



G35 Software Edition for LTE, WiMAX, Femto and All-IP Networks

PC Simulation Software

Highest Load Performance with the Latest Available Hardware

4G technologies like WiMAX and LTE are placing ever increasing demands on the scalability and performance of network elements. The high bandwidth and low-latency requirements of these technologies require network equipment manufacturers to deploy the latest available network processing hardware. Likewise, test equipment must be able to stress test (i.e. to surpass the capabilities of) such network elements. Thus, test tools must also be based on the latest available technology.



Flexible and Powerful Platform for All-IP 3G / 4G Testing

- Deploy the latest off-the-shelf network servers for your load test needs
- Use standard PC hardware for 3G and 4G functional testing
- Stay abreast of 4G developments with the test platform that evolves with your needs

Features & Benefits

- Use the latest off-the-shelf network server hardware for highest load traffic generation performance in the multi-Gbps domain
- Cost-effective functional testing for IP-based mobile network technologies using any standard PC hardware platform
- Simulate the latest protocol implementations for IP-based technologies like WiMAX and LTE
- Benefit from the same test tool chain for test scenario development that is available with G35 portable and rackmount units

Applications

- Highest performance load and capacity test
- LTE functional and load testing
- WiMAX simulation and load testing for all key interfaces
- Femto and 3G Iu-CS / Iu-PS for IP-based interfaces
- IMS testing

Fortunately, such a requirement can be met with Tektronix Communications' new G35 Software Edition. The G35 software, which was originally integrated with a dedicated cPCI-based hardware platform, has now been extended to allow emulations and user-developed simulation scenarios to be executed in an external Linux-based 'probe'. This probe can be based on any standard PC or network server hardware platform that supports off-the-shelf GbE Network Interface Cards which are recommended by Tektronix Communications.

This approach allows the latest hardware available on the market to be used for highest load traffic generation. This approach also allows standard low-cost PC hardware to be used e.g. for functional test applications. As a G35 user, you will no longer be tied to deploying a specific hardware platform for your test needs. In other words, you can control the deployment of a hardware platform that suits your performance needs.

Use the Power of G35 for 3G and 4G Testing

The complete tool chain used with the existing G35 platforms is also available with G35-SE. With this tool chain, the following sample test applications can be supported:

- Load testing of a WiMAX ASN-GW by simulating a large number of Subscriber Stations and Base Stations
- Functional and load testing of the LTE EPC (Evolved Packet Core)

The tool chain of G35-SE includes the following elements:

Emulation Scenario Editor (ESE)

Any test case development requires the definition of an emulation scenario which identifies individual protocol layers as well as their inter-relationships.



G35-SE using the performance of an off-the-shelf (OTS) network server

An emulation scenario created with the ESE may consist of one or several pre-defined protocol emulations that automatically simulate the behavior of a particular protocol layer.

Message Building System (MBS) and Message Sequence Chart (MSC)

You can also create your own protocol layer emulation that addresses specialized test scenarios using the MBS and MSC tools. The MBS allows you to define required messages and information elements. These messages can build upon a very large pool of available protocols for IP-based interfaces. The MSC then allows you to specify in easy-to-use graphical format required message interactions between the test tool and the IUT (Implementation under Test).

Protocol Monitoring and Statistics

Detailed protocol-layer analysis can be performed using the industry-leading *Tektronix Communications Monitoring Application*. It allows for deep-level decoding of traffic and representation of decodes in a variety of formats (including human-readable). Statistics can be collected and viewed in various graphical formats and can be exported to support test reports and further offline analysis.

Characteristics

G35 Software Edition Components

- PC Software, including the complete G35 test tool chain (as described further below), for installation in a standard Windows XP environment (e.g. desktop PC, laptop).
- Linux-based G35-SE probe software for installation on appropriate network server or standard PC hardware.

Test Tool Chain

- Emulation Scenario Editor for creating protocol layer / network element / network subsystem emulation scenarios
- Message Building System for creating user-defined messages, primitives and variables
- Message Sequence Chart for creating protocol-layer, specific user-defined simulation scenarios
- Monitor application for deep-level decoding of message transactions between protocol tester and DUT
- Statistics application

Supported Interfaces (Samples)

- WiMAX: R1, R3, R4, R6, R8
- LTE: Uu, X2, S1, S3, S4, S6a, S10, S11, S12, S13, S101, S103, Gxx, Rf+, Gz, SGi
- Femto and 2G/3G Core Network: Iuh, Iu-CS (IP), Iu-PS (IP), Gb(IP), Gi
- IMS: Gm, Go, Gq, Cx, Dx, Mb, Mg, Mm, Mr, Mw, Mn, Ut



G35-SE Client installed on a standard OTS laptop



About Tektronix Communications:

Tektronix Communications provides network operators and equipment manufacturers around the world an unparalleled suite of network diagnostics and management solutions for fixed, mobile, IP and converged multi-service networks.

This comprehensive set of solutions support a range of architectures and applications such as LTE, fixed mobile convergence, IMS, broadband wireless access, WiMAX, VoIP and triple play, including IPTV. Tektronix Communications is headquartered in Richardson, Texas.

Learn more about the company's test, measurement and network monitoring solutions by visiting: www.tektronixcommunications.com

For Further Information:

Tektronix Communications maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology.

Please visit www.tektronixcommunications.com

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