RTN 910

Features

The RTN 910 is the new-generation of IP radio transmission equipment developed by Huawei. The equipment, 1U high, supports a maximum of two RF directions. With various service interfaces, the RTN 910 can be configured flexibly and installed easily. The equipment can be applied not only in the 3G/WiMAX/LTE backhaul but also in the radio access of private network services and private line services for VIP customers.

IP Radio Transmission with AM

- Supports adaptive modulation (AM) and QoS, improving the efficiency of bandwidth usage and quality of services.
- Supports the pseudo wire emulation edge to edge (PWE3) technology, and adopts high-performance and unified pure packet switching.
- Provides a variety of OAM functions and fast fault-isolation methods, simplifying packet network maintenance.
- Supports end-to-end service configuration, improving the flexibility of radio network planning and reducing the OPEX.

Robust IP Service-Processing Capability

- Provides 4.4 Gbit/s switching capacity, and supports the VLAN, flow control, and MPLS functions.
  - Supports basic MPLS functions and service forwarding, and supports static LSPs.
  - Adopts the LSP tunnel technology and the PWE3 technology to form an MPLS network where access of multiple services is allowed.
- The advanced header compression technology achieves maximum capacity of 1 Gbps backhaul.
- Supports 8-class QoS, provides a wide range of services, and ensures the quality of services with high priorities.
- Supports MPLS OAM features, making management and maintenance in IP networks similar to those in SONET networks.
- Provides packet-based IEEE 1588V2 synchronization, facilitating cost-effective clock solutions for 3G/ WiMAX/LTE base stations.

Excellent Protection Schemes

- Protection schemes for radio links
  - 1+1 HSB/SD/FD protection
  - LAG protection for Ethernet services
- Network-level protection schemes
  - Ethernet ring protection switching (ERPS)
  - MPLS tunnel 1:1 protection
  - PW 1:1 protection
- Equipment-level protection schemes
  - 1+1 hot backup for the input power supply

ATPC

The automatic transmit power control (ATPC) technology enables the RTN 910 to automatically change the output power of the transmitter within the ATPC control range according to the received signal level. As a result, the interference to the neighboring system and the residual error rate are reduced.

XPIC

The RTN 910 supports Cross-Polarization Interference Cancellation (XPIC) technology, which helps to double the service capacity of a microwave channel at the same spectrum and bandwidth.

Easy Maintenance

- Supports different types of loopbacks at the service ports and the IF ports.
- Supports RMON performance events.
- Supports MPLS OAM, PW OAM, and Ethernet OAM functions.
- Provides a built-in test system to perform the pseudo-random binary sequence (PRBS) error test at the IF port.
- Supports remote data and software loading by using the NMS. Thus, the entire network can be upgraded rapidly.
- Supports in-service software upgrades.

Multiple Methods for Network Management

- Uses the iManager U2000 to manage the RTN devices and Huawei optical transport devices. Hence, quick fault isolation, quick service provisioning, visual IP service management, and the OPEX is reduced.
- Uses the Web LCT to manage a single RTN NE or multiple RTN NEs in a centralized manner.
- Enables users to query alarms and performance events through the simple network management protocol (SNMP).
- Supports the in band DCN scheme. Hence, dedicated DCN channels are not required, and the network construction cost is reduced.

Clock and Synchronization

- Supports the radio link clock and synchronous Ethernet clock.
- Supports the sync sourse message (SSM) protocol.
- Supports IEEE 1588v2 synchronization

Technical Specifications

RF Specifications

Frequency Band			6GHz	11 GHz	18 GHz	23 GHz
Channel Spacing (MHz)			30	40	40/50	40/50
Maximum Transmit Power (dBm)	QPSK		30	26	24	24
	16QAM		28	24	21	21
	32QAM		26.5	24	21	21
	64QAM/128QAM		25	22	19.5	19.5
	256QAM		23	20	16.5	17.5
Typical Receiver Sensitivity (RSL@BER=10^{-6})	30 MHz Channel	QPSK	-89	–88.5	–87.0	–88.0
		16QAM	-81	–80.5	–79.0	–80.0
		32QAM	-77.5	–77.5	–75.5	–76.5
		64QAM	-75	–74.5	–73.0	–74.0
		128QAM	-72	–71.5	–70.0	–71.0
		256QAM	-69	–68.5	–67.0	–68.0
	40 MHz Channel	QPSK	-	–87.5	–86.0	–87.0
		16QAM	-	–79.5	–78.0	–79.0
		32QAM	-	–76.0	–74.5	–75.5
		64QAM	-	–73.5	–72.0	–73.0
		128QAM	-	–70.5	–69.0	–70.0
		256QAM	-	–67.5	–66.0	–67.0
	50 MHz Channel	QPSK	-	-	–85.0	–86.0
		16QAM	-	-	–77.0	–78.0
		32QAM	-	-	–73.5	–74.5
		64QAM	-	-	–71.0	–72.0
		128QAM	-	-	–68.0	–69.0
		256QAM	-	-	–65.0	–66.0
RF Direction			A maximum of two RF directions			
RF Configuration			1+0 non-protection 2+0 non-protection 1+1 HSB/FD/SD protection XPIC configuration			
Equalization			Adaptive time domain equalization			

Native Ethernet Throughput (airinterface, Mbit/s)

Base Throughput	Channel/Modulation	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
	30 MHz	43 to 55	87 to 111	109 to 139	138 to 176	161 to 205	186 to 236
	40 MHz	58 to 75	122 to 155	152 to 194	186 to 238	217 to 276	250 to 318
	50 MHz	73 to 94	148 to 189	190 to 241	234 to 300	274 to 350	315 to 396
With L2 Frame Header Compression	Channel/Modulation	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
	30 MHz	43 to 68	87 to 136	109 to 170	138 to 216	162 to 253	186 to 287
	40 MHz	58 to 91	122 to 189	152 to 238	187 to 291	217 to 338	250 to 388
	50 MHz	74 to 115	148 to 230	190 to 295	234 to 362	274 to 428	315 to 488
With L2+L3 Frame Header Compression (IPV6)	Channel/Modulation	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM
	30 MHz	43 to 139	88 to 281	110 to 350	139 to 444	162 to 518	187 to 596
	40 MHz	57 to 182	114 to 366	148 to 474	182 to 583	216 to 691	251 to 800
	50 MHz	74 to 237	149 to 474	191 to 608	235 to 747	276 to 875	316 to 1000

Service Specifications

Traffic Interface		FE electrical interface: 10/100BASE-T(X) GE optical interface: 1000Base-SX and 1000Base-LX GE electrical interface: 10/100/1000BASE-T(X)
Switching Capacity		4.4 Gbit/s
Ethernet Function		Ethernet II, IEEE 802.3, and IEEE 802.1q/p service frame formats E-Line and E-LAN Ethernet services Ethernet ring protection switching (ERPS) Adding, deletion, and exchange of IEEE 802.1q- or IEEE 802.1p-compliant VLAN tags Flow control that complies with IEEE 802.3x Link aggregation group (LAG) IETF RFC 2819-compliant RMON performance monitoring STP protocol and MSTP protocol (generating only the CIST, equivalent to RSTP)
MPLS/PWE3	Function	Encapsulation of Ethernet services and transmission over an LSP tunnel to implement E-Line services Static tunnels and PWs MPLS tunnel 1:1 protection PW 1:1 protection
	Capacity	Number of MPLS tunnels: 1024 Number of PWs: 1024 Number of APS protection groups: 32
QoS		DiffServ and standard 8-level PHB Traffic classification based on the Port, C-VLAN ID, S-VLAN ID, 802.1p priority of the C-VLAN/S-VLAN packet, or DSCP. CAR and traffic policing Eight classes for queue scheduling over an Ethernet interface

System Parameters

Dimensions and Weight	IDU	Dimensions (width x depth x height): 17.4 inch x 8.66 inch x 1.73 inch, (442 mm x 220 mm x 44 mm) Weight: < 12.1 lbs (5.5 kg)
	ODU	Dimensions (width x depth x height): < 11 inch x 3.62 inch x 11 inch, (280 mm x 92 mm x 280 mm) Weight: 9.9 lbs (4.5 kg)
Working Temperature	IDU	Long-term: +23°F to +140°F (–5°C to +60°C) Short-term: –4°F to +149°F (–20°C to +65°C)
	ODU	Long-term: –27.4°F to +131°F (–33°C to +55°C) Short-term: –40°F to +140°F (–40°C to +60°C)
Power Supply		–38.4 V to –72 V DC
Heat Dissipation		Fan cooling
Relative Humidity	IDU	5% to 95%
	ODU	5% to 100%