

Antenna and Transmissions Line Sweeping

Course Length:	2 Days
Course Code:	3002
Prerequisites	None, however a basic understanding of radio frequency principles will be useful for students taking this course.
Course Overview:	The course covers installation, maintenance and operation of antenna systems. The class will include extensive hands-on exercises, sweeping antennas & transmission lines and interpreting results. The class may be customized on the four popular test sets of Agilent, Anritsu, Bird and Tektronix.
Required Equipment:	It is highly recommended that the student bring line sweeping test equipment to class. This will enable the student to learn on the actual equipment they will be using on a daily basis.



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Course Outline

Introduction to Antennas

- Maxwell & Waves
- Why antennas work
- Antenna network components
- Transmission lines
- Connectors
- Terminations
- Testing Standards

Impedance and Reflections

- Impedance
- Bad connectors
- Crushed cable
- Damaged cable

Antenna and Transmissions Line Sweeping

Basics of Line Sweeping

- What are you testing
- Various types of test equipment
- TDR v/s FDR

Antenna Test Equipment

- Test Heads
 - Coaxial
 - Waveguides
- Phase Stable Cables
- Scalar analyzers – displays
- Equipment set-up
- Initial calibration
- Environmental considerations

Test Interpretation

- Testing Standards - defined
- Return Loss
- Distance-to-Fault
- VSWR – Return Loss
- Software tools
- Saving and printing plots

Practical Applications

- When to test
 - Spools
 - Turn-up
 - Damage
 - Scheduled
- Testing Special cables
- Testing Waveguides
- Sectionalizing
- Testing Tower Amplifiers

Frequency Verification of Antennas

- Measuring antennas
- Establish band of operation
- Find the bandwidth
- Measure return loss