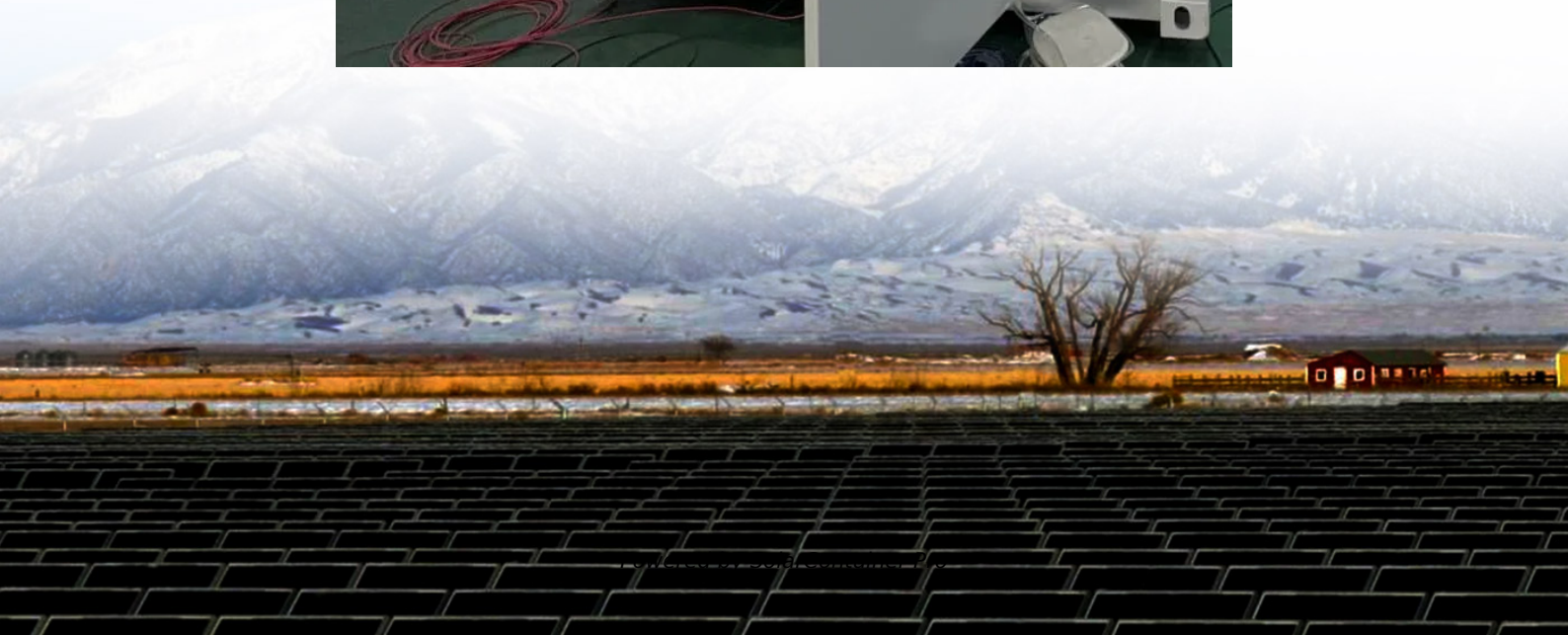


Base station power supply load current measurement





Overview

Is there a direct relationship between base station traffic load and power consumption?

The real data in terms of the power consumption and traffic load have been obtained from continuous measurements performed on a fully operated base station site. Measurements show the existence of a direct relationship between base station traffic load and power consumption.

Do base station power amplifiers need current monitoring?

Current monitoring is necessary in base station power amplifiers, especially with the more complex modulation methods used in 3G and LTE, where the peak-to-average power ratio varies from 3.5 dB (about 2.2 to 1) for 3G W-CDMA to 8.5 dB (about 7.1 to 1) for LTE OFDM—compared with 3 dB (about 2 to 1) for the most popular 2G single-carrier GSM.

What is a linear BS power consumption model?

Based on the measured average traffic load and the instantaneous power consumption obtained for each BS rack on the DC side, our goal was to develop a linear BS power consumption model. The developed model must express instantaneous power consumption of each BS rack as a function of the current traffic load.

How much AC power does a BS site use?

According to Table 4, average AC active power of the complete BS site during continuous five day measurements is: 3.16 kW, 2.14 kW and 2.14 kW for phases A, B and C, respectively. As can be seen from the calculated averages presented in Table 4, the average consumption for phases B and C is equal. Figure 16.

How do base stations affect mobile cellular network power consumption?

Base stations represent the main contributor to the energy consumption of a



mobile cellular network. Since traffic load in mobile networks significantly varies during a working or weekend day, it is important to quantify the influence of these variations on the base station power consumption.

What is the largest energy consumer in a base station?

The largest energy consumer in the BS is the power amplifier, which has a share of around 65% of the total energy consumption . Of the other base station elements, significant energy consumers are: air conditioning (17.5%), digital signal processing (10%) and AC/DC conversion elements (7.5%) .



Base station power supply load current measurement



Measurements and Modelling of Base Station Power Consumption, PDF, Amplifier

Measurements show a direct relationship between base station traffic load and power consumption, allowing the development of a linear power consumption model for each ...

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Measurements and Modelling of Base Station Power Consumption under Real

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

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(PDF) Measurements and Modelling of Base Station Power Consumption

Based on real on-site measurements performed on a set of macro base stations of different access technologies and production years, we developed linear power consumption models.

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[Power Supply Measurement and Analysis](#)

Historically, characterizing the behavior of a power supply has meant taking static current and voltage measurements with a digital multimeter and performing painstaking



calculations on a ...

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[Measurements and Modelling of Base Station Power ...](#)

Measurements show the existence of a direct relationship between base station traffic load and power consumption. According to this relationship, we develop a linear power ...

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High-Side Current-Sense Measurement: Circuits and Principles

Examples of applications include overcurrent protection, 4-20mA systems, battery chargers, high-brightness LED control, GSM base station power supply, and H-bridge motor ...

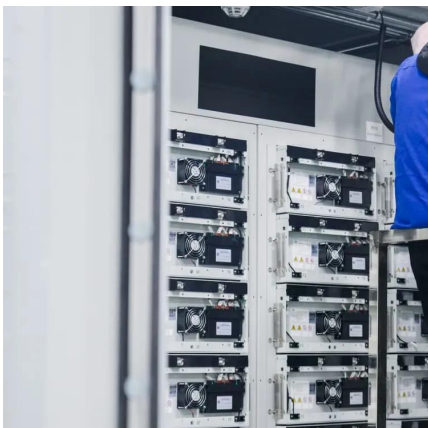
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Precision Current Measurements on High-Voltage Power ...

Measuring current at the high-side of the load, or directly in series with the power rail being monitored and the remainder of the circuit, avoids both the varying system reference and ...

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[Key Applications of Power Meters in Tower Base Stations](#)

Power meters continuously monitor the voltage and current values within the base station. When abnormal voltage fluctuations occur, such as overvoltage or undervoltage, or ...

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[Components and Methods for Current Measurement](#)

Current sensing is used to perform two essential circuit functions. First, it is used to measure "how much" current is flowing in a circuit, which may be used for power management in a DC/DC ...

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