MINI-LINK LH

MINI-LINK the Network Node
The increasing complexity of today's and future networks require flexible and well-integrated microwave nodes. Building an efficient microwave backhaul network with end-to-end performance in mind, requires high node capacity, compact and modular building practice, advanced packet functionality.

Ericsson is the market leader in microwave transmission and has over 40 years of microwave experience with more than 3.8 million radio units delivered to over 180 countries.

MINI-LINK LH is the Trunk product in the market leading MINI-LINK product family and provides up to 8 Gbps over one antenna. MINI-LINK LH contains an integrated high capacity Ethernet switch and Carrier Grade Quality of Service well suited for 5G and the evolution to all-IP.

Typical applications
For *new roll-out* and *evolution of mobile backhaul networks*, MINI-LINK LH supports all-IP Ethernet Backhaul with Ethernet quality of service and packet based synchronization. With the current increase of data traffic in the mobile network, MINI-LINK LH meets the demand for microwave based Ethernet connections in the Gbps-range.
High capacity Ethernet microwave is used to close rings in the metro and core part of *fixed broadband networks*. It is also used for building complete networks in areas where microwave offers a more efficient solution than optical fiber, e.g. in difficult terrain or when short implementation time is critical.

MINI-LINK LH is also suitable for private communications networks like *Enterprise, Power Utilities, and National Security*.

Best in class spectrum efficiency
Ericsson's trunk radio systems provide best in class spectrum efficiency and make the most out of available frequency spectrum. More than 8 Gbps of data can be trans-mitted in as little as 8 x 56 MHz of frequency bandwidth using cross polar interference cancellation, XPIC.

Integrated Short Haul and Trunk radio in a common platform
Slots in the Access Module Magazine that are not used for the long haul radio link can be fitted with any type of short haul modems from MINI-LINK TN for TDM and Ethernet traffic. This integration reduces floor space, power consumption and number of network elements.

Several functions are common in the MINI-LINK platform such as Circuit Emulation, Adaptive Modulation, and Radio Link Bonding.

MINI-LINK LH adhere to carrier grade availability through redundant hardware plus line and radio-link protection. In addition are protection related protocols for traffic and synchronization part of the standard offering.

Adaptive Modulation
Hybrid traffic with Adaptive modulation enables substantially higher average traffic capacity than standard SDH/SONET trunk.

MINI-LINK LH Full size and Compact

MINI-LINK LH SuperCompact

MINI-LINK LH Split

Different building practices
Four different building practices are available for MINI-LINK LH including the new Split solution with a weight of only 25kg with 4 TRX. Which to select should be decided by the capacity needed and the space available on site. All active components and system performance is independent of the selected product**.**

Advanced packet handling
A microwave network node needs to have integrated Ethernet Switching functionality, reducing the cost and complexity by not needing external equipment. Hierarchical QoS enable sharing of networks between several operators with multiple technologies.

Technical specification MINI-LINK LH

RADIO LINK	Up to 530 Mbps over 56/60 MHz (ETSI/ANSI) using 1024 QAM TX power: +28 to +32 dBm, +40 dBm with Tx Booster RX threshold (10-6 BER): -65 to -94 dBm Up to 16 channels per system Space Diversity combining in single TRX
RADIO LINK PROTECTION MODES	SD, FD, HSB, QUAD, SDH/SONET N+1 Ethernet: Adaptive Modulation and 8+0 L1 Radio Link Bonding with Graceful Degradation
ANTENNAS	0.3 /0.6 /0.9 /1.2 /1.8 / 2.4 /3.0 /3.7 m 1 /2 /3 /4 /6 /8 /10 /12 ft single and dual polarized antennas
FREQUENCIES	4, 5, 5.8, 6L, 6U, 7, 8, 11, 13 GHz
POWER SUPPLY	-48 V DC
POWER CONSUMPTION	Typical 90 W per channel depending on configuration
DIMENSIONS (HXWXD)	2200x600x400 mm, 90x24x16 inch (Full Size 16 ch) 1800x600x400 mm, 71x24x16 inch (Full Size 12 ch) 480x440x260 mm, 19x18x11 inch (Compact 4 ch) 180x440x260 mm, 7x18x11 inch (SuperCompact 2 ch) 400x415x390 mm, 15.7x16x14 inch (Split LH outdoor box with 4 TRX)
TRAFFIC INTERFACES	10/100/1000 BASE-T, IEEE802.3 Optical GbE via 1000/2500/10 G BASE-SX/LX/ ZX/CWDM IEEE802.3 STM-1 Electrical ITU-T, G.703 STM-1 Optical ITU-T, G.957
SYNCHRONIZATION	Sync E, 1588v2 (Telecom profile G.8275.1), NTP transparent, E1, 2MHz, STM-1/OC-3
SWITCHING	Up to 60 Gbps full duplex, non-blocking IEEE 802.1Q-2011 Customer and Provider Bridge IEEE 802.1w RSTP IEEE 802.1AX LAG/LACP Hierarchical QoS Bandwidth notification (G.8013) HW Switch Protection
OAM	Link OAM Service OAM FM/PM, two way delay measurement (Y.1731), TWAMP reflector
USER INPUT/OUTPUT	2 in +3 out in Full Size with NPU1 D 5 in +5 out in Compact with NPU3 D
SERVICE CHANNELS	2x (4xE1) ports (Full Size). 4xE1 ports(Compact)
NETWORK MANAGEMENT	Supported by IP transport NMS, ServiceON, Craft and CLI, SNMP v1/v2c/v3 with privacy, SFTP, SSHv2, Radius, TACACS+, NTP with authentication.
STANDARDS AND RECOMMENDATIONS	CEN/CENELEC, ETSI, ITU, IEC, IEEE, IETF, MEF 9, MEF 14
OPERATIONAL TEMPERATURE	-5°C to + 50°C / 23 F to +122 F
DATA COMMUNICATION NETWORK	IP DCN and Site LAN service DCN interfaces via 10/100 BASE-T, E1, E0. In-band transport over Microwave and STM-1/OC-3. DCN over Ethernet VLAN support.

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