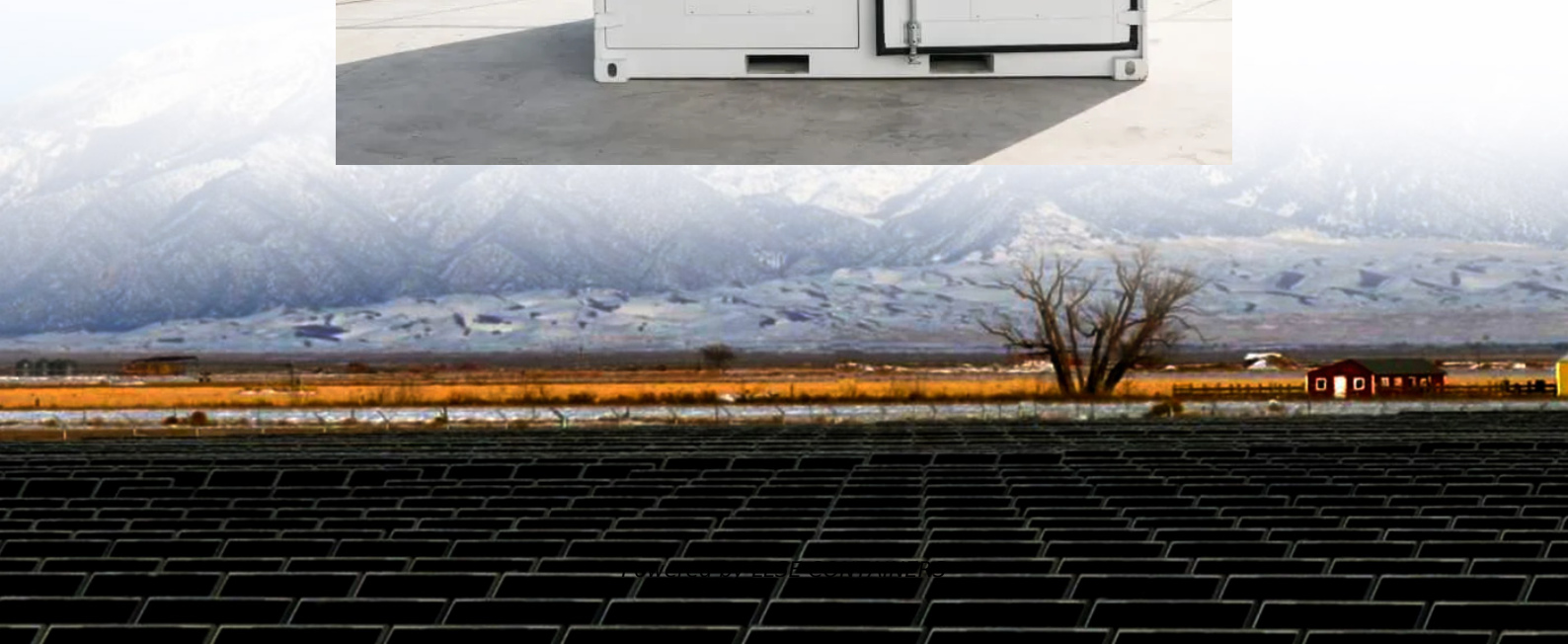


# Signal height of green base station for ground communication





## Overview

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What is the height of a ground-based base station tower?

Where,  $h_{s u f}$  is the height of the ground-based base station tower.  $a$ ,  $b$ , and  $c$  are the linear relationship coefficients of this function. Based on practical considerations, the height of ground-based base station towers ranges from a minimum of 15 meters to a maximum of 40 meters.

What is the architecture of a ground station?

The architecture of modern ground stations is characterized by a combination of essential structural components, including antennas, radomes, equipment shelters, and tracking systems. Antennas play a crucial role in satellite communication by receiving and transmitting signals to and from satellites in orbit.

How high should a base station antenna be?

Per ITU-R P.1410 recommendations, base station antenna heights typically range between 15-60 meters. Urban deployments favor 25-35m, rural coverage requires 40-55m, while 5G mmWave systems operate efficiently at 15-25m. Critical factors include propagation models, terrain, and frequency bands.

What is the minimum height of a base station?

The base station height must be higher than the surrounding low- to mid-rise buildings to ensure optimal signal coverage, excluding high-rise buildings. Therefore, the minimum height of the base station is set to the average height of the surrounding low- to mid-rise buildings. (13)  $h_{m e a n} \leq h_{s u f} \leq 40$



## Signal height of green base station for ground communication

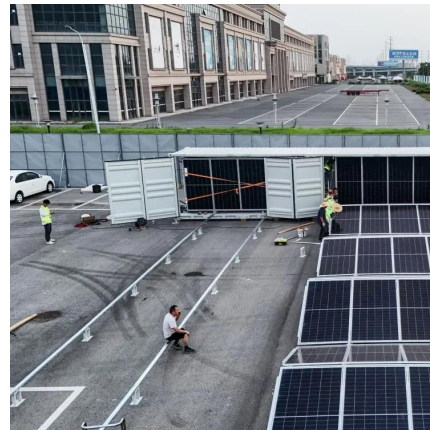


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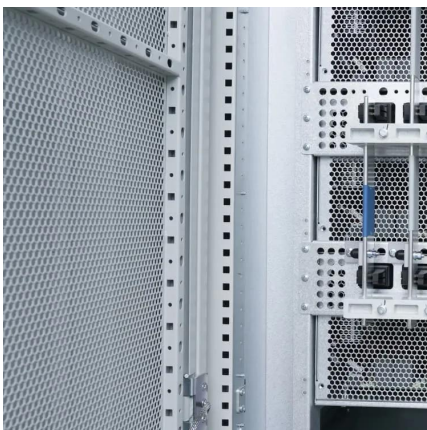
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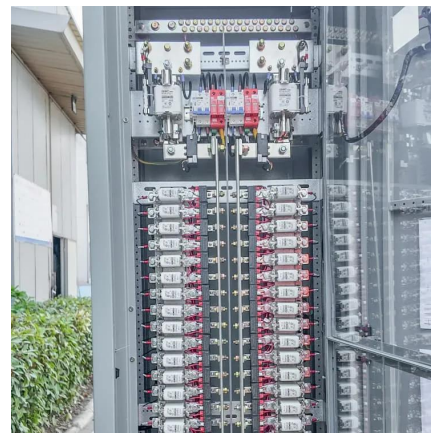


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