SOLAR PRO.

How to measure wind power in communication base stations

This white paper discusses how wind load, an important mechanical characteristic for base station antennas, is determined. It describes the three main methods used: numerical simulation, wind tunnel testing, and ...

We investigate the use of wind turbine-mounted base stations (WTBSs) as a cost-effective solution for regions with high wind energy potential, since it could replace or even outperform ...

These systems have a wide range of options for measuring wind speed, wind direction, air density, and electric power. Real-time or interval data are stored locally on the data logger, and can be transmitted via all standard ...

METHODS OF DETERMINING THE WIND LOAD There are three recognised methods for determining the wind load of base station antennas:

In the past, there has been some difficulty in correctly estimating wind load, with a variety of different calculations, measurements and standards being used, as well as different methods of wind tunnel ...

In one example, the present disclosure provides structure for operating in a wind flow across a range of wind speeds.

The results characterize wind load performance for a variety of antenna profiles across a wide range of wind directions, from zero to 180 degrees. This paper details the methodology, results and analysis of the testing.

Among wind load measurement tests, the wind tunnel test simulates the environment most similar to the actual natural environment of the product and therefore is the most accurate test method.

Using a thorough understanding of the physics and aerodynamics behind wind load, we optimize the antenna design to minimize wind load. This involves using numerical methods such as computational fluid dynamics ...

By taking the time to refine measurement techniques to ensure the most accurate possible test results, we are now able to look at pushing the wind loading eficiency of base station antennas.

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