Spectrum-DMRIP-200s

upto 4G Throughtput. Complete outdoor 2+0 Radio

A compact all-outdoor packet radio solution, combining the advantages of an all-outdoor profile with carrier-grade performance of DMR Family, generates significant CAPEX and OPEX savings.

DMRIP-200s is the innovative packet radio which is the perfect replacement of optical fiber cable and FSO.

Robust and durable single-box structure withstands harsh weather conditions and can be easily mounted on towers, rooftops, lamp posts, traffic light poles and small outdoor mobile cell-sites.

Enhanced spectrum utilization, low-latency traffic and comprehensive synchronization solution.

Software-scalable bandwidths (ETSI up to 112 MHz, FCC up to 80MHz) and adaptive modulation schemes (QPSK-4096QAM) provide traffic with more flexibility and strong adaptability to various application environments.

DMRIP-200s is compliant with the IEEE 802.1/3 and RFC standards for various Ethernet functionalities.

User-friendly Management- Telnet, WEB GUI, NMS, SNMP Manager. Software and firmware online upgradeable.

Applications

4G and 5G mobile Backhaul

DMRIP-200s is a perfect fit for 3G/4G/5G base station backhaul to replace optical fiber and FSO, ideally for new all-packet base station, and caters to various connection needs: voice, data, management and control. With SynE synchronization, DMRIP-200s could meet any RAN network requirement.
With external PWE3 interface unit, Smart Packet could provide up to 8E1 and more Ethernet interfaces for 2G/3G/4/5G co-site scenario.

Broadband Access

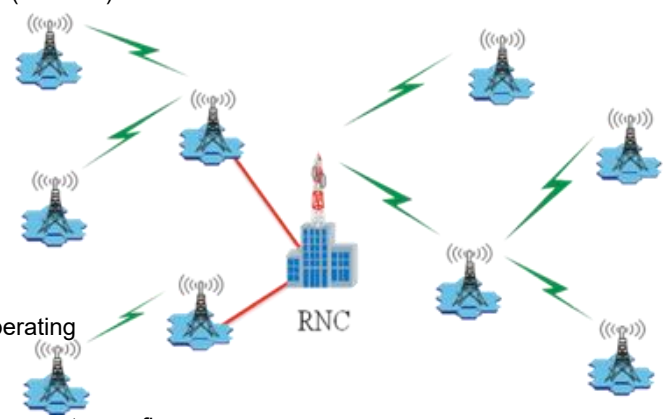
DMRIP-200s is an affordable medium capacity radio solution for enterprises that need private lines and broadband Ethernet traffic. It offers solutions with fine combination of cost effectiveness & short commission time for the following applications:

ISP Backhaul

DMRIP-200s allows ISPs, who own no land lines, to quickly establish a backhaul without quality compromises. ISPs can grow up their profits by delivering services with guaranteed SLA or reaching distant clients from their PTP using radios with similar cost at licensed frequencies to avoid spectrum congestion.

Features

- Zero footprint, fully outdoor and cost-effective solution
- (QPSK-4096QAM) to secure best link performance
- Advanced multilevel LDPC and RS FEC
- Up to 2Gbps capacity with Hitless Automatic Adaptive Coding and Modulation (HAACM)
- The capacity can be up to 4Gbps by 2-radios aggregation
- Power supply with coaxial cable or 2-wire cable
- Multi-GE ports with 2-10 Gb
- High availability and reliability based on licensed frequencies 5~44G
- Layer-2 switching, auto MDI/MDXI, VLAN, QoS, QinQ, STP/RSTP, LACP-
- 16K Mac Table Entries, - Jumbo frame up to 10240 bytes
- RF and digital loopback capability
- Adaptive digital Pre-distortion feature, - ATPC and built-in FEC function
- Built-in Bit Error Rate (BER) monitoring and spectrum scan
- Small and attractive profile, Low latency and low power consumption, wide operating temperature range fits all weather conditions
- Management capability as well as SNMP and Https
- Support Local and Remote loopback for Line checking - System Log for alarm, events, config.
- QoS (Quality of Service) based on port, VLAN ID/Priority, DSCP for traffic prioritization
- Scalable bandwidths (ETSI up to 112 MHz) and flexible modulation schemes



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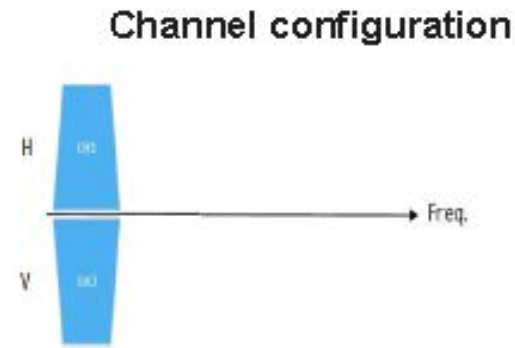
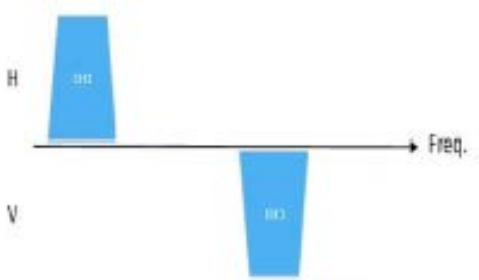
* Dual-channels in each subband using dual-polarization (XPIC)
* Dual-channels in different subband using dual-polarization
* Dual-channels with east/west and Add/drop feature
* 4+0 by using 2 radios

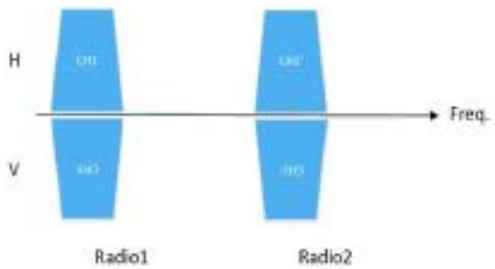
Channel configuration



Dual-channels in each subband using dual polarization (XPIC) with OMT



Dual-channels in different subband using dual-polarization with OMT



4+0 by using 2 radios with OMT plus combiner

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Specifications

Frequency			6.5GHz	7GHz	8GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz
Standard			ETSI/ITU or customer specified							
RF Output Power/per channel (dBm-Max)		4096QAM	20	19	19	19	18	18	17	17
		2048QAM	20	19	19	19	18	18	17	17
		1024QAM	21	20	20	20	19	19	18	18
		512QAM	21	20	20	20	19	19	18	18
		256QAM	21	20	20	20	19	19	18	18
		128QAM	21	20	20	20	19	19	18	18
		64QAM	22	21	21	21	20	20	19	19
		32QAM	22	21	21	21	20	20	19	19
		16QAM	22	21	21	21	20	20	19	19
		QPSK	22	21	21	21	20	20	19	19
RF Output Power(dBm- Min)			0							
Tuning Increment (dB)			1							
Accuracy (dB)			±2							
RX at BER=10-6 (dBm)	112MHz	4096QAM	-49.1	N/A	-49.1	-48.6	-48.6	-48.6	-48.1	-48.1
		2048QAM	-53.0	N/A	-53.0	-52.5	-52.5	-52.5	-52.0	-52.0
		1024QAM	-56.1	N/A	-56.1	-55.6	-55.6	-55.6	-55.1	-55.1
		512QAM	-59.3	N/A	-59.3	-58.8	-58.8	-58.8	-58.3	-58.3
		256QAM	-62.3	N/A	-62.3	-61.8	-61.8	-61.8	-61.3	-61.3
		128QAM	-65.4	N/A	-65.4	-64.9	-64.9	-64.9	-64.4	-64.4
		64QAM	-68.3	N/A	-68.3	-67.8	-67.8	-67.8	-67.3	-67.3
		32QAM	-70.6	N/A	-70.6	-70.1	-70.1	-70.1	-69.6	-69.6
		16QAM	-73.7	N/A	-73.7	-73.2	-73.2	-73.2	-72.7	-72.7
		QPSK	-80.1	N/A	-80.1	-79.6	-79.6	-79.6	-79.1	-79.1
	80MHz	4096QAM	-50.5	N/A	-50.5	-50.0	-50.0	-50.0	-49.5	-49.5
		2048QAM	-54.4	N/A	-54.4	-53.9	-53.9	-53.9	-53.4	-53.4
		1024QAM	-57.6	N/A	-57.6	-57.1	-57.1	-57.1	-56.6	-56.6
		512QAM	-60.7	N/A	-60.7	-60.2	-60.2	-60.2	-59.7	-59.7
		256QAM	-63.8	N/A	-63.8	-63.3	-63.3	-63.3	-62.8	-62.8
		128QAM	-66.9	N/A	-66.9	-66.4	-66.4	-66.4	-65.9	-65.9
		64QAM	-69.7	N/A	-69.7	-69.2	-69.2	-69.2	-68.7	-68.7
		32QAM	-72.1	N/A	-72.1	-71.6	-71.6	-71.6	-71.1	-71.1
		16QAM	-75.2	N/A	-75.2	-74.7	-74.7	-74.7	-74.2	-74.2
		QPSK	-81.7	N/A	-81.7	-81.2	-81.2	-81.2	-80.2	-80.2
	56MHz	4096QAM	-51.9	-51.9	-51.9	-51.4	-51.4	-51.4	-50.9	-50.9
		2048QAM	-55.8	-55.8	-55.8	-55.3	-55.3	-55.3	-54.8	-54.8
		1024QAM	-59.1	-59.1	-59.1	-58.6	-58.6	-58.6	-58.1	-58.1
		512QAM	-62.3	-62.3	-62.3	-61.8	-61.8	-61.8	-61.3	-61.3
		256QAM	-65.4	-65.4	-65.4	-64.9	-64.9	-64.9	-64.4	-64.4
		128QAM	-68.4	-68.4	-68.4	-67.9	-67.9	-67.9	-67.4	-67.4
		64QAM	-71.2	-71.2	-71.2	-70.7	-70.7	-70.7	-70.3	-70.3
		32QAM	-73.7	-73.7	-73.7	-73.2	-73.2	-73.2	-72.7	-72.7
		16QAM	-76.8	-76.8	-76.8	-76.3	-76.3	-76.3	-75.8	-75.8
		QPSK	-83.2	-83.2	-83.2	-82.7	-82.7	-82.7	-82.2	-82.2
	40MHz	4096QAM	-53.3	-53.3	-53.3	-52.8	-52.8	-52.8	-52.3	-52.3
		2048QAM	-57.2	-57.2	-57.2	-56.7	-56.7	-56.7	-56.2	-56.2
		1024QAM	-60.6	-60.6	-60.6	-60.1	-60.1	-60.1	-59.6	-59.6
		512QAM	-63.8	-63.8	-63.8	-63.3	-63.3	-63.3	-62.8	-62.8
		256QAM	-67.0	-67.0	-67.0	-66.5	-66.5	-66.5	-66.0	-66.0
		128QAM	-69.8	-69.8	-69.8	-69.3	-69.3	-69.3	-68.8	-68.8
		64QAM	-72.6	-72.6	-72.6	-72.1	-72.1	-72.1	-71.6	-71.6
		32QAM	-75.2	-75.2	-75.2	-74.7	-74.7	-74.7	-74.2	-74.2
		16QAM	-78.4	-78.4	-78.4	-77.9	-77.9	-77.9	-77.4	-77.4
		QPSK	-84.7	-84.7	-84.7	-84.2	-84.2	-84.2	-83.7	-83.7
	28MHz	4096QAM	-54.6	-54.6	-54.6	-54.1	-54.1	-54.1	-53.6	-53.6
		2048QAM	-58.6	-58.6	-58.6	-58.1	-58.1	-58.1	-57.6	-57.6
		1024QAM	-62.1	-62.1	-62.1	-61.6	-61.6	-61.6	-61.1	-61.1
		512QAM	-65.4	-65.4	-65.4	-64.9	-64.9	-64.9	-64.4	-64.4
		256QAM	-68.5	-68.5	-68.5	-68.0	-68.0	-68.0	-67.5	-67.5
		128QAM	-71.3	-71.3	-71.3	-70.8	-70.8	-70.8	-70.3	-70.3
		64QAM	-74.1	-74.1	-74.1	-73.6	-73.6	-73.6	-73.1	-73.1
		32QAM	-76.8	-76.8	-76.8	-76.3	-76.3	-76.3	-75.8	-75.8
		16QAM	-79.9	-79.9	-79.9	-79.4	-79.4	-79.4	-78.9	-78.9
		QPSK	-86.2	-86.2	-86.2	-85.7	-85.7	-85.7	-85.2	-85.2

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Flange	UBR84	UBR84	UBR84	UBR100	UBR140	UBR140	UBR220	UBR220
RSSI	Output voltage vs. RSL: 0～1.4V vs. -90～-20dBm(10dB/200mV)							
RSL Accuracy	±2 dB@-80~-30dBm, ±3 dB@-90~-80dBm or -30~-20dBm							
Frequency Stability	±5ppm		**Spectrum Efficiency:** class 8 (ETSI EN 302 217-2-2 V 2.0.0(2012-09)					
Frequency Source	Synthesizer			**Max Input Level Without Damage**			0dBm	
Modulation	QPSK~4096QAM			CCDP with XPIC		**ACM switching**	Hitless	
Throughput (single channel)/Mbps	Up to 2800Mbps@4*80MHz (anatel) , 4Gbps@4*112MHz							
Switch type	10GE Layer 2			**QoS**		802.1p		
Max frame size	10240 bytes			**QoS queuing**		Yes		
MAC table	16k entries, auto learning & aging			**VLAN support**		802.1Q, **QinQ**		
Packet buffer	8Mbit;non-blocking store & Forward			**Spanning tree protocol**		802.1D-1998 STP&RSTP		
Flow control	802.3x			**Synchronization**		N/A		
SNMP	SNMP traps, MIB,SNMP v1/v2c/v3,							
EMS	Web based HTTP, SNMP, https call							
Interface	2-10GE optical, Single-mode 10G SFP							
NMS Interface	Ethernet(in-band)							
RSSI	Mini-BNC							
Power	Coaxial cable with N-type connector							
Power Supply	-48V±20%							
Power Consumption	< 150W							
Ambient Temperature	-35~ +55 ℃							
Weight &Dimension (kg/mm)	400*300*115mm							
Humidity	All weather							
Elevation	15,000ft / 4572 m,IP65							

Notes: *All Specifications are typical values and subject to change without prior notice.*

Capacity (Mbps)/per channel											
BW	Mod	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM	512QAM	1024QAM	2048QAM	4096QAM
28MHz	2+0	91.9	183.6	224.6	276.5	322.6	368.5	415.7	461.0	501.8	531.7
	4+0	182.8	367.2	449.2	553.1	645.2	737.1	831.4	922.0	1003.6	1063.4
29.65MHz	2+0	97.4	194.4	237.8	292.8	341.6	390.2	440.2	488.2	531.4	563.0
	4+0	194.8	388.8	475.6	585.6	683.2	780.4	880.4	976.4	1062.9	1126.1
40MHz	2+0	130.0	260.1	320.2	396.1	462.2	528.4	594.0	662.0	720.0	768.0
	4+0	260.0	520.0	640.0	792.0	924.0	1056.0	1188.0	1324.0	1440.0	1536.0
56MHz	2+0	183.8	367.2	449.2	553	645.2	737	831.4	922	1003.6	1063.4
	4+0	365.6	734.4	898.4	1106.2	1290.4	1474.2	1662.8	1844	2007.2	2126.8
59.3MHz	2+0	189.6	372.1	462.0	570.2	666.3	755.5	847.5	949.9	1024.0	1064.6
	4+0	379.1	744.1	923.9	1140.3	1332.6	1510.9	1694.9	1899.7	2047.9	2129.2
80MHz	2+0	244.35	478.0	596.8	734.5	858.8	969.75	1086.8	1221.7	1311.4	1406
	4+0	488.7	956.0	1193.6	1469.0	1717.6	1939.5	2173.6	2443.4	2622.8	2812.0
112MHz	2+0	367.6	734.4	898.4	1106	1290.4	1474	1662.8	1844	2007.2	2126.8
	4+0	731.2	1468.8	1796.8	2212.4	2580.8	2948.4	3325.6	3688	4014.4	4253.6

Note:

1. ***For HC (head compression) at network traffic model 2, the capacity will increase about 20~30%***

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