

Power consumption of battery cabinet base station power module





Overview

How much energy does an off-grid base station consume?

This number is even higher for the case of off-grid base stations (BSs) that are powered by diesel generators. Such BS sites consume, for example, 4.8 kW and spew into the atmosphere 33.3 tons of CO₂ annually. Another key driver for reducing energy consumption is frequently rising energy prices.

How does instantaneous BS power consumption relate to TX power?

In order to relate instantaneous BS power consumption and Tx power, we have performed on-site measurements of five different, fully operated macro BSs. These BSs differ in transmission technology and production years. The first two are GSM, the next two are UMTS while the last one is a LTE BS.

What is total BS power consumption?

According to the model proposed in [1], total BS power consumption is determined as the sum of powers consumed by individual BS components. In this model, consumption of the power amplifier (PA) is the most significant since it is the Tx power dependent component with a share of around 65 percent of total BS power consumption.

What is instantaneous power consumption?

The instantaneous power consumption of BS is defined as a product of the instantaneous DC electric current and the associated DC power supply voltage. The measured voltage of the DC battery power supply is constant in time, and for individual GSM, UMTS and LTE BSs is listed in Table 1, Table 2, Table 3, respectively.

What is the nominal power supply voltage for UMTS & LTE BSS?

According to BSs declarations, the nominal power supply voltage for UMTS, LTE and GSM BSs is also different. It is a 24 V direct current (DC) for GSM while for UMTS and LTE BSs equals to 48 V. However, on all analyzed BSSs,



only 48 V DC BSs power supply systems with corresponding batteries are installed.

How many volts is a GSM BSS power supply?

It is a 24 V direct current (DC) for GSM while for UMTS and LTE BSs equals to 48 V. However, on all analyzed BSSs, only 48 V DC BSs power supply systems with corresponding batteries are installed. Thus, to ensure required power supply voltage, internal DC/DC converters are used at the GSM BSSs.



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Base station power consumption comparison for different loads ...

Base station power consumption comparison for different loads values. The plot demonstrates how the power consumption of base station sites is impacted by load.

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What equipment does the base station energy storage ...

To encapsulate everything discussed, the components present in base station energy storage cabinets are vital for efficient operation and ...

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The real data in terms of the power consumption and traffic load have been obtained from continuous measurements performed on a fully ...

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Power Architectures for Telecommunications

Keywords- Power Architecture of telecommunication, Base station Power supplies, telecom energy schemes, power distribution for telecommunication equipment, ...

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Energy Storage System Solutions- Ampac

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Final draft of deliverable D.WG3-02-Smart Energy Saving of ...

Change Log This document contains Version 1.0 of the ITU-T Technical Report on "Smart Energy Saving of 5G Base Station: Based on AI and other emerging technologies to forecast and ...

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Applications



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Details of the power consumption for an LTE-macro ...

Download Table , Details of the power consumption for an LTE-macro base station [21,22]. from publication: Optimal Solar Power System for Remote ...

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