

Simplify field testing of remote radio heads

In combination with the R&S®FSH handheld spectrum analyzer, the R&S®EX-IQ-Box digital signal interface module significantly simplifies RRH installation and inspection in distributed network architectures.

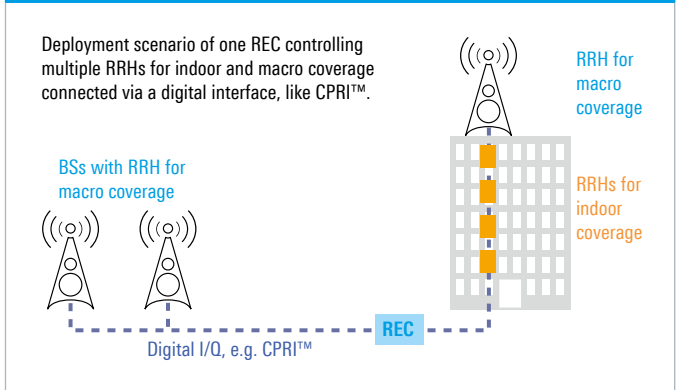


Unique test solution for remote radio heads in the field.

Your task

During the installation of a radiocommunications network, a series of tests needs to be carried out before the network is put into operation. The performance and correct operation of each base station must be ensured. Increasing demand for distributed network architectures drives the need for new test solutions.

Example of a distributed network architecture



Distributed architectures use one baseband module – the radio equipment controller (REC) – to control multiple remote radio head (RRH) modules (= radio equipment, RE) by means of either an optical or electrical interface. One of the common digital interface protocol standards the industry has agreed on is the common public radio interface (CPRI™).

Distances between an REC and the various RRHs typically range from a few meters to a few hundred meters. In rural areas, the separation can even be considerably greater. Because RRH testing requires the REC to send defined test signals, field tests can quickly become very complex, time-consuming and costly when the REC is located far away. This drives the need for a portable REC simulator that can be directly connected to the RRH under test to save time and manpower.

T & M solution

Rohde & Schwarz offers a unique portable test solution including REC simulation and signal analysis for verifying the RF performance of installed RRHs at any location in the field.

The REC simulator is based on the R&S®EX-IQ-Box (model .04), which provides the digital baseband connection to the RRH by means of a CPRI™ breakout board (R&S®EXBOX-B85 option), plus the CPRI™ RE test software option (R&S®EXBOX-K10). Small form-factor pluggable (SFP) modules are used to establish the optical link between the RRH under test and the CPRI™ breakout board.

With the compact R&S®FSH4/FSH8 handheld spectrum analyzer or a high-power RF power sensor, essential measurements can be carried out to ensure that the RRH under test meets the required RF performance.

The portable RRH test solution from Rohde&Schwarz eliminates the need for a realtime signal generator, which requires a mains supply. Instead, equipping the small-sized R&S®EX-IQ-Box with an internal 64Msamples waveform memory (R&S®EXBOX-K90 option) enables you to play back precalculated waveforms. The test waveforms are generated in advance with either the R&S®WinIQSIM2™ simulation software or third-party tools such as MATLAB®.

The R&S®EX-IQ-Box is configured and controlled from an external, USB-connected laptop with the R&S®DigIConf software. This software supports CPRI™ REC simulation for all major communications standards such as LTE, WCDMA/HSPA, CDMA2000®, WiMAX™, as well as user-defined systems.

For testing, the precalculated test waveforms are played back from the R&S®EX-IQ-Box and are transmitted to the RRH via the CPRI™ link. Essential measurements such as

maximum output power, channel power, ACLR, OBW and spurious emission (SEM) on the resulting RF downlink signal from the RRH are carried out with the R&S®FSH4/FSH8 handheld spectrum analyzer. A high-power RF power sensor can also be used for this setup. Another alternative is the portable R&S®FSL spectrum analyzer.

Adding a third-party battery to power the R&S®EX-IQ-Box makes the Rohde&Schwarz test solution fully portable and ideally suited for the installation and inspection of RRHs in the field. This unique solution is also ideal for government authorities to test if the output signals of radio transmitters in an installed network are in accordance with national regulations.

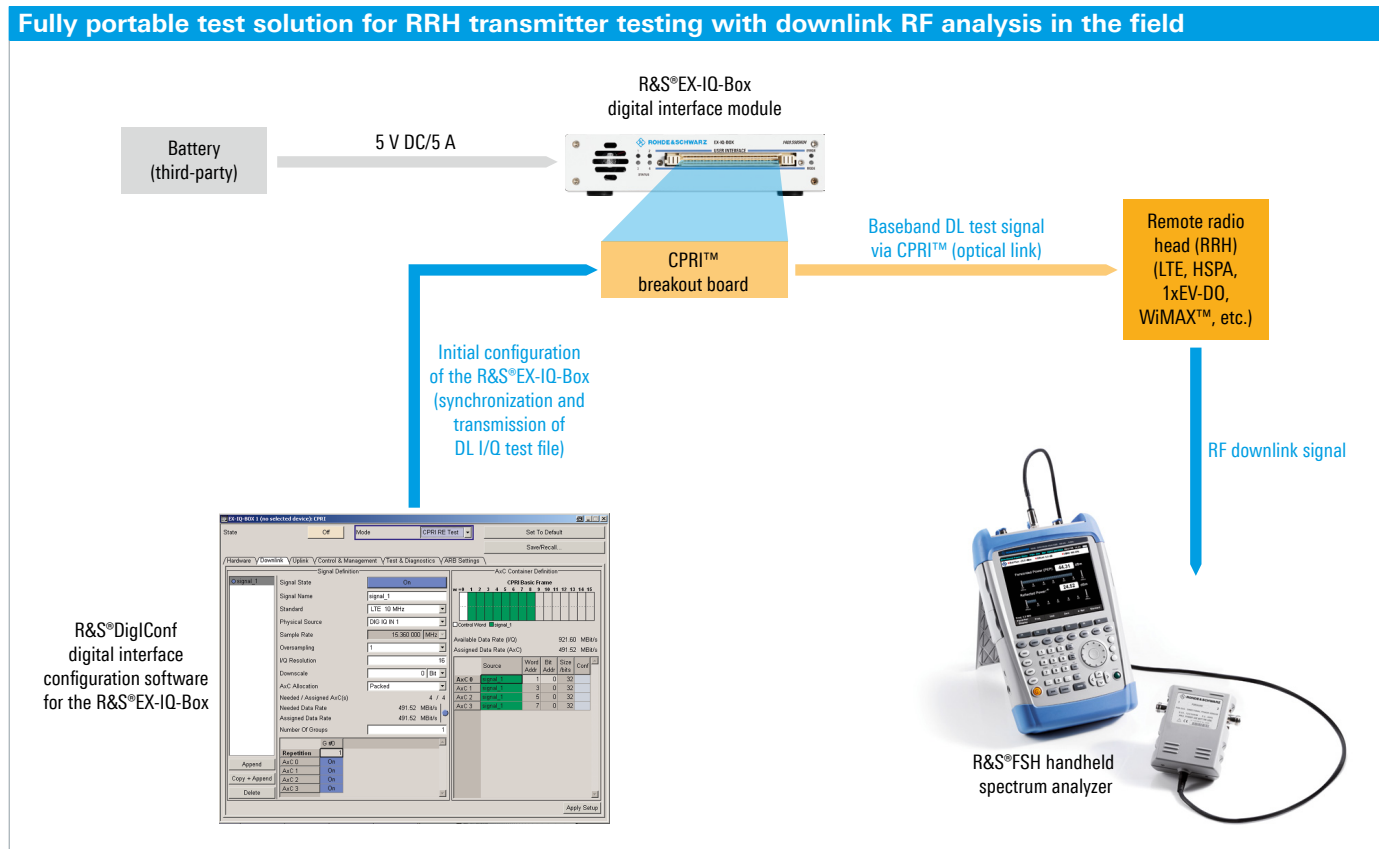
Rohde&Schwarz offers a unique, compact and fully portable test solution for base station field testing including functional and performance tests on CPRI™ RRHs and antenna systems in the field.

See also: www.rohde-schwarz.com/technologies

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