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Protocol Test

6401 AIME/CT

UMTS Conformance and Protocol Analysis Test Solution



- 3GPP UMTS Compliant mobile protocol analyzer and conformance tester
- ETSI sourced 3GPP test cases
- Independent third party validation
- Fully automated testing including mobile control
- Highly modular flexible design extends use to R&D
- Supports GSM/GPRS-UMTS handover requirements
- User friendly Windows™ MMI for ease of use
- Upgrade to support 3GPP RF Conformance testing
- Full training and support packages included

The complexity of a modern communications network requires the development of extensive and detailed technical specifications. This responsibility is undertaken collectively by the telecommunications industry. For UMTS, 3GPP (Third Generation Partnership Project) undertakes this role. Global compliance has been ensured through close international collaboration between national standards bodies such as ETSI, ARIB, and TTA. The resultant output is a comprehensive set of specifications setting out the requirements to which equipment must conform, and the scenarios against which equipment must be verified. As with earlier standards, these standards will inevitably evolve as new features and applications are introduced.

To reduce the time it takes to deliver a mobile to market, the design and development process is accelerated if the user can test against the conformance specifications whilst still in development.

EXPERTISE IN DIGITAL CELLULAR TEST

Aeroflex has been closely involved in providing test solutions since the launch of digital cellular systems. These have delivered users significant time and cost benefits in technologies such as GSM, GPRS, EDGE and CDMA. Aeroflex develops its own hardware and software and works with industry leaders in areas such as conformance test cases. This approach ensures the integrity and reliability of the test systems.

MEETING CUSTOMER NEEDS

Aeroflex delivers a total solution where elements such as reliability, support and customization are recognized to be of equal importance. This approach enables solutions to be offered that can be tailored to meet the specific needs of the user.

PRODUCT OVERVIEW

The Racal Instruments Wireless Solutions 6401 is the latest ProCLAIME family offering and provides a 3GPP UMTS protocol and conformance test solution. Using a completely new platform, the 6401 uses the latest generation of DSP and baseband technology to provide a near 'software only' protocol test solution. This will enable the 6401 to remain future proof as the UMTS standards evolve and new features are introduced, thereby protecting the investment made in the test system.

PLATFORM AND SOFTWARE ENVIRONMENT

The 6401 platform provides the protocol analysis capability to allow a user to observe the protocol behaviour of a mobile operating against a simulated 'perfect' UMTS network. The faithfulness of the network simulation is achieved within the 6401 by embedding a 3GPP compliant network protocol stack solution at Layers 1 and 2.

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The AIME/CT software environment runs on the 6401 and can be used to address two distinct applications:

Conformance testing

Research and development

For conformance testing, the AIME/CT software environment can be used to run the various test cases and provides an independently validated fully compliant 3GPP UMTS mobile conformance test solution.

The AIME/CT software can also be used as a protocol test tool for those involved in research and development (R&D), system integration and interoperability testing for UMTS mobiles. A number of additional software components are available as options to extend the functionality and flexibility of the 6401 for these R&D applications.

AUTOMATION

The test system supports the automation of test campaigns. Test cases and scripts can be assembled into test campaigns and then automatically executed where separate log and report files are generated for each test in the campaign.

To fully automate testing, the mobile under test can be controlled via a serial interface. This improves the efficiency of testing as it removes the need for manual intervention.

CONFORMANCE TEST APPLICATIONS

The AIME/CT software allows a user to execute validated 3GPP conformance test cases. Operation of the software is very simple. The MMI is built on core ProCLAIME customer proven features:

Ease of use.

Clear display of pertinent information.

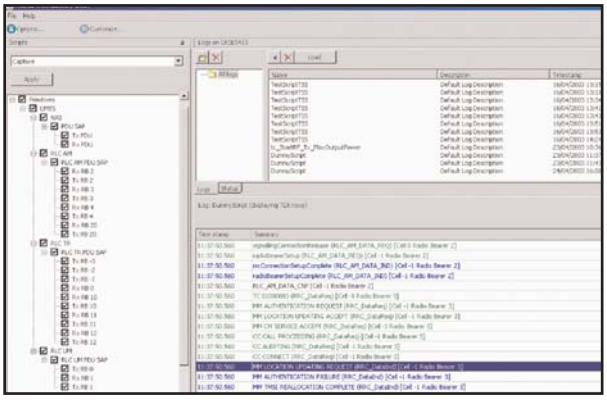
Separate on-screen windows to show information such as available test cases, system status and generated log files.

High level summary of the status whilst the test is being executed.

Dialog boxes 'pop-up' to prompt the user during test execution.

The user selects the appropriate test case or test campaign. To run only a single click action is required. A new test campaign is easily built through clicking and selecting on the desired test cases.

On test completion the test case verdict is displayed and a test report file generated. The report file contains summary information of the test conditions and test verdict. The report can be either printed or exported in a standard file format.



TEST CASE PACKAGES

For conformance testing Aeroflex delivers fully compliant ETSI TS 134 123 test cases approved by the Global Certification Forum (GCF). The effectiveness of the conformance test solutions is defined by the integrity of the supplied test cases.

Aeroflex supplies validated protocol conformance executable test suites to test the degree of compliance of a UMTS mobile. Only ETSI sourced TTCN is used thus avoiding the compliance issues associated with using TTCN independently derived from the specifications and therefore subject to mis-interpretation and ambiguity.

Aeroflex invests heavily in the test case development process. The integrity of the test cases is ensured through a rigorous process including certification and pre-validation before delivery to external 3rd party validators. The success of the approach is demonstrated by the very low number of conformance test cases that have required re-validation.

Aeroflex works closely within the 3GPP and GCF forums to deliver Conformance test cases in packages based on the GCF prioritization.

R&D APPLICATIONS

The AIME/CT software is also designed to address applications in R&D and interoperability testing. The powerful software environment provides access to features such as:

Detailed protocol signaling exchange between the mobile and the network with diagnostic capability

Real time logging, decoding and filtering of the information

Filtering capability to capture desired information down to specific 3GPP primitives

Colour coding of the information to improve readability of screens

Generation of log files to allow off-line protocol analysis

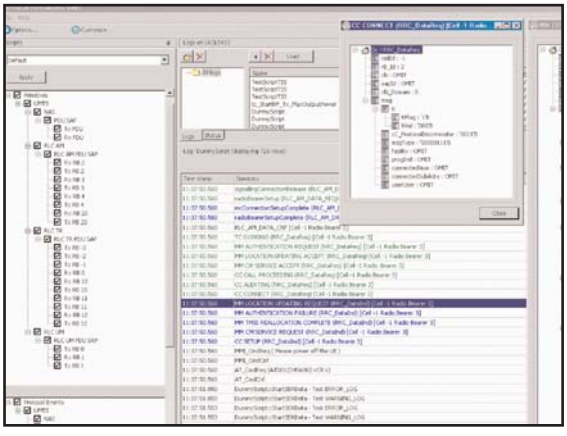
In the future software options will add further capabilities such as:

Modification of TTCN conformance test cases

Development of TTCN test cases

Development of new test cases in any COM based language

Thus, a user can configure the 6401 AIME/CT to emulate specific UMTS network configurations and quickly identify incorrect protocol behaviour within the mobile. From either the on-screen display or the log-files detailed information can easily be understood.



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FUTURE PROOF

The 6401 AIME/CT is a highly modular and flexible test solution. The hardware is designed to support all the major telecommunication standards but is focused first on 3GPP UMTS FDD testing.

The hardware design uses compact PCI architecture, controlled and configured from an external PC. Baseband and RF transceiver modules are used to generate channels and RF carriers. The modular system architecture allows many different configurations. This results in a test solution easily upgraded if additional capability is required. The user has the capability to emulate highly complex network scenarios or generate multiple channels as test needs evolve.

For conformance testing, the 6401 is focused to first meet the higher priority GCF identified UMTS protocol conformance test cases. The more complex test cases that require emulation of up to 6 UMTS cells and generation of multiple RF carriers can easily be accommodated.

SUPPORT

Support of the system hardware is an essential element in maximizing efficiency and return on investment of your equipment. Aeroflex offers several comprehensive hardware support packages, which are tailored to typical usage profiles.

The 6401 comes with a comprehensive worldwide hardware, software and test case support package. Two tiers of support packages are offered to the user. Regardless of the level of support chosen, users have access to a helpdesk facility where any faults or issues can be logged, and are guaranteed to receive a response from Aeroflex within the next working day.

The support also covers issues such as specification tracking and any changes in the 3GPP versions of the standard. To fulfil specific support needs, the user is able to customize any of the support packages.

Further details about support can be found in the support section on the Aeroflex website.

INTERSYSTEM HANDOVER (ISHO)

As a consequence of the gradual deployment of UMTS, mobiles must have the capability to handover to existing 2/2.5G networks. The test requirements to support handover between 2/2.5G & 3G are captured in test specifications 51.010 and ETSI TS 134 123.

The 6401 AIME/CT can be upgraded to support the handover conformance test cases. Aeroflex provides an integrated solution using the 6401 and GCF validated 6103 AIME/CT (2/2.5G platform). The solution leverages the capability of both platforms, to deliver all required functionality from the outset, to support mobile handover between a GSM/GPRS & UMTS network.

For further details see the ISHO product information.

For the very latest specifications visit www.aeroflex.com

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TECHNICAL INFORMATION

ENVIRONMENTAL AND SAFETY

Voltage Range:	*85 to 130 V and 180 to 264V AC*
Frequency Range:	*47 to 66 Hz*
Operating Temperature:	*10°C to 35°C*
Humidity:	*5% to 85% RH (non-condensing)*
Calibration:	*2 years*
EMC:	*Complies with EN61326-1 :1997+A1 : 1998 , Class A (emissions) , EN61326-1 :1997+A1 : 1998 Table 1 (immunity)*
Safety:	*Complies with EN61010-1: 2001*

CONTROL PC MINIMUM SPECIFICATION

CPU:	*Pentium 4 2.8 GHz*
RAM:	*1 GB*
HDD:	*40 GB, with Ultra ATA/100*
I/O interface:	*100 Mbps Ethernet*
CD:	*32 X CD-ROM*
Graphics:	*SXGA (1280 x 1024) resolution*
O/S:	*Windows2000 Server + Microsoft SQL Server2000*

ORDERING INFORMATION

6401 MOBILE AIR INTERFACE TEST SYSTEM

6401-001	1 Carrier, 3 Cell capability
6401-002	2 Carrier, 4 Cell capability
6401-003	3 Carrier, 5 Cell capability

CONTROL PC

6400-250	Control PC

SOFTWARE ENVIRONMENT

6401-100	UMTS Capability (AIME/CT)
6401-110	TTCN Target Adaptor software
6401-120	AIME API software

3GPP 34.123 CONFORMANCE TEST CASES

6401-210	GCF W1-010 P1 test cases
6401-220	GCF W1-010 P2 test cases
6401-230	GCF W1-010 P3 test cases
6401-240	GCF W1-010 P4 test cases

Note. Please refer to separate Test Case product information for further details.

TEST CASE DEVELOPMENT TOOLS

6401-111	TTCN Compilation Suite
6402-112	TTCN Editor/debug Suite

FUNCTIONALITY UPGRADES

6401-601	Upgrade 6401-001 to 6401-002, or 6401-002 to 6401-003
6401-602	Upgrade 6401-001 to 6401-003

OPTIONAL SOFTWARE

6401-150	Standalone Log Analyzer

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.

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