Course Name: Microwave Fundamentals

Course Overview:
Wireless companies use microwave radio to interconnect networks nationwide. The Microwave Fundamentals class is designed to provide real life training required to maintain and operate point-to-point and point to multi-point radio networks. It integrates the core technologies of radio with the special operating parameters of microwave. Customer provided equipment creates a hands-on teaching environment and gives the student test equipment experience with standardized testing methods.

Course Length: 2 days

Who should attend?

- Field Service Technicians
- Field Engineers
- Managers/ Field Supervisors
- Design Engineers
- Electricians
- Managers or Supervisors

You will learn:

- The fundamentals of microwave radio
- Radio compared to fiber and copper transmission
- Microwave equipment – specifications and operating theory
- Modulation schemes used in microwave networks
- Traffic interface and testing applications for microwave networks
- Microwave propagation in free space
- Microwave antenna systems
- The microwave link budget
- RF safety in the wireless world

Prerequisites: None

Customizable Course: Yes

Course Content:

Introduction to Microwave

- Why Microwave
- Fiber vs. Radio
- Bandwidth, Attenuation and Noise
- Radio Regulation in the US

Digital Modulation

- QPSK
- QAM

Digital Interfaces

- T1/DS3 SONET
- IP Based
- Channel Banks - Servers

Understanding Microwave Equipment

- Microwave Transmitters
- Microwave Receivers
- Microwave Alarms
- Student Exercises

Microwave Propagation

- Maxwell and Waves
- Wave Attenuation
- Free Space Loss
- Ducting & Fades
- Reflections & Multipath
- Fresnel Zone Clearance

Microwave Antennas

- Antenna Gain & Bandwidth
- Directivity & Beam Width
- Antenna Types & Connectors
- Transmission Lines
- Antenna Testing
- Student Exercises

Microwave Links

- The Link Budget
- System Gain
- System Planning
- Student Exercise
- System Testing
- RF Site Safety - OSHA