ME7834

Mobile Device Test Platform

Signaling test solutions

- **Protocol Conformance**
- **Carrier Acceptance**

Ubiquitous Wireless Coverage - The N

We travel the world and expect to be able to talk, text, browse and more importantly be informed wherever we are. "Staying connected" is now expected.

Wireless technologies compete and collaborate for market share, and following the trend for a global standard started by GSM there are now many evolving and hybrid systems.

Today there are more variables, more applications and more features providing a new challenge for terminals.

LTE

LTE (Long Term Evolution) is the established next generation technology, with many legacy systems and variants being integrated into operator network updates. The challenge for terminal developers is to offer the right services and be able to support a variety of systems to ensure globally connected devices.
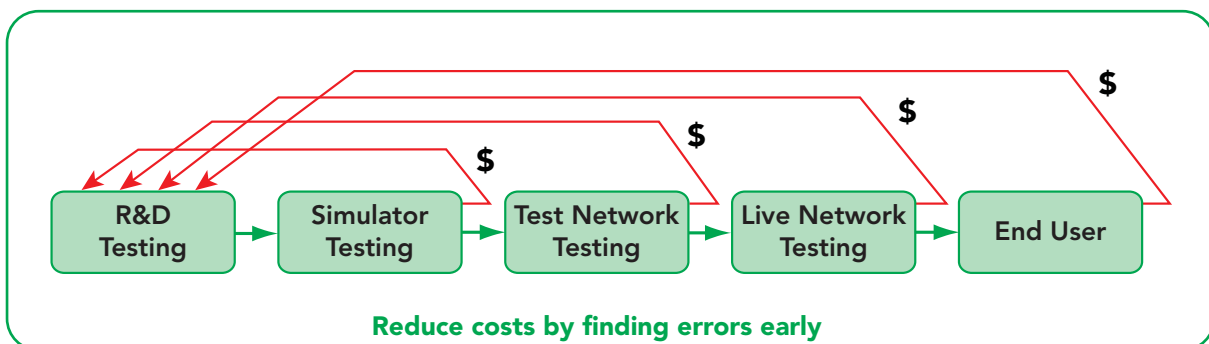
Multi-cell simulation in the lab

There is an established practice to simulate scenarios found or expected to be found in the field by creating them in the laboratory. This way the development teams have a better chance of isolating and fixing any problems before the products are commercially deployed.

Initially, simple single cell simulations are required for early development. Conformance tests may require additional active cells. As interoperability and network acceptance is introduced, sophisticated multi-cell, multi-system simulations are required to ensure terminals are tested in conditions as close to real networks as possible.

High quality, advanced and dependable

Anritsu is reputed for dependable test solutions that offer innovation, high performance and excellent functionality.

Supporting standards bodies

Anritsu actively participates in many industry standards bodies and forums to ensure that products meet their requirements. Anritsu also provides engineering resources for the MCC TF 160 group that develops the conformance tests in co-operation with 3GPP.

Environmentally aware

The company prides itself on its "green" credentials and contributes to promote a safe, secure and comfortable society. It has achieved ISO14001 certification over many years and aims to exceed its responsibilities to protect our environment.

R&D Testing → Simulator Testing → Test Network Testing → Live Network Testing → End User

Reduce costs by finding errors early

ext Challenge

ME7834 Mobile Device Test Platform

The ME7834 is a configurable system that provides flexible protocol test solutions throughout the lifecycle of modern wireless terminals.

ME7834 systems are able to address applications in development and conformance and evolve to provide advanced system simulation.

Anritsu led the way with 3rd generation mobile development programs. It is now delivering intelligent test solutions to LTE development teams that need to accelerate their designs to stay competitive.

Global support

With firmly established R&D centres in Europe, Japan and North America, Anritsu can claim to be a truly global company with industry leading expertise.

Systems are supported through a world-wide network of engineering hubs that can provide calibration as well as application support.

System Simulators - The Building Block

Anritsu has a well earned reputation for capable and dependable wireless simulators. The MD8430A has the ability to generate 6 LTE cells: which means that as terminal designs mature, the test system is ready to create new complex testing environments without the need to add more equipment or change out cables.

2 X 2 MIMO handovers are possible using one MD8430A. Adding MD8480C(s) and MD8470A(s) provides simulations that add multiple UTRAN/GERAN cells and multiple cdma2000 1xRTT/1xEV-DO (HRPD and/or eHRPD) Cells. This means that for InterRAT handovers the most realistic network simulation is provided and resources are not time shared, with a likely performance compromise.

The hardware is designed to ensure that an investment today provides capability for the future.

MD8430A LTE Signaling Tester
- LTE for FDD and TDD covering 350 to 3000 MHz frequency band
- 100 MB (DL): 50 MB (UL)
- 4 RF supports 2x2MIMO handover
- Up to 6 Cells (2 communication, 4 neighbour)
- Future proof – Category 4 today
- Compliant with 3GPP TS 36.523 for GCF and PTCRB certification

MD8470A Signaling Tester

- All-in-one platform supporting functional testing of mobile terminal applications, including voice and video calling, content download and messaging.
- Wide frequency coverage (400 MHz to 2.7 GHz)
- CDMA2000 1X/1xEV-DO Rev. A

MD8475A Signaling Tester
- Supports 2G/3G standards GERAN and TD-SCDMA
- 2 cells for TD-SCDMA /GERAN Inter-RAT and Intra-RAT
- Real-time TD-HSPA (DL 2.8M/ UL 2.2M) data rates

MD8480C Signaling Tester
- Up to 4 W-CDMA cells and 2 TDMA cells
- Up to 2 physical RF channels
- Enhancement to HSPA Evo including Rel-8 DC-HSDPA

s of a Test System

ME7834 - flexible configurations

The ME7834 can be configured to provide solutions for individual applications or combinations that allow functionality to be shared or expanded as needs mature.

From a simple bench-top development system, to a rack that provides comprehensive simulation of real networks, ME7834 combines hardware with tools and a framework for efficient use of resources.

Additionally users that have purchased Anritsu's established protocol tools may integrate them into a ME7834 platform to protect their investment.

MF6900A
Fading Simulator

Add fading

MD8475A
Signaling Tester

Add TD-SCDMA

MD8470A
Signaling Tester

Add cdma2000

MD8480C
Signaling Tester

Add UTRAN/GERAN

Add LTE

MD8430A
LTE Signaling Tester

Flexibility & Resource Sharing for Opti

ME7834 systems are fully configured and can be supplied racked or as individual components.

Commissioning and training can be tailored to individual requirements.

Conformance test systems may be configured to test against specific work items through to comprehensive parallel test systems that are able to run test campaigns efficiently.

ME7834 can be configured for GCF / PTCRB conformance testing for all bands and automated to provide the fastest conformance test solution.

Carrier acceptance tests are available for a number of global network operator configurations covering North America and Asia. ME7834 Carrier Acceptance Tests and Protocol Conformance Tests may be combined in the same system configuration when required.

Components can be added as requirements expand

mum Cost Performance

DATA SERVER (1U)

1U
5U
1U
2U
3U
1U
1U
1U
5U
2U
7U
1U
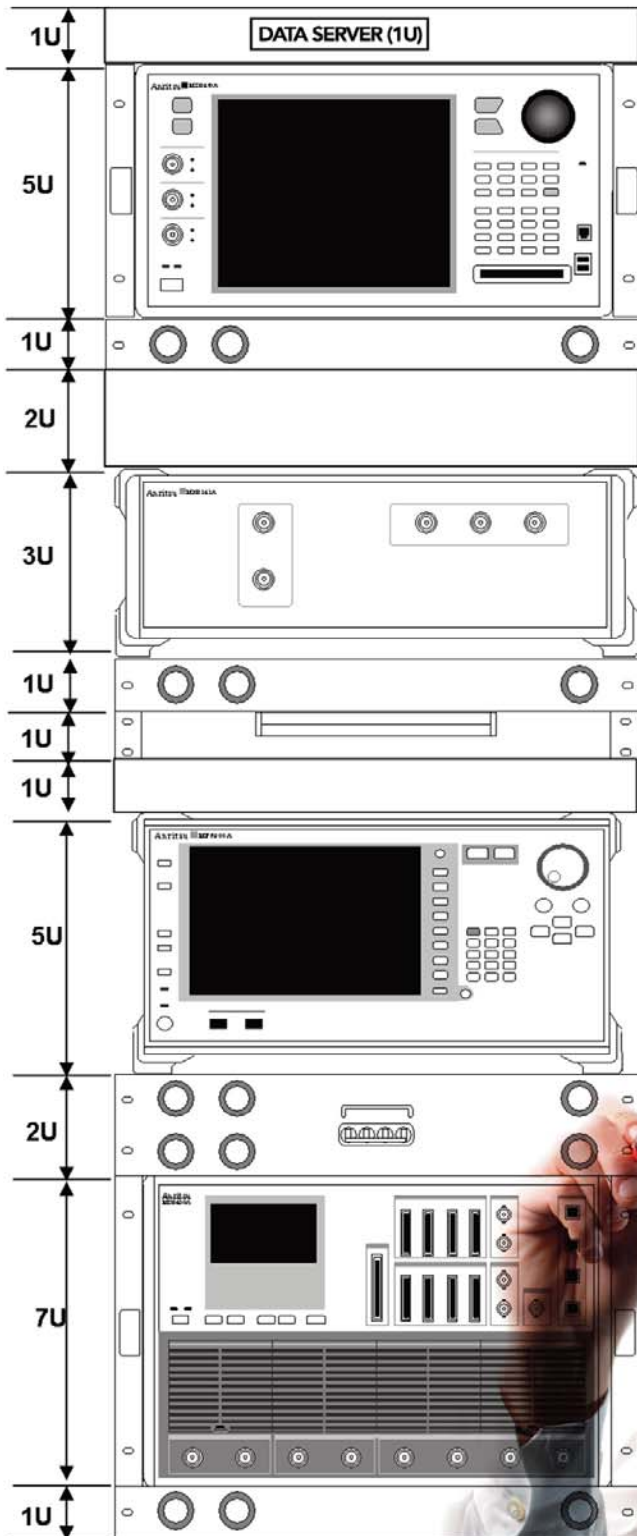
Designed to your requirements

LTE-FDD	HSPA
LTE-TDD	cdma2000
UTRAN	TD-SCDMA
GERAN	LTE-A
IMS	

Conformance Testing to Meet Rapidly

The world's first test equipment supplier to meet the GCF RF & protocol LTE device certification targets

The Global Certification Forum (GCF) and the PCS Type Certification Review Board (PTCRB) include the ME7834 as an approved platform to provide test coverage for LTE-Advanced, LTE FDD & TDD, IMS, UTRAN + HSPA, TD-SCDMA and GERAN technologies.

Hardware, software, tests and test validations all need to keep pace with the latest 3GPP requirements. Anritsu supports the 3GPP standards and RAN5 test specifications always investing in supporting the working groups that architect these specifications. Leading the race to provide the best test coverage for GCF and PTCRB in LTE for Protocol & RF to meet compliance for the latest industry standards.

A 3 month cycle of conformance test evolution puts significant demands on organisations to ensure that their new devices can meet these new test requirements.

The ME7834 is registered as GCF TP119 and tracks TS 36.523 for LTE and TS 34.123 for UTRAN. It has met critical deadlines set by the industry for test platform approval. The system may also be configured to meet tests mandated by several network operators.

- **Reducing risk in product development**

  With the integration of many new technologies, it is even more important to have results you can trust. The ability to analyze in detail any issues you may have as quickly and easily as possible, reduces any risks to your development lifecycle. The ME7834 platform is able to provide a robust configuration with no cables to change, reliable operation with approved test cases available when you need them. Combined with advanced analysis tools and real time measurement functionality the ME7834 provides a fully integrated system with an intuitive graphical interface.

- **Accelerating time to market for new technologies**

  Launching new products to market as quickly as possible is a challenge facing all manufactures. This generates the need to automate the growing number of tests required to efficiently complete the validation cycle for new products. Anritsu's advanced automation environment solves this problem, allowing the system to be controlled remotely along with device automation. This allows large campaigns to be developed that can contain hundreds of tests which can be executed in an unattended environment.

- **Flexibility to create custom test scenarios**

  Standard test cases are not always enough to ensure your product meets the demanding environment of today's networks. The ability to modify the standard test cases in TTCN-3 gives you flexibility and can be further enhanced by the purchase of dedicated acceptance test packages to support all your testing and technology needs.
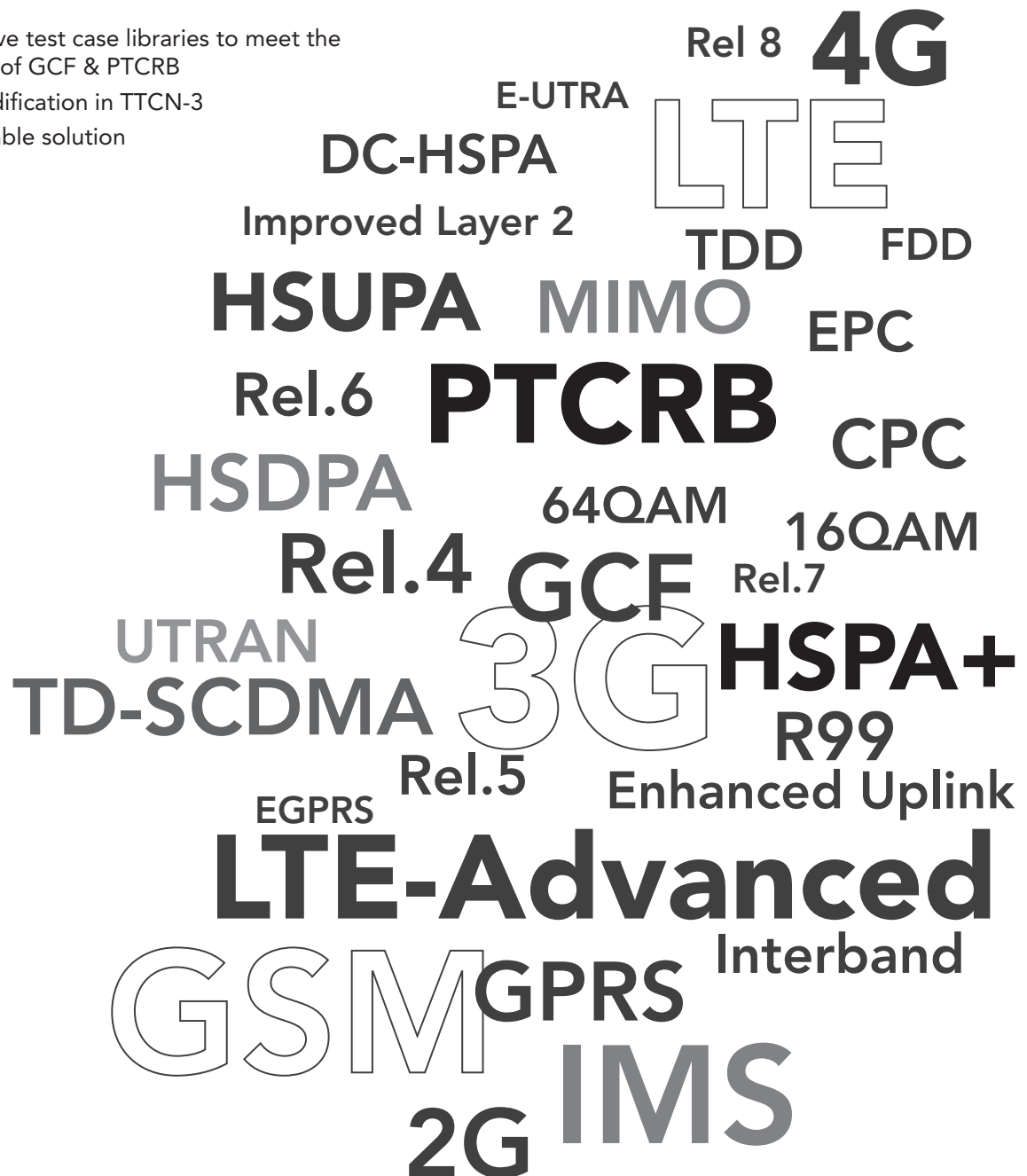
Evolving Specifications

ME7834 systems are easily upgraded as requirements change. A system used for LTE Conformance Testing can easily be adapted to also run carrier acceptance tests. Existing PCT users will be able to upgrade to ME7834, protecting their equipment investment and more importantly tests.

The systems are the most reliable and provide results that can be trusted.

- Comprehensive test case libraries to meet the requirements of GCF & PTCRB
- Test case modification in TTCN-3
- InterRAT capable solution

Rel 8 **4G**
E-UTRA
LTE
DC-HSPA
Improved Layer 2
TDD FDD
HSUPA MIMO
EPC
Rel.6 **PTCRB**
CPC
HSDPA
64QAM
16QAM
Rel.4 **GCF** Rel.7
UTRAN
3G **HSPA+**
TD-SCDMA
R99
Rel.5 Enhanced Uplink
EGPRS
LTE-Advanced
GSM GPRS Interband
2G IMS

The fastest protocol conformance testing for wireless terminals

*"The world's fastest
Protocol Conformance Tester"*

As the number of conformance tests grow, the need to automate and reduce test execution times becomes essential. Anritsu systems provide leading hardware and software performance and it is possible to reduce overall test cycle times further by combining multiple hardware units within a single system.

- Easy test sequence creation.
- Drag 'n' drop graphical user interface.
- Industry leading validated test case catalogue.
- Flexible test sequence creation.
- Test report generation with export to accepted industry formats.

- Custom test case development.
- View, edit and create custom test cases based on the TS36.523 specification in TTCN-3.
- TTCN-3 editor provides syntax highlighting & navigator view for easy project browsing.
- Navigation from a log entry in the protocol analyzer to the associated line of source code for efficient test case debug.

- Fast & reliable test execution.
- Quickly identify where and why a test fails.
- Automatically parameterise test cases according to the UE capabilities.
- Advanced automation control via AT & MMI commands.
- Easily integrate into proprietary automated test environments using the remote control interface.

GCF
Global Certification Forum

PTCRB

Registered as an approved GCF & PTCRB TP119 reference platform

Acceptance Testing for Carriers

With finite bandwidth and ever more traffic, the challenge for carriers is to optimize their networks and ensure that terminals obey the rules they set. LTE/SAE attempts to make more efficient use of the spectrum available but still needs to inter-work with legacy systems. There are also regional variations and network specific requirements that terminals will be expected to meet. Load balancing may be important to make best use of network resources and although aesthetics and applications may define a terminal's popularity, the behaviour under specific conditions needs to be tested to ensure a reliable and friendly user experience.

Carriers are making use of the intelligent test tools to ensure that terminals behave correctly on their networks. Terminal development teams simulate conditions in networks that may be thousands of miles away and may not yet support the updated functionality present in new handsets.
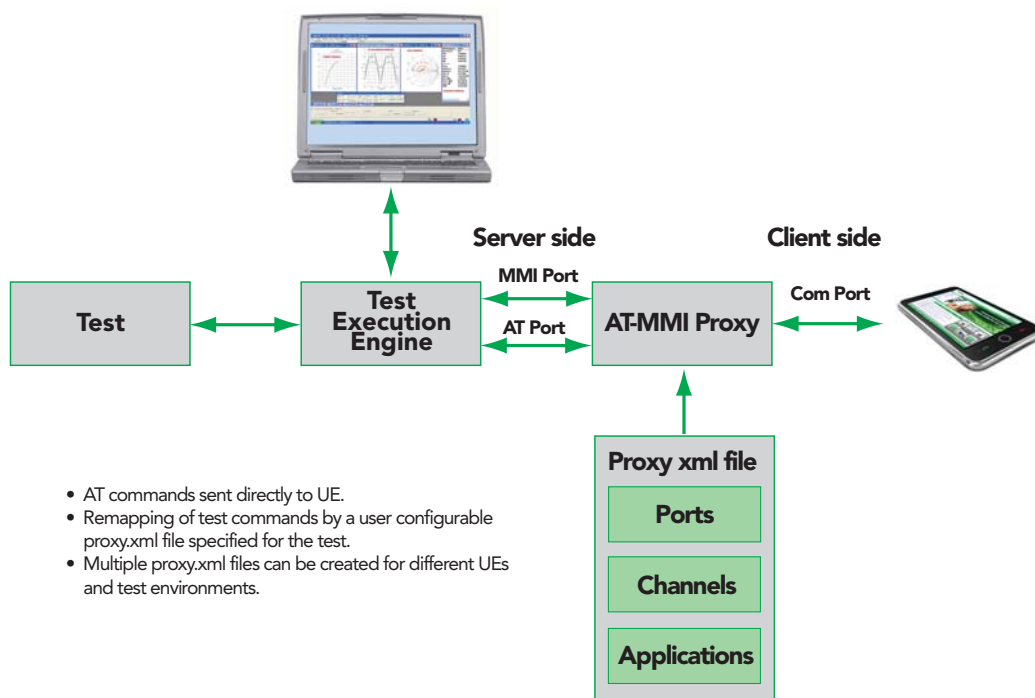
Roaming partners

Today the cost of sending engineering teams to perform network testing over many weeks can be a very significant portion of a carrier's proving budget. More tests can be executed in the laboratory, resulting in cost savings and repeatability.
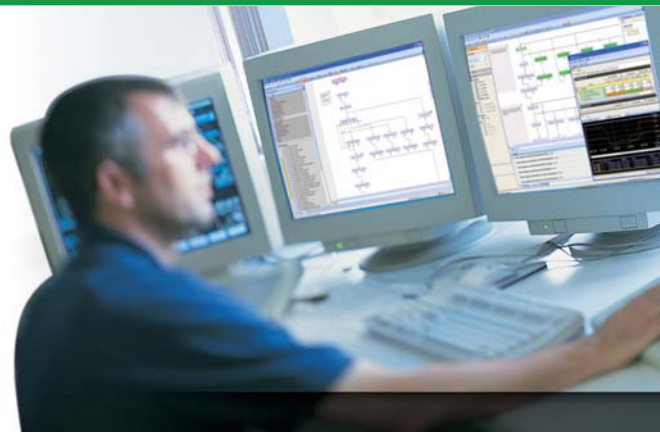
New network services

Most carriers will not allow new terminals onto their live networks without some proving. ME7834 provides a way to test new terminals and also new services that may be ready to be deployed. Future functionality and applications can be proved in a controlled way.

Automation

Automation of the test execution is preferred to allow tests to run overnight or unattended, presenting the user with an executive summary of the various outcomes. Control of external equipment is provided from the tools.

- AT commands sent directly to UE.
- Remapping of test commands by a user configurable proxy.xml file specified for the test.
- Multiple proxy.xml files can be created for different UEs and test environments.

Test packages that keep pace with network requirements

Anritsu is able to provide and support a number of carrier specific tests. *(Note: some test packages may need to be obtained directly from carriers)*

The tests are created and validated with a graphical test executive. This makes it straightforward to visualize test flow and hence verify and debug the terminal's behaviour. These tests are validated against stringent requirements before they are provided as a commercial test package.

ME7834 users now have the ability to purchase carrier acceptance test packages outright or subscribe to them on an annual basis to suit their fiscal needs.

- Purchasing the tests requires the customer to order each individual test package as they are introduced.
- Subscription provides all the tests available at the time of purchase and any that are introduced through the period of subscription.

The documentation provided with the tests includes all the information needed to understand the test method, its purpose and criteria applied to prove a pass or failure. This is documented in a way that will be familiar to users that have studied the 3GPP processes.

Carrier Validation & Acceptance Tests

AT & T LTE	ME7834L-400 series
AT & T Legacy	ME7834L-410 series
Band13 LTE	ME7834L-430 series (for VzW ecosystem)
Band13 VoLTE	ME7834L-450 series (for VzW ecosystem)
T-Mobile USA LTE	ME7834L-460 series
T-Mobile USA UTRAN	ME7834L-475 series
TD-LTE NS-IOT	ME7834L-800 series (for CMCC ecosystem)
KDDI	ME7834L-820 series
SKT	ME7834L-830 series
Docomo	ME7834L-860 series

Please contact your local representative for a data sheet with details of the tests required.

ME7834 for Carrier Acceptance Repo

Annotation

Tests are annotated, enabling easy identification of logical and functional blocks, so that they may be used and modified for acceptance as well as debug purposes.

Watermarking

Tests are watermarked to provide confidence to the user that the tests and results are original and have not been modified.

Fading simulation

The MF6900 Fading Simulator is included in some ME7834 systems, particularly where data performance is measured.

Inter-RAT

Complex tests are supported through the combination of multiple signaling simulators and MN8141 RF Combiner

Automation

Where possible, tests are automated allowing overnight unattended runs for greater efficiency. By using a definable proxy, control of a wide range of devices is possible.

rts & Results

Pass/Fail results ✓ ✗

Test results will be given a pass / fail verdict based on criteria set within the test. The verdict is available visually or can be generated in a report.

Criteria editor

To diagnose problems the criteria set in the tests may be able to establish the cause of failure. By opening a log, results are displayed – see example below.

The criteria may be edited and post processed to look for trends and for debugging. This avoids running a suite of tests again. A report is created from the test flow that occurs in every test execution.
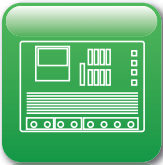
If further diagnostics are required the test log is available for full analysis.
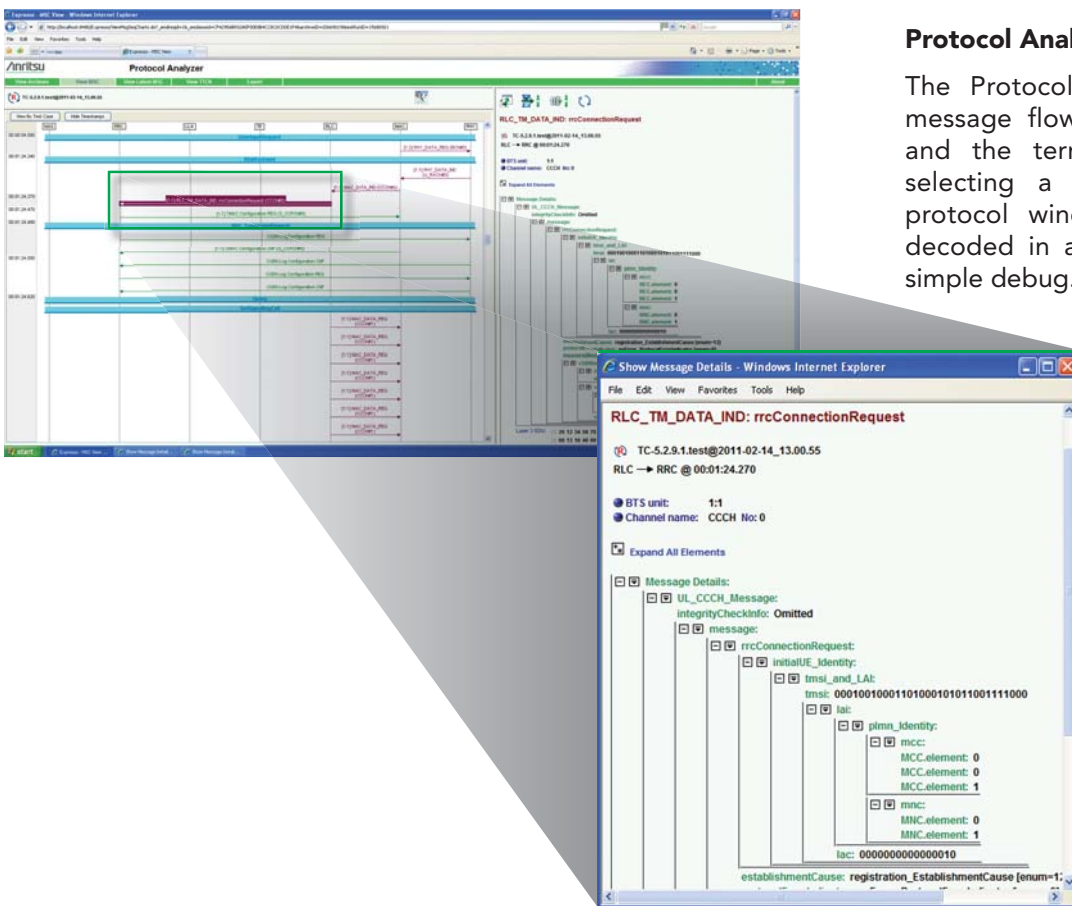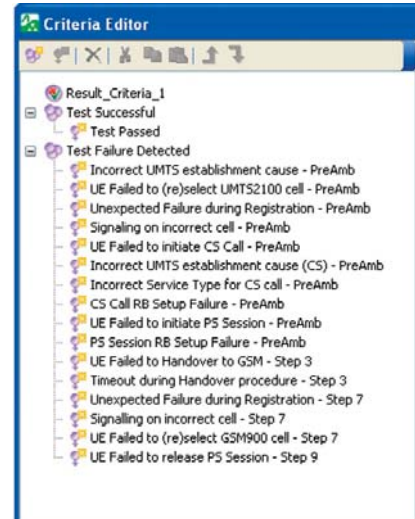
Protocol Analyzer

The Protocol Analyzer displays the message flow between the ME7834 and the terminal under test. By selecting a message in the main protocol window, the message is decoded in a new window, allowing simple debug.

ME7834 Highlights

Dependable hardware

Anritsu system simulators are designed to run continuously and perform within specification to ensure test results can be trusted.

Test packages

There are test packages to suit all requirements from conformance to acceptance.

Fading

For performance measurements under fading conditions, MF6900 can be integrated.

Results analysis

Preliminary judgement can be made without needing to view and analyse test logs.

Expandable

The ME7834 can be expanded as requirements evolve.

Watermarking

Acceptance tests are watermarked to ensure that validated test results are submitted and correct tests have been used.

Fast test execution

The test systems have been optimised to run efficiently.

Automation

Either in-built test campaigns or integrated as part of a test system. Control of device under test and external devices.

Active participant in standards

Anritsu is represented on various standards bodies' and supports the 3GPP test creation team in Sophia Antipolis.

Simplified Configuration

Single RF connection for any device and technology combination.

On-site support

As well as access to the online support teams, engineering resources are available to install and configure systems on-site.

Electronic software delivery

24-7 access to the latest software is available via a secure electronic download site.

Re-use of hardware

Existing equipment, including soft components can be re-used to build comprehensive network simulations.

On-line support suite

Tracking of support issues can be managed via a secure internet connection. Managerial privileges may be set up to allow filtering and reporting.

ME7834 the Complete System Solution

Cost of ownership

The ME7834 provides a suite of support and training options to suit different users and applications. Anritsu is able to supply turnkey solutions or individual components. Systems are installed and supported by teams of highly skilled engineers that are deployed world-wide.

As wireless terminals continue to evolve, it is important to keep up to date with market changes and 3GPP specifications. Product updates and technical support is provided to help the user receive the maximum benefit and to maintain the latest capability from the test system.

You are encouraged to take out annual software update and maintenance contracts to ensure that you are kept up-to-date with both the latest software features and tracking with the latest 3GPP version supported.

Updates

Updates for the test system may be triggered for a number of different reasons. Some of the requirements relate to ongoing product development and are therefore scheduled according to Anritsu's engineering programs and these are described in the product roadmap. Other requirements are triggered by external factors, including, but not limited to the activities of the GCF, PTCRB and ETSI organizations.

In relation to Anritsu's program of continuous product development it may be necessary to provide additional updates in cases where the core or test specifications change and re-validation of the platform is therefore required (product enhancements and 3GPP updates are provided in the same release).

Approximately every three months a new version of the software is introduced and made available to all participants in the program.
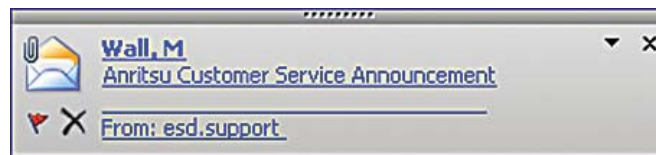
Electronic software delivery

System updates are straightforward to install and are normally completed by customers. Anritsu's support engineers are available to visit customer sites for installation updates on request.

Software is available 24-7 via the Electronic Software Delivery (ESD) service. Full installation instructions are provided and technical support is available to ensure the process is completed successfully.

On-line help & tutorials

On-line help is available for many applications with help and tutorials allowing first time users to get the most from the system. The tutorials are designed to guide them through many of the unique features and help understand the architecture and operation of the system.

Training

Training courses are available for the ME7834 and comprise a combination of classroom and practical activities. Training can be provided either at the customer site or at Anritsu facilities.

Installation and commissioning

Installation and commissioning can be provided if required. This service is offered in addition to the initial training for the product.

Calibration

Calibration can be arranged at one of the many accredited calibration and repair laboratories or even on-site in some instances.

Support desk

Where possible local support is provided in territory or from a local field office. This is the first line of support, which is backed up from our international support desks. Users are given a dedicated login to SupportSuite so tracking of support issues can be managed via a secure internet connection. Managerial privileges may be set up to allow filtering and reporting.

From day one we aim to provide an efficient support service and fast response time to technical questions.

For full details of the services currently available and planned for your territory, please contact your local Anritsu Sales office.

/Inritsu

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