ME7832A
Protocol Conformance Test System
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Product Introduction
The Industry’s Top Test Solution

- ME7832A is the Industry’s No.1 protocol conformance test system solution
  - Covers the highest number of test cases for W-CDMA UE protocol conformance
  - Based on 3GPP TS34.123-1 for GCF/PTCRB Terminal Certification
- Proven platform to provide HSPA Evolution for Conformance Test
  - HSPA Evolution solution delivered on the same HW and software platform
  - HSPA Evolution WI080 is now available.
- Parallel Test Controller Option enables dramatic test time reduction
  - Up to 50% reduction in total test run time
  - Uses parallel operation of three MD8480C system simulators
A Complete Integrated Test Solution

• Enhanced system provides easy operation
  – New GUI with drag-and-drop facility
  – Fully automated execution with single mouse click

• A single all-inclusive integrated solution
  – Easier ordering
  – Includes all necessary hardware and software
  – Has a pre-installed PC

• An Anritsu engineer provides on-site setup and user training

• Integrated support
  – Includes support with software update and maintenance service
ME7832A System Overview

- MD8480C(SS1)
- MD8480C(SS2)
- MD8480C(SS3)
- MN8140A (Combiner)
- Z1109A Ethernet HUB
- Personal Computer

Connections:
- Uplink
- Downlink 1,2
- Ethernet
- Sync
- 10MHz

Diagram shows the system overview of ME7832A with the indicated components and connections.
Protocol Conformance Test System

• ME7832A Standard Configuration
  – One MD8480C system simulator
  – Conformance Test Toolkit core software
  – Pre-installed high-performance PC
    • Dual Core 3 GHz CPU, 4 GB RAM
    • 19 inch TFT, 250 GB HDD, DVD-RW
  – Setup
    • Installation
    • Commissioning
    • Training
Protocol Conformance Test System

- ME7832A Optional Configurations
  - Addition of 2nd and 3rd MD8480C system simulators
  - WI packages including USIMs
  - RF Combiner Kit
  - Router and cables
  - Additional FDD Band capabilities
  - Contracts
    - Hardware repair
    - Hardware calibration
  - Parallel Test Controller Option
    - For test time reduction
  - System Rack Option
No.1 Protocol Conformance Test Solution

- GCF/PTCRB Terminal Certification Test Cases

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<th>Wi-013</th>
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Anritsu Competitive Advantages

- No.1 overall in 3G Protocol Conformance test
  - For both GCF and PTCRB
- The only test platform vendor supplying 100% 3GPP test coverage in single platform today
  - One hardware platform (MD8480C) supports both W-CDMA and InterRAT
Anritsu Competitive Advantages

• Anritsu leads the market for new technologies on the same hardware platform
  – No current competitor solution for HSPA Evolution for conformance test
  – HSPA Evolution solution delivered on the same HW platform
• Always aims to use the latest TTCN language
  • Latest IWD releases
**ME7832A Competitive Advantages**

- A highly reliable platform and the most stable platform (test houses statement)
  - Runs without manual interaction for days
- Uses less space in the lab
- Provides today’s most user-friendly and easy GUI
  - Enables drag-and-drop and run with a single click
- Easiest setup for automation capability
ME7832A Competitive Advantages

• Unique Parallel Test capability for large test time reduction
  – Up to 3 UE can run simultaneously
  – Multiple PCs, multiple UEs, and multiple test cases will run at same time with a single click
• Real-time log analysis

ME7832A
Protocol Conformance Test System
- Complete test coverage for wireless technologies
- Parallel testing enabling significant reduction in test time
- System design using standard reliable hardware

Discover... the largest number of W-CDMA GCF/PTCRB approved Test Cases
ME7832A Solution Benefits

• A complete fully-integrated test system
  – Simplified system options
    • Easier configuration
  – New competitive pricing structure based on a package solution
  – Installation and training included
    • One day on-site
  – One year software and firmware updates included

• Largest number of approved GCF/PTCRB test cases for W-CDMA
  – Ahead of all competitors

• Parallel Test Controller Option
  – Test Time Reduction to Less Than 24 Hours
ME7832A Solution Benefits

- Future expandability to HSPA Evolution
  - On same hardware platform (MD8480C)
- Graphical User Interface
  - Provides exceptional ease of use
- Standard MD8480C system simulator hardware
  - Proven repeatability and reliability
ME7832A System Configuration Options

**ME7832A Standard Configuration**

- **ME7832A-050**
  - 2nd System Simulator

- **ME7832A-051**
  - 3rd System Simulator

- **MN8140A**
  - RF Combiner Unit

- **ME7832A-01X**
  - Frequency Bands

- **ME7832A-07X**
  - Work Item Test Cases

- **ME7832A-030**
  - Parallel Test Controller
Parallel Test Controller Option

Reducing Conformance Test Times
Parallel Test Controller Concept

Conformance Toolkit

8480 - 8480 - 8480

RF Combiner

Parallel Test Controller

Conformance Toolkit

8480 - 8480 - 8480

RF Combiner

Car

Race Car
Example Of Test Time Reductions

• Based on GCF Work Items 10, 12, 13 and 14
  – Automatable test cases
  – 489 Tests need One MD8480C, 72 Tests need Two MD8480C and 4 Tests need Three MD8480C

• One MD8480C (without parallel operation)
  – 44 hours, one-box test cases
  – 2 hours, two-box test cases
  – 0.5 hours, three-box test cases
  \[\text{Total: 46.5 hours}\]

• Two MD8480C in parallel operation
  – 22 hours, one-box test cases
  – 2 hours, two-box test cases
  \[\text{Total: 24 hours}\]

• Three MD8480C in parallel operation
  – 12.7 hours, one-box test cases
  – 2 hours, two-box test cases
  – 0.5 hours, three box test cases
  \[\text{Total: 15.2 hours}\]
ME7832A Test Cases

Reliability Benefits
Conformance Test Cases Reliability

- Overall reliability of the Interim Working Document (IWD) release has increased to 99%

<table>
<thead>
<tr>
<th>IWD</th>
<th>Percentage of overall Test Cases with 100% reliability</th>
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<tbody>
<tr>
<td>D07IWD_03</td>
<td>77%</td>
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<tr>
<td>D07IWD_23</td>
<td>93%</td>
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<tr>
<td>D07IWD_47</td>
<td>93%</td>
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<tr>
<td>D07IWD_47 (CAG#12/PVG39)</td>
<td>96%</td>
</tr>
<tr>
<td>D08IWD_23</td>
<td>99%</td>
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</table>

- Reliability measured after running each test case five times
  - If five continuous “Pass” results observed then that test case brings 100% reliability
Graphical User Interface Benefits
Graphical User Interface

- New user interface developed
  - Test system configuration
  - Test Campaign definition
  - PICS/PIXIT management
  - Campaign execution
  - Results management and reporting

- Existing campaign spreadsheet will be supported and enhanced until new user interface supports a comparable feature set
Test Cases Selection

- Sort by TTCN Suite
- Expand to view tests and execute single tests
Drag & Drop Test Case Into Test Sequence

Highlight test cases

Drag and drop to Test Sequence window
Modifying PICS/PIXIT For UE

Modify UUT PICS/PIXIT Deviations

Set PICS/PIXIT Deviations:
Select the PICS/PIXIT deviation(s) that apply for the UUT. These overwrite the default values and are automatically applied when running tests.

Deviation | Add new PICS/PIXIT deviation
--- | ---
UE_Bond1 | ✓
UE_BondII | □
UE_BondIV | □
UE_BondV | □
UE_BondVI | □
UE_BondVII | □
UE_BondVIII | □
UE_BandDX | □
UE_DCS1800 | □
UE_GSM900 | □
UE_PCS1900 | □
AutoAttach | □
ManualAttach | □
Background | □
Conversational | □
Interactive | □
Streaming | □
MIDPA | □
HSUPA | □
UMTS Only | □
UMTS-GSM | □

OK | Cancel
Executing Test Sequences

Left click to execute test sequence
Viewing Test Results

- Sort by pass/fail or re-run failed tests
- Left click and to launch Protocol View
Protocol Analyser View

The screenshot shows a protocol analyser interface. The interface is divided into several sections, each representing different protocol layers and functionalities. The top section includes buttons for different views such as "View Archives," "View MSC," "View Latest MSC," "View TTCN," "Export," and "About." Below these buttons, there is a main workspace displaying a protocol analysis graph with various nodes and edges, indicating different protocol interactions. The graph includes labels such as "LLC," "MAC," and "PHY." The right side of the interface contains a section labeled "UUT Report" with details like Station ID, Serial Number, Date, Time, Operator, Execution Time, Number of Results, and UUT Result. The UUT Result is marked as "Passed."
## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>WI</td>
<td>Work Item</td>
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<tr>
<td>IWD</td>
<td>Interim Working Document</td>
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<tr>
<td>CAG/PVG</td>
<td>Conformance and Interoperability Agreement Group / PCS Validation Group</td>
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<tr>
<td>PICS</td>
<td>Protocol Implementation Conformance Statement</td>
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<td>TTCN</td>
<td>Tree Tabular Combined Notation</td>
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Note