Environmental assessment of green base stations for mobile communications

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.

Can low-carbon communication base stations improve local energy use?
Therefore,low-carbon upgrades to communication base stations can effectively improve the economics of local energy usewhile reducing local environmental pollution and gaining public health benefits. For this research,we recommend further in-depth exploration in three areas for the future.

Should China upgrade to low-carbon base stations?
These outcomes demonstrate that upgrading to low-carbon base stations not only ensures economic feasibility but also delivers significant environmental and public health benefits, reinforcing the strategic value of decarbonizing China's communication infrastructure.

Abstract. The current national policies and technical requirements related to electromagnetic radiation administration of mobile communication base stations in China are ...

The focus is on smaller cell infrastructure and the need for optimization in terms of connection, communication, and power. The solutions include reconfiguring flow paths, ...

Starting with motivation and challenges in Chapter 3, Chapter 4 gives an overview of industry driven initiatives and standardization activities related to sustainability of mobile ...

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.

Green technology has emerged as an essential factor in the development of networking methods and communication technologies. Energy-efficient networks and ...

These outcomes demonstrate that upgrading to low-carbon base stations not only ensures economic feasibility but also delivers significant environmental and public health ...

Environmental EMF assessment for epidemiological studies is important. It obviously differs from the measurements for compliance test with the safety limits. We live by ...

With the new infrastructure construction proposed in China, 5G base stations as the basis for it will make the environmental impact during the construction process. Quantifying the ...

The use of mobile phones has increased probably and has been accompanied by a parallel raise in concern about the health hazards associated with exposure to the ...

The periods the base transceiver stations (BTSs) are powered by the nationalgrid were investigated and we considered the emission generated from the alternative energy ...

China Mobile added 467,000 5G base stations while achieving a 2% reduction in overall base station energy consumption in 2024.

On the one hand, China has built the world's largest number of communication base stations due to its large population and the huge communication demand for areas such as ...

Goncalves et al. (2020) explored carbon neutrality evaluation of 5G base stations from the perspective of network structure and carbon sequestration. Despite the growing ...

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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. ...

Energy efficiency and renewable energy are the main pillars of sustainability and environmental compatibility. This study presents an overview of sustainable and green cellular ...

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