Acterna Mobile Service Tester

4200S Series

What's the fastest way to get a comprehensive picture?

Mobile phone service needs to meet the increasing demands of an ever-changing technology characterized by fast turn-around times, limited budgets and shortages in fully skilled personnel

Today's service procedures usually start with a Triage Test, serving as a filter to sort out returned phones into those with no fault and those requiring repair.

The subsequent repair procedure differentiates between low-, mid- and chip-level services. Low-level service consists primarily of pre-customer testing and repair/replacement of mechanical components. Mid-level service includes boards swaps and module exchanges with subsequent alignment procedures, while chip-level service requires the use of comprehensive test systems as they are used during the manufacturing process.

The Acterna 4200S Series represents an ideal solution for mid-level service. It allows accurate RF measurements and offers a full range of features for testing the voice, data and SMS functions of dual-band and triple-band GSM mobile phones. Due to their advanced design and small footprint all models require only little desk space while offering easy operation and large displays to show test results and guide the user through the measuring procedure.

The Acterna 4200S Series is available at competitive prices and features a power output accuracy of 0.9 dB suitable for BER measurements and highly accurate power testing. An additional audio loop-back mode allows performance testing of the latest EFR codecs.

Additional functions for special requirements

Servicing the new generation of mobile phones often requires the technician to get beyond the standard procedures. Therefore, the Acterna 4200S Series comes with a full range of options for increased functionality and versatility.

– **De-tuning**

This option allows De-tuning the carrier frequency by ± 75 kHz to perform a variety of special mobile phone tests.

– **AM Signal Generator Option**

The AM Signal Generator Option allows testing of specific mobile phones. The option generates an AM modulated signal at higher power levels.

– **GSM 850**

This option supports new frequency ranges used in the Americas.

– **Result Upload**

This option makes the paperless workbench a reality, since it allows with the press of a button to upload test results via a PC to virtually any location in a corporate network, where these can be processed further on – freeing the precious time of a service technician to do his job.
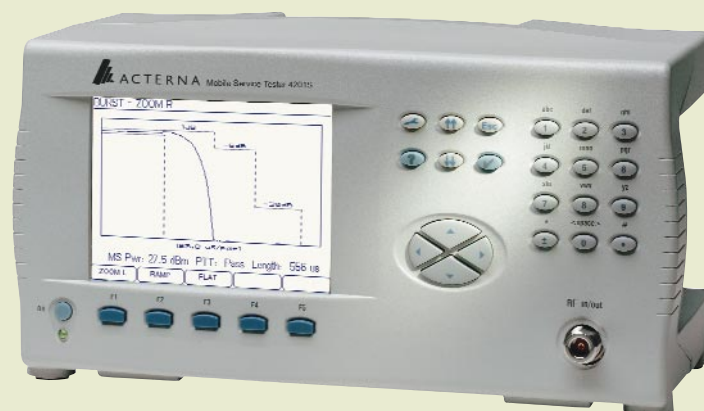
– **Mobile phone adapters**

A wide range of mobile phone adapters provides the electrical and mechanical interface to practically all GSM mobile phones on the market.

– **Universal Antenna Coupler**

This coupler allows connecting the mobile phone to be tested directly via the built-in-antenna. It matches all models on the market and makes it easy to service different mobile phones without the need of dedicated RF adapters.

– **Shield Box**

This box serves as an effective shield against ambient RF interference. It offers sufficient space to use the Universal Antenna Coupler and allows secure service work even in environments with high electromagnetic noise levels.

Advanced Technology for comprehensive testing

The Acterna 4200S Series goes beyond the requirements of basic servicing. It offers a comprehensive range of features tailored to the advanced technology of modern mobile phones:

– Short messages service (SMS) testing with the 4200S Series offers more than the basic procedures to confirm full functionality of the mobile phone. It also allows reading out system parameters such as the service center number to indicate incorrect or missing numbers. Up to six messages may be stored for test purposes, including messages in non-western character sets, such as Chinese.

– **Data communication**
  Modern data modules usually do not support voice channels which prevents the use of standard test sets not supporting data. With the data function of the 4200S Series, however, it is possible to set up data calls and achieve standard RF measurements.

– **Triple-band phones**
  With the 4200S Series , testing the latest range of triple-band mobile phones is a fast and efficient procedure, since the advanced design of this test system does not require switching between different simulated networks.

One concept in two versions

The Acterna 4200S Series GSM mobile phone testers are available in two versions. Both follow the same design principle, but offer different testing capabilities.
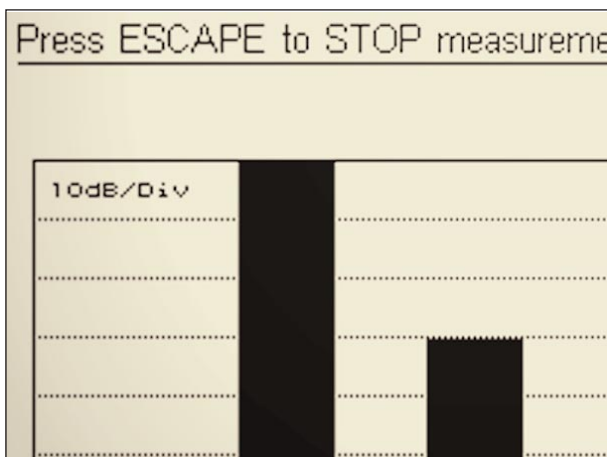

figure 1 The large dynamic range of 60 dB for I/Q alignment allow for optimal tuning of phones. The bar graphs are clearly visible and the numbers provide accurate results.
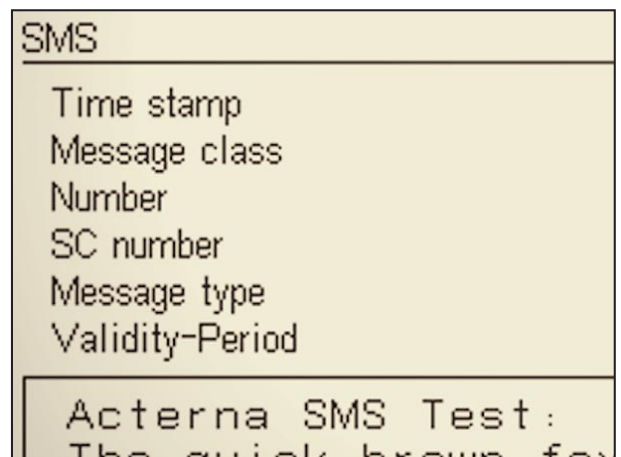

figure 2 The SMS test capabilities of the 4200S offer analysis of the most crucial parameters used for SMS, such as Service Center Number, Validity Period and Message Class. This allows a service technician to pinpoint possible problems in the transfer of short messages.

Acterna 4201S

Is the basic model with anything but basic capabilities. It is feature-packed and provides comprehensive functionality for a wide range of service tasks.

- Multiple GSM bands:
  GSM850 (optional), GSM900, EGSM, GSM-R, GSM1800, GSM1900
- TX Testing:
  MS power, power-time-template, burst length, spectrum, phase and frequency error
- RX Testing
- MS sensitivity, BER/FER
- RX quality, RX level
- MS info:
  IMSI/IMEI, GSM revision information, MS capabilities
- Speech loop-back for full rate (FR) and enhanced full rate (EFR)
- Basic 9.6 kbps data test in fault find mode, call setup procedures, TX/RX testing
- IQ tuning in asynchronous mode
- Variable network parameters (MCC, MNC, BS-PA-MFRMS)
- Multiple signalling capabilities:
  Location update, call from mobile, call from base station, MS clear, BS clear, inter and intra band handover (900>1800, 900>1900)
- Multi-language support:
  English, French, German, Italian, Chinese

Acterna 4202S

Is the equipment of choice, if more than general servicing is required. In addition to the features on model 4201S, it offers the following capabilities:

- Data test 9.6 kbps (also in auto test)
- SMS point-to-point
- Timing Advance measurement

Automated Testing

The auto test mode of the 4200S Series Mobile Service Tester is the fast way to get a comprehensive picture. It automatically checks a wide variety of functions and presents the technician with a final pass/fail statement. The first step is selecting the connection between the tester and the mobile phone (cable, antenna or coupler) and the type of system (single-/dual- or triple-band). These settings determine which predefined test sequence will be used. Sequences includes measurements of power, power-time-template, phase and frequency error, speech quality and BER (with cable connection only).

The auto test sequence results in a comprehensive test report which can be viewed on the built-in display or printed out for documentation purposes for future reference. For faster service work, the on-screen display can be limited to such results reporting a failure. An additional fault-find mode assists the service technician with failure analysis repair work.

Scan mode

With the scan mode, the Acterna 4200S Series tester is able to detect interference caused by nearby GSM base stations. It checks the channels to be used for later testing and makes sure that there are no interfering signals. If required, channels can be monitored continuously to detect occasional transmissions.

Utility software

The optional utility software serves to modify the built-in auto test sequences of the Acterna 4200S Series tester to tailor it to specific needs. It allows altering the pre-defined auto test sequences as well as creating new sequences.

CATS software

CATS is the software needed to control an Acterna 4200S Series tester from a PC. The tester is connected to the PC via a serial RS-232-C interface. In this way, it is possible to not only control the tester, but also additional devices, such as the mobile phone for advanced service centers performing high-level servicing. The CATS Test Sequencer is the perfect tool to set-up fully automatic test procedures including the alignment of mobile phone functions. A major advantage is that CATS is compatible with the overall range of Acterna phone testers.
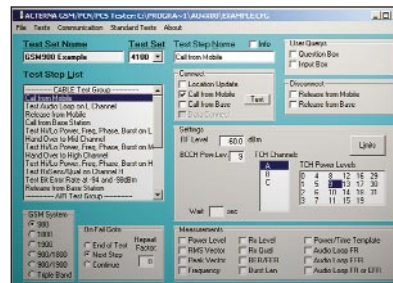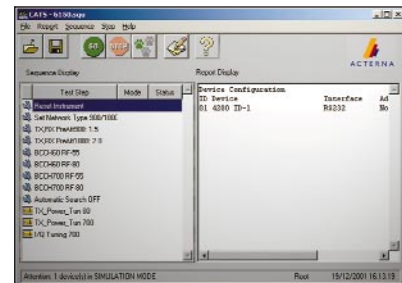

figure 3 Utility Software

figure 4 CATS Software

Note: Specifications, terms and conditions are subject to change without notice.

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