

# TRuepoint™ 4000

## Data Sheet

### A new generation of point-to-point PDH / Ethernet digital radios



TRuepoint 4000 is a compact, efficient, split-mount, PDH/Ethernet digital radio. With support for all major CEPT frequency bands from 7 to 38 GHz and up to 16xE1 telephony and 2x100Base-T data interfaces, it delivers the voice and data connectivity required for cellular backhaul, enterprise, government, and public safety networks.

#### Transmission

|                             |  |
|-----------------------------|--|
| <b>Capacity:</b>            | 4 to 32 Mbps                           |
| <b>Modulation:</b>          | QPSK, 16 QAM                           |
| <b>FEC:</b>                 | Reed-Solomon                           |
| <b>Frequency Stability:</b> | 7 to 38 GHz: ± 7 ppm (including aging) |
| <b>ATPC:</b>                | ~2.5 to 10 dB range                    |
| <b>Residual BER:</b>        | <10 <sup>-11</sup> per hop             |
| <b>Auxiliary Channels:</b>  | 512 Kbps                               |

#### Configuration

|                            |   |
|----------------------------|---|
| <b>Digital Interfaces:</b> | 2 to 8 E1 or 2 to 16 E1, (75 or 120 Ohms)<br>2x10/100BASE-T Ethernet Optional orderwire |
| <b>Configurations:</b>     | SPU: 1+0, 1+1<br>RFU: 1+0, MHSB, Frequency Diversity, Space Diversity                   |

#### Management

|   |  |
|---|--|
| <b>Network Management:</b>                        | NetBoss®, StarView™, SNMP  |
| <b>Control, Monitoring and Maintenance Tools:</b> | Web-based management interface<br>VT-100 serial management interface<br>Harris handheld terminal |
| <b>Alarms:</b>                                    | Programmable relay alarms, (4 output, 2 input)   |

#### Environmental

|   |  |
|---|--|
| <b>Temperature Range (Guaranteed):</b>  | IDU: -5° to +50° C<br>ODU: -33° to +55° C  |
| <b>Temperature Range (Operational):</b> | IDU: -10° to +55° C<br>ODU: -33° to +55° C |
| <b>Humidity:</b>                        | IDU: 95% max non-condensing                |

#### Power

|                           |                                      |      |
|---------------------------|--------------------------------------|------|
| <b>Power Source:</b>      | -60 to -21.6 VDC or +21.6 to +60 VDC |      |
| <b>Power Consumption:</b> | 1+0                                  | 1+1  |
|                           | SPU 22 W                             | 28 W |
|                           | RFU 40 W                             | 80 W |

**Software-programmable Power:** Up to 28 dB below rated power without attenuation pads

### Regulatory Information

|                                       |   |
|---------------------------------------|---|
| <b>Frequency Plans:</b>               | Conforming to each relevant ITU-R and CEPT recommendation |
| <b>Digital Interface:</b>             | Rec. G.703  |
| <b>Electromagnetic Compatibility:</b> | EN 301 489-1, EN 301 489-4                                |

### Mechanical Characteristics

|                            |  |  |  |
|----------------------------|--|--|--|
| <b>Separation IDU/ODU:</b> | Up to 300 meters                                 |  |  |
| <b>Connections:</b>        | SPU to RFU, coaxial cable with N-Type connectors |  |  |
| <b>Dimensions:</b>         | SPU 1+0 (1 RMS)                                  | H: 4.5 cm; W: 48.3 cm; D: 25.8 cm; W: 3.3 kg |  |
|                            | SPU 1+1 (2 RMS)                                  | H: 9.0 cm; W: 48.3 cm; D: 25.8 cm; W: 5.2 kg |  |
|                            | RFU 1+0  | D: 8.9 cm; OD: 26.7 cm; W: 5.0 kg            |  |

### Antenna Characteristics

|                  |   |
|------------------|---|
| <b>Sizes:</b>    | 30 cm, 60 cm, up to 1.2 m supported       |
| <b>Mounting:</b> | Direct-mount and separate-mount supported |

### System Characteristics

| Frequency Band (GHz)   | 7     |       | 8     |       | 13    |       | 15    |       | 18    |       | 23    |       | 26    |       | 32    |       | 38    |       |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Modulation   | QPSK  | 16QAM | QPSK  | 16QAM | QPSK  | 16QAM | QPSK  | 16QAM | QPSK  | 16QAM | QPSK  | 16QAM | QPK   | 16QAM | QPSK  | 16QAM | QPSK  | 16QAM |
| Nominal Output Power (at antenna port for 1 + 0 configuration) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| (dBm)  | 25    | 21    | 25    | 21    | 24    | 20    | 24    | 20    | 24    | 20    | 22    | 18    | 22    | 18    | 20    | 16    | 20    | 16    |
| Typical Receiver Threshold (dB) at 10 <sup>-6</sup> BER        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 2E1  | -93   | N/A   | -93   | N/A   | -93   | N/A   | -93   | N/A   | -93   | N/A   | -92.5 | N/A   | -92.5 | N/A   | N/A   | N/A   | N/A   | N/A   |
| 4E1  | -90   | N/A   | -90   | N/A   | -90   | N/A   | -90   | N/A   | -90   | N/A   | -89.5 | N/A   | -89.5 | N/A   | -88   | N/A   | -88   | N/A   |
| 8E1  | -87   | -83.5 | -87   | -83.5 | -87   | -83.5 | -87   | -83.5 | -87   | -83.5 | -86.5 | -83   | -86.5 | -83   | -85   | -81.5 | -85   | -81.5 |
| 16E1   | -84.5 | -80.5 | -84.5 | -80.5 | -84.5 | -80.5 | -84.5 | -80.5 | -84.5 | -80.5 | -84   | -80   | -84   | -80   | -82.5 | -78.5 | -82.5 | -78.5 |

Notes: Guaranteed output power is 2 dB lower than typical value. Guaranteed receiver threshold is 1 dB lower than typical value. Typical receiver threshold at 10<sup>-3</sup> BER is 1 dB better than 10<sup>-6</sup> BER.

| Transmit/Receive Characteristics |                   |                                   |                       |
|----------------------------------|-------------------|-----------------------------------|-----------------------|
| Band                             | Frequency Range   | Tx/Rx Frequency Spacing (MHz)     | Channel Spacing (MHz) |
| 7 GHz                            | 7.10 - 7.90 GHz   | 154, 160, 161, 168, 196, 245      | 3.5, 7, 14, 28        |
| 8 GHz                            | 7.73 - 8.50 GHz   | 119, 126, 208, 266, 311.32        | 3.5, 7, 14, 28        |
| 13 GHz                           | 12.75 - 13.25 GHz | 266                               | 3.5, 7, 14, 28        |
| 15 GHz                           | 14.40 - 15.35 GHz | 315, 420, 475, 490, 640, 644, 728 | 3.5, 7, 14, 28        |
| 18 GHz                           | 17.70 - 19.70 GHz | 1008, 1010, 1560                  | 3.5, 7, 13.75, 27.5   |
| 22/23 GHz                        | 22.00 - 23.60 GHz | 1008, 1200, 1232                  | 3.5, 7, 14, 28        |
| 26 GHz                           | 24.25 - 26.45 GHz | 800, 1008                         | 3.5, 7, 14, 28        |
| 32 GHz                           | 31.80-33.40 GHz   | 812                               | 3.5, 7, 14, 28        |
| 38 GHz                           | 37.00 - 40.10 GHz | 700, 1260                         | 3.5, 7, 14, 28        |

| RF Combiner Insertion |                |             |                  |              |
|-----------------------|----------------|-------------|------------------|--------------|
| Insertion Loss (dB)   | Equal Splitter |             | Unequal Splitter |              |
|                       | Chan. A        | Chan. B     | Chan. A          | Chan. B      |
|                       | 3.0 +/- 0.2    | 3.0 +/- 0.2 | 1.0 +/- 0.1      | 10.0 +/- 0.5 |

| Channel Bandwidth (MHz) |          |          |
|-------------------------|----------|----------|
|                         | QPSK     | 16 QAM   |
| 2E1                     | 3.5      | N/A      |
| 4E1                     | 7        | N/A      |
| 8E1                     | 13.75/14 | 7        |
| 16E1                    | 27.5/28  | 13.75/14 |