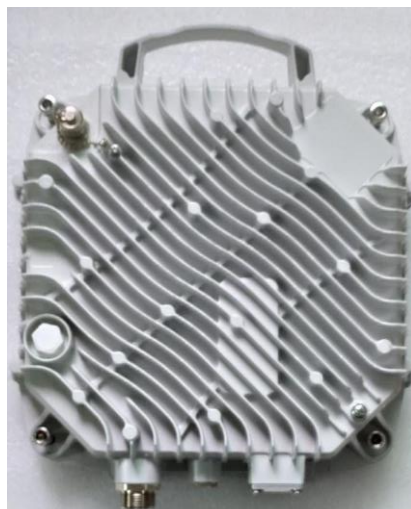


MKW150 Full-outdoor Packet Radio

- 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.
- 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 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





MKW150 Full-outdoor Packet Radio

A compact all-outdoor packet radio solution, combining the advantages of an all-outdoor profile with carrier-grade performance of MKW150 Family, generates significant CAPEX and OPEX savings.

MKW150 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 (ETSI 3.5/7/14/28/56MHz, FCC 5/10/20/30/40/80MHz) and adaptive modulation schemes (QPSK-128QAM) provide traffic with more flexibility and strong adaptability to various application environments.

MKW150 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

MKW150 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, MKW150 Packet could meet any RAN network requirement. With external PWE3 interface unit, MKW150 Packet could provide up to 16E1 and 4FE interfaces for 2G/3G/LTE co-site scenario.

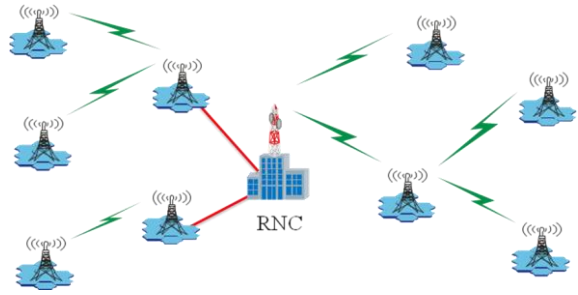


Figure 1 – Cellular Backhaul

ISP Backhaul

MKW150 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

MKW150 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			6.5GHz	7GHz	8GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz
Standard			ETSI/ITU or customer specified							
RF Output Power (dBm-Max)	1024QAM	23	23	23	16	16	16	15	15	
	512QAM	24	24	24	17	17	17	16	16	
	256QAM	25	25	25	18	18	18	17	17	
	128QAM	25	25	25	18	18	18	17	17	
	64QAM	25	25	25	19	19	19	18	18	
	32QAM	25	25	25	20	20	20	19	19	
	16QAM	25	25	25	21	21	21	20	20	
QPSK		25	25	25	23	23	23	21	21	
RF Output Power(dBm- Min)			0							
Tuning Increment (dB)			1							
Accuracy (dB)			±2							
RX at BER= 10-6 (dBm)	112MHz	1024QAM	-52.9	N/A	-52.9	-52.4	N/A	-52.4	-52.0	-52.0
		512QAM	-56.5	N/A	-56.5	-56.0	N/A	-56.0	-55.6	-55.6
		256QAM	-59.5	N/A	-59.5	-59.0	N/A	-59.0	-58.6	-58.6
		128QAM	-62.5	N/A	-62.5	-62.0	N/A	-62.0	-61.6	-61.6
		64QAM	-65.5	N/A	-65.5	-65.0	N/A	-65.0	-64.6	-64.6
		32QAM	-68.5	N/A	-68.5	-68.0	N/A	-68.0	-67.6	-67.6
		16QAM	-71.4	N/A	-71.4	-71.0	N/A	-71.0	-70.6	-70.6
	QPSK	-77.8	N/A	-77.8	-77.3	N/A	-77.3	-76.7	-76.7	
	56MHz	1024QAM	-55.9	N/A	-55.9	-55.4	-55.4	-55.4	-55.0	-55.0
		512QAM	-59.5	N/A	-59.5	-59.0	-59.0	-59.0	-58.6	-58.6
		256QAM	-62.5	N/A	-62.5	-62.0	-62.0	-62.0	-61.6	-61.6
		128QAM	-65.5	N/A	-65.5	-65.0	-65.0	-65.0	-64.6	-64.6
		64QAM	-68.5	N/A	-68.5	-68.0	-68.0	-68.0	-67.6	-67.6
		32QAM	-71.4	N/A	-71.4	-71.0	-71.0	-71.0	-70.6	-70.6
		16QAM	-74.4	N/A	-74.4	-74.0	-74.0	-74.0	-73.6	-73.6
	QPSK	-80.8	N/A	-80.8	-80.3	-80.3	-80.3	-79.7	-79.7	
	28MHz	1024QAM	-57.9	-57.9	-57.9	-57.4	-57.4	-57.4	-57.0	-57.0
		512QAM	-62.4	-62.4	-62.4	-61.9	-61.9	-61.9	-61.5	-61.5
		256QAM	-65.4	-65.4	-65.4	-65.1	-65.1	-65.1	-64.7	-64.7
		128QAM	-68.5	-68.5	-68.5	-68.0	-68.0	-68.0	-67.6	-67.6
		64QAM	-71.5	-71.5	-71.5	-71.2	-71.2	-71.2	-70.8	-70.8
		32QAM	-74.5	-74.5	-74.5	-74.0	-74.0	-74.0	-73.6	-73.6
		16QAM	-77.3	-77.3	-77.3	-76.8	-76.8	-76.8	-76.4	-76.4
	QPSK	-83.7	-83.7	-83.7	-83.1	-83.1	-83.1	-82.7	-82.7	
	14MHz	1024QAM	-61.1	-61.1	-61.1	-60.6	-60.6	-60.6	-60.2	-60.2
		512QAM	-64.9	-64.9	-64.9	-64.5	-64.5	-64.5	-64.1	-64.1
		256QAM	-67.9	-67.9	-67.9	-67.4	-67.4	-67.4	-67.0	-67.0
		128QAM	-70.6	-70.6	-70.6	-70.1	-70.1	-70.1	-69.7	-69.7
		64QAM	-73.3	-73.3	-73.3	-72.8	-72.8	-72.8	-72.4	-72.4
		32QAM	-76.1	-76.1	-76.1	-75.6	-75.6	-75.6	-75.2	-75.2
		16QAM	-80.3	-80.3	-80.3	-79.8	-79.8	-79.8	-79.4	-79.4
	QPSK	-86.1	-86.1	-86.1	-85.6	-85.6	-85.6	-85.2	-85.2	
	7MHz	1024QAM	-63.4	-63.4	-63.4	-62.9	-62.9	-62.9	-62.5	-62.5
		512QAM	-67.6	-67.6	-67.6	-67.1	-67.1	-67.1	-66.7	-66.7
		256QAM	-70.6	-70.6	-70.6	-70.1	-70.1	-70.1	-69.7	-69.7
		128QAM	-73.4	-73.4	-73.4	-72.9	-72.9	-72.9	-72.5	-72.5
		64QAM	-76.9	-76.9	-76.9	-76.4	-76.4	-76.4	-76.0	-76.0
		32QAM	-80.4	-80.4	-80.4	-79.9	-79.9	-79.9	-79.5	-79.5
		16QAM	-83.2	-83.2	-83.2	-82.7	-82.7	-82.7	-82.3	-82.3
	QPSK	-88.9	-88.9	-88.9	-88.4	-88.4	-88.4	-88.0	-88.0	
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							
Frequency Source			Synthesizer							
Max Input Level Without Damage			0dBm							
Modulation			QPSK~1024QAM							
ACM switching			Hitless							
Throughput (single channel)/Mbps			Up to 450Mbps							
Protection			2+0 with external smart switch							
Switch type			GE Layer 2			QoS			802.1p	
Max frame size			9216 bytes			QoS queuing			Yes	
MAC table			1k entries, auto learning & aging			VLAN support			802.1Q, QinQ	
Packet buffer			31kBB;non-blocking store &			Spanning tree protocol			802.1D-1998 STP&RSTP	



	forward		
Flow control	802.3x	Synchronization	SyncE and IEEE1588v2(TC)
SNMP	SNMP traps, MIB, SNMP v1/v2c		
EMS	Web based HTTP, Telnet, FTP, SNMP		
Interface	Ethernet(basic) and E1 with external TDM-over-IP IDU(CRN155)		
Ethernet physical Interface	GE Electrical	E1 physical interface	RJ45 120ohm Balanced
NMS Interface	Ethernet RJ45 (in-band)		
RSSI	BNC		
Power	RJ45 with POE		
Power Supply	-48V±20%		
Power Consumption	<40W		
Ambient Temperature	-35~ +55°C		
Weight &Dimension (kg/mm)	6/315×265×130		
Humidity	All weather		
Elevation	15,000ft / 4572 m, IP67		

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