Digital Radio Communication Tester CMU 200

Selftesting CMU 200

Modern measuring instruments are not only expected to be fast and accurate, the user also wants high reliability and above all long calibration intervals. Should any repair ever become necessary, accurate fault diagnosis helps to keep servicing times to a minimum and makes for increased instrument availability. Universal Radio Communication Tester CMU 200 consequently integrates elaborate selftest facilities allowing fast checking of its basic functions.

Extensive selftests as early as production

CMU 200 selftest functions are extensively used during its production. The first selftest is carried out after assembly and interconnection of all the unit's modules. In this way possible faults are detected before the instrument is subjected to a five-day burn-in at temperatures varying between 5 °C and 45 °C. During this time a continuous selftest is run in CMU 200. Any faults detected are logged in a file. This reveals both non-recurrent faults and those appearing at certain temperatures. Such a procedure detects faults at the earliest possible stage, so that only good units are subjected to further checks and final testing, thus considerably reducing measurement time and costs.

An extra benefit for the user

CMU 200 selftest functions offer the user a convenient way of checking basic instrument functions and thus reliably excluding faults. This is important, for example, in the production of mobiles, where the user needs to be sure that his measuring equipment is operating properly.

At Rohde & Schwarz service centers, the selftest functions are used in incoming inspection of instruments returned. The tests supply detailed information about faulty modules, which enables fast repair, ie replacement. Customers benefit from short repair times because their instruments are soon available for use again.

Menu-guided test runs

The selftest menu is called with the MENU SELECT key on the CMU 200 front panel (examples are shown in FIGs 1 to 3). Then you select the BASE/Maintenance function group with the spinwheel and confirm with ENTER. The selftest menu (Maintenance/Dyn. Test) opens and you can choose the particular test with the spinwheel after pressing the SELECT softkey.

Detailed report

The selected selftest is started by pressing TEST and confirming with ON. You can cancel a selftest at any time by pressing OFF. At the end of the selftest, a report is displayed in which you can scroll up and down with the spinwheel after pressing the REPORT softkey. Any fault that may have occurred is thus easily located and remedied fast by replacing the module concerned. Normally, of course, no faults will be detected in the selftest, showing that your CMU 200 is working perfectly – this is ensured alone by early diagnosis in production.

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To find out just how fast CMU200 can measure the power of GSM mobiles, look at pages 24–25

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Reader service card 167/10

FIG 1
Example: selection of selftest function
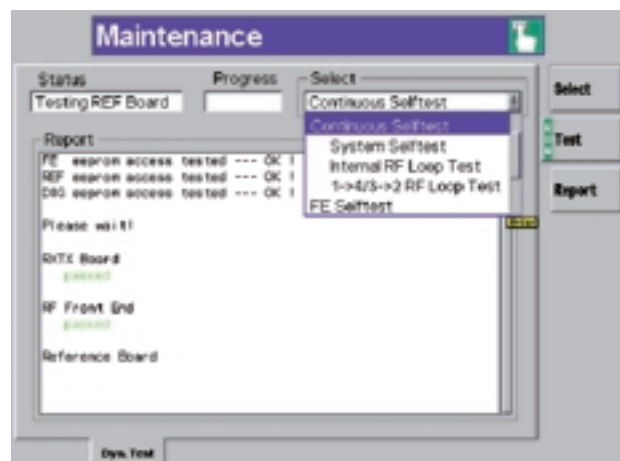
CMU 200 selftest

Module tests

(Any tolerance violations are marked in red)

FE Selftest   RF FRONTEND. Output of defined supply voltages and logic switching voltages, limit values and current measured value for each voltage.

REF Selftest   REFERENCE BOARD. Output of defined tuning and amplitude voltages of PLLs at different frequencies, output of supply voltages and module temperature, limit values and current measured value for each voltage.

DIG Selftest   DIGITAL BOARD. Output of defined supply voltages and frequency-proportional voltages of clock signals, limit values and current measured value for each voltage.

RXTX1 Selftest   RXTX BOARD 1. Output of defined supply voltages, tuning and amplitude voltages of PLLs of oscillators, tuning voltages of harmonic filters, module temperatures, limit values and current measured value for each voltage.

Combined tests

System Selftest   All modules are tested once in consecutive order. Test results (PASSED or FAILED) and the fault in question are indicated.

Internal RF LOOP Selftest   The frequencies and levels of the RF path are tested once at connectors RF 1 and RF 2 using the TX generator and the selective RX power meter with internal RF coupling. All frequencies and levels are output and any limit violations marked in red.

Continuous Selftest   Continuous test of system selftest and internal RF LOOP selftest. This test was developed specially for the burn-in cycle and is also very helpful in finding faults occurring rarely or sporadically.

Test results (PASSED or FAILED) and the fault in question are indicated. Any faults found are logged in a specially created file (CST.ERR) together with the date and time.

1–>4/3–>2 RF LOOP   The frequencies and levels of the RF path are tested once at connectors RF 1–>RF 4 IN and RF 3 OUT–>RF 2 via special external N coax cables (included in CMU Service Kit CMU-Z3) using the TX generator and the selective RX power meter.

FIG 2   Example: REF selftest

FIG 3   Example: internal RF loop test