

## 155 Mbps SDH Transmission

# TransportNode X/30 Radio

## Point-to-point digital microwave radio for high-capacity, long-haul transmission in frequency bands 6, 7, 8 and 11 GHz

The TransportNode X/30 radio features a highly-integrated architecture that employs 128 QAM technology to transport 155 Mbps payloads in standard ETSI radio channels.

Designed for seamless integration with optical network elements and with higher-level network management systems, the TransportNode X/30 radio offers service providers a robust, proven and cost-effective solution for deploying high-speed, high-capacity transport networks ready to meet the burgeoning demand for greater bandwidth.



### Benefits

- Most economical solution for deploying SDH networks over adverse terrain, when infrastructure exists or when capacity doesn't warrant optical fiber
- Flexible system scalability for incremental growth without staggering start-up costs
- Rapid deployment for fast time-to-market and quick return on investment
- Low operating costs attributed to high component reliability, standby protection and multi-level centralized network management
- Five nines reliability for carrier grade service and content delivery

### Features

- Highest bandwidth efficiency, 155 Mbps plus wayside traffic in a single radio channel
- 1:N configuration providing expanded payload capacity and errorless protection switching
- Performance equal to fiber, with such functions as forward error correction, errorless protection switching and space diversity
- Compact and modular design, allowing up to four radio channels to be mounted on one standard bay
- Adaptive transmit power control, facilitating frequency coordination and minimizing power consumption
- Local and express orderwire for inter-site communications among service personnel
- Optional wayside channels for dropping traffic at regenerator sites and to offer supplementary value added services
- Radio Element Manager (REM), an SNMP-based network management solution designed to monitor and control the entire radio network from a central location
- Seamless connectivity between REM and Nortel Networks higher level Preside network management system



# TN-X/30 SDH Radio Solutions

## Technical Specifications

SYSTEM	6 GHz	U6 GHz	7 GHz	8 GHz	11 GHz
Frequency Range (MHz)	5925-6425	6430-7110	7110-7430	7725-8275	10700-11700
ITU-R Recommendation	383.5	384.6	385.6 Annex 3	386.4	387.7
Channel Bandwidth	29.65 MHz	40 MHz	28 MHz	29.65 MHz	40 MHz
Channel Capacity	171.7 Mbps (155.5 Mbps + 3xE1 wayside channels)				
Modulation	128 QAM				
System Gain at 10 <sup>-3</sup> BER* (dB)	105.1	104.6	104.6	103.9	99.9
System Gain at 10 <sup>-6</sup> BER* (dB)	102.1	101.6	101.6	100.9	96.5
Dispersive Fade Margin	>47 dB at 10 <sup>-3</sup> BER; >45 dB at 10 <sup>-6</sup> BER				
<b>TRANSMITTER</b>					
RF Power Output* (dBm)	31.5	31.3	31.3	31.0	28.0
Adaptive Transmit Power Control (ATPC) Range	17 dB				
Frequency Stability	±10 ppm				
<b>RECEIVER</b>					
Threshold at 10 <sup>-3</sup> BER* (dBm)	-73.6	-73.3	-73.3	-72.9	-71.9
Threshold at 10 <sup>-6</sup> BER* (dBm)	-70.6	-70.3	-70.3	-69.9	-68.5
Residual Bit Error Rate	<10 <sup>-13</sup> per hop				
<b>POWER REQUIREMENTS</b>					
Input Voltage	-48 VDC or ±24 VDC				
Power Consumption (for a basic terminal shelf)	162 W with nominal Tx output power; 187 W with maximum Tx output power; add 25 W when service channel, orderwire and 1+1 optical interfaces are equipped.				
<b>MECHANICAL</b>					
Bay Dimensions (ETSI frame)	600 mm W x 2200 / 2600 mm H x 450 mm D including waveguides				
Weight	295 kg for a bay fully-loaded with four shelves				
<b>ENVIRONMENTAL</b>					
Operating Temperature	0 to +50°C				
Relative Humidity	10 to 95%				
<b>NETWORK MANAGEMENT</b>					
REM - Radio Element Manager	An intuitive SNMP-based network manager designed to monitor and control all radio network elements from one central location. REM features a graphical user interface for simple, point-and click navigation and with its open-system architecture, it interfaces with higher-level network management systems like Nortel Networks INM solution.				
Craft-Terminal Interface (CTI)	Gives service personnel local access to the radio equipment for provisioning, alarm and performance monitoring, status readings (RSL, transmit power, stress voltages), and protection switching control and status.				
Parallel Interface	Dry-contact relay terminals for extending alarm and status information (critical, major and minor alarms, as well as protection switching controls and status) from the radio equipment to an alarm monitoring center.				
Serial Interface	An EIA RS-422 port that provides unit level alarms, propagation alarm, performance alerts, and protection switching control and status.				
Optional Interfaces	Seamless integration with Nortel Networks Integrated Network Management (INM) solution, a higher-level network management system providing a total view of hybrid radio-fiber networks. Some key features are: <ul style="list-style-type: none"> <li>- Full menu of management functions, including software download and fault management</li> <li>- Single-ended OS interfaces</li> <li>- Parallel telemetry: 13 alarms and 5 controls per shelf for site conditioning</li> </ul>				
<b>AUXILIARY FACILITIES</b>					
Service Channel	Two RS-422 asynchronous ports capable of supporting data rates of up to 19.2 kbps within the radio frame				
Orderwire	Local and express orderwire circuits with DTMF signaling and 4-way VF bridge				
Wayside Channels	Up to three E1 channels				

\* Given values are typical and are as measured at the output of the branching circulator on a dual-port receiver.

For more information, contact your Northern Radio and Wireless Corporation representative, or call 1-514-685-9847 from anywhere in North America.

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