

Kongres Container

How to calculate the power configuration of 5G base stations



Overview

How much energy does a 5G base station consume?

Because it is estimated that in 5G, the base station's density is expected to exceed 40-50 BSs/ Km². The energy consumption of the 5G network is driving attention and many world-leading network operators have launched alerts about the increased power consumption of the 5G mobile infrastructure.

What are the components of a 5G base station?

Baseband Unit (BBU): Handles baseband signal processing. Remote Radio Unit (RRU): Converts signals to radio frequencies for transmission. Active Antenna Unit (AAU): Integrates RRU and antenna for 5G-era efficiency. 2. Power Supply System This acts as the "blood supply" of the base station, ensuring uninterrupted power. It includes:.

What is a 5G cell reference power?

In a 5G network, cell reference power is the baseline amount of power transmitted by a cell (or base station) across its coverage area. It's used to ensure that signals can be received clearly by devices within the cell's range. Think of it as the "starting point" for the cell's power output. Simple analogy: Imagine you're speaking in a large room.

What is 5G SSB power?

This means the SSB Power equals 21 dB. As shown in the image below, this is how you can verify the current 5G SSB Power using drive test (DT) data through the configuration information provided for the SS-PBCH-BlockPower, which is part of the system information block (SIB) configuration for the serving cell.

How much power does a 5G system need?

To keep the power density per MHz similar to LTE systems, the 100MHz

3.5GHz spectrum will require 5x 80 W, which is not easy to be achieved. 5G trials need to define a realistic output power trade-off between coverage, power consumption, EMF limits, and performance.

Are 5G radio access networks energy-efficient?

Various 5G enabled scenarios, such as, the impact of traffic load variations, the number of antennas of HPN, variation in bandwidth, and density of LPNs in mm-wave communication is considered to investigate the power requirements and network power efficiency of these radio access architectures to propose the energy-efficient radio access network.

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