI plus additional KPI
- Rich set of visualization and analysis functions
- Full internal data storage, no „replay“ required
- Full inter-view synchronisation including multi-file synchronisation; drill down synchronisation between analysis and data views
- User-configurable, persistent views, layouts and workspaces
- Single-button startup of predefined setups, like expert analysis workspaces
- Compatible with all CVD data output of ICT-GSM, ICT-GPRS, ACT (black-box) and DMTS

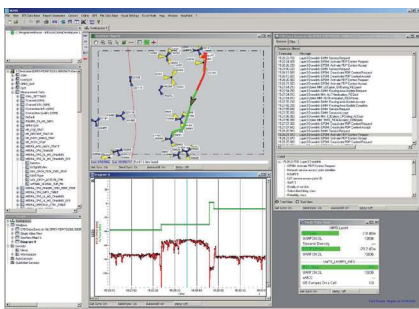


Supported Devices

- Motorola Razer R3xx, Nokia N95 (HSDPA Class 6)
- Trace Mobiles Sagem OT x6, 1xx, 2xx family
- Trace Mobiles Nokia 6650, 6630, 6680
- Trace Mobiles Nokia 6230, 6230i (optional)
- Trace Mobiles based on Qualcomm® chip sets (optional)
- Packet Services testing with all commercial mobiles supporting Windows® RAS
- Speech Services testing with all commercial mobiles supporting a minimum set of AT commands
- P/N Scanner type DTI
- P/N Scanner other types (optional)
- LAN Mode (enables Hotspot/WiMAX QoS testing)

Geo Positioning

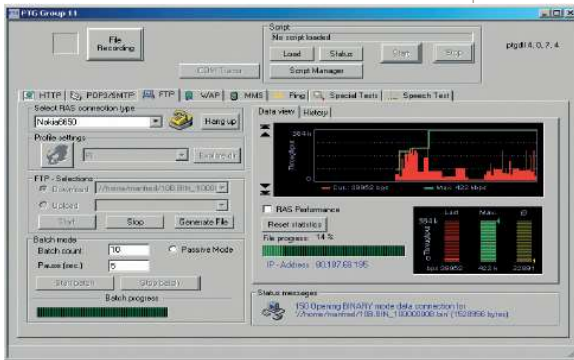
- GPS: Supported types NMEA (RMC & GGA minimum required), TSIP
- Way point Operation for in-house measurement, list and map mode



Services Testing (PTG Module)

PTG (Packet Traffic Generator) is the traffic generator unit for testing GPRS services. It can be used, however, in other contexts too, where realistic network activity shall be generated with little effort from the user's side.

It works with all terminal (UE) types, including commercial, as well as via Local Area Network (LAN).



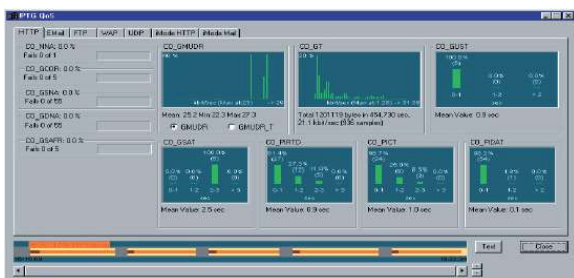
Packet Traffic Generator

Supported Services, Properties

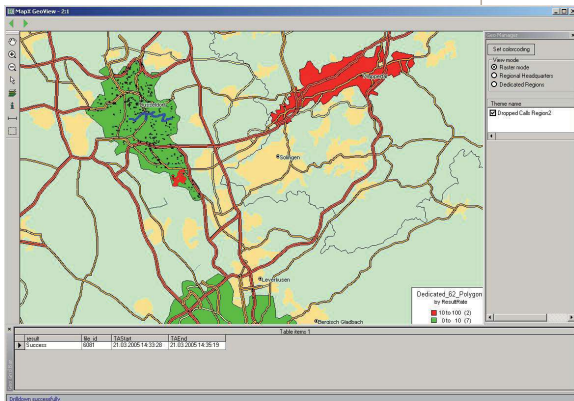
- **Speech.** Supported modes: MOC, MTC. Optional ITU-T 862.1, MOS-LQO output for uplink and downlink direction (DL SpQ requires Speech Server); data output for KPI assessment according to ETSI TS 102 250-2
- **HTTP** (HTML 1.1 browser, for security reasons no active content supported). Special test modes for PDP Context Activation and DNS access only; data output for KPI assessment according to ETSI TS 102 250-2
- **FTP** (upload/download, Active/Passive mode). User-definable, persistent accounts; data output for KPI assessment according to ETSI TS 102250-2
- **E-Mail** (POP3, SMTP). Upload/download; supported login procedures: None, CRAM-MD5, Auth Login Plain, Auth Login; user-definable, persistent accounts; data output for KPI assessment according to ETSI TS 102 250-2
- **WAP.** Supported modes: HTML, Binary Connectionless, Binary Connection Oriented; data output for KPI assessment analogous to ETSI TS 102 250-2 (currently does not support WAP)
- **PING.** TTL and payload size user-settable
- **IMode** HTML, iMode Mail
- **MMS** (same-machine B party, remote-machine B party). Data output for KPI assessment according to ETSI TS 102 250-2
- **SMS** (using „echo mode“ destination, no file merging required. Application for destination control included; data output for KPI assessment according to ETSI TS 102 250-2
- **UDP.** Data transfer modes: Streaming, conversational, interactive; internal code generator modes: Sequential, pseudorandom, reproducible pseudorandom, file; user-selectable data rate and packet size; stationary side software application (UDP server) included; optional server-side IP trace with automatic transfer to mobile-side
- **Attach Test.** High-speed attach/detach sequences to probe network capabilities
- **Video Telephony.** Testing based on modem-connection test (call setup and call drop testing) with special data patterns for block-error rate and latency measurement; optionally full H324 protocol-based testing; includes destination-side application software; no file merge required
- **Streaming Video.** Customer-view testing using special embedded Real Player® application; testing stream setup success/failure rates, stream throughput; detection of stream reproduction pauses (freezing „jerkiness“); optional video MOS on stream output
- **Push To Talk** (Push Over Cellular, PoC). Using real UE (not just PC-based stack implementation)

Services Testing Script Language Features

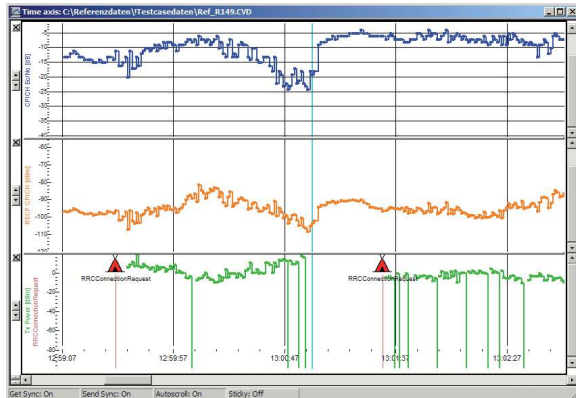
- Powerful but easy to use control language
- One-mouse click „get“ feature creates complex scripts directly from user-interface input
- Basic command set allows for full services-testing setup including batch control, repeat loop control, file output control
- Test cases can be combined freely within one script
- Output-file creation under full script control, including automatic file name creation, fixed file name parts, and working-directory selection
- Script-controlled Packet Services (RAS) set-up, including modem assignment, APN setting, user name and log-in setting
- Time-control commands, e.g. wait for given time, wait to given date and time (one-shot or cyclical)
- Various default-mode modification commands
- Scripts are simple text files which can be shared among installations



Quality of Service (QoS) View



Geo View



Time Axis

Visualizations

All data views listed here are fully online-capable, i.e. can show measurement data in real time as well as data from files.

- Geo Visualization (based on Map Info® MapX®), including multi-track data visualization with multi-color mapping, event visualization with customizable symbols, BTS (Node B) visualization including Active Set/Neighbor Set relationship view
- Fully configurable time-axis view, providing full flexibility in composition of view by simple Drag & Drop operations
- Vector Data time-axis visualisation with multi-curve, Bar Group, Bar Stack, Bar Lane view
- Fully configurable Single Value View
- Fully configurable Vector Table View
- Message Browsers with detail decode for GSM/GPRS L3, RLC/MAC and UMTS RRC
- Message Browser with detail decode for all measurement data types
- Fully configurable table-style Data Browser with customizable color assignment to measurement data types
- Scatter View (showing correlation between two measurement values)
- Integrated Microsoft® Excel® (requiring Excel® license installed)
- QoS Monitor (showing QoS KPI during measurement)
- Full-text Finder View with user-configurable trigger conditions on Layer 3 messages
- User-configurable color assignment to measurement data types
- User-configurable symbol assignment to Layer 3 messages
- User-configurable symbol assignment to marker events

Workflow Functions

- Fully configurable Layouts. By simple Drag & Drop operations, time-axis views can be customized to show any combination of data types, including control of view options and track area assignment
- Full configurable Workspaces, containing views and online devices
- Layouts and workspaces can be stored to files, and can be assigned to data sources both in online and offline mode. Layout and Workspace files can be shared by simple file transfer
- Apply layouts and workspaces to files and online data sources: Create complex data views for analysis, optimization and result assessment by simple mouse actions
- Quick-start feature: With a simple mouse click, the measurement tool is prepared for action by start any number of pre-defined workspaces containing online devices

Analysis Functions

- Call Drop Analyzer: Automated Root Cause Analysis for CS and PS calls; provides cause classification including diagnostic hints; drill down-control interface, result export functions
- Technical Reporting: Provides automated Procedure Analysis (e.g. Connection setup, Hand over), procedure-result statistics, procedure sequence list with drill down synchronisation to raw data; configurable Gap analysis; measurement-value distribution statistics.
- BTS Usage Statistics
- Measurement extraction from 2G/3G Layer 3 messages to tables; export function
- SIB View

BTS Database Functions

- Open, fully documented import format for 2G and 3G cell site data
- Rich BTS database functionality including search for name, CI, LAC, SC; BTS Search function by Scrambling Code
- Fast load function (loading once-created binary images instead of huge native BTS database text files)
- Fully user-configurable BTS relationship colors

Report Generator Functions

- Reporting on file sets of arbitrary size
- QoS KPI compliant to and exceeding ETSI TS 102 250-2, including User View and Technical View
- No technical restriction of QoS KPI assessment to Trace Mobiles; KPI can be determined with commercial (traceless) UE to full extent trigger points
- Fully exportable Result Overview function providing QoS KPI View, drill down-enabled Transaction View with rich detail and Time-Profile View (e.g. for SLA analysis) with user-selectable time resolution
- Integrated Microsoft® Excel®-based reporting with user-editable layouts, sample layouts included
- Integrated Crystal Reports® reporting, sample reports included
- User-configurable MNC/MCC override, allowing correct network assignment for measurements taken with traceless UE
- Context assessment for transactions, including Technology, start/end cell identity, L3-based Attach and PDP Context Activation information
- User-configurable KPI assessment functions, allowing direct classification of results to Passed/Fail categories; supported for Throughput, Attach Success Rate, Attach Time, PDP Context Activation Success Rate, PDP Context Activation Time

Output and Export Formats

- Fully configurable table export, output compatible with Microsoft® Excel®
- Layer 3 (GSM/GPRS and UMTS) fully decoded output to text files Report exports (by-file and summary) to Microsoft® Excel®-compatible files
- Value extraction from GSM L3 and RRC messages to user-configurable, exportable tables

Other Functions

- Time Ruler: Control tool for automatic (like „replay“, but based on random access to data history) or manual navigation in multiple views
- Device Layout Manager: Automatically assigns user-definable workspaces or layouts to specific device types at start
- Data Dictionary Override for user-configurable settings of measurement-value min-max limits
- File Database and File Information Centre, providing quick overview of files by date/time range, content, service types contained or QoS result
- Monitoring and alarming, fully user-configurable to supervise devices, QoS KPI and individual measurement-data values; create alarm on absence, gaps or value-threshold violations

Feature Roadmap

- H.324 Video Telephony testing against commercial mobiles, including Audio and Video MOS (now available)
- Integrated IP Trace with Ethereal® compatible output
- HTTP test with „1:1“ Microsoft® Internet Explorer® (now available)
- Internet Radio/Internet TV testing (now available)
- Enhanced Call Drop Analyzer (more Root Cause categories, more diagnostic detail)
- User-configurable Data Browser with type-dependent colorization of entries
- Full Text Search in L3 results (now available)
- File Group handling
- Direct Nokia 6630/6680 Forcing command support (from within application) (now available)
- WLAN low-level trace information

Range of System Solutions

- Interactive measurement
- Unattended measurement
- Analysis
- Turnkey/19" Systems
- Benchmarking Systems
- Evaluation and Reporting

All our products have a modular design, offering high flexibility to deal with our customer's requirements and full compatibility due to optimally inter-balanced system components. This allows an optimum in hand-in-hand working.



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