

Course Name: Broadband Antenna Systems

Course Overview:

As Wireless Broadband and modern data services grow, many are realizing the importance of an efficient cable and antenna system. These problems are not always obvious or even cause outages, but are a major inhibitor to efficient throughput. This class will provide the attendee with a solid understanding of how antennas work as well as common issues and concerns for the engineer, installer or technician from the design phase to system maintenance.

Course Length:

- 1 day (Course typically combined with Line Sweeping)

Who should attend?

- Installers
- Tower Workers
- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Electricians
- Managers or Supervisors

You will learn:

- Antenna basics and types of antennas
- Radiation and safety concerns
- Gain, coverage beamwidth and signal propagation and loss
- Coverage, obstructions and interference
- Cable and connector considerations
- Basic testing and maintenance
- Electrical codes, grounding and protection

Prerequisites: None

Customizable Course: Yes



Course Content:

SCADA Overview

- Overview
- History of SCADA
- Example Applications
- Industry Trends

The Basics of an Antenna

- Generate/Collect Energy
- Frequency
- Power Handling
- Polarization

Types of Antennas

- Yagi
- Patch
- Panel
- Reflectors

Antenna Radiation

- The Dipole
- Omni-directional
- Semi-Directional
- Highly-Directional

Antenna Gain

- The Isotropic Radiator
- Comparing with EIRP
- Gain and Coverage
- Beamwidth

Antenna Usage

- Access Points
- Point to Point
- Repeater
- Bridge

Wave Propagation

- RF Spectrum
- LOS – Line of Sight
- Direct and Reflected
- Radio Horizon

- Sky and Ground
- Multi-path Interference

Antenna Signal Loss

- Free Space Loss
- Buildings & Trees
- Rain & Ice
- Elevation
- Fresnel Zone

Link Budget

- Gains and Losses
- Receive Sensitivity
- Coax Type and Loss

Antenna Obstructions

- Free Space Loss
- Buildings, Trees
- Rain, Ice
- Topography
- Fresnel Zone

Antenna Covers

- Fiberglass
- Molded Plastic
- Radome

Antenna Testing

- Return Loss
- dB vs VSWR
- Narrow, Broadband

Antenna Connections

- Coax
- Connectors

Antenna Grounding

- Electrical Codes
- Lightning Protection
- Towers and Coax
- MGB-Main Ground Bus
- Weatherproof





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