The SpectraComm 5002 LTU is a highly efficient means of transmitting and receiving digital data over an E1 line supplied by a telephone company or other service provider. The LTU serves as the interface between the E1 line and up to 15 SpectraComm 5034 data set emulator cards (DSEs) co-located with the LTU in a SpectraComm shelf. Each SC 5034 DSE provides a two-channel business equipment interface for data transmitted and received by the LTU.

Features
- Provides the interface to E1 or Fractional E1 services.
- Connects with up to 30 DSE cards in via the shelf backplane in a dual shelf configuration.
- Network and local management via a co-located SCM.
- Supports Time Slot 16 CAS signalling for operation in an MFC R2 network.
- Configurable transmit timing from Network (Loop) timing, Shelf timing, or Internal (Local) clock sources.
- Supports HDB3 signalling.
- Selectable input impedance of 75 or 120 Ohms.

Intended Use
The SC 5002 LTU is ideal for medium-sized, low-channel density networks. The SC 5002 supports comprehensive, non-intrusive network management, operating in conjunction with an SNMP controller. Diagnostic testing performed through SNMP requires no intervention by personnel at remote sites. The SpectraComm 5002 is a 7-inch by 9.5-inch (178 mm by 241 mm) printed circuit card that conforms to GDC’s SpectraComm format.

Theory of Operation
The figure below shows the SC 5002 LTU in a typical application with an SCM card and SC 5034 DSEs in a SpectraComm shelf. The SCM is the shelf controller and provides the management access, SNMP management, and the IP address for the LTU and up to 14 additional co-located devices. The SCM also provides the terminal interface for the LTU, the DSEs, and other compatible cards in the shelf.

The shelf’s built-in backplane highway is a high-speed bus that supports four full duplex data highways to support the exchange of data and timing signals between the LTU and up to 15 co-located SC 5034 DSEs in a single shelf. The DSEs provide DTE interface functions and are compatible with remote V.34 analog modems.
## SC5001 Physical Specifications

### Single-slot Blade
- **Depth:** 241 (9.5 in)
- **Width:** 178 mm (7.0 in)
- **Height:** 21 mm (0.81 in)
- **Weight:** 0.28 kg (10 oz)
- **Shipping Weight:** 0.74 kg (1 lb. 10 oz)

### Environmental Specifications

#### Non-Operating Temperature
- Temperature in SC/UAS 16-slot shelf: -40 to 85 degrees C (-40 to 185 degrees F)
- Temperature in MultiPak 10-slot enclosure: -40 to 70 degrees C (-40 to 158 degrees F)

#### Operating Temperature
- 0 to 50 degrees C (32 to 122 degrees F)
  - (Derate by 1 deg C/1000 ft above sea level)

#### Operating Altitude
- 0 to 3,047 m (0 to 10,000 ft)
- Non-Operating Altitude: 0 to 12,192 m (40,000 ft)
- Relative Humidity: 5% - 95% non-condensing

### Electrical Characteristics:
- Power (AC or DC), voltage, frequency, and fusing determined by your SpectraComm shelf or enclosure.
- Power Dissipation: 5 W maximum +5V, 1 W maximum +/-12V

### Compliance & Compatibility
- **Safety:** TUV Approved
- **EMI:** FCC Part 15 Class A Approved
- **Quality Assurance:** ISO 9001: 2000 Certified

## Operational Specifications

### Network Transmitter
- **Frequency:** 2,048,000 +/- 50 bps
- **Timing Source:** Internal Clock, Network Timing, Shelf Timing

### Network Receiver
- **Operating Range:** 0.0 to 2.6 km over 0.6 mm twisted pair cable
- **Input Impedance:** 75 or 120 Ohm
- **Jitter Tolerance:** Exceeds ETSI TBR 12/13 jitter transfer performance specification

### Transmitter
- **Encoding:** HDB3
- **Impedance:** 75 or 120 Ohm

### Interfaces
- **Communication Line:** E1 digital carrier
- **Line Impedance:** 75 or 120 Ohm
- **Network Port Physical Interface:** RJ48C modular jack

### Diagnostics
- **The E1 Line Loopback causes the LTU to loop received data back in the network interface as transmit data.**
- **The Unit Self Test establishes a Local Test loopback and directs an internally generated test signal through the LTU.**

### Major Alarms
- Loss of Signal
- Loss of Frame
- Alarm Indication Signal
- Timing Loss
- Unit Failure
- NV RAM Corrupt

### Minor Alarms
- Near End Unavailable Seconds
- Near End Errored Seconds
- Near End Severely Errored Seconds
- Near End Background Block Errors
- Near End Line Code Violations Minor
- Far End Unavailable Seconds
- Far End Errored Seconds
- Far End Severely Errored Seconds
- Far End Background Block Errors

### Informational Alarms
- Power-Up
- Fallback Timing Active