

Can a 5G base station promote green development of mobile communication facilities?

However, a significant reduction of ca. 42.8% can be achieved by optimizing the power structure and base station layout strategy and reducing equipment power consumption. Overall, this study provides a clear approach to assess the environmental impact of the 5G base station and will promote the green development of mobile communication facilities.

Are green cellular base stations sustainable?

This study presents an overview of sustainable and green cellular base stations (BSs), which account for most of the energy consumed in cellular networks. We review the architecture of the BS and the power consumption model, and then summarize the trends in green cellular network research over the past decade.

What is the scope of a 5G base station?

Scope: The scope of the entire lifecycle of the 5G base station includes the materials and equipment manufacturing, transportation and operation, which excludes the end-of-life stage. Both a single 5G macro base station and a 5G micro base station are included.

How can mobile network architecture contribute to green networking?

The representation of the mobile network architecture along with the expanded view of the 5G base station has been depicted in Fig. 5. Improving hardware components can contribute toward green networking. It entails reducing BS's energy consumption by using energy-efficient hardware.

How many BBU does a 5G micro base station have?

In this study, a single 5G macro base station is equipped with a fully loaded BBU and three AAUs (channel number 64T) and a single 5G micro base station is equipped with a BBU with a 4T baseband board and three RRUs (channel number 4T). Fig. 2. The system boundary of assessing the life cycle impacts of 5G base station.

How much power does a 5G base station use?

2.6. Scenario analysis 5G base stations are high-frequency with an average coverage of about 450 m, while the 4G base stations cover an average range of about 1500 m. Taking a 64T64R S111 5G macro station equipment as an example, the power consumption was ca. 3-4 kW, 2-3 times higher than that of 4G equipment (Li, 2019).

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