

Anritsu Advancing beyond

Simple Conformance Test System

ME7800L



The First Step
in **Future** Communications



Simple Conformance Test System

ME7800L



Partners with Anritsu Conformance Test System

Anritsu's Simple Conformance Test System ME7800L is the ideal system for introducing RF and Protocol Conformance tests of 3GPP-compliant LTE mobile terminals. It covers not only all the basic LTE test items but also the latest Cat-M1/NB-IoT. Moreover, it supports evolving communications standards.

Both RF/Performance/RRM tests and protocol tests can be selected and introduced as necessary and work efficiency is maximized by the full range of built-in functions for every stage, ranging from assuring network quality to developing mobile terminals.

The series top-of-the-line LTE-Advanced RF Conformance Test System has won more LTE-Advanced-related certifications than any other company and Anritsu promises to bring the benefits of its long experience in conformance test systems to customers meeting the challenges of verification.

Increasingly Important Conformance Tests

The first generation of mobile phones offered only voice calls, but today's mobile terminals feature huge technology advances such as broadband LTE and must operate in a rapidly changing communications environment to support fast data communications for web browsing, SNS, video streaming, and more. As a result, mobile subscribers expect uninterrupted services as they carry and use their mobiles anywhere in the world.

The conformance tests check that the mobile terminal's performance and functions meet agreed international standards and play a key role in helping both mobile carriers and network operators assure worldwide interoperability.

Simple Equipment Configuration

By focusing on the basic LTE test items, the ME7800L design minimizes required hardware. Changes to 3GPP standards are supported by annual contract packages offering easy software updates and technical support, helping hold down initial capital costs that can be expensive when introducing conformance testing.

GCF/PTCRB Approved

The ME7800L received GCF/PTCRB approval as a new test platform in April 2017.

Global Mobile Support

Both current and future 3GPP-defined frequency bands (450 MHz to 3.8 GHz) are supported.

Stable Operation Test System

The high reliability and stable test environment supported by the ME7800L leverages the high-quality hardware and software of Anritsu's top-of-the-line LTE-Advanced Conformance Test System model.

Simple Conformance Test System ME7800L Features

First Steps in LTE Mobile Conformance Tests

Affordable Conformance Testing

Previous conformance test systems required expensive hardware and software to keep up with support for the latest test functions required by leading-edge technologies.

The Simple Conformance Test System ME7800L is based on the popular ME7873LA and ME7834LA with a proven track record in conformance testing. It incorporates all the basic and necessary functions and performance as well as service contracts including 3GPP-compliant software updates and technical support in one convenient package, lowering the barrier to introducing conformance testing.

As a result, conformance testing capacity can be widened easily using both novices and experienced engineers.

All-in-One RF and Conformance Tests

Using one Signalling Tester MD8430A as a base station simulator with installed RF/RRM and protocol test software supports both RF/RRM and protocol conformance tests.

Support for Spurious Tests

Even the base model in the product line supports the spurious test required at RF measurement.

GCF*1/PTCRB*2 Approved Conformance Tests

The Simple Conformance Test System ME7800L is a GCF/PTCRB-approved test platform with RF/RRM and protocol test cases certified*3 by GCF/PTCRB.

*1: Abbreviation for Global Certification Forum, an organization certifying mobile equipment and test platform standards compliance. GCF is composed of operators, mobile equipment and chipset makers and certifies standards compliance for the frequency bands used principally in Europe.

*2: Abbreviation for PCS Type Certification Review Board, an organization like the GCF mobile equipment and test platform standards compliance. Unlike GCF, its main target is frequency bands used principally in N. America.

*3: Registered as GCF Test Platform (TP) 160.

Compliance with 3GPP Standards include the latest IoT tests

In addition to RF/RRM and protocol tests, the ME7800L continues to follow supported 3GPP standards, and also supports the latest Cat-M and NB-IoT as well as prior LTE standards.

Refer to the Standards section for the supported test standards.

Support for Regional Frequency Bands

In addition to the GCF/PTCRB-certified bands used principally in Europe and N. America, 3GPP-defined bands are also supported. We also plan increasing support for other bands, depending on market requirements. Refer to the standards page for the frequency bands.

Easy Control of Peripheral Equipment

A function for controlling the DC power supply and constant temperature chamber required by RF/RRM tests is built-in as standard. Control is easy and performed in the same manner as selecting test items for simple automated testing.

*: The DC power supply and constant temperature chamber must be supplied by the customer. Refer to the ordering information page for recommended models.

Calibration/Correction Functions for Higher Reliability

The following built-in calibration and correction functions improve measurement stability and reliability:

- Factory shipping basic correction
- Start-up auto-calibration
- Correction at each measurement

Since measurement correction is performed immediately before measurement, temperature-related changes in the measurement system are eliminated to greatly improve the measured value reliability.

Moreover, factory shipping basic correction eliminates the need for customers to perform complex operations, such as daily calibration and correction.

Excellent Support System

Various support packages provide after-purchase services to help ensure this system is used at its highest efficiency. They include:

- Software updates assuring full compliance with new 3GPP standards
- Technical support consultations for troubleshooting testing problems

These versatile services help ensure efficient and effective testing work.

Simple Conformance Test System ME7800L Features

What is The Conformance Test?

Against a background of rapidly globalizing communications, people want to use their mobile terminals in multiple countries with different network operators, which requires standardized mobile communications technical specifications and testing standards. Various specifications and standards have been formulated by 3GPP for 3G and later mobile communications. In these circumstances, 3GPP-compliant designs and quality management are the keys to ensuring that network quality is not degraded by use of non-compliant terminals on networks. The Conformance Test is for improving mobile interoperability on global networks.

Conformance Test Operation

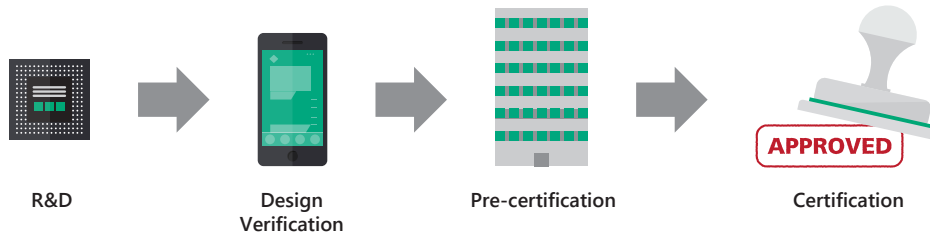
The mobile communications Conformance Test standards are defined by 3GPP and the operation rules are applied by the GCF (Global Certification Forum) and PTCRB (PCS Type Certification Review Board) organizations.

GCF and PTCRB are composed of forums made up of representatives from network operators, test houses, test equipment vendors, manufacturers, etc., who propose coherent Conformance Test standards, certify test platforms, and approve mobile terminals.



Wide Flexibility

The Simple Conformance Test System ME7800L platform supports the 3GPP TS 36.521-1/3 and TS 36.523 RF/RRM/Protocol Conformance Test standards. With a full line of versatile functions for R&D, it covers a wide range of applications from early stage mobile terminal, module, and chipset R&D, evaluation and precertification tests to final-stage certification.



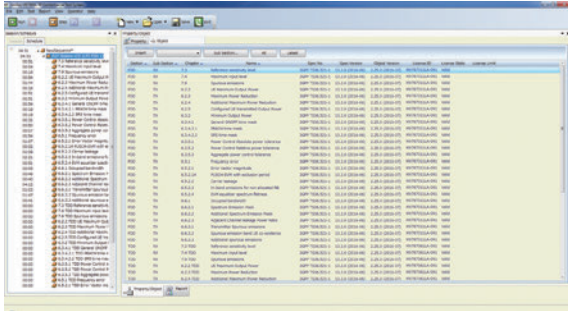
Simple Conformance Test System ME7800L Functions

Convenient Functions for RF/RRM Testing

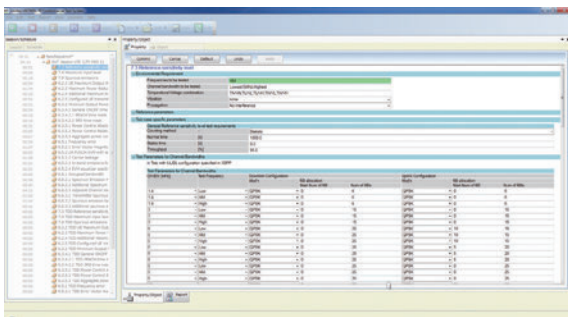
Easy Sequence Creation and Editing

The creation and editing procedure is as easy as selecting the test case to measure from the task pane (below) and clicking [Insert] to create the sequence. Select the created test case and double click [Schedule] at the screen bottom left to display detailed parameters.

The measurement frequency and channel bandwidth can be changed here too.



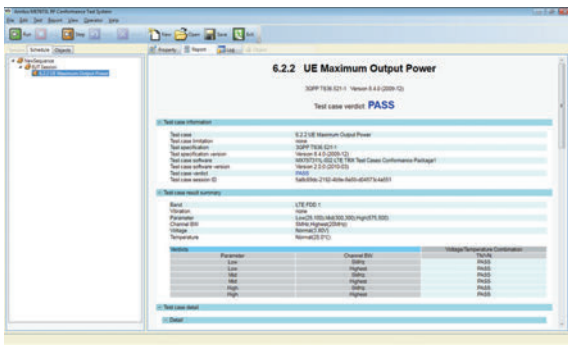
Sequence Creation Screen



Parameter Changing Screen

Easy-to-use Main Screen for Key Operations

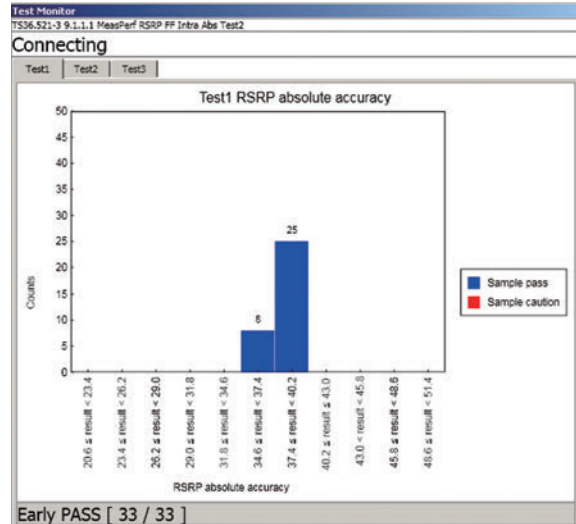
The screen toolbar icons for key operations are easy to understand. Test sequence items are displayed at top left and test results are displayed at screen center.



Measurement Results

At-a-glance Measurement Results Histogram

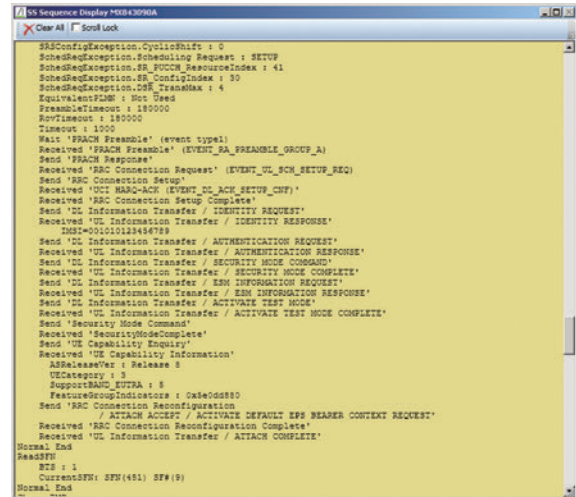
The RRM test has many test items for PASS/FAIL evaluations of multiple operations. The histogram display helps understand detailed mobile operation trends at-a-glance.



RRM Measurement Distribution

Check Measurement Progress

The current measurement progress is easily confirmed because the Signalling Tester MD8430A displays real-time logs during measurement. In addition, failed results are easily seen from the message exchanges between the tester and mobile sides, supporting easy problem troubleshooting.



Real-time SS Log Display

Simple Conformance Test System ME7800L Functions

Convenient Functions for RF/RRM Testing (Continued)

Measured Data Management

Measurement results are confirmed at the Measurement Result screen and saved either as HTML for easy confirmation or as XML/CSV for easy database management. Moreover, HTML report files are linked to the signalling logs for each measurement, cutting search times for required information.

6.6.1 Occupied bandwidth
 3GPP TS44.521:1 Version 9.6.0 (2011-09)
 Test case vendor: PASS

Service Information

Test platform software: Version 2.06.00
 Name: TestReport

EUT Information

EUT Hardware Information: UE-O
 EUT Firmware Information:
 EUT Serial Number:
 EUT Power Class: Power Class 3
 EUT Release Version: Release 9
 UE RLS DCH Category:
 UE E-DCH Category:
 LTE Category: Category 3
 Access Point:
 EUT Session ID: 64240310-6d9c-429a-ae10-8934a391d0fa

Test case information

Test case: 6.6.1 Occupied bandwidth
 Test case location: none
 Test specification: 3GPP TS44.521:1
 Test specification version: Version 9.6.0 (2011-09)
 Test case software: 52079711E RF Conformance Test Software 2.06.04
 Test case software version: Version 2.6.0 (2011-10)
 Test case vendor: PASS
 Test case session ID: 075478b-e1af-466f-a81e-2636a6c22bae

Test case result summary

Result: LTE FDD 2T
 Vibration: none
 Parameter: 35dBSM(35dB)
 Channel BW: 5MHz(5.0MHz)
 Voltage: Normal(1.0V)
 Temperature: Normal(25.0°C)

| Variable | Parameter | Channel BW | TXVX | ENXV |
|----------|-----------|------------|------|------|
| 35dBSM | 35dB | 5MHz | PASS | PASS |
| 5MHz | 5MHz | 5MHz | PASS | PASS |

Test case detail

Result: LTE FDD 2T
 Vibration: none
 Parameter: 35dBSM(35dB)
 Channel BW: 5MHz(5.0MHz)
 Voltage: Normal(1.0V)
 Temperature: Normal(25.0°C)
 Signalling log: 3G_Log07_0000_20111124_200908_023.log

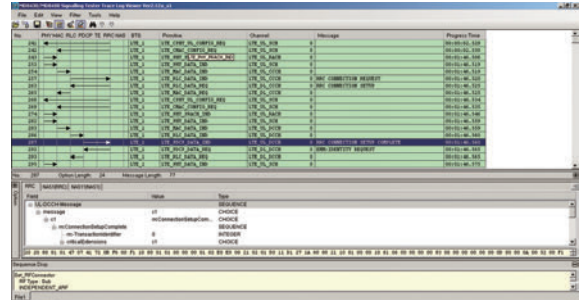
Vendor

| Requirement | Requirement | Pass | Fail | Comment | Duration |
|-------------------|-------------------------|----------|-------|---------|----------|
| Channel bandwidth | not exceed 5.0MHz(5MHz) | 4.45312E | -0.04 | 35dB | 00:00:12 |

Measurement Report (HTML)

Measurement Log Analysis

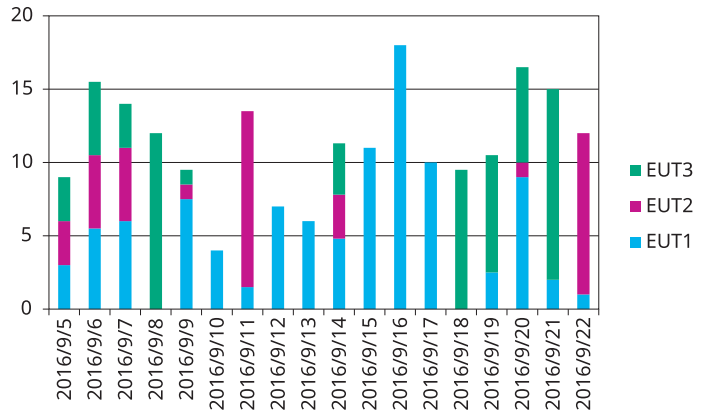
Signalling Tester MD8430A measurement logs are saved automatically for detailed checking and troubleshooting with standard log viewer software.



SS Log Viewer Display

System Usage Analysis

To support various usage-data analyses, this system outputs data for the measured frequency band EUT, frequency band, and measurement time.

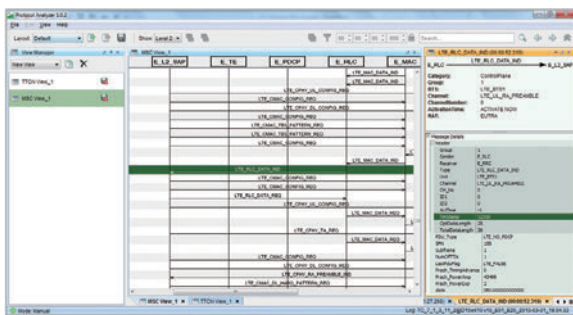


Analysis Examples of Daily System Usage Ratio by EUT

Convenient Functions for Protocol Testing

Measurement Log Analysis

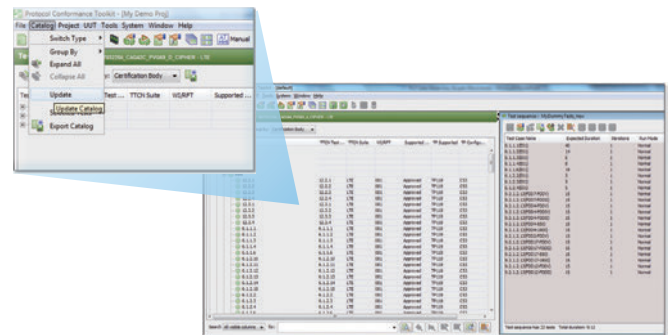
Captures test logs can be analyzed later using Protocol Analyzer 3; simultaneous graphical TTCN-3 displays of multiple log files as well as search and filter functions facilitate fast fault location and analysis.



Protocol Analyzer 3 Display

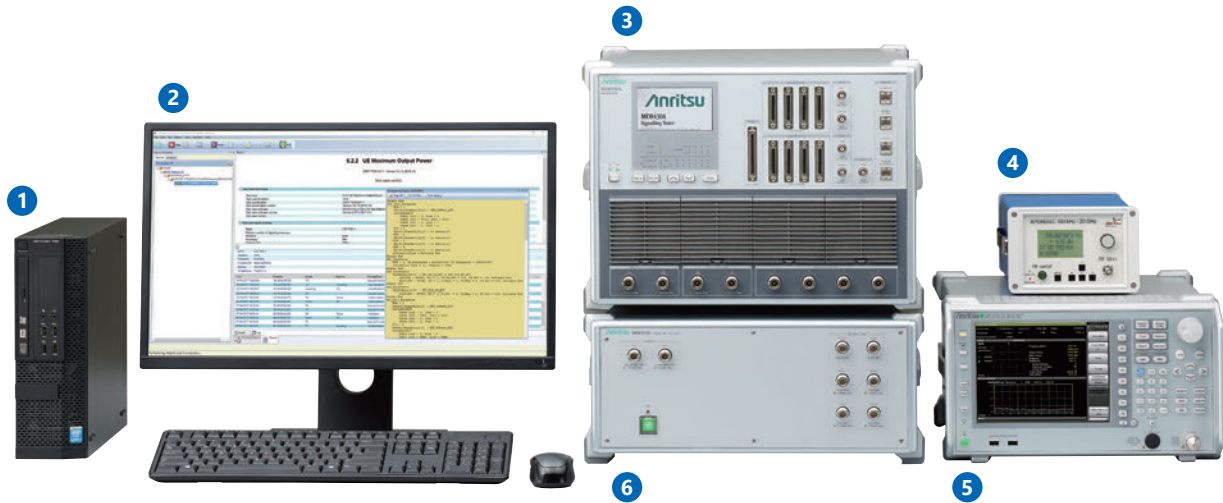
Simple Test Case Catalog

The latest validation status of test cases registered in the GCF/PTCRB databases is updated by one click at the easy-to-use GUI.



Test Case Update Screen

Simple Conformance Test System ME7800L Layout



- 1 Control PC**
Controls entire system
- 2 Display**
Displays measurement status and results
- 3 Signaling Tester (Base Station Simulator) MD8430A**
Operates system as LTE base-station simulator
- 4 APSIN20 G-HC-AZ1 Signal Generator G0378B**
Outputs CW signal
- 5 Signal Analyzer MS2692A**
Analyzes mobile terminal signals and monitors all system signals to assure measurement stability and reliability
- 6 Combiner Unit MN8160A**
Couples and divides signals between each measuring instrument in system

In addition to the above, the standard accessories including an Ethernet hub, cables, test SIM cards and a power sensor helping assure the system measurement accuracy.

Simple Conformance Test System ME7800L Specifications

Connector

TRx port: N-J, 50Ω, Maximum input +35 dBm
 Rx port: N-J, 50Ω, Maximum input +30 dBm

Reference Oscillator

10 MHz Buffered Output of MD8430A as standard
 External oscillator signal input available (Frequency: 10 MHz, Connector: BNC)

Temperature Range

Operating: 15°C to 35°C
 Storage: 0°C to 50°C

Power Supply

Power voltage: 100 V (ac) to 120 V (ac)/200 V (ac) to 240 V (ac)
 Frequency: 50 Hz/60 Hz
 Power consumption: ≤2500 VA

CE Marking

EMC: 2014/30/EU, EN61326-1, EN61000-3-2
 LVD: 2014/35/EU, EN61010-1
 RoHS: 2011/65/EU, (EU) 2015/863, EN IEC 63000: 2018

UKCA Marking

EMC: S.I. 2016 No.1091, EN 61326-1, EN61000-3-2
 LVD: S.I. 2016 No.1101, EN 61010-1
 RoHS: S.I. 2012 No.3032, EN IEC 63000:2018

Supported Test Standards

Both RF/RRM and Protocol Testing support Release 8, 9, 10 (only 2 Downlink Carrier Aggregation) and Release 13 (IoT only) of below standards.

RF/RRM Testing

3GPP TS 36.521-1
 E-UTRA UE Conformance Specification Radio Transmission and Reception Part1: Conformance Testing
 3GPP TS 36.521-3
 E-UTRA UE Conformance Specification Radio Transmission and Reception Part3: RRM Conformance Testing

Protocol Testing

3GPP TS 36.523-1
 Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification
 3GPP TS 34.229-1
 Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification

Frequency Range

| Operating Band | UL Frequencies (MHz) | DL Frequencies (MHz) |
|----------------|----------------------|----------------------|
| 1 | 1920 to 1980 | 2110 to 2170 |
| 2 | 1850 to 1910 | 1930 to 1990 |
| 3 | 1710 to 1785 | 1805 to 1880 |
| 4 | 1710 to 1755 | 2110 to 2155 |
| 5 | 824 to 849 | 869 to 894 |
| 7 | 2500 to 2570 | 2620 to 2690 |
| 8 | 880 to 915 | 925 to 960 |
| 9 | 1749.9 to 1784.9 | 1844.9 to 1879.9 |
| 10 | 1710 to 1770 | 2110 to 2170 |
| 11 | 1427.9 to 1447.9 | 1475.9 to 1495.9 |
| 12 | 698 to 716 | 728 to 746 |
| 13 | 777 to 787 | 746 to 756 |
| 14 | 788 to 798 | 758 to 768 |
| 17 | 704 to 716 | 734 to 746 |
| 18 | 815 to 830 | 860 to 875 |
| 19 | 830 to 845 | 875 to 890 |
| 20 | 832 to 862 | 791 to 821 |
| 21 | 1447.9 to 1462.9 | 1495.9 to 1510.9 |
| 24 | 1626.5 to 1660.5 | 1525 to 1559 |
| 25 | 1850 to 1915 | 1930 to 1995 |
| 26 | 814 to 849 | 859 to 894 |
| 27 | 807 to 824 | 852 to 869 |
| 28 | 703 to 748 | 758 to 803 |
| 29 | N/A | 717 to 728 |
| 30 | 2305 to 2315 | 2350 to 2360 |
| 31 | 452.5 to 457.5 | 462.4 to 467.5 |
| 32 | N/A | 1452 to 1496 |
| 33 | 1900 to 1920 | 1900 to 1920 |
| 34 | 2010 to 2025 | 2010 to 2025 |
| 35 | 1850 to 1910 | 1850 to 1910 |
| 36 | 1930 to 1990 | 1930 to 1990 |
| 37 | 1910 to 1930 | 1910 to 1930 |
| 38 | 2570 to 2620 | 2570 to 2620 |
| 39 | 1880 to 1920 | 1880 to 1920 |
| 40 | 2300 to 2400 | 2300 to 2400 |
| 41 | 2496 to 2690 | 2496 to 2690 |
| 42 | 3400 to 3600 | 3400 to 3600 |
| 48 | 3550 to 3700 | 3550 to 3700 |
| 66 | 1710 to 1780 | 2110 to 2200 |
| 71 | 663 to 698 | 617 to 652 |

Simple Conformance Test System ME7800L Ordering Information

Please specify the model/order number, name and quantity when ordering.
The names listed in the chart below are Order Names.
The actual name of the item may differ from the Order Name.

| Model/Order No. | Name |
|-----------------|--|
| ME7800L | Main frame Simple Conformance Test System |
| | Configuration items |
| MN8160A | Combiner Unit |
| Z1938B | Standard PC for SimpleCT (with monitor) |
| ME7800L-AK000 | Accessory Kit for ME7800L |
| MD8430A | Signalling Tester |
| MS2692A | Signal Analyzer |
| MA24218A | Microwave Universal USB Power Sensor (10 MHz-18 GHz) |
| G0378B | APSIN20 G-HC-AZ1 Signal Generator |
| | Standard accessory ME7800L Operation Manual (CD-ROM) 1 set |
| | Options |
| ME7800L-001 | LTE Protocol Test Package |
| ME7800L-011 | IoT Protocol Test Package |
| ME7800L-051 | LTE RF/RRM Test Package |
| ME7800L-061 | IoT RF/RRM Test Package |

The following DC power supplies and temperature chamber used for the RF tests can be controlled by the ME7800L.

DC Power Supply

The DC power supply to the mobile can be controlled.

| Model | Name | pcs | Manufacturer |
|----------|---|-----|----------------------------|
| N6700C | Main frame | 1 | Keysight Technologies Inc. |
| N6732B*1 | 8 V, 6.25 A, 50 W DC Power Module | 1 | |
| N6708A | Filler Panel Kit | 1 | |
| 2306-PJ | Dual-Channel Battery/Charger Simulator with 500 mA Range | 1 | Keithley Instruments Inc. |

*1: When using DC power modules other than the N6732B, the customer must confirm whether the power supply can be installed in the N6700C main unit.

Temperature Chamber

The temperature chamber can be controlled for the mobile temperature test.

| Model | Name | Manufacturer |
|----------|--|------------------------------|
| SH-241*2 | Bench-Top Type Temperature & Humidity Chamber | Espec Corp. |
| SH-242*2 | | |
| VT4002*3 | EMC Shielding with Temperature | Votsch Industrietechnik GmbH |
| 105*2 | Benchtop Temperature Chamber | TestEquity LLC |
| 107*2 | | |
| 115*2 | | |

*2: GPIB cable is required to control this chamber automatically.

*3: USB-RS232C converter cable is required to control this chamber automatically.

Simple Conformance Test System ME7800L Related Products

LTE-Advanced RF Conformance Test System ME7873LA

The ME7873LA test system automates RF and RRM tests of mobiles meeting the latest 3GPP standards.



Features

- Most and first GCF/PTCRB approved test cases
- Supports latest 3GPP standards
- Multiple hardware configurations tailored to measurement requirements, TRx, Performance and RRM
- Tunable filtering supports multiple bands with no hardware upgrade
- Capable of Inter-RAT handover measurements; LTE to/from UMTS/TD-SCDMA, and LTE to GSM/CDMA2000

LTE-Advanced Mobile Device Test Platform ME7834LA

The ME7834LA is an advanced protocol test system supporting mobile terminal R&D tests, conformance tests, and carrier acceptance inspection Multi-RAT tests.



Features

- All leading-edge LTE-Advanced measurement functions such as 4x4MIMO, 4CC CA/5CC CA, etc., in one rack
- Flexible platform with excellent support for different technologies and applications
- High quality, innovative and reliable
- High-quality solution with solid hardware and proven reliability
- For mobile terminal R&D, conformance tests, interoperability tests and inspections

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