Standard Procedures for Grounding Communication Towers

Overview

LBI-39067A The self supporting lattice tower grounding system consists of a ground rod at each tower leg. If necessary, additional ground rods may be used.

Key Takeaways

Effective grounding of communication towers involves creating a low-resistance path to safely dissipate lightning and electrical surges into the earth while protecting personnel and equipment.

Key Grounding Principles

Direct Tower Bonding All metallic tower structures must be bonded to the grounding system. Conventional air terminals and dissipators should be clamped directly to the tower using #2 AWG minimum bare tinned solid copper wire, ensuring a continuous electrical path for lightning currents. Towers over 100 feet should have coaxial cables and waveguides bonded at intervals not exceeding 75 feet to prevent surge propagation.

Grounding Electrodes and Ground Rings Install a ground ring around the tower base, consisting of conductive material in direct soil contact. Ground rods or plates should be connected to this ring at regular intervals to reduce overall ground resistance. Multiple rods spaced apart and buried below the soil surface can achieve resistances below 5 ohms, which is recommended for effective tower grounding.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Cable and Equipment Bonding Coaxial cables, waveguides, and antennas should be bonded near the tower base and at cable bends. A grounding bus bar installed near the tower base collects cable grounds and connects them to the tower ground using #2 AWG bare tinned copper wire. Tight bends in cables help prevent lightning currents from traveling toward sensitive equipment.

Minimizing Ground Potential Rise (GPR) Properly engineered grounding systems consider both resistance and impedance to mitigate GPR, which occurs when lightning or surge currents raise the potential of surrounding soil. This protects personnel from step voltage hazards and prevents equipment damage. Compliance with Standards Grounding systems should follow NEC requirements for metallic towers and incorporate IEEE 142 (Green Book) recommendations for industrial and IT equipment grounding.

This ensures both life safety and protection of sensitive electronics.

Installation Best Practices

Avoid unnecessary joints; if splicing is required, use proper welding techniques to maintain conductivity. Use tinned copper wires for corrosion resistance. Ensure all auxiliary grounding infrastructure is bonded to the main tower ground.

Summary

A robust communication tower grounding system combines direct tower bonding, ground rings with rods or plates, cable and equipment bonding, and adherence to NEC/IEEE standards. This approach ensures low-resistance paths for lightning and surge currents, minimizes step potential hazards, and protects both personnel and sensitive equipment from electrical damage.

Article Content

LBI-39067A

The self supporting lattice tower grounding system consists of a ground rod at each tower leg. If necessary, additional ground rods may be used to decrease ground resistance where needed, or be

Six Essential Grounding and Bonding Practices for Radio Towers ...

Learn essential grounding and bonding practices for radio towers. Discover proven methods to reduce risk, protect equipment, and ensure reliable tower operation.

SIX ESSENTIAL GROUNDING AND BONDING PRACTICES FOR

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

We have assembled some of the most prominent practices commonly used on radio tower grounding systems to ensure the effective operation of installed lightning protection systems.

Grounding Series Part 12, Tower Grounding

[4m:16s] When proper guidelines are followed grounding, a tower should not be difficult, and you can be confident that has been done correctly and will meet code.

LBI-39067

These include internal and external grounding systems for equipment in the communications building, grounding of the antenna towers and guys, trans- mission line, telephone line and AC power line

ITU-T Rec. K.112 (07/2019) Lightning protection, earthing and bonding ...

The purpose of this Recommendation is to give detailed guidance on protection procedures, so that an engineer who is not a lightning protection expert can accomplish the design of the lightning

Effective Communication Tower Grounding Design

To design an effective telecommunication tower grounding system, SAE utilizes high sensitivity ground resistivity meters, CDEGS modeling software, patented SAE products such as ConduCrete,

LBI-39067A

OBJECTIVE The fundamental objective of this document is to provide guidelines and practices for Ericsson site equipment grounding, with recommended methods that are essential to protect

GROUNDING AND BONDING FOR COMMUNICATIONS SYSTEMS

607-D, Telecommunications Bonding and Grounding (Earthing) for Customer Premises. Work covered by this Section shall onsist of furnishing supplies, labor, materials

On Communication Tower Grounding Under Lightning Currents

This letter presents simple formulas for grounding resistance, impulse impedance, and effective length of the radial counterpoises, which can help analyze optimal grounding configurations for lightning

Communications Site Grounding and Power Distribution Inspection

The Motorola Communication Site Grounding and Power Distribution Inspection service provides an on-site inspection of existing equipment installation, system bonding, grounding, electrical power

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

GROUNDING & PROTECTION OF COMMUNICATION SITES

Course Summary This 1 day course is designed for the communications professional whose job responsibilities include working with AC and DC power systems located at but not limited to Central

Grounding Series Part 12, Tower Grounding

[0m:39s] For the purpose of today''s video, we want to move on to a different subject in regards to grounding more specifically. We want to talk about some of the principles, we should follow when we

Safety Center Tower Grounding

All communications systems need antenna towers, which naturally invite lightning strikes that can cause damage to a center''s sensitive equipment. The solution: equip the towers with robust, correctly

SECTION 260526

GROUNDING AND BONDING DESCRIPTION A. Connecting the communications system and permanently joining all that metal conducting portions of the communications pathway to earth in

Day Wireless Systems: the Complexities of Site Grounding in ...

Day Wireless Systems (DWS) stands at the forefront of the communications and tower industry due to our expertise in the equipment as well as the rules and standards that govern them.

BY ORDER OF THE AIR FORCE MANUAL 32-1065 SECRETARY

1.4.3. Execute the Air Force electrical systems and grounding program by setting standards, developing procedures, and providing technical assistance to implement Air Force policy and programs. This

On Communication Tower Grounding Under Lightning Currents

The recommended typical grounding of a communication tower comprises a ring with radial counterpoises. However, guidance on determining the size and layout for actual practical situations

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Contact Us

Continue your research online:

Website: https://alfa-pro.co.za
Technical inquiry: https://alfa-pro.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved