

## PDEOZE PowerContainer

# 5g base station power supply characteristics



## Overview

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What is a small cell in 5G?

Small cells are a new part of the 5G platform that increase network capacity and speed, while also having a lower deployment cost than macrocells. The compact size of a small cell requires that all components – especially power converters – provide high efficiency, better thermals and eventually the best power density possible.

How does a 5G base station reduce OPEX?

This technique reduces opex by putting a base station into a “sleep mode,” with only the essentials remaining powered on. Pulse power leverages 5G base stations’ ability to analyze traffic loads. In 4G, radios are always on, even when traffic levels don’t warrant it, such as transmitting reference signals to detect users in the middle of the night.

How will mmWave based 5G affect PA & PSU designs?

Site-selection considerations also are driving changes to the PA and PSU designs. The higher the frequency, the shorter the signals travel, which means mmWave-based 5G will require a much higher density of small cells compared to 4G. Many 5G sites will also need to be close to street level, where people are.

Why does 5G cost more than 4G?

This percentage will increase significantly with 5G because a gNodeB uses at least twice as much electricity as a 4G base station. The more operators spend on electricity, the more difficult it is to price their 5G services competitively and profitably.

Should a 5G power amplifier be combined with a power amplifier?

For 5G, infrastructure OEMs are considering combining the radio, power amplifier and associated signal processing circuits with the passive antenna

array in active antenna units (AAU). While AAUs improve performance and simplify installation, they also require the power supply to share a heatsink with the power amplifier for cooling.

What is the trend in 5G radio applications?

The trend in 5G radio applications is to use higher frequencies and shorter wavelengths. Increasing the frequency increases the speed of sending/receiving signals and helps shrink the size of the antenna, which in turn shrinks the size of the cell.

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To understand how, consider the power amplifier (PA) and power supply unit (PSU) in the 5G New Radio (NR) gNodeB base station. In 2G, 3G and 4G, the PA and PSU were separate components, each with ...

In addition, these 5G cells will also contain more integrated antennas to apply massive multiple-input, multiple-output (MIMO) technology for reliable connectivity. Therefore, a variety of state ...

These tools simplify the task of selecting the right power management solutions for these devices and, thereby, provide an optimal power solution for 5G base stations components.

In general, in the 5G era, how to reduce power consumption is a problem that the entire industry chain needs to think about. High efficiency, high power density, and high ...

The 48V Switching Power Supply segment is projected to dominate the 5G base station power supply market during the forecast period (2025-2033). This dominance stems from its cost ...

The equipment ensures that devices across the infrastructure stack receive reliable power from the mains network, wherever they happen to reside. With it, individuals and organizations can ...

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Building better power supplies for 5G base stations Authored by: Alessandro Pevere, and Francesco Di Domenico, both at Infineon Technologies Infineon Technologies - Technical ...

The need to increase the number of base stations to provide wider and more dense coverage has led to the creation of small cells. Small cells are a new part of the 5G platform that increase ...

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