

Protocol Tester R&S®CRTU-G

Reducing test time through automation

Being able to reduce test time is increasingly important in development laboratories. Completely automated test sequences are an effective means of achieving this goal. In addition, tests can be performed at off times – at night, for example. The operational software supplied with every R&S®CRTU-G contains a preconfigured solution for such scenarios. It can significantly contribute to shorter test time.

Fully automated tests

Type approval tests of mobile phones can take several hours or even days. Without automation, much of this time is wasted as idle time or merely on switching the mobile phone on and off. For (E)GPRS test cases in particular, additional time-consuming manual operations must be performed, e.g. "Initiate GPRS Attach" or "PDP Context Activation".

You can fully automate such operations via remote control of the mobile phone by using AT commands such as specified in 3GPP 07.05 und 07.07, as well as by using a handful of proprietary AT commands*. You can then let the test run automatically without having to monitor it or take any further steps.

DLL contains all functions for remote control of the mobile phone via an interface during testing. You can define any interface you want (RS-232-C, USB, IR, *Bluetooth*®, etc) when you compile the DLL.

Another advantage of this concept is that you can separate the Customer Automation DLL from the Applies Common Code Library (ACCL), which contains the information required for the actual test case. This eliminates the time-consuming task of having to compile the test case again. Expansions to the ACCL do not affect existing DLLs. You can continue to use these DLLs, yet you can also adapt them to the expanded functionality of the ACCL as necessary. In addition, you can maintain separate DLLs for different mobile phones.

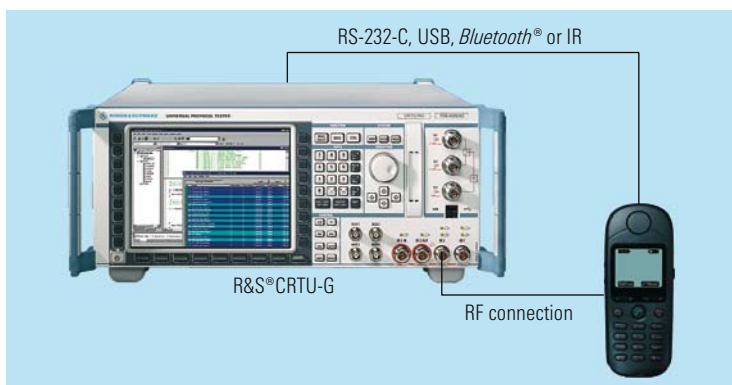
Customer Automation DLL

The R&S®CRTU-G (see figure below) automates test sequences by using the sequencer and a special Customer Automation DLL (dynamic link library). This

Msproc.lib library

The test sequence to be carried out is assembled in the sequencer of the R&S®CRTU-G. From the sequencer, you can select the default setting Auto Test Mode to automate the test. When a test case issues a message or request such as "Please select 1234" on the display of the R&S®CRTU-G during runtime, this is done by means of the Msproc.lib library. This library contains the functions that access the Customer Automation DLL based on the context. An example of such a DLL is supplied in each protocol tester. It uses exclusively

The R&S®CRTU-G performs fully automated testing of a mobile phone by using the sequencer and a special Customer Automation DLL.



* For example, switch-on and switch-off commands not specified in 3GPP.

3GPP-specific commands and must be adapted to the specific mobile phone being tested by means of proprietary commands. This requires a knowledge of Visual C++. It should also be mentioned here that the Automation DLL project basically contains two modules: the `comport.c` module, which contains all functions that involve the COM port, and the `MS_Auto_RS232.cpp` module, which contains all mobile-phone-specific commands. For details, refer to the R&S®CRTU-G software manual.

Adapting this DLL to the DUT takes relatively little time if you consider that this up-front work reduces test time and that no personnel is needed during testing. This means that you can use the protocol tester virtually around the clock.

You can monitor the commands exchanged between the R&S®CRTU-G and the mobile phone by using the AutoDLL Traffic Viewer. This tool is also helpful when developing a Customer Automation DLL.

Summary

By providing test-case automation, Rohde & Schwarz has increased the value of the R&S®CRTU-G even further. A universal mechanism that requires only a little up-front effort saves substantial time later on. For details, refer to the R&S®CRTU-G documentation.

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