

TRACER

WIRELESS 2XT1

PRODUCT FEATURES

- Digital microwave radio
- Dual T1s
- No license required per FCC Rules Part 15.247
- Direct-sequence spread spectrum
- NEBS Level 3 compliant
- Two frequency bands:
2.4 to 2.835 or 5.725 to 5.850 GHz
- Frequency-agile
- Remote Loopback
- Remote control of far end
- Point-to-point, up to 30 miles
- 1U, 19-inch rack space using mastmounted RFC or
2U, 19-inch rack space using
rackmounted RFC
- Industry-leading five-year
warranty

ADTRAN's TRACER® is an unlicensed digital microwave radio that uses spread-spectrum technology to provide two independent T1 communication links. As authorized under part 15.247 of the FCC rules, TRACER operates in the 2.4 to 2.835 GHz and 5.725 to 5.850 GHz industrial, scientific, and medical (ISM) band. TRACER equipment can operate license-free in the U.S. and many other countries.

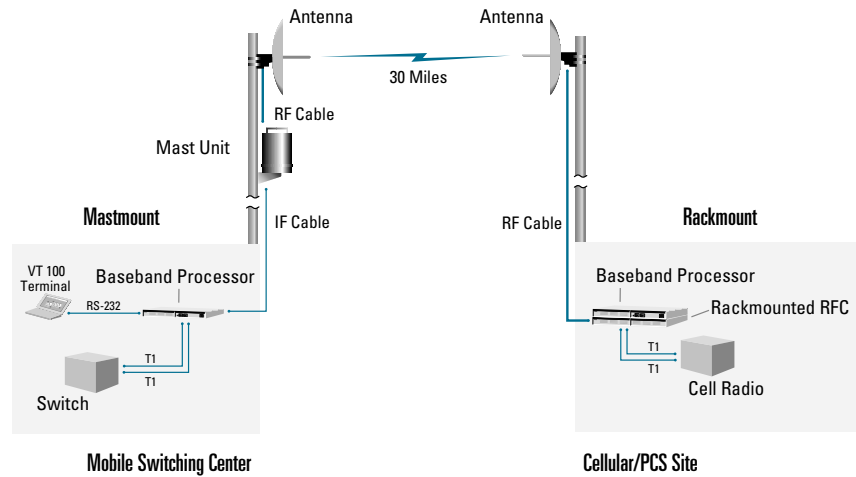
TRACER is the industry's first National Equipment Building System (NEBS) Level 3 compliant spread-spectrum radio. This means that TRACER has met the strict requirements for performance, quality, and safety required by the Regional Bell Operating Companies (RBOCs) for equipment installed in their Central Offices. NEBS compliance is intended to provide the maximum safety and protection of the network, its customers, and employees under any and all conditions.

The TRACER system is composed of two primary hardware elements: a Baseband Processor (BBP) and a Radio-Frequency Converter (RFC). All signaling and power functions between the BBP and the RFC are provided over a single coax connection. In the rackmount configuration, the BBP and RFC are each contained in a 19" x 1U (1.75-inch) chassis, suitable for mounting indoors in a rack or tabletop.

Like the rackmount system, the TRACER mastmount system is also composed of a BBP and an RFC. To minimize transmission line loss, the weatherproof RFC can be mounted near the antenna at up to 350 feet from the Baseband Processor using one RG-8 size coax. All signaling and power functions between the BBP and RFC are provided over this single coax connection.

TRACER transports two T1 digital signals in any framing or line-code format and provides two DS-1/DSX-1 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 T1 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. As a result, TRACER includes an industry-leading five-year warranty. In addition, every TRACER product is backed by ADTRAN's outstanding 24-hour technical support.



Product Specifications

TRANSMITTER

2.4 GHz

- **Output Power:** +20 dBm maximum
- **High Output Option:** +27 dBm nominal, +30 dBm max
- **Frequency Band:** 2.4 to 2.4835 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 140 MHz

5.8 GHz

- **Output Power:** +20 dBm maximum
- **High Output Option:** N/A
- **Frequency Band:** 5.725 to 5.850 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 140 MHz

RECEIVER

2.4 GHz

- **Receive Level Threshold:** -91 dBm (10^{-6} BER)
- **Receive Level Max:** -30 dBm
- **Frequency Range:** 2.4 to 2.4835 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 70 MHz

5.8 GHz

- **Receive Level Threshold:** -89 dBm (10^{-6} BER)
- **Receive Level Max:** -30 dBm
- **Frequency Range:** 5.725 to 5.850 GHz
- **Channel Bandwidth:** 40 MHz
- **Intermediate Frequency:** 70 MHz

FREQUENCY PLAN

2.4 GHz

- **A:** TX 2.422 GHz, RX 2.462 GHz
- **B:** TX 2.462 GHz, RX 2.422 GHz

5.8 GHz

- **A:** TX 5.752 GHz, RX 5.823 GHz
- **B:** TX 5.823 GHz, RX 5.752 GHz

SPREAD SPECTRUM DATA PUMP

- **Modulation:** QPSK
- **Spreading Method:** Direct sequence
- **Codes:** 10
- **Code Length:** 120
- **Processing Gain:** >12dB
- **Spreading Rate:** 12 times

RADIO FREQUENCY CONVERTER

- **Preselector Filter:** Capacity-tuned
- **Antenna Port:** N-type, female
- **Impedance:** 50 Ω

DIGITAL INTERFACE

- **Capacity:** 2 x T1
- **Data Rate:** 2 x 1.544 Mbps
- **Digital Interface:** DS-1/DSX-1
- **Connection:** RJ-48C, Bantam
- **Monitor:** Bantam
- **Line Code:** AMI, B8ZS
- **Framing:** SF, ESF
- **Alarms:** YEL/AIS, Red, BPV
- **Loopbacks:** Local and remote

USER INTERFACE

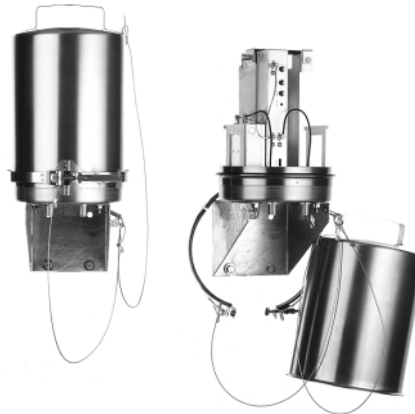
- **Front Panel:** Status LEDs, configuration switches
- **Diagnostics:** T1 loopback, remote test with BERT, self-test
- **Test Points:** RSSI, system voltages, I & Q
- **Alarm Contacts:** Major, minor (normally open or closed)



2xT1 Baseband Processor



Rackmounted RFC



Mastmounted RFC

TERMINAL INTERFACE

- **Function:** Menu-driven user interface, monitor and control of local and remote end, password-protected, event history
- **Data Rate:** 9600 bps
- **Emulation:** VT 100
- **Connection:** DB-25 (RS-232)

MECHANICAL AND ENVIRONMENTAL

Baseband Processor

- **Operating Temperature:** -25° to 65° C
- **Width:** 16.75" (for 19" EIA rackmounting)
- **Height:** 1.75" (1U)
- **Depth:** 9.5"
- **Humidity:** 95%, non-condensing
- **Weight:** 6 lbs.

Radio Frequency Converter Rackmount

- **Operating Temperature:** -40° to 65°C
- **Diameter:** N/A
- **Width:** 16.75" (for 19" EIA rackmounting)
- **Height:** 1.75" (1U)
- **Depth:** 9.5"
- **Humidity:** 95%, non-condensing
- **Weight:** 9 lbs.

Radio Frequency Converter Mastmount

- **Operating Temperature:** -40° to 65°C
- **Diameter:** 9"
- **Width:** N/A
- **Height:** 21"
- **Depth:** N/A
- **Humidity:** 100%
- **Weight:** 18 lbs.

POWER

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

REGULATORY COMPLIANCE

2.4 GHz

- **FCC Part 15.247 Rackmount:** HDCTRACERT1L7
- **FCC Part 15.247 Mastmount:** HDCTRACERT1L8
- **FCC Part 68:** HDCUSA-32567-DE-N
- **Industry Canada RSS139:** 2250911A
- **Industry Canada RSS139:** 2250391123A

5.8 GHz

- **FCC Part 15.247 Rackmount:** HDCTRC582TRI
- **FCC Part 15.247 Mastmount:** HDCTRC582TMI
- **FCC Part 68:** Certification pending
- **Industry Canada RSS139:** Certification pending
- **Industry Canada RSS139:** Certification pending

Ordering Information

EQUIPMENT 2.4 GHZ PART

- 2xT1 Rackmount, Freq A4280TRACERT1L7-A
- 2xT1 Rackmount, Freq B4280TRACERT1L7-B
- 2xT1 Mastmount, Freq A ...4280TRACERT1L8-A
- 2xT1 Mastmount, Freq B ...4280TRACERT1L8-B

EQUIPMENT 5.8 GHZ PART

- 2xT1 Rackmount, Freq A4280TRC582TR1-A
- 2xT1 Rackmount, Freq B4280TRC582TR1-B
- 2xT1 Mastmount, Freq A.....4280TRC582TM1-A
- 2xT1 Mastmount, Freq B4280TRC582TM1-B

Specifications subject to change without notice.

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