

Course Name: T1 Testing Concepts for Wireless Technicians

Course Overview: The majority of wireless companies in the industry today utilize DS1 and DS3 transport systems to connect their sites. Many times the wireless technicians are at the mercy of the provider when one of these connections is down. This course is designed for the technician who installs tests and maintains these systems. This course is focused on the wireless market and addresses all types of DS1 line test equipment. Test equipment is provided but students are encouraged to bring and learn on the actual equipment they will be using in the field.

This course will train you on proper troubleshooting and installation practices as well as an overview of DS1/T1 fundamentals. With over 65% of class times focused on hands-on applications, students build and troubleshoot T1 spans with modern test equipment. The course is designed to teach proper testing techniques to ensure minimal down time.

Course Length: 2 days

Who should attend:

- Field Service Technicians
- Switch Technicians
- Design Engineers
- Managers/Field Supervisors
- Field Engineers
- Installers

You will learn:

- Understand the basic steps in building a DS1 Signal (Multiplexing, Framing, Coding)
- Set up, operate and interpret results on standard DS1/T1 test equipment
- Efficiently install and test new DS1/T1 transport systems
- Troubleshoot existing DS1/T1 systems to ensure signal quality
- Effectively work with DS1/T1 providers to ensure faulty systems are restored quickly and new systems are installed with standardized acceptance test.
- Describe DS1/T1 test parameters and be able to accurately interpret these parameters at multiple test access points.
- Perform channelized testing on existing systems

Prerequisites: None

Course fee:

- 2 day course at a TESSCO Location \$950 per person
- 2 day course at your location \$6,200 for up to 10 attendees

Customizable: Yes

Course Content:

DS1/T1 Overview

- Wireless applications
- Basic speeds/abilities

DS1/T1 Technology

- Multiplexing the signal
- Framing the signal (D4, ESF)
- Coding the signal (AMI, B8ZS)

DS1/T1 Network Equipment

- CSU, Multiplexers, DSX-1, DCS, Switch...
- Connections/cable
- Provider's equipment
- Demarcation

DS1/T1 Test Equipment

- Types of test equipment
- Equipment operation & setup
- Connections to a DS1/T1
- Testing techniques
- Test parameters

Lab 1 – Test Equipment Installing DS1/T1s

- BERT
- Test Access points
- DS1/T1 loop back testing
- End/End testing
- Verifying service parameters

Lab 2 – Build T1 Span

- Install equipment
- Correctly wire
- Verify connectivity
- Loop and test

Maintaining DS1/T1s

- Test access points
- Recommended test patterns
- Monitoring signal quality
- Monitoring alarms and errors
- Equipment emulation
- Verifying timing/clocking

Lab 2 – Testing

- Bit Error Rate Testing
- End-End Testing
- Loop Testing
- Signal Analysis

Lab 3 – Troubleshooting I

- Fault Detection

Lab 4 – Troubleshooting II

- Proving to provider there is a problem

Lab 5 – CSU emulation

- Using Test equipment as CSU/Cell Site

Channelized Testing

- Monitoring DS0s from DS1s
- Monitoring DS1s from DS3s
- Fractional DS1/T1s (FT1)
- Drop and Insert testing