Course Name: Fiber Optics Fundamentals for Wireless Technicians

Course Overview:
An overview of the history and development of fiber optics, fiber optic transmission theory, system parameters, wireless systems, installation guidelines and technical standards. Includes hands-on exposure to fiber optic termination, testing, and splicing equipment.

Course Length: 1 Day

Who should attend?
- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Managers or Supervisors

Recommended Prerequisites: None. Entry level.

Customizable Course: Yes

Course Content:

History and Development of Fiber Optics
- Tyndall's guided light experiment
- Bell's photophone
- Fiber innovators
- First US systems
- Development timeline
- Advantages of optical fiber media
- Fiber Optic Transmission Theory

Structure of the optical waveguide
- Total internal reflection
- Fiber types
- Basic fiber parameters

Fiber Optic Cable Design
- Terminology review
- Design objectives
- Classes of fiber protection
- Loose tube cable
- Tight-buffered cable

Fiber Cable Placement Overview

- Comparison of optical fiber and metallic media installation concerns
- Basic installation parameters
- Key points for “pre-pull”
- Key points for short indoor runs
- Key points for long outdoor runs
- Key points for “post-pull”

Fiber Termination
- Function of fiber connectors
- Fiber connector types
- Field installation advantages and disadvantages
- Factory termination advantages and disadvantages
- Techniques for installing factory terminated solutions
- Techniques for field installation
- Field installation critical steps

Transmitters and Receivers
- Optical Transmitters
- Optical Receivers
- Optical Amplifiers
- Multi-channel Optical Systems

Wireless Systems
- Analog Fiber Optics
- Distributed Antenna Systems
- Testing Fiber Optic System Performance

Field Testing
- Identify the basic fiber optic field tests
- Basic visual/continuity check
- Applications of the attenuation test set
- Use of the light source and power meter
- Applications of the Optical Time Domain Reflectometer (OTDR)
- Generating an OTDR baseline trace
- OTDR trace interpretation

Fiber Splicing
- Applications for splicing
- Selection of splice hardware
- Selection of splice solution
- Types of fusion splicers

Standards and Codes
- Fire code listings on optical fiber cables
- Introduction to standards and codes reference

Attenuation Budgeting

- Standard attenuation metrics
- Class exercise: compute a link loss budget