Course Name: Practical Spectrum Analysis and Interference Detection

Course Overview:
This course introduces the student to radio services and supporting technologies. Modules include an overview of radio as a transmission media, transmitters/receivers, wave propagation and radio antenna systems. Included in this course is numerous hands-on exercises based around spectrum analysis. This course is easily customized and can be taught on any test equipment, system or network equipment.

Course Length: 2 days

Who should attend?

- Field Service Technicians
- Cellular/RF Technicians
- Employees of wireless providers
- Site operators and managers
- Managers and supervisors

You will learn:

- Practical RF concepts
- An understanding of transmitters, receivers and antenna coupling devices
- Radio wave propagation through space
- Types of interference and signals
- Test equipment
- Troubleshooting techniques
- Types of measurements and results analysis

Prerequisites: None

Customizable Course: Yes

Course Content:

Day 1 Classroom (8 hours)

How Radio Works

- Why Radio
- Radio – Fiber – Copper
- Broadband & Narrowband
- Bandwidth Defined
- Attenuation & Noise
- FCC Regulation

Understanding Radio Equipment

- Radio Transmitters
- Radio Receivers
- Antenna Coupling

Radio Antennas

- How Antennas Work
- Antenna Types
- Antenna Gain & Bandwidth
- Transmission Lines
- Grounding overview

Modulation Techniques

- Amplitude, Frequency and Phase
- Cellular modulation
  - AMPS
  - TDMA
  - GSM
  - CDMA

Test Equipment O/V

- Buttons, settings, ranges and filters
- Results settings
- Equipment specific

Spectrum Analysis

- Tips and Tricks

Day 2 Classroom (8 hours)

Radio Wave Propagation

- Maxwell & Waves Attenuation
- Free Space Loss
- Absorption
- Reflections & Multipath
- Radio Horizons & Clearance

Interference

- Identification
- Detection
- Resolution

Types of Measurements

- Interference
- Power
- Adjacent Channel
- Co-Channel
- C/I

Troubleshooting Techniques

How to apply this knowledge in the real world

Recommend field trip