

The RBS 2206—A flexible ticket to third-generation wireless systems

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The migration from second-generation to third-generation mobile systems is one of the core issues facing the industry as it enters into the new telecoms world. Ericsson is committed to making this migration as seamless as possible for the operator. One of Ericsson's cornerstone products is a new, indoor macro-base station—the RBS 2206.

Twice the capacity, same footprint

The RBS 2206 is a successor to the RBS 2202, which is the world's most deployed GSM base station. A new double transceiver unit (dTRU) in the RBS 2206 gives it unsurpassed capacity: with room for six dTRUs, it can serve as a 12-transceiver base station, which is twice the capacity of the RBS 2202. Nonetheless, the footprint of the two models is exactly the same, which is an important point—today, many base station sites host two RBS 2202 units. If these units were replaced with the RBS 2206, the extra space gained at the site could be used for a second unit, say, one that supports third-generation standards (Figure 2). Thus, operators can build a third-generation network using existing sites. This is good news, since site space is a valuable operator asset.

True bridge from 2G to 3G

When an operator decides to implement third-generation technology, the RBS 2206 can provide coverage quickly. Indeed, the RBS 2206 is a true bridge from second- to third-generation systems. Full support for enhanced data rates for global evolution (EDGE) is achieved by adding one or more plug-in transceiver units in the cabinet's transceiver slots; support for wideband code-division multiple access (WCDMA) is achieved by adding a plug-in WCDMA transceiver unit (WTRU) and a remote radio unit (RRU). The RBS 2206, which represents a flexible, low-cost ticket to third-generation capabilities, is especially suited to sites where space is a premium (urban areas) or where coverage is the main priority (rural areas).

Plug-in WTRU and remote radio unit

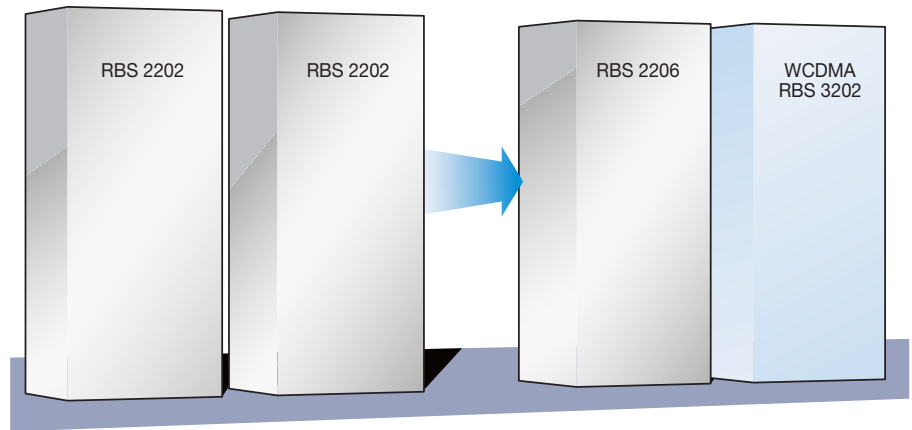
As mentioned above, the RBS 2206 can be

expanded to support WCDMA using a plug-in WTRU, which contains baseband functionality (Figure 3). A remote radio unit, which can be placed anywhere between the cabinet and the antenna, contains radio functionality and power amplification. The connection between the base station and the remote unit is made by means of a fiber optic cable, making installation flexible and easy. Up to three RRUs can be deployed, depending on the number of sector configurations (one, two or three).



Figure 1
Photograph of the RBS 2206. Dimensions in mm (height x width x depth): 1900 x 600 x 400.

Figure 2
The footprint of the RBS 2206 is one-half that of the RBS 2202. Thus, by upgrading to the RBS 2206, operators have space over for, say, a second unit that supports third-generation standards.



BOX A, ABBREVIATIONS

2G	Second-generation mobile/wireless system
3G	Third-generation mobile/wireless system
CDU-F	Combiner and distribution unit (F)
CDU-G	Combiner and distribution unit (G)
dTRU	Double transceiver unit
DXU	Distribution switch unit
EDGE	Enhanced data rates for global evolution
GPRS	General packet radio service
GSM	Global system for mobile communication
HSCSD	High-speed circuit-switched data
RBS	Radio base station
RRU	Remote radio unit
TRU	Transceiver unit
WCDMA	Wideband code-division multiple access
WTRU	WCDMA TRU

Generation 2.5

In the interim before third-generation systems are introduced, the RBS 2206 can aptly fulfill several roles, since it provides full support for the technologies that pave the way for third-generation systems. The RBS 2206 is

- fully prepared for GSM data services, including 14.4 kbit/s time slots, high-speed circuit-switched data (HSCSD), and general packet radio service (GPRS); and
- equipped with a powerful distribution switch unit (DXU) and fast internal buses, which guarantee full EDGE sup-

port on all time slots. Moreover, the DXU is prepared for Internet protocol-based (IP) A-bis transmission.

Immediate benefits

The RBS 2206 also offers several immediate benefits to present-day GSM networks. Apart from having twice the capacity of its predecessor, the RBS 2206 also gives improved radio performance. For example, in addition to standard, two-branch diversity, it supports four-branch receiver diversity, which improves the uplink with up to 4 dB.

BOX B, THE RBS 2206

Key features

- Six double transceiver units (dTRU) for a total of 12 transceivers
- Hybrid combining one, two or three sectors in one cabinet
- Filter combining one, two or three sectors in one cabinet
- 35/16 W output power from cabinet (CDU-G)
- 20 W output power from cabinet (CDU-F)
- Synthesized and baseband frequency hopping
- Prepared for data: 14.4 kbit/s, HSCSD, GPRS
- Prepared for two-slot WTDUs

- Supports 12 EDGE transceivers on all time slots
- All speech codes: HR, FR, EFR
- Dual-band (GSM 900/GSM 1800)
- Extended range 121 km
- Supports software power boost
- Prepared for IP-based transmission
- Prepared for four-branch receiver diversity
- Prepared for GPS-assisted positioning services

Technical specifications

- Frequency band E-GSM 900, GSM 1800
- Transmission (Tx) 925-960, 1805-1880 MHz
- Reception (Rx) 880-915, 1710-1785 MHz
- Dimensions 1900x600x400 mm
- Weight (equipped) 230 kg
- Power into antenna feeder
 - 35 W (GSM 900)
 - 28 W (GSM 1800)
- Receiver sensitivity -110 dBm
- Power supply 120 to 250 VAC, 50/60 Hz
 - 48 to -72 VDC
 - +20 to +29 VDC

The combination of two unique features—*Extended range 121 km*, and four-branch receiver diversity—gives almost immediate rural coverage at the lowest possible cost.

The RBS 2206 also comes with two new combiners—the CDU-F and CDU-G—which when compared to the combiners of the RBS 2202, increase output power by 1 dB. Obviously, increased output power implies greater site-to-site distance. Thus, compared to the RBS 2202, networks built with the RBS 2206 require approximately 15% fewer sites (Figure 4).

The CDU-G combiner can be configured in either capacity or coverage mode. In coverage mode, its output power is increased by 3 dB to 35 W, making it ideal for rural sites or roll-outs where speed or cost is a key factor.

Because it is fully compatible with Ericsson's RBS 2202, the RBS 2206 can quickly and easily be implemented in present-day networks. The RBS 2206 will become commercially available during the first quarter of 2001. EDGE functionality will be introduced a few months later. The plug-in WTRU will be offered for deployment in 2002.

Conclusion

The RBS 2206 gives operators flexible entry into the world of third-generation systems. Having the same footprint as the RBS 2202 but double the capacity, the RBS 2206 frees

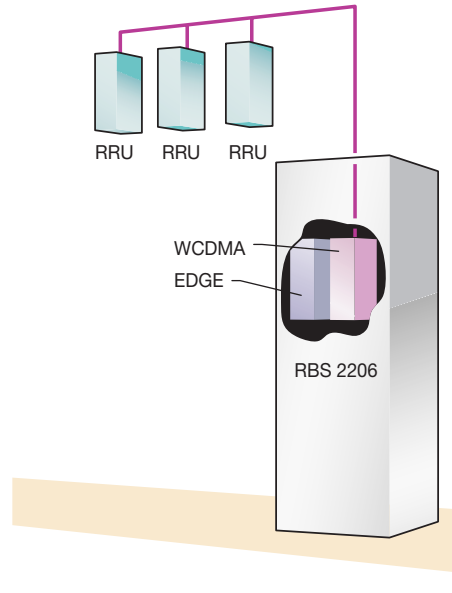


Figure 3
The RBS 2206 can be expanded to support WCDMA using a plug-in WTRU and remote radio unit.

up 50% of the cabinet space currently occupied at base station sites. Operators can use this extra space to install a third-generation base station; for example, the WCDMA macro-base station/RBS 3202.

The RBS 2206 is fully prepared for EDGE and WCDMA. To add WCDMA functionality, operators need only plug in a WCDMA transceiver unit and remote radio unit. Thus, because major site investments can be reused, the RBS 2206 gives operators rapid, low-cost roll-out of a third-generation network.

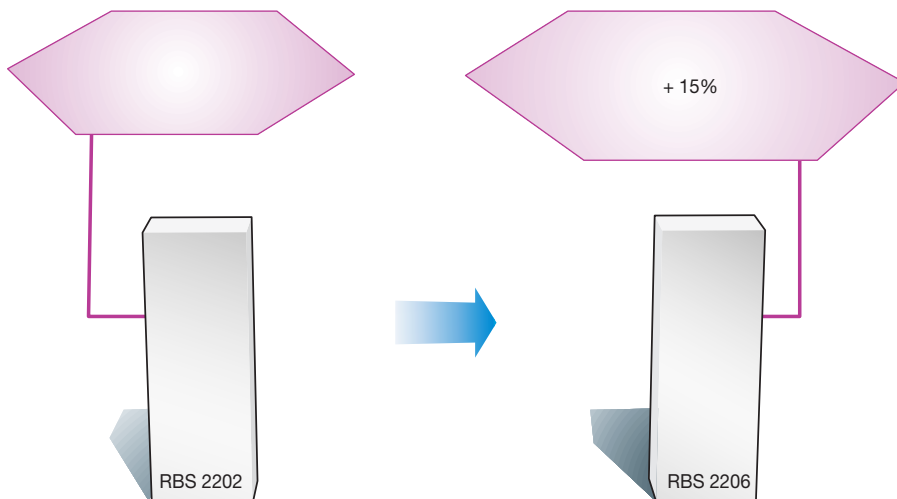


Figure 4
The increased site-to-site distance afforded by the CDU-F combiner means that—compared to the RBS 2202—networks built with the RBS 2206 require approximately 15% fewer sites.