

Protocol Tester R&S®CRTU-W / CRTU-G

More efficient generation of custom 2G/3G InterRAT test scenarios

Equipped with a convenient and powerful TTCN interface, the R&S®CRTU-W is setting standards in conformance testing. The MLAPI software option (R&S®CRTU-WT02) has been introduced to also make this instrument a leader in the field of R&D tests. Adding 2G/3G InterRAT functionality to this intelligent programming interface opens up new applications for combined R&S®CRTU-W / CRTU-G systems.

Intelligent approach

Owing to the wide variety of parameters in the 3GPP standard and the diverse applications, UMTS protocol development places high demands on a programming interface. The software option named "Medium Level C++ Application Programming Interface (MLAPI)" represents an intelligent and widely recognized compromise between flexibility and convenience [1, 2]. You can now use this tool for efficient testing of the system transitions between 2G and 3G networks. The comprehensive GSM / GPRS / EDGE function library of the Protocol Tester R&S®CRTU-G was encapsulated in C++ modules to make it available to users. In line with the medium-level philosophy of the 3G programming interface, these new modules provide preferential access to the service access points (SAP) of layer 3 even for the GERAN protocol stack. This also covers setting up the underlying channel structure, which can even include intentionally configuring the lower layers incorrectly. Simple macros that allow state machines to be defined make it possible to efficiently program operations with complex branching. It is of course also possible to easily simulate dynamic behavior by linear programming of individual event queries.

Example scenarios

Predefined example scenarios make it easier to program complex test applications. In contrast to the conformance test cases formulated in TTCN, the focus is not only on signaling testing. Real applications such as voice or data can also be included in the test. The cur-

rently available example scenarios for the CS domain cover the following system transitions between second- and third-generation mobile radio networks:

- ◆ Handover of a CS voice or data link from UMTS to GSM, and vice versa (incl. U plane)
- ◆ Cell reselection from UMTS to GSM, and vice versa
- ◆ InterRAT measurements using compressed mode at the UMTS end

Future scenarios will also include the PS domain and describe the transitions between GPRS and UMTS in particular.

Uniform tools

The software tools installed on the R&S®CRTU-W have been enhanced to cover GERAN. As the central control unit, the Project Explorer also sets up the connected Protocol Testers R&S®CRTU-G. The Message Composer now makes it possible to configure GERAN-specific messages. And the Message Analyzer – the powerful tool for analyzing message sequence and contents – combines the synchronized signaling data from both worlds (UMTS and GERAN) in one sorted log file. These features provide a uniform, convenient and modern user interface.

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More information and data sheet at www.rohde-schwarz.com
(search term: CRTU)

REFERENCES

- [1] Protocol Tester R&S®CRTU-G / -W: 2 in 1 – Software option for 2G/3G system simulation. News from Rohde & Schwarz (2003) No. 178, pp 22–24
- [2] Protocol Tester R&S®CRTU-G / -W: Efficient programming interface for UMTS protocol development. News from Rohde & Schwarz (2004) No. 182, pp 17–20