# TRACER

## Wireless E1

## Product Features

- Digital Microwave Radio
- E1 Interface
- Direct Sequence Spread Spectrum
- Frequency 2.4 to 2.4835 GHz
- No License Required in many Countries
- Frequency Agile
- Remote Loopback
- Remote Control of Far-End
- Rack or Mast-mounted RFC Option
- 1U (4.4 cm), 48.3 cm (19" EIA) Rack Space using Mast-mounted RFC
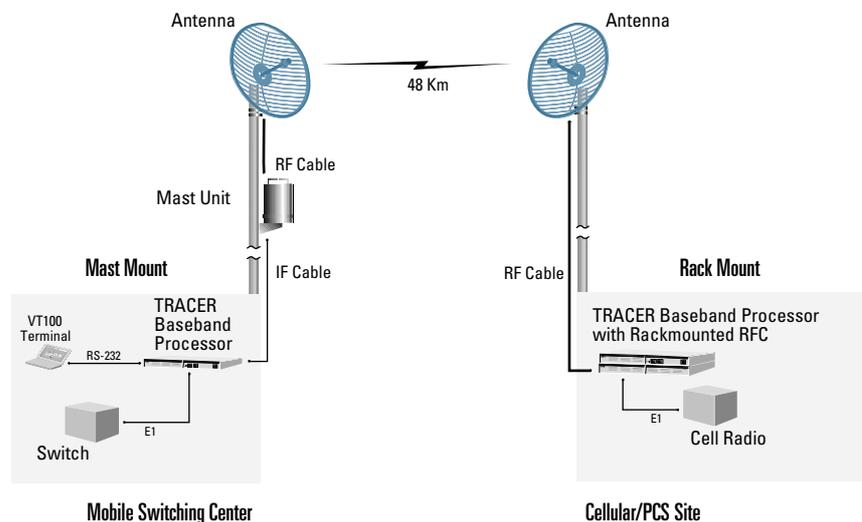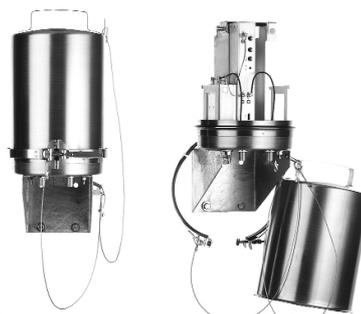- Point-to-Point, Up to 48 km

**The ADTRAN TRACER is a digital microwave radio that uses spread spectrum technology to provide E1 communication links.** TRACER operates in the 2.4-2.4835 GHz band and is unlicensed in many countries.

TRACER is composed of two primary components, a Baseband Processor and a radio-frequency converter (RFC). To minimize transmission line loss at 2.4 GHz, the RFC may be mast mounted up to 100 meters from the Baseband Processor, using a single RG-8 size coax. Additionally, the RFC may be rack mounted as an option for installations using low-loss coax connections to the antenna. All signaling and power functions between the Baseband Processor and RFC are provided over a single coax connection.

TRACER transports an E1 digital signal in either HDB3 or AMI coding formats and provides either 75Ω BNC or 120Ω DB-15/RJ-48 interfaces. A separate maintenance channel is embedded in the TRACER data stream, providing remote configuration and monitoring functions. The maintenance channel is provided without impacting the E1 capacity.

By using the latest technology and incorporating ADTRAN's ISO 9001 manufacturing processes, ADTRAN has designed TRACER to provide the highest levels of reliability and durability.



Mobile Switching Center

Cellular/PCS Site



**Mast-mounted RFC**

**E1 Baseband Processor**

**Rack-mounted RFC**

**AC Adapter**

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# Product Specifications

### Transmitter
- **Output Power:** +20 dBm, Max
- **Frequency Band:** 2.4 to 2.4835 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 140 MHz

### Receiver
- **Receive Level Threshold:** –91 dBm (10-6 BER)
- **Receive Level, Max:** –30 dBm
- **Receive Level, Nominal:** –60 dBm
- **Frequency Range:** 2.4 to 2.4835 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 70 MHz

### Frequency Plan
- A - TX 2.422 GHz RX 2.462 GHz
- B - TX 2.462 GHz RX 2.422 GHz

### Spread Spectrum Data Pump
- **Modulation:** QPSK
- **Spreading Method:** Direct Sequence
- **Codes:** 10
- **Code Length:** 120
- **Processing Gain:** >12 dB
- **Spreading Rate:** 12 times

### Radio-Frequency Converter
- **Preselector Filter:** Cavity tuned
- **Antenna Port:** N-type, female
- **Impedance:** 50 Ω

### E1 Interface
- **Capacity:** E1
- **Data Rate:** 2.048 Mbps
- **Digital Interface:** Meets G.703, G.704 & G.823
- **Line Code:** AMI, HDB3
- **Connection Option 1:** 75 Ω - BNC
- **Connection Option 2:** 120 Ω - DB-15/RJ-48
- **Alarms:** ALARM, LOS OOS, CV CRC
- **Loopbacks:** Local & remote

### User Interface
- **Front Panel:** Status LEDs, configuration switches
- **Diagnostics:** E1 loopback, remote test with BERT, self-test
- **Test Points:** RSSI, system voltages, I & Q
- **Alarm Contacts:** Major, minor (normally open or closed)

### Terminal Interface
- **Function:** Menu-driven user interface, monitor & control of local & remote end, password protected, event history
- **Data Rate:** 9600 Bps
- **Emulation:** VT100
- **Connection:** DB-25 (RS-232)

### Baseband Processor
- **Operating Temperature:** –25° to 60° C
- **Width:** 42.4 cm, (for 19" EIA rack mounting)
- **Height:** 1U (4.4 cm)
- **Depth:** 29.2 cm
- **Humidity:** 95%, non-condensing
- **Weight:** 2.7 kg

### Rack-mounted RFC
- **Operating Temperature:** –40° to 65° C
- **Width:** 42.4 cm, (for 19" EIA rack mounting)
- **Height:** 1U (4.4 cm)
- **Depth:** 29.2 cm
- **Humidity:** 95%, non-condensing
- **Weight:** 4.8 kg

### Mast-mounted RFC
- **Operating Temp:** –40° to 65° C
- **Diameter:** 22.5 cm
- **Height:** 52.5 cm
- **Humidity:** 100%
- **Weight:** 8.1 kg

### Power
- **Input Voltage:** 21 to 60 vDC
- **Power Consumption:** 30 watts (amperage=30 watts/voltage)
- **DC Connector:** 3 pin screw clamp
- **AC Adapter Connector:** 3 pin DIN

# Ordering Information

| Equipment | Part # |
|---|---|
| E1 Tracer system* | 4280TRACERE1(options) |
| 100-240 vAC Adapter** | 1360DSK24VL1 |

| Options | Appendix |
|---|---|
| **Mast-mounted** | |
| 75Ω BNC, preconfigured frequency plan A | L1-A |
| 75Ω BNC, preconfigured frequency plan B | L1-B |
| 120Ω DB-15/RJ-48, preconfigured frequency plan A | L3-A |
| 120Ω DB-15/RJ-48, preconfigured frequency plan B | L3-B |
| **Rack-mounted** | |
| 75Ω BNC, preconfigured frequency plan A | L2-A |
| 75Ω BNC, preconfigured frequency plan B | L2-B |
| 120Ω DB-15/RJ-48, preconfigured frequency plan A | L4-A |
| 120Ω DB-15/RJ-48, preconfigured frequency plan B | L4-B |

\* Systems are shipped with pre-configured frequency plans, but may be switched without additional equipment to accommodate either plan.

\*\* Includes US style AC cord. Country specific power cord not included.

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