

Firmware options for Miniport Receiver EB200

Coverage and field-strength measurements with the mini-receiver



Photo 43687/1

FIG 1 EB 200 is ideally suited for indoor coverage measurements and mobile applications in vehicles

The optional DIGI-Scan enables

Miniport Receiver EB 200 – the

portable all-in solution for

radiolocation [1] – to cover a wide

RF spectrum from 10 kHz to 3 GHz.

Two innovative firmware options now

enhance the receiver's use for

measuring field strength and coverage.

Highly versatile

Miniport Receiver EB 200 (FIG 1) and Handheld Directional Antenna HE 200 (FIG 2) make for easy radiolocation from 10 kHz to 3 GHz. Combined the two form a flexible, portable solution enabling the user to search for and monitor emissions, detect interference and locate the tiniest transmitters even in difficult terrain. Plus, EB 200 in a system rack is a favourably priced, compact handoff receiver for remote control on a LAN interface.

Besides the familiar EB 200 DS (DIGI-Scan), which detects even very short signals such as frequency hopping and bursts without difficulty, Rohde & Schwarz now presents another two firmware options: EB 200 FS for field-strength

and EB 200 CM for coverage measurements.

Field strength

Together with suitable antennas, option EB 200 FS permits measurement of field strength. Besides level display in dB μ V, EB 200 also indicates field strength in dB μ V/m. All antennas with a known antenna factor in the useful frequency range are suitable. These factors describe the correlation between antenna output voltage into 50 Ω and electric field strength.

The antenna factors of the Rohde & Schwarz HE 200 antennas and of a half-wave dipole are already held in a data



9 kHz to 30 MHz

Photo 43 015/3



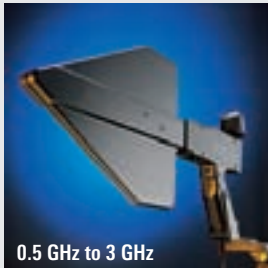
20 MHz to 200 MHz

Photo 43 015/2



200 MHz to 500 MHz

Photo 43 015/4



0.5 GHz to 3 GHz

Photo 43 015/1

FIG 2 Active Directional Antenna HE200 consists of four interchangeable RF modules

set in EB 200FS. The individual directional antenna modules can be operated both in passive and active mode. The halfwave dipole covers the range 9 kHz to 3 GHz.

If you select the number of an antenna for which there is already a data set, field strength in dB μ V/m too is displayed on the left of the numerical level display. This presupposes that the receive frequency is within the range for which the antenna factors are defined (FIGS 3 and 4).

FIG 3
Field-strength display

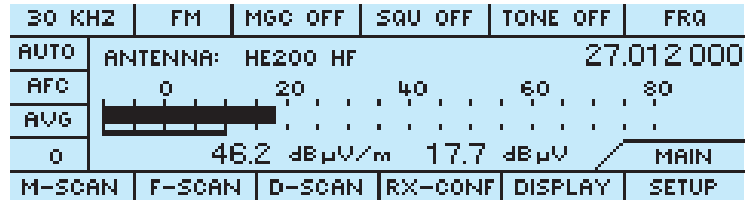
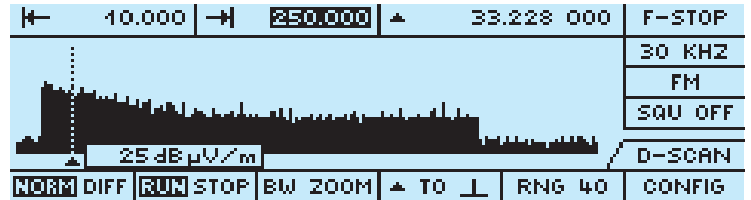


FIG 4
D-SCAN mode:
levels are displayed
in dB μ V/m (Antenna
HE200, 20 MHz to
200 MHz)



User-defined antenna factors are entered on the remote-control interface using an Internet browser such as Internet Explorer or Netscape. You simply enter the IP address of the unit. After link setup, a Java application contained in the firmware is loaded via the browser from EB 200 to a PC or laptop and presents a straightforward menu (FIG 5).

Coverage

Firmware Option EB 200 CM makes EB 200 a specialist for coverage measurements. This option is operated on the remote-control interface because such measurements involve a large volume of data.

In this mode EB 200 exhibits features far superior to those of common test mobiles:

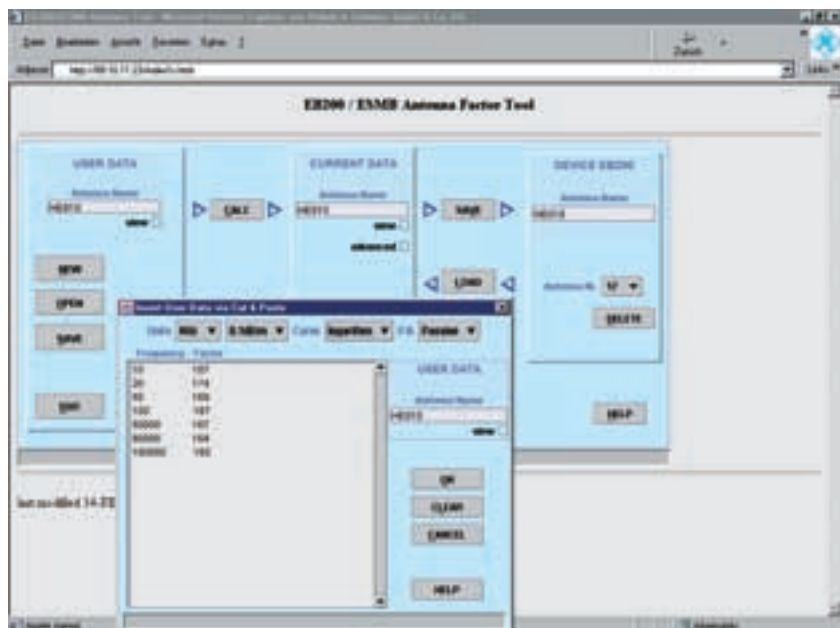


FIG 5 Menu for editing user-defined antenna factors

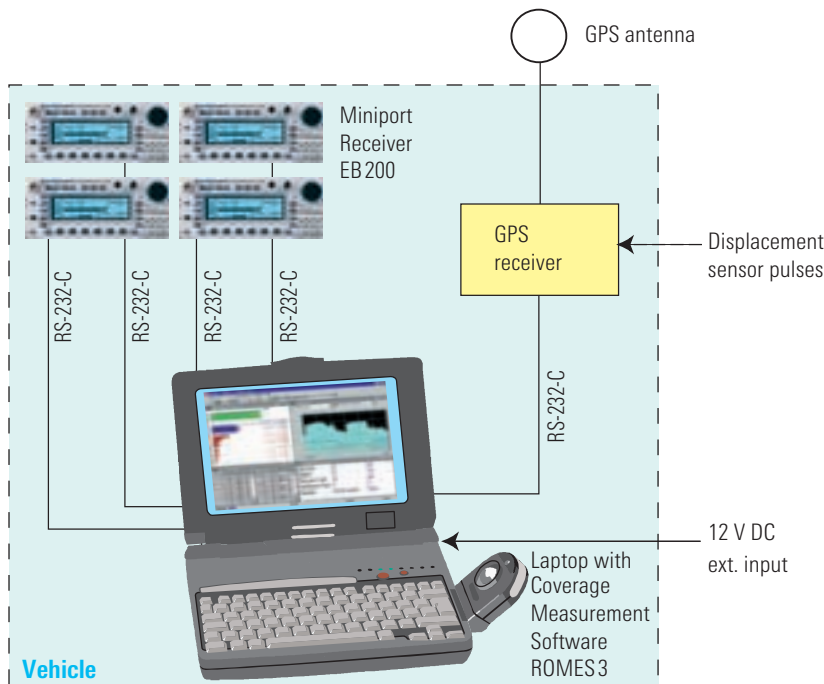


FIG 6 EB 200 is ideally suited for mobile applications too

- High measurement speed: test mobiles can handle two measurements per second; in single-channel mode EB 200 allows up to 2000 triggered level measurements per second on one frequency. In multichannel mode up to 200 measurements per second can be performed on a list of frequencies with any frequency hops.
- Minimum level error: test mobiles achieve approx. 4 dB; EB 200 is outstanding with approx. 1 dB.
- Many bandwidths: test mobiles provide one bandwidth only; with EB 200 up to 17 IF bandwidths can be set. This variety will play an important role in the future for narrowband measurements in the new UMTS (universal mobile telecommunication service) standard.
- The portable EB 200 is ideally suited for indoor coverage measurements. Other high-end test receivers are unsuitable for such purposes because of their size and weight.
- Settable measurement times (not possible with test mobiles).

EB 200 allows flexible adaptation to a variety of different measurement tasks. For this purpose it features two test modes, three level detectors and user-selectable measurement time.

Level detectors for peak value (PEAK), average value (AVG) and realtime (FAST) can be activated in EB 200. In default mode, the preset times are selected so that precise measured values can be expected for the set IF bandwidth and level detection. In continuous mode, EB 200 queries and displays the current value of the level detector every 200 ms. In periodic mode, the measured values of the level detectors are deleted, new values determined and displayed, all in tune with the periodicity.

Bandwidth, demodulation mode, AGC, detector type and measurement time have to be set before embarking on single-channel measurements with the receiver. Up to 50 frequencies can be defined for multichannel measurements (triggered scan). All other parameters

(bandwidth, detector type, etc) are set in the same way as for single-channel measurement. The trigger can be configured to external, internal or timer.

Together with Coverage Measurement Software ROMES 3 and Test System TS9951[2], EB 200 with option EB 200CM is destined to play an important role as an allround receiver both for indoor coverage measurements and mobile applications in vehicles (FIG 6).

Theodor Fokken; Christoph Mügge

More information and data sheet at
www.rohde-schwarz.com or enter 170/03
 on reader service card

REFERENCES

- [1] Miniport Receiver EB 200 and Handheld Directional Antenna HE 200: Radio-monitoring from 10 kHz to 3 GHz now with portable equipment. News from Rohde & Schwarz (1997) No. 156, pp 4–6
- [2] Coverage Measurement Software ROMES3 – Acquisition, analysis and visualization of data in coverage measurements. News from Rohde & Schwarz (2000) No. 166, pp 29–32