

Course Name: E1 and E3 Installation and Maintenance

Course Overview:

When dealing with international standards, it is important to understand both E and T carrier systems. E1/E3 and T1/T3 networks are similar but it is rare that technicians or engineers understand both. TESSCO Technologies has incorporated these technologies into a two-day comprehensive training program that is sure to be beneficial to installers, technicians and engineers. This includes extensive hands-on exercises with transport equipment as well as service verification with modern 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.

Course Length: 2 days

Who should attend?

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

You will learn:

- The basic steps in building a E1 & T1 Signal (Multiplexing, Framing, Coding)
- How to set up, operate and interpret results on standard test equipment
- How to efficiently install and test new transport systems
- How to troubleshoot existing systems to ensure signal quality
- How to effectively work with service providers to ensure faulty systems are restored quickly and new systems are installed with standardized acceptance test.
- How to describe test parameters and be able to accurately interpret these parameters at multiple test access points.
- How to Perform channelized testing on existing systems

Prerequisites: None

Customizable Course: Yes



Course Content:

Transport Overview

- E-Carrier
- T-Carrier
- SONET/SDH

Introduction to E1

E1 Basics

- E1 compared to T1
- Can be delivered on copper or coax
- E1 Architecture

E1 Multiplexing

- Timeslots
- Synchronization

E1 Framing

- Double Frame
- CRC4
- TS 16 Multiframe
- Alarm Transport
- International Carrier Use

E1 Digital Encoding

- PCM Process
- AMI
- HDB3

E1 Signaling

- CAS

Test Equipment

- Types of test equipment
- Equipment operation & setup
- Connections circuit under test
- Testing techniques
- Test parameters

Maintaining E1 Systems

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

DS1/T1 Technology

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

Overview of High Speed Systems

- E3 & T3
- Optics
- SONET & SDH

