

## LK200 Full-outdoor Packet Radio

- Zero footprint, fully integrated and cost-effective solution
- Up to 900Mbps capacity with Hitless Automatic Adaptive Coding and Modulation (HAACM)\*
- Network synchronization with SyncE
- QoS (Quality of Service) and VLAN for traffic prioritization
- Scalable bandwidths (ETSI up to 112 MHz, FCC up to 80MHz) and flexible modulation schemes (QPSK-1024QAM) to secure best link performance
- Power supply with coaxial cable and Optional Optical GE port for strong lightning protection.
- High availability and reliability based on licensed frequencies from 6.5G to 23G
- Jumbo frame up to 9K bytes, layer-2 switching, auto MDI/MDXI, VLAN, QoS, QinQ, STP/RSTP, RLS
- RF and digital loopback capability
- 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
- Local management capability as well as SNMP
- Zero IF design for easy manufacturing



## LK200 Full-outdoor Packet Radio

A compact all-outdoor packet radio solution, combining the advantages of an all-outdoor profile with carrier-grade performance of LK200 Family, generates significant CAPEX and OPEX savings.

**LK200 Packet** 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 (3.5/7/14/28/56/112MHz) and adaptive modulation schemes (QPSK-1024QAM) provide traffic with more flexibility and strong adaptability to various application environments.

**LK200 Packet** 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

### Cellular Backhaul

LK200 Packet is a perfect fit for 3G/LTE/WiMAX 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, LK200 Packet could meet any RAN network requirement. With external PWE3 interface unit, LK200 Packet could provide up to 16E1 and 4FE interfaces for 2G/3G/LTE co-site scenario.



Figure 1 – Cellular Backhaul

### ISP Backhaul

LK200 Packet 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 PoP using radios with similar cost at licensed frequencies to avoid spectrum congestion.



Figure 2 – ISP Backhaul

### Broadband Access

LK200 Packet 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:

- \* DSLAM backhaul
- \* No right-of-way
- \* Extending network from a fiber POP
- \* Private Communication networks

## Specifications

Frequency (GHz)		6	7	8	11	13	15	18	23	26	38	
<b>Standard</b>		ETSI/ITU or customer specified										
<b>RF Output Power (dBm-Max)</b>	1024QAM	23	23	23	16	16	16	15	15	14	13	
	512QAM	24	24	24	17	17	17	16	16	15	14	
	256QAM	25	25	25	18	18	18	17	17	16	15	
	128QAM	25	25	25	18	18	18	17	17	16	15	
	64QAM	25	25	25	19	19	19	18	18	17	16	
	32QAM	25	25	25	20	20	20	19	19	18	17	
	16QAM	25	25	25	21	21	21	20	20	19	18	
QPSK	25	25	25	23	23	23	23	21	21	20	19	
<b>RF Output Power(dBm- Min)</b>		0										
<b>Tuning Increment (dB)</b>		1										
<b>Accuracy (dB)</b>		±2										
<b>RX at BER= 10-6 (dBm)</b>	112MHz	1024QAM	-52.9	N/A	-52.9	-52.4	N/A	-52.4	-52.0	-52.0	-51.0	-51.0
		512QAM	-56.5	N/A	-56.5	-56.0	N/A	-56.0	-55.6	-55.6	-54.6	-54.6
		256QAM	-59.5	N/A	-59.5	-59.0	N/A	-59.0	-58.6	-58.6	-57.6	-57.6
		128QAM	-62.5	N/A	-62.5	-62.0	N/A	-62.0	-61.6	-61.6	-60.6	-60.6
		64QAM	-65.5	N/A	-65.5	-65.0	N/A	-65.0	-64.6	-64.6	-63.6	-63.6
		32QAM	-68.5	N/A	-68.5	-68.0	N/A	-68.0	-67.6	-67.6	-66.6	-66.6
		16QAM	-71.4	N/A	-71.4	-71.0	N/A	-71.0	-70.6	-70.6	-69.6	-69.6
	QPSK	-77.8	N/A	-77.8	-77.3	N/A	-77.3	-76.7	-76.7	-75.7	-75.7	
	56MHz	1024QAM	-55.9	N/A	-55.9	-55.4	-55.4	-55.4	-55.0	-55.0	-54.0	-54.0
		512QAM	-59.5	N/A	-59.5	-59.0	-59.0	-59.0	-58.6	-58.6	-57.6	-57.6
		256QAM	-62.5	N/A	-62.5	-62.0	-62.0	-62.0	-61.6	-61.6	-60.6	-60.6
		128QAM	-65.5	N/A	-65.5	-65.0	-65.0	-65.0	-64.6	-64.6	-63.6	-63.6
		64QAM	-68.5	N/A	-68.5	-68.0	-68.0	-68.0	-67.6	-67.6	-66.6	-66.6
		32QAM	-71.4	N/A	-71.4	-71.0	-71.0	-71.0	-70.6	-70.6	-69.6	-69.6
		16QAM	-74.4	N/A	-74.4	-74.0	-74.0	-74.0	-73.6	-73.6	-72.6	-72.6
	QPSK	-80.8	N/A	-80.8	-80.3	-80.3	-80.3	-79.7	-79.7	-78.7	-78.7	
	28MHz	1024QAM	-57.9	-57.9	-57.9	-57.4	-57.4	-57.4	-57.0	-57.0	-56.0	-56.0
		512QAM	-62.4	-62.4	-62.4	-61.9	-61.9	-61.9	-61.5	-61.5	-60.5	-60.5
		256QAM	-65.4	-65.4	-65.4	-65.1	-65.1	-65.1	-64.7	-64.7	-63.7	-63.7
		128QAM	-68.5	-68.5	-68.5	-68.0	-68.0	-68.0	-67.6	-67.6	-66.6	-66.6
		64QAM	-71.5	-71.5	-71.5	-71.2	-71.2	-71.2	-70.8	-70.8	-69.8	-69.8
		32QAM	-74.5	-74.5	-74.5	-74.0	-74.0	-74.0	-73.6	-73.6	-72.6	-72.6
		16QAM	-77.3	-77.3	-77.3	-76.8	-76.8	-76.8	-76.4	-76.4	-75.4	-75.4
	QPSK	-83.7	-83.7	-83.7	-83.1	-83.1	-83.1	-82.7	-82.7	-81.7	-81.7	
	14MHz	1024QAM	-61.1	-61.1	-61.1	-60.6	-60.6	-60.6	-60.2	-60.2	-59.2	-59.2
		512QAM	-64.9	-64.9	-64.9	-64.5	-64.5	-64.5	-64.1	-64.1	-63.1	-63.1
		256QAM	-67.9	-67.9	-67.9	-67.4	-67.4	-67.4	-67.0	-67.0	-66.0	-66.0
		128QAM	-70.6	-70.6	-70.6	-70.1	-70.1	-70.1	-69.7	-69.7	-68.7	-68.7
		64QAM	-73.3	-73.3	-73.3	-72.8	-72.8	-72.8	-72.4	-72.4	-71.4	-71.4
		32QAM	-76.1	-76.1	-76.1	-75.6	-75.6	-75.6	-75.2	-75.2	-74.2	-74.2
		16QAM	-80.3	-80.3	-80.3	-79.8	-79.8	-79.8	-79.4	-79.4	-78.4	-78.4
	QPSK	-86.1	-86.1	-86.1	-85.6	-85.6	-85.6	-85.2	-85.2	-84.2	-84.2	
	7MHz	1024QAM	-63.4	-63.4	-63.4	-62.9	-62.9	-62.9	-62.5	-62.5	-61.5	-61.5
		512QAM	-67.6	-67.6	-67.6	-67.1	-67.1	-67.1	-66.7	-66.7	-65.7	-65.7
		256QAM	-70.6	-70.6	-70.6	-70.1	-70.1	-70.1	-69.7	-69.7	-68.7	-68.7
		128QAM	-73.4	-73.4	-73.4	-72.9	-72.9	-72.9	-72.5	-72.5	-71.5	-71.5
		64QAM	-76.9	-76.9	-76.9	-76.4	-76.4	-76.4	-76.0	-76.0	-75.0	-75.0
		32QAM	-80.4	-80.4	-80.4	-79.9	-79.9	-79.9	-79.5	-79.5	-78.5	-78.5
		16QAM	-83.2	-83.2	-83.2	-82.7	-82.7	-82.7	-82.3	-82.3	-81.3	-81.3
	QPSK	-88.9	-88.9	-88.9	-88.4	-88.4	-88.4	-88.0	-88.0	-87.0	-87.0	
	<b>Flange</b>		UBR84	UBR84	UBR84	UBR100	UBR140	UBR140	UBR220	UBR220	UBR220	UBR320
	<b>RSSI</b>		Output voltage vs. RSL: 0~1.4V vs. -90~-20dBm(10dB/200mV)									
	<b>RSL Accuracy</b>		±2 dB@-80~-30dBm, ±3 dB@-90~-80dBm or -30~-20dBm									
	<b>Frequency Stability</b>		±5ppm									
	<b>Frequency Source</b>		Synthesizer									
	<b>Max Input Level Without Damage</b>		0dBm									
	<b>Modulation</b>		QPSK~1024QAM									
	<b>ACM switching</b>		Hitless									
<b>Throughput (single channel)/Mbps</b>		Up to 900 Mbps										
<b>Protection</b>		2+0 with external smart switch (CRN156)										
<b>Switch type</b>		GE Layer 2					<b>QoS</b>			802.1p		
<b>Max frame size</b>		9216 bytes					<b>QoS queuing</b>			Yes		
<b>MAC table</b>		1k entries, auto learning & aging					<b>VLAN support</b>			802.1Q, QinQ		
<b>Packet buffer</b>		31kBB;non-blocking store & forward					<b>Spanning tree protocol</b>			802.1D-1998 STP&RSTP		
<b>Flow control</b>		802.3x					<b>Synchronization</b>					

# RESILIENT

PROGRESSIVE TECHNOLOGY

<b>SNMP</b>	SNMP traps, MIB, SNMP v1/v2c
<b>EMS</b>	Web based HTTP, Telnet, FTP, SNMP
<b>Interface</b>	Optical GE
<b>Ethernet physical Interface</b>	LC connector (Single mode, optical fiber)
<b>RSSI</b>	BNC
<b>Power</b>	N-type female
<b>Power Supply</b>	-48V±20%
<b>Power Consumption</b>	<40W
<b>Ambient Temperature</b>	-35~ +55°C
<b>Weight &amp; Dimension (kg/mm)</b>	6/315×265×130
<b>Humidity</b>	All weather
<b>Elevation</b>	15,000ft / 4572 m, IP65

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

Capacity (Mbps)									
Mod	BW	QPSK	16QAM	32QAM	64QAM	128QAM	256QAM	512QAM	1024QAM
14		22	44	55	66	77	88	99	110
20		31	63	79	94	110	126	141	157
28		44	88	110	132	154	176	198	220
40		63	126	157	189	220	251	283	314
56		88	176	220	264	308	352	396	440
60		94	189	236	283	330	377	424	471
80		126	252	315	377	441	503	566	630
112		176	352	440	528	616	704	792	880